

DelftDashBoard

DelftDashBoard is a Matlab-based user interface that couples model input with both online and offline databases. By coupling the automatic grid and boundary generation tools in DelftDashBoard to datasets that e.g. contain global bathymetric data, tide data and output from meteorological models, it has become possible to quickly set up hydrodynamic models anywhere in the World.

DelftDashBoard now supports several types of models and practically every existing horizontal coordinate system. In addition, a large number of toolboxes are available that make generating model input faster and easier. Setting up model anywhere in the world can be done in a matter of minutes.

The software has been set up in a modular way. As a result, it is easy to add user interfaces for other models as well as new toolboxes.

Model GUIs

Four hydrodynamic and wave models are now supported by DelftDashBoard:

- Delft3D-FLOW
- Delft3D-WAVE
- SWAN
- X-Beach

Figure 1 shows the open boundary section of the Delft3D-FLOW User Interface.

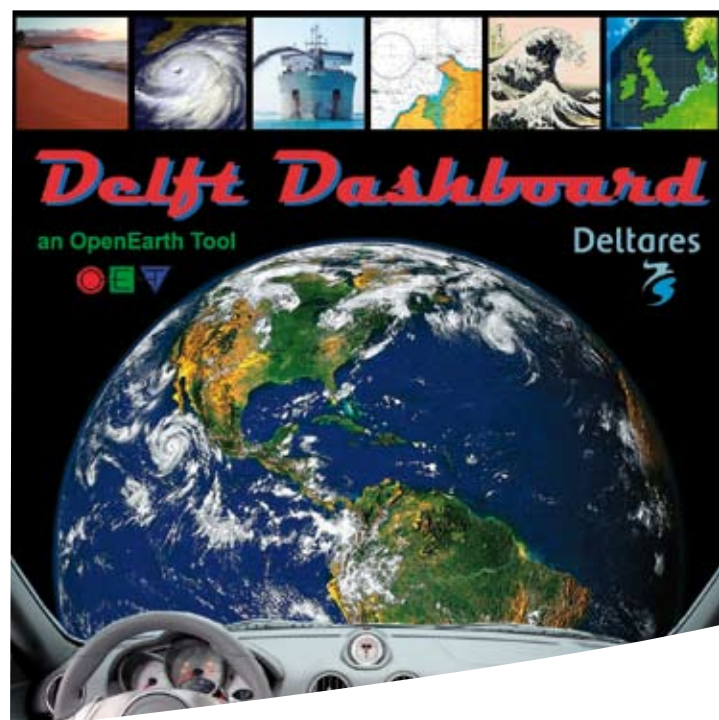
Other models that may be included in the future could be:

- WAVEWATCH III
- ROMS
- Delft3D-WAQ

Toolboxes

There are now about 12 toolboxes in DelftDashBoard. The most important ones are listed below.

- ModelMaker: an automatic (rectangular) grid, bathymetry and boundary conditions generator. The bathymetry that is used as model input can come from both online (OpenDAP) and offline data sources (e.g. GEBCO, SRTM). Boundary conditions for tide models are obtained from the TOPEX/Poseidon database.



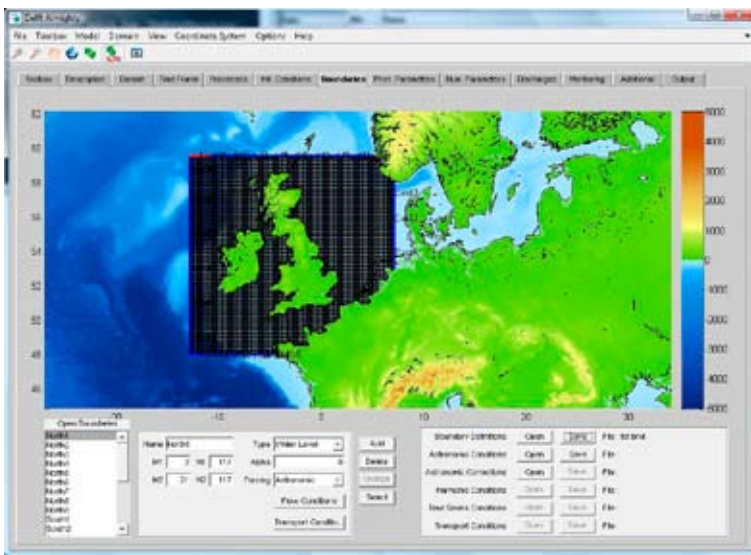


Figure 1 Delft3D-FLOW User Interface

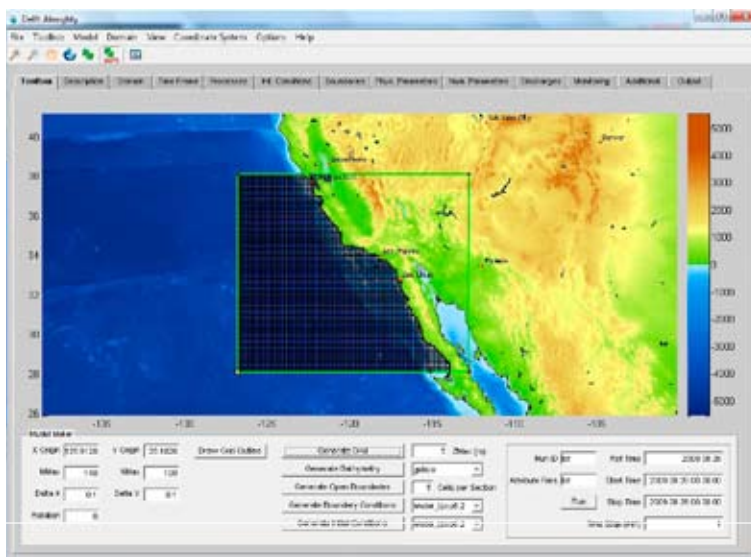


Figure 2 The Model Maker toolbox



Figure 3 The Tsunami toolbox

- Nesting toolbox: for easy nesting between models.
- Domain Decomposition (DD) toolbox: supports Delft3D-FLOW domain decomposition capabilities.
- Tide station toolbox: a worldwide database with tide stations and observed astronomical components at these stations. The tide stations can be easily included in the models as observation points where computed time series are stored.
- Observations toolbox: a database with wave buoys and tide stations.
- Geolmage toolbox: used to generate geo-referenced images from Google Earth and Microsoft Virtual Earth.
- Hurricane toolbox: to access online predicted hurricane tracks and converting these into spider web wind fields using the Holland (1980) wind model.
- Tsunami toolbox: to quickly generate the initial tsunami wave based on a number of earth quake parameters (based on the Okada model) for Delft3D simulations.
- Dredge plume toolbox: generating a moving discharge in a model to simulate a moving dredge vessel.

Toolboxes that are still under development are:

- Navigation Chart toolbox: giving access to data in electronic navigation charts (ENCs).
- Morphological toolbox: containing for example representative wind and wave climates for morphological simulations.

Databases

The following databases are offline (stored on the user's local hard disk) available for DelftDashBoard:

- GEBCO global bathymetry
- Etopo2 global bathymetry
- SRTM global topography
- TOPEX/Poseidon global tidal constituents
- IHO tide database
- XTide tide database
- National Data Buoy Centre (USA) buoy database
- NOAA Co-ops tide database

Data sources that are available online are:

- Rijkswaterstaat Jarkus and vaklodingen (through an OpenDAP server)
- National Hurricane Centre storm tracks

Online databases that could be supported in the future are:

- Output from several weather models (KNMI, GFS etc)
- WAVEWATCH III global wave predictions

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