

Package ‘GADMTools’

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Type Package

Title Easy Use of 'GADM' Shapefiles

Version 2.2-1

Date 2018-06-04

Description Manipulate, assemble, export <<http://www.gadm.org>> shapefiles. Create choropleth, heatmaps, dots plot, proportional dots and more.

License GPL-3

Depends sp, ggplot2, dplyr, classInt, rgdal

Imports RColorBrewer, maptools, stringr, lattice, jsonlite, gridExtra, rgeos, ggmap

Suggests knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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GADMTools-package	<i>Easy use of GADM shapefiles</i>
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Description

See; <https://gadm.org/>

GADM is a spatial database of the world's administrative boundaries for use in **GIS** and similar software. Administrative areas in this database are countries and lower level subdivisions such as provinces, departments, cantons, etc.

With **GADMTools**, a wrapper for **GADM** shapefiles, you can easily manipulate, assemble, and create subsets of these objects.

Details

Package:	GADMTools
Type:	Package
Version:	2.2-1
Date:	2018-06-04
License:	GPL-3

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

Maintainer: Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

~~ Literature or other references for background information ~~

See Also

~~ Optional links to other man pages, e.g. ~~

Examples

```
## NOTHING
```

choropleth *Draw a choropleth on selected regions*

Description

Drawing a choropleth (colored regions based on data values) with GADMTools is straightforward. You just have to select your shape(s) file(s) with *gadm.loadcountries*, load your data from a csv file for example, and call the choropleth function with the right arguments.

Usage

```
choropleth (x, data, value=NULL, breaks = NULL, steps = 5, adm.join=NULL,
            legend = NULL, labels = NULL, palette=NULL,
            title="")
```

Arguments

x	Object GADMWrapper
data	data.frame - data to plot
value	String - the name of the column in the data.frame we want to plot (eg: an incidence in epidemiology studies)
breaks	Vector of breaks values or a String name of a function from <i>classIntervals</i> (one of "sd", "equal", "pretty", "quantile", "kmeans", "hclust", "bclust", "fisher", or "jenks")
steps	Integer - number of breaks. Default = 5. If <i>breaks</i> is NOT NULL this value is used internally with cut().
adm.join	String - the name in GADM spdf dataset which will be joined with a column of the data.
legend	String - legend title. Default NULL .
labels	String vector labels for the legend. Default NULL
palette	String - An RColorBrewer palette name or a String vector vector of colors. Default NULL .
title	String - Title of the plot. Default is an empty string.

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

[classIntervals](#)

Examples

```
# library(GADMTools)
# library(sp)
# library(dplyr)

# MAP <- gadm.loadCountries("BEL", level = 3, simplify=0.01)
# DAT = read.csv2("BE_chlamydia_incidence.csv")

# Here is the main trick !
# -----
# DAT <- rename(DAT, NAME_3 = district)

# choropleth(MAP, DAT,
#             adm.join = "NAME_3",
#             value = "rate03",
#             breaks = "sd",
#             palette="Oranges",
#             legend = "Incidence",
#             title="Chlamydia incidence by Belgian district for 2003")
```

classDots

Plot dots on a map with values between different fixed classes.

Description

Plot values as discretized scale circles on a map.

Usage

```
classDots(x, data, color="red", value = NULL, breaks = NULL,  
          steps = 5, labels = NULL, opacity = 0.5, title="",  
          note=NULL, legend = NULL)
```

Arguments

x	Object GADMWrapper
data	Object data.frame with columns 'latitude' and 'longitude'
color	a valid color
value	Character Name of a column of the data.frame.
breaks	vector of breaks
steps	unused
labels	vector of labels
opacity	float Background opacity of the filled circles
title	Character The title of the plot
note	Character Add an annotation
legend	Character The title of the legend

Details
---**Value**

Object ggplot2

Note
---**Author(s)**

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References
---**See Also**
---**Examples**

```
# todo
```

 dots

Plot dots on a map

Description

Plot points on a map with different colors and shapes.

Usage

```
dots(x, points, color="red", value = NULL,
     breaks = NULL, steps = 5, palette = NULL, labels = NULL, strate = NULL,
     title="", legend = NULL, note=NULL)
```

Arguments

x	Object GADMWrapper
points	Object data.frame with columns 'latitude' and 'longitude'
color	a valid color
value	Character Name of a column in the data.frame. If is not null, colored dots are displayed according to the value.
breaks	vector of breaks
steps	Integer Number of breaks for the value field.
palette	a valid palette
labels	vector of labels
strate	Character name of a column in the data.frame. If is not null, display dots with different shapes according to the value.
title	Character The title of the plot
legend	Character The title of the legend
note	Character Add an annotation

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

[RColorBrewer](#)

Examples

```
# library(GADMTools)
# library(sp)
# data(quakes)
# M <- gadm.loadCountries("FJI", basefile=".")
# colnames(quakes)[1] <- "latitude"
# colnames(quakes)[2] <- "longitude"
# dots(M, quakes, value="mag")
```

fast.choropleth

Draw a choropleth on selected regions with lattice.

Description

Drawing a choropleth (colored regions based on data values) with GADMTools is straightforward. You just have to select your shape(s) file(s) with *gadm.loadcountries*, load your data from a csv file for example, and call the *fast.choropleth* function with the right arguments. *fast.choropleth* does not use *ggplot2* but *lattice*, so it is very fast.

Usage

```
fast.choropleth (x, data, value=NULL, breaks = NULL, steps = 5,
  adm.join=NULL, legend = NULL, labels = NULL, palette=NULL,
  title="")
```

Arguments

x	Object GADMWrapper
data	data.frame - data to plot
value	String - the name of the column in the data.frame we want to plot (eg: an incidence in epidemiology studies)
breaks	
steps	Integer - number of breaks. Default = 5. If <i>breaks</i> is NOT NULL this value is used internally with <i>cut()</i> .

adm.join	String - the name in GADM spdf dataset which will be joined with a column of the data.
legend	String - legend title. Default NULL .
labels	String vector labels for the legend. Default NULL
palette	String - An RColorBrewer palette name or a String vector vector of colors. Default NULL .
title	String - Title of the plot. Default is an empty string.

Details

Value

Object a lattice plot of class "trellis"

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

[classIntervals](#)

Examples

```
# MAP <- gadm.loadCountries("BEL", level = 3, simplify=0.01)
# DAT = read.csv2("BE_chlamydia_incidence.csv")

# DAT <- rename(DAT, NAME_3 = district)

# fast.choropleth(MAP, DAT,
#                 adm.join = "NAME_3",
#                 value = "rate03",
#                 steps = 4,
#                 breaks = "jenks",
#                 palette="Greens",
#                 legend = "Incidence",
#                 title="Chlamydia incidence by Belgian district (2003)")
```

gadm.loadCountries *Load one or more GADM shapefiles*

Description

Load one or more GADM shapefiles from a local path or from a remote repository.

Usage

```
gadm.loadCountries(fileName, level = 0, basefile=GADM_BASE,
                   baseurl=GADM_URL, simplify=NULL)
```

Arguments

fileName	Character vector of named regions. An ISO-3166-1 code or a custom name. You don't have to specify the suffix (admX) nor the file extension (.rds).
level	Integer the level of the administrative boundaries (0 is the country, higher values equal finer divisions)
basefile	Character vector the path of the directory where shapefiles are stored. Default is <code>"/GADM"</code>
baseurl	Character vector The url of GADM files. Default is <code>"http://biogeo.ucdavis.edu/data/gadm2.8/rds/"</code>
simplify	Numeric Numerical tolerance value to be used by the Douglas-Peucker algorithm. Higher values use less polygon points (and less memory) and lower values use more polygon points (and more memory). We suggest not going higher than 0.01 in order for intra-country boundaries to align.

Value

Object GADMWrapper

ISO-3166-1

See : https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3

"ABW", "AFG", "AGO", "AIA", "ALA", "ALB", "AND", "ANT", "ARE", "ARG", "ARM", "ASM", "ATA", "ATF", "ATG", "AUS", "

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# Belgium = gadm.loadCountries("BEL", level=2, basefile="./")
# plotmap(Belgium)
```

gadm.loadStripped *Load one GADM stripped shapefile*

Description

Load one GADM stripped shapefiles from a local path for use with ggplot2.

Usage

```
gadm.loadStripped(name, level, basefile='./')
```

Arguments

name	Character vector of a named region. An ISO-3166-1 code or a custom name. You don't have to specify the suffix (admX) nor the file extension (.rds).
level	Integer the level of the administrative boundaries (0 is the country, higher values equal finer divisions)
basefile	Character vector the path of the directory where shapefiles are stored. Default is "./"

Value

Object GADMWrapper with stripped properties == TRUE

ISO-3166-1

See : https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3

"ABW", "AFG", "AGO", "AIA", "ALA", "ALB", "AND", "ANT", "ARE", "ARG", "ARM", "ASM", "ATA", "ATF", "ATG", "AUS", "

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# BE <- gadm.loadStripped('BEL', level=2)
# plotmap(BE)
```

gadm.saveStripped *Save a stripped GADM object*

Description

Save a stripped (with stripSP()) GADM object for later use it with ggplot2.

Usage

```
gadm.saveStripped(x, fname, basefile = './')
```

Arguments

x	Object GADMWrapper with stripped property == TRUE
fname	String file name of a region. You don't have to specify the suffix (admX) nor the file extension (.rds).
basefile	Character vector the path of the directory where shapefiles are stored. Default is "./"

Value

Boolean TRUE

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

Examples

```
# library(GADMTools)
# library(sp)
# BE <- gadm.loadCountries('BEL', level=2)
# S_BE <- stripSP(BE)
# gadm.saveStripped(S_BE, "BEL")
```

grid.map

Arrange maps on a grid

Description

Allows you to arrange multiple maps into one image. This is useful for showing a country together with its territories in other parts of the world (ex: showing France and Reunion island) or placing two or more countries side by side.

Usage

```
grid.map(left, right, center=NULL, title=NULL)
```

Arguments

left	Object GADMWrapper
right	data.frame - data to plot
center	String - an RColorBrewer palette name or a String vector vector of colors. Default NULL .
title	String - plot title. Default is an empty string.

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
##---- Should be DIRECTLY executable !! ----
##-- ==> Define data, use random,
##-- or do help(data=index) for the standard data sets.
```

isopleth

Draw an isopleth on selected regions

Description

Drawing an isopleth (also known as heat maps) with GADMTools is straightforward. You just have to select your shape(s) file(s) with *gadm.loadcountries*, load your data from a csv file for example, and call the isopleth function with the right arguments.

Usage

```
isopleth(x, data, palette=NULL, title="")
```

Arguments

x	Object GADMWrapper
data	data.frame - data to plot
palette	String - An RColorBrewer palette name or a String vector vector of colors. Default NULL .
title	String - Plot title. Default is an empty string.

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
# library(GADMTools)
# library(sp)

# France = gadm.loadCountries("FRA", level=1, simplify=0.01)
# W <- read.csv2("wepi.csv")
# W$lieux_lat <- as.double(as.character(W$lieux_lat))
# W$lieux_long <- as.double(as.character(W$lieux_long))
# colnames(W)[1] <- "latitude"
# colnames(W)[2] <- "longitude"
# Region = subset(France, regions=c("Ile-de-France", "Haute-Normandie"), level=1)
# isopleth(Region, W)
```

json.choropleth

Create a geojson choropleth of selected regions.

Description

Drawing a choropleth (colored regions based on data values) with GADMTools is straightforward. You just have to select your shape(s) file(s) with *gadm.loadcountries*, load your data from a csv file for example, and call the *json.choropleth* function with the right arguments. *json.choropleth* create a GEOJSON file (output.json) that can be used with Leaflet library.

Usage

```
json.choropleth (x, data, value=NULL, breaks = NULL, steps = 5,
  adm.join=NULL, legend = NULL, labels = NULL, palette=NULL,
  title="")
```

Arguments

x	Object GADMWrapper
data	data.frame - data to plot
value	String - the name of the column in the data.frame we want to plot (eg: an incidence in epidemiology studies)

breaks	
steps	Integer - number of breaks. Default = 5. If <i>breaks</i> is NOT NULL this value is used internally with cut().
adm.join	String - the name in GADM spdf dataset which will be joined with a column of the data.
legend	String - legend title. Default NULL .
labels	String vector labels for the legend. Default NULL
palette	String - An RColorBrewer palette name or a String vector vector of colors. Default NULL .
title	String - Title of the plot. Default is an empty string.

Details

Value

Object a lattice plot of class "trellis"

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

[classIntervals](#)

Examples

```
##---- Should be DIRECTLY executable !! ----  
##-- ==> Define data, use random,  
##--or do help(data=index) for the standard data sets.
```

listNames	<i>List the region names for a specific administrative level</i>
-----------	--

Description

Returns a list of the names associated with the particular administration level.

Usage

```
listNames(x, level = 0)
```

Arguments

x	Object - a GADMWrapper object
level	Integer - the value of the administration level to list. Attention: only the administrative levels that have been loaded in the loadCountries object can be listed. Names are given in the country's language or English.

Details

Some GADM country maps provide five or more administrative levels.

Value

Character vector of names

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
# library(GADMTools)
# library(sp)
# MAP <- gadm.loadCountries("FRA", level=1, basefile=".")
# listNames(MAP, level=1)
```

plotmap	<i>Draw a shapefile from a GADMWrapper object</i>
---------	---

Description

Given the graphic object of a map, this function will display it with a title.

Usage

```
plotmap(x, title="")
```

Arguments

x	Object GADMWrapper
title	String - Title of the plot. Default is an empty string

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
# library(GADMTools)
# library(sp)
# map <- gadm.loadCountries(c("FRA"), level=1, basefile=".")
# plotmap(map, title="carte de la France")
```

propDots

Plot proportionnal circles (dots) on a map

Description

Plot values as proportionnal circles on a map.

Usage

```
propDots(x, data, value, breaks=NULL, range=NULL,
         labels=NULL, color="red", title="", note=NULL)
```

Arguments

x	Object GADMWrapper
data	Object data.frame with columns 'latitude' and 'longitude'
value	Character Name of a column of the data.frame.
breaks	a vector of breaks
range	vector min, max
labels	vector of labels
color	a valid color
title	Character The title of the plot
note	Character A note associated with the plot

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# data(quakes)
# M <- gadm.loadCountries("FJI", basefile=".")
# colnames(quakes)[1] <- "latitude"
# colnames(quakes)[2] <- "longitude"
# propDots(M, quakes, value="mag")
```

remove*Remove one or more regions from a map in a GADMWrapper object*

Description

Remove the shapes of one or more regions in a GADMWrapper object.

Usage

```
remove(x, level=NULL, regions=NULL)
```

Arguments

x	Object GADMWrapper
level	Integer - level from which shapes are removed. If NULL, current level is used.
regions	String - vector of regions to be removed

Details

—

Value

Object - A GADMWrapper object.

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
# library(GADMTools)
# library(sp)
# map <- gadm.loadCountries(c("FRA"), level=1, basefile=".")
# remove(map, regions="Auvergne")
```

saveas

Save your own GADM shapefile as an rds file

Description

Save a GADM shapefile (.rds)

Usage

```
saveas(x, name = NULL)
```

Arguments

x	Object - GADMWrapper
name	String - File path

Details

Value

Note

Do not specify the rds extension, it is added automatically.

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# France = gadm.loadCountries("FRA", level=1, basefile=".")
# Auvergne = subset(France,regions = "Auvergne", level=1)
# saveas(Auvergne, "./AUVERGNE")
# AUV <- gadm.loadCountries("AUVERGNE", level=1, basefile=".")
# plotmap(AUV)
```

saveAsStripped

*Strip a GADMWrapper object***Description**

Strip a GADMWrapper object (with property 'stripped' == FALSE) and save it stripped (with property 'stripped' == TRUE).

Usage

```
saveAsStripped(x, fname, name= NULL, basefile = './')
```

Arguments

x	Object GADMWrapper with stripped property == FALSE
fname	String file name of the region to save. You don't have to specify the suffix (admX) nor the file extension (.rds).
name	String the name of the field in spdf, like "NAME_1".
basefile	String the path of the directory where shapefiles are stored. Default is "."

Value

Object GADMWrapper with stripped property == TRUE

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# BE <- gadm.loadCountries('BEL', level=2)
# saveAsStripped(BE, "BEL", level=1)
```

strippedExists	<i>Test if a stripped GADMWrapper object exists</i>
----------------	---

Description

Test if a stripped GADMWrapper object exists on the file system in the directory 'basefile'

Usage

```
strippedExists(name, level, basefile = './')
```

Arguments

name	Character vector of a named region. An ISO-3166-1 code or a custom name. You don't have to specify the suffix (admX) nor the file extension (.rds).
level	Integer the level of the administrative boundaries (0 is the country, higher values equal finer divisions)
basefile	Character vector the path of the directory where shapefiles are stored. Default is "./"

Value

Boolean TRUE if the file exists, FALSE if not

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# if (strippedExists('BEL', level = 2) {
#   BE <- gadm.loadStripped("BEL", level=2)
# }
```

stripSP*Strip a GADMWrapper object*

Description

Strip a GADMWrapper object (with property 'stripped' == FALSE) and return a stripped GADMWrapper object (with property 'stripped' == TRUE)

Usage

```
stripSP(x, level=NULL)
```

Arguments

x **Object** GADMWrapper with property 'stripped' == FALSE
level **Int** admin level to be stripped/extracted. If NULL, the current level is selected

Value

Object GADMWrapper with property 'stripped' == TRUE

Note

—

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

—

See Also

—

Examples

```
# library(GADMTools)
# library(sp)
# BE <- gadm.loadCountries('BEL', level=2)
# Belgique <- stripSP(BE, level=2)
```

subset	<i>Extract regions</i>
--------	------------------------

Description

With subset you can extract one or more regions from a country at the current level.

Usage

```
subset(x, level = NULL, regions = NULL)
```

Arguments

x	Object GADMWrapper
level	Integer the level at which the regions are extracted from
regions	String vector of named regions

Details

Value

Object GADMWrapper

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

[listNames](#)

Examples

```
# library(GADMTools)
# library(sp)
# France = gadm.loadCountries("FRA", level=1, basefile=".")
# Auvergne = subset(France,regions = "Auvergne", level=1)
# plotmap(Auvergne, title="Auvergne - level 1")
```

vignette

*Create a vignette***Description**

Vignette will superimpose a region map over a larger (lower level) map.

Usage

```
vignette(main, region, maincolor = "black",
         regioncolor = "white", mainfill = "grey",
         regionfill = "black",
         mainsize = 1, regionsize = 0.5)
```

Arguments

main	Object GADMWrapper
region	Object GADMWrapper
maincolor	a valid color
regioncolor	a valid color
mainfill	a valid color
regionfill	a valid color
mainsize	Numeric border size
regionsize	Numeric border size

Details

Value

Object ggplot2

Note

Author(s)

Jean Pierre Decorps <jp.decorps@epiconcept.fr>

References

See Also

Examples

```
# library(GADMTools)
# library(sp)
# library(ggplot2)
# FR <- gadm.loadCountries("FRA", level=1, basefile=".")
# AU <- subset(FR, regions="Auvergne", level=1)
# vignette(FR, AU)
```

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