Package: whitebox (via r-universe)

October 16, 2026

Type Package

Title 'WhiteboxTools' R Frontend

Version 2.4.3

Description An R frontend for the 'WhiteboxTools' library, which is an advanced geospatial data analysis platform developed by Prof. John Lindsay at the University of Guelph's Geomorphometry and Hydrogeomatics Research Group. 'WhiteboxTools' can be used to perform common geographical information systems (GIS) analysis operations, such as cost-distance analysis, distance buffering, and raster reclassification. Remote sensing and image processing tasks include image enhancement (e.g. panchromatic sharpening, contrast adjustments), image mosaicing, numerous filtering operations, simple classification (k-means), and common image transformations. 'WhiteboxTools' also contains advanced tooling for spatial hydrological analysis (e.g. flow-accumulation, watershed delineation, stream network analysis, sink removal), terrain analysis (e.g. common terrain indices such as slope, curvatures, wetness index, hillshading; hypsometric analysis; multi-scale topographic position analysis), and LiDAR data processing. Suggested citation: Lindsay (2016) <doi:10.1016/j.cageo.2016.07.003>.

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SystemRequirements WhiteboxTools (https://github.com/jblindsay/whitebox-tools/releases/latest)

Encoding UTF-8

Language en-US

RoxygenNote 7.3.3

Roxygen list(markdown = TRUE)

URL https://whiteboxr.gishub.org/, https://github.com/opengeos/whiteboxR

BugReports https://github.com/opengeos/whiteboxR/issues

Suggests knitr, rmarkdown, testthat, terra, sf, raster

VignetteBuilder knitr

Depends R (>= 3.5)

LazyData true

Repository https://opengeos.r-universe.dev

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`check_whitebox_binary` *Check for 'WhiteboxTools' executable path*

Description

Check for 'WhiteboxTools' executable path

Usage

```
check_whitebox_binary(silent = TRUE)
```

Arguments

`silent`	logical. Print help on installation/setting path. Default `TRUE`.

Value

logical if 'WhiteboxTools' executable file exists.

See Also

`wbt_exe_path()`

`sample_dem_data` *Convenience method for path to sample DEM and soils data*

Description

Get a file path to DEM.tif or STATSGO2.shp stored in extdata subfolder of whitebox package installation directory.

Usage

```
sample_dem_data(destfile = NULL, ...)

sample_soils_data(destfile = NULL, ...)
```

Arguments

destfile	Path to target location of sample data. Will be downloaded if does not exist. Defaults to file path of extdata subfolder of whitebox package installation directory.
...	additional arguments to `file.copy()` e.g. `overwrite`

Value

character.

Examples

```
if (check_whitebox_binary()) {
  wbt_slope(sample_dem_data(), output = "slope.tif")
}
unlink(c('slope.tif', 'settings.json'))
```

---

wbt — *Run WhiteboxTools by Tool Name*

Description

You are required to specify all required arguments as either paths to files, or R object types that can be associated with a file.

`wbt_result()`: return a combined list of results from either the history of a `wbt_result` (if present and `history=TRUE`), or the result of a `wbt_result`

Usage

```
wbt(
  result,
  tool_name,
  ...,
  crs = NULL,
  verbose_mode = FALSE,
  command_only = FALSE
)

## S3 method for class 'wbt_result'
wbt(
  result,
  tool_name,
  ...,
  crs = NULL,
  verbose_mode = FALSE,
  command_only = FALSE
```

```
)

wbt_result(result, i = NULL, history = TRUE, attribute = "output")

## S3 method for class 'character'
wbt(
  result,
  tool_name,
  ...,
  crs = NULL,
  verbose_mode = FALSE,
  command_only = FALSE
)

## S3 method for class '`function`'
wbt(
  result,
  tool_name,
  ...,
  crs = NULL,
  verbose_mode = FALSE,
  command_only = FALSE
)

## S3 method for class 'missing'
wbt(
  result,
  tool_name,
  ...,
  crs = NULL,
  verbose_mode = FALSE,
  command_only = FALSE
)
```

Arguments

`result`	an object of class `wbt_result`
`tool_name`	character. name of the tool to run. Or a tool/function name (i.e. a symbol) that is non-standard evaluated as a character.
`...`	arguments to tool
`crs`	character Optional: a WKT Coordinate Reference System string, or other identifier such as EPSG code or PROJ string
`verbose_mode`	passed to `wbt_run_tool()`
`command_only`	Return command that would be run with `system()`? Default: `FALSE`
`i`	Optional index of result list element to return as result. Default is whole list.
`history`	Default: `TRUE` returns a list of all history results
`attribute`	Default: `"output"`

Details

Supports SpatRaster / RasterLayer input / output. Arguments are transformed from their source class and passed to WhiteboxTools executable as standard character string arguments involving file paths.

To print help for any tool, see `wbt_tool_help()`

`tool_name` may be specified with or without quotes or `wbt_` prefix. e.g. `"wbt_slope"`, `wbt_slope`, `slope`, and `"slope"` are identical.

Value

a list with class `"wbt_result"` containing elements:

- `tool` - the tool name
- `args` - arguments passed to executable
- `stdout` - console output (result of `wbt_run_tool()`)
- `crs` - Coordinate Reference System string (WKT or PROJ)
- `result` - any 'result' parameters (`--output`) that can be converted to R objects after run. A list of RasterLayer or character. May be a `try-error` if arguments are specified incorrectly.
- `history` - history of 'result' when `wbt_result` was passed as input, most recent output at end

list of result in `attribute` if `"history"` is present, otherwise the result in `attribute`. If `i` is specified, just the `i`th element of the list.

See Also

`wbt_tool_help()`

---

wbt_absolute_value *Absolute value*

Description

Calculates the absolute value of every cell in a raster.

Usage

```
wbt_absolute_value(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_accumulation_curvature *Accumulation curvature*

Description

This tool calculates accumulation curvature from an input DEM.

Usage

```
wbt_accumulation_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.

zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_activate *Activate 'WhiteboxTools' Extensions*

Description

Activate 'WhiteboxTools' Extensions

Usage

```
wbt_activate(
  email,
  activation_key,
  seat = 1,
  destdir = dirname(wbt_exe_path(shell_quote = FALSE))
)
```

Arguments

email	Email Address
activation_key	Activation Key
seat	Seat Number (Default 1)
destdir	Directory containing whitebox_tools and /plugins/ folder.

Value

0 for success (invisibly). Try-error on error.

wbt_adaptive_filter *Adaptive filter*

Description

Performs an adaptive filter on an image.

Usage

```
wbt_adaptive_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  threshold = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
threshold	Difference from mean threshold, in standard deviations.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_add *Add*

Description

Performs an addition operation on two rasters or a raster and a constant value.

Usage

```
wbt_add(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_add_point_coordinates_to_table

Add point coordinates to table

Description

Modifies the attribute table of a point vector by adding fields containing each point's X and Y coordinates.

Usage

```
wbt_add_point_coordinates_to_table(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector Points file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_aggregate_raster *Aggregate raster*

Description

Aggregates a raster to a lower resolution.

Usage

```
wbt_aggregate_raster(
  input,
  output,
  agg_factor = 2,
  type = "mean",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
agg_factor	Aggregation factor, in pixels.
type	Statistic used to fill output pixels.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_and *And*

Description

Performs a logical AND operator on two Boolean raster images.

Usage

```
wbt_and(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_anova *Anova*

Description

Performs an analysis of variance (ANOVA) test on a raster dataset.

Usage

```
wbt_anova(
  input,
  features,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
features	Feature definition (or class) raster.
output	Output HTML file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_arc_cos *Arc cos*

Description

Returns the inverse cosine (arccos) of each values in a raster.

Usage

```
wbt_arc_cos(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_arc_sin *Arc sin*

Description

Returns the inverse sine (arcsin) of each values in a raster.

Usage

```
wbt_arc_sin(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_arc_tan *Arc tan*

Description

Returns the inverse tangent (arctan) of each values in a raster.

Usage

```
wbt_arc_tan(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_arcosh *Arcosh*

Description

Returns the inverse hyperbolic cosine (arcosh) of each values in a raster.

Usage

```
wbt_arcosh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_arsinh *Arsinh*

Description

Returns the inverse hyperbolic sine (arsinh) of each values in a raster.

Usage

```
wbt_arsinh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_artanh *Artanh*

Description

Returns the inverse hyperbolic tangent (arctanh) of each values in a raster.

Usage

```
wbt_artanh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_ascii_to_las *Ascii to las*

Description

Converts one or more ASCII files containing LiDAR points into LAS files.

Usage

```
wbt_ascii_to_las(
  inputs,
  pattern,
  proj = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input LiDAR ASCII files (.csv).
`pattern`	Input field pattern.
`proj`	Well-known-text string or EPSG code describing projection.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_aspect *Aspect*

Description

Calculates an aspect raster from an input DEM.

Usage

```
wbt_aspect(
  dem,
  output,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_assess_route *Assess route*

Description

This tool assesses a route for slope, elevation, and visibility variation.

Usage

```
wbt_assess_route(
  routes,
  dem,
  output,
  length = "",
  dist = 20,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

routes	Name of the input routes vector file.
dem	Name of the input DEM raster file.
output	Name of the output lines shapefile.
length	Maximum segment length (m).
dist	Search distance, in grid cells, used in visibility analysis.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_atan2 *Atan2*

Description

Returns the 2-argument inverse tangent (atan2).

Usage

```
wbt_atan2(
  input_y,
  input_x,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input_y	Input y raster file or constant value (rise).
input_x	Input x raster file or constant value (run).
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_attribute_correlation

Attribute correlation

Description

Performs a correlation analysis on attribute fields from a vector database.

Usage

```
wbt_attribute_correlation(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output HTML file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_attribute_correlation_neighbourhood_analysis

Attribute correlation neighbourhood analysis

Description

Performs a correlation on two input vector attributes within a neighbourhood search windows.

Usage

```
wbt_attribute_correlation_neighbourhood_analysis(
  input,
  field1,
  field2,
  radius = NULL,
  min_points = NULL,
  stat = "pearson",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
field1	First input field name (dependent variable) in attribute table.
field2	Second input field name (independent variable) in attribute table.
radius	Search Radius (in map units).
min_points	Minimum number of points.
stat	Correlation type; one of 'pearson' (default) and 'spearman'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_attribute_histogram *Attribute histogram*

Description

Creates a histogram for the field values of a vector's attribute table.

Usage

```
wbt_attribute_histogram(
  input,
  field,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
field	Input field name in attribute table.
output	Output HTML file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_attribute_scattergram

Attribute scattergram

Description

Creates a scattergram for two field values of a vector's attribute table.

Usage

```
wbt_attribute_scattergram(
  input,
  fieldx,
  fieldy,
  output,
  trendline = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`fieldx`	Input field name in attribute table for the x-axis.
`fieldy`	Input field name in attribute table for the y-axis.
`output`	Output HTML file (default name will be based on input file if unspecified).
`trendline`	Draw the trendline.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_average_flowpath_slope

Average flowpath slope

Description

Measures the average slope gradient from each grid cell to all upslope divide cells.

Usage

```
wbt_average_flowpath_slope(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_average_normal_vector_angular_deviation

Average normal vector angular deviation

Description

Calculates the circular variance of aspect at a scale for a DEM.

Usage

```
wbt_average_normal_vector_angular_deviation(
  dem,
  output,
  filter = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`output`	Output raster file.
`filter`	Size of the filter kernel.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_average_overlay *Average overlay*

Description

Calculates the average for each grid cell from a group of raster images.

Usage

```
wbt_average_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_average_upslope_flowpath_length

Average upslope flowpath length

Description

Measures the average length of all upslope flowpaths draining each grid cell.

Usage

```
wbt_average_upslope_flowpath_length(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_balance_contrast_enhancement

Balance contrast enhancement

Description

Performs a balance contrast enhancement on a colour-composite image of multispectral data.

Usage

```
wbt_balance_contrast_enhancement(
  input,
  output,
  band_mean = 100,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input colour composite image file.
`output`	Output raster file.
`band_mean`	Band mean value.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_basins *Basins*

Description

Identifies drainage basins that drain to the DEM edge.

Usage

```
wbt_basins(
  d8_pntr,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_bilateral_filter *Bilateral filter*

Description

A bilateral filter is an edge-preserving smoothing filter introduced by Tomasi and Manduchi (1998).

Usage

```
wbt_bilateral_filter(
  input,
  output,
  sigma_dist = 0.75,
  sigma_int = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
sigma_dist	Standard deviation in distance in pixels.
sigma_int	Standard deviation in intensity in pixels.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_block_maximum_gridding

Block maximum gridding

Description

Creates a raster grid based on a set of vector points and assigns grid values using a block maximum scheme.

Usage

```
wbt_block_maximum_gridding(
  input,
  field,
  output,
  use_z = FALSE,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector Points file.
field	Input field name in attribute table.
output	Output raster file.
use_z	Use z-coordinate instead of field?.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_block_minimum_gridding

Block minimum gridding

Description

Creates a raster grid based on a set of vector points and assigns grid values using a block minimum scheme.

Usage

```
wbt_block_minimum_gridding(
  input,
  field,
  output,
  use_z = FALSE,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector Points file.
field	Input field name in attribute table.
output	Output raster file.
use_z	Use z-coordinate instead of field?.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_boundary_shape_complexity

Boundary shape complexity

Description

Calculates the complexity of the boundaries of raster polygons.

Usage

```
wbt_boundary_shape_complexity(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_breach_depressions

Breach depressions

Description

Breaches all of the depressions in a DEM using Lindsay's (2016) algorithm. This should be preferred over depression filling in most cases.

Usage

```
wbt_breach_depressions(
  dem,
  output,
  max_depth = NULL,
  max_length = NULL,
  flat_increment = NULL,
  fill_pits = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`output`	Output raster file.
`max_depth`	Optional maximum breach depth (default is Inf).
`max_length`	Optional maximum breach channel length (in grid cells; default is Inf).
`flat_increment`	Optional elevation increment applied to flat areas.
`fill_pits`	Optional flag indicating whether to fill single-cell pits.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_breach_depressions_least_cost

Breach depressions least cost

Description

Breaches the depressions in a DEM using a least-cost pathway method.

Usage

```
wbt_breach_depressions_least_cost(
  dem,
  output,
  dist,
  max_cost = NULL,
  min_dist = TRUE,
  flat_increment = NULL,
  fill = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
dist	Maximum search distance for breach paths in cells.
max_cost	Optional maximum breach cost (default is Inf).
min_dist	Optional flag indicating whether to minimize breach distances.
flat_increment	Optional elevation increment applied to flat areas.
fill	Optional flag indicating whether to fill any remaining unbreached depressions.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_breach_single_cell_pits *Breach single cell pits*

Description

Removes single-cell pits from an input DEM by breaching.

Usage

```
wbt_breach_single_cell_pits(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_breakline_mapping *Breakline mapping*

Description

This tool maps breaklines from an input DEM.

Usage

```
wbt_breakline_mapping(
  dem,
  output,
  threshold = 2,
  min_length = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster image file.
output	Name of the output vector lines file.
threshold	Threshold value (0 - infinity but typically 1 to 5 works well).
min_length	Minimum line length, in grid cells.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_buffer_raster *Buffer raster*

Description

Maps a distance-based buffer around each non-background (non-zero/non-nodata) grid cell in an input image.

Usage

```
wbt_buffer_raster(
  input,
  output,
  size,
  gridcells = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
size	Buffer size.
gridcells	Optional flag to indicate that the 'size' threshold should be measured in grid cells instead of the default map units.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_burn_streams_at_roads

Burn streams at roads

Description

Burns-in streams at the sites of road embankments.

Usage

```
wbt_burn_streams_at_roads(
  dem,
  streams,
  roads,
  output,
  width = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster digital elevation model (DEM) file.
streams	Input vector streams file.
roads	Input vector roads file.
output	Output raster file.
width	Maximum road embankment width, in map units.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_canny_edge_detection

Canny edge detection

Description

This tool performs a Canny edge-detection filter on an input image.

Usage

```
wbt_canny_edge_detection(
  input,
  output,
  sigma = 0.5,
  low = 0.05,
  high = 0.15,
  add_back = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster image file.
output	Name of the output raster image file.
sigma	Sigma value used in Gaussian filtering, default = 0.5.
low	Low threshold, default = 0.05.
high	High threshold, default = 0.15.
add_back	Add the edge cells back to the input image.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_ceil *Ceil*

Description

Returns the smallest (closest to negative infinity) value that is greater than or equal to the values in a raster.

Usage

```
wbt_ceil(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_centroid *Centroid*

Description

Calculates the centroid, or average location, of raster polygon objects.

Usage

```
wbt_centroid(
  input,
  output,
  text_output = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
text_output	Optional text output.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_centroid_vector *Centroid vector*

Description

Identifies the centroid point of a vector polyline or polygon feature or a group of vector points.

Usage

```
wbt_centroid_vector(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_change_vector_analysis

Change vector analysis

Description

Performs a change vector analysis on a two-date multi-spectral dataset.

Usage

```
wbt_change_vector_analysis(
  date1,
  date2,
  magnitude,
  direction,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

date1	Input raster files for the earlier date.
date2	Input raster files for the later date.
magnitude	Output vector magnitude raster file.
direction	Output vector Direction raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_circular_variance_of_aspect

Circular variance of aspect

Description

Calculates the circular variance of aspect at a scale for a DEM.

Usage

```
wbt_circular_variance_of_aspect(
  dem,
  output,
  filter = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`output`	Output raster file.
`filter`	Size of the filter kernel.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_classify_buildings_in_lidar

Classify buildings in lidar

Description

Reclassifies a LiDAR points that lie within vector building footprints.

Usage

```
wbt_classify_buildings_in_lidar(
  input,
  buildings,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
buildings	Input vector polygons file.
output	Output LiDAR file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_classify_lidar *Classify lidar*

Description

Classify points within a LiDAR point cloud based on point properties.

Usage

```
wbt_classify_lidar(
  input,
  output = NULL,
  radius = 1.5,
  grd_threshold = 0.1,
  oto_threshold = 2,
  planarity_threshold = 0.85,
  linearity_threshold = 0.7,
  iterations = 30,
  facade_threshold = 0.5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`output`	Name of the output LiDAR points.
`radius`	Search distance used in neighbourhood search (metres).
`grd_threshold`	Ground threshold (metres).
`oto_threshold`	Off-terrain object threshold (metres).
`planarity_threshold`	Planarity threshold (0-1).
`linearity_threshold`	Linearity threshold (0-1).
`iterations`	Number of iterations.
`facade_threshold`	Facade threshold (metres).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_classify_overlap_points *Classify overlap points*

Description

Classifies or filters LAS points in regions of overlapping flight lines.

Usage

```
wbt_classify_overlap_points(
  input,
  output,
  resolution = 2,
  criterion = "max scan angle",
  filter = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input LiDAR file.

output
: Output LiDAR file.

resolution
: The size of the square area used to evaluate nearby points in the LiDAR data.

criterion
: Criterion used to identify overlapping points; options are 'max scan angle', 'not min point source ID', 'not min time', 'multiple point source IDs'.

filter
: Filter out points from overlapping flightlines? If false, overlaps will simply be classified.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_clean_vector *Clean vector*

Description

Removes null features and lines/polygons with fewer than the required number of vertices.

Usage

```
wbt_clean_vector(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector file path. See wbt_file_path() for details.

output
: Output vector file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_clip *Clip*

Description

Extract all the features, or parts of features, that overlap with the features of the clip vector.

Usage

```
wbt_clip(
  input,
  clip,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
clip	Input clip polygon vector file.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_clip_lidar_to_polygon

Clip lidar to polygon

Description

Clips a LiDAR point cloud to a vector polygon or polygons.

Usage

```
wbt_clip_lidar_to_polygon(
  input,
  polygons,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`polygons`	Input vector polygons file.
`output`	Output LiDAR file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_clip_raster_to_polygon

Clip raster to polygon

Description

Clips a raster to a vector polygon.

Usage

```
wbt_clip_raster_to_polygon(
  input,
  polygons,
  output,
  maintain_dimensions = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`polygons`	Input vector polygons file.
`output`	Output raster file.
`maintain_dimensions`	Maintain input raster dimensions?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_closing *Closing*

Description

A closing is a mathematical morphology operation involving an erosion (min filter) of a dilation (max filter) set.

Usage

```
wbt_closing(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_clump *Clump*

Description

Groups cells that form discrete areas, assigning them unique identifiers.

Usage

```
wbt_clump(
  input,
  output,
  diag = TRUE,
  zero_back = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
diag	Flag indicating whether diagonal connections should be considered.
zero_back	Flag indicating whether zero values should be treated as a background.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_colourize_based_on_class

Colourize based on class

Description

Sets the RGB values of a LiDAR point cloud based on the point classification values.

Usage

```
wbt_colourize_based_on_class(
  input,
  output = NULL,
  intensity_blending = 50,
  clr_str = "",
  use_unique_clrs_for_buildings = FALSE,
  radius = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`output`	Name of the output LiDAR points.
`intensity_blending`	Intensity blending amount (0-100 percent).
`clr_str`	Colour values, e.g. 2: (184, 167, 108); 5: #9ab86c.
`use_unique_clrs_for_buildings`	Use unique colours for each building?.
`radius`	Search distance used in neighbourhood search.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_colourize_based_on_point_returns

Colourize based on point returns

Description

Sets the RGB values of a LiDAR point cloud based on the point returns.

Usage

```
wbt_colourize_based_on_point_returns(
  input,
  output = NULL,
  intensity_blending = 50,
  only = "(230,214,170)",
  first = "(0,140,0)",
  intermediate = "(255,0,255)",
  last = "(0,0,255)",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`output`	Name of the output LiDAR points.
`intensity_blending`	Intensity blending amount (0-100 percent).
`only`	Only return colour, e.g. (230,214,170), #e6d6aa, or 0xe6d6aa.
`first`	First return colour, e.g. (230,214,170), #e6d6aa, or 0xe6d6aa.
`intermediate`	Intermediate return colour, e.g. (230,214,170), #e6d6aa, or 0xe6d6aa.
`last`	Last return colour, e.g. (230,214,170), #e6d6aa, or 0xe6d6aa.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_compactness_ratio *Compactness ratio*

Description

Calculates the compactness ratio (A/P), a measure of shape complexity, for vector polygons.

Usage

```
wbt_compactness_ratio(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector polygon file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_conditional_evaluation

Conditional evaluation

Description

Performs a conditional evaluation (if-then-else) operation on a raster.

Usage

```
wbt_conditional_evaluation(
  input,
  output,
  statement = "",
  true = NULL,
  false = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input raster file.
`output`	Name of the output raster file.
`statement`	Conditional statement e.g. value > 35.0. This statement must be a valid Rust statement.
`true`	Value where condition evaluates TRUE (input raster or constant value).
`false`	Value where condition evaluates FALSE (input raster or constant value).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_conditioned_latin_hypercube

Conditioned latin hypercube

Description

Implements conditioned Latin Hypercube sampling.

Usage

```
wbt_conditioned_latin_hypercube(
  inputs,
  output,
  samples = 500,
  iterations = 25000,
  seed = NULL,
  prob = 0.5,
  threshold = NULL,
  temp = 1,
  temp_decay = 0.05,
  cycle = 10,
  average = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Name of the input raster file.
`output`	Output shapefile.
`samples`	Number of sample sites returned.
`iterations`	Maximum iterations (if stopping criteria not reached).
`seed`	Seed for RNG consistency.
`prob`	Probability of random resample or resampling worst strata between `[0,1]`.
`threshold`	Objective function values below the threshold stop the resampling iterations.
`temp`	Initial annealing temperature between `[0,1]`.
`temp_decay`	Annealing temperature decay proportion between `[0,1]`. Reduce temperature by this proportion each annealing cycle.
`cycle`	Number of iterations before decaying annealing temperature.
`average`	Weight the continuous objective function by the 1/N contributing strata.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_conservative_smoothing_filter

Conservative smoothing filter

Description

Performs a conservative-smoothing filter on an image.

Usage

```
wbt_conservative_smoothing_filter(
  input,
  output,
  filterx = 3,
  filtery = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

filterx
: Size of the filter kernel in the x-direction.

filtery
: Size of the filter kernel in the y-direction.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_construct_vector_tin` *Construct vector tin*

Description

Creates a vector triangular irregular network (TIN) for a set of vector points.

Usage

```
wbt_construct_vector_tin(
  input,
  output,
  field = NULL,
  use_z = FALSE,
  max_triangle_edge_length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`
: Input vector points file.

`output`
: Output vector polygon file.

`field`
: Input field name in attribute table.

`use_z`
: Use the 'z' dimension of the Shapefile's geometry instead of an attribute field?.

`max_triangle_edge_length`
: Optional maximum triangle edge length; triangles larger than this size will not be gridded.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_contours_from_points *Contours from points*

Description

Creates a contour coverage from a set of input points.

Usage

```
wbt_contours_from_points(
  input,
  output,
  field = NULL,
  use_z = FALSE,
  max_triangle_edge_length = NULL,
  interval = 10,
  base = 0,
  smooth = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector points file.

output
: Output vector lines file.

field
: Input field name in attribute table.

use_z
: Use the 'z' dimension of the Shapefile's geometry instead of an attribute field?.

`max_triangle_edge_length`
: Optional maximum triangle edge length; triangles larger than this size will not be gridded.

`interval`
: Contour interval.

`base`
: Base contour height.

`smooth`
: Smoothing filter size (in num. points), e.g. 3, 5, 7, 9, 11.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

`verbose_mode`
: Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_contours_from_raster` *Contours from raster*

Description

Derives a vector contour coverage from a raster surface.

Usage

```
wbt_contours_from_raster(
  input,
  output,
  interval = 10,
  base = 0,
  smooth = 9,
  tolerance = 10,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input surface raster file.
output	Output vector contour file.
interval	Contour interval.
base	Base contour height.
smooth	Smoothing filter size (in num. points), e.g. 3, 5, 7, 9, 11.
tolerance	Tolerance factor, in degrees (0-45); determines generalization level.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_convert_nodata_to_zero *Convert nodata to zero*

Description

Converts nodata values in a raster to zero.

Usage

```
wbt_convert_nodata_to_zero(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_convert_raster_format

Convert raster format

Description

Converts raster data from one format to another.

Usage

```
wbt_convert_raster_format(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_corner_detection *Corner detection*

Description

Identifies corner patterns in boolean images using hit-and-miss pattern matching.

Usage

```
wbt_corner_detection(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input boolean image.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_correct_vignetting *Correct vignetting*

Description

Corrects the darkening of images towards corners.

Usage

```
wbt_correct_vignetting(
  input,
  pp,
  output,
  focal_length = 304.8,
  image_width = 228.6,
  n = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`pp`	Input principal point file.
`output`	Output raster file.
`focal_length`	Camera focal length, in millimeters.
`image_width`	Distance between photograph edges, in millimeters.
`n`	The 'n' parameter.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_cos *Cos*

Description

Returns the cosine (cos) of each values in a raster.

Usage

```
wbt_cos(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_cosh *Cosh*

Description

Returns the hyperbolic cosine (cosh) of each values in a raster.

Usage

```
wbt_cosh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_cost_allocation *Cost allocation*

Description

Identifies the source cell to which each grid cell is connected by a least-cost pathway in a cost-distance analysis.

Usage

```
wbt_cost_allocation(
  source,
  backlink,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

source	Input source raster file.
backlink	Input backlink raster file generated by the cost-distance tool.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_cost_distance *Cost distance*

Description

Performs cost-distance accumulation on a cost surface and a group of source cells.

Usage

```
wbt_cost_distance(
  source,
  cost,
  out_accum,
  out_backlink,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

source	Input source raster file.
cost	Input cost (friction) raster file.
out_accum	Output cost accumulation raster file.
out_backlink	Output backlink raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_cost_pathway *Cost pathway*

Description

Performs cost-distance pathway analysis using a series of destination grid cells.

Usage

```
wbt_cost_pathway(
  destination,
  backlink,
  output,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

destination	Input destination raster file.
backlink	Input backlink raster file generated by the cost-distance tool.
output	Output cost pathway raster file.
zero_background	Flag indicating whether zero values should be treated as a background.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_count_if *Count if*

Description

Counts the number of occurrences of a specified value in a cell-stack of rasters.

Usage

```
wbt_count_if(
  inputs,
  output,
  value,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
value	Search value (e.g. countif value = 5.0).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_create_colour_composite

Create colour composite

Description

Creates a colour-composite image from three bands of multispectral imagery.

Usage

```
wbt_create_colour_composite(
  red,
  green,
  blue,
  output,
  opacity = NULL,
  enhance = TRUE,
  zeros = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

red	Input red band image file.
green	Input green band image file.
blue	Input blue band image file.
output	Output colour composite file.
opacity	Input opacity band image file (optional).
enhance	Optional flag indicating whether a balance contrast enhancement is performed.
zeros	Optional flag to indicate if zeros are nodata values.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_create_hexagonal_vector_grid

Create hexagonal vector grid

Description

Creates a hexagonal vector grid.

Usage

```
wbt_create_hexagonal_vector_grid(
  input,
  output,
  width,
  orientation = "horizontal",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input base file.
output	Output vector polygon file.
width	The grid cell width.
orientation	Grid Orientation, 'horizontal' or 'vertical'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_create_plane *Create plane*

Description

Creates a raster image based on the equation for a simple plane.

Usage

```
wbt_create_plane(
  base,
  output,
  gradient = 15,
  aspect = 90,
  constant = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base	Input base raster file.
output	Output raster file.
gradient	Slope gradient in degrees (-85.0 to 85.0).
aspect	Aspect (direction) in degrees clockwise from north (0.0-360.0).
constant	Constant value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_create_rectangular_vector_grid

Create rectangular vector grid

Description

Creates a rectangular vector grid.

Usage

```
wbt_create_rectangular_vector_grid(
  input,
  output,
  width,
  height,
  xorig = 0,
  yorig = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input base file.
output	Output vector polygon file.
width	The grid cell width.
height	The grid cell height.
xorig	The grid origin x-coordinate.
yorig	The grid origin y-coordinate.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_crispness_index *Crispness index*

Description

Calculates the Crispness Index, which is used to quantify how crisp (or conversely how fuzzy) a probability image is.

Usage

```
wbt_crispness_index(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Optional output html file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_cross_tabulation *Cross tabulation*

Description

Performs a cross-tabulation on two categorical images.

Usage

```
wbt_cross_tabulation(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file 1.
input2	Input raster file 1.
output	Output HTML file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_csv_points_to_vector

Csv points to vector

Description

Converts a CSV text file to vector points.

Usage

```
wbt_csv_points_to_vector(
  input,
  output,
  xfield = 0,
  yfield = 1,
  epsg = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input CSV file (i.e. source of data to be imported).
`output`	Output vector file.
`xfield`	X field number (e.g. 0 for first field).
`yfield`	Y field number (e.g. 1 for second field).
`epsg`	EPSG projection (e.g. 2958).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_cumulative_distribution

Cumulative distribution

Description

Converts a raster image to its cumulative distribution function.

Usage

```
wbt_cumulative_distribution(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_curvedness *Curvedness*

Description

This tool calculates curvedness from an input DEM.

Usage

```
wbt_curvedness(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_d_inf_flow_accumulation

D inf flow accumulation

Description

Calculates a D-infinity flow accumulation raster from an input DEM.

Usage

```
wbt_d_inf_flow_accumulation(
  input,
  output,
  out_type = "Specific Contributing Area",
  threshold = NULL,
  log = FALSE,
  clip = FALSE,
  pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster DEM or D-infinity pointer file.
output	Output raster file.
out_type	Output type; one of 'cells', 'sca' (default), and 'ca'.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
log	Optional flag to request the output be log-transformed.
clip	Optional flag to request clipping the display max by 1 percent.
pntr	Is the input raster a D-infinity flow pointer rather than a DEM?.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_d_inf_mass_flux *D inf mass flux*

Description

Performs a D-infinity mass flux calculation.

Usage

```
wbt_d_inf_mass_flux(
  dem,
  loading,
  efficiency,
  absorption,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
loading	Input loading raster file.
efficiency	Input efficiency raster file.
absorption	Input absorption raster file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_d_inf_pointer *D inf pointer*

Description

Calculates a D-infinity flow pointer (flow direction) raster from an input DEM.

Usage

```
wbt_d_inf_pointer(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_d8_flow_accumulation

D8 flow accumulation

Description

Calculates a D8 flow accumulation raster from an input DEM or flow pointer.

Usage

```
wbt_d8_flow_accumulation(
  input,
  output,
  out_type = "cells",
  log = FALSE,
  clip = FALSE,
  pntr = FALSE,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster DEM or D8 pointer file.
output	Output raster file.
out_type	Output type; one of 'cells' (default), 'catchment area', and 'specific contributing area'.
log	Optional flag to request the output be log-transformed.
clip	Optional flag to request clipping the display max by 1 percent.
pntr	Is the input raster a D8 flow pointer rather than a DEM?.
esri_pntr	Input D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_d8_mass_flux *D8 mass flux*

Description

Performs a D8 mass flux calculation.

Usage

```
wbt_d8_mass_flux(
  dem,
  loading,
  efficiency,
  absorption,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`loading`	Input loading raster file.
`efficiency`	Input efficiency raster file.
`absorption`	Input absorption raster file.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_d8_pointer *D8 pointer*

Description

Calculates a D8 flow pointer raster from an input DEM.

Usage

```
wbt_d8_pointer(
  dem,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_dbscan *Dbscan*

Description

Performs a DBSCAN-based unsupervised clustering operation.

Usage

```
wbt_dbscan(
  inputs,
  output,
  scaling = "Normalize",
  search_dist = 0.01,
  min_points = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Names of the input rasters.
output	Name of the output raster file.
scaling	Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.
search_dist	Search-distance parameter.
min_points	Minimum point density needed to define 'core' point in cluster.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_decrement *Decrement*

Description

Decreases the values of each grid cell in an input raster by 1.0 (see also InPlaceSubtract).

Usage

```
wbt_decrement(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_dem_void_filling *Dem void filling*

Description

This tool can be used to fill the void areas of a DEM using another fill DEM data set.

Usage

```
wbt_dem_void_filling(
  dem,
  fill,
  output,
  mean_plane_dist = 20,
  edge_treatment = "use DEM",
  weight_value = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file, containing the void areas.
fill	Name of the input fill DEM file, containing the values used to fill the void areas in the other DEM.
output	Name of the output void-filled DEM file.
mean_plane_dist	Distance to void edge at which the mean-plane value is used as an offset, measured in grid cells.
edge_treatment	How should void-edge cells be treated? Options include 'use DEM' (default), 'use Fill', 'average'.
weight_value	Weight value used for IDW interpolation (default is 2.0).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_depth_in_sink *Depth in sink*

Description

Measures the depth of sinks (depressions) in a DEM.

Usage

```
wbt_depth_in_sink(
  dem,
  output,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
zero_background	Flag indicating whether the background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_depth_to_water *Depth to water*

Description

This tool calculates cartographic depth-to-water (DTW) index.

Usage

```
wbt_depth_to_water(
  dem,
  output,
  streams = NULL,
  lakes = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
streams	Name of the input streams vector (optional).
lakes	Name of the input lakes vector (optional).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_dev_from_mean_elev *Dev from mean elev*

Description

Calculates deviation from mean elevation.

Usage

```
wbt_dev_from_mean_elev(
  dem,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_diff_from_mean_elev

Diff from mean elev

Description

Calculates difference from mean elevation (equivalent to a high-pass filter).

Usage

```
wbt_diff_from_mean_elev(
  dem,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_diff_of_gaussian_filter

Diff of gaussian filter

Description

Performs a Difference of Gaussian (DoG) filter on an image.

Usage

```
wbt_diff_of_gaussian_filter(
  input,
  output,
  sigma1 = 2,
  sigma2 = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`sigma1`	Standard deviation distance in pixels.
`sigma2`	Standard deviation distance in pixels.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_difference *Difference*

Description

Outputs the features that occur in one of the two vector inputs but not both, i.e. no overlapping features.

Usage

```
wbt_difference(
  input,
  overlay,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
overlay	Input overlay vector file.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_difference_curvature

Difference curvature

Description

This tool calculates difference curvature from an input DEM.

Usage

```
wbt_difference_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_direct_decorrelation_stretch

Direct decorrelation stretch

Description

Performs a direct decorrelation stretch enhancement on a colour-composite image of multispectral data.

Usage

```
wbt_direct_decorrelation_stretch(
  input,
  output,
  k = 0.5,
  clip = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input colour composite image file.
`output`	Output raster file.
`k`	Achromatic factor (k) ranges between 0 (no effect) and 1 (full saturation stretch), although typical values range from 0.3 to 0.7.
`clip`	Optional percent to clip the upper tail by during the stretch.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_directional_relief

Directional relief

Description

Calculates relief for cells in an input DEM for a specified direction.

Usage

```
wbt_directional_relief(
  dem,
  output,
  azimuth = 0,
  max_dist = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
azimuth	Wind azimuth in degrees.
max_dist	Optional maximum search distance (unspecified if none; in xy units).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_dissolve *Dissolve*

Description

Removes the interior, or shared, boundaries within a vector polygon coverage.

Usage

```
wbt_dissolve(
  input,
  output,
  field = NULL,
  snap = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector file.
field	Dissolve field attribute (optional).
snap	Snap tolerance.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_distance_to_outlet

Distance to outlet

Description

Calculates the distance of stream grid cells to the channel network outlet cell.

Usage

```
wbt_distance_to_outlet(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`d8_pntr`	Input raster D8 pointer file.
`streams`	Input raster streams file.
`output`	Output raster file.
`esri_pntr`	D8 pointer uses the ESRI style scheme.
`zero_background`	Flag indicating whether a background value of zero should be used.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_diversity_filter *Diversity filter*

Description

Assigns each cell in the output grid the number of different values in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_diversity_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_divide *Divide*

Description

Performs a division operation on two rasters or a raster and a constant value.

Usage

```
wbt_divide(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_downslope_distance_to_stream

Downslope distance to stream

Description

Measures distance to the nearest downslope stream cell.

Usage

```
wbt_downslope_distance_to_stream(
  dem,
  streams,
  output,
  dinf = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`streams`	Input raster streams file.
`output`	Output raster file.
`dinf`	Use the D-infinity flow algorithm instead of D8?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_downslope_flowpath_length

Downslope flowpath length

Description

Calculates the downslope flowpath length from each cell to basin outlet.

Usage

```
wbt_downslope_flowpath_length(
  d8_pntr,
  output,
  watersheds = NULL,
  weights = NULL,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input D8 pointer raster file.
output	Output raster file.
watersheds	Optional input watershed raster file.
weights	Optional input weights raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_downslope_index *Downslope index*

Description

Calculates the Hjerdt et al. (2004) downslope index.

Usage

```
wbt_downslope_index(
  dem,
  output,
  drop = 2,
  out_type = "tangent",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
drop	Vertical drop value (default is 2.0).
out_type	Output type, options include 'tangent', 'degrees', 'radians', 'distance' (default is 'tangent').
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_edge_contamination

Edge contamination

Description

Identifies grid cells within an input DEM that may be impacted by edge contamination for hydrological applications.

Usage

```
wbt_edge_contamination(
  dem,
  output,
  flow_type = "mfd",
  zfactor = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Name of the input DEM raster file; must be depressionless.
`output`	Name of the output raster file.
`flow_type`	Flow algorithm type, one of 'd8', 'mfd', or 'dinf'.
`zfactor`	Optional multiplier for when the vertical and horizontal units are not the same.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_edge_density *Edge density*

Description

Calculates the density of edges, or breaks-in-slope within DEMs.

Usage

```
wbt_edge_density(
  dem,
  output,
  filter = 11,
  norm_diff = 5,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filter	Size of the filter kernel.
norm_diff	Maximum difference in normal vectors, in degrees.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_edge_preserving_mean_filter

Edge preserving mean filter

Description

Performs a simple edge-preserving mean filter on an input image.

Usage

```
wbt_edge_preserving_mean_filter(
  input,
  output,
  threshold,
  filter = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`threshold`	Maximum difference in values.
`filter`	Size of the filter kernel.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_edge_proportion *Edge proportion*

Description

Calculate the proportion of cells in a raster polygon that are edge cells.

Usage

```
wbt_edge_proportion(
  input,
  output,
  output_text = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
output_text	flag indicating whether a text report should also be output.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elev_above_pit *Elev above pit*

Description

Calculate the elevation of each grid cell above the nearest downstream pit cell or grid edge cell.

Usage

```
wbt_elev_above_pit(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elev_percentile *Elev percentile*

Description

Calculates the elevation percentile raster from a DEM.

Usage

```
wbt_elev_percentile(
  dem,
  output,
  filterx = 11,
  filtery = 11,
  sig_digits = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
sig_digits	Number of significant digits.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elev_relative_to_min_max

Elev relative to min max

Description

Calculates the elevation of a location relative to the minimum and maximum elevations in a DEM.

Usage

```
wbt_elev_relative_to_min_max(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elev_relative_to_watershed_min_max

Elev relative to watershed min max

Description

Calculates the elevation of a location relative to the minimum and maximum elevations in a watershed.

Usage

```
wbt_elev_relative_to_watershed_min_max(
  dem,
  watersheds,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
watersheds	Input raster watersheds file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elevation_above_stream

Elevation above stream

Description

Calculates the elevation of cells above the nearest downslope stream cell.

Usage

```
wbt_elevation_above_stream(
  dem,
  streams,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
streams	Input raster streams file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elevation_above_stream_euclidean

Elevation above stream euclidean

Description

Calculates the elevation of cells above the nearest (Euclidean distance) stream cell.

Usage

```
wbt_elevation_above_stream_euclidean(
  dem,
  streams,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`streams`	Input raster streams file.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_eliminate_coincident_points

Eliminate coincident points

Description

Removes any coincident, or nearly coincident, points from a vector points file.

Usage

```
wbt_eliminate_coincident_points(
  input,
  output,
  tolerance,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector points file.
tolerance	The distance tolerance for points.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_elongation_ratio *Elongation ratio*

Description

Calculates the elongation ratio for vector polygons.

Usage

```
wbt_elongation_ratio(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_embankment_mapping *Embankment mapping*

Description

Maps and/or removes road embankments from an input fine-resolution DEM.

Usage

```
wbt_embankment_mapping(
  dem,
  road_vec,
  output,
  search_dist = 2.5,
  min_road_width = 6,
  typical_width = 30,
  max_height = 2,
  max_width = 60,
  max_increment = 0.05,
  spillout_slope = 4,
  remove_embankments = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
road_vec	Input vector polygons file.
output	Output raster file.
search_dist	Search distance used to reposition transportation vectors onto road embankments (in map units).
min_road_width	Minimum road width; this is the width of the paved road surface (in map units).
typical_width	Typical embankment width; this is the maximum width of an embankment with roadside ditches (in map units).
max_height	Typical embankment maximum height; this is the height a typical embankment with roadside ditches (in map units).
max_width	Maximum embankment width, typically where embankments traverse steep-sided valleys (in map units).
max_increment	Maximum upwards increment between neighbouring cells on an embankment (in elevation units).
spillout_slope	Spillout slope (in degrees).
remove_embankments	Optional flag indicating whether to output a DEM with embankments removed (true) or an embankment raster map (false).
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_emboss_filter *Emboss filter*

Description

Performs an emboss filter on an image, similar to a hillshade operation.

Usage

```
wbt_emboss_filter(
  input,
  output,
  direction = "n",
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

direction
: Direction of reflection; options include 'n', 's', 'e', 'w', 'ne', 'se', 'nw', 'sw'.

clip
: Optional amount to clip the distribution tails by, in percent.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_equal_to *Equal to*

Description

Performs a equal-to comparison operation on two rasters or a raster and a constant value.

Usage

```
wbt_equal_to(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_erase *Erase*

Description

Removes all the features, or parts of features, that overlap with the features of the erase vector polygon.

Usage

```
wbt_erase(
  input,
  erase,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
erase	Input erase polygon vector file.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_erase_polygon_from_lidar

Erase polygon from lidar

Description

Erases (cuts out) a vector polygon or polygons from a LiDAR point cloud.

Usage

```
wbt_erase_polygon_from_lidar(
  input,
  polygons,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`polygons`	Input vector polygons file.
`output`	Output LiDAR file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_erase_polygon_from_raster

Erase polygon from raster

Description

Erases (cuts out) a vector polygon from a raster.

Usage

```
wbt_erase_polygon_from_raster(
  input,
  polygons,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
polygons	Input vector polygons file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_euclidean_allocation

Euclidean allocation

Description

Assigns grid cells in the output raster the value of the nearest target cell in the input image, measured by the Shih and Wu (2004) Euclidean distance transform.

Usage

```
wbt_euclidean_allocation(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_euclidean_distance *Euclidean distance*

Description

Calculates the Shih and Wu (2004) Euclidean distance transform.

Usage

```
wbt_euclidean_distance(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_evaluate_training_sites

Evaluate training sites

Description

This tool can be used to inspect the overlap in spectral signatures of training sites for various classes.

Usage

```
wbt_evaluate_training_sites(
  inputs,
  polys,
  field,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Name of the input band images.
`polys`	Name of the input training site polygons shapefile.
`field`	Name of the attribute containing class name data.
`output`	Name of the output report file (*.html).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_exp *Exp*

Description

Returns the exponential (base e) of values in a raster.

Usage

```
wbt_exp(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_exp2 *Exp2*

Description

Returns the exponential (base 2) of values in a raster.

Usage

```
wbt_exp2(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_export_table_to_csv

Export table to csv

Description

Exports an attribute table to a CSV text file.

Usage

```
wbt_export_table_to_csv(
  input,
  output,
  headers = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output csv file.
headers	Export field names as file header?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_exposure_towards_wind_flux

Exposure towards wind flux

Description

Evaluates hydrologic connectivity within a DEM.

Usage

```
wbt_exposure_towards_wind_flux(
  dem,
  output,
  azimuth = "",
  max_dist = "",
  zfactor = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file.
output	Name of the output raster file.
azimuth	Wind azimuth, in degrees.
max_dist	Optional maximum search distance. Minimum value is 5 x cell size.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_extend_vector_lines *Extend vector lines*

Description

Extends vector lines by a specified distance.

Usage

```
wbt_extend_vector_lines(
  input,
  output,
  dist,
  extend = "both ends",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polyline file.
output	Output vector polyline file.
dist	The distance to extend.
extend	Extend direction, 'both ends' (default), 'line start', 'line end'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_extract_nodes *Extract nodes*

Description

Converts vector lines or polygons into vertex points.

Usage

```
wbt_extract_nodes(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector lines or polygon file.
output	Output vector points file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_extract_raster_values_at_points

Extract raster values at points

Description

Extracts the values of raster(s) at vector point locations.

Usage

```
wbt_extract_raster_values_at_points(
  inputs,
  points,
  out_text = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input raster file paths, concatenated with `","` or `";"`. See `wbt_file_path()` for details.
`points`	Input vector points file.
`out_text`	Output point values as text? Otherwise, the only output is to to the points file's attribute table.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_extract_streams *Extract streams*

Description

Extracts stream grid cells from a flow accumulation raster.

Usage

```
wbt_extract_streams(
  flow_accum,
  output,
  threshold,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

flow_accum	Input raster D8 flow accumulation file.
output	Output raster file.
threshold	Threshold in flow accumulation values for channelization.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_extract_valleys *Extract valleys*

Description

Identifies potential valley bottom grid cells based on local topolography alone.

Usage

```
wbt_extract_valleys(
  dem,
  output,
  variant = "LQ",
  line_thin = TRUE,
  filter = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
variant	Options include 'LQ' (lower quartile), 'JandR' (Johnston and Rosenfeld), and 'PandD' (Peucker and Douglas); default is 'LQ'.
line_thin	Optional flag indicating whether post-processing line-thinning should be performed.
filter	Optional argument (only used when variant='lq') providing the filter size, in grid cells, used for lq-filtering (default is 5).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_farthest_channel_head

Farthest channel head

Description

Calculates the distance to the furthest upstream channel head for each stream cell.

Usage

```
wbt_farthest_channel_head(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`d8_pntr`	Input raster D8 pointer file.
`streams`	Input raster streams file.
`output`	Output raster file.
`esri_pntr`	D8 pointer uses the ESRI style scheme.
`zero_background`	Flag indicating whether a background value of zero should be used.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_fast_almost_gaussian_filter

Fast almost gaussian filter

Description

Performs a fast approximate Gaussian filter on an image.

Usage

```
wbt_fast_almost_gaussian_filter(
  input,
  output,
  sigma = 1.8,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
sigma	Standard deviation distance in pixels.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fd8_flow_accumulation

Fd8 flow accumulation

Description

Calculates an FD8 flow accumulation raster from an input DEM.

Usage

```
wbt_fd8_flow_accumulation(
  dem,
  output,
  out_type = "specific contributing area",
  exponent = 1.1,
  threshold = NULL,
  log = FALSE,
  clip = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
out_type	Output type; one of 'cells', 'specific contributing area' (default), and 'catchment area'.
exponent	Optional exponent parameter; default is 1.1.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
log	Optional flag to request the output be log-transformed.
clip	Optional flag to request clipping the display max by 1 percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_fd8_pointer *Fd8 pointer*

Description

Calculates an FD8 flow pointer raster from an input DEM.

Usage

```
wbt_fd8_pointer(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_feature_preserving_smoothing

Feature preserving smoothing

Description

Reduces short-scale variation in an input DEM using a modified Sun et al. (2007) algorithm.

Usage

```
wbt_feature_preserving_smoothing(
  dem,
  output,
  filter = 11,
  norm_diff = 15,
  num_iter = 3,
  max_diff = 0.5,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filter	Size of the filter kernel.
norm_diff	Maximum difference in normal vectors, in degrees.
num_iter	Number of iterations.
max_diff	Maximum allowable absolute elevation change (optional).
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_fetch_analysis *Fetch analysis*

Description

Performs an analysis of fetch or upwind distance to an obstacle.

Usage

```
wbt_fetch_analysis(
  dem,
  output,
  azimuth = 0,
  hgt_inc = 0.05,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
azimuth	Wind azimuth in degrees in degrees.
hgt_inc	Height increment value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_file_path — *Prepare File Paths for WhiteboxTools Commands*

Description

Performs path expansion with `path.expand()` and shell quotes with `shQuote()` the input paths.

Usage

```
wbt_file_path(x, shell_quote = TRUE, delimiter = ",", check_exists = FALSE)
```

Arguments

`x`	character or `terra` object. Vector of file paths or strings of file paths for passing as arguments to WhiteboxTools. If the object is of class `SpatRaster`, `SpatRasterCollection`, `SpatVector` or `SpatVectorProxy` the sources are extracted with `terra::sources()`
`shell_quote`	logical. Shell quotes around result? Default: `TRUE`
`delimiter`	character. Either `","` (default) or `";"` allowed by WhiteboxTools.
`check_exists`	logical. Check if file(s) in x exist? Useful for input values. Default: `FALSE`

Details

If an input vector contains `";"` or `","` this is considered, path expansion is performed on the substrings. If the input vector has length greater than `1`, the vector is concatenated with `","` or `";"` to create a single output string.

Value

character. Length 1. A safe input string for use in WhiteboxTools commands, with paths expanded and concatenated, if necessary, and optionally shell quoted.

Examples

```
wbt_file_path("./abc.tif")

wbt_file_path("./abc.tif;./def.tif")

wbt_file_path("./abc.tif,./def.tif")

wbt_file_path(c("./abc.tif", "./def.tif"))

wbt_file_path("~/abc.tif", shell_quote = FALSE)

wbt_file_path(c("~/abc.tif", "~/def.tif"))
```

wbt_fill_burn *Fill burn*

Description

Burns streams into a DEM using the FillBurn (Saunders, 1999) method.

Usage

```
wbt_fill_burn(
  dem,
  streams,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
streams	Input vector streams file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fill_depressions *Fill depressions*

Description

Fills all of the depressions in a DEM. Depression breaching should be preferred in most cases.

Usage

```
wbt_fill_depressions(
  dem,
  output,
  fix_flats = TRUE,
  flat_increment = NULL,
  max_depth = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
fix_flats	Optional flag indicating whether flat areas should have a small gradient applied.
flat_increment	Optional elevation increment applied to flat areas.
max_depth	Optional maximum depression depth to fill.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fill_depressions_planchon_and_darboux

Fill depressions planchon and darboux

Description

Fills all of the depressions in a DEM using the Planchon and Darboux (2002) method.

Usage

```
wbt_fill_depressions_planchon_and_darboux(
  dem,
  output,
  fix_flats = TRUE,
  flat_increment = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
fix_flats	Optional flag indicating whether flat areas should have a small gradient applied.
flat_increment	Optional elevation increment applied to flat areas.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fill_depressions_wang_and_liu

Fill depressions wang and liu

Description

Fills all of the depressions in a DEM using the Wang and Liu (2006) method. Depression breaching should be preferred in most cases.

Usage

```
wbt_fill_depressions_wang_and_liu(
  dem,
  output,
  fix_flats = TRUE,
  flat_increment = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`output`	Output raster file.
`fix_flats`	Optional flag indicating whether flat areas should have a small gradient applied.
`flat_increment`	Optional elevation increment applied to flat areas.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_fill_missing_data *Fill missing data*

Description

Fills NoData holes in a DEM.

Usage

```
wbt_fill_missing_data(
  input,
  output,
  filter = 11,
  weight = 2,
  no_edges = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filter	Filter size (cells).
weight	IDW weight value.
no_edges	Optional flag indicating whether to exclude NoData cells in edge regions.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fill_single_cell_pits

Fill single cell pits

Description

Raises pit cells to the elevation of their lowest neighbour.

Usage

```
wbt_fill_single_cell_pits(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_filter_lidar *Filter lidar*

Description

Filters points within a LiDAR point cloud based on point properties.

Usage

```
wbt_filter_lidar(
  input,
  output = NULL,
  statement = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
output	Name of the output LiDAR points.
statement	Filter statement e.g. x < 5000.0 && y > 100.0 && is_late && !is_noise. This statement must be a valid Rust statement.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_filter_lidar_classes

Filter lidar classes

Description

Removes points in a LAS file with certain specified class values.

Usage

```
wbt_filter_lidar_classes(
  input,
  output,
  exclude_cls = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output LiDAR file.
`exclude_cls`	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_filter_lidar_scan_angles

Filter lidar scan angles

Description

Removes points in a LAS file with scan angles greater than a threshold.

Usage

```
wbt_filter_lidar_scan_angles(
  input,
  output,
  threshold,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output LiDAR file.
threshold	Scan angle threshold.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_filter_raster_features_by_area

Filter raster features by area

Description

Removes small-area features from a raster.

Usage

```
wbt_filter_raster_features_by_area(
  input,
  output,
  threshold,
  background = "zero",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
threshold	Remove features with fewer grid cells than this threshold value.
background	Background value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_flightline_edge_points

Find flightline edge points

Description

Identifies points along a flightline's edge in a LAS file.

Usage

```
wbt_find_flightline_edge_points(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_lowest_or_highest_points

Find lowest or highest points

Description

Locates the lowest and/or highest valued cells in a raster.

Usage

```
wbt_find_lowest_or_highest_points(
  input,
  output,
  out_type = "lowest",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output vector points file.
out_type	Output type; one of 'area' (default) and 'volume'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_main_stem *Find main stem*

Description

Finds the main stem, based on stream lengths, of each stream network.

Usage

```
wbt_find_main_stem(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_no_flow_cells *Find no flow cells*

Description

Finds grid cells with no downslope neighbours.

Usage

```
wbt_find_no_flow_cells(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_parallel_flow *Find parallel flow*

Description

Finds areas of parallel flow in D8 flow direction rasters.

Usage

```
wbt_find_parallel_flow(
  d8_pntr,
  streams,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input D8 pointer raster file.
streams	Input raster streams file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_patch_or_class_edge_cells

Find patch or class edge cells

Description

Finds all cells located on the edge of patch or class features.

Usage

```
wbt_find_patch_or_class_edge_cells(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_find_ridges *Find ridges*

Description

Identifies potential ridge and peak grid cells.

Usage

```
wbt_find_ridges(
  dem,
  output,
  line_thin = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
line_thin	Optional flag indicating whether post-processing line-thinning should be performed.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_fix_dangling_arcs *Fix dangling arcs*

Description

This tool fixes undershot and overshot arcs, two common topological errors, in an input vector lines file.

Usage

```
wbt_fix_dangling_arcs(
  input,
  output,
  dist = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input lines vector file.
output	Name of the output lines vector file.
dist	Snap distance, in xy units (metres).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_flatten_lakes *Flatten lakes*

Description

Flattens lake polygons in a raster DEM.

Usage

```
wbt_flatten_lakes(
  dem,
  lakes,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
lakes	Input lakes vector polygons file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_flightline_overlap

Flightline overlap

Description

Reads a LiDAR (LAS) point file and outputs a raster containing the number of overlapping flightlines in each grid cell.

Usage

```
wbt_flightline_overlap(
  input,
  output = NULL,
  resolution = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output file.
`resolution`	Output raster's grid resolution.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_flip_image *Flip image*

Description

Reflects an image in the vertical or horizontal axis.

Usage

```
wbt_flip_image(
  input,
  output,
  direction = "vertical",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
direction	Direction of reflection; options include 'v' (vertical), 'h' (horizontal), and 'b' (both).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_flood_order *Flood order*

Description

Assigns each DEM grid cell its order in the sequence of inundations that are encountered during a search starting from the edges, moving inward at increasing elevations.

Usage

```
wbt_flood_order(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_floor *Floor*

Description

Returns the largest (closest to positive infinity) value that is less than or equal to the values in a raster.

Usage

```
wbt_floor(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_flow_accumulation_full_workflow

Flow accumulation full workflow

Description

Resolves all of the depressions in a DEM, outputting a breached DEM, an aspect-aligned non-divergent flow pointer, and a flow accumulation raster.

Usage

```
wbt_flow_accumulation_full_workflow(
  dem,
  out_dem,
  out_pntr,
  out_accum,
  out_type = "Specific Contributing Area",
  log = FALSE,
  clip = FALSE,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
out_dem	Output raster DEM file.
out_pntr	Output raster flow pointer file.
out_accum	Output raster flow accumulation file.
out_type	Output type; one of 'cells', 'sca' (default), and 'ca'.
log	Optional flag to request the output be log-transformed.
clip	Optional flag to request clipping the display max by 1 percent.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_flow_length_diff` *Flow length diff*

Description

Calculates the local maximum absolute difference in downslope flowpath length, useful in mapping drainage divides and ridges.

Usage

```
wbt_flow_length_diff(
  d8_pntr,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input D8 pointer raster file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_gamma_correction *Gamma correction*

Description

Performs a gamma correction on an input images.

Usage

```
wbt_gamma_correction(
  input,
  output,
  gamma = 0.5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
gamma	Gamma value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_gaussian_contrast_stretch

Gaussian contrast stretch

Description

Performs a Gaussian contrast stretch on input images.

Usage

```
wbt_gaussian_contrast_stretch(
  input,
  output,
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
num_tones	Number of tones in the output image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_gaussian_curvature *Gaussian curvature*

Description

Calculates a mean curvature raster from an input DEM.

Usage

```
wbt_gaussian_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_gaussian_filter *Gaussian filter*

Description

Performs a Gaussian filter on an image.

Usage

```
wbt_gaussian_filter(
  input,
  output,
  sigma = 0.75,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
sigma	Standard deviation distance in pixels.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_gaussian_scale_space *Gaussian scale space*

Description

Uses the fast Gaussian approximation algorithm to produce scaled land-surface parameter measurements from an input DEM.

Usage

```
wbt_gaussian_scale_space(
  dem,
  output,
  output_zscore,
  output_scale,
  points = NULL,
  sigma = 0.5,
  step = 0.5,
  num_steps = 10,
  lsp = "Slope",
  z_factor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file.
output	Name of the output land-surface parameter raster file.
output_zscore	Name of the output z-score raster file.
output_scale	Name of the output scale raster file.
points	Name of the input vector points shapefile.
sigma	Initial sigma value (cells).
step	Step size as any positive non-zero integer.
num_steps	Number of steps.
lsp	Output land-surface parameter; one of 'AnisotropyLTP', 'Aspect', 'DiffMeanElev', 'Eastness', 'Elevation', 'Hillshade', 'MeanCurvature', 'Northness', 'PlanCurvature', 'ProfileCurvature', 'Ruggedness', 'Slope', 'TanCurvature', 'TotalCurvature'.
z_factor	Optional multiplier for when the vertical and horizontal units are not the same.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_generalize_classified_raster *Generalize classified raster*

Description

Generalizes a raster containing class or object features by removing small features.

Usage

```
wbt_generalize_classified_raster(
  input,
  output,
  min_size = 4,
  method = "longest",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster image file.
output	Name of the output raster file.
min_size	Minimum feature size, in grid cells.
method	Grouping method; one of 'longest' (default), 'largest', and 'nearest'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_generalize_with_similarity
Generalize with similarity

Description

Generalizes a raster containing class or object features by removing small features using similarity criteria of neighbouring features.

Usage

```
wbt_generalize_with_similarity(
  input,
  similarity,
  output,
  min_size = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Name of the input raster image file.

similarity
: Names of the input similarity images.

output
: Name of the output raster file.

min_size
: Minimum feature size, in grid cells.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_generating_function *Generating function*

Description

This tool calculates generating function from an input DEM.

Usage

```
wbt_generating_function(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Name of the input raster DEM file.

output
: Name of the output raster image file.

log
: Display output values using a log-scale.

zfactor
: Z conversion factor.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_geomorphons *Geomorphons*

Description

Computes geomorphon patterns.

Usage

```
wbt_geomorphons(
  dem,
  output,
  search = 50,
  threshold = 0,
  fdist = 0,
  skip = 0,
  forms = TRUE,
  residuals = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Input raster DEM file.

output
: Output raster file.

search
: Look up distance (in cells).

threshold
: Flatness threshold for the classification function (in degrees).

fdist
: Distance (in cells) to begin reducing the flatness threshold to avoid problems with pseudo-flat lines-of-sight.

skip
: Distance (in cells) to begin calculating lines-of-sight.

forms
: Classify geomorphons into 10 common land morphologies, else output ternary pattern.

residuals	Convert elevation to residuals of a linear model.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_greater_than *Greater than*

Description

Performs a greater-than comparison operation on two rasters or a raster and a constant value.

Usage

```
wbt_greater_than(
  input1,
  input2,
  output,
  incl_equals = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
incl_equals	Perform a greater-than-or-equal-to operation.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_hack_stream_order *Hack stream order*

Description

Assigns the Hack stream order to each tributary in a stream network.

Usage

```
wbt_hack_stream_order(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr
: Input raster D8 pointer file.

streams
: Input raster streams file.

output
: Output raster file.

esri_pntr
: D8 pointer uses the ESRI style scheme.

zero_background
: Flag indicating whether a background value of zero should be used.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_heat_map *Heat map*

Description

Calculates a heat map, or kernel density estimation (KDE), for an input point set.

Usage

```
wbt_heat_map(
  input,
  output,
  weight_field = NULL,
  bandwidth = "",
  kernel = "quartic",
  cell_size = "",
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Name of the input points shapefile.

output
: Name of the output raster image file.

weight_field
: Optional name of the attribute containing point weight.

bandwidth
: Bandwidth (metres).

kernel
: Kernel type; one of 'uniform', 'triangular', 'epanechnikov', 'quartic', 'triweight', 'tricube', 'gaussian', 'cosine', 'logistic', 'sigmoid', 'silverman'.

cell_size	Optionally specified cell size of output raster, in metres. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_height_above_ground *Height above ground*

Description

Normalizes a LiDAR point cloud, providing the height above the nearest ground-classified point.

Usage

```
wbt_height_above_ground(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file (including extension).
output	Output lidar file (including extension).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

`verbose_mode` Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters` Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only` Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_help` *Help description for 'WhiteboxTools'*

Description

Help description for 'WhiteboxTools'

Usage

```
wbt_help()
```

Value

Returns the help description for 'WhiteboxTools' as an R character vector.

Examples

```
## Not run:
wbt_help()

## End(Not run)
```

wbt_high_pass_bilateral_filter

High pass bilateral filter

Description

Performs a high-pass bilateral filter, by differencing an input image by the bilateral filter by Tomasi and Manduchi (1998).

Usage

```
wbt_high_pass_bilateral_filter(
  input,
  output,
  sigma_dist = 0.75,
  sigma_int = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`sigma_dist`	Standard deviation in distance in pixels.
`sigma_int`	Standard deviation in intensity in pixels.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_high_pass_filter *High pass filter*

Description

Performs a high-pass filter on an input image.

Usage

```
wbt_high_pass_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_high_pass_median_filter

High pass median filter

Description

Performs a high pass median filter on an input image.

Usage

```
wbt_high_pass_median_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  sig_digits = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
sig_digits	Number of significant digits.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_highest_position *Highest position*

Description

Identifies the stack position of the maximum value within a raster stack on a cell-by-cell basis.

Usage

```
wbt_highest_position(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_hillshade *Hillshade*

Description

Calculates a hillshade raster from an input DEM.

Usage

```
wbt_hillshade(
  dem,
  output,
  azimuth = 315,
  altitude = 30,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
azimuth	Illumination source azimuth in degrees.
altitude	Illumination source altitude in degrees.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_hillslopes *Hillslopes*

Description

Identifies the individual hillslopes draining to each link in a stream network.

Usage

```
wbt_hillslopes(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_histogram_equalization

Histogram equalization

Description

Performs a histogram equalization contrast enhancement on an image.

Usage

```
wbt_histogram_equalization(
  input,
  output,
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
num_tones	Number of tones in the output image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_histogram_matching *Histogram matching*

Description

Alters the statistical distribution of a raster image matching it to a specified PDF.

Usage

```
wbt_histogram_matching(
  input,
  histo_file,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
histo_file	Input reference probability distribution function (pdf) text file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_histogram_matching_two_images

Histogram matching two images

Description

Alters the cumulative distribution function of a raster image to that of another image.

Usage

```
wbt_histogram_matching_two_images(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file to modify.
input2	Input reference raster file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_hole_proportion *Hole proportion*

Description

Calculates the proportion of the total area of a polygon's holes relative to the area of the polygon's hull.

Usage

```
wbt_hole_proportion(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector polygon file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_horizon_angle *Horizon angle*

Description

Calculates horizon angle (maximum upwind slope) for each grid cell in an input DEM.

Usage

```
wbt_horizon_angle(
  dem,
  output,
  azimuth = 0,
  max_dist = 100,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
azimuth	Azimuth, in degrees.
max_dist	Optional maximum search distance (unspecified if none; in xy units). Minimum value is 5 x cell size.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_horizontal_excess_curvature

Horizontal excess curvature

Description

This tool calculates horizontal excess curvature from an input DEM.

Usage

```
wbt_horizontal_excess_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Name of the input raster DEM file.
`output`	Name of the output raster image file.
`log`	Display output values using a log-scale.
`zfactor`	Z conversion factor.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_horton_stream_order

Horton stream order

Description

Assigns the Horton stream order to each tributary in a stream network.

Usage

```
wbt_horton_stream_order(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_hydrologic_connectivity

Hydrologic connectivity

Description

This tool evaluates hydrologic connectivity within a DEM.

Usage

```
wbt_hydrologic_connectivity(
  dem,
  output1,
  output2,
  exponent = 1,
  threshold = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file; must be depressionless.
output1	Name of the output downslope unsaturated length (DUL) file.
output2	Name of the output upslope disconnected saturated area (UDSA) file.
exponent	Optional exponent parameter; default is 1.0.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_hypsometric_analysis

Hypsometric analysis

Description

Calculates a hypsometric curve for one or more DEMs.

Usage

```
wbt_hypsometric_analysis(
  inputs,
  output,
  watershed = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input DEM files.
`output`	Output HTML file (default name will be based on input file if unspecified).
`watershed`	Input watershed files (optional).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_hypsometrically_tinted_hillshade

Hypsometrically tinted hillshade

Description

Creates an colour shaded relief image from an input DEM.

Usage

```
wbt_hypsometrically_tinted_hillshade(
  dem,
  output,
  altitude = 45,
  hs_weight = 0.5,
  brightness = 0.5,
  atmospheric = 0,
  palette = "atlas",
  reverse = FALSE,
  zfactor = NULL,
  full_mode = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
altitude	Illumination source altitude in degrees.
hs_weight	Weight given to hillshade relative to relief (0.0-1.0).
brightness	Brightness factor (0.0-1.0).
atmospheric	Atmospheric effects weight (0.0-1.0).
palette	Options include 'atlas', 'high_relief', 'arid', 'soft', 'muted', 'purple', 'viridis', 'gn_yl', 'pi_y_g', 'bl_yl_rd', and 'deep'.
reverse	Optional flag indicating whether to use reverse the palette.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
full_mode	Optional flag indicating whether to use full 360-degrees of illumination sources.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode — Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters — Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only — Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_idw_interpolation *Idw interpolation*

Description

Interpolates vector points into a raster surface using an inverse-distance weighted scheme.

Usage

```
wbt_idw_interpolation(
  input,
  field,
  output,
  use_z = FALSE,
  weight = 2,
  radius = NULL,
  min_points = NULL,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input — Input vector Points file.

field — Input field name in attribute table.

output — Output raster file.

use_z — Use z-coordinate instead of field?.

weight — IDW weight value.

radius	Search Radius in map units.
min_points	Minimum number of points.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_ihs_to_rgb *Ihs to rgb*

Description

Converts intensity, hue, and saturation (IHS) images into red, green, and blue (RGB) images.

Usage

```
wbt_ihs_to_rgb(
  intensity,
  hue,
  saturation,
  red = NULL,
  green = NULL,
  blue = NULL,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`intensity`	Input intensity file.
`hue`	Input hue file.
`saturation`	Input saturation file.
`red`	Output red band file. Optionally specified if colour-composite not specified.
`green`	Output green band file. Optionally specified if colour-composite not specified.
`blue`	Output blue band file. Optionally specified if colour-composite not specified.
`output`	Output colour-composite file. Only used if individual bands are not specified.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_image_autocorrelation

Image autocorrelation

Description

Performs Moran's I analysis on two or more input images.

Usage

```
wbt_image_autocorrelation(
  inputs,
  output,
  contiguity = "Rook",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output HTML file (default name will be based on input file if unspecified).
contiguity	Contiguity type.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_correlation *Image correlation*

Description

Performs image correlation on two or more input images.

Usage

```
wbt_image_correlation(
  inputs,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output HTML file (default name will be based on input file if unspecified).

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_correlation_neighbourhood_analysis

Image correlation neighbourhood analysis

Description

Performs image correlation on two input images neighbourhood search windows.

Usage

```
wbt_image_correlation_neighbourhood_analysis(
  input1,
  input2,
  output1,
  output2,
  filter = 11,
  stat = "pearson",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file path. See wbt_file_path() for details.
output1	Output correlation (r-value or rho) raster file.
output2	Output significance (p-value) raster file.

filter	Size of the filter kernel.
stat	Correlation type; one of 'pearson' (default) and 'spearman'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_regression *Image regression*

Description

Performs image regression analysis on two input images.

Usage

```
wbt_image_regression(
  input1,
  input2,
  output,
  out_residuals = NULL,
  standardize = FALSE,
  scattergram = FALSE,
  num_samples = 1000,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file (independent variable, X).
input2	Input raster file (dependent variable, Y).
output	Output HTML file for regression summary report.

out_residuals	Output raster regression residual file.
standardize	Optional flag indicating whether to standardize the residuals map.
scattergram	Optional flag indicating whether to output a scattergram.
num_samples	Number of samples used to create scattergram.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_segmentation *Image segmentation*

Description

Performs a region-growing based segmentation on a set of multi-spectral images.

Usage

```
wbt_image_segmentation(
  inputs,
  output,
  threshold = 0.5,
  steps = 10,
  min_area = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Names of the input band images.
output	Name of the output raster file.
threshold	Distance threshold, in z-scores.
steps	Number of steps.
min_area	Minimum object area, in grid cells (1-8).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_slider *Image slider*

Description

This tool creates an image slider from two input images.

Usage

```
wbt_image_slider(
  input1,
  input2,
  output,
  palette1 = "grey",
  reverse1 = FALSE,
  label1 = "",
  palette2 = "grey",
  reverse2 = FALSE,
  label2 = "",
  height = 600,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Name of the left input image file.
input2	Name of the right input image file.
output	Name of the output HTML file (*.html).
palette1	Left image palette; options are 'grey', 'atlas', 'high_relief', 'arid', 'soft', 'muted', 'purple', 'viridi', 'gn_yl', 'pi_y_g', 'bl_yl_rd', 'deep', and 'rgb'.
reverse1	Reverse left image palette?.
label1	Left image label (leave blank for none).
palette2	Right image palette; options are 'grey', 'atlas', 'high_relief', 'arid', 'soft', 'muted', 'purple', 'viridi', 'gn_yl', 'pi_y_g', 'bl_yl_rd', 'deep', and 'rgb'.
reverse2	Reverse right image palette?.
label2	Right image label (leave blank for none).
height	Image height, in pixels.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_image_stack_profile

Image stack profile

Description

Plots an image stack profile (i.e. signature) for a set of points and multispectral images.

Usage

```
wbt_image_stack_profile(
  inputs,
  points,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input multispectral image files.
points	Input vector points file.
output	Output HTML file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_impoundment_size_index

Impoundment size index

Description

Calculates the impoundment size resulting from damming a DEM.

Usage

```
wbt_impoundment_size_index(
  dem,
  damlength,
  out_mean = NULL,
  out_max = NULL,
  out_volume = NULL,
  out_area = NULL,
  out_dam_height = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
damlength	Maximum length of the dam.
out_mean	Output mean flooded depth file.
out_max	Output maximum flooded depth file.
out_volume	Output flooded volume file.
out_area	Output flooded area file.
out_dam_height	Output dam height file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_in_place_add *In place add*

Description

Performs an in-place addition operation (input1 += input2).

Usage

```
wbt_in_place_add(
  input1,
  input2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file or constant value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_in_place_divide *In place divide*

Description

Performs an in-place division operation (input1 /= input2).

Usage

```
wbt_in_place_divide(
  input1,
  input2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file or constant value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_in_place_multiply *In place multiply*

Description

Performs an in-place multiplication operation (input1 *= input2).

Usage

```
wbt_in_place_multiply(
  input1,
  input2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file or constant value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_in_place_subtract *In place subtract*

Description

Performs an in-place subtraction operation (input1 -= input2).

Usage

```
wbt_in_place_subtract(
  input1,
  input2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file or constant value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_increment *Increment*

Description

Increases the values of each grid cell in an input raster by 1.0. (see also InPlaceAdd).

Usage

```
wbt_increment(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_individual_tree_detection

Individual tree detection

Description

Identifies points in a LiDAR point cloud that are associated with the tops of individual trees.

Usage

```
wbt_individual_tree_detection(
  input,
  output = NULL,
  min_search_radius = 1,
  min_height = 0,
  max_search_radius = "",
  max_height = "",
  only_use_veg = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR file.
`output`	Name of the output vector points file.
`min_search_radius`	Minimum search radius (m).
`min_height`	Minimum height (m).
`max_search_radius`	Maximum search radius (m).
`max_height`	Maximum height (m).
`only_use_veg`	Only use veg. class points?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_init` *Initialize 'WhiteboxTools'*

Description

`wbt_init()`: Check if a suitable 'WhiteboxTools' executable is present. Search default path in package directory or set it manually with `exe_path`.

`wbt_options()`: Get/set package options

- `whitebox.exe_path` - character. Path to executable file. The default value is the package installation directory, subdirectory `"WBT"`, followed by `whitebox_tools.exe` or `whitebox_tools`. Set the `whitebox.exe_path` option using `wbt_init()` `exe_path` argument
- `whitebox.wd` - character. Path to WhiteboxTools working directory. Used as `--wd` argument for tools that support it when `wd` is not specified elsewhere.
- `whitebox.verbose` - logical. Should standard output from calls to executable be `cat()` out for readability? When `whitebox.verbose=FALSE` no output is produced. Set the value of `whitebox.verbose` with `wbt_verbose()` `verbose` argument. Default is result of `interactive()` if R package options are unset.
- `whitebox.compress_rasters` - logical. Should raster output from WhiteboxTools be compressed? Default: `NULL` uses existing WhiteboxTools settings. Set the value of `whitebox.compress_rasters` with `wbt_compress_rasters()` `compress_rasters` argument.
- `whitebox.max_procs` - integer. Maximum number of processes for tools that run in parallel or partially parallelize. Default: `-1` uses all of the available cores.

`wbt_exe_path()`: Get the file path of the 'WhiteboxTools' executable.

`wbt_runner_path()`: Get the file path of the 'WhiteboxTools Runner' executable.

`wbt_default_path()`: Get the default file path of the 'WhiteboxTools' executable.

`wbt_data_dir()`: Get the directory where 'WhiteboxTools' data are stored.

`wbt_wd()`: Get or set the 'WhiteboxTools' working directory. Default: `""` (unset) is your R working directory if no other options are set.

`wbt_verbose()`: Check verbose options for 'WhiteboxTools'

`wbt_compress_rasters()`: Check raster compression option for 'WhiteboxTools'. Default behavior is based on WhiteboxTools settings.json, package options (if set). Raster compression settings can be overridden in any `wbt_*()` function call by passing the `compress_rasters` argument directly.

`wbt_max_procs()`: Check maximum number of processes for for tools that run in parallel or partially parallelize. Default: `-1` uses all of the available cores.

Usage

```
wbt_init(
  exe_path = wbt_exe_path(shell_quote = FALSE),
  ...,
  check_version = TRUE
)

wbt_options(
  exe_path = NULL,
  wd = NULL,
  verbose = NULL,
  compress_rasters = NULL,
  max_procs = NULL
)

wbt_exe_path(exe_path = NULL, shell_quote = TRUE)

wbt_runner_path(shell_quote = TRUE)

wbt_default_path()

wbt_data_dir()

wbt_wd(wd = NULL)

wbt_verbose(verbose = NULL)

wbt_compress_rasters(compress_rasters = NULL)

wbt_max_procs(max_procs = NULL)
```

Arguments

`exe_path`	Optional: User-supplied path to 'WhiteboxTools' executable. Default: `NULL`
`...`	additional arguments to `wbt_options()`
`check_version`	Check version of 'WhiteboxTools' installed against version R package was built for? Default: `TRUE`
`wd`	character; Default: `NULL`; if set the package option `whitebox.wd` is set specified path (if directory exists)
`verbose`	logical. Default: `NULL`; if `TRUE` or `FALSE`, set the package option `whitebox.verbose` to specified value. Tool verbosity settings can be overridden in any `wbt_*()` function call by passing the `verbose_mode` argument directly.
`compress_rasters`	logical. Default: `NULL`; if `TRUE` or `FALSE`, set the package option `whitebox.compress_rasters` to specified value.
`max_procs`	Default: `NULL`; if integer, set the package option `whitebox.max_procs` to specified value

shell_quote Return shQuote() result?

Details

wbt_exe_path(): Checks system environment variable R_WHITEBOX_EXE_PATH and package option whitebox.exe_path. Set your desired path with either Sys.setenv(R_WHITEBOX_EXE_PATH = "C:/path/to/whitebox_tools.exe") or options(whitebox.exe_path = "C:/path/to/whitebox_tools.exe"). The default, backwards-compatible path is returned by wbt_default_path()

wbt_runner_path(): Returns a path to 'WhiteboxTools Runner' including a platform-specific executable (with or without .exe extension)

wbt_default_path(): Returns a path to 'WhiteboxTools' executable including a platform-specific executable (with or without .exe extension)

wbt_data_dir(): Uses platform-specific user data directory from tools::R_user_dir(package = "whitebox", which = "data") on R 4.0+. On R<4 returns the original default find.package("whitebox").

wbt_wd(): Before you set the working directory in a session the default output will be in your current R working directory unless otherwise specified. You can change working directory at any time by setting the wd argument to wbt_wd() and running a tool. Note that once you have set a working directory, the directory needs to be set somewhere to "replace" the old value; just dropping the flag will not change the working directory back to the R working directory. To "unset" the option in the R package you can use wbt_wd("") which removes the --wd flag from commands and sets the working_directory value in the WhiteboxTools *settings.json* to "".

Value

wbt_init(): logical; TRUE if binary file is found at exe_path

wbt_options(): an invisible list containing current whitebox.exe_path, whitebox.verbose, whitebox.compress_rasters, and whitebox.max_procs options

Returns the file path of 'WhiteboxTools' executable.

wbt_wd(): character; when working directory is unset, will not add --wd= arguments to calls and should be the same as using getwd(). See Details.

wbt_verbose(): logical; returns the result of option "whitebox.verbose_mode", if unset defaults to result of interactive().

wbt_compress_rasters(): logical; returns the result of option "whitebox.compress_rasters", if unset defaults to NA.

wbt_max_procs(): integer; defaults to NA_integer_

See Also

install_whitebox() whitebox

Examples

```
## Not run:
## wbt_init():

# set path to binary as an argument
# wbt_init(exe_path = "not/a/valid/path/whitebox_tools.exe")
```

```
## End(Not run)
## Not run:

## wbt_options():

# set multiple options (e.g. exe_path and verbose) with wbt_options()
wbt_options(exe_path = "not/a/valid/path/whitebox_tools.exe", verbose = TRUE)


## End(Not run)
## Not run:
wbt_exe_path()

## End(Not run)
## Not run:

## wbt_wd():

# no working directory set
wbt_wd(wd = "")

# set WBT working directory to R working directory
wbt_wd(wd = getwd())

## End(Not run)
## Not run:

## wbt_verbose():

wbt_verbose(verbose = TRUE)

## End(Not run)
## Not run:

## wbt_compress_rasters():

wbt_compress_rasters(compress_rasters = TRUE)

## End(Not run)
## Not run:

## wbt_max_procs():

wbt_max_procs(max_procs = 2)

## End(Not run)
```

---

wbt_insert_dams *Insert dams*

Description

Calculates the impoundment size resulting from damming a DEM.

Usage

```
wbt_insert_dams(
  dem,
  dam_pts,
  output,
  damlength,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
dam_pts	Input vector dam points file.
output	Output file.
damlength	Maximum length of the dam.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_install *Download and Install 'WhiteboxTools'*

Description

This function downloads the 'WhiteboxTools' binary if needed. Pre-compiled binaries are only available for download for 64-bit Linux (default compiled with glibc on Ubuntu 22.04; use `platform="linux_musl"` for musl/earlier versions of glibc), Windows and Mac OS (ARM and Intel) platforms. If you need WhiteboxTools for another platform follow the instructions to build from source: https://github.com/jblindsay/whitebox-tools

Usage

```
wbt_install(
  pkg_dir = wbt_data_dir(),
  platform = NULL,
  force = FALSE,
  remove = FALSE
)

install_whitebox(
  pkg_dir = wbt_data_dir(),
  platform = NULL,
  force = FALSE,
  remove = FALSE
)

wbt_install_extension(
  extension = c("GeneralToolsetExtension", "AgricultureToolset",
    "DemAndSpatialHydrologyToolset", "LidarAndRemoteSensingToolset"),
  platform = NULL,
  destdir = dirname(wbt_exe_path(shell_quote = FALSE))
)
```

Arguments

`pkg_dir`	default install path is to whitebox package "WBT" folder
`platform`	character. Optional: suffix used for alternate platform names. On Linux, you can choose `"linux_amd64"` (default; Linux) or `"linux_musl"` for older glibc versions. On macOS Darwin you can choose `"darwin_amd64"` (default; macOS) or `"darwin_m_series"` for Apple M series hardware. Note that for `wbt_install_extension()` on the Apple M series use `"MacOS_ARM"`. Only one Windows binary is available: `"win_amd64"` (default; Windows).
`force`	logical. Force install? Default `FALSE`. When `remove=TRUE` passed to `unlink()` to change permissions to allow removal of files/directories.
`remove`	logical. Remove contents of "WBT" folder from `pkg_dir`? Default: `FALSE`
`extension`	Extension name
`destdir`	Directory to create `/plugins/` directory for extracting extensions

Details

'WhiteboxTools' and all of its extensions can be uninstalled by passing the `remove=TRUE` argument.

Value

Prints out the location of the WhiteboxTools binary, if found. NULL otherwise.

Examples

```
## Not run:
install_whitebox()

## End(Not run)
```

---

wbt_install_wb_extension

Install wb extension

Description

Use to install a Whitebox extension product.

Usage

```
wbt_install_wb_extension(
  install_extension = "General Toolset Extension",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

install_extension
: Name of the extension product to install. Options include: 'General Toolset Extension', 'DEM & Spatial Hydrology Extension', 'Lidar & Remote Sensing Extension', and 'Agriculture Extension'.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_integer_division *Integer division*

Description

Performs an integer division operation on two rasters or a raster and a constant value.

Usage

```
wbt_integer_division(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_integral_image *Integral image*

Description

Transforms an input image (summed area table) into its integral image equivalent.

Usage

```
wbt_integral_image(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_intersect *Intersect*

Description

Identifies the parts of features in common between two input vector layers.

Usage

```
wbt_intersect(
  input,
  overlay,
  output,
  snap = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
overlay	Input overlay vector file.
output	Output vector file.
snap	Snap tolerance.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_inverse_principal_component_analysis

Inverse principal component analysis

Description

This tool performs an inverse principal component analysis on a series of input component images.

Usage

```
wbt_inverse_principal_component_analysis(
  inputs,
  report,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Name of the input PCA component images.
`report`	Name of the PCA report file (*.html).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_is_no_data *Is no data*

Description

Identifies NoData valued pixels in an image.

Usage

```
wbt_is_no_data(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_isobasins *Isobasins*

Description

Divides a landscape into nearly equal sized drainage basins (i.e. watersheds).

Usage

```
wbt_isobasins(
  dem,
  output,
  size,
  connections = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
size	Target basin size, in grid cells.
connections	Output upstream-downstream flow connections among basins?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_jenson_snap_pour_points

Jenson snap pour points

Description

Moves outlet points used to specify points of interest in a watershedding operation to the nearest stream cell.

Usage

```
wbt_jenson_snap_pour_points(
  pour_pts,
  streams,
  output,
  snap_dist,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`pour_pts`	Input vector pour points (outlet) file.
`streams`	Input raster streams file.
`output`	Output vector file.
`snap_dist`	Maximum snap distance in map units.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_join_tables *Join tables*

Description

Merge a vector's attribute table with another table based on a common field.

Usage

```
wbt_join_tables(
  input1,
  pkey,
  input2,
  fkey,
  import_field = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input primary vector file (i.e. the table to be modified).
pkey	Primary key field.
input2	Input foreign vector file (i.e. source of data to be imported).
fkey	Foreign key field.
import_field	Imported field (all fields will be imported if not specified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_k_means_clustering

K means clustering

Description

Performs a k-means clustering operation on a multi-spectral dataset.

Usage

```
wbt_k_means_clustering(
  inputs,
  output,
  classes,
  out_html = NULL,
  max_iterations = 10,
  class_change = 2,
  initialize = "diagonal",
  min_class_size = 10,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with `","` or `";"`. See `wbt_file_path()` for details.
output	Output raster file.
classes	Number of classes.
out_html	Output HTML report file.
max_iterations	Maximum number of iterations.
class_change	Minimum percent of cells changed between iterations before completion.
initialize	How to initialize cluster centres?.
min_class_size	Minimum class size, in pixels.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_k_nearest_mean_filter`
K nearest mean filter

Description

A k-nearest mean filter is a type of edge-preserving smoothing filter.

Usage

```
wbt_k_nearest_mean_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  k = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See `wbt_file_path()` for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
k	k-value in pixels; this is the number of nearest-valued neighbours to use.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_kappa_index *Kappa index*

Description

Performs a kappa index of agreement (KIA) analysis on two categorical raster files.

Usage

```
wbt_kappa_index(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input classification raster file.
input2	Input reference raster file.
output	Output HTML file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_knn_classification

Knn classification

Description

Performs a supervised k-nearest neighbour classification using training site polygons/points and predictor rasters.

Usage

```
wbt_knn_classification(
  inputs,
  training,
  field,
  scaling = "Normalize",
  output = NULL,
  k = 5,
  clip = TRUE,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Names of the input predictor rasters.
training	Name of the input training site polygons/points shapefile.
field	Name of the attribute containing class name data.
scaling	Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.
output	Name of the output raster file.
k	k-parameter, which determines the number of nearest neighbours used.
clip	Perform training data clipping to remove outlier pixels?.
test_proportion	The proportion of the dataset to include in the test split; default is 0.2.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_knn_regression *Knn regression*

Description

Performs a supervised k-nearest neighbour regression using training site points and predictor rasters.

Usage

```
wbt_knn_regression(
  inputs,
  training,
  field,
  scaling = "Normalize",
  output = NULL,
  k = 5,
  weight = TRUE,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs
: Names of the input predictor rasters.

training
: Name of the input training site points Shapefile.

field
: Name of the attribute containing response variable name data.

scaling
: Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.

output
: Name of the output raster file.

k
: k-parameter, which determines the number of nearest neighbours used.

weight
: Use distance weighting?.

`test_proportion`
: The proportion of the dataset to include in the test split; default is 0.2.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

`verbose_mode`
: Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_ks_test_for_normality`
Ks test for normality

Description

Evaluates whether the values in a raster are normally distributed.

Usage

```
wbt_ks_test_for_normality(
  input,
  output,
  num_samples = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`
: Input raster file path. See `wbt_file_path()` for details.

`output`
: Output HTML file.

`num_samples`
: Number of samples. Leave blank to use whole image.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_laplacian_filter *Laplacian filter*

Description

Performs a Laplacian filter on an image.

Usage

```
wbt_laplacian_filter(
  input,
  output,
  variant = "3x3(1)",
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

variant
: Optional variant value. Options include 3x3(1), 3x3(2), 3x3(3), 3x3(4), 5x5(1), and 5x5(2) (default is 3x3(1)).

clip
: Optional amount to clip the distribution tails by, in percent.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_laplacian_of_gaussian_filter`
Laplacian of gaussian filter

Description

Performs a Laplacian-of-Gaussian (LoG) filter on an image.

Usage

```
wbt_laplacian_of_gaussian_filter(
  input,
  output,
  sigma = 0.75,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`
: Input raster file path. See `wbt_file_path()` for details.

`output`
: Output raster file.

`sigma`
: Standard deviation in pixels.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

`verbose_mode`
: Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_las_to_ascii *Las to ascii*

Description

Converts one or more LAS files into ASCII text files.

Usage

```
wbt_las_to_ascii(
  inputs,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input LiDAR files.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_las_to_laz *Las to laz*

Description

This tool converts one or more LAS files into the LAZ format.

Usage

```
wbt_las_to_laz(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LAS files (leave blank to use all LAS files in WorkingDirectory.
output	Output LAZ file (including extension).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_las_to_multipoint_shapefile

Las to multipoint shapefile

Description

Converts one or more LAS files into MultipointZ vector Shapefiles. When the input parameter is not specified, the tool grids all LAS files contained within the working directory.

Usage

```
wbt_las_to_multipoint_shapefile(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_las_to_shapefile *Las to shapefile*

Description

Converts one or more LAS files into a vector Shapefile of POINT ShapeType.

Usage

```
wbt_las_to_shapefile(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_las_to_zlidar *Las to zlidar*

Description

Converts one or more LAS files into the zlidar compressed LiDAR data format.

Usage

```
wbt_las_to_zlidar(
  inputs = NULL,
  outdir = NULL,
  compress = "brotli",
  level = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input LAS files.
outdir	Output directory into which zlidar files are created. If unspecified, it is assumed to be the same as the inputs.
compress	Compression method, including 'brotli' and 'deflate'.
level	Compression level (1-9).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_launch_runner *Launch 'WhiteboxTools Runner' GUI*

Description

wbt_launch_runner(): Launch the 'WhiteboxTools Runner' GUI at wbt_runner_path()

Usage

```
wbt_launch_runner(clear_app_state = FALSE)
```

Arguments

`clear_app_state`
: Clear application state memory? Default: `FALSE`

Details

Opens the 'WhiteboxTools Runner' GUI included with WhiteboxTools Open Core v2.3.0 or higher.

See Also

`wbt_runner_path()`

---

wbt_launch_wb_runner *Launch wb runner*

Description

Opens the Whitebox Runner application.

Usage

```
wbt_launch_wb_runner(
  clear_app_state = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`clear_app_state`
: Clear the application state memory?.

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

`verbose_mode`
: Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_layer_footprint *Layer footprint*

Description

Creates a vector polygon footprint of the area covered by a raster grid or vector layer.

Usage

```
wbt_layer_footprint(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster or vector file.
output	Output vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_laz_to_las *Laz to las*

Description

This tool converts one or more LAZ files into the LAS format.

Usage

```
wbt_laz_to_las(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LAZ files (leave blank to use all LAZ files in WorkingDirectory.
output	Output LAS file (including extension).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lee_sigma_filter *Lee sigma filter*

Description

Performs a Lee (Sigma) smoothing filter on an image.

Usage

```
wbt_lee_sigma_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  sigma = 10,
  m = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
sigma	Sigma value should be related to the standard deviation of the distribution of image speckle noise.
m	M-threshold value the minimum allowable number of pixels within the intensity range.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_length_of_upstream_channels

Length of upstream channels

Description

Calculates the total length of channels upstream.

Usage

```
wbt_length_of_upstream_channels(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_less_than *Less than*

Description

Performs a less-than comparison operation on two rasters or a raster and a constant value.

Usage

```
wbt_less_than(
  input1,
  input2,
  output,
  incl_equals = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
incl_equals	Perform a less-than-or-equal-to operation.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_license *License information for 'WhiteboxTools'*

Description

License information for 'WhiteboxTools'

Usage

```
wbt_license()
```

Value

Returns the license information for WhiteboxTools as an R character vector.

Examples

```
## Not run:
wbt_license()

## End(Not run)
```

wbt_lidar_block_maximum *Lidar block maximum*

Description

Creates a block-maximum raster from an input LAS file. When the input/output parameters are not specified, the tool grids all LAS files contained within the working directory.

Usage

```
wbt_lidar_block_maximum(
  input,
  output = NULL,
  resolution = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output file.
`resolution`	Output raster's grid resolution.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_lidar_block_minimum

Lidar block minimum

Description

Creates a block-minimum raster from an input LAS file. When the input/output parameters are not specified, the tool grids all LAS files contained within the working directory.

Usage

```
wbt_lidar_block_minimum(
  input,
  output = NULL,
  resolution = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output file.
`resolution`	Output raster's grid resolution.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_lidar_classify_subset

Lidar classify subset

Description

Classifies the values in one LiDAR point cloud that correspond with points in a subset cloud.

Usage

```
wbt_lidar_classify_subset(
  base,
  subset,
  output,
  subset_class,
  nonsubset_class = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base	Input base LiDAR file.
subset	Input subset LiDAR file.
output	Output LiDAR file.
subset_class	Subset point class value (must be 0-18; see LAS specifications).
nonsubset_class	Non-subset point class value (must be 0-18; see LAS specifications).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_colourize *Lidar colourize*

Description

Adds the red-green-blue colour fields of a LiDAR (LAS) file based on an input image.

Usage

```
wbt_lidar_colourize(
  in_lidar,
  in_image,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

in_lidar	Input LiDAR file.
in_image	Input colour image file.
output	Output LiDAR file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_contour *Lidar contour*

Description

This tool creates a vector contour coverage from an input LiDAR point file.

Usage

```
wbt_lidar_contour(
  input,
  output = NULL,
  interval = 10,
  base = 0,
  smooth = 5,
  parameter = "elevation",
  returns = "all",
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  max_triangle_edge_length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`output`	Name of the output vector lines file.
`interval`	Contour interval.
`base`	Base contour.
`smooth`	Smoothing filter size (in num. points), e.g. 3, 5, 7, 9, 11.
`parameter`	Interpolation parameter; options are 'elevation' (default), 'intensity', 'user_data'.
`returns`	Point return types to include; options are 'all' (default), 'last', 'first'.
`exclude_cls`	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
`minz`	Optional minimum elevation for inclusion in interpolation.
`maxz`	Optional maximum elevation for inclusion in interpolation.
`max_triangle_edge_length`	Optional maximum triangle edge length; triangles larger than this size will not be gridded.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_lidar_digital_surface_model` *Lidar digital surface model*

Description

Creates a top-surface digital surface model (DSM) from a LiDAR point cloud.

Usage

```
wbt_lidar_digital_surface_model(
  input,
  output = NULL,
  resolution = 1,
  radius = 0.5,
  minz = NULL,
  maxz = NULL,
  max_triangle_edge_length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file (including extension).
`output`	Output raster file (including extension).
`resolution`	Output raster's grid resolution.
`radius`	Search Radius.
`minz`	Optional minimum elevation for inclusion in interpolation.
`maxz`	Optional maximum elevation for inclusion in interpolation.
`max_triangle_edge_length`	Optional maximum triangle edge length; triangles larger than this size will not be gridded.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_eigenvalue_features

Lidar eigenvalue features

Description

Calculate eigenvalue-based metrics from a LiDAR point cloud.

Usage

```
wbt_lidar_eigenvalue_features(
  input,
  num_neighbours = NULL,
  radius = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`num_neighbours`	Number of neighbours used in search.
`radius`	Search distance used in neighbourhood search.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_elevation_slice

Lidar elevation slice

Description

Outputs all of the points within a LiDAR (LAS) point file that lie between a specified elevation range.

Usage

```
wbt_lidar_elevation_slice(
  input,
  output,
  minz = NULL,
  maxz = NULL,
  cls = FALSE,
  inclassval = 2,
  outclassval = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output LiDAR file.
minz	Minimum elevation value (optional).
maxz	Maximum elevation value (optional).
cls	Optional boolean flag indicating whether points outside the range should be retained in output but reclassified.
inclassval	Optional parameter specifying the class value assigned to points within the slice.
outclassval	Optional parameter specifying the class value assigned to points within the slice.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_ground_point_filter

Lidar ground point filter

Description

Identifies ground points within LiDAR dataset using a slope-based method.

Usage

```
wbt_lidar_ground_point_filter(
  input,
  output,
  radius = 2,
  min_neighbours = 0,
  slope_threshold = 45,
  height_threshold = 1,
  classify = TRUE,
  slope_norm = TRUE,
  height_above_ground = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output LiDAR file.
`radius`	Search Radius.
`min_neighbours`	The minimum number of neighbouring points within search areas. If fewer points than this threshold are identified during the fixed-radius search, a subsequent kNN search is performed to identify the k number of neighbours.
`slope_threshold`	Maximum inter-point slope to be considered an off-terrain point.
`height_threshold`	Inter-point height difference to be considered an off-terrain point.
`classify`	Classify points as ground (2) or off-ground (1).
`slope_norm`	Perform initial ground slope normalization?.
`height_above_ground`	Transform output to height above average ground elevation?.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_hex_binning *Lidar hex binning*

Description

Hex-bins a set of LiDAR points.

Usage

```
wbt_lidar_hex_binning(
  input,
  output,
  width,
  orientation = "horizontal",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input base file.
output	Output vector polygon file.
width	The grid cell width.
orientation	Grid Orientation, 'horizontal' or 'vertical'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_hillshade *Lidar hillshade*

Description

Calculates a hillshade value for points within a LAS file and stores these data in the RGB field.

Usage

```
wbt_lidar_hillshade(
  input,
  output,
  azimuth = 315,
  altitude = 30,
  radius = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input LiDAR file.

output
: Output file.

azimuth
: Illumination source azimuth in degrees.

altitude
: Illumination source altitude in degrees.

radius
: Search Radius.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_histogram *Lidar histogram*

Description

Creates a histogram of LiDAR data.

Usage

```
wbt_lidar_histogram(
  input,
  output,
  parameter = "elevation",
  clip = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input LiDAR file.

output
: Output HTML file (default name will be based on input file if unspecified).

parameter
: Parameter; options are 'elevation' (default), 'intensity', 'scan angle', 'class', 'time'.

clip
: Amount to clip distribution tails (in percent).

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_idw_interpolation *Lidar idw interpolation*

Description

Interpolates LAS files using an inverse-distance weighted (IDW) scheme. When the input/output parameters are not specified, the tool interpolates all LAS files contained within the working directory.

Usage

```
wbt_lidar_idw_interpolation(
  input,
  output = NULL,
  parameter = "elevation",
  returns = "all",
  resolution = 1,
  weight = 1,
  radius = 2.5,
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input LiDAR file (including extension).

output
: Output raster file (including extension).

parameter
: Interpolation parameter; options are 'elevation' (default), 'intensity', 'class', 'return_number', 'number_of_returns', 'scan angle', 'rgb', 'user data'.

`returns`	Point return types to include; options are 'all' (default), 'last', 'first'.
`resolution`	Output raster's grid resolution.
`weight`	IDW weight value.
`radius`	Search Radius.
`exclude_cls`	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
`minz`	Optional minimum elevation for inclusion in interpolation.
`maxz`	Optional maximum elevation for inclusion in interpolation.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_lidar_info` *Lidar info*

Description

Prints information about a LiDAR (LAS) dataset, including header, point return frequency, and classification data and information about the variable length records (VLRs) and geokeys.

Usage

```
wbt_lidar_info(
  input,
  output,
  density = TRUE,
  vlr = TRUE,
  geokeys = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output HTML file for summary report.
density	Flag indicating whether or not to calculate the average point density and nominal point spacing.
vlr	Flag indicating whether or not to print the variable length records (VLRs).
geokeys	Flag indicating whether or not to print the geokeys.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_join *Lidar join*

Description

Joins multiple LiDAR (LAS) files into a single LAS file.

Usage

```
wbt_lidar_join(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input LiDAR files.
output	Output LiDAR file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_kappa_index *Lidar kappa index*

Description

Performs a kappa index of agreement (KIA) analysis on the classifications of two LAS files.

Usage

```
wbt_lidar_kappa_index(
  input1,
  input2,
  output,
  class_accuracy,
  resolution = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input LiDAR classification file.
input2	Input LiDAR reference file.
output	Output HTML file.

class_accuracy Output classification accuracy raster file.

resolution Output raster's grid resolution.

wd Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_nearest_neighbour_gridding *Lidar nearest neighbour gridding*

Description

Grids LiDAR files using nearest-neighbour scheme. When the input/output parameters are not specified, the tool grids all LAS files contained within the working directory.

Usage

```
wbt_lidar_nearest_neighbour_gridding(
  input,
  output = NULL,
  parameter = "elevation",
  returns = "all",
  resolution = 1,
  radius = 2.5,
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file (including extension).
`output`	Output raster file (including extension).
`parameter`	Interpolation parameter; options are 'elevation' (default), 'intensity', 'class', 'return_number', 'number_of_returns', 'scan angle', 'rgb', 'user data', 'time'.
`returns`	Point return types to include; options are 'all' (default), 'last', 'first'.
`resolution`	Output raster's grid resolution.
`radius`	Search Radius.
`exclude_cls`	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
`minz`	Optional minimum elevation for inclusion in interpolation.
`maxz`	Optional maximum elevation for inclusion in interpolation.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_lidar_point_density

Lidar point density

Description

Calculates the spatial pattern of point density for a LiDAR data set. When the input/output parameters are not specified, the tool grids all LAS files contained within the working directory.

Usage

```
wbt_lidar_point_density(
  input,
  output = NULL,
  returns = "all",
  resolution = 1,
  radius = 2.5,
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file (including extension).
output	Output raster file (including extension).
returns	Point return types to include; options are 'all' (default), 'last', 'first'.
resolution	Output raster's grid resolution.
radius	Search radius.
exclude_cls	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
minz	Optional minimum elevation for inclusion in interpolation.
maxz	Optional maximum elevation for inclusion in interpolation.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_point_return_analysis

Lidar point return analysis

Description

This tool performs a quality control check on the return values of points in a LiDAR file.

Usage

```
wbt_lidar_point_return_analysis(
  input,
  output = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
output	Name of the output LiDAR points.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lidar_point_stats *Lidar point stats*

Description

Creates several rasters summarizing the distribution of LAS point data. When the input/output parameters are not specified, the tool works on all LAS files contained within the working directory.

Usage

```
wbt_lidar_point_stats(
  input,
  resolution = 1,
  num_points = TRUE,
  num_pulses = FALSE,
  avg_points_per_pulse = TRUE,
  z_range = FALSE,
  intensity_range = FALSE,
  predom_class = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
resolution	Output raster's grid resolution.
num_points	Flag indicating whether or not to output the number of points (returns) raster.
num_pulses	Flag indicating whether or not to output the number of pulses raster.
avg_points_per_pulse	Flag indicating whether or not to output the average number of points (returns) per pulse raster.
z_range	Flag indicating whether or not to output the elevation range raster.
intensity_range	Flag indicating whether or not to output the intensity range raster.
predom_class	Flag indicating whether or not to output the predominant classification raster.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_lidar_ransac_planes` *Lidar ransac planes*

Description

Performs a RANSAC analysis to identify points within a LiDAR point cloud that belong to linear planes.

Usage

```
wbt_lidar_ransac_planes(
  input,
  output,
  radius = 2,
  num_iter = 50,
  num_samples = 5,
  threshold = 0.35,
  model_size = 8,
  max_slope = 80,
  classify = FALSE,
  last_returns = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input` Input LiDAR file.

`output` Output LiDAR file.

`radius` Search Radius.

`num_iter` Number of iterations.

`num_samples` Number of sample points on which to build the model.

threshold	Threshold used to determine inlier points.
model_size	Acceptable model size.
max_slope	Maximum planar slope.
classify	Classify points as ground (2) or off-ground (1).
last_returns	Only include last- and only-return points.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_rbf_interpolation *Lidar rbf interpolation*

Description

Interpolates LAS files using a radial basis function (RBF) scheme. When the input/output parameters are not specified, the tool interpolates all LAS files contained within the working directory.

Usage

```
wbt_lidar_rbf_interpolation(
  input,
  output = NULL,
  parameter = "elevation",
  returns = "all",
  resolution = 1,
  num_points = 20,
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  func_type = "ThinPlateSpline",
  poly_order = "none",
  weight = 5,
```

```
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file (including extension).
output	Output raster file (including extension).
parameter	Interpolation parameter; options are 'elevation' (default), 'intensity', 'class', 'return_number', 'number_of_returns', 'scan angle', 'rgb', 'user data'.
returns	Point return types to include; options are 'all' (default), 'last', 'first'.
resolution	Output raster's grid resolution.
num_points	Number of points.
exclude_cls	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
minz	Optional minimum elevation for inclusion in interpolation.
maxz	Optional maximum elevation for inclusion in interpolation.
func_type	Radial basis function type; options are 'ThinPlateSpline' (default), 'PolyHarmonic', 'Gaussian', 'MultiQuadric', 'InverseMultiQuadric'.
poly_order	Polynomial order; options are 'none' (default), 'constant', 'affine'.
weight	Weight parameter used in basis function.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_remove_duplicates

Lidar remove duplicates

Description

Removes duplicate points from a LiDAR data set.

Usage

```
wbt_lidar_remove_duplicates(
  input,
  output,
  include_z = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output LiDAR file.
include_z	Include z-values in point comparison?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lidar_remove_outliers
Lidar remove outliers

Description

Removes outliers (high and low points) in a LiDAR point cloud.

Usage

```
wbt_lidar_remove_outliers(
  input,
  output,
  radius = 2,
  elev_diff = 50,
  use_median = FALSE,
  classify = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output LiDAR file.
radius	Search Radius.
elev_diff	Max. elevation difference.
use_median	Optional flag indicating whether to use the difference from median elevation rather than mean.
classify	Classify points as ground (2) or off-ground (1).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_rooftop_analysis

Lidar rooftop analysis

Description

Identifies roof segments in a LiDAR point cloud.

Usage

```
wbt_lidar_rooftop_analysis(
  buildings,
  output,
  input = NULL,
  radius = 2,
  num_iter = 50,
  num_samples = 10,
  threshold = 0.15,
  model_size = 15,
  max_slope = 65,
  norm_diff = 10,
  azimuth = 180,
  altitude = 30,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

buildings	Input vector build footprint polygons file.
output	Output vector polygon file.
input	Input LiDAR file.
radius	Search Radius.
num_iter	Number of iterations.
num_samples	Number of sample points on which to build the model.
threshold	Threshold used to determine inlier points (in elevation units).
model_size	Acceptable model size, in points.
max_slope	Maximum planar slope, in degrees.
norm_diff	Maximum difference in normal vectors, in degrees.

azimuth	Illumination source azimuth, in degrees.
altitude	Illumination source altitude in degrees.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_segmentation *Lidar segmentation*

Description

Segments a LiDAR point cloud based on differences in the orientation of fitted planar surfaces and point proximity.

Usage

```
wbt_lidar_segmentation(
  input,
  output,
  radius = 2,
  num_iter = 50,
  num_samples = 10,
  threshold = 0.15,
  model_size = 15,
  max_slope = 80,
  norm_diff = 10,
  maxzdiff = 1,
  classes = FALSE,
  ground = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output LiDAR file.
`radius`	Search Radius.
`num_iter`	Number of iterations.
`num_samples`	Number of sample points on which to build the model.
`threshold`	Threshold used to determine inlier points.
`model_size`	Acceptable model size.
`max_slope`	Maximum planar slope.
`norm_diff`	Maximum difference in normal vectors, in degrees.
`maxzdiff`	Maximum difference in elevation (z units) between neighbouring points of the same segment.
`classes`	Segments don't cross class boundaries.
`ground`	Classify the largest segment as ground points?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_lidar_segmentation_based_filter` *Lidar segmentation based filter*

Description

Identifies ground points within LiDAR point clouds using a segmentation based approach.

Usage

```
wbt_lidar_segmentation_based_filter(
  input,
  output,
  radius = 5,
  norm_diff = 2,
  maxzdiff = 1,
  classify = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output file.
radius	Search Radius.
norm_diff	Maximum difference in normal vectors, in degrees.
maxzdiff	Maximum difference in elevation (z units) between neighbouring points of the same segment.
classify	Classify points as ground (2) or off-ground (1).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lidar_shift *Lidar shift*

Description

Shifts the x,y,z coordinates of a LiDAR file.

Usage

```
wbt_lidar_shift(
  input,
  output,
  x_shift = "",
  y_shift = "",
  z_shift = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
output	Name of the output LiDAR points.
x_shift	x-shift value, blank for none.
y_shift	y-shift value, blank for none.
z_shift	z-shift value, blank for none.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lidar_sibson_interpolation

Lidar sibson interpolation

Description

This tool interpolates one or more LiDAR tiles using Sibson's natural neighbour method.

Usage

```
wbt_lidar_sibson_interpolation(
  input,
  output = NULL,
  parameter = "elevation",
  returns = "all",
  resolution = 1,
  exclude_cls = NULL,
  minz = NULL,
  maxz = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points (leave blank to use all files in WorkingDirectory.
output	Output raster file (including extension).
parameter	Interpolation parameter; options are 'elevation' (default), 'intensity', 'class', 'return_number', 'number_of_returns', 'scan angle', 'user_data'.
returns	Point return types to include; options are 'all' (default), 'last', 'first'.
resolution	Output raster's grid resolution.
exclude_cls	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
minz	Optional minimum elevation for inclusion in interpolation.
maxz	Optional maximum elevation for inclusion in interpolation.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_sort_by_time *Lidar sort by time*

Description

This tool sorts the points in a LiDAR file by the GPS time.

Usage

```
wbt_lidar_sort_by_time(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Name of the input LiDAR points.

output
: Name of the output LiDAR points.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_thin *Lidar thin*

Description

Thins a LiDAR point cloud, reducing point density.

Usage

```
wbt_lidar_thin(
  input,
  output,
  resolution = 2,
  method = "lowest",
  save_filtered = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
output	Output LiDAR file.
resolution	The size of the square area used to evaluate nearby points in the LiDAR data.
method	Point selection method; options are 'first', 'last', 'lowest' (default), 'highest', 'nearest'.
save_filtered	Save filtered points to separate file?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lidar_thin_high_density

Lidar thin high density

Description

Thins points from high density areas within a LiDAR point cloud.

Usage

```
wbt_lidar_thin_high_density(
  input,
  output,
  density,
  resolution = 1,
  save_filtered = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output LiDAR file.
`density`	Max. point density (points / m^3).
`resolution`	Output raster's grid resolution.
`save_filtered`	Save filtered points to separate file?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_tile *Lidar tile*

Description

Tiles a LiDAR LAS file into multiple LAS files.

Usage

```
wbt_lidar_tile(
  input,
  width = 1000,
  height = 1000,
  origin_x = 0,
  origin_y = 0,
  min_points = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file.
width	Width of tiles in the X dimension; default 1000.0.
height	Height of tiles in the Y dimension.
origin_x	Origin point X coordinate for tile grid.
origin_y	Origin point Y coordinate for tile grid.
min_points	Minimum number of points contained in a tile for it to be saved.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_tile_footprint

Lidar tile footprint

Description

Creates a vector polygon of the convex hull of a LiDAR point cloud. When the input/output parameters are not specified, the tool works with all LAS files contained within the working directory.

Usage

```
wbt_lidar_tile_footprint(
  input,
  output,
  hull = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output vector polygon file.
`hull`	Identify the convex hull around points.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_lidar_tin_gridding *Lidar tin gridding*

Description

Creates a raster grid based on a Delaunay triangular irregular network (TIN) fitted to LiDAR points.

Usage

```
wbt_lidar_tin_gridding(
  input,
  output = NULL,
  parameter = "elevation",
  returns = "all",
  resolution = 1,
  exclude_cls = "7,18",
  minz = NULL,
  maxz = NULL,
  max_triangle_edge_length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input LiDAR file (including extension).
output	Output raster file (including extension).
parameter	Interpolation parameter; options are 'elevation' (default), 'intensity', 'class', 'return_number', 'number_of_returns', 'scan angle', 'rgb', 'user data'.
returns	Point return types to include; options are 'all' (default), 'last', 'first'.
resolution	Output raster's grid resolution.
exclude_cls	Optional exclude classes from interpolation; Valid class values range from 0 to 18, based on LAS specifications. Example, –exclude_cls='3,4,5,6,7,18'.
minz	Optional minimum elevation for inclusion in interpolation.
maxz	Optional maximum elevation for inclusion in interpolation.
max_triangle_edge_length	Optional maximum triangle edge length; triangles larger than this size will not be gridded.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_lidar_tophat_transform *Lidar tophat transform*

Description

Performs a white top-hat transform on a Lidar dataset; as an estimate of height above ground, this is useful for modelling the vegetation canopy.

Usage

```
wbt_lidar_tophat_transform(
  input,
  output,
  radius = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input LiDAR file.

output
: Output LiDAR file.

radius
: Search Radius.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_line_detection_filter *Line detection filter*

Description

Performs a line-detection filter on an image.

Usage

```
wbt_line_detection_filter(
  input,
  output,
  variant = "vertical",
  absvals = FALSE,
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

variant
: Optional variant value. Options include 'v' (vertical), 'h' (horizontal), '45', and '135' (default is 'v').

absvals
: Optional flag indicating whether outputs should be absolute values.

clip
: Optional amount to clip the distribution tails by, in percent.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_line_intersections *Line intersections*

Description

Identifies points where the features of two vector line layers intersect.

Usage

```
wbt_line_intersections(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1
: Input vector polyline file.

input2
: Input vector polyline file.

output
: Output vector point file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_line_thinning *Line thinning*

Description

Performs line thinning a on Boolean raster image; intended to be used with the RemoveSpurs tool.

Usage

```
wbt_line_thinning(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_linearity_index *Linearity index*

Description

Calculates the linearity index for vector polygons.

Usage

```
wbt_linearity_index(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lines_to_polygons *Lines to polygons*

Description

Converts vector polylines to polygons.

Usage

```
wbt_lines_to_polygons(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector line file.
output	Output vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_list_tools *All available tools in 'WhiteboxTools'*

Description

All available tools in 'WhiteboxTools'

Usage

```
wbt_list_tools(keywords = "'")
```

Arguments

keywords	Keywords may be used to search available tools. Default "'" returns all available tools.

Value

Return all available tools in WhiteboxTools that contain the keywords.

Examples

```
## Not run:
wbt_list_tools("lidar")

## End(Not run)
```

---

wbt_list_unique_values

List unique values

Description

Lists the unique values contained in a field within a vector's attribute table.

Usage

```
wbt_list_unique_values(
  input,
  field,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
field	Input field name in attribute table.
output	Output HTML file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_list_unique_values_raster

List unique values raster

Description

Lists the unique values contained in a field within a vector's attribute table.

Usage

```
wbt_list_unique_values_raster(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector file path. See `wbt_file_path()` for details.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_ln *Ln*

Description

Returns the natural logarithm of values in a raster.

Usage

```
wbt_ln(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_local_hypsometric_analysis

Local hypsometric analysis

Description

This tool calculates a local, neighbourhood-based hypsometric integral raster.

Usage

```
wbt_local_hypsometric_analysis(
  input,
  out_mag,
  out_scale,
  min_scale = 4,
  step = 1,
  num_steps = 10,
  step_nonlinearity = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster DEM file.
out_mag	Name of the openness output raster file.
out_scale	Name of the openness output raster file.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
num_steps	Number of steps.
step_nonlinearity	Step nonlinearity factor (1.0-2.0 is typical).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_local_quadratic_regression

Local quadratic regression

Description

An implementation of the constrained quadratic regression algorithm using a flexible window size described in Wood (1996).

Usage

```
wbt_local_quadratic_regression(
  dem,
  output,
  filter = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Name of the input DEM raster file.
`output`	Name of the output raster file.
`filter`	Edge length of the filter kernel.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_log10 *Log10*

Description

Returns the base-10 logarithm of values in a raster.

Usage

```
wbt_log10(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_log2 *Log2*

Description

Returns the base-2 logarithm of values in a raster.

Usage

```
wbt_log2(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_logistic_regression *Logistic regression*

Description

Performs a logistic regression analysis using training site polygons/points and predictor rasters.

Usage

```
wbt_logistic_regression(
  inputs,
  training,
  field,
  scaling = "Normalize",
  output = NULL,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Names of the input predictor rasters.
training	Name of the input training site polygons/points shapefile.
field	Name of the attribute containing class data.
scaling	Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.
output	Name of the output raster file.
test_proportion	The proportion of the dataset to include in the test split; default is 0.2.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_long_profile *Long profile*

Description

Plots the stream longitudinal profiles for one or more rivers.

Usage

```
wbt_long_profile(
  d8_pntr,
  streams,
  dem,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
dem	Input raster DEM file.
output	Output HTML file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_long_profile_from_points

Long profile from points

Description

Plots the longitudinal profiles from flow-paths initiating from a set of vector points.

Usage

```
wbt_long_profile_from_points(
  d8_pntr,
  points,
  dem,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
points	Input vector points file.
dem	Input raster DEM file.
output	Output HTML file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_longest_flowpath *Longest flowpath*

Description

Delineates the longest flowpaths for a group of subbasins or watersheds.

Usage

```
wbt_longest_flowpath(
  dem,
  basins,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
basins	Input raster basins file.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_low_points_on_headwater_divides

Low points on headwater divides

Description

This tool locates saddle points along ridges within a digital elevation model (DEM).

Usage

```
wbt_low_points_on_headwater_divides(
  dem,
  streams,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file.
streams	Name of the input stream channel raster file.
output	Name of the output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_lowest_position *Lowest position*

Description

Identifies the stack position of the minimum value within a raster stack on a cell-by-cell basis.

Usage

```
wbt_lowest_position(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_majority_filter *Majority filter*

Description

Assigns each cell in the output grid the most frequently occurring value (mode) in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_majority_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_map_off_terrain_objects

Map off terrain objects

Description

Maps off-terrain objects in a digital elevation model (DEM).

Usage

```
wbt_map_off_terrain_objects(
  dem,
  output,
  max_slope = 40,
  min_size = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
max_slope	Maximum inter-cell absolute slope.
min_size	Minimum feature size, in grid cells.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max *Max*

Description

Performs a MAX operation on two rasters or a raster and a constant value.

Usage

```
wbt_max(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_absolute_overlay *Max absolute overlay*

Description

Evaluates the maximum absolute value for each grid cell from a stack of input rasters.

Usage

```
wbt_max_absolute_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_anisotropy_dev

Max anisotropy dev

Description

Calculates the maximum anisotropy (directionality) in elevation deviation over a range of spatial scales.

Usage

```
wbt_max_anisotropy_dev(
  dem,
  out_mag,
  out_scale,
  max_scale,
  min_scale = 3,
  step = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
out_mag	Output raster DEVmax magnitude file.
out_scale	Output raster DEVmax scale file.
max_scale	Maximum search neighbourhood radius in grid cells.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_max_anisotropy_dev_signature

Max anisotropy dev signature

Description

Calculates the anisotropy in deviation from mean for points over a range of spatial scales.

Usage

```
wbt_max_anisotropy_dev_signature(
  dem,
  points,
  output,
  max_scale,
  min_scale = 1,
  step = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
points	Input vector points file.
output	Output HTML file.
max_scale	Maximum search neighbourhood radius in grid cells.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_max_branch_length *Max branch length*

Description

Lindsay and Seibert's (2013) branch length index is used to map drainage divides or ridge lines.

Usage

```
wbt_max_branch_length(
  dem,
  output,
  log = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Optional flag to request the output be log-transformed.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_difference_from_mean
Max difference from mean

Description

Calculates the maximum difference from mean elevation over a range of spatial scales.

Usage

```
wbt_max_difference_from_mean(
  dem,
  out_mag,
  out_scale,
  min_scale,
  max_scale,
  step = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
out_mag	Output raster DIFFmax magnitude file.
out_scale	Output raster DIFFmax scale file.
min_scale	Minimum search neighbourhood radius in grid cells.
max_scale	Maximum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_downslope_elev_change
Max downslope elev change

Description

Calculates the maximum downslope change in elevation between a grid cell and its eight downslope neighbors.

Usage

```
wbt_max_downslope_elev_change(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_elev_dev_signature

Max elev dev signature

Description

Calculates the maximum elevation deviation over a range of spatial scales and for a set of points.

Usage

```
wbt_max_elev_dev_signature(
  dem,
  points,
  output,
  min_scale,
  max_scale,
  step = 10,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
points	Input vector points file.
output	Output HTML file.
min_scale	Minimum search neighbourhood radius in grid cells.
max_scale	Maximum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_elevation_deviation

Max elevation deviation

Description

Calculates the maximum elevation deviation over a range of spatial scales.

Usage

```
wbt_max_elevation_deviation(
  dem,
  out_mag,
  out_scale,
  min_scale,
  max_scale,
  step = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
out_mag	Output raster DEVmax magnitude file.
out_scale	Output raster DEVmax scale file.
min_scale	Minimum search neighbourhood radius in grid cells.
max_scale	Maximum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_overlay *Max overlay*

Description

Evaluates the maximum value for each grid cell from a stack of input rasters.

Usage

```
wbt_max_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_upslope_elev_change

Max upslope elev change

Description

Calculates the maximum upslope change in elevation between a grid cell and its eight downslope neighbors.

Usage

```
wbt_max_upslope_elev_change(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_upslope_flowpath_length

Max upslope flowpath length

Description

Measures the maximum length of all upslope flowpaths draining each grid cell.

Usage

```
wbt_max_upslope_flowpath_length(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_max_upslope_value *Max upslope value*

Description

Calculates the maximum upslope value from an input values raster along flowpaths.

Usage

```
wbt_max_upslope_value(
  dem,
  values,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input DEM; it must be depressionless.
values	Name of the input values raster file.
output	Name of the output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_maximal_curvature *Maximal curvature*

Description

Calculates a mean curvature raster from an input DEM.

Usage

```
wbt_maximal_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_maximum_filter *Maximum filter*

Description

Assigns each cell in the output grid the maximum value in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_maximum_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_md_inf_flow_accumulation

Md inf flow accumulation

Description

Calculates an FD8 flow accumulation raster from an input DEM.

Usage

```
wbt_md_inf_flow_accumulation(
  dem,
  output,
  out_type = "specific contributing area",
  exponent = 1.1,
  threshold = NULL,
  log = FALSE,
  clip = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
out_type	Output type; one of 'cells', 'specific contributing area' (default), and 'catchment area'.
exponent	Optional exponent parameter; default is 1.1.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
log	Optional flag to request the output be log-transformed.
clip	Optional flag to request clipping the display max by 1 percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_mean_curvature *Mean curvature*

Description

Calculates a mean curvature raster from an input DEM.

Usage

```
wbt_mean_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_mean_filter *Mean filter*

Description

Performs a mean filter (low-pass filter) on an input image.

Usage

```
wbt_mean_filter(
  input,
  output,
  filterx = 3,
  filtery = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_median_filter *Median filter*

Description

Performs a median filter on an input image.

Usage

```
wbt_median_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  sig_digits = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
sig_digits	Number of significant digits.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_medoid *Medoid*

Description

Calculates the medoid for a series of vector features contained in a shapefile.

Usage

```
wbt_medoid(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_merge_line_segments
Merge line segments

Description

Merges vector line segments into larger features.

Usage

```
wbt_merge_line_segments(
  input,
  output,
  snap = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector file.
snap	Snap tolerance.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_merge_table_with_csv

Merge table with csv

Description

Merge a vector's attribute table with a table contained within a CSV text file.

Usage

```
wbt_merge_table_with_csv(
  input,
  pkey,
  csv,
  fkey,
  import_field = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input primary vector file (i.e. the table to be modified).
`pkey`	Primary key field.
`csv`	Input CSV file (i.e. source of data to be imported).
`fkey`	Foreign key field.
`import_field`	Imported field (all fields will be imported if not specified).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_merge_vectors *Merge vectors*

Description

Combines two or more input vectors of the same ShapeType creating a single, new output vector.

Usage

```
wbt_merge_vectors(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input vector file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_min *Min*

Description

Performs a MIN operation on two rasters or a raster and a constant value.

Usage

```
wbt_min(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_min_absolute_overlay
Min absolute overlay

Description

Evaluates the minimum absolute value for each grid cell from a stack of input rasters.

Usage

```
wbt_min_absolute_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_min_dist_classification

Min dist classification

Description

Performs a supervised minimum-distance classification using training site polygons and multi-spectral images.

Usage

```
wbt_min_dist_classification(
  inputs,
  polys,
  field,
  output,
  threshold = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Names of the input band images.
`polys`	Name of the input training site polygons shapefile.
`field`	Name of the attribute containing class name data.
`output`	Name of the output raster file.
`threshold`	Distance threshold, in z-scores; blank for none.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_min_downslope_elev_change
Min downslope elev change

Description

Calculates the minimum downslope change in elevation between a grid cell and its eight downslope neighbors.

Usage

```
wbt_min_downslope_elev_change(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_min_max_contrast_stretch

Min max contrast stretch

Description

Performs a min-max contrast stretch on an input greytone image.

Usage

```
wbt_min_max_contrast_stretch(
  input,
  output,
  min_val,
  max_val,
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
min_val	Lower tail clip value.
max_val	Upper tail clip value.
num_tones	Number of tones in the output image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_min_overlay *Min overlay*

Description

Evaluates the minimum value for each grid cell from a stack of input rasters.

Usage

```
wbt_min_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimal_curvature *Minimal curvature*

Description

Calculates a mean curvature raster from an input DEM.

Usage

```
wbt_minimal_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimum_bounding_box

Minimum bounding box

Description

Creates a vector minimum bounding rectangle around vector features.

Usage

```
wbt_minimum_bounding_box(
  input,
  output,
  criterion = "area",
  features = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector polygon file.
criterion	Minimization criterion; options include 'area' (default), 'length', 'width', and 'perimeter'.
features	Find the minimum bounding rectangles around each individual vector feature.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimum_bounding_circle

Minimum bounding circle

Description

Delineates the minimum bounding circle (i.e. smallest enclosing circle) for a group of vectors.

Usage

```
wbt_minimum_bounding_circle(
  input,
  output,
  features = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector polygon file.
features	Find the minimum bounding circle around each individual vector feature.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimum_bounding_envelope

Minimum bounding envelope

Description

Creates a vector axis-aligned minimum bounding rectangle (envelope) around vector features.

Usage

```
wbt_minimum_bounding_envelope(
  input,
  output,
  features = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector polygon file.
features	Find the minimum bounding envelop around each individual vector feature.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimum_convex_hull *Minimum convex hull*

Description

Creates a vector convex polygon around vector features.

Usage

```
wbt_minimum_convex_hull(
  input,
  output,
  features = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
output	Output vector polygon file.
features	Find the hulls around each vector feature.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_minimum_filter *Minimum filter*

Description

Assigns each cell in the output grid the minimum value in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_minimum_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_modified_k_means_clustering

Modified k means clustering

Description

Performs a modified k-means clustering operation on a multi-spectral dataset.

Usage

```
wbt_modified_k_means_clustering(
  inputs,
  output,
  out_html = NULL,
  start_clusters = 1000,
  merge_dist = NULL,
  max_iterations = 10,
  class_change = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input raster file paths, concatenated with `","` or `";"`. See `wbt_file_path()` for details.
`output`	Output raster file.
`out_html`	Output HTML report file.
`start_clusters`	Initial number of clusters.
`merge_dist`	Cluster merger distance.
`max_iterations`	Maximum number of iterations.
`class_change`	Minimum percent of cells changed between iterations before completion.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_modify_lidar *Modify lidar*

Description

Modify points within a LiDAR point cloud based on point properties.

Usage

```
wbt_modify_lidar(
  input,
  output = NULL,
  statement = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
output	Name of the output LiDAR points.
statement	Modify statement e.g. x += 5000.0.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_modify_no_data_value *Modify no data value*

Description

Modifies nodata values in a raster.

Usage

```
wbt_modify_no_data_value(
  input,
  new_value = "-32768.0",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
new_value	New NoData value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_modulo *Modulo*

Description

Performs a modulo operation on two rasters or a raster and a constant value.

Usage

```
wbt_modulo(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_mosaic *Mosaic*

Description

Mosaics two or more images together.

Usage

```
wbt_mosaic(
  output,
  inputs = NULL,
  method = "nn",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

output	Output raster file.
inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
method	Resampling method; options include 'nn' (nearest neighbour), 'bilinear', and 'cc' (cubic convolution).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_mosaic_with_feathering

Mosaic with feathering

Description

Mosaics two images together using a feathering technique in overlapping areas to reduce edge-effects.

Usage

```
wbt_mosaic_with_feathering(
  input1,
  input2,
  output,
  method = "cc",
  weight = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file to modify.
input2	Input reference raster file.
output	Output raster file.
method	Resampling method; options include 'nn' (nearest neighbour), 'bilinear', and 'cc' (cubic convolution).
weight	.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_multi_part_to_single_part

Multi part to single part

Description

Converts a vector file containing multi-part features into a vector containing only single-part features.

Usage

```
wbt_multi_part_to_single_part(
  input,
  output,
  exclude_holes = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector line or polygon file.
`output`	Output vector line or polygon file.
`exclude_holes`	Exclude hole parts from the feature splitting? (holes will continue to belong to their features in output.).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_multidirectional_hillshade

Multidirectional hillshade

Description

Calculates a multi-direction hillshade raster from an input DEM.

Usage

```
wbt_multidirectional_hillshade(
  dem,
  output,
  altitude = 45,
  zfactor = NULL,
  full_mode = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
altitude	Illumination source altitude in degrees.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
full_mode	Optional flag indicating whether to use full 360-degrees of illumination sources.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_multiply *Multiply*

Description

Performs a multiplication operation on two rasters or a raster and a constant value.

Usage

```
wbt_multiply(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_multiply_overlay *Multiply overlay*

Description

Calculates the sum for each grid cell from a group of raster images.

Usage

```
wbt_multiply_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_multiscale_curvatures

Multiscale curvatures

Description

This tool calculates several multiscale curvatures and curvature-based indices from an input DEM.

Usage

```
wbt_multiscale_curvatures(
  dem,
  out_mag,
  curv_type = "ProfileCurv",
  out_scale = NULL,
  min_scale = 0,
  step = 1,
  num_steps = 1,
  step_nonlinearity = 1,
  log = TRUE,
  standardize = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
out_mag	Output raster magnitude file.
curv_type	Curvature type.
out_scale	Output raster scale file.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
num_steps	Number of steps.
step_nonlinearity	Step nonlinearity factor (1.0-2.0 is typical).
log	Display output values using a log-scale.
standardize	Should each scale be standardized to z-scores?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_multiscale_elevation_percentile`
Multiscale elevation percentile

Description

Calculates surface roughness over a range of spatial scales.

Usage

```
wbt_multiscale_elevation_percentile(
  dem,
  out_mag,
  out_scale,
  sig_digits = 3,
  min_scale = 4,
  step = 1,
  num_steps = 10,
  step_nonlinearity = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`dem`	Input raster DEM file.
`out_mag`	Output raster roughness magnitude file.
`out_scale`	Output raster roughness scale file.
`sig_digits`	Number of significant digits.
`min_scale`	Minimum search neighbourhood radius in grid cells.
`step`	Step size as any positive non-zero integer.
`num_steps`	Number of steps.

step_nonlinearity
: Step nonlinearity factor (1.0-2.0 is typical).

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_multiscale_roughness *Multiscale roughness*

Description

Calculates surface roughness over a range of spatial scales.

Usage

```
wbt_multiscale_roughness(
  dem,
  out_mag,
  out_scale,
  max_scale,
  min_scale = 1,
  step = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Input raster DEM file.

out_mag
: Output raster roughness magnitude file.

out_scale
: Output raster roughness scale file.

max_scale	Maximum search neighbourhood radius in grid cells.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_multiscale_roughness_signature

Multiscale roughness signature

Description

Calculates the surface roughness for points over a range of spatial scales.

Usage

```
wbt_multiscale_roughness_signature(
  dem,
  points,
  output,
  max_scale,
  min_scale = 1,
  step = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
points	Input vector points file.
output	Output HTML file.
max_scale	Maximum search neighbourhood radius in grid cells.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_multiscale_std_dev_normals

Multiscale std dev normals

Description

Calculates surface roughness over a range of spatial scales.

Usage

```
wbt_multiscale_std_dev_normals(
  dem,
  out_mag,
  out_scale,
  min_scale = 1,
  step = 1,
  num_steps = 10,
  step_nonlinearity = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
out_mag	Output raster roughness magnitude file.
out_scale	Output raster roughness scale file.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
num_steps	Number of steps.
step_nonlinearity	Step nonlinearity factor (1.0-2.0 is typical).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_multiscale_std_dev_normals_signature

Multiscale std dev normals signature

Description

Calculates the surface roughness for points over a range of spatial scales.

Usage

```
wbt_multiscale_std_dev_normals_signature(
  dem,
  points,
  output,
  min_scale = 1,
  step = 1,
  num_steps = 10,
  step_nonlinearity = 1,
  wd = NULL,
```

```
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
points	Input vector points file.
output	Output HTML file.
min_scale	Minimum search neighbourhood radius in grid cells.
step	Step size as any positive non-zero integer.
num_steps	Number of steps.
step_nonlinearity	Step nonlinearity factor (1.0-2.0 is typical).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_multiscale_topographic_position_image

Multiscale topographic position image

Description

Creates a multiscale topographic position image from three DEVmax rasters of differing spatial scale ranges.

Usage

```
wbt_multiscale_topographic_position_image(
  local,
  meso,
  broad,
  output,
  hillshade = NULL,
  lightness = 1.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`local`	Input local-scale topographic position (DEVmax) raster file.
`meso`	Input meso-scale topographic position (DEVmax) raster file.
`broad`	Input broad-scale topographic position (DEVmax) raster file.
`output`	Output raster file.
`hillshade`	Input optional hillshade raster file. Note: a multi-directional (360-degree option) hillshade tends to work best in this application.
`lightness`	Image lightness value (default is 1.2).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_narrowness_index *Narrowness index*

Description

Calculates the narrowness of raster polygons.

Usage

```
wbt_narrowness_index(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_natural_neighbour_interpolation

Natural neighbour interpolation

Description

Creates a raster grid based on Sibson's natural neighbour method.

Usage

```
wbt_natural_neighbour_interpolation(
  input,
  output,
  field = NULL,
  use_z = FALSE,
  cell_size = NULL,
  base = NULL,
  clip = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector points file.
output	Output raster file.
field	Input field name in attribute table.
use_z	Use the 'z' dimension of the Shapefile's geometry instead of an attribute field?.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
clip	Clip the data to the convex hull of the points?.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_nearest_neighbour_gridding

Nearest neighbour gridding

Description

Creates a raster grid based on a set of vector points and assigns grid values using the nearest neighbour.

Usage

```
wbt_nearest_neighbour_gridding(
  input,
  field,
  output,
  use_z = FALSE,
  cell_size = NULL,
  base = NULL,
  max_dist = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector Points file.
`field`	Input field name in attribute table.
`output`	Output raster file.
`use_z`	Use z-coordinate instead of field?.
`cell_size`	Optionally specified cell size of output raster. Not used when base raster is specified.
`base`	Optionally specified input base raster file. Not used when a cell size is specified.
`max_dist`	Maximum search distance (optional).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_negate *Negate*

Description

Changes the sign of values in a raster or the 0-1 values of a Boolean raster.

Usage

```
wbt_negate(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_new_raster_from_base *New raster from base*

Description

Creates a new raster using a base image.

Usage

```
wbt_new_raster_from_base(
  base,
  output,
  value = "nodata",
  data_type = "float",
  cell_size = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base	Input base raster file.
output	Output raster file.
value	Constant value to fill raster with; either 'nodata' or numeric value.
data_type	Output raster data type; options include 'double' (64-bit), 'float' (32-bit), and 'integer' (signed 16-bit) (default is 'float').
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_normal_vectors *Normal vectors*

Description

Calculates normal vectors for points within a LAS file and stores these data (XYZ vector components) in the RGB field.

Usage

```
wbt_normal_vectors(
  input,
  output,
  radius = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input LiDAR file.
`output`	Output LiDAR file.
`radius`	Search Radius.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_normalize_lidar *Normalize lidar*

Description

Normalizes a LiDAR point cloud.

Usage

```
wbt_normalize_lidar(
  input,
  output,
  dtm,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR file.
output	Name of the output LiDAR file.
dtm	Name of the input digital terrain model (DTM) raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_normalized_difference_index

Normalized difference index

Description

Calculate a normalized-difference index (NDI) from two bands of multispectral image data.

Usage

```
wbt_normalized_difference_index(
  input1,
  input2,
  output,
  clip = 0,
  correction = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input image 1 (e.g. near-infrared band).
input2	Input image 2 (e.g. red band).
output	Output raster file.
clip	Optional amount to clip the distribution tails by, in percent.
correction	Optional adjustment value (e.g. 1, or 0.16 for the optimal soil adjusted vegetation index, OSAVI).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_not *Not*

Description

Performs a logical NOT operator on two Boolean raster images.

Usage

```
wbt_not(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_not_equal_to *Not equal to*

Description

Performs a not-equal-to comparison operation on two rasters or a raster and a constant value.

Usage

```
wbt_not_equal_to(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_num_downslope_neighbours

Num downslope neighbours

Description

Calculates the number of downslope neighbours to each grid cell in a DEM.

Usage

```
wbt_num_downslope_neighbours(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_num_inflowing_neighbours
Num inflowing neighbours

Description

Computes the number of inflowing neighbours to each cell in an input DEM based on the D8 algorithm.

Usage

```
wbt_num_inflowing_neighbours(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_num_upslope_neighbours

Num upslope neighbours

Description

Calculates the number of upslope neighbours to each grid cell in a DEM.

Usage

```
wbt_num_upslope_neighbours(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_olympic_filter *Olympic filter*

Description

Performs an olympic smoothing filter on an image.

Usage

```
wbt_olympic_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_opening *Opening*

Description

An opening is a mathematical morphology operation involving a dilation (max filter) of an erosion (min filter) set.

Usage

```
wbt_opening(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_openness *Openness*

Description

This tool calculates the topographic openness index from an input DEM.

Usage

```
wbt_openness(
  input,
  pos_output,
  neg_output,
  dist = 20,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster DEM file.
pos_output	Name of the positive openness output raster file.
neg_output	Name of the negative openness output raster file.
dist	Search distance, in grid cells.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_or *Or*

Description

Performs a logical OR operator on two Boolean raster images.

Usage

```
wbt_or(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_paired_sample_t_test

Paired sample t test

Description

Performs a 2-sample K-S test for significant differences on two input rasters.

Usage

```
wbt_paired_sample_t_test(
  input1,
  input2,
  output,
  num_samples = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	First input raster file.
input2	Second input raster file.
output	Output HTML file.
num_samples	Number of samples. Leave blank to use whole image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_panchromatic_sharpening

Panchromatic sharpening

Description

Increases the spatial resolution of image data by combining multispectral bands with panchromatic data.

Usage

```
wbt_panchromatic_sharpening(
  pan,
  output,
  red = NULL,
  green = NULL,
  blue = NULL,
  composite = NULL,
  method = "brovey",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

pan	Input panchromatic band file.
output	Output colour composite file.
red	Input red band image file. Optionally specified if colour-composite not specified.
green	Input green band image file. Optionally specified if colour-composite not specified.
blue	Input blue band image file. Optionally specified if colour-composite not specified.
composite	Input colour-composite image file. Only used if individual bands are not specified.
method	Options include 'brovey' (default) and 'ihs'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_parallelepiped_classification

Parallelepiped classification

Description

Performs a supervised parallelepiped classification using training site polygons and multi-spectral images.

Usage

```
wbt_parallelepiped_classification(
  inputs,
  polys,
  field,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs
: Name of the input band images.

polys
: Name of the input training site polygons shapefile.

field
: Name of the attribute containing class name data.

output
: Name of the output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_patch_orientation *Patch orientation*

Description

Calculates the orientation of vector polygons.

Usage

```
wbt_patch_orientation(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector polygon file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_pennock_landform_class

Pennock landform class

Description

Classifies hillslope zones based on slope, profile curvature, and plan curvature.

Usage

```
wbt_pennock_landform_class(
  dem,
  output,
  slope = 3,
  prof = 0.1,
  plan = 0,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
slope	Slope threshold value, in degrees (default is 3.0).
prof	Profile curvature threshold value (default is 0.1).
plan	Plan curvature threshold value (default is 0.0).
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_percent_elev_range

Percent elev range

Description

Calculates percent of elevation range from a DEM.

Usage

```
wbt_percent_elev_range(
  dem,
  output,
  filterx = 3,
  filtery = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_percent_equal_to *Percent equal to*

Description

Calculates the percentage of a raster stack that have cell values equal to an input on a cell-by-cell basis.

Usage

```
wbt_percent_equal_to(
  inputs,
  comparison,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input raster file paths, concatenated with `","` or `";"`. See `wbt_file_path()` for details.
`comparison`	Input comparison raster file.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_percent_greater_than *Percent greater than*

Description

Calculates the percentage of a raster stack that have cell values greater than an input on a cell-by-cell basis.

Usage

```
wbt_percent_greater_than(
  inputs,
  comparison,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
comparison	Input comparison raster file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_percent_less_than *Percent less than*

Description

Calculates the percentage of a raster stack that have cell values less than an input on a cell-by-cell basis.

Usage

```
wbt_percent_less_than(
  inputs,
  comparison,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
comparison	Input comparison raster file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_percentage_contrast_stretch

Percentage contrast stretch

Description

Performs a percentage linear contrast stretch on input images.

Usage

```
wbt_percentage_contrast_stretch(
  input,
  output,
  clip = 1,
  tail = "both",
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See `wbt_file_path()` for details.
output	Output raster file.
clip	Optional amount to clip the distribution tails by, in percent.
tail	Specified which tails to clip; options include 'upper', 'lower', and 'both' (default is 'both').
num_tones	Number of tones in the output image.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_percentile_filter *Percentile filter*

Description

Performs a percentile filter on an input image.

Usage

```
wbt_percentile_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  sig_digits = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
sig_digits	Number of significant digits.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_perimeter_area_ratio *Perimeter area ratio*

Description

Calculates the perimeter-area ratio of vector polygons.

Usage

```
wbt_perimeter_area_ratio(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_phi_coefficient *Phi coefficient*

Description

This tool performs a binary classification accuracy assessment.

Usage

```
wbt_phi_coefficient(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Name of the first input raster image file.
input2	Name of the second input raster image file.
output	Name of the output HTML file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_pick_from_list *Pick from list*

Description

Outputs the value from a raster stack specified by a position raster.

Usage

```
wbt_pick_from_list(
  inputs,
  pos_input,
  output,
```

```
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
pos_input	Input position raster file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_piecewise_contrast_stretch

Piecewise contrast stretch

Description

Performs a piecewise contrast stretch on an input image.

Usage

```
wbt_piecewise_contrast_stretch(
  input,
  output,
  FUN = "",
  greytones = 1024,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input raster image file.
`output`	Name of the output raster image file.
`FUN`	Piecewise break-points e.g. '(50, 0.1); (150, 0.8); (255; 1.0).
`greytones`	Number of greytones in the output image.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_plan_curvature *Plan curvature*

Description

Calculates a plan (contour) curvature raster from an input DEM.

Usage

```
wbt_plan_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_polygon_area *Polygon area*

Description

Calculates the area of vector polygons.

Usage

```
wbt_polygon_area(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_polygon_long_axis *Polygon long axis*

Description

Used to map the long axis of polygon features.

Usage

```
wbt_polygon_long_axis(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector polygons file.

output
: Output vector polyline file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_polygon_perimeter *Polygon perimeter*

Description

Calculates the perimeter of vector polygons.

Usage

```
wbt_polygon_perimeter(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector polygon file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_polygon_short_axis *Polygon short axis*

Description

Used to map the short axis of polygon features.

Usage

```
wbt_polygon_short_axis(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygons file.
output	Output vector polyline file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_polygonize *Polygonize*

Description

Creates a polygon layer from two or more intersecting line features contained in one or more input vector line files.

Usage

```
wbt_polygonize(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input vector polyline file.
output	Output vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_polygons_to_lines *Polygons to lines*

Description

Converts vector polygons to polylines.

Usage

```
wbt_polygons_to_lines(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
output	Output vector lines file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_power *Power*

Description

Raises the values in grid cells of one rasters, or a constant value, by values in another raster or constant value.

Usage

```
wbt_power(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_prewitt_filter *Prewitt filter*

Description

Performs a Prewitt edge-detection filter on an image.

Usage

```
wbt_prewitt_filter(
  input,
  output,
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
clip	Optional amount to clip the distribution tails by, in percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_principal_component_analysis

Principal component analysis

Description

Performs a principal component analysis (PCA) on a multi-spectral dataset.

Usage

```
wbt_principal_component_analysis(
  inputs,
  output,
  num_comp = NULL,
  standardized = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input raster file paths, concatenated with `","` or `";"`. See `wbt_file_path()` for details.
`output`	Output HTML report file.
`num_comp`	Number of component images to output; <= to num. input images.
`standardized`	Perform standardized PCA?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_print_geo_tiff_tags *Print geo tiff tags*

Description

Prints the tags within a GeoTIFF.

Usage

```
wbt_print_geo_tiff_tags(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input GeoTIFF file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_profile *Profile*

Description

Plots profiles from digital surface models.

Usage

```
wbt_profile(
  lines,
  surface,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

lines	Input vector line file.
surface	Input raster surface file.
output	Output HTML file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_profile_curvature *Profile curvature*

Description

Calculates a profile curvature raster from an input DEM.

Usage

```
wbt_profile_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_qin_flow_accumulation
Qin flow accumulation

Description

Calculates Qin et al. (2007) flow accumulation.

Usage

```
wbt_qin_flow_accumulation(
  dem,
  output,
  out_type = "specific contributing area",
  exponent = 10,
  max_slope = 45,
  threshold = NULL,
  log = FALSE,
  clip = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file; must be depressionless.
output	Name of the output raster file.
out_type	Output type; one of 'cells', 'specific contributing area' (default), and 'catchment area'.
exponent	Optional upper-bound exponent parameter; default is 10.0.
max_slope	Optional upper-bound slope parameter, in degrees (0-90); default is 45.0.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
log	Log-transform the output values?.
clip	Optional flag to request clipping the display max by 1 percent.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_quantiles` *Quantiles*

Description

Transforms raster values into quantiles.

Usage

```
wbt_quantiles(
  input,
  output,
  num_quantiles = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See `wbt_file_path()` for details.
output	Output raster file.
num_quantiles	Number of quantiles.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_quinn_flow_accumulation

Quinn flow accumulation

Description

Calculates Quinn et al. (1995) flow accumulation.

Usage

```
wbt_quinn_flow_accumulation(
  dem,
  output,
  out_type = "specific contributing area",
  exponent = 1,
  threshold = NULL,
  log = FALSE,
  clip = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input DEM raster file; must be depressionless.
output	Name of the output raster file.
out_type	Output type; one of 'cells', 'specific contributing area' (default), and 'catchment area'.
exponent	Optional exponent parameter; default is 1.0.
threshold	Optional convergence threshold parameter, in grid cells; default is infinity.
log	Log-transform the output values?.
clip	Optional flag to request clipping the display max by 1 percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_radial_basis_function_interpolation

Radial basis function interpolation

Description

Interpolates vector points into a raster surface using a radial basis function scheme.

Usage

```
wbt_radial_basis_function_interpolation(
  input,
  field,
  output,
  use_z = FALSE,
  radius = NULL,
  min_points = NULL,
  func_type = "ThinPlateSpline",
  poly_order = "none",
  weight = 0.1,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector points file.
field	Input field name in attribute table.
output	Output raster file.
use_z	Use z-coordinate instead of field?.
radius	Search Radius (in map units).
min_points	Minimum number of points.
func_type	Radial basis function type; options are 'ThinPlateSpline' (default), 'PolyHarmonic', 'Gaussian', 'MultiQuadric', 'InverseMultiQuadric'.
poly_order	Polynomial order; options are 'none' (default), 'constant', 'affine'.
weight	Weight parameter used in basis function.

cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_radius_of_gyration *Radius of gyration*

Description

Calculates the distance of cells from their polygon's centroid.

Usage

```
wbt_radius_of_gyration(
  input,
  output,
  text_output = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
text_output	Optional text output.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raise_walls *Raise walls*

Description

Raises walls in a DEM along a line or around a polygon, e.g. a watershed.

Usage

```
wbt_raise_walls(
  input,
  dem,
  output,
  breach = NULL,
  height = 100,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector lines or polygons file.
dem	Input raster DEM file.
output	Output raster file.
breach	Optional input vector breach lines.
height	Wall height.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_random_field *Random field*

Description

Creates an image containing random values.

Usage

```
wbt_random_field(
  base,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_random_forest_classification

Random forest classification

Description

Performs a supervised random forest classification using training site polygons/points and predictor rasters.

Usage

```
wbt_random_forest_classification(
  inputs,
  training,
  field,
  output = NULL,
  split_criterion = "Gini",
  n_trees = 500,
  min_samples_leaf = 1,
  min_samples_split = 2,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Names of the input predictor rasters.
`training`	Name of the input training site polygons/points shapefile.
`field`	Name of the attribute containing class data.
`output`	Name of the output raster file.
`split_criterion`	Split criterion to use when building a tree. Options include 'Gini', 'Entropy', and 'ClassificationError'.
`n_trees`	The number of trees in the forest.
`min_samples_leaf`	The minimum number of samples required to be at a leaf node.
`min_samples_split`	The minimum number of samples required to split an internal node.

test_proportion
: The proportion of the dataset to include in the test split; default is 0.2.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_random_forest_regression *Random forest regression*

Description

Performs a random forest regression analysis using training site data and predictor rasters.

Usage

```
wbt_random_forest_regression(
  inputs,
  training,
  field,
  output = NULL,
  n_trees = 100,
  min_samples_leaf = 1,
  min_samples_split = 2,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

- `inputs` — Names of the input predictor rasters.
- `training` — Name of the input training site points shapefile.
- `field` — Name of the attribute containing response variable name data.
- `output` — Name of the output raster file. This parameter is optional. When unspecified, the tool will only build the model. When specified, the tool will use the built model and predictor rasters to perform a spatial prediction.
- `n_trees` — The number of trees in the forest.
- `min_samples_leaf` — The minimum number of samples required to be at a leaf node.
- `min_samples_split` — The minimum number of samples required to split an internal node.
- `test_proportion` — The proportion of the dataset to include in the test split; default is 0.2.
- `wd` — Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
- `verbose_mode` — Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
- `compress_rasters` — Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
- `command_only` — Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_random_sample *Random sample*

Description

Creates an image containing randomly located sample grid cells with unique IDs.

Usage

```
wbt_random_sample(
  base,
  output,
  num_samples = 1000,
  wd = NULL,
```

```
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
num_samples	Number of samples.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_range_filter *Range filter*

Description

Assigns each cell in the output grid the range of values in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_range_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_area *Raster area*

Description

Calculates the area of polygons or classes within a raster image.

Usage

```
wbt_raster_area(
  input,
  output = NULL,
  out_text = FALSE,
  units = "grid cells",
  zero_back = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
out_text	Would you like to output polygon areas to text?.
units	Area units; options include 'grid cells' and 'map units'.
zero_back	Flag indicating whether zero values should be treated as a background.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_calculator *Raster calculator*

Description

Performs a complex mathematical operations on one or more input raster images on a cell-to-cell basis.

Usage

```
wbt_raster_calculator(
  output,
  statement = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

output	Name of the output raster file.
statement	Statement e.g. cos("raster1") * 35.0 + "raster2". This statement must be a valid Rust statement.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_cell_assignment *Raster cell assignment*

Description

Assign row or column number to cells.

Usage

```
wbt_raster_cell_assignment(
  input,
  output,
  assign = "column",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.

assign	Which variable would you like to assign to grid cells? Options include 'column', 'row', 'x', and 'y'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_histogram *Raster histogram*

Description

Creates a histogram from raster values.

Usage

```
wbt_raster_histogram(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output HTML file (default name will be based on input file if unspecified).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_perimeter *Raster perimeter*

Description

Calculates the perimeters of polygons or classes within a raster image.

Usage

```
wbt_raster_perimeter(
  input,
  output = NULL,
  out_text = FALSE,
  units = "grid cells",
  zero_back = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

out_text
: Would you like to output polygon areas to text?.

units
: Area units; options include 'grid cells' and 'map units'.

zero_back
: Flag indicating whether zero values should be treated as a background.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_raster_streams_to_vector *Raster streams to vector*

Description

Converts a raster stream file into a vector file.

Usage

```
wbt_raster_streams_to_vector(
  streams,
  d8_pntr,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

streams
: Input raster streams file.

d8_pntr
: Input raster D8 pointer file.

output
: Output vector file.

esri_pntr
: D8 pointer uses the ESRI style scheme.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_raster_summary_stats`
Raster summary stats

Description

Measures a rasters min, max, average, standard deviation, num. non-nodata cells, and total.

Usage

```
wbt_raster_summary_stats(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input Input raster file path. See `wbt_file_path()` for details.

wd Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_raster_to_vector_lines

Raster to vector lines

Description

Converts a raster lines features into a vector of the POLYLINE shapetype.

Usage

```
wbt_raster_to_vector_lines(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster lines file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_raster_to_vector_points
Raster to vector points

Description

Converts a raster dataset to a vector of the POINT shapetype.

Usage

```
wbt_raster_to_vector_points(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output vector points file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_raster_to_vector_polygons

Raster to vector polygons

Description

Converts a raster dataset to a vector of the POLYGON shapetype.

Usage

```
wbt_raster_to_vector_polygons(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output vector polygons file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_rasterize_streams *Rasterize streams*

Description

Rasterizes vector streams based on Lindsay (2016) method.

Usage

```
wbt_rasterize_streams(
  streams,
  base,
  output,
  nodata = TRUE,
  feature_id = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

streams	Input vector streams file.
base	Input base raster file.
output	Output raster file.
nodata	Use NoData value for background?.
feature_id	Use feature number as output value?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_reciprocal *Reciprocal*

Description

Returns the reciprocal (i.e. 1 / z) of values in a raster.

Usage

```
wbt_reciprocal(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_reclass *Reclass*

Description

Reclassifies the values in a raster image.

Usage

```
wbt_reclass(
  input,
  output,
  reclass_vals,
  assign_mode = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
reclass_vals	Reclassification triplet values (new value; from value; to less than), e.g. '0.0;0.0;1.0;1.0;1.0;2.0'.
assign_mode	Optional Boolean flag indicating whether to operate in assign mode, reclass_vals values are interpreted as new value; old value pairs.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_reclass_equal_interval

Reclass equal interval

Description

Reclassifies the values in a raster image based on equal-ranges.

Usage

```
wbt_reclass_equal_interval(
  input,
  output,
  interval = 10,
  start_val = NULL,
  end_val = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
interval	Class interval size.
start_val	Optional starting value (default is input minimum value).
end_val	Optional ending value (default is input maximum value).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_reclass_from_file *Reclass from file*

Description

Reclassifies the values in a raster image using reclass ranges in a text file.

Usage

```
wbt_reclass_from_file(
  input,
  reclass_file,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
reclass_file	Input text file containing reclass ranges.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_reconcile_multiple_headers
Reconcile multiple headers

Description

This tool adjusts the crop yield values for data sets collected with multiple headers or combines.

Usage

```
wbt_reconcile_multiple_headers(
  input,
  region_field,
  yield_field,
  output,
  radius = NULL,
  min_yield = NULL,
  max_yield = NULL,
  mean_tonnage = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input points shapefile.
region_field	Name of the attribute containing region data.
yield_field	Name of the attribute containing yield data.
output	Name of the output points shapefile.
radius	Optional search radius, in metres. Only specify this value if you want to calculate locally normalized yield.
min_yield	Minimum yield value in output.
max_yield	Maximum yield value in output.
mean_tonnage	Use this optional parameter to force the output to have a certain overall average tonnage.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_recover_flightline_info`
Recover flightline info

Description

Associates LiDAR points by their flightlines.

Usage

```
wbt_recover_flightline_info(
  input,
  output,
  max_time_diff = 5,
  pt_src_id = FALSE,
  user_data = FALSE,
  rgb = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input LiDAR points.
`output`	Name of the output LiDAR points.
`max_time_diff`	Maximum in-flightline time difference (seconds).
`pt_src_id`	Add flightline information to the point source ID.
`user_data`	Add flightline information to the user data.
`rgb`	Add flightline information to the RGB colour data.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_recreate_pass_lines *Recreate pass lines*

Description

This tool can be used to approximate the harvester pass lines from yield points.

Usage

```
wbt_recreate_pass_lines(
  input,
  yield_field_name,
  output_lines,
  output_points,
  max_change_in_heading = 25,
  ignore_zeros = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Name of the input points shapefile.

yield_field_name
: Name of the attribute containing yield data.

output_lines
: Name of the output pass lines shapefile.

output_points
: Name of the output points shapefile.

max_change_in_heading
: Max change in heading.

ignore_zeros	Ignore zero-valued yield points?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_reinitialize_attribute_table

Reinitialize attribute table

Description

Reinitializes a vector's attribute table deleting all fields but the feature ID (FID).

Usage

```
wbt_reinitialize_attribute_table(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_related_circumscribing_circle` *Related circumscribing circle*

Description

Calculates the related circumscribing circle of vector polygons.

Usage

```
wbt_related_circumscribing_circle(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input Input vector polygon file.

wd Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

command_only Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_relative_aspect *Relative aspect*

Description

Calculates relative aspect (relative to a user-specified direction) from an input DEM.

Usage

```
wbt_relative_aspect(
  dem,
  output,
  azimuth = 0,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
azimuth	Illumination source azimuth.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_relative_topographic_position

Relative topographic position

Description

Calculates the relative topographic position index from a DEM.

Usage

```
wbt_relative_topographic_position(
  dem,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_field_edge_points

Remove field edge points

Description

This tool can be used to remove, or flag, most of the points along the edges from a crop yield data set.

Usage

```
wbt_remove_field_edge_points(
  input,
  output,
  dist = NULL,
  max_change_in_heading = 25,
  flag_edges = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input points shapefile.
output	Name of the output points shapefile.
dist	Average distance between passes, in meters.
max_change_in_heading	Max change in heading.
flag_edges	Don't remove edge points, just flag them in the attribute table?.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_off_terrain_objects

Remove off terrain objects

Description

Removes off-terrain objects from a raster digital elevation model (DEM).

Usage

```
wbt_remove_off_terrain_objects(
  dem,
  output,
  filter = 11,
  slope = 15,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filter	Filter size (cells).
slope	Slope threshold value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_polygon_holes

Remove polygon holes

Description

Removes holes within the features of a vector polygon file.

Usage

```
wbt_remove_polygon_holes(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
output	Output vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_raster_polygon_holes

Remove raster polygon holes

Description

Removes polygon holes, or 'donut-holes', from raster polygons.

Usage

```
wbt_remove_raster_polygon_holes(
  input,
  output,
  threshold = 3,
  use_diagonals = TRUE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster image file.
output	Name of the output raster file.
threshold	Maximum size of removed holes, in grid cells. Blank for no threshold, i.e. remove all holes.
use_diagonals	Use diagonal neighbours during clumping operation.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_short_streams

Remove short streams

Description

Removes short first-order streams from a stream network.

Usage

```
wbt_remove_short_streams(
  d8_pntr,
  streams,
  output,
  min_length,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
min_length	Minimum tributary length (in map units) used for network pruning.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_remove_spurs *Remove spurs*

Description

Removes the spurs (pruning operation) from a Boolean line image; intended to be used on the output of the LineThinning tool.

Usage

```
wbt_remove_spurs(
  input,
  output,
  iterations = 10,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`iterations`	Maximum number of iterations.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_repair_stream_vector_topology

Repair stream vector topology

Description

This tool resolves topological errors and inconsistencies associated with digitized vector streams.

Usage

```
wbt_repair_stream_vector_topology(
  input,
  output,
  dist = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input lines vector file.
output	Name of the output lines vector file.
dist	Snap distance, in xy units (metres).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_resample *Resample*

Description

Resamples one or more input images into a destination image.

Usage

```
wbt_resample(
  inputs,
  output,
  cell_size = NULL,
  base = NULL,
  method = "cc",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
method	Resampling method; options include 'nn' (nearest neighbour), 'bilinear', and 'cc' (cubic convolution).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_rescale_value_range

Rescale value range

Description

Performs a min-max contrast stretch on an input greytone image.

Usage

```
wbt_rescale_value_range(
  input,
  output,
  out_min_val,
  out_max_val,
  clip_min = NULL,
  clip_max = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
out_min_val	New minimum value in output image.
out_max_val	New maximum value in output image.
clip_min	Optional lower tail clip value.
clip_max	Optional upper tail clip value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_rgb_to_ihs *Rgb to ihs*

Description

Converts red, green, and blue (RGB) images into intensity, hue, and saturation (IHS) images.

Usage

```
wbt_rgb_to_ihs(
  intensity,
  hue,
  saturation,
  red = NULL,
  green = NULL,
  blue = NULL,
  composite = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

intensity	Output intensity raster file.
hue	Output hue raster file.
saturation	Output saturation raster file.
red	Input red band image file. Optionally specified if colour-composite not specified.
green	Input green band image file. Optionally specified if colour-composite not specified.
blue	Input blue band image file. Optionally specified if colour-composite not specified.
composite	Input colour-composite image file. Only used if individual bands are not specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_rho8_flow_accumulation`
Rho8 flow accumulation

Description

Calculates Fairfield and Leymarie (1991) flow accumulation.

Usage

```
wbt_rho8_flow_accumulation(
  input,
  output,
  out_type = "specific contributing area",
  log = FALSE,
  clip = FALSE,
  pntr = FALSE,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input DEM or Rho8 pointer file; if a DEM is used, it must be depressionless.
output	Name of the output raster file.
out_type	Output type; one of 'cells', 'specific contributing area' (default), and 'catchment area'.
log	Log-transform the output values?.
clip	Optional flag to request clipping the display max by 1 percent.
pntr	Is the input raster a Rho8 flow pointer rather than a DEM?.
esri_pntr	Does the input Rho8 pointer use the ESRI style scheme?.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_rho8_pointer *Rho8 pointer*

Description

Calculates a stochastic Rho8 flow pointer raster from an input DEM.

Usage

```
wbt_rho8_pointer(
  dem,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Input raster DEM file.

output
: Output raster file.

esri_pntr
: D8 pointer uses the ESRI style scheme.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_ring_curvature *Ring curvature*

Description

This tool calculates ring curvature from an input DEM.

Usage

```
wbt_ring_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_river_centerlines *River centerlines*

Description

Maps river centerlines from an input water raster.

Usage

```
wbt_river_centerlines(
  input,
  output,
  min_length = 3,
  radius = 4,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster image file.
output	Name of the output vector lines file.
min_length	Minimum line length, in grid cells.
radius	Search radius for joining distant endnodes, in grid cells.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_roberts_cross_filter *Roberts cross filter*

Description

Performs a Robert's cross edge-detection filter on an image.

Usage

```
wbt_roberts_cross_filter(
  input,
  output,
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
clip	Optional amount to clip the distribution tails by, in percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_root_mean_square_error

Root mean square error

Description

Calculates the RMSE and other accuracy statistics.

Usage

```
wbt_root_mean_square_error(
  input,
  base,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
base	Input base raster file used for comparison.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_rotor *Rotor*

Description

This tool calculates rotor from an input DEM.

Usage

```
wbt_rotor(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_round *Round*

Description

Rounds the values in an input raster to the nearest integer value.

Usage

```
wbt_round(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_ruggedness_index *Ruggedness index*

Description

Calculates the Riley et al.'s (1999) terrain ruggedness index from an input DEM.

Usage

```
wbt_ruggedness_index(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_run_tool *Run a tool in 'WhiteboxTools' by name*

Description

Runs a tool and specifies tool arguments. If the prefix "whitebox::" or "wbt_" is in `tool_name` it is removed to match the definitions in `wbt_list_tools()`

Usage

```
wbt_run_tool(tool_name, args, verbose_mode = FALSE, command_only = FALSE)
```

Arguments

`tool_name`	The name of the tool to run.
`args`	Tool arguments.
`verbose_mode`	Verbose mode. Without this flag, tool outputs will not be printed.
`command_only`	Return command that would be run with `system()`? Default: `FALSE`

Value

Returns the (character) output of the tool.

See Also

wbt_list_tools

Examples

```
## Not run:
tool_name <- "breach_depressions"
dem <- system.file("extdata", "DEM.tif", package="whitebox")
output <- "./output.tif"
arg1 <- paste0("--dem=", dem)
arg2 <- paste0("--output=", output)
args <- paste(arg1, arg2)
wbt_run_tool(tool_name, args)

## End(Not run)
```

wbt_rust_backtrace — *Convenience method for setting RUST_BACKTRACE options for debugging*

Description

Convenience method for setting RUST_BACKTRACE options for debugging

Usage

```
wbt_rust_backtrace(RUST_BACKTRACE = c("0", "1", "full"))
```

Arguments

RUST_BACKTRACE	One of "0", "1", "full", Logical values are converted to integer and then character.

Value

value of system environment variable RUST_BACKTRACE

Examples

```
## Not run:
wbt_rust_backtrace(TRUE)

## End(Not run)
```

wbt_scharr_filter — *Scharr filter*

Description

Performs a Scharr edge-detection filter on an image.

Usage

```
wbt_scharr_filter(
  input,
  output,
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
clip	Optional amount to clip the distribution tails by, in percent.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_sediment_transport_index

Sediment transport index

Description

Calculates the sediment transport index.

Usage

```
wbt_sediment_transport_index(
  sca,
  slope,
  output,
  sca_exponent = 0.4,
  slope_exponent = 1.3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

sca	Input raster specific contributing area (SCA) file.
slope	Input raster slope file.
output	Output raster file.
sca_exponent	SCA exponent value.
slope_exponent	Slope exponent value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_select_tiles_by_polygon

Select tiles by polygon

Description

Copies LiDAR tiles overlapping with a polygon into an output directory.

Usage

```
wbt_select_tiles_by_polygon(
  indir,
  outdir,
  polygons,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

indir	Input LAS file source directory.
outdir	Output directory into which LAS files within the polygon are copied.
polygons	Input vector polygons file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_set_nodata_value *Set nodata value*

Description

Assign the NoData value for an input image.

Usage

```
wbt_set_nodata_value(
  input,
  output,
  back_value = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
back_value	Background value to set to nodata.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_shadow_animation *Shadow animation*

Description

This tool creates an animated GIF of shadows based on an input DEM.

Usage

```
wbt_shadow_animation(
  input,
  output,
  palette = "atlas",
  max_dist = "",
  date = "21/06/2021",
  interval = 15,
  location = "43.5448/-80.2482/-4",
  height = 600,
  delay = 250,
  label = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input digital surface model (DSM) raster file.
output	Name of the output HTML file (*.html).

palette — DSM image palette; options are 'atlas', 'high_relief', 'arid', 'soft', 'muted', 'light_quant', 'purple', 'viridis', 'gn_yl', 'pi_y_g', 'bl_yl_rd', 'deep', and 'none'.

max_dist — Optional maximum search distance, in xy units. Minimum value is 5 x cell size.

date — Date in format DD/MM/YYYY.

interval — Time interval, in minutes (1-60).

location — Location, defined as Lat/Long/UTC-offset (e.g. 43.5448/-80.2482/-4).

height — Image height, in pixels.

delay — GIF time delay in milliseconds.

label — Label text (leave blank for none).

wd — Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode — Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters — Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

command_only — Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_shadow_image` *Shadow image*

Description

This tool creates a raster of shadow areas based on an input DEM.

Usage

```
wbt_shadow_image(
  input,
  output,
  palette = "soft",
  max_dist = "",
  date = "21/06/2021",
  time = "13:00",
  location = "43.5448/-80.2482/-4",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input digital surface model (DSM) raster file.
output	Name of the output raster file.
palette	DSM image palette; options are 'atlas', 'high_relief', 'arid', 'soft', 'muted', 'light_quant', 'purple', 'viridi', 'gn_yl', 'pi_y_g', 'bl_yl_rd', 'deep', and 'none'.
max_dist	Optional maximum search distance, in xy unites. Minimum value is 5 x cell size.
date	Date in format DD/MM/YYYY.
time	Time in format HH::MM, e.g. 03:15AM or 14:30.
location	Location, defined as Lat/Long/UTC-offset (e.g. 43.5448/-80.2482/-4).
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
verbose_mode	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
command_only	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_shape_complexity_index

Shape complexity index

Description

Calculates overall polygon shape complexity or irregularity.

Usage

```
wbt_shape_complexity_index(
  input,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_shape_complexity_index_raster

Shape complexity index raster

Description

Calculates the complexity of raster polygons or classes.

Usage

```
wbt_shape_complexity_index_raster(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_shape_index *Shape index*

Description

This tool calculates the shape index from an input DEM.

Usage

```
wbt_shape_index(
  dem,
  output,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Name of the input raster DEM file.

output
: Name of the output raster image file.

zfactor
: Z conversion factor.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_shreve_stream_magnitude

Shreve stream magnitude

Description

Assigns the Shreve stream magnitude to each link in a stream network.

Usage

```
wbt_shreve_stream_magnitude(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`d8_pntr`	Input raster D8 pointer file.
`streams`	Input raster streams file.
`output`	Output raster file.
`esri_pntr`	D8 pointer uses the ESRI style scheme.
`zero_background`	Flag indicating whether a background value of zero should be used.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_sigmoidal_contrast_stretch

Sigmoidal contrast stretch

Description

Performs a sigmoidal contrast stretch on input images.

Usage

```
wbt_sigmoidal_contrast_stretch(
  input,
  output,
  cutoff = 0,
  gain = 1,
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
cutoff	Cutoff value between 0.0 and 0.95.
gain	Gain value.
num_tones	Number of tones in the output image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sin *Sin*

Description

Returns the sine (sin) of each values in a raster.

Usage

```
wbt_sin(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_single_part_to_multi_part
Single part to multi part

Description

Converts a vector file containing multi-part features into a vector containing only single-part features.

Usage

```
wbt_single_part_to_multi_part(
  input,
  output,
  field = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector line or polygon file.
output	Output vector line or polygon file.
field	Grouping ID field name in attribute table.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sinh *Sinh*

Description

Returns the hyperbolic sine (sinh) of each values in a raster.

Usage

```
wbt_sinh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sink *Sink*

Description

Identifies the depressions in a DEM, giving each feature a unique identifier.

Usage

```
wbt_sink(
  input,
  output,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster DEM file.
output	Output raster file.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_slope *Slope*

Description

Calculates a slope raster from an input DEM.

Usage

```
wbt_slope(
  dem,
  output,
  zfactor = NULL,
  units = "degrees",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
units	Units of output raster; options include 'degrees', 'radians', 'percent'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_slope_vs_aspect_plot *Slope vs aspect plot*

Description

This tool creates a slope-aspect relation plot from an input DEM.

Usage

```
wbt_slope_vs_aspect_plot(
  input,
  output,
  bin_size = 2,
  min_slope = 0.1,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input raster image file.
output	Name of the output report file (*.html).
bin_size	Aspect bin size, in degrees.
min_slope	Minimum slope, in degrees.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_slope_vs_elevation_plot

Slope vs elevation plot

Description

Creates a slope vs. elevation plot for one or more DEMs.

Usage

```
wbt_slope_vs_elevation_plot(
  inputs,
  output,
  watershed = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input DEM files.
`output`	Output HTML file (default name will be based on input file if unspecified).
`watershed`	Input watershed files (optional).
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_smooth_vectors *Smooth vectors*

Description

Smooths a vector coverage of either a POLYLINE or POLYGON base ShapeType.

Usage

```
wbt_smooth_vectors(
  input,
  output,
  filter = 3,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input vector POLYLINE or POLYGON file.
`output`	Output vector file.
`filter`	The filter size, any odd integer greater than or equal to 3; default is 3.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_smooth_vegetation_residual

Smooth vegetation residual

Description

This tool can smooth the residual roughness due to vegetation cover in LiDAR DEMs.

Usage

```
wbt_smooth_vegetation_residual(
  input,
  output,
  max_scale = 30,
  dev_threshold = 1,
  scale_threshold = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input digital elevation model (DEM) raster file.
output	Name of the output raster file.
max_scale	Maximum search neighbourhood radius in grid cells.
dev_threshold	DEVmax Threshold.
scale_threshold	DEVmax scale threshold.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_snap_pour_points *Snap pour points*

Description

Moves outlet points used to specify points of interest in a watershedding operation to the cell with the highest flow accumulation in its neighbourhood.

Usage

```
wbt_snap_pour_points(
  pour_pts,
  flow_accum,
  output,
  snap_dist,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

pour_pts	Input vector pour points (outlet) file.
flow_accum	Input raster D8 flow accumulation file.
output	Output vector file.
snap_dist	Maximum snap distance in map units.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sobel_filter *Sobel filter*

Description

Performs a Sobel edge-detection filter on an image.

Usage

```
wbt_sobel_filter(
  input,
  output,
  variant = "3x3",
  clip = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
variant	Optional variant value. Options include 3x3 and 5x5 (default is 3x3).
clip	Optional amount to clip the distribution tails by, in percent (default is 0.0).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sort_lidar *Sort lidar*

Description

Sorts LiDAR points based on their properties.

Usage

```
wbt_sort_lidar(
  input,
  output = NULL,
  criteria = "",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
output	Name of the output LiDAR points.
criteria	Sort criteria e.g. 'x 50.0, y 50.0, z'; criteria may include x, y, z, intensity, class, user_data, point_source_id, and scan_angle.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_source *Initialize an R object containing spatial data for use by WhiteboxTools*

Description

Initialize an R object containing spatial data for use by WhiteboxTools

Usage

```
wbt_source(
  x,
  dsn = NULL,
  layer = NULL,
  force = FALSE,
  tmpdir = tempdir(),
  pattern = "wbt",
  verbose = wbt_verbose(),
  ...
)
```

Arguments

x	A terra SpatVector or sf object (in memory) or a path to a file that can be read as a SpatVectorProxy. Or a memory or file-based SpatRaster. When x has multiple layers/bands, the first layer is used by default; use the layer argument to select a specific layer/band.
dsn	Data source path / file name
layer	Data layer. For vectors, layer is interpreted as a layer name (character); for rasters, layer is interpreted as a band index or name (integer OR character)
force	Force write of vector data to file? Default: FALSE (only write if file does not exist and new file is needed)
tmpdir	Directory to write temporary ESRI Shapefiles for vector input in memory or otherwise not already in shapefile. Default: tempdir()
pattern	Character vector giving the initial part of the temporary file name
verbose	Print information about data source and contents?
...	Additional arguments passed to terra::writeVector() or sf::st_write(), or terra::writeRaster (for rasters).

Value

An R object (SpatRaster, SpatVector, SpatVectorProxy, sf) with attributes wbt_dsn and wbt_layer set as needed to support reading and writing R objects from file by WhiteboxTools.

wbt_spherical_std_dev_of_normals

Spherical std dev of normals

Description

Calculates the spherical standard deviation of surface normals for a DEM.

Usage

```
wbt_spherical_std_dev_of_normals(
  dem,
  output,
  filter = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
filter	Size of the filter kernel.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_split_colour_composite

Split colour composite

Description

Splits an RGB colour composite image into separate multispectral images.

Usage

```
wbt_split_colour_composite(
  input,
  red = NULL,
  green = NULL,
  blue = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input colour composite image file.
`red`	Output red band file.
`green`	Output green band file.
`blue`	Output blue band file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_split_lidar *Split lidar*

Description

Splits LiDAR points up into a series of new files based on their properties.

Usage

```
wbt_split_lidar(
  input,
  criterion = "num_pts",
  interval = "",
  min_pts = 5,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input LiDAR points.
criterion	Criterion on which to base the split of the input file. Options include 'num_pts, 'x', 'y', 'z', intensity, 'class', 'user_data', 'point_source_id', 'scan_angle', 'time'.
interval	Interval.
min_pts	Minimum number of points in an output file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_split_vector_lines

Split vector lines

Description

Used to split a vector line coverage into even-lengthed segments.

Usage

```
wbt_split_vector_lines(
  input,
  output,
  length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input lines shapefile.
output	Name of the output lines shapefile.
length	Maximum segment length (m).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_split_with_lines *Split with lines*

Description

Splits the lines or polygons in one layer using the lines in another layer.

Usage

```
wbt_split_with_lines(
  input,
  split,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector line or polygon file.
split	Input vector polyline file.
output	Output vector file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_square *Square*

Description

Squares the values in a raster.

Usage

```
wbt_square(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_square_root *Square root*

Description

Returns the square root of the values in a raster.

Usage

```
wbt_square_root(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_standard_deviation_contrast_stretch

Standard deviation contrast stretch

Description

Performs a standard-deviation contrast stretch on input images.

Usage

```
wbt_standard_deviation_contrast_stretch(
  input,
  output,
  stdev = 2,
  num_tones = 256,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`stdev`	Standard deviation clip value.
`num_tones`	Number of tones in the output image.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_standard_deviation_filter

Standard deviation filter

Description

Assigns each cell in the output grid the standard deviation of values in a moving window centred on each grid cell in the input raster.

Usage

```
wbt_standard_deviation_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_standard_deviation_of_slope

Standard deviation of slope

Description

Calculates the standard deviation of slope from an input DEM.

Usage

```
wbt_standard_deviation_of_slope(
  input,
  output,
  zfactor = NULL,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster DEM file.
output	Output raster DEM file.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stochastic_depression_analysis

Stochastic depression analysis

Description

Performs a stochastic analysis of depressions within a DEM.

Usage

```
wbt_stochastic_depression_analysis(
  dem,
  output,
  rmse,
  range,
  iterations = 100,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output file.
rmse	The DEM's root-mean-square-error (RMSE), in z units. This determines error magnitude.
range	The error field's correlation length, in xy-units.
iterations	The number of iterations.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_strahler_order_basins

Strahler order basins

Description

Identifies Strahler-order basins from an input stream network.

Usage

```
wbt_strahler_order_basins(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_strahler_stream_order

Strahler stream order

Description

Assigns the Strahler stream order to each link in a stream network.

Usage

```
wbt_strahler_stream_order(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_link_class *Stream link class*

Description

Identifies the exterior/interior links and nodes in a stream network.

Usage

```
wbt_stream_link_class(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_link_identifier

Stream link identifier

Description

Assigns a unique identifier to each link in a stream network.

Usage

```
wbt_stream_link_identifier(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_link_length

Stream link length

Description

Estimates the length of each link (or tributary) in a stream network.

Usage

```
wbt_stream_link_length(
  d8_pntr,
  linkid,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
linkid	Input raster streams link ID (or tributary ID) file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_link_slope *Stream link slope*

Description

Estimates the average slope of each link (or tributary) in a stream network.

Usage

```
wbt_stream_link_slope(
  d8_pntr,
  linkid,
  dem,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
linkid	Input raster streams link ID (or tributary ID) file.
dem	Input raster DEM file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_power_index *Stream power index*

Description

Calculates the relative stream power index.

Usage

```
wbt_stream_power_index(
  sca,
  slope,
  output,
  exponent = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

sca	Input raster specific contributing area (SCA) file.
slope	Input raster slope file.
output	Output raster file.
exponent	SCA exponent value.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_stream_slope_continuous

Stream slope continuous

Description

Estimates the slope of each grid cell in a stream network.

Usage

```
wbt_stream_slope_continuous(
  d8_pntr,
  streams,
  dem,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
dem	Input raster DEM file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_subbasins *Subbasins*

Description

Identifies the catchments, or sub-basin, draining to each link in a stream network.

Usage

```
wbt_subbasins(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input D8 pointer raster file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_subtract *Subtract*

Description

Performs a differencing operation on two rasters or a raster and a constant value.

Usage

```
wbt_subtract(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file or constant value.
input2	Input raster file or constant value.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_sum_overlay *Sum overlay*

Description

Calculates the sum for each grid cell from a group of raster images.

Usage

```
wbt_sum_overlay(
  inputs,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs	Input raster file paths, concatenated with ",” or ";”. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_surface_area_ratio

Surface area ratio

Description

Calculates a the surface area ratio of each grid cell in an input DEM.

Usage

```
wbt_surface_area_ratio(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_svm_classification

Svm classification

Description

Performs an SVM binary classification using training site polygons/points and multiple input images.

Usage

```
wbt_svm_classification(
  inputs,
  training,
  field,
  scaling = "Normalize",
  output = NULL,
  c = 200,
  gamma = 50,
  tolerance = 0.1,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Names of the input predictor rasters.
`training`	Name of the input training site polygons/points Shapefile.
`field`	Name of the attribute containing class data.
`scaling`	Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.
`output`	Name of the output raster file.
`c`	c-value, the regularization parameter.
`gamma`	Gamma parameter used in setting the RBF (Gaussian) kernel function.
`tolerance`	The tolerance parameter used in determining the stopping condition.
`test_proportion`	The proportion of the dataset to include in the test split; default is 0.2.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_svm_regression` *Svm regression*

Description

Performs a supervised SVM regression analysis using training site points and predictor rasters.

Usage

```
wbt_svm_regression(
  inputs,
  training,
  field,
  scaling = "Normalize",
  output = NULL,
  c = 50,
  eps = 10,
  gamma = 0.5,
  test_proportion = 0.2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`
: Names of the input predictor rasters.

`training`
: Name of the input training site points Shapefile.

`field`
: Name of the attribute containing class data.

`scaling`
: Scaling method for predictors. Options include 'None', 'Normalize', and 'Standardize'.

`output`
: Name of the output raster file.

`c`
: c-value, the regularization parameter.

eps	Epsilon in the epsilon-SVR model.
gamma	Gamma parameter used in setting the RBF (Gaussian) kernel function.
test_proportion	The proportion of the dataset to include in the test split; default is 0.2.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_symmetrical_difference

Symmetrical difference

Description

Outputs the features that occur in one of the two vector inputs but not both, i.e. no overlapping features.

Usage

```
wbt_symmetrical_difference(
  input,
  overlay,
  output,
  snap = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
overlay	Input overlay vector file.
output	Output vector file.
snap	Snap tolerance.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_tan *Tan*

Description

Returns the tangent (tan) of each values in a raster.

Usage

```
wbt_tan(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_tangential_curvature *Tangential curvature*

Description

Calculates a tangential curvature raster from an input DEM.

Usage

```
wbt_tangential_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem
: Input raster DEM file.

output
: Output raster file.

log
: Display output values using a log-scale.

zfactor
: Optional multiplier for when the vertical and horizontal units are not the same.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_tanh *Tanh*

Description

Returns the hyperbolic tangent (tanh) of each values in a raster.

Usage

```
wbt_tanh(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_thicken_raster_line

Thicken raster line

Description

Thickens single-cell wide lines within a raster image.

Usage

```
wbt_thicken_raster_line(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Input raster file path. See `wbt_file_path()` for details.
`output`	Output raster file.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_time_in_daylight *Time in daylight*

Description

Calculates the proportion of time a location is not within an area of shadow.

Usage

```
wbt_time_in_daylight(
  dem,
  output,
  lat,
  long,
  az_fraction = 10,
  max_dist = 100,
  utc_offset = "00:00",
  start_day = 1,
  end_day = 365,
  start_time = "00:00:00",
  end_time = "23:59:59",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
lat	Centre point latitude.
long	Centre point longitude.
az_fraction	Azimuth fraction in degrees.
max_dist	Optional maximum search distance. Minimum value is 5 x cell size.
utc_offset	UTC time offset, in hours (e.g. -04:00, +06:00).
start_day	Start day of the year (1-365).
end_day	End day of the year (1-365).
start_time	Starting hour to track shadows (e.g. 5, 5:00, 05:00:00). Assumes 24-hour time: HH:MM:SS. 'sunrise' is also a valid time.
end_time	Ending hour to track shadows (e.g. 21, 21:00, 21:00:00). Assumes 24-hour time: HH:MM:SS. 'sunset' is also a valid time.
wd	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_tin_gridding *Tin gridding*

Description

Creates a raster grid based on a triangular irregular network (TIN) fitted to vector points.

Usage

```
wbt_tin_gridding(
  input,
  output,
  field = NULL,
  use_z = FALSE,
  resolution = NULL,
  base = NULL,
  max_triangle_edge_length = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector points file.

output
: Output raster file.

field
: Input field name in attribute table.

use_z
: Use the 'z' dimension of the Shapefile's geometry instead of an attribute field?.

resolution
: Output raster's grid resolution.

base
: Optionally specified input base raster file. Not used when a cell size is specified.

max_triangle_edge_length
: Optional maximum triangle edge length; triangles larger than this size will not be gridded.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_to_degrees *To degrees*

Description

Converts a raster from radians to degrees.

Usage

```
wbt_to_degrees(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_to_radians *To radians*

Description

Converts a raster from degrees to radians.

Usage

```
wbt_to_radians(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_tool_help — *Help description for a specific tool in 'WhiteboxTools'*

Description

Retrieves the help description for a specific tool.

Usage

```
wbt_tool_help(tool_name = NULL)
```

Arguments

tool_name	The name of the tool.

Details

Leaving tool_name as default NULL returns results for all tools, but does not work on Windows.

Value

Returns the help description for a specific tool.

Examples

```
## Not run:
wbt_tool_help("lidar_info")

## End(Not run)
```

wbt_tool_parameters — *Tool parameter descriptions for a specific tool in 'WhiteboxTools'*

Description

Retrieves the tool parameter descriptions for a specific tool.

Usage

```
wbt_tool_parameters(tool_name, quiet = FALSE)
```

Arguments

tool_name	The name of the tool.
quiet	Prevent tool output being printed. Default: FALSE

Details

`quiet` argument can be set to `TRUE` to allow for "quiet" internal use within other functions.

Value

Returns the tool parameter descriptions for a specific tool.

Examples

```
## Not run:
wbt_tool_parameters("lidar_info")

## End(Not run)
```

---

wbt_toolbox *The toolbox for a specific tool in WhiteboxTools*

Description

Retrieve the toolbox for a specific tool.

Usage

```
wbt_toolbox(tool_name = NULL)
```

Arguments

`tool_name`	The name of the tool.

Details

Leaving `tool_name` as default `NULL` returns results for all tools, but does not work on Windows.

Value

Returns the toolbox for a specific tool.

Examples

```
## Not run:
wbt_toolbox("breach_depressions")

## End(Not run)
```

wbt_tophat_transform *Tophat transform*

Description

Performs either a white or black top-hat transform on an input image.

Usage

```
wbt_tophat_transform(
  input,
  output,
  filterx = 11,
  filtery = 11,
  variant = "white",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
variant	Optional variant value. Options include 'white' and 'black'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_topo_render *Topo render*

Description

This tool creates a pseudo-3D rendering from an input DEM, for the purpose of effective topographic visualization.

Usage

```
wbt_topo_render(
  dem,
  output,
  palette = "soft",
  rev_palette = FALSE,
  az = 315,
  alt = 30,
  background_hgt_offset = 10,
  polygon = NULL,
  background_clr = "[255, 255, 255]",
  attenuation = 0.6,
  ambient_light = 0.2,
  z_factor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input digital elevation model (DEM) raster file.
output	Name of the output raster file.
palette	Palette name; options are 'atlas', 'high_relief', 'arid', 'soft', 'earthtones', 'muted', 'light_quant', 'purple', 'viridi', 'gn_yl', 'pi_y_g', 'bl_yl_rd', 'deep', 'imhof', and 'white'.
rev_palette	Reverse the palette?.
az	Light source azimuth direction (degrees, 0-360).
alt	Light source altitude (degrees, 0-90).
background_hgt_offset	Offset height of background, in z-units.
polygon	Clipping polygon vector file (optional).
background_clr	Background red-green-blue (RGB) or red-green-blue-alpha (RGBA) colour, e.g. '[255, 255, 245]','[255, 255, 245, 200]'.

attenuation	Attenuation parameter. Range is 0-4. Zero means no attenuation.
ambient_light	Ambient light parameter. Range is 0.0-0.7. Zero means no ambient light.
z_factor	Elevation multiplier, or a vertical exageration.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_topographic_position_animation

Topographic position animation

Description

This tool creates an animated GIF of multi-scale local topographic position (elevation deviation).

Usage

```
wbt_topographic_position_animation(
  input,
  output,
  palette = "bl_yl_rd",
  min_scale = 1,
  num_steps = 100,
  step_nonlinearity = 1.5,
  height = 600,
  delay = 250,
  label = "",
  dev_max = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input digital elevation model (DEM) raster file.
`output`	Name of the output HTML file (*.html).
`palette`	Image palette; options are 'bl_yl_rd', 'bl_w_rd', 'purple', 'gn_yl', 'pi_y_g', and 'viridis'.
`min_scale`	Minimum search neighbourhood radius in grid cells.
`num_steps`	Number of steps.
`step_nonlinearity`	Step nonlinearity factor (1.0-2.0 is typical).
`height`	Image height, in pixels.
`delay`	GIF time delay in milliseconds.
`label`	Label text (leave blank for none).
`dev_max`	Do you want to use DEVmax instead of DEV for measuring local topographic position?.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_topological_stream_order` *Topological stream order*

Description

Assigns each link in a stream network its topological order.

Usage

```
wbt_topological_stream_order(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_total_curvature *Total curvature*

Description

Calculates a total curvature raster from an input DEM.

Usage

```
wbt_total_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
log	Display output values using a log-scale.
zfactor	Optional multiplier for when the vertical and horizontal units are not the same.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_total_filter *Total filter*

Description

Performs a total filter on an input image.

Usage

```
wbt_total_filter(
  input,
  output,
  filterx = 11,
  filtery = 11,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
filterx	Size of the filter kernel in the x-direction.
filtery	Size of the filter kernel in the y-direction.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_trace_downslope_flowpaths

Trace downslope flowpaths

Description

Traces downslope flowpaths from one or more target sites (i.e. seed points).

Usage

```
wbt_trace_downslope_flowpaths(
  seed_pts,
  d8_pntr,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

seed_pts	Input vector seed points file.
d8_pntr	Input D8 pointer raster file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_travelling_salesman_problem

Travelling salesman problem

Description

Finds approximate solutions to travelling salesman problems, the goal of which is to identify the shortest route connecting a set of locations.

Usage

```
wbt_travelling_salesman_problem(
  input,
  output,
  duration = 60,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input points shapefile.
output	Name of the output lines shapefile.
duration	Maximum duration, in seconds.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_trend_surface *Trend surface*

Description

Estimates the trend surface of an input raster file.

Usage

```
wbt_trend_surface(
  input,
  output,
  order = 1,
```

```
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
order	Polynomial order (1 to 10).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_trend_surface_vector_points

Trend surface vector points

Description

Estimates a trend surface from vector points.

Usage

```
wbt_trend_surface_vector_points(
  input,
  field,
  output,
  cell_size,
  order = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector Points file.
field	Input field name in attribute table.
output	Output raster file.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
order	Polynomial order (1 to 10).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_tributary_identifier

Tributary identifier

Description

Assigns a unique identifier to each tributary in a stream network.

Usage

```
wbt_tributary_identifier(
  d8_pntr,
  streams,
  output,
  esri_pntr = FALSE,
  zero_background = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input raster D8 pointer file.
streams	Input raster streams file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
zero_background	Flag indicating whether a background value of zero should be used.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_truncate *Truncate*

Description

Truncates the values in a raster to the desired number of decimal places.

Usage

```
wbt_truncate(
  input,
  output,
  num_decimals = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
num_decimals	Number of decimals left after truncation (default is zero).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_turning_bands_simulation

Turning bands simulation

Description

Creates an image containing random values based on a turning-bands simulation.

Usage

```
wbt_turning_bands_simulation(
  base,
  output,
  range,
  iterations = 1000,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

base	Input base raster file.
output	Output file.
range	The field's range, in xy-units, related to the extent of spatial autocorrelation.
iterations	The number of iterations.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_two_sample_ks_test

Two sample ks test

Description

Performs a 2-sample K-S test for significant differences on two input rasters.

Usage

```
wbt_two_sample_ks_test(
  input1,
  input2,
  output,
  num_samples = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	First input raster file.
input2	Second input raster file.
output	Output HTML file.
num_samples	Number of samples. Leave blank to use whole image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_union *Union*

Description

Splits vector layers at their overlaps, creating a layer containing all the portions from both input and overlay layers.

Usage

```
wbt_union(
  input,
  overlay,
  output,
  snap = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector file path. See wbt_file_path() for details.
overlay	Input overlay vector file.
output	Output vector file.
snap	Snap tolerance.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_unnest_basins *Unnest basins*

Description

Extract whole watersheds for a set of outlet points.

Usage

```
wbt_unnest_basins(
  d8_pntr,
  pour_pts,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr	Input D8 pointer raster file.
pour_pts	Input vector pour points (outlet) file.
output	Output raster file.
esri_pntr	D8 pointer uses the ESRI style scheme.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_unsharp_masking *Unsharp masking*

Description

An image sharpening technique that enhances edges.

Usage

```
wbt_unsharp_masking(
  input,
  output,
  sigma = 0.75,
  amount = 100,
  threshold = 0,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
sigma	Standard deviation distance in pixels.
amount	A percentage and controls the magnitude of each overshoot.
threshold	Controls the minimal brightness change that will be sharpened.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_unsphericity *Unsphericity*

Description

This tool calculates the unsphericity curvature from an input DEM.

Usage

```
wbt_unsphericity(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_update_nodata_cells

Update nodata cells

Description

Replaces the NoData values in an input raster with the corresponding values contained in a second update layer.

Usage

```
wbt_update_nodata_cells(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file 1.
input2	Input raster file 2; update layer.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_upslope_depression_storage

Upslope depression storage

Description

Estimates the average upslope depression storage depth.

Usage

```
wbt_upslope_depression_storage(
  dem,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_user_defined_weights_filter

User ined weights filter

Description

Performs a user-defined weights filter on an image.

Usage

```
wbt_user_defined_weights_filter(
  input,
  weights,
  output,
  center = "center",
  normalize = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

weights
: Input weights file.

output
: Output raster file.

center
: Kernel center cell; options include 'center', 'upper-left', 'upper-right', 'lower-left', 'lower-right'.

normalize
: Normalize kernel weights? This can reduce edge effects and lessen the impact of data gaps (nodata) but is not suited when the kernel weights sum to zero.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_vector_hex_binning *Vector hex binning*

Description

Hex-bins a set of vector points.

Usage

```
wbt_vector_hex_binning(
  input,
  output,
  width,
  orientation = "horizontal",
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input base file.
output	Output vector polygon file.
width	The grid cell width.
orientation	Grid Orientation, 'horizontal' or 'vertical'.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_vector_lines_to_raster *Vector lines to raster*

Description

Converts a vector containing polylines into a raster.

Usage

```
wbt_vector_lines_to_raster(
  input,
  output,
  field = "FID",
  nodata = TRUE,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input vector lines file.

output
: Output raster file.

field
: Input field name in attribute table.

nodata
: Background value to set to NoData. Without this flag, it will be set to 0.0.

cell_size
: Optionally specified cell size of output raster. Not used when base raster is specified.

base
: Optionally specified input base raster file. Not used when a cell size is specified.

wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_vector_points_to_raster *Vector points to raster*

Description

Converts a vector containing points into a raster.

Usage

```
wbt_vector_points_to_raster(
  input,
  output,
  field = "FID",
  assign = "last",
  nodata = TRUE,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector Points file.
output	Output raster file.
field	Input field name in attribute table.

assign	Assignment operation, where multiple points are in the same grid cell; options include 'first', 'last' (default), 'min', 'max', 'sum', 'number'.
nodata	Background value to set to NoData. Without this flag, it will be set to 0.0.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_vector_polygons_to_raster *Vector polygons to raster*

Description

Converts a vector containing polygons into a raster.

Usage

```
wbt_vector_polygons_to_raster(
  input,
  output,
  field = "FID",
  nodata = TRUE,
  cell_size = NULL,
  base = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector polygons file.
output	Output raster file.
field	Input field name in attribute table.
nodata	Background value to set to NoData. Without this flag, it will be set to 0.0.
cell_size	Optionally specified cell size of output raster. Not used when base raster is specified.
base	Optionally specified input base raster file. Not used when a cell size is specified.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_vector_stream_network_analysis

Vector stream network analysis

Description

This tool performs common stream network analysis operations on an input vector stream file.

Usage

```
wbt_vector_stream_network_analysis(
  streams,
  output,
  snap = 0.1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

streams	Name of the input streams vector file.
output	Name of the output lines shapefile.
snap	Snap distance, in xy units (metres).
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_version *Version information for 'WhiteboxTools'*

Description

Version information for 'WhiteboxTools'

Usage

```
wbt_version(extract = FALSE)
```

Arguments

extract	Extract semantic version number from first line of result? Default: FALSE

Value

Returns the version information for 'WhiteboxTools' as an R character vector.

Examples

```
## Not run:
wbt_version()

## End(Not run)
```

wbt_vertical_excess_curvature

Vertical excess curvature

Description

This tool calculates vertical excess curvature from an input DEM.

Usage

```
wbt_vertical_excess_curvature(
  dem,
  output,
  log = FALSE,
  zfactor = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Name of the input raster DEM file.
output	Name of the output raster image file.
log	Display output values using a log-scale.
zfactor	Z conversion factor.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_view_code *Source code for a specific tool in 'WhiteboxTools'*

Description

Opens a web browser to view the source code for a specific tool on the projects source code repository.

Usage

```
wbt_view_code(tool_name, viewer = FALSE)
```

Arguments

tool_name	Name of the tool.
viewer	Show source code in browser? default: TRUE

Value

Returns a GitHub URL to view the source code of the tool.

Examples

```
## Not run:
wbt_view_code("breach_depressions")

## End(Not run)
```

wbt_viewshed *Viewshed*

Description

Identifies the viewshed for a point or set of points.

Usage

```
wbt_viewshed(
  dem,
  stations,
  output,
  height = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
stations	Input viewing station vector file.
output	Output raster file.
height	Viewing station height, in z units.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_visibility_index *Visibility index*

Description

Estimates the relative visibility of sites in a DEM.

Usage

```
wbt_visibility_index(
  dem,
  output,
  height = 2,
  res_factor = 2,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

dem	Input raster DEM file.
output	Output raster file.
height	Viewing station height, in z units.
res_factor	The resolution factor determines the density of measured viewsheds.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_voronoi_diagram *Voronoi diagram*

Description

Creates a vector Voronoi diagram for a set of vector points.

Usage

```
wbt_voronoi_diagram(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input vector points file.
output	Output vector polygon file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_watershed *Watershed*

Description

Identifies the watershed, or drainage basin, draining to a set of target cells.

Usage

```
wbt_watershed(
  d8_pntr,
  pour_pts,
  output,
  esri_pntr = FALSE,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

d8_pntr Input D8 pointer raster file.

pour_pts Input pour points (outlet) file.

output Output raster file.

esri_pntr D8 pointer uses the ESRI style scheme.

wd Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

`compress_rasters`
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.

`command_only`
: Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

`wbt_weighted_overlay` *Weighted overlay*

Description

Performs a weighted sum on multiple input rasters after converting each image to a common scale. The tool performs a multi-criteria evaluation (MCE).

Usage

```
wbt_weighted_overlay(
  factors,
  weights,
  output,
  cost = NULL,
  constraints = NULL,
  scale_max = 1,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`factors`
: Input factor raster files.

`weights`
: Weight values, contained in quotes and separated by commas or semicolons. Must have the same number as factors.

`output`
: Output raster file.

`cost`
: Boolean array indicating which factors are cost factors, contained in quotes and separated by commas or semicolons. Must have the same number as factors.

`constraints`
: Input constraints raster files.

`scale_max`
: Suitability scale maximum value (common values are 1.0, 100.0, and 255.0).

`wd`
: Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_weighted_sum *Weighted sum*

Description

Performs a weighted-sum overlay on multiple input raster images.

Usage

```
wbt_weighted_sum(
  inputs,
  weights,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

inputs
: Input raster file paths, concatenated with "," or ";". See wbt_file_path() for details.

weights
: Weight values, contained in quotes and separated by commas or semicolons.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_wetness_index *Wetness index*

Description

Calculates the topographic wetness index, Ln(A / tan(slope)).

Usage

```
wbt_wetness_index(
  sca,
  slope,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

sca
: Input raster specific contributing area (SCA) file.

slope
: Input raster slope file (in degrees).

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_wilcoxon_signed_rank_test

Wilcoxon signed rank test

Description

Performs a 2-sample K-S test for significant differences on two input rasters.

Usage

```
wbt_wilcoxon_signed_rank_test(
  input1,
  input2,
  output,
  num_samples = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	First input raster file.
input2	Second input raster file.
output	Output HTML file.
num_samples	Number of samples. Leave blank to use whole image.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_write_function_memory_insertion

Write function memory insertion

Description

Performs a write function memory insertion for single-band multi-date change detection.

Usage

```
wbt_write_function_memory_insertion(
  input1,
  input2,
  output,
  input3 = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file associated with the first date.
input2	Input raster file associated with the second date.
output	Output raster file.
input3	Optional input raster file associated with the third date.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_xor *Xor*

Description

Performs a logical XOR operator on two Boolean raster images.

Usage

```
wbt_xor(
  input1,
  input2,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input1	Input raster file path. See wbt_file_path() for details.
input2	Input raster file path. See wbt_file_path() for details.
output	Output raster file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_yield_filter *Yield filter*

Description

Filters crop yield values of point data derived from combine harvester yield monitors.

Usage

```
wbt_yield_filter(
  input,
  yield_field,
  pass_field,
  output,
  width = 6.096,
  z_score_threshold = 2.5,
  min_yield = 0,
  max_yield = 99999.9,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Name of the input points shapefile.
yield_field	Name of the attribute containing yield data.
pass_field	Name of the attribute containing pass line ID.
output	Name of the output points shapefile.
width	Pass swath width (m).
z_score_threshold	Z-score threshold value (default=2.5).
min_yield	Minimum yield value in output.
max_yield	Maximum yield value in output.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

`wbt_yield_map` *Yield map*

Description

This tool can be used to create a segmented-vector polygon yield map from a set of harvester points.

Usage

```
wbt_yield_map(
  input,
  pass_field_name,
  output,
  width = 6.096,
  max_change_in_heading = 25,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input points shapefile.
`pass_field_name`	Name of the attribute containing pass line ID.
`output`	Name of the output polygon shapefile.
`width`	Pass swath width (m).
`max_change_in_heading`	Max change in heading.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

---

wbt_yield_normalization

Yield normalization

Description

This tool can be used to normalize the yield points for a field.

Usage

```
wbt_yield_normalization(
  input,
  yield_field,
  output,
  standardize = FALSE,
  radius = NULL,
  min_yield = 0,
  max_yield = 99999.9,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`input`	Name of the input points shapefile.
`yield_field`	Name of the attribute containing yield data.
`output`	Name of the output points shapefile.
`standardize`	Should the yield values be standardized (converted to z-scores) rather than normalized?.
`radius`	Optional search radius, in metres. Only specify this value if you want to calculate locally normalized yield.
`min_yield`	Minimum yield value in output.
`max_yield`	Maximum yield value in output.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

---

wbt_z_scores *Z scores*

Description

Standardizes the values in an input raster by converting to z-scores.

Usage

```
wbt_z_scores(
  input,
  output,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input
: Input raster file path. See wbt_file_path() for details.

output
: Output raster file.

wd
: Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.

verbose_mode
: Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.

compress_rasters
: Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.

command_only
: Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

wbt_zlidar_to_las *Zlidar to las*

Description

Converts one or more zlidar files into the LAS data format.

Usage

```
wbt_zlidar_to_las(
  inputs = NULL,
  outdir = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

`inputs`	Input ZLidar files.
`outdir`	Output directory into which zlidar files are created. If unspecified, it is assumed to be the same as the inputs.
`wd`	Changes the working directory. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_wd()` for details.
`verbose_mode`	Sets verbose mode. If verbose mode is `FALSE`, tools will not print output messages. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_verbose()` for details.
`compress_rasters`	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: `NULL` will use the value in WhiteboxTools settings, see `wbt_compress_rasters()` for details.
`command_only`	Return command that would be executed by `system()` rather than running tool. Default: `FALSE`.

Value

Returns the tool text outputs.

wbt_zonal_statistics *Zonal statistics*

Description

Extracts descriptive statistics for a group of patches in a raster.

Usage

```
wbt_zonal_statistics(
  input,
  features,
  output = NULL,
  stat = "mean",
  out_table = NULL,
  wd = NULL,
  verbose_mode = NULL,
  compress_rasters = NULL,
  command_only = FALSE
)
```

Arguments

input	Input data raster file.
features	Input feature definition raster file.
output	Output raster file.
stat	Statistic to extract, including 'mean', 'median', 'minimum', 'maximum', 'range', 'standard deviation', and 'total'.
out_table	Output HTML Table file.
wd	Changes the working directory. Default: NULL will use the value in WhiteboxTools settings, see wbt_wd() for details.
verbose_mode	Sets verbose mode. If verbose mode is FALSE, tools will not print output messages. Default: NULL will use the value in WhiteboxTools settings, see wbt_verbose() for details.
compress_rasters	Sets the flag used by 'WhiteboxTools' to determine whether to use compression for output rasters. Default: NULL will use the value in WhiteboxTools settings, see wbt_compress_rasters() for details.
command_only	Return command that would be executed by system() rather than running tool. Default: FALSE.

Value

Returns the tool text outputs.

`wbttoolparameters` *'WhiteboxTools' Tool Parameters*

Description

This data set is a `data.frame` containing tool parameters and associated metadata

Usage

```
wbttoolparameters
```

Format

An object of class `data.frame` with 2313 rows and 13 columns.

Variables

- `"function_name"` - R function name
- `"tool_name"` - 'WhiteboxTools' tool name
- `"name"` - parameter name
- `"flags"` - flags used to specify parameter on command line; comma separated
- `"description"` - parameter description
- `"parameter_class"` - parameter type
- `"parameter_detail"` - parameter details; character: data type followed by colon and more specifics, For OptionList possible values, comma-separated (if defined)
- `"default_value"` - parameter default value, if any
- `"optional"` - parameter "optional" flag; note that some combination of optional parameters may be required for certain conditions
- `"label"` - labels for selected subset of `"flags"` **used as R function argument names** for `wbt_` functions
- `"is_input"` - logical. Classification of 'input' parameters
- `"is_output"` - logical. Classification of 'output' parameters

Source

WhiteboxTools

See Also

wbttools `wbt_tool_parameters()`

`wbttools` *'WhiteboxTools' Tool List*

Description

This data set is a `data.frame` containing tools by name and associated R function name

Usage

```
wbttools
```

Format

An object of class `data.frame` with 562 rows and 8 columns.

Variables

- `"tool_name"` - 'WhiteboxTools' tool name
- `"function_name"` - R function name
- `"toolbox_name"` - 'WhiteboxTools' toolbox name
- `"label"` - 'WhiteboxTools' tool label
- `"description"` - Brief description
- `"github"` - Link to related code on 'GitHub'
- `"book"` - Link to 'WhiteboxTools' Manual
- `"is_extension"` - Tool is part of 'General Toolset Extension' (GTE), as opposed to the "open core"

Source

WhiteboxTools

See Also

wbttoolparameters `wbt_list_tools()`

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