Package: proj4 (via r-universe)

October 28, 2026

Version 1.0-15

Title A simple interface to the PROJ.4 cartographic projections library

Depends R (>= 2.0.0)

Author Simon Urbanek [aut, cre, cph] (https://urbanek.org, <https://orcid.org/0000-0003-2297-1732>)

Maintainer Simon Urbanek <simon.urbanek@r-project.org>

Description A simple interface to lat/long projection and datum transformation of the PROJ.4 cartographic projections library. It allows transformation of geographic coordinates from one projection and/or datum to another.

SystemRequirements proj 4.4.6 or higher (https://proj.org/)

License GPL-2

URL https://www.rforge.net/proj4/

BugReports https://github.com/s-u/proj4/issues

NeedsCompilation yes

Config/pak/sysreqs libproj-dev

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

Date/Publication 2025-03-21 15:37:21 UTC

RemoteUrl https://github.com/cran/proj4

RemoteRef HEAD

RemoteSha 065347a2c64ae4370551938717c142a3398c1f24

Contents

project 2
transform 3

Index **5**

project *Projection of coordinates*

Description

Projection of lat/long coordinates or its inverse.

Usage

```
project(xy, proj, inverse = FALSE, degrees = TRUE, silent = FALSE,
        ellps.default="sphere")
```

Arguments

xy	input (list, matrix or 2d-array) - see details below.
proj	projection definition
inverse	if TRUE inverse projection is performed (from a cartographic projection into lat/long), otherwise projects from lat/long into a cartographic projection.
degrees	if TRUE then the lat/long data is assumed to be in degrees, otherwise in radians
silent	if set to TRUE, warnings will be suppressed
ellps.default	default ellipsoid that will be added if no datum or ellipsoid parameter is specified in proj. Older versions of PROJ.4 didn't require a datum (and used sphere by default), but 4.5.0 and higher always require a datum or an ellipsoid. Set to NA if no datum should be added to proj (e.g. if you specify an ellipsoid directly).

Details

The input can be a list of two or more vectors (if the list contains more than two entries, only first two entries are used and a warning is issued), a two-dimensional matrix or array (the number of columns or rows must be exactly two) or a vector of the length 2. For a 2x2 input the columns are taken as x and y. If the input is a list then the result will be a list with the entries named x and y, otherwise the result is a matrix with two columns.

When the list form is used, inputs are recycled with a warning when necessary.

proj specifies the target (or source if inverse) projection. The format can be either a single (unnamed) string which contains all parameters: `"+proj=lcc +lat_1=33 +lat_2=45 +lat_0=39 +lon_0=-96"`
or an unnamed vector of complete individual parameters: `c("+proj=lcc","+lat_1=33","+lat_2=45","+lat_0=39","+lo`
or a named vector or list that will be composed into parameters: `list(proj="lcc", lat_1=33, lat_2=45, lat_0=39, lon_0=-96)`

if degrees is TRUE then the latitude and longitude are expected to be in degrees, if FALSE then in radians.

Value

A two column matrix or list of coordinates. If the input was a list then the output will be a list, otherwise a matrix.

References

https://proj.org/

Examples

```
## this is just very simple, because we don't want to depend on
## maps package, so we can't show more useful stuff..
data(state)
s <- project(state.center, "+proj=merc")
plot(s, type='n', asp=1)
text(s,, state.abb)
```

---

transform *Transform geographic coordinates from one projection into another*

Description

Transformation of geographics coordinates from one projection to another, using PROJ.4 library.

Usage

```
ptransform(data, src.proj, dst.proj, silent=TRUE)
```

Arguments

data	input (list, matrix or 2d-array) - see details below.
src.proj	description of the source projection
dst.proj	description of the destination projection
silent	if set to TRUE, warnings will be suppressed

Details

The data can be a list of vectors (if the list contains more than three entries, only first three entries are used and a warning is issued), a two-dimensional matrix or array (the number of columns or rows must be at most three). If the input is a list then the result will be a list with the entries named x, y and z, otherwise the result is a matrix with three columns.

When the list form is used, inputs are recycled with a warning when necessary. All unspecified coordinates are set to zero.

Note that the project specification *must* include an ellipsoid or a datum. Add `ellps='sphere'` to obtain the same result as older PROJ.4 versions with no datum specification.

Datum files must be installed in order to be able to perform datum shifts (on Windows they should be located in `c:\proj`) - see PROJ.4 website for the download of datum files.

Value

A matrix with three columns or list with projected coordinates. If the input was a list then the output will be a list, otherwise a matrix.

Author(s)

Simon Urbanek

References

https://proj.org/

Examples

```
data(state)
sc <- cbind(state.center$x, state.center$y)
## this is essentially the same as project except
## that the default lat/long input is in radians
tr <- ptransform(sc/180*pi, '+proj=latlong +ellps=sphere',
                 '+proj=merc +ellps=sphere')
## we can compare it with the project result
res <- project(sc, c(proj="merc"))
## ptransform has z coordinate which is 0 for this projection
summary(tr - cbind(res, 0))
```

Index

∗ **spatial**
project, 2
transform, 3

project, 2
ptransform *(*transform*)*, 3

transform, 3