Service Change Notice 19-41
National Weather Service Headquarters Silver Spring MD
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From: Bob Maxson
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National Centers for Environmental Prediction

Subject: Additions and Changes to the NAM nest and HiResW
Effective June 12, 2019

Effective on or about Wednesday, June 12, 2019, beginning with the 1200 Coordinated Universal Time (UTC) model distribution, the National Centers for Environmental Prediction (NCEP) will be making modifications to severe weather fields in the North American Mesoscale (NAM) nests and the High-Resolution Window (HiResW) output files. These changes will be coincident with the implementation of GFS v15.1 so any changes in that implementation's schedule will impact these NAM/HiResW changes.

As part of the proposed High Resolution Ensemble Forecast (HREF) implementation in FY19Q3, the Storm Prediction Center has requested that the convectively relevant output fields for the constituent models used in HREF be unified. To achieve this, some fields have to be added and/or modified in the NAM nest and HiResW output files.

The following changes will be applied to the NCEP Web services, including NOMADS "grib filter" and OpenDAP:

https://nomads.ncep.noaa.gov/pub/data/nccf/com/nam/prod/
ftp://ftpprd.ncep.noaa.gov/pub/data/nccf/com/nam/prod
https://nomads.ncep.noaa.gov/pub/data/nccf/com/hiresw/prod/
ftp://ftpprd.ncep.noaa.gov/pub/data/nccf/com/hiresw/prod

1) The following variables will be added to the NAM CONUS nest output "hiresf" files:
nam.tCCz.conusnest.hiresfFF.tm00.grib2, where CC is cycle and FF is forecast hour

- Instantaneous simulated reflectivity at the -10C level (REPD:263 K level)
- Hourly maximum simulated reflectivity at the -10C level (REPD:263 K level 11-12 h max fcst)
- Hourly minimum updraft helicity for the 0-3 km above ground
level (AGL) and 2-5 km AGL (MNUPHL:3000-0 m above ground: and
MNUPHL:5000-2000 m above ground:)
- Hourly maximum updraft helicity for the 0-3 km AGL
(MXUPHL:3000-0 m above ground)

2) Modifications to all NAM nests "hiresf" files (CONUS, Alaska,
Hawaii, Puerto Rico, and Fire Weather) to change:

- The vertical integration range for the hourly maximum
  updraft speed (MAXUVV) and downdraft speed (MAXDVV) is changed
  from 400-1000 hPa to 100-1000 hPa
- In the NAM post-processing code, the thunder parameter
  (LTNG) is currently set to 1 if convective precipitation is non-
  zero at a model grid point. Since 2014, when convective
  parameterization was turned off in the NAM nests, this field has
  been zero. To populate this field with non-zero values from the
  NAM nests for HREF, it will now be set to 1 in the NAM nests if
  the total precipitation is non-zero at a grid point. In the 12
  km NAM parent domain output grids, this parameter will still be
  set to 1 if convective precipitation is non-zero.

3) Additions and changes to the HiResW output files:

- Add hourly maximum simulated reflectivity at the -10C level
  for the 5 km HiResW output files, for the 3 km subset grid for
  CONUS, and for the 5 km subset grid for Alaska:
  hiresw.tCCz.nmmb_5km.fFF.DOMAIN.grib2
  hiresw.tCCz.arw_5km.fFF.DOMAIN.grib2
  hiresw.tCCz.nmmb_?km.fFF.DOMAIN.subset.grib2
  hiresw.tCCz.arw_?km.fFF.DOMAIN.subset.grib2
  Where CC is cycle, FF is forecast hour, ? is the domain
  resolution, and DOMAIN is the region.
- Adds a yes/no thunder parameter for all full domain 5 km
  HiResW output grids (but not for the *conuseast* and *conuswest*
  legacy grids)
- Fix the minimum updraft helicity field in the Non-
  hydrostatic, hybrid vertical coordinate mesoscale model on B-
  grid (NMMB) HiResW output files:
  hiresw.tCCz.nmmb_5km.fFF.DOMAIN.grib2
  hiresw.tCCz.nmmb_?km.fFF.DOMAIN.subset.grib2
- Specify the earth's radius properly for NCAR Advanced
  Research WRF (ARW) model output, correcting some slight
  interpolation errors

NCEP urges all users to ensure their decoders can handle changes
in content order, changes in the scaling factor component within
the product definition section (PDS) of the GRIB files, and
volume changes. These elements may change with future NCEP model
implementations. NCEP will make every attempt to alert users to
these changes before implementation.

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 concerning the NAM, please contact:
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For questions regarding the data flow aspects of these data
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https://www.weather.gov/notification

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