# TUFLOW

# Coastal Infrastructure Design and Ports

Maritime engineering requires solutions to specific challenges and conditions not encountered in other engineering fields. The natural forces of winds, waves, tides, and currents vary widely from the daily tide to extreme weather events. Global trade imposes considerable pressure on the coastal zone and creates a fundamental need to formulate environmentally sound practices that balance maritime function and economic benefits to society.

TUFLOW provides tools to accurately understand and assess hydraulic, sedimentation and water quality issues for port design and operation.

Developed over the past three decades TUFLOW has been extensively benchmarked against theory, lab scale experiments and real-world data. It has proven itself as one of the world's most accurate, workflow efficient, and feature packed coastal infrastructure and port modelling software. Testament to TUFLOW's accuracy and flexibility is the successful delivery of multiple internationally significant Port EIS studies within the heavily regulated and globally recognised Great Barrier Reef World Heritage Area.

Enable your team to tackle the most complex coastal infrastructure design and port operation modelling tasks with TUFLOW; a world-leader for coastal EIS assessments.

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 global, from the instantaneous to the inter-decadal. Our projects require flexible, accurate, fast and powerful tools backed up by research, benchmarking and support.
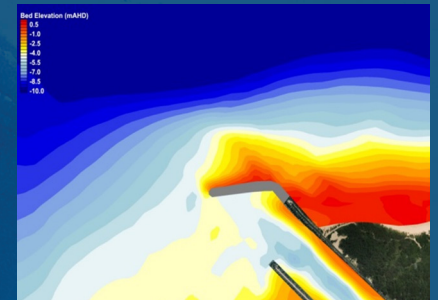
# Feature packed coastal engineering design and assessment software


High Resolution Current Prediction


Breakwater Design - Siltation


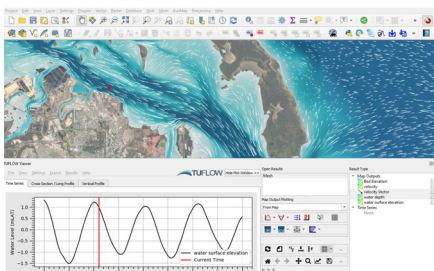Dredging and Navigation

## TUFLOW Feature Focus

- World leading solution for accurate 1D, 2D and 3D hydraulics, advection dispersion, sediment transport with morphological updating, particle tracking, waves, and water quality.

- Multiple sediment fraction groups as cohesive or non-cohesive in the one simulation.

- Advanced external coupling with external spectral wave models such as SWAN as one-way or two-way dynamic coupling.

- Numerous structure features: such as porous seawall options; built-in weir formulas; structure operational controls based on either time, trigger value (e.g. water level) or variable sampling (e.g. salinity) targets.

- Comprehensive boundary condition input options: tide; global ocean circulation; meteorological and climatological gridded inputs; pumps; rainfall; catchment inflows; and numerous parametric options.

- No licensing or software limit to model size! Build bigger, higher resolution models.

- GPU acceleration provides significant benefits to project productivity, providing results 10 to 100 times quicker.
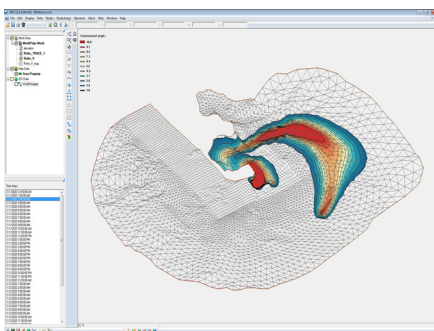

Review Results in TUFLOW Viewer


Ballast Water Contaminant Plume

TUFLOW is often referred to as "The Modeller's Model". It is the industry leader for accuracy and all aspects of coastal modelling; a versatile and flexible tool of choice for your project. Common use applications in the coastal infrastructure design and port sector include:

- 2D and 3D hydrodynamic, advection dispersion and sedimentation/morphological modelling.

- Coastal structure design assessment.

- Dredging impact and siltation assessments.

- Turbidity plume and water quality assessments.

- Current modelling to support ship simulators for ship manoeuvring, marine traffic risk and terminal operation assessment.

- Storm tide and tsunami modelling and mapping.

- Climate change hazard assessment.

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 modelling package for coastal infrastructure design and port operation applications.

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