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Public Information Statement 25-45
National Weather Service Headquarters Silver Spring MD
1030 AM EDT Tue Jul 15 2025

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From: Geoff Manikin
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Subject: Soliciting Comments on the Proposed Upgrade of the National Blend of Models through November 21, 2025

The Statistical Modeling Division (SMD) of the Meteorological Development Laboratory (MDL) is proposing to update the National Blend of Models (NBM) in April of 2026. The NWS is seeking comments on this proposed upgrade through November 21, 2025. If approved, a Service Change Notice (SCN) will be issued at least 30 days prior to the implementation of these upgraded products with more detailed information.

NBM Version 5.0 is a significant upgrade over the operational version 4.3 and will continue to fill existing product gaps requested by the Fire Weather, Winter, Water Resources, Aviation, Public, and Tropical NWS Service Programs.

Several highlights associated with this upcoming release include the following:

(1) Generation of Quantile-Mapped (QM) quantitative precipitation forecasts (QPF) and probability of precipitation guidance (PoP) replaces the current equal weighting of all inputs with an approach that gives more (pre-defined) weight to higher-resolution inputs (CONUS, Alaska, Hawaii, Puerto Rico, and Oceanic domains). The Multi-Model Ensemble Bias Correction (MMEBC) QPF product from the Weather Prediction Center (WPC) is added as an input (CONUS).

(2) Addition of a new 24h probability matched mean (PMM) quantitative precipitation product (only comprising High- Resolution models) for the CONUS and Alaska domains.

(3) Replacement of decaying average computations of instantaneous temperature, dew point temperature, relative humidity, and 12-hour maximum and minimum relative humidity (RH) with QM. This allows for the computation of associated percentile and exceedance values (CONUS, Alaska, Hawaii, Puerto Rico, and Guam domains).

(4) Addition of joint fire weather probabilities for the occurrence of various combinations of wind speeds and RH thresholds (CONUS, Alaska, Hawaii, Puerto Rico, Guam domains).

(5) Addition of QM 10-meter wind speed and wind gust guidance for the Alaska, Hawaii, Puerto Rico, and Guam domains.

(6) Addition of probabilistic QM bias-corrected wind speed and wind gust along with decaying average bias corrected probabilistic dew point temperature, 6-hour maximum and minimum 2-meter temperature, and sky cover for the Oceanic domain.

(7) Addition of deterministic and probabilistic decaying average bias-corrected precipitable water guidance for the CONUS.

(8) Addition of a new CONUS 24h, 48h, and 72h calibrated snow exceedance product along with a 24h probability matched mean deterministic snow and ice guidance (only comprising High- Resolution models) for the CONUS and Alaska domains.

(9) Addition of a new deterministic snow depth product and corresponding exceedance probabilities to address fire weather concerns over the CONUS and Alaska domains.

(10) Addition of probabilistic apparent temperature for the CONUS, Alaska, Hawaii, Puerto Rico, and Guam domains and deterministic apparent temperature for the Oceanic domain.

(11) Introduction of a new “percentile picking” approach to generate deterministic wind speed and wind gust forecasts rather than using the mean QM value. This methodology modulates the QM mean 10-meter wind speed and wind gusts forecasts away from the mean value as a function of where the mean forecast lies relative to the model distribution and past climatology (CONUS, Alaska, Hawaii, Puerto Rico, and Oceanic domains).

(12) Adding the Canadian Global and Regional deterministic and ensemble models as inputs to the winter weather suite along with minor changes to the criteria for converting snow and ice to rain in the downscaling approach. With respect to probabilistic snowfall accumulation, an unequal model weighting method is now applied (similar to what is noted in (1)) when calculating the cumulative distribution functions for generating percentile and exceedance values (CONUS and Alaska domains).

(13) Replacement of the low-resolution deterministic ECMWF (0.25 deg) and ECMWF Ensemble guidance (0.50 deg) with 0.10 deg and 0.20 deg data, respectively. Replacement of the lower resolution GDPS (25 km) and REPS (15km) Canadian model data with higher horizontal resolution data of 15km and 10km, respectively.

(14) An update to the approach used to bias correct significant wave heights by leveraging QM to replace the operational decaying average algorithm and increasing the number of model inputs from 13 to approximately 120 (CONUS, Alaska, Hawaii, Puerto Rico, Guam, and Oceanic domains).

(15) Replacement of the deterministic ceiling height and visibility (C&V) guidance for the Hawaiian domain with a new C&V product for Hawaii that will mirror the gridded "Meld" Localized Aviation MOS Program (LAMP) approach used over CONUS and Alaska, and will incorporate a gridded observational analysis, RAP, GFS, and ECMWF as inputs. The product leverages a random forest technique to derive "pseudo" observations over the Hawaiian islands to help inform the gridded observational analysis (an important component in the first six hours).

(16) Removal of the Haines Index product (CONUS, Alaska, Hawaii, and Puerto Rico domains).

(17) Extension of hourly guidance from 36 hours to 48 hours (excluding ceiling, visibility, and thunderstorm coverage).

(18) Usage of the European Centre for Medium-Range Weather Forecasts Artificial Intelligence/Integrated Forecasting System (ECAIFS) as an input for temperature, dew point, wind speed and gust, and QPF (all domains, except for QPF over Guam).

(19) Addition of probabilistic convective available potential energy (CAPE) over the CONUS: 10th, 50th, and 90th weighted percentiles.

It is anticipated that these upgrades will benefit the NWS in its mission towards better Impact-based Decision Support Services (IDSS).

Publicly accessible NBM GRIB2 files will be available for download in NOMADS approximately 30 days prior to implementation. Further details concerning the location of the data will be provided closer to the implementation date with an updated SCN.

A slide deck detailing the NBM v5.0 updates and improvements can be found under the Version 5.0 section of the NBM Versions webpage:

https://vlab.noaa.gov/web/mdl/nbm-versions
All or a portion of the NBM text bulletins can be obtained by visiting an interactive Graphical User Interface (GUI):

https://blend.mdl.nws.noaa.gov/nbm-text

Many of the NBM v5.0 products can be viewed on our Quick Viewer located at:

https://blend.mdl.nws.noaa.gov/nbm-images

The NWS will evaluate all comments on this NBM upgrade to determine whether or not to proceed with this upgrade.

For providing comments on the above changes, please use the feedback form which can be accessed via this link:

https://docs.google.com/forms/d/13MPuQ_kDMAMwX4nrJzkOUVuymkc6UvgBorghKolRgjE/

Alternatively, any questions, comments or requests regarding this implementation should be directed to the contacts below. We will review any feedback and decide whether or not to proceed.

For questions regarding the implementation of NBM guidance, please contact:

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National Public Information Statements are online at:

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