Package 'dsmSearch'

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Type Package
Title DSM and LiDAR downloader
Version 1.0.2
Description A collection of functions to search and donwload DSM (Digital Surface Model) and LiDAR (Light Detection and Ranging) data via APIs, including 'OpenTopography' https://portal.opentopography.org/apidocs/ and 'TNMAccess' https://apps.nationalmap.gov/tnmaccess/#/>.
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Imports dplyr, sf, sp, terra, lidR, httr2, imager
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get_dsm_30

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Description

Search for and download ALOS Global Digital Surface Model (AW3D30) via OpenTopography API 1.0.0 based on coordinates of a spatial point with a given distance or bounding box. The raster resolution is 30 meter.

Usage

```
get_dsm_30(x, y, r, epsg, bbox, key = "")
```

Arguments

X	numeric, indicating Longtitude degree of the center point.
у	numeric, indicating latitude degree of the center point.
r	numeric, indicating search distance (meter or feet) for LiDAR data.
epsg	numeric, the EPSG code specifying the coordinate reference system.
bbox	vector, a bounding box defining the geographical area for downloading data.
key	character, API key of OpenTopography.

Details

To request an API key of OpenTopography, online registeration is needed.

Value

raster

Examples

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Description

Search for and download LiDAR data based on coordinates of a spatial point with a given distance or a bounding box. The maximum distance is 1000m. Different dataset could be found and the function automatically downloads the latest dataset. To get more details of data on a larger scale, please use viewscape::lidar_search.

Usage

```
get_lidar(x, y, r, epsg, bbox, max_return = 500, folder)
```

Arguments

x	numeric, indicating Longtitude degree of the center point.
У	numeric, indicating latitude degree of the center point.
r	numeric, indicating search distance for LiDAR data. The maximum distance is 1000m (3281ft). If $r > 1000 \text{m}$, it will be reset to 1000m .
epsg	numeric, the EPSG code specifying the coordinate reference system.
bbox	vector, a bounding box defining the geographical area for downloading data.
max_return	numeric, indicating the maximum of returns.
folder	string (optional), indicating a path for downloading the LiDAR data

Value

lidR LAS object.

References

Jean-Romain Roussel and David Auty (2022). Airborne LiDAR Data Manipulation and Visualization for Forestry Applications. R package version 4.0.1. https://cran.r-project.org/package=lidR

See Also

```
lidar_search()
```

Examples

```
las <- dsmSearch::get_lidar(x = -83.741289, y = 42.270146, r = 1000, epsg = 2253)
las <- dsmSearch::get_lidar(bbox = c(-83.742282,42.273389, -83.733442,42.278724), epsg = 2253)
terra::plot(lidR::rasterize_canopy(las, 10, lidR::dsmtin()))</pre>
```

lidar_search

Description

The lidar_search function is designed to facilitate the retrieval and exploration of LiDAR (Light Detection and Ranging) data within a specified bounding box (bbox). This function enables users to search for LiDAR data, preview available graphics, and optionally download LiDAR data files for further analysis.

Usage

```
lidar_search(bbox, max_return = 500, preview = FALSE, folder = "")
```

Arguments

bbox vector, a bounding box defining the geographical area for the LiDAR data search.

max_return numeric, indicating the maximum of returns.

preview logical. If TRUE (default is FALSE), enable or disable previewing LiDAR

graphics.

folder string (optional), indicating an optional folder path where downloaded LiDAR

data files will be saved.

Value

dataframe

Note

The lidar_search function simplifies the process of searching for and working with LiDAR data via the TNMAccess API: https://tnmaccess.nationalmap.gov/api/v1/docs.

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