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Service Change Notice 17-101 Updated
National Weather Service Headquarters Silver Spring MD
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To: Subscribers:
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-Emergency Managers Weather Information Network
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From: Dave Myrick
NWS Office of Science and Technology Integration

Subject: Updated: Changes to LAMP station-based and gridded guidance effective January 25, 2018

Updated to change the implementation date to January 25, 2018

On or about Thursday, January 25, 2018, beginning with the 1230 Coordinated Universal Time (UTC) model run, the NWS Meteorological Development Laboratory (MDL) will implement changes to the Localized Aviation Model Output Statistics Program (LAMP) station-based and Gridded LAMP (GLMP) guidance.

LAMP station-based guidance is produced at more than 1600 stations in the Continental United State (CONUS), Alaska, Hawaii and Puerto Rico. GLMP guidance is generated on a 2.5-km Lambert Conformal grid over the CONUS. LAMP station-based forecasts and GLMP gridded observations and gridded forecasts (1 to 25 hour projections) are produced hourly. These products are disseminated on the Satellite Broadcast Network (SBN), NOAAPORT, and are available in the operational National Digital Guidance Database (NDGD).

Specific changes are as follows:

1. Addition of 1-h convection and lightning gridded guidance over the CONUS. This new guidance incorporates High Resolution Rapid Refresh (HRRR) model data, Multi-Radar Multi-Sensor data, and total lightning data. The following elements will be available on the 2.5-km National Digital Forecast Database (NDFD) CONUS grid in GRIB2 format for hourly projections through 25 hours:

  1. 1-h Probability of convection
  2. 1-h Potential of convection occurrence (No/Low/Medium/High)
  3. 1-h Probability of lightning
  4. 1-h Potential of lightning occurrence (No/Low/Medium/High)

These elements will be disseminated over the SBN, NOAAPORT and

will be available in NDGD on the NWS ftp server. WMO headers and NDGD file names for the 1-h convection and lightning products are listed in Tables 3 and 4 below, respectively.

Comparison images for operational 2-h guidance and experimental 1-h guidance can be viewed at the following links:

Convection: http://www.nws.noaa.gov/mdl/lamp/cnv1h_proposed.php
Lightning: http://www.nws.noaa.gov/mdl/lamp/ltg1h_proposed.php

The new 1-h convection and lightning gridded guidance will eventually replace the operational 2-h gridded guidance. Dissemination of the operational 2-h gridded guidance will continue until the 1-h gridded products are available in AWIPS.

2. Replacement of 2-h convection and lightning guidance with 1-h guidance in the LAMP text bulletins (AWIPS PIL "LAV"). The format of the LAV text bulletins will change as follows:

- Line for 2-h lightning probability (labeled "LP2") will be replaced with 1-h lightning probability (labeled "LP1"), with probabilities specified for each hour through 25 hours.
- Line for 2-h lightning potential (labeled "LC2") will be replaced with 1-h lightning potential (labeled "LC1"), with potential categories (N/L/M/H) specified for each hour through 25 hours.
- Line for 2-h convection probability (labeled "CP2") will be replaced with 1-h convection probability (labeled "CP1"), with probabilities specified for each hour through 25 hours.
- Line for 2-h convection potential (labeled "CC2") will be replaced with 1-h convection potential (labeled "CC1"), with potential categories (N/L/M/H) specified for each hour through 25 hours.

There will be no changes to the LAMP BUFR message for convection and lightning. The 2-h lightning guidance will remain in the BUFR message until such time as AWIPS decoders are modified to handle the 1-h guidance. At that time, the 1-hr lightning guidance will replace the 2-hr lightning guidance and the 1-hr convection guidance will be added in the BUFR.

Example text bulletins containing the new 1-h convection and lightning guidance can be viewed at the following link:

https://sats.nws.noaa.gov/~lamp/exprlamp/bull/cy.latest.txt

3. Addition of 332 new stations to the LAMP text bulletins and BUFR files to match the stations available in the GFS MOS (MAV) text bulletins. Added stations will have guidance for ceiling height, visibility, obstruction to vision, 1-h convection probability and potential, and 1-h lightning probability and potential. Guidance for other elements will be added in future

implementations.

A list of stations being added to the LAMP text bulletins and BUFR messages is provided at the following link:

https://www.weather.gov/mdl/lamp_newsites_v2.1.0

New stations are not being added to the GLMP analysis at this time. These sites will be added to GLMP with a future implementation.

4. Use the most recent METAR and special (SPECI) observations as predictors for all elements, in place of the traditional top-of-the-hour observation. This approach leverages the most recent observations that are available at the time of the LAMP run, which benefits the station LAMP forecasts and the grids that use the station forecasts, especially in the first few hours.

5. Addition of station-based and GLMP guidance for ceiling and visibility produced every 15 minutes using the most recent METAR and SPECI observations. In addition to the "base" LAMP run which runs at 30 minutes past the hour out to 25 hours, guidance for ceiling, visibility, and obstruction to vision will be produced 3 additional times per hour at nominal runs times of 00, 15, and 45 minutes past each hour, for hourly projections out to 3 hours. Forecasts from the 15-minute runs out to 3 hours will still be valid at the top of the hour.

Prototype text bulletins containing ceiling and visibility guidance out to 3 hours generated every 15 minutes can be viewed at the following link:

https://sats.nws.noaa.gov/~lamp/exprlamp/bull/cyupdate.latest.txt

Note that the above link will show full bulletins if the most recent LAMP run was the "base" LAMP run that ran nominally at 30 past the hour. Prototype GLMP images for ceiling and visibility out to 3 hours generated every 15 minutes can be viewed at the following link:

https://sats.nws.noaa.gov/~glmp/glmp_expr_v2.1.0.php

At this time, the text bulletins and gridded output generated from the 15-minute (non-base) LAMP runs will not be disseminated over the SBN/NOAAPORT due to issues with AWIPS compatibility. Instead this guidance will be experimentally available on a web page for user evaluation at the links provided above. The 15-minute guidance may be added to the SBN in a future implementation once AWIPS is able to ingest the 15-minute data.

Benefits of the system changes include:

1. Improved spatial and temporal resolution of convection and lightning guidance over the CONUS.

2. Availability of guidance for additional stations to match what is available in the GFS MOS text bulletins.
3. Infusing most recent METAR and SPECI observations into the LAMP system results in improved skill primarily in the first few hours.
4. Additional 15-minute (non-base) runs for ceiling and visibility leverage most recent METAR and SPECI observations, resulting in improved forecast skill for these elements through 3 hours.

More details about LAMP/GLMP products and this implementation can be found online at the LAMP Documentation web site:

http://www.weather.gov/mdl/lamp_docs

Changes to Dissemination:

1. The new 1-h convection and lightning gridded guidance in GRIB2 format will be added to the SBN/NOAAPORT and operational NDGD.
2. The 2-h lightning products at 5 km resolution over the CONUS will be removed from the SBN/NOAAPORT. A list of headers being removed is provided in Table 5 below. Since the 2-h products are available in AWIPS at 2.5 km resolution, it is no longer necessary to disseminate the legacy 5 km guidance. This removal notification was provided in TIN 13-50:

http://www.nws.noaa.gov/os/notification/tin13-50lamp_cnvltgaab.htm

There are no other changes to the dissemination with this implementation. The LAMP and GLMP products will continue to be available in operational NDGD, SBN, NOAAPORT and NWS ftp server.

Details for the locations of the LAMP and GLMP products on the NWS ftp server can be found here:

http://www.weather.gov/mdl/lamp_NWS_tgftp_server

Complete lists of LAMP and GLMP WMO headers can be found here:

LAMP headers:
http://www.weather.gov/media/mdl/lampheaders_vert_structure_v2.1.0_05192017.pdf

GLMP headers:
http://www.weather.gov/media/mdl/glmpheaders_2016.pdf

The communication identifiers for the LAMP text and BUFR products are shown in Tables 1 and 2 below.

Table 1: Communication identifiers for the GFS-based LAMP products in ASCII format. Listed below are the WMO heading and the AWIPS identifier.

WMO heading	AWIPS ID
FOUS11 KWNO	LAVUSA

Table 2: Communication identifiers for the GFS-based LAMP products in BUFR format. Listed below are the WMO headings.

WMO heading	Region
JSMF10 KWNO	LAMP BUFR Pacific Region
JSMF11 KWNO	LAMP BUFR Northeast Region
JSMF12 KWNO	LAMP BUFR Southeast Region
JSMF13 KWNO	LAMP BUFR North Central Region
JSMF14 KWNO	LAMP BUFR South Central Region
JSMF15 KWNO	LAMP BUFR Rocky Mountains Region
JSMF16 KWNO	LAMP BUFR West Coast Region
JSMF17 KWNO	LAMP BUFR Alaska Region

Table 3: Communication identifiers for the 1-h convection and lightning gridded products in GRIB2 format. Listed below are representations of the WMO headers where xxx represents the valid day and valid UTC hour of the forecasts. Please see updated LAMP header document linked above for further details.

WMO HEADER	ELEMENT
YGUxxx KWNO	Gridded 1-h lightning probability
YHUxxx KWNO	Gridded 1-h lightning potential of occurrence
YIUxxx KWNO	Gridded 1-h convection probability
YJUxxx KWNO	Gridded 1-h convection potential of occurrence

Table 4: NDGD file names for 1-h convection and lightning products in GRIB2 format.

NDGD FILENAME	ELEMENT
ds.plt01.bin	Gridded 1-h lightning probability
ds.olt01.bin	Gridded 1-h lightning potential of occurrence
ds.pcv01.bin	Gridded 1-h convection probability
ds.ocv01.bin	Gridded 1-h convection potential of occurrence

Table 5: Communication identifiers for the 2-h lightning gridded products at 5 km resolution that will be removed from the SBN/NOAAPORT. Listed below are representations of the WMO headers where xxx represents the valid day and valid UTC hour of the forecasts.

WMO HEADER	ELEMENT
LAUxxx KWNO	Gridded 2-h lightning probability (5 km)
LBUxxx KWNO	Gridded 2-h lightning potential (5 km)

A consistent parallel feed of data will be made available in

the near future on the NCEP HTTP site. The data will be available at the following URLs:

http://para.nomads.ncep.noaa.gov/pub/data/nccf/noaaport/lmp

http://para.nomads.ncep.noaa.gov/pub/data/nccf/noaaport/glmp

Questions, comments or requests regarding this change should be directed to the contact below. We will review feedback and decide whether to proceed.

Judy Ghirardelli
National Weather Service
Meteorological Development Laboratory
Judy.Ghirardelli@noaa.gov

301-427-9496

Links to the LAMP products and descriptions can be found at:

http://www.weather.gov/mdl/lamp_home

National Service Change Notices are online at:

http://www.weather.gov/os/notif.htm

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