# Oregon Water Supply Availability Committee
# February 13, 2018

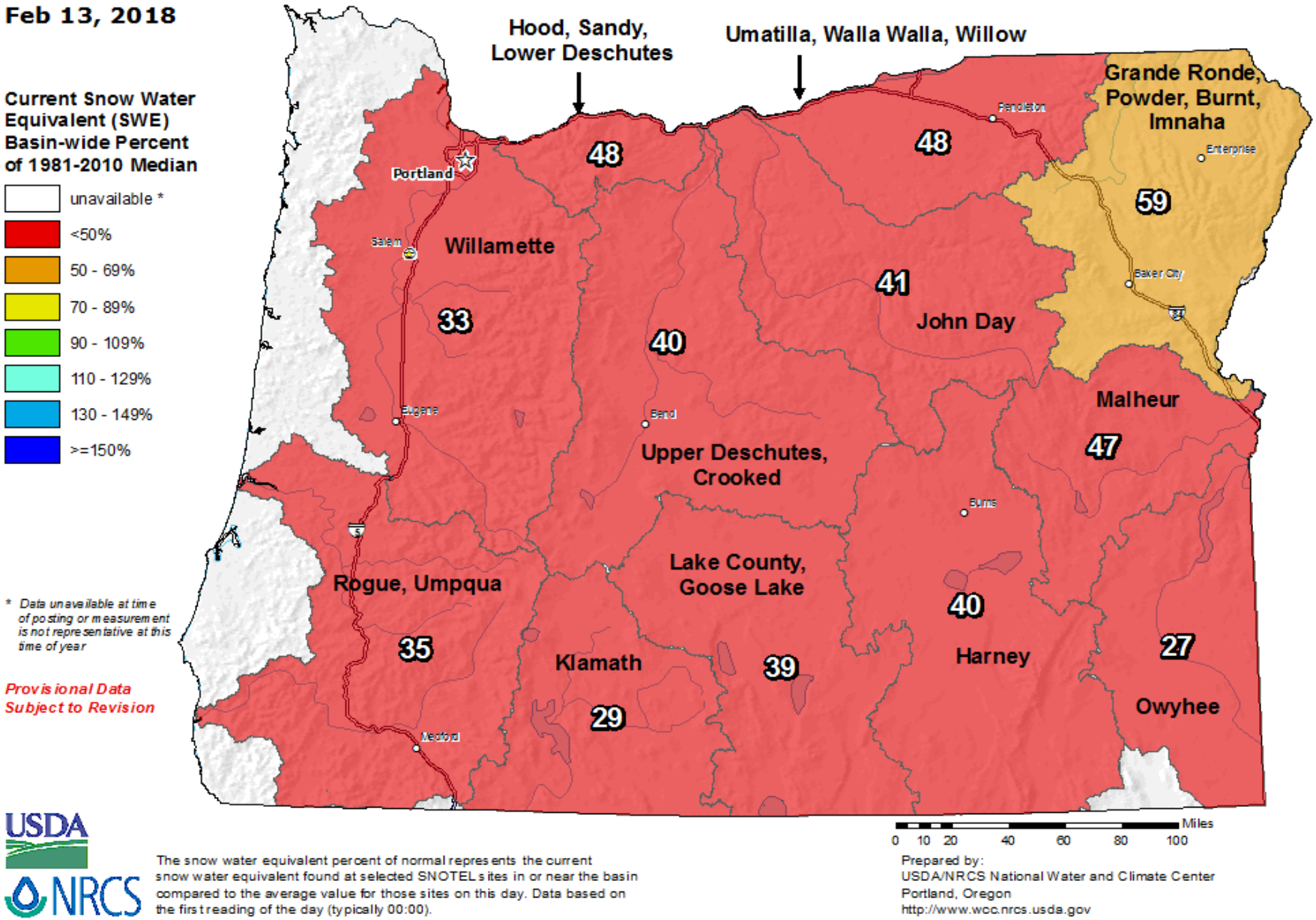
**Feb 1st SWE = 3.4”, 46% of Normal**

**Ross Twiss prepares to measure the below average snowpack at Ochoco Meadows SNOTEL site in the Crooked River basin**
*Photo courtesy of Russ Rhoden (Snow Surveyor, Ochoco Irrigation District)*

**H. Scott Oviatt**
**Snow Survey Supervisory Hydrologist**
**Acting State Soil Scientist**
**USDA Natural Resources Conservation Service**
**Scott.Oviatt@or.usda.gov**
**503-414-3271**
**http://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/**

# Statewide SNOTEL Snowpack is 39% of normal (25% of Normal In 2015)

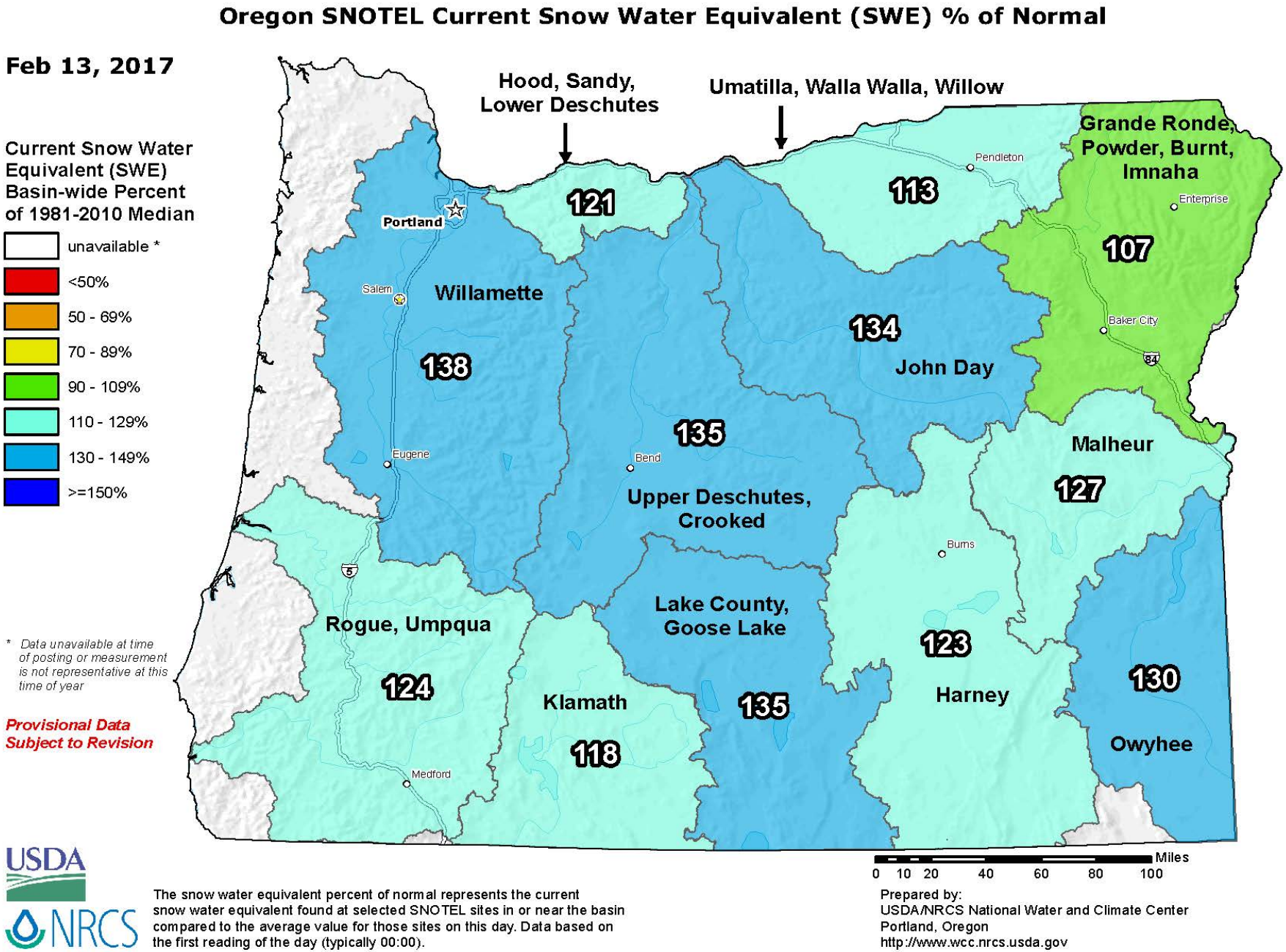
## Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal



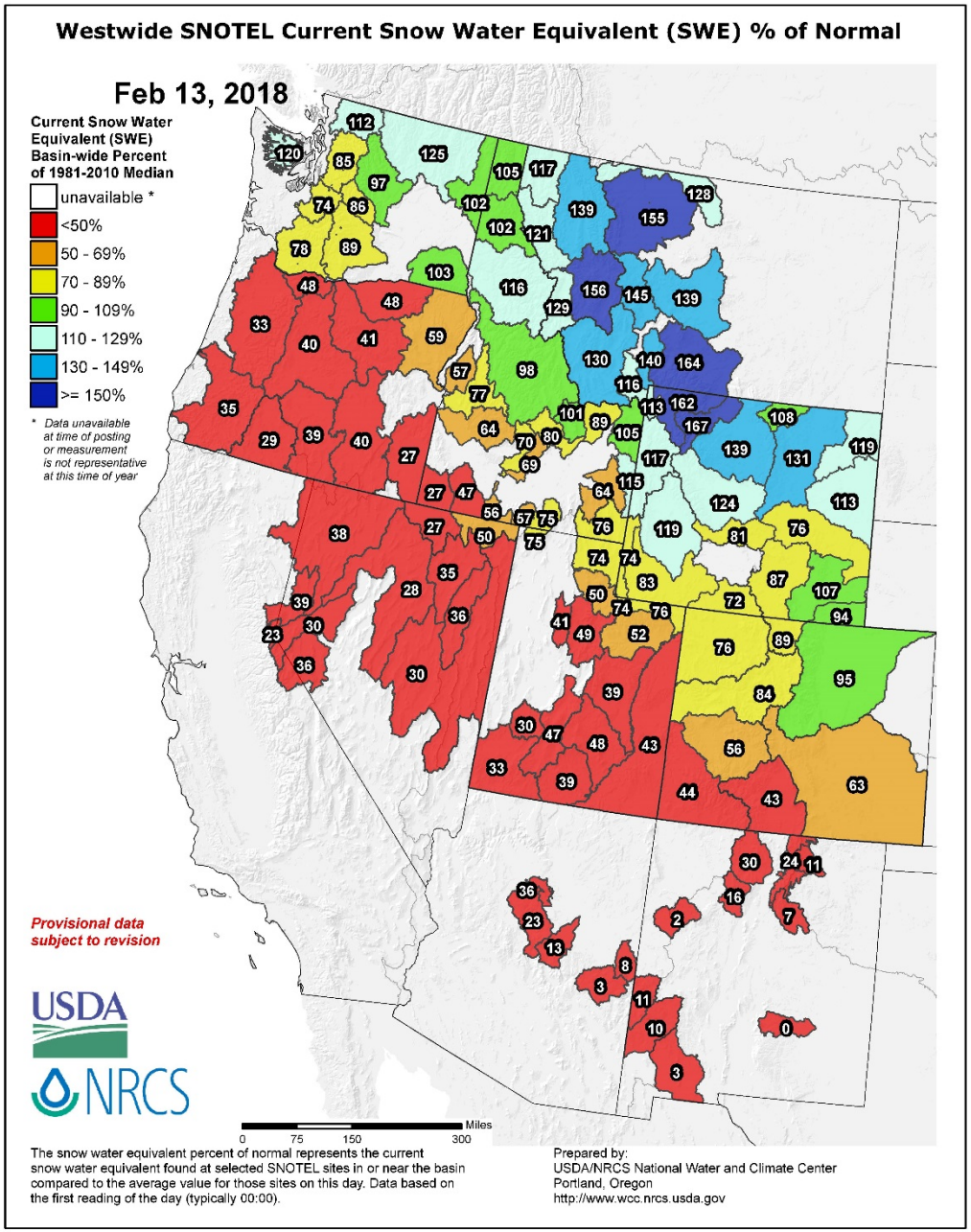

The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

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

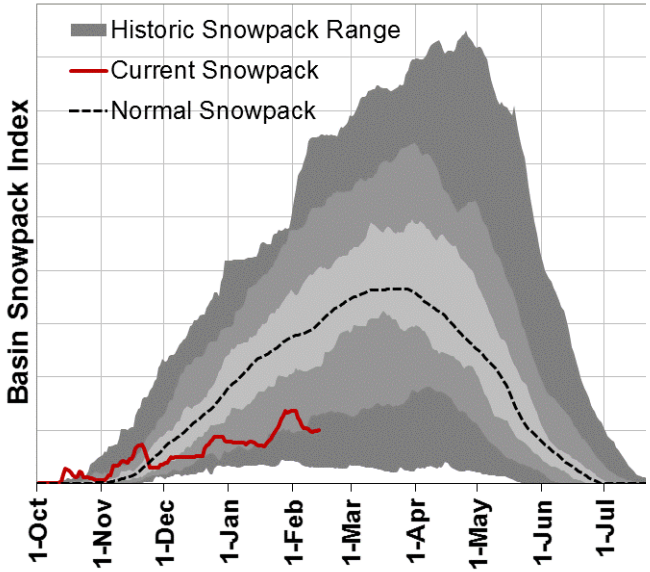
# Statewide SNOTEL Snowpack was 125% of normal



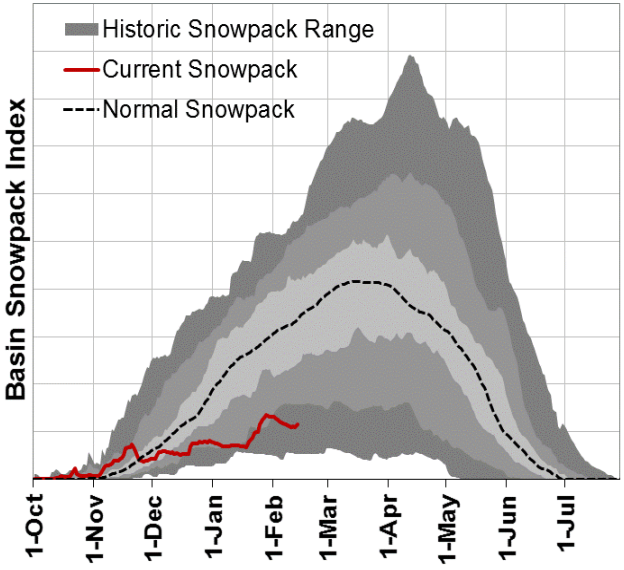
# West-Wide Snowpack – February 13, 2018



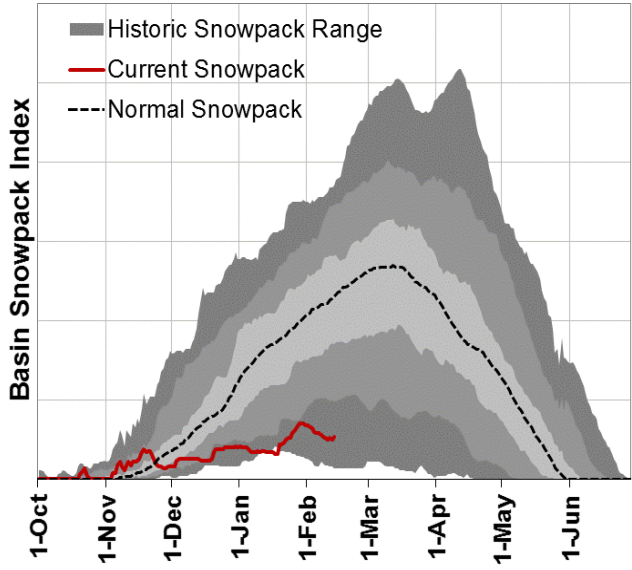
## Willamette



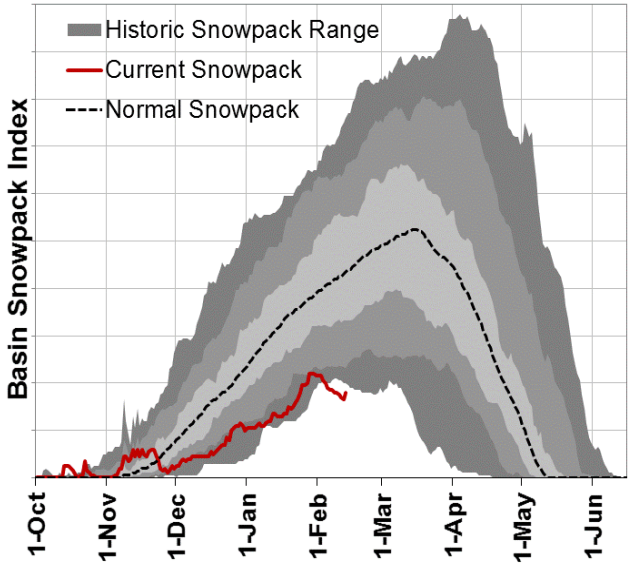

## Rogue/Umpqua



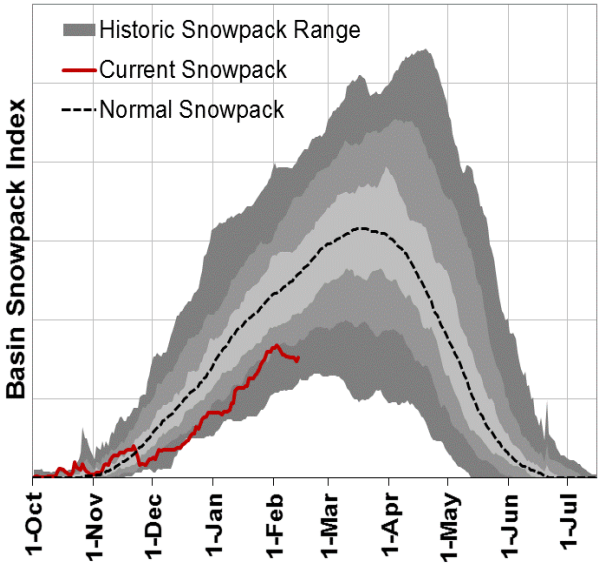

## Klamath



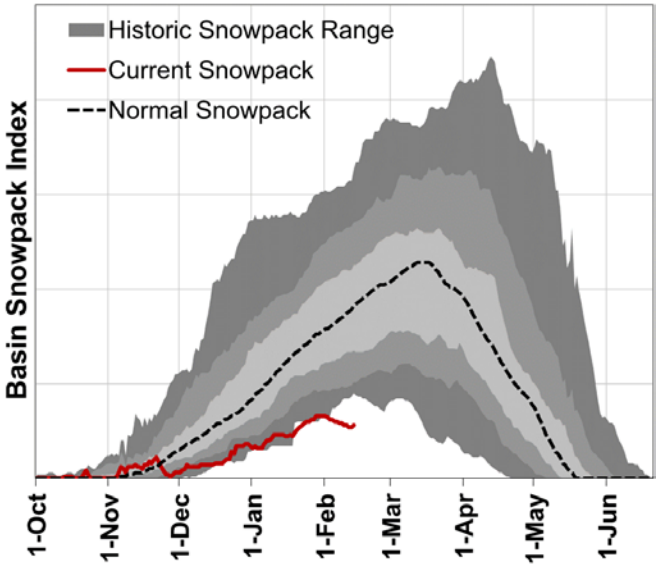

## John Day




## Grande Ronde/Powder/Burnt




## Owyhee/Malheur



United States Department of Agriculture
NRCS Natural Resources Conservation Service
National Water and Climate Center

# SNOTEL SWE Records – February 12, 2018

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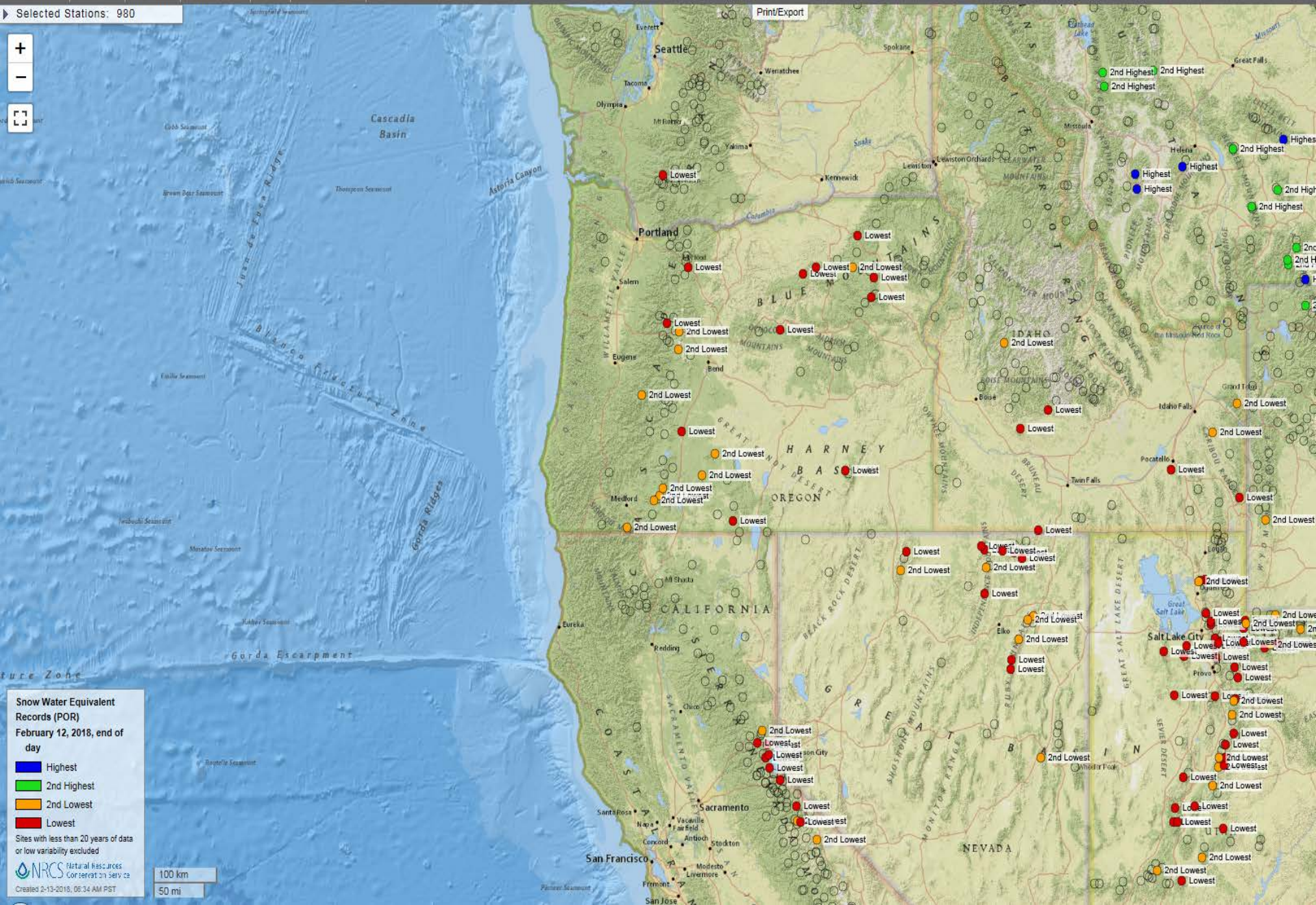

United States Department of Agriculture
NRCS Natural Resources Conservation Service
National Water and Climate Center

# SNOTEL SWE Records – February 12, 2015

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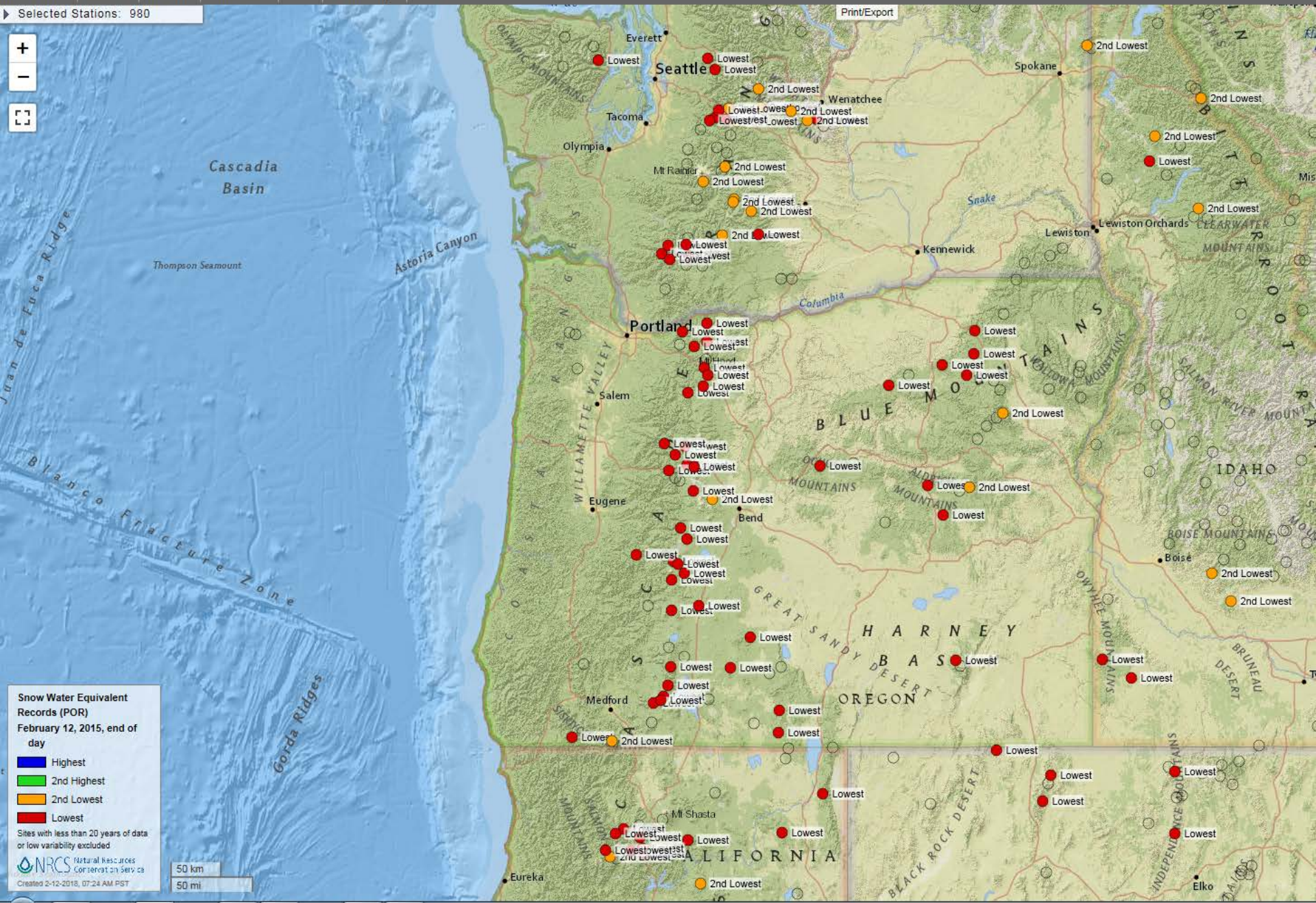
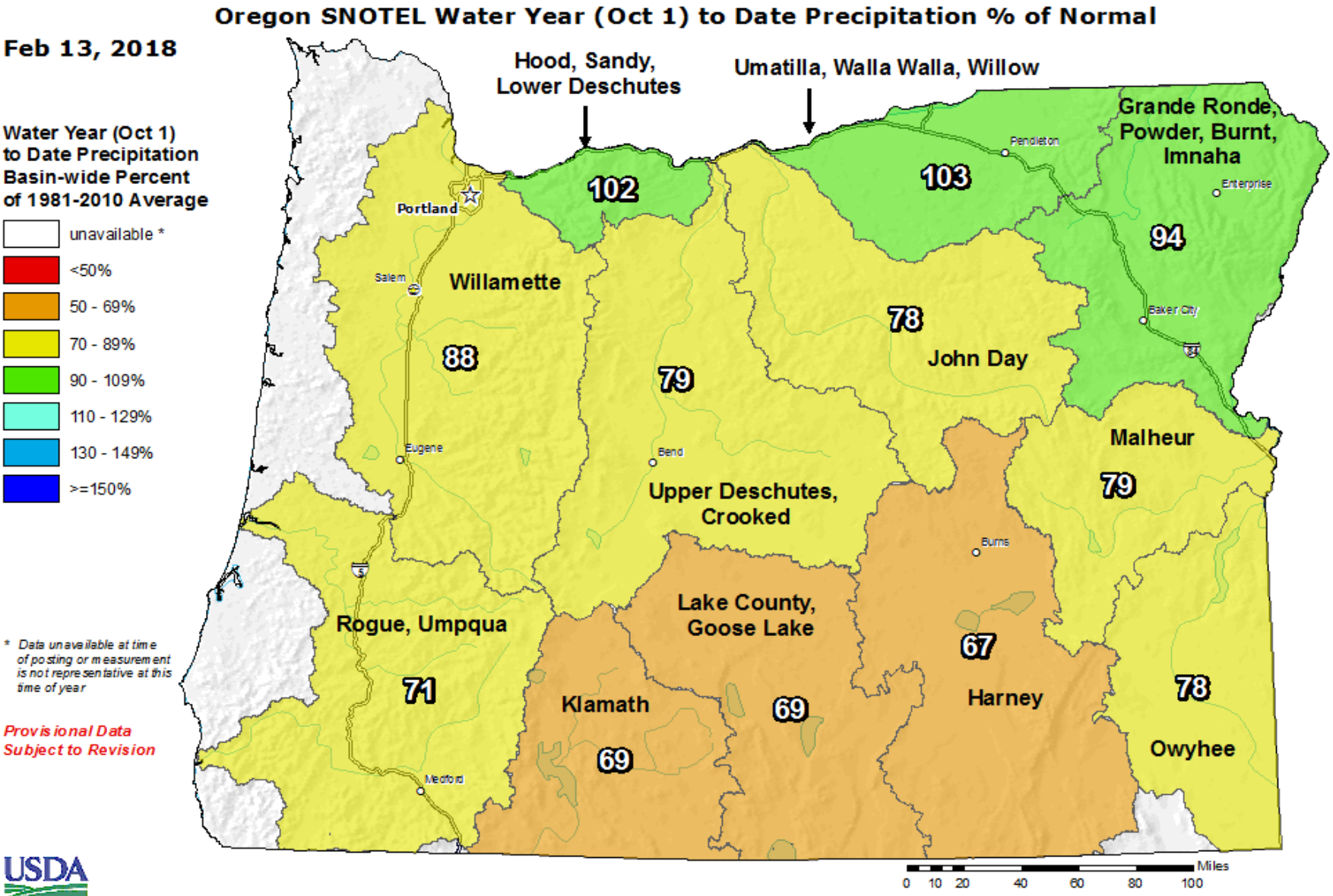


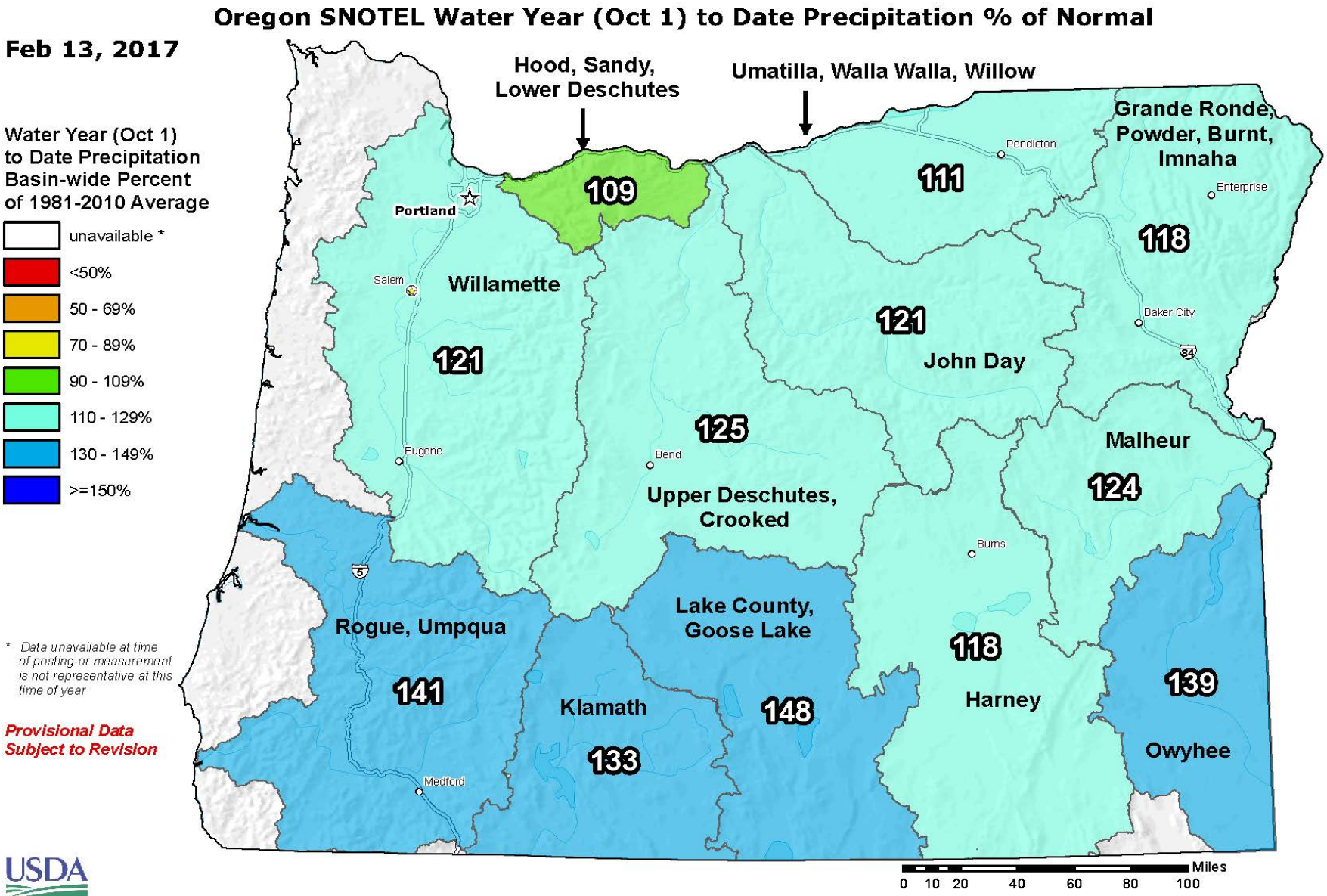
# Statewide SNOTEL Precipitation is 86% of normal (104% of Average in 2015)




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

# Statewide SNOTEL Precipitation was 124% of normal




USDA NRCS

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
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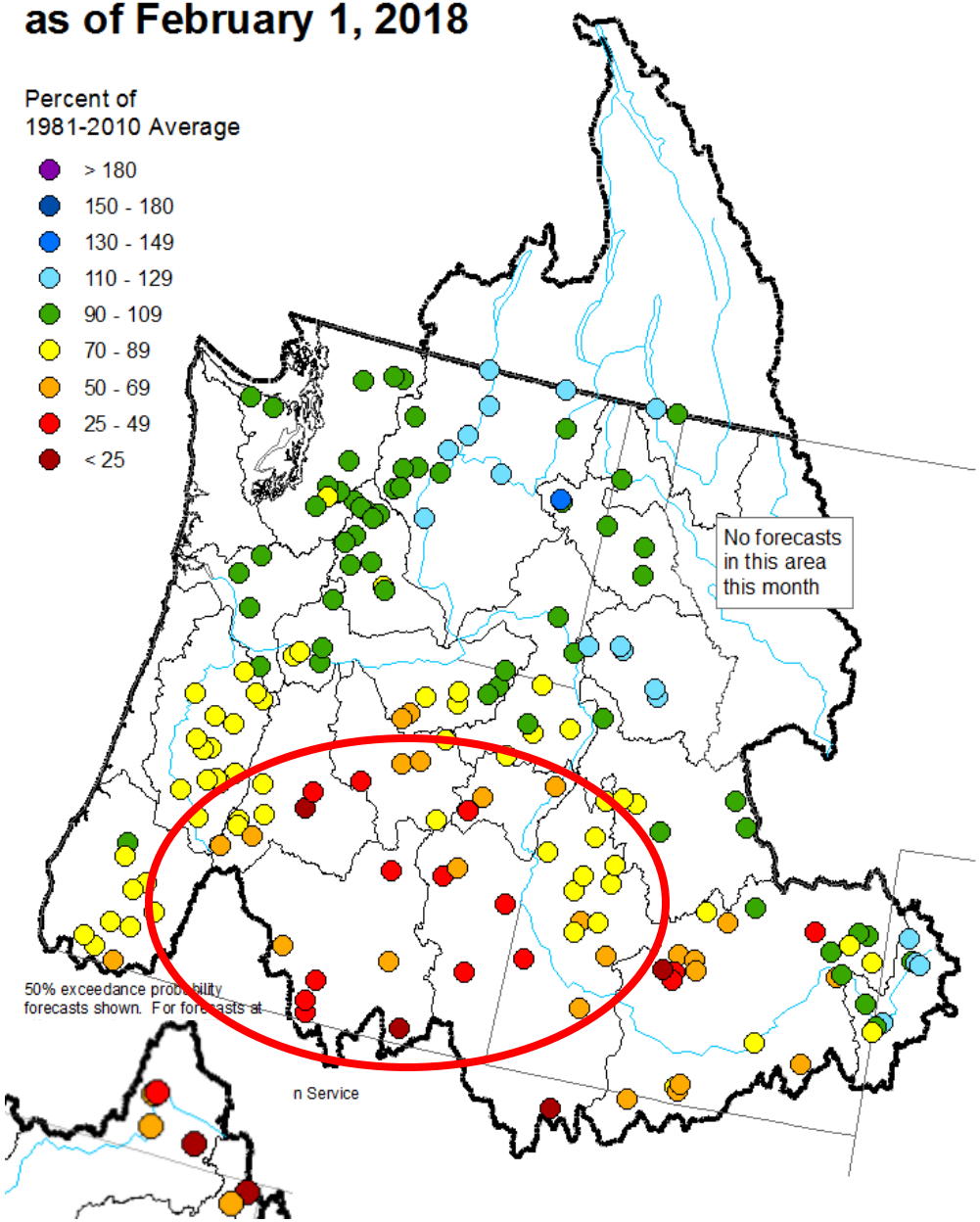
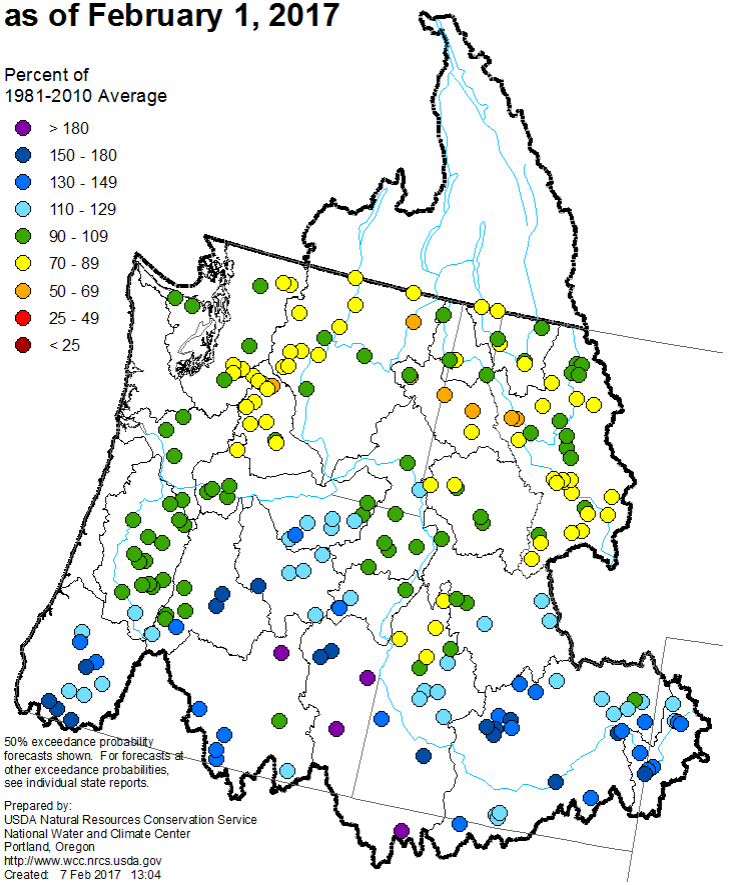
## Columbia River and Pacific Coastal Basins Spring and Summer Streamflow Forecasts as of February 1, 2018




## April thru September Streamflow Forecasts:

- Generally below normal to well below normal statewide
- Lack of Snowpack Driving Mechanism

## Columbia River and Pacific Coastal Basins Spring and Summer Streamflow Forecasts as of February 1, 2017

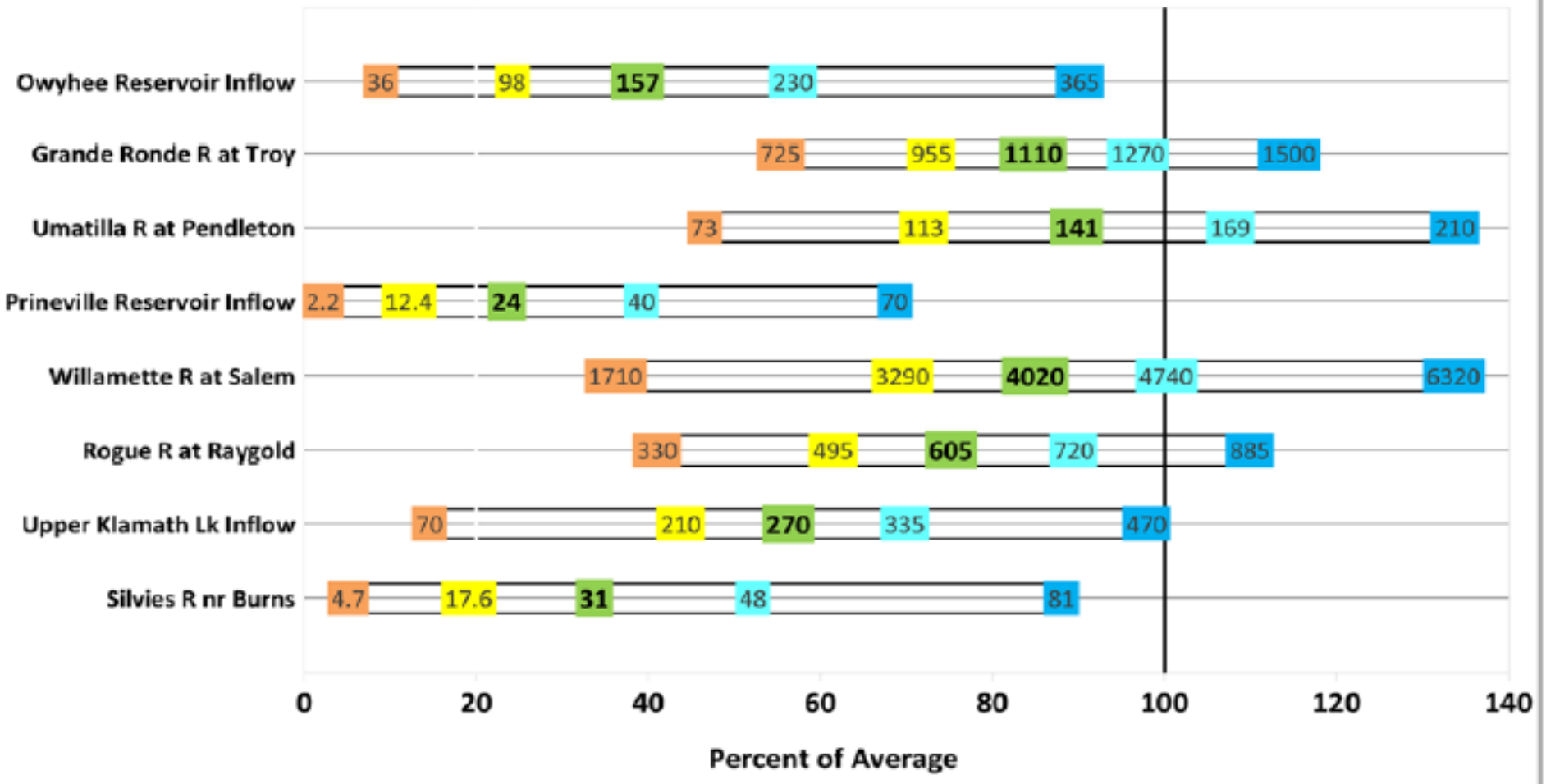


February 1, 2018

# Summary of Streamflow Forecasts across Oregon

## April through September Forecast Volumes at a Selection of Streamflow Points

## (Volumes listed in KAF)




**Legend:** ←----------Drier----------**Future Conditions**----------Wetter----------→

**90% Exceedance Forecast (KAF)**
There is a 90% chance that flows will exceed this volume.

**70% Exceedance Forecast (KAF)**
There is a 70% chance that flows will exceed this volume.

**50% Exceedance Forecast (KAF)**
There is a 50% chance that flows will exceed this volume.

**30% Exceedance Forecast (KAF)**
There is a 30% chance that flows will exceed this volume.

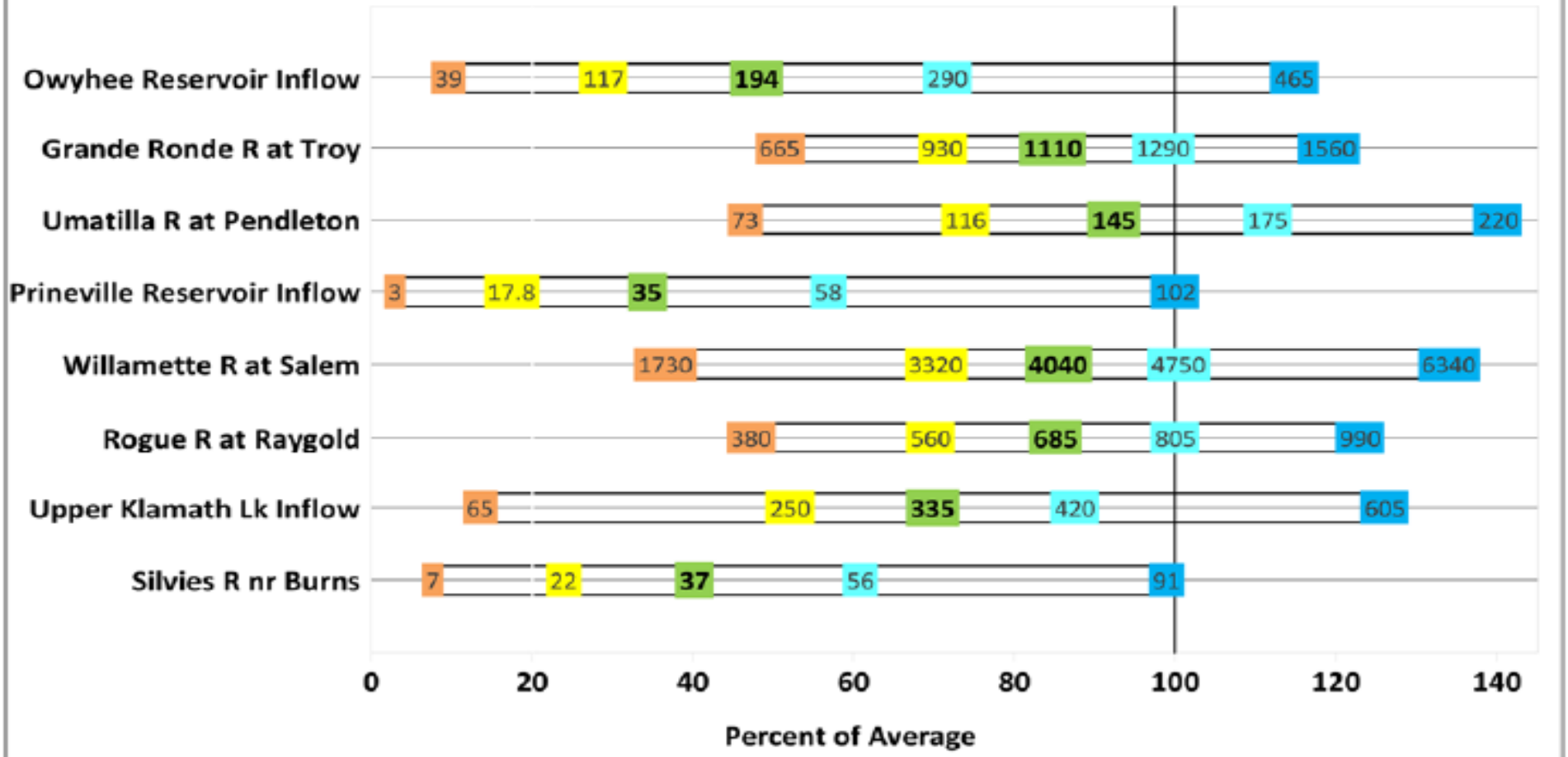
**10% Exceedance Forecast (KAF)**
There is a 10% chance that flows will exceed this volume.

January 1, 2018

# Summary of Streamflow Forecasts across Oregon

## April through September Forecast Volumes at a Selection of Streamflow Points

## (Volumes listed in KAF)




**Legend:** ←----------Drier----------**Future Conditions**----------Wetter----------→

| 90% Exceedance Forecast (KAF) | 70% Exceedance Forecast (KAF) | 50% Exceedance Forecast (KAF) | 30% Exceedance Forecast (KAF) | 10% Exceedance Forecast (KAF) |
|---|---|---|---|---|
| There is a 90% chance that flows will exceed this volume. | There is a 70% chance that flows will exceed this volume. | There is a 50% chance that flows will exceed this volume. | There is a 30% chance that flows will exceed this volume. | There is a 10% chance that flows will exceed this volume. |

# Thank you!

# Oregon Water Supply Availability Committee
# February 13, 2018

**Feb 1st SWE = 3.4”, 46% of Normal**

**Ross Twiss prepares to measure the below average snowpack at Ochoco Meadows SNOTEL site in the Crooked River basin**
*Photo courtesy of Russ Rhoden (Snow Surveyor, Ochoco Irrigation District)*

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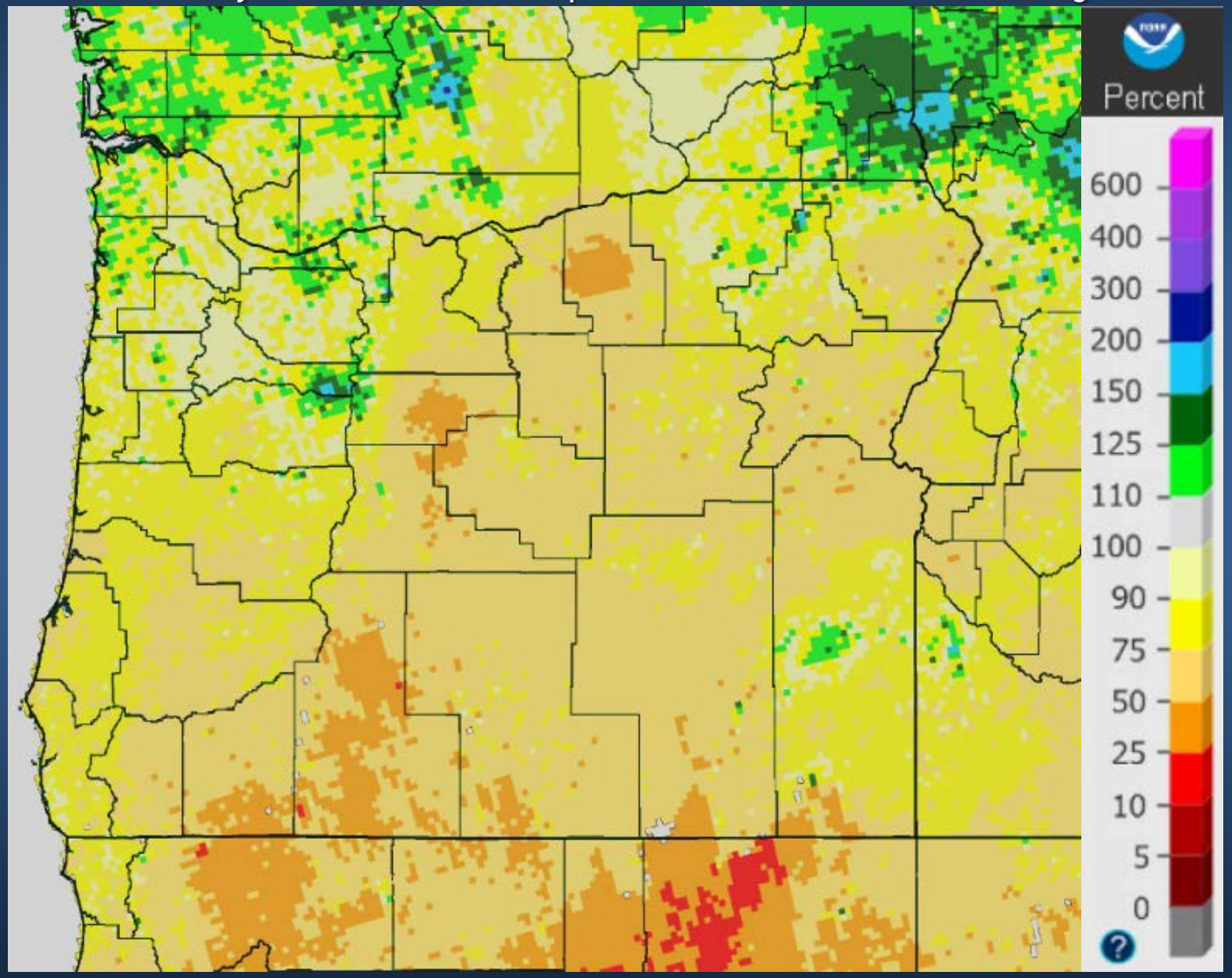
# Oregon Water Supply Availability

## *February 13, 2018 NWS Update*

Andy Bryant, NWS Portland

# WY2018 Precipitation thus far

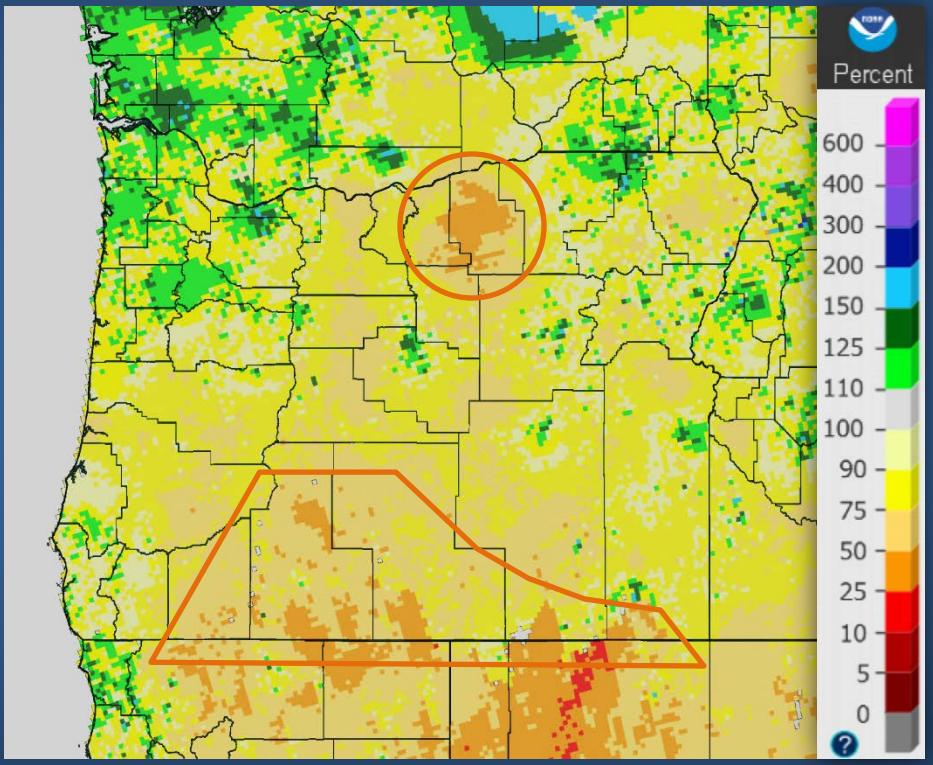
February 12th Water Year Precipitation to Date – Percent of Average




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

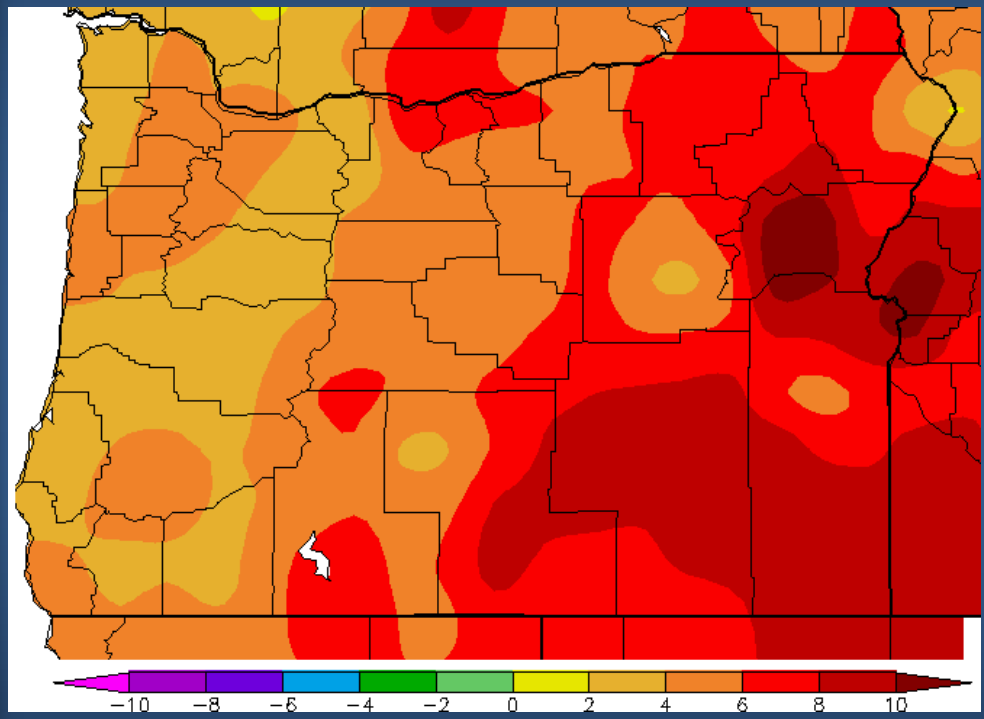
# January 2018 Precipitation & Temperatures

January 2018 Precipitation - Percent of Ave




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

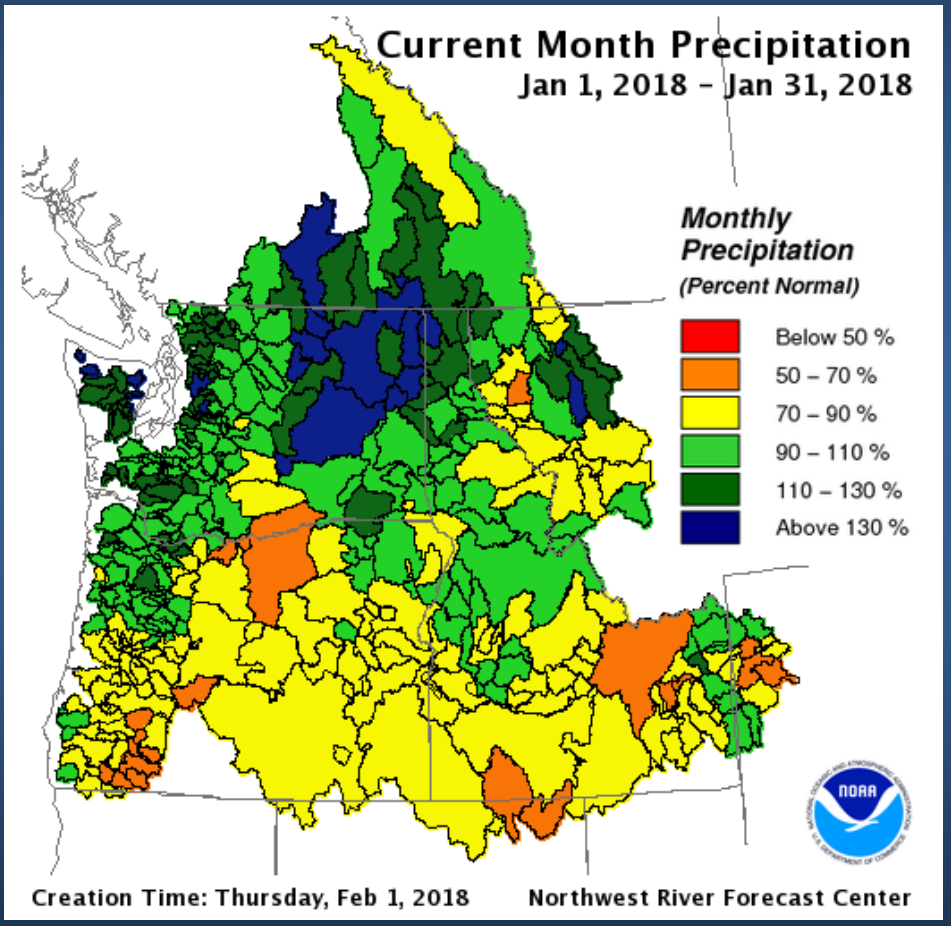
Jan 1, 2018 – Feb 10, 2018 Temperatures – Departure from Ave

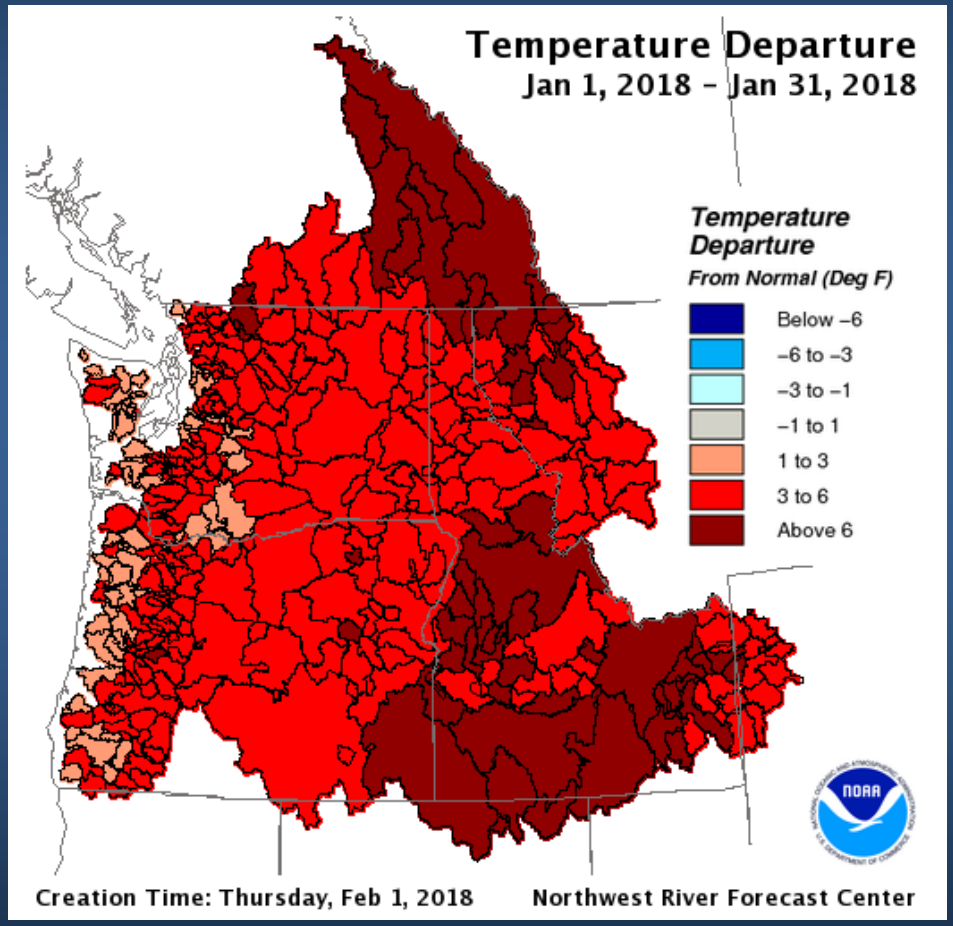



Source: wrcc.dri.edu/anom/ore_anom.html

# January 2018 Precipitation & Temperatures

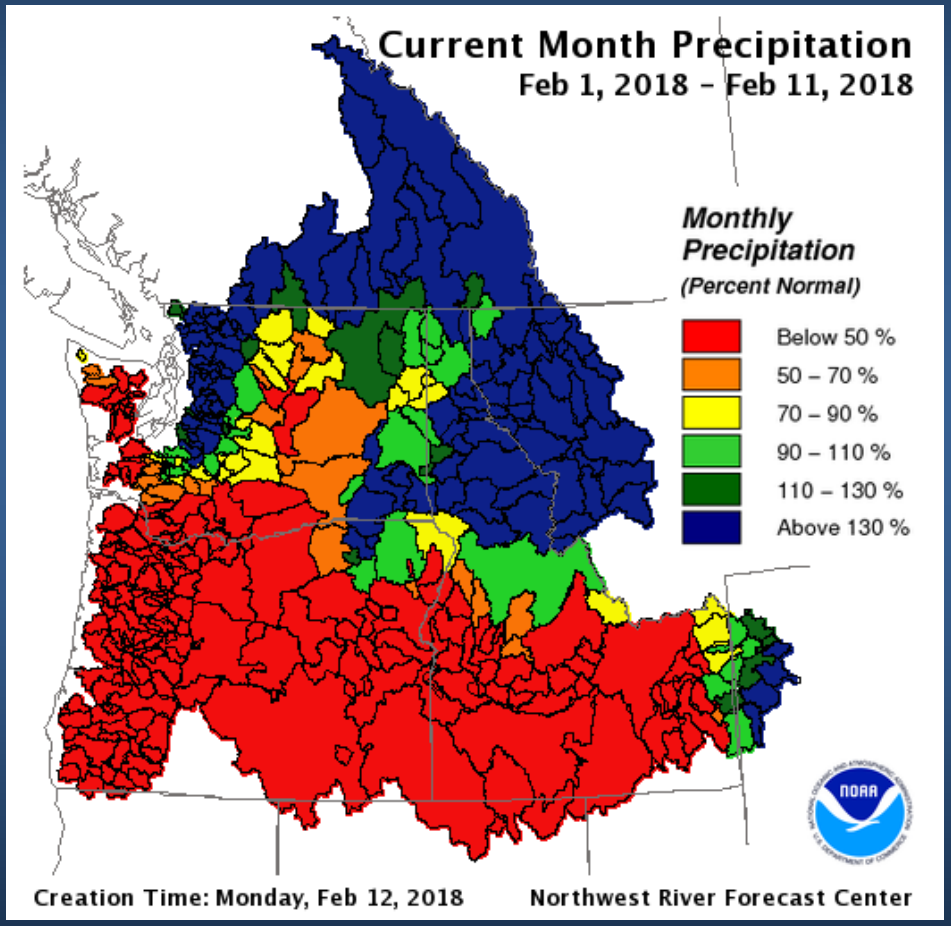
## *Columbia Basin Conditions*

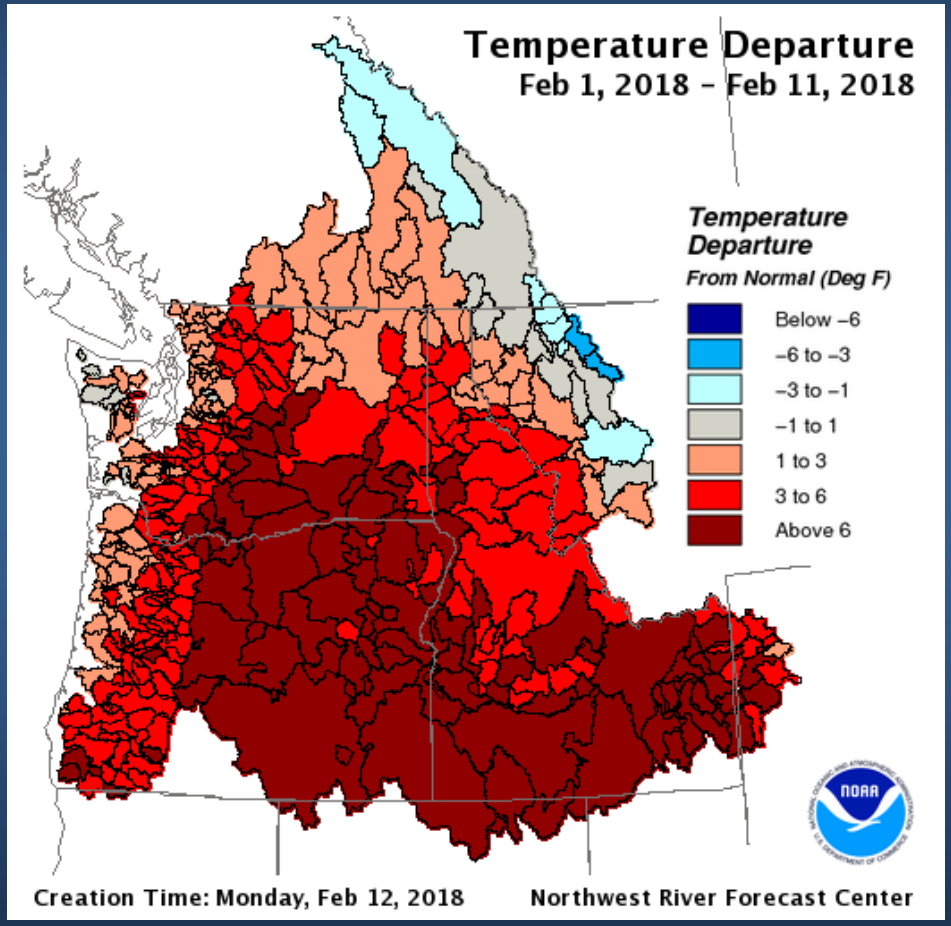



Source: www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=2

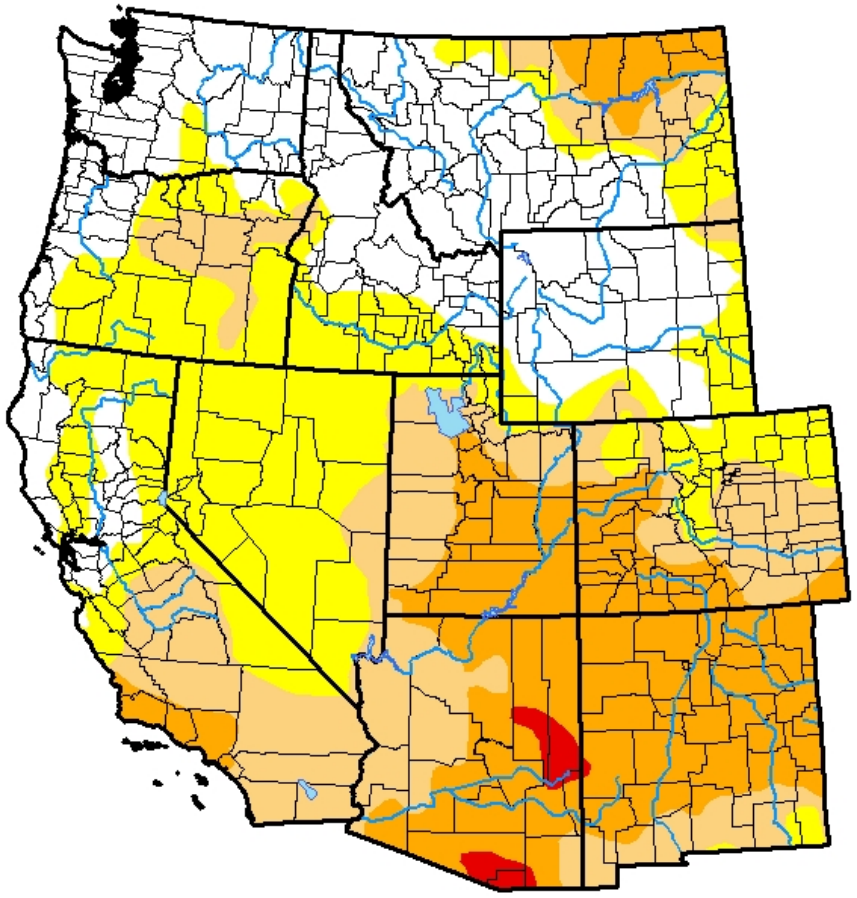
# February 1 – 11, 2018
# Precipitation & Temperatures
## *Columbia Basin Conditions*




Source: www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=2

# Drought Monitor



***U.S. Drought Monitor***

**West**

**February 6, 2018**

***(Released Thursday, Feb. 8, 2018)***

**Valid 7 a.m. EST**

*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.*

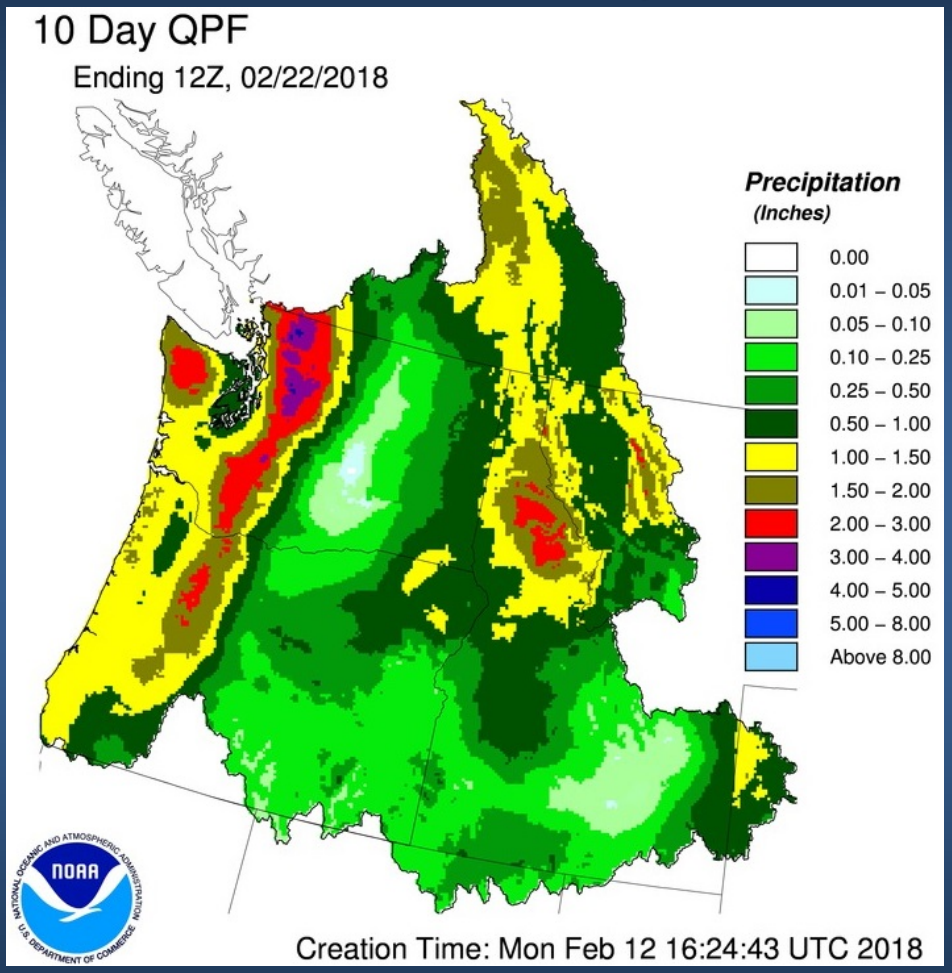
*Author:*

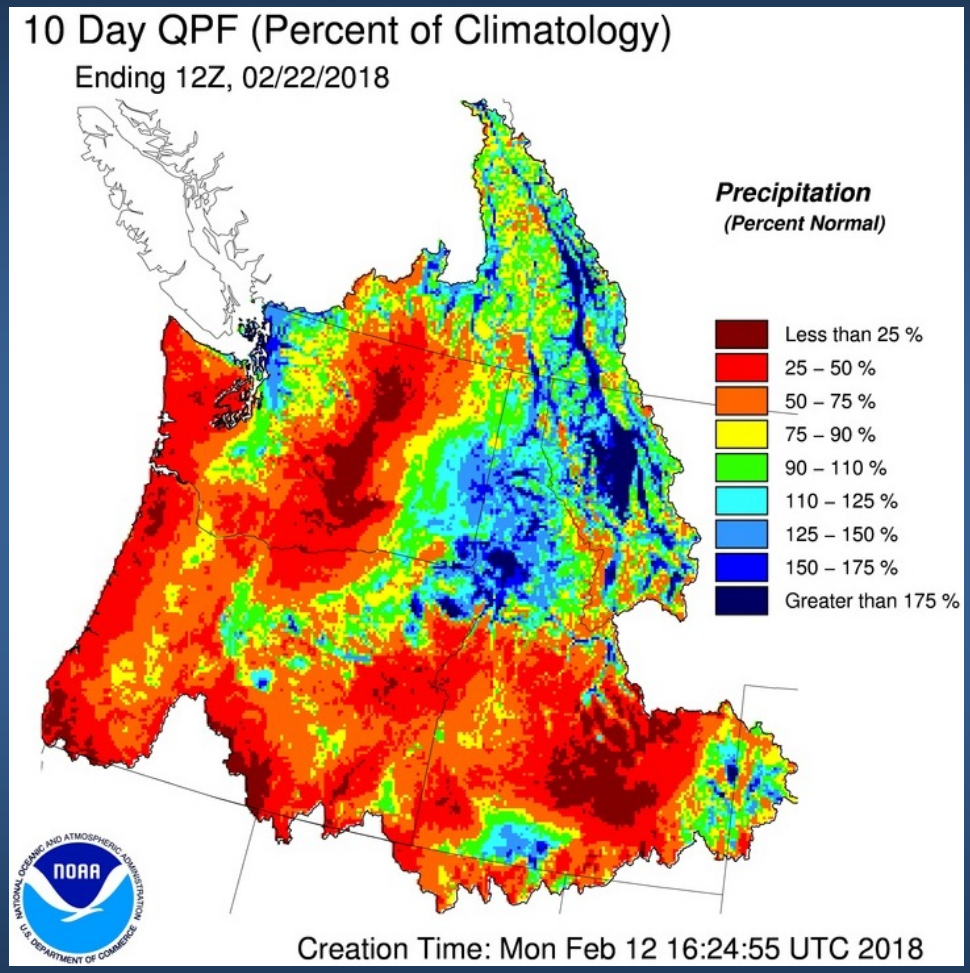
Eric Luebehusen
U.S. Department of Agriculture

**http://droughtmonitor.unl.edu/**

# Mid-February Outlook

February 12 – 21, 2018 Forecast Precipitation

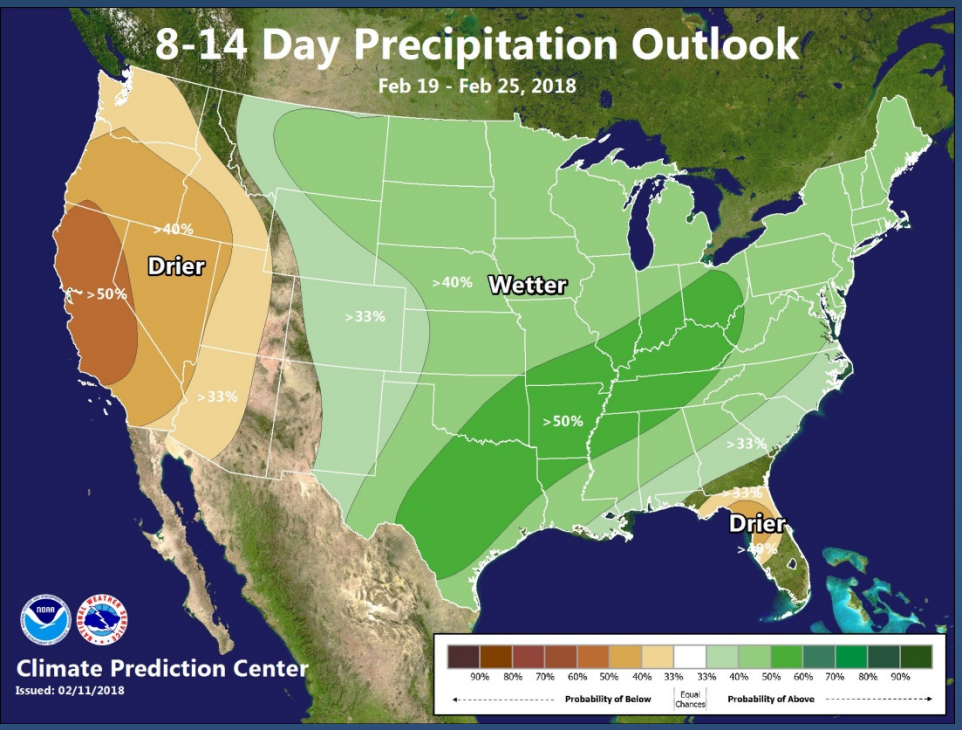



Temperatures will generally be near average through this period.

# Late-February Outlook

February 19 – 25, 2018 Precipitation & Temperature Outlook



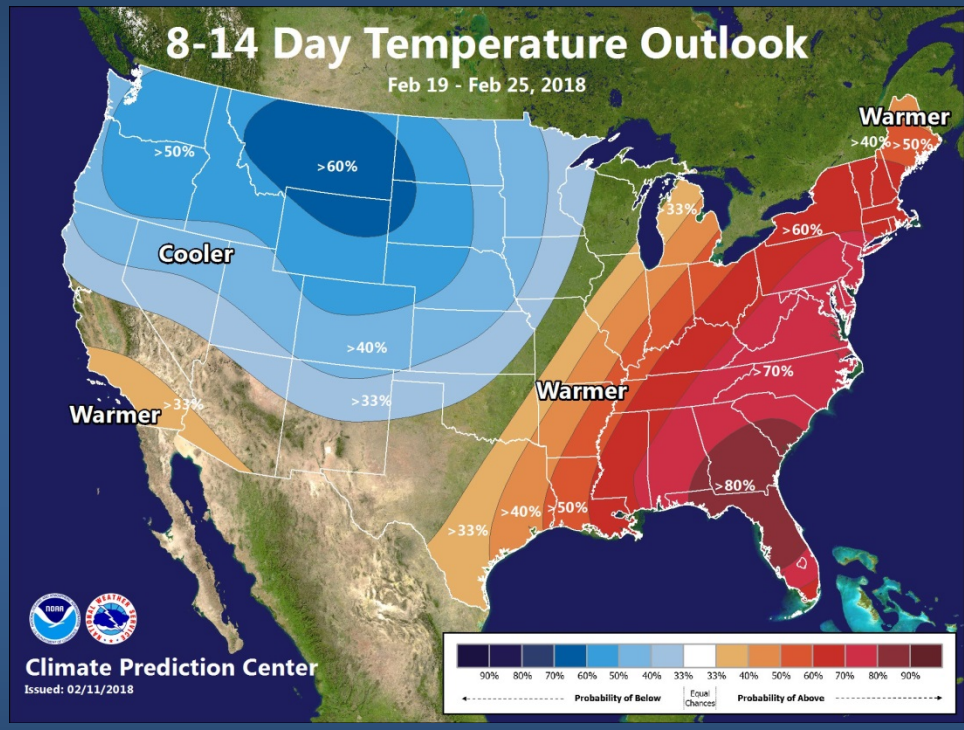
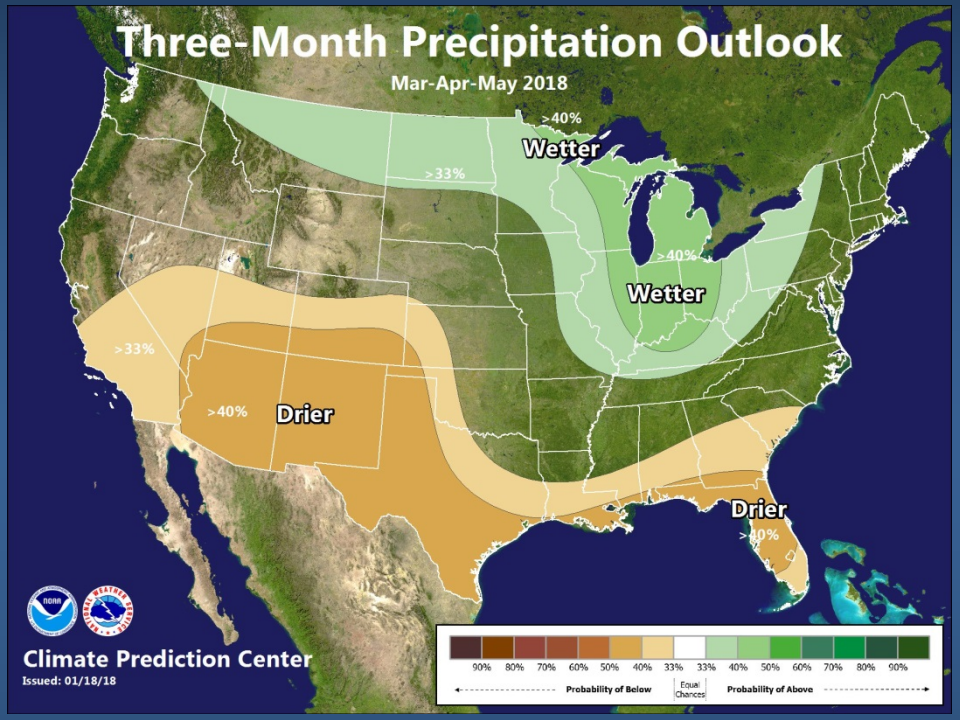




Image source: www.cpc.ncep.noaa.gov

# Outlook for March-April-May 2018



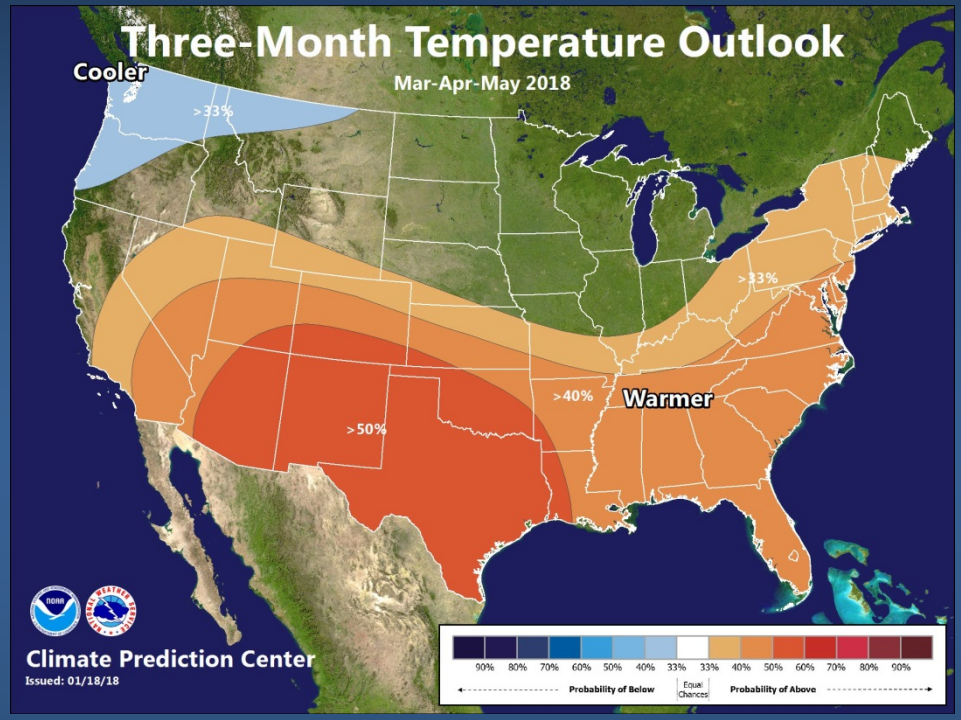
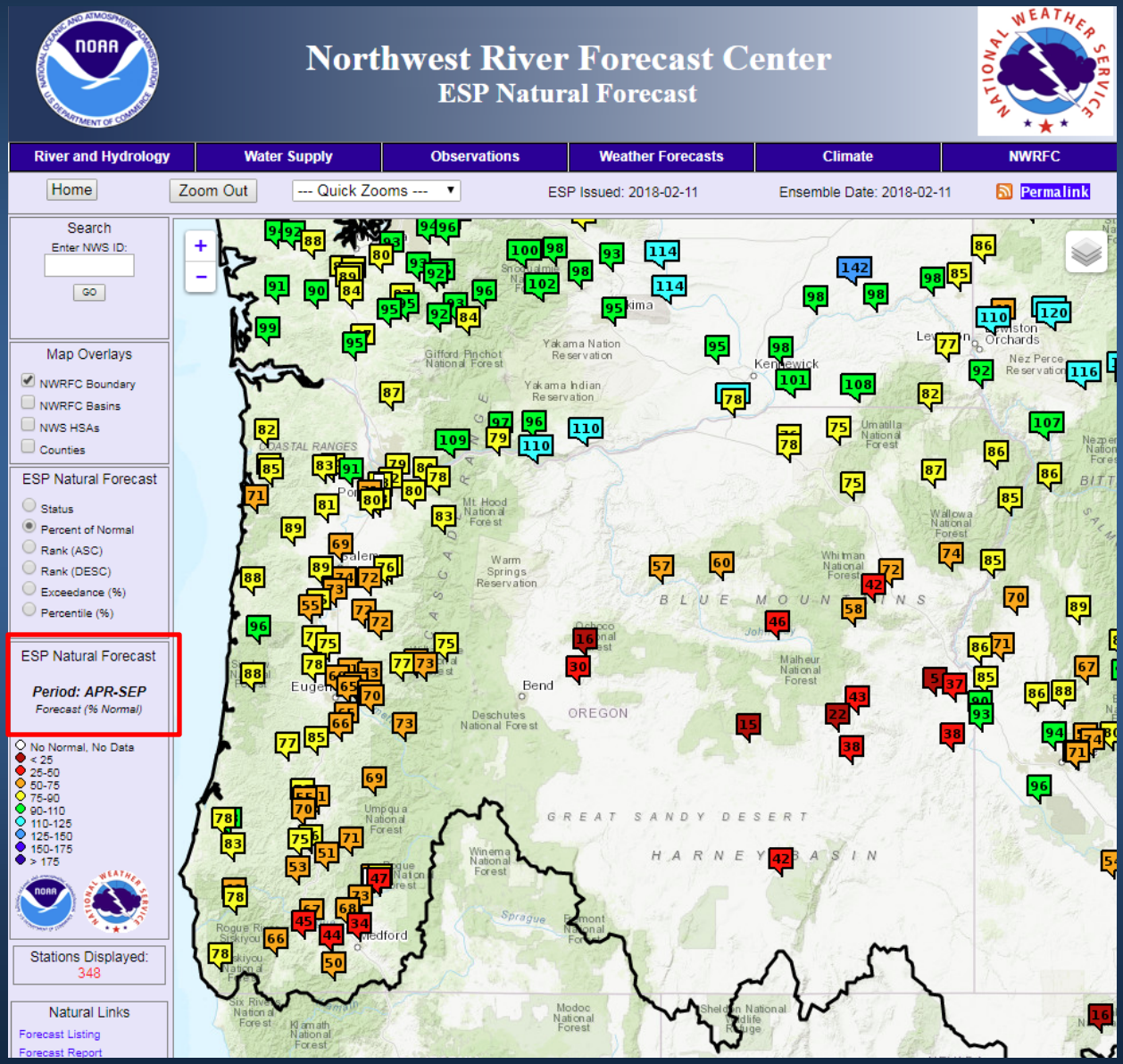
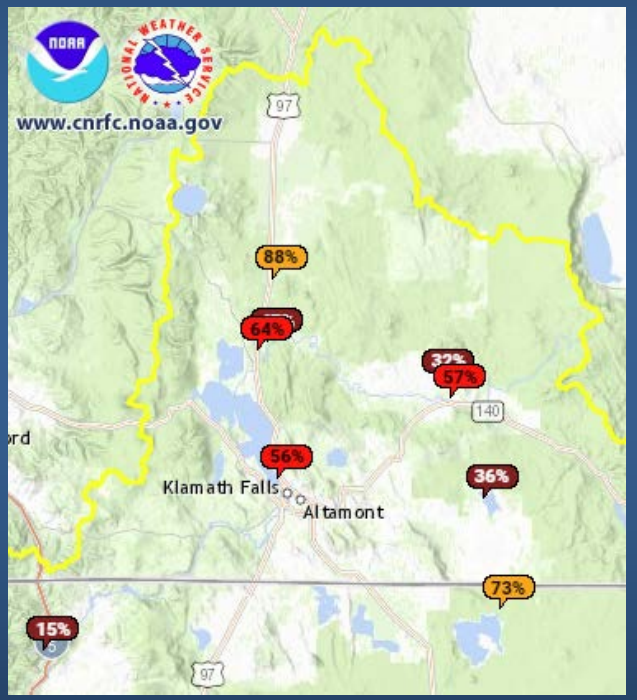




Image source: www.cpc.ncep.noaa.gov

# Water Supply Forecasts



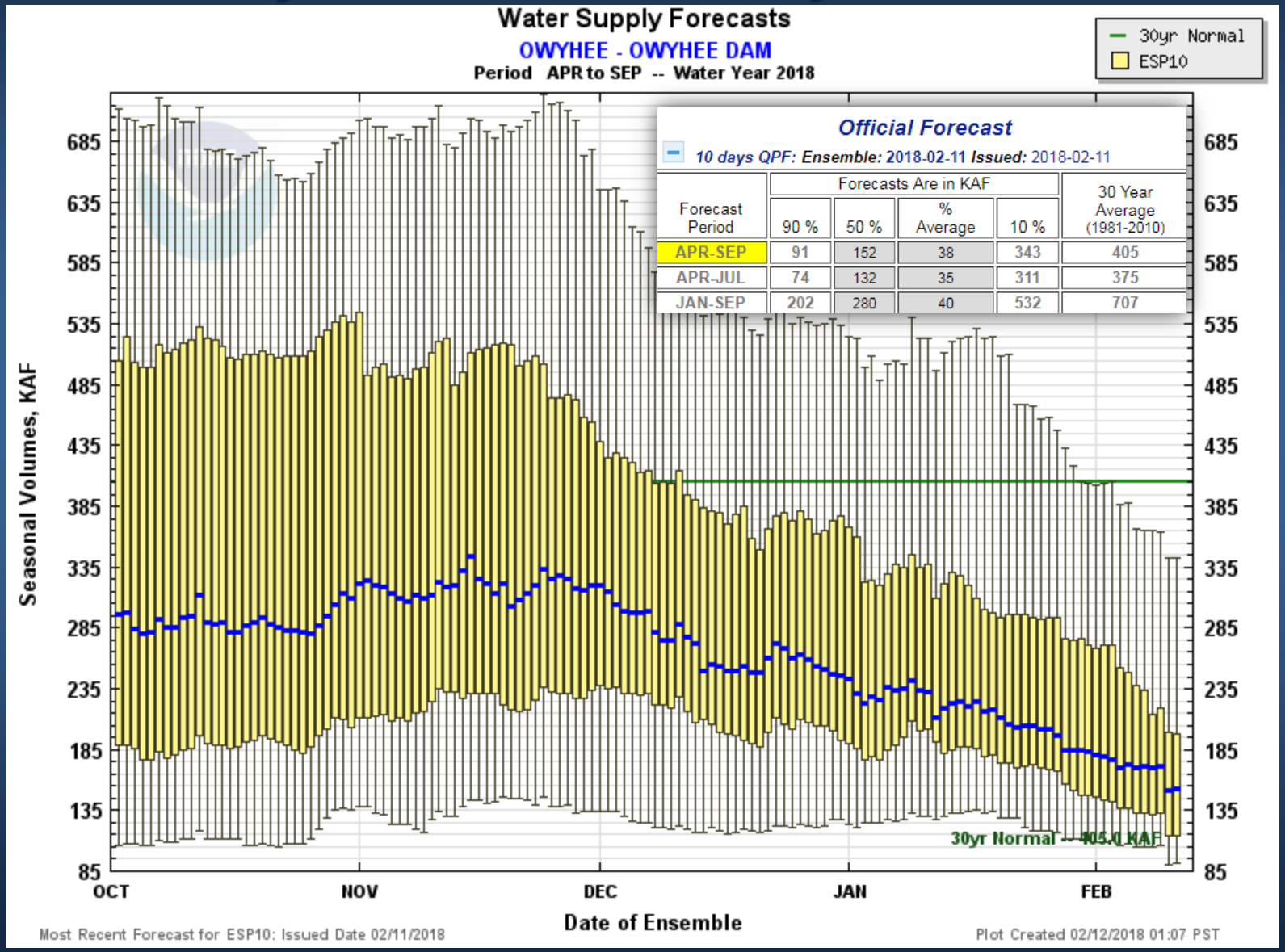




Source: www.nwrfc.noaa.gov & www.cnrfc.noaa.gov

# Water Supply Forecasts

## *Owyhee R below Owyhee Dam*

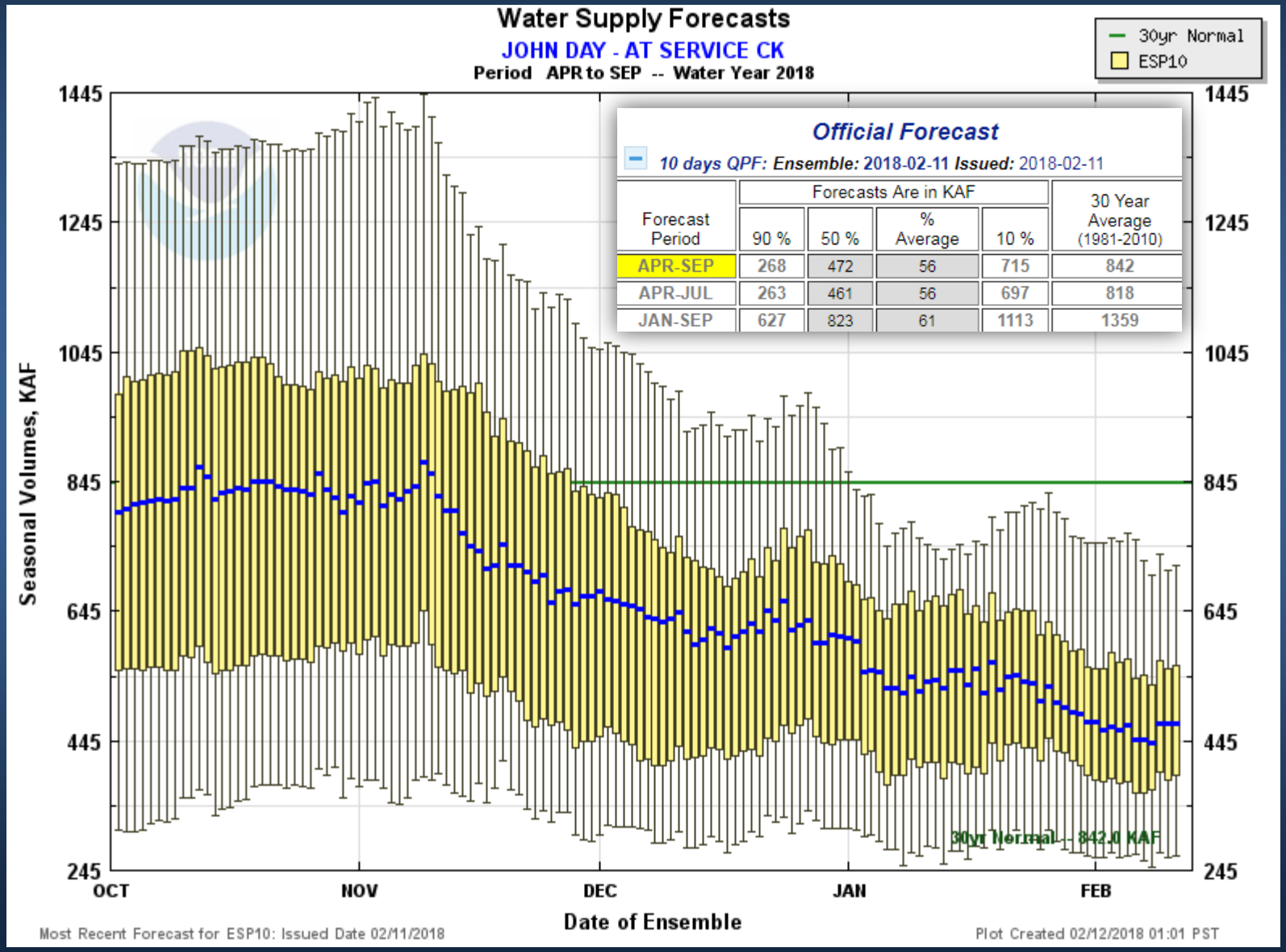




# Water Supply Forecasts

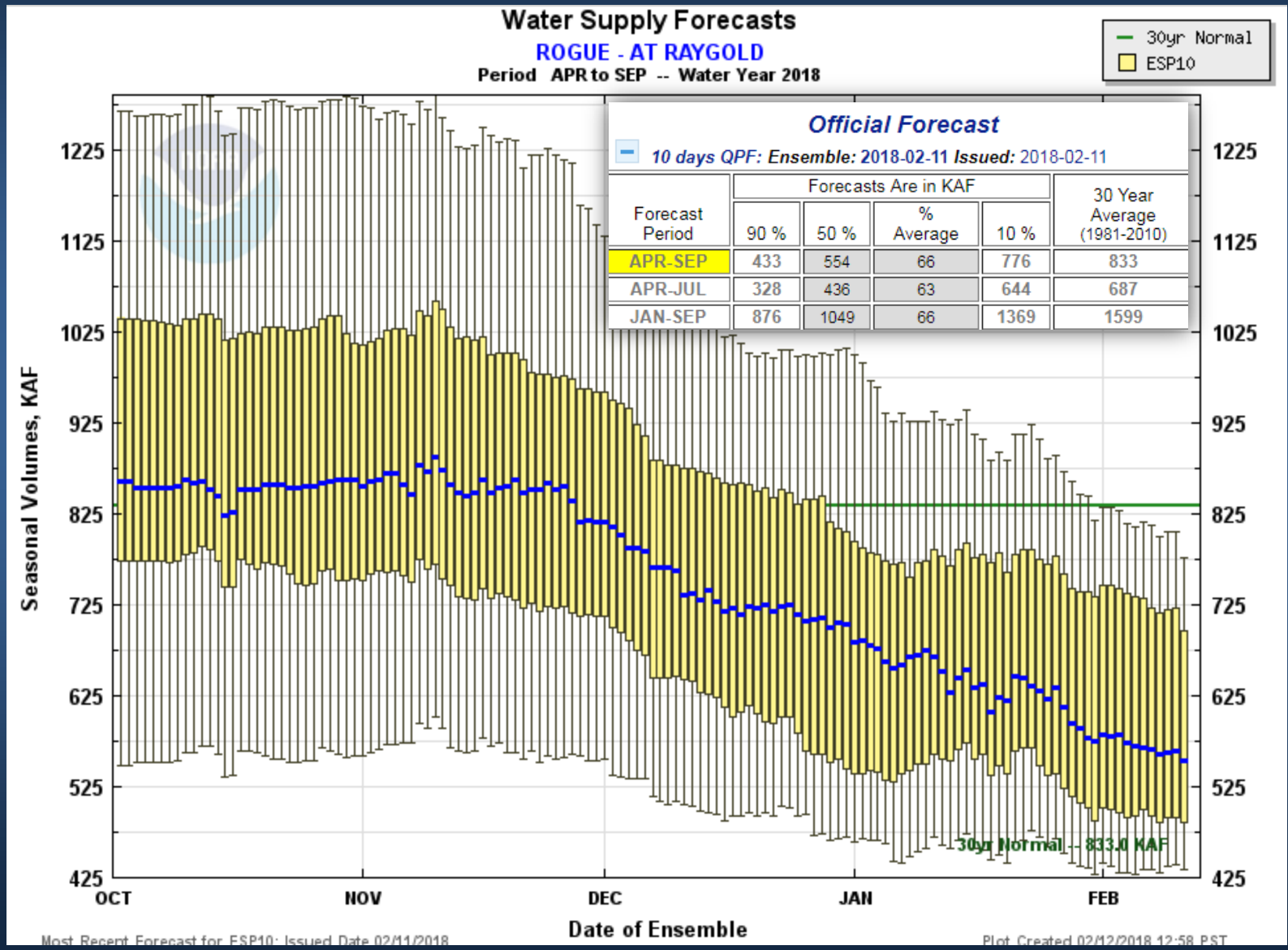
## *John Day R at Service Creek*



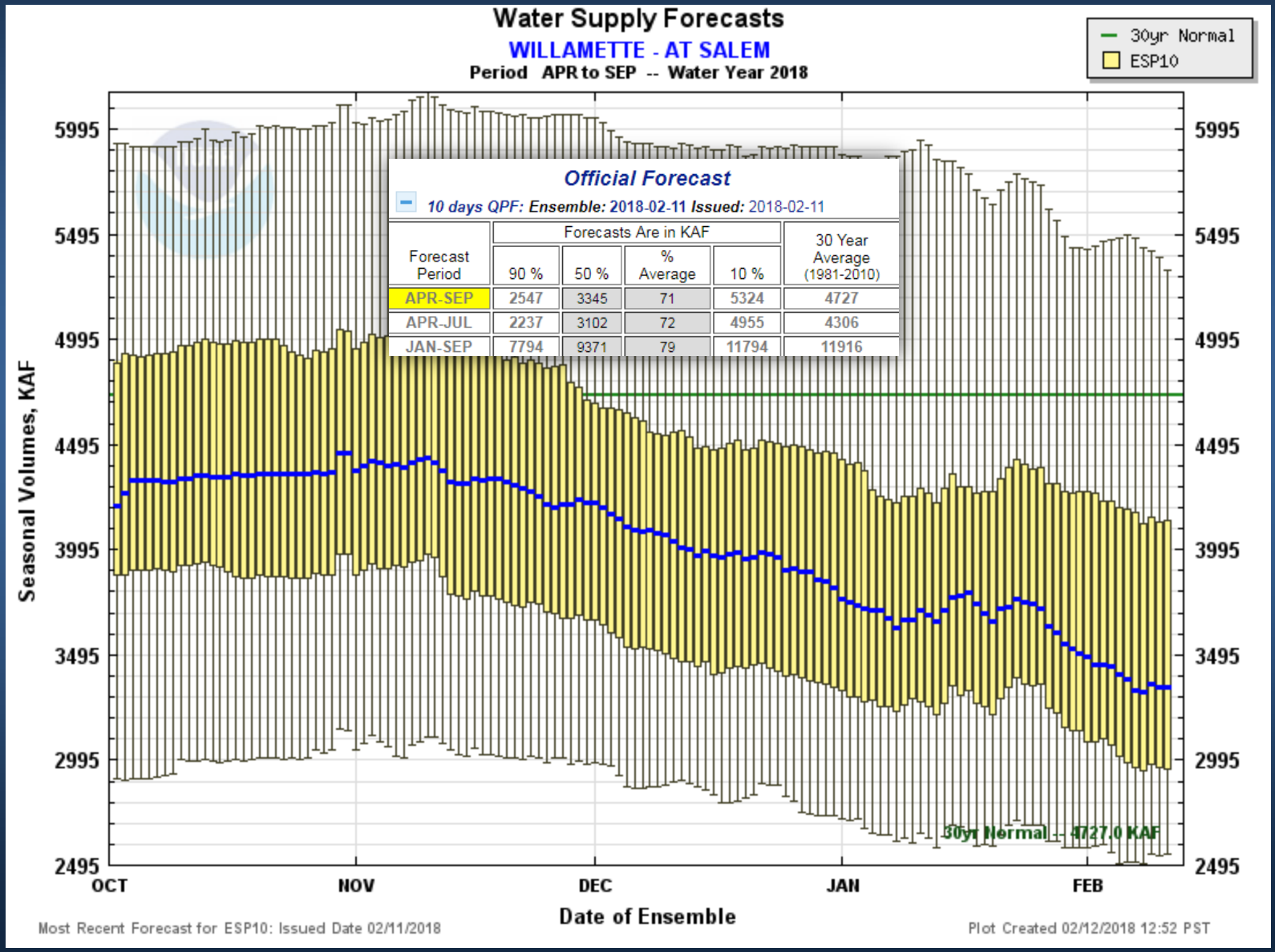


# Water Supply Forecasts

## *Rogue R at Raygold*



# Water Supply Forecasts
## *Willamette R at Salem*

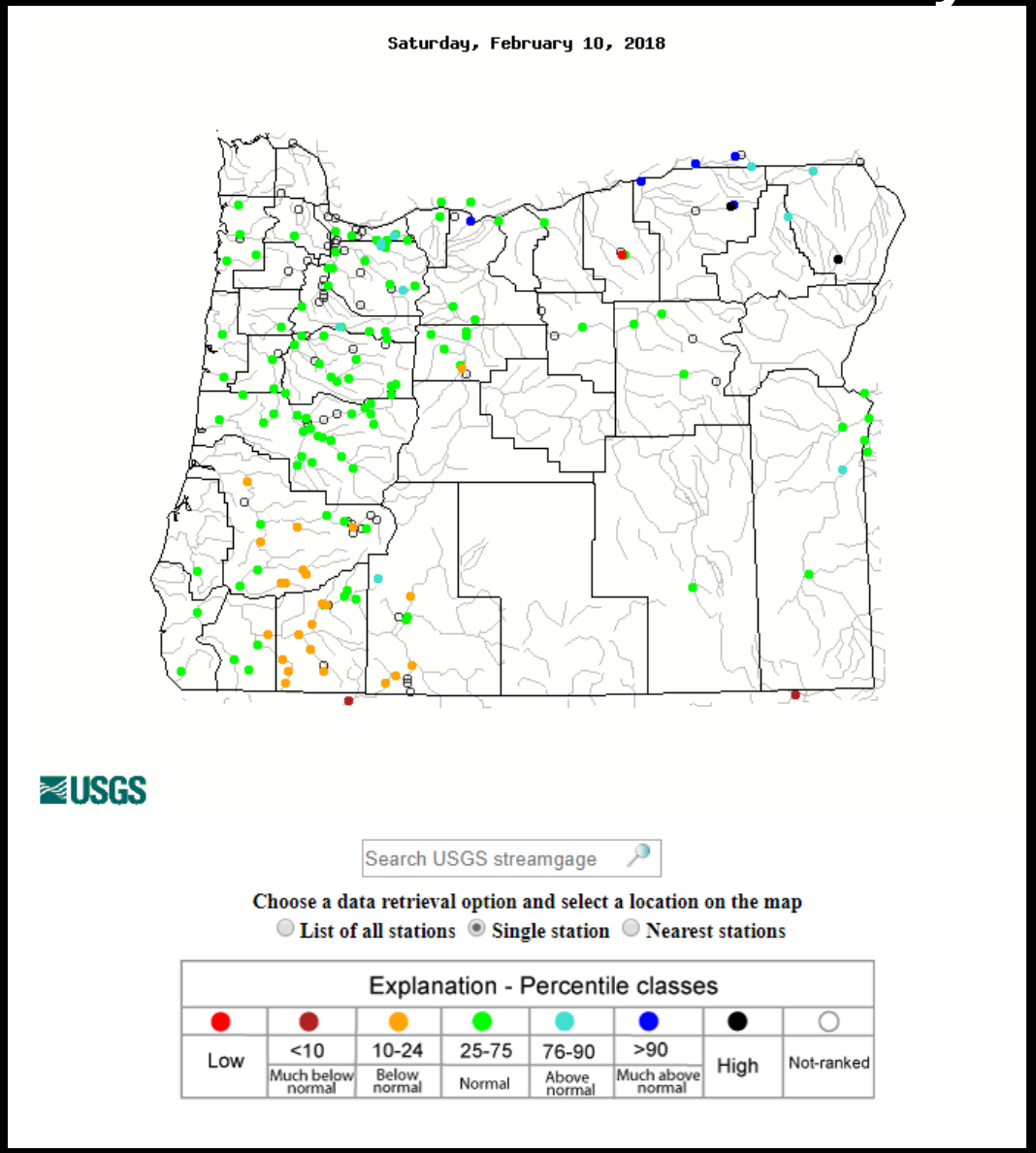


USGS
science for a changing world

# Water Supply Availability Committee

**USGS Update on Current Surface Water Conditions**
**February, 11 2018**

# Oregon Map of 28-day average streamflow compared to historical streamflow for the day of the year




USGS

US GEOLOGICAL SURVEY, OREGON WATER SCIENCE CENTER
WATER AVAILABILITY REPORT FOR January 2018

| Station | NRCS SWSI Basin | Monthly mean discharge: Cubic feet per second | Monthly mean discharge: Percent of average | Change in discharge from previous month (percent) | Accumulated Runoff for the Period Oct. to Jan.: Percent of average |
|---|---|---|---|---|---|
| Donner Und Blitzen nr Frenchglen | Harney | 46 | 70 | 7 | 80 |
| *)Deep Creek above Adel | Lake County | 64 | 77 | 88 | 80 |
| *)Chewaucan River near Paisley | Lake County | 65 | 66 | 27 | 91 |
| Williamson River near Chiloquin | Klamath | 670 | 64 | 5 | 80 |
| Owyhee River near Rome | Owyhee | 378 | 73 | 66 | 82 |
| *)NF Malheur River near Beulah | Malheur | 63 | 86 | 9 | 101 |
| Grande Ronde R at Troy | Grande Ronde Powder/Burnt | 3,040 | 156 | 98 | 132 |
| Umatilla River nr Gibbon | Umatilla Lower John Day | 558 | 214 | 147 | 164 |
| John Day River at Service Crk | Upper John Day | 1,055 | 65 | 123 | 66 |
| *)Little Deschutes River nr LaPine | Upper Deschutes | 137 | 84 | 5 | 110 |
| Hood River nr Hood River | Lower Deschutes Mt.Hood | 1,641 | 116 | 42 | 133 |
| Willamette River at Salem | Willamette | 36,897 | 82 | 44 | 93 |
| Wilson River near Tillamook | North Coast | 3,043 | 123 | 59 | 128 |
| Umpqua River near Elkton | Rogue/Umpqua | 8,605 | 59 | 89 | 63 |
| Rogue River near Agness | Rogue/Umpqua | 5,764 | 56 | 74 | 65 |
| SF Coquille River at Powers | South Coast | 1,850 | 110 | 241 | 83 |
| Chetco River near Brookings | South Coast | 4,367 | 88 | 209 | 82 |

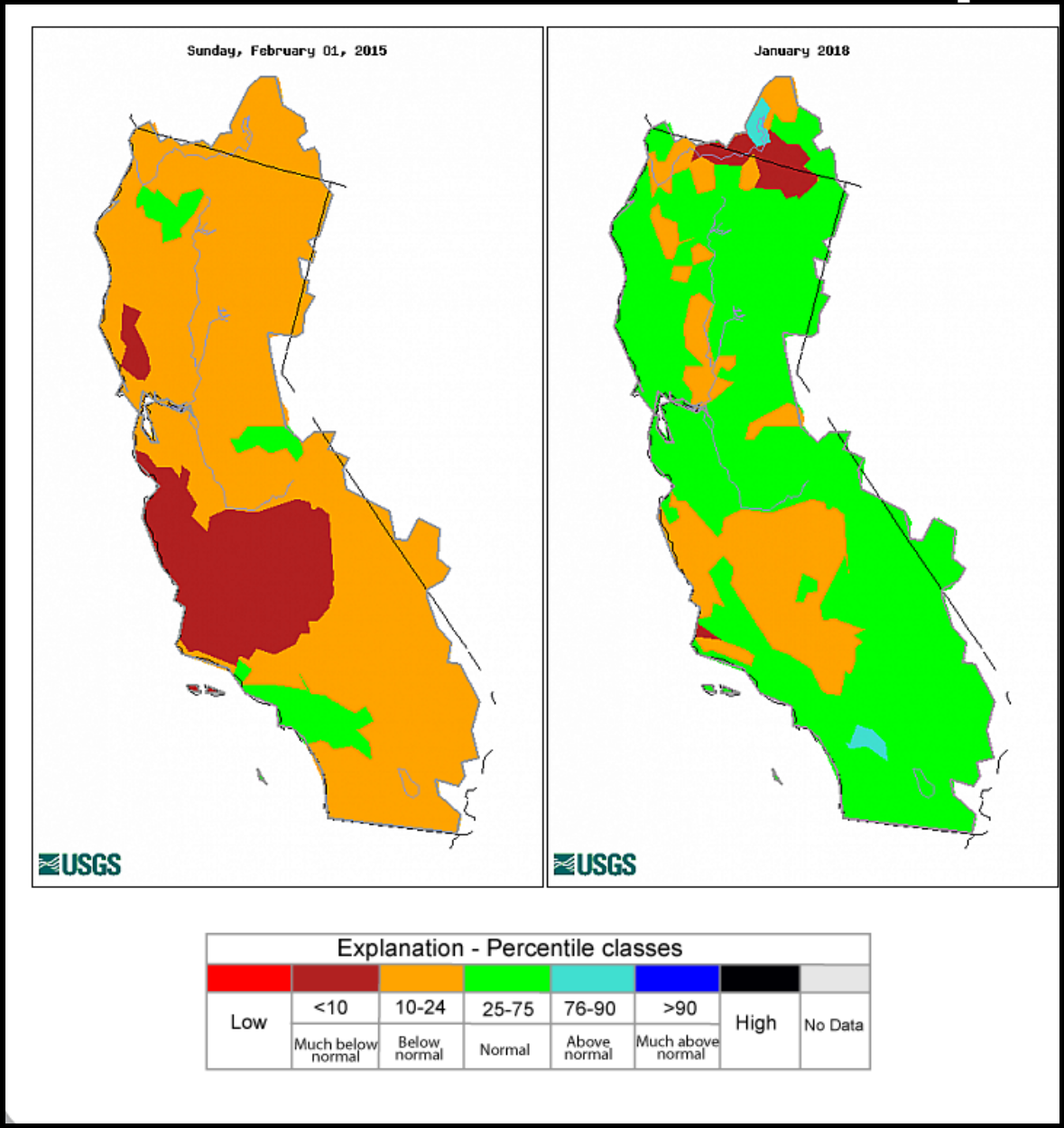
All data should be considered provisional and subject to revision.
Percent of average computed using 30-year base period, water years 1981-2010.
(*) provided by Oregon Water Resources Department

2/2/2018

https://or.water.usgs.gov/data_dir/war_dir/war_docs.html

USGS

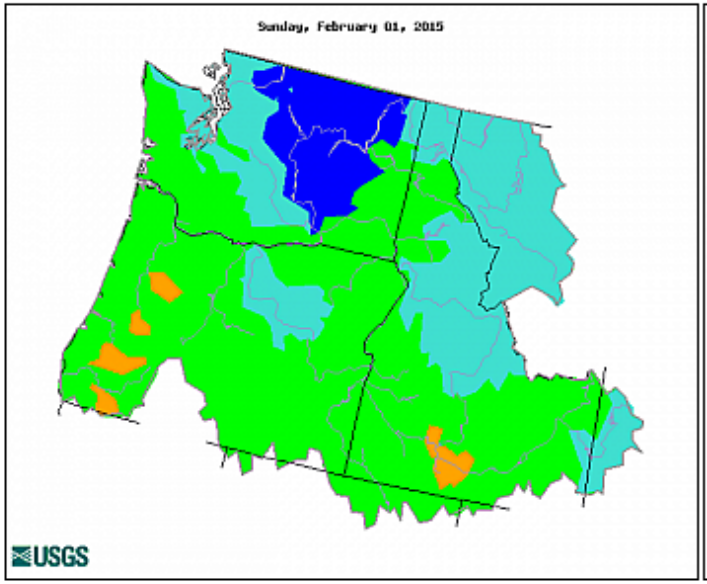
# Comparison of Streamflow Maps



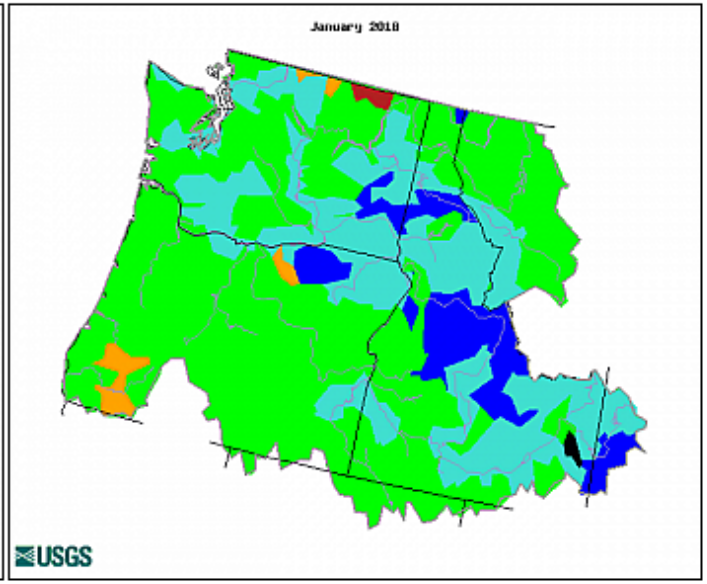

USGS

# Comparison of Streamflow Maps

Date (YYYYMM): 201501




Date (YYYYMM): 201801

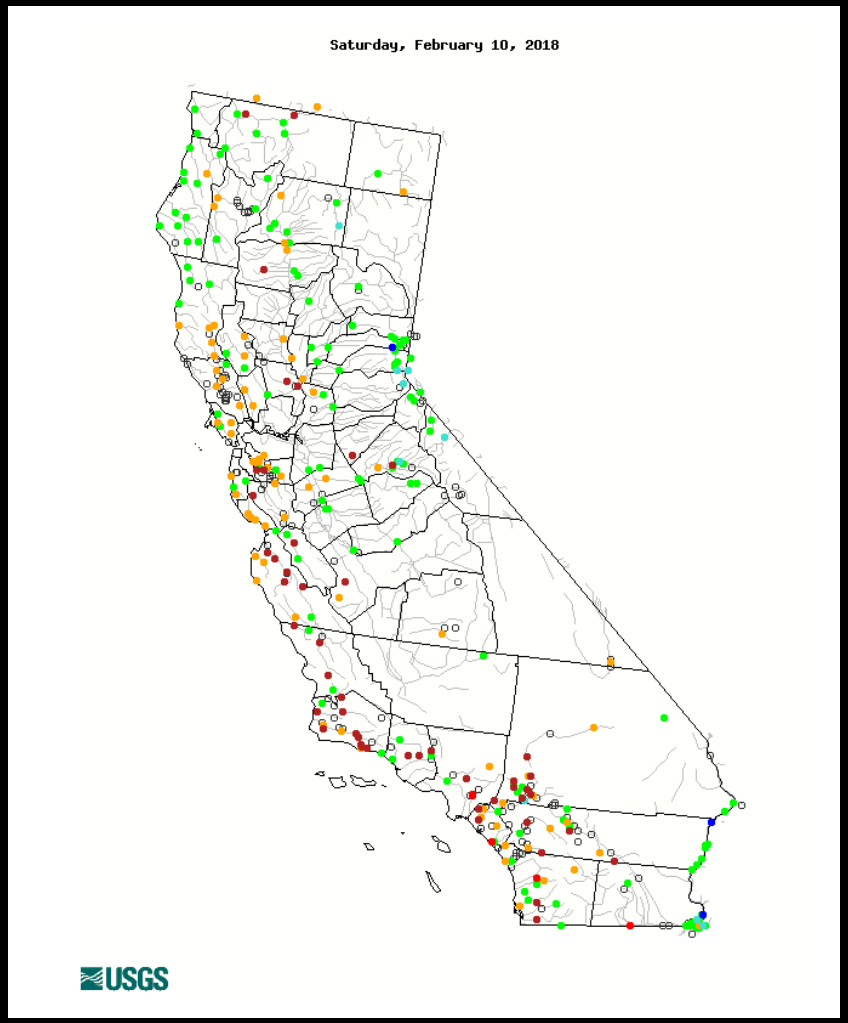


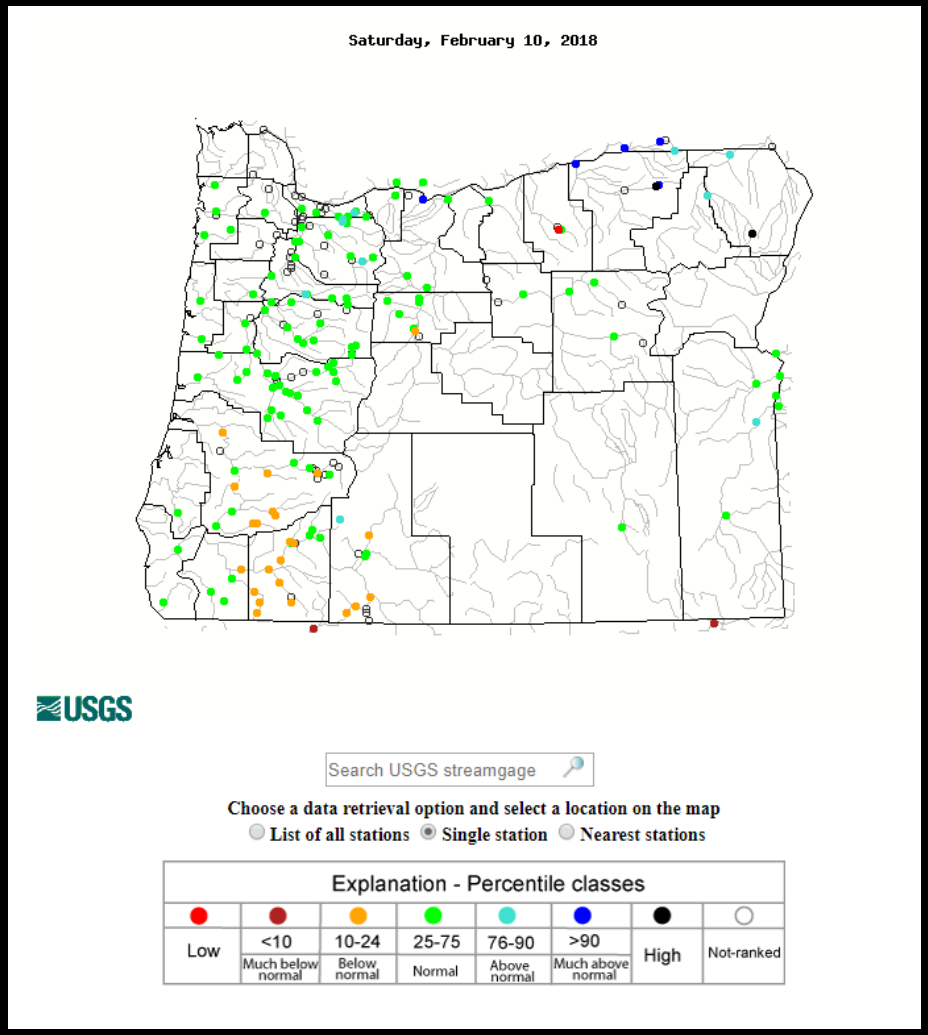

Explanation - Percentile classes

| Low | <10 | 10-24 | 25-75 | 76-90 | >90 | High | No Data |
|---|---|---|---|---|---|---|---|
| | Much below normal | Below normal | Normal | Above normal | Much above normal | | |

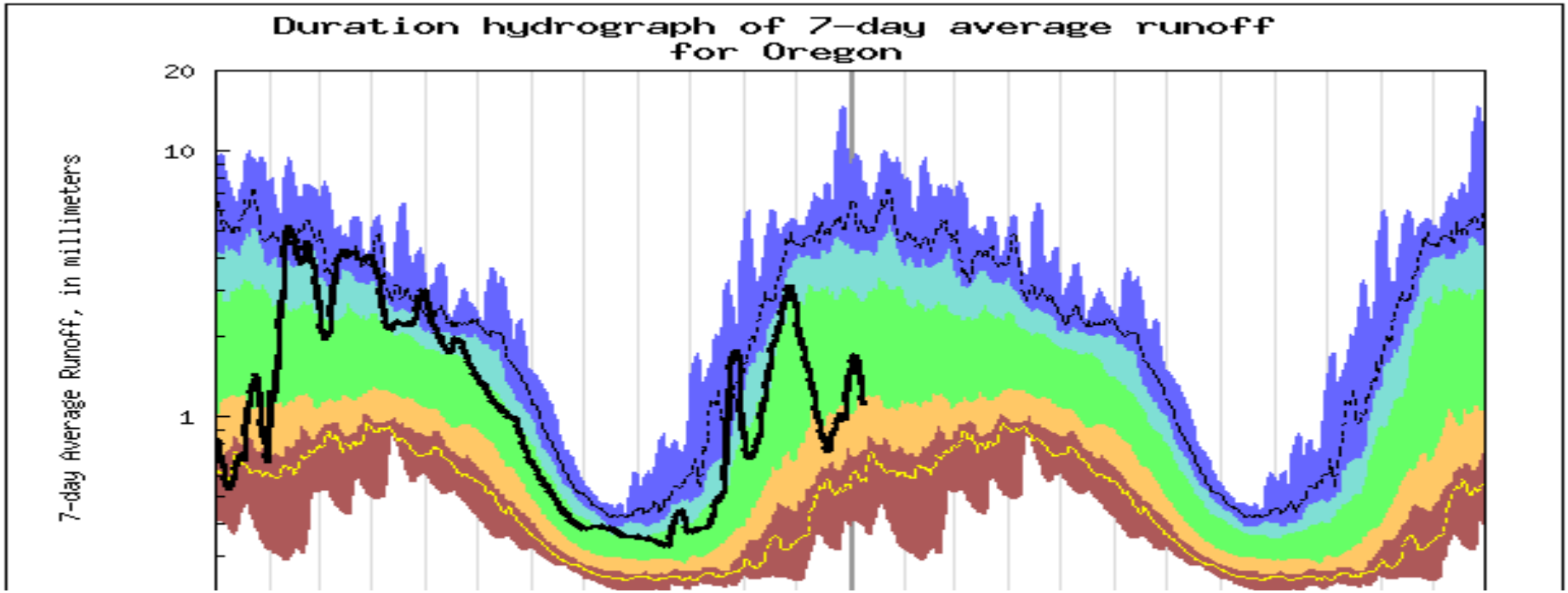
USGS

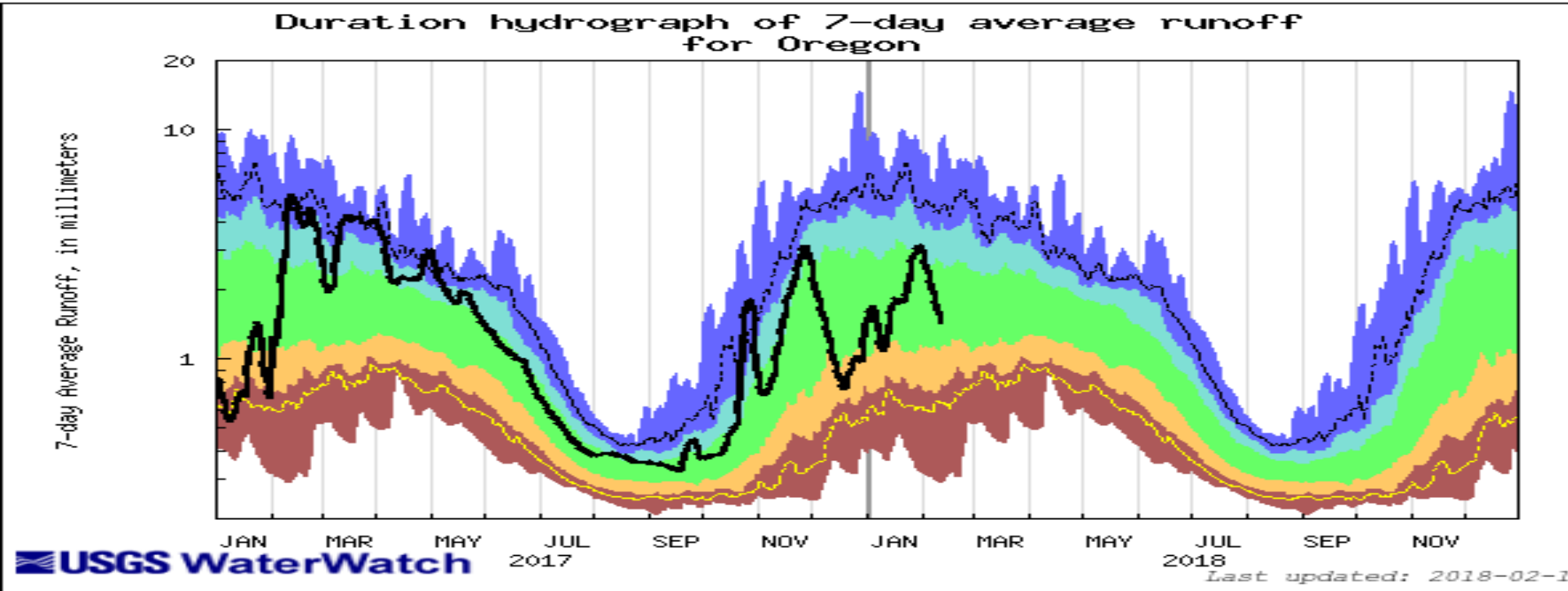
# Maps of 28-day average streamflow compared to historical streamflow for the day of the year



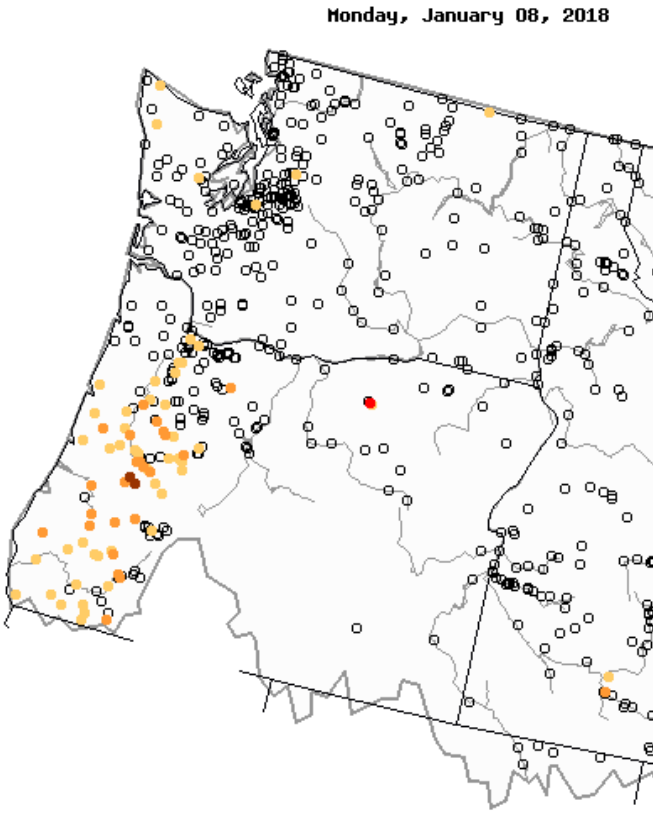




USGS

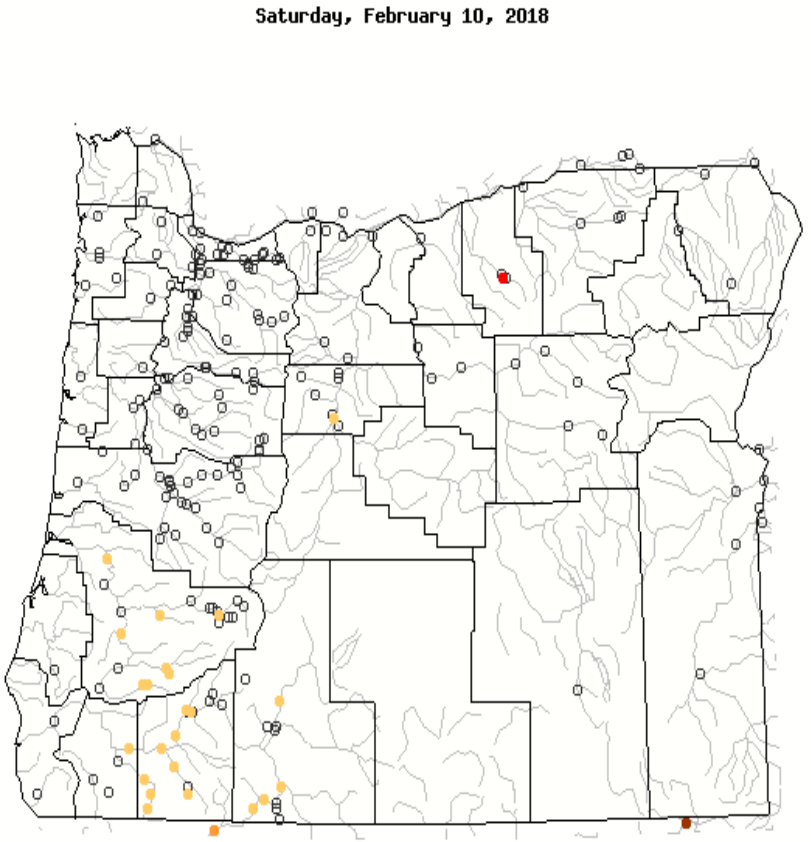

Duration hydrograph of 7-day average runoff
for Oregon
7-day Average Runoff, in millimeters
20
10
1


Duration hydrograph of 7-day average runoff
for Oregon
7-day Average Runoff, in millimeters
20
10
1
JAN
MAR
MAY
JUL
SEP
NOV
JAN
MAR
MAY
JUL
SEP
NOV
2017
2018
USGS WaterWatch
Last updated: 2018-02-1

# Map of below normal 28-day average streamflow compared to historical streamflow for the day of year (Pacific Northwest Last Month and Oregon this month)



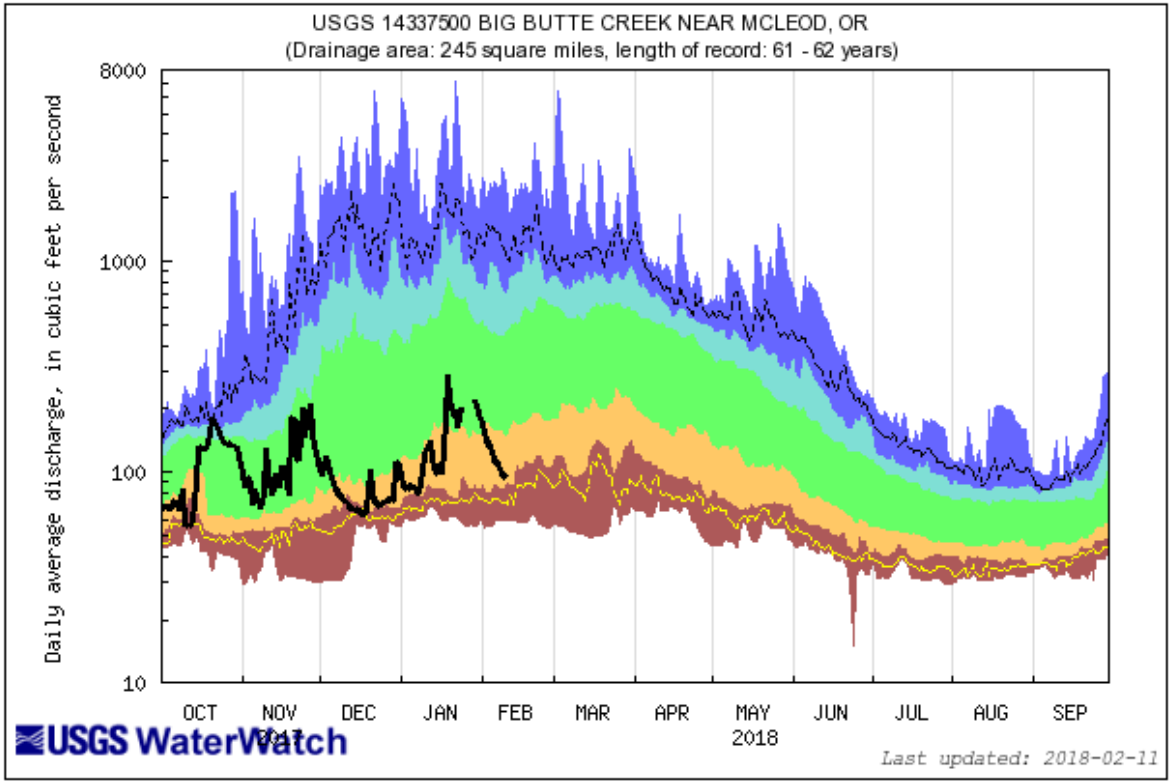

USGS

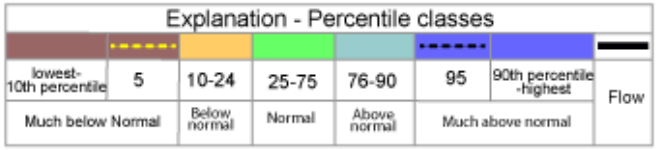



USGS

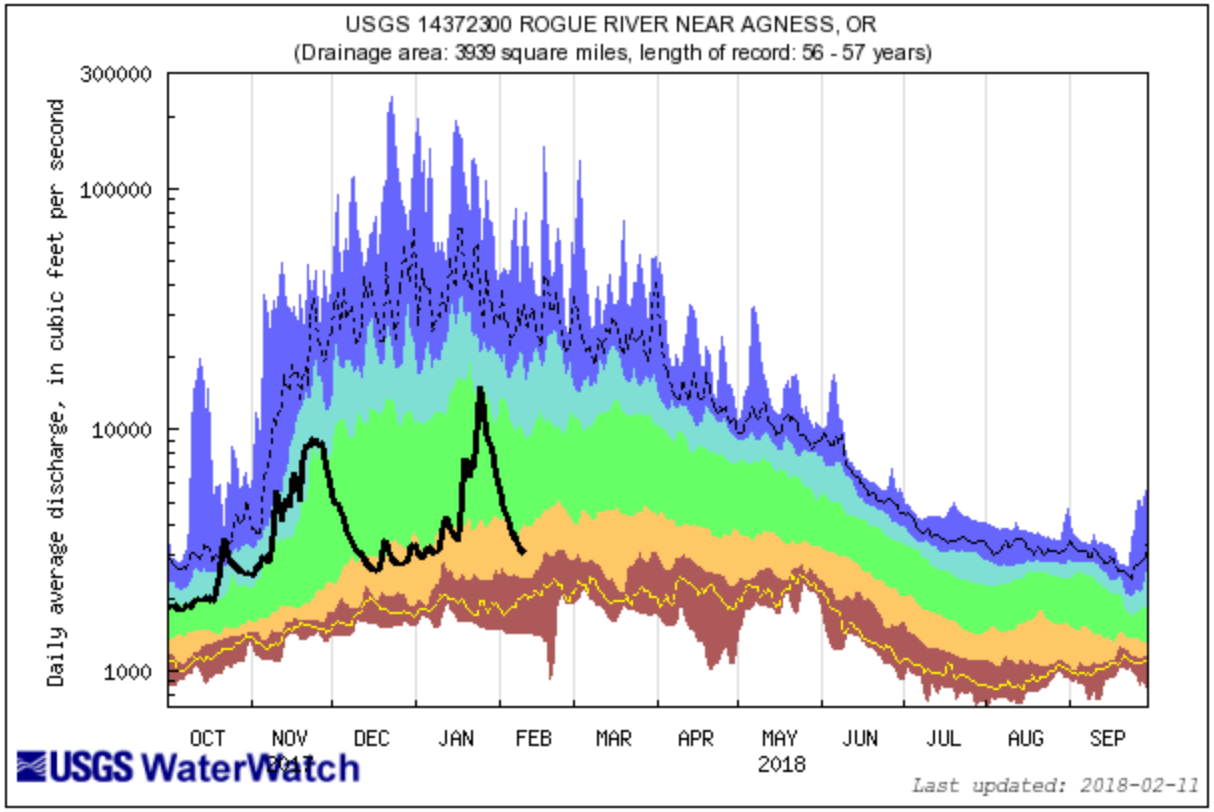
Search USGS streamgage

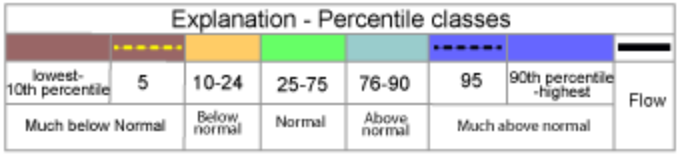
# ROGUE/UMPQUA BASIN



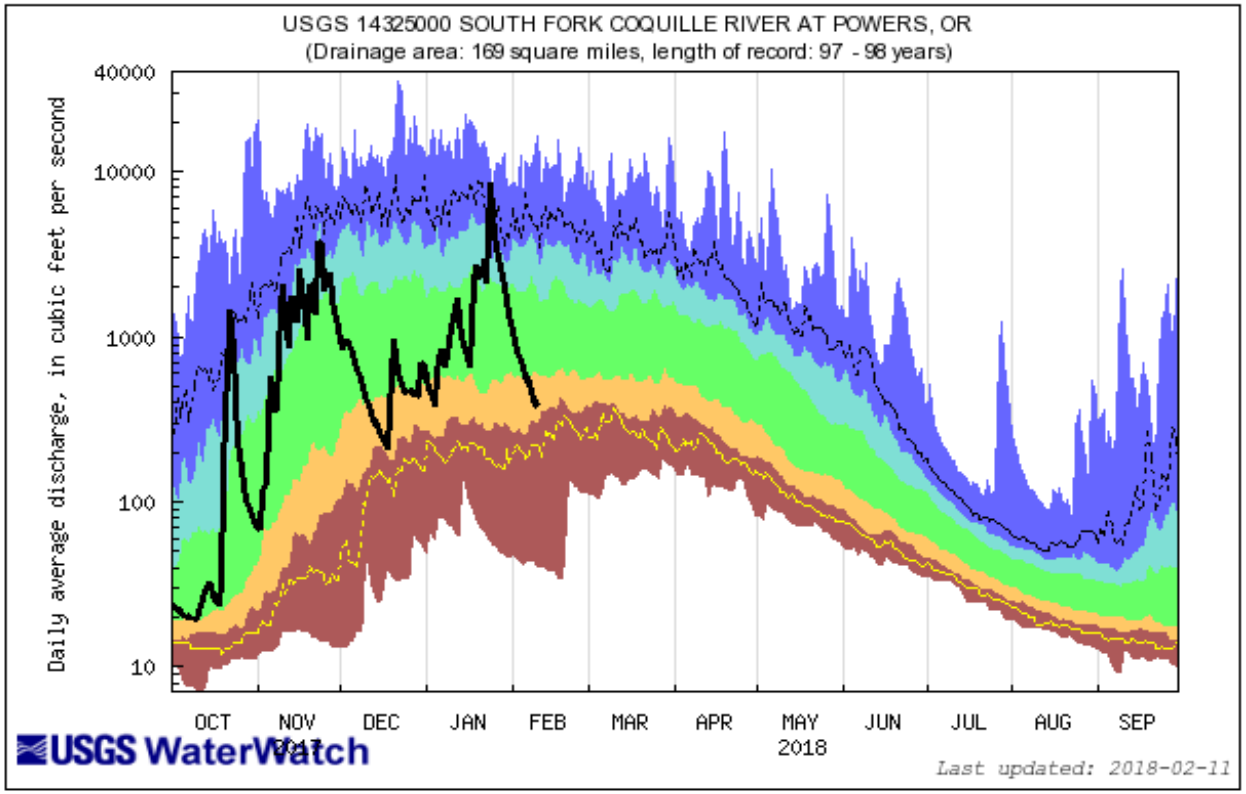
# ROGUE/UMPQUA BASIN




USGS

# SOUTH COAST

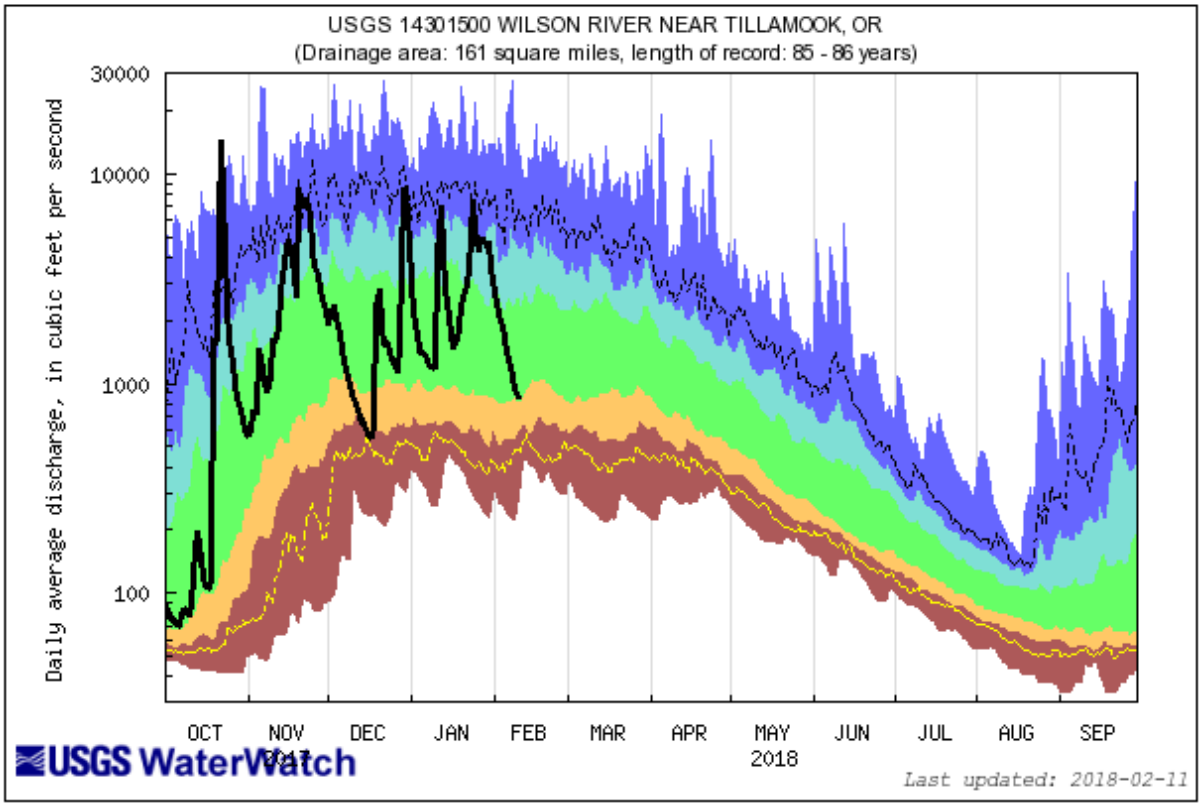



Explanation - Percentile classes

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| lowest-10th percentile | 5 | 10-24 | 25-75 | 76-90 | 95 | 90th percentile -highest | Flow |
| Much below Normal | | Below normal | Normal | Above normal | Much above normal | | |

USGS

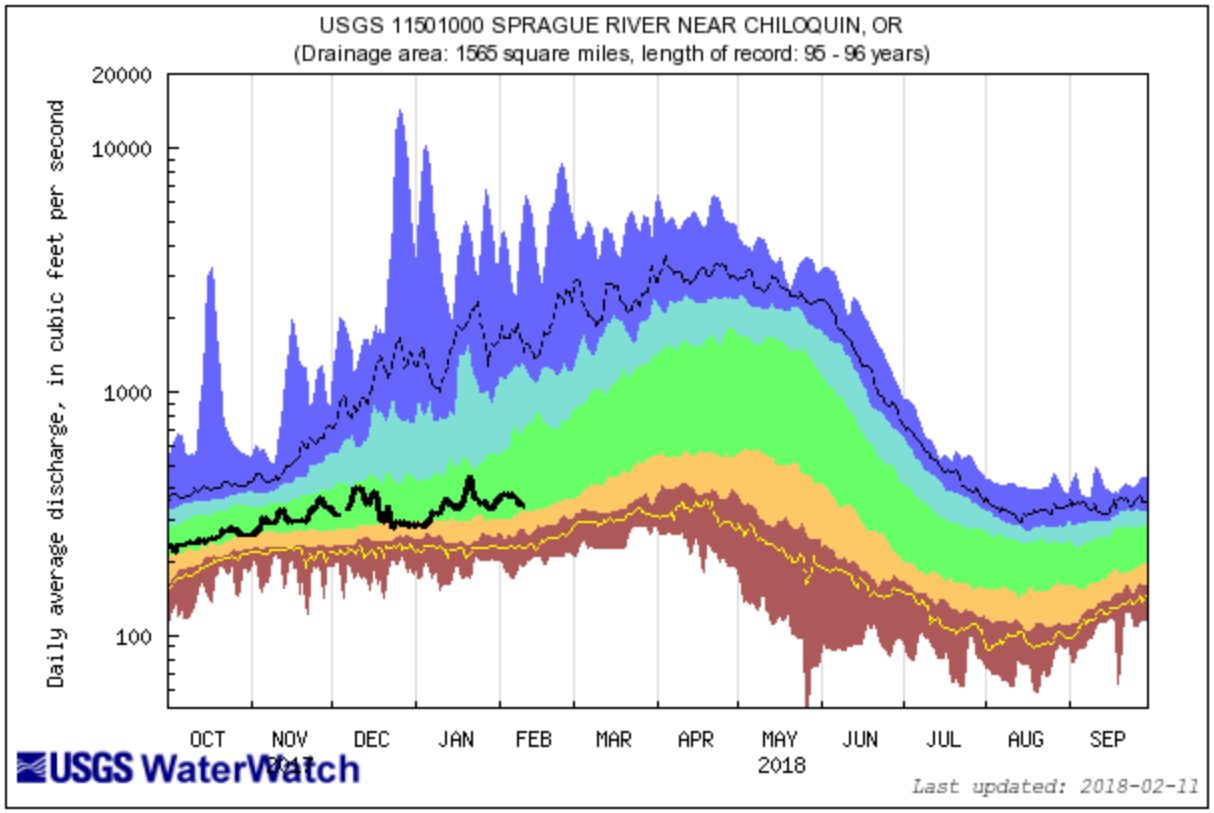
# NORTH COAST

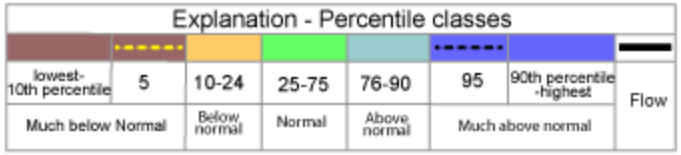



| Explanation - Percentile classes | | | | | | | |
|---|---|---|---|---|---|---|---|
| lowest-10th percentile | 5 | 10-24 | 25-75 | 76-90 | 95 | 90th percentile -highest | Flow |
| Much below Normal | | Below normal | Normal | Above normal | Much above normal | | |

USGS

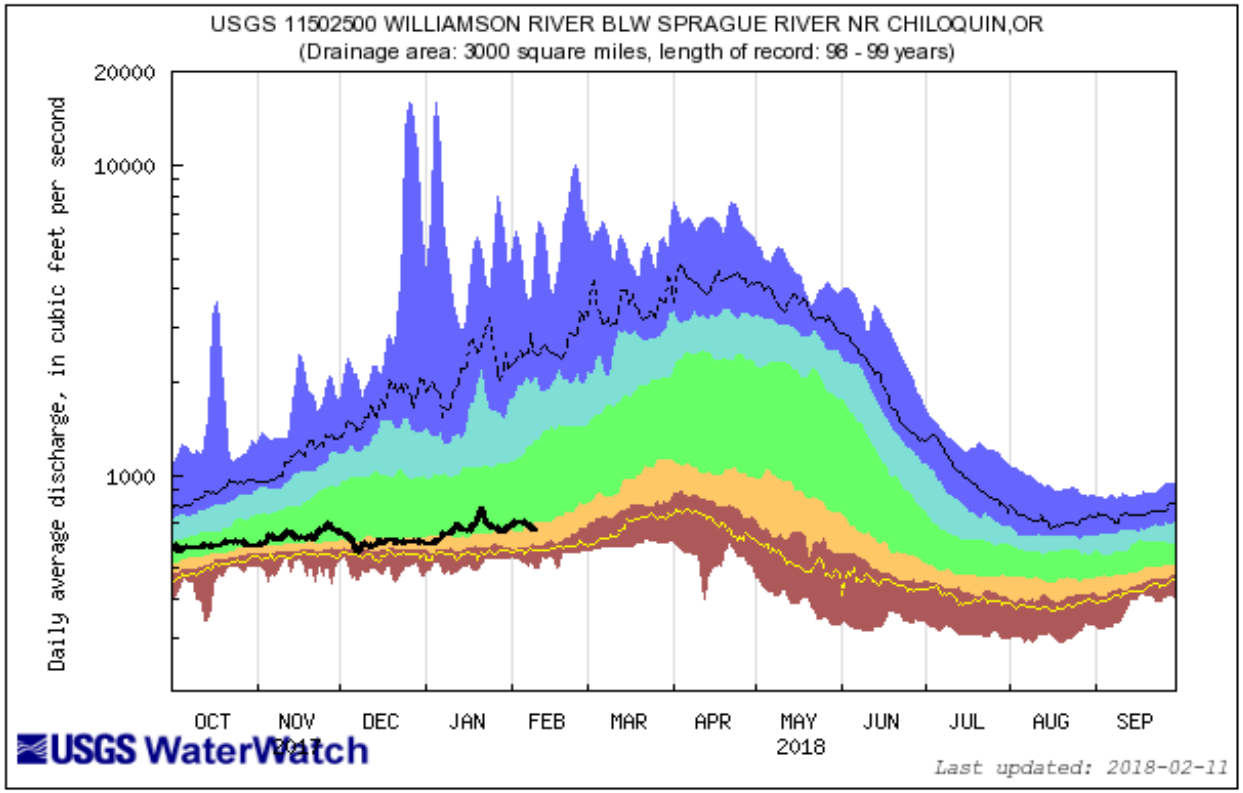
# KLAMATH BASIN




USGS

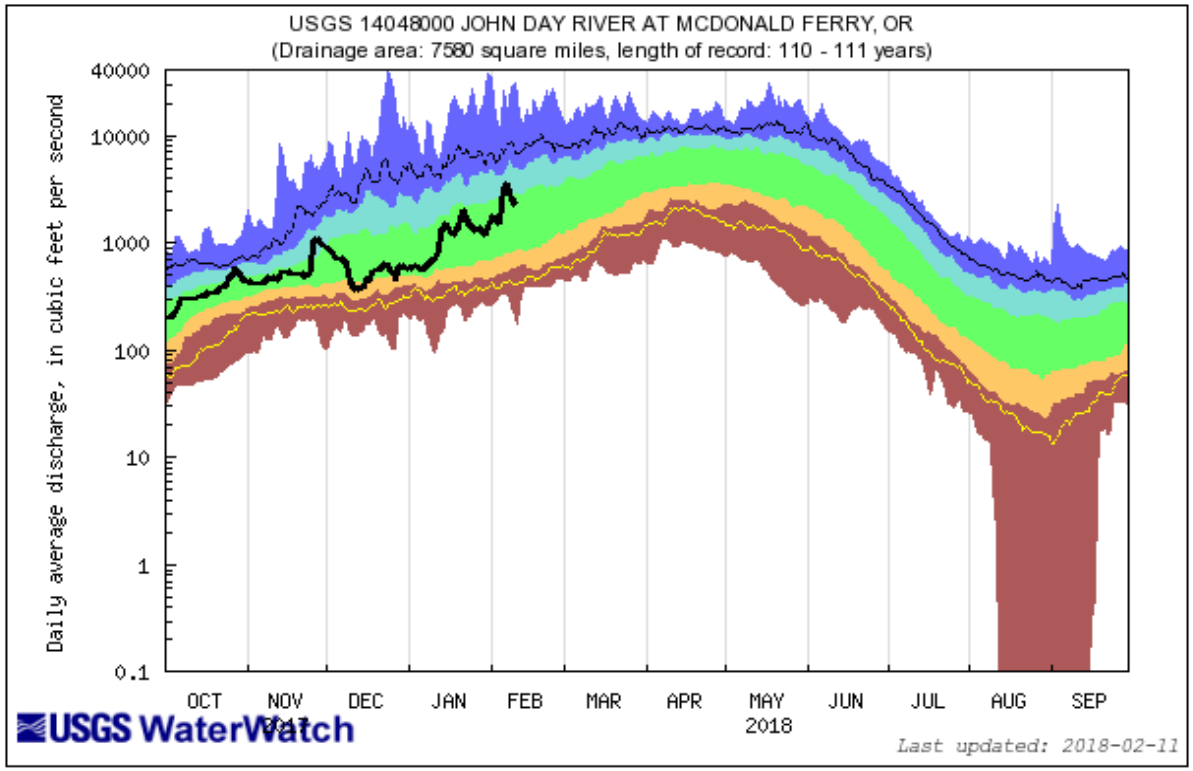
# KLAMATH BASIN

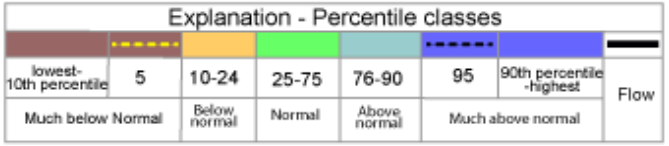



| Explanation - Percentile classes | | | | | | | |
|---|---|---|---|---|---|---|---|
| lowest-10th percentile | 5 | 10-24 | 25-75 | 76-90 | 95 | 90th percentile -highest | Flow |
| Much below Normal | | Below normal | Normal | Above normal | Much above normal | | |

USGS

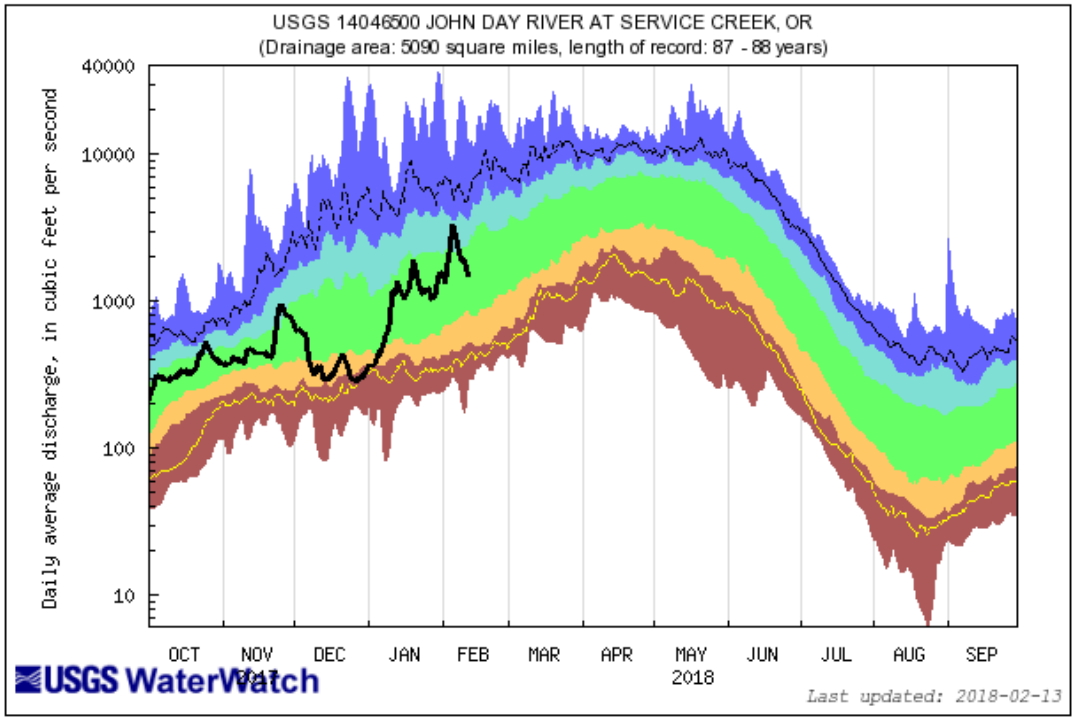
# JOHN DAY

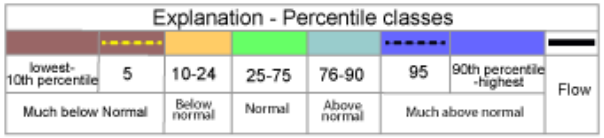



USGS

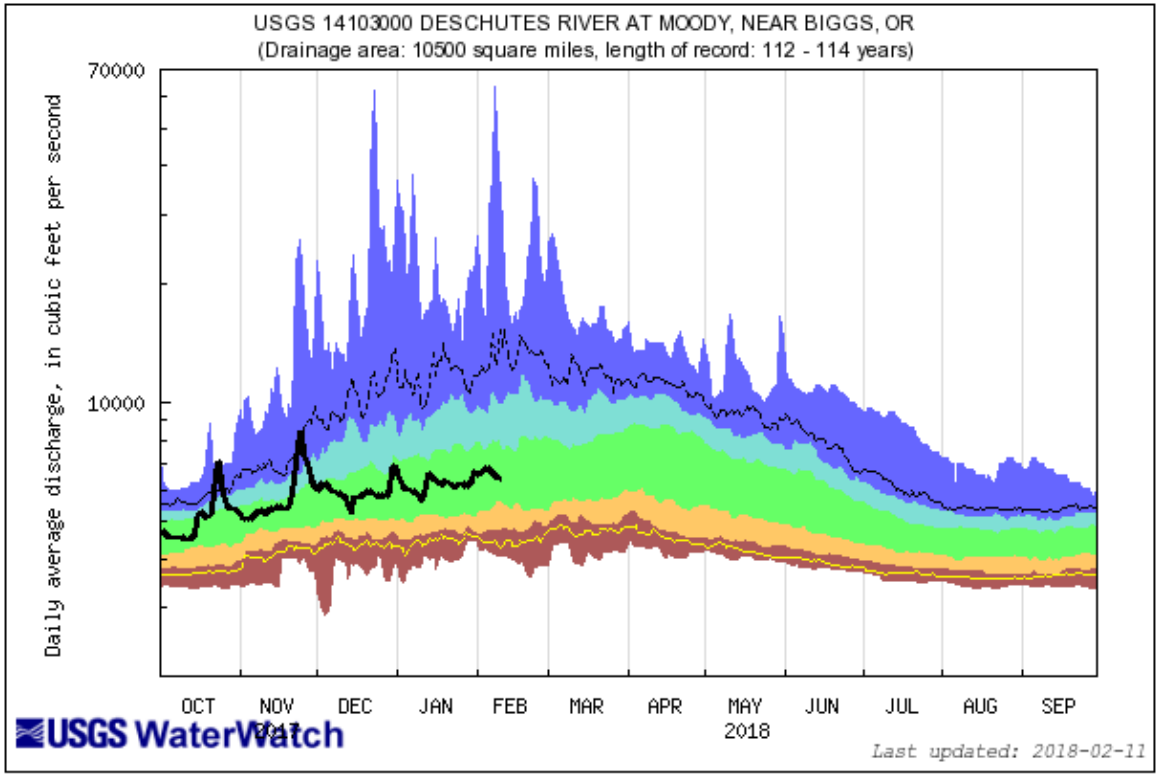
# UPPER JOHN DAY




USGS

# LOWER DESCHUTES BASIN

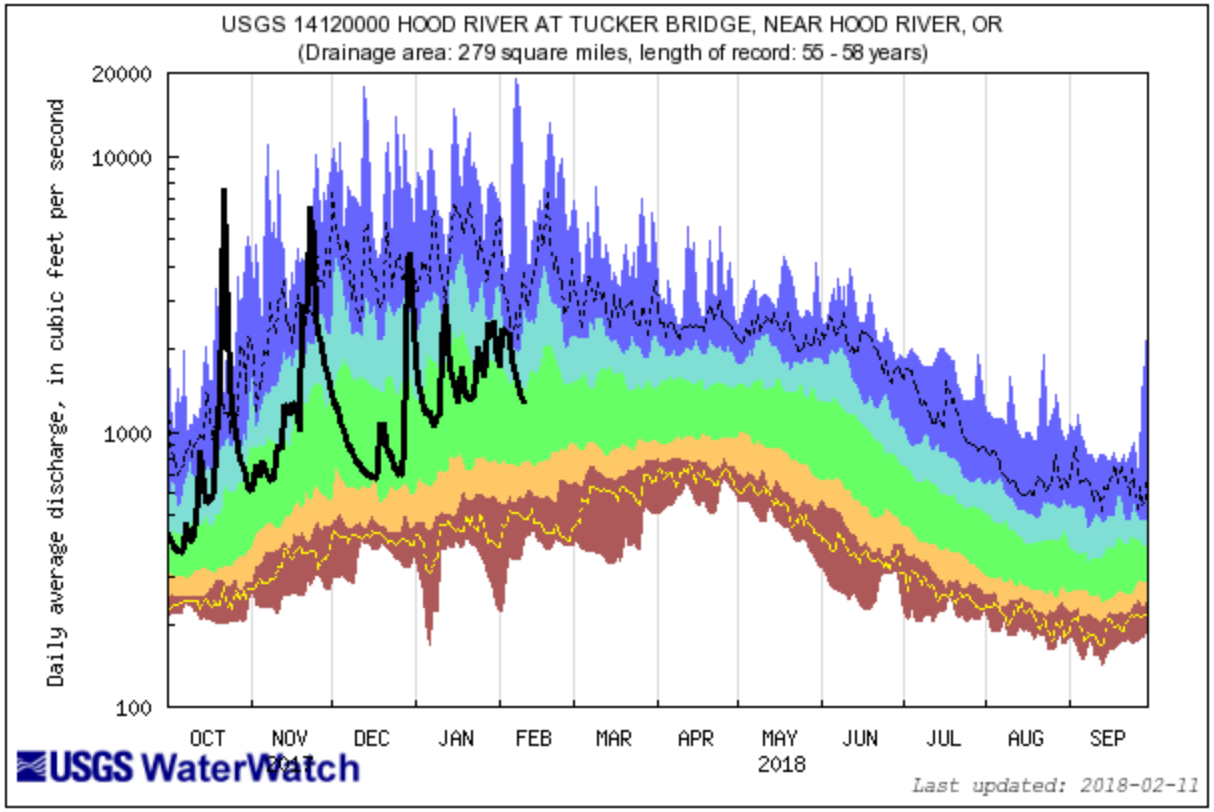


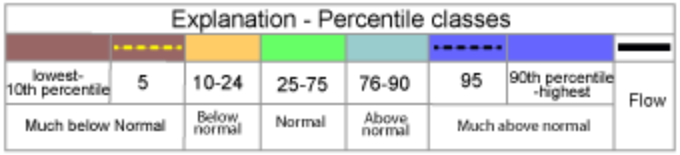

Explanation - Percentile classes

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| lowest-10th percentile | 5 | 10-24 | 25-75 | 76-90 | 95 | 90th percentile -highest | Flow |
| Much below Normal | | Below normal | Normal | Above normal | Much above normal | | |

USGS

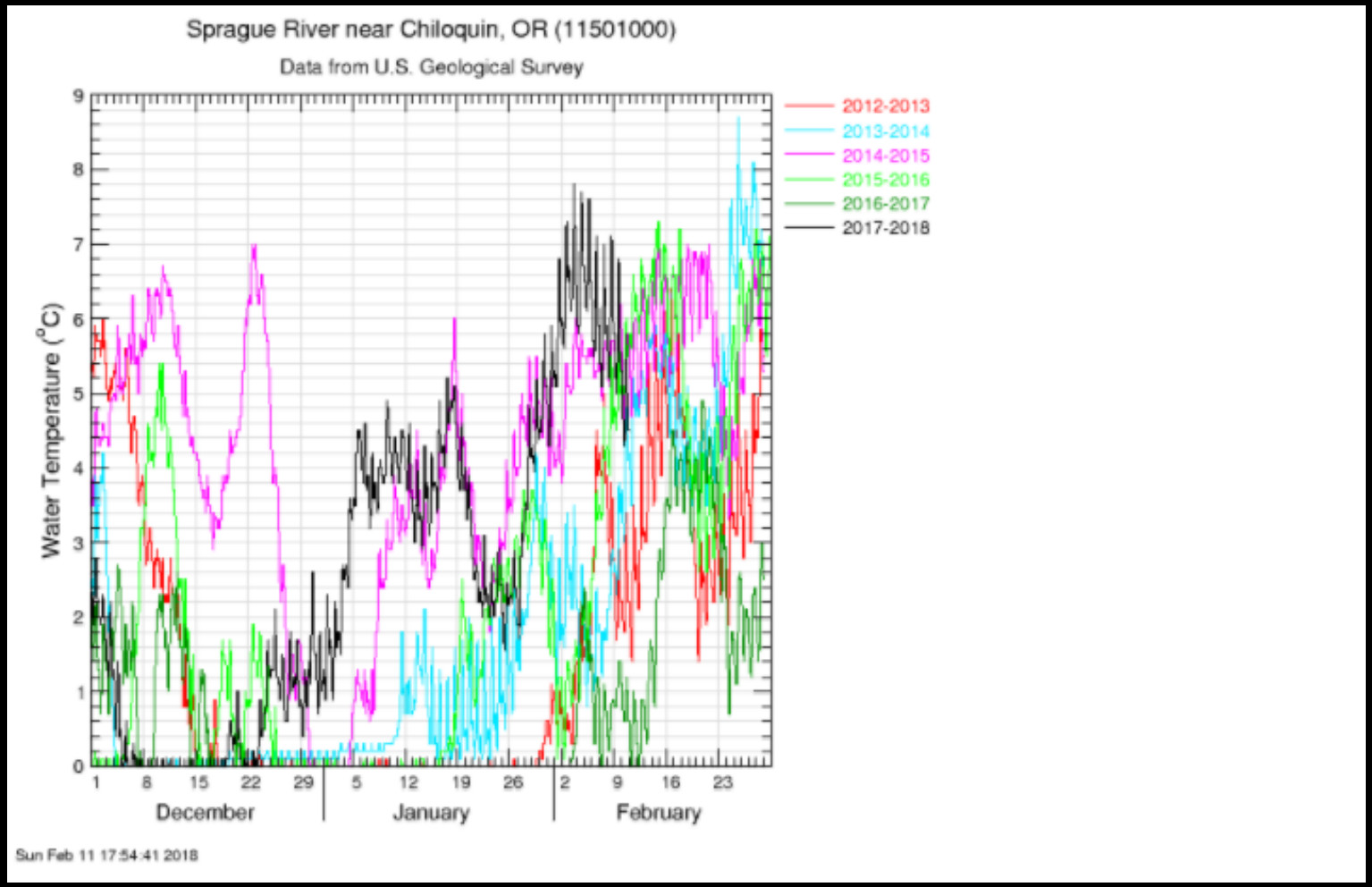
# UPPER DECHUSTES BASIN




USGS

# KLAMATH BASIN STREAM TEMPERATURE

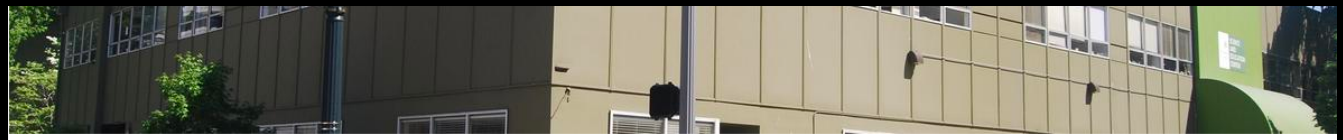



USGS

https://or.water.usgs.gov/grapher/

# New Oregon USGS Links

- https://www.usgs.gov/centers/or-water
- https://or.water.usgs.gov/data_dir/war_dir/www.usgs.gov/centers/or-water



Release Date: JANUARY 11, 2018

Your eyes are not playing tricks on you, we have a new website!! Explore.

Greetings.

As you may have noticed, we have migrated our old USGS Oregon Water Science Center website into a new framework that better aligns with our national USGS mission. Boy oh boy do things look considerably different, right? Worry not, how you search for projects, research, contacts will be a completely simpler and better user experience. Besides the obvious cosmetic overhaul and new look of the website, the underlying architecture and functionality is considerably different.

What are some of the new features? There are many, but the most important include:

1. **Search engine optimization.** Rather than navigate our website by clicking link after link, simply type your inquiry into the *search bar*. And *voila*...your answers should be provided for you (hopefully). Whether you are looking for a person, project, or publication, all the varied components of our science are tagged and available to the search engine. You'll never need to navigate the site the old way again.
2. **Mobile compatibility.** Unlike our previous website, our new one is fully mobile compatible. If you're viewing this on your phone or tablet it should be a clean user experience. If you are at your desk viewing content on your screen, you should have a similar smooth experience. There should be no more concerns about what browser you are using either. So however you view, your viewing experience should be greatly improved.
3. **Better accessibility**. Yes, science *is* science. But guess what? *People do the science*. We value the effort our scientists, technicians, specialists, and support staff provide. As such, we now have better accessibility to find and talk with the people who can answer whatever question you may have. If you don't care who you talk with, we also have social media platforms where you can direct your conversation.

There are plenty of other changes under the hood of the new website, but generally, your experience viewing our site should be good. What do you think? Did we hit the mark?

Thanks for visiting us here at the USGS Oregon Water Science Center.

Do you still need help? Let me know.

-Steven Sobieszczyk

Contacts

Steven Sobieszczyk, GISP

**Hydrologist and Communications Lead**
Oregon Water Science Center
Email: ssobie@usgs.gov
Phone: 503-251-3208

USGS

**Power Point “USGS Update on Surface Water Conditions”**

**By: Marc Stewart  USGS ORWSC**

**Water Availability Report By:  Tiffany Rae Jacklin  USGS ORWSC**

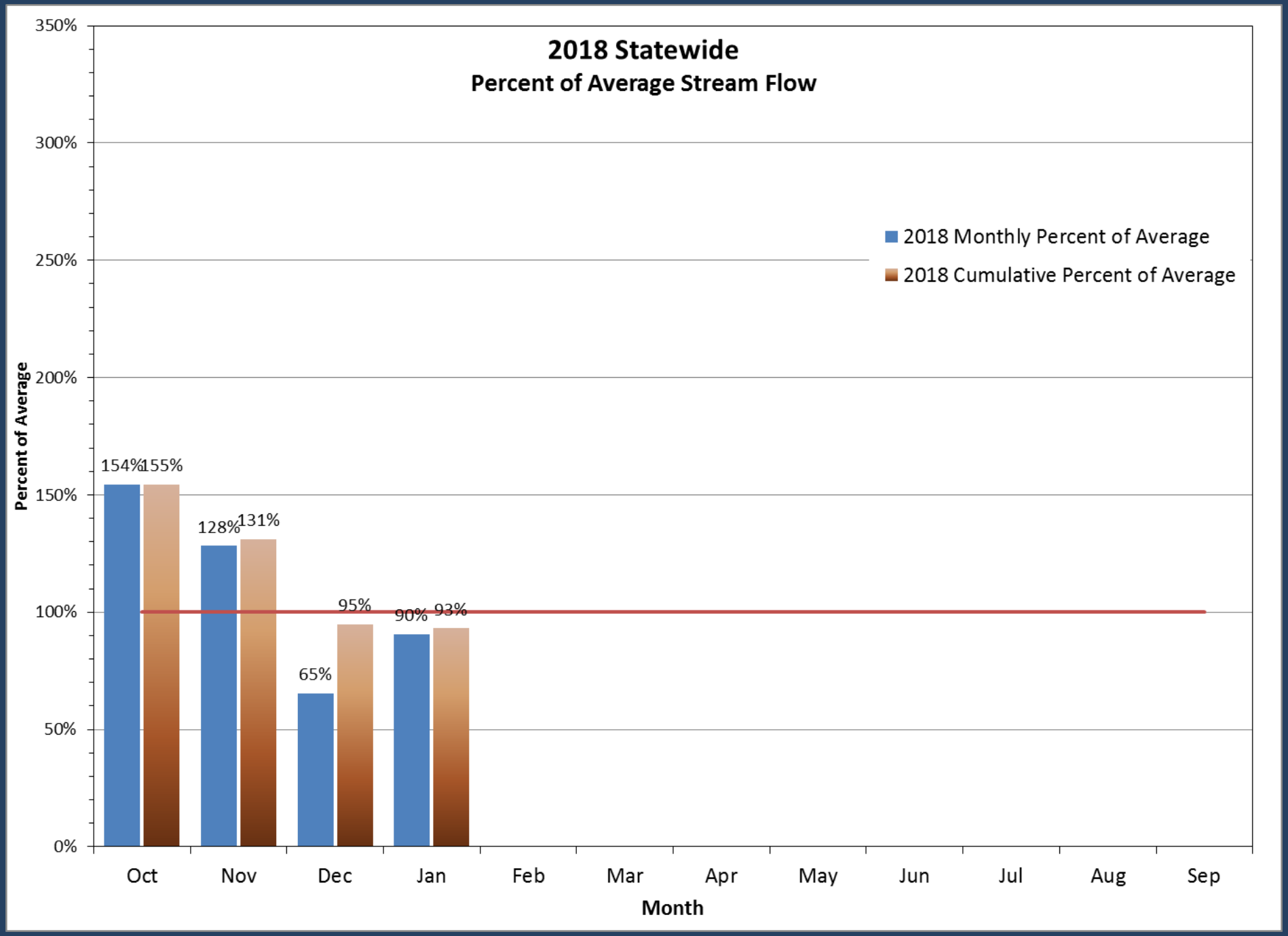
**Photos Credit: Andrew Erickson  USGS ORWSC**

Surface Water Conditions Report

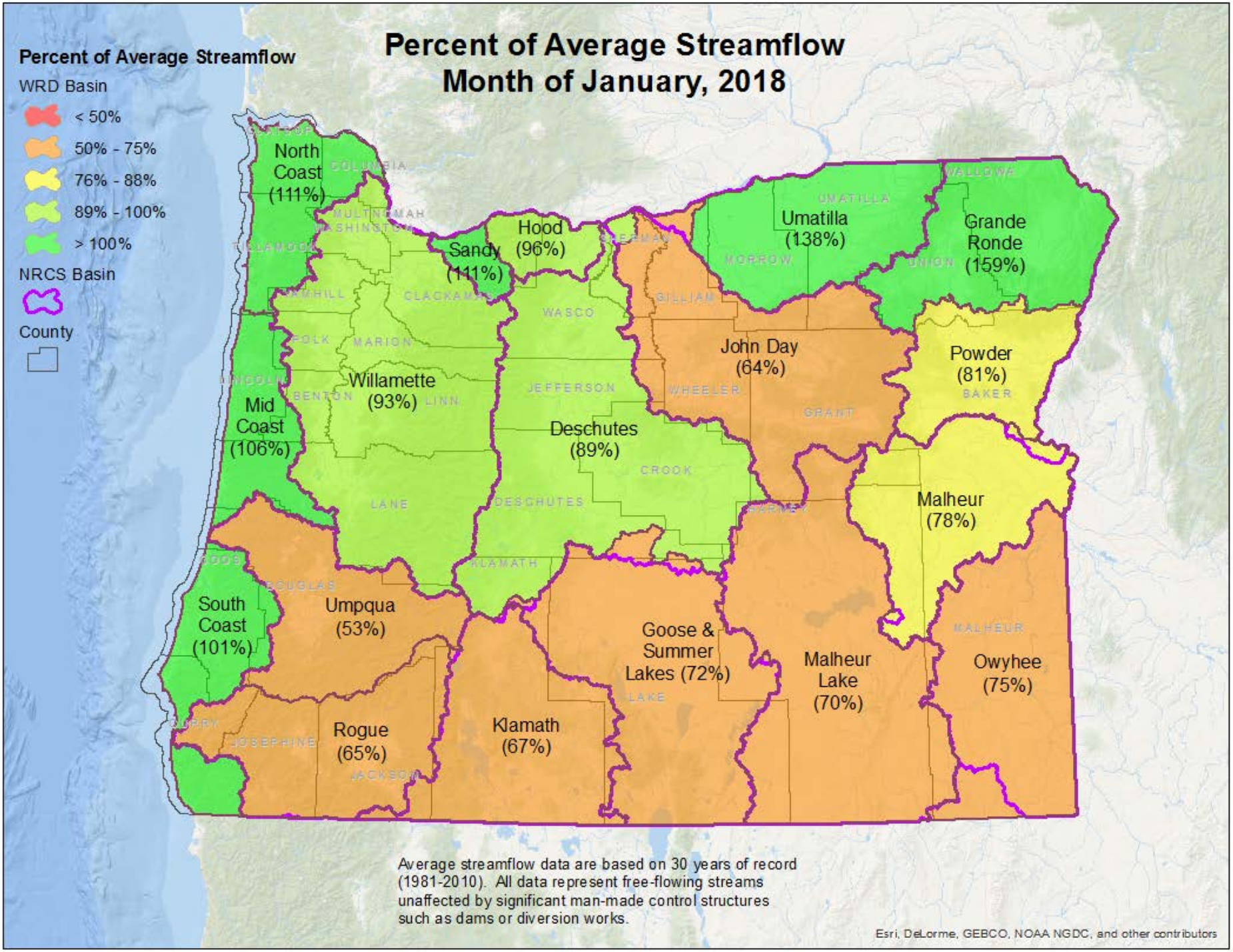
# Water Supply Availability Committee

Ken Stahr
Oregon Water Resources Department

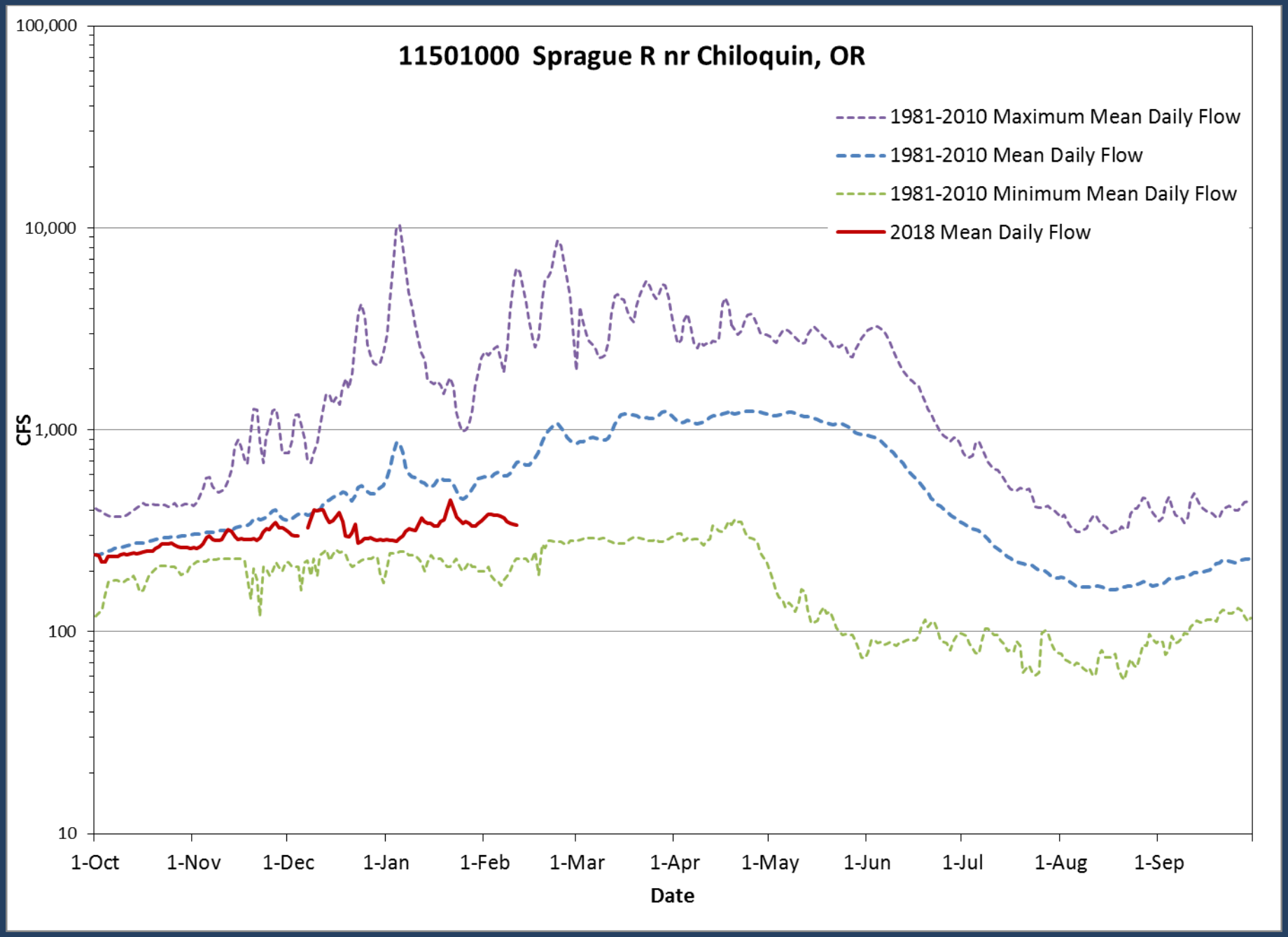
**February 13, 2018**

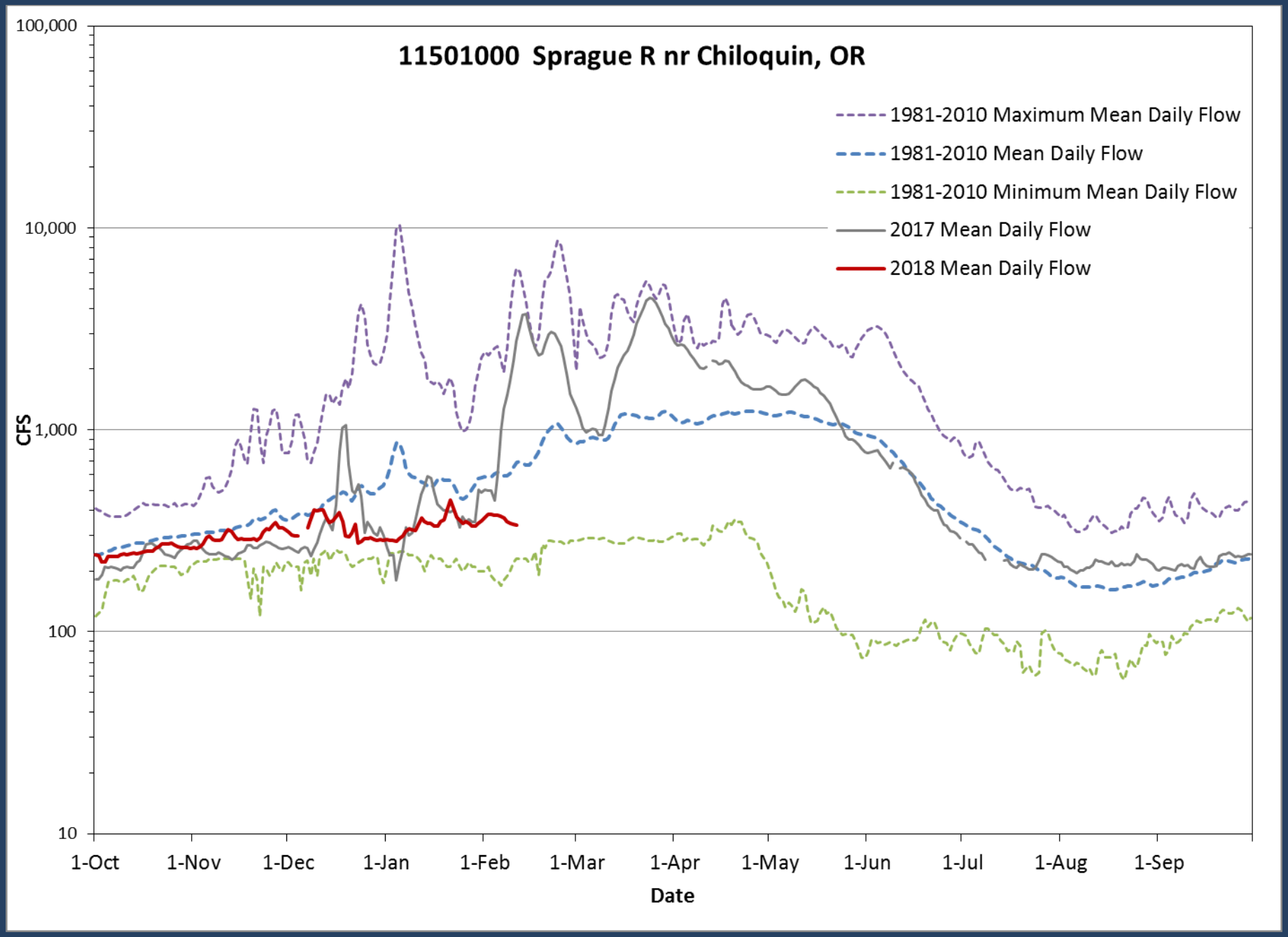

2018 Statewide
Percent of Average Stream Flow
2018 Monthly Percent of Average
2018 Cumulative Percent of Average
Percent of Average
350%
300%
250%
200%
150%
100%
50%
0%
154%
155%
128%
131%
65%
95%
90%
93%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Month

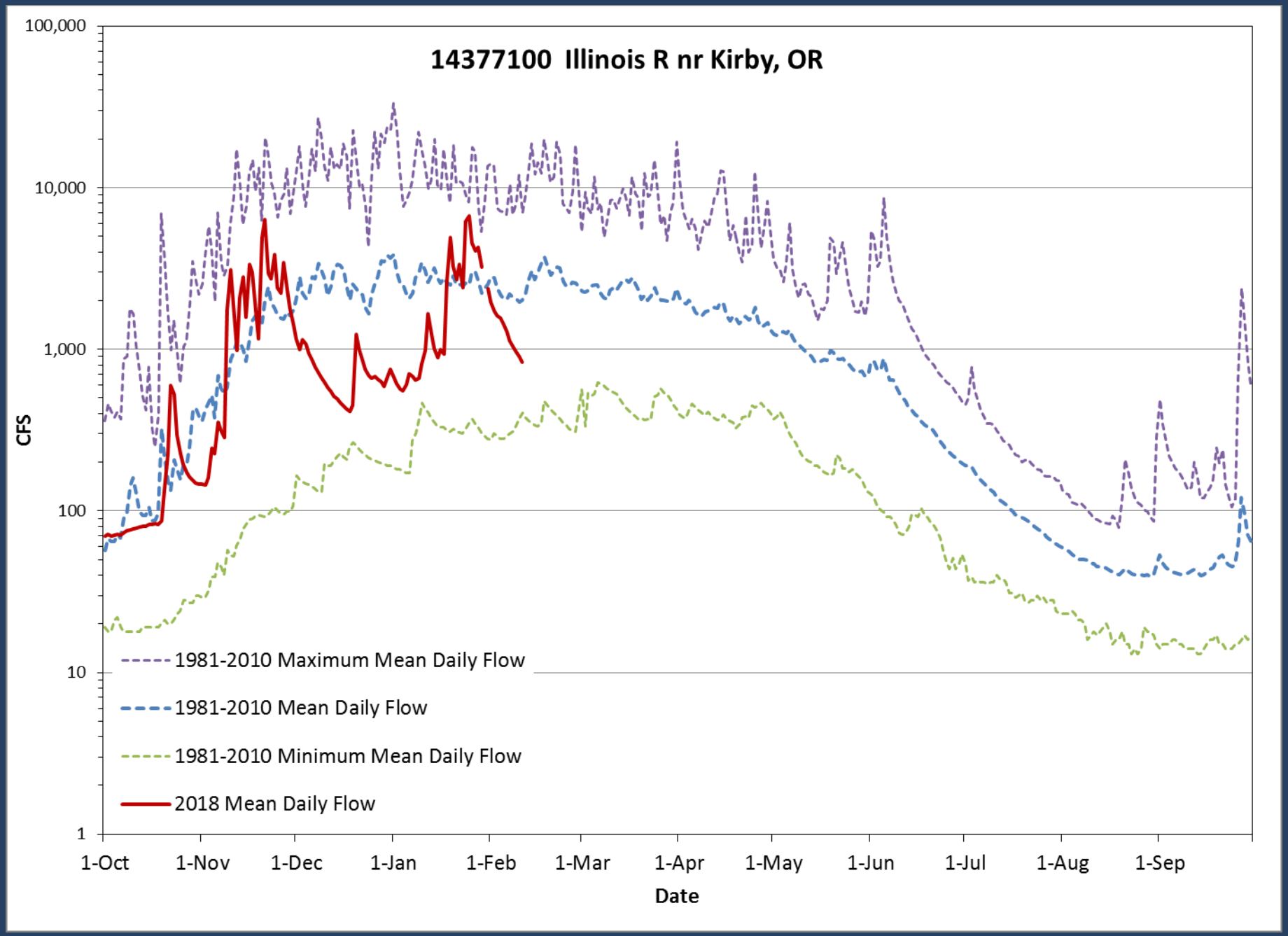
# Percent of Average Streamflow
# Month of January, 2018

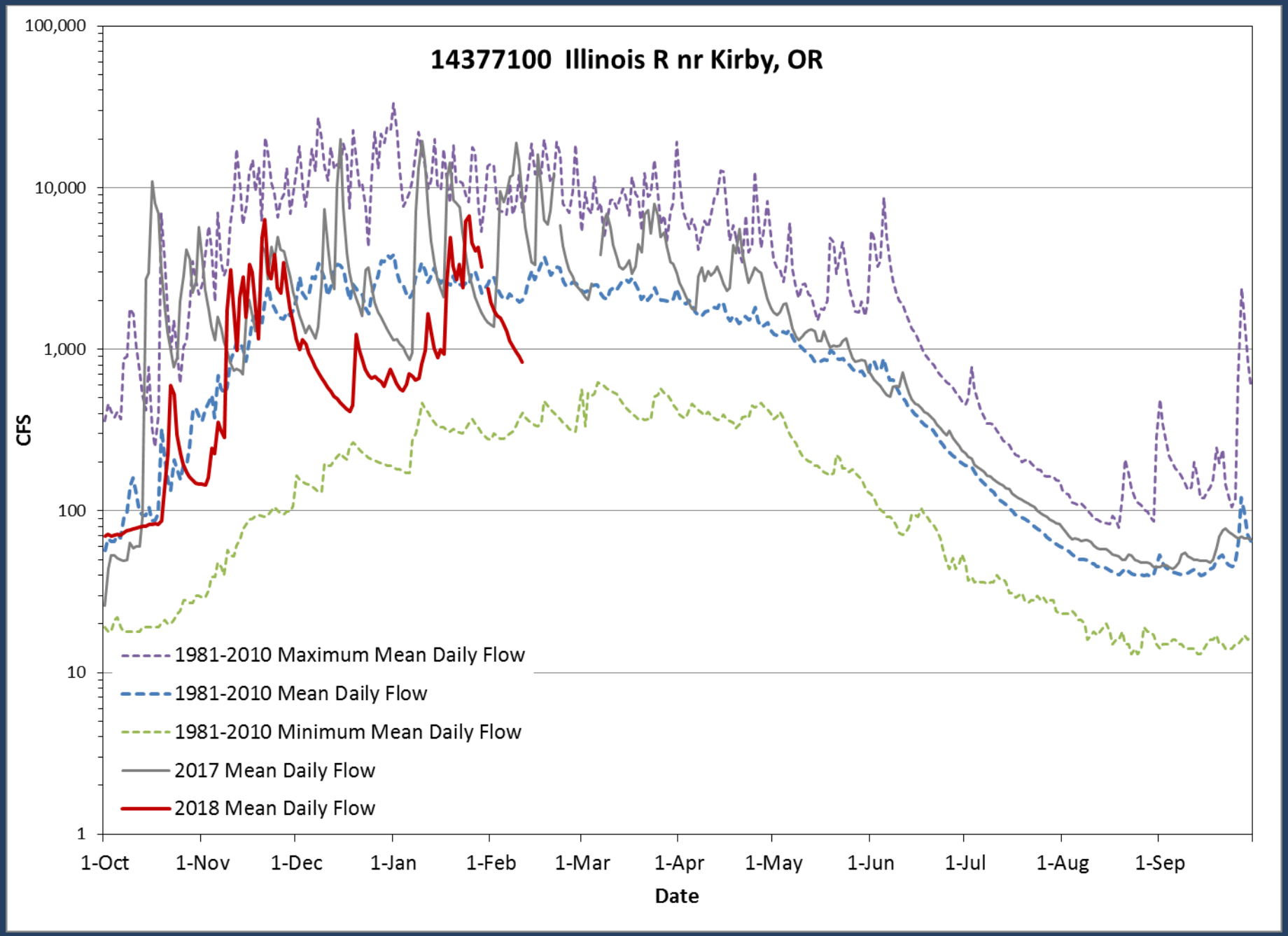


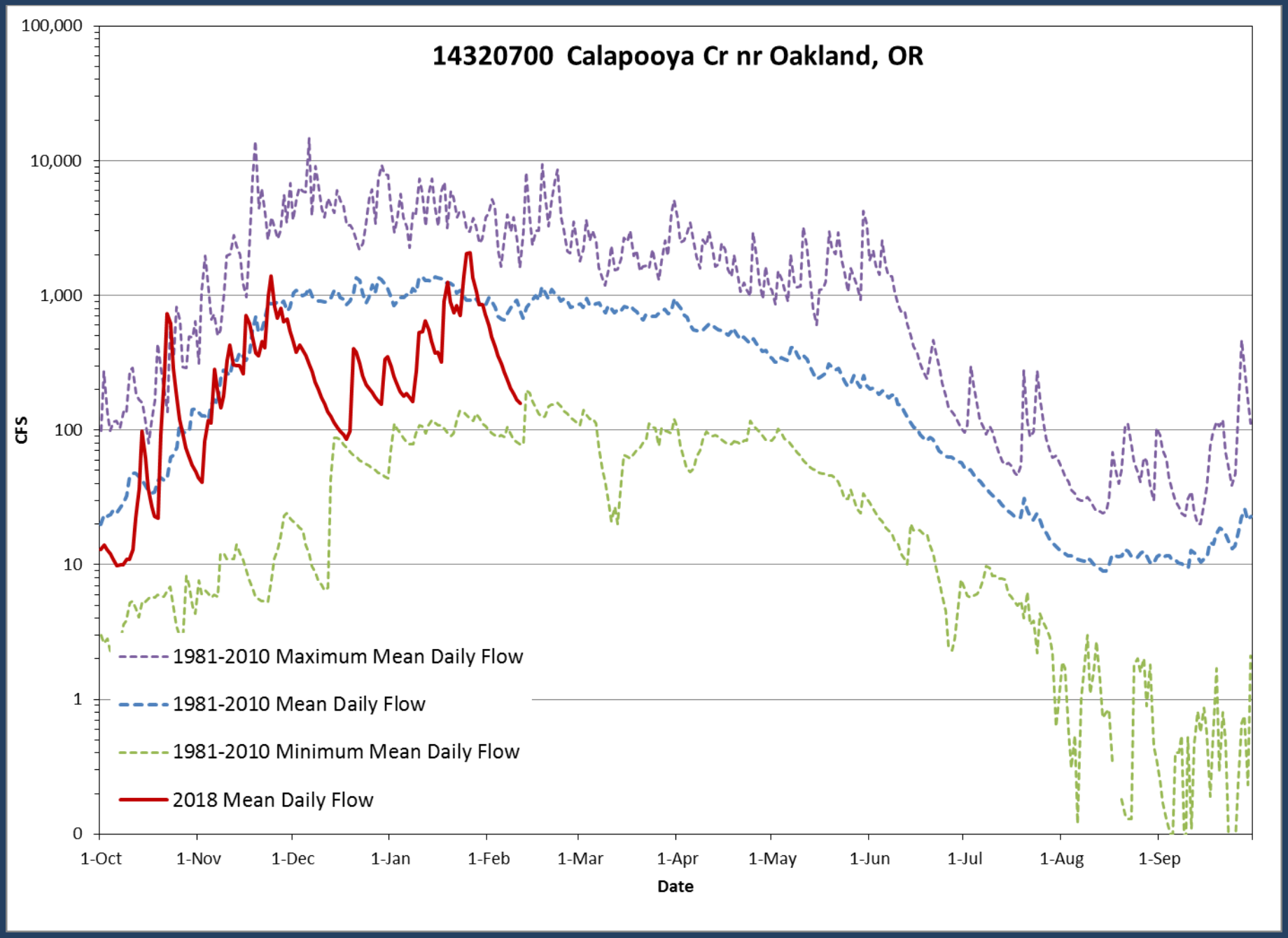
| Basin | Water Year % of average through January, 2018 | % of average for January | % of average for 02/10/2018 |
|---|---|---|---|
| North Coast | 118% | 111% | 44% |
| Willamette | 97% | 93% | 58% |
| Sandy | 115% | 111% | 88% |
| Hood | 106% | 96% | 89% |
| Deschutes | 94% | 89% | 89% |
| John Day | 74% | 64% | 77% |
| Umatilla | 114% | 138% | 117% |
| Grande Ronde | 130% | 159% | 224% |
| Powder | 95% | 81% | 132% |
| Malheur | 93% | 78% | 86% |
| Owyhee | 84% | 75% | 67% |
| Malheur Lake | 81% | 70% | 65% |
| Goose & Summer Lakes | 83% | 72% | 83% |
| Klamath | 77% | 67% | 59% |
| Rogue | 74% | 65% | 59% |
| Umpqua | 63% | 53% | 36% |
| South Coast | 84% | 101% | 37% |
| Mid Coast | 93% | 106% | 37% |
| **West Side** | **92%** | **91%** | **51%** |
| **East Side** | **94%** | **90%** | **99%** |
| **State** | **93%** | **90%** | **80%** |

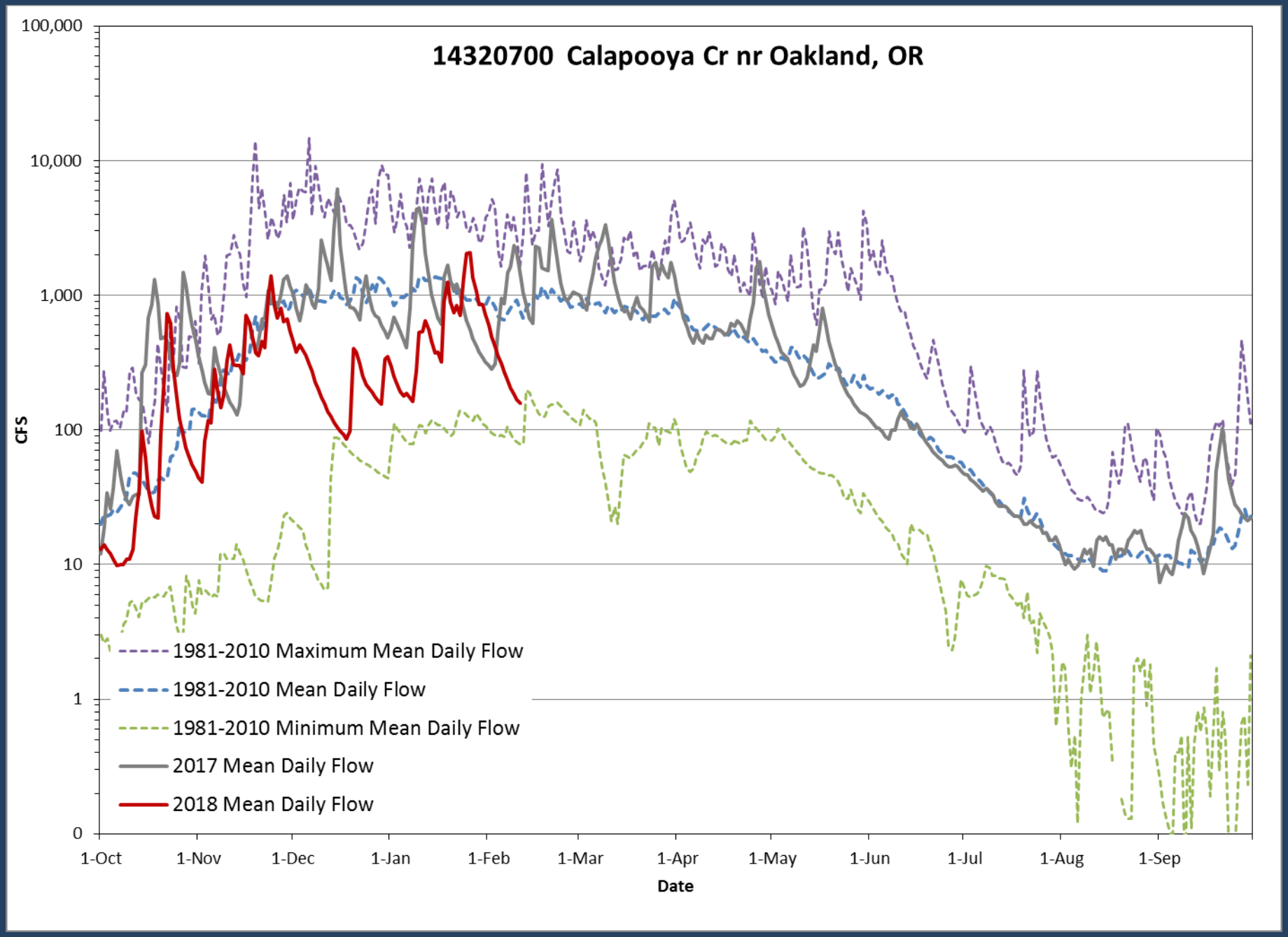

11501000 Sprague R nr Chiloquin, OR
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2018 Mean Daily Flow
100,000
10,000
1,000
100
10
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date

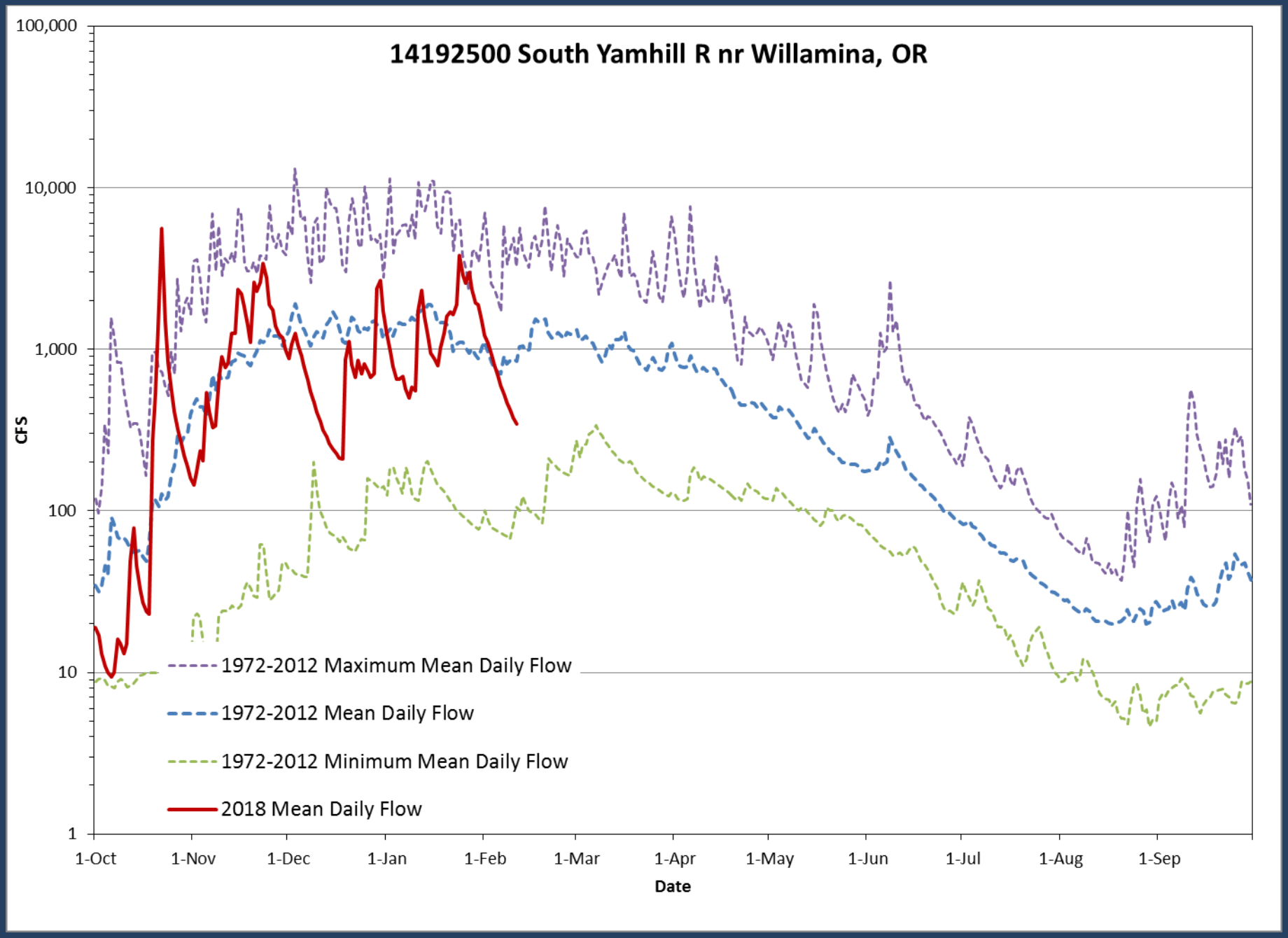

11501000 Sprague R nr Chiloquin, OR
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2017 Mean Daily Flow
2018 Mean Daily Flow
100,000
10,000
1,000
100
10
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date

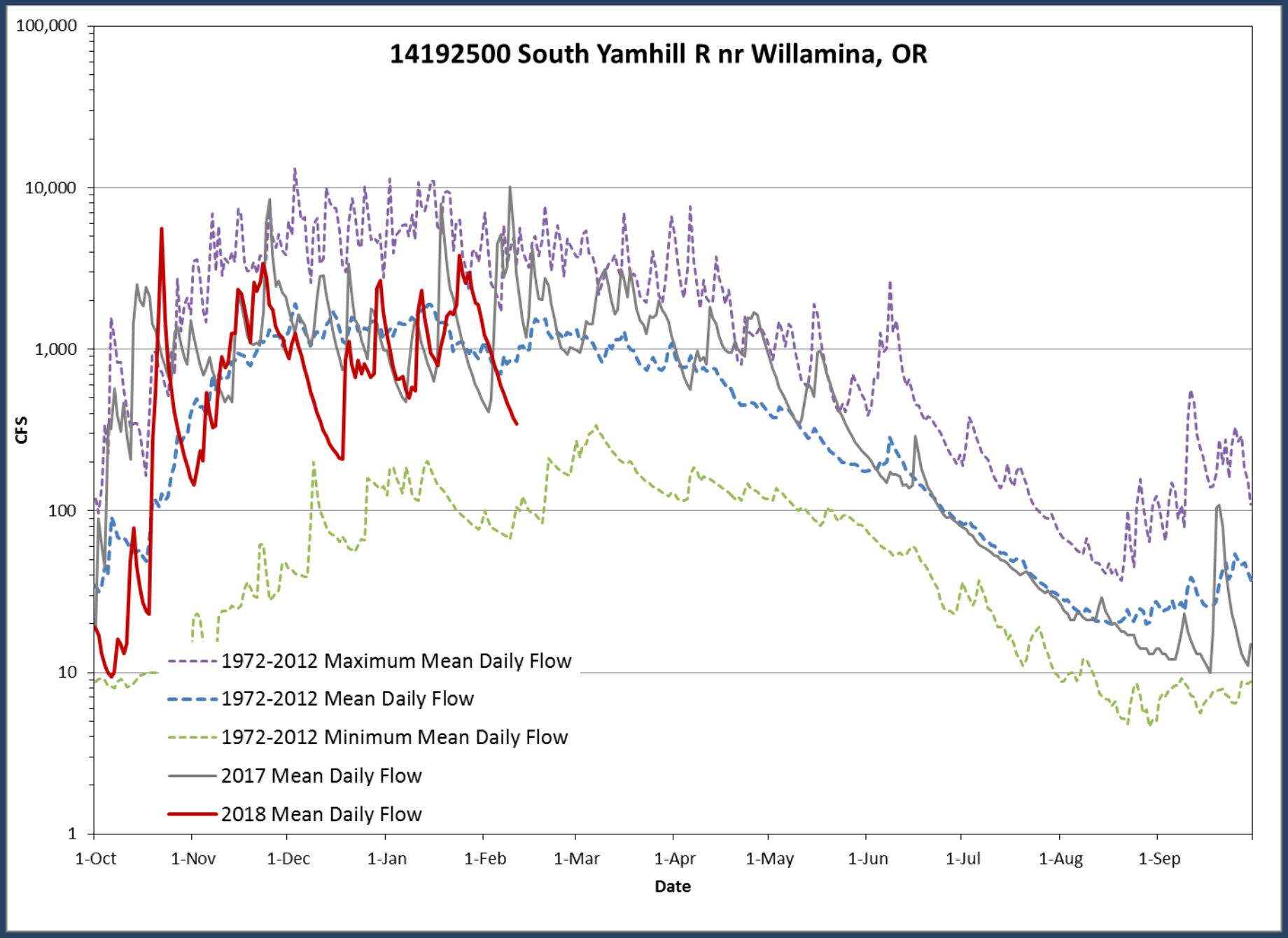

14377100 Illinois R nr Kirby, OR
100,000
10,000
1,000
100
10
1
CFS
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2018 Mean Daily Flow
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


14377100 Illinois R nr Kirby, OR
100,000
10,000
1,000
100
10
1
CFS
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
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2017 Mean Daily Flow
2018 Mean Daily Flow

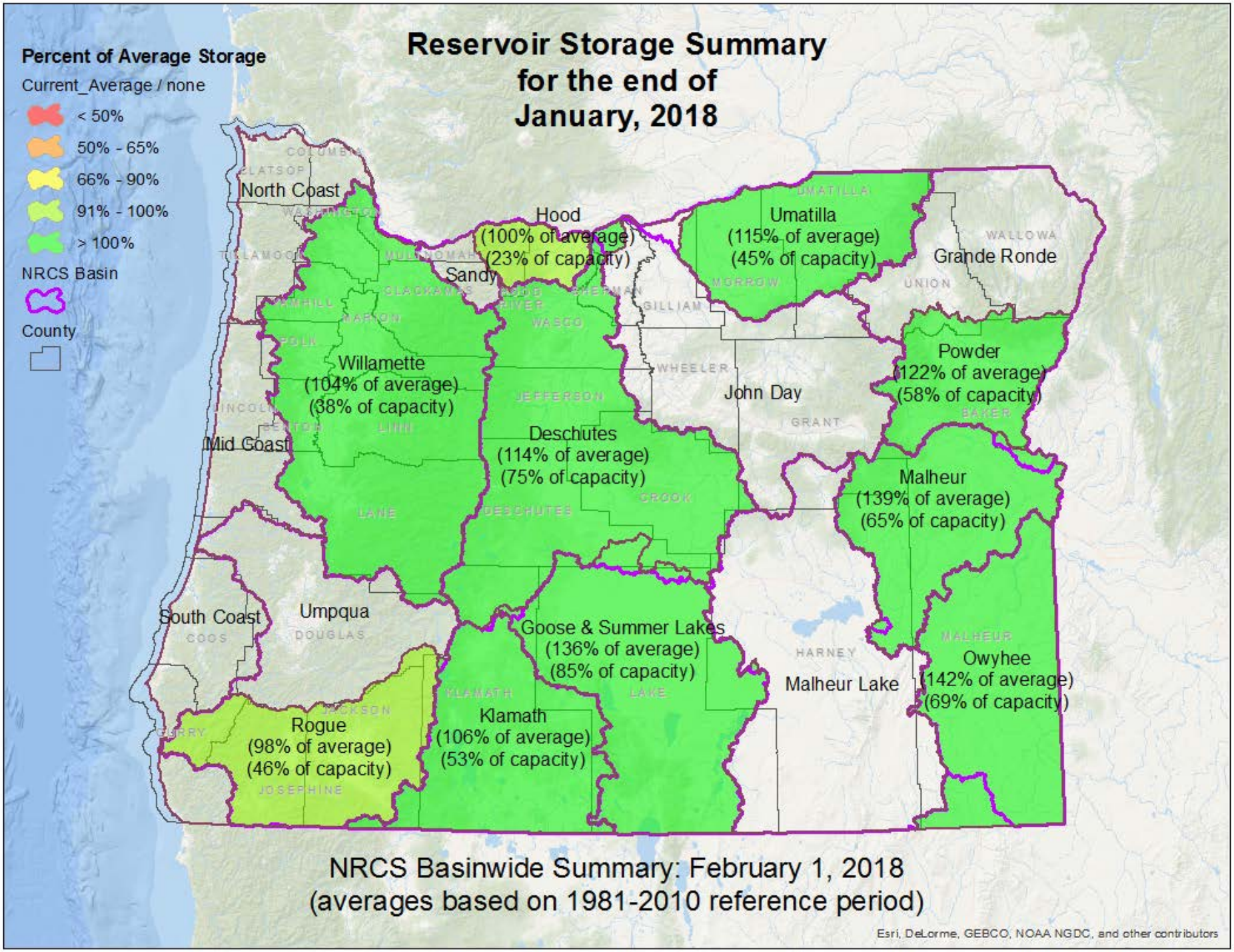

14320700 Calapooya Cr nr Oakland, OR
100,000
10,000
1,000
100
10
1
0
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2018 Mean Daily Flow


14320700 Calapooya Cr nr Oakland, OR
100,000
10,000
1,000
100
10
1
0
CFS
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
1981-2010 Maximum Mean Daily Flow
1981-2010 Mean Daily Flow
1981-2010 Minimum Mean Daily Flow
2017 Mean Daily Flow
2018 Mean Daily Flow

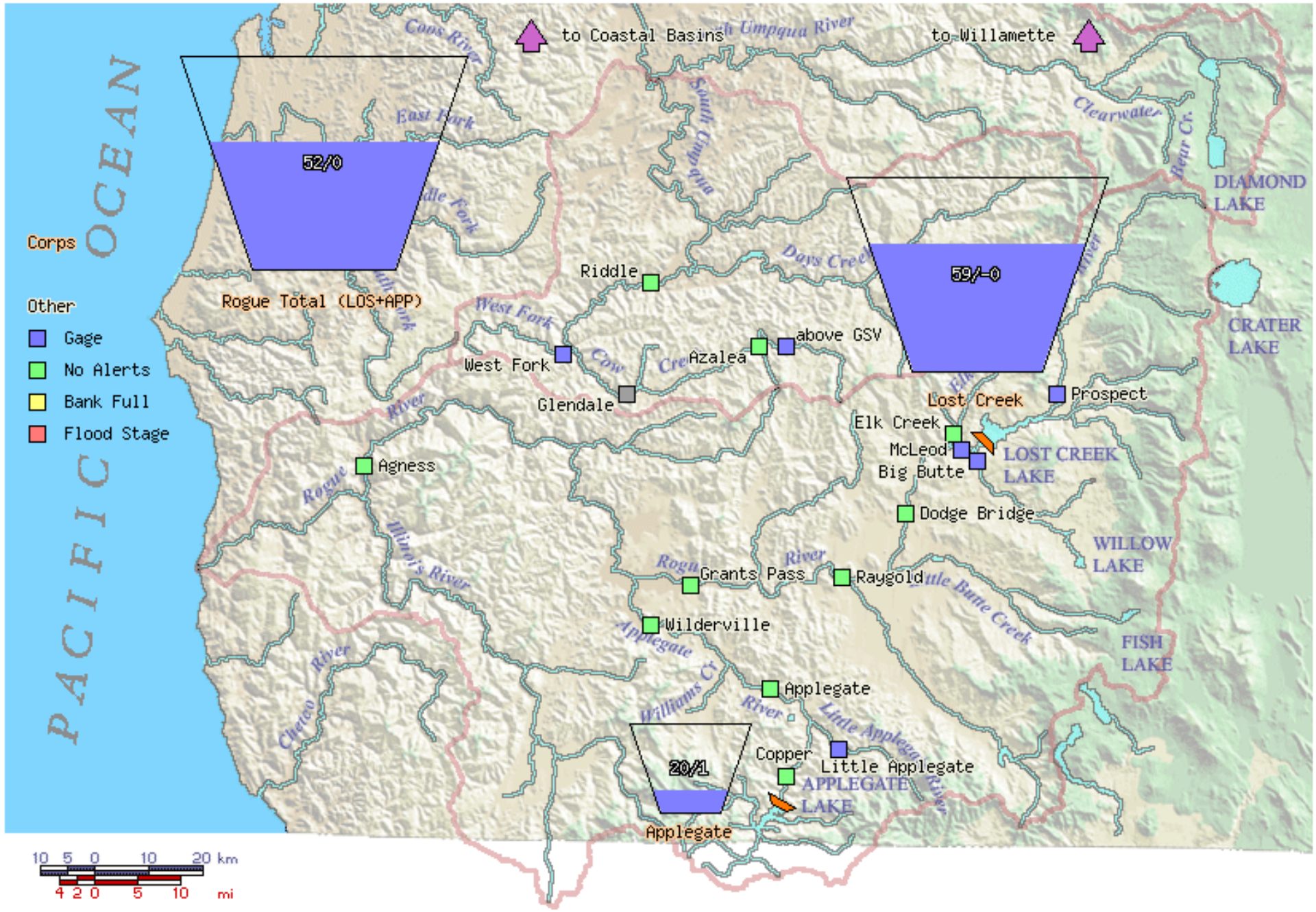

14192500 South Yamhill R nr Willamina, OR
100,000
10,000
1,000
100
10
1
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1972-2012 Maximum Mean Daily Flow
1972-2012 Mean Daily Flow
1972-2012 Minimum Mean Daily Flow
2018 Mean Daily Flow


14192500 South Yamhill R nr Willamina, OR
100,000
10,000
1,000
100
10
1
CFS
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
1972-2012 Maximum Mean Daily Flow
1972-2012 Mean Daily Flow
1972-2012 Minimum Mean Daily Flow
2017 Mean Daily Flow
2018 Mean Daily Flow

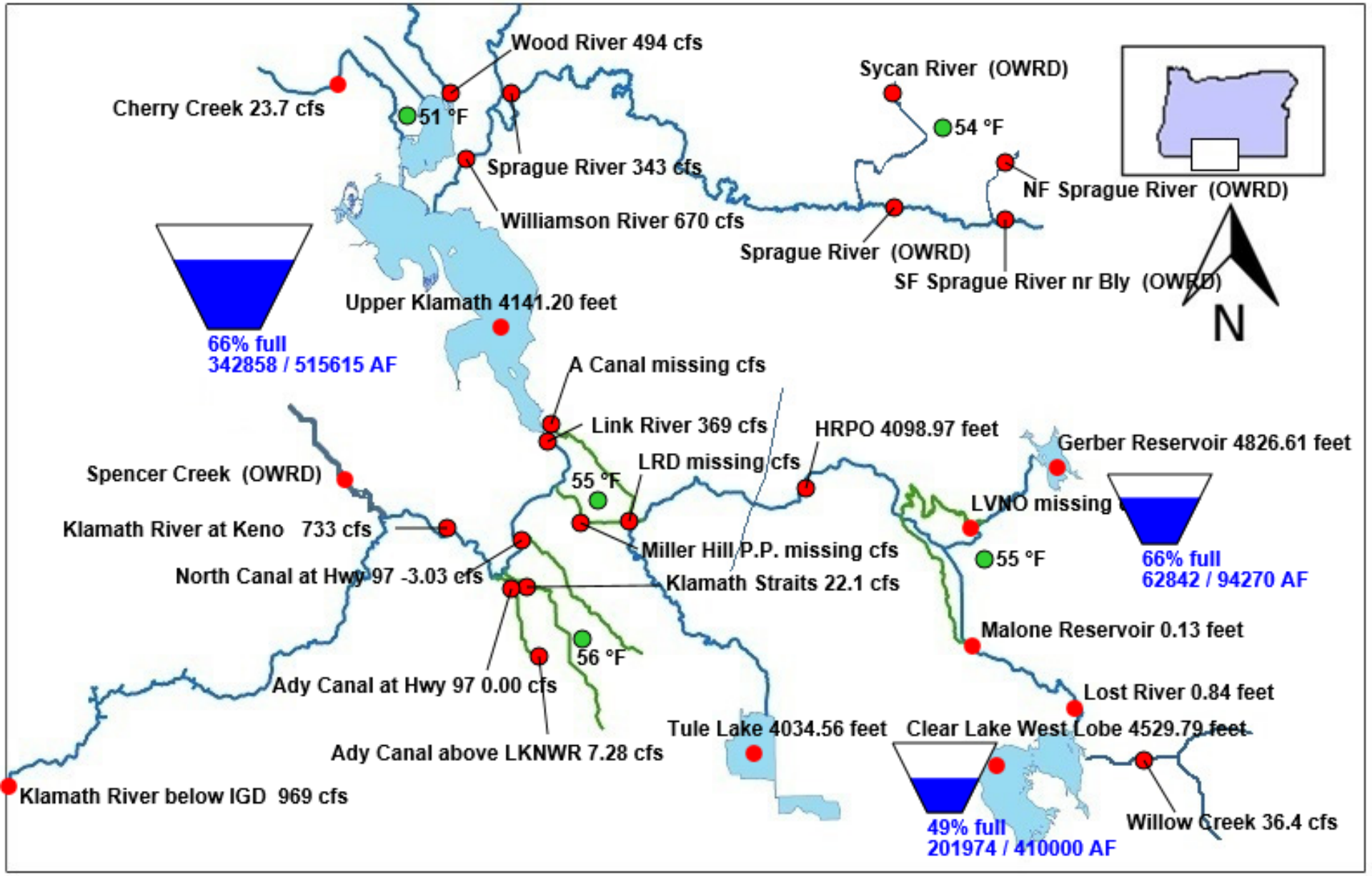

Storage


Reservoir Storage Summary
for the end of
January, 2018
Percent of Average Storage
Current_Average / none
< 50%
50% - 65%
66% - 90%
91% - 100%
> 100%
NRCS Basin
County
North Coast
Hood
(100% of average)
(23% of capacity)
Sandy
Umatilla
(115% of average)
(45% of capacity)
Grande Ronde
Willamette
(104% of average)
(38% of capacity)
Mid Coast
Deschutes
(114% of average)
(75% of capacity)
John Day
Powder
(122% of average)
(58% of capacity)
Malheur
(139% of average)
(65% of capacity)
South Coast
Umpqua
Goose & Summer Lakes
(136% of average)
(85% of capacity)
Malheur Lake
Owyhee
(142% of average)
(69% of capacity)
Rogue
(98% of average)
(46% of capacity)
Klamath
(106% of average)
(53% of capacity)
NRCS Basinwide Summary: February 1, 2018
(averages based on 1981-2010 reference period)
Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors


**Created:** Fri Feb 9 14:25:26 2018




**Created:** Fri Feb 9 15:55:11 2018




Fri Feb 09 2018 16:12:10 GMT-0800 (Pacific Standard Time)

# Thank You

# RECLAMATION

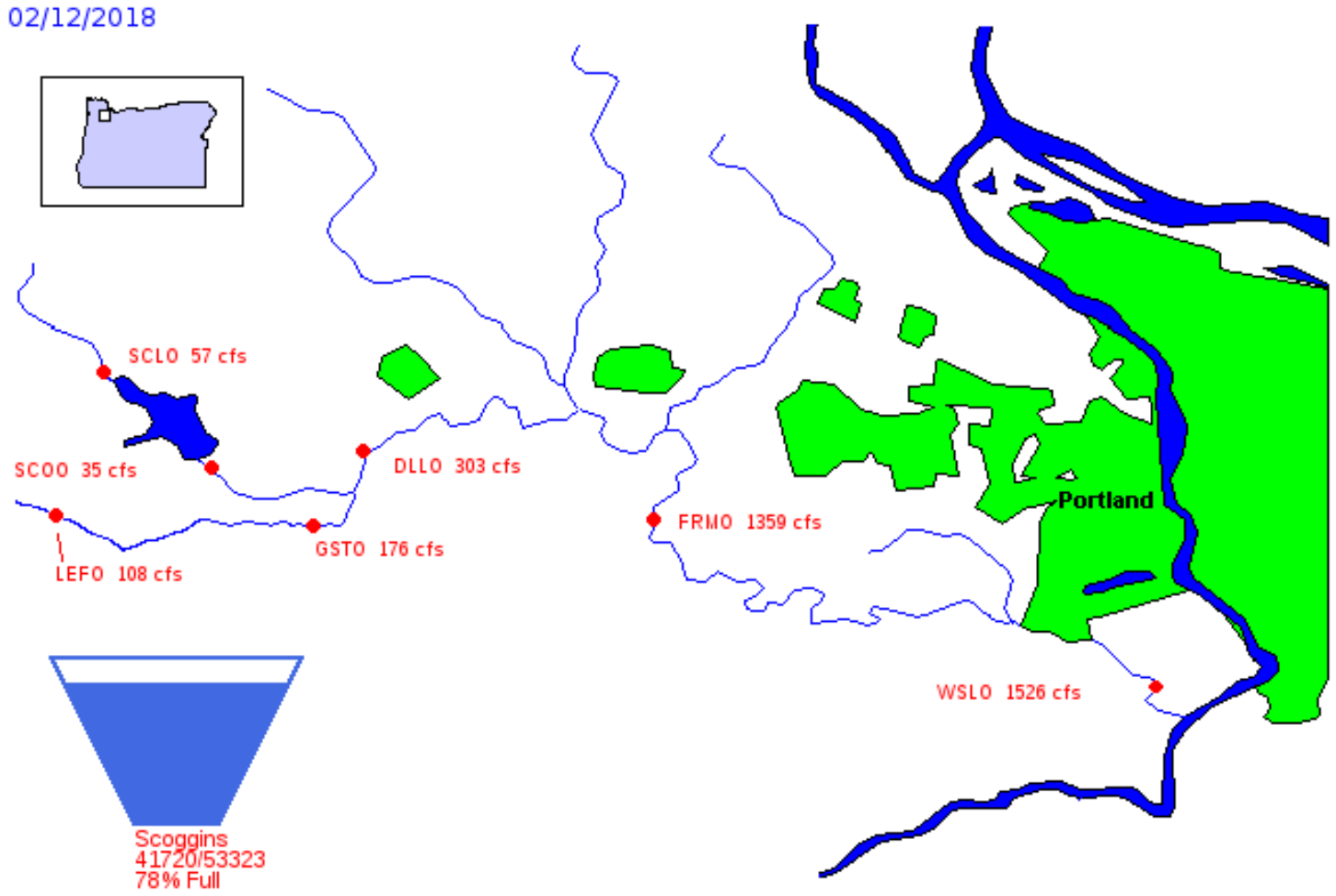
*Managing Water in the West*

## Oregon Water Supply Availability Committee Meeting
## February 13, 2018

**Peter Cooper**

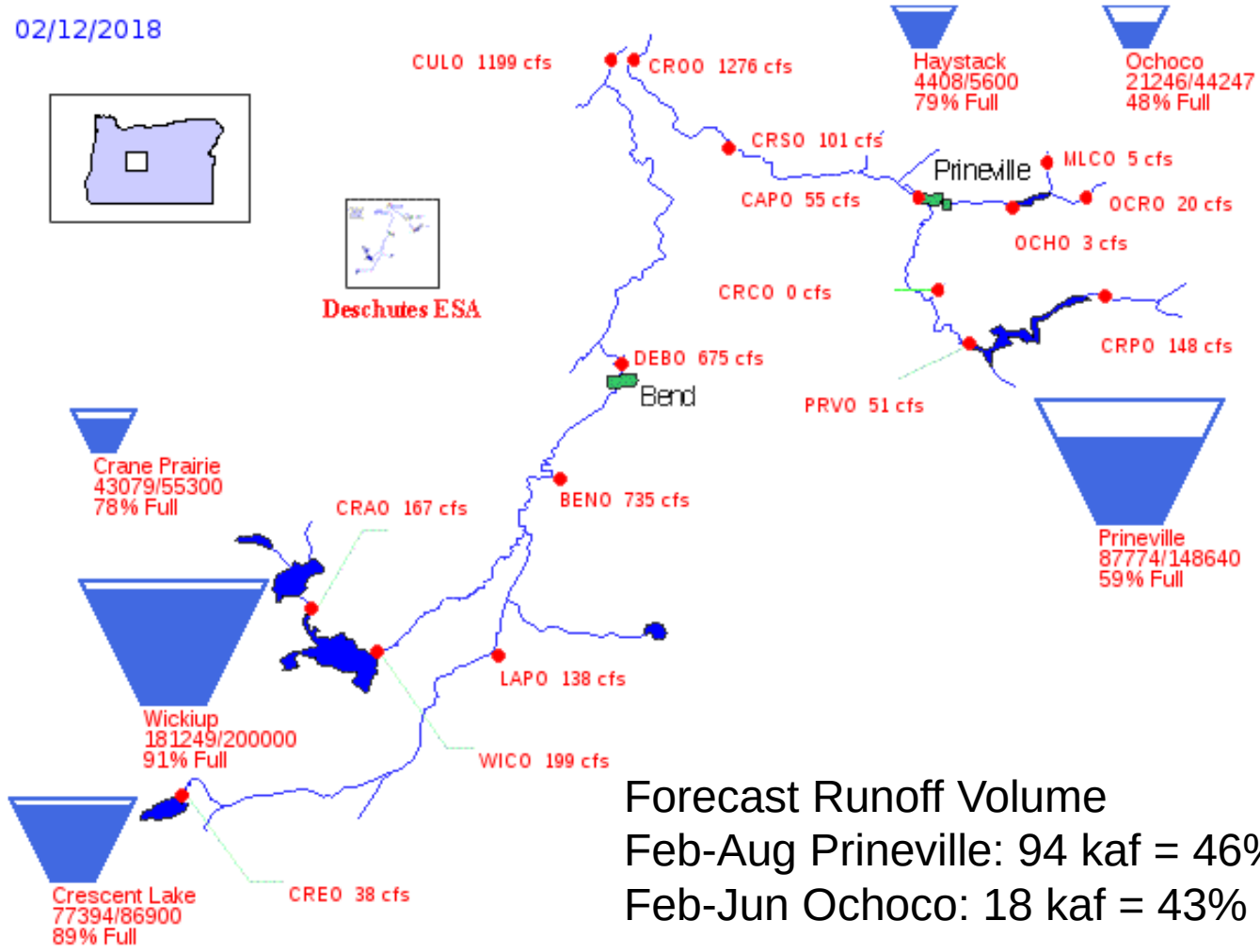
U.S. Department of the Interior
Bureau of Reclamation

# Bureau of Reclamation, Pacific Northwest Region
# Tualatin River Basin Storage and Flow Diagram




RECLAMATION

# US Bureau of Reclamation, Pacific Northwest Region
# Major Storage Reservoirs in the Deschutes River Basin




Forecast Runoff Volume
Feb-Aug Prineville: 94 kaf = 46% of ave
Feb-Jun Ochoco: 18 kaf = 43% of ave

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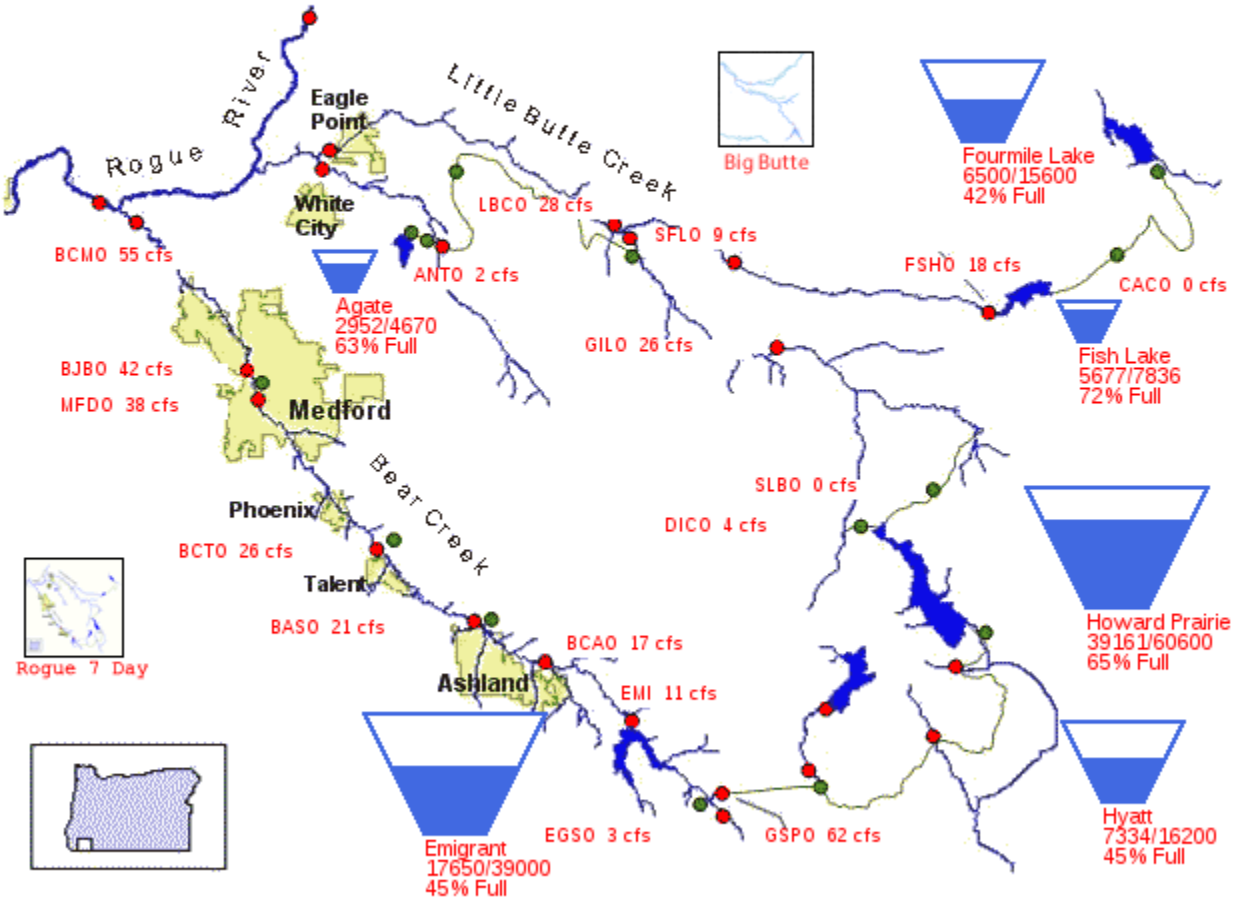
# US Bureau of Reclamation, Pacific Northwest Region
# Bear Creek and Little Butte Creek Basins

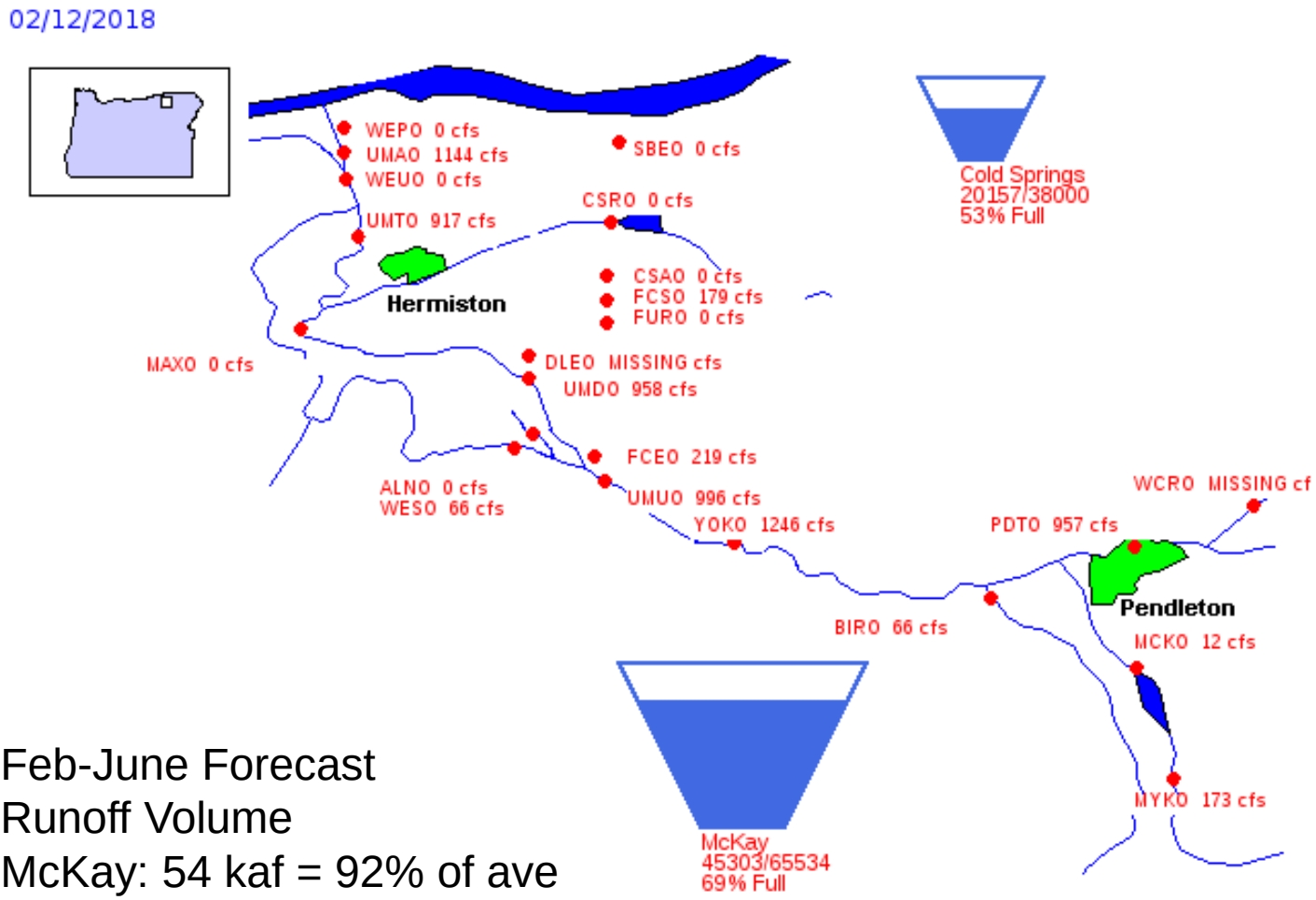
02/12/2018




PROVISIONAL DATA - SUBJECT TO CHANGE!

RECLAMATION

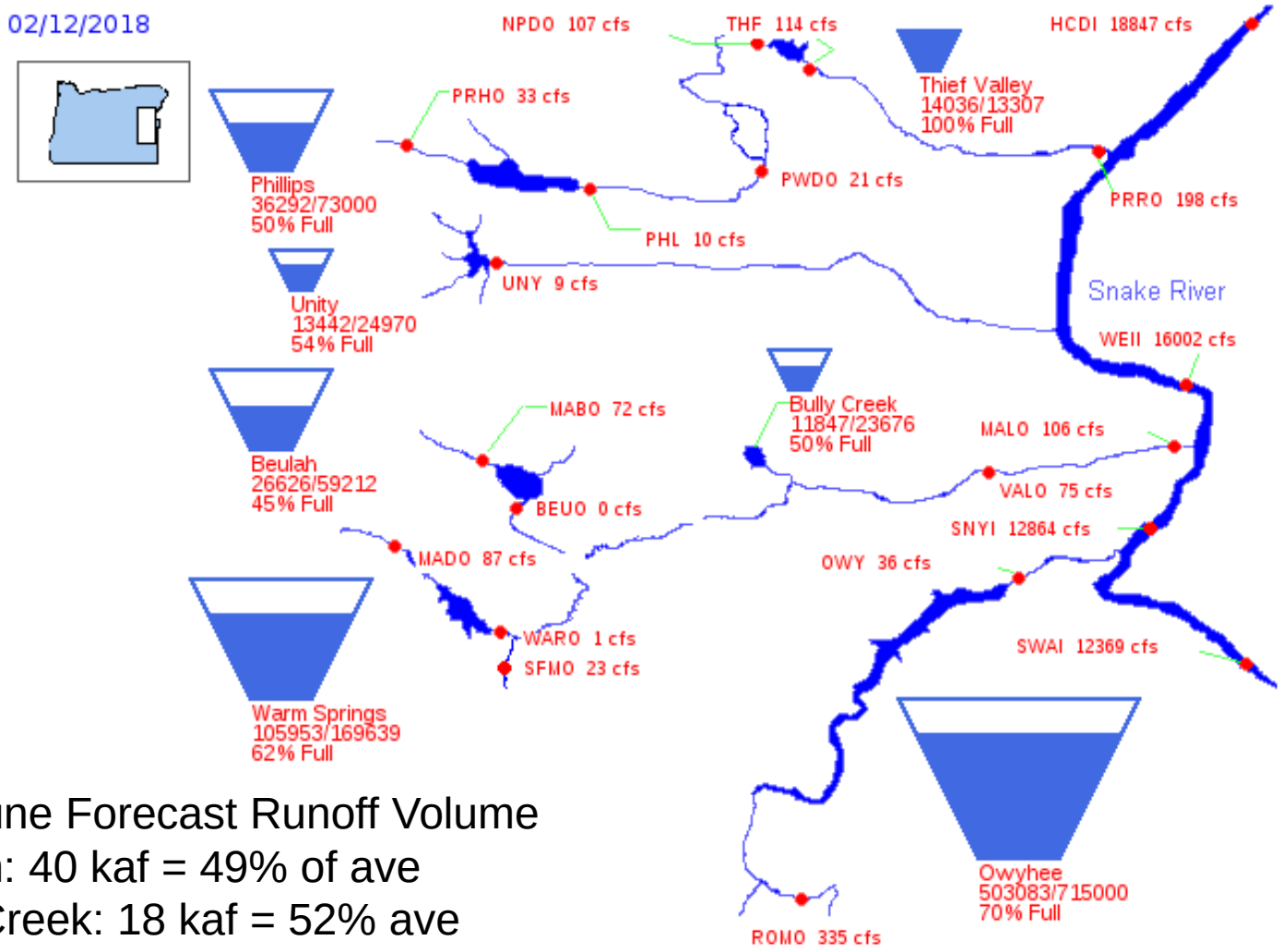
# Bureau of Reclamation, Pacific Northwest Region
# Umatilla River Basin Storage and Flow Diagram




Feb-June Forecast
Runoff Volume
McKay: 54 kaf = 92% of ave

RECLAMATION

# US Bureau of Reclamation, Pacific Northwest Region
# Major Storage Reservoirs in Southeastern Oregon




Feb-June Forecast Runoff Volume
Beulah: 40 kaf = 49% of ave
Bully Creek: 18 kaf = 52% ave
Owyhee: 265 kaf = 43%
Warm Springs: 57 kaf = 45%

RECLAMATION

Questions?