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Technical Implementation Notice XX-XX
NOAA's National Ocean Service Headquarters Washington DC
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From: Peter Stone
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NOS Center for Operational Oceanographic Products and Services (CO-OPS)

Subject: Implementation of National Ocean Service's new Oceanographic Forecast Modeling System for Chesapeake Bay, Effective March 29, 2011

Effective March 29, 2011 beginning at 1500 Coordinated Universal Time (UTC) (10AM EST), the NOAA/National Ocean Service Chesapeake Bay Operational Forecast System (CBOFS) will be implemented on NOAA's Central Computer System (CCS) operated by NCEP Central Operations (NCO). The new implemented CBOFS will be replacement of the NOS' two-dimensional version of CBOFS run on NOS' computer system. The new version of CBOFS uses a three-dimensional, numerical ocean circulation model and the forecast horizon is extended from 30 to 48 hours. The new version of CBOFS will now provides users with nowcasts (predictions for near present) and forecast guidance of the three-dimensional physical condition of the Chesapeake Bay, including 3-D water currents, water temperature, and salinity as well as surface water levels.

The three-dimensional ocean model used by the new version of CBOFS is the Rutgers University's Regional Ocean Modeling System, a community-based, free-surface, hydrostatic, primitive equation ocean model which uses stretched, terrain-following sigma coordinates in the vertical and curvilinear coordinates in the horizontal. The CBOFS grid has 332 x 291 points in the horizontal. The finest grid resolutions in the x- and y-directions are 34m (111 feet) and 29m (95 feet), respectively, and the coarsest resolutions are 4895m (3 miles) and 3380m (2.1 miles), respectively. The vertical grid follows the terrain and consists of 20 model levels. The CBOFS domain was designed to include the whole of the Chesapeake Bay and a piece of the shelf to allow a realistic interaction between the shelf and the entrance to the Bay.

CBOFS has four daily nowcast and forecast cycles at 0, 6, 12, and 18 UTC and operates within NOS Coastal Ocean Modeling Framework (COMF). The meteorological forcing for CBOFS nowcast cycles is provided by hourly surface wind analyses from NCEP's Real-Time Mesoscale Analysis (RTMA) and surface heat flux from NCEP North American Mesoscale (NAM) weather prediction model. River discharge is estimated using near-real-time observations from U.S. Geological Survey river gauges. Oceanographic conditions on CBOFS' lateral boundary on the shelf are estimated based on subtidal water level forecast guidance from NWS Extra-Tropical Storm Surge (ETSS) Model and adjusted by observed subtidal water level s at NOS water level gauges, tides from Advanced CIRCulation Model (ADCIRC) ec2001 tide database, and U.S. Navy Coastal Ocean Model (NCOM) temperature and salinity nowcasts.

The CBOFS forecast cycles rely on meteorological forcing is provided by NAM model forecast guidance and river discharge is estimated by persisting the most recent observations for the entire forecast period. On the lateral boundary, future water levels are estimated based on subtidal water level forecast guidance from the NWS Extra-Tropical Storm Surge Model and tides from the Advanced CIRCulation Model (ADCIRC) while water temperature and salinity conditions are based on NCOM forecast guidance.

The output delivery timing of the CBOFS on CO-OPS servers or web page will not be impacted by this implementation. However, an increase in the data volumes is expected due to the extension out to 48 hours.

Gridded and point forecast guidance from CBOFS will be available in netCDF files on the NCEP server at NOAA's Web Operations Centers (WOC) (ftpprd.ncep.noaa.gov) in the directory

/pub/data/nccfs/com/nos/prod/cbofs.yyyymmdd

at NOS/CO-OPS OPeNDAP server

http://opendap.co-ops.nos.noaa.gov/netcdf/

and at CO-OPS THREDDS server

http://opendap.co-ops.nos.noaa.gov/thredds/catalog.html.

CBOFS output is displayed on the CO-OPS web page

http://tidesandcurrents.noaa.gov

and the NOS nowCOAST web mapping portal at

http://nowcoast.noaa.gov.

Additional information about CBOFS can be found at

http://www.tidesandcurrents.noaa.gov/models.html.

CBOFS predictions are used by commercial and recreational mariners and fishermen, emergency managers, search and rescue operations, and NWS marine weather forecasters. The development and implementation of CBOFS was a joint project of the NOS/ Office of Coast Survey/Coast Survey Development Laboratory, the NOS/Center for Operational Oceanographic Products and Services (CO-OPS), NWS/NCEP/NCO and Rutgers University. CBOFS is monitored 24 x 7 by both NCO and CO-OPS Continuous Real-Time Monitoring System (CORMS) personnel.

If you have any questions concering these changes, please contact:

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For questions regarding the dataflow aspects with respect to the NCEP server at the WOC, please contact:

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For questions on how to access CBOFS digital products from CO-OPS servers please contact:

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