Sediment and Transport Module Report Card

Testing of Single Channel Transport Code

A Sediment and Transport Module (STM) is being developed for the Delta Simulation Model 2 (DSM2). To ensure that each portion of the newly developed code works properly, code tests have been created. This report card summarizes the current code tests and results for STM.

|  |  |
| --- | --- |
| **Test Name** | **Test Result** |
| Advection (plug flow) |  |
| Uniform bidirectional flow, Gaussian mass distribution, zero concentration remote BC[[1]](#footnote-1) | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Uniform bidirectional flow, Gaussian mass distribution, specified concentration BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Uniform single direction flow, Gaussian mass distribution, zero concentration BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Tidal flow, Gaussian initial distribution of mass, zero concentration remote BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Tidal flow, Sinusoidal initial distribution of mass, zero concentration remote BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Diffusion (mixing) |  |
| Smooth hump of mass, concentration value BC (Fletcher 1991) | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Smooth hump of mass with flux value BC (Fletcher 1991) | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Diffusion of Gaussian hump of mass with zero value BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Diffusion of Gaussian hump of mass with flux value BC | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Reaction (growth/decay) |  |
| Liner decay test for 2nd order Heun ordinary differential equation solver | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Linear decay test for 3rd order Runge-Kutta ordinary differential equation solver | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Advection & Diffusion |  |
| Gaussian hump of mass with constant area, dispersion coefficient, and velocity | **C:\Documents and Settings\Kaveh Zamani\Local Settings\Temporary Internet Files\Content.IE5\5LCOBPX9\MC900403169[1].wmf** review |
| Specially varying area, dispersion coeff., and velocity (Zoppou & Knight 1998) | **~** In progress |
| Temporal varying dispersion coefficient, and velocity (Crank 1975) | **~** In progress |
| Advection & Reaction |  |
| Gaussian mass distribution, tidal flow, remote concentration BC | **C:\Documents and Settings\Kaveh Zamani\Local Settings\Temporary Internet Files\Content.IE5\5LCOBPX9\MC900403169[1].wmf** review |
| Gaussian mass distribution, constant area, decay rate, and velocity | C:\Documents and Settings\jamiea\Local Settings\Temporary Internet Files\Content.IE5\W5MFG1IZ\MC900441310[1].PNGPassed |
| Advection, Diffusion & Reaction |  |
| Gaussian mass distribution, const. area, dispersion coeff., decay & velocity, value BC | **~** In progress |
| Gaussian mass distribution, const. area, dispersion coeff., decay rate & velocity, zero BC | **C:\Documents and Settings\Kaveh Zamani\Local Settings\Temporary Internet Files\Content.IE5\5LCOBPX9\MC900403169[1].wmf** review |

1. Boundary Condition [↑](#footnote-ref-1)