

Package: kwb.impetus (via r-universe)

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Title R Package with Functions Used in Project IMPETUS

Version 0.0.0.9000

Description R Package with Functions used in Project IMPETUS.

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URL <https://github.com/KWB-R/kwb.impetus>

BugReports <https://github.com/KWB-R/kwb.impetus/issues>

Imports archive, dplyr, fs, ggplot2, kwb.utils, leaflet, leafem,
magrittr, sf, stars, stringr, readr, rlang, tibble

Suggests covr, DT, htmlwidgets, leaflet, jsonlite, knitr, kwb.dwd,
kwb.fisbroker, kwb.pkgbuild, plotly, openxlsx, rmarkdown,
tidyr, wasserportal

VignetteBuilder knitr

Remotes github::kwb-r/kwb.dwd, github::kwb-r/kwb.fisbroker,
github::kwb-r/kwb.utils, github::kwb-r/kwb.pkgbuild,
github::kwb-r/wasserportal

Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.1

Depends R (>= 2.10)

Config/pak/sysreqs libabsl-dev cmake libgdal-dev gdal-bin libgeos-dev make libarchive-dev libicu-
dev libpng-dev libuv1-dev libssl-dev libproj-dev libsqlite3-dev libudunits2-dev libx11-dev

Repository <https://kwb-r.r-universe.dev>

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decade_label	<i>Label for Decade Year Range</i>
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Description

Label for Decade Year Range

Usage

decade_label(decade)

Arguments

decade start of decade as integer, e.g. 1990L

Value

character string, e.g. "1990 - 1999"

decade_ribbons	<i>ggplot2 ribbon between q05 and q95</i>
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Description

ggplot2 ribbon between q05 and q95

Usage

```
decade_ribbons(alpha = 0.1)
```

Arguments

alpha	passed to geom_ribbon
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decades_tibble	<i>Tibble with Decade Names and Values</i>
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Description

Tibble with Decade Names and Values

Usage

```
decades_tibble(  
  decade_labels,  
  colors = c("darkblue", "blue", "darkgreen", "lightgreen", "orange", "red")  
)
```

Arguments

decade_labels	decade labels
colors	colour values

Value

tibble with columns names and values

download_gfz_model	<i>Download GFZ Model Layers</i>
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Description

Download GFZ Model Layers

Usage

```
download_gfz_model(target_dir = tempdir())
```

Arguments

target_dir target directory to extract files (default: tempdir())

Value

extracts GFZ model layers in target directory

dwd_berlin_monthly	<i>DWD Dataset (Precipitation and Potential Evaporation) Averaged for Berlin</i>
--------------------	--

Description

A dataset containing the precipitation and potential diamonds.

Usage

dwd_berlin_monthly

Format

A data frame with 3852 rows and 12 variables:

- parameter_name** self-defined name for parameter
- parameter** original DWD parameter name (required for requests)
- file** name of raw data file
- year** year
- month** month
- mean** spatial mean value for month
- sd** spatial standard deviation value for month
- min** spatial minimum value for month
- max** spatial maximum value for month
- n_values** number of 1x1km2 grids used for spatial statistics calculation
- parameter** parameter name
- url** full url to raw data file

Examples

```
## Not run:
#####
#### R code used for creation of "dwd_berlin_monthly.rds"
#####

remotes::install_github("kwb-r/kwb.dwd")

library(kwb.impetus)

shape_obj <- kwb.dwd::get_shape_of_german_region(name = "berlin")
shape_file <- "berlin.shp"

shape_obj %>%
  sf::st_as_sf() %>%
  sf::write_sf(shape_file)

### Plot to check if Berlin boundaries are plotted correctly.
### Set target CRS
crs_target <- 4326
shape_pt <- sf::st_read(shape_file) %>%
  sf::st_transform(crs = crs_target)
basemap <- shape_pt %>%
  leaflet::leaflet() %>%
  leaflet::addTiles() %>%
  leaflet::addProviderTiles(leaflet::providers$CartoDB.Positron) %>%
  leaflet::addPolygons(color = "red", fill = FALSE)
basemap
yearmonth_start <- "188101"
yearmonth_end <- "202208"
kwb.dwd::list_monthly_grids_germany_asc_gz("x")
dwd_monthly_vars <- c("#air temperature (mean)" = "air_temperature_mean",
  "drought index" = "drought_index",
  "evaporation, potential" = "evapo_p",
  "evaporation, real" = "evapo_r",
  "precipitation" = "precipitation",
  "soil moisture" = "soil_moist",
  "soil temperature (5 cm)" = "soil_temperature_5cm"
)

system.time(
  dwd_berlin_monthly_list <- stats::setNames(lapply(dwd_monthly_vars, function(dwd_var) {
    kwb.dwd::read_monthly_data_over_shape(
      file = shape_file,
      variable = dwd_var,
      from = yearmonth_start,
      to = yearmonth_end,
      quiet = TRUE
    )
  }), nm = dwd_monthly_vars))
```

```

dwd_berlin_monthly <- dplyr::bind_rows(dwd_berlin_monthly_list, .id = "parameter")

dwd_berlin_monthly <- tibble::tibble(parameter_name = names(dwd_monthly_vars),
                                     parameter = as.character(dwd_monthly_vars)) %>%
  dplyr::left_join(dwd_berlin_monthly)

usethis::use_data(dwd_berlin_monthly, overwrite = TRUE)

## End(Not run)

# Dataset

dwd_berlin_monthly

# Covered time period for each parameter

dwd_berlin_monthly %>%
  dplyr::group_by(.data$parameter_name,
                  .data$parameter) %>%
  dplyr::summarise(date_min = min(.data$date),
                  date_max = max(.data$date))

```

floor_decade

floor to decade

Description

floors to previous decade.

Usage

```
floor_decade(value)
```

Arguments

value year

Value

decade

Examples

```
floor_decade(2000:2020)
```

ggplot2_scale_x_continuous_12
<i>Continuous x scale for months</i>

Description

Continuous x scale for months

Usage

ggplot2_scale_x_continuous_12()

group_by_decade_label	<i>Group by Dekade_Label</i>
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Description

Group by Dekade_Label

Usage

group_by_decade_label(data)

Arguments

data	data frame
------	------------

group_by_decade_month_label
<i>Group by Decade, Decade_Label, Month, Label</i>

Description

Group by Decade, Decade_Label, Month, Label

Usage

group_by_decade_month_label(data)

Arguments

data	data frame
------	------------

group_by_site_decade_month_label
<i>Group by Messstellennummer, Decade, Decade_Label, Month, Label</i>

Description
Group by Messstellennummer, Decade, Decade_Label, Month, Label

Usage
group_by_site_decade_month_label(data)

Arguments
data data frame

group_by_site_year_month_label
<i>Group by Messstellennummer, Year, Month, Label</i>

Description
Group by Messstellennummer, Year, Month, Label

Usage
group_by_site_year_month_label(data)

Arguments
data data frame

group_by_year_month	<i>Group by Year, Month</i>
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Description
Group by Year, Month

Usage
group_by_year_month(data)

Arguments
data data frame

numeric_quantile	<i>Unnamed Quantile Value</i>
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Description

Unnamed Quantile Value

Usage

numeric_quantile(x, prob)

Arguments

- x vector of numeric
- prob probability passed to [quantile](#)

plot_gfz_layer	<i>Plot GFZ Model Raster Layer</i>
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Description

Plot GFZ Model Raster Layer

Usage

plot_gfz_layer(layer)

Arguments

- layer a layer as retrieved by [read_gfz_layers](#)

Value

plot raster layer

q_surface_water	<i>Surface Water Flows (from Niedrigwasserbericht 2018-2020 by SenUVK Berlin)</i>
-----------------	---

Description

Extracted parts of table on page 16 from Niedrigwasserbericht 2018-2020 by SenUVK Berlin. Contains only flows from inflows to Berlin (i.e. no data from Sophienwerder and Muehlendamm Schleuse were imported)

Usage

```
q_surface_water
```

Format

A data frame with 6 rows and 10 variables:

fliessgewaesser name of surface water
pegel name of monitoring station
mq.1991_2017 MQ for period 1991-2017 (m3/s)
mnq.1991_2017 MQ for period 1991-2017 (m3/s)
nnq.1991_2017 MQ for period 1991-2017 (m3/s)
nnq.value NNQ value (m3/s)
nnq.date Date of nnq.value (NA if "often" !)
mq.2018 MQ of year 2018 (m3/s)
mq.2019 MQ of year 2019 (m3/s)
mq.2020 MQ of year 2020 (m3/s)

References

https://www.berlin.de/sen/uvk/_assets/umwelt/wasser-und-geologie/niedrigwasser/niedrigwasser_berlin_2018-2020.pdf#page=16

Examples

```
kwb.impetus::q_surface_water
```

read_gfz_layer	<i>Reads a single GFZ Model Layer</i>
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Description

Reads a single GFZ Model Layer

Usage

```
read_gfz_layer(path, as_raster)
```

Arguments

path	path to GFZ Model Layer
as_raster	convert to raster (default: TRUE)

Value

imported layer file

read_gfz_layers	<i>Reads multiple GFZ Model Layers</i>
-----------------	--

Description

Reads multiple GFZ Model Layers

Usage

```
read_gfz_layers(  
  dir_model_data,  
  type = "elevation",  
  as_raster = TRUE,  
  dbg = TRUE  
)
```

Arguments

dir_model_data	path to GFZ Model Layer Data as retrieved by download_gfz_model
as_raster	convert to raster (default: TRUE)
dbg	print debug messages (default: TRUE)

Value

imported layer files

round_to_decade	<i>round to decade</i>
-----------------	------------------------

Description

rounds to next decade if end year is >=5 or floors to previous decade if end year <5.

Usage

round_to_decade(values)

Arguments

values year

Value

decade

Examples

round_to_decade(2000:2020)

scale_color_decades	<i>ggplot2: scale color decades</i>
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Description

ggplot2: scale color decades

Usage

scale_color_decades(decades, ...)

Arguments

decades decades
... additional arguments passed to xxx

Value

re-scales ggplot2

scale_fill_decades	<i>ggplot2: scale fill decades</i>
--------------------	------------------------------------

Description

ggplot2: scale fill decades

Usage

```
scale_fill_decades(decades, ...)
```

Arguments

decades	decades
...	additional arguments passed to xxx

Value

re-scales ggplot2

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