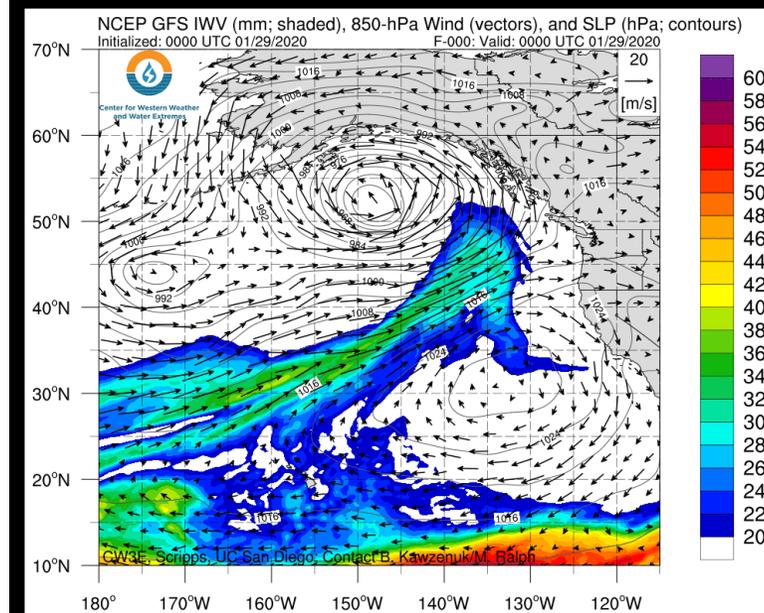
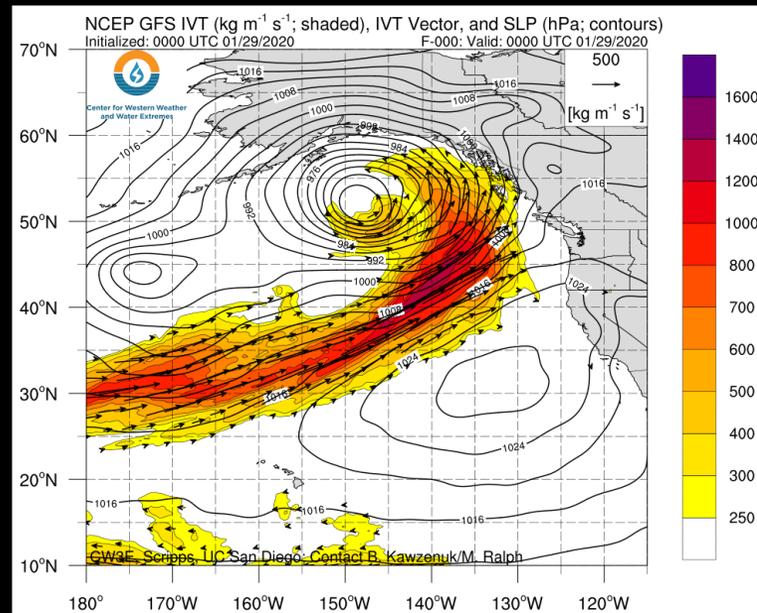




## A landfalling AR will bring heavy rainfall and the potential for flooding to the Pacific Northwest

- 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

For California DWR's AR Program



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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:

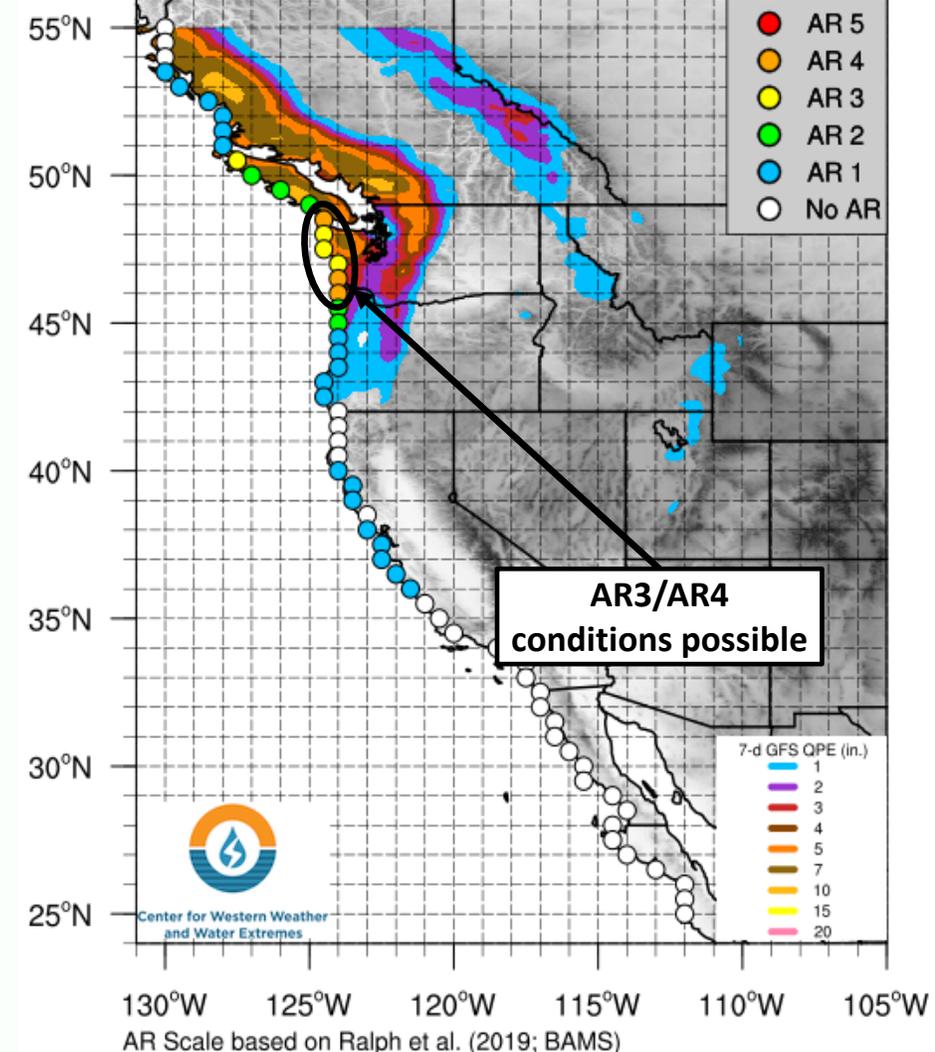
- If you live near area rivers and waterways, keep an eye on water levels and forecasts



Issued 1/28/2020 by NWS Seattle

## GEFS Control AR Scale and GFS 7-day QPF

Forecast valid: 00Z 01/29/20 - 00Z 02/05/2020



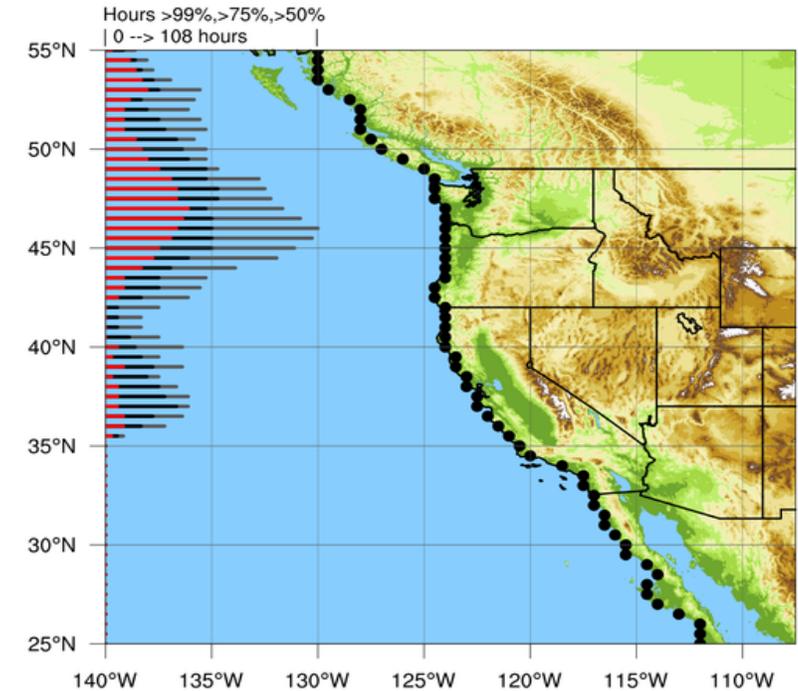
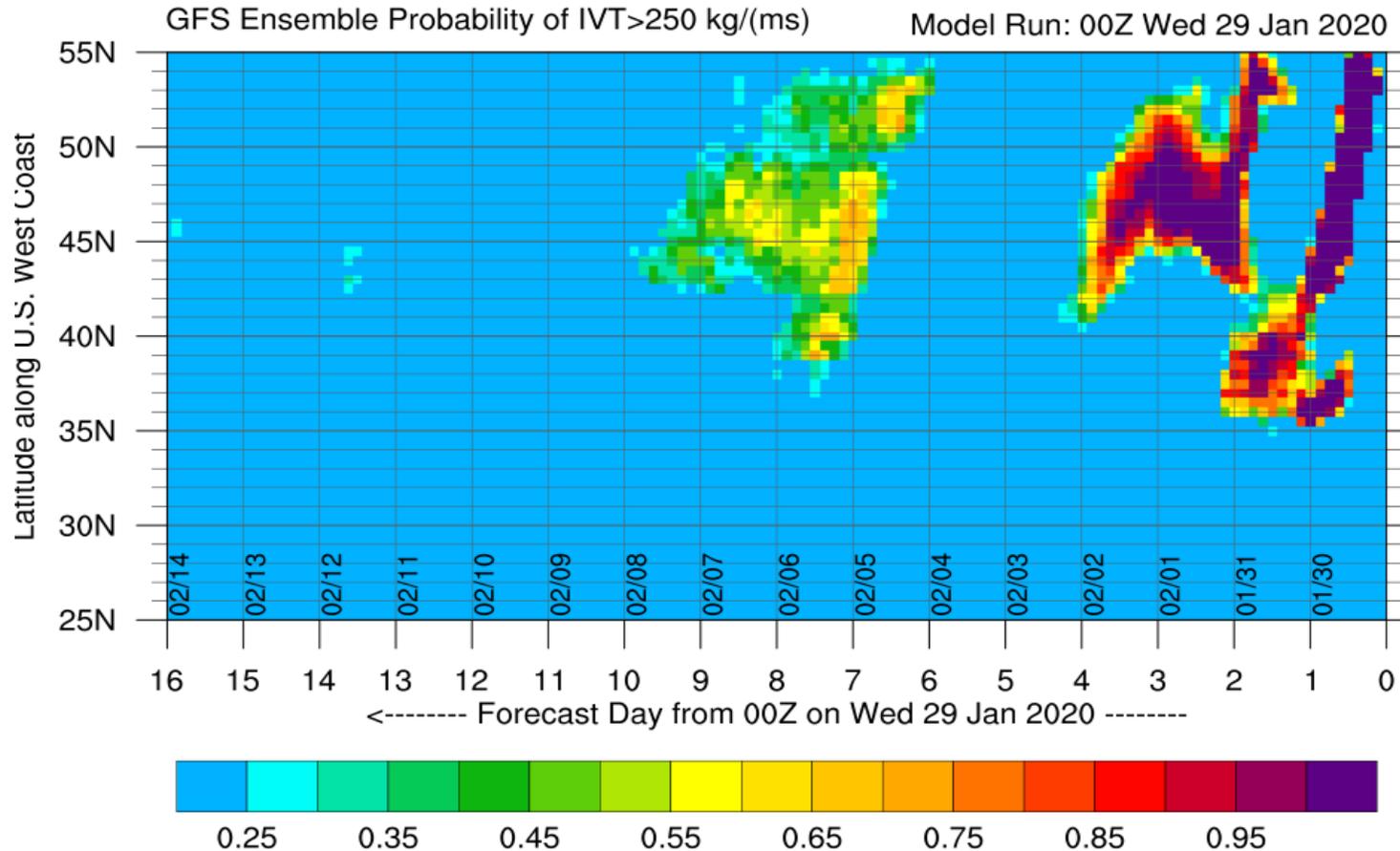
# AR Outlook: 29 Jan 2020

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- 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
- GFS long-range forecasts suggest the potential for additional landfalling AR activity between 4 Feb and 7 Feb

# AR Outlook: 29 Jan 2020

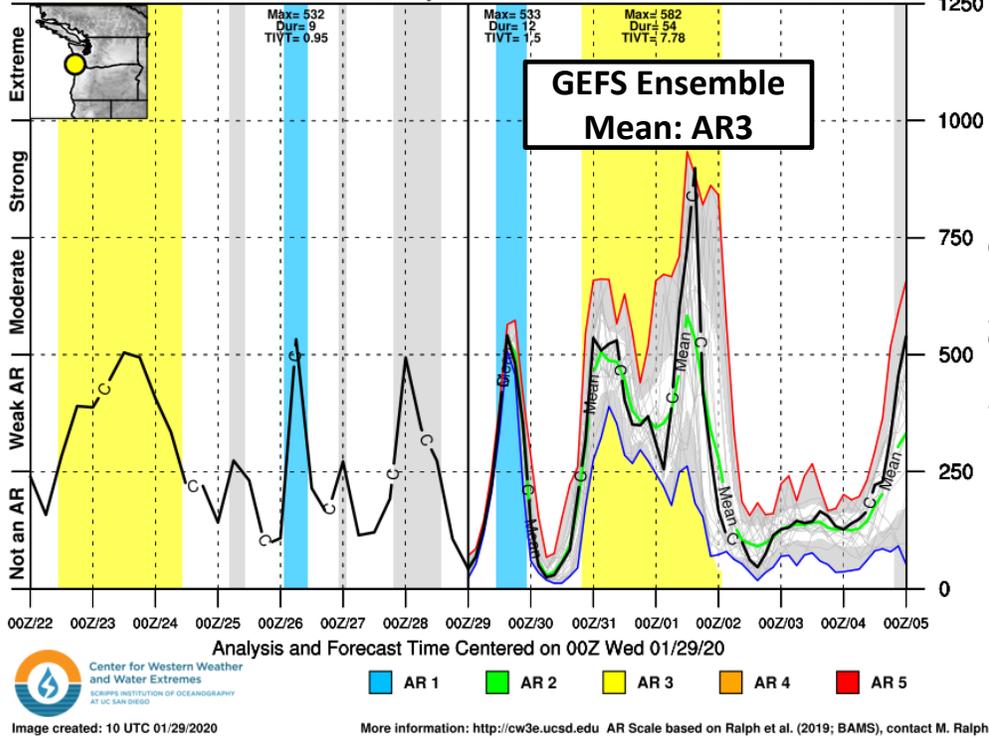
For California DWR's AR Program



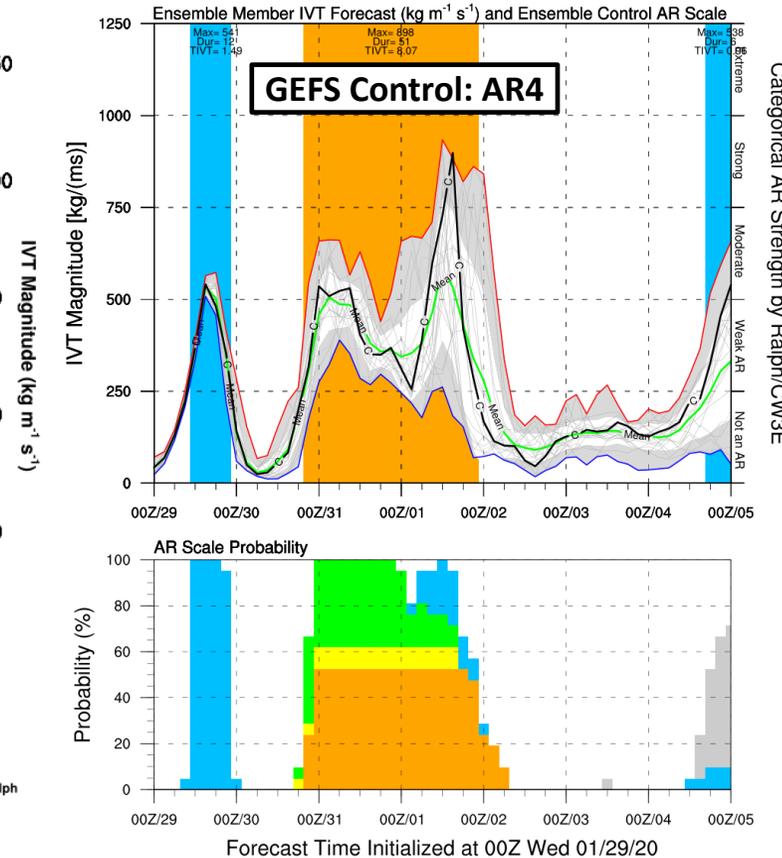
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## GEFS IVT Forecast Plumes

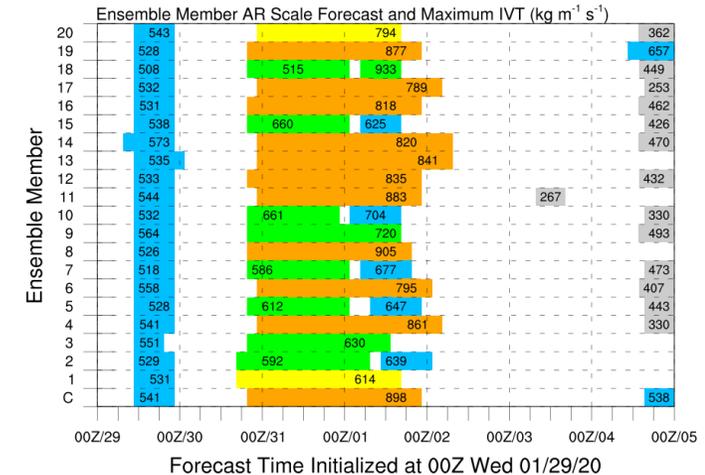
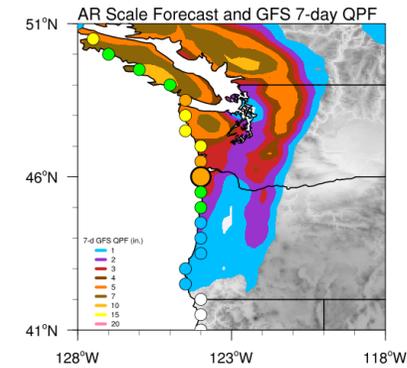
AR Scale & IVT Analysis/Forecast Initialized 00Z Wed 01/29/20  
Analysis Forecast Location: 46N, 124W



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



Location: 46°N 124°W



- There is a large difference between the GEFS control ( $898 \text{ kg m}^{-1} \text{ s}^{-1}$ ) and ensemble mean ( $582 \text{ kg m}^{-1} \text{ s}^{-1}$ ) 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  $250 \text{ kg m}^{-1} \text{ s}^{-1}$  for several hours before the second pulse of IVT on 1 Feb

# AR Outlook: 29 Jan 2020

For California DWR's AR Program



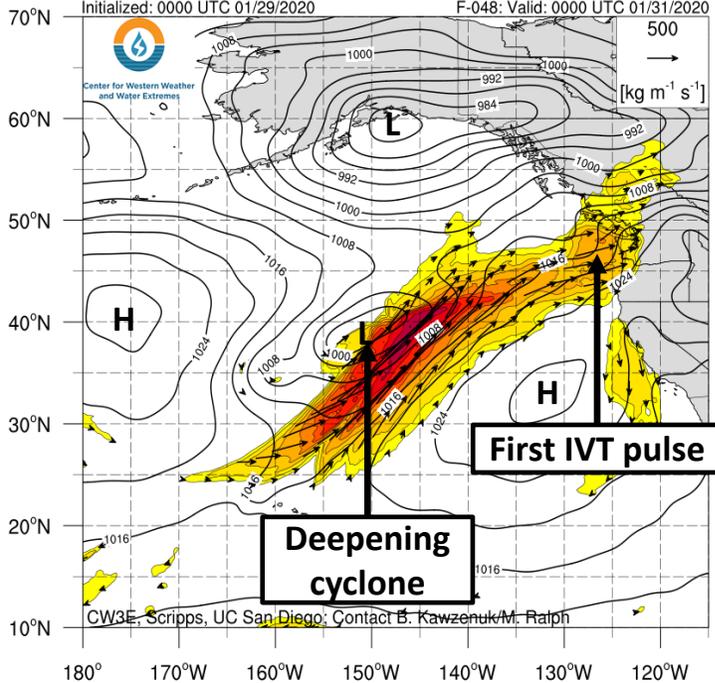
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## GFS IVT Forecasts

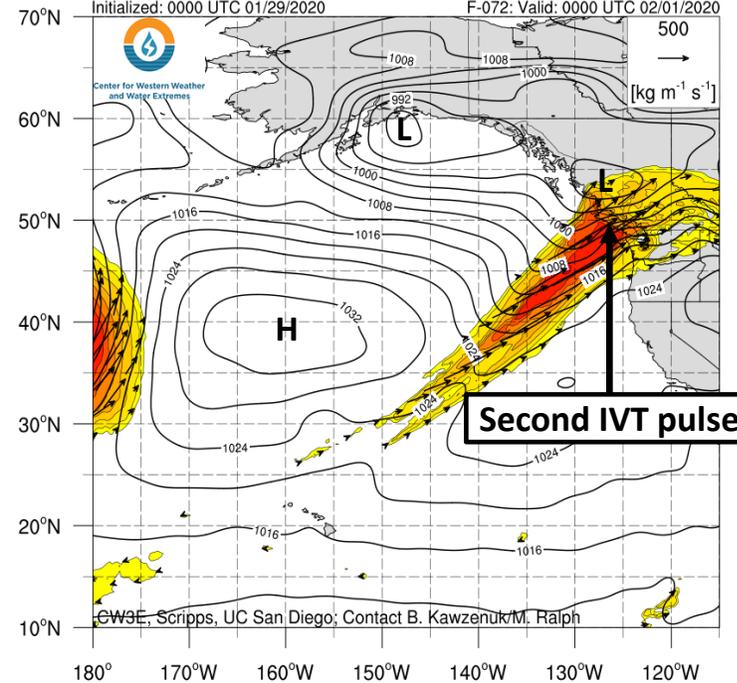
### F-48 Valid: 0000 UTC 31 Jan

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 0000 UTC 01/29/2020 F-048: Valid: 0000 UTC 01/31/2020



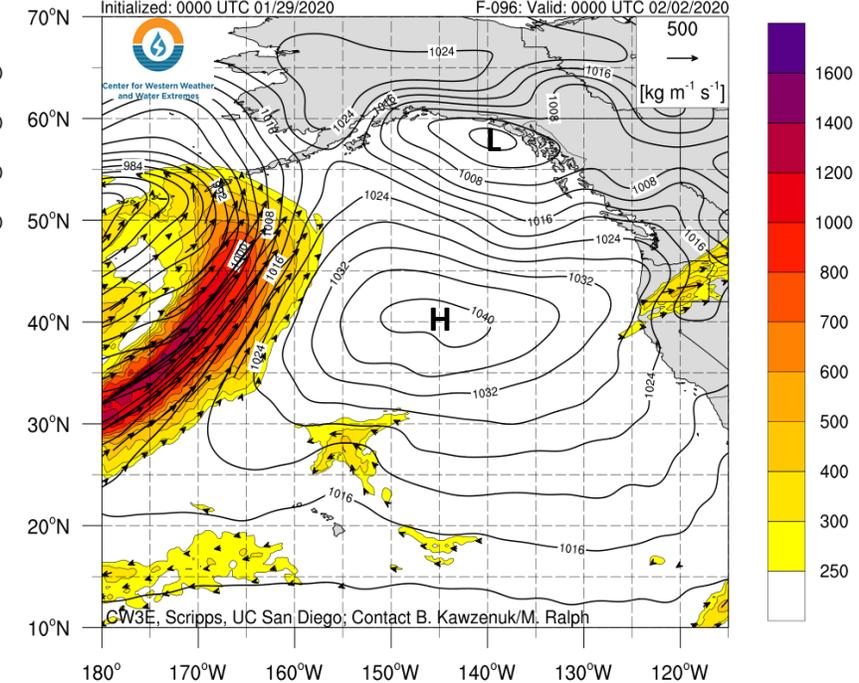
### F-72 Valid: 0000 UTC 1 Feb

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 0000 UTC 01/29/2020 F-072: Valid: 0000 UTC 02/01/2020



### F-96 Valid: 0000 UTC 2 Feb

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 0000 UTC 01/29/2020 F-096: Valid: 0000 UTC 02/02/2020



- 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

# AR Outlook: 29 Jan 2020

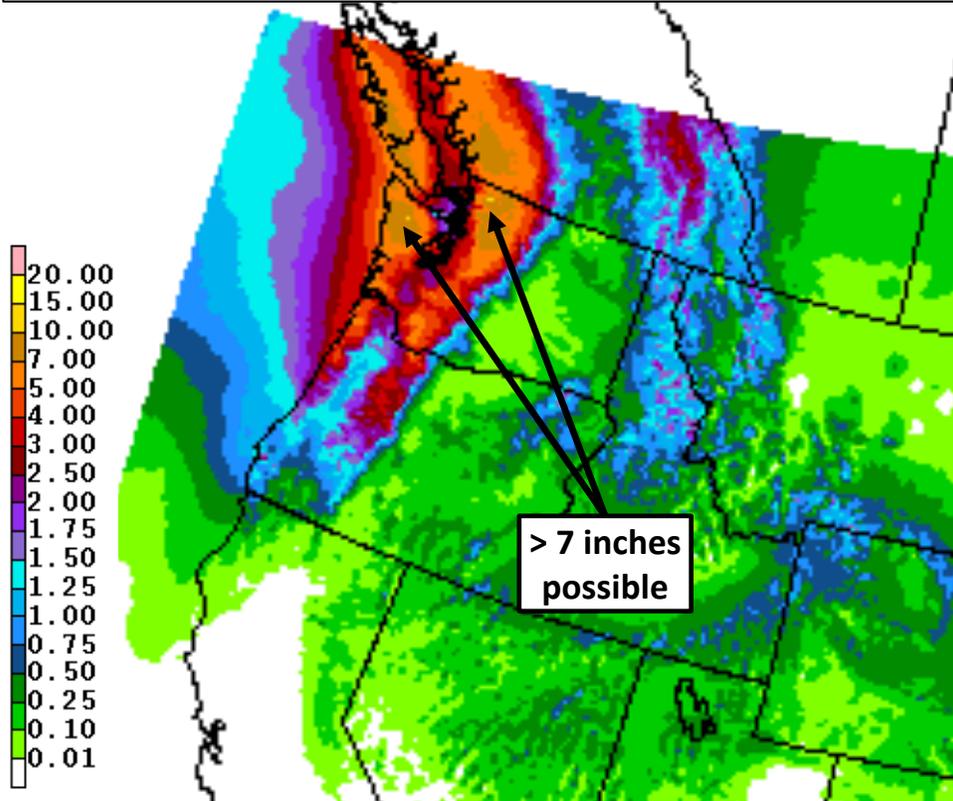
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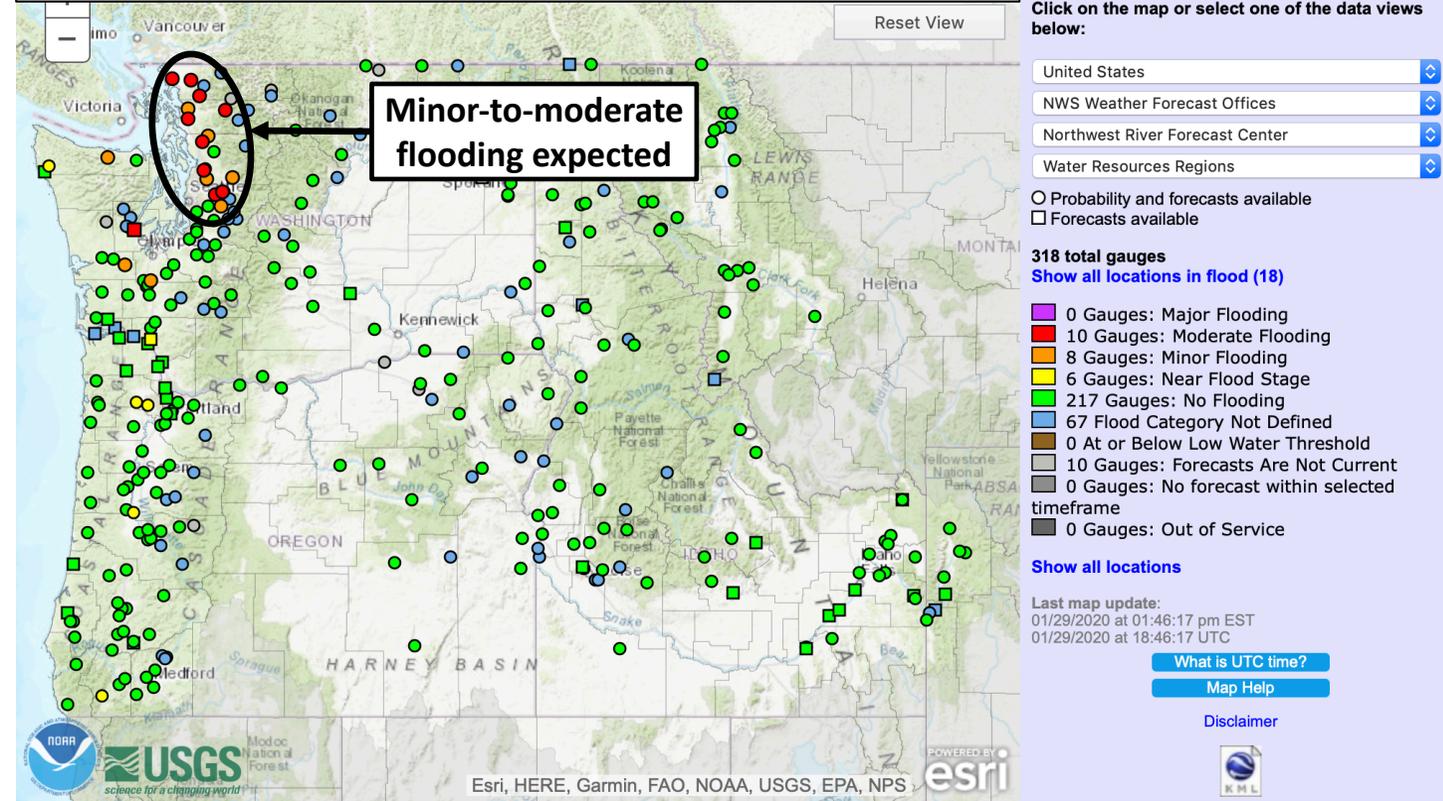
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WPC 5-day QPF: Valid 1200 UTC 29 Jan – 3 Feb



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