Package 'getCRUCLdata'

May 20, 2026

Type Package

Title 'CRU' 'CL' v. 2.0 Climatology Client

Version 2.0.0

Description Provides functions that automate downloading and importing University of East Anglia Climate Research Unit ('CRU') 'CL' v. 2.0 climatology data, facilitates the calculation of minimum temperature and maximum temperature and formats the data into a data.table object or a 'terra' 'SpatRaster' object. 'CRU' 'CL' v. 2.0 data are a gridded climatology of 1961-1990 monthly means released in 2002 and cover all land areas (excluding Antarctica) at 10 arc minutes (0.1666667 degree) resolution. For more information see the description of the data provided by the University of East Anglia Climate Research Unit, <https://crudata.uea.ac.uk/cru/data/hrg/tmc/readme.txt>.

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URL https://codeberg.org/ropensci/getCRUCLdata, https://docs.ropensci.org/getCRUCLdata/

BugReports https://codeberg.org/ropensci/getCRUCLdata/issues

Depends R (>= 4.1.0)

Imports brio, cli, data.table, fs, httr2, rlang, terra

Suggests knitr, R.utils, rmarkdown, roxygen2, roxyglobals, spelling, testthat, withr

VignetteBuilder knitr

ByteCompile TRUE

Config/Needs/build moodymudskipper/devtag

Config/roxygen2/version 8.0.0

Config/roxyglobals/filename globals.R

Config/roxyglobals/unique FALSE

Config/roxylint list(linters = roxylint::tidy)

Config/testthat/edition 3

Config/testthat/parallel true

Encoding UTF-8

Language en-US

X-schema.org-applicationCategory Tools

X-schema.org-isPartOf https://ropensci.org

X-schema.org-keywords anglia-cru, climate-data, cru-cl2, temperature, rainfall, elevation, data-access, wind, relative-humidity, solar-radiation, diurnal-temperature, frost

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-05-20 09:10:02 UTC

Contents

`.add_derived_dt` *Add derived temperature values for TMAX and TMIN*

Description

Add derived temperature values for TMAX and TMIN

Usage

```
.add_derived_dt(dt, vars)
```

Arguments

`dt`	A data.table object of CRU data containing `tmp` and `dtr` in order to calculate tmin and tmax.
`vars`	A named logical vector.

Value

A data.table with tmin and or tmax cols.

.drop_source_vars_dt *Remove source vars if not requested*

Description

If `tmin` or `tmax` are requested but `tmp` or `dtr` are not requested, this function drops the unrequested vars.

Usage

```
.drop_source_vars_dt(dt, vars)
```

Arguments

`dt`	A data.table object of CRU data containing `tmp` and `dtr` in order to calculate tmin and tmax.
`vars`	A named logical vector.

Value

A data.table with the unrequested var columns removed.

read_cru_dt *Create a data.table of CRU CL v. 2.0 climatology elements*

Description

Automates importing CRU CL v.2.0 climatology data and from either the CRU server or local files and creates a **data.table** of the data. If requested, minimum and maximum temperature may also be calculated as described in the data readme.txt file and returned.

Usage

```
read_cru_dt(
  pre = FALSE,
  pre_cv = FALSE,
  rd0 = FALSE,
  tmp = FALSE,
  dtr = FALSE,
  reh = FALSE,
  tmn = FALSE,
  tmx = FALSE,
  sunp = FALSE,
  frs = FALSE,
  wnd = FALSE,
```

```
  elv = FALSE,
  x = NULL
)
```

Arguments

pre	Read precipitation (millimetres/month) and return it, TRUE. Defaults to FALSE.
pre_cv	Read cv of precipitation (percent) and return it, TRUE. Defaults to FALSE. NOTE. Setting this to TRUE will always results in pre being set to TRUE and returned as well.
rd0	Read wet-days (number days with >0.1 millimetres rain per month) and return it, TRUE. Defaults to FALSE.
tmp	Reads temperature (degrees Celsius) and return it, TRUE. Defaults to FALSE‘.
dtr	Read mean diurnal temperature range (degrees Celsius) and return it, TRUE. Defaults to FALSE.
reh	Read relative humidity and return it, TRUE. Defaults to FALSE.
tmn	Calculate minimum temperature values (degrees Celsius) and return it, TRUE. Defaults to FALSE.
tmx	Calculate maximum temperature (degrees Celsius) and return it, TRUE. Defaults to FALSE.
sunp	Read sunshine, percent of maximum possible (percent of day length) and return it, TRUE. Defaults to FALSE.
frs	Read ground-frost records (number of days with ground- frost per month) and return it, TRUE. Defaults to FALSE.
wnd	Read 10 m wind speed (metres/second) and return it, TRUE. Defaults to FALSE.
elv	Read elevation (converted to metres) and return it, TRUE. Defaults to FALSE.
x	An optional local file path where CRU CL v.2.0 .dat.gz files are located. If this is empty, the requested data will automatically be downloaded from the server.

Value

A data.table::data.table object of CRU CL v. 2.0 climatology elements.

Nomenclature and Units

pre precipitation (millimetres/month)

cv cv of precipitation (percent)

rd0 wet-days (number days with >0.1 millimetres rain per month)

tmp mean temperature (degrees Celsius)

dtr mean diurnal temperature range (degrees Celsius)

reh relative humidity (percent)

sunp sunshine (percent of maximum possible (percent of day length))

frs ground-frost (number of days with ground-frost per month)

wnd 10 metre wind speed (metres/second)

elv elevation (automatically converted to metres from kilometres)

For more information see the description of the data provided by CRU, https://crudata.uea.ac.uk/cru/data/hrg/tmc/readme.txt

Author(s)

Adam H. Sparks, <adamhsparks@gmail.com>

Source

pre https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_pre.dat.gz

rd0 https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_rd0.dat.gz

tmp https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_tmp.dat.gz

dtr https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_dtr.dat.gz

reh https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_reh.dat.gz

sunp https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_sunp.dat.gz

frs https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_frs.dat.gz

wnd https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_wnd.dat.gz, areas originally including Antarctica are removed.

elv https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_elv.dat.gz, values are converted from kilometres to metres.

This package crops all spatial outputs to an extent of ymin = -60, ymax = 85, xmin = -180, xmax = 180.

References

New, Mark, et al. "A high-resolution data set of surface climate over global land areas." Climate research 21.1 (2002): 1-25. https://crudata.uea.ac.uk/cru/data/hrg/tmc/new_et_al_10minute_climate_CR.pdf

See Also

read_cru_rast.

Examples

```
# Create a data frame of temperature from locally available files in the
# tempdir() directory.
library(fs)

f <- path(path_temp(), "grid_10min_tmp.dat.gz")

download.file(
  url = "https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_tmp.dat.gz",
  destfile = f
)
```

```
cru_tmp <- read_cru_dt(tmp = TRUE, x = f)

cru_tmp

# or downloading directly from the CRU server

cru_tmp <- read_cru_dt(tmp = TRUE)

cru_tmp
```

`read_cru_rast` *Create a terra SpatRaster object of CRU CL v. 2.0 climatology elements*

Description

Create a terra::SpatRaster object or list of objects from CRU CL 2.0 data.

Usage

```
read_cru_rast(
  pre = FALSE,
  pre_cv = FALSE,
  rd0 = FALSE,
  tmp = FALSE,
  dtr = FALSE,
  reh = FALSE,
  tmn = FALSE,
  tmx = FALSE,
  sunp = FALSE,
  frs = FALSE,
  wnd = FALSE,
  elv = FALSE,
  x = NULL
)
```

Arguments

`pre`	Read precipitation (millimetres/month) and return it, `TRUE`. Defaults to `FALSE`.
`pre_cv`	Read cv of precipitation (percent) and return it, `TRUE`. Defaults to `FALSE`. NOTE. Setting this to `TRUE` will always results in `pre` being set to `TRUE` and returned as well.
`rd0`	Read wet-days (number days with >0.1 millimetres rain per month) and return it, `TRUE`. Defaults to `FALSE`.

tmp	Reads temperature (degrees Celsius) and return it, TRUE. Defaults to FALSE‘.
dtr	Read mean diurnal temperature range (degrees Celsius) and return it, TRUE. Defaults to FALSE.
reh	Read relative humidity and return it, TRUE. Defaults to FALSE.
tmn	Calculate minimum temperature values (degrees Celsius) and return it, TRUE. Defaults to FALSE.
tmx	Calculate maximum temperature (degrees Celsius) and return it, TRUE. Defaults to FALSE.
sunp	Read sunshine, percent of maximum possible (percent of day length) and return it, TRUE. Defaults to FALSE.
frs	Read ground-frost records (number of days with ground- frost per month) and return it, TRUE. Defaults to FALSE.
wnd	Read 10 m wind speed (metres/second) and return it, TRUE. Defaults to FALSE.
elv	Read elevation (converted to metres) and return it, TRUE. Defaults to FALSE.
x	An optional local file path where CRU CL v.2.0 .dat.gz files are located. If this is empty, the requested data will automatically be downloaded from the server.

Value

A terra::SpatRaster object.

Nomenclature and Units

pre precipitation (millimetres/month)

cv cv of precipitation (percent)

rd0 wet-days (number days with >0.1 millimetres rain per month)

tmp mean temperature (degrees Celsius)

dtr mean diurnal temperature range (degrees Celsius)

reh relative humidity (percent)

sunp sunshine (percent of maximum possible (percent of day length))

frs ground-frost (number of days with ground-frost per month)

wnd 10 metre wind speed (metres/second)

elv elevation (automatically converted to metres from kilometres)

For more information see the description of the data provided by CRU, https://crudata.uea.ac.uk/cru/data/hrg/tmc/readme.txt

Author(s)

Adam H. Sparks, <adamhsparks@gmail.com>

Source

pre https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_pre.dat.gz

rd0 https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_rd0.dat.gz

tmp https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_tmp.dat.gz

dtr https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_dtr.dat.gz

reh https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_reh.dat.gz

sunp https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_sunp.dat.gz

frs https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_frs.dat.gz

wnd https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_wnd.dat.gz, areas originally including Antarctica are removed.

elv https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_elv.dat.gz, values are converted from kilometres to metres.

This package crops all spatial outputs to an extent of ymin = -60, ymax = 85, xmin = -180, xmax = 180.

References

New, Mark, et al. "A high-resolution data set of surface climate over global land areas." Climate research 21.1 (2002): 1-25. https://crudata.uea.ac.uk/cru/data/hrg/tmc/new_et_al_10minute_climate_CR.pdf

See Also

read_cru_rast.

Examples

```
# Create a data frame of temperature from locally available files in the
# tempdir() directory.
library(fs)

f <- path(path_temp(), "grid_10min_tmp.dat.gz")

download.file(
  url = "https://crudata.uea.ac.uk/cru/data/hrg/tmc/grid_10min_tmp.dat.gz",
  destfile = f
)


cru_tmp <- read_cru_rast(tmp = TRUE, x = f)

cru_tmp

# or downloading directly from the CRU server

cru_tmp <- read_cru_rast(tmp = TRUE)

cru_tmp
```

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