Package ‘iadf’

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Calculate the adjusted false ring proportion, as suggested by Osborn et. al. (1997), of a set of binary false ring assignments.

**Usage**

```r
afrp(iadf)
```

**Arguments**

- `iadf` A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked with 1, those without with 0, years not covered by the series are set to NA.

**Value**

A data frame

**References**


**See Also**

- `frp`
Description

Chapman model fitting to size classes for the calculation of size corrected IADF frequencies according to Campelo et al. (2015).

Usage

```r
campelo_chapman(campelo_freq_object, min.n = 15, start = NULL, make.plot = TRUE, max.iter = 500, ...)
```

Arguments

- **campelo_freq_object**: a campelo frequency object, output of `campelo_freq`
- **min.n**: minimum number of samples within each group to be included in model estimation
- **start**: set custom start values - default to list(a = 0.8, b = 0.03, c = 12.5)
- **make.plot**: logical
- **max.iter**: maximum iterations for internally used `nls`
- **...**: additional plotting arguments

Value

a model object of class "nls"

References


See Also

campelo_freq, campelo_index
Examples

```r
data('example_iadf')
data('example_rwl')
model <- campelo_chapman(campelo_freq(example_iadf, example_rwl))
campelo_index(example_iadf, example_rwl, model)
```

Description

Find good start values manually in case `campelo_chapman` returns an error caused by insufficient default starting values.

Usage

```r
campelo_chapman_find_start(
  campelo_freq_object,
  min.n = 15,
  max_a = 3,
  max_b = 1,
  max_c = 17
)
```

Arguments

- **campelo_freq_object**: a campelo frequency object, output of `campelo_freq`
- **min.n**: minimum number of samples within each group to be included in model estimation
- **max_a**: maximum value of manipulate slider for parameter a
- **max_b**: maximum value of manipulate slider for parameter b
- **max_c**: maximum value of manipulate slider for parameter c

Value

A list which can be used as input argument 'start' in `campelo_chapman`
campelo_freq

**iadf frequency per ring width class**

**Description**

Calculate the frequency per ring width class as suggested by Campelo (2015).

**Usage**

```r
campelo_freq(iadf, rwl, n = 20)
```

**Arguments**

- `iadf`: A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked binary with 1, those without with 0, years not covered by the series are set to NA.
- `rwl`: data frame containing ring widths with years in rows and series in columns
- `n`: number of ring width classes

**Value**

a data frame

**References**


**See Also**

- `campelo_chapman`
- `campelo_index`

**Examples**

```r
data('example_iadf')
data('example_rwl')
model <- campelo_chapman(campelo_freq(example_iadf, example_rwl))
campelo_index(example_iadf, example_rwl, model)
```
Description
Calculation of size corrected IADF frequencies according to Campelo et al. (2015)

Usage
campelo_index(iadf, rwl, model)

Arguments
- iadf: A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked binary with 1, those without with 0, years not covered by the series are set to NA.
- rwl: a rwl/data.frame object
- model: a chapman model, output of campelo_chapman

Value
a data frame

References

See Also
campelo_freq, campelo_chapman

Examples
data('example_iadf')
data('example_rwl')
model <- campelo_chapman(campelo_freq(example_iadf, example_rwl))
campelo_index(example_iadf, example_rwl, model)
example_iadf

Description
An rwl object to be used in documented examples

Usage
example_iadf

Format
A data.frame with 135 years and 30 series.

example_rwl

Description
An rwl object to be used in documented examples

Usage
example_rwl

Format
A data.frame with 135 years and 30 series.

frp

Description
Calculate the false ring proportion of a set of binary false ring assignments.

Usage
frp(iadf)
Arguments

iadf  A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked binary with 1, those without with 0, years not covered by the series are set to NA.

Value

a data frame

See Also

afrp

Description

calculate false ring proportions from data frames of intra annual density fluctuations

Description

Calculate the frequency per cambial age as suggested by Novak et al. (2013).

Usage

novak_freq(iadf, po = NULL)

Arguments

iadf  A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked binary with 1, those without with 0, years not covered by the series are set to NA.

po  a data frame with pith offsets with series names in the first and pith offset as number of rings in the second column

Value

a data frame
novak_index

References


See Also

novak_weibull, novak_index

Examples

data('example_iadf')
model <- novak_weibull(novak_freq(example_iadf), 15)
novak_index(example_iadf, model)

Description

Calculation of age corrected IADF frequencies according to Novak et al. (2013).

Usage

novak_index(iadf, model, po = NULL, method = "difference")

Arguments

iidf A data frame with numeric columns representing individual series and years as rownames where years with IADF are marked binary with 1, those without with 0, years not covered by the series are set to NA.
model a model, output of either novak_weibull
po an optional data frame of pith offsets with series names in the first and pith offsets in the second column
method method for the RCS detrending, 'quotient' or 'difference'

Value

a data frame

References

See Also

`novak_freq, novak_weibull`

Examples

```r
data('example_iadf')
model <- novak_weibull(novak_freq(example_iadf), 15)
novak_index(example_iadf, model)
```

Description

Fit a Weibull function for the calculation of age corrected IADF frequencies according to Novak et al. (2013).

Usage

```r
novak_weibull(
  novak_freq_object,
  min.n = 15,
  start = NULL,
  max.iter = 500,
  make.plot = TRUE,
  ...                   
)
```

Arguments

- **novak_freq_object**: A `novak_freq_object` as obtained from `novak_freq`
- **min.n**: minimum number of samples within each cambial age to be included in model estimation
- **start**: set custom start values - default to `list(a = 4, b = 0.33, c = 15.5)`
- **max.iter**: maximum iterations for internally used `nls`
- **make.plot**: logical
- **...**: additional plotting arguments

Value

a model object of class "nls"

References

See Also

novak_freq, novak_index

Examples

data('example_iadf')
model <- novak_weibull(novak_freq(example_iadf), 15)
novak_index(example_iadf, model)

Description

Find good start values manually in case novak_weibull returns an error caused by insufficient default starting values.

Usage

novak_weibull_find_start(
  novak_freq_object,
  min.n = 15,
  max_a = 10,
  max_b = 3,
  max_c = 30
)

Arguments

  novak_freq_object  A novak_freq_object as obtained from novak_freq
  min.n  minimum number of samples within each cambial age to be included in model estimation
  max_a  maximum value of manipulate slider for parameter a
  max_b  maximum value of manipulate slider for parameter b
  max_c  maximum value of manipulate slider for parameter c

Value

  a list which can be used as input argument 'start' in novak_weibull
Description

returns the series length of the series within a data.frame/rwl object.

Usage

series_length(x)

Arguments

x a data.frame/rwl object

Value

a numeric vector

sort_by_index

Description

internal function such as sortByIndex as in package dplR, shifts series to start with index 1, maintaining the same vector length by adding NA values to the end.

Usage

sort_by_index(x)

Arguments

x a numeric vector, representing an individual rwl series, potentially containing NA values.

Value

a numeric vector with the same length as x.

Examples

x <- c(NA, NA, NA, 1, 2, 3, 4, 5, NA, NA)
iadf::sort_by_index(x)
#[1] 1 2 3 4 5 NA NA NA NA
tidyrwl

## tidy and untidy ring width data

### Description

Little helper functions to convert dataframes from the data format used in multiple dendro-related R packages such as **dplR** to tidy data used in the **tidyverse** and vice versa.

### Usage

```r
tidy_crn(crn)
untidy_crn(tidy_crn)
tidy_rwl(rwl, value_col = "rwl")
untidy_rwl(tidy_rwl, value_col = "rwl")
```

#### Arguments

- `crn`: a chronology as obtained from `chron`
- `tidy_crn`: a tidy chronology as obtained from `tidy_crn`
- `rwl`: ring width data as obtained from `read.rwl`
- `value_col`: column name of the value column in the tidy tibble of the input resp output object
- `tidy_rwl`: tidy ring width data as obtained from `tidy_rwl`

### Value

Data frames or tibbles

---

### to_cambial_age

#### to_cambial_age

### Description

This function aligns tree ring series to match their cambial ages, taking pith offset into account if provided.

#### Usage

```r
to_cambial_age(rwl, po = NULL)
```
Arguments

- `rwl`: a data frame/rwl object.
- `po`: optional, a data frame containing series names in the first and `po` data as nr. of years in the second column.

Value

A data.frame with aligned series

Examples

```r
library("dplR")
data("gp.rwl")
data("gp.po")
gp.po$series <- as.character(gp.po$series)
iadf:::to_cambial_age(gp.rwl, gp.po)
```
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