Package: rchelsa (via r-universe)

September 10, 2024

Title A Package for Accessing Chelsa Climate Data

Date 2023-11-15

Version 0.0.0.9001

Description Download Chelsa data <https://chelsa-climate.org/>.

Depends R (>= 4.2)

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Imports cli, crayon, curl, glue

Suggests rmarkdown, testthat, yaml

URL https://github.com/inSileco/rchelsa

BugReports https://github.com/inSileco/rchelsa/issues

Encoding UTF-8

RoxygenNote 7.2.3

Roxygen list(markdown = TRUE)

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

RemoteUrl https://github.com/inSileco/rchelsa

RemoteRef HEAD

RemoteSha 6f551803b4514e06fd2d7012ee2cd36930650c73

Contents

`chl_europ_obs` *Access high resolution climate data for Europe.*

Description

Access high resolution climate data for Europe.

Usage

```
chl_europ_obs(period = "year", var, year, path = ".")
```

Arguments

`period`	time period (see below) or "doc" for documentation.
`var`	variable name (see XXX).
`year`	year only available when period is set to 'daily' or 'yearly'.
`path`	path to the folder where files will be stored.

Details

Time periods (`periods`) are as follows:

- `daily`: Data files on a daily resolution (usually years available are 1981-2005)
- `yearly`: Annual aggregations of a variable (usually years available are 1981-2005).
- `monthly`: Data files on a monthly resolution.
- `normal`: Long term, climatological, means of a variable over a Normals period.

References

- https://os.zhdk.cloud.switch.ch/envicloud/chelsa/chelsa_V2/EUR11/documentation/CHELSA_EUR11_technical_documentation.pdf
- Karger, D.N., Conrad, O., Böhner, J., Kawohl, T., Kreft, H., Soria-Auza, R.W., Zimmermann, N.E., Linder, H.P. & Kessler, M. (2017) Climatologies at high resolution for the earth's land surface areas. Scientific Data 4, 170122
- Karger, Dirk Nikolaus; Dabaghchian, Babek; Lange, Stefan; Thuiller, Wilfried; Zimmermann, Niklaus E.; Graham, Catherine H. (2020). High resolution climate data for Europe. EnviDat. doi:10.16904/envidat.150.

Examples

```
## Not run:
chl_europ_obs("normal", "pr")

## End(Not run)
```

chl_global_mod *Chelsa V2*

Description

Chelsa V2

Usage

```
chl_global_mod(
  horizon = 2040,
  var = "bio",
  val = 10,
  model = "mpi-esm1",
  scenario = "ssp126",
  path = "."
)

chl_global_obsv_daily(var, month = 1, day = 1, path = ".")

chl_global_obsv_monthly(var, month = 1, year = 1980, path = ".")
```

Arguments

horizon	time horizons.
var	variable.
val	values.
model	models.
scenario	scenarios.
path	path to the folder where files will be stored.
month	month.
day	day.
year	year.

Details

- Models:
  - mpi-esm1 : MPI-ESM1-2-HR
  - gfdl-esm4 : GFDL-ESM4
  - ipsl-cm6a : IPSL-CM6A-LR
  - mri-esm2 : MRI-ESM2-0
  - ukesm1 : UKESM1-0-LL
- Scenarios (scenarios): SSP (Shared Socioeconomic Pathways)

  - ssp126: SSP 1, 2.6 W.m-2
  - ssp370: SSP 3, 7.0 W.m-2
  - ssp585: SSP 5, 8.5 W.m-2
- Time horizons (horizons):
  - 2010: 1981-2010 ('model' and 'scenario' are ignored).
  - 2040: 2011-2040
  - 2070: 2041-2070
  - 2100: 2071-2100

Functions

- chl_global_obsv_daily(): observed data daily (for 1980).
- chl_global_obsv_monthly(): observed data monthly (from 1980 up to 2018) .

Examples

```
## Not run:
 chl_global_mod(var = "pr", val = 1, model = "ukesm1", scenario = "ssp370", horizon = 2010)
 chl_global_mod(var = "pr", val = 1, model = "ukesm1", scenario = "ssp370", horizon = 2040)
 chl_global_obsv_monthly(var = "pr")

## End(Not run)
```

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chl_ts *Access CHELSA timeseries*

Description

Access CHELSA timeseries

Usage

```
chl_ts(var, year, val = NULL, path = ".")
```

Arguments

var	variable name.
year	year.
val	optional.
path	path to the folder where files will be stored.

Details

"The CHELSA timeseries data consists of monthly downscaled model output temperature and precipitation estimates at a horizontal resolution of 30 arc sec. from 1979-2013. The resulting data consist of a mean monthly temperature and precipitation amounts." (Karger et al. 2017)

References

- https://chelsa-climate.org
- Karger, D.N., Conrad, O., Böhner, J., Kawohl, T., Kreft, H., Soria-Auza, R.W., Zimmermann, N.E., Linder, H.P., Kessler, M.(2017) Data from: Climatologies at high resolution for the earth's land surface areas. Dryad Digital Repository. doi.org/10.5061/dryad.kd1d4.

Examples

```
## Not run:
chl_ts("prec", 1982, 3)
chl_ts("gts30", 1982)

## End(Not run)
```

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get_chelsea_data *Download Chelsea data*

Description

Download Chelsea data

Usage

```
get_chelsea_data(categ = "clim", type = "bio", id = 1, path = ".")
```

Arguments

categ	category.
type	type.
id	resource id.
path	path to the folder where files will be stored.

References

https://chelsa-climate.org

Index