Physics of Monuments Plots

The website www.monumenten.bwk.tue.nl allows users to download MAT-files. When these files are opened in Matlab, each measurement position is loaded in the workspace as a separate structure. The plots that are available online can also be made in Matlab. This is a short guide on how to do this.

Structures

There are 2 types of structures:

- T and RH structures as created by the T and RH Time Plot export option
- Tsurf structures as created by the T Time Plot export option

Each structure contains:

- ye (time vector containing years)
- mo (time vector containing months)
- da (time vector containing days)
- ho (time vector containing hours)
- mi (time vector containing minutes)

T and RH structures also contain:
- T (vector containing temperature data)
- RH (vector containing relative humidity data)

Tsuf structures contain
- Tsurf (vector containing surface temperature data)

Only plotting opening hours or office hours

To only consider the opening hours, the next function is used:
[name of new structure] = opening(name of structure)

Converting Tsurf to an RH near the surface

To calculate the RH near a surface, based on the vapor pressure on another measurement position, the following command can be used:
[name of new structure] = RH(name of Tsurf structure, name of T and RH structure)

Tsuf structure plots

Tsurf structures can only be plotted using the PoMsurf plot command. A plot can be made using 2 or more surface temperatures:
PoMsurf(name of first Tsurf structure, name of second Tsurf structure, …) (2 or more structures) or
PoMsurf(name of first Tsurf structure, name of second Tsurf structure, …, options)

T and RH structure plots

For these structures there are 3 different kinds of plots: PoMtime, PoMkek and PoMbar.

PoMtime(name of structure 1, name of structure 2, …) (1 or more structures) or
PoMtime(name of structure 1, name of structure 2, …, options)

PoMkek(name of structure) (only 1 structure) or
PoMkek(name of structure, options)

PoMmultikek(name of structure 1, name of structure 2, …) (1 or more structures) or
PoMmultikek(name of structure 1, name of structure 2, …, options)

PoMbar(name of structure) (only 1 structure) or
PoMbar(name of structure, options)

Options

Each plot has a few default settings. These settings can be changed by creating a structure that matches some or all of these settings.
Examples

Creating a time plot of structures A and B with a specific title and legend:
Opt.title = 'This is a title';
Opt.legend = 'Room A;Room B';
PoMtime(A,B,Opt)

Examine fungal growth near a surface S in room A:
Scalculated = RH(S,A)
Opt.histo = 0;
PoMkek(Scalculated,Opt)