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Public Information Statement 25-12
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From: Daryl Kleist
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Subject: Soliciting Comments through April 14, 2025 on the Proposed Upgrade of the Hurricane Analysis and Forecast System (HAFS) to version 2.1

NWS is soliciting comments through April 14, 2025, on a proposed upgrade of the operational HAFS to version 2.1.

HAFS consists of two model configurations for global (HAFS-A) and basin-scale (HAFS-B) tropical storm prediction, which are built upon NOAA's Unified Forecast System (UFS). HAFS version 2.1 is expected to improve forecasting skill for track and intensity of tropical cyclones (TCs) worldwide (HAFS-A) as well as in the North Atlantic and Eastern and Central North Pacific basins (HAFS-B).

HAFS version 2.1 includes the following changes:
- 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

No product changes are introduced by the proposed upgrade. HAFS products will continue to be available from the NOAA Operational Model Archive and Distribution Services (NOMADS)/FTPPRD web services.

Please submit comments, questions, or requests on science aspects of the proposed upgrade to:

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