

Package ‘KNMlr’

July 24, 2017

Type Package

Title functions for retrieving historic climate data and the six-day forecast from the Dutch meteorological institute KNMI

Version 0.2.0

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Description This package provides functions to retrieve raw and processed climate data from the official Dutch meteorological institute (KNMI). For some stations data goes back to 1900.
With helper-functions, the data can be subsetted based on year and specified variables. The returned data is converted to SI-units, when necessary. Several additional helper functions are available, such as a function that calculates the Hugin- or VE-index.
The package also contains two KNMI datasets with all measurement stations and with long term averages from 2000-2015.

Depends R (>= 3.2.1)

Imports data.table, plyr, dplyr, stringr, RCurl, rvest, xml2, ggplot2, gmap

License GPL-3

LazyData true

Encoding UTF-8

RoxygenNote 6.0.1

Suggests knitr, rmarkdown

VignetteBuilder knitr

R topics documented:

add_degree_days	<i>add degree-day data.</i>
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Description

add_degree_days adds a column with the degree days based on either the Huglin or VE calculation.

Usage

```
add_degree_days(data, dggType = "Huglin",
  startDate = paste(format(Sys.Date(), format = "%Y"), "01-01", sep = "-"),
  endDate = paste(format(Sys.Date(), format = "%Y"), "12-31", sep = "-"))
```

Arguments

data	dataframe containing four mandatory columns; the stationID, doy (day-of-the-year) and gemTemp (the daily mean temperature) and maxTemp (the daily maximum temperature) and an optional column containing the year (jaar). Temperatures in degrees Celcius. The data frame can contain the ranges for multiple years.
dggType	type of degree days that will be added. Two options: 'Huglin' or 'VE'. Default is 'Huglin'.
startDate	the start of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the start of the year.
endDate	the end of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the end of the year.

Details

this helper-function adds growing degree days (see [growing degree days on Wikipedia](#)), either the Huglin-index or the VE-index, to the provided data-frame. See the functions [calculate_Huglin_index](#) or [calculate_VE_index](#) for more details.

NOTE: This function only works correctly when the column names of the data-frame have been translated with the function 'rename_columns_KNMI_data()'.

Value

the original dataframe with the cumulative Huglin-index or the VE-index added for each day-of-the-year

beaufort_scale	<i>Wind-force conversion table between the Beaufort-scale and m/s or km/hour.</i>
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Description

- Beaufort: the Beaufort scale
- min_km_per_uur: minimum wind force in km/hour corresponding to the Beaufort scale
- max_km_per_uur: maximum wind force in km/hour corresponding to the Beaufort scale
- min_m_per_s: minimum wind force in m/s corresponding to the Beaufort scale
- max_m_per_s: maximum wind force in m/s corresponding to the Beaufort scale
- omschrijving: description of the wind force (in Dutch)
- uitwerking op open zee: description of the effect of the wind force on open sea

Usage

```
data(beaufort_scale)
```

Format

A data frame with 13 rows and 7 variables:

Source

<http://cdn.knmi.nl/system/downloads/files/000/000/011/original/beaufortschaal.pdf>

calculate_Huglin_index	<i>calculate the Huglin-index.</i>
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Description

calculate_Huglin_index calculates the degree days according to the Huglin-algorithm.

Usage

```
calculate_Huglin_index(dgg, startDate = paste(format(Sys.Date(), format =
"%Y"), "01-01", sep = "-"), endDate = paste(format(Sys.Date(), format =
"%Y"), "12-31", sep = "-"))
```

Arguments

dgg	dotaframe containing three mandatory columns; the day-of-the-year (doy), the daily mean temperature (gemTemp), the daily maximum temperature (maxTemp) and an optional column containing the year (jaar). Temperatures in degrees Celcius. The data frame can contain the ranges for multiple years.
startDate	the start of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the start of the year.
endDate	the end of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the end of the year.

Details

This function calculates the Huglin index (see [Klimaat en de Druivelaar](#) on the website of the Brabantse Wijnbouwers (in Dutch)). The Huglin index is one of the statistics that represents the total amount of heat in a season that is bennefical to the growth of plants. More specific, its used to measure the amount of warmth that is required by grapes to start growing, blossom and ripen.

It is calculated as the cumultive summation over the days of the year of the mean of the daily averagee temperature (in degrees Celcius) plus the daily maximum temperature, substracted with 10 (the temperature at wihch grapes start growing). This value is only added to the total when its positive. The value is multiplied by a correction for the latitude of the measurement location (1.06 for The Netherlands). The default summation interval, from the first of April until the end of September, has been altered to be able to deal with cool-climate winegrowing that requires a prolonged growing season.

NOTE: This function only works correctly when the column names of the data-frame have been translated with the function 'rename_columns_KNMI_data()'.

Documentation: <https://de.wikipedia.org/wiki/Huglin-Index>.

Value

dataframe containing the year, the day-of-the-year (doy) and the Huglin-index for each day-of-the-year.

calculate_VE_index	<i>calculate the VE-index.</i>
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Description

calculate_VE_index calculates the degree days according to the VE-algorithm.

Usage

```
calculate_VE_index(dgg, startDate = paste(format(Sys.Date(), format = "%Y"),
"01-01", sep = "-"), endDate = paste(format(Sys.Date(), format = "%Y"),
"12-31", sep = "-"))
```

Arguments

dgg	dotaframe containing two mandatory columns; the day-of-the-year (doy), the daily mean temperature (gemTemp) and an optional column containing the year (jaar). Temperatures in degrees Celcius. The data frame can contain the ranges for multiple years.
startDate	the start of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the start of the year.
endDate	the end of the summation interval, formatted as a string 'yyyy-mm-dd'. Defaults to the end of the year.

Details

This function calculates the VE index (see [Klimaat en de Druivelaar](#) on the website of the Brabantse Wijnbouwers (in Dutch)). The VE index is one of the statistics that represents the total amount of heat in a season that is bennefical to the growth of plants. More specific, its used to measure the amount of warmth that is required by grapes to start growing, blossom and ripen.

It is calculated as the cumultive summation over the days of the year of the mean of the daily minimum temperature (in degrees Celcius) substracted with 10 (the temperature at wihch grapes start growing). This value is only added to the total when its positive. The default summation interval, from the first of April until the end of September, has been altered to be able to deal with cool-climate winegrowing that requires a prolonged growing season.

NOTE: This function only works correctly when the column names of the data-frame have been translated with the function 'rename_columns_KNMI_data()'.

Documentation: <https://de.wikipedia.org/wiki/Wachstumsgradtag>.

Value

dataframe containing the year, the day-of-the-year (doy) and the Huglin-index for each day-of-the-year.

date2day_of_year	<i>date to day-of-year conversion</i>
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Description

date2day_of_year converts a date into an integer that represents the day-of-the-year.

Usage

```
date2day_of_year(datum)
```

Arguments

datum	the date that needs to be converted. Date class.
-------	--

Details

Note: this function is a R-base implementation of the lubridate::yday function.

Value

an integer representing the day-of-the-year.

Examples

```
date2day_of_year(as.Date("2015-01-01")) # expected value: 1
date2day_of_year(as.Date("2015-12-31")) # expected value: 365
```

day_of_year2date	<i>day-of-year to date conversion</i>
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Description

day_of_year2date converts a 'day-of-the-year'-value into a date.

Usage

```
day_of_year2date(doy, year = format(Sys.Date(), format = "%Y"))
```

Arguments

doy	the day-of-the-year that needs to be converted. Integer.
year	the year for which the day-of-the-year is applicable. Integer. Default is the current year.

Value

the date corresponding to the day-of-the-year.

Examples

```
day_of_year2date(1) # '01-01-2017', when executed in the year 2017.
day_of_year2date(1, year=2010) # '01-01-2010'
```

difference_in_days	<i>difference-in-days between to equivalent time series</i>
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Description

difference_in_days determines the two dates in two ranges of values that have the most similar value. Next, the difference between the two days is calculated.

Usage

```
difference_in_days(ac, lvg)
```

Arguments

ac	dataframe containing the day-of-the-year and a column containing the value (note: The values must belong to the same year. The column-names are not relevant.)
lvg	dataframe containing the day-of-the-year and a column containing the value (note: The values must belong to the same year. The column-names are not relevant)

Details

this helper-function calculates the difference in days between the maximum value in the first range with daily values and the day-of-the-year that this value occurred in the second range with daily values. Normally the first range contains the actual values and the second range contains a historic time series of data. The function expects more or less continuously increasing values, for example the Huglin-index, VE-index, the yearly totalized amount of rain, etc.

Value

difference in days between the two ranges with daily values.

find_nearest_KNMI_station	<i>find the nearest KNMI station</i>
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Description

find_nearest_KNMI_station returns the KNMI measurement station that is closest to the provided location.

Usage

```
find_nearest_KNMI_station(location, active = TRUE)
```

Arguments

location	data-frame with a lat/lon-column (using the WGS84 coordinate system).
active	boolean to select only currently active stations. Default = TRUE.

Details

One can select from the active stations (active = TRUE, the default) or all stations (active = FALSE).

Value

data-frame with the id, name, url to station information and the lat/lon of the nearest KNMI-station.

```
get_6day_weather_forecast
```

Get six-day weather forecast.

Description

get_6day_weather_forecast retrieves the six-day weather forecast from the KNMI-website.

Usage

```
get_6day_weather_forecast()
```

Format

The returned data frame contains the following columns:

- STN ID of measurementstation;
- YYYYMMDD Datum (YYYY=jaar MM=maand DD=dag) in karakter-formaat;
- date date in date-format;
- TN Minimum temperatuur (in 0.1 graden Celsius);
- TX Maximum temperatuur (in 0.1 graden Celsius);
- TG Etmaalgemiddelde temperatuur (in 0.1 graden Celsius);
- RH Etmaalsom van de neerslag (in 0.1 mm) (-1 voor <0.05 mm);
- neerslagKans Kans op neerslag (uitgedrukt in
- SP Percentage van de langst mogelijke zonneschijnduur;
- windkracht (Beaufort);
- min_m_per_s minimum wind (in m/s);
- max_m_per_s maximum wind (in m/s);
- doy day-of-the-year;
- year jaar;
- month maand;
- week weeknummer;
- day weekdag;

Details

This function retrieves the six-day weather forecast from the KNMI-website by applying web-scraping to the original KNMI web-page. This page can be viewed at <http://www.knmi.nl/nederland-nu/weer/verwachtingen>.

The page <https://www.knmi.nl/kennis-en-datacentrum/achtergrond/de-weersverwachting> contains background information on the weather forecast.

Value

a data frame.

Source

<http://www.knmi.nl/nederland-nu/weer/verwachtingen>

get_climate_data_api *get KNMI climate data.*

Description

get_climate_data_api retrieves KNMI data through the KNMI-API.

Usage

```
get_climate_data_api(stationID = "ALL", from = paste(format(Sys.Date(),
  format = "%Y"), "0101", sep = ""), to = format(Sys.Date() - 1, format =
  "%Y%m%d"))
```

Arguments

stationID	ID for the KNMI measurement station. The available stations can be retrieved with the function 'getStations()'. Defaults to "all". . Note: a string of characters in the format 'iii'.
from	startdate for the time-window. Defaults to the start of the current year. Note: a string of characters in the format 'yyyymmdd'.
to	enddate for the time-window. Defaults to yesterday. Note: a string of characters in the format 'yyyymmdd'.

Format

The returned data frame contains the following columns:

- STN = ID of measurementstation;
- YYYYMMDD = Datum (YYYY=jaar MM=maand DD=dag);
- DDVEC Vectors gemiddelde windrichting in graden (360=noord, 90=oost, 180=zuid, 270=west, 0=windstil/variabel). Zie <http://www.knmi.nl/kennis-en-datacentrum/achtergrond/klimatologische-brochures-en-boeken>;

- FHVEC Vectorgemiddelde windsnelheid (in 0.1 m/s). Zie <http://www.knmi.nl/kennis-en-datacentrum/achtergrond/klimatologische-brochures-en-boeken>;
- FG Etmaalgemiddelde windsnelheid (in 0.1 m/s);
- FHX Hoogste uurgemiddelde windsnelheid (in 0.1 m/s);
- FHXH Uurvak waarin FHX is gemeten;
- FHN Laagste uurgemiddelde windsnelheid (in 0.1 m/s);
- FHNH Uurvak waarin FHN is gemeten;
- FXX Hoogste windstoot (in 0.1 m/s);
- FXXH Uurvak waarin FXX is gemeten;
- TG Etmaalgemiddelde temperatuur (in 0.1 graden Celsius);
- TN Minimum temperatuur (in 0.1 graden Celsius);
- TNH Uurvak waarin TN is gemeten;
- TX Maximum temperatuur (in 0.1 graden Celsius);
- TXH Uurvak waarin TX is gemeten;
- T10N Minimum temperatuur op 10 cm hoogte (in 0.1 graden Celsius);
- T10NH 6-uurs tijdvak waarin T10N is gemeten;
- SQ Zonneschijnduur (in 0.1 uur) berekend uit de globale straling (-1 voor <0.05 uur);
- SP Percentage van de langst mogelijke zonneschijnduur;
- Q Globale straling (in J/cm²);
- DR Duur van de neerslag (in 0.1 uur);
- RH Etmaalsom van de neerslag (in 0.1 mm) (-1 voor <0.05 mm);
- RHX Hoogste uursom van de neerslag (in 0.1 mm) (-1 voor <0.05 mm);
- RHXH Uurvak waarin RHX is gemeten;
- EV24 Referentiegewasverdamping (Makkink) (in 0.1 mm);
- PG Etmaalgemiddelde luchtdruk herleid tot zeeniveau (in 0.1 hPa) berekend uit 24 uurwaarden;
- PX Hoogste uurwaarde van de luchtdruk herleid tot zeeniveau (in 0.1 hPa);
- PXH Uurvak waarin PX is gemeten;
- PN Laagste uurwaarde van de luchtdruk herleid tot zeeniveau (in 0.1 hPa);
- PNH Uurvak waarin PN is gemeten;
- VVN Minimum opgetreden zicht;
- VVNH Uurvak waarin VVN is gemeten;
- VVX Maximum opgetreden zicht;
- VVXH Uurvak waarin VVX is gemeten;
- NG Etmaalgemiddelde bewolking (bedekkingsgraad van de bovenlucht in achtsten, 9=bovenlucht onzichtbaar);
- UG Etmaalgemiddelde relatieve vochtigheid (in procenten);
- UX Maximale relatieve vochtigheid (in procenten);
- UXH Uurvak waarin UX is gemeten;
- UN Minimale relatieve vochtigheid (in procenten);
- UNH Uurvak waarin UN is gemeten;

Details

This function retrieves raw climate data collected by the official KNMI measurement stations for a specific station and/or date-range. It uses the, somewhat slower, KNMI-API to collect the data. The function `get_climate_data_zip` in this package is optimized to collect data for larger date-ranges (e.g. for > 10 years), but is less flexible with combinations of all or specific stations and date ranges.

You can specify a specific station or get data from all the stations at once (the default). When the from and to date parameters are not provided, all measurements for the current year are returned. Otherwise the data is subsetting to the given interval.

The original KNMI API is described on the web-page [collecting data through a script](#).

Note: this function only works for the land-based measurement stations, so not for the stations in the North Sea, as the API does not expose these.

Value

a data frame.

`get_climate_data_zip` *get KNMI climate data from zip-files.*

Description

`get_climate_data_zip` retrieves KNMI data by downloading prepared KNMI zip-files.

Usage

```
get_climate_data_zip(station = "ALL", from = paste(format(Sys.Date(), format
= "%Y"), "0101", sep = ""), to = format(Sys.Date() - 1, format =
"%Y%m%d"), return_only_land = TRUE)
```

Arguments

<code>station</code>	ID for the KNMI station. The available stations can be retrieved with the function <code>'list_stations()'</code> . Defaults to "ALL". . Note: a string of characters in the format 'iii'.
<code>from</code>	startdate for the time-window. Defaults to the start of the current year. If the returned data is from a later date, no prior data is available for the selected station. Note: a string of characters in the format 'yyymmdd'.
<code>to</code>	enddate for the time-window. Defaults to yesterday. If the returned data is from an earlier date, no recent data is available for the selected station. Note: a string of characters in the format 'yyymmdd'.
<code>return_only_land</code>	boolean indicating that only the data for the land-based stations is returned. Defaults to "TRUE".

Format

The returned data frame contains the following columns:

- STN = ID of measurementstation;
- YYYYMMDD = Datum (YYYY=jaar MM=maand DD=dag);
- DDVEC Vectorgemiddelde windrichting in graden (360=noord, 90=oost, 180=zuid, 270=west, 0=windstil/variabel). Zie <http://www.knmi.nl/kennis-en-datacentrum/achtergrond/klimatologische-brochures-en-boeken>;
- FHVEC Vectorgemiddelde windsnelheid (in 0.1 m/s). Zie <http://www.knmi.nl/kennis-en-datacentrum/achtergrond/klimatologische-brochures-en-boeken>;
- FG Etmaalgemiddelde windsnelheid (in 0.1 m/s);
- FHX Hoogste uurgemiddelde windsnelheid (in 0.1 m/s);
- FHHX Uurvak waarin FHX is gemeten;
- FHN Laagste uurgemiddelde windsnelheid (in 0.1 m/s);
- FHNH Uurvak waarin FHN is gemeten;
- FXX Hoogste windstoot (in 0.1 m/s);
- FXXH Uurvak waarin FXX is gemeten;
- TG Etmaalgemiddelde temperatuur (in 0.1 graden Celsius);
- TN Minimum temperatuur (in 0.1 graden Celsius);
- TNH Uurvak waarin TN is gemeten;
- TX Maximum temperatuur (in 0.1 graden Celsius);
- TXH Uurvak waarin TX is gemeten;
- T10N Minimum temperatuur op 10 cm hoogte (in 0.1 graden Celsius);
- T10NH 6-uurs tijdvak waarin T10N is gemeten;
- SQ Zonneschijnduur (in 0.1 uur) berekend uit de globale straling (-1 voor <0.05 uur);
- SP Percentage van de langst mogelijke zonneschijnduur;
- Q Globale straling (in J/cm²);
- DR Duur van de neerslag (in 0.1 uur);
- RH Etmaalsom van de neerslag (in 0.1 mm) (-1 voor <0.05 mm);
- RHX Hoogste uursom van de neerslag (in 0.1 mm) (-1 voor <0.05 mm);
- RHXH Uurvak waarin RHX is gemeten;
- PG Etmaalgemiddelde luchtdruk herleid tot zeeniveau (in 0.1 hPa) berekend uit 24 uurwaarden;
- PX Hoogste uurwaarde van de luchtdruk herleid tot zeeniveau (in 0.1 hPa);
- PXH Uurvak waarin PX is gemeten;
- PN Laagste uurwaarde van de luchtdruk herleid tot zeeniveau (in 0.1 hPa);
- PNH Uurvak waarin PN is gemeten;
- VVN Minimum opgetreden zicht;
- VVNH Uurvak waarin VVN is gemeten;

- VVX Maximum opgetreden zicht;
- VVXH Uurvak waarin VVX is gemeten;
- NG Etmaalgemiddelde bewolking (bedekkingsgraad van de bovenlucht in achtsten, 9=bovenlucht onzichtbaar);
- UG Etmaalgemiddelde relatieve vochtigheid (in procenten);
- UX Maximale relatieve vochtigheid (in procenten);
- UXH Uurvak waarin UX is gemeten;
- UN Minimale relatieve vochtigheid (in procenten);
- UNH Uurvak waarin UN is gemeten;
- EV24 Referentiegewasverdamping (Makkink) (in 0.1 mm);

Details

This function retrieves raw climate data collected by the official KNMI weather stations. It is optimised for retrieving large sets of data that have been prepared by the KNMI for download. If a year in the past is selected, the call is forwarded to the function [get_climate_data_api](#). The function [get_climate_data_api](#) in this package is better suited to retrieve data for very specific date-ranges.

You can specify a specific station or get data from all the stations at once (the default). When the from and to date parameters are not provided, all measurements for the current year are returned. Otherwise the data is subsetting to the given interval.

The original KNMI API is described at the web-page [Daggegevens van het weer in Nederland](#).

Note: this function also works for the measurement stations in the North Sea. When the parameter station = "ALL" and return_only_land = FALSE, the data for all stations on land and sea is returned. With return_only_land = TRUE (the default) only the data for the land-based stations is returned.

Value

a data frame.

knmi.langJarigGem	<i>KNMI longterm averages</i>
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Description

A dataset containing the longterm averages (from 01-01-1999 to 31-12-2014) of measurements.

Usage

```
data(knmi_langJarigGem)
```

Format

A data frame with 13346 rows and 11 variables:

- station: ID of the station (210–391)
- dagVjaar: day of the year (1-366)
- gemTemp:
- gemMaxTemp:
- absMaxTemp:
- gemMinTemp:
- absMinTemp:
- gemNeerslag:
- gemZon:
- gemPercZon:
- gemStraling:

KNMIr

KNMIr: functions for retrieving historic climate data and the six-day forecast from the Dutch meteorological institute KNMI.

Description

This package provides functions to retrieve raw and processed climate data from the official Dutch meteorological institute (KNMI). For some stations data goes back to 1900.

Details

With helper-functions, the data can be subsetting based on year and specified variables. The returned data is converted to SI-units, when necessary. Several additional helper functions are available, such as a function that calculates the Huglin- or VE-index.

The package also contains two KNMI datasets with all measurement stations and with long term averages from 2000-2015.

list_stations	<i>list KNMI measurement stations.</i>
---------------	--

Description

list_stations list the id's and names of the KNMI measurement stations and if they are active or not.

Usage

```
list_stations(active = TRUE)
```

Arguments

active boolean to select only currently active stations. Default = TRUE.

Format

The returned data-frame contains the following columns:

- station = ID of measurement station;
- plaats = city closest to the measurement station;
- active = indicates if the station is still active;

Value

a data-frame.

map	<i>Map of the Netherlands (used for showing the locations of the measurementstations).</i>
-----	--

Description

details; 1280x1280 roadmap map image from Google Maps.

Usage

```
data(map_Netherlands)
```

Format

A data frame with 13 rows and 7 variables:

Source

Google Maps

plot_stations	<i>plot KNMI measurement stations.</i>
---------------	--

Description

plot_stations plots a map of The Netherlands and shows the locations of the KNMI measurement station and their id and name.

Usage

```
plot_stations(active = TRUE)
```

Arguments

active boolean to select only currently active stations. Default = TRUE.

Details

One can show the active stations (active = TRUE, the default) or *all* stations (active = FALSE).

Value

data-frame with the id, name, url to station information and the lat/lon of the nearest KNMI-station.

rename_columns_KNMI_data	<i>rename columns in the raw KNMI dataset.</i>
--------------------------	--

Description

rename_columns_KNMI_data provides more readable names for the different variables.

Usage

```
rename_columns_KNMI_data(data)
```

Arguments

data data-frame with KNMI-data that has been obtained with the function [get_climate_data_api](#), [get_climate_data_zip](#), [get_6day_weather_forecast](#) or [subset_KNMI_data](#).

Value

data-frame met subset van de KNMI-data.

stations	<i>KNMI stations</i>
----------	----------------------

Description

A dataset containing the ID's and meta-data on the official KNMI measurement stations.

Usage

```
data(stations)
```

Format

A data frame with 35 rows and 7 variables:

Details

- station: ID of the station (210–391)
- plaats: City where the station is located
- lon: geographical longitude (format: Decimal Degrees DDD.DDDDD°)
- lat: geographical latitude (format: Decimal Degrees DDD.DDDDD°)
- startdatum: start date of the measurement series
- einddatum: end date of the measurement series
- info: url pointing to the web-page with the station information

Source

<http://projects.knmi.nl/klimatologie/metadata/index.html>

subset_KNMI_data	<i>subset the KNMI data.</i>
------------------	------------------------------

Description

subset_KNMI_data returns a filtered subset of the KNMI data-set.

Usage

```
subset_KNMI_data(data, startyear = 2006, variables = c("FG", "TG", "TN",  
  "TX", "SQ", "SP", "Q", "RH", "NG"))
```

Arguments

data	data-frame with KNMI-data that has been obtained with the function 'getClimateDataSet' or 'getClimateDateInBulk'.
startyear	start-year for the selection. Default is 2006. Note that the end-year is always the most current year in the data-set.
variables	list with variables that should be returned from the data-frame. Default is ("FG", "TG", "TN", "TX", "SQ", "S

Format

The default data frame contains the following columns:

- stationID = ID of measurementstation;
- datum = Datum (YYYY=jaar MM=maand DD=dag);
- FG : gemWind = Etmaalgemiddelde windsnelheid (in m/s);
- TG : gemTemp = Etmaalgemiddelde temperatuur (in graden Celsius);
- TN : minTemp = Minimum temperatuur (in graden Celsius);
- TX : maxTemp = Maximum temperatuur (in graden Celsius);
- SQ : zon = Zonneschijnduur (in uur) berekend uit de globale straling (-1 voor <0.05 uur);
- SP : percZon = Percentage van de langst mogelijke zonneschijnduur;
- Q : straling = Globale straling (in J/cm2);
- RH : dagTotaalNeerslag = Etmaalsom van de neerslag (in mm) (-1 voor <0.05 mm);
- NG : gemBewolking = Etmaalgemiddelde bewolking (bedekkingsgraad van de bovenlucht in achtsten, 9=bovenlucht onzichtbaar);

Details

The function subset_KNMI_data can only be applied to the raw measurement data obtained with the functions [get_climate_data_api](#), [get_climate_data_zip](#), [get_6day_weather_forecast](#).

It's a convenience function; the results can also be obtained in other ways.

The filtering is two-fold; select the most-used variables from the complete set of variables and include the data from the provided start-year upward to the most current date.

More importantly, this function modifies the column values to SI-units and it adds some helper-columns, like day-of-the-year, weeknumber, daynummer, year.

Value

data-frame met subset van de KNMI-data.