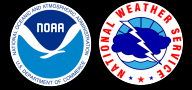




# NWS Portland Warning, Watch, Advisory Criteria



Guidance for all WWA Products:

Last Update: 03/07/2024 (For new zone names and numbers)

Written instructions cannot address every operational situation. All WFO personnel exercise initiative and professional judgment to minimize risk to public safety and property in situations not explicitly covered by written instructions. Protection of life and property takes precedence in these decision making processes. As such, criteria for weather warnings are to be considered as guidance only, not strict thresholds. Forecasters may issue warnings and advisories based upon lower criteria if the event in question poses a significant threat to life due to timing or other circumstances.

**Watch Issuance when confidence is  $\geq$  50%**  
**Warning Issuance when confidence is  $\geq$  80%**

Multi-Purpose Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
Special Weather Statement	Duration: < 6 hours	<ul style="list-style-type: none"> <li>- Strong, sub-severe convection or gust fronts. Could include gusts 40-57mph, hail &lt; 1", frequent/continuous lightning.</li> <li style="text-align: center;">OR</li> <li>- Funnel clouds not expected to become a tornado threat (e.g. cold-core funnel clouds)</li> <li style="text-align: center;">OR</li> <li>- Short term hazards like frosty or icy conditions that may cause hazardous driving, but not meet freezing fog advisory criteria</li> <li style="text-align: center;">OR</li> <li>- Highlight a major multi-hazard event expected beyond 6 hours.</li> <li style="text-align: center;">OR</li> <li>- Level 5 (Extreme) Space Weather Event.</li> </ul>			
Convective Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
Severe Weather Statement	Duration: 0-1 hour	Used to update, correct, expire, or cancel a TOR or SVR. An SVS should be issued at least once during the valid time of a SVR or TOR.			
Severe Thunderstorm Watch	SPC-Driven	Issued in coordination with Severe Prediction Center (SPC). Observed and/or expected atmospheric conditions support the formation of severe thunderstorms.	Oregon: NO Washington: YES	Oregon: YES Washington: YES  Automatic	
Severe Thunderstorm Warning	Duration: 30-60 min	Impact criteria: Thunderstorms that are forecast to produce significant tree or structural damage, downed powerlines, flying debris, or threaten lives/property. <ul style="list-style-type: none"> <li>- Gusts <math>\geq</math> 58 MPH</li> <li style="text-align: center;">OR</li> <li>- Hail size <math>\geq</math> 1"</li> <li style="text-align: center;">OR</li> <li>- Damage reports that indicate thunderstorm wind or hail.</li> </ul>	Oregon: YES Washington: YES	Oregon: YES Washington: YES  Automatic	YES  Automatic when has a considerable or destructive tag only
Tornado Watch	SPC-Driven	Issued in coordination with SPC. <ul style="list-style-type: none"> <li>- When there is a forecast of multiple weak tornadoes or any tornado which could produce EF2 or greater damage.</li> <li>- The forecast event minimum thresholds should be at least 2 hours over an area at least 8,000 square miles.</li> </ul>	Oregon: YES Washington: YES	Oregon: YES Washington: YES  Automatic	

<b>Tornado Warning</b>	Duration: 15-45 min	Radar indication or credible report of (developing) tornado, including TVS, hook echo, mesocyclone  TVS: - gate to gate shear >90 kts within 30 nm of the RDA - gate to gate shear >70 kts between 30 to 55 nm of the RDA	Oregon: YES Washington: YES	Oregon: YES Washington: YES  Automatic	YES  Automatic
<b>Tornado Emergency</b>	Duration: 15-45 min	Exceedingly rare situations when: Severe threat to human life and catastrophic damage from a tornado is imminent or ongoing.  Visual or radar sources confirm tornado. Radar imagery (e.g., debris ball signature) strongly suggests the existence of a damaging tornado.	Oregon: YES Washington: YES	Oregon: YES Washington: YES  Automatic	YES  Automatic
<b>Special Marine Warning</b>	Duration: 0-1 hour	- Wind: Sustained wind or frequent gusts of $\geq 34$ kt not adequately covered in CWF. Duration for up to 2 hours--usually less  - Thunderstorm: (Non-severe) a thunderstorm producing wind gusts of $\geq 34$ kt that forms or moves over the marine forecast area  - Severe Thunderstorm: 50 kt wind gust, hail $\geq 3/4$ " diameter (penny-size)  - Waterspout indicated or observed	Oregon: No Washington: YES	Oregon: YES Washington: YES  Required for coastal weather radios  Automatic	

Hydrology Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
<b>Flood Potential Outlook</b>	Lead Time: >36 hours	- Issued if expected hydro-meteorological conditions may cause flooding problems, generally a few days from the time of issuance as a "heads-up" to emergency managers and the public.			
<b>Flood Advisory</b>	Lead Time: short term, generally 0 to 12 hours	- Issued for urban areas and/or small streams when hydro-meteorological conditions may cause flooding or smaller streams and urban areas (e.g. underpasses, low lying areas, or drainages) which may hinder or block public traffic or access			
<b>Flood Watch</b>	Lead Time: 12-48 hours	- Issued when current or developing hydro-meteorological conditions indicate a threat of flooding, but the occurrence is neither certain or imminent	Oregon: NO Washington: YES  Manual		
<b>Flood Warning (River Forecast Points)</b>	Lead Time: 6-24 hours	- Flooding at a river forecast point is imminent or in progress OR - River forecast indicates flooding within next several hours  - Category of flooding increases (e.g. minor to moderate)	Oregon: YES Washington: YES  Manual	Oregon: YES Washington: YES  Manual  For "Major" flood category only	
<b>Flood Warning (Areal)</b>	Lead Time: 6-24 hours	- Issued when flooding presents a threat to life or property	Oregon: YES Washington: YES  Manual		
<b>Flood Statement</b>	--	- Used to update, correct, expire, or cancel a Flood Warning.			
<b>Flash Flood Watch</b>	Lead Time: 6-48 hours	- Conditions indicate flash-flooding is possible but not imminent  - Potential dam or levee failure	Oregon: NO Washington: YES  Manual	At lead forecaster discretion  Manual	

<b>Flash Flood Warning</b>	Lead Time: 0-6 hours	<ul style="list-style-type: none"> <li>- Flash flooding is reported by a reliable source</li> <li>- Precipitation capable of producing flash flooding is detected or reported</li> <li>- Observed rainfall approaches or exceeds guidance obtained from the RFC</li> <li>- Sudden release from a dam, levee, or other structure due to controlled release or failure</li> <li>- Headwater tables or other predictive procedures indicate flash flooding</li> <li>- Notification by PacifiCorp that releases at Merwin Dam will be increased to 60,000 CFS or more within the next 6 hours</li> </ul>	Oregon: YES Washington: YES  Manual	Oregon: YES Washington: YES  Automatic	YES  Automatic  when has a considerable or catastrophic tag only
<b>Flash Flood Statement</b>	--	- Used to update, correct, expire, or cancel a Flash Flood Warning.			
<b>Flash Flood Emergency</b>	Lead Time: 0-6 hours	<p>FFW criteria</p> <p>AND one of the following:</p> <ul style="list-style-type: none"> <li>- State of Emergency declared due to life-threatening rapidly rising water</li> <li>- Flash flood water rises to level rarely ever seen or much higher than typical flash floods;</li> <li>- Multiple swift water rescue teams required;</li> <li>- Total failure of high hazard dam with catastrophic impacts.</li> </ul>	Oregon: YES Washington: YES  Manual	Oregon: YES Washington: YES  Automatic	YES  Automatic
<b>Winter Hazard</b>	<b>Lead Time / Duration Guidance</b>	<b>Criteria (including IMPACTS)</b>	<b>NAWAS</b>	<b>NOAA Weather Radio TONE/SAME</b>	<b>WEA</b>
<b>Winter Weather Advisory</b>	Lead Time: 0-36 hours	<p>Cascades: 6-11 inches in 12 hours If the above criteria is only expected to be met for elevations above 5,500 feet, then no headline is needed!</p> <p>Cascade Foothills, Coast Range, Willapa Hills, and Upper Hood River Valley: 2-4 inches in 12 hours</p> <p>Coast, Coast Range Lowlands, Willapa and Wahkiakum Lowlands, Lower Columbia, Willamette Valley, Cowlitz County Lowlands, and Columbia River Gorge: 1-3 inches in 12 hours</p> <p>Freezing rain: 0.10-0.25" flat ice accumulation in 12 hours</p> <p>Impact Criteria: Significant travel inconveniences due to slippery roads and/or sidewalks, scattered power disruptions, significant civic or economic disruption (i.e. schools and/or businesses closed).</p>			
<b>Winter Storm Watch</b>	Lead Time: 36-48 hours (can be longer for high-confidence events)	≥ 50% chance of a hazardous winter weather event meeting or exceeding warning and/or impact criteria	Oregon: NO Washington: YES  Manual		

<p><b>Winter Storm Warning</b></p>	<p>Lead Time: 0-36 hours</p>	<p>- Issued for all winter precipitation events meeting/exceeding warning guidelines and/or causing significant impact. Exceptions: Blizzards, Ice Storms, or Wind Chill are issued separately.</p> <p>- Winter Storm Warnings include different event types such as heavy snow, snow mixed with sleet or freezing rain, blowing snow, etc.</p> <p>- If BOTH Winter Storm Warning and High Wind Warning criteria are met, issue both separately: WSW for Winter Storm, and NPW for High Wind. Consider tying the two together in the *ADDITIONAL DETAILS...section of each.</p> <p>Cascades:          ≥12 inches in 12 hours          ≥18 inches in 24 hours          If the above criteria is only expected to be met for elevations above 5,500 feet, then no headline is needed!</p> <p>Cascade Foothills, Coast Range, Willapa Hills, and Upper Hood River Valley:          ≥4 inches in 12 hours</p> <p>Coast, Coast Range Lowlands, Willapa and Wahkiakum Lowlands, Lower Columbia, Willamette Valley, Cowlitz County Lowlands, and Columbia River Gorge:          ≥3 inches in 12 hours          ≥6 inches in 24 hours</p> <p>Impact Criteria:          Life-threatening travel conditions, widespread power outages due to heavy snow, major economic disruption (i.e. closure of I-84).</p>	<p>Oregon: NO          Washington: YES</p> <p>Manual</p>	<p>Generally reserve the alert for short fused and major events</p> <p>Manual</p>	
<p><b>Snow Squall Warning</b></p>	<p>Duration: 30-60 min</p>	<p>Significant, short lived snow events causing extremely dangerous driving conditions from near white-out conditions</p> <p>- Snow accumulations are often ≤ 1"          - Added combination of:            - Gusty winds            - Sub-freezing ambient road temperatures            - Reduced visibility (≤ 1/4 mi)</p> <p>This would be a very rare event for our CWA</p>	<p>Oregon: YES          Washington: YES</p> <p>Manual</p>	<p>Generally reserve the alert for short fused and major events</p> <p>Automatic (TONE and SAME only)</p>	<p>YES</p> <p>Automatic when has a SIGNIFICANT impacts tag only</p>
<p><b>Ice Storm Warning</b></p>	<p>Lead Time: 0-36 hours</p>	<p>Significant, widespread and possibly damaging accumulations of ice:          ≥0.25" ice accumulation in 24 hours</p> <p>Impact Criteria:          Widespread power outages due to downed ice-laden trees/limbs, life threatening travel conditions, major economic disruption (i.e. closure of I-84).</p>	<p>Oregon: YES          Washington: YES</p> <p>Manual</p>	<p>Generally reserve the alert for major events</p> <p>Automatic</p>	
<p><b>Blizzard Warning</b></p>	<p>Lead Time: 0-36 hours</p>	<p>- Sustained wind speeds or frequent gusts of 35 mph          AND          - Considerable falling and/or blowing snow frequently reducing visibility &lt;1/4 mile for 3+ hours</p>	<p>Oregon: YES          Washington: YES</p> <p>Manual</p>	<p>Generally reserve the alert for major events</p> <p>Manual</p>	
<p><b>Wind Chill Advisory</b></p>	<p>Lead Time: 0-36 hours</p>	<p>- Wind chill is ≤ 0°F          AND          - Expected to last 1+ hour          AND          - Wind speed ≥ 10 mph (see wind chill chart)</p> <p>For the Cascades, only consider wind chills at passes or below</p>			

<b>Wind Chill Watch</b>	Lead Time: 36-48 hours (can be longer for high-confidence events)	Conditions are favorable for hazardous wind chill to develop, but its occurrence, location, and/or timing is still uncertain	Oregon: NO Washington: YES  Automatic		
<b>Wind Chill Warning</b>	Lead Time: 0-36 hours	- Wind chill is $\leq -20^{\circ}\text{F}$ AND - Expected to last 1+ hour AND - Wind speed $\geq 10$ mph (see wind chill chart)  For the Cascades, only consider wind chills at passes or below	Oregon: YES Washington: YES  Automatic		
<b>Non-Precip Hazard</b>	<b>Lead Time / Duration Guidance</b>	<b>Criteria (including IMPACTS)</b>	<b>NAWAS</b>	<b>NOAA Weather Radio TONE/SAME</b>	<b>WEA</b>
<b>Wind Advisory</b>	Lead Time: 12-36 hours	Issued for all zones except the coast, Columbia River Gorge, and high Cascades:  - ORZ109-118 (Willamette Valley) - ORZ108-WAZ204 (Lower Columbia in Columbia & Cowlitz Counties) - WAZ205-207 (Clark County lowlands)  - Sustained winds: 30-39 mph (26-34 kt), duration of 1+ hour - Frequent gusts: 45-57 mph (39-49 kt), any duration			
<b>High Wind Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	Conditions are favorable for hazardous high wind warning conditions to develop, but its occurrence, location, and/or timing is still uncertain	Oregon: NO Washington: YES  Manual		
<b>High Wind Warning</b>	Lead Time: 0-36 hours	For all zones (except the Columbia River Gorge and Cascades):  - Sustained winds: 40 mph (40 kt), duration of 1+ hour - Frequent gusts: 58 mph (50 kt), any duration OR - Credible reports, or expectation, of widespread damaging wind at lower values  For the Columbia River Gorge and Cascades: ORZ119-120 and WAZ209 (Western Columbia River Gorge) ORZ126-127 (North Oregon Cascades and Marion/Linn Cascades) WAZ211 (South Washington Cascades)  - Sustained winds: 50 mph (43 kt), duration of 1+ hour - Frequent gusts: 75 mph (65 kt), any duration OR - Credible reports, or expectation, of widespread damaging wind at lower values	Oregon: NO Washington: YES  Manual	Oregon: YES Washington: YES  Manual  SAME/Tone Alert for Extreme High Wind Warnings for the following criteria:  Coast/Willapa Hills WA: $\geq 60$ G90mph Coast/Coast Range OR: $\geq 60$ G100mph Inland WA & OR: $\geq 50$ G75mph  - Within 6 hours of the onset of the high wind criteria  Oregon: NO Washington: NO No SAME/Tone Alert for Gorge/Cascades	
<b>Heat Advisory</b>	Lead Time: 12-36 hours	Use NWS Western Region Heat Risk Tool - Heat Risk Value: 2.4-2.65 (high orange/low red levels) - Moderate risk for those who are sensitive to heat, especially those without effective cooling and/or adequate hydration			
<b>Excessive Heat Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	Conditions are favorable for hazardous heat conditions to develop, but its occurrence, location, and/or timing is still uncertain	Oregon: NO Washington: YES  Manual		

<b>Excessive Heat Warning</b>	Lead Time: 0-36 hours	<p>Use NWS Western Region Heat Risk Tool</p> <ul style="list-style-type: none"> <li>- Heat Risk Value: 2.66-3.9 (red level)</li> <li>- High risk for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration</li> <li>- Heat Risk Value: 4 (magenta level)</li> <li>- Rare, long duration heat event. Very high risk due to long duration heat with little to no relief overnight</li> </ul>	<p>Oregon: YES Washington: YES</p> <p>Manual</p>		
<b>Frost Advisory</b>	Lead Time: 0-36 hours	<p>Growing Season Only (APR-OCT)</p> <ul style="list-style-type: none"> <li>- Minimum shelter temperatures mainly 33°F-36°F on nights with good radiational cooling conditions (light winds and clear skies)</li> <li>- Comprises of all forecast zones except for WAZ211, ORZ126, ORZ127, and ORZ128 (the high Cascades zones)</li> </ul>			
<b>Freeze Watch</b>	Lead Time: 48-96 hours	<ul style="list-style-type: none"> <li>- Conditions are favorable for hazardous freeze conditions to develop, but its occurrence, location, and/or timing is still uncertain</li> </ul>			
<b>Freeze Warning</b>	Lead Time: 0-36 hours	<p>Growing Season Only (APR-OCT)</p> <ul style="list-style-type: none"> <li>- Widespread minimum shelter temperatures between 29°F-32°F</li> <li>- Comprises of all forecast zones except for WAZ211, ORZ126, ORZ127, and ORZ128 (the high Cascades zones)</li> </ul>	<p>Oregon: NO Washington: YES</p> <p>Manual</p>		
<b>Hard Freeze Watch</b>	Lead Time: 48-96 hours	<ul style="list-style-type: none"> <li>- Conditions are favorable for hazardous hard freeze conditions to develop, but its occurrence, location, and/or timing is still uncertain</li> </ul>			
<b>Hard Freeze Warning</b>	Lead Time: 0-36 hours	<p>Growing Season Only (APR-OCT)</p> <ul style="list-style-type: none"> <li>- Widespread minimum shelter temperatures <math>\leq 28^{\circ}\text{F}</math></li> <li>- Comprises of all forecast zones except for WAZ211, ORZ126, ORZ127, and ORZ128 (the high Cascades zones)</li> </ul>	<p>Oregon: NO Washington: YES</p> <p>Manual</p>		
<b>Dust Advisory (polygon-based)</b>	Lead Time: 12-36 hours	<ul style="list-style-type: none"> <li>- Widespread or localized blowing dust reduces visibilities to <math>\leq 1</math> mile, but <math>&gt; 1/4</math> mile</li> <li>- Dust storms are extremely rare west of the Cascades</li> </ul>			
<b>Dust Storm Warning (polygon-based)</b>	Lead Time: 0-36 hours	<ul style="list-style-type: none"> <li>- Widespread or localized blowing dust reduces visibilities to <math>\leq 1/4</math> mile</li> <li>- Sustained winds <math>\geq 25</math> mph</li> <li>- Dust storms are extremely rare west of the Cascades</li> </ul>	<p>Oregon: YES Washington: YES</p> <p>Manual</p>		<p>YES</p> <p>Automatic</p>
<b>Blowing Dust Advisory (zone-based)</b>	Lead Time: 12-36 hours	<ul style="list-style-type: none"> <li>- Widespread or localized blowing dust reduces visibilities to <math>\leq 1</math> mile, but <math>&gt; 1/4</math> mile</li> <li>- Dust storms are extremely rare west of the Cascades</li> </ul>			
<b>Blowing Dust Warning (zone-based)</b>	Lead Time: 0-36 hours	<ul style="list-style-type: none"> <li>- Widespread or localized blowing dust reduces visibilities to <math>\leq 1/4</math> mile</li> <li>- Sustained winds <math>\geq 25</math> mph</li> <li>- Dust storms are extremely rare west of the Cascades</li> </ul>	<p>Oregon: YES Washington: YES</p> <p>Manual</p>		
<b>Dense Fog Advisory</b>	Lead Time: 12-36 hours	<ul style="list-style-type: none"> <li>- Widespread or localized fog is expected to, or is reducing visibilities <math>\leq 1/4</math> mile</li> </ul>			

<b>Freezing Fog Advisory</b>	Lead Time: 12-36 hours	- Issue when we receive multiple reports from spotters, law enforcement, or other government agencies of hazardous conditions due to the freezing fog. ASOS reports of freezing fog, on their own, are not enough.  - The freezing fog must affect a "representative part of the area".			
<b>Dense Smoke Advisory</b>	Lead Time: 12-36 hours	- Widespread or localized smoke reduces visibility to $\leq 1/4$ miles			
<b>Coastal Hazard</b>	<b>Lead Time / Duration Guidance</b>	<b>Criteria (including IMPACTS)</b>	<b>NAWAS</b>	<b>NOAA Weather Radio TONE/SAME</b>	<b>WEA</b>
<b>Beach Hazards Statement</b>	--	High Sneaker Wave threat: - Swell height $\geq 9$ ft with a period $\geq 14$ sec on a weekend/holiday			
<b>Coastal Flood Advisory (for Tidal Overflow)</b>	Lead Time: 0-36 hours	- Rivers at/near 80% flood flow and tide + tidal anomaly of 9.5 ft at Newport (South Beach) in the south and Astoria (Tongue Point) or Willapa Bay (Toke Point) in the north.  OR  - Southwest Washington Coast: Tide + tidal anomaly alone is $\geq 11$ ft at Willapa Bay (Toke Point, south Washington coast).  - North Oregon Coast: Tide + tidal anomaly alone is $\geq 10.5$ ft at Astoria (Tongue point, north Oregon coast) or Garibaldi.  - Central Oregon Coast: Tide + tidal anomaly alone is $\geq 12$ ft at Newport (South Beach, central Oregon coast).  OR  - Tidal flooding is observed and reported by a reliable source.	Oregon: NO Washington: YES  Manual		
<b>Coastal Flood Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	- See Coastal Flood Warning	Oregon: NO Washington: YES  Manual		
<b>Coastal Flood Warning</b>	Lead Time: 0-36 hours (can be longer for high-confidence events)	- Coastal Flood Index of $\geq 22$ for a .02 slope beach is forecast or occurring. We will use .02 as a representative standard.  OR  - Tide + tidal anomaly alone is 14.5 ft or greater at South Beach (central Oregon coast), Astoria (north Oregon coast), or Toke Point (south Washington coast).	Oregon: NO Washington: YES  Manual		
<b>High Surf Advisory</b>	Lead Time: 0-36 hours	- Issued for swell energy flux of $100 \times 10^4$ J/ms	Oregon: NO Washington: YES  Manual		
<b>High Surf Warning</b>	Lead Time: 0-36 hours	- Issued for swell energy flux of $160 \times 10^4$ J/ms	Oregon: NO Washington: YES  Manual		
<b>Marine Hazard</b>	<b>Lead Time / Duration Guidance</b>	<b>Criteria (including IMPACTS)</b>	<b>NAWAS</b>	<b>NOAA Weather Radio TONE/SAME</b>	<b>WEA</b>

<b>Marine Weather Statement</b>	Lead time: 0-36 hours	<p>Product to provide mariners with details on significant or potentially hazardous conditions not otherwise covered in existing marine warnings and forecasts</p> <ul style="list-style-type: none"> <li>- Non-Severe, Short-term Wind Events: sustained winds or gusts to 33 kt are expected for 2 hours or less</li> <li>- Non-Severe, Long-term Events: dense fog, hazardous materials spills; volcanic impacts, trends for increasing and/or decreasing wind and wave/seas conditions</li> <li>- Other hazardous events: funnel clouds, tsunamis, marine debris, ice changes, freezing spray advisories, ashfall advisories</li> </ul>			
<b>Special Marine Warning</b>	Duration: 0-1 hour	<ul style="list-style-type: none"> <li>- Wind: Sustained wind or frequent gusts of <math>\geq 33</math> kt not adequately covered in CWF. Duration for up to 2 hours--usually less</li> <li>- Thunderstorm: (Non-severe) a thunderstorm producing wind gusts of <math>\geq 33</math> kt that forms or moves over the marine forecast area</li> <li>- Severe Thunderstorm: Hail with diameter <math>\geq 3/4</math>" diameter (penny-size)</li> <li>- Waterspout indicated or observed</li> </ul>	Oregon: NO Washington: YES	Oregon: YES Washington: YES Required for coastal weather radios Automatic	
<b>Dense Fog Advisory</b>	Lead Time: 0-36 hours	- Widespread or localized fog reducing visibility to $< 1$ nautical mile			
<b>Dense Smoke Advisory</b>	Lead Time: 0-36 hours	- Widespread or localized smoke reducing visibility to $< 1$ nautical mile			
<b>Small Craft Advisory</b>	Lead Time: 0-36 hours	<ul style="list-style-type: none"> <li>- Sustained wind speeds or frequent gusts of 21-33 kts</li> <li>OR</li> <li>- Combined seas <math>\geq 10</math> ft</li> <li>OR</li> <li>- Meets wave steepness criteria (local wave criteria below)</li> <li>OR</li> <li>- Seas 7-9 ft with strong (5.6 kts) to very strong (6.4 kts) ebb currents (PZZ210 only) at Sand Island Tower station</li> </ul>			
<b>Freezing Spray Advisory</b>	Lead Time: 0-36 hours	- Light ice accumulation expected applicable primarily to PZZ210, see Columbia River Bar section of the marine Google page for more guidance			
<b>Gale Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	- Conditions are favorable to meet Gale Warning criteria in the next 12-48 hours			
<b>Gale Warning</b>	Lead Time: 0-36 hours	- Sustained winds or frequent gusts of 34-47 kts, either predicted or occurring			
<b>Storm Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	- Conditions are favorable to meet Storm Watch Warning criteria, but its occurrence, location, and/or timing is still uncertain			
<b>Storm Warning</b>	Lead Time: 0-36 hours	- Sustained winds or frequent gusts of 48-63 kts, either predicted or occurring	Oregon: NO Washington: YES Manual		
<b>Hurricane Force Wind Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	- Conditions are favorable to meet Hurricane Force Wind Warning criteria, but its occurrence, location, and/or timing is still uncertain			
<b>Hurricane Force Wind Warning</b>	Lead Time: 0-36 hours	- Sustained winds or frequent gusts of $\geq 64$ kts, either predicted or occurring, and not directly associated with a tropical cyclone	Oregon: NO Washington: YES Manual		



<b>Hazardous Seas Watch</b>	Lead Time: 12-48 hours (can be longer for high-confidence events)	- Conditions are favorable to meet Hazardous Seas Warning criteria, but its occurrence, location, and/or timing is still uncertain			
<b>Hazardous Seas Warning</b>	Lead Time: 0-36 hours	- A warning for wave heights and/or wave steepness values meeting or exceeding locally defined warning criteria (see table below)			

Local Wave Criteria								
No Hazard (green) Small Craft Advisory (yellow) and Hazardous Seas (red)								
		Dominant Wave Period (seconds)						
		<= 7	8	9	10	11	12	>= 13
Significant Wave Height (ft)	<=5	X	X	X	X	X	X	X
	6	X	X	X	X	X	X	X
	7	X	X	X	X	X	X	X
	8	X	X	X	X	X	X	X
	9	X	X	X	X	X	X	X
	10	X	X	X	X	X	X	X
	11	X	X	X	X	X	X	X
	12	X	X	X	X	X	X	X
	13	X	X	X	X	X	X	X
	14	X	X	X	X	X	X	X
>= 15	X	X	X	X	X	X	X	

Fire Weather Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
<b>Fire Weather Watch</b>	Lead Time: 48-72 hours (can be longer for high-confidence events)	Day (for 4 hours): - Dry fuels - RH ≤ 25% - RAWs: 10G20 mph - ASOS: 15G25 mph  Night (for 3 hours): - Dry fuels - RH ≤ 35% - RAWs: 10G20 mph - ASOS: 15G25 mph  Dry and unstable: - Dry fuels - RH ≤ 25% - Mid-Haines: 6 - High-Haines: 5/6  Lightning: - Scattered thunderstorms - Critically dry fuels - No appreciable change in fuel conditions after event	Oregon: NO Washington: YES  Manual		

<b>Red Flag Warning</b>	Lead Time: 24-60 hours (can be longer for high-confidence events)	<p>Day (for 4 hours):</p> <ul style="list-style-type: none"> <li>- Dry fuels</li> <li>- RH ≤ 25%</li> <li>- RAWs: 10G20 mph</li> <li>- ASOS: 15G25 mph</li> </ul> <p>Night (for 3 hours):</p> <ul style="list-style-type: none"> <li>- Dry fuels</li> <li>- RH ≤ 35%</li> <li>- RAWs: 10G20 mph</li> <li>- ASOS: 15G25 mph</li> </ul> <p>Dry and unstable:</p> <ul style="list-style-type: none"> <li>- Dry fuels</li> <li>- RH ≤ 25%</li> <li>- Mid-Haines: 6</li> <li>- High-Haines: 5/6</li> </ul> <p>Lightning:</p> <ul style="list-style-type: none"> <li>- Scattered thunderstorms</li> <li>- Critically dry fuels</li> <li>- No appreciable change in fuel conditions after event</li> </ul>	<p>Oregon: NO Washington: YES</p> <p>Manual</p>		
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Geohazard Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
Tsunami Advisory	NTWC-Driven	<ul style="list-style-type: none"> <li>- Issued for the threat of a potential tsunami that may produce strong currents in harbors and bays or waves dangerous to those near the water.</li> <li>- Issued for sub-warning events NOT expected to produce wave amplitudes ≥ 1 meter</li> </ul>	<p>Oregon: *NO Washington: *NO</p> <p>*(NTWC will call OR and WA who then relays to the counties)</p>		
Tsunami Watch	NTWC-Driven	<ul style="list-style-type: none"> <li>- Issued to alert the public of a tsunami event that may later impact the watch area</li> <li>- Earthquake magnitude &gt; 7.8: the watch area will be for locations along the coast with wave arrival times 3-6 hours of the epicenter</li> <li>- No watches issued for earthquake magnitudes &lt; 7.8</li> </ul>	<p>Oregon: *NO Washington: *NO</p> <p>*(NTWC will call OR and WA who then relays to the counties)</p>	<p>Oregon: YES Washington: YES</p> <p>Manual via Tsunami GUI</p>	
Tsunami Warning	NTWC-Driven	<ul style="list-style-type: none"> <li>- Issued when a potential tsunami with significant widespread inundation is imminent or expected</li> <li>- Earthquake magnitude 7.1 to 7.5: the warning will be for an area 250 km from the epicenter, extending to the nearest breakpoint (e.g. Cascade Head)</li> <li>- Earthquake magnitudes 7.5 to 7.8 (inclusive): the warning area will be for an area 500 km from the epicenter, extending to the nearest breakpoint</li> <li>- Earthquake magnitudes &gt; 7.8: the warning will be for locations along the coast with wave arrival times within 3 hours of the epicenter. Wave amplitudes are expected to be ≥ 1 meter</li> </ul>	<p>Oregon: *NO Washington: *NO</p> <p>*(NTWC will call OR and WA who then relays to the counties)</p>	<p>Oregon: YES Washington: YES</p> <p>Manual via Tsunami GUI</p>	<p>YES</p> <p>Automatic</p>
Ashfall Advisory (Land)	Coordination with VAAC & CVO	<ul style="list-style-type: none"> <li>- Coordination with Volcanic Ash Advisory Center (VAAC) and USGS Cascades Volcano Observatory (CVO) required</li> <li>- Issued for a volcano undergoing a minor eruption where the public will be affected by a limited hazard extent such as &lt;1/4" of ashfall accumulation</li> </ul>	<p>Oregon: YES Washington: YES</p> <p>Manual</p>		

<b>Ashfall Warning (Land)</b>	Coordination with VAAC & CVO	- Coordination with Volcanic Ash Advisory Center (VAAC) and USGS Cascades Volcano Observatory (CVO) required  - Issued for a volcano undergoing a major eruption where the public will be affected to a significant extent, such as $\geq 1/4$ " of ashfall accumulation, significant debris, lava or lahar flows.	Oregon: YES Washington: YES  Manual	Oregon: YES Washington: YES  Manual  At Lead Forecaster Discretion depending on magnitude of the event	
<b>Ashfall Advisory (Marine)</b>	Coordination with VAAC & CVO	- Coordination with Volcanic Ash Advisory Center (VAAC) and USGS Cascades Volcano Observatory (CVO) required  <1/4" of ashfall accumulation, pumice rafts, or some floating debris.	Oregon: YES Washington: YES  Manual		
<b>Ashfall Warning (Marine)</b>	Coordination with VAAC & CVO	- Coordination with Volcanic Ash Advisory Center (VAAC) and USGS Cascades Volcano Observatory (CVO) required  $\geq 1/4$ " of ashfall accumulation, significant debris, lava, or lahar flows.	Oregon: YES Washington: YES  Manual	Oregon: YES Washington: YES  Manual  At Lead Forecaster Discretion depending on magnitude of the event	

3rd Party Hazard	Lead Time / Duration Guidance	Criteria (including IMPACTS)	NAWAS	NOAA Weather Radio TONE/SAME	WEA
<b>Air Stagnation Advisory</b>	Lead Time: Up to 36 hours	- Persistent surface inversions (especially sharp ones)  - NW Oregon and SW Washington mixing level <2000 ft  - Transport winds <5 kts  - No precipitation expected  - Above conditions to last 48+ hours			
<b>Air Quality Alert</b>	Partner-Driven	Requested by Department of Environmental Quality (DEQ) or Lane Regional Air Protection Agency (LRAPA)			
<b>Special Avalanche Bulletin</b>	Partner-Driven	Requested by Northwest Avalanche Center (NWAC)			
<b>Avalanche Watch</b>	Partner-Driven	Requested by Northwest Avalanche Center (NWAC)	Oregon: NO Washington: YES - WFO Seattle has the responsibility to relay products to WAZ019  Manual		
<b>Avalanche Warning</b>	Partner-Driven	Requested by Northwest Avalanche Center (NWAC)	Oregon: NO Washington: YES - WFO Seattle has the responsibility to relay products to WAZ019  Manual		