Washington Water Supply Availability Committee
Hosted by Jeff Marti

https://watech.webex.com/watech/j.php?MTID=m34e821560bfed425a6904f666e76ef8d
Friday, Aug 13, 2021 10:00 am | 1 hour 30 minutes | (UTC-07:00) Pacific Time (US & Canada)
Meeting number: 177 152 2916
Password: baseFlows1
Agenda: The Washington State Water Supply Availability Committee (WSAC) meets periodically to monitor water supply conditions and forecasts for Washington State.

Join by video system
Dial 1771522916@webex.com
You can also dial 173.243.2.68 and enter your meeting number.

Join by phone
+1-415-655-0001 US Toll
+1-206-207-1700 United States Toll (Seattle)
Access code: 177 152 2916

Washington Water Supply Availability Committee
August 13, 2021
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DEPARTMENT OF ECOLOGY
State of Washington

Time	Subject	Responsible	Representing
10:00– 10:10	Welcome Refresher course on State Drought Declaration Process vs Federal Disaster Determination	Jeff Marti	Ecology
10:10-10:20	Mountain report	Scott Pattee	NRCS
10:20-10:35	Regional Climate Perspective 1. Recent precipitation and temperature 2. Seasonal forecasts/ENSO	Karin Bumbaco Nick Bond	Office of Washington State Climatologist
10:35-10:45	Streamflow Conditions	Dan Restivo	USGS
10:45-11:00	Mid season retrospective on streamflow forecasts	Henry Pai, NWS NWRFC	NWS-NWRFC
11:00-11:10	Yakima Basin	Chris Lynch	BOR
11:10-11:30	Reports from Other Water Managers Impact reports	All	
	Next Meeting: Propose Friday, October 15		

Washington Drought Declaration Areas

DEPARTMENT OF ECOLOGY State of Washington

Joint Legislative Committee on Water Supply During Drought

Monday August 16th at 1:00 pm

- Introductions.
- Election of Chair and Vice-Chair.
- Drought declaration and current and projected conditions.
- Update on drought response and available funding.
- Federal funding for drought relief.
- Update on municipal drought response needs.
- Committee discussion and possible action items.
- Meeting is scheduled to end at 5:00 p.m.

https://app.leg.wa.gov/committeeschedules?eventID=2021081047#//15660/08-16-2021/08-16-2021/Schedule///Bill/

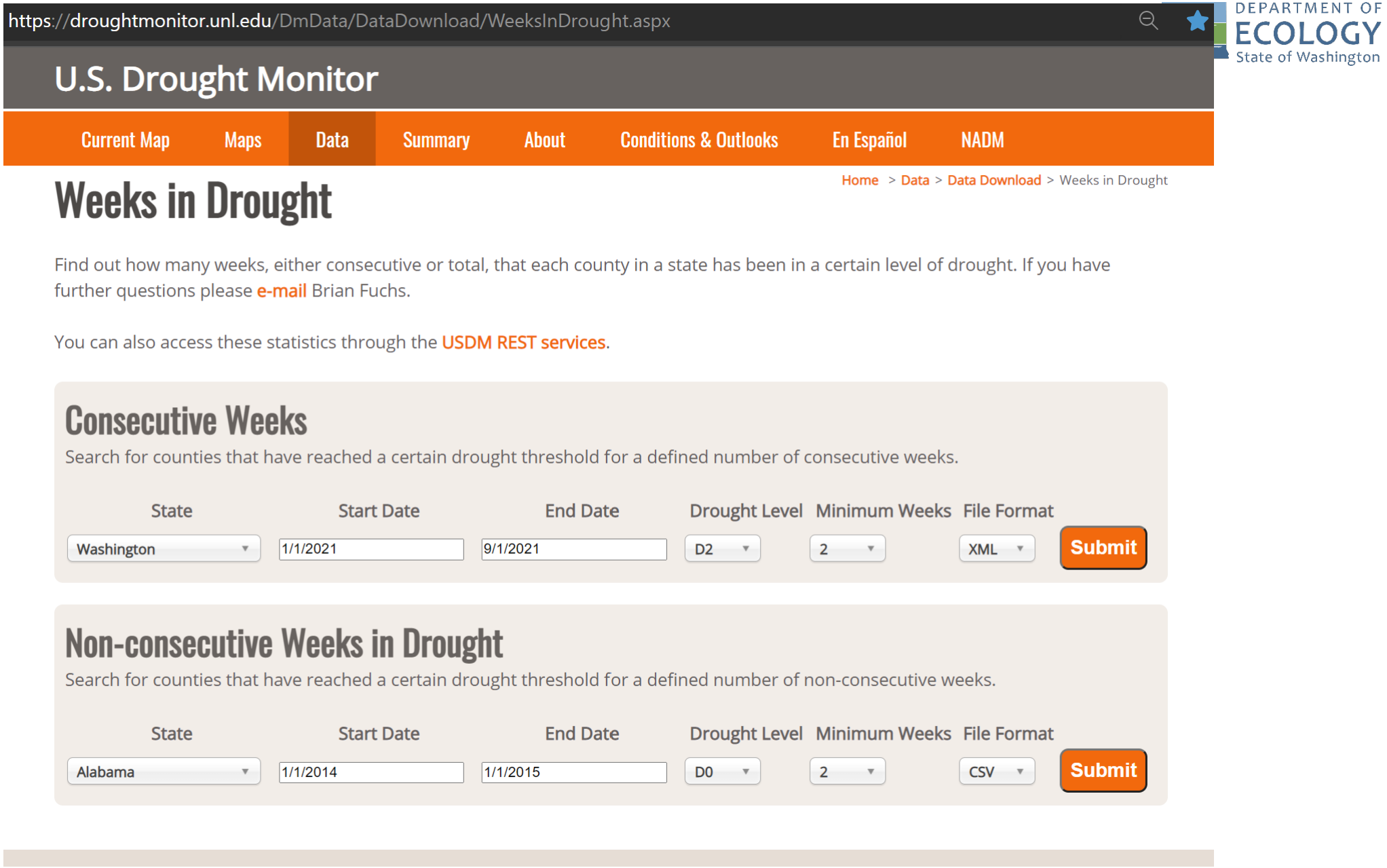
State vs Federal Drought Determinations

State

- Includes consideration of forecasts
- The region is receiving, or is projected to receive, less than 75% of its normal water supply
- Water users in the region will likely incur undue hardships as a result of the shortage
- Response actions center around emergency water withdrawals

Federal

- Does not include forecasted conditions
- Disaster Determinations are automatically triggered by the federal Drought Monitor or by request of Governor
- Drought Monitor considers precipitation and other conditions, impacts and expert input
- Makes available various forms of financial assistance and other measures
- Federal disaster determinations and federal crop insurance eligibility are **not** contingent on State declaration



https://droughtmonitor.unl.edu/DmData/DataDownload/WeeksInDrought.aspx

Diverging fates: irrigated vs dryland farming

Apples

PRESS RELEASE

NATIONAL AGRICULTURAL STATISTICS SERVICE

United States Department of Agriculture • Washington, DC 20250
Northwest Regional Field Office • Olympia, WA 98507
Ag Statistics Hotline: 1-800-727-9540 • www.nass.usda.gov

Posted online August 12, 2021

Regional Contacts

Phone: 1-800-435-5883 **Email:** nassrfonwr@usda.gov

- Washington – Christopher Mertz, NW Regional Director
- Idaho – Randy Welk, State Statistician
- Oregon – Dave Losh, State Statistician
- Alaska – Sue Benz, State Statistician

Apples

Based on August 1, 2021 conditions, Oregon apple production is forecast at 190 million pounds, up 9 percent from 2020. Washington ranks number one in apple production, accounting for 70 percent of the U.S. production this year. Washington apple production is forecast at 7.40 billion pounds, up 7 percent from last year's production.

Winter Wheat

PRESS RELEASE

NATIONAL AGRICULTURAL STATISTICS SERVICE

United States Department of Agriculture • Washington, DC 20250
Northwest Regional Field Office • Olympia, WA 98507
Ag Statistics Hotline: 1-800-727-9540 • www.nass.usda.gov

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- Alaska – Sue Benz, State Statistician

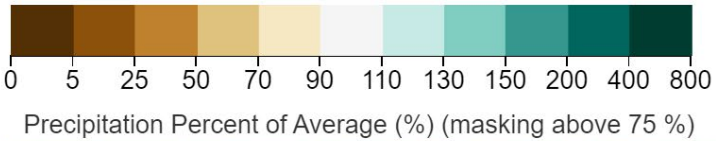
Winter Wheat

Based on August 1, 2021 conditions, production of winter wheat in Idaho is forecast at 52.9 million bushels, down 7 percent from the July 1 forecast and down 21 percent from last year. Harvested area, at 670,000 acres, is up 10,000 acres from 2020. Yield is expected to be 79.0 bushels per acre, down 22.0 bushels from 2020. Oregon winter wheat production is forecast at 32.0 million bushels, down 4 percent from last month and down 31 percent from last year. Harvested area, at 695,000 acres, is down 30,000 acres from 2020. Yield is expected to be 46.0 bushels per acre, down 18.0 bushels from the previous year. Washington winter wheat production is forecast at 74.4 million bushels, down 20 percent from last month and down 44 percent from last year. Harvested area, at 1.69 million acres, is down 60,000 acres from 2020. Yield is expected to be 44.0 bushels per acre, down 32.0 bushels from the previous year.

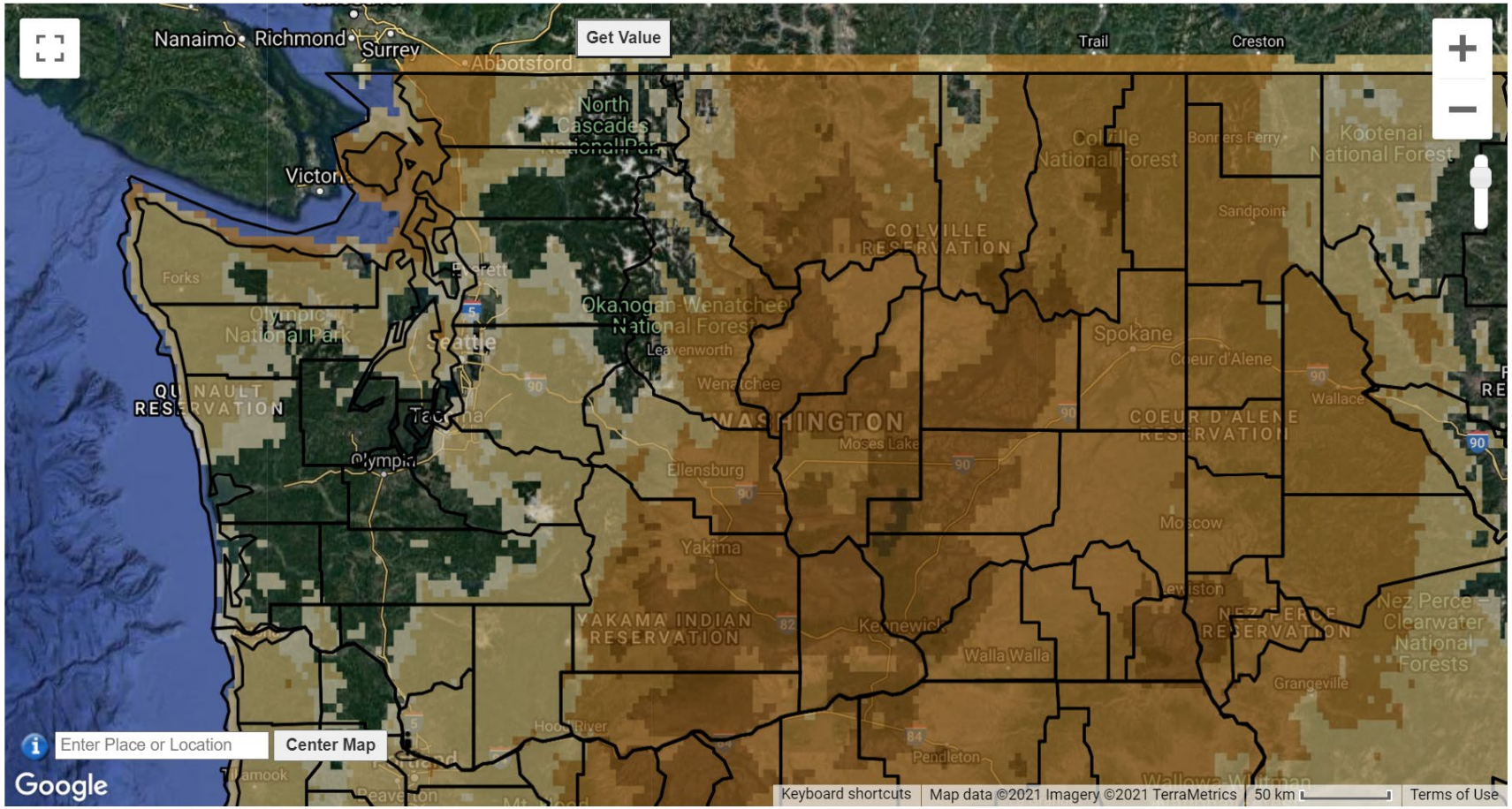
This is the end.

Precipitation Percent Of Average (gridMET)

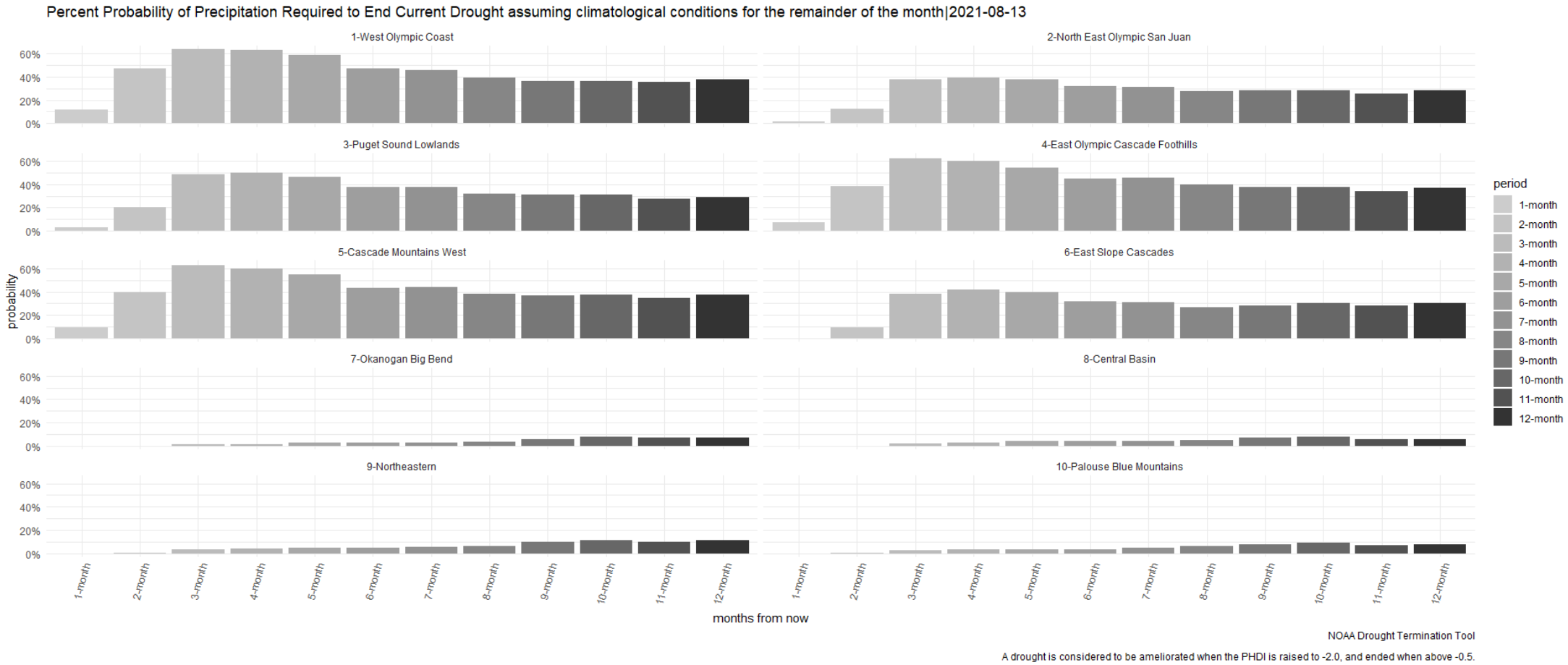
2021-05-12 to 2021-08-09, Total, vs. 1981 - 2010



Precipitation Percent of Average (%) (masking above 75 %)



Generated by ClimateEngine.org


Percent Probability of Precipitation Required to End Current Drought assuming climatological conditions for the remainder of the month|2021-08-13
1-West Olympic Coast
2-North East Olympic San Juan
3-Puget Sound Lowlands
4-East Olympic Cascade Foothills
5-Cascade Mountains West
6-East Slope Cascades
7-Okanogan Big Bend
8-Central Basin
9-Northeastern
10-Palouse Blue Mountains
probability
60%
40%
20%
0%
1-month
2-month
3-month
4-month
5-month
6-month
7-month
8-month
9-month
10-month
11-month
12-month
months from now
period
NOAA Drought Termination Tool
A drought is considered to be ameliorated when the PHDI is raised to -2.0, and ended when above -0.5.

Emergency withdrawals

RCW 43.83B.410(1)(c)

The waters proposed for withdrawal are to be used for a beneficial use involving **a previously established activity or purpose.**

The previously established activity or purpose was furnished water through rights applicable to the use of a public body of water that cannot be exercised due to the lack of water arising from natural drought conditions.

The proposed withdrawal will not reduce flows or levels below essential minimums necessary to ensure the maintenance of fisheries requirements and to protect federal and state interests including, among others, power generation, navigation**, and existing water rights.**

Powers granted to Ecology

RCW 43.83B.410

Authorize emergency withdrawal of public surface and ground waters, including dead storage…

Approve a temporary change in purpose, place of use, point of diversion, or point of withdrawal.

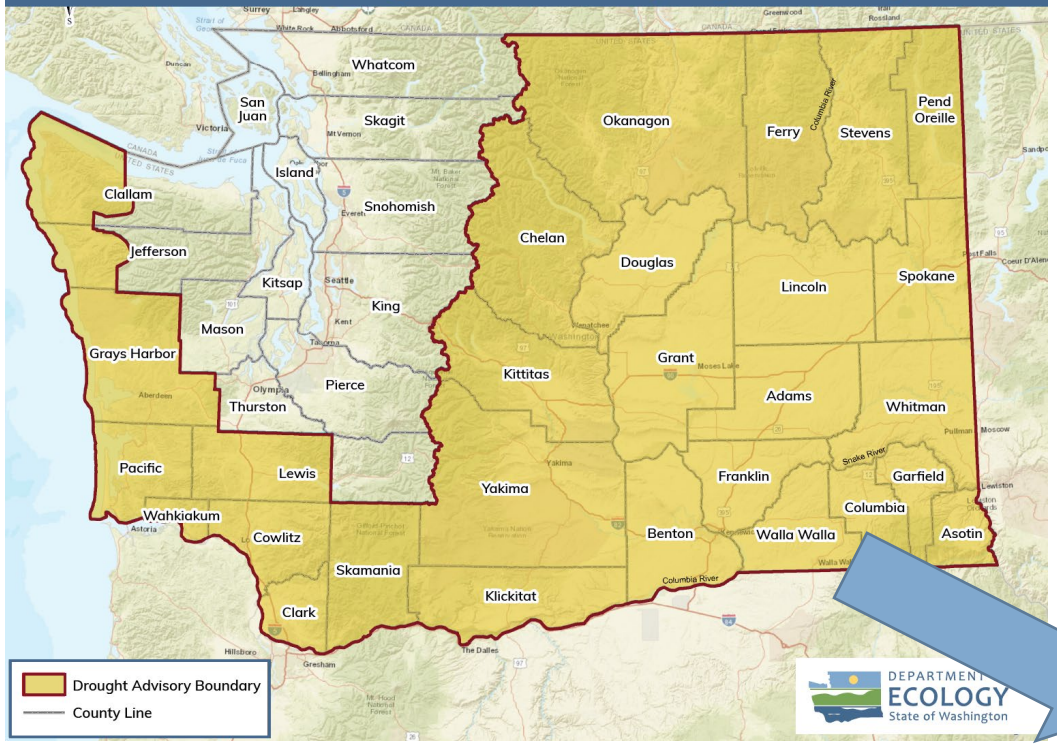
Employ additional persons for specified terms of time, consistent with the term of a drought condition, as are necessary.

Acquire needed emergency drought-related equipment.

Enter into agreements with applicants receiving emergency withdrawal authorizations…to recover the costs…of mitigation for emergency withdrawal authorizations.

Enter into interagency agreements…to partner in emergency drought response.

2021 Drought Advisory by County

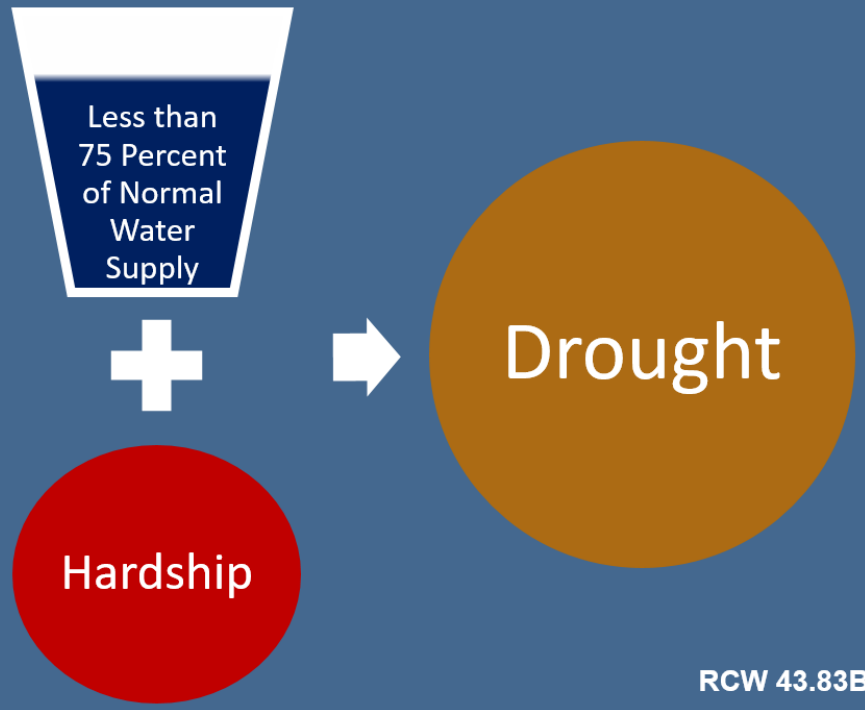


DEPARTMENT OF ECOLOGY State of Washington

Washington Drought Declaration Areas

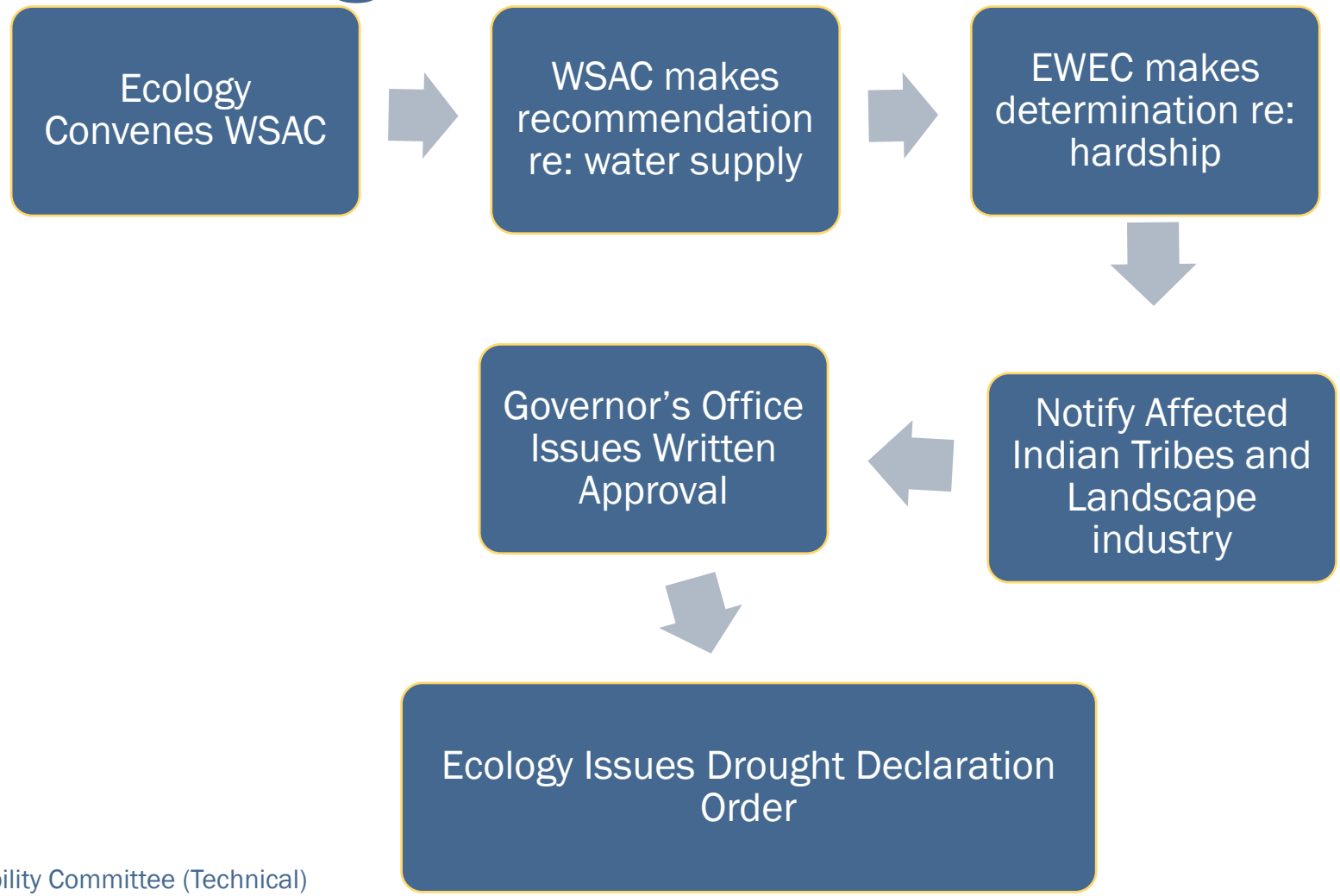
DEPARTMENT OF ECOLOGY
State of Washington

Washington State's Drought Trigger



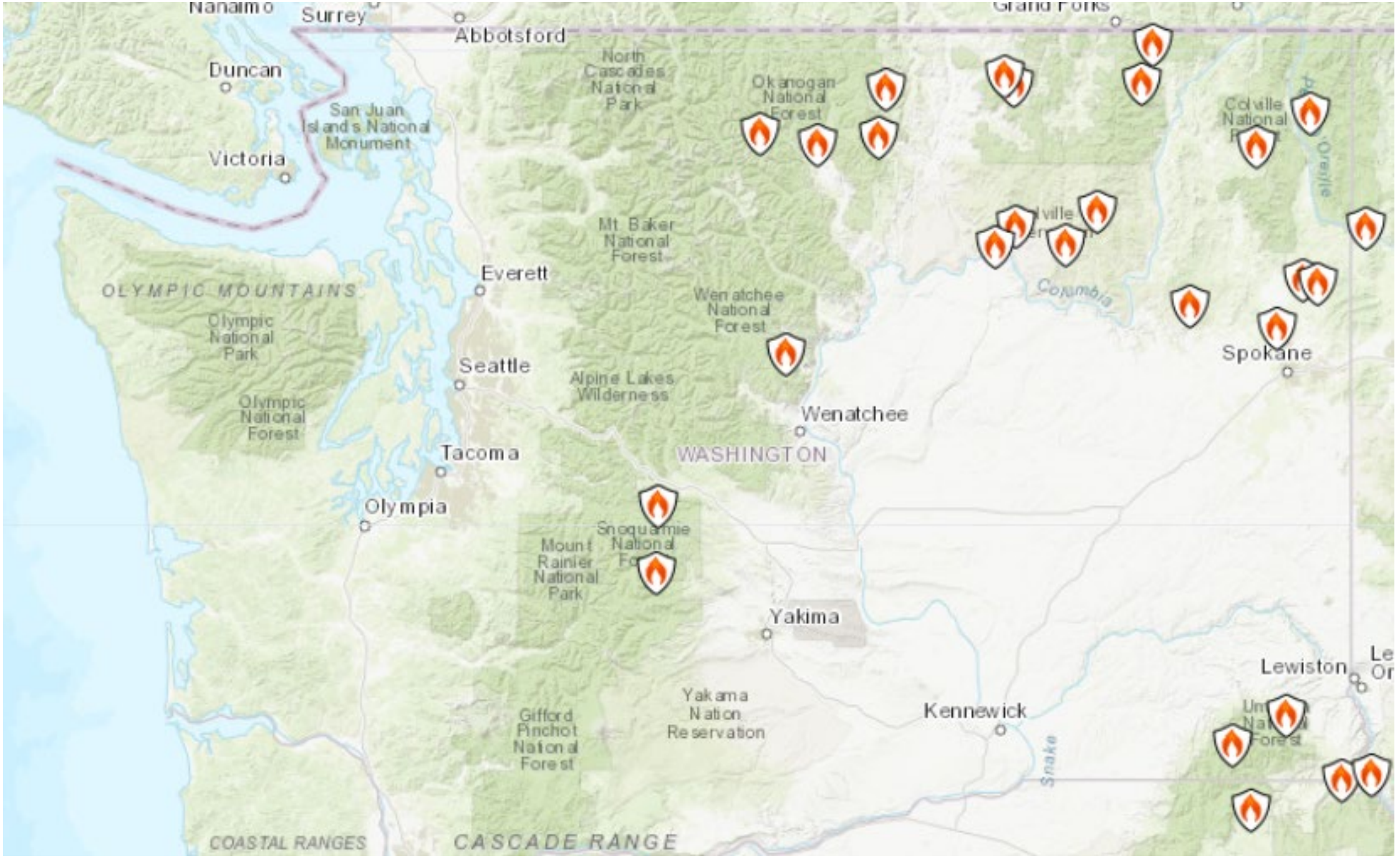
RCW 43.83B.011

Steps to a drought declaration

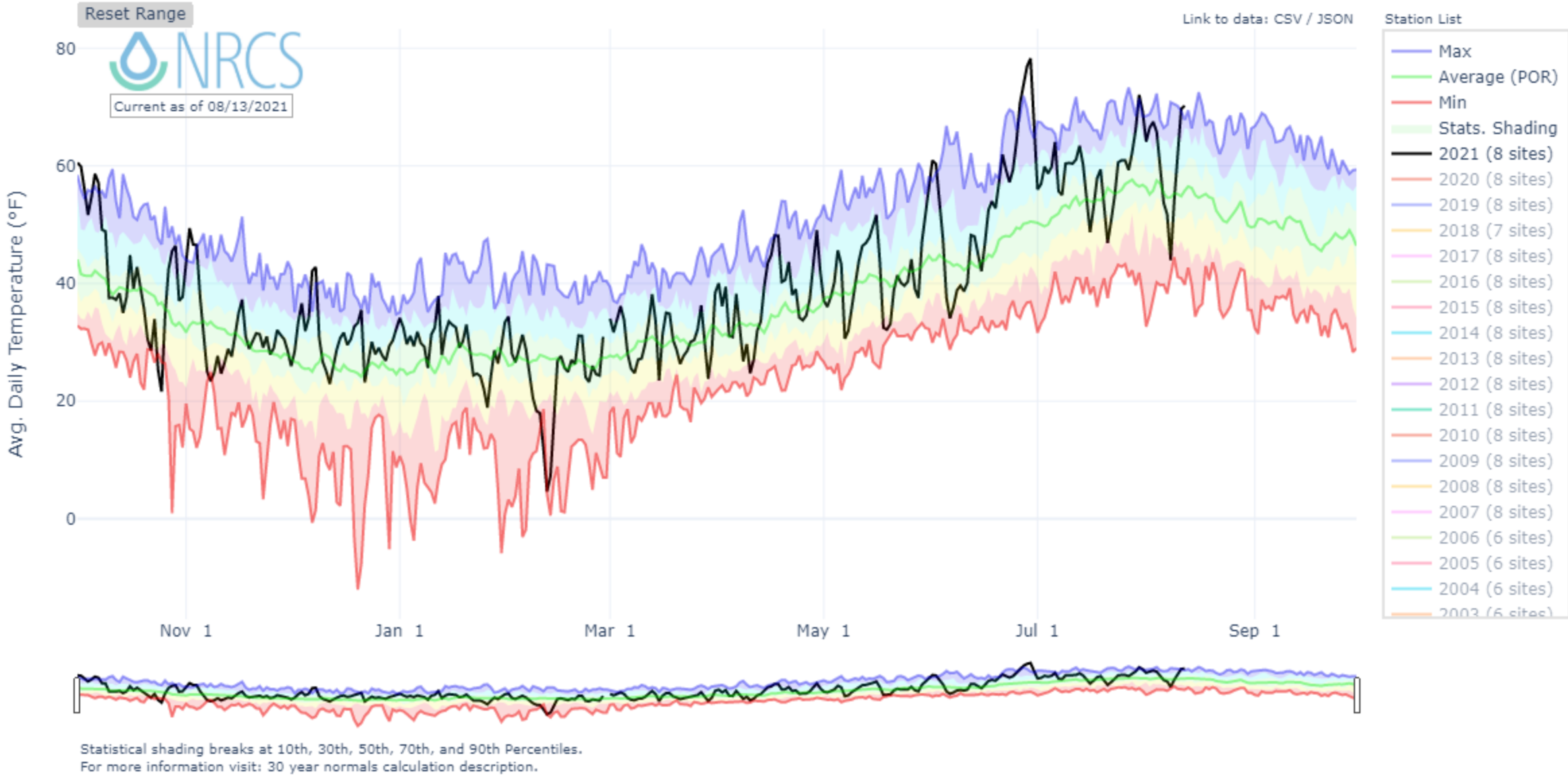


WSAC = Water Supply Availability Committee (Technical)
EWEC = Executive Water Emergency Committee (Policy)

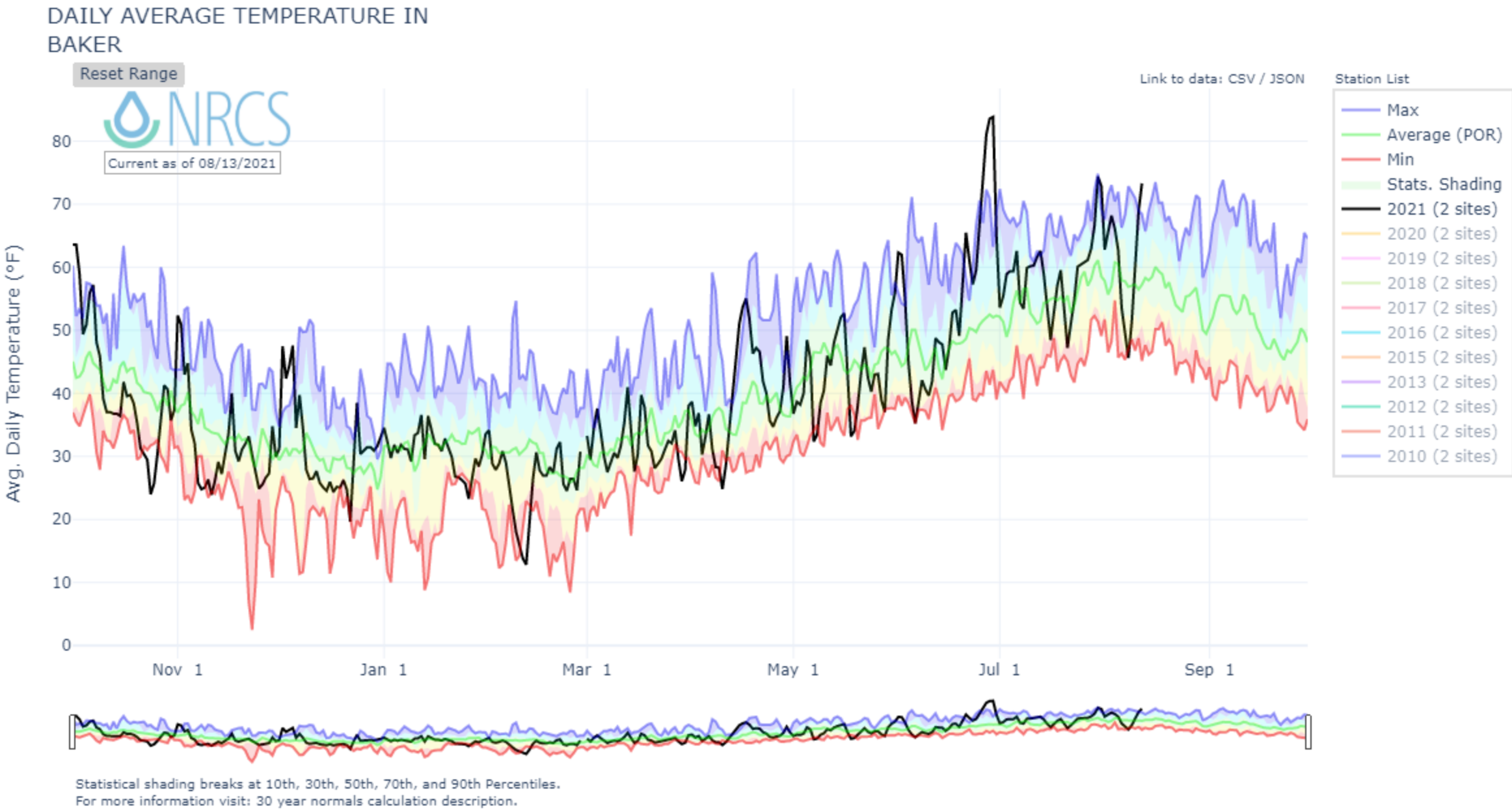
Fire


Nanaimo
Surrey
Abbotsford
Grand Forks
Duncan
North Cascades National Park
Okanogan National Forest
San Juan Islands National Monument
Victoria
Colville National Forest
Mt. Baker National Forest
Everett
OLYMPIC MOUNTAINS
Wenatchee National Forest
Columbia
Olympic National Park
Spokane
Seattle
Alpine Lakes Wilderness
Olympic National Forest
Wenatchee
WASHINGTON
Tacoma
Olympia
Snoqualmie National Forest
Mount Rainier National Park
Yakima
Lewiston
Yakama Nation Reservation
Kennewick
Gifford Pinchot National Forest
Snake
COASTAL RANGES
CASCADE RANGE

DAILY AVERAGE TEMPERATURE IN NACHES



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.


DAILY AVERAGE TEMPERATURE IN BAKER
Reset Range
NRCS
Current as of 08/13/2021
Link to data: CSV / JSON
Station List
Max
Average (POR)
Min
Stats. Shading
2021 (2 sites)
2020 (2 sites)
2019 (2 sites)
2018 (2 sites)
2017 (2 sites)
2016 (2 sites)
2015 (2 sites)
2013 (2 sites)
2012 (2 sites)
2011 (2 sites)
2010 (2 sites)
Avg. Daily Temperature (°F)
0
10
20
30
40
50
60
70
80
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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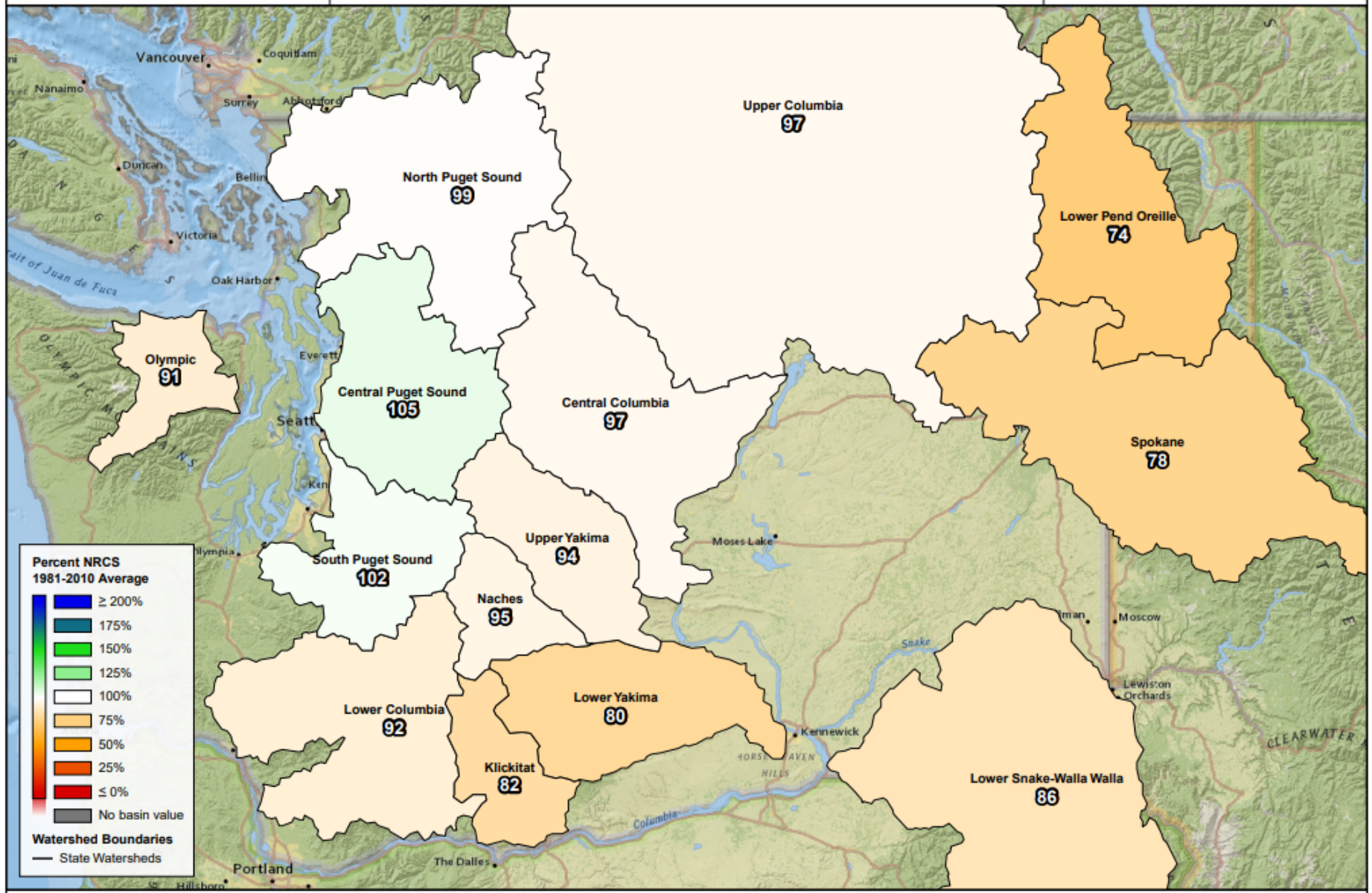
PRECIPITATION

Water Year to Date Precipitation	Percent NRCS 1981-2010 Average	October 1, 2020 - August 10, 2021



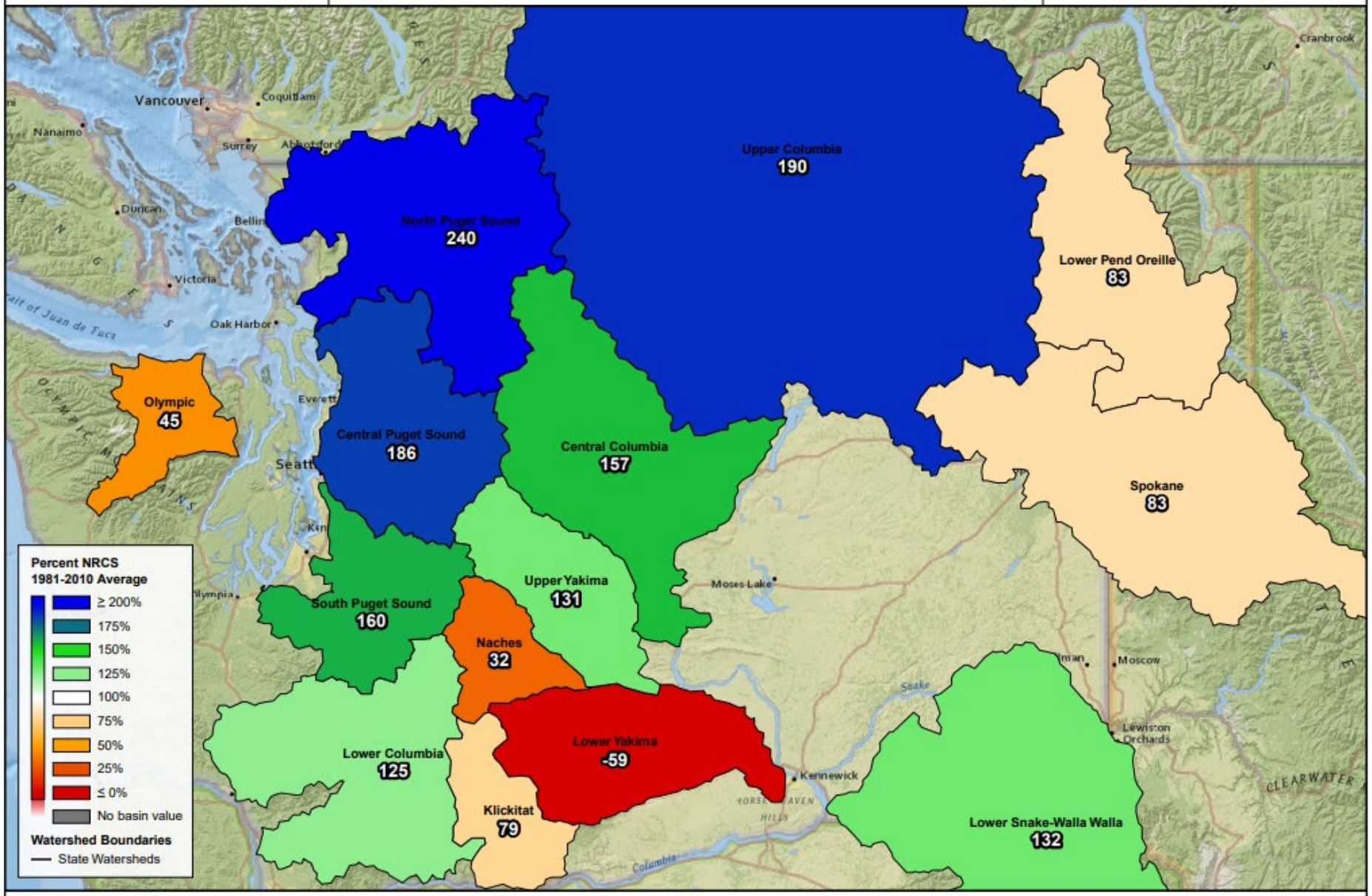
USDA Natural Resources Conservation Service
United States Department of Agriculture

N

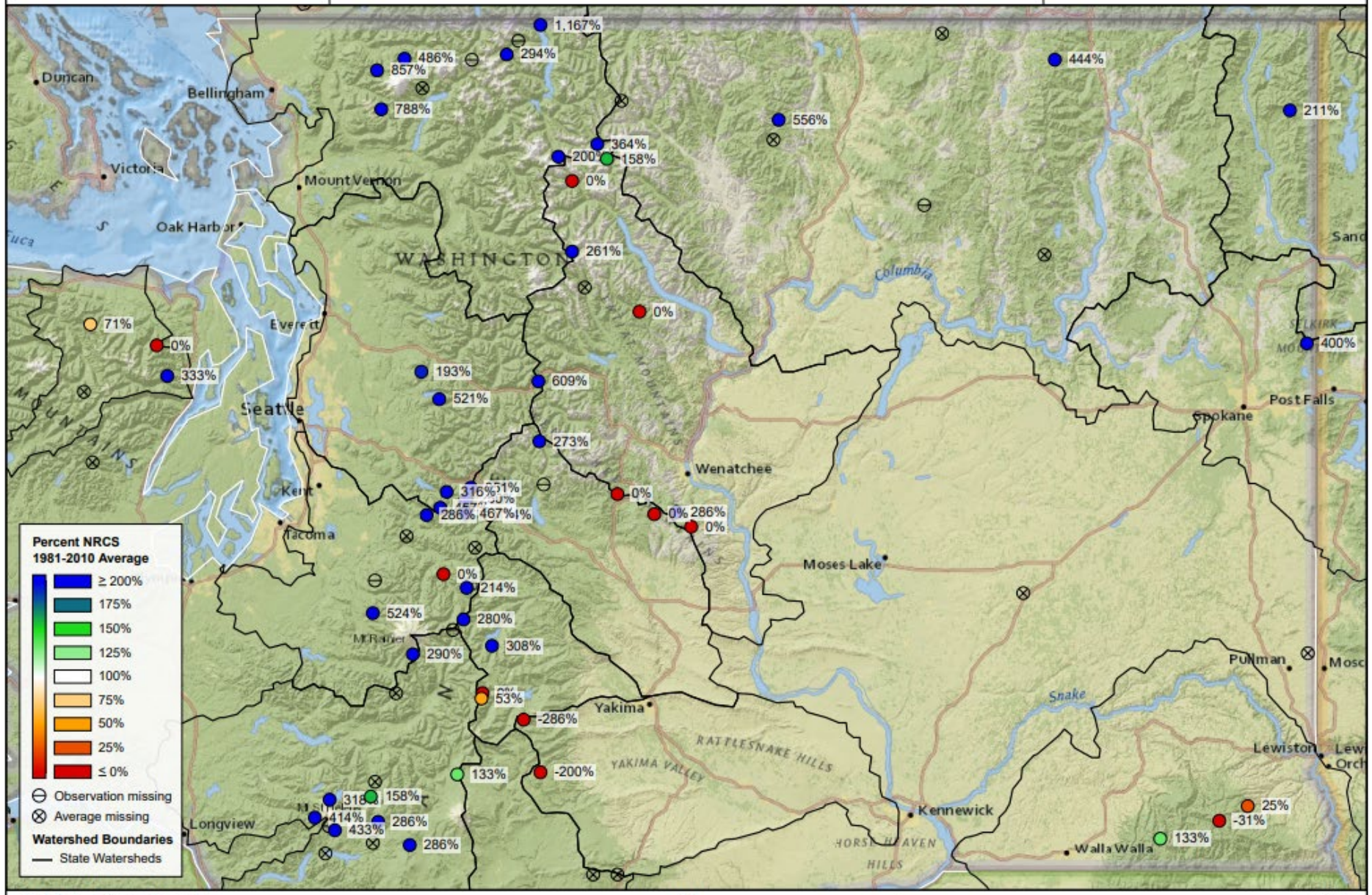
0 10 20 40 60 80 100 Miles

Created 8-11-2021

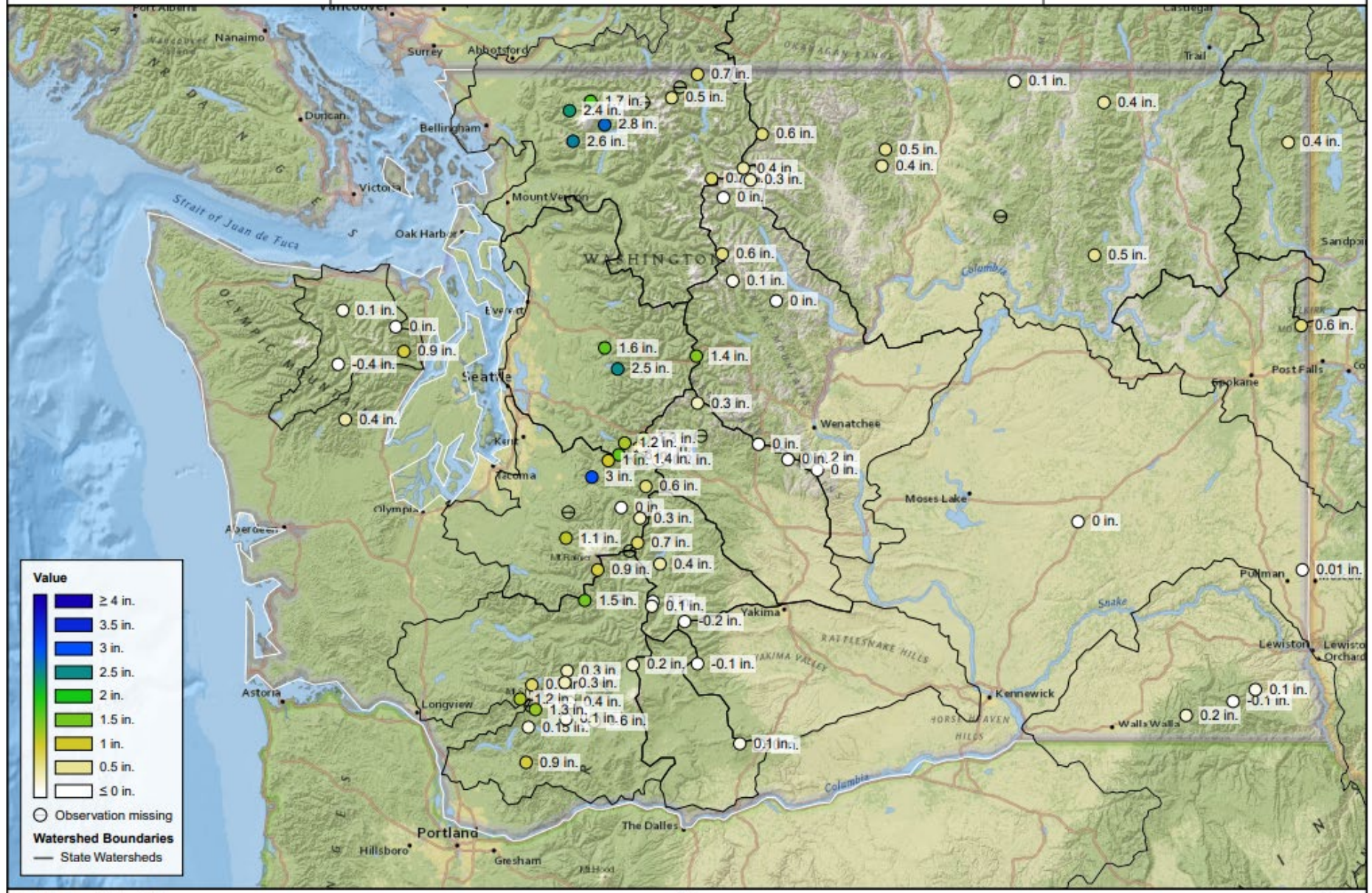
Month to Date Precipitation	Percent NRCS 1981-2010 Average	August 1, 2021 - August 10, 2021



5 day Precipitation	Percent NRCS 1981-2010 Average	August 4, 2021 - August 8, 2021

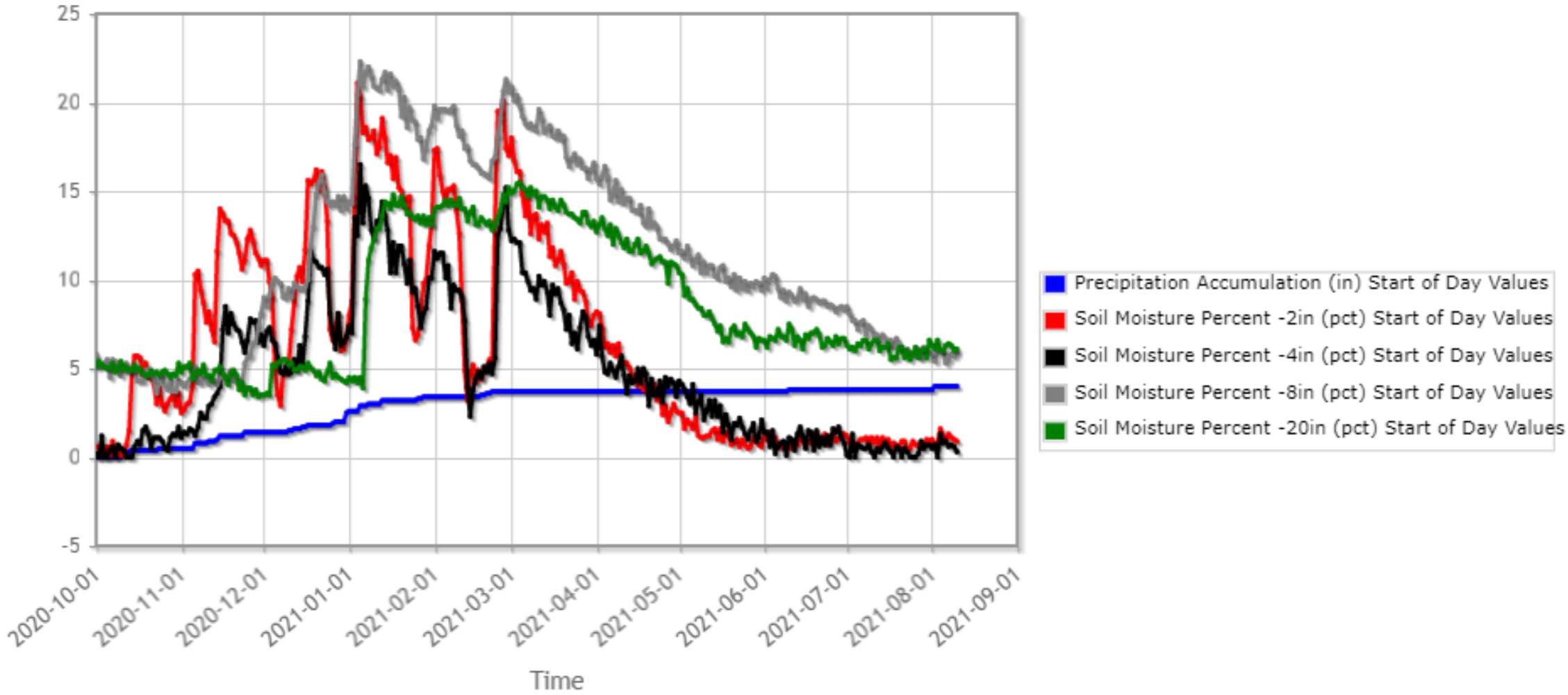


5 day Precipitation	Value	August 4, 2021 - August 8, 2021

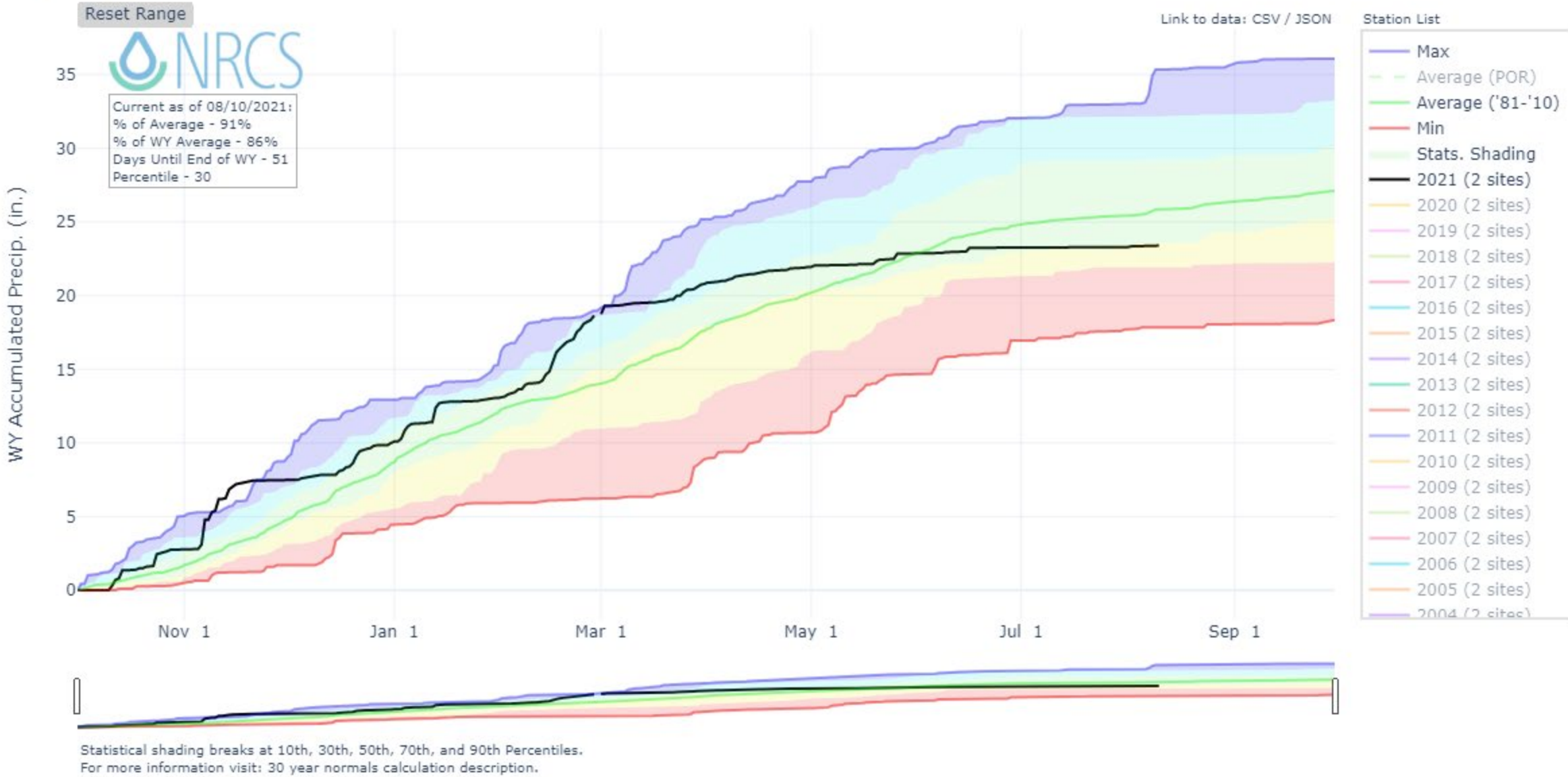


BASIN PRECIPITATION/ SOIL MOISTURE

Lind #1 (2021) Washington SCAN Site - 1640 ftReporting Frequency: Daily; Date Range: 2020-10-01 to 2021-09-30

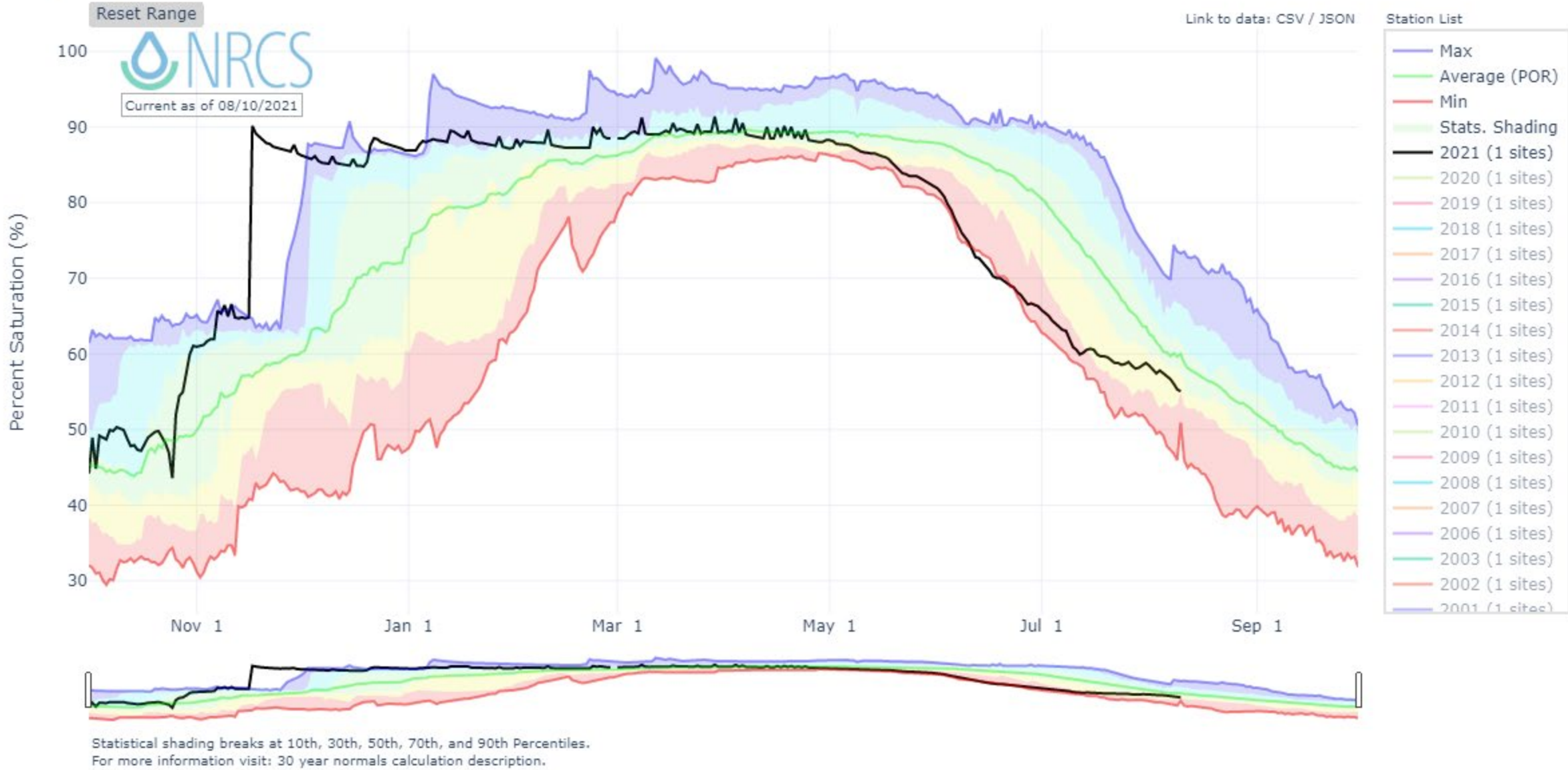


PRECIPITATION IN ASOTIN



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.

DEPTH AVERAGED SOIL SATURATION IN ASOTIN



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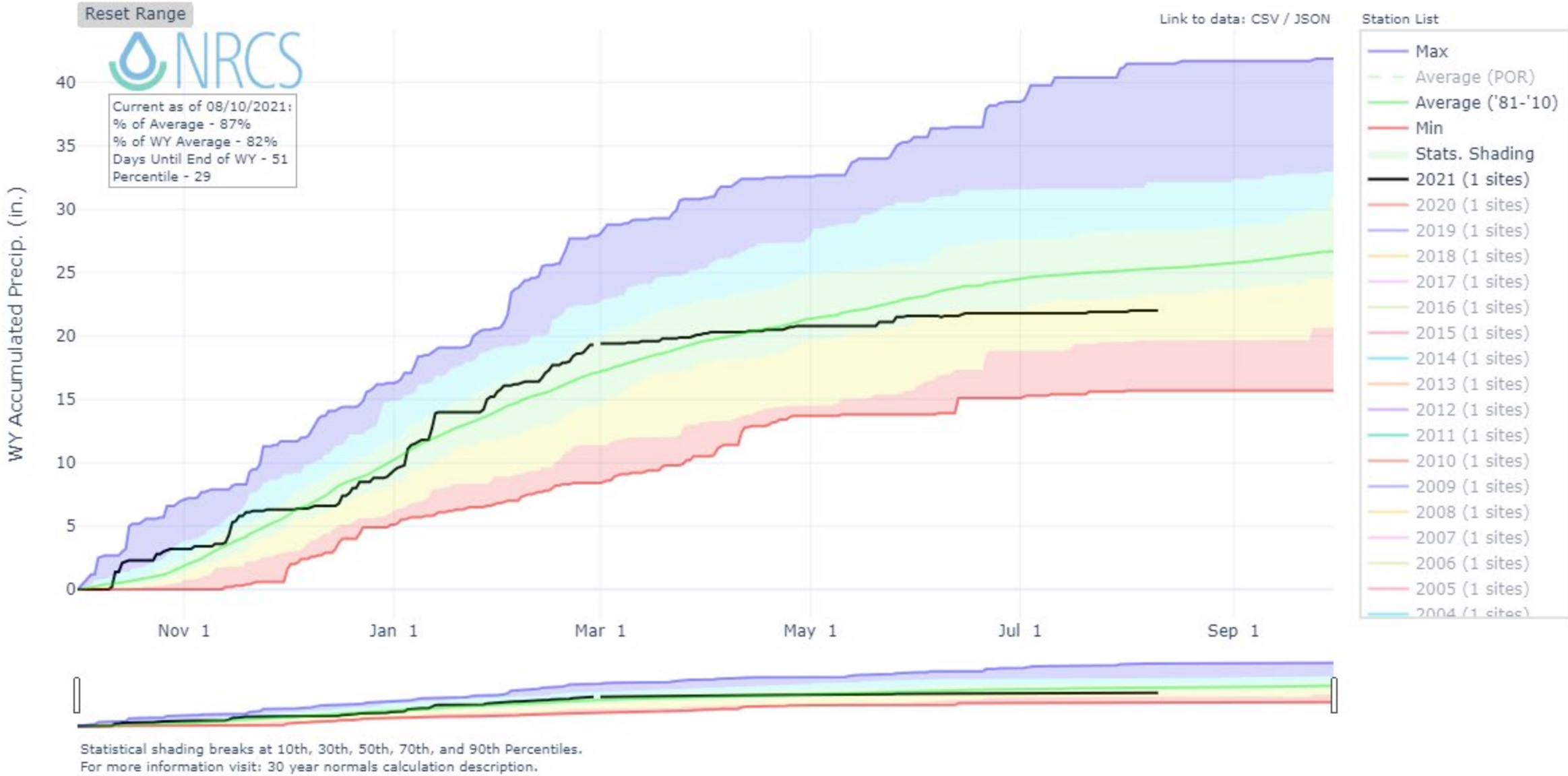
PRECIPITATION IN COLCKUM



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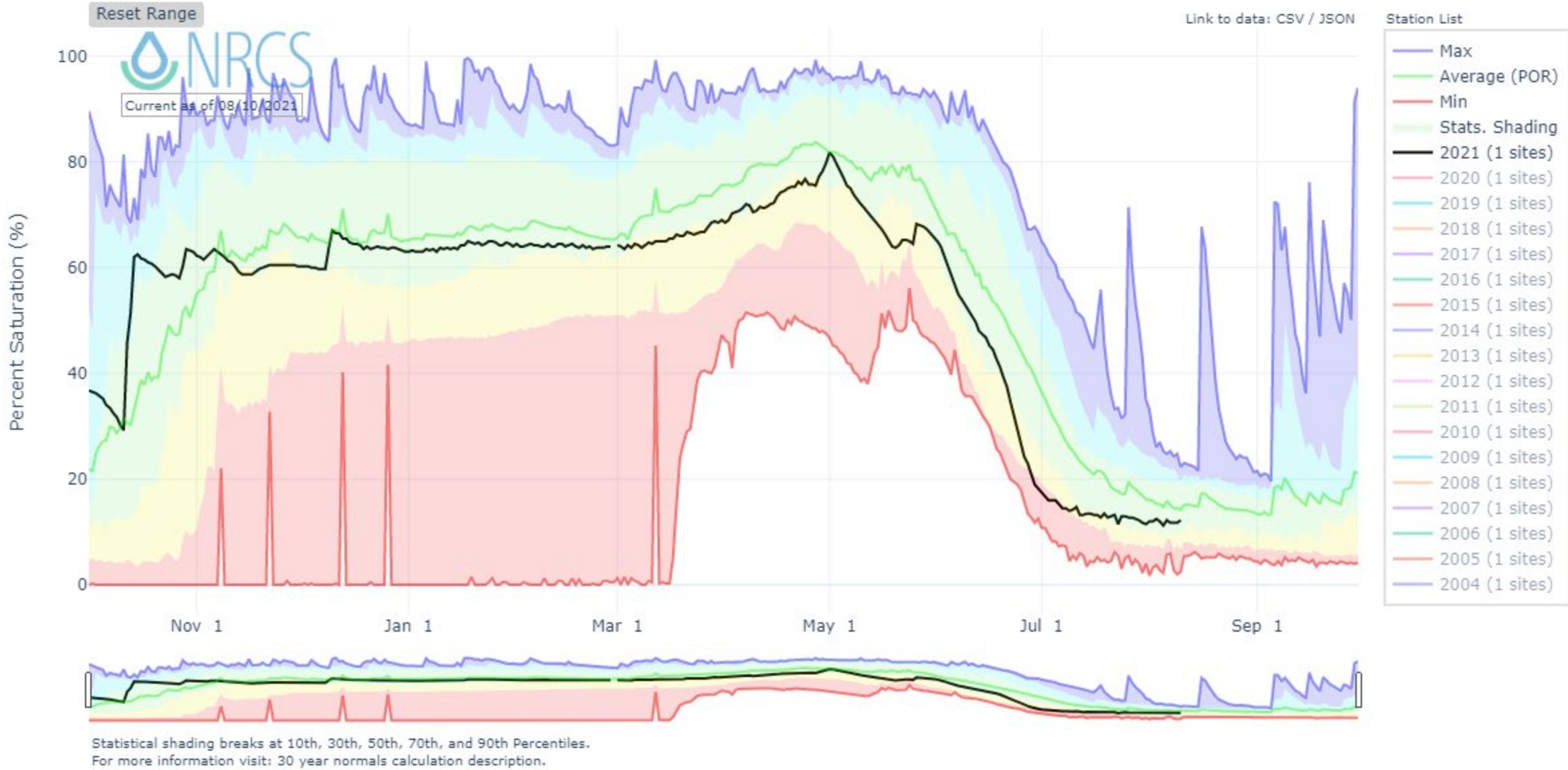
DEPTH AVERAGED SOIL SATURATION IN COLCKUM



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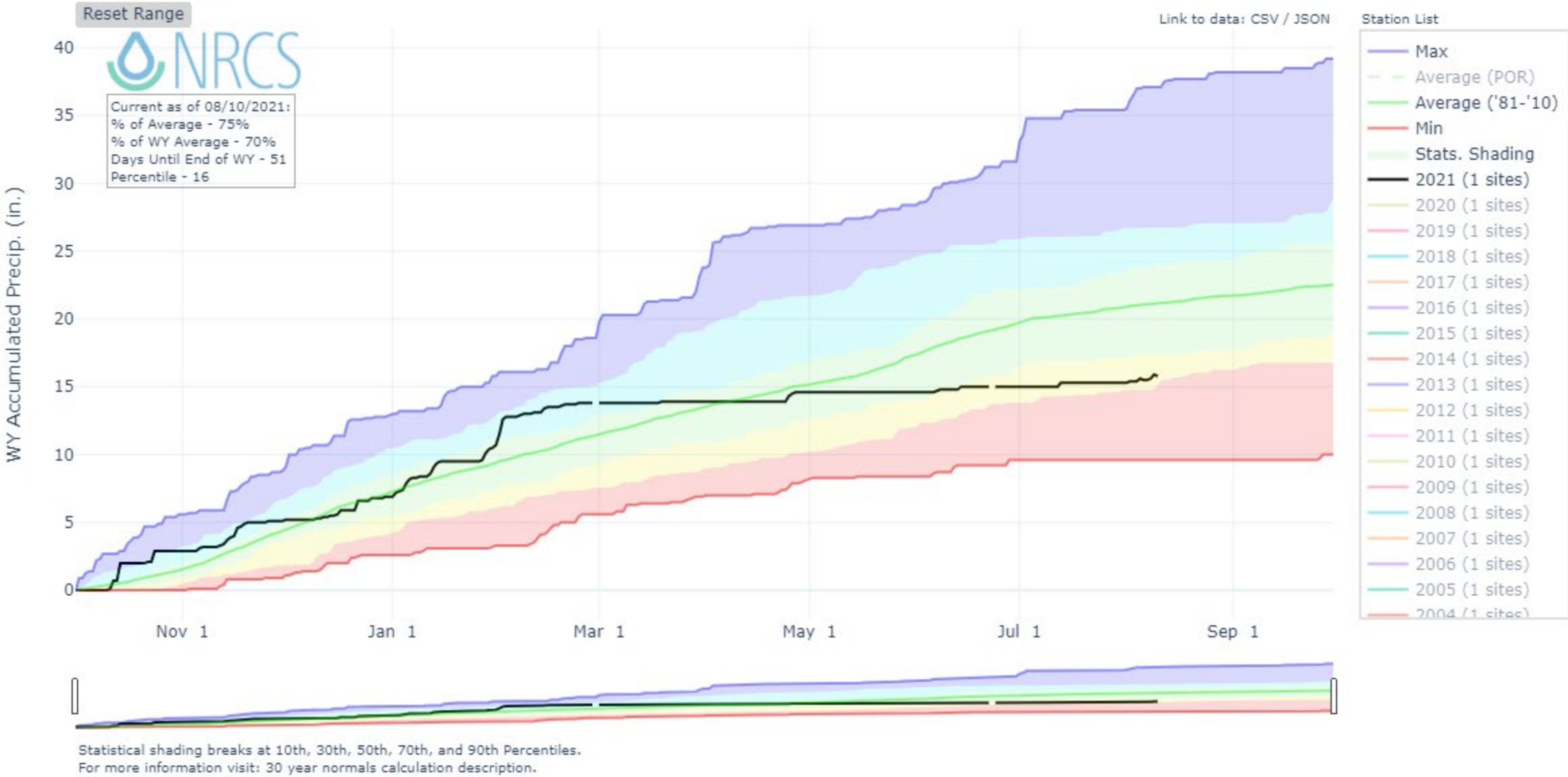
PRECIPITATION IN CONCULLY LAKE



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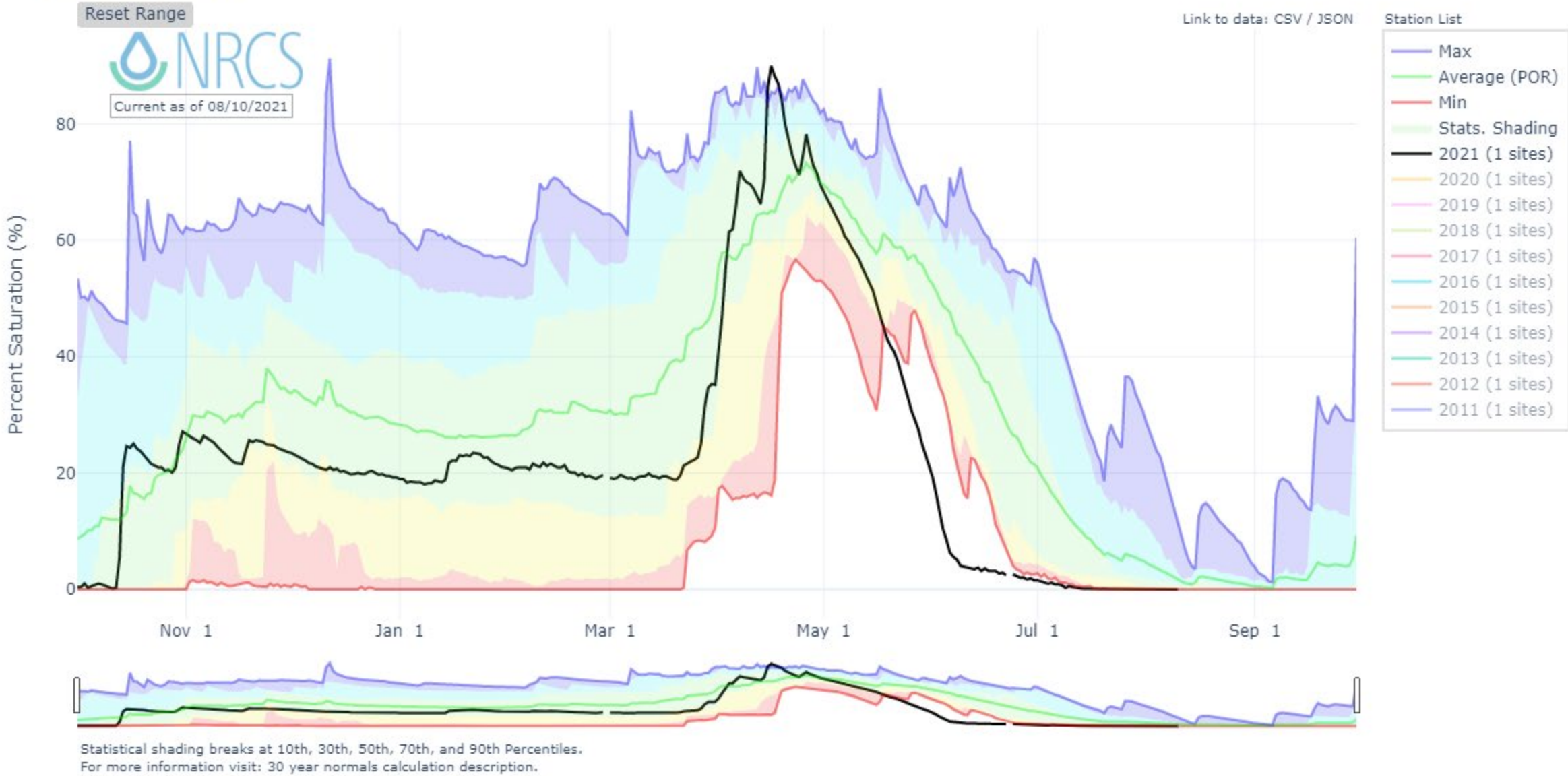
DEPTH AVERAGED SOIL SATURATION IN CONCULLY LAKE



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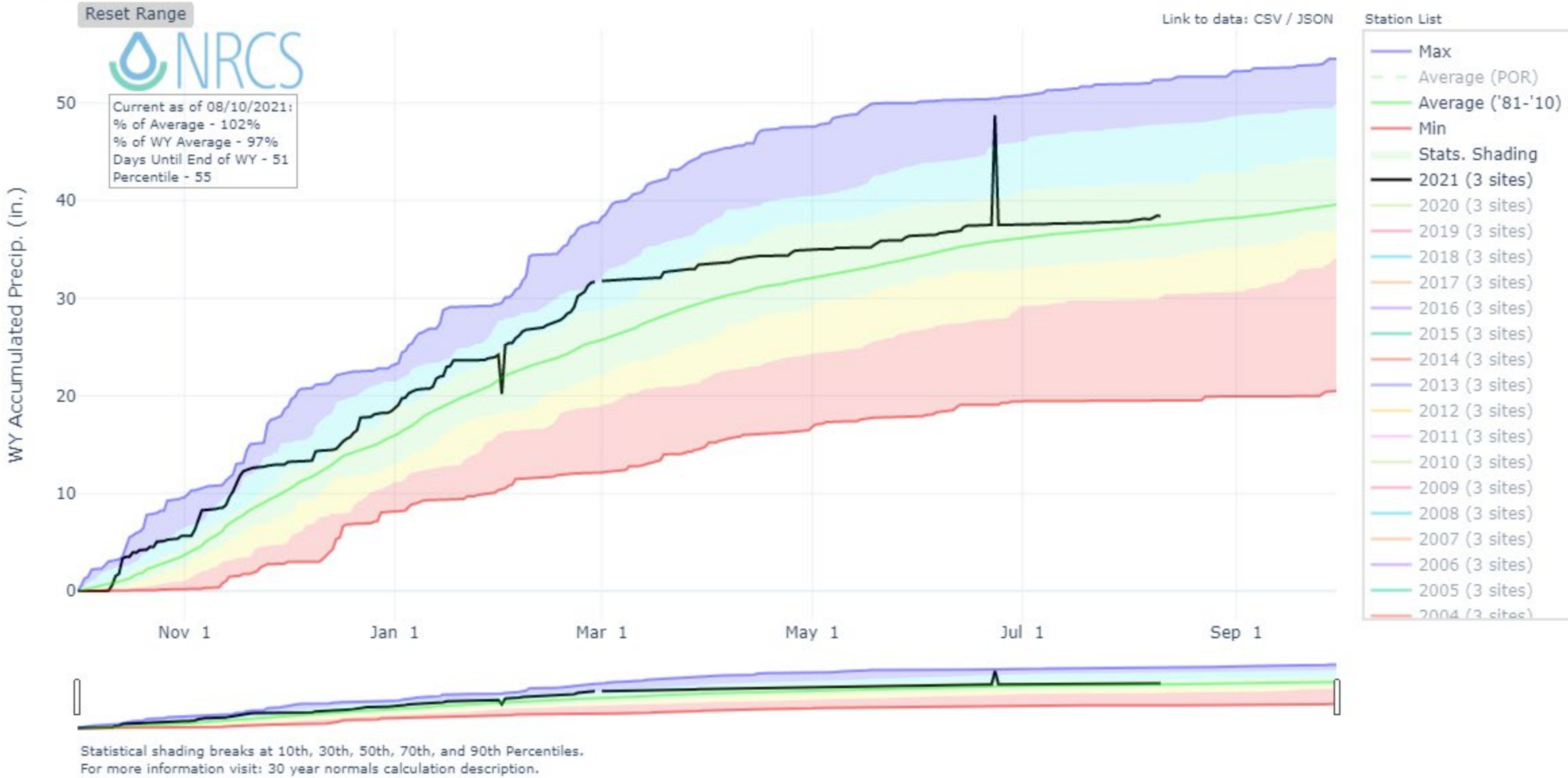
PRECIPITATION IN METHOW



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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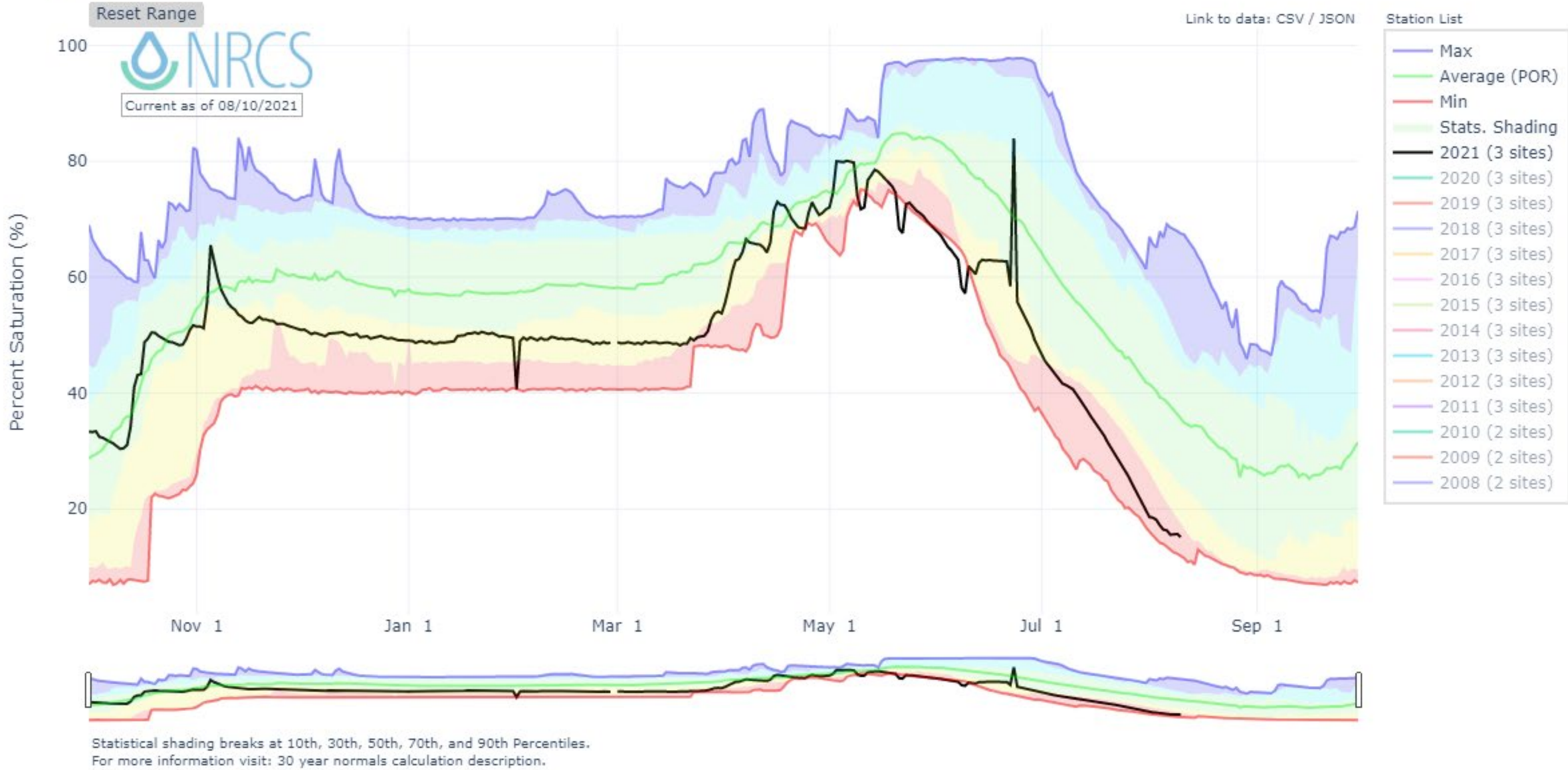
DEPTH AVERAGED SOIL SATURATION IN METHOW



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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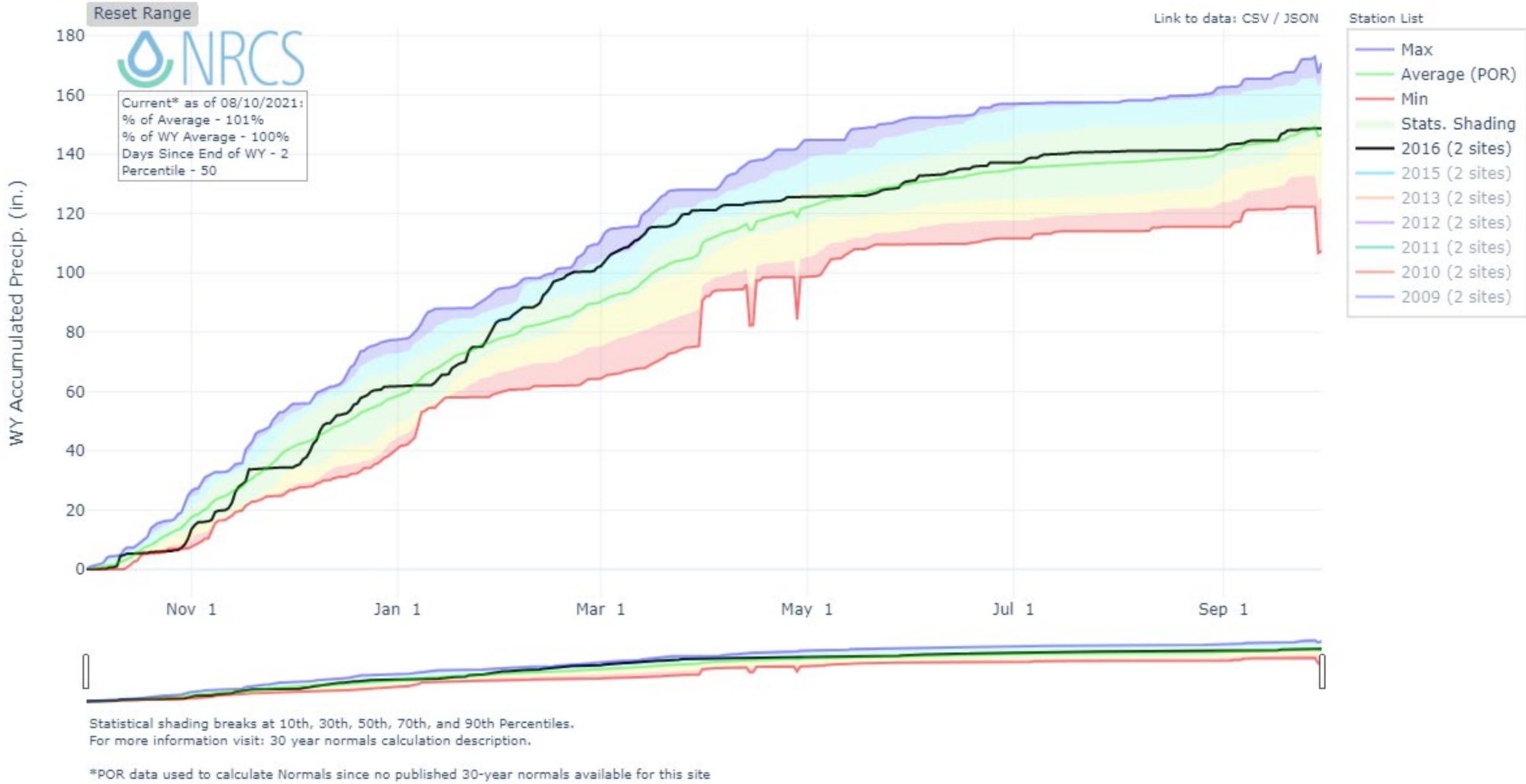
PRECIPITATION IN BAKER



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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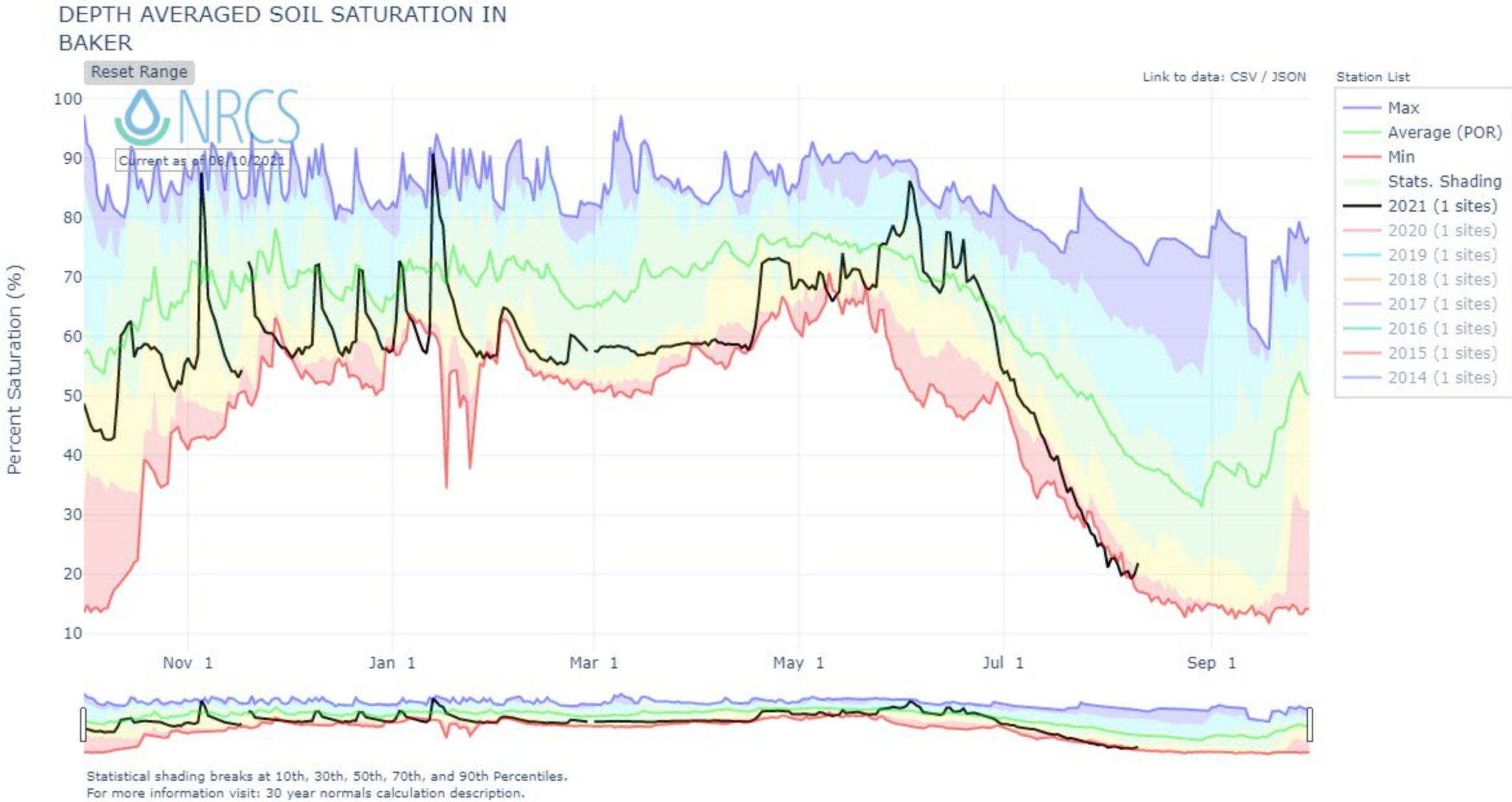
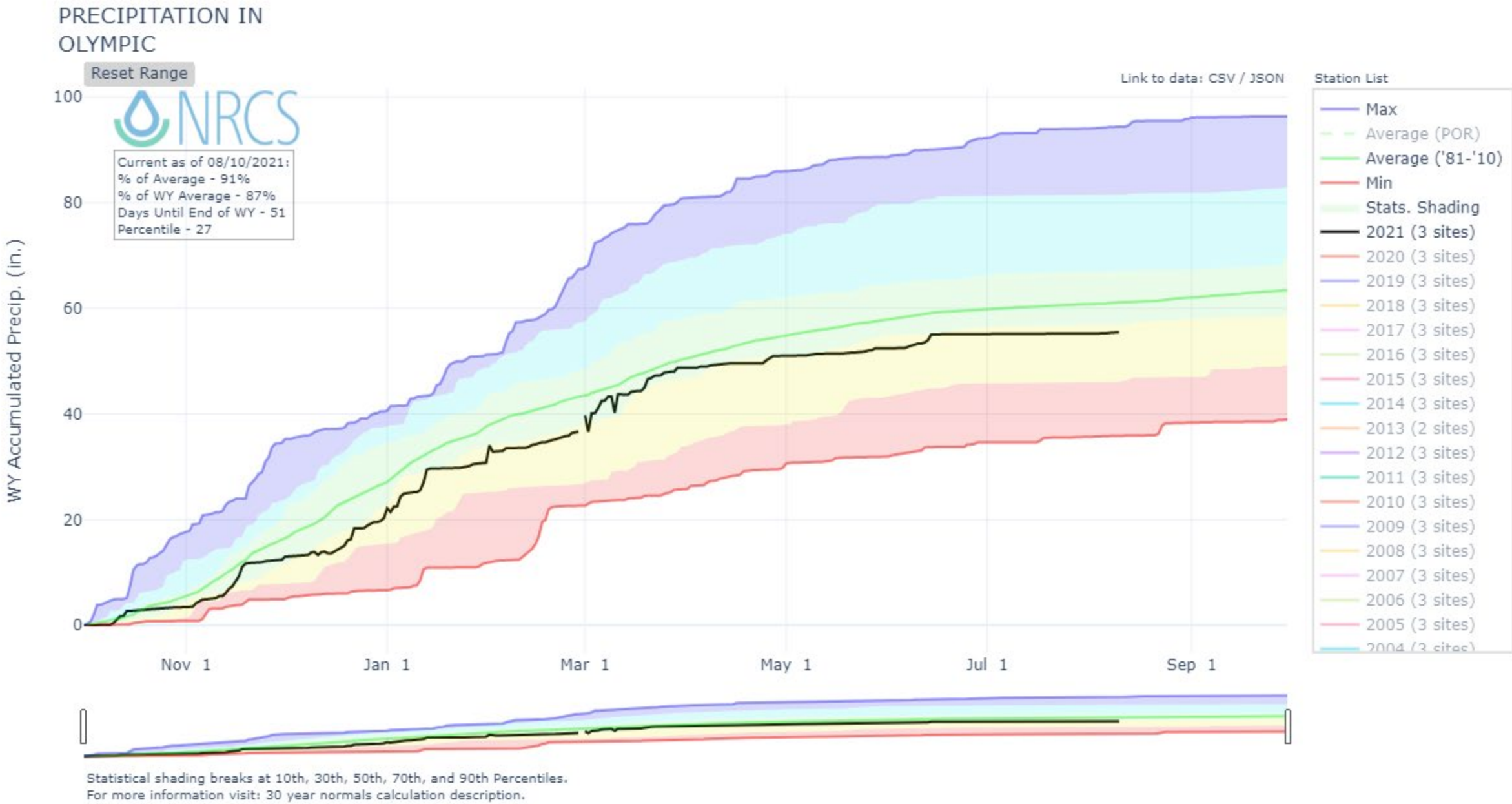
*POR data used to calculate Normals since no published 30-year normals available for this site


DEPTH AVERAGED SOIL SATURATION IN BAKER
Reset Range
Link to data: CSV / JSON
Station List
Max
Average (POR)
Min
Stats. Shading
2021 (1 sites)
2020 (1 sites)
2019 (1 sites)
2018 (1 sites)
2017 (1 sites)
2016 (1 sites)
2015 (1 sites)
2014 (1 sites)
NRCS
Current as of 08/10/2021
Percent Saturation (%)
100
90
80
70
60
50
40
30
20
10
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.


PRECIPITATION IN OLYMPIC
Reset Range
Link to data: CSV / JSON
Station List
NRCS
Current as of 08/10/2021:
% of Average - 91%
% of WY Average - 87%
Days Until End of WY - 51
Percentile - 27
WY Accumulated Precip. (in.)
100
80
60
40
20
0
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Max
Average (POR)
Average ('81-'10)
Min
Stats. Shading
2021 (3 sites)
2020 (3 sites)
2019 (3 sites)
2018 (3 sites)
2017 (3 sites)
2016 (3 sites)
2015 (3 sites)
2014 (3 sites)
2013 (2 sites)
2012 (3 sites)
2011 (3 sites)
2010 (3 sites)
2009 (3 sites)
2008 (3 sites)
2007 (3 sites)
2006 (3 sites)
2005 (3 sites)
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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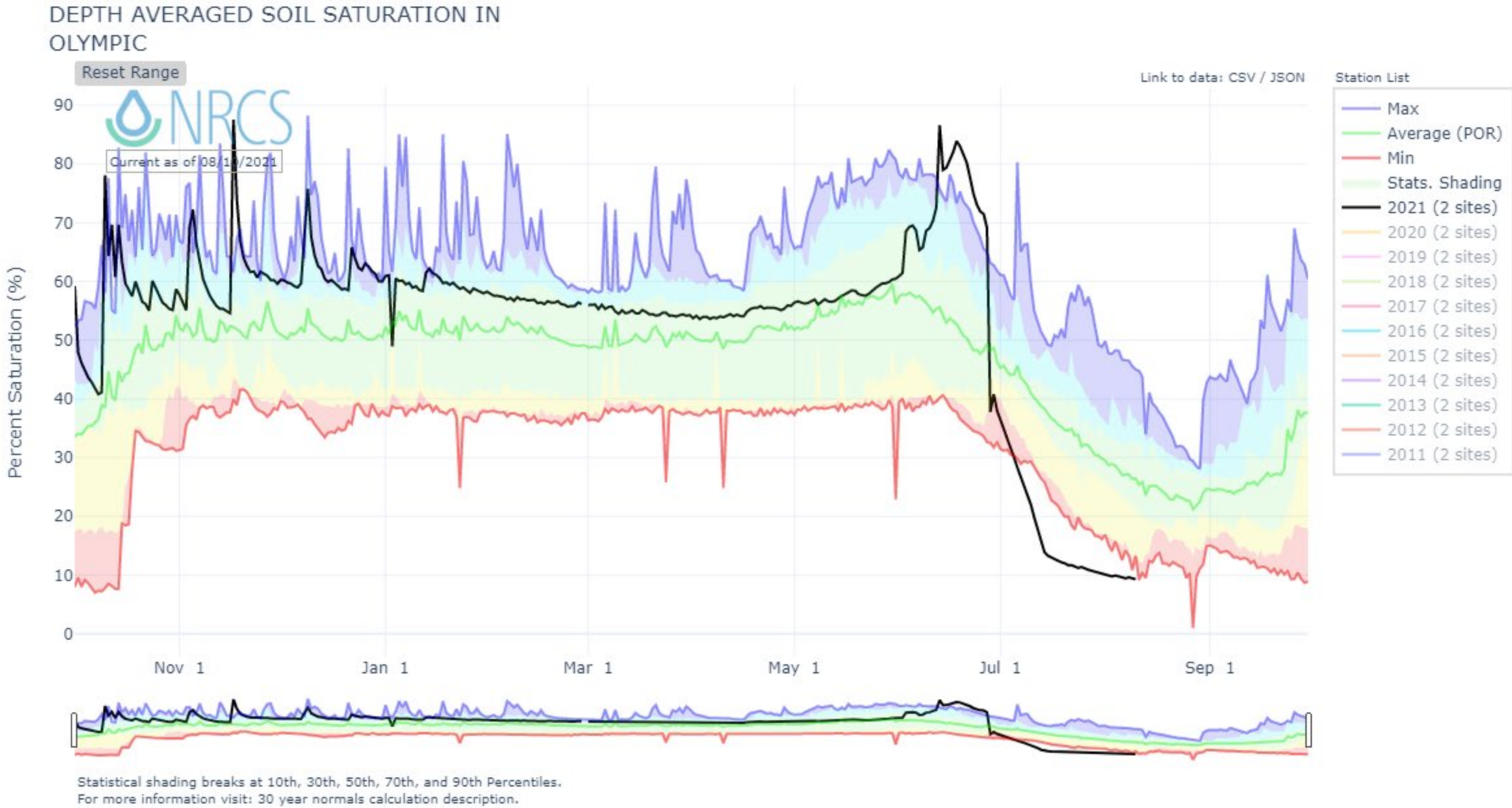
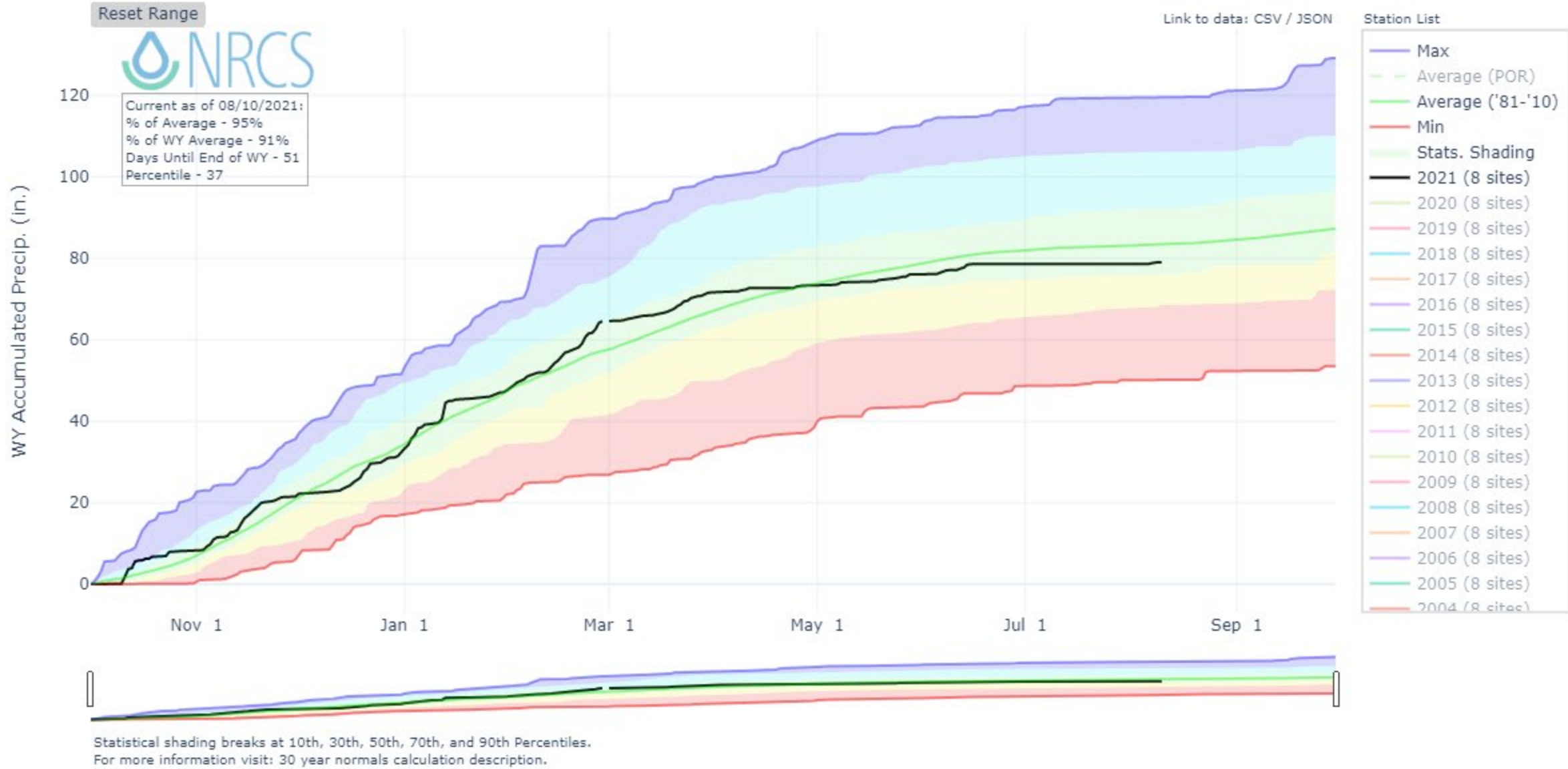

DEPTH AVERAGED SOIL SATURATION IN OLYMPIC
Reset Range
Link to data: CSV / JSON
Station List
Max
Average (POR)
Min
Stats. Shading
2021 (2 sites)
2020 (2 sites)
2019 (2 sites)
2018 (2 sites)
2017 (2 sites)
2016 (2 sites)
2015 (2 sites)
2014 (2 sites)
2013 (2 sites)
2012 (2 sites)
2011 (2 sites)
NRCS
Current as of 08/19/2021
Percent Saturation (%)
90
80
70
60
50
40
30
20
10
0
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.

PRECIPITATION IN COWLITZ



Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
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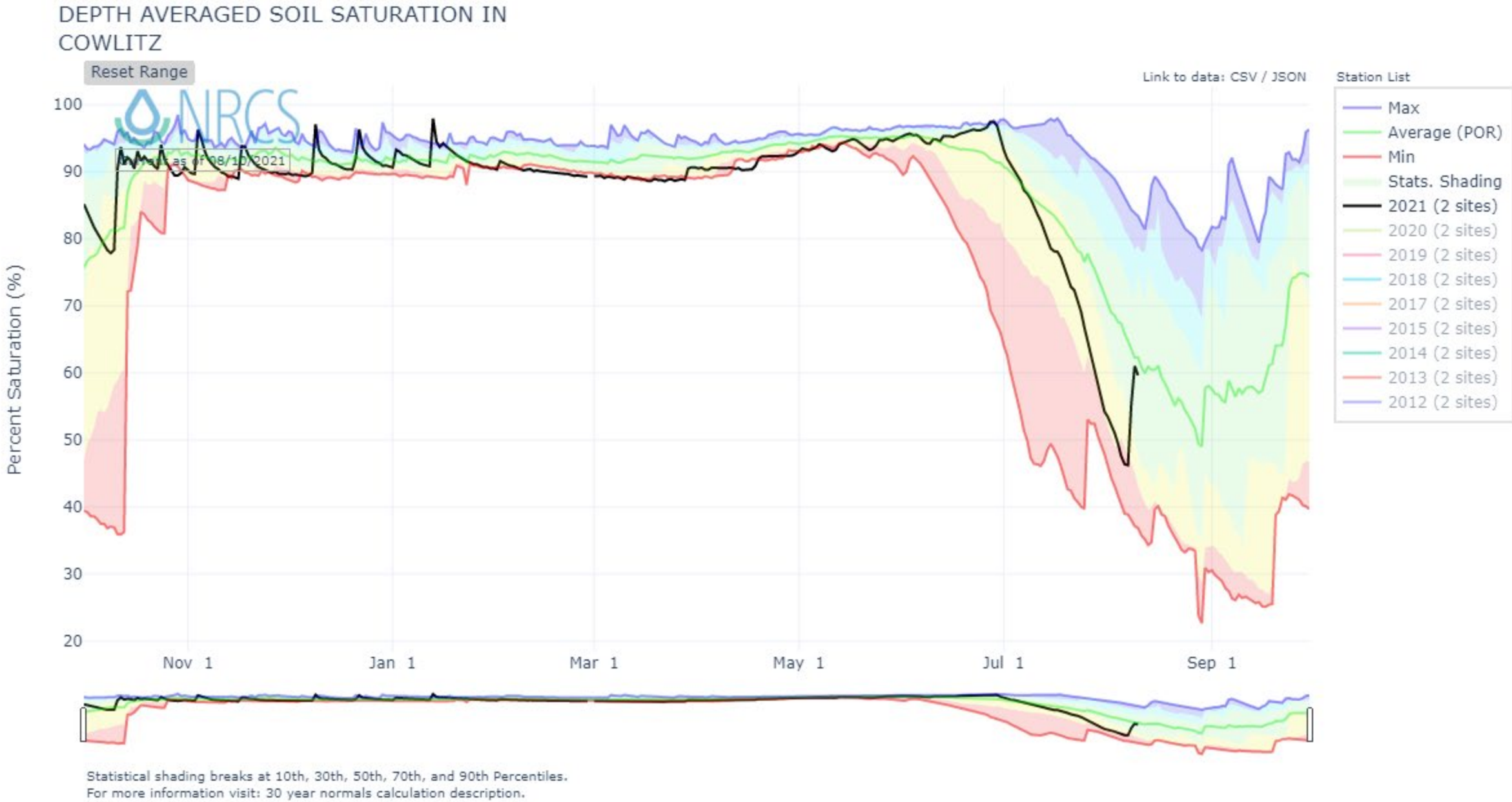

DEPTH AVERAGED SOIL SATURATION IN COWLITZ
Reset Range
Link to data: CSV / JSON
Station List
Max
Average (POR)
Min
Stats. Shading
2021 (2 sites)
2020 (2 sites)
2019 (2 sites)
2018 (2 sites)
2017 (2 sites)
2015 (2 sites)
2014 (2 sites)
2013 (2 sites)
2012 (2 sites)
Percent Saturation (%)
100
90
80
70
60
50
40
30
20
Nov 1
Jan 1
Mar 1
May 1
Jul 1
Sep 1
Statistical shading breaks at 10th, 30th, 50th, 70th, and 90th Percentiles.
For more information visit: 30 year normals calculation description.

Summary:

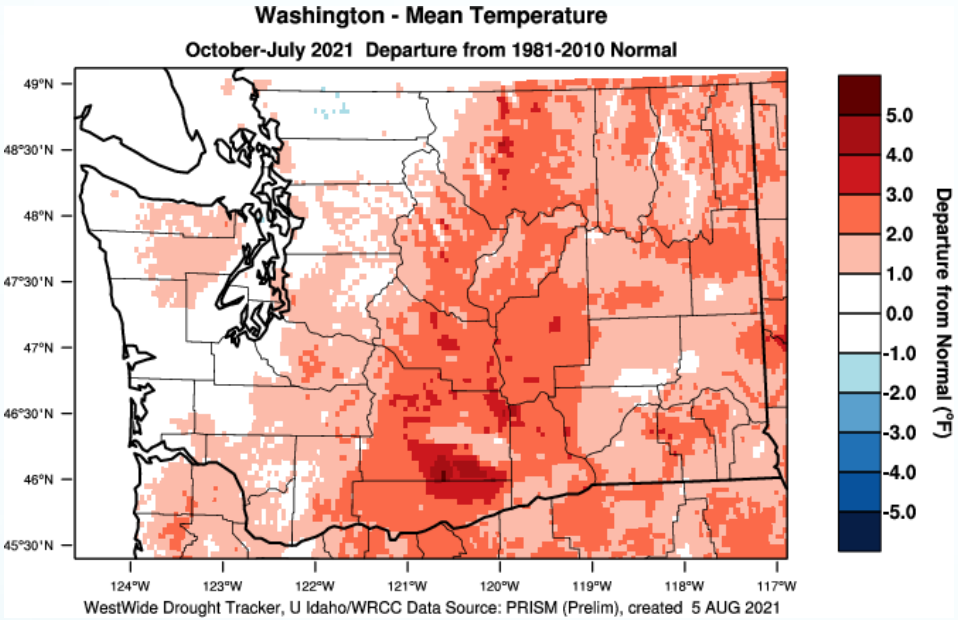
- High temps continue
- Maintenance precipitation
- Looooooow soil moisture

Regional Climate Perspective

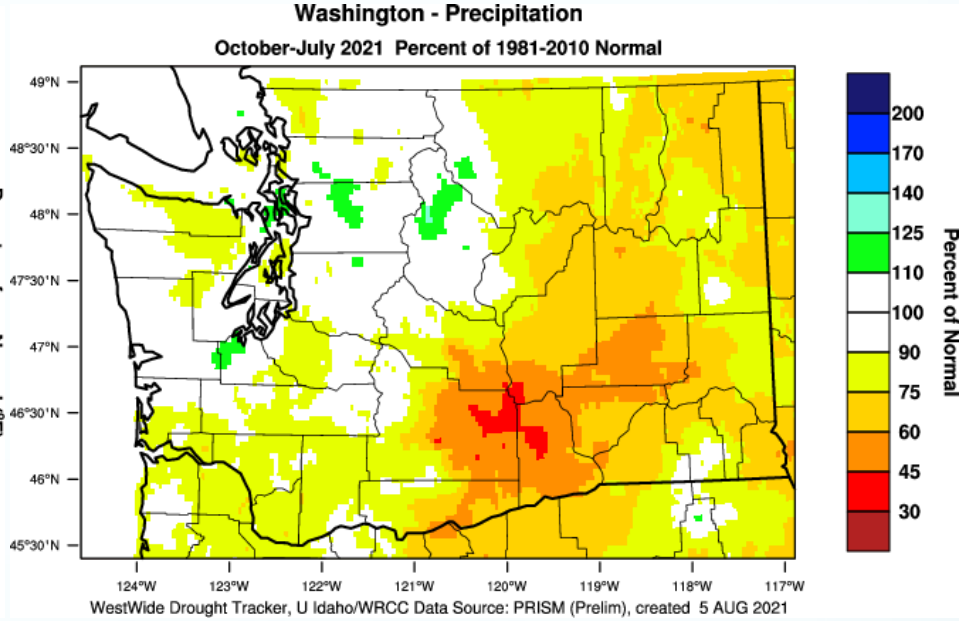
Nick Bond & Karin Bumbaco
Office of the Washington State Climatologist
Cooperative Institute for Climate, Ocean, and Ecosystem Studies
University of Washington
13 August 2021

2021 Water Year

Temperature



Precipitation

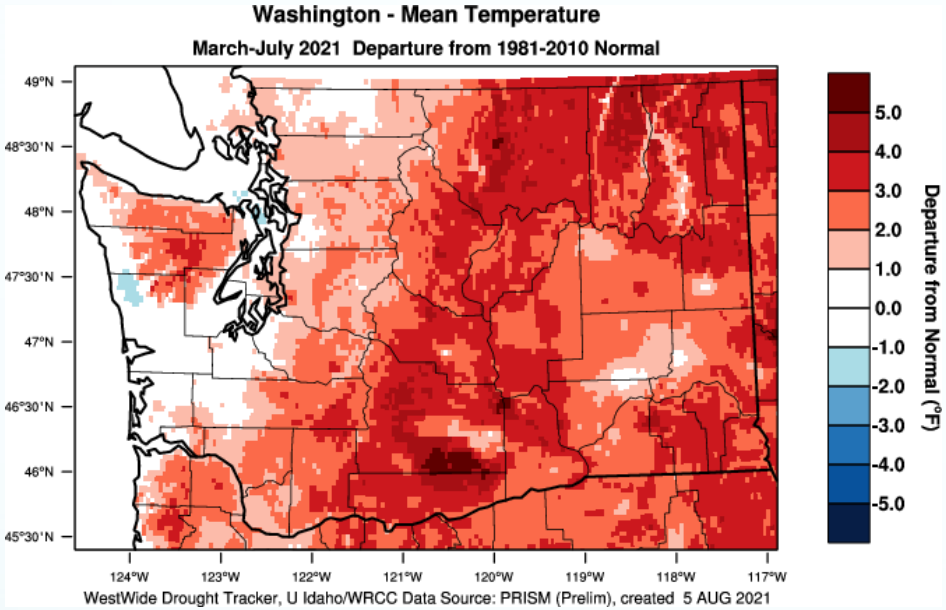


- Averaged statewide, WY 2021 warmer than normal (+1.9°F), tying as 7th warmest*
- Averaged statewide, below normal precipitation for WY 2021 (-4.24”)

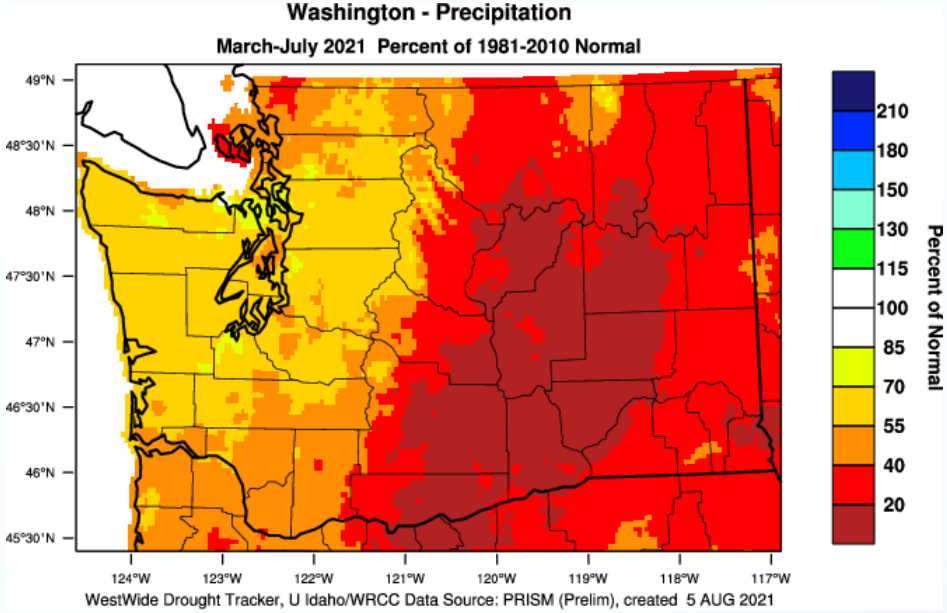
*Records since 1895

March-July 2021

Temperature



Precipitation

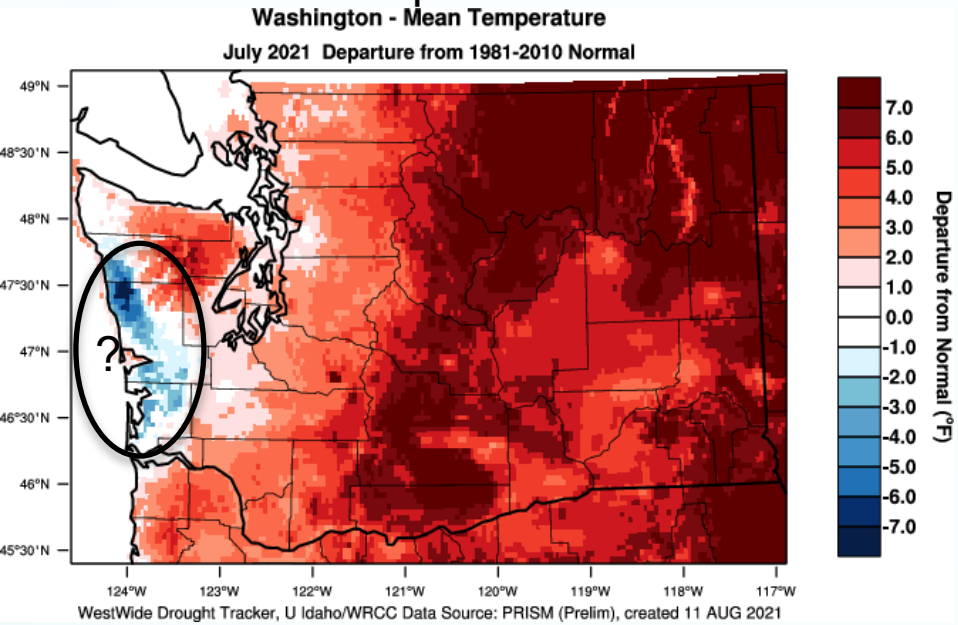


- Averaged statewide, 3rd warmest* March-July on record (+2.8°F)
- Averaged statewide, 2nd driest* March-July on record (-6.83”)

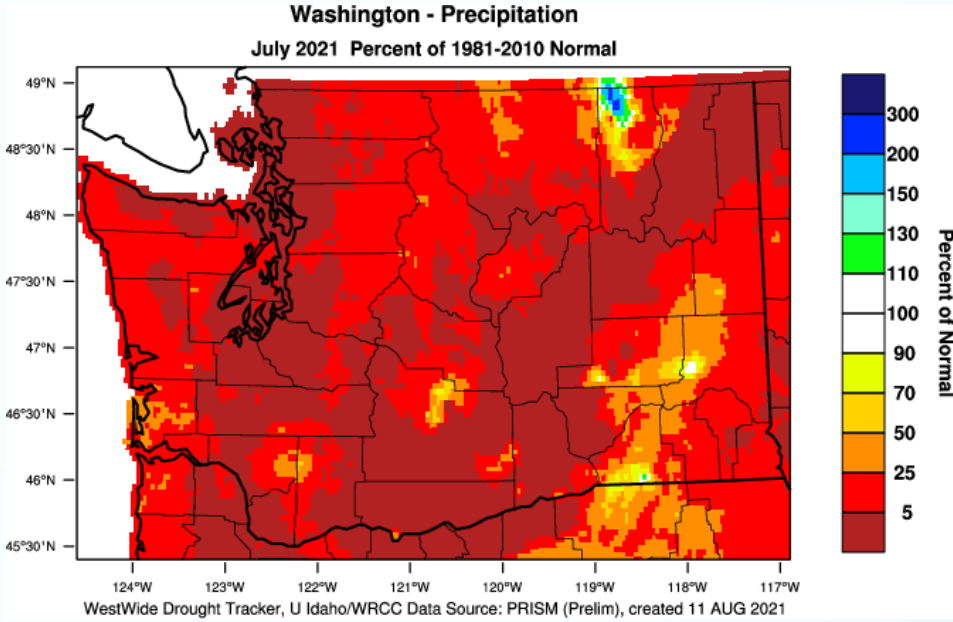
*Records since 1895

July 2021

Temperature



Precipitation



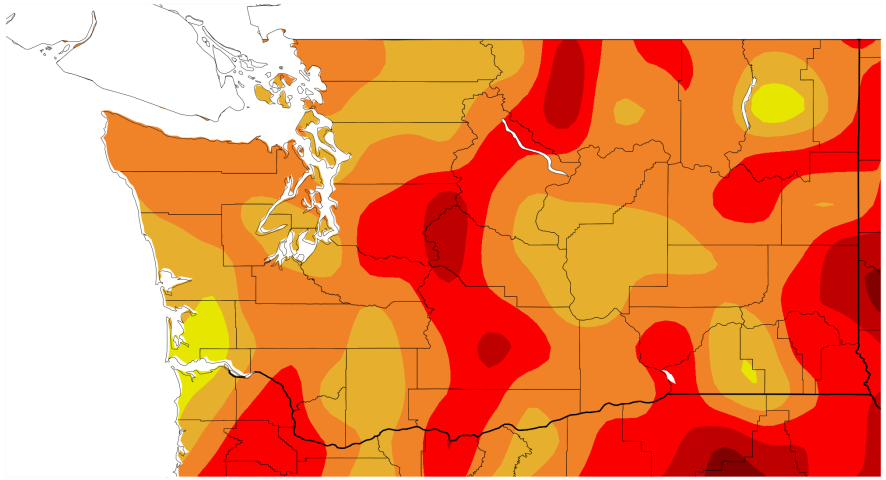
- Averaged statewide, warmest* July on record (+5.4°F)
- Averaged statewide, 4th driest* July on record (-0.92”)

*Records since 1895

August 2021

Temperature

Departure from Normal Temperature (F)
8/1/2021 – 8/11/2021

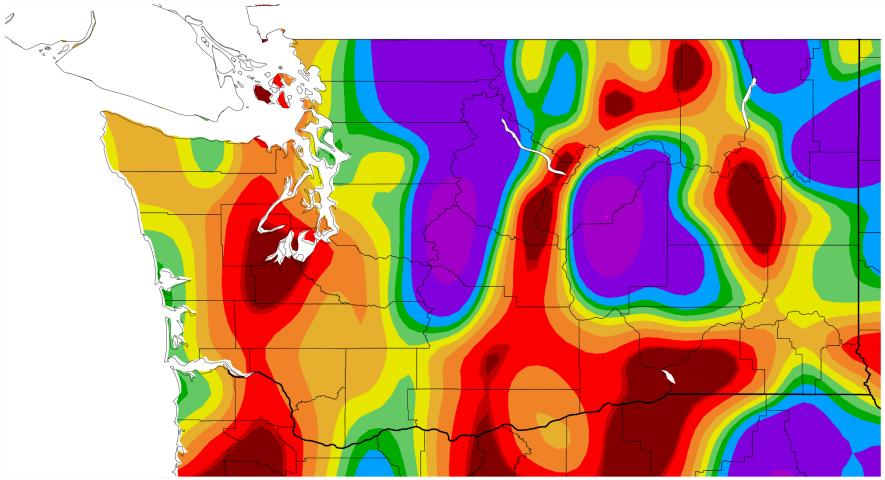


Generated 8/12/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

Precipitation

Percent of Normal Precipitation (%)
8/1/2021 – 8/11/2021



Generated 8/12/2021 at HPRCC using provisional data.

NOAA Regional Climate Centers

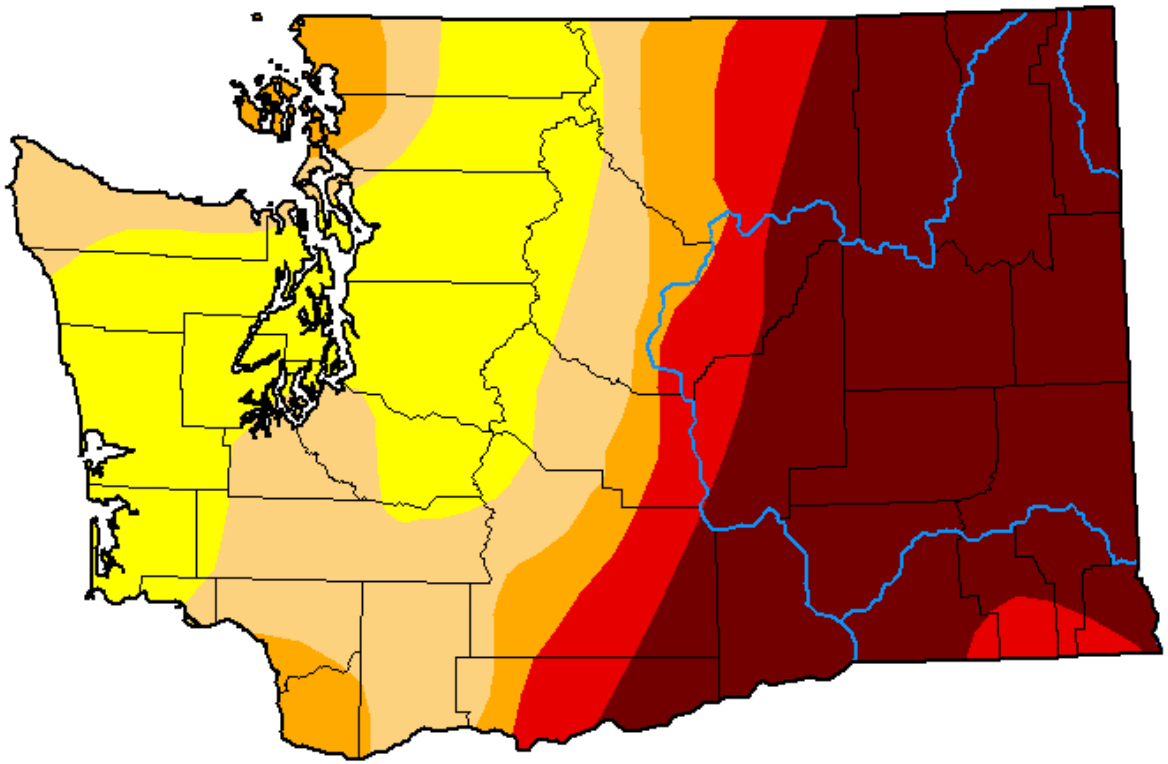
U.S. Drought Monitor

Washington

August 10, 2021

(Released Thursday, Aug. 12, 2021)

Valid 8 a.m. EDT



Intensity:

- None
- 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. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

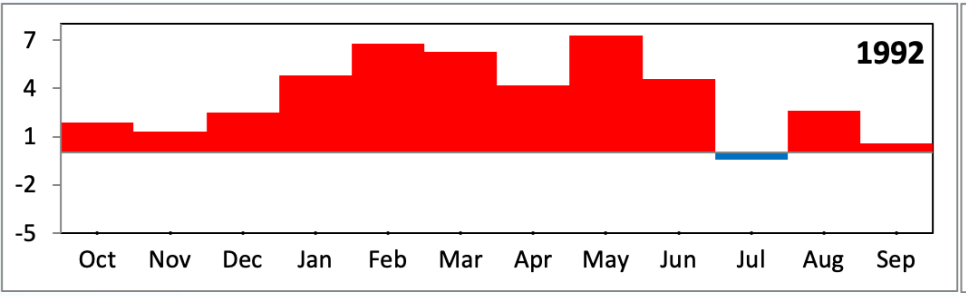
Author:

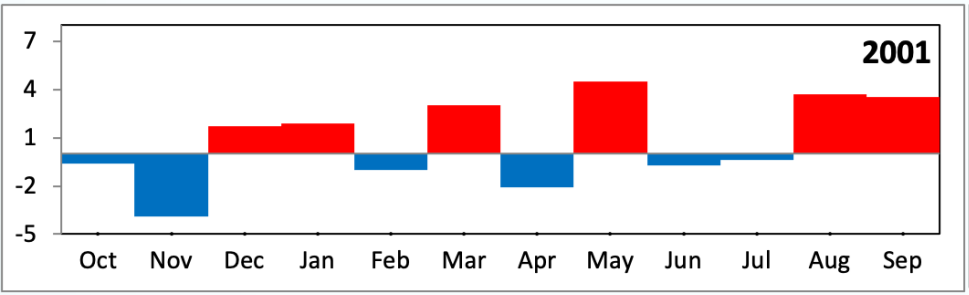
Richard Tinker
CPC/NOAA/NWS/NCEP

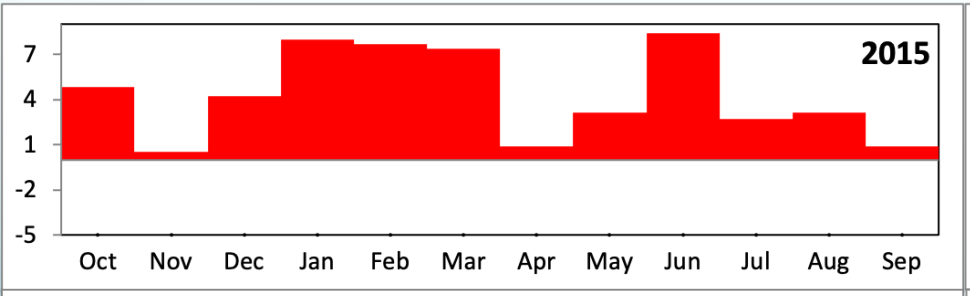
droughtmonitor.unl.edu

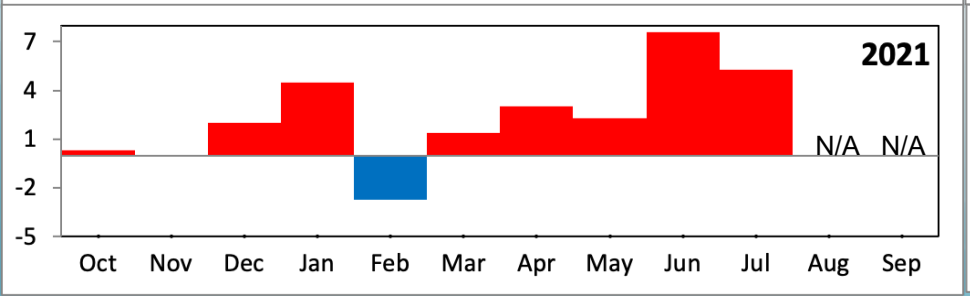
Historical Droughts

Statewide Temperature Anomalies

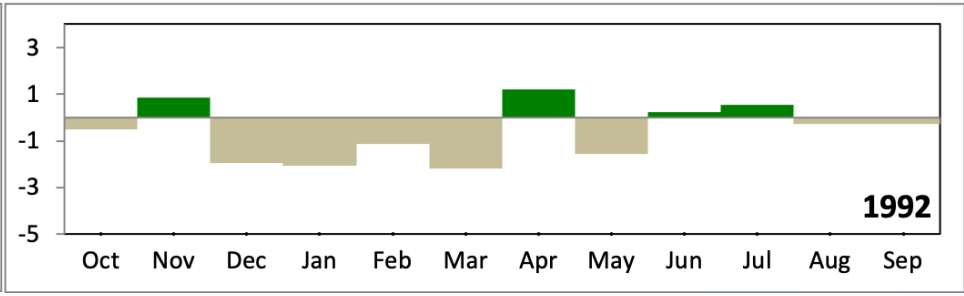


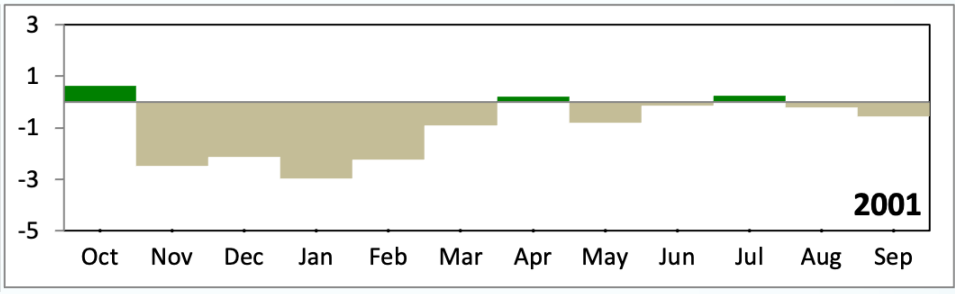


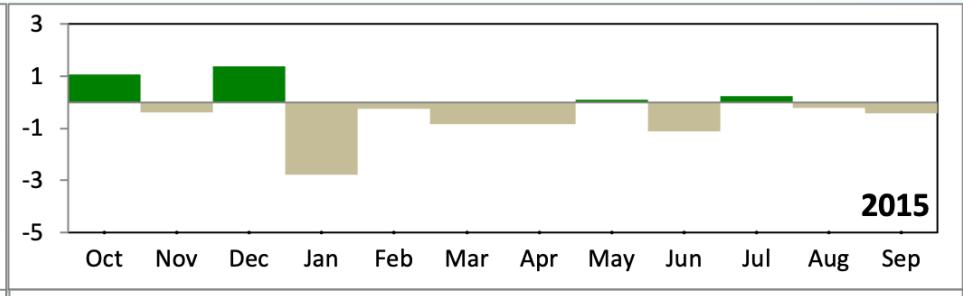


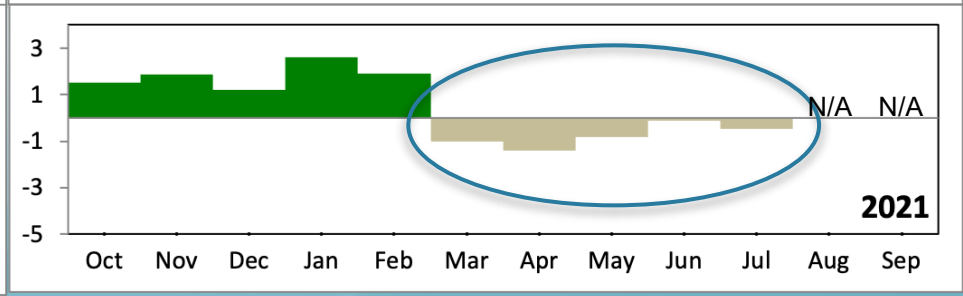


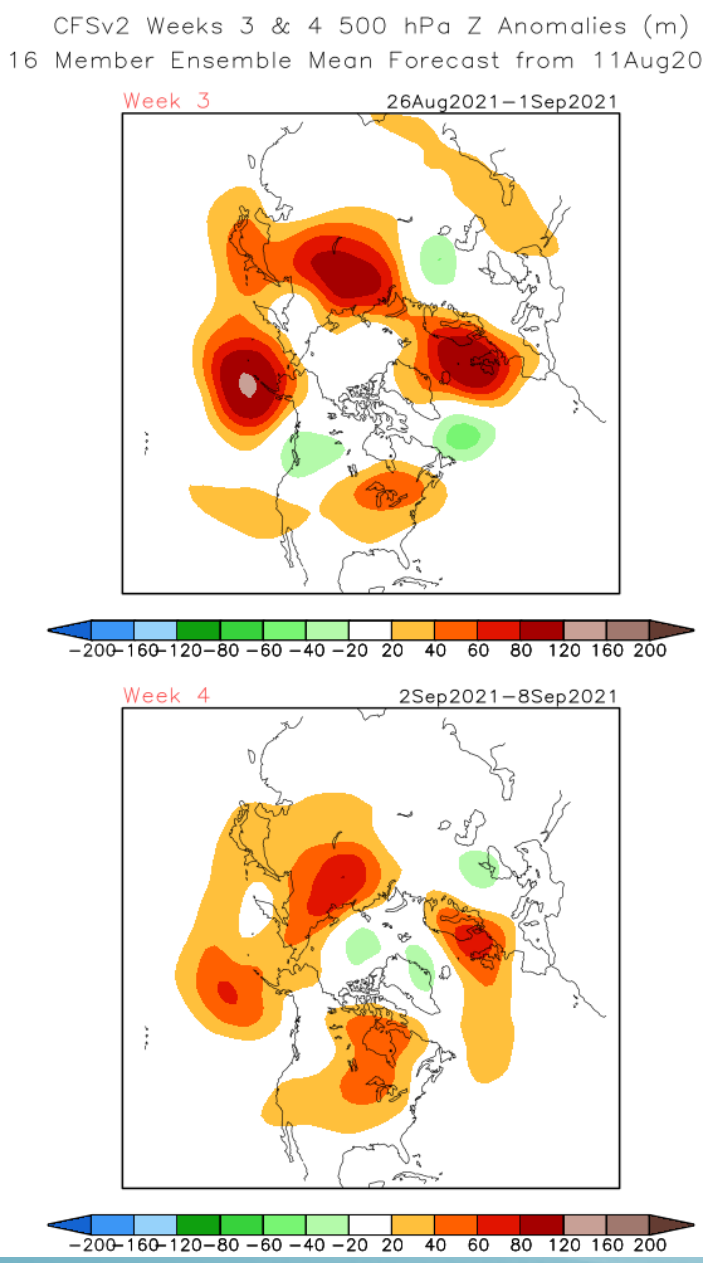
Statewide Precipitation Anomalies







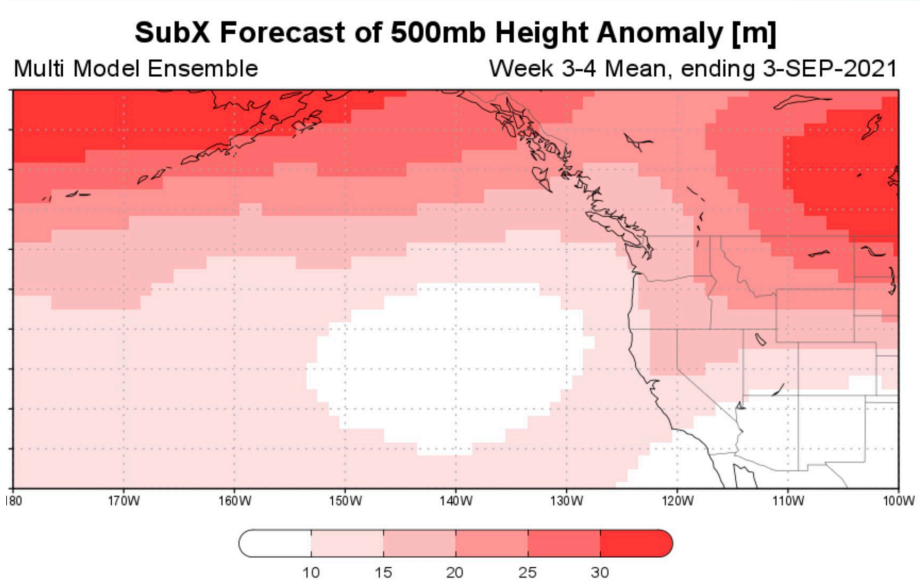




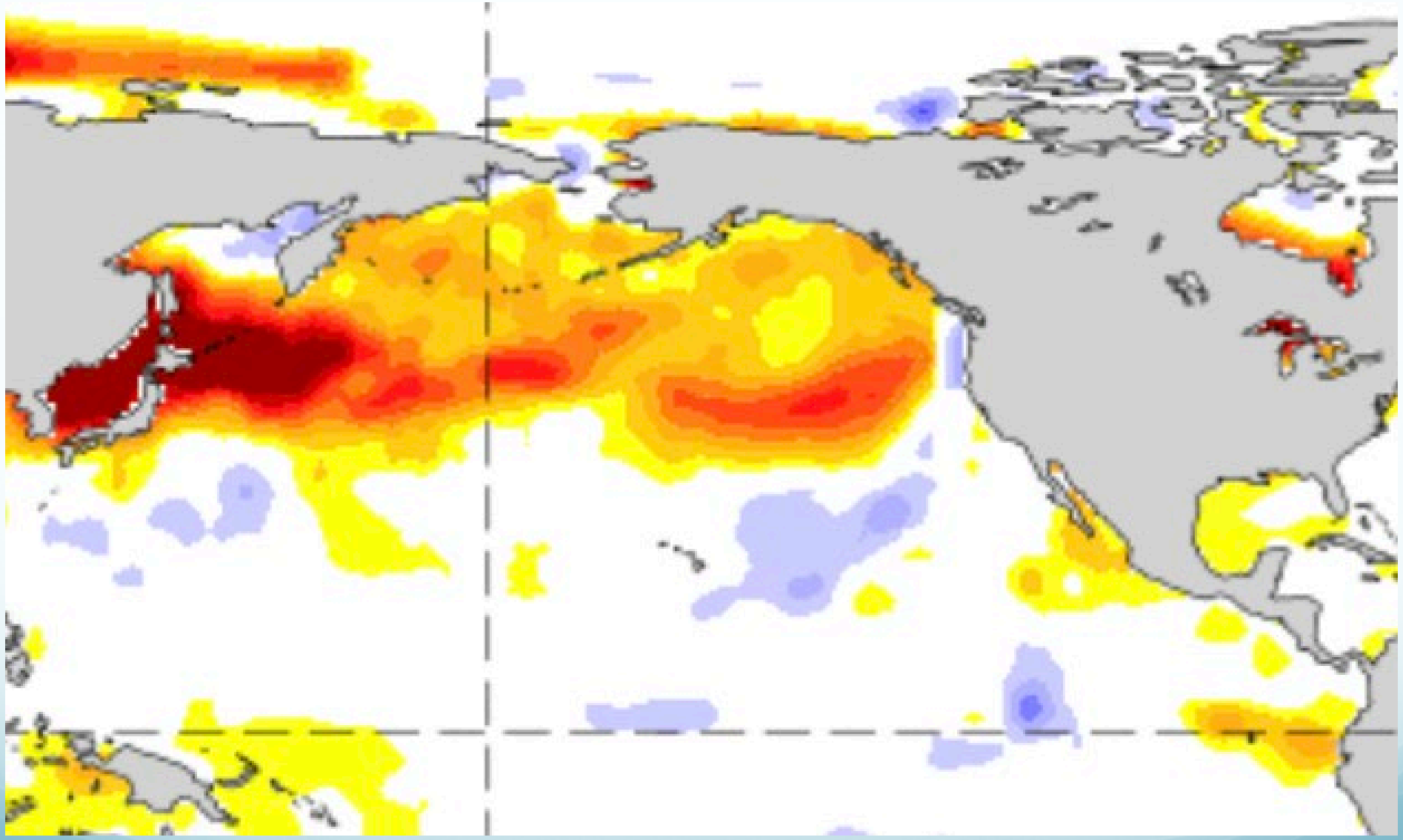
Latest Set of Week 3-4 Forecasts from CFSv2

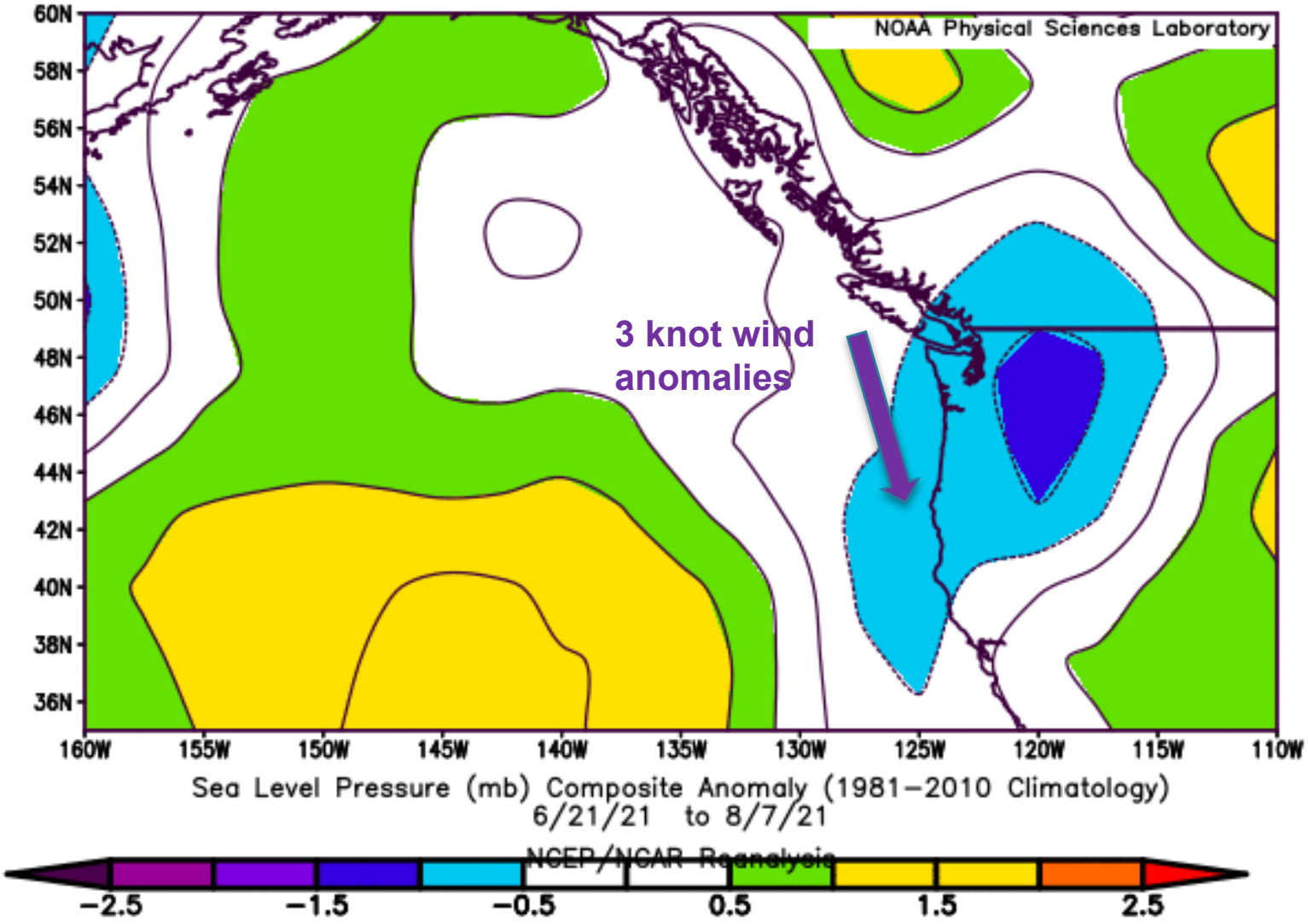
Negative 500 hPa height anomalies over the Pac NW early suggest cooler weather for the end of the month

Model Runs from last week

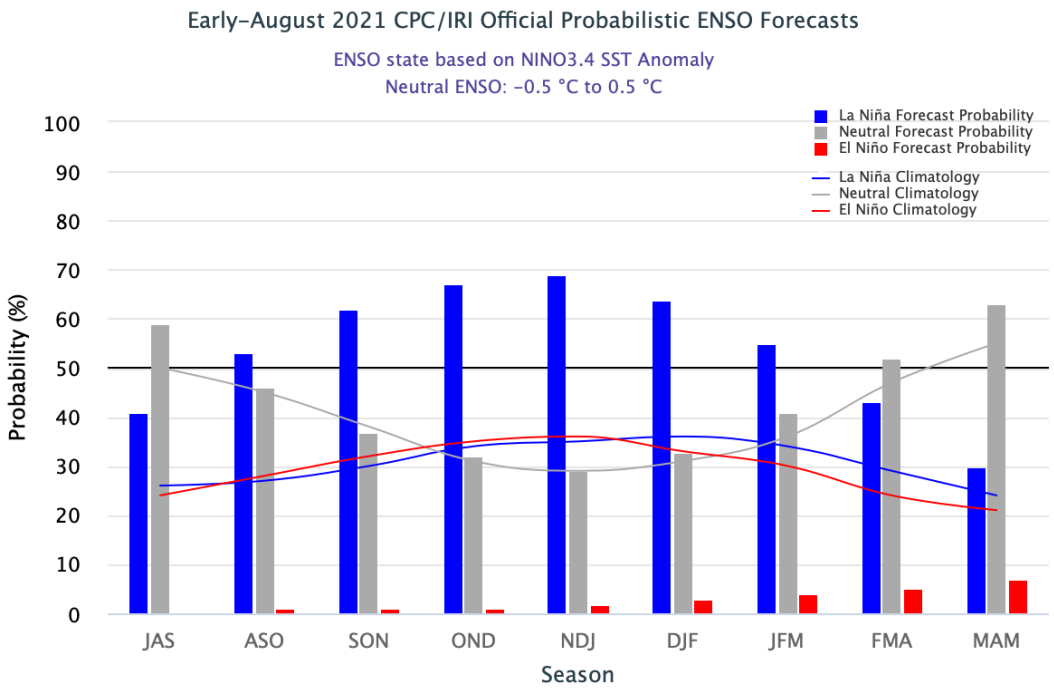


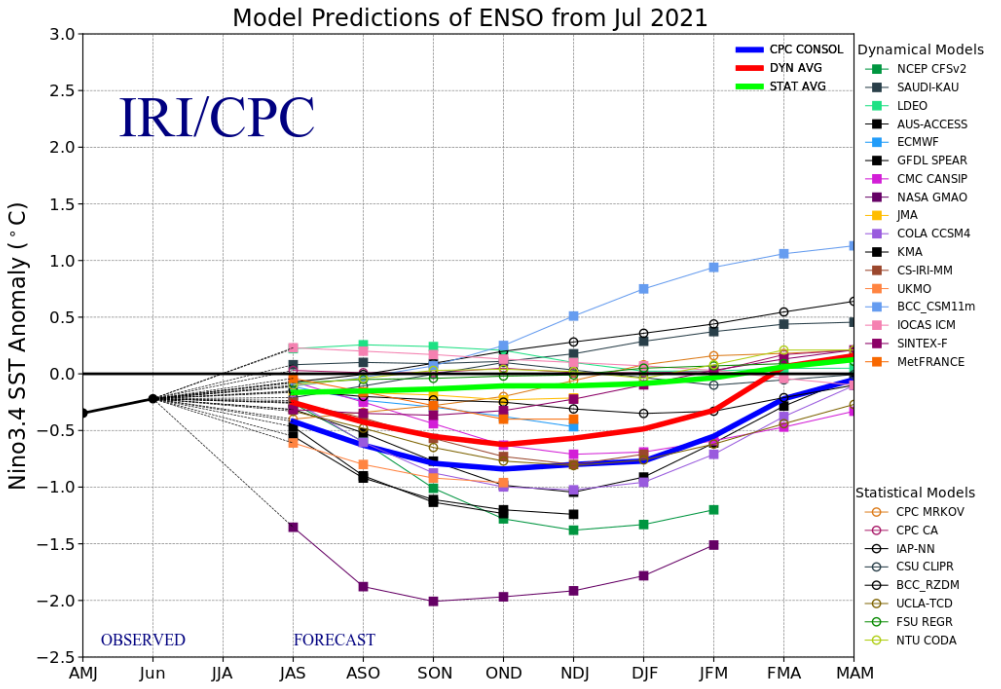
SST Anomalies: 1-8 August 2021



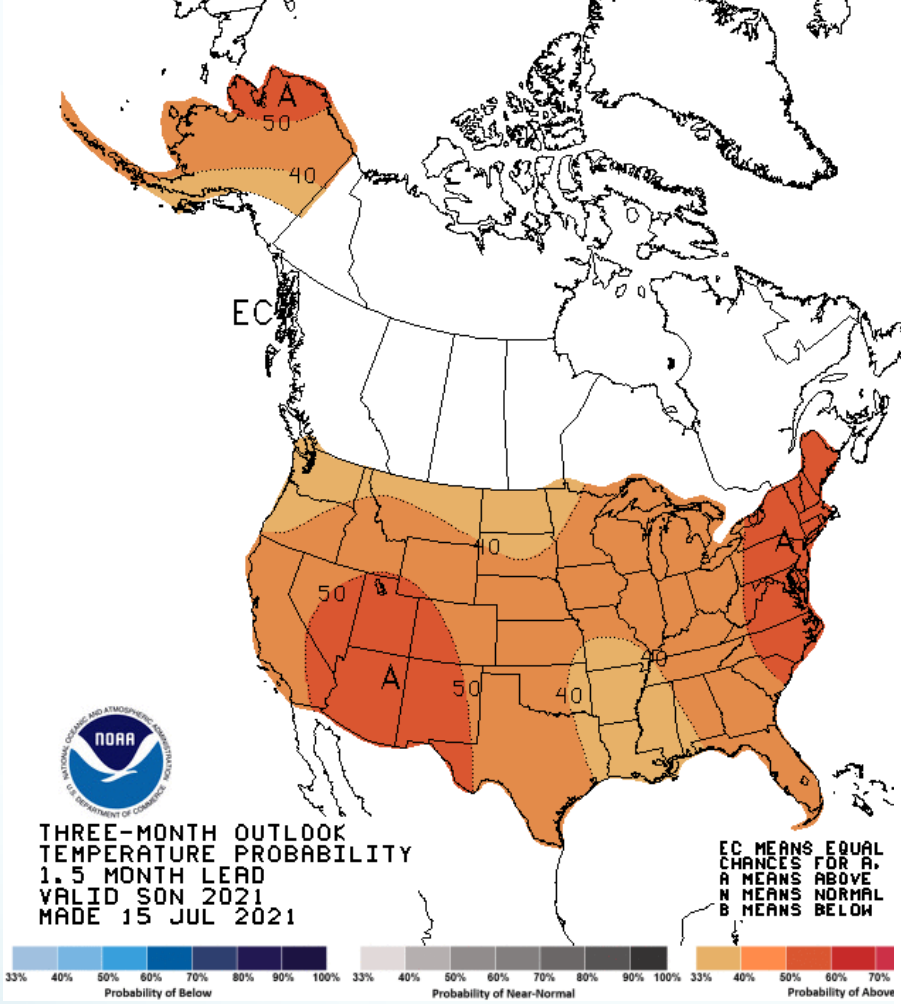

NOAA Physical Sciences Laboratory
3 knot wind anomalies
60N
58N
56N
54N
52N
50N
48N
46N
44N
42N
40N
38N
36N
160W
155W
150W
145W
140W
135W
130W
125W
120W
115W
110W
Sea Level Pressure (mb) Composite Anomaly (1981–2010 Climatology)
6/21/21 to 8/7/21
NCEP/NCAR Reanalysis
−2.5
−1.5
−0.5
0.5
1.5
2.5

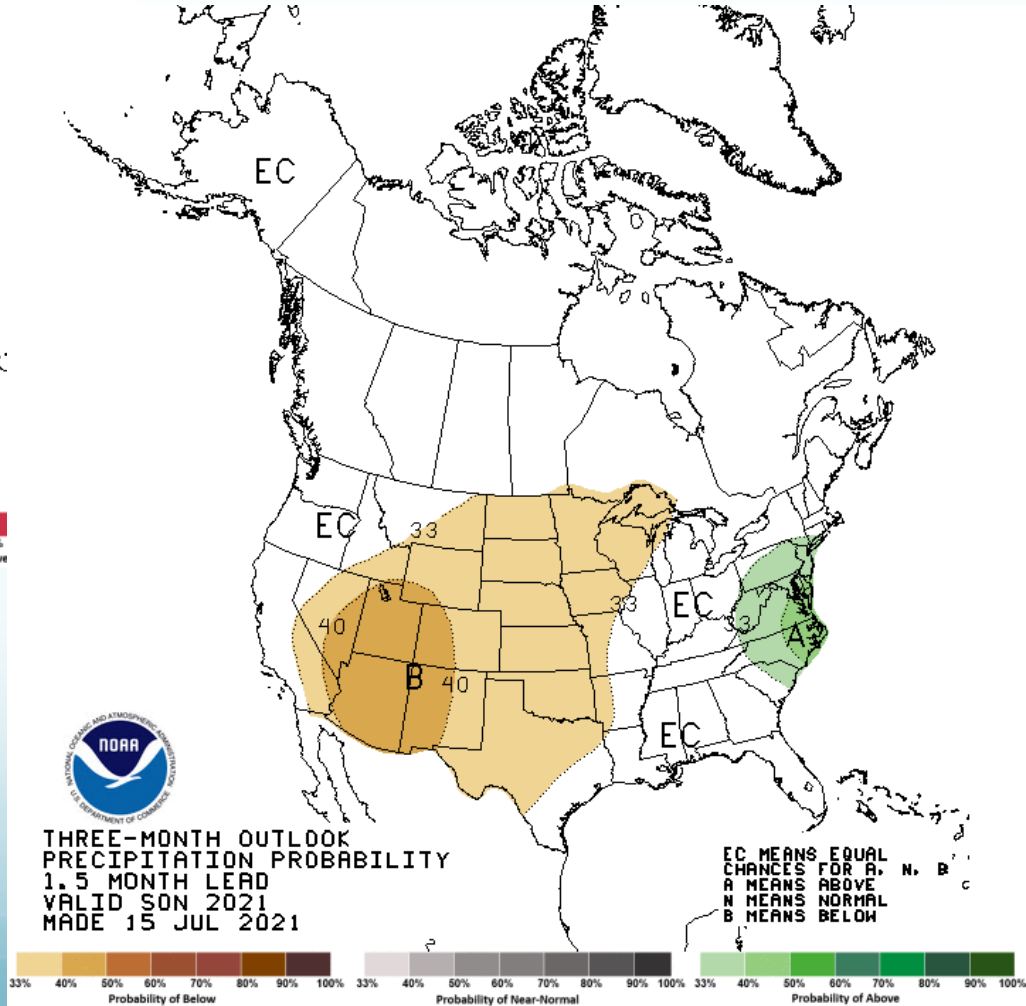
ENSO Predictions





NOAA/CPC Forecasts for Sep-Nov 2021

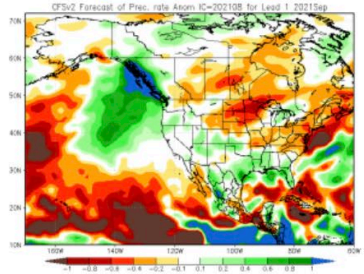




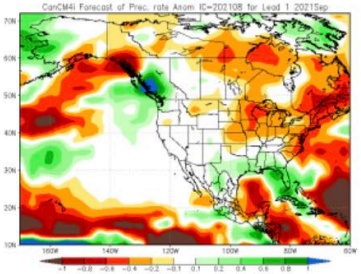
Precipitation Forecasts for September

August Model Runs

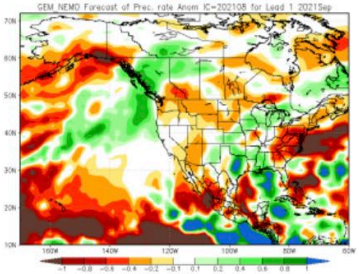
NCEP_CFSv2



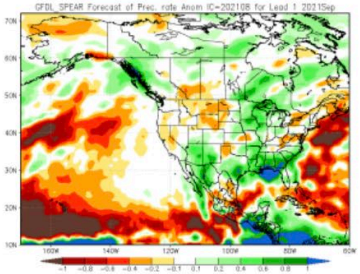
CanCM4i



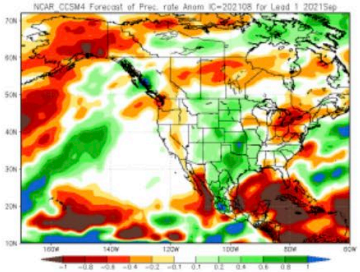
GEM_NEMO



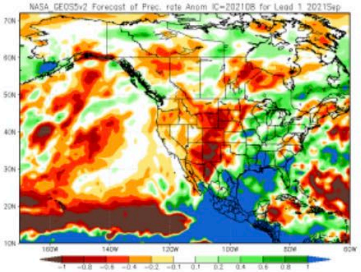
GFDL_SPEAR



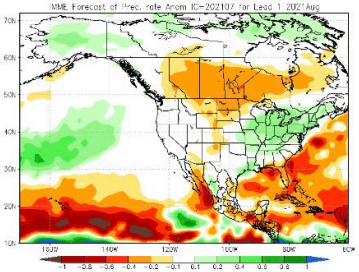
NCAR_CCSM4



NASA_GEOS5v2

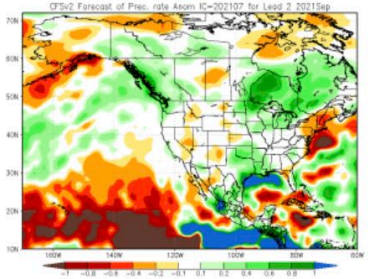


IMME

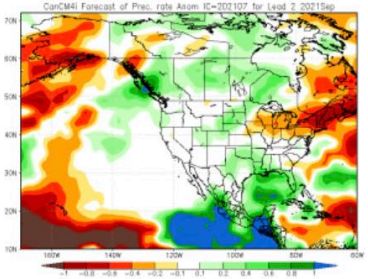


July Model Runs

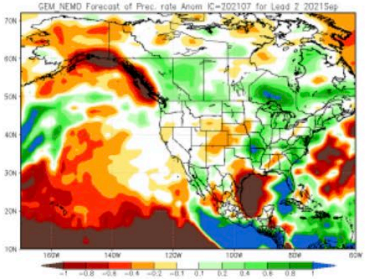
NCEP_CFSv2



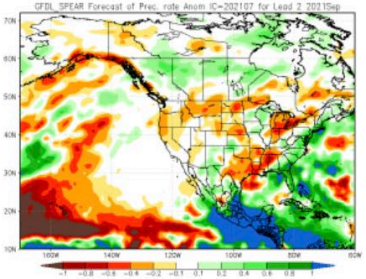
CanCM4i



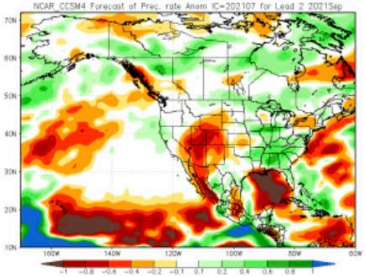
GEM_NEMO



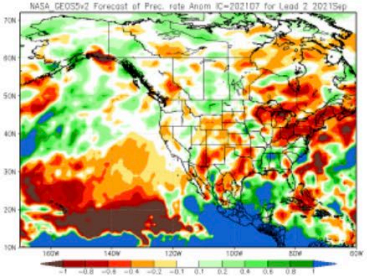
GFDL_SPEAR



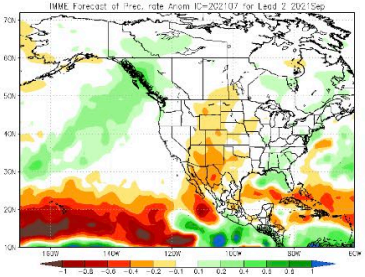
NCAR_CCSM4



NASA_GEOS5v2



IMME



Final Remarks

- Water year 2021 has had above-average temperatures for most of WA, with below normal precipitation except for the north-central Cascades
- Averaged statewide, March-July was the 3rd warmest and 2nd driest on record
- Most of eastern WA are in exceptional drought
- Positive SST anomalies prevail across the North Pacific Ocean north of 40 N, which **may** promote the landfall of a particularly strong storm into the Pacific NW this fall.

Streamflow Conditions in Washington State as of August 11-12, 2021

Presented
to
The Washington State
Water Supply Availability Committee
on
August 13, 2021

by
Dan Restivo,
Acting Surface Water Specialist

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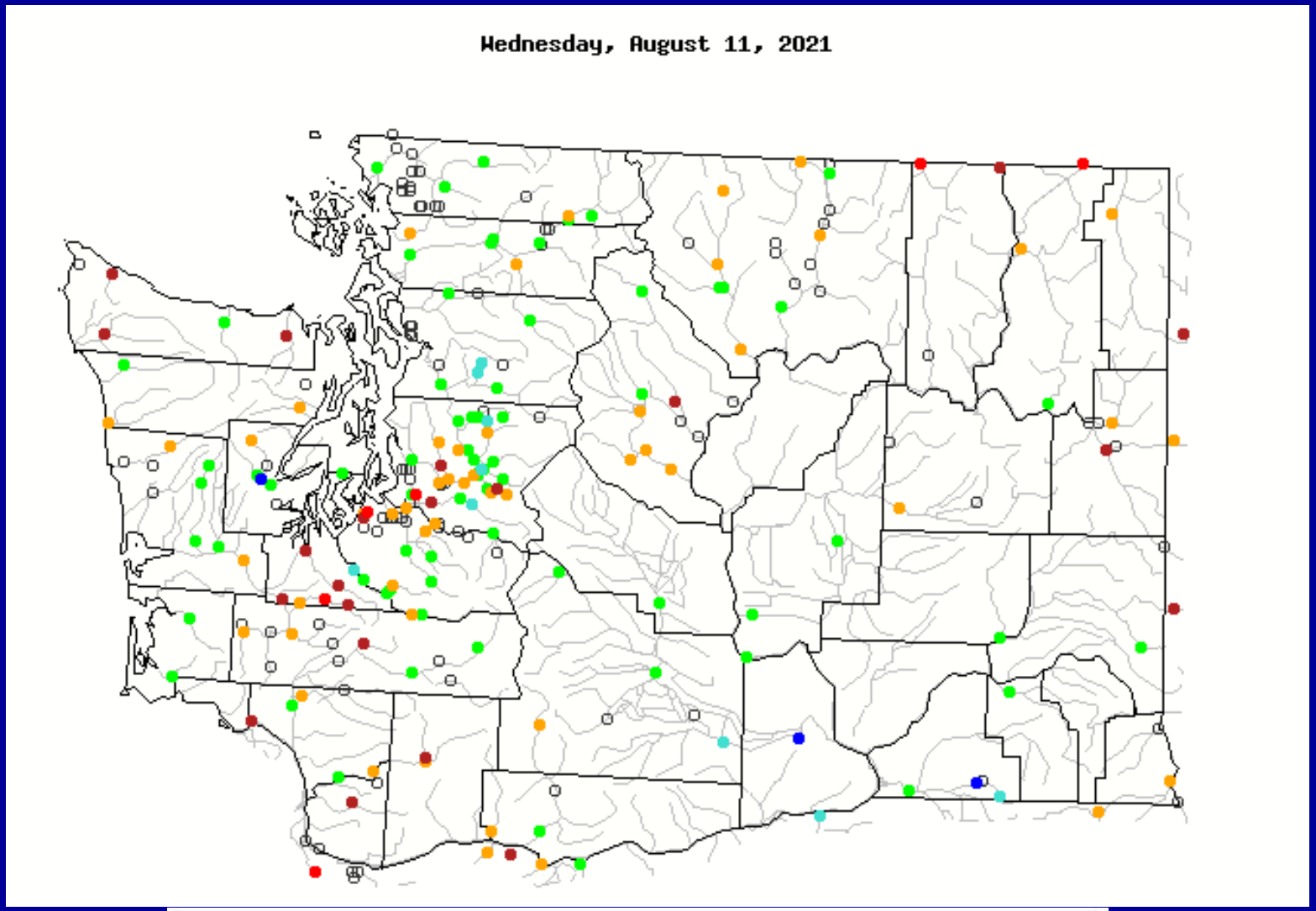
7-day Average Streamflow



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

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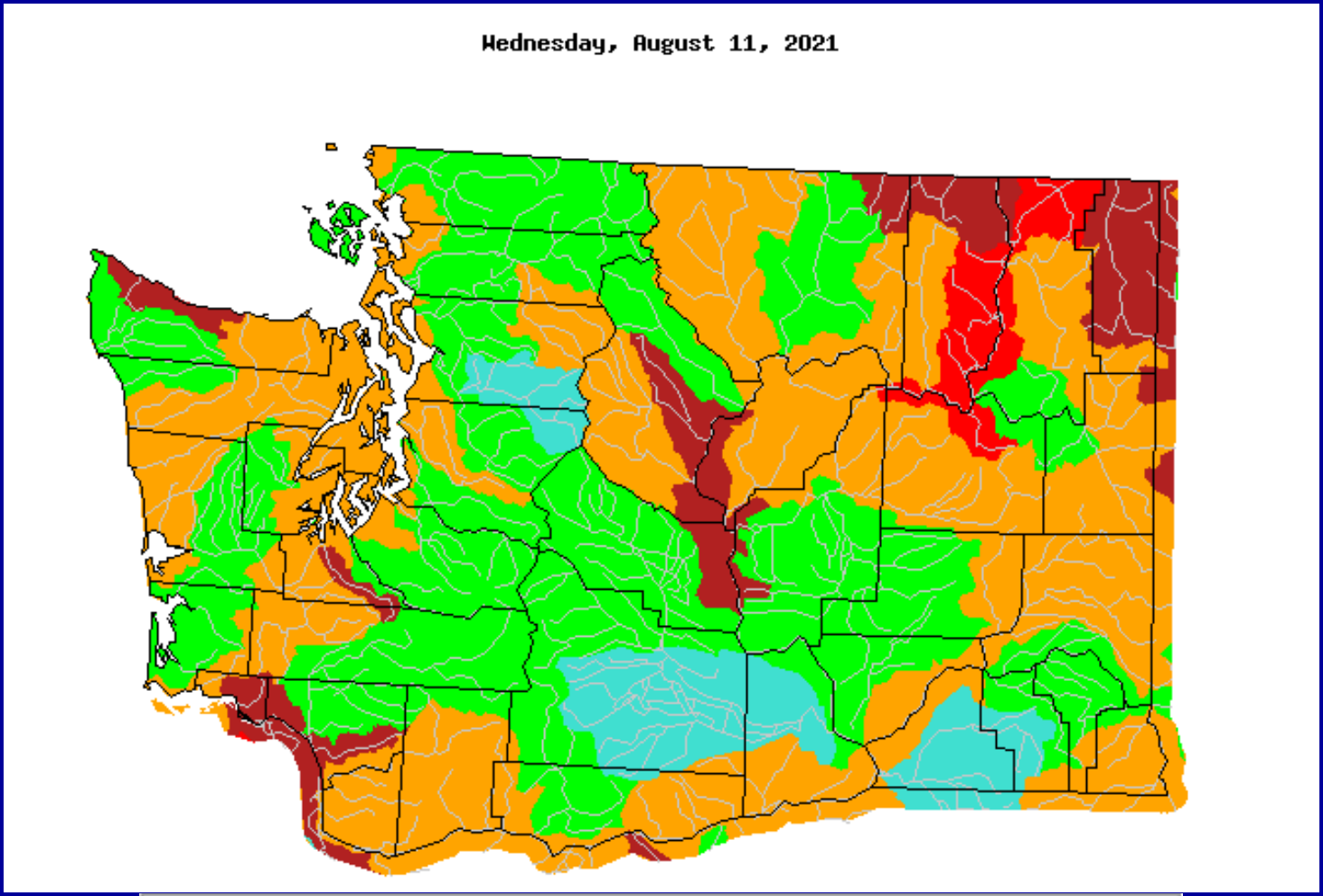
7-day Average Streamflow by HUC



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		

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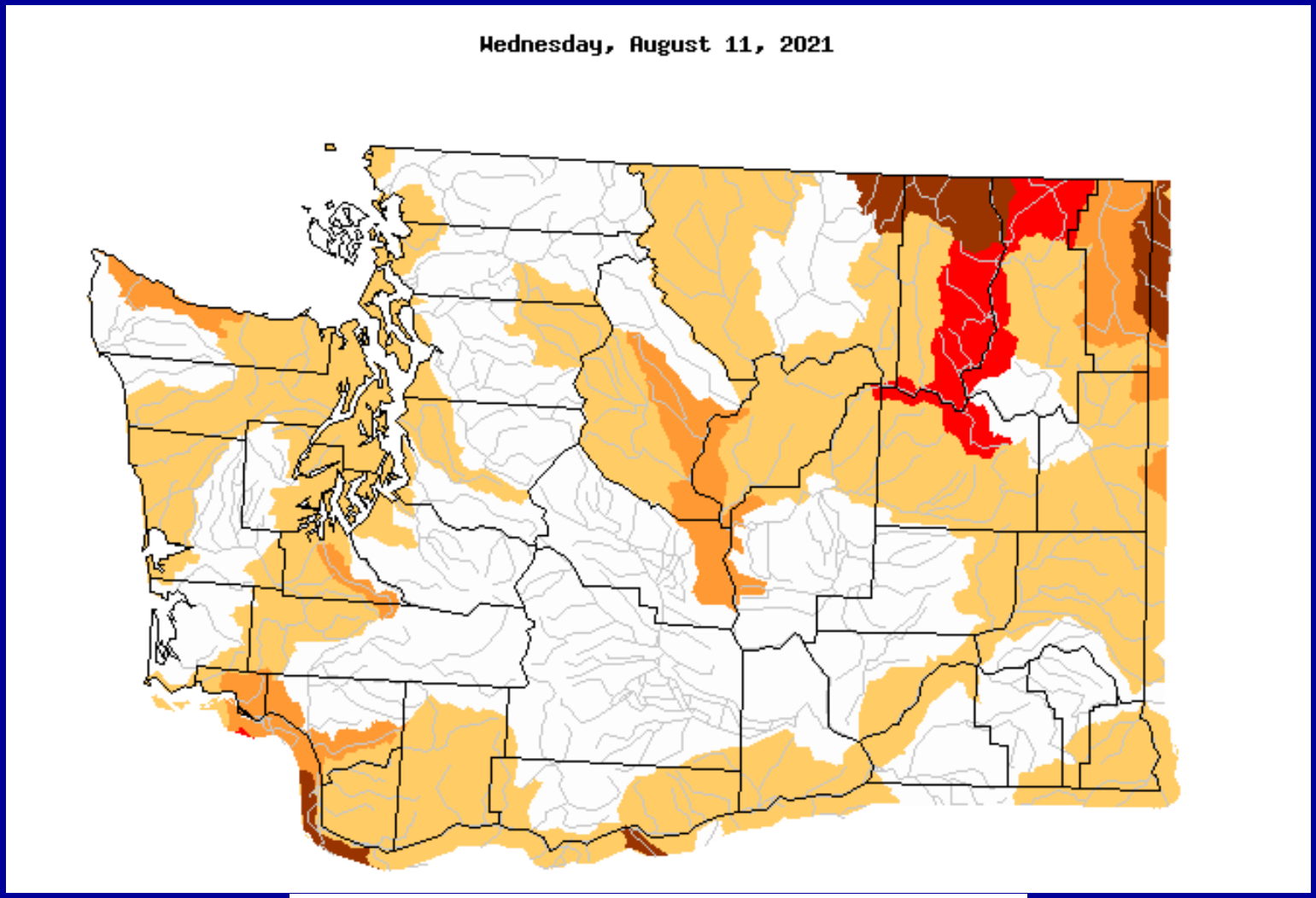
Below Normal 7-day Average Streamflow by HUC



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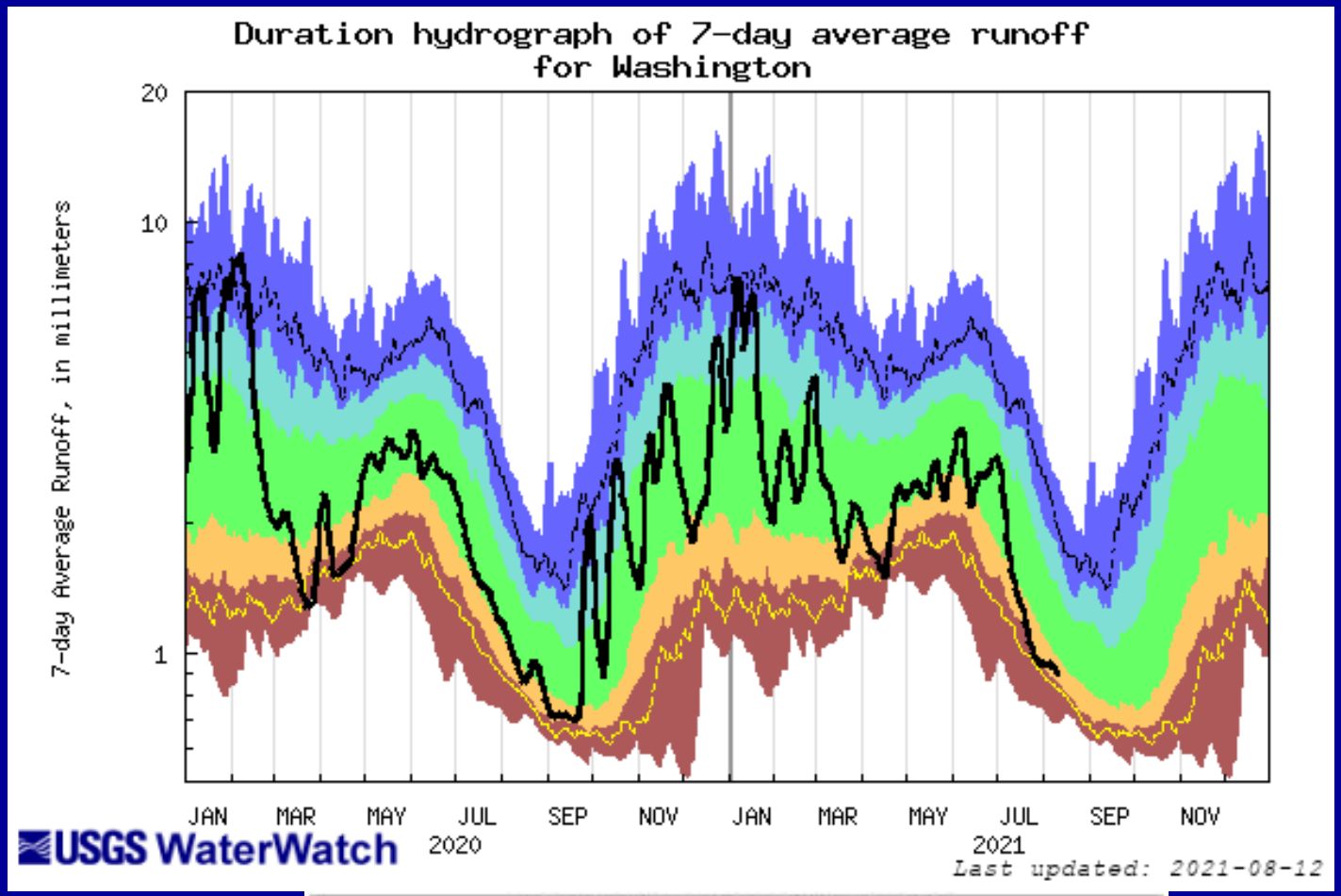
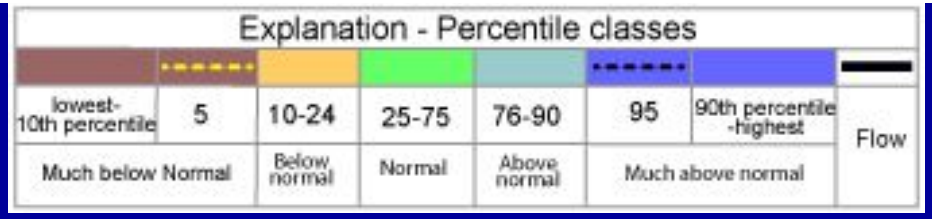
Duration Hydrograph, Washington State

7-day Average Streamflow





As of Aug. 12, 2021, statewide 7-day average flows are between the 10th and 24th percentile, which is Below Normal.

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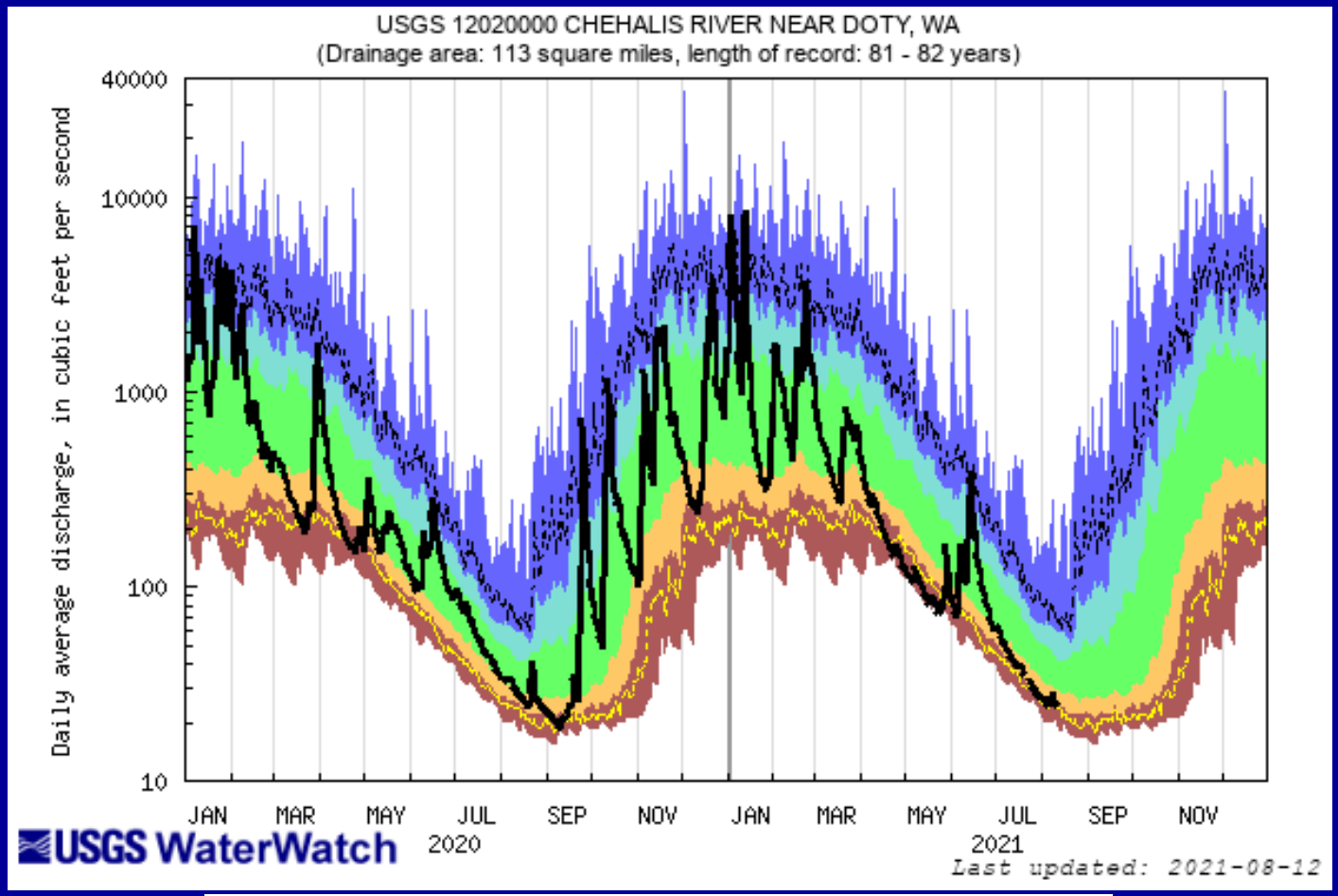
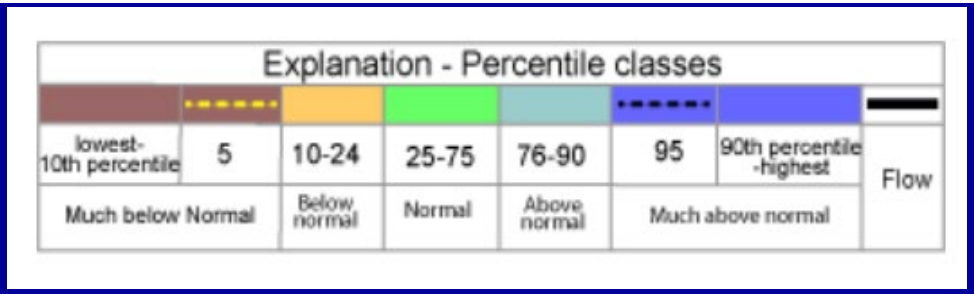
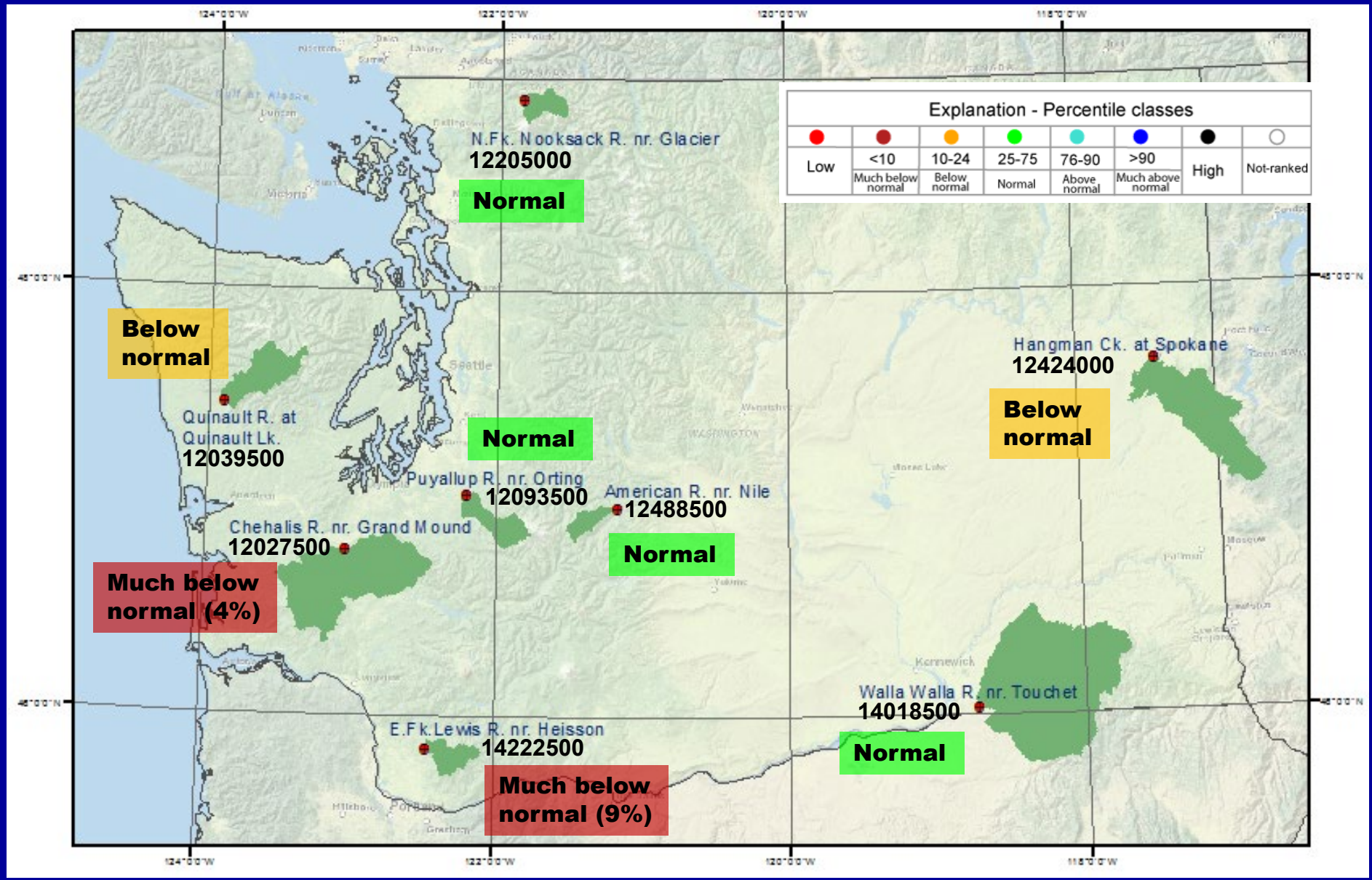
Chehalis River near Doty

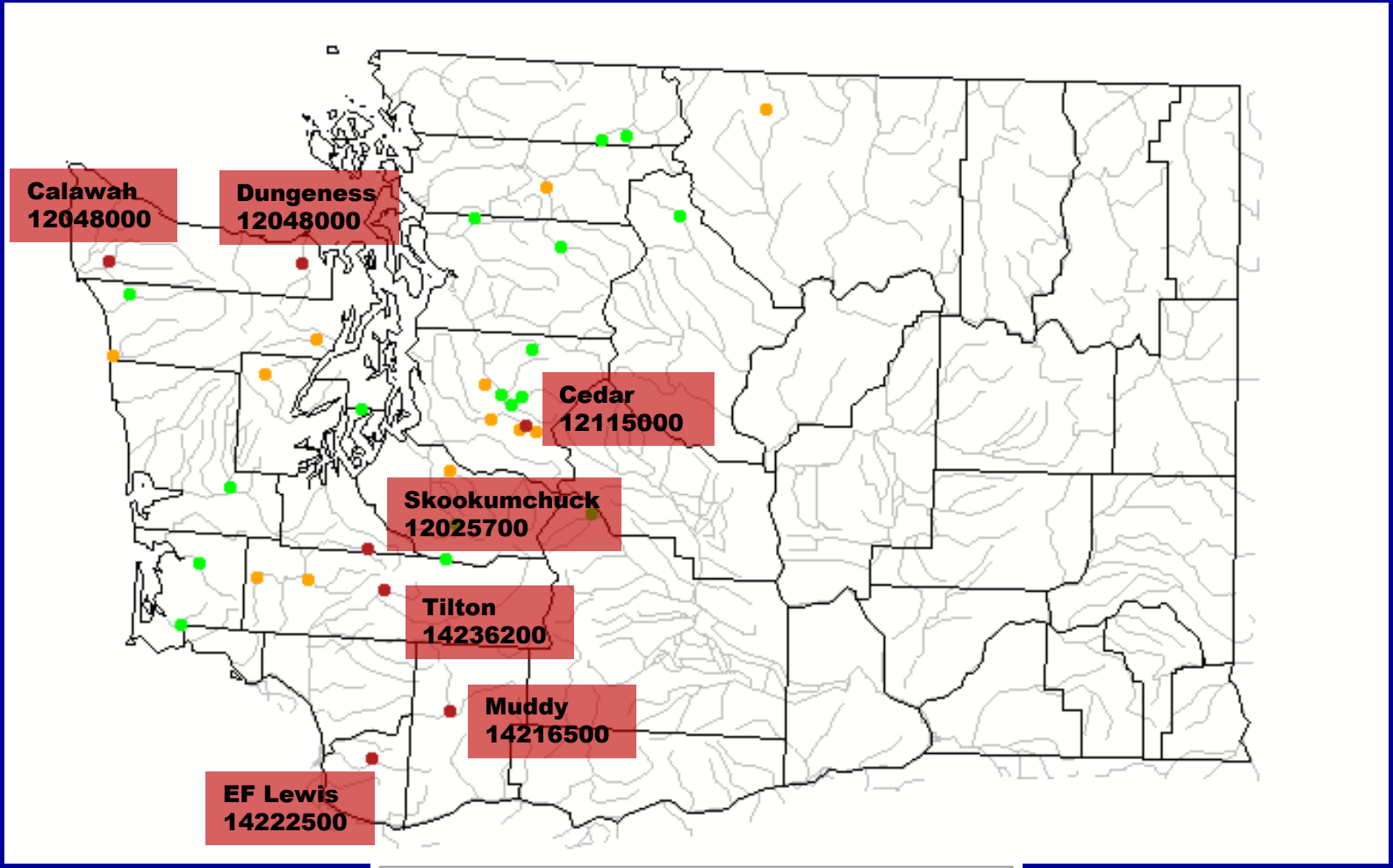




Index Gaging Stations,
7-day average streamflow (as of Aug. 11, 2021)



HCDN Gaging Stations, 7-day average streamflow (as of Aug. 11, 2021)



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

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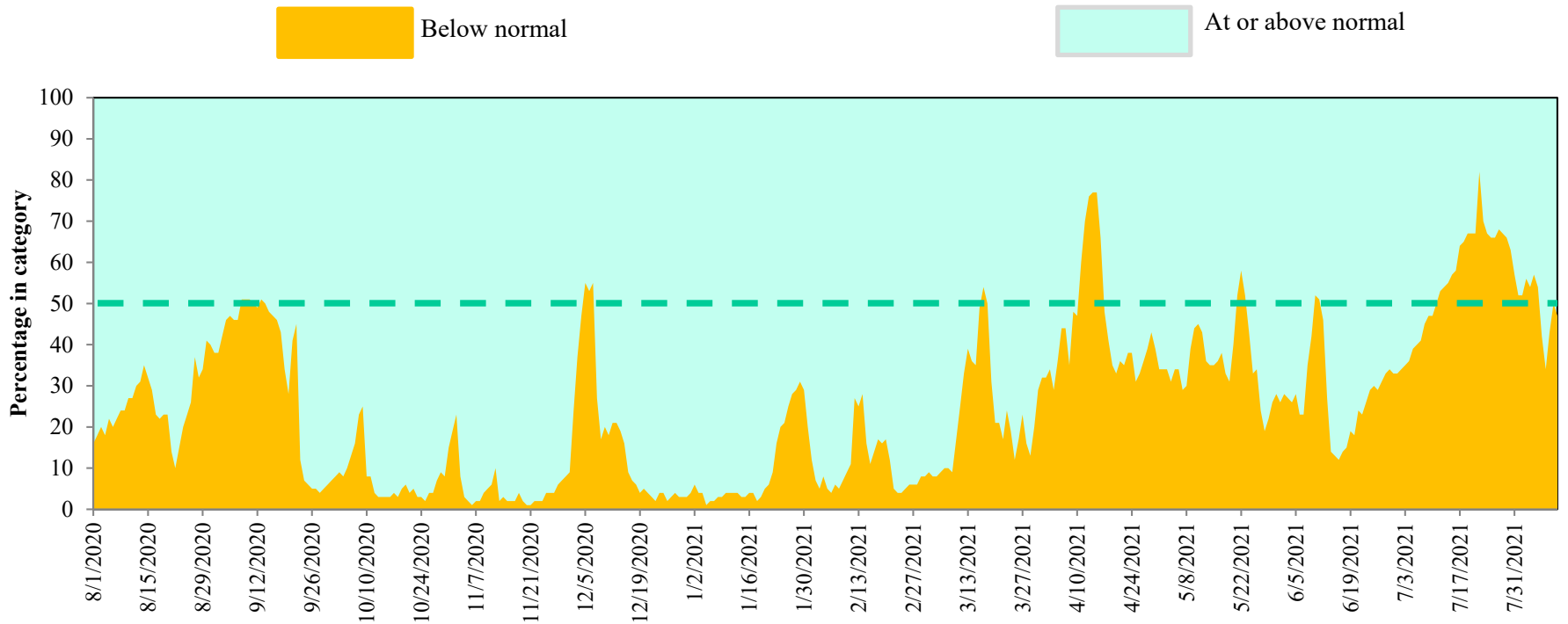
Daily streamflow in Washington Rivers compared to historical streamflow on that date, Aug 1, 2020 – Aug. 11, 2021



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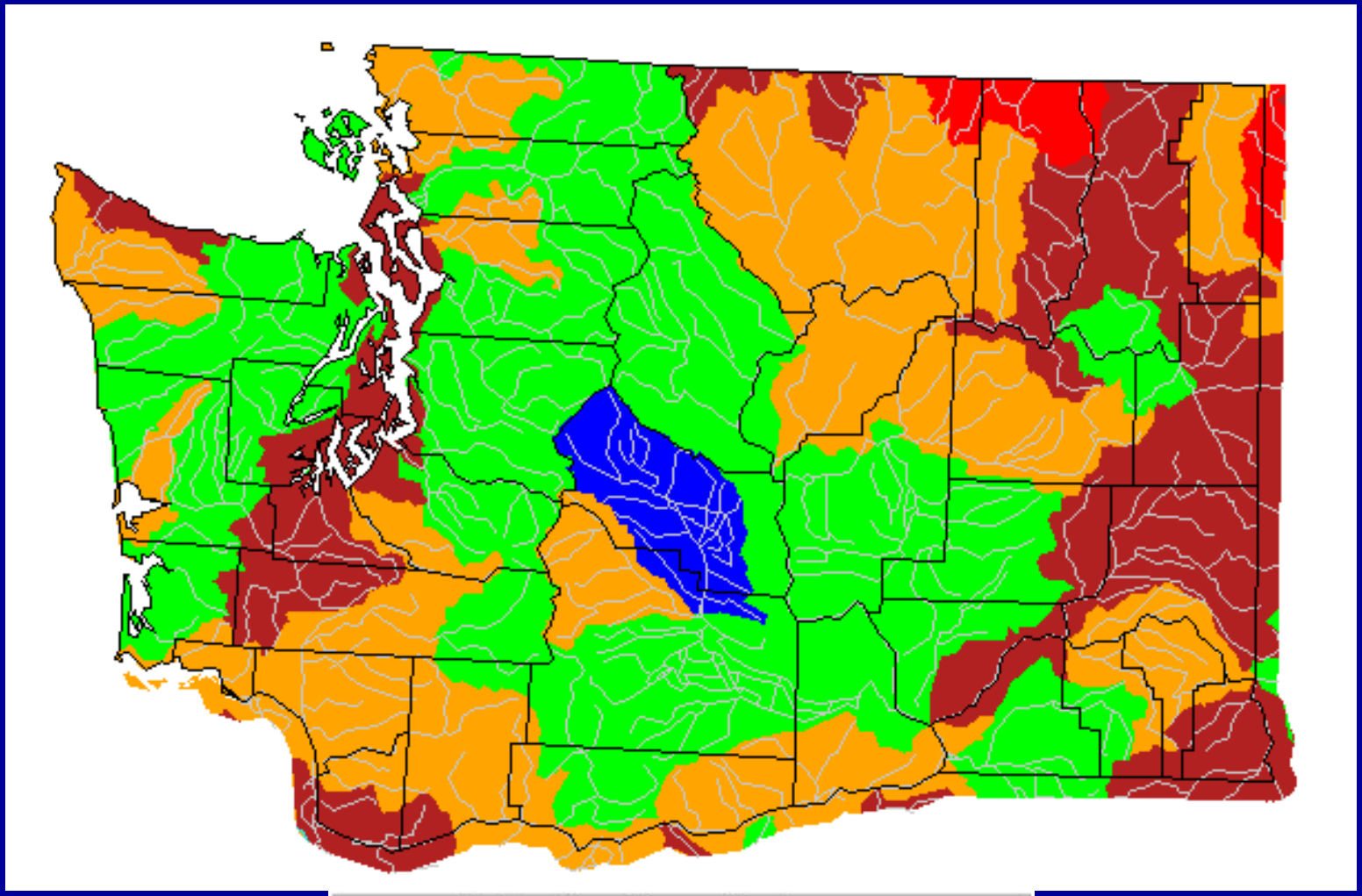
Average July 2021 Streamflow



Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

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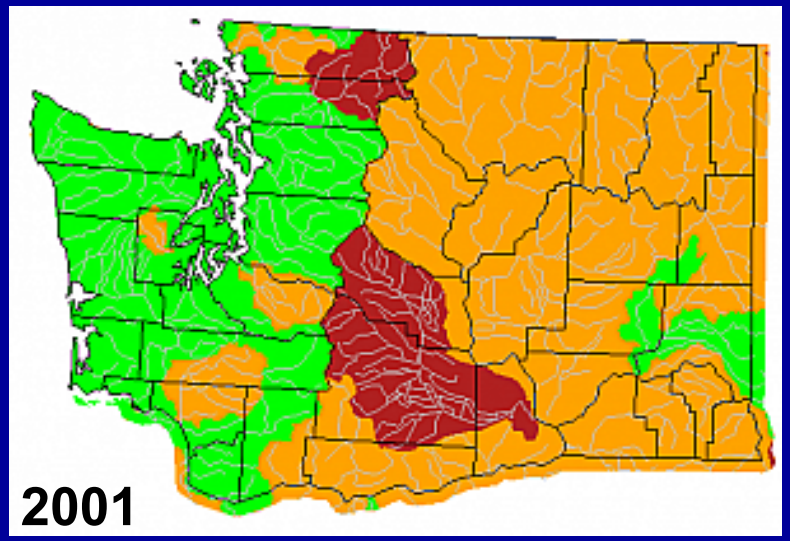
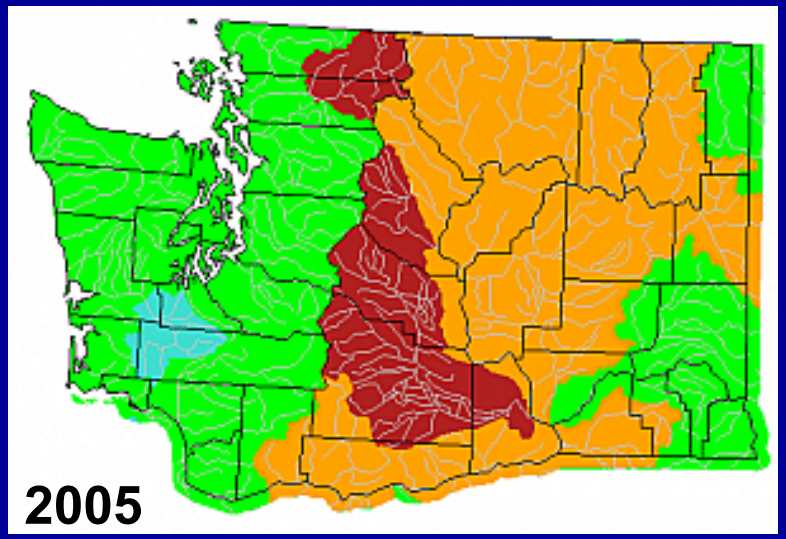
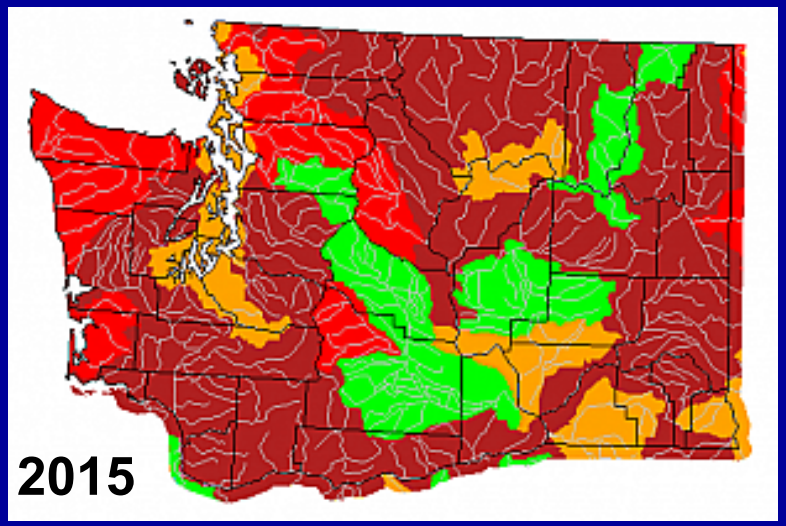
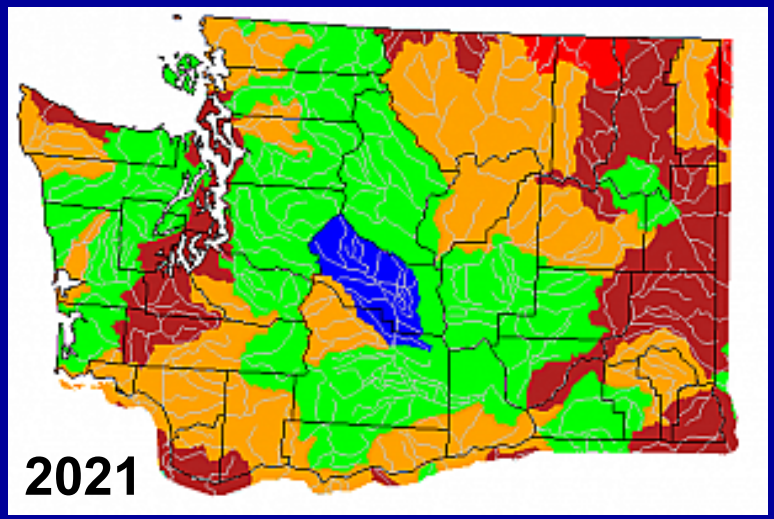
Average July 2001, ‘05, ‘15 & ‘21 Streamflow

(2001, ‘05 & ‘15 were years of statewide drought in Washington)









Explanation - Percentile classes

Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

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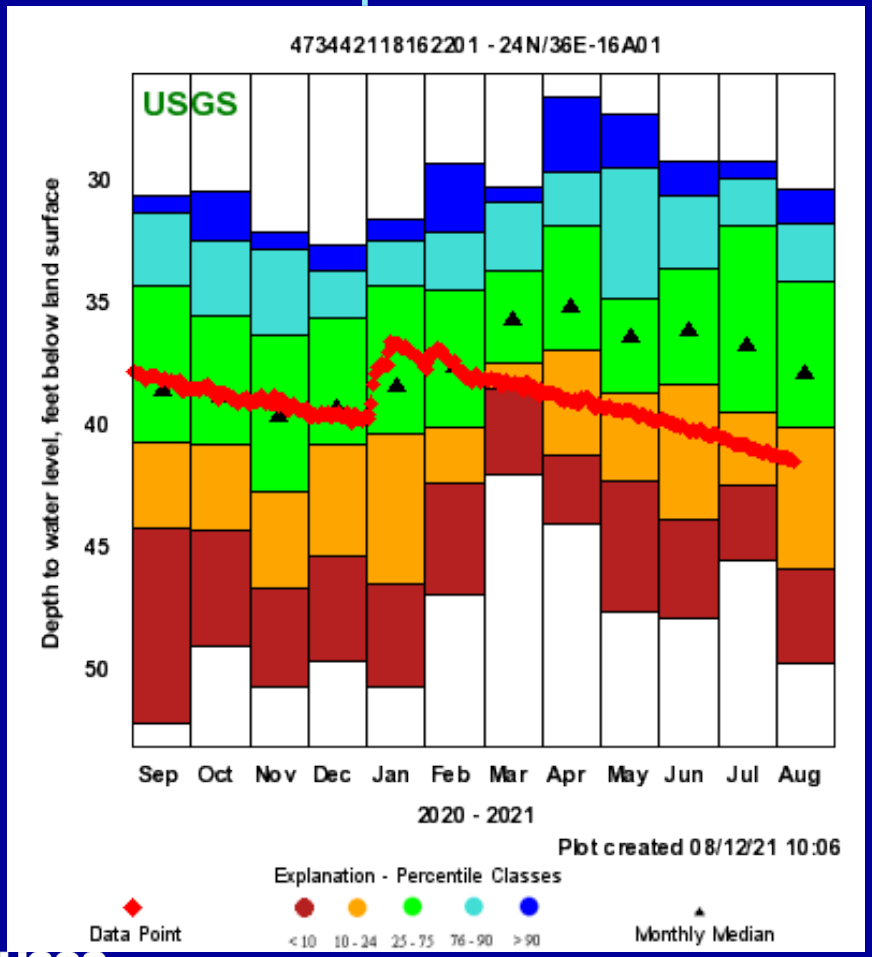
Index Groundwater Conditions as of Aug. 12, 2021

Groundwater Watch:

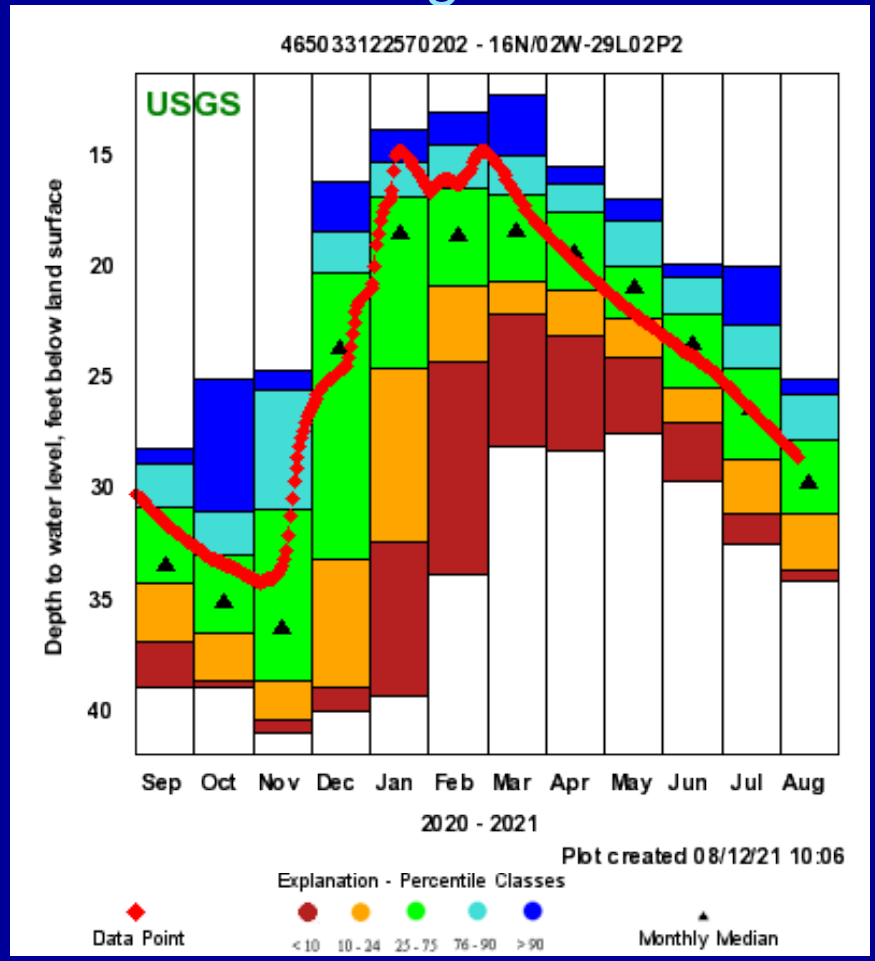
Davenport well (east)

- 117-ft deep
- Wanapum Basalt



Scatter Creek well (west)

- 82-ft deep
- Sand and gravel



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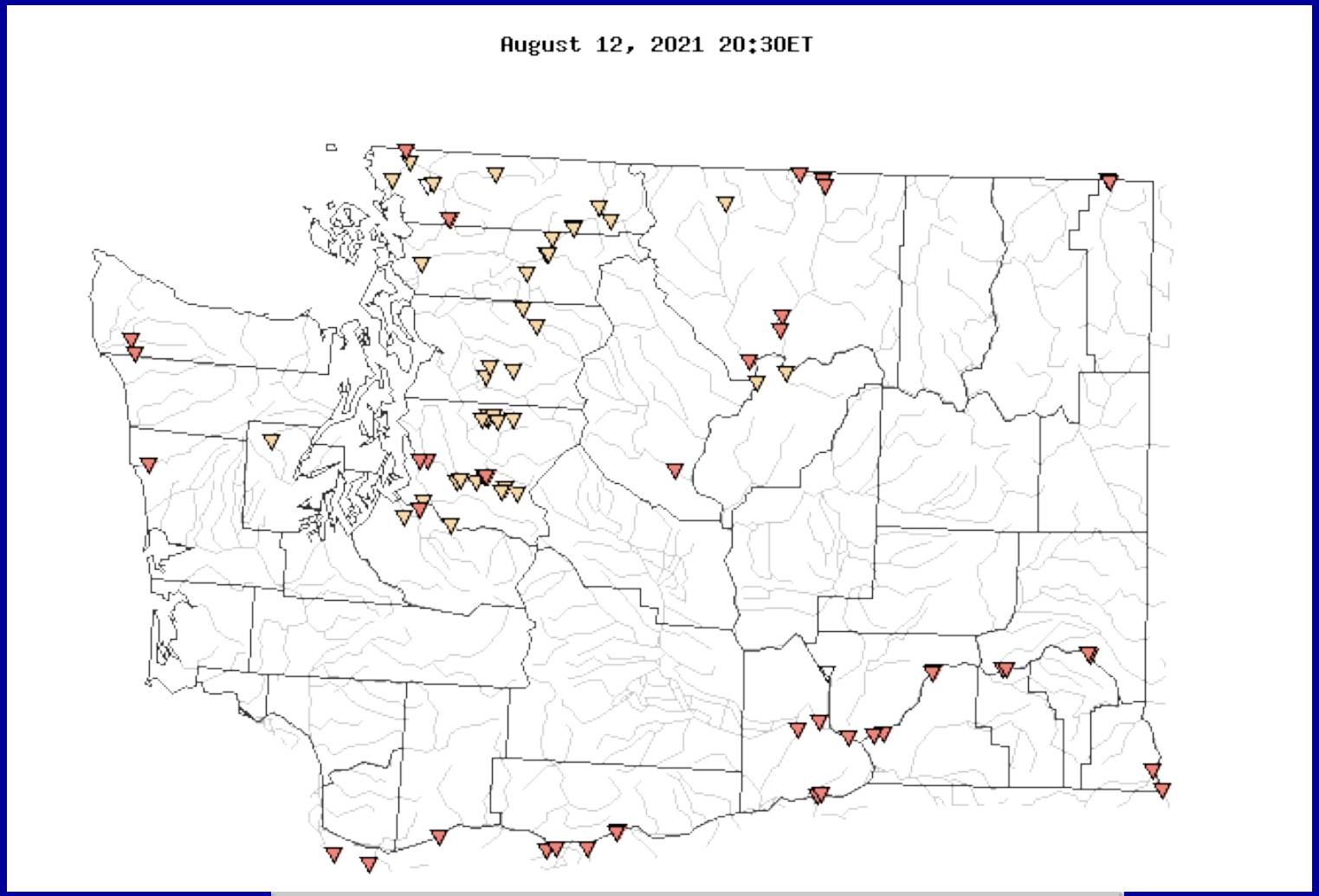
Real-time Water Temperature (degrees C)

Water Quality Watch:



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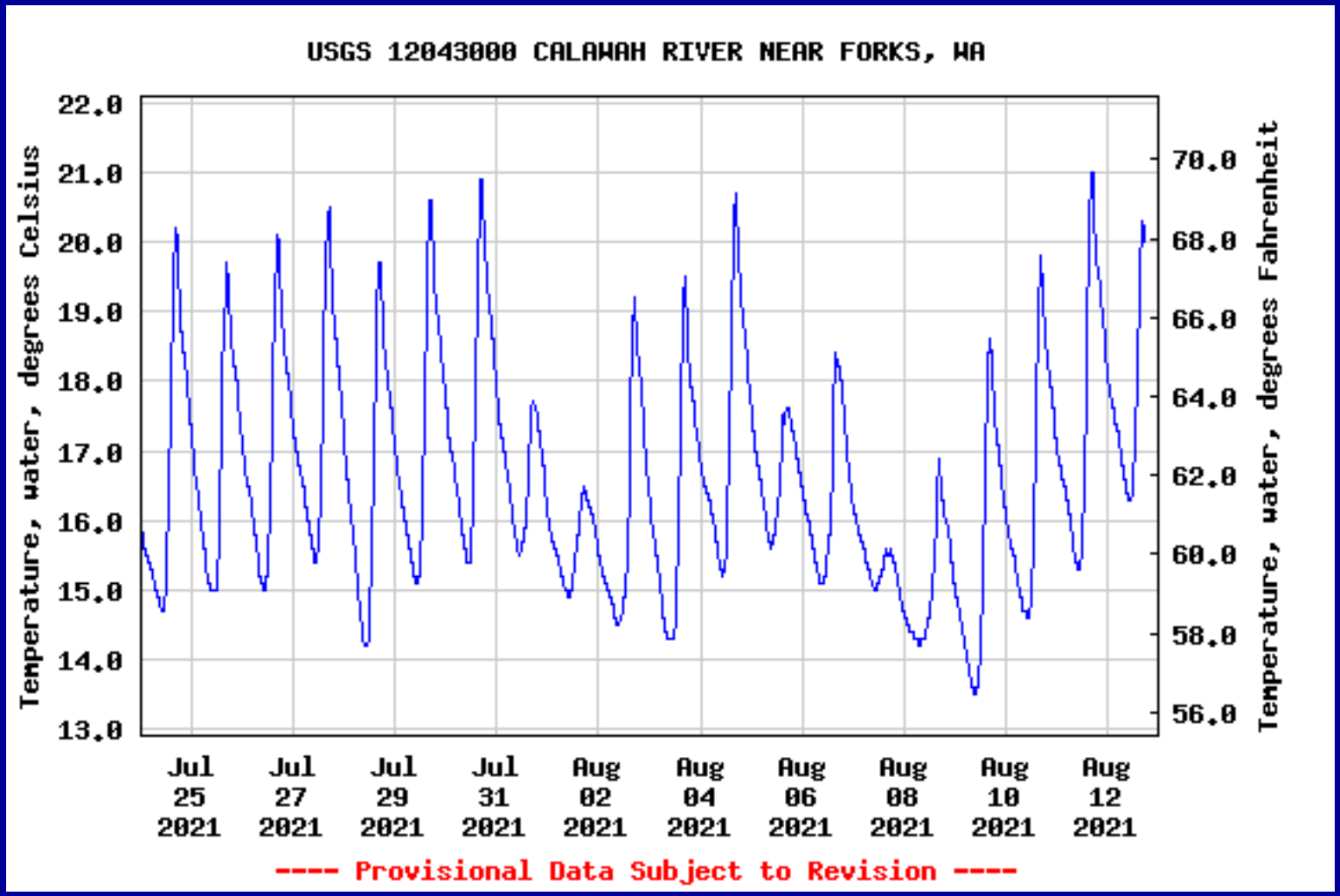
Water Temperature – Calawah River near Forks



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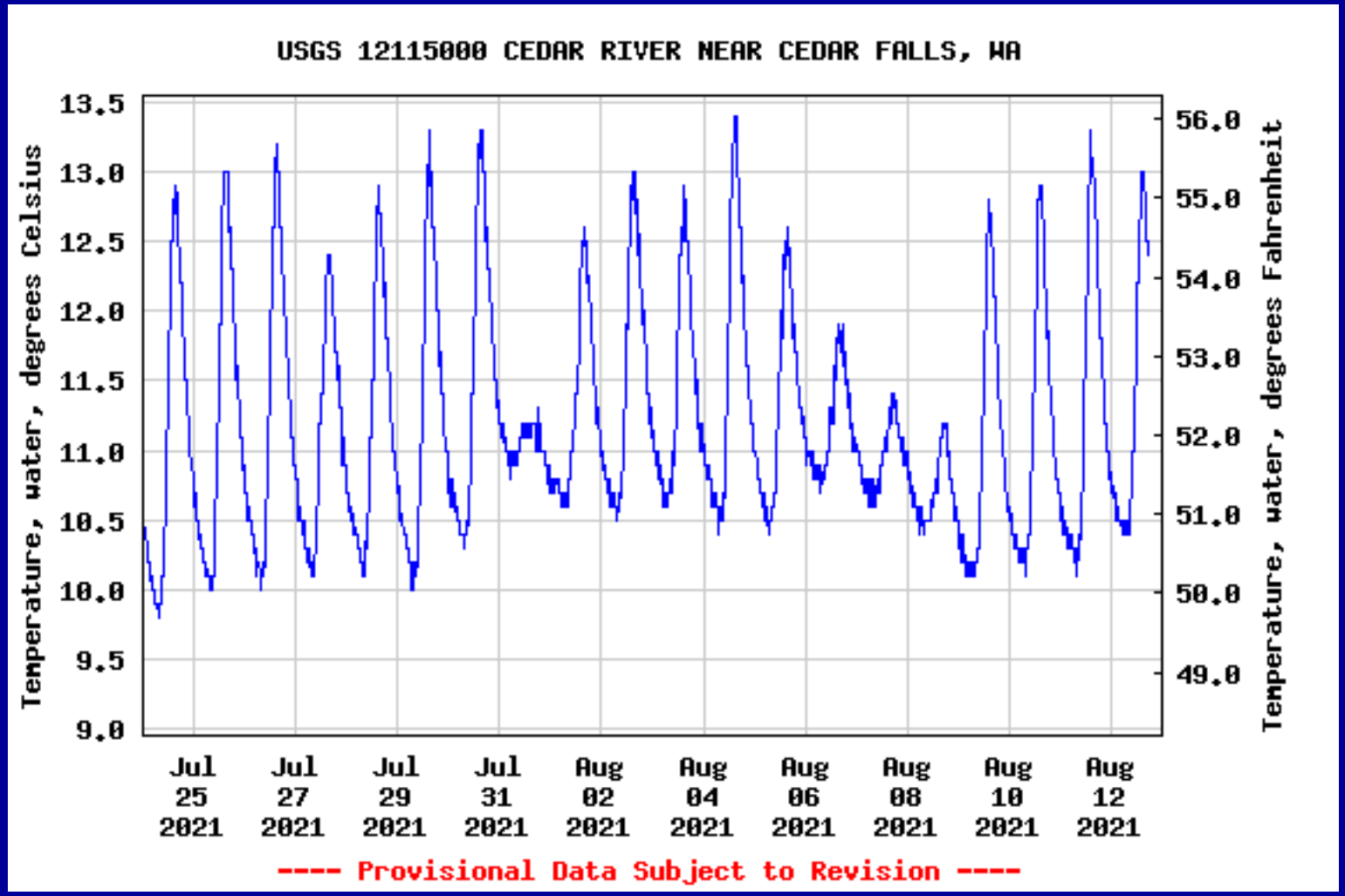
Water Temperature – Cedar River near Cedar Falls



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Summary
Streamflow Conditions as of Aug 11-12, 2021

- 7-day average streamflow statewide overall is **below normal** (between 10th and 24th percentile). **Much below normal** (<10th percentile) conditions are present in the southwest, the north side of the Olympic Peninsula, southern Puget Sound lowlands, central WA, and in the northeast.

- 70 of the 149 reporting stream gages (47%) are Below normal daily streamflow levels.

- 7-day average streamflow at eight index gaging stations:
  - West side:
    - Chehalis River nr. Grand Mound and EF Lewis River – **Much below normal**
    - Quinault River – **Below normal**
    - Puyallup River nr. Orting and NF Nooksack River - **Normal**
  - East side:
    - Hangman Creek – **Below normal**
    - Walla Walla River and American River –**Normal**

- Index groundwater sites:
  - Davenport well (east) – **Below normal**
  - Scatter Creek well (west) –**Normal**

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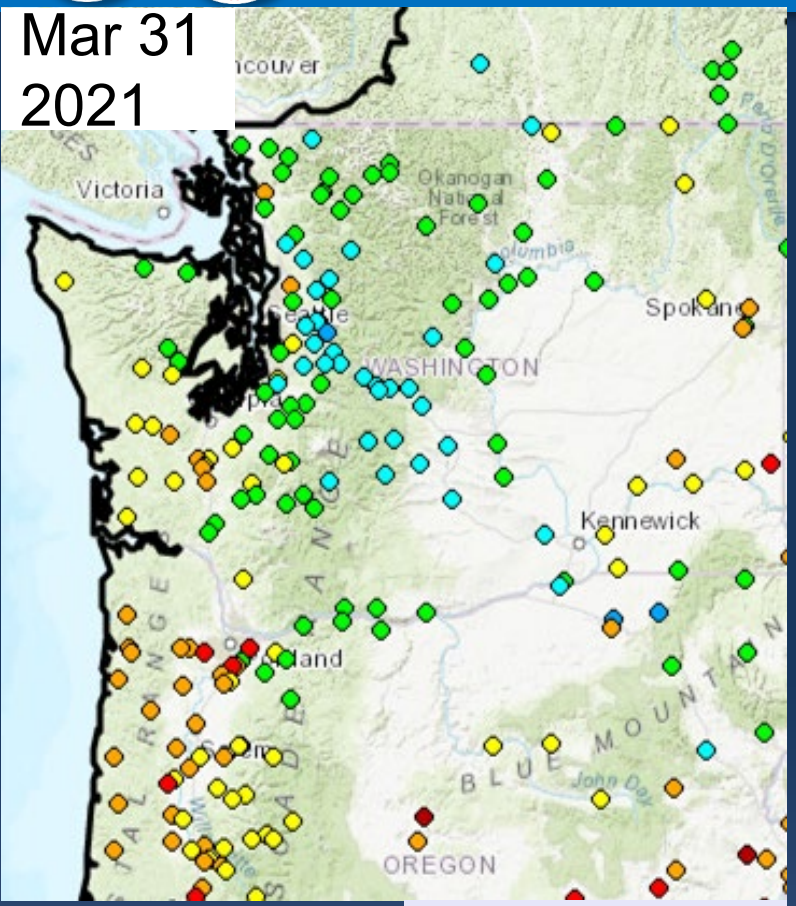
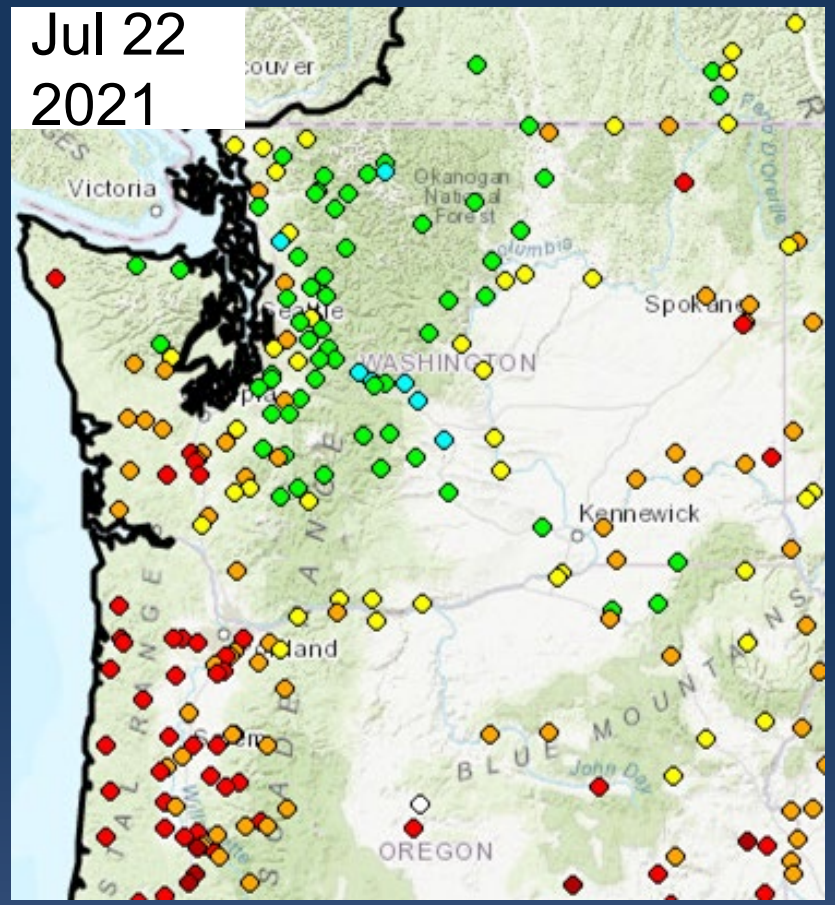
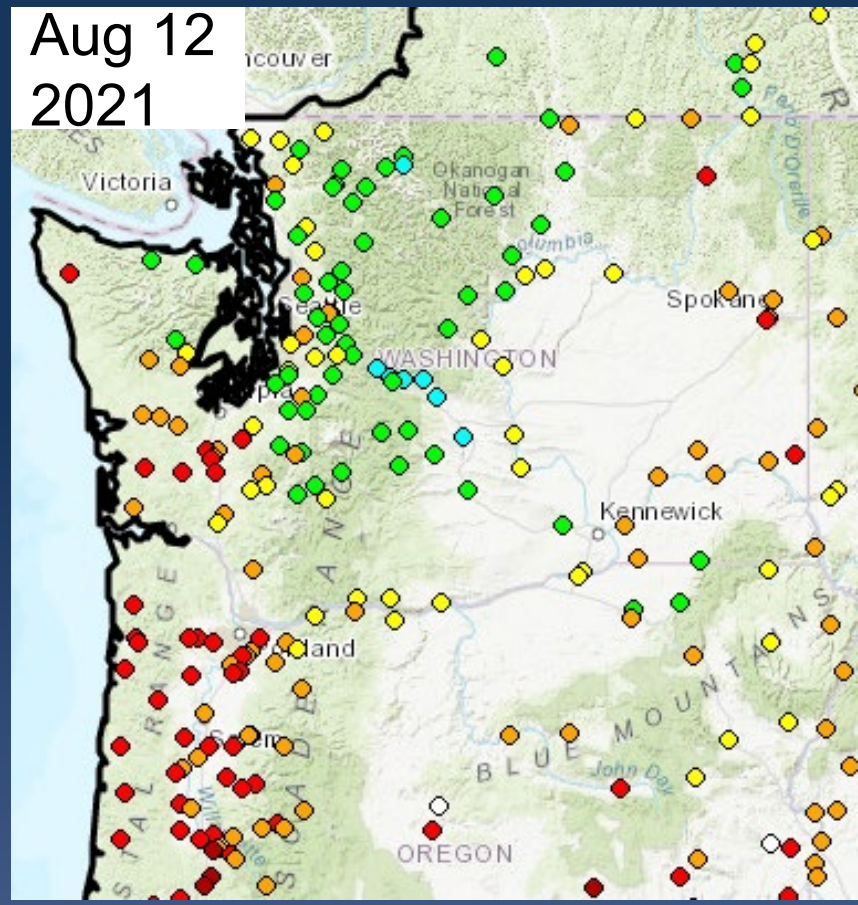
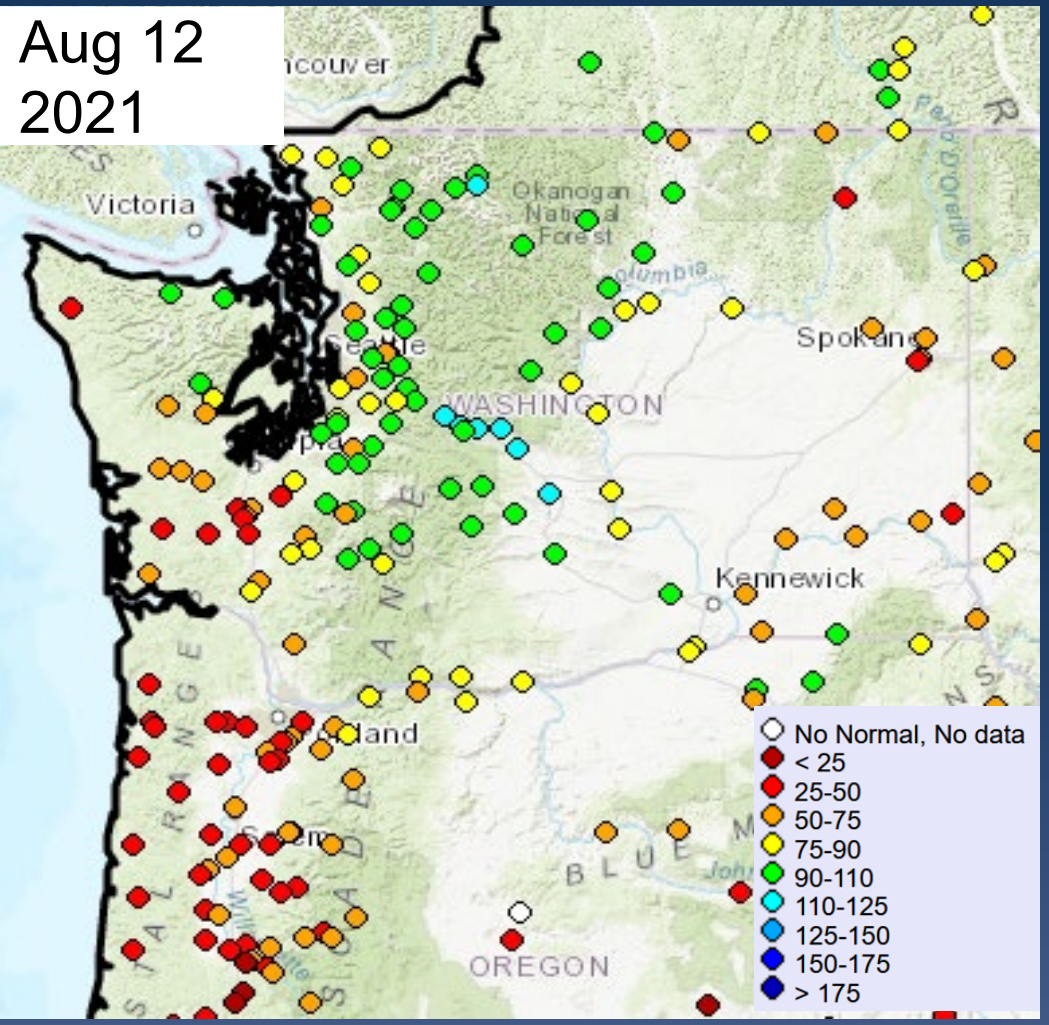
ESP10 Natural Forecasts - WA







ESP10 Natural Forecasts - WA



% Normal Apr -Sep Vol	**Mar 31**	**July 23**	**Aug 12**
Skagit nr Mt Vernon	105	102	102
Dungeness nr Sequim	96	94	92
Chehalis at Porter	73	59	58
Okanogan at Malott	104	95	95
Methow nr Pateros	110	101	101
Yakima at Parker	113	105	106
Walla Walla nr Touchet	84	50	51