

PhysaliaSIM tool README:

The tool PhysaliaSIM allows you to track the most likely dispersion of floating colonies of *P. physalis* entering the Mediterranean Sea on a specific time-slot. You can define the time when the colonies are entering the basin (e.g., based on observations in the Strait of Gibraltar region) and also define your Region of Interest (ROI), i.e. the area of the Mediterranean Sea you are most concerned with. The tool will provide with both maps and time-series of the presence of colonies in the user-defined ROI.

1. What you need before running PhysaliaSIM:
 - a. Matlab/Octave installed
 - b. Input values (database with drifting pathways) on the very same folder as the programs (where this 'Readme' file is)

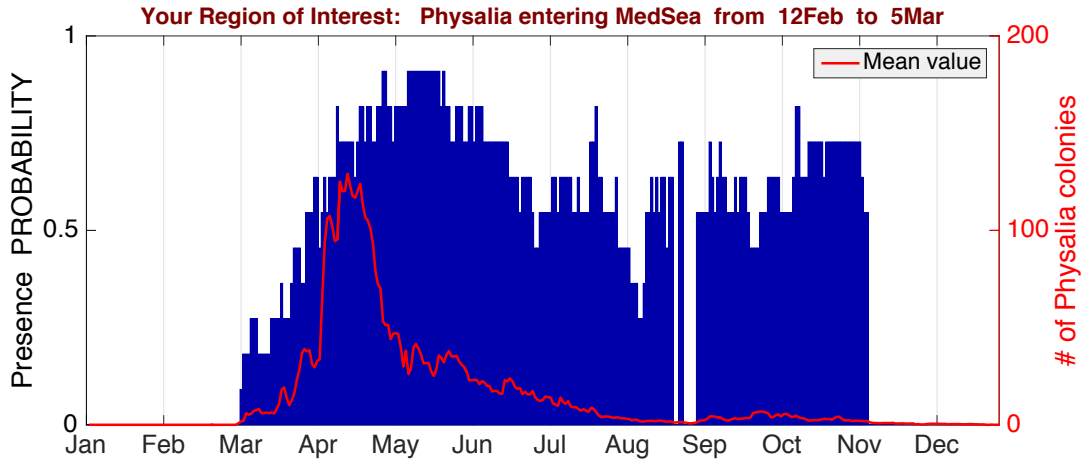
2. What you need to do to calculate your prediction:
 - a. If you are using Octave: copy `start.m_octave` to `start.m*`
 - b. If you are using Matlab: copy `start.m_matlab` to `start.m*`

* For an advanced configuration of your own `start.m`, see '8. Configure your own `start.m`' at the end of this document. Please notice that you may need NOW to change the "/" or "\" in the definition of 'myresultsdir=' of your `start.m` (Matlab or Octave) depending if your computer is using Linux, Windows, your Octave version, etc.

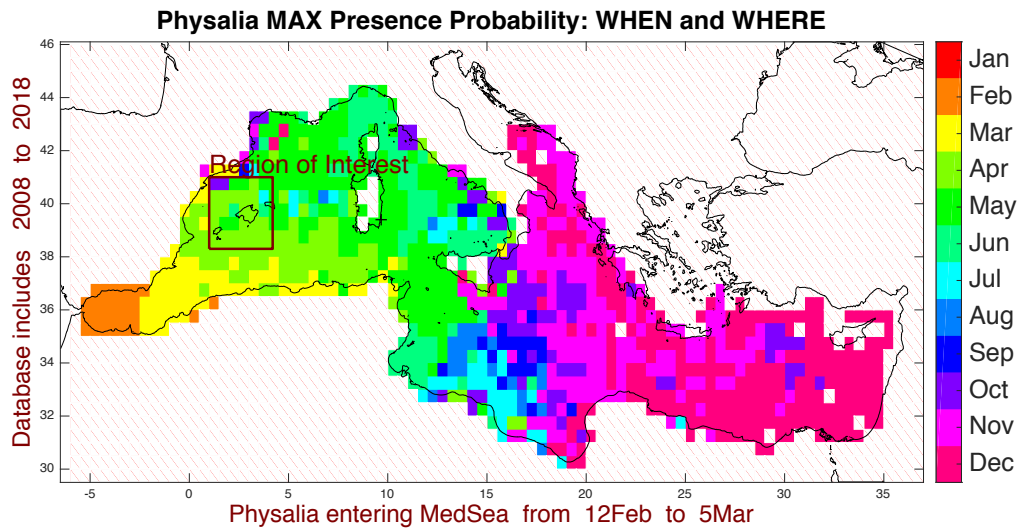
3. Run 'PhysaliaSIM_myrun.m'

4. Input values needed to perform the run: you will be prompted to insert the following values when executing the run script:
 - a. Name of your run (that is needed for re-plotting without the need of performing the computations again, see below)
 - b. Indicate the dates (month/day) when *P. physalis* is entering the Mediterranean Sea
 - c. Geographical limits (lon/lat) of your region of interest (indicate here the region within the Mediterranean where you want to get results about the arrival of *P. physalis*).

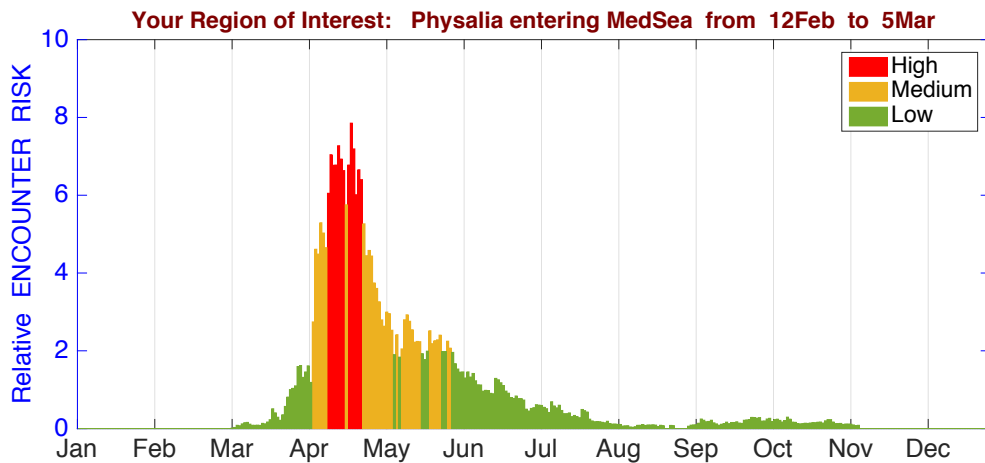
5. Examples of your results: the script above will produce four plots with the dispersion predicted for the *P. physalis* colonies entering the Mediterranean Sea in the time-period defined by you (please bear in mind the calculations can take up to 10+ minutes). These plots are like the following (for a complete definition of the parameters shown please refer to the publication):
 - a. Time-series of presence probability and mean number of colonies within your ROI:



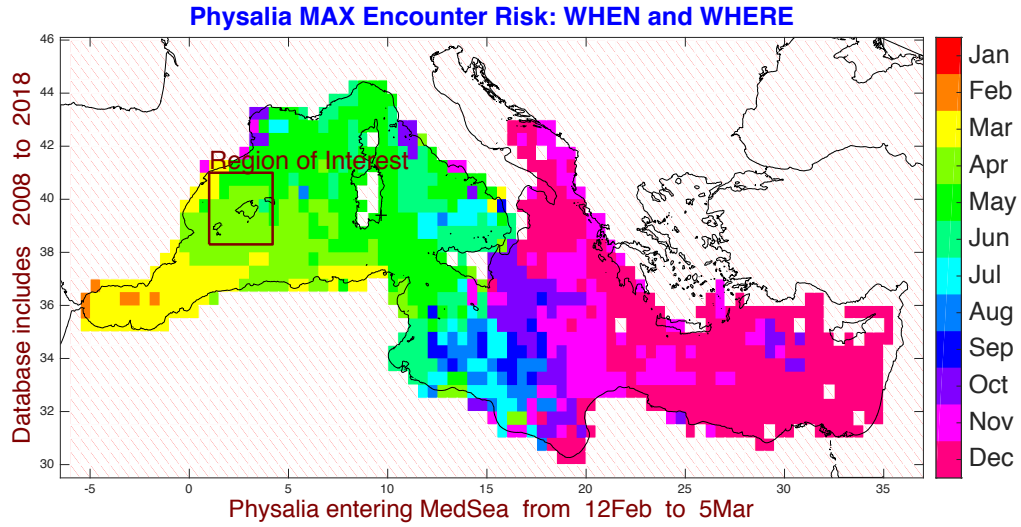
b. Spatial map with the period (moth) of maximum presence probability in the whole Mediterranean:



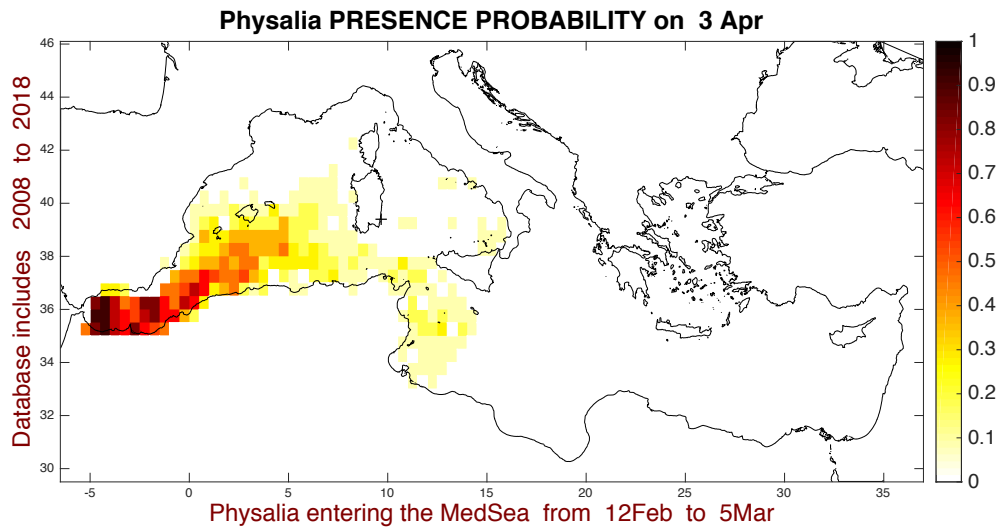
c. Time-series of encounter risk for *P. physalis* within your ROI:

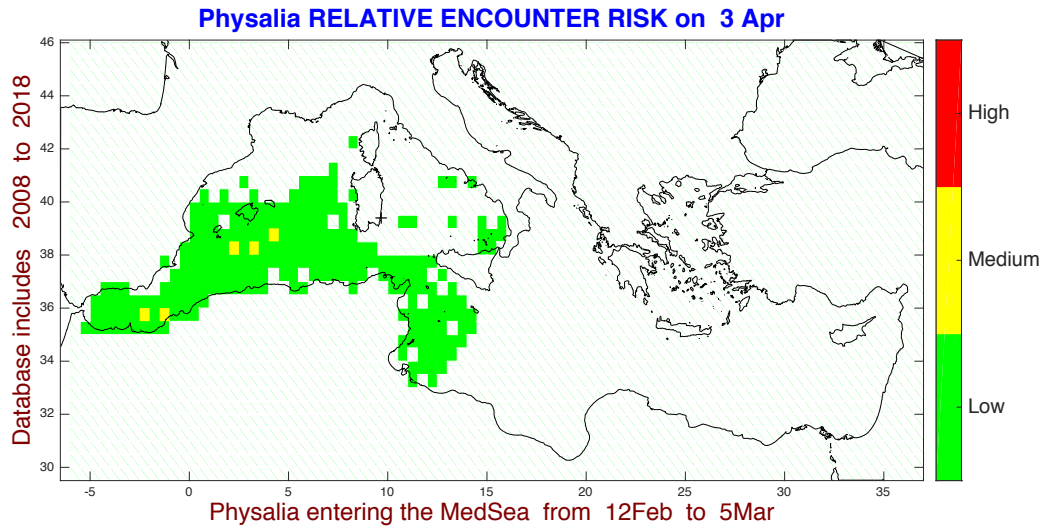


- d. Spatial map with the period (month) for maximum encounter risk for the whole Mediterranean



- e. After plotting the maps, you will be asked if you want to plot maps of presence and encounter risk for specific days of the year. If you answer 'yes' and specify a date after the entrance event (point 4.b) you will get this type of maps:





6. To replot your results without recalculating: the results of your computation (point 4) are stored in an ad-hoc folder with the name you decided at the beginning of the process (point 4.a). If you want to re-plot the maps and figures above you can just use the script 'PhysaliaSIM_replotting.m' and it will generate the figures without needing to re-calculate again

7. To replot your results without recalculating AND changing your region of interest: you can also call you results (for the time-window specified in point 4.b) and change the geographical location of your ROI. For doing this you must run the script 'PhysaliaSIM_replotting_changing_Region_of_interest.m'. When executing the script, you will be asked for the new limits of your ROI and the plots will be produced swiftly.

8. Configure your own start.m:
 - a. To change the folder where you store your results, change 'myresultsdir=' in the new start.m
 - b. The default horizontal resolution of the resulting maps (the ones shown in point 5.) is 0.5 geographical degrees. If you prefer a different horizontal resolution, change 'myhorizresolution=' in geographical degrees in your start.m. Please, notice that changing this resolution will impact the time the PhysaliaSIM tool will need to finish the calculations (in point 4.)

Thanks for using the PhysaliaSIM tool!