Package 'processCFSR'

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Type Package

Title Process CFSR datasets

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Imports methods, hydroGOF

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Description Tools to download CFSR datasets and convert to SWAT and WGN Excel Macro inputs format. Also, it allows users to plot and analyze anomalies between weather stations and CFSR datasets.

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R topics documented:

`CFSRStationData-class` *Class* `"CFSRStationData"`

Description

Objects with this class store CFSR and Station data to be computed by `getAnomalies` function. Each pair of values must refer to the same day.

Objects from the Class

Objects can be created by calls of the form `new("CFSRStationData", ...)`.

Slots

`CFSR`: Object of class `"numeric"`

`Station`: Object of class `"numeric"`

Methods

getAnomalies `signature(object = "CFSRStationData")`: This method calculates the anomalies (deltas) subtracting CFSR values from weather station values.

Author(s)

Jefferson Valencia Gomez

See Also

`CFSRStationDataExtra`, `getAnomalies`

Examples

```
a = new("CFSRStationData", CFSR = 1:10, Station = 11:20)

showClass("CFSRStationData")
```

CFSRStationDataExtra-class

Class `"CFSRStationDataExtra"`

Description

Objects with this class store CFSR, Station and Anomalies data to be showed on a plot by `plotCFSRStation` function.

Objects from the Class

Objects can be created by calls of the form `new("CFSRStationDataExtra", ...)`.

Slots

`CFSR`: Object of class `"numeric"`

`Station`: Object of class `"numeric"`

`Anomaly`: Object of class `"numeric"`

Extends

Class `"CFSRStationData"`, directly.

Methods

plotCFSRStation `signature(data = "CFSRStationDataExtra")`: This method plots the anomalies (deltas) which were obtained subtracting CFSR values from weather station values.

Author(s)

Jefferson Valencia Gomez

See Also

CFSRStationData, getAnomalies, plotCFSRStation

Examples

```
CFSR = 1:10
Station = 11:20
Anomaly = Station - CFSR
a = new("CFSRStationDataExtra", CFSR = CFSR, Station = Station, Anomaly = Anomaly)

showClass("CFSRStationDataExtra")
```

CFSRStationSampleData *Sample dataset of precipitation with CFSR and weather station data*

Description

Sample dataset of precipitation to be used in the function getAnomalies and then plot it by using plotCFSRStation

Usage

```
data(SampleData)
```

Format

A data frame with 10748 observations on the following 2 variables.

`CFSR` a numeric vector

`Station` a numeric vector

Details

This dataset can be compiled with the data downloaded from drfuka.org service and bound with weather station data.

Examples

```
data(SampleData)
CFSR = CFSRStationSampleData$CFSR
Station = CFSRStationSampleData$Station
```

`convertCFSRTo` *Convert from CFSR to SWAT Model/WGN Excel Macro input files format*

Description

Function to convert CFSR datasets downloaded by using `processSamplePoints` function to either SWAT Model or WGN Excel Macro input files format

Usage

```
convertCFSRTo(CSVspath, format = "SWAT", inputStartDate = FALSE, inputEndDate = FALSE)
```

Arguments

`CSVspath`	Folder path where stored all the CSV files downloaded by using `processSamplePoints` function. See `extdata/CFSRData.csv` as an example file.
`format`	Format which datasets have to be converted to. Two possible options `"SWAT"` or `"WGN"`.
`inputStartDate`	Start date to cut/trunc the data with format `"m/d/Y"`.
`inputEndDate`	End date to cut/trunc the data with format `"m/d/Y"`.

Details

If `format` is not defined, the CFSR datasets are converted to SWAT Model input files format. If either `inputStartDate` or `inputStartDate` are not defined, the start date or end date are read from the input files.

Value

In the `CSVspath` folder it will be created another folder named either SWAT or WGN with all the created TXT files that are ready to enter to SWAT Model or WGN Excel Macro.

Warning

This function adds rows with -99 values where missing data.

Author(s)

Jefferson Valencia Gomez

References

For more references related to SWAT model please visit: SWAT Model webpage

getAnomalies-methods *Method* getAnomalies

Description

This method calculates the anomalies (deltas) subtracting CFSR values from weather station values.

Details

This method removes all the pairs of data with any NA value.

Methods

`signature(object = "CFSRStationData")` Based on an object of class `CFSRStationData` with CFSR and Station data, it calculates the anomalies (deltas) between both and returns an object of class `CFSRStationDataExtra`.

See Also

`CFSRStationData`, `CFSRStationDataExtra`

Examples

```
a = new("CFSRStationData", CFSR = 1:10, Station = 11:20)
b = getAnomalies(a)
```

plotCFSRStation-methods *Method* plotCFSRStation

Description

This method plots the anomalies (deltas) which were obtained subtracting CFSR values from weather station values. A scatter diagram and histogram of anomalies are showed on the plot for the variable defined as an input.

Methods

`signature(data = "CFSRStationDataExtra")` Based on an object of class `CFSRStationDataExtra` with CFSR, Station and Anomalies data, it plots the anomalies (deltas) which were obtained subtracting CFSR values from weather station values.

Examples

```
data(SampleData)
CFSR = CFSRStationSampleData$CFSR
Station = CFSRStationSampleData$Station

a = new("CFSRStationData", CFSR = CFSR, Station = Station)

b = getAnomalies(a)

plotCFSRStation(b, variable = "PCP")
```

`processSamplePoints` *Download CFSR datasets from drfuka.org service*

Description

This function allows user to download CFSR datasets and cut them based on the start and end dates defined in the CSV input file.

Usage

```
processSamplePoints(samplePointsFile, finalFolder)
```

Arguments

`samplePointsFile`	CSV file with the id's, coordinates (Lat and Long) and start and end dates of the points to be downloaded. See `extdata/SamplePoints.csv` as an example file .
`finalFolder`	Folder path where all the downloaded CFSR datasets will be stored in CSV format.

Details

Id's have to be unique. Lat and Long coordinates must be in decimal degrees. Start and end dates have to be formatted as `"m/d/Y"`.

Value

In the `finalFolder` it will be stored in CSV format all the downloaded CFSR datasets. See `extdata/CFSRData.csv` as an example file .

Warning

This function adds rows with `NA` values where missing data.

Author(s)

Jefferson Valencia Gomez

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