

CW3E Winter Storm Outlook: 13 February 2026

Multiple Storms to Bring Rain and Mountain Snow to California

- Multiple mid-level troughs are forecast to propagate southward and deepen near the US West Coast over the next several days, bringing unsettled weather to California.
- A weak atmospheric river (AR) is forecast to develop downstream of the first trough and bring a brief period of AR conditions to portions of central and southern California on Mon 16 Feb.
- About 70% of West-WRF ensemble members are forecasting an AR 1 or greater (based on the Ralph et al. 2019 AR Scale) over San Diego County, but there is considerable uncertainty in the magnitude of peak IVT.
- While moisture in the vicinity of the second trough is forecast to be more limited, strong low-to-midlevel west-southwesterly flow may lead to the development of weak AR conditions along the California coast.
- The NWS Weather Prediction Center (WPC) is forecasting at least 3–7 inches of total precipitation over the Sierra Nevada, California Coast Ranges, and Transverse Ranges during the next 7 days.
- **Marginal risk** excessive rainfall outlooks (EROs) have been issued for coastal California from the Bay Area southward Mon 16 Feb into early Wed 18 Feb due to the potential for heavy rainfall from both storms.
- There is substantial uncertainty in forecast precipitation over southern California, likely due to uncertainty in the duration of the AR during the first storm, as well as the evolution of the second trough and associated corridor of enhanced moisture transport.
- Relatively low freezing levels will allow for widespread significant snowfall across the Sierra Nevada, particularly during the second storm. By Thu 19 Feb, several feet of snow are possible above 5,000 feet in Sierra Nevada, as well as in the highest elevations of the San Bernardino Mountains.
- Given the recent extended period of dry conditions, precipitation from these storms will likely be beneficial, especially over the northern and central Sierra Nevada where snowpack is currently running well-below normal.
- **Stay tuned to river/stream forecasts from the [CNRFC](#), as well as [NWS](#) watches, warnings, and advisories.**

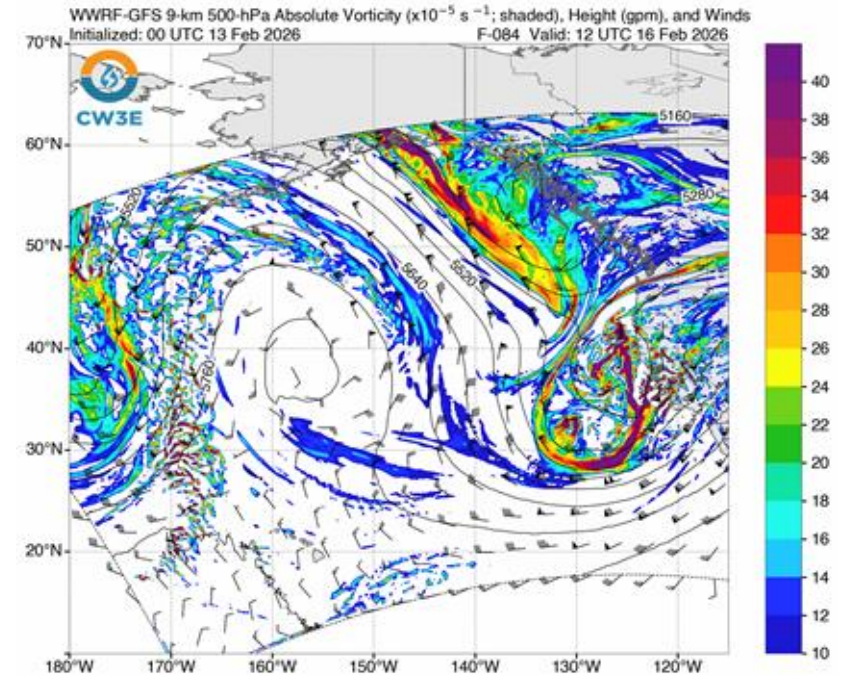
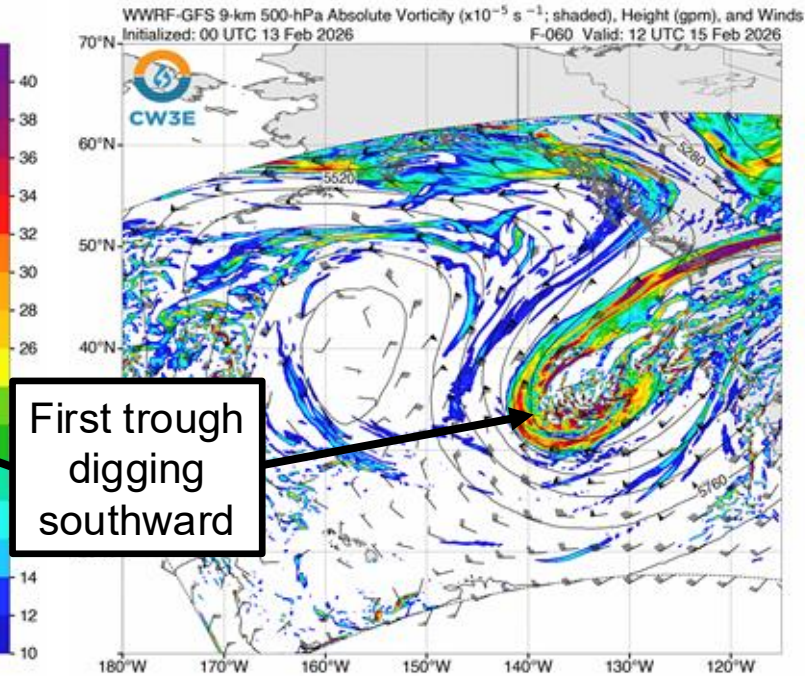
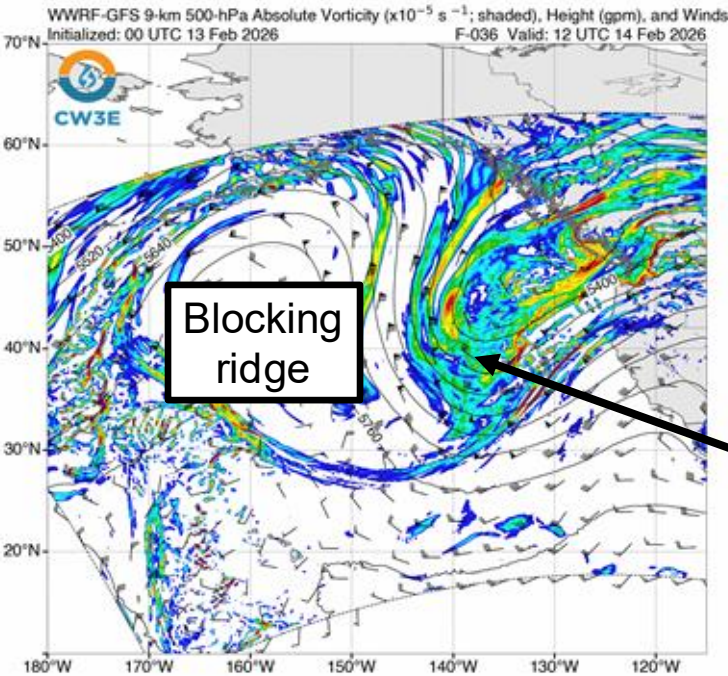
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West-WRF GFS 500-hPa Geopotential Height & Vorticity Forecasts (First Trough)

Valid: 4 AM PST 14 Feb

Valid: 4 AM PST 15 Feb

Valid: 4 AM PST 16 Feb

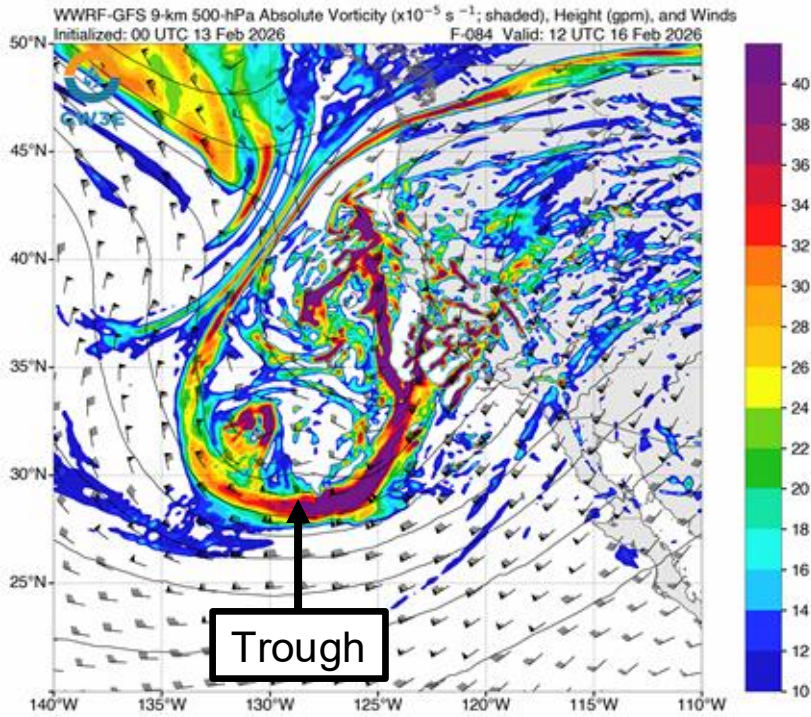


- After a prolonged stretch of unusually dry and warm conditions during much of January and early February, a shift in the large-scale pattern will bring a period of unsettled weather to the southwestern US.
- A blocking ridge near the Aleutian Islands will facilitate the deepening and southward propagation of multiple shortwave troughs across the Northeast Pacific this weekend through the middle of next week.
- The first trough is forecast to dig southward off the US West Coast during the next 48 hours, then slowly propagate eastward toward southern California, bringing an initial round of precipitation to California on Sun 15 Feb and Mon 16 Feb.

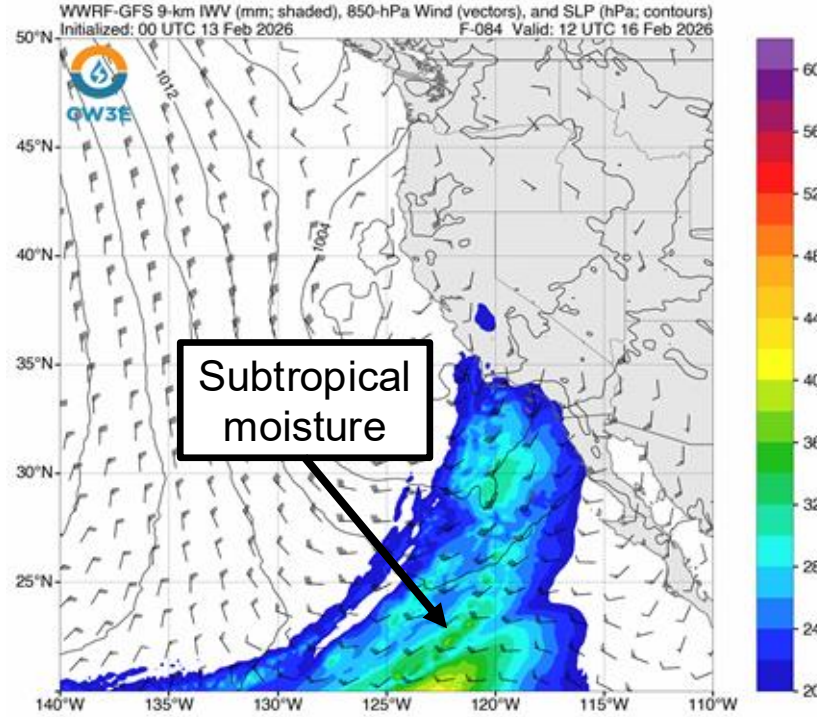
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West-WRF GFS Forecasts: Valid 4 AM PST 16 Feb (F-084)

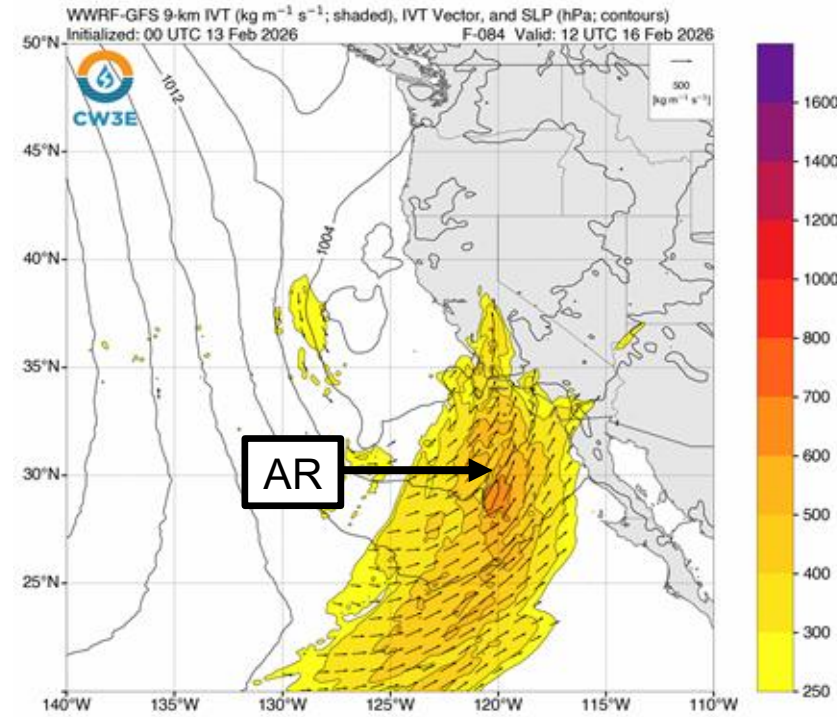
500-hPa Geopotential Height & Vorticity



IWV and 850-hPa Wind



IVT & SLP



- As the trough begins to approach southern California, strengthening southwesterly flow downstream of the trough is forecast to interact with a region of subtropical moisture, leading to the formation of an atmospheric river (AR) along the central and southern California coast early Mon 16 Dec.
- While the duration of AR conditions ($\text{IVT} \geq 250 \text{ kg m}^{-1} \text{ s}^{-1}$) is expected to be brief (<24 hours), south-southwesterly moisture flux will likely be optimal for orographic enhancement of precipitation over the Transverse Ranges.

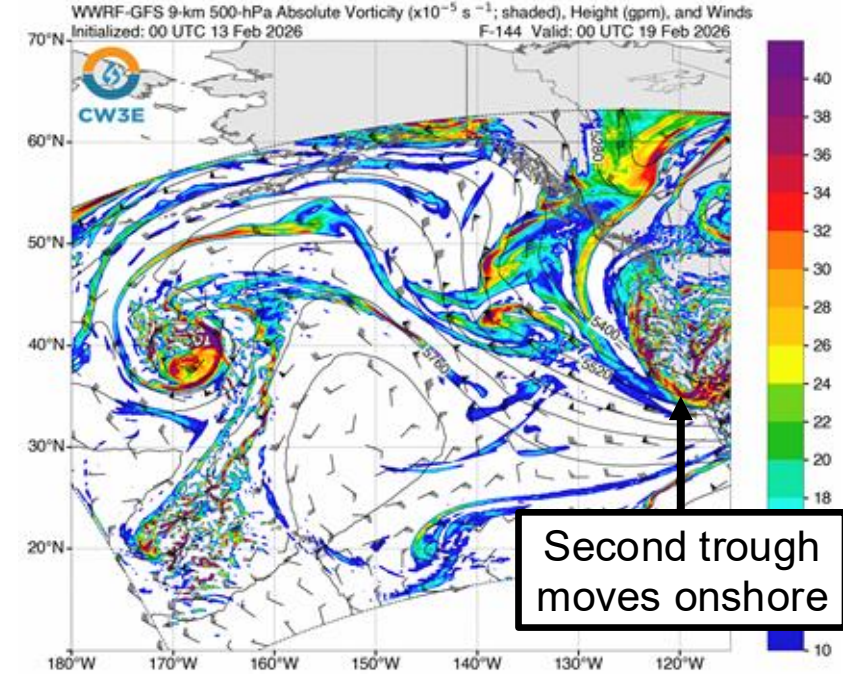
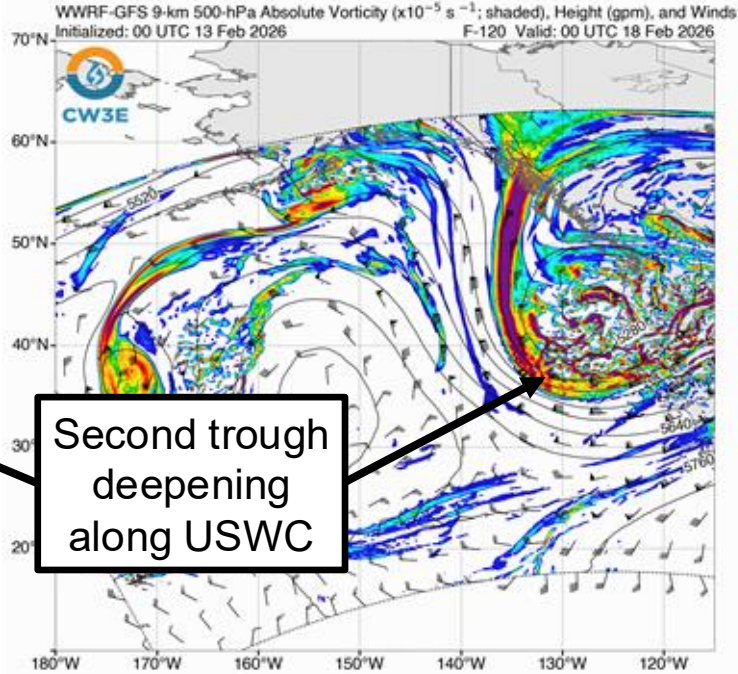
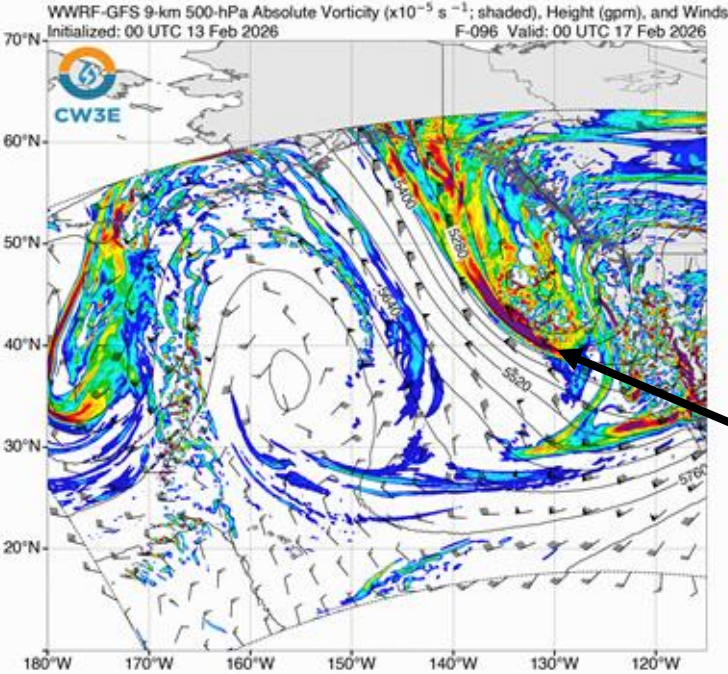
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West-WRF GFS 500-hPa Geopotential Height & Vorticity Forecasts (Second Trough)

Valid: 4 PM PST 16 Feb

Valid: 4 PM PST 17 Feb

Valid: 4 PM PST 18 Feb

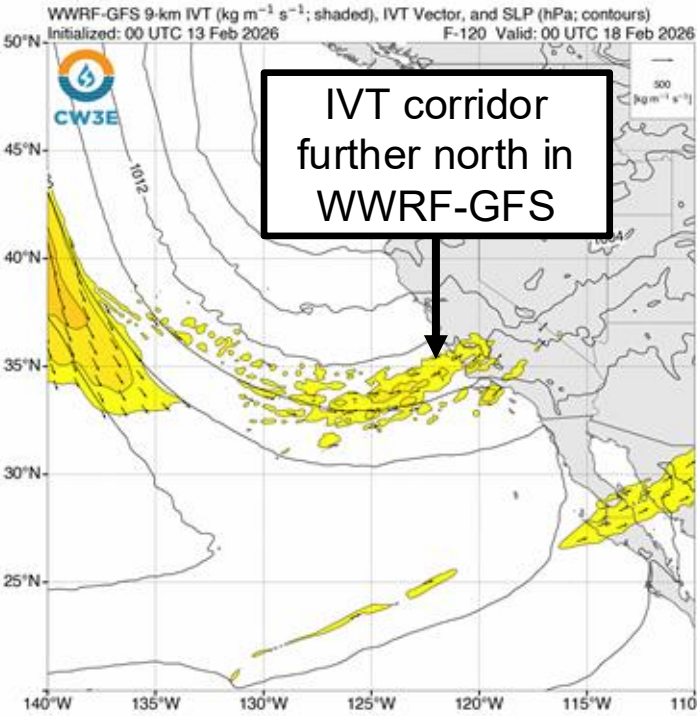


- As the first trough weakens and moves onshore, a second shortwave trough is forecast to propagate southward and deepen along the US West Coast, bringing another round of precipitation to California on Tue 17 Feb and Wed 18 Feb.
- The second trough is forecast to move onshore Wed 18 Feb, but subsequent mid-level shortwaves may produce additional light-to-moderate precipitation over California through Fri 20 Feb.

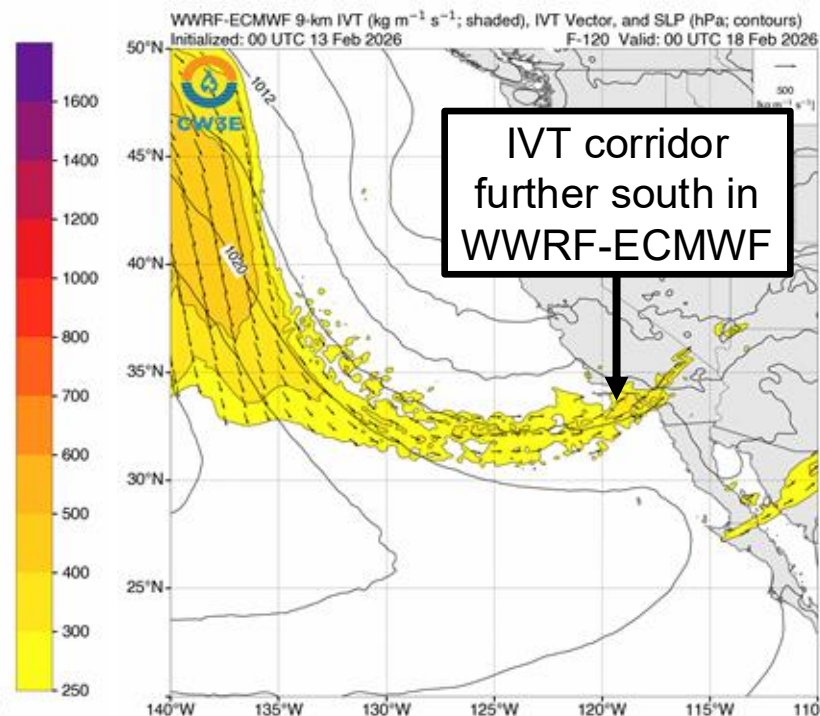
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West-WRF Model IVT Comparison: Valid 4 PM PST 17 Feb (F-120)

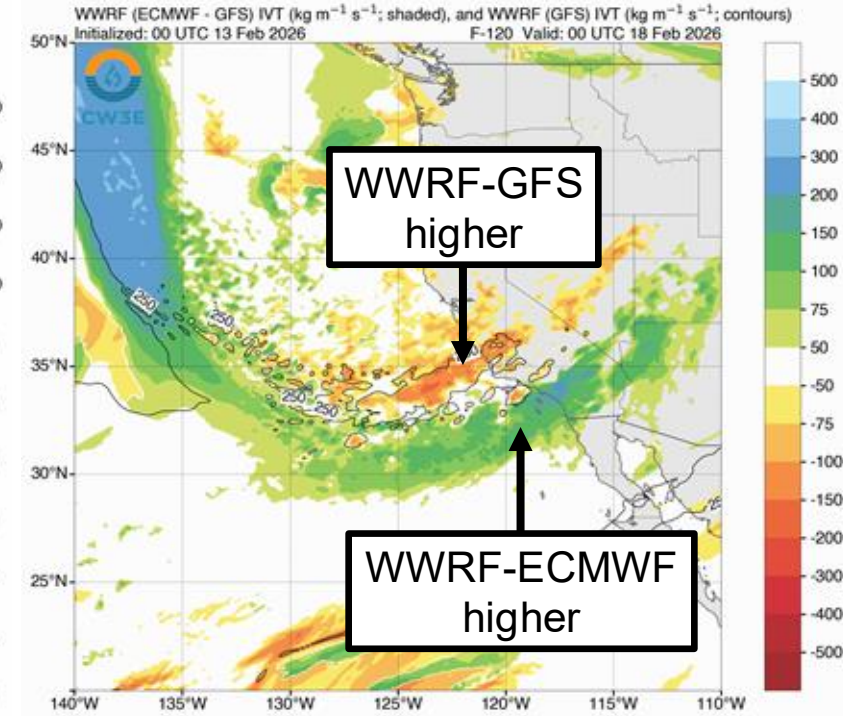
West-WRF GFS



West-WRF ECMWF



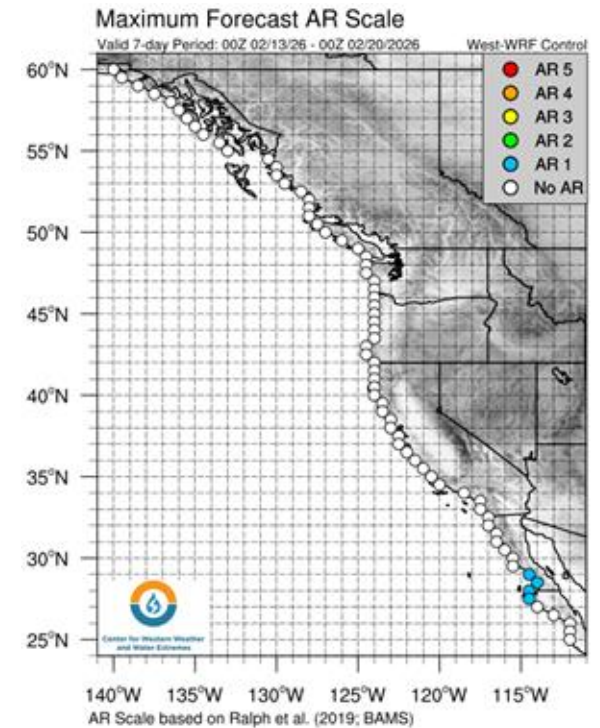
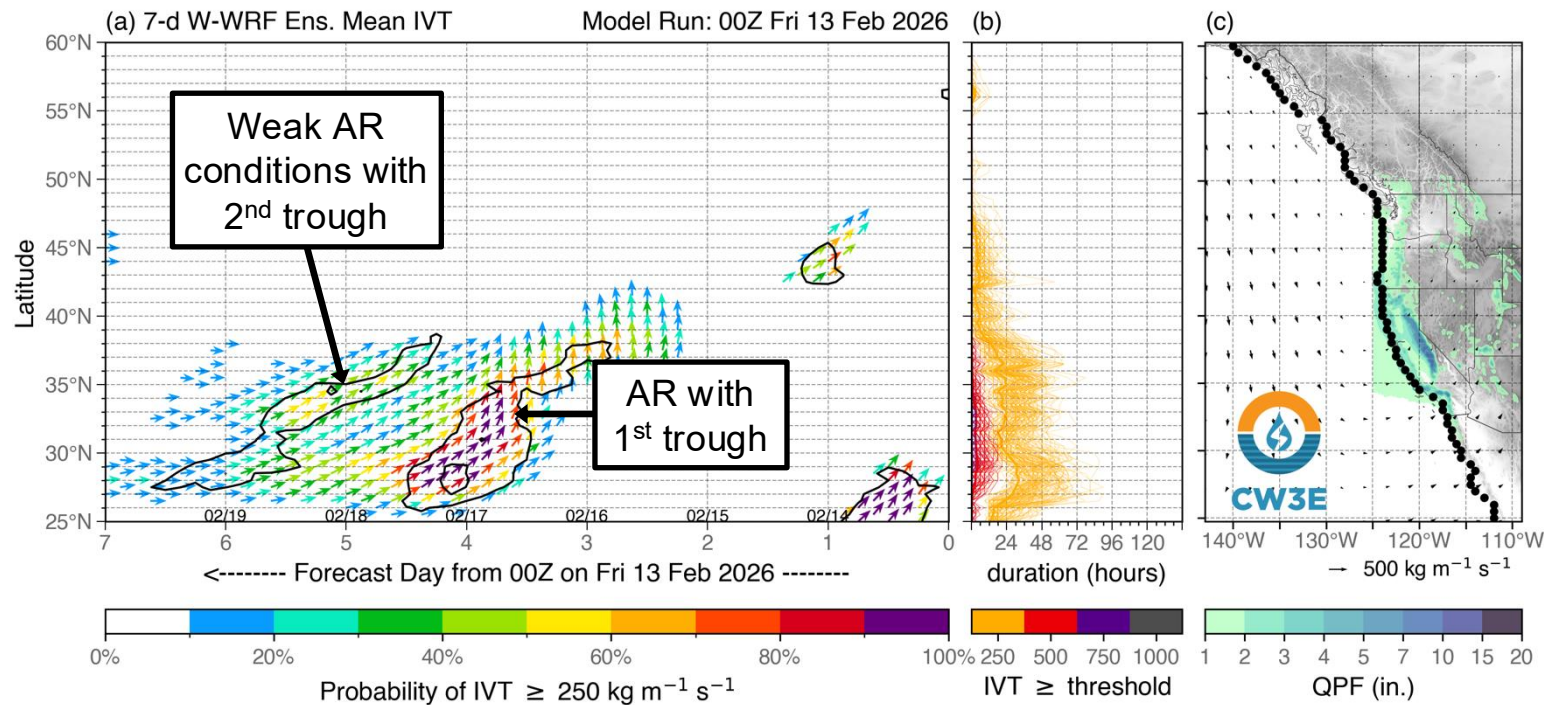
Difference (ECMWF Minus GFS)



- While moisture is expected to be much more limited during the second storm, strong low-to-midlevel west-southwesterly flow may lead to the development of weak AR conditions along the southern periphery of the second trough.
- Compared to the West-WRF model initialized with GFS, the West-WRF initialized with ECMWF is forecasting the trough and the associated narrow corridor of enhanced IVT to be positioned slightly further south on Tue 17 Feb.
- The WWRF-GFS solution favors stronger upslope moisture flux over the central California Coast Ranges and Sierra Nevada, whereas the WWRF-ECMWF solution favors stronger upslope moisture flux over the eastern Transverse Ranges and Peninsular Ranges.

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West-WRF Coastal AR Landfall Tool & Control AR Scale



Forecasts support FIRO/CA-AR Program and NSF #2052972 | Intended for research purposes only

- CW3E's AR landfall tool based on West-WRF is showing very high confidence (>90% probability) in a brief period of AR conditions over coastal southern California on Mon 16 Feb in association with the AR forecast to develop near the first trough.
- West-WRF is also showing low-to-moderate confidence (30–60% probability) in weak AR conditions over coastal central and southern California Tue 17 Feb into Wed 18 Feb as the second trough approaches the US West Coast.
- Note the south-southwesterly orientation of forecast IVT vectors within the AR on Mon 16 Feb, which is optimal for orographic precipitation enhancement in the Transverse Ranges.

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West-WRF AR Scale and IVT Forecasts: San Diego County

West-WRF Ensemble Initialized: 00Z Fri 02/13/26

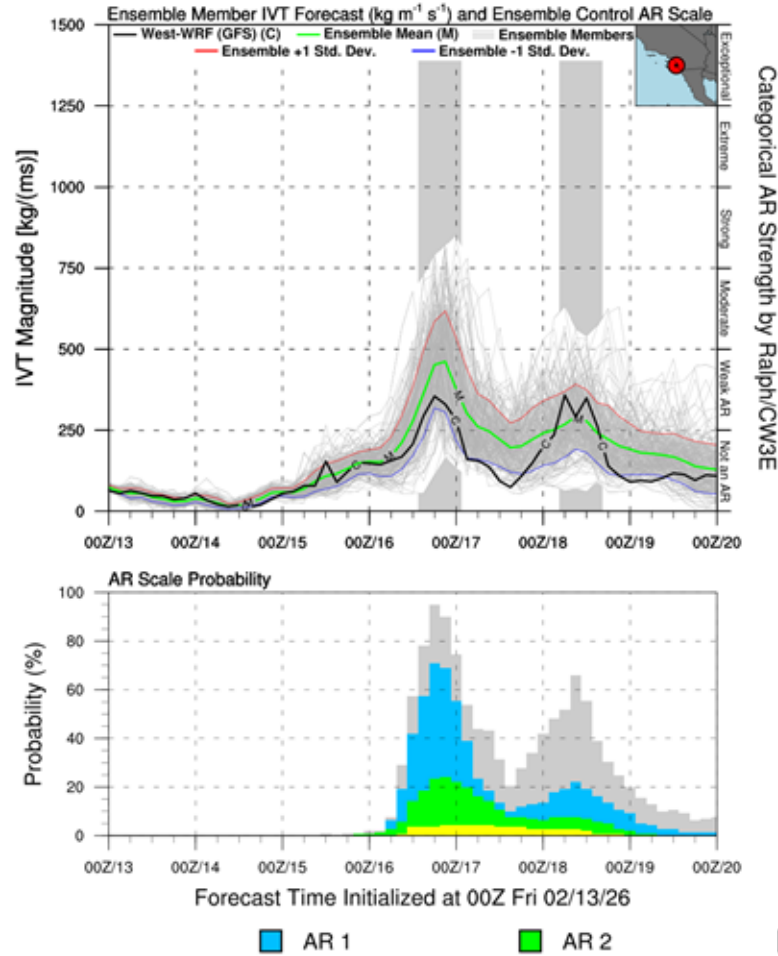
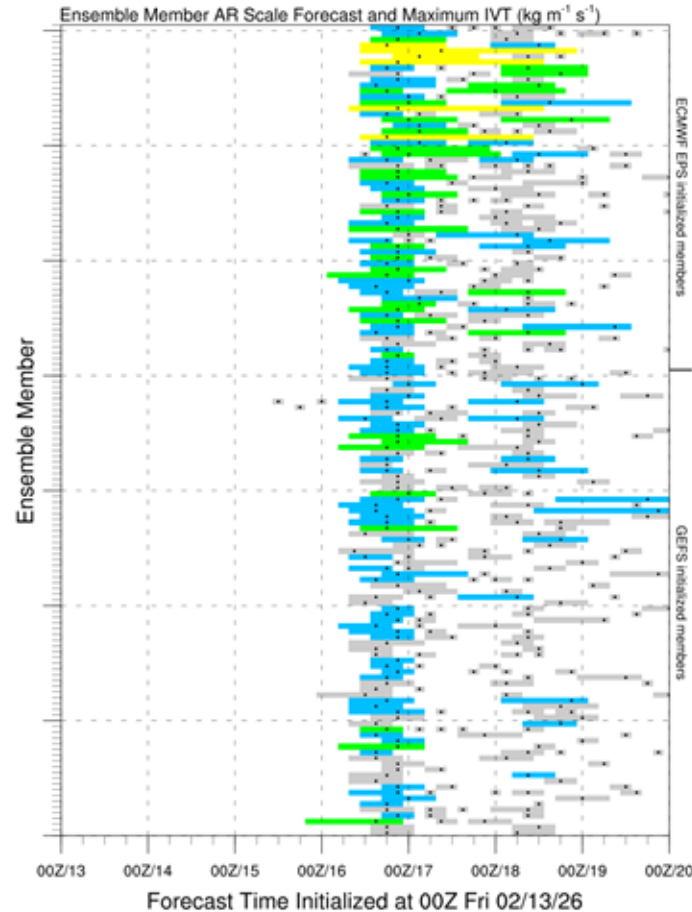


Image created: 13 UTC 02/13/2026 (140/200 members completed)

More information: <http://cw3e.ucsd.edu> AR Scale based on Ralph et al. (2019; BAMS), contact M. Ralph

Location: 33°N 117.5°W



- The West-WRF ensemble control member is not currently forecasting either period of AR conditions to meet the Ralph et al. (2019) AR Scale criteria along the California coast.
- While the control member is forecasting IVT to remain below $500 \text{ kg m}^{-1} \text{ s}^{-1}$ at 33.0°N, 117.5°W (San Diego County) during the first period of AR conditions, there is large ensemble spread in the magnitude of peak IVT on Tue 16 Feb, with several members forecasting peak IVT $>750 \text{ kg m}^{-1} \text{ s}^{-1}$.
- About 70% of ensemble members are forecasting at least an AR 1 at this location, and ~25% are forecasting at least an AR 2.
- There is also considerable uncertainty in the magnitude/timing of peak IVT and duration of AR conditions at this location in association with the second trough.

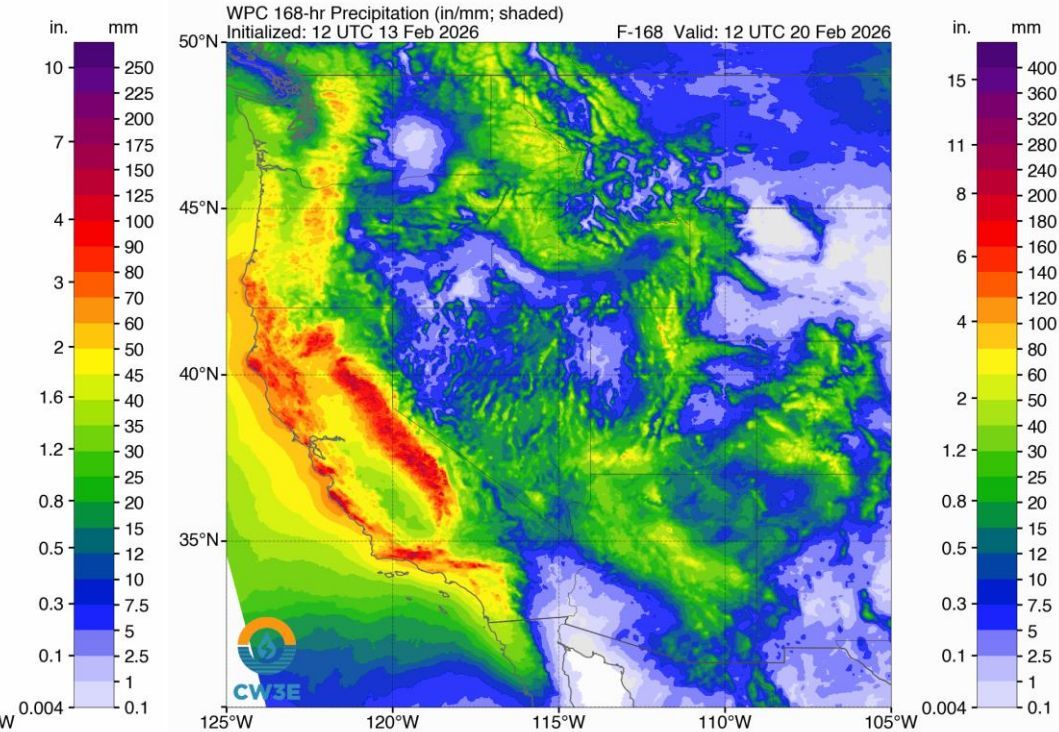
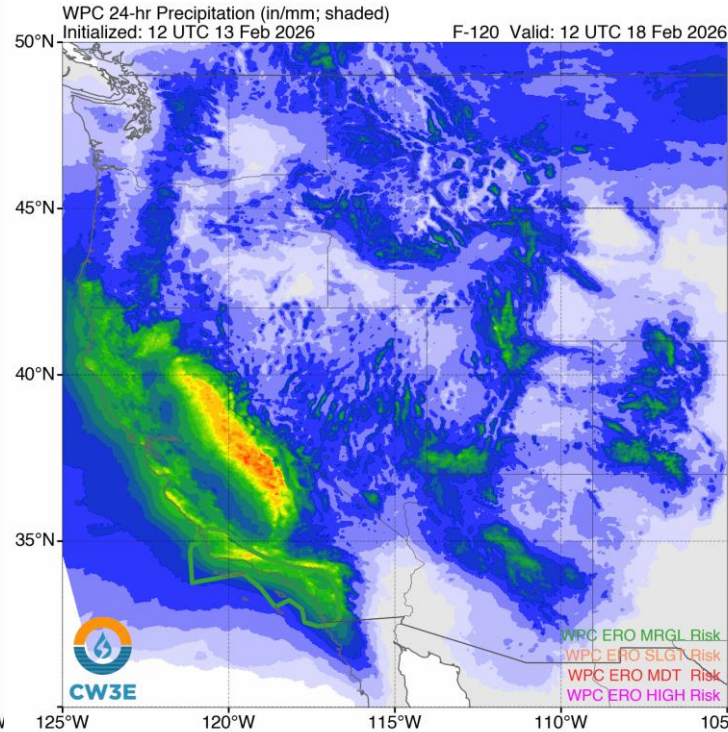
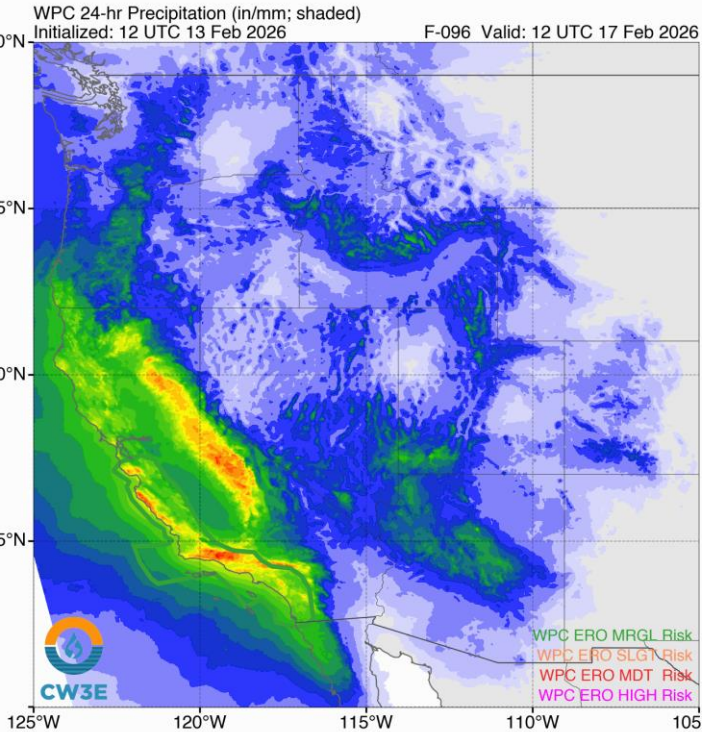
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Precipitation Forecasts

WPC Day 4 24-h QPF & ERO
Valid 4 AM PST 17 Feb

WPC Day 5 24-h QPF & ERO
Valid 4 AM PST 18 Feb

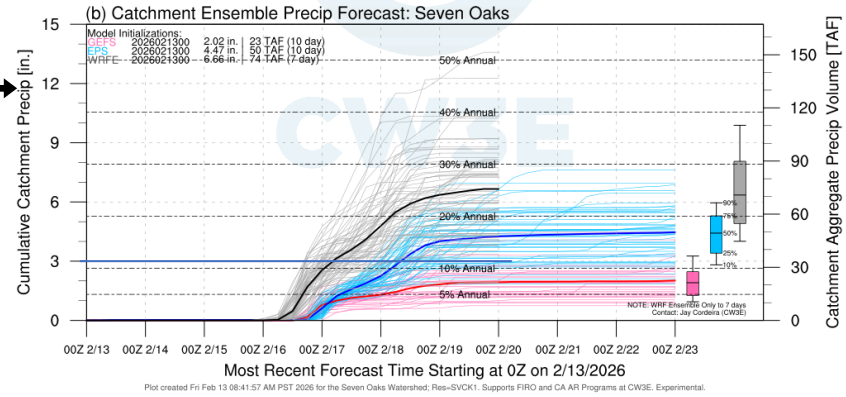
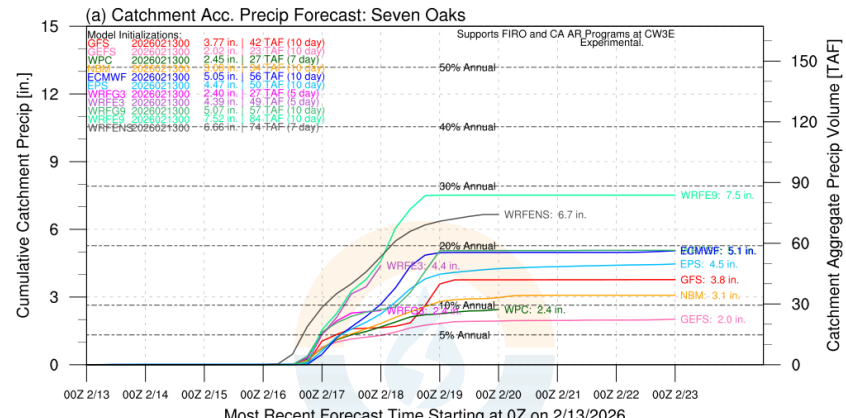
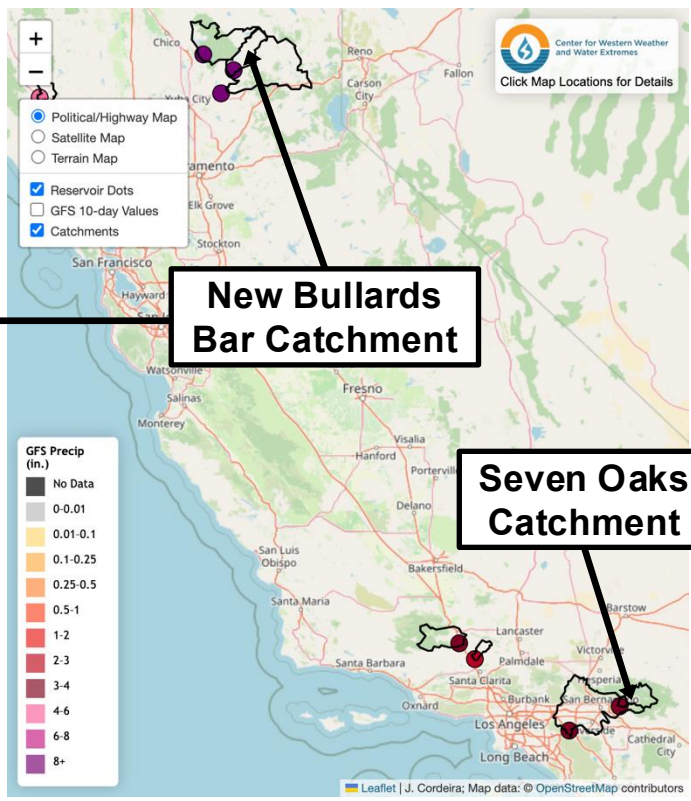
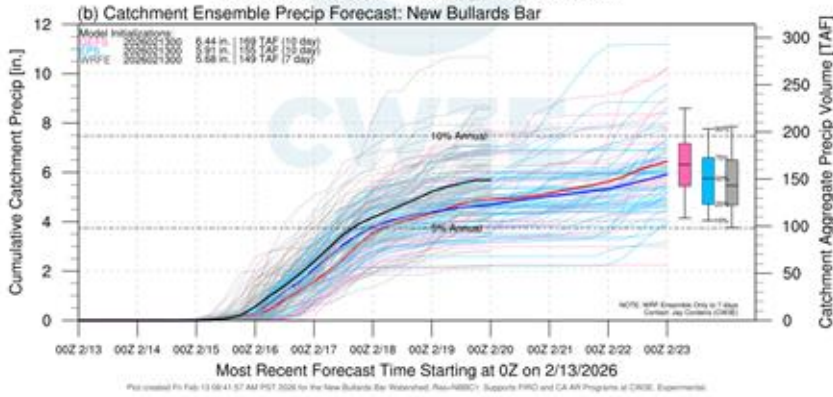
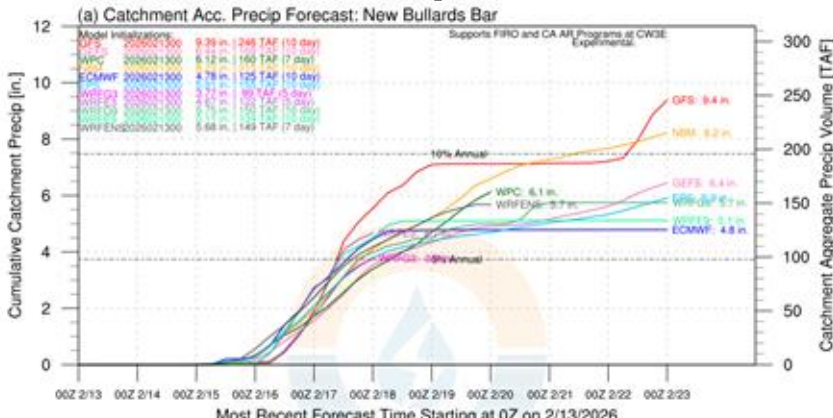
WPC 7-day Total QPF
Valid 4 AM PST 20 Feb



- The NWS Weather Prediction Center (WPC) is forecasting at least 3–7 inches of total precipitation over the California Coast Ranges, Sierra Nevada, and Transverse Ranges, and 2–4 inches over the Sacramento Valley and elsewhere in coastal southern California during the next 7 days.
- The WPC has issued **marginal risk** (level 1 of 4; $\geq 5\%$ probability of rainfall exceeding flash flood guidance) excessive rainfall outlooks (EROs) over coastal California from the Bay Area southward Mon 16 Feb into early Wed 18 Feb.

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Watershed Precipitation Forecasts

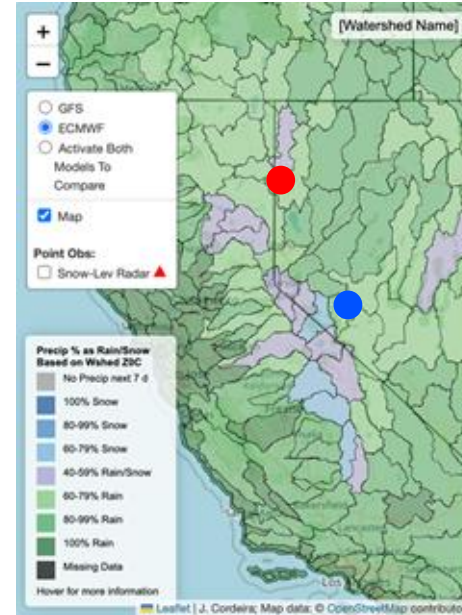
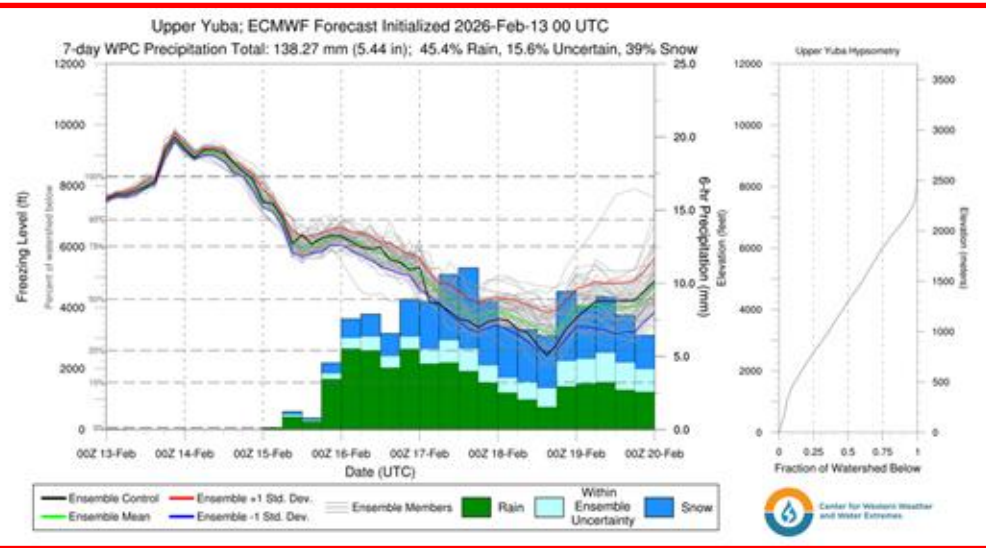


- GEFS, ECMWF, and West-WRF ensembles are showing a high likelihood of 7-day precipitation totals >5% of normal annual precipitation (~3.8 inches) in the New Bullards Bar catchment by 4 PM PT Thu 19 Feb.
- There is much more uncertainty in precipitation forecasts over southern California, likely due to uncertainty in the duration of AR conditions during the first storm, as well as uncertainty in the evolution of the second trough and the associated corridor of enhanced moisture transport.
- In the Seven Oaks catchment, a majority of West-WRF members are forecasting 7-day totals $\geq 20\%$ of normal annual precipitation (~5.3 inches), ~25% of ECMWF members are forecasting $\geq 20\%$ of normal annual precipitation, and <25% of GEFS members are forecasting $\geq 10\%$ of normal annual precipitation (~2.7 inches). Much of the divergence in precipitation between GEFS and ECMWF is during the second storm.

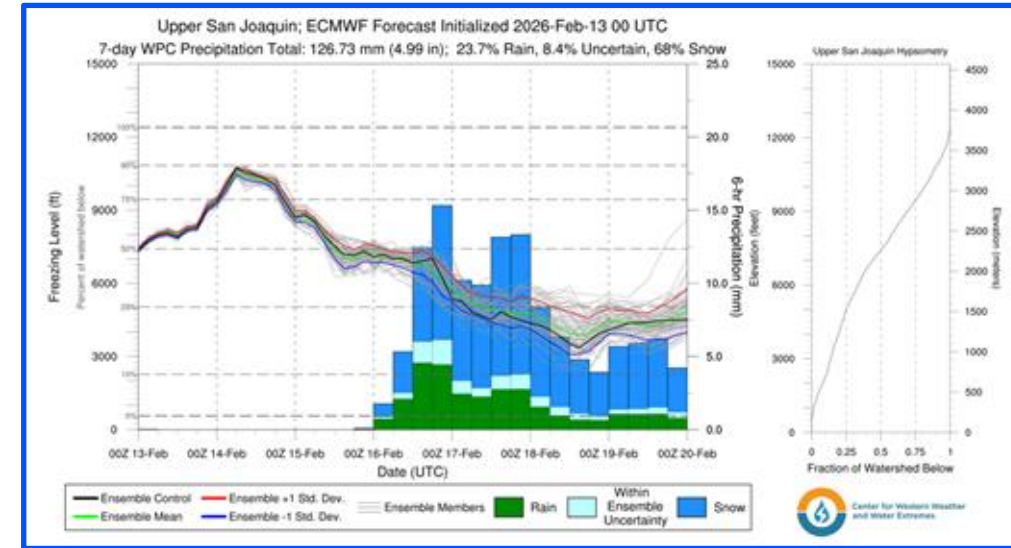
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Watershed Freezing Level Forecasts (ECMWF)

Upper Yuba



Upper San Joaquin



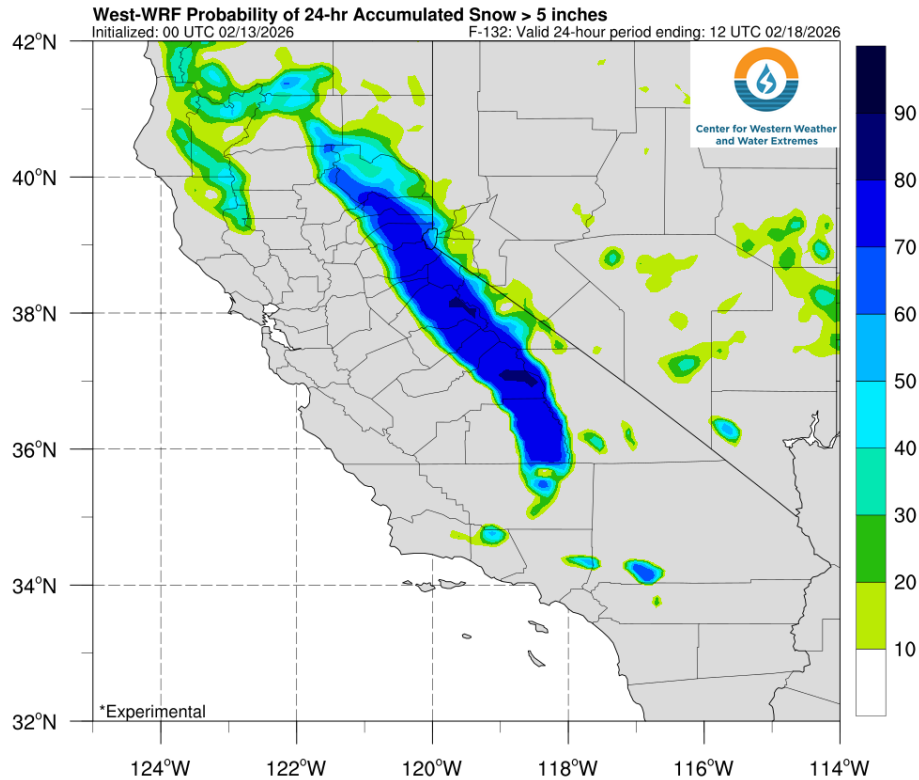
- Freezing levels in the northern Sierra Nevada are forecast to remain between 5,000 and 6,500 feet during the first storm, then steadily fall during the second storm, potentially dropping below 3,000 feet by Wed 18 Feb.
- Freezing levels in the southern Sierra Nevada are forecast to remain between 6,000 feet and 7,500 feet during the first storm, then steadily fall during the second storm, potentially dropping below 4,000 feet by Wed 18 Feb.
- Lower freezing levels during the second storm will facilitate widespread significant snowfall throughout the Sierra Nevada.
- CW3E's watershed freezing level tool based on ECMWF is forecasting ~40% of total precipitation to fall as snow in the Upper Yuba watershed and ~70% of total precipitation to fall as snow in the Upper San Joaquin watershed during the next 7 days.

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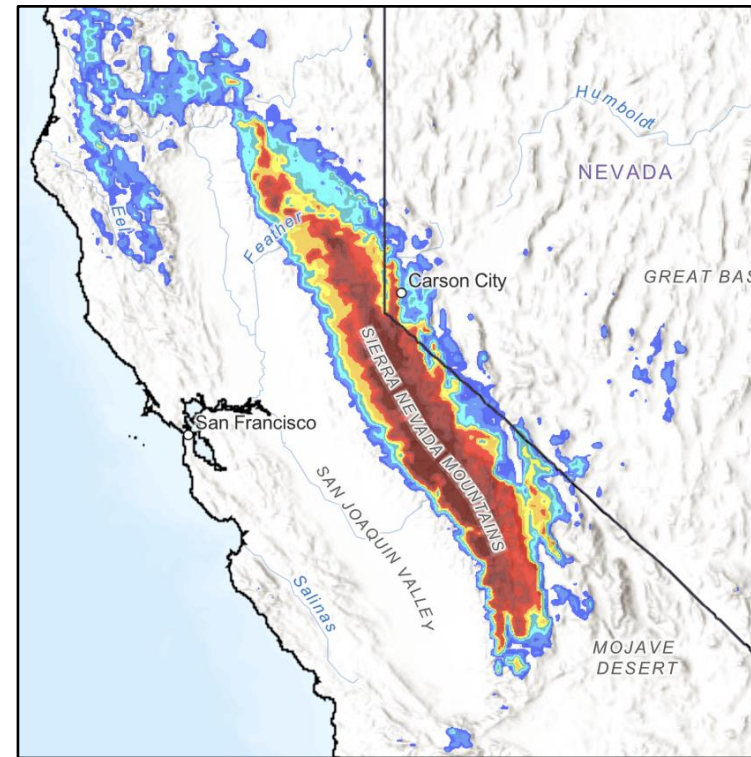


Winter Weather Hazards

West-WRF Probability of 24-h Snowfall >5 inches
Valid 4 AM PST 18 Feb

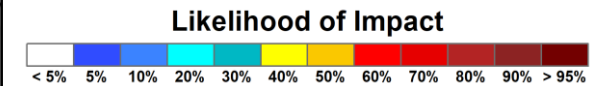


WPC Probabilistic Winter Storm Severity Index: Major Impacts
Valid: 4 AM PST 17 Feb – 4 AM PST 18 Feb



Credit: NOAA/NWS Weather Prediction Center

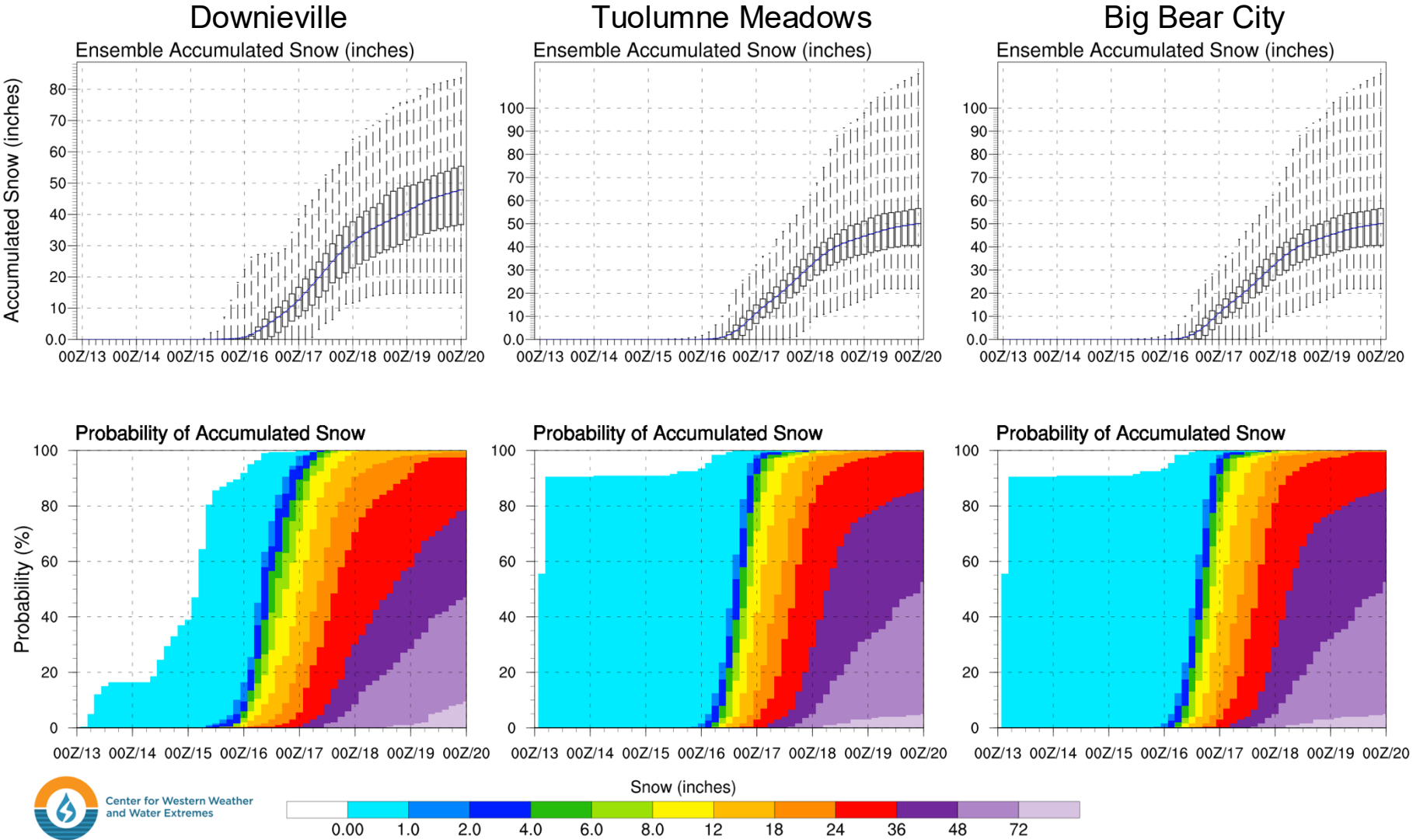
Potential Winter Storm Impacts	
Winter Weather Area	Expect Winter Weather. • Winter driving conditions. Drive carefully.
Minor Impacts	Expect a few inconveniences to daily life. • Winter driving conditions. Use caution while driving.
Moderate Impacts	Expect disruptions to daily life. • Hazardous driving 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.



- The second trough is forecast to produce widespread heavy snowfall across the Sierra Nevada, where CW3E's West-WRF ensemble is showing >70% likelihood of snowfall >5 inches during the 24-hour period ending 4 AM PST Wed 18 Feb.
- WPC is indicating a high likelihood (>70% probability) of major winter storm impacts above 6,000 feet throughout much of the Sierra Nevada during the same period.

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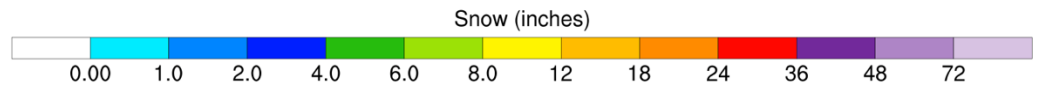
West-WRF Ensemble Snowfall Forecasts



- CW3E's West-WRF ensemble is showing >75% probability of 36+ inches of total snowfall at Downieville (northern Sierra Nevada), Tuolumne Meadows (central Sierra Nevada), and Big Bear City (San Bernardino Mountains) by 4 PM PST Thu 19 Feb.
- With current snowpack running well-below normal in much of the Sierra Nevada, heavy snowfall from these storms will likely be beneficial.



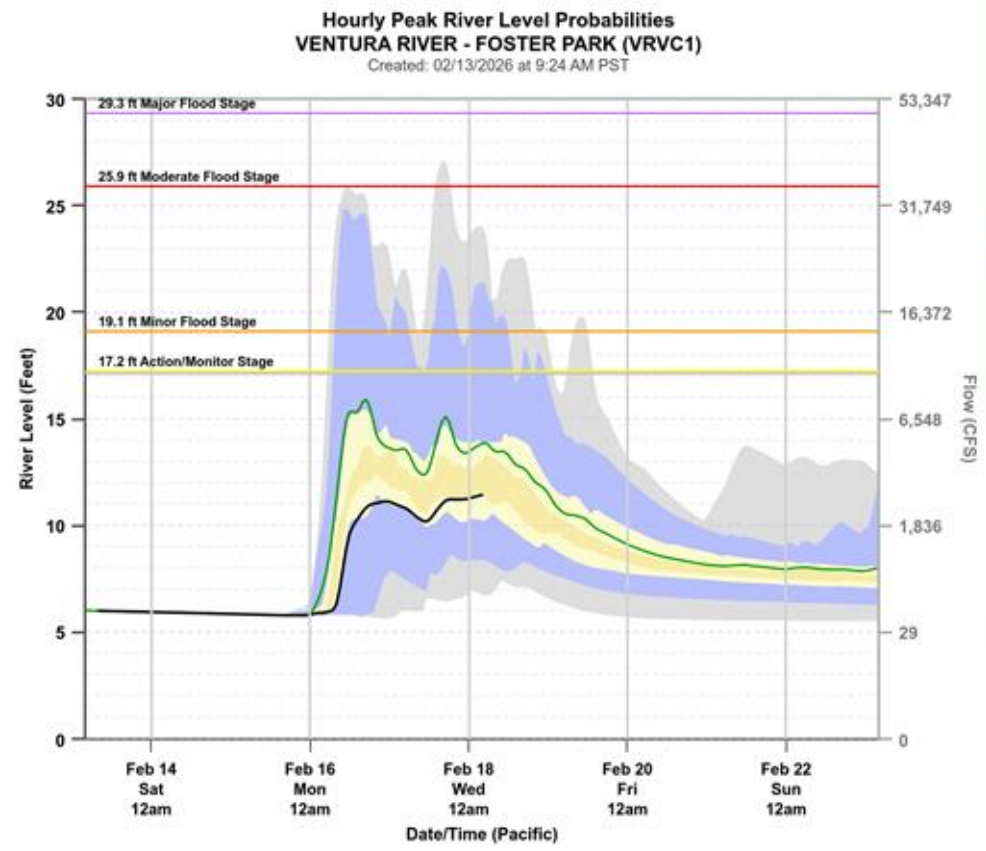
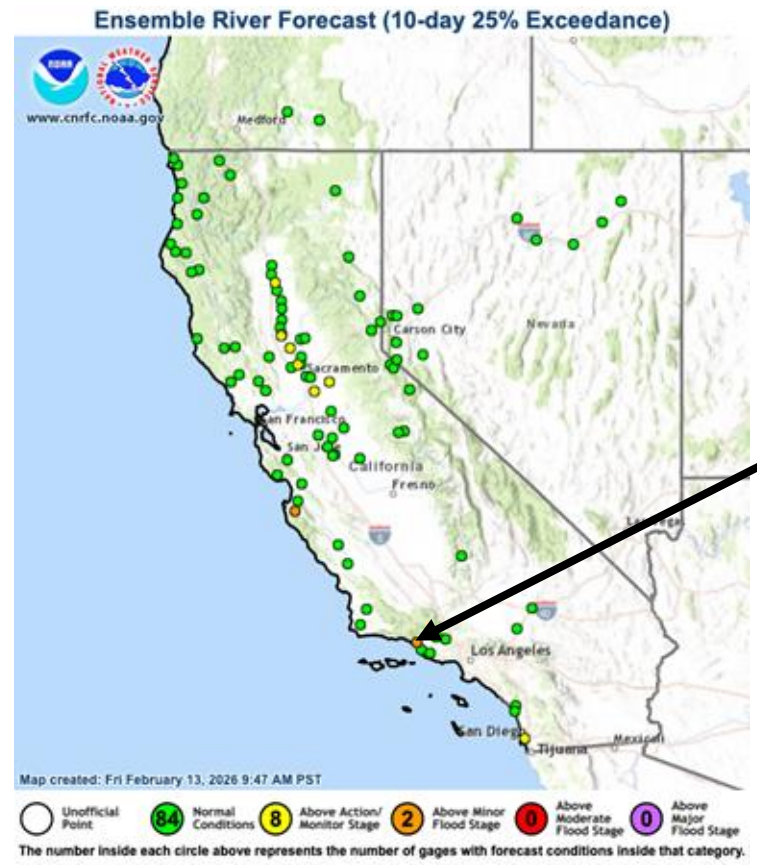
Center for Western Weather and Water Extremes



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Hydrologic Forecasts



Chance of River Level Exceedance (Feet)	
Forecast Period: 02/13/2026 4 am - 02/23/2026 4 am	
Max	27.04
5%	25.33
10%	24.85
25%	22.10
50%	15.78
75%	13.15
90%	11.09
95%	9.88
Min	7.87

Minor Flood 19.1 ft
Action/Monitor 17.2 ft

- Rivers and streams are forecast to rise throughout California due to multiple days of moderate-to-heavy precipitation.
- While deterministic forecasts from the California–Nevada River Forecast Center (CNRFC) only show 4 gages rising above action stage during the next 5 days, ensemble forecasts are showing 8 gages with $\geq 25\%$ probability of rising above action stage and 2 gages (e.g., Ventura River at Foster Park; *right*) with $\geq 25\%$ probability of rising above minor flood stage during the next 10 days.
- Stay alert to DWR/CNRFC forecasts for changes in river forecasts or to local NWS offices for local flood/flash flood guidance.