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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R topics documented:

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meter-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.

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dates   *date manipulation*

Description

Helper functions for manipulation of dates, includding 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	*Read FSE formatted weather data*

Description

Read or write FSE formatted weather data

Usage

```
readFSEwth(f)
```

Arguments

f	character. filename

Value

data.frame

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generics	*Generic functions*

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.

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photoperiod	*photoperiod*

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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