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From: Geoff Manikin
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 Meteorological Development Laboratory

Subject: Soliciting Comments on Upgrade 4.3 of the National Blend of Models through January 21, 2025

The Statistical Modeling Division (SMD) of the Meteorological Development Laboratory (MDL) is proposing to update the National Blend of Models (NBM) this December. The NWS is seeking comments on this proposed upgrade through January 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 4.3, which is tentatively scheduled to be implemented in April of 2025, will continue to fill existing product gaps requested by the Tropical, Fire Weather, Severe Weather, and Aviation NWS Services.

This upgrade primarily introduces improvements and corrections to the NBM tropical cyclone feature-matched wind products, along with incorporating updates to Storm Prediction Center's (SPC's) probabilistic severe weather products that are disseminated through the NBM. The primary highlights with this upcoming implementation include:

(1) Improvements to the featured-matched tropical cyclone wind products:

a) A fix that addresses the issue of feature-matched tropical cyclone dropouts at random projections.

b) Land/Water adjustments of Direct Model Output (DMO) wind speed and u-v wind components when displaced to match the WTCM center. These adjustments are made using the surface roughness values from the Hurricane Analysis and Forecast System (HAFS).

c) Replacement of the existing tropical wind direction with the derived 10m wind direction from tropical feature-matched 10m u- and v-components.

(2) Updated SPC probabilistic severe weather products:

a) Probabilistic severe hazards for tornado, hail, thunder, and wind are expanded out to Day 2 and are now calibrated from a GEFS/HREF blend. (Usage of the SREF to compute these probabilities is terminated.). New cycles for these severe hazards are 0000 UTC and 1200 Coordinated Universal Time (UTC).

b) New SPC guidance for combined hazard severe weather probabilities for each day during the Days 3-8 period, available for the 06Z and 18Z cycles.

(3) Minor updates to the Cobb melting technique, used in computation of snow accumulation and snow-to-liquid ratio, to account for the possibility of the computed wet-bulb temperatures being slightly too warm. This change makes the NBM winter code consistent with the computation in ForecastBuilder.

(4) The computation of wet-bulb globe temperature (WBGT) is updated to be consistent with the WBGT computation used in the National Digital Forecast Database (NDFD).

(5) The ceiling consistency check with the sky cover field is now constrained when introducing ceilings to not allow the values to be below 13,000 ft.

(6) A consistency check is applied so that the deterministic wind gust value can no longer be less than the wind speed. In instances in which the gust is lower than the speed, the gust is now set to 1.08 times the speed value.

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

Publicly accessible NBM gridded binary version two (GRIB2) files will be available for download in the NOAA Operational Model Archive and Distribution System (NOMADS) approximately 30 days prior to implementation. Further details concerning the location of the data will be provided closer to the implementation date in the official SCN.

NBMv4.3 feature-matched wind graphics, generated from tests run on 2024 tropical cyclone cases, can be viewed on a comparison webpage:

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

A slide deck detailing the NBM v4.3 updates and improvements can be found under the Version 4.3 section of the NBM Versions webpage:

<https://vlab.noaa.gov/web/mdl/nbm-versions>

NBM v4.3 images can be viewed by NOAA personnel on the WSUP viewer located at:

<https://wsup.mdl.nws.noaa.gov>

For those outside of NOAA, many of the NBM v4.3 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 proposed NBM upgrade to determine whether to proceed with this upgrade.

To provide formal comments on the planned changes, please use the feedback form which can be accessed via this link:

<https://docs.google.com/forms/d/1Zhs2x-06jThTdYXIoj5zCyRs0vUsUYlQlqvSzD-hns>

Please note that this form should only be submitted once per NWS Region or NCEP Center.

Alternatively, any questions, comments or requests regarding this implementation should be directed to the contacts below. We will review any feedback and decide whether to proceed.

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

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National Public Information Statements are online at:

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

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