

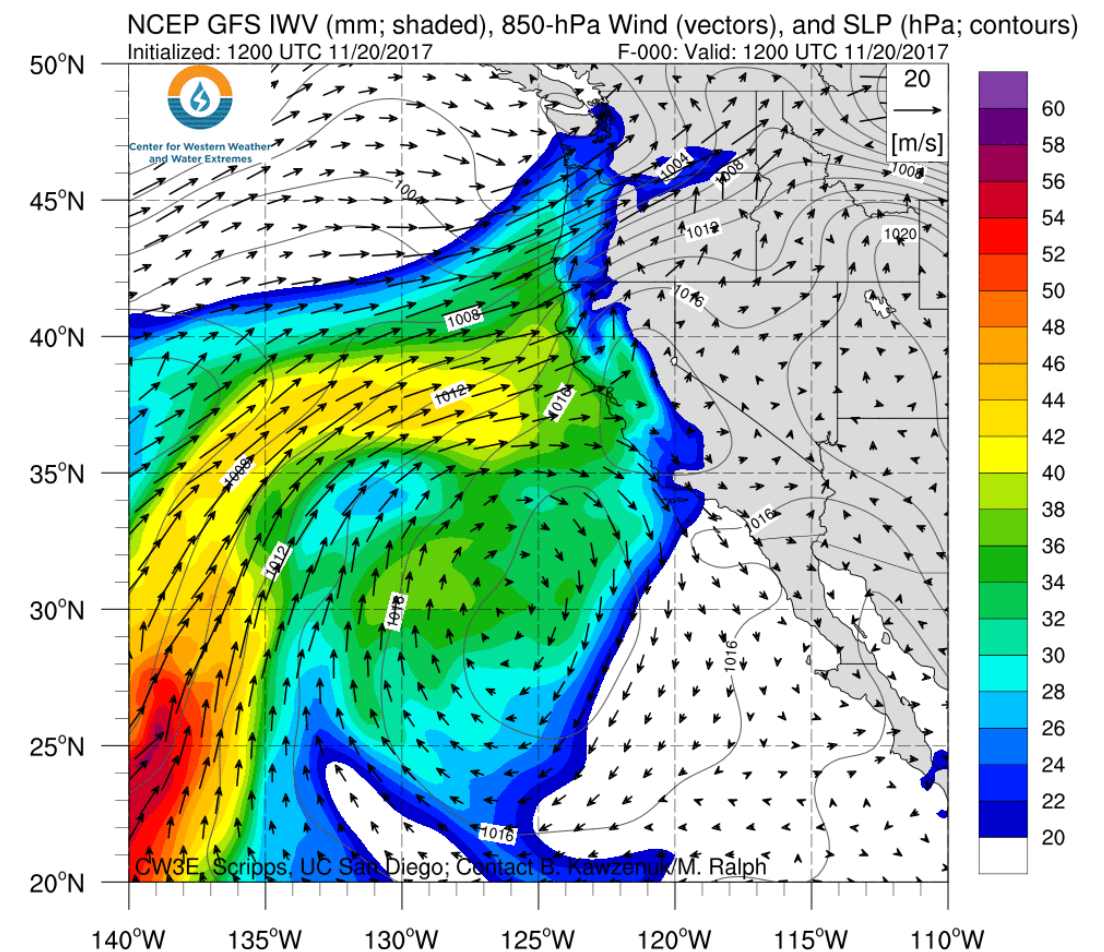
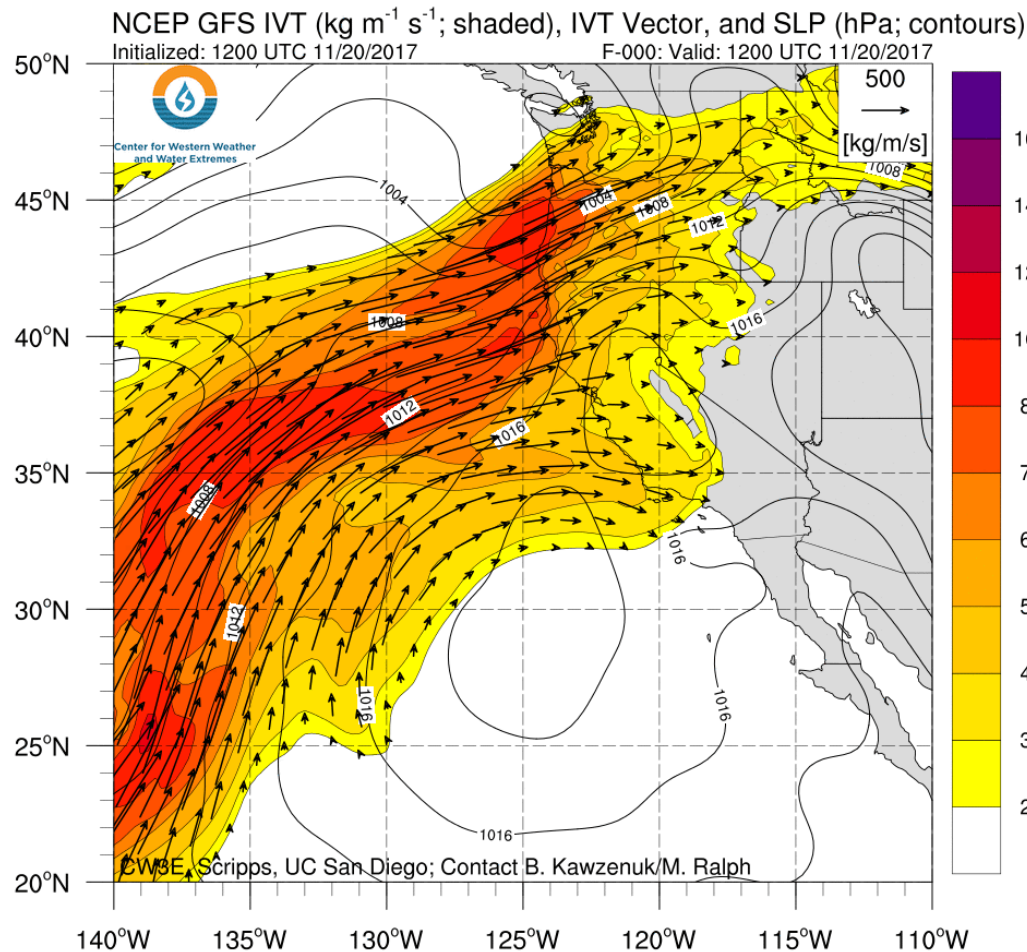
CW3E Atmospheric River Update – Outlook



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

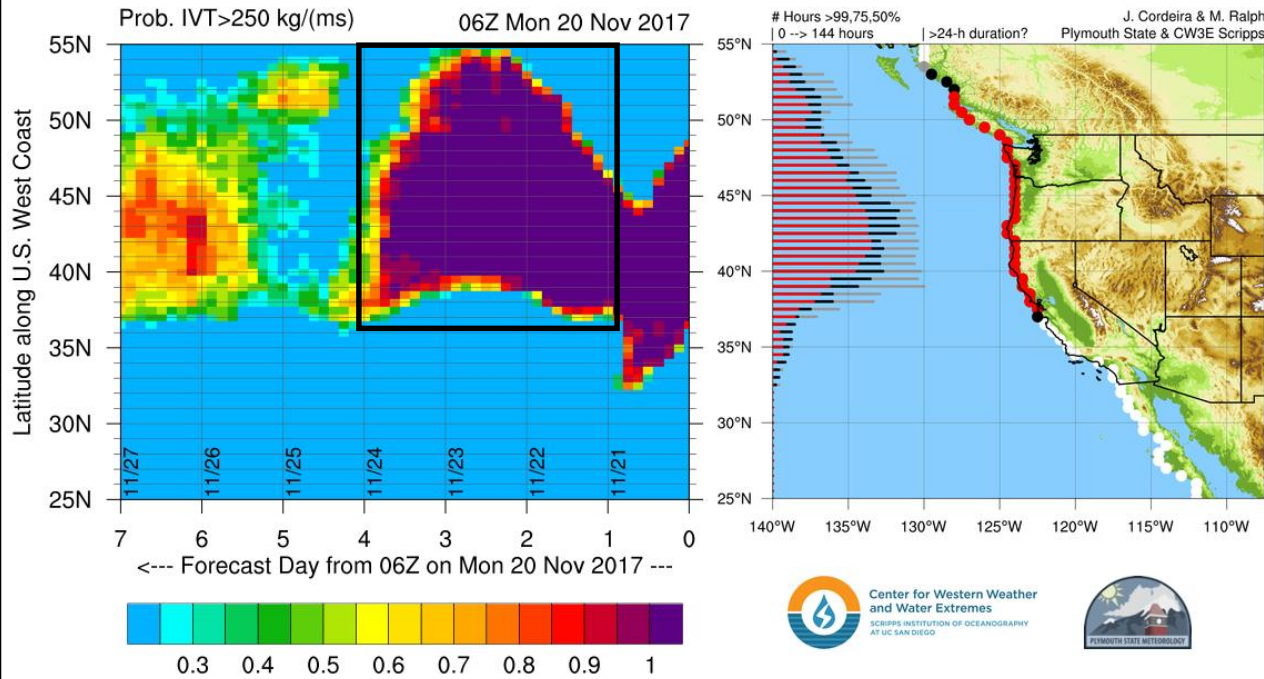
An Potentially Extreme and Persistent AR is forecast to Impact the Pacific Northwest

- A potentially extreme AR is forecast to impact the Pacific Northwest over the next 4 days
- AR conditions could last over 50 hours in portions of Oregon and Northern California
- As much as 15 inches of precipitation is forecast to fall over the Olympic Mountains over the next 5 days
- Several rivers in Washington are currently forecast to rise above flood stage

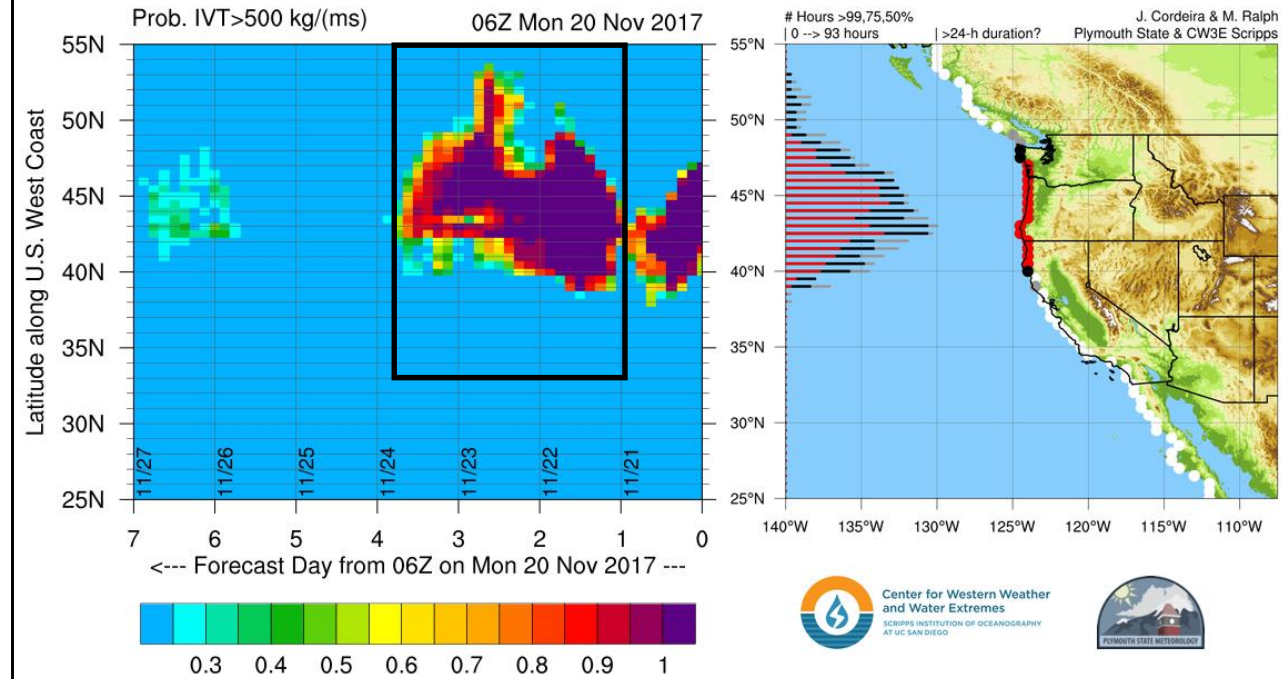




Odds of at least a **WEAK** AR making landfall

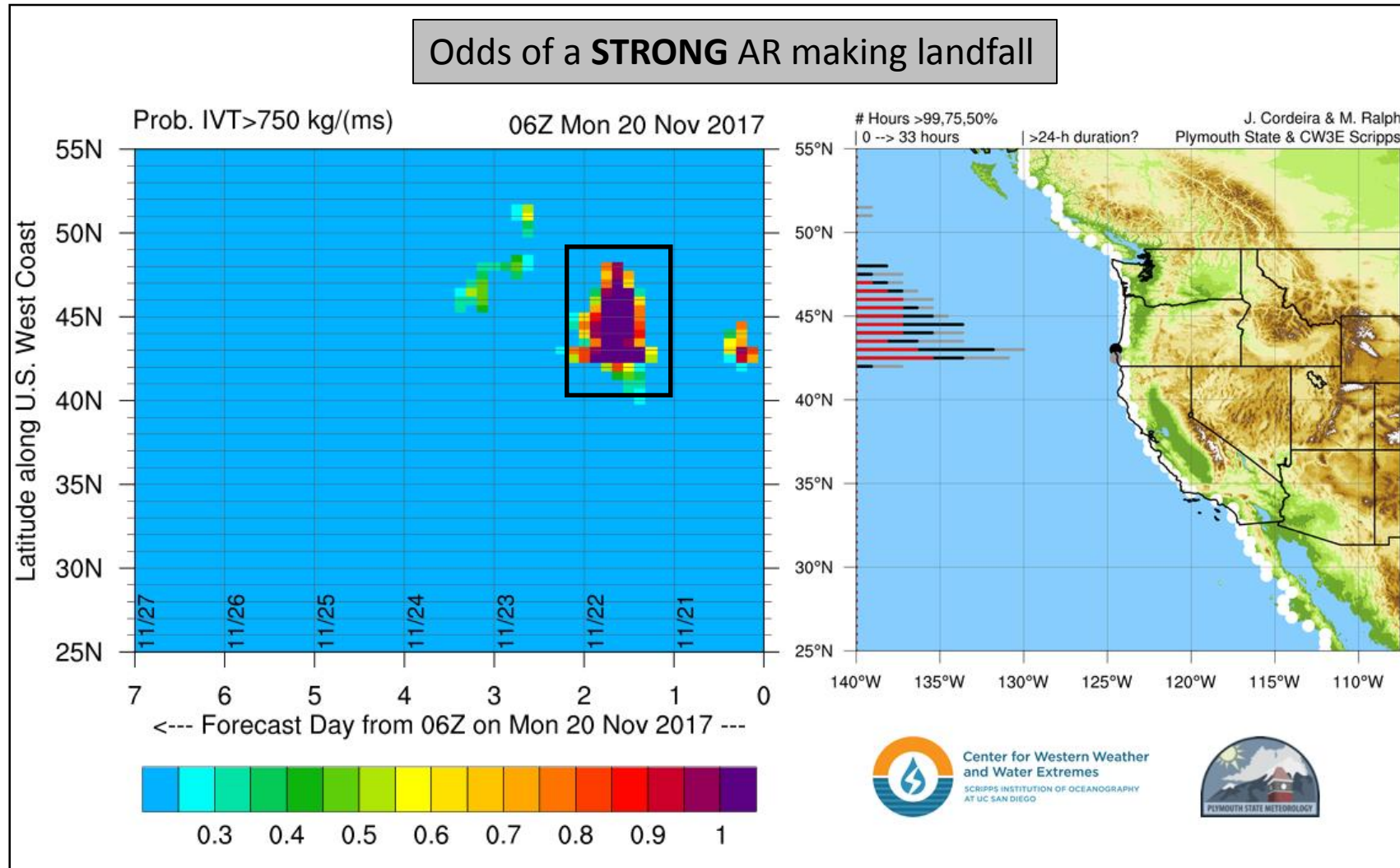


Odds of a **MODERATE-STRENGTH** AR making landfall



- There is high confidence (>95%) of at least weak AR conditions (IVT > 250 kg m⁻¹ s⁻¹) lasting >50 hours over WA, OR, and NorCal

- There is also high confidence of moderate AR conditions lasting >48 hours over Oregon with shorter durations over WA and NorCal



- There is a high probability of strong AR conditions lasting >12 hours over Oregon between 21 and 22 November

AR Outlook: 20 November 2017

For California DWR's AR Program



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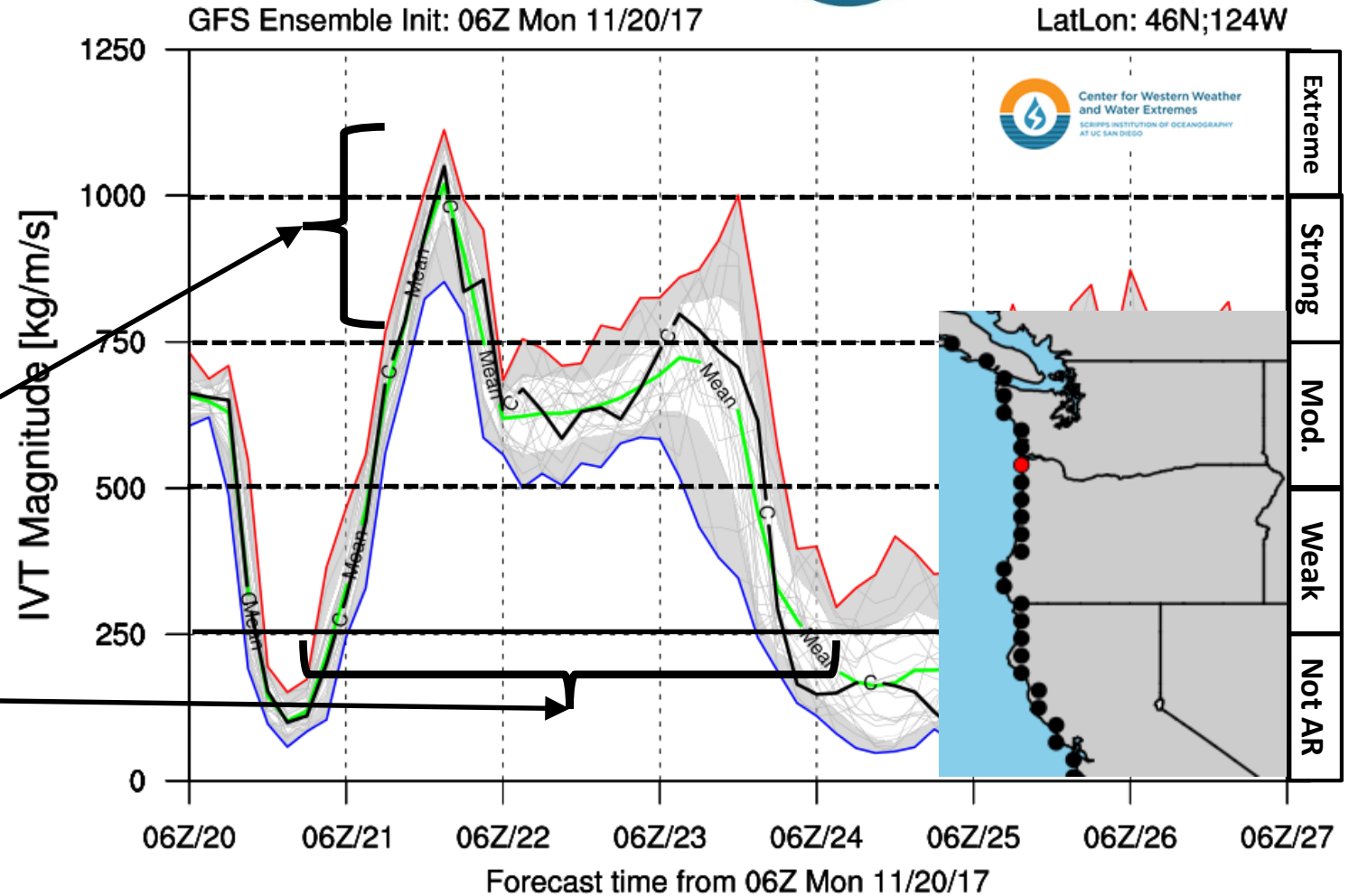
GFS Ensemble members are in good agreement in the onset and magnitude of AR conditions with some uncertainty in the duration of conditions due to the development of a mesoscale frontal wave

Magnitude of Potential AR

- Maximum possible IVT $\sim 1150 \text{ kg m}^{-1} \text{ s}^{-1}$
- Mean IVT $\sim 1100 \text{ kg m}^{-1} \text{ s}^{-1}$
- Minimum IVT $\sim 850 \text{ kg m}^{-1} \text{ s}^{-1}$
- Uncertainty $\sim \pm 15\%$

Duration of AR conditions

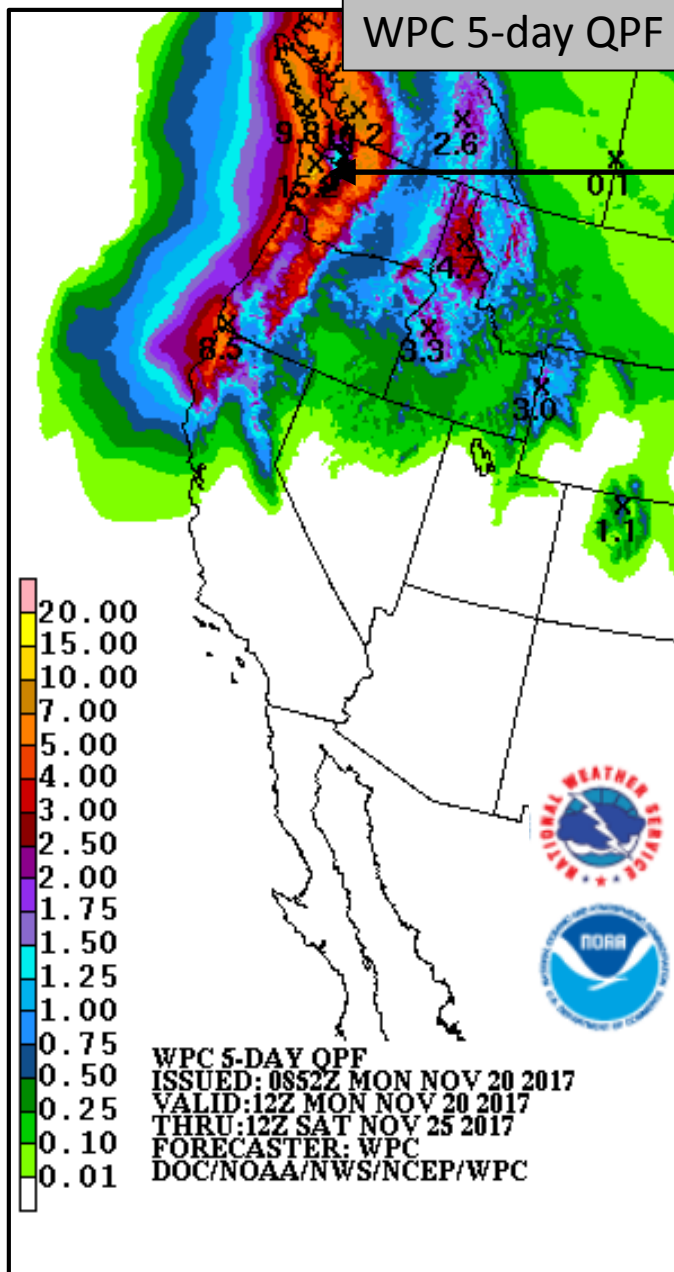
- Weak: $\sim 65 \text{ hours} \pm 24 \text{ h}$
- Moderate: $\sim 48 \text{ hours} \pm 18 \text{ h}$
- Strong: $\sim 18 \text{ hours} \pm 12 \text{ h}$
- Extreme $\sim 3 \text{ hours} \pm 3 \text{ h}$



AR Outlook: 20 November 2017



NOAA Weather Prediction Center



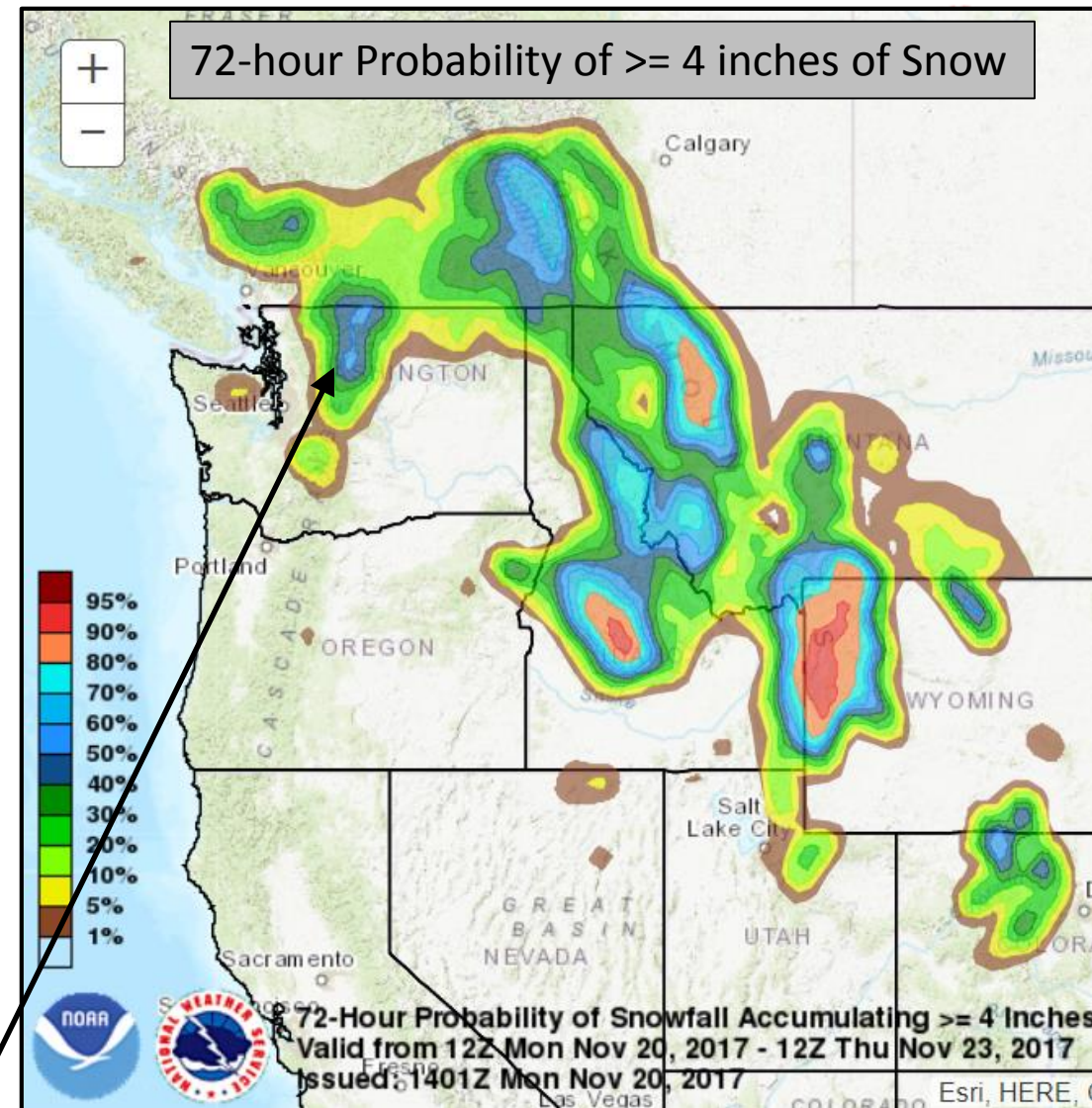
The Olympic Mountains in Northwest Washington are forecast to receive ~15 inches of precipitation over the next 5-days by the Weather Prediction Center

Other high elevation locations, such as the Coastal and Cascade Mountains, are forecast to receive 5–10 inches

Lower elevations in Washington, Oregon, and Northern California are forecast to receive .75 to 3 inches of precipitation

Lower elevations in, WA, OR, and Northern CA are forecast to receive 1–2 inches

There is a 20–70 % chance that snow accumulations will exceed 4 inches in the Northern Cascade MTS. in the next 72-hrs

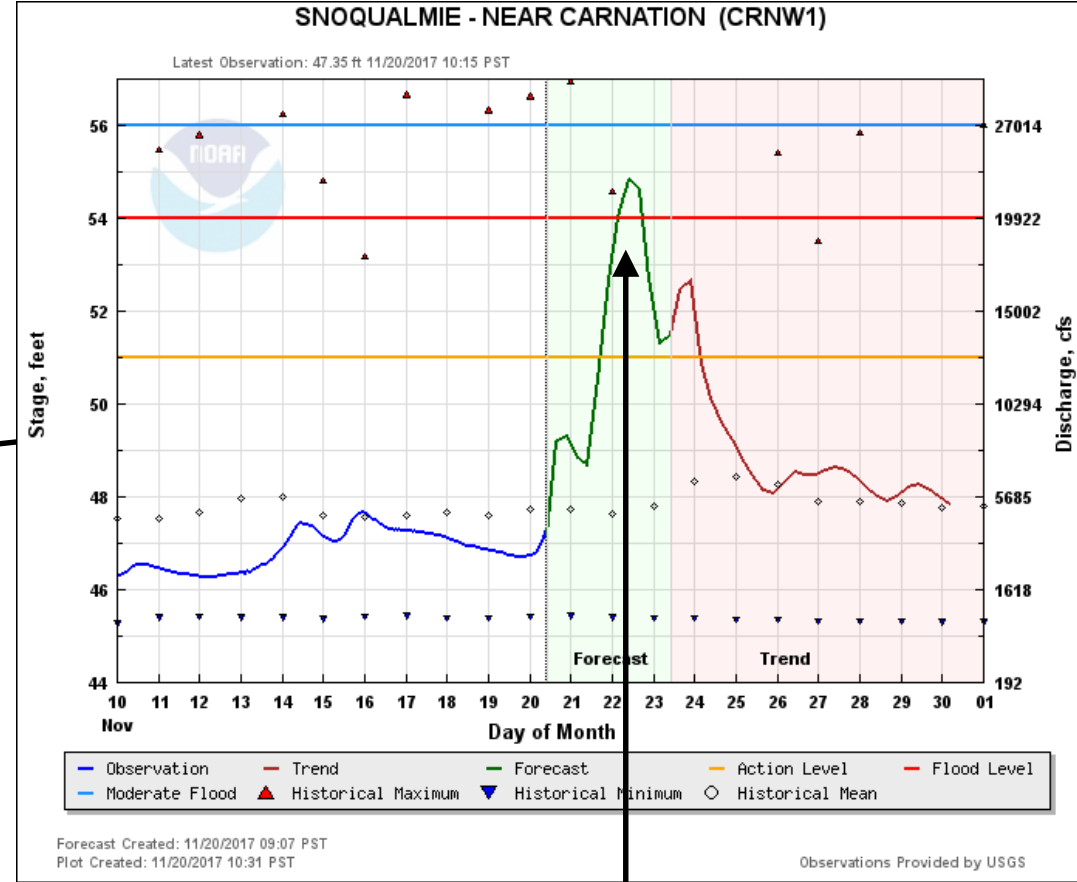
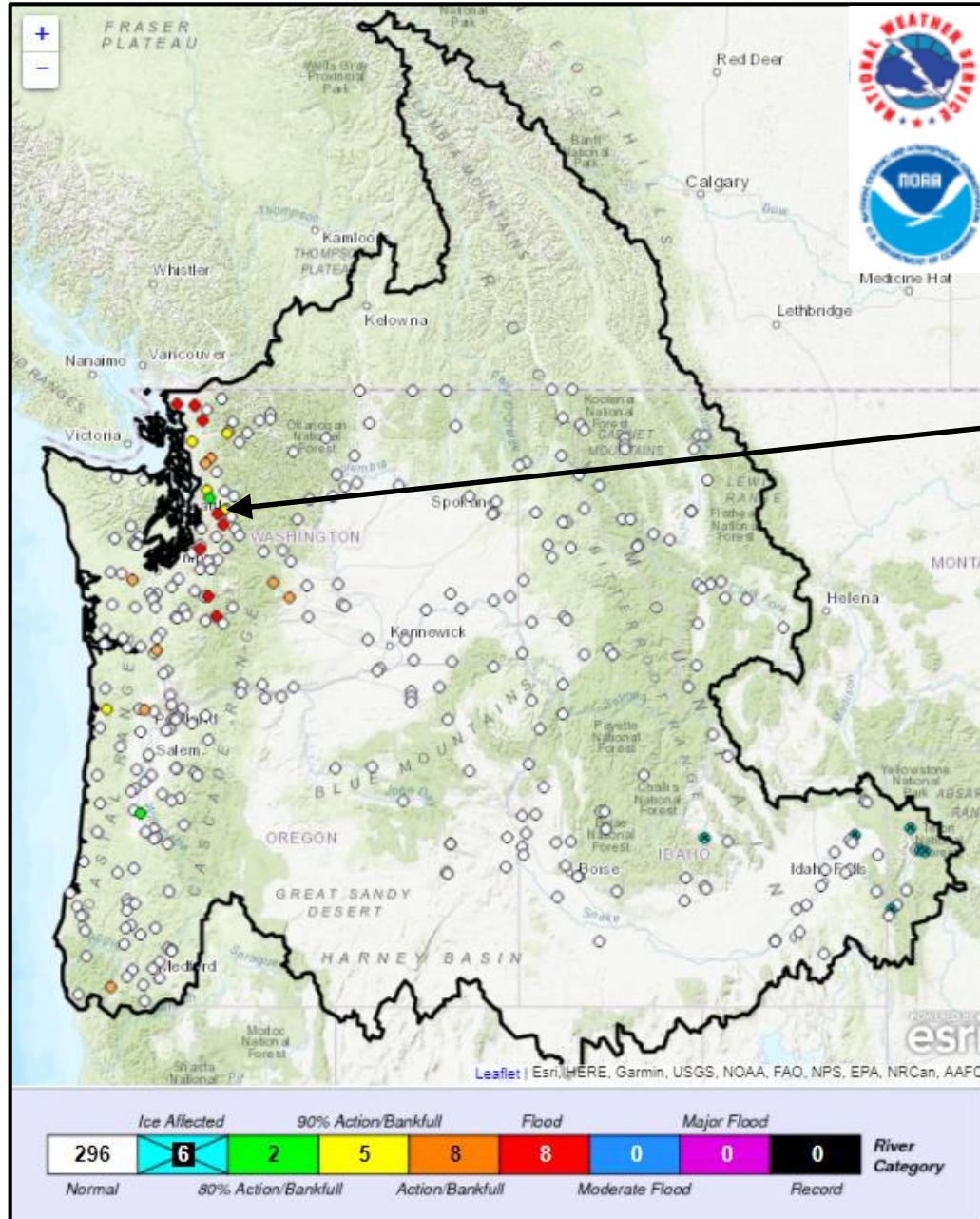


AR Outlook: 20 November 2017



NOAA Northwest River Forecast Center

There are currently 8 rivers forecast to rise above flood stage by the Northwest River Forecast Center with an additional 15 rivers forecast to rise above 80% bankfull or greater



The Snowqualmie River near Carnation, Washington is forecast to rise to ~55 feet on 22 Nov., ~1 foot above flood stage