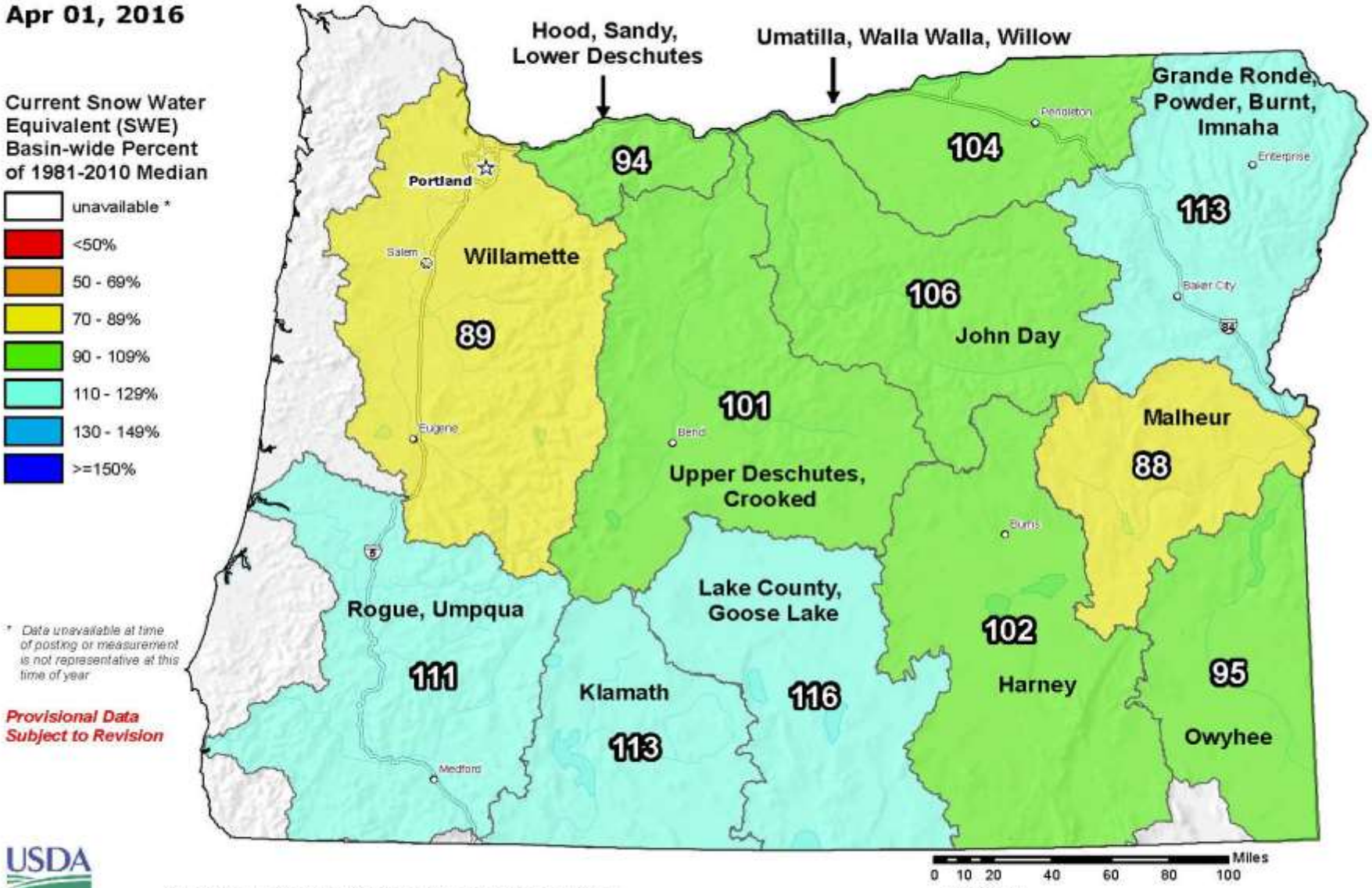
Oregon Water Supply Availability Committee

May 16, 2016

H. Scott Oviatt
Snow Survey Supervisory Hydrologist
USDA NRCS Snow Survey and Water Supply Forecasting Program
Scott.Oviatt@or.usda.gov
503-414-3271
http://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/

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

Apr 01, 2016



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

Provisional Data Subject to Revision

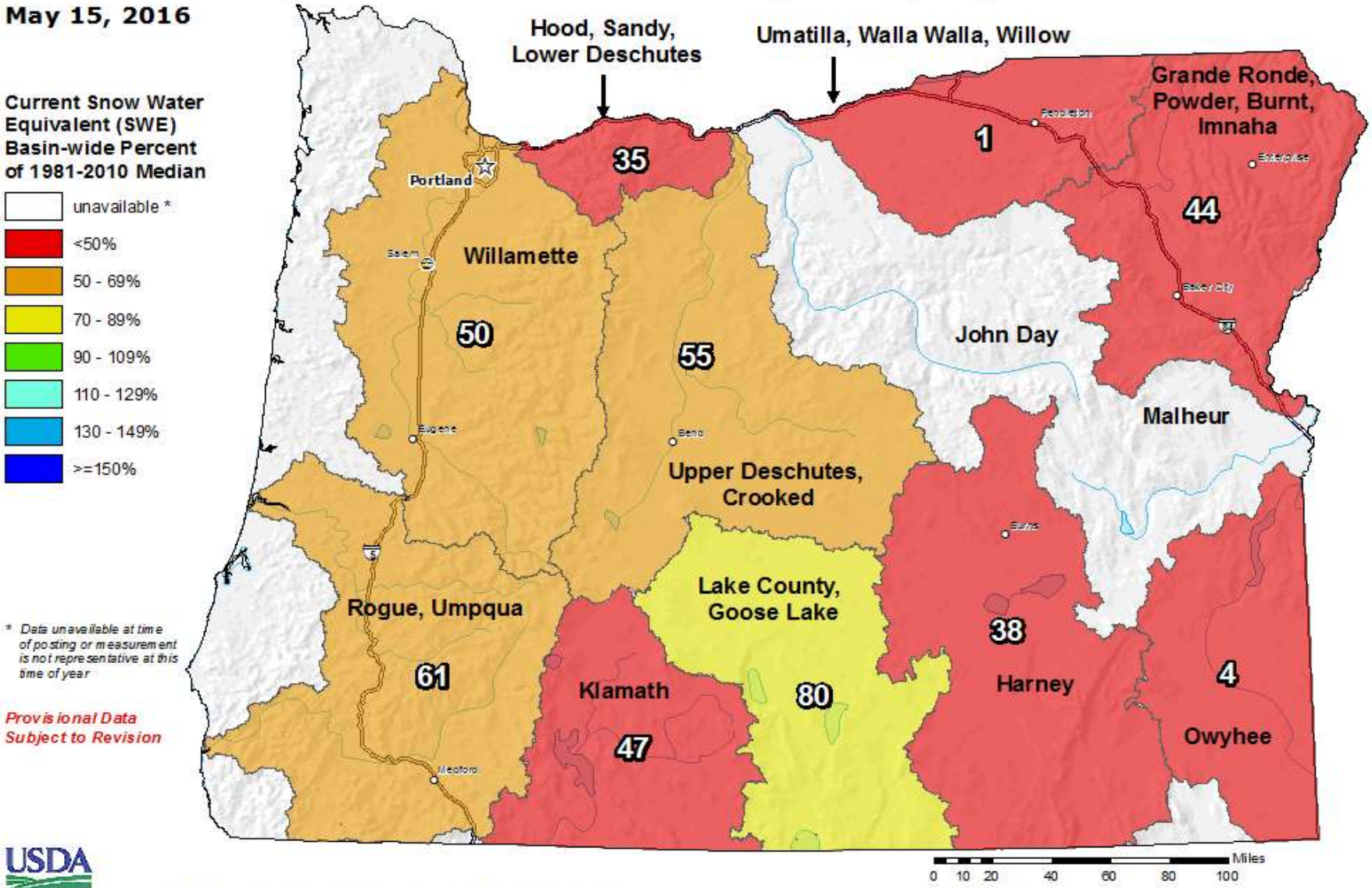
USDA NRCS

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

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

May 15, 2016



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

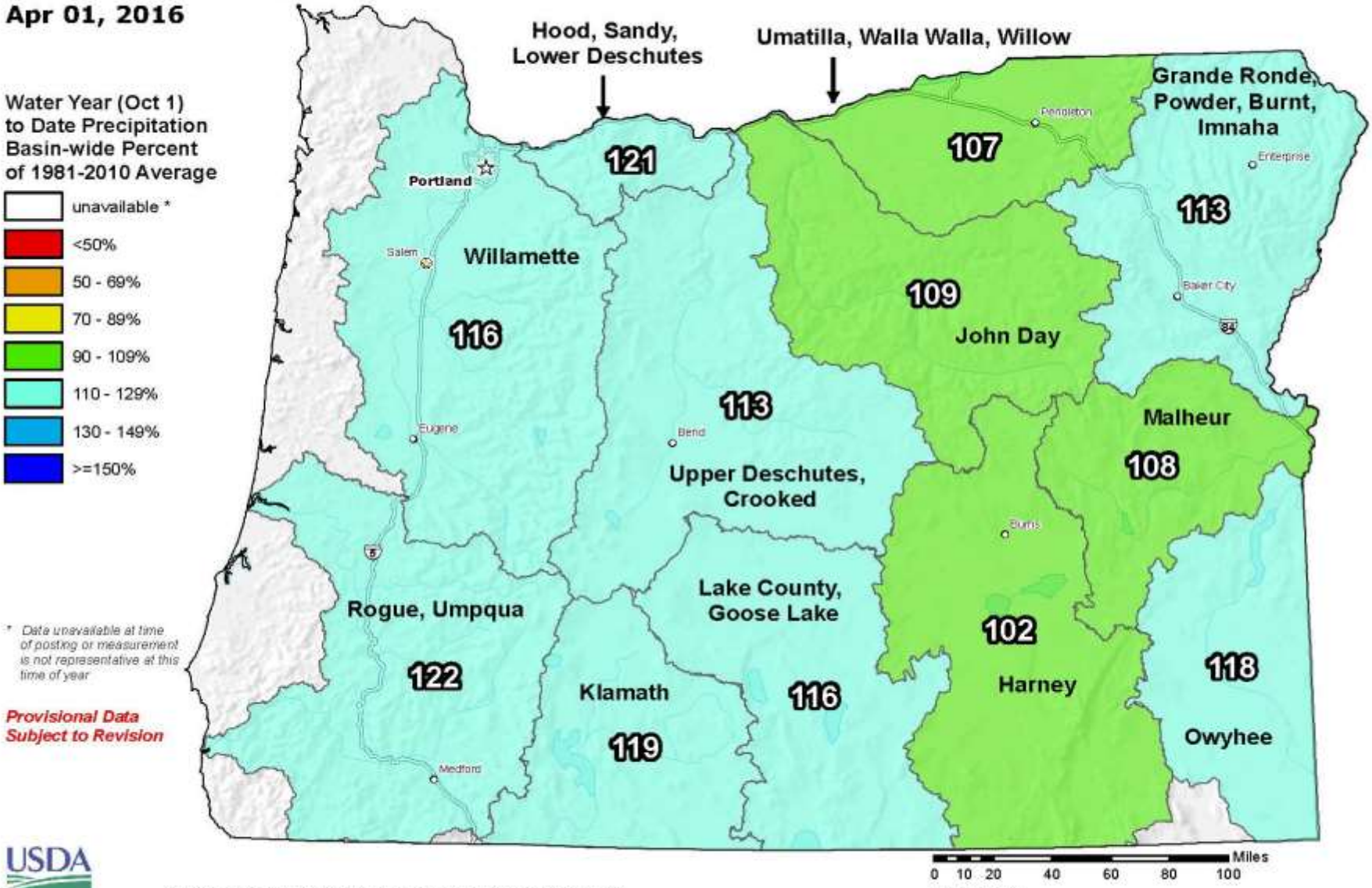
Provisional Data Subject to Revision

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

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

Apr 01, 2016

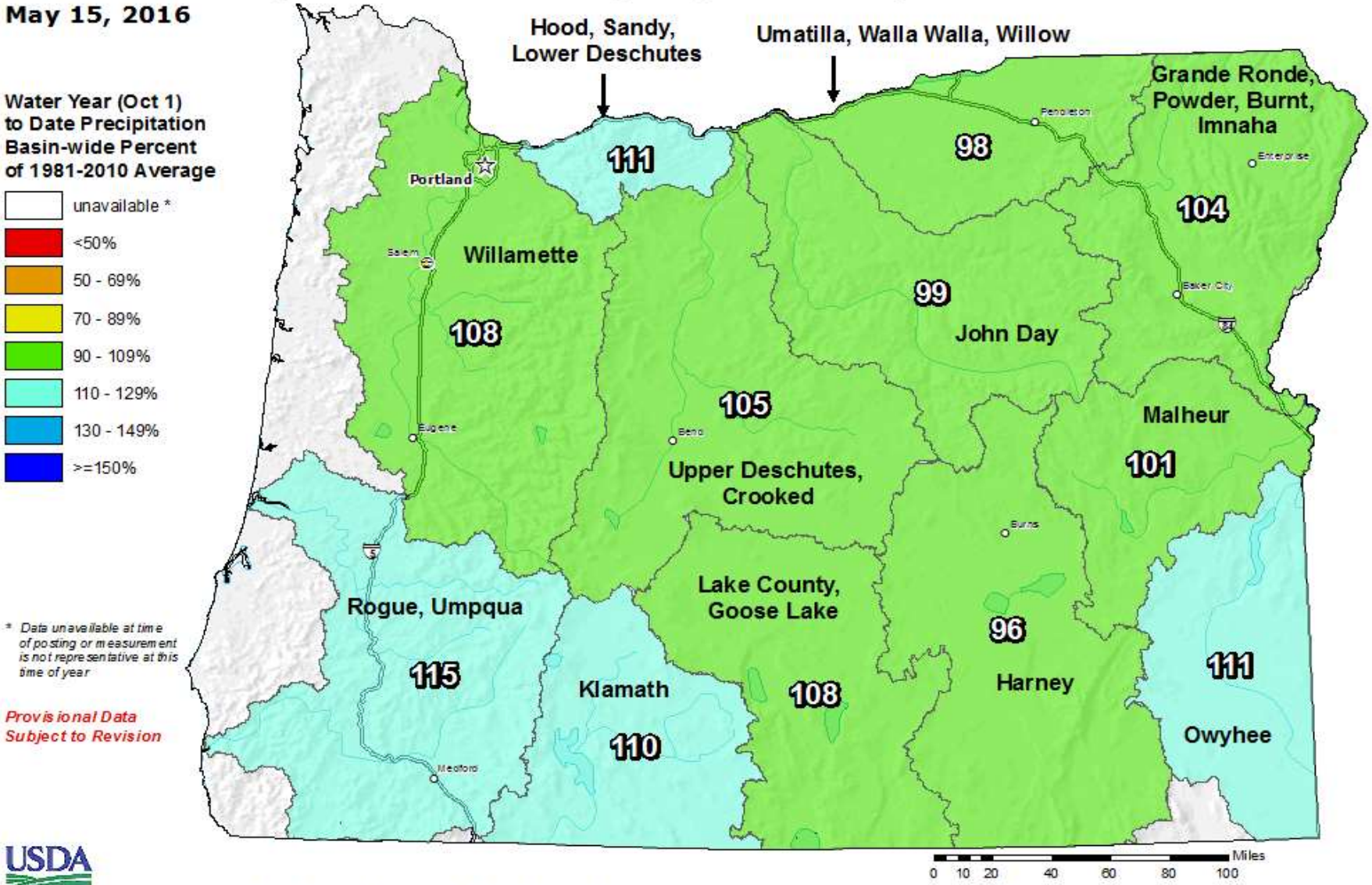


The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

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

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

May 15, 2016



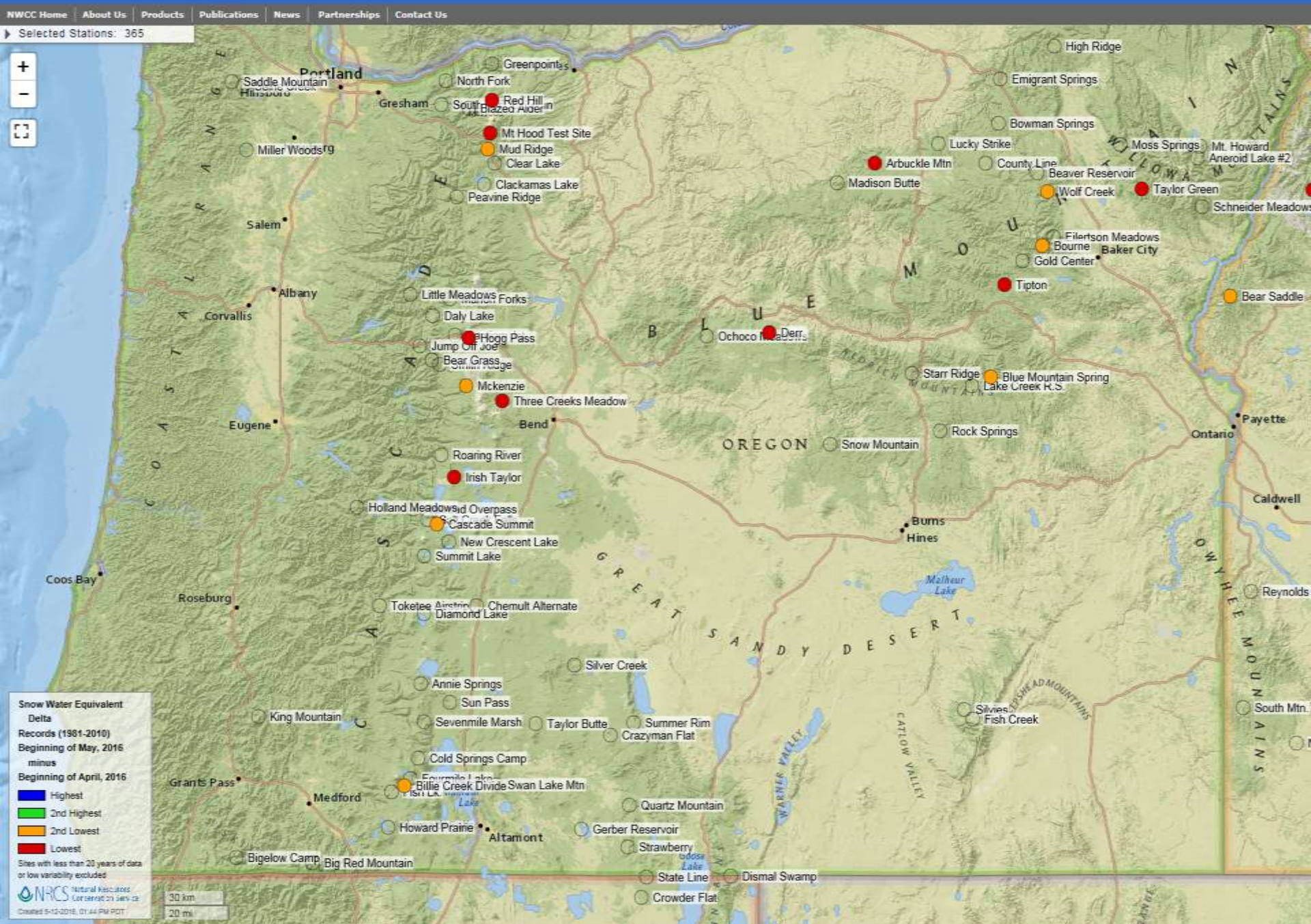
USDA NRCS

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).

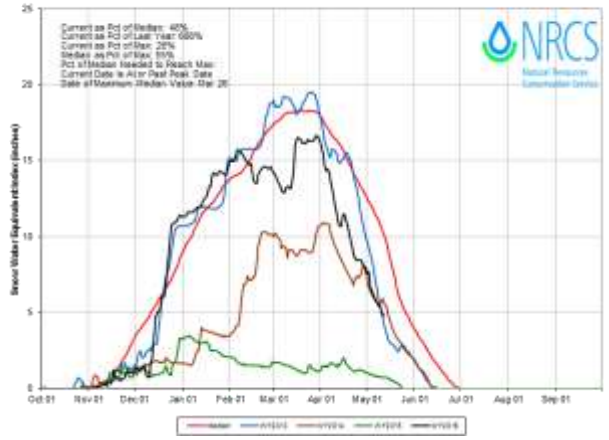
Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

United States Department of Agriculture
NRCS Natural Resources Conservation Service

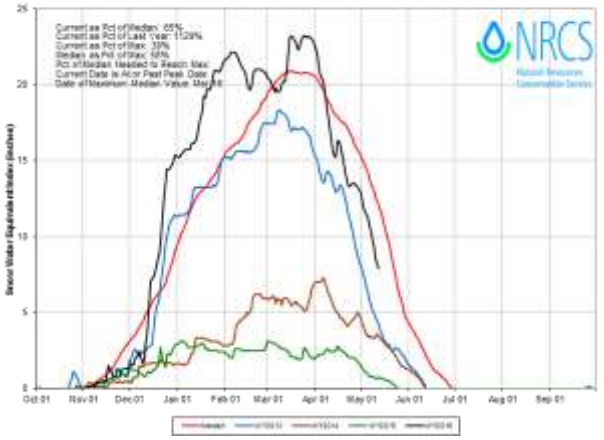
SWE Change records (1981 – 2010) Change from May1 to April 1



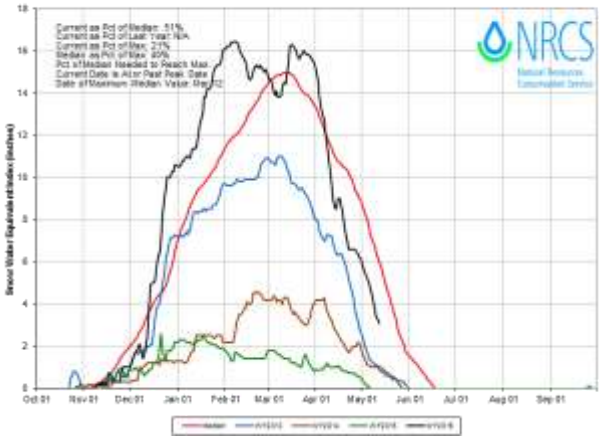
Willamette



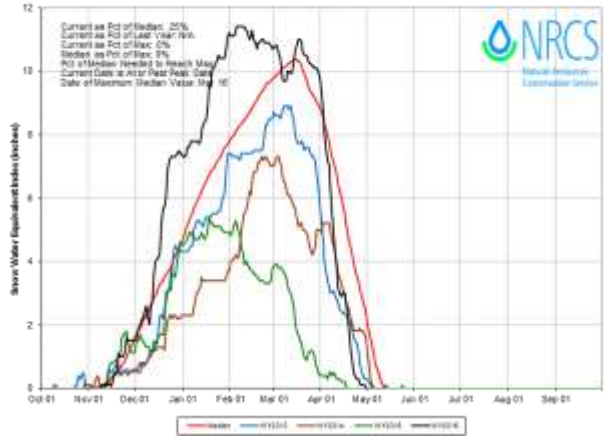
Rogue/Umpqua



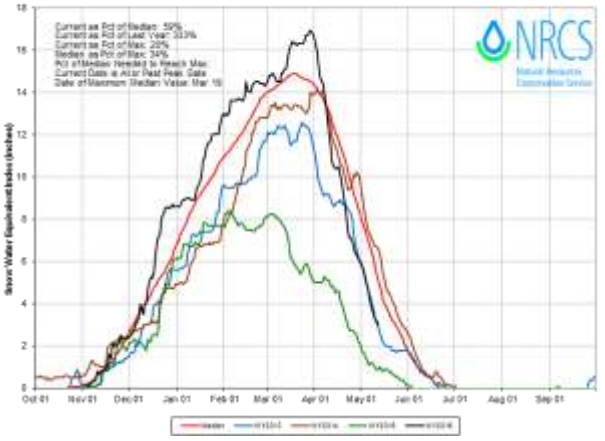
Klamath



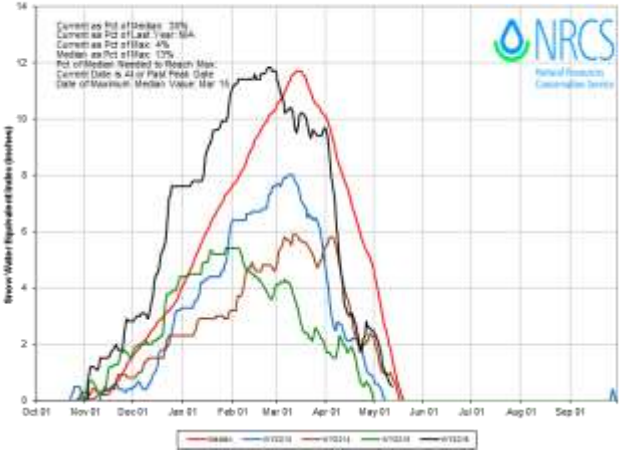
John Day



Grande Ronde/Powder/Burnt



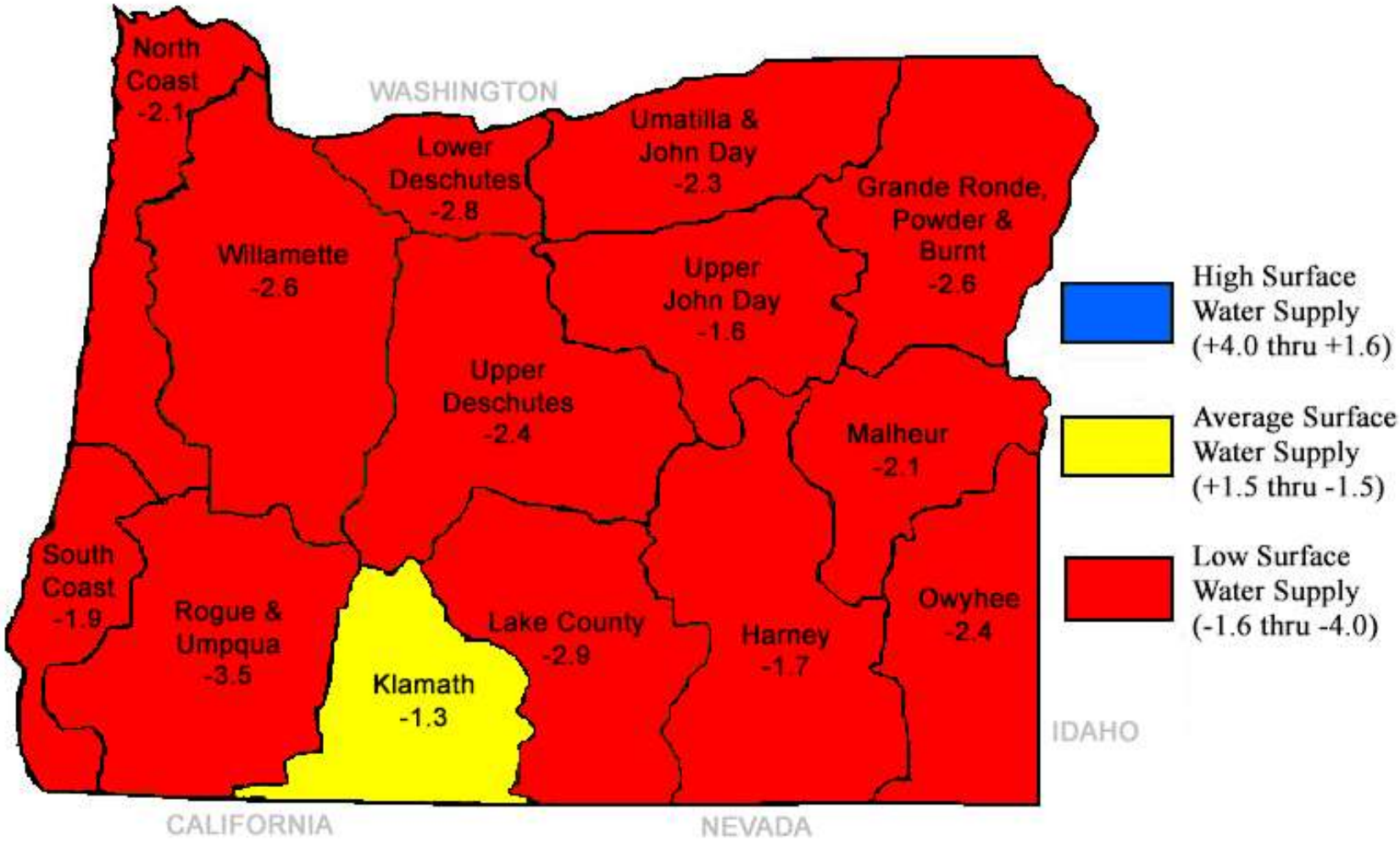
Owyhee



NRCS Natural Resources Conservation Service

Oregon Surface Water Supply Index (SWSI)

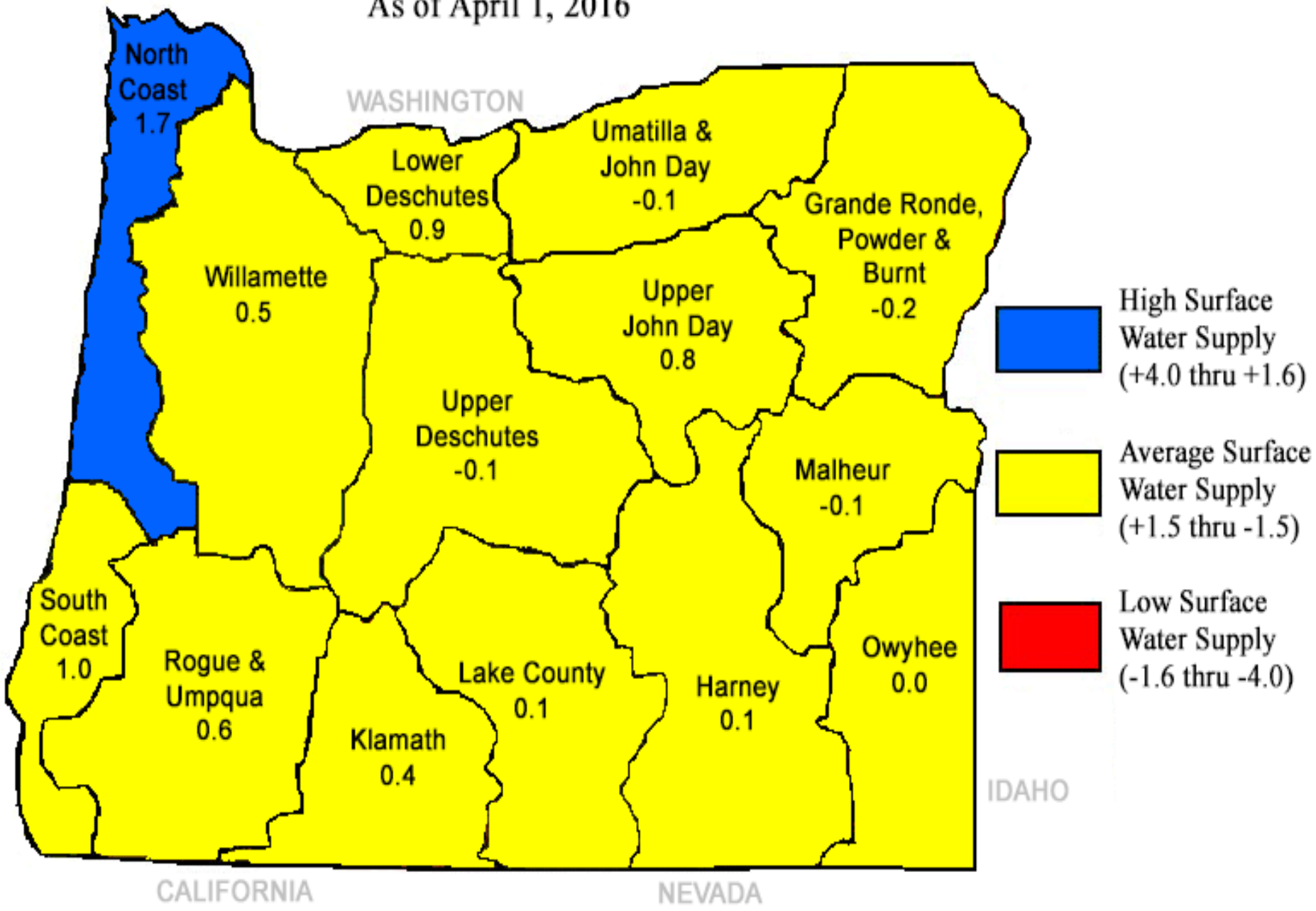
As of October 1, 2015



NRCS Natural Resources Conservation Service

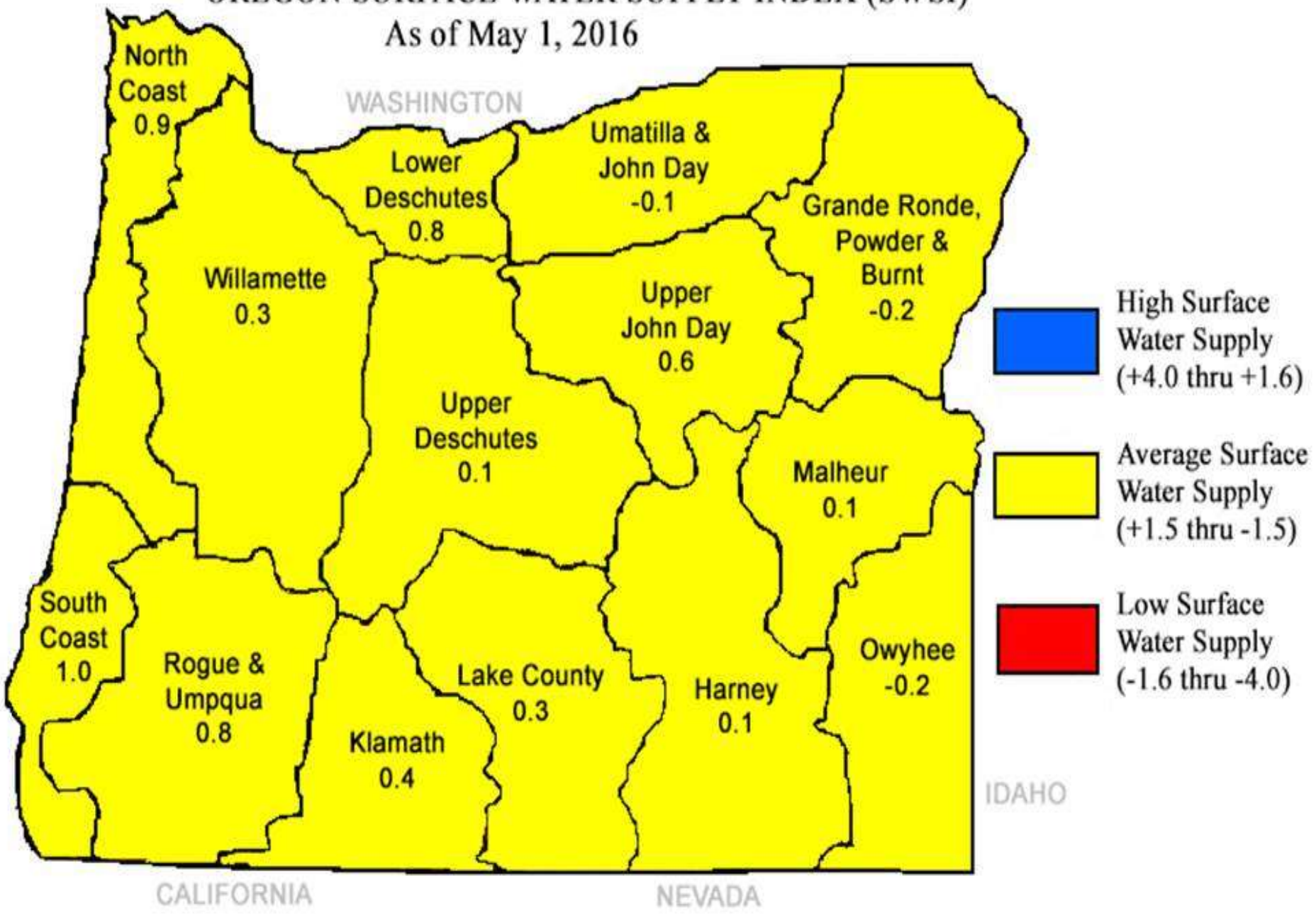
OREGON SURFACE WATER SUPPLY INDEX (SWSI)

As of April 1, 2016

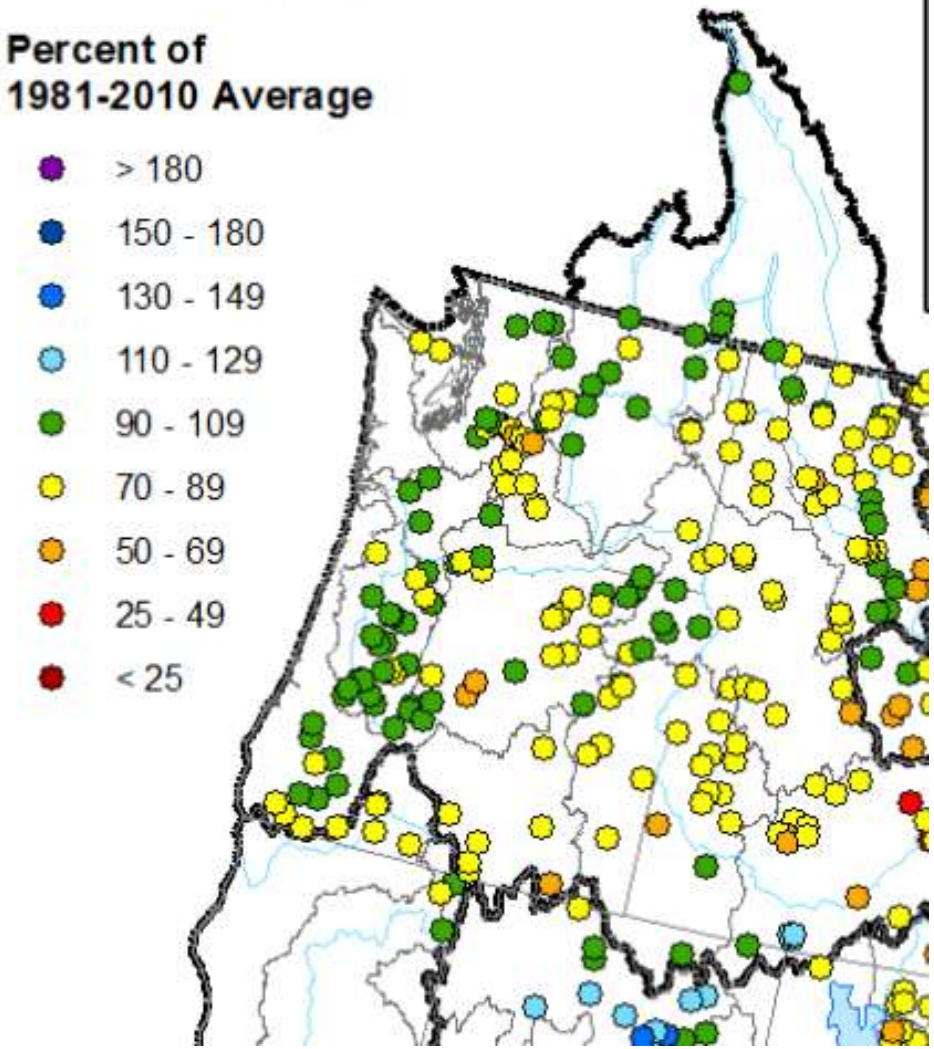


OREGON SURFACE WATER SUPPLY INDEX (SWSI)

As of May 1, 2016



Spring and Summer Streamflow Forecasts as of May 1, 2016



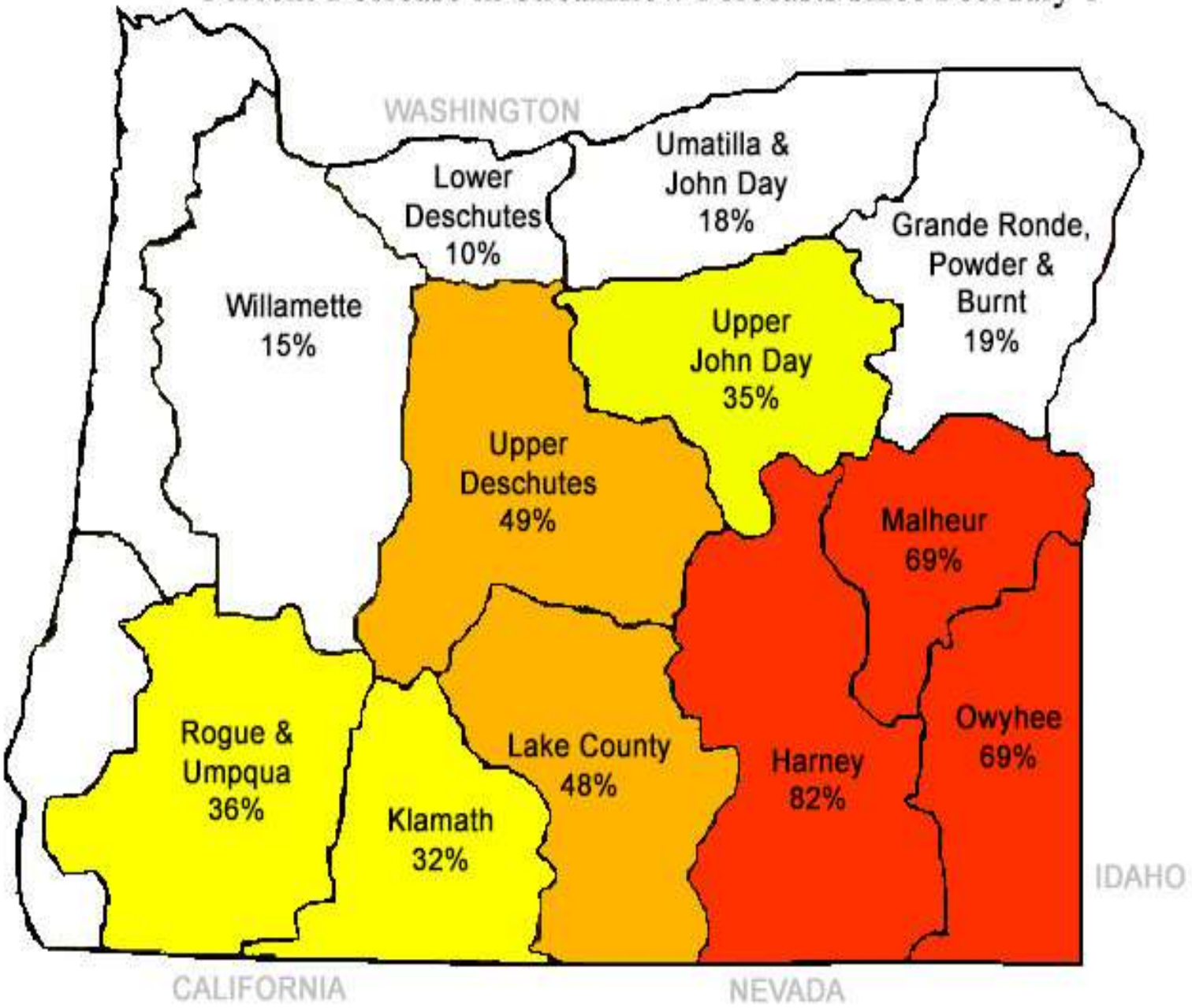
May thru September Streamflow Forecasts:

- Below normal to near normal statewide
- Loss of snowpack resulted in drop in statewide streamflow forecasts since mid April
- This year snowmelt season shortened by unusually warm temperatures and rapid snowmelt, streams will also likely see a shortened high-water season
- Streams most likely have seen their highest flows earlier than usual and will recede to baseflows sooner than normal

SUMMARY OF STREAMFLOW FORECASTS for WY2016

BASIN	% of AVERAGE of MAY-SEP FORECASTS IN THE BASIN				
	1-Jan	1-Feb	1-Mar	1-Apr	1-May
OWYHEE AND MALHEUR BASINS	129	141	104	96	72
GRANDE RONDE, POWDER, BURNT AND IMNAHA B	111	110	104	111	90
UMATILLA, WALLA WALLA AND WILLOW BASINS	118	107	98	104	89
JOHN DAY BASIN	122	123	102	104	88
UPPER DESCHUTES AND CROOKED BASINS	125	133	116	116	85
HOOD, SANDY AND LOWER DESCHUTES BASINS	111	102	99	102	92
WILLAMETTE BASIN	114	108	100	103	93
ROGUE AND UMPQUA BASINS	121	125	106	121	90
KLAMATH BASIN	110	108	84	89	76
LAKE COUNTY AND GOOSE LAKE BASINS	115	131	100	102	83
HARNEY BASIN	130	152	109	91	70

Percent Decrease in Streamflow Forecasts since February 1



NRCS Natural Resources Conservation Service

Oregon Water Supply Availability Committee

May 16, 2016

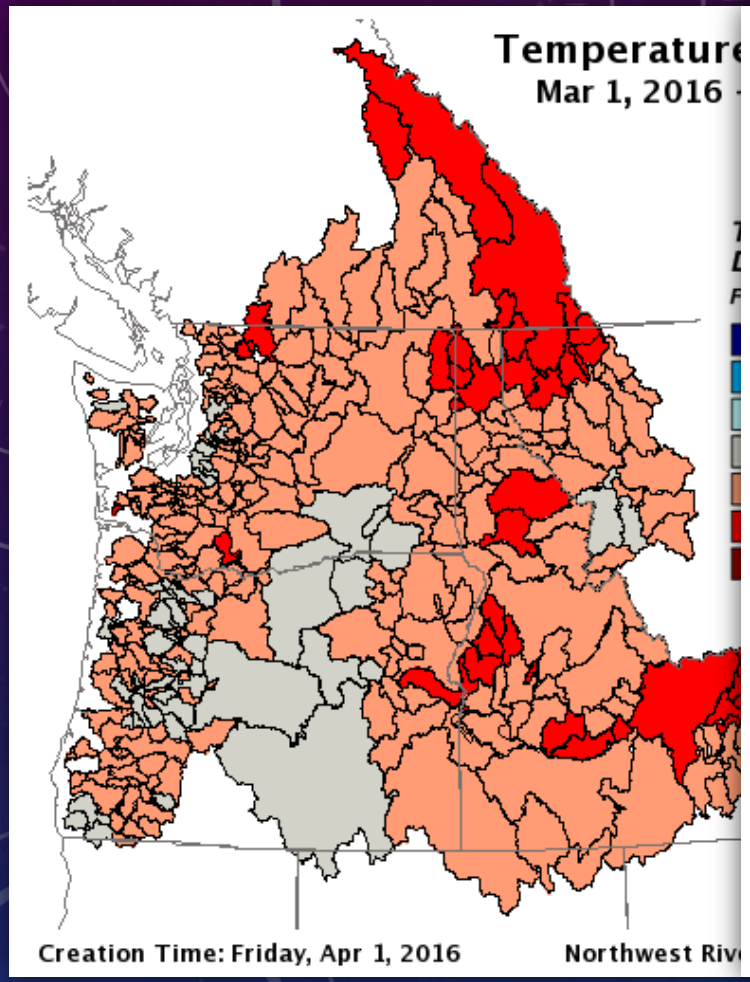
H. Scott Oviatt
Snow Survey Supervisory Hydrologist
USDA NRCS Snow Survey and Water Supply Forecasting Program
Scott.Oviatt@or.usda.gov
503-414-3271
http://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/

Thank you!

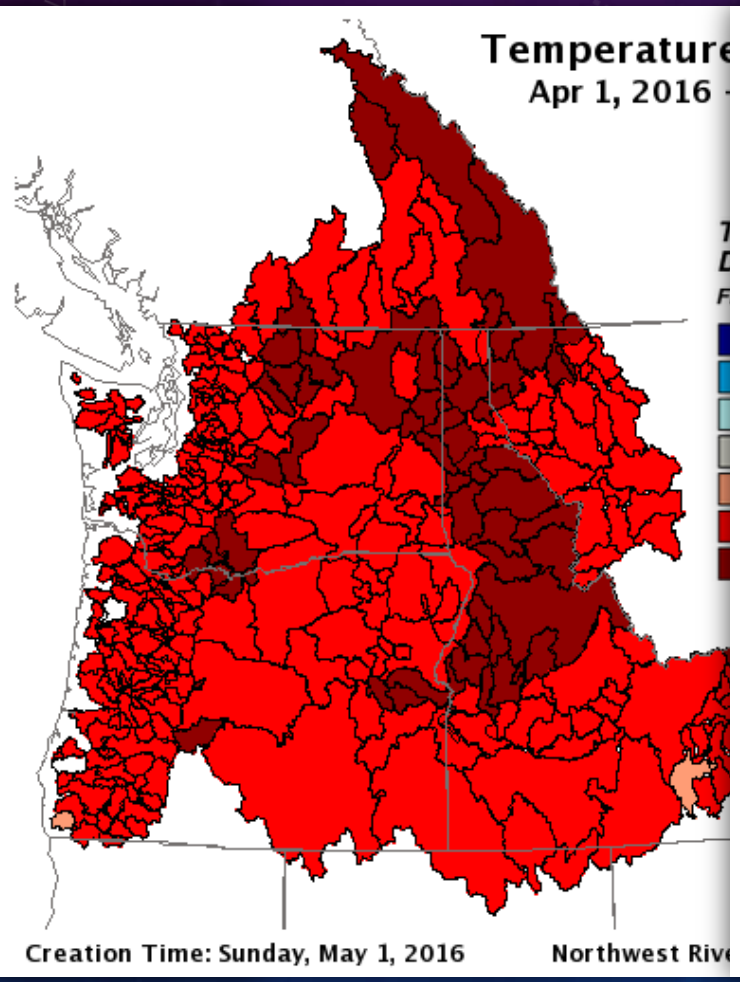
OBSERVED TEMPERATURES

NOAA NORTHWEST RIVER FORECAST CENTER

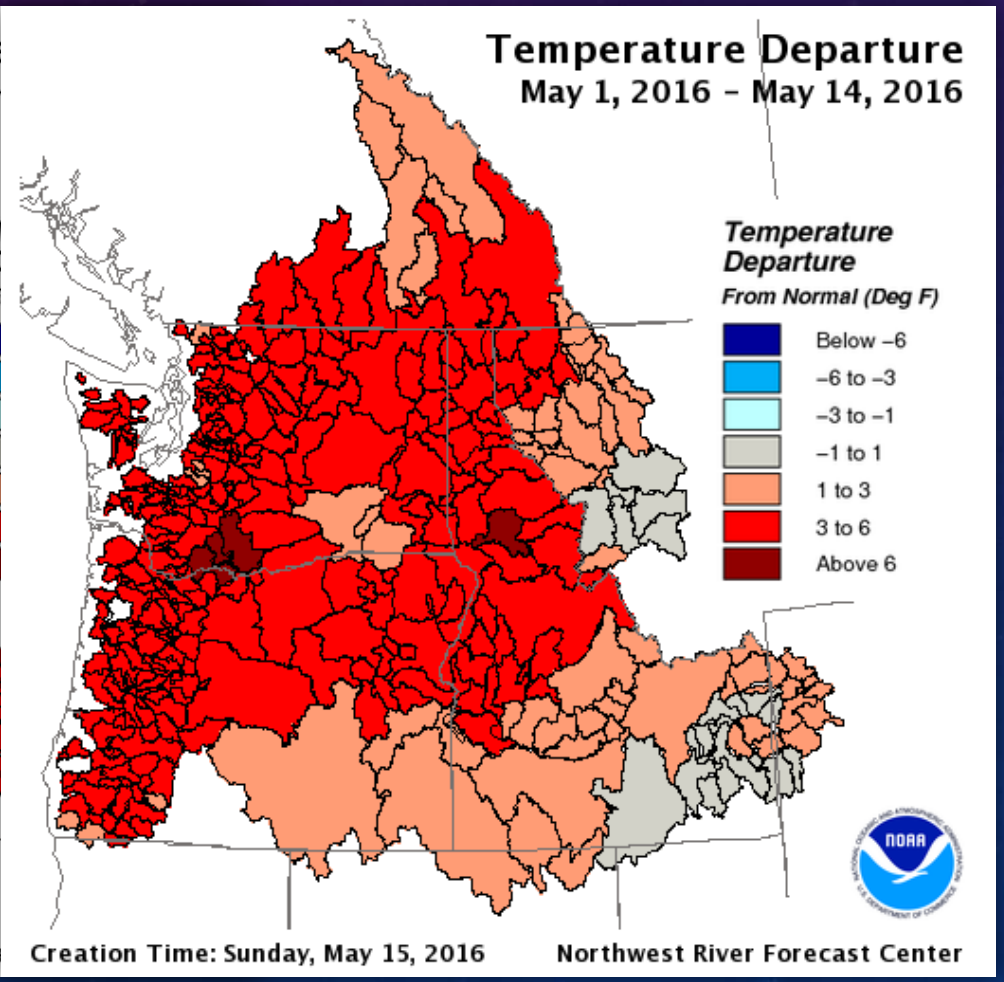
MARCH



APRIL



EARLY MAY



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

OBSERVED TEMPERATURES

NOAA NORTHWEST RIVER FORECAST CENTER

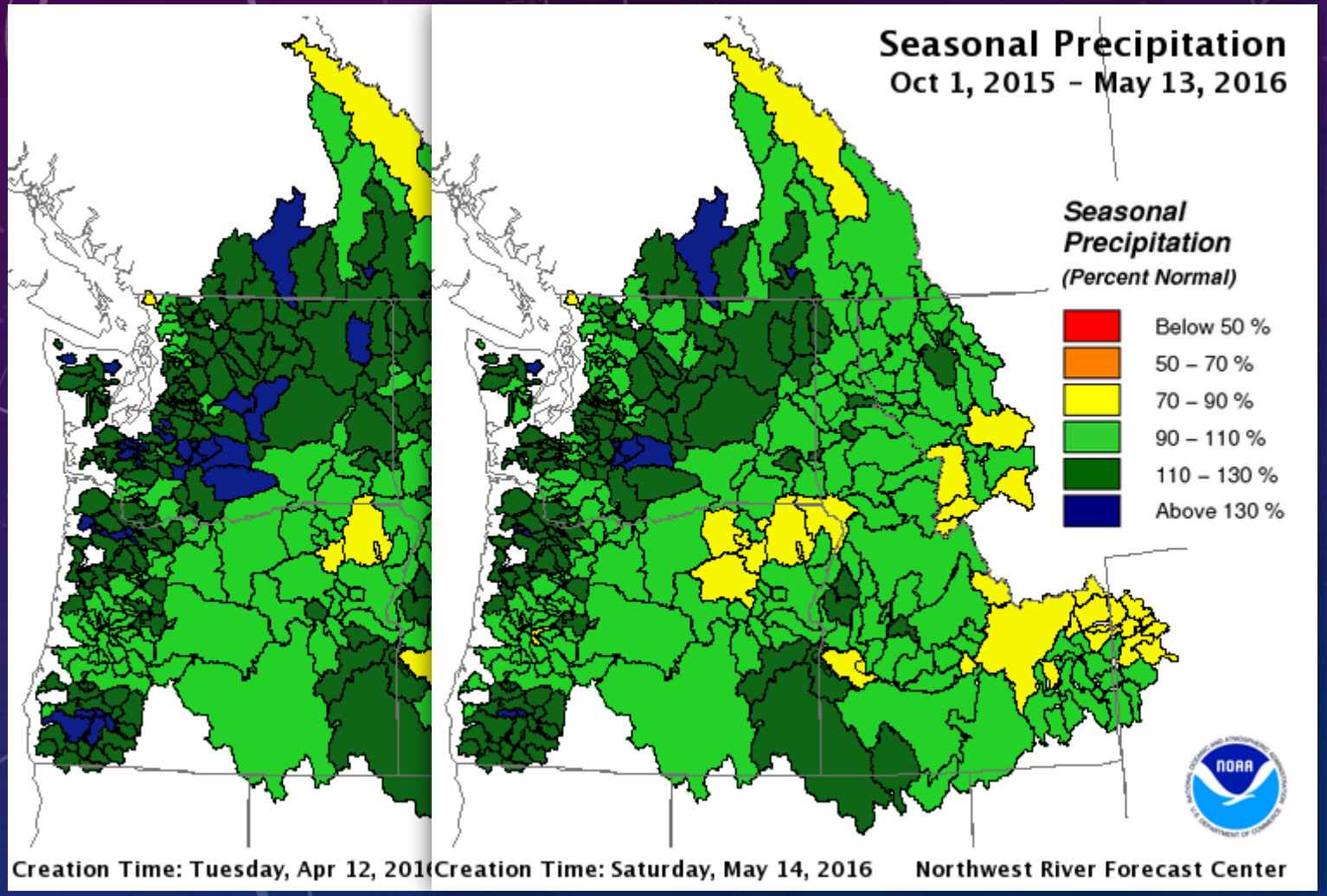
DIVISION NAME	May 1 - 13	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Malheur-Owyhee-Boise River Basins	2.0	5.4	-3.5	-0.1	0.6	4.1	1.6	4.5
Grande Ronde River Basin	3.7	5.6	-2.5	1.3	2.2	5.5	1.4	5.2
Middle Columbia Lower Tribs	4.3	5.1	-3.0	0.4	0.7	4.7	1.1	5.3
Coastal River Basins	4.6	4.9	-1.5	1.7	2.5	4.7	1.6	5.0
Clackamas River Basin	3.8	4.3	-2.7	0.9	1.0	4.2	1.1	4.7
Willamette River Basin abv Harrisburg	3.9	4.2	-2.4	1.0	1.0	4.0	0.9	4.4
Santiam River Basin	4.2	4.6	-2.2	1.1	1.1	4.2	1.0	4.6
Coquille River Basin	3.7	4.6	-2.2	1.2	1.5	4.2	1.5	4.7
Umpqua River Basin	3.7	4.9	-2.2	0.7	1.4	4.4	1.4	4.9
Rogue-Illinois River Basins	3.4	4.7	-2.4	0.5	1.2	4.1	1.2	4.8

www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=6

OBSERVED PRECIPITATION

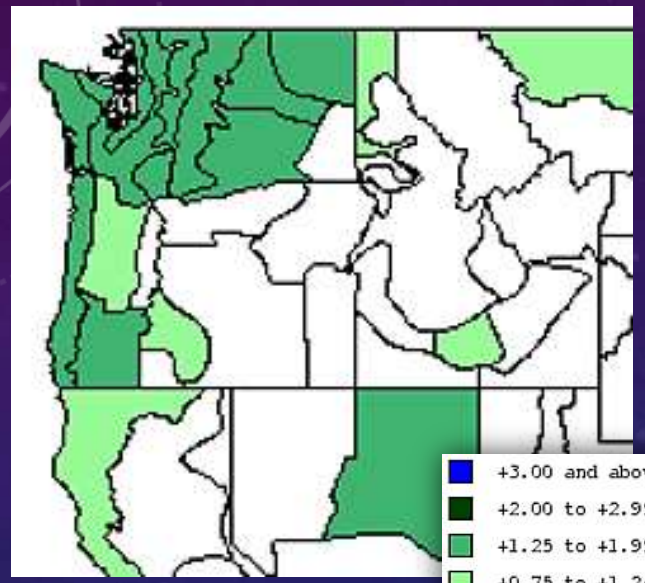
NOAA NORTHWEST RIVER FORECAST CENTER
& WESTERN REGIONAL CLIMATE CENTER

WATER YEAR PERCENT OF AVERAGE



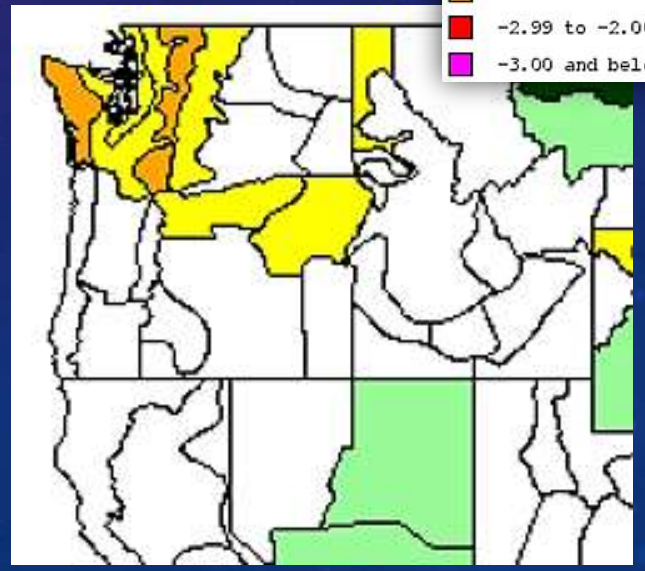
www.nwrfc.noaa.gov/water_supply/wy_summary/wy_summary.php?tab=2

6 MONTH STANDARDIZED PRECIPITATION INDEX THROUGH THE END OF APRIL



+3.00 and above (exceptionally wet)
+2.00 to +2.99 (extremely wet)
+1.25 to +1.99 (very wet)
+0.75 to +1.24 (moderately wet)
-0.74 to +0.74 (near normal)
-1.24 to -0.75 (moderately dry)
-1.99 to -1.25 (very dry)
-2.99 to -2.00 (extremely dry)
-3.00 and below (exceptionally dry)

1 MONTH SPI APRIL

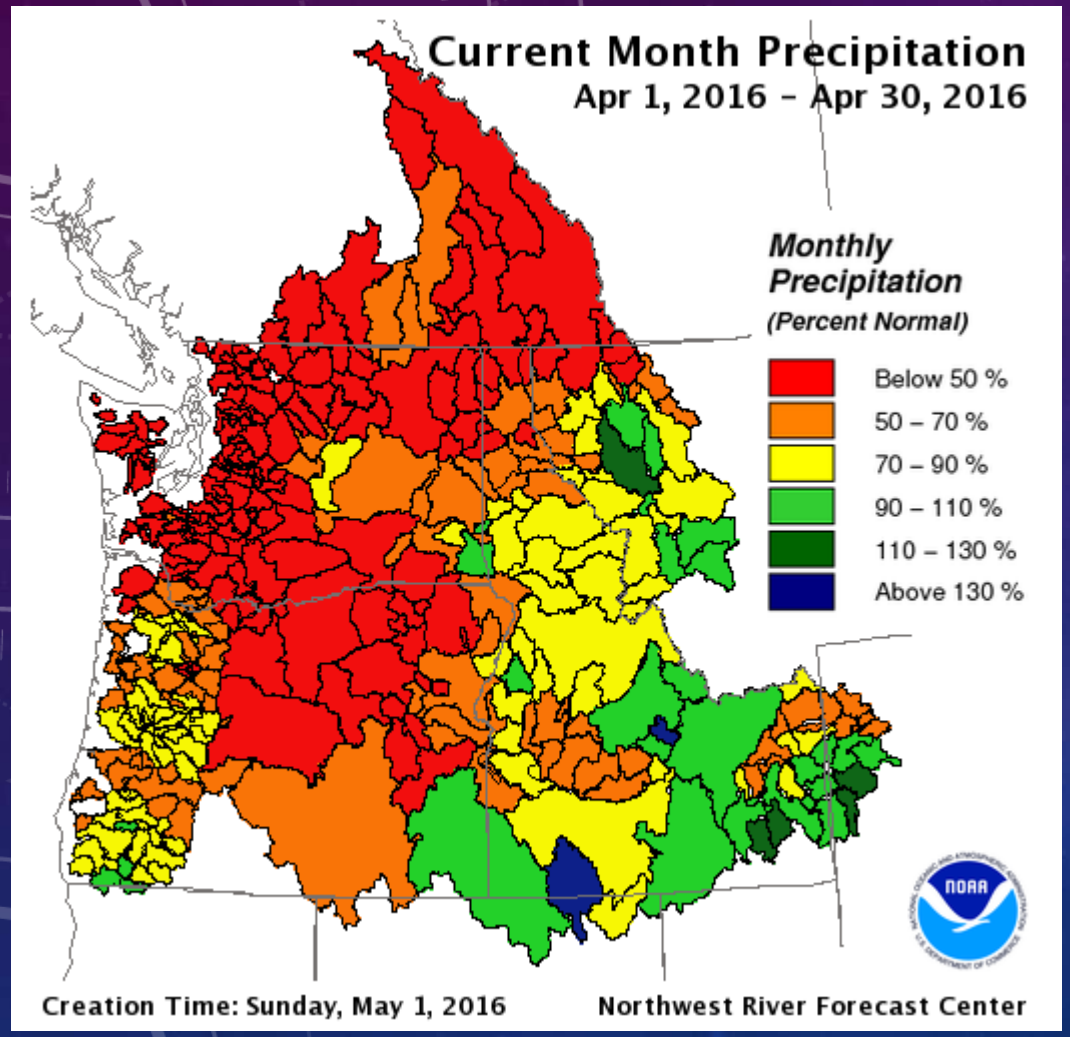


www.wrcc.dri.edu/spi-products/

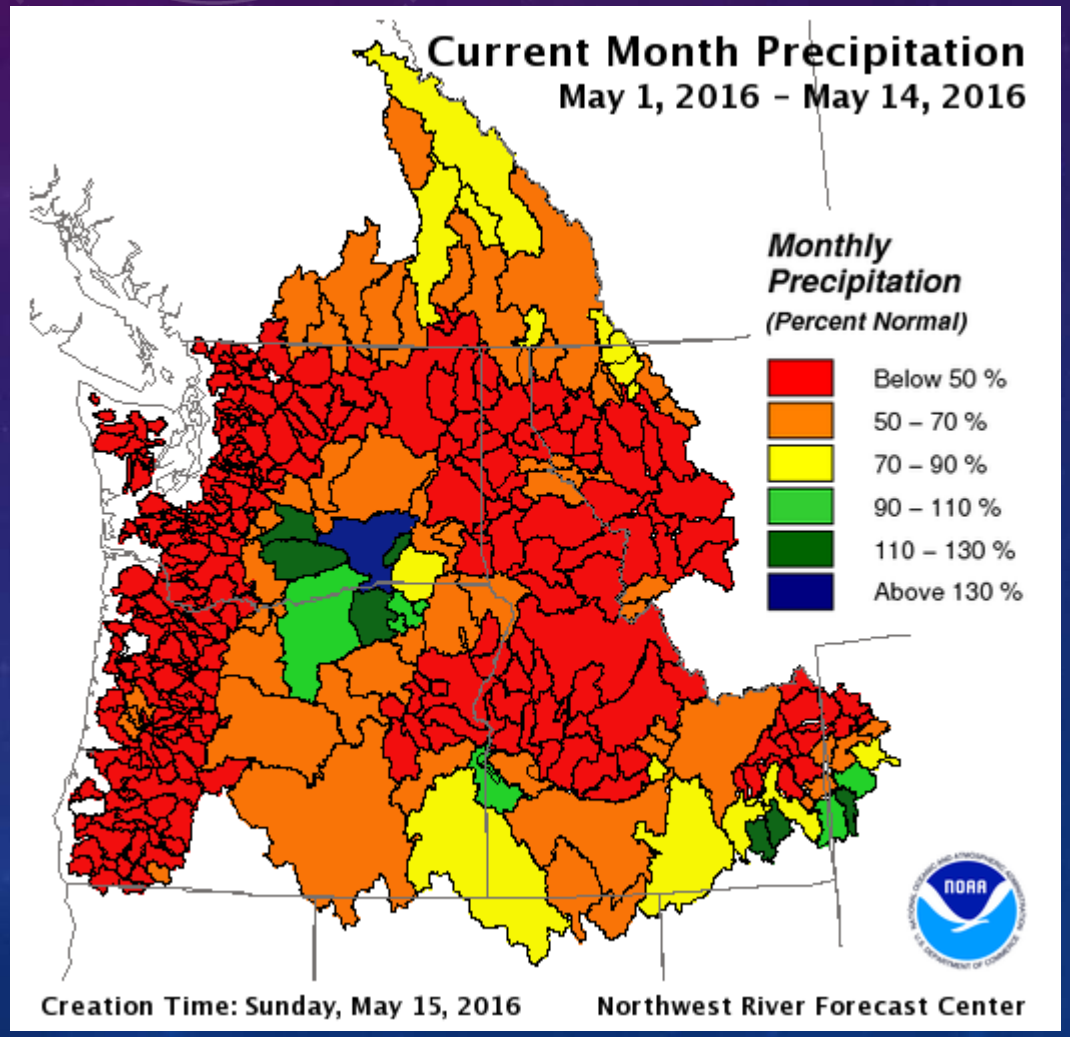
OBSERVED PRECIPITATION

NOAA NORTHWEST RIVER FORECAST CENTER

APRIL



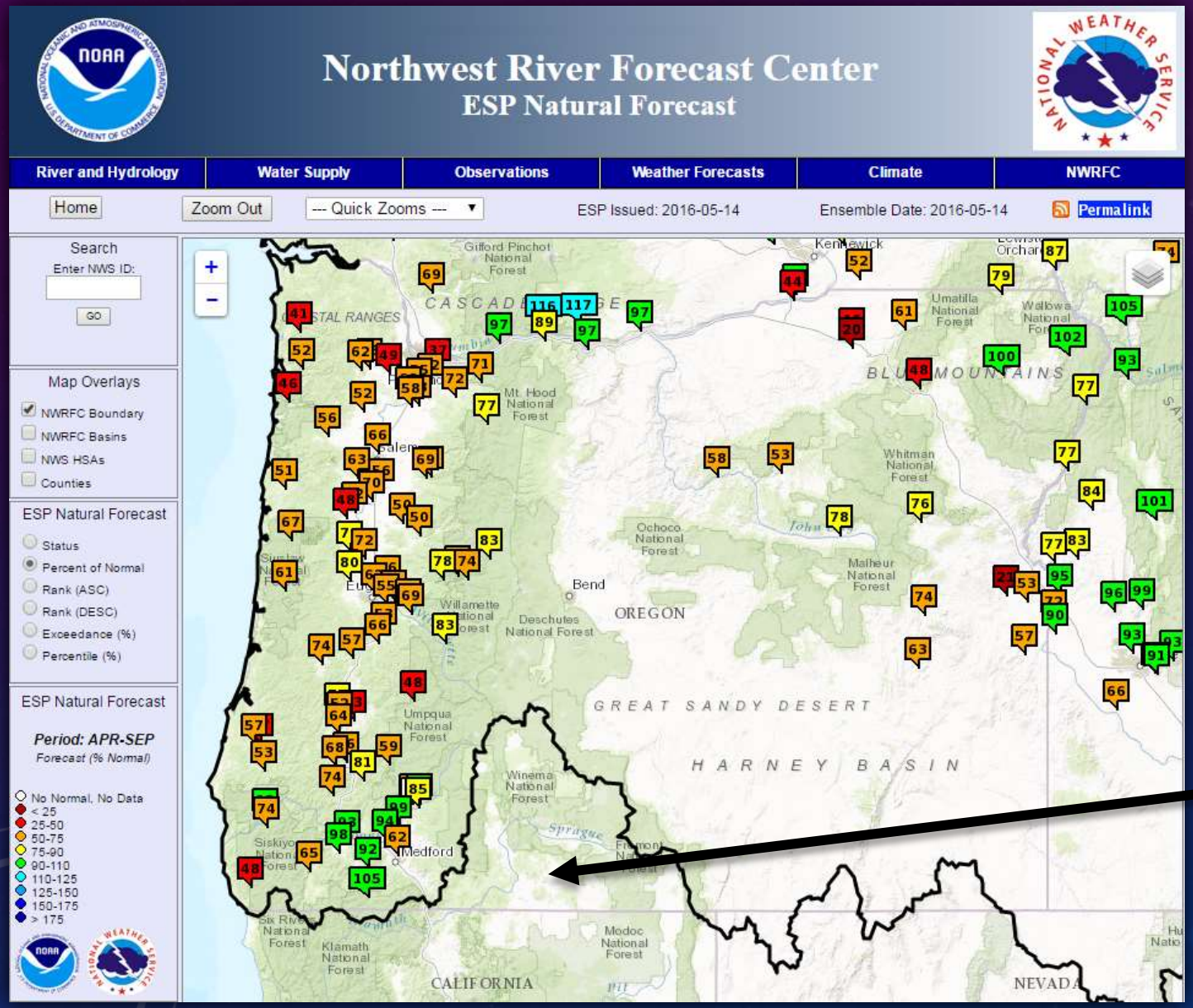
MAY 1 - 14



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

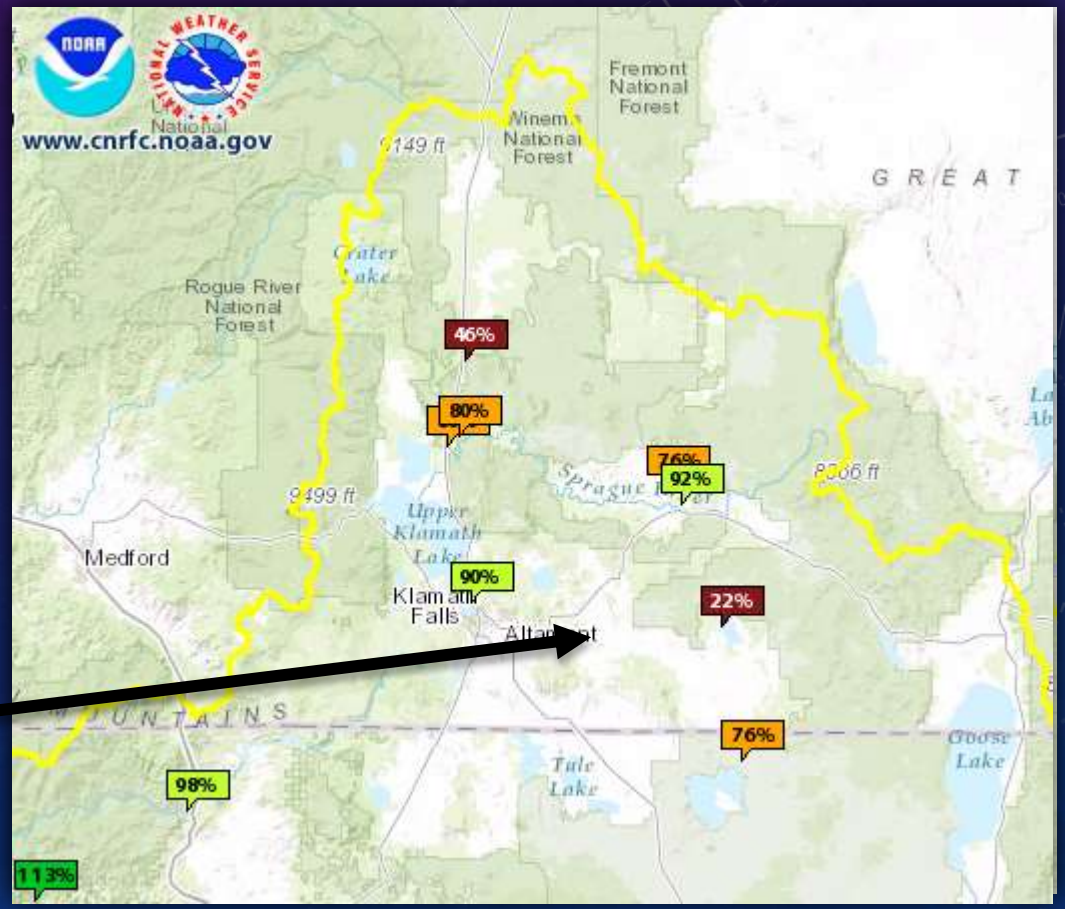
WATER SUPPLY FORECASTS

NOAA NORTHWEST RFC & CALIFORNIA-NEVADA RFC



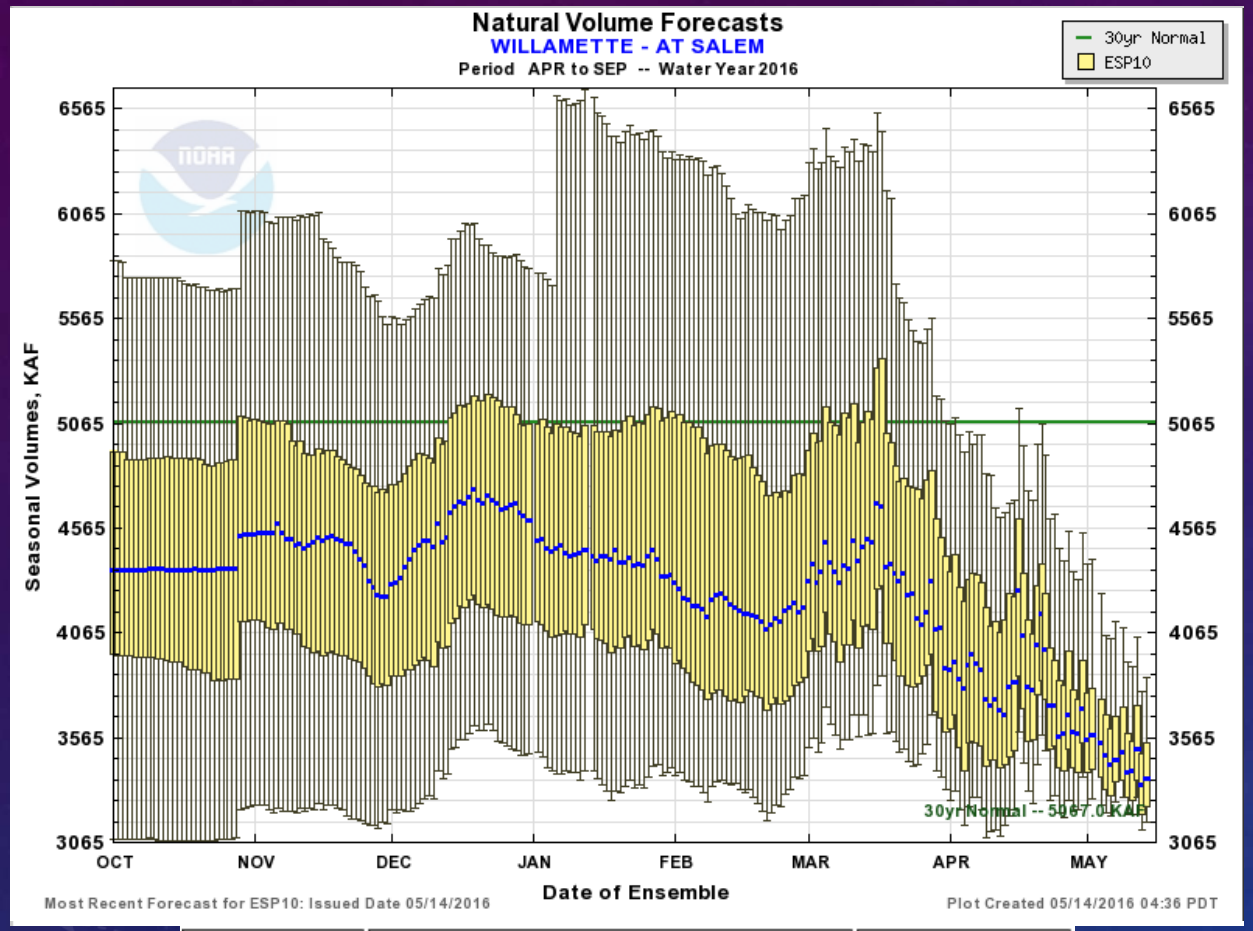
www.nwrfc.noaa.gov/natural/index.html?version=20151001v2

www.cnrfc.noaa.gov/water_resources_update.php

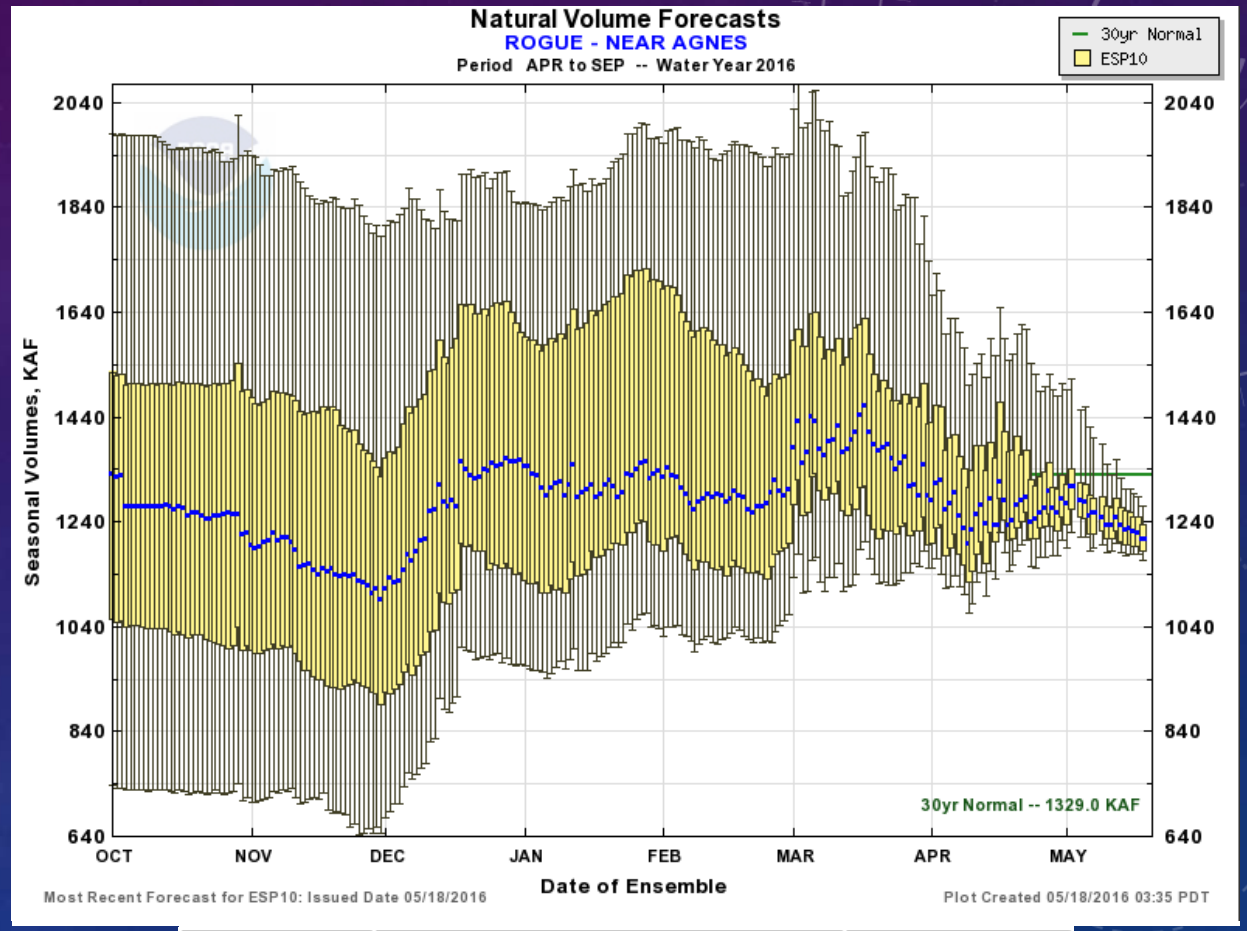


WATER SUPPLY FORECASTS

NOAA NORTHWEST RFC



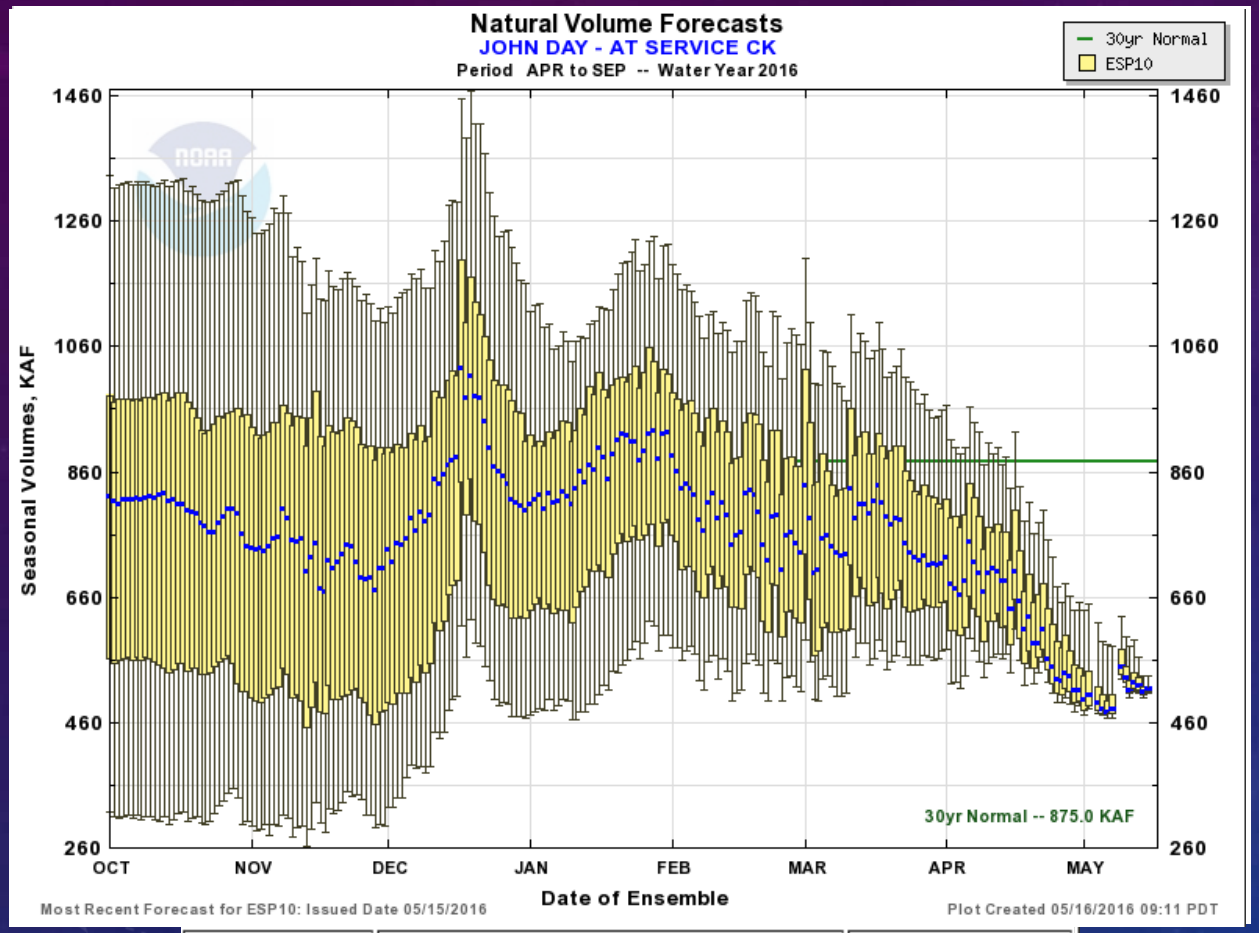
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	3158	3369	66	3855	5067
APR-JUL	2771	2918	65	3317	4496
JAN-SEP	11279	11490	94	11976	12226
JAN-JUL	10893	11039	95	11438	11656



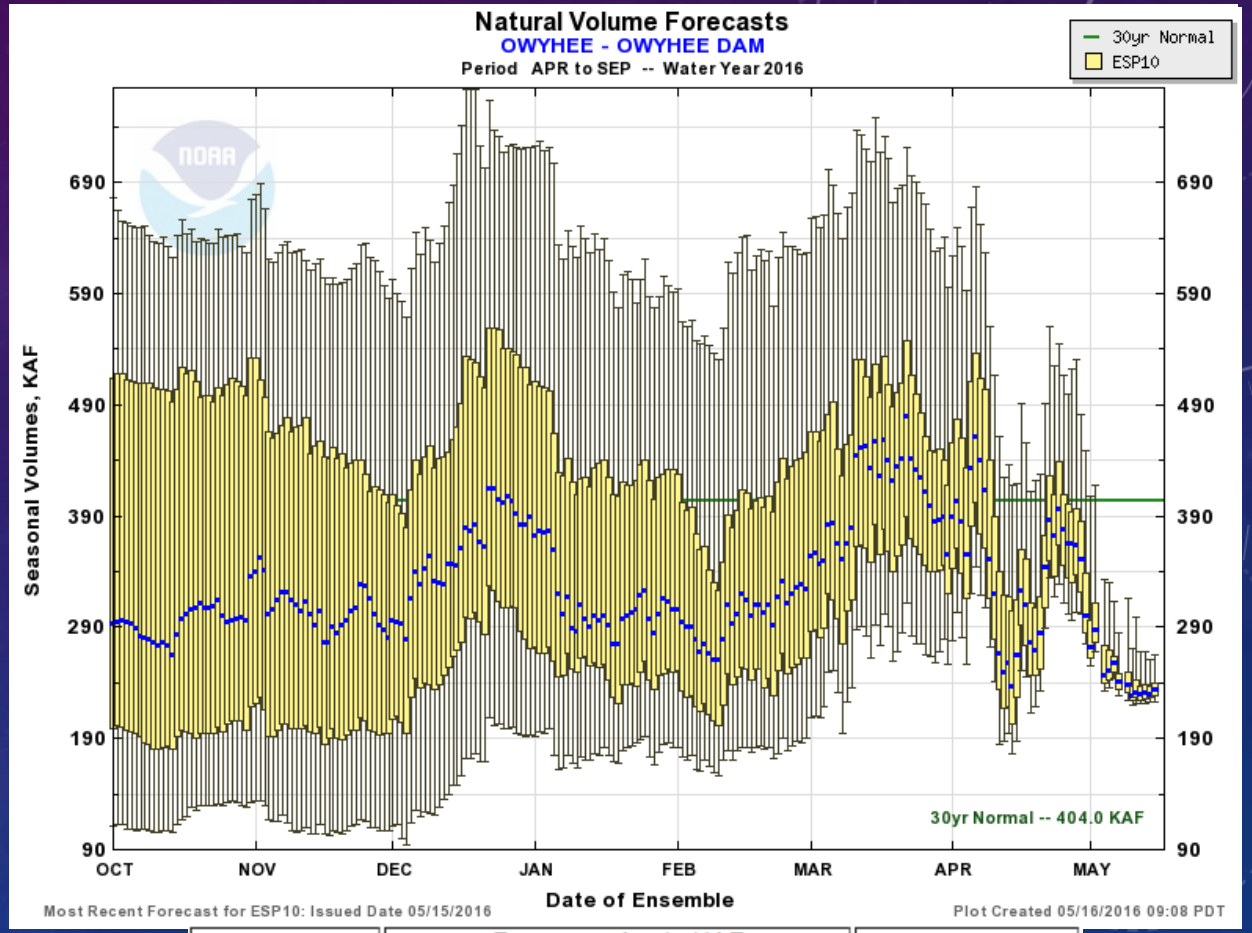
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	1166	1208	91	1271	1329
APR-JUL	1000	1032	89	1096	1158
JAN-SEP	3977	4019	128	4082	3132
JAN-JUL	3811	3843	130	3907	2961

WATER SUPPLY FORECASTS

NOAA NORTHWEST RFC

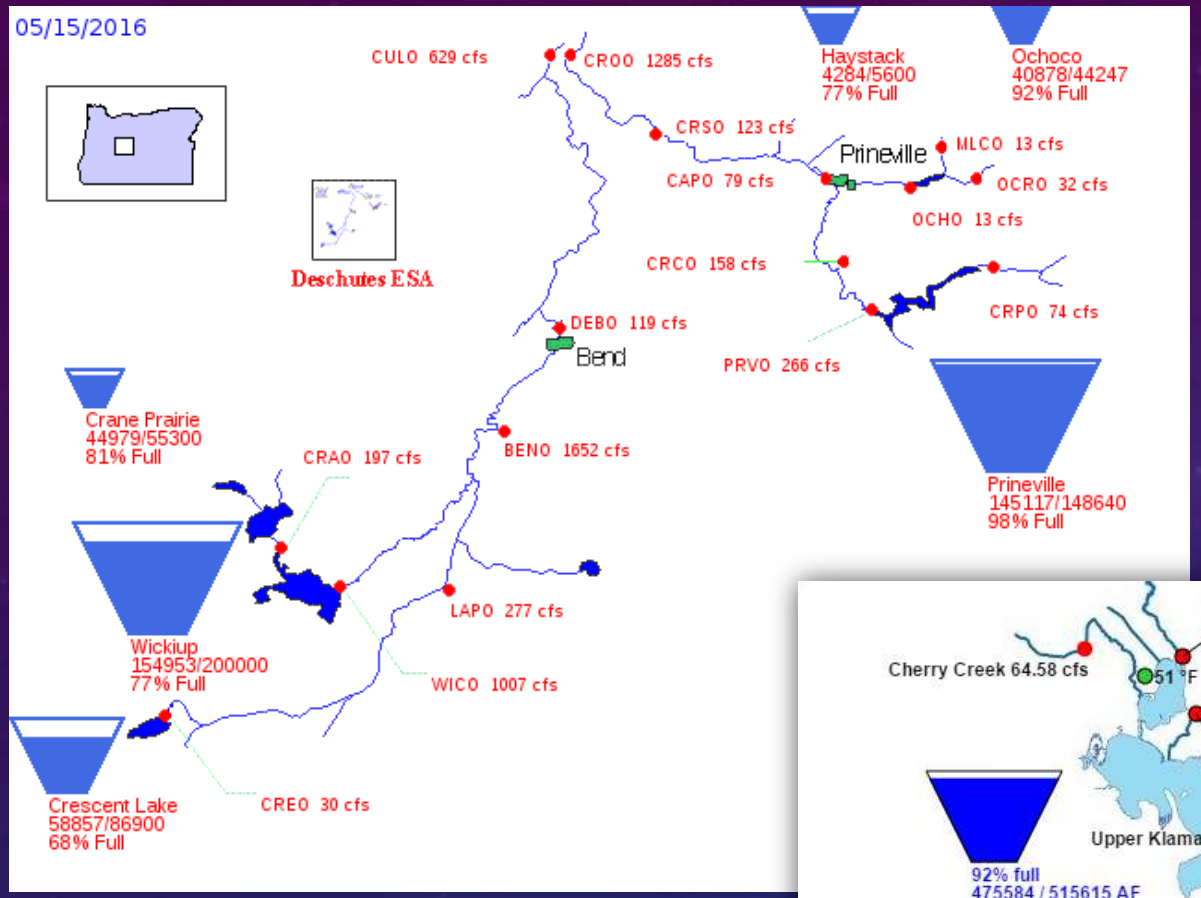


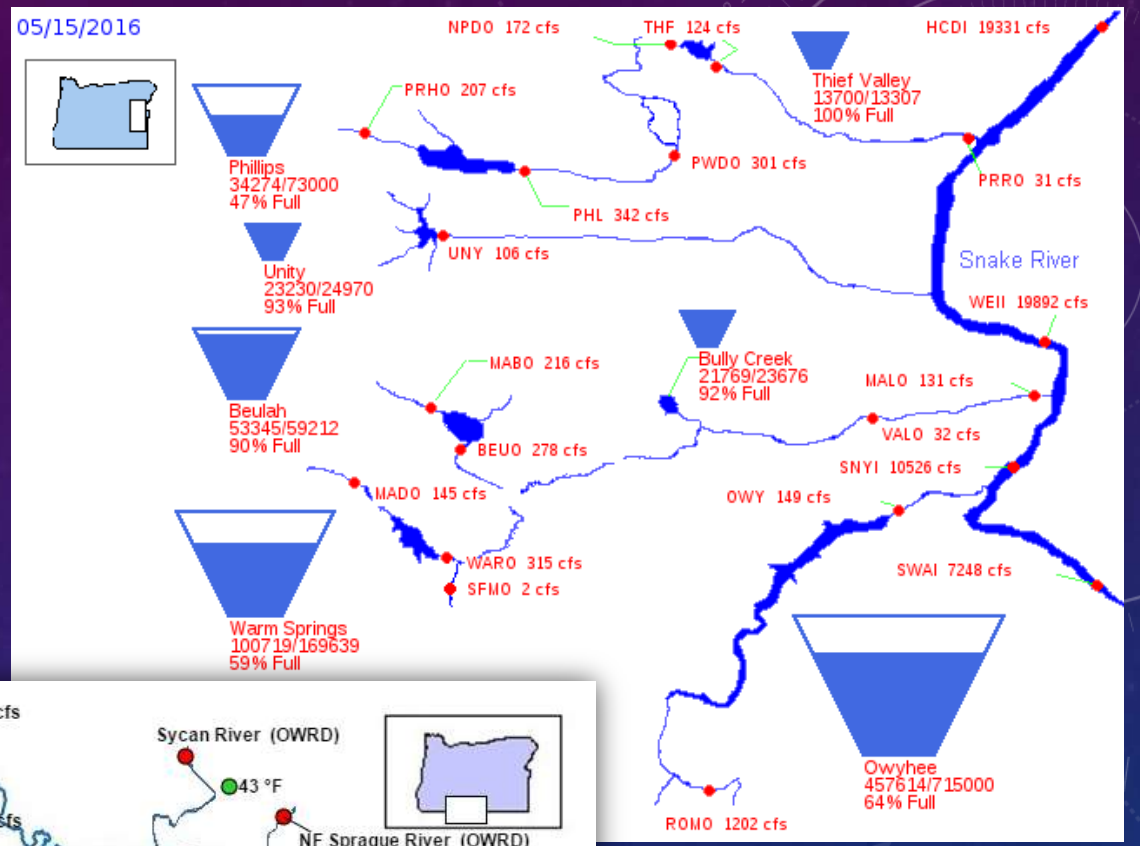
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	506	515	59	535	875
APR-JUL	473	479	58	497	828
JAN-SEP	1159	1168	84	1188	1388
JAN-JUL	1126	1132	84	1150	1341

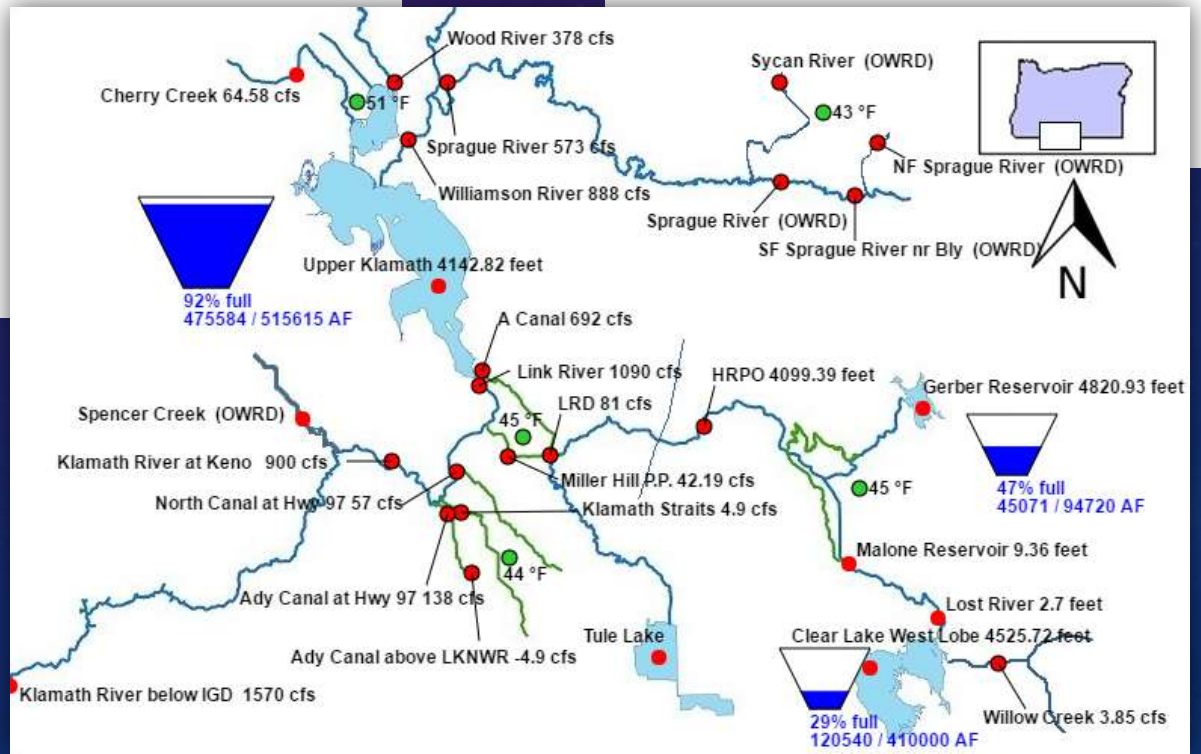


Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	223	234	58	265	404
APR-JUL	197	204	54	232	374
JAN-SEP	553	563	80	594	705
JAN-JUL	526	533	79	562	675

RESERVOIRS - CENTRAL & EAST

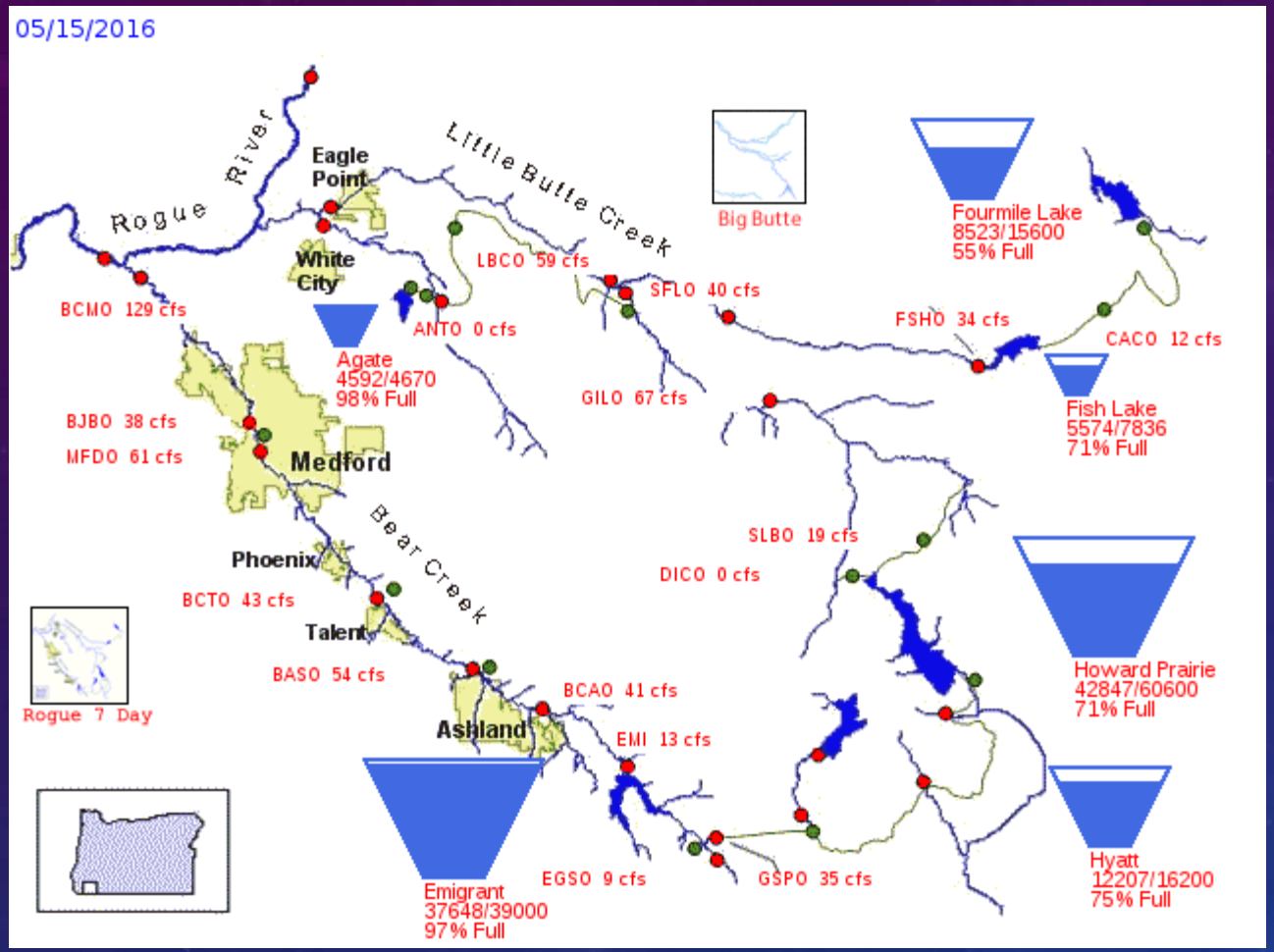






www.usbr.gov/pn/hydromet/select.html

RESERVOIRS - WEST

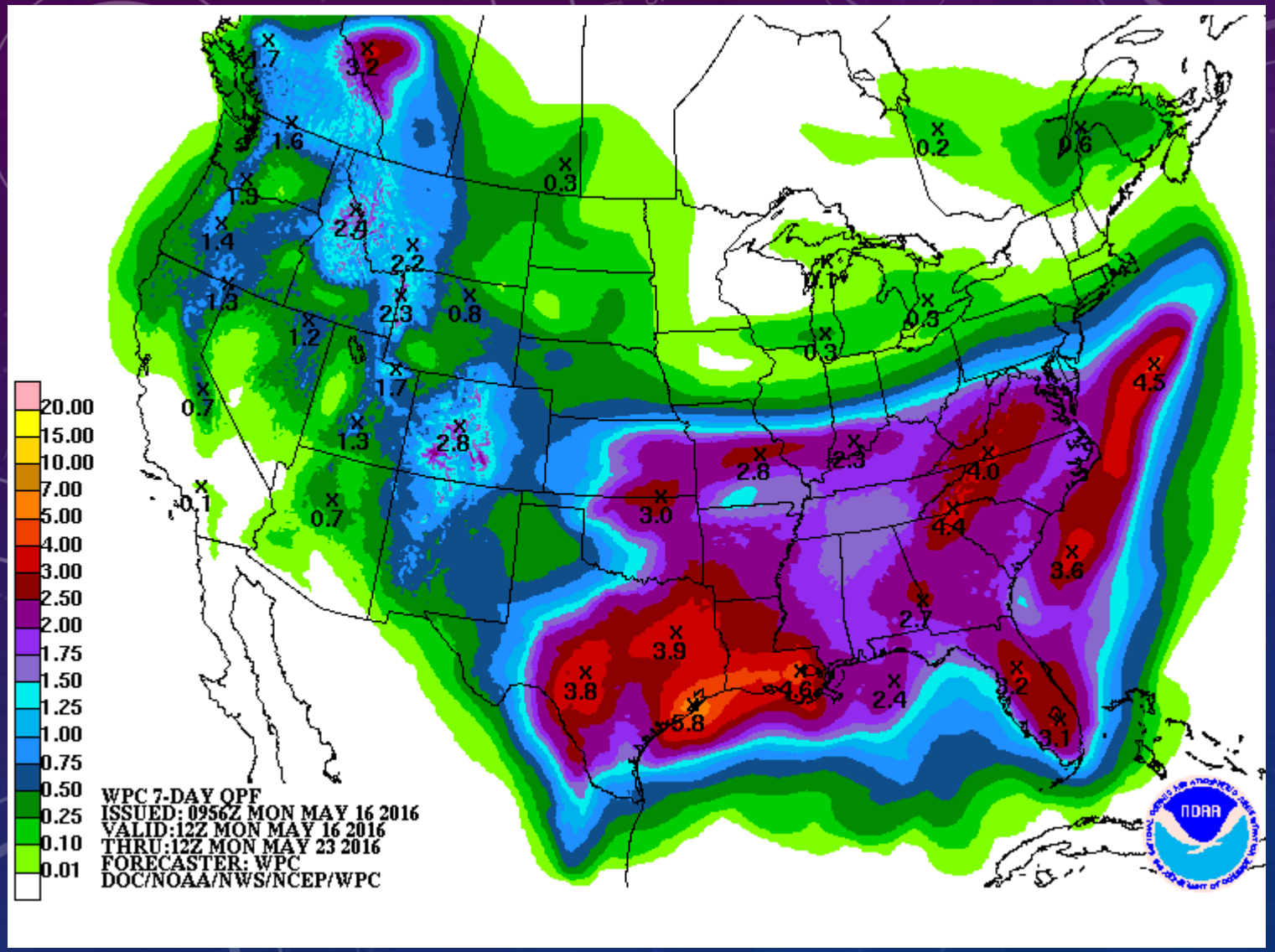


www.usbr.gov/pn/hydromet/select.html

www.nwd-wc.usace.army.mil/nwp/teacup/willamette/

TOTAL PRECIP NEXT 7 DAYS

NOAA NWS WEATHER PREDICTION CENTER



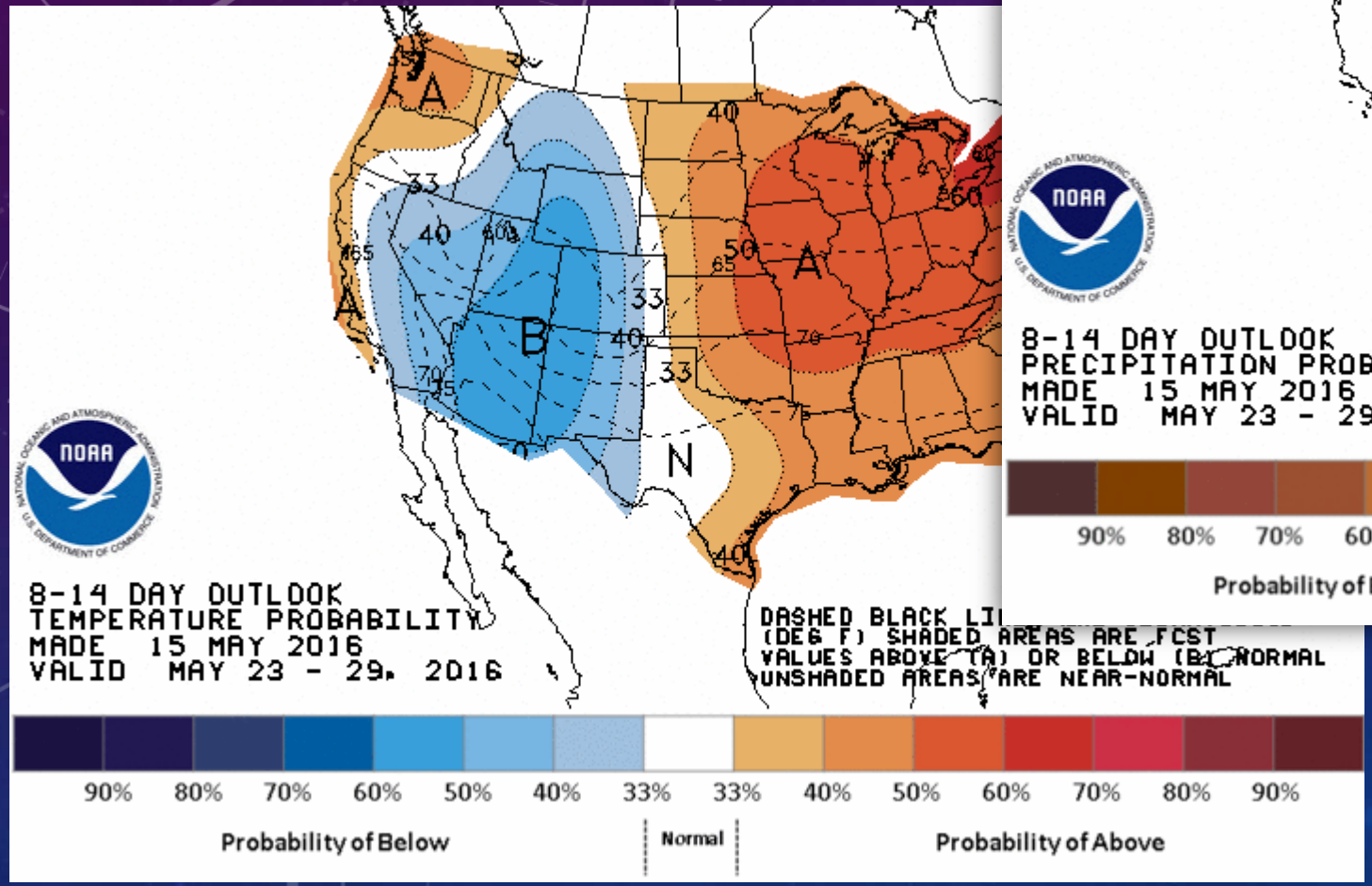
0.5 TO 1.5 INCHES FOR NEXT 7 DAYS

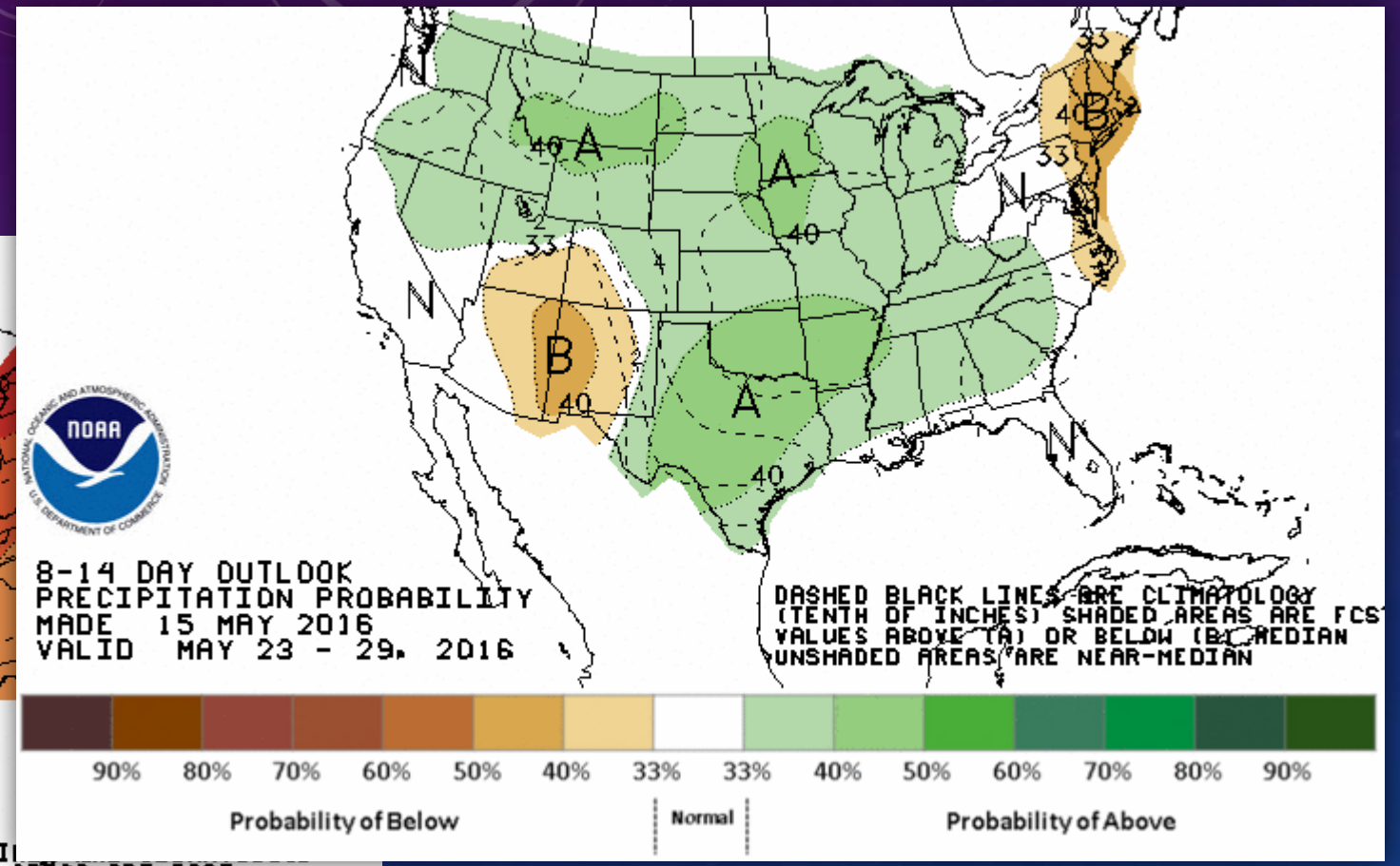
SOURCE: www.wcp.ncep.noaa.gov

8 TO 14 DAY OUTLOOKS

NOAA CLIMATE PREDICTION CENTER

www.cpc.ncep.noaa.gov/products/predictions/814day/

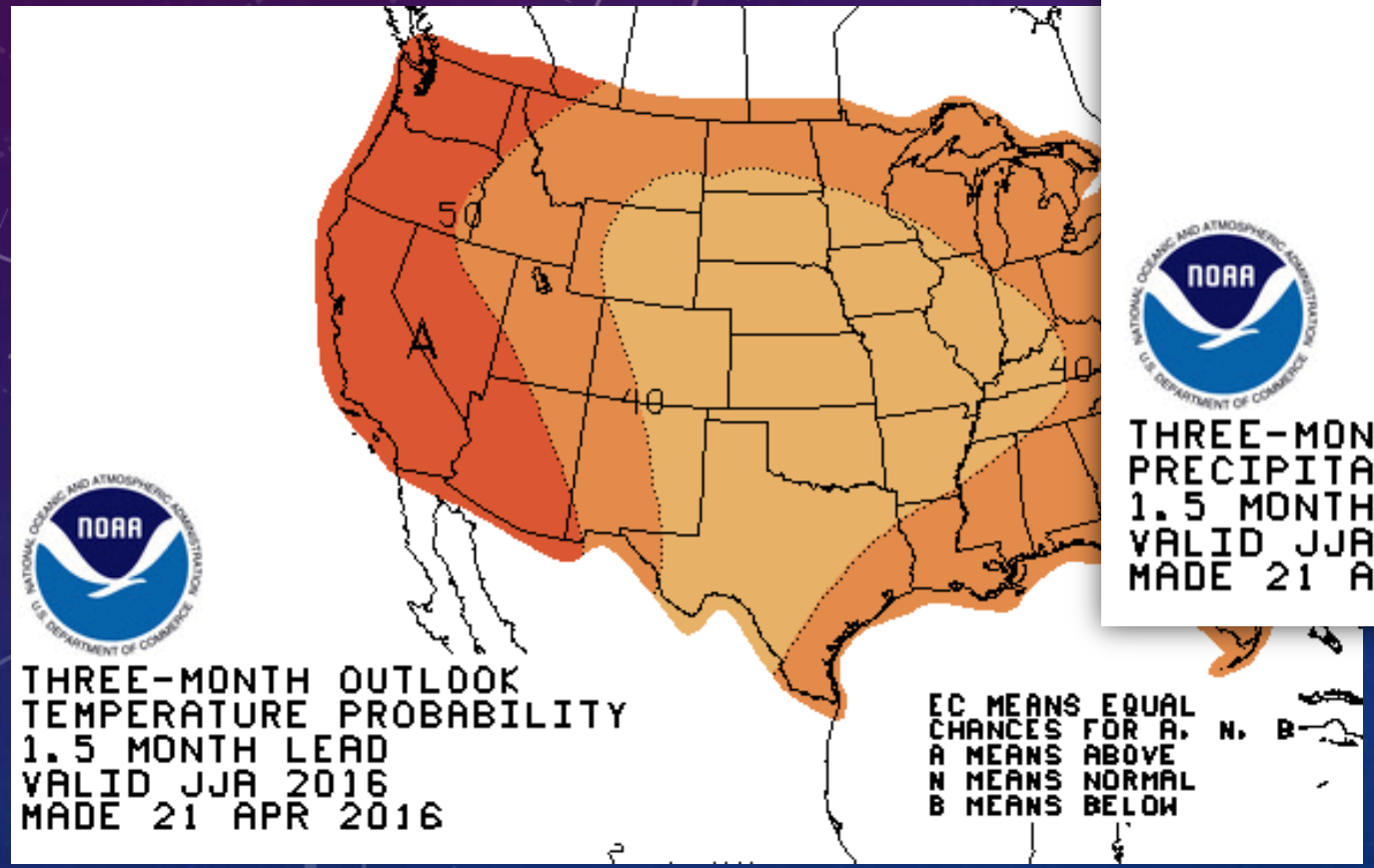


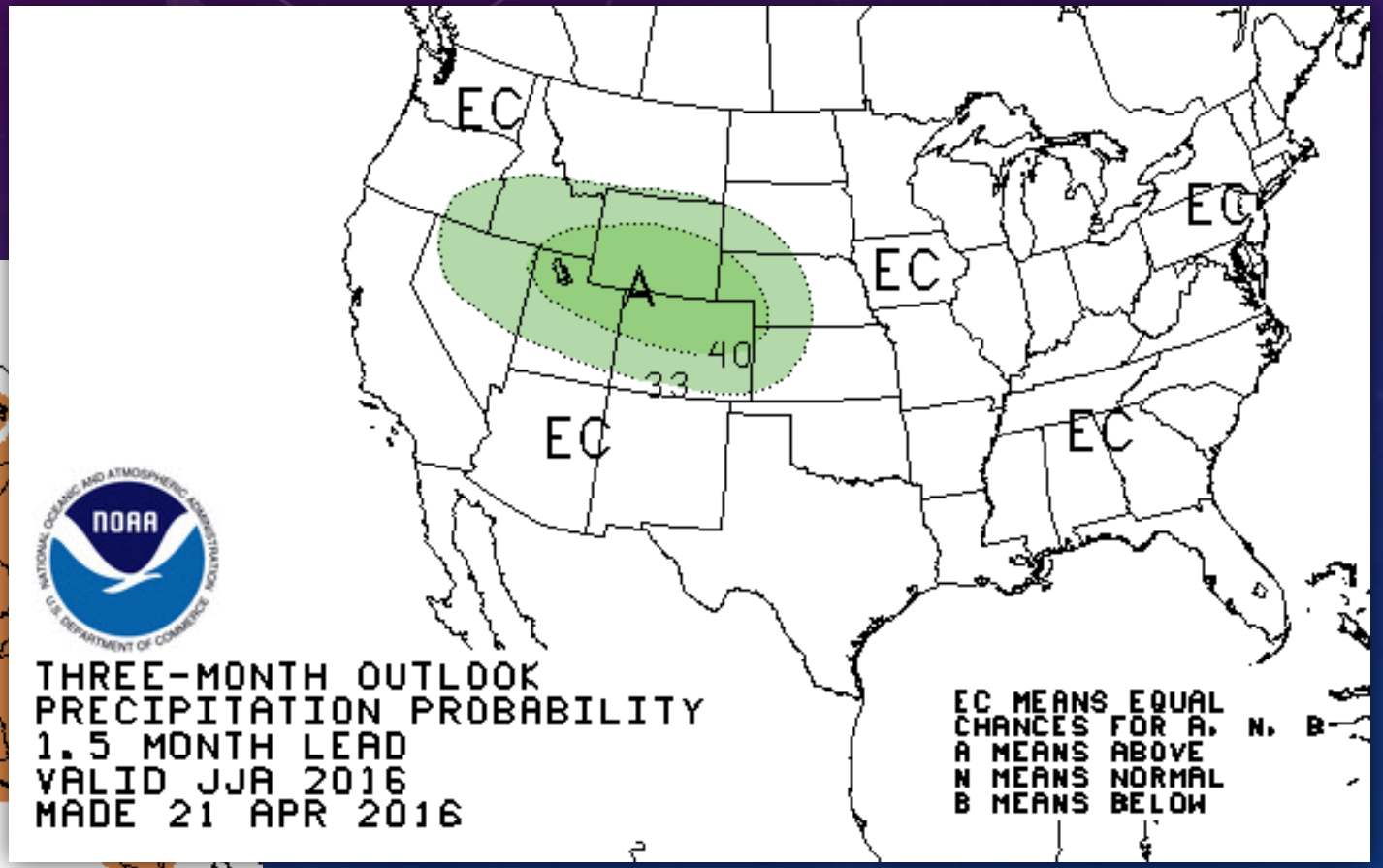


JUNE-JULY-AUGUST OUTLOOKS

NOAA CLIMATE PREDICTION CENTER

www.cpc.ncep.noaa.gov/products/predictions/long_range/



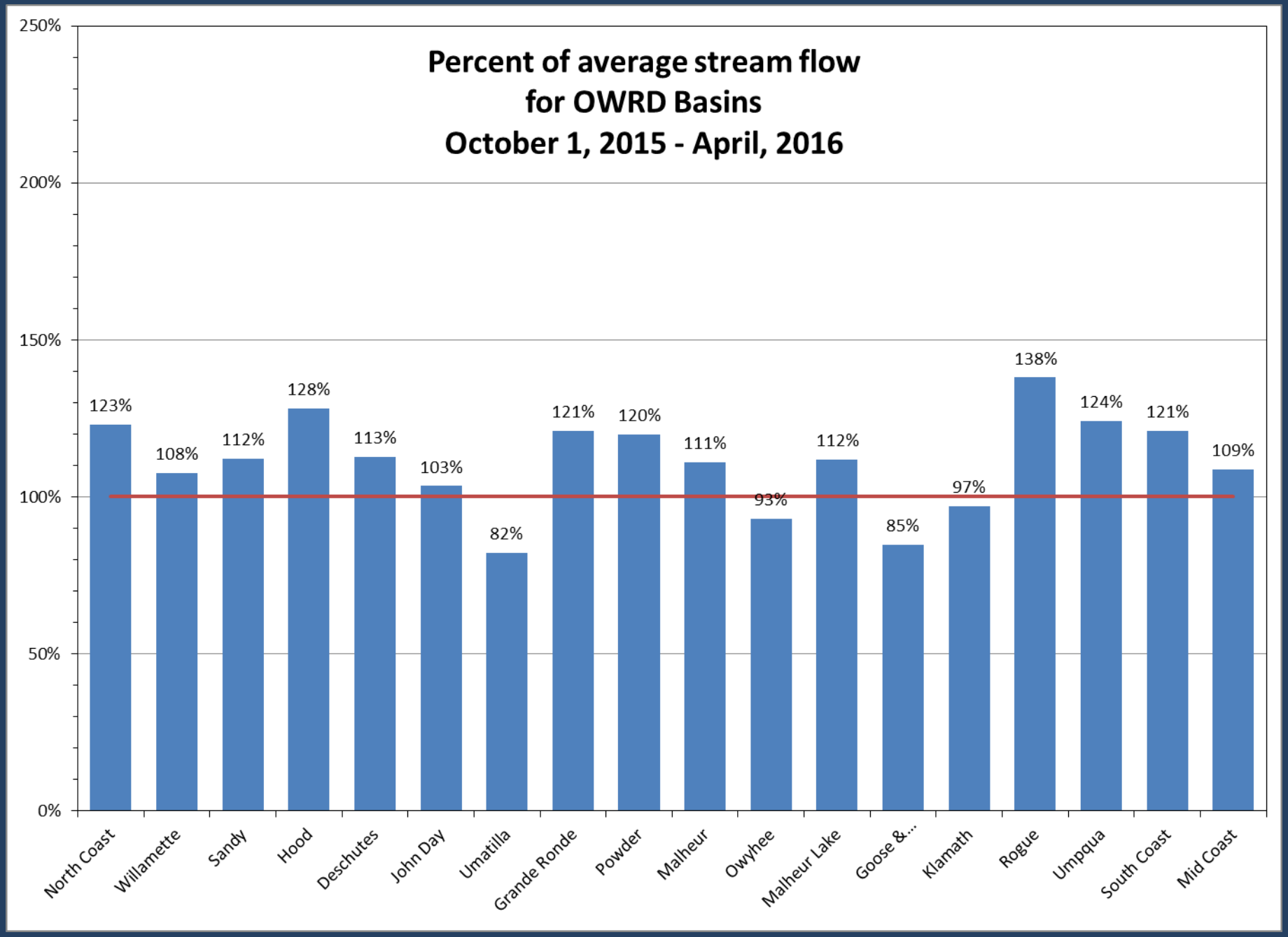


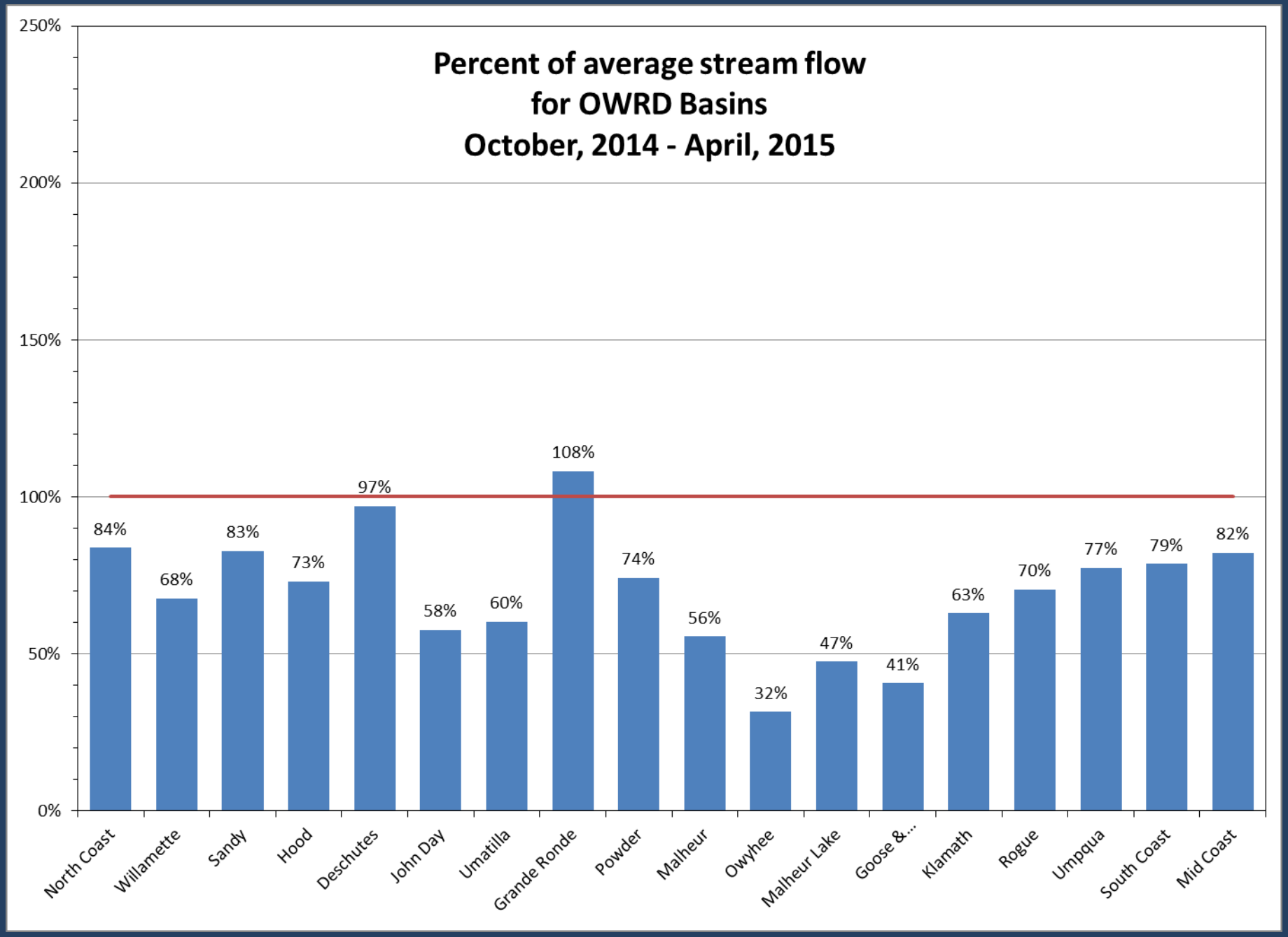
Streamflow Conditions

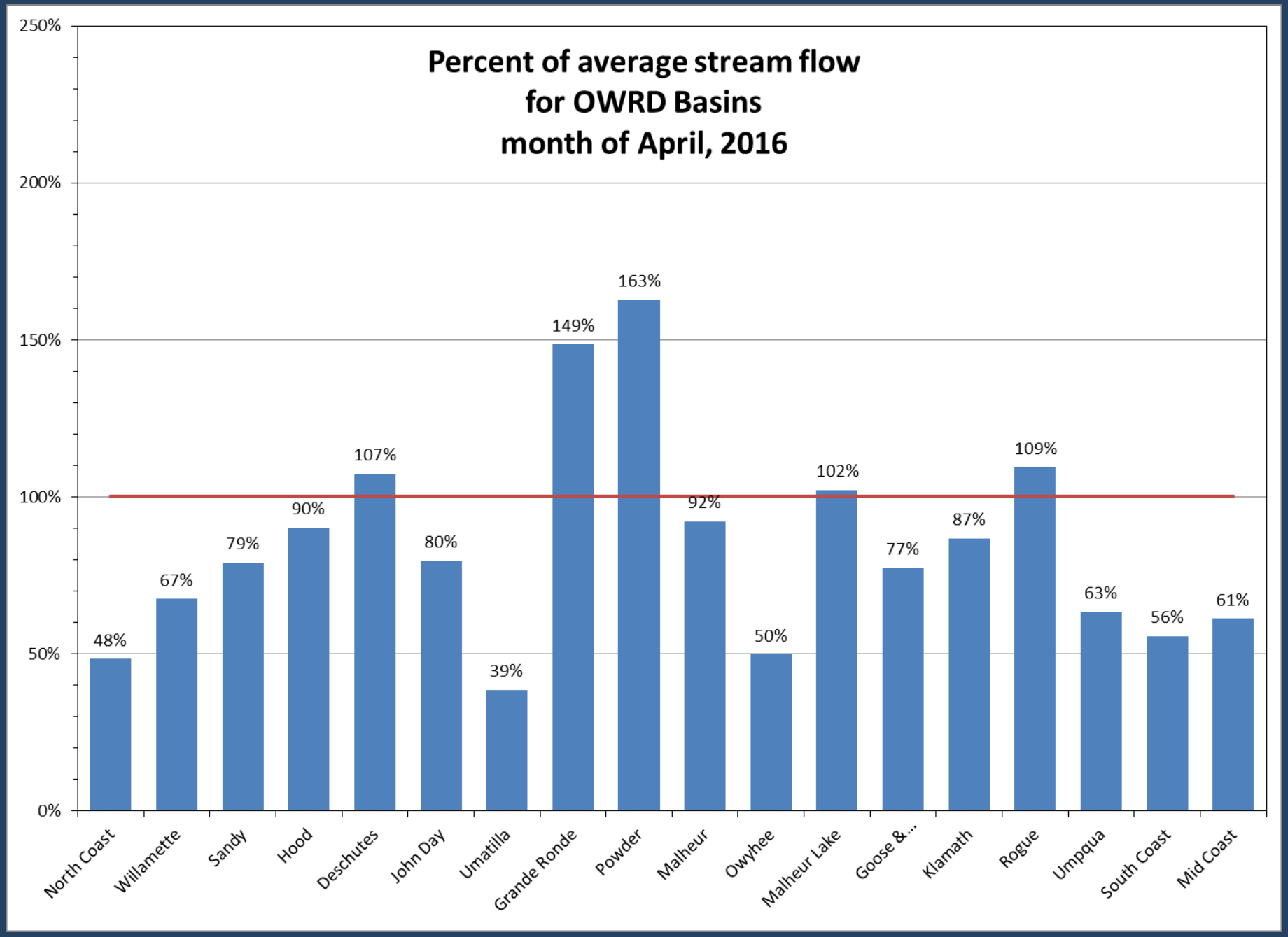
May 16, 2016

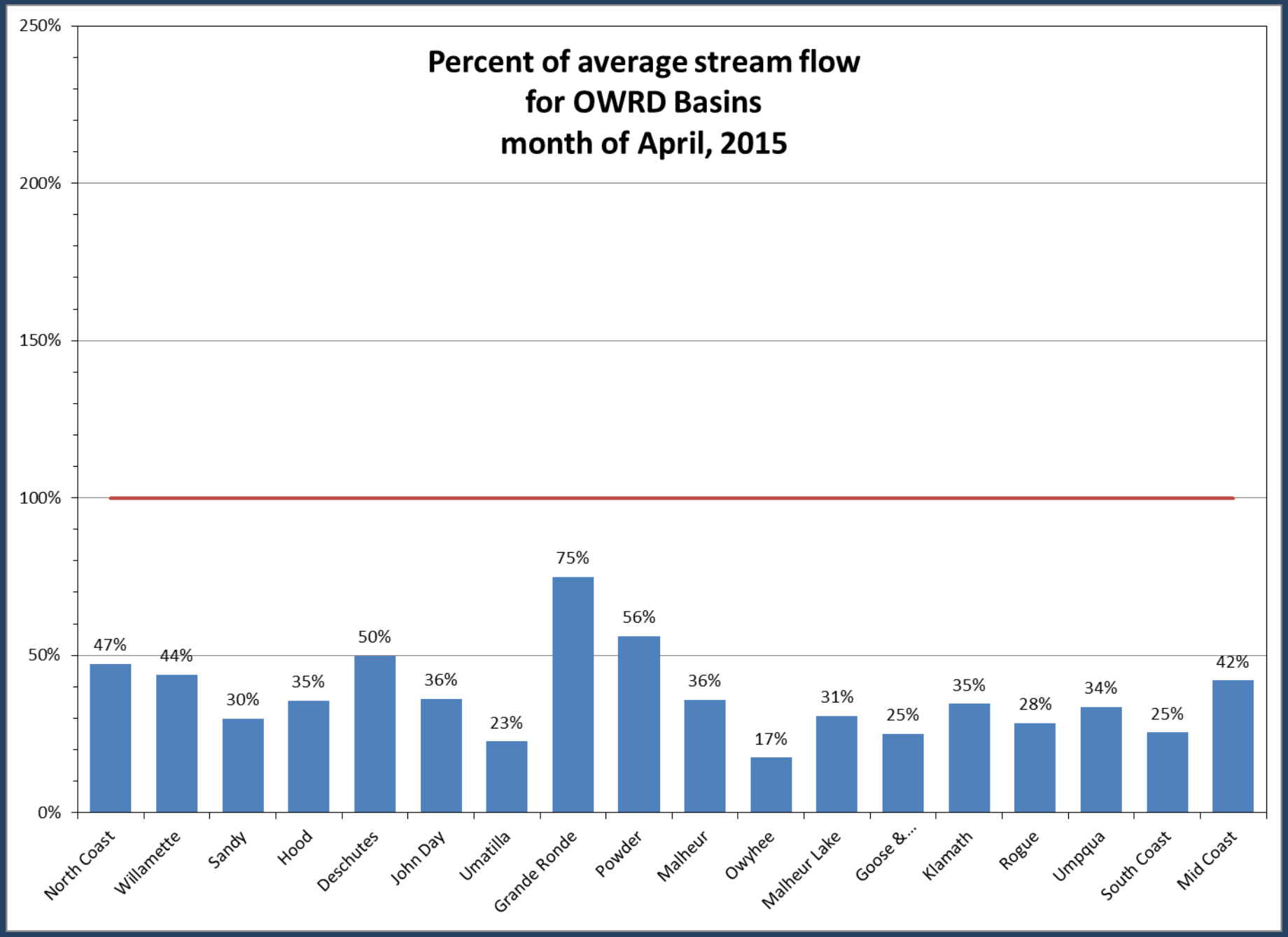
Ken Stahr

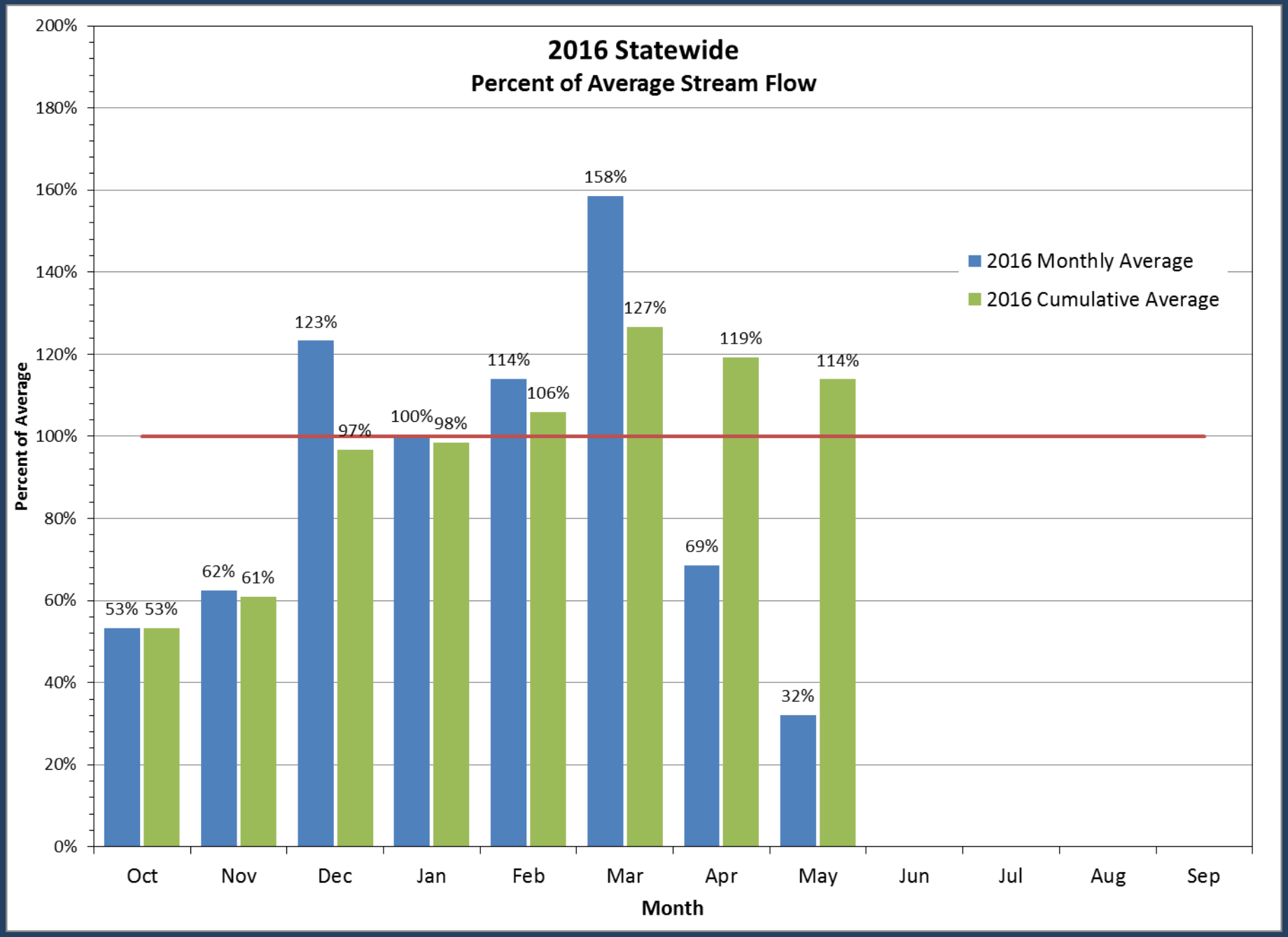
Oregon Water Resources Department

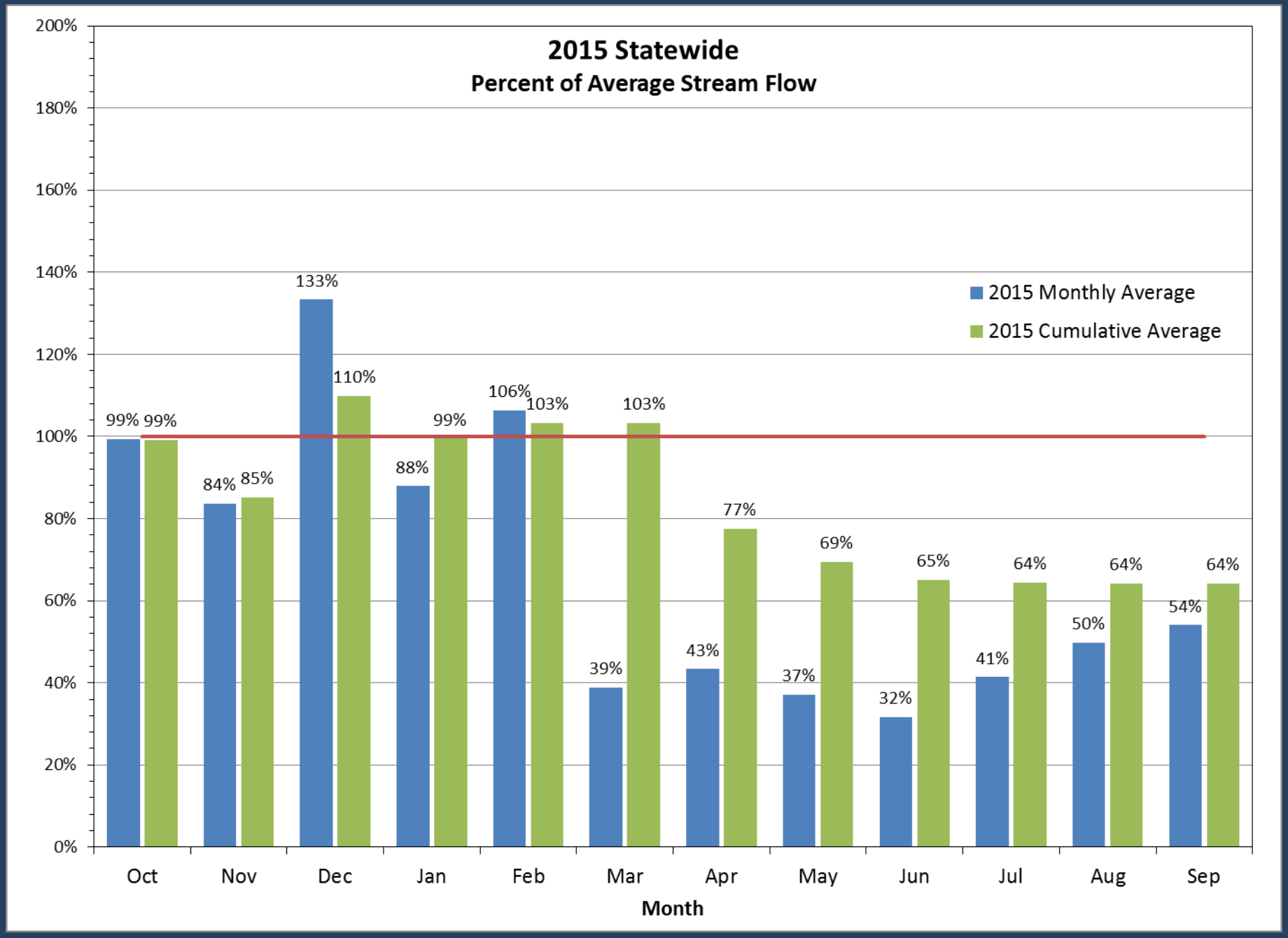

Percent of average stream flow
for OWRD Basins
October 1, 2015 - April, 2016
250%
200%
150%
100%
50%
0%
123%
108%
112%
128%
113%
103%
82%
121%
120%
111%
93%
112%
85%
97%
138%
124%
121%
109%
North Coast
Willamette
Sandy
Hood
Deschutes
John Day
Umatilla
Grande Ronde
Powder
Malheur
Owyhee
Malheur Lake
Goose &...
Klamath
Rogue
Umpqua
South Coast
Mid Coast

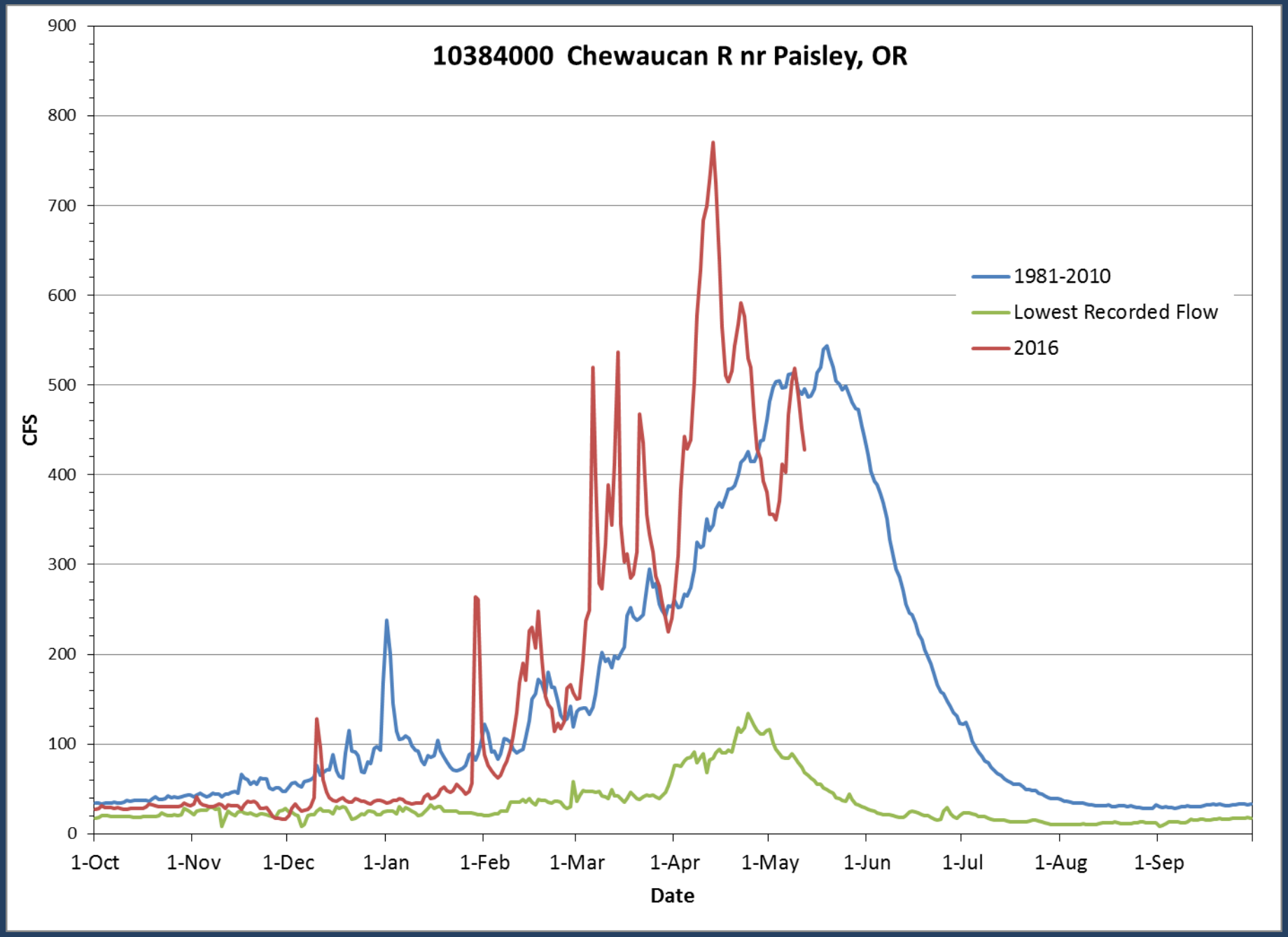

Percent of average stream flow
for OWRD Basins
October, 2014 - April, 2015
250%
200%
150%
100%
50%
0%
84%
68%
83%
73%
97%
58%
60%
108%
74%
56%
32%
47%
41%
63%
70%
77%
79%
82%
North Coast
Willamette
Sandy
Hood
Deschutes
John Day
Umatilla
Grande Ronde
Powder
Malheur
Owyhee
Malheur Lake
Goose &...
Klamath
Rogue
Umpqua
South Coast
Mid Coast

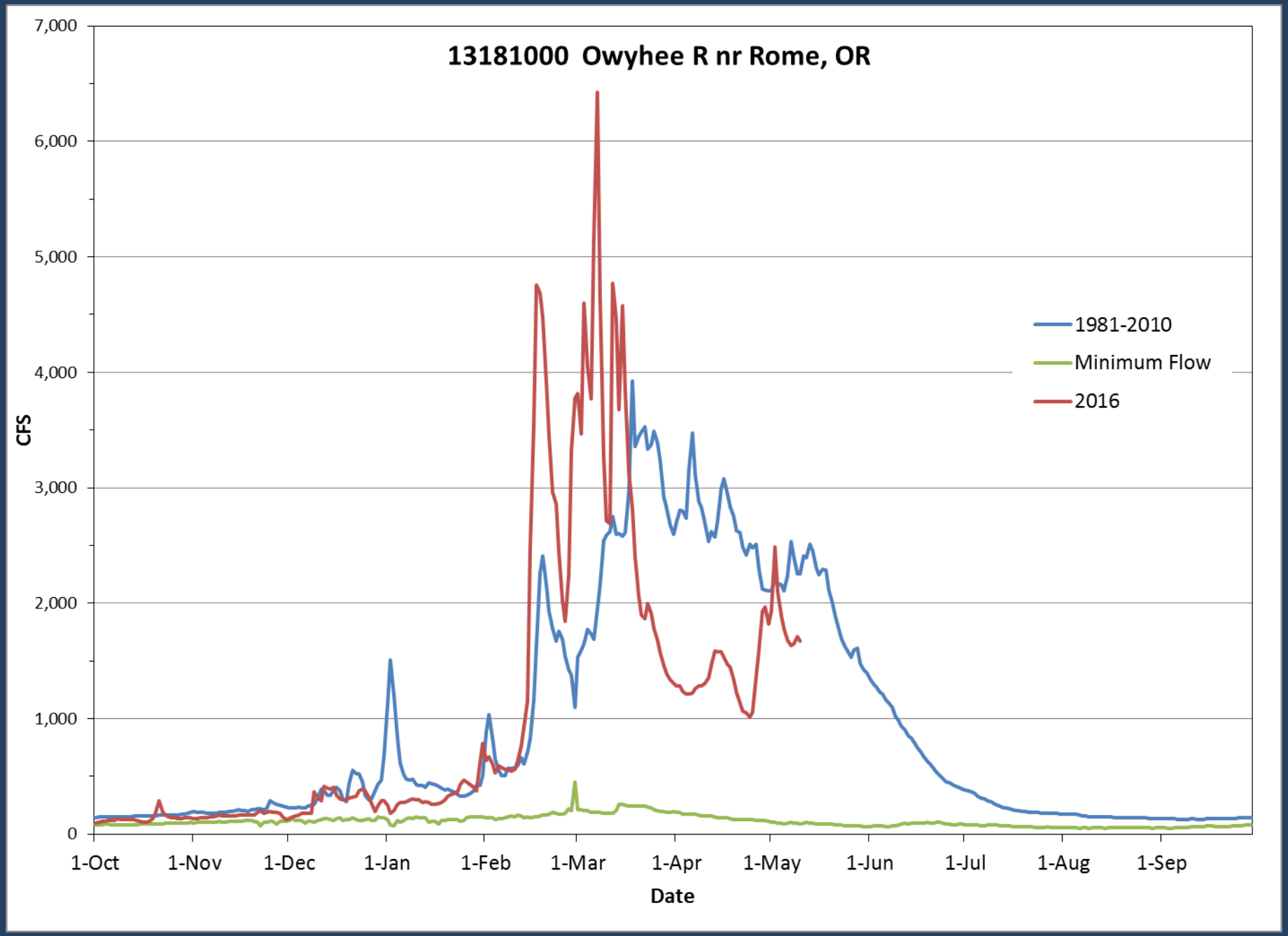

Percent of average stream flow
for OWRD Basins
month of April, 2016
250%
200%
150%
100%
50%
0%
48%
67%
79%
90%
107%
80%
39%
149%
163%
92%
50%
102%
77%
87%
109%
63%
56%
61%
North Coast
Willamette
Sandy
Hood
Deschutes
John Day
Umatilla
Grande Ronde
Powder
Malheur
Owyhee
Malheur Lake
Goose &...
Klamath
Rogue
Umpqua
South Coast
Mid Coast

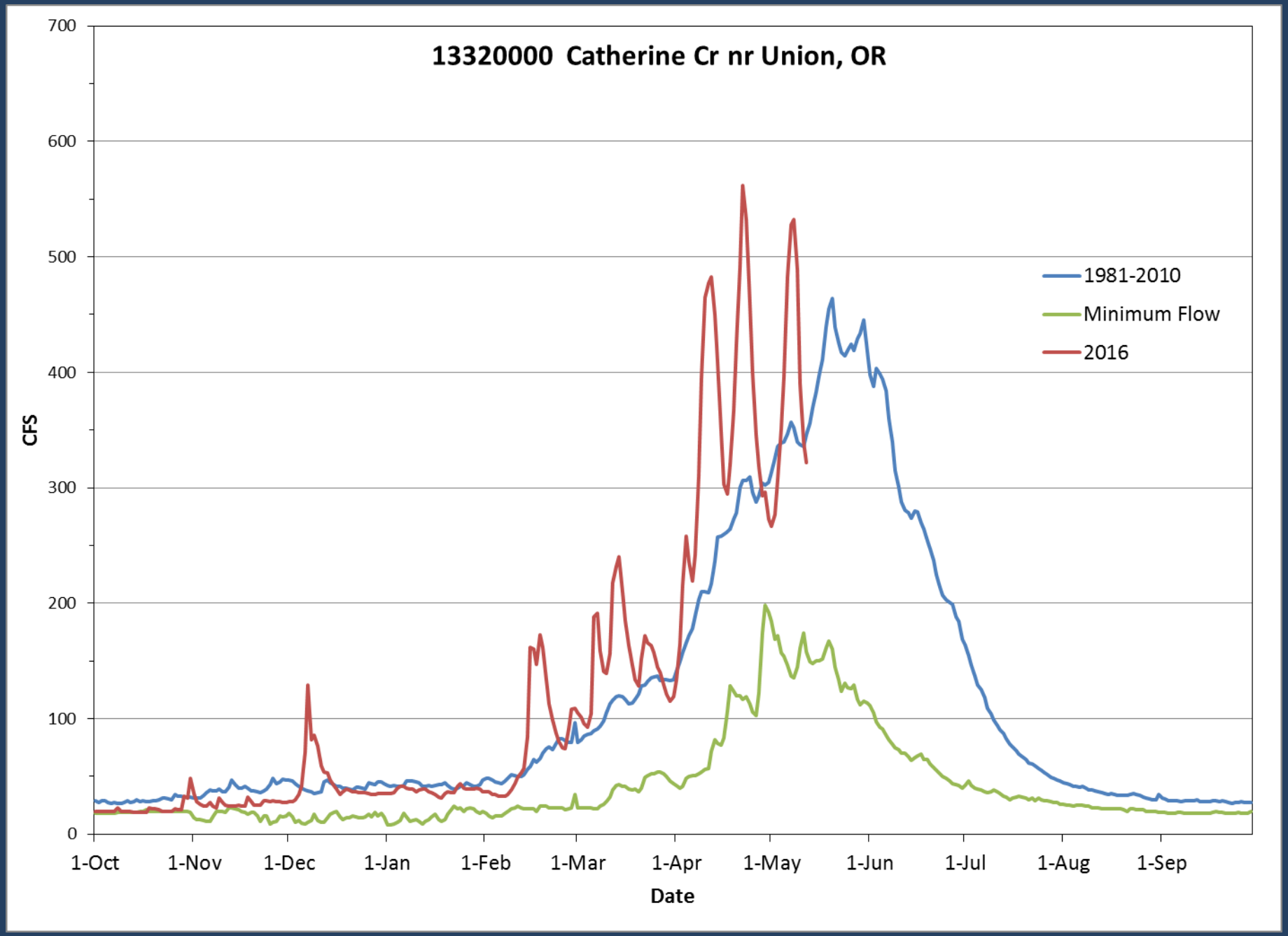

Percent of average stream flow
for OWRD Basins
month of April, 2015
250%
200%
150%
100%
50%
0%
47%
44%
30%
35%
50%
36%
23%
75%
56%
36%
17%
31%
25%
35%
28%
34%
25%
42%
North Coast
Willamette
Sandy
Hood
Deschutes
John Day
Umatilla
Grande Ronde
Powder
Malheur
Owyhee
Malheur Lake
Goose &...
Klamath
Rogue
Umpqua
South Coast
Mid Coast

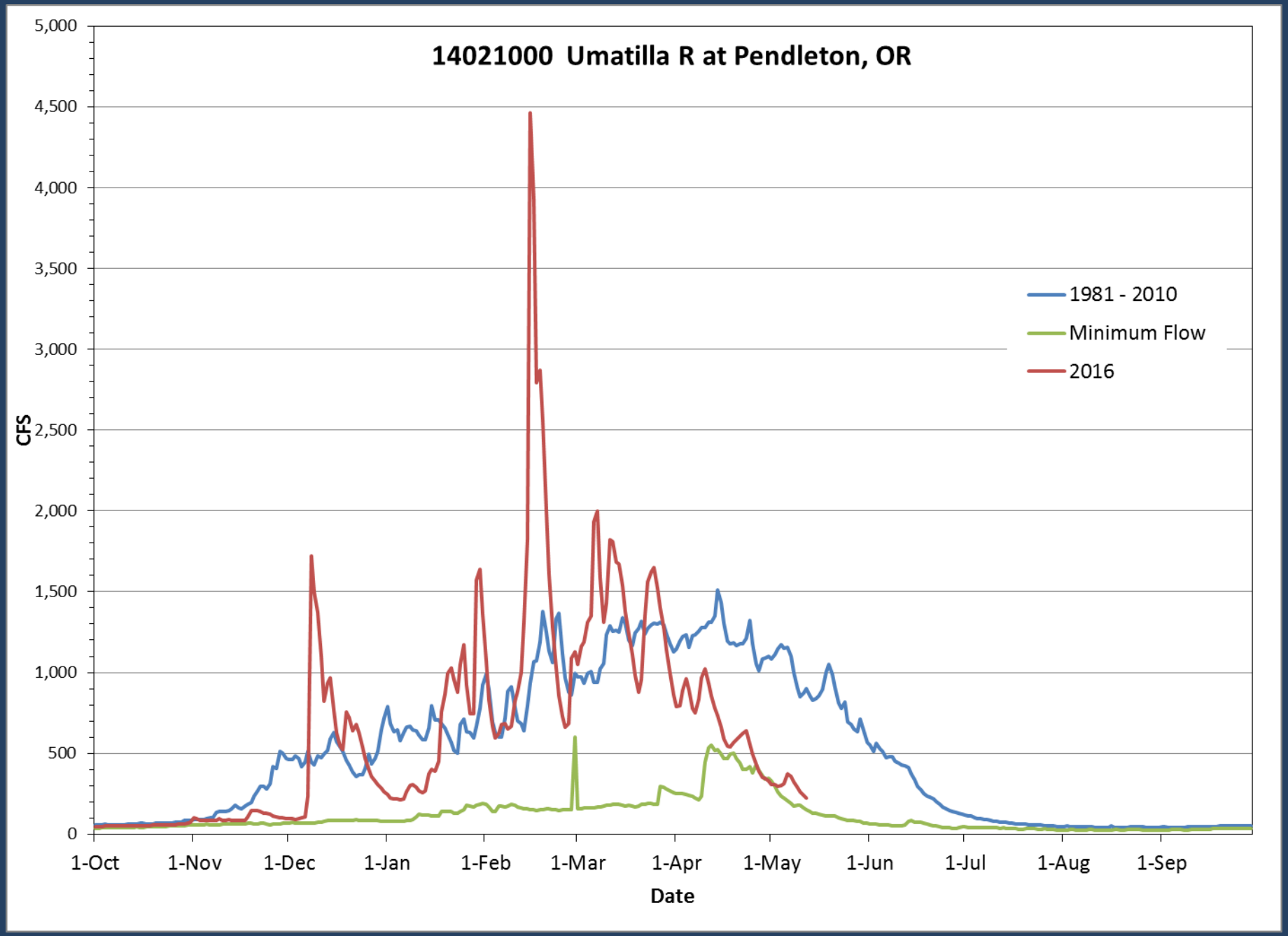

2016 Statewide
Percent of Average Stream Flow
Percent of Average
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
2016 Monthly Average
2016 Cumulative Average
53%
53%
62%
61%
123%
97%
100%
98%
114%
106%
158%
127%
69%
119%
32%
114%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Month

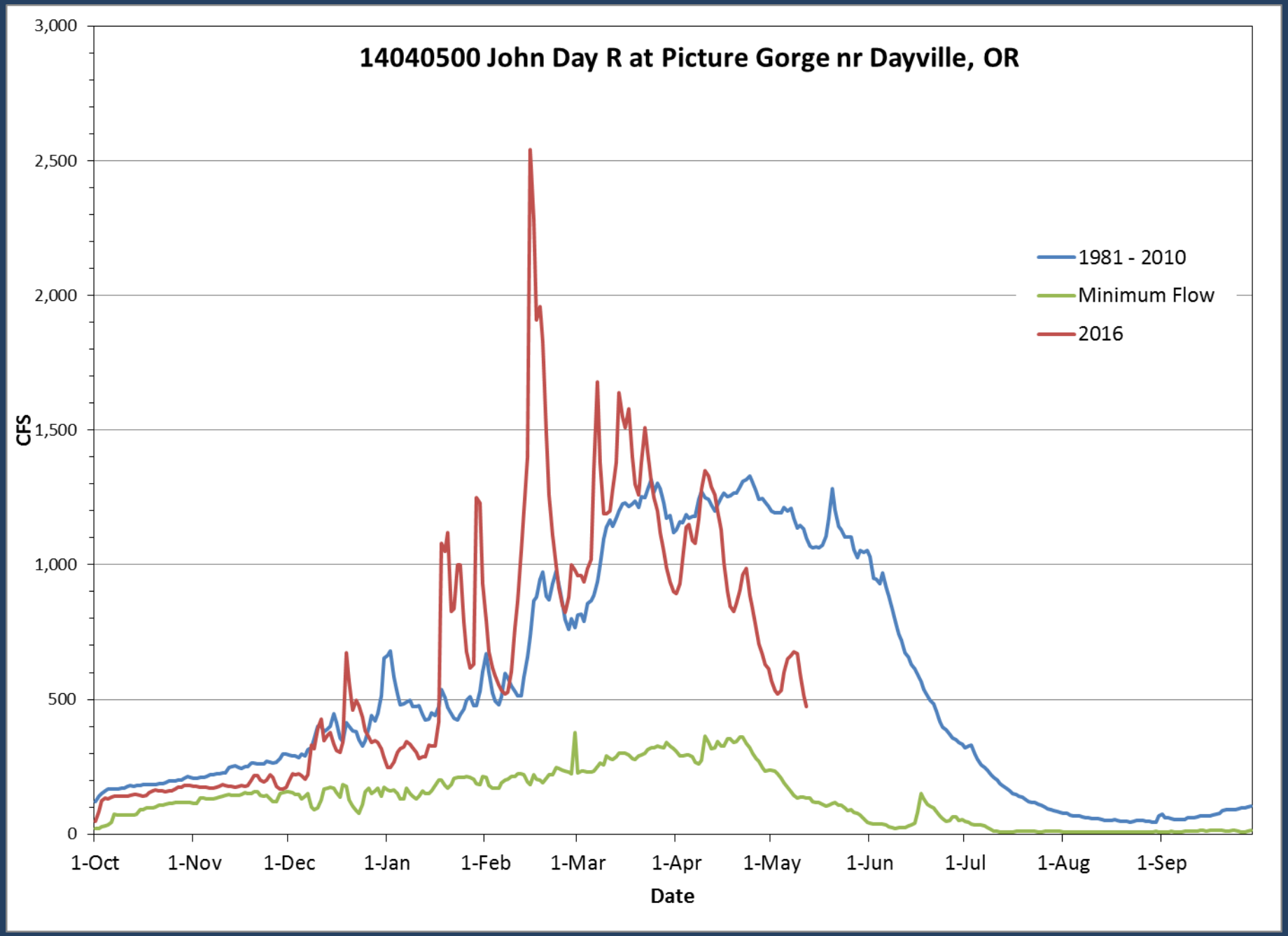

2015 Statewide
Percent of Average Stream Flow
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
2015 Monthly Average
2015 Cumulative Average
99%
99%
84%
85%
133%
110%
88%
99%
106%
103%
39%
103%
43%
77%
37%
69%
32%
65%
41%
64%
50%
64%
54%
64%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Month

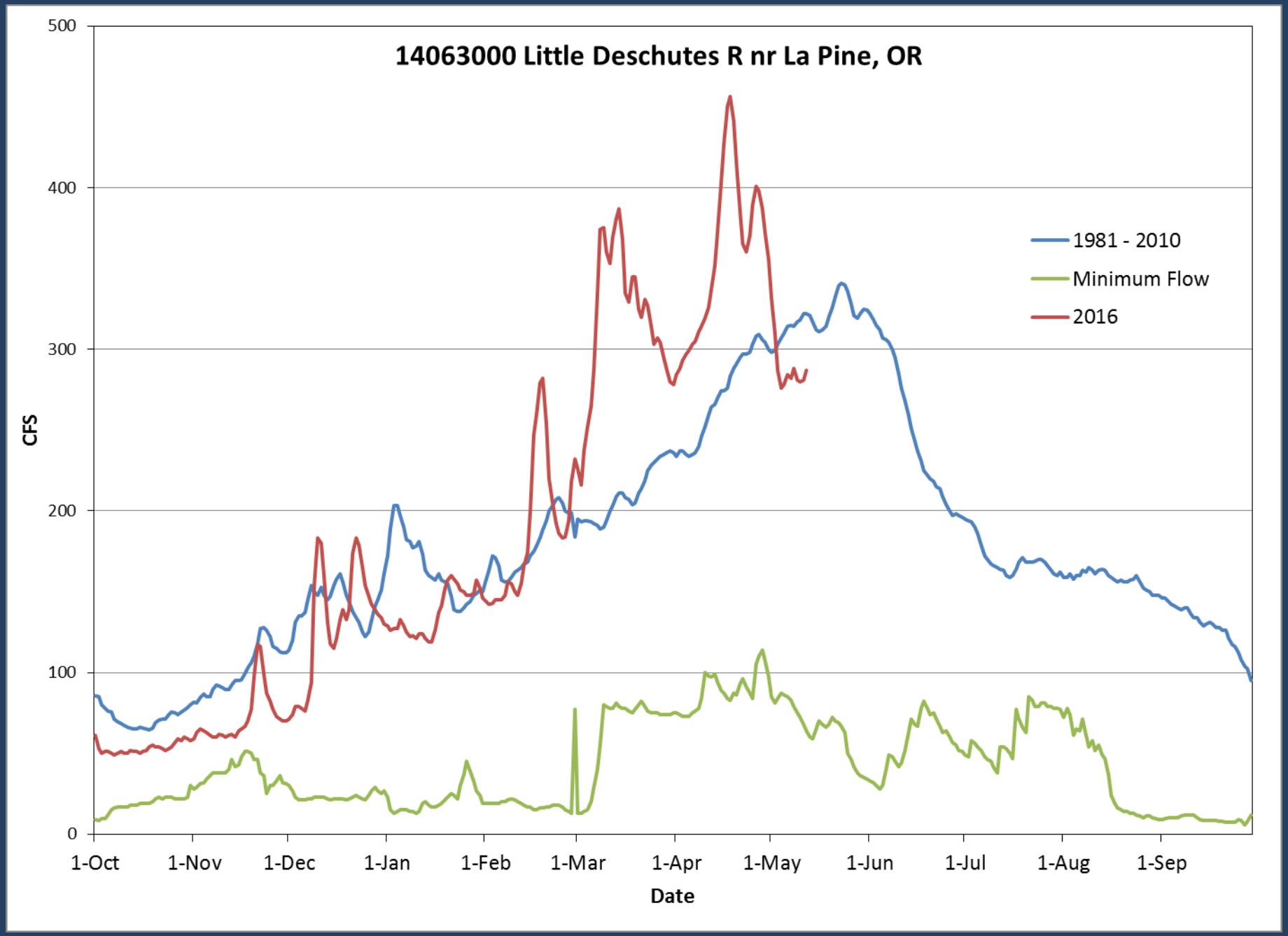

10384000 Chewaucan R nr Paisley, OR
900
800
700
600
500
400
300
200
100
0
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010
Lowest Recorded Flow
2016

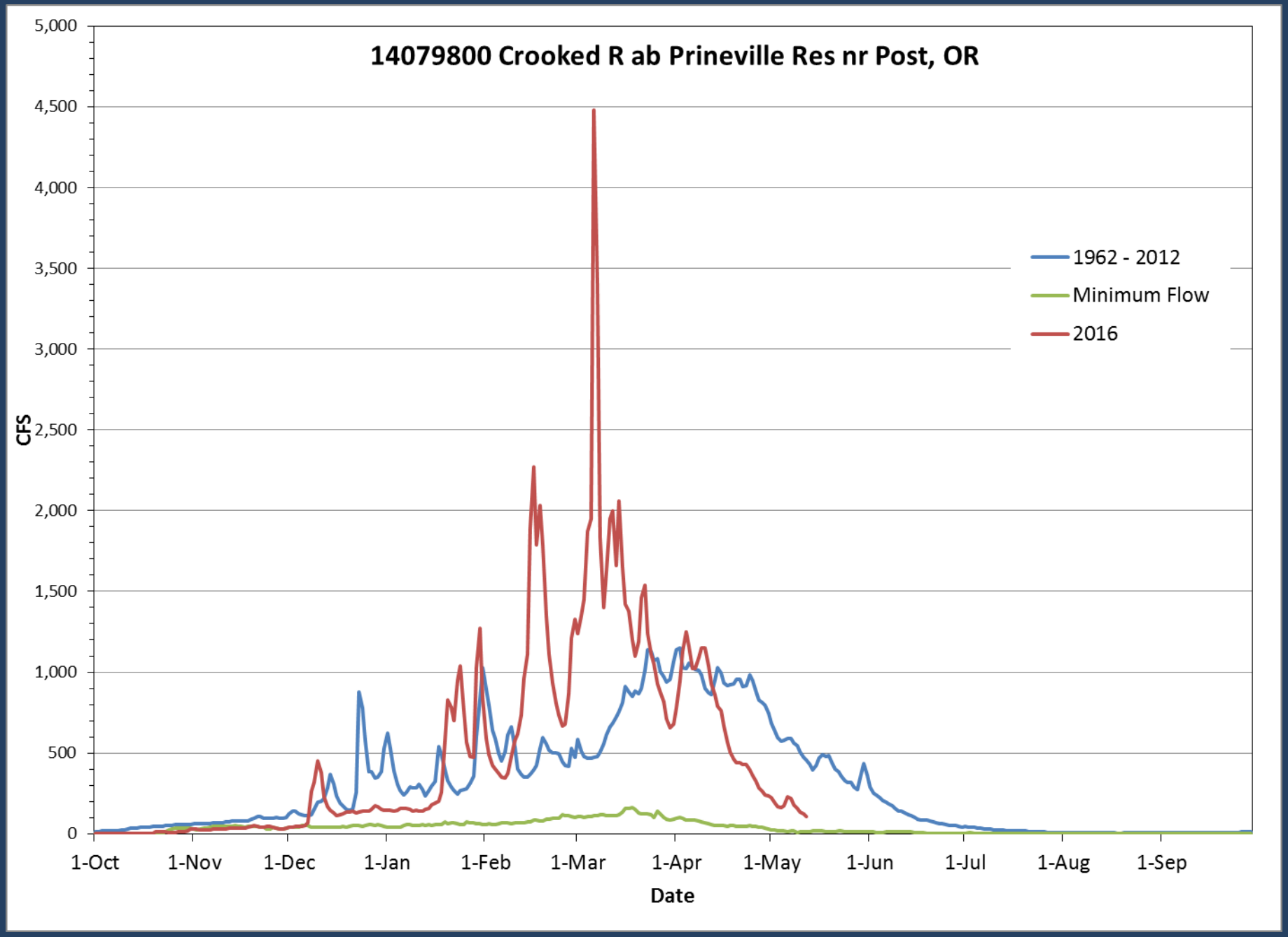

13181000 Owyhee R nr Rome, OR
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
CFS
1981-2010
Minimum Flow
2016
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date

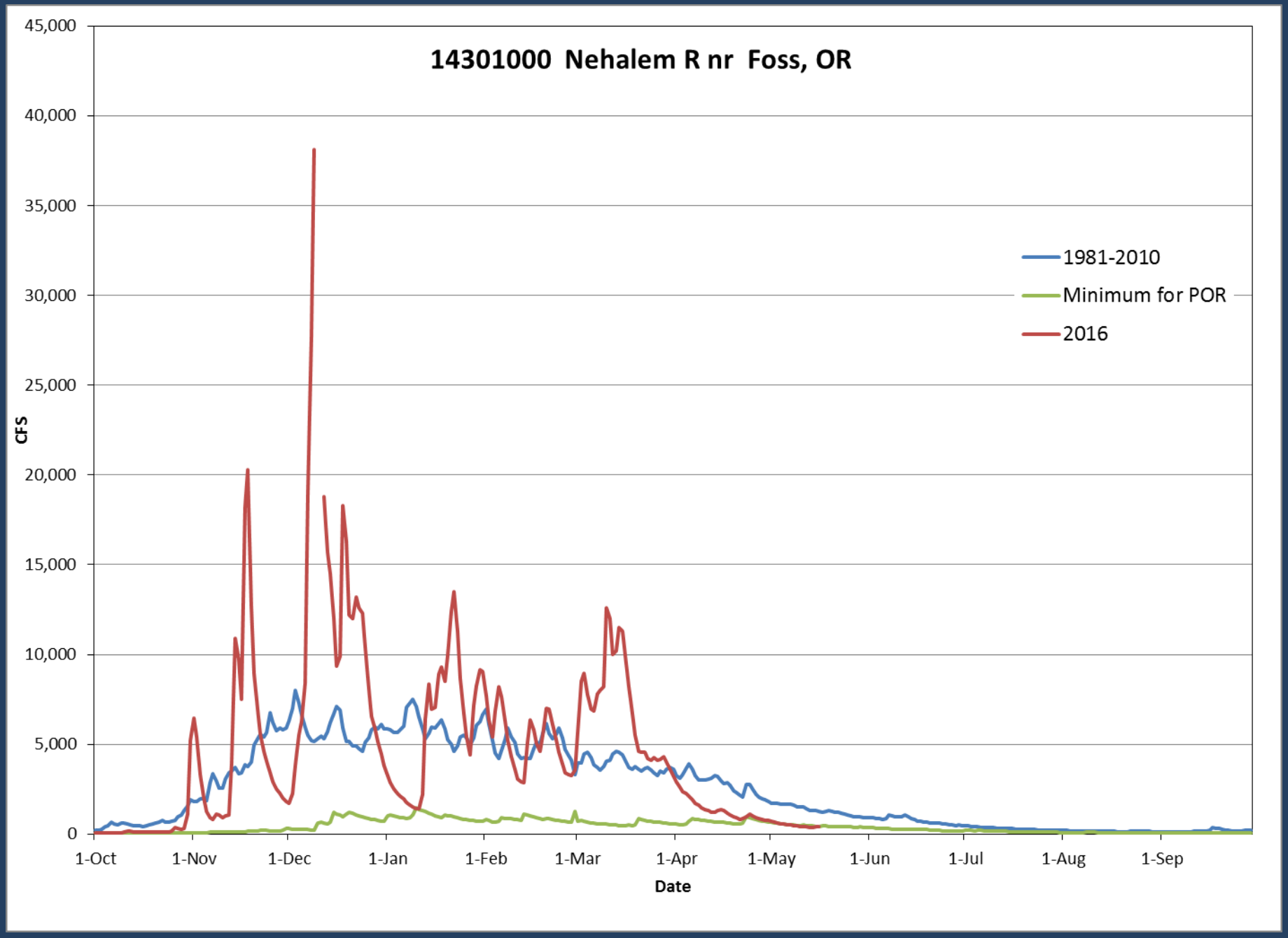

13320000 Catherine Cr nr Union, OR
700
600
500
400
300
200
100
0
CFS
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date
1981-2010
Minimum Flow
2016

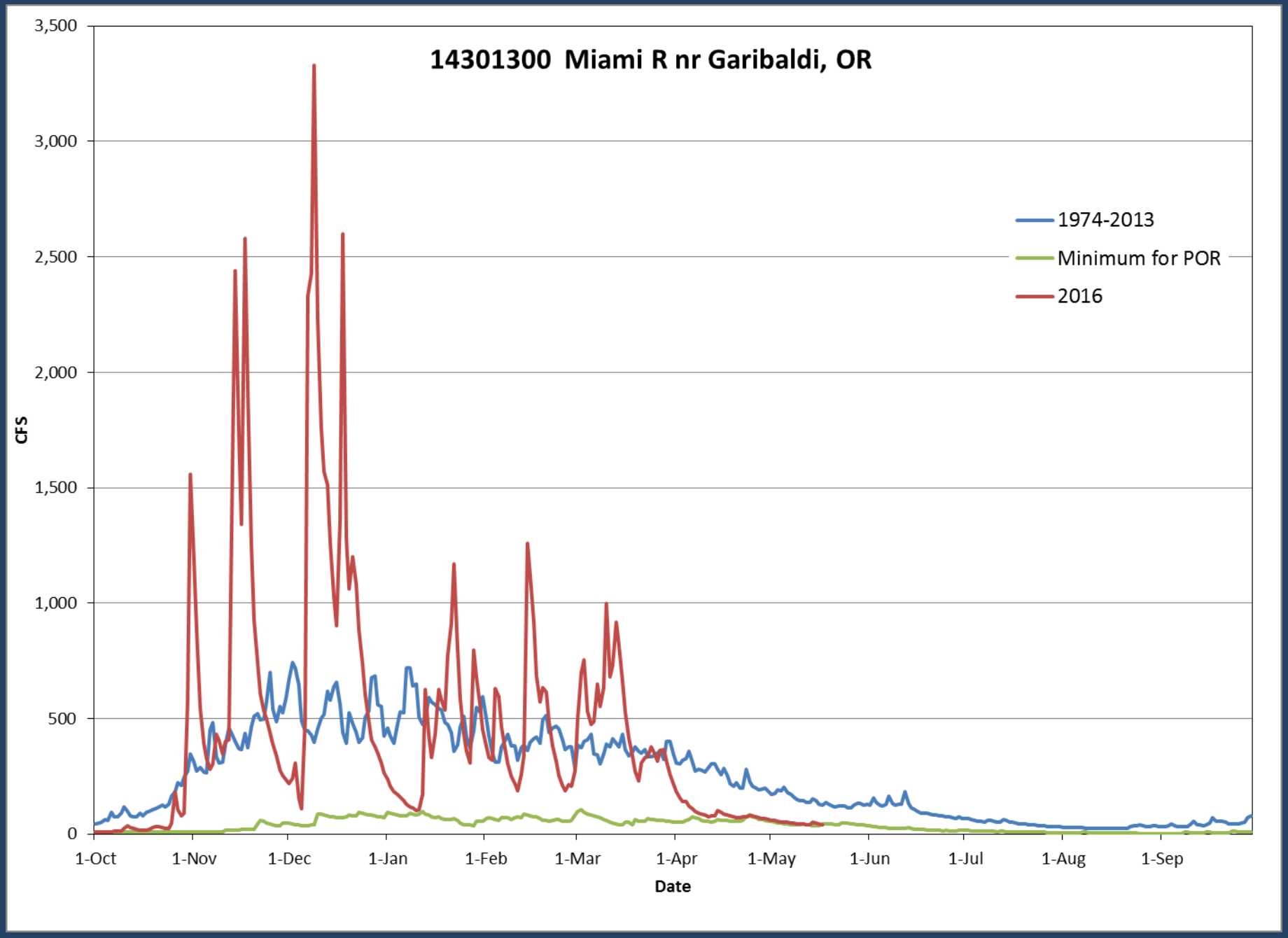

14021000 Umatilla R at Pendleton, OR
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
CFS
1981 - 2010
Minimum Flow
2016
1-Oct
1-Nov
1-Dec
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
Date


14040500 John Day R at Picture Gorge nr Dayville, OR
3,000
2,500
2,000
1,500
1,000
500
0
CFS
1981 - 2010
Minimum Flow
2016
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


14063000 Little Deschutes R nr La Pine, OR
500
400
300
200
100
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
Minimum Flow
2016


14079800 Crooked R ab Prineville Res nr Post, OR
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
CFS
1962 - 2012
Minimum Flow
2016
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


14301000 Nehalem R nr Foss, OR
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
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
Minimum for POR
2016


14301300 Miami R nr Garibaldi, OR
3,500
3,000
2,500
2,000
1,500
1,000
500
0
CFS
1974-2013
Minimum for POR
2016
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

Thank You

Water Supply Availability Committee

May 2016

Marc Stewart

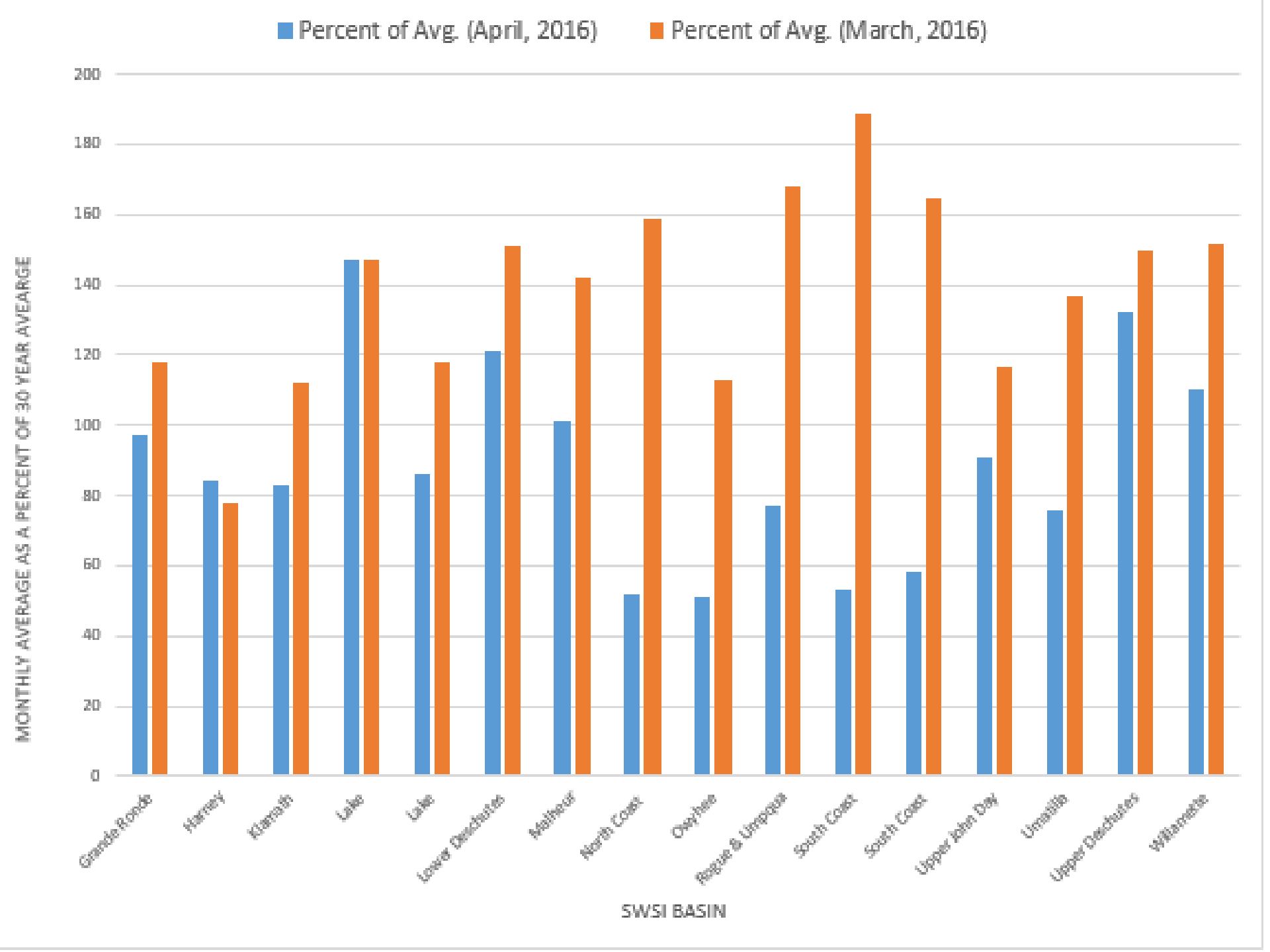
Keith Overton

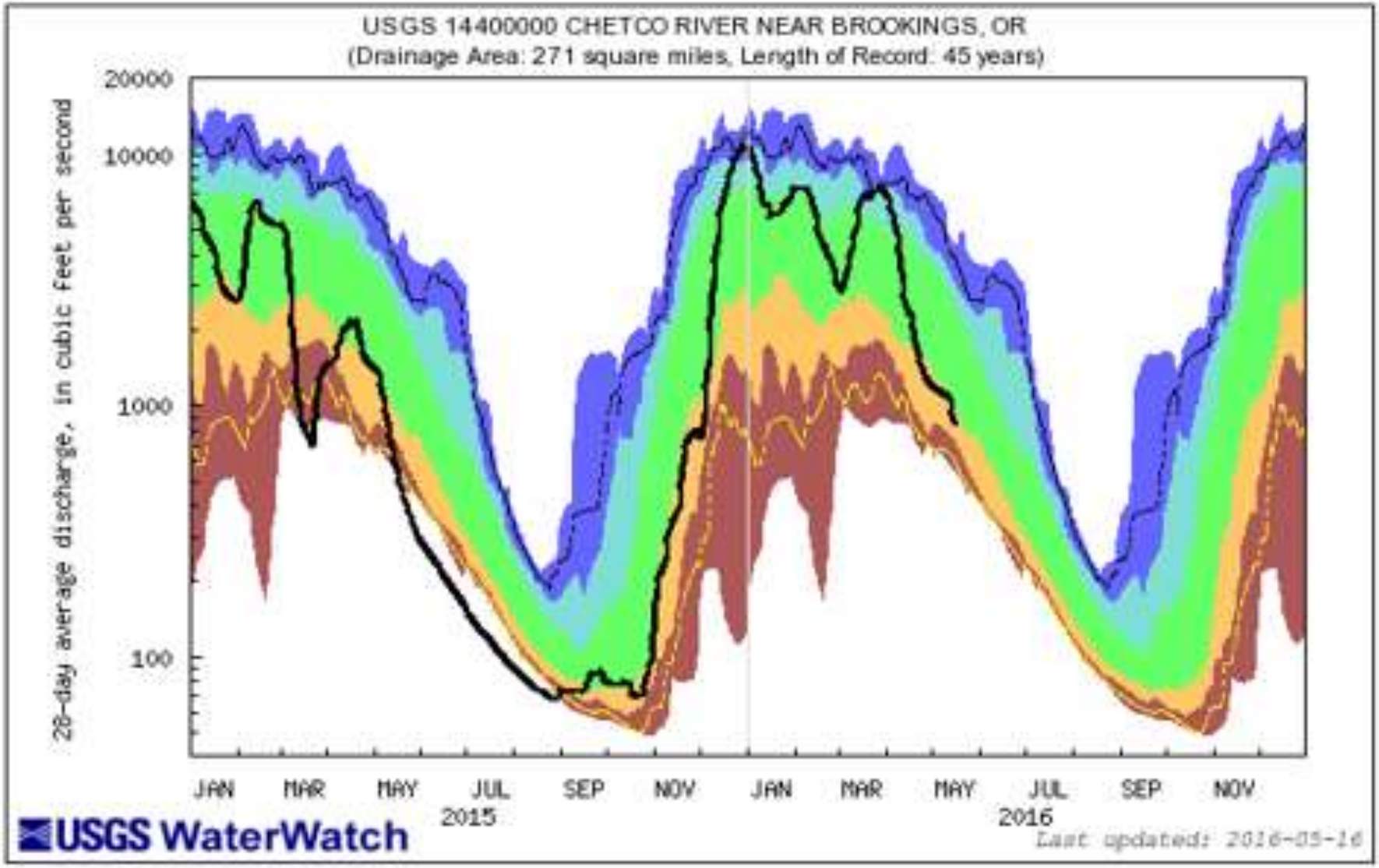
http://or.water.usgs.gov/data_dir/war_dir/war1604.html

http://waterwatch.usgs.gov/

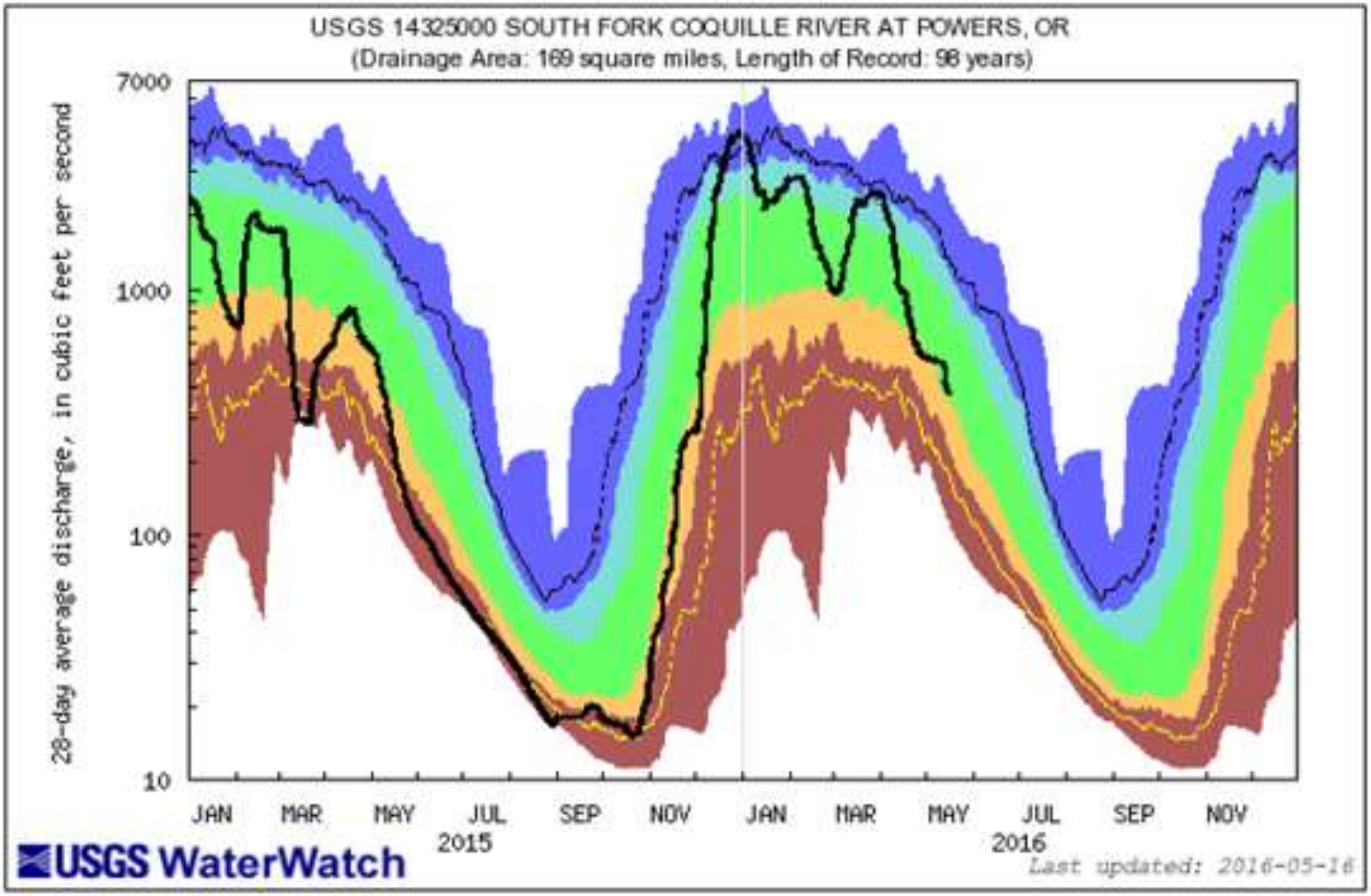
Data are provisional and subject to revision until they have been thoroughly reviewed and received final approval.

U.S. Department of the Interior
U.S. Geological Survey

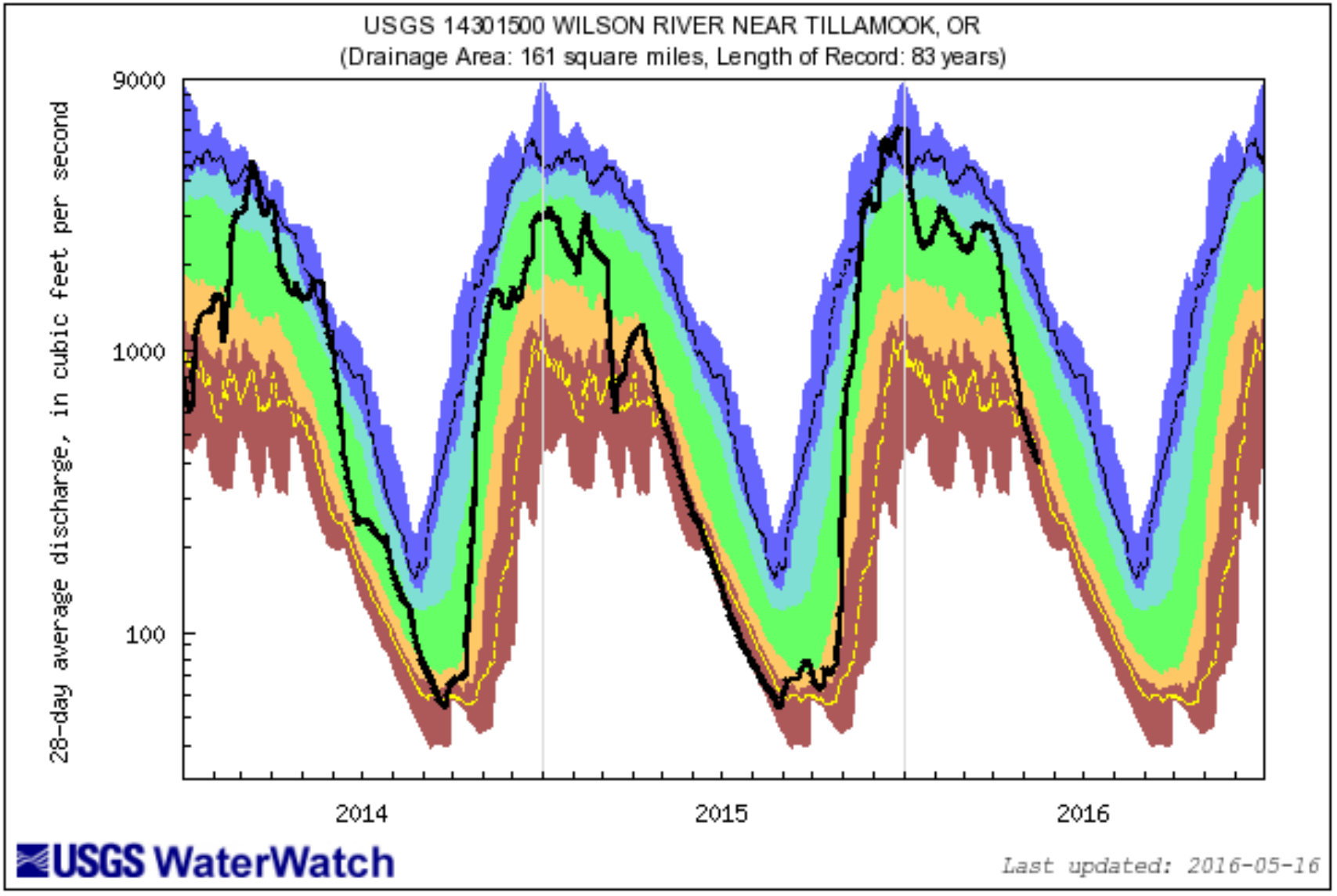

Percent of Avg. (April, 2016)
Percent of Avg. (March, 2016)
MONTHLY AVERAGE AS A PERCENT OF 30 YEAR AVEARGE
200
180
160
140
120
100
80
60
40
20
0
Grande Ronde
Harney
Klamath
Lake
Lake
Lower Deschutes
Malheur
North Coast
Owyhee
Rogue & Umpqua
South Coast
South Coast
Upper John Day
Umatilla
Upper Deschutes
Willamette
SWSI BASIN



waterwatch.usgs.gov

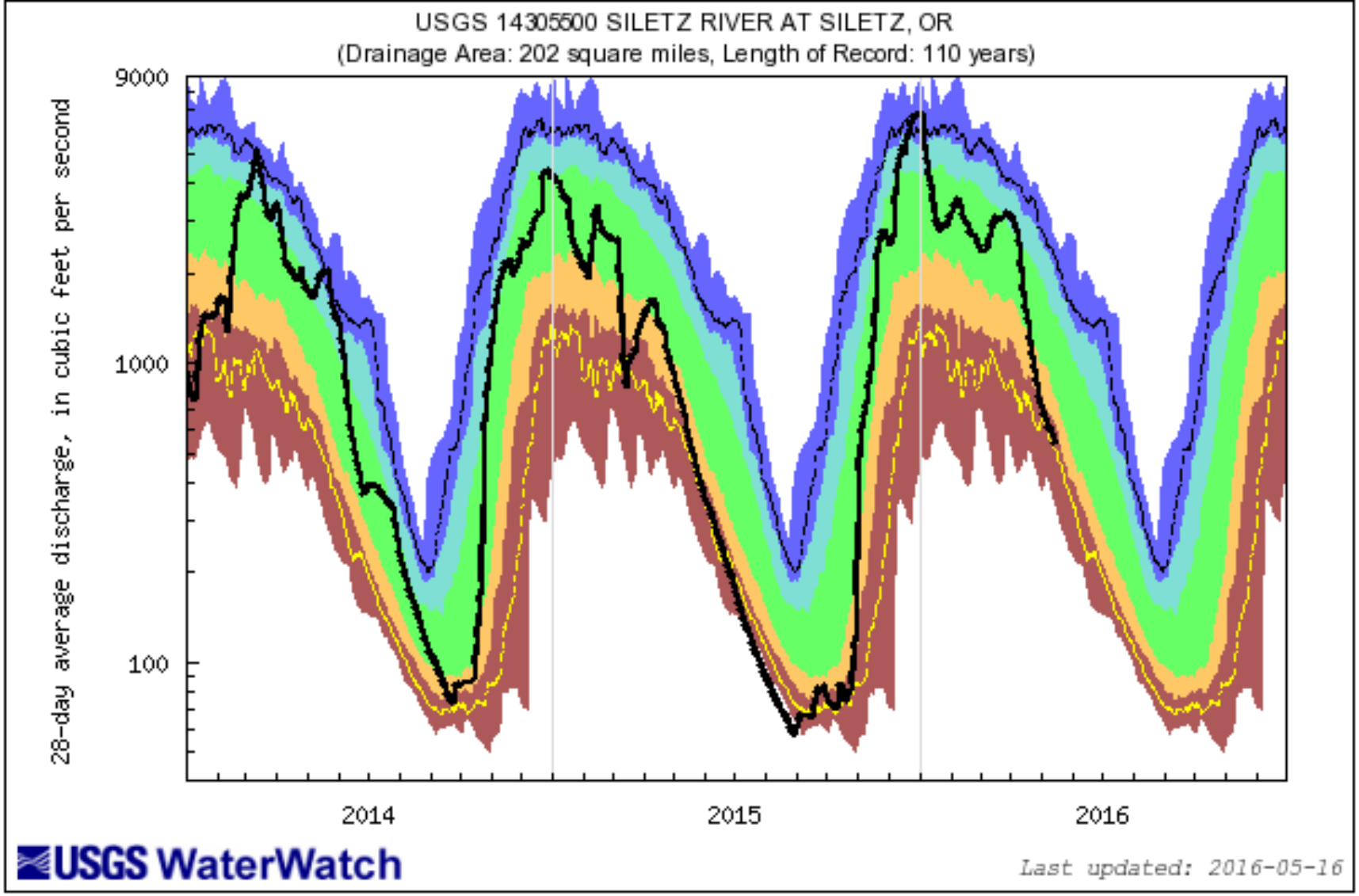


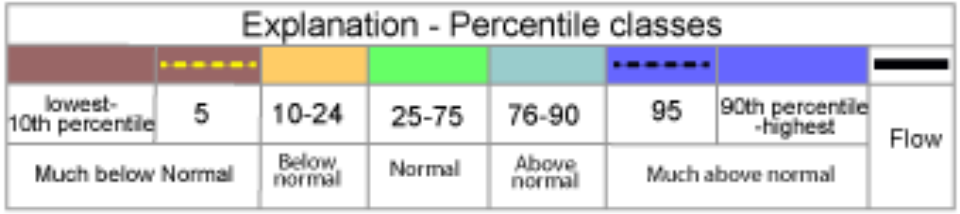
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		

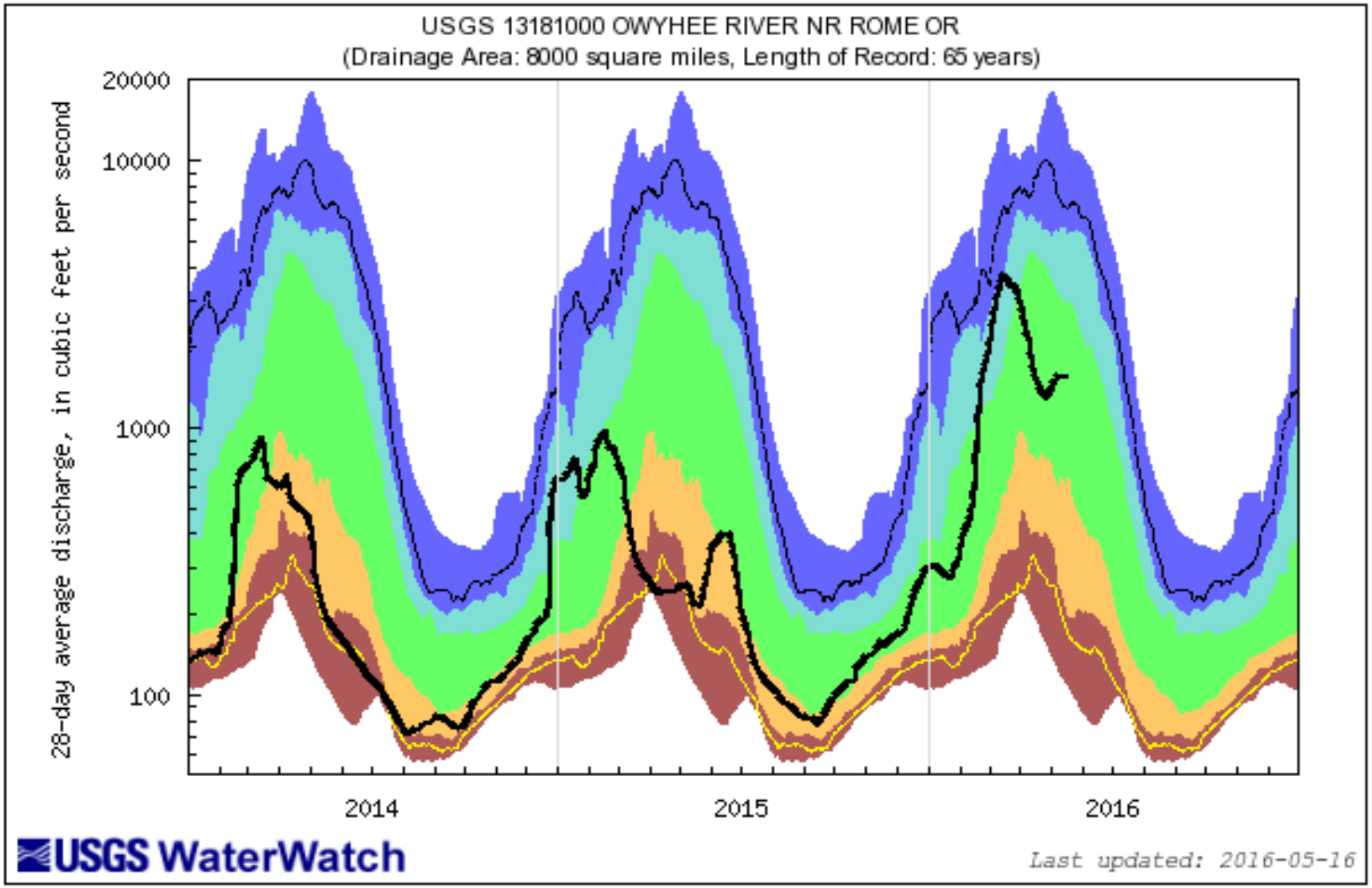


Explanation - Percentile classes

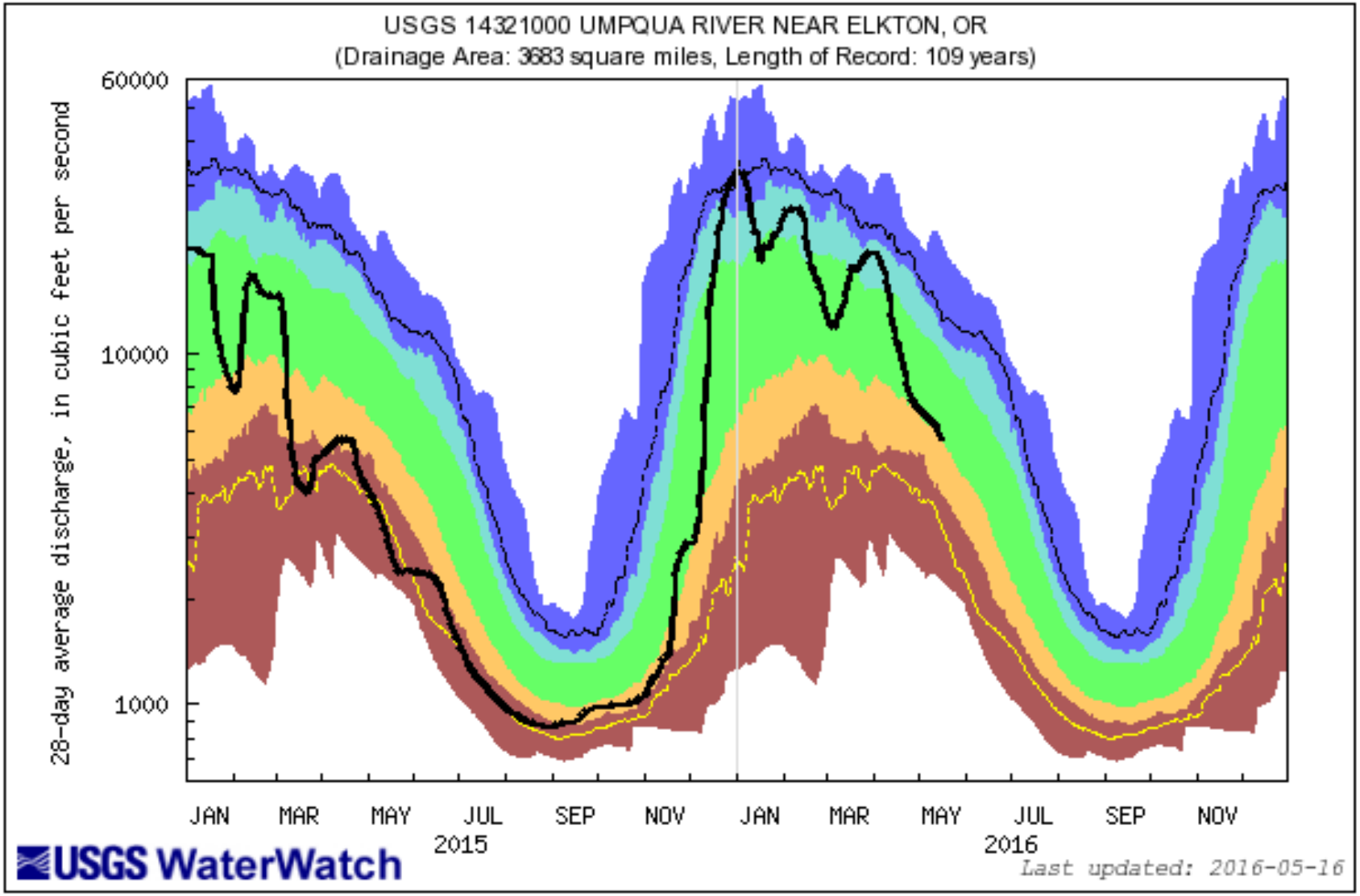
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		


USGS 14305500 SILETZ RIVER AT SILETZ, OR
(Drainage Area: 202 square miles, Length of Record: 110 years)
28-day average discharge, in cubic feet per second
9000
1000
100
2014
2015
2016
USGS WaterWatch
Last updated: 2016-05-16

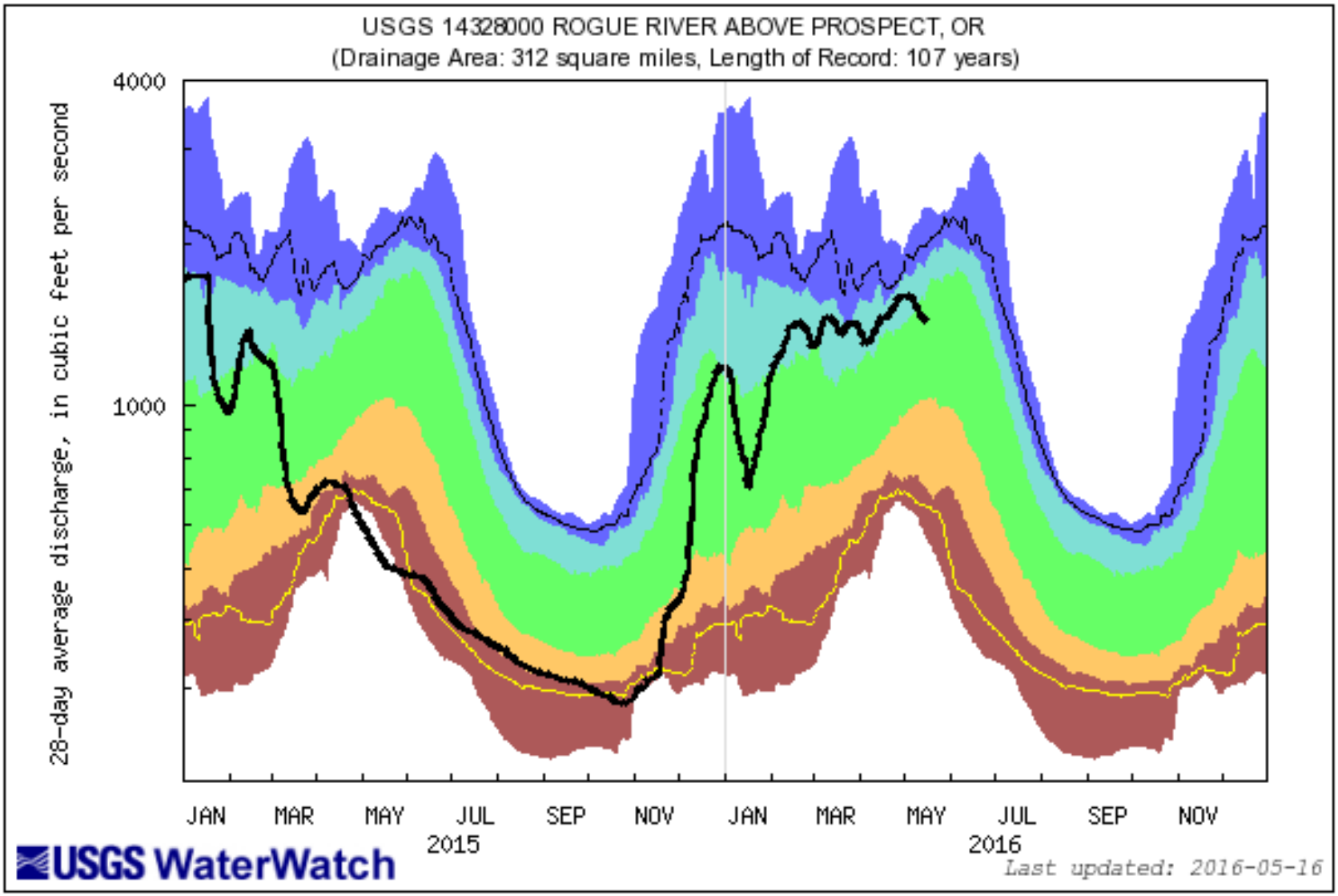

Explanation - Percentile classes
lowest-10th percentile
5
10-24
25-75
76-90
95
90th percentile -highest
Flow
Much below Normal
Below normal
Normal
Above normal
Much above normal



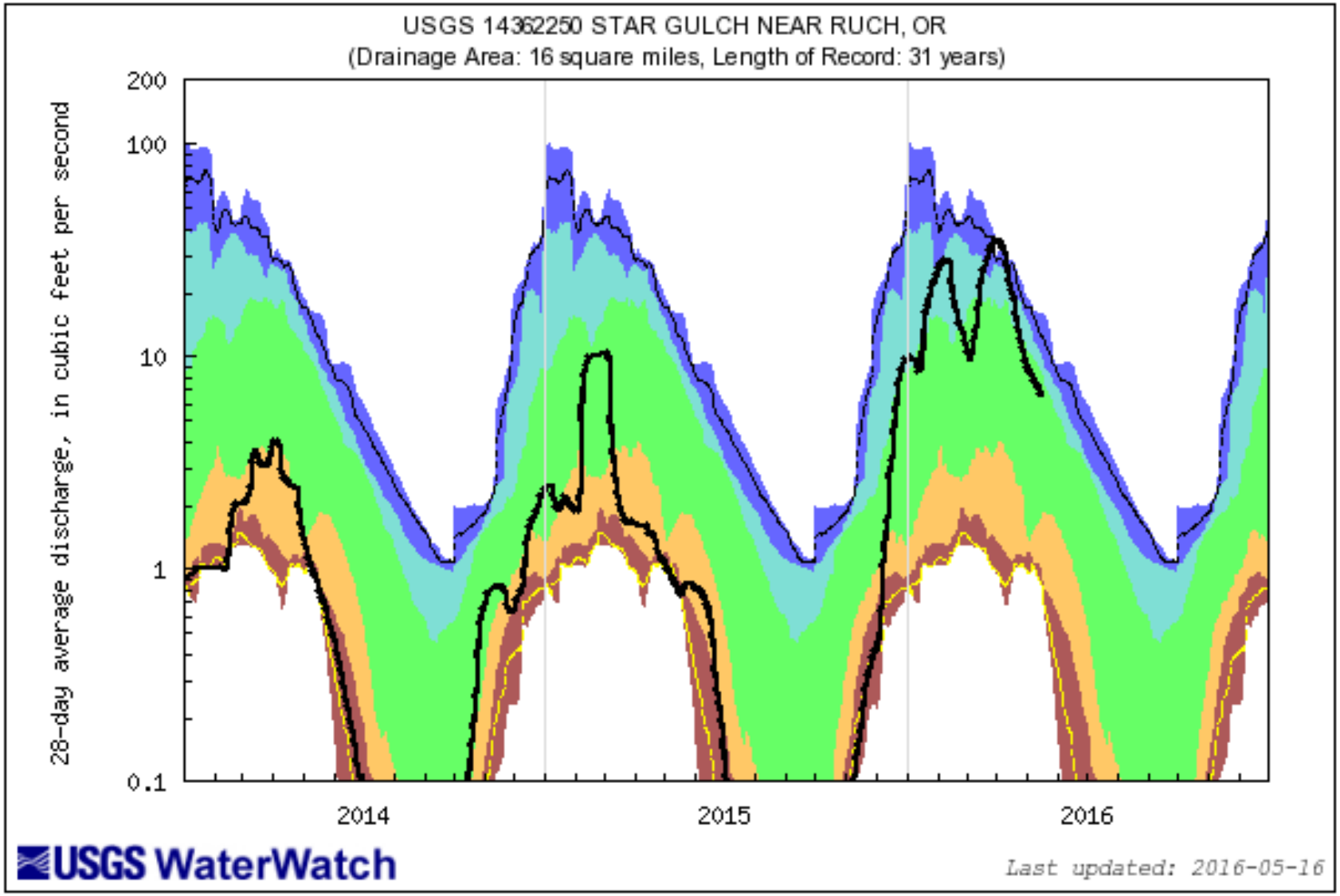
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		



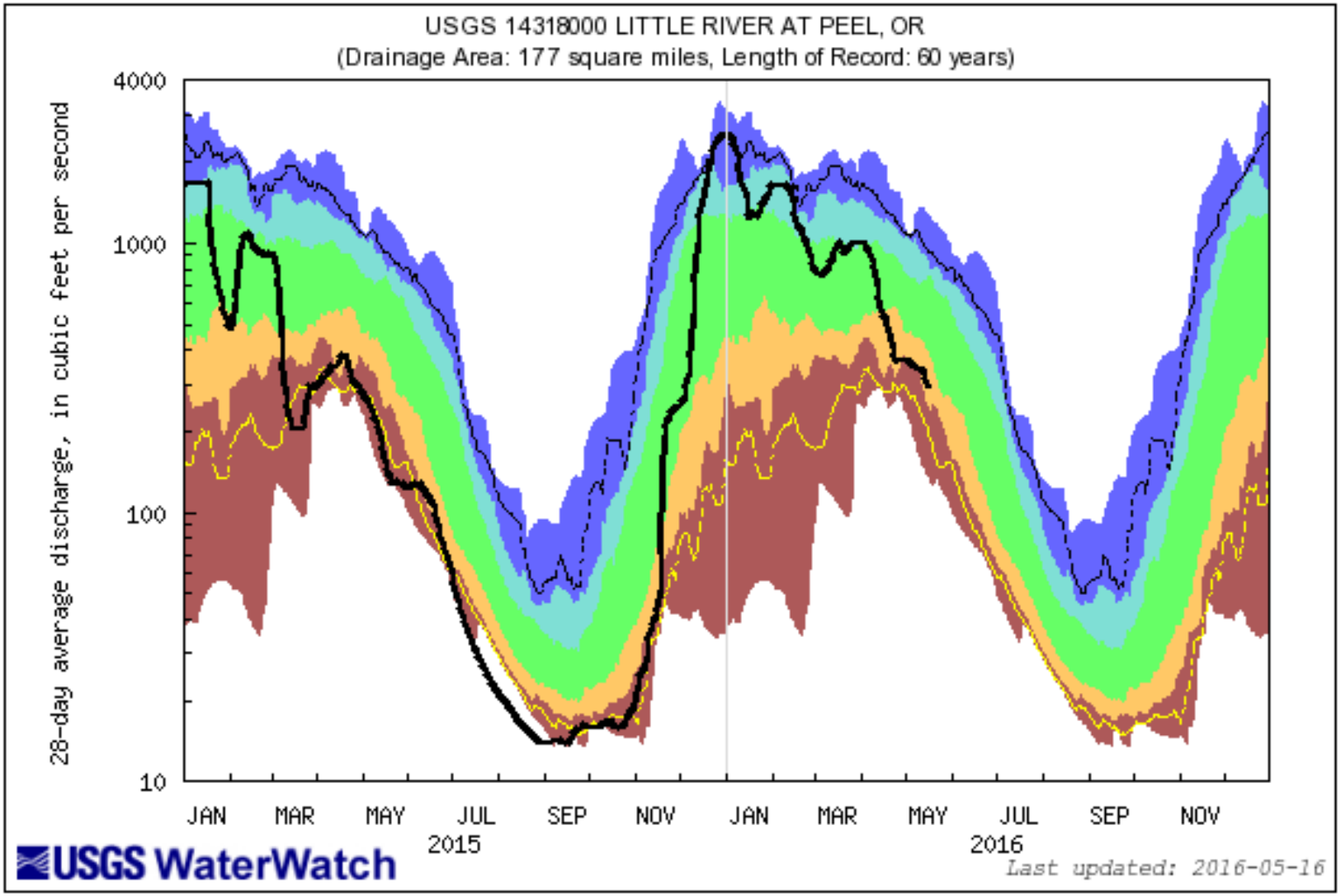
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		



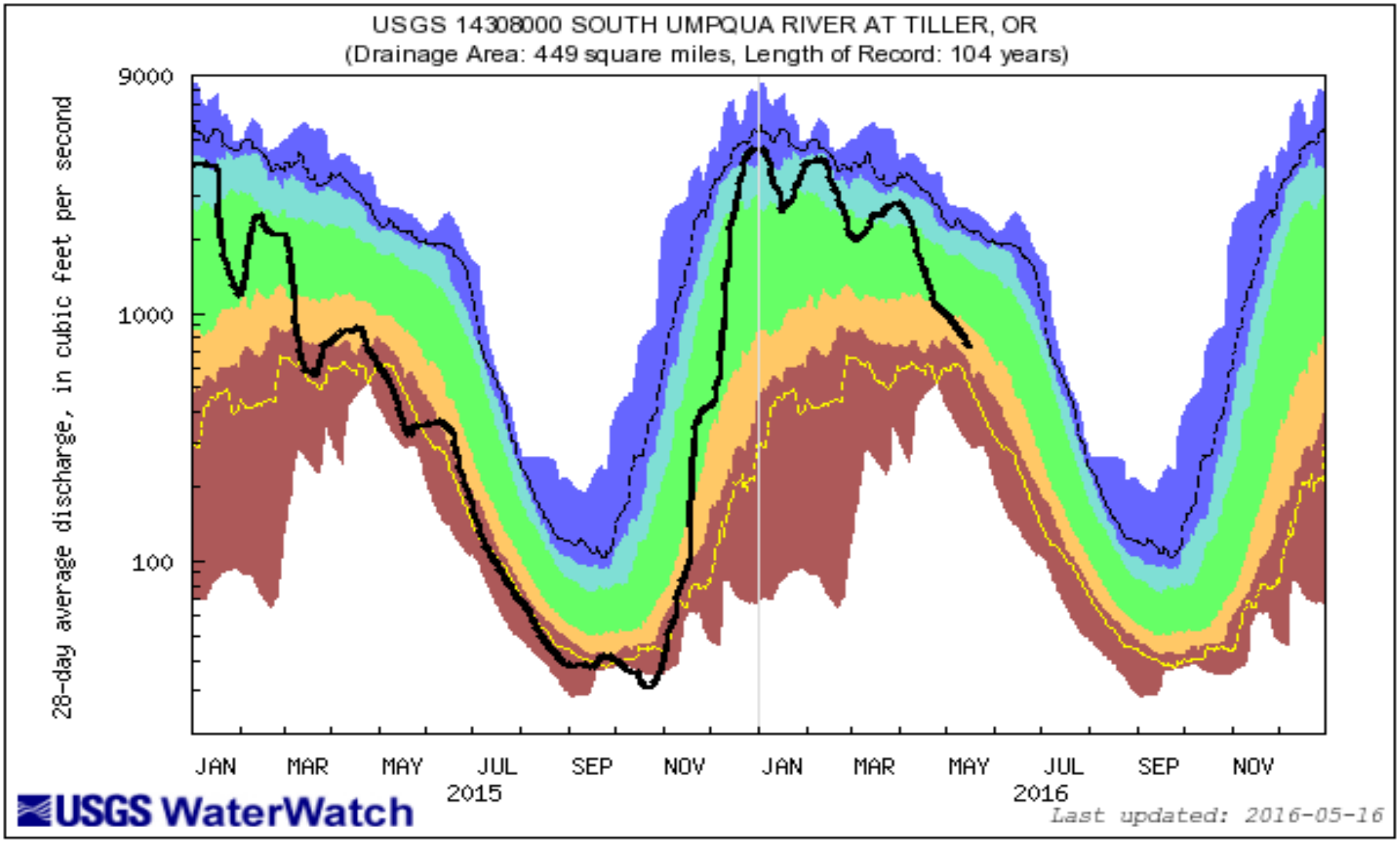
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		



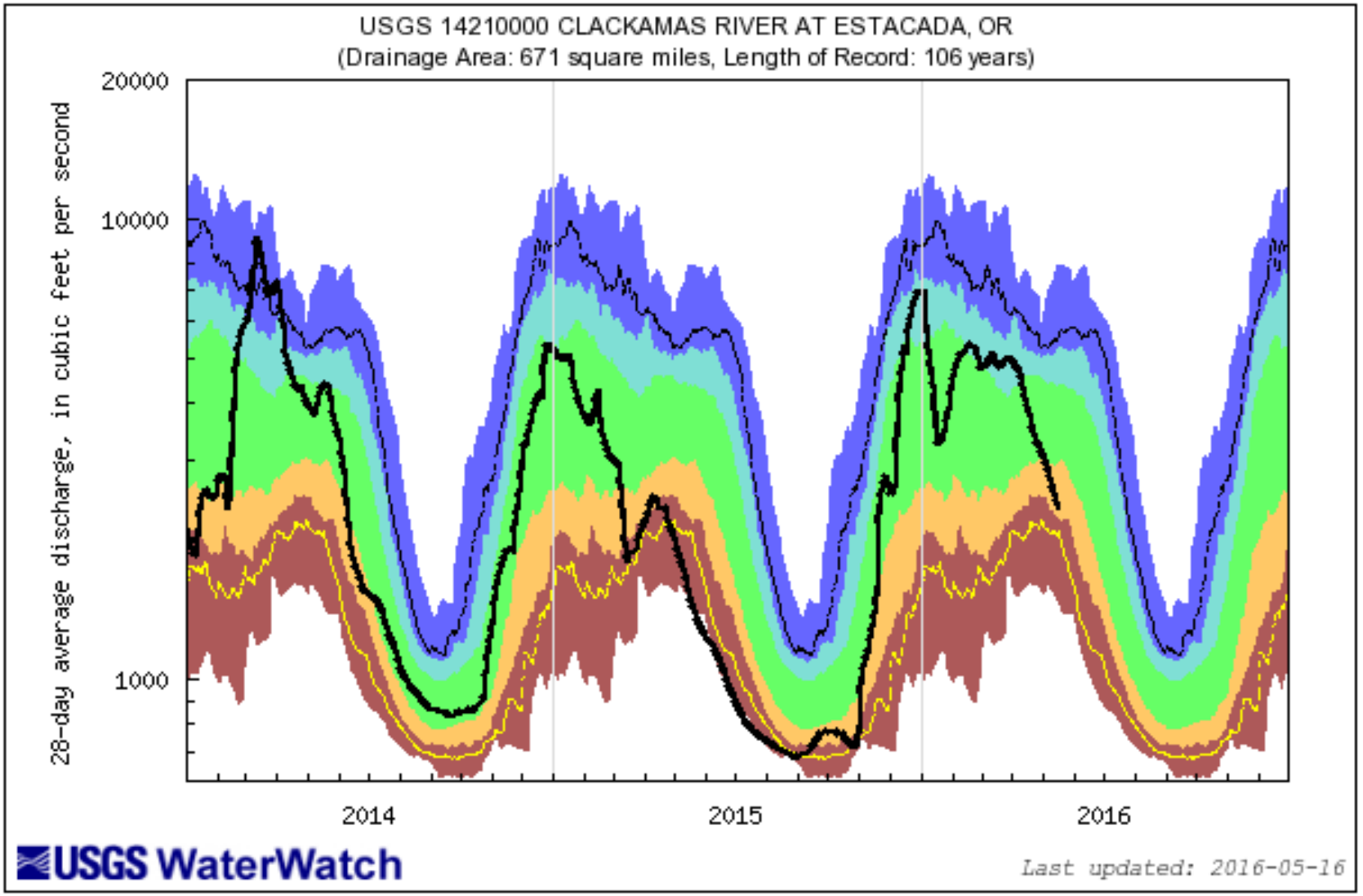
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		



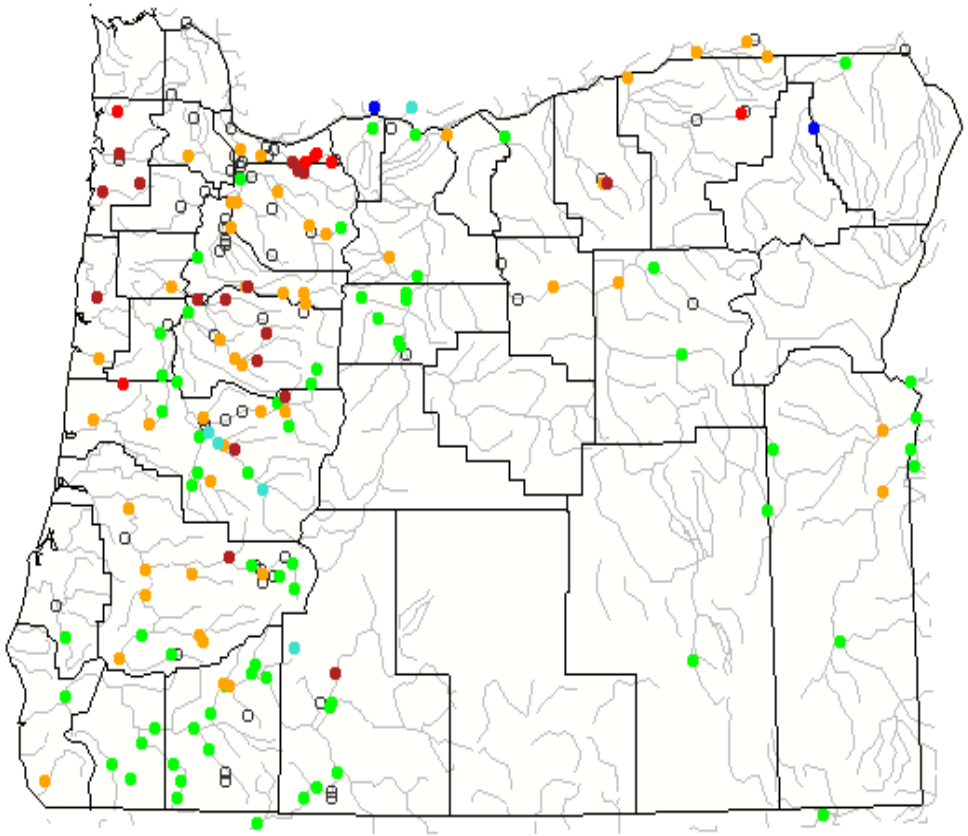
Explanation - Percentile classes							
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile -highest	Flow
Much below Normal		Below normal	Normal	Above normal	Much above normal		



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		



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

Choose a data retrieval option and select a location on the map

List of all stations Single station Nearest stations

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 28-day average streamflow compared to historical streamflow for the day of the year (Oregon)

http://waterwatch.usgs.gov/index.php?m=pa28d&r=or&w=map

Thank You

Provisional Data Statement
Data are provisional and subject to revision until they have been thoroughly reviewed and received final approval.

Real-time data relayed by satellite or other telemetry are automatically screened to not display improbable values until they can be verified.

Provisional data may be inaccurate due to instrument malfunctions or physical changes at the measurement site. Subsequent review based on field inspections and measurements may result in significant revisions to the data.

Data users are cautioned to consider carefully the provisional nature of the information before using it for decisions that concern personal or public safety or the conduct of business that involves substantial monetary or operational consequences.

Information concerning the accuracy and appropriate uses of these data or concerning other hydrologic data may be obtained from the USGS

USGS