Package 'hwsdr'

October 13, 2022

Title Interface to the 'HWSD' Web Services

Version 1.0

Description Programmatic interface to the Harmonized World Soil Database 'HWSD' web services (<https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1247>). Allows for easy downloads of 'HWSD' soil data directly to your R workspace or your computer. Routines for both single pixel data downloads and gridded data are provided.

Depends R (>= 3.6)

Imports sf, raster, httr

License AGPL-3

LazyData true

ByteCompile true

RoxygenNote 7.1.1

Encoding UTF-8

Suggests rgdal, ncdf4, magrittr, knitr, markdown, rmarkdown, covr, testthat

VignetteBuilder knitr

URL https://github.com/bluegreen-labs/hwsdr

BugReports https://github.com/bluegreen-labs/hwsdr/issues

NeedsCompilation no

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Repository CRAN

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R topics documented:

`hwsd_meta_data` *HWSD meta-data*

Description

Data frame with meta-data on the ORNL DAAC parameters one can query using the THREDDS server. In addition a brief description of the various data products and their units is provided.

Usage

```
hwsd_meta_data
```

Format

data.frame

parameter parameter names used in THREDDS server call

subset bands within a data product (only for CLM data)

description general description of the variable

units units of the variable

`ws_get` *Basic HWSD download function*

Description

Downloads HWSD data, wrapped by `ws_subset()` for convenient use. This is a function mainly for internal use but exposed so people can benefit from it in other (more flexible) setups if so desired.

Usage

```
ws_get(location, param, path, internal = TRUE)
```

Arguments

`location`	file with several site locations and coordinates in a comma delimited format: site, latitude, longitude
`param`	which soil parameter to use
`path`	default is tempdir()
`internal`	return an internal raster or just retain values in the path

Value

HWSD data as a raster file

ws_subset *Subset ORNL DAAC HWSD data*

Description

Subset function to query pixel or spatial data from the ORNL DAAC HWSD THREDDS server. Returns a tidy data frame for point locations or raster data to the workspace or disk.

Usage

```
ws_subset(
  location = c(32, -81, 34, -80),
  site = "HWSD",
  param = "ALL",
  path = tempdir(),
  internal = TRUE,
  rate = 0.1
)
```

Arguments

location	location of a bounding box c(lat, lon, lat, lon) defined by a bottom-left and top-right coordinates, a single location (lat, lon) or a data frame with various locations listed (site, lat, lon)
site	sitename for the extracted location
param	soil parameters to provide, the default setting is ALL, this will download all available soil parameters.Check https://daac.ornl.gov/SOILS/guides/HWSD.html for parameter descriptions.
path	path where to download the data to (only applicable to spatial data)
internal	do not store the data on disk
rate	request rate in seconds, determines how long to wait between queries to avoid bouncing because of rate limitations

Value

Local geotiff data, or a data frame with HWSD soil information

Examples

```
## Not run:
 # extract sand fraction values
 # for a point location
 values <- ws_subset(
    site = "HWSD",
    location = c(34, -81),
```

```
   param = "T_SAND"
  )

print(values)

# Download a soil fraction map
# of sand for a given bounding box
t_sand <- ws_subset(
   site = "HWSD",
   location = c(32, -81, 34, -80),
   param = "T_SAND",
   path = tempdir(),
   internal = TRUE
  )

raster::plot(t_sand)

## End(Not run)
```

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