

CW3E Atmospheric River Outlook: 15 September 2022

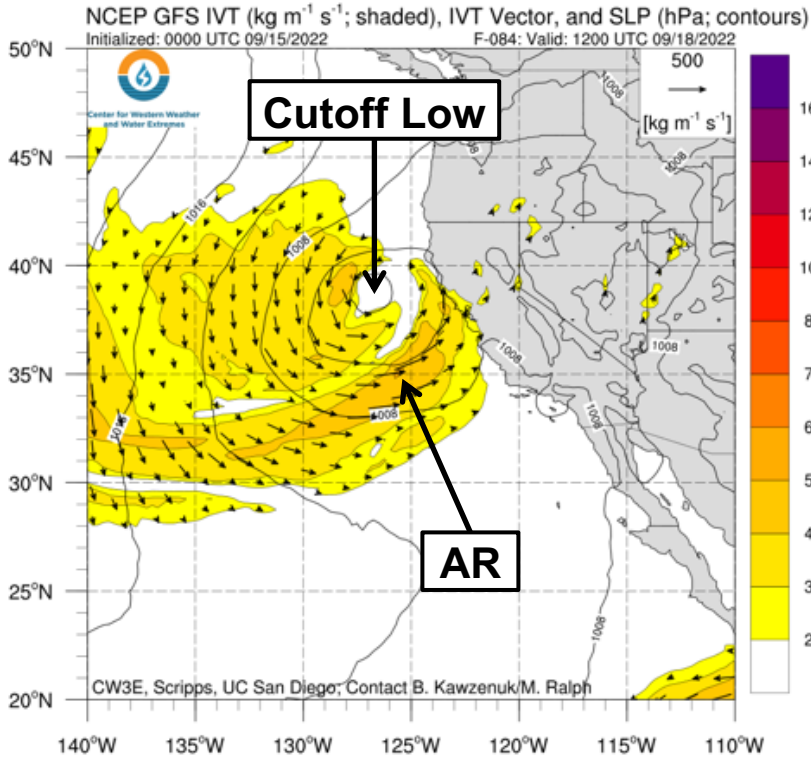
Early-Season Atmospheric River to Bring Precipitation to California

- An atmospheric river (AR) is forecasted to make landfall over California late Saturday night in association with a cutoff low
- Forecast models show the potential for an AR 1/AR 2 (based on the Ralph et al. 2019 AR Scale) in coastal Northern and Central CA, but there is still some uncertainty in the magnitude and duration of AR conditions
- The NWS Weather Prediction Center (WPC) is forecasting 1–2 inches of total precipitation over portions of the California Coast Ranges and Sierra Nevada over the next 7 days
- As the cutoff low weakens and moves eastward, strengthening poleward moisture transport over the Four Corners Region may produce 1–3 inches of precipitation in the higher terrain of the Upper Colorado River Basin
- Significant hydrologic impacts are not expected, but this precipitation will likely help fire management efforts to contain the Mosquito Fire, which has already burned about 64,000 acres

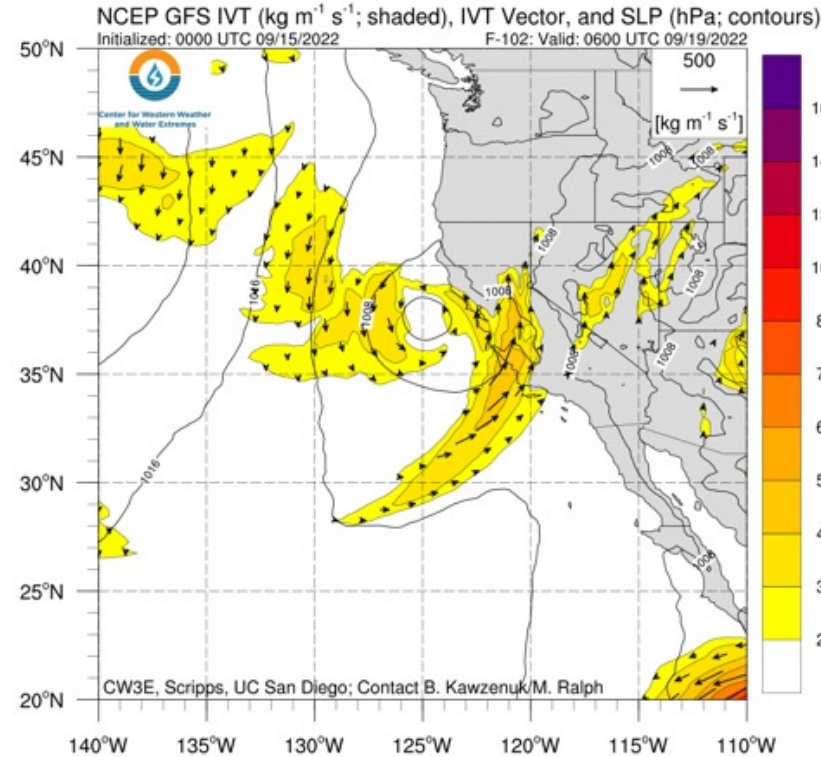
CW3E AR Outlook: 15 September 2022

Model IVT & SLP Forecasts

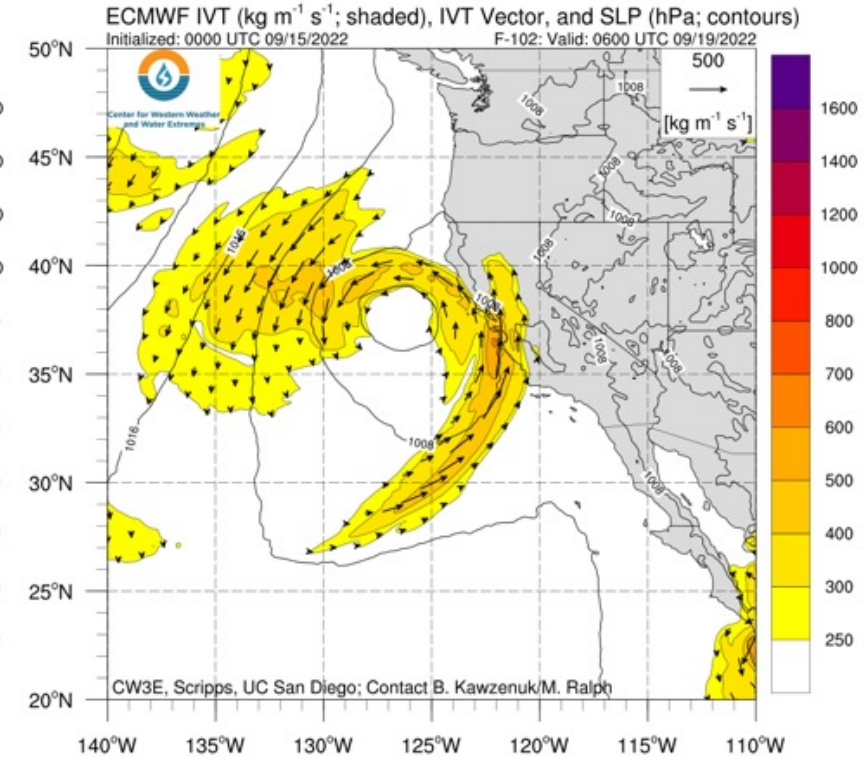
(A) GFS Valid: 5 AM PT 18 Sep (F-84)



(B) GFS Valid: 11 PM PT 18 Sep (F-102)



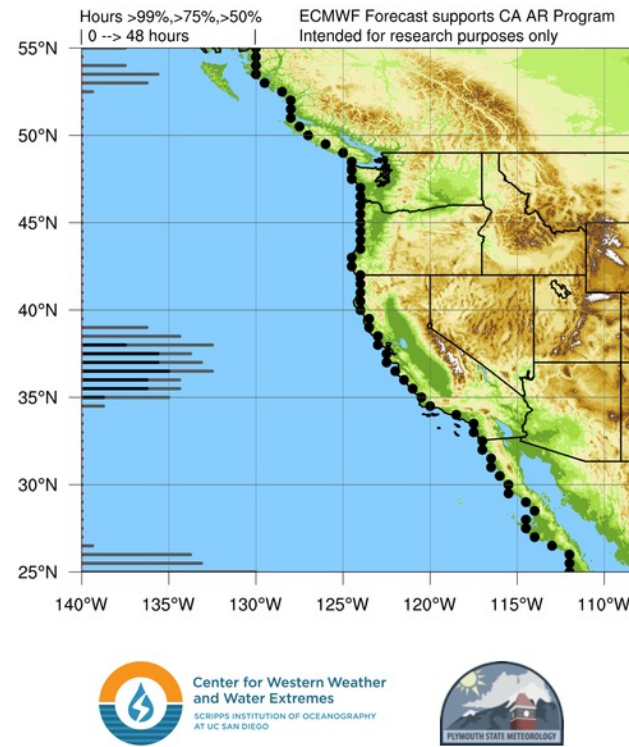
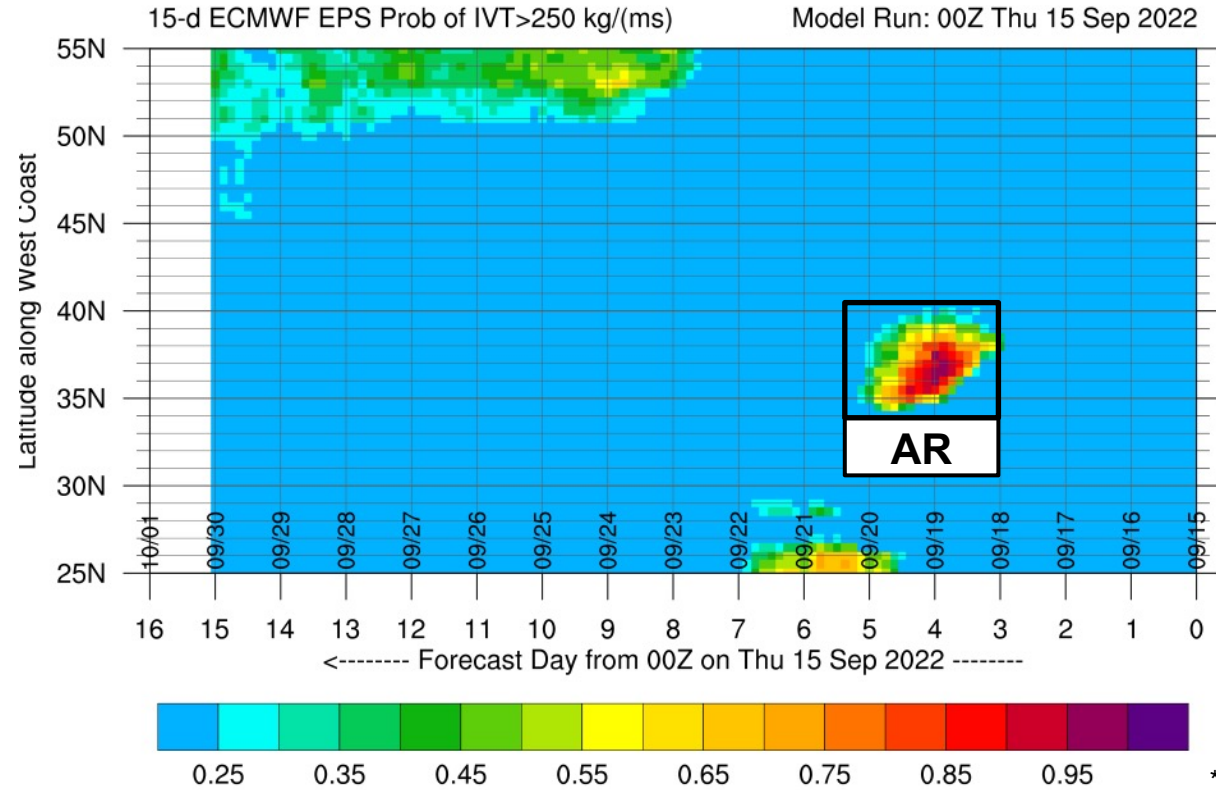
(C) ECMWF Valid: 11 PM PT 18 Sep (F-102)



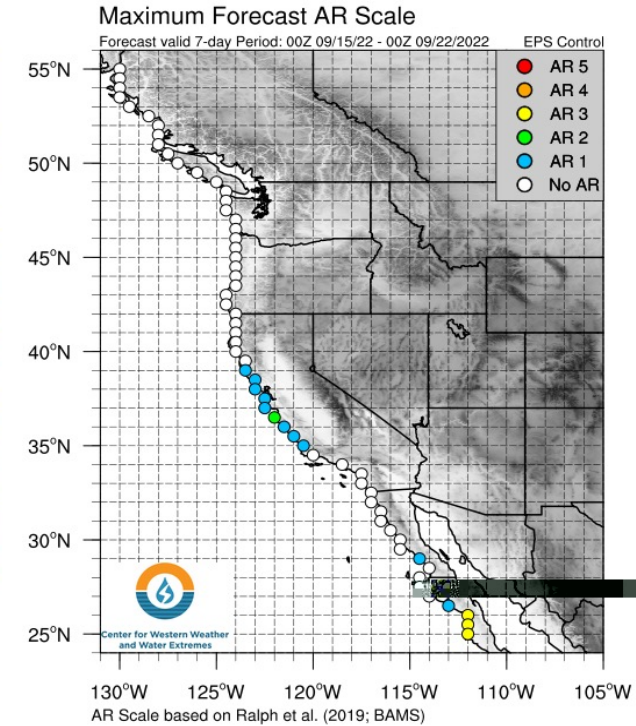
- An AR associated with a developing cutoff low is forecast to make landfall in California late Saturday night (Figure A)
- The strongest moisture transport is currently forecast over the Monterey Peninsula, with IVT values approaching $500 \text{ m}^{-1} \text{ s}^{-1}$
- As time progresses, the 00Z GFS is forecasting higher IVT values to spread into interior portions of California, whereas the 00Z ECMWF keeps much of the enhanced moisture transport along the coast (Figures B and C)
- These differences in the forecast IVT field are leading to differences in the forecast precipitation over the Sierra Nevada

CW3E AR Outlook: 15 September 2022

Probability of AR Conditions Along Coast (ECMWF EPS)



AR Scale



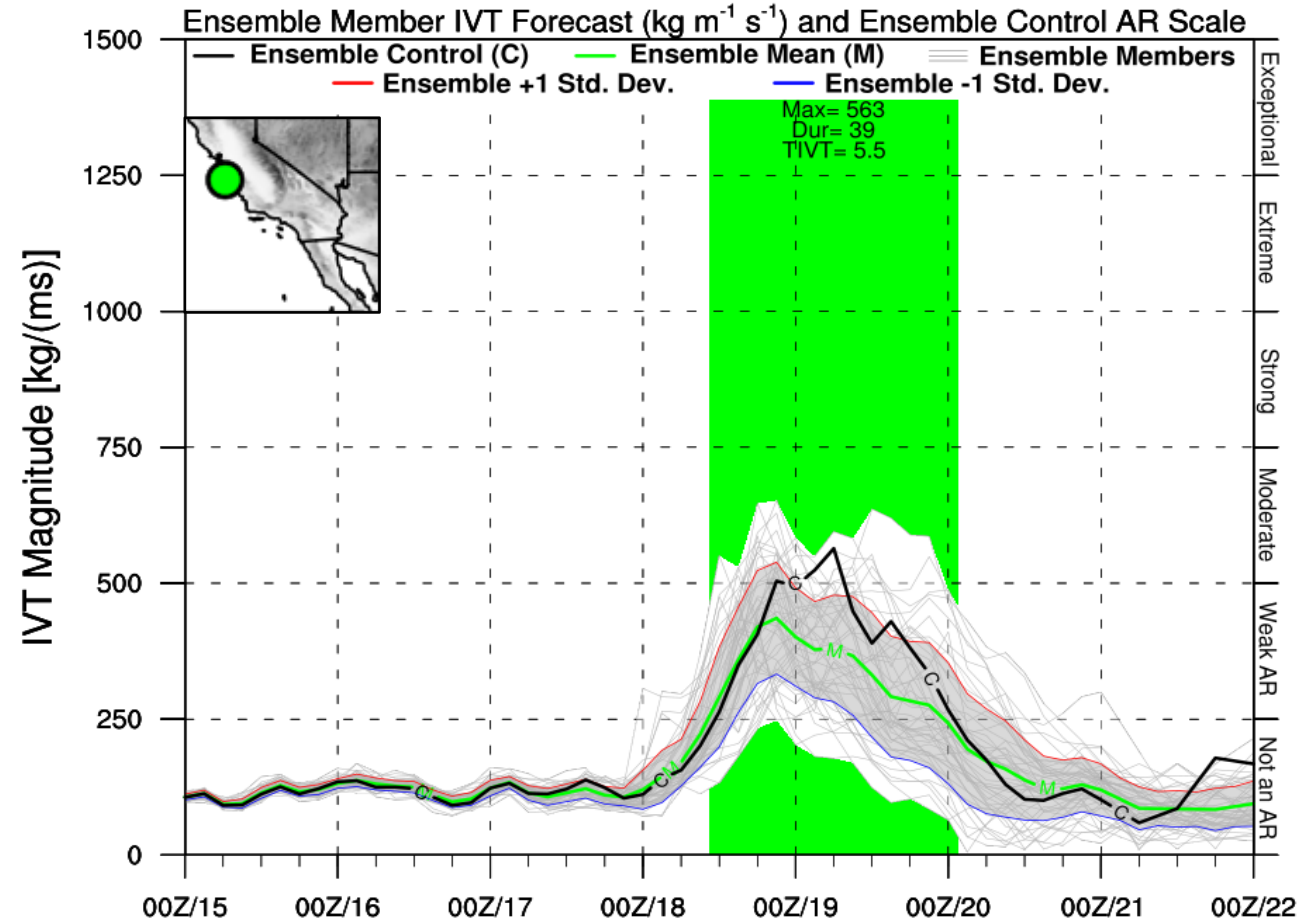
*ECMWF EPS = ECMWF Ensemble Prediction System (Europe)

- The 00Z ECMWF EPS is showing high confidence (> 80% probability) in a period of AR conditions ($IVT > 250 \text{ m}^{-1} \text{ s}^{-1}$) over portions of Central and Northern CA in association with this AR
- The 00Z ECMWF EPS control run is predicting AR 1 conditions along the California coast between Mendocino County and Santa Barbara County, with AR 2 conditions possible over the Monterey Peninsula

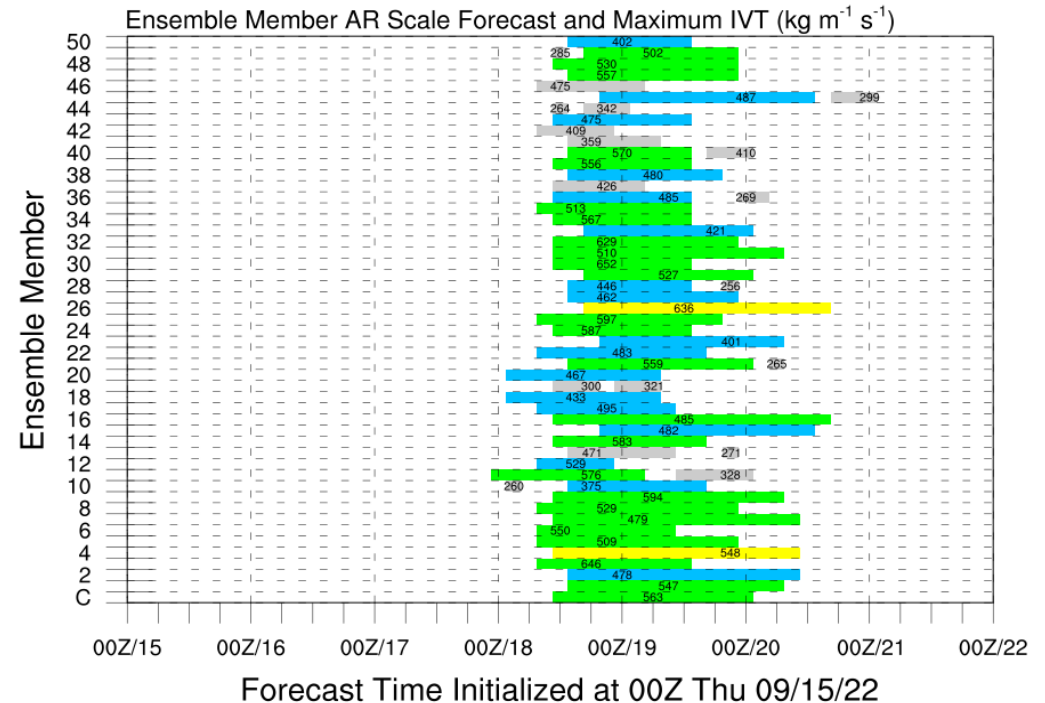
CW3E AR Outlook: 15 September 2022

ECMWF AR Scale and IVT Forecasts

ECMWF Ensemble Initialized: 00Z Thu 09/15/22



- The 00Z ECMWF EPS control run is forecasting an AR 2 at 36.5°N, 122°W (near Monterey, CA)
- There is still considerable uncertainty in the timing of the maximum IVT, as well as the duration of AR conditions
- 25 (49%) ensemble members are predicting an AR 2, 17 (33%) are predicting an AR 1, and 2 (4%) are predicting an AR 3

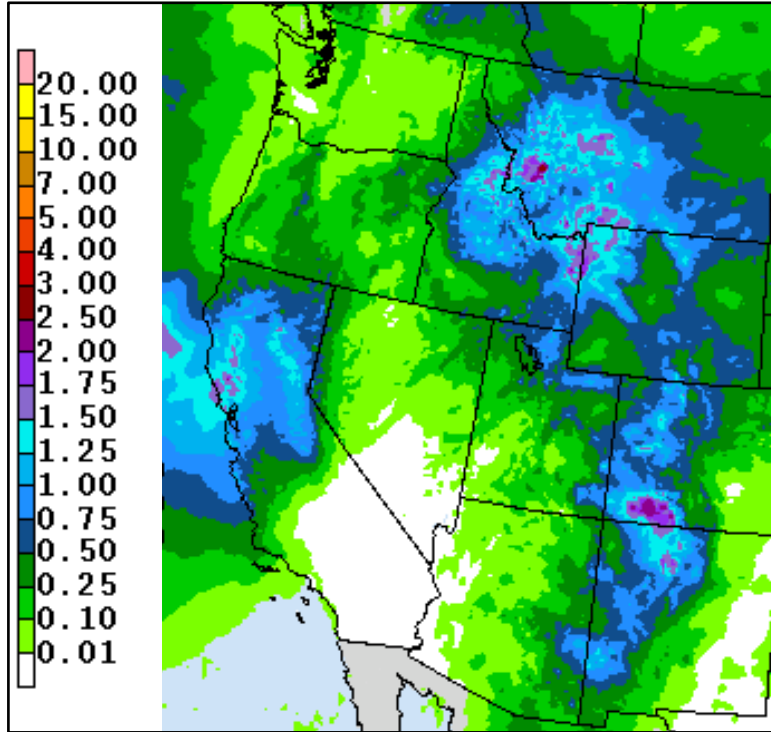


AR 1 (Blue) AR 2 (Green) AR 3 (Yellow) AR 4 (Orange) AR 5 (Red)

CW3E AR Outlook: 15 September 2022

Precipitation Forecasts

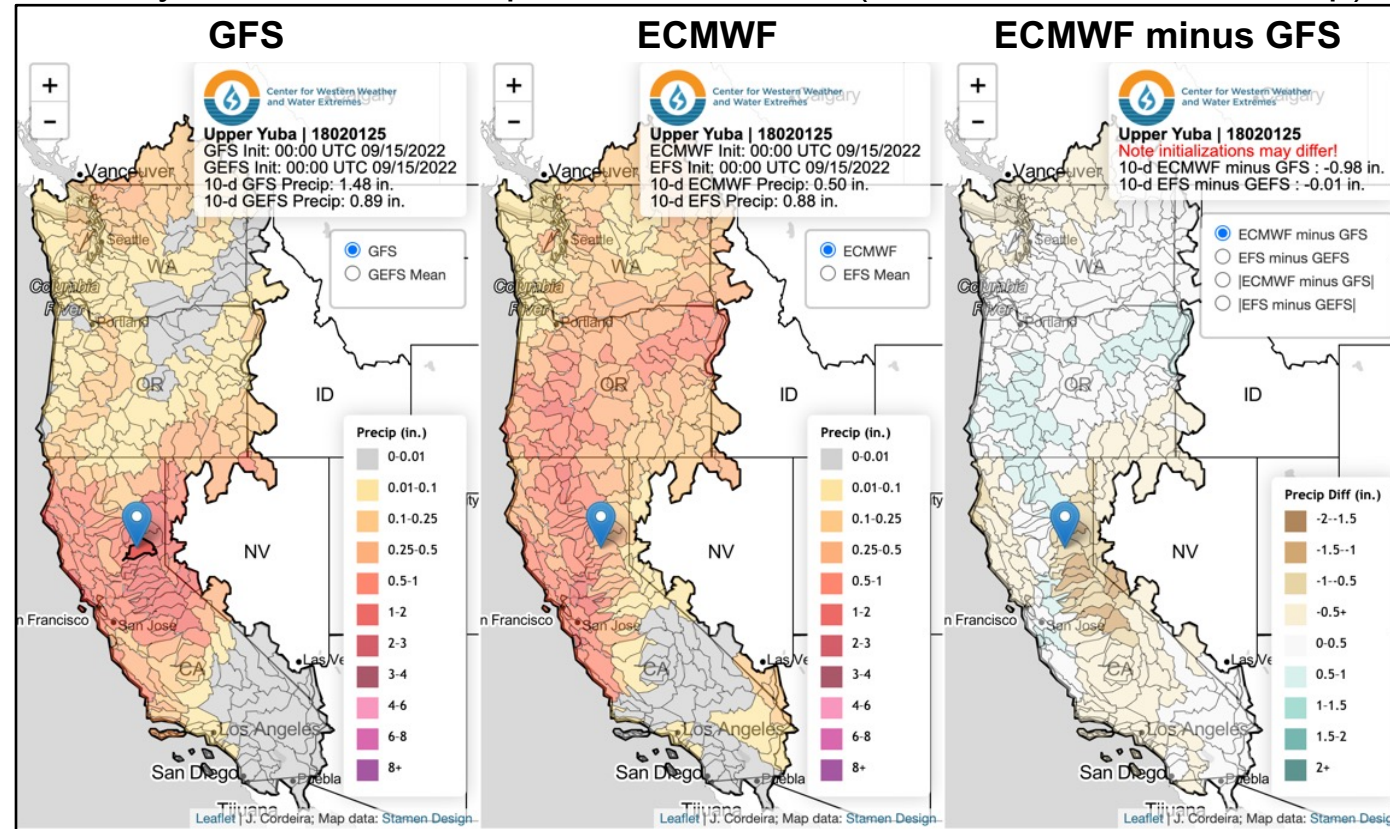
WPC 7-day QPF: Valid 5 AM PT 15–22 Sep



Source: NWS Weather Prediction Center



10-day Watershed Precipitation Forecasts (Initialized 00 UTC 15 Sep)

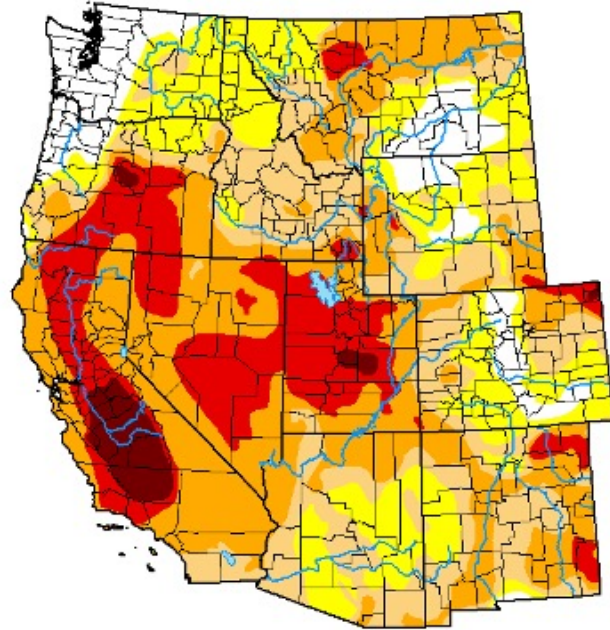


- The NWS Weather Prediction Center (WPC) is forecasting 1–2 inches of precipitation over much of Northern California during the next 7 days, with the highest amounts expected in the Coast Ranges and Northern Sierra Nevada
- The WPC is also forecasting about 1–3 inches of total precipitation over the higher terrain of the Upper Colorado River Basin
- There is model disagreement in forecast precipitation over the Sierra Nevada, with the GFS (ECMWF) forecasting higher (lower) amounts
- The 00Z GFS is forecasting 1.48 inches of mean areal precipitation in the Upper Yuba Watershed over the next 10 days

CW3E AR Outlook: 15 September 2022

Drought & Fire Impacts

U.S. Drought Monitor West



September 13, 2022
(Released Thursday, Sep. 15, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.72	91.28	71.39	49.03	18.15	2.83
Last Week 09-06-2022	11.81	88.19	68.39	49.06	18.91	2.63
3 Months Ago 06-14-2022	10.12	89.88	77.48	61.29	39.24	10.26
Start of Calendar Year 01-01-2022	3.88	96.32	89.29	64.90	23.85	3.94
Start of Water Year 03-28-2021	2.21	97.79	89.50	75.36	52.45	19.40
One Year Ago 09-04-2021	4.17	95.83	89.26	74.82	53.15	18.57

Intensity:
 None (White) D2 Severe Drought (Orange)
 D0 Abnormally Dry (Yellow) D3 Extreme Drought (Red)
 D1 Moderate Drought (Light Orange) D4 Exceptional Drought (Dark Red)

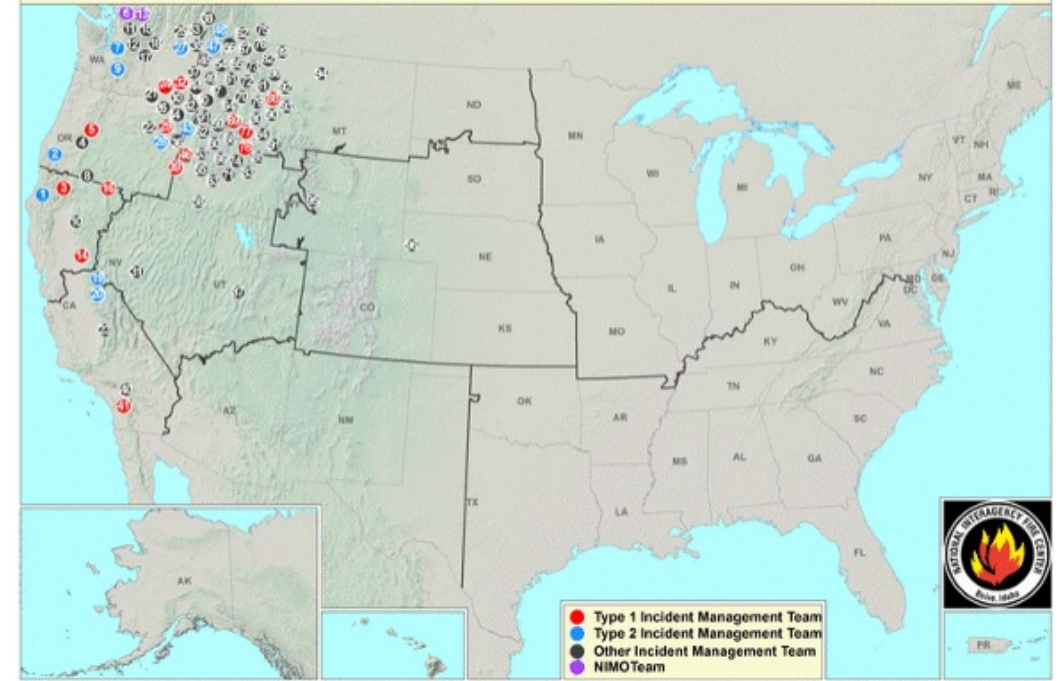
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

Current Large Incidents September 15, 2022



- Unfortunately, this event is not expected to provide much relief to the ongoing drought in California
- Nearly all of California is experiencing severe drought conditions, with exceptional drought over a large portion of Central CA
- However, the precipitation from this AR will likely aid efforts to contain the Mosquito Fire, which has already burned about 64,000 acres and is only 20% contained as of this morning