

Quick Look at Atmospheric River Impacting California

Updated: 13 December 2024

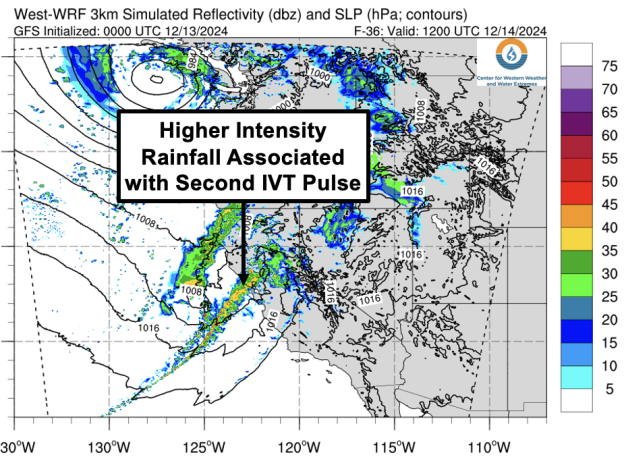
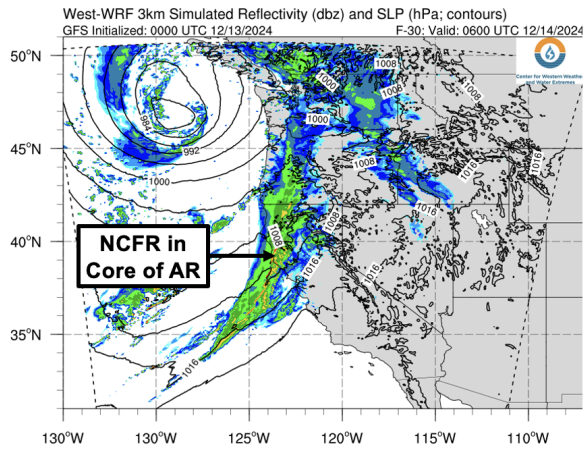
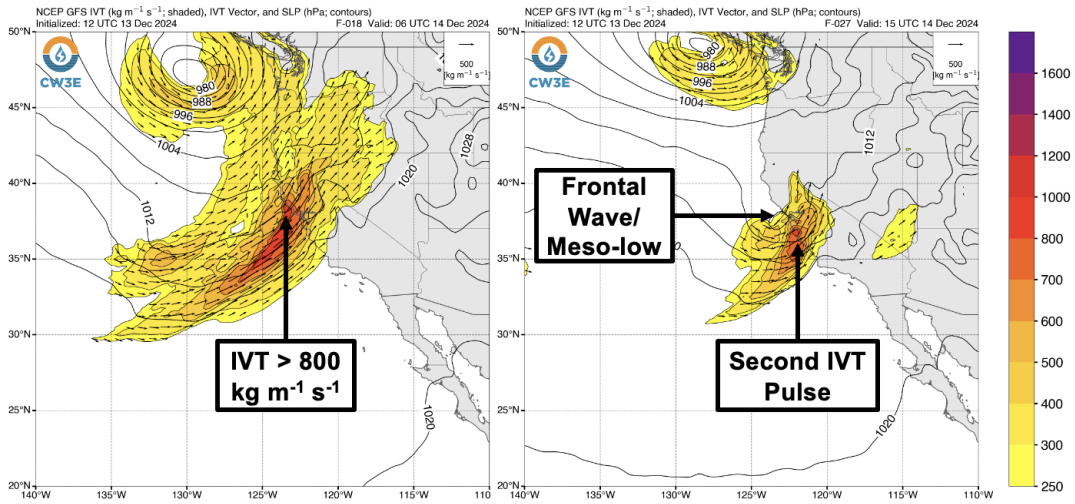
An atmospheric river (AR) will bring heavy rain and mountain snow to portions of Northern and Central California today and tomorrow.

Forecast Highlights:

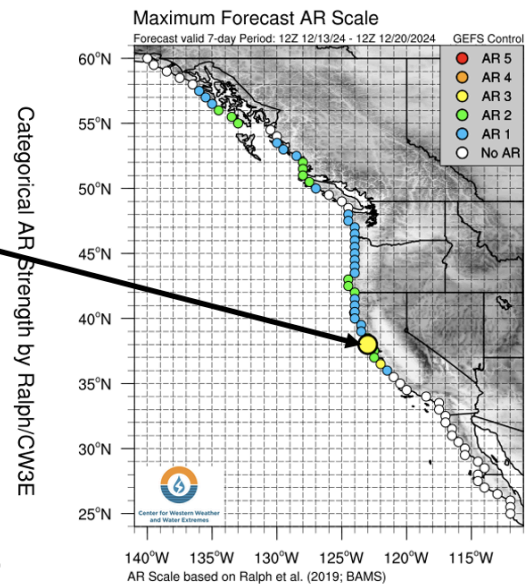
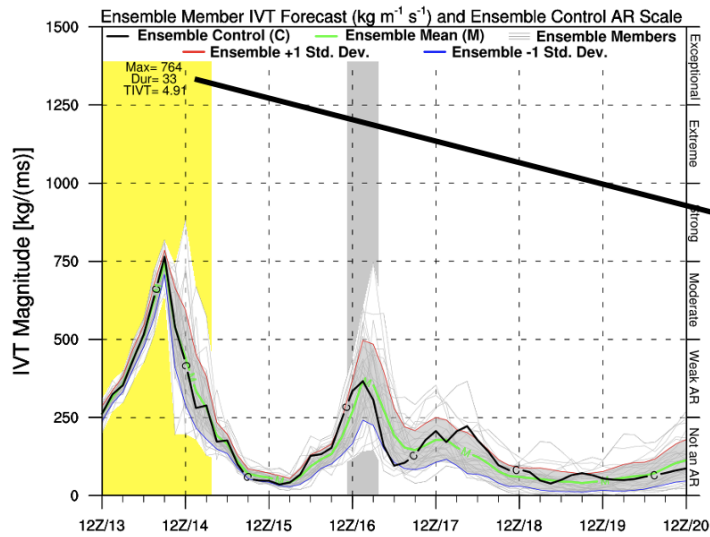
- The AR will make landfall today south of a strong low-pressure system and bring moderate-to-strong AR conditions ($IVT \geq 500 \text{ kg m}^{-1} \text{ s}^{-1}$) to coastal Northern California.
- After the AR moves onshore and begins to weaken, a frontal wave is forecast to develop near the tail of the AR, resulting in a brief re-intensification of the AR south of the Bay Area. There is still some uncertainty regarding the evolution of this frontal wave, as well as the magnitude of the second IVT pulse.
- CW3E's regional West-WRF model is indicating potential for the formation of a narrow cold-frontal rainband (NCFR) in the core of the AR as it passes through Northern California, as well as a second period of higher-intensity rainfall associated with the frontal wave and second IVT pulse.
- The 12Z GEFS control member is forecasting AR 2–3 conditions (based on the Ralph et al. 2019 AR Scale) along the coast between Sonoma and Monterey Counties. About 50% of GEFS members are forecasting an AR 3 in Marin County.
- The NWS Weather Prediction Center (WPC) is forecasting 3–7 inches of precipitation in the Northern California Coast Ranges, Southern Cascades, and Northern Sierra Nevada today through Sun 15 Dec, as well as 1–3 inches of precipitation in the immediate Bay Area, Sacramento Valley, and Central Sierra Nevada.
- The WPC has issued a **slight risk ($\geq 15\%$; level 2 of 4)** excessive rainfall outlook (ERO) over the Northern California Coast Ranges, including the Russian River watershed. A **marginal risk ($\geq 5\%$; level 1 of 4)** ERO has been issued for the Sacramento Valley and Northern Sierra Nevada foothills.
- Twelve stream gages in California are forecast to rise above action/monitor stage, and two stream gages are forecast to rise above minor flood stage. The California–Nevada River Forecast Center is showing a 59% probability that the Russian River at Hopland will exceed minor flood stage.
- Compared to the November AR event, snow levels are expected to be lower during this storm. The 12Z GEFS is forecasting freezing levels to drop below 5,000 feet later today in the North Fork Feather watershed, with a significant portion of event precipitation likely to fall as snow within the watershed.
- At least 1–3 feet of snow are forecast in the higher terrain of the Klamath Mountains, Southern Cascades, and Northern and Central Sierra Nevada. Winter Storm Warnings have been issued for these areas, with major-to-extreme winter storm impacts expected.

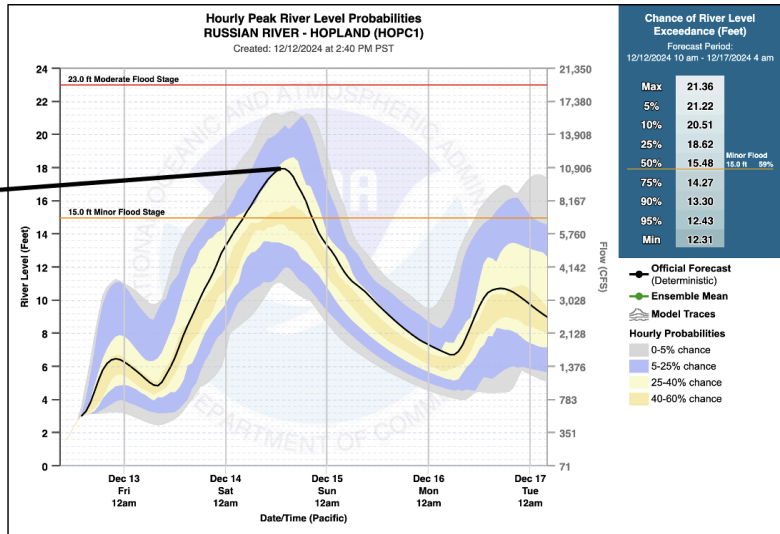
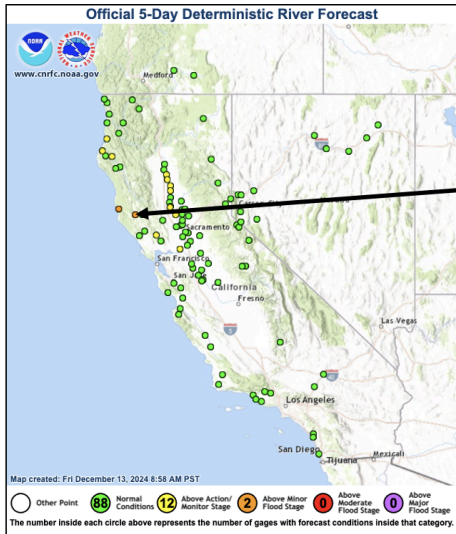
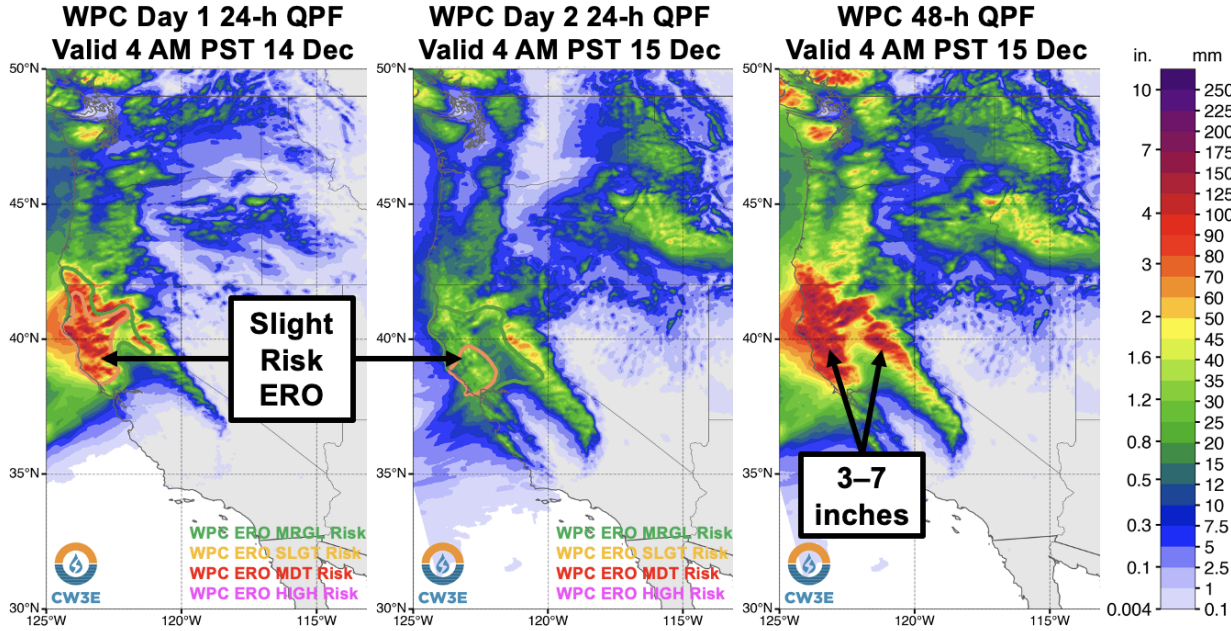
Stay alert to official NWS forecasts, watches, and warnings at [weather.gov](https://www.weather.gov) and follow guidance from local emergency management officials

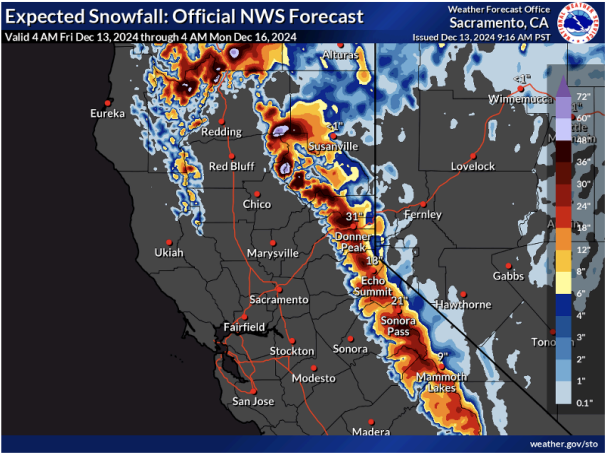
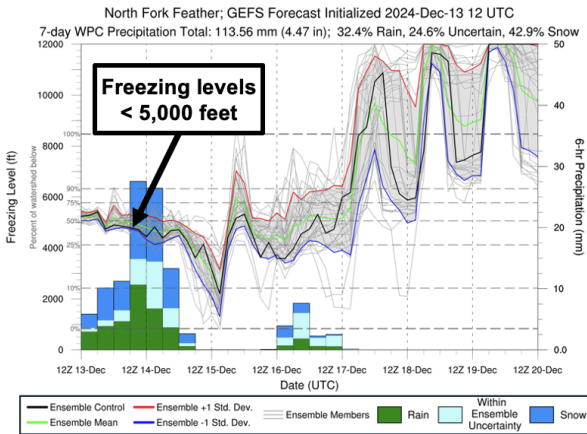
GFS IVT & SLP Forecasts: Valid 10 PM PST 13 Dec (F-018) and 7 AM PST 14 Dec (F-027)



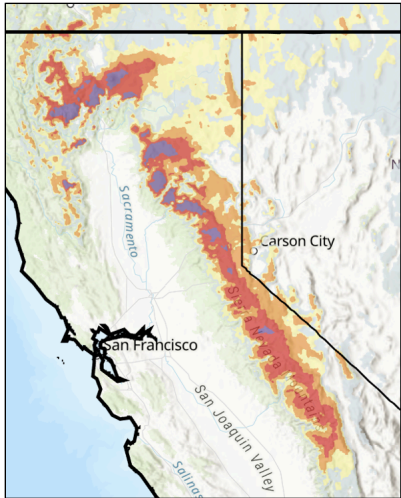
GFS Ensemble Initialized: 12Z Fri 12/13/24





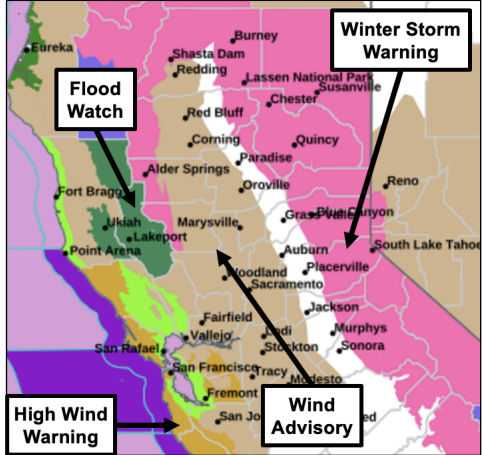


WPC Winter Storm Severity Index
Valid: 5 AM PST 13 Dec – 4 AM PST 16 Dec



Potential Winter Storm Impacts	
	Winter Weather Area Expect Winter Weather. • Winter driving conditions. Drive carefully.
	Minor Impacts Expect a few inconveniences to daily life. • Winter driving conditions. Use caution while driving.
	Moderate Impacts Expect disruptions to daily life. • Hazardous driving conditions. Use extra caution while driving. • Closures and disruptions to infrastructure may occur.
	Major Impacts Expect considerable disruptions to daily life. • Dangerous or impossible driving conditions. Avoid travel if possible. • Widespread closures and disruptions to infrastructure may occur.
	Extreme Impacts Expect substantial disruptions to daily life. • Extremely dangerous or impossible driving conditions. Travel is not advised. • Extensive and widespread closures and disruptions to infrastructure may occur. • Life-saving actions may be needed.

NWS Watches, Warnings, & Advisories



Additional Considerations:

- Visit cnrfc.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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