Package 'mapSpain'

January 17, 2026

Type Package

Title Administrative Boundaries of Spain

Version 1.0.0

Description Administrative Boundaries of Spain at several levels (Autonomous Communities, Provinces, Municipalities) based on the 'GISCO' 'Eurostat' database <https://ec.europa.eu/eurostat/web/gisco> and 'CartoBase SIANE' from 'Instituto Geografico Nacional' <https://www.ign.es/>. It also provides a 'leaflet' plugin and the ability of downloading and processing static tiles.

License GPL-3

URL https://ropenspain.github.io/mapSpain/, https://github.com/rOpenSpain/mapSpain

BugReports https://github.com/rOpenSpain/mapSpain/issues

Depends R (>= 4.1.0)

Imports cli (>= 3.6.0), countrycode (>= 1.2.0), giscoR (>= 1.0.0), httr2, jsonlite, lifecycle, rappdirs (>= 0.3.0), sf (>= 1.0.0), tibble, utils

Suggests dplyr, ggplot2 (>= 3.5.0), knitr, leaflet (>= 2.0.0), rmarkdown, terra (>= 1.1-4), testthat (>= 3.0.0), tidyterra

VignetteBuilder knitr

Config/Needs/check curl

Config/Needs/coverage covr

Config/Needs/website ragg, reactable, rnaturalearth, tidyverse, devtools, remotes, ropenspain/rostemplate, ropensci/rnaturalearthhires, geodata, sessioninfo, sfheaders, rapidjsonr, jsonify, geometries, dieghernan/geobounds

Config/testthat/edition 3

Config/testthat/parallel true

Copyright © EuroGeographics for the administrative boundaries. Atlas Nacional de España (ANE) CC BY 4.0 <http://www.ign.es>. INE <https://www.ine.es/en/index.htm>

Encoding UTF-8

LazyData true

RoxygenNote 7.3.3

X-schema.org-applicationCategory cartography

X-schema.org-isPartOf https://ropenspain.es/

X-schema.org-keywords ropenspain, tiles, r, maps, spatial, rstats, r-package, municipalities, spain, gisco, provinces, ign, administrative-boundaries, ccaa, static-tiles, cran, ggplot2, gis

NeedsCompilation no

Author Diego Hernangómez [aut, cre, cph] (ORCID: <https://orcid.org/0000-0001-8457-4658>), Eurostat [cph] (ROR: <https://ror.org/033d3q980>), Instituto Geográfico Nacional [cph] (ROR: <https://ror.org/03yycdv57>), Francisco J. Goerlich [ctb] (ORCID: <https://orcid.org/0000-0003-1626-525X>)

Maintainer Diego Hernangómez <diego.hernangomezherrero@gmail.com>

Repository CRAN

Date/Publication 2026-01-17 06:10:21 UTC

Contents

addProviderEspTiles . . . 3
esp_clear_cache . . . 4
esp_codelist . . . 5
esp_dict_region_code . . . 7
esp_get_can_box . . . 9
esp_get_capimun . . . 11
esp_get_ccaa . . . 14
esp_get_ccaa_siane . . . 17
esp_get_comarca . . . 19
esp_get_countries_siane . . . 22
esp_get_gridmap . . . 23
esp_get_grid_BDN . . . 25
esp_get_grid_ESDAC . . . 27
esp_get_grid_MTN . . . 29
esp_get_hydrobasin . . . 31
esp_get_hypsobath . . . 33
esp_get_landwater . . . 35
esp_get_munic . . . 38
esp_get_munic_siane . . . 41
esp_get_nuts . . . 44
esp_get_prov . . . 47
esp_get_prov_siane . . . 50
esp_get_railway . . . 52

esp_get_roads 54
esp_get_simpl 56
esp_get_spain 58
esp_get_spain_siane 60
esp_get_tiles 62
esp_make_provider 65
esp_move_can 66
esp_nuts_2024 68
esp_set_cache_dir 69
esp_siane_bulk_download 71
esp_tiles_providers 73
pobmun25 76

Index **78**

`addProviderEspTiles` *Add a tile layer from Spanish public administrations to a* R*hrefhttps://CRAN.R-project.org/package=leaflet***leaflet** *map*

Description

Add a tile layer from Spanish public administrations to a **leaflet** map

Usage

```
addProviderEspTiles(
  map,
  provider,
  layerId = NULL,
  group = NULL,
  options = leaflet::providerTileOptions()
)
```

Arguments

`map`	the map to add the tile layer to
`provider`	the name of the provider, see esp_tiles_providers or `https://dieghernan.github.io/leaflet-providersESP/preview/`.
`layerId`	the layer id to assign
`group`	the name of the group the newly created layers should belong to (for `clearGroup()` and `addLayersControl()` purposes). Human-friendly group names are permitted–they need not be short, identifier-style names.
`options`	tile options

Value

modified map object

Source

https://dieghernan.github.io/leaflet-providersESP/ leaflet plugin, **v1.3.3**.

See Also

`leaflet::leaflet()`, `leaflet::addTiles()`, `leaflet::addWMSTiles()`, esp_tiles_providers.

Other functions for creating maps with images: `esp_get_tiles()`, `esp_make_provider()`

Examples

```
library(leaflet)
leafmap <- leaflet(width = "100%", height = "60vh") |>
  setView(lat = 40.4166, lng = -3.7038400, zoom = 10) |>
  addTiles(group = "Default (OSM)") |>
  addProviderEspTiles(
    provider = "IDErioja.Claro",
    group = "IDErioja Claro"
  ) |>
  addProviderEspTiles(
    provider = "RedTransporte.Carreteras",
    group = "Carreteras"
  ) |>
  addLayersControl(
    baseGroups = c("IDErioja Claro", "Default (OSM)"),
    overlayGroups = "Carreteras",
    options = layersControlOptions(collapsed = FALSE)
  )

leafmap
```

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

Description

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

- Deletes the **mapSpain** configuration directory (`tools::R_user_dir("mapSpain", "config")`).
- Deletes the `cache_dir` directory and its contents.
- Clears the value stored in `Sys.getenv("MAPSPAIN_CACHE_DIR")`.

Usage

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

Arguments

config	logical. If TRUE, deletes the configuration folder of **mapSpain**.
cached_data	logical. If TRUE, deletes your cache_dir and all its contents.
verbose	logical. If TRUE displays informational messages.

Details

This is an aggressive function intended to reset your installation as if you had never installed or used **mapSpain**.

Value

Invisible. This function is called for its side effects.

See Also

tools::R_user_dir()

Other cache utilities: esp_set_cache_dir()

Examples

```
# Don't run this! It would modify your current state
## Not run:
my_cache <- esp_detect_cache_dir()

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

# Restore initial cache
esp_clear_cache(verbose = TRUE)

esp_set_cache_dir(my_cache)
identical(my_cache, esp_detect_cache_dir())

## End(Not run)
```

---

esp_codelist *Database with codes and names of Spanish regions*

Description

A tibble object used internally for translating codes and names of the different subdivisions of Spain. This tibble provides a hierarchical representation of Spain's subdivisions, including NUTS1 level, autonomous communities (equivalent to NUTS2), provinces, and NUTS3 level. See **Note**.

Format

A tibble with 59 rows and columns:

nuts1.code NUTS 1 code

nuts1.name NUTS 1 name

nuts1.name.alt NUTS 1 alternative name

nuts1.shortname.es NUTS 1 short (common) name (Spanish)

codauto INE code of the autonomous community

iso2.ccaa.code ISO2 code of the autonomous community

nuts2.code NUTS 2 Code

ine.ccaa.name INE name of the autonomous community

iso2.ccaa.name.es ISO2 name of the autonomous community (Spanish)

iso2.ccaa.name.ca ISO2 name of the autonomous community (Catalan)

iso2.ccaa.name.gl ISO2 name of the autonomous community (Galician)

iso2.ccaa.name.eu ISO2 name of the autonomous community (Basque)

nuts2.name NUTS 2 name

cldr.ccaa.name.en CLDR name of the autonomous community (English)

cldr.ccaa.name.es CLDR name of the autonomous community (Spanish)

cldr.ccaa.name.ca CLDR name of the autonomous community (Catalan)

cldr.ccaa.name.ga CLDR name of the autonomous community (Galician)

cldr.ccaa.name.eu CLDR name of the autonomous community (Basque)

ccaa.shortname.en Short (common) name of the autonomous community (English)

ccaa.shortname.es Short (common) name of the autonomous community (Spanish)

ccaa.shortname.ca Short (common) name of the autonomous community (Catalan)

ccaa.shortname.ga Short (common) name of the autonomous community (Galician)

ccaa.shortname.eu Short (common) name of the autonomous community (Basque)

cpro INE code of the province

iso2.prov.code ISO2 code of the province

nuts.prov.code NUTS code of the province

ine.prov.name INE name of the province

iso2.prov.name.es ISO2 name of the province (Spanish)

iso2.prov.name.ca ISO2 name of the province (Catalan)

iso2.prov.name.ga ISO2 name of the province (Galician)

iso2.prov.name.eu ISO2 name of the province (Basque)

cldr.prov.name.en CLDR name of the province (English)

cldr.prov.name.es CLDR name of the province (Spanish)

cldr.prov.name.ca CLDR name of the province (Catalan)

cldr.prov.name.ga CLDR name of the province (Galician)

cldr.prov.name.eu CLDR name of the province (Basque)

prov.shortname.en Short (common) name of the province (English)

prov.shortname.es Short (common) name of the province (Spanish)

prov.shortname.ca Short (common) name of the province (Catalan)

prov.shortname.ga Short (common) name of the province (Galician)

prov.shortname.eu Short (common) name of the province (Basque)

nuts3.code NUTS 3 code

nuts3.name NUTS 3 name

nuts3.shortname.es NUTS 3 short (common) name

Note

Although NUTS2 aligns with the first subdivision level of Spain (CCAA - Autonomous Communities), it is important to note that NUTS3 does not correspond to the second subdivision level of Spain (Provinces). NUTS3 provides dedicated codes for major islands, whereas provinces do not.

Ceuta and Melilla have a special status as Autonomous Cities but are treated as autonomous communities with a single province (like Madrid, Asturias, or Murcia) in this database.

Source

- **INE**: Instituto Nacional de Estadistica: https://www.ine.es/
- **Eurostat (NUTS)**: https://ec.europa.eu/eurostat/web/nuts/overview
- **ISO**: https://www.iso.org/obp/ui/#iso:code:3166:ES
- **CLDR**: https://www.unicode.org/cldr/charts/48/subdivisionNames/index.html

See Also

Other datasets: esp_nuts_2024, esp_tiles_providers, pobmun25

Examples

```
data("esp_codelist")
esp_codelist
```

---

esp_dict_region_code *Convert and translate Spanish subdivision names and codes*

Description

Convert Spanish subdivision names or identifiers between different coding schemes (NUTS, ISO2, province codes, etc.) or obtain human-readable names.

Usage

```
esp_dict_region_code(sourcevar, origin = "text", destination = "text")

esp_dict_translate(sourcevar, lang = "en", all = FALSE)
```

Arguments

sourcevar	character string. Vector which contains the codes or names to be converted.
origin, destination	character string. Coding scheme of origin and destination. One of "text", "nuts", "iso2", "codauto", or "cpro".
lang	character string. Target language code, available values: • "es": Spanish. • "en": English. • "ca": Catalan. • "ga": Galician. • "eu": Basque.
all	logical. If TRUE the function returns all possible translations for each input as a named list. When FALSE (default) a single preferred translation per input is returned as a character vector.

Details

The function uses internal dictionaries together with **countrycode** to map between schemes. When origin == destination == "text" the input is returned unchanged. Mixing names from different administrative levels (for example autonomous community and province) may produce NA values for some entries.

Value

esp_dict_region_code() returns a character vector with converted subdivision identifiers or names. If a value cannot be matched the corresponding element will be NA and a warning is emitted via cli::cli_alert_warning().

esp_dict_translate() translates a vector of names from one language to another :

- If all = FALSE, a character vector with the translated name for each element of sourcevar.
- If all = TRUE, a named list is returned where each element contains all available translations for the corresponding input value.

Examples

```
vals <- c("Errioxa", "Coruna", "Gerona", "Madrid")

esp_dict_region_code(vals)
esp_dict_region_code(vals, destination = "nuts")
esp_dict_region_code(vals, destination = "cpro")
esp_dict_region_code(vals, destination = "iso2")
```

```
# From ISO2 to another codes

iso2vals <- c("ES-M", "ES-S", "ES-SG")
esp_dict_region_code(iso2vals, origin = "iso2")
esp_dict_region_code(iso2vals,
  origin = "iso2",
  destination = "nuts"
)
esp_dict_region_code(iso2vals,
  origin = "iso2",
  destination = "cpro"
)

# Mixing levels
valsmix <- c("Centro", "Andalucia", "Seville", "Menorca")
esp_dict_region_code(valsmix, destination = "nuts")

esp_dict_region_code(valsmix, destination = "codauto")
esp_dict_region_code(valsmix, destination = "iso2")

vals <- c("La Rioja", "Sevilla", "Madrid", "Jaen", "Orense", "Baleares")

esp_dict_translate(vals)
esp_dict_translate(vals, lang = "es")
esp_dict_translate(vals, lang = "ca")
esp_dict_translate(vals, lang = "eu")
esp_dict_translate(vals, lang = "ga")

esp_dict_translate(vals, lang = "ga", all = TRUE)
```

`esp_get_can_box` *Canary Islands inset box and outline*

Description

Create an `sf` `POLYGON` or `LINESTRING` that can be used to mark or frame the Canary Islands when they are displayed as an inset on maps of Spain. This object is useful together with `esp_move_can()` and the `moveCAN` arguments available in other `mapSpain` getters.

`esp_get_can_provinces()` returns a small `LINESTRING` used to mark the separator between the two provinces of the Canary Islands. This helper is intended for cartographic use when composing inset maps of Spain.

Usage

```
esp_get_can_box(
  style = c("right", "left", "box", "poly"),
  moveCAN = TRUE,
  epsg = 4258
```

```
)

esp_get_can_provinces(moveCAN = TRUE, epsg = "4258")
```

Arguments

style	character string. One of "right", "left", "box" or "poly". Default is "right", see **Details**.
moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.

Details

The style parameter controls the geometry returned:

- "box": a rectangular boundary returned as a LINESTRING.
- "poly": a slightly expanded rectangle returned as a filled POLYGON.
- "left" / "right": decorative LINESTRING variants that follow the western or eastern side of the islands respectively.

Value

An sf object: a POLYGON (when style = "poly") or a LINESTRING (other styles).

Source

Coordinates of esp_get_can_provinces() derived from CartoBase ANE (se89_mult_admin_provcan_l.shp).

See Also

Other helpers for the Canary Islands: esp_move_can()

Examples

```
provs <- esp_get_prov()
box <- esp_get_can_box()
line <- esp_get_can_provinces()

library(ggplot2)
ggplot(provs) +
  geom_sf() +
  geom_sf(data = box, linewidth = 0.15) +
  geom_sf(data = line, linewidth = 0.15) +
```

```
  theme_linedraw()


# Displacing the Canary Islands by a custom offset
displace <- c(15, 0)
provs_disp <- esp_get_prov(moveCAN = displace)
box_disp <- esp_get_can_box(style = "left", moveCAN = displace)
line_disp <- esp_get_can_provinces(moveCAN = displace)
ggplot(provs_disp) +
  geom_sf() +
  geom_sf(data = box_disp, linewidth = 0.15) +
  geom_sf(data = line_disp, linewidth = 0.15) +
  theme_linedraw()

# Example using the polygon style together with other layers
library(giscoR)
res <- "20"
countries <- gisco_get_countries(
  res = res, epsg = "4326",
  country = c("France", "Portugal", "Andorra", "Morocco", "Argelia")
)
can_box <- esp_get_can_box(
  style = "poly", epsg = "4326",
  moveCAN = c(12.5, 0)
)
ccaa <- esp_get_ccaa(res = res, epsg = "4326", moveCAN = c(12.5, 0))
ggplot(countries) +
  geom_sf(fill = "#DFDFDF") +
  geom_sf(data = can_box, fill = "#C7E7FB", linewidth = 1) +
  geom_sf(data = ccaa, fill = "#FDFBEA") +
  coord_sf(xlim = c(-10, 4.3), ylim = c(34.6, 44)) +
  theme(
    panel.background = element_rect(fill = "#C7E7FB"),
    panel.grid = element_blank()
  )
```

`esp_get_capimun` *City where the municipal public authorities are based - SIANE*

Description

Get a `sf` `POINT` with the location of the political powers for each municipality.

Note that this differs from the centroid of the boundaries of the municipality, returned by `esp_get_munic_siane()`.

Usage

```
esp_get_capimun(
  year = Sys.Date(),
  epsg = 4258,
```

```
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  region = NULL,
  munic = NULL,
  moveCAN = TRUE,
  rawcols = FALSE
)
```

Arguments

year	character string or number. Release year, it must be in formats YYYY (assuming end of year) or YYYY-MM-DD. Historical information starts as of 2005.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
region	Optional. A vector of region names, NUTS or ISO codes (see esp_dict_region_code()).
munic	character string. A name or regex expression with the names of the required municipalities. NULL will return all municipalities.
moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
rawcols	logical. Setting this to TRUE will add the raw columns of the resulting object as provided by IGN.

Details

When using region you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

When calling a higher level (province, CCAA or NUTS1), all the municipalities of that level will be added.

Value

A sf object.

Note

Although **mapSpain** supplies cartographically suitable datasets, a historical database of Spanish municipal boundaries is also available, offering higher-resolution geometries that may be more appropriate for GIS-oriented workflows:

- Goerlich, F. J., & Pérez Vázquez, P. (2025). *Base de datos histórica de contornos municipales de España –LAU2boundaries4Spain–* [Data set]. Zenodo. doi:10.5281/zenodo.15345101, https://www.uv.es/goerlich/Ivie/LAU2boundaries4Spain.html.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other datasets representing political borders: esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Political borders from CartoBase ANE: esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_munic_siane(), esp_get_prov_siane(), esp_get_spain_siane(), esp_siane_bulk_download()

Datasets representing municipalities: esp_get_munic(), esp_get_munic_siane()

Examples

```
# This code compares centroids of municipalities against esp_get_capimun

# Get shape
area <- esp_get_munic_siane(munic = "Valladolid", epsg = 3857)

# Area in km2
print(paste0(round(as.double(sf::st_area(area)) / 1000000, 2), " km2"))

# Extract centroid
```

```
centroid <- sf::st_centroid(area)
centroid$type <- "Centroid"

# Compare with capimun
capimun <- esp_get_capimun(munic = "Valladolid", epsg = 3857)
capimun$type <- "Capimun"

# Join both point geometries
points <- dplyr::bind_rows(centroid, capimun)

# Check on plot
library(ggplot2)

ggplot(points) +
  geom_sf(data = area, fill = NA, color = "blue") +
  geom_sf(data = points, aes(fill = type), size = 5, shape = 21) +
  scale_fill_manual(values = c("green", "red")) +
  labs(title = "Centroid vs. capimun")
```

`esp_get_ccaa` *Autonomous Communities of Spain - GISCO*

Description

Returns Autonomous Communities of Spain at a specified scale.

Usage

```
esp_get_ccaa(ccaa = NULL, moveCAN = TRUE, ...)
```

Arguments

`ccaa`	character string. A vector of names and/or codes for Autonomous Communities or `NULL` to get all the autonomous communities. See **Details**.
`moveCAN`	A logical `TRUE/FALSE` or a vector of coordinates `c(lat, lon)`. It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in `esp_move_can()`.
`...`	Arguments passed on to `esp_get_nuts` `year` year character string or number. Release year of the file. See `giscoR::gisco_get_nuts()` for valid values. `epsg` character string or number. Projection of the map: 4-digit EPSG code. One of: • `"4258"`: ETRS89 • `"4326"`: WGS84. • `"3035"`: ETRS89 / ETRS-LAEA.

- "3857": Pseudo-Mercator.

cache logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().

update_cache logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.

cache_dir character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().

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

- "RG": Regions - MULTIPOLYGON/POLYGON object.
- "LB": Labels - POINT object.

ext character. Extension of the file (default "gpkg"). See giscoR::gisco_get_nuts().

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.

Details

When using ccaa you can use and mix names and NUTS codes (levels 1 or 2), ISO codes (corresponding to level 2) or codauto (see esp_codelist). Ceuta and Melilla are considered as Autonomous Communities in this function.

When calling a NUTS1 level, all the Autonomous Communities of that level will be added.

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

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Datasets provided by GISCO: esp_get_munic(), esp_get_nuts(), esp_get_prov(), esp_get_spain()

Examples

```
ccaa <- esp_get_ccaa()

library(ggplot2)

ggplot(ccaa) +
  geom_sf()

# Random CCAA
random_ccaa <- esp_get_ccaa(ccaa = c(
  "Euskadi",
  "Catalunya",
  "ES-EX",
  "Canarias",
  "ES52",
  "01"
))


ggplot(random_ccaa) +
  geom_sf(aes(fill = codauto), show.legend = FALSE) +
  geom_sf_label(aes(label = codauto), alpha = 0.3) +
  coord_sf(crs = 3857)

# All CCAA of a Zone plus an addition

mixed <- esp_get_ccaa(ccaa = c("La Rioja", "Noroeste"))

ggplot(mixed) +
  geom_sf()

# Combine with giscoR to get countries


library(giscoR)
library(sf)

res <- 20 # Set same resoluion

europe <- gisco_get_countries(resolution = res)
ccaa <- esp_get_ccaa(moveCAN = FALSE, resolution = res)


ggplot(europe) +
  geom_sf(fill = "#DFDFDF", color = "#656565") +
  geom_sf(data = ccaa, fill = "#FDFBEA", color = "#656565") +
  coord_sf(
    xlim = c(23, 74) * 10e4,
    ylim = c(14, 55) * 10e4,
    crs = 3035
  ) +
  theme(panel.background = element_rect(fill = "#C7E7FB"))
```

esp_get_ccaa_siane *Autonomous Communities of Spain - SIANE*

Description

Returns Autonomous Communities of Spain at a specified scale.

Usage

```
esp_get_ccaa_siane(
  ccaa = NULL,
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(3, 6.5, 10),
  moveCAN = TRUE,
  rawcols = FALSE
)
```

Arguments

ccaa	character string. A vector of names and/or codes for Autonomous Communities or NULL to get all the autonomous communities. See **Details**.
year	character string or number. Release year, it must be in formats YYYY (assuming end of year) or YYYY-MM-DD. Historical information starts as of 2005.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "10": 1:10 million.

- "6.5": 1:6.5 million.
- "3": 1:3 million.

`moveCAN` A logical `TRUE/FALSE` or a vector of coordinates `c(lat, lon)`. It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in `esp_move_can()`.

`rawcols` logical. Setting this to `TRUE` will add the raw columns of the resulting object as provided by IGN.

Details

When using `ccaa` you can use and mix names and NUTS codes (levels 1 or 2), ISO codes (corresponding to level 2) or `codauto` (see esp_codelist). Ceuta and Melilla are considered as Autonomous Communities in this function.

When calling a NUTS1 level, all the Autonomous Communities of that level will be added.

Value

A `sf` object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), `http://www.ign.es/web/ign/portal`. Years available are 2005 up to today.

Copyright: `https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane`

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see `https://github.com/rOpenSpain/mapSpain/tree/sianedata`.

See Also

Other datasets representing political borders: `esp_get_capimun()`, `esp_get_ccaa()`, `esp_get_comarca()`, `esp_get_countries_siane()`, `esp_get_gridmap`, `esp_get_munic()`, `esp_get_munic_siane()`, `esp_get_nuts()`, `esp_get_prov()`, `esp_get_prov_siane()`, `esp_get_simpl`, `esp_get_spain()`, `esp_get_spain_siane()`, `esp_siane_bulk_download()`

Political borders from CartoBase ANE: `esp_get_capimun()`, `esp_get_countries_siane()`, `esp_get_munic_siane()`, `esp_get_prov_siane()`, `esp_get_spain_siane()`, `esp_siane_bulk_download()`

Examples

```
ccaas1 <- esp_get_ccaa_siane()
dplyr::glimpse(ccaas1)

# Low res
ccaas_low <- esp_get_ccaa_siane(
  rawcols = TRUE, moveCAN = FALSE,
  resolution = 10, epsg = 3035
)


library(ggplot2)

ggplot(ccaas_low) +
  geom_sf(aes(fill = nuts1.name)) +
  scale_fill_viridis_d(option = "cividis")
```

`esp_get_comarca` *'Comarcas' of Spain*

Description

Returns Comarcas of Spain. Comarcas are traditional informal territorial division, comprising several municipalities sharing geographical, economic or cultural traits, typically with not well defined limits.

Usage

```
esp_get_comarca(
  region = NULL,
  comarca = NULL,
  moveCAN = TRUE,
  type = c("INE", "IGN", "AGR", "LIV"),
  epsg = 4258,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

`region`	character string. A vector of names and/or codes for provinces or `NULL` to get all the comarcas. See **Details**.
`comarca`	character string. A name or `regex` expression with the names of the required comarcas. `NULL` will return all the possible comarcas.

moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
type	character string. One of "INE", "IGN", "AGR", "LIV". Type of comarca to return, see **Details**.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.

Details

When using region you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

When calling a higher level (Province, Autonomous Community or NUTS1), all the comarcas of that level will be added.

Value

A sf object.

About comarcas

'Comarcas' (English equivalent: district, county, area or zone) does not always have a formal legal status. They correspond mainly to natural areas (valleys, river basins, etc.) or even to historical regions or ancient kingdoms.

In the case of Spain, comarcas only have an administrative character legally recognized in Catalonia, the Basque Country, Navarra (named merindades instead), in the region of El Bierzo (Castilla y Leon) and Aragon. Galicia, the Principality of Asturias, and Andalusia have functional comarcas.

Types

esp_get_comarca() can retrieve several types of comarcas, each one provided under different classification criteria.

- "INE": Comarcas as defined by the National Statistics Institute (INE).
- "IGN": Official comarcas, only available on some Autonomous Communities, provided by the National Geographic Institute.
- "AGR": Agrarian comarcas defined by the Ministry of Agriculture, Fisheries and Food (MAPA).
- "LIV": Livestock comarcas defined by the Ministry of Agriculture, Fisheries and Food (MAPA).

Note

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

Note

The use of the information contained on the INE website may be carried out by users or re-use agents, at their own risk, and they will be the sole liable parties in the case of having to answer to third parties due to damages arising from such use.

Source

INE: PC_Axis files, IGN, Ministry of Agriculture, Fisheries and Food (MAPA).

See Also

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Examples

```
comarcas <- esp_get_comarca(moveCAN = FALSE)

library(ggplot2)

ggplot(comarcas) +
  geom_sf()

# IGN provides recognized comarcas

rec <- esp_get_comarca(type = "IGN")

ggplot(rec) +
  geom_sf(aes(fill = t_comarca))

# Legal Comarcas of Catalunya

comarcas_cat <- esp_get_comarca("Catalunya", type = "IGN")

ggplot(comarcas_cat) +
  geom_sf(aes(fill = ine.prov.name)) +
  labs(fill = "Province")
```

esp_get_countries_siane *Countries of the World - SIANE*

Description

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

The data included in this cartographic database do not imply any opinion of the IGN regarding its legal status.

Usage

```
esp_get_countries_siane(
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  country = NULL
)
```

Arguments

year	character string or number. Release year, it must be in formats YYYY (assuming end of year) or YYYY-MM-DD. Historical information starts as of 2005.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
country	character vector of country codes. It can be either a vector of country names, a vector of ISO3 country codes or a vector of ISO2 country codes. See also countrycode::countrycode().

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

giscoR::gisco_get_countries().

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Political borders from CartoBase ANE: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_munic_siane(), esp_get_prov_siane(), esp_get_spain_siane(), esp_siane_bulk_download()

Examples

```
cntries <- esp_get_countries_siane()

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

---

esp_get_gridmap *Get a sf hexbin or squared POLYGON of Spain*

Description

Loads a hexbin map (sf object) or a map of squares with the boundaries of the provinces or autonomous communities of Spain.

Usage

```
esp_get_hex_prov(prov = NULL)

esp_get_hex_ccaa(ccaa = NULL)

esp_get_grid_prov(prov = NULL)

esp_get_grid_ccaa(ccaa = NULL)
```

Arguments

prov, ccaa	character. A vector of names and/or codes for provinces and autonomous communities or NULL to get all the data. See **Details**.

Details

Hexbin (or grid) maps have an advantage over traditional choropleth maps. In choropleths, regions with larger polygons tend to appear more prominent simply because of their size, which introduces visual bias. With hexbin maps, each region is represented equally, reducing this bias.

You can use and mix names, ISO codes, "codauto"/ "cpro" codes (see esp_codelist) and NUTS codes of different levels.

When using a code corresponding to a higher level (e.g. esp_get_prov("Andalucia")) all the corresponding units of that level are provided (in this case, all the provinces of Andalusia).

Results are provided in **EPSG:4258**, use sf::st_transform() to change the projection.

Value

A sf object.

See Also

esp_get_simpl.

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Examples

```
esp <- esp_get_spain()
hexccaa <- esp_get_hex_ccaa()

library(ggplot2)

ggplot(hexccaa) +
  geom_sf(data = esp) +
  geom_sf(aes(fill = codauto), alpha = 0.3, show.legend = FALSE) +
  geom_sf_text(aes(label = label), check_overlap = TRUE) +
```

```
  theme_void() +
  labs(title = "Hexbin: CCAA")


hexprov <- esp_get_hex_prov()

ggplot(hexprov) +
  geom_sf(data = esp) +
  geom_sf(aes(fill = codauto), alpha = 0.3, show.legend = FALSE) +
  geom_sf_text(aes(label = label), check_overlap = TRUE) +
  theme_void() +
  labs(title = "Hexbin: Provinces")


gridccaa <- esp_get_grid_ccaa()

ggplot(gridccaa) +
  geom_sf(data = esp) +
  geom_sf(aes(fill = codauto), alpha = 0.3, show.legend = FALSE) +
  geom_sf_text(aes(label = label), check_overlap = TRUE) +
  theme_void() +
  labs(title = "Grid: CCAA")


gridprov <- esp_get_grid_prov()

ggplot(gridprov) +
  geom_sf(data = esp) +
  geom_sf(aes(fill = codauto), alpha = 0.3, show.legend = FALSE) +
  geom_sf_text(aes(label = label), check_overlap = TRUE) +
  theme_void() +
  labs(title = "Grid: Provinces")
```

`esp_get_grid_BDN` *National geographic grids from BDN (Nature Data Bank)*

Description

Loads a `sf` `POLYGON` object with the geographic grids of Spain as provided by the Banco de Datos de la Naturaleza (Nature Data Bank), under the Ministry of Environment (MITECO).

This dataset provides:

- `esp_get_grid_BDN()` extracts country-wide regular grids with resolutions of 5x5 or 10x10 kilometers (mainland Spain or Canary Islands).
- `esp_get_grid_BDN_ccaa()` extracts 1x1 kilometer resolution grids for individual Autonomous Communities.

These grids are useful for biodiversity analysis, environmental monitoring, and spatial statistical applications.

`esp_get_grid_BDN_ccaa()` provides higher-resolution 1x1 kilometer grids for specific Autonomous Communities, useful for regional analysis with finer spatial detail.

Usage

```
esp_get_grid_BDN(
  resolution = c(10, 5),
  type = c("main", "canary"),
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)

esp_get_grid_BDN_ccaa(
  ccaa,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

`resolution`	numeric. Resolution of the grid in kms. Must be one of: • `5`: 5x5 kilometer cells • `10`: 10x10 kilometer cells (default)
`type`	character. The geographic scope of the grid: • `"main"`: Mainland Spain (default) • `"canary"`: Canary Islands
`update_cache`	logical. Should the cached file be refreshed? Default is `FALSE`. When set to `TRUE`, it will force a new download.
`cache_dir`	character string. A path to a cache directory. See **Caching strategies** section in `esp_set_cache_dir()`.
`verbose`	logical. If `TRUE` displays informational messages.
`ccaa`	character string. A vector of names and/or codes for Autonomous Communities. See **Details** on `esp_get_ccaa()` for accepted formats.

Details

The BDN provides standardized geographic grids for Spain that follow the Nature Data Bank's specifications. The data is maintained via a custom CDN and is regularly updated.

Value

A `sf` object.

Source

Data sourced from the Banco de Datos de la Naturaleza (BDN) via a custom CDN. See the repository structure: https://github.com/rOpenSpain/mapSpain/tree/sianedata/MTN

For more information about BDN grids and other resources, visit: https://www.miteco.gob.es/es/biodiversidad/servicios/banco-datos-naturaleza/informacion-disponible/bdn-cart-aux-descargas-cca.html.

See Also

esp_get_ccaa()

Other geographical grids: esp_get_grid_ESDAC(), esp_get_grid_MTN()

Examples

```
# Load a 10x10 km grid for mainland Spain
grid <- esp_get_grid_BDN(resolution = 10, type = "main")

# Visualize the grid
library(ggplot2)

ggplot(grid) +
  geom_sf(fill = NA, color = "steelblue") +
  theme_light() +
  labs(title = "BDN Geographic Grid: 10x10 km Spain")
```

---

esp_get_grid_ESDAC *National geographic grids from the European Soil Data Centre (ESDAC)*

Description

Loads a sf POLYGON with the geographic grids of Spain as provided by the European Soil Data Centre (ESDAC).

Usage

```
esp_get_grid_ESDAC(
  resolution = c(10, 1),
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

resolution	numeric. Resolution of the grid in kms Can be 1 or 10.
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.

Value

A sf POLYGON.

Source

EEA reference grid.

References

- Panagos P., Van Liedekerke M., Jones A., Montanarella L., "European Soil Data Centre: Response to European policy support and public data requirements"; (2012) *Land Use Policy*, 29 (2), pp. 329-338. doi:10.1016/j.landusepol.2011.07.003
- European Soil Data Centre (ESDAC), esdac.jrc.ec.europa.eu, European Commission, Joint Research Centre.

See Also

Other geographical grids: esp_get_grid_BDN(), esp_get_grid_MTN()

Examples

```
## Not run:
grid <- esp_get_grid_ESDAC()
esp <- esp_get_spain(moveCAN = FALSE)

library(ggplot2)

ggplot(grid) +
  geom_sf() +
  geom_sf(data = esp, color = "grey50", fill = NA) +
  theme_light() +
  labs(title = "ESDAC Grid for Spain")

## End(Not run)
```

esp_get_grid_MTN *National geographic grids from IGN MTN ((Mapa Topografico Nacional)*

Description

Loads a sf POLYGON with the geographic grids of Spain.

Usage

```
esp_get_grid_MTN(
  grid = "MTN25_ETRS89_Peninsula_Baleares_Canarias",
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

grid	Name of the grid to be loaded. See **Details**.
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.

Details

Metadata available on https://github.com/rOpenSpain/mapSpain/tree/sianedata/MTN.

Possible values of grid are:

grid_name
MTN25_ED50_Peninsula_Baleares
MTN25_ETRS89_ceuta_melilla_alboran
MTN25_ETRS89_Peninsula_Baleares_Canarias
MTN25_RegCan95_Canarias
MTN50_ED50_Peninsula_Baleares
MTN50_ETRS89_Peninsula_Baleares_Canarias
MTN50_RegCan95_Canarias

MTN Grids:

A description of the MTN (Mapa Topografico Nacional) grids available:

MTN25_ED50_Peninsula_Baleares

MTN25 grid corresponding to the Peninsula and Balearic Islands, in ED50 and geographical coordinates (longitude, latitude) This is the real MTN25 grid, that is, the one that divides the current printed series of the map, taking into account special sheets and irregularities.

MTN50_ED50_Peninsula_Baleares

MTN50 grid corresponding to the Peninsula and Balearic Islands, in ED50 and geographical coordinates (longitude, latitude) This is the real MTN50 grid, that is, the one that divides the current printed series of the map, taking into account special sheets and irregularities.

MTN25_ETRS89_ceuta_melilla_alboran

MTN25 grid corresponding to Ceuta, Melilla, Alboran and Spanish territories in North Africa, adjusted to the new official geodetic reference system ETRS89, in geographical coordinates (longitude, latitude).

MTN25_ETRS89_Peninsula_Baleares_Canarias

MTN25 real grid corresponding to the Peninsula, the Balearic Islands and the Canary Islands, adjusted to the new ETRS89 official reference geodetic system, in geographical coordinates (longitude, latitude).

MTN50_ETRS89_Peninsula_Baleares_Canarias

MTN50 real grid corresponding to the Peninsula, the Balearic Islands and the Canary Islands, adjusted to the new ETRS89 official reference geodetic system, in geographical coordinates (longitude, latitude).

MTN25_RegCan95_Canarias

MTN25 grid corresponding to the Canary Islands, in REGCAN95 (WGS84 compatible) and geographic coordinates (longitude, latitude). It is the real MTN25 grid, that is, the one that divides the current printed series of the map, taking into account the special distribution of the Canary Islands sheets.

MTN50_RegCan95_Canarias

MTN50 grid corresponding to the Canary Islands, in REGCAN95 (WGS84 compatible) and geographic coordinates (longitude, latitude). This is the real grid of the MTN50, that is, the one that divides the current printed series of the map, taking into account the special distribution of the Canary Islands sheets.

Value

A `sf` `POLYGON`.

Source

IGN data via a custom CDN (see https://github.com/rOpenSpain/mapSpain/tree/sianedata/MTN).

See Also

Other geographical grids: `esp_get_grid_BDN()`, `esp_get_grid_ESDAC()`

Examples

```
grid <- esp_get_grid_MTN(grid = "MTN50_ETRS89_Peninsula_Baleares_Canarias")
```

```
library(ggplot2)

ggplot(grid) +
  geom_sf() +
  theme_light() +
  labs(title = "MTN50 Grid for Spain")
```

`esp_get_hydrobasin` *River basin districts of Spain - SIANE*

Description

River basin districts are the areas of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters.

Usage

```
esp_get_hydrobasin(
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(3, 6.5, 10),
  domain = c("land", "landsea")
)
```

Arguments

epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "10": 1:10 million.

- "6.5": 1:6.5 million.
- "3": 1:3 million.

`domain` character string. Type of river basin district. Possible values are `"land"`, including only the groundwaters area or `"landsea"`, groundwaters and coastal waters.

Details

Metadata available on https://github.com/rOpenSpain/mapSpain/tree/sianedata/.

Value

A `sf` object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other natural features: `esp_get_hypsobath()`, `esp_get_landwater`

Examples

```
hydroland <- esp_get_hydrobasin(domain = "land")
hydrolandsea <- esp_get_hydrobasin(domain = "landsea")

library(ggplot2)


ggplot(hydroland) +
  geom_sf(data = hydrolandsea, fill = "skyblue4", alpha = .4) +
  geom_sf(fill = "skyblue", alpha = .5) +
  geom_sf_text(aes(label = rotulo),
    size = 2, check_overlap = TRUE,
    fontface = "bold",
    family = "serif"
```

```
  ) +
  coord_sf(
    crs = 3857,
    xlim = c(-9.5, 4.5),
    ylim = c(35, 44)
  ) +
  theme_void()
```

`esp_get_hypsobath` *Hypsometry and bathymetry of Spain - SIANE*

Description

Dataset representing the hypsometry and bathymetry of Spain.

- **Hypsometry** represents the elevation and depth of features of the Earth's surface relative to mean sea level.
- **Bathymetry** is the measurement of the depth of water in oceans, rivers, or lakes.

Usage

```
esp_get_hypsobath(
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(3, 6.5),
  spatialtype = c("area", "line")
)
```

Arguments

epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().

verbose	logical. If TRUE displays informational messages.
resolution	character string or number. Resolution of the geospatial data. One of: • "6.5": 1:6.5 million. • "3": 1:3 million.
spatialtype	character string. Spatial type of the output. Use "area" for POLYGON or "line" for LINESTRING.

Details

Metadata available on https://github.com/rOpenSpain/mapSpain/tree/sianedata/.

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other natural features: esp_get_hydrobasin(), esp_get_landwater

Examples

```
# This code will produce a nice plot - It will take a few seconds to run
library(ggplot2)

hypsobath <- esp_get_hypsobath()

# Tints from Wikipedia
# https://en.wikipedia.org/wiki/Wikipedia:WikiProject_Maps/Conventions/
# Topographic_maps
```

```
levels <- sort(unique(hypsobath$val_inf))

# Create Manual pal
br_bath <- length(levels[levels < 0])
br_terrain <- length(levels) - br_bath
pal <- c(
  tidyterra::hypso.colors(br_bath, "wiki-2.0_bathy"),
  tidyterra::hypso.colors(br_terrain, "wiki-2.0_hypso")
)


# Plot Canary Islands
ggplot(hypsobath) +
  geom_sf(aes(fill = as.factor(val_inf)),
    color = NA
  ) +
  coord_sf(
    xlim = c(-18.6, -13),
    ylim = c(27, 29.5)
  ) +
  scale_fill_manual(values = pal) +
  guides(fill = guide_legend(
    title = "Elevation",
    direction = "horizontal",
    label.position = "bottom",
    title.position = "top",
    nrow = 1
  )) +
  theme(legend.position = "bottom")


# Plot Mainland
ggplot(hypsobath) +
  geom_sf(aes(fill = as.factor(val_inf)),
    color = NA
  ) +
  coord_sf(
    xlim = c(-9.5, 4.4),
    ylim = c(35.8, 44)
  ) +
  scale_fill_manual(values = pal) +
  guides(fill = guide_legend(
    title = "Elevation",
    reverse = TRUE,
    keyheight = .8
  ))
```

---

esp_get_landwater *Rivers and wetlands of Spain - SIANE*

Description

Object representing rivers, lagoons, reservoirs and wetlands of Spain.

Usage

```
esp_get_rivers(
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = deprecated(),
  spatialtype = c("line", "area"),
  moveCAN = TRUE,
  name = NULL
)

esp_get_wetlands(
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  moveCAN = TRUE,
  name = NULL
)
```

Arguments

epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
resolution	**[Deprecated]** character string. Ignored, resolution 3 (the most detailed) will always be provided.
spatialtype	**[Deprecated]** character string. Use esp_get_wetlands() instead of "spatialtype" for wetlands.

moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
name	character string or regex expression. Name of the element(s) to be extracted.

Details

Metadata available on https://github.com/rOpenSpain/mapSpain/tree/sianedata/.

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other natural features: esp_get_hydrobasin(), esp_get_hypsobath()

Examples

```
# Use of regex

regex1 <- esp_get_rivers(name = "Tajo|Segura")
unique(regex1$rotulo)


regex2 <- esp_get_rivers(name = "Tajo$| Segura")
unique(regex2$rotulo)

# See the difference

# Rivers in Spain
iberian <- giscoR::gisco_get_countries(
```

```
  country = c("ES", "PT", "FR"), resolution = 3
)

main_rivers <- esp_get_rivers() |>
  dplyr::filter(t_rio == 1)

library(ggplot2)

ggplot(iberian) +
  geom_sf() +
  geom_sf(data = main_rivers, color = "skyblue", linewidth = 2) +
  coord_sf(
    xlim = c(-10, 5),
    ylim = c(35, 44)
  )


# Wetlands in South-West Andalucia
and <- esp_get_prov(c("Huelva", "Sevilla", "Cadiz"))
wetlands <- esp_get_wetlands()
wetlands_south <- sf::st_filter(wetlands, and)

ggplot(and) +
  geom_sf() +
  geom_sf(
    data = wetlands_south, fill = "skyblue",
    color = "skyblue", alpha = 0.5
  )
```

---

esp_get_munic *Municipalities of Spain - GISCO*

Description

This dataset shows boundaries of municipalities in Spain.

Usage

```
esp_get_munic(
  year = 2024,
  epsg = 4258,
  cache = deprecated(),
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  region = NULL,
  munic = NULL,
```

```
  moveCAN = TRUE,
  ext = "gpkg"
)
```

Arguments

year	year character string or number. Release year of the file. See giscoR::gisco_get_lau() and giscoR::gisco_get_communes() for valid values.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	**[Deprecated]**. This argument is deprecated, the dataset will always be downloaded to the cache_dir.
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
region	Optional. A vector of region names, NUTS or ISO codes (see esp_dict_region_code()).
munic	character string. A name or regex expression with the names of the required municipalities. NULL will return all municipalities.
moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
ext	character. Extension of the file (default "gpkg"). See giscoR::gisco_get_nuts().

Details

When using region you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

When calling a higher level (province, CCAA or NUTS1), all the municipalities of that level will be added.

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

giscoR::gisco_get_lau(), giscoR::gisco_get_communes().

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Datasets representing municipalities: esp_get_capimun(), esp_get_munic_siane()

Datasets provided by GISCO: esp_get_ccaa(), esp_get_nuts(), esp_get_prov(), esp_get_spain()

Examples

```
# The Spanish Lapland:
# https://en.wikipedia.org/wiki/Celtiberian_Range

# Get munics
spanish_laplad <- esp_get_munic(
  year = 2023,
  region = c(
    "Cuenca", "Teruel",
    "Zaragoza", "Guadalajara",
    "Soria", "Burgos",
    "La Rioja"
  )
)

breaks <- sort(c(0, 5, 10, 50, 100, 200, 500, 1000, Inf))
spanish_laplad$dens_breaks <- cut(spanish_laplad$POP_DENS_2023, breaks,
  dig.lab = 20
)

cut_labs <- prettyNum(breaks, big.mark = " ")[-1]
cut_labs[length(breaks)] <- "> 1000"

library(ggplot2)
ggplot(spanish_laplad) +
  geom_sf(aes(fill = dens_breaks), color = "grey30", linewidth = 0.1) +
  scale_fill_manual(
    values = hcl.colors(length(breaks) - 1, "Spectral"), na.value = "black",
    name = "people per sq. kilometer",
    labels = cut_labs,
    guide = guide_legend(
      direction = "horizontal",
      nrow = 1
    )
  ) +
  theme_void() +
  labs(
    title = "The Spanish Lapland",
    caption = giscoR::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")
  )
```

`esp_get_munic_siane` *Municipalities of Spain - SIANE*

Description

This dataset shows boundaries of municipalities in Spain.

Usage

```
esp_get_munic_siane(
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(3, 6.5, 10),
  region = NULL,
  munic = NULL,
  moveCAN = TRUE,
  rawcols = FALSE
)
```

Arguments

`year`	character string or number. Release year, it must be in formats `YYYY` (assuming end of year) or `YYYY-MM-DD`. Historical information starts as of 2005.
`epsg`	character string or number. Projection of the map: 4-digit EPSG code. One of: • `"4258"`: ETRS89 • `"4326"`: WGS84.

- "3035": ETRS89 / ETRS-LAEA.
- "3857": Pseudo-Mercator.

cache — logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().

update_cache — logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.

cache_dir — character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().

verbose — logical. If TRUE displays informational messages.

resolution — character string or number. Resolution of the geospatial data. One of:

- "10": 1:10 million.
- "6.5": 1:6.5 million.
- "3": 1:3 million.

region — Optional. A vector of region names, NUTS or ISO codes (see esp_dict_region_code()).

munic — character string. A name or regex expression with the names of the required municipalities. NULL will return all municipalities.

moveCAN — A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().

rawcols — logical. Setting this to TRUE will add the raw columns of the resulting object as provided by IGN.

Details

When using region you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

When calling a higher level (province, CCAA or NUTS1), all the municipalities of that level will be added.

Value

A sf object.

Note

Although **mapSpain** supplies cartographically suitable datasets, a historical database of Spanish municipal boundaries is also available, offering higher-resolution geometries that may be more appropriate for GIS-oriented workflows:

- Goerlich, F. J., & Pérez Vázquez, P. (2025). *Base de datos histórica de contornos municipales de España –LAU2boundaries4Spain–* [Data set]. Zenodo. doi:10.5281/zenodo.15345101, https://www.uv.es/goerlich/Ivie/LAU2boundaries4Spain.html.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Political borders from CartoBase ANE: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_prov_siane(), esp_get_spain_siane(), esp_siane_bulk_download()

Datasets representing municipalities: esp_get_capimun(), esp_get_munic()

Examples

```
# Municipalities that have changed in the past: three cuts
munis2005 <- esp_get_munic_siane(year = 2005, rawcols = TRUE)
munis2015 <- esp_get_munic_siane(year = 2015, rawcols = TRUE)
munis2024 <- esp_get_munic_siane(year = 2024, rawcols = TRUE)

# manipulate
library(dplyr)
allmunis_unique <- bind_rows(munis2005, munis2015, munis2024) |>
  distinct()

id_all <- allmunis_unique |>
  sf::st_drop_geometry() |>
  group_by(id_ine, name) |>
  count() |>
  ungroup() |>
  arrange(desc(n)) |>
  slice_head(n = 1) |>
  glimpse()

library(ggplot2)
```

```
allmunis_unique |>
  filter(id_ine == id_all$id_ine) |>
  ggplot() +
  geom_sf(aes(fill = as.factor(fecha_alta)),
    alpha = 0.7,
    show.legend = FALSE
  ) +
  scale_fill_viridis_d() +
  facet_wrap(~fecha_alta) +
  labs(
    title = id_all$name,
    subtitle = "Changes on boundaries over time",
    fill = ""
  )
```

`esp_get_nuts` *Territorial Spanish units for statistics (NUTS) dataset*

Description

The GISCO statistical unit dataset represents the NUTS (nomenclature of territorial units for statistics) and statistical regions using 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.

Usage

```
esp_get_nuts(
  year = 2024,
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = 1,
  spatialtype = c("RG", "LB"),
  region = NULL,
  nuts_level = c("all", "0", "1", "2", "3"),
  moveCAN = TRUE,
  ext = "gpkg"
)
```

Arguments

year	year character string or number. Release year of the file. See giscoR::gisco_get_nuts() for valid values.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_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.
region	Optional. A vector of region names, NUTS or ISO codes (see esp_dict_region_code()).
nuts_level	character string. NUTS level. One of 0, 1, 2, 3 or all for all levels.
moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().
ext	character. Extension of the file (default "gpkg"). See giscoR::gisco_get_nuts().

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

giscoR::gisco_get_nuts(), esp_dict_region_code().

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Other nuts: esp_get_spain()

Datasets provided by GISCO: esp_get_ccaa(), esp_get_munic(), esp_get_prov(), esp_get_spain()

Examples

```
nuts1 <- esp_get_nuts(nuts_level = 1, moveCAN = TRUE)

library(ggplot2)

ggplot(nuts1) +
  geom_sf() +
  labs(
    title = "NUTS1: Displacing Canary Islands",
    caption = giscoR::gisco_attributions()
  )


nuts1_alt <- esp_get_nuts(nuts_level = 1, moveCAN = c(15, 0))


ggplot(nuts1_alt) +
  geom_sf() +
  labs(
    title = "NUTS1: Displacing Canary Islands",
    subtitle = "to the right",
    caption = giscoR::gisco_attributions()
  )


nuts1_orig <- esp_get_nuts(nuts_level = 1, moveCAN = FALSE)
```

```
ggplot(nuts1_orig) +
  geom_sf() +
  labs(
    title = "NUTS1",
    subtitle = "Canary Islands on the true location",
    caption = giscoR::gisco_attributions()
  )


and_orient <- esp_get_nuts(region = c(
  "Almeria", "Granada",
  "Jaen", "Malaga"
))


ggplot(and_orient) +
  geom_sf()


random_regions <- esp_get_nuts(region = c("ES1", "ES300", "ES51"))

ggplot(random_regions) +
  geom_sf() +
  labs(title = "Random Regions")


mixing_codes <- esp_get_nuts(region = c("ES4", "ES-PV", "Valencia"))


ggplot(mixing_codes) +
  geom_sf() +
  labs(title = "Mixing Codes")
```

`esp_get_prov` *Provinces of Spain - GISCO*

Description

Returns provinces of Spain at a specified scale.

Usage

```
esp_get_prov(prov = NULL, moveCAN = TRUE, ...)
```

Arguments

`prov`	A vector of names and/or codes for provinces or `NULL` to get all the provinces. See **Details**.

moveCAN A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().

... Arguments passed on to esp_get_nuts, esp_get_nuts

year year character string or number. Release year of the file. See giscoR::gisco_get_nuts() for valid values.

epsg character string or number. Projection of the map: 4-digit EPSG code. One of:

- "4258": ETRS89
- "4326": WGS84.
- "3035": ETRS89 / ETRS-LAEA.
- "3857": Pseudo-Mercator.

cache logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().

update_cache logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.

cache_dir character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().

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

- "RG": Regions - MULTIPOLYGON/POLYGON object.
- "LB": Labels - POINT object.

ext character. Extension of the file (default "gpkg"). See giscoR::gisco_get_nuts().

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.

Details

When using prov you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

Ceuta and Melilla are considered as provinces in this dataset.

When calling a higher level (Autonomous Community or NUTS1), all the provinces of that level will be added.

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

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Datasets provided by GISCO: esp_get_ccaa(), esp_get_munic(), esp_get_nuts(), esp_get_spain()

Examples

```
prov <- esp_get_prov()

library(ggplot2)

ggplot(prov) +
  geom_sf() +
  theme_minimal()


# Random Provinces
random <- esp_get_prov(prov = c(
  "Zamora", "Palencia", "ES-GR",
  "ES521", "01"
))


ggplot(random) +
  geom_sf(aes(fill = codauto), show.legend = FALSE, alpha = 0.5) +
  scale_fill_manual(values = hcl.colors(nrow(random), "Spectral")) +
  theme_minimal()


# All Provinces of a Zone plus an addition
mix <- esp_get_prov(prov = c(
  "Noroeste",
  "Castilla y Leon", "La Rioja"
))

mix$ccaa <- esp_dict_region_code(
  mix$codauto,
  origin = "codauto"
)
```

```
ggplot(mix) +
  geom_sf(aes(fill = ccaa), alpha = 0.5) +
  scale_fill_discrete(type = hcl.colors(5, "Temps")) +
  theme_classic()

# ISO codes available

allprovs <- esp_get_prov()

ggplot(allprovs) +
  geom_sf(fill = NA) +
  geom_sf_text(aes(label = iso2.prov.code),
    check_overlap = TRUE,
    fontface = "bold"
  ) +
  coord_sf(crs = 3857) +
  theme_void()
```

`esp_get_prov_siane` *Provinces of Spain - SIANE*

Description

Returns provinces of Spain at a specified scale.

Usage

```
esp_get_prov_siane(
  prov = NULL,
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  resolution = c(3, 6.5, 10),
  moveCAN = TRUE,
  rawcols = FALSE
)
```

Arguments

`prov`	A vector of names and/or codes for provinces or `NULL` to get all the provinces. See **Details**.
`year`	character string or number. Release year, it must be in formats `YYYY` (assuming end of year) or `YYYY-MM-DD`. Historical information starts as of 2005.
`epsg`	character string or number. Projection of the map: 4-digit EPSG code. One of:

- "4258": ETRS89
- "4326": WGS84.
- "3035": ETRS89 / ETRS-LAEA.
- "3857": Pseudo-Mercator.

cache — logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().

update_cache — logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.

cache_dir — character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().

verbose — logical. If TRUE displays informational messages.

resolution — character string or number. Resolution of the geospatial data. One of:

- "10": 1:10 million.
- "6.5": 1:6.5 million.
- "3": 1:3 million.

moveCAN — A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().

rawcols — logical. Setting this to TRUE will add the raw columns of the resulting object as provided by IGN.

Details

When using prov you can use and mix names and NUTS codes (levels 1, 2 or 3), ISO codes (corresponding to level 2 or 3) or "cpro" (see esp_codelist).

Ceuta and Melilla are considered as provinces in this dataset.

When calling a higher level (Autonomous Community or NUTS1), all the provinces of that level will be added.

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional

2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Political borders from CartoBase ANE: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_munic_siane(), esp_get_spain_siane(), esp_siane_bulk_download()

Examples

```
library(ggplot2)

esp_get_ccaa_siane() |>
  dplyr::glimpse() |>
  ggplot() +
  geom_sf()
```

---

esp_get_railway *Railways of Spain - SIANE*

Description

Loads a sf LINESTRING or POINT object representing the nodes and railway lines of Spain.

Usage

```
esp_get_railway(
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  spatialtype = c("line", "point")
)

esp_get_stations(
  year = Sys.Date(),
  epsg = 4258,
  cache = TRUE,
```

```
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

year	Ignored.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
spatialtype	**[Deprecated]** character string. Use esp_get_stations() instead of "point" for stations.

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other man-made infrastructures: esp_get_roads()

Examples

```
provs <- esp_get_prov()
ccaa <- esp_get_ccaa()

# Railways
rails <- esp_get_railway()

# Stations
stations <- esp_get_stations()

# Map

library(ggplot2)

ggplot(provs) +
  geom_sf(fill = "grey99", color = "grey50") +
  geom_sf(data = ccaa, fill = NA) +
  geom_sf(
    data = rails, aes(color = t_ffcc_desc),
    show.legend = FALSE,
    linewidth = 1.5
  ) +
  geom_sf(
    data = stations,
    color = "red", alpha = 0.5
  ) +
  scale_colour_viridis_d() +
  facet_wrap(~t_ffcc_desc) +
  theme_minimal()
```

---

esp_get_roads *Roads of Spain - SIANE*

Description

Object representing the main roads of Spain.

Usage

```
esp_get_roads(
  year = Sys.Date(),
  epsg = "4258",
  cache = TRUE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
```

```
  moveCAN = TRUE
)
```

Arguments

year	Ignored.
epsg	character string or number. Projection of the map: 4-digit EPSG code. One of: • "4258": ETRS89 • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	logical. Whether to do caching. Default is TRUE. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
moveCAN	A logical TRUE/FALSE or a vector of coordinates c(lat, lon). It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in esp_move_can().

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other man-made infrastructures: esp_get_railway()

Examples

```
country <- esp_get_spain()
roads <- esp_get_roads()

library(ggplot2)

ggplot(country) +
  geom_sf(fill = "grey90") +
  geom_sf(data = roads, aes(color = t_ctra_desc), show.legend = "line") +
  scale_color_manual(
    values = c("#003399", "#003399", "#ff0000", "#ffff00")
  ) +
  guides(color = guide_legend(direction = "vertical")) +
  theme_minimal() +
  labs(color = "Road type") +
  theme(legend.position = "bottom")
```

---

esp_get_simpl *Simplified map of provinces and autonomous communities of Spain*

Description

Simplified map with the boundaries of the provinces or autonomous communities of Spain, as provided by the **INE** (Instituto Nacional de Estadistica).

Usage

```
esp_get_simpl_prov(
  prov = NULL,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)

esp_get_simpl_ccaa(
  ccaa = NULL,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE
)
```

Arguments

prov, ccaa	character. A vector of names and/or codes for provinces and autonomous communities or NULL to get all the data. See **Details**.
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.

Details

Results are provided **without CRS**, as provided by source.

You can use and mix names, ISO codes, "codauto"/ "cpro" codes (see esp_codelist) and NUTS codes of different levels.

When using a code corresponding to a higher level (e.g. esp_get_prov("Andalucia")) all the corresponding units of that level are provided (in this case, all the provinces of Andalusia).

Value

A sf object.

Source

INE: PC_Axis files

See Also

esp_get_gridmap.

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_spain(), esp_get_spain_siane(), esp_siane_bulk_download()

Examples

```
prov_simp <- esp_get_simpl_prov()

library(ggplot2)

ggplot(prov_simp) +
  geom_sf(aes(fill = ine.ccaa.name)) +
  labs(fill = "CCAA")

# Provs of Single CCAA

and_simple <- esp_get_simpl_prov("Andalucia")
```

```
ggplot(and_simple) +
  geom_sf()

# CCAAs

ccaa_simp <- esp_get_simpl_ccaa()

ggplot(ccaa_simp) +
  geom_sf() +
  geom_sf_text(aes(label = ine.ccaa.name), check_overlap = TRUE)
```

`esp_get_spain` *Boundaries of Spain - GISCO*

Description

Returns the boundaries of Spain as a single `sf` `POLYGON` at a specified scale.

Usage

```
esp_get_spain(moveCAN = TRUE, ...)
```

Arguments

`moveCAN`	A logical `TRUE/FALSE` or a vector of coordinates `c(lat, lon)`. It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in `esp_move_can()`.
`...`	Arguments passed on to `esp_get_nuts` `year` year character string or number. Release year of the file. See `giscoR::gisco_get_nuts()` for valid values. `epsg` character string or number. Projection of the map: 4-digit EPSG code. One of: • `"4258"`: ETRS89 • `"4326"`: WGS84. • `"3035"`: ETRS89 / ETRS-LAEA. • `"3857"`: Pseudo-Mercator. `cache` logical. Whether to do caching. Default is `TRUE`. See **Caching strategies** section in `esp_set_cache_dir()`. `update_cache` logical. Should the cached file be refreshed? Default is `FALSE`. When set to `TRUE`, it will force a new download. `cache_dir` character string. A path to a cache directory. See **Caching strategies** section in `esp_set_cache_dir()`. `ext` character. Extension of the file (default `"gpkg"`). See `giscoR::gisco_get_nuts()`. `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.

Details

Dataset derived from NUTS data provided by GISCO. Check `esp_get_nuts()` for details.

Value

A `sf` `POLYGON` 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

Other datasets representing political borders: `esp_get_capimun()`, `esp_get_ccaa()`, `esp_get_ccaa_siane()`, `esp_get_comarca()`, `esp_get_countries_siane()`, `esp_get_gridmap`, `esp_get_munic()`, `esp_get_munic_siane()`, `esp_get_nuts()`, `esp_get_prov()`, `esp_get_prov_siane()`, `esp_get_simpl`, `esp_get_spain_siane()`, `esp_siane_bulk_download()`

Other nuts: `esp_get_nuts()`

Datasets provided by GISCO: `esp_get_ccaa()`, `esp_get_munic()`, `esp_get_nuts()`, `esp_get_prov()`

Examples

```
original_can <- esp_get_spain(moveCAN = FALSE)

# One row only
original_can


library(ggplot2)

ggplot(original_can) +
  geom_sf(fill = "grey70")

# Less resolution
```

```
moved_can <- esp_get_spain(moveCAN = TRUE, resolution = 20)

ggplot(moved_can) +
  geom_sf(fill = "grey70")
```

`esp_get_spain_siane` *Boundaries of Spain - SIANE*

Description

Returns the boundaries of Spain as a single `sf` `POLYGON`.

Usage

```
esp_get_spain_siane(moveCAN = TRUE, ...)
```

Arguments

`moveCAN`	A logical `TRUE/FALSE` or a vector of coordinates `c(lat, lon)`. It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates. See **Displacing the Canary Islands** in `esp_move_can()`.
`...`	Arguments passed on to `esp_get_ccaa_siane` `year` character string or number. Release year, it must be in formats `YYYY` (assuming end of year) or `YYYY-MM-DD`. Historical information starts as of 2005. `resolution` character string or number. Resolution of the geospatial data. One of: • "10": 1:10 million. • "6.5": 1:6.5 million. • "3": 1:3 million. `epsg` character string or number. Projection of the map: 4-digit EPSG code. One of: • `"4258"`: ETRS89 • `"4326"`: WGS84. • `"3035"`: ETRS89 / ETRS-LAEA. • `"3857"`: Pseudo-Mercator. `cache` logical. Whether to do caching. Default is `TRUE`. See **Caching strategies** section in `esp_set_cache_dir()`. `update_cache` logical. Should the cached file be refreshed? Default is `FALSE`. When set to `TRUE`, it will force a new download. `cache_dir` character string. A path to a cache directory. See **Caching strategies** section in `esp_set_cache_dir()`. `verbose` logical. If `TRUE` displays informational messages.

Value

A sf object.

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_siane_bulk_download()

Political borders from CartoBase ANE: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_munic_siane(), esp_get_prov_siane(), esp_siane_bulk_download()

Examples

```
original_can <- esp_get_spain_siane(moveCAN = FALSE)

# One row only
original_can


library(ggplot2)

ggplot(original_can) +
  geom_sf(fill = "grey70")

# Less resolution
moved_can <- esp_get_spain_siane(moveCAN = TRUE, resolution = 10)

ggplot(moved_can) +
  geom_sf(fill = "grey70")
```

esp_get_tiles *Get static tiles from public administrations of Spain*

Description

Get static map tiles based on a spatial object. Maps can be fetched from various open map servers.

This function is an implementation of the javascript plugin leaflet-providersESP **v1.3.3**.

`esp_get_attributions` gets the attribution of a tile provider defined as the `type` argument.

Usage

```
esp_get_tiles(
  x,
  type = "IDErioja",
  zoom = NULL,
  zoommin = 0,
  crop = TRUE,
  res = 512,
  bbox_expand = 0.05,
  transparent = TRUE,
  mask = FALSE,
  update_cache = FALSE,
  cache_dir = NULL,
  verbose = FALSE,
  options = NULL
)

esp_get_attributions(type, options = NULL)
```

Arguments

`x`	An `sf` or `sfc` object.
`type`	This argument can be either: • The name of one of the pre-defined providers (see esp_tiles_providers). • A list with two named elements `id` and `q` with your own arguments. See `esp_make_provider()` and examples.
`zoom`	character string or number. Only valid for WMTS providers, zoom level to be downloaded. If `NULL`, it is determined automatically. If set, it overrides `zoommin`. If a single `sf POINT` and `zoom = NULL`, the function sets a zoom level of 18. See **Details**.
`zoommin`	character string or number. Delta on default `zoom`. The default value is designed to download fewer tiles than you probably want. Use `1` or `2` to increase the resolution.
`crop`	logical. If `TRUE`, the results will be cropped to the specified `x` extent. If `x` is an `sf` object with one `POINT`, `crop` is set to `FALSE`. See `terra::crop()`.

res	character string or number. Only valid for WMS providers. Resolution (in pixels) of the final tile.
bbox_expand	number. Expansion percentage of the bounding box of x.
transparent	logical. Provides transparent background, if supported.
mask	logical. TRUE if the result should be masked to x. See terra::mask().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
verbose	logical. If TRUE displays informational messages.
options	A named list containing additional options to pass to the query.

Details

Zoom levels are described on the OpenStreetMap wiki:

zoom	area to represent
0	whole world
3	large country
5	state
8	county
10	metropolitan area
11	city
13	village or suburb
16	streets
18	some buildings, trees

For a complete list of providers see esp_tiles_providers.

Most WMS/WMTS providers provide tiles on "EPSG:3857". In case that the tile looks deformed, try projecting first x:

```
x <- sf::st_transform(x, 3857)
```

Value

A SpatRaster with 3 (RGB) or 4 (RGBA) layers, depending on the provider. See terra::rast().

Source

https://dieghernan.github.io/leaflet-providersESP/ leaflet plugin, **v1.3.3**.

See Also

terra::rast(), esp_tiles_providers, maptiles::get_tiles()

giscoR::gisco_attributions()

Other functions for creating maps with images: addProviderEspTiles(), esp_make_provider()

Examples

```
## Not run:

# This example downloads data to your local computer!

segovia <- esp_get_prov_siane("segovia", epsg = 3857)
tile <- esp_get_tiles(segovia, "IGNBase.Todo")

library(ggplot2)
library(tidyterra)

ggplot(segovia) +
  geom_spatraster_rgb(data = tile, maxcell = Inf) +
  geom_sf(fill = NA, linewidth = 1)

# Another provider

tile2 <- esp_get_tiles(segovia, type = "MDT")

ggplot(segovia) +
  geom_spatraster_rgb(data = tile2, maxcell = Inf) +
  geom_sf(fill = NA, linewidth = 1, color = "red")

# A custom WMS provided

custom_wms <- esp_make_provider(
  id = "an_id_for_caching",
  q = "https://idecyl.jcyl.es/geoserver/ge/wms?",
  service = "WMS",
  version = "1.3.0",
  format = "image/png",
  layers = "geolog_cyl_litologia"
)

custom_wms_tile <- esp_get_tiles(segovia, custom_wms)

autoplot(custom_wms_tile, maxcell = Inf) +
  geom_sf(data = segovia, fill = NA, color = "red", linewidth = 1)

# A custom WMTS provider

custom_wmts <- esp_make_provider(
  id = "cyl_wmts",
  q = "https://www.ign.es/wmts/pnoa-ma?",
  service = "WMTS",
  layer = "OI.OrthoimageCoverage"
)

custom_wmts_tile <- esp_get_tiles(segovia, custom_wmts)

autoplot(custom_wmts_tile, maxcell = Inf) +
  geom_sf(data = segovia, fill = NA, color = "white", linewidth = 1)
```

```
# Example from https://leaflet-extras.github.io/leaflet-providers/preview/
cartodb_dark <- list(
  id = "CartoDB_DarkMatter",
  q = "https://a.basemaps.cartocdn.com/dark_all/{z}/{x}/{y}{r}.png"
)
cartodb_dark_tile <- esp_get_tiles(segovia, cartodb_dark,
  zoommin = 1,
  update_cache = TRUE
)

autoplot(cartodb_dark_tile, maxcell = Inf) +
  geom_sf(data = segovia, fill = NA, color = "white", linewidth = 1)

## End(Not run)
```

`esp_make_provider` *Create a custom tile provider*

Description

Helper function for `esp_get_tiles()` that helps to create a custom provider.

Usage

```
esp_make_provider(id, q, service, layers, ...)
```

Arguments

`id`	An identifier for the user. It will be used for identifying cached tiles.
`q`	The base url of the service.
`service`	The type of tile service, either `"WMS"` or `"WMTS"`.
`layers`	The name of the layer to retrieve.
`...`	Additional arguments to the query, like `version`, `format`, `crs/srs`, `style`, etc. depending on the capabilities of the service.

Details

This function is meant to work with services provided as of the OGC Standard.

Note that:

- **mapSpain** will not provide advice on the argument `q` to be provided.
- Currently, on **WMTS** requests only services with `tilematrixset=GoogleMapsCompatible` are supported.

Value

A named list with two elements `id` and `q`.

See Also

`esp_get_tiles()`.

For a list of potential providers from Spain check IDEE Directory.

Other functions for creating maps with images: `addProviderEspTiles()`, `esp_get_tiles()`

Examples

```
## Not run:
custom_wms <- esp_make_provider(
  id = "an_id_for_caching",
  q = "https://idecyl.jcyl.es/geoserver/ge/wms?",
  service = "WMS",
  version = "1.3.0",
  layers = "geolog_cyl_litologia"
)

x <- esp_get_ccaa("Castilla y León", epsg = 3857)

mytile <- esp_get_tiles(x, type = custom_wms)

tidyterra::autoplot(mytile) +
  ggplot2::geom_sf(data = x, fill = NA)

## End(Not run)
```

---

esp_move_can *Displace a `sf` object located in the Canary Islands*

Description

Helper function to displace an external `sf` object (potentially representing a location in the Canary Islands) to align it with the objects provided by `sf` with the option `moveCAN = TRUE`.

Usage

```
esp_move_can(x, moveCAN = TRUE)
```

Arguments

`x`	An `sf` object. It can be an `sf` or `sfc` object.
`moveCAN`	A logical `TRUE/FALSE` or a vector of coordinates `c(lat, lon)`. It places the Canary Islands close to Spain's mainland. Initial position can be adjusted using the vector of coordinates.

Details

This is a helper function that intends to ease the representation of objects located in the Canary Islands that have been obtained from other sources rather than the package **mapSpain**.

Value

A sf object of the same class and same CRS as x but displaced accordingly.

Displacing the Canary Islands

While moveCAN is useful for visualization, it will alter the actual geographic position of the Canary Islands. When using the output for spatial analysis or using tiles (e.g. with esp_get_tiles() or addProviderEspTiles()) this option should be set to FALSE in order to get the actual coordinates, instead of the modified ones.

See Also

Other helpers for the Canary Islands: esp_get_can_box()

Examples

```
library(sf)
teide <- data.frame(
  name = "Teide Peak",
  lon = -16.6437593,
  lat = 28.2722883
)

teide_sf <- st_as_sf(teide, coords = c("lon", "lat"), crs = 4326)

# If we use any mapSpain produced object with moveCAN = TRUE...

esp <- esp_get_spain(moveCAN = c(13, 0))

library(ggplot2)


ggplot(esp) +
  geom_sf() +
  geom_sf(data = teide_sf, color = "red") +
  labs(
    title = "Canary Islands displaced",
    subtitle = "But not the external Teide object"
  )


# But we can

teide_sf_disp <- esp_move_can(teide_sf, moveCAN = c(13, 0))

ggplot(esp) +
```

```
  geom_sf() +
  geom_sf(data = teide_sf_disp, color = "red") +
  labs(
    title = "Canary Islands displaced",
    subtitle = "And also the external Teide object"
  )
```

---

esp_nuts_2024 *NUTS 2024 for Spain* sf *object*

Description

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

Format

An sf object with MULTIPOLYGON geometries at 1:1 million resolution in EPSG:4258 projection, containing 86 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 more than 50% of the regional population lives in these mountain areas.
- 4: Non-mountain region or 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 region (on the coast).
- 2: Coastal region (less than 50% of the population living within 50 km of the coastline).
- 3: Non-coastal region.
- 0: No classification provided.

Source

NUTS_RG_01M_2024_4326.gpkg file.

See Also

esp_get_nuts()

Other datasets: esp_codelist, esp_tiles_providers, pobmun25

Examples

```
data("esp_nuts_2024")
head(esp_nuts_2024)
```

---

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

Description

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

Usage

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

esp_detect_cache_dir()
```

Arguments

cache_dir	A path to a cache directory. When NULL, the function stores cached files in a temporary directory (see base::tempdir()).
overwrite	logical. If TRUE, overwrites an existing MAPSPAIN_CACHE_DIR on your local machine.
install	logical. If TRUE, installs the key on your local machine for use in future sessions. Defaults to FALSE. If cache_dir is FALSE, this argument is automatically set to FALSE.
verbose	logical. If TRUE displays informational messages.

Details

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

Value

esp_set_cache_dir() returns an (invisible) character string with the path to your cache_dir. It is primarily called for its side effect.

esp_detect_cache_dir() returns the path to the cache_dir used in the current session.

Caching strategies

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

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

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

If you experience download problems, try downloading the file by another method and save it to your cache_dir. Use verbose = TRUE to debug the API query and esp_detect_cache_dir() to identify your cache path.

Note

In **mapSpain** >= 1.0.0, the configuration file location has moved from rappdirs::user_config_dir("mapSpain", "R") to tools::R_user_dir("mapSpain", "config"). A migration function automatically transfers previous configuration files from the old to the new location. A message appears once during this migration.

See Also

tools::R_user_dir()

Other cache utilities: esp_clear_cache()

Examples

```
# Don't run this! It would modify your current state
## Not run:
my_cache <- esp_detect_cache_dir()

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

esp_detect_cache_dir()

# Restore initial cache
esp_set_cache_dir(my_cache)
identical(my_cache, esp_detect_cache_dir())

## End(Not run)


esp_detect_cache_dir()
```

---

esp_siane_bulk_download

SIANE bulk download

Description

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

Usage

```
esp_siane_bulk_download(
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE
)
```

Arguments

cache_dir	character string. A path to a cache directory. See **Caching strategies** section in esp_set_cache_dir().
update_cache	logical. Should the cached file be refreshed? Default is FALSE. When set to TRUE, it will force a new download.
verbose	logical. If TRUE displays informational messages.

Value

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

Source

CartoBase ANE provided by Instituto Geografico Nacional (IGN), http://www.ign.es/web/ign/portal. Years available are 2005 up to today.

Copyright: https://centrodedescargas.cnig.es/CentroDescargas/cartobase-ane

It's necessary to always acknowledge authorship using the following formulas:

1. When the original digital product is not modified or altered, it can be expressed in one of the following ways:
   - CartoBase ANE 2006-2024 CC-BY 4.0 ign.es
   - CartoBase ANE 2006-2024 CC-BY 4.0 Instituto Geográfico Nacional
2. When a new product is generated:

- Obra derivada de CartoBase ANE 2006-2024 CC-BY 4.0 ign.es

Data distributed via a custom CDN, see https://github.com/rOpenSpain/mapSpain/tree/sianedata.

See Also

Other datasets representing political borders: esp_get_capimun(), esp_get_ccaa(), esp_get_ccaa_siane(), esp_get_comarca(), esp_get_countries_siane(), esp_get_gridmap, esp_get_munic(), esp_get_munic_siane(), esp_get_nuts(), esp_get_prov(), esp_get_prov_siane(), esp_get_simpl, esp_get_spain(), esp_get_spain_siane()

Political borders from CartoBase ANE: esp_get_capimun(), esp_get_ccaa_siane(), esp_get_countries_siane(), esp_get_munic_siane(), esp_get_prov_siane(), esp_get_spain_siane()

Examples

```
tmp <- file.path(tempdir(), "testexample")
dest_files <- esp_siane_bulk_download(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 <- esp_get_munic_siane(cache_dir = tmp, verbose = TRUE)

# Message shows that file is already cached ;)

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

`esp_tiles_providers` *Public WMS and WMTS providers for Spain*

Description

A named `list` of length 102 containing URL information for different public WMS and WMTS tile providers of Spain.

Implementation of the JavaScript plugin leaflet-providersESP **v1.3.3**.

Format

A named `list` of available providers with the following structure:

- Each list item is named with the provider alias.
- Each element contains two nested named lists:
  - `static` with the parameters required to obtain static tiles, plus an additional item named `attribution`.
  - `leaflet` with additional parameters to pass to `addProviderEspTiles()`.

Details

Providers available to be passed to `type` on `esp_get_tiles()` are:

- `"IDErioja"`
- `"IDErioja.Base"`
- `"IDErioja.Relieve"`
- `"IDErioja.Claro"`
- `"IDErioja.Oscuro"`
- `"IGNBase"`
- `"IGNBase.Todo"`
- `"IGNBase.Gris"`
- `"IGNBase.TodoNoFondo"`
- `"IGNBase.Orto"`
- `"MDT"`
- `"MDT.Elevaciones"`
- `"MDT.Relieve"`
- `"MDT.CurvasNivel"`
- `"MDT.SpotElevation"`
- `"PNOA"`
- `"PNOA.MaximaActualidad"`
- `"PNOA.Mosaico"`

- "OcupacionSuelo"
- "OcupacionSuelo.Ocupacion"
- "OcupacionSuelo.Usos"
- "LiDAR"
- "MTN"
- "Geofisica"
- "Geofisica.Terremotos10dias"
- "Geofisica.Terremotos30dias"
- "Geofisica.Terremotos365dias"
- "Geofisica.ObservedEvents"
- "Geofisica.HazardArea"
- "VigilanciaVolcanica"
- "VigilanciaVolcanica.ErupcionesHistoricas"
- "CaminoDeSantiago"
- "CaminoDeSantiago.CaminoFrances"
- "CaminoDeSantiago.CaminosFrancia"
- "CaminoDeSantiago.CaminosGalicia"
- "CaminoDeSantiago.CaminosDelNorte"
- "CaminoDeSantiago.CaminosAndaluces"
- "CaminoDeSantiago.CaminosCentro"
- "CaminoDeSantiago.CaminosEste"
- "CaminoDeSantiago.CaminosCatalanes"
- "CaminoDeSantiago.CaminosSureste"
- "CaminoDeSantiago.CaminosInsulares"
- "CaminoDeSantiago.CaminosPortugueses"
- "Catastro"
- "Catastro.Catastro"
- "Catastro.Parcela"
- "Catastro.CadastralParcel"
- "Catastro.CadastralZoning"
- "Catastro.Address"
- "Catastro.Building"
- "Catastro.BuildingPart"
- "Catastro.AdministrativeBoundary"
- "Catastro.AdministrativeUnit"
- "RedTransporte"
- "RedTransporte.Carreteras"

- "RedTransporte.Ferroviario"
- "RedTransporte.Aerodromo"
- "RedTransporte.AreaServicio"
- "RedTransporte.EstacionesFerroviario"
- "RedTransporte.Puertos"
- "Cartociudad"
- "Cartociudad.CodigosPostales"
- "Cartociudad.Direcciones"
- "NombresGeograficos"
- "UnidadesAdm"
- "UnidadesAdm.Limites"
- "UnidadesAdm.Unidades"
- "Hidrografia"
- "Hidrografia.MasaAgua"
- "Hidrografia.Cuencas"
- "Hidrografia.Subcuencas"
- "Hidrografia.POI"
- "Hidrografia.ManMade"
- "Hidrografia.LineaCosta"
- "Hidrografia.Rios"
- "Hidrografia.Humedales"
- "Militar"
- "Militar.CEGET1M"
- "Militar.CEGETM7814"
- "Militar.CEGETM7815"
- "Militar.CEGETM682"
- "Militar.CECAF1M"
- "ADIF"
- "ADIF.Vias"
- "ADIF.Nodos"
- "ADIF.Estaciones"
- "LimitesMaritimos"
- "LimitesMaritimos.LimitesMaritimos"
- "LimitesMaritimos.LineasBase"
- "Copernicus"
- "Copernicus.Forest"
- "Copernicus.ForestLeaf"

- "Copernicus.WaterWet"
- "Copernicus.SoilSeal"
- "Copernicus.GrassLand"
- "Copernicus.RiparianGreen"
- "Copernicus.RiparianLandCover"
- "Copernicus.Natura2k"
- "Copernicus.UrbanAtlas"
- "ParquesNaturales"
- "ParquesNaturales.Limites"
- "ParquesNaturales.ZonasPerifericas"

Source

https://dieghernan.github.io/leaflet-providersESP/ leaflet plugin, **v1.3.3**.

See Also

Other datasets: esp_codelist, esp_nuts_2024, pobmun25

Examples

```
data("esp_tiles_providers")
# Get a single provider

single <- esp_tiles_providers[["IGNBase.Todo"]]
single$static

single$leaflet
```

---

pobmun25 *Population of Spain by municipality (2025)*

Description

Population of Spain by municipality (2025)

Format

A tibble object with 8,132 rows containing population data by municipality in Spain for 2025.

cpro INE code of the province.
provincia Name of the province.
cmun INE code of the municipality.
name Name of the municipality.
pob25 Total population (2025)
men Male population (2025)
women Female population (2025)

Source

INE: Instituto Nacional de Estadistica https://www.ine.es/dyngs/INEbase/categoria.htm?c=Estadistica_P&cid=1254734710990.

See Also

Other datasets: esp_codelist, esp_nuts_2024, esp_tiles_providers

Examples

```
data("pobmun25")
```

Index

∗ **cache utilities**
  esp_clear_cache, 4
  esp_set_cache_dir, 69
∗ **can_helpers**
  esp_get_can_box, 9
  esp_move_can, 66
∗ **datasets**
  esp_codelist, 5
  esp_nuts_2024, 68
  esp_tiles_providers, 73
  pobmun25, 76
∗ **dictionary**
  esp_dict_region_code, 7
∗ **gisco**
  esp_get_ccaa, 14
  esp_get_munic, 38
  esp_get_nuts, 44
  esp_get_prov, 47
  esp_get_spain, 58
∗ **grids**
  esp_get_grid_BDN, 25
  esp_get_grid_ESDAC, 27
  esp_get_grid_MTN, 29
∗ **images**
  addProviderEspTiles, 3
  esp_get_tiles, 62
  esp_make_provider, 65
∗ **infrastructure**
  esp_get_railway, 52
  esp_get_roads, 54
∗ **municipalities**
  esp_get_capimun, 11
  esp_get_munic, 38
  esp_get_munic_siane, 41
∗ **natural**
  esp_get_hydrobasin, 31
  esp_get_hypsobath, 33
  esp_get_landwater, 35
∗ **nuts**
  esp_get_nuts, 44
  esp_get_spain, 58
∗ **political**
  esp_get_capimun, 11
  esp_get_ccaa, 14
  esp_get_ccaa_siane, 17
  esp_get_comarca, 19
  esp_get_countries_siane, 22
  esp_get_gridmap, 23
  esp_get_munic, 38
  esp_get_munic_siane, 41
  esp_get_nuts, 44
  esp_get_prov, 47
  esp_get_prov_siane, 50
  esp_get_simpl, 56
  esp_get_spain, 58
  esp_get_spain_siane, 60
  esp_siane_bulk_download, 71
∗ **siane**
  esp_get_capimun, 11
  esp_get_ccaa_siane, 17
  esp_get_countries_siane, 22
  esp_get_munic_siane, 41
  esp_get_prov_siane, 50
  esp_get_spain_siane, 60
  esp_siane_bulk_download, 71

addLayersControl(), *3*
addProviderEspTiles, 3, *63*, *66*
addProviderEspTiles(), *67*, *73*

base::tempdir(), *70*

cache_dir, *71*
clearGroup(), *3*
cli::cli_alert_warning(), *8*
countrycode::countrycode(), *22*

esp_clear_cache, 4, *71*
esp_codelist, 5, *12*, *15*, *18*, *20*, *24*, *39*, *42*, *48*, *51*, *57*, *69*, *76*, *77*

esp_detect_cache_dir
(esp_set_cache_dir), 69
esp_detect_cache_dir(), 69, 70
esp_dict_region_code, 7
esp_dict_region_code(), 12, 39, 42, 45, 46
esp_dict_translate
(esp_dict_region_code), 7
esp_get_attributions (esp_get_tiles), 62
esp_get_can_box, 9, 67
esp_get_can_provinces
(esp_get_can_box), 9
esp_get_capimun, 11, 15, 18, 21, 23, 24, 40, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_ccaa, 13, 14, 18, 21, 23, 24, 40, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_ccaa(), 26, 27
esp_get_ccaa_siane, 13, 15, 17, 21, 23, 24, 40, 43, 46, 49, 52, 57, 59–61, 72
esp_get_comarca, 13, 15, 18, 19, 23, 24, 40, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_countries_siane, 13, 15, 18, 21, 22, 24, 40, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_country (esp_get_spain), 58
esp_get_grid_BDN, 25, 28, 30
esp_get_grid_BDN(), 25
esp_get_grid_BDN_ccaa
(esp_get_grid_BDN), 25
esp_get_grid_BDN_ccaa(), 25
esp_get_grid_ccaa (esp_get_gridmap), 23
esp_get_grid_ESDAC, 27, 27, 30
esp_get_grid_MTN, 27, 28, 29
esp_get_grid_prov (esp_get_gridmap), 23
esp_get_gridmap, 13, 15, 18, 21, 23, 23, 40, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_hex_ccaa (esp_get_gridmap), 23
esp_get_hex_prov (esp_get_gridmap), 23
esp_get_hydrobasin, 31, 34, 37
esp_get_hypsobath, 32, 33, 37
esp_get_landwater, 32, 34, 35
esp_get_munic, 13, 15, 18, 21, 23, 24, 38, 43, 46, 49, 52, 57, 59, 61, 72
esp_get_munic_siane, 13, 15, 18, 21, 23, 24, 40, 41, 46, 49, 52, 57, 59, 61, 72
esp_get_munic_siane(), 11
esp_get_nuts, 13–15, 18, 21, 23, 24, 40, 43, 44, 48, 49, 52, 57–59, 61, 72
esp_get_nuts(), 59, 69
esp_get_prov, 13, 15, 18, 21, 23, 24, 40, 43, 46, 47, 52, 57, 59, 61, 72
esp_get_prov_siane, 13, 15, 18, 21, 23, 24, 40, 43, 46, 49, 50, 57, 59, 61, 72
esp_get_railway, 52, 55
esp_get_rivers (esp_get_landwater), 35
esp_get_roads, 53, 54
esp_get_simpl, 13, 15, 18, 21, 23, 24, 40, 43, 46, 49, 52, 56, 59, 61, 72
esp_get_simpl_ccaa (esp_get_simpl), 56
esp_get_simpl_prov (esp_get_simpl), 56
esp_get_spain, 13, 15, 18, 21, 23, 24, 40, 43, 46, 49, 52, 57, 58, 61, 72
esp_get_spain_siane, 13, 15, 18, 21, 23, 24, 40, 43, 46, 49, 52, 57, 59, 60, 72
esp_get_stations (esp_get_railway), 52
esp_get_stations(), 53
esp_get_tiles, 4, 62, 66
esp_get_tiles(), 65–67, 73
esp_get_wetlands (esp_get_landwater), 35
esp_get_wetlands(), 36
esp_getTiles (esp_get_tiles), 62
esp_make_provider, 4, 63, 65
esp_make_provider(), 62
esp_move_can, 10, 66
esp_move_can(), 9, 10, 12, 14, 18, 20, 37, 39, 42, 45, 48, 51, 55, 58, 60
esp_nuts_2024, 7, 68, 76, 77
esp_set_cache_dir, 5, 69
esp_set_cache_dir(), 12, 15, 17, 20, 22, 26, 28, 29, 31, 33, 36, 39, 42, 45, 48, 51, 53, 55, 57, 58, 60, 63, 71
esp_siane_bulk_download, 13, 15, 18, 21, 23, 24, 40, 43, 46, 49, 52, 57, 59, 61, 71
esp_tiles_providers, 3, 4, 7, 62, 63, 69, 73, 77

gisco_attributions(), 15, 21, 39, 46, 49, 59
giscoR::gisco_attributions(), 63
giscoR::gisco_get_communes(), 39, 40
giscoR::gisco_get_countries(), 23
giscoR::gisco_get_lau(), 39, 40
giscoR::gisco_get_nuts(), 14, 15, 39, 45, 46, 48, 58

leaflet::addTiles(), 4
leaflet::addWMSTiles(), 4
leaflet::leaflet(), 4

list, *73*

maptiles::get_tiles(), *63*

pobmun25, *7*, *69*, *76*, 76

regex, *12*, *19*, *37*, *39*, *42*

sf, *10–12*, *15*, *18*, *20*, *22–30*, *32*, *34*, *37*, *39*, *42*, *46*, *48*, *51–53*, *55*, *57–62*, *66–68*
sf::st_transform(), *24*
sfc, *62*

tempdir(), *70*
terra::crop(), *62*
terra::mask(), *63*
terra::rast(), *63*
tibble, *5*, *6*, *76*
tools::R_user_dir(), *5*, *71*