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PNSWSH

Technical Implementation Notice 15-09
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Subject: Changes to Global Forecast System (GFS)-based Model Output Statistics (MOS) Guidance: Effective March 24, 2015

On or about Tuesday, March 24, 2015, beginning with the 1200 Coordinated Universal Time (UTC) model run, the NWS Meteorological Development Laboratory (MDL) will implement a refresh of the GFS-based MOS guidance for the warm season. This implementation will include updated cool season guidance for some elements. These changes will impact the Localized Aviation MOS Program (LAMP) products beginning with the 1600 UTC cycle. MDL has created a comparison webpage for the short-range and extended-range GFS-based MOS text bulletins:

http://www.mdl.nws.noaa.gov/~mos/mos/gfsmos_eval/moscomp.php

This update will include the following changes to GFS-based MOS text and Binary Universal Form for the Representation of meteorological data (BUFR) products:

1) Updated warm season equations for the short-range (Days 1-4) MOS text and BUFR messages from the 0000, 0600, 1200 and 1800 UTC model runs. The updates will include the following elements:

Daytime Maximum and Nighttime Minimum Temperature
2-meter Temperature
2-meter Dewpoint Temperature
Wind Speed
Wind Direction
6-hour/12-hour probability of a thunderstorm
6-hour/12-hour conditional probability of a severe thunderstorm

2) Updated warm season equations for the extended-range (Days 1-7) MOS text and BUFR messages from the 0000 and 1200 UTC model runs. The updates will include the following elements:

Daytime Maximum and Nighttime Minimum Temperature
2-meter Temperature

2-meter Dewpoint Temperature
Wind Speed
Wind direction
12-hour/24-hour probability of a thunderstorm

3) To improve the calibration for the cool season, equations for the following elements were updated for the cool season by adding three additional months of data to the training sample:

Daytime Maximum and Nighttime Minimum Temperature
2-meter Temperature
2-meter Dewpoint Temperature

4) Updated warm season equations for the probability of precipitation occurrence on the hour (PoPO) and the probability of precipitation occurrence during a 3-hour period (PoPO3) for all cycles of the short-range (days 1-4) MOS BUFR message.

5) Updated warm season maximum and minimum temperature guidance for all cycles of the short-range and extended-range MOS COOP text messages.

6) Updated cool season and warm season mesonet guidance for the 0000 and 1200 UTC cycles. These updates include the following elements:

Daytime Maximum and Nighttime Minimum Temperature
2-meter Temperature
2-meter Dewpoint Temperature
Wind Speed
Wind Direction

Guidance for mesonet sites is used in the GFS MOS River Forecast Center (RFC) Standard Hydrometeorological Exchange Format (SHEF) message (Advanced Weather Interactive Processing System (AWIPS) identifier (ID) FTP) and also influences the Gridded MOS analysis for temperature and wind. New mesonet sites are not being added to the Gridded MOS analysis at this time.

7) Stations will be added to existing warm season regional equations for the following elements in the short-range and extended-range MOS text and BUFR products:

Sky Cover
Probability of Precipitation
Quantitative Precipitation
Ceiling Height
Visibility Obstruction to Vision

8) NWS will remove two duplicate stations from the short-range and extended-range Global Forecast System (GFS) MOS text bulletins (AWIPS IDs MAV and MEX) and BUFR messages for both cool and warm seasons:

K27D Canby Field, MN (same as KCNB)
KM89 Arkadelphia, AR (same as KADF)

In addition to the above, sites that were added or removed with the cool season refresh (see Technical Implementation Notice 14-47) will also apply to this warm season update.

9) These changes will mean 75 stations in the GFS MOS RFC SHEF message (AWIPS ID FTP), which previously had guidance, will now have missing forecasts. These 75 stations are sites that have closed, stopped reporting or do not contain sufficient observations to develop equations. Guidance for new sites is available for inclusion in the SHEF message at the request of the RFCs with a future implementation.

The cool season updates outlined above will become effective on the implementation date. The warm season updates will become effective starting April 1, 2015 for most elements. These changes will slightly alter the format of the MAV, MEX, MMG and FTP messages because lines will be added or removed to accommodate the addition/removal of stations and elements. The communication identifiers for the GFS MOS text and BUFR products affected by these changes are shown in the tables below.

This update will also include changes to GFS-based LAMP text and BUFR products. The GFS MOS changes above will slightly alter the format of the LAV messages because lines will be added or removed in response to additions or removals of GFS MOS guidance for some elements. The communication identifiers for the LAMP text and BUFR products affected by these changes are shown in the tables below.

Table 1: Communication Identifiers for the GFS-based MOS Public Text Products Affected by the Changes. For Air Force MOS messages with World Meteorological Organization (WMO) headers FOUS30 and FEUS30, FXX = F01, ..., F29.

WMO Heading (Short Range)	AWIPS ID	WMO Heading (Extended Range)	AWIPS ID
FOPA20 KWNO	MAVPA0	FEPA20 KWNO	MEXPA0
FOUS21 KWNO	MAVNE1	FEUS21 KWNO	MEXNE1
FOUS22 KWNO	MAVSE1	FEUS22 KWNO	MEXSE1
FOUS23 KWNO	MAVNC1	FEUS23 KWNO	MEXNC1
FOUS24 KWNO	MAVSC1	FEUS24 KWNO	MEXSC1
FOUS25 KWNO	MAVRM1	FEUS25 KWNO	MEXRM1
FOUS26 KWNO	MAVWC0	FEUS26 KWNO	MEXWC0
FOUS30 KWNO	MAVFXX	FEUS30 KWNO	MEXFXX
FOAK37 KWNO	MAVAJK	FEUS37 KWNO	MEXAJK
FOAK38 KWNO	MAVAFC	FEUS38 KWNO	MEXAFC
FOAK39 KWNO	MAVAFG	FEUS39 KWNO	MEXAFG

Table 2: Communication Identifiers for the GFS-based Marine MOS Text Products Affected by the Changes

WMO Heading	AWIPS ID
FQPA20 KWNO	MMGHI1
FQUS21 KWNO	MMGNE1
FQUS22 KWNO	MMGSE1

FQUS23	KWNO	MMGGL1
FQUS24	KWNO	MMGGF1
FQUS25	KWNO	MMGNW1
FQUS26	KWNO	MMGSW1
FQAK37	KWNO	MMGAK1

Table 3: Communication Identifiers for the GFS-based RFC MOS Text Products Affected by the Changes

WMO Heading	AWIPS ID
FOUS12 KWNO	FTPCIN
FOUS12 KWNO	FTPHFD
FOUS12 KWNO	FTPKRF
FOUS12 KWNO	FTPMSR
FOUS12 KWNO	FTPPTR
FOUS12 KWNO	FTPRHA
FOUS12 KWNO	FTPRSA
FOUS12 KWNO	FTPSLR
FOUS12 KWNO	FTPTUR
FOAK12 KWNO	FTPACR

Table 4: Communication Identifiers for the GFS-based Canadian MOS Text Products Affected by the Changes

WMO Heading (Short Range)	WMO Heading (Extended Range)
FOCN20 KWNO	FECN21 KWNO

Table 5: Communication Identifiers for the GFS-based MOS BUFR Products Affected by the Changes

WMO Heading (Short Range)	WMO Heading (Extended Range)	Region
JSML30 KWNO	JSMT30 KWNO	Pacific Region
JSML31 KWNO	JSMT31 KWNO	Northeast CONUS
JSML32 KWNO	JSMT32 KWNO	Southeast CONUS
JSML33 KWNO	JSMT33 KWNO	North Central CONUS
JSML34 KWNO	JSMT34 KWNO	South Central CONUS
JSML35 KWNO	JSMT35 KWNO	Rocky Mountain CONUS
JSML36 KWNO	JSMT36 KWNO	West Coast CONUS
JSML37 KWNO	JSMT37 KWNO	Alaska

Table 6: Communication Identifiers for the GFS-based LAMP Public Text Product Affected by the Changes

WMO Heading	AWIPS ID
FOUS11 KWNO	LAVUSA

Table 7: Communication Identifiers for the GFS-based LAMP BUFR Products Affected by the Changes

WMO Heading	Region
JSMF10 KWNO	Pacific Region
JSMF11 KWNO	Northeast CONUS
JSMF12 KWNO	Southeast CONUS
JSMF13 KWNO	North Central CONUS
JSMF14 KWNO	South Central CONUS
JSMF15 KWNO	Rocky Mountain CONUS
JSMF16 KWNO	West Coast CONUS
JSMF17 KWNO	Alaska

For questions regarding the updates to the GFS MOS guidance and station changes, contact:

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Links to the MOS products and descriptions are online at:

http://www.nws.noaa.gov/mdl/synop

National Technical Implementation Notices are online at:

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

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