

Package ‘stacr’

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Title Tidy 'STAC' Workflows for R

Version 0.1.0

Description Wraps the 'rstac' package with a pipe-friendly, tidy API. All results return 'tibbles' instead of nested lists. Ships with a catalog registry of known 'STAC' endpoints including Planetary Computer, Earth Search, and 'USGS', while supporting any 'STAC' API URL.

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URL <https://github.com/null-island-labs/stacr>

BugReports <https://github.com/null-island-labs/stacr/issues>

Depends R (>= 4.1.0)

Imports rstac, tibble, cli

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has_internet *Check internet connectivity*

Description

Tests whether a network connection to a STAC endpoint is available. Used in @examplesIf guards for network-dependent examples.

Usage

```
has_internet()
```

Value

TRUE if an internet connection is available, FALSE otherwise.

Examples

```
has_internet()
```

stac_catalogs *List Known STAC Catalogs*

Description

Returns a tibble of known STAC API endpoints bundled with the package. Includes Planetary Computer, Earth Search, and USGS catalogs.

Usage

```
stac_catalogs()
```

Value

A `tibble::tibble` with columns:

name Human-readable catalog name.

url Root URL of the STAC API endpoint.

provider Organization providing the catalog.

Examples

```
stac_catalogs()
```

stac_collections	<i>List STAC Collections</i>
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Description

Queries a STAC API endpoint and returns available collections as a tidy tibble. Wraps `rstac::collections()` with tidy output.

Usage

```
stac_collections(url)
```

Arguments

`url` Character. Root URL of a STAC API endpoint (e.g., "https://earth-search.aws.element84.com/v1")

Value

A `tibble::tibble` with one row per collection and columns:

id Collection identifier.

title Human-readable title.

description Collection description.

Examples

```
stac_collections("https://earth-search.aws.element84.com/v1")
```

stac_download	<i>Download STAC Assets</i>
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Description

Downloads assets from STAC items returned by `stac_search()` or `stac_items()`. Wraps `rstac::assets_download()` with tidy output.

Usage

```
stac_download(items, assets = NULL, output_dir = tempdir(), overwrite = FALSE)
```

Arguments

items	An rstac doc_items object as returned by <code>stac_search()</code> or <code>stac_items()</code> with the raw attribute, or the raw rstac result directly.
assets	Character vector. Asset names to download (e.g., <code>c("red", "green", "blue")</code>). If NULL, downloads all assets.
output_dir	Character. Directory where files are saved. Defaults to <code>tempdir()</code> .
overwrite	Logical. Overwrite existing files? Defaults to FALSE.

Value

The rstac items object (invisibly) with assets downloaded to `output_dir`. Downloaded file paths can be retrieved with `rstac::assets_url()`.

Examples

```
# Search for items first
items <- stac_search(
  url = "https://earth-search.aws.element84.com/v1",
  collections = "sentinel-2-l2a",
  bbox = c(-84.5, 38.0, -84.3, 38.2),
  limit = 1
)
```

stac_items

List Items in a STAC Collection

Description

Retrieves items from a specific collection in a STAC API endpoint and returns them as a tidy tibble. Wraps `rstac::items()` with tidy output.

Usage

```
stac_items(url, collection, limit = 100L)
```

Arguments

url	Character. Root URL of a STAC API endpoint (e.g., <code>"https://earth-search.aws.element84.com/v1"</code>).
collection	Character. The collection ID to list items from.
limit	Integer. Maximum number of items to return. Defaults to 100.

Value

A `tibble::tibble` with one row per item and columns:

id Item identifier.

collection Collection the item belongs to.

datetime Acquisition datetime as a character string.

bbox Bounding box as a numeric list column.

geometry GeoJSON geometry as a list column.

assets Character vector of available asset names.

Examples

```
stac_items(  
  url = "https://earth-search.aws.element84.com/v1",  
  collection = "sentinel-2-l2a",  
  limit = 5  
)
```

stac_map

Map STAC Item Footprints

Description

Creates an interactive 'leaflet' map showing the spatial footprints of STAC items returned by `stac_search()` or `stac_items()`. Requires the 'leaflet' and 'sf' packages to be installed.

Usage

```
stac_map(items)
```

Arguments

items A `tibble::tibble` of STAC items as returned by `stac_search()` or `stac_items()`, with a geometry list column.

Value

A leaflet htmlwidget object.

Examples

```
items <- stac_search(
  url = "https://earth-search.aws.element84.com/v1",
  collections = "sentinel-2-l2a",
  bbox = c(-84.5, 38.0, -84.3, 38.2),
  limit = 5
)
stac_map(items)
```

stac_search

Search a STAC API

Description

Searches a STAC API endpoint for items matching the given filters and returns results as a tidy tibble. Wraps `rstac::stac_search()` with tidy output.

Usage

```
stac_search(
  url,
  collections = NULL,
  bbox = NULL,
  datetime = NULL,
  limit = 100L
)
```

Arguments

<code>url</code>	Character. Root URL of a STAC API endpoint (e.g., "https://earth-search.aws.element84.com/v1").
<code>collections</code>	Character vector. Collection IDs to search within.
<code>bbox</code>	Numeric vector of length 4: <code>c(xmin, ymin, xmax, ymax)</code> . Only items intersecting this bounding box are returned.
<code>datetime</code>	Character. Date/time filter as a single datetime or range (e.g., "2024-01-01/2024-12-31"). Follows RFC 3339.
<code>limit</code>	Integer. Maximum number of items to return. Defaults to 100.

Value

A `tibble::tibble` with one row per item and columns:

id Item identifier.

collection Collection the item belongs to.

datetime Acquisition datetime as a character string.

bbox Bounding box as a numeric list column.

geometry GeoJSON geometry as a list column.

assets Character vector of available asset names.

Examples

```
stac_search(
  url = "https://earth-search.aws.element84.com/v1",
  collections = "sentinel-2-l2a",
  bbox = c(-84.5, 38.0, -84.3, 38.2),
  limit = 5
)
```

stac_search_raw	<i>Search STAC and Return Raw rstac Result</i>
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Description

Like `stac_search()` but returns the raw `rstac doc_items` object instead of a tibble. Useful as input for `stac_download()` and `stac_to_cube()`.

Usage

```
stac_search_raw(
  url,
  collections = NULL,
  bbox = NULL,
  datetime = NULL,
  limit = 100L
)
```

Arguments

url	Character. Root URL of a STAC API endpoint (e.g., "https://earth-search.aws.element84.com/v1").
collections	Character vector. Collection IDs to search within.
bbox	Numeric vector of length 4: <code>c(xmin, ymin, xmax, ymax)</code> . Only items intersecting this bounding box are returned.
datetime	Character. Date/time filter as a single datetime or range (e.g., "2024-01-01/2024-12-31"). Follows RFC 3339.
limit	Integer. Maximum number of items to return. Defaults to 100.

Value

An `rstac doc_items` object.

Examples

```
raw <- stac_search_raw(
  url = "https://earth-search.aws.element84.com/v1",
  collections = "sentinel-2-l2a",
  bbox = c(-84.5, 38.0, -84.3, 38.2),
  limit = 1
)
```

stac_to_cube

Convert STAC Items to a gdal_cubes Image Collection

Description

Bridges STAC search results to 'gdal_cubes' for raster data cube analysis. Requires the 'gdal_cubes' package to be installed.

Usage

```
stac_to_cube(items, asset_names = NULL, ...)
```

Arguments

<code>items</code>	An <code>rstac doc_items</code> object as returned by <code>stac_search_raw()</code> or <code>rstac::post_request()</code> .
<code>asset_names</code>	Character vector. Asset names to include in the image collection (e.g., <code>c("red", "green", "blue")</code>).
<code>...</code>	Additional arguments passed to <code>gdal_cubes::stac_image_collection()</code> .

Value

A `gdal_cubes` image collection object.

Examples

```
raw <- stac_search_raw(
  url = "https://earth-search.aws.element84.com/v1",
  collections = "sentinel-2-l2a",
  bbox = c(-84.5, 38.0, -84.3, 38.2),
  limit = 5
)
cube <- stac_to_cube(raw, asset_names = c("red", "green", "blue"))
```

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