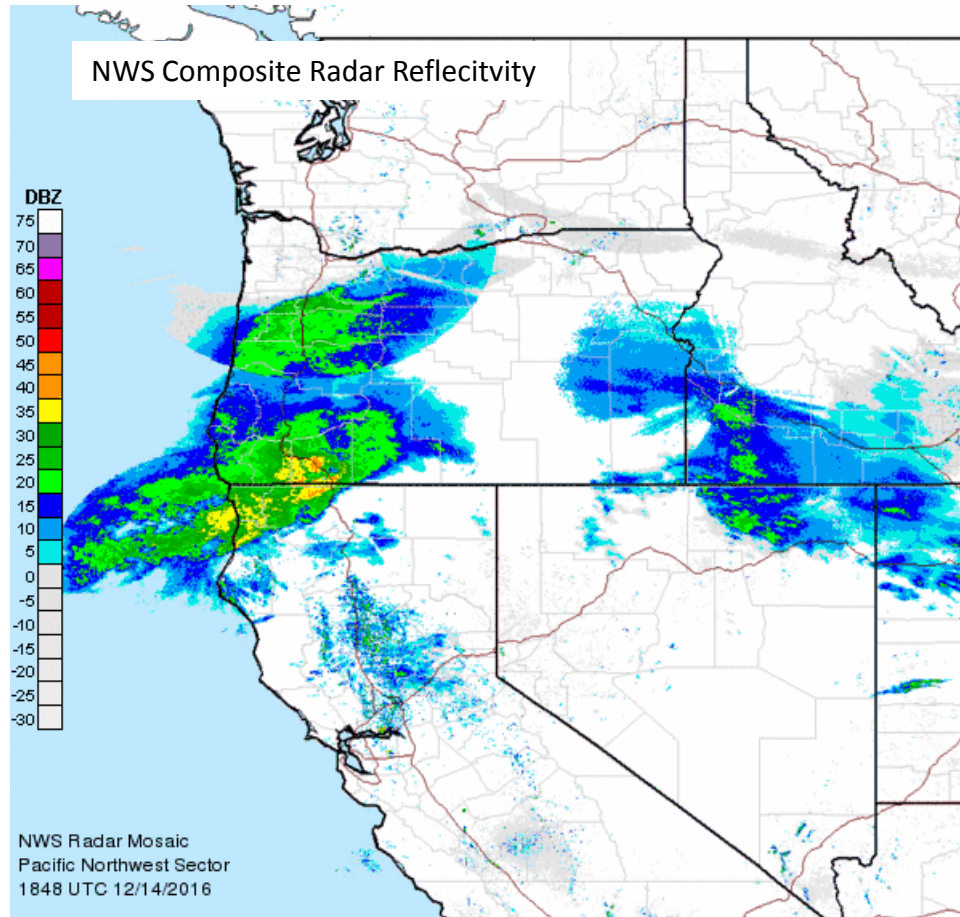


# CW3E Atmospheric River Update

For California DWR's AR  
Program

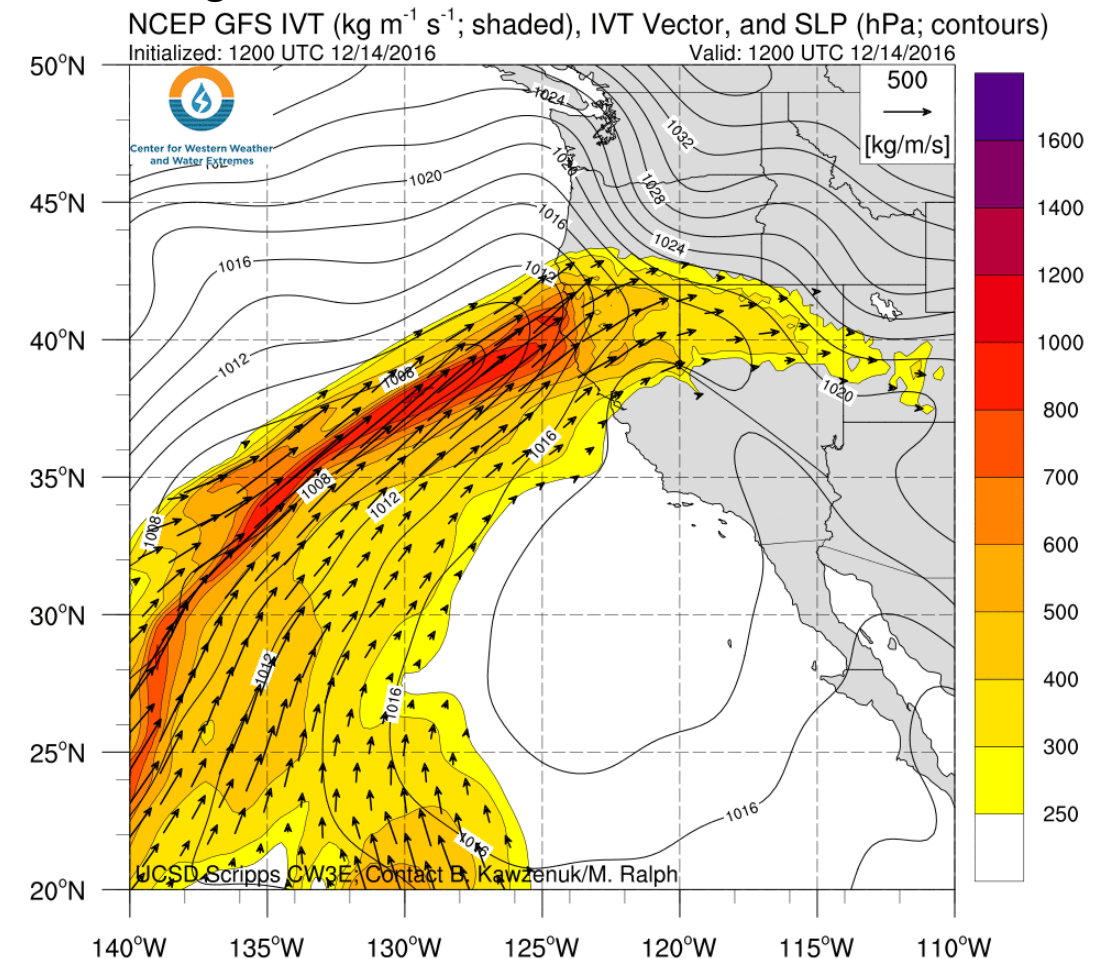


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## Update on AR Impacting California

- Precipitation has begun falling in portions of northern CA and southern Oregon where 24-h precipitation accumulations range from 1 to 4.9 in.
- AR conditions are expected to continue over northern California for the next 48-hrs before moving southward



Summary by C. Hecht & F.M. Ralph 1 PM PT Wed 14 Dec. 2016

- NWS precipitation forecasts for the rest of the event continue to predict higher precipitation amounts of ~10 inches in 3 days over the higher elevations of the Sierra Nevada Mts. with other locations in northern CA receiving an additional 2-10 inches
- CNRFC river forecasts are now predicting several river gages to rise above flood stage

# AR Update: 14–17 December 2016

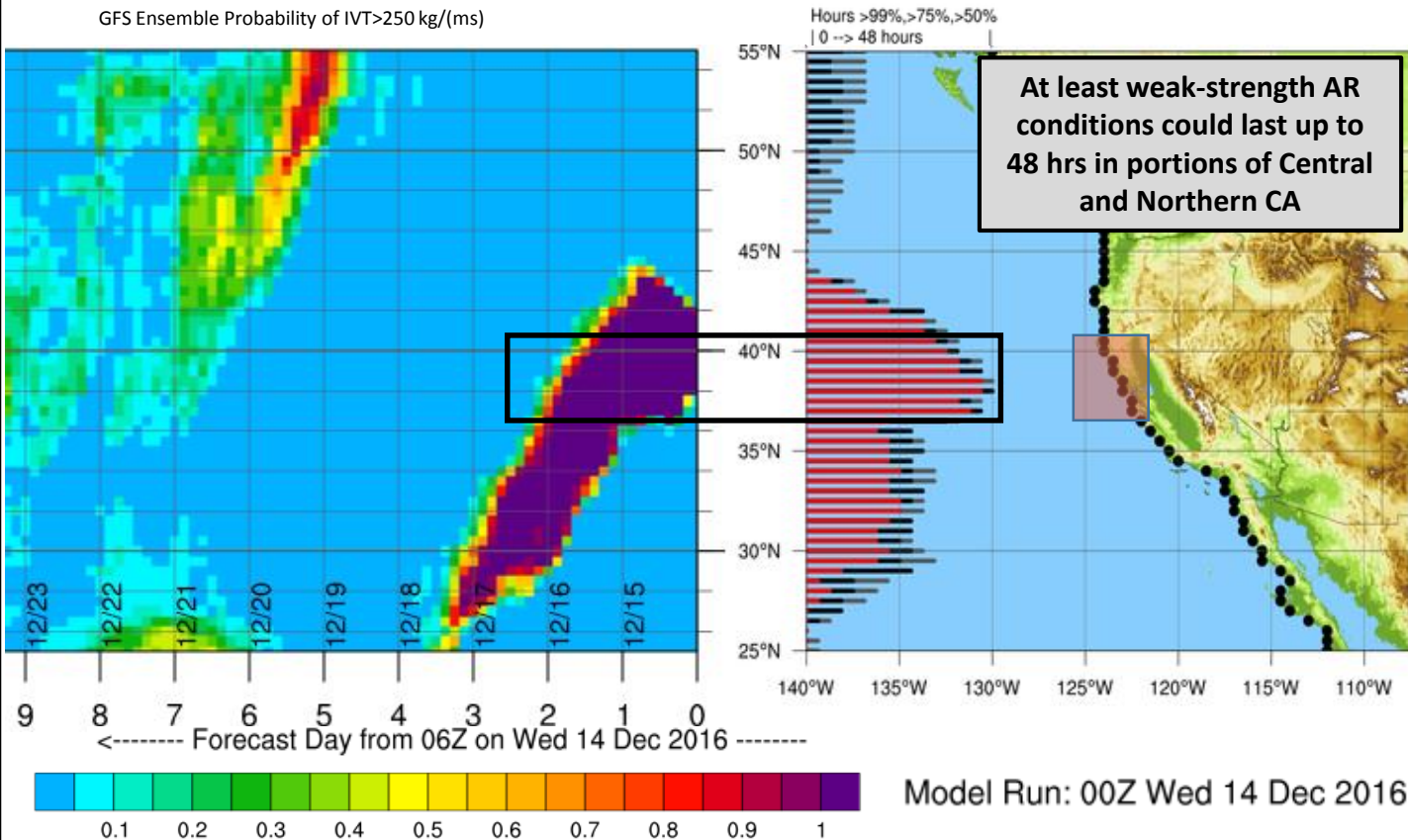
For California DWR's  
AR Program



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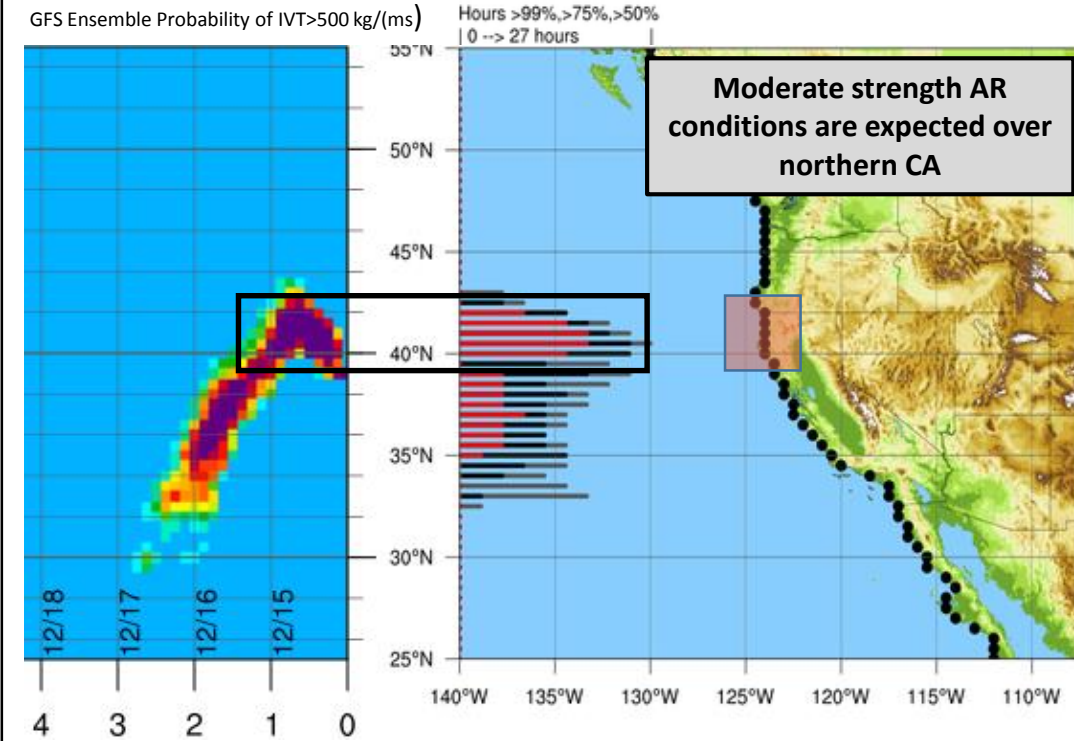
## Odds of at least a **WEAK** AR making landfall

GFS Ensemble Probability of  $IVT > 250 \text{ kg/(ms)}$



## Odds of a **MODERATE-STRENGTH** AR making landfall

GFS Ensemble Probability of  $IVT > 500 \text{ kg/(ms)}$



- AR conditions ( $IVT > 250 \text{ kg m}^{-1} \text{ s}^{-1}$ ) are expected to last for up to 48-hrs in portions of northern California before the AR propagates southward bringing AR conditions to southern California on 15 and 16 December 2016
- The chances of moderate strength ( $IVT > 500 \text{ kg m}^{-1} \text{ s}^{-1}$ ) conditions over northern CA have increased and portions of central CA could experience moderate conditions tomorrow



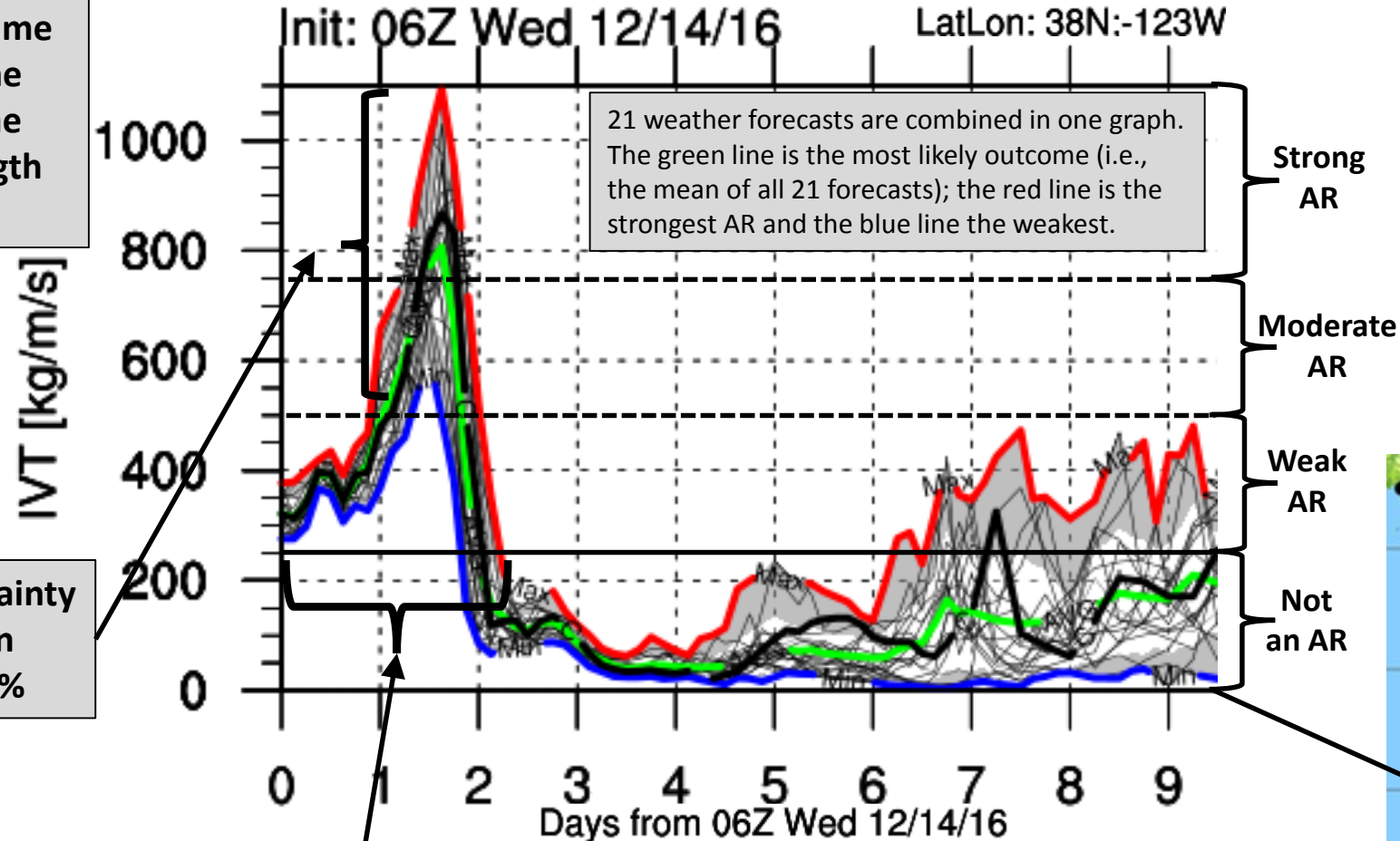
# AR Update: 14–17 December 2016

For California DWR's AR Program



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While there is more agreement between the ensemble members as time progresses closer to the event there is still some uncertainty in AR strength and duration



There is still some uncertainty in AR strength with an uncertainty of +/- ~25%

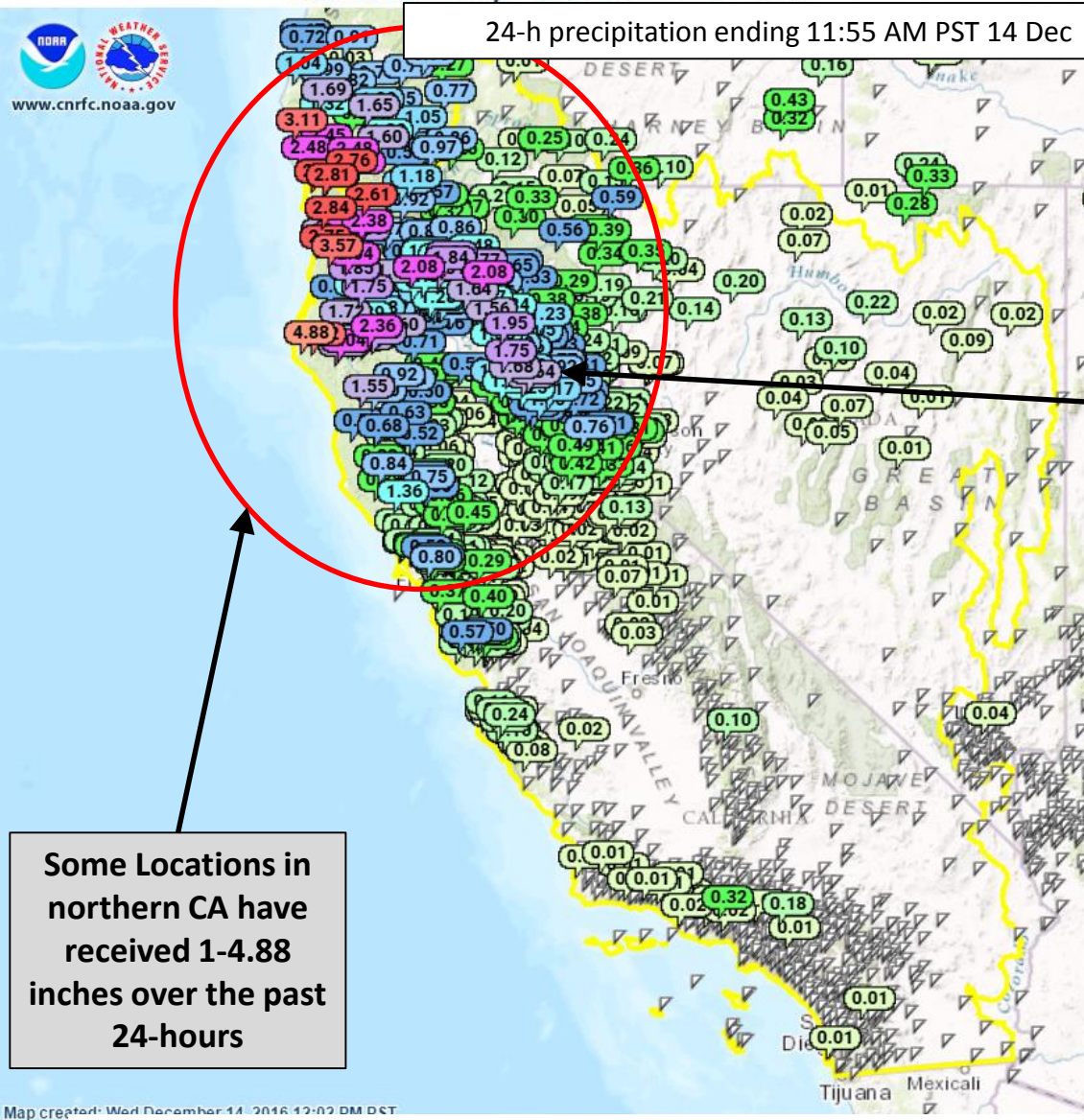
There is more agreement in the duration between the ensemble members with a difference of ~6-hours between the longest and shortest forecasts (moderate AR conditions could last ~24 h)



# AR Update: 14–17 December 2016

For California DWR's AR Program

Observed Precip - Last 24 Hours - Raw

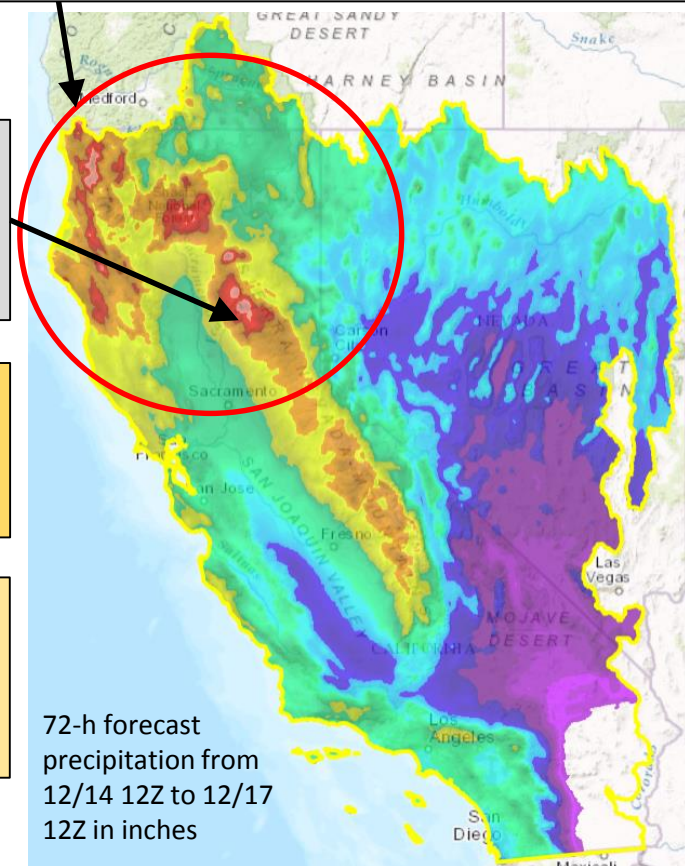


Locations in northern CA are forecast by the California Nevada River Forecast Center (CNRFC) to receive additional precipitation amounts of 2.5 to 9.5 inches

By the end of the event, total precipitation accumulations at the highest elevations could reach as high as 12 inches

Precipitation could reach R-CAT 2 (12-16 inches in 3 days) at the wettest mountain sites

For Official NOAA-CNRFC Precipitation Forecasts see  
<http://www.cnrfc.noaa.gov/ol.php?ty=pe=QPF>





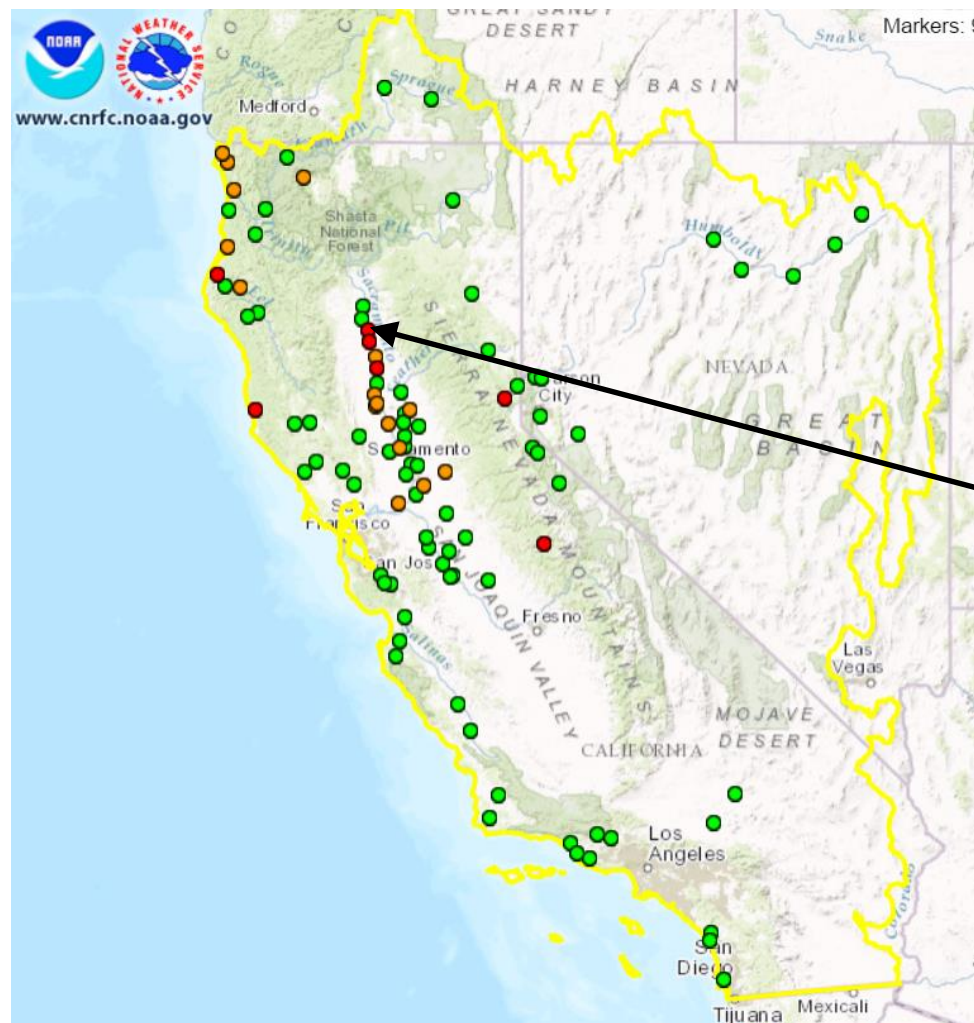
# AR Update: 13–17 December 2016

For California DWR's AR Program

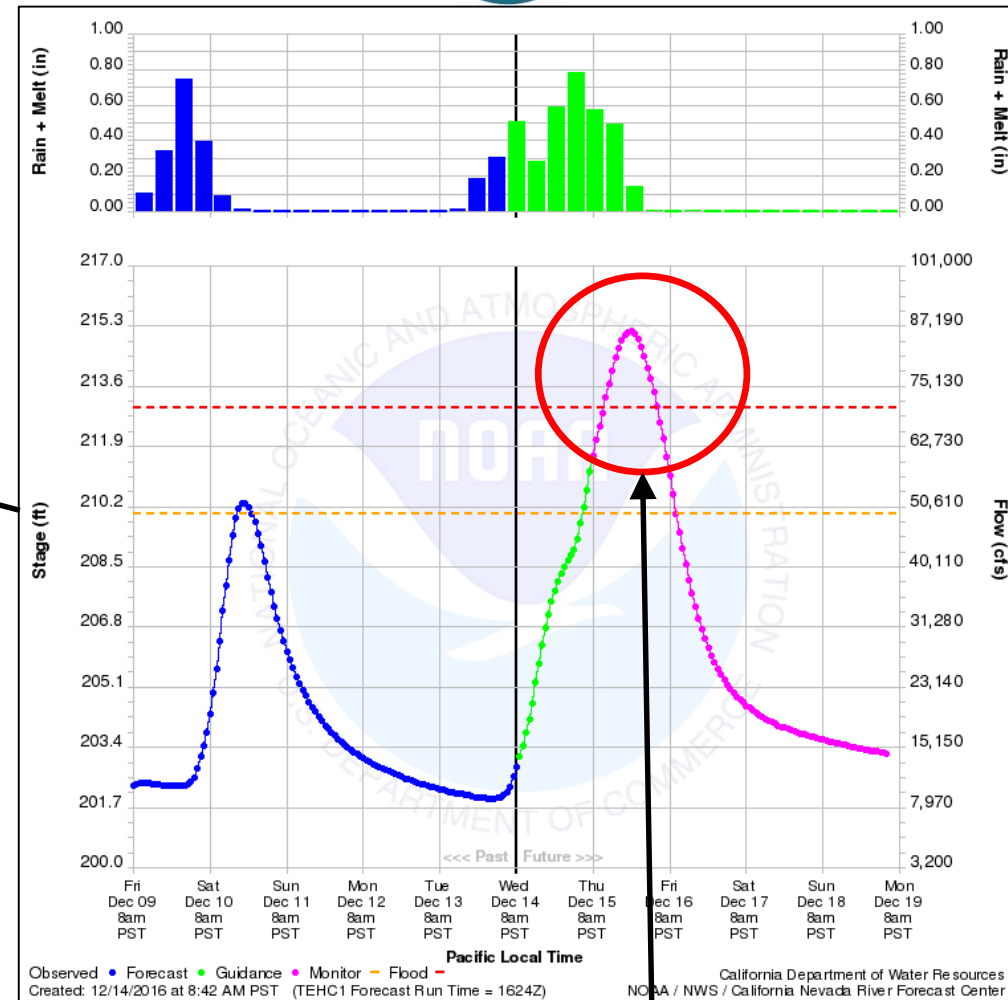
Since yesterdays outlook the River Forecast Center is expecting 4 more rivers to reach flood stage bringing the total to 7

16 additional gages are forecast to reach above monitor stage in the Sacramento River Valley and Coastal Mts. Of northwestern CA

For official NOAA-NWS CNRFC Streamflow Forecasts see [http://cnrfc.noaa.gov/rf\\_c\\_guidance.php](http://cnrfc.noaa.gov/rf_c_guidance.php)



The number inside each circle above represents the number of gages with forecast conditions inside that category.



The forecast stage height for Tehama Bridge has now increased from ~212 feet to 215.3 feet since yesterdays forecast, which is ~2 feet above flood stage