Guidelines to use the Graphical User Interface (GUI) for marine disease modelling

This is a guideline for the Grafical User Interface (GUI) that have been set up to easily manipulate the marine disease model parameters and initial conditions and get results for different disease scenarios. The model behind the GUI is a compartmental single population model as built in this course lessons, where S is the susceptible host population, I is the infected population, DI is the dead infected population and IP is the parasite pool in the water column. This model is adequate to simulate some invertebrate marine populations' disease dynamics; for example abalones. Abalone is the common name for marine gastropod molluscs (sea snails) in the *Haliotidae* family.Withering abalone syndrome is the disease of the abalone shellfish, found in black and red abalones.

Parasite transmission to S occur through direct contact between (1) I and S individuals, (2) DI and S individuals and (2) waterborne parasites IP and S individuals. Disease transmission rate is specific for each of thee transmission types, that is $Iinfect$, $Dinfect$, and $IPinfect$, respefctively. Susceptible individuals are removed from the system by $Bmort$ mortality rate, while infected animals die at $Imort$ mortality rate. Parasite stages in the water column are produced (released) by infected and dead infected individuals at $Irelease$ and $Drelease$ rates, respectively. Dead individuals are removed from the system at $DeadDecay$ rate while IP are lost or deactivated at Premove rate.

Files

To run the GUI you need to download both files (*.m and *.fig) in the same folder: (1) **Abalone1.m** and **Abalone1.fig**. The **Abalone1.m** file is the file you need to run on MATLAB by typing **Abalone1** on the command window. The **Abalone1.fig** is the file you need to open in order to edit and change the outputs of the GUI. A priori you do not need to open and edit this **Abalone1.fig** file.

Run the GUI

On the Matlab workspace find and open the folder where you have located both files.

Once you are in the folder, follow the steps 2-7 in Figures 1 and 2.

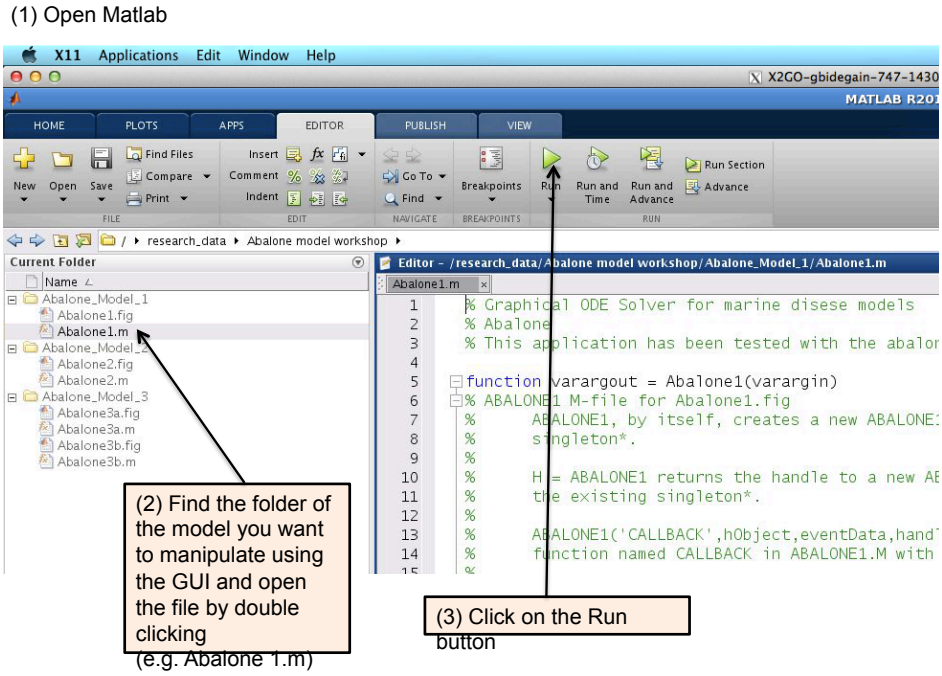

Figure 1: Steps to follow in the Matlab Workspace

1.5

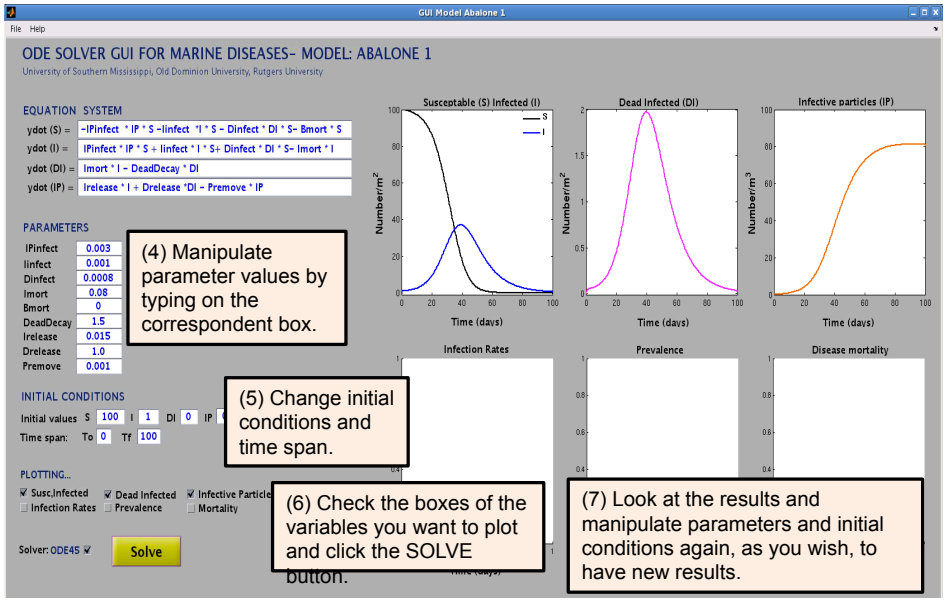

Figure 2: Steps to follow on the GUI window