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From: Edward Myers
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 NOS/Office of Coast Survey/Coast Survey Development Laboratory

Subject: Soliciting Comments on the Upgrade of the Surge and Tide
Operational Forecast System (STOFS) to Version 2.0.0 through September 27,
2023

The Coast Survey Development Laboratory (CSDL) in NOAA/NOS/Office of Coast Survey is proposing to upgrade the Surge and Tide Operational Forecast System (STOFS) to Version 2.0.0 in late December 2023. CSDL is seeking comments on this proposed upgrade through September 27, 2023. If approved, a Service Change Notice (SCN) will be issued at least 30 days before implementation of STOFS V2.0.0 with more detailed information.

STOFS V2.0.0 represents an upgrade of the STOFS modeling system, last upgraded in January 2023. STOFS V2.0.0 contains several enhancements improving model performance, resolution, and coverage, including upgrades to both the global (STOFS-2D-Global) and Atlantic (STOFS-3D-Atlantic) components. Model upgrades include:

- Upgrades to STOFS-2D-Global, which uses the ADvanced CIRCulation (ADCIRC) model core:

* Inclusion of bias correction at station locations where NOS/CO-OPS observations are available. This bias correction will correct the station forecast guidance biases by removing the bias between the observed water levels and most recent five days of nowcast water levels.

* Improved temporal resolution for GFS forcing, by including hourly GFS forcing out to five days in the forecast, then 3-hourly from five days to 7.5 days in the forecast. Previously, 3-hourly GFS forcing was used for the entire forecast period.

* Improvements to coastal topography, bathymetry, friction values and the mesh, for improved accuracy of water level forecast guidance.

* Possible inclusion of 3D baroclinic effects from the Global Real-Time Ocean Forecast System (Global RTOFS), to include 3D physical effects in global water level forecast guidance and to improve accuracy.

- Upgrades to STOfS-3D-Atlantic, which uses the Semi-implicit Cross- scale Hydroscience Integrated System Model (SCHISM) model core:

* Major improvements to the mesh in the watersheds, including better resolving of river channels. Mesh in coastal areas such as the Great South Bay and Shinnecock Bay will also be improved for enhanced accuracy of water level forecast guidance.

* Incorporation of satellite altimetry observations, specifically absolute dynamic topography (ADT), to improve open ocean boundary conditions. Also, xGEOID20b will be used instead of NAVD88 to improve model initialization and vertical datum referencing. Output will remain in NAVD88.

* Extending the forecast horizon from 48 to 96 hours into the future.

* Expanding the model coverage east and north to include the St. Lawrence River and improve boundary conditions.

CSDL will evaluate all comments to determine whether to proceed with all portions of this upgrade.

Send comments on this proposal for the upgrade of STOfS to Version 2.0.0 by September 27, 2023, to:

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A webpage describing STOfS and providing real-time verification statistics can be found at:

<https://polar.ncep.noaa.gov/estofs/>

STOfS model forecast guidance can also be viewed at:

nowcoast.noaa.gov

STOfS output can also be accessed via the AWS cloud courtesy of NOAA Open Data Dissemination (NODD) at:

<https://registry.opendata.aws/noaa-gestofs/>
<https://registry.opendata.aws/noaa-nos-stofs3d/>

National Public Information Statements are online at:

<https://www.weather.gov/notification/>

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