

**National Weather Service**  
**Product Description Document (PDD)**

**Week Two Marine Wind Speed and Wave Height  
Probabilities - Graphical (experimental)**

March 11, 2025

**Part I - Mission Connection**

1. **Product/Service Description:** The Week Two Marine Wind Speed and Wave Height Probabilities graphics display probabilities in percent of sustained (one-minute average) surface (10-meter) wind speeds equal to or exceeding 34 knots (kt) (39 miles per hour (mph)), 48 kt (55 mph), and 64 kt (74 mph). These values equal the respective thresholds for gale-, storm-, and hurricane-force winds. Additionally, the graphics display probabilities in percent of significant wave height equal to or exceeding 4 meters (m), 6m, 9m, and 14m. These probabilities are based on the operational Global Ensemble Forecast System (GEFS), validated and calibrated for hazardous forecast conditions. The coverage area is from approximately 20 south latitude to 80 north latitude, and from 0 longitude to approximately 140 east longitude.
2. **Purpose/Intended Use:** There is no current, operational capability for maritime hazard information for the two-week period and beyond. The science challenge is the predictive skill for lead times beyond a few days for relevant wind and wave fields available from operational ensemble modeling systems. Courtesy of extensive research, the capability exists for an oceanic hazards outlook containing delineations of where winds and waves are expected to have the potential of posing a hazard to either life or property for vessels at sea. Critical economic and life-saving decisions can be made with greater situational awareness of upcoming hazards. This would enhance total marine weather services to the private sector, the public and the global community ultimately advancing America's blue economy. In addition, the availability of uncertainty for winds and seas in the week two time frame is consistent with the need for probabilistic information as stated by "Completing the Forecast: Characterizing and Communicating Uncertainty for Better Decisions Using Weather and Climate Forecasts".
3. **Audience:** The general public is the primary target audience. However, this product will be used by federal agencies, and global maritime interests.
4. **Presentation Format:** These graphical products are displayed on the Internet and will soon be available as downloadable kmz files. Operational GEFSv12

forecasts can be obtained from:

<https://ftpprd.ncep.noaa.gov/data/nccf/com/gens/prod/>

Archived data can be found at:

<https://noaa-gefs-pds.s3.amazonaws.com/index.html>

5. Feedback Method: Questions and comments can be emailed to:

[darin.figurskey@noaa.gov](mailto:darin.figurskey@noaa.gov)

Technical or policy questions about this product may be directed to:

Darin Figurskey  
Ocean Forecast Branch Chief  
NWS Ocean Prediction Center  
College Park, MD  
[darin.figurskey@noaa.gov](mailto:darin.figurskey@noaa.gov)

## **Part II – Technical**

1. **Format & Science Basis:** The products are statistically derived from the operational Global Ensemble Forecast System (GEFS), calibrated and validated for hazardous weather conditions. Probabilities will be produced for three wind speed (34, 48, and 64 knots) and four significant wave height (4, 6, 9, and 14 meter) thresholds for a one-week cumulative interval. The values provide the probability the event will occur sometime during the specified, one-week cumulative forecast period at the locations specified on the map. The algorithm for probability maps begins by pooling forecast data into 2° x 2° bins, centered at each grid point, over a seven-day time window associated with the second week of the forecast. This process is repeated for the entire ensemble member set, which is then combined and reshaped into a single large array, forming a cumulative distribution function. A predefined percentile is selected to subsample the extreme tail of the distribution, from which probabilities associated with given thresholds are computed.
2. **Availability:** These products will be available on a web site hosted by the Ocean Prediction Center by 1200 UTC each Monday, Wednesday, and Friday. The probability graphics can be found at:

<https://ocean.weather.gov/week2>

The graphics will soon be made available in KMZ format. Details on the links will be made available when the web site is ready.

3. Additional Information: A full description of high seas and offshore marine forecast services can be found in the NWS Directive in NWSI 10-311, available on-line at:

<https://www.nws.noaa.gov/directives/sym/pd01003011curr.pdf>