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PNSWSH

Technical Implementation Notice 16-27  
National Weather Service Headquarters Washington DC  
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To:           Subscribers:  
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From:        Timothy McClung, Portfolio Manager  
              Office of Science and Technology Integration

Subject: RTMA, URMA, NAM DNG and SREF Upgrade: Effective August 23, 2016

Effective on or about Tuesday, August 23, 2016, beginning with the 1200 Coordinated Universal Time (UTC) cycle (1500 UTC cycle for the Short-Range Ensemble Forecast (SREF)), the National Centers for Environmental Prediction (NCEP) will upgrade the Real-Time Mesoscale Analysis (RTMA), Un-Restricted Mesoscale Analysis (URMA), and North American Model (NAM) Downscaled Numerical Guidance (DNG) and make minor product modifications to the SREF System. The changes include some scientific changes and product changes. They are outlined below for each modeling system.

RTMA/URMA:

- Replace the current terrain and land/sea mask used in the system with the new Environmental Modeling Center (EMC)/Graphical Forecast Editor (GFE) consensus terrain and land/sea mask in the 2.5km contiguous U.S. (CONUS) domain. The use of the common terrain and land/sea mask will eliminate the need for NWS forecasters to reduce the RTMA and URMA analyses to their local GFE terrain.
- Improve the CONUS and Alaska grids of wind speed by analyzing wind speed directly as a scalar, as opposed to deriving it from the control variables of stream function and velocity potential.
- Produce new URMA output for Hawaii and Puerto Rico on 2.5km grids. These new URMA systems will provide "truth analyses" for the National Blend of Models (NBM) Project. The output will contain analysis and analysis uncertainty for the following parameters: Surface pressure, 2m-temperature, 2m-dewpoint, 2m-specific Humidity, 10-m u-wind component, 10m-v wind component, 10-m wind speed, 10-m wind direction, 10-m gust, and surface visibility.

At this time, these products will only be available on the NCEP file transfer protocol (ftp) server at:

<http://ftpprd.ncep.noaa.gov/data/nccf/com/rtma> and  
<http://ftpprd.ncep.noaa.gov/data/nccf/com/urma>

in subdirectories hiurma.YYYYMMDD and prurma.YYYYMMDD. The filenames will

be:

hiurma.tCCz.[2dvargess|2dvaranl|2dvarerr]\_ndfd.grb2  
prurma.tCCz.[2dvargess|2dvaranl|2dvarerr]\_ndfd.grb2

where 2dvargess is background/first guess, 2dvaranl is analysis and 2dvarerr is analysis uncertainty, YYYYMMDD is year, month, day and CC is cycle from 00-23.

- Add gridded binary version two (GRIB2) files for Cloud Ceiling Height (CEIL) analysis (anl) and Cloud Ceiling Height analysis uncertainty (err) for RTMA and URMA for the 2.5km CONUS grids only. At this time, these products will only be available on the NCEP ftp server at:

<http://ftpprd.ncep.noaa.gov/data/nccf/com/rtma> and  
<http://ftpprd.ncep.noaa.gov/data/nccf/com/urma>

The filenames will be:

rtma2p5.tCCz.[2dvaranl|2dvarerr]\_ceil\_[ndfd|nwrfc].grb2  
urma2p5.tCCz.[2dvaranl|2dvarerr]\_ceil\_[ndfd|nwrfc].grb2

where 2dvaranl is analysis and 2dvarerr is analysis uncertainty, CC is cycle from 00-23, and ndfd and nwrfc denote which CONUS grid is used.

GRIB2 files for Ceiling (CEIL) should be considered experimental at this time. After sufficient evaluation, if these fields are promoted to operational, we will put these fields into the larger RTMA/URMA output files and no longer have them in separate files.

- Add URMA-CONUS grids of maximum temperature (TMAX) and minimum temperature (TMIN) to the National Digital Guidance Database (NDGD) at:

<ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/DF.gr2/DC.ndgd/GT.urma/AR.conus>

file name - ds.maxt.bin; MAX temperature file name - ds.mint.bin; MIN temperature and to NOAAPort with the following World Meteorological Organization (WMO) headers:

LTQA98 KWBR           URMA TMAX or TMIN Analysis  
LTQA98 KWBR           URMA TMAX or TMIN Analysis Uncertainty

The MAX temperature grid is only available from the 0800 UTC cycle run and the MIN temperature from the 2000 UTC cycle run.

NAM Downscaled Numerical Guidance (DNG) Changes:

- Replace the current terrain and land/sea mask used in the system with the new EMC/GFE consensus terrain and land/sea mask for the 2.5km CONUS domain.

- Modify the wind gust calculation at intermediate hours (1, 2, 4, 5, etc.) to use the maximum of the NAM nest wind gust and downscaled wind speed. This calculation is already done at the 0, 3, 6, etc. forecast

hours and this change will make it consistent across all forecast hours.

- Add new variables Cloud Ceiling height [gpm], and Mean Sea Level Pressure (Eta model reduction) [Pa] to the 2.5km CONUS, 3km Alaska, Puerto Rico and Hawaii NAM DNG files on the NCEP ftp server.

- Add hourly output of Total Cloud Cover field for all NAM DNG domains. It was previously available only every three hours. Remove the 5km CONUS and 6km AK NAM DNG GRIB files from the NCEP servers. These products have been replaced by the 2.5km CONUS and 3km Alaska products.

Removed:

nam.YYYYMMDD/nam.tCCz.smartconusFF.tm00.grib2

nam.YYYYMMDD/nam.tCCz.smartakFF.tm00.grib2

Replacement:

nam.YYYYMMDD/nam.tCCz.smartconus2p5FF.tm00.grib2

nam.YYYYMMDD/nam.tCCz.smartak3FF.tm00.grib2

Where CC is cycle and FF is forecast hour.

- Modify the GRIB encoding for the Haines Index fields to use the value  $9.9 \times 10^{10}$  for the missing value.

SREF Changes:

- Update the SREF ensemble mean, probability and spread products on NOAAport to add the 0-3 hour accumulated precipitation parameter, which is erroneously being skipped.

Add the following fields to all of the SREF output grids (grids 132, 212, 216, 221 and 243) on the NCEP ftp server at:

ftpprd.ncep.noaa.gov/data/nccf/com/sref/prod/

Water Equivalent of Snow Depth (both instantaneous and 3-hourly Snow Depth)

- Increase the forecast hours available in the probability files available on the NCEP ftp server for grid 132 from 72 hours to 87. The filename is sref.tCCz.pgrb132.prob\_3hrly.grib2.

Real-time sample parallel data for the RTMA/URMA and NAM is available via the following URLs:

<http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/rtma/para/>

<http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/urma/para/>

<http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/nam/para/>

More information about the RTMA and URMA update is available at:

Parallel RTMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/RTMAP](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/RTMAP)

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Parallel URMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/URMAP](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/URMAP)

Operational RTMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/RTMA](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/RTMA)

Operational URMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/URMA](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/URMA)

Parallel vs. Ops RTMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/RTMAP-RTMA](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/RTMAP-RTMA)

Parallel vs. Ops URMA:

[http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma\\_urma/URMAP-URMA](http://www.emc.ncep.noaa.gov/mmb/jcarley/rtma_urma/URMAP-URMA)

For questions regarding these changes, please contact:

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National Technical Implementation Notices are online at:

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

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