Package 'rEarthquake'

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Type Package

Title rEarthquake

Version 0.0.1

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Description More about what it does (maybe more than one line)
Use four spaces when indenting paragraphs within the Description.

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Depends R (>= 2.10)

Imports dplyr, ggplot2,leaflet,stringr,lubridate,tidyr, grid

Suggests testthat,
knitr,
rmarkdown,
readr

VignetteBuilder knitr

R topics documented:

`eq_clean_data` *eq_clean_data*

Description

Takes the raw data set and adds new columns "date", "longitude" and "latitude".

Usage

```
eq_clean_data(eq_data)
```

Arguments

`eq_data`	A data table containing NOAA Earthquake data

Value

A date frame with a new column called date (in POSIXct format) and longitude and latitude columns formated as numeric.

Examples

```
library(dplyr)
USA <- eq_clean_data(eq_data_raw) %>% dplyr::filter(COUNTRY %in% "USA")
USA_IRAN <- eq_clean_data(eq_data_raw) %>%
  dplyr::filter(COUNTRY %in% c("USA","IRAN"))
```

`eq_create_label` *eq_create_label*

Description

A function to generate a custom popup box for a selected earthquake showing location, magnitude and total deaths.

Usage

```
eq_create_label(eq_data)
```

Arguments

`eq_data`	A data table containing NOAA Earthquake data

Value

An interactive map displaying earthquate location for a given country with custom popup.

Examples

```
library(dplyr)
eq_clean_data(eq_data_raw) %>%
  eq_location_clean() %>%
  dplyr::filter(COUNTRY == "MEXICO" & lubridate::year(date) >= 2000) %>%
  dplyr::mutate(popup_text = eq_create_label(.)) %>% eq_map(annot_col="popup_text")
```

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eq_data_raw *NOAA Significant Earthquake Data (entire DB up until April 2017)*

Description

NOAA Significant Earthquake Data (entire DB up until April 2017)

Usage

```
eq_data_raw
```

Format

A dataframe with columns described here: https://www.ngdc.noaa.gov/nndc/struts/results?&t=101650&s=225&d=225

Source

U.S. National Oceanographic and Atmospheric Administration (NOAA) https://www.ngdc.noaa.gov/nndc/struts/form?t=101650&s=1&d=1

Examples

```
## Not run:
eq_data_raw

## End(Not run)
```

eq_location_clean *eq_location_clean*

Description

Takes the raw data set and modified the column LOCATION_NAME to strip out country names and reformats to title case. This is recommended before passing the data into the "_label" functions to improve presentation of the output. The function can be used in conjuntion with ‘eq_clean_data‘ either before or after it in a

Usage

```
eq_location_clean(eq_data)
```

Arguments

eq_data	A data table containing NOAA Earthquake data

Details

A regular expression is used to match and remove the country names.

Value

A date frame with LOCATION_NAME cleaned to have country names removed and text in title case.

Examples

```
library(dplyr)
USA_clean_loc <- eq_clean_data(eq_data_raw) %>%
  eq_location_clean() %>% dplyr::filter(COUNTRY %in% "USA")
USA_IRAN_clean_loc <- eq_clean_data(eq_data_raw) %>%
   eq_location_clean() %>% dplyr::filter(COUNTRY %in% c("USA","IRAN"))
```

eq_map *eq_map*

Description

A function to generate an interactive map showing earthquakes for a particular country. The user specifies a column from the data which the earthquake is to be annotated by eg date.

Usage

```
eq_map(eq_data, annot_col)
```

Arguments

eq_data	A data table containing NOAA Earthquake data
annot_col	A column found in eq_data to annotate earthquake marker

Value

An interactive map displaying earthquate location for a given country with user defined popup.

Examples

```
library(dplyr)
library(lubridate)
eq_clean_data(eq_data_raw) %>%
  dplyr::filter(COUNTRY == "MEXICO" & lubridate::year(date) >= 2000) %>% eq_map(annot_col="date")
```

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geomTimeline *geomTimeline*

Description

geomTimeline

StatTimeline

geomTimelineLabel

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geom_timeline *geom_timeline*

Description

A ggplot2 graphical function to plot a timeline of earthquakes from cleaned data. The plot indicates the magnitude of each earthquake and number of deaths.

Usage

```
geom_timeline(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  ...
)
```

Arguments

mapping	mapping
data	data
stat	stat
position	position
na.rm	na.rm
show.legend	show.legend
inherit.aes	inherit.aes
...	...

Value

ggplot2 graphical object

Aesthetics

geom_timeline understands the following aesthetics:

- x date
- y latitude
- xmin minimum date for earthquakes
- xmax maximum date for earthquakes
- size used to size shape based on magnitude of earthquake eg EQ_PRIMARY
- fill used to colour shape based on number of deaths eg DEATHS
- colour used to colour shape based on number of deaths eg DEATHS

Examples

```
library(dplyr)
library(ggplot2)
library(lubridate)
eq_clean_data(eq_data_raw) %>% eq_location_clean() %>%
dplyr::filter(COUNTRY %in% c("USA","IRAN"))  %>%
    ggplot2::ggplot() +
    geom_timeline(aes(x = date,
                      y = COUNTRY,
                      colour = DEATHS,
                      size = EQ_PRIMARY,
                      fill = DEATHS,
                      xmin = lubridate::ymd_hm("2000-01-01",truncated = 2),
                      xmax = lubridate::ymd_hm("2016-01-01",truncated = 2)))
```

geom_timeline_label *geom_timeline_label*

Description

A ggplot2 graphical function that adds labels to earthquakes visualised. There is an option to select the "n" largest earthquakes by magnitude to which to apply the labels. Best used with 'eq_location_clean'.

Usage

```
geom_timeline_label(
  mapping = NULL,
  data = NULL,
  stat = "identity",
  position = "identity",
  na.rm = FALSE,
  show.legend = NA,
  inherit.aes = TRUE,
  ...
)
```

Arguments

mapping	mapping
data	data
stat	stat
position	position
na.rm	na.rm
show.legend	show.legend
inherit.aes	inherit.aes
...	...

Value

A ggplot2 graphical object for labelling plots generated with geom_timeline.

Aesthetics

geom_timeline_label understands the following aesthetics:

- x date
- y (optional) aes can be used to group output eg by COUNTRY
- location aes used to selection labels eg LOCATION_NAME
- xmin minimum date for earthquakes

- xmax maximum date for earthquakes
- size aes used to indicate size eg EQ_PRIMARY
- n_max the top n number of labels to show based on size aes, defaults to n = 5

Examples

```
library(dplyr)
library(ggplot2)
library(lubridate)
eq_clean_data(eq_data_raw) %>% eq_location_clean() %>%
dplyr::filter(COUNTRY %in% c("USA","IRAN"))  %>%
    ggplot2::ggplot() +
    geom_timeline(aes(x = date,
                      y = COUNTRY,
                      colour = DEATHS,
                      size = EQ_PRIMARY,
                      fill = DEATHS,
                      xmin = lubridate::ymd_hm("2000-01-01",truncated=2),
                      xmax = lubridate::ymd_hm("2016-01-01",truncated=2))) +
    geom_timeline_label(aes(x = date,
                            location = LOCATION_NAME,
                            xmin = lubridate::ymd_hm("2000-01-01",truncated=2),
                            xmax = lubridate::ymd_hm("2016-01-01",truncated=2),
                            size=EQ_PRIMARY,n_max=5,y=COUNTRY))
```

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get_timeline *get_timeline*

Description

A wrapper function to help generate timeline visualisations easier.

Usage

```
get_timeline(data_raw, clist = "ALL", xmin, xmax)
```

Arguments

data_raw	A data table containing NOAA Earthquake data
clist	Character/Vector of grouping names eg "USA" from COUNTRY column.
xmin	POSIXct date - minimum date for timeline
xmax	POSIXct date - maximum date for timeline

Value

A ggplot2 graphical object displaying timeline of earthquakes data

Examples

```
## Not run:
get_timeline(eq_data_raw, c("USA","IRAN"),"1970-01-01","2016-01-01")

## End(Not run)
```

`get_timeline_label` *get_timeline_label*

Description

A wrapper function to help generate timeline (with labels) visualisations easier.

Usage

```
get_timeline_label(data_raw, clist = "ALL", xmin, xmax, n_max = 5)
```

Arguments

`data_raw`	A data table containing NOAA Earthquake data
`clist`	Character/Vector of grouping names eg "USA" from COUNTRY column.
`xmin`	POSIXct date - minimum date for timeline
`xmax`	POSIXct date - maximum date for timeline
`n_max`	Integer value to control number of labels per group to show

Value

A ggplot2 graphical object displying timeline earthquate data with labels.

Examples

```
## Not run:
get_timeline_label(eq_data_raw, c("USA","CHINA"),"2010-01-01","2016-01-01", n_max = 5)

## End(Not run)
```

`theme_timeline` *theme_timeline*

Description

theme_timeline

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