Instruction on how to use the m-model stand-alone program

3 July 2018

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The m-model stand-alone program `StandAloneMModel` is an exe-file that reads a standardized file with climate data and outputs the m-values both as a diagram and in a standardized output file.

The input file for climate data must have the name `Inputm.txt` and have the following structure with time (h), temperature (°C), relative humidity (Pa/Pa) and a fourth column which is not used, but which needs to be there (we have placed 8,0000 there):

```
0    21,900000    0,268000    8,000000
1    22,300000    0,267000    8,000000
2    22,100000    0,269000    8,000000
3    22,100000    0,269000    8,000000
4    22,100000    0,269000    8,000000
5    22,200000    0,270000    8,000000
6    22,100000    0,273000    8,000000
7    22,100000    0,273000    8,000000
8    22,100000    0,271000    8,000000
9    22,100000    0,270000    8,000000
10   22,100000    0,273000    8,000000
11   22,100000    0,277000    8,000000
12   22,100000    0,276000    8,000000
13   22,100000    0,277000    8,000000
14   22,000000    0,279000    8,000000
15   22,100000    0,280000    8,000000
16   22,100000    0,277000    8,000000
17   22,100000    0,278000    8,000000
18   22,100000    0,281000    8,000000
19   22,100000    0,280000    8,000000
20   22,100000    0,280000    8,000000
21   22,100000    0,269000    8,000000
22   22,100000    0,271000    8,000000
23   7,800000     0,739000    8,000000
```

Note that decimal comma needs to be used and that the values are separated by tabs.

The above data can be created by using Excel in this way:

1. Create the data above.
2. Column 1 should be formatted as numbers with 0 decimals.
3. Columns 2-4 should be formatted as numbers with 6 decimals.

4. Save as Inputm.txt using the following format: Text (Tab delimited).

The input file can also be created with the following MATLAB code (where `t`, `T` and `RH` are already defined):
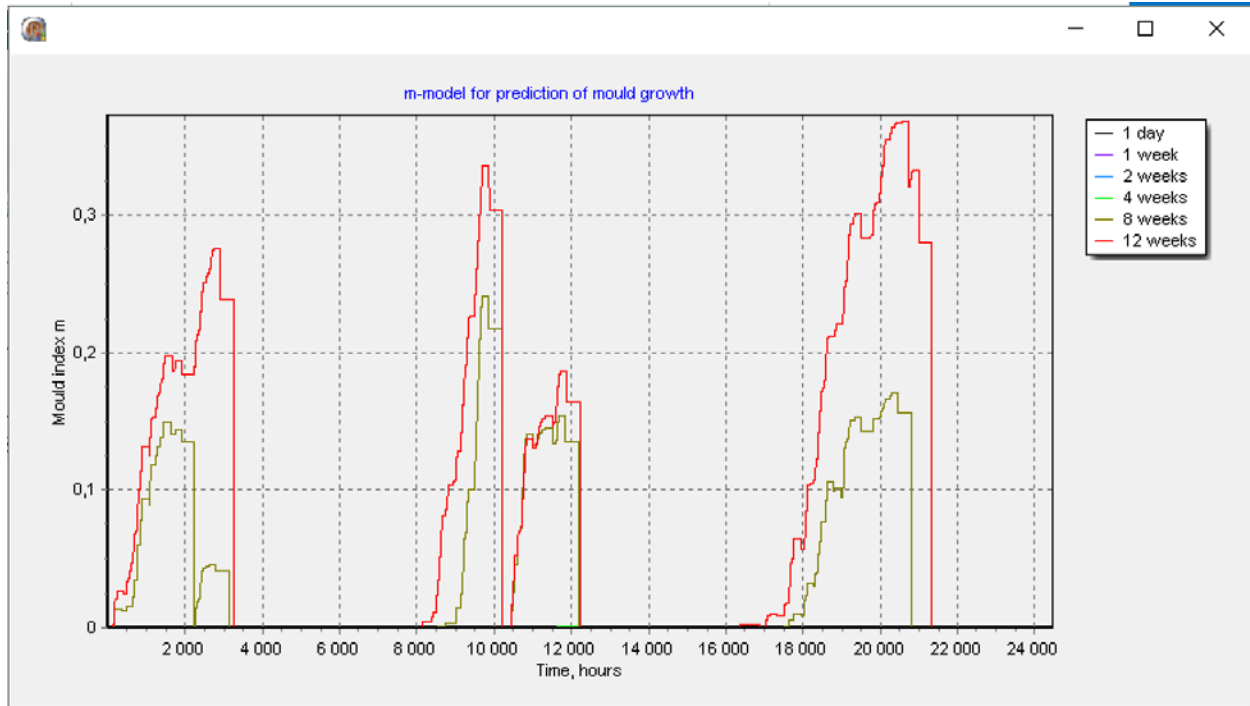
```
w=8*ones(1,length(t)); %not used, but has to have a value
A=[t' T' (RH/100)' w']; %make matrix of output data
hf=fopen('Inputm.txt','w+'); %open file
for k=1:length(t)
    Aline=sprintf('%-u\t%-f\t%-f\t%-f\r',A(k,:)); %format
    Aline(findstr(Aline,'.'))=','; %change to decimal comma
    fprintf(hf,'%s\n',Aline); %write a line to file
end
fclose(hf) %close file
```

An output file with the m-values has the name `Outputm.txt` and contains the time (h) and the m-values for the six time-scales 1 day, 1 week, 2 weeks, 4 weeks, 8weeks and 12 weeks. It has the following format:

1 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
2 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
3 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
4 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
5 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
6 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
7 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
8 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
9 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
10 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
11 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
12 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
13 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
14 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
15 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
16 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
17 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
18 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
19 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
20 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
21 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
22 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000
23 0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000	0.00000000000000E+0000

Note that the names of the two files cannot be changed, so you need to create a new input file or change the name of an existing file for each new run and also save the output file under a new name if you do not want it to be overwritten by the next run.

Below is an example of the result from an m-model calculation with StandAloneMModel.exe. In this case only the longest time scales 8 and 12 weeks were active and the highest m-value is less than 0.4.

For a description of the m-model and how to interpret it, please look at Wadsö et al. "The m-model for prediction of mold growth" (manuscript; can be obtained from lars.wadso@byggtek.lth.se).