Package: WeatherGermany (via r-universe)

March 7, 2025

Title Weather Data for Germany from the Deutscher Wetterdienst (DWD)

Version 1.0-0

Date 2024-11-20

Description Weather data for all stations in Germany as provided by
the Deutscher Wetterdienst (DWD). The data is pre-processed and
only the observations with the highest quality flags are
provided. In addition, elevation data of Germany is provided as
stars object.

License GPL-2 | GPL-3

URL https://github.com/gamlss-dev/WeatherGermany

BugReports https://github.com/gamlss-dev/WeatherGermany/issues

Depends R (>= 3.5.0), sf, stars

Suggests gamlss2

NeedsCompilation no

Config/pak/sysreqs libgdal-dev gdal-bin libgeos-dev libssl-dev
libproj-dev libsqlite3-dev libudunits2-dev

Repository https://gamlss-dev.r-universe.dev

RemoteUrl https://github.com/gamlss-dev/WeatherGermany

RemoteRef HEAD

RemoteSha 92e914790af950040b00a65cc02054c552ca5149

Contents

ElevationGermany   *Elevation Data for Germany*

Description

Digital elevation model data for Germany as provided from the **geodata** package.

Usage

```
data("ElevationGermany", package = "WeatherGermany")
```

Format

A "stars" object.

Source

Data is obtained from the **geodata** package. The original data source is provied by the Radar Topography Mission (SRTM) from https://srtm.csi.cgiar.org/.

Examples

```
## load the data
data("ElevationGermany", package = "WeatherGermany")

## plot elevation data
plot(ElevationGermany)
```

Germany   *Map of Germany*

Description

The map contains the counties of Germany. The data was originally taken from GADM (https://gadm.org/) and slightly simplified to reduce disk space.

Usage

```
data("Germany", package = "WeatherGermany")
```

Format

A class "sf" data frame containing 403 counties of Germany.

id Factor, a county id.

county Character, the county in Germany where the weather station is located.

state Character, the state in Germany where the weather station is located.

geometry The polygon information.

Source

Map of Germany:

Data Source: GADM

Licence: CC BY

URL: https://gadm.org/

Coordinate Reference System: Longitude/latitude and the WGS84 datum.

Examples

```
## load sf package for plotting
library("sf")

## load the data
data("Germany", package = "WeatherGermany")

## plot the map
plot(st_geometry(Germany))
```

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storms	*Severe Storms in Germany*

Description

According to the Beaufort scale, severe storms occur from a wind speed of 24.5-28.4 m/s. This dataset contains annual severe storm counts from weather stations in Germany from 1981 to 2021.

Usage

```
data("storms", package = "WeatherGermany")
```

Format

A data frame containing 3494 observations on 8 variables.

id Factor, the weather station id.

year Integer, the year the observation was measured.

counts Integer, the number of severe storms in this year.

mean Numeric, the mean of the maximum wind speeds (in m/s) recorded during severe storms in the respective year.

max Numeric, the maximum of the maximum wind speeds (in m/s) recorded during severe storms in the respective year.

sd Numeric, the standard deviation of the maximum wind speeds (in m/s) recorded during severe storms in the respective year.

name Character, the region name the weather station is located.

alt Numeric, the altitude in meters above sea level of the weather station.

lon Numeric, the longitude coordinate of the weather station.

lat Numeric, the latitude coordinate of the weather station.

Source

Severe Storms Data:

Data Source: Deutscher Wetterdienst (DWD), Climate Data Center (CDC).

Licence: CC BY 4.0

URL: https://opendata.dwd.de/climate_environment/CDC/

Coordinate Reference System: Longitude/latitude and the WGS84 datum.

Examples

```
## load the data
data("storms", package = "WeatherGermany")

## yearly observations
plot(counts ~ year, data = storms)

## count distribution
barplot(table(storms$counts))

## NBI model
## Not run: library("gamlss2")

## model formula including spatial effect
f <- counts ~ s(year) + s(alt) + s(lon, lat) |
  s(year) + s(alt) + s(lon, lat)

## estimate model
b <- gamlss2(f, data = storms, family = NBI)

## estimated effects
plot(b)

## residual diagnostics
plot(b, which = "resid")

## End(Not run)
```

WeatherGermany   *Weather data for Germany from the Deutscher Wetterdienst (DWD)*

Description

Daily weather data for all stations in Germany as provided by the Deutscher Wetterdienst (DWD). The data is pre-processed and only the observations with the highest quality flags are provided. Please see the documentation of the DWD provided in

https://opendata.dwd.de/climate_environment/CDC/observations_germany/climate/daily/kl/historical/

Usage

```
data("WeatherGermany", package = "WeatherGermany")
```

Format

A data frame containing 6734119 observations on 11 variables.

id Factor, the weather station id.

date Dat, the day the data is recored.

Wmax Numeric, the maximum wind speed in m/s.

pre Numeric, amount of precipitation in mm.

Tmax Numeric, the maximum 2m temperature.

Tmin Numeric, the minimum 2m temperature.

sun Numeric, number of hours of sunshine.

name Character, the station name.

alt Numeric, the altitude in meters above sea level of the weather station.

lon Numeric, the longitude coordinate of the weather station.

lat Numeric, the latitude coordinate of the weather station.

Source

Daily German Weather Data:

Data Source: Deutscher Wetterdienst (DWD), Climate Data Center (CDC).

Licence: CC BY 4.0

URL: https://opendata.dwd.de/climate_environment/CDC/

Coordinate Reference System: Longitude/latitude and the WGS84 datum.

Examples

```
## load the data
data("WeatherGermany", package = "WeatherGermany")

## yearly averages of maximum temperature
WeatherGermany$year <- as.POSIXlt(WeatherGermany$date)$year + 1900
a <- aggregate(Tmax ~ year, data = WeatherGermany, FUN = mean)

## plot
plot(Tmax ~ year, data = a, type = "b")
```

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