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Public Information Statement 20-24  
National Weather Service Headquarters Silver Spring, MD  
1030 AM EDT Tue Apr 21 2020

To:           Subscribers:  
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From:         Vijay Tallapragada  
              Chief, Modeling and Data Assimilation Branch  
              NCEP/Environmental Modeling Center

Subject:      Soliciting comments about an upgrade of the High  
              Resolution Ensemble Forecast (HREF) system through  
              June 24, 2020

The Environmental Modeling Center (EMC) is proposing to upgrade the High Resolution Ensemble Forecast (HREF) in December 2020. The NWS is accepting public comments on this proposed upgrade until June 24, 2020.

This upgrade includes model membership changes with a High Resolution Window (HiresW) - Finite Volume Cubed Sphere (FV3) dynamic core member being added as a first step in a planned unification of all regional weather models around the FV3 dynamical core in the Unified Forecast System (UFS) framework. This new HiresW-FV3 member will replace the HiresW - Nonhydrostatic Multiscale Model on B grid (NMMB) member for all domains. The HiresW-NMMB was selected to be discontinued as it shows the least overall forecast skill of the current HREF membership. The HiresW-FV3 run will be extended to 60 h to better support a 48 h HREF forecast with this upgrade. The operational HiresW-NMMB runs to 48 h.

The High Resolution Rapid Refresh (HRRR) also is being added as a new member for the CONUS and Alaska HREF domains. With the

addition of the HRRR, the total number of members (including time-lagged members) increases from 8 to 10 for CONUS and from 6 to 8 for Alaska.

Also included with the proposed upgrade are a number of product additions and refinements:

- Extends the forecast length to 48 h from the current 36 h
- Replaces lower threshold QPF and snow probabilities currently produced with neighborhood maximum probabilities with Ensemble Agreement Scale (EAS) probabilities
- Replaces probability-matched mean QPF with a local probability-matched mean QPF
- Refines how 10 meter above ground level wind speed probabilities are generated, changing from point probabilities of instantaneous wind speed to neighborhood maximum probabilities of hourly maximum wind speed
- Adds probabilities of QPF exceeding recurrence interval and flash flood guidance values for the CONUS domain only.
- Adds a lightning probability field
- Adds a mean skin temperature field
- Modifies the thresholds for maximum updraft helicity probabilities (current production HREF generates for 25 and 100  $m^2/s^2$ ; proposed HREF generates probabilities for 25, 75, and 150  $m^2/s^2$ )

Graphical comparisons of parallel output are available at these websites through at least June 29, 2020:

- Comparing the real-time HREF parallel and operational HREF: <https://www.emc.ncep.noaa.gov/mmb/mpyle/hrefv3/>
- Comparing the operational HiresW-NMMB and parallel HiresW-FV3: <https://www.emc.ncep.noaa.gov/mmb/mpyle/hiresw/nmmb fv3/>

Real-time parallel model output data also will be made available:

<https://para.nomads.ncep.noaa.gov/pub/data/nccf/com/hiresw/para/>

The NWS will evaluate all comments to determine whether to proceed with the upgrade. Please provide comments on this HREF upgrade by June 24, 2020 to:

Matthew Pyle

Email: [Matthew.Pyle@noaa.gov](mailto:Matthew.Pyle@noaa.gov) or

Vijay Tallapragada

Email: [Vijay.Tallapragada@noaa.gov](mailto:Vijay.Tallapragada@noaa.gov)

National Public Information Statements are online at:

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

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