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Public Information Statement 25-03
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Subject: Soliciting Comments through February 21, 2025, on the Proposed Upgrade of the Hybrid Single-Particle Lagrangian Integrated Trajectory model (HYSPLIT) to Version 9.0

The NWS is soliciting comments through February 21, 2025, on a proposed upgrade of the operational HYSPLIT model to version 9.0.

HYSPLIT is a transport and dispersion model developed at NOAA's Air Resources Laboratory (ARL) for real-time wind-blown dust predictions over the contiguous U.S. (CONUS) and on-demand dispersion predictions for: radioactive material, via World Meteorological Organization (WMO) Regional Specialized Meteorological Center (RSMC) and agreements with the Comprehensive Test Ban Treaty Organization (CTBTO); volcanic ash, via International Civil Aviation Organization (ICAO) agreements; and hazardous material release.

The proposed model upgrade includes:

- The most recent revision of the HYSPLIT model code (v5.3.0).

- The implementation of a Transfer Coefficient Matrix (TCM) methodology for faster simulation of radiological and volcanic ash events. The TCM allows rapid updates of source term strength without the need to rerun transport and dispersion simulations. Ten volcanoes are included in the TCM for rapid ash prediction capabilities.

- HYSPLIT global prediction capability will be extended to 15 days.

- HYSPLIT global prediction capabilities have been extended to higher altitudes. Altitude now extends to 0.01 mb for Global Forecast System (GFS) 1 degree (from 100 mb) and to 2 mb for GFS 0.25 degree (from 13 mb).

The proposed upgrade will increase the data volume for input, output, post-process fields and products due to the proposed higher vertical extent and longer forecast length.

Specifically, ARL-Packed format meteorological input files will be extended as follows:

- Global Forecast System (GFS) files at 1-degree resolution, all cycles:
* The number of vertical levels will increase to 41 (up to 0.01 mb) from 21 (up to 100 mb).
* The forecast length will increase to 15 days.
* Individual file size will increase to 1.68 GB per cycle.

- Global Forecast System (GFS) files, 0.25-degree resolution, all cycles:
* The number of vertical levels will increase to 64 (up to 2 mb) from 56 (up to 13 mb).
* The forecast length will increase to 15 days.
* Individual file size will increase to 3.1 GB per cycle.
* New files will be produced and named as follows:
** hysplit.t{CC}z.gfs0p25f{NNN}
where CC = 00, 06, 12, 18 Coordinated Universal Time (UTC) cycle and NNN = 096, 120, 144, 168, 192, 216, 240, 288, 312, 336 forecast hour.

- Global Ensemble Forecast System (GEFS) files, 31 members, all cycles:
* The forecast length will increase to 15 days.
* Total data volume per cycle will increase to 121 GB.
* New files will be produced:
** hysplit.t{CC}z.gefs.mrf.{MMM} (include forecast hours 87-240)
** hysplit.t{CC}z.gefs.lrf.{MMM} (include forecast hours 246-360)
where CC = 00, 06, 12, 18 UTC cycle, and MMM = gec00 (control member), gep01 through gep30 (ensemble member 1 through 30).

New products will be generated four times a day for volcanic ash predictions with the new TCM capability:

- hysplit_tcm.${YYYYMMDD}_t{CC}z.volc${SITEID}.zip
where: YYYY = four-digit forecast year, MM = two-digit forecast month, DD = two-digit forecast day; CC = 00, 06, 12, 18 UTC cycle; and SITEID = six-digit volcano identifier number.

All new files will be available at the following URL:

https://ftpprd.ncep.noaa.gov/data/nccf/com/hysplit/v9.0/

GFS files will also be available from the NOAA Operational Model Archive and Distribution Service (NOMADS)/FTPPRD web services.

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

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National Public Information Statements are online at:

https://www.weather.gov/notification

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