

Package: mapSpain (via r-universe)

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Type Package

Title Administrative Boundaries and Static Map Tiles for Spain

Version 1.2.1.9000

Description Administrative boundaries of Spain at several levels (Autonomous Communities and Cities, provinces, municipalities and 'NUTS'), based on 'GISCO' from 'Eurostat' <<https://ec.europa.eu/eurostat/web/gisco>> and 'CartoBase ANE' from 'Instituto Geográfico Nacional' <<https://www.ign.es/>>. Includes tools to download and process static map tiles and a 'leaflet' plugin for Spanish public administration tile providers.

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

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

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addProviderEspTiles	<i>Add a tile layer from Spanish public administrations to a R leaflet map</i>
---------------------	--

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 the preview and the layer guide .
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/>, a plugin for **leaflet**, v1.5.0.

See Also

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

Static map tiles and imagery: `esp_get_attributions()`, `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](https://CRAN.R-project.org/package=mapSpain)**mapSpain**
cache directory

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	A logical value indicating whether to display informational messages.

Details

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

Value

Invisible NULL. This function is called for its side effects.

See Also

`tools::R_user_dir()`.

Cache management utilities: `esp_set_cache_dir()`

Examples

```
# Do not 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 the 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

Spanish subdivision codes and names

Description

A [tibble](#) object used internally to translate codes and names for different Spanish subdivisions. This tibble provides a hierarchical representation of Spain's subdivisions, including NUTS 1, Autonomous Communities and Cities (equivalent to NUTS 2), provinces and province-level NUTS 3 units. See the note below for coverage details.

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 or City.

iso2.ccaa.code ISO2 code of the Autonomous Community or City.

nuts2.code NUTS 2 code.

ine.ccaa.name INE name of the Autonomous Community or City.

iso2.ccaa.name.es ISO2 name of the Autonomous Community or City (Spanish).

iso2.ccaa.name.ca ISO2 name of the Autonomous Community or City (Catalan).

iso2.ccaa.name.gl ISO2 name of the Autonomous Community or City (Galician).

iso2.ccaa.name.eu ISO2 name of the Autonomous Community or City (Basque).

nuts2.name NUTS 2 name.

cldr.ccaa.name.en CLDR name of the Autonomous Community or City (English).

cldr.ccaa.name.es CLDR name of the Autonomous Community or City (Spanish).

cldr.ccaa.name.ca CLDR name of the Autonomous Community or City (Catalan).

cldr.ccaa.name.ga CLDR name of the Autonomous Community or City (Galician).

cldr.ccaa.name.eu CLDR name of the Autonomous Community or City (Basque).

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

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

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

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

ccaa.shortname.eu Short (common) name of the subdivision (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 NUTS 2 aligns with the first subdivision level of Spain (Autonomous Communities and Cities), NUTS 3 does not correspond to the second subdivision level of Spain (provinces). NUTS 3 provides dedicated codes for major islands, whereas provinces do not.

Ceuta and Melilla have special status as Autonomous Cities but are represented at the Autonomous Communities and Cities level with a single province, like Madrid, Asturias or Murcia, in this database.

Source

- **INE:** Instituto Nacional de Estadística, <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

[esp_dict_region_code\(\)](#).

Included package 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 among coding schemes such as NUTS, ISO2 and province codes. The function can also return 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 that 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 are "es" (Spanish), "en" (English), "ca" (Catalan), "ga" (Galician) and "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

This 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 or City 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_warn()`.

`esp_dict_translate()` translates a vector of names from one language to another. If `all = FALSE`, it returns a character vector with the translated name for each element of `sourcevar`. If `all = TRUE`, it returns a named **list** where each element contains all available translations for the corresponding input value.

See Also

- [countrycode::countrycode\(\)](#) converts country codes and names.
- [esp_codelist](#) documents the supported Spanish subdivision codes.

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 other 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", "Balears")

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_attributions *Get the attribution for a tile provider*

Description

esp_get_attributions() returns the attribution for a tile provider defined by the type argument.

Usage

```
esp_get_attributions(type, options = NULL)
```

Arguments

type	This argument can be one of: <ul style="list-style-type: none">• 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.
options	A named list containing additional options to pass to the query.

Value

A character string with the provider attribution, or NULL if no attribution is available.

See Also

- [esp_get_tiles\(\)](#) downloads static map tiles.
- [giscoR::gisco_attributions\(\)](#) provides GISCO attribution text.

Static map tiles and imagery: [addProviderEspTiles\(\)](#), [esp_get_tiles\(\)](#), [esp_make_provider\(\)](#)

Examples

```
esp_get_attributions("IGNBase.TODO")
```

esp_get_can_box	<i>Canary Islands inset box and outline</i>
-----------------	---

Description

Create an [sf](#) POLYGON or LINESTRING that can 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 <code>c(lat, lon)</code> . 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 <code>esp_move_can()</code> .
epsg	Character string or number. Projection of the map: 4-digit EPSG code . One of: <ul style="list-style-type: none"> • "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_1.shp`).

See Also

Helpers for Canary Islands insets and displacement: `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

Municipal seats of government from SIANE

Description

This function returns an [sf](#) POINT object that locates the seat of government 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 use format 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display 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. Use NULL to return all municipalities.
moveCAN	A logical TRUE/FALSE or a vector of coordinates <code>c(lat, lon)</code> . 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. If TRUE, retains 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, such as a province, Autonomous Community, Autonomous City or NUTS 1 region, all municipalities of that level are added.

Value

An [sf](#) POINT object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

CartoBase ANE (Atlas Nacional de España) provided by Instituto Geográfico Nacional (IGN), <https://www.ign.es/web/ign/portal>. Data are available from 2005 to the present.

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

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

CartoBase ANE boundaries and utilities: `esp_get_ccaa_siane()`, `esp_get_countries_siane()`, `esp_get_munic_siane()`, `esp_get_prov_siane()`, `esp_get_spain_siane()`, `esp_siane_bulk_download()`

Municipality-level datasets: `esp_get_munic()`, `esp_get_munic_siane()`

Examples

```
# Compare municipality centroids against municipal seats of government.

# Get the municipality boundary.
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 the 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 a 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 and Cities of Spain from GISCO

Description

Return **Autonomous Communities and Cities of Spain** at a specified scale.

Usage

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

Arguments

ccaa	Character string. A vector of names, codes or both for Autonomous Communities and Cities, or NULL to get all Autonomous Communities and Cities. 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .

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

- "RG": regions, returned as a MULTIPOLYGON/POLYGON object.
- "LB": labels, returned as a POINT object.

ext Character. Extension of the file (default "gpkg"). See [giscoR::gisco_get_nuts\(\)](#).

verbose A logical value indicating whether to display informational messages.

resolution A character string or numeric value with the geospatial data resolution. 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 included at the Autonomous Communities and Cities level in this function.

When calling a NUTS 1 level, all Autonomous Communities and Cities of that level are added.

Value

An [sf](#) object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

GISCO NUTS distribution API: <https://gisco-services.ec.europa.eu/distribution/v2/nuts/>.

See Also

[esp_get_ccaa_siane\(\)](#).

GISCO boundary data: [esp_get_munic\(\)](#), [esp_get_nuts\(\)](#), [esp_get_prov\(\)](#), [esp_get_spain\(\)](#)

Examples

```
ccaa <- esp_get_ccaa()
```

```
library(ggplot2)
```

```

ggplot(ccaa) +
  geom_sf()

# Random Autonomous Communities and Cities.
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 Autonomous Communities and Cities of a NUTS 1 region plus one.
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 # Use the same resolution.

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"))

```

Description

Return **Autonomous Communities and Cities 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, codes or both for Autonomous Communities and Cities, or NULL to get all Autonomous Communities and Cities. See Details .
year	Character string or number. Release year. It must use format 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	Character string or number. Resolution of the geospatial data. One of: <ul style="list-style-type: none"> • "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. If TRUE, retains 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 included at the Autonomous Communities and Cities level in this function.

When calling a NUTS 1 level, all Autonomous Communities and Cities of that level are added.

Value

An [sf](#) object.

Caching

Functions that download data store files in cache_dir. When cache_dir is NULL, they use the active package cache, which defaults to a temporary directory. Set update_cache = TRUE to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

[esp_get_ccaa\(\)](#).

CartoBase ANE boundaries and utilities: [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()
utils::head(ccaas1)

# Low resolution.
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

Get **comarcas of Spain**. Comarcas are traditional informal territorial divisions comprising several municipalities that share geographical, economic or cultural traits, typically with poorly 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, codes or both 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. Use NULL to return all 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" or "LIV". Type of comarca to return. See Details .
epsg	Character string or number. Projection of the map: 4-digit EPSG code . One of: <ul style="list-style-type: none"> "4258": ETRS89. "4326": WGS84.

	<ul style="list-style-type: none"> • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display 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, such as a province, Autonomous Community, Autonomous City or NUTS 1 region, all comarcas of that level are added.

Value

An [sf](#) object.

About comarcas

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

In Spain, comarcas only have an administrative character legally recognized in Catalonia, the Basque Country, Navarra (named merindades instead), 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 provided under different classification criteria.

- "INE": Comarcas defined by the National Statistics Institute (INE).
- "IGN": Official comarcas, only available for some Autonomous Communities and Cities, 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).

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Note

The use of the information contained on the [INE website](#) is at the sole risk of users and re-use agents. They are liable for damages to third parties arising from such use.

Source

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

See Also

Additional boundary datasets and representations: [esp_get_gridmap](#), [esp_get_simpl](#)

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 from SIANE

Description

This dataset contains worldwide country-level administrative boundaries.

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 use format 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
country	Character vector of country codes. Accepts country names, ISO3 country codes or ISO2 country codes. See also countrycode::countrycode() .

Value

An [sf](#) object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

CartoBase ANE (Atlas Nacional de España) provided by Instituto Geográfico Nacional (IGN), <https://www.ign.es/web/ign/portal>. Data are available from 2005 to the present.

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

`giscoR::gisco_get_countries()`.

CartoBase ANE boundaries and utilities: `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()
```

<code>esp_get_grid_BDN</code>	<i>National geographic grids from BDN (Nature Data Bank)</i>
-------------------------------	--

Description

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

This dataset provides two accessors. `esp_get_grid_BDN()` extracts country-wide regular grids with resolutions of 5 x 5 or 10 x 10 kilometers for mainland Spain or the Canary Islands. `esp_get_grid_BDN_ccaa()` extracts 1 x 1 kilometer resolution grids for individual Autonomous Communities and Cities.

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

`esp_get_grid_BDN_ccaa()` provides higher-resolution 1 x 1 kilometer grids for specific Autonomous Communities and Cities, 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 kilometers. Must be one of: <ul style="list-style-type: none"> • 5: 5 x 5 kilometer cells. • 10: 10 x 10 kilometer cells (default).
type	Character. The geographic scope of the grid: <ul style="list-style-type: none"> • "main": Mainland Spain (default). • "canary": Canary Islands.
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
ccaa	Character string. A vector of names, codes or both for Autonomous Communities and Cities. 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 are downloaded from the `sianedata/MITECO/dist` data branch and are regularly updated.

Value

An [sf](#) POLYGON object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

Data sourced from the Banco de Datos de la Naturaleza (BDN). See the repository structure: <https://github.com/rOpenSpain/mapSpain/tree/sianedata/MITECO/dist>

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-cc.html>.

See Also

[esp_get_ccaa\(\)](#)

Geographic grid data: [esp_get_grid_ESDAC\(\)](#), [esp_get_grid_MTN\(\)](#)

Examples

```
# Load a 10 x 10 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	<i>National geographic grids from the European Soil Data Centre (ESDAC)</i>
--------------------	---

Description

This function loads an [sf](#) POLYGON with the geographic grids of Spain 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 kilometers. Can be 1 or 10.
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.

Value

An [sf](#) POLYGON object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

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

Geographic grid data: [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	<i>National geographic grids from IGN MTN (Mapa Topográfico Nacional)</i>
------------------	---

Description

This function loads an `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. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display 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 available MTN (Mapa Topográfico Nacional) grids:

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

An [sf](#) POLYGON object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

IGN data distributed through the `sianedata/MTN` data branch (see <https://github.com/rOpenSpain/mapSpain/tree/sianedata/MTN>).

See Also

Geographic grid data: [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_gridmap	<i>Hexbin or square grid maps of Spain</i>
-----------------	--

Description

This function loads a hexbin map ([sf](#) object) or a map of squares with boundaries of the provinces or Autonomous Communities and Cities 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, codes or both for provinces and Autonomous Communities and Cities, 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" or "cpro" codes (see [esp_codelist](#)) and NUTS codes of different levels.

When using a code corresponding to a higher level (for example, `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

An [sf](#) object.

See Also

Additional boundary datasets and representations: [esp_get_comarca\(\)](#), [esp_get_simpl](#)

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: Autonomous Communities and Cities")

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: Autonomous Communities and Cities")

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_hydrobasin	<i>River basin districts of Spain from SIANE</i>
--------------------	--

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: <ul style="list-style-type: none"> "4258": ETRS89. "4326": WGS84. "3035": ETRS89 / ETRS-LAEA. "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	Character string or number. Resolution of the geospatial data. One of: <ul style="list-style-type: none"> "10": 1:10 million. "6.5": 1:6.5 million. "3": 1:3 million.
domain	Character string. Type of river basin district: <ul style="list-style-type: none"> "land" includes only groundwater areas. "landsea" includes groundwater areas and coastal waters.

Details

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

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

CartoBase ANE (Atlas Nacional de España) provided by Instituto Geográfico Nacional (IGN), <https://www.ign.es/web/ign/portal>. Data are available from 2005 to the present.

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

Natural feature datasets: `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 = 0.4) +
  geom_sf(fill = "skyblue", alpha = 0.5) +
  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 from SIANE

Description

This dataset represents 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	Character string or number. Resolution of the geospatial data. One of: <ul style="list-style-type: none"> • "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

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

Natural feature datasets: `esp_get_hydrobasin()`, `esp_get_landwater`

Examples

```
# This code produces a plot and takes 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 the manual palette.
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 the 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 Spain.
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 = 0.8
  ))

```

Description

This dataset represents rivers, lagoons, reservoirs and wetlands in 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	[Deprecated] character string. Ignored. Resolution 3 (the most detailed) will always be provided.
spatialtype	[Deprecated] character string. Use <code>esp_get_wetlands()</code> instead of "spatialtype" for wetlands.
moveCAN	A logical TRUE/FALSE or a vector of coordinates <code>c(lat, lon)</code> . 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 <code>esp_move_can()</code> .
name	Character string or regex expression. Name of the elements to extract.

Details

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

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

Natural feature datasets: `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 Andalusia.
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 from GISCO

Description

Get 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: <ul style="list-style-type: none"> • "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. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display 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. Use NULL to 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, such as a province, Autonomous Community, Autonomous City or NUTS 1 region, all municipalities of that level are added.

Value

An [sf](#) object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Note

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

Source

GISCO Local Administrative Units distribution API: <https://gisco-services.ec.europa.eu/distribution/v2/lau/>.

See Also

- `giscoR::gisco_get_lau()`.
- `giscoR::gisco_get_communes()`.
- `esp_get_munic_siane()`.

Municipality-level datasets: `esp_get_capimun()`, `esp_get_munic_siane()`

GISCO boundary data: `esp_get_ccaa()`, `esp_get_nuts()`, `esp_get_prov()`, `esp_get_spain()`

Examples

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

# Get municipalities.
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 from SIANE*

Description

Get 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 use format 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	Character string or number. Resolution of the geospatial data. One of: <ul style="list-style-type: none"> • "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. Use NULL to return all municipalities.
moveCAN	A logical TRUE/FALSE or a vector of coordinates <code>c(lat, lon)</code> . 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. If TRUE, retains 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, such as a province, Autonomous Community, Autonomous City or NUTS 1 region, all municipalities of that level are added.

Value

An [sf](#) object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

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

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

[esp_get_munic\(\)](#).

CartoBase ANE boundaries and utilities: [esp_get_capimun\(\)](#), [esp_get_ccaa_siane\(\)](#), [esp_get_countries_siane\(\)](#), [esp_get_prov_siane\(\)](#), [esp_get_spain_siane\(\)](#), [esp_siane_bulk_download\(\)](#)

Municipality-level datasets: [esp_get_capimun\(\)](#), [esp_get_munic\(\)](#)

Examples

```
# Municipalities that have changed in the past: three snapshots.
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 data.
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 = "Boundary changes over time",
    fill = ""
  )

```

esp_get_nuts

Territorial Spanish units for statistics (NUTS) dataset

Description

The GISCO statistical unit dataset represents 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 visualize multipart polygonal regions.

NUTS is a hierarchical system divided into three levels:

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

There is also 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	A character string or numeric value with the geospatial data resolution. One of: <ul style="list-style-type: none"> • "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: <ul style="list-style-type: none"> • "RG": regions, returned as a MULTIPOLYGON/POLYGON object. • "LB": labels, returned as a POINT object.
region	Optional. A vector of region names, NUTS or ISO codes (see esp_dict_region_code()).
nuts_level	A character string with the NUTS level. One of 0, 1, 2, 3 or all for all levels.
moveCAN	A logical TRUE/FALSE or a vector of coordinates <code>c(lat, lon)</code> . 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. An unofficial 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.

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Note

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

Source

GISCO NUTS distribution API: <https://gisco-services.ec.europa.eu/distribution/v2/nuts/>.

See Also

- `giscoR::gisco_get_nuts()` retrieves NUTS data from GISCO.
- `esp_dict_region_code()` converts Spanish subdivision identifiers.

NUTS boundary datasets: `esp_get_spain()`

GISCO boundary data: `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 = "NUTS 1: 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 = "NUTS 1: 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 = "NUTS 1",
    subtitle = "Canary Islands in their 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 from GISCO

Description

Return **provinces of Spain** at a specified scale.

Usage

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

Arguments

- | | |
|--------------|--|
| prov | A vector of names, codes or both 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 |
| 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator. |
| cache | Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching . |
| update_cache | Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE. |
| cache_dir | Character string. A path to a cache directory. See Caching . |
| spatialtype | Character string. Type of geometry to be returned. Options available are: <ul style="list-style-type: none"> • "RG": regions, returned as a MULTIPOLYGON/POLYGON object. • "LB": labels, returned as a POINT object. |
| ext | Character. Extension of the file (default "gpkg"). See giscoR::gisco_get_nuts() . |
| verbose | A logical value indicating whether to display informational messages. |
| resolution | A character string or numeric value with the geospatial data resolution. One of: <ul style="list-style-type: none"> • "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 provinces in this dataset.

When calling a higher level, such as an Autonomous Community, Autonomous City or NUTS 1 region, all provinces of that level are added.

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

GISCO NUTS distribution API: <https://gisco-services.ec.europa.eu/distribution/v2/nuts/>.

See Also

`esp_get_prov_siane()`.

GISCO boundary data: `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 one 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()

# Available ISO codes.

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	<i>Provinces of Spain from SIANE</i>
--------------------	--------------------------------------

Description

Return **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, codes or both for provinces, or NULL to get all the provinces. See Details .
------	--

year	Character string or number. Release year. It must use format 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
resolution	Character string or number. Resolution of the geospatial data. One of: <ul style="list-style-type: none"> • "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. If TRUE, retains 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 provinces in this dataset.

When calling a higher level, such as an Autonomous Community, Autonomous City or NUTS 1 region, all provinces of that level are added.

Value

An [sf](#) object.

Caching

Functions that download data store files in cache_dir. When cache_dir is NULL, they use the active package cache, which defaults to a temporary directory. Set update_cache = TRUE to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

[esp_get_prov\(\)](#).

CartoBase ANE boundaries and utilities: [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() |>
  ggplot() +
  geom_sf()
```

esp_get_railway	<i>Railways of Spain from SIANE</i>
-----------------	-------------------------------------

Description

This function loads an [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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
spatialtype	[Deprecated] character string. Use <code>esp_get_stations()</code> instead of "point" for stations.

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

Transport infrastructure datasets: [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 from SIANE
```

Description

This dataset represents 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: <ul style="list-style-type: none"> • "4258": ETRS89. • "4326": WGS84. • "3035": ETRS89 / ETRS-LAEA. • "3857": Pseudo-Mercator.
cache	Logical. Whether to cache downloaded files. Defaults to TRUE. See Caching .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.
moveCAN	A logical TRUE/FALSE or a vector of coordinates <code>c(lat, lon)</code> . 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 <code>esp_move_can()</code> .

Value

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

Transport infrastructure datasets: `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	<i>Simplified map of provinces and Autonomous Communities and Cities of Spain</i>
---------------	---

Description

Simplified map with the boundaries of the provinces or Autonomous Communities of Spain, as provided by the **INE** (Instituto Nacional de Estadística).

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, codes or both for provinces and Autonomous Communities and Cities, or NULL to get all the data. See Details .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display informational messages.

Details

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

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

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

Value

An [sf](#) object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

INE: PC-Axis files.

See Also

Additional boundary datasets and representations: [esp_get_comarca\(\)](#), [esp_get_gridmap](#)

Examples

```
prov_simp <- esp_get_simpl_prov()

library(ggplot2)

ggplot(prov_simp) +
  geom_sf(aes(fill = ine.ccaa.name)) +
  labs(fill = "Autonomous Communities and Cities")

# Provinces of a single Autonomous Community or City.

and_simple <- esp_get_simpl_prov("Andalucia")

ggplot(and_simple) +
  geom_sf()

# Autonomous Communities and Cities.

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 from 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 cache downloaded files. Defaults to TRUE. See **Caching**.

update_cache Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.

cache_dir Character string. A path to a cache directory. See **Caching**.

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

verbose A logical value indicating whether to display informational messages.

resolution A character string or numeric value with the geospatial data resolution. 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

An `sf` object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

GISCO NUTS distribution API: <https://gisco-services.ec.europa.eu/distribution/v2/nuts/>.

See Also

[esp_get_spain_siane\(\)](#).

NUTS boundary datasets: [esp_get_nuts\(\)](#)

GISCO boundary data: [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	<i>Boundaries of Spain from SIANE</i>
---------------------	---------------------------------------

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 <code>c(lat, lon)</code> . 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 use format 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 cache downloaded files. Defaults to TRUE. See **Caching**.

update_cache Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.

cache_dir Character string. A path to a cache directory. See **Caching**.

verbose A logical value indicating whether to display informational messages.

Value

An **sf** object.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

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Data distributed through the `sianedata` data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

[esp_get_spain\(\)](#).

CartoBase ANE boundaries and utilities: [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 map tiles from public administrations of Spain

Description

Get static map tiles based on a spatial object. Maps can be fetched from WMS and WMTS providers.

This function is an implementation of the JavaScript plugin [leaflet-providersESP v1.5.0](#).

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
  )

```

Arguments

x	An sf or sfc object.
type	This argument can be one of: <ul style="list-style-type: none"> • The name of one of the pre-defined providers (see esp_tiles_providers). • A list with two named elements <code>id</code> and <code>q</code> 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 <code>zoommin</code> . For a single sf POINT with <code>zoom = NULL</code> , 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, crop results 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. Whether to use a transparent background, if supported.
mask	Logical. TRUE to mask the result to x. See terra::mask() .
update_cache	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
cache_dir	Character string. A path to a cache directory. See Caching .
verbose	A logical value indicating whether to display 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". If the tile looks deformed, try projecting `x` first:

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

Value

A [SpatRaster](#) with 3 (RGB) or 4 (RGBA) layers, depending on the provider.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in [esp_set_cache_dir\(\)](#) to configure a persistent cache.

Source

<https://dieghernan.github.io/leaflet-providersESP/>, a plugin for **leaflet**, v1.5.0.

See Also

- [terra::rast\(\)](#).
- [esp_tiles_providers](#).

Static map tiles and imagery: [addProviderEspTiles\(\)](#), [esp_get_attributions\(\)](#), [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 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	<i>Create a custom tile provider</i>
-------------------	--------------------------------------

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. 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, such as version, format, crs/srs and style, depending on the capabilities of the service.

Details

This function is meant to work with services provided under the [OGC Standard](#).

Note that:

- [mapSpain](#) does not provide advice on the value of q.
- Currently, for **WMTS** requests only services with tilematrixset=GoogleMapsCompatible are supported.

Value

A named [list](#) with two elements, id and q.

For a list of potential providers from Spain, check the [IDEE Directory](#).

See Also

Static map tiles and imagery: [addProviderEspTiles\(\)](#), [esp_get_attributions\(\)](#), [esp_get_tiles\(\)](#)

Examples

```
## Not run:
custom_wmts <- esp_make_provider(
  id = "example",
  q = "https://www.ign.es/wmts/ign-base?",
  service = "WMTS",
  layer = "IGNBaseTodo"
)

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

mytile <- esp_get_tiles(x, type = custom_wmts)

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

## End(Not run)
```

 esp_move_can

Displace an sf or sfc object located in the Canary Islands

Description

Helper function to displace an external sf or sfc object, potentially representing a location in the Canary Islands, to align it with **mapSpain** objects generated with moveCAN = TRUE.

Usage

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

Arguments

x	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. See Displacing the Canary Islands in esp_move_can() .

Details

This helper function makes it easier to represent objects located in the Canary Islands that have been obtained from sources other than **mapSpain**.

Value

An **sf** or **sfc** object of the same class and with the same CRS as x, 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 tiles (for example, with [esp_get_tiles\(\)](#) or [addProviderEspTiles\(\)](#)), set this option to FALSE to get the actual coordinates instead of the modified ones.

See Also

Helpers for Canary Islands insets and displacement: [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)

# A mapSpain object with moveCAN = TRUE is displaced.

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"
  )

# Displace the external object too.

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 boundaries for Spain

Description

This dataset represents Spanish subdivisions 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 or 3).

CNTR_CODE Eurostat country code.

NAME_LATN NUTS name in Latin characters.

NUTS_NAME NUTS name in the local alphabet.

MOUNT_TYPE Mountain type, see **Details**.

URBN_TYPE Urban type, see **Details**.

COAST_TYPE Coastal 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 / other regions.
- 0: No classification provided.

URBN_TYPE: Urban-rural typology:

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

COAST_TYPE: Coastal typology:

- 1: Coastal (on coast).
- 2: Coastal (less than 50% of the population lives 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\(\)](#).

Included package datasets: [esp_codelist](#), [esp_tiles_providers](#), [pobmun25](#)

Examples

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

esp_set_cache_dir	<i>Set your R https://CRAN.R-project.org/package=mapSpain cache directory</i>
-------------------	---

Description

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

Usage

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

esp_detect_cache_dir()
```

Arguments

<code>cache_dir</code>	A path to a cache directory. When <code>NULL</code> , the function stores cached files in a temporary directory (see <code>base::tempdir()</code>).
<code>overwrite</code>	Logical. If <code>TRUE</code> , overwrites an existing <code>MAPSPAIN_CACHE_DIR</code> on your local machine.
<code>install</code>	Logical. If <code>TRUE</code> , installs the path on your local machine for use in future sessions. Defaults to <code>FALSE</code> . If <code>cache_dir</code> is <code>FALSE</code> , this argument is automatically set to <code>FALSE</code> .
<code>verbose</code>	A logical value indicating whether to display 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

Functions that download data store files in `cache_dir`. When `cache_dir` is `NULL`, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Caching strategies

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

- For occasional use, rely on the default `base::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)`, which 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** $\geq$ 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()`.

Cache management utilities: `esp_clear_cache()`

Examples

```
# Do not 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 the 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

This function downloads zipped data from SIANE to `cache_dir` and extracts the relevant files.

Usage

```

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

```

Arguments

<code>cache_dir</code>	Character string. A path to a cache directory. See Caching .
<code>update_cache</code>	Logical. If TRUE, refreshes the cached file and forces a new download. Defaults to FALSE.
<code>verbose</code>	A logical value indicating whether to display informational messages.

Value

An invisible character vector with the full paths of the extracted files. See **Examples**.

Caching

Functions that download data store files in `cache_dir`. When `cache_dir` is NULL, they use the active package cache, which defaults to a temporary directory. Set `update_cache = TRUE` to replace an existing cached file. See **Caching strategies** in `esp_set_cache_dir()` to configure a persistent cache.

Source

CartoBase ANE (Atlas Nacional de España) provided by Instituto Geográfico Nacional (IGN), <https://www.ign.es/web/ign/portal>. Data are available from 2005 to the present.

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

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Data distributed through the sianedata data branch, see <https://github.com/rOpenSpain/mapSpain/tree/sianedata>.

See Also

CartoBase ANE boundaries and utilities: [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 file.
library(sf)
read_sf(dest_files[1]) |> head()

# Connect the function with the downloaded data.

invisible(esp_get_munic_siane(cache_dir = tmp, verbose = TRUE))

# The message shows that the file is already cached.

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

esp_tiles_providers *Public WMS and WMTS providers for Spain*

Description

A named [list](#) of length 174, containing URL information from different public WMS and WMTS tile providers in Spain.

This dataset is an implementation of the JavaScript plugin [leaflet-providersESP v1.5.0](#).

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` contains the parameters required to obtain static map tiles and an additional item named `attribution`. `leaflet` contains additional parameters to pass to [addProviderEspTiles\(\)](#).

Details

Compare layers in the [preview](#) and consult the [layer guide](#) for coverage, scale and availability information.

Providers available to be passed to type in [esp_get_tiles\(\)](#) are:

- "IDERioja"
- "IDERioja.Base"
- "IDERioja.Relieve"
- "IDERioja.Claro"
- "IDERioja.Oscuro"
- "IGNBase"
- "IGNBase.TODO"
- "IGNBase.Simplificado"
- "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.EstacionesSismicas"
- "Geofisica.HazardArea2015PGA"
- "Geofisica.HazardArea2015Isolineas"
- "Geofisica.HazardArea2015Intensidad"
- "Geofisica.HazardArea2002"
- "Geofisica.HazardArea"
- "VigilanciaVolcanica"
- "VigilanciaVolcanica.ErupcionesHistoricas"
- "CaminoDeSantiago"
- "CaminoDeSantiago.CaminoFrances"
- "CaminoDeSantiago.CaminosFrancia"
- "CaminoDeSantiago.CaminosGalicia"
- "CaminoDeSantiago.CaminosDelNorte"
- "CaminoDeSantiago.CaminosAndaluces"
- "CaminoDeSantiago.CaminosCentro"
- "CaminoDeSantiago.CaminosEste"
- "CaminoDeSantiago.CaminosNordeste"
- "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.Ferrovial"
- "RedTransporte.Aerodromo"
- "RedTransporte.Pistas"

- "RedTransporte.CallesRodaje"
- "RedTransporte.Plataformas"
- "RedTransporte.TransporteCable"
- "RedTransporte.AreaServicio"
- "RedTransporte.EstacionesFerroviario"
- "RedTransporte.Puertos"
- "Cartociudad"
- "Cartociudad.CodigosPostales"
- "Cartociudad.Direcciones"
- "NombresGeograficos"
- "UnidadesAdm"
- "UnidadesAdm.Limites"
- "UnidadesAdm.LimitesHistoricos"
- "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.CECA1M"
- "ADIF"
- "ADIF.Vias"
- "ADIF.Nodos"
- "ADIF.Estaciones"
- "LimitesMaritimos"
- "LimitesMaritimos.LimitesMaritimos"
- "LimitesMaritimos.LineasBase"
- "Copernicus"

- "Copernicus.Forest"
- "Copernicus.ForestLeaf"
- "Copernicus.WaterWet"
- "Copernicus.SoilSeal"
- "Copernicus.GrassLand"
- "Copernicus.RiparianLandCover"
- "Copernicus.Natura2k"
- "Copernicus.UrbanAtlas"
- "Copernicus.RiparianGreen"
- "PNOAHistorico"
- "PNOAHistorico.Americano"
- "PNOAHistorico.Interministerial"
- "PNOAHistorico.Nacional"
- "PNOAHistorico.OLISTAT"
- "PNOAHistorico.SIGPAC"
- "PNOAHistorico.PNOA2004"
- "PNOAHistorico.PNOA2009"
- "PNOAHistorico.PNOA2014"
- "PNOAHistorico.PNOA2019"
- "PNOAHistorico.PNOA2024"
- "MTNHistorico"
- "MTNHistorico.MTN50"
- "MTNHistorico.MTN25"
- "MTNHistorico.Minutas"
- "Inundaciones"
- "Inundaciones.FluvialT10"
- "Inundaciones.FluvialT100"
- "Inundaciones.FluvialT500"
- "Inundaciones.MarinaT100"
- "Inundaciones.MarinaT500"
- "RedNatura"
- "RedNatura.General"
- "EspaciosProtegidos"
- "EspaciosProtegidos.General"
- "SeccionesINE"
- "SeccionesINE.Secciones2026"
- "SeccionesINE.Distritos2026"

- "SeccionesINE.Secciones2021"
- "SeccionesINE.Distritos2021"
- "Pendientes"
- "Pendientes.MDP05"
- "GEODE"
- "GEODE.Geologia"
- "GEODE.Unidades"
- "GEODE.Contactos"
- "GEODE.Cuaternario"
- "SIGPAC"
- "SIGPAC.Recintos"
- "SIGPAC.CultivoDeclarado2025"
- "SIGPAC.PaisajeAreas"
- "SIGPAC.PaisajeLineas"
- "SIGPAC.PaisajePuntos"
- "MapaForestal"
- "MapaForestal.Usos"
- "Planimetrias"
- "Planimetrias.Minutas"
- "CaminosNaturales"
- "CaminosNaturales.Etapas"
- "SpainByBike"
- "SpainByBike.Etapas"
- "SpainByBike.TiposVia"
- "SpainByBike.CentrosBTT"
- "SpainByBike.Puertos"
- "SpainByBike.PuertosPuntos"
- "ViasPecuarrias"
- "ViasPecuarrias.Red2024"
- "PotencialSolar"
- "PotencialSolar.Global"
- "PotencialSolar.Edificios"
- "ParquesNaturales"
- "ParquesNaturales.Limites"
- "ParquesNaturales.ZonasPerifericas"

Source

<https://dieghernan.github.io/leaflet-providersESP/>, a plugin for **leaflet**, v1.5.0.

See Also

- [esp_get_tiles\(\)](#) downloads static map tiles from these providers.
- [addProviderEspTiles\(\)](#) adds these providers to interactive maps.

Included package 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 Estadística. https://www.ine.es/dyngs/INEbase/categoria.htm?c=Estadistica_P&cid=1254734710990.

See Also

Included package datasets: [esp_codelist](#), [esp_nuts_2024](#), [esp_tiles_providers](#)

Examples

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

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