

# CW3E Atmospheric River Update – Summary & Outlook

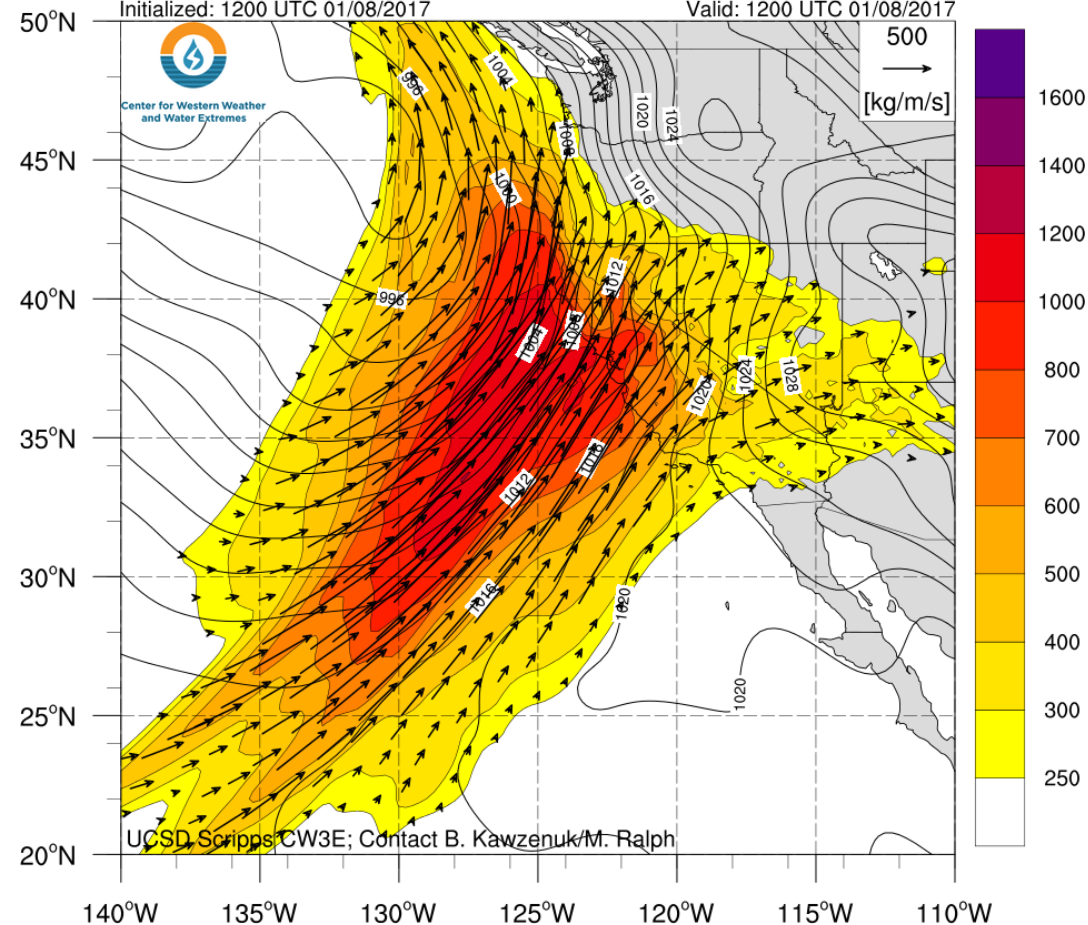


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## Strong Atmospheric River makes landfall over CA, with a second AR on the way

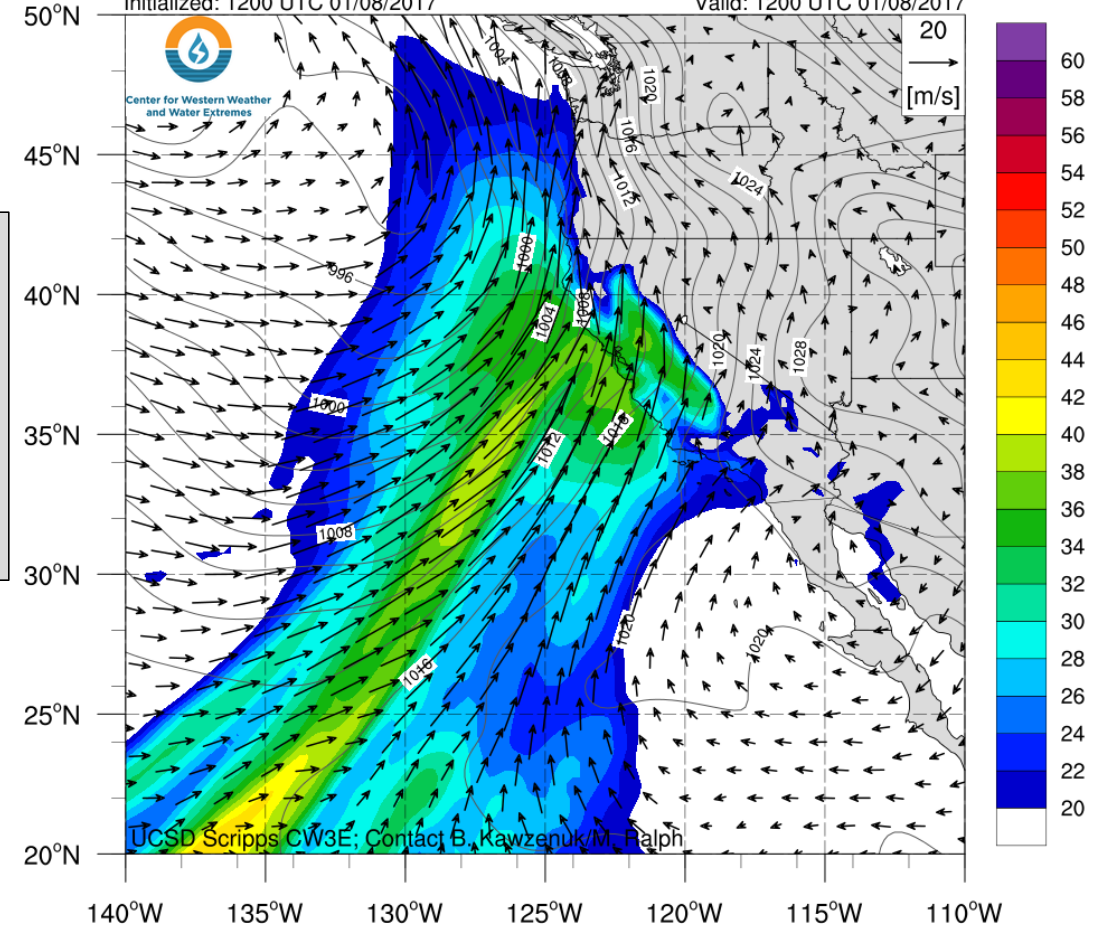
- A strong Atmospheric River (AR) made landfall over the U.S. West Coast on 8-9 January 2017
- The AR had  $>1000 \text{ kg m}^{-1} \text{ s}^{-1}$  of Integrated Water Vapor Transport (IVT) and  $>35 \text{ mm}$  of Integrated Water Vapor (IWW)
- As of Monday afternoon several locations received over 12 inches of precipitation in 72 hours (R-Cat 2)

NCEP GFS IVT ( $\text{kg m}^{-1} \text{ s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 1200 UTC 01/08/2017 Valid: 1200 UTC 01/08/2017



Strong AR  
making landfall  
with very large  
water vapor  
content and  
transport

NCEP GFS IWW (mm; shaded), 850-hPa Wind (vectors), and SLP (hPa; contours)  
Initialized: 1200 UTC 01/08/2017 Valid: 1200 UTC 01/08/2017



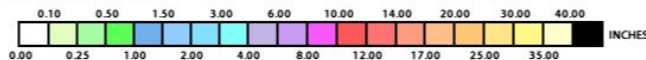
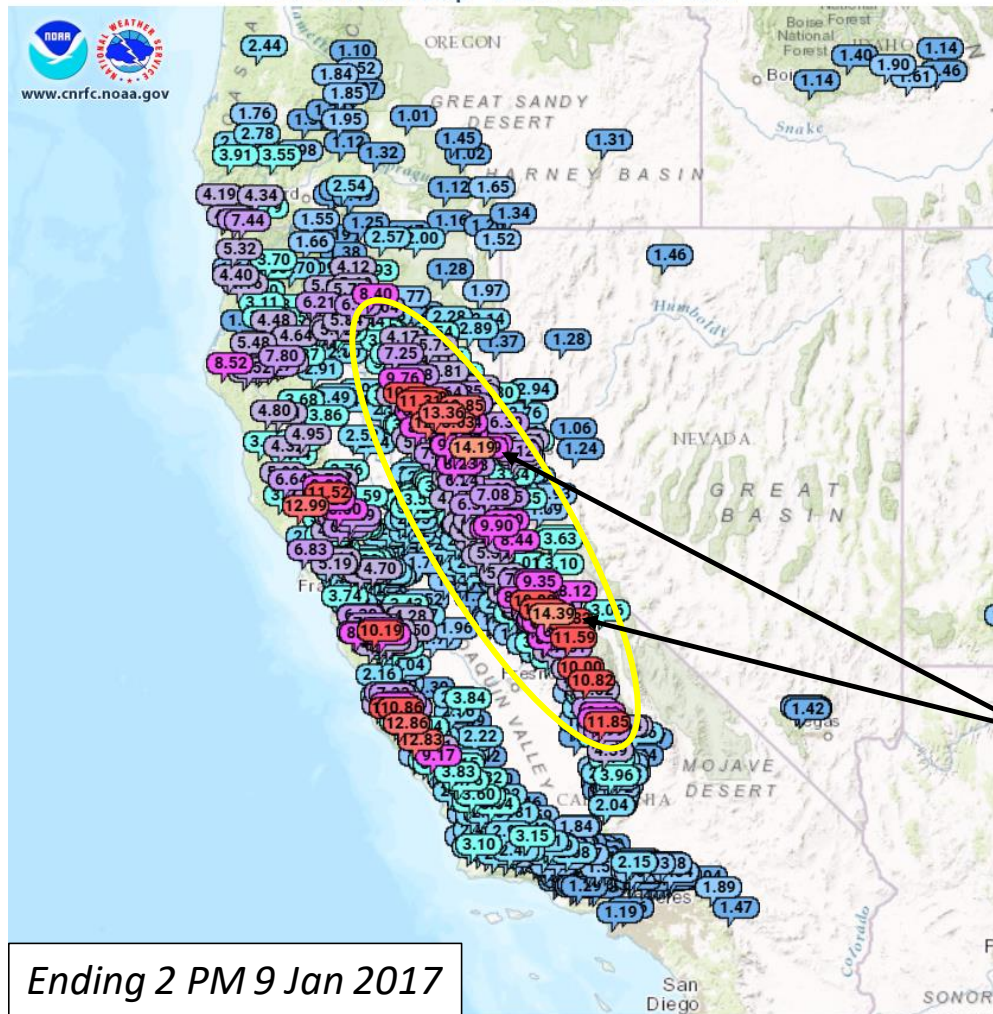
# Observed Precipitation



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## CNRFC Observed Precipitation

Observed Precip - Last 72 Hours - Raw



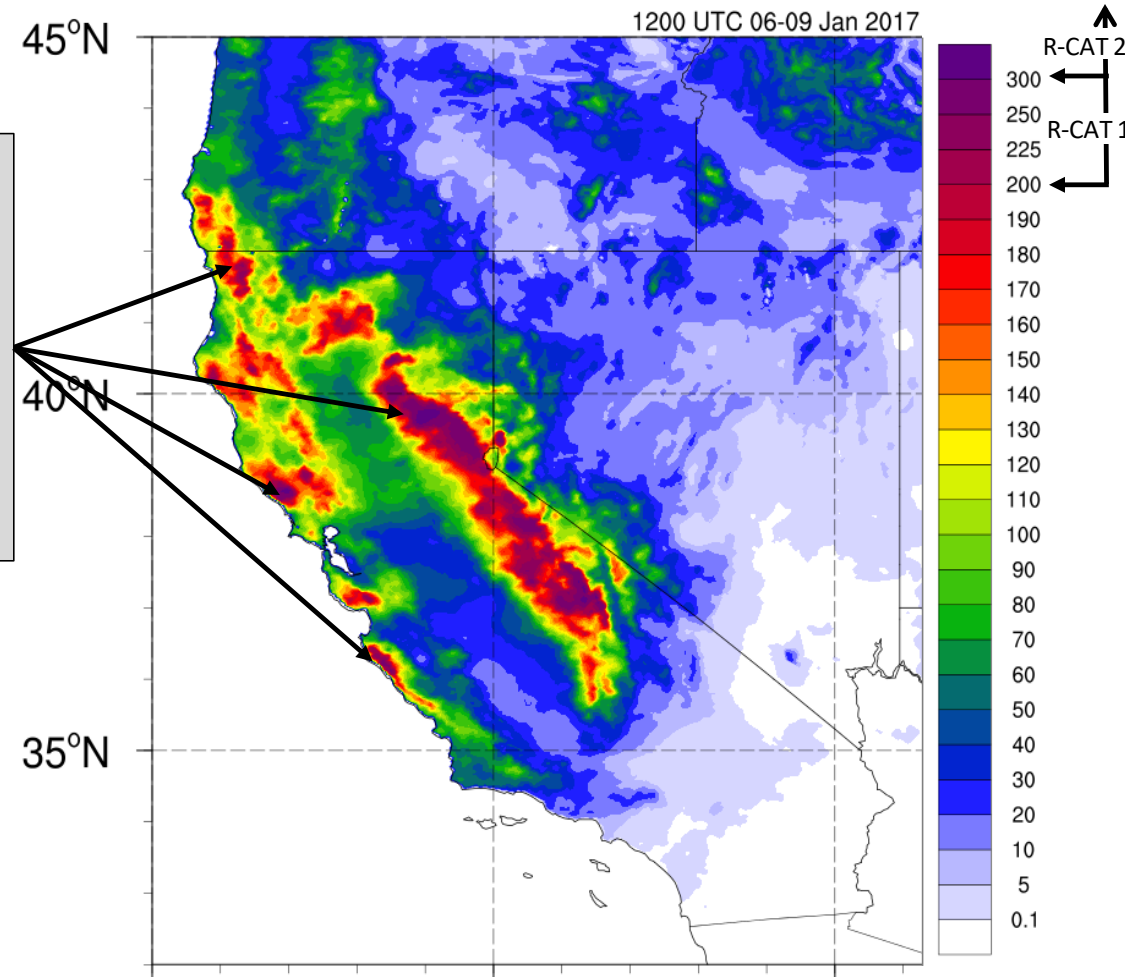
>300 mm (R-CAT 2)  
Over large portions  
of the Sierra  
Nevada Mtns. and  
several locations  
over the CA Coastal  
Mtns.

Maximum gauge  
measurements  
>14 inches

## National Stage IV Quantitative Precipitation Estimate

72-h Accumulated Precipitation (mm)

1200 UTC 06-09 Jan 2017



125°W

120°W

115°W

Summary by B. Kawzenuk, C. Hecht, and F.M. Ralph 3 pm 9 Jan 2017

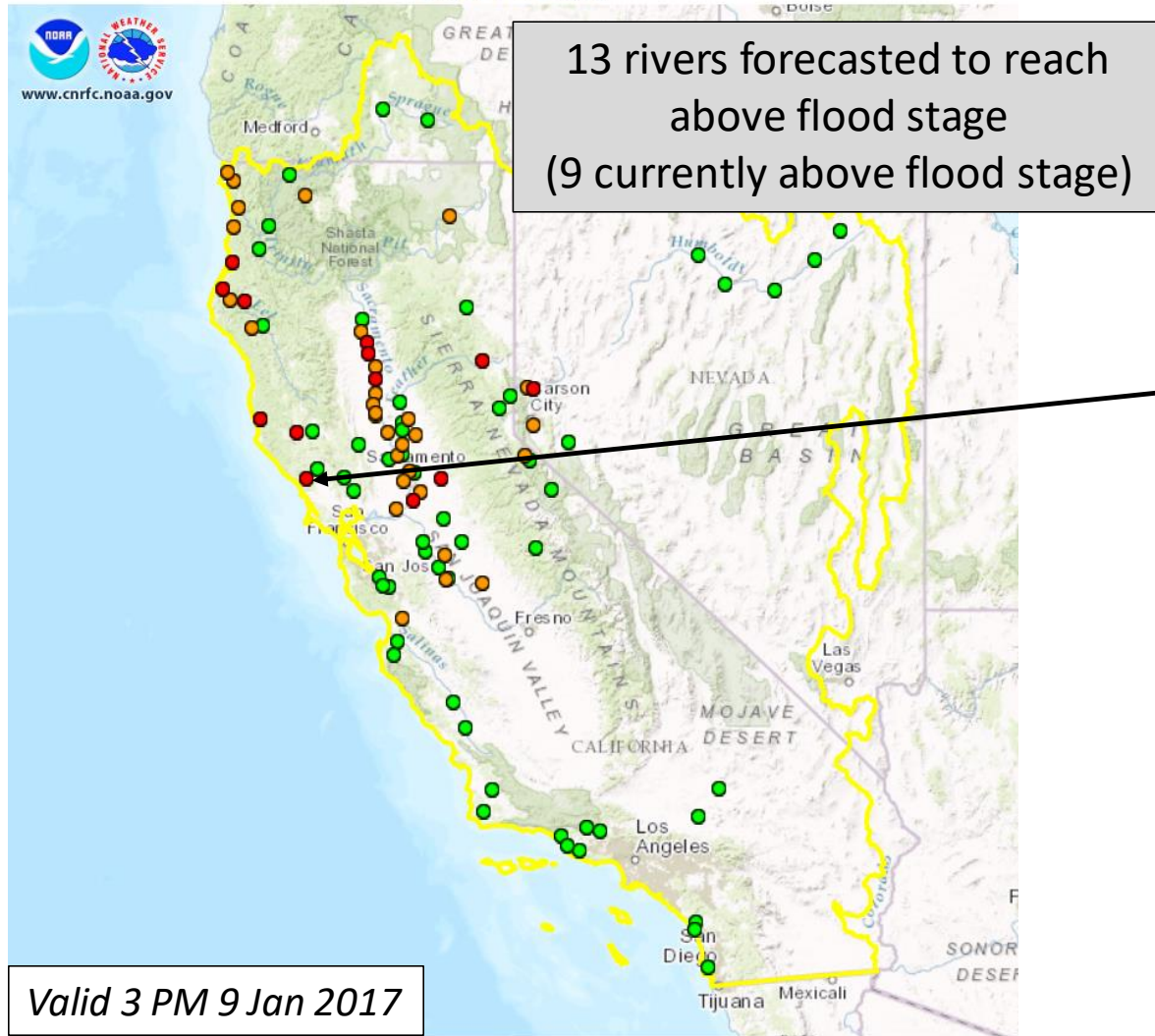
# River Observations and Forecasts



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## CNRFC River Forecasts

River Forecast

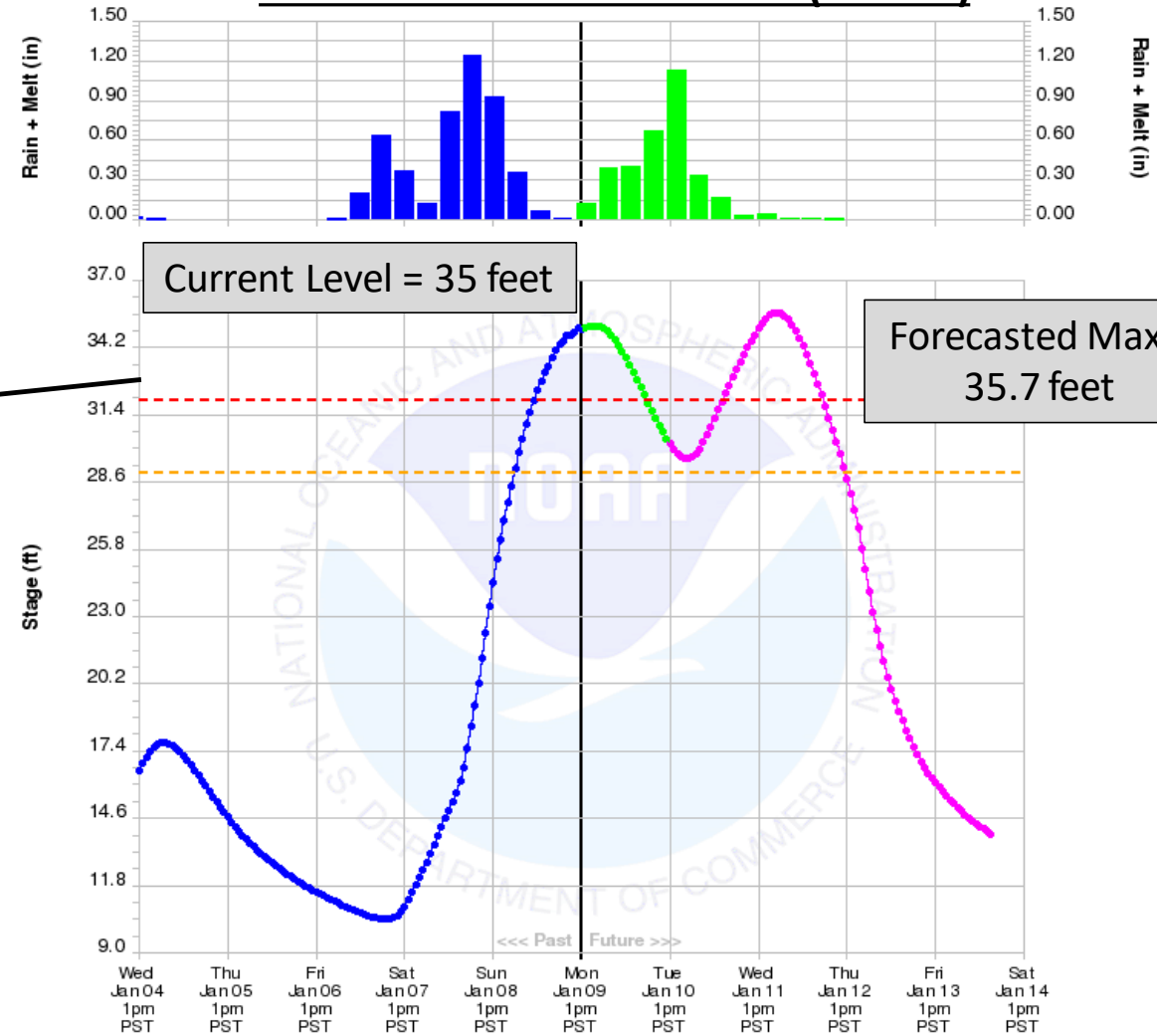


Valid 3 PM 9 Jan 2017



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

## Russian River – Guerneville (GUEC1)

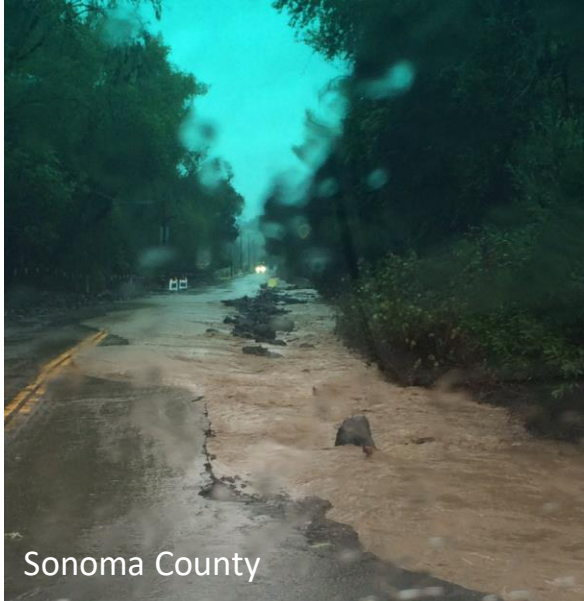


Observed - Forecast - Guidance - Monitor - Flood -  
Created: 01/09/2017 at 1:58 PM PST (GUEC1 Forecast Run Time = 2155Z)

California Department of Water Resources  
NOAA / NWS / California Nevada River Forecast Center

Summary by B. Kawzenuk, C. Hecht, and F.M. Ralph 3 pm 9 Jan 2017

# California Impacts



Sonoma County



Northern Sierras (CA) I-80 Mudslide  
<https://www.facebook.com/chp.truckee/>



Yosemite Valley  
Image from Joe Meyer



Sonoma County  
<https://twitter.com/sonomasheriff/status/818163273430245376>



Big Sur - Central Coast, CA  
<https://bigsurkate.wordpress.com/>



Yosemite Valley  
Image from Joe Meyer

# AR Update: 9 January 2017 Outlook

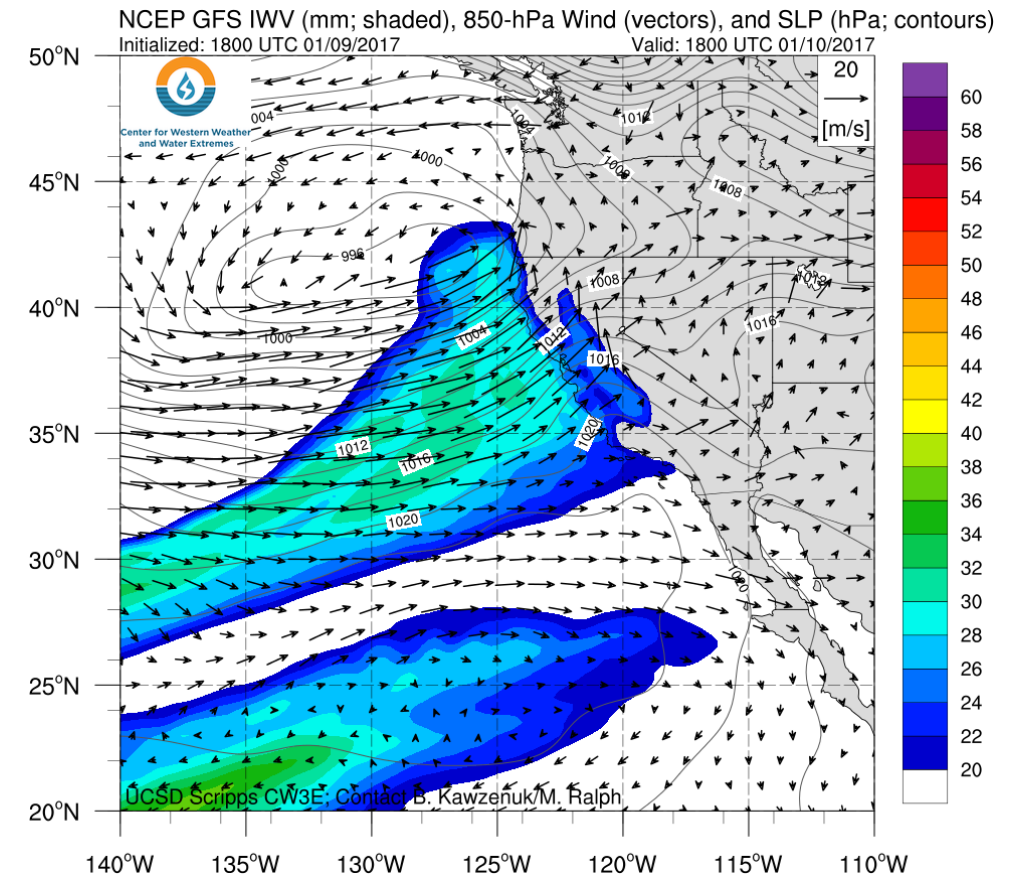
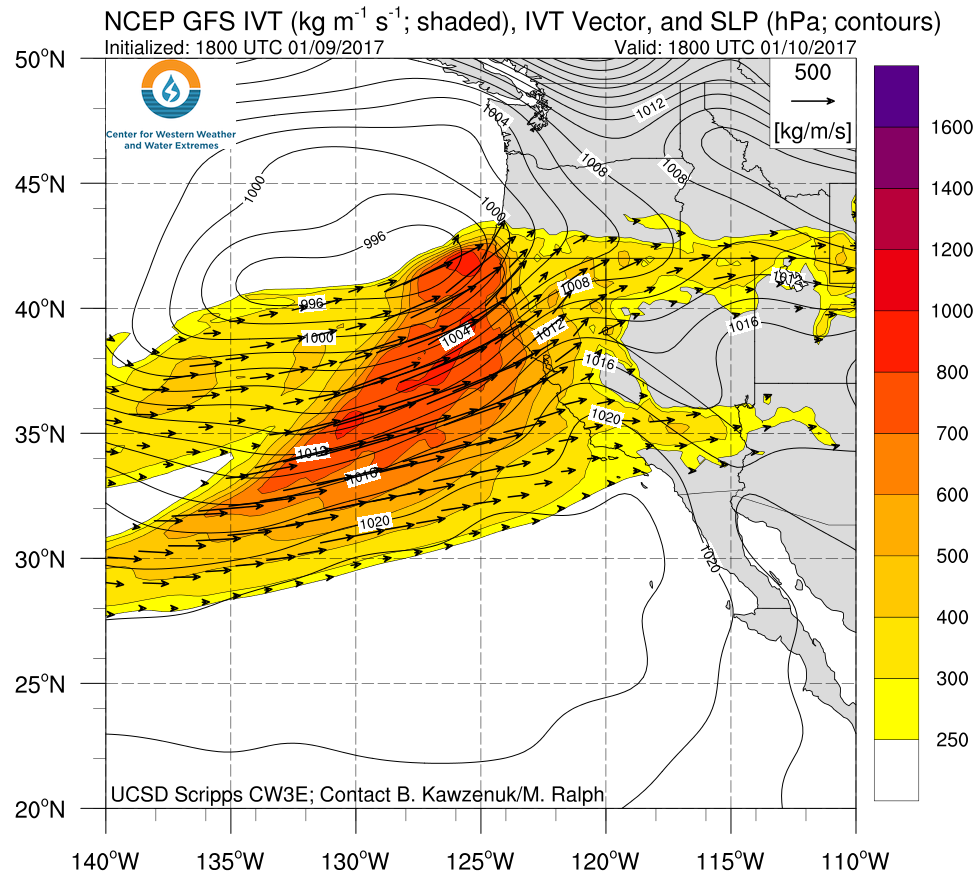
For California DWR's AR Program



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## Update on Strong AR over the next two days

- Another AR is forecast to make landfall over Central California tonight and last until Wednesday evening
- As much as 10 more inches of rain could fall over already saturated soil
- Lower freezing levels may cause most of the higher elevations to receive snow instead of rain
- Several river gauges are forecast to rise back above flood stage with little time to recover back to normal after this past weekends AR



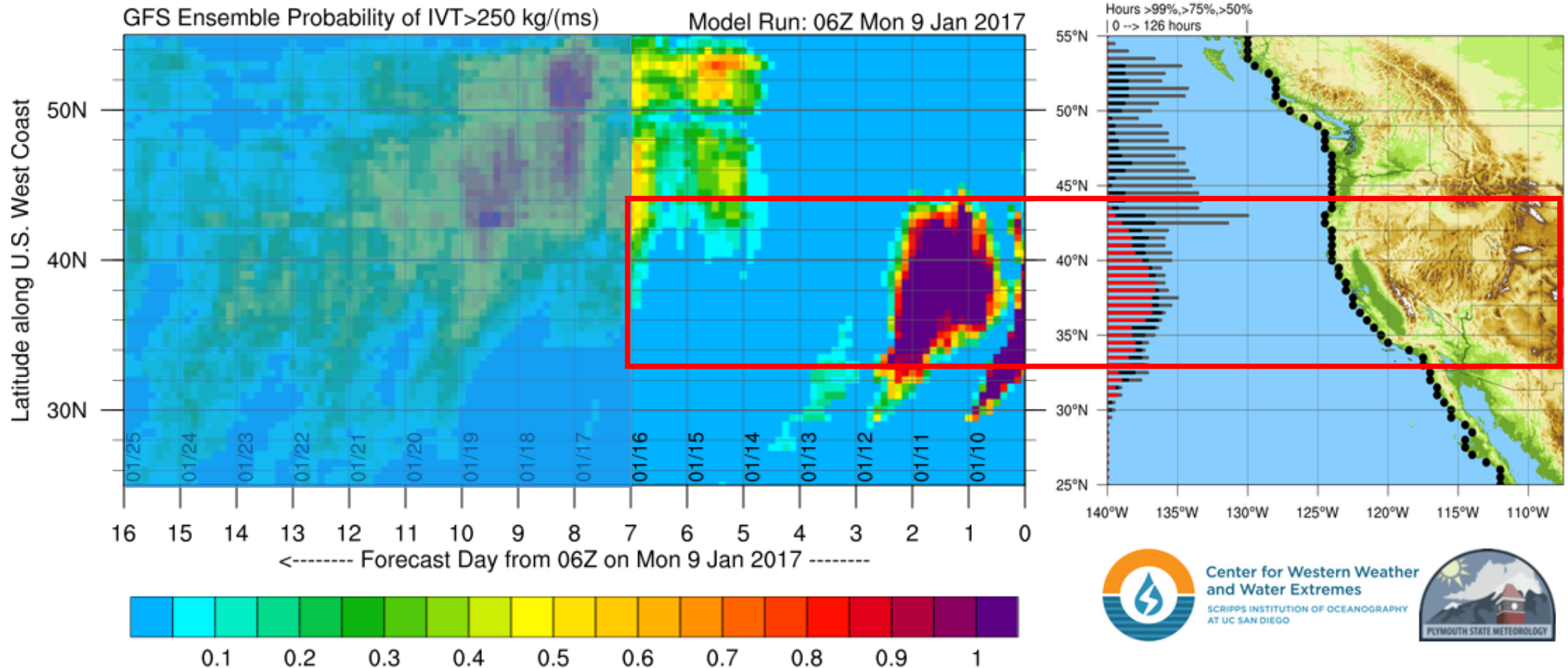
Summary by B. Kawzenuk, C. Hecht, and F.M. Ralph 3 pm 9 Jan 2017

# AR Update: 9 January 2017 Outlook

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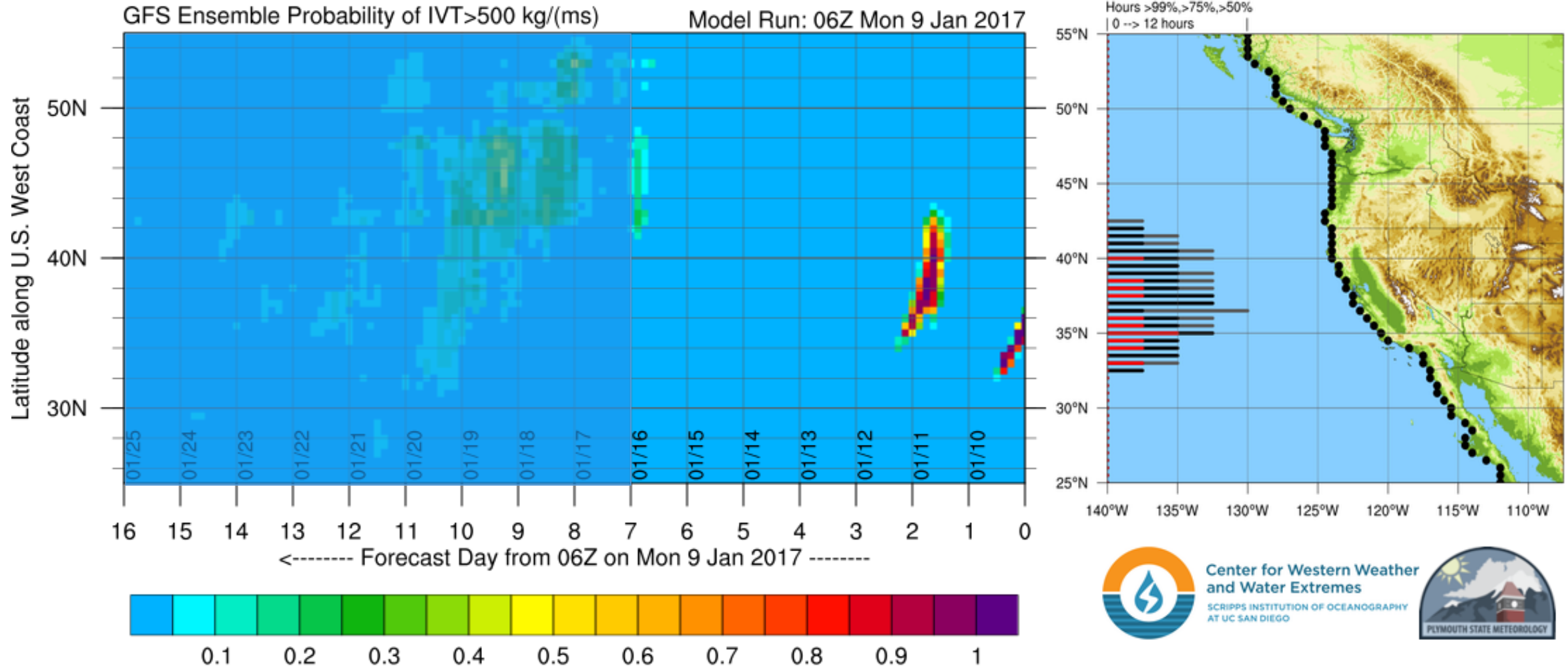
At least weak AR conditions (IVT > 250 kg m<sup>-1</sup> s<sup>-1</sup>) could last up to 36 hours between 10 and 12 Jan. in Central and Southern CA

# AR Update: 9 January 2017 Outlook

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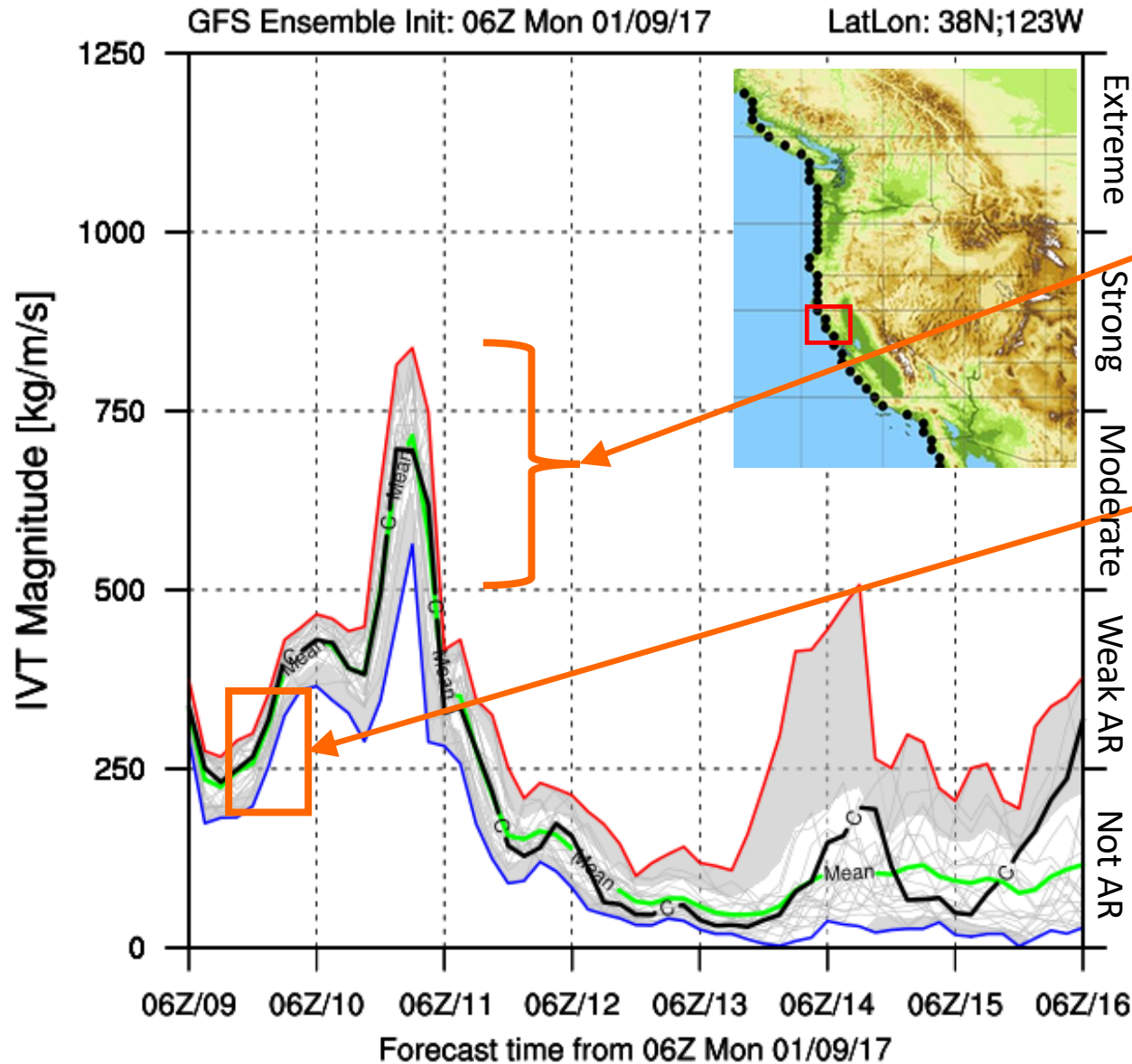
There is a slight chance of moderate AR conditions (IVT > 500 kg m<sup>-1</sup> s<sup>-1</sup>) for a short period of time (~6–12 hours) on 11 Jan 2017

# AR Update: 9 January 2017 Outlook

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## Magnitude of AR

- Maximum possible IVT  $\sim 825 \text{ kg m}^{-1} \text{ s}^{-1}$
- Mean IVT  $\sim 745 \text{ kg m}^{-1} \text{ s}^{-1}$
- Minimum possible IVT  $\sim 575 \text{ kg m}^{-1} \text{ s}^{-1}$
- Uncertainty  $\sim \pm 10\%$

## Start Time of AR conditions

- 10 AM Tuesday 10 January
- High confidence  $\pm 3 \text{ h}$

## Duration of AR conditions

- Weak:  $\sim 36 \text{ hours (minimum)}$
- Moderate:  $\sim 12 \text{ hours } \pm 3 \text{ h}$



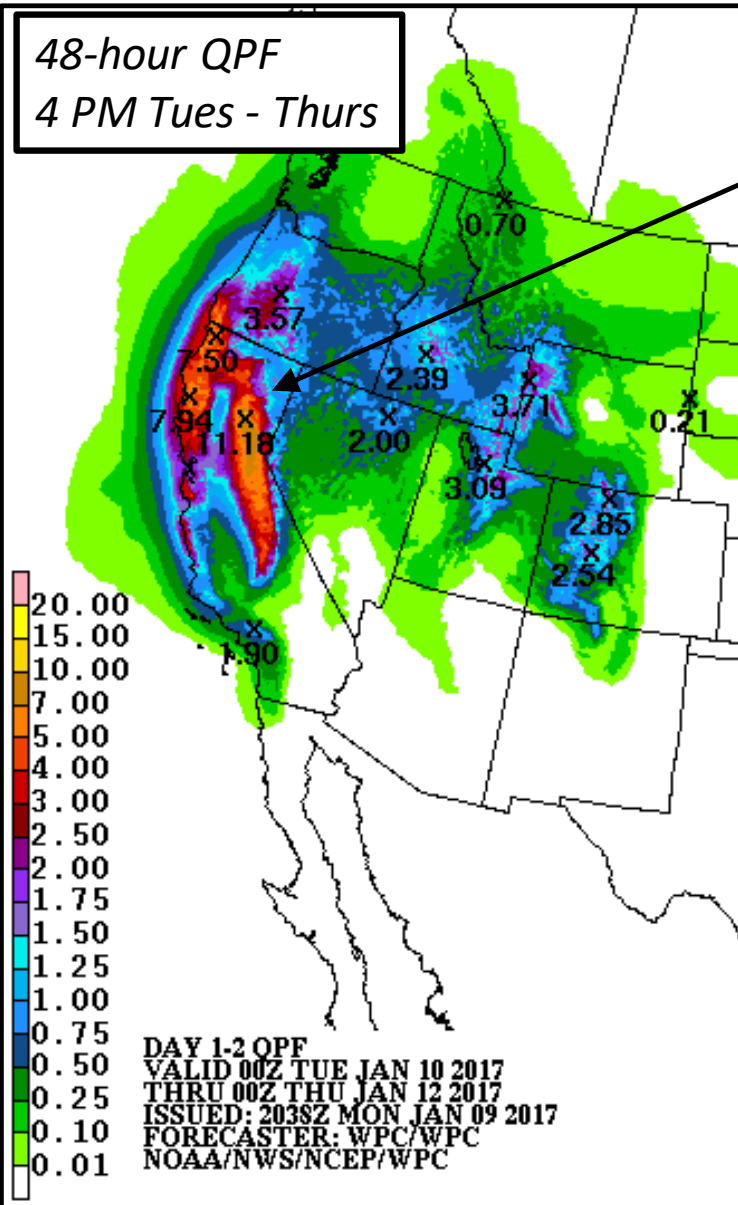
# AR Update: 9 January 2017 Outlook

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48-hour QPF  
4 PM Tues - Thurs



1–2 day precipitation forecasts from the weather prediction center are forecasting another 8–11 inches of rain to fall over already saturated soil

Freezing levels during the expected precipitation are forecast at 6,000–7,000 feet, which would cause precipitation to fall as snow at the higher elevations of the Sierra Mts.

For Official NOAA-NWS Precipitation Forecasts see [www.wpc.ncep.noaa.gov/qpf/qpf2.shtml](http://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml)

For Official NOAA-CNRFC Freezing Level Forecasts see [Cnrfc.noaa.gov](http://Cnrfc.noaa.gov)

Points: Observed Freezing Levels  
Areal: Tue Jan 10 10 AM PST (10/18Z)

