

Package ‘RCGLS’

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Title Download and Open Data Provided by the Copernicus Global Land Service

Version 1.0.3

Description Download and open manifest files provided by the Copernicus Global Land Service data <<https://land.copernicus.eu/global/>>. The manifest files are available at: <<https://land.copernicus.vgt.vito.be/manifest/>>. Also see: <<https://land.copernicus.eu/global/access/>>. Before you can download the data, you will first need to register to create a username and password.

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Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Imports RCurl, ncdf4, raster, sp

Suggests testthat

NeedsCompilation no

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download_CGLS_data	<i>Download CGLS data</i>
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Description

Downloads manifest files of the Copernicus Global Land Service. Registration at <https://land.copernicus.eu/global/> is required.

Usage

```
download_CGLS_data(username, password, timeframe, product, resolution, version)
```

Arguments

username	Register at https://land.copernicus.eu/global/
password	Register at https://land.copernicus.eu/global/
timeframe	Time frame of interest, for example June 2019
product	Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
resolution	1km, 300m or 100m
version	Version number: v1, v2, v3,...

Details

Check <https://land.copernicus.eu/global/products/> for a product overview and product details. Check <https://land.copernicus.vgt.vito.be/manifest/> for an overview for data availability in the manifest.

Value

CGLS data Data saved locally in chosen folder.

Examples

```
## Not run:
#library(RCurl)
UN  <- "Willemijn"
PW  <- "Testthis"
TF  <- seq(as.Date("2019-06-01"), as.Date("2019-06-15"), by="days")
PROD <- "fapar" #Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
RES  <- "1km" #1km, 300m or 100m
V    <- "v1" #Version number: v1, v2, v3, ...

download_CGLS_data(username=UN, password=PW, timeframe=TF, product=PROD, resolution=RES, version=V)

## End(Not run)
```

ncvar_get_CGSL	<i>Read netcdf CGLS data</i>
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Description

Read single layers of Copernicus Global Land Service (CGLS) data and adjusts coordinates for R.

Usage

```
ncvar_get_CGSL(date, product, resolution, version, variable)
```

Arguments

date	Date of interest, for example for 13 june 2019: 2019-06-13
product	Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
resolution	1km, 300m or 100m
version	Version number: v1, v2, v3,...
variable	FAPAR_ERR, FAPAR_QFLAG... Also see https://land.copernicus.eu/global/products/

Details

Adjusting coordinates is a necessary step to use the data because Copernicus nc files have lat/long belonging to the centre of the pixel, and R uses upper/left corner. This function opens the data without any corrections.

Value

CGLS data Large matrix of a specific variable in environment, coordinates adjusted.

Examples

```
## Not run:
#' library(ncdf4)
DATE <- "2019-06-13" #Date of interest, for example for 13 june 2019: 2019-06-13
PROD <- "fapar" #Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
RES <- "1km" #1km, 300m or 100m
V <- "v1" #Version number: v1, v2, v3, ...
VAR <- "FAPAR" #FAPAR_ERR, FAPAR_QFLAG... Also see https://land.copernicus.eu/global/products/

nc_data <- ncvar_get_CGSL (date=DATE, product=PROD, resolution=RES, version=V, variable=VAR)

## End(Not run)
```

nc_open_CGLS	<i>Open netcdf CGLS data</i>
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Description

Opens single original data files/layers of Copernicus Global as netCDF filesLand Service as netCDF files without adjusting coordinates. Coordinate adjustment is necessary as R uses upper left corner as pixel reference and Copernicus uses pixel centre. Also see: <https://land.copernicus.eu/global/products/>.

Usage

```
nc_open_CGLS(date, product, resolution, version)
```

Arguments

date	Date of interest, for example for 13 june 2019: 2019-06-13
product	Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
resolution	1km, 300m or 100m
version	Version number: v1, v2, v3,...

Details

Adjusting coordinates is a necessary step to use the data because Copernicus nc files have lat/long belonging to the centre of the pixel, and R uses upper/left corner. This function opens the data without any corrections.

Value

CGLS data Opens single netcdf file in environment

Note

Coordinates are shifted and need to be adjusted, for example by: `if(resolution == "300m") lon <- lon - (1/336)/2 lat <- lat + (1/336)/2`
`if(resolution == "1km") lon <- lon - (1/112)/2 lat <- lat + (1/112)/2`

Examples

```
## Not run:
library(ncdf4)
DATE    <- "2019-06-13" #Date of interest, for example for 13 june 2019: 2019-06-13
PROD    <- "fapar" #Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
RES     <- "1km" #1km, 300m or 100m
V       <- "v1" #Version number: v1, v2, v3, ...

nc      <- nc_open_CGLS (date=DATE, product=PROD, resolution=RES, version=V)

## End(Not run)
```

stack_CGLS

*stack CGLS data***Description**

Read all downloaded files from Copernicus Global Land Service within a timeframe as Raster Stack and adjusts coordinates for R.

Usage

```
stack_CGLS (timeframe, product, resolution, version, variable)
```

Arguments

timeframe	Time frame of interest, for example June 2019
product	Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
resolution	1km, 300m or 100m
version	Version number: v1, v2, v3,...
variable	Variable name: FAPAR_ERR, FAPAR_QFLAG... Also see https://land.copernicus.eu/global/products/

Details

Adjusting coordinates is a necessary step to use the data because Copernicus nc files have lat/long belonging to the centre of the pixel, and R uses upper/left corner.

Value

CGLS data Raster Stack

Examples

```
## Not run:
library(raster)
TF    <- seq(as.Date("2019-06-01"), as.Date("2019-06-31"), by="days")
PROD  <- "fapar" #Product name: fapar, fcover, lai, ndvi, ss, swi, lst, ...
RES   <- "1km" #1km, 300m or 100m
V     <- "v1" #Version number: v1, v2, v3, ...
VAR   <- "FAPAR" #FAPAR_ERR, FAPAR_QFLAG... Also see https://land.copernicus.eu/global/products/
data  <- stack_CGLS(timeframe=TF, product=PROD, resolution=RES, version=V, variable=VAR)

## End(Not run)
```

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