

# Package ‘spCEH’

August 30, 2021

**Title** Spatial utility functions and data

**Version** 0.3

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

**Depends** R (>= 3.2.0),  
raster

**License** MIT + file LICENSE

**LazyData** true

**Suggests** testthat,  
knitr,  
covr

**VignetteBuilder** knitr

**Imports** rgdal

**RoxygenNote** 7.1.1

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

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spCEH-package	<i>Spatial functions and data from CEH.</i>
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### Description

spCEH provides spatial utility functions and data.

### Author(s)

**Maintainer:** Peter Levy <plevy@ceh.ac.uk> ([ORCID](#)) [copyright holder]

### See Also

Useful links:

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

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crs_Ire	<i>CRS object for the TM75 Irish Grid projection.</i>
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### Description

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

### Usage

crs\_Ire

### Format

An sp CRS object

### Source

<https://spatialreference.org/>

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crs_lonlat	<i>CRS object for null projection (longitude-latitude).</i>
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**Description**

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

**Usage**

crs\_lonlat

**Format**

An sp CRS object

**Source**

<https://spatialreference.org/>

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crs_OSGB	<i>CRS object for the OSGB projection.</i>
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**Description**

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

**Usage**

crs\_OSGB

**Format**

An sp CRS object

**Source**

<https://spatialreference.org/>

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getData	<i>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.</i>
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### 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)
```

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getRasterTemplate	<i>Function to initialise an empty raster for the UK or a sub-region</i>
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### Description

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

### Usage

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

**Arguments**

domain	Domain of the output raster: "UK", "Scotland" etc.
res	Resolution of the output raster in metres.
crs	CRS (coordinate reference system) of the output raster: "crs_OSGB" or "crs_lonlat".
proj	Projection of the output raster: "projOSGB" or "projlonlat". Deprecated - only used for backwards compatibility.

**Value**

An empty raster object covering the domain.

**Examples**

```
r <- getRasterTemplate(domain = "UK", res = 10000, crs = crs_OSGB)
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)
r <- getRasterTemplate(domain = "UK_NAME", crs = crs_lonlat)
```

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maskByCountry	<i>Function to mask out cells outwith polygons defining a country within the UK</i>
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**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"))
```

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projIre	<i>CRS object for the TM75 Irish Grid projection.</i>
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**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/>

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projlonlat	<i>CRS object for null projection (longitude-latitude).</i>
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**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/>

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projOSGB	<i>CRS object for the OSGB projection.</i>
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**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/>

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r_alt	<i>UK altitude</i>
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**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/>

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r_Csoil	<i>UK soil carbon</i>
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**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/>

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r_lcm	<i>UK Land Cover Map classes</i>
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**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/>



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r_twi	<i>UK Topographic Wetness Index</i>
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**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/>

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spgdf_uk	<i>UK coastline</i>
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**Description**

A SpatialPolygonsDataFrame of the UK coastline and borders

**Usage**

spgdf\_uk

**Format**

A SpatialPolygonsDataFrame object from the sp package

**Source**

<https://spatialreference.org/>

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