



Oregon Drought Monitor Advisory Committee

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Oregon DMAC

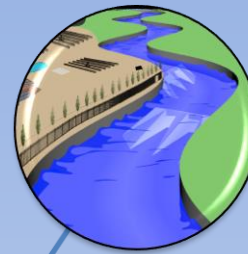
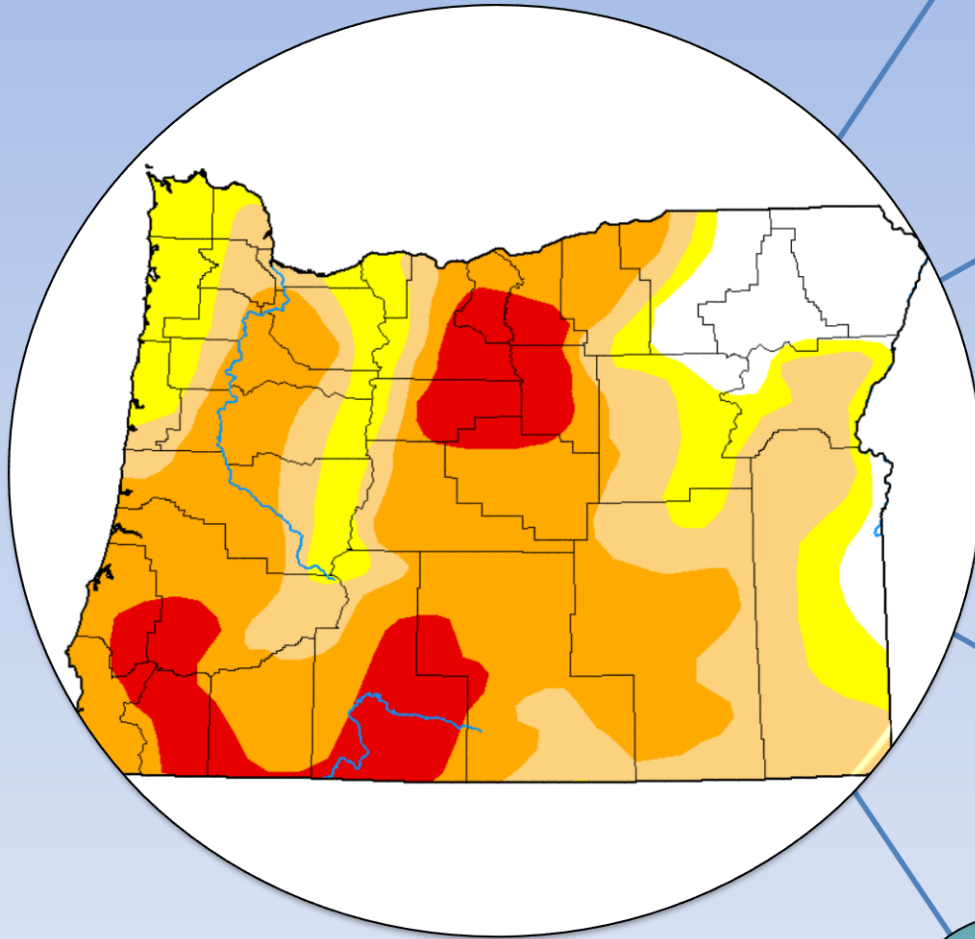
- One strength of the USDM is its consideration of local conditions from regional experts
- Regional input is volunteered, and we greatly appreciate their commitment to the USDM

Name	Affiliation
Larry O'Neill	OSU; OR State Climatologist
Ken Stahr	Oregon Water Resources Department
Scott Oviatt	USDA
Andy Bryant	NWS Portland
Marc Stewart	USGS
Spencer Higginson	NWS Medford
Troy Lindquist	NWS Boise
Marilyn Lohmann	NWS Pendleton
Ryan Sandler	NWS Medford
Amy Burke	NWS River Forecast Center Portland
Brett Lutz	NWS Medford
Stephen King	NWS River Forecast Center Portland

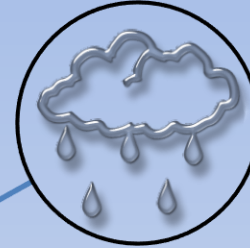
Oregon's approach to drought assessment

- Generally consistent with USDM recommended practices
 - Consider multiple objective indices or indicators known to be most representative of impacts and surface water supply
 - Typically follows a “confluence of indicators” approach to set drought designations
 - Not a drought forecast, but a depiction of current conditions
 - Guided by the “science before policy” principle
- While it informs the state level drought declaration process, it does not fulfill legal drought declarations

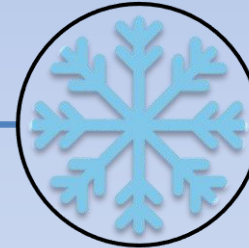
Key objective drought indicators for Oregon



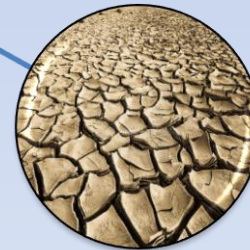
- Streamflow
- Seasonal runoff



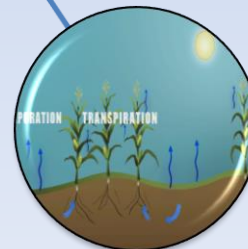
- Precipitation
- Standardized Precipitation Index (SPI)



- Snowpack
- Snow Water Equivalent (SWE)



- Soil moisture
- Shallow groundwater

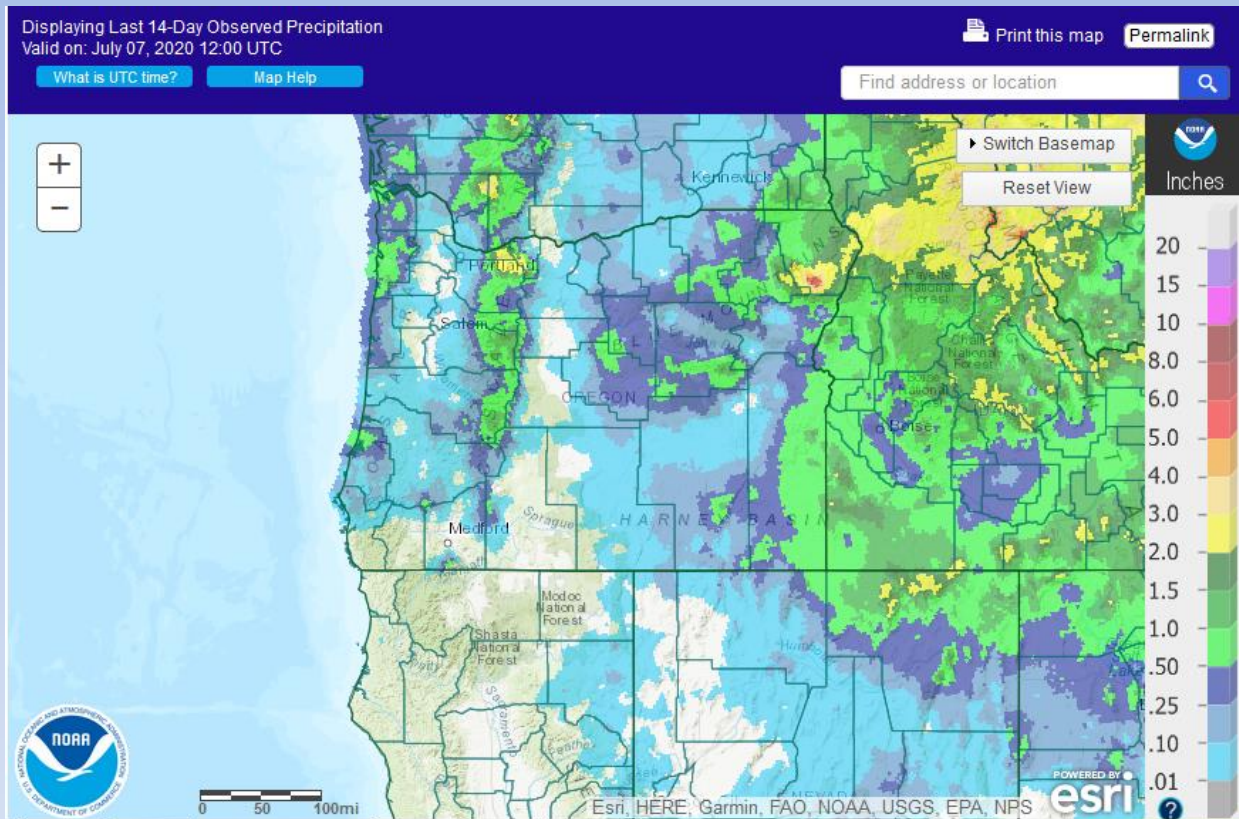


- Evapotranspiration
- Air Temperature

Precipitation Observing System

- Advanced Hydrologic Prediction Service (AHPS)
 - Produced daily by NOAA/National Weather Service
 - Provides an estimate mostly consistent with precipitation gages and NEXRAD radar-derived precipitation estimates
- SNOTEL stations
 - Provided in near-real time
 - Combines SWE, rainfall and in some cases, soil moisture
- PRISM
 - Updated monthly
 - Incorporates observations from stations which do not report in near real time
 - Often used to check for biases in the AHPS as well as providing a consistent long-term climatology
- CoCoRaHS community precipitation monitoring network
 - Also provides daily precipitation reports
 - Particularly valuable in data sparse regions without many high-quality observing stations
 - Often used to evaluate AHPS gridded precipitation estimates

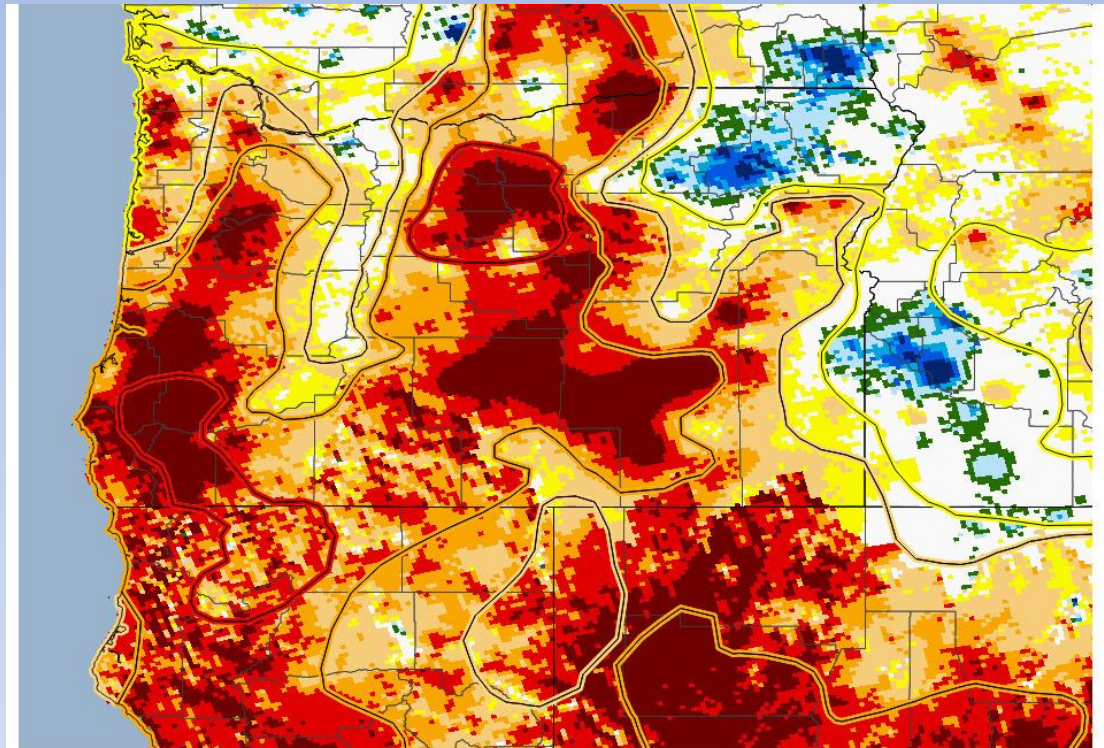
AHPS Daily Precipitation



- Available at a variety of time scales and for historical comparisons
- Enhanced uncertainties in regions with few near-real-time station observations and poor radar coverage, such as portions of central and eastern Oregon

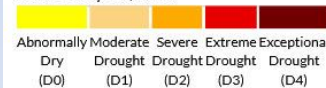
AHPS Standardized Precipitation Index (SPI)

- The SPI allows comparison of precipitation anomalies from different regions in a standard way
- In this map, reds are abnormally dry, white normal, and blues abnormally moist
- Multiple timescales are considered, but often the WYTD is most relevant for drought determination

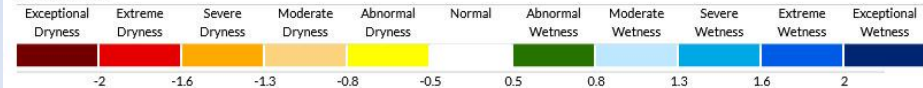


Jul 19, 2020

USDM July 14, 2020

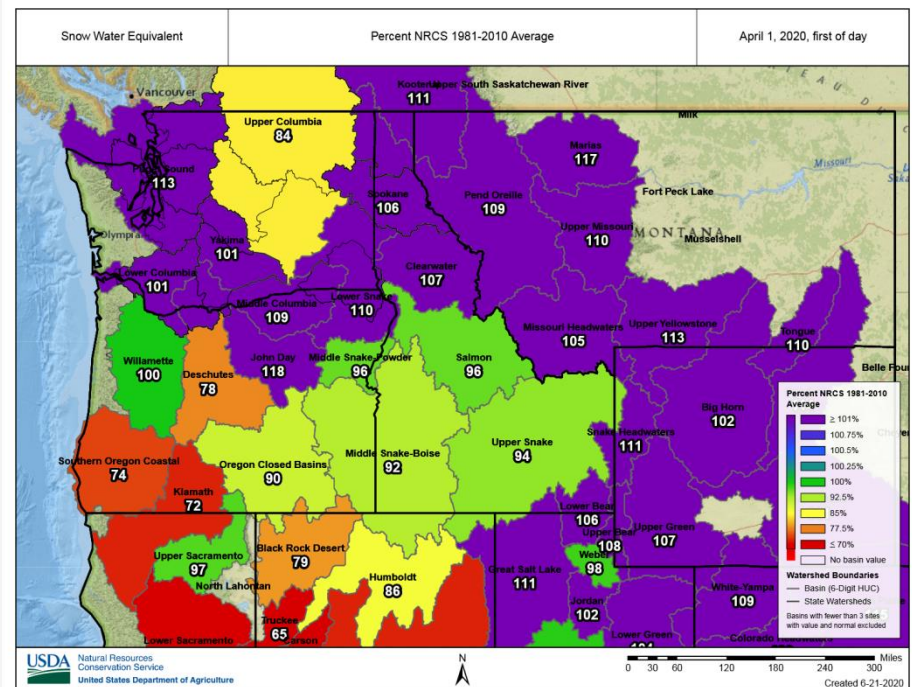
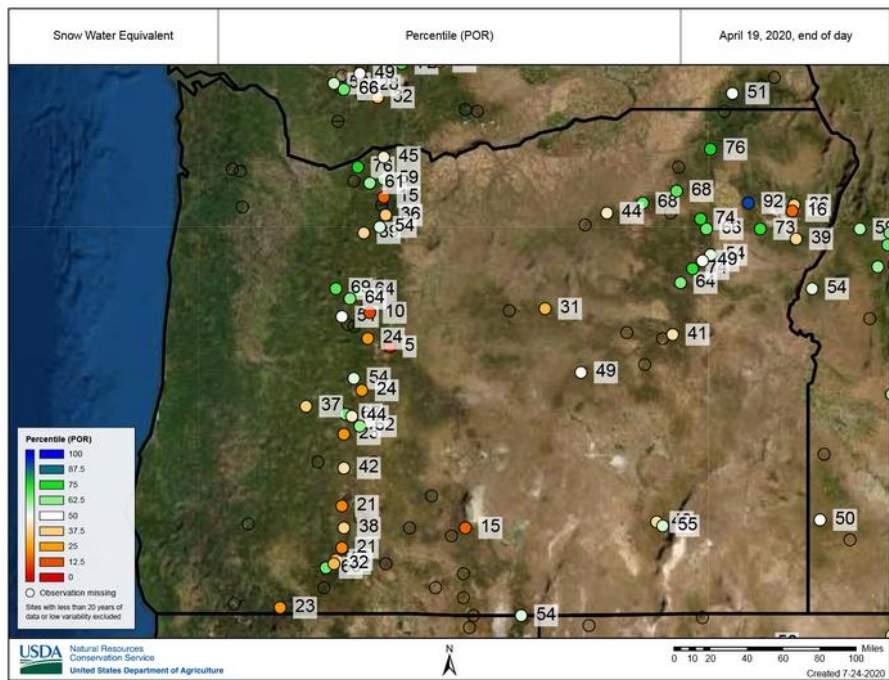


9-month SPI



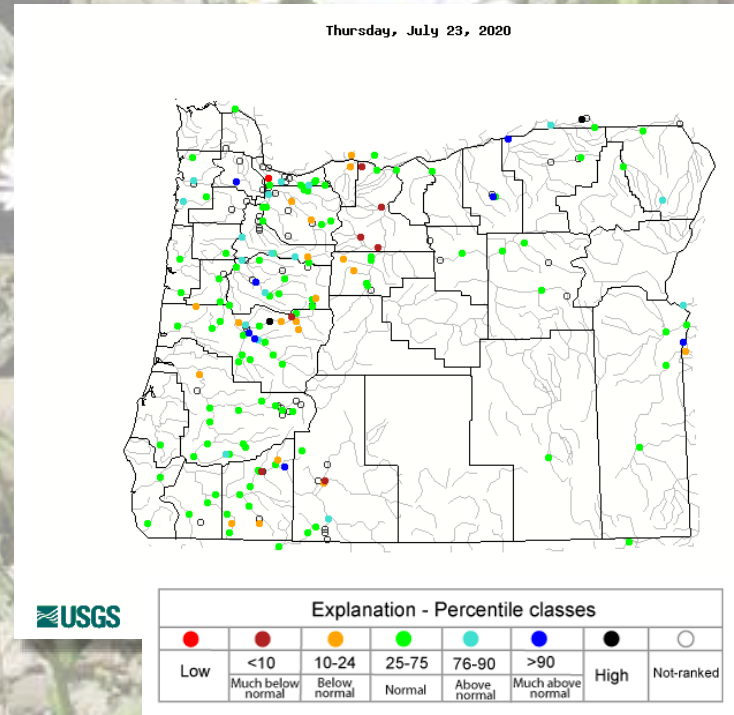
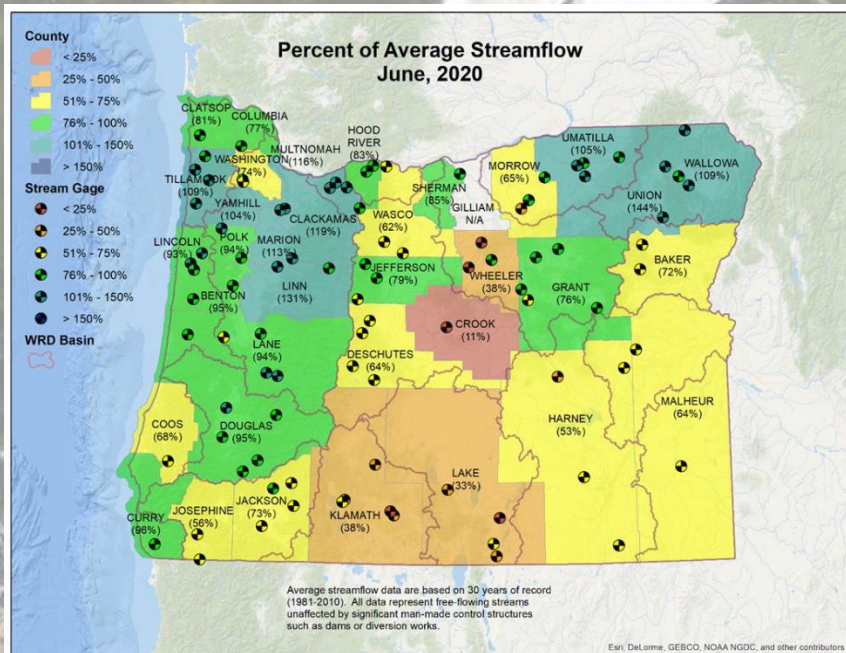
SNOTEL Observations

- Critical component of monitoring the water content of the mountain snowpack
- For the USDM, we assess both individual stations and aggregated over basins



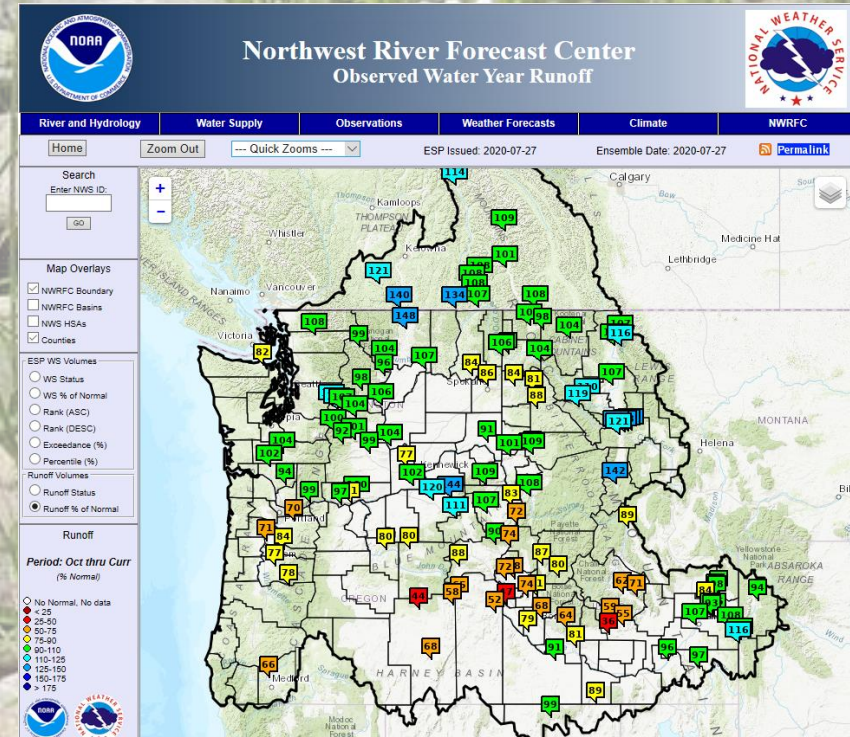
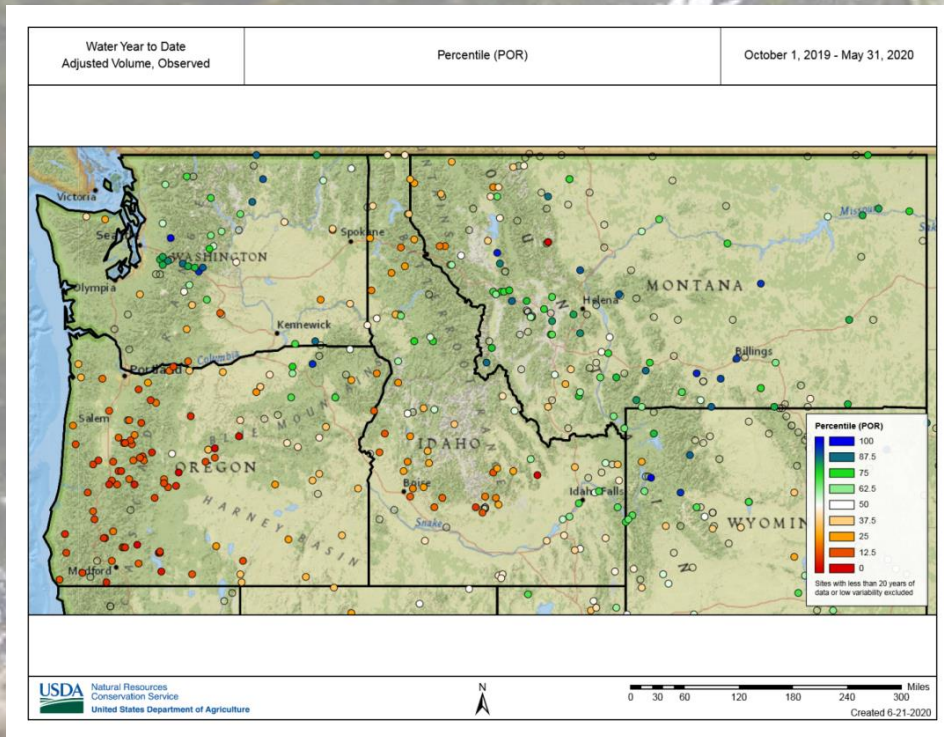
Streamflow Observations

- Two main sources of information:
 - USGS
 - Oregon Water Resources Dept (OWRD)



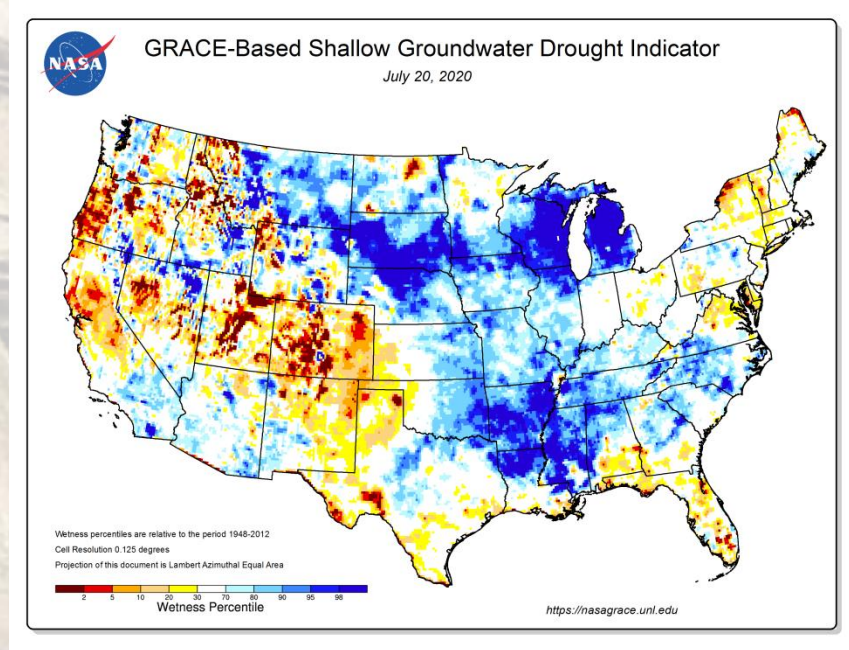
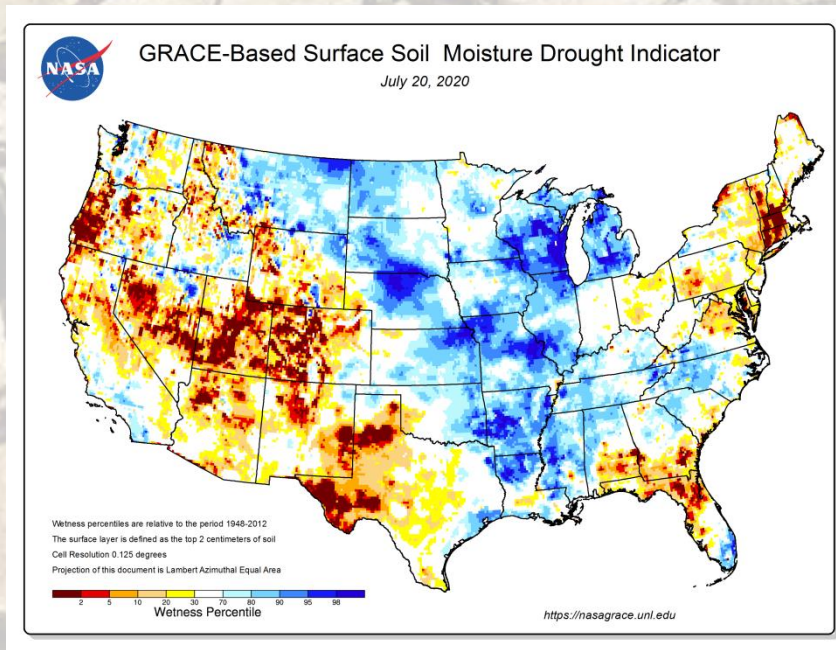
Seasonal Runoff Anomalies

- Besides current or monthly averaged streamflows, the water volume passing through a station over longer timescales gives an important assessment of surface water availability within watersheds
- Many stations have long time series to compare current conditions with historical conditions



Soil Moisture

- We typically consider a number of different soil moisture products
- The most useful currently is one which incorporate GRACE satellite observations into a land-surface hydrological model
- Available on weekly timescales
- We also consider direct observations from a few soil moisture stations scattered throughout the state; these measurements are also incorporated into various modeled soil moisture products

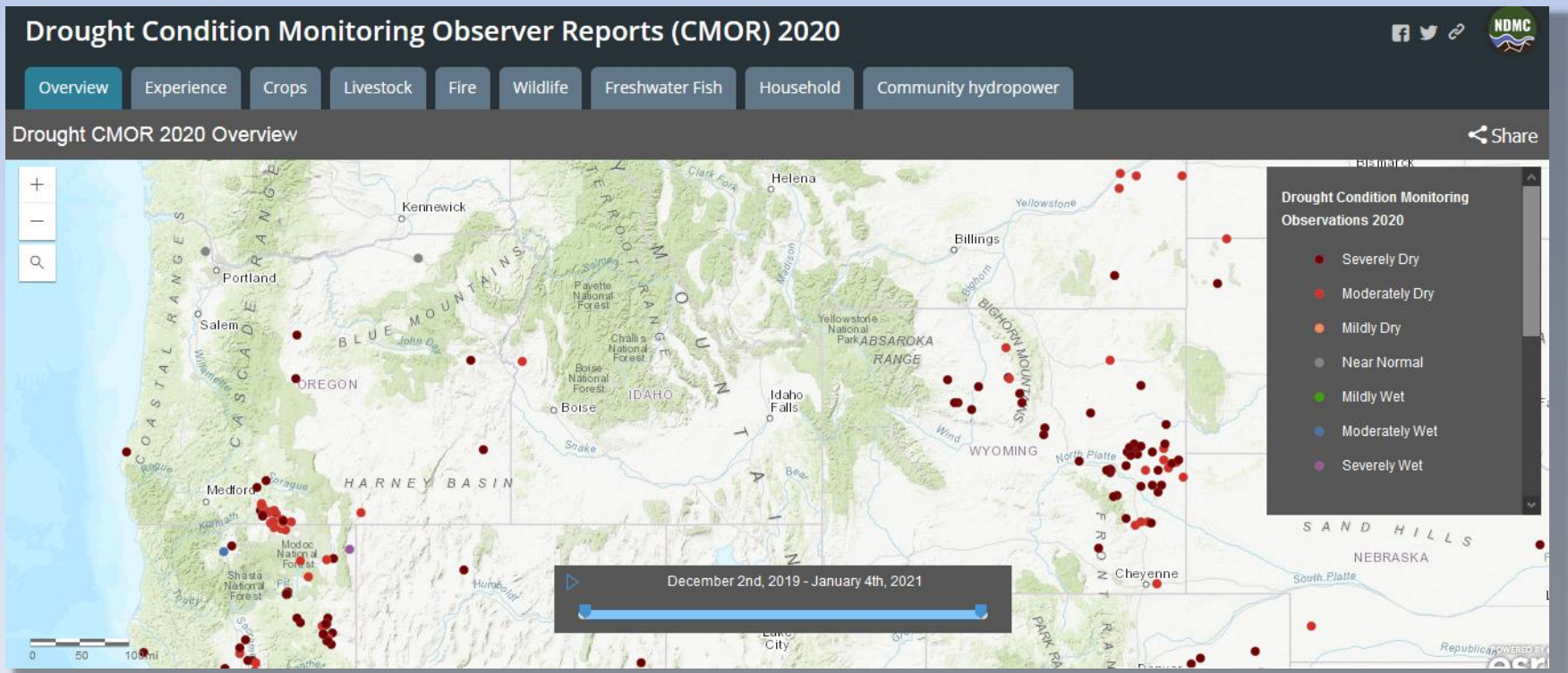


Consideration of Drought Impacts

- We also consider impact observations
 - Examples: agricultural/pasture, surface water availability, vegetative and forest health, and recreational
- Sources, including but not limited to:
 - USDA (e.g., crop progress and condition report)
 - NDMC Drought Condition Monitoring Observer Reports (CMOR)
 - NDMC Drought Impact Reporter
 - CoCoRaHS observer reports
 - Media
 - Local emergency managers

Condition Observer Reports

- Condition observer reports from a variety of sources assist in providing context to the meteorological and hydrological data, and sometimes point to areas where perhaps other objective data have not fully captured drought extent or evolution
- Example below shows the CMOR dashboard service provided by the NDMC
 - https://go.unl.edu/CMOR_drought



Concluding Remarks

- We greatly appreciate the work and communications of the USDM national authors and the contributions of the DMAC contributors
 - Without their efforts, the drought monitor would not be possible
- The Oregon DMAC submits its suggestions to the national USDM authors based on objective indicators and impact assessments