

***NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 12-2003
APPLICABLE TO NWSI 10-310
APRIL 29, 2020***

***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 9, 2017.

The following changes were made in this issuance:

1. Revised wording in section 1.
2. Revised permissible wave height ranges in Section 2 (to include ranges up to 4 feet when significant wave height forecasts exceed 16 feet).
3. Updated references to “Small Craft Advisories” in accordance with Hazard Simplification (for Marine products).
4. Updated “Wave Steepness” table in Appendix A for WFO Monterey, CA.

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A. Wave Steepness Criteria	A-1
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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). It is emphasized that it is not possible for guidance provided in this directive supplement to address the nuance(s) of every possible operational forecast scenario and associated messaging. In such instances where the guidance provided here does not adequately or completely address a specific situation, forecasters should take initiative to apply their expertise within the context and limits of sound professional judgment, to protect lives, and minimize the risk to property and public safety.

2. Wave Information in CWFs. Refer to NWSI 10-310 for general guidance on the CWF. Due to inherent uncertainty in wave height forecasts, appropriate ranges may be used. For example, a range of 1 to 2 feet may be used when overall significant wave heights up to 6 feet are expected. Proportionately larger ranges may be used when higher waves are expected, up to 4 feet when significant wave heights exceed 16 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):

PZZ210-290030-
Columbia River Bar-
257 AM PST Fri Feb 28 2020

...SMALL CRAFT ADVISORY IN EFFECT UNTIL 9 AM PST THIS MORNING...
...SMALL CRAFT ADVISORY IN EFFECT FROM THIS EVENING THROUGH
SATURDAY MORNING...

.IN THE MAIN CHANNEL...

- GENERAL SEAS...Around 8 ft, building to around 10 ft Friday night.
- FIRST EBB...Around 730 AM Friday morning. Seas to 10 ft.
- SECOND EBB...Around 730 PM Friday. Seas to 13 ft.
- THIRD EBB...Around 8 AM Saturday. Seas to 13 ft with breakers possible.

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.....

IN THE DEEP WATER CHANNEL...Seas 5 to 7 ft with a dominant period of 14 seconds.

ACROSS THE BAR...Seas 6 to 8 ft with a dominant period of 14 seconds. Maximum ebb current of 1.5 kt at 08:01 PM Friday and 2.2 kt at 07:49 AM Saturday.

4. Wave Steepness for Marine Advisories and Warnings. Small Craft Advisories 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 in support of Small Craft Advisory (SCA) issuance. Individual WFOs may utilize more detailed local SCA criteria, as needed. “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	None	None	None	None	None	None
	6	None	None	None	None	None	None	None
	7	Small Craft Advisory	None	None	None	None	None	None
	8	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None
	9	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None
	10	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory
	11	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory
	>/=12	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory

Small Craft Advisory
 None

WFO Portland, OR

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

Small Craft Advisory
 None

WFO Monterey, CA

		Wave Period (Seconds)									
		</=6	7	8	9	10	11	12	13	14	>/=15
Wave Height (feet)	</= 5	None	None	None	None	None	None	None	None	None	None
	6	Small Craft Advisory	None	None	None	None	None	None	None	None	None
	7	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None	None	None	None
	8	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None	None	None
	9	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None	None
	10	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None
	11	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None
	12	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None
	13	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None
	14	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None
	>/= 15	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory

Small Craft Advisory
 None

WFO Los Angeles/Oxnard, CA

		Wave Period (seconds)							
		</=5	6	7	8	9	10	11	>/=12
Wave height (feet)	</=5	None	None	None	None	None	None	None	None
	6	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None	None
	7	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None	None
	8	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None	None
	9	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None	None
	10	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	None
	>/=11	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory	Small Craft Advisory

Small Craft Advisory
 None

WFO San Diego, CA

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

Small Craft Advisory
 None