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Service Change Notice 25-48 Updated
National Weather Service Headquarters Silver Spring MD
240 PM EDT Tue Jul 2 2025

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

From: David Michaud, Director
NCEP Central Operations

Subject: Updated: Upgrade to Hurricane Analysis and Forecast System (HAFS)to version 2.1: Effective July 29, 2025

Updated to reflect new implementation date of Jul 29, 2025.

Effective on or about Tuesday, July 29, 2025 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 2.1 (HAFSv2.1) for both HFSA and HFSB configurations. In the event that the implementation date is declared a Critical Weather Day (CWD), an Enhanced Caution Event (ECE), or other significant weather is occurring or is anticipated to occur, implementation of this change will take place at 1200 UTC on the next weekday not declared a CWD and when no significant weather is occurring.

The scientific and technical enhancements include the following:
- Model code updates based on later UFS revision (July 3, 2024)

Atmospheric physics advances:
* Improved Scale-Aware Simplified Arakawa-Schubert (sa-SAS) convection scheme using:
* scale-adaptive convective cloud water calculations
* prognostic sigma closure for all TC basins
* Improved Turbulent Kinetic Energy (TKE)-based Eddy-Diffusivity Mass-Flux (EDMF) Planetary Boundary Layer (PBL) scheme
* Enabled exponential-random cloud overlap method in the Rapid Radiative Transfer Model for GCMs (RRTM-G)

Ocean model updates:
* Initialized ocean model using the latest RTOFS version 2.5, which is scheduled to be implemented into operations along with HAFS version 2.1
* Upgraded ocean coupling and improved ocean model mixed layer scheme

Vortex Initialization (VI) and Data Assimilation (DA) improvements:

* Improved VI for more accurate storm intensity representation
* Applied wavenumber filtering to DA increments
* Enabled storm-following Three-Dimensional Incremental Analysis Update (3DIAU) in inner-core DA
* Assimilated NOAA-21 Advanced Technology Microwave Sounder (ATMS) and Cross-Track Infrared Sounder (CrIS) observations
* Turned off assimilation of both P3 and C-130 Stepped Frequency Microwave Radiometer (SFMR) surface wind speed observations

The HASFv2.1.0 system has been fully tested and compared with the forecast skill of 2024 operational HAFSv2.0, 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/FTPPRD web services at:

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

An event driven parallel feed of HAFSv2.1.0 data is available on the NCEP sites at the following URLs:

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

Sample HAFS products from HAFSv2.1 are available at:
https://www.emc.ncep.noaa.gov/gc_wmb/vxt/zack/HAFS_Sample_Files/HFSA_sample/hafs/v2.1/
https://www.emc.ncep.noaa.gov/gc_wmb/vxt/zack/HAFS_Sample_Files/HFSB_sample/hafs/v2.1/

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.

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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