Package ‘iadf’

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density fluctuations.
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Description

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

Usage

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

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

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

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, minNn = 15, max_a = 3,
  max_b = 1, max_c = 17)
```

Arguments

- `campelo_freq_object`: a campelo frequency object, output of campelo_freq
- `minNn`: 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

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

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

---

### example_iadf

<table>
<thead>
<tr>
<th>example_iadf</th>
</tr>
</thead>
<tbody>
<tr>
<td>example_iadf</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>example_rwl</th>
</tr>
</thead>
<tbody>
<tr>
<td>example_rwl</td>
</tr>
</tbody>
</table>

**Description**

An rwl object to be used in documented examples

**Usage**

`example_rwl`

**Format**

A data.frame with 135 years and 30 series.
**frp**

false ring proportion

---

**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
novak_freq

iadf frequency per cambial age

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

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

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.
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

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

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

```r
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`

---

**series_length**

Description

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

Usage

```r
series_length(x)
```

Arguments

- `x` a data.frame/rwl object

Value

a numeric vector
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

ea numeric vector with the same length as x.

Examples

x <- c(naLnaLnaL1LRL3LTLUL naL na)
iadf:::sort_by_index(x)
#[1] 1 R 3 T U na na na na na

tidy_rwl

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

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

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>crn</td>
<td>a chronology as obtained from chron</td>
</tr>
<tr>
<td>tidy_crn</td>
<td>a tidy chronology as obtained from tidy_crn</td>
</tr>
<tr>
<td>rwl</td>
<td>ring width data as obtained from read.rwl</td>
</tr>
<tr>
<td>value_col</td>
<td>column name of the value column in the tidy tibble of the input resp output object</td>
</tr>
<tr>
<td>tidy_rwl</td>
<td>tidy ring width data as obtained from tidy_rwl</td>
</tr>
</tbody>
</table>

Value
data frames or tibbles

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

Usage
to_cambial_age(rwl, po = NULL)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rwl</td>
<td>a data frame/rwl object.</td>
</tr>
<tr>
<td>po</td>
<td>optional, a data frame containing series names in the first and po data as nr. of years in the second column.</td>
</tr>
</tbody>
</table>

Value
A data.frame with aligned series

Examples

```r
to_cambial_age(gpNrwl, gpNpo)
```

```
library("dplyr")
data("gpNrwl")
data("gpNpo")
gpNpo$series <- as.character(gpNpo$series)
iadf:::to_cambial_age(gpNrwl, gpNpo)
```
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