NOUS41 KWBC 311330
PNSWSH

Technical Implementation Notice 10-44
National Weather Service Headquarters Washington DC
930 AM EDT Tue Aug 31 2010

To: Subscribers:
-Family of Services
-NOAA Weather Wire Service
-Emergency Managers Weather Information Network
-NOAAPORT
Other NWS Partners...Users and Employees

From: Tim McClung
Science Plans Branch Chief
Office of Science and Technology

Subject: Multi-grid Hurricane Wave Model Upgrade:
Effective October 19, 2010

Effective Tuesday October 19, 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 will be a multi-grid hurricane wave model and 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, which is 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 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 min grid for the North Atlantic regional waters
-New 10 arc min grid for the North Pacific regional waters
-New 10 arc min grid for the Pacific Islands and Hawaii
-New 10x15 arc min grid for the Alaskan waters
-New 4 arc min grid for the US East Coast
-New 4 arc min grid for the US West Coast (including the coastal waters of Hawaii)
-New 8x4 arc min 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 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 via the following URL:

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 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:

Hendrik Tolman
NCEP/Marine Modeling and Analysis Branch
Camp Springs, Maryland
301-763-8000 x 7253
hendrik.tolman@noaa.gov

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

Rebecca Cosgrove
NCEP/NCO Dataflow Team
Camp Springs, Maryland 20746
301-763-8000 x 7198
ncep.list.pmb-dataflow@noaa.gov

NWS National Technical Implementation Notices are online at:

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

$$
NNNN