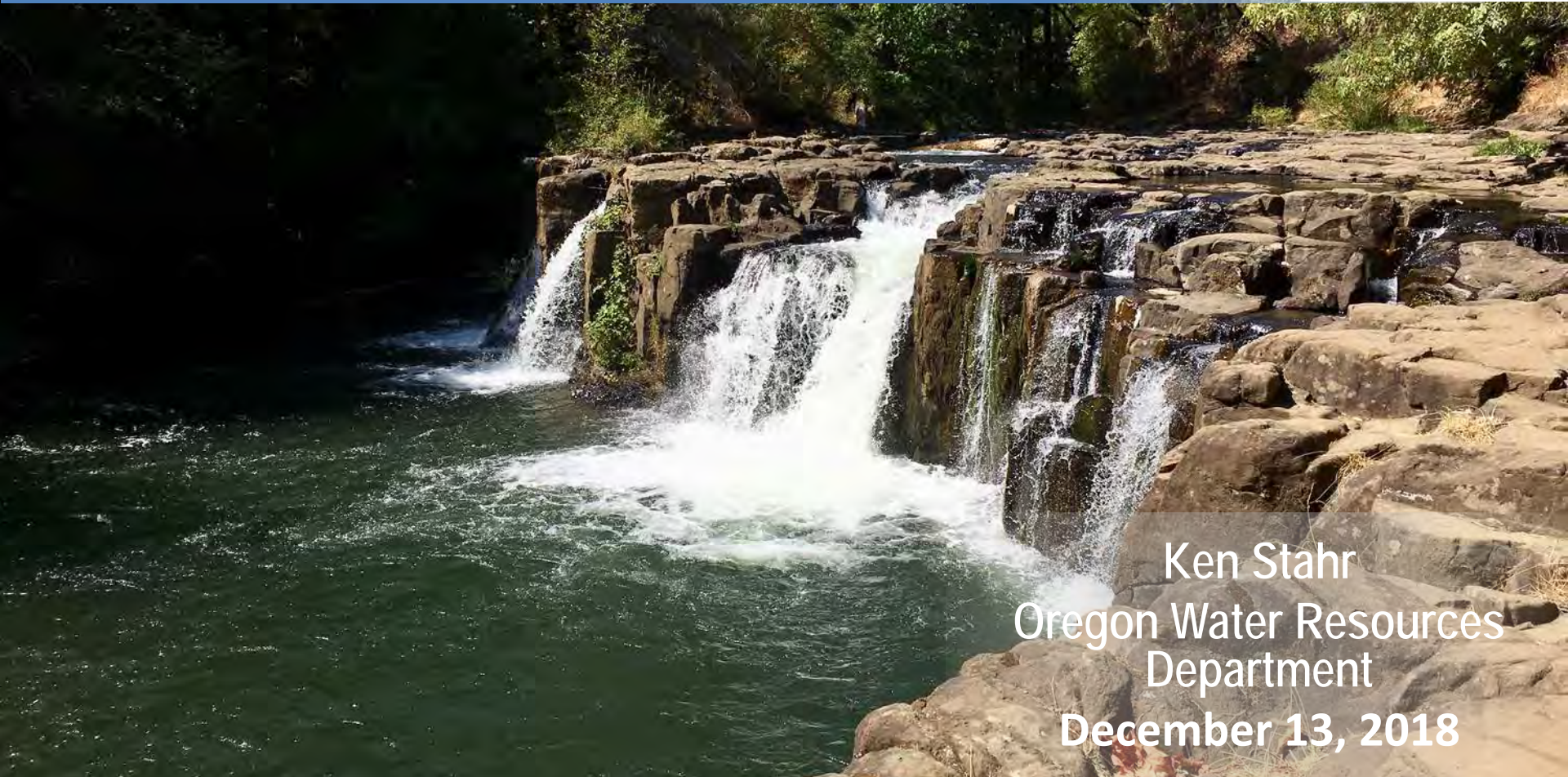


Water Supply Conditions Report

Drought Readiness Council

A photograph of a waterfall cascading over a series of large, dark, layered rock formations. The water is white and frothy as it falls. The surrounding area is lush with green trees and foliage. The scene is captured from a slightly elevated angle, looking down at the waterfall.

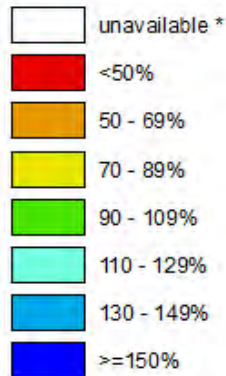
Ken Stahr
Oregon Water Resources
Department
December 13, 2018

Statewide SNOTEL Snow Water Equivalent is 57% of normal

Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal

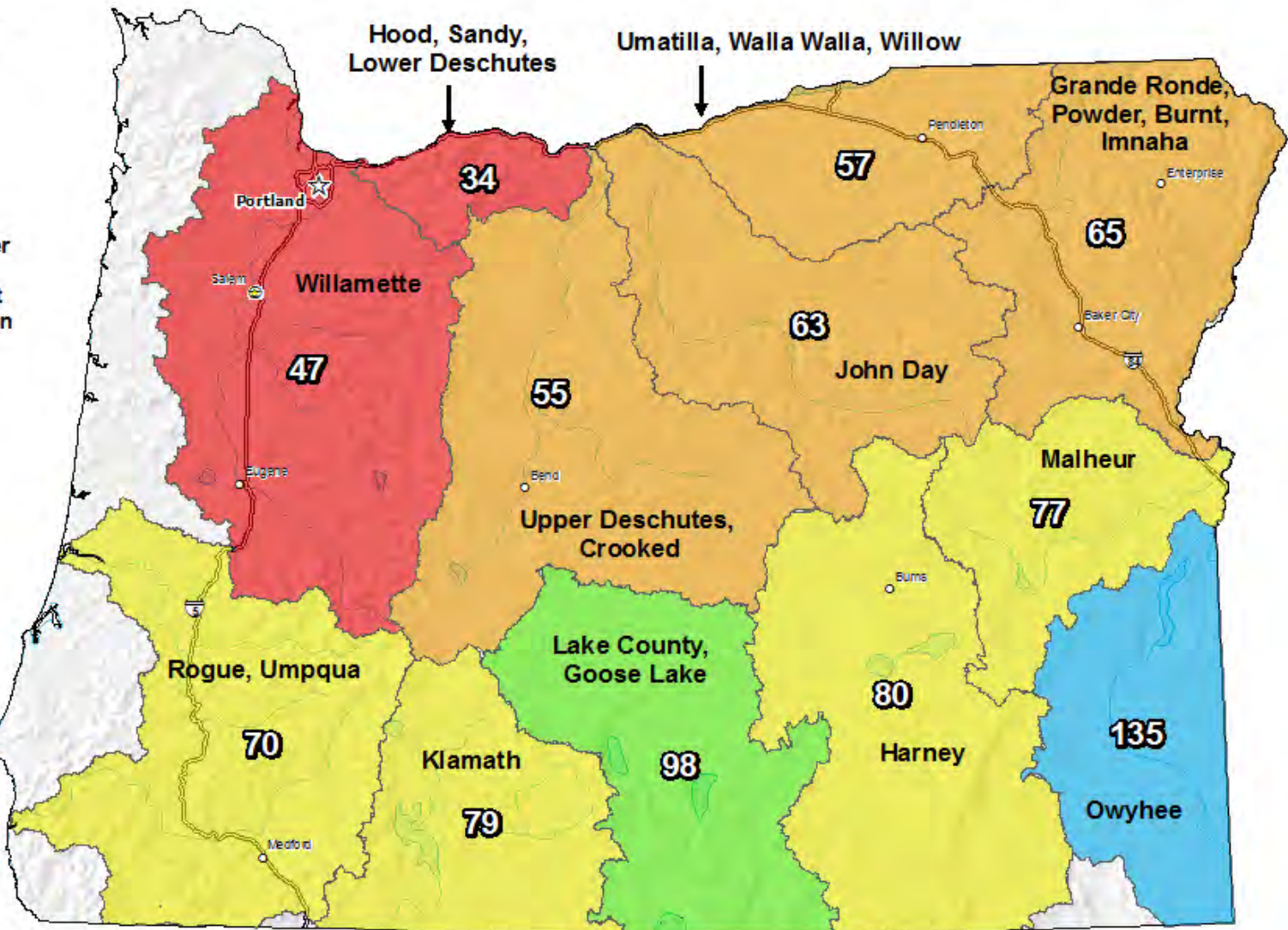
Dec 10, 2018

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median

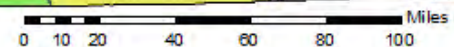


* Data unavailable at time of posting or measurement is not representative at this time of year

Provisional Data
Subject to Revision

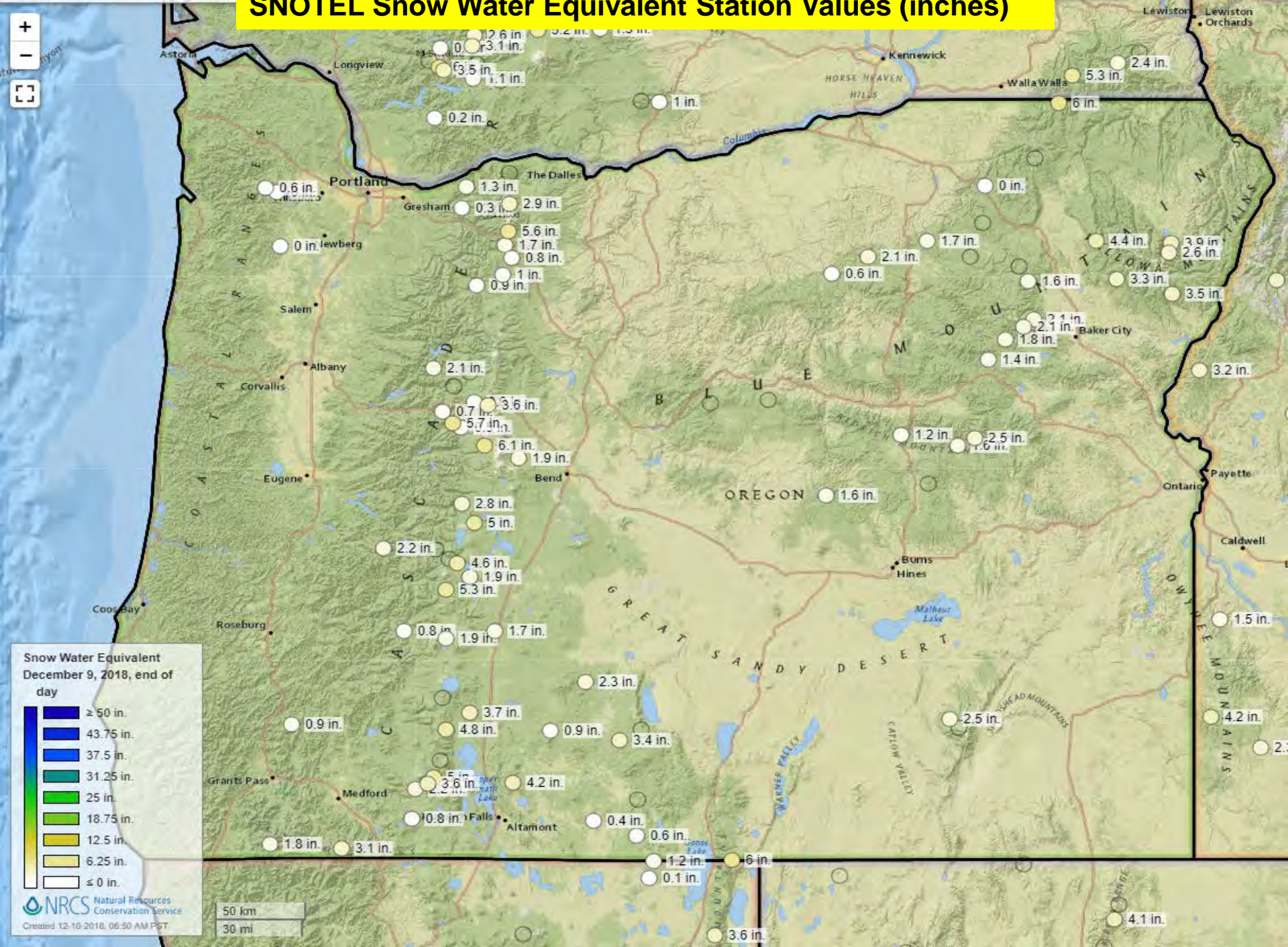


The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).



Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

SNOTEL Snow Water Equivalent Station Values (inches)



Snow Water Equivalent
December 9, 2018, end of day

Dark Blue	≥ 50 in.
Blue	43.75 in.
Light Blue	37.5 in.
Teal	31.25 in.
Green	25 in.
Light Green	18.75 in.
Yellow-Green	12.5 in.
Yellow	6.25 in.
White	≤ 0 in.

NRCS Natural Resources Conservation Service
Created 12-10-2016, 06:50 AM PST

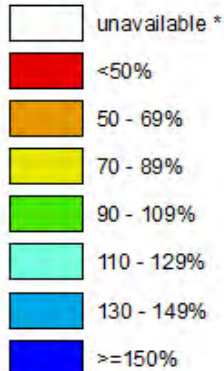
50 km
30 mi

Statewide SNOTEL Precipitation is 66% of normal

Oregon SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

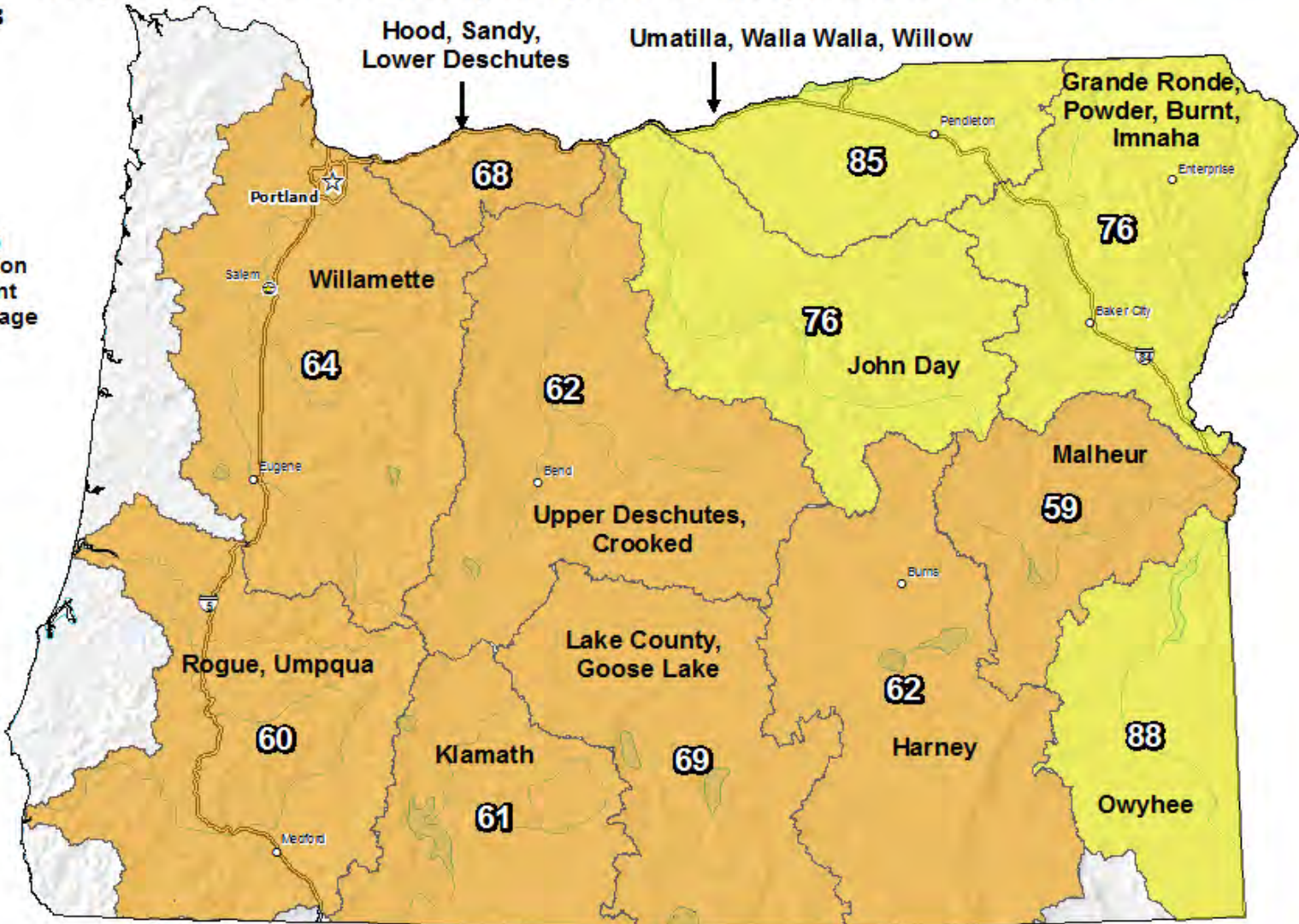
Dec 10, 2018

Water Year (Oct 1) to Date Precipitation Basin-wide Percent of 1981-2010 Average

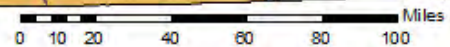


* Data unavailable at time of posting or measurement is not representative at this time of year

*Provisional Data
Subject to Revision*

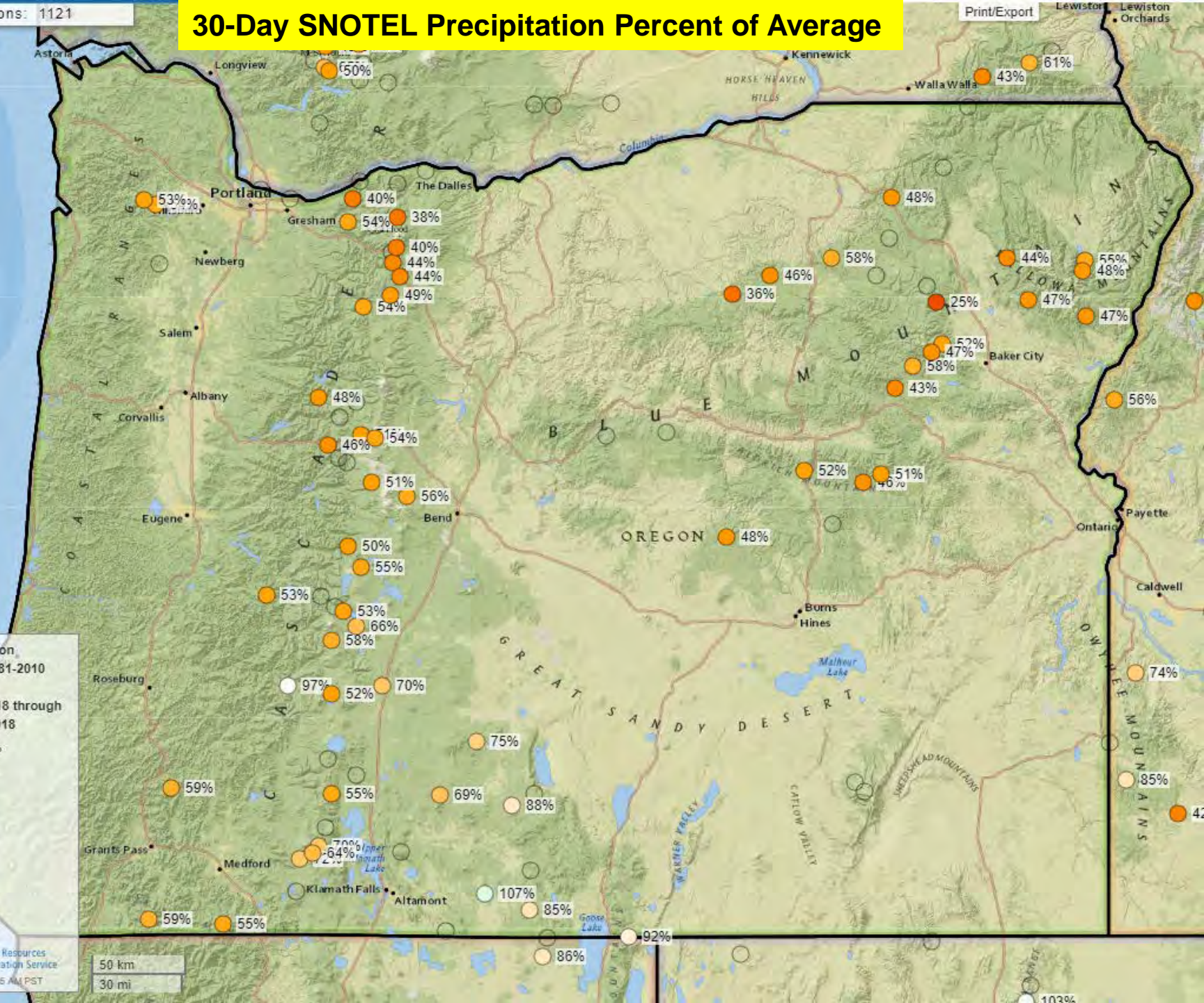


The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).



Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

30-Day SNOTEL Precipitation Percent of Average



30 day Precipitation
Percent NRCS 1981-2010
Average
November 10, 2018 through
December 9, 2018

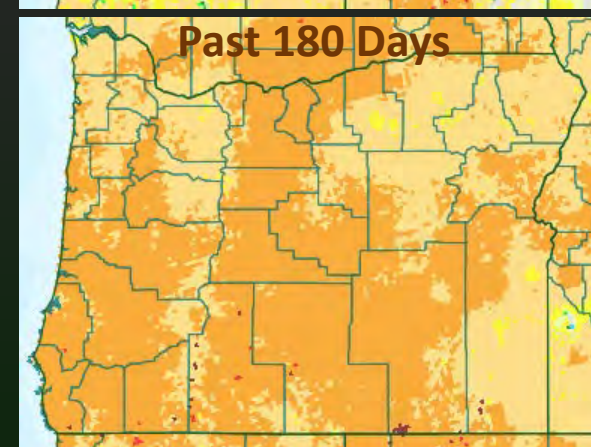
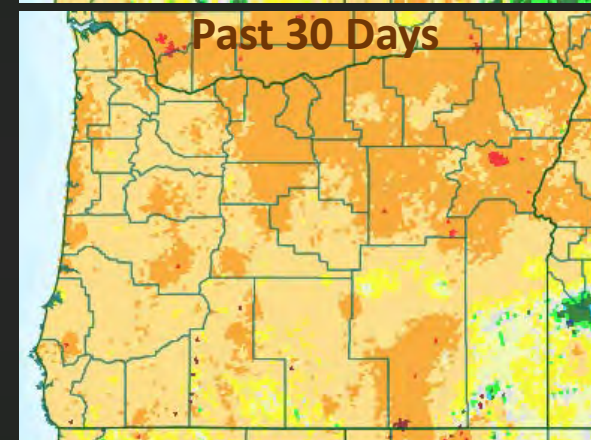
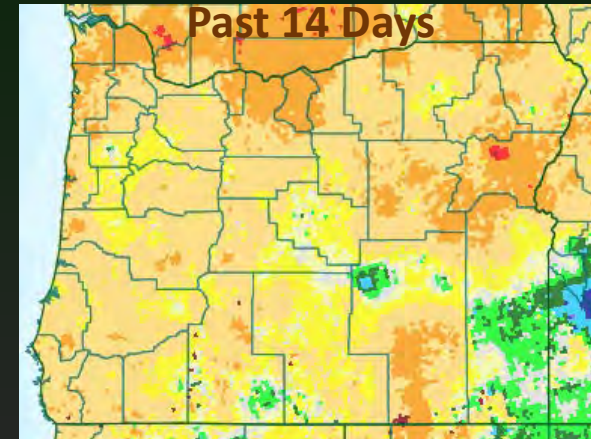
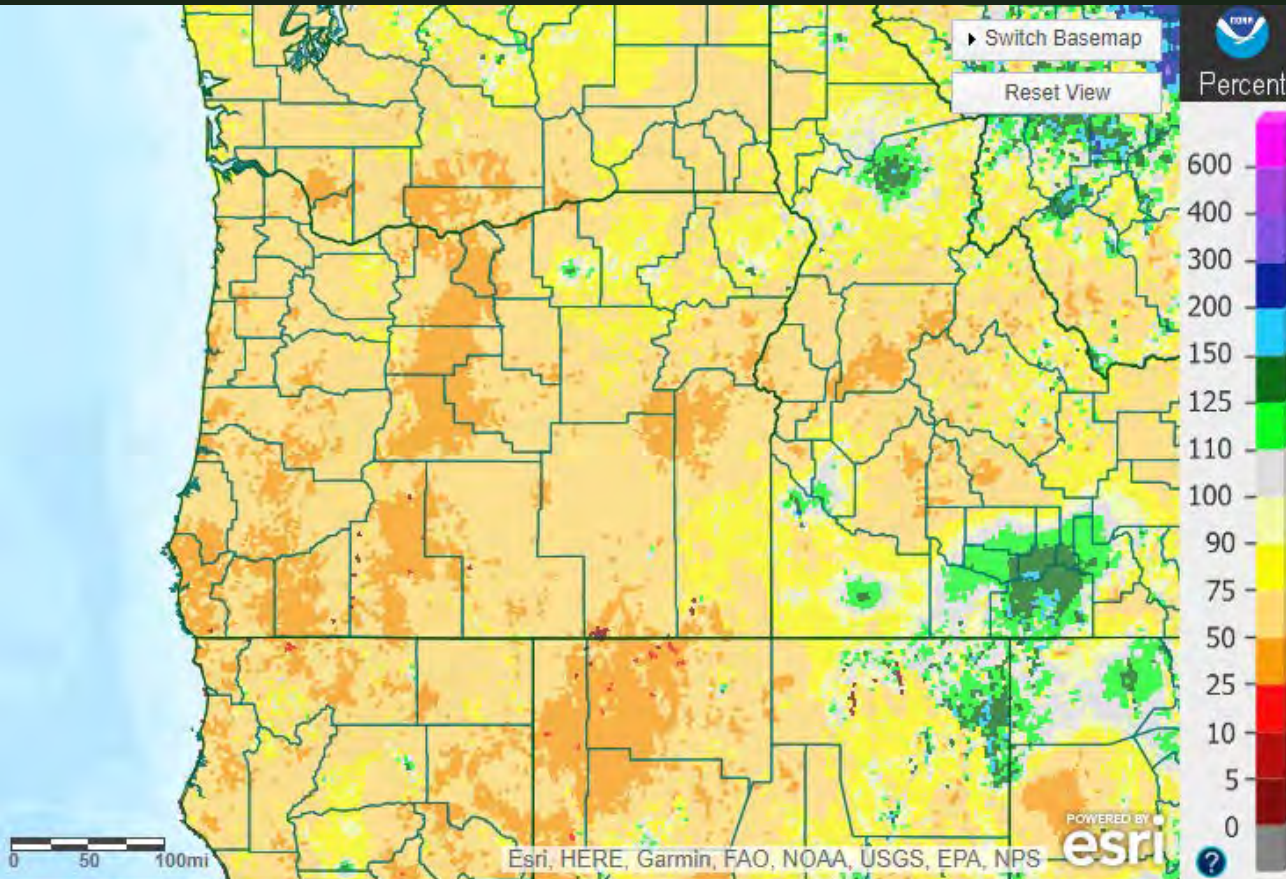
Dark Blue	≥ 200%
Blue	175%
Green	150%
Light Green	125%
White	100%
Yellow	75%
Orange	50%
Red-Orange	25%
Red	≤ 0%

50 km
30 mi



Precipitation % of Average

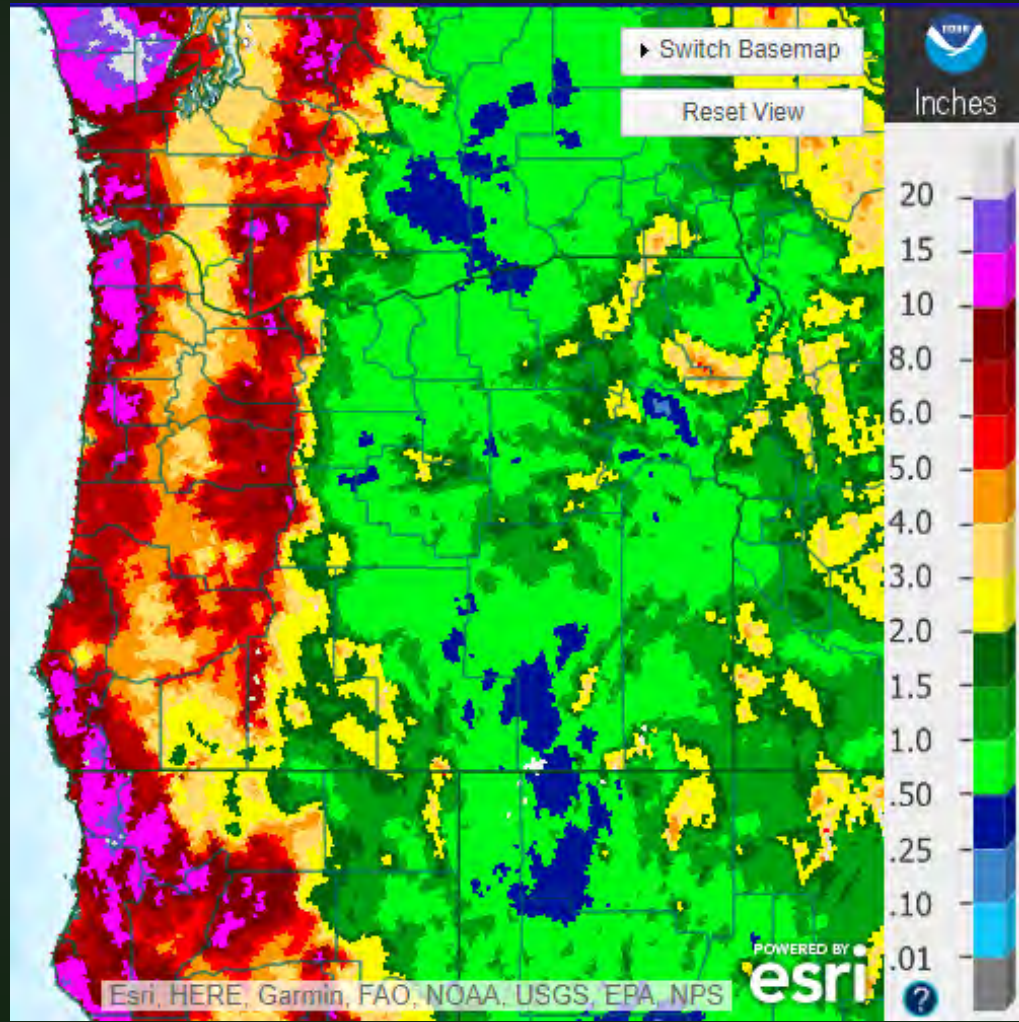
2019 Water Year thus far



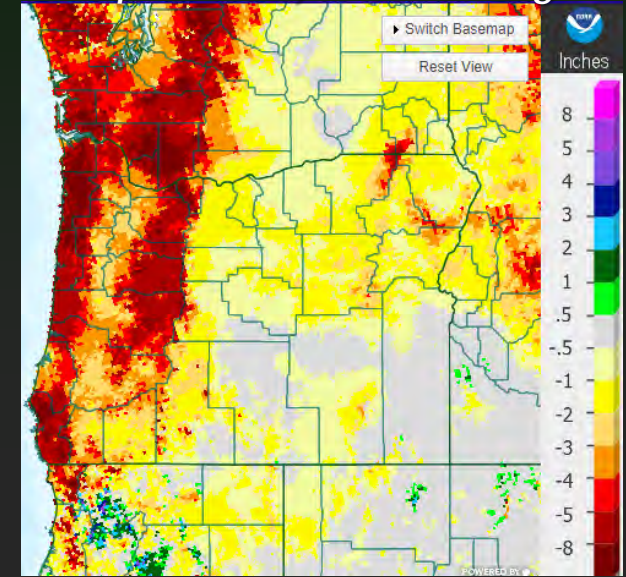
Precipitation Data as of December 10, 2018

Precipitation Past 30 Days

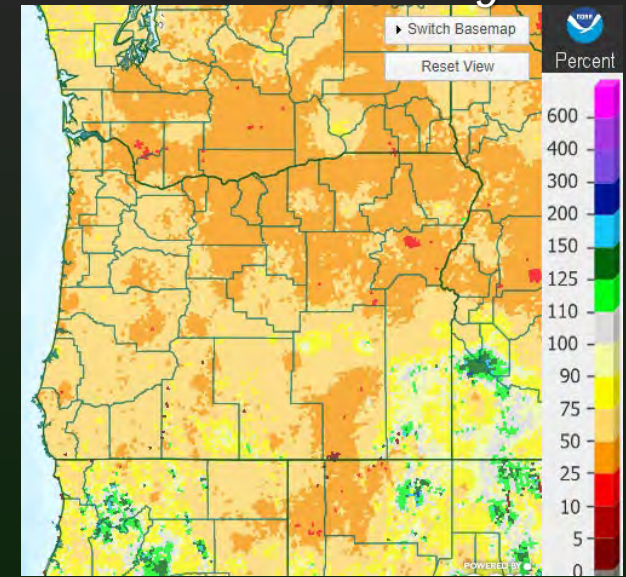
Precipitation Totals



Departure from Average



Percent of Average



Precipitation Data as of December 10, 2018

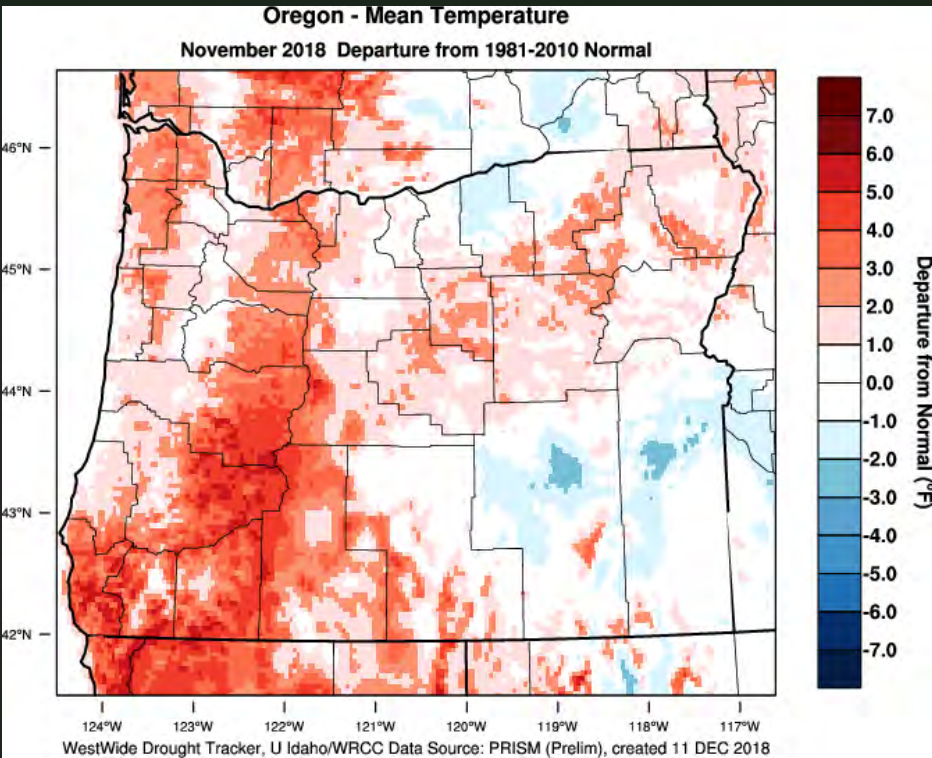
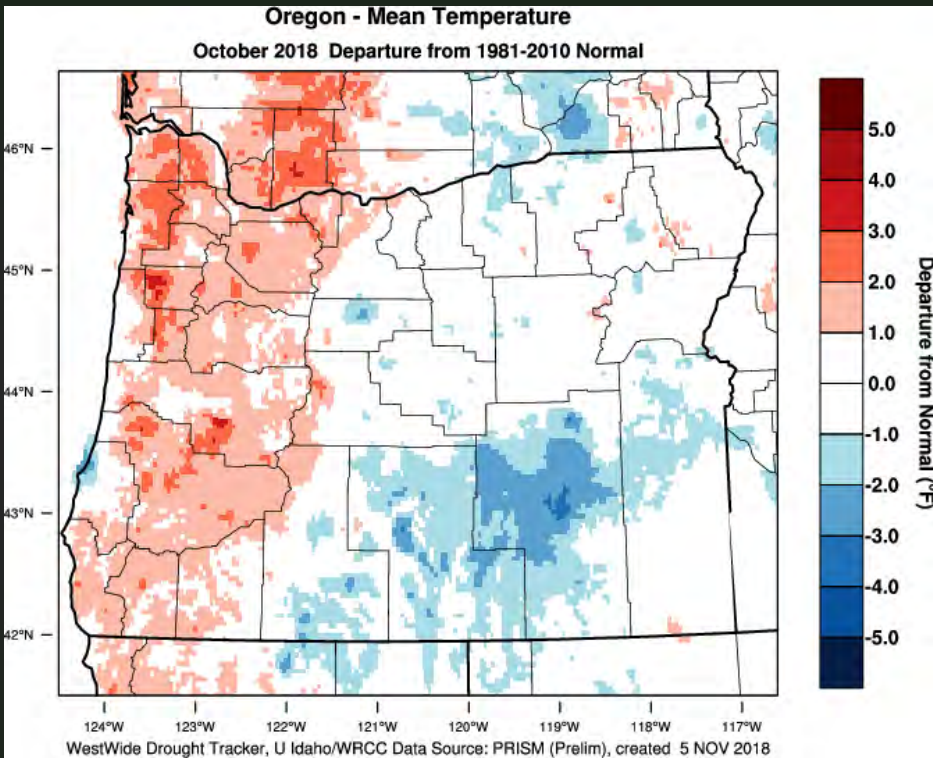
Source: water.weather.gov/precip/index.php?location_type=wfo&location_name=pqr



Recent Temperatures

October 2018

November 2018



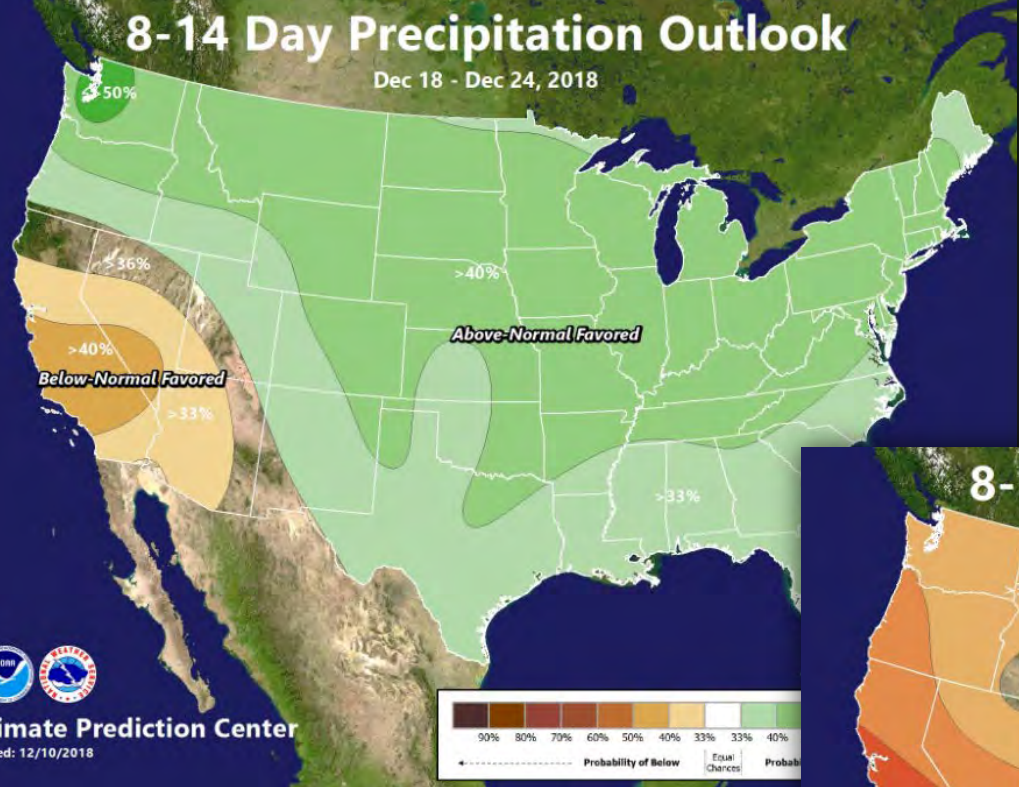
Temperatures thus far in December are below average.



Mid-December Outlook

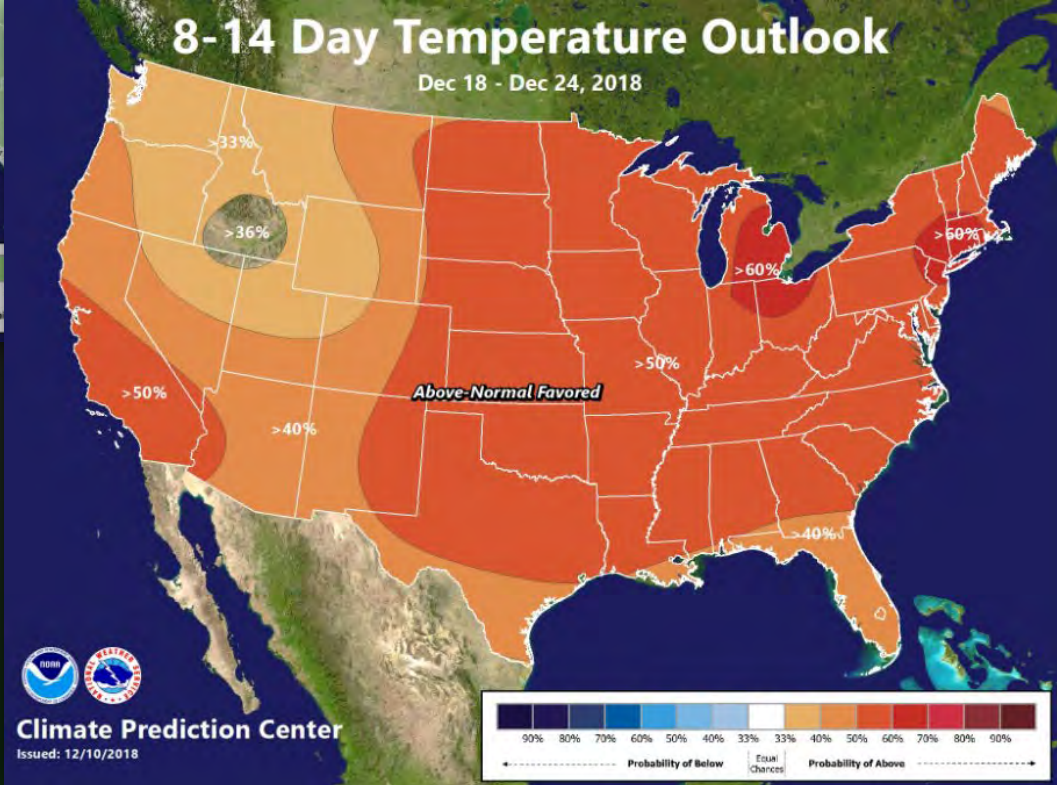
8-14 Day Precipitation Outlook

Dec 18 - Dec 24, 2018



8-14 Day Temperature Outlook

Dec 18 - Dec 24, 2018



Climate Prediction Center
Issued: 12/10/2018

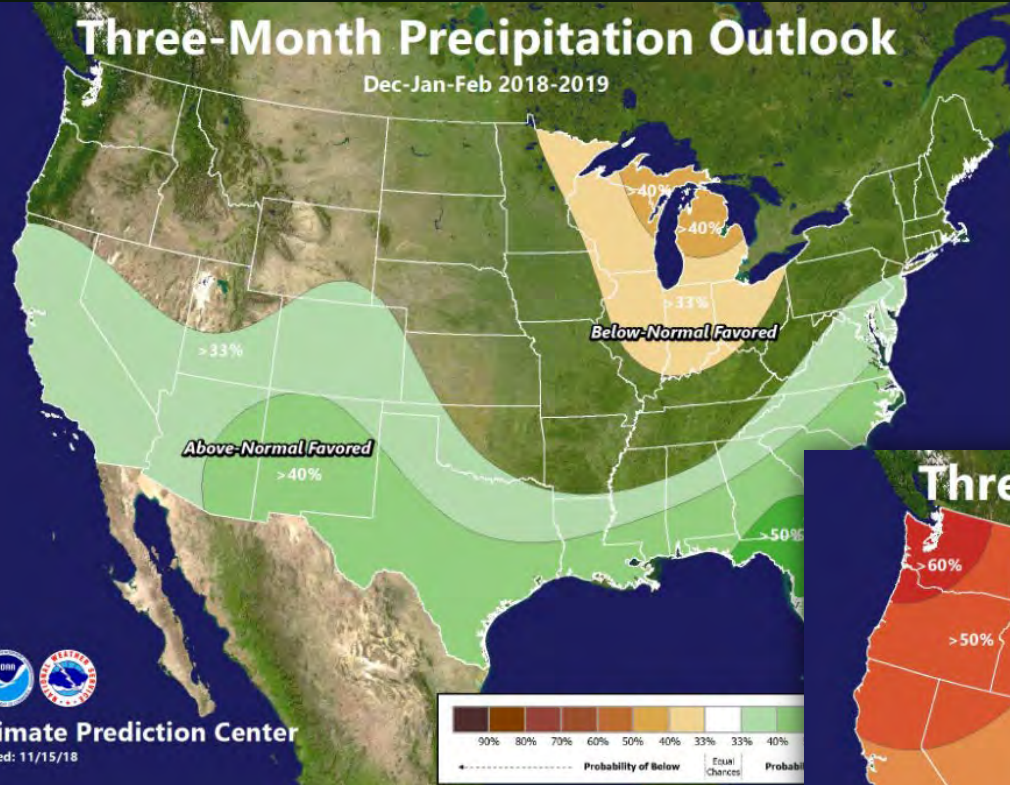
Climate Prediction Center
Issued: 12/10/2018



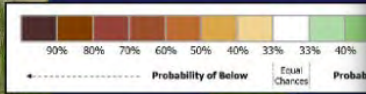
Outlook for Dec 2018 - Feb 2019

Three-Month Precipitation Outlook

Dec-Jan-Feb 2018-2019

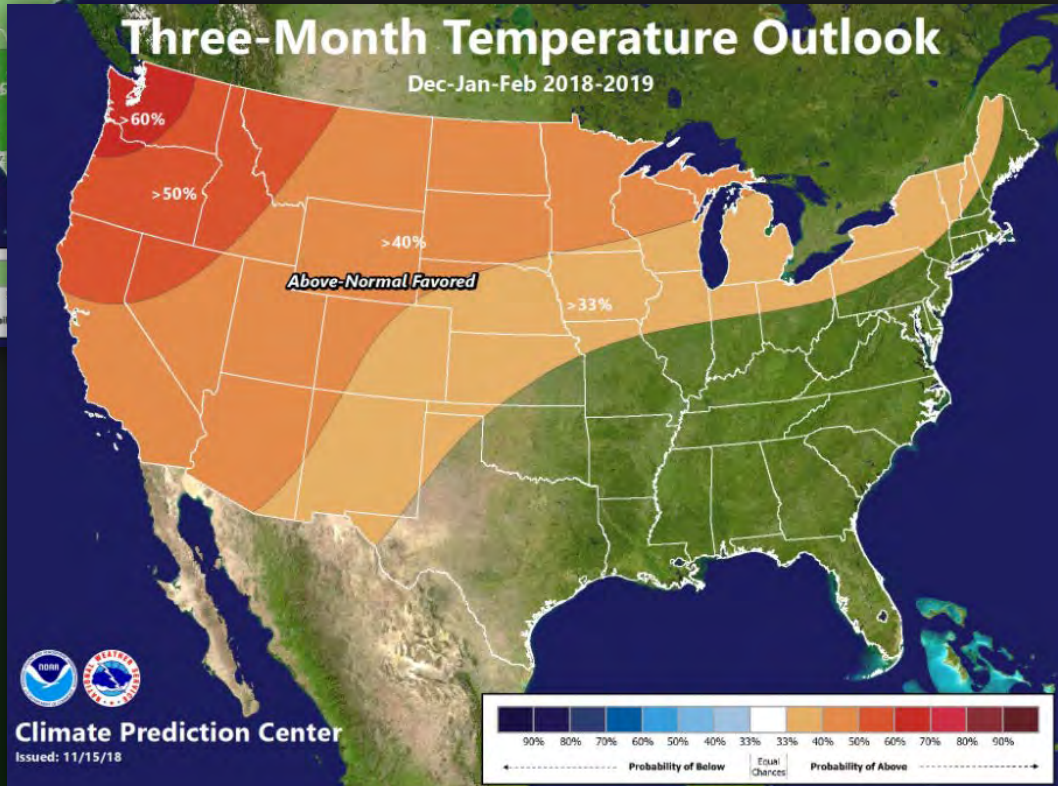


Climate Prediction Center
 Issued: 11/15/18

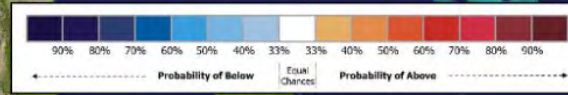


Three-Month Temperature Outlook

Dec-Jan-Feb 2018-2019

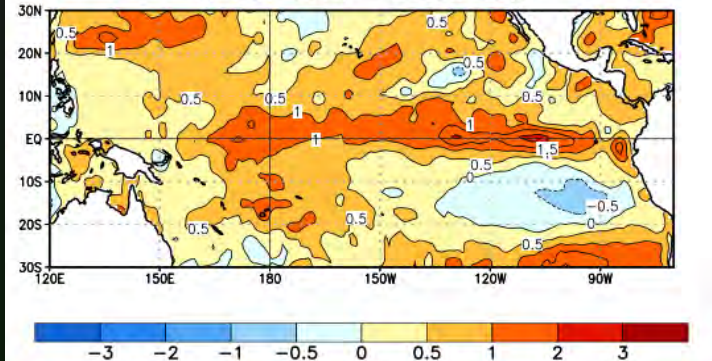


Climate Prediction Center
 Issued: 11/15/18



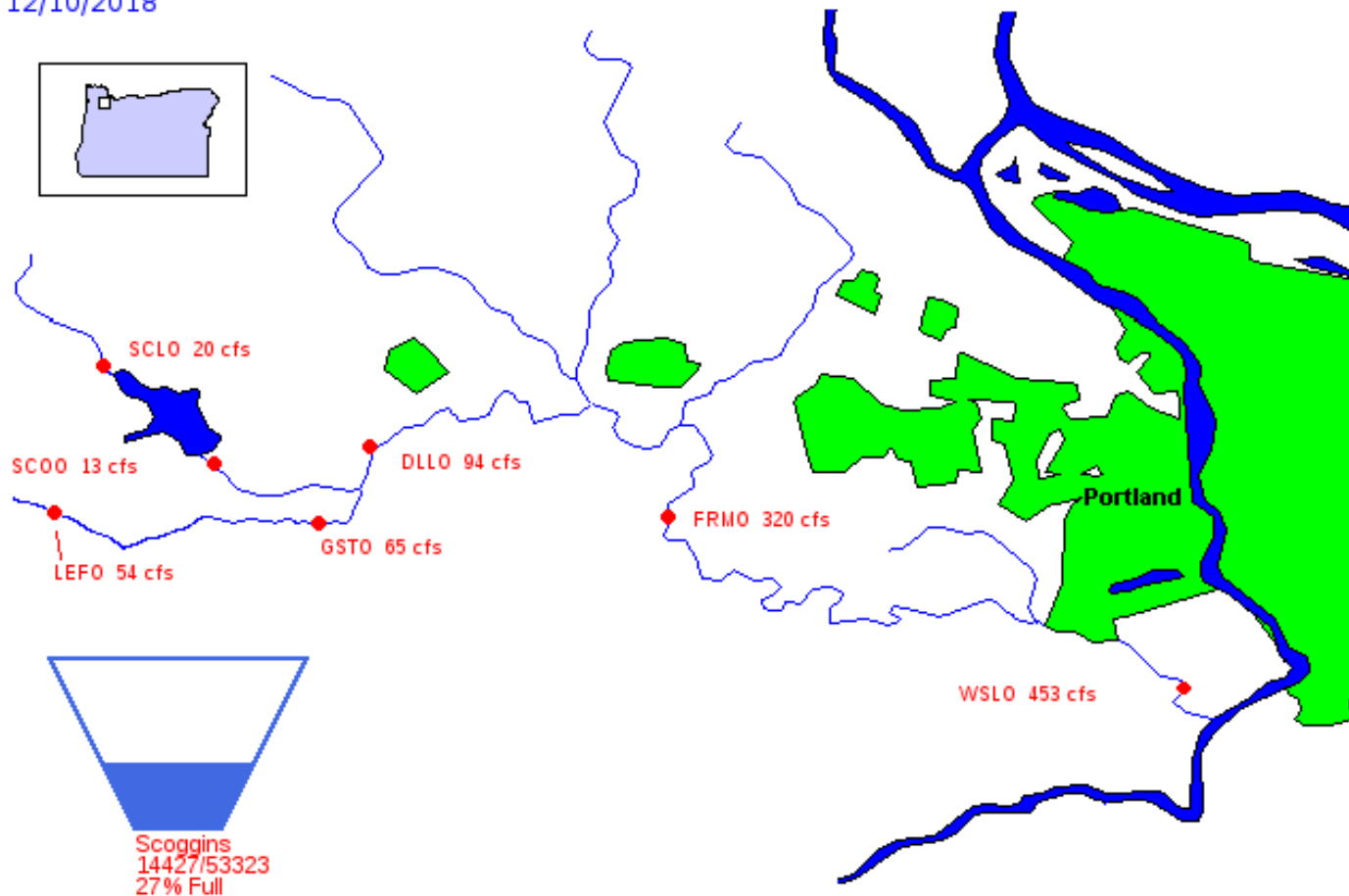
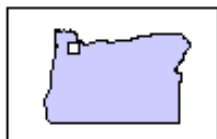
Average SST Anomalies

11 NOV 2018 - 8 DEC 2018



Tualatin River Basin

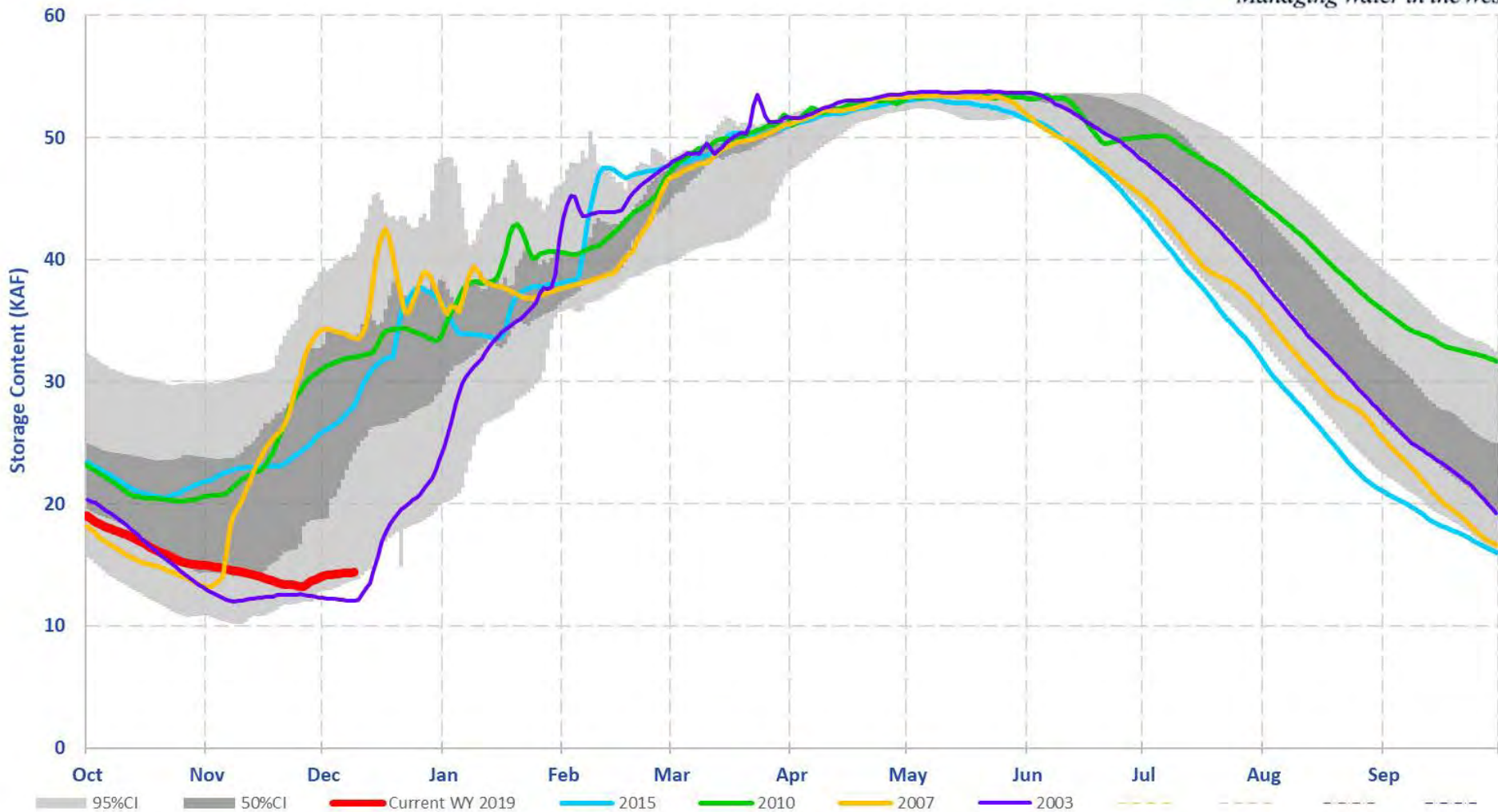
12/10/2018



Tualatin River Basin: Scoggins

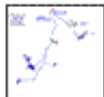
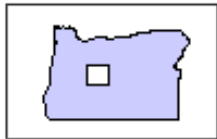
RECLAMATION
Managing Water in the West

SCO AF

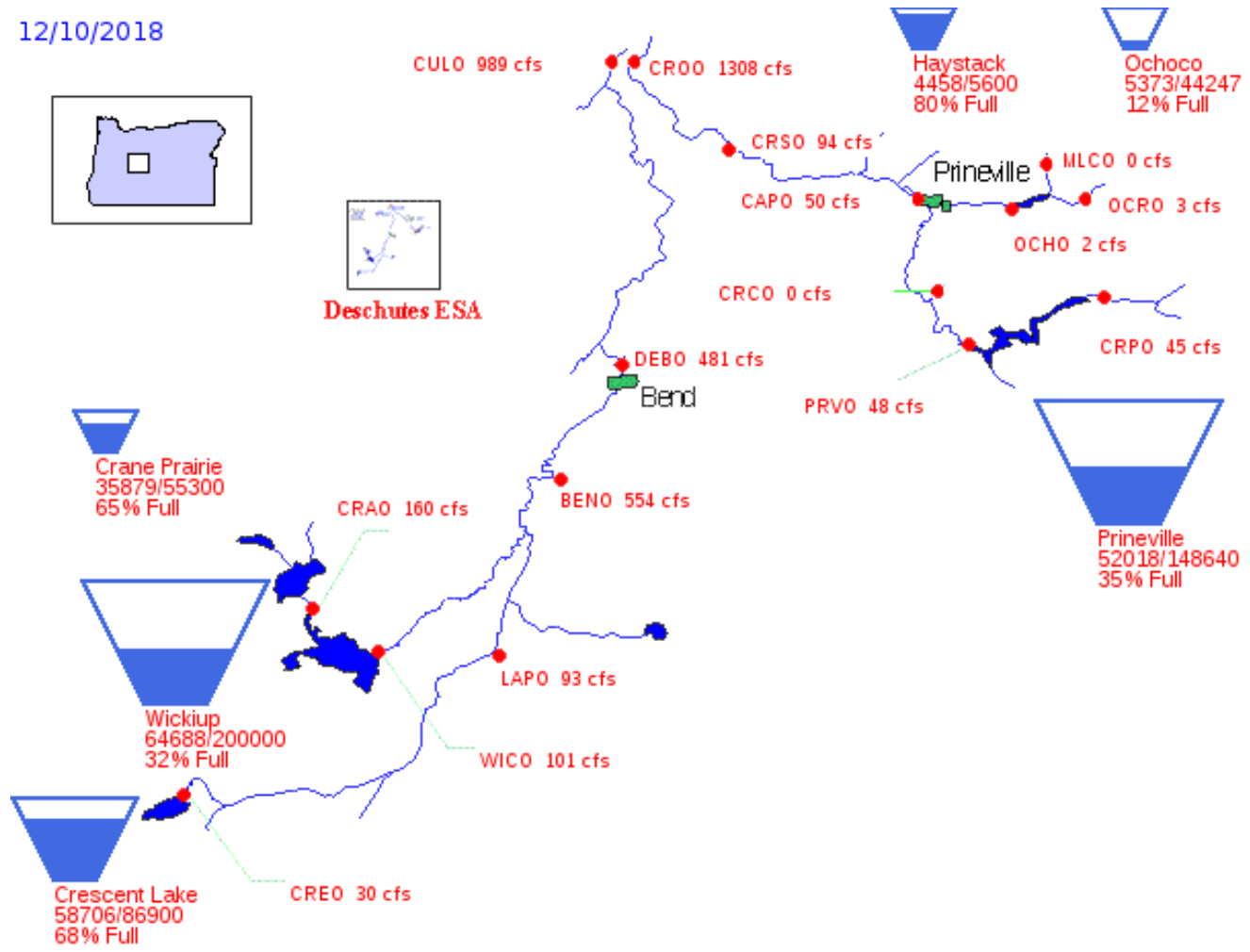


Deschutes River Basin

12/10/2018



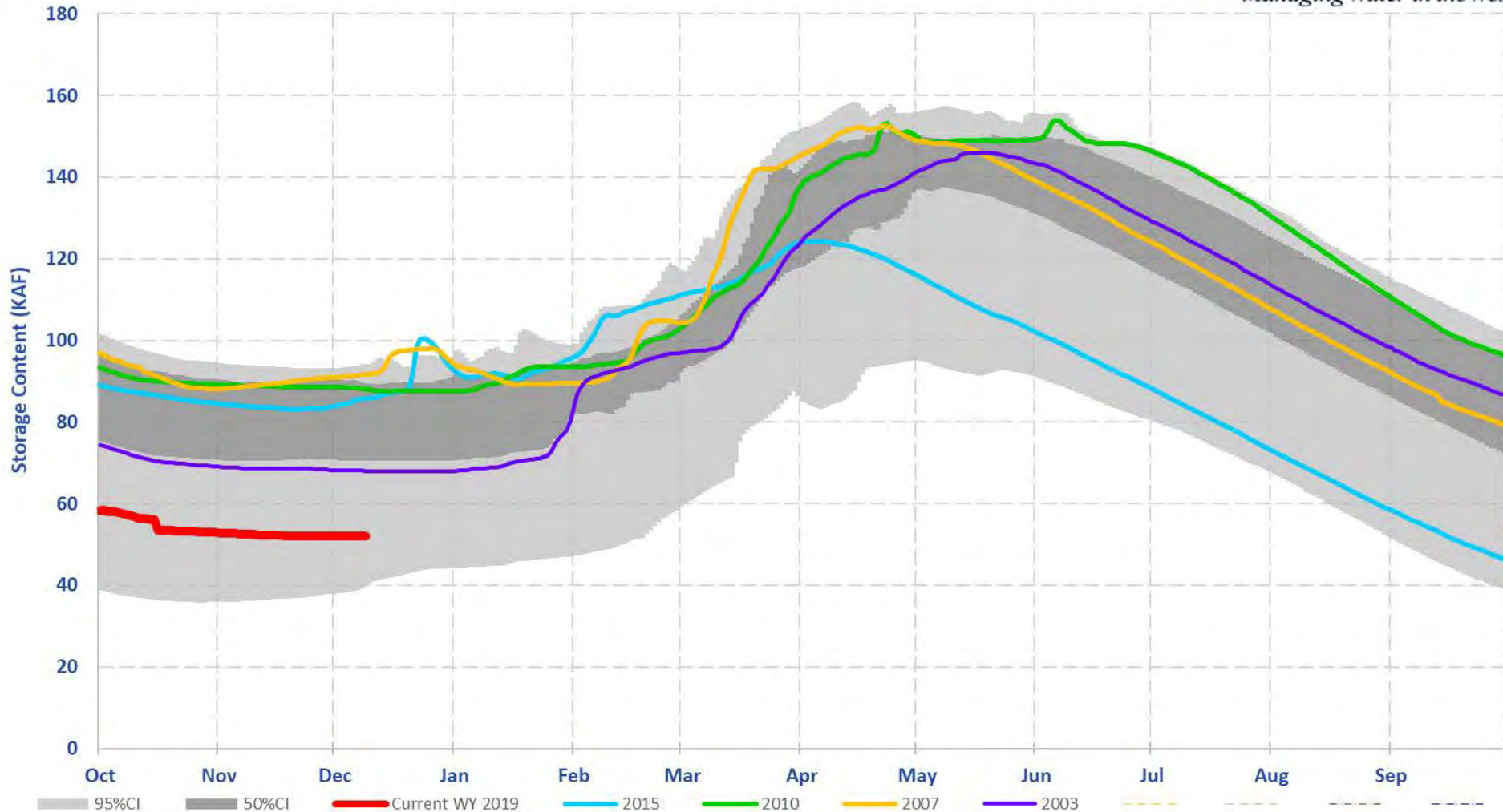
Deschutes ESA



Deschutes River Basin: Prineville

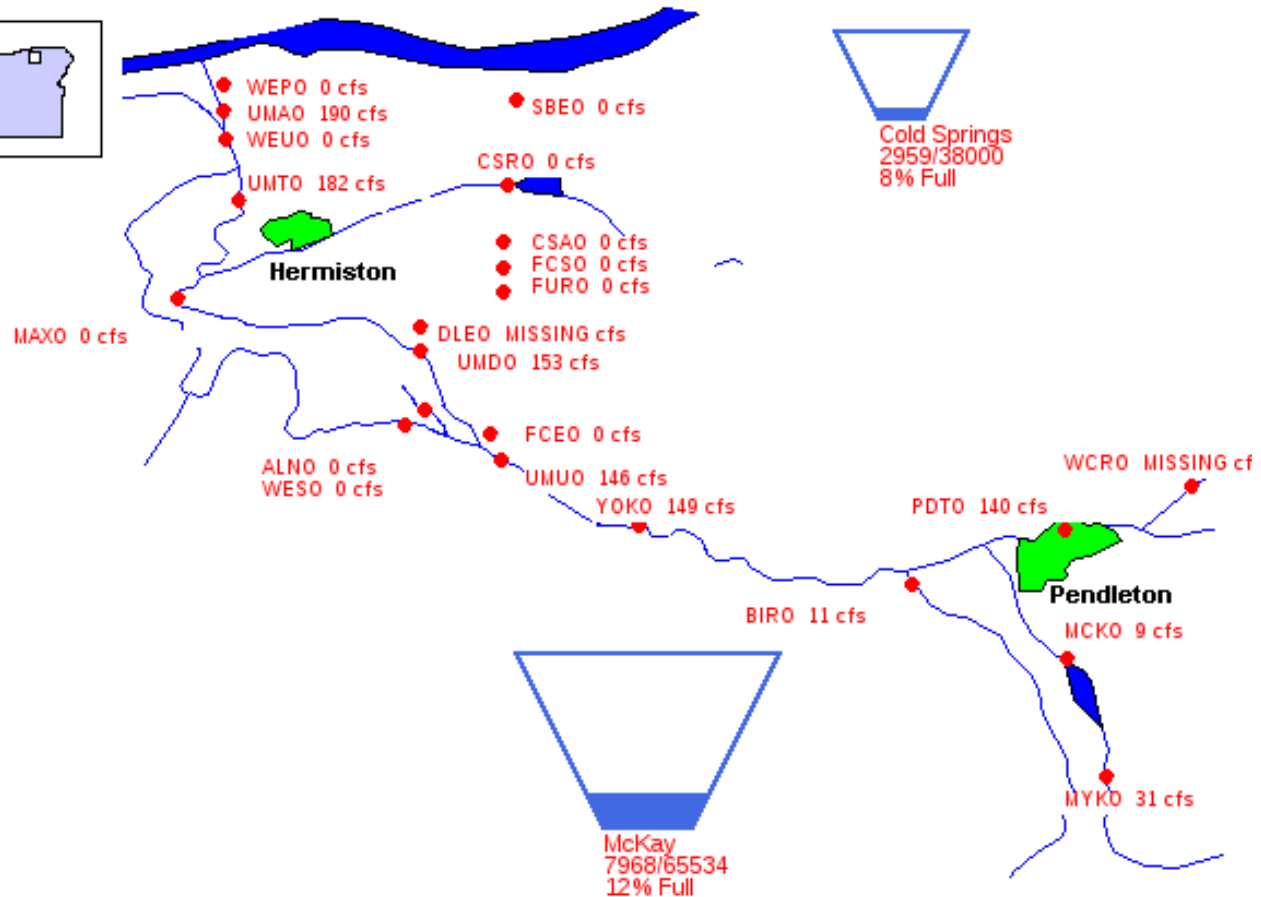
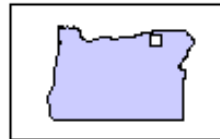
RECLAMATION
Managing Water in the West

PRV AF



Umatilla River Basin

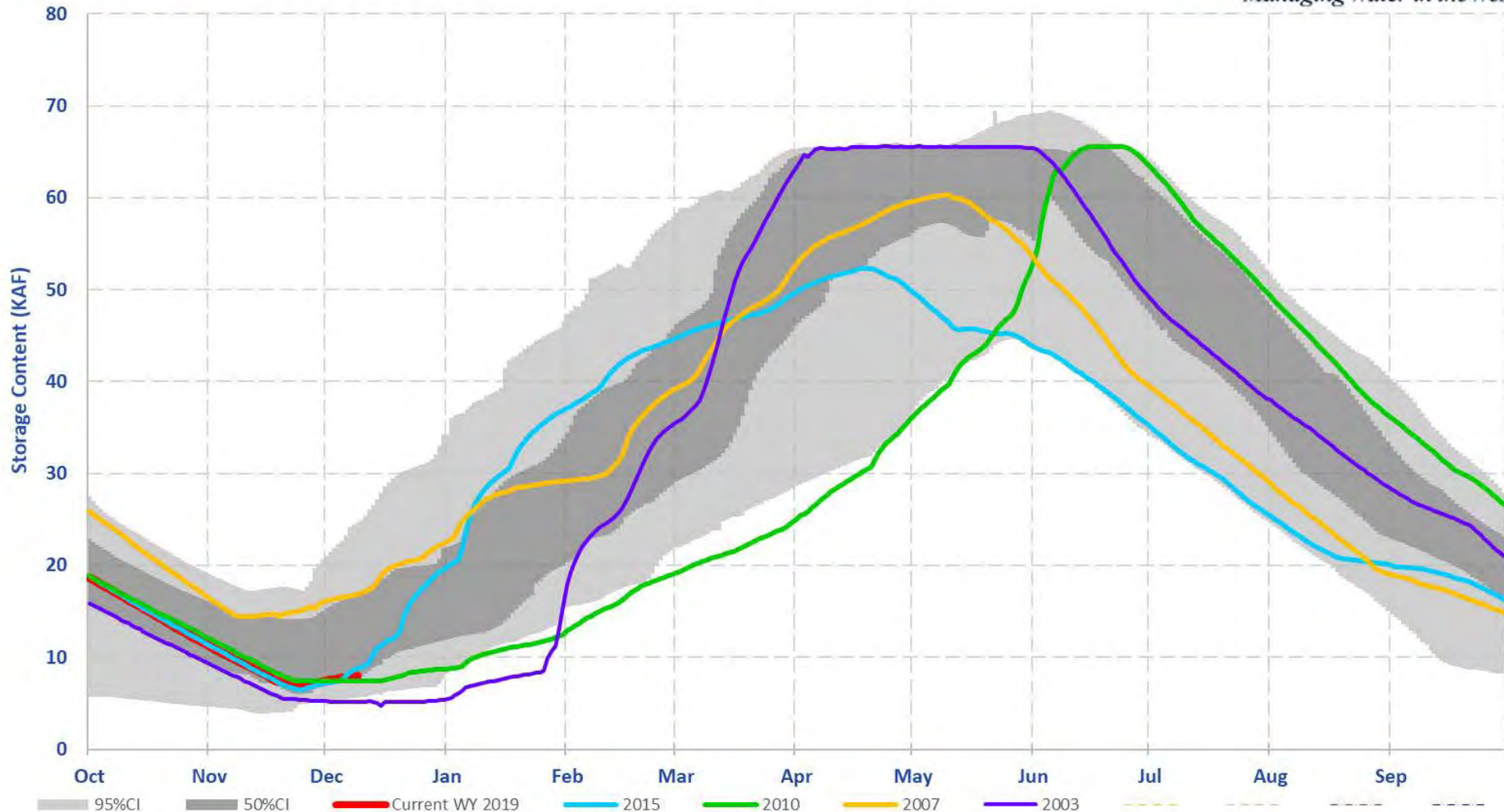
12/10/2018



Umatilla River Basin: McKay

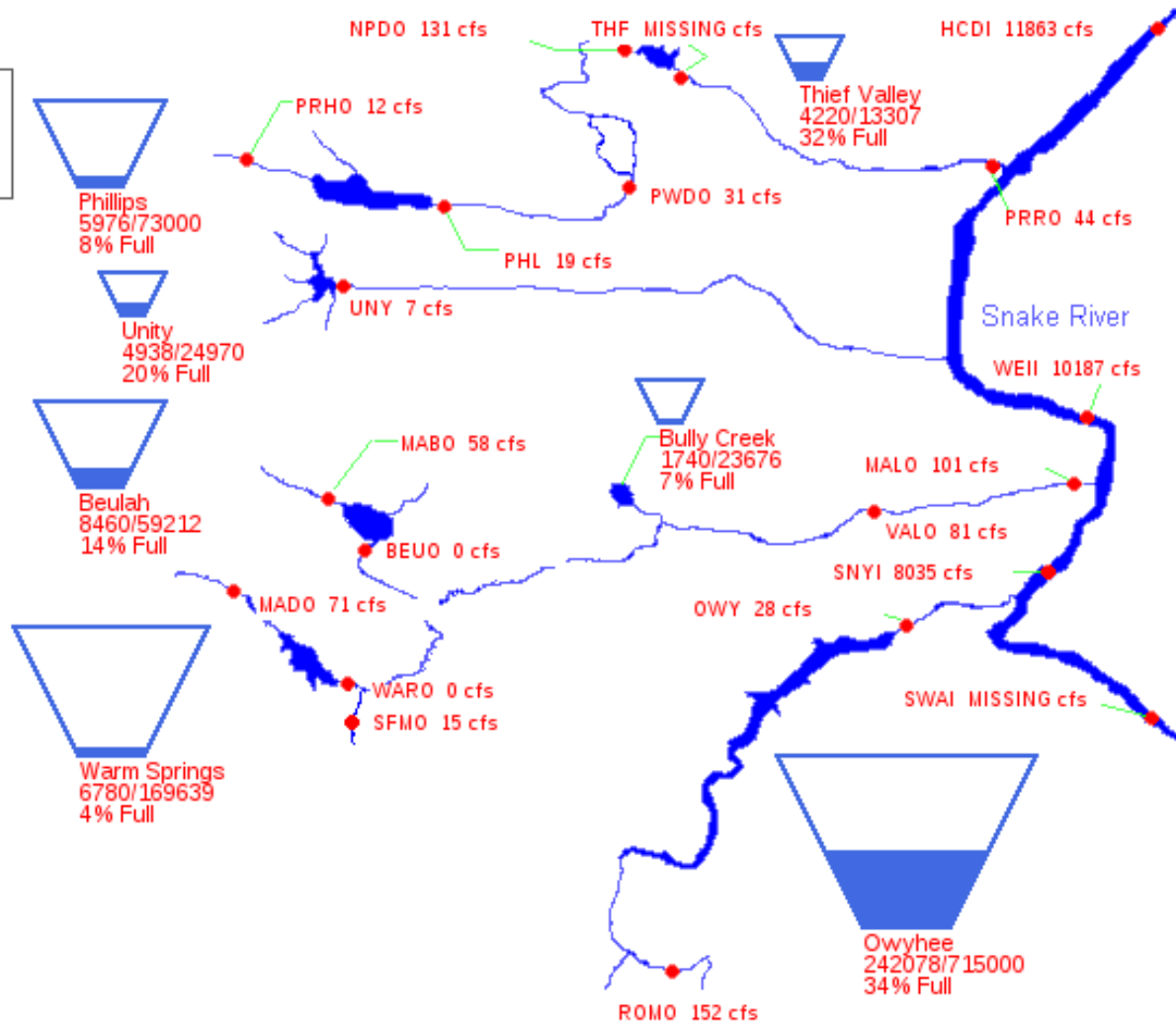
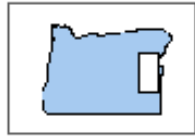
RECLAMATION
Managing Water in the West

MCK AF



Southeastern Oregon

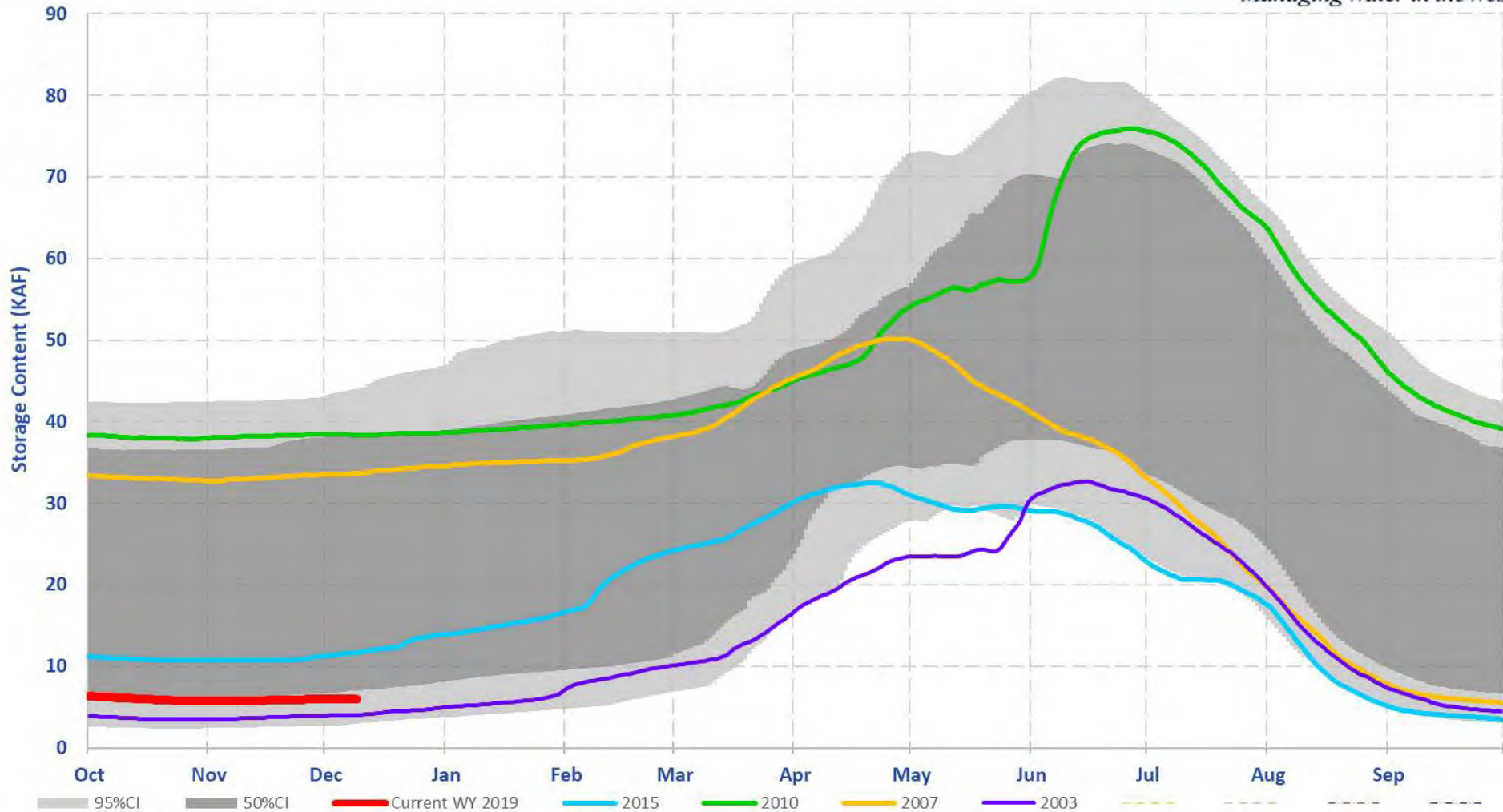
12/10/2018



Powder River Basin: Phillips

RECLAMATION
Managing Water in the West

PHL AF



Rogue River Basin

US Bureau of Reclamation, Pacific Northwest Region Bear Creek and Little Butte Creek Basins

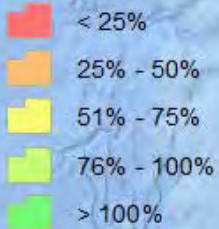
12/10/2018



PROVISIONAL DATA - SUBJECT TO CHANGE!

Percent of Average Streamflow November - 2018

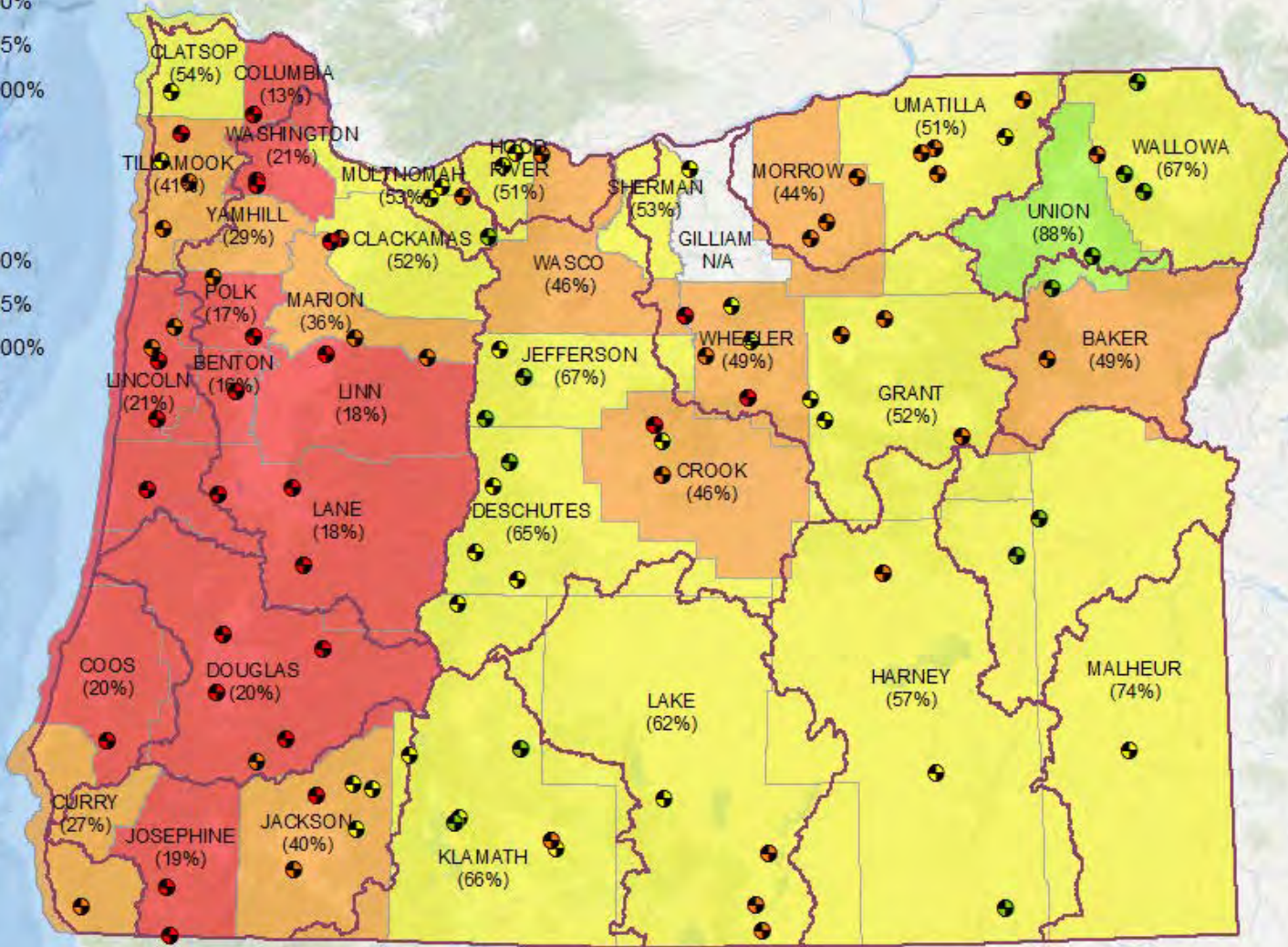
County



Stream gage

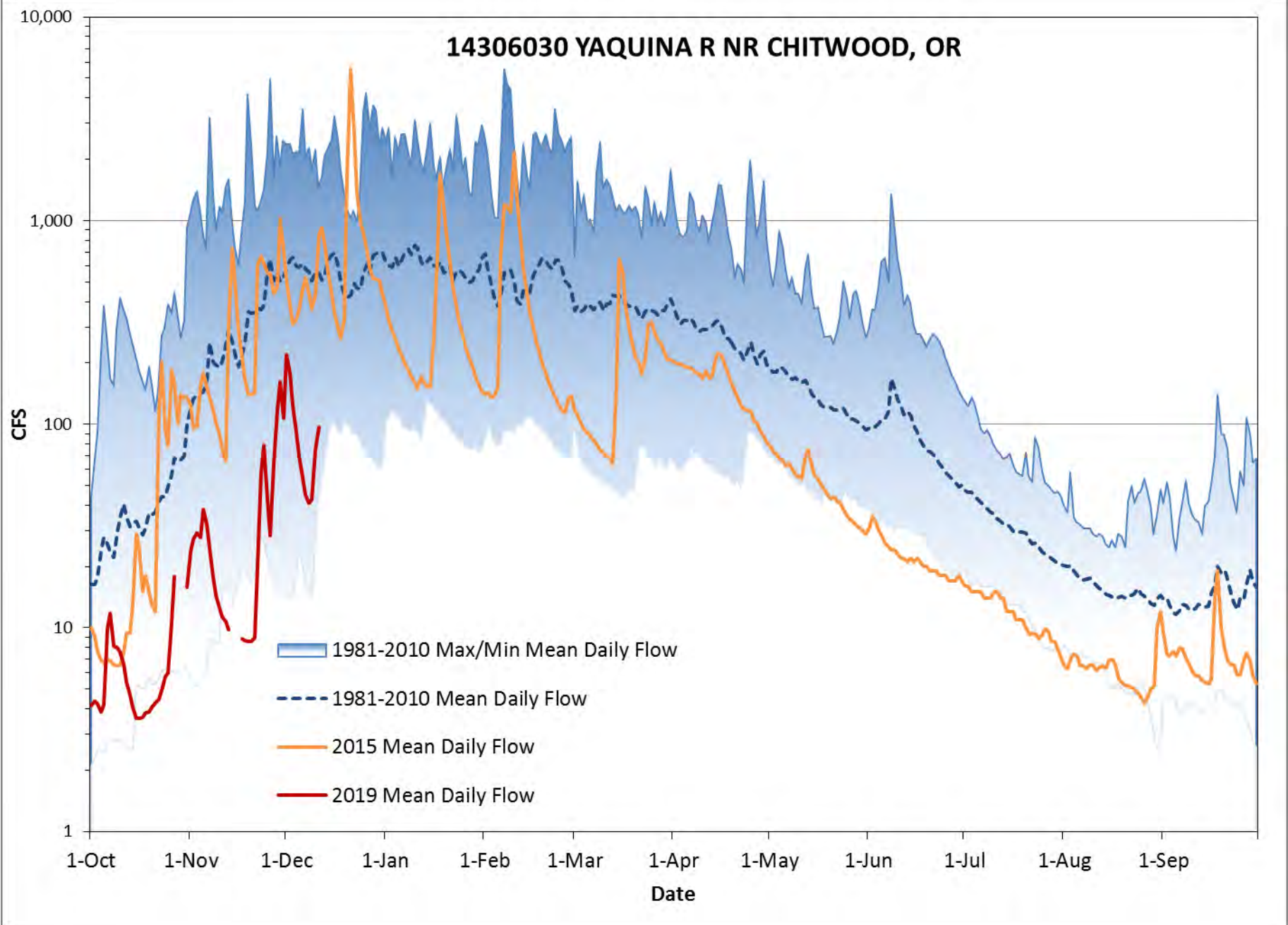


WRD Basin

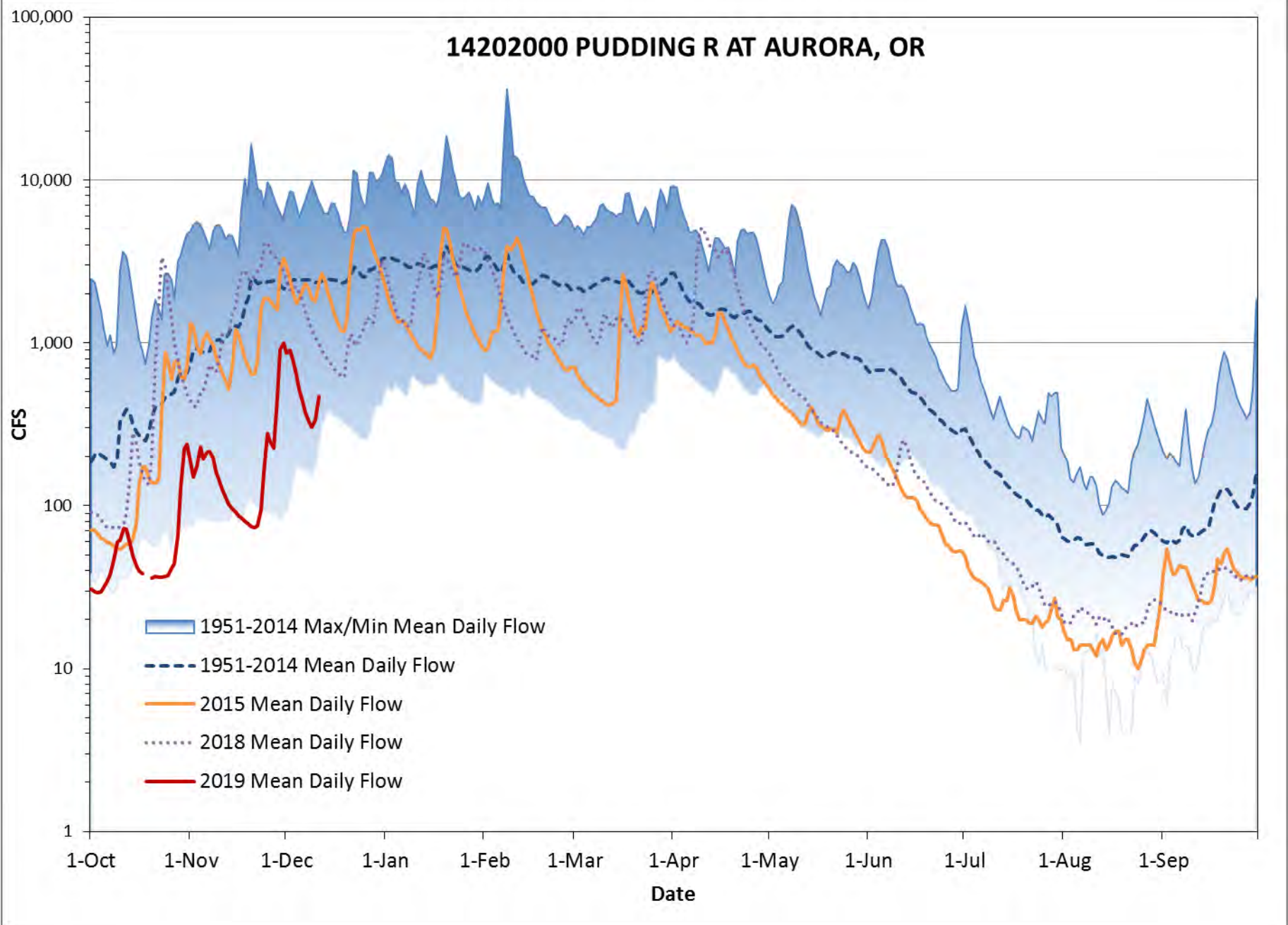


Average streamflow data are based on 30 years of record (1981-2010). All data represent free-flowing streams unaffected by significant man-made control structures such as dams or diversion works.

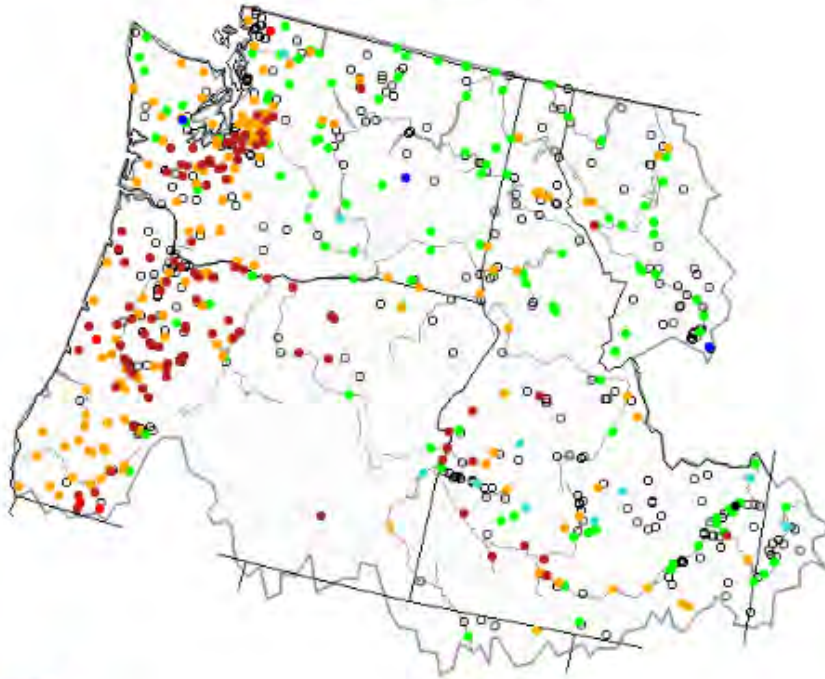
14306030 YAQUINA R NR CHITWOOD, OR



14202000 PUDDING R AT AURORA, OR



Monday, December 10, 2018



Search USGS streamgage

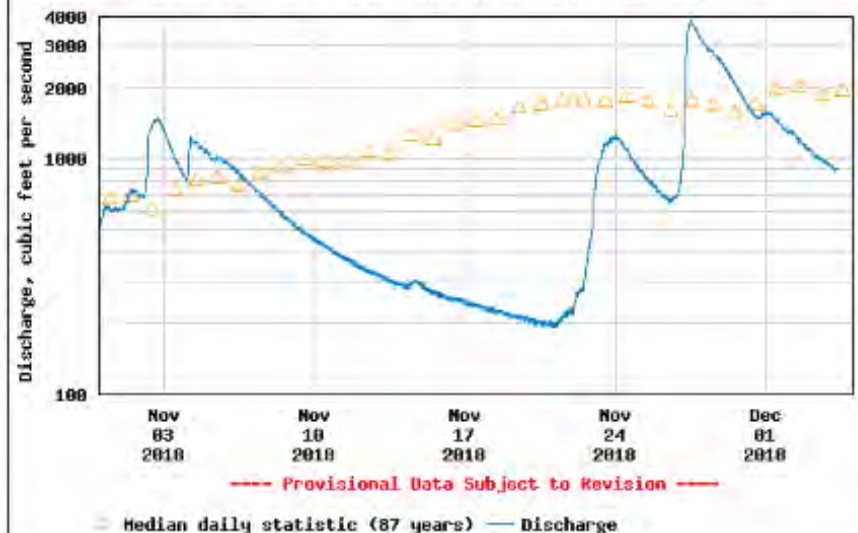
Explanation - Percentile classes

Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

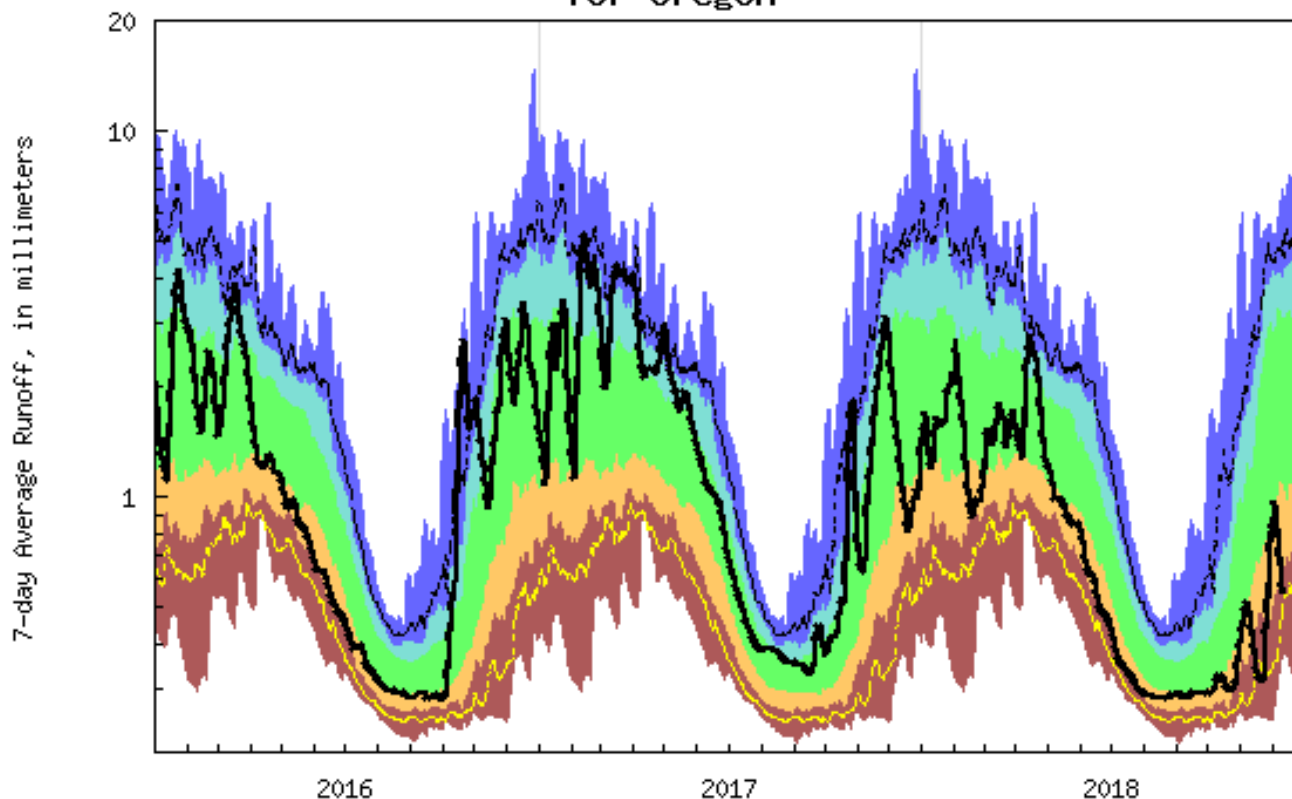
Map of 7-day average streamflow compared to historical streamflow for the day of the year (Pacific Northwest)



USGS 14301500 WILSON RIVER NEAR TILLAMOOK, OR



Duration hydrograph of 7-day average runoff for Oregon



USGS WaterWatch

Last updated: 2018-12-12

Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Runoff

<https://waterwatch.usgs.gov/index.php>



Power Point "USGS Update on Surface Water Conditions"

By: Marc Stewart & Carrie Boudreau USGS ORWSC

Water Availability Report By: Tiffany Rae Jacklin

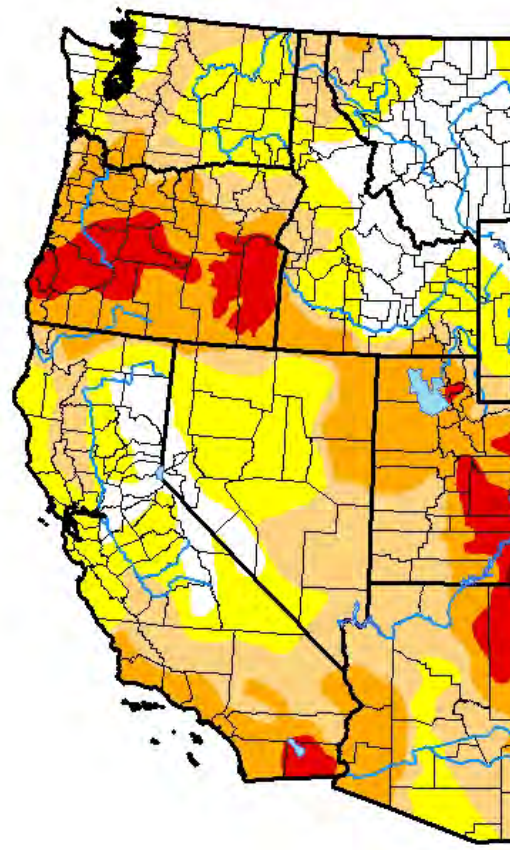
Pictures Marty Berry & Marc Stewart--- USGS ORWSC



Drought Monitor

U.S. Drought Monitor West

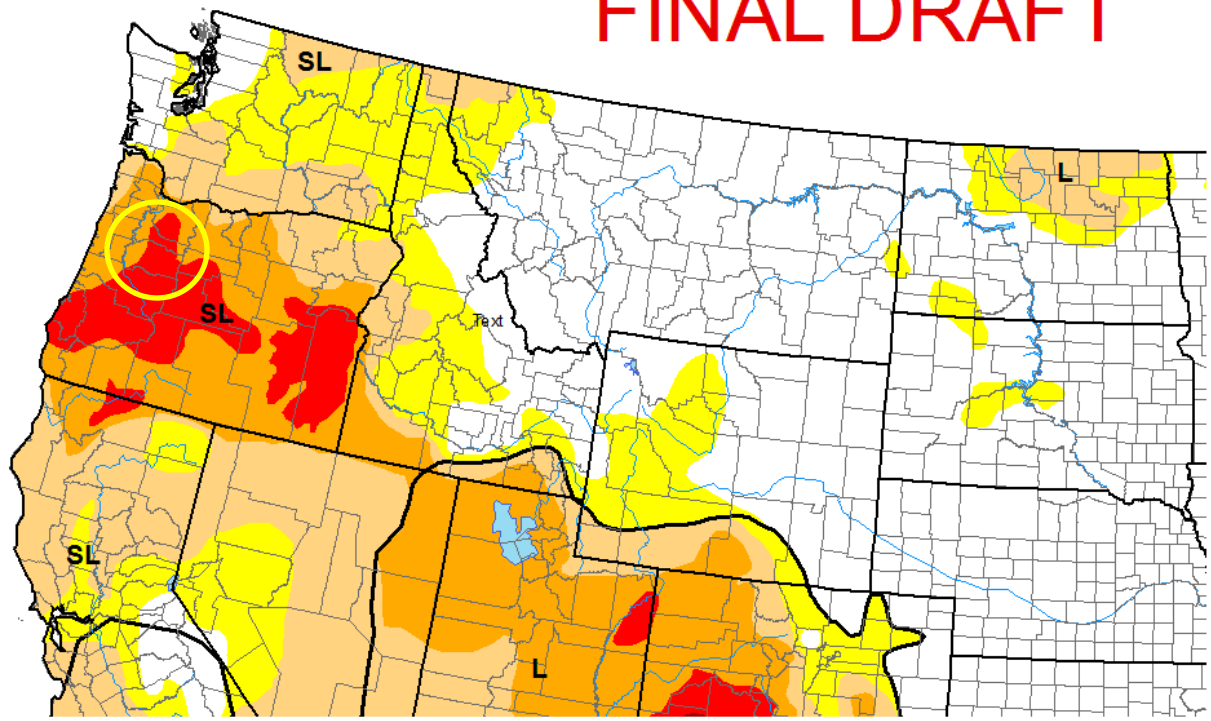
October 30, 2018
(Released Thursday, Nov. 1, 2018)
Valid 8 a.m. EDT



U.S. Drought Monitor

December 11, 2018
Valid 8 a.m. EDT

FINAL DRAFT



- Intensity:
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional

- Drought Impact Types:
- Delineates dominant impacts
 - S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
 - L = Long-Term, typically >6 months (e.g. hydrology, ecology)



Released Thursday December 13, 2018

Author: Curtis Riganti
National Drought Mitigation Center

OREGON



WATER RESOURCES
DEPARTMENT

Thank you.



THUNDERSTRUCK: A USER'S GUIDE

A USER'S GUIDE TO **THUNDERSTRUCK** AND GENERAL LIGHTNING INFORMATION
(*"CHEAT SHEET"*)

Drafted on March 8th, 2018
by Tom Jenkins, AEM
Meteorologist, ODF Smoke Management

WHAT IS THUNDERSTRUCK?

- **Thunderstruck** is an interactive catalog of historical lightning strike reports, mapped out over the Pacific Northwest
- The data spans a **10-year period (1996-2005)**, covers **6 months** of the year, **9 distinct wind patterns** (8 directions + Calm conditions), with breakdowns over a **24-hour** day
- This means there are **1,296 separate maps** for **Northwest Oregon, Southern Oregon, and Eastern Oregon Areas** (3,888 total maps!)

WHAT THUNDERSTRUCK ISN'T:

- **Thunderstruck** is **NOT** a weather model; traditional weather forecasts (and the meteorologists who produce them) are still needed to determine *if* thunderstorms are likely to develop or not
- **Thunderstruck** doesn't identify how strong individual thunderstorms are, nor whether or not Oregon is experiencing more or less thunderstorm activity than is typically observed
- It simply shows **where thunderstorm activity has historically developed and cast lightning bolts** under similar conditions during the same time of day/time of year

WHY IS **THUNDERSTRUCK** SPLIT INTO **3 MODULES**?

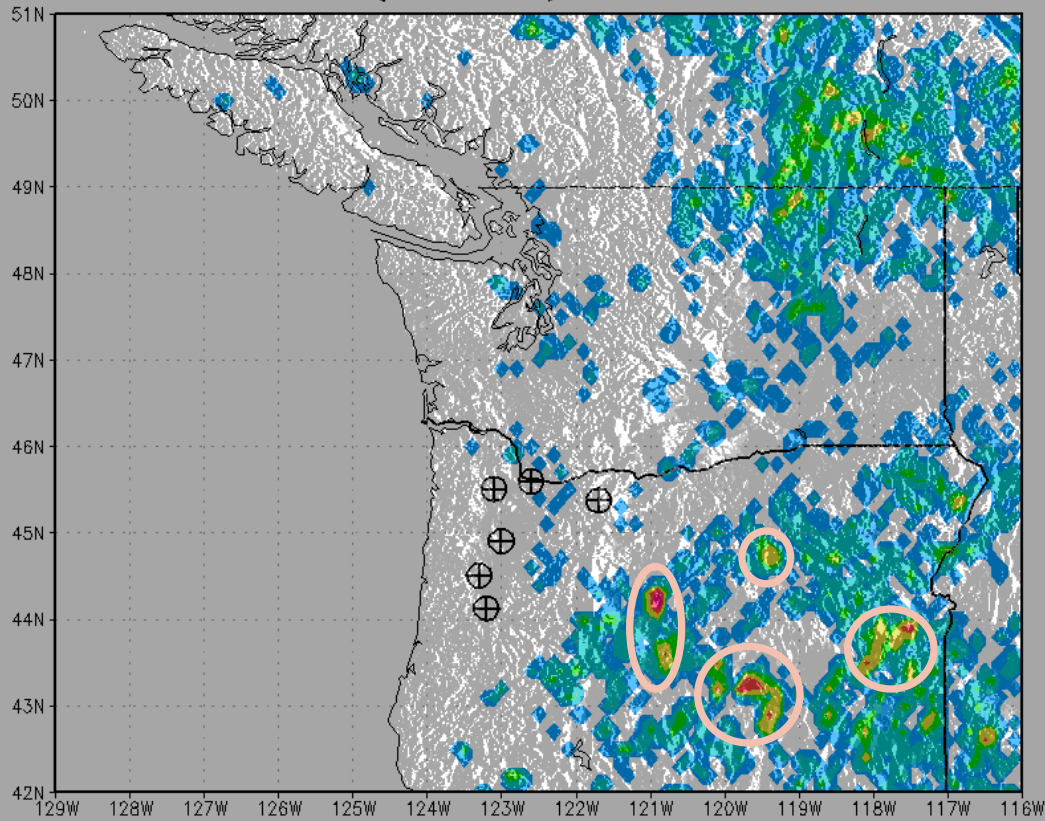
- As with **all observed** weather data/records, the information tends to become less reliable the further away from the collection point you look
- The scale of Oregon, plus its complex geography, create **distinct** environments between **NWOA, SOA, and EOA**
- Even though the generated maps are large enough to show **regional** values, the **fidelity** of the reports is greatest near the points where wind data was collected (Salem, Medford, and Boise)

WHAT IS SO SPECIAL ABOUT 10,000-FT WINDS?

- The 10,000ft (a.k.a. 700mb) winds are commonly referred to as the “***Storm Track***” winds; they tend to steer both large storm systems and smaller individual thunderstorms around
- Air movement at 10,000ft above sea level avoids friction with nearly all of the major mountain ranges nearby, with the exception of taller peaks
- The wind at this altitude tends to stay constant throughout most of the day, so checking it at 5 a.m. each day quickly identifies whether the atmosphere will promote thunderstorm activity (**Cool and moist air**) or limit it (**Dry and warm air**)

WHERE LIGHTNING IS MOST LIKELY TO STRIKE

Average June 22:00 UTC Lightning Strikes
Southwest (203–247) KSLE 700mb Wind



Probability of a thunderstorm producing (1) **single lightning bolt that strikes the ground, during this hour** (10% or less, 50% or less, and > 50% probability), followed by **average # of strikes during this hour**

Remember: No Thunderstorms = No Lightning!

Does your forecast have thunderstorms near these areas today? If so, **when** are they forecast to begin & end?

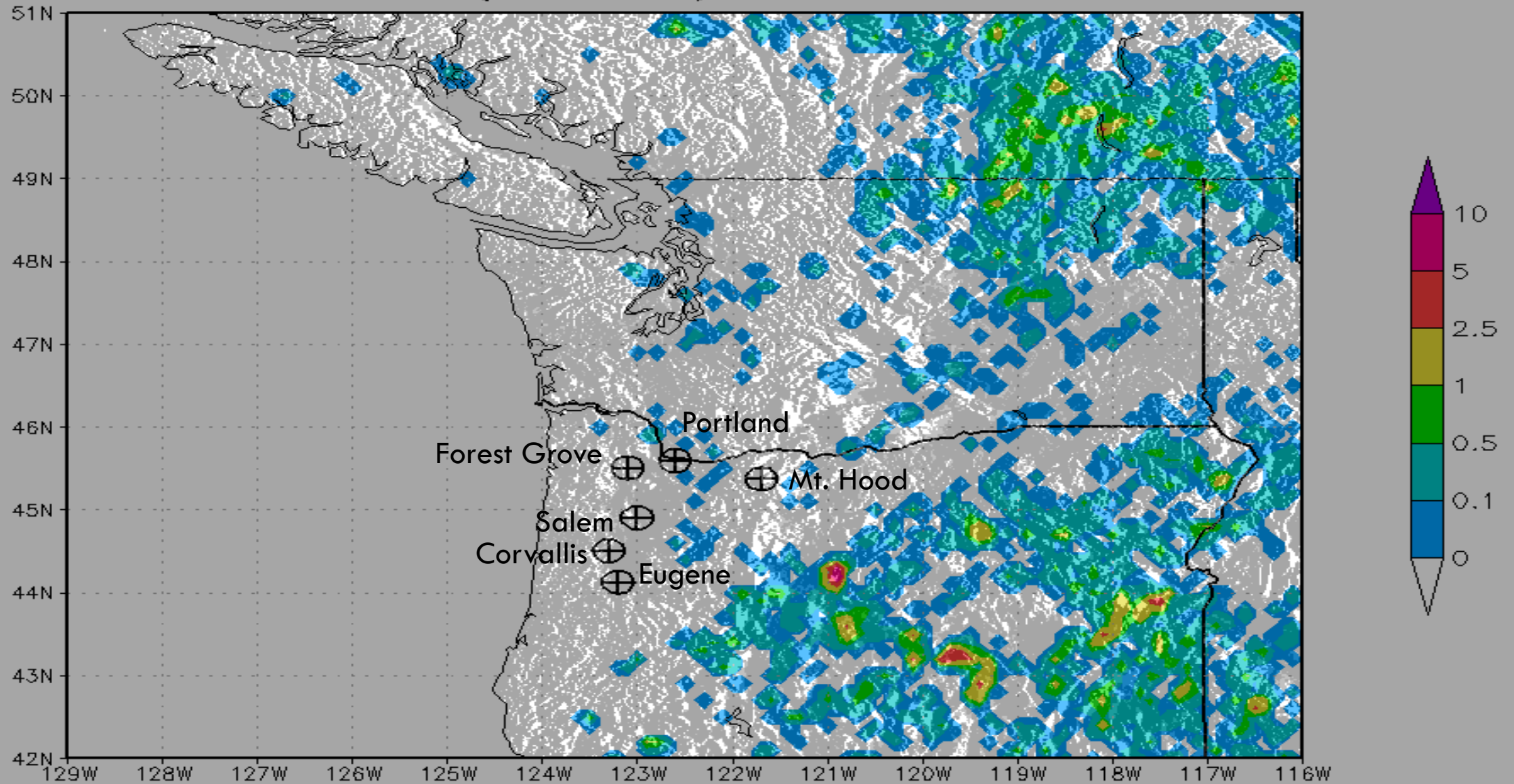
Consider the **area/coverage** of previous strikes under these conditions, as well as the **# of strikes** reported. **Where is the risk the greatest?**

June 22:00 UTC Southwest (203–247) KSLE 700mb Wind

POR: 1996 – 2005

Produced by: 557 WW / 14 Weather Squadron, 02 MAR 2018

Average June 22:00 UTC Lightning Strikes Southwest (203–247) KSLE 700mb Wind



June 22:00 UTC Southwest (203–247) KSLE 700mb Wind

POR: 1996 – 2005

Produced by: 557 WW / 14 Weather Squadron, 02 MAR 2018

HOW TO BEST USE **THUNDERSTRUCK**

- **Thunderstruck** is intended to be a risk analysis model.
- For current and recent observed data, situational awareness is best found using **ODF's Lightning Tracker**, which is updated with new reports every 60-seconds
- All models are wrong, but **some** models are useful! **Thunderstruck** is no different.