Package 'CAOP.RAA.2024'

March 13, 2025

Title Official Administrative Map of the Azores (CAOP 2024)

Version 0.0.5

Description Provides the official administrative boundaries of the Azores
(Região Autónoma dos Açores (RAA)) as defined in the 2024 edition of the
Carta Administrativa Oficial de Portugal (CAOP), published by the
Direção-Geral do Território (DGT). The package includes convenience
functions to import these boundaries as 'sf' objects for spatial analysis in
R.
Source: <https://geo2.dgterritorio.gov.pt/caop/CAOP_RAA_2024-gpkg.zip>.

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Encoding UTF-8

Depends R (>= 3.5)

Imports sf, tibble, dplyr, readr, stringi, glue

Suggests testthat (>= 3.0.0), roxygen2, knitr, rmarkdown, ggplot2

RoxygenNote 7.3.2

URL https://github.com/patterninstitute/CAOP.RAA.2024,
https://www.pattern.institute/CAOP.RAA.2024/

BugReports https://github.com/patterninstitute/CAOP.RAA.2024/issues

Config/Needs/website patterninstitute/chic

NeedsCompilation no

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Repository CRAN

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boundary_segments   *Azorean boundary segments*

Description

[boundary_segments()](#) returns the boundary segments that separate administrative entities or borders with the Atlantic Ocean in the Azores.

[boundary_segments_25N()](#) returns the boundary segments in the meter-based projection PTRA08 / UTM zone 25N, i.e. those boundary segments in the western-most part of the archipelago: *Ilha das Flores* and *Ilha do Corvo*.

[boundary_segments_26N()](#) returns the boundary segments in the meter-based projection PTRA08 / UTM zone 26N, i.e. those boundary segments in the Central and Eastern groups of the archipelago.

Usage

```
boundary_segments(crs = laea_azores_proj())

boundary_segments_25N()

boundary_segments_26N()
```

Arguments

crs   Coordinate reference system (CRS) passed on to [st_transform()](#). Defaults to a
                    custom CRS centered on the Azores, see [laea_azores_proj()](#) for more details.
                    Other possible options are ″EPSG: 3035″ for ETRS89-extended / LAEA Europe
                    or ″EPSG:4326″ for WGS 84.

Value

A simple features ([sf](#)) object with seven fields:

id An unique UUID identifier for the segment.

id_at_right Identifier for the entity at the right side of the boundary.

id_at_left Identifier for the entity at the left side of the boundary.

is_confirmed Boundary segment whose acceptance by the parties has not yet been officially communicated.

boundary_type Boundary type: land or coast.

boundary_level Boundary level: administrative level.

length Boundary segment length in kilometers.

Examples

```
boundary_segments()
boundary_segments_25N()
boundary_segments_26N()
```

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districts   *Azorean districts*

Description

[districts()](#) returns the boundaries of districts (islands) in the Azores.

[districts_25N()](#) returns the districts in the meter-based projection PTRA08 / UTM zone 25N, i.e. those districts in the western-most part of the archipelago: *Ilha das Flores* and *Ilha do Corvo*.

[districts_26N()](#) returns the districts in the meter-based projection PTRA08 / UTM zone 26N, i.e. those districts in the Central and Eastern groups of the archipelago.

Usage

```
districts(crs = laea_azores_proj())

districts_25N()

districts_26N()
```

Arguments

crs   Coordinate reference system (CRS) passed on to [st_transform()](#). Defaults to a custom CRS centered on the Azores, see [laea_azores_proj()](#) for more details. Other possible options are ″EPSG: 3035″ for ETRS89-extended / LAEA Europe or ″EPSG:4326″ for WGS 84.

Value

A simple features ([sf](sf)) object with six fields:

id An unique identifier for the district. Follows the format [DT][MN][FR]: DT is a two-digit id for the district, MN for the municipality and FR for the district (freguesia in Portuguese).

district Name of the civil district.

municipality Name of municipality.

district Name of district, coincides with the name of the island.

area District area in hectares (ha).

perimeter District perimeter in kilometers.

n_municipalities Number of municipalities in the district.

n_parishes Number of parishes in the district.

Examples

```
districts()
districts_25N()
districts_26N()
```

---

eez   *Compute the Exclusive Economic Zone (EEZ) for the Azores*

Description

This function calculates the Exclusive Economic Zone (EEZ) boundary for the Azores by buffering each island by a specified distance (default 200 nautical miles) and merging the resulting buffers to create a single EEZ polygon.

Usage

```
eez(crs = laea_azores_proj(), distance = 200)
```

Arguments

crs   Character or CRS object. The target coordinate reference system (CRS) for the EEZ output. Defaults to laea_azores_proj() (a custom Lambert Azimuthal Equal-Area projection centered on the Azores).

distance   Numeric. The buffer distance in nautical miles (NM) around each island. Defaults to 200 (200 NM, the standard EEZ definition). If another value is provided, it will be converted to meters.

Details

The EEZ is defined as the area **200 nautical miles from the nearest baseline of each island**. This function:

- Buffers each island by `distance × 1,852` meters (default: **370,400 meters**).

- Merges overlapping buffers into a single EEZ boundary.

- Transforms the final EEZ to the specified `crs`.

Value

An `sf` object representing the EEZ as a single POLYGON.

Examples

```
library(ggplot2)
ggplot() +
geom_sf(data = eez(), fill = NA, linewidth = 1, col = "gray") +
 geom_sf(data = districts(), mapping = aes(fill = district), col = "white") +
 guides(fill = "none")

# WGS 84 projection
ggplot() +
geom_sf(data = eez(crs = "EPSG:4326"), fill = NA, linewidth = 1, col = "gray") +
 geom_sf(data = districts(crs = "EPSG:4326"), mapping = aes(fill = district), col = "white") +
 guides(fill = "none")
```

---

islands   *Azorean islands*

Description

A brief dataset of the nine Azorean islands.

Usage

```
islands()
```

Value

A [tibble](#) with columns:

group Island group.

is_triangle Due to their proximity, Pico, Faial and São Jorge form the so-called *Triangle* of the Central Group of islands.

name Island's name.

Examples

```
islands()
```

---

laea_azores_proj	*Lambert Azimuthal Equal-Area (LAEA) projection centered on the Azores*

Description

[laea_azores_proj()](#) creates a PROJ string for a custom Lambert Azimuthal Equal-Area (LAEA) projection, centered on the Azores. It allows flexibility in setting the latitude and longitude center, datum, and units.

Usage

```
laea_azores_proj(lat_0 = 38.5, lon_0 = -28, datum = "WGS84", units = "m")
```

Arguments

lat_0	Numeric. Latitude of the projection's center. Defaults to 38.5 (Central Azores).
lon_0	Numeric. Longitude of the projection's center. Defaults to -28 (Central Azores).
datum	Character. The geodetic datum used for the projection. Defaults to "WGS84". Other options include "ETRS89", "NAD83", etc.
units	Character. Measurement units for the projection. Defaults to "m" (meters). Can be set to "ft" (feet) if needed.

Value

A character string representing the PROJ definition for the custom LAEA projection.

Examples

```
# Default Azores-centered LAEA projection
laea_azores_proj()

# Custom projection centered at a different location
laea_azores_proj(lat_0 = 38, lon_0 = -27, datum = "ETRS89")
```

municipalities	*Azorean municipalities*

Description

municipalities() returns the boundaries of municipalities in the Azores.

municipalities_25N() returns the municipalities in the meter-based projection PTRA08 / UTM zone 25N, i.e. those municipalities in the western-most part of the archipelago: *Ilha das Flores* and *Ilha do Corvo*.

municipalities_26N() returns the municipalities in the meter-based projection PTRA08 / UTM zone 26N, i.e. those municipalities in the Central and Eastern groups of the archipelago.

Usage

```
municipalities(crs = laea_azores_proj())

municipalities_25N()

municipalities_26N()
```

Arguments

crs   Coordinate reference system (CRS) passed on to st_transform(). Defaults to a custom CRS centered on the Azores, see laea_azores_proj() for more details. Other possible options are "EPSG: 3035" for ETRS89-extended / LAEA Europe or "EPSG:4326" for WGS 84.

Value

A simple features (sf) object with six fields:

id An unique identifier for the municipality. Follows the format [DT][MN]: DT is a two-digit id for the district and MN for the municipality.

municipality Name of municipality.

district Name of district, coincides with the name of the island.

area Municipality area in hectares (ha).

perimeter Municipality perimeter in kilometers.

n_parishes Number of parishes in municipality.

Examples

```
municipalities()
municipalities_25N()
municipalities_26N()
```

---

nuts   *Azorean NUTS*

Description

nuts() returns the boundaries of the Nomenclature of Territorial Units for Statistics (NUTS).

nuts_25N() returns the NUTS boundaries in the meter-based projection PTRA08 / UTM zone 25N, i.e. the NUTS area in the western-most part of the archipelago: *Ilha das Flores* and *Ilha do Corvo*.

nuts_26N() returns the NUTS boundaries in the meter-based projection PTRA08 / UTM zone 26N, i.e. the NUTS area in the Central and Eastern groups of the archipelago.

Usage

```
nuts(crs = laea_azores_proj())

nuts_25N()

nuts_26N()
```

Arguments

crs   Coordinate reference system (CRS) passed on to st_transform(). Defaults to a custom CRS centered on the Azores, see laea_azores_proj() for more details. Other possible options are "EPSG: 3035" for ETRS89-extended / LAEA Europe or "EPSG:4326" for WGS 84.

Value

A simple features ([sf](sf)) object with seven fields:

nuts_code NUTS code.

nuts_level NUTS level.

nuts_name NUTS name.

area NUTS area in hectares (ha).

perimeter NUTS perimeter in kilometers.

n_municipalities Number of municipalities in the NUTS.

n_parishes Number of parishes in the NUTS.

Examples

```
nuts()
nuts_25N()
nuts_26N()
```

---

parishes   *Azorean civil administrative parishes*

Description

`parishes()` returns the boundaries of civil parishes in the Azores.

`parishes_25N()` returns the parishes in the meter-based projection PTRA08 / UTM zone 25N, i.e. those parishes in the western-most part of the archipelago: *Ilha das Flores* and *Ilha do Corvo*.

`parishes_26N()` returns the parishes in the meter-based projection PTRA08 / UTM zone 26N, i.e. those parishes in the Central and Eastern groups of the archipelago.

Usage

```
parishes(crs = laea_azores_proj())

parishes_25N()

parishes_26N()
```

Arguments

crs   Coordinate reference system (CRS) passed on to st_transform(). Defaults to a
                custom CRS centered on the Azores, see `laea_azores_proj()` for more details.
                Other possible options are "EPSG: 3035" for ETRS89-extended / LAEA Europe
                or "EPSG:4326" for WGS 84.

Value

A simple features (sf) object with six fields:

id An unique identifier for the parish. Follows the format [DT][MN][FR]: DT is a two-digit id for
    the district, MN for the municipality and FR for the parish (freguesia in Portuguese).

parish Name of the civil parish.

municipality Name of municipality.

district Name of district, coincides with the name of the island.

area Parish area in hectares (ha).

perimeter Parish perimeter in kilometers.

Examples

```
parishes()
parishes_25N()
parishes_26N()
```

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