Documentation of the files generating the figures in the paper entitled:

“Mechanisms of exchange flow in an estuary with a narrow, deep channel and wide, shallow shoals”

Authors: W.R. Geyer, D.K. Ralston and J-L Chen

Contact: rgeyer@whoi.edu

Date: 1/27/2020

The paper investigates the estuarine processes in the Delaware estuary, based on idealized simulations using the ROMS model. The spatial structure of the model is based on realistic bathymetry, but the forcing is idealized, with the actual tidal coefficients but constant freshwater forcing and no wind forcing. The model grid has 1276 grid cells in the along-estuary direction, 184 in the cross-estuary and 20 unevenly spaced in the vertical. Simulations include 4 sets of runs for different river discharge conditions, including 100, 300, 600 and 1,000 m3/s. For each of these cases, 4 output files were saved in NET-CDF format, each with 10 days of samples at hourly intervals, comprising 240 time steps each. Each of the files includes hourly averaged vector velocity, salinity, and supporting data such as depth, latitude, longitude, eddy diffusivity, etc.

In order to get access to the original model data, access to the THREDDS server must be obtained by contacting rgeyer@whoi.edu or dralston@whoi.edu

The analysis was performed in Matlab, and all of the m-files that generated the figures are included in this data repository. Each of the m-files is named for the figure(s) that it generated. The methodology of analysis is evident in the matlab code.

Additional m-files that are required in the path are included in the mrocky folder.