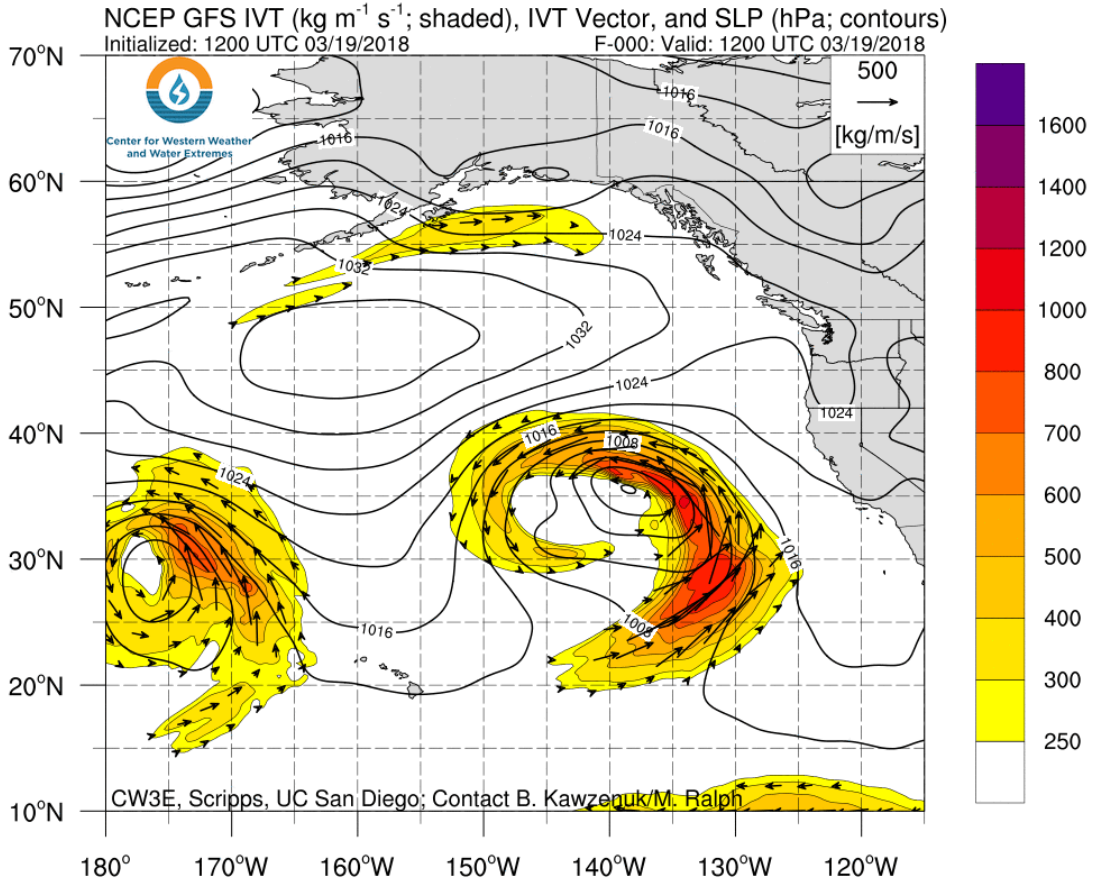
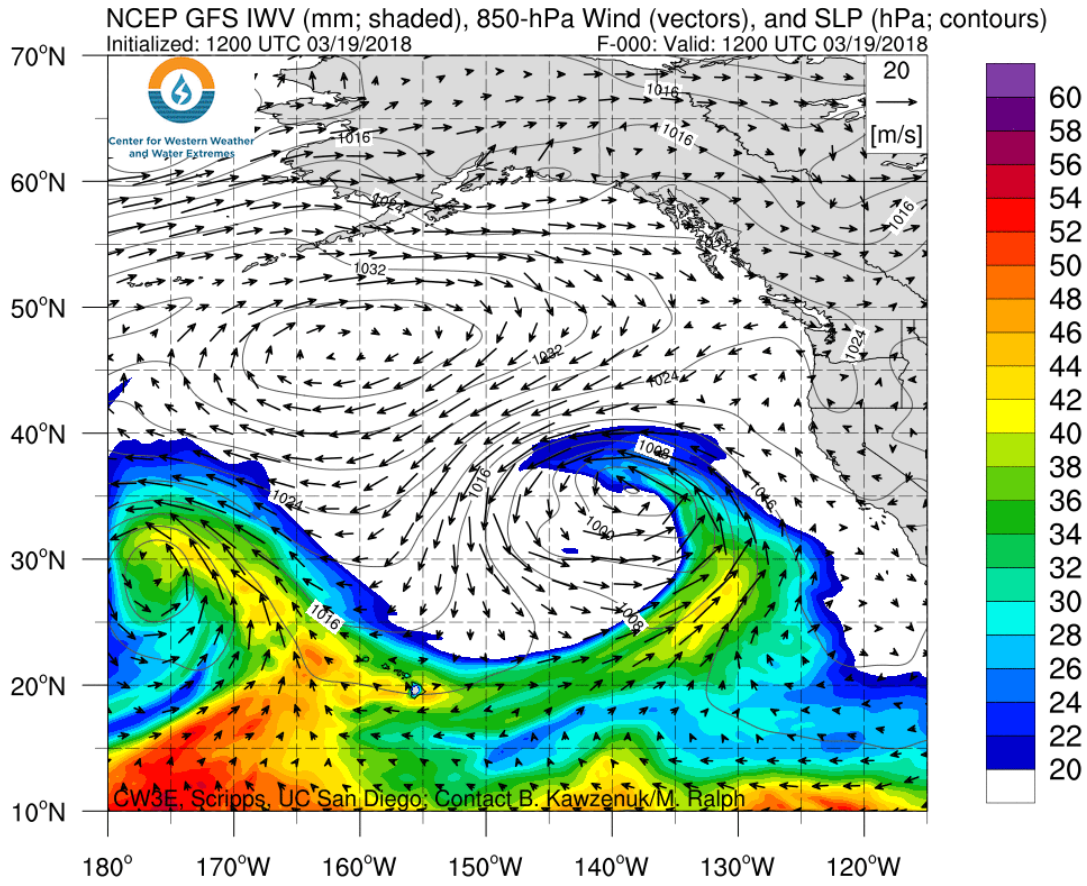
CW3E Atmospheric River Outlook

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

Update on Atmospheric River Forecast to Impact California Next Week

- Several changes have occurred in the forecast for the AR that may impact CA this week
- GFS Ensemble members have continued to converge on Coastal AR conditions
- While there is more agreement between GFS Ensemble members there are still numerous changes from model run to model run, introducing several uncertainties in the impacts associated with this event





AR Outlook: 19 March 2018

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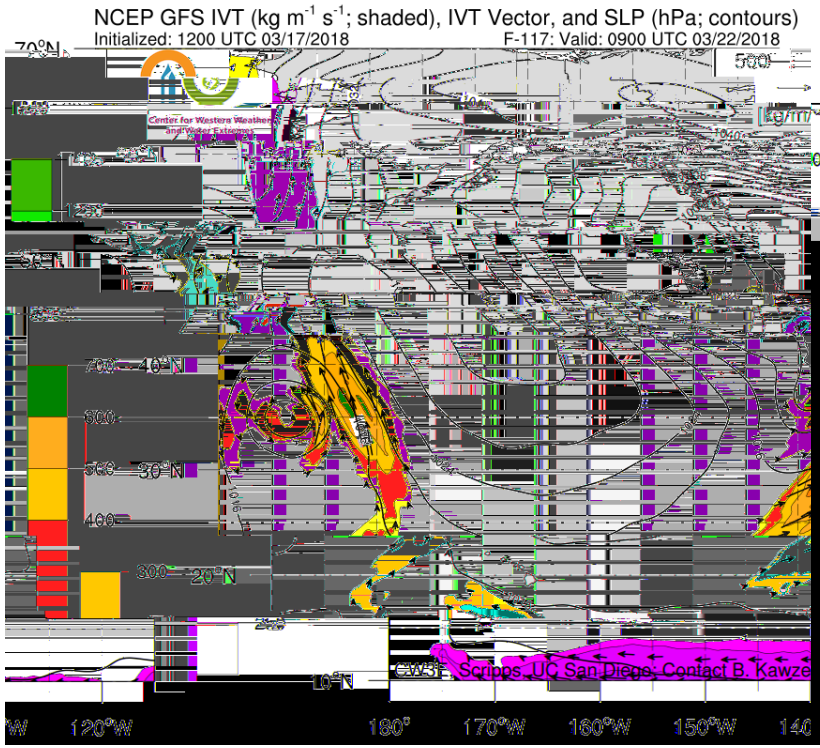
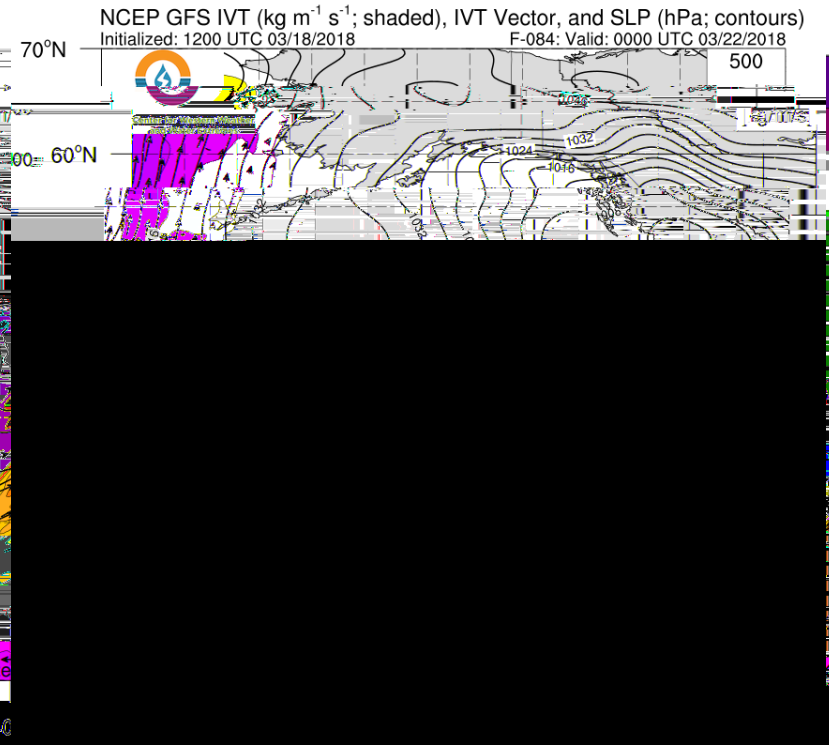
Model Changes Run-to-Run

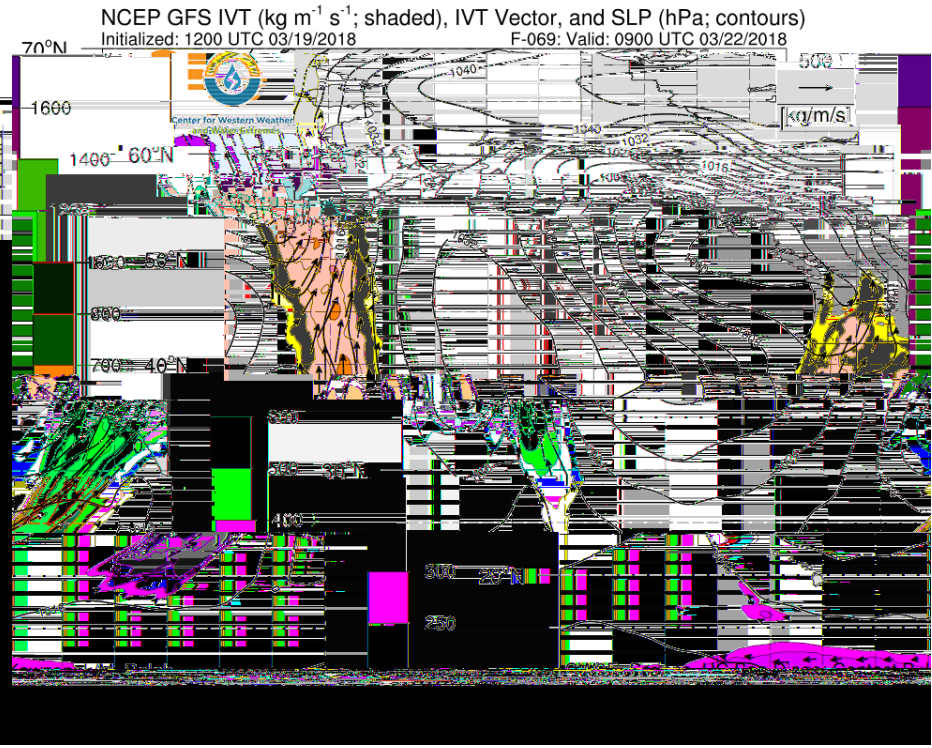
Initialized 12Z 17 March



Initialized 12Z 18 March



Initialized 12Z 19 March



- **Models continue to change the characteristics of the AR from model run to model run**
- **The IVT within the core of the AR has increased from 600–700 kg m^{-1} s^{-1} from the 17 March run to 700–800 kg m^{-1} s^{-1} in today's run**
- **The IVT direction within the AR has also shifted to more southerly over the coast, introducing uncertainties in the impacts associated with this event**

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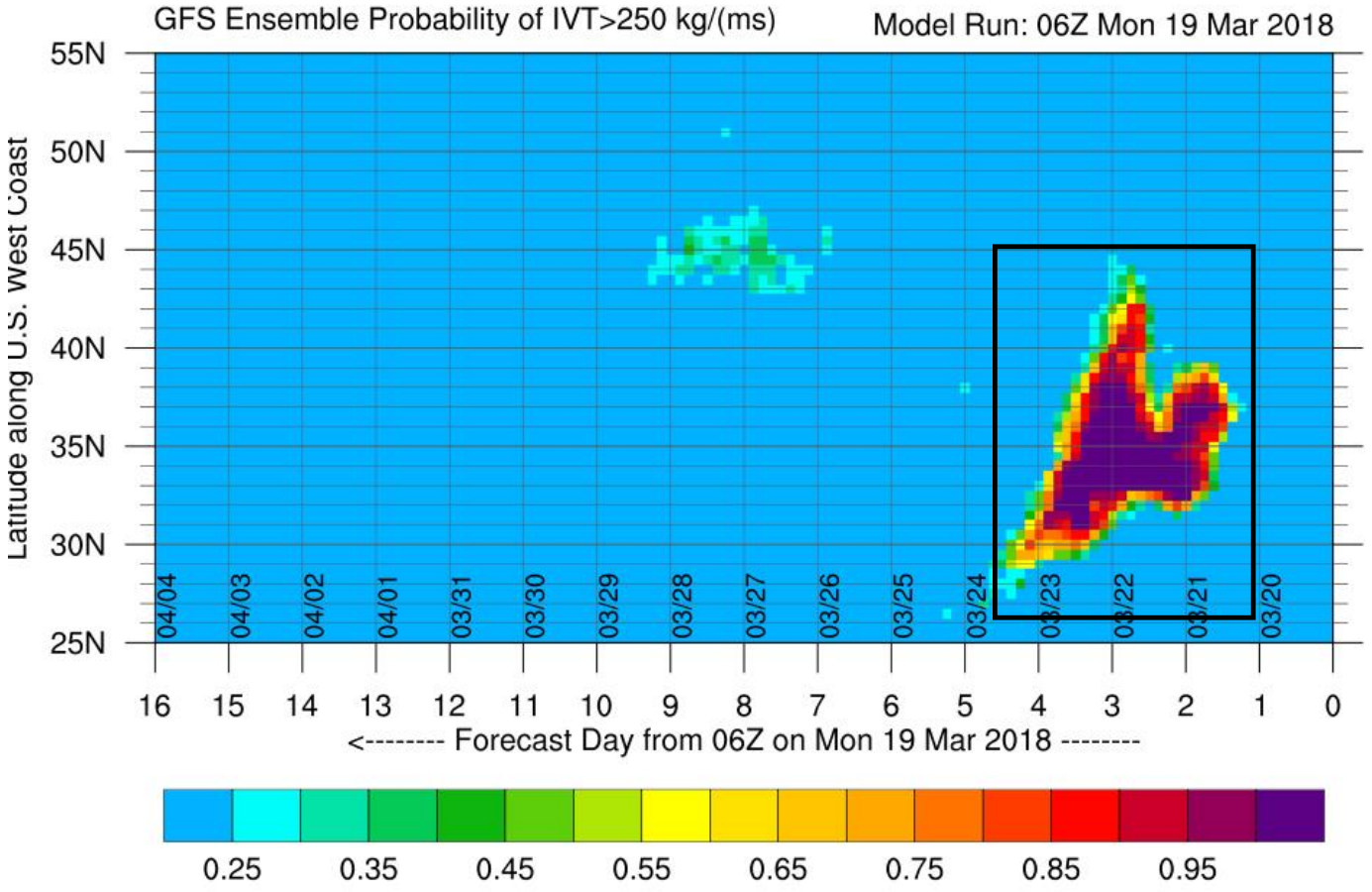
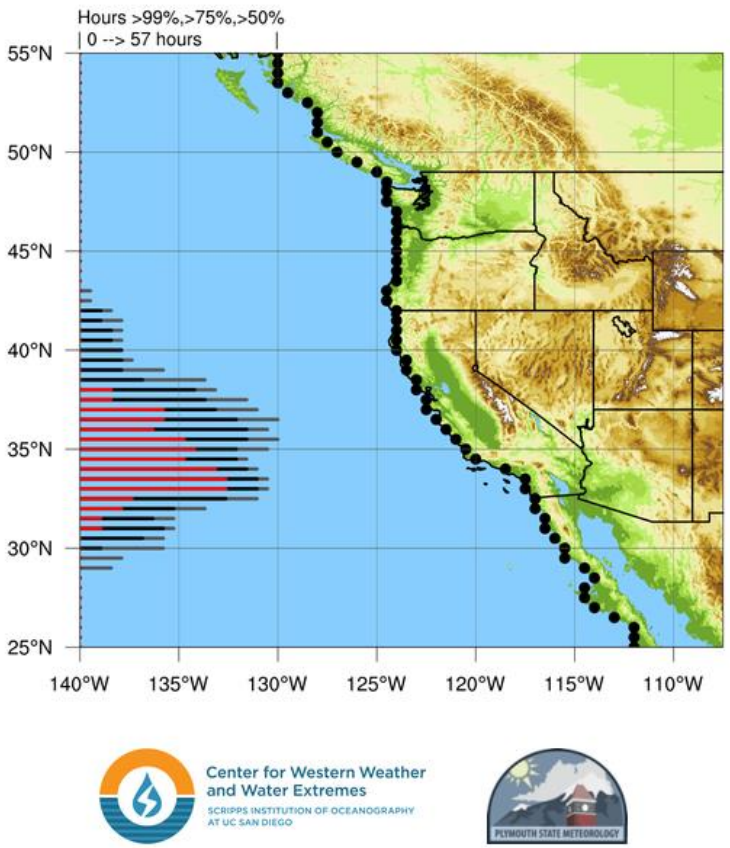
Odds of at least a **WEAK** AR making landfall





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PLYMOUTH STATE METEOROLOGY

- **GFS Ensemble members suggest a high probability (>95%) of at least weak AR conditions (IVT >250 kg m^{-1} s^{-1}) from ~32˚ to 42˚ N**
- **Coastal AR conditions could potentially last >36 hours between 33˚ and 35˚ N**

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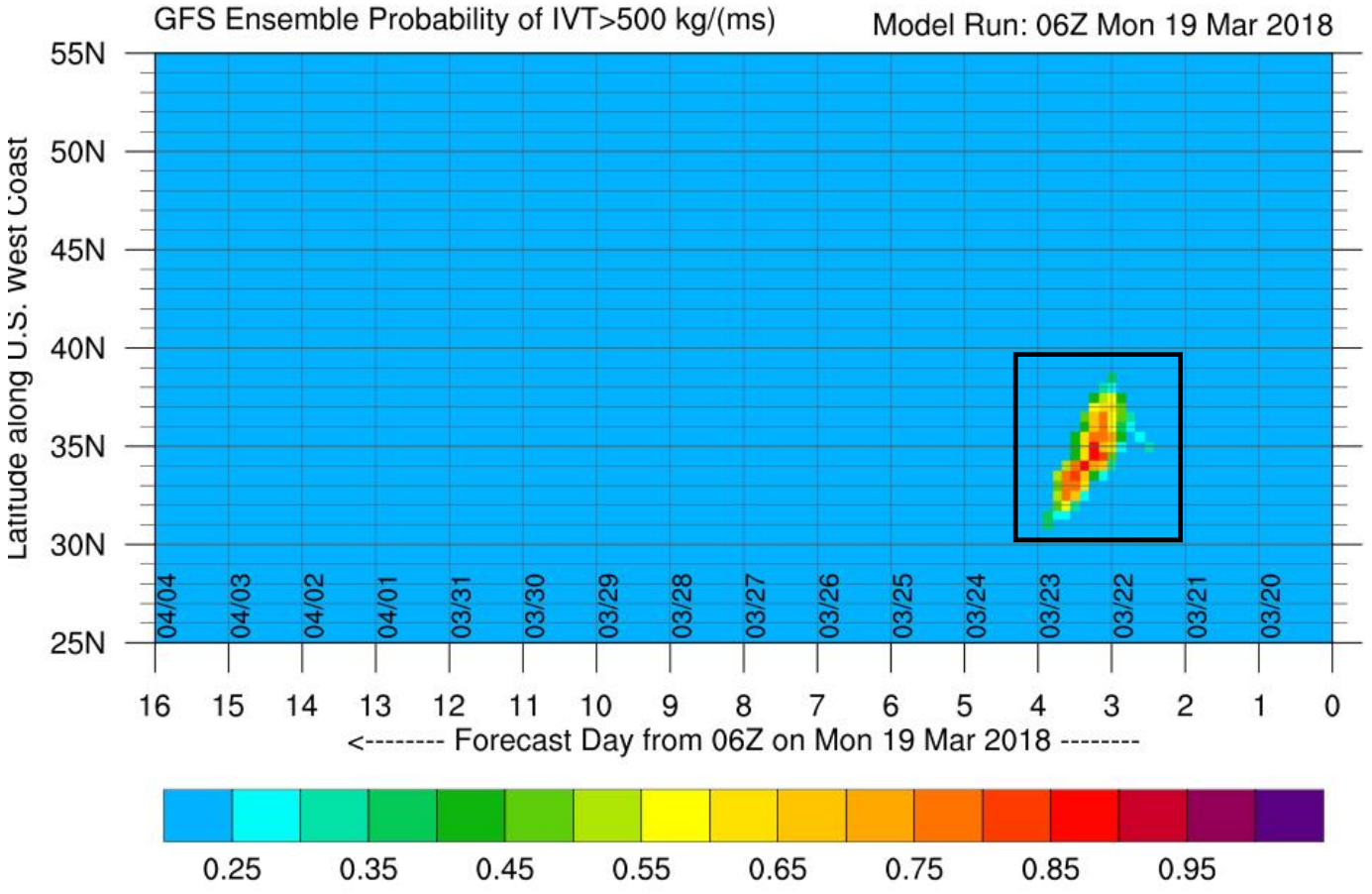
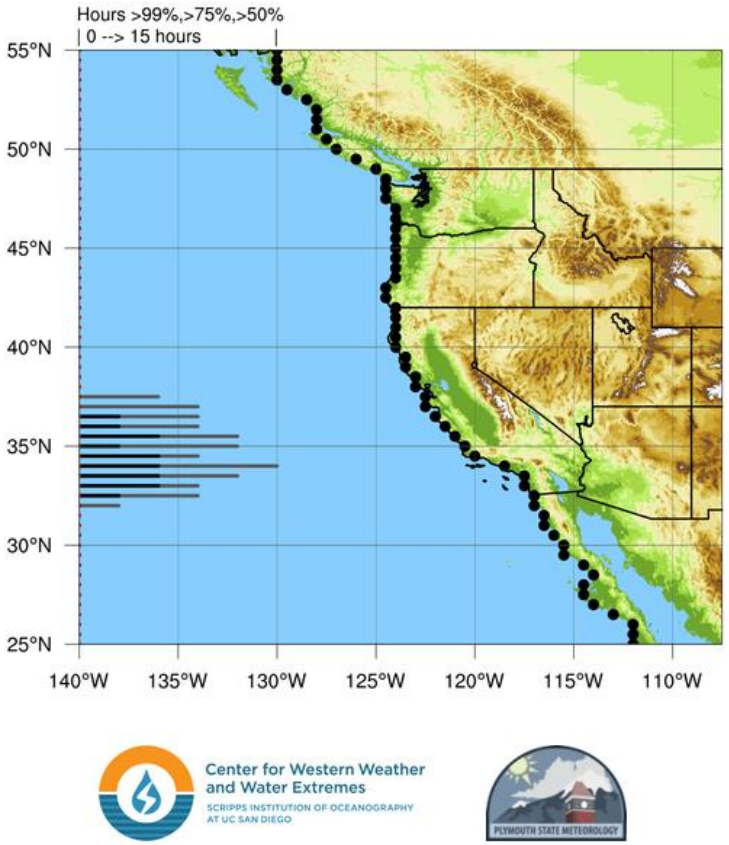
Odds of **Moderate** AR making landfall





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PLYMOUTH STATE METEOROLOGY

- **The probability of moderate strength AR conditions (IVT >500 kg m^{-1} s^{-1}) has increased to ~85% for 34–35˚N**

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As expected, GFS Ensemble member have begun to converge and forecast confidence in onset, duration, and magnitude of coastal IVT has increased

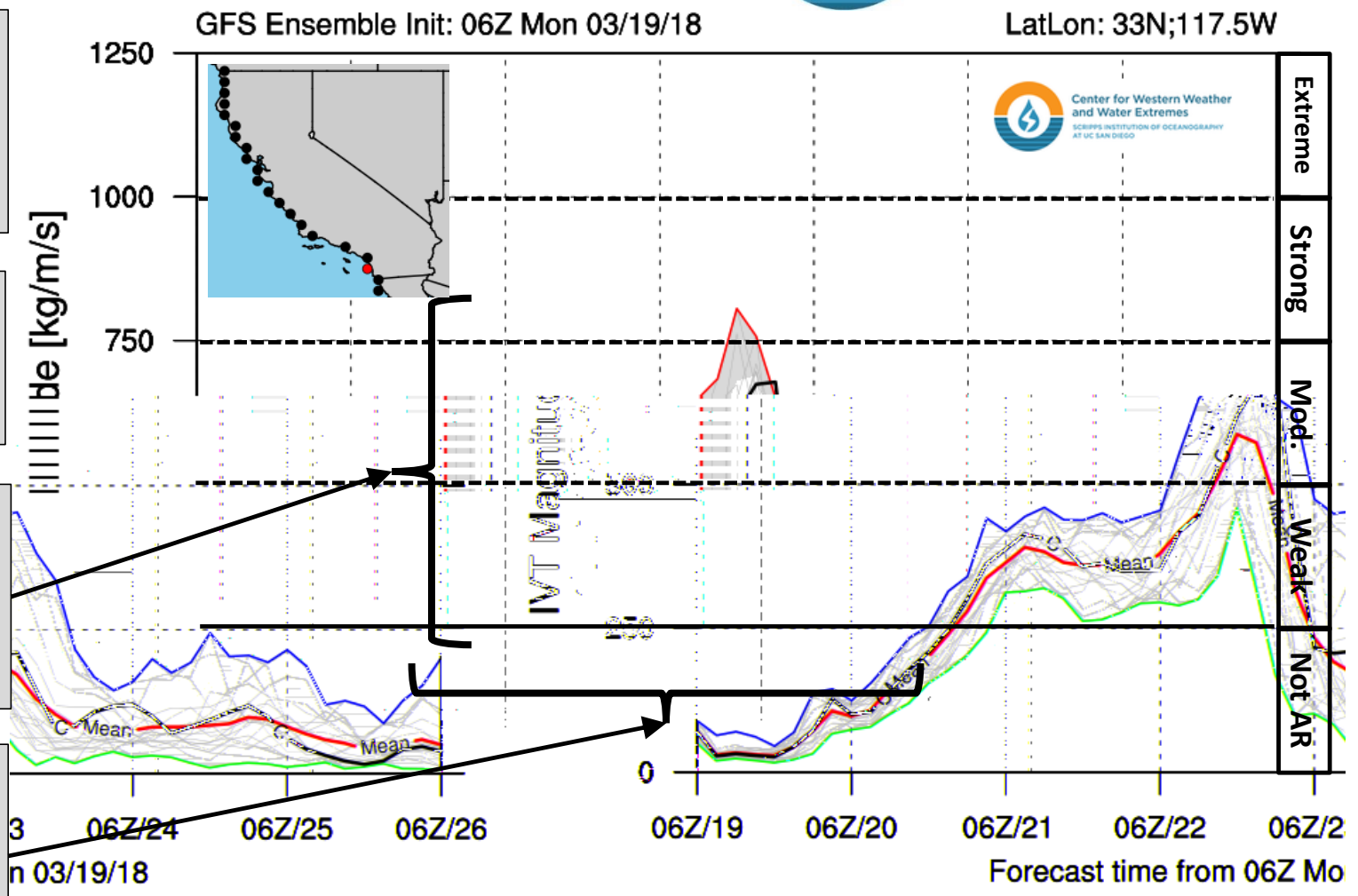
GFS Ensemble members a suggesting that this event could be a potentially strong and long duration event

Magnitude of Potential AR

- Maximum predicted IVT ~850 kg m^{-1} s^{-1}
- Mean IVT ~650 kg m^{-1} s^{-1}
- Minimum IVT ~450 kg m^{-1} s^{-1}

Duration of AR conditions by strength

- Weak: ~57 hours +/– 24 h
- Moderate: ~6 hours +/– 6 h
- Strong: ~3 hours +/– 3 h



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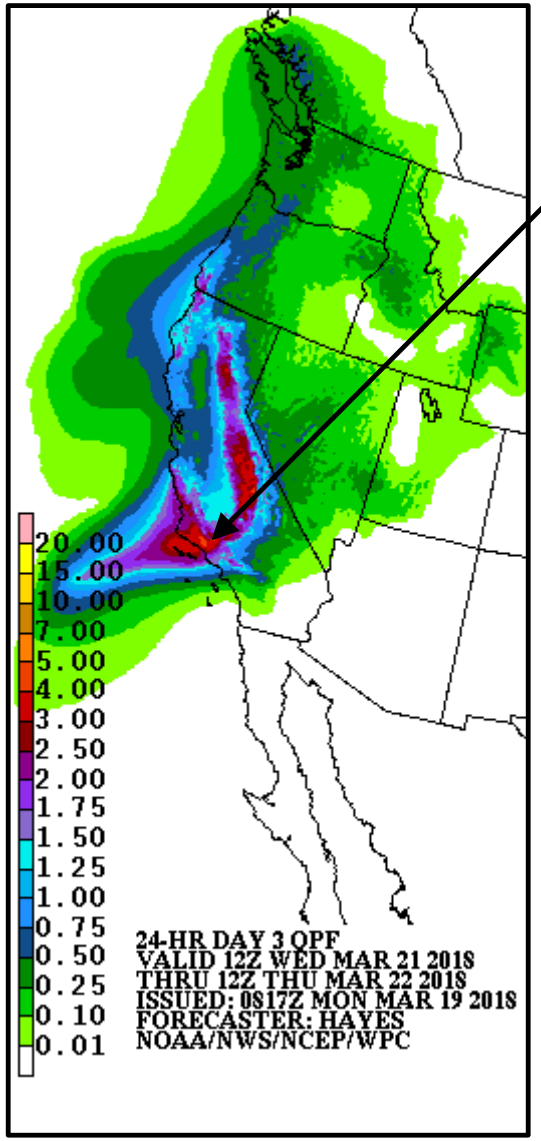
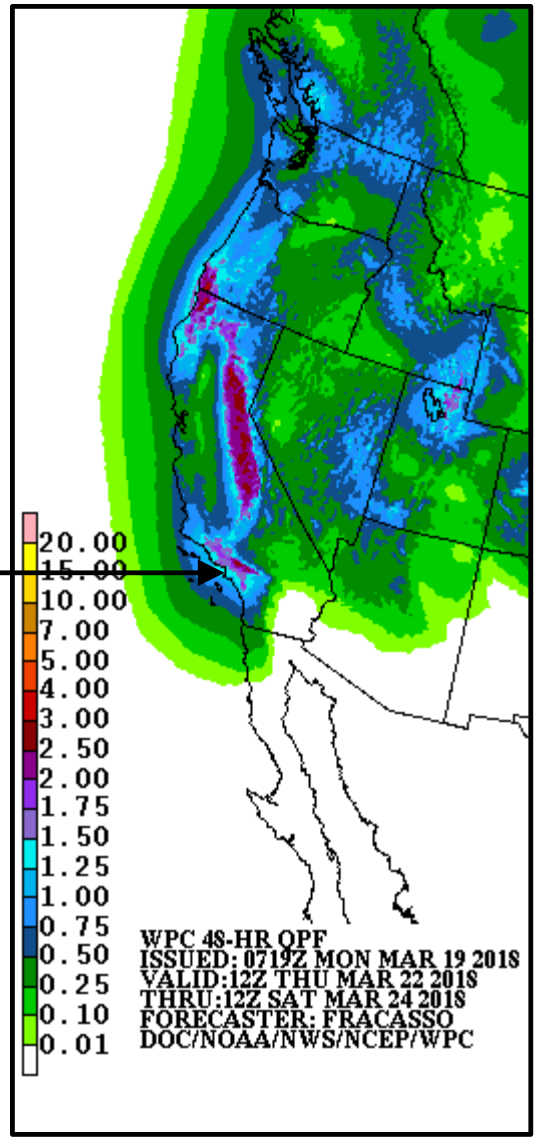


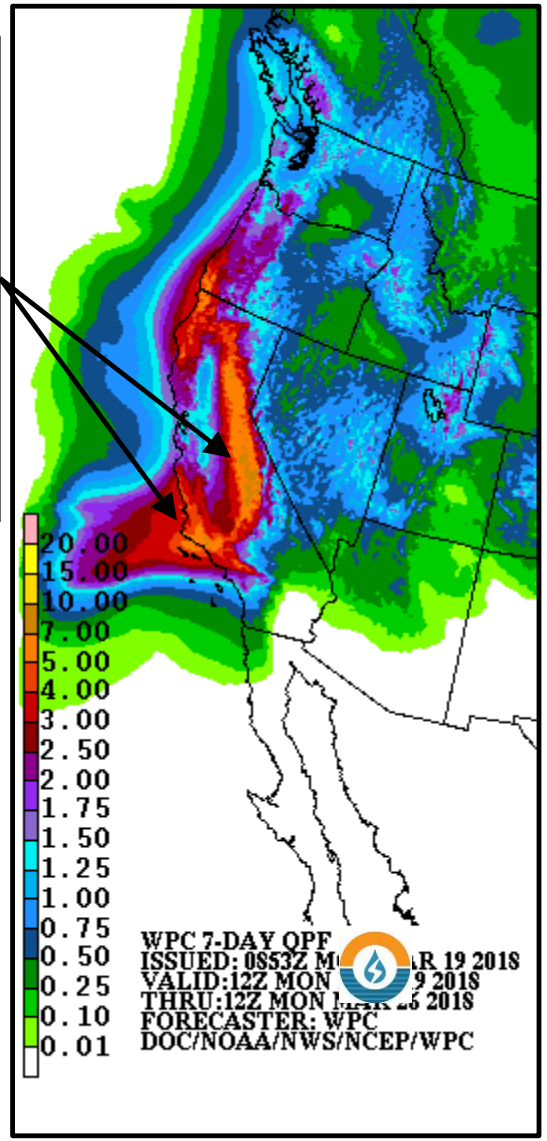
The NOAA WPC Day 3 QPF is forecasting ~4 inches of precipitation over the higher elevations of Santa Barbara County

An additional 1.5–2 inches could fall on days 4 and 5 (valid 12 Z 22 March to 12 Z 24 March)

Higher precipitation accumulations are also forecast for the high Sierra



1–7 day precipitation accumulations could reach >6 inches in Santa Barbara County and the High Sierra



For official NOAA Weather Prediction Center Forecasts: wpc.ncep.noaa.gov

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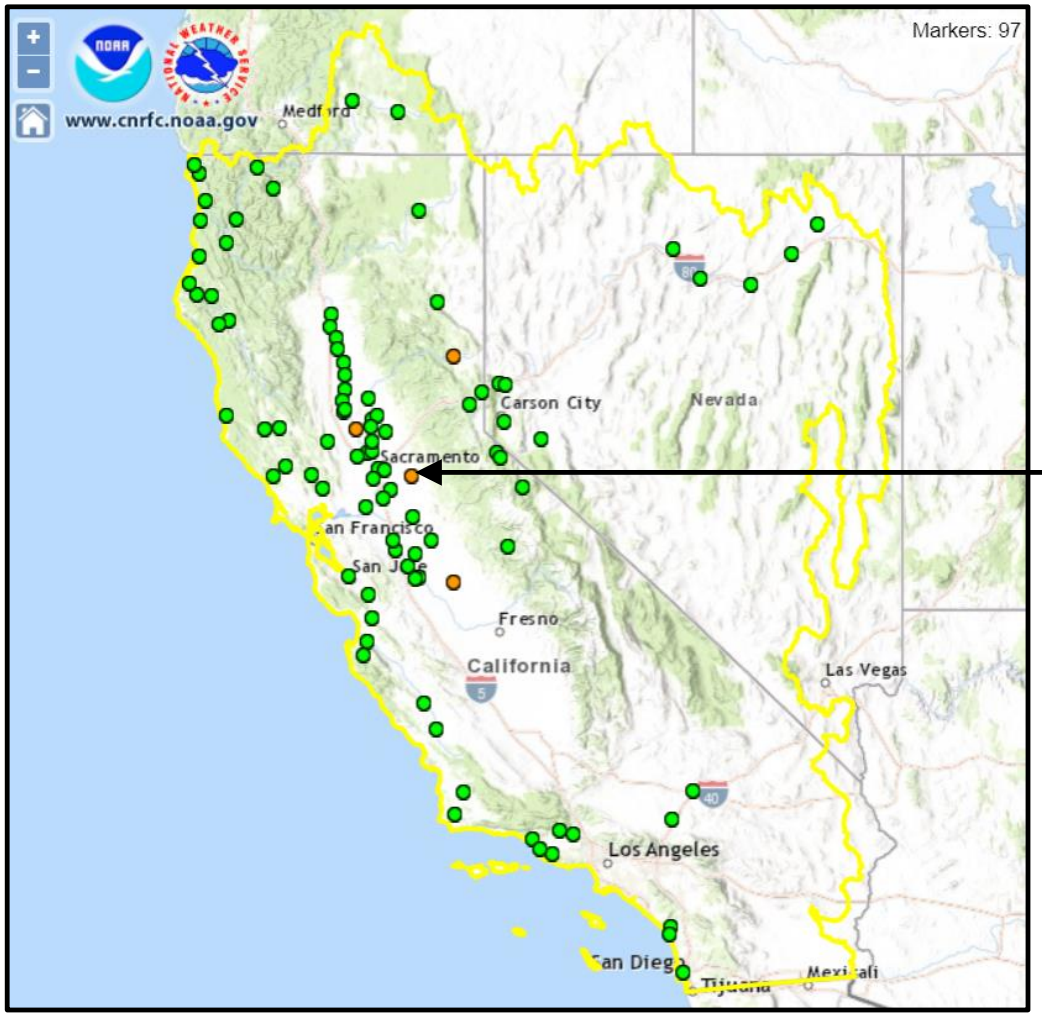
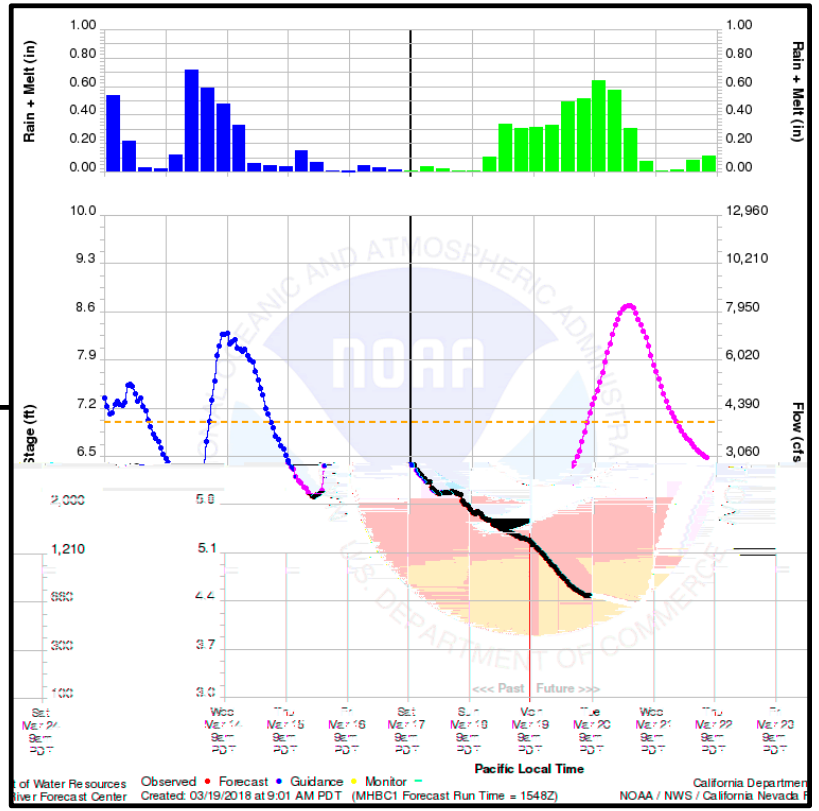
- There are currently 4 rivers in the Sierra and Central Valley forecast to rise above monitor stage
- While SoCal rivers are forecast to see a rise in stage, all are currently forecast to stay below monitor or stage





The Cosumnes River at Michigan Bar is forecast to rise to 8.7 feet at 9 pm on 22 March, 2.9 feet above monitor stage

For official California-Nevada Forecast Center Forecasts: cnrfc.noaa.gov

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Area Forecast Discussion from The National Weather Service Forecast Office in Los Angeles

The most important forecast for an AR event is the placement and orientation of the axis of the AR. The placement will determine which area is hit hardest and the orientation determines orthogonal component to the higher terrain which will greatly affect the **rainfall** amounts and rates. None of the mdls agree on any of these details and non of the mdls agree with their previous runs which is not good for the detailed forecast. So while we can say with great confidence that most of the area (a few mdls keep southern LA county rather dry) will get a very good soaking. We cannot say exactly when the peak of the **rainfall** will be or where max total precip area will be. Right now it seems **likely** it will be Western SBA county or Southern SBA/western VTA counties.

There is still a considerable amount of uncertainty between models and model runs leading to difficulties in determining the overall impacts this event will produce. Expect more changes in the forecast as this event approaches and models begin to converge

For localized forecasts visit www.weather.gov