Package 'rlandfire'

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Type Package

Title Interface to 'LANDFIRE Product Service' API

Version 2.0.0

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Description Provides access to a suite of geospatial data layers for wildfire management, fuel modeling, ecology, natural resource management, climate, conservation, etc., via the 'LANDFIRE' (<https://www.landfire.gov/>) Product Service ('LFPS') API.

License GPL (>= 3)

Encoding UTF-8

URL https://github.com/bcknr/rlandfire

BugReports https://github.com/bcknr/rlandfire/issues

RoxygenNote 7.3.2

Imports curl, httr2, sf, terra, utils

Suggests foreign, httptest2, httr, knitr, lifecycle, raster, rmarkdown, stars, testthat (>= 3.0.0)

Config/testthat/edition 3

VignetteBuilder knitr

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NeedsCompilation no

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Contents

`cancelJob` *Cancel an active LANDFIRE Product Service (LFPS) API job*

Description

`cancelJob()` sends a request to cancel a LFPS API request

Usage

```
cancelJob(job_id)
```

Arguments

`job_id`	The job ID of the LFPS API request as a character string

Value

NULL. Prints a message to the console about the job status.

Examples

```
## Not run:
products <-  c("ASP2020", "ELEV2020", "230CC")
aoi <- c("-123.7835", "41.7534", "-123.6352", "41.8042")
email <- "email@example.com>"

resp <- landfireAPIv2(products, aoi, email, background = TRUE)

job_id <- resp$request$job_id #Get job_id from a previous request
cancelJob("job_id")

## End(Not run)
```

checkStatus *Check the status of an existing LANDFIRE Product Service (LFPS) request*

Description

checkStatus checks if a previous request is complete and downloads available data

Usage

```
checkStatus(landfire_api, verbose = TRUE, method = "curl")
```

Arguments

landfire_api	landfire_api object returned from landfireAPIv2()
verbose	If FALSE suppress all status messages
method	Passed to utils::download.file(). See ?download.file or use "none" to skip download and use landfire_vsi()

Value

Returns a landfire_api object with named elements:

- request - list with elements query, date, url, job_id, request,dwl_url
- content - Informative messages passed from API
- response - Full response
- status - Final API status, one of "Failed", "Succeeded", or "Timed out"
- time - time of job completion
- path - path to save directory

Examples

```
## Not run:
products <-  c("ASP2020", "ELEV2020", "230CC")
aoi <- c("-123.7835", "41.7534", "-123.6352", "41.8042")
email <- "email@example.com"
resp <- landfireAPIv2(products, aoi, email, background = TRUE)
checkStatus(resp)

## End(Not run)
```

getAOI *Create extent vector for* landfireAPI()

Description

getAOI creates an extent vector in WGS84 from spatial data

Usage

```
getAOI(data, extend = NULL, sf_order = FALSE)
```

Arguments

data	A SpatRaster, SpatVector, sf, stars, or RasterLayer (raster) object
extend	Optional. A numeric vector of 1, 2, or 4 elements to increase the extent by.
sf_order	If extend != NULL, logical indicating that the order of the extend vector follows sf::st_bbox() (xmin, ymin, xmax, ymax) when TRUE or terra::extend() (xmin, xmax, ymin, ymax) when FALSE. This is FALSE by default to ensure backwards compatibility with previous versions.

Value

Returns an extent vector ordered xmin, ymin, xmax, ymax with a lat/lon projection.

Examples

```
r <- terra::rast(nrows = 50, ncols = 50,
  xmin = -123.7835, xmax = -123.6352,
  ymin = 41.7534, ymax = 41.8042,
  crs = terra::crs("epsg:4326"),
  vals = rnorm(2500))
ext <- getAOI(r, c(10, 15))
```

getZone *Find LANDFIRE map zone for use with* landfireAPI()

Description

getZone returns the LANDFIRE Map Zone(s) a spatial object intersects or the zone number from the zone name. Currently, only map zones within CONUS are supported.

Usage

```
getZone(data)
```

Arguments

data	An sf object or character string with the map zone name.

Value

Returns a numeric vector containing the map zone(s)

Examples

```
## Not run:
v <- sf::st_bbox(sf::st_as_sf(data.frame(x = c(-123.7835,-123.6352),
                                         y = c(41.7534,41.8042)),
                              coords = c("x", "y"),
                              crs = 4326)) |>
 sf::st_as_sfc()
zone <- getZone(v)

## End(Not run)
```

---

healthCheck *Check if the LFPS API is available*

Description

`healthCheck()` checks if the LPFS API is available

Usage

```
healthCheck()
```

Value

NULL. Prints a message to the console about the current LFPS status.

Examples

```
## Not run:
healthCheck()

## End(Not run)
```

`landfireAPI` *Depreciated: Call the LANDFIRE Product Service (LFPS) API*

Description

Depreciated: `landfireAPI()` is no longer supported due to updates to the LFPS API. Use `landfireAPIv2()` instead.

`landfireAPI` downloads LANDFIRE data by calling the LFPS API

Usage

```
landfireAPI(
  products,
  aoi,
  projection = NULL,
  resolution = NULL,
  edit_rule = NULL,
  edit_mask = NULL,
  path = NULL,
  max_time = 10000,
  method = "curl",
  verbose = TRUE
)
```

Arguments

`products`	Product names as character vector (see: Products Table)
`aoi`	Area of interest as character or numeric vector defined by latitude and longitude in decimal degrees in WGS84 and ordered `xmin`, `ymin`, `xmax`, `ymax` or a LANDFIRE map zone.
`projection`	Optional. A numeric value of the WKID for the output projection Default is a localized Albers projection.
`resolution`	Optional. A numeric value between 30-9999 specifying the resample resolution in meters. Default is 30m.
`edit_rule`	Optional. A list of character vectors ordered "operator class" "product", "operator", "value". Limited to fuel theme products only. (see: LFPS Guide)
`edit_mask`	Optional. **Not currently functional**
`path`	Path to `.zip` directory. Passed to `utils::download.file()`. If NULL, a temporary directory is created.
`max_time`	Maximum time, in seconds, to wait for job to be completed.
`method`	Passed to `utils::download.file()`. See `?download.file` or use "none" to skip download and use `landfire_vsi()`
`verbose`	If FALSE suppress all status messages

Value

Returns a `landfire_api` object with named elements:

- `request` - list with elements `query`, `date`, `url`, `job_id`,`dwl_url`
- `content` - Informative messages passed from API
- `response` - Full response
- `status` - Final API status, one of "Failed", "Succeeded", or "Timed out"
- `path` - path to save directory

Examples

```
## Not run:
products <-  c("ASP2020", "ELEV2020", "230CC")
aoi <- c("-123.7835", "41.7534", "-123.6352", "41.8042")
projection <- 6414
resolution <- 90
edit_rule <- list(c("condition","ELEV2020","lt",500), c("change", "230CC", "st", 181))
save_file <- tempfile(fileext = ".zip")
resp <- landfireAPI(products, aoi, projection, resolution, edit_rule = edit_rule, path = save_file)

## End(Not run)
```

`landfireAPIv2` *Call the LANDFIRE Product Service (LFPS) API*

Description

`landfireAPIv2` downloads LANDFIRE data by calling the LFPS API

Usage

```
landfireAPIv2(
  products,
  aoi,
  email,
  projection = NULL,
  resolution = NULL,
  edit_rule = NULL,
  edit_mask = NULL,
  priority_code = NULL,
  path = NULL,
  max_time = 10000,
  method = "curl",
  verbose = TRUE,
  background = FALSE
)
```

Arguments

products	Product names as character vector (see: Products Table)
aoi	Area of interest as character or numeric vector defined by latitude and longitude in decimal degrees in WGS84 and ordered xmin, ymin, xmax, ymax or a LANDFIRE map zone.
email	Email address as character string. This is a required argument for the LFPS v2 API. See the LFPS Guide for more information. Outside of the LFPS API request, this email address is not used for any other purpose, stored, or shared by rlandfire.
projection	Optional. A numeric value of the WKID for the output projection Default is a localized Albers projection.
resolution	Optional. A numeric value between 30-9999 specifying the resample resolution in meters. Default is 30m.
edit_rule	Optional. A list of character vectors ordered "operator class" "product", "operator", "value" where "operator class" is one of "condition", "ORcondition", or "change". Edits are limited to fuel theme products only. (see: LFPS Guide)
edit_mask	Optional. Path to a compressed shapefile (.zip) to be used as an edit mask. The shapefile must be less than 1MB in size and must comply with ESRI shapefile naming rules.
priority_code	Optional. Priority code for wildland fire systems/users. Contact the LANDFIRE help desk for information (helpdesk@landfire.gov)
path	Path to .zip directory. Passed to utils::download.file(). If NULL, a temporary directory is created.
max_time	Maximum time, in seconds, to wait for job to be completed.
method	Passed to utils::download.file(). See ?download.file
verbose	If FALSE suppress all status messages
background	If TRUE, the function will return immediately and the job will run in the background. User will need to check the status of the job manually with checkStatus().

Value

Returns a landfire_api object with named elements:

- request - list with elements query, date, url, job_id, request,dwl_url
- content - Informative messages passed from API
- response - Full response
- status - Final API status, one of "Failed", "Succeeded", or "Timed out"
- time - time of job completion
- path - path to save directory

Examples

```
## Not run:
products <-  c("ASP2020", "ELEV2020", "230CC")
aoi <- c("-123.7835", "41.7534", "-123.6352", "41.8042")
email <- "email@example.com"
projection <- 6414
resolution <- 90
edit_rule <- list(c("condition","ELEV2020","lt",500),
                  c("change", "230CC", "st", 181))
save_file <- tempfile(fileext = ".zip")
resp <- landfireAPIv2(products, aoi, email, projection,
                      resolution, edit_rule = edit_rule,
                      path = save_file)

## End(Not run)
```

`landfireVSI` *Read in LANDFIRE products using the GDAL* `virtual file system`

Description

`landfire_vsi()` opens a request LANDFIRE GeoTIFF using the GDAL `virtual file system` (VSI).

Usage

```
landfireVSI(landfire_api)
```

Arguments

`landfire_api`	A `landfire_api` object created by `landfireAPIv2()`

Details

The GDAL virtual file system allows you to read in LANDFIRE products without having to download the file to your local machine within 60 minutes of the request or if the file already exists on your local machine without having to unzip it.

Value

SpatRaster object of the requested LANDFIRE product/s

Examples

```
## Not run:
aoi  <- c("-113.79", "42.148", "-113.56", "42.29")
email <- "email@example"
rast <- landfireAPIv2(products = "240EVC",
                      aoi = aoi, email = email,
```

```
                        method = "none")  |>
        landfireVSI()

## End(Not run)
```

`viewProducts` *View LFPS products table*

Description

`viewProducts()` opens the LFPS products table in your web browser

Usage

```
viewProducts()
```

Value

NULL. Opens the LF products table in your default browser.

Examples

```
## Not run:
viewProducts()

## End(Not run)
```

Index