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PNSWSH

Technical Implementation Notice 11-47  
National Weather Service Headquarters Washington DC  
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From: Timothy McClung  
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Office of Science and Technology

Subject: Global Ensemble Forecast System (GEFS) Changes:  
Effective January 24, 2012

On or about Tuesday, January 24, 2012, beginning with the 1200 Coordinated Universal Time (UTC) run, the NCEP Global Ensemble Forecast System (GEFS) will be updated.

The upgrade in the GEFS production suite includes:

1. Running the latest Global Forecast System (GFS) model with improved physics scheme GFS v9.1.0 to replace the currently used GFS v8.0
2. Increasing the horizontal resolution from T190 (about 70km) to T254 (about 50-55km) for the first 192 hours (8days) of model integration
3. Increasing vertical resolution from 28 levels to 42 levels for 0-384 hours (0-16 days) forecasts
4. Improving the ensemble initialization method by inflating the initial perturbations between Earth's surface and 500mb.
5. Optimizing the stochastic Total Tendency Perturbation (STTP) scheme, implemented in February 2010 to represent model related uncertainty by adjusting its parameters to match the increased model resolution

Due to the increase in model resolution and limitations in computational resources, the delivery of some GEFS products will be delayed. Files for the early hours (06h forecast) will experience virtually no delay. Files for the longer forecast hours may be subject to a delay of up to 20 minutes depending on the lead time. This change has been announced earlier this year in a Public Information Statement. The delivery times of the GFS

and North American Ensemble Forecast System (NAEFS) products will not be affected.

There will be several changes in the GEFS product data files affecting files with names pgrba/pgrbb. The GEFS products disseminated over NOAAPORT will not change in format or content. The GEFS products disseminated via the NWS and NCEP servers will have some changes in content. A small increase in the GRIB product data volumes is expected due to these changes. These products are available at the following locations:

NCEP server:

<http://www.ftp.ncep.noaa.gov/data/nccf/com/gens/prod/gefs.YYYYMMDD/xx>

or

<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/gens/prod/gefs.YYYYMMDD/D/xx> , where YYYYMMDD is the date and xx is the model cycle

NWS server:

[ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/MT.ensg\\_CY.xx/RD.YYYYMMDD](ftp://tgftp.nws.noaa.gov/SL.us008001/ST.opnl/MT.ensg_CY.xx/RD.YYYYMMDD)

Specific sub-directories and filenames on these servers will be given for each product change below.

Product Additions:

1. Sunshine Duration (SUNSD) will be added to the following GEFS output files for all forecast hours.

NCEP server:

pgrb2b/ge???.tHHz.pgrb2bf\*  
pgrb2blr/ge???.tHHz.pgrb2bf\*.2

NWS server:

PT.grid\_DF.gr2\_RE.low/fh.xxxx\_pa.membr\*\_tl.press\_gr.onedeg  
PT.grid\_DF.gr2\_RE.low/fh.xxxx\_pa.membr\*\_tl.press\_gr.2p5deg

2. Model surface (terrain) height will be added to the 204h forecast file to reflect its change after the model truncation at 192h. Note that the surface height in the 00h forecast files (such as ge???.tHHz.pgrbaf00) is the terrain height used in the model integration before the truncation at 192h.

NCEP server:

pgrb2a/ge???.tHHz.pgrb2af204  
pgrb2alr/ge???.tHHz.pgrb2af204.2

NWS server:

PT.grid\_DF.gr2\_RE.high/fh.0204\_pa.membr\*\_tl.press\_gr.onedeg  
PT.grid\_DF.gr2\_RE.high/fh.0204\_pa.membr\*\_tl.press\_gr.2p5deg

Product Removals:

Several parameters were mistakenly added to the 192 hour GEFS products during a recent GFS upgrade. They will be removed with this implementation. The parameters include:

1. 12-hr Total Precipitation accumulation for the 180-192 hr period

2. 12-hr Precipitation category fields, which include categorical snow, ice pellets, freezing rain and rain, for the 180-192 hr period.

Changes 1 and 2 will affect the following files:

NCEP server:

pgrb2a/ge???.tHHz.pgrb2af192  
pgrb2alr/ge???.tHHz.pgrb2af192.2

NWS server:

PT.grid\_DF.gr2\_RE.high/fh.0192\_pa.membr\*\_tl.press\_gr.onedeg  
PT.grid\_DF.gr2\_RE.high/fh.0192\_pa.membr\*\_tl.press\_gr.2p5deg

3. 12-hr convective precipitation fields for the 180-192 hr period

4. 12-hr averaged pressure fields at low/mid/high cloud bottom over the 180-192 hr period

Changes 3 and 4 affect the following files:

NCEP server:

pgrb2b/ge???.tHHz.pgrb2bf192  
pgrb2blr/ge???.tHHz.pgrb2bf192.2

NWS server:

PT.grid\_DF.gr2\_RE.low/fh.0192\_pa.membr\*\_tl.press\_gr.2p5deg

Fixes affecting inclusion of certain parameters:

Some diagnostic and anomaly fields have occasionally been missing due to timing issues between post processing jobs. The missing fields include 500 MB 5-wave geopotential height and its anomaly, and 500 and 1000mb geopotential height anomaly. These fields will now consistently be available in the following files:

NCEP server:

pgrb2b/ge???.tHHz.pgrb2bf\*  
pgrb2blr/ge???.tHHz.pgrb2bf\*.2

NWS server:

PT.grid\_DF.gr2\_RE.low/fh.xxxx\_pa.membr\*\_tl.press\_gr.onedeg  
PT.grid\_DF.gr2\_RE.low/fh.xxxx\_pa.membr\*\_tl.press\_gr.2p5deg

A consistent parallel feed of data will become available on the NCEP server once the model is running in parallel on the NCEP Central Computing System by early December. The parallel data will be available via the following URLs:

<http://www.ftp.ncep.noaa.gov/data/nccf/com/gens/para>  
or  
<ftp://ftpprd.ncep.noaa.gov/pub/data/nccf/com/gens/para>

Test data are also available at:

[ftp://ftp.emc.ncep.noaa.gov/gc\\_wmb/](ftp://ftp.emc.ncep.noaa.gov/gc_wmb/)

Specific information regarding the scientific implementation can be found at:

[http://www.emc.ncep.noaa.gov/gmb/yzhu/html/imp/201109\\_imp.html](http://www.emc.ncep.noaa.gov/gmb/yzhu/html/imp/201109_imp.html)

[http://www.emc.ncep.noaa.gov/gmb/yzhu/imp/i201109/Q4\\_FY11\\_GEFS\\_Science\\_v4.pdf](http://www.emc.ncep.noaa.gov/gmb/yzhu/imp/i201109/Q4_FY11_GEFS_Science_v4.pdf)

NCEP encourages all users to ensure their decoders are flexible and are able to adequately handle changes in content order, parameter fields changing order, changes in the scaling factor component within the Product Definition Section of the GRIB files and also any volume changes which may be forthcoming. These elements may change with future NCEP model implementations. NCEP will make every attempt to alert users to these changes prior to any implementation.

For questions regarding these changes, please contact:

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For questions regarding the dataflow aspects of this dataset, please contact:

NCEP/NCO Dataflow Team  
Camp Springs , Maryland 20746  
301-763-8000 x7198  
[ncep.list.pmb-dataflow@noaa.gov](mailto:ncep.list.pmb-dataflow@noaa.gov)

NWS National Technical Implementation Notices are online at:

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

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