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Service Change Notice 24-64
National Weather Service Headquarters Silver Spring MD
1100 AM EDT Thu Jun 13 2024

To: Subscribers:
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 -Emergency Managers Weather Information Network
 -NOAAPort
 Other NWS Partners, Users and Employees

From: Mike Farrar, Director
 National Centers for Environmental Prediction

Subject: Upgrade to Hurricane Analysis and Forecast System (HAFS):
Effective July 16, 2024

Effective on or about Tuesday, July 16, 2024 with the 1200 Coordinated Universal Time (UTC) cycle, the National Centers for Environmental Prediction (NCEP) Central Operations (NCO) will be implementing a new upgrade of Hurricane Analysis and Forecast System version 2 (HAFSv2) replacing the existing HAFSv1 with both HFSA and HFSB configurations be updated.

The scientific and technical enhancements include the following:

System and Infrastructure Upgrades:

- Latest version of ufs-weather-model, HAFSv2 final scientific configuration freeze on February 8, 2024
- Increase moving nesting horizontal resolution from 6-2 km to 5.4-1.8 km (HFSA only)
- Reduce model time step from 90 to 72s (HFSB only)
- Updated horizontal advection options
- Improved model stability and runtime efficiency

Vortex Initialization Improvements:

- Enhance vortex initialization to cycle hydrometeor variables and vertical velocity (HFSA only)
- Update composite vortex and reduce warm-cycling Vmax threshold from 50 to 40 kt (HFSA only)

Data Assimilation Improvements:

- Ingest new high-resolution GOES-R mesoscale AMVs
- Scale-Dependent Localization for innercore DA
- Refine GPS RO (Radio Occultation) DA

Model Physics Advancement:

- Upgrade Thompson MP with bug fixes
- Thompson Microphysics for NATL basin, GFDL Microphysics for EPAC/CPAC and JTWC basins (HFSA only)
- Update TKE EDMF PBL and SASAS CP schemes with vertical wind shear impacts

- Change the radiation calling time step from 720s to 900s (HFSA only)
- Reduce radiation time step from 1800 to 720s (HFSA only)
- Update CO2 fix files

Ocean/Wave Coupling:

- MOM6 ocean model coupling (HFSA only)
- CMEPS with inline-CDEPS coupling (HFSA only)

Post-processing:

- Upgrade GFDL Tracker

The HAFSv2.0.0 system has been fully tested and compared with the forecast skill of 2023 operational HAFSv1.0, demonstrating overall improved tropical cyclone track and intensity forecast guidance in all global oceanic basins.

Product Timing Changes:

There will be no changes on the HAFS product delivery time for Users of public data on the NOAA Operational Model Archive and Distribution Service (NOMADS).

Data files for the HAFS remain at their current location on NOMADS/FTPFRD web services at:

<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/hafs/prod>
<https://nomads.ncep.noaa.gov/pub/data/nccf/com/hafs/prod>
<https://www.ftp.ncep.noaa.gov/pub/data/nccf/com/hafs/prod>

An event driven parallel feed of HAFSv2.0.0 data is available on the NCEP sites at the following URLs:

<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/hafs/para>
<https://nomads.ncep.noaa.gov/pub/data/nccf/com/hafs/para>
<https://www.ftp.ncep.noaa.gov/pub/data/nccf/com/hafs/para>

Sample HAFS products from HAFSv2.0 are available at:

https://www.emc.ncep.noaa.gov/gc_wmb/vxt/zack/HAFSv2_Sample_Files/

NCEP encourages users to ensure their decoders are flexible and are able to adequately handle changes in content order, changes in the scaling factor component within the product definition section (PDS) of the Gridded Binary (GRIB) files, and any volume changes which may be forthcoming. These elements may change with future NCEP model implementations. NCEP will make every attempt to alert users to these changes prior to any implementations.

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 these model changes, please contact:

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For questions regarding the data flow aspects of these datasets, contact:

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National Service Change Notices are online at:

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

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