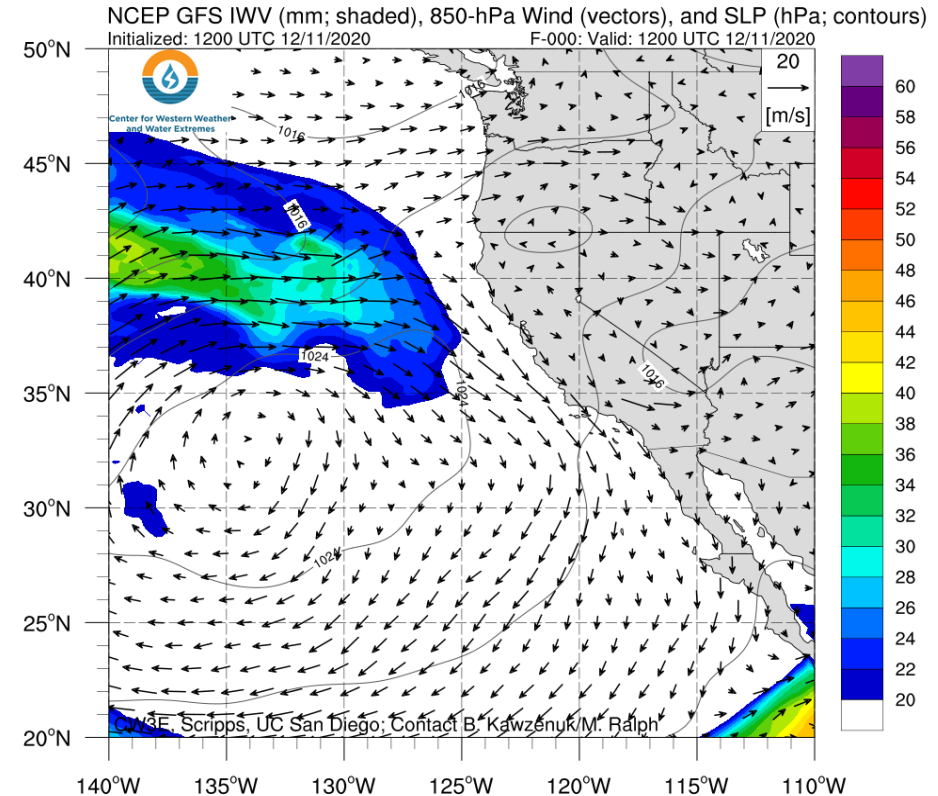
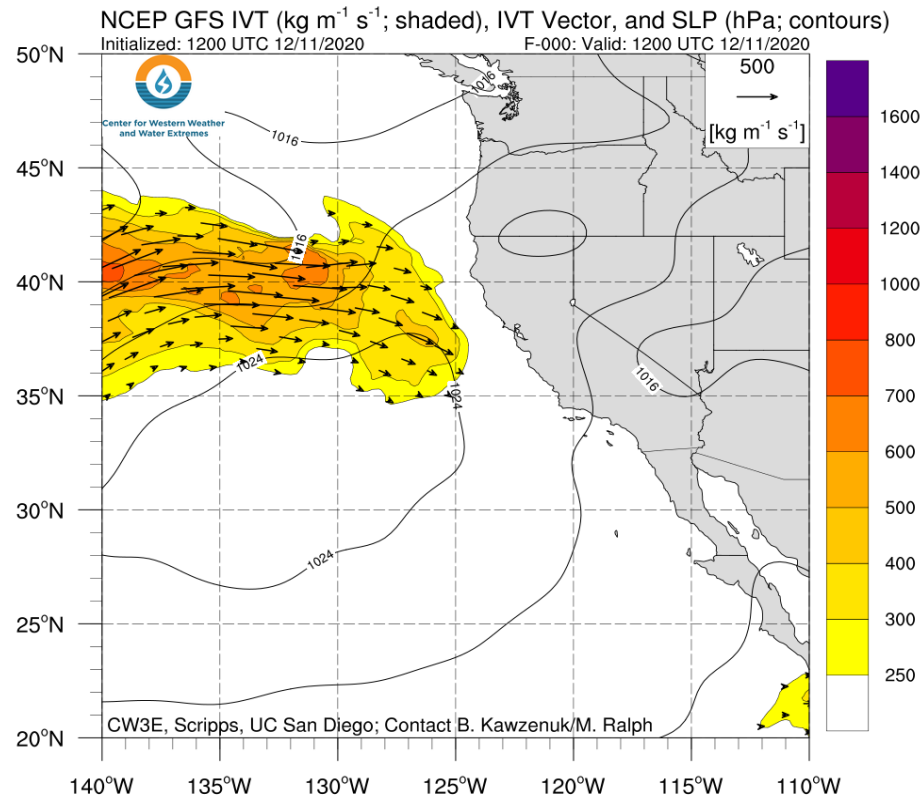


Landfalling ARs to bring much-needed precipitation to Northern California

- Multiple ARs will impact the U.S. West Coast during the next few days
- AR 2 conditions (based on the Ralph et al. 2019 AR Scale) are forecast over portions of coastal California in association with the first landfalling AR, but the northwesterly orientation of the IVT vectors will limit precipitation amounts
- About 1–3 inches of total precipitation are forecast over the Sierra Nevada, Northern California Coast Ranges, Oregon Coast Ranges, and Oregon Cascades during the next 72 hours
- More than a foot of total snowfall is possible in the higher terrain of the Sierra Nevada

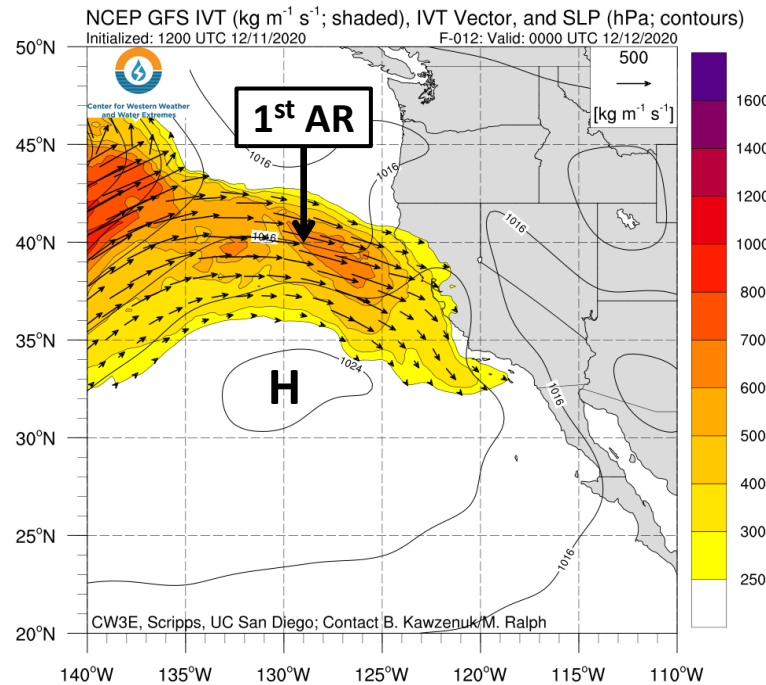


AR Outlook: 11 Dec 2020

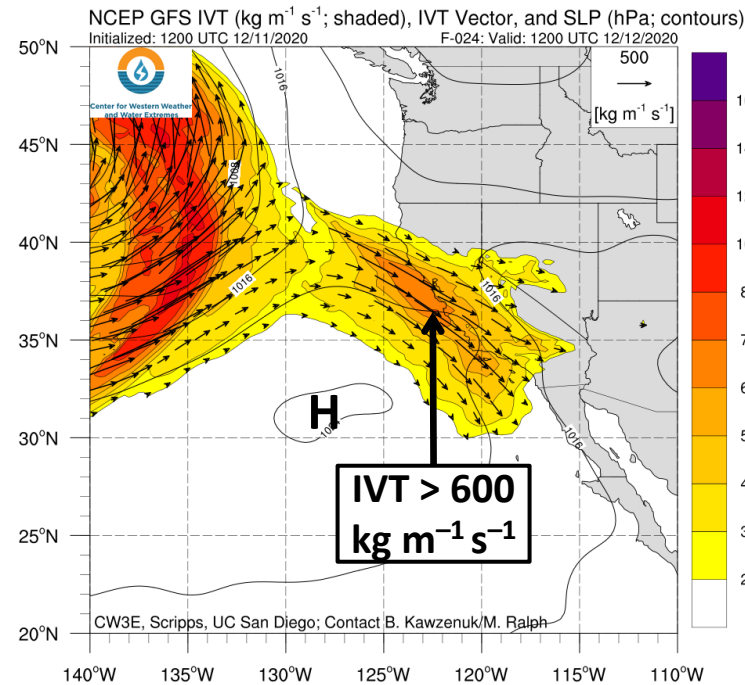
For California DWR's AR Program

GFS IVT & SLP Forecasts

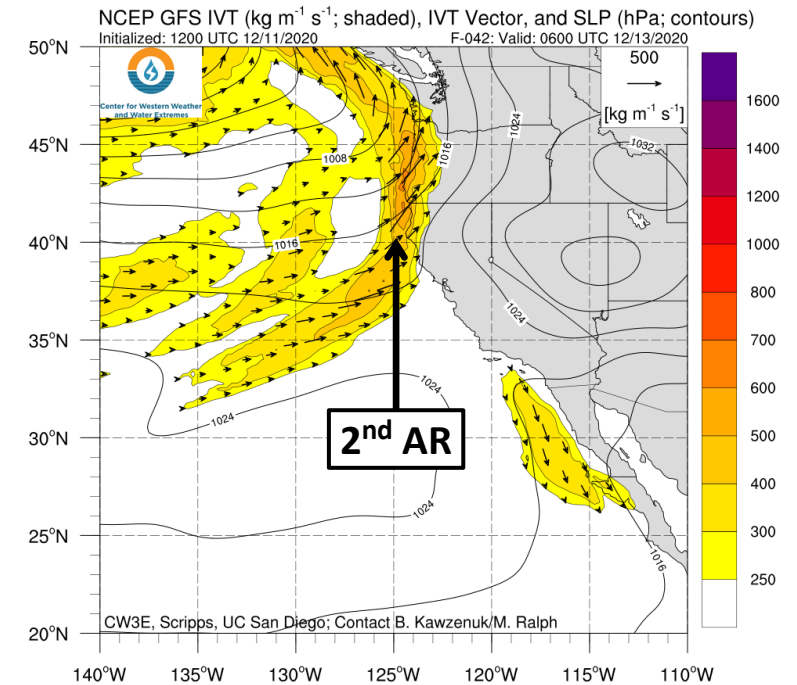
A) Valid 0000 UTC 12 Dec (F-012)



B) Valid 1200 UTC 12 Dec (F-024)



C) Valid 0600 UTC 13 Dec (F-042)

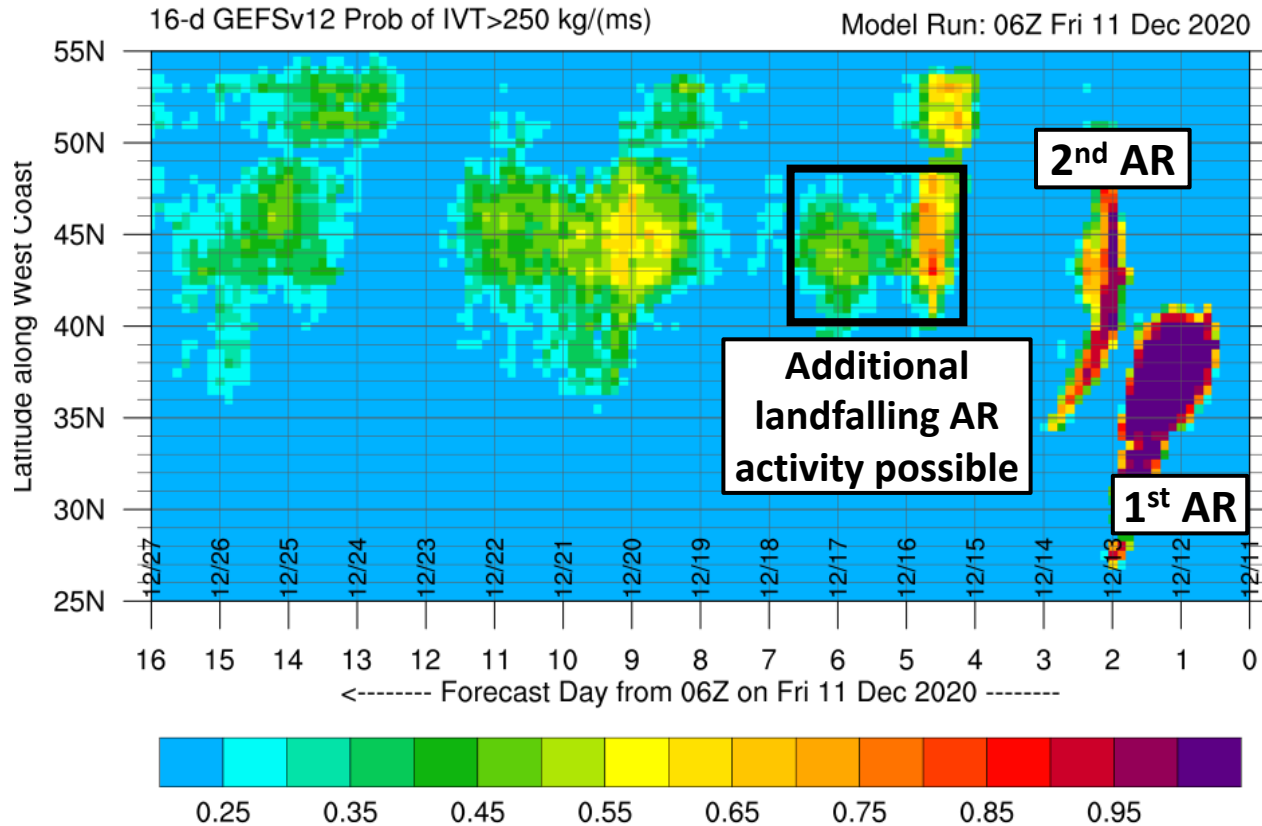


- The first AR is forecast to make landfall later today over Northern California on the poleward side of a subtropical anticyclone (Figure A)
- Moisture transport is expected to peak around 12Z 12 Dec (tomorrow morning), with IVT values approaching $600 \text{ kg m}^{-1} \text{s}^{-1}$ near the San Francisco Bay Area (Figure B)
- Note that the northwesterly orientation of the IVT vectors across much of Southern and Central California is not favorable for precipitation
- A second AR associated with a weakening frontal boundary is forecast to make landfall along the U.S. West Coast around 06Z 13 Dec (Figure C)

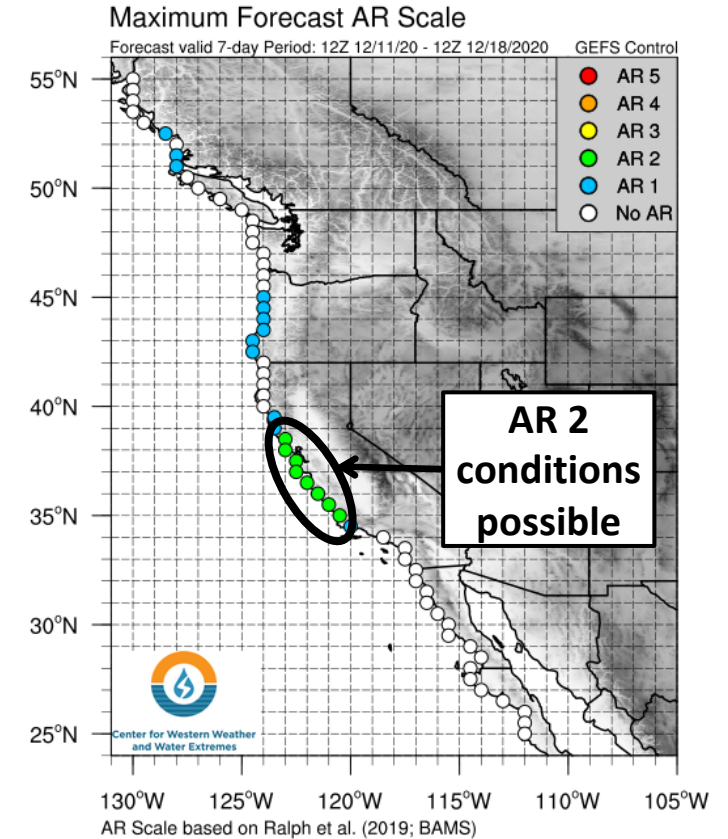
AR Outlook: 11 Dec 2020

For California DWR's AR Program

Probability of AR Conditions: Coastal Transect



AR Scale: Coastal Transect



*GEFS = NCEP Global Ensemble Forecast System (United States)

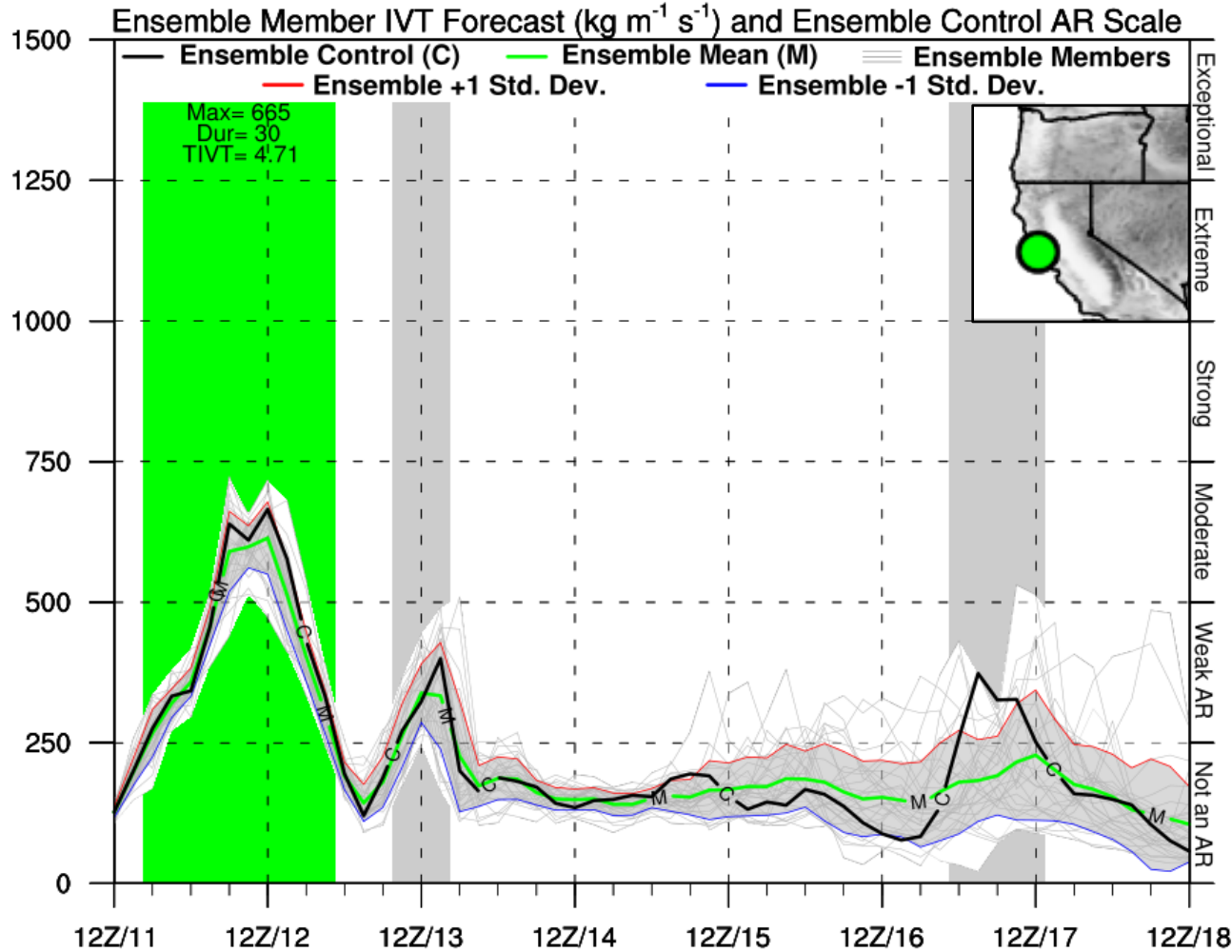
- 06Z GEFS AR landfall tool shows very high confidence ($> 95\%$ probability) in a period of AR conditions ($IVT \geq 250 \text{ kg m}^{-1} \text{ s}^{-1}$) over coastal California between 00Z 12 Dec and 00Z 13 Dec
- AR 2 conditions are forecast in association with the first landfalling AR, but given the persistent northwesterly flow, no major impacts are expected across most of Central California
- A second, brief period of landfalling AR activity is very likely ($> 90\%$ probability) over coastal Northern California and Oregon on 13 Dec
- Additional landfalling AR activity is possible ($> 50\%$ probability) along the U.S. West Coast during 15–17 Dec, but uncertainty remains high

AR Outlook: 11 Dec 2020

For California DWR's AR Program

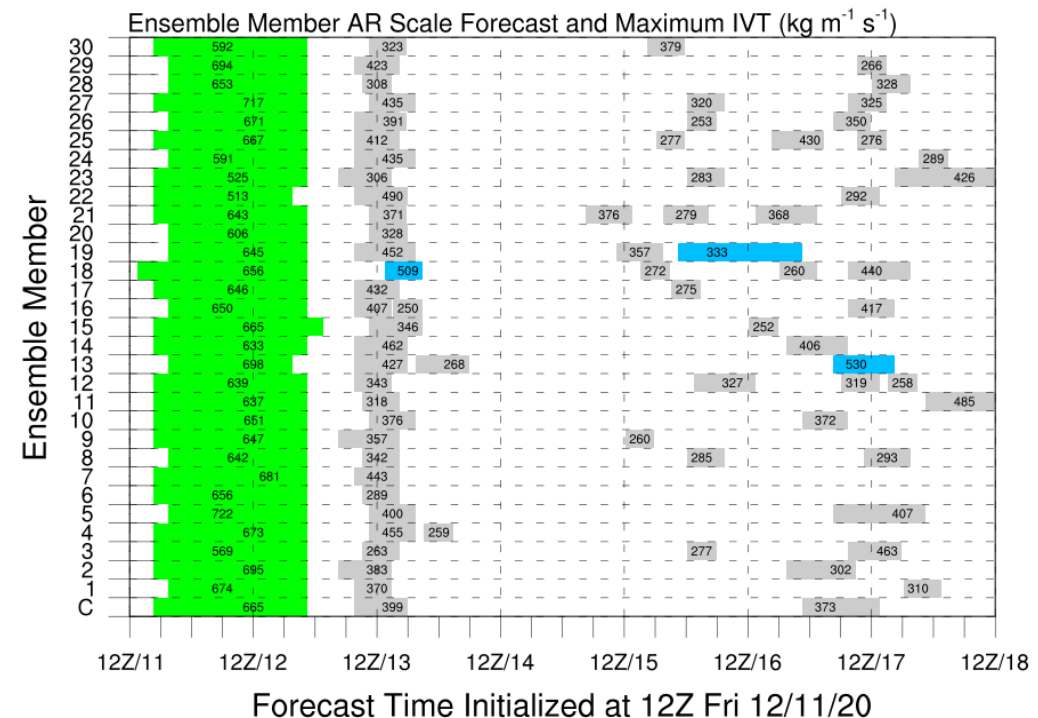
GEFS AR Scale & IVT Forecasts

GFS Ensemble Initialized: 12Z Fri 12/11/20



Categorical AR Strength by Ralph/CW3E

- The 12Z GEFS control member is forecasting an AR 2 in association with the first landfalling AR at 38°N , 123°W (near Point Reyes)
 - Maximum IVT: $665 \text{ kg m}^{-1} \text{ s}^{-1}$
 - AR duration: 30 h
- There is good ensemble agreement in the IVT forecasts, with all ensemble members forecasting an AR 2 at this location



AR 1 AR 2 AR 3 AR 4 AR 5

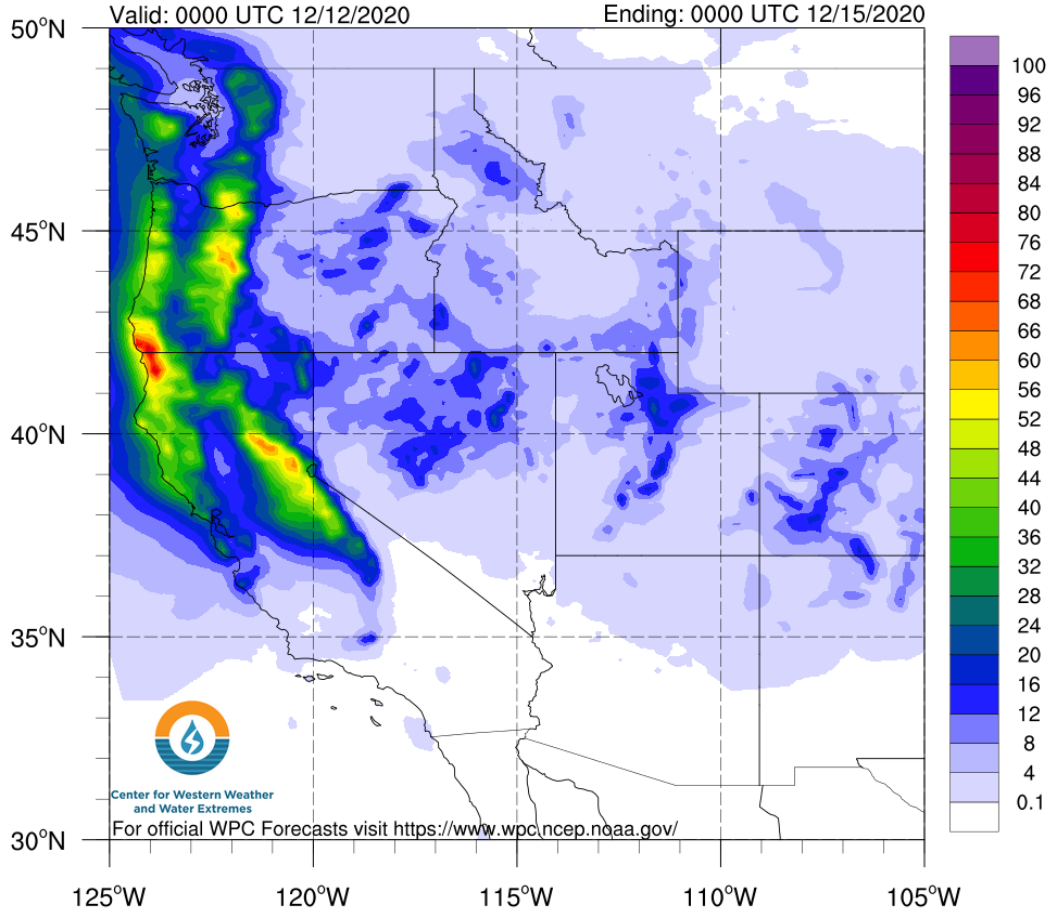
AR Outlook: 11 Dec 2020

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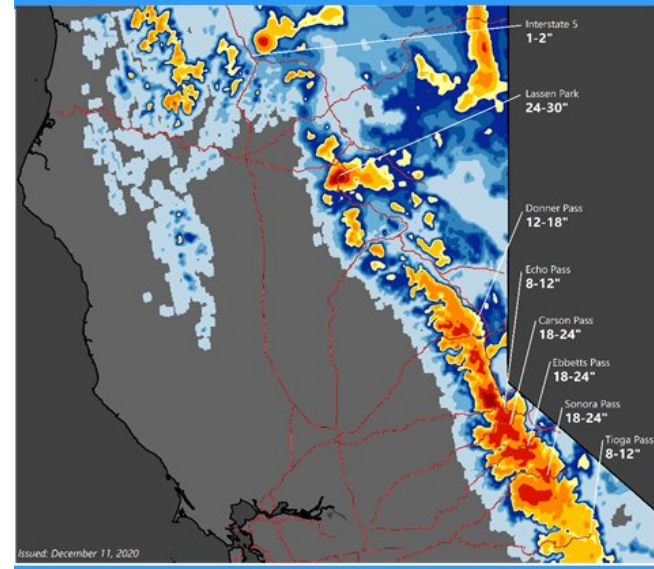
Center for Western Weather and Water Extremes
SCRIPPS INSTITUTION OF OCEANOGRAPHY
AT UC SAN DIEGO

WPC 3-day Precipitation Forecast (mm)



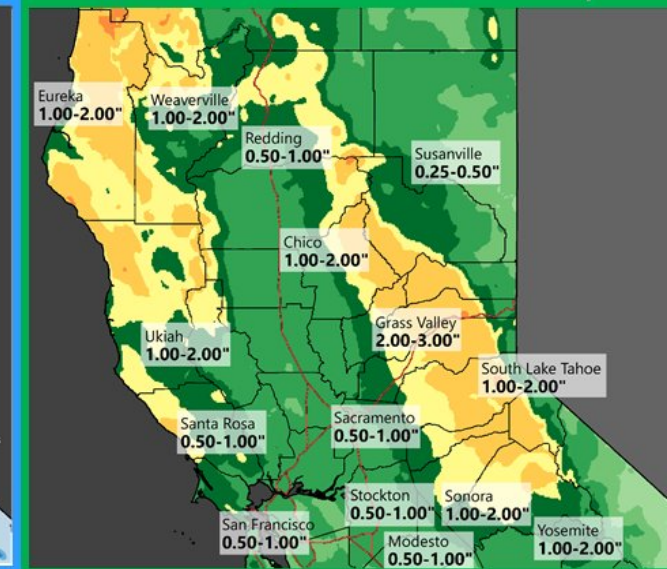
Snow Forecast

This Weekend



Precipitation Forecast

This Weekend



Snow Levels: 2500-3500 feet Friday Evening quickly rising above 6500 feet Saturday

Timing: Friday night – Sunday. Best chances tonight and again Sunday.

Road Info: 1-800-427-7623 or quickmap.dot.ca.gov

Latest Forecast: weather.gov/sto

Issued: December 11, 2020



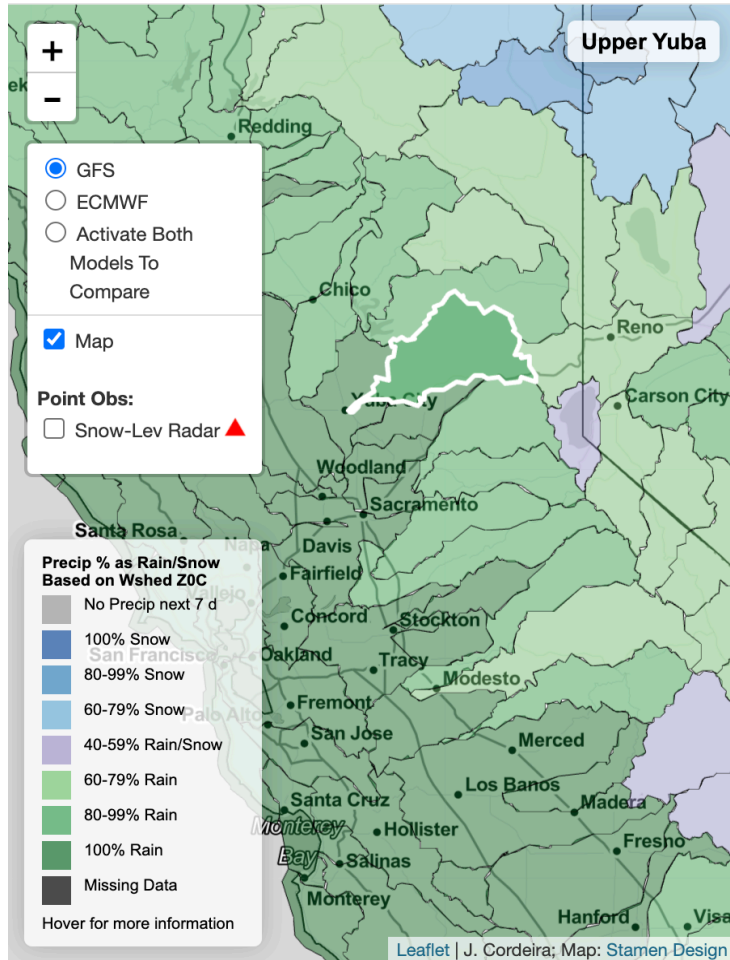
- NWS Weather Prediction Center (WPC) is about 1–3 inches of total precipitation over the Sierra Nevada, Northern California Coast Ranges, Oregon Coast Ranges, and Oregon Cascades during the 72-h period ending 0000 UTC (4 PM PST) 15 Dec
- The first event will primarily affect the Bay Area and Central Sierra Nevada, whereas precipitation from the second event will be more widespread
- Total snowfall accumulations > 12 inches are possible in the higher terrain of the Sierra Nevada

AR Outlook: 11 Dec 2020

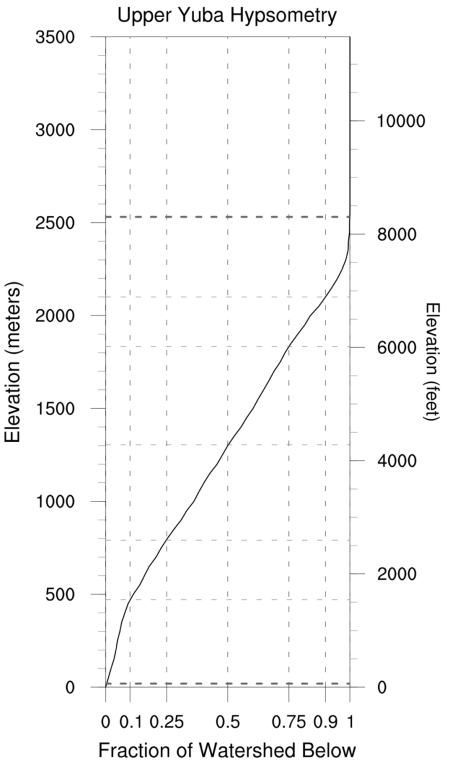
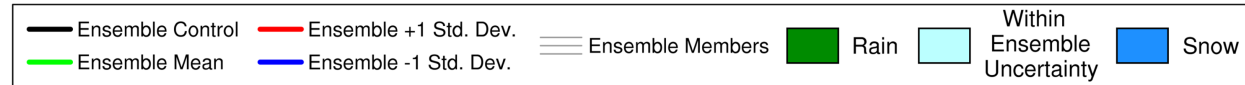
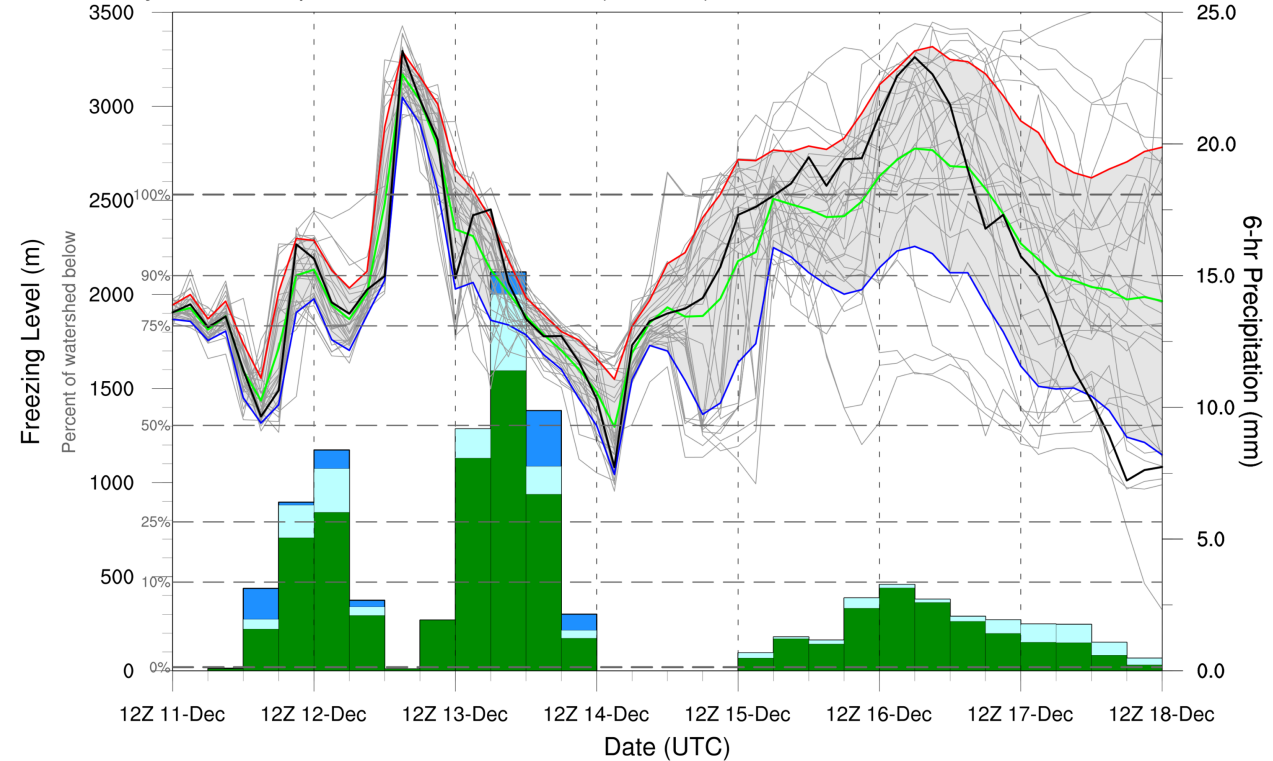
For California DWR's AR Program



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Upper Yuba; GEFS Forecast Initialized 2020-Dec-11 12 UTC
7-day WPC Precipitation Total: 79.94 mm (3.147 in); 76.6% Rain, 16.1% Uncertain, 7.3% Snow



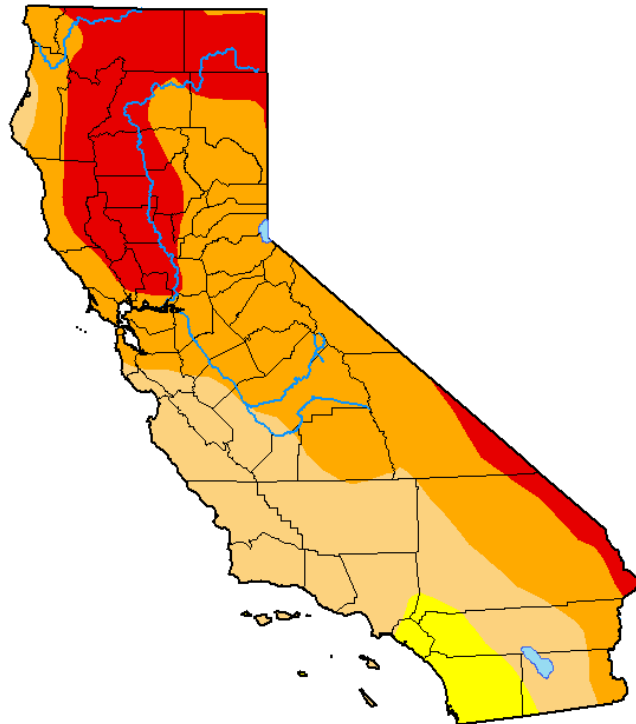
Center for Western Weather and Water Extremes

- Snow levels in the Sierra Nevada are generally expected to remain above 6,000 ft during both events
- Freezing levels in the Upper Yuba Watershed are forecast to rise substantially between 00Z 12 Dec (this afternoon) and 00Z 13 Dec (tomorrow afternoon), and then fall during the second event on 13 Dec
- The heaviest precipitation in the Upper Yuba Watershed is forecast to occur during the second event

AR Outlook: 11 Dec 2020

For California DWR's AR Program

U.S. Drought Monitor California



December 8, 2020

(Released Thursday, Dec. 10, 2020)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	95.17	66.79	21.30	0.00
Last Week 12-01-2020	3.46	96.54	75.03	48.19	19.36	0.00
3 Months Ago 09-08-2020	20.45	79.55	54.18	32.98	3.04	0.00
Start of Calendar Year 12-31-2019	96.43	3.57	0.00	0.00	0.00	0.00
Start of Water Year 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
One Year Ago 12-10-2019	96.43	3.57	0.00	0.00	0.00	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

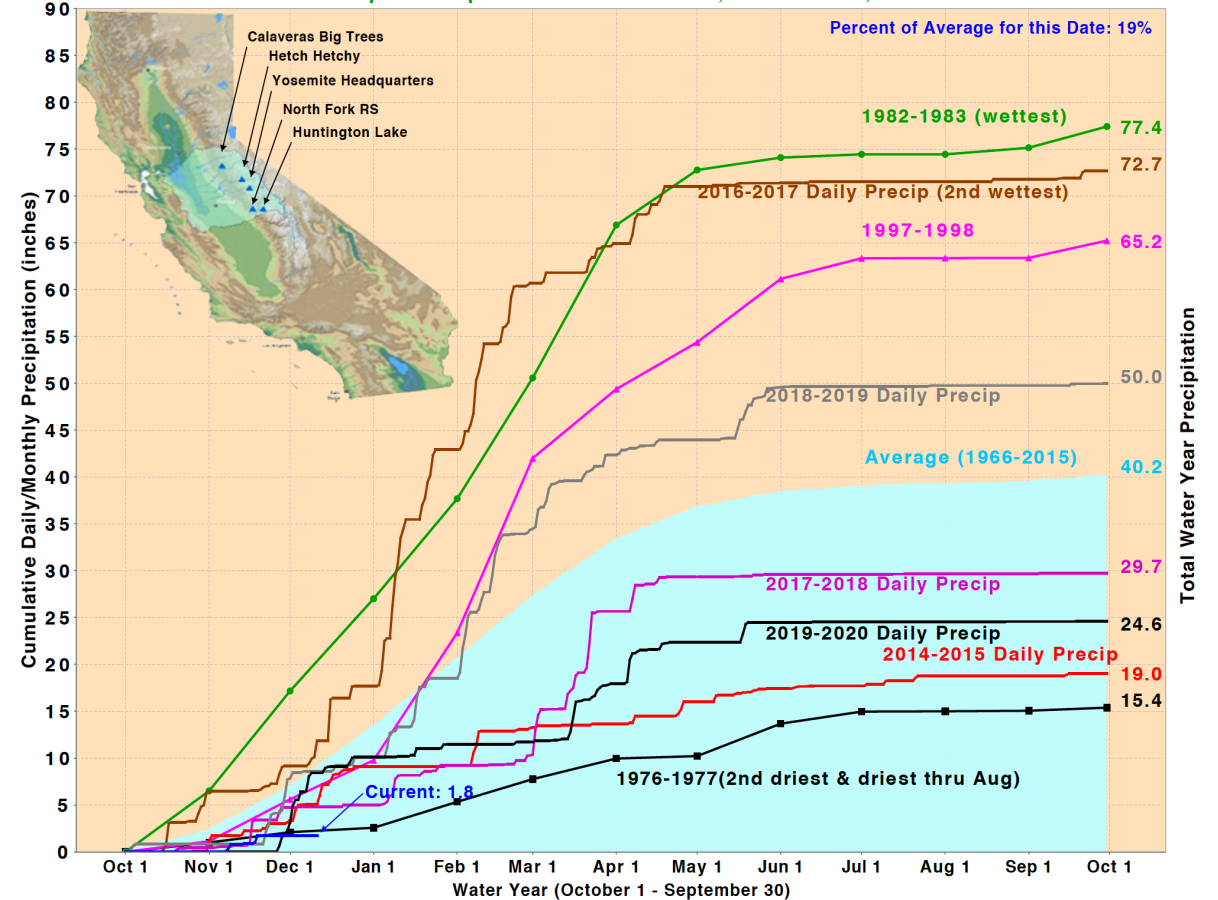
Author:

David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

San Joaquin Precipitation: 5-Station Index, December 11, 2020



- These storms are expected to bring much-needed precipitation to Northern California, which is currently under severe-to-extreme drought conditions
- As of 11 Dec, the San Joaquin (Central Sierra) 5-station precipitation index is only 19% of normal, highlighting the very dry start to Water Year 2021