Package ‘atpolR’

October 12, 2022

Type Package

Title ATPOL Grid Implementation

Version 0.1.1

Description ATPOL is a rectangular grid system used for botanical studies in Poland. The ATPOL grid was developed in Institute of Botany, Jagiellonian University, Krakow, Poland in '70. Since then it is widely used to represent distribution of plants in Poland. 'atpolR' provides functions to translate geographic coordinates to the grid and vice versa. It also allows to create a choreograph map.

License GPL-3

Language en-US

Encoding UTF-8

Depends R (>= 3.5.0)

Imports Rdpack (>= 0.7), sf, stats, stringr, terra

RdMacros Rdpack

RoxygenNote 7.2.1

URL https://github.com/gsapijaszko/atpolR

BugReports https://github.com/gsapijaszko/atpolR/issues

Suggests colorspace, dplyr, knitr, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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**Description**

atpol100k creates ATPOL grid 100km x 100km and returns it as sf object

**Usage**

```r
atpol100k()
```

**Value**

Simple Feature (sf) grid of polygons for 100km x 100km ATPOL grid

---

atpol10k returns ATPOL grid 10x10 km and returns it as sf object

**Usage**

```r
atpol10k()
```

**Value**

Simple Feature (sf) grid of polygons for 10km x 10km ATPOL grid
atpol1k

atpol1k creates ATPOL grid 1km x 1km and returns it as sf object

Description
atpol1k creates ATPOL grid 1km x 1km and returns it as sf object

Usage
atpol1k(grid)

Arguments
grid    any valid ATPOL 10km grid like "BE23" or "DC58"

Value
Simple Feature (sf) grid of polygons for 1km x 1km ATPOL grid

Examples
atpol1k("BE23")

atpol_div

atpol_div creates ATPOL grid divided by 2, 4 or 5 (based on divider parameter) and returns it as sf object. Useful for grids like 5 x 5 km (divider = 2), 250 x 250 m (divider = 4) or 20 x 20 m (divider = 5). For details see Verey and Komsta (2018)

Description
atpol_div creates ATPOL grid divided by 2, 4 or 5 (based on divider parameter) and returns it as sf object. Useful for grids like 5 x 5 km (divider = 2), 250 x 250 m (divider = 4) or 20 x 20 m (divider = 5). For details see Verey and Komsta (2018)

Usage
atpol_div(grid, divider)

Arguments
grid      any valid ATPOL grid like "BE" or "DC5128"
divider   divide by parameter: 2, 4, 5
check_atpol_square

Value

Simple Feature (sf) grid of polygons for ATPOL grid divided by 2, 4 or 5

References


Examples

```r
atpol_div("BE", 2)
atpol_div(grid = c("BE23", "DC5128"), divider = 4)
```

boundaryPL

boundaryPL reads the file data/pl_boundary.Rds with simplified boundary geometry.

Description

boundaryPL reads the file data/pl_boundary.Rds with simplified boundary geometry.

Usage

```r
boundaryPL()
```

Value

Simple Feature (sf) geometry of Poland in EPSG:2180 projection.

check_atpol_square

Reverse engineering of published ATPOL grids

Description

check_atpol_square() do a reverse engineering of published ATPOL grids species, especially those published in 

Usage

```r
check_atpol_square(centroid, raster, distance)
```
grid_to_latlon

Arguments

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<tr>
<td>centroid</td>
<td>Simple Feature point geometry for which the check is performed, usually it</td>
</tr>
<tr>
<td></td>
<td>corresponds to centroid of ATPOL 10km x 10km grid</td>
</tr>
<tr>
<td>raster</td>
<td>geocoded raster, it has to be in EPSG:2180 projection</td>
</tr>
<tr>
<td>distance</td>
<td>st_buffer distance from centroid point for which the check is done, default</td>
</tr>
<tr>
<td></td>
<td>1200 m</td>
</tr>
</tbody>
</table>

Value

"YES" or "?" for given SF point

References


grid_to_latlon

grid_to_latlon converts the ATPOL grid to latitude and longitude. With xoffset = 0 and yoffset = 0 parameters it returns coordinates of the upper left corner of the grid.

Description

grid_to_latlon converts the ATPOL grid to latitude and longitude. With xoffset = 0 and yoffset = 0 parameters it returns coordinates of the upper left corner of the grid.

Usage

grid_to_latlon(grid, xoffset = 0.5, yoffset = 0.5)

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
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<tr>
<td>grid</td>
<td>An ATPOL grid, ex. &quot;GF2345&quot;.</td>
</tr>
<tr>
<td>xoffset</td>
<td>An offset in X, where 0 is for left, and 1 for right side of the grid. The</td>
</tr>
<tr>
<td></td>
<td>default value is 0.5, which corresponds to middle of the grid.</td>
</tr>
<tr>
<td>yoffset</td>
<td>An offset in Y, where 0 is for top, and 1 for bottom side of the grid. The</td>
</tr>
<tr>
<td></td>
<td>default value is 0.5, which corresponds to middle of the grid.</td>
</tr>
</tbody>
</table>

Value

latitude and longitude of ATPOL grid (default centroid) as pair of numerics

References

https://atpol.sourceforge.io/
Examples

grid_to_latlon("BE21")
grid_to_latlon("BE21", 0, 0)

latlon_to_grid(latlon_to_grid(lat, lon, length) converts geographical coordinates to
ATPOL grid of given length)

Description

latlon_to_grid(lat, lon, length) converts geographical coordinates to ATPOL grid of given length

Usage

latlon_to_grid(lat, lon, length)

Arguments

lat Longitude in degrees, ex. 51.123456
lon Longitude in degrees, ex. 17.234567
length Desired ATPOL grid length, which can be 2, 4, 6, 8, 10 or 12,

Value

grid, ex. BE, BE23, BE2357, etc.

References

https://atpol.sourceforge.io/

Examples

latlon_to_grid(51, 17, 2)
latron_to_grid(51, 17, 6)
plotPoitsOnAtpol() plots the observations on ATPOL 10km x 10km grid

Description

plotPoitsOnAtpol() plots the observations on ATPOL 10km x 10km grid

Usage

plotPoitsOnAtpol(myData, outputType, filename, main, colors, cex, col, pch)

Arguments

- **myData**: SimpleFeature data frame with point geometry, usually centroid of ATPOL grid square
- **outputType**: image output type, either "svg" or "png"; if not specified a standard output device is used (screen)
- **filename**: name of the output file
- **main**: image title, usually a species name
- **colors**: vector of colors to be used as a background, default internal .myCols
- **cex**: size of the points, default 0.9
- **col**: color of the points, default black
- **pch**: shape of the point, default 16 - filled dot

Value

choreograph map of species distribution in Poland.
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