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PNSWSH

Service Change Notice 22-42 Updated
National Weather Service Headquarters Silver Spring MD
200 PM EDT Mon May 9 2022

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From: Jason Levit, Chief
 NCEP/Environmental Modeling Center
 Verification, Post-Processing, Product Generation Branch

Subject: Updated: Replacement of HYSPLIT Forecast Smoke Products with RAP
Smoke Forecast Products: Effective June 28, 2022, with Two Test Periods
Scheduled for June 1 and June 14, 2022

Updated to correct incorrect implementation date of June 27, 2022.
Implementation is now scheduled for Tuesday, June 28, 2022.

Effective on or about Tuesday, June 28, 2022 at 1200 Coordinated Universal Time (UTC), in tandem with the planned move to new supercomputing hardware noted in a previous Service Change Notice, the National Centers for Environmental Prediction (NCEP) will replace all smoke forecast products from the Hybrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) forecast model system. The content in those products will be replaced by content created via the Rapid Refresh (RAP) forecast model system smoke products.

This update is happening as a result of the move of the NCEP model suite to a new supercomputing system, effective approximately June 27, 2022. In preparation for that move, NCEP will be running two 24-hour tests of dissemination from the new system in the 30-day period before the transition. These tests are planned for June 1 and June 14, 2022. During those two tests the changes advertised in this SCN will be live, and after the test the output will revert to the current status until the system move is complete.

A. Changes to File Content

Some important differences between the existing HYSPLIT smoke data and the replacement RAP smoke data must be noted:

- 1) The HYSPLIT smoke output consists of "surface" and "PBL" fields. The RAP smoke output consists of "surface" and "column-integrated" fields.
- 2) The smoke parameter in the HYSPLIT files is integrated column particulate matter (fine). The surface smoke field in the RAP files is labeled as mass density, while the integrated field is labeled as column-integrated mass density.

- 3) The HYSPLIT "surface" smoke is averaged over the lowest 100 meters. The RAP surface smoke is an output at the 8 meter level.
- 4) The HYSPLIT "PBL" smoke is averaged over the lowest 5 kilometers. The replacement field in the RAP is integrated over the entire column.
- 5) The HYSPLIT smoke fields are 1-hour averaged products. The RAP smoke products contain instantaneous values.
- 6) The HYSPLIT smoke products cover a 48-hour period from 06 UTC on Day 1 to 06 UTC on Day 3. The RAP smoke products cover a 51-hour period from 03 UTC on Day 1 to 06 UTC on Day 3.

B. Changes on NWS Web Services: TGFTP/National Digital Guidance Database (NDGD)

On TGFTP in the NDGD area, the data contained in the files noted below will be replaced by data from the Rapid Refresh (RAP).

For the contiguous U.S. (CONUS) domain:

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

ds.smokec01.bin
ds.smokes01.bin

For the Alaska domain:

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

ds.smokec01.bin
ds.smokes01.bin

For the Hawaii domain:

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

ds.smokec01.bin
ds.smokes01.bin

The content of these files will change as described above in Section A, but the filenames will not change.

Additionally, the list of new World Meteorological Organization (WMO) headers being produced for each region can be found here at the following link:

https://www.nco.ncep.noaa.gov/pmb/changes/new_headers_smoke_v5.php

C. Changes on NOMADS and FTPPRD Web Services

The following files under com/hysplit/prod/ will be removed, with the files under com/rap/prod/rap.YYYYMMDD/ serving as replacements:

smokeak.t06z.grib2ak_sfc.1hr_198 --> rap_smokeAK.t03z.sfc.1hr_198.grib2
smokeak.t06z.grib2ak_pbl.1hr_198 --> rap_smokeAK.t03z.pbl.1hr_198.grib2
smokecs.t06z.grib2hi_sfc.1hr_227 --> rap_smokeCS.t03z.sfc.1hr_227.grib2
smokecs.t06z.grib2hi_pbl.1hr_227 --> rap_smokeCS.t03z.pbl.1hr_227.grib2

smokehi.t06z.grib2hi_sfc.1hr_196 --> rap_smokeHI.t03z.sfc.1hr_196.grib2
smokehi.t06z.grib2hi_pbl.1hr_196 --> rap_smokeHI.t03z.pbl.1hr_196.grib2

D. Timing Changes

The current HYSPLIT smoke products are available at approximately 0945 UTC each day. The replacement RAP smoke products are generated from the 03Z RAP cycle, so they will be available far earlier, with delivery completed by 0410 UTC, approximately 335 minutes earlier than the current HYSPLIT products.

E. Changes to Air Quality Web Services

In addition, graphical web products affected are HYSPLIT 1-Hour Average Surface Smoke and 1-Hour Average Vertical Smoke Integration for CONUS, Alaska and Hawaii. They will be removed from the operational <http://airquality.weather.gov>. All smoke products will be replaced with the RAP smoke products on:

<https://digital.mdl.nws.noaa.gov/airquality/> and
[https://idpgis.ncep.noaa.gov/arcgis/rest/services/NWS Forecasts Guidance Warnings](https://idpgis.ncep.noaa.gov/arcgis/rest/services/NWS_Forecasts_Guidance_Warnings)

For differences between HYSPLIT and RAP smoke products, see the section above.

A test data set from a cycle of the RAP will be made available on:

<https://para.nomads.ncep.noaa.gov> for users to test their ability to ingest the model data following the implementation of the changes.

If you have any questions regarding this change, please contact:

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National Service Change Notices are online at:

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

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