Pacific Northwest Tribal Climate Change Network

Drought Condition Summary

Water Year 2020 (Oct 2019-Current)

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Most recent US Drought Monitor for the US west

Currently, about 77% of the US west is experiencing some form of drought

About 34% is experiencing severe or extreme drought

For the Pacific Northwest, Oregon is taking the brunt of drought impacts
• This year’s drought is more concentrated in Oregon and the Washington Cascades
• Not as widespread as previous droughts (for instance, the droughts of 2001, 2003-2004, 2015, 2018

Image retrieved from: https://droughtmonitor.unl.edu/Data/Timeseries.aspx
Most recent US Drought Monitor depiction for Oregon

In general, drought is least severe in the mountainous regions (e.g., central and northern Oregon Cascades, the Blue Mtns, and the Owyhee Mtns)

Drought is most severe in southwestern and central Oregon
Governor Kate Brown has approved 14 counties for state-level drought declarations.

Most declarations have cited moderate to severe drought impacts on agriculture, livestock, fishing, recreation, and low surface water supplies.

Image courtesy of Ken Stahr, Oregon Water Resources Dept.
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
This year’s drought in the PNW is driven mainly by a prolonged lack of rain compared to normal.

The driest areas, in terms of precipitation, are downwind of the Cascades and coastal mountain ranges.

This rainshadow effect is particularly strong this year.
On April 1, 2020 most Oregon basins had normal to above normal snowpack. An unseasonably warm April and early May caused a rapid meltout about 3-4 weeks earlier than normal. This early meltout means less water is available during the summer. Despite the early meltout, this year’s drought was not a snow drought, in contrast to most recent droughts.

Images courtesy of Scott Oviatt, USDA-NRCS
Soil moisture

- Warm colors indicate much drier soils compared to normal
- Much of the PNW has extremely dry soil; much of Oregon is experiencing historically rare conditions
River and stream runoff percentiles

- Runoff is the accumulated volume of water transported by rivers and streams.
- For the full water year, runoff has been extremely low by historical standards.
Current Oregon Reservoir Storage

- Figure shows storage for all US Bureau of Reclamation (USBR) reservoirs within each subregion of Oregon.
- Yellow crosses show storage as percent of average on August 10.
- Central and Southern Oregon are far below average for this date and are near record lows.

Image courtesy of Jonathan Rocha from the US Bureau of Reclamation.
Vegetation Health Index

An estimate of the relative health of crops, rangeland, and forests

Warm colors indicate drought stress, with red indicating severe to extreme drought conditions

Much of the PNW vegetation is experiencing moderate to severe drought stress

VegDRI available online at: https://vegdri.unl.edu
Condition Monitoring Observer Reports (CMOR)

- 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

Most observer reports indicate extremely dry conditions.

Impacts reported include agriculture/livestock production, wells, fire danger, ecology, wildlife, dust.
Drought Resources

• **US Drought Monitor** is a depiction of drought conditions informed by local and national drought experts
• **Impact reports**
  – Condition Observer Monitoring Reports (CMOR) go.unl.edu/CMOR_drought
  – Drought Impact Reports (DIR) droughtreporter.unl.edu/map/
• **Online climate data toolboxes and dashboards**
  – climatetoolbox.org
  – Upper Missouri River Basin (UMRB) drought indicators dashboard: drought.climate.umt.edu
• ...
Concluding Remarks

• Most of Oregon and parts of Washington experiencing some level of drought
  – Drought most severe in Oregon
• Drought is more common in recent years, and this is making impacts worse
• This year was not a snow drought year, which is fairly unique compared with recent droughts
• Please report impacts in the CMOR database!
• Please email me with questions or comments!
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