Package ‘kgc’

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Title Koeppen-Geiger Climatic Zones
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Encoding UTF-8
LazyData true
Description Aids in identifying the Koeppen-Geiger (KG) climatic zone for
    a given location. The Koeppen-Geiger climate zones were first published in 1884, as a system
    to classify regions of the earth by their relative heat and humidity through the year, for
    the benefit of human health, plant and agriculture and other human activity [1]. This climate
    zone classification system, applicable to all of the earth’s surface, has continued to be
    developed by scientists up to the present day. Recently one of use (FZ) has published updated,
    higher accuracy KG climate zone definitions [2]. In this package we use these updated
    high-resolution maps as the data source [3]. We provide functions that return the KG climate zone
    for a given longitude and latitude, or for a given United States zip code. In addition
    the CZUncertainty() function will check climate zones nearby to check if the given location
    is near a climate zone boundary. In addition an interactive shiny app is provided to define
    the KG climate zone for a given longitude and latitude, or United States zip code.
    Digital data, as well as animated maps, showing the shift of the climate zones are provided
    on the following website <http://koeppen-geiger.vu-wien.ac.at>.
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VignetteBuilder knitr
RoxygenNote 6.0.1
climatezones

Description

A data frame containing the Koppen Geiger climate classification for areas.

Usage

climatezones

Format

A data frame with 92416 rows and 3 variables:

Lat  Latitude, numeric
Lon  Longitude, numeric
Cls  Climate Zone, factor with 30 levels

Source

http://koeppen-geiger.vu-wien.ac.at/present.htm
**Description**

This function will return the uncertainty associated with the predicted climate zone along with other potential climate zones.

**Usage**

`CZUncertainty(data)`

**Arguments**

- **data**
  The co-ordinates for the location you are trying to predict the climate zone of.

**Value**

The uncertainty associated with the located climate zone along with other potential climate zones.

**Examples**

```r
data<- data.frame(Site = c("GC","UFS","NEG"),
                  Longitude = c(-15.42,10.98,34.78),
                  Latitude = c(27.82,47.42,30.86))
data <- data.frame(data,
                    rndCoord.lon = RoundCoordinates(data$Longitude),
                    rndCoord.lat = RoundCoordinates(data$Latitude))
data <- data.frame(data,ClimateZ=LookupCZ(data))
data <- data.frame(data, CZUncertainty(data))
```

**genCoords**

**Description**

This function will generate a list of coordinates for the 'fine' resolution climate zone map data, stored in 'kgz.rda'.

**Usage**

`genCoords(latlong = "lat", full = FALSE, latdim = 6480, londim = 12960)`
Arguments

latlong Whether a vector of latitude values, or longitude values, is being created.
full Specify whether to generate a full list of all coords in the full image, or just one row/column (default FALSE, means just one row/column).
latdim The number of pixels in the image in the latitude dimension (y)
londim The number of pixels in the image in the longitude dimension (x)

Value

A vector of latitude or longitude coordinate values (default for a map 12960x 6480y).

Examples

ccoords <- genCoords(latlong='lon',full='true')

Description

This function will return the character code of a given climate zone corresponding to a numeric value (factor levels of the fine resolution data).

Usage

getZone(num)

Arguments

num The numeric code describing a climate zone.

Value

A string describing the climate zone as a character code.

Examples

ccz <- getZone(16)
kgcities

Koppen Geiger climates for selected cities reference table.

Description
A data frame containing the reported climate zones and longitude and latitude for selected example cities worldwide.

Usage
kgcities

Format
A data frame with 88 rows and 5 variables:
- loc  location, character
- rczd reported climate zone description, character
- rcz  reported climate zone, character
- lon  longitude, numeric
- lat  latitude, numeric

Source
http://www.wikipedia.org

kmz

High resolution (100s) Koppen Geiger climate zones.

Description
A vector containing all points of a high resolution climate zone map.

Usage
kmz

Format
A vector of length 83980800 (ydim=6480, xdim=12960, row-wise), with 32 factor levels representing 31 koppen-geiger climate zones and 'ocean'.

Source
LookupCZ

Description

This function will return the climate zone for the co-ordinates provided.

Usage

LookupCZ(data, res = "course", rc = FALSE)

Arguments

data The co-ordinates for the location you are trying to predict the climate zone of (format is three column dataframe, first column site IDs, second column longitude values, third column latitude values).

res Specify the resolution as a string - 'course' for lower resolution (default, 0.5 degrees), 'fine' for higher resolution (100s).

rc Specify whether to generate the rounded coordinate columns in the input dataframe, default is FALSE.

Value

The climate zone for the co-ordinates provided.

Examples

data <- data.frame(site = c("GC","UFS","NEG"),
                   longitude = c(-15.42,18.98,34.78),
                   latitude = c(27.82,47.42,38.86))
data <- data.frame(data,
                   rndCoord.lon = RoundCoordinates(data$Longitude),
                   rndCoord.lat = RoundCoordinates(data$Latitude))
data <- data.frame(data,ClimateZ=LookupCZ(data))

RoundCoordinates

Description

This function will round the inputed value to a co-ordinate present in the KG Climate Zone look up table.

Usage

RoundCoordinates(number, res = "course", latlong = "lat")
RunExample

**Arguments**

- **number**: The value to round
- **res**: Specify the resolution as a string - 'course' for lower resolution (default, 0.5 degrees), 'fine' for higher resolution (100s).
- **latlong**: Whether the number is a latitude value ('lat', default), or longitude value ('lon') (this parameter is only used if res='fine').

**Value**

The inputed number, rounded to a value ending in either .25 or .75 (course), or to nearest 'fine' (100s) resolution grid point.

**Examples**

```r
runExample()
```

**Description**

This function will run the shiny app found in this package.

**Usage**

```r
runExample()
```

**Value**

launches the shiny app created for the package.

**Examples**

```r
## Not run:
kgc::runExample()
```

## End(Not run)
TranslateZipCode

Description
This function will return the data frame with the longitude and latitude of the zip codes

Usage
TranslateZipCode(number)

Arguments
number A dataframe that contains zip codes in a column labeled 'zip'

Value
The original data frame, with two additional columns for the corresponding latitude and longitude

Examples
example <- data.frame("zip" = c(44106, 638, 1106))
TranslateZipCode(example)

zipcodes

Description
A data frame containing the longitude and latitude for zip codes.

Usage
zipcodes

Format
A data frame with 33144 rows and 3 variables:
zip  zip code, numeric
lat  latitude, numeric
long long, numeric

Source
http://www.census.gov/geo/maps-data/data/gazetteer2016.html
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