Package 'giscoR'

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Type Package

Title Download Map Data from GISCO API - Eurostat

Version 1.1.0

Description Tools to download data from the GISCO (Geographic Information System of the Commission) Eurostat database <https://ec.europa.eu/eurostat/web/gisco>. Global and European map data available. This package is in no way officially related to or endorsed by Eurostat.

License GPL-3

URL https://ropengov.github.io/giscoR/, https://github.com/rOpenGov/giscoR

BugReports https://github.com/rOpenGov/giscoR/issues

Depends R (>= 4.1)

Imports cli, countrycode (>= 1.2.0), httr2 (>= 1.2.0), jsonlite, lifecycle, rappdirs (>= 0.3.0), sf (>= 1.0.0), testthat (>= 3.0.0), tibble, tools, utils

Suggests dplyr, eurostat, ggplot2 (>= 3.5.0), knitr, quarto, withr

VignetteBuilder quarto

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Copyright Eurostat's general copyright notice and licence policy applies (see file COPYRIGHTS). Moreover, there are specific rules that apply to administrative and statistical data, see <https://ec.europa.eu/eurostat/web/gisco/geodata>.

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Contents

gisco_address_api *GISCO Address API*

Description

Functions to interact with the GISCO Address API, which allows for both geocoding and reverse geocoding using a pan-European address database.

Each endpoint available is implemented through a specific function, see **Details**.

The API supports fuzzy searching (also referred to as approximate string matching) for all arguments of each endpoint.

Usage

```
gisco_address_api_search(
  country = NULL,
  province = NULL,
  city = NULL,
  road = NULL,
  housenumber = NULL,
  postcode = NULL,
  verbose = FALSE
)

gisco_address_api_reverse(x, y, country = NULL, verbose = FALSE)

gisco_address_api_bbox(
  country = NULL,
  province = NULL,
  city = NULL,
  road = NULL,
  postcode = NULL,
  verbose = FALSE
)

gisco_address_api_countries(verbose = FALSE)

gisco_address_api_provinces(country = NULL, city = NULL, verbose = FALSE)

gisco_address_api_cities(country = NULL, province = NULL, verbose = FALSE)

gisco_address_api_roads(
  country = NULL,
  province = NULL,
  city = NULL,
  verbose = FALSE
)
```

```
gisco_address_api_housenumbers(
  country = NULL,
  province = NULL,
  city = NULL,
  road = NULL,
  postcode = NULL,
  verbose = FALSE
)

gisco_address_api_postcodes(
  country = NULL,
  province = NULL,
  city = NULL,
  verbose = FALSE
)

gisco_address_api_copyright(verbose = FALSE)
```

Arguments

country	Country code (country = "LU").
province	A province within a country. For a list of provinces within a certain country use the provinces endpoint (gisco_address_api_provinces(country = "LU")).
city	A city within a province. For a list of cities within a certain province use the cities endpoint (gisco_address_api_cities(province = "capellen")).
road	A road within a city.
housenumber	The house number or house name within a road or street.
postcode	Can be used in combination with the previous arguments.
verbose	logical. If TRUE displays informational messages.
x, y	x and y coordinates (as longitude and latitude) to be converted into a human-readable address.

Details

Brief description of the API endpoints (source GISCO Address API Endpoints):

Endpoint	Description
/countries	Returns all country codes that are compatible with the address API. Check the coverage map for available c
/provinces	Returns all provinces within the specified country. Can also be used to get the province of a specified city.
/cities	Returns all cities within a specified province or country.
/roads	Returns all roads or streets within a specified city.
/housenumbers	Returns all house numbers or names within the specified road. It is possible that in certain countries an add
/postcodes	Returns all postcodes within the specified address component (Country or Province or City).
/search	The search endpoint allows structured queries to the address database. Please note that various combinatior
/reverse	The API's reverse theme allows you to specify x and y coordinates in order to retrieve a structured address.
/bbox	Returns a WKT bounding box for an address component depending on the arguments specified.

`/copyright`	Returns the copyright text for each available country in the Address API.

The resulting object may present the following variables:

Property name	Description
`LD`	Refers to "Locator Designator" and represents the house number part of the address
`TF`	Refers to "Thoroughfare" and represents the street or road part of the address
`L0`	Refers to Level 0 of the API administrative levels. Values are country codes consisting of 2 characters.
`L1`	Refers to Level 1 of the API administrative levels. Values are province names. Please note that "province" is
`L2`	Refers to Level 2 of the API administrative levels. Values are town or city names. Please note that "city" is a
`PC`	Postal Code
`N0`	Refers to "NUTS 0"
`N1`	Refers to "NUTS 1"
`N2`	Refers to "NUTS 2"
`N3`	Refers to "NUTS 3"
`X` and `Y`	Refers to the x and y coordinates of the address point
`OL`	Refers to the address' Open Location Code

Value

A tibble in most cases, except `gisco_address_api_search()`, `gisco_address_api_reverse()` and `gisco_address_api_bbox()`, that return a `sf` object.

Source

https://gisco-services.ec.europa.eu/addressapi/docs/screen/home.

See Also

See the docs: https://gisco-services.ec.europa.eu/addressapi/docs/screen/home.

Other API tools: `gisco_id_api`

Examples

```
# Cities in a region

gisco_address_api_cities(country = "PT", province = "LISBOA")


# Geocode and reverse geocode with sf objects
# Structured search
struct <- gisco_address_api_search(
  country = "ES", city = "BARCELONA",
  road = "GRACIA"
)

struct
```

```
# Reverse geocoding
reverse <- gisco_address_api_reverse(x = struct$X[1], y = struct$Y[1])

reverse
```

`gisco_attributions` *Attribution for administrative and statistical GISCO data*

Description

Get the legal text to be used for administrative and statistical data downloaded from GISCO, see section **Copyright information**.

For other datasets you may abide by the Eurostat's general copyright notice and licence policy.

Usage

```
gisco_attributions(lang = "en", copyright = FALSE)
```

Arguments

`lang`	character. Language (two-letter ISO code). See countrycode::codelist and **Details**.
`copyright`	logical `TRUE/FALSE`. Whether to display the copyright notice or not on the console.

Details

Current languages supported are:

- `"en"`: English.
- `"da"`: Danish.
- `"de"`: German.
- `"es"`: Spanish.
- `"fi"`: Finnish.
- `"fr"`: French.
- `"no"`: Norwegian.
- `"sv"`: Swedish.

Please consider contributing if you spot any mistake or want to add a new language.

Value

A string with the attribution to be used.

Copyright information

The provisions described in this section apply to administrative and statistical data provided by the following functions:

Administrative units

- gisco_get_communes()
- gisco_get_countries()
- gisco_get_postal_codes()

Statistical units

- gisco_get_census()
- gisco_get_coastal_lines()
- gisco_get_lau()
- gisco_get_nuts()
- gisco_get_urban_audit()

Copyright Notice:

When data downloaded from GISCO is used in any printed or electronic publication, in addition to any other provisions applicable to the whole Eurostat website, data source will have to be acknowledged in the legend of the map and in the introductory page of the publication with the following copyright notice:

- EN: © EuroGeographics for the administrative boundaries.
- FR: © EuroGeographics pour les limites administratives.
- DE: © EuroGeographics bezüglich der Verwaltungsgrenzen.

For publications in languages other than English, French or German, the translation of the copyright notice in the language of the publication shall be used.

If you intend to use the data commercially, please contact EuroGeographics for information regarding their licence agreements.

Examples

```
gisco_attributions()

gisco_attributions(lang = "es", copyright = TRUE)

gisco_attributions(lang = "XXX")

# Get list of codes from countrycodes
library(dplyr)

countrycode::codelist |>
  select(country.name.en, iso2c)
```

gisco_bulk_download *GISCO API bulk download*

Description

Download zipped data from GISCO to the cache_dir and extract the relevant ones.

Usage

```
gisco_bulk_download(
  id = c("countries", "coastal_lines", "communes", "lau", "nuts", "urban_audit",
    "postal_codes"),
  year = 2016,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE,
  resolution = 10,
  ext = c("shp", "geojson", "svg", "json", "gdb"),
  recursive = deprecated(),
  ...
)
```

Arguments

id	character string or number. Type of dataset to be downloaded, see **Details**. Values supported are: • "countries" • "coastal_lines" • "communes" • "lau" • "nuts" • "urban_audit" • "postal_codes" This argument replaces the previous (deprecated) argument id_giscoR.
year	character string or number. Release year of the file, see **Details**.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "60": 1:60 million. • "20": 1:20 million.

- "10": 1:10 million.
- "03": 1:3 million.
- "01": 1:1 million.

`ext` Extension of the file(s) to be downloaded. Formats available are "shp", "geojson", "svg", "json", "gdb". See **Details**.

`recursive` **[Deprecated]** `recursive` is no longer supported, and this function will never perform recursive extraction of child `.zip` files. This is the case of "shp.zip inside the top-level `.zip`, that won't be unzipped.

`...` Ignored. The argument `id_giscoR` (**[Deprecated]**) is captured via `...` and redirected to `id` with a warning.

Details

Some arguments only apply to a specific value of "id". For example "resolution" is ignored for values "communes", "lau", "urban_audit" and "postal_codes".

See years available in the corresponding functions:

- gisco_get_countries().
- gisco_get_coastal_lines().
- gisco_get_communes().
- gisco_get_lau().
- gisco_get_nuts().
- gisco_get_urban_audit().
- gisco_get_postal_codes().

The usual extensions used across **giscoR** are "gpkg" and "shp", however other formats are already available on GISCO. Note that after performing a bulk download you may need to adjust the default "ext" value in the corresponding function to connect it with the downloaded files (see **Examples**).

Value

A (invisible) character vector with the full path of the files extracted. See **Examples**.

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

See Also

Additional utils for downloading datasets: gisco_get_unit

Examples

```
tmp <- file.path(tempdir(), "testexample")

dest_files <- gisco_bulk_download(
  id = "countries", resolution = 60,
  year = 2024, ext = "geojson",
  cache_dir = tmp
)
# Read one
library(sf)
read_sf(dest_files[1]) |> head()

# Now we can connect the function with the downloaded data like:

connect <- gisco_get_countries(
  resolution = 60,
  year = 2024, ext = "geojson",
  cache_dir = tmp, verbose = TRUE
)

# Message shows that file is already cached

# Clean
unlink(tmp, force = TRUE)
```

`gisco_clear_cache` *Clear your* R*hrefhttps://CRAN.R-project.org/package=giscoR***giscoR** *cache dir*

Description

Use this function with caution. This function clears your cached data and configuration, specifically:

- Deletes the **giscoR** config directory (`tools::R_user_dir("giscoR", "config")`).
- Deletes the `cache_dir` directory.
- Deletes the values stored on `Sys.getenv("GISCO_CACHE_DIR")`.

Usage

```
gisco_clear_cache(config = FALSE, cached_data = TRUE, verbose = FALSE)
```

Arguments

`config`	if `TRUE`, will delete the configuration folder of **giscoR**.
`cached_data`	If this is set to `TRUE`, it will delete your `cache_dir` and all its content.
`verbose`	logical. If `TRUE` displays informational messages.

Details

This is an overkill function that is intended to reset your status as if you had never installed and/or used **giscoR**.

Value

Invisible. This function is called for its side effects.

See Also

`tools::R_user_dir()`

Other cache utilities: `gisco_set_cache_dir()`

Examples

```
# Don't run this! It modifies your current state
## Not run:
my_cache <- gisco_detect_cache_dir()

# Set an example cache
ex <- file.path(tempdir(), "example", "cache")
gisco_set_cache_dir(ex, verbose = FALSE)

# Restore initial cache
gisco_clear_cache(verbose = TRUE)

gisco_set_cache_dir(my_cache)
identical(my_cache, gisco_detect_cache_dir())

## End(Not run)
```

---

gisco_coastal_lines *Coastal lines 2016 sf object*

Description

This object contains the coastal lines of the world.

Format

A `sf` object with `POLYGON` geometries, resolution: 1:20 million and EPSG:4326.

Source

COAS_RG_20M_2016_4326.gpkg file.

See Also

gisco_get_coastal_lines()

Other datasets: gisco_countries_2024, gisco_countrycode, gisco_db, gisco_nuts_2024

Examples

```
library(sf)
data("gisco_coastal_lines")
gisco_coastal_lines
```

---

gisco_countries_2024 *Countries 2024 sf object*

Description

This object contains the administrative boundaries at country level of the world.

Format

A sf object with MULTIPOLYGON geometries, resolution: 1:20 million and EPSG:4326. with 263 rows and 12 variables:

CNTR_ID Country ID as per Eurostat.

CNTR_NAME Official country name in local language.

NAME_ENGL Country name in English.

NAME_FREN Country name in French.

ISO3_CODE ISO 3166-1 alpha-3 code of each country, as provided by GISCO.

SVRG_UN Sovereign status as per United Nations.

CAPT Capital city.

EU_STAT European Union member.

EFTA_STAT EFTA member.

CC_STAT EU candidate member.

NAME_GERM Country name in German.

geometry Geometry field.

Source

CNTR_RG_20M_2024_4326.gpkg file.

See Also

gisco_get_countries()

Other datasets: gisco_coastal_lines, gisco_countrycode, gisco_db, gisco_nuts_2024

Examples

```
data("gisco_countries_2024")
head(gisco_countries_2024)
```

`gisco_countrycode` *Database with different country code schemes and world regions*

Description

A tibble containing conversions between different country code schemes (Eurostat/ISO2 and 3) as well as geographic regions as provided by the World Bank and the UN (M49 Standard). This database has been extracted from the **countrycode** package.

Format

A data frame object with 249 rows and 13 variables:

`ISO3_CODE` Eurostat code of each country.

`CNTR_CODE` ISO 3166-1 alpha-2 code of each country.

`iso2c` ISO 3166-1 alpha-3 code of each country.

`iso.name.en` ISO English short name.

`cldr.short.en` English short name as provided by the Unicode Common Locale Data Repository.

`continent` As provided by the World Bank.

`un.region.code` Numeric region code UN (M49).

`un.region.name` Region name UN (M49).

`un.regionintermediate.code` Numeric intermediate Region.

`un.regionintermediate.name` Intermediate Region name UN (M49).

`un.regionsub.code` Numeric sub-region code UN (M49).

`un.regionsub.name` Sub-Region name UN (M49).

`eu` Logical indicating if the country belongs to the European Union.

World Regions

Regions are defined as per the geographic regions defined by the UN (see `https://unstats.un.org/unsd/methodology/m49/`. Under this scheme Cyprus is assigned to Asia.

Source

countrycode::codelist **v1.6.1**.

See Also

gisco_get_countries(), countrycode::codelist.

See also the Unicode Common Locale Data Repository.

Other datasets: gisco_coastal_lines, gisco_countries_2024, gisco_db, gisco_nuts_2024

Examples

```
data("gisco_countrycode")
dplyr::glimpse(gisco_countrycode)
```

---

gisco_db *Cached GISCO database*

Description

Database with the list of files in the GISCO API as of 2026-01-12.

Format

A tibble with 9,714 rows.

Details

This database is used to redirect the corresponding functions to the right API endpoints.

This version of the database is used if there is a problem during update. Please use gisco_get_cached_db() with update_cache = TRUE to update the corresponding API endpoints.

Source

GISCO API datasets.json.

See Also

Other datasets: gisco_coastal_lines, gisco_countries_2024, gisco_countrycode, gisco_nuts_2024

Other database utils: gisco_get_cached_db(), gisco_get_metadata()

Examples

```
data("gisco_db")
gisco_db |>
  dplyr::glimpse()
```

gisco_get_airports *Airports dataset*

Description

This dataset includes the location of over 11,800 Pan European airports and heliports. The airports are identified using the International Civil Aviation Organisation (ICAO) airport codes.

Usage

```
gisco_get_airports(
  year = c(2013, 2006),
  country = NULL,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE
)
```

Arguments

year	character string or number. Release year of the file. One of 2013, 2006.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
verbose	logical. If TRUE displays informational messages.

Details

Dataset includes objects in EPSG:4326.

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/transport-networks.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata.

See Also

Other transport networks datasets: gisco_get_ports()

Examples

```
airp <- gisco_get_airports(year = 2013)
coast <- giscoR::gisco_coastal_lines

if (!is.null(airp)) {
  library(ggplot2)

  ggplot(coast) +
    geom_sf(fill = "grey10", color = "grey20") +
    geom_sf(
      data = airp, color = "#00F0FF",
      size = 0.2, alpha = 0.25
    ) +
    theme_void() +
    theme(
      plot.background = element_rect(fill = "black"),
      text = element_text(color = "white"),
      panel.grid = element_blank(),
      plot.title = element_text(face = "bold", hjust = 0.5),
      plot.subtitle = element_text(face = "italic", hjust = 0.5)
    ) +
    labs(
      title = "Airports in Europe", subtitle = "Year 2013",
      caption = "Source: Eurostat, Airports 2013 dataset."
    ) +
    # Center in Europe: EPSG 3035
    coord_sf(
      crs = 3035,
      xlim = c(2377294, 7453440),
      ylim = c(1313597, 5628510)
    )
}
```

---

gisco_get_cached_db *Retrieve and update the GISCO database in use by* R*hrefhttps://CRAN.R-project.org/package=giscoR***giscoR**

Description

Returns or optionally updates the cached database with the endpoints of the GISCO API.

Usage

```
gisco_get_cached_db(update_cache = FALSE)
```

Arguments

update_cache	logical. On TRUE the cached database is rebuilt with the most updated information of the GISCO API.

Details

The cached database is stored in the **giscoR** cache path, see `gisco_set_cache_dir()` for details. The cached database is used in subsequent **R** sessions.

On new GISCO data releases, you can access the new updated data simply by refreshing the cached database without waiting for a new version of **giscoR**.

A static database gisco_db is shipped with the package. This database is used in case there is any problem on update.

Value

A tibble.

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

See Also

Other database utils: `gisco_db`, `gisco_get_metadata()`

Examples

```
gisco_get_cached_db() |>
  dplyr::glimpse()
```

---

gisco_get_census *Census dataset*

Description

This dataset shows pan European communal boundaries depicting the situation at the corresponding Census.

Usage

```
gisco_get_census(
  year = 2011,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE,
  spatialtype = c("RG", "PT")
)
```

Arguments

year	character string or number. Release year of the file. Currently only "2011" is provided.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
verbose	logical. If TRUE displays informational messages.
spatialtype	Type of geometry to be returned: • "PT": Points - POINT object. • "RG": Regions - MULTIPOLYGON/POLYGON object.

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/statistical-units/census.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/statistical-units.

See Also

See gisco_id_api_census_grid() to download via GISCO ID service API.

Other statistical units datasets: gisco_get_coastal_lines(), gisco_get_lau(), gisco_get_nuts(), gisco_get_urban_audit()

Examples

```
library(sf)

pts <- gisco_get_census(spatialtype = "PT")

pts
```

gisco_get_coastal_lines *Coastal lines dataset*

Description

Downloads worldwide coastlines.

Usage

```
gisco_get_coastal_lines(
  year = 2016,
  epsg = 4326,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = 20,
  ext = "gpkg"
)
```

Arguments

year	character string or number. Release year of the file. One of "2016", "2013", "2010", "2006".
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "60": 1:60 million. • "20": 1:20 million. • "10": 1:10 million. • "03": 1:3 million. • "01": 1:1 million.
ext	character. Extension of the file (default "gpkg"). One of "shp", "gpkg", "geojson".

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/statistical-units.

See Also

gisco_coastal_lines.

See gisco_bulk_download() to perform a bulk download of datasets.

Other statistical units datasets: gisco_get_census(), gisco_get_lau(), gisco_get_nuts(), gisco_get_urban_audit()

Examples

```
coast <- gisco_get_coastal_lines()

library(ggplot2)

ggplot(coast) +
  geom_sf(color = "#1278AB", fill = "#FDFBEA") +
  # Zoom on Mediterranean Sea
  coord_sf(
    xlim = c(-4, 35),
    ylim = c(31, 45)
  ) +
  theme_minimal() +
  theme(
    panel.background = element_rect(fill = "#C7E7FB", color = NA),
    panel.border = element_rect(colour = "black", fill = NA)
  )
```

---

gisco_get_communes *Communes dataset*

Description

This dataset shows pan European administrative boundaries down to commune level. Communes are equivalent to Local Administrative Units, see gisco_get_lau().

Usage

```
gisco_get_communes(
  year = 2016,
  epsg = 4326,
  cache = deprecated(),
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  spatialtype = "RG",
  country = NULL,
  ext = "shp"
)
```

Arguments

year	character string or number. Release year of the file. One of "2016", "2013", "2010", "2008", "2006", "2004", "2001".
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	**[Deprecated]**. These functions always cache the result due to the size. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
spatialtype	character string. Type of geometry to be returned. Options available are: • "RG": Regions - MULTIPOLYGON/POLYGON object. • "LB": Labels - POINT object. • "BN": Boundaries - LINESTRING object. **Note that** argument country is only applied when spatialtype is "RG" or "LB".
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
ext	character. Extension of the file (default "shp"). One of "shp", "gpkg", "geojson".

Details

The Nomenclature of Territorial Units for Statistics (NUTS) and the LAU nomenclature are hierarchical classifications of statistical regions that together subdivide the EU economic territory into regions of five different levels (NUTS 1, 2 and 3 and LAU, respectively, moving from larger to smaller territorial units).

The dataset is based on EuroBoundaryMap from EuroGeographics. Geographical extent covers the European Union 28, EFTA countries and candidate countries. The scale of the dataset is 1:100 000.

The LAU classification is not covered by any legislative act.

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/administrative-units.

See Also

gisco_get_lau().

See gisco_bulk_download() to perform a bulk download of datasets.

Other administrative units datasets: gisco_get_countries(), gisco_get_postal_codes()

Examples

```
ire_comm <- gisco_get_communes(spatialtype = "LB", country = "Ireland")

if (!is.null(ire_comm)) {
  library(ggplot2)

  ggplot(ire_comm) +
    geom_sf(shape = 21, col = "#009A44", size = 0.5) +
    labs(
      title = "Communes in Ireland",
      subtitle = "Year 2016",
      caption = gisco_attributions()
    ) +
    theme_void() +
    theme(text = element_text(
      colour = "#009A44",
      family = "serif", face = "bold"
    ))
}
```

`gisco_get_countries` *Countries dataset*

Description

This dataset contains the administrative boundaries at country level of the world. This dataset consists of 2 feature classes (regions, boundaries) per scale level and there are 5 different scale levels (1M, 3M, 10M, 20M and 60M).

Please note that this function gets data from the aggregated GISCO country file. If you prefer to download individual country files, please use `gisco_get_unit_country()`.

Usage

```
gisco_get_countries(
  year = 2024,
  epsg = 4326,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = 20,
  spatialtype = "RG",
  country = NULL,
  region = NULL,
  ext = "gpkg"
)
```

Arguments

`year`	character string or number. Release year of the file. One of `"2024"`, `"2020"`, `"2016"`, `"2013"`, `"2010"`, `"2006"`, `"2001"`.
`epsg`	character string or number. Projection of the map: 4-digit EPSG code. One of: • `"4326"`: WGS84. • `"3035"`: ETRS89 / ETRS-LAEA. • `"3857"`: Pseudo-Mercator.
`cache`	logical. Whether to do caching. Default is `TRUE`. See **Caching strategies** section in `gisco_set_cache_dir()`.
`update_cache`	logical. Should the cached file be refreshed? Default is `FALSE`. When set to `TRUE` it forces a new download.
`cache_dir`	character string. A path to a cache directory. See **Caching strategies** section in `gisco_set_cache_dir()`.
`verbose`	logical. If `TRUE` displays informational messages.
`resolution`	character string or number. Resolution of the geospatial data. One of: • `"60"`: 1:60 million.

- "20": 1:20 million.
- "10": 1:10 million.
- "03": 1:3 million.
- "01": 1:1 million.

spatialtype — character string. Type of geometry to be returned. Options available are:

- "RG": Regions - MULTIPOLYGON/POLYGON object.
- "LB": Labels - POINT object.
- "BN": Boundaries - LINESTRING object.
- "COASTL": coastlines - LINESTRING object.
- "INLAND": inland boundaries - LINESTRING object.

Note that arguments country and region are only applied when spatialtype is "RG" or "LB".

country — character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().

region — Optional. A character vector of UN M49 region codes or European Union membership. Possible values are "Africa", "Americas", "Asia", "Europe", "Oceania" or "EU" for countries belonging to the European Union (as per 2021). See **World Regions** and gisco_countrycode.

ext — character. Extension of the file (default "gpkg"). One of "shp", "gpkg", "geojson".

Value

A sf object.

World Regions

Regions are defined as per the geographic regions defined by the UN (see https://unstats.un.org/unsd/methodology/m49/. Under this scheme Cyprus is assigned to Asia.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/administrative-units.

See Also

gisco_countrycode, gisco_countries_2024, gisco_get_metadata(), countrycode::countrycode().

See gisco_bulk_download() to perform a bulk download of datasets.

See gisco_get_unit_country() to download single files.

See gisco_id_api_country() to download via GISCO ID service API.

Other administrative units datasets: gisco_get_communes(), gisco_get_postal_codes()

Examples

```
cntries <- gisco_get_countries()

library(ggplot2)
ggplot(cntries) +
  geom_sf()

# Get a region

africa <- gisco_get_countries(region = "Africa")
ggplot(africa) +
  geom_sf(fill = "#078930", col = "white") +
  theme_minimal()
```

---

gisco_get_education *Education services in Europe*

Description

This dataset is an integration of Member States official data on the location of education services. Additional information on these services is included when available (see **Details**).

Usage

```
gisco_get_education(
  year = c(2023, 2020),
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  country = NULL
)
```

Arguments

year	character string or number. Release year of the file. One of 2023, 2020.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().

Details

Files are distributed on EPSG:4326.

Brief description of each attribute:

Attribute	Description
id	The education service identifier. This identifier is based on national identification codes, if it exists.
name	The name of the education institution.
site_name	The name of the specific site or branch of an education institution.
lat	Latitude (WGS 84).
lon	Longitude (WGS 84).
street	Street name.
house_number	House number.
postcode	Postcode.
address	Address information when the different components of the address are not separated in the source.
city	City name (sometimes refers to a region or municipality).
cntr_id	Country code (2 letters, ISO 3166-1 alpha-2).
levels	Education levels represented by a single integer or range (ISCED 2011).
max_students	Measure of capacity by maximum number of students.
enrollment	Measure of capacity by number of enrolled students.
fields	Academic disciplines the institution specializes in (ISCED-F 2013).
facility_type	Type of institution in reference to ownership and operation e.g. Catholic, International, etc.
public_private	The public or private status of the education service.
tel	Telephone number.
email	Email address.
url	URL link to the institution's website.
ref_date	The reference date (DD/MM/YYYY) the data refers to. The dataset represents the reality as it was at this date
geo_qual	Geolocation quality indicator: 1=Good, 2=Medium, 3=Low, 4=From source, -1=Unknown, -2=Not geoco
comments	Some additional information on the education service.

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/basic-services.

There are no specific download rules for the datasets shown below. However, please refer to the general copyright notice and licence provisions, which must be complied with. Permission to download and use these data are subject to these rules being accepted.

The data are extracted from official national registers. They may contain inconsistencies, inaccuracies and gaps, due to the heterogeneity of the input national data.

See Also

Other basic services datasets: gisco_get_healthcare()

Examples

```
edu_austria <- gisco_get_education(country = "Austria", year = 2023)

# Plot if downloaded
if (!is.null(edu_austria)) {
  austria_nuts3 <- gisco_get_nuts(country = "Austria", nuts_level = 3)

  library(ggplot2)
  ggplot(austria_nuts3) +
    geom_sf(fill = "grey10", color = "grey60") +
    geom_sf(
      data = edu_austria, aes(color = rev(public_private)),
      alpha = 0.25
    ) +
    theme_void() +
    theme(
      plot.background = element_rect(fill = "black"),
      text = element_text(color = "white"),
      panel.grid = element_blank(),
      plot.title = element_text(face = "bold", hjust = 0.5),
      plot.subtitle = element_text(face = "italic", hjust = 0.5)
    ) +
    labs(
      title = "Education", subtitle = "Austria (2023)",
      caption = "Source: Eurostat, Education 2023 dataset.",
      color = "Type"
    ) +
    coord_sf(crs = 3035)
}
```

`gisco_get_grid` *Grid dataset*

Description

These datasets contain grid cells covering the European land territory, for various resolutions from 1km to 100km. Base statistics such as population figures are provided for these cells.

Usage

```
gisco_get_grid(
  resolution = c(100, 50, 20, 10, 5, 2, 1),
  spatialtype = c("REGION", "POINT"),
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE
)
```

Arguments

resolution	Resolution of the grid cells in km. Available values are "1", "2", "5", "10", "20", "50", "100". See **Details**.
spatialtype	Select one of "REGION" or "POINT".
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
verbose	logical. If TRUE displays informational messages.

Details

Files are distributed on EPSG:3035.

The file sizes range from 428 KB (resolution = 100) to 1.7 GB (resolution = 1).

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/grids.

There are specific downloading provisions, please see https://ec.europa.eu/eurostat/web/gisco/geodata/grids.

Examples

```
grid <- gisco_get_grid(resolution = 20)

# If downloaded correctly proceed

if (!is.null(grid)) {
  library(dplyr)

  grid <- grid |>
    mutate(popdens = TOT_P_2021 / 20)

  breaks <- c(0, 0.1, 100, 500, 1000, 5000, 10000, Inf)

  # Cut groups
  grid <- grid |>
    mutate(popdens_cut = cut(popdens,
      breaks = breaks,
      include.lowest = TRUE
    ))

  cut_labs <- prettyNum(breaks, big.mark = " ")[-1]
  cut_labs[1] <- "0"
  cut_labs[7] <- "> 10 000"
```

```
  pal <- c("black", hcl.colors(length(breaks) - 2,
    palette = "Spectral",
    alpha = 0.9
  ))

  library(ggplot2)

  ggplot(grid) +
    geom_sf(aes(fill = popdens_cut), color = NA, linewidth = 0) +
    coord_sf(
      xlim = c(2500000, 7000000),
      ylim = c(1500000, 5200000)
    ) +
    scale_fill_manual(
      values = pal, na.value = "black",
      name = "people per sq. kilometer",
      labels = cut_labs,
      guide = guide_legend(
        direction = "horizontal",
        nrow = 1
      )
    ) +
    theme_void() +
    labs(
      title = "Population density in Europe (2021)",
      subtitle = "Grid: 20 km.",
      caption = gisco_attributions()
    ) +
    theme(
      text = element_text(colour = "white"),
      plot.background = element_rect(fill = "grey2"),
      plot.title = element_text(hjust = 0.5),
      plot.subtitle = element_text(hjust = 0.5, face = "bold"),
      plot.caption = element_text(
        color = "grey60", hjust = 0.5, vjust = 0,
        margin = margin(t = 5, b = 10)
      ),
      legend.position = "bottom",
      legend.title.position = "top",
      legend.text.position = "bottom",
      legend.key.height = unit(0.5, "lines"),
      legend.key.width = unit(1, "lines")
    )
}
```

---

gisco_get_healthcare *Healthcare services in Europe*

Description

The dataset contains information on main healthcare services considered to be 'hospitals' by Member States. The definition varies slightly from country to country, but roughly includes the following:

"'Hospitals' comprises licensed establishments primarily engaged in providing medical, diagnostic and treatment services that include physician, nursing and other health services to in-patients and the specialised accommodation services required by inpatients."

Usage

```
gisco_get_healthcare(
  year = c(2023, 2020),
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  country = NULL
)
```

Arguments

year	character string or number. Release year of the file. One of 2023, 2020.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().

Details

Files are distributed on EPSG:4326.

Brief description of each attribute:

Attribute	Description
id	The healthcare service identifier. This identifier is based on national identification codes, if it exists.
hospital_name	The name of the healthcare institution.
site_name	The name of the specific site or branch of a healthcare institution.
lat	Latitude (WGS 84).
lon	Longitude (WGS 84).
street	Street name.
house_number	House number.

postcode	Postcode.
address	Address information when the different components of the address are not separated in the source.
city	City name (sometimes refers to a region or municipality).
cntr_id	Country code (2 letters, ISO 3166-1 alpha-2).
emergency	'yes/no' for whether the healthcare site provides emergency medical services.
cap_beds	Measure of capacity by number of beds (most common).
cap_prac	Measure of capacity by number of practitioners.
cap_rooms	Measure of capacity by number of rooms.
facility_type	Type of healthcare service (e.g., psychiatric hospital), based on national classification.
public_private	'public/private' status of the healthcare service.
list_specs	List of specialties recognized in the EU and EEA according to the 2005 EU Directive (Annex V).
tel	Telephone number.
email	Email address.
url	URL link to the institution's website.
ref_date	The date (DD/MM/YYYY) the data refers to (reference date).
pub_date	The publication date of the dataset by Eurostat (DD/MM/YYYY).
geo_qual	Geolocation quality indicator: 1=Good, 2=Medium, 3=Low, 4=From source, -1=Unknown, -2=Not geoco
comments	Additional information on the healthcare service.

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/basic-services.

There are no specific download rules for the datasets shown below. However, please refer to the general copyright notice and licence provisions, which must be complied with. Permission to download and use these data are subject to these rules being accepted.

The data are extracted from official national registers. They may contain inconsistencies, inaccuracies and gaps, due to the heterogeneity of the input national data.

See Also

Other basic services datasets: gisco_get_education()

Examples

```
health_benelux <- gisco_get_healthcare(
  country = c("BE", "NL", "LU"),
  year = 2023
)

# Plot if downloaded
if (!is.null(health_benelux)) {
  benelux <- gisco_get_countries(country = c("BE", "NL", "LU"))

  library(ggplot2)
```

```
  ggplot(benelux) +
    geom_sf(fill = "grey10", color = "grey20") +
    geom_sf(
      data = health_benelux, color = "red",
      size = 0.2, alpha = 0.25
    ) +
    theme_void() +
    theme(
      plot.background = element_rect(fill = "black"),
      text = element_text(color = "white"),
      panel.grid = element_blank(),
      plot.title = element_text(face = "bold", hjust = 0.5),
      plot.subtitle = element_text(face = "italic", hjust = 0.5)
    ) +
    labs(
      title = "Healthcare services", subtitle = "Benelux (2023)",
      caption = "Source: Eurostat, Healthcare 2023 dataset."
    ) +
    coord_sf(crs = 3035)
}
```

`gisco_get_lau` *Local Administrative Units (LAU) dataset*

Description

This dataset shows pan European administrative boundaries down to commune level. Local Administrative units are equivalent to Communes, see `gisco_get_communes()`.

Usage

```
gisco_get_lau(
  year = 2024,
  epsg = 4326,
  cache = deprecated(),
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  country = NULL,
  gisco_id = NULL,
  ext = "gpkg"
)
```

Arguments

`year`	character string or number. Release year of the file. One of `"2024"`, `"2023"`, `"2022"`, `"2021"`, `"2020"`, `"2019"`, `"2018"`, `"2017"`, `"2016"`, `"2015"`, `"2014"`, `"2013"`, `"2012"`, `"2011"`.

epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	**[Deprecated]**. These functions always cache the result due to the size. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
gisco_id	Optional. A character vector of GISCO_ID LAU values.
ext	character. Extension of the file (default "gpkg"). One of "shp", "gpkg", "geojson".

Details

The Nomenclature of Territorial Units for Statistics (NUTS) and the LAU nomenclature are hierarchical classifications of statistical regions that together subdivide the EU economic territory into regions of five different levels (NUTS 1, 2 and 3 and LAU, respectively, moving from larger to smaller territorial units).

The LAU classification is not covered by any legislative act. Geographical extent covers the European Union, EFTA countries and candidate countries. The scale of the dataset is 1:100 000.

The data contains the National Statistical agency LAU code which can be joined to LAU lists as well as a field GISCO_ID which is a unique identifier consisting of the Country code and LAU code.

Total resident population figures (31 December) have also been added in some versions based on the associated LAU lists

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/statistical-units.

See Also

gisco_get_communes().

See gisco_bulk_download() to perform a bulk download of datasets.

See gisco_id_api_lau() to download via GISCO ID service API.

Other statistical units datasets: gisco_get_census(), gisco_get_coastal_lines(), gisco_get_nuts(), gisco_get_urban_audit()

Examples

```
## Not run:

lu_lau <- gisco_get_lau(year = 2024, country = "Luxembourg")

if (!is.null(lu_lau)) {
  library(ggplot2)

  ggplot(lu_lau) +
    geom_sf(aes(fill = POP_DENS_2024)) +
    labs(
      title = "Population Density in Luxembourg",
      subtitle = "Year 2024",
      caption = gisco_attributions()
    ) +
    scale_fill_viridis_b(
      option = "cividis",
      label = \(x) prettyNum(x, big.mark = ",")
    ) +
    theme_void() +
    labs(fill = "pop/km2")
}

## End(Not run)
```

---

gisco_get_metadata *Get metadata*

Description

Get a table with the names and ids of administrative and statistical units.

Usage

```
gisco_get_metadata(
  id = c("nuts", "countries", "urban_audit"),
  year = 2024,
  verbose = FALSE
)
```

Arguments

id	character string. Select the unit type to be downloaded. Accepted values are "nuts", "countries" or "urban_audit".
year	character string or number. Release year of the metadata.
verbose	logical. If TRUE displays informational messages.

Value

A tibble.

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

See Also

gisco_get_nuts(), gisco_get_countries(), gisco_get_urban_audit().

Other database utils: gisco_db, gisco_get_cached_db()

Examples

```
cities <- gisco_get_metadata(id = "urban_audit", year = 2020)

cities
```

---

gisco_get_nuts *Territorial units for statistics (NUTS) dataset*

Description

The GISCO statistical unit dataset represents the NUTS (nomenclature of territorial units for statistics) and statistical regions by means of multipart polygon, polyline and point topology. The NUTS geographical information is completed by attribute tables and a set of cartographic help lines to better visualise multipart polygonal regions.

The NUTS are a hierarchical system divided into 3 levels:

- NUTS 1: major socio-economic regions
- NUTS 2: basic regions for the application of regional policies
- NUTS 3: small regions for specific diagnoses.

Also, there is a NUTS 0 level, which usually corresponds to the national boundaries.

Please note that this function gets data from the aggregated GISCO NUTS file, that contains data of all the countries at the requested NUTS level(s). If you prefer to download individual NUTS files, please use gisco_get_unit_nuts().

Usage

```
gisco_get_nuts(
  year = 2024,
  epsg = 4326,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = 20,
  spatialtype = "RG",
  country = NULL,
  nuts_id = NULL,
  nuts_level = c("all", "0", "1", "2", "3"),
  ext = "gpkg"
)
```

Arguments

year	character string or number. Release year of the file. One of "2024", "2021", "2016", "2013", "2010", "2006", "2003".
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "60": 1:60 million. • "20": 1:20 million. • "10": 1:10 million. • "03": 1:3 million. • "01": 1:1 million.
spatialtype	character string. Type of geometry to be returned. Options available are: • "RG": Regions - MULTIPOLYGON/POLYGON object. • "LB": Labels - POINT object. • "BN": Boundaries - LINESTRING object. **Note that** arguments country, nuts_level and nuts_id are only applied when spatialtype is "RG" or "LB".

country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
nuts_id	Optional. A character vector of NUTS IDs.
nuts_level	character string. NUTS level. One of 0, 1, 2, 3 or all for all levels.
ext	character. Extension of the file (default "gpkg"). One of "shp", "gpkg", "geojson".

Details

The NUTS nomenclature is a hierarchical classification of statistical regions and subdivides the EU economic territory into regions of three different levels (NUTS 1, 2 and 3, moving respectively from larger to smaller territorial units). NUTS 1 is the most aggregated level. An additional Country level (NUTS 0) is also available for countries where the nation at statistical level does not coincide with the administrative boundaries.

The NUTS classification has been officially established through Commission Delegated Regulation 2019/1755. A non-official NUTS-like classification has been defined for the EFTA countries, candidate countries and potential candidates based on a bilateral agreement between Eurostat and the respective statistical agencies.

An introduction to the NUTS classification is available here: https://ec.europa.eu/eurostat/web/nuts/overview.

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/administrative-units.

See Also

gisco_nuts_2024, eurostat::get_eurostat_geospatial().

See gisco_bulk_download() to perform a bulk download of datasets.

See gisco_get_unit_nuts() to download single files.

See gisco_id_api_nuts() to download via GISCO ID service API.

Other statistical units datasets: gisco_get_census(), gisco_get_coastal_lines(), gisco_get_lau(), gisco_get_urban_audit()

Examples

```
nuts2 <- gisco_get_nuts(nuts_level = 2)

library(ggplot2)

ggplot(nuts2) +
  geom_sf() +
  # ETRS89 / ETRS-LAEA
  coord_sf(
    crs = 3035, xlim = c(2377294, 7453440),
    ylim = c(1313597, 5628510)
  ) +
  labs(title = "NUTS-2 levels")
# NUTS-3 for Germany
germany_nuts3 <- gisco_get_nuts(nuts_level = 3, country = "Germany")

ggplot(germany_nuts3) +
  geom_sf() +
  labs(
    title = "NUTS-3 levels",
    subtitle = "Germany",
    caption = gisco_attributions()
  )


# Select specific regions
select_nuts <- gisco_get_nuts(nuts_id = c("ES2", "FRJ", "FRL", "ITC"))

ggplot(select_nuts) +
  geom_sf(aes(fill = CNTR_CODE)) +
  scale_fill_viridis_d()
```

---

gisco_get_ports *Ports dataset*

Description

This dataset includes the location of over 2,440 Pan European ports. The ports are identified following the UN LOCODE list.

Usage

```
gisco_get_ports(
  year = c(2013, 2009),
  country = NULL,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE
)
```

Arguments

year	character string or number. Release year of the file. One of 2013, 2009.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
verbose	logical. If TRUE displays informational messages.

Details

Dataset includes objects in EPSG:4326.

gisco_get_ports() adds a new field CNTR_ISO2 to the original data identifying the country of the port.

Value

A sf object.

Source

https://ec.europa.eu/eurostat/web/gisco/geodata/transport-networks.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata.

See Also

Other transport networks datasets: gisco_get_airports()

Examples

```
library(sf)

ports <- gisco_get_ports(2013)
coast <- giscoR::gisco_coastal_lines

if (!is.null(ports)) {
  library(ggplot2)

  ggplot(coast) +
    geom_sf(fill = "grey10", color = "grey20") +
    geom_sf(
      data = ports, color = "#6bb857",
      size = 0.2, alpha = 0.25
    ) +
    theme_void() +
    theme(
      plot.background = element_rect(fill = "black"),
```

```
    text = element_text(color = "white"),
    panel.grid = element_blank(),
    plot.title = element_text(face = "bold", hjust = 0.5),
    plot.subtitle = element_text(face = "italic", hjust = 0.5)
  ) +
  labs(
    title = "Ports Worldwide", subtitle = "Year 2013",
    caption = "Source: Eurostat, Ports 2013 dataset."
  ) +
  coord_sf(crs = "ESRI:54030")
}
```

`gisco_get_postal_codes` *Postal codes dataset*

Description

The postal code point dataset shows the location of postal codes, NUTS codes and the Degree of Urbanisation classification across the EU, EFTA and candidate countries from a variety of sources. Its primary purpose is to create correspondence tables for the NUTS classification (EC) 1059/2003 as part of the Tercet Regulation (EU) 2017/2391.

Usage

```
gisco_get_postal_codes(
  year = 2024,
  country = NULL,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE,
  ext = "gpkg"
)
```

Arguments

`year`	character string or number. Release year of the file. One of `"2024"`, `"2020"`.
`country`	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also `countrycode::countrycode()`.
`cache_dir`	character string. A path to a cache directory. See **Caching strategies** section in `gisco_set_cache_dir()`.
`update_cache`	logical. Should the cached file be refreshed? Default is `FALSE`. When set to `TRUE` it forces a new download.
`verbose`	logical. If `TRUE` displays informational messages.
`ext`	character. Extension of the file (default `"gpkg"`). One of `"shp"`, `"gpkg"`, `"geojson"`.

Value

A sf object.

Copyright

The dataset is released under the CC-BY-SA-4.0 licence and requires the following attribution whenever used:

© European Union - GISCO, 2024, postal code point dataset, Licence CC-BY-SA 4.0.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/administrative-units.

See Also

See gisco_bulk_download() to perform a bulk download of datasets.

Other administrative units datasets: gisco_get_communes(), gisco_get_countries()

Examples

```
# Heavy-weight download!
## Not run:

pc_bel <- gisco_get_postal_codes(country = "BE")

if (!is.null(pc_bel)) {
  library(ggplot2)

  ggplot(pc_bel) +
    geom_sf(color = "gold") +
    theme_bw() +
    labs(
      title = "Postcodes of Belgium",
      subtitle = "2024",
      caption = paste("\u00a9 European Union - GISCO, 2024,",
        "postal code point dataset",
        "Licence CC-BY-SA 4.0",
        sep = "\n"
      )
    )
}

## End(Not run)
```

gisco_get_unit *GISCO API single download*

Description

Download datasets of single spatial units from GISCO to the cache_dir.

Unlike gisco_get_countries(), gisco_get_nuts() or gisco_get_urban_audit() (that downloads a full dataset and applies filters), these functions download a single per unit, reducing the time of downloading and reading into your **R** session.

Usage

```
gisco_get_unit_country(
  unit = "ES",
  year = 2024,
  epsg = c(4326, 3857, 3035),
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(1, 3, 10, 20, 60),
  spatialtype = c("RG", "LB")
)

gisco_get_unit_nuts(
  unit = "ES416",
  year = 2024,
  epsg = c(4326, 3857, 3035),
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(1, 3, 10, 20, 60),
  spatialtype = c("RG", "LB")
)

gisco_get_unit_urban_audit(
  unit = "ES001F",
  year = 2024,
  epsg = c(4326, 3857, 3035),
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  spatialtype = c("RG", "LB")
)
```

Arguments

unit	character vector of unit ids to be downloaded. See **Details**.
year	character string or number. Release year of the file.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "60": 1:60 million. • "20": 1:20 million. • "10": 1:10 million. • "03": 1:3 million. • "01": 1:1 million.
spatialtype	character string. Type of geometry to be returned. Options available are: • "RG": Regions - MULTIPOLYGON/POLYGON object. • "LB": Labels - POINT object.

Details

Check the available unit ids with the required combination of arguments with gisco_get_metadata().

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/

All the source files are .geojson files.

See Also

gisco_get_metadata(), gisco_get_countries(), gisco_get_nuts(), gisco_get_urban_audit().

See gisco_id_api to download via GISCO ID service API.

Additional utils for downloading datasets: gisco_bulk_download()

Examples

```
# Get metadata
cities <- gisco_get_metadata("urban_audit", year = 2024)


# Valencia, Spain
valencia <- cities[grep("Valencia", cities$URAU_NAME), ]
valencia
library(dplyr)
# Now get the sf objects and order by AREA_SQM
valencia_sf <- gisco_get_unit_urban_audit(
  unit = valencia$URAU_CODE,
  year = 2024,
) |>
  arrange(desc(AREA_SQM))
# Plot
library(ggplot2)

ggplot(valencia_sf) +
  geom_sf(aes(fill = URAU_CATG)) +
  scale_fill_viridis_d() +
  labs(
    title = "Valencia",
    subtitle = "Urban Audit 2020",
    fill = "Category"
  )
```

---

gisco_get_units *Get geospatial units data from GISCO API*

Description

[Deprecated]

This function is deprecated. Use:

- gisco_get_metadata() (equivalent to mode = "df").
- ?gisco_get_unitfunctions (equivalent to mode = "sf")

Usage

```
gisco_get_units(
  id_giscoR = c("nuts", "countries", "urban_audit"),
  unit = "ES4",
  mode = c("sf", "df"),
  year = 2016,
  epsg = 4326,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = 20,
  spatialtype = "RG"
)
```

Arguments

id_giscoR	Select the unit type to be downloaded. Accepted values are "nuts", "countries" or "urban_audit".
unit	Unit ID to be downloaded.
mode	Controls the output of the function. Possible values are "sf" or "df". See **Value**.
year	character string or number. Release year of the file.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "60": 1:60 million. • "20": 1:20 million. • "10": 1:10 million. • "03": 1:3 million. • "01": 1:1 million.
spatialtype	character string. Type of geometry to be returned. Options available are: • "RG": Regions - MULTIPOLYGON/POLYGON object. • "LB": Labels - POINT object.

Value

A sf object on mode = "sf" or a tibble on mode = "df".

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/

All the source files are .geojson files.

See Also

gisco_get_metadata(), ?gisco_get_unit functions.

Examples

```
# mode df
gisco_get_units("nuts", mode = "df", year = 2016)
# ->
gisco_get_metadata("nuts", year = 2016)

# mode sf for NUTS
gisco_get_units("nuts", unit = "ES111", mode = "sf", year = 2016)
# ->
gisco_get_unit_nuts(unit = "ES111", year = 2016)
```

---

gisco_get_urban_audit *Urban Audit dataset*

Description

The dataset contains the boundaries of cities ("CITIES"), greater cities ("GREATER_CITIES") and functional urban areas ("FUA") as defined according to the EC-OECD city definition. This is used for the Eurostat Urban Audit data collection.

Please note that this function gets data from the aggregated GISCO Urban Audit file. If you prefer to download individual urban audit files, please use gisco_get_unit_urban_audit().

Usage

```
gisco_get_urban_audit(
  year = 2024,
  epsg = 4326,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  spatialtype = c("RG", "LB"),
  country = NULL,
  level = c("all", "CITIES", "FUA", "GREATER_CITIES", "CITY", "KERN", "LUZ"),
  ext = "gpkg"
)
```

Arguments

year	character string or number. Release year of the file. One of "2024", "2021", "2020", "2018", "2014", "2004", "2001".
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in gisco_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE it forces a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in gisco_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
spatialtype	character string. Type of geometry to be returned. Options available are: • "RG": Regions - MULTIPOLYGON/POLYGON object. • "LB": Labels - POINT object.
country	character vector of country codes. It could be either a vector of country names, a vector of ISO3 country codes or a vector of Eurostat country codes. See also countrycode::countrycode().
level	character string. Level of Urban Audit. Possible values "all" (the default), that downloads the full dataset or "CITIES", "FUA", and (for versions prior to year = 2020) "GREATER_CITIES", "CITY", "KERN" or "LUZ".
ext	character. Extension of the file (default "gpkg"). One of "shp", "gpkg", "geojson".

Details

See more in Eurostat - Statistics Explained.

The cities are defined at several conceptual levels:

- The core city ("CITIES"), using an administrative definition.
- The Functional Urban Area/Large Urban Zone ("FUA"), approximating the functional urban region. The coverage is the EU plus Iceland, Norway and Switzerland . The dataset includes polygon features, point features and a related attribute table which can be joined on the URAU code field.

The "URAU_CATG" field defines the Urban Audit category:

- "C" = City.
- "F" = Functional Urban Area Service Type.

Value

A sf object.

Note

Please check the download and usage provisions on gisco_attributions().

Source

https://gisco-services.ec.europa.eu/distribution/v2/.

Copyright: https://ec.europa.eu/eurostat/web/gisco/geodata/administrative-units.

See Also

See gisco_bulk_download() to perform a bulk download of datasets.

See gisco_get_unit_urban_audit() to download single files.

Other statistical units datasets: gisco_get_census(), gisco_get_coastal_lines(), gisco_get_lau(), gisco_get_nuts()

Examples

```
cities <- gisco_get_urban_audit(year = 2024, level = "CITIES")

if (!is.null(cities)) {
  bcn <- cities[cities$URAU_NAME == "Barcelona", ]

  library(ggplot2)
  ggplot(bcn) +
    geom_sf()
}
```

gisco_id_api *GISCO ID service API*

Description

Functions to interact with the GISCO ID service API, which returns attributes and, optionally, geometry for different datasets at specified longitude and latitude coordinates.

Each endpoint available is implemented through a specific function, see **Details**.

Usage

```
gisco_id_api_geonames(
  x = NULL,
  y = NULL,
  xmin = NULL,
  ymin = NULL,
  xmax = NULL,
  ymax = NULL,
  verbose = FALSE
)

gisco_id_api_nuts(
  x = NULL,
  y = NULL,
  year = 2024,
  epsg = c(4326, 4258, 3035),
  verbose = FALSE,
  nuts_id = NULL,
  nuts_level = NULL,
  geometry = TRUE
)

gisco_id_api_lau(
  x,
  y,
  year = 2024,
  epsg = c(4326, 4258, 3035),
  verbose = FALSE,
  geometry = TRUE
)

gisco_id_api_country(
  x,
  y,
  year = 2024,
  epsg = c(4326, 4258, 3035),
```

```
  verbose = FALSE,
  geometry = TRUE
)

gisco_id_api_river_basin(
  x,
  y,
  year = 2019,
  epsg = c(4326, 4258, 3035),
  verbose = FALSE,
  geometry = TRUE
)

gisco_id_api_biogeo_region(
  x,
  y,
  year = 2016,
  epsg = c(4326, 4258, 3035),
  verbose = FALSE,
  geometry = TRUE
)

gisco_id_api_census_grid(
  x,
  y,
  year = 2021,
  epsg = c(4326, 4258, 3035),
  verbose = FALSE,
  geometry = TRUE
)
```

Arguments

x, y	character string or numeric. x and y coordinates (as longitude and latitude) to be identified.
xmin, ymin, xmax, ymax	character string or numeric. Bounding box coordinates to identify all geonames within the box.
verbose	logical. If TRUE displays informational messages.
year	character string or numeric. Year of the dataset, see **Details**.
epsg	character string or numeric. EPSG code for the coordinate reference system.
nuts_id	character. NUTS ID code.
nuts_level	character string. NUTS level. One of 0, 1, 2 or 3.
geometry	logical. Whether to return geometry. On TRUE a sf object is returned. On FALSE a tibble is returned.

Details

The available endpoints are:

- `gisco_id_api_geonames()`: Get geographic placenames either from x/y coordinates or a bounding box.
- `gisco_id_api_nuts()`: Returns NUTS regions from either a specified longitude and latitude (x,y) or id. Accepted `year` are `"2024"`, `"2021"`, `"2016"`, `"2013"`, `"2010"`, `"2006"`.
- `gisco_id_api_lau()`: Returns the id and - optionally - geometry for Large Urban Areas (LAU) at specified longitude and latitude (x,y). Accepted `year` are `"2024"`, `"2023"`, `"2022"`, `"2021"`, `"2020"`, `"2019"`, `"2018"`, `"2017"`, `"2016"`, `"2015"`, `"2014"`, `"2013"`, `"2012"`, `"2011"`.
- `gisco_id_api_country()`: Returns the id and - optionally - geometry for countries at specified longitude and latitude (x,y). Accepted `year` are `"2024"`, `"2020"`, `"2016"`, `"2013"`, `"2010"`, `"2006"`.
- `gisco_id_api_river_basin()`: Returns the id and - optionally - geometry for river basins at specified longitude and latitude (x,y), based on the Water Framework Directive (WFD) reference spatial data sets. Accepted `year` are `"2024"`, `"2023"`, `"2022"`, `"2021"`, `"2020"`, `"2019"`.
- `gisco_id_api_biogeo_region()`: Returns the id and - optionally - geometry for biogeo regions at specified longitude and latitude (x,y). The biogeographical regions dataset contains the official delineations used in the Habitats Directive (92/43/EEC) and for the EMERALD Network. Accepted `year` is `"2016"`.
- `gisco_id_api_census_grid()`: Returns the id and - optionally - geometry for census grid cells at specified longitude and latitude (x,y). Accepted `year` is `"2021"`.

Value

A tibble or a `sf` object.

Source

https://gisco-services.ec.europa.eu/id/api-docs/.

See Also

`gisco_get_nuts()`, `gisco_get_lau()`, `gisco_get_countries()`, `gisco_get_census()`.

Other API tools: `gisco_address_api`

Examples

```
gisco_id_api_geonames(x = -2.5, y = 43.06)

lau <- gisco_id_api_lau(x = -2.5, y = 43.06)
nuts3 <- gisco_id_api_nuts(x = -2.5, y = 43.06, nuts_level = 3)

if (all(!is.null(lau), !is.null(nuts3))) {
  library(ggplot2)
```

```
  ggplot(nuts3) +
    geom_sf(fill = "lightblue", color = "black") +
    geom_sf(data = lau, fill = "orange", color = "red") +
    labs(
      title = "NUTS3 and LAU boundaries",
      subtitle = "Arrasate, Basque Country, Spain",
      caption = "Source: GISCO ID service API"
    )
}
```

`gisco_nuts_2024` *NUTS 2024 sf object*

Description

This dataset represents the regions for levels 0, 1, 2 and 3 of the Nomenclature of Territorial Units for Statistics (NUTS) for 2024.

Format

A `sf` object with `MULTIPOLYGON` geometries, resolution: 1:20 million and EPSG:4326. with 1798 rows and 10 variables:

`NUTS_ID` NUTS identifier.

`LEVL_CODE` NUTS level code (`0,1,2,3`).

`CNTR_CODE` Eurostat Country code.

`NAME_LATN` NUTS name on Latin characters.

`NUTS_NAME` NUTS name on local alphabet.

`MOUNT_TYPE` Mount Type, see **Details**.

`URBN_TYPE` Urban Type, see **Details**.

`COAST_TYPE` Coast Type, see **Details**.

`geo` Same as `NUTS_ID`, provided for compatibility with **eurostat**.

`geometry` geometry field.

Details

`MOUNT_TYPE`: Mountain typology:

- `1`: More than 50 % of the surface is covered by topographic mountain areas.
- `2`: More than 50 % of the regional population lives in topographic mountain areas.
- `3`: More than 50 % of the surface is covered by topographic mountain areas and where more than 50 % of the regional population lives in these mountain areas.
- `4`: Non-mountain region / other regions.

- `0`: No classification provided.

`URBN_TYPE`: Urban-rural typology:

- `1`: Predominantly urban region.
- `2`: Intermediate region.
- `3`: Predominantly rural region.
- `0`: No classification provided.

`COAST_TYPE`: Coastal typology:

- `1`: Coastal (on coast).
- `2`: Coastal (less than 50% of population living within 50 km. of the coastline).
- `3`: Non-coastal region.
- `0`: No classification provided.

Source

NUTS_RG_20M_2024_4326.gpkg file.

See Also

`gisco_get_nuts()`

Other datasets: `gisco_coastal_lines`, `gisco_countries_2024`, `gisco_countrycode`, `gisco_db`

Examples

```
data("gisco_nuts_2024")
head(gisco_nuts_2024)
```

---

gisco_set_cache_dir *Set your cache dir* R*hrefhttps://CRAN.R-project.org/package=giscoR***giscoR**

Description

This function stores your `cache_dir` path on your local machine and loads it for future sessions. Type `Sys.getenv("GISCO_CACHE_DIR")` to find your cached path or use `gisco_detect_cache_dir()`.

Usage

```
gisco_set_cache_dir(
  cache_dir = NULL,
  overwrite = FALSE,
  install = FALSE,
  verbose = TRUE
)

gisco_detect_cache_dir()
```

Arguments

cache_dir	A path to a cache directory. On NULL, the function stores the cached files on a temporary dir (see base::tempdir()).
overwrite	If this is set to TRUE, it will overwrite an existing GISCO_CACHE_DIR that you already have on your local machine.
install	If TRUE, will install the key in your local machine for use in future sessions. Defaults to FALSE. If cache_dir is FALSE this argument is set to FALSE automatically.
verbose	logical. If TRUE displays informational messages.

Details

By default, when no cache cache_dir is set the package uses a folder inside base::tempdir() (so files are temporary and are removed when the **R** session ends). To persist a cache across **R** sessions, use gisco_set_cache_dir(cache_dir, install = TRUE) which writes the chosen path to a small configuration file under tools::R_user_dir("giscoR", "config").

Value

gisco_set_cache_dir() returns an (invisible) character with the path to your cache_dir, but it is mainly called for its side effect.

gisco_detect_cache_dir() returns the path to the cache_dir used in this session.

Caching strategies

Some files can be read from their online source without caching using the option cache = FALSE. Otherwise the source file is downloaded to your computer. **giscoR** implements the following caching options:

- For occasional use, rely on the default tempdir()-based cache (no install).
- Modify the cache for a single session setting gisco_set_cache_dir(cache_dir = "a/path/here").
- For reproducible workflows, install a persistent cache with gisco_set_cache_dir(cache_dir = "a/path/here", install = TRUE) that is be kept across **R** sessions.
- For caching specific files, use the cache_dir argument in the corresponding function. See example in gisco_get_nuts().

Sometimes cached files may be corrupt. In that case, try re-downloading the data setting update_cache = TRUE in the corresponding function.

If you experience any problem on download, try to download the corresponding file by any other method and save it on your cache_dir. Use the option verbose = TRUE for debugging the API query and gisco_detect_cache_dir() to identify your cached path.

Note

In **giscoR** >= 1.0.0 the location of the configuration file has moved from rappdirs::user_config_dir("giscoR", "R") to tools::R_user_dir("giscoR", "config"). We have implemented a function that migrates previous configuration files from one location to another with a message. This message appears only once informing of the migration.

See Also

tools::R_user_dir()

Other cache utilities: gisco_clear_cache()

Examples

```
# Don't run this! It modifies your current state
## Not run:
my_cache <- gisco_detect_cache_dir()

# Set an example cache
ex <- file.path(tempdir(), "example", "cachenew")
gisco_set_cache_dir(ex)

gisco_detect_cache_dir()

# Restore initial cache
gisco_set_cache_dir(my_cache)
identical(my_cache, gisco_detect_cache_dir())

## End(Not run)


gisco_detect_cache_dir()
```

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