

Instructions for setting-up and running an ASMITA model of Southampton Water

Download the code

The ASMITA code can be downloaded from www.coastalsea.uk.

In addition, you should download the 'ASMITA training pack' and unzip the file to your working folder.

Installation

ASMITA is installed as an App and requires muitoolbox and dstoolbox to be installed. The download for each of these includes the code, documentation and example files. The files required are:

dstoolbox: [dstoolbox.mltbx](#)

muitoolbox: [muitoolbox.mltbx](#)

The App file: **Error! Reference source not found..mlappinstall**

Installing the toolboxes

The two toolboxes can be installed using the *Add-Ons>Manage Add-Ons* option on the Home tab of Matlab™. Alternatively, right-click the mouse on the 'mltbx' files and select install. All the folder paths are initialised upon installation and the location of the code is also handled by Matlab™. The location of the code can be accessed using the options in the *Manage Add-Ons* UI.

Installing the App

The App is installed using the Install Apps button on the APPS tab in Matlab™. Alternatively, right-click the mouse on the 'mlappinstall' file and select install. Again all the folder paths are initialised upon installation and the location of the code is handled by Matlab™.

The App file contains the code for the three models. Once installed, the model can be run from the Command Window using:

```
>> Asmita;
```

Documentation can be viewed from the Supplementary Software in the Matlab™ documentation. The location of the code can be accessed by hovering over the App icon and then finding the link in the pop-up window.

Opening ASMITA

A graphical user interface (GUI) is used to set-up, run scenarios, plot results and export model output.

With the Matlab working directory (folder) pointing to the folder containing the ASMITA code, the GUI is run from the command prompt by typing:

```
>> Asmita;
```

A splash screen crediting the developers appears for a few seconds before being replaced by the ASMITA interface.

Training exercise materials

The ASMITA training pack.zip file should contain the following:

- ASMITA training exercise.docx – this file
- ASMITA training exercise.pdf – slides used to explain the exercise
- Note on Southampton Water.pdf – a background description of the estuary.
- SW4e model parameters.xlsx – spreadsheet with summary of element properties and historic changes.
- SW4e element properties.txt – text file of the element properties.
- Inner Channel Interventions.txt – text file of the historic interventions.



Training exercise

Set-up a 4-element model of Southampton Water using the data provided in 'SW4e model parameters.xls'. Set start year to 1800. The Inner channel interventions file includes historic maintenance dredging and an assumed rate of maintenance dredging for the duration of the simulation (to 2100).

Then examine the following scenarios:

1. Run mode for sea level rise of 2mm/year, with and without nodal cycle of amplitude 0.15m.
2. With sea level rise of 2mm/year but no nodal cycle:
3. Load 'SW4e_change.xls' to examine influence of indicative historical changes
4. Introduce dredged channel 200m wide and 2m deeper than existing bed in 2000
5. Introduce a reclamation on the R. Test tidal flat element removing 20ha and reducing tidal prism by 0.5Mm³ in 2020.

What are the changes in volume of the estuary over 50 years from 2000 to 2050?

- a) Total volume changes (moving surface); and
- b) Relative to a fixed plane (fixed surface).

Of the 4 scenarios, which has the biggest impact?