

CW3E Atmospheric River Update – Summary

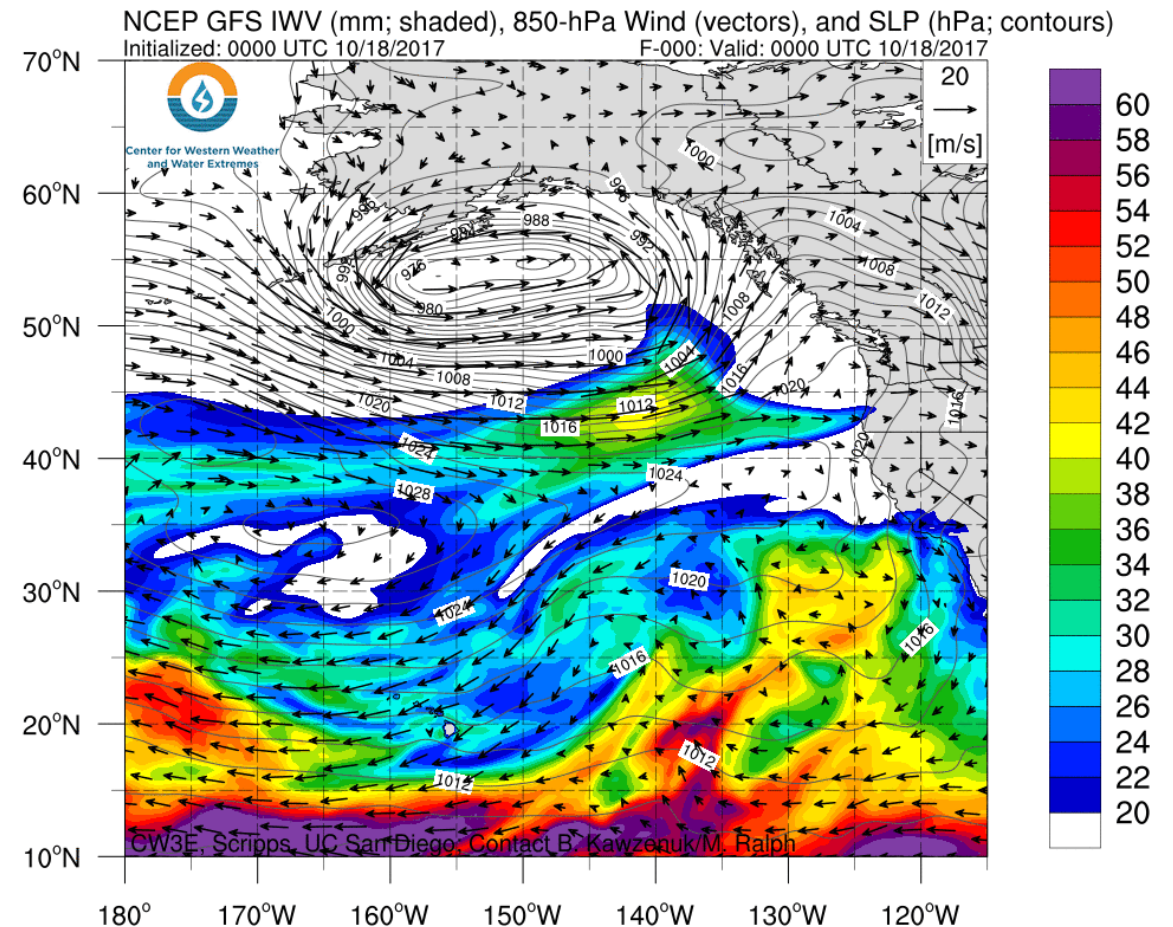
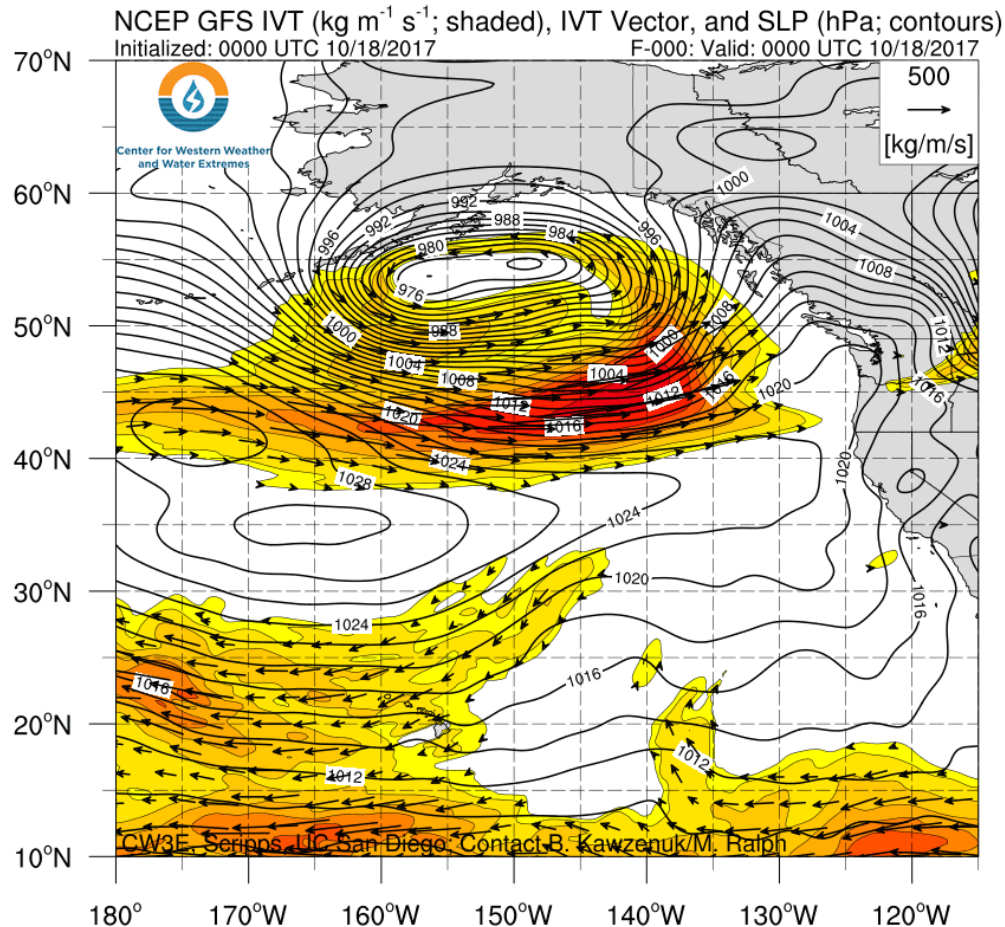


Center for Western Weather
and Water Extremes
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Two Early Season Atmospheric Rivers Make Landfall over the Pacific Northwest

- The first AR made landfall over WA and OR ~1200 UTC 18 October 2017
- This AR produced >300 mm of precipitation over the Olympic Mountains in 72 hours (R-Cat 2)
- The second AR made landfall over OR ~0600 UTC 21 October 2017
- This AR produced >400 mm of precipitation over the Cascade Mountains in OR in 72 hours (R-Cat 3)

For California DWR's
AR Program

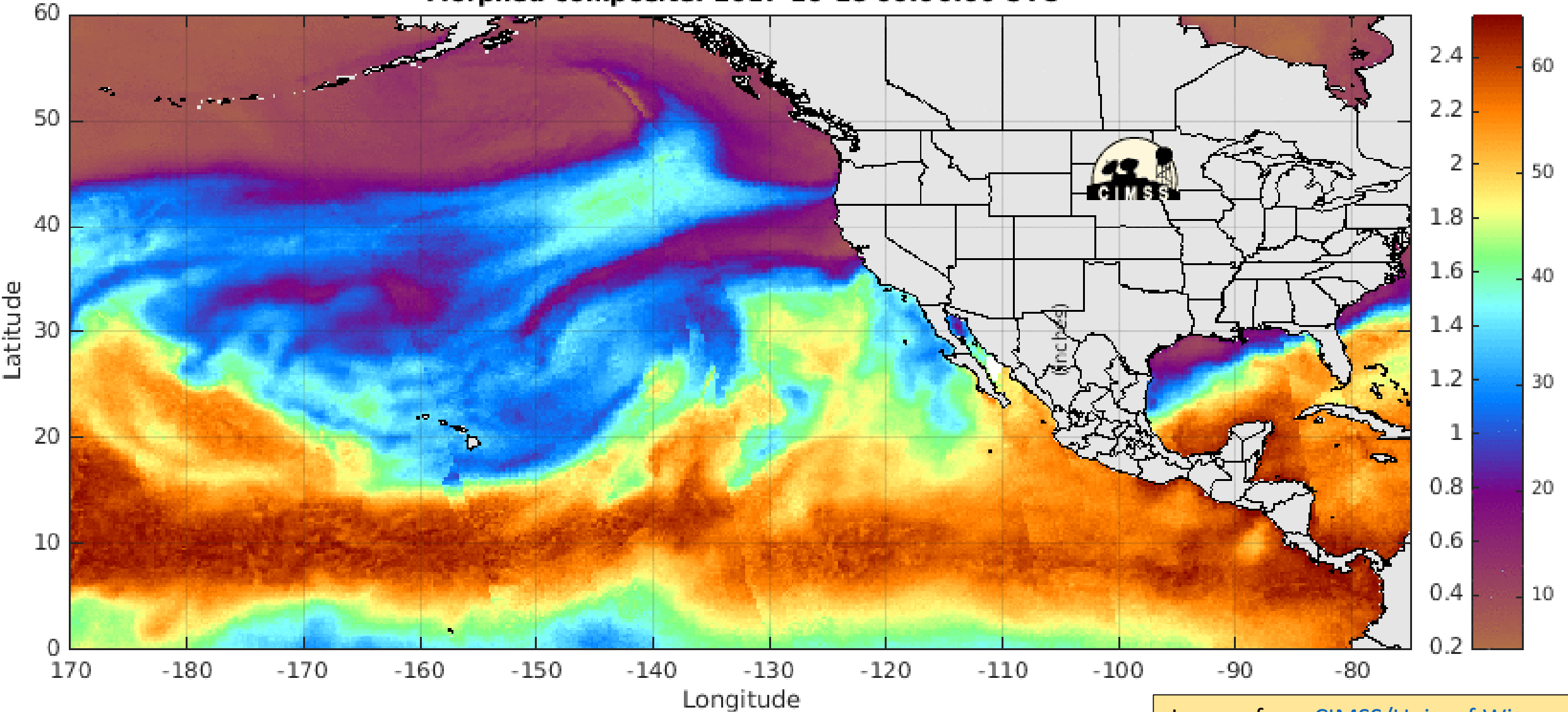


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Morphed composite: 2017-10-18 00:00:00 UTC



Images from CIMSS/Univ. of Wisconsin

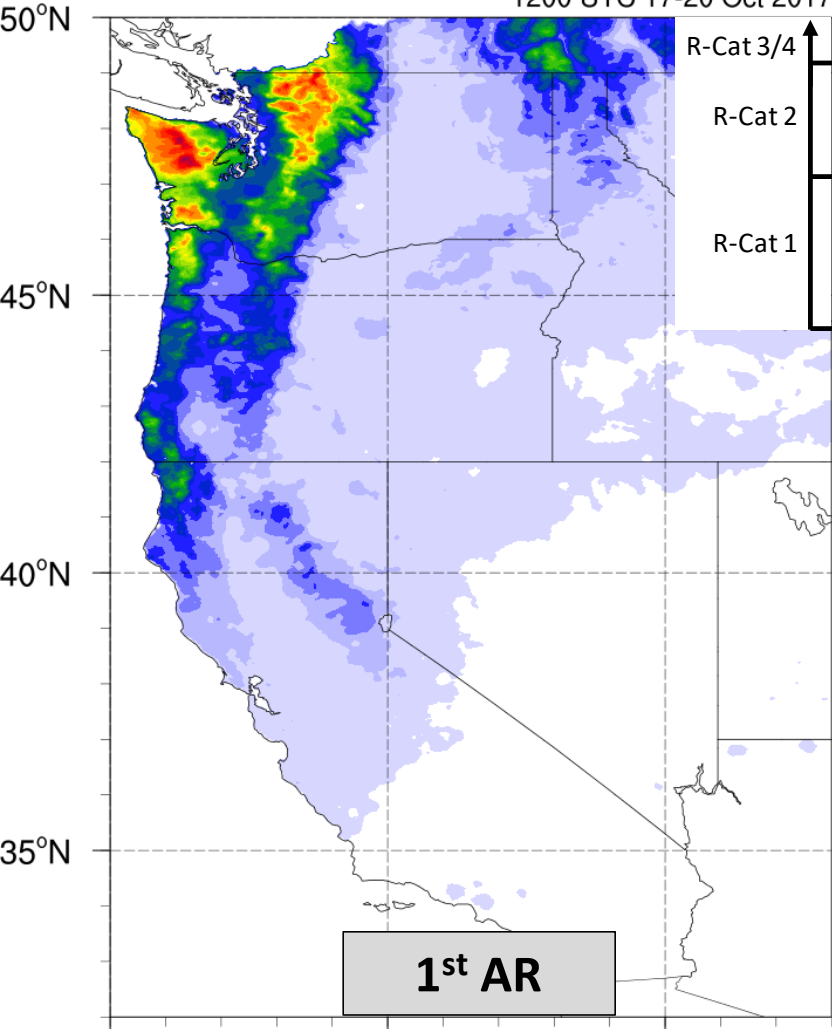
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NCEP Stage IV Quantitative Precipitation Estimate

For CW3E R-Cat alerts visit:
<http://cw3e.ucsd.edu/cw3e-r-cat-alerts/>

72-h Accumulated Precipitation (mm)

1200 UTC 17-20 Oct 2017



The 1st AR was an R-Cat 2 event as >300 mm of 72-hr precipitation was observed over the Olympic Mtns

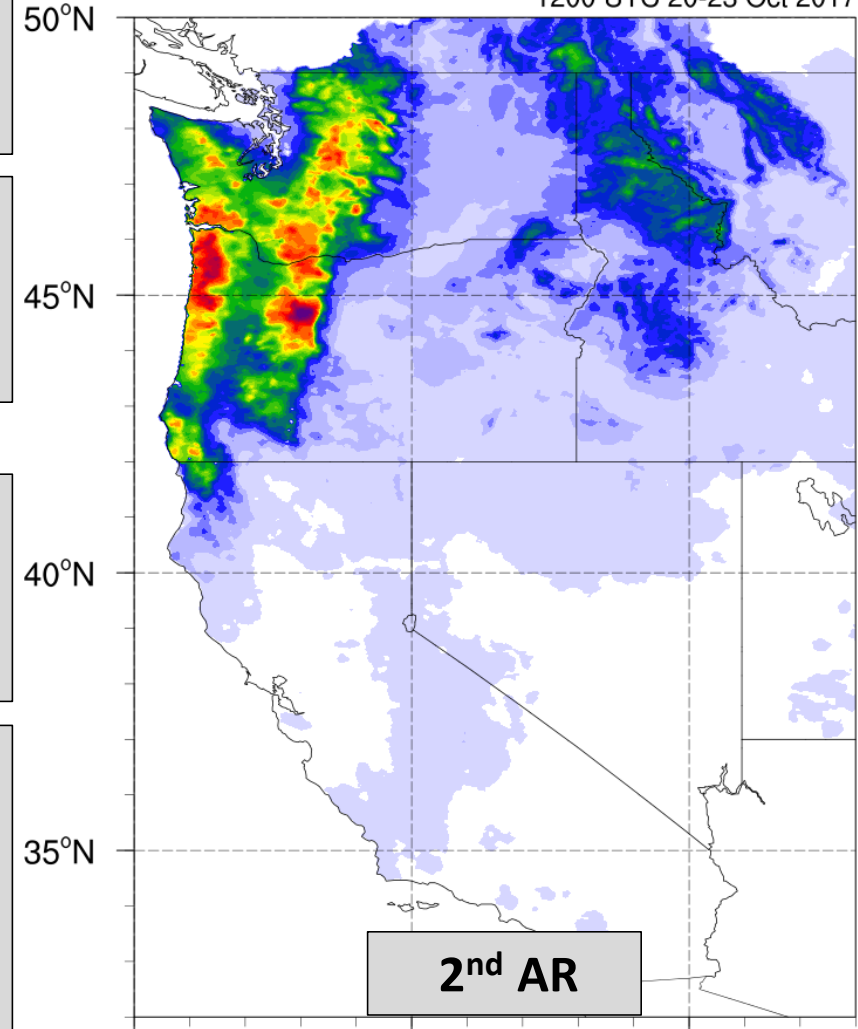
>200 mm of precipitation (R-Cat 1) was observed over the Coastal and Cascade Mtns in Washington

The 2nd AR was an R-Cat 3 event as >400 mm of 72-hr precipitation was observed over the Cascade Mtns in Oregon

>300 mm (R-Cat 2) was observed over the Coastal Mtns in OR and >200 mm (R-Cat 2) was observed over the Coastal and Cascade Mtns in OR and WA

72-h Accumulated Precipitation (mm)

1200 UTC 20-23 Oct 2017



125°W

120°W

115°W

125°W

120°W

115°W

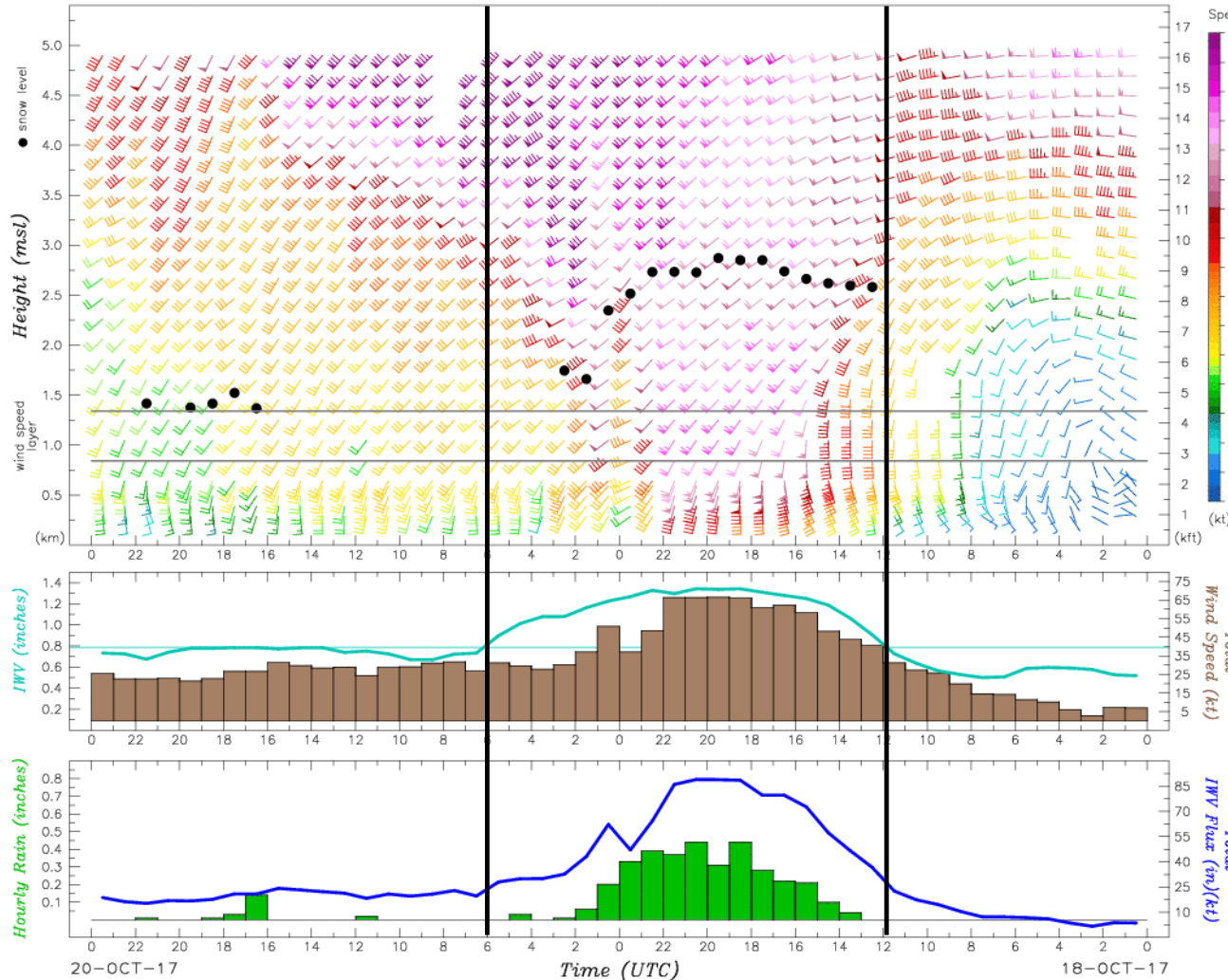
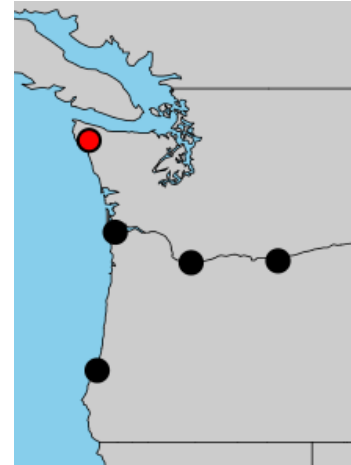
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ESRL Physical Sciences Division
Coastal Atmospheric River Monitoring and Early Warning System

Data provided by Pacific Northwest National Laboratory on behalf of the U.S. Department of Energy



Forks, WA (FKS)
47.9745 N, 124.3980 W, 95 m

48-hr precip: 3.64 in

Northwest WA experienced AR conditions during the first AR from ~1200 UTC 18 Oct to ~0600 UTC 19 Oct

The Atmospheric River Observatory (ARO) at Forks, WA observed 3.64 inches (92 mm) of precipitation during 18-19 Oct

The ARO also observed IWV > 1 inch for ~12 hours with maximum values up to 1.4 inches (~35 mm)

Winds in the controlling layer (0.75-1.25 km agl) reached up to 65 knots, and were >50 knots for ~10 hours

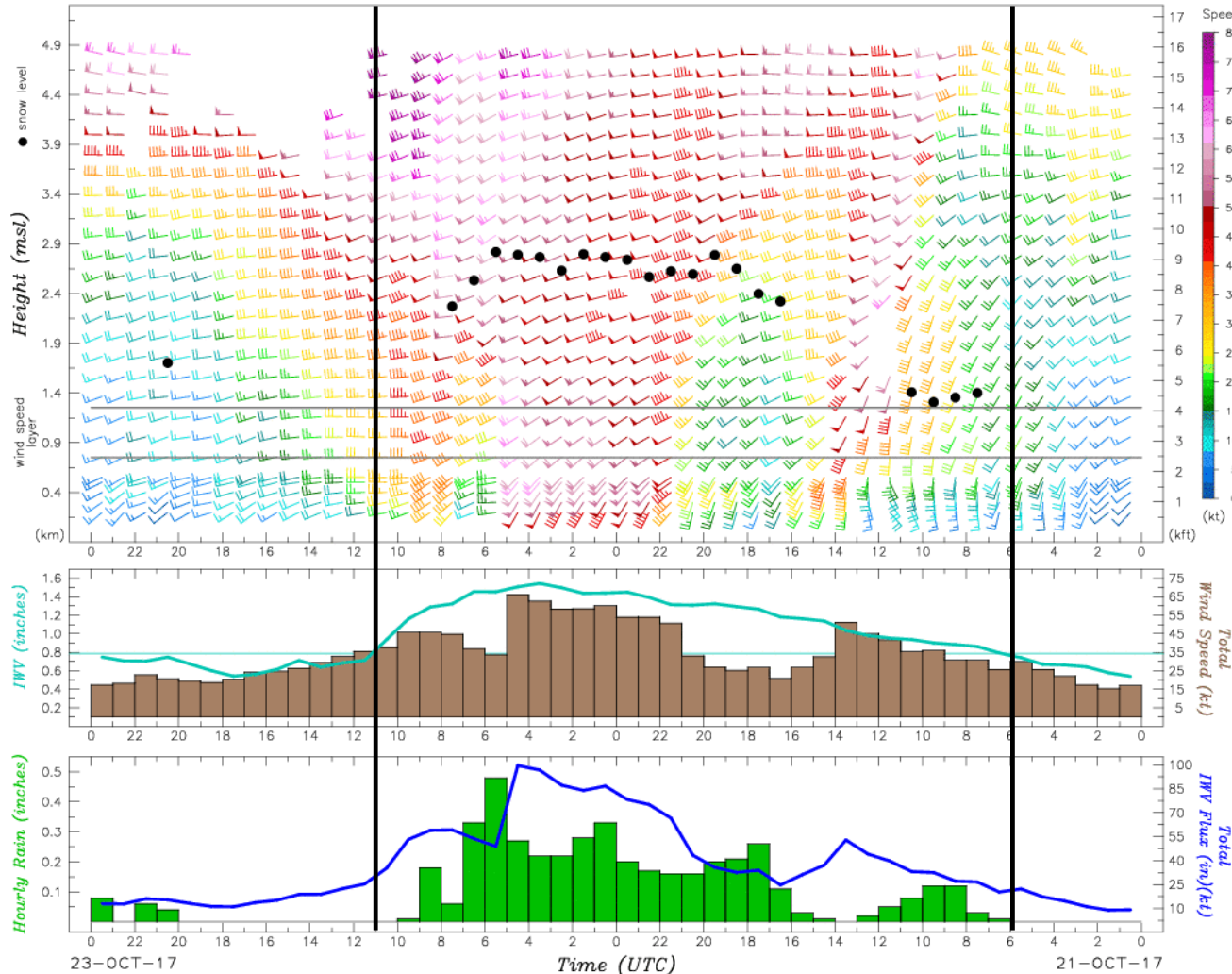
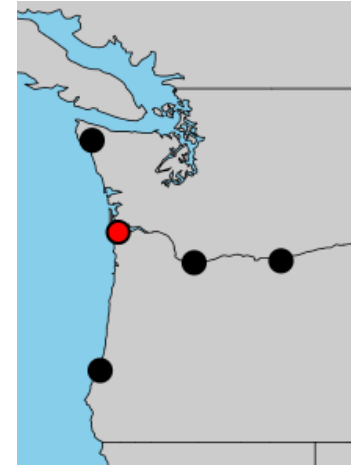
Plot from [NOAA ESRL PSD](https://psd.noaa.gov)

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Astoria, OR (AST)
46.1569 N, 123.8830 W, 3 m

48-hr precip: 4.50 in

Northwest WA experienced AR conditions during the first AR from ~0600 UTC 21 Oct to ~1100 UTC 22 Oct

The Atmospheric River Observatory (ARO) at Astoria, OR observed 4.50 inches (114 mm) of precipitation during 21-22 Oct

The ARO also observed IWV > 1 inch for ~24 hours with maximum values up to 1.4 inches (~35 mm)

Winds in the controlling layer (0.75-1.25 km agl) reached up to 65 knots, and were >50 knots for ~9 hours

Plot from [NOAA ESRL PSD](https://psd.noaa.gov/)

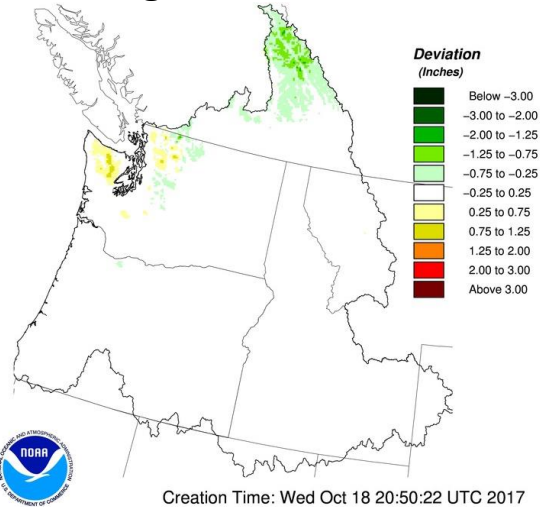
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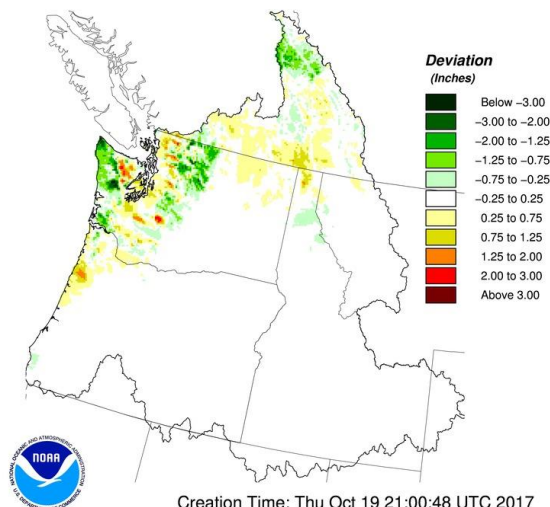
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NWRFC 24-hr QPF Verification (Fcst – Obs)

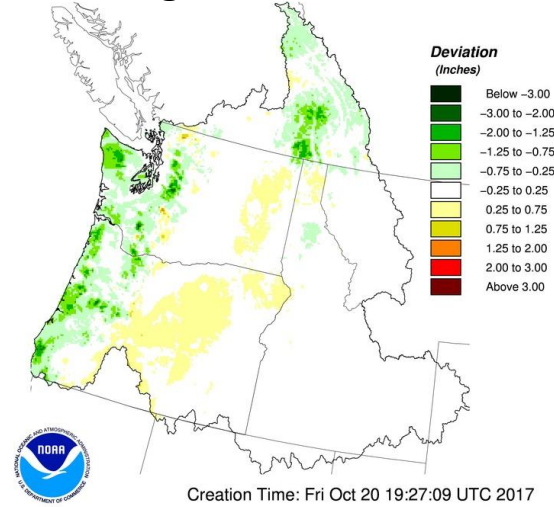
Ending 12Z 10/18/2017



Ending 12Z 10/19/2017



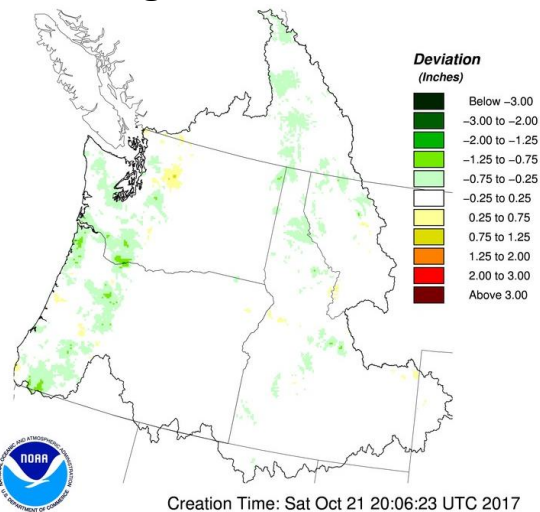
Ending 12Z 10/20/2017



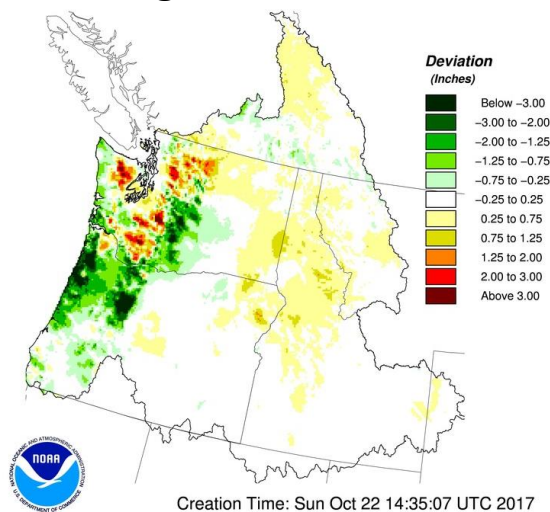
[NOAA NWRFC](#)

Northwest River Forecast Center (NWRFC) QPF under forecasted both events over most locations, especially on the day of highest observed precipitation, Oct 22.

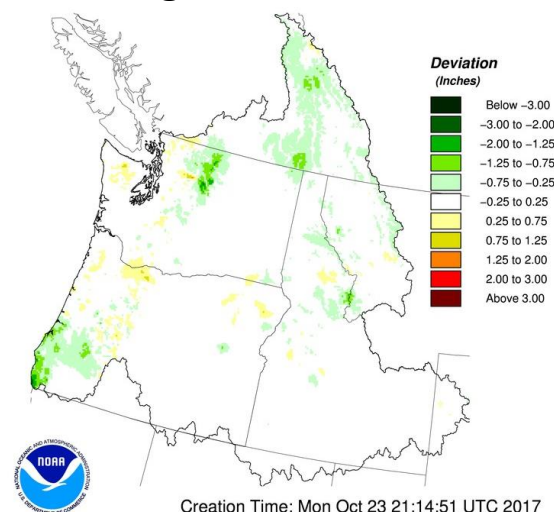
Ending 12Z 10/21/2017



Ending 12Z 10/22/2017



Ending 12Z 10/23/2017



At some locations over the Coastal and Cascade Mtns 24-hr QPF under forecasted the observed precipitation on Oct 22 by >3 inches