

Package: parzer (via r-universe)

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Type Package

Title Parse Messy Geographic Coordinates

Description Parse messy geographic coordinates from various character formats to decimal degree numeric values. Parse coordinates into their parts (degree, minutes, seconds); calculate hemisphere from coordinates; pull out individually degrees, minutes, or seconds; add and subtract degrees, minutes, and seconds. C++ code herein originally inspired from code written by Jeffrey D. Bogan, but then completely re-written.

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URL <https://github.com/ropensci/parzer>,
<https://docs.ropensci.org/parzer/>

BugReports <https://github.com/ropensci/parzer/issues>

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parzer-package	<i>parzer: Parse Messy Geographic Coordinates</i>
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Description

Parse messy geographic coordinates from various character formats to decimal degree numeric values. Parse coordinates into their parts (degree, minutes, seconds); calculate hemisphere from coordinates; pull out individually degrees, minutes, or seconds; add and subtract degrees, minutes, and seconds. C++ code herein originally inspired from code written by Jeffrey D. Bogan, but then completely re-written.

Details

[Stable]

parse geographic coordinates

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- rOpenSci (019jywm96) [funder]
- German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig (01jty7g66) [funder]

See Also

Useful links:

- <https://github.com/ropensci/parzer>
- <https://docs.ropensci.org/parzer/>
- Report bugs at <https://github.com/ropensci/parzer/issues>

dms

extract degree, minutes, and seconds

Description

extract degree, minutes, and seconds

Usage

```
pz_degree(lon = NULL, lat = NULL)
```

```
pz_minute(lon = NULL, lat = NULL)
```

```
pz_second(lon = NULL, lat = NULL)
```

```
## S3 method for class 'pz'  
print(x, ...)
```

```
pz_d(x)
```

```
pz_m(x)
```

```
pz_s(x)
```

```
## S3 method for class 'pz'
e1 + e2

## S3 method for class 'pz'
e1 - e2

## S3 method for class 'pz'
e1 / e2

## S3 method for class 'pz'
e1 * e2
```

Arguments

lon, lat	(numeric/integer/character) one or more longitude or latitude values. values are internally validated. only one of lon or lat accepted
x	(integer) an integer representing a degree, minute or second
...	print dots
e1, e2	objects of class pz, from using pz_d(), pz_m(), or pz_s()

Details

Mathematics operators are exported for +, -, /, and *, but / and * are only exported with a stop message to say it's not supported; otherwise you'd be allow to divide degrees by minutes, leading to nonsense.

Value

pz_degree: integer, pz_minute: integer, pz_second: numeric, pz_d: numeric, pz_m: numeric, pz_s: numeric (adding/subtracting these also gives numeric)

Examples

```
# extract parts of a coordinate value
pz_degree(-45.23323)
pz_minute(-45.23323)
pz_second(-45.23323)

pz_degree(lon = 178.23423)
pz_minute(lon = 178.23423)
pz_second(lon = 178.23423)
## Not run:
pz_degree(lat = c(45.23323, "40:25:6N", "40° 25´ 5.994 S"))
pz_minute(lat = c(45.23323, "40:25:6N", "40° 25´ 5.994 S"))
pz_second(lat = c(45.23323, "40:25:6N", "40° 25´ 5.994 S"))

# invalid
pz_degree(445.23323)

# add or subtract
```

```

pz_d(31)
pz_m(44)
pz_s(3)
pz_d(31) + pz_m(44)
pz_d(-31) - pz_m(44)
pz_d(-31) + pz_m(44) + pz_s(59)
pz_d(31) - pz_m(44) + pz_s(59)
pz_d(-121) + pz_m(1) + pz_s(33)
unclass(pz_d(31) + pz_m(44) + pz_s(59))

## End(Not run)

```

parse_hemisphere *get hemisphere from long/lat coordinates*

Description

BEWARE: EXPERIMENTAL

Usage

```
parse_hemisphere(lon, lat)
```

Arguments

lon (character/numeric/integer) one or more longitude values
lat (character/numeric/integer) one or more latitude values

Details

length(lon) == length(lat)

Value

character vector of quadrants, one of: NE, NW, SE, SW. if one of the coordinate values is invalid, and one is valid, you get a length 1 string. if both coordinate values are bad, you get a zero length string.

Warnings are thrown on invalid values

Examples

```

# NE
parse_hemisphere("74.123E", "45N54.2356")
## Not run:
# NW
parse_hemisphere(-120, 40.4183318)
# SW
parse_hemisphere(-120, -40.4183318)
# SE

```

```
parse_hemisphere(120, -40.4183318)

# bad inputs, get one of the two strings
parse_hemisphere(-181, -40.4183318)
parse_hemisphere(-120, -192.4183318)

## End(Not run)
```

parse_lat

Parse latitude values

Description

Parse latitude values

Usage

```
parse_lat(lat, format = NULL)
```

Arguments

lat (numeric/integer/character) one or more latitude values
format (character) format, default often works

Value

numeric vector

Errors

Throws warnings on parsing errors, and returns NaN in each case

Types of errors:

- invalid argument: e.g., letters passed instead of numbers, see https://en.cppreference.com/w/cpp/error/invalid_argument.html
- out of range: numbers of out acceptable range, see https://en.cppreference.com/w/cpp/error/out_of_range.html
- out of latitude range: not within -90/90 range

Examples

```
parse_lat("")
## Not run:
parse_lat("-91")
parse_lat("95")
parse_lat("asdfaf")

parse_lat("45")
```

```
parse_lat("-45")
parse_lat("-45.2323")

# out of range with std::stod?
parse_lat("-45.23232e24")
parse_lat("-45.23232e2")

# numeric input
parse_lat(1:10)
parse_lat(85:94)

# different formats
parse_lat("40.4183318 N")
parse_lat("40.4183318 S")
parse_lat("40 25 5.994") # => 40.41833

parse_lat("40.4183318N")
parse_lat("N40.4183318")
parse_lat("40.4183318S")
parse_lat("S40.4183318")

parse_lat("N 39 21.440") # => 39.35733
parse_lat("S 56 1.389") # => -56.02315

parse_lat("N40°25'5.994") # => 40.41833
parse_lat("40° 25' 5.994\" N") # => 40.41833
parse_lat("40:25:6N")
parse_lat("40:25:5.994N")
parse_lat("40d 25' 6\" N")

## End(Not run)
```

parse_llstr

parse string with lat and lon together

Description

parse string with lat and lon together

Usage

```
parse_llstr(str)
```

Arguments

str (character) string with latitude and longitude, one or more in a vector.

Value

A data.frame with parsed latitude and longitude in decimal degrees.

Examples

```

parse_llstr("N 04.1683, E 101.5823")
parse_llstr("N04.82344, E101.61320")
parse_llstr("N 04.25164, E 101.70695")
parse_llstr("N05.03062, E101.75172")
parse_llstr("N05.03062,E101.75172")
parse_llstr("N4.9196, E101.345")
parse_llstr("N4.9196, E101.346")
parse_llstr("N4.9196, E101.347")
# no comma
parse_llstr("N4.9196 E101.347")
# no space
parse_llstr("N4.9196E101.347")

# DMS
parse_llstr("N4 51'36\"", E101 34'7\"")
parse_llstr(c("4 51'36\"S, 101 34'7\"W", "N4 51'36\"", E101 34'7\""))

```

parse_lon

Parse longitude values

Description

Parse longitude values

Usage

```
parse_lon(lon, format = NULL)
```

Arguments

lon (numeric/integer/character) one or more longitude values.
format (character) format, not implemented yet.

Value

numeric vector

Errors

Throws warnings on parsing errors, and returns NaN in each case

Types of errors:

- invalid argument: e.g., letters passed instead of numbers, see https://en.cppreference.com/w/cpp/error/invalid_argument.html
- out of range: numbers of out acceptable range, see https://en.cppreference.com/w/cpp/error/out_of_range.html
- out of longitude range: not within -180/360 range

Examples

```

parse_lon("")
## Not run:
parse_lon("-181")
parse_lon("-361")
parse_lon("95")
parse_lon("asdfaf")

parse_lon("45")
parse_lon("-45")
parse_lon("-45.2323")
parse_lon("334")

# out of range with std::stod?
parse_lon("-45.23232e24")
parse_lon("-45.23232e2")
parse_lon("-45.23232")

# numeric input
parse_lon(1:10)
parse_lon(85:94)

# different formats
parse_lon("40.4183318 E")
parse_lon("40.4183318 W")
parse_lon("40 25 5.994") # => 40.41833

parse_lon("40.4183318W")
parse_lon("W40.4183318")
parse_lon("E40.4183318")
parse_lon("40.4183318E")

parse_lon("E 39 21.440") # => 39.35733
parse_lon("W 56 1.389") # => -56.02315

parse_lon("E40°25'5.994") # => 40.41833
parse_lon("40° 25' 5.994\" E") # => 40.41833
parse_lon("40:25:6E")
parse_lon("40:25:5.994E")
parse_lon("40d 25' 6\" E")

## End(Not run)

```

 parse_lon_lat

parse longitude and latitude

Description

parse longitude and latitude

Usage

```
parse_lon_lat(lon, lat)
```

Arguments

```
lon          (character/numeric/integer) one or more longitude values
lat          (character/numeric/integer) one or more latitude values
```

Details

```
length(lon) == length(lat)
```

Value

data.frame, with columns lon, lat. on an invalid values, an NA is returned. In addition, warnings are thrown on invalid values

Examples

```
parse_lon_lat("-120.43", "49.12")
## Not run:
parse_lon_lat("-120.43", "93")
parse_lon_lat("-190", "49.12")
parse_lon_lat("240", "49.12")
parse_lon_lat("-190", "92")
# many
lons <- c("45W54.2356", "181", 45, 45.234234, "-45.98739874")
lats <- c("40.123°", "40.123N74.123W", "191.89", 12, "N45 04.25764")
parse_lon_lat(lons, lats)

## End(Not run)
```

```
parse_parts
```

```
parse coordinates into degrees, minutes and seconds
```

Description

parse coordinates into degrees, minutes and seconds

Usage

```
parse_parts_lon(str)
```

```
parse_parts_lat(str)
```

Arguments

```
str          (character) string including longitude or latitude
```

Value

data.frame with columns for:

- deg (integer)
- min (integer)
- sec (numeric)

NA/NaN given upon error

Examples

```
parse_parts_lon("140.4183318")
## Not run:
parse_parts_lon("174.6411133")
parse_parts_lon("-45.98739874")
parse_parts_lon("40.123W")

parse_parts_lat("45N54.2356")
parse_parts_lat("40.4183318")
parse_parts_lat("-74.6411133")
parse_parts_lat("-45.98739874")
parse_parts_lat("40.123N")
parse_parts_lat("N40°25'5.994")

# not working, needs format input
parse_parts_lat("N455698735")

# multiple
x <- c("40.123°", "40.123N74.123W", "191.89", 12, "N45 04.25764")
parse_parts_lat(x)
system.time(parse_parts_lat(rep(x, 10^2)))

## End(Not run)
```

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