Package: L3bin (via r-universe)

September 5, 2024

Title Integerized Sinusoidal Binning Scheme for Level 3 Data

Version 0.0.0.9000

Description The NASA Ocean Biology processing Group L3 bin scheme, based on the sinusoidal map projection. Psuedo code for the binning scheme was published in Appendix A of NASA Technical Memorandum 104566, Vol. 32., listed in URL.

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URL https://oceancolor.gsfc.nasa.gov/docs/format/l3bins/, https://oceancolor.gsfc.nasa.gov/docs/technical/seawifs_reports/prelaunch/PreLVol32.pdf, https://hypertidy.github.io/L3bin/

BugReports https://github.com/hypertidy/L3bin/issues

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

RemoteUrl https://github.com/hypertidy/L3bin

RemoteRef HEAD

RemoteSha ec061c398664847f5bf4ab079a3b0a2eb359779e

Contents

bin_from_lonlat *Generate bin number from longitude latitude.*

Description

Bin number from longitude and latitude for a given grid with NUMROWS unique latitudes.

Usage

```
bin_from_lonlat(lon, lat, NUMROWS)
```

Arguments

lon	longitude
lat	latitude
NUMROWS	number of rows in the grid

Details

This function previously lived in sosoc/croc where it is called lonlat2bin

Value

integer vector of bin number

Examples

```
bin_from_lonlat(147, -42, 1024)
bin_from_lonlat(c(0, 0, 0), c(-90, 0, 90), 1024)
```

crop_bins *Crop L3 init object with an extent*

Description

Crop L3 list, returns bins that fall within the extent.

Usage

```
crop_bins(x, extent)
```

Arguments

x	L3bin object
extent	vector of 'c(xmin, xmax, ymin, ymax)'

Details

This function previously lived in sosoc/croc where it is called crop_init

Value

integer vector of bins

Examples

```
init <- L3bin(24)
crop_bins(init, c(100, 110, -50, -45))
```

`extent_from_bin` *Calculate bin boundaries from bin number*

Description

Calculate bin boundaries from bin number

Usage

```
extent_from_bin(bin, NUMROWS)
```

Arguments

`bin`	bin number
`NUMROWS`	relevant number of L3 bin rows

Details

Bin boundaries are the xmin, xmax, ymin, ymax edge of each bin - compare to the output of lonlat_from_bin‘ which returns only the centre of each bin. This function previously lived in sosoc/croc where it is called bin2bounds

Value

matrix of extent columns xmin,xmax,ymin,ymax -

Examples

```
bins <- L3bin(NUMROWS = 12)
ex <- extent_from_bin(1:bins$totbins, 12)
plot(range(ex[,1:2]), range(ex[,3:4]), type = "n", asp = 1)
points(lonlat_from_bin(1:bins$totbins, 12), pch = "+", cex = .8)
rect(ex[,1], ex[,3], ex[,2], ex[,4])
```

L3bin *Set up the basic values for the bin scheme for given number of rows.*

Description

This function previously lived in sosoc/croc where it is called initbin

Usage

```
L3bin(NUMROWS = 2160)
```

Arguments

NUMROWS	relevant number of L3 bin rows

References

https://oceancolor.gsfc.nasa.gov/docs/format/l3bins/

Examples

```
L3bin(1024)
```

lonlat_from_bin *Longitude and latitude from bin number.*

Description

Generate longitude and latitude coordinates from bin number.

Usage

```
lonlat_from_bin(bins, NUMROWS)
```

Arguments

bins	bin number
NUMROWS	number of rows in this grid

Details

This function previously lived in sosoc/croc where it is called bin2lonlat

Value

matrix of longitude, latitude the centre coordinate of the bin

Examples

```
lonlat_from_bin(c(1, 184), 12)
```

`row_from_lat` *Latitude to row*

Description

Row is 1-based, and starts at the southern-most row.

Usage

```
row_from_lat(lat, NUMROWS)
```

Arguments

`lat`	latitude
`NUMROWS`	number of rows in the grid

Details

This function previously lived in sosoc/croc where it is called .lat2row.

Examples

```
row_from_lat(-42, 1024)
row_from_lat(c(-90, 0, 90), 1024)
```

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