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PNSWSH

Technical Implementation Notice 13-16
National Weather Service Headquarters Washington DC
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From: Timothy McClung
Science Plans Branch Chief
Office of Science and Technology

Subject: Hybrid Single-Particle Lagrangian Integrated Trajectory
(HYSPLIT) Model Update Effective July 16, 2013

Effective on or about Tuesday, July 16, 2013, beginning with the 1200 Coordinated Universal Time (UTC) run, the National Centers for Environmental Prediction (NCEP) will upgrade the HYSPLIT modeling system including smoke, dust and volcanic ash.

The NOAA Air Resources Laboratory HYSPLIT subversion number 339 will be implemented as NCEP version 7.0.0 on NCEP's new Weather and Climate Operational Supercomputing System (WCOSS), scheduled to become the operational machine on July 16, 2013. A separate TIN will be issued announcing the operational switch to the WCOSS system. In the event that switch date is changed, this TIN will be modified to reflect that change in implementation date.

Forecasts from the updated HYSPLIT model will be made available through a parallel feed from WCOSS starting around June 19, 2013. The smoke and dust HYSPLIT GRIB products from the parallel feed are disseminated via the NCEP website:

<http://www.emc.ncep.noaa.gov/mmb/aq/hysplit/grib/>

and the products will be displayed through NCEP's website:

<http://www.emc.ncep.noaa.gov/mmb/aq/hysplit/web/html/#picture>

Current operational HYSPLIT model will continue providing forecasts through NCEP Central Computing System (CCS) until the WCOSS machine goes live on July 16, 2013. At that time, updated WCOSS smoke and dust predictions will be distributed through

<ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/DF.gr2/DC.ndgd/GT.aq/AR.conu>
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<ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/DF.gr2/DC.ndgd/GT.aq/AR.alaska/>

<ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/DF.gr2/DC.ndgd/GT.aq/AR.hawaii/>

and displayed at

<http://airquality.weather.gov/>

The scientific enhancements include the following:

- Improving wet removal by reducing the in-cloud particle wet removal coefficient, allowing wet removal to occur only when both precipitation and clouds are defined in the same grid cell and turning off precipitation field spatial interpolation
- Revising horizontal puff dispersion rate to be more consistent with particle dispersion
- Setting Kanthar-Clayson vertical mixing parameterization as default
- Relaxing maximum plume rise limits
- Modifying fires pre-processor for daily emission cycling

The model has been tested with these updates for all HYSPLIT applications at NCEP. Overall the results showed generally similar results except for simulations of the wet deposition from the Fukushima nuclear power plant incident of 2011, in which significant improvements occurred.

There are no changes to existing products or their contents. More details about the HYSPLIT are available at:

<http://www.ready.noaa.gov/HYSPLIT.php>

For questions regarding these updated predictions, please contact:

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NWS National Technical Implementation Notices are online at:

<http://www.nws.noaa.gov/os/notif.htm>

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