

Package ‘solarPos’

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Type Package

Title Solar Position Algorithm for Solar Radiation Applications

Version 1.0

Date 2016-01-07

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Description Calculation of solar zenith and azimuth angles.

License GPL-2

NeedsCompilation no

Repository CRAN

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R topics documented:

solarPos-package	1
julianDay	2
solarPosition	3
Index	5

solarPos-package	<i>Solar Position Algorithm for Solar Radiation Applications</i>
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Description

Implementation of the Solar Position Algorithm for Solar Radiation Applications of Reda and Andreas (2004, 2007) for calculation of solar zenith and azimuth angles.

Details

Package: solarPos
Type: Package
Version: 1.0
Date: 2016-01-07
License: GPL-2

Author(s)

Jasper Van doninck

Maintainer: Jasper Van doninck <vandinck.jasper@gmail.com>

References

Reda, I. and Andreas, A. (2004) Solar position algorithm for solar radiation applications, *Solar Energy* 76, 577-589.

Reda, I. and Andreas, A. (2007) Corrigendum to Solar position algorithm for solar radiation applications [Solar Energy 76 (2004) 577589], *Solar Energy* 81, 838.

julianDay

Julian Day

Description

Computes Julian Day from year, month, day and time of day.

Usage

```
julianDay(year, month, day, hour = 12, min = 0, sec = 0, tz = 0, dut1 = 0)
```

Arguments

year	Year
month	Month (1-12)
day	Day (1-12)
hour	Hour (0-23)
min	Minute (0-59)
sec	Second (0-59)
tz	Time zone (negative to the west)
dut1	Correction term (0-1)

Details

Astronomical year numbering is used, i.e., 0 is used for 1 BC, -1 for 2 BC, and so on.

Time is expressed as Coordinated Universal Time (UTC), or Local Standard Time (LST) if the `tz` argument is used. The argument `dut1` is expressed as a fraction of a second and used to correct UTC to Universal Time (UT)

Value

Julian Day

Author(s)

Jasper Van doninck

Examples

```
julianDay(2000,1,1,12,0,0)
```

```
julianDay(2010,5,10,16,30,0,tz=-7)
```

```
julianDay(2015,1:12,1,0,0,0)
```

solarPosition	<i>Solar zenith and azimuth angles</i>
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Description

Computes the solar zenith and azimuth for a place on Earth for a given date and time.

Usage

```
solarPosition(jd, lon, lat, delta_t = 32.184, elev = 0, temp = 16, pres = 1013.25)
```

Arguments

<code>jd</code>	Julian day, with decimal fraction.
<code>lon</code>	Longitude, in decimal degrees.
<code>lat</code>	Latitude, in decimal degrees.
<code>delta_t</code>	Difference between the Earth rotation time and the Terrestrial Time (TT), in seconds.
<code>elev</code>	Elevation, in meters.
<code>temp</code>	Temperature, in degrees Celsius.
<code>pres</code>	Pressure, in hPa.

Details

Solar zenith and azimuth angle are give in degrees, azimuth is measured eastward from north.

Value

Matrix of solar zenith and azimuth angles.

Author(s)

Jasper Van doninck

Examples

```
##Julian day
```

```
jd <- julianDay(2003,10,17,12,30,30,tz=-7)
```

```
##Solar angles
```

```
solarPosition(jd,-105.1786,39.742476,delta_t=67,elev=1830.14,temp=11,pres=820)
```

Index

`julianDay`, 2

`solarPos-package`, 1

`solarPosition`, 3