PRODUCT DESCRIPTION DOCUMENT

Gridded Significant Wave Heights from the National Centers

APPROVED: //signed//
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National Weather Service

Gridded Significant Wave Heights from the National Centers

Product Description Document (PDD)

Part I – Mission Connection

a. Product Description – The traditional format for the significant wave height products from the National Centers are graphical depictions of the observed and forecast wind-driven waves for the Atlantic and Pacific Oceans adjacent to the coasts of the Continental United States (US) and extending south over the Caribbean Sea and the west coast of Central America. These graphical products have been prepared for many years in the raster format by the Ocean Prediction Center (OPC) and the National Hurricane Center's (NHC) Tropical Analysis and Forecast Branch (TAFB) and transmitted via radiofax and the internet. The production and dissemination of the traditional raster format for the graphical significant wave height products from the OPC and TAFB will continue.

The gridded products are prepared for the initial wave heights and the 24 hour and 48 hour forecast wave heights in Gridded Binary (GRIB2) format. The gridded products are disseminated by the National Weather Service (NWS) Telecommunications Gateway to the Weather Forecast Offices (WFOs), National Centers, and other users.

Users may also access these products via the internet at:

ftp://ftp.mpc.ncep.noaa.gov/grids/operational/waves/atl

ftp://ftp.mpc.ncep.noaa.gov/grids/operational/waves/pac

b. Purpose- National Oceanic and Atmospheric Administration's (NOAA's) NWS is the official US governmental agency issuing warnings during life-threatening weather situations. The mission includes forecasts and warnings for the US, adjacent coastal waters and ocean areas for the protection of life and property and the enhancement of the national economy. The provision of these products in gridded format is consistent with the NWS mission where it states NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

The initial purpose for providing these products in a gridded format is to enable forecasters at coastal WFOs to display them directly on their Advanced Weather Information Processing System (AWIPS) workstations and to ingest them into the AWIPS Graphical Forecast Editor (GFE) as forecast guidance for WFO outer coastal waters. Without the availability of the gridded products, the WFOs can only view coarse depictions of National Center wave height graphics on their AWIPS workstations. Ingesting these gridded products into the GFE allows forecasters at the coastal WFOs to overlay or underlay these products with other datasets directly on their operational workstations. The direct display will assist coastal WFOs in developing their coastal wave forecasts and wave height grids. The intended result is a consistent and seamless set of wave forecasts from US coastal and offshore waters to the high seas.

c. Audience - The target audience for the gridded significant wave heights is coastal WFOs. The significant wave heights in gridded format are available to the WFOs via the Gateway and AWIPS.

In addition, private sector weather interests who currently use gridded wave height data directly from the NWS computer models benefit by receiving gridded forecasts prepared with forecaster input.

d. Presentation Format

The grids provide significant wave height information in meters in areas covered by 3 separate grids with 25 kilometer spatial resolution:

Grid 180: A 25 km grid for the Western Atlantic, the Caribbean, and the Gulf of Mexico west of 55W to 100W and north of 5N to 55N. This grid contains wave height information from both the OPC and NHC TAFB.

Grid 181: A 25 km grid for the Eastern North Pacific north of 30N to 62N and east of 155W to 110W. This grid is provided solely by the OPC.

Grid 182: A 25 km grid for the Eastern Tropical Pacific north of the Equator to 30N and east of 140W to 100W. This grid is provided solely by the NHC TAFB.

e. Feedback Method – Feedback can be provided online at:

http://www.weather.gov/survey/nws-survey.php?code=GSWH

Comments may also be mailed to:
NOAA National Weather Service
W/OS21
Mr. Wayne Weeks
1325 East West Highway
Silver Spring, MD 20910

E mail: wayne.weeks@noaa.gov

Part II - Technical Description

a. Format and Science Basis - The gridded significant wave height products are provided in GRIB2 format. The significant wave height is defined as average height (trough to crest) of the one-third highest waves. An experienced observer will most frequently report heights equivalent to the average of the highest one-third of all waves observed.

The gridded significant wave height products are created by converting the graphical significant wave heights prepared by the OPC and TAFB forecasters using their GEMPAK software to GRIB2 format (which is compatible with the AWIPS systems used at the coastal offices.) For areas south of 30N in Grids 180 and 182, the NWS NHC/TAFB forecasters use the conversion software to manually prepare the 00 hour wave height grids, but use the multi-grid wavewatch (MWW3) model data to populate

the grids for their 24 and 48 hour forecasts. The reason for this is the conversion software results in a degradation of the MWW3 output over the low resolution large domain and does not accurately portray their human prepared forecasts in areas of complex bathymetry near islands, such as the Bahamas and the Antilles. However, TAFB is now providing experimental gridded significant wave heights (NHC/TAFB Experimental Gridded Marine Forecasts**)** out to five days (120 hours) in network Common Data Form (NetCDF) (see catalog entry in the New and Enhanced Products and Services Database and Product Description Document for details.)

b. Product Availability – The Gridded Significant Wave Height products are issued up to four times daily as follows:

For OPC and TAFB, the 00 hour gridded products are issued twice-daily approximately 2 hours after 0000 and 1200 Coordinated Universal Time (UTC).

For TAFB, the 24 hour forecasts are issued twice daily for each basin. For the Atlantic, both the 00 UTC and 12 UTC valid time forecasts are issued at about synoptic time. For the Pacific, the 00 UTC valid time forecast is issued about two hours after synoptic time, and the 12 UTC valid time forecast is issued within an hour of the synoptic time.

For OPC, the 24 hour forecasts are issued twice daily for each basin at approximately 2 hours after 00 and 12 UTC (within two hours after issuance of the graphical forecast).

For TAFB, the 48 hour forecasts are issued twice daily for each basin. For the Atlantic, both the 00 UTC and 12 UTC valid time forecasts are issued at about synoptic time. For the Pacific, the 00 UTC valid time forecast is issued about two hours after synoptic time, and the 12 UTC valid time forecast is issued at about the synoptic time.

For OPC, the 48 hour forecasts are issued within 2 hours of the issuance of the 00 and 12 UTC valid time forecast graphics for both oceans.