

Package ‘PETr’

February 17, 2020

Type Package

Title PET

Version 0.1.0

Maintainer ECAD <eca@knmi.nl>

Depends R (>= 2.12.0)

Imports ncdf4 (>= 1.10)

Description Estimates potential evapotranspiration using the Penman-Monteith method.
The climate variables required are Tmax, Tmin, vapour pressure, wind speed, sunshine hours OR radiation.

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

R topics documented:

dewpoint_to_humidity	1
pet_makkink	2
pet_penmon	3
pet_priestley_taylor	4
vapour_pressure	4

Index	6
--------------	----------

dewpoint_to_humidity	<i>Relative Humidity</i>
----------------------	--------------------------

Description

This function computes RH from dewpoint

Usage

```
dewpoint_to_humidity(dp = NA, t = NA)
```

Arguments

```
dp          = Dewpoint (degrees celsius)
t           = Temperature mean (degrees celcius)
```

Value

A vector containing the daily vp

pet_makkink	<i>Potential Evapotranspiration</i>
-------------	-------------------------------------

Description

This function takes a dataframe object as input and computes PET using Makkink's method.

Usage

```
pet_makkink(indat)
```

Arguments

```
indat          = dataframe containing the input variables
```

Value

A vector containing the daily Potential EvapoTranspiration (mm/day)

Examples

```
pet_makkink(indat)
```

Where the dataframe "indat" contains the following variables:

```
tmin = Temperature min    (degrees Celsius)
tmax = Temperature max    (degrees Celsius)
rs   = radiation           (MJ/m^2)
```

Missing values should be converted to NA

pet_penmon	<i>Potential Evapotranspiration</i>
------------	-------------------------------------

Description

This function takes a dataframe object as input and computes PET.

Usage

```
pet_penmon(indat)
```

Arguments

indat = dataframe containing the input variables

Value

A vector containing the daily Potential EvapoTranspiration (mm/day)

Examples

```
pet_penmon(indat)
```

Where the dataframe "indat" contains the following variables:

```
tmin = Temperature min    (degrees Celsius)
tmax = Temperature max    (degrees Celsius)
only one of the following variables (vp OR rh OR dp) are to be passed
vp = Vapour pressure      (hPa)
rh = Relative humidity    (%)
dp = Dewpoint             (degrees Celsius)
ws = Wind speed at 10m    (m/s)
either ss or rs is passed, but not both
ss = Sunshine duration    (0-24 hours)
cl = Cloudiness           (0-1)
cl is optional for use with ss, if unavailble cl is estimated
rs = radiation             (MJ/m^2)
```

Also rquired is the latitude and longitude

```
lat = Latitude (degrees)
```

```
lons = Longitude (degrees)
```

Elevation (needed) is retrieved from the PETr internal file "data/elev_dat.rda" which contains data from:

http://www.ecad.eu/download/ensembles/data/Grid_0.1deg_reg_ensemble/elev_ens_0.1deg_reg_v17.0e.nc

Missing values should be converted to NA

`pet_priestley_taylor` *Potential Evapotranspiration*

Description

This function takes a dataframe object as input and computes PET using Makkink's method.

Usage

```
pet_priestley_taylor(indat)
```

Arguments

`indat` = dataframe containing the input variables

Value

A vector containing the daily Potential EvapoTranspiration (mm/day)

Examples

```
pet_priestley_taylor(indat)
```

Where the dataframe "indat" contains the following variables:

```
tmin = Temperature min    (degrees Celsius)
tmax = Temperature max    (degrees Celsius)
only one of the following variables (vp OR rh OR dp) are to be passed
vp = Vapour pressure      (hPa)
rh = Relative humidity    (%)
dp = Dewpoint             (degrees Celsius)
rs = radiation            (MJ/m^2)
Also required is the latitude and longitude (for land sea mask)
lat = Latitude            (degrees)
lons = Longitude          (degrees)
```

Missing values should be converted to NA

`vapour_pressure` *Vapour pressure*

Description

This function computes vapour pressure from temperature

vapour_pressure

5

Usage

```
vapour_pressure(tm)
```

Arguments

tm	= Temperature (degrees Celcius)
vp	= Vapour pressure (hPa)

Value

A vector containing the daily vp

Index

dewpoint_to_humidity, [1](#)

pet_makkink, [2](#)

pet_penmon, [3](#)

pet_priestley_taylor, [4](#)

vapour_pressure, [4](#)