

Quick Look at the Upcoming AR Activity and Impacts over the US West Coast

Updated: 18 March 2025

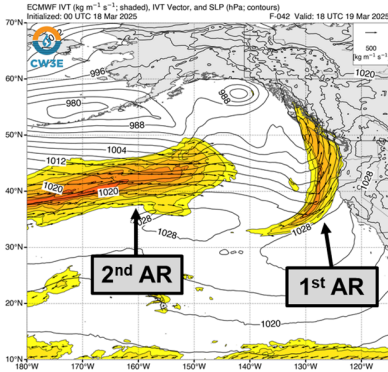
Two weak atmospheric rivers (ARs) are forecast to move onshore over the PNW later this week, followed by a potential long-duration AR this weekend into early next week, although uncertainty remains as to the exact location, duration, and strength of the third system.

Forecast Highlights:

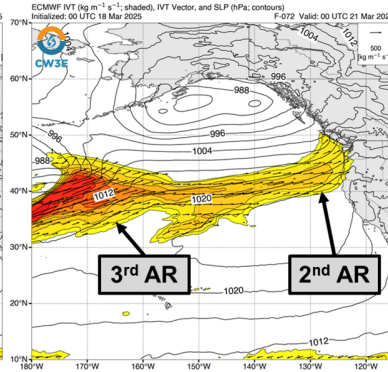
- A decaying AR with south-southwesterly IVT is forecast to quickly move over the Pacific Northwest on Wed 19 Mar, followed by a short-duration, weak AR on Thu 20 Mar associated with westerly IVT $> 250 \text{ kg m}^{-1} \text{ s}^{-1}$ that is forecast to last ~ 30 hours.
- A 3rd AR is forecast to move onshore late Sat 22 Mar over the PNW and continue through early next week, although uncertainty remains in both the GFS and ECMWF model as to the exact location, duration, and strength of this AR.
- These AR features will be kept primarily over the northern US West Coast due to ridging that is forecast to set up offshore of California, keeping the southern half of the USWC drier.
- CW3E's AR Landfall Tool displaying the difference between the GFS and ECMWF probability of IVT $> 250 \text{ kg m}^{-1} \text{ s}^{-1}$ over the USWC show much higher probabilities of AR conditions in WA/OR in EPS versus GEFS for the period between 22-24 Mar.
- Highlighting forecast uncertainty with the 3rd AR, for a coastal point in northern Oregon (45.5 N, 124.0 W), the 00Z GEFS is forecasting only low confidence ($\sim 25\%$ probability) in AR 1 conditions, whereas the 00Z EPS is forecasting high confidence in at least AR 2 conditions ($> 70\%$ probability) and moderate confidence in AR 3 conditions ($\sim 40\%$ probability).
- The NWS Weather Prediction Center (WPC) is forecasting 7-day precipitation totals (period ending 5 AM PT Tue 25 Mar) of 4–6 in. along the coastal mountains of Oregon & Washington and along the Cascades, with areas of > 6 in. forecast over terrain on the Olympic Peninsula.
- NWS WPC has issued a **marginal risk ($\geq 5\%$; level 1 of 4)** excessive rainfall outlook (ERO) over coastal northwest Oregon and Washington following the 2nd AR landfall, highlighting the potential hydrologic impact of multiple days of rainfall in the region.
- Model quantitative precipitation forecasts also highlight the forecast uncertainty with the 3rd AR. In coastal Washington over the Queets-Quinault watershed the ECMWF/EPS (~ 8.5 in.) are forecasting 10-day precipitation almost twice that of the GFS/GEFS (~ 4.5 in.). Similar forecast discrepancies are seen inland over the Duwamish watershed where the ECMWF/EPS (~ 4.5 in.) are also forecasting higher precipitation totals as compared to the GFS/GEFS (~ 3 in.).

Stay tuned to the CW3E webpage for a full AR Update

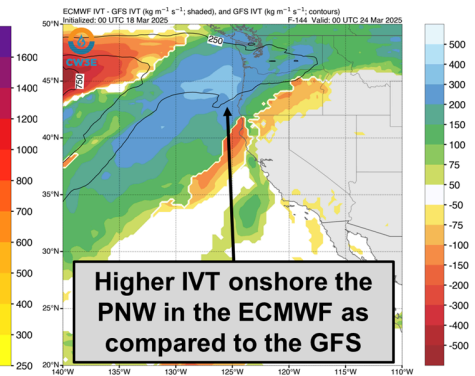
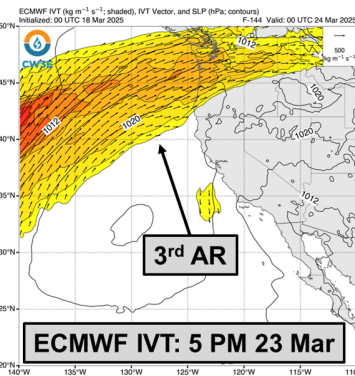
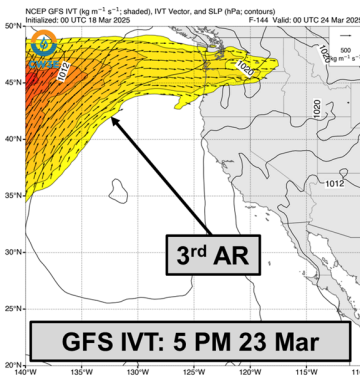
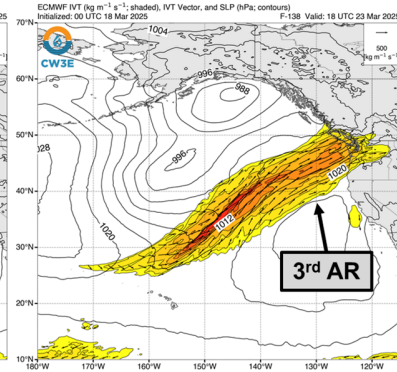
ECMWF IVT & SLP: 11 AM Wed 19 Mar



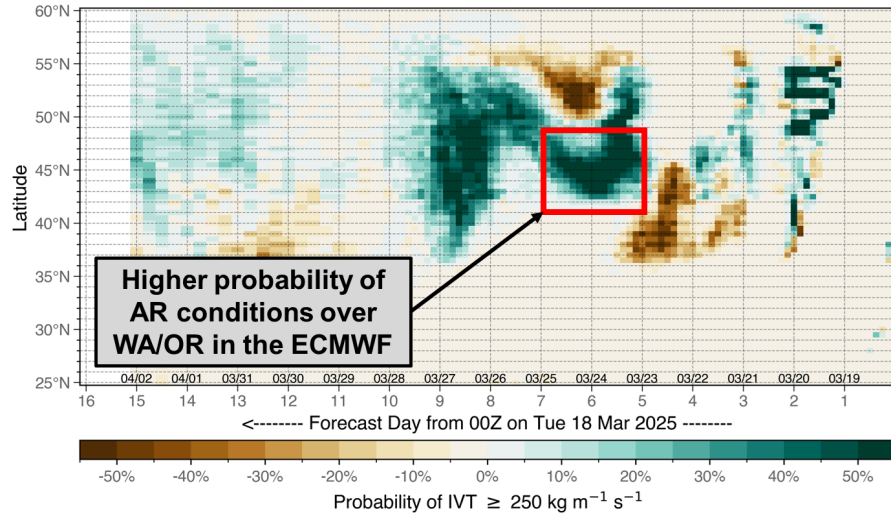
ECMWF IVT & SLP: 5 PM Thu 20 Mar



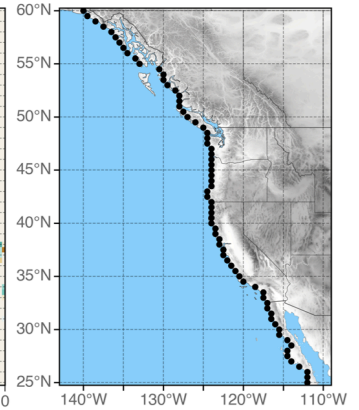
ECMWF IVT & SLP: 11 AM Sun 23 Mar

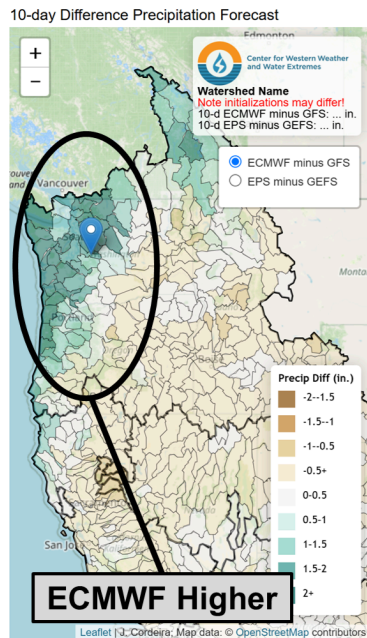
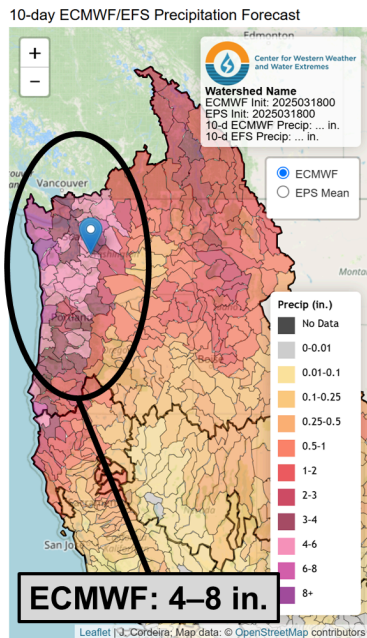
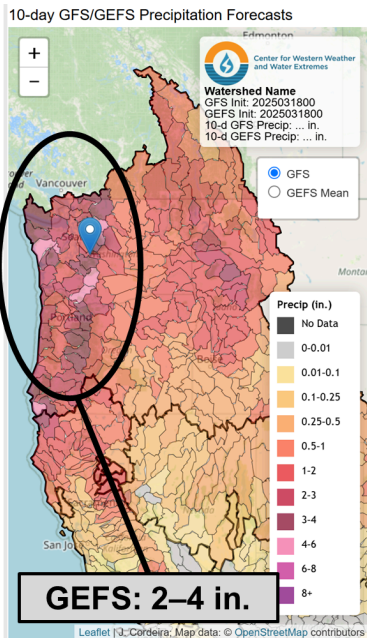
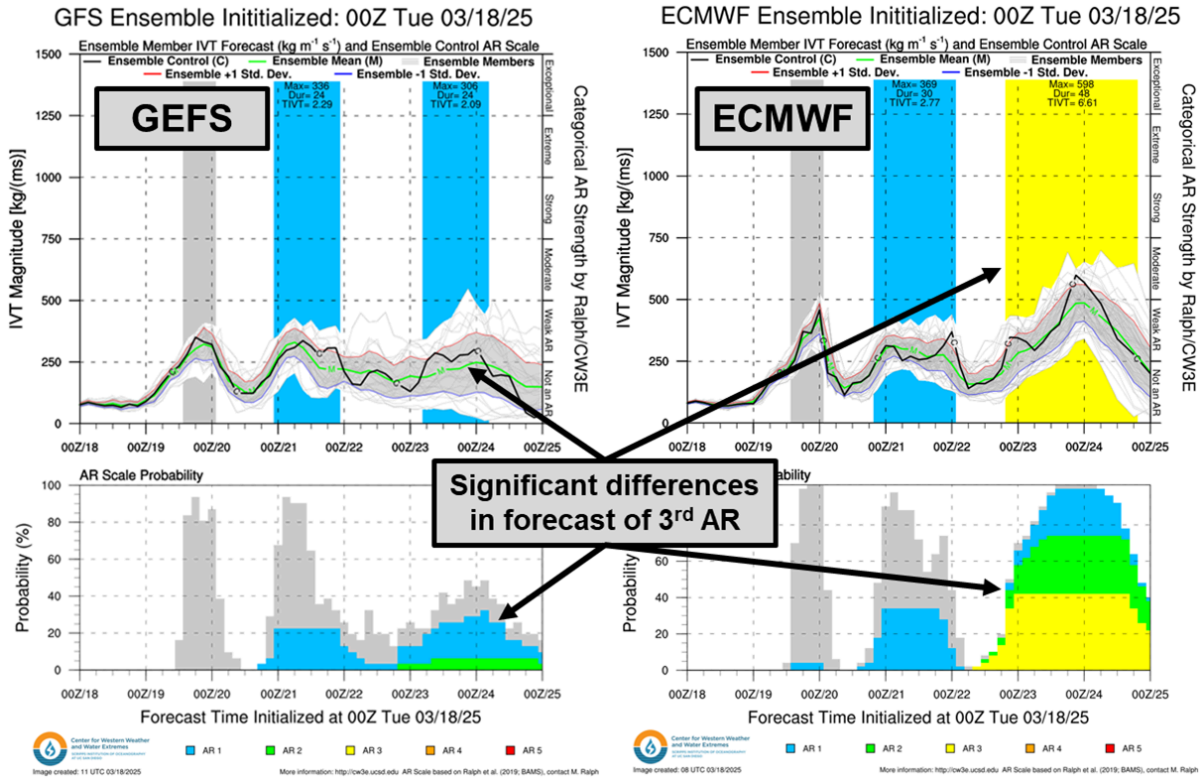


CW3E AR Landfall Tool | ECMWF-GEFS

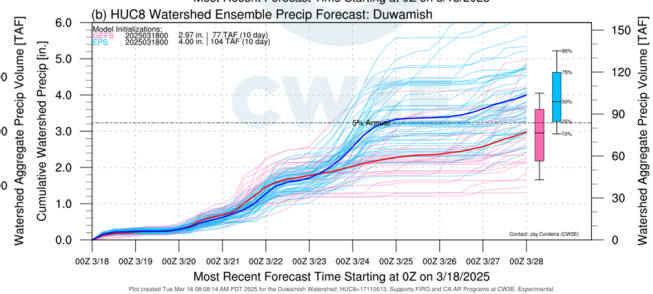
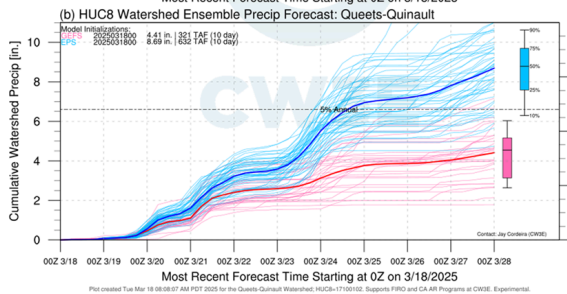
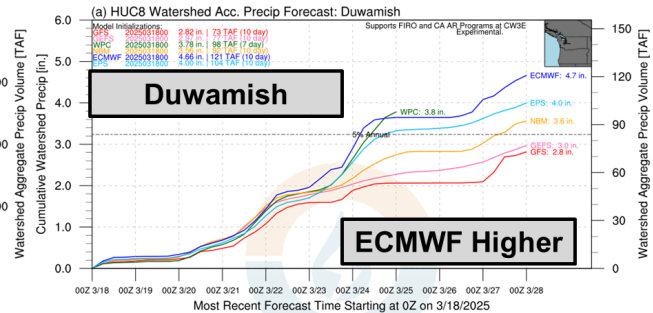
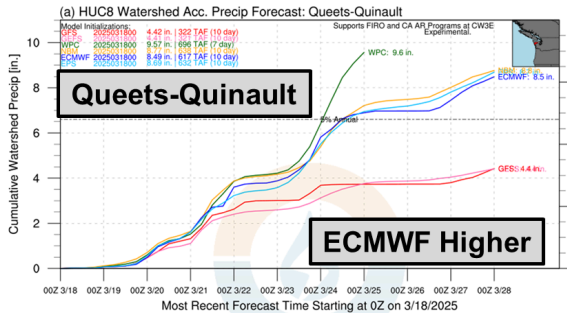
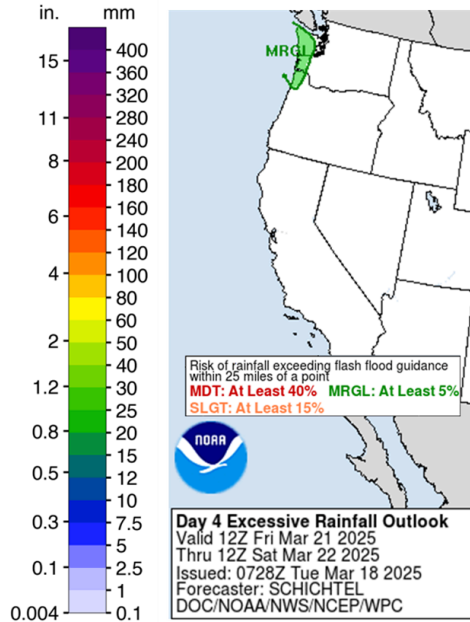
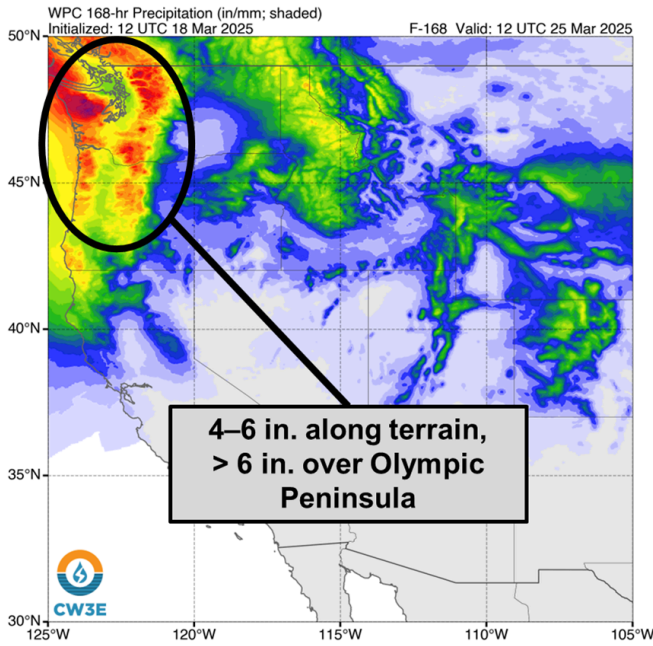


Model Run: 00Z Tue 18 Mar 2025





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Additional Considerations:

Visit <https://www.weather.gov/nwrfc/> for specific river and stream forecasts and <https://www.weather.gov/> for point specific forecasts.

In-depth AR forecasts products can be found here:

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

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