Package: pruatlas (via r-universe)

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Title The Atlas and Utilities for PRU Maps

Version 0.0.1.9000

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Description A set of utilities for creation of map as used in PRU documents and portal.

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URL https://pruatlas.ansperformance.eu,
https://github.com/euctrl-pru/pruatlas

BugReports https://github.com/euctrl-pru/pruatlas/issues

Depends R (>= 3.4.0)

Imports dplyr, ggplot2, magrittr, sf, stringi, stringr, tibble, units

Suggests knitr, lwgeom, purrr, readr, rmarkdown

VignetteBuilder knitr

Encoding UTF-8

LazyData true

Roxygen list(markdown = TRUE)

RoxygenNote 7.2.3

Repository https://eurocontrol.r-universe.dev

RemoteUrl https://github.com/euctrl-pru/pruatlas

RemoteRef HEAD

RemoteSha 36df4df7437ef9f3842de5aa2ee7aa10038960a2

Contents

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ansps_ace_406   *ACE ANSPs for AIRAC 406 and 481.*

Description

A dataset containing the definition of the ANSPs as used in the ACE Benchmarking Report.

Usage

```
ansps_ace_406
```

Format

A Simple Feature dataset with airspace definitions for ANSPs:

airac_cfmu the AIRAC cycle number in CFMU format

id the ID for the ANSP

name the name of the ANSP

ace_code the code of the ANSP used in ACE

min_fl the minimum flight level of the ANSP

max_fl the maximum flight level of the ANSP

airspace_type the type of the airspace (ANSP)

geometry the Simple Feature describing the ANSP

Source

---

base_map   *Provide base country layer for PRU maps.*

Description

Provide base country layer for PRU maps.

Usage

```
base_map(
  colour_sea = "#D8F4FF",
  colour_land = "grey89",
  colour_border = "#A9A9A9",
  colour_graticule = "#D3D3D3",
  colour_backgroud = "#f5f5f2",
  border_size = 0.2
)
```

Arguments

colour_sea   colour of the sea

colour_land   colour of the land

colour_border   colour of the country border

colour_graticule

                  colour of the graticule

colour_backgroud

                  background colour

border_size   thickness of the border line

Value

a ggplot2 object with world countries in LAEA projection.

Examples

```
## Not run:
library(pruatlas)
# Plot a world map in LAEA projection.
bm <- base_map()

## End(Not run)
```

countries50m	*World countries at 50m scale.*

Description

A dataset containing the definition of the world countries.

Usage

```
countries50m
```

Format

A Simple Feature dataset with 240 countries and 4 variables:

iso_a3 ISO 3166-1 alpha-3 three-letter country code

iso_n3 ISO 3166-1 numeric three digits country code

admin Country's English short name according to ISO 3166

geometry the Simple Feature describing the country

Source

https://github.com/euctrl-pru/eurocontrol-atlas

country_ansp	*Extract ANSP polygon at defined flight level*

Description

Extract ANSP polygon at defined flight level

Usage

```
country_ansp(ansps, ansp_id = "ENAV", fl = 300)
```

Arguments

ansps	the sf holding the ANSP polygons, i.e. pruatlas::ansps_ace_406
ansp_id	optional, the ANSP ID of the relevant country, "ENAV" otherwise. It can be a regular expression, i.e. "DFS|ENAV" for matching Germany and Italy.
fl	the flight level of interest

Value

a polygon for the ANSP(s)

Examples

```
## Not run:
country_ansp(ansps_ace_406, "DFS", fl = 350)

# more complicated for Italy/ENAV: there is a hole over Rome.
# if we want to get rid of it we can use smoothr::fill_holes()
enav <- pruatlas::ansps_ace_406 %>%
  country_ansp(ansp_id = "ENAV", fl = 355) %>%
  smoothr::fill_holes(units::set_units(10000, km^2))

## End(Not run)
```

---

country_fir   *Return the country FIR for a EUROCONTROL's Member State.*

Description

Return the country FIR for a EUROCONTROL's Member State.

Usage

```
country_fir(firs, icao_id = "LI", fl = 0, merge = TRUE, exclude = NULL)
```

Arguments

firs	the relevant NM FIRs.
icao_id	optional, the ICAO ID of the relevant country, "LI" otherwise. It can be a regular expression, i.e. "LI|LF" for matching France and Italy.
fl	flight level at which assemble the composing polygons.
merge	Do you want to merge? (Default: TRUE).
exclude	List of IDs to filter out. It can be useful to use when only continental portion of FIR is of interest, i.e. exclude SANTA MARIA FIR for Portugal.

Value

An Simple Feature for the relevant country FIR.

Examples

```
## Not run:
# France
country_fir(pruatlas::firs_nm_406, "LF")
# EUROCONTROL's Member States
country_fir(pruatlas::firs_nm_406, icao_id = "E.|L.|UD|UG|GM|UK|GC")
# Consider only continental portion of Portugal FIR
country_fir(pruatlas::firs_nm_406, icao_id = "LP", exclude = c("LPPOFIR"))

## End(Not run)
```

---

ecac_northeast *STATFOR ECAC North East region*

Description

STATFOR ECAC North East region

Usage

```
ecac_northeast(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC North East region

Examples

```
## Not run:
ecac_northeast()

## End(Not run)
```

---

ecac_northwest *STATFOR ECAC North West region*

Description

STATFOR ECAC North West region

Usage

```
ecac_northwest(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC North West region

Examples

```
## Not run:
ecac_northwest()

## End(Not run)
```

---

ecac_oceanic   *STATFOR ECAC Oceanic region*

Description

STATFOR ECAC Oceanic region

Usage

```
ecac_oceanic(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC Oceanic region

Examples

```
## Not run:
ecac_oceanic()

## End(Not run)
```

---

ecac_region   *STATFOR ECAC region*

Description

STATFOR ECAC region

Usage

```
ecac_region(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC region

Examples

```
## Not run:
ecac_region()

## End(Not run)
```

---

ecac_southeast   *STATFOR ECAC South East region*

Description

STATFOR ECAC South East region

Usage

```
ecac_southeast(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC South East region

Examples

```
## Not run:
ecac_southeast()

## End(Not run)
```

---

ecac_southwest *STATFOR ECAC South West region*

Description

STATFOR ECAC South West region

Usage

```
ecac_southwest(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR ECAC South West region

Examples

```
## Not run:
ecac_southhwest()

## End(Not run)
```

---

extent_fir *Return the extent of a set of FIRs.*

Description

Return the extent of a set of FIRs.

Usage

```
extent_fir(firs, crs)
```

Arguments

firs   the relevant NM FIRs.

crs   the `proj` projection string.

Value

A data frame of the extent of the input data.

Examples

```
## Not run:
crs <- sf::st_crs(3035)
extent_fir(firs_nm_406, crs)

## End(Not run)
```

---

firs_nm_406   *NM FIRs for AIRAC 406.*

Description

A dataset containing the definition of the FIRs as used by the [Network Manager](#).

Usage

```
firs_nm_406
```

Format

A Simple Feature dataset with 111 FIRs and 9 variables:

airac_cfmu the AIRAC cycle number in CFMU format

icao the ICAO region code for the FIR

id the ID for the FIR

min_fl the minimum flight level of the FIR

max_fl the maximum flight level of the FIR

name the name of the FIR

airspace_type the type of the airspace (FIR)

geometry the Simple Feature describing the FIR

---

firs_nm_481   *NM FIRs for AIRAC 481.*

Description

A dataset containing the definition of the FIRs as used by the [Network Manager](#).

Usage

```
firs_nm_481
```

Format

A Simple Feature dataset with 111 FIRs and 9 variables:

airac_cfmu the AIRAC cycle number in CFMU format

icao the ICAO region code for the FIR

id the ID for the FIR

min_fl the minimum flight level of the FIR

max_fl the maximum flight level of the FIR

name the name of the FIR

airspace_type the type of the airspace (FIR)

geometry the Simple Feature describing the FIR

---

member_states   *EUROCONTROL's Member States*

Description

A data frame with the following fields

name the country name, e.g. "Italy"

iso3c the 3-letter ISO code, e.g. "ITA"

iso2c the 2-letter ISO code, e.g. "IT"

icao the 2-letter ICAO code, e.g. "LI"

iso3n the 3-digits ISO code, e.g. "380"

date the date of `status` code, e.g. 1996-04-01

status the status code, e.g. "M" (`M` Member State, `C` Comprehensive Agreement State, `T` Transitional State)

These are useful to grab the right spatial polygons in case of need. Note: Kosovo is also included in the list.

Usage

```
member_states
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 45 rows and 7 columns.

| north_atlantic | *STATFOR North Atlantic region* |

Description

STATFOR North Atlantic region

Usage

```
north_atlantic(firs = pruatlas::firs_nm_406)
```

Arguments

firs   the global FIRs

Value

the FIR-based STATFOR North Atlantic

Examples

```
## Not run:
north_atlantic()

## End(Not run)
```

| parse_airspace_crco | *Parse CRCO Airspace Charging Zone format* |

Description

`parse_airspace_crco` reads the airspace CRCO format and returns a tibble where each row describes an airspace. The airspace file can be found on EUROCONTROL website.

Each airspace in CRCO format is described by:

1. Airspace description (one row):
     - `nb_point` the number of points
     - `latitude` the latitude (of the label)
     - `longitude` the longitude (of the label)
     - `flights`
     - `bottom_level` low level of the volume (flight level)
     - `top_level` high level of the volume (flight level)
     - `surface`
     - `sector_num`

- flight time
- traffic density
- x mileage
- rte extens.
- value 1
- value 2
- name airspace name/code

2. `latitude longitude`: coordinates (nb_point rows in minutes decimal)

Usage

```
parse_airspace_crco(lines)
```

Arguments

lines   text lines of the PRISME airspace representation

Value

a tibble of airspaces (CRS = 4326)

Examples

```
## Not run:
bo <- system.file("extdata", "sbm_bz_20200527.txt", package = "pruatlas")
crco <- readr::read_lines(bo) %>%
  parse_airspace_crco()

## End(Not run)
```

---

plot_country_ansp   *Plot country and relevant ANSP.*

Description

Plot country and relevant ANSP.

Usage

```
plot_country_ansp(
  ansp_id,
  name,
  fl = 300,
  buffer = 100,
  ansps = pruatlas::ansps_ace_406
)
```

Arguments

`ansp_id`	optional, the ANSP ID of the relevant country, "ENAV" otherwise. It can be a regular expression, i.e. "DFS|ENAV" for matching Germany and Italy.
`name`	The name used to title the plot.
`fl`	the flight level of interest
`buffer`	Buffer around ANSP (km)
`ansps`	the `sf` holding the ANSP polygons, i.e. `pruatlas::ansps_ace_406`

Value

A ggplot object with country and relevant ANSP.

Examples

```
## Not run:
plot_country_ansp("DFS", "Germany")
# Italy'ENAV has a hole above Rome...
plot_country_ansp("ENAV", "Italy (hole over Rome)")
# ...filling the hole, manually
enav <- pruatlas::ansps_ace_406 %>%
  country_ansp(ansp_id = "ENAV", fl = 355) %>%
  dplyr::mutate(min_fl = 355, max_fl = 355, id = "ENAV") %>%
  smoothr::fill_holes(units::set_units(10000, km^2))
plot_country_ansp(ansp_id = "ENAV", name = "Italy", fl = 355, ansps = enav)

## End(Not run)
```

---

plot_country_fir   *Plot country and relevant FIR.*

Description

Plot country and relevant FIR.

Usage

```
plot_country_fir(
  icao_id,
  name,
  fl = 0,
  buffer = 100,
  firs = pruatlas::firs_nm_406,
  merge = TRUE
)
```

Arguments

`icao_id`	optional, the ICAO ID of the relevant country, "LI" otherwise. It can be a regular expression, i.e. "LI|LF" for matching France and Italy.
`name`	The name used to title the plot.
`fl`	flight level at which assemble the composing polygons.
`buffer`	Buffer around FIR (km)
`firs`	the relevant NM FIRs.
`merge`	Do you want to merge (default: TRUE)

Value

A ggplot object with country and relevant FIR.

Examples

```
## Not run:
plot_country_fir("LI", "Italy")
# UK and Portugal have oceanic part...
plot_country_fir("EG", "United Kingdom (oceanic)")
# decoupling oceanic, manually
uk_continental <- firs_nm_406 %>%
  dplyr::filter(icao == "EG", min_fl <= 0, 0 <= max_fl) %>%
  dplyr::filter(!(id %in% c("EGGXFIR", "EGGX")))
plot_country_fir("EG", "United Kingdom (continental)", firs = uk_continental)
# EUROCONTROL
plot_country_fir(icao_id = "E.|L.|UD|UG|GM|UK|GC",
                 "EUROCONTROL Member States",
                 buffer = 350,
                 fl = 200)

## End(Not run)
```

---

pruatlas	*pruatlas: A package for PRU maps generation.*

Description

The pruatlas package provides function to plot country FIRs, access the underlying FIR or country spatial definitions.

Functions

The pruatlas package provides three sets of functions, one for plottting, the second for accessing the underlying datasets and the last is about helper functions. For example `plot_coutry_fir` is an high level function that plots the FIR at the country level.

TODOs

- list/define the colours of the maps (currently hardcoded)
- provide FIRs for other AIRAC's (separate data packages? lazy-loading of data?)
- define a function to convert from CFMU AIRAC format to AIP format
- change `airacnm` to the AIP format

---

pru_colours   *Default colours for PRU maps.*

Description

Default colours for PRU maps.

Usage

```
pru_colours()
```

Value

The colours for the various elements of a map, i.e. see, land, fir, ...

---

sphere   *Return the polygon represent the spherical Earth.*

Description

Return the polygon represent the spherical Earth.

Usage

```
sphere(crs = pruatlas::pru_laea_proj)
```

Arguments

crs   a `proj` projection string

Value

A Simple Feature representing the spherical contour of the Earch in the relevant projection.

---

sphere_laea   *A special object to represent the spherical Earth in a given projection.*

Description

A special object to represent the spherical Earth in a given projection.

Usage

```
sphere_laea
```

Format

An object of class sf (inherits from data.frame) with 1 rows and 2 columns.

Source

<https://github.com/euctrl-pru/eurocontrol-atlas>

See Also

<http://stackoverflow.com/q/43207947/963575>

---

theme_map   *PRU theme for maps.*

Description

A clean theme for displaying maps.

Usage

```
theme_map(base_size = 9, base_family = "", ...)
```

Arguments

base_size	base font size, given in pts.
base_family	base font family
...	other theme parameters

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