

**NATIONAL WEATHER SERVICE WESTERN REGION SUPPLEMENT 12-2003  
APPLICABLE TO INSTRUCTION NWSI 10-310  
OCTOBER 5, 2012**

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

**MARINE WEATHER SERVICES**

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**OPR:** W/WR1x4 (J. Lorens)

**Certified by:** W/WR1 (C. Schmidt)

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**SUMMARY OF REVISIONS:** This directive supersedes NWS Western Region Supplement 12-2003, dated November 21, 2008 (recertified October 1, 2010).

The following changes were made in this issuance:

1. Added guidance for use of “frequent gusts” based on areal percent coverage of marine zones.
2. Added guidance for wave height ranges.
3. Added guidance for determining “wind waves”.
4. Extended inclusion of wave period (through the first five forecast periods).
5. Added wording clarifying that WFOs may combine zones and forecast periods for brevity (consistent with NWSI 10-310 guidelines).
6. Amended wording in paragraph 3 (Surf Zone Forecast) to refer to NWSI 10-310 for general guidance concerning the SRF.

Signed

09/17/12

Vickie Nadolski

Date

Regional Director, Western Region

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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 10-201 (National Digital Forecast Database and Local Database Description and Specifications), 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 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 Content.

2.3.1 Synopsis. WR WFOs will include a brief synopsis discussing the dominant weather features affecting their 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 period 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 in shallower depths due to longer period).

3. Combined Seas. (Combination of 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 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

.IN THE MAIN CHANNEL...COMBINED SEAS WILL BE AROUND 3 FT TODAY AND TONIGHT. SEAS WILL TEMPORARILY BUILD TO 4 FT DURING THE EBB CURRENT 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 watches, 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. WFOs which do not routinely provide rip current outlook information may include this information in High Surf Advisories/Warnings, Coastal Flood Advisories/Warnings/Watches (CFW) (Ref: NWSI 10-320 and WR Supplement), and the Hazardous Weather Outlook (Ref: NWSI 10-517). For WFOs routinely issuing SRFs, High Surf and Coastal Flood Advisories/Warnings/Watches should be headlined in the SRF. Additionally, WFOs routinely issuing SRFs 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 daily no later than 0200 and 1400 (Pacific Local Time). The SRF may be issued up to 30 minutes prior to, but not later than the 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. WR WFOs will use the format as indicated in Figure 1. See Appendix B for an example SRF.

3.3 Content. SRFs issued by WR offices will contain 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 Height (approximate height of breaking waves). For swell information, SRFs may reference the local WFOs Coastal Waters Forecast (CWF).
- c. Surf (Water) Temperature. Specify appropriate range (degrees F).

4. Forecast Collaboration. WFOs routinely collaborate with adjacent offices and with the Ocean Prediction Center (OPC), as necessary during the forecast process to facilitate or improve consistency of marine forecasts, watches, warnings, and advisories. Forecasters will use available means for collaboration (chat, telephone, intersite coordination tools (IFPS/ISC), etc.).

**Figure 1. Surf Zone Forecast (SRF) Format**

FPZUS KXXX ddhmm  
SRFXXX

SURF ZONE FORECAST  
NATIONAL WEATHER SERVICE CITY STATE  
time am/pm LT day mon dd yyyy

.FOR THE BEACHES OF (specify area)...for (day)...

\* THE FOLLOWING INFORMATION APPLIES WHEN FORECAST RIP CURRENT RISK 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.

CAZXXX-XXX>XXX-ddhmm-  
Counties  
time am/pm day mon dd yyyy

...(HEADLINES as needed)...

.TODAY...  
SURF HEIGHT.....(specify height in ft)  
RIP CURRENT RISK.....(LOW or HIGH)\*  
WATER TEMPERATURE.....(specify in degrees F)

REMARKS.....(as needed)  
OUTLOOK FOR (following day)...(outlook for surf height)

\$\$  
CAZXXX-XXX>XXX-ddhmm-  
Counties  
time am/pm day mon dd yyyy

...(HEADLINES as needed)...

.TODAY...  
SURF HEIGHT.....(specify)  
RIP CURRENT RISK.....(LOW or HIGH)\*  
WATER TEMPERATURE.....(specify in degrees F)

REMARKS.....(as needed)  
OUTLOOK FOR (following day)...(outlook for surf height)

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**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	None	None	None
	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	None	None
	>/=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	None	None	None
	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	None	None
	>/=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







**APPENDIX B - Example Surf Zone Forecast**

SURF ZONE FORECAST  
NATIONAL WEATHER SERVICE LOS ANGELES/OXNARD CA  
200 AM PDT FRI AUG 10 2012

.FOR THE BEACHES OF SOUTHERN CALIFORNIA...VALID FRI AUG 10...

\* THE FOLLOWING INFORMATION APPLIES WHEN FORECAST RIP CURRENT RISK 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.

CAZ041-102100-  
LOS ANGELES COUNTY COAST-  
200 AM PDT TUE FRI AUG 10 2012

.TODAY...  
SURF HEIGHT.....2-4 FEET.  
RIP CURRENT RISK.....LOW\*  
WATER TEMPERATURE.....64-70 DEGREES.

REMARKS...PREDOMINANT S SWELL.

OUTLOOK FOR SATURDAY...SLIGHT INCREASE IN SWELL AND SURF.

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CAZ040-102100-  
SANTA BARBARA COUNTY SOUTH COAST-  
200 AM PDT TUE FRI AUG 10 2012

.TODAY...  
SURF HEIGHT.....1-2 FEET.  
RIP CURRENT RISK.....LOW\*  
WATER TEMPERATURE.....63-66 DEGREES.

REMARKS...NONE.

OUTLOOK FOR SATURDAY...LITTLE CHANGE.

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