

# Package ‘maptiles’

July 22, 2025

**Title** Download and Display Map Tiles

**Version** 0.10.0

**Description** To create maps from tiles, 'maptiles' downloads, composes and displays tiles from a large number of providers (e.g. 'OpenStreetMap', 'Stadia', 'Esri', 'CARTO', or 'Thunderforest').

**URL** <https://github.com/riatelab/maptiles/>

**BugReports** <https://github.com/riatelab/maptiles/issues/>

**License** GPL-3

**Depends** R (>= 3.5.0)

**Imports** sf, curl, digest, graphics, grDevices, png, terra (>= 1.8-21), tools, slippymath, utils

**Suggests** covr, tinytest

**Encoding** UTF-8

**RoxygenNote** 7.3.2

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2025-05-07 13:10:02 UTC

## Contents

|                           |   |
|---------------------------|---|
| create_provider . . . . . | 2 |
| get_credit . . . . .      | 3 |

|                         |          |
|-------------------------|----------|
| get_providers . . . . . | 4        |
| get_tiles . . . . .     | 4        |
| maptiles . . . . .      | 6        |
| plot_tiles . . . . .    | 7        |
| <b>Index</b>            | <b>8</b> |

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|                 |                                   |
|-----------------|-----------------------------------|
| create_provider | <i>Create a new tile provider</i> |
|-----------------|-----------------------------------|

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**Description**

Use this function to create new tiles provider.

**Usage**

```
create_provider(name, url, sub = NA, citation)
```

**Arguments**

- name                    name of the provider.
- url                    url of the provider. The url must contain {x}, {y} and {z} placeholders. It may also contain {s} for sub-domains or {apikey} for API keys (see Examples).
- sub                    sub-domains.
- citation               attribution text of the provider.

**Value**

a list is returned. This list can be used by [get\\_tiles](#).

**Examples**

```
stadia_toner <- create_provider(  
  name = "stadia_stamen_toner",  
  url = "https://tiles.stadiamaps.com/tiles/stamen_toner/{z}/{x}/{y}.png?api_key={apikey}",  
  citation = "© Stadia Maps © Stamen Design © OpenMapTiles © OpenStreetMap contributors"  
)  
opentopomap <- create_provider(  
  name = "otm",  
  url = "https://{s}.tile.opentopomap.org/{z}/{x}/{y}.png",  
  sub = c("a", "b", "c"),  
  citation = "map data: © OpenStreetMap contributors, SRTM | map style: © OpenTopoMap (CC-BY-SA)"  
)  
IGN <- create_provider(  
  name = "orthophoto_IGN",  
  url = paste0(  
    "https://data.geopf.fr/wmts?",  
    "request=GetTile",  
    "&service=WMTS",
```

```

"&version=1.0.0",
"&style=normal",
"&tilematrixset=PM_6_18",
"&format=image/jpeg",
"&layer=ORTHOIMAGERY.ORTHOPHOTOS.BDORTHO",
"&tilematrix={z}",
"&tilerow={y}",
"&tilecol={x}"
),
citation = "IGN, BD ORTHO®"
)

# Find TileMatrixSet and Style values
layer <- "ORTHOIMAGERY.ORTHOPHOTOS.BDORTHO"
path <- "https://data.geopf.fr/wmts?"
param_info <- "service=wmts&request=GetCapabilities&version=1.0.0"
url <- paste0("WMTS:", path, param_info, ",layer=", layer)
## Not run:
tmp <- tempfile(fileext = ".xml")
sf::gdal_utils(
  util = "translate",
  source = url, destination = tmp,
  options = c("-of", "WMTS")
)
readLines(tmp)

## End(Not run)

```

---

get\_credit

*Get basemap tiles attribution*


---

## Description

Get the attribution of map tiles.

## Usage

```
get_credit(provider)
```

## Arguments

provider                      provider name or provider object (as produced by [create\\_provider](#)).

## Examples

```
get_credit("OpenStreetMap")
```

---

`get_providers`*Providers*

---

**Description**

List of builtin providers with their name, URL, subdomains and attribution text.

**Usage**

```
get_providers()
```

**Value**

A list of is returned.

**Examples**

```
get_providers()
```

---

`get_tiles`*Get basemap tiles from map servers*

---

**Description**

Get map tiles based on a spatial object extent. Maps can be fetched from various map servers ('OpenStreetMap', 'Stadia', 'Esri', 'CARTO', or 'Thunderforest').

**Usage**

```
get_tiles(  
    x,  
    provider = "OpenStreetMap",  
    zoom,  
    crop = FALSE,  
    project = TRUE,  
    verbose = FALSE,  
    apikey,  
    cachedir,  
    forceDownload = FALSE,  
    retina = TRUE  
)
```

**Arguments**

|               |                                                                                                                                                                                  |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| x             | sf, sfc, bbox, SpatRaster, SpatVector or SpatExtent object. If x is a SpatExtent it must express coordinates in lon/lat WGS84 (epsg:4326).                                       |
| provider      | tile server to get the tiles from. It can be one of the builtin providers (see Details for the list) or a named list produced by <a href="#">create_provider</a> (see Examples). |
| zoom          | zoom level (see Details).                                                                                                                                                        |
| crop          | TRUE if results should be cropped to the specified x extent, FALSE otherwise. If x is an sf object with one POINT, crop is set to FALSE.                                         |
| project       | if TRUE, the output is projected to the crs of x. If FALSE the output uses "EPSG:3857" (Web Mercator).                                                                           |
| verbose       | if TRUE, tiles filepaths, zoom level and attribution are displayed.                                                                                                              |
| apikey        | API key. Not needed for Thunderforest or Stadia servers if environment variables named "THUNDERFOREST_MAPS" or "STADIA_MAPS" are set.                                            |
| cachedir      | name of a folder used to cache tiles. If not set, tiles are cached in a <a href="#">tempdir</a> folder.                                                                          |
| forceDownload | if TRUE, existing cached tiles may be overwritten.                                                                                                                               |
| retina        | if TRUE, tiles are downloaded in high resolution if they exist. Stadia and CARTO provide such tiles.                                                                             |

**Details**

Zoom levels are described in the OpenStreetMap wiki: [https://wiki.openstreetmap.org/wiki/Zoom\\_levels](https://wiki.openstreetmap.org/wiki/Zoom_levels).

Here is the complete list of builtin providers:

"OpenStreetMap", "OpenStreetMap.DE", "OpenStreetMap.France", "OpenStreetMap.HOT", "Open-TopoMap",  
 "Stadia.AlidadeSmooth", "Stadia.AlidadeSmoothDark", "Stadia.OSMBright", "Stadia.Outdoors",  
 "Stadia.StamenToner", "Stadia.StamenTonerBackground", "Stadia.StamenTonerLines", "Stadia.StamenTonerLabels",  
 "Stadia.StamenTonerLite", "Stadia.StamenWatercolor", "Stadia.StamenTerrain", "Stadia.StamenTerrainBackground",  
 "Stadia.StamenTerrainLabels",  
 "Esri.WorldStreetMap", "Esri.WorldTopoMap", "Esri.WorldImagery", "Esri.WorldTerrain", "Esri.WorldShadedRelief",  
 "Esri.OceanBasemap", "Esri.NatGeoWorldMap", "Esri.WorldGrayCanvas",  
 "CartoDB.Positron", "CartoDB.PositronNoLabels", "CartoDB.PositronOnlyLabels", "CartoDB.DarkMatter",  
 "CartoDB.DarkMatterNoLabels", "CartoDB.DarkMatterOnlyLabels", "CartoDB.Voyager", "CartoDB.VoyagerNoLabels", "CartoDB.VoyagerOnlyLabels",  
 "Thunderforest.OpenCycleMap", "Thunderforest.Transport", "Thunderforest.TransportDark", "Thunderforest.SpinalMap", "Thunderforest.Landscape", "Thunderforest.Outdoors", "Thunderforest.Pioneer",  
 "Thunderforest.MobileAtlas", "Thunderforest.Neighbourhood"

**Value**

A SpatRaster is returned.

## Examples

```
## Not run:
library(sf)
library(maptiles)
nc <- st_read(system.file("shape/nc.shp", package = "sf"), quiet = TRUE)
nc_osm <- get_tiles(nc, crop = TRUE, zoom = 6)
plot_tiles(nc_osm)

# Create a provider from a custom url
osm_tiles <- create_provider(
  name = "osm_tiles",
  url = "https://tile.openstreetmap.org/{z}/{x}/{y}.png",
  citation = "© OpenStreetMap contributors."
)
# Download tiles and compose raster (SpatRaster)
nc_osm2 <- get_tiles(
  x = nc, provider = osm_tiles, crop = FALSE,
  zoom = 6, project = FALSE, verbose = TRUE
)
# Plot the tiles
plot_tiles(nc_osm2)
# Add attribution
mtext(get_credit(osm_tiles), side = 1, line = -1)

## End(Not run)
```

---

maptiles

*Download and Display Map Tiles*


---

## Description

To create maps from tiles, maptiles downloads, composes and displays tiles from a large number of providers (e.g. OpenStreetMap, Stamen, Esri, CARTO, or Thunderforest).

## Author(s)

**Maintainer:** Timothée Giraud <timothee.giraud@cnrs.fr> ([ORCID](#))

Other contributors:

- Diego Hernangómez ([ORCID](#)) [contributor]
- Robert J. Hijmans ([ORCID](#)) [contributor]
- Hugh A. Graham [contributor]

## See Also

Useful links:

- <https://github.com/riatelab/maptiles/>
- Report bugs at <https://github.com/riatelab/maptiles/issues/>

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`plot_tiles`*Plot map tiles*

---

**Description**

Plot map tiles.

**Usage**

```
plot_tiles(x, adjust = FALSE, add = FALSE, ...)
```

**Arguments**

|                     |                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <code>x</code>      | a <code>SpatRaster</code> object.                                                                                                                                                                                                                                   |
| <code>adjust</code> | if TRUE, plot the raster without zoom-in or zoom-out in the graphic device: add margins if the raster is smaller than the graphic device, zoom-in if the raster is larger than the graphic device. This feature does not work with an unprojected (lon/lat) raster. |
| <code>add</code>    | whether to add the layer to an existing plot (TRUE) or not (FALSE).                                                                                                                                                                                                 |
| <code>...</code>    | <code>balpha</code> , <code>smooth</code> , or other arguments passed to be passed to <a href="#">plotRGB</a>                                                                                                                                                       |

**Note**

This function is a wrapper for [plotRGB](#) from the terra package.

**Examples**

```
## Not run:
library(sf)
library(maptiles)
nc <- st_read(system.file("shape/nc.shp", package = "sf"), quiet = TRUE)
nc_osm <- get_tiles(nc, crop = TRUE)
plot_tiles(nc_osm)

## End(Not run)
```

# Index

`create_provider`, [2](#), [3](#), [5](#)

`get_credit`, [3](#)

`get_providers`, [4](#)

`get_tiles`, [2](#), [4](#)

`maptiles`, [6](#)

`maptiles-package (maptiles)`, [6](#)

`plot_tiles`, [7](#)

`plotRGB`, [7](#)

`tempdir`, [5](#)