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PNSWSH

Technical Implementation Notice 14-52 Corrected
National Weather Service Headquarters Washington DC
1105 AM EST Wed Jan 28 2015

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From: Timothy McClung
 Chief, Science Plans Branch
 Office of Science and Technology

Subject: Corrected: Changes to the Great Lakes Wave (GLW) System:
Effective January 28, 2015

Corrected to correct an error for the new 2.5km file names which should be:

glw.grlc_2p5km.tCCz.grib2
glwn.grlc_2p5km.tCCz.grib2, not glw.tCCz.grlc_2p5km.grib2
glwn.tCCz.grlc_2p5km.grib2.

Also, the implementation date changed from January 27, 2015, to January 28, 2015, because of a critical weather day.

Effective Wednesday, January 28, 2015, beginning with the 1200 Coordinated Universal Time (UTC) run, the National Centers for Environmental Prediction (NCEP) will upgrade the Great Lakes Wave forecasting system (GLW), affecting both early and late runs:

Early run: GLW: at 00, 06, 12 and 18 UTC
Late runs: GLWN: at 03, 09, 15 and 21 UTC

Changes include:

- Increased spatial grid resolution to 2.5 km using a curvilinear Lambert conformal grid
- Increased spectral resolution to expand range to one Hz
- Increased resolution of input wind fields from North American Model (NAM) smart initialization (smartinit)
- Improved ice concentration analysis
- Switch to latest wave model version, WAVEWATCH III v4.15.1

The implications of the changes are as follows:

- Increased spatial grid resolution to 2.5 km is expected to bring improvements in the quality of forecasting with higher-resolution grid better resolving coastal features and better representing wind fetch geometry near shore and during rapidly changing conditions. To that end,

NCEP is using a new bathymetric database made available by the NOAA Great Lakes Research Laboratory (GLERL) at a 30 arcsec resolution, in association with high-resolution coastlines from NOAA Office for Coastal Management Digital Coast database, to build the new grids.

- Spectral resolution will be increased to expand the resolved frequency range internally to one Hz, matching the GLW spectral range extent to that of other wave models, allowing later introduction of more advanced physics packages.

- Increased resolution of input wind fields from NAM atmospheric model smartinit files will allow improved resolution of wind fields from current 12 km to the four km NAM nest data, with expected impacts to storm wave forecasting and nearshore wave growth.

- The increased resolution of the input wind fields will delay the GLW runs by 40 to 50 minutes.

- Improved ice concentration analysis will result in better representation of ice coverage during winter months, which will render the model a more realistic representation of areas in the lakes basins exposed to waves.

- Extension of forecast range in the GLWN runs to 147 hours addresses Weather Forecast Offices' (WFOs') request to fulfil their mission of providing forecasts up to that range.

- Upgrade to the latest WAVEWATCH III code follows regular procedure to bring all wave models towards using the latest available technology.

Output Product Changes: NCEP FTP/HTTP Server:

New output files using the native curvilinear Lambert conformal wave model grid at 2.5 km resolution will replace the existing four km resolution files. The new 2.5 km resolution files will also have a new naming convention.

New 2.5 km Datasets:

glw.grlc_2p5km.tCCz.grib2 - NAM smartinit forcing
glwn.grlc_2p5km.tCCz.grib2 - National Digital Forecast Database (NDFD) forcing

Removed Datasets:

glw.grl.tCCz.grib2 - four km wave grid, NAM forcing
glwn.grl.tCCz.grib2 - four km wave grid, NDFD forcing
glw.grl.tCCz.ice - four km wave grid, NAM forcing ice binary
glw.grl.tCCz.restart - four km wave grid, NAM forcing restart binary
glw.grl.tCCz.wind - four km wave grid, NAM forcing wind binary
glwn.grl.tCCz.ice - four km wave grid, NDFD forcing ice binary
glwn.grl.tCCz.restart - four km wave grid, NDFD forcing restart binary
glwn.grl.tCCz.wind - four km wave grid, NDFD forcing wind binary

NOAA Operational Model Archive and Distribution System (NOMADS):

The existing four km wave grid GLW/GLWN datasets available via the Distributed Oceanographic Data Systems (DODS) and gridded binary (GRIB) Filter will be transitioned to use the 2.5 km datasets.

NOAAPort/Satellite Broadcast Network (SBN):

Four km wave grid datasets from the late run GLWN will continue to be disseminated via the Advanced Weather Interactive Processing System (AWIPS) for use by NWS WFOs. The grids will eventually be replaced in AWIPS by the 2.5 km curvilinear wave grid datasets and phased out in a subsequent GLW system upgrade expected to occur in mid-2015.

Data Availability:

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

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

Sample output files from the new physics are available at:

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

Details about the NCEP Wave Models are found online at:

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

A consistent parallel feed of data is available on the NCEP server via the following URLs:

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

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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National Technical Implementation Notices are online at:

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

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