

Package ‘SEF’

January 22, 2020

Type Package

Title Tools to handle the C3S Station Exchange Format

Version 1.0.0

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Description Functions for writing and reading SEF files.

Depends R (>= 3.2.0)

License file LICENSE

Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

NeedsCompilation no

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Bern	<i>Sub-daily meteorological observations for Bern</i>
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Description

Observations of pressure and temperature for the city of Bern (Switzerland) for the period 1800-1827.

Usage

Bern

Format

A list of data frames (one data frame per variable). The format of the data frames is that required by the QC functions.

Source

Institute of Geography - University of Bern

check_sef	<i>Check compliance with SEF guidelines</i>
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Description

Check compliance with SEF guidelines

Usage

```
check_sef(file = file.choose())
```

Arguments

file	Character string giving the path of the SEF file.
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Value

TRUE if no errors are found, FALSE otherwise.

Note

For more information on error/warning messages produced by this function see the SEF documentation.

Author(s)

Yuri Brugnara

Meta	<i>Metadata for the station of Bern</i>
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Description

Metadata for the station of Bern

Usage

```
Meta
```

Format

A list of data frames (one data frame per variable)

Source

Institute of Geography - University of Bern

read_meta	<i>Read metadata from the Station Exchange Format version 1.0.0</i>
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Description

Read metadata from the Station Exchange Format version 1.0.0

Usage

```
read_meta(file = file.choose(), parameter = NULL)
```

Arguments

file	Character string giving the path of the data file.
parameter	Character vector of required parameters. Accepted values are "version", "id", "name", "lat", "lon", "alt", "source", "link", "var", "stat", "units", "meta". By default all parameters are read at once.

Value

A character vector with the required parameters.

Author(s)

Yuri Brugnara

read_sef	<i>Read data files in Station Exchange Format version 1.0.0</i>
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Description

Read data files in Station Exchange Format version 1.0.0

Usage

```
read_sef(file = file.choose(), all = FALSE)
```

Arguments

file	Character string giving the path of the SEF file.
all	If FALSE (the default), omit the columns 'Period' and 'Meta' (also 'Hour' and 'Minute' for non-instantaneous data)

Value

A data frame with up to 9 variables, depending on whether all is set to TRUE. The variables are: variable code, year, month, day, hour, minute, value, period, metadata.

Author(s)

Yuri Brugnara

Variables*List of standard variable codes*

Description

List of standard variable codes

Usage

Variables

Format

A data frame with two variables

Source

C3S Data Rescue Service

write_sef*Write data in Station Exchange Format version 1.0.0*

Description

Write data in Station Exchange Format version 1.0.0

Usage

```
write_sef(Data, filepath = getwd(), variable, cod, nam = "", lat = "",
lon = "", alt = "", sou = "", link = "", units, stat,
metaHead = "", meta = "", period = "", time_offset = 0,
note = "", keep_na = FALSE, outfile = NA)
```

Arguments

Data	A data frame with 6 variables in this order: year, month, day, hour, minute, value.
filepath	Character string giving the output path (note that the filename is generated from the source identifier, station code, start and end dates, and variable code). By default this is the working directory.
variable	Variable code. This is a required field.
cod	Station code. This is a required field.
nam	Station name.
lat	Station latitude (degrees North in decimal).
lon	Station longitude (degrees East in decimal).

alt	Station altitude (metres).
sou	Character string giving the source identifier.
link	Character string giving an url for metadata (e.g., link to the C3S Data Rescue registry).
units	Character string giving the units. This is a required field.
stat	Character string giving the statistic code. This is a required field.
metaHead	Character string giving metadata entries for the header (pipe separated).
meta	Character vector with length equal to the number of rows of Data, giving meta-data entries for the single observations (pipe separated).
period	Observation time period code. Must be a character vector with length equal to the number of rows of Data unless all observations have the same period code.
time_offset	Numerical vector of offsets from UTC in hours. This value will be subtracted from the observation times to obtain UTC times, so for instance the offset of Central European Time is +1 hour. Recycled for all observations if only one value is given.
note	Character string to be added to the end of the standard output filename. It will be separated from the rest of the name by an underscore. Blanks will be also replaced by underscores.
keep_na	If FALSE (the default), lines where observations are NA are removed.
outfile	Output filename. If specified, ignores note.

Note

Times in SEF files must be expressed in UTC.

If outfile is not specified, the output filename is generated automatically as sou_cod_startdate_enddate_variable.tsv

Author(s)

Yuri Brugnara

Examples

```
# Create a basic SEF file for air temperature in Bern
# (assuming the observation times are in local solar time)
# The file will be written in the working directory
meta_bern <- Meta$ta[which(Meta$ta$id == "Bern"), ]
write_sef(Bern$ta[, 2:7], variable = "ta", cod = meta_bern$id, lat = meta_bern$lat,
          lon = meta_bern$lon, alt = meta_bern$alt, units = meta_bern$units,
          stat = "point", period = "0", time_offset = meta_bern$lon * 24 / 360)
```

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