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Public Information Statement 22-35
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From: Vijay Tallapragada
           NCEP EMC Modeling and Data Assimilation Branch Chief

Subject: Soliciting Comments on the Proposed Upgrade of the HYSPLIT v8.0
through July 31, 2022

NOAA/NWS runs the NOAA/Air Resources Laboratory (ARL) Hybrid Single-
Particle Lagrangian Integrated Trajectory (HYSPLIT) transport and
dispersion model for real-time dust predictions over the contiguous U.S.
(CONUS) and on-demand dispersion predictions for radiological via World
Meteorological Organization (WMO) Regional Specialized Meteorological
Center (RSMC) and volcanic ash via International Civil Aviation
Organization (ICAO) agreements and hazardous material release. The
Environmental Modeling Center (EMC) is seeking comments on the proposed
changes to the HYSPLIT transport and dispersion model V8.0 upgrade driven
by NWS/National Centers for Environmental Prediction (NCEP)
meteorological models through July 31, 2022. The upgrade and planned
implementation HYSPLIT v8.0 includes the following upgrades and bug
fixes:

- Update to the latest version of ARL HYSPLIT model codes.
- Inclusion of an ensemble dispersion capability to predict and quantify
Volcanic Ash plume uncertainty using the 31-member NWS Global Ensemble
Forecast Capability (GEFS) v12 to drive the dispersion. Output from each
HYSPLIT ensemble prediction will be available, as well as a graphic
representing the probability of ash concentrations greater than 0.2
ug/m3. These outputs will be available on the NCEP FTP server as well as
the NOAA Operational Model Archive and Distribution System (NOMADS) web
system.
- Creation of ARL-Packed format High Resolution Ensemble Forecast (HREF)
10-member predictions input files to drive HYSPLIT hazardous release
ensemble predictions. These input files for HYSPLIT will be available on
an NCEP ftp site and NWS Web Operation Center (WOC) server (password
protected).
- Creation of a Time of Arrival graphic for radiological plume prediction
as requested by the WMO RSMC Expert Team on Emergency Response Activities
(ET-ERA).
- Transition to Weather and Climate Operational Supercomputing System 2
(WCOSS2) Cray supercomputer.

Results and supporting documents for these changes are found here:

https://drive.google.com/file/d/1vB0okIIv_qvobwNblgtmqBNFEQx9m0AG/view?usp=sharing

The proposed changes in model forecast output, post-processed fields and downstream products are as follows:

- Existing file names will remain unchanged.
- Data volume will increase to include Volcanic Ash output dispersion files on NCEP ftp public server and the NOAA NOMADS data access system. In preparation for the official release of the 4th quarter fiscal year (FY) 2022 HYSPLIT volcanic ash ensemble prediction, NCEP-EMC is currently running experimental tests with the fictitious ash release of the Popocatepetl volcano. Recent case predictions of volcanic ash predictions will be available at:

http://www.emc.ncep.noaa.gov/mmb/aq/hysplitv80/vash

Outputs will be available at best effort.

EMC and ARL conducted retrospective experiments covering major volcanic ash eruptions in the ICAO Region IV (North and Central America) for a comprehensive evaluation of this upgrade. A summary of retrospective evaluations of volcanic ash ensembles is found in the presentation linked above.

Send any comments on the science aspects of this upgrade to:

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For questions on the dataflow aspects, please contact:

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The NWS will evaluate all comments to determine whether to proceed with this upgrade. If approved, a Service Change Notice (SCN) will be issued giving a minimum of 30 days' notice of the implementation date.

National Public Information Statements are online at:

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

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