Package 'horizon'

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Type Package

Title Horizon Search Algorithm

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Description Calculates horizon elevation angle and sky view factor from a digital terrain model (Dozier and Frew, 1990).

Depends raster

License GPL-2

NeedsCompilation no

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`horizon-package` *Horizon Search Algorithm*

Description

Implementation of the horizon search algorithm and sky view factor algorithms of Dozier and Frew (1990) for a raster digital terrain model.

Details

Package:	horizon
Type:	Package
Version:	1.2
Date:	2018-07-03
Depends:	raster
License:	GPL-2

Author(s)

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References

Dozier, J. and Frew, J. (1990) Rapid calculation of terrain parameters for radiation modeling from digital elevation data, *IEEE Transactions on Geoscience and Remote Sensing* 5, 963–969.

`horizonSearch` *Horizon elevation angle from DEM RasterLayer*

Description

Computes the horizon elevation angle, within a maximum search distance, for a given azimith angle for each pixel in a digital elevation model raster object.

Usage

```
horizonSearch(x, azimuth, maxDist = 1000, degrees = FALSE,
              ll = TRUE, filename = "", blockSize = NULL)
```

Arguments

`x`	RasterLayer object.
`azimuth`	numeric. Azimuth angle.
`maxDist`	integer. Maximum search distance in meters.
`degrees`	logical. If TRUE, input (azimuth) and output (horizon elevation) angles are in degrees; else in radian.
`ll`	logical. If TRUE, coordinates should be in degrees; else planar.
`filename`	character. Output raster filename. Optional.
`blockSize`	integer>0. Number of raster rows processed simultaneously. Default is the number of rows in the input raster divided by 10.

Details

Azimuth is measured from North over East.

The 'blockSize' parameter may be reduced to avoid memory errors when processing large input RasterLayer objects.

Value

RasterLayer object

See Also

svf

Examples

```
r <- getData('alt', country='ALB')

h <- horizonSearch(r, 60, degrees=TRUE, maxDist=2000, ll=TRUE)
```

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svf *Sky view factor from DEM RasterLayer*

Description

Computes the sky view factor (fraction of sky not obstructed by terrain within a hemisphere), within a maximum search distance, for each pixel in a digital elevation model raster object.

Usage

```
svf(x, nAngles = 16, maxDist = 1000, ll = TRUE,
    filename = "", blockSize = NULL, verbose = TRUE)
```

Arguments

x	RasterLayer object
nAngles	integer. Discrete number of angles used to calculate sky view factor.
maxDist	integer. Maximum search distance in meters.
ll	logical. If TRUE, coordinates should be in degrees; else planar.
filename	character. Output raster filename. Optional.
blockSize	integer>0. Number of raster rows processed simultaneously. Default is the number of rows in the input raster divided by 10.
verbose	logical. If TRUE, progress messages are displayed.

Details

The sky view factor is estimated by calculating and averaging the horizon elevation angle and sky view factor for a discrete number of azimuth angles. Increasing this discreet number of angles 'nAngles' will provide a better estimate of the actual sky view factor, at the expense of longer processing time.

The 'maxDist' parameter determines the maximum search radius for determining the horizon angle. Increasing the value of 'maxDist' will provide a better estimate of the actual sky view factor, at the expense of longer processing time.

The 'blockSize' parameter may be reduced to avoid memory errors when processing large input RasterLayer objects.

Value

RasterLayer object. Values between 0 and 1.

See Also

horizonSearch

Examples

```
r <- getData('alt', country='ALB')

s <- svf(r, nAngles=8, maxDist=500, ll=TRUE)
```

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