

Read Me:

Model Name: TC-02_Neckar_Dye_Test_Case

Objective: Use EFDC+ Explorer (EE) and EFDC+ to simulate the test case described in the journal paper by Rodi, “Prediction of flow and pollutant spreading in rivers” (1981). The purpose of this test case is to examine how EFDC simulates the pollutant-concentration field induced by discharge into a river. The test case used data published by Rodi et al (1981) which reported a pollutant discharge from the Stuttgart sewage plant into the Neckar River in Germany.

Model Grid: 4,846 horizontal grid cells and 1 vertical layer.

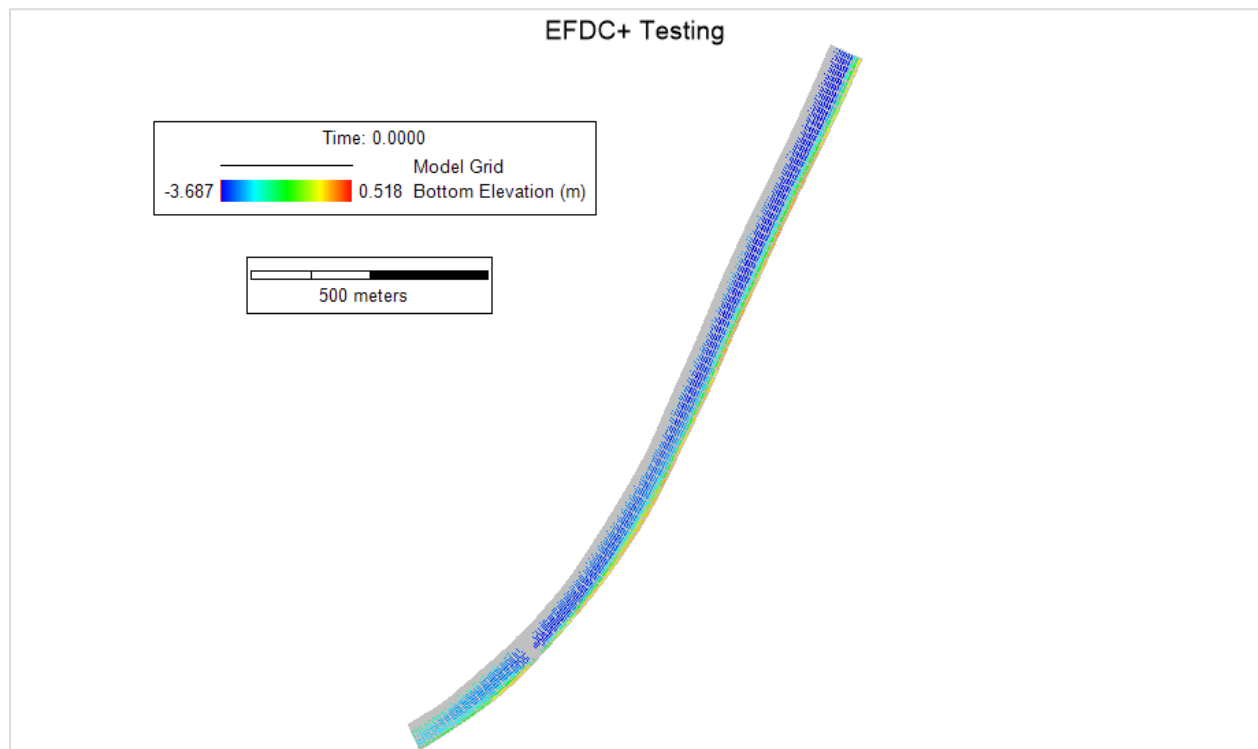


Figure 1 Model Domain of TC-02_Neckar_Dye.

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.

Maps-Images: This folder contains the maps / images of the study area. The formats of the maps / images can be *.geo (geo-referenced file), *.jgw, *.jpg etc.

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: Data published by Rodi (cited below) reports pollutant discharge from the Stuttgart sewage plant into the Neckar River in Germany. The purpose of this test case is to use EFDC+ to simulate the pollutant-concentration field induced by the discharge into the river and compare the model velocity and dye concentration output with the measured data. Details of how this was done are in a document in “Data” folder.

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:

Rodi W., Pavlovic R. N. and Srivatsa S. K. (1981) “Prediction of flow and pollutant spreading in rivers.” In Fischer, H. B. (ed.) *Transport models for Inland and Coastal Waters: Proceedings of the Symposium on Predictive Ability*, University of California Academic Press, Berkeley (1980), pp. 63–11

Files in Data Folder:

- Measured Velocity_CR1.dat
- Measured Velocity_CR2.dat
- Measured Velocity_CR3.dat
- Measured Velocity_CR4.dat
- Measured Velocity_CR5.dat
- Cross-sections locations.p2d

Data sources: The data provided in the “Data” folder are derived from the paper mentioned above.

Mode results:

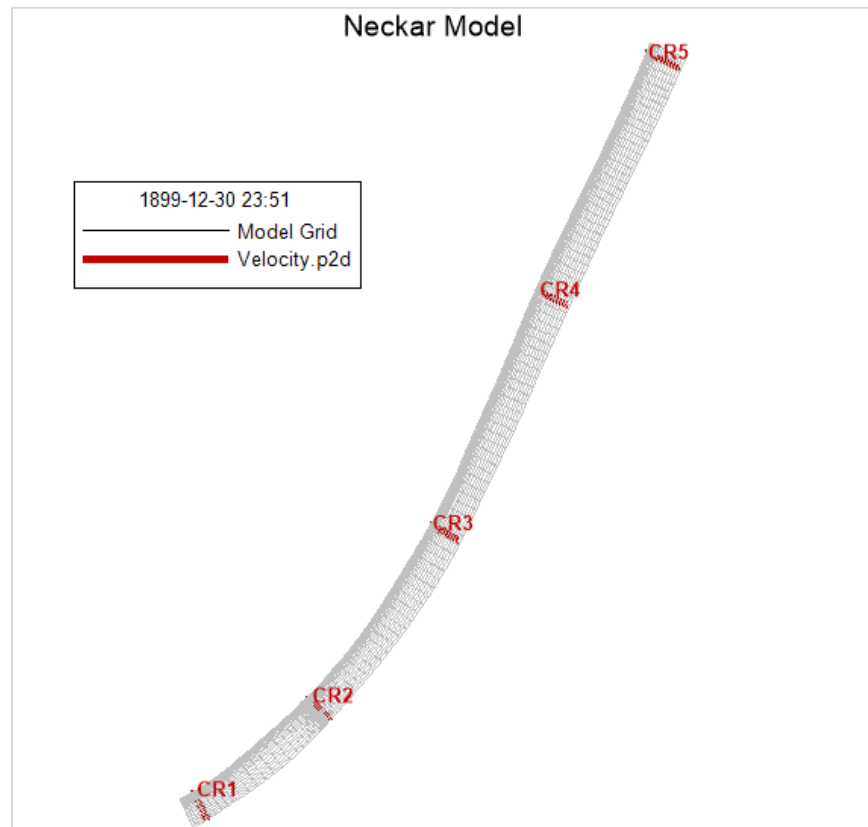


Figure 2 Cross sections locations.

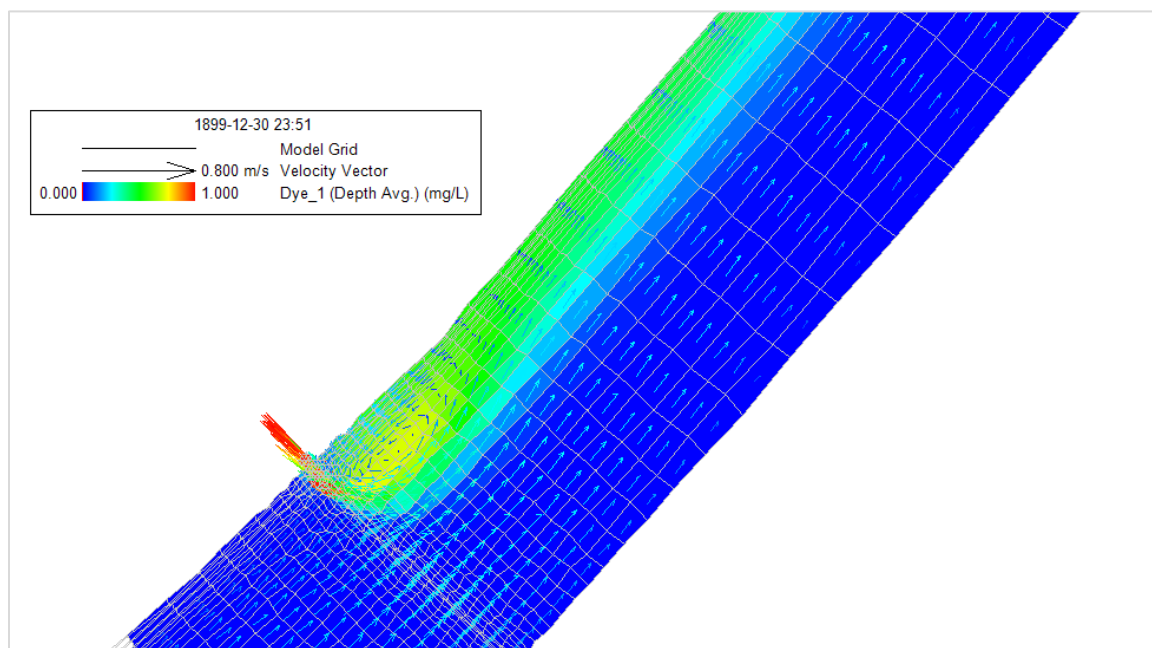


Figure 3 Velocity vector in 2DH view.

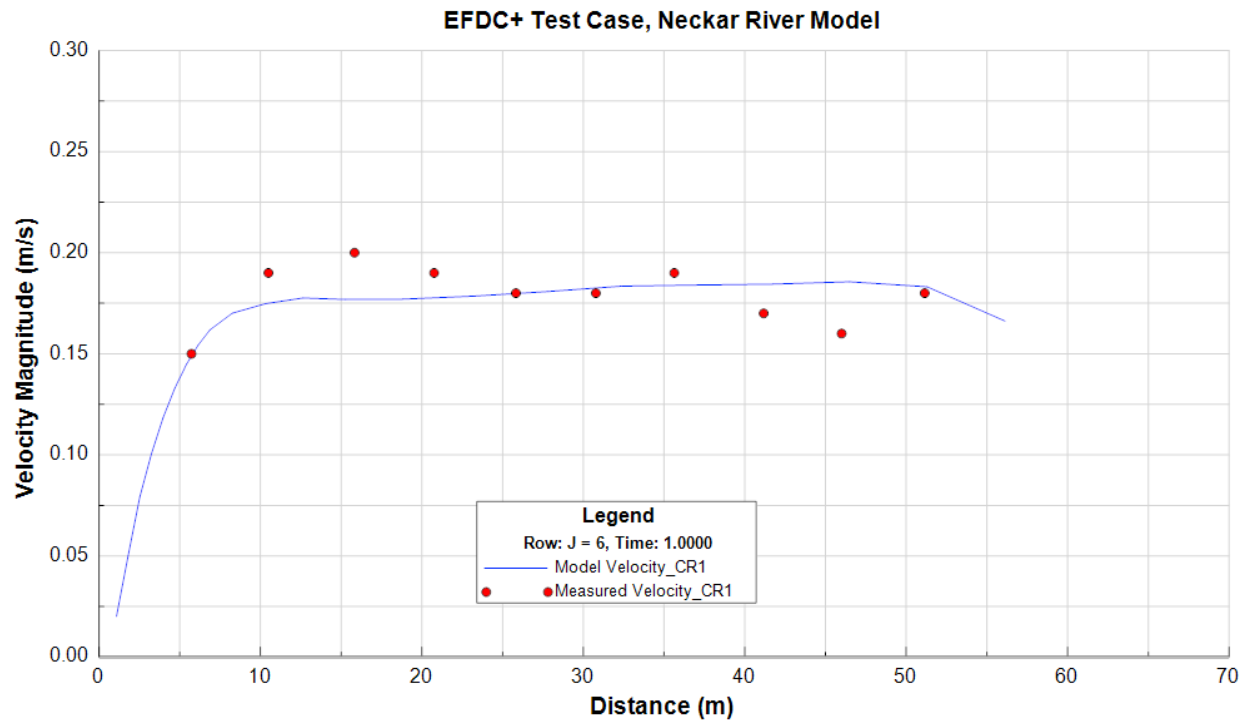


Figure 4 Modeled and measured velocity at the CR1.

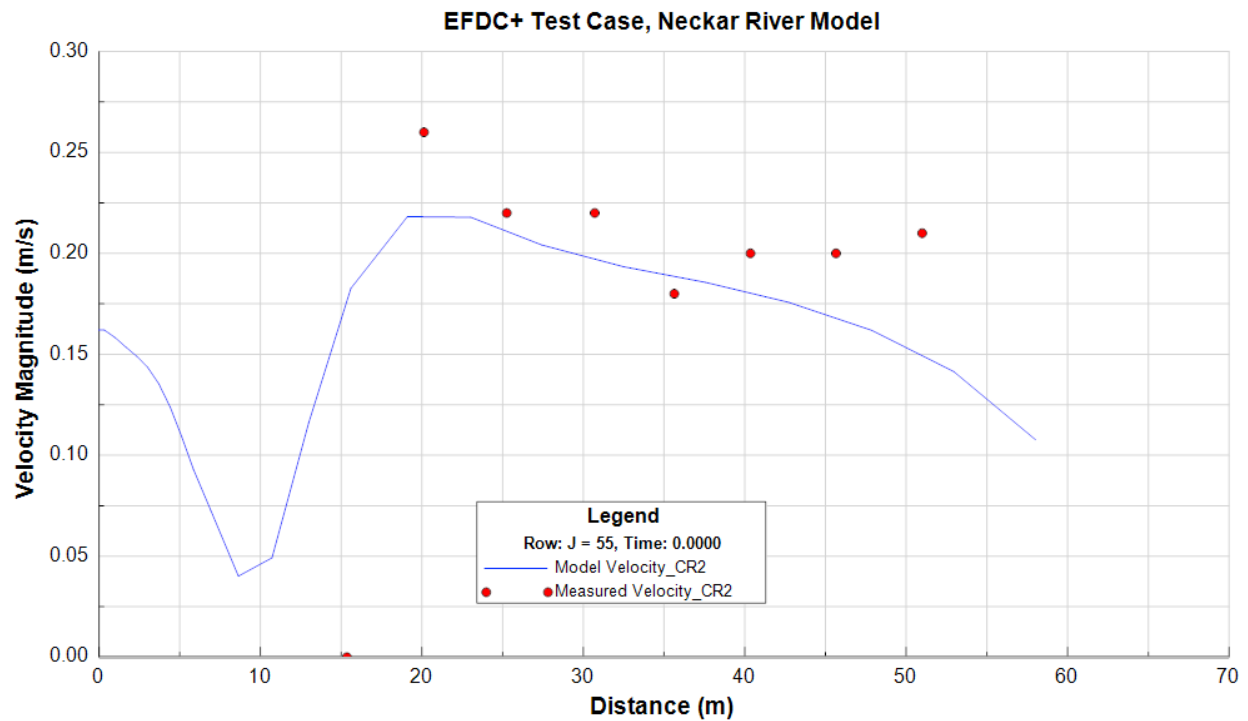


Figure 5 Modeled and measured velocity at the CR2.

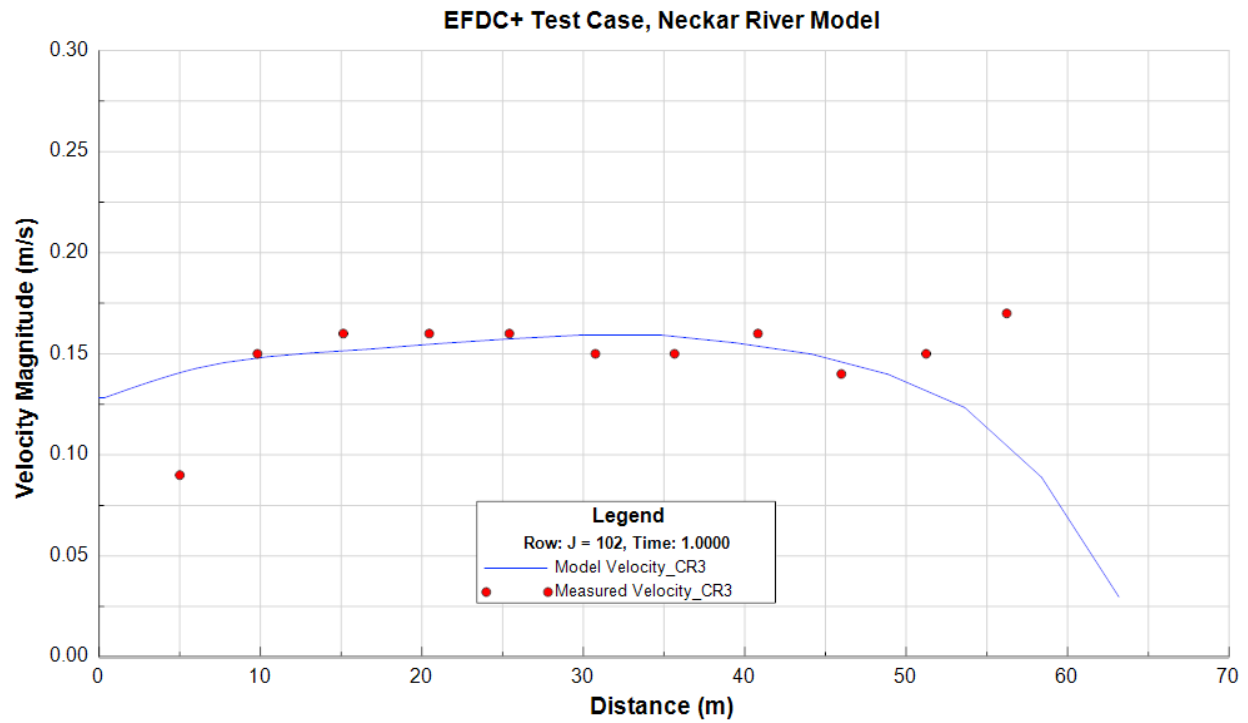


Figure 6 Modeled and measured velocity at the CR3.

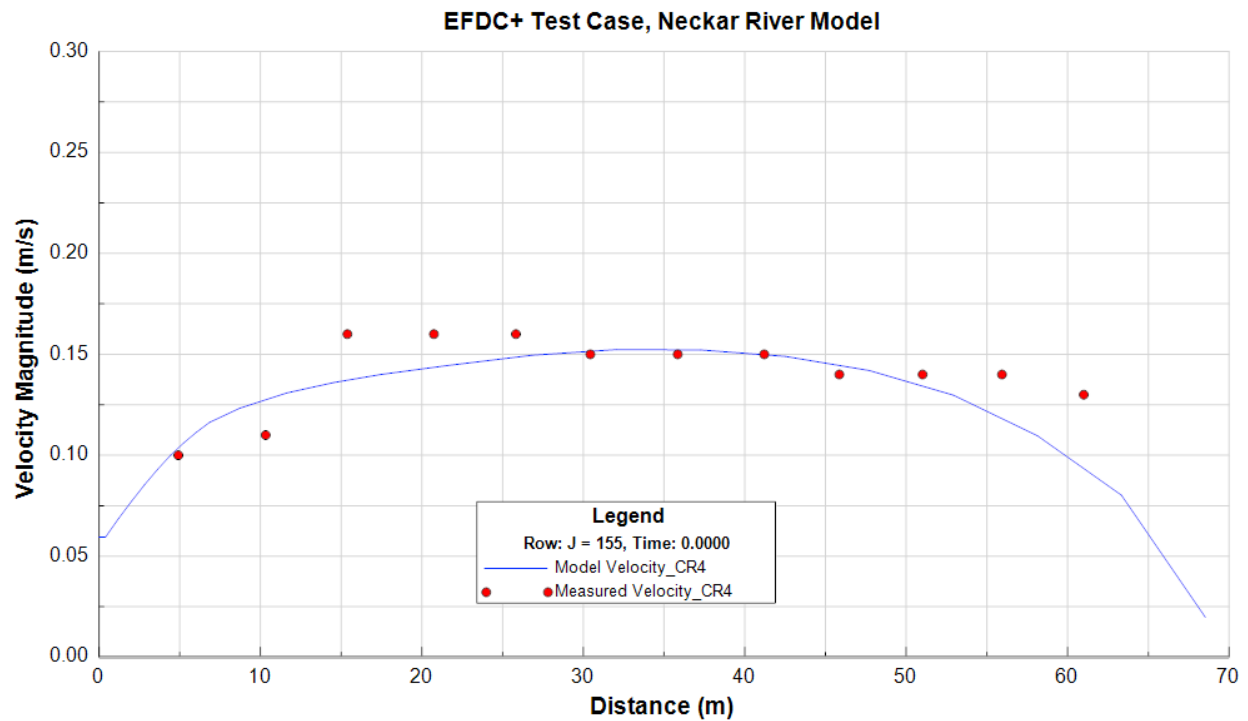


Figure 7 Modeled and measured velocity at the CR4.

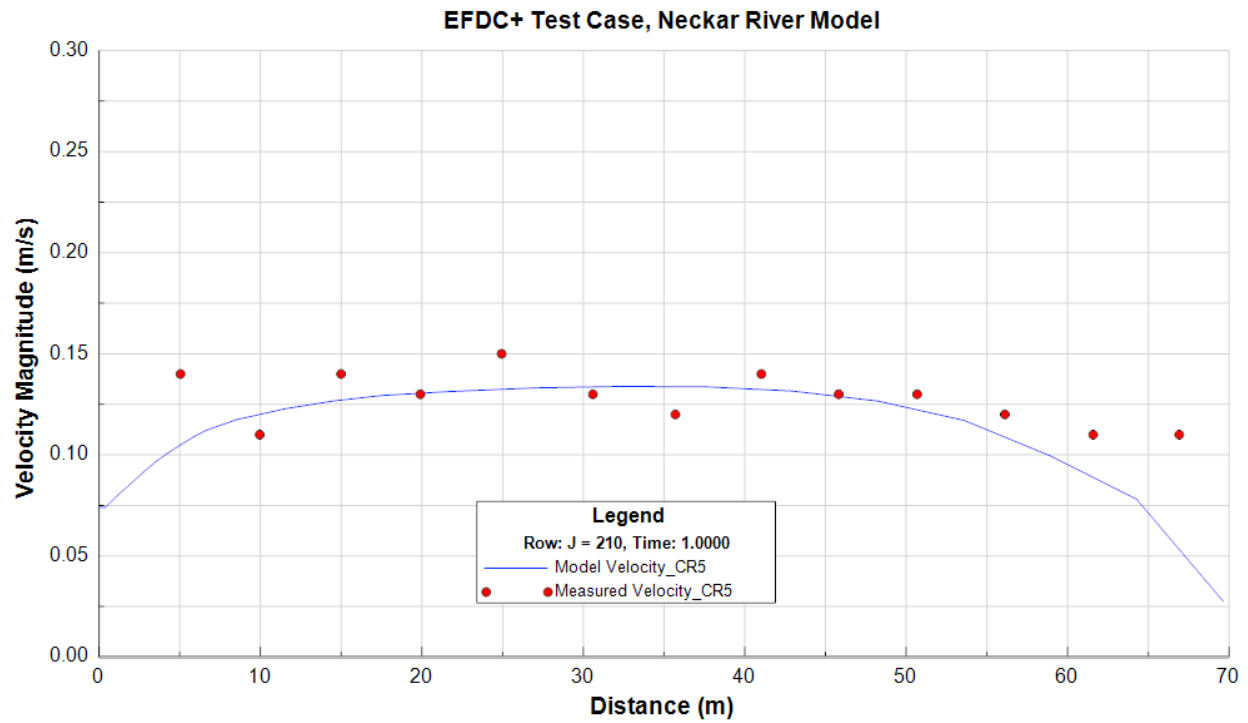


Figure 8 Modeled and measured velocity at the CR5.