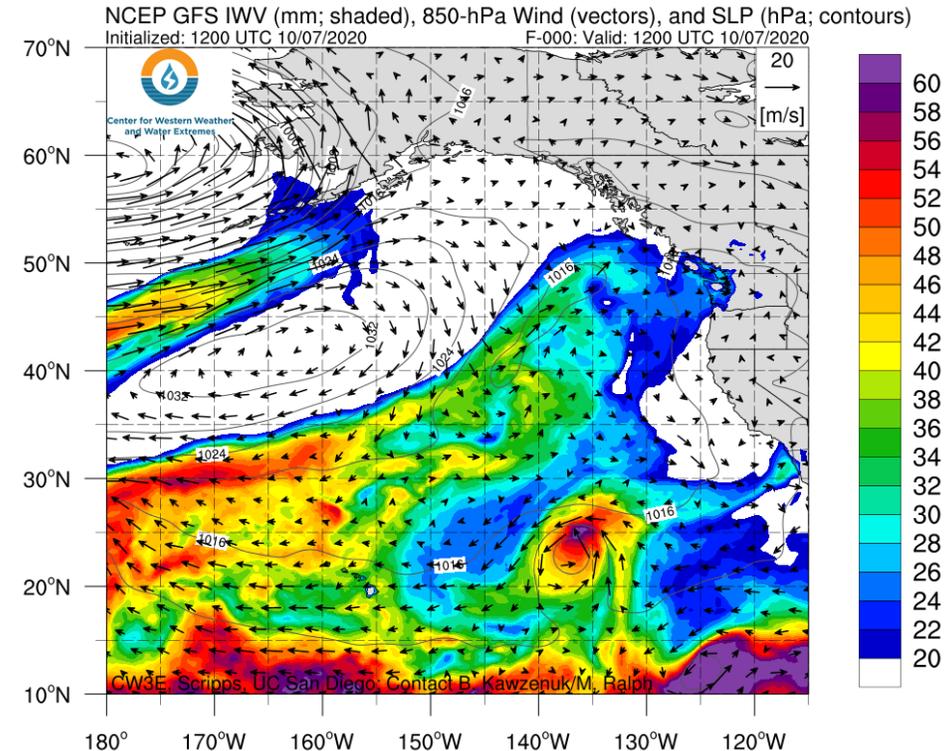
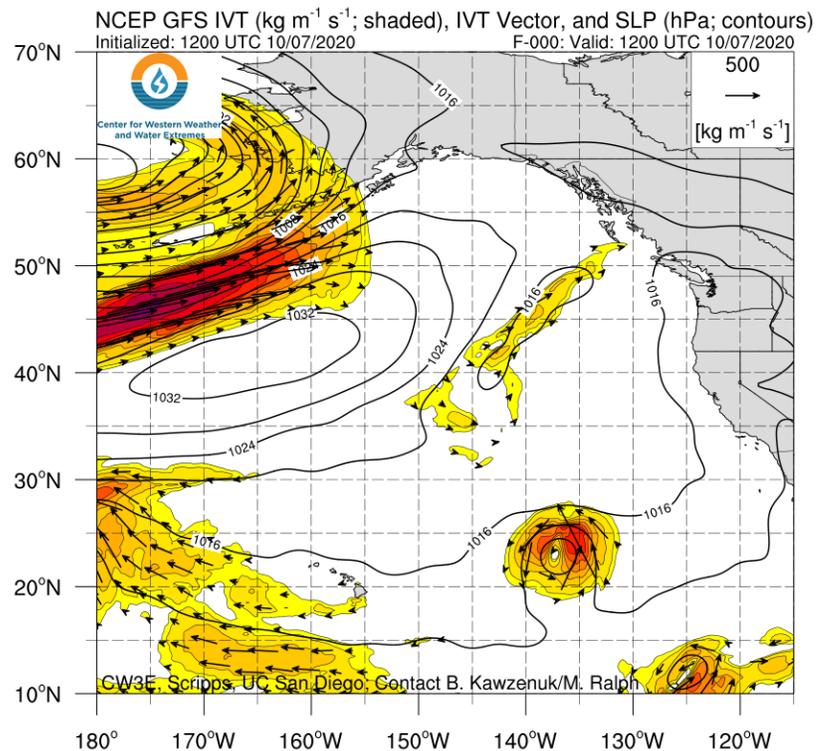


## Update on Atmospheric Rivers Forecast to Impact the US West Coast

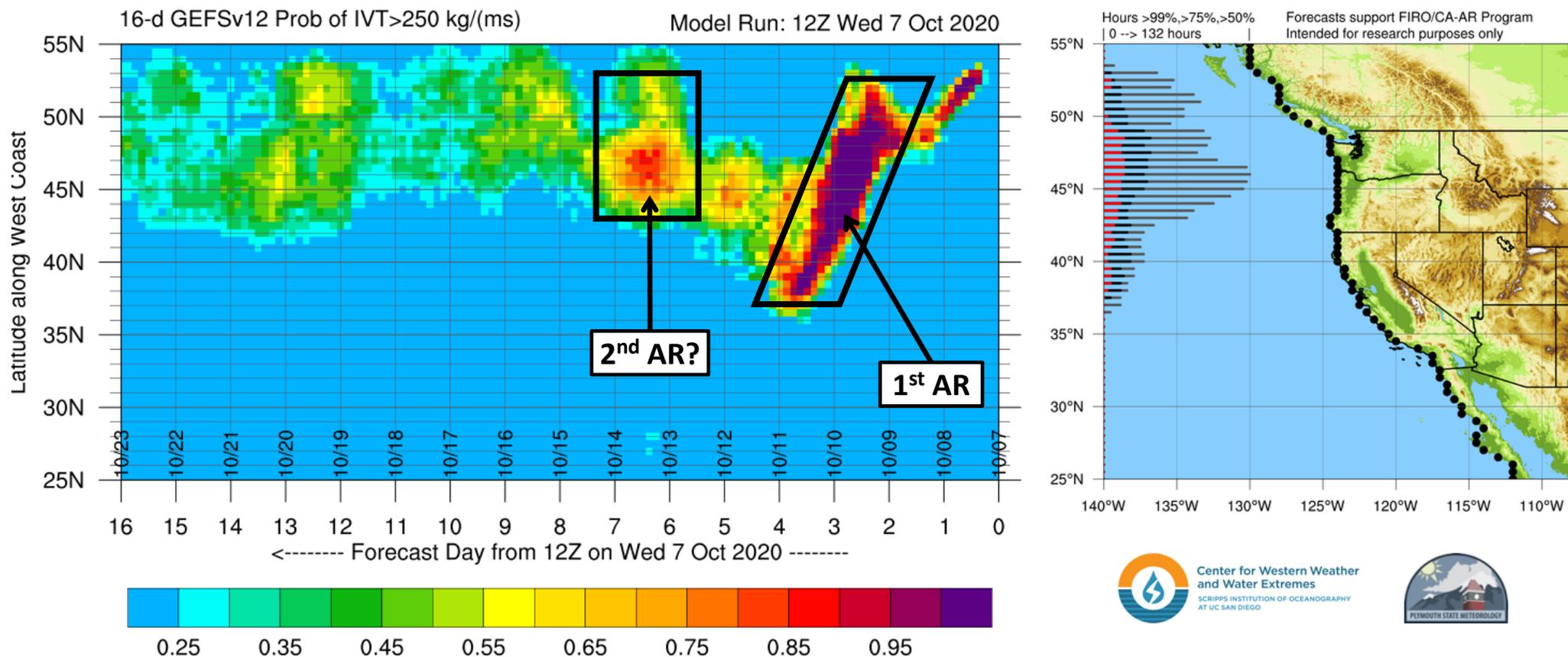
- An active weather pattern over the Northeast Pacific Ocean may result in multiple AR landfalls along the US West Coast during the next 7 days
- Current forecasts suggest the possibility of an AR 2/AR 3 between extreme Northern California and Washington in association with the first landfalling AR, but there is some uncertainty in the timing, duration, and magnitude of AR conditions
- The GFS and ECMWF are forecasting at least 1–3 inches of precipitation across western Washington and Oregon during the next 5 days, with higher amounts possible over the Olympic Mountains and North Cascades
- Unfortunately, little precipitation is expected in California, where many large fires are still active



# AR Outlook: 7 Oct 2020

For California DWR's AR Program

## Probability of AR Conditions Along Coast

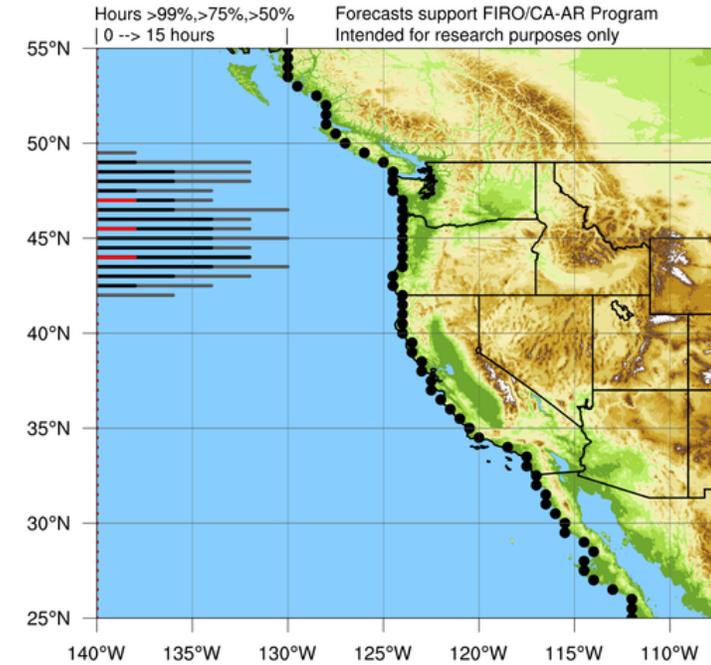
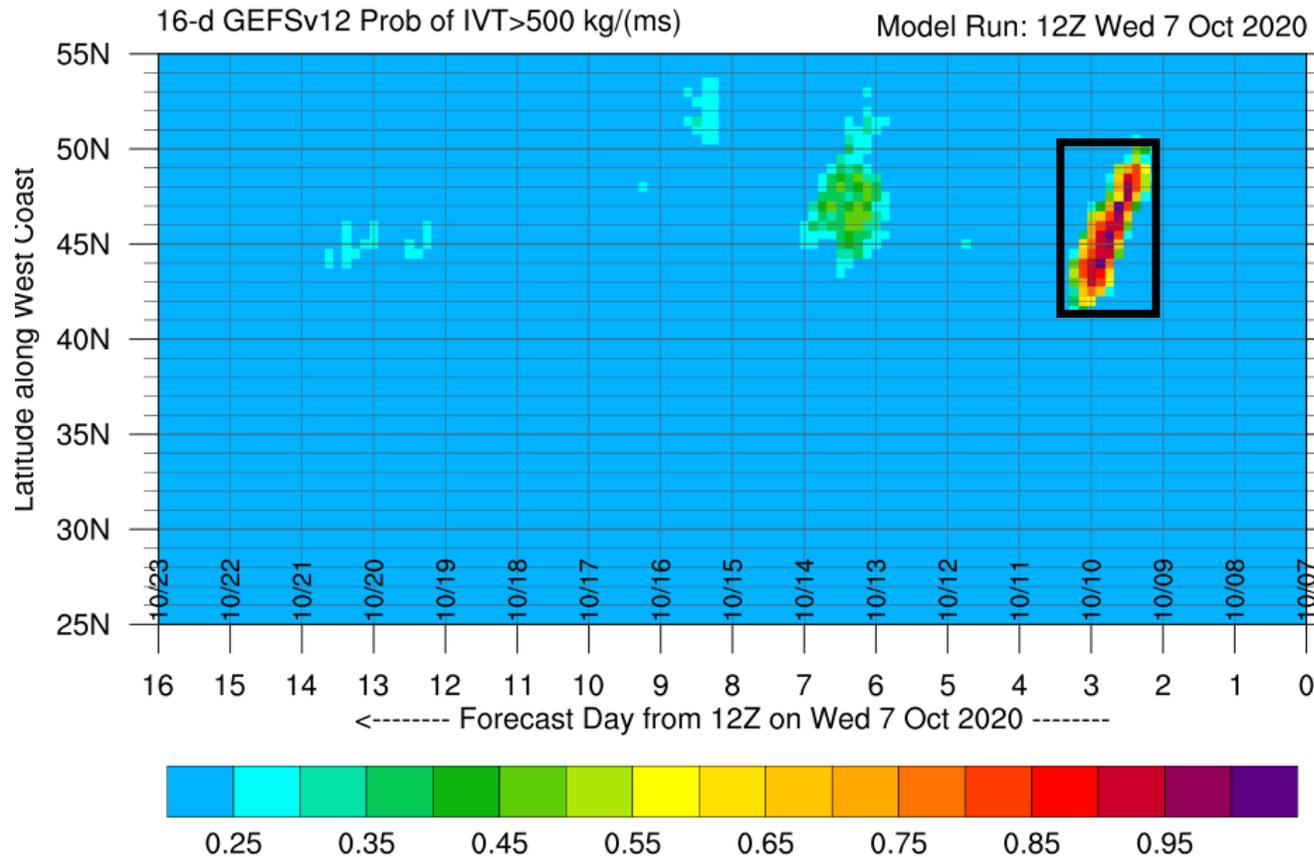


- GEFS coastal AR landfall tool shows high confidence (> 90% probability) in a period of AR conditions between Northern California and southern British Columbia in association with the first landfalling AR
- There is some uncertainty in the duration and spatial extent of AR conditions beyond 00Z 11 Oct
- Beyond 00Z 13 Oct, there is another period of elevated probabilities (> 60%) in AR conditions over coastal Oregon and Washington

# AR Outlook: 7 Oct 2020

For California DWR's AR Program

## Probability of Moderate AR Conditions Along Coast



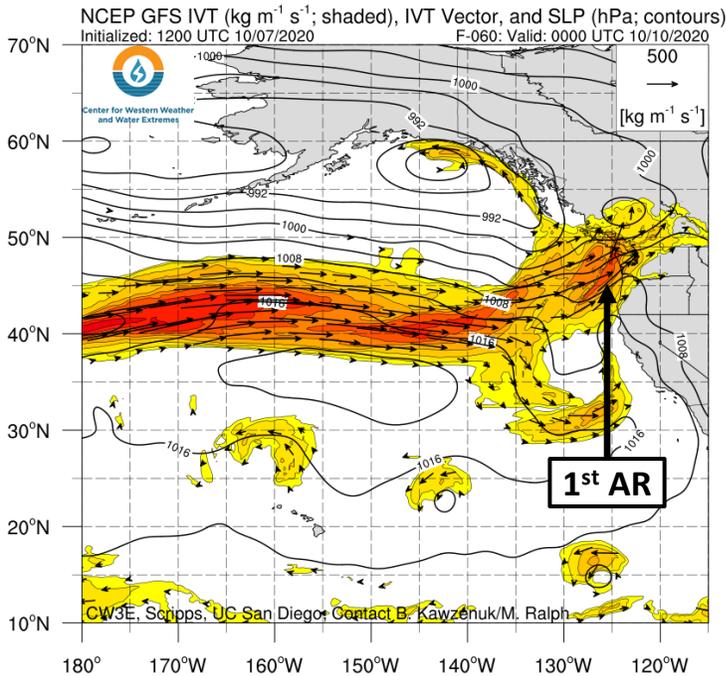
- GEFS AR landfall tool also shows high confidence (> 70% probability) in a brief period of moderate AR conditions ( $IVT \geq 500 \text{ kg m}^{-1} \text{ s}^{-1}$ ) between extreme northern California and the Olympic Peninsula

# AR Outlook: 7 Oct 2020

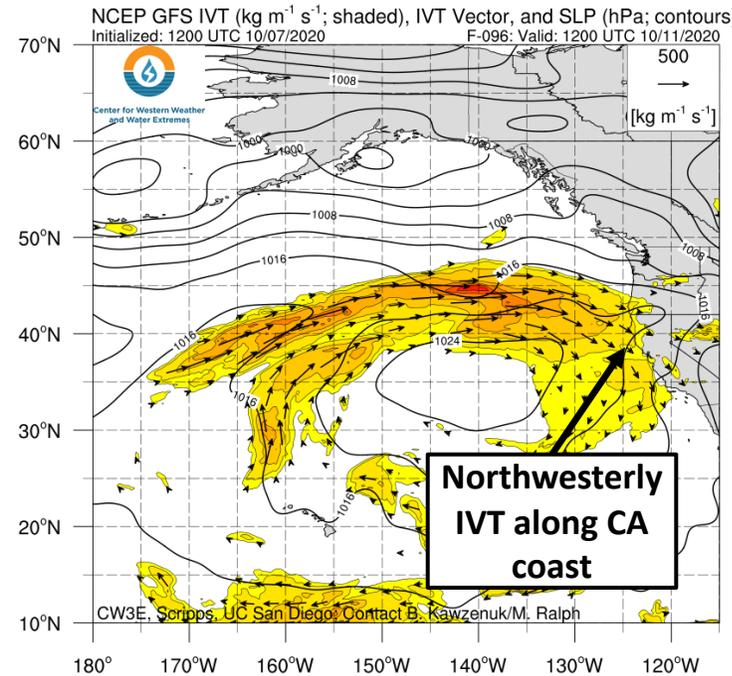
For California DWR's AR Program

## GFS IVT & SLP Forecasts

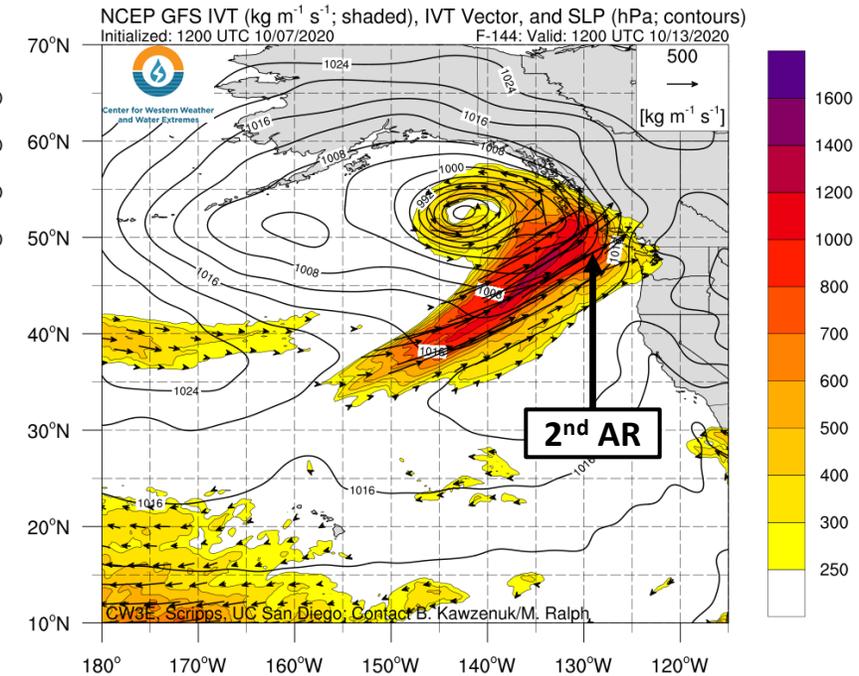
A) Valid: 0000 UTC 10 Oct (F-60)



B) Valid: 1200 UTC 11 Oct (F-96)



C) Valid: 1200 UTC 13 Oct (F-144)



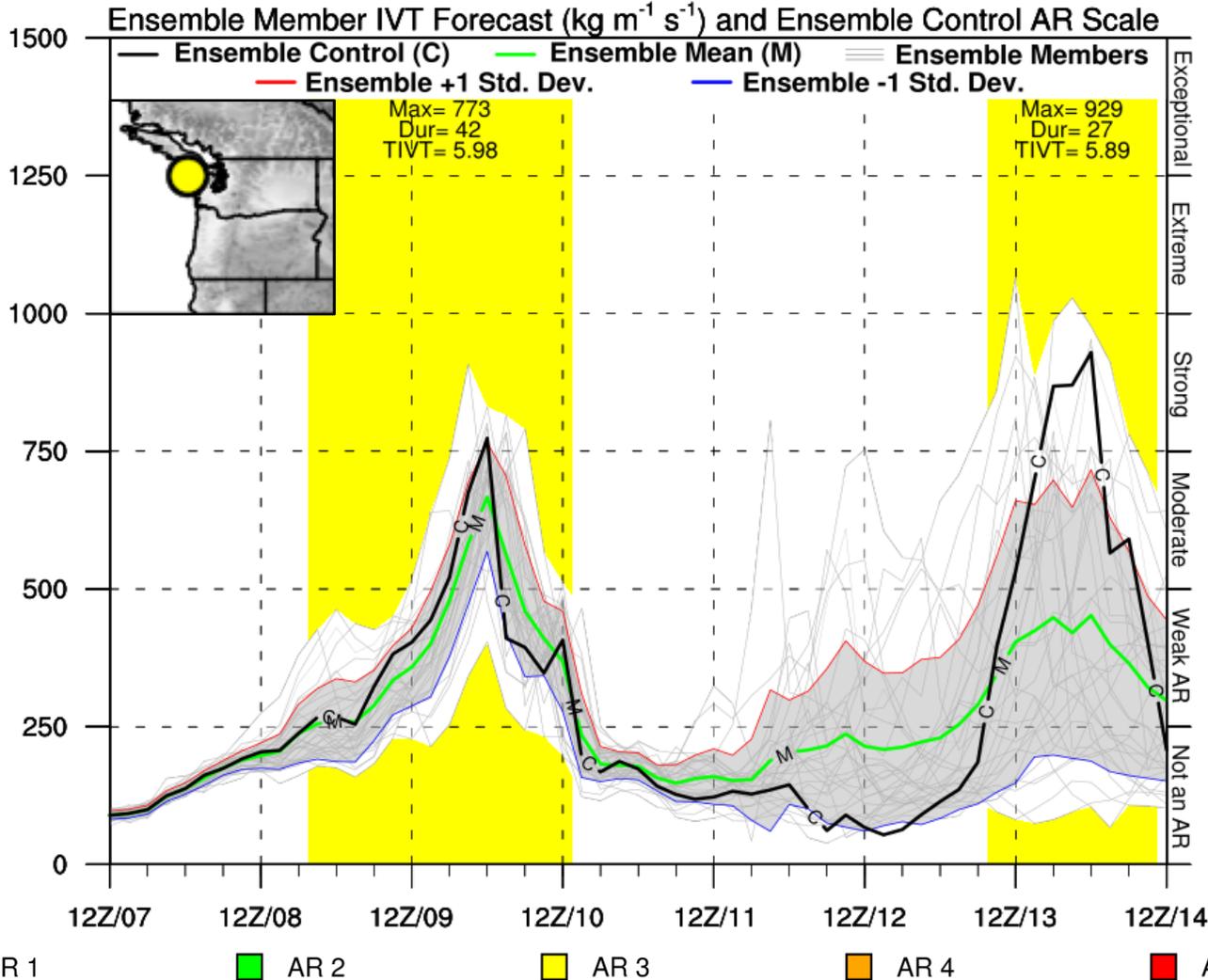
- The first AR is forecast to make landfall downstream of a surface cyclone over the Gulf of Alaska slightly before 00Z 10 Oct
- As the initial pulse of moisture transport weakens, weak AR conditions are forecast to continue along the coast of Northern California and southern Oregon, but the northwesterly orientation of the IVT vectors is unfavorable for significant precipitation
- A second, stronger AR is forecast to make landfall over Washington and British Columbia around 12Z 13 Oct

# AR Outlook: 7 Oct 2020

For California DWR's AR Program

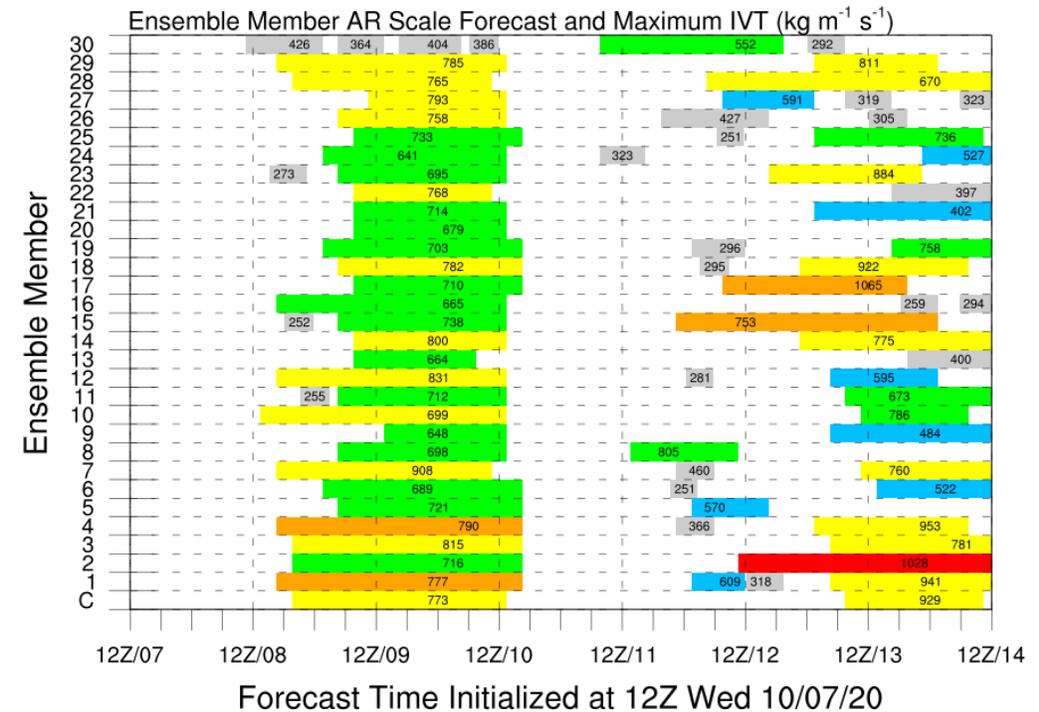
## GEFS AR Scale & IVT Forecasts

GFS Ensemble Initialized: 12Z Wed 10/07/20



Categorical AR Strength by Ralph/CW3E

- The GEFSv12 control member is currently predicting an AR 3 (maximum IVT  $> 750 \text{ kg m}^{-1} \text{ s}^{-1}$ ; AR duration  $> 24$  hours) at  $48^\circ\text{N}$ ,  $124.5^\circ\text{W}$  (near Quillayute, WA)
- There is still some uncertainty in the timing and duration of the first AR
- Nearly all GEFS members are forecasting an AR 2 or greater; 14/31 (45%) are forecasting an AR 3 or AR 4
- Beyond Day 5, there is potential for another strong AR, but forecast uncertainty is very large

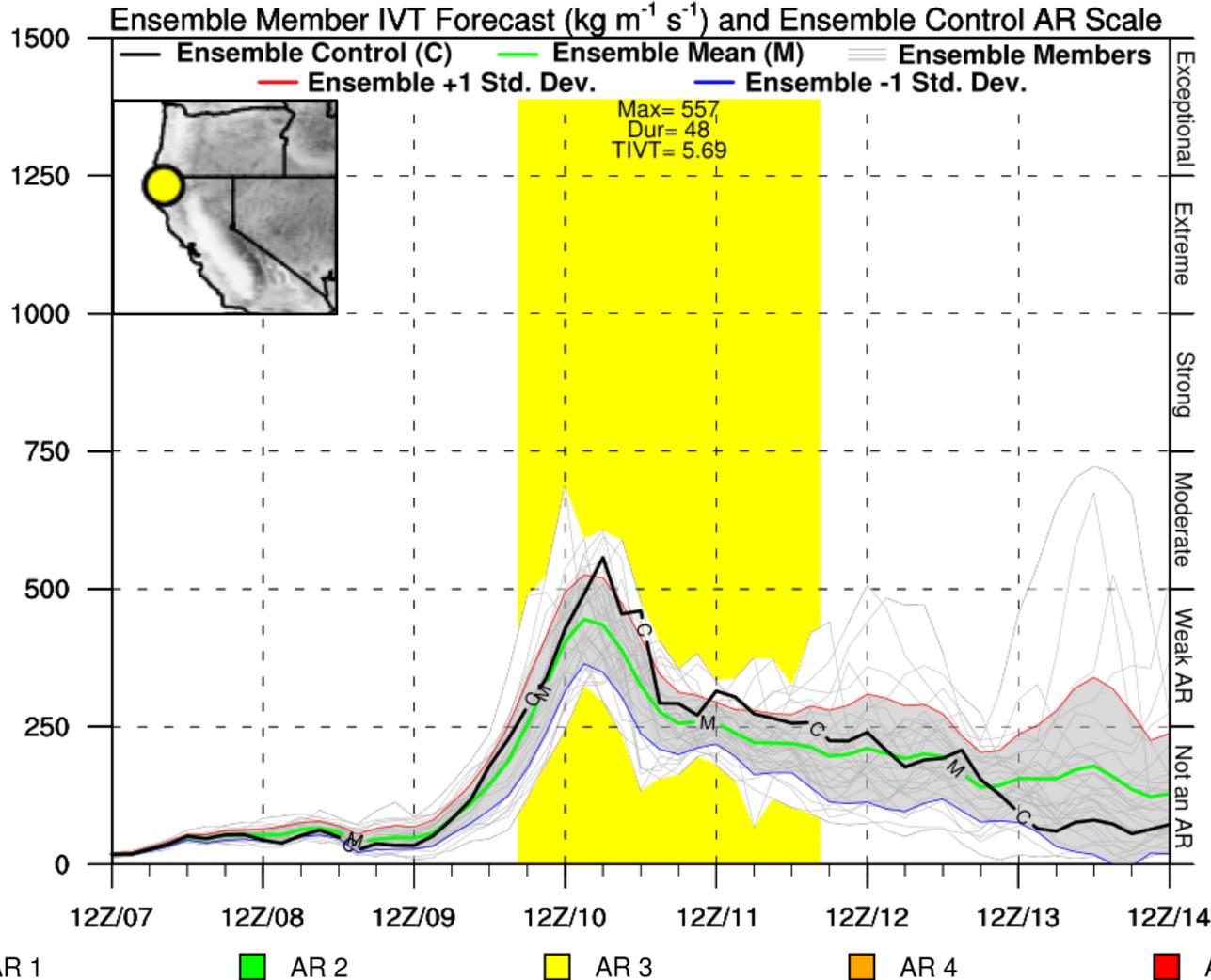


# AR Outlook: 7 Oct 2020

For California DWR's AR Program

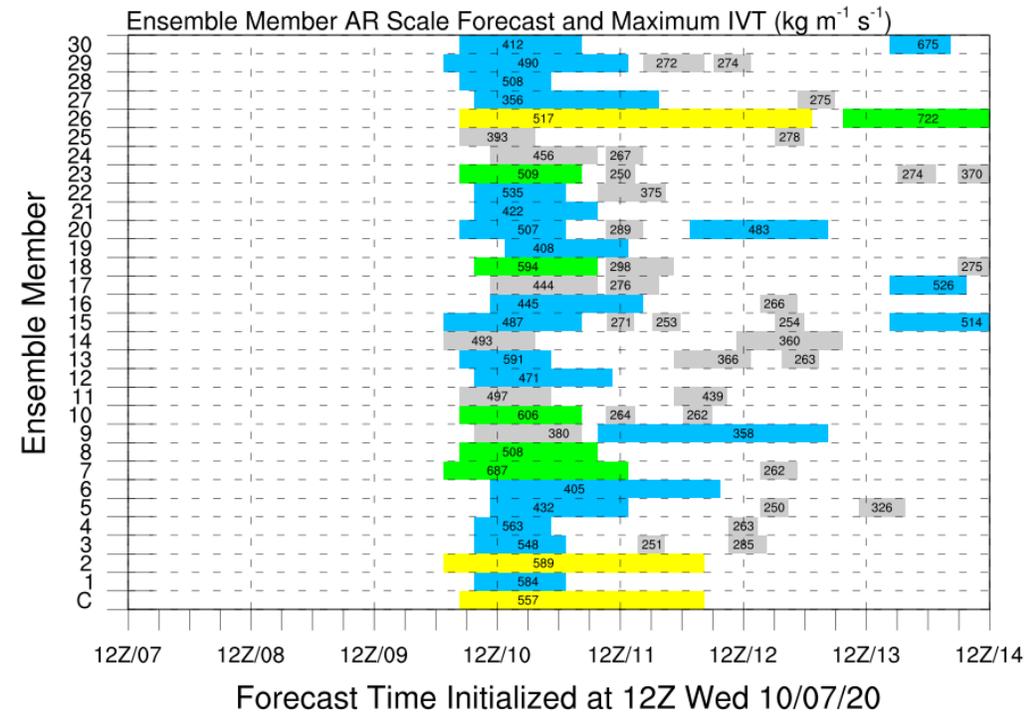
## GEFS AR Scale & IVT Forecasts

GFS Ensemble Initialized: 12Z Wed 10/07/20



Categorical AR Strength by Ralph/CW3E

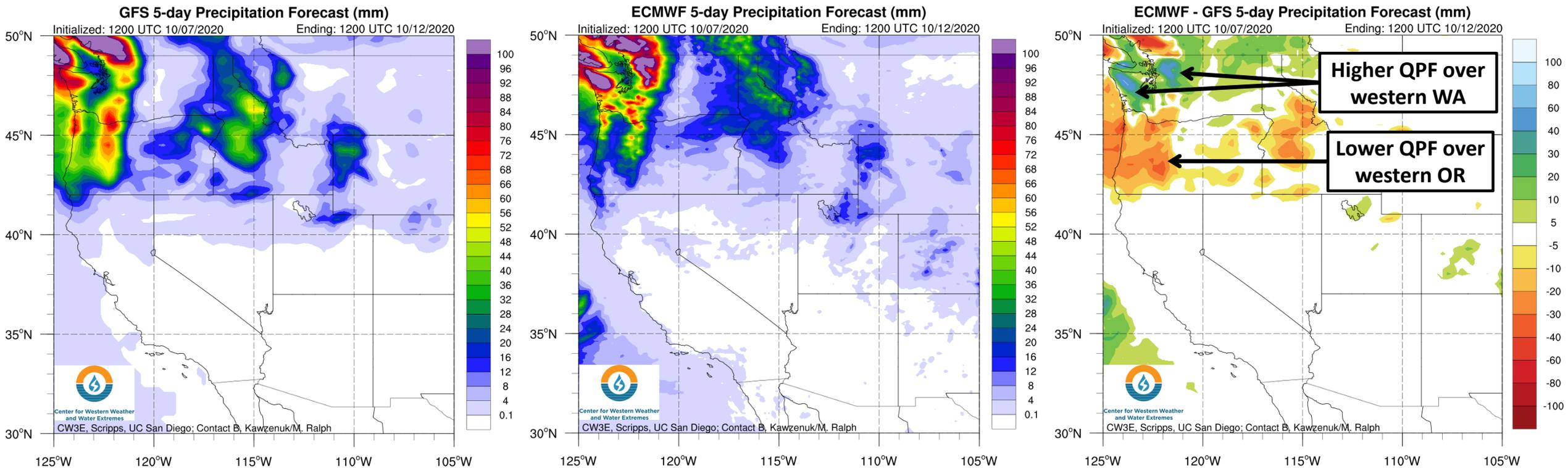
- The GEFSv12 control member is also predicting an AR 3 (maximum IVT  $> 500 \text{ kg m}^{-1} \text{ s}^{-1}$ ; AR duration  $\geq 48$  hours) at  $41.5^\circ\text{N}$ ,  $124^\circ\text{W}$  (near Klamath, CA)
- There is considerable forecast uncertainty in duration and magnitude of AR conditions, and much of the IVT after 00Z 11 Oct will be northwesterly (unfavorable for precipitation)
- Only 3/31 (10%) GEFS members are forecasting an AR 3; 23/31 (74%) are forecasting an AR 1 or no AR



# AR Outlook: 7 Oct 2020

For California DWR's AR Program

## Model 5-day QPF: Valid 1200 UTC 7–12 Oct



\*GFS = NCEP Global Forecast System (United States)

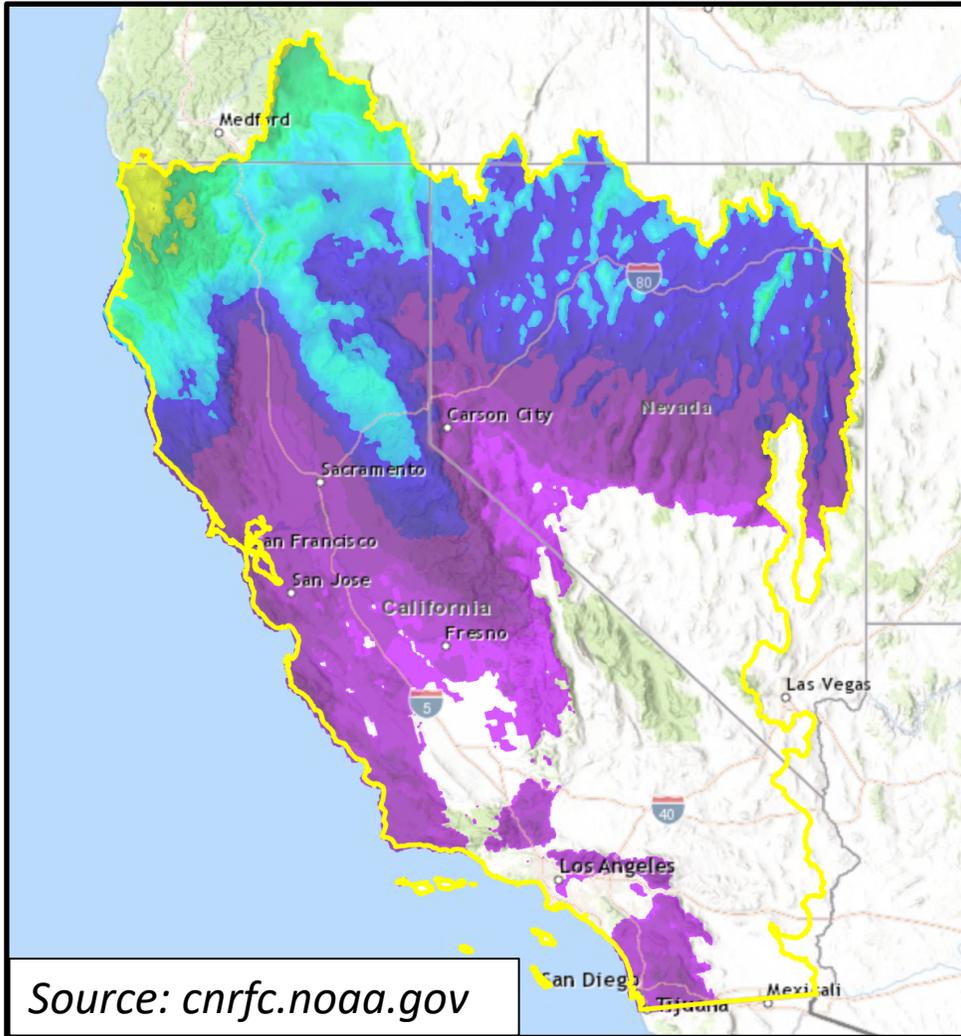
\*NBM = National Blend of Models (Blend of NWS and non-NWS models)

\*ECMWF = European Center for Medium-Range Weather Forecasts (Europe)

- GFS and ECMWF are both forecasting at least 1–3 inches of precipitation across much of western Washington and Oregon during the next 5 days, with higher amounts possible over the Olympic Mountains and North Cascades
- The ECMWF is forecasting much higher precipitation amounts over the Olympic Mountains and North Cascades, and lower precipitation amounts across western Oregon

# AR Outlook: 7 Oct 2020

CNRFC 6-day QPF: Valid 1200 UTC 7–13 Oct



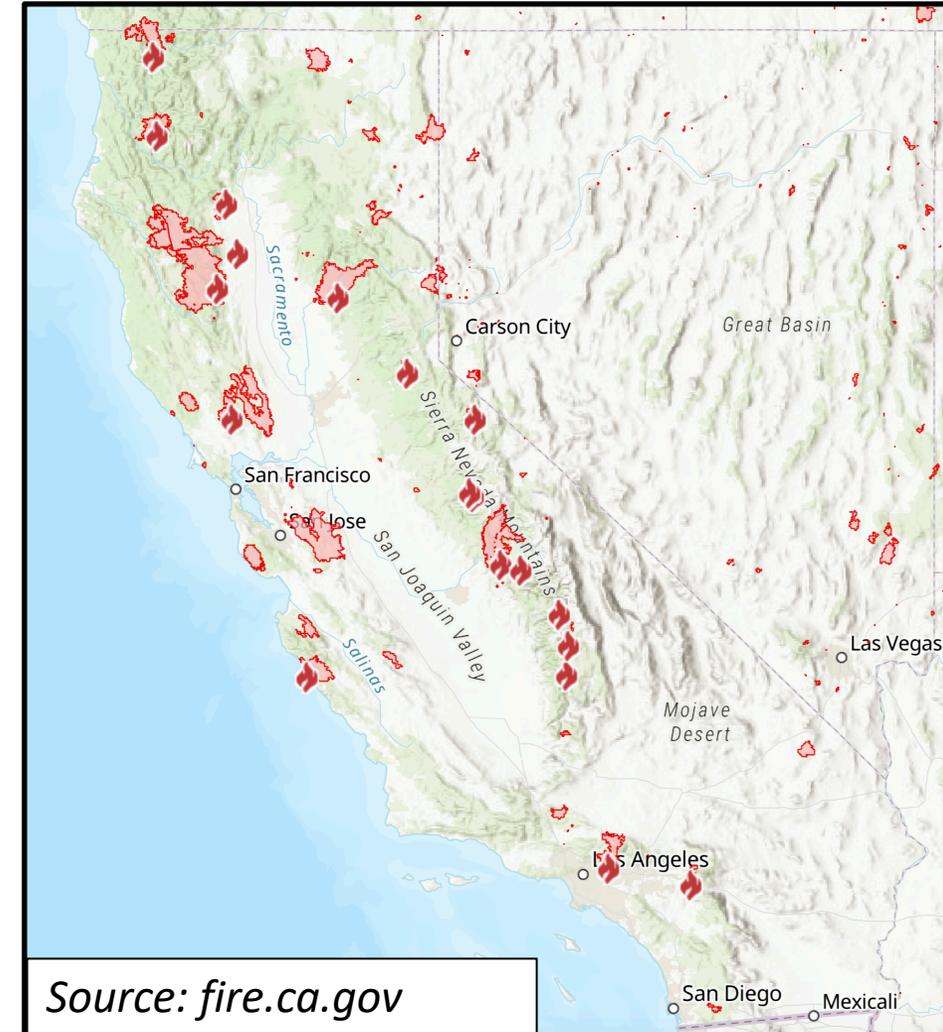
Source: [cnrfc.noaa.gov](http://cnrfc.noaa.gov)

For California DWR's AR Program



- There are 19 active large fires in California
- The CNRFC is currently forecasting 0.25–1.50 inches of precipitation over portions over Northern California during the next 6 days
- While this rainfall may bring some wildfire relief, unfortunately little precipitation is expected elsewhere in California

## Active Large Fire Incidents



Source: [fire.ca.gov](http://fire.ca.gov)

Precipitation (inches)

