

**NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 12-2003
APPLICABLE TO NWSI 10-310
JUNE 9, 2017**

*Operations and Services
Marine and Coastal Weather Services, NWSPD 10-3
Coastal Marine Forecast Services, 10-310*

MARINE WEATHER SERVICES

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SUMMARY OF REVISIONS: This directive supersedes NWS Western Region Supplement 13-2003, dated June 21, 2014.

The following changes were made in this issuance:

1. Removed several sections, which are now covered in NWSI 10-310, Coastal Waters Forecast: “Preparation and Issuance”, “Reference to National Marine Sanctuaries”, “Synopsis”, and “Wind”.
2. Shortened and simplified paragraph 2, Wave Information in Coastal Waters Forecasts.
3. Removed “Surf Zone Forecast” section (covered in NWSI 10-320, Surf Zone Forecast and Coastal/Lakeshore Hazard Services).

Signed _____
Grant Cooper
Director, Western Region

05/30/17
Date

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1. Introduction. This regional supplement provides additional guidance and instructions for marine weather products and services including Coastal Waters Forecasts (CWF) and the “Marine” section of the Area Forecast Discussion (AWIPS product ID: AFD). Written instructions cannot address every situation. Forecasters must exercise initiative and professional judgment to minimize risk to public safety and property in instances when written instructions do not provide appropriate guidance.

2. Wave Information in CWFs. Refer to NWSI 10-310 for general guidance on the CWF. Whenever possible, wave height ranges should be limited to 2 feet. Except as noted for “Combined Seas” (see paragraph 2d.), wave information will be separated into its separate components:

- a. Wind wave height. As a general rule, waves may be considered “wind waves” if the wind is imparting energy to the wave, i.e. when the wind is in the same direction as the wave motion and the wind speed is faster than the wave speed (celerity).
- b. Swell. Swell information (height, direction, and period) will be included, except for enclosed marine zones (e.g. Puget Sound). Include swell period for the first five forecast periods.
- c. Mixed Swell. A secondary swell should also be included if it can be clearly identified. In such cases, specify the predominant swell first, then the secondary swell. Include a direction, height, and period for each swell. As general guidance, include a secondary swell if it differs from the primary swell by 90 degrees or more, the height of the secondary swell is at least half the height of the primary swell, or if it poses a special hazard (e.g. shoaling associated with longer wave periods).

- d. Combined Seas. "Combined seas" may be substituted for the combination of swell and wind wave when the two cannot be clearly distinguished. If used, substitute dominant wave period and direction (for swell period and direction), if they can be determined (e.g. "Combined Seas NW 7 ft at 10 seconds"). If the dominant period and direction cannot be clearly determined, include only the term "combined seas" (e.g. "Combined Seas 10 ft").

3. River/Bay Bar Forecasts. Certain areas along the California, Oregon, and Washington coasts, especially near the entrance to rivers and bays, are identified as "bars". These areas may have significantly different wave conditions than surrounding coastal waters. For these areas, specific wave forecasts and related information (e.g. tidal information) may be included in the CWF. Some river/bay bars have unique marine zones assigned to them, while others may be part of an existing coastal waters marine zone.

The following is an example of a bar forecast for a unique marine zone (a separate segment within the CWF):

```
PZZ210-102230-  
COLUMBIA RIVER BAR-  
805 AM PDT FRI AUG 10 2012
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.IN THE MAIN CHANNEL...COMBINED SEAS WILL BE AROUND 3 FT TODAY  
AND TONIGHT. SEAS WILL TEMPORARILY BUILD TO NEAR 4 FT DURING  
THE EBB CURRENTS AROUND 1130 AM THIS MORNING AND 1215 AM SAT  
MORNING.
```

The following is an example of a bar forecast for an area which is part of an existing coastal waters marine zone (appended to segment):

```
.....SAN FRANCISCO BAR/FOURFATHOM BANK FORECAST.....
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IN THE DEEP WATER CHANNEL...COMBINED SEAS 5 TO 7 FEET WITH A  
DOMINANT PERIOD OF 9 SECONDS.
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ACROSS THE BAR...COMBINED SEAS 5 TO 7 FEET WITH A DOMINANT PERIOD  
OF 9 SECONDS. MAXIMUM EBB CURRENT OF 0.6 KNOTS AT 11:16 AM THIS MORNING  
AND 1.4 KNOTS AT 11:37 PM TONIGHT.
```

4. Wave Steepness for Marine Advisories and Warnings. Small Craft Advisories for Hazardous Seas and Hazardous Seas Warnings are based in part on wave steepness. See Appendix A for Western Region WFO wave steepness criteria. For more general guidance concerning marine watches, warnings, advisories, and associated headlines, refer to NWSI 10-315.

5. Area Forecast Discussion (AFD) “Marine” Section. A “Marine” section is required in all AFD products issued by Western Region coastal WFOs. It follows the “Discussion” section and is separated by a topic divider (“&&”). The Marine portion will begin with the string “MARINE...”. It should be as concise as possible and oriented toward local/regional marine partners and user groups in the coastal waters or major bays and sounds (e.g., U.S. Coast Guard, commercial fishing, ferry operators, etc.). The Marine section will be included in the AFD whenever the CWF is routinely issued. Include the time the section was written (local time). If the Marine section of the AFD is updated at other times (e.g. when it no longer is representative of expected conditions), include the word “UPDATED” (e.g. “MARINE... 18/515 AM PST...UPDATED”). Include discussion of significant marine weather conditions expected during the CWF forecast period (focusing on wind, waves, thunderstorms, and fog, as needed). Hazardous conditions should be emphasized, when expected, especially when Gale Warning (or stronger) conditions are forecast. Do not include conditions specific to the surf zone (e.g. high surf or coastal flooding). Forecasters are highly encouraged to add information regarding “marine forecast confidence”, including approximate timing and intensity of major impacts, when expected. If marine weather conditions are not expected to have significant impacts on marine partners/user groups during the forecast period, a brief phrase may be used to indicate this (e.g., “No significant marine weather conditions are expected through (day)”).

APPENDIX A – Wave Steepness Criteria (Note: The tables below are for information. Individual WFOs may utilize more detailed local tables with additional information. “Swell Height” and “Swell Period” may be used for “Wave Height” and “Wave Period”, as needed.)

WFO Seattle, WA

		Wave Period (Seconds)						
		</=7	8	9	10	11	12	>/=13
Wave Height (feet)	</= 5	None						
	6	None						
	7	Small Craft Advisory for Hazardous Seas	None	None	None	None	None	None
	8	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	None	None	None	None	None
	9	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	None	None	None	None
	10	Small Craft Advisory for Hazardous Seas						
	11	Small Craft Advisory for Hazardous Seas						
	>/=12	Small Craft Advisory for Hazardous Seas						

Small Craft Advisory for Hazardous Seas
None

WFO Portland, OR

		Wave Period (Seconds)						
		</=7	8	9	10	11	12	>/=13
Wave Height (feet)	</=5	None						
	6	None						
	7	Small Craft Advisory for Hazardous Seas	None	None	None	None	None	None
	8	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	None	None	None	None	None
	9	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	None	None	None	None
	10	Small Craft Advisory for Hazardous Seas						
	11	Small Craft Advisory for Hazardous Seas						
	>/=12	Small Craft Advisory for Hazardous Seas						

Small Craft Advisory for Hazardous Seas
None

WFO Medford, OR

		Wave Period (Seconds)						
		<=7	8	9	10	11	12	>=13
Wave Height (feet)	<=5	Green	Green	Green	Green	Green	Green	Green
	6	Yellow	Green	Green	Green	Green	Green	Green
	7	Yellow	Yellow	Green	Green	Green	Green	Green
	8	Yellow	Yellow	Yellow	Green	Green	Green	Green
	9	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	10	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow
	11	Red	Red	Red	Yellow	Yellow	Yellow	Yellow
	12	Red	Red	Red	Red	Yellow	Yellow	Yellow
	13	Red	Red	Red	Red	Red	Yellow	Yellow
	14	Red	Red	Red	Red	Red	Yellow	Yellow
	15	Red	Red	Red	Red	Red	Red	Yellow
	16	Red	Red	Red	Red	Red	Red	Yellow
	17	Red	Red	Red	Red	Red	Red	Yellow
	>=18	Red	Red	Red	Red	Red	Red	Red

■ Hazardous Seas Warning
■ Small Craft Advisory for Hazardous Seas
■ None

WFO Eureka, CA

		Wave Period (seconds)							
		<=7	8	9	10	11	12	13	>=14
Wave height (feet)	<=5	Green	Green	Green	Green	Green	Green	Green	Green
	6	Yellow	Green						
	7	Yellow	Yellow	Green	Green	Green	Green	Green	Green
	8	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
	9	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green
	10	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
	11	Red	Red	Red	Yellow	Yellow	Yellow	Yellow	Yellow
	12	Red	Red	Red	Red	Yellow	Yellow	Yellow	Yellow
	13	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow
	14	Red	Red	Red	Red	Red	Yellow	Yellow	Yellow
	15	Red	Red	Red	Red	Red	Red	Yellow	Yellow
	16	Red	Red	Red	Red	Red	Red	Red	Yellow
	17	Red	Red	Red	Red	Red	Red	Red	Yellow
	>=18	Red	Red	Red	Red	Red	Red	Red	Red

■ Hazardous Seas Warning
■ Small Craft Advisory for Hazardous Seas
■ None

WFO Monterey, CA

		Wave Period (Seconds)									
		<=6	7	8	9	10	11	12	13	14	>=15
Wave Height (feet)	<= 5	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	6	Yellow	Green								
	7	Yellow	Yellow	Green							
	8	Yellow	Yellow	Yellow	Green						
	9	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green
	10	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
	11	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green
	12	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	13	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green
	14	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green
	>= 15	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Yellow Small Craft Advisory for Hazardous Seas
 Green None

WFO Los Angeles/Oxnard, CA

		Wave Period (seconds)							
		<=5	6	7	8	9	10	11	>=12
Wave height (feet)	<=5	Green	Green	Green	Green	Green	Green	Green	Green
	6	Yellow	Yellow	Green	Green	Green	Green	Green	Green
	7	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
	8	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green
	9	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	10	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green
	>=11	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Yellow Small Craft Advisory for Hazardous Seas
 Green None

WFO San Diego, CA

		Wave Period (Seconds)							
		<=5	6	7	8	9	10	11	>=12
Wave Height (feet)	<=5	Green	Green	Green	Green	Green	Green	Green	Green
	6	Yellow	Yellow	Green	Green	Green	Green	Green	Green
	7	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green
	8	Yellow	Yellow	Yellow	Yellow	Green	Green	Green	Green
	9	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	10	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green
	>=11	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Yellow Small Craft Advisory for Hazardous Seas
 Green None