Oregon
Kate Brown, Governor

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Drought Readiness Council

Oregon Emergency Management's Anderson Readiness Center
3225 State St., Salem, OR 97301

October 12, 2016 Meeting Materials

- October 12, 2016 Memo from Water Supply Availability Committee
- September 15, 2016 Meeting Notes for Approval
- Powerpoint Presentation – Water Supply Availability Committee

Memo

To: Drought Readiness Council
From: Water Supply Availability Committee
Date: October 12, 2016
Subject: Update on Water Supply Conditions

Oregon's Water Supply Availability Committee (WSAC) held its regular monthly meeting on October 11, 2016. The Committee discussed recent water supply conditions, as well as a summary of water conditions during the 2016 Water Year (Oct. 1, 2015-Sept. 30, 2016). Water supply conditions across the state continued to be lower than average at the end of the water year, due to a return to warm temperatures in August.

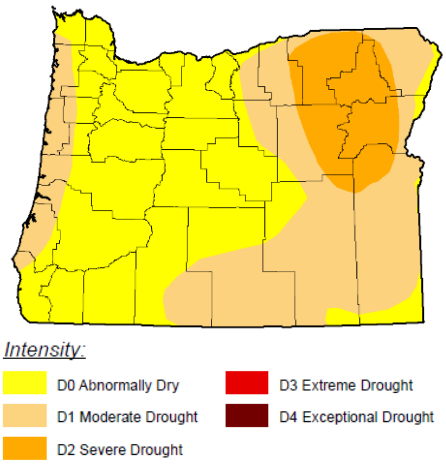
Key Highlights from 2016:

- **Precipitation varied widely across the state during September.** The northwest corner and north central parts of the state received well above average amounts of precipitation during September, with below average conditions for this time of the year in the rest of the state.

- **For September, statewide average streamflows were at 61 percent of normal.** While low, this was better than the 54 percent of normal seen last year at this time. Streamflow conditions in the Hood, Klamath, and Malheur Lake Basins, all 79 percent of normal or higher, fared the best. The most stressed basins in September were the Umatilla, John Day, North Coast, and South Coast Basins. Refer to Attachment 1 for a map of streamflow conditions for September. See Attachment 2 for a bar graph displaying monthly and cumulative streamflow conditions for 2016.

- **Reservoir storage levels were strong at the start of the 2016 irrigation season.** From December 2015 through March 2016, Oregon received much-needed snow and precipitation. Above-normal temperatures during April 2016 resulted in early and rapid snowmelt, high streamflows, and good storage / reservoir conditions. A subsequent lack of spring rains contributed to the rapid drawdown of many reservoirs supplying water for agriculture. By the end of the summer, many eastern Oregon reservoirs were back to the low levels seen in 2015. Through rigorous management, Owyhee Reservoir (a two-year reservoir) will have some carry-over water for next year.

- **Little change in the *U.S. Drought Monitor* since last month.** As of October 4, the entire state is in the D0 category (abnormally dry). Coastal areas from the southern portion of the North Coast, to the northern portion of the South Coast, and Eastern Oregon regions, representing approximately 50 percent of the state, are listed in the D1 category (moderate drought). Further, 12 percent of the state, including portions of Umatilla, Baker, Grant, and Union Counties continue to be listed in the D2 category (severe drought). Soil moisture models continue to indicate drier than normal conditions within these areas.



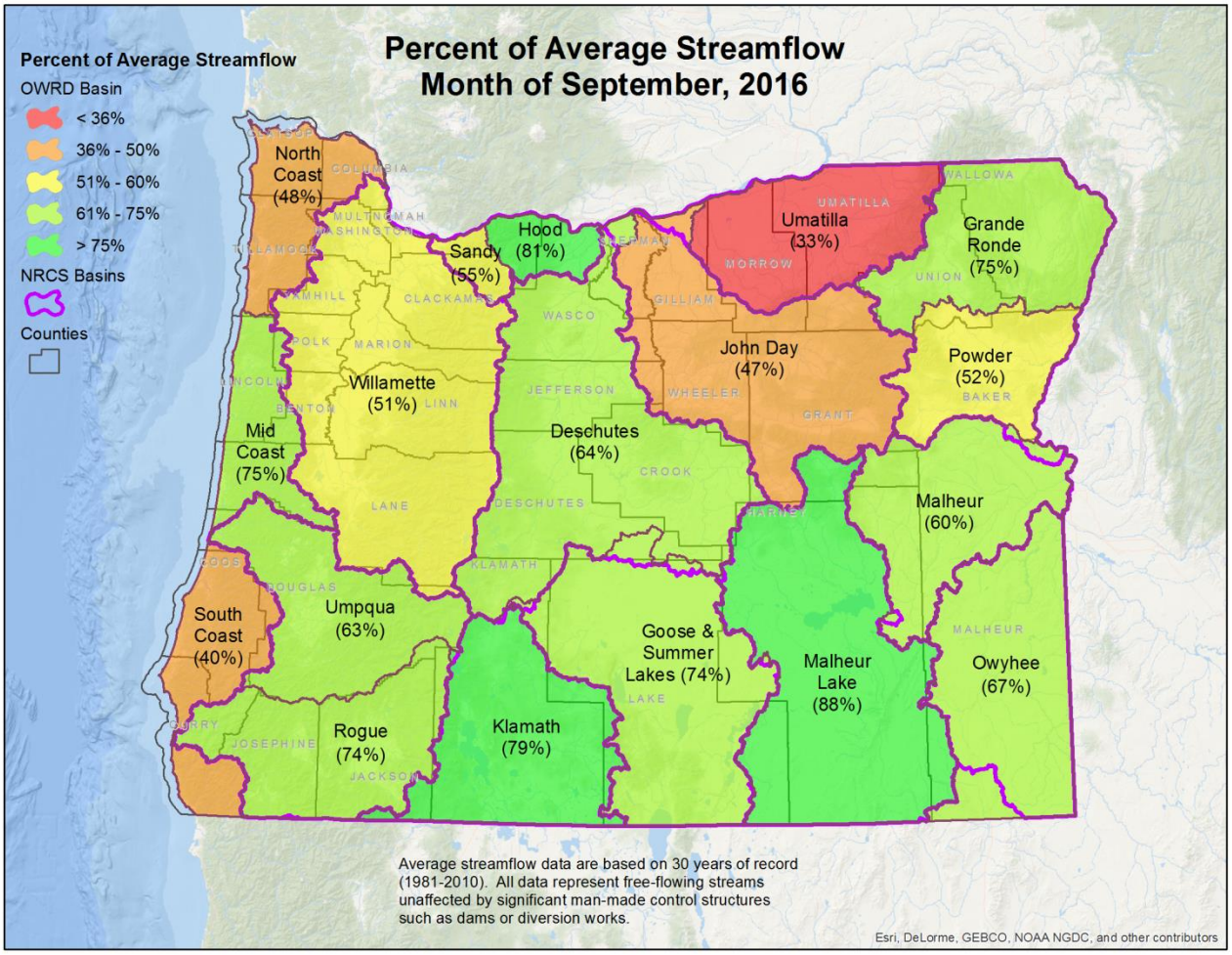
- **Fire potential is low-to-moderate.** Recent rainfall and cooler temperatures have reduced fire potential to low-to-moderate levels for most of Oregon. Compared to last year, there were far fewer acres burned from wildfire in 2016. Conditions were dry this year and at times, even drier than last year. Much of the lack of significant wildfire this year is because of fewer lightning events.

  The Oregon Department of Forestry recently announced that the current Regulated-Use Closure in the Northwest Oregon Forest Protection District has been lifted. This area includes all state, private, and federal Bureau of Land Management forestlands in the Tillamook, Forest Grove and Astoria districts. Check with your local ODF office for restrictions in your area or visit ODF's fire restrictions web page for more information.

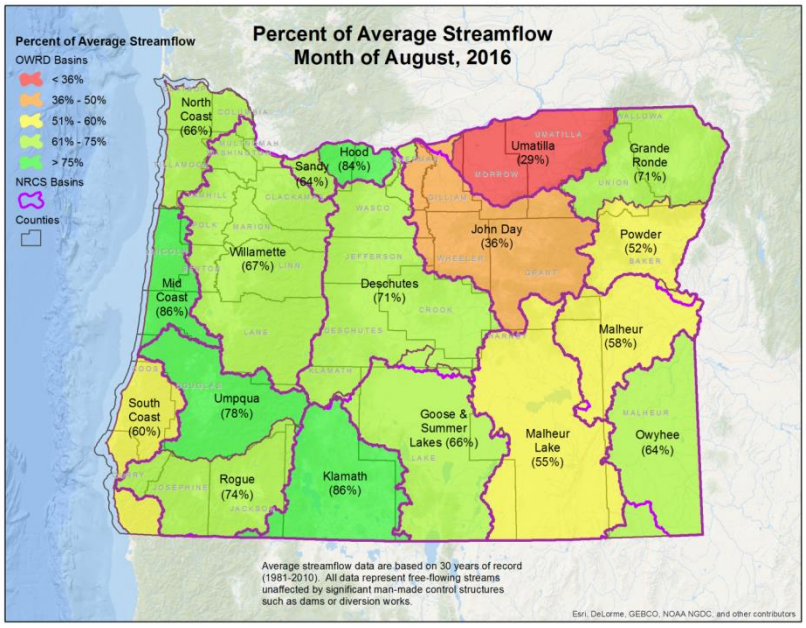
Looking Ahead:

- **Climate models now indicate the likelihood of ENSO-Neutral conditions for later in 2016.** "ENSO" is the El Niño/Southern Oscillation, and refers to the relationship between ocean temperatures and atmospheric conditions. Neutral conditions occur when the system is transitioning between El Niño and La Niña events. This winter has the potential for a very mild La Niña. For the Pacific Northwest, ENSO-Neutral conditions mean that there is an equal likelihood of above-average or below-average precipitation in coming months.

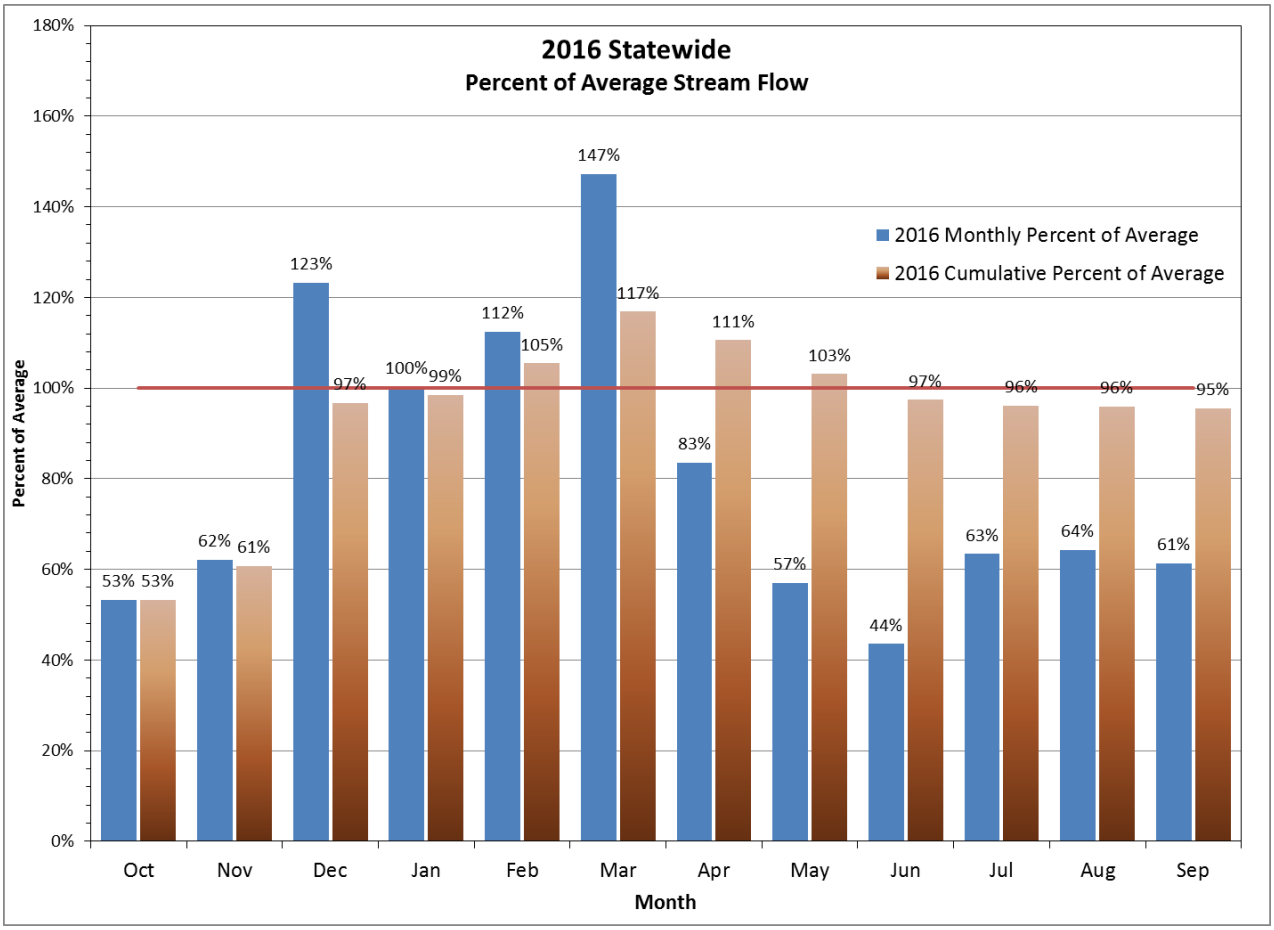
- **Above average temperatures are forecasted to continue through December.** Temperatures in September were 1 to 3 degrees above normal in the northern to mid-coast regions and 1 to 5 degrees warmer than normal in far eastern Oregon; temperatures were cooler than normal for the rest of the state. NOAA's Climate Prediction Center continues to predict increased odds of warmer than normal conditions through early winter.



Compared to this time last month...



Attachment 2: Bar Graph — Statewide Percent of Average Streamflow



Oregon's Drought Readiness Council
October 12, 2016 Meeting Notes

OEM's Anderson Readiness Center
Salem, OR

DRAFT – Needs Council Approval

Attendees:
Brenda Bateman, co-chair of the Drought Readiness Council, WRD
Matt Marheine, co-chair of the Drought Readiness Council, OEM
Ken Stahr, chair of Water Supply Availability Committee, WRD
Alyssa Mucken, WRD Drought Coordinator

by phone:
Wade Peerman, DEQ
Kathie Dello, OCCRI
Tom Elliot, DOE
Jim Johnson, ODA
Karyl Salis, OHA
Anna P. Stevenson, ODFW
Nick Yonker, ODF

1. Welcome and Introductions:
Brenda Bateman & Matt Marheine, council co-chairs, welcomed everyone and participants introduced themselves.

2. Agenda Check:
Members added a check in on the status of drought declarations to the agenda.

3. Approval of August Meeting Notes:
Members unanimously approved the September meeting notes, with an edit to the number of DEQ wells mentioned on page two.

4. Update on Water Conditions
Ken Stahr, Chair, Water Supply Availability Committee, presented an end-of-water year summary from the WSAC to the Drought Readiness Council (see meeting materials for slides). Highlights and recap include:

- Umatilla is currently the most stressed basin in the state, hovering at 33 percent of average streamflow.
- At Sept. 30, flows were at their lowest. Last weekend's storms improved streamflows for western Oregon.
- Oregon entered the water year (Oct. 1, 2015) at a deficit. In December through March, Oregon enjoyed a high snowpack and precipitation. A record April warming caused early and rapid run-off, high streamflows, and adequate storage, but a loss of snowpack. Little precipitation followed.
- Irrigation season saw below normal streamflow.
- Cooler temps in July and some precipitation helped.
- We finished the water year at 95 percent of normal streamflow, statewide.
- See meeting materials (slides) for a summary of reservoir storage, 2016 statistics, and anecdotal notes from around the state.
- Today, we're 12 days into the 2017 water year.
- The *U.S. Drought Monitor* shows no recent change in conditions.

- Oregon now has nine counties with federal drought designations, now that some counties have maintained their D2 status in the *U.S. Drought Monitor* for eight weeks running.

5. Presentation on Drought Early Warning System

Kathie Dello of the Oregon Climate Change Research Institute, Ken Stahr (WRD) and Alyssa Mucken (WRD) briefed the group on a recent event. In September, the National Drought Mitigation Center, and National Integrated Drought Information System (NIDIS) invited agency representatives from Oregon, Washington, Montana, Idaho, Colorado, the Bureau of Reclamation and US Forest Service to Boise, Idaho for a two-day workshop on drought early warning metrics.

Originally convening with a goal to define drought-related "triggers," the group of 20 came away realizing it needed a better system to measure and document drought-related impacts. It is important to understand who and what is affected by drought, as well as how, and to what degree. The group agreed to approach this work as a region, coming up with metrics for the Pacific Northwest as a whole. Discussion included the following:

- Creating an index requires field testing.
- Indicators don't have to be quantitative.
- Indicators shouldn't be limited to agricultural impacts, but should include ecological and other impacts as well.
- Other states are relying heavily on the *U.S. Drought Monitor*, and have put quite a bit of time and effort into it.
- It's important to debrief/capture anecdotally drought impacts after each season.
- We also need to conduct vulnerability assessments. (see CO & WA examples).
    - They broke their work into sectors: recreation, municipal drinking water, ag, energy.
    - The conducted interviews and groundtruthed their work.
    - They also assessed adaptive capacity (e.g., intertie agreements, storage as back-up supply), and conducted a literature review to figure out how to go about doing this. Colorado's drought response plan is 800 pages, not 20 like Oregon's.
- Oregon doesn't include demand, or conflicting uses, in any kind of drought metric yet.
- Many states have a fund they can tap for work in this area. All the other states seem to have funding to pay their own agency partners to go collect data for the greater good!
- Kathie is currently writing a strategic plan for the Pacific NW; Alyssa will help review.
- Are we incorporating long-term data into the index? In year two or three of drought, that means soil moisture is in jeopardy, trees are dying, etc.
- WRD wants to improve Oregon's surface water supply index.
- It's good to put names to these tools, so that we can gather more budget and political support.
- NOAA and other federal agencies have put MOUs in place to help get political buy-in.

6. Other Business of the Council

a. Drought Declaration Requests

Emergency managers in Baker County requested a drought declaration from the state months ago, and the Harney County Court was considering doing the same. However, Oregon Department of Agriculture explained that both counties were seeking the federal tax breaks that flow from a federal drought declaration, not state declaration.

Discussions included the following:

- This leads to bigger policy question: what is the reason for a state declaration? What benefit does it get people?
- We really need to include the US Department of Agriculture's Farm Services Agency (FSA) in these meetings and conversations, particularly because we need to be documenting vulnerabilities and economic impacts.
- Taylor Murray at FSA would be a good fit for this group.

- Or Peter Halverson or someone out of FSA's Tualatin HQ office. Jim Johnson offered to initiate that contact.

b. NOAA Atlas 14 Updates.

- WRD staff is still working on a one-pager, describing the need for an updated state-wide precipitation analysis, called NOAA Atlas 14. Question: How does this product relate to the skirmishes between NOAA's NMFS Biop & FEMA flood program? Answer: the product, in close coordination with the state, comes from NOAA's Climate Service, and provides analysis independent from the rest of NOAA's floodplain work.

c. Connecting with County Emergency Managers.

- OEM and WRD staff will plan to connect with county emergency managers during the winter, to make sure they have the latest templates and instructions for requesting ORS 536 and ORS 401 declarations. Local emergency managers have a call each month; plan to participate in a November call.

- In addition, the Oregon Prepared Workshop takes place every April. OEM plans to put drought on the agenda, to connect with county emergency managers so they get training on state and federal drought declarations. Aim for an event during the second week of April.

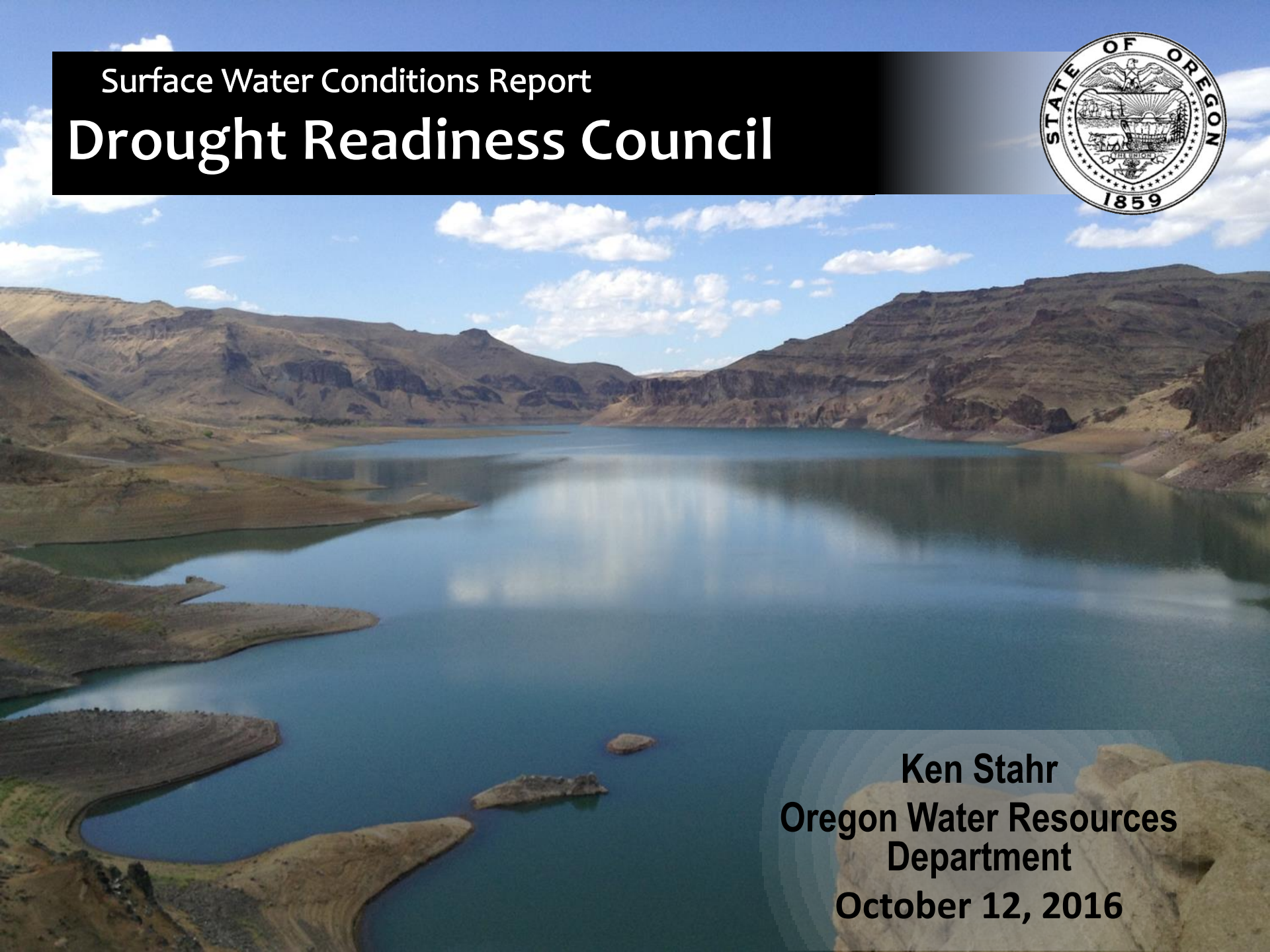
7. Announcements and next meetings

- The Drought Readiness Council will be in recess for November and December.
- WRD and OEM will plan to connect with county emergency managers in the interim.
- The Water Supply Availability Committee will not meet in November, but might meet December 13, depending on water conditions.
- Kathie Dello noted that the NW Climate Conference is coming to Skamania Lodge, November 14-16, 2016. This event is designed as a conversation between researchers and practitioners, and focuses on climate change adaptation. There will be lots of networking time. See: PNWClimateconference.org.
- The Drought Task Force is holding is next-to-last meeting today, and has a final report due to the Legislature November 1st.
- The Policy Advisory Group for the 2017 Integrated Water Resources Strategy meeting meets December 6-7 at WRD.

The meeting adjourned at 11:45.
Thanks for your continued support!

Surface Water Conditions Report

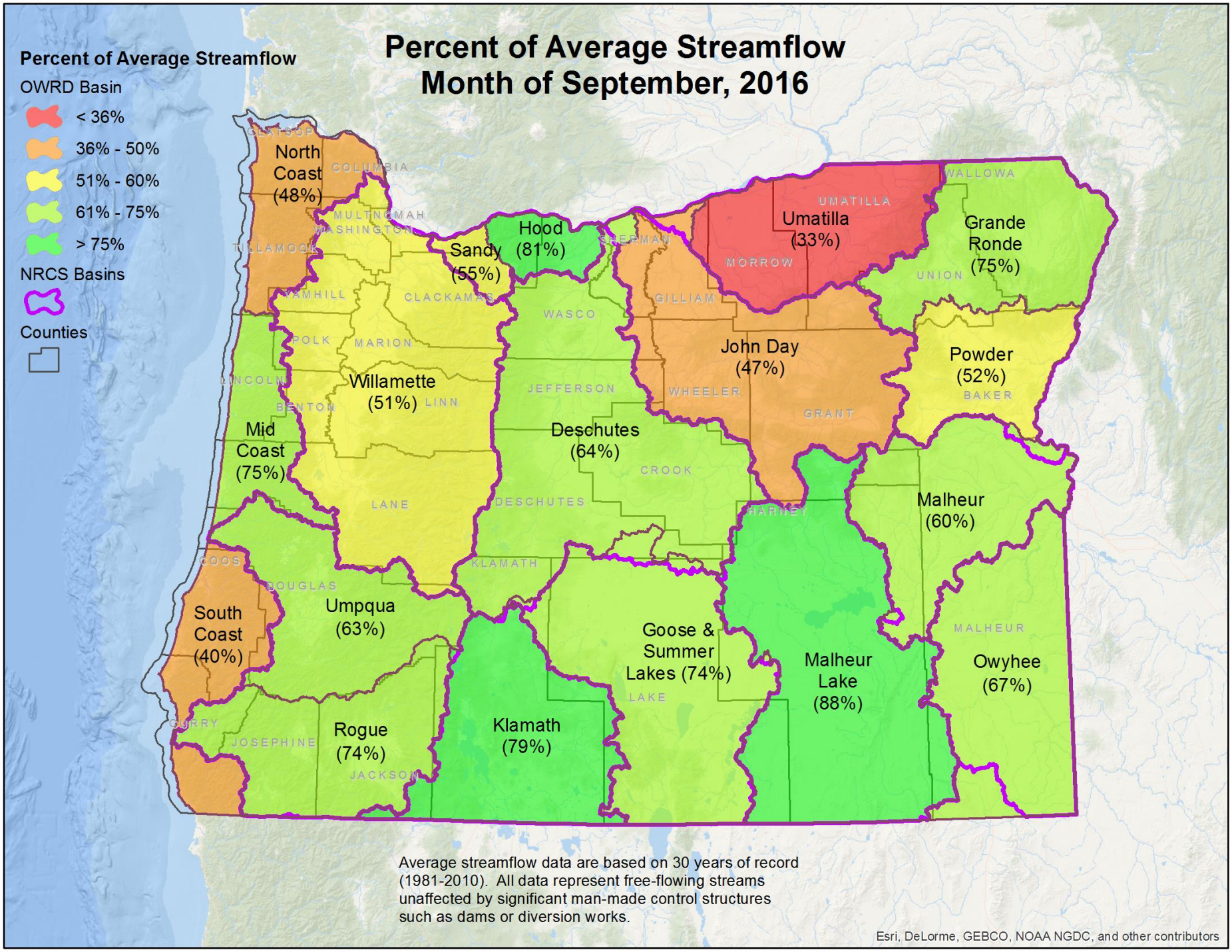
Drought Readiness Council



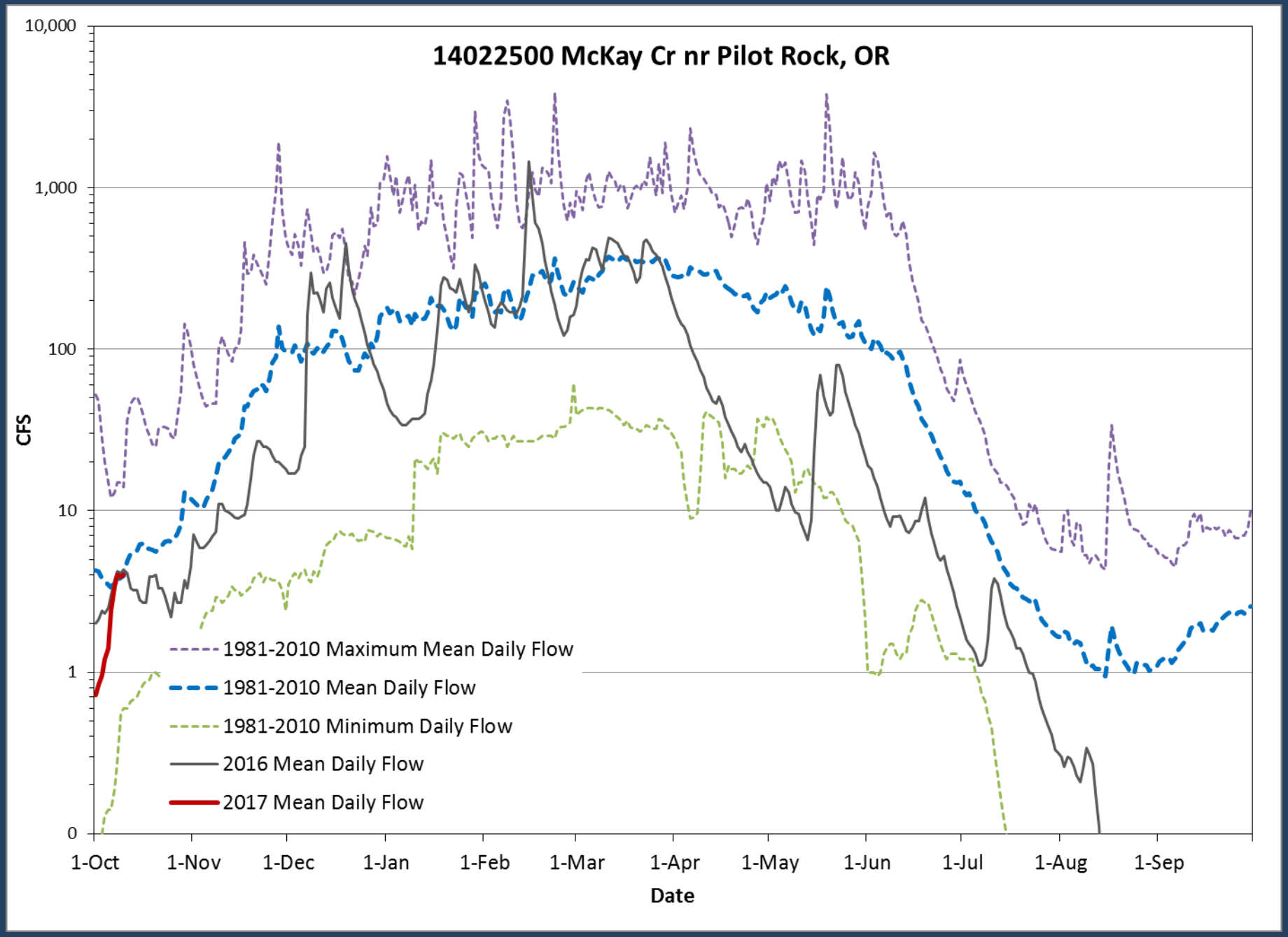
Ken Stahr
Oregon Water Resources Department

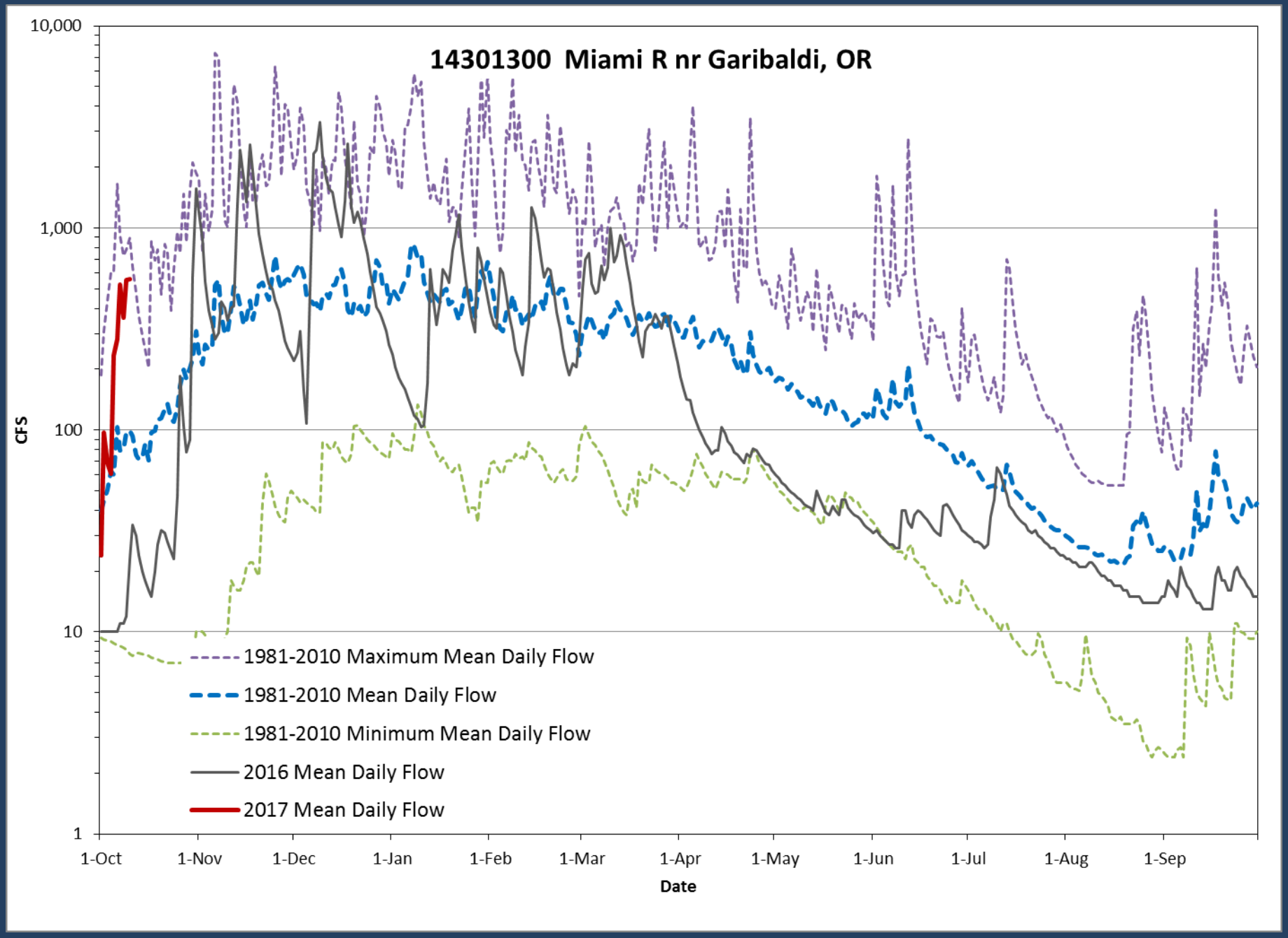
October 12, 2016

Percent of Average Streamflow
Month of September, 2016



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.


14022500 McKay Cr nr Pilot Rock, OR
10,000
1,000
100
10
1
0
CFS
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Daily Flow
2016 Mean Daily Flow
2017 Mean Daily Flow
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


14301300 Miami R nr Garibaldi, OR
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CFS
1-Oct
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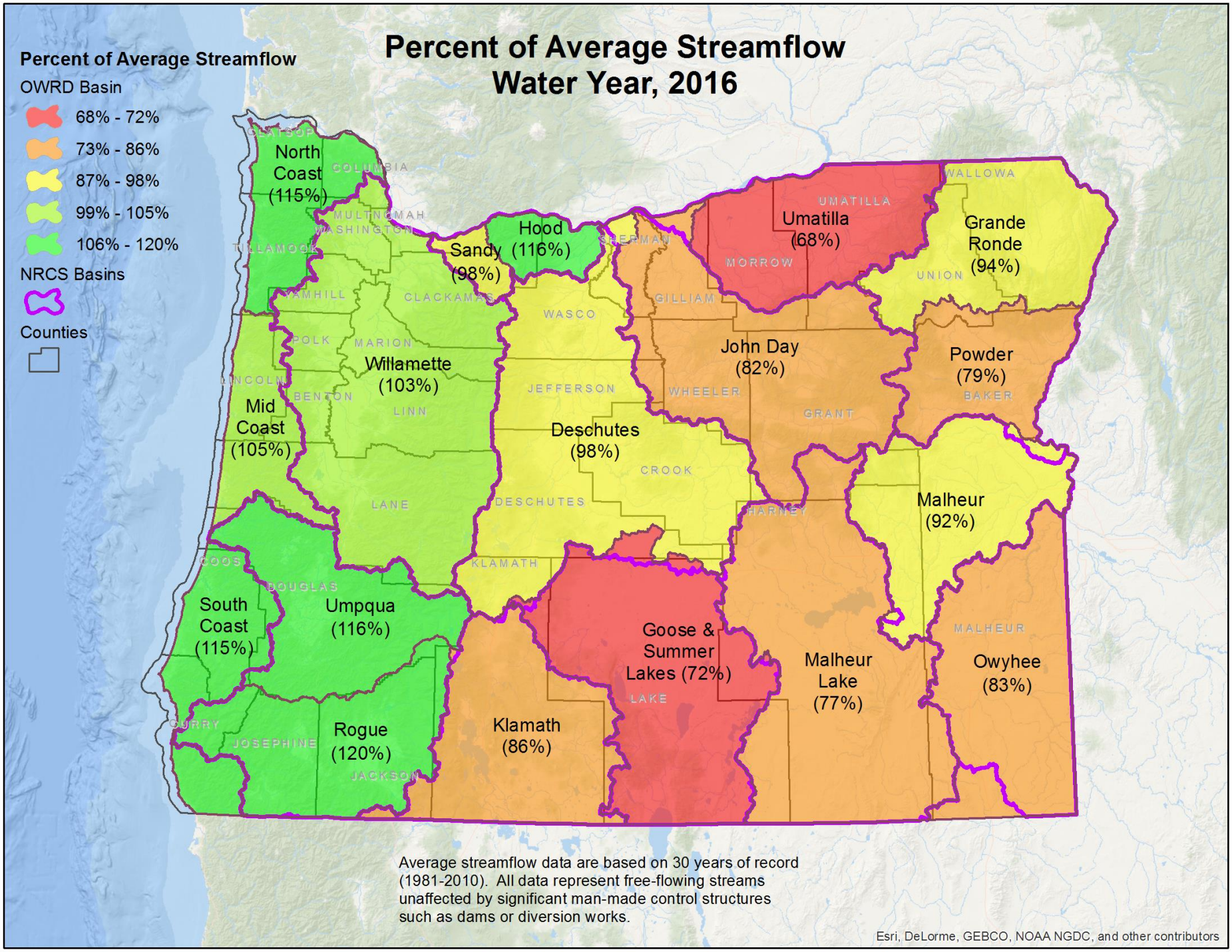
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2016 Mean Daily Flow
2017 Mean Daily Flow

Percent of Average Streamflow
Water Year, 2016



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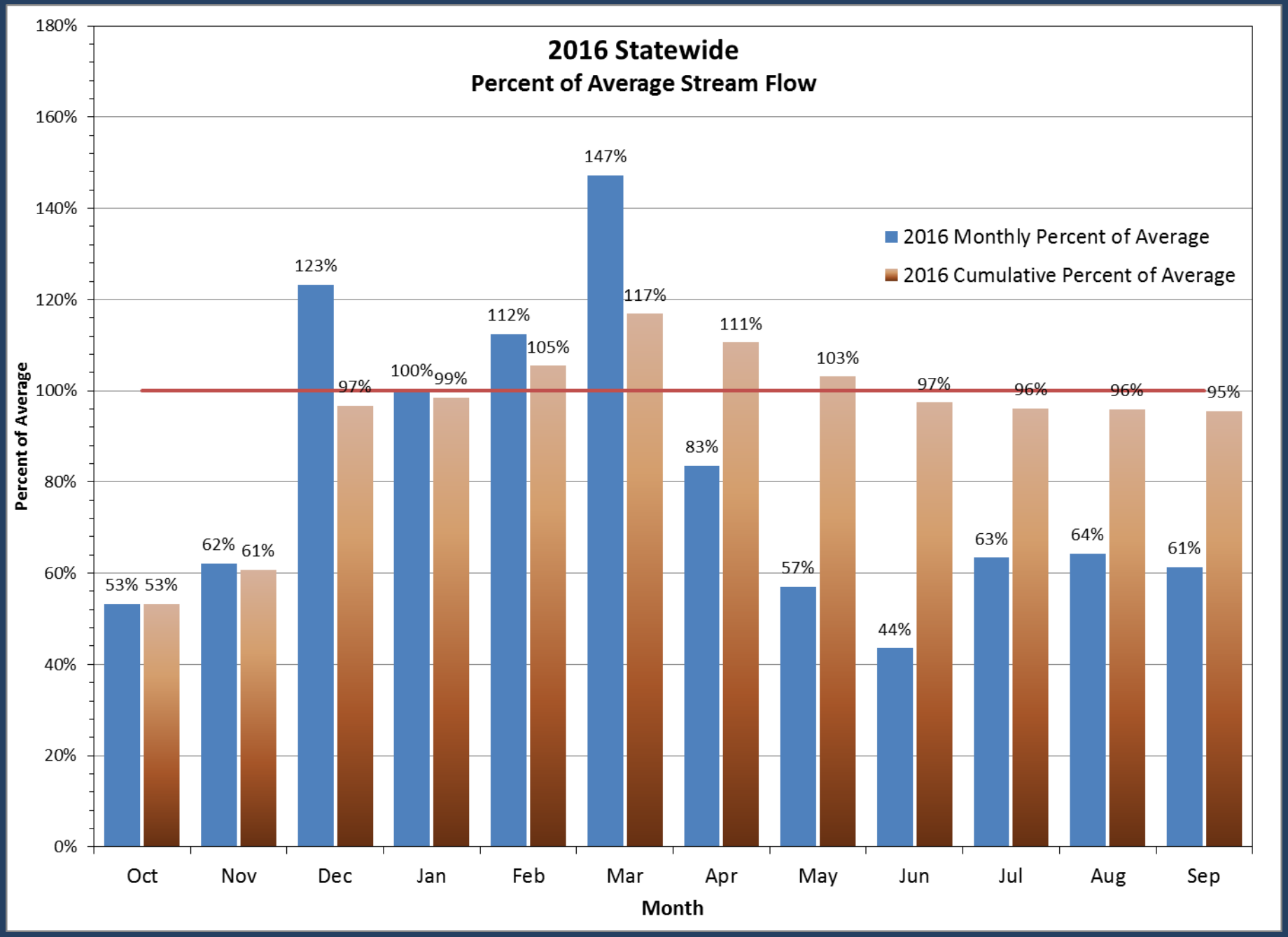
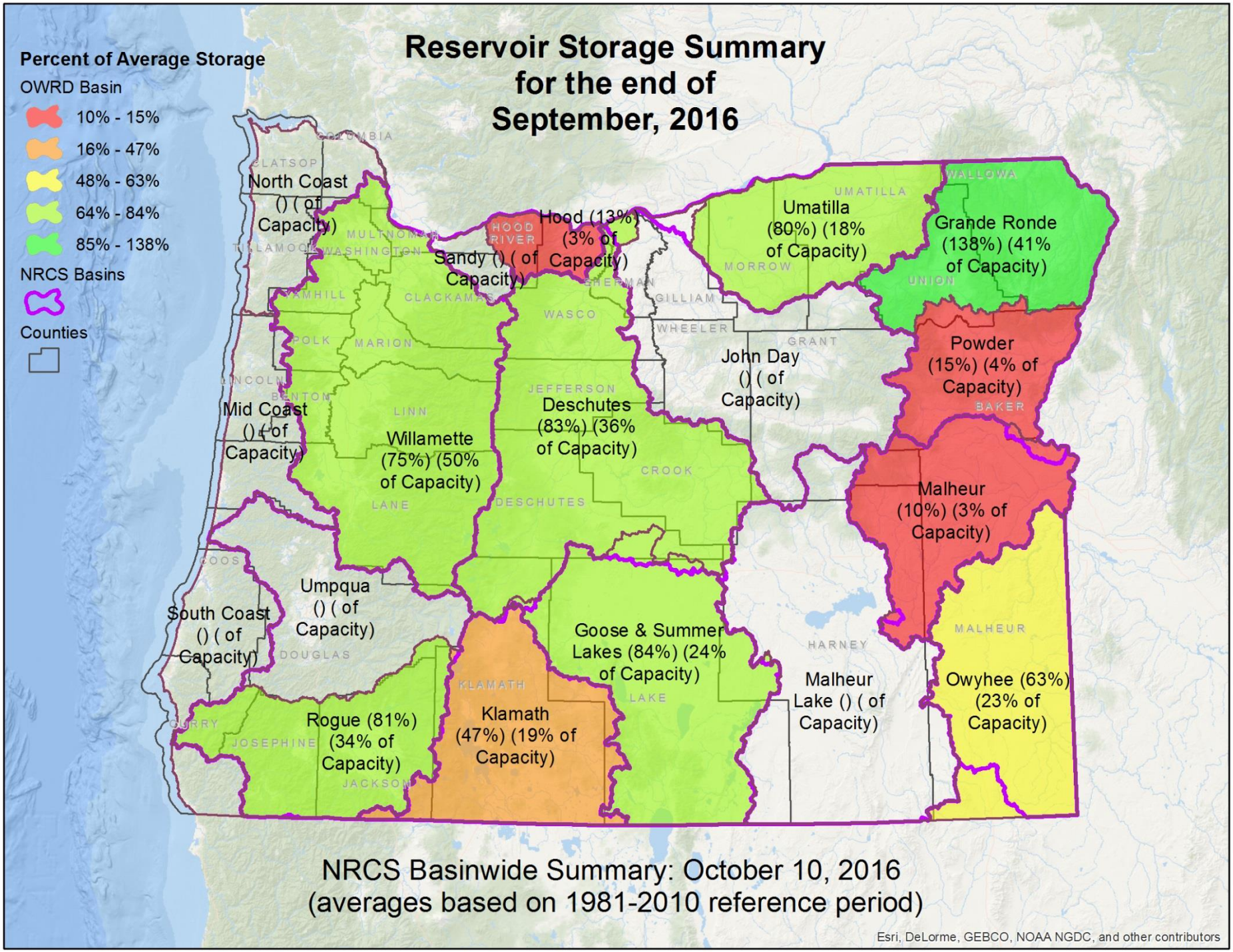

2016 Statewide
Percent of Average Stream Flow
2016 Monthly Percent of Average
2016 Cumulative Percent of Average
Percent of Average
Month
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
53%
53%
62%
61%
123%
97%
100%
99%
112%
105%
147%
117%
83%
111%
57%
103%
44%
97%
63%
96%
64%
96%
61%
95%

Reservoir Storage Summary for the end of September, 2016



NRCS Basinwide Summary: October 10, 2016
(averages based on 1981-2010 reference period)

Water Year 2016 Summary

I. **Beginning the water year: October through January 1st**

a. ***Above normal precipitation and snowpack conditions***

II. **Snow accumulation season: January through April**

a. ***Most of the state accumulated a near normal snowpack in the mountains***

III. **Peak of the snow season:**

a. ***Near normal snowpack on April 1st except NW Oregon***

IV. **Springtime conditions: April through June**

a. ***Record heat rapidly depleted the snowpack during April***

b. Spring precipitation was below average for most of the state

V. **Summertime Streamflow**

a. Streams peaked early and began to recede earlier than normal

b. Well below average streamflow occurred in most rivers throughout the state

H. Scott Oviatt
Snow Survey Supervisory Hydrologist
USDA NRCS Oregon
Scott.Oviatt@or.usda.gov
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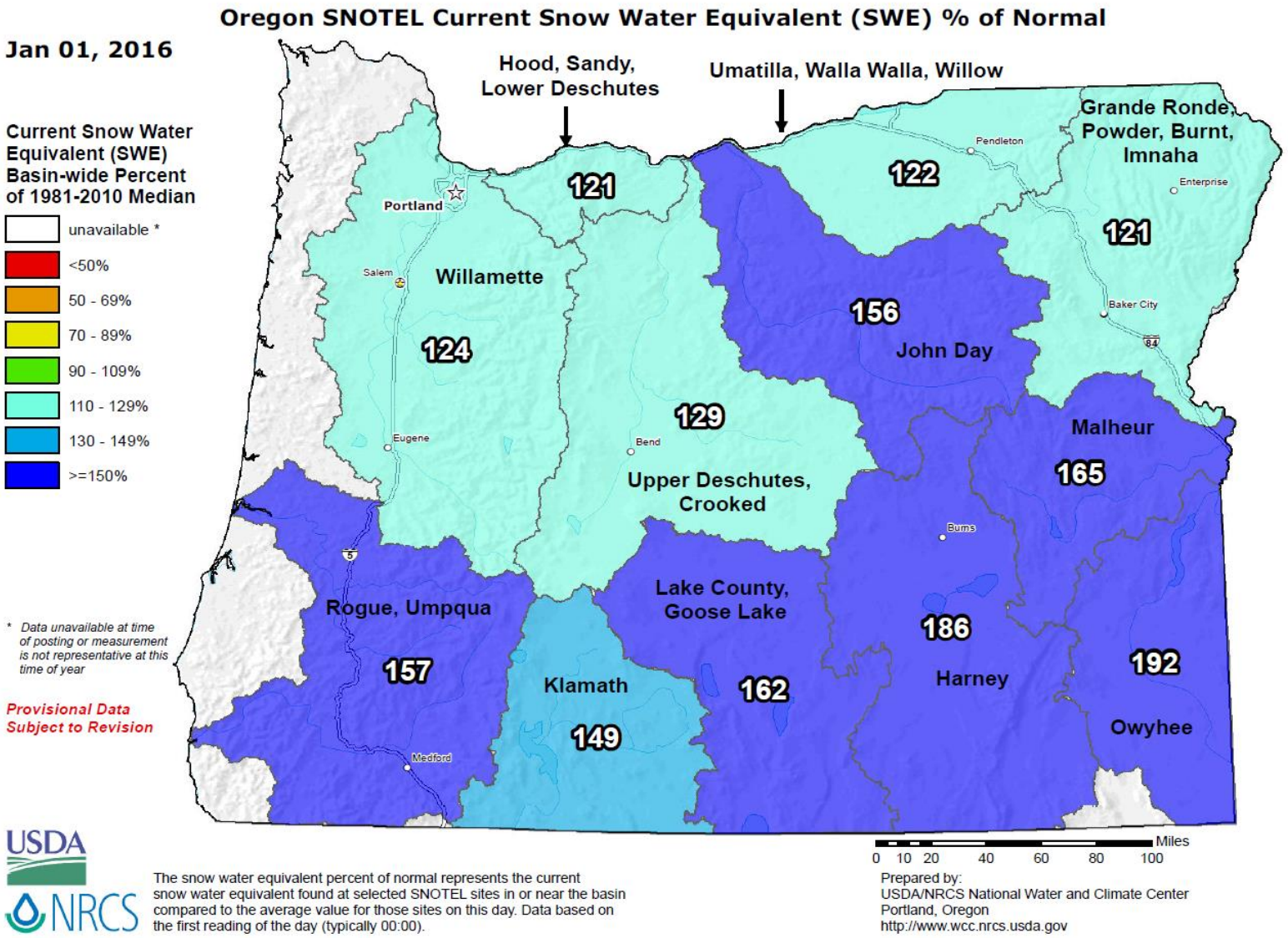
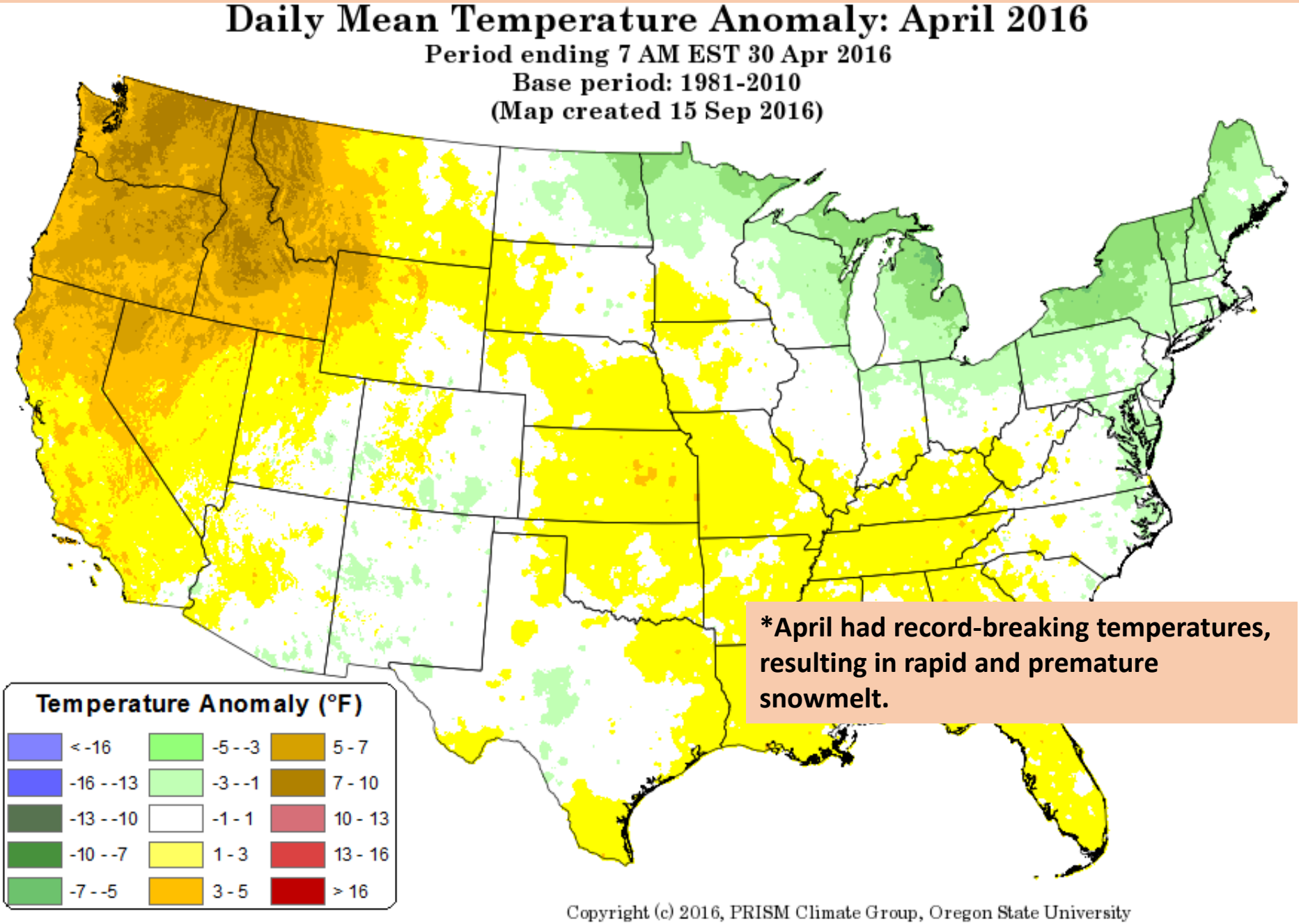
http://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/

January 1, 2016 Snowpack

Above normal snowpack for Oregon



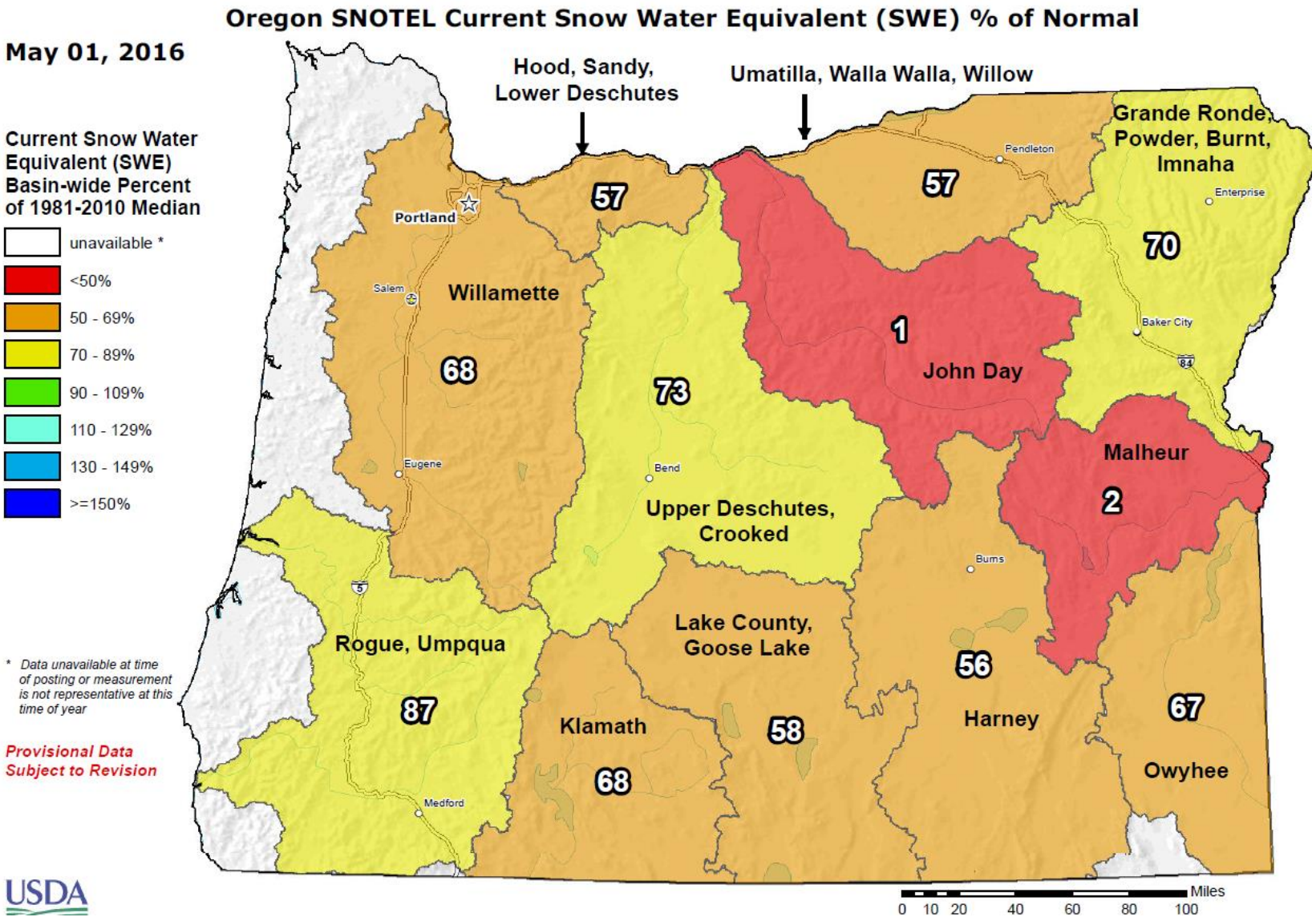
Heat Wave, April 2016



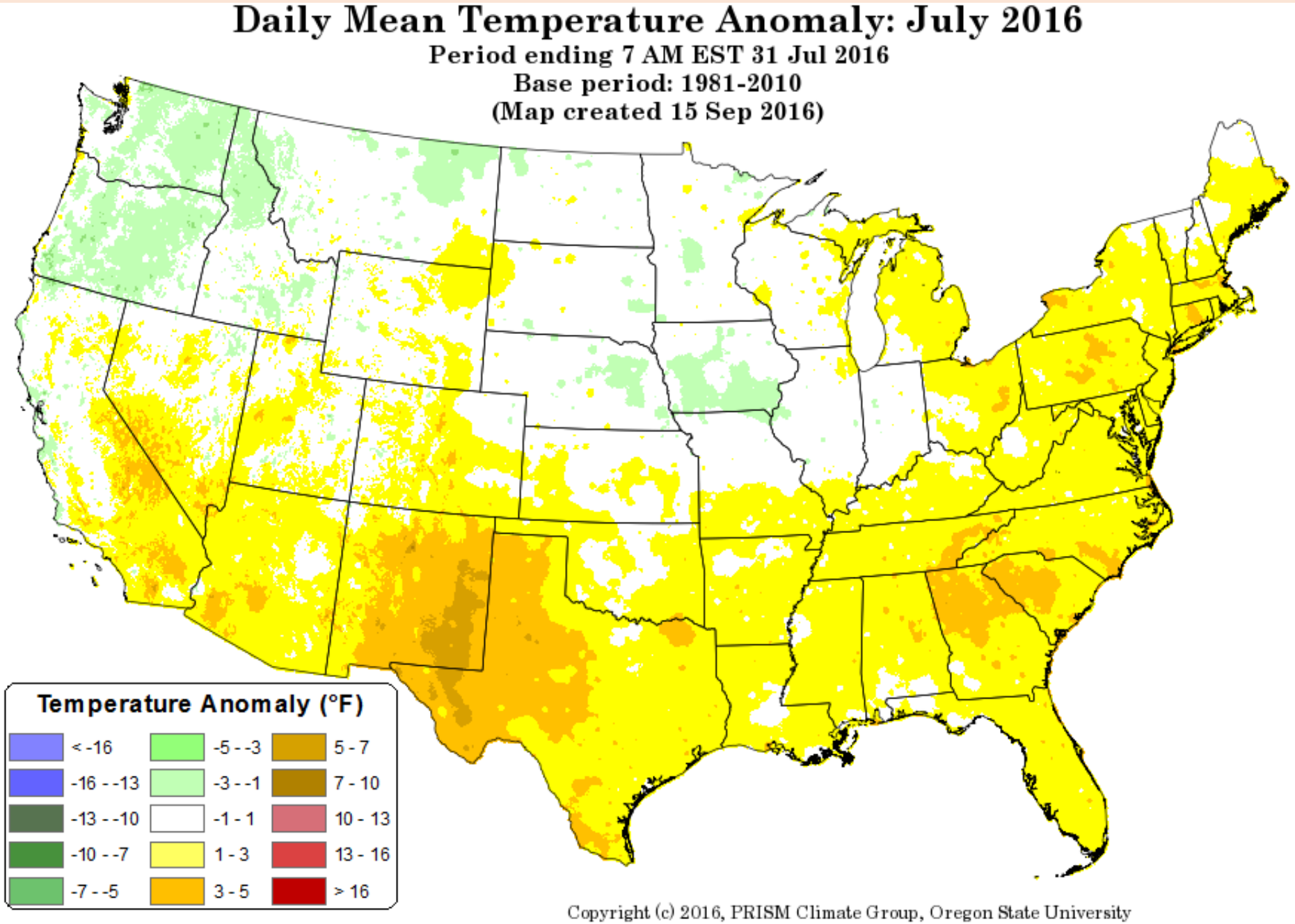
***April had record-breaking temperatures, resulting in rapid and premature snowmelt.**

May 1st snowpack conditions

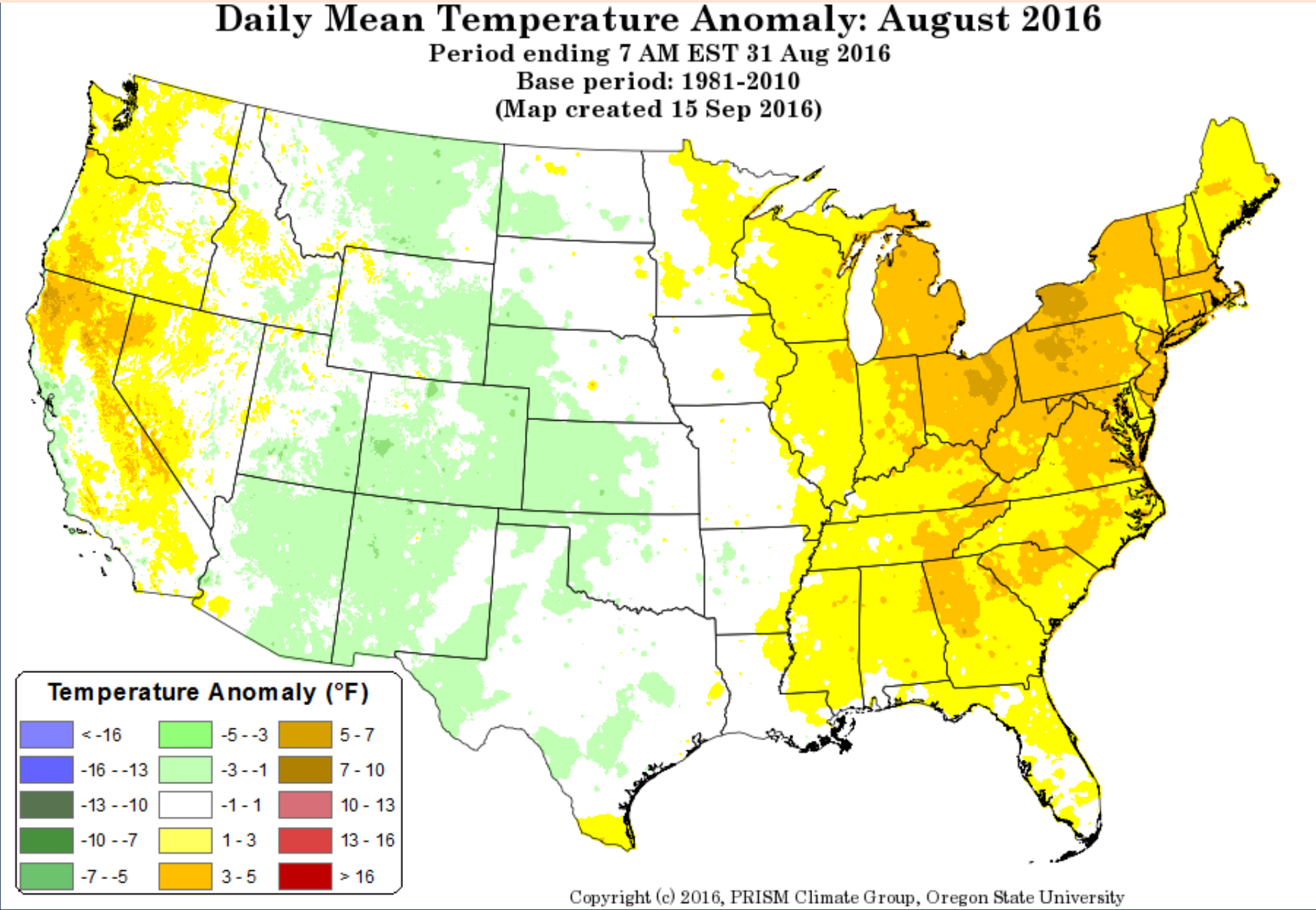
***Rapid snowmelt led to well below normal snowpack conditions by May 1st**



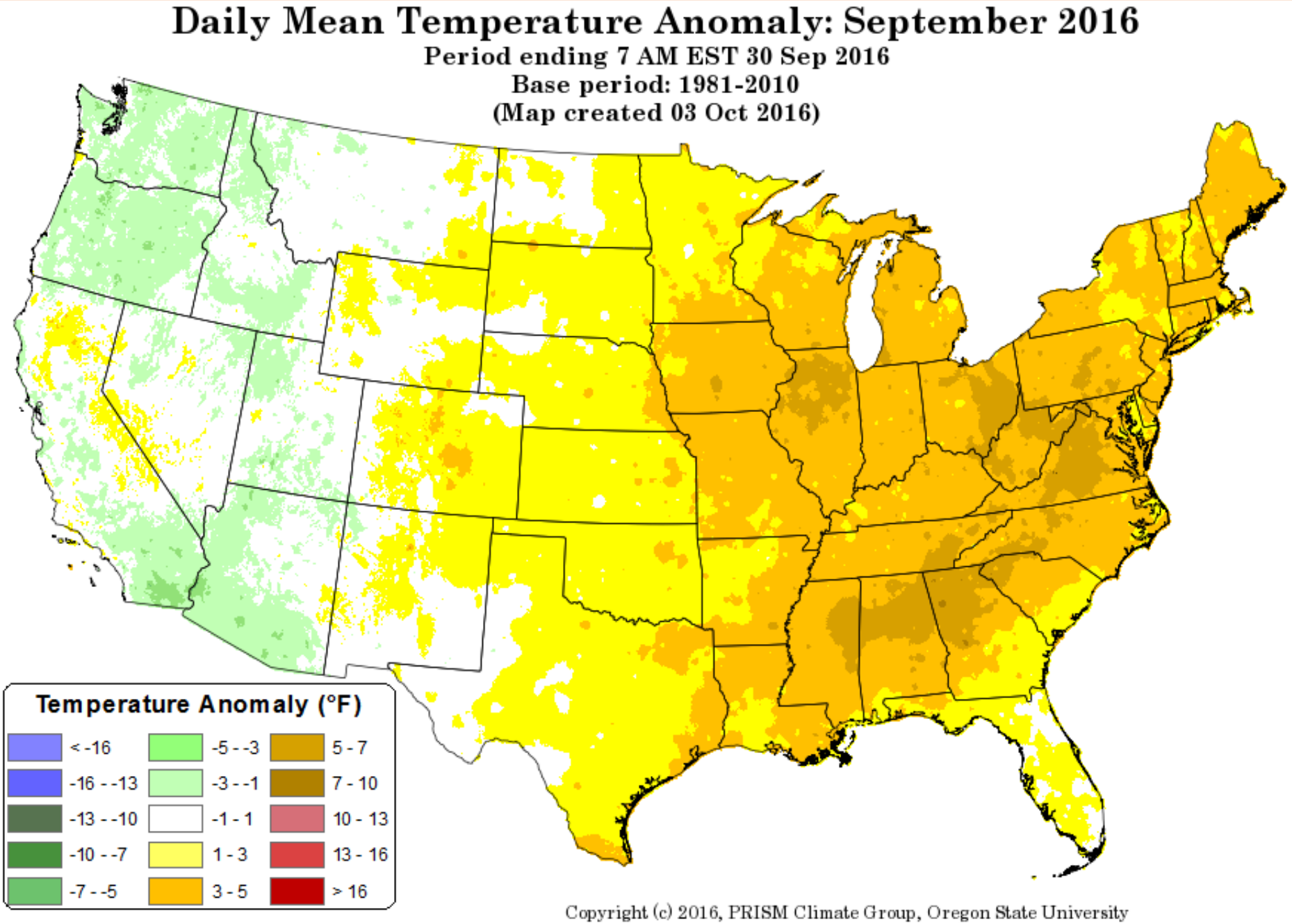
July was Cooler than Normal for the Pacific Northwest

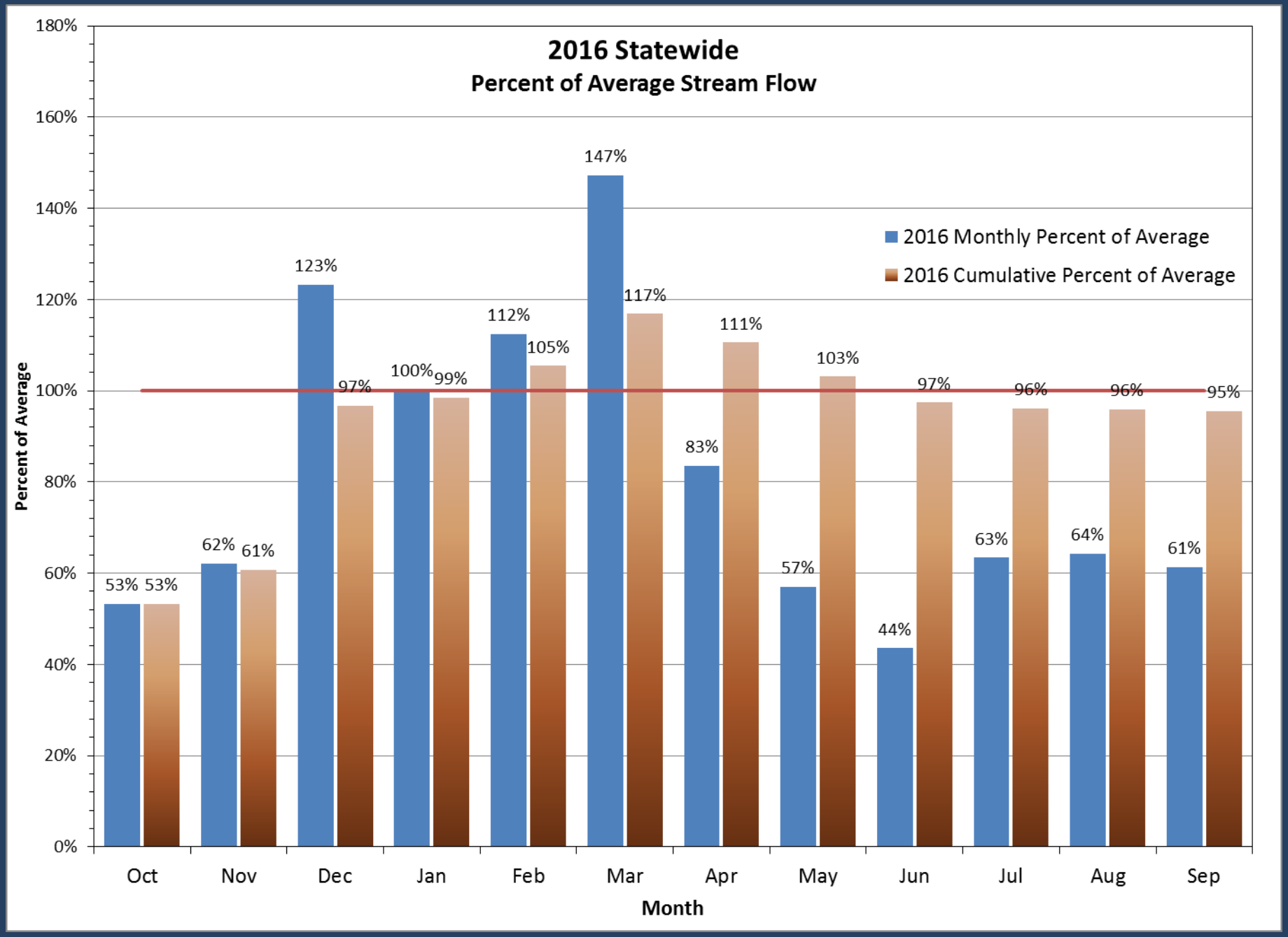


August was Hotter than Normal



September was Cooler than Normal




2016 Statewide
Percent of Average Stream Flow
2016 Monthly Percent of Average
2016 Cumulative Percent of Average
Percent of Average
Month
180%
160%
140%
120%
100%
80%
60%
40%
20%
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Oct
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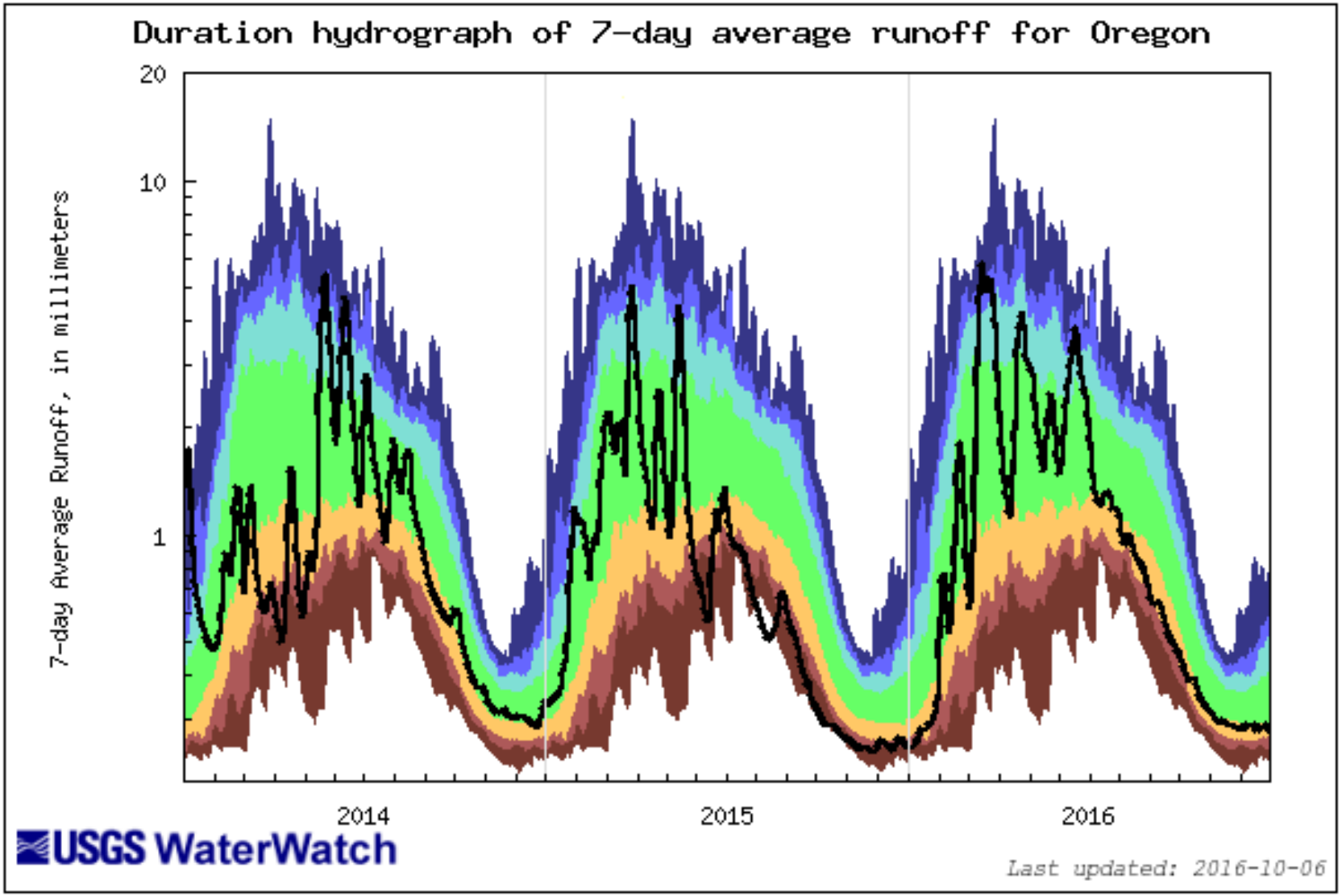
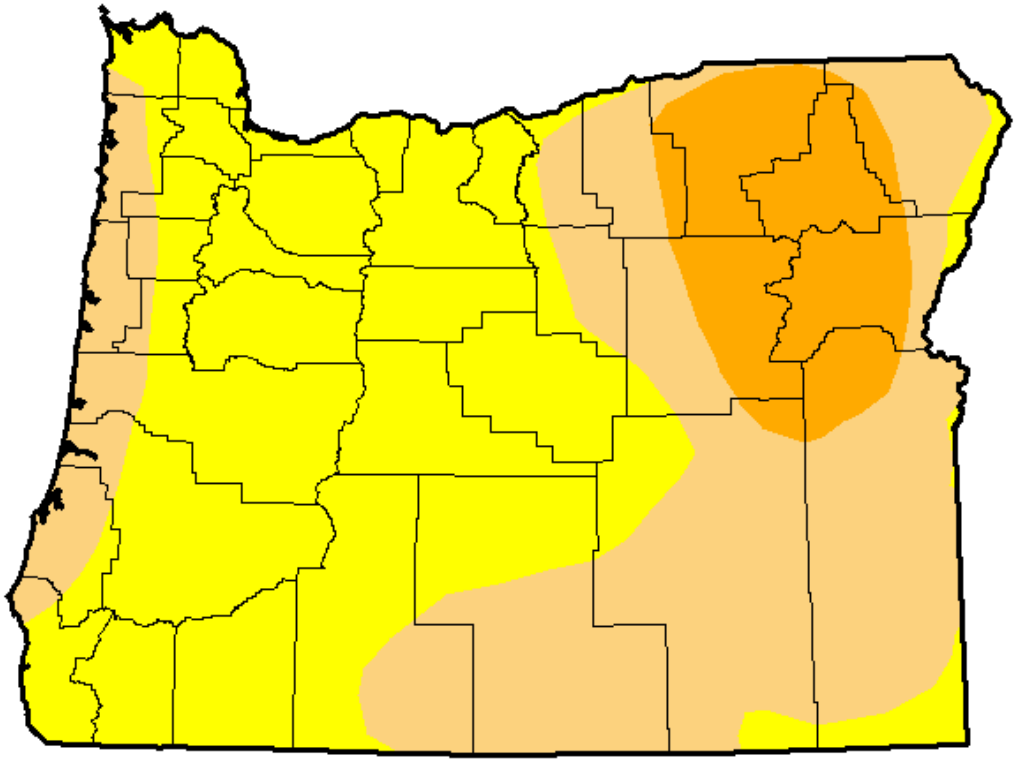


Explanation - Percentile classes							
lowest-5th percentile	6-9	10-24	25-75	76-90	91-94	95th percentile -highest	Runoff
Severe hydrologic drought	Moderate hydrologic drought	Below normal	Normal	Above normal	Much above normal		

U.S. Drought Monitor

Oregon



October 4, 2016

(Released Thursday, Oct. 6, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	50.28	12.30	0.00	0.00
Last Week 9/27/2016	0.00	100.00	50.59	12.30	0.00	0.00
3 Months Ago 7/5/2016	0.00	100.00	49.75	0.00	0.00	0.00
Start of Calendar Year 12/29/2015	14.52	85.48	80.45	65.33	39.55	0.00
Start of Water Year 9/27/2016	0.00	100.00	50.59	12.30	0.00	0.00
One Year Ago 10/6/2015	0.00	100.00	100.00	100.00	67.29	0.00

Intensity:

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

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

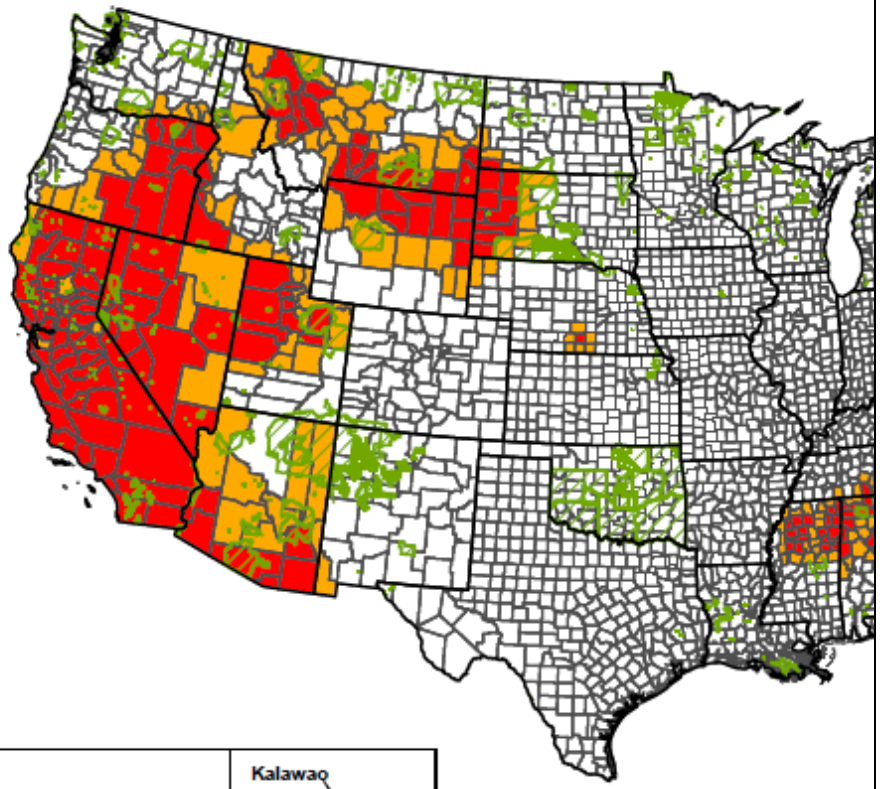
Author:

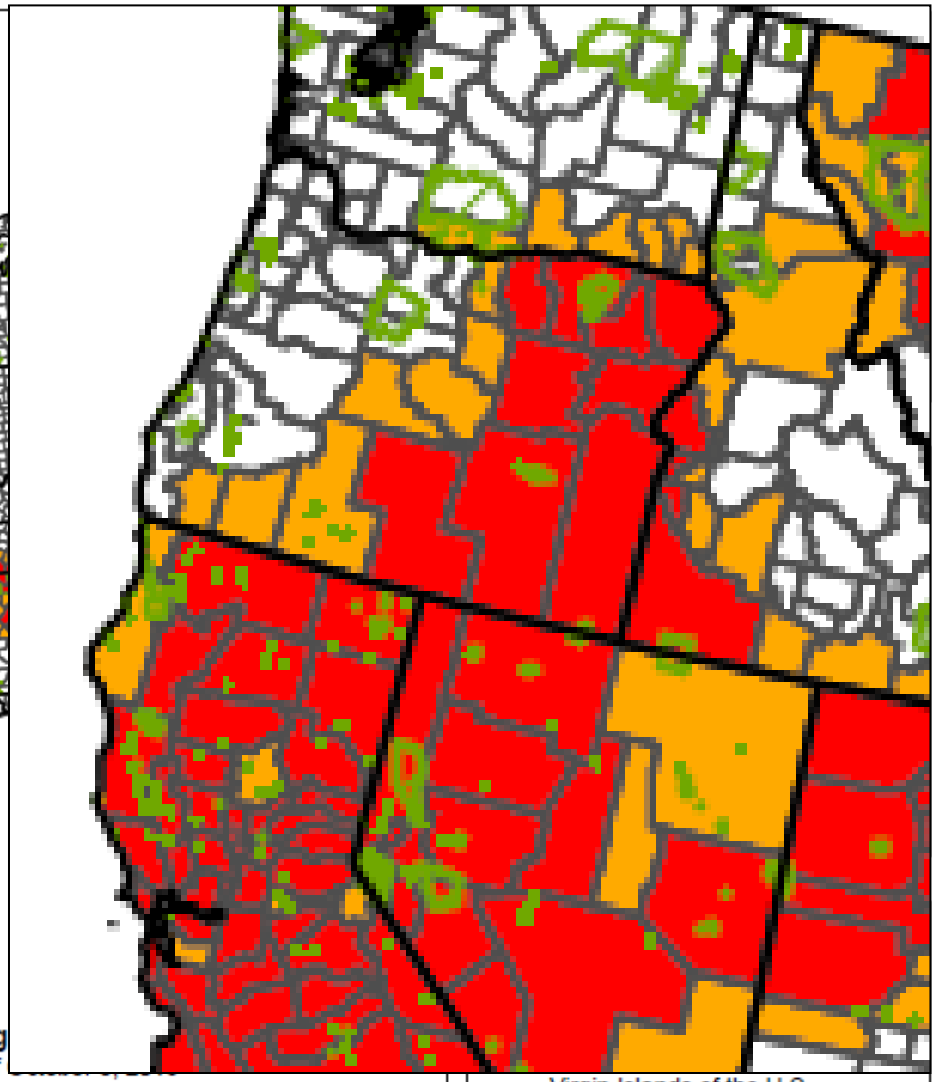
Brian Fuchs

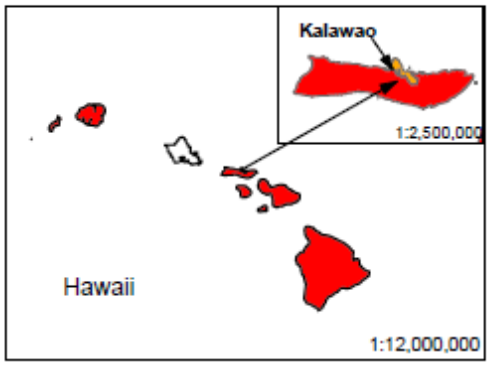
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

2016 Secretarial Drought Designations - All Drought







Secretarial Drought Desig
Disaster Incidents as of

- State Boundary
- County Boundary
- Tribal Lands
- Primary Counties: 372
- Contiguous Counties: 257

1:25,000,000

Virgin Islands of the U.S.

1:1,500,000

USDA Farm Service Agency
Production, Emergencies and Compliance Division
Washington, D.C.
October 5, 2016

North Central Region

- July 1 start of regulation – close to normal in some areas.
- Conditions were slightly better than last year.
- McKay Reservoir did not fill again – releases started a month+ earlier than normal.
- Low April precipitation.
- GW complaints were fewer than in 2015
- Low flows in mainstem John Day.

East Region

- Despite the early runoff, no major flooding occurred.
- Lack of spring rain did not build adequate soil moisture.
- High springtime temperatures.
- Flows overall were better than last year.
- Regulation in some areas started one month earlier than normal.
- Powder Basin reservoirs at season end are at lower levels than 2015.
- Owyhee Res. will have good carryover. Currently @ 24% of capacity with 170K acft.
- Snowpack started out well but early runoff, hot spring weather and previous dry years are taking its toll.

South Central Region

- Flows were better than last year.
- Adequate storage even in the Crooked R watershed.
- Outreach on conditions helped prepare people for summer conditions.
- Lower demand later in the summer helped to maintain supply in reservoirs.
- Wickiup Reservoir releasing higher winter flows to help avoid fish stranding.

Thank You