

Package: rasterShade (via r-universe)

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Type Package

Title Wrapper around rayshader package

Version 0.6.0

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Description The package rasterShade is just a wrapper around function in rayshader package. The rasterShade package allows using rayshader algorithm directly on spatial data in form of Raster. The package tries to set ``reasonable" default values for parameters in rayshading algorithm. These default values are based on real world shadows that can be seen in nature.

License GPL (>= 3)

Encoding UTF-8

LazyData true

Depends R (>= 3.6.0)

Imports rayshader (>= 0.13.0), raster, sp, suncalc, lubridate, hms, glue, assertthat, methods

Suggests knitr, testthat (>= 2.1.0)

VignetteBuilder knitr

RoxygenNote 7.0.2

Repository <https://jancaha.r-universe.dev>

RemoteUrl <https://github.com/JanCaha/rasterShade>

RemoteRef HEAD

RemoteSha aaa67388e73d84fdccd0951d9967741c0f5f6cca

Contents

get_sun_position	2
shade_ambient	3
shade_global	4
shade_lambert	5

Index	7
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get_sun_position *Extract sun position at given location in specific date and time*

Description

The function is a wrapper around [getSunlightPosition](#) function. It performs several validity checks on inputs to ensure that they are logically valid. It also allows specification of time as and as an solar event.

Usage

```
get_sun_position(
  date = lubridate::ymd(Sys.Date()),
  time = "noon",
  tzone = "UTC",
  lat,
  lon
)
```

Arguments

date	Date specified as character in form YYYY-MM-DD. Default value is Sys.Date .
time	Either character representation of time (in format HH:MM:SS), or hms class, or one of text values: "noon", "sunrise", "sunset", "goldenHour", "goldenHourEnd". The textual representation is used to determine sun elevation using function getSunlightPosition . Value "sunrise" represents end of sunrise, while "sunset" represents start of sunset. Default value is "noon".
tzone	a character string that specifies which time zone to parse the date with. The string must be a time zone that is recognized by the user's OS. If no time zone is given the default value "UTC" is used. Default value "UTC".
lat	latitude of the location. Numeric from range -90,90. Positive values are north of the Equator.
lon	longitude of the location. Numeric from range -180,180. Positive values are east of the central meridian.

Value

data.frame with one row and two columns sun_azimuth and sun_elevation indicating sun position on the sky. Both values are in degrees. Sun azimuth value 0 is pointing towards North and in rises clockwise direction. Sun elevation 0 means that sun is exactly on the horizon, value 90 means that sun is exactly az zenith.

shade_ambient	<i>Function for calculation of ambient shading on raster data</i>
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Description

This function is just a wrapper around [ambient_shade](#) that supports directly using [Raster](#) in the function. The function also tries to set "reasonable" default values for parameters.

Usage

```
shade_ambient_date_time(  
  surface_raster,  
  date = as.character(Sys.Date()),  
  time = "noon",  
  tzone = "UTC",  
  rays_number = 36,  
  search_distance = 200,  
  z_value = 1,  
  verbose = FALSE  
)
```

```
shade_ambient_sun_position(  
  surface_raster,  
  sun_elevation = 45,  
  rays_number = 36,  
  search_distance = 200,  
  z_value = 1,  
  verbose = FALSE  
)
```

Arguments

surface_raster	Object of class Raster .
date	Date specified as character in form YYYY-MM-DD. Default value is Sys.Date .
time	Either character representation of time (in format HH:MM:SS), or hms class, or one of text values: "noon", "sunrise", "sunset", "goldenHour", "goldenHourEnd". The textual representation is used to determine sun elevation using function getSunlightPosition . Value "sunrise" represents end of sunrise, while "sunset" represents start of sunset. Default value is "noon".
tzone	a character string that specifies which time zone to parse the date with. The string must be a time zone that is recognized by the user's OS. If no time zone is given the default value "UTC" is used. Default value "UTC".
rays_number	Number of rays that are calculated around each pixel. Default value is 36, which means that one ray per 10 degrees of orientation.

search_distance	Distance in which sun blocking objects are searched for, specified in map units. Default value is 200 map units.
z_value	numeric value indicating the scale between xy and z. Typical use is if the distance is measured in meters and elevation in feet, in such case the z value needs to be recalculated to meters. Default value is 1, which means that both measures use the same units.
verbose	Should informative message be printed? Default FALSE.
sun_elevation	Numeric value, from range 0 - 90, with 0 being sun elevation directly on horizon while 90 means that sun is directly above the surface.

Value

Object of class [Raster](#).

shade_global	<i>Function for calculation of global shading on raster data</i>
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Description

This function is just a wrapper around [ray_shade](#) that supports directly using [Raster](#) in the function. The function also tries to set "reasonable" default values for parameters.

Usage

```
shade_global_date_time(
  surface_raster,
  date = as.character(Sys.Date()),
  time = "noon",
  tzone = "UTC",
  search_distance = 200,
  z_value = 1,
  verbose = FALSE
)

shade_global_sun_position(
  surface_raster,
  sun_elevation = 45,
  sun_azimuth = 180,
  search_distance = 200,
  z_value = 1,
  verbose = FALSE
)
```

Arguments

surface_raster	Object of class RasterLayer .
date	Date specified as character in form YYYY-MM-DD. Default value is Sys.Date .
time	Either character representation of time (in format HH:MM:SS), or hms class, or one of text values: "noon", "sunrise", "sunset", "goldenHour", "goldenHourEnd". The textual representation is used to determine sun elevation using function getSunlightPosition . Value "sunrise" represents end of sunrise, while "sunset" represents start of sunset. Default value is "noon".
tzone	a character string that specifies which time zone to parse the date with. The string must be a time zone that is recognized by the user's OS. If no time zone is given the default value "UTC" is used. Default value "UTC".
search_distance	Distance in which sun blocking objects are searched for, specified in map units. Default value is 200 map units.
z_value	numeric value indicating the scale between xy and z. Typical use is if the distance is measured in meters and elevation in fots, in such case the z value needs to be recalculated to meters. Default value is 1, which means that both measures use the same units.
verbose	Should informative message be printed? Default FALSE.
sun_elevation	Numeric value, from range 0 - 90, with 0 being sun elevation directly on horizon while 90 means that sun is directly above the surface. Default value is 45.
sun_azimuth	Numeric value that specifies azimuth from which the sun is shining on the surface. Value has to be from the range 0 - 360. Default value is 180.

Value

Object of class [Raster](#).

shade_lambert	<i>Function for calculation of lambert shading (also known as hillshade in GIS) on raster data</i>
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Description

This function is just a wrapper around [lamb_shade](#) that supports directly using [Raster](#) in the function. The function also tries to set "reasonable" default values for parameters.

Usage

```
shade_lambert_date_time(
  surface_raster,
  date = as.character(Sys.Date()),
  time = "noon",
  tzone = "UTC",
```

```

    only_facing_sun = FALSE,
    z_value = 1,
    verbose = FALSE
)

shade_lambert_sun_position(
  surface_raster,
  sun_elevation = 45,
  sun_azimuth = 180,
  only_facing_sun = FALSE,
  z_value = 1,
  verbose = FALSE
)

```

Arguments

surface_raster	Object of class Raster .
date	Date specified as character in form YYYY-MM-DD. Default value is Sys.Date .
time	Either character representation of time (in format HH:MM:SS), or hms class, or one of text values: "noon", "sunrise", "sunset", "goldenHour", "goldenHourEnd". The textual representation is used to determine sun elevation using function getSunlightPosition . Value "sunrise" represents end of sunrise, while "sunset" represents start of sunset. Default value is "noon".
tzone	a character string that specifies which time zone to parse the date with. The string must be a time zone that is recognized by the user's OS. If no time zone is given the default value "UTC" is used. Default value "UTC".
only_facing_sun	Boolean value specifying if the value should be determined for all parts of the surface or only for parts oriented towards sun. Default value is FALSE, which means that it is calculated for all parts of the surface.
z_value	numeric value indicating the scale between xy and z. Typical use is if the distance is measured in meters and elevation in fots, in such case the z value needs to be recalculated to meters. Default value is 1, which means that both measures use the same units.
verbose	Should informative message be printed? Default FALSE.
sun_elevation	Numeric value, from range 0 - 90, with 0 being sun elevation directly on horizon while 90 means that sun is directly above the surface. Default value is 45.
sun_azimuth	Numeric value that specifies azimuth from which the sun is shining on the surface. Value has to be from the range 0 - 360. Default value is 180.

Value

Object of class [Raster](#).

Index

ambient_shade, [3](#)

get_sun_position, [2](#)
getSunlightPosition, [2](#), [3](#), [5](#), [6](#)

hms, [2](#), [3](#), [5](#), [6](#)

lamb_shade, [5](#)

Raster, [3–6](#)
RasterLayer, [5](#)
ray_shade, [4](#)

shade_ambient, [3](#)
shade_ambient_date_time
 (shade_ambient), [3](#)
shade_ambient_sun_position
 (shade_ambient), [3](#)
shade_global, [4](#)
shade_global_date_time (shade_global), [4](#)
shade_global_sun_position
 (shade_global), [4](#)
shade_lambert, [5](#)
shade_lambert_date_time
 (shade_lambert), [5](#)
shade_lambert_sun_position
 (shade_lambert), [5](#)
Sys.Date, [2](#), [3](#), [5](#), [6](#)