

CW3E Atmospheric River Update – Outlook

For California DWR's AR Program

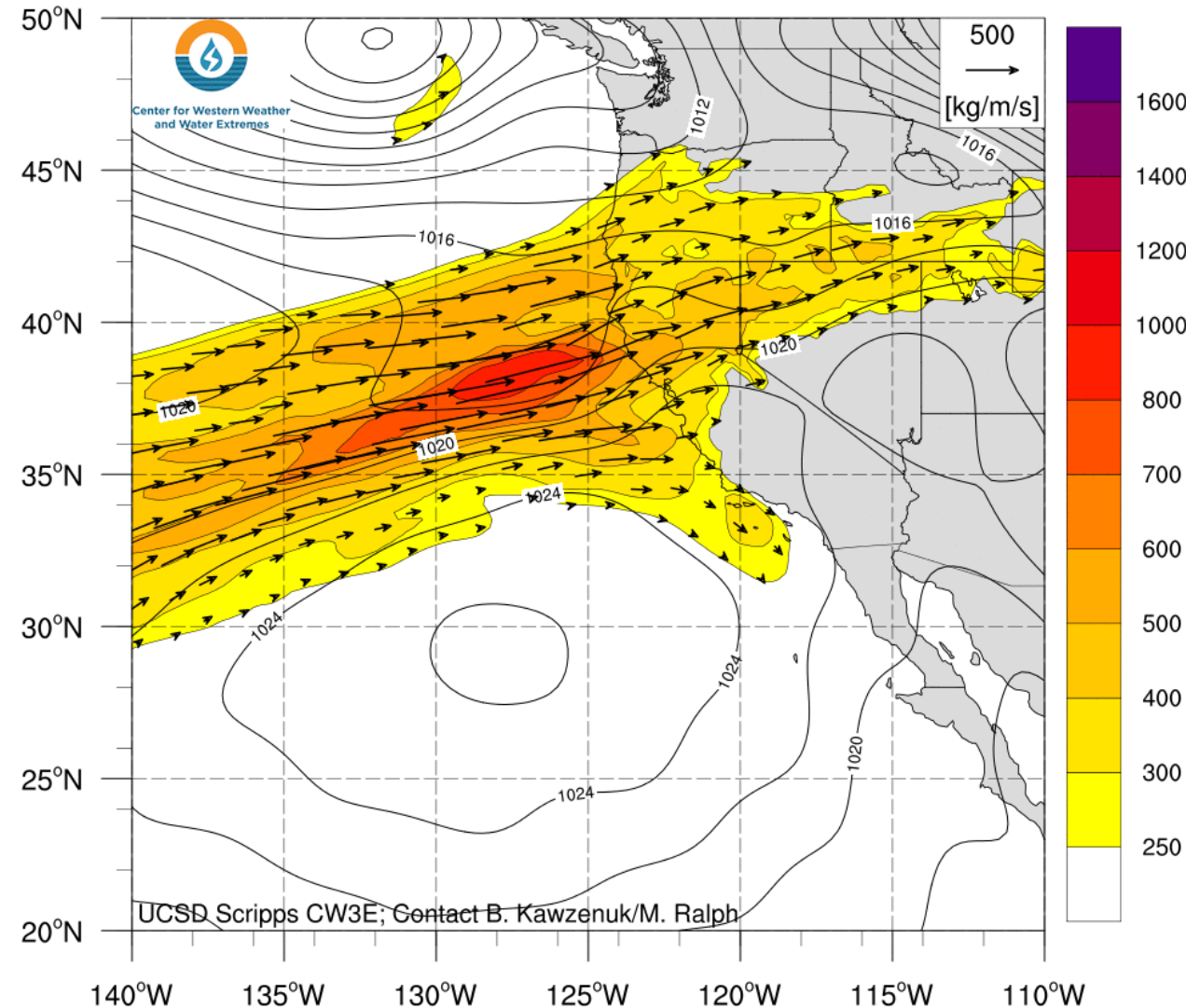


Center for Western Weather
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Landfalling AR to impact California

- A moderate AR is expected to make landfall in north/central California tonight
- The AR propagates southward over the weekend bringing AR conditions to portions of southern California
- Current precipitation forecast suggest higher precipitation amounts of up to 150 mm over the higher elevations of the Sierra Nevada Mts., while the Coastal Mts. won't receive as much
- Above normal soil moisture conditions in northwestern CA suggest that conditions are primed for more of the precipitation to turn into runoff rather than be lost to moistening the soil
- Extended forecasts suggest the landfall of another AR over southern California on the 13th, but forecast confidence is currently low

GFS IVT Forecast from 6 UTC 12/09 to 00 UTC 12/13



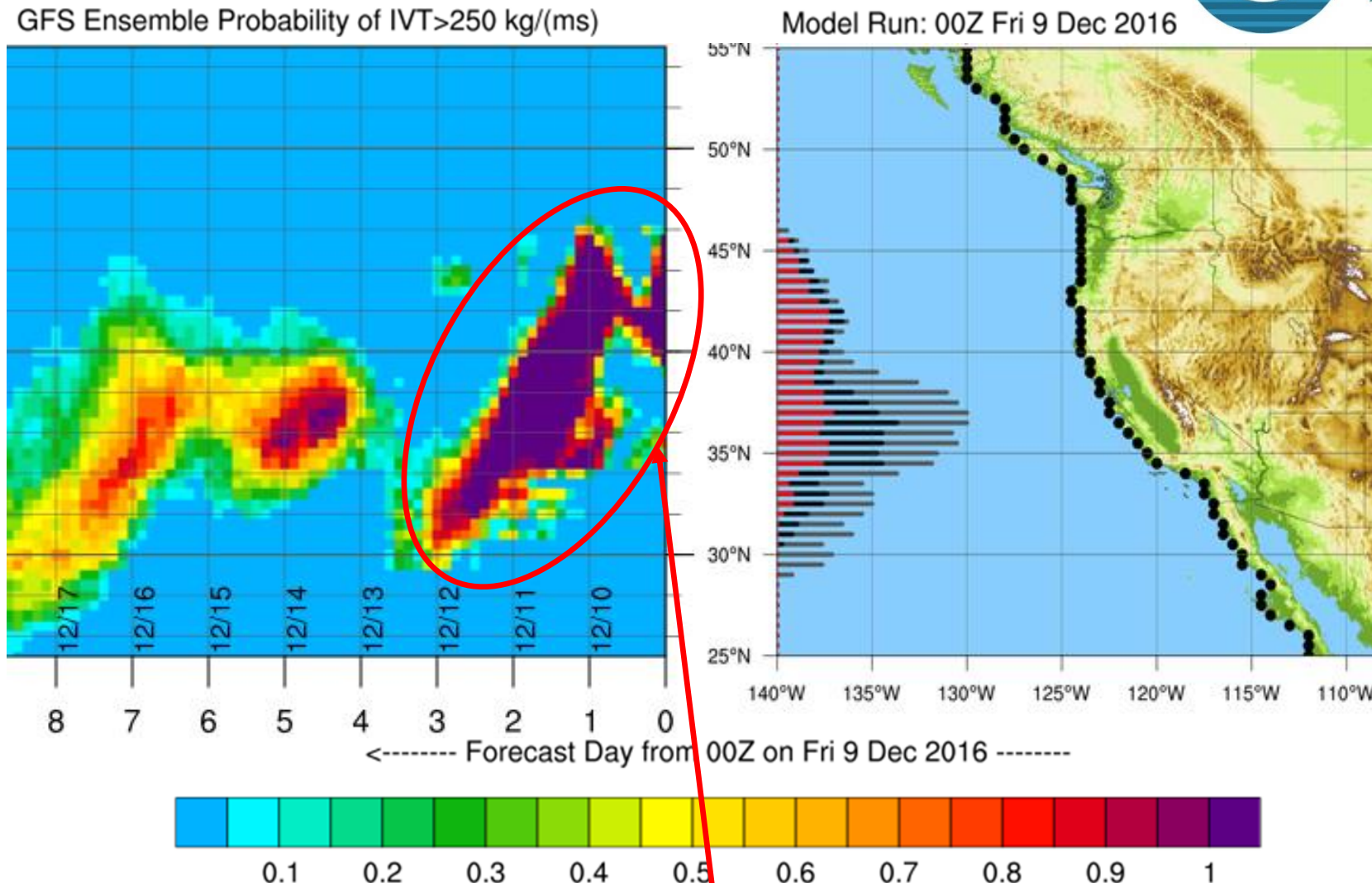
Summary by C. Hecht & F.M. Ralph 3 PM PT Fri 09 Dec. 2016

AR Outlook: 9–13 December 2016

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The probability of IVT $> 250 \text{ kg m}^{-1} \text{ s}^{-1}$ (atleast minimal AR conditions) is high (~ 1) along the entire California Coast indicating high forecast confidence and the southward movement of the AR over time

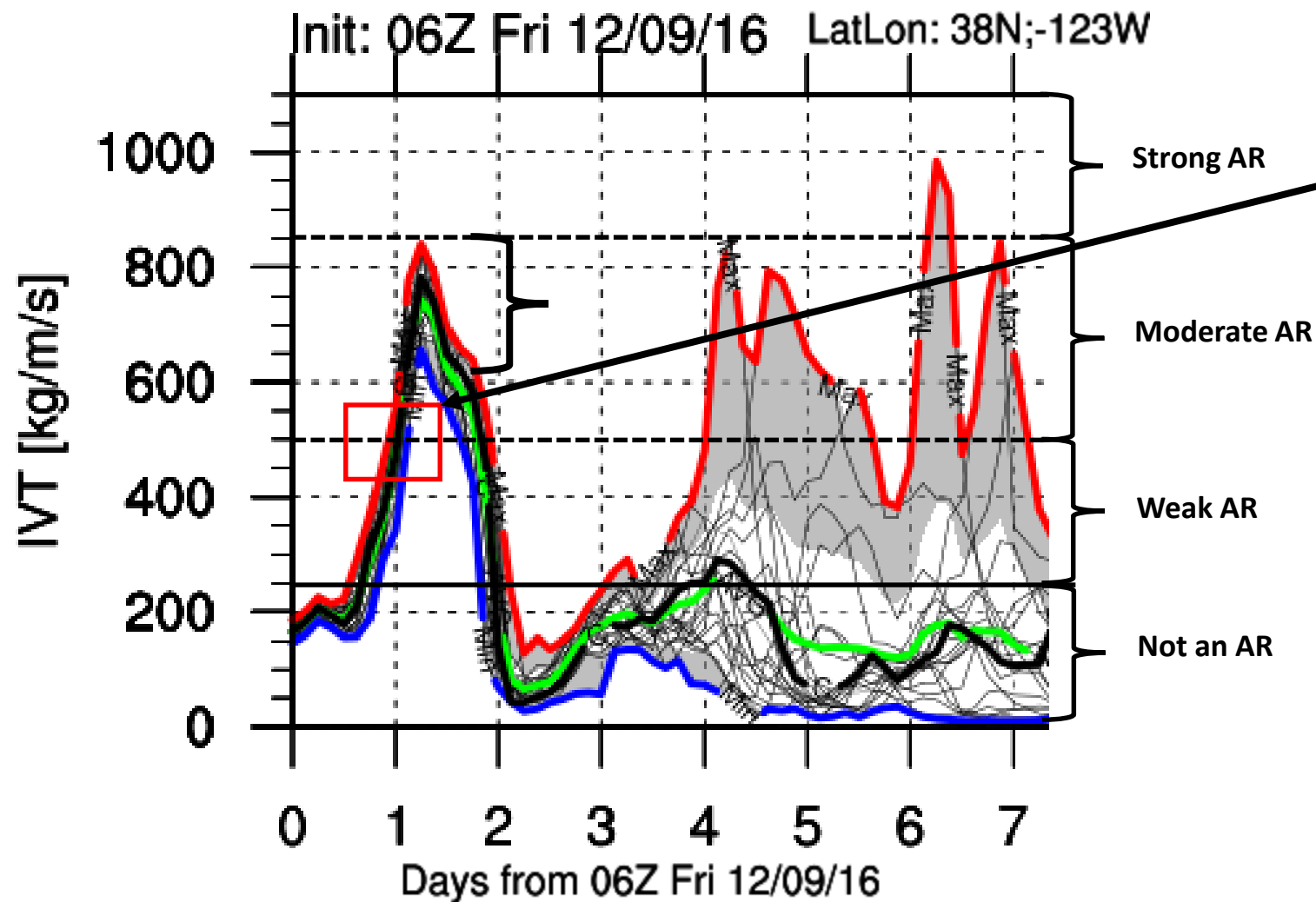
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Onset of moderate-strength AR conditions
Friday night and lasts about 24-hours

AR's Max strength is uncertain by +/-10%



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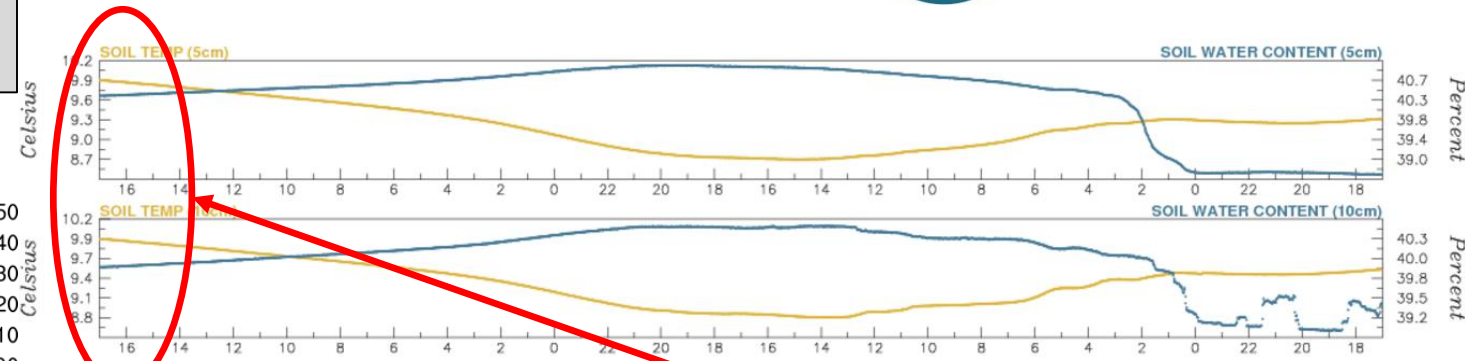
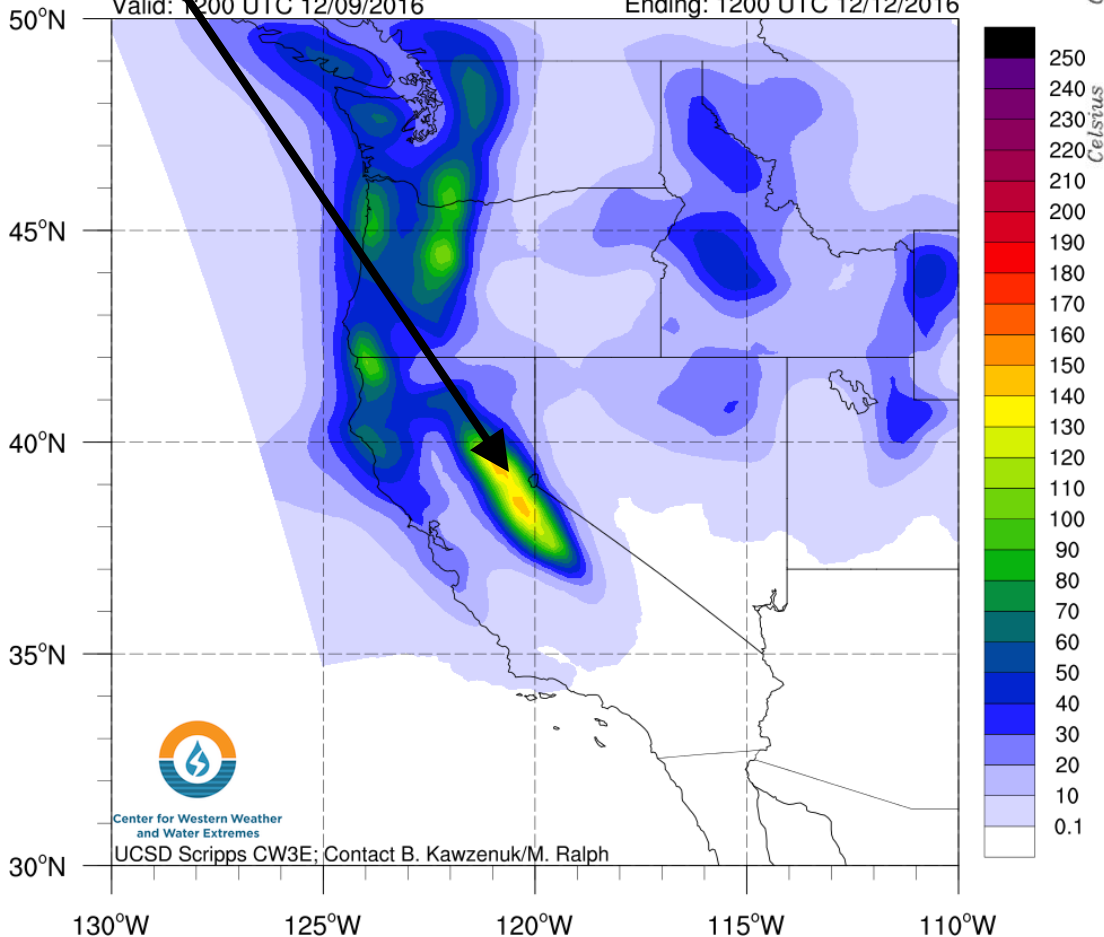
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**Largest WPC 3-day precipitation forecasts over the central Sierra
Nevadas of 140–150 mm (~5.5–6 inches)**

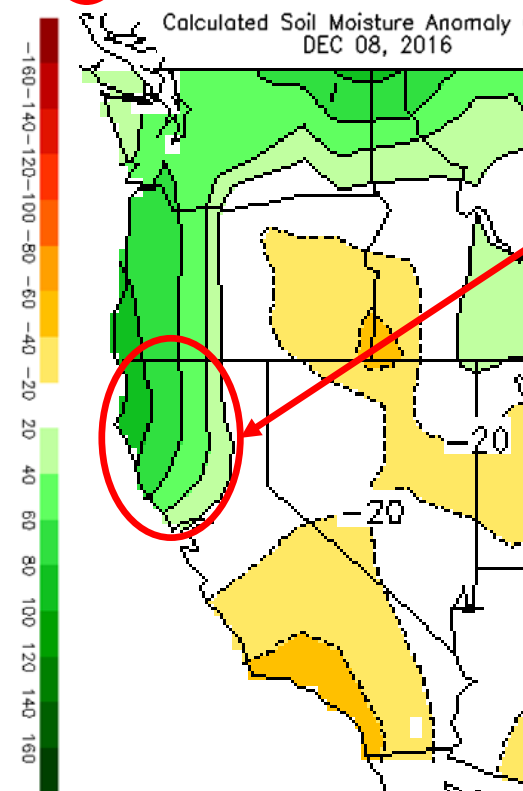
WPC 3-day Precipitation Forecast (mm)

Valid: 1200 UTC 12/09/2016

Ending: 1200 UTC 12/12/2016



Calculated Soil Moisture Anomaly (mm)
DEC 08, 2016



The soil moisture content for most of northwestern California is currently above normal for this date and the soil water content at Cazadero, CA in the Russian River watershed is currently ~10% at 5 and 10 cm depth

Therefore, a larger fraction of precipitation will turn into runoff instead of being absorbed by drier soil and would contribute to water levels in Lake Mendocino

Lake Mendocino is an important reservoir for water resources and is currently at 88.6% of the target water supply storage

For Official NOAA-NWS Precipitation Forecasts see
<http://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml>

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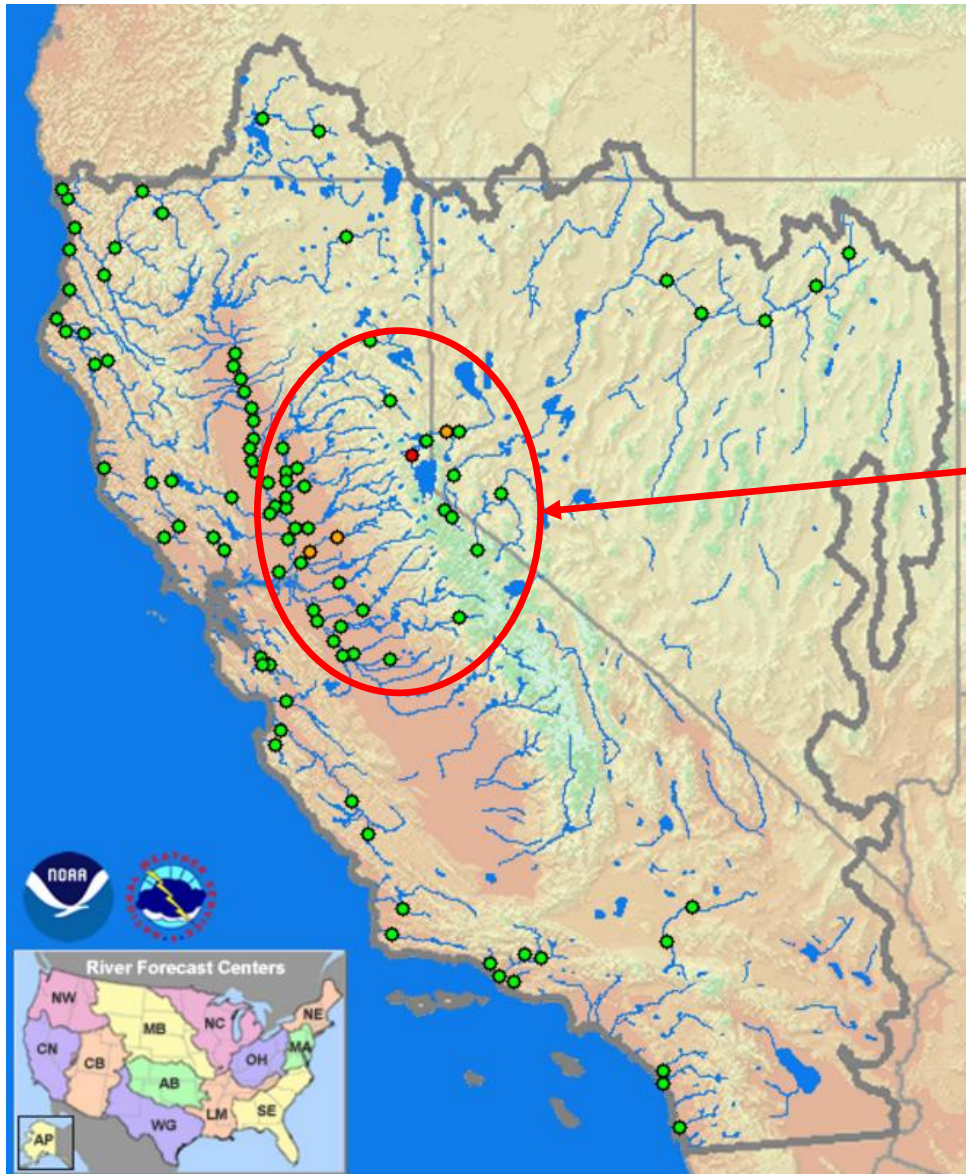
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River Guidance Forecast Status (Approximately 5 Days)

- ☐ No Data or Critical Stages
- ☒ Normal Conditions
- ☐ Above Monitor Stage
- ☐ Above Flood Stage
- ☐ Above Danger Stage
- ☐ River Gage Location

The River Forecast Center (RFC) is forecasting for three Gages to go above monitor stage and one gage to go above flood stage, all four of which are in or downstream of the region forecasted receiving the most precipitation in the Sierra Nevada Mts.

For official NOAA-NWS CNRFC Streamflow
Forecasts see
http://cnrfc.noaa.gov/rfc_guidance.php



94 Gages Forecast
Normal Conditions
(95.9% of Gages)

3 Gages Forecast
Above Monitor Stage
(3.1% of Gages)

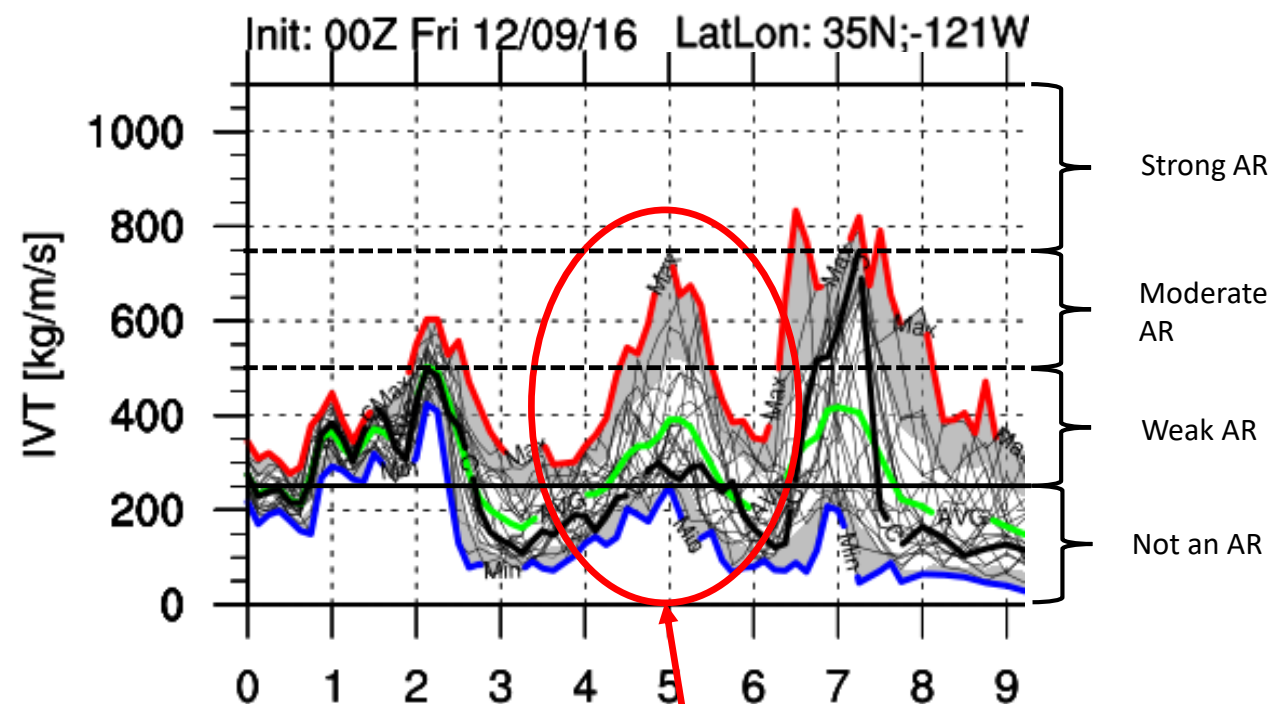
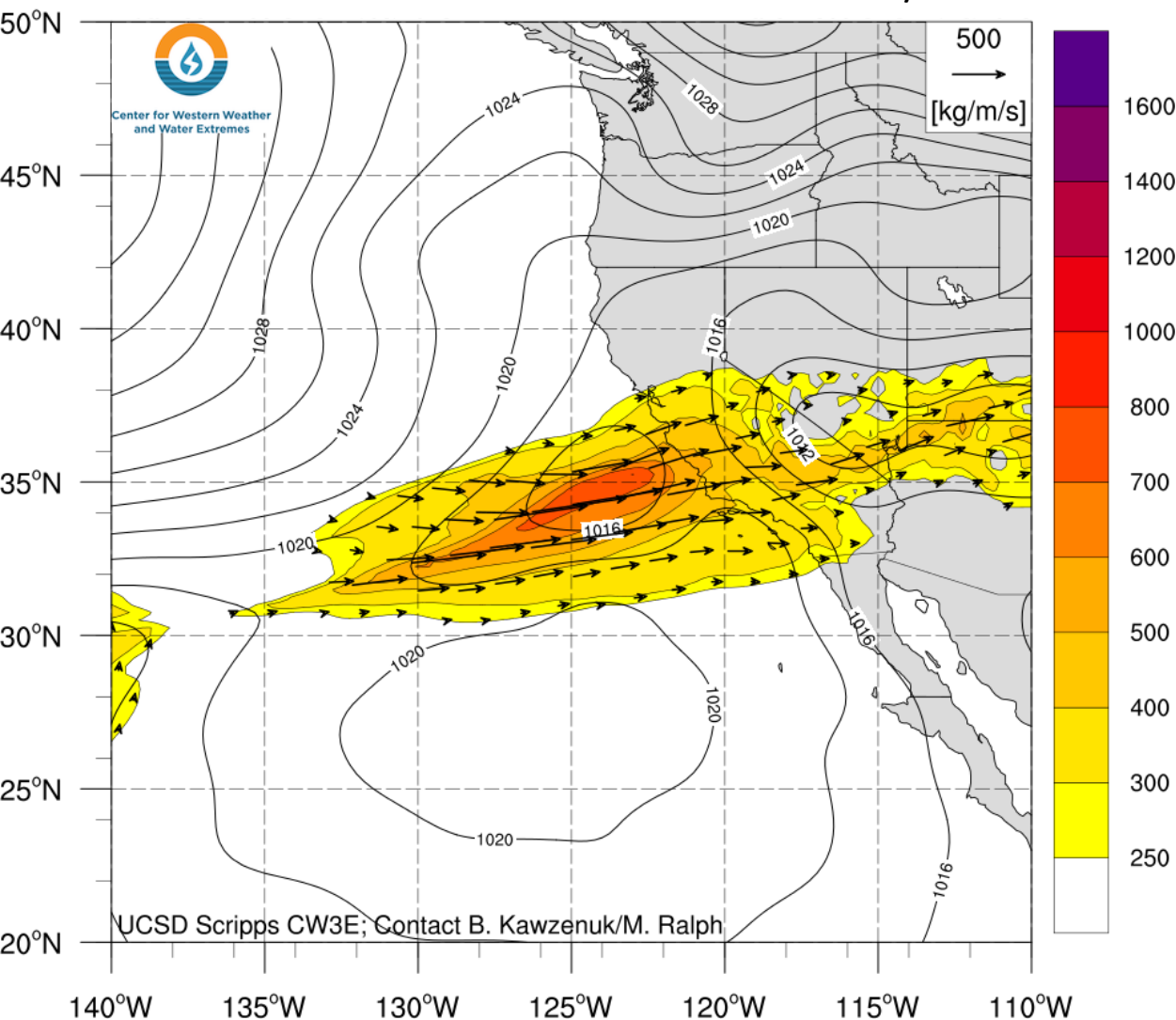
1 Gage Forecast
Above Flood Stage
(1.0% of Gages)

0 Gages Forecast
Above Danger Stage
(0.0% of Gages)

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AR Outlook: Extended Forecast of Second AR

GFS IVT Forecast for 18 UTC on 12/13



Extended forecasts are suggesting the landfall of a second AR from 13–14 Dec. over southern California but forecast confidence of timing, intensity and duration of IVT are low