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Subject: Soliciting Comments on the Upgrade of the Surge and Tide Operational Forecast System (STOFS) to Version 3.1.0 through January 16, 2026

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 3.1.0 in April 2026. CSDL is seeking comments on this proposed upgrade through January 16, 2026. If approved, a Service Change Notice (SCN) will be issued at least 30 days before implementation of STOFS V3.1.0 with more detailed information.

STOFS V3.1.0 represents an upgrade of the STOFS modeling system, last upgraded in May 2024. STOFS V3.1.0 contains several enhancements improving model performance, resolution, and coverage, including upgrades to both the global (STOFS-2D-Global) and Atlantic (STOFS-3D-Atlantic) components, and the addition of a new component for the Pacific (STOFS-3D-Pacific).

Model upgrades include:

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

-Inclusion of a gridded bias correction. This bias correction uses the current station bias correction approach used in operational STOFS-2D-Global (v2.1), which corrects the station water level forecast guidance biases by removing the bias between the observed water levels at NOS/CO-OPS stations and most recent 5 days of nowcast water levels. This bias correction at stations is then propagated across the entire global grid using a graph diffusion approach. The result is both station and gridded output is bias corrected.

-Addition of a few stations to the output, as requested by National Weather Service forecast offices. Also, some redundant stations are removed from the output.

-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 watersheds (rivers, levees) and coastal areas (barrier islands, jetties/breakwaters, Intracoastal Waterway); and local mesh refinements requested by the community. These refinements resulted in improvements to the water level forecast guidance.

-Inclusion of a dynamic adjustment (bias correction) of open boundary conditions, to account for missing physics in the model, including steric effects, to improve the model's overall accuracy. This bias correction is calculated by averaging the model's nowcast bias for the past two days over 11 U.S. East Coast open coast NOS/CO-OPS stations. This bias is then uniformly applied to the open boundary conditions to force the model simulations.

-Station output will now be referenced to local mean sea level (LMSL), while gridded output will remain referenced to xGEOID20b.

-Addition of the STOFS-3D-Pacific component, which will use the SCHISM model core, to provide 3D baroclinic and surface current coverage for the north Pacific basin, from 30 degrees South to the Bering Strait. STOFS-3D-Pacific will use input from the National Water Model and Copernicus' Global Flood Awareness System (GloFAS) global hydrology to include inland hydrology and extreme precipitation effects on coastal flooding, and will also provide surface currents for marine navigation use.

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

Send comments on this proposal for the upgrade of STOFS to Version 3.1.0 by January 16, 2026 to:

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A web page 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:
https://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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