

# CW3E Atmospheric River Outlook

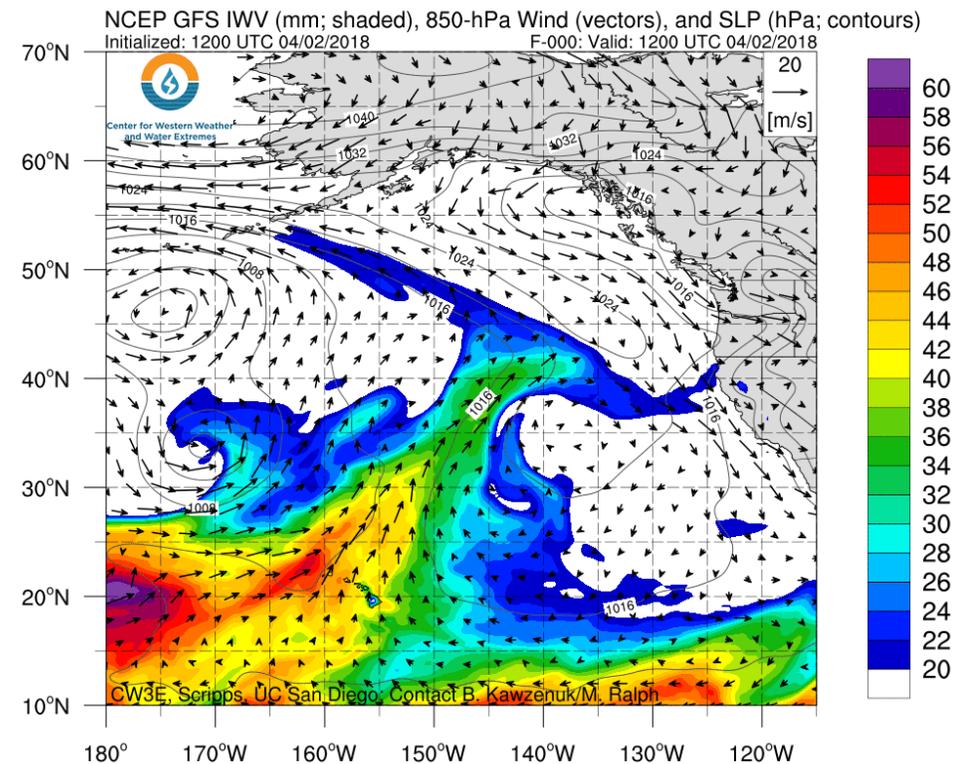
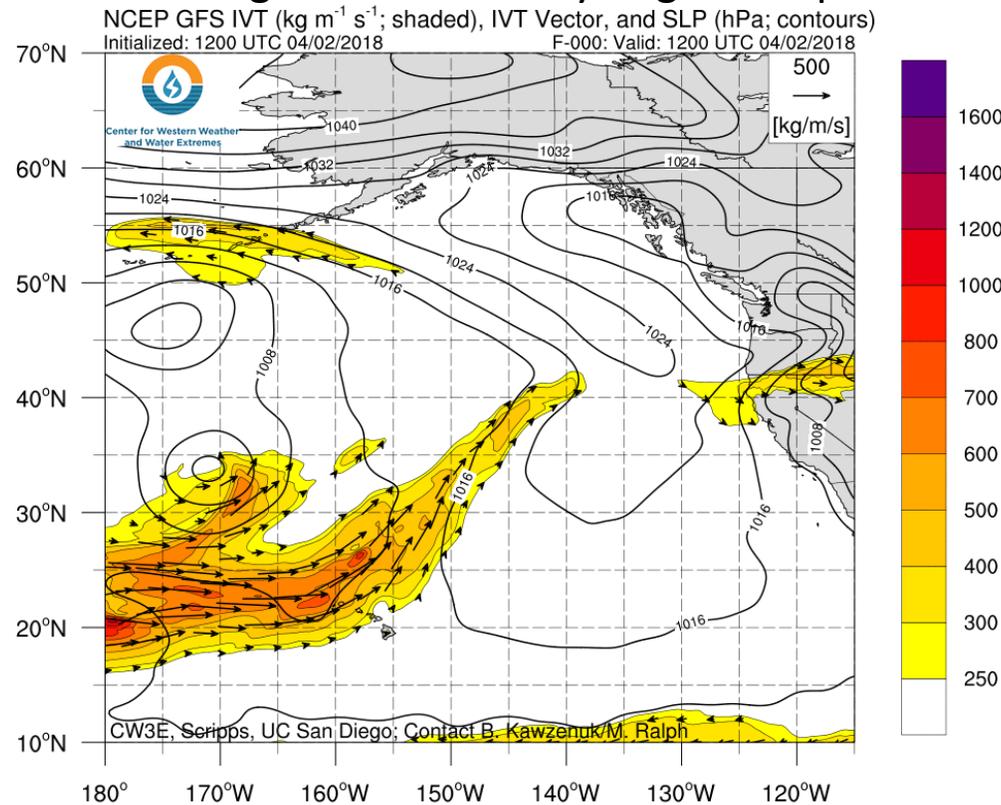
For California DWR's AR Program



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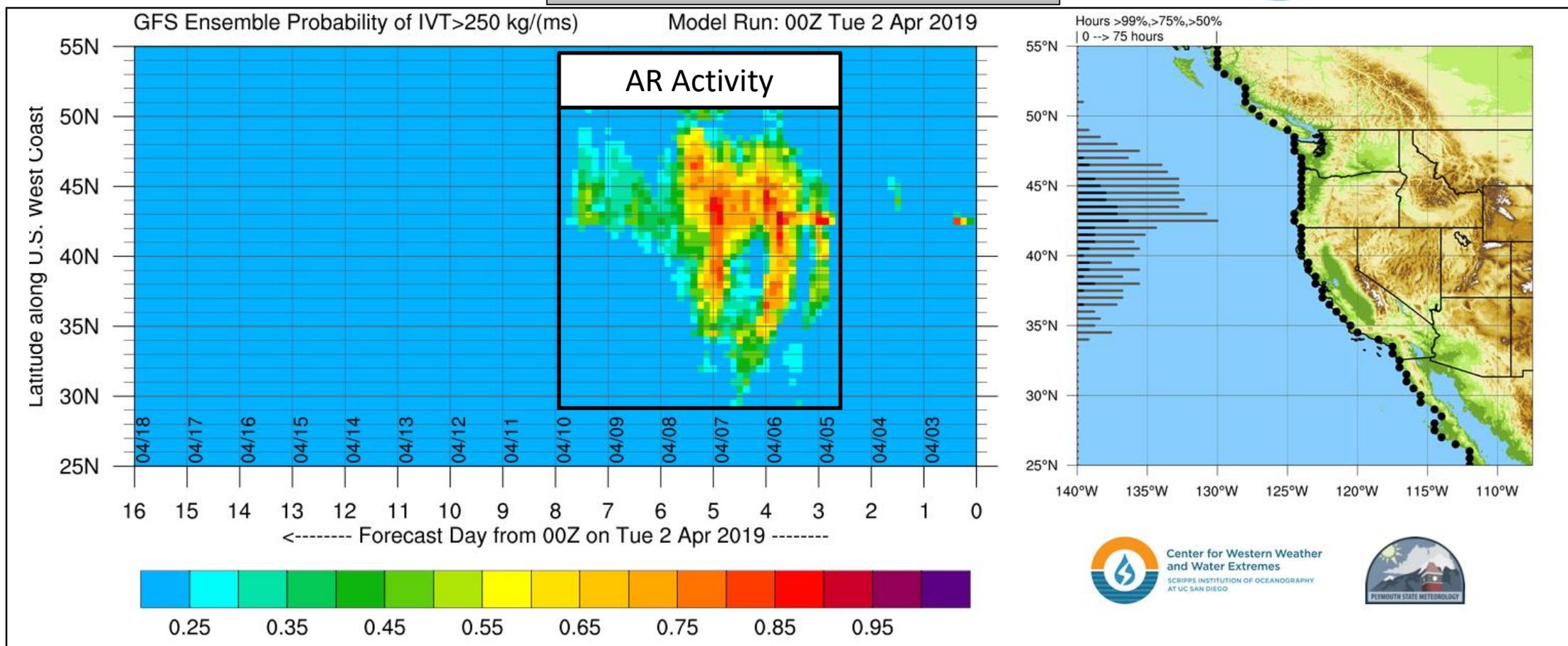
## Multiple Atmospheric Rivers Forecast to Impact Northern California, Oregon and Washington Later this Week

- The GFS is currently forecasting two weak and successive ARs to make landfall between 05 and 08 April 2019
- There is currently large uncertainty in the overall onset, magnitude, and duration of both ARs
- Precipitation forecasts currently suggest as much as 9 inches of precipitation over the Coastal Mountains of Northern California and Oregon
- Freezing levels are currently forecast to remain above 5,000 feet over the Northern Sierra Nevada Mountains, which could lead to rain falling on the currently large snowpack and increased runoff associated with these events





## Odds of AR Conditions Along Coast



- 65–95% (a large spread) of GFS Ensemble members are currently predicting AR conditions ( $IVT > 250 \text{ kg m}^{-1} \text{ s}^{-1}$ ) for Northern CA, OR, and WA between 5 and 8 April
- There is currently large uncertainty in the forecast duration of AR conditions associated with this active period
- The GEFS currently suggests that there could be two pulses of AR conditions over California between the 5<sup>th</sup> and 7<sup>th</sup>, while Oregon is currently forecast to receive a long duration (>48 hours) of AR conditions without a break

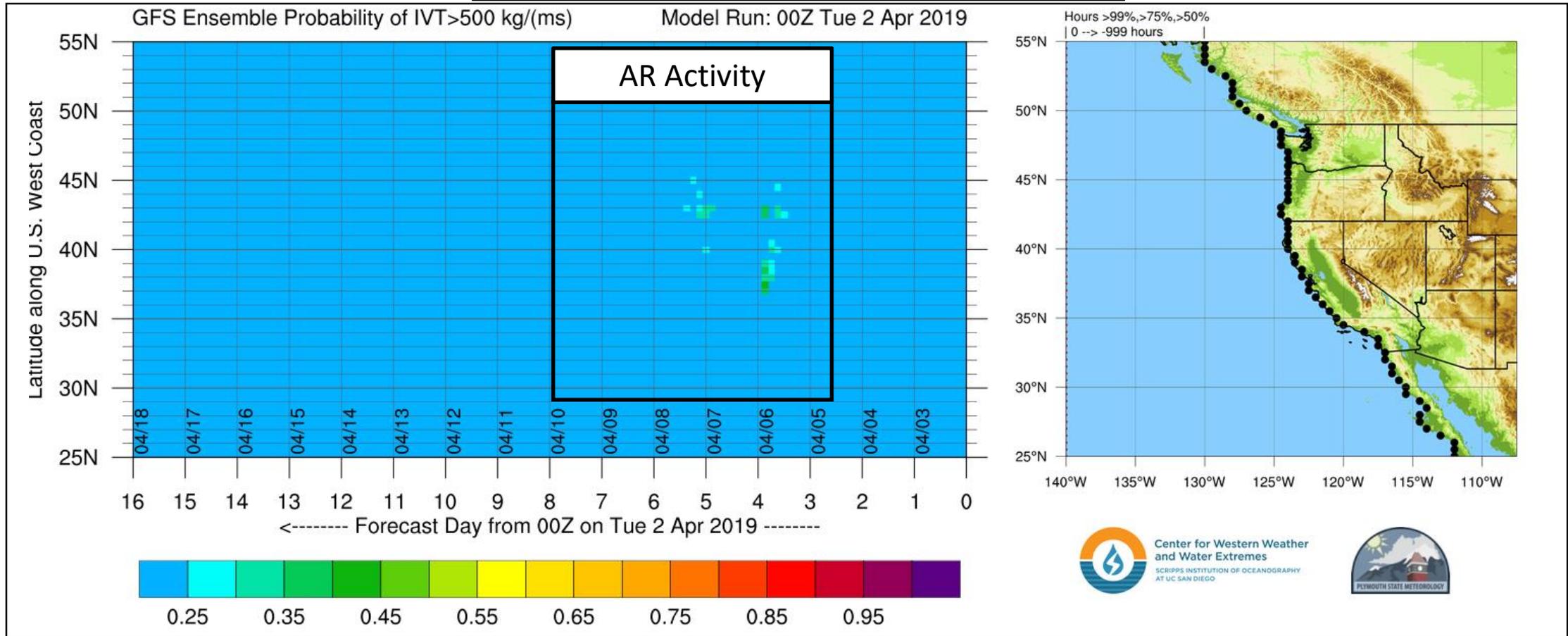
# AR Outlook: 02 April 2019

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## Odds of Moderate AR Conditions Along Coast



The GEFS is currently predicting a low probability (<30% of ensemble members) of moderate AR conditions over Northern CA and OR

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The GEFS is currently predicting two pulses of weak to moderate AR conditions over Coastal Northern California

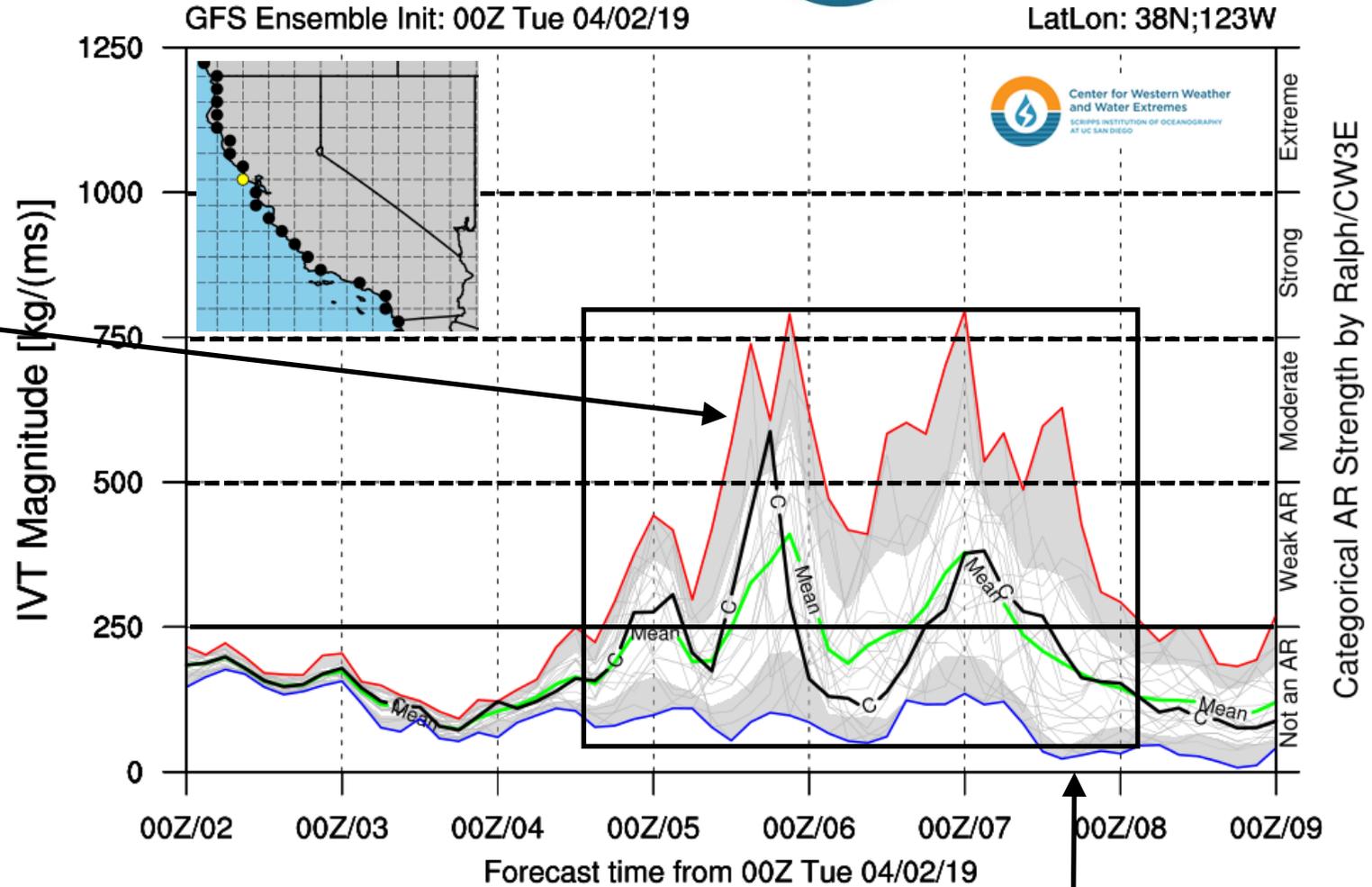
## Magnitude of first potential AR

- Maximum predicted IVT  $\sim 760 \text{ kg m}^{-1} \text{ s}^{-1}$
- Mean IVT  $\sim 400 \text{ kg m}^{-1} \text{ s}^{-1}$

## Forecast duration of AR conditions (based on control)

- Weak 12 hours
- Moderate 3 hours

A few ensemble members (~4) are currently suggesting that the second pulse of AR conditions could be moderate strength, but most suggest IVT will stay below  $500 \text{ kg m}^{-1} \text{ s}^{-1}$

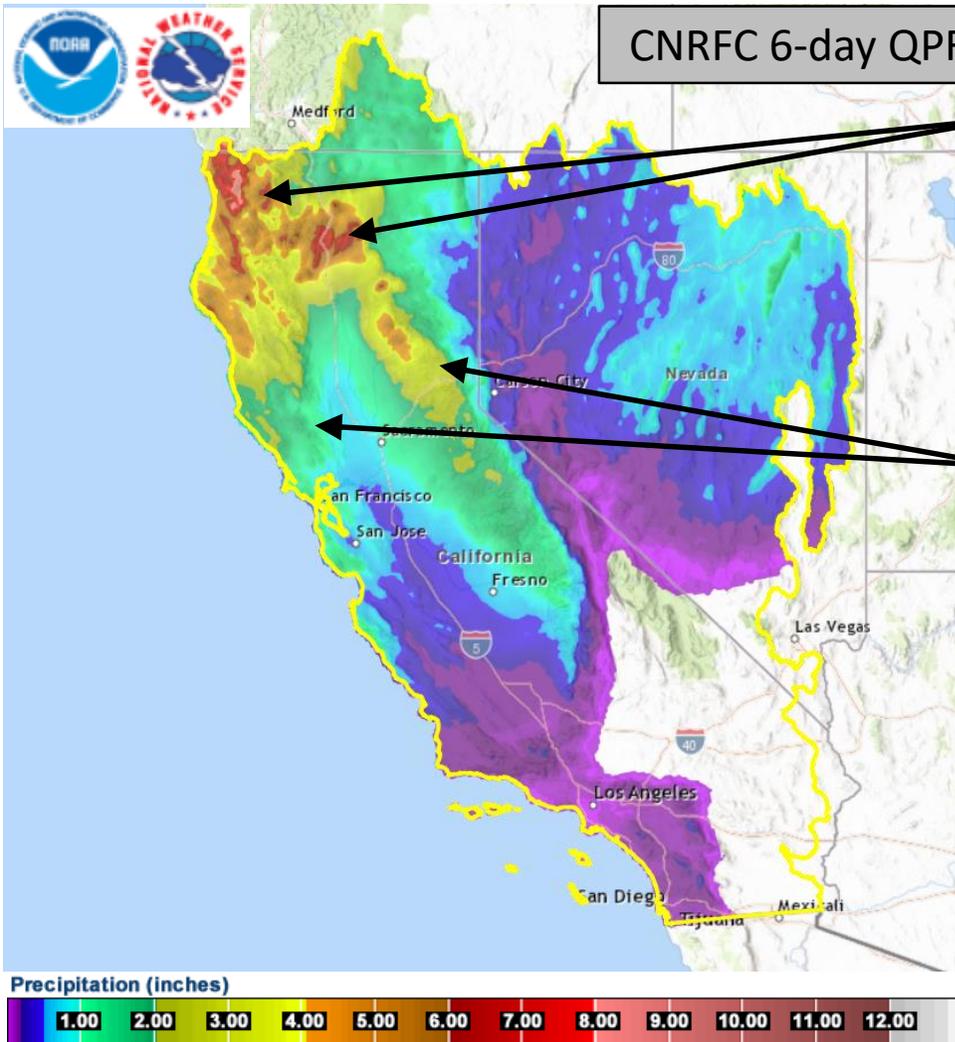


There is currently large uncertainty in when AR conditions are forecast to start, how strong the AR conditions are going to be, and how long each pulse of AR conditions is going to last (especially within the second pulse)

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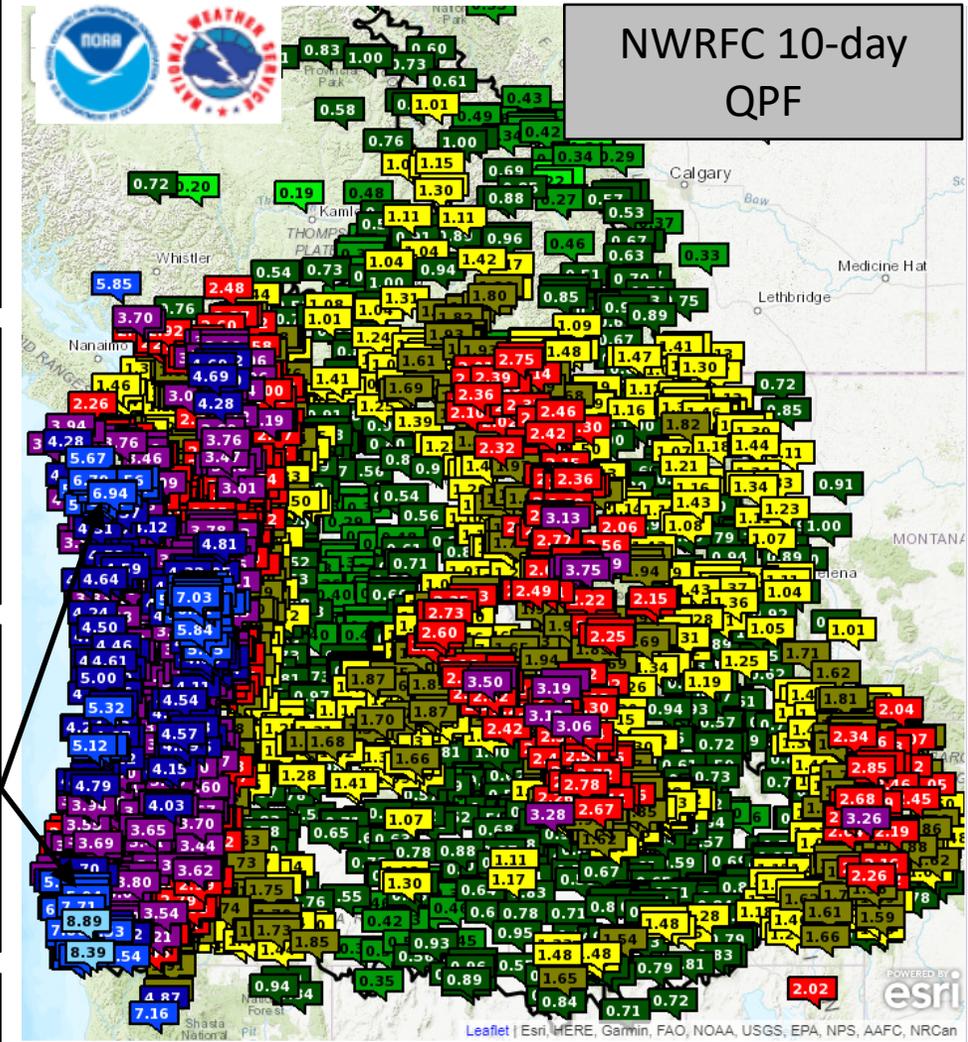


The CNRFC is currently predicting the highest precipitation accumulations (4.5 to 9.5 in.) to be over the Coastal Mts. And Trinity Alps in far Northern CA during the next 6-days

Forecast precipitation accumulations decrease southward with 1–2.5 in. for the Central CA Coastal Mts. and Sierra

The NWRFC is currently forecasting as much as 7 – 9 inches to fall over the Coastal Mountains of Oregon and Washington for the next 10 days

Precipitation products from [cnrfc.noaa.gov](http://cnrfc.noaa.gov) and [nwrfc.noaa.gov](http://nwrfc.noaa.gov)

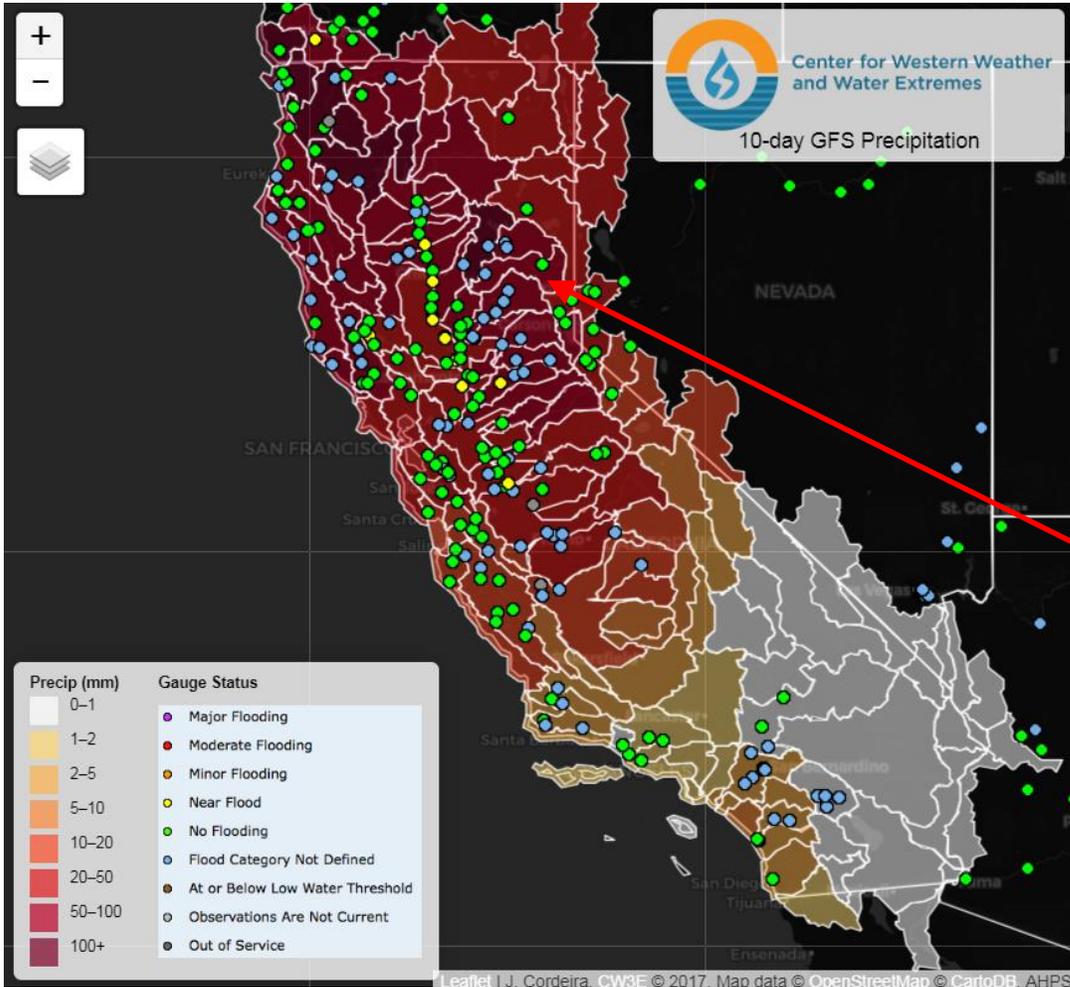


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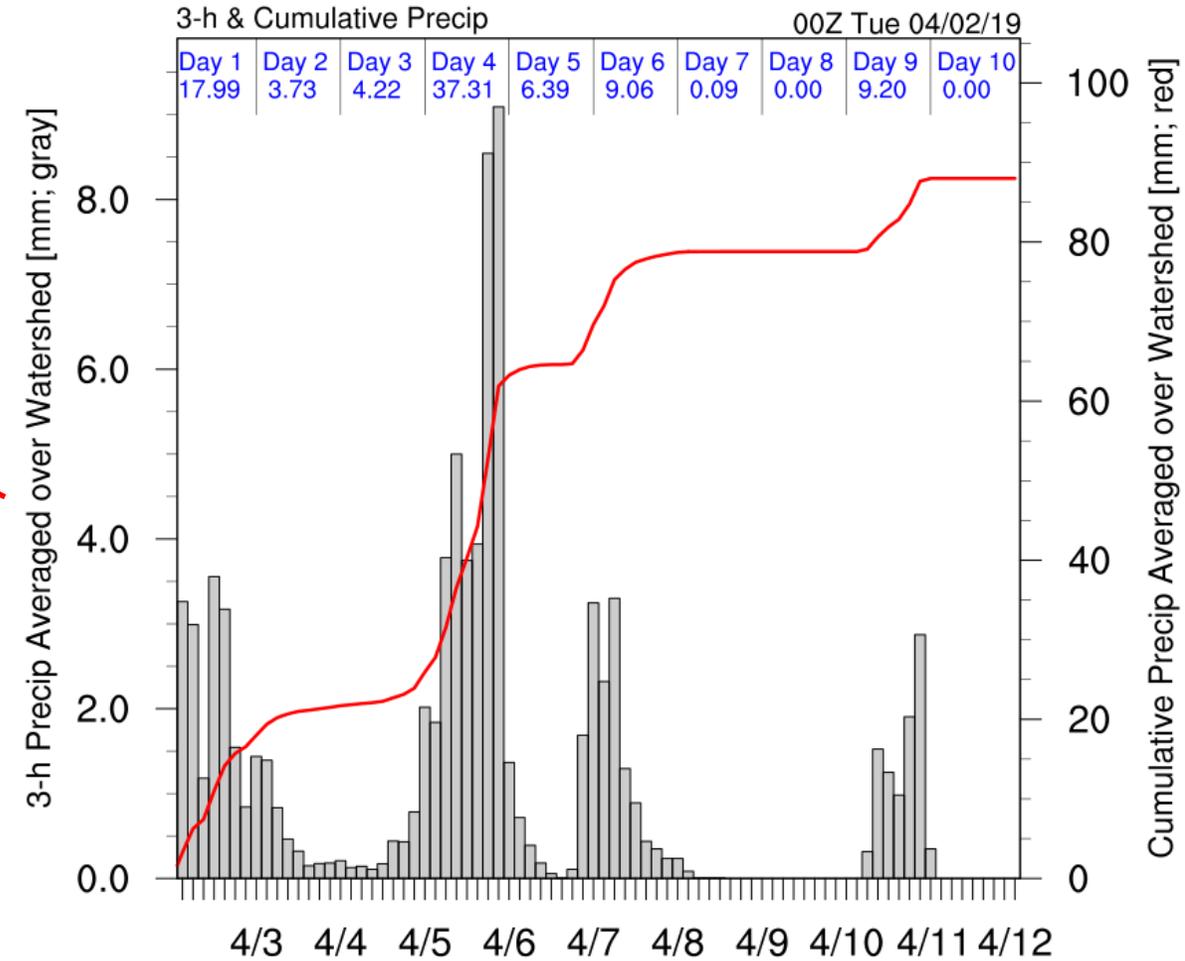
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## Middle Fork Feather Watershed



The Middle Fork of the Feather River watershed is currently forecast by the GFS to receive 88 mm (~3.5 in.) of watershed average precipitation over the next 10 days, with the heaviest precipitation forecast to fall between the 5<sup>th</sup> and 6<sup>th</sup> of April

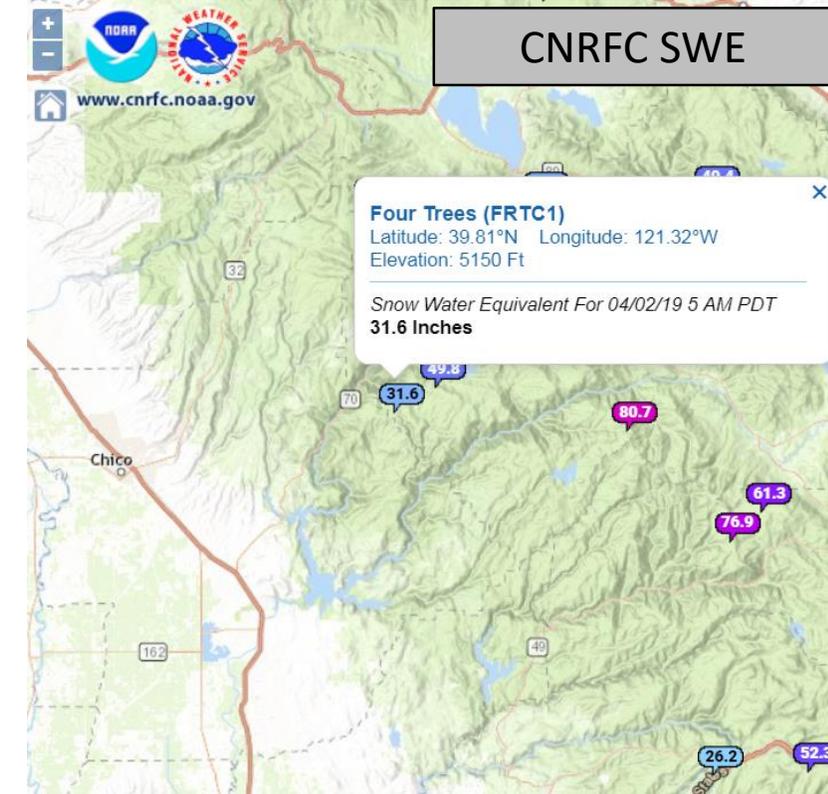
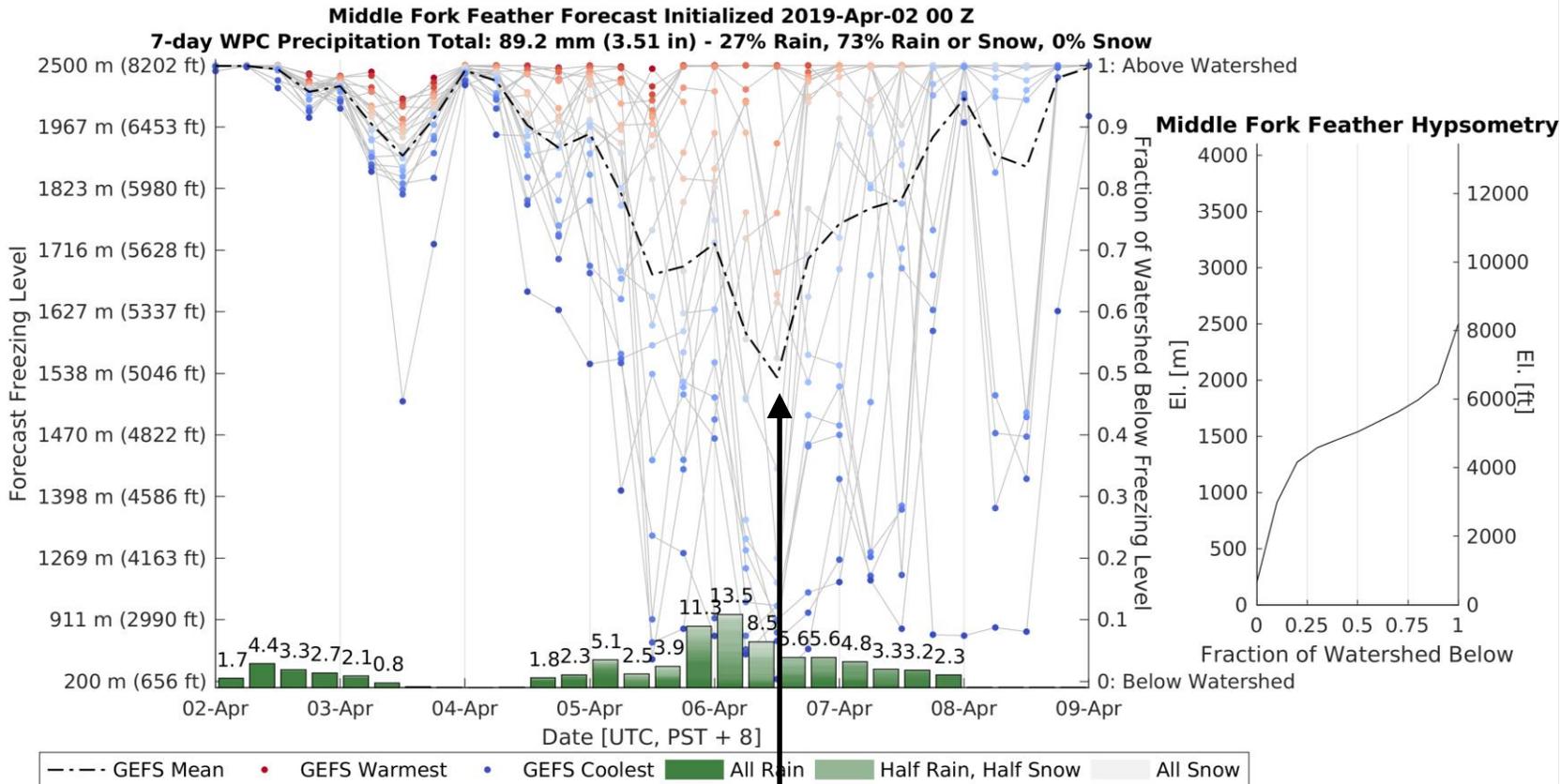
Total: 88 mm | 252139 AcreFeet

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- When precipitation is forecast to be heaviest over the Feather River watershed, freezing levels are forecast to drop to ~5-5.5k ft., which would mean >50% of the watershed would be below the freezing level for a majority of the event
- Note: There is currently very large uncertainty in both timing of precipitation and freezing level height

There is currently 31.6 inches of snow water equivalent at Four Trees (5150 ft.) in the Feather River watershed, which may lead to increased runoff and streamflow due to rain falling on the large snowpack