

Coastal & Estuarine Tides & Currents

Our coastlines and estuaries drive our global economy. They provide the gateways for shipping and trade, energy supply, fisheries, recreation, and tourism. They are also critically important for marine biodiversity and sustaining our environmental values.

Subject to ceaseless atmospheric and oceanic forces that generate currents, waves, and water level fluctuations we need to be able to understand, reproduce, and predict the hydrodynamic effect of these forces on our coastal areas with accurate numerical models like TUFLOW.

The TUFLOW software suite started its life three decade ago to meet the challenges of modelling the coastal/estuarine zone. In fact, the very first TUFLOW model was a 1D-2D linked model of an estuary, more than 10 years ahead of alternative software.

Today, TUFLOW's flexible mesh 1D-2D-3D solver gives you the power and flexibility to work from oceanic to local scale without compromising on speed or accuracy. The ability to model 3D effects, such as density driven currents or stratification, combined with the Water Quality, Sediment, Particle Tracking and Wave modules, makes it the coastal modeller's model.

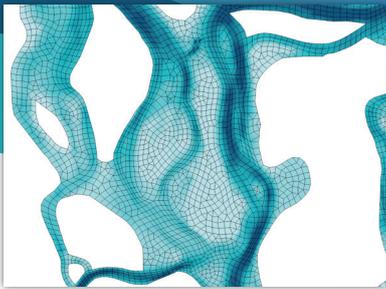
As researchers, scientists and engineers we work in a range of industries that solve complex environmental problems. Our assessments span scales from the molecular, to the global, from the instantaneous to the inter-decadal. Our projects require flexible, accurate, fast and powerful tools backed up by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

From offshore to upriver take control with our world leading coastal and estuarine solutions

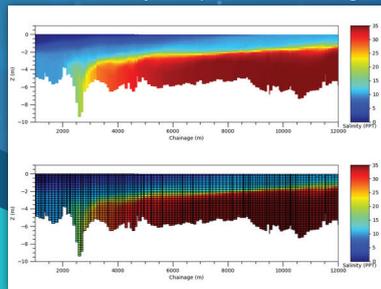
TUFLOW Feature Focus

- TUFLOW's flexible mesh solution enables refined high-resolution assessment where desired without compromising accuracy or simulation speed.
- Fully integrated 1D-2D-3D solution with multiple 3D geometry layering options and robust wetting and drying give you the tools you need to model complex coastal and estuarine environments.
- GPU acceleration provides significant benefits to project productivity, providing results 10 to 100 times quicker.
- Model salinity and temperature (including atmospheric heat module) with excellent reproduction of 3D density gradients.
- Benefit from TUFLOW's perfected techniques to nest high resolution 2D and 3D hydrodynamic models into common global hindcast meteorological/climatological datasets, wave models and oceanographic circulation models.
- Powerful environmental toolbox integration including advection dispersion, sediment transport, particle tracking and water quality.
- Model wave current and setup integration via our spectral wave model integration and model setup tools.

Flexible Mesh for Complex Coasts



3D Salinity Output - Salt Wedge



Velocity Tracers and Magnitude



TUFLOW's 3D capable flexible mesh solver provides an extremely versatile modelling platform that excels at many applications in the coastal zone:

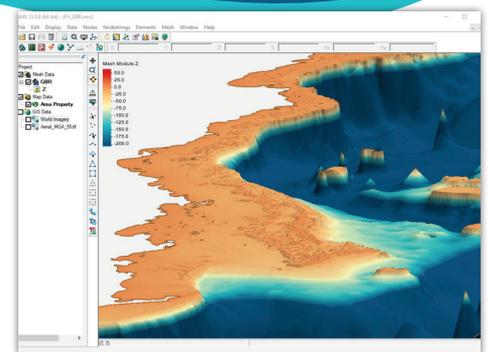
- Effectively investigate non-linear interactions between ocean circulation currents, tides, waves, tsunamis, winds, atmospheric pressure as they are amplified or attenuated by complex coastal formations and bathymetry via the use of a flexible mesh.
- Reproduce 3D currents and density stratification/gradient flows in stratified environments.
- Conduct hydrodynamic analyses to support coastal and estuarine sediment transport, bed scour, water quality analyses such as flushing and residence times and particle tracking.
- Evaluate the performance of structures, gates, offshore energy platforms under extreme conditions.
- Undertake stochastic analyses with ease supported by TUFLOW's highly scriptable and open platform.

TUFLOW software is developed with three primary goals in mind: accuracy; simulation speed; and workflow efficiency. TUFLOW is uniquely integrated with numerous Geographic Information Systems (GIS) and Graphical User Interfaces (GUI) software such as ArcGIS, QGIS, SMS and Paraview.

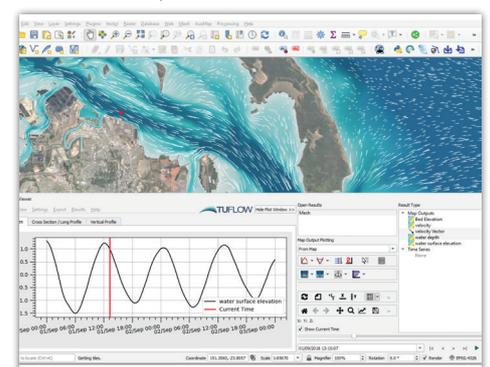
Develop models and view results in your choice of development environment. These complimentary GIS and GUI software are supported by program specific plugins and free MATLAB and Python script toolboxes for: model build; results mapping; curtain and other specialised plots for 3D result visualisation; post-processing; and reporting efficiency.

TUFLOW is the complete package for coastal assessment applications.

For more information:
info@tufLOW.com
www.tufLOW.com



Aquaveo SMS Interface



TUFLOW Viewer QGIS Plugin

