

Quick Look at Atmospheric River Forecast to Impact Pacific Northwest *Updated: 21 February 2025*

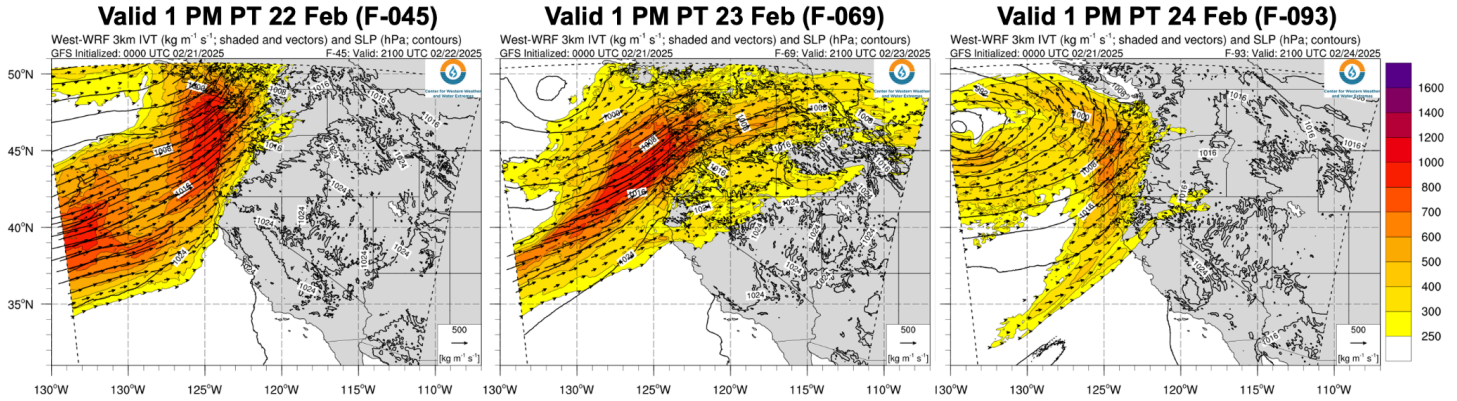
A strong atmospheric river (AR) is forecast to bring heavy precipitation to Washington and Oregon this weekend.

Forecast Highlights:

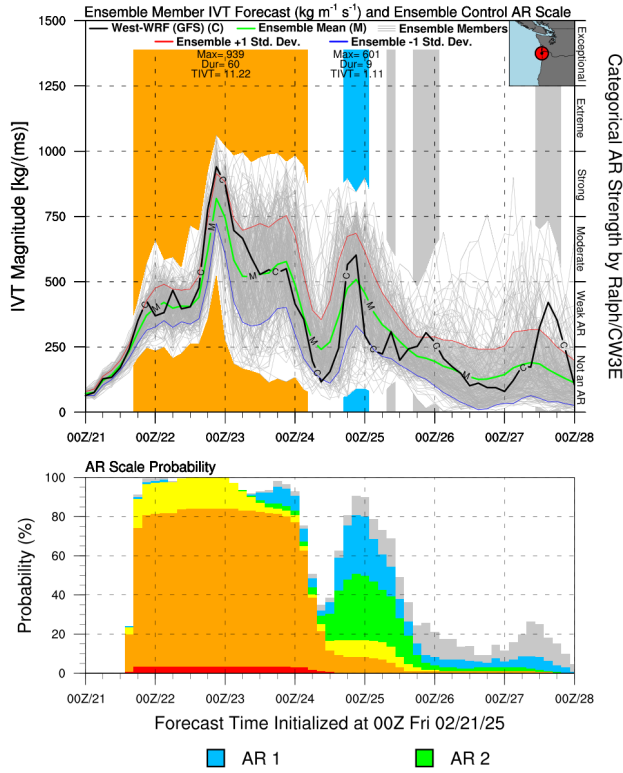
- An AR associated with a narrow plume of moisture extending from west of Hawaii is forecast to make landfall over the Pacific Northwest tomorrow (Sat 22 Feb).
- The initial pulse of moisture transport within this AR is forecast to bring strong AR conditions ($IVT \geq 750 \text{ kg m}^{-1} \text{ s}^{-1}$) to much of coastal Washington and Oregon.
- A second pulse of moisture transport associated with a mesoscale frontal wave may bring another period of strong AR conditions to coastal Oregon on Sun 23 Feb. There is still considerable uncertainty in the timing and magnitude of this second IVT pulse.
- After the main AR dissipates, a second weaker AR associated with a low-pressure system is forecast to bring additional precipitation to the region on Mon 24 Feb into Tue 25 Feb.
- CW3E's West-WRF deterministic model is forecasting an AR 4 (based on the Ralph et al. AR Scale) over coastal Washington and Oregon. While there is considerable uncertainty in the duration of AR conditions, >80% of ensemble members are forecasting an AR 4 or greater in northern coastal Oregon.
- The NWS Weather Prediction Center (WPC) is forecasting at least 3–7 inches of precipitation in the Pacific Coast Ranges and Cascades during the next 7 days. Higher amounts are possible in the Olympic Mountains and Washington Cascades.
- A significant portion of the precipitation from the main AR is forecast to fall as rain due to high freezing levels (>6,000 feet), leading to increased runoff and potential for rain-on-snow.
- Forecast uncertainty in the evolution of both ARs is contributing to forecast uncertainty in precipitation over western Washington.
- More than 50% of GEFS members are forecasting at least 6 inches of mean areal precipitation in the Howard Hanson Dam catchment, but the ensemble spread ranges from ~4 inches to ~8 inches. Meanwhile, 75% of EPS members are forecasting <5 inches and 75% of West-WRF ensemble members are forecasting <4 inches of mean areal precipitation.
- The WPC has issued **marginal risk ($\geq 5\%$; level 1 of 4)** EROs Sat 22 Feb into early Tue 25 Feb for coastal Washington/Oregon and areas along the western side of the Cascades. A **marginal risk** ERO has also been issued for northern Idaho and northwestern Montana Sun 23 Feb into early Mon 24 Feb due to potential for heavy rain and snowmelt associated with the inland penetration of the main AR.
- Numerous stream gages in western Washington are forecast to rise above action/bankfull stage over the next 10 days. The Snoqualmie River near Carnation is forecast to exceed minor flood stage and crest just below moderate flood stage on Sun 24 Feb.

Stay alert to official NWS forecasts, watches, and warnings at [weather.gov](https://www.weather.gov) and follow guidance from local emergency management officials

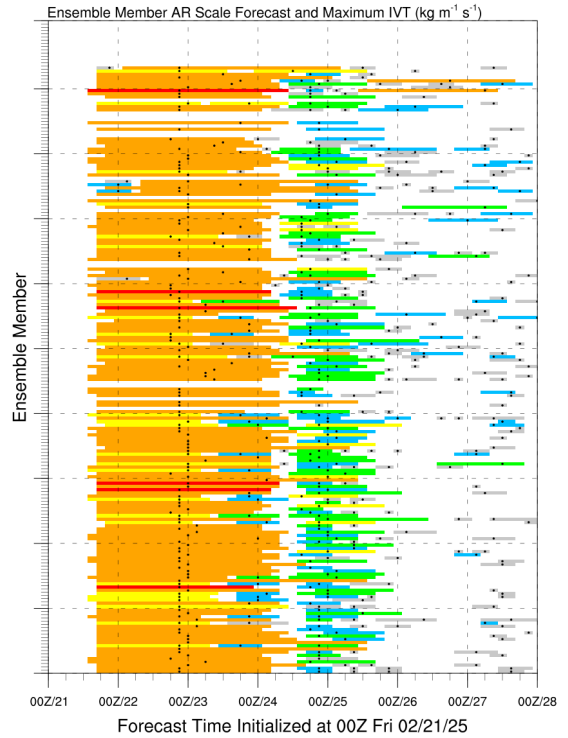
West-WRF GFS IVT & SLP Forecasts

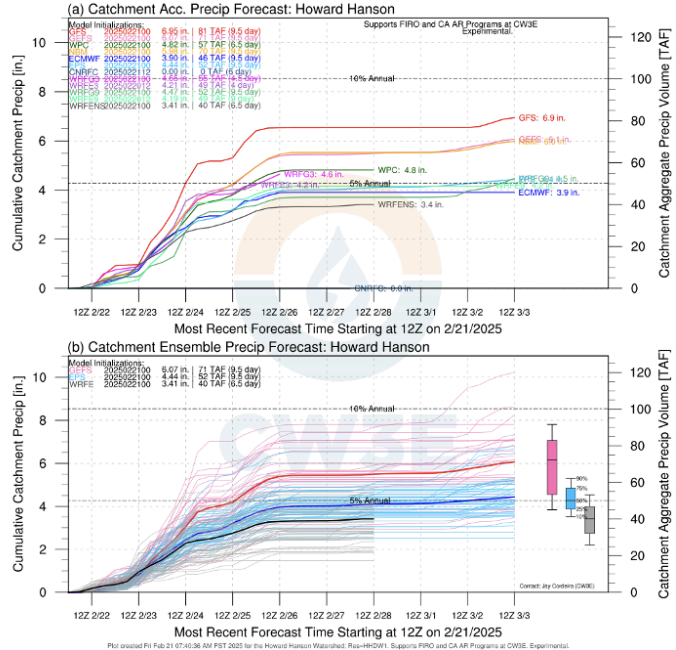
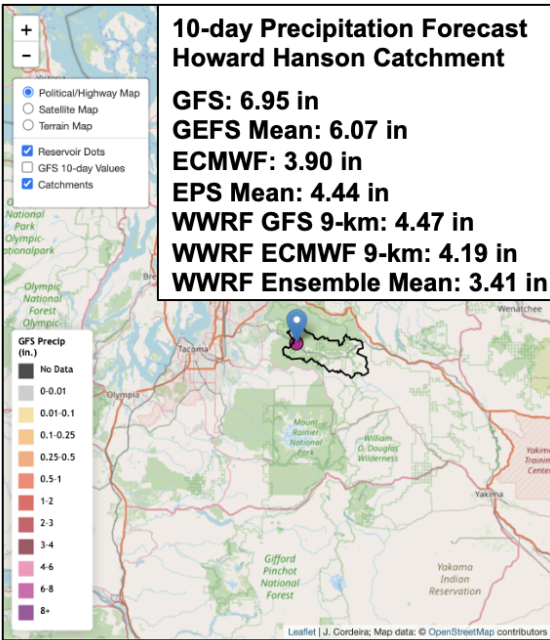
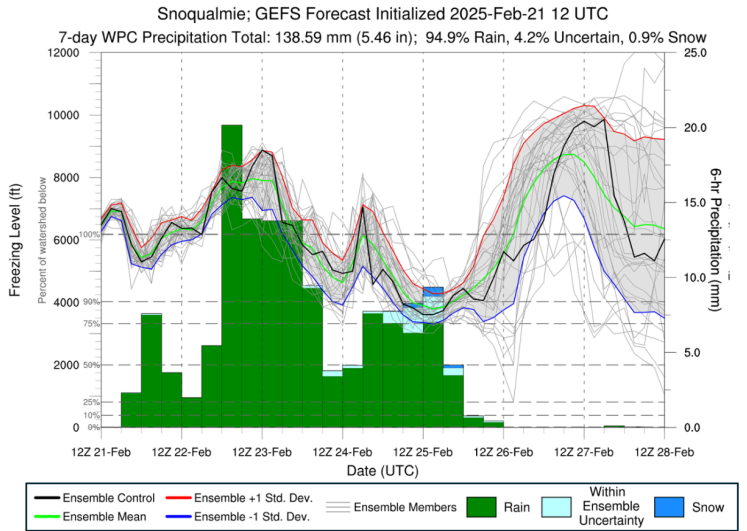
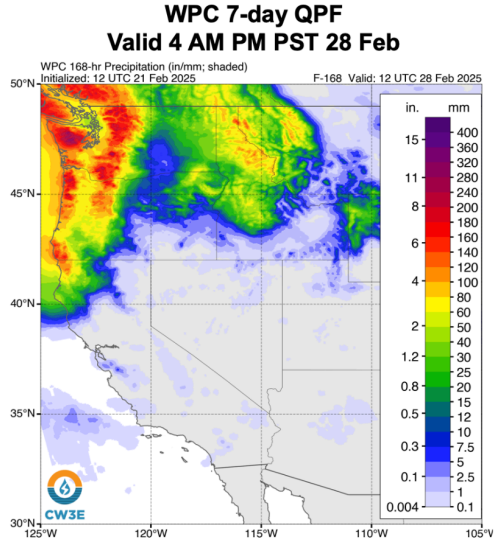


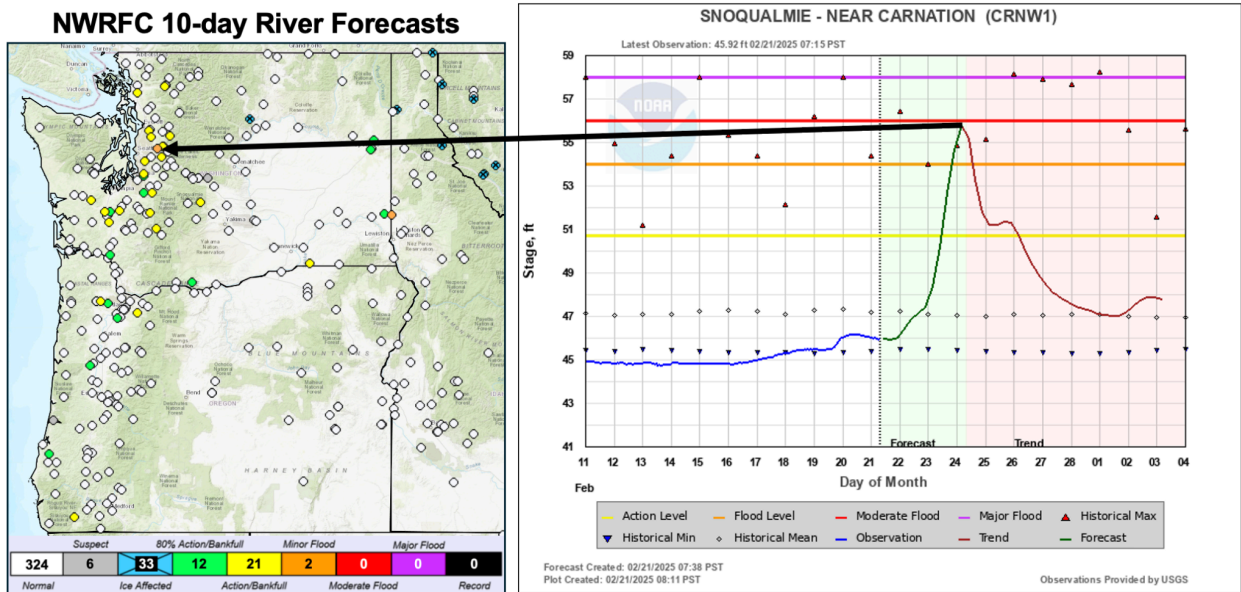
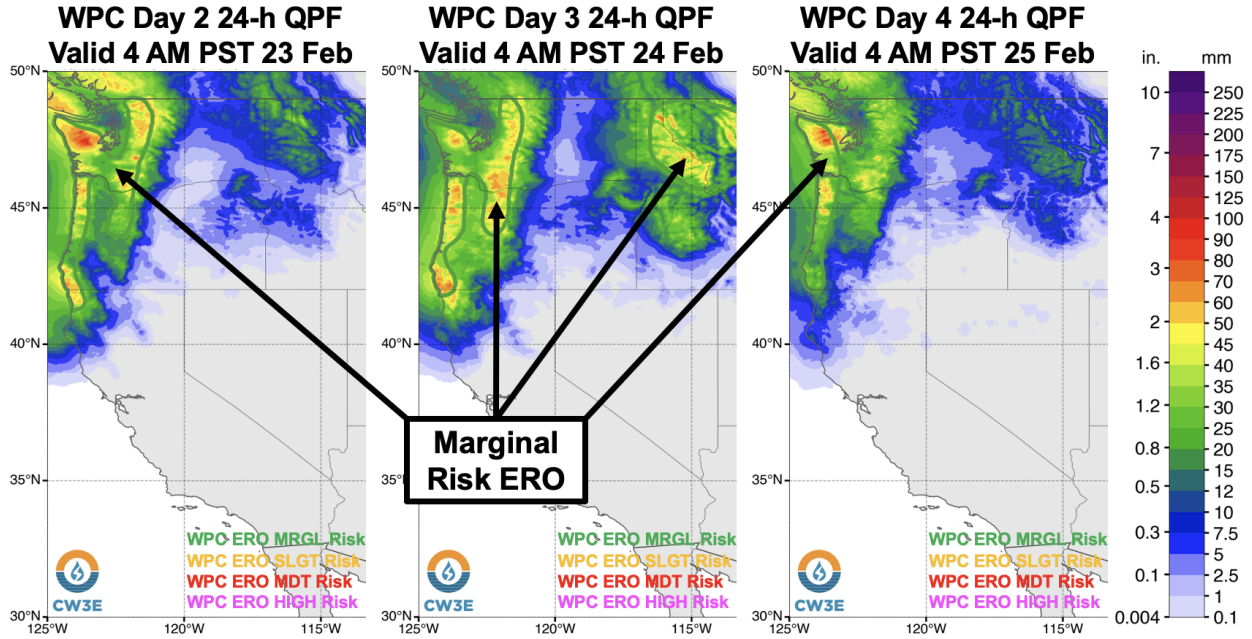
West-WRF Ensemble Initialized: 00Z Fri 02/21/25



Location: 46°N 124°W







Additional Considerations:

- Visit nwrfc.noaa.gov/ for specific river and stream forecasts and weather.gov/ for point specific watches, warnings, and forecasts.

In-depth AR forecasts products can be found here:

<https://cw3e.ucsd.edu/iwv-and-ivt-forecasts/>

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