Package 'ThermIndex'

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Type Package

Title Calculate Thermal Indexes

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Description
Calculates several thermal comfort indexes using temperature, wind speed and relative humidity values, calculating indexes such as Humidex, windchill, Discomfort Index and others.

License GPL (>= 2)

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`Convert Temperature from Farenheit to Celsius`
Convert Temperature from Farenheit to Celsius

Description

Converts Temperature from Farenheit to Celsius

Usage

```
tempftoc(tf)
```

Arguments

`tf`	Numerical Vector of Temperature Values in Farenheit

Value

Numerical vectors containing Temperature Values in Celsius

Author(s)

Francisco Jablinski Castelhano - Laboclima/ Universidade Federal do Paraná

Examples

```
##----Converting temperature from farenheit to celsius
tempftoc(tf= 92)
```

`Convert Wind Velocity from km/h to m/s`
Convert Wind Velocity from km/h to m/s

Description

Converts Wind Velocity values in Km/h to m/s

Usage

```
kmhtoms(wvkmh)
```

Arguments

`wvkmh`	Numerical Vector of Wind Velocity Values in Km/h

Value

Numerical vectors containing Wind velocity in m/s

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

Examples

```
##----Converting Wind from Km/h to m/s
kmhtoms(wvkmh=5)
```

`Convert Wind Velocity from knots to m/s`

Convert Wind Velocity from knots to m/s

Description

Converts Wind Velocity values in Knots to m/s

Usage

```
kntoms(wvkn)
```

Arguments

`wvkn`	Numerical Vector of Wind Velocity Values in Knots

Value

Numerical vectors containing Wind velocity in m/s

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

Examples

```
##----Converting Wind from Knots to m/s
kntoms(wvkn=4)
```

Convert Wind Velocity from mph to m/s *Convert Wind Velocity from mph to m/s*

Description

Converts Wind Velocity values in mph to m/s

Usage

```
mphtoms(wvmph)
```

Arguments

wvmph	Numerical Vector of Wind Velocity Values in mph

Value

Numerical vectors containing Wind velocity in m/s

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

Examples

```
##----Converting Wind from mph to m/s
mphtoms(wvmph=9.4)
```

Discomfort Index *Discomfort Index*

Description

This function calculates the Thermal Discomfort Index for a daily or hourly data series, based on the formula purposed by Thom(1959). Thom's index was created in 1959 at the U.S Weather Bureau in order to precise thermal discomfort levels. A chart containing the values and the discomfort level are presented on the link written at See Also section.

Usage

```
di(temp, ur)
```

Arguments

temp	Numerical Vector of Mean Air Temperature values in celsius
ur	Numerical Vector of Mean Air Temperature values in celsius

Value

Numerical vectors containing the Discomfort Index Values

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

References

Thom, E.C. The discomfort index. Weatherwise.(1959), v. 12, p. 57-60.

See Also

http://www.eurometeo.com/english/read/doc_heat

Examples

```
##----Performing the Discomfort Index calculation
di(temp=22,ur=18)
```

Effective Temperature Taking Wind Velocity

Calculates the Effective Temperature Taking Wind Velocity

Description

Calculates the Effective Temperature taking Wind Velocity for a daily or hourly data series, based on the formula by Suping et al(1992) .

Usage

```
etv(temp,ur,vv)
```

Arguments

temp	Numerical Vector of Mean Air Temperature values in celsius
ur	Numerical vector of Relative humidity Values in percentual
vv	Numerical vector of Wind velocity values in m/s

Value

Numerical vectors containing the Effective Temperature taking Wind velocity

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

References

Suping, Z. Guanglin, M.,Yanwen, W.,Ji, L. Study of the relationships between weather conditions and the marathon race, and of meteorotropic effects on distance runners, International Journal of Biometeorology,(1992),V.36, P.63-68.

See Also

http://www.periodicos.ufam.edu.br/revista-geonorte/article/view/e/2204

Examples

```
#Calculating the Effective Temperature taking Wind velocity Index
etv(temp= 31.1,ur=64,vv=1.2)
```

Humidex *Humidex Index for Thermal Comfort*

Description

Calculates the Thermal Comfort Index Humidex for daily or hourly data series, based on the formula purposed by Masterton and Richardson (1979).

Usage

```
humidex(temp,ur)
```

Arguments

temp	Numerical Vector of Mean Temperature Values in celsius
ur	Numerical Vector of Relative Humidity in percentual

Value

Numerical vectors containing the Humidex Index Values

Author(s)

Francisco Jablinski Castelhano - Laboclima/Univesidade Federal do Paraná

References

Masterton,J.M., Richardson,F.A.,Humidex ; a method of quantifying human discomfort due to excessive heat and humidity,Environment Canada,1979

See Also

https://www.ccohs.ca/oshanswers/phys_agents/humidex.html

Examples

```
##----Performing the Humidex calculation
humidex(temp=21.2,ur = 97)
```

`Wind Chill Index` *Wind Chill Index*

Description

Calculates the Wind Chill index based on the NOAA's equation. Notice that this is an index to calculate how cold air feels on human skin. It is only effective for Wind Velocity values higher than 1.3 m/s and temperatures lower than 10 celsius

Usage

```
wc(temp,vv)
```

Arguments

`temp`	Numerical Vector of Mean Air Temperature values in celsius
`vv`	Numerical vector of Wind velocity values in m/s

Value

Numerical vectors containing the Wind Chill Index in Celsius

Author(s)

Francisco Jablinski Castelhano - Laboclima/Universidade Federal do Paraná

References

NOAA, Wind Chill Temperature Index, Available at <http://www.nws.noaa.gov/om/cold/resources/wind-chill-brochure.pdf>, Acess date: Jul 14,2017

See Also

http://www.nws.noaa.gov/om/cold/wind_chill.shtml

Examples

```
##----Calculating the Wind Chill Index
wc(temp= 8,vv= 3.5)
```

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