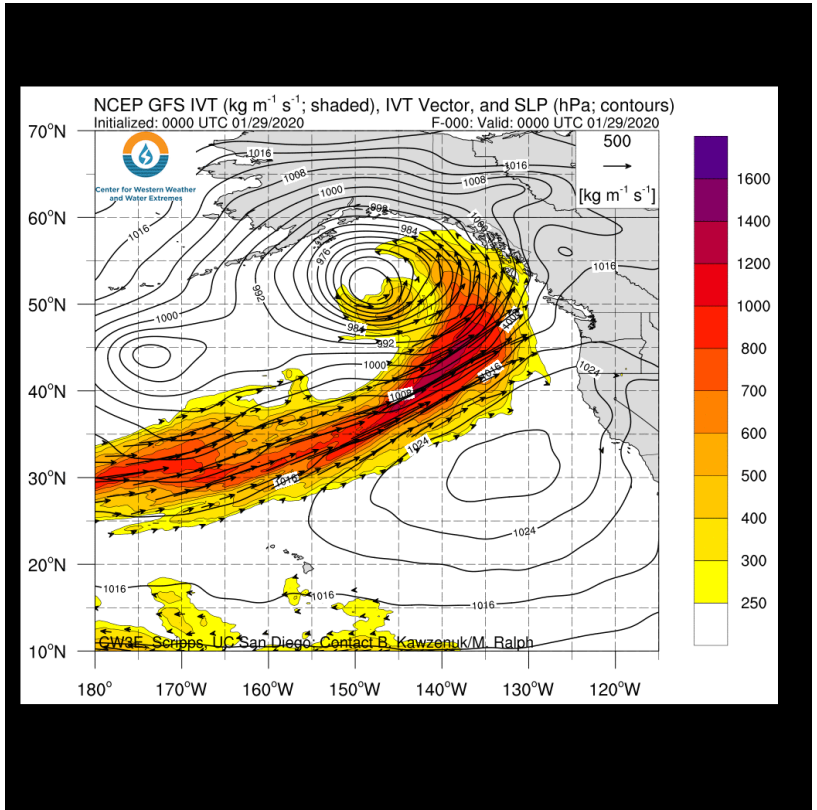
CW3E AR Outlook

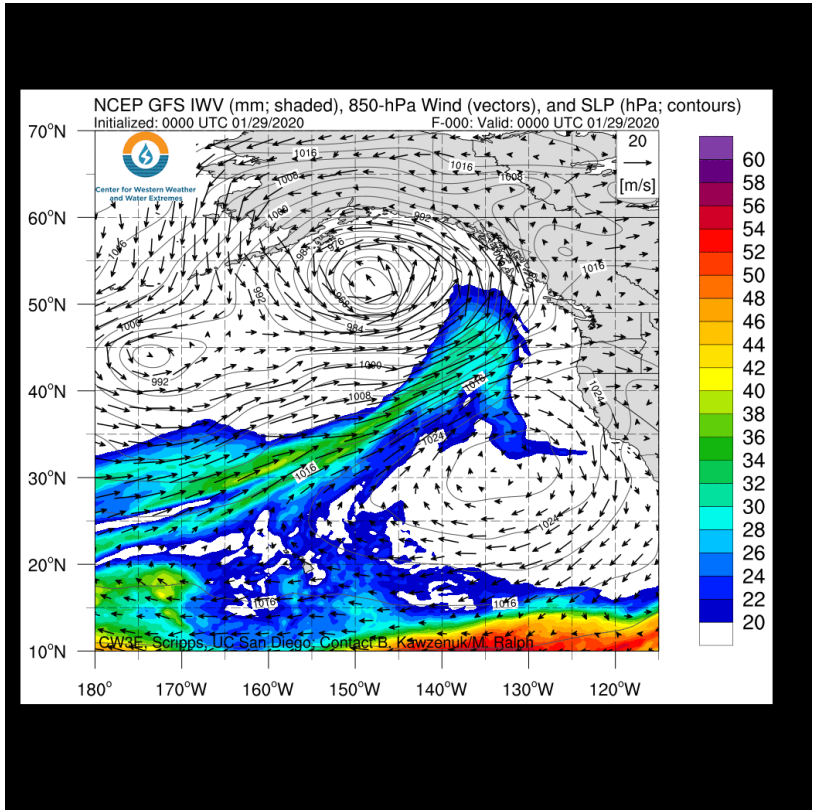
For California DWR's AR Program

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

A landfalling AR will bring heavy rainfall and the potential for flooding to the Pacific Northwest

- A landfalling AR is forecast to impact British Columbia, Washington, and Oregon this week
- Some areas along the coast may experience AR3/AR4 conditions, but there is significant uncertainty in forecast AR Scale
- At least 3–7 inches of rainfall are expected over portions of western WA and OR during the next 5 days, with more than 7 inches possible over the Olympic Peninsula and North Cascades
- Surface high pressure will build over the Northeast Pacific Ocean during 1–3 Feb
- Additional landfalling AR activity is currently forecast on the poleward side of the surface high between 4 Feb and 7 Feb





AR Outlook: 29 Jan 2020

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Flooding Possible

Friday January 31 – Sunday February 2, 2020

Location:

- Rivers, streams, and urban areas in Western Washington

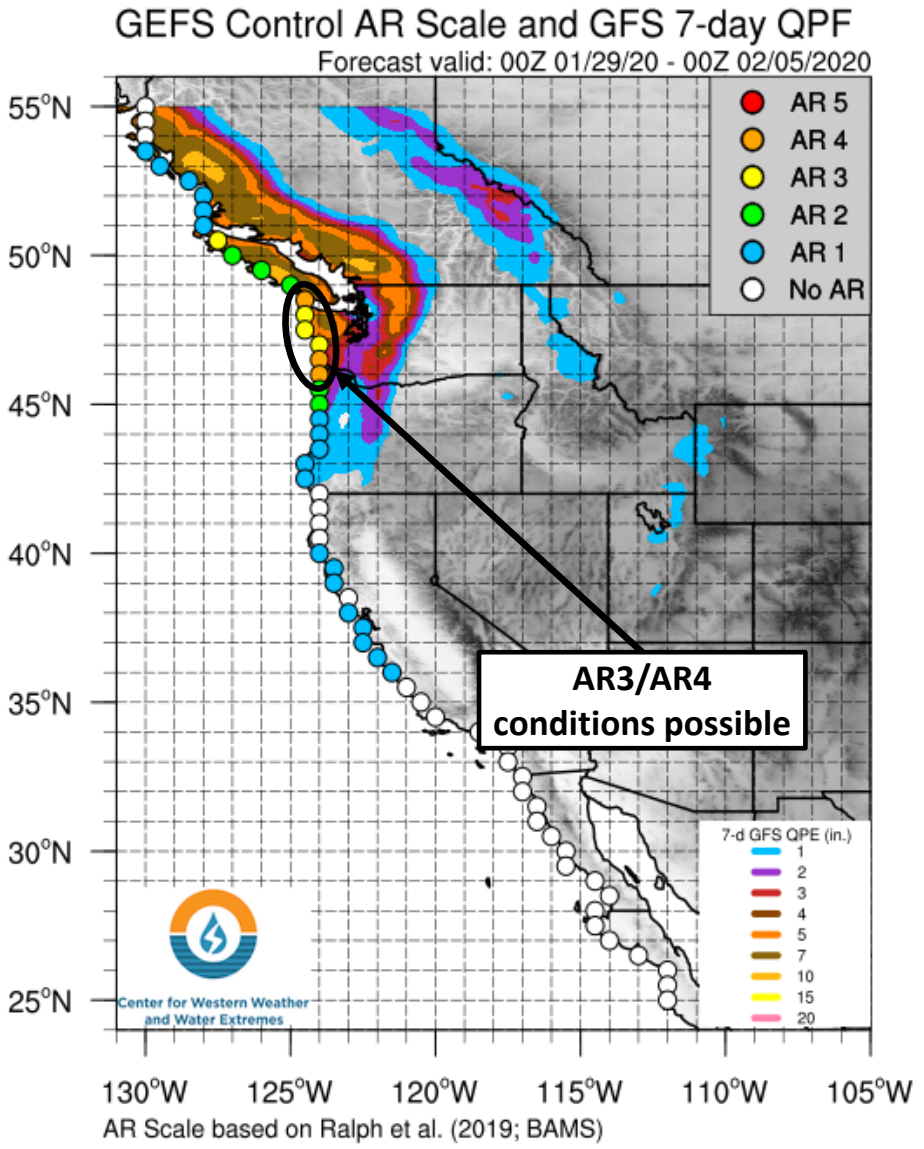
Details:

- Heavy rain **Friday and Saturday** may produce flooding on rivers, streams, and in urban areas through the weekend.
- At this time, some rivers may reach flood stage by Friday afternoon.

Prepare:

- If you live near area rivers and waterways, keep an eye on water levels and forecasts

Issued 1/28/2020 by NWS Seattle



Source: NOAA/NWS WFO Seattle, WA, https://www.weather.gov/sew/

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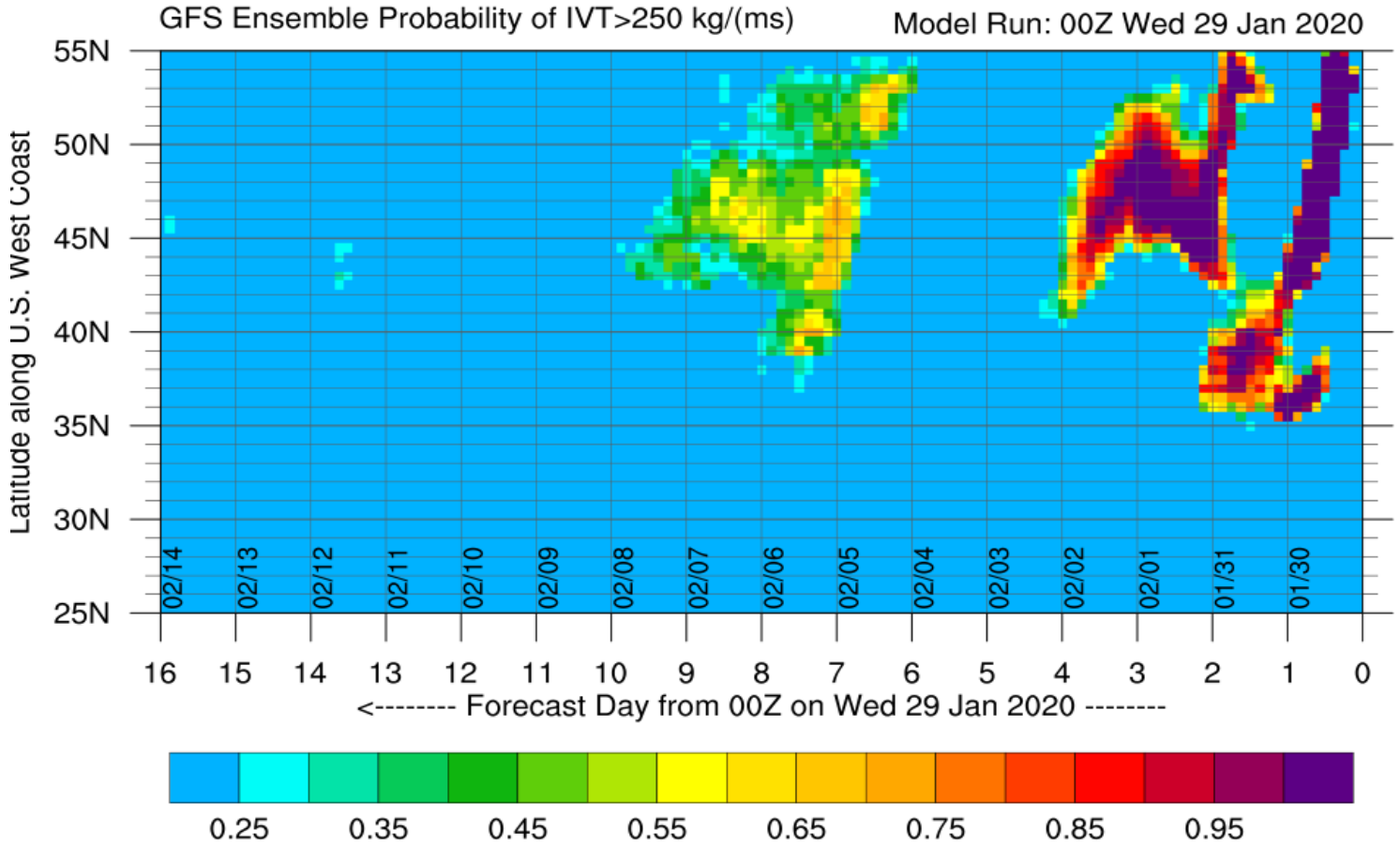

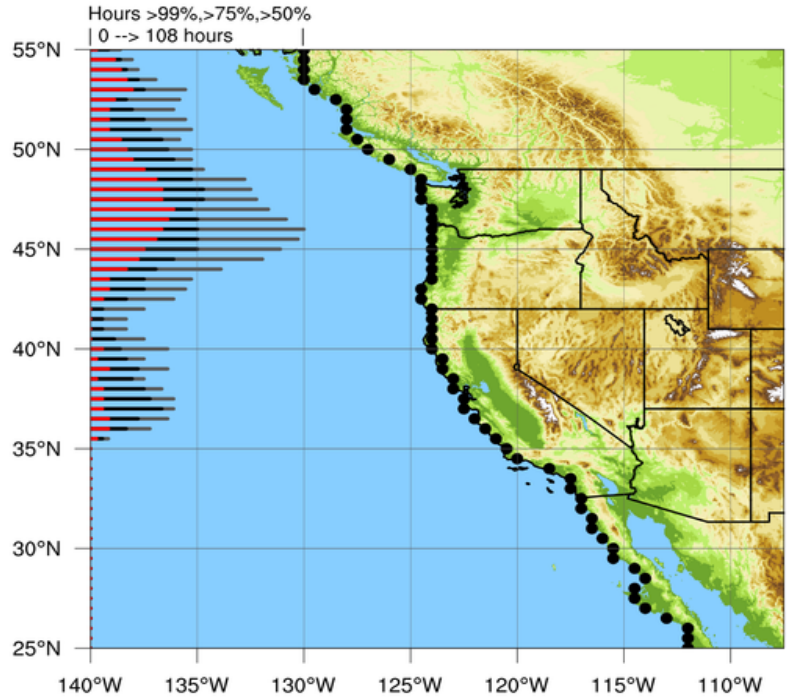

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PLYMOUTH STATE METEOROLOGY

- **AR landfall tool shows high confidence (> 80%) in AR conditions over coastal OR and WA between 0000 UTC 31 Jan and 1200 UTC 1 Feb**
- **There is still some uncertainty in the location of AR conditions between 0000 UTC 1 Feb and 0000 UTC 2 Feb**
- **Note: The region of elevated IVT values along the CA coast is associated with northerly/northwesterly flow on the east side of surface high pressure and thus will not produce any significant precipitation**
- **GEFS long-range forecasts suggest the potential for additional landfalling AR activity between 4 Feb and 7 Feb**

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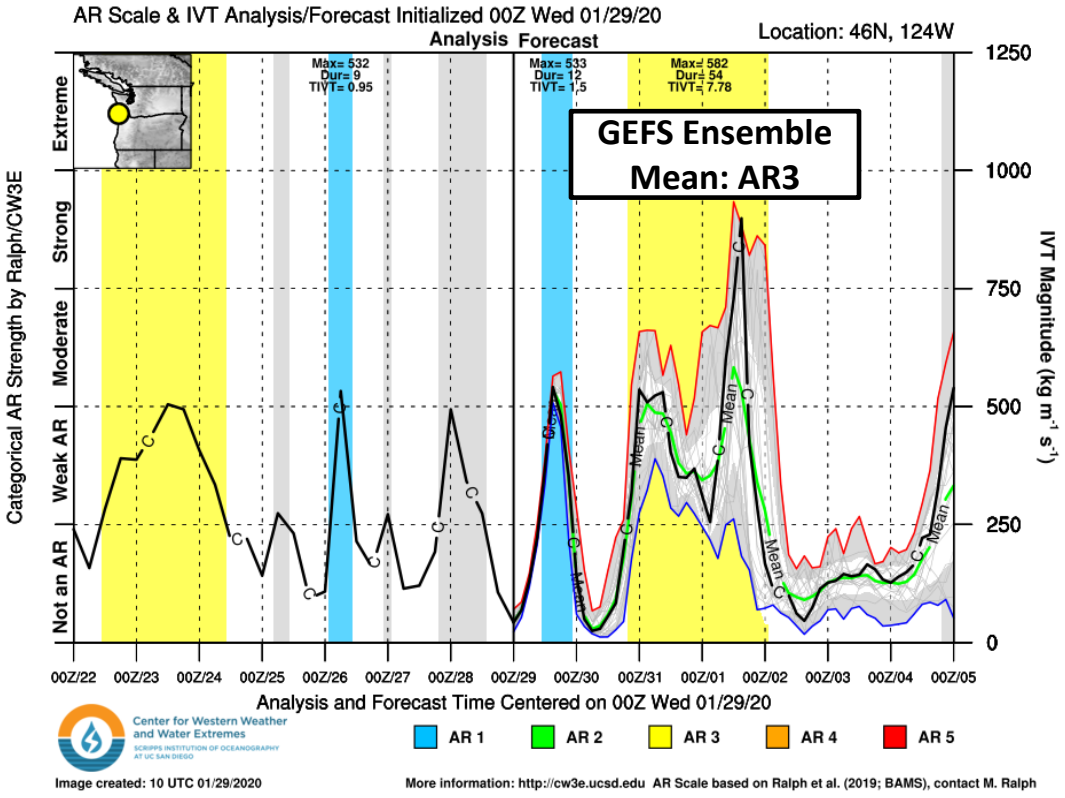
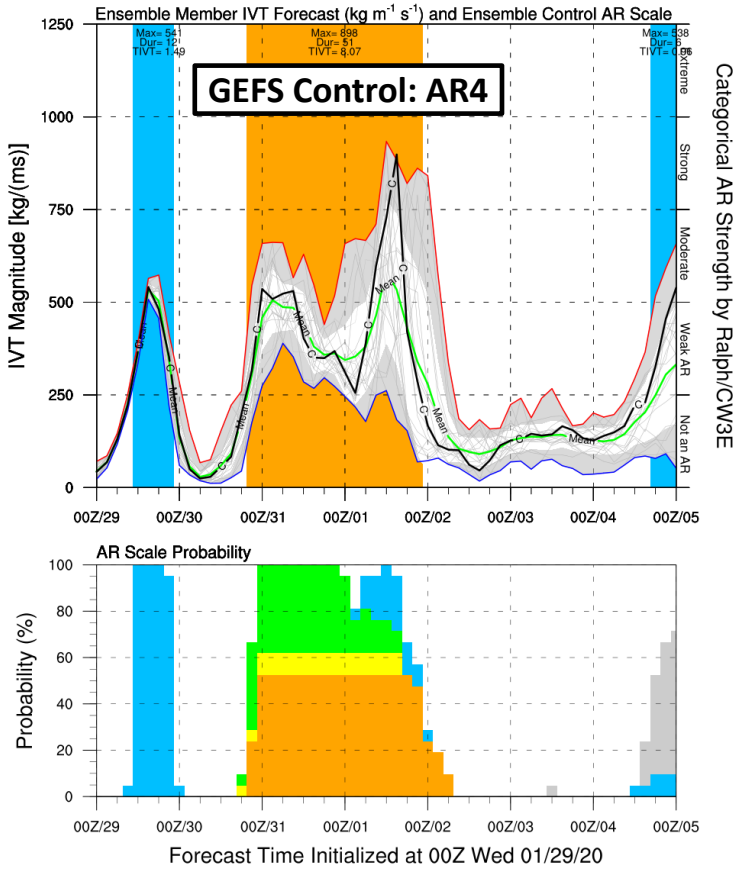
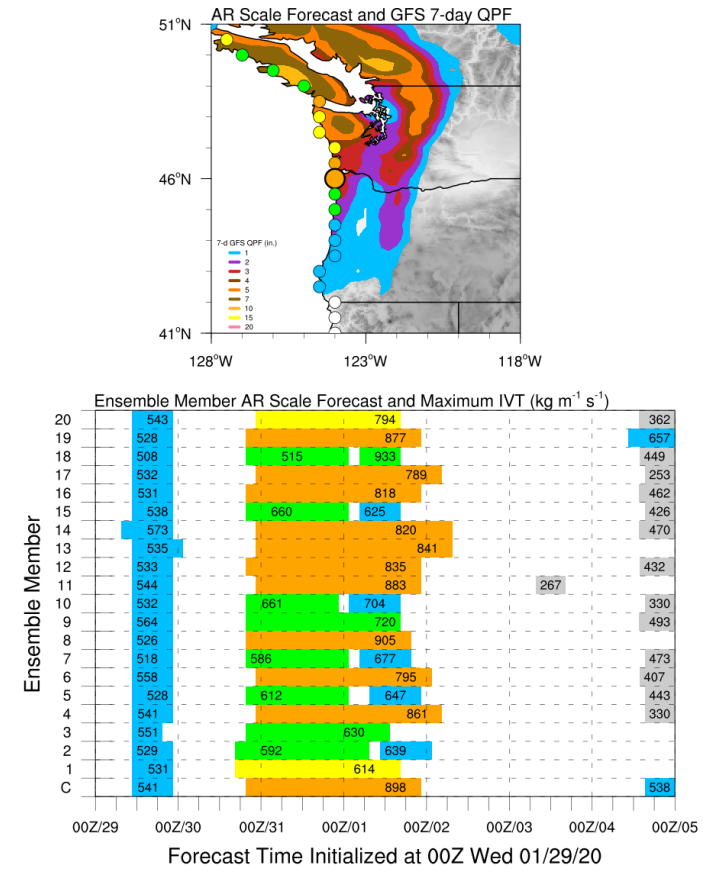
GEFS IVT Forecast Plumes



GFS Ensemble Inititialized: 00Z Wed 01/29/20



Location: 46°N 124°W



- There is a large difference between the GEFS control (898 kg m^{-1} s^{-1}) and ensemble mean (582 kg m^{-1} s^{-1}) maximum IVT forecast over northwestern OR, with the GEFS control predicting AR4 conditions and the ensemble mean suggesting AR3 conditions
- While 11/21 GEFS members are predicting AR4 conditions, 8/21 members are only predicting AR2 conditions
- There is significant uncertainty regarding the magnitude of IVT between 0000 UTC 1 Feb and 0000 UTC 2 Feb
- Several GEFS members even suggest that IVT will drop below 250 kg m^{-1} s^{-1} for several hours before the second pulse of IVT on 1 Feb

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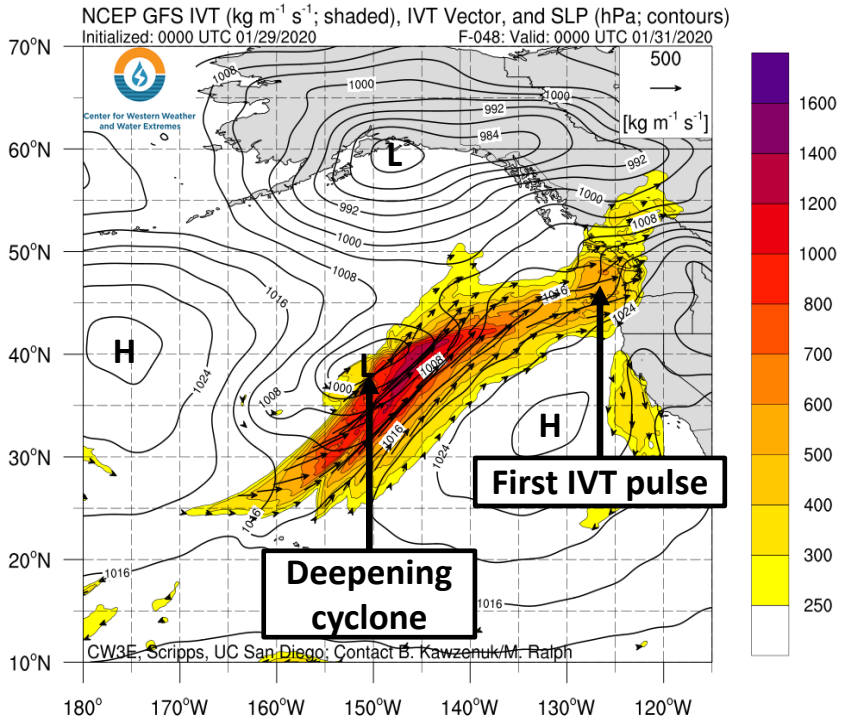
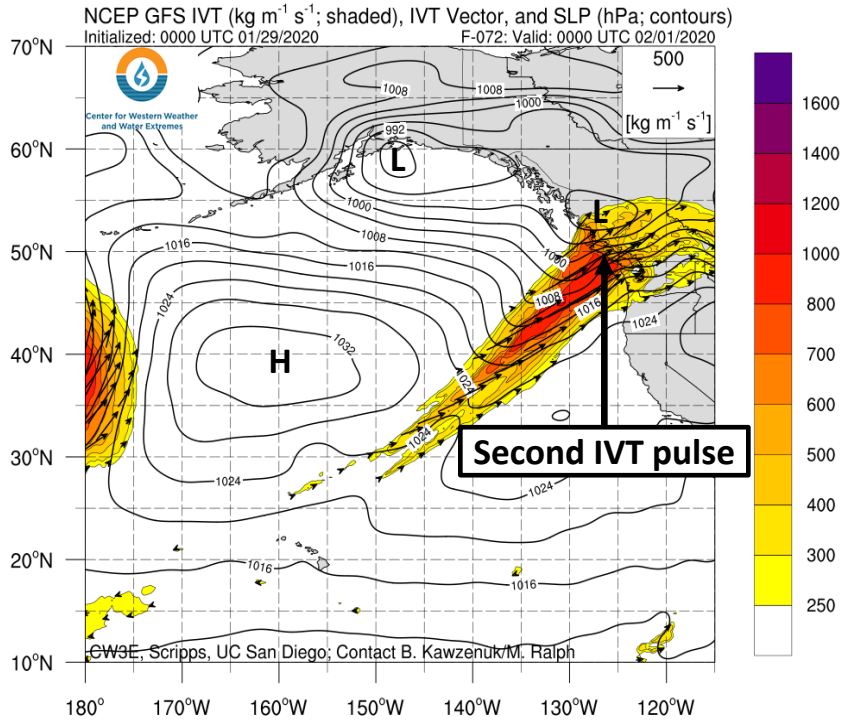
GFS IVT Forecasts

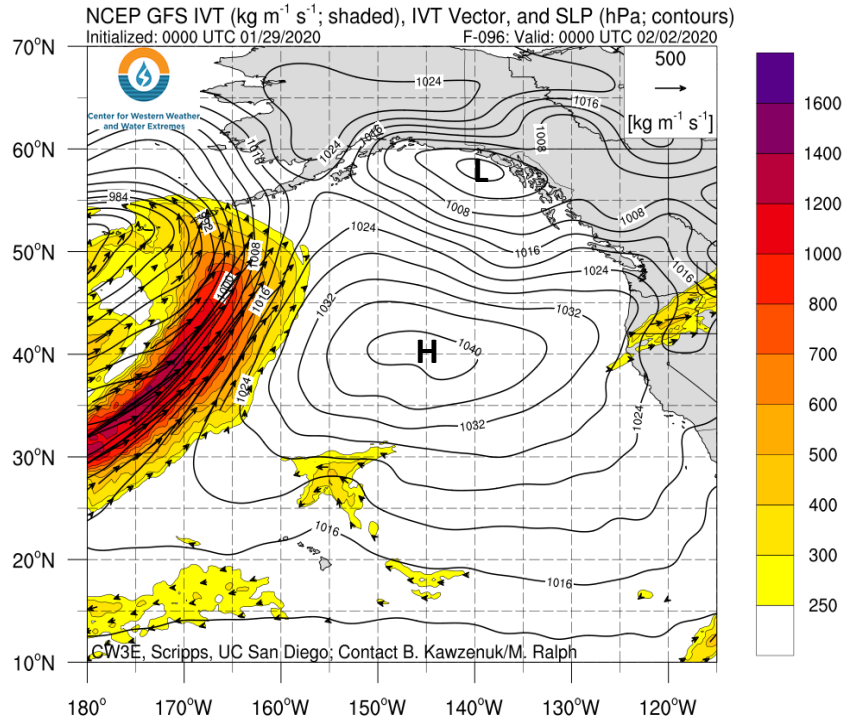
F-48 Valid: 0000 UTC 31 Jan



F-72 Valid: 0000 UTC 1 Feb



F-96 Valid: 0000 UTC 2 Feb



- **The first pulse of IVT associated with a decaying frontal boundary is forecast to make landfall along the WA and OR coast shortly before 0000 UTC 31 Jan**
- **A stronger pulse of IVT associated with a deepening surface cyclone is forecast to make landfall over Vancouver Island shortly before 0000 UTC 1 Feb, but there is some uncertainty in the position and orientation of the main IVT corridor**
- **By 0000 UTC 2 Feb, strong surface high pressure builds over Northeast Pacific Ocean**

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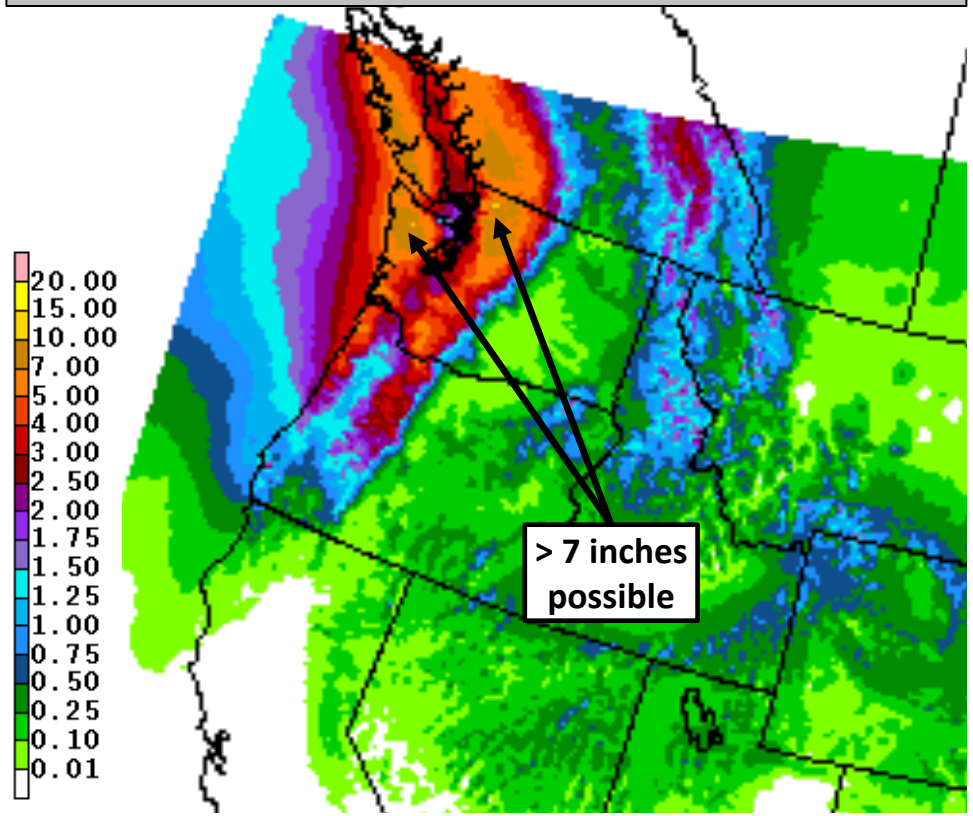
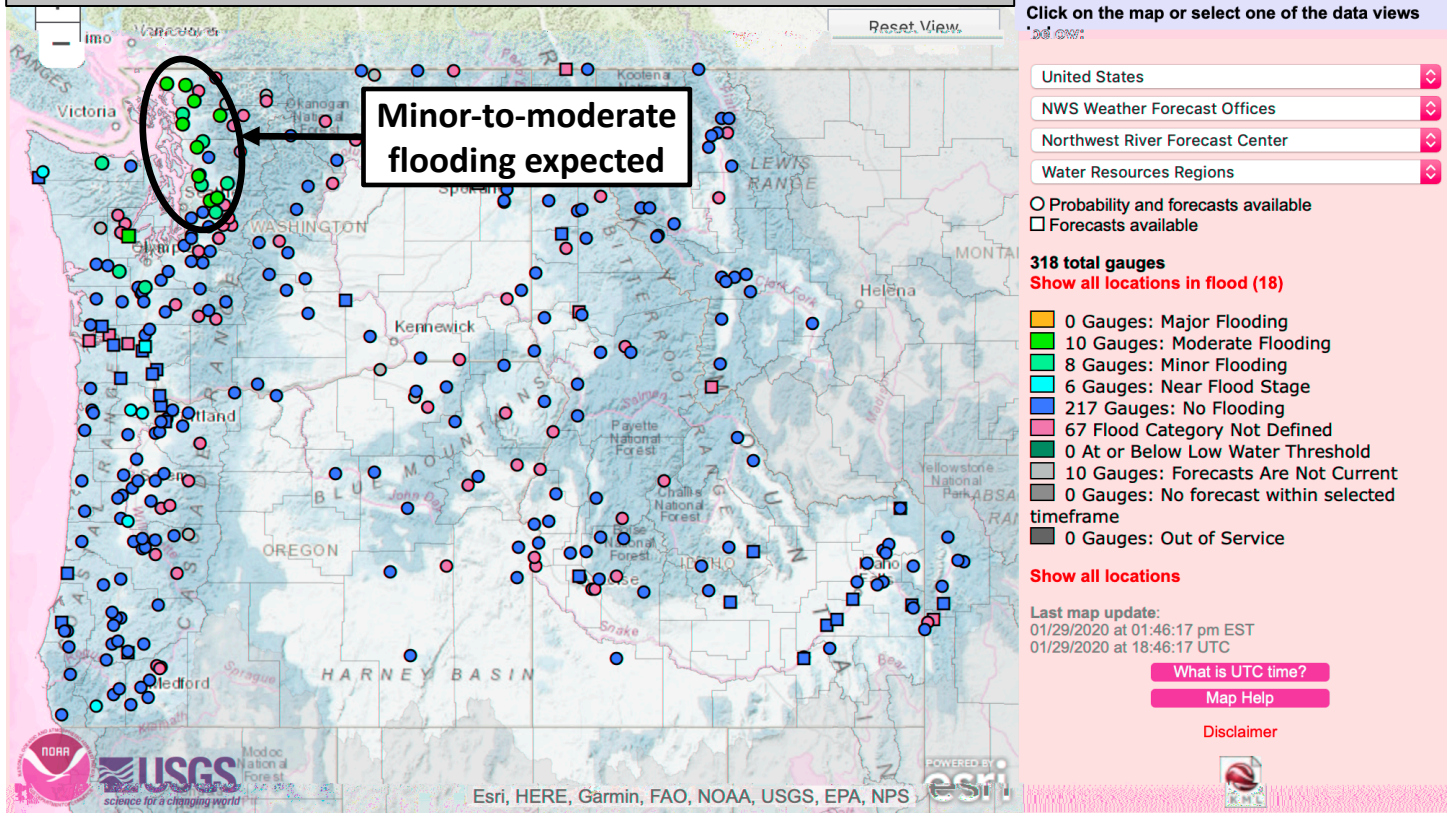
WPC 5-day QPF: Valid 1200 UTC 29 Jan – 3 Feb



Source: NOAA/NWS WPC, https://www.wpc.ncep.noaa.gov/

9-day Maximum Forecast Flood Category



Source: NOAA/NWS Advanced Hydrologic Prediction Service, https://water.weather.gov/ahps/

- **At least 3–7 inches of precipitation are forecast over portions of western OR and WA, as well as southwestern BC, during the next 5 days**
- **The highest amounts (> 7 inches) are expected over the Olympic Mountains, the North Cascades, and Vancouver Island**
- **Given the saturated soil conditions and rapid increase in mountain snowpack over the past 4 weeks, there is potential for river flooding at lower elevations west of the North Cascades**
- **Lighter precipitation (1–3 inches) is expected over the Rocky Mountains in association with the inland penetration of high IVT values**