Package 'spCEH'

March 3, 2021

Title Spatial utility functions and data

Version 0.2.2

Description Generically useful utility functions and data used at CEH Edinburgh for spatial work.

Depends R (>= 3.2.0),
raster

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LazyData true

Suggests testthat,
knitr,
covr

VignetteBuilder knitr

Imports rgdal

RoxygenNote 7.1.1

BugReports https://github.com/NERC-CEH/spCEH/issues

R topics documented:

spCEH-package *Spatial functions and data from CEH.*

Description

spCEH provides spatial utility functions and data.

Author(s)

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See Also

Useful links:

- Report bugs at https://github.com/NERC-CEH/spCEH/issues

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getData *Function to load data distributed with the spCEH package. Data are retrived from tif files stored in extdata. getData masks the equivalent function in raster package, so use raster::getData or spCEH::getData to be explicit. For small-medium sized files, this function is not necessary; the four rasters below can be saved as .rda files. However, this will be needed for anything larger than 100 MB.*

Description

Function to load data distributed with the spCEH package. Data are retrived from tif files stored in extdata. getData masks the equivalent function in raster package, so use raster::getData or spCEH::getData to be explicit. For small-medium sized files, this function is not necessary; the four rasters below can be saved as .rda files. However, this will be needed for anything larger than 100 MB.

Usage

```
getData(name_var = c("alt", "Csoil", "lcm", "twi"), res = 1000)
```

Arguments

name_var	A variable name, one of "alt", "Csoil", "lcm", "twi".
res	Resolution of the raster grid produced. Defaults to 1000 m. Higher values produce coarser grids by aggregation (e.g. 5000 gives a 5-km grid).

Value

A RasterLayer containing the named variable at the specified resolution.

Examples

```
r_alt <- getData(name_var = "alt", res = 1000)
```

getRasterTemplate *Function to initialise an empty raster for the UK or a sub-region*

Description

Function to initialise an empty raster for the UK or a sub-region

Usage

```
getRasterTemplate(domain = "UK", res = 100, proj = projOSGB)
```

Arguments

domain	Domain of the output raster: "UK", "Scotland".
res	Resolution of the output raster in metres.
proj	Projection of the output raster: "projOSGB" or "projlonlat".

Value

An empty raster object covering the UK.

Examples

```
r <- getRasterTemplate(domain = "Scotland", res = 10000)
r <- getRasterTemplate(domain = "NT_10km", res = 100)
r <- getRasterTemplate(domain = "UK", res = 10000, proj = projOSGB)
r <- getRasterTemplate(domain = "UK", res = 0.1, proj = projlonlat)
r <- getRasterTemplate(domain = "UK_NAME", proj = projlonlat)
```

maskByCountry *Function to mask out cells outwith polygons defining a country within the UK*

Description

Function to mask out cells outwith polygons defining a country within the UK

Usage

```
maskByCountry(r, countryName)
```

Arguments

r	A RasterLayer.
countryName	The name of a country within the UK ("Scotland", "Northern Ireland", "England" or "Wales").

Value

A RasterLayer masked to the named country.

Examples

```
r <- getRasterTemplate(domain = "UK", res = 10000)
r_masked <- maskByCountry(r, c("England", "Wales"))
```

`projIre` *CRS object for the TM75 Irish Grid projection.*

Description

A Coordinate Reference System object for the Transverse Mercator projection used by the Ordnance Survey in Ireland (TM75 / EPSG:29903)

Usage

```
projIre
```

Format

A text string

Source

https://spatialreference.org/

`projlonlat` *CRS object for null projection (longitude-latitude).*

Description

A Coordinate Reference System object for the WGS84 lon-lat coordinate system / EPSG:4326

Usage

```
projlonlat
```

Format

A text string

Source

https://spatialreference.org/

projOSGB *CRS object for the OSGB projection.*

Description

A Coordinate Reference System object for the Transverse Mercator projection used by the Ordnance Survey in Great Britain (OSGB / EPSG:27700)

Usage

```
projOSGB
```

Format

A text string

Source

https://spatialreference.org/

r_alt *UK altitude*

Description

A raster layer of altitude in the UK

Usage

```
r_alt
```

Format

A Raster object from the raster package. Units: metres above mean sea level

Source

https://SRTMspaceshuttleterrainmissionIthink/

r_Csoil *UK soil carbon*

Description

A raster layer of soil carbon in the UK

Usage

```
r_Csoil
```

Format

A Raster object from the raster package. Units: kg C / m2

Source

https://Bradleyetal2005/

r_lcm *UK Land Cover Map classes*

Description

A raster layer of UK Land Cover Map classes

Usage

```
r_lcm
```

Format

A Raster object from the raster package. Units: integers representing land cover classes

Source

https://EIDC/

r_twi *UK Topographic Wetness Index*

Description

A raster layer of Topographic Wetness Index in the UK

Usage

```
r_twi
```

Format

A Raster object from the raster package. Units: dimensionless ratio

Source

https://DerivedfromOSDEMdatabyPL/

spgdf_uk *UK coastline*

Description

A SpatialPolygonsDataFrame of the UK coastline and borders

Usage

```
spgdf_uk
```

Format

A SpatialPolygonsDataFrame object from the sp package

Source

https://spatialreference.org/

Index