

# Fresh Water Quality Analysis

The importance of sustainably managing the quality of freshwater environments is recognized within the United Nations' Sustainable Development Goal 6.6. Responsible management of natural and artificial freshwater bodies is essential for sustaining a healthy environment. Management of freshwater reservoirs is critical to afford the basic human right to access safe drinking water and to safeguard the natural environment downstream.

Now more than ever, we must bring the most advanced and robust water quality science to the numerical simulation of the freshwater environment to preserve and

protect our natural and artificial aquatic resources for future generations.

The TUFLOW software suite has been developed and evolved over three decades, with water quality modeling one of its latest additions. Our extensively benchmarked shallow water models offer industry-leading computational speed, numerical stability, and functionalities to simulate the most challenging water quality conditions in both the natural and built environments. Simulate interactions between biogeochemical variables including dissolved oxygen, carbon, nutrients (organic and inorganic), sediment, light temperature, phytoplankton, zooplankton and geochemistry.

As researchers, scientists and engineers we work in a range of industries that solve complex environmental problems. Our assessments span scales from the molecular, to the global, from the instantaneous to the inter-decadal. Our projects require flexible, accurate, fast and powerful tools backed up by research, benchmarking and support.

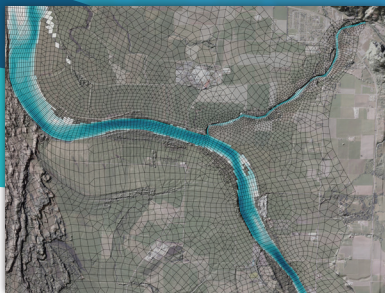


# Access world-leading freshwater quality science with TUFLOW

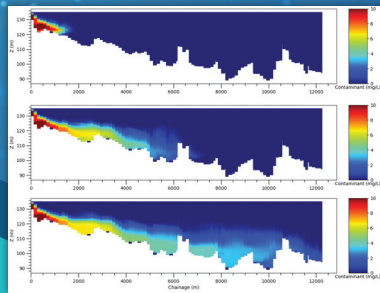
## TUFLOW Feature Focus

- Advanced water quality algorithms and numerical models fully integrated with TUFLOW hydrodynamic solvers that draw on the compute power of GPUs and domain decomposition.
- Simulation of the impact of bubble plumes on mixing deeper freshwater bodies such as reservoirs.
- Rapid simulation of shallow urban lakes that include complex ecological processes such as riparian growth and distributed freshwater inflows.
- Selectable water quality modules to simulate interactions between biogeochemical variables including dissolved oxygen, carbon, nutrients (organic and inorganic), sediment, light temperature, phytoplankton, zooplankton, and geochemistry.
- Flexibility and freedom to customize for your own water quality modeling project. Add your own water quality modules using the equation sets of your choosing.
- Use free GIS plugins for immediate and interactive viewing of model results in 1D, 2D and 3D including curtain and other advanced plots.
- Access to research quality science through a tried and tested commercial interface.

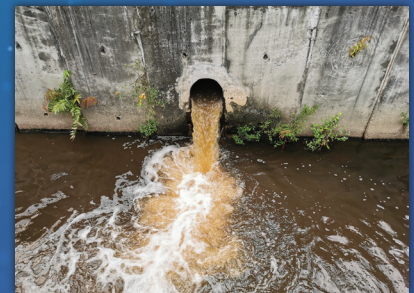
Freshwater Hydrodynamics



Reservoir Underflow



Stormwater/Sewerage Outflows



TUFLOW incorporates industry-leading freshwater quality modeling science embedded within the computational speed of GPU accelerated hydrodynamic solvers that reduce simulations that previously took days or weeks down to hours.

Applied with a 2D and/or 3D TUFLOW flexible mesh framework, TUFLOW WQ allows for simulation interactions between biogeochemical variables in the following freshwater environments:

- Freshwater streams in their natural and perturbed states.
- Drinking water or water supply reservoirs, with or without artificial destratification.
- Shallow lakes, both urban and natural.
- Mine voids.
- Other built freshwater systems such as canal estates.

TUFLOW software is developed with three primary goals in mind: accuracy, simulation speed and workflow efficiency. It is uniquely integrated with

GIS and GUI software such as ArcGIS, QGIS, SMS and Blue Kenue. Develop models and view results in your environment of choice. These complimentary GIS and GUI software are supported by program specific plugins and free Matlab and Python script toolboxes to enhance model build efficiency, 1D, 2D and 3D result visualization, analysis, and report production.

Enable your team to tackle the most complex freshwater environmental problems with TUFLOW.

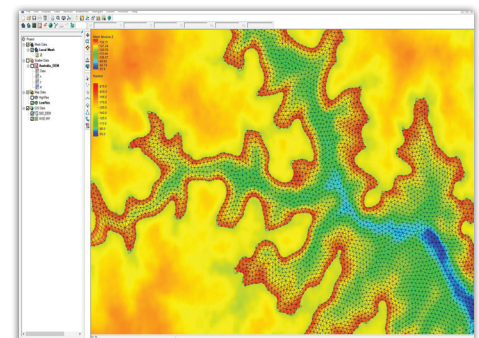
For more information:

[info@tufLOW.com](mailto:info@tufLOW.com)

[www.tufLOW.com](http://www.tufLOW.com)



Water Quality Impact - Fish Kill



Reservoir Mesh Development - SMS