

Package ‘dsmSearch’

October 24, 2025

Type Package

Title DSM and LiDAR Downloader

Version 1.2.2

Description A collection of functions to search and download Digital Surface Model (DSM) and Light Detection and Ranging (LiDAR) data via APIs, including 'OpenTopography' <<https://portal.opentopography.org/apidocs/>> and 'TNMAccess' <<https://apps.nationalmap.gov/tnmaccess/#/>>, and canopy tree height data.

Depends R (>= 4.1)

License GPL-3

Encoding UTF-8

RoxygenNote 7.3.2

Language en-US

Suggests testthat (>= 3.0.0), knitr, rmarkdown

VignetteBuilder knitr, rmarkdown

Imports dplyr, sf, sp, terra, lidR, httr2, nominatimlite, imager, cli, aws.s3, stringr

NeedsCompilation no

Author Xiaohao Yang [aut, cre, cph],
Nathan Fox [aut],
Derek Van Berkel [aut],
Mark Lindquist [aut]

Maintainer Xiaohao Yang <xiaohaoy@umich.edu>

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Contents

get_dsm_30	2
get_lidar	3
lidar_search	5

Index	6
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get_dsm_30

get_dsm_30

Description

Search for and download Digital Surface Model based on coordinates of a spatial point with a given distance or bounding box. The resolution of AW3D30 (ALOS World 3D 30m) and SRTMGL1 (SRTM GL1 30m) raster is 30 meter. The raster resolutions of USGS datasets are 10m and 1m. Forest canopy height maps (CHM) include the ETH Global Sentinel-2 10m Canopy Height (2020) and the Meta High Resolution 1m Global Canopy Height Map

Usage

```
get_dsm_30(x, y, r, epsg, bbox, datatype = "AW3D30", key = "")
```

Arguments

x	numeric, indicating Longitude degree of the center point. (bbox is specified, this argument is ignored)
y	numeric, indicating latitude degree of the center point. (bbox is specified, this argument is ignored)
r	numeric, indicating search distance (meter or feet) for LiDAR data. (bbox is specified, this argument is ignored)
epsg	numeric, the EPSG code specifying the coordinate reference system. (bbox is specified, this argument is ignored)
bbox	vector, a bounding box defining the geographical area for downloading data.
datatype	character, dataset names including "AW3D30", "SRTMGL1", "USGS1m", "USGS10m", "metaCHM", and "ethCHM".
key	character, API key of OpenTopography. (not required for "metaCHM", and "ethCHM")

Details

To request an API key of OpenTopography, [online registration](#) is needed.

To get CHMs with more customized arguments please use `fd_canopy_height` from the `forestdata` package.

Data may be freely used for academic purposes, but be cited appropriately (see references below).

Value

SpatRaster raster

References

- Japan Aerospace Exploration Agency (2021). ALOS World 3D 30 meter DEM. V3.2, Jan 2021. Distributed by OpenTopography. <https://doi.org/10.5069/G94M92HB>. Accessed: 2025-06-04
- United States Geological Survey (2021). United States Geological Survey 3D Elevation Program 1 meter Digital Elevation Model. Distributed by OpenTopography. <https://doi.org/10.5069/G9NP22NT>. Accessed: 2025-06-04
- United States Geological Survey (2021). United States Geological Survey 3D Elevation Program 1/3 arc-second Digital Elevation Model. Distributed by OpenTopography. <https://doi.org/10.5069/G98K778D>. Accessed: 2025-06-04
- United States Geological Survey (2021). United States Geological Survey 3D Elevation Program 1 arc-second Digital Elevation Model. Distributed by OpenTopography. <https://doi.org/10.5069/G9HX19WN>. Accessed: 2025-06-04
- Lang, Nico, Walter Jetz, Konrad Schindler, and Jan Dirk Wegner. "A high-resolution canopy height model of the Earth." arXiv preprint arXiv:2204.08322 (2022).
- Tolan, J., Yang, H.I., Nosarzewski, B., Couairon, G., Vo, H.V., Brandt, J., Spore, J., Majumdar, S. , Haziza, D., Vamaraju, J. and Moutakanni, T., 2024. Very high resolution canopy height maps from RGB imagery using self-supervised vision transformer and convolutional decoder trained on aerial lidar. Remote Sensing of Environment, 300, p.113888.

Examples

```
## Not run:
data <- dsmSearch::get_dsm_30(bbox = c(-83.783557, 42.241833, -83.696525, 42.310420),
                              key = "API key")
data <- dsmSearch::get_dsm_30(x = -83.741289,
                              y = 42.270146,
                              r = 1000,
                              epsg = 2253,
                              key = "API key")

## End(Not run)
```

get_lidar

get_lidar

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`.

Index

`get_dsm_30`, [2](#)

`get_lidar`, [3](#)

`lidar_search`, [5](#)

`lidar_search()`, [4](#)