Package 'mapboxapi'

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Description Includes support for 'Mapbox' Navigation APIs, including directions, isochrones, and route optimization; the Search API for forward and reverse geocoding; the Maps API for interacting with 'Mapbox' vector tilesets and visualizing 'Mapbox' maps in R; and the 'tippecanoe' tile-generation utility. See <https://docs.mapbox.com/api/> for more information about the 'Mapbox' APIs.

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Depends R (>= 3.3.0)

Imports httr, sf, jsonlite, purrr, curl, dplyr (>= 1.0.0), tidyr (>= 1.0.0), aws.s3, stringi, slippymath, protolite, rlang, geojsonsf, magick, leaflet, units, raster, png, jpeg

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R topics documented:

`addMapboxTiles` *Use a Mapbox style in a Leaflet map*

Description

See the Mapbox Static Tiles API documentation for more information.

Usage

```
addMapboxTiles(
  map,
  style_id,
  username,
  style_url = NULL,
  scaling_factor = c("1x", "0.5x", "2x"),
  access_token = NULL,
  layerId = NULL,
  group = NULL,
  options = leaflet::tileOptions(),
  data = leaflet::getMapData(map),
  attribution = TRUE
)
```

Arguments

map	A map widget object created by leaflet::leaflet()
style_id	The style ID of a Mapbox style
username	A Mapbox username
style_url	A Mapbox style URL
scaling_factor	The scaling factor to use when rendering the tiles. A scaling factor of "1x" (the default) returns 512px by 512px tiles. A factor of "1x" returns 256x256 tiles, and a factor of "2x" returns 1024x1024 tiles.
access_token	Your Mapbox access token; which can be set with mb_access_token().
layerId	the layer ID
group	The name of the group the Mapbox tile layer should belong to (for use in Shiny and to modify layers control in a Leaflet workflow)
options	A list of extra options (optional)
data	The data object used to derive argument values; can be provided to the initial call to leaflet::leaflet()
attribution	If TRUE, pass a standard attribution to leaflet::addTiles(). If FALSE, attribution is NULL. attribution can also be a character string including HTML.

Value

A pointer to the Mapbox Static Tiles API which will be translated appropriately by the leaflet R package.

Examples

```
## Not run:

library(leaflet)
library(mapboxapi)

leaflet() %>%
  addMapboxTiles(
    style_id = "light-v9",
    username = "mapbox"
  ) %>%
  setView(
    lng = -74.0051,
    lat = 40.7251,
    zoom = 13
  )

## End(Not run)
```

check_upload_status *Check the status of a Mapbox upload*

Description

Check the status of a Mapbox upload

Usage

```
check_upload_status(upload_id, username, access_token = NULL)
```

Arguments

upload_id	The upload ID
username	Your account's username
access_token	Your Mapbox access token

get_static_tiles *Get static tiles from a Mapbox style for use as a basemap*

Description

This function queries the Mapbox Static Tiles API and composites the tiles as a raster suitable for use as a basemap in tmap or ggplot2 (with the `ggspatial::layer_spatial()` function. It returns a raster layer that corresponds either to an input bounding box or a buffered area around an input shape.

Usage

```
get_static_tiles(
  location,
  zoom,
  style_id,
  username,
  style_url = NULL,
  scaling_factor = c("1x", "2x"),
  buffer_dist = 5000,
  units = "m",
  crop = TRUE,
  access_token = NULL
)
```

Arguments

location	An input location for which you would like to request tiles. Can be a length-4 vector representing a bounding box, or an sf object. If an input sf object is supplied, use the buffer_dist argument to control how much area you want to capture around the layer. While the input sf object can be in an arbitrary coordinate reference system, if a length-4 bounding box vector is supplied instead it must represent WGS84 longitude/latitude coordinates and be in the order c(xmin, ymin, xmax, ymax).
zoom	The zoom level for which you'd like to return tiles.
style_id	A Mapbox style ID; retrieve yours from your Mapbox account.
username	A Mapbox username.
style_url	A Mapbox style URL.
scaling_factor	The scaling factor to use; one of "1x" or "2x".
buffer_dist	The distance to buffer around an input sf object for determining tile extent, specified in units. Defaults to 5000.
units	Units of buffer_dist; defaults to "m" (meters). If buffer_dist is a units class object, the units argument is ignored.
crop	Whether or not to crop the result to the specified bounding box or buffer area. Defaults to TRUE; FALSE will return the extent of the overlapping tiles.
access_token	A Mapbox access token. Supply yours here or set globally with the mb_access_token() function.

Value

A raster layer of tiles from the requested Mapbox style representing the area around the input location. The raster layer is projected in the Web Mercator coordinate reference system.

Examples

```
## Not run:

library(mapboxapi)
library(tigris)
library(tmap)
library(ggspatial)
library(ggplot2)

ny_tracts <- tracts("NY", "New York", cb = TRUE)

ny_tiles <- get_static_tiles(
  location = ny_tracts,
  zoom = 10,
  style_id = "light-v9",
  username = "mapbox"
)

# tmap usage:
```

```
tm_shape(ny_tiles) +
  tm_rgb() +
  tm_shape(ny_tracts) +
  tm_polygons(alpha = 0.5, col = "navy") +
  tm_credits("Basemap (c) Mapbox, (c) OpenStreetMap",
    position = c("RIGHT", "BOTTOM")
  )

# ggplot2 usage:
ggplot() +
  layer_spatial(ny_tiles) +
  geom_sf(data = ny_tracts, fill = "navy", alpha = 0.5) +
  theme_void() +
  labs(caption = "Basemap (c) Mapbox, (c) OpenStreetMap")

## End(Not run)
```

`get_style` *Get information about a style or list styles from a Mapbox account*

Description

See the Mapbox Styles API documentation for more information.

Usage

```
get_style(style_id, username, style_url = NULL, access_token = NULL)

list_styles(username, access_token = NULL)
```

Arguments

`style_id`	A style ID
`username`	A Mapbox username
`style_url`	A Mapbox style URL
`access_token`	A Mapbox public or secret access token; set with `mb_access_token()`

Value

get_style returns a list of information about your selected style. list_styles returns a data frame of information about styles from a Mapbox account

`get_vector_tiles` *Retrieve vector tiles from a given Mapbox tileset*

Description

Retrieve vector tiles from a given Mapbox tileset

Usage

```
get_vector_tiles(tileset_id, location, zoom, access_token = NULL)
```

Arguments

`tileset_id`	The name of the tileset ID; names can be retrieved from your Mapbox account
`location`	The location for which you'd like to retrieve tiles. If the input is an `sf` object, the function will return data for all tiles that intersect the object's bounding box. If the input is a coordinate pair or an address, data will be returned for the specific tile that contains the input.
`zoom`	The zoom level of the request; larger zoom levels will return more detail but will take longer to process.
`access_token`	A Mapbox access token; which can be set with `mb_access_token()`.

Value

A list of `sf` objects representing the different layer types found in the requested vector tiles.

Examples

```
## Not run:

library(mapboxapi)
library(ggplot2)

vector_extract <- get_vector_tiles(
  tileset_id = "mapbox.mapbox-streets-v8",
  location = c(-73.99405, 40.72033),
  zoom = 15
)

ggplot(vector_extract$building$polygons) +
  geom_sf() +
  theme_void()

## End(Not run)
```

`layer_static_mapbox` *Make a static Mapbox ggplot2 layer or tmap basemap*

Description

These functions wrap `static_mapbox()` and `ggspatial::layer_spatial()` or `tmap::tm_rgb()` to support the use of images from the Mapbox Static Maps API as ggplot2 or tmap basemaps.

Usage

```
layer_static_mapbox(
  location = NULL,
  buffer_dist = 1000,
  units = "m",
  style_id,
  username,
  style_url = NULL,
  overlay_sf = NULL,
  overlay_style = NULL,
  overlay_markers = NULL,
  width = NULL,
  height = NULL,
  scale = 0.5,
  scaling_factor = c("1x", "2x"),
  attribution = TRUE,
  logo = TRUE,
  before_layer = NULL,
  access_token = NULL,
  ...
)

tm_static_mapbox(
  location = NULL,
  buffer_dist = 1000,
  units = "m",
  style_id,
  username,
  style_url = NULL,
  overlay_sf = NULL,
  overlay_style = NULL,
  overlay_markers = NULL,
  width = NULL,
  height = NULL,
  scale = 0.5,
  scaling_factor = c("1x", "2x"),
  attribution = TRUE,
  logo = TRUE,
```

```
  before_layer = NULL,
  access_token = NULL,
  ...
)
```

Arguments

location	An input location for which you would like to request tiles. Can be a length-4 vector representing a bounding box, or an sf object. If an input sf object is supplied, use the buffer_dist argument to control how much area you want to capture around the layer. While the input sf object can be in an arbitrary coordinate reference system, if a length-4 bounding box vector is supplied instead it must represent WGS84 longitude/latitude coordinates and be in the order c(xmin, ymin, xmax, ymax).
buffer_dist	The distance to buffer around an input sf object for determining static map, specified in units. If location is a POINT object of 2 rows or less and buffer_dist is 0 or NULL, a 1 unit buffer is applied to try to ensure the creation of a valid bounding box for the map area.
units	Units of buffer_dist; defaults to "m" (meters). If buffer_dist is a units class object, the units argument is ignored.
style_id	A style ID (required if style_url is NULL).
username	A Mapbox username (required if style_url = NULL).
style_url	A Mapbox style url; defaults to NULL.
overlay_sf	The overlay sf object (optional). The function will convert the sf object to GeoJSON then plot over the basemap style. Spatial data that are too large will trigger an error, and should be added to the style in Mapbox Studio instead.
overlay_style	A named list of vectors specifying how to style the sf overlay. Possible names are "stroke", "stroke-width" (or "stroke_width"), "stroke-opacity" (or "stroke_opacity"), "fill", and "fill-opacity" (or "fill_opacity"). The fill and stroke color values can be specified as six-digit hex codes or color names, and the opacity and width values should be supplied as floating-point numbers. If overlay_style is NULL, the style values can be pulled from columns with the same names in overlay_sf.
overlay_markers	The prepared overlay markers (optional). See the function prep_overlay_markers for more information on how to specify a marker overlay.
width, height	The map width and height; defaults to NULL
scale	ratio to scale the output image; scale = 1 will return the largest possible image. defaults to 0.5
scaling_factor	The scaling factor of the tiles; either "1x" (the default) or "2x"
attribution	Controls whether there is attribution on the image. Defaults to TRUE. If FALSE, the watermarked attribution is removed from the image. You still have a legal responsibility to attribute maps that use OpenStreetMap data, which includes most maps from Mapbox. If you specify attribution = FALSE, you are legally required to include proper attribution elsewhere on the webpage or document.
logo	Controls whether there is a Mapbox logo on the image. Defaults to TRUE.

before_layer	A character string that specifies where in the hierarchy of layer elements the overlay should be inserted. The overlay will be placed just above the specified layer in the given Mapbox styles. List layer ids for a map style with `get_style(style_id = style_id, username = username, style_url = style_url, access_token = access_token)[["layers"]][["id"]]`
access_token	A Mapbox access token; which can be set with mb_access_token.
...	additional parameters passed to ggspatial::layer_spatial or tmap::tm_rgb

Details

This function uses a different approach `get_static_tiles()`. Instead, `layer_static_mapbox()` is based largely on `layer_mapbox()` in the snapbox package (available under a MIT license. There are a few key differences between `layer_static_mapbox()` and `layer_mapbox()`. The "scale" parameter is equivalent to the "scale_ratio" parameter for snapbox. Setting `scale_factor = "2x"` is equivalent to setting `retina = TRUE`. Both functions return basemaps that are no larger than a single tile (a maximum of 1280 by 1280 pixels).

For `tm_static_mapbox()`, tmap::tm_shape is called with `projection = 3857` and tmap::tm_rgb is called with `max.value = 1`.

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`mapboxapi` *An R interface to Mapbox web services*

Description

Use Mapbox web services APIs for spatial data science and visualization projects in R. Usage of the package is governed by the Mapbox Terms of Service.

Author(s)

Kyle Walker

mb_access_token *Install or retrieve a Mapbox access token in your .Renviron for repeated use*

Description

See the Mapbox API documentation for more information on access tokens and token scopes.

Usage

```
mb_access_token(token, overwrite = FALSE, install = FALSE)

get_mb_access_token(
  token = NULL,
  default = c("MAPBOX_PUBLIC_TOKEN", "MAPBOX_SECRET_TOKEN"),
  secret_required = FALSE
)

list_tokens(
  username,
  default = NULL,
  limit = NULL,
  sortby = "created",
  usage = NULL,
  access_token = NULL
)
```

Arguments

token	A Mapbox access token; can be public (starting with 'pk') or secret (starting with 'sk') scope, which the function will interpret for you.
overwrite	Whether or not to overwrite an existing Mapbox access token. Defaults to FALSE.
install	if TRUE, will install the key in your .Renviron file for use in future sessions. Defaults to FALSE.
default	If TRUE, will only include the default token for an account. If FALSE, will include all other tokens except for the default. Defaults to NULL.
secret_required	If TRUE, a secret token is required. If FALSE, the default token is provided first and the other token provided second if the first is unavailable.
username	The Mapbox username for which you'd like to list access tokens.
limit	The maximum number of tokens to return. Defaults to NULL.
sortby	How to sort the returned tokens; one of "created" or "modified".
usage	If "pk", returns only public tokens; if "sk", returns only secret tokens. Defaults to NULL, which returns all tokens in the scope of the supplied access token.

access_token Your Mapbox access token. If left NULL, will first check to see if you have a secret token stored in .Renviron, then a public token.

Value

A tibble of information about tokens in your Mapbox account.

Examples

```
## Not run:
my_token <- "..." # The token generated from your Mapbox account
mb_access_token(my_token, install = TRUE)
Sys.getenv("MAPBOX_PUBLIC_TOKEN")

get_mb_access_token()

## End(Not run)
## Not run:

token_list <- list_tokens(
  username = "kwalkertcu", # You would use your own username here
  limit = 10,
  sortby = "modified" #'
)

## End(Not run)
```

---

mb_directions *Make a request to the Mapbox Directions API*

Description

See the Mapbox Directions API documentation for more information.

Usage

```
mb_directions(
  input_data = NULL,
  origin = NULL,
  destination = NULL,
  profile = "driving",
  output = "sf",
  depart_at = NULL,
  alternatives = NULL,
  annotations = NULL,
  bearings = NULL,
  continue_straight = NULL,
  exclude = NULL,
```

```
  geometries = "geojson",
  overview = "simplified",
  radiuses = NULL,
  approaches = NULL,
  steps = NULL,
  banner_instructions = NULL,
  language = NULL,
  roundabout_exits = NULL,
  voice_instructions = NULL,
  voice_units = NULL,
  waypoint_names = NULL,
  waypoint_targets = NULL,
  waypoints = NULL,
  walking_speed = NULL,
  walkway_bias = NULL,
  alley_bias = NULL,
  access_token = NULL
)
```

Arguments

input_data	An input dataset of class "sf", or a list of coordinate pairs for format c(longitude, latitude). Cannot be used with an origin/destination pair.
origin	An address or coordinate pair that represents the origin of your requested route. Cannot be used with input_data.
destination	An address or coordinate pair that represents the destination of your requested route.
profile	One of "driving" (the default), "driving-traffic", "walking", or "cycling".
output	One of "sf" (the default), which returns an sf LINESTRING representing the route geometry, or "full", which returns the full request from the Directions API as a list.
depart_at	(optional) For the "driving" or "driving-traffic" profiles, the departure date and time to reflect historical traffic patterns. If "driving-traffic" is used, live traffic will be mixed in with historical traffic for dates/times near to the current time. Should be specified as an ISO 8601 date/time, e.g. "2022-03-31T09:00".
alternatives	Whether or not to return alternative routes with your request. If TRUE, a list of up to 3 possible routes will be returned.
annotations	A comma-separated string of additional route metadata, which may include duration, distance, speed, and congestion. Must be used with overview = "full".
bearings	A semicolon-delimited character string of bearings
continue_straight	continue_straight
exclude	Road types to exclude from your route; possible choices are 'toll', 'motorway', or 'ferry'. Defaults to NULL.

`geometries` The route geometry format. If `output = 'sf'`, you will get back an `sf` object and you should leave this blank. If `output = 'full'`, the embedded route geometries will be one of `'geojson'` (the default), `'polyline'` with five decimal place precision, or `'polyline6'`.

`overview` If left blank, defaults to `'simplified'` for simplified geometry; the other option is `'full'` which provides the most detailed geometry available.

`radiuses` A character string with semicolon-separated radii that specify the distance (in meters) to snap each input coordinate to the road network. Defaults to `NULL`.

`approaches` A character string with semicolon-separated specifications for how to approach waypoints. Options include `unrestricted` and `curb`. Defaults to `NULL` which uses `unrestricted` for all waypoints.

`steps` If `TRUE`, returns the route object split up into route legs with step-by-step instructions included. If `FALSE` or `NULL` (the default), a single line geometry representing the full route will be returned.

`banner_instructions`
Whether or not to return banner objects; only available when`output = 'full'` and `steps = TRUE`.

`language` The language of the returned instructions (defaults to English). Available language codes are found at https://docs.mapbox.com/api/navigation/#instructions-languages. Only available when `steps = TRUE`.

`roundabout_exits`
If TRUE, adds instructions for roundabout entrance and exit. Only available when `steps = TRUE`.

`voice_instructions, voice_units`
Only available when `steps = TRUE` and `output = 'full'`.

`waypoint_names, waypoint_targets, waypoints`
Only available when `steps = TRUE` and `output = 'full'`.

`walking_speed` The walking speed in meters/second; available when `profile = 'walking'`.

`walkway_bias` Can take values between -1 and 1, where negative numbers avoid walkways and positive numbers prefer walkways. Available when `profile = 'walking'`.

`alley_bias` Can take values between -1 and 1, where negative numbers avoid alleys and positive numbers prefer alleys. Available when `profile = 'walking'`.

`access_token` A Mapbox access token; which can be set with `mb_access_token()`

Value

An `sf` object (or list of `sf` objects), or full R list representing the API response.

Examples

```
## Not run:
library(mapboxapi)
library(leaflet)

my_route <- mb_directions(
  origin = "10 Avenue de Wagram, 75008 Paris France",
```

```
  destination = "59 Rue de Tocqueville, 75017 Paris France",
  profile = "cycling",
  steps = TRUE,
  language = "fr"
)

leaflet(my_route) %>%
  addMapboxTiles(
    style_id = "light-v9",
    username = "mapbox"
  ) %>%
  addPolylines()

## End(Not run)
```

---

mb_geocode *Geocode an address or place description using the Mapbox Geocoding API*

Description

See the Mapbox Geocoding API documentation for more information.

Usage

```
mb_geocode(
  search_text,
  endpoint = "mapbox.places",
  limit = 1,
  types = NULL,
  search_within = NULL,
  language = NULL,
  output = "coordinates",
  access_token = NULL
)

mb_reverse_geocode(
  coordinates,
  endpoint = "mapbox.places",
  limit = 1,
  language = NULL,
  types = NULL,
  output = "text",
  access_token = NULL
)
```

Arguments

search_text	The text to search, formatted as a character string. Can be an address, a location, or a description of a point of interest.
endpoint	One of 'mapbox.places' (the default) or mapbox.places-permanent. Per Mapbox's terms of service, you are only allowed to save results and perform batch geocoding with the places-permanent endpoint.
limit	How many results to return; defaults to 1 (maximum 10).
types	A vector of feature types to limit to which the search should be limited. Available options include 'country', 'region', 'postcode', 'district', 'place', 'locality', 'neighborhood', 'address', and 'poi'. If left blank, all types will be searched.
search_within	An sf object, or vector representing a bounding box of format c(min_longitude, min_latitude, max_longitude, max_latitude) used to limit search results. Defaults to NULL.
language	The user's language, which can help with interpretation of queries. Available languages are found at https://docs.mapbox.com/api/search/#language-coverage.
output	one of "text" (the default), which will return a character string or list of character strings representing the returned results; output = "sf", returning an sf object; or "full", which will return a list with the full API response.
access_token	The Mapbox access token (required); can be set with mb_access_token()
coordinates	The coordinates of a location in format c(longitude, latitude) for which you'd like to return information.

Value

A character vector, list, or sf object representing the query results.

Examples

```
## Not run:

whitehouse <- mb_geocode("1600 Pennsylvania Ave, Washington DC")

## End(Not run)

## Not run:

mb_reverse_geocode(c(77.5958768, 12.9667046), limit = 5, types = "poi")

## End(Not run)
```

`mb_isochrone` *Generate isochrones using the Mapbox Navigation Service Isochrone API*

Description

This function returns isochrones from the Mapbox Navigation Service Isochrone API. Isochrones are shapes that represent the reachable area around one or more locations within a given travel time. Isochrones can be computed for driving, walking, or cycling routing profiles, and can optionally be set to return distances rather than times. `mb_isochrone()` returns isochrones as simple features objects in the WGS 1984 geographic coordinate system.

Usage

```
mb_isochrone(
  location,
  profile = "driving",
  time = c(5, 10, 15),
  distance = NULL,
  depart_at = NULL,
  access_token = NULL,
  denoise = 1,
  generalize = NULL,
  geometry = "polygon",
  output = "sf",
  rate_limit = 300,
  keep_color_cols = FALSE,
  id_column = NULL
)
```

Arguments

`location`	A vector of form `c(longitude, latitude)`, an address that can be geocoded as a character string, or an `sf` object.
`profile`	One of "driving", "walking", "cycling", or "driving-traffic". "driving" is the default.
`time`	A vector of isochrone contours, specified in minutes. Defaults to `c(5, 10, 15)`. The maximum time supported is 60 minutes. Reflects traffic conditions for the date and time at which the function is called. If reproducibility of isochrones is required, supply an argument to the `depart_at` parameter.
`distance`	A vector of distance contours specified in meters. If supplied, will supercede any call to the `time` parameter as time and distance cannot be used simultaneously. Defaults to `NULL`.
`depart_at`	(optional) For the "driving" or "driving-traffic" profiles, the departure date and time to reflect historical traffic patterns. If "driving-traffic" is used, live traffic will be mixed in with historical traffic for dates/times near to the current time.

	Should be specified as an ISO 8601 date/time, e.g. `"2022-03-31T09:00"`. If `NULL` (the default), isochrones will reflect traffic conditions at the date and time when the function is called.
`access_token`	A valid Mapbox access token.
`denoise`	A floating-point value between 0 and 1 used to remove smaller contours. 1 is the default and returns only the largest contour for an input time.
`generalize`	A value expressed in meters of the tolerance for the Douglas-Peucker generalization algorithm used to simplify the isochrone shapes. If `NULL` (the default), the Mapbox API will choose an optimal value for you.
`geometry`	one of `"polygon"` (the default), which returns isochrones as polygons, or alternatively `"linestring"`, which returns isochrones as linestrings.
`output`	one of `"sf"` (the default), which returns an `sf` object representing the isochrone(s), or `"list"`, which returns the GeoJSON response from the API as an R list.
`rate_limit`	The rate limit for the API, expressed in maximum number of calls per minute. For most users this will be 300 though this parameter can be modified based on your Mapbox plan. Used when `location` is `"sf"`.
`keep_color_cols`	Whether or not to retain the color columns that the Mapbox API generates by default (applies when the output is an `sf` object). Defaults to `FALSE`.
`id_column`	If the input dataset is an `sf` object, the column in your dataset you want to use as the isochrone ID. Otherwise, isochrone IDs will be identified by row index or position.

Value

An `sf` object representing the isochrone(s) around the location(s).

Examples

```
## Not run:

library(mapboxapi)
library(mapdeck)
isochrones <- mb_isochrone("The Kremlin, Moscow Russia",
  time = c(4, 8, 12),
  profile = "walking"
)

mapdeck(style = mapdeck_style("light")) %>%
  add_polygon(
    data = isochrones,
    fill_colour = "time",
    fill_opacity = 0.5,
    legend = TRUE
  )

## End(Not run)
```

mb_matrix *Retrieve a matrix of travel times from the Mapbox Directions API*

Description

Retrieve a matrix of travel times from the Mapbox Directions API

Usage

```
mb_matrix(
  origins,
  destinations = NULL,
  profile = "driving",
  fallback_speed = NULL,
  output = c("duration", "distance"),
  duration_output = c("minutes", "seconds"),
  access_token = NULL
)
```

Arguments

origins	The input coordinates of your request. Acceptable inputs include a list of coordinate pair vectors in `c(x, y)` format or an `sf` object. For sf linestrings or polygons, the distance between centroids will be taken.
destinations	The destination coordinates of your request. If `NULL` (the default), a many-to-many matrix using `origins` will be returned.
profile	One of "driving" (the default), "driving-traffic", "walking", or "cycling".
fallback_speed	A value expressed in kilometers per hour used to estimate travel time when a route cannot be found between locations. The returned travel time will be based on the straight-line estimate of travel between the locations at the specified fallback speed.
output	one of `"duration"` (the default), which will be measured in either minutes or seconds (depending on the value of `duration_output`), or `"distance"`, which will be returned in meters.
duration_output	one of `"minutes"` (the default) or `"seconds"`
access_token	A Mapbox access token (required)

Value

An R matrix of source-destination travel times.

Examples

```
## Not run:

library(mapboxapi)
library(tigris)
library(mapdeck)

philly_tracts <- tracts("PA", "Philadelphia", cb = TRUE, class = "sf")
downtown_philly <- mb_geocode("Philadelphia City Hall, Philadelphia PA")

time_to_downtown <- mb_matrix(philly_tracts, downtown_philly)

philly_tracts$time <- time_to_downtown

mapdeck(style = mapdeck_style("light")) %>%
  add_polygon(
    data = philly_tracts,
    fill_colour = "time",
    fill_opacity = 0.6,
    legend = TRUE
  )

## End(Not run)
```

---

mb_optimized_route *Return an optimized route for a series of input coordinates*

Description

Return an optimized route for a series of input coordinates

Usage

```
mb_optimized_route(
  input_data,
  profile = c("driving", "walking", "cycling", "driving-traffic"),
  output = "sf",
  source = c("any", "first"),
  destination = c("any", "last"),
  roundtrip = TRUE,
  annotations = NULL,
  approaches = NULL,
  bearings = NULL,
  distributions = NULL,
  language = NULL,
  overview = "simplified",
  radiuses = NULL,
```

```
  steps = NULL,
  access_token = NULL
)
```

Arguments

input_data	An input dataset of class "sf", or a list of coordinate pairs of format c(longitude, latitude). Must be between 2 and 12 coordinate pairs.
profile	One of "driving" (the default), "driving-traffic", "walking", or "cycling".
output	One of "sf" (the default), which returns an sf LINESTRING representing the route geometry, or "full", which returns the full request from the Directions API as a list.
source	One of "any" (the default) or "first". If "any" is specified, any of the input coordinates may be used as the starting point. If "first" is specified, the first coordinate will be used.
destination	One of "any" (the default) or "last". If "any" is specified, any of the input coordinates may be used as the ending point. If "last" is specified, the last coordinate will be used.
roundtrip	If TRUE (the default), the route will start and end at the same point. roundtrip = FALSE only works when source is "first" and destination is "last". If FALSE is supplied here, the route will start at the first point in input_data and end at the last point.
annotations	A comma-separated string of additional route metadata, which may include duration, distance, speed, and congestion. Must be used with overview = "full".
approaches	A character string with semicolon-separated specifications for how to approach waypoints. Options include unrestricted and curb. Defaults to NULL which uses unrestricted for all waypoints.
bearings	A semicolon-delimited character string of bearings.
distributions	A semicolon-delimited character string of number pairs that specifies pick-up and drop-off locations. The first number indicates the index of the pick-up location, and the second number represents the index of the drop-off location.
language	The language of the returned instructions (defaults to English). Available language codes are found at https://docs.mapbox.com/api/navigation/#instructions-languages. Only available when steps = TRUE.
overview	If left blank, defaults to 'simplified' for simplified geometry; the other option is 'full' which provides the most detailed geometry available.
radiuses	A character string with semicolon-separated radii that specify the distance (in meters) to snap each input coordinate to the road network. Defaults to NULL.
steps	If TRUE, returns the route object split up into route legs with step-by-step instructions included. If FALSE or NULL (the default), a single line geometry representing the full route will be returned.
access_token	Your Mapbox access token; which can be set with mb_access_token()

Value

Either a list of two `sf` objects - one representing the waypoints, and one representing the route - or an R list representing the full optimization API response.

Examples

```
## Not run:

library(mapboxapi)
library(sf)

to_visit <- data.frame(
  X = c(-0.209307, -0.185875, -0.216877, -0.233511, -0.234541),
  Y = c(5.556019, 5.58031, 5.582528, 5.566771, 5.550209)
) %>%
  st_as_sf(coords = c("X", "Y"), crs = 4326)

optimized_route <- mb_optimized_route(to_visit,
  profile = "driving-traffic"
)

## End(Not run)
```

`prep_overlay_markers` *Prepare overlay markers for use in a Mapbox static map*

Description

Markers are prepared to match GeoJSON marker-spec which is a partial implementation of the GeoJSON simplestyle-spec (described as a work-in-progress by Mapbox).

Usage

```
prep_overlay_markers(
  data = NULL,
  marker_type = c("pin-s", "pin-l", "url"),
  label = NA,
  color = NA,
  longitude = NULL,
  latitude = NULL,
  url = NA
)
```

Arguments

`data`	An input data frame with longitude and latitude columns (X and Y or lon and lat as names are also acceptable) or an `sf` object with geometry type POINT.

marker_type	The marker type; one of "pin-s", for a small pin; "pin-l", for a large pin; and "url", for an image path.
label	The marker label (optional). Can be a letter, number (0 through 99), or a valid Maki icon (see https://labs.mapbox.com/maki-icons/) for options).
color	The marker color (optional). Color should be specified as a three or six-digit hexadecimal code without the number sign.
longitude	A vector of longitudes; inferred from the input dataset if data is provided.
latitude	A vector of latitudes; inferred from the input dataset if data is provided.
url	The URL of the image to be used for the icon if marker_type = "url".

Value

A formatted list of marker specifications that can be passed to the static_mapbox function.

---

query_tiles *Get information about features in a tileset using the Tilequery API*

Description

Get information about features in a tileset using the Tilequery API

Usage

```
query_tiles(
  location,
  tileset_id,
  radius = 0,
  limit = 5,
  dedupe = TRUE,
  geometry = NULL,
  layers = NULL,
  access_token = NULL
)
```

Arguments

location	The location for which you'd like to query tiles, expressed as either a length-2 vector of longitude and latitude or an address you'd like to geocode.
tileset_id	The tileset ID to query.
radius	The radius around the point (in meters) for which you'd like to query features. For point-in-polygon queries (e.g. "what county is my point located in?") the default of 0 should be used.
limit	How many features to return (defaults to 5). Can be an integer between 1 and 50.

dedupe	Whether or not to return duplicate features as identified by their IDs. The default, TRUE, will de-duplicate your dataset.
geometry	The feature geometry type to query - can be "point", "linestring", or "polygon". If left blank, all geometry types will be queried.
layers	A vector of layer IDs you'd like to query (recommended); if left blank will query all layers, with the limitation that at most 50 features can be returned.
access_token	A Mapbox access token, which can be set with mb_access_token().

Value

An R list containing the API response, which includes information about the requested features. Parse the list to extract desired elements.

See Also

https://docs.mapbox.com/help/tutorials/find-elevations-with-tilequery-api/

Examples

```
## Not run:

library(mapboxapi)

elevation <- query_tiles(
  location = "Breckenridge, Colorado",
  tileset_id = "mapbox.mapbox-terrain-v2",
  layer = "contour",
  limit = 50
)

max(elevation$features$properties$ele)

## End(Not run)
```

---

static_mapbox *Return a static Mapbox map from a specified style*

Description

This function uses the Mapbox Static Maps API to return a pointer to an "magick-image" class image or a httr::response object from the static map image URL.

Usage

```
static_mapbox(
  location = NULL,
  buffer_dist = 1000,
  units = "m",
  style_id,
  username,
  style_url = NULL,
  overlay_sf = NULL,
  overlay_style = NULL,
  overlay_markers = NULL,
  longitude = NULL,
  latitude = NULL,
  zoom = NULL,
  width = NULL,
  height = NULL,
  bearing = NULL,
  pitch = NULL,
  scale = 0.5,
  scaling_factor = c("1x", "2x"),
  attribution = TRUE,
  logo = TRUE,
  before_layer = NULL,
  access_token = NULL,
  image = TRUE,
  strip = TRUE
)
```

Arguments

location	An input location for which you would like to request tiles. Can be a length-4 vector representing a bounding box, or an sf object. If an input sf object is supplied, use the buffer_dist argument to control how much area you want to capture around the layer. While the input sf object can be in an arbitrary coordinate reference system, if a length-4 bounding box vector is supplied instead it must represent WGS84 longitude/latitude coordinates and be in the order c(xmin, ymin, xmax, ymax).
buffer_dist	The distance to buffer around an input sf object for determining static map, specified in units. If location is a POINT object of 2 rows or less and buffer_dist is 0 or NULL, a 1 unit buffer is applied to try to ensure the creation of a valid bounding box for the map area.
units	Units of buffer_dist; defaults to "m" (meters). If buffer_dist is a units class object, the units argument is ignored.
style_id	A style ID (required if style_url is NULL).
username	A Mapbox username (required if style_url = NULL).
style_url	A Mapbox style url; defaults to NULL.

`overlay_sf` The overlay `sf` object (optional). The function will convert the `sf` object to GeoJSON then plot over the basemap style. Spatial data that are too large will trigger an error, and should be added to the style in Mapbox Studio instead.

`overlay_style` A named list of vectors specifying how to style the sf overlay. Possible names are "stroke", "stroke-width" (or "stroke_width"), "stroke-opacity" (or "stroke_opacity"), "fill", and "fill-opacity" (or "fill_opacity"). The fill and stroke color values can be specified as six-digit hex codes or color names, and the opacity and width values should be supplied as floating-point numbers. If overlay_style is `NULL`, the style values can be pulled from columns with the same names in `overlay_sf`.

`overlay_markers`
The prepared overlay markers (optional). See the function prep_overlay_markers for more information on how to specify a marker overlay.

`longitude, latitude`
The longitude and latitude of the map center. If an overlay is supplied, the map will default to the extent of the overlay unless longitude, latitude, and zoom are all specified.

`zoom` The map zoom. The map will infer this from the overlay unless longitude, latitude, and zoom are all specified.

`width, height` The map width and height; defaults to `NULL`

`pitch, bearing` The map pitch and bearing; defaults to `NULL`. pitch can range from 0 to 60, and bearing from -360 to 360.

`scale` ratio to scale the output image; `scale = 1` will return the largest possible image. defaults to 0.5

`scaling_factor` The scaling factor of the tiles; either `"1x"` (the default) or `"2x"`

`attribution` Controls whether there is attribution on the image. Defaults to `TRUE`. If `FALSE`, the watermarked attribution is removed from the image. You still have a legal responsibility to attribute maps that use OpenStreetMap data, which includes most maps from Mapbox. If you specify `attribution = FALSE`, you are legally required to include proper attribution elsewhere on the webpage or document.

`logo` Controls whether there is a Mapbox logo on the image. Defaults to `TRUE`.

`before_layer` A character string that specifies where in the hierarchy of layer elements the overlay should be inserted. The overlay will be placed just above the specified layer in the given Mapbox styles. List layer ids for a map style with `get_style(style_id = style_id, username = username, style_url = style_url, access_token = access_token)[["layers"]][["id"]]`

`access_token` A Mapbox access token; which can be set with mb_access_token.

`image` If `FALSE`, return the a httr::response object from httr::GET using the static image URL; defaults to `TRUE`.

`strip` If `TRUE`, drop image comments and metadata when `image = TRUE`; defaults to `TRUE`.

Value

A pointer to an image of class `"magick-image"` if `image = TRUE`. The resulting image can be manipulated further with functions from the magick package.

Examples

```
## Not run:

library(mapboxapi)

points_of_interest <- tibble::tibble(
  longitude = c(-73.99405, -74.00616, -73.99577, -74.00761),
  latitude = c(40.72033, 40.72182, 40.71590, 40.71428)
)

prepped_pois <- prep_overlay_markers(
  data = points_of_interest,
  marker_type = "pin-l",
  label = 1:4,
  color = "fff"
)

map <- static_mapbox(
  style_id = "streets-v11",
  username = "mapbox",
  overlay_markers = prepped_pois,
  width = 1200,
  height = 800
)

map

## End(Not run)
```

`tippecanoe` *Generate an .mbtiles file with tippecanoe*

Description

Tippecanoe is a tile-generation utility for building vector tilesets from large (or small) collections of GeoJSON, Geobuf, or CSV features. The tippecanoe function requires that the tippecanoe utility is installed on your system; see the tippecanoe documentation for installation instructions. Once installed, tippecanoe can be used in large visualization workflows in concert with Mapbox Studio.

Usage

```
tippecanoe(
  input,
  output,
  layer_name = NULL,
  min_zoom = NULL,
  max_zoom = NULL,
  drop_rate = NULL,
```

```
  overwrite = TRUE,
  other_options = NULL,
  keep_geojson = FALSE
)
```

Arguments

input	The dataset from which to generate vector tiles. Can be an sf object or GeoJSON file on disk.
output	The name of the output .mbtiles file (with .mbtiles extension). Will be saved in the current working directory.
layer_name	The name of the layer in the output .mbtiles file. If NULL, will either be a random string (if input is an sf object) or the name of the input GeoJSON file (if input is a file path).
min_zoom, max_zoom	The minimum and maximum zoom levels for which to compute tiles. If both min_zoom and max_zoom are blank, tippecanoe will guess the best zoom levels for your data.
drop_rate	The rate at which tippecanoe will drop features as you zoom out. If NULL, tippecanoe will drop features as needed in the densest tiles to stay within Mapbox's limits.
overwrite	If TRUE, an existing .mbtiles file with the same name will be overwritten.
other_options	A character string of other options to be passed to the tippecanoe program.
keep_geojson	Whether nor not to keep the temporary CSV or GeoJSON file used to generate the tiles. Defaults to FALSE.

Details

Mapbox also offers the Mapbox Tiling Service as an alternate way to transform datasets into vector tiles.

Examples

```
## Not run:

# Workflow: create a dynamic tileset for dot-density mapping
library(tidycensus)
library(sf)
library(mapboxapi)

# Get population data for Census tracts in Vermont
vt_population <- get_decennial(
  geography = "tract",
  variables = "P001001",
  state = "Vermont",
  year = 2010,
  geometry = TRUE
)
```

```
# Convert to representative dots - 1 per person
vt_dots <- st_sample(
  vt_population,
  size = vt_population$value
)

# Use tippecanoe to create dynamic tiles
tippecanoe(
  input = vt_dots,
  output = "vt_population.mbtiles",
  layer_name = "vermont_population",
  max_zoom = 18,
  drop_rate = 1.5
)

# Upload to your Mapbox account for visualization
# A Mapbox secret access token must be set with mb_access_token()
# to upload data to your account
upload_tiles(
  input = "vt_population.mbtiles",
  username = "kwalkertcu",
  tileset_id = "vt_population_dots",
  multipart = TRUE
)

## End(Not run)
```

`upload_tiles` *Upload dataset to your Mapbox account*

Description

Upload dataset to your Mapbox account

Usage

```
upload_tiles(
  input,
  username,
  access_token = NULL,
  tileset_id = NULL,
  tileset_name = NULL,
  keep_geojson = FALSE,
  multipart = FALSE
)
```

Arguments

input	An sf object, or the path to the dataset to upload as a character string.
username	Your Mapbox username
access_token	Your Mapbox access token; must have secret scope
tileset_id	The ID of the tileset in your Mapbox account
tileset_name	The name of the tileset in your Mapbox account
keep_geojson	Whether or not to keep the temporary GeoJSON used to generate the tiles (if the input is an sf object)
multipart	Whether or not to upload to the temporary AWS staging bucket as a multipart object; defaults to FALSE.

Examples

```
## Not run:

# Example: create a tileset of median age for all United States Census tracts
# Requires setting a Mapbox secret access token as an environment variable

library(mapboxapi)
library(tidycensus)
options(tigris_use_cache = TRUE)

median_age <- get_acs(
  geography = "tract",
  variables = "B01002_001",
  state = c(state.abb, "DC"),
  geometry = TRUE
)

upload_tiles(
  input = median_age,
  username = "kwalkertcu", # Your username goes here
  tileset_id = "median_age",
  tileset_name = "us_median_age_2014_to_2018"
)

## End(Not run)
```

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