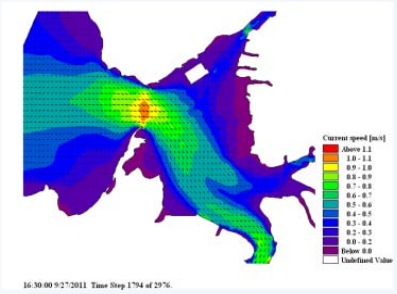
Coastal Engineering & Numerical Modeling

The services offered by Zebec in hydraulic numerical modeling can be broadly classified into the following sub sections:

- Hydrodynamics studies
- Sediment transport studies
- Wave transformation studies
- Wave disturbance studies
- Dredging and dispersion studies
- Oil spill studies

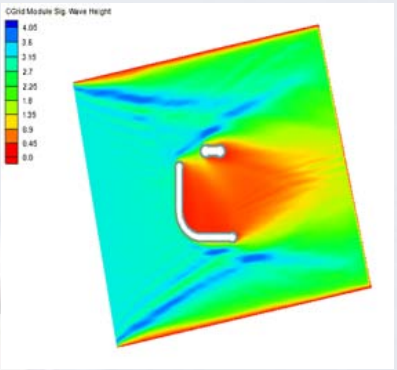


Hydrodynamic modeling

These studies are used to estimate currents, surface elevations due to tides, river flows and storm surges. This information is used as one of the inputs in the design of port structures. The currents and surface elevations obtained from these studies are essential inputs for assessment of sedimentation, dispersion during dredging & dumping.

Sediment transport

This is useful to estimate the backfilling of dredged channels, morphological changes in sea, river & estuarine environments.



Wave transformation

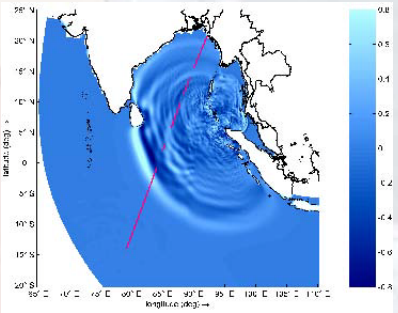
This involves the transformation of waves from offshore to the near-shore areas. This near shore wave data is a necessary input for design of coastal structures and estimation of downtime for transhipment operations.

Wave disturbance studies

This is useful in estimating the disturbance due to short waves in the port basin. It helps in understanding the total operational days of the port.

Dredging and disposal studies

Dredging studies are used to estimate the extent of spreading of the bed material which is brought into suspension during dredging operations.



Tsunami Simulation

Can be used to assess the water displacement at the fault site, and wave propagation from origin

Oil spill studies

These studies are carried out to simulate the oil slick mobility, amount of oil left on the water surface, evaporation and evolution of the oil properties in ambient environmental conditions. Mitigation measures and response in an emergency can be planned.