Package 'metqc'

July 8, 2022

Title Quality Control Of Field Site Meteorological Data

Version 0.0.1

Description Quality control of field site meteorological data.

The working version is deployed at https //connect-apps.ceh.ac.uk/content/1943fcd9-7dde-4477-928c-01ae7701a69b.

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Encoding UTF-8

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Depends R (>= 3.5.0)

LazyData true

Imports pkgload,
    shinydashboard,
    shiny,
    lubridate,
    ggplot2,
    dplyr,
    ggiraph,
    data.table,
    DT,
    shinyWidgets,
    shinyjs,
    ROracle,
    ggExtra,
    mgcv,
    here,
    openair,
    powerjoin,
    pins

R topics documented:

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detect_gaps   *detect_gaps*

Description

Detects any gaps in a data frame representing a time series, ie. find any intervals greater than the expected interval.

Usage

```
detect_gaps(df, expected_interval = 30, date_field = "DATECT")
```

Arguments

df   A data frame of met data

expected_interval

                Expected time interval of series, Default: '30 min'

date_field   Column name for POSIX date/time variable in df, Default: 'DATECT'

Details

DETAILS

Value

OUTPUT_DESCRIPTION

Examples

```
## Not run:
if(interactive()){
 #EXAMPLE1
 gaps <- detect_gaps(l_logr$df)
 }

## End(Not run)
```

---

impute   *impute*

Description

Impute missing values using various methods

Usage

```
impute(
  y,
  l_met = l_met,
  method = "era5",
  qc_tokeep = 0,
  selection = TRUE,
  date_field = "DATECT",
  k = 40,
  fit = TRUE,
  x = NULL,
  df_era5 = NULL,
  lat = 55.792,
  lon = -3.243,
  plot_graph = TRUE
)
```

Arguments

y	Response variable with missing values to be replaced (variable name as a "quoted string")
l_met	List of two data frames containing data and qc codes. Default: l_met
method	Method to use for imputing missing values, Default: "era5"
qc_tokeep	Which QC codes to leave unaltered when selecting values to impute, Default: 0 (raw data)
selection	Denotes the points selected interactivelt by user in app Default: TRUE (= all)
date_field	Name of the date field or variable in the data frame. Default: DATECT
k	Number of knots to use when imputing using a GAM in the "time" method. Higher values give more flexibility = more wiggliness. Default: 40
fit	Whether to fit a linear model or directly replace missing y with x values when using either "regn" or "era5" methods, Default: TRUE
x	The covariate with which to fit a linear model in the "regn" method. Default: NULL
df_era5	The name of the data frame containing the corresponding ERA5 data. Default: df_era5
lat	Latitude of the site for calculating day/night-time in "nightzero" method. Default: 55.792 (= Auchencorth)
lon	Longitude of the site for calculating day/night-time in "nightzero" method. Default: -3.243 (= Auchencorth)
plot_graph	Whether to produce a ggplot graphic - can be slow for large data sets. Default: TRUE

Details

DETAILS

Value

List of two data frames containing data and qc codes with imputed values.

Examples

```
## Not run:
if(interactive()) {
 #EXAMPLE1
l_met <- list(df = df, df_qc = df_qc)
l_met <- impute(y = "SW_IN", x = "PPFD_IN",  l_met)
 }

## End(Not run)
```

---

pad_data	*pad_data*

Description

Adds in any gaps in a data frame representing a time series

Usage

```
pad_data(df, by = "30 min", date_field = "DATECT", v_dates = NULL)
```

Arguments

df	A data frame
by	Time interval of series, Default: '30 min'
date_field	Column name for POSIX date/time variable in df, Default: 'DATECT'
v_dates	A vector of POSIX date/times, potentially from another df, to match with it. Default: 'df$DATECT'

Details

DETAILS

Value

OUTPUT_DESCRIPTION

Examples

```
## Not run:
if(interactive()){
 #EXAMPLE1
 df <- pad_data(df)
 }

## End(Not run)
```

---

plotting_function *plotting_function*

Description

Creates an interactive girafe plot, whereby the user can select points for flagging as poor quality and imputing new values.

Usage

```
plotting_function(input_variable)
```

Arguments

input_variable   The name of the variable within the query data frame to plot.

Details

Custom plotting function for each variable

DETAILS

Value

OUTPUT_DESCRIPTION

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plot_heatmap_calendar *plot_heatmap_calendar*

Description

Plots a calendar showing who has checked the data by date

Usage

```
plot_heatmap_calendar(df)
```

Arguments

df   A data frame of met data

Details

Custom plotting function to construct a heatmap calendar

DETAILS

Value

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