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Technical Implementation Notice 10-44 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: Multi-Grid Hurricane Wave Model Upgrade: Rescheduled for
November 2, 2010

Amended to postpone this implementation from October 26 to November 2,
2010, to provide broader customer notification.

Effective Tuesday, November 2, 2010, beginning with the 1200 Coordinated
Universal Time (UTC) run, the National Centers for Environmental
Prediction (NCEP) will implement a new Hurricane Wave Model. This multi-
grid hurricane wave model will replace the existing North Atlantic
Hurricane (NAH) and North Pacific Hurricane (NPH) wave models. The model
upgrade will result in a change of 27 minutes to the product dissemination
time and the generation of new products. Details of these changes are
outlined below.

Model Changes:

Instead of two separate models, the hurricane wave model will now be a
single model with multiple two-way nested grids. The new multi-grid
hurricane wave model will use WAVEWATCH-III v3.14, the same model version
as NCEP's Global Multi-Grid Wave Model (the current NAH and NPH use
WAVEWATCH-III v. 2.22). The upgrade to version 3.14 will result in the
following:

- Upgraded shallow water physics, which accounts for shallow water
processes such as wave breaking. Together with the increased wave
resolution in coastal regions, this change will provide a better
representation of wave physics in land falling hurricanes.

- Increasing internal model spectral resolution to 50 components in
frequency and 36 components in direction. Spectral output at the points
will continue to be 29 components in frequency and 24 components in
direction.

- Adding a new algorithm to partition the spectral energy into wind wave,
primary and secondary swells. Spectral parameters for these different

fields (wave height, peak period and direction) will be part of the model output on the new grids listed below. These fields will not be added to the existing NAH and NPH products.

Wind forcing for the global, Alaskan and Pacific Island grids will be from the Global Forecast System (GFS) winds, while all the other grids will be a blend of the GFS and Geophysical Fluid Dynamics Laboratory (GFDL) hurricane model winds, as is currently done in the NAH and NPH. The only exception is the Hawaiian Islands, part of the Pacific Island grid, which also will have a blend of GFS and GFDL hurricane model wind forcings.

Product Changes:

As a result of this upgrade, all of the output products from the new multi-grid hurricane model will be disseminated 27 minutes later than the current NAH and NPH output products. Any concerns with this change in product dissemination time should be directed to the contact points listed below.

The output grids from the multi-grid hurricane wave model will be as follows:

Products with 25x24 spectral resolution:

- Current 0.25 degree NAH grids
- Current 0.25 degree NPH grids
- Products with 50x36 spectral resolution:
 - New 0.5 degree global domain grid
 - New 0.25 degree regional domain for North Atlantic (domain corresponds to current NAH grid)
 - New 0.25 degree regional domain for North Pacific (domain corresponds to current NPH grid)
 - New 10 arc minute grid for the North Atlantic regional waters
 - New 10 arc minute grid for the North Pacific regional waters
 - New 10 arc minute grid for the Pacific Islands and Hawaii
 - New 10x15 arc minute grid for the Alaskan waters
 - New four arc minute grid for the US East Coast
 - New four arc minute grid for the US West Coast (including the coastal waters of Hawaii)
 - New 8x4 arc minute grid for the Alaskan coast.

NCEP will continue to produce the current NAH and NPH output products, including their respective point output files, until further notice. These products will be generated using output from the new multi-grid hurricane wave model. The new grids will be disseminated via the NCEP server and will be incorporated into the Advanced Weather Interactive Processing System (AWIPS) on a yet-to-be-determined date.

More details about the NCEP Multi-Grid Hurricane Wave Model are available at:

<http://polar.ncep.noaa.gov/waves/index2.shtml>

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, around September 7, 2010. At this time, the parallel data will be available at:

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

Users should ensure their decoders are flexible and are able to adequately handle changes in content, parameter fields changing order, changes in the scaling factor component within the Product Definition Section (PDS) of the gridded binary (GRIB) files, and any volume changes that may occur. 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 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/notification/archive>

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