

***NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 12-2003  
APPLICABLE TO NWSI 10-310  
NOVEMBER 7, 2013***

***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 October 5, 2012 (recertified October 1, 2010).

The following changes were made in this issuance:

1. Amended section 3, Surf Zone Forecast (SRF) (format/content).

Signed 10/24/13  
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1. Introduction. This regional supplement provides additional guidance and instructions for marine weather products and services including Coastal Waters Forecasts and Surf Zone Forecasts. Written instructions cannot address every situation. Operational personnel 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. Coastal Waters Forecasts (CWF).

2.1 Preparation and Issuance. Western Region (WR) Weather Forecast Offices (WFOs) will prepare and issue Coastal Waters Forecast (CWF) products for their marine areas of responsibility, in accordance with NWSI 10-310 (Coastal Marine Forecast Services), NWSI 10-506 (Digital Data Products/Services Specification), and this Supplement. Scheduled issuance times for CWFs are: 0300/0900/1500/2100 (Local Time). CWFs will be issued no earlier than one hour prior to, but no later than scheduled issuance times. Unscheduled (updated or corrected) CWFs will be issued as necessary. Gridded marine elements will be updated as needed to ensure currency.

2.2 CWF Format. Refer to NWSI 10-310 for general CWF format and guidance. When possible, marine zones and time periods may be combined in the CWF for the sake of brevity.

2.2.2 Reference to National Marine Sanctuaries. WFOs Los Angeles, San Francisco Bay Area, and Seattle will reference National Marine Sanctuaries in their areas of responsibility in the SYNOPSIS description line or in the areal description line of the Mass News Disseminator (MND).

2.3 CWF Content.

2.3.1 Synopsis. WR WFOs will include a brief synopsis discussing the dominant weather features affecting the WFOs coastal waters area of responsibility, including general trends (movement, intensification, weakening, etc.). Primary emphasis will be placed on the first 36-48 hours of the forecast, emphasizing weather features expected to result in a significant degradation or improvement of forecast conditions, particularly when marine warning/advisory thresholds are expected to be crossed.

2.3.2 Forecast Content. Refer to NWSI 10-310 for general guidance on CWF content.

- a. Wind. To be considered “frequent”, wind gusts should cover at least 20 percent of marine zones. See also NWSI 10-303, Appendix A (definition of “frequent gust”).
- b. Waves. Whenever possible, wave height ranges should be limited to 2 feet, except for very strong storms, where a range up to 3 feet is permissible. Except as noted, wave information will be separated into its separate components:
  1. Wind wave height (feet). 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).
  2. Swell. Swell information will be included for coastal waters marine zones (0 to 60 nautical miles from the coast). Swell will not be included in inland waters marine zones (e.g. Puget Sound).
    - a. Swell direction and height (feet).
    - b. Swell period (seconds). Include swell periods in 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).

3. Combined seas (combination of all swell and wind wave heights, typically synonymous with **significant wave height**). The term “combined seas” may be substituted for the combination of *swell* and *wind wave* when the two cannot be clearly distinguished.

2.4. River/Bay Bar Forecasts. Certain areas along the California, Oregon, and Washington coasts, especially near (or at) 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 rivers/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

.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.....

IN THE DEEP WATER CHANNEL...COMBINED SEAS 5 TO 7 FEET WITH A  
DOMINANT PERIOD OF 9 SECONDS.

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.

2.5 Marine Watches, Warnings, Advisories and Associated Headlines. Small Craft Advisories for Hazardous Seas and Hazardous Seas Warnings are based in part on wave steepness. See Appendix A for WR WFO wave steepness criteria. Headlines associated with marine watches, warnings, and advisories are automatically inserted into the CWF via the CWF formatter. For more general guidance concerning marine watched, warnings, advisories, and associated headlines, refer to NWSI 10-315 (and Western Region Supplement).

3. Surf Zone Forecasts (SRF). See NWSI 10-310 for general information and guidance on the SRF. For WR WFOs routinely issuing SRFs, High Surf and Coastal Flood Advisories/Warnings/Watches should be headlined in the SRF. Additionally, WR WFOs which routinely provide rip current information via the SRF product will include a headline in the SRF whenever the risk of rip currents is “HIGH”.

3.1 Issuance. In WR, the SRF will be issued twice daily. WFOs Oxnard and San Diego, because of their high population density and shared media markets, should issue their SRF products at approximately the same times and be valid for similar periods, whenever possible. The SRF may be issued up to 30 minutes prior to, but not later than scheduled issuance times. During unusually heavy workload situations, the SRF may be issued up to 1 hour prior to the scheduled issuance time.

3.2 Format and Content. WR WFOs issuing SRF products will include surf heights expected in the breaker zone. Other parameters (e.g. weather, wind, sky condition, temperature, etc.) may be included, based on partner and user needs, in accordance with NWSI 10-310. Because of the high population density in southern California, and the extensive use of beaches for recreation (including surfing, swimming, and other activities), WFOs Oxnard and San Diego will use a consistent format and will also include the following elements:

- a. Rip Current Risk. Use “LOW” or “HIGH” (reference: NWSI 10-310). Forecasters may also use “MODERATE” if they are sufficiently confident.
  - b. Surf (Water) Temperature. Specify appropriate range (degrees F).
4. Forecast Collaboration. Forecasters will use available means for collaboration of forecasts (e.g. chat software, telephone, intersite coordination tools (IFPS/ISC), etc.).

**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	None	None	None	None	None	None
	6	None	None	None	None	None	None	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	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas
	11	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas
	>/=12	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	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	None	None	None	None	None	None
	6	None	None	None	None	None	None	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	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas
	11	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas
	>/=12	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	Small Craft Advisory for Hazardous Seas	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	Green	Green	Green	Green	Green	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	Green	Green	Green	Green	Green	Green	Green	Green
	7	Yellow	Yellow	Green	Green	Green	Green	Green	Green	Green	Green
	8	Yellow	Yellow	Yellow	Green	Green	Green	Green	Green	Green	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

Small Craft Advisory for Hazardous Seas  
 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	Green	Green	Green	Green	Green	Green	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	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	>=11	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Small Craft Advisory for Hazardous Seas  
 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	Green	Green	Green	Green	Green	Green	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	Yellow	Yellow	Yellow	Yellow	Yellow	Green	Green	Green
	>=11	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow

Small Craft Advisory for Hazardous Seas  
 None



**APPENDIX B – Example Surf Zone Forecast**

FZUS56 KLOX 230900  
SRFLOX

SURF ZONE FORECAST  
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA  
200 AM PDT TUE SEP 23 2008

.FOR THE BEACHES OF SOUTHERN CALIFORNIA...VALID TUE SEP 23...

\* THE FOLLOWING INFORMATION APPLIES WHEN FORECAST RIP CURRENT POTENTIAL IS "LOW": DUE TO HIGHLY VARIED COASTAL TOPOGRAPHY, DANGEROUS RIP CURRENTS ARE ALWAYS A POSSIBILITY ALONG THE SOUTHERN CALIFORNIA COASTS, AND SWIMMERS ARE URGED TO USE CAUTION AT ALL TIMES.

CAZ041-232900-  
LOS ANGELES COUNTY COAST-  
200 AM PDT TUE SEP 23 2008

.TODAY...  
SURF HEIGHT.....1-2 FEET.  
RIP CURRENT POTENTIAL.....LOW\*  
WATER TEMPERATURE.....61-69 DEGREES.

REMARKS...MIXED SOUTH SWELL AND NORTHWEST WIND SWELL. OCCASIONAL 3 FEET EXPOSED SOUTH AND SOUTHWEST FACING SHORES.

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE.

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CAZ040-232100-  
VENTURA COUNTY COAST-  
200 AM PDT TUE SEP 23 2008

.TODAY...  
SURF HEIGHT.....1-2 FEET.  
RIP CURRENT POTENTIAL.....LOW\*  
WATER TEMPERATURE.....62-68 DEGREES.

REMARKS...MIXED SOUTH SWELL AND NORTHWEST WIND SWELL. OCCASIONAL 3 FEET EXPOSED SOUTH AND SOUTHWEST FACING SHORES.

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE.

\$\$

CAZ039-232100-  
SANTA BARBARA COUNTY SOUTH COAST-  
200 AM PDT TUE SEP 23 2008

.TODAY...  
SURF HEIGHT.....1-2 FEET  
RIP CURRENT POTENTIAL.....LOW\*  
WATER TEMPERATURE.....59-66 DEGREES

REMARKS...NONE.

OUTLOOK FOR WEDNESDAY...LITTLE CHANGE.

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