Water Quality Research Group
CE-QUAL-W2 Hydrodynamic and Water Quality Model
Portland State UNIVERSITY

Home
History
Application History
Forum
W2 Model
Contacts
WQRG Projects
Workshop
Links

7. Dynamic light extinction inputs
8. Dynamic topographic and vegetative shading algorithm
9. Spatially varying wind sheltering coefficients
10. CBOD nutrient recycling
11. Kinetic flux algorithms

Version 3.2

Version 3.2 is a result of additional improvements to the model. These new capabilities include:

1. Internal code rewrite to reduce code size, simplify code maintenance, and improve model execution speed
2. New screen display during model run-time. The new screen display allows for controlling the processor usage, examining output va and restarting a model run on the fly. This allows the model user to stop a code, then make changes in the control file or any input at the point that it was stopped
3. Addition of a new algorithm to estimate suspended solids resuspension as a result of wind-wave action
4. Reorganization of the graph.npt file to allow more output control formatting possibilities
5. New turbulent kinetic energy-turbulent dissipation turbulence closure model was added to the model
6. Model restart capabilities are now working again

Version 3.5

Version 3.5 is a result of significant enhancements to the model. These new capabilities include:

1. Addition of the macrophyte model of Berger and Wells (2008) with a user-defined number of species
2. Addition of a zooplankton model with a user-defined number of species based on an updated version of the CE-QUAL-R1 model (E 1995)
3. Addition of a new focusing or settling velocity for sediments that accumulate in the first order sediment model. In earlier versions, s the velocity given foe POM. In this version a user can specify that focusing velocity. This means that sediments can still migrate tov over time even after they have hit the sidewalls of the channel
4. User-defined time-variable input of P and N associated with organic matter inputs. In earlier versions, the P or N associated with or static stoichiometric coefficient specified in the control file. Now, the user provides in the input files the dynamic P and N associated from tributaries or inflows. This is essentially allowing for variable stoichiometry in the input boundary conditions
5. Based on the above refinement, the organic matter fractions within the model now have variable stoichiometry for P and N. This pr balances. The stoichiometry given in the input files is merely the initial value of the C-N-P stoichiometry of POM and DOM compart organic N are tracked correctly in the code
6. The first order sediment model also tracks the C-N-P correctly and has a dynamic stoichiometry as it accumulates organic matter i of W2 had a user-defined value of fixed stoichiometry for the 1st order sediment model
7. CBOD groups now have a user-defined settling velocity. Hence, the user can define organic matter groups as particulate and dissc the settling velocity. As in prior versions, CBOD has associated stoichiometry and if there is settling, it will accumulate in the 1st orc
8. A sediment burial rate was added to the 1st order sediment model
9. A Monod formulation was implemented for the inititation of anaerobic processes and reduction of aerobic processes. In earlier moc specified oxygen concentration that acted like a step function turning these processes on or off

Version 3.6

This version is file compatible with version 3.5. Hence no changes need to be made to any input files. Even though there are some new these are not required for users of V3.5 and can be kept blank. The primary change is allowing the code to run on multiple processors. T been made in the code from V3.5 to V3.6:

1. The code has been rewritten into smaller subroutines to allow better code compilation and optimization.
2. The code has been revised with the goal of improving the computational speed. This new compiled code using Intel Visual Fortra single processor than the V3.5 code compiled on a PC with CVF 6.6.
3. The code now has OPENMP commands embedded to allow for limited parallelization of some of the routines. Current tests show 2 can result in up to 20-40% speed improvement.
4. The TKE algorithm has been updated with new algorithms that match experimental tank data for kinetic energy and dissipation. T degree project by Sam Gould at Portland State University. A new user option is the TKE1 algorithm, in addition to the legacy algor
5. The roughness height of the water for correction of the vertical velocity wind profile is now a user-defined input, z0. Prior to this th value of z0=0.003 m for wind speed correction at 2m (for evaporation where wind height at 2 m is typical) and z0=0.01 m for wind calculations where wind height of 10 m is typical). For consistency, both conversions now use the same value of roughness heigh the value of z0 (for example if he/she leaves the spaces blank for z0 using a V3.5 control file), the code uses 0.001 m.
6. The Windows user interface no longer uses Array Viewer. The dialog box and PC executable no longer require installation of Arra obsolete) nor do they need the Array Viewer DLL. The Dialog box has some minor improvements: model run directory displayed a
7. Fixed error with Algae/chlorophyll a ratio in user manual and fixed pre-processor. The earlier language in the user manual discuss ratio but presented information that was the ratio of chlorophyll a/algae – this has been revised and fixed in User Manual and in pı
8. Spreadsheet output: in earlier versions put in an alphanumeric character as a space for the spreadsheet to preserve the formattin