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Technical Implementation Notice 14-22 Amended  
National Weather Service Headquarters Washington DC  
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From:         Tim McClung  
              Chief, Science Plans Branch  
              Office of Science and Technology

Subject: Amended: Change to Global Wave Ensemble System: Effective July 1, 2014

Amended to reschedule effective date from June 17 to July 1, 2014.

On or about Tuesday, July 1, 2014, beginning with the 1200 Coordinated Universal Time (UTC) cycle, the National Centers for Environmental Prediction (NCEP) will introduce several major upgrades to its Global Wave Ensemble System. These changes will affect the quality of output products, the spatial grid of output products, the naming of the system and output files, and introduce new products. The key changes for the Global Wave Ensemble System are as follows:

1. Name change

The system will no longer be identified by the acronym MENS (Multi-wave ENsemble System). It will now use the new acronym GWES (Global Wave Ensemble System). This will impact output file names as described below.

2. Wave Evolution Physics

- New physics package for wave growth under wind seas.
- New physics package to account for swell dissipation for swells propagating long distances.
- New physics package for wave dissipation due to wave breaking.

The new physics packages are outlined in Ardhuin et al., 2010. Previous upgrades made to NCEP's wave forecasting systems GLW/GLWN and MULT11 have shown that the new physics significantly improve model skill for wave height, especially in regions of strong storm wind forcing. This will reflect in crucial improvement in forecast performance for extreme wave prediction, an important feature considering the widespread usage of NCEP's wave ensemble system by the National Hurricane Center (NHC).

### 3. Spatial resolution change

The upgrade will increase the spatial resolution from a regular 1 x 1 degree global domain, to a 0.5 x 0.5 degree global grid.

### 4. Output products changes

#### 4.1 File name changes

The change in the acronym used to identify the system will result in changes to the names of output files. These files will also become larger files because sizes are affected by the spatial resolution increase. Gridded output will also include new parameters representing spectral partitions, which will provide users a more accurate description of wave systems. This change will bring the wave ensemble system to the current state of other wave models in terms of type and number of output parameters in gridded output files. In most cases, the effect on the filename is that "mens" is changed to "gwes" in the filename. The webpage <http://www.nco.ncep.noaa.gov/pmb/products/wave/#WaveEnsemble> outlines the current files available and shows the new filenames for these products.

#### 4.2 Change to spectral output files

The spectral output files for the individual members and the ensemble products will now be compressed. Output filenames will end in "gz," with an example gwes00.t00z.spec\_tar.gz.

#### 4.3 Location change of output files

With this implementation, the location of the output data on the ftp servers will be changed. Data are currently available in a general directory named "wave". With this implementation, the GWES data will be put in a directory named "gwes". The full directory paths are listed below.

The output data from these models will be disseminated on the NCEP server at:

<http://www.ftp.ncep.noaa.gov/data/nccf/com/wave/prod/gwes.YYYYMMDD>

and:

<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/wave/prod/gwes.YYYYMMDD>

and on NOAA's Operational Model Archive and Distribution System (NOMADS) at:

<http://nomads.ncep.noaa.gov/pub/data/nccf/com/wave/prod/gwes.YYYYMMDD>

where YYYYMMDD is the 4-digit year, month and day.

Sample output files from the new physics are available at:

<ftp://polar.ncep.noaa.gov/pub/waves/develop/>

A consistent parallel feed of data will be available on the NCEP server once the model is running in parallel in early May. The parallel data will be available via the following URLs:

<http://www.ftp.ncep.noaa.gov/data/nccf/com/wave/para/gwes.YYYYYMMDD>  
<ftp://ftp.ncep.noaa.gov/pub/data/nccf/com/wave/para/gwes.YYYYYMMDD>

NCEP urges all users to ensure their decoders can handle changes in content order, changes in the scaling factor component within the product definition section (PDS) of the GRIB files, changes to the GRIB Bit Map Section (BMS), and volume changes. These elements may change with future NCEP model implementations. NCEP will make every attempt to alert users to these changes before implementation.

For questions regarding these model changes, please contact:

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

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National Technical Implementation Notices are online at:

<https://www.weather.gov/notifications/archive>

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