Package 'confidence'

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Title Confidence Estimation of Environmental State Classifications

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Description Functions for estimating and reporting multi-year averages and corresponding confidence intervals and distributions. A potential use case is reporting the chemical and ecological status of surface waters according to the European Water Framework Directive.

Depends R (>= 4.0.0), tcltk

Imports knitr, markdown, plyr, xtable, ggplot2

Suggests testthat

Encoding UTF-8

VignetteBuilder knitr

License GPL (>= 3)

RoxygenNote 7.3.2

NeedsCompilation no

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Contents

`backtransform` *Back-transformations Performs inverse log or logit transformations.*

Description

Back-transformations

Performs inverse log or logit transformations.

Usage

```
backtransform(x, type = c("identity", "log", "logit", "none", NA_character_))
```

Arguments

`x`	value to back-transform
`type`	type of transform (log, logit).

Value

backtransformed value

`conf` *Perform Confidence Run*

Description

This function starts the 'confidence tool'. The results will be stored in a subdirectory in the current working directory. See details section below.

Usage

```
conf(x = NULL, tmpdir = tempfile(pattern = "confidence"), browse = TRUE)
```

Arguments

`x`	name of the input file or a `data.frame` containing the input. If `x = NULL` (the default) a file dialog will appear for interactive selection of an input file. See the package vignette for details about the file format.
`tmpdir`	directory to store temporary files (for debugging only)
`browse`	load resulting report directly in a browser? `TRUE` or `FALSE`

Details

This function will create a subdirectory

- in the same directory as x, in case x is a filename or
- in the current working directory (see getwd), in case x is a data.frame.

The computer should have write permission to this directory, if not an error message will be raised. The subdirectory contains an HTML-report with all analysis results. For convenience, the results are also stored in CSV-format (tables) and png-format (figures) for further processing.

See Also

confidence and the package vignette (vignette("confidence")).

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conf_input *Check Confidence data*

Description

This function checks data.frames to be used by the confidence package. The format has been specified in Van Loon (2014) and should contain the following columns:

- OBJECTID: water body code, e.g., NL89_os;
- PAR: parameter, e.g., Cadmium;
- DATE: date according to ISO 8601 (YYYY-mm-dd) for point values or year YYYY for annual means;
- VALUE: numerical value.
- TARGET: target value for the European Water Framework Directive;
- UNIT: measurement unit of PAR. This unit should be the same for all records with the same PAR and is the same for both VALUE and TARGET;
- transform: data transformation, i.e., log, logit, NA.

Usage

```
conf_input(x)
```

Arguments

x	data.frame to be checked

Details

The function performs the following tasks:

- checks availablitity of required columns (case insensitive);
- make column names case-insensitive;
- removes redundant spaces;
- checks on missing values in required columns;
- checks if DATE-field adheres to ISO 8601 (YYYY-mm-dd) or YYYY;
- checks mixtures of annual averages and point values for a each year;
- checks if measurement units are the same for a specific OBJECTID-PAR-pair;
- checks if TARGET-value is the same for a specific OBJECTID-PAR-pair;
- checks if transform is one of log, logit, NA in transform column;
- checks that the EQR-column contains identical values fo each OBJECTID-PAR combination.

Value

`data.frame` that has passed all checks

DCA *Annual Average 1,2-dichloroethane Concentration*

Description

Annual arithmetic average concentration of 1,2-dichloroethane (DCA) in a specific water body ($\mu g/l$), based on Baggelaar et al., (2010)

Details

The columns represent the following information:

OBJECTID water body code

PAR parameter, in this case 1,2-dichloroethane

color colors in density function

DATE year

VALUE annual arithmetic average concentration

TARGET target according to the European Water Framework Directive

UNIT measurement unit ($\mu g/l$)

Source

Baggelaar, P., O. van Tongeren, R. Knoben, & W. van Loon, 2010. Rapporteren van de betrouwbaarheid van KRW-beoordelingen. H2O 16, p.21–25

EQR *Annual Average Environmental Quality Ratio for Macrofauna.*

Description

Annual artithmetic average environmental quality ratio's (EQR) for Macrofauna in a specific water body, based on Baggelaar et al., (2010)

Details

The columns represent the following information:

OBJECTID water body code

PAR parameter, in this case EQR

color colors in density function

DATE year

VALUE annual arithmetic average EQR

TARGET target EQR

transfrom applied transform

Source

Baggelaar, P., O. van Tongeren, R. Knoben, & W. van Loon, 2010. Rapporteren van de betrouwbaarheid van KRW-beoordelingen. H2O 16, p.21–25

metal *Simulated Metal Contents*

Description

A data set with two time-series of simulated metal contents. These data have mainly been used to test the package. Users may find this dataset convenient as an example to construct their own data sets. The columns represent the following information:

OBJECTID water body code, e.g., NL89_os

PAR parameter, e.g., Cadmium

color colors in density function

DATE date according to ISO 8601 (YYYY-mm-dd) for point values or year YYYY for annual means

VALUE numerical value

TARGET e.g., the target value for the European Water Framework Directive

UNIT measurement unit of PAR. This unit should be the same for all records with the same PAR and is the same for both VALUE and TARGET

transform data transformation, i.e., log, logit, NA

mya *Multi-Year Average*

Description

Estimates the multi-year average of environmental properties and associated confidence intervals.

Usage

```
mya(x, ...)
```

Arguments

x	object of class conf_input or a data.frame that can be coerced to an instance of class conf_input.
...	further arguments to be passed to other methods

Value

a data.frame with the following columns:

MYA: the multi-year arithmetic average;

PROB_LTT: the probability that MYA is less than the target value specified;

PROB_GTT: the probability that MYA is greater than the target value specified;

q05: the lowerbound of the 90% confidence interval of MYA;

q95: the upperbound of the 90% confidence interval of MYA.

See Also

conf

sanitize *Sanitize Text to Give Proper Filenames*

Description

Sanitize Text to Give Proper Filenames

Usage

```
sanitize(x)
```

Arguments

x	character vector to sanitize

Value

sanitized character vector

`strip_spaces` *Remove Redundant Spaces*

Description

This function removes redundant spaces from character vectors

Usage

```
strip_spaces(x)
```

Arguments

`x`	character vector

Value

character vector without trailing or multiple spaces

Examples

```
stopifnot(confidence:::strip_spaces(" Hello  World  ") == "Hello World")
```

`transform` *Transformations Performs log or logit transformations.*

Description

Transformations

Performs log or logit transformations.

Usage

```
transform(x, type = c("identity", "log", "logit", "none", NA_character_))
```

Arguments

`x`	value to transform
`type`	type of transform (log, logit).

Value

transformed value

write_html *Internal Functions For Writing HTML*

Description

Internal Functions For Writing HTML

Usage

```
write_html(x, ...)
```

Arguments

x	object
...	further arguments passed to or from other methods.

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