Read Me:

Model Name: TC-00_Bijvelds_Square_Harbor_Test_Case

Objective: Use EFDC+ Explorer (EE) and EFDC+ to simulate the test case described in Bijvelds' journal paper "3D Numerical Simulation of Turbulent Shallow-water flow in square Harbor". The goal is to better understand the overall diffusivity pattern in the model.

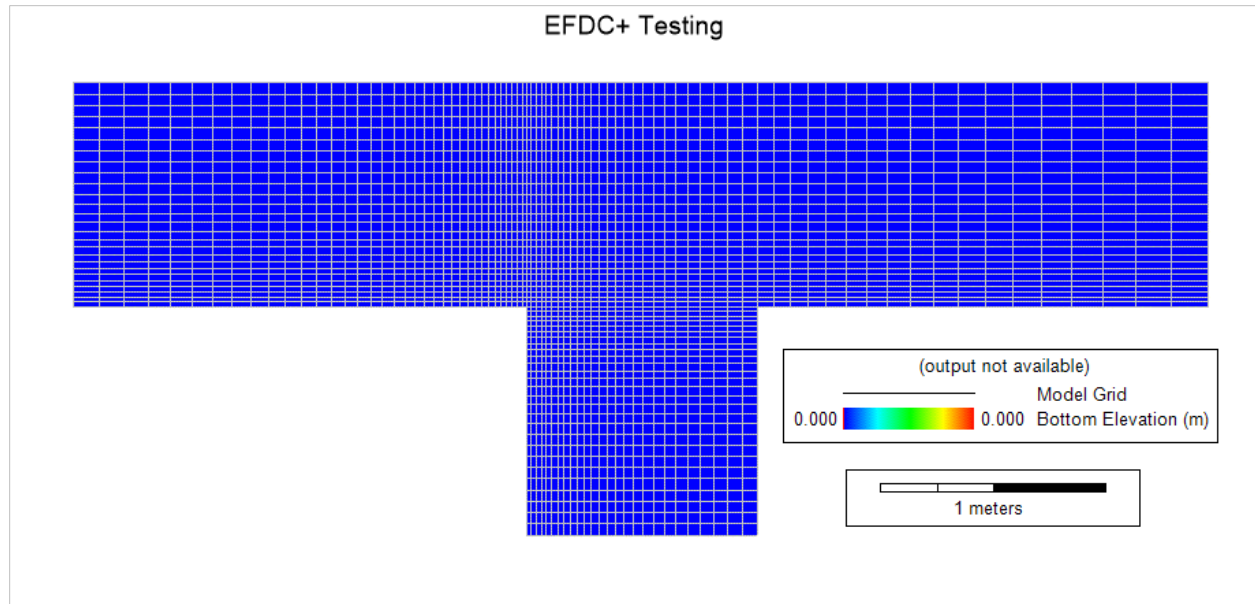**Model Grid:** 2,782 horizontal grid cells and 10 vertical layers.

Figure 1 Model Domain of TC-00_Bijvelds_Square_Harbor.

Folder Structure:

> **Data:** This folder contains data that can be used with the model. These data can be measured data or output from model or derived from analytical equations.

> **Model:** EFDC model that can be loaded in EE to pre- and post-process.

> **Test_record file:** This file is just a record file that informs which EFDC+ executable was used to run the model.

Modules Activated: hydrodynamics, dye.

Description: This model seeks to replicate the case described in Bijvelds' journal paper referenced below. By looking elevation vs velocity plot shown in Figure 2 below we can see how closely the EFDC+ model replicates this case and helps us better understand the diffusivity behavior in EFDC+.

Disclaimer: The model is provided to our users to demonstrate that EFDC_Explorer and EFDC+ can be used to better understand how to build this kind of model. The model is running as expected; however, shouldn't be considered final as the model can be modified / refined to obtain improved results.

Citation for the paper:

Bijvelds, M., Kranenburg, C., and Stelling, G. (1999). "3D numerical simulation of turbulent shallow-water flow in square harbor." *Journal of Hydraulic Engineering*, 125(1), 26-31.

Files in Data Folder:

- Measured Data.dat
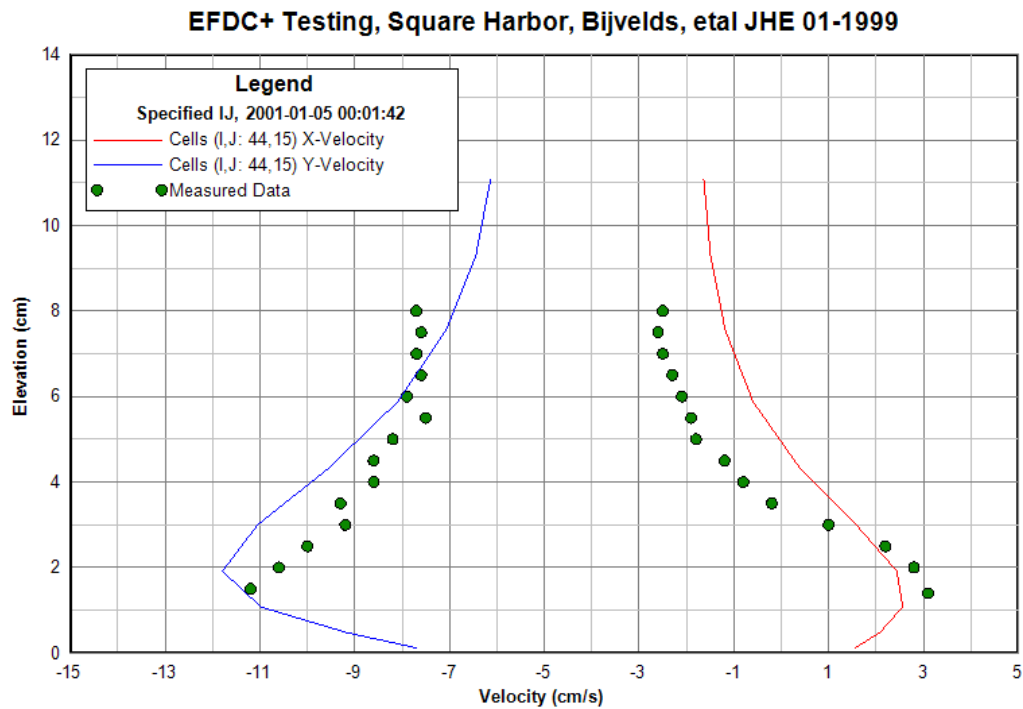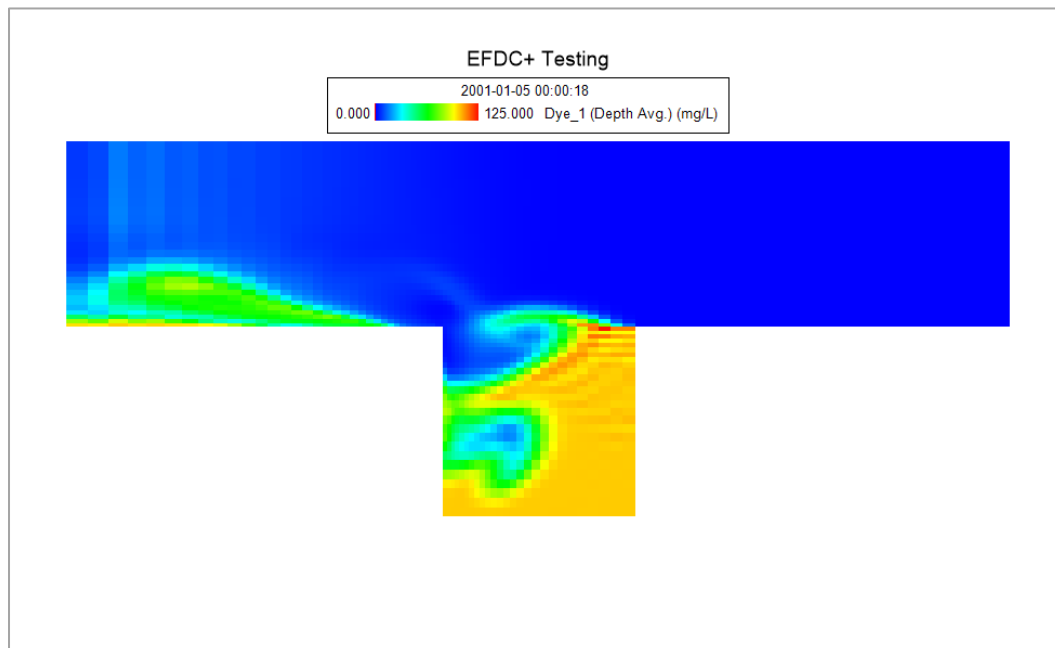
Model results:

Figure 2 Modeled velocity and data comparison.

Figure 3 Dye concentration in 2DH view.