Accessing Operational Coastal Model Data

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The National Ocean Service (NOS) develops and maintains real-time coastal models called Operational Forecast Systems (OFS) for the harbors and estuaries of the United States. These OFS create forecast simulations of oceanographic parameters (water levels, currents, salinity, temperature) over the next several days and disseminate the results to users over the web. These models are updated every 6 hours on a 24 by 7 basis. OFS predictions support safe and efficient navigation, search and rescue missions, pollutant tracking, and marine forecasting on our Nation's coastal waterways.

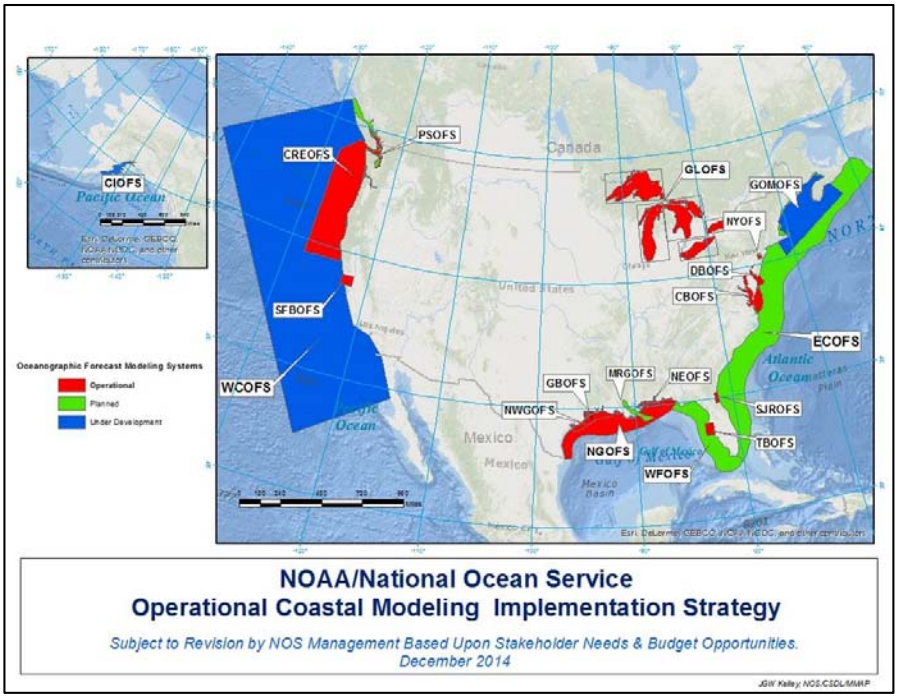

Figure 1. Location of Existing and Planned OFS Models.

Real-time data from NOS' OFS models are available for regions shown in red in Figure 1, with blue regions currently under development and green regions showing coverage planned for future deployment. Data are provided at points of interest along the coast along with animations of oceanographic conditions along the coast and in estuaries (including water level, currents, temperature, and salinity). The OFS can be viewed and accessed on the web at: tidesandcurrents.noaa.gov/models.html.

Figure 2 shows a water level animation for Chesapeake Bay and the water level forecast guidance time series at the Chesapeake Bay Bridge Tunnel.

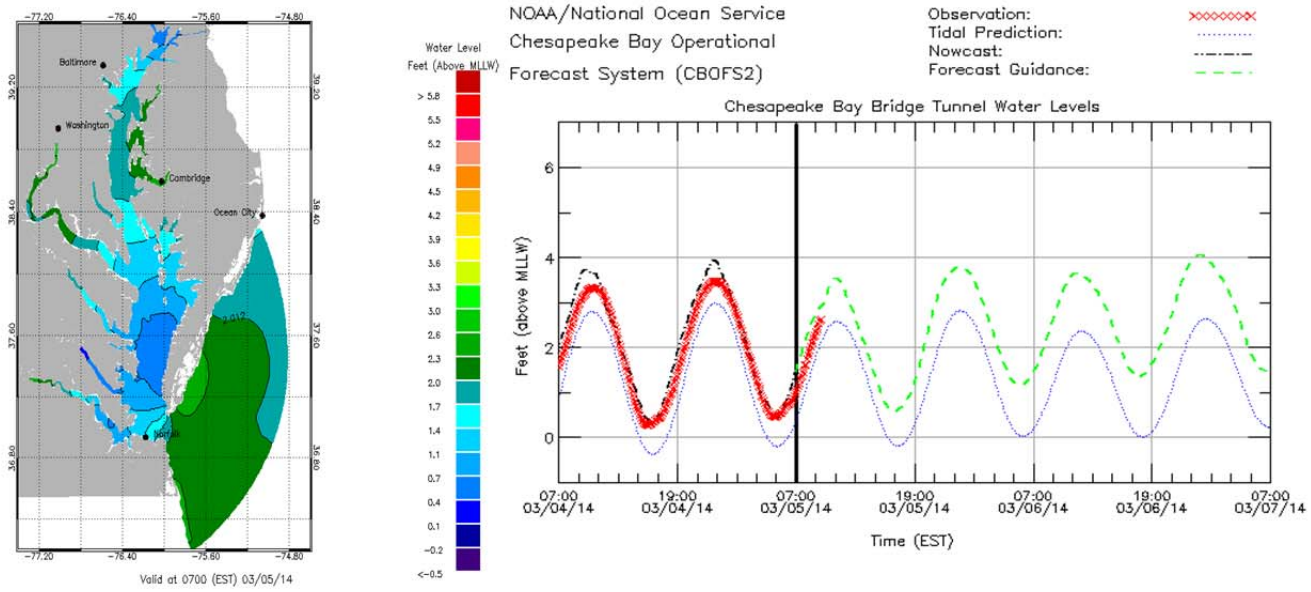

Figure 2. Water Level Forecast Guidance from the Chesapeake Bay OFS found on http://tidesandcurrents.noaa.gov/models.html.

All of the OFS model output data (hourly records of water levels, currents, temperature, and salinity as well as six minute data at critical point locations) is directly accessible via web services utilizing standard data formats. OFS model output is generated in Network Common Data Format (NetCDF; for more information see http://www.unidata.ucar.edu/software/netcdf/). A catalogue of the NetCDF gridded field and point station data is available on an NOS server which supports Thematic Real-time Environmental Distributed Data Services (THREDDS; https://www.unidata.ucar.edu/software/thredds/current/tds/). Many software utilities can directly access the OFS data available at: http://opendap.co-ops.nos.noaa.gov/thredds/catalog.html

NOS has also recently upgraded a web mapping portal for real time coastal data called *nowCOAST* (http://nowcoast.noaa.gov/mariner.html). For each OFS, *nowCOAST* depicts maps of surface currents along with water levels, current speed, sea surface temperature, or salinity. In addition to providing a visual web interface, *nowCOAST* also provides access to maps of OFS output via Web Map Services (WMS) and ArcGIS Server Representational State Transfer (REST) Services. These maps are listed on the *nowCOAST* Map Services web page: http://nowcoast.noaa.gov/help/#!section=mapservices&item=guidance-ocean

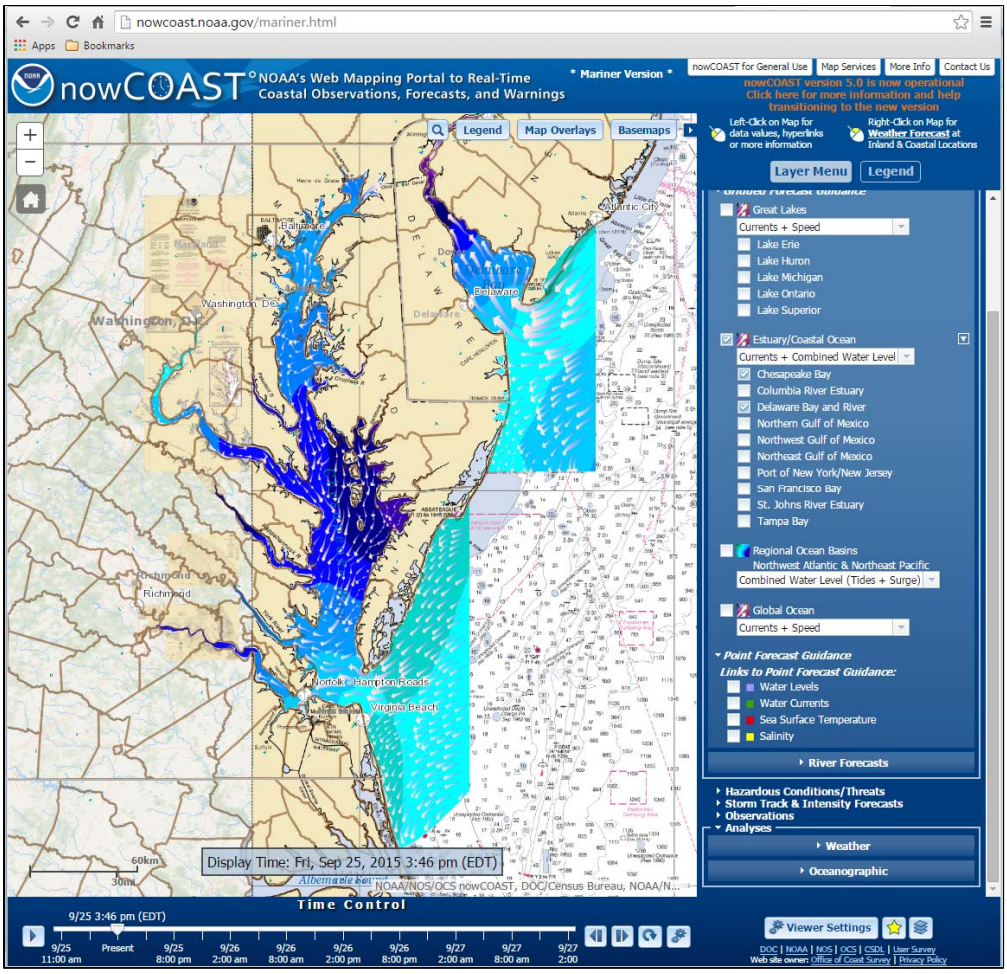

Figure 3. Chesapeake Bay and Delaware Bay OFS Output Displayed on the *nowCOAST* Web Map Viewer.

NOS also provides OFS water levels at point locations via text bulletins in the Standard Hydrometeorological Exchange Format (SHEF; http://www.nws.noaa.gov/om/water/resources/SHEF_CodeManual_5July2012.pdf). These time series data list recent observations and OFS predictions of water levels into the near future. The SHEF data are available through the National Weather Service Telecommunication Gateway (http://www.nws.noaa.gov/tg/cominfo.php). Further information on the SHEF water level data has been reported in http://co-ops.nos.noaa.gov/publications/NOAA_Technical_Report_NOS_COOPS_026.pdf.