

Package ‘geomerge’

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Description Geospatial data integration framework that merges raster, spatial polygon, and (dynamic) spatial points data into a spatial (panel) data frame at any geographical resolution.

License LGPL-3

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geomerge-package *geomerge: Geospatial Data Integration*

Description

geomerge is a framework for geospatial data integration that merges raster, spatial polygon, and (dynamic) spatial points data into a spatial (panel) data frame at any geographical resolution.

Details

The geomerge function conducts a series of spatial joins for Geographic Information Systems (GIS) data. It integrates three of R's most commonly used GIS data classes - polygons, points and rasters. With flexible options for assignment rules and including the calculation of spatial and temporal lags, geomerge returns a time series `SpatialPolygonsDataFrame` that users may import into any predictive statistical analysis.

Note

The spatial resolution of the input datasets and scope of the area covered by the integration routine will influence the runtime of `geomerge`. Depending on the inputs, integration may therefore require some time.

Author(s)

Karsten Donnay and Andrew M. Linke

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge](#), [geomerge.merge](#), [geomerge.neighbor](#), [geomerge.assign](#), [generateGrid](#)

ACLED

Point dataset to illustrate the functionality of geomeerge

Description

ACLED conflict events for Nigeria in 2011 used as example for a `SpatialPointsDataFrame` available from <http://www.acleddata.com/data>. The dataset contains timestamped and geo-coded information on individual conflict events.

Usage

```
data(geomeerge)
```

Format

A `SpatialPointsDataFrame` containing observations.

Details

The original ACLED "EVENT_DATE" column has been relabeled as "timestamp" in accordance with geomeerge conventions.

Author(s)

Karsten Donnay and Andrew M. Linke

Source

<http://www.acleddata.com/data>

Citation: Clionadh Raleigh, Andrew Linke, Havard Hegre and Joakim Karlsen. (2010). "Introducing ACLED-Armed Conflict Location and Event Data." *Journal of Peace Research* 47(5): 651-660.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

AidData

Point dataset to illustrate the functionality of geomeerge

Description

AidData aid project locations for projects in Nigeria with start date in 2011 used as example for a `SpatialPointsDataFrame`. The dataset is available from <http://aiddata.org>. The dataset contains timestamped and geo-coded information on individual aid projects.

Usage

```
data(geomeerge)
```

Format

A `SpatialPointsDataFrame` containing observations.

Details

The original *AidData* "start_date" column has been relabeled as "timestamp" in accordance with geomeerge conventions.

Author(s)

Karsten Donnay and Andrew M. Linke

Source

<http://aiddata.org>

Citation: AidData. 2016. NigeriaAIMS_GeocodedResearchRelease_Level1_v1.3.1 geocoded dataset. Williamsburg, VA and Washington, DC: AidData. Accessed on August 23, 2017. <http://aiddata.org/research-datasets>.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

generateGrid	<i>Generates a grid in a given local CRS that is, by default, returned as SpatialPolygonsDataFrame in WGS84.</i>
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Description

Implementation of a simple grid generation function producing a SpatialPolygonsDataFrame to be used as target in geomeerge.

Usage

```
generateGrid(extent, size, local.CRS, makeWGS84 = TRUE, silent = FALSE)
```

Arguments

extent	SpatialPolygonsDataFrame that defines the (minimum) extent of the grid to be generated.
size	size of the grid cells in m.
local.CRS	definition of the local (projected) CRS the grid is spanned in. Has to be class "CRS".
makeWGS84	Boolean switch indicating whether or not the grid is returned in WGS84. Default = TRUE.
silent	Boolean switch to suppress any (non-critical) warnings and messages. Default = FALSE.

Value

Returns an object of SpatialPolygonsDataFrame that spans the grid with spatial resolution given by size.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomeerge-package](#), [geomeerge](#)

Examples

```
require(sp)
data(geomerger)

# Generate grid with 10 km cell size in local CRS for Nigeria
states.grid <- generateGrid(states,10000,local.CRS=CRS("+init=epsg:26391"),
                           silent=TRUE)
```

geoEPR

Polygon dataset to illustrate the functionality of geomerger

Description

geoEPR Nigeria dataset used as example for a `SpatialPolygonsDataFrame` can be accessed and downloaded at <https://icr.ethz.ch/data/epr/geoepr/>. The dataset contains geo-locations for all politically relevant ethnic groups from the EPR-Core 2014 dataset. It assigns every politically relevant group one of six settlement patterns and provides polygons describing their location.

Usage

```
data(geomerger)
```

Format

A `SpatialPolygonsDataFrame` containing observations.

Author(s)

Karsten Donnay and Andrew M. Linke

Source

<https://icr.ethz.ch/data/epr/geoepr/>

Citation: Julian Wucherpfennig, Nils B. Weidmann, Luc Girardin, Lars-Erik Cederman, and Andreas Wimmer. (2011). "Politically Relevant Ethnic Groups Across Space and Time: Introducing the GeoEPR Dataset." *Conflict Management and Peace Science* 28(5): 423-437.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

Description

This function conducts a series of spatial joins for Geographic Information Systems (GIS) data. It integrates three of R's most commonly used GIS data classes - polygons, points and rasters. With flexible options for assignment rules and including the calculation of spatial and temporal lags, `geomerge` returns a spatial (panel) dataset in the form of a `SpatialPolygonsDataFrame` that users may import into any predictive statistical analysis.

Usage

```
geomerge(..., target=NULL, time=NA, time.lag=TRUE, spat.lag=TRUE,
         zonal.fun=sum, assignment="max(area)", population.data = NA,
         point.agg = "cnt", t_unit="days", silent=FALSE)
```

Arguments

<code>...</code>	input datasets and, if provided, optional arguments. See Details.
<code>target</code>	<code>SpatialPolygonsDataFrame</code> representing desired units of analysis. See Details.
<code>time</code>	temporal window for dynamic temporal binning of point data. Required format is <code>c(start_date, end_date, interval_length)</code> , each specified as String. Default = NA. See Details.
<code>time.lag</code>	Boolean indicating whether or not first and second order temporal lag values of all variables are returned. Only affects dynamic point data integration. Default = TRUE.
<code>spat.lag</code>	Boolean indicating whether or not first and second order spatial lag values of all variables are returned. Default = TRUE.
<code>zonal.fun</code>	object of class function applied to values of <code>RasterLayer</code> when generating zonal statistics for each target polygon. Default = <code>sum</code> . See Details.
<code>assignment</code>	identification of either population- or area-weighting assignment rules when handling <code>SpatialPolygonsDataFrame</code> joins to <code>target</code> . Default = <code>"max(area)"</code> . See Details.
<code>population.data</code>	specifies data used for weighting if a population-based assignment rule is selected. See Details.
<code>point.agg</code>	specification of aggregation format for data of type <code>SpatialPointsDataFrame</code> . Default = <code>"cnt"</code> . See Details.
<code>t_unit</code>	temporal unit used for dynamic point aggregation. Default = <code>"days"</code> .
<code>silent</code>	Boolean switch to suppress any (non-critical) warnings and messages. Default = FALSE.

Details

geomerger accepts any number of data inputs of the most common spatial data classes in R - `SpatialPolygonsDataFrame`, `SpatialPointsDataFrame`, and `RasterLayer`. The target they are merged to may be of any shape but must be a `SpatialPolygonsDataFrame`. The extent of each data input should at least match the extent of the target; if not, the package returns a warning. In order to perform accurate area calculations at any scale, geomerger projects any data geometry into WGS84. Input data (including target) not in WGS84 are automatically re-projected.

geomerger assumes that all inputs of type `SpatialPolygonsDataFrame` and `RasterLayer` are static and contemporary. If polygons or raster are changing, we advise to simply rerun geomerger for each interval in which data are static and contemporary. The package allows for dynamic integration of all inputs that are a `SpatialPointsDataFrame`, i.e., one can, for example, automatically generate the counts of events that occur within a specific unit of target within a specific time period. Further details are given below.

If `SpatialPolygonsDataFrame` data are joined to target, they must contain only one column with the data of interest. The package also accepts the short-hand variable specification using the standard "\$" notation to denote the selection of a specific variable from the `SpatialPolygonsDataFrame`. `RasterLayer` are by default single-valued. These data may be of class factor or numeric.

If `SpatialPointsDataFrame` are joined to target they must have one column coding the variable of interest and, if points carry timestamps, dates must be given in a second column timestamp and formatted as a UTC date string with format "YYYY-MM-DD" or "YYYY-MM-DD hh:mm:ss".

In practice, our input logic implies that if more than one variable of interest are to be merged to target, statically or dynamically, each has to be separately entered as argument. Note that variable names in target derive from the name of the input data and it is therefore advised to use meaningful labels for input data.

In merging `SpatialPolygonsDataFrame` values to units of analysis given by target, users have a choice among a number of different assignment rules based on area overlap and population size. Area-based assignment generally can take the values "max(area)" or "min(area)", i.e., the value assigned to a given unit in target comes from that polygon in the `SpatialPolygonsDataFrame` with maximal or minimal area overlap respectively. If the value of interest is of class numeric, the user may also choose "weighted(area)", i.e., the values is assigned as the area-weighted average of the values in all polygons intersecting a given unit in target.

The assignment rules "max(pop)", "min(pop)" and "weighted(pop)" (the latter again for numeric variables only) analogously use the population value given by `population.data` in overlapping areas as basis for assignment. If any of them is selected in the assignment argument, users must provide `population.data` as a `RasterLayer`. The geographical resolution of `population.data` should be the same or better than that of target. The zonal statistic used for population within overlapping polygons is sum.

When a `SpatialPointsDataFrame` is merged to target, one of two operations can be performed. For `point.agg = "cnt"` the function calculates the sum of the number of locations that fall within each unit of target. For numerical variables of interest, `point.agg = "sum"` returns the sum across for all values associated with points within each unit of target. If different aggregation formats are to be applied to different `SpatialPointsDataFrame` inputs, these have to be specified as a character vector, i.e., `point.agg = c("sum", "cnt")`, in the order of inputs.

Values for inputs of type `SpatialPointsDataFrame` are either calculated statically across the entire frame if `time = NA` or dynamically within a given time period that can be specified using

`time = c(start_date, end_date, interval_length)`. All three inputs must be Strings where `interval_length` is defined in multiples of `t_unit`. The default value is `t_unit = "days"`, the package also accepts inputs of "secs", "mins", "hours", "months" or "years".

Zonal statistics are applied to objects of class `RasterLayer` that are joined to `target`. The specific operations are defined in the function call using the argument `zonal.fun` and each is added into the result. Any zonal statistics compatible with the `extract` function in **raster** is accepted. Note that `geomerge` does not accept raster stacks. If you have raster stacks they must be separated and the layers integrated separately into the function.

If `spat.lag = TRUE` spatial lags of all numeric variables from a `SpatialPolygonsDataFrame` or `RasterLayer` joined to `target` polygons are returned using first and also second order neighboring weights matrices. The package assigns `target` polygons the mean value of units within each neighborhood. When dynamic point aggregation is run and `time.lag = TRUE`, `geomerge` returns the values of every `target` polygon, as well as its first and second order neighboring unit averages, separately, at time `t-1` and `t-2` defined by `interval` in the argument `time`.

Value

Returns an object of class "geomerge".

The functions `summary`, `print`, `plot` overload the standard outputs for objects of type `geomerge` providing summary information and and visualizations specific to the output object. An object of class "geomerge" is a list containing the following three components:

<code>data</code>	<code>SpatialPolygonsDataFrame</code> that contains all information merged with the <code>target</code> layer. Column names are assigned the name of the input data object separated by "." from a short description of the calculation, as well as modifiers such as ".1st" and ".2nd" for first- and second-order neighborhoods of <code>target</code> . In the case of dynamic point data aggregation, ".t_1" and ".t_2" are used to label first- and second-order temporal lags. For example, if <code>geomerge</code> is told to use a <code>SpatialPointsDataFrame</code> called "vio" to count incidents of conflict contained within units of <code>target</code> , the default output would include columns named "vio.cnt", "vio.cnt.t_1", "vio.cnt.t_2", "vio.cnt.1st", "vio.cnt.1st.t_1", "vio.cnt.1st.t_2", "vio.cnt.2nd", "vio.cnt.2nd.t_1", "vio.cnt.2nd.t_2".
<code>inputData</code>	List containing the spatial objects used as input.
<code>parameters</code>	List containing information on all input parameters used during integration.

Note

`geomerge` exclusively merges data using the global WGS84 coordinate reference system (CRS) to ensure that areal statistics are accurate at all scales. If data are entered that are using a different and/or projected CRS, the tool automatically first transforms the data. This on-the-fly transformation, however, may be very slow and it is advised to always enter inputs in WGS84.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerger-package](#), [print.geomerger](#), [plot.geomerger](#), [summary.geomerger](#), [generateGrid](#)

Examples

```
data(geomerger)

# 1) Simple static integration of polygon data
output <- geomerger(geoEPR,target=states,silent=TRUE)
summary (output)

# 2) Static integration for point, polygon, raster data
output <- geomerger(ACLED$EVENT_TYPE,AidData$project_id,geoEPR,
  gpw,na.rm=TRUE,target=states)
summary(output)
plot(output)

# 3) Dynamic point data integration for numeric variables
output <- geomerger(ACLED$FATALITIES,AidData$commitme_1,geoEPR,
  target=states,time=c("2011-01-01", "2011-12-31","1"),
  t_unit='months',point.agg='sum')
summary(output)
plot(output)

# 4) Population weighted assignment
output <- geomerger(geoEPR,target=states,assignment='max(pop)',
  population.data = gpw)
summary(output)
plot(output)
```

geomerger.assign

Implements different assignment rules using SQL [Auxiliary Function]

Description

Implements assignment of polygon values to the target frame using different assignment rules. For efficient performance implemented using SQL.

Usage

```
geomerger.assign(polygon_input,target,assignment,population.data,optional.inputs,silent)
```

Arguments

polygon_input	input SpatialPolygonsDataFrame parsed from geomerge main function.
target	SpatialPolygonsDataFrame representing desired units of analysis. See Details of geomerge .
assignment	identification of either population- or area-weighting assignment rules when handling SpatialPolygonsDataFrame joins to target. Default = "max(area)". See Details in geomerge .
population.data	specifies data used for weighting if a population-based assignment rule is selected. See Details in geomerge .
optional.inputs	Any optional inputs compatible with the extract function in raster .
silent	Boolean switch to suppress any (non-critical) warnings and messages. Default = FALSE.

Details

For details on different input parameters, please refer to the detailed documentation in [geomerge](#).

Value

Returns an object of class `data.frame` that contains the column from input, after proper assignment, that is to be added to `target@data`.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge-package](#), [geomerge](#), [generateGrid](#)

geomerge.merge *Performing dataset merger [Auxiliary Function]*

Description

Auxiliary function that performs the actual integration of the target frame with specified input data. The routine proceeds on dataset at a time.

Usage

```
geomerge.merge(data, data.name, target, standard.CRS, outdata, wghts,
time, time.lag, spat.lag, zonal.fun, assignment,
population.data, point.agg, t_unit, silent, optional.inputs)
```

Arguments

data	input dataset. See Details in geomerge .
data.name	name of input dataset
target	SpatialPolygonsDataFrame representing desired units of analysis. See Details in geomerge .
standard.CRS	Defines the CRS used. Default used in geomerge is WGS84.
outdata	data.frame containing integrated data relative to the SpatialPolygonsDataFrame target.
wghts	spatial weights calculated by link{geomerge.neighbor}.
time	specification of temporal window for temporal binning of point data by c(start_date, end_date, interval). Default = NA. See Details in geomerge .
time.lag	Boolean indicating whether or not first and second order temporal lag values of all variables are returned. Default = TRUE.
spat.lag	Boolean indicating whether or not first and second order spatial lag values of all variables are returned. Default = TRUE.
zonal.fun	object of class function applied to values of RasterLayer when generating zonal statistics for each target polygon. Default = sum. See Details in geomerge .
assignment	identification of either population- or area-weighting assignment rules when handling SpatialPolygonsDataFrame joins to target. Default = "area.assign". See Details in geomerge .
population.data	specifies data used for weighting if a population-based assignment rule is selected. See Details in geomerge .
point.agg	specification of aggregation format for data of type SpatialPointsDataFrame. Default = "cnt". See Details in geomerge .
t_unit	temporal unit used for dynamic point aggregation. Default = "days".
silent	Boolean switch to suppress any (non-critical) warnings and messages. Default = FALSE.
optional.inputs	Any optional inputs compatible with the extract function in raster .

Details

For details on different input parameters, please refer to the detailed documentation in [geomerge](#).

Value

Returns an object of class `data.frame` that contains all information from merger to target to be added to `target@data` in the main `geomerge` function. The documentation in [geomerge](#) provides a detailed overview over the columns returned and their naming conventions

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge-package](#), [geomerge](#), [generateGrid](#)

`geomerge.neighbor` *Returns first and second order spatial neighbors [Auxiliary Function]*

Description

Auxiliary function that uses functionality from **spdep** to retrieve first and second order neighbor weights.

Usage

```
geomerge.neighbor(polygon_input)
```

Arguments

`polygon_input` a `SpatialPolygonsDataFrame`.

Details

The function serves as a wrapper for the `poly2nb`, `nblag` and `nb2listw` functions from **spdep** and returns first and second order neighbor weights using `zero.policy = TRUE`.

Value

Returns a list of lists of neighbor weights named "wts1" and "wts2".

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge-package](#), [geomerge](#), [generateGrid](#)

gpw

Raster dataset to illustrate the functionality of geomerge

Description

gpw population raster data for Nigeria for the year 2010 used as example for a RasterLayer available from <http://sedac.ciesin.columbia.edu/data/collection/gpw-v4>. The dataset (gpw-v4) provides population estimates at a grid resolution of about 4km.

Usage

```
data(geomerge)
```

Format

A RasterLayer containing observations.

Author(s)

Karsten Donnay and Andrew M. Linke

Source

<http://sedac.ciesin.columbia.edu/data/collection/gpw-v4>

Citation: Center for International Earth Science Information Network - CIESIN - Columbia University. (2016). *Gridded Population of the World, Version 4 (GPWv4): Population Density*. Palisades, NY: NASA Socioeconomic Data and Applications Center (SEDAC).

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

plot.geomerge *Plot function for objects of class 'geomerge'.*

Description

Overloads the default plot for objects of class 'geomerge'.

Usage

```
## S3 method for class 'geomerge'  
plot(x, ...)
```

Arguments

x object of class [geomerge](#).
... further optional arguments.

Details

Returns a series of maps that visualizes numeric variables produced by geomerge. It returns a map for each unique numeric variable including first order spatially and temporally lagged values if `spat.lag=TRUE` and `time.lag=TRUE` when running geomerge. For spatial panels, the function by default returns values for the last period.

Five optional arguments that are specific to this plotting function can be provided. The first is `period`, a numeric input that allows to specify a specific period to be plotted. `inputs` must be a sequence of character strings specifying select variables to be plotted only. These have to have been merged (with the same name) in geomerge. `time.lag` and `spat.lag` override the boolean values parsed automatically from the result of geomerge. They are mainly meant to switch off plotting of spatial and temporal lags as they are ignored if these lags were not generated in the first place. The last argument is `ncol`, a numeric input, which allows to specify the width of the panel of plotted maps. By default, always 2 maps are shown side-by-side.

Note

plot for objects of class 'geomerge' relies in many core aspects of its functionality on **ggplot2**. If the target `SpatialPolygonsDataFrame` is very large it may reach or exceed the limits of what the plotting functionality from **ggplot2** can handle and plot may be very slow or even stall.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge](#)

print.geomerge	<i>Print function for objects of class 'geomerge'.</i>
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Description

Overloads the default print for objects of class 'geomerge'.

Usage

```
## S3 method for class 'geomerge'  
print(x, ...)
```

Arguments

x	object of class geomerge .
...	further arguments passed to or from other methods.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

See Also

[geomerge](#)

states

Polygon dataset to illustrate the functionality of geomeerge

Description

Nigeria administrative units (ADM1) dataset used as example for the target `SpatialPolygonsDataFrame` data are merged. The dataset is available at <http://www.arcgis.com/home/item.html?id=0e58995046b74254911c1dc0eb756fa4>

Usage

```
data(geomeerge)
```

Format

A `SpatialPolygonsDataFrame` containing observation and that data is merged to using `geomeerge`.

Details

Note that the polygons in `states` have been simplified to reduce the size of the `SpatialPolygonsDataFrame` used as integration target for easier illustration. This applies, in particular, to the Niger Delta region of Nigeria.

Author(s)

Karsten Donnay and Andrew M. Linke

Source

<http://www.arcgis.com/home/item.html?id=0e58995046b74254911c1dc0eb756fa4>

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

summary.geomerge *Summary function for objects of class 'geomerge'.*

Description

Overloads the default summary for objects of class 'geomerge'.

Usage

```
## S3 method for class 'geomerge'  
summary(object, ...)
```

Arguments

object object of class [geomerge](#).
... further arguments passed to or from other methods.

Value

Returns a number of summary statistics describing the results of the [geomerge](#) integration, including how many variables were integrated, which of those are numerical vs. non numerical and whether spatially and/or temporally lagged values are available.

Author(s)

Karsten Donnay and Andrew M. Linke.

References

Andrew M. Linke, Karsten Donnay. (2017). "Scale Variability Misclassification: The Impact of Spatial Resolution on Effect Estimates in the Geographic Analysis of Foreign Aid and Conflict." Paper presented at the *International Studies Association Annual Meeting*, February 22-25 2017, Baltimore.

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