

CW3E Event Summary: 26–27 Nov 2019



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and Water Extremes
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AT UC SAN DIEGO

A strong and rapidly intensifying cyclone made landfall over Northern CA and Southern OR resulting in numerous impacts

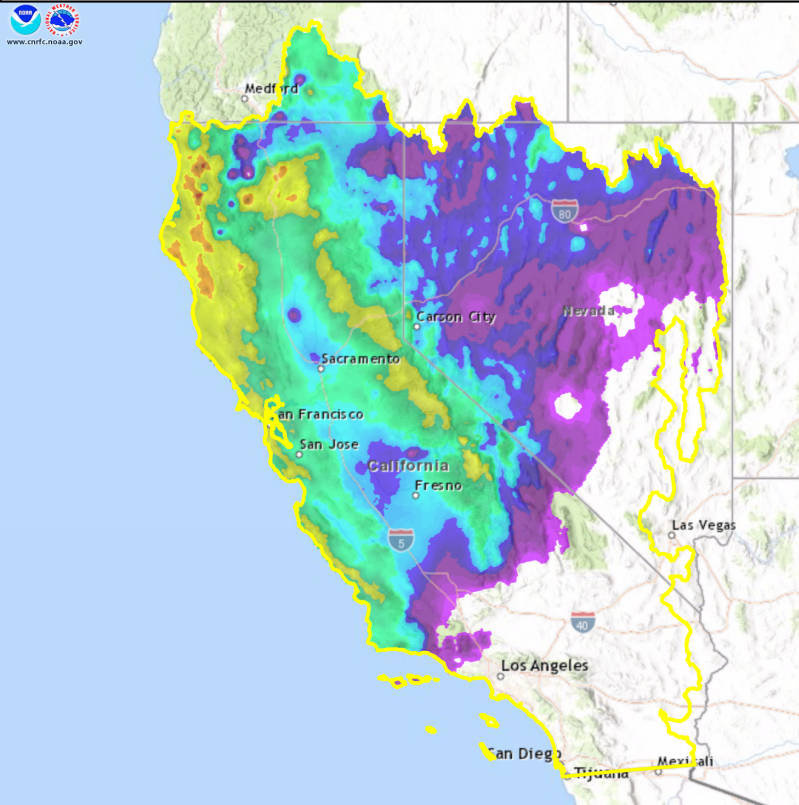
- A cyclone that underwent rapid intensification moved onshore over Northern CA and Southern OR, bringing strong winds, high precipitation rates, and heavy snow
- A narrow cold frontal rain band developed in association with the fast-moving and dynamically robust cold front and brought high rain rates to portions of coastal Northern and Central California
- Cape Blanco in Southern OR experienced sustained winds of 85 mph and a maximum gust of 106 mph in association with the strong landfalling cyclone
- The strong winds produced wave heights as high as 34 feet off the coast of Northern CA and the all-time low pressure measurement for the state of California was preliminarily set in Crescent City of 973.6 hPa
- Both Interstate 5 and 80 have been closed in sections due to heavy snow and whiteout conditions during one of the busiest travel weeks of the year

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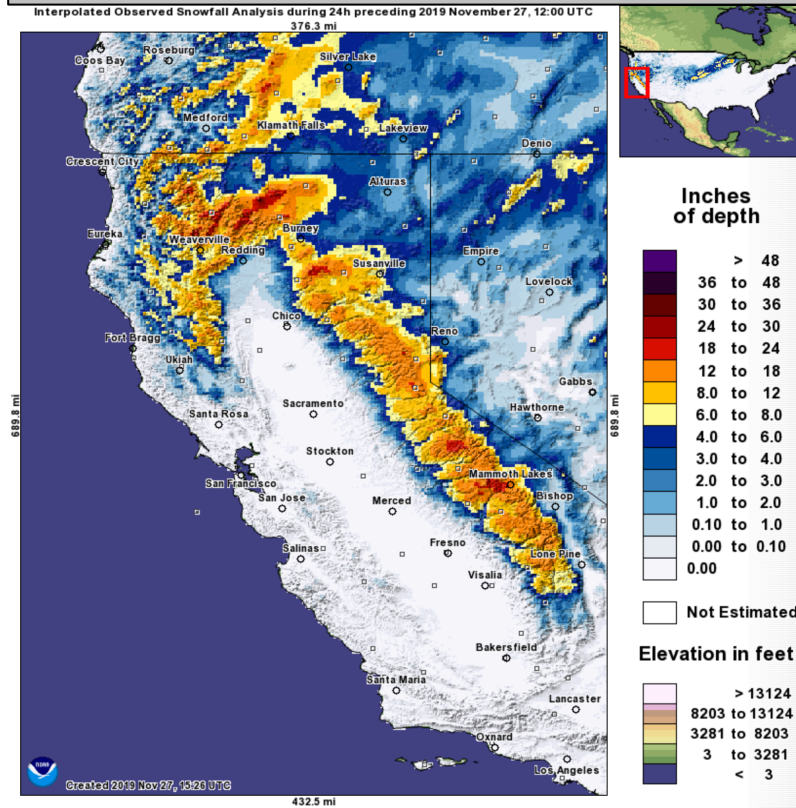


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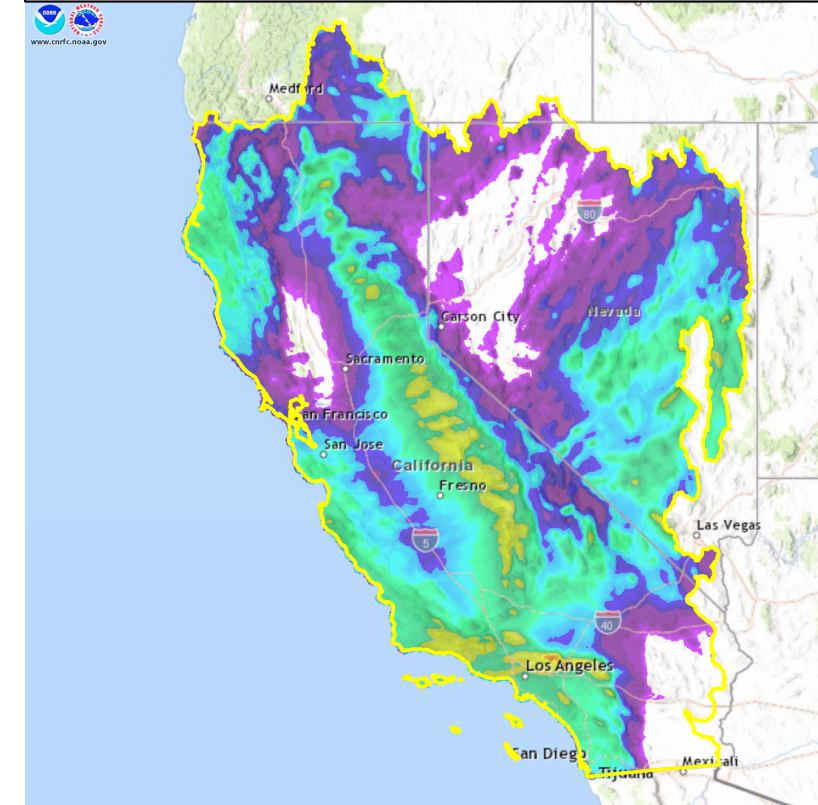
24-h QPE: Valid 1200 UTC 26–27 Nov



24-h Snowfall: Valid 1200 UTC 26–27 Nov

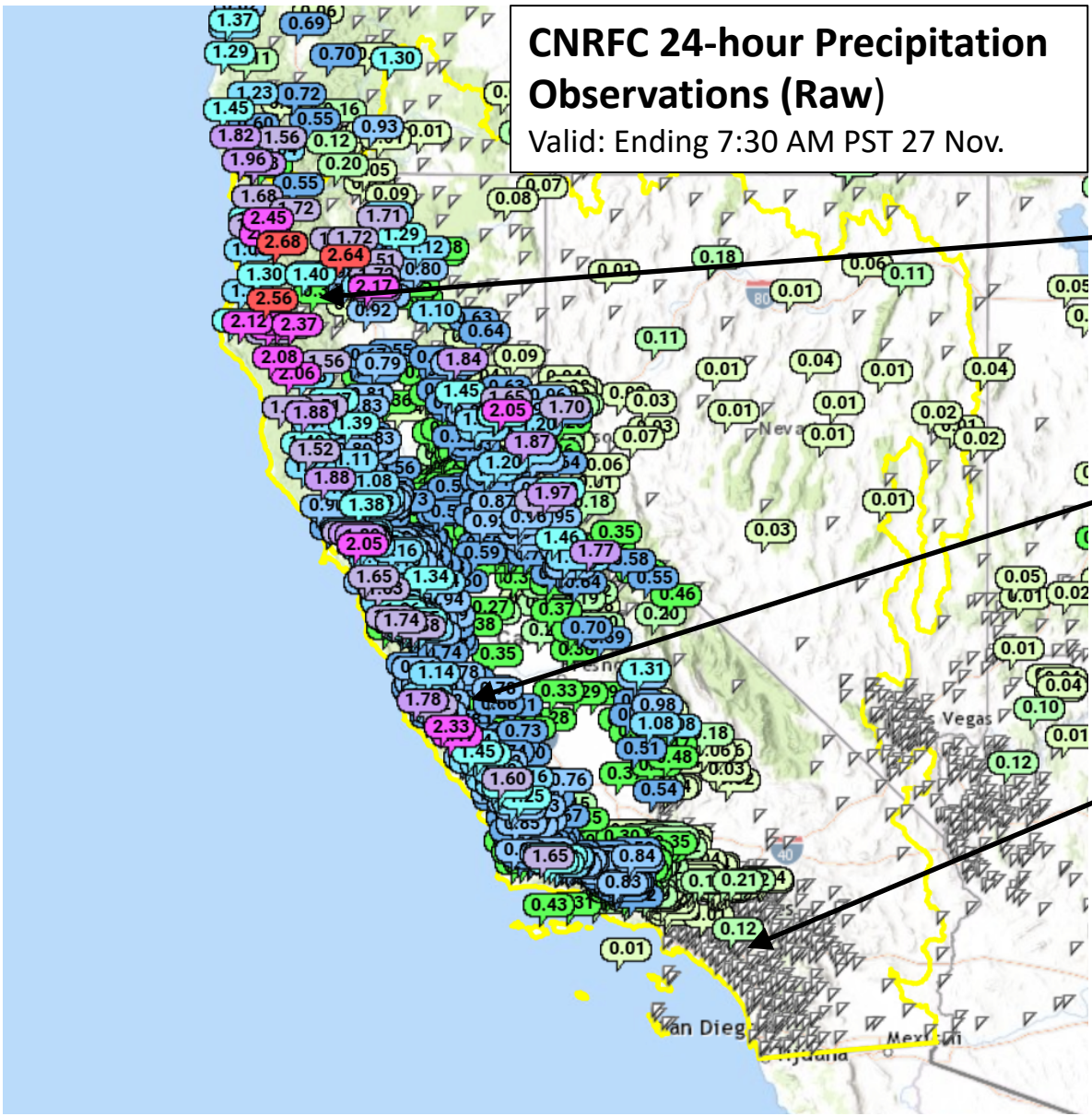


24-h QPF: Valid 1200 UTC 27–28 Nov



- 1-3 inches of precipitation have fallen over the northern CA Coast Ranges, Klamath Mountains, and Sierra Nevada over the past 24 hours
- An estimated 1-2 feet of snow has fallen over parts of the Sierra Nevada and the Klamath Mountains
- Additional precipitation amounts of 1-2 inches are forecast over the southern Sierra Nevada and southern CA Transverse Ranges during the next 24 hours

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As much as 2.5 inches of precipitation has fallen over portions of North-Coastal California in the last 24 hours

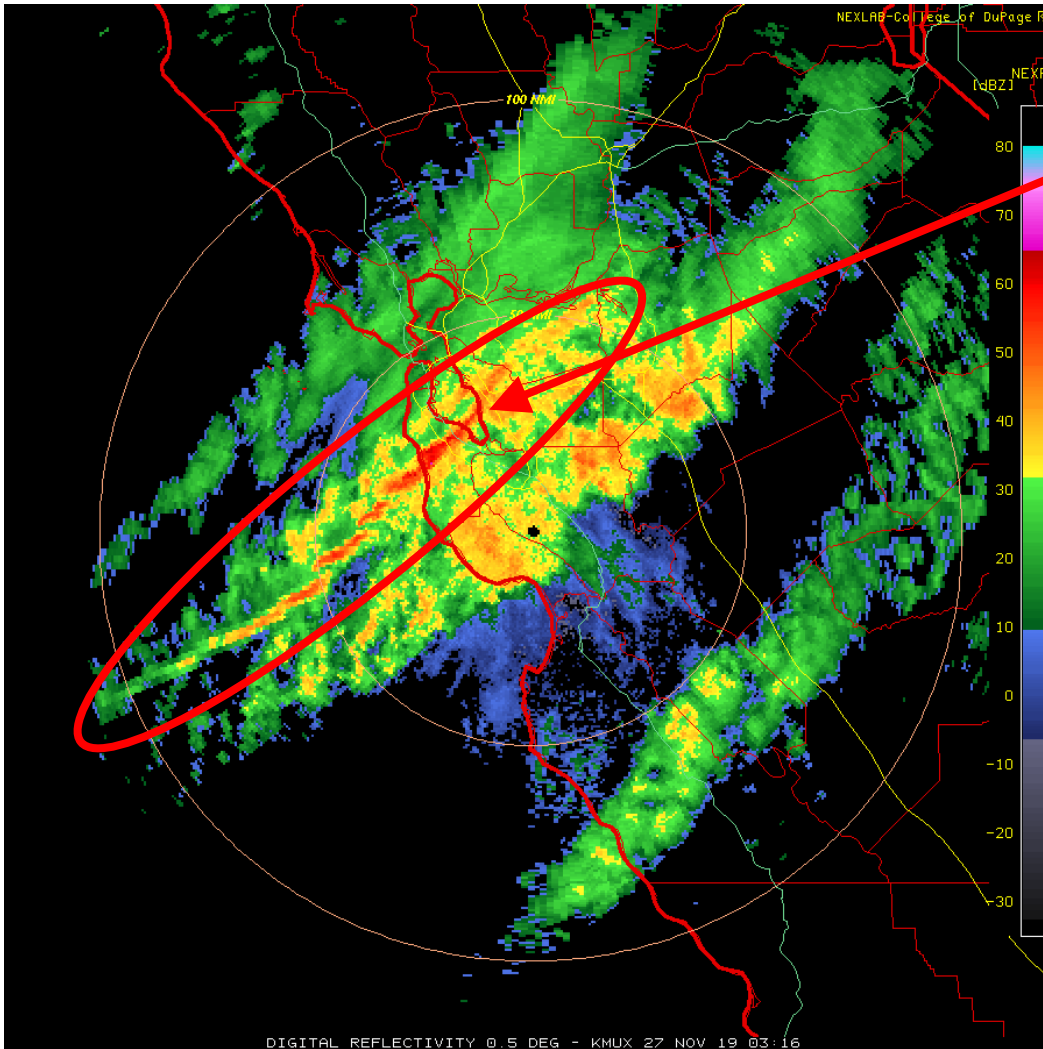
As the cold front quickly moved southward along the coast, numerous stations recorded > 1 inch of precipitation with a couple stations in the higher elevations of Big Sur recording ~2.25 inches

As this system continues to impact the West Coast, some locations could see an additional 1-2 inches of precipitation, especially in Southern CA

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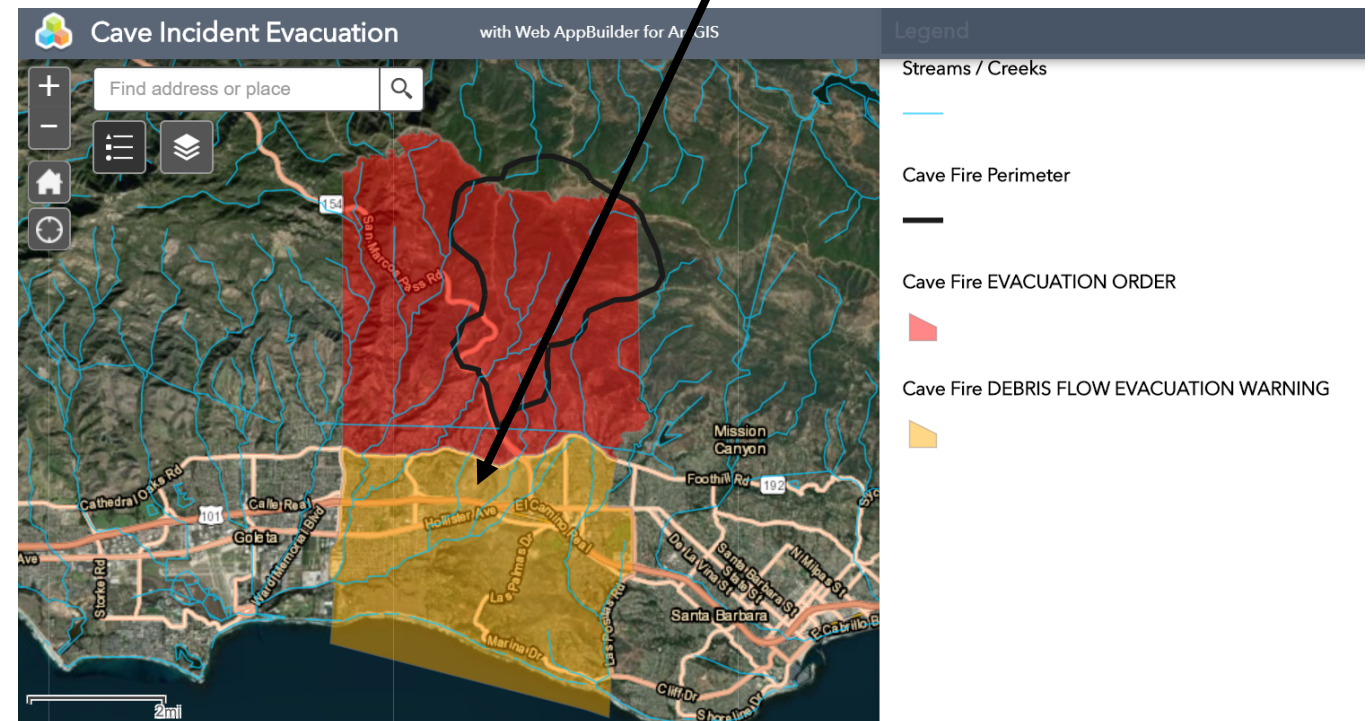


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A narrow cold frontal rain band developed along the fast-moving and dynamically robust cold front and resulted in locally heavy rain rates over the coast

The frontal rain band continued to propagate southward down the coast and resulted in numerous flash flood watches being issued and an evacuation warning for a potential debris flow near the recently ignited Cave Fire in Santa Barbara County



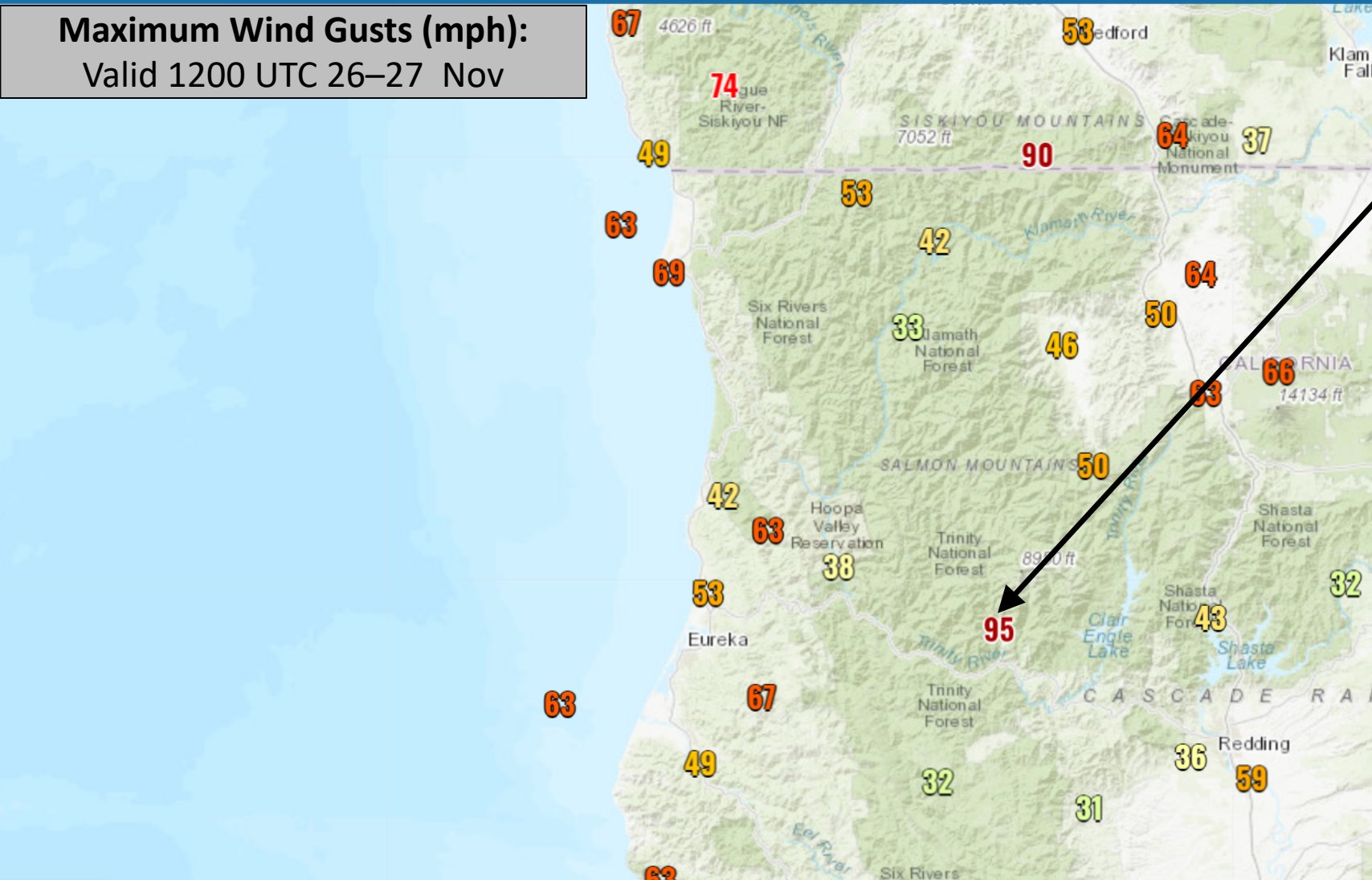
Visit <https://readysbc.org/> for more information on evacuation orders and the Cave fire

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 **National Weather Service**
National Oceanic and Atmospheric Admin. | WEATHER & HAZARDS DATA VIEWER | Feedback

Maximum Wind Gusts (mph):
Valid 1200 UTC 26–27 Nov

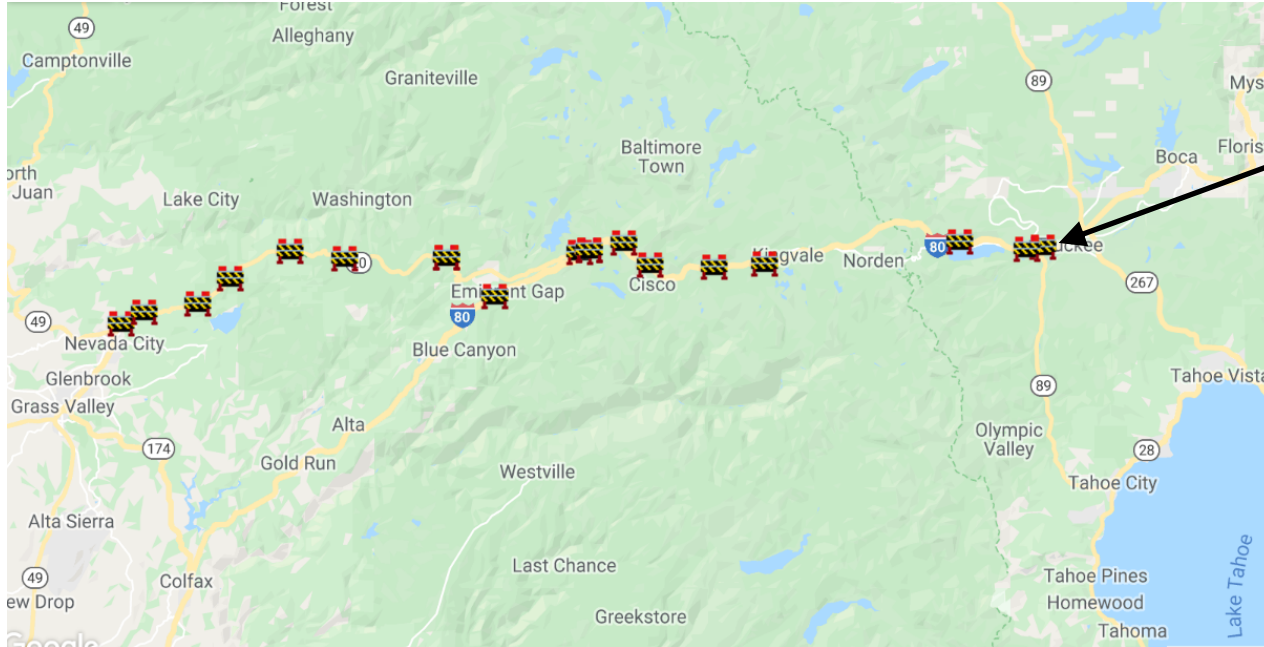


Numerous weather stations in Northern CA and Southern Oregon reported wind gusts above 50 mph, with Backbone Station reporting a gust of 95 mph

The highest gust of 106 mph was reported last night in Cape Blanco, OR

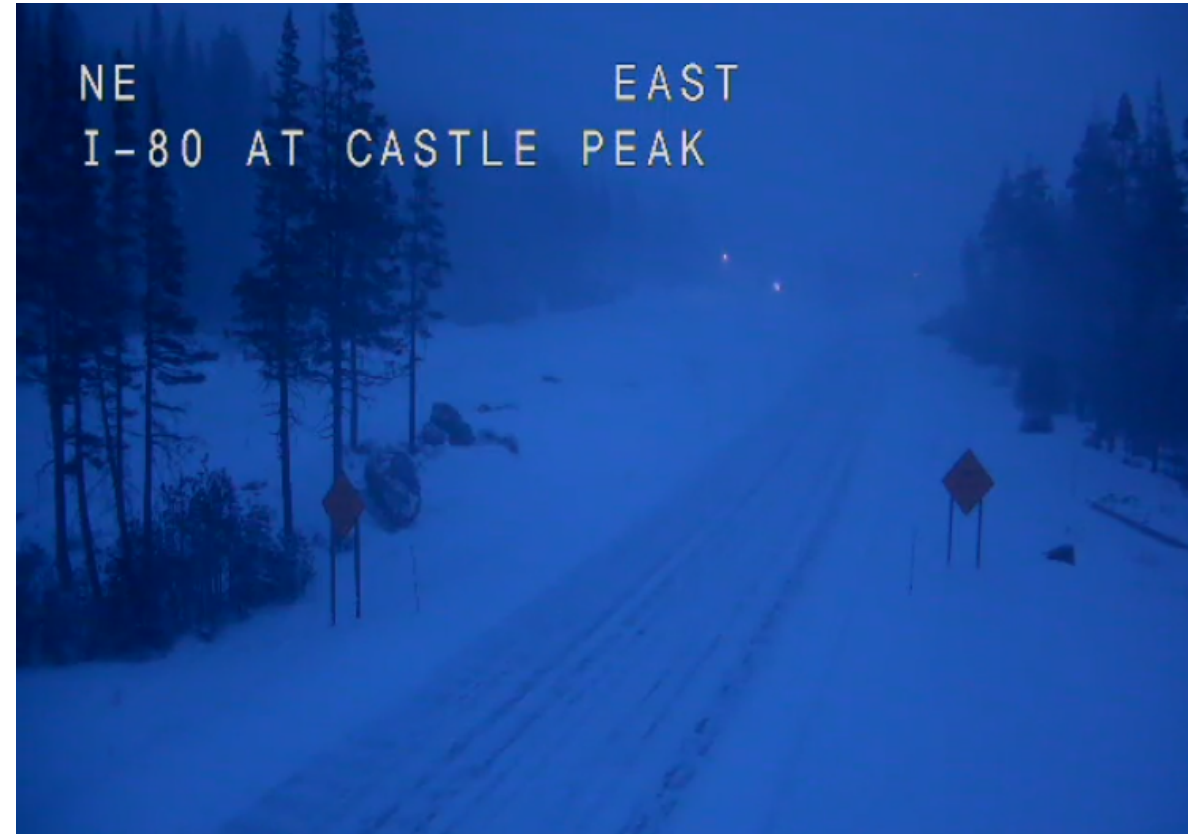
The high winds have resulted in numerous power outages across the region (40k customers in the Bay Area alone) and have caused several transportation hazards on major roadways

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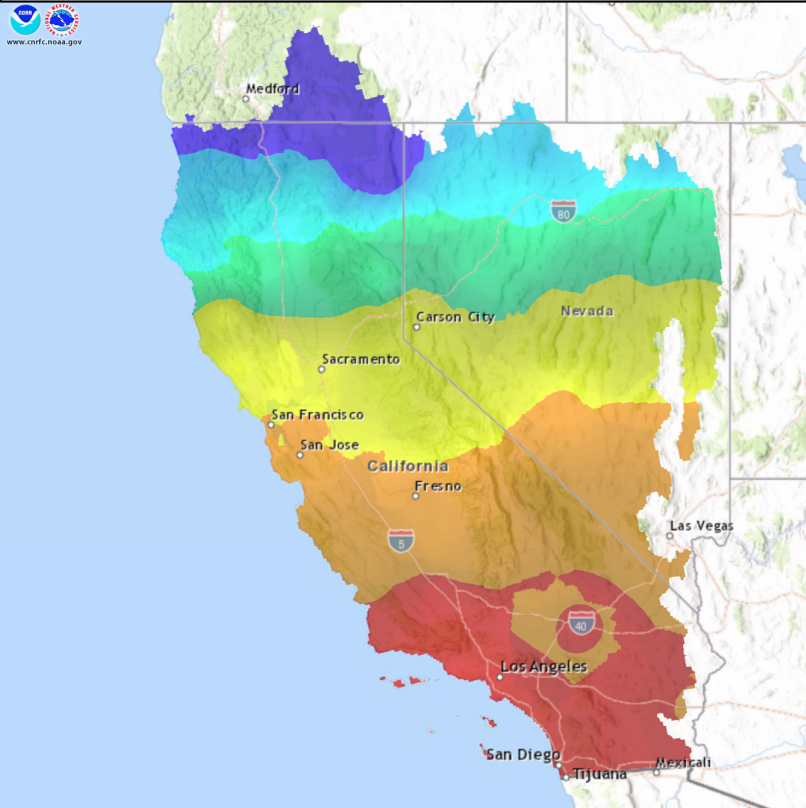
The winter weather at high elevations throughout California has resulted in numerous road closures, such as Interstate 80 over the Sierra Nevada Mountains

The heavy snow and high winds caused near whiteout conditions making travel nearly impossible and leading to the road/highway closures

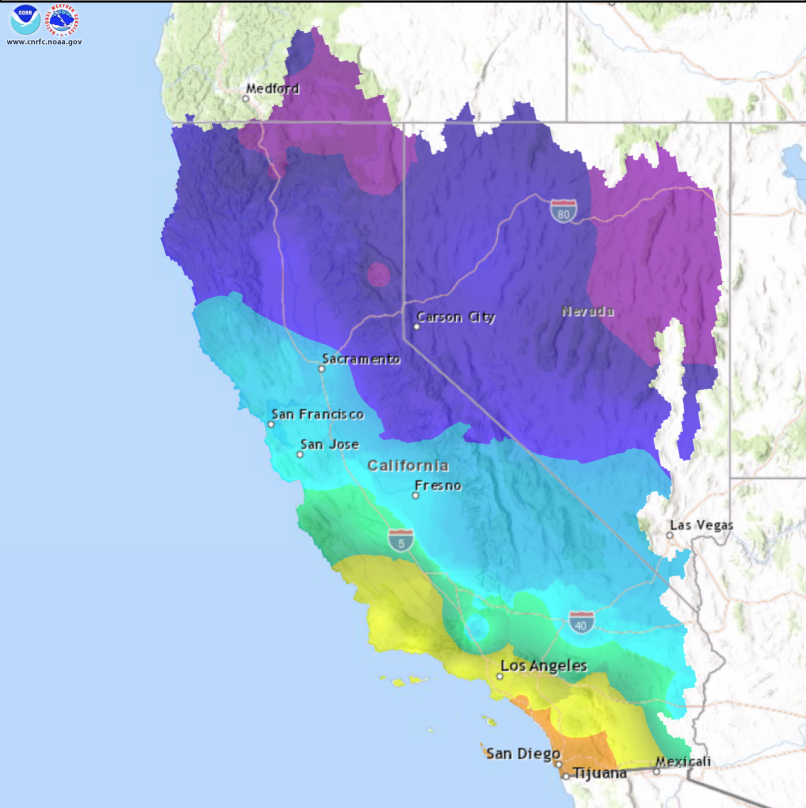


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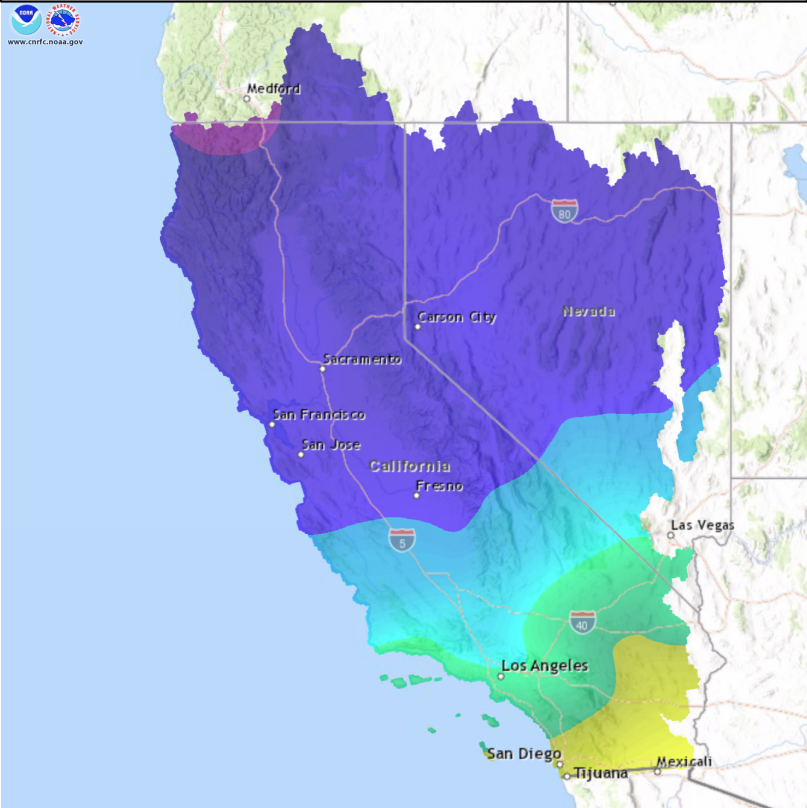
CNRFC Estimated Freezing Level
Valid 1200 UTC 25 Nov



CNRFC Estimated Freezing Level
Valid 1200 UTC 26 Nov



CNRFC Estimated Freezing Level
Valid 1200 UTC 27 Nov



- Freezing level heights have dropped significantly over the past 48 hours in association with the landfalling cyclone
- By 1200 UTC 27 Nov, freezing level heights were below 4,000 feet in northern California and approaching 6,000 feet near Los Angeles

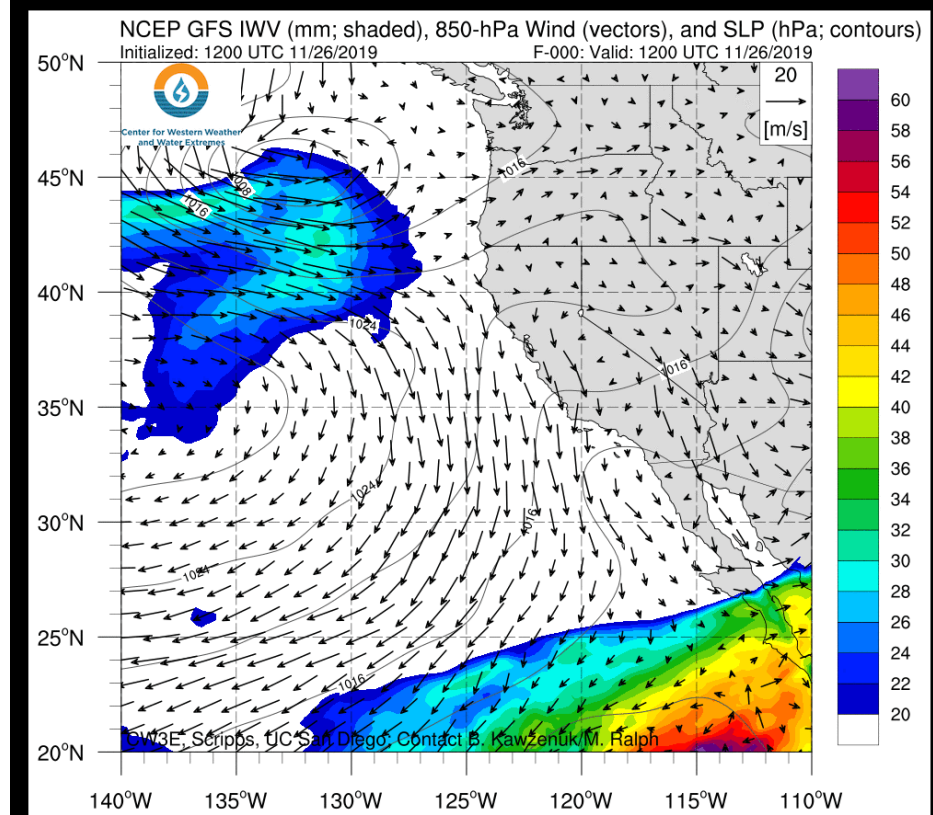
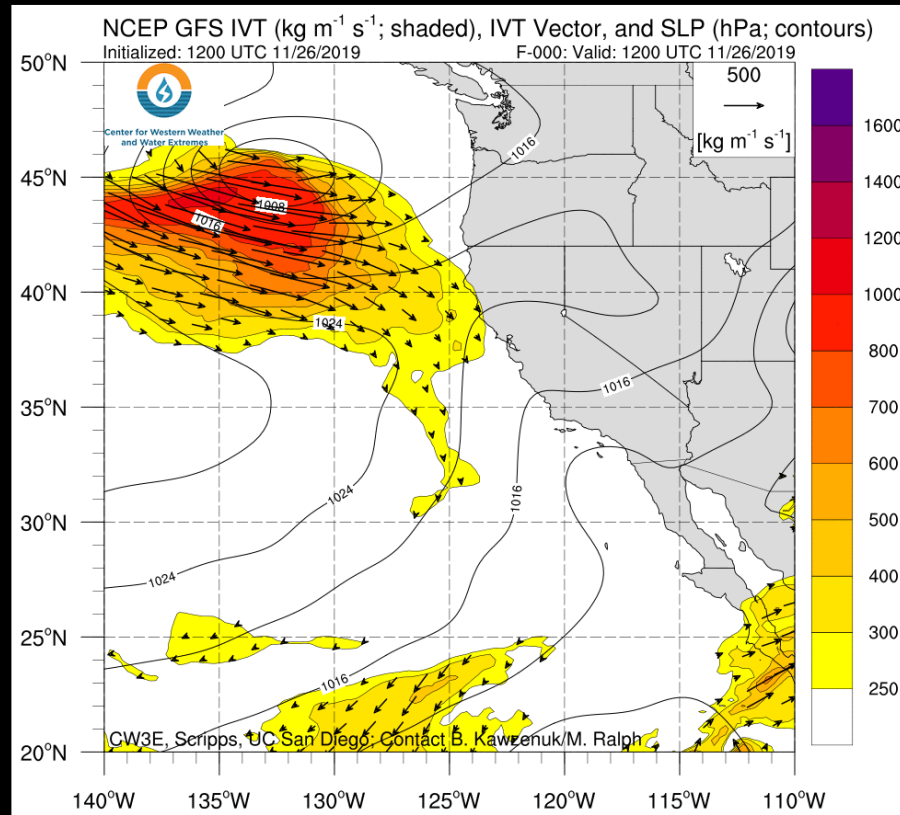
CW3E AR Outlook



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Active weather pattern over Western U.S. will persist into early next week

- Multiple landfalling ARs over western North America will impact the U.S. Southwest during the next 48 hours
- There is increasing forecast confidence in the likelihood of a long-duration AR event in California starting 30 Nov
- Total precipitation amounts over the next 7 days may exceed 5 inches in some locations

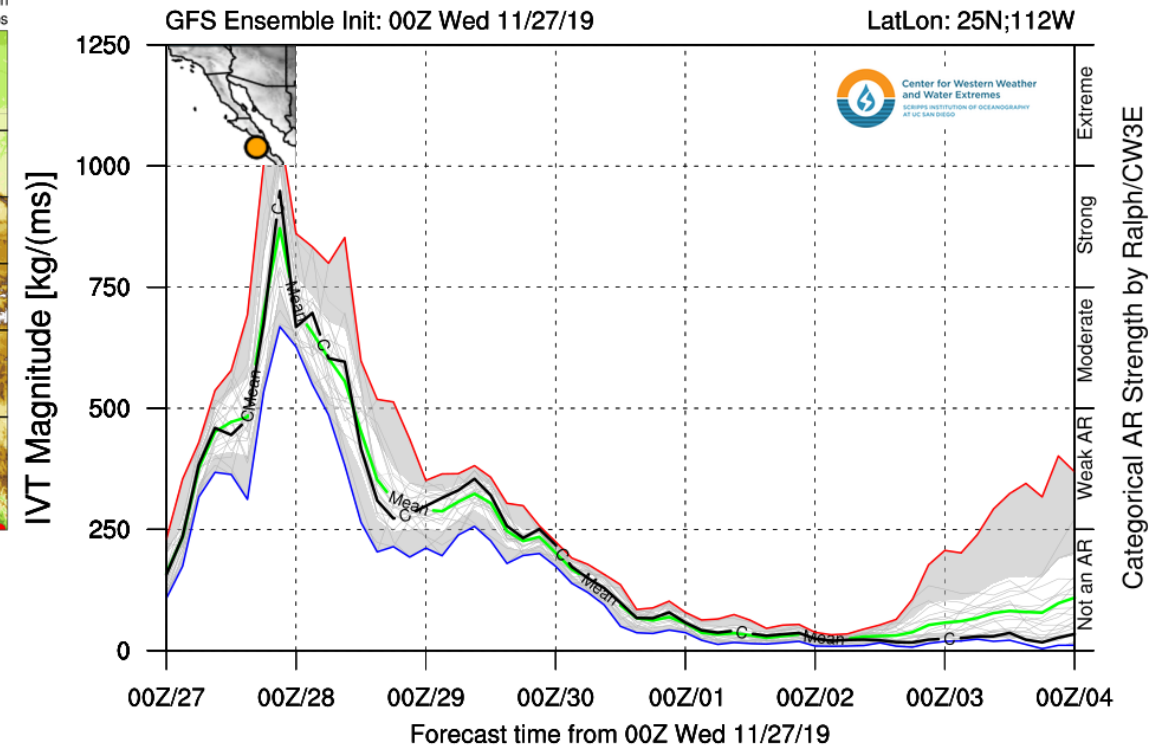
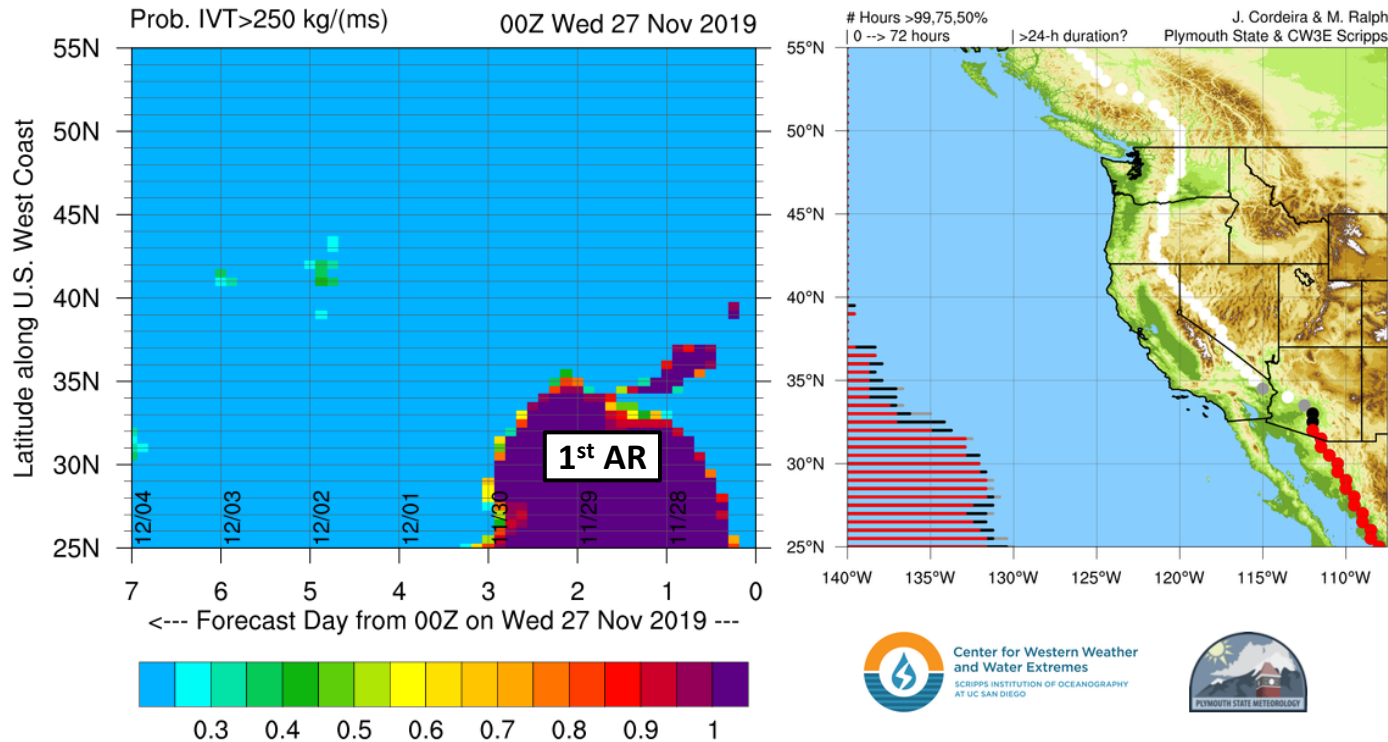


CW3E AR Outlook: 27–29 Nov 2019



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Inland AR Conditions



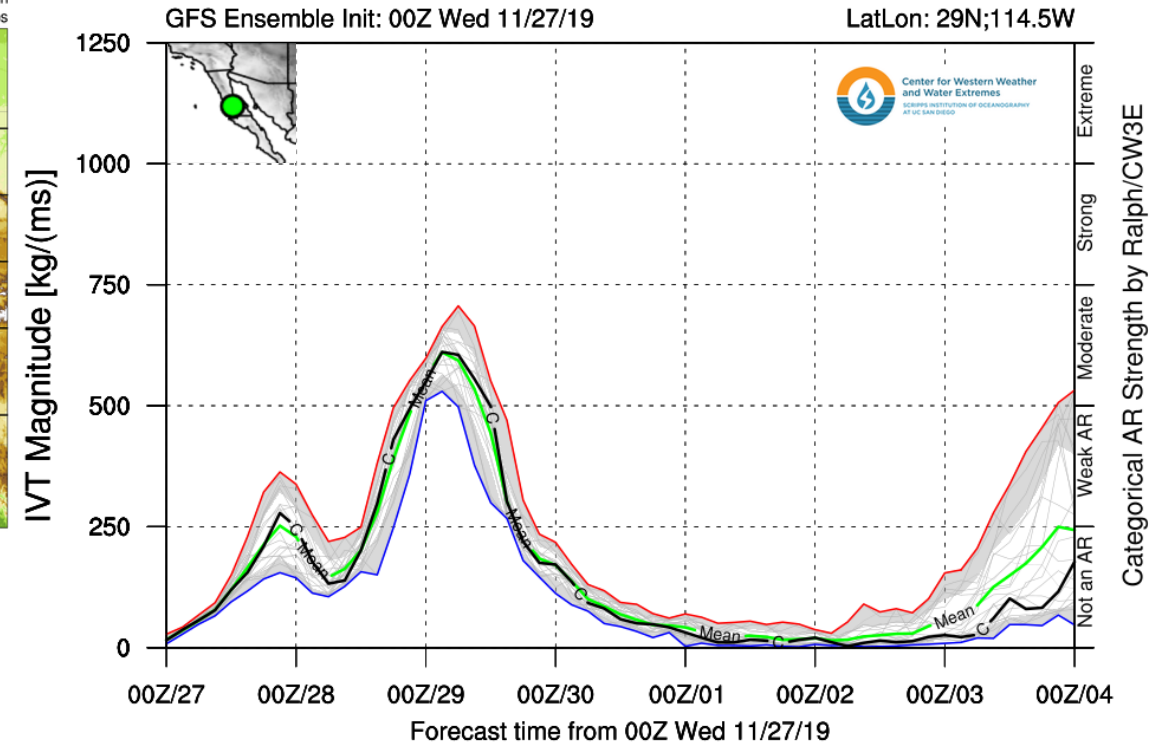
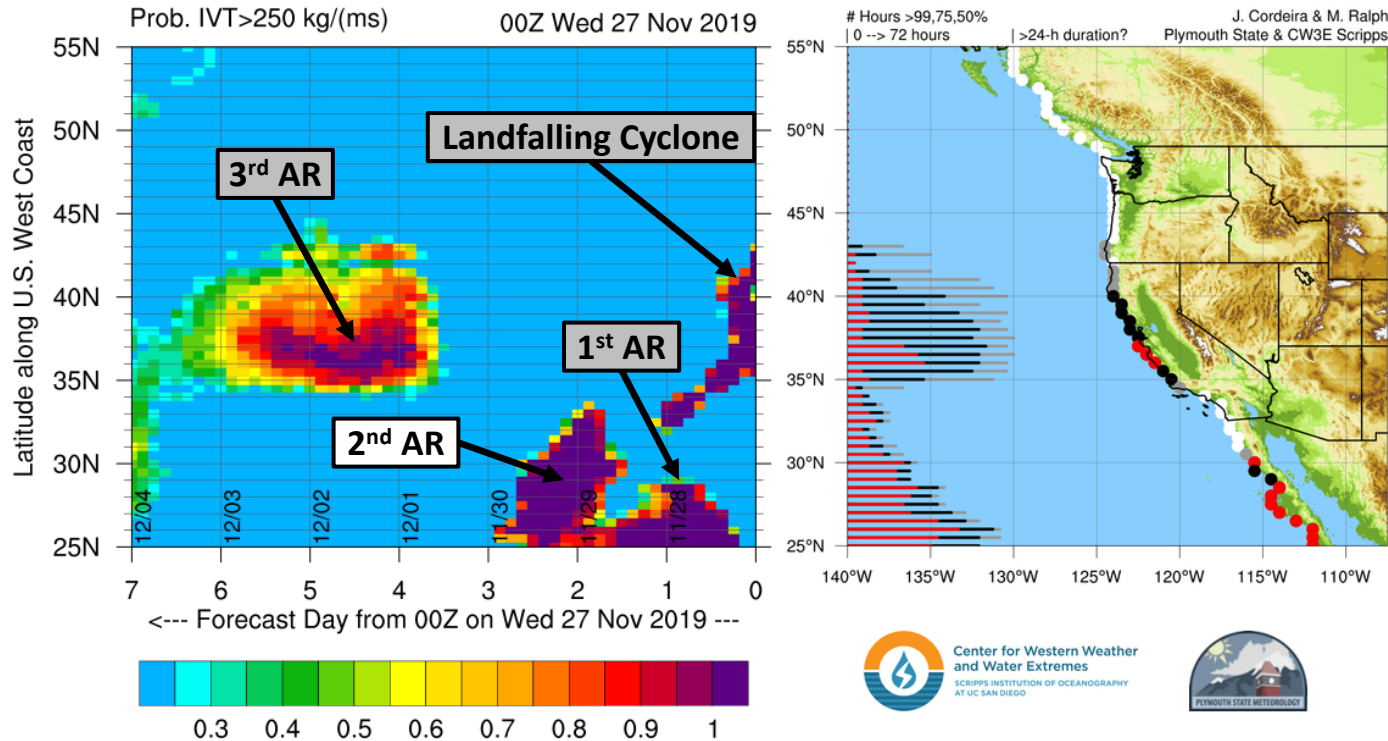
- AR landfall probability tool (see 1st AR above) shows high confidence in a long-duration AR event east of the Gulf of California between 0000 UTC 27 Nov and 0000 UTC 30 Nov
- GEFS control member predicts that Baja California Sur will experience AR conditions for > 48 hours, with several hours of strong (IVT > 750 kg m⁻¹ s⁻¹) AR conditions
- This AR will be associated with heavy rainfall in southeastern Arizona and New Mexico on 27 and 28 Nov

CW3E AR Outlook: 27–29 Nov 2019



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Coastal AR Conditions



- AR landfall probability tool (see 2nd AR above) and IVT plumes show high confidence in weak-to-moderate AR conditions for roughly 24 hours over Baja California starting around 1200 UTC 28 Nov
- This AR will be associated with heavy rainfall in southern California and the Lower Colorado River Basin on 28 and 29 Nov

CW3E AR Outlook: 27–29 Nov 2019

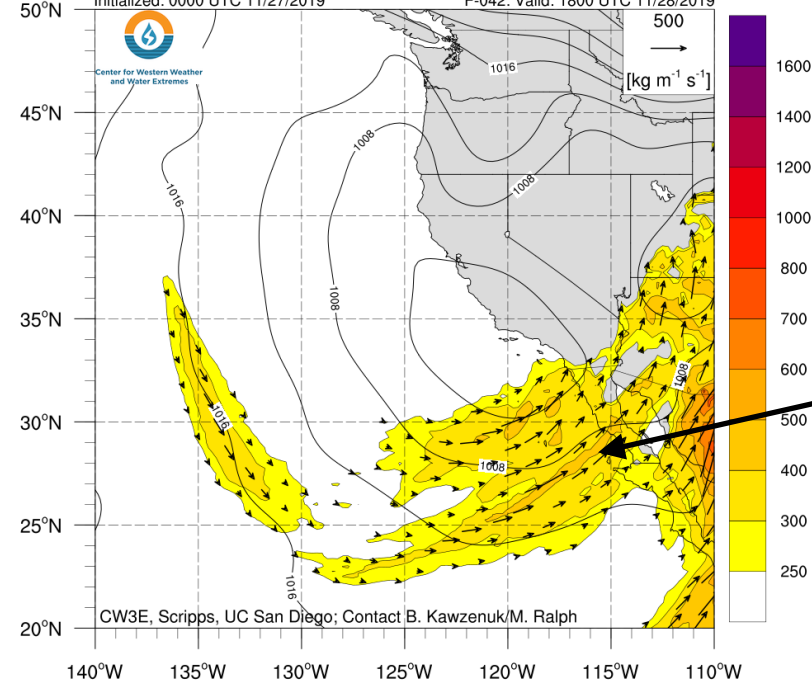


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GFS IVT Forecast for 2nd AR

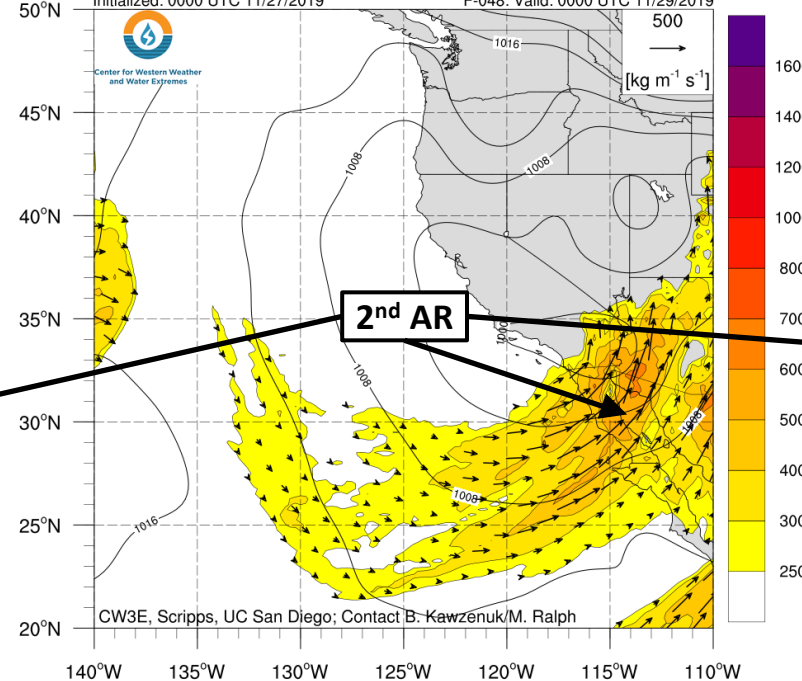
1800 UTC 28 Nov

NCEP GFS IVT ($\text{kg m}^{-1} \text{s}^{-1}$; shaded), IVT Vector, and SLP (hPa; contours)
Initialized: 0000 UTC 11/27/2019 F-042: Valid: 1800 UTC 11/28/2019



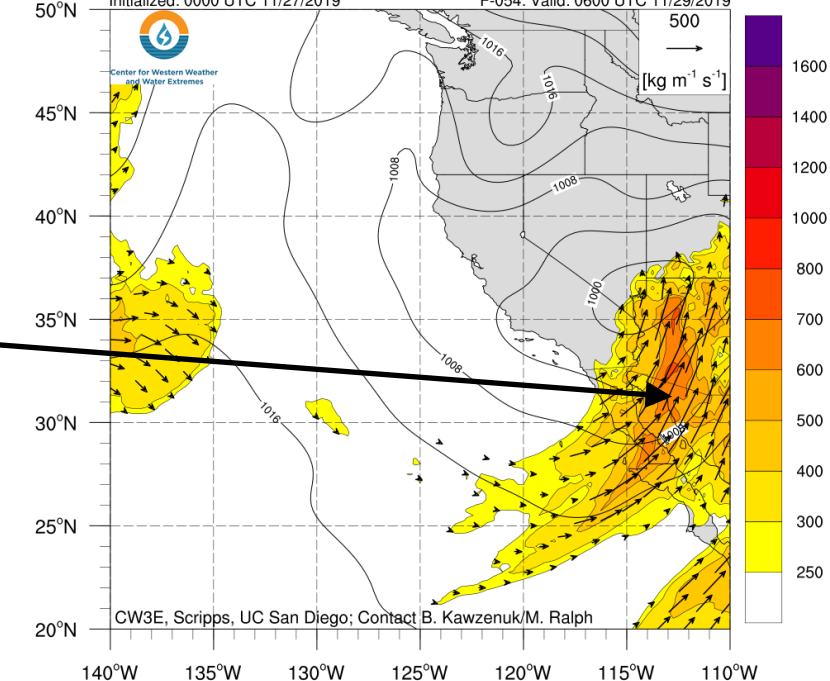
0000 UTC 29 Nov

NCEP GFS IVT ($\text{kg m}^{-1} \text{s}^{-1}$; shaded), IVT Vector, and SLP (hPa; contours)
Initialized: 0000 UTC 11/27/2019 F-048: Valid: 0000 UTC 11/29/2019



0600 UTC 29 Nov

NCEP GFS IVT ($\text{kg m}^{-1} \text{s}^{-1}$; shaded), IVT Vector, and SLP (hPa; contours)
Initialized: 0000 UTC 11/27/2019 F-054: Valid: 0600 UTC 11/29/2019



- After the initial landfalling cyclone weakens, a second low pressure system is expected to develop near the central California coast
- As the second low deepens and moves eastward, IVT will gradually intensify over southern California and Arizona
- This corridor of high IVT immediately south and east of the second low is associated with the 2nd AR

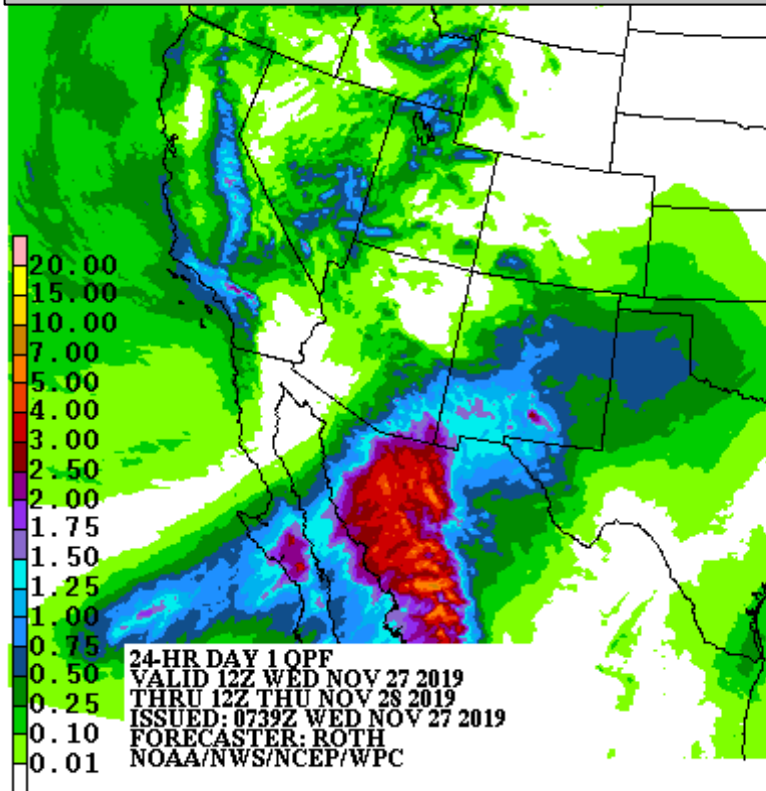
CW3E AR Outlook: 27–29 Nov 2019



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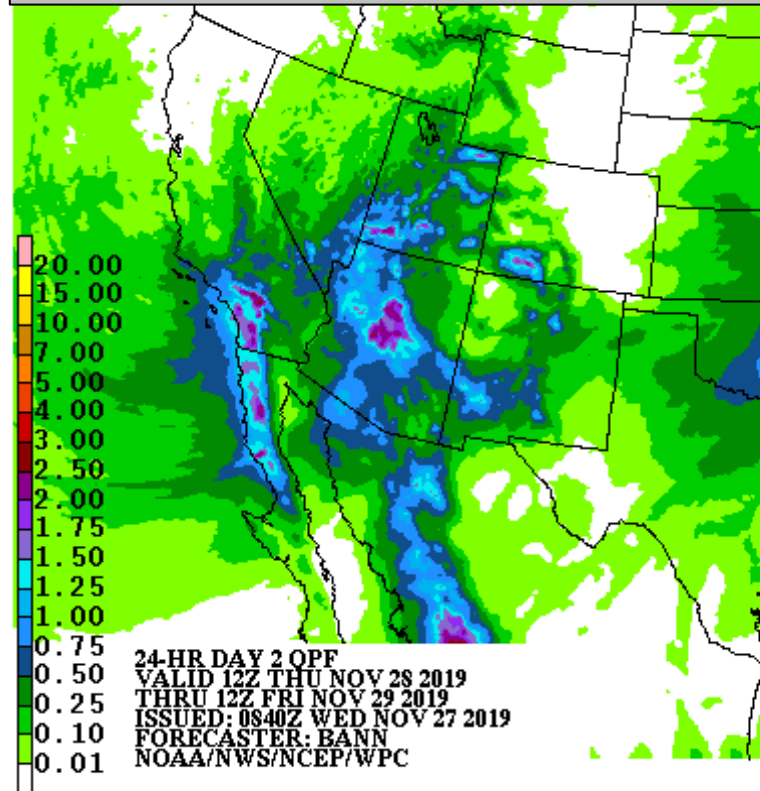
WPC 24-hr QPF

Valid 1200 UTC 27–28 Nov



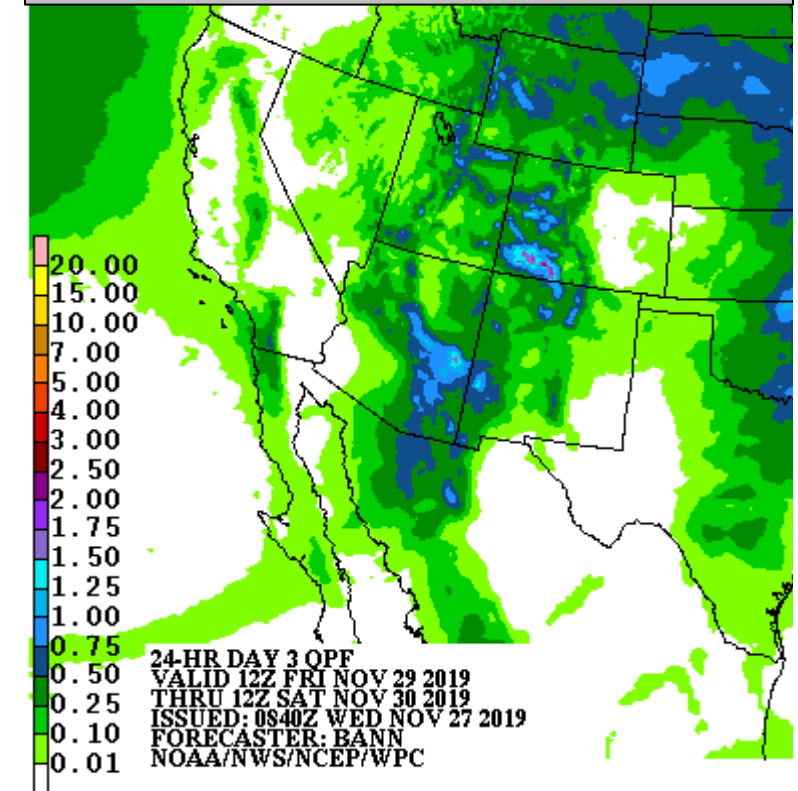
WPC 24-hr QPF

Valid 1200 UTC 28–29 Nov



WPC 24-hr QPF

Valid 1200 UTC 29–30 Nov

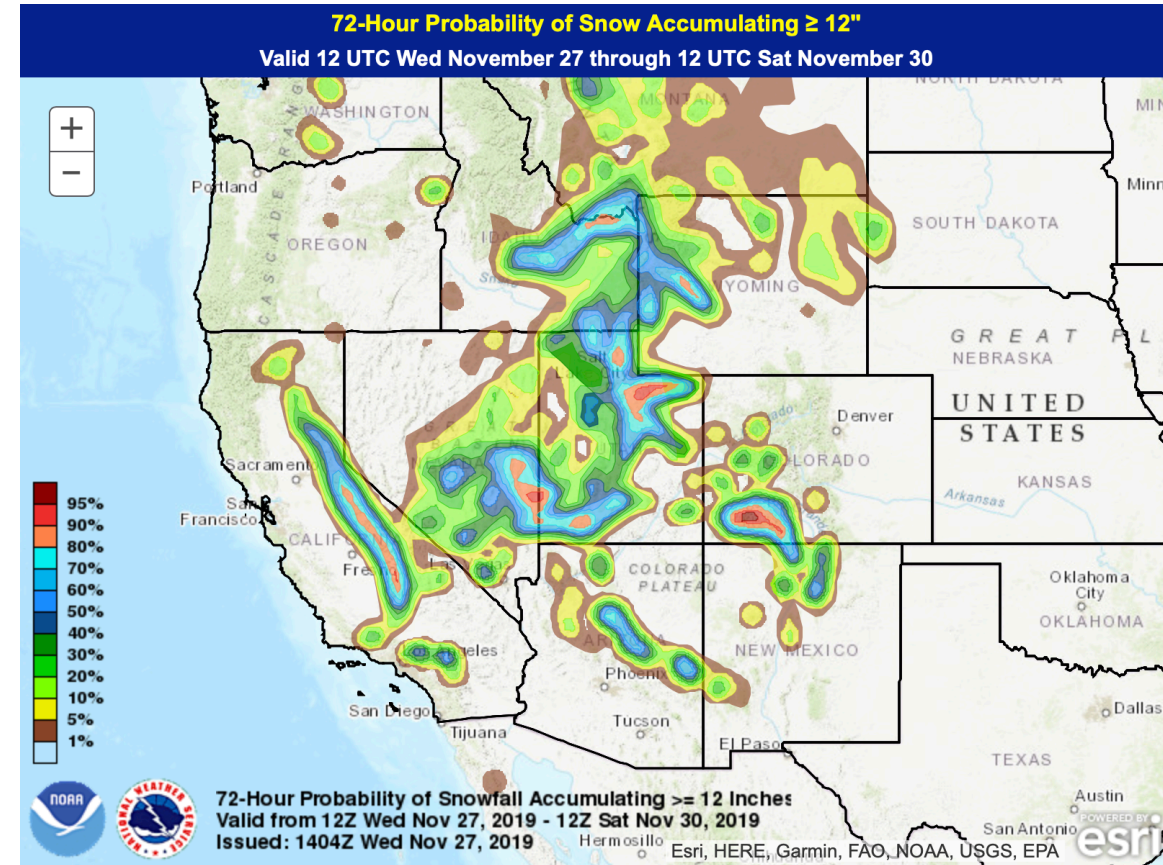
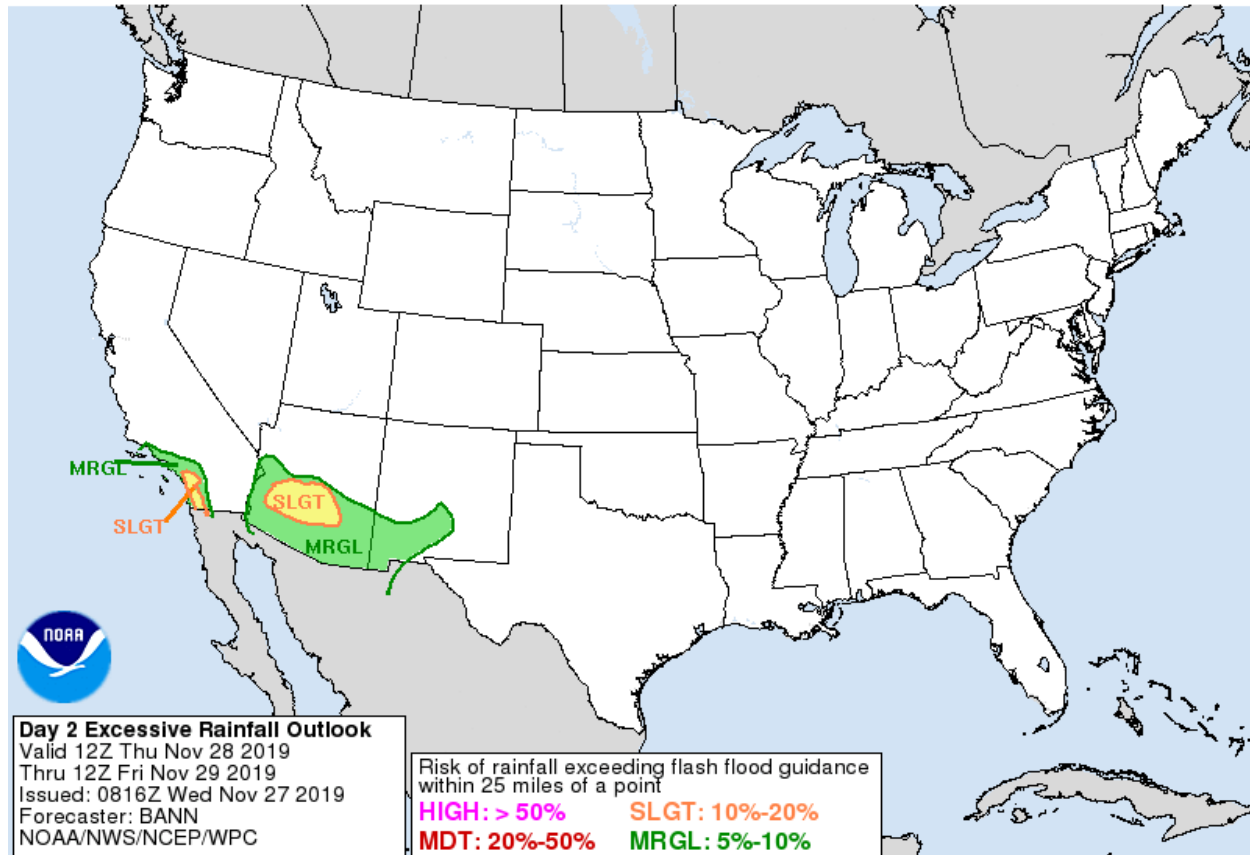


- Heavy rainfall (1-2 inches) associated with the 1st AR is expected over southeastern AZ and southern NM during the next 24 hours
- Heavy rainfall (1-3 inches) associated with the 2nd AR is expected over southern CA and the Lower Colorado River Basin on 28 and 29 Nov
- The highest 3-day precipitation amounts are forecast over the Transverse and Peninsular Ranges in southern CA, as well as over the elevated terrain in north-central AZ, southwestern UT, and southwestern CO

CW3E AR Outlook: 27–29 Nov 2019

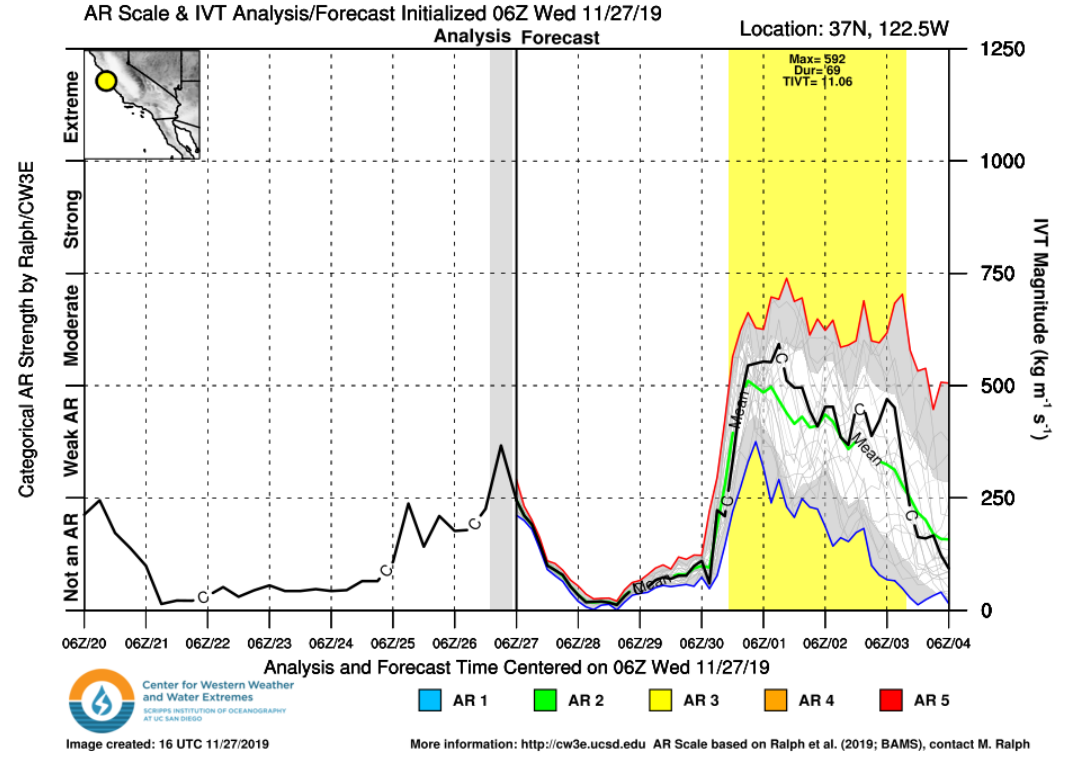
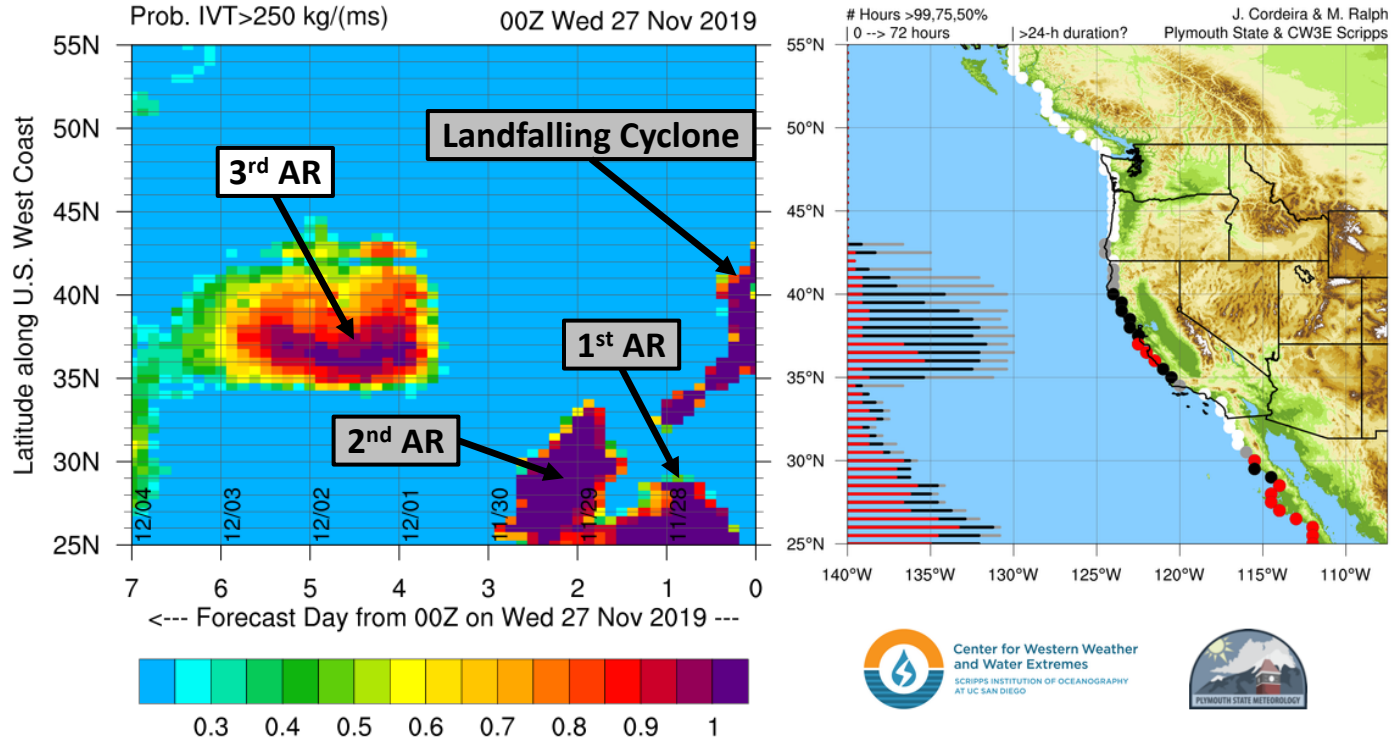


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- NOAA/NWS Weather Prediction Center (WPC) has issued a slight risk for excessive rainfall in southern coastal CA and central AZ for 1200 UTC 28–29 Nov
- In addition to heavy rainfall, snowfall accumulations exceeding 12" are likely (> 70% probability) over the higher elevations in eastern NV, southwestern UT, northeastern UT, and southwestern CO

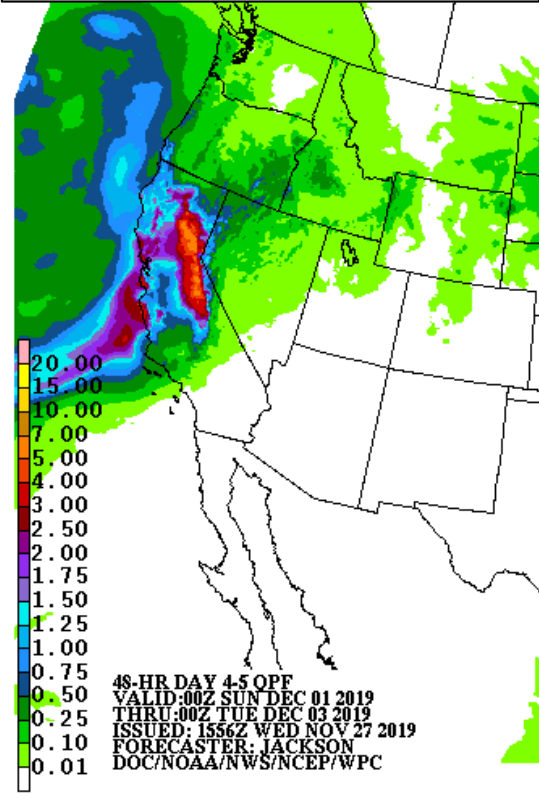
CW3E AR Outlook: 30 Nov – 3 Dec 2019



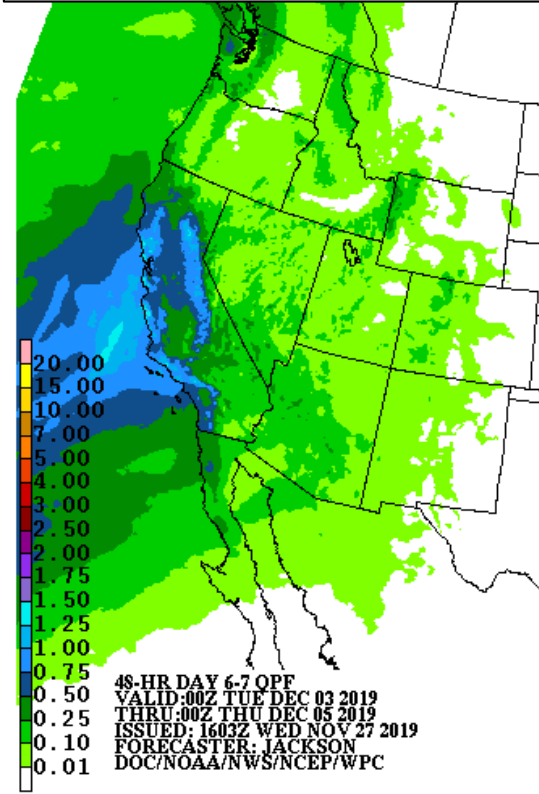
- AR landfall probability tool (see 3rd AR above) and IVT plumes show the potential for a long-duration AR event along the California coast starting 30 Nov
- GEFS control member is currently forecasting nearly 72 hours of weak-to-moderate AR conditions (AR3 based on the *Ralph et al. (2019)* AR Scale) near Monterey Bay, but there is a large degree of uncertainty regarding the AR landfall location, duration, and magnitude

CW3E AR Outlook: 30 Nov – 3 Dec 2019

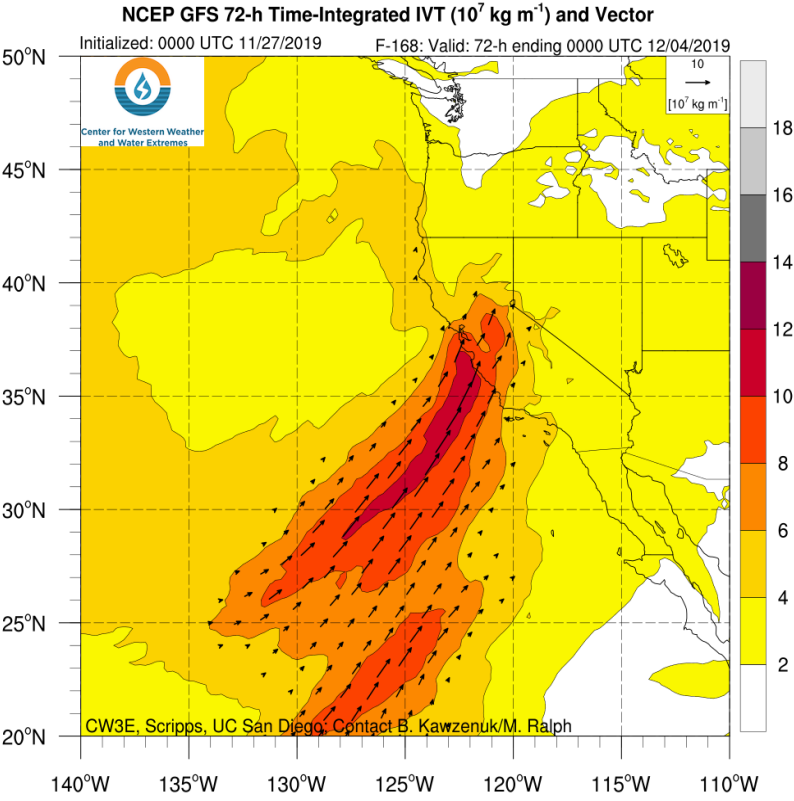
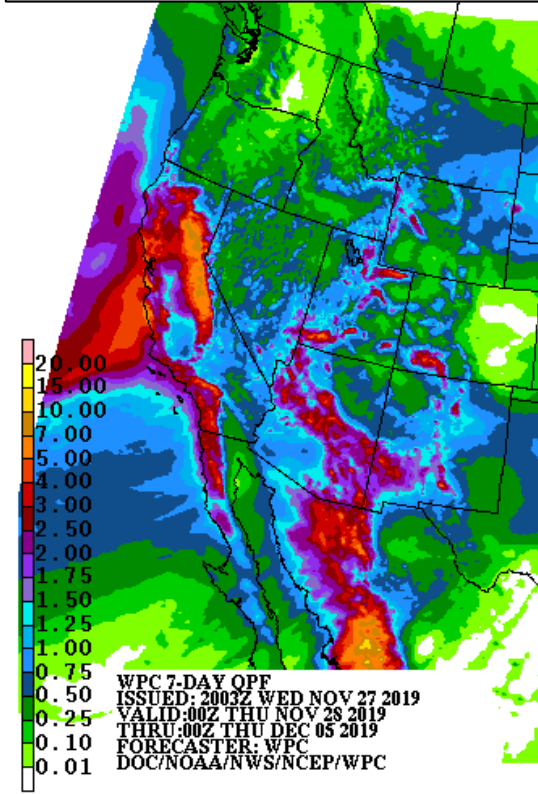
WPC 48-hr QPF
Valid 00 UTC 1–3 Dec



WPC 48-hr QPF
Valid 00 UTC 3–5 Dec



WPC 7-day QPF
Valid 00 UTC 27 Nov – 5 Dec



- WPC Days 4-5 and 6-7 QPF (ending 00 UTC 3 Dec) suggests that much northern and central CA may receive another 1-3 inches of precipitation in association with the 3rd AR (higher amounts possible over the Sierra Nevada)
- Over the next 7 days, a large section of the Western U.S. is forecast to receive at least 1 inch of precipitation, with 3-5+ inches possible along the California coast and over the Sierra Nevada