

Package ‘meteor’

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Type Package

Title Meteorological Data Manipulation

Version 0.3-4

LinkingTo Rcpp

SystemRequirements C++11

Imports methods, Rcpp (>= 0.12.4)

Date 2019-08-07

Description A set of functions for weather and climate data manipulation, and other helper functions, to support dynamic ecological modelling, particularly crop and crop disease modeling.

License GPL (>= 3)

BugReports <https://github.com/cropmodels/meteor/issues/>

NeedsCompilation yes

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meteor-package *The meteor package*

Description

This package contains of a number of meteorological data manipulation functions. Some of these are also available in other R packages. The context of this package is to make the functions available from dynamic simulation models of crops and crop diseases.

dates *date manipulation*

Description

Helper functions for manipulation of dates, including conversion between (day of year) (DOY) to date and back, and extraction of parts of a date.

Usage

```
dateFromDoy(doy, year)
doyFromDate(date)
dayFromDate(date)
monthFromDate(date)
yearFromDate(date)
isLeapYear(year)
daysInYear(year)
```

Arguments

| | |
|------|--------------------------------------------------------------------|
| doy | integer. Day of the year (1..365) or (1..366) for leap years |
| year | integer. Year, e.g. 1982 |
| date | Date object or character formatted 'yyyy-mm-dd', e.g. '1982-11-23' |

Value

integer or Date

Examples

```
doy <- 88
year <- 1970
date <- dateFromDoy(doy, year)
date
dateFromDoy(-15, 2000)
doyFromDate(date)
isLeapYear(2000)
daysInYear(2000)
daysInYear(1999)
```

| | |
|-------------|----------------------------------------|
| FSE weather | <i>Read FSE formatted weather data</i> |
|-------------|----------------------------------------|

Description

Read or write FSE formatted weather data

Usage

```
readFSEwth(f)
```

Arguments

f character. filename

Value

data.frame

| | |
|----------|--------------------------|
| generics | <i>Generic functions</i> |
|----------|--------------------------|

Description

These are generic functions that are declared in this package but have no implementation here. They are to be used by packages that depend on this package.

| | |
|-------------|--------------------|
| photoperiod | <i>photoperiod</i> |
|-------------|--------------------|

Description

Compute photoperiod (daylength, sunshine duration) at a given latitude and day of the year.

Usage

```
photoperiod(doy, latitude)
```

Arguments

doy integer. Day of the year. Integer between 1 and 365
latitude numeric. Latitude, in degrees, should be between -90 and 90

Value

double. Photoperiod in hours

References

Forsythe, W.C., E.J. Rykiel Jr., R.S. Stahl, H. Wu, R.M. Schoolfield, 1995. A model comparison for photoperiod as a function of latitude and day of the year. *Ecological Modeling* 80: 87-95.

Examples

```
photoperiod(50, 52)
photoperiod(50, 5)
photoperiod(180, 55)

p <- photoperiod(1:365, 52)
d <- dateFromDoy(1:365, 2001)
plot(d, p)
```

Weather-class

Weather class

Description

Weather data

Objects from the Class

Objects can be created by calls of the form `new("Weather", ...)`, or with the helper functions such as `weather`.

Slots

Slots of Weather objects

data: data.frame with the weather data

ID: character

name: character

country: character

longitude: numeric

latitude: numeric

elevation: numeric

Examples

```
showClass("Weather")
```

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