Package: BNRTools (via r-universe)

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Title A suite of convenience functions created by IIASA BNR Researchers

Version 0.1

Description What the package does (one paragraph).

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URL https://github.com/iiasa/BNRTools,

https://iiasa.github.io/BNRTools/

BugReports https://github.com/iiasa/BNRTools/issues

Depends R (>= 3.6)

Imports cli, janitor, dplyr, assertthat, sf, terra, stars, abind, RNetCDF, ncdf4, yaml

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Repository https://iiasa.r-universe.dev

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Contents

conv_downscalr2ibis *Function to format a prepared GLOBIOM netCDF file for use in* `ibis.iSDM`

Description

This function expects a downscaled GLOBIOM output as created in the BIOCLIMA project. It converts the input to a stars object to be fed to the `ibis.iSDM` R-package.

Usage

```
conv_downscalr2ibis(
  fname,
  ignore = NULL,
  period = "all",
  template = NULL,
  shares_to_area = FALSE,
  use_gdalutils = FALSE,
  verbose = TRUE
)
```

Arguments

`fname`	A filename in `character` pointing to a GLOBIOM output in netCDF format.
`ignore`	A `vector` of variables to be ignored (Default: `NULL`).
`period`	A `character` limiting the period to be returned from the formatted data. Options include `"reference"` for the first entry, `"projection"` for all entries but the first, and `"all"` for all entries (Default: `"reference"`).
`template`	An optional `SpatRaster` object towards which projects should be transformed.
`shares_to_area`	A `logical` on whether shares should be corrected to areas (if identified).
`use_gdalutils`	(Deprecated) `logical` on to use gdalutils hack-around.
`verbose`	`logical` on whether to be chatty.

Value

A SpatRaster stack with the formatted GLOBIOM predictors.

Author(s)

Martin Jung

Examples

```
## Not run:
## Does not work unless downscalr file is provided.
# Expects a filename pointing to a netCDF file.
covariates <- conv_downscalr2ibis(fname)

## End(Not run)
```

misc_objectSize *Shows size of objects in the R environment*

Description

Shows the size of the objects currently in the R environment. Helps to locate large objects cluttering the R environment and/or causing memory problems during the execution of large workflows.

Usage

```
misc_objectSize(n = 10)
```

Arguments

n	Number of objects to show, Default: 10

Value

A data frame with the row names indicating the object name, the field ’Type’ indicating the object type, ’Size’ indicating the object size, and the columns ’Length/Rows’ and ’Columns’ indicating the object dimensions if applicable.

Author(s)

Bias Benito

Examples

```
if(interactive()){

 #creating dummy objects
 x <- matrix(runif(100), 10, 10)
 y <- matrix(runif(10000), 100, 100)

 #reading their in-memory size
 misc_objectSize()

}
```

misc_sanitizeNames *Sanitize variable names*

Description

Prepared covariates often have special characters in their variable names which can or can not be used in formulas or cause errors for certain procedures. This function converts special characters (points, underscores or similar) of variable names into a species format.

Usage

```
misc_sanitizeNames(names)
```

Arguments

names	A vector of character vectors to be sanitized.

Value

A vector of sanitized character.

Examples

```
# Correct variable names
vars <- c("Climate-temperature2015", "Elevation__sealevel", "Landuse.forest..meanshare")
misc_sanitizeNames(vars)
```

spl_exportNetCDF *RExport a gridded raster to a NetCDF format*

Description

This function serves as a general wrapper function to export a provided spatial gridded layer as multi-dimensional NetCDF file. It furthermore requires the specification of a list containing metadata information.

Usage

```
spl_exportNetCDF(
  obj,
  filename,
  global_meta = system.file("iiasa_meta.yaml", package = "BNRTools"),
  separate_meta = FALSE,
  ...
)
```

Arguments

`obj`	A `SpatRaster` object to be exported.
`filename`	A `character` with the output filename.
`global_meta`	A global metadata descriptor by default using IIASA standard metadata (Default: `"iiasa_meta` data").
`separate_meta`	A `logical` flag on whether the metadata should be written separately in `"yaml"` format (Default: `FALSE`).
`...`	Any other metadata that should be overwritten or added to `"global_meta"`.

Details

The default metadata is contained in `"inst/iiasa_meta"`. See examples.

Note

A support for `'stars'` could be added.

Author(s)

Martin Jung

See Also

`writeCDF`, `writeRaster`

Examples

```
# Load default metadata (loaded by default by function too)
meta <- yaml::read_yaml(system.file("iiasa_meta.yaml", package = "BNRTools"))

# Dummy raster
obj <- terra::rast(ncol = 100, nrow = 100,
                   xmin = 0, xmax = 100,
                   ymin = 0, ymax = 100,
                   resolution = 5, crs = terra::crs("WGS84"),
                   val = runif(400)
                   )

# Export
spl_exportNetCDF(obj, filename = "test.nc",
                     global_meta = meta, title = "Super cool analysis")
```

spl_replaceGriddedNA *Replace NA values in gridded layers with a fixed value.*

Description

This function replaces all NA values in a spatial gridded layer with a fixed value such as for example `0`. Accepted input layers are for `SpatRaster` from the `"terra"` R-package and `stars` from the `"stars"` R-package.

Usage

```
spl_replaceGriddedNA(obj, value = 0, mask, verbose = FALSE)
```

Arguments

`obj` A `SpatRaster`, `SpatRasterDataset` or `stars` object.

`value` A fixed numeric value of which all `NA` values are to be replaced with (Default: `0`).

`mask` An optional `SpatRaster` object used instead of the value.

`verbose` Be chatty about what is processed (Default: `FALSE`).

Details

Required inputs are a single `"obj"` gridded data object and a numeric value. In addition an optional mask layer can be provided that to use a mask. In this case all no-data values a replaced with the value in this mask.

Value

A object of the same type as the input but with no-data values replaced with `'value'`.

Author(s)

Martin Jung

### Examples

```
# Example
s <- terra::rast(system.file("ex/logo.tif", package="terra"))
s[sample(1:terra::ncell(s), 100)] <- NA
sfill <- spl_replaceGriddedNA(s, value = 100)
terra::plot(sfill)
```

spl_resampleRas *Resample raster*

Description

Resample two raster to the spatial resolution using aggregation or disaggregation.

Usage

```
spl_resampleRas(x, y, discrete = FALSE)
```

Arguments

`x`	A `SpatRaster` to be resampled.
`y`	A `SpatRaster` to which `x` will be resampled
`discrete`	`logical` to specifiy if input raster has continitous or discrete values

Value

`SpatRaster`

See Also

`aggregate`, `disagg`

### Examples

```
set.seed(42)
ras_a <- terra::rast(ncol = 100, nrow = 100, xmin = 0, xmax = 100,
ymin = 0, ymax = 100, resolution = 20, crs = NA)

ras_b <- terra::rast(ncol = 100, nrow = 100, xmin = 0, xmax = 100,
ymin = 0, ymax = 100, resolution = 5, crs = NA)

 terra::values(ras_a) <- runif(n = terra::ncell(ras_a))
 terra::values(ras_b) <- runif(n = terra::ncell(ras_b))
```

```
spl_resampleRas(x = ras_a, y = ras_b)
```

%notin% *Inverse of 'in' call*

Description

Calculates the set of entries not present in the second vector. Added for convenience since this is not supported by default in R.

Usage

```
a %notin% b
```

Arguments

a	First `vector` object.
b	Second `vector` object.

Value

A `vector` of `logical` entries of `'a'` not present in `'b'`.

Author(s)

Martin Jung

Examples

```
# example code
```

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