**Product Description Document**
**Experimental Coastal Waters Forecast (CWF) Wave Component Update**
**September 2022**

## Part 1 – Mission Connection

### a) Product Description:

The goal of this project is to provide greater wave detail with more clarity for marine users and partners to support better decision making. Multiple coexisting wave systems are common at any point in the ocean, each containing their own unique height, period and direction. Details on each of these wave systems provides valuable input for marine customers. For example, a very short period wave system moving parallel to the coast may provide significant hazards to small and/or flat bottom vessels leaving an inlet. Meanwhile, longer period waves moving towards the shore produce shoaling hazards near the coast. There are a multitude of similar scenarios that are of interest to various marine users.

Based on feedback and advancements in the Nearshore Wave Prediction System (NWPS), the proposed updated wave component of the Coastal Waters Forecast (CWF) includes significant wave height and the option to include additional wave detail. In a recent experiment by NWS Weather Forecast Office (WFO) Eureka, CA, it was found that mariners needed significant wave height as a way to quickly gauge the accuracy of a forecast based on buoy observations as well as additional wave information on height, period, and direction. The NWS has several different ways of describing waves at present. The experimental product will offer more consistency on the CWF across the nation, while providing offices with a means to provide valuable wave detail to their customers.

### b) Purpose/Intended Use:

The purpose of this project is to provide mariners with significant wave height and detailed wave information enabling them to make informed decisions. For example, when there are two distinct waves, height, period and direction information for each will be provided to show what makes up the significant wave height. When there is only one important wave group present, then only that wave's height, period, and direction will be provided, along with the significant wave height.

Guidelines:
Each region will determine which optional fields will be used for their region based on their local wave climatology and long standing customer preferences and for regional consistency.

**c) Audience/Users:**
The Experimental CWF Wave Component is targeted toward any marine user in the coastal waters. Users include recreational and commercial mariners, and those responsible for protection of life and property and/or enhancement of the national economy.

**d) Presentation Format:**
The Experimental CWF Wave Component is a text product and is issued in accordance with NWS Policy (NWS Instruction (NWSI) 10-310). Examples of the updated CWF can be seen in Part 2 Section C.

**e) Feedback Method:**
The NWS is accepting comments on the experimental CWF Wave Component, through July 31, 2023 via the NWS Survey located at:

https://www.surveymonkey.com/r/ExpCWFWaveComponentUpdate_2022

For further information, please contact:

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**Part 2 – Technical Description**

**a) Format and Science Basis:**
Wave information will be produced through the use of partitioned wave data from the NWPS which is fed through a Graphical Forecast Editor (GFE) to create a gridded forecast database. Following the graphical forecast, a text forecast will be created for the web and NOAA Weather Radio.

**b) Availability:**
The Experimental CWF Wave Component will be issued in accordance with NWS Policy (NWSI 10-310). Forecasts will only be available on the web addresses below:

The following WFOs will participate in the Experimental CWF Wave Component Update:

| WFO | Web address |
|---|---|
| Boston, MA (BOX) | https://www.weather.gov/box/proposedcwf |

| | |
|---|---|
| Caribou, ME (CAR) | https://www.weather.gov/car/proposedcwf |
| Charleston, SC (CHS) | https://www.weather.gov/chs/proposedcwf |
| Corpus Christi, TX (CRP) | https://www.weather.gov/crp/proposedcwf |
| Eureka, CA (EKA) | https://www.weather.gov/eka/proposedcwf |
| Honolulu, HI (HFO) | https://www.weather.gov/hfo/proposedcwf |
| Miami, FL (MFL) | https://www.weather.gov/mfl/proposedcwf |
| Mobile, AL (MOB) | https://www.weather.gov/mob/proposedcwf |
| Morehead City, NC (MHX) | https://www.weather.gov/mhx/proposedcwf |
| Mount Holly, NJ (PHI) | https://www.weather.gov/phi/proposedcwf |
| Portland, OR (PQR) | https://www.weather.gov/pqr/proposedcwf |
| San Diego, CA (SGX) | https://www.weather.gov/sgx/proposedcwf |
| San Francisco, CA (MTR) | https://www.weather.gov/mtr/proposedcwf |
| Upton, NY (OKX) | https://www.weather.gov/okx/proposedcwf |
| Wakefield, VA (AKQ) | https://www.weather.gov/akq/proposedcwf |
| Wilmington, NC (ILM) | https://www.weather.gov/ilm/proposedcwf |

**c) Experimental CWF Wave Components framework:**

1. Significant wave height (mandatory) with range (optional). "Seas" will be used for coastal WFOs and "Waves" will be used for the bays, sounds, and other bodies of water. For example,

   Seas 6 ft. (wave height)
   Seas 4 to 6 ft. (wave height with range)

2. Occasional wave height (statistically highest 1/10 wave height) (optional). For example,

   Seas 6 ft with occasional seas to 8 ft.

3. Wave detail information (optional) - height, period, and direction for one or more waves systems. Wave detail will be provided out to six forecast periods. Beyond six forecast periods, only significant wave height will be provided. For example,

   Seas 6 ft with occasional seas to 8 ft.
   Wave Detail: NE 5 ft at 5 seconds and SE 3 ft at 15 seconds.

   Seas 4 to 6 ft
   Wave Detail: NW 4 ft at 5 seconds and SW 4 ft at 15 seconds.

4. This experimental product will not be utilizing “wind wave” and “swell.” These terms were useful to infer something about the characteristics of a given wave before we had modern wave models, but their use now keeps us from leveraging those wave models to precisely describe a wave's characteristics using height, period, and direction.