

Read Me:

**Model Name:** TC-01\_Chapra\_AntDiff\_Test\_Case

**Objective:** Use EFDC+ Explorer (EE) and EFDC+ to replicate the test case for studying diffusivity effects on parameters outlined by Stephen C. Chapra in his book "Surface Water-Quality Modeling" (2008) for Distributed Series (Time Variable).

**Model Grid:** 100 horizontal grid cells and one vertical layer.

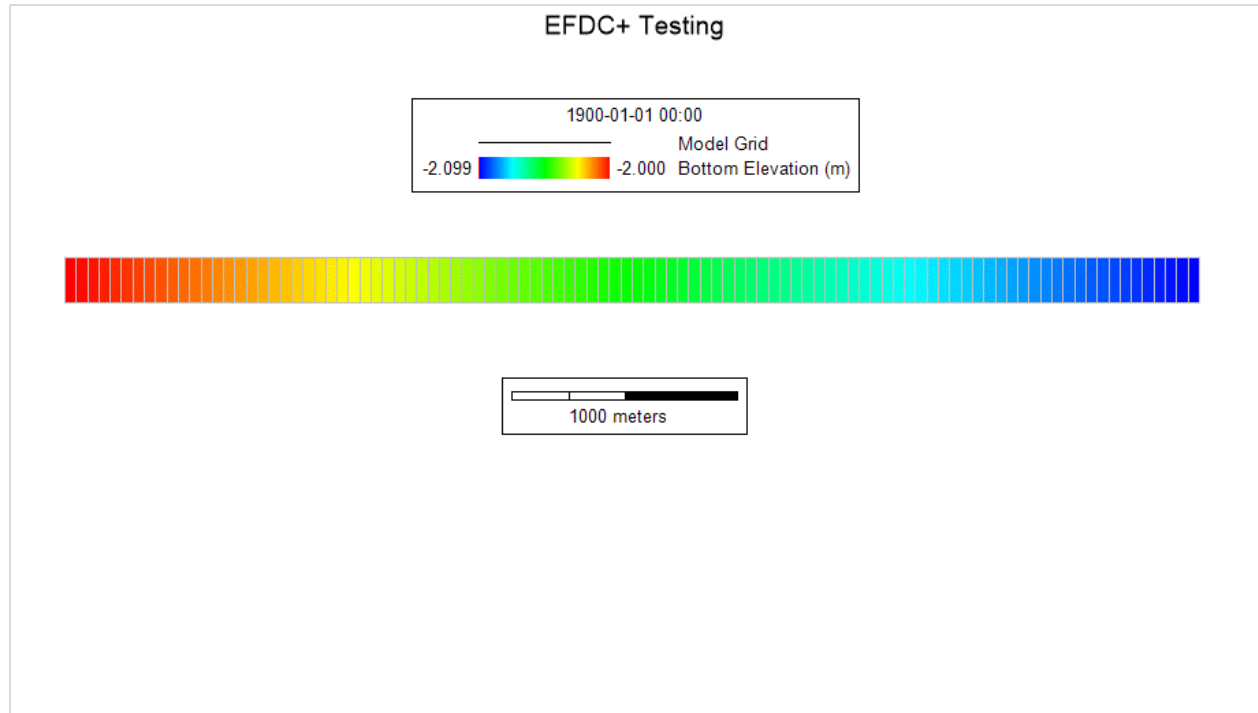


Figure 1 Model Domain of TC-01\_Chapra\_AntDiff.

**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.

**Module Activated:** hydrodynamics, dye.

**Description:** The Chapra case cited below simulates a "breakthrough" curve and the change in concentration at a point 2,000 m downstream for conservative and non-conservative releases. This model is a 1D channel of 100 cells with AHO set to 5 m<sup>2</sup>/s. The measured data provided in the data folder can be used to compare the empirically calculated dye concentration with output from the model. The model is in good agreement with the measured dye concentration.

**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:**

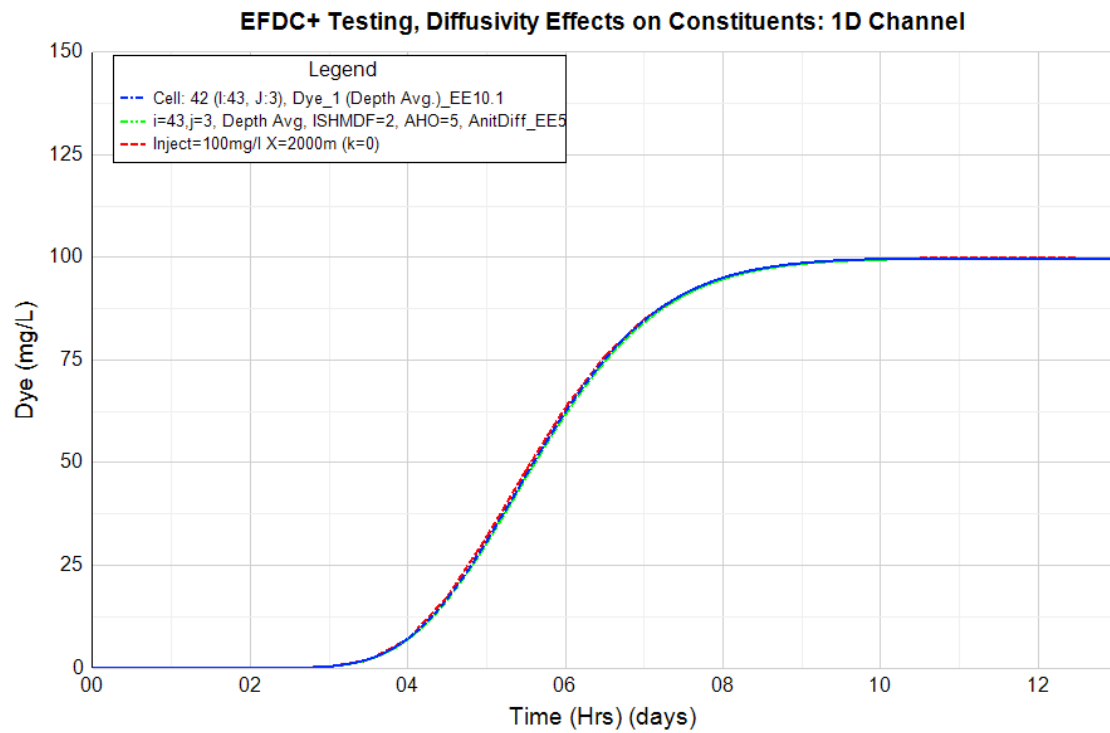
Chapra, Stephen C. (2008). "Surface Water-Quality Modeling." *Waveland Press Inc*, December 31, 2008.

**Files in Data Folder:**

- TS\_Dye ISHMDF=2 AHO=5 AntiDiff.dat
- LocationX2000m.dat

**Data sources:** The data provided in the "Data" folder are derived from the book mentioned above.

## Model results:



**Figure 2 Modeled and measured dye concentration comparison.**