# R documentation

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## R topics documented:



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`extractNightLights` *Extract Night Lights data from regions in a shapefile*

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### Description

Extract NOAA night lights data for regions in a SpatialPolygonsDataFrame. For years with two different satellite readings, it first takes the average between the two years.

### Usage

```
extractNightLights(nl.dir = ".", shp, stats = c("sum"))
```

### Arguments

| | |
|---|---|
| `nl.dir` | The directory the night lights data is stored in. The files must be extracted to TIFF format and the filenames must not have been changed. Other TIFF files in the same directory will probably cause problems. The default value for `nl.dir` is the current directory. |
| `shp` | The `SpatialPolygonsDataFrame` to extract data from. |
| `stats` | A vector of functions to apply to the data within each region, for example `c("sum", "mean", "sd")`. The default is `"sum"`. |

### Value

Returns a `data.frame` with `shp@data` combined with the extracted night lights data for each year provided.

## Examples

```
q <- readline(prompt="Download shapefile and night lights data for example (about 500MB)? (Y/n)")
if (q != "Y") {
  stop("Aborted.")
}

# Get an example shapefile to work with:
download.file("ftp://ftp2.census.gov/geo/tiger/TIGER2015/COUSUB/tl_2015_25_cousub.zip",
              destfile = "tl_2015_25_cousub.zip")
unzip("tl_2015_25_cousub.zip")
shp <- rgdal::readOGR(".", "tl_2015_25_cousub")

# Download and extract some night lights data (one year here as an example):
download.file("http://ngdc.noaa.gov/eog/data/web_data/v4composites/F182013.v4.tar",
              destfile = "F182013.v4.tar")
untar("F182013.v4.tar")
R.utils::gunzip("F182013.v4c_web.stable_lights.avg_vis.tif.gz")

# Directory where night lights data are stored (current directory here):
nl.dir <- "."

# By default, the function gets the sum of night lights within the regions:
nl.sums <- extractNightLights(nl.dir, shp)

# You can specificy other statistics to get, e.g. the mean & standard deviation:
nl.mean.sd <- extractNightLights(nl.dir, shp, stats = c("mean", "sd"))
```

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