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From: Allison Allen
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Subject: Soliciting comments on the upgrade of the National Water Model to Version 3.1 through January 29, 2026

The National Weather Service (NWS) Office of Water Prediction (OWP) is proposing to upgrade the National Water Model (NWM) to Version 3.1 in the fourth quarter of FY 2026. The NWS is seeking comments on this proposed upgrade through January 29, 2026. If approved, a Service Change Notice (SCN) will be issued at least 30 days before the implementation of NWM V3.1 with more detailed information.

NWM V3.1 contains several significant enhancements over v3.0 implemented in 2023. Highlights include:

CONUS Domain

-An additional NWM Medium-Range (MR) inland forecast configuration, forced with meteorological data from the National Digital Forecast Database (NDFD), including precipitation, temperature, humidity, and wind speed/direction. The remaining inputs--pressure, shortwave and longwave radiation--are drawn from the Global Forecast System (GFS). Both NWM forcing and model output from this new configuration will be available, as will an accompanying NDFD-forced coastal total water level forecast configuration. NOTE: This new test NDFD MR configuration is under consideration for inclusion in the operational NWM v3.1, and is being included in the science evaluation so as to gather feedback from users on potential inclusion in the final operational configuration. Feedback on its performance versus existing NWM MR configurations will be taken into account when formulating the final mix of NWM v3.1 MR operational configurations

-An NBM-based six-member MR time-lagged ensemble. This resembles the existing six-member GFS-forced NWM MR ensemble but is forced with time-lagged NBM QPF (with remaining fields drawn from the GFS). NOTE: This new test NBM MR ensemble configuration is under consideration for inclusion in the operational NWM v3.1 and is being included in the science evaluation so as to gather feedback from users on potential inclusion in the final operational configuration. Feedback on its performance versus the existing NWM MR GFS-based ensemble configuration

will be taken into account when formulating the final mix of NWM v3.1 MR operational configurations

- Representation of the flow diversion between the Mississippi and Atchafalaya Rivers via observation-based flow persistence through the Old River Control Structure

- Improved downscaling of temperature forcing data via an NWP model data-based dynamic lapse rate approach

- Use of Multi-Radar/Multi-Sensor System (MRMS)- and Numerical Weather Prediction (NWP)-based precipitation-type specification for CONUS Analysis and Assimilation (AnA), Short-Range, and GFS-based Medium-Range configurations

- Incorporation of Field feedback on Standard Hydrometeorological Exchange Format (SHEF) output locations (25 new locations, one shifted location)

- Alteration of Medium-Range coastal Atlantic Gulf and Pacific domain forecast lengths from 10 days to 5 days to decrease run time and output latency by ~70% when combined with software optimization mentioned below

- Inclusion of updated Atlantic-Gulf topography-bathymetry data for the coastal model along portions of the Florida, North Carolina, Virginia, and Maryland coastlines

- Use of bias-corrected STOFS 2D model data as boundary condition input into the NWM coastal Total Water Level (TWL) component

- Updated NWM CONUS hydrofabric with location refinements for 311 USGS stream gauges, improving their representation in the NWM Analysis and Assimilation configuration.

Puerto Rico / USVI Domain

- New P-surge-forced Short-Range coastal forecast configuration, executed when P-surge data is available

- New 00Z and 12Z Short-Range forecast cycles for both inland and coastal configurations

- Use of NBM in place of WRF-ARW and NAM-NEST precipitation as primary precipitation forcing input for inland and coastal configurations

All Domains

- Significant decrease in coastal model runtime via code optimization

- Assimilation of USGS streamflow observations available at the forecast execution time into the corresponding beginning hours of the NWM short-, medium-, and long-range forecasts. The initial forecast period overlapping with available observations will thus track observed values

Publicly accessible NWM NetCDF for all output fields, and SHEF files for TWL guidance, can be downloaded on or about December 10, 2025, within nwm.YYYYMMDD sub-directories at:

<https://hydrology.nws.noaa.gov/pub/nwm/v3.1/wcoss-data/>

Where YYYY represents the four-digit year of output, MM represents the two-digit month of output, and DD represents the two-digit day of output.

With the upgrade of the NWM to Version 3.1, the NWM's related post-processing system is also being upgraded to operate more efficiently. Post-processed NWM v3.1 output from this post-processing system is available at:

https://hydrology.nws.noaa.gov/pub/nwm/v3.1/wcoss-data/nwm.YYYYMMDD/post_processed/

Where YYYY represents the four-digit year of output, MM represents the two-digit month of output, and DD represents the two-digit day of output. Note that the date has been removed from the name of each post-processed file, and now resides in the directory name.

These files, for RFC ingest, contain NWM data which has been subsetted down to the 13 RFC domains, and include channel, land, terrain, and reservoir files.

Note that the IMAGES sub-directory is being removed from the post-processed data point. This will eliminate pre-generated PNG images of several NWM output fields previously hosted in this location.

The NWS will evaluate all comments on NWM V3.1 to determine whether to proceed with this upgrade. Any questions, comments, or requests regarding this implementation should be directed to the contact below:

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A webpage describing the NWM can be found at:

<https://water.noaa.gov/about/nwm>

A description of full-domain NWM output available from NOMADS is here:

https://water.noaa.gov/about/output_file_contents

National Public Information Statements are online at:

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

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