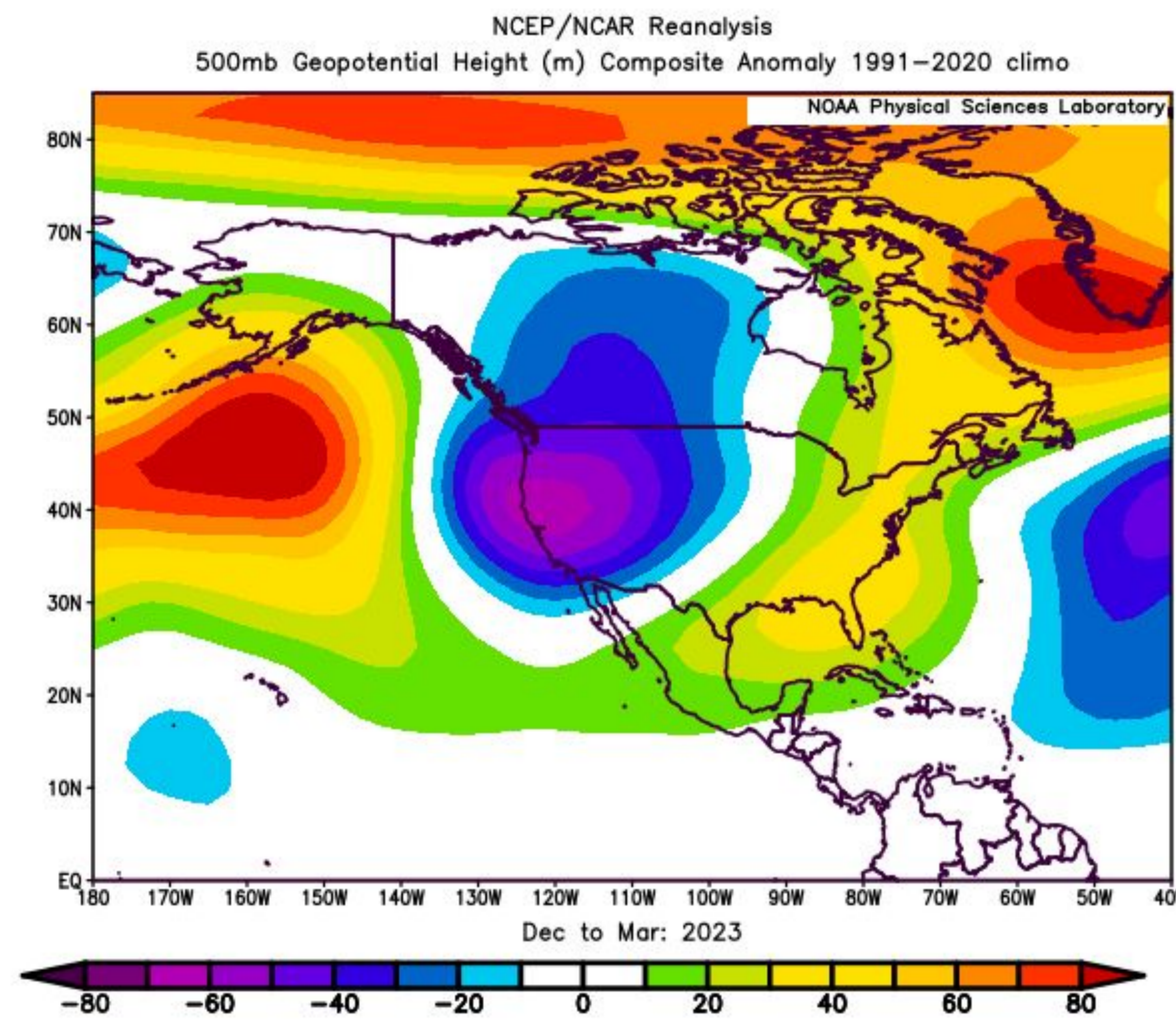


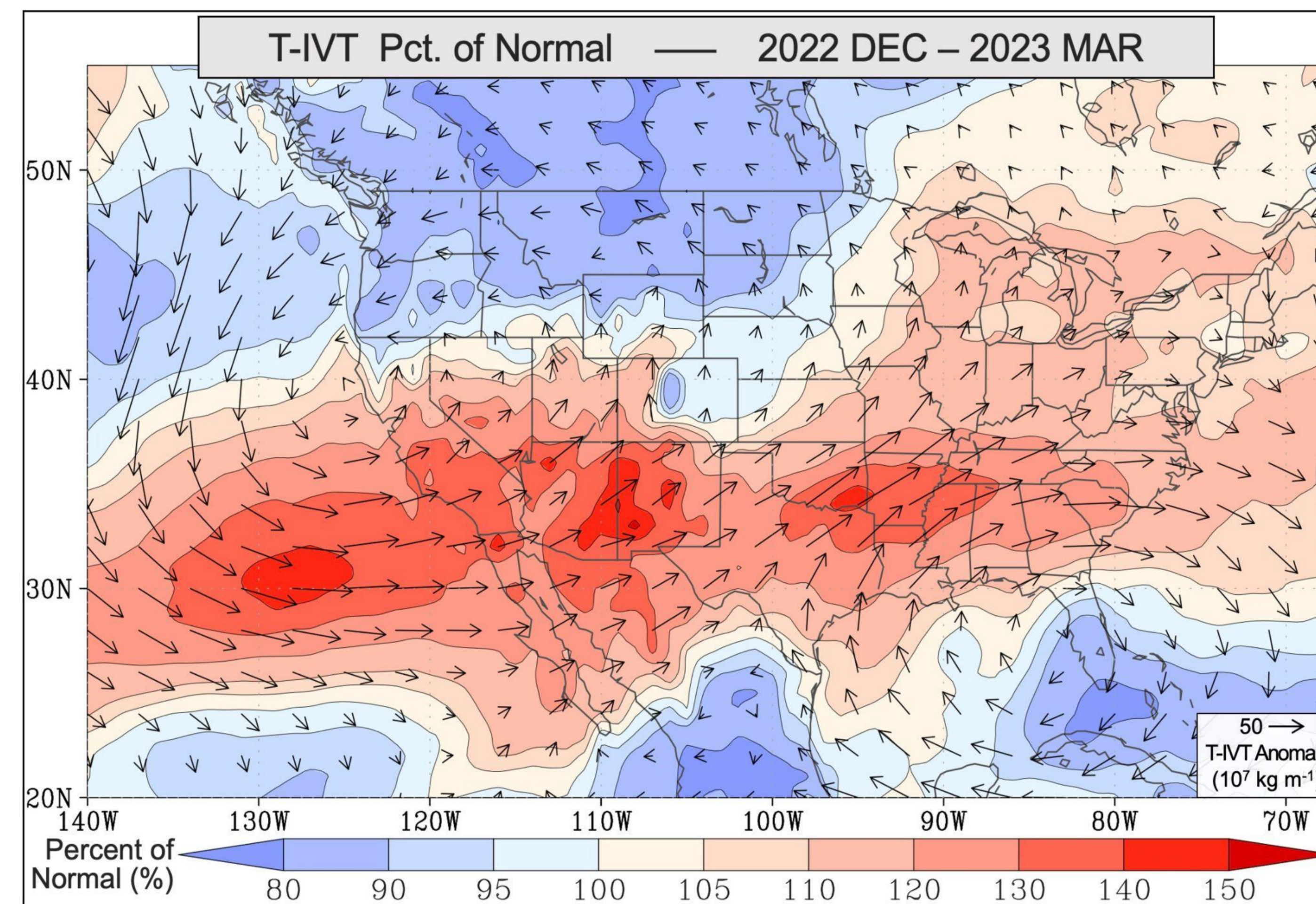
# The Atmospheric Pattern and Record Precipitation across the Western U.S. during Winter 2022/2023

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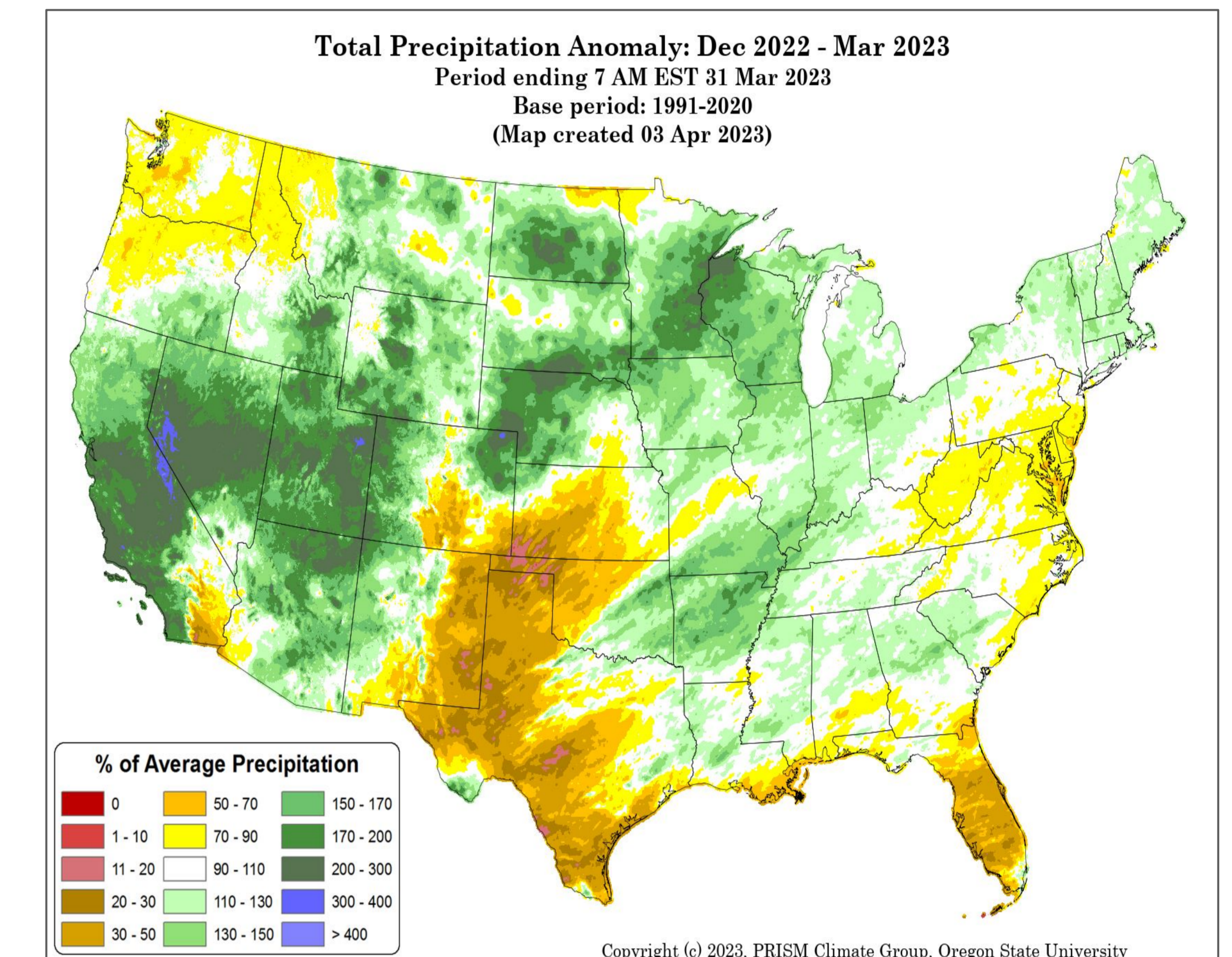
The winter of 2022/2023 was unique in many ways: anomalously low 500mb heights over the Western U.S., anomalously high IVT across the southwestern (and eastern) U.S., a large number of landfalling ARs along the U.S. West Coast, and consequently much above-normal precipitation, snowfall, and snowpack across the U.S. West.



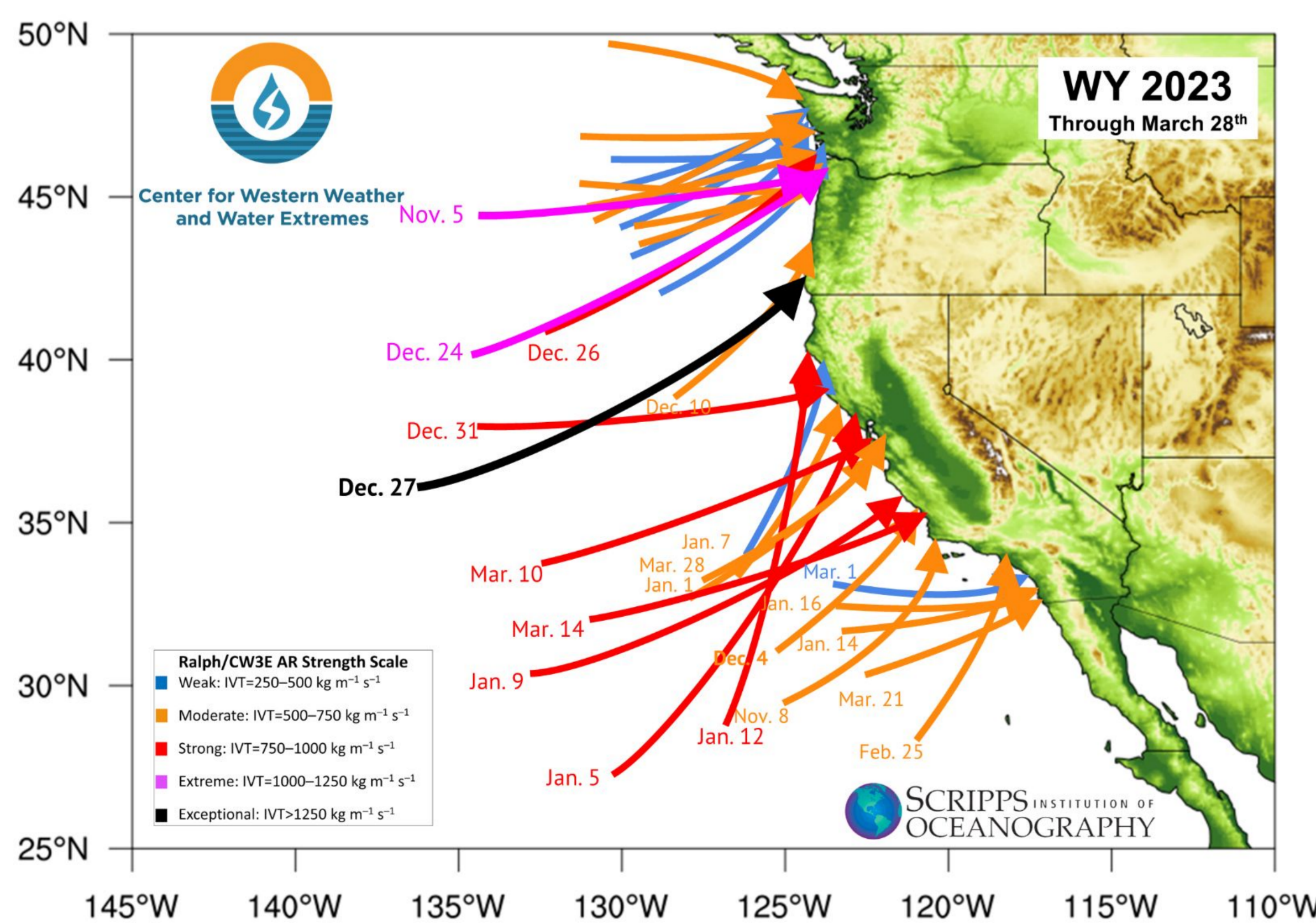
North American 500-mb geopotential height anomaly during Dec 2022 – Mar 2023, based on NCEP/NCAR Reanalysis. Color shading shows the geopotential height anomaly (decameters) relative to 1991 – 2020 climatology.



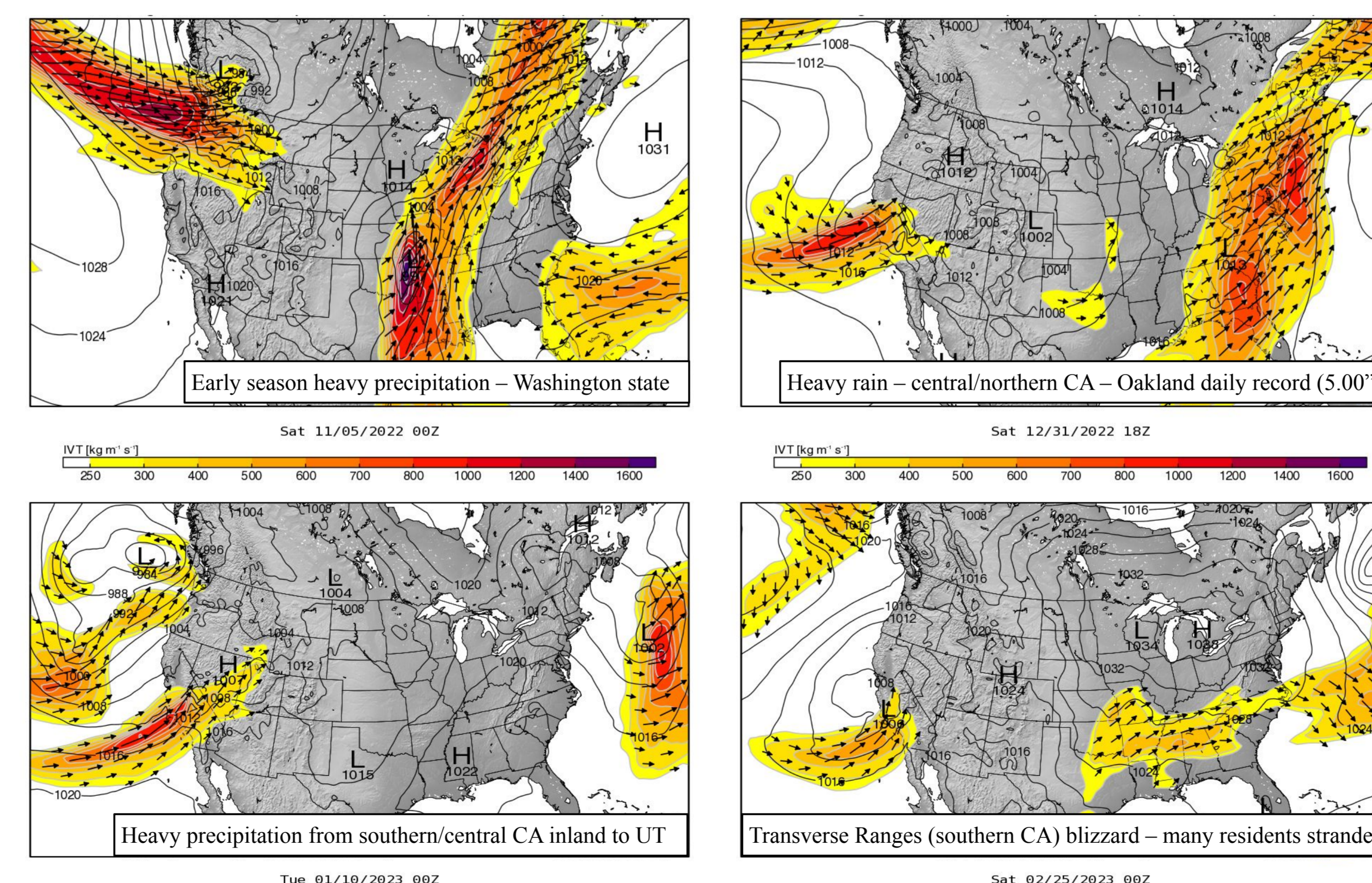
Time-integrated IVT (T-IVT) during Dec 2022 – Mar 2023 based on NCEP CFSR/CFSv2 Analysis. The colors show the T-IVT as a percentage of normal (climatological mean T-IVT in Dec–Mar 1979–2021). The vectors represent the T-IVT anomaly ( $10^7 \text{ kg m}^{-1}$ ).



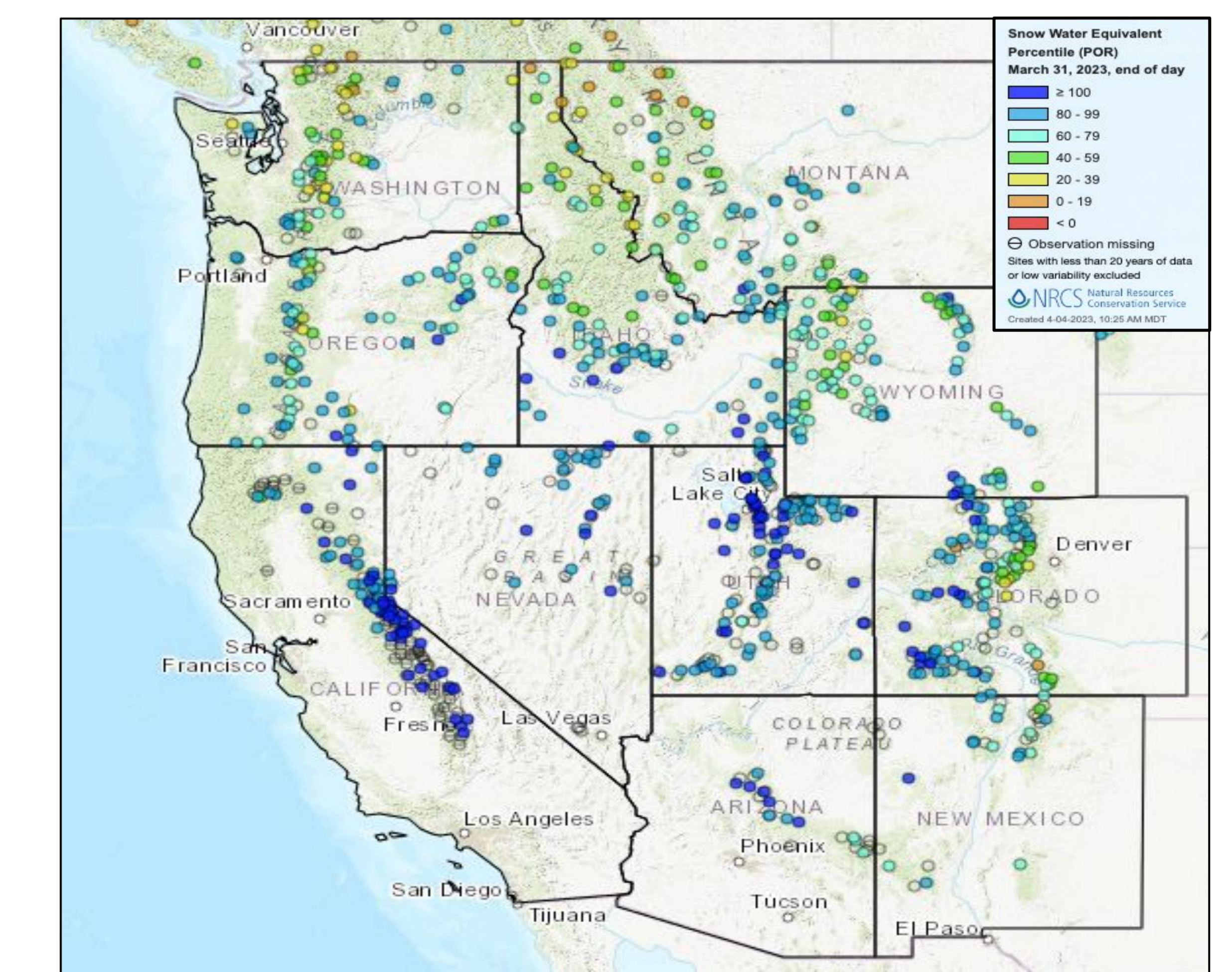
Percent of average precipitation during Dec 2022 – Mar 2023, based on PRISM. Color shading shows the % of average precipitation vs. 1991 – 2020 climatology.



Atmospheric Rivers making landfall along the U.S. West Coast during Winter 2022/2023. Color shading indicates AR Scale ranking and arrow directions approximate AR approaches toward coast (credit: Chad Hecht).



MSLP and IVT at the “peak” of selected major events during Winter 2022/2023.



Percentile rank of snow water equivalent at SNOTEL stations on 31 Mar 2023, based on each station’s period of record.