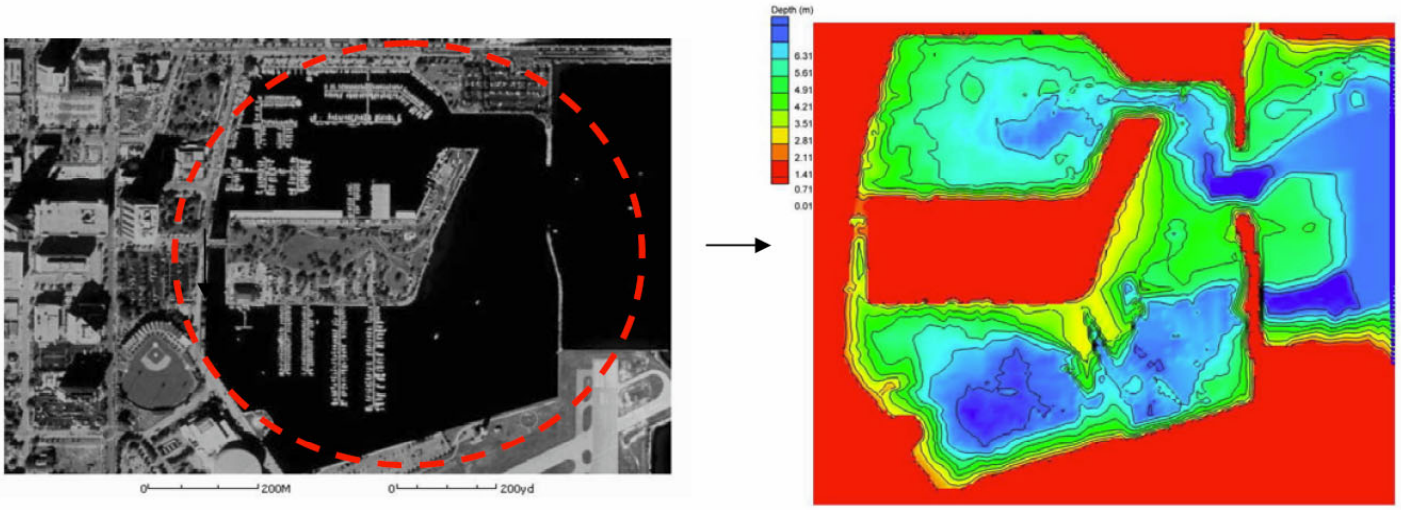
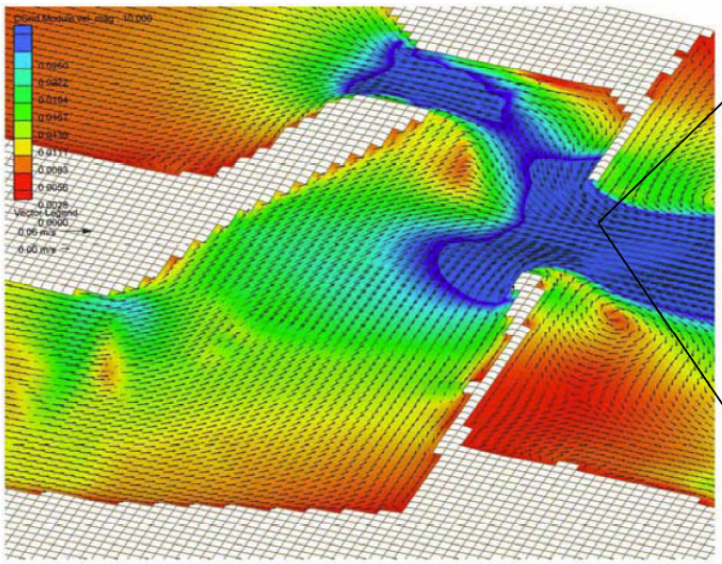
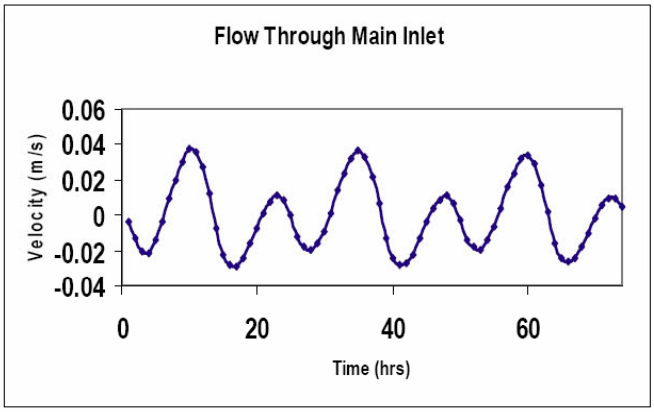
Hydrodynamic Modeling of a Marina Basin



NSN utilized Surface Water Modeling Software (SMS version 9.0) to simulate hydrodynamic processes and predict changes in circulation and sediment transport in a marina located in Saint Petersburg, FL. Our modeling capabilities can be used to provide a comprehensive analysis of hydrologic parameters such as current speed and direction, water surface elevation, average wave height and period, and quantified sediment deposition/erosion. This type of analysis is crucial to projects involving pre- and post-construction impact analysis, as well as flushing studies, water quality studies, and marine and environmental permitting. Real-time bathymetric data obtained using sonar equipment is combined with tidal information, physical characteristics of the water and sediments, and time specifications in order to simulate circulation in a given environment. Boundary conditions are set according to variables such as wave forcing, tidal flux, changes in water surface elevation, and wind speed/direction, depending on the specific system that is being analyzed. The software allows for both large scale regional modeling as well as smaller scale, site-specific observations.



Model simulations generate velocity contours and vectors that provide a quantitative perspective of circulation in a system



Recording stations allow for analysis of changes in current speed, direction, and sediment deposition/scour at specific locations

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