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Service Change Notice XX
National Weather Service Headquarters Washington DC
XXXX XX EST XXXX XXX XX 2017

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          -NOAA Weather Wire Service
          -Emergency Managers Weather Information Network
          -NOAAPORT
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From: Tim McClung
          Chief Operating Officer
          NWS Office of Science and Technology Integration

Subject: Upgrade and Addition of GEFS/NAEFS Bias Corrected Products and
          downscaled Products for Alaska and CONUS: Effective December XX,
          2017

Effective on or about Tuesday, December XX, 2017, beginning with the 1200
Universal Coordinated Time (UTC) run, the National Centers for
Environmental Prediction (NCEP) will upgrade the Global Ensemble Forecast
System (GEFS) and the North American Ensemble Forecast System (NAEFS). The
upgrade will include:

- Generate Icing Severity in the GEFS raw products to support aviation
  forecast
- Introduce higher resolution (0.5*0.5 degree grid) raw and bias
  corrected forecast from CMC global ensemble and use it in NAEFS
  products as well as tropical storm track/genesis prognosis
- upgrade the bias-corrected GEFS/NAEFS products (from 1*1) to 0.5*0.5
  degree grid and from every 6 hours to every 3 hours for the first 8
  days
- upgrade the downscaled GEFS/NAEFS products (CONUS and Alaska)from
  every 6 hours to every 3 hours for the first 8 days
- Upgrade the methodology (hybrid of decaying average and reforecast)
  for bias correction of variables other than precipitation
- Add wind speed at 10m above ground in the GEFS/NAEFS bias-corrected
  forecast
- Introduce extreme forecast index products for mean sea level pressure
  (PRMSL), 2m temperature and 10m wind speed in the bias-corrected
  GEFS/NAEFS forecast
- Upgrade the GEFS bias-corrected quantitative precipitation forecast
  (qpf) and probabilistic quantitative precipitation forecast (pqpf)
  products (from daily 2.5x2.5 degree) to 6-hourly 0.5x0.5 degree grid,
  and add downscaled forecasts for CONUS domain using climatology
  downscaling methodology

Changes in file contents of GEFS raw forecast

GEFS model will remain unchanged but there will be some changes in the

product files (pgrb2* subdirectories). The GEFS raw forecast files will
remain at their current location, i.e. they can be located on the NCEP
servers at:
       ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/gens/prod/
       http://www.ftp.ncep.noaa.gov/data/nccf/com/gens/prod
       http://nomads.ncep.noaa.gov/pub/data/nccf/com/gens/prod

The variable of Icing Severity
       ICSEV at 300, 400, 500, 600, 700 and 800mb
will be added to the following files:
       pgrb2b/gexxx.tCCz.pgrb2bf###
       pgrb2blr/gexxx.tCCz.pgrb2bf###.2
       pgrb2bp5/gexxx.tCCz.pgrb2b.0p50.f###

Two variables, namely
       HGT: 300 mb
       ICETK: surface (ice thickness)
will be added to
       pgrb2a/gexxx.tCCz.pgrb2af###
       pgrb2alr/gexxx.tCCz.pgr2af###.2
       pgrb2ap5/gexxx.tCCz.pgrb2a.0p50.f###
and removed from
       pgrb2b/gexxx.tCCz.pgrb2bf###
       pgrb2blr/gexxx.tCCz.pgr2bf###.2
       pgrb2bp5/gexxx.tCCz.pgrb2b.0p50f###

Between pgrb2ap5 and pgrb2bp5 sub-directories, 42 more variables will be
re-distributed:
       UGRD/VGRD: 10, 50, 100, 200, 250 mb   (10 variables)
       TMP: 10, 50, 100, 200, 250, 500, 700 mb   (7 variables)
       RH: 10, 50, 100, 200, 250, 500, 700 mb   (7 variables)
       HGT: 10, 50, 100, 200, 250, 500 mb   (6 variables)
       TSOIL: 0-0.1 m below ground
       SOILW: 0-0.1 m below ground
       WEASD: surface
       SNOD: surface
       LHTFL: surface
       SHTFL: surface
       DSWRF: surface
       DLWRF: surface
       USWRF: surface
       ULWRF: surface
       ULWRF: top of atmosphere
These variables will be added to
       pgrb2ap5/gexxx.tCCz.pgrb2a.0p50.f###
and removed from
       pgrb2bp5/gexxx.tCCz.pgrb2b.0p50.f###

After these changes, pgrb2ap5/pgrb2bp5 files will have identical list of
variables as pgrb2a/pgrb2b. More specifically, there will be 85 variables
in pgrb2a(p5) and 429 variables in pgrb2b(p5).

Changes in file names and contents in GEFS/NAEFS re-processed forecast

Data files for bias-corrected GEFS forecast, forecast reprocessed or
derived from GEFS raw or bias-corrected products, as well as forecasts from

CMC and FNMOC ensembles, will be moved to a new directory named
~com/naefs/prod. All filenames given below can be located on the NCEP
servers at

ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/naefs/prod/
http://www.ftp.ncep.noaa.gov/data/nccf/com/naefs/prod/
http://nomads.ncep.noaa.gov/pub/data/nccf/com/naefs/prod

1. Replacing the GEFS sub-directory pgrb2a_bc with pgrb2ap5_bc with
following changes in file names and contents:

File names are changed to
    NCEP GEFS bias corrected forecast
      pgrb2ap5_bc/gep##.tCCz.pgrb2a.0p50_bcfHHH (##=01, 02, … 20)
      pgrb2ap5_bc/gec00.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/gegfs.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/geavg.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/gespr.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/ge10pt.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/ge50pt.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/ge90pt.tCCz.pgrb2a.0p50_bcfHHH
      pgrb2ap5_bc/gemode.tCCz.pgrb2a.0p50_bcfHHH

    NAEFS forecast derived from ensemble, bias-corrected
      pgrb2ap5_bc/naefs_ge10pt.tCCz.pgrb2a_bcfHHH
      pgrb2ap5_bc/naefs_ge50pt.tCCz.pgrb2a_bcfHHH
      pgrb2ap5_bc/naefs_ge90pt.tCCz.pgrb2a_bcfHHH
      pgrb2ap5_bc/naefs_gemode.tCCz.pgrb2a_bcfHHH
      pgrb2ap5_bc/naefs_geavg.tCCz.pgrb2a_bcfHHH
      pgrb2ap5_bc/naefs_gespr.tCCz.pgrb2a_bcfHHH

where HHH=003, 006, 009, … 189, 192, 198, 204, … 384.

The following variable is added to all the above mentioned files:
      WIND:10m above ground (total speed)

Note that new files are added for the following hours:
      HHH=003, 009, 015, … 189
and they have the same list of variables as the existing files except that
TMAX and TMIN are not included.

All the contents are at 0.5*0.5 degree grid, as indicated by "p5" in the
sub-directory name and "0p50" in the file names.

2. Replacing the GEFS pgrb2a_an sub-directory with pgrb2ap5_an with
following changes in file names and contents:

Existing file names are changed to:
    Climate percentile of GEFS member forecast
      pgrb2ap5_an/gep##.tCCz.pgrb2a.0p50_anfHHH   (##=01, 02, 03, … 20)
      pgrb2ap5_an/gec00.tCCz.pgrb2a.0p50_anfHHH
      pgrb2ap5_an/gegfs.tCCz.pgrb2a.0p50_anfHHH
    Deviation of GEFS ensemble mean forecast from daily climatology
      pgrb2ap5_an/geavg.tCCz.pgrb2a.0p50_anvfHHH

The following new files are added:

Climate percentile of the GEFS ensemble mean forecast
        pgrb2ap5_an/geavg.tCCz.pgrb2a.0p50_anfHHH

For the above mentioned existing and newly added files
        HHH=003, 006, 009 … 189, 192, 198, 204 … 384.

The following new element is added to all the existing and new files:
        WIND:10 m above ground (total speed)

3. Replacing the NAEFS pgrb2a_an sub-directory with pgrb2ap5_an with
following changes in fine names and contents:

Existing file names are changed to
     Deviation of NAEFS ensemble mean from daily climatology
        pgrb2ap5_an/naefs_geavg.tCCz.pgrb2a.0p50_anvfHHH

The following new files are added with the same variables as the existing
files
     The climate percentile of NAEFS ensemble mean forecast
        pgrb2ap5_an/naefs_geavg.tCCz.pgrb2a.0p50_anfHHH

For the above mentioned existing and newly added files
        HHH=003, 006, 009 … 189, 192, 198, 204 … 384.

In all the above mentioned files, a new variable is added:
        WIND:10 m above ground (total speed)

4. Adding new files for Extreme Forecast Index (efi) to GEFS/NAEFS bias-
corrected products (in pgrb2ap5_an sub-directories)

    File names are
          NCEP GEFS files: pgrb2ap5_an/geefi.tCCz.pgrb2a.0p50.fHHH
          NAEFS files: pgrb2ap5_an/naefs_geefi.tCCz.pgrb2a.0p50.fHHH

    Each file contains three records for
        PRMSL:mean sea level
        TMP:2 m above ground
        WIND:10 m above ground (total speed)

    For all the above mentioned files
        HHH=003, 006, 009 … 189, 192, 198, 204 … 384.

5. Replacing the existing 1.0 degree grid files with 0.5 degree grid in
GEFS sub-directory prcp_gb2

Existing files,
    Ensemble based PQPF forecast, one record for each of the 13 thresholds
    24 hour accumulation, raw forecast
       prcp_gb2/gepqpf.tCCz.pgrb2_24hfHHH
are replaced by
       prcp_gb2/gepqpf.tCCz.pgrb2a.0p50.24hfHHH

6. Adding GEFS subdirectory prcp_bc_gb2 for bias corrected GEFS
precipitation forecast products

File names:
    Ensemble quantitative precipitation forecast

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     24 hour accumulation, bias-corrected, one record for each of the 21
     individual members (20 perturbed members and low-res control)
          prcp_bc_gb2/geprcp.tCCz.pgrb2a.0p50.bc_24hfHHH
     06 hour accumulation, bias-corrected, one record for each of the 22
     individual members (20 perturbed members, low-res control and gfs)
          prcp_bc_gb2/geprcp.tCCz.pgrb2a.0p50.bc_06hfHHH
  Ensemble based PQPF forecast, one record for each of the 13 thresholds
     24 hour accumulation, bias-corrected
          Prcp_bc_gb2/gepqpf.tCCz.pgrb2a.0p50.bc_24hfHHH
     06 hour accumulation, bias-corrected
          Prcp_bc_gb2/gepqpf.tCCz.pgrb2a.0p50.bc_06hfHHH
  Extreme precipitation forecast derived from GEFS ensemble, 24 hour
accumulation
     Percentile (of the 50-percentile-forecast of all ensemble members)in
     the climate distribution, 1 record
          prcp_bc_gb2/geprcp.tCCz.pgrb2a.0p50.anvfHHH
     Extreme forecast index, 1 record
          prcp_bc_gb2/geprcp.tCCz.pgrb2a.0p50.efifHHH


For 06 hour accumulation
     HHH=006, 012, 018 … 384


For 24 hour accumulation
     HHH=024, 030, 036 … 384


7. Adding new files for GEFS/NAEFS downscaled products (CONUS and Alaska)
in ndgd_gb2 sub-directory

     File names for GEFS CONUS products
     ndgd_gb2/gefs.tCCz.ge10pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/gefs.tCCz.ge90pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/gefs.tCCz.ge50pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/gefs.tCCz.gemode.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/gefs.tCCz.geavg.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/gefs.tCCz.gespr.fHHH.conus_ext_2p5.grib2

     File names for NAEFS CONUS products
     ndgd_gb2/naefs.tCCz.ge10pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/naefs.tCCz.ge90pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/naefs.tCCz.ge50pt.fHHH.conus_ext_2p5.grib2
     ndgd_gb2/naefs.tCCz.gemode.fHHH.conus_ext_2p5.grib2
     ndgd gb2/naefs.tCCz.geavg.fHHH.conus ext 2p5.grib2
     ndgd_gb2/naefs.tCCz.gespr.fHHH.conus_ext_2p5.grib2

     File names for GEFS Alaska products:
     ndgd_gb2/gefs.tCCz.ge10pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/gefs.tCCz.ge90pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/gefs.tCCz.ge50pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/gefs.tCCz.gemode.fHHH.alaska_3p0.grib2
     ndgd_gb2/gefs.tCCz.geavg.fHHH.alaska_3p0.grib2
     ndgd_gb2/gefs.tCCz.gespr.fHHH.alaska_3p0.grib2

     File names for NAEFS Alaska products:
     ndgd_gb2/naefs.tCCz.ge10pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/naefs.tCCz.ge90pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/naefs.tCCz.ge50pt.fHHH.alaska_3p0.grib2
     ndgd_gb2/naefs.tCCz.gemode.fHHH.alaska_3p0.grib2
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        ndgd_gb2/naefs.tCCz.geavg.fHHH.alaska_3p0.grib2
        ndgd_gb2/naefs.tCCz.gespr.fHHH.alaska_3p0.grib2
```

The new files are added for the following hours:
HHH=003, 009, 015, … 189
and they have the same list of variables as the existing files

8. Adding the ndgd_prcp_gb2 sub-directory and the filenames for GEFS
ensemble based products, bias corrected and downscaled to ndgd conus 2.5km
grid:

        Ensemble quantitative precipitation forecast, 21 records, one for
        each member (20 perturbed plus the low-res control)
        24 hour accumulation
            ndgd_prcp_gb2/geprcp.tCCz.ndgd2p5_conus.24hfHHH.gb2
        06 hour accumulation
            ndgd_prcp_gb2/geprcp.tCCz.ndgd2p5_conus.06hfHHH.gb2

        pqpf forecast derived from ensemble, 13 records, one for each
        thresholds
        24 hour accumulation
            ndgd_prcp_gb2/gepqpf.tCCz.ndgd2p5_conus.24hfHHH.gb2
        06 hour accumulation
            ndgd_prcp_gb2/gepqpf.tCCz.ndgd2p5_conus.06hfHHH.gb2

where HHH=024, 030, 036, …. 384 hours for 24 hour accumulations and
HHH=006, 012, 018 …. 384 hours for 06 hour accumulations

Upgrade of CMC Raw and Bias Corrected Ensemble:

For CMC ensemble raw forecast products, pgrb2ap5 sub-directory (0.5*0.5
degree grid)is introduced to replace pgrb2a (1x1 degree grid) with the
following changes:

Adding the following six elements:
    HGT:300 mb
    UGRD:300 mb
    VGRD:300 mb
    UGRD:400 mb
    VGRD:400 mb
    ICETK:surface (ice thickness)

Decreasing time interval from 6h to 3h between 000h and 192h lead time

Changing the filenames to:
    Ensemble perturbed members: pgrb2ap5/cmc_gepxx.tCCz.pgrb2a.0p50.fHHH
    Ensemble control member: pgrb2ap5/cmc_gec00.tCCz.pgrb2a.0p50.fHHH
    Ensemble mean: Pgrb2ap5/cmc_geavg.tCCz.pgrb2a.0p50.fHHH
    Ensemble mean: Pgrb2ap5/cmc_gespr.tCCz.pgrb2a.0p50.fHHH
where xx=01, 02 … 20 and HHH=000, 003,006 … 189, 192, 198, 204 … 384.

Upgrade of FNMOC Raw and Bias Corrected Ensemble:
(None)
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**Changes in Tropical Cyclone track/genesis Forecast files**

   The ensemble tropical cyclone track and genesis files in tctrack and
genesis sub-directories of GEFS, CMCE and FENS forecast, will be moved to a
new directory named ens_tracker on the NCEP servers

   ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/ens_tracker/prod/
   http://www.ftp.ncep.noaa.gov/data/nccf/com/ens_tracker/prod/
   http://nomads.ncep.noaa.gov/pub/data/nccf/com/ens_tracker/prod/

Changing the file names for Navy (FNMOC)Ensemble (FENS) to
     TC track files for ensemble members
         Control member: tctrack/nc00.t??z.cyclone.trackatcfunix
         Perturbed members: tctrack/npxx.t??z.cyclone.trackatcfunix
         Ensemble Mean: tctrack/nemn.t??z.cyclone.trackatcfunix
     TC genesis file for storm XXXX:
         genesis/nemn.trkprob.XXXX.65nm.YYYYMMDDCC.indiv.gene

Changing the format of each record
     TC mean track files: The last three elements will be dropped off, e.g.
         *BB, 02, 2017053000, 03, FEMN, 024, 264N,  925E,  10, 1000, XX, 34,*
         *NEQ, 0000, 0000, 0000, 0000,  84,   2,   3*
     Will be replaced by
         *BB, 02, 2017053000, 03, FEMN, 024, 264N,  925E,  10, 1000, XX, 34,*
         *NEQ, 0000, 0000, 0000, 0000*

     Genesis files: will include the location and genesis probability, e.g.
         *HC, 02, 2017053000, 03, AEMN, 120, 448N, 1707W,   5*

Adding the following tropical cyclone track files for TIGGE data exchange
     GFS:  tctrack/kwbc_YYYYMMDDCC0000_GFS_glob_prod_sttr_glo.xml
     GEFS: tctrack/kwbc_YYYYMMDDCC0000_GEFS_glob_prod_esttr_glo.xml
     CMC:  tctrack/kwbc_YYYYMMDDCC0000_CMC_glob_prod_sttr_glo.xml
     CENS: tctrack/kwbc_YYYYMMDDCC0000_CENS_glob_prod_esttr_glo.xml


Adding genesis forecast files for individual ensemble members of NCEP
(GEFS), Canadian (CMCE) and FNMOC (FENS) ensembles
     GEFS: genesis/storms.axxx.atcf_gen.altg.YYYYMMDDCC
     CMCE: genesis/storms.cxxx.atcf_gen.altg.YYYYMMDDCC
     FENS: genesis/storms.nxxx.atcf_gen.altg.YYYYMMDDCC
where xxx=c00, p01, p02, …  p20.



A consistent parallel feed of both GEFS, NAEFS and ens_tracker data will be
available on the NCEP server via the following URLs:

http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/gens/para
http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/naefs/para
http://para.nomads.ncep.noaa.gov/pub/data/nccf/com/ens_tracker/para


NCEP encourages all users to ensure their decoders are flexible and are
able to adequately handle changes in content order, changes in the scaling
factor component within the product definition section (PDS) of the GRIB

files, and also any file 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 implementations.

For questions regarding these changes, please contact:

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For questions regarding the dataflow aspects of these data sets, please contact:

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NWS National Service Change Notices are online at:

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

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