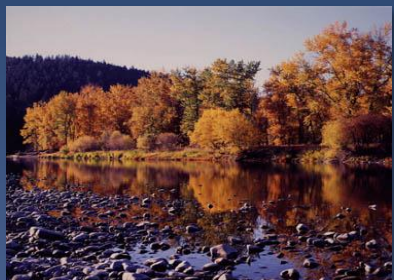




# Northwest River Forecast Center



## May 2020 Water Supply Briefing

Telephone Conference : (562) 247-8422

Pass Code : 322-526-815#

Ryan Lucas, PhD

[NWRFC.watersupply@noaa.gov](mailto:NWRFC.watersupply@noaa.gov)

(503) 326-7291

\*Audio PIN is provided when logging into the webinar and will be required if you wish to ask questions at the end of presentation



# Bottom Line

April was a drier than normal month for most of the basin.

Northern basin near normal to above normal water supply forecasts.

Southern basin generally below normal water supply forecasts.

State drought declarations for counties in S Oregon and S Idaho.



# Water Supply Forecast Briefing Outline

## Observed Conditions WY2020:

- Temperature
- Precipitation
- Snowpack
- Runoff

Model States

## Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Water Supply Forecasts

Model Forcings

Model Inputs

## Additional Guidance

- State Drought Declarations
- CPC Climate Outlook

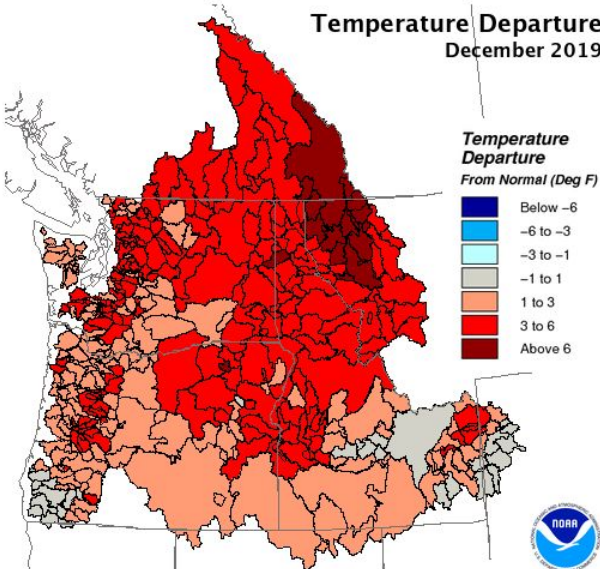
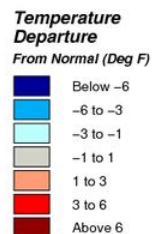
## Summary





# Monthly Temperature Departure

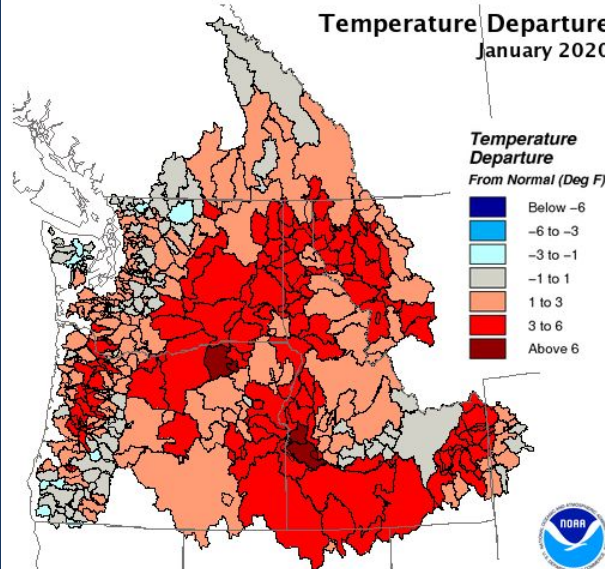
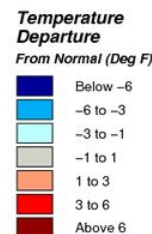
Temperature Departure  
December 2019



Creation Time: Thursday, Jan 2, 2020

Northwest River Forecast Center

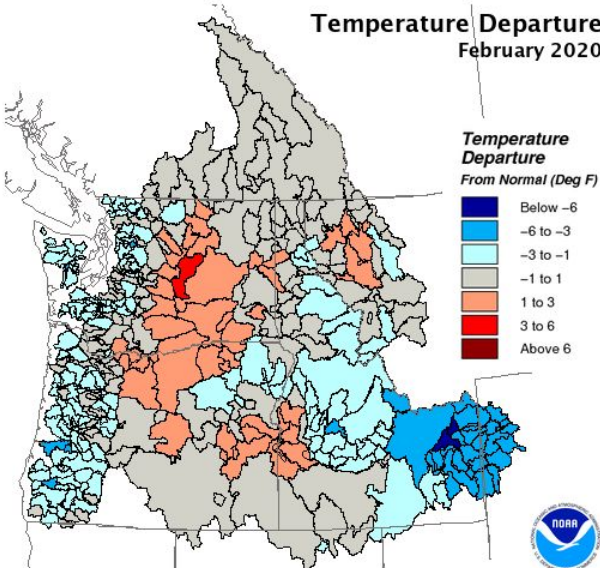
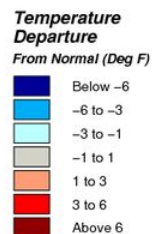
Temperature Departure  
January 2020



Creation Time: Saturday, Feb 1, 2020

Northwest River Forecast Center

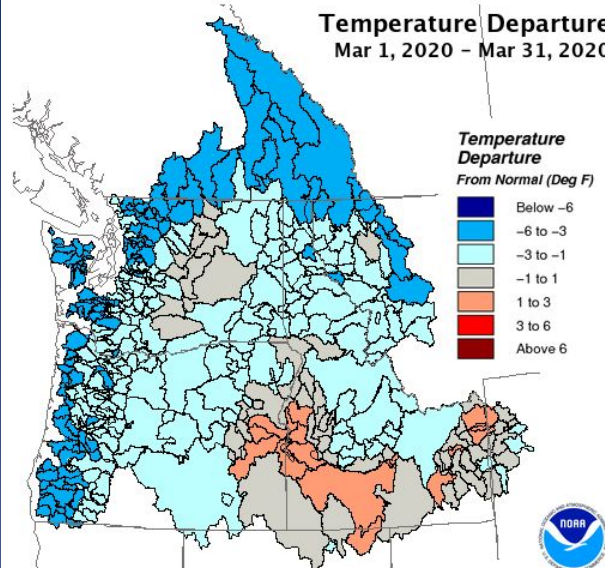
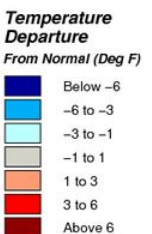
Temperature Departure  
February 2020



Creation Time: Sunday, Mar 1, 2020

Northwest River Forecast Center

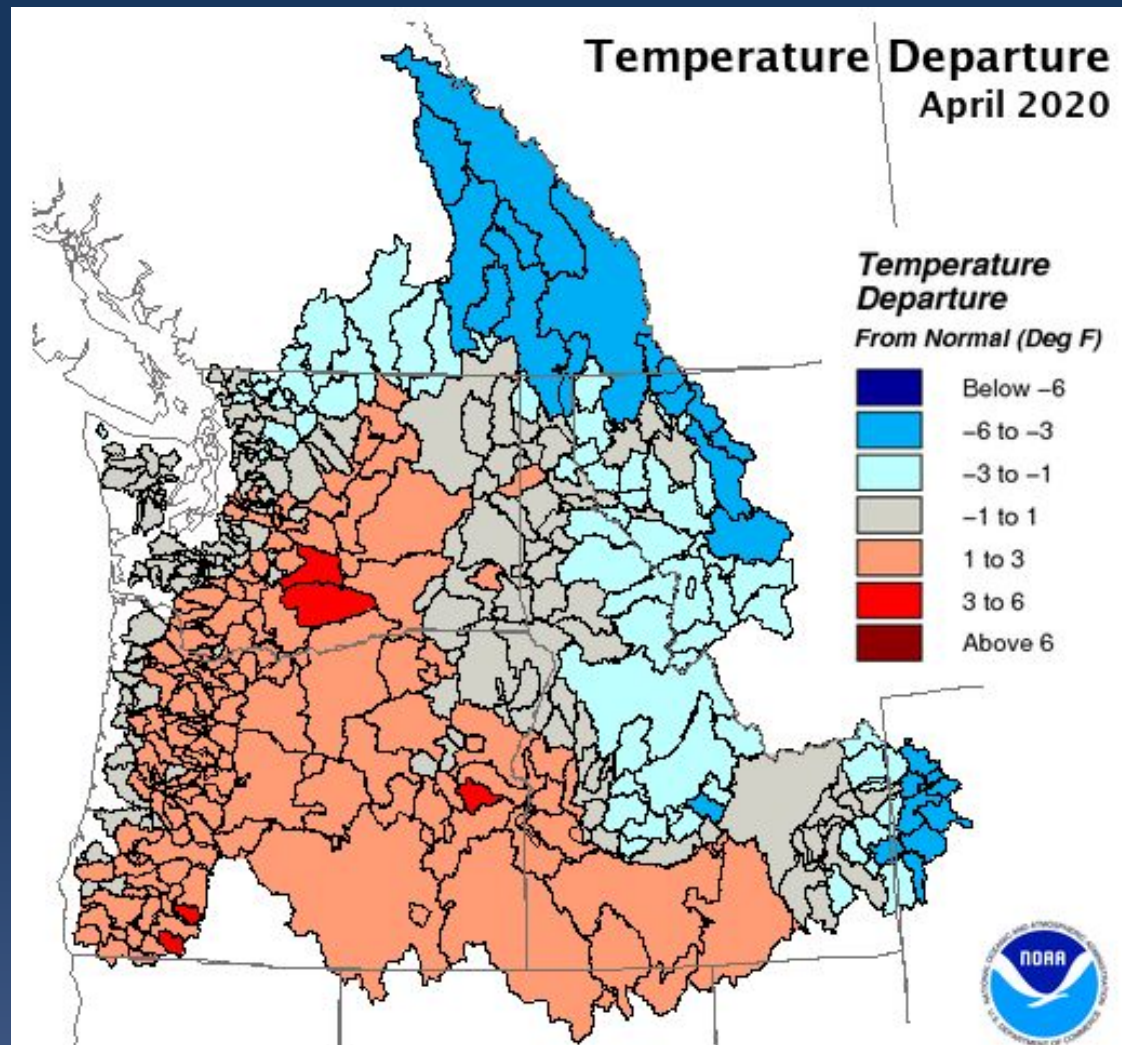
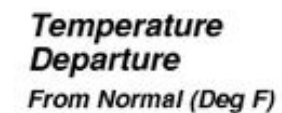
Temperature Departure  
Mar 1, 2020 - Mar 31, 2020



Creation Time: Wednesday, Apr 1, 2020

Northwest River Forecast Center

Temperature Departure  
April 2020



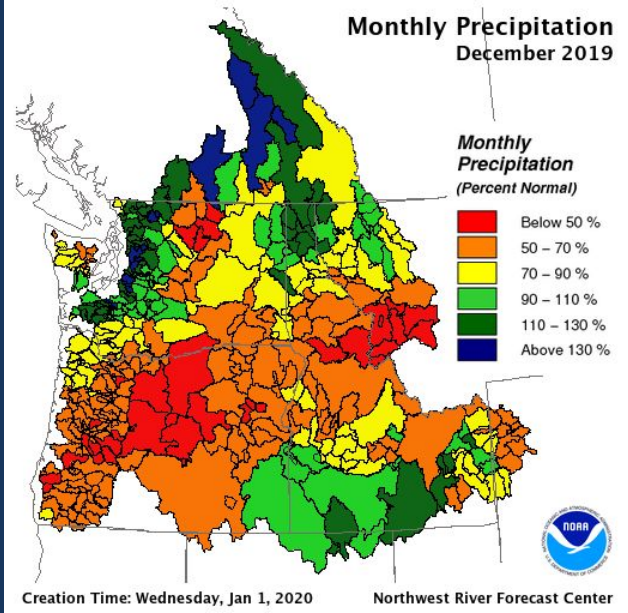
Creation Time: Friday, May 1, 2020

Northwest River Forecast Center

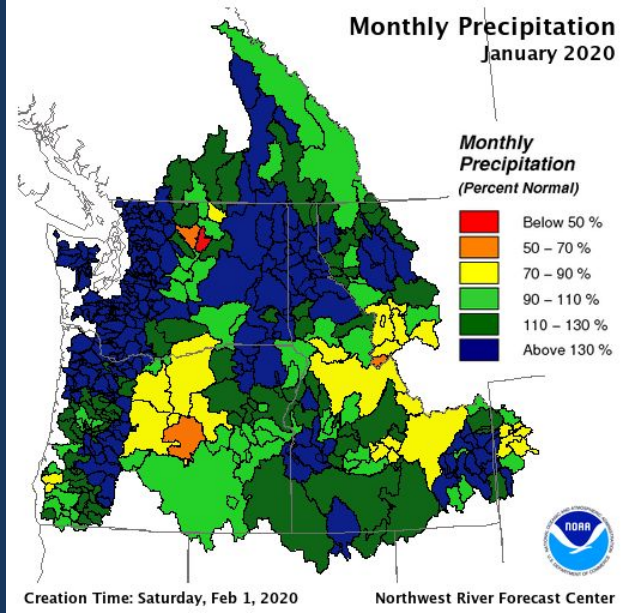


# Monthly Precipitation Departure

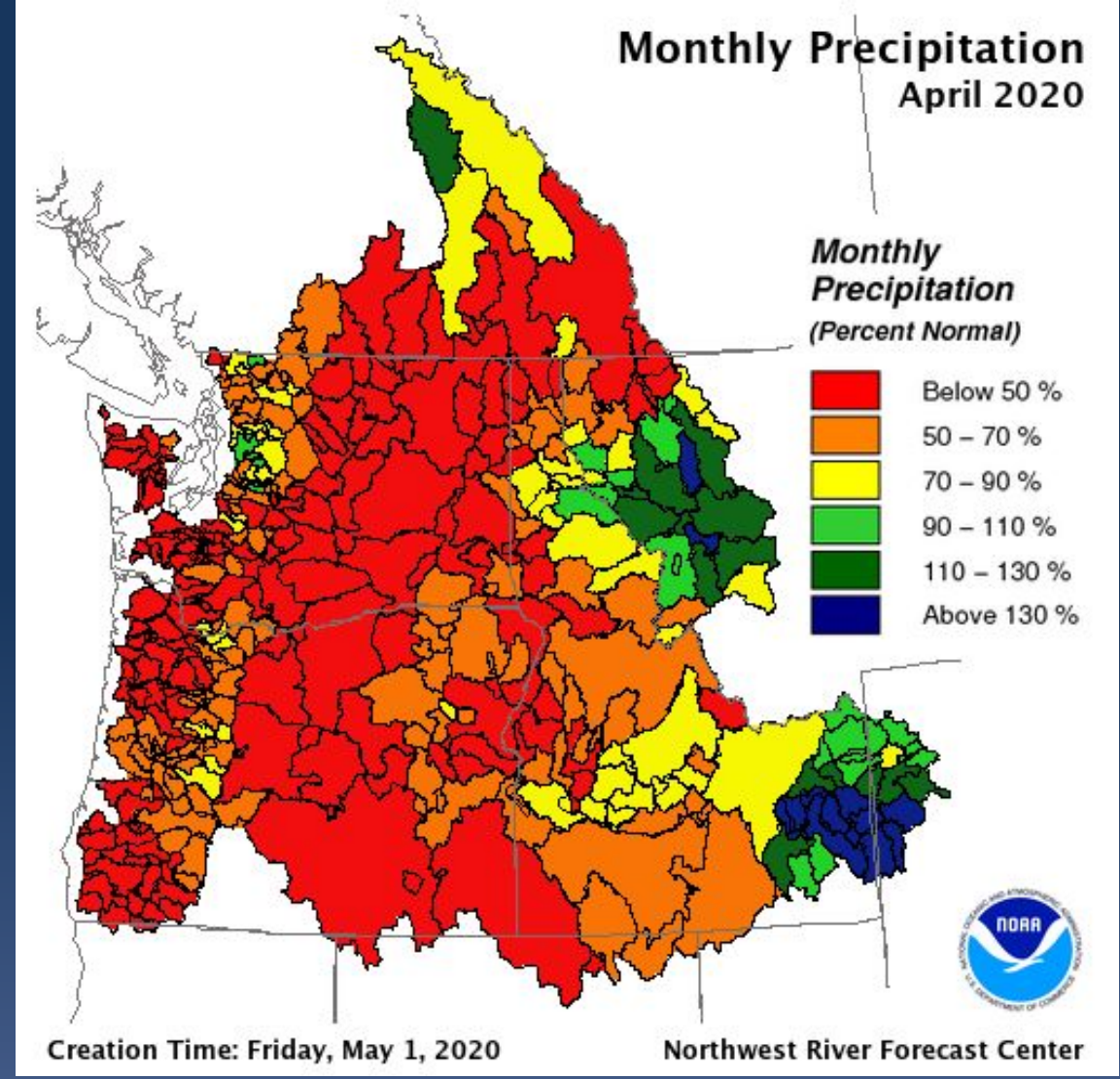
Monthly Precipitation  
December 2019



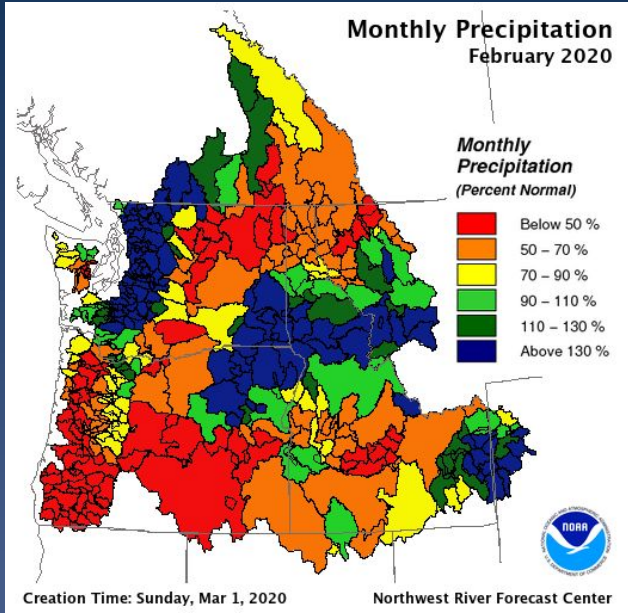
Monthly Precipitation  
January 2020



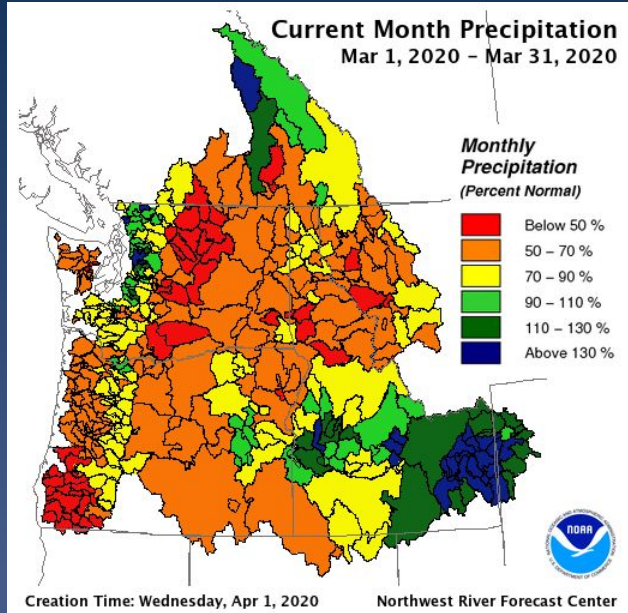
Monthly Precipitation  
April 2020



Monthly Precipitation  
February 2020



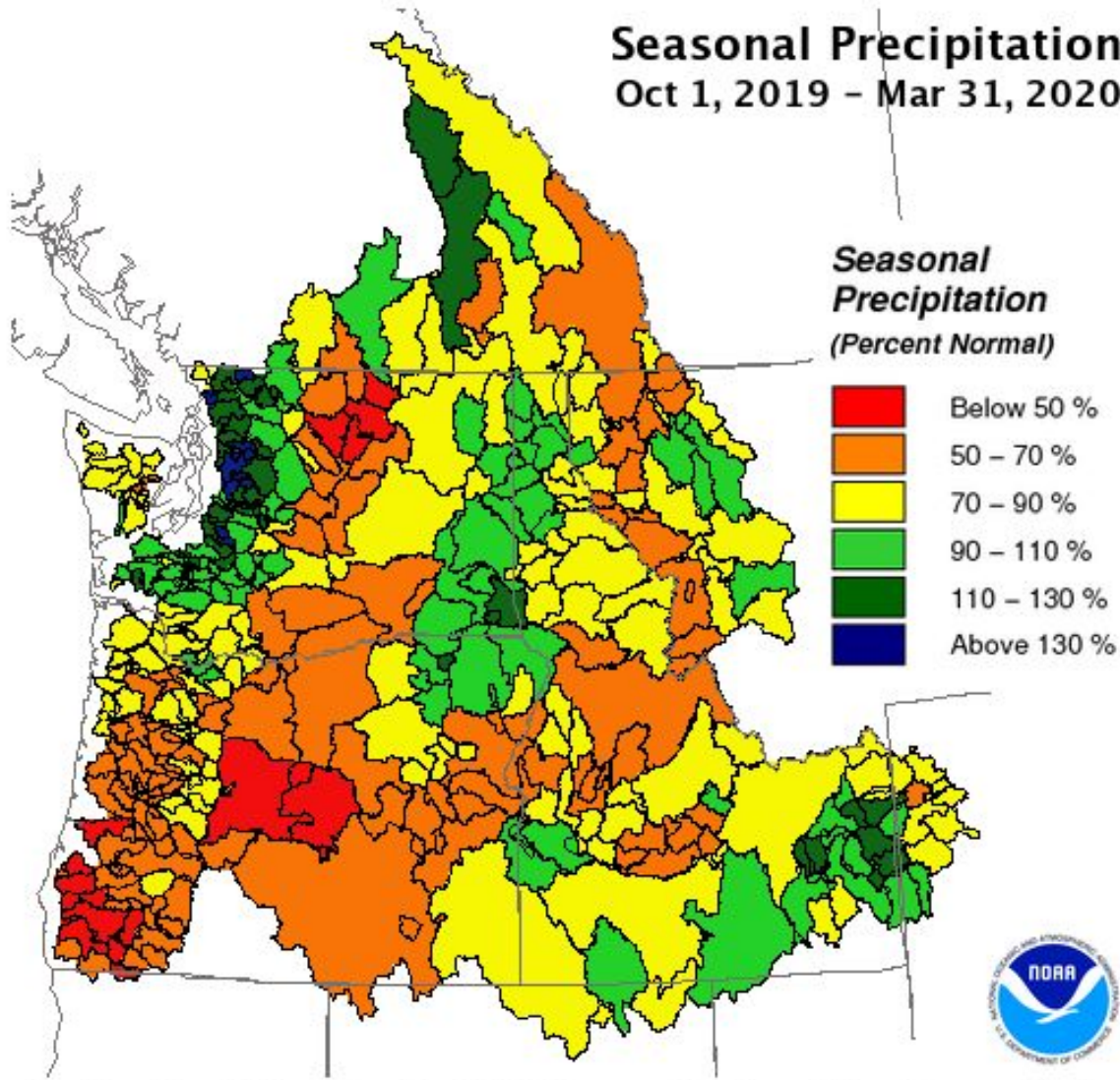
Current Month Precipitation  
Mar 1, 2020 - Mar 31, 2020





# Seasonal Precipitation

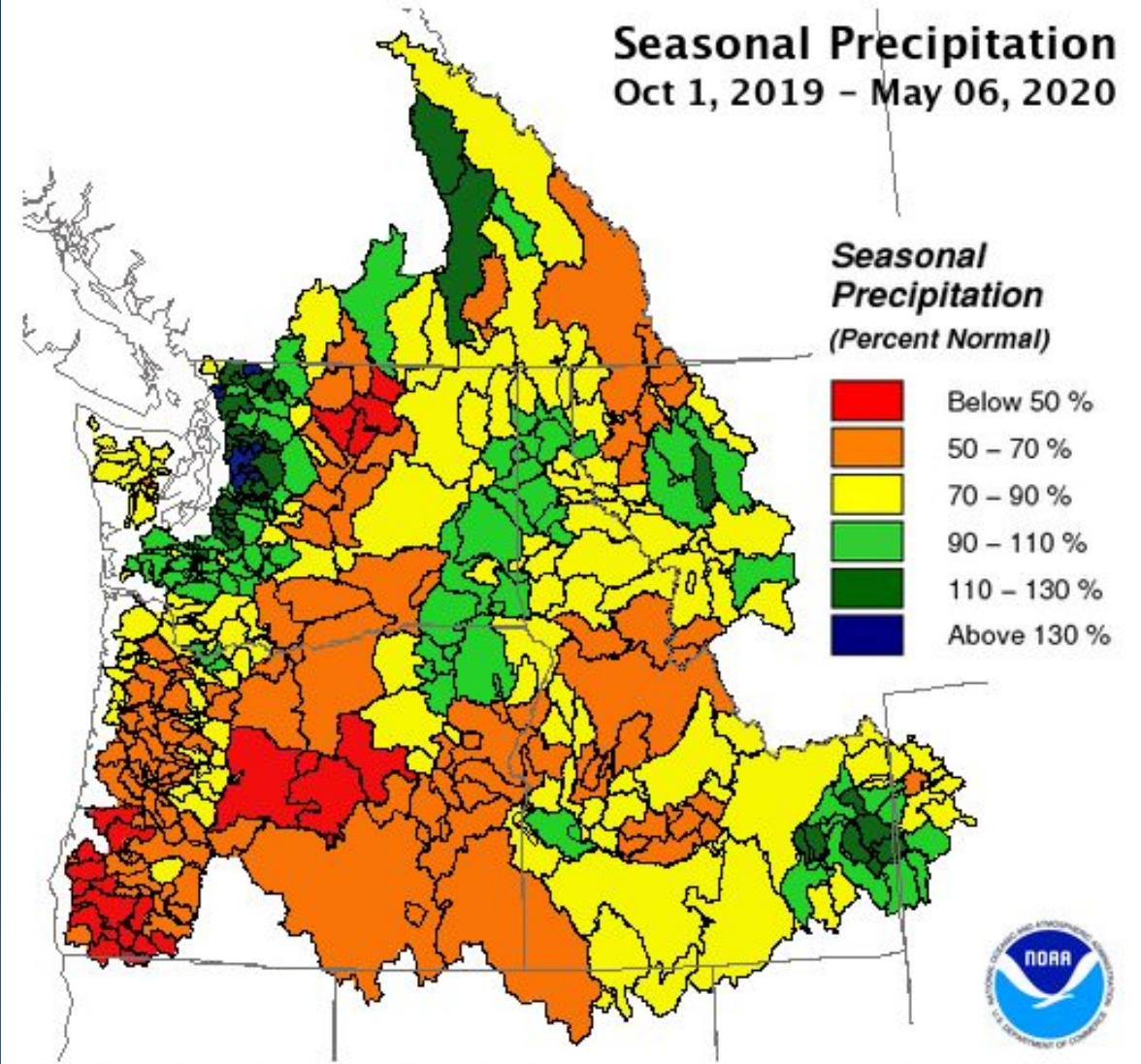
**Seasonal Precipitation**  
Oct 1, 2019 - Mar 31, 2020



Creation Time: Wednesday, Apr 1, 2020

Northwest River Forecast Center

**Seasonal Precipitation**  
Oct 1, 2019 - May 06, 2020



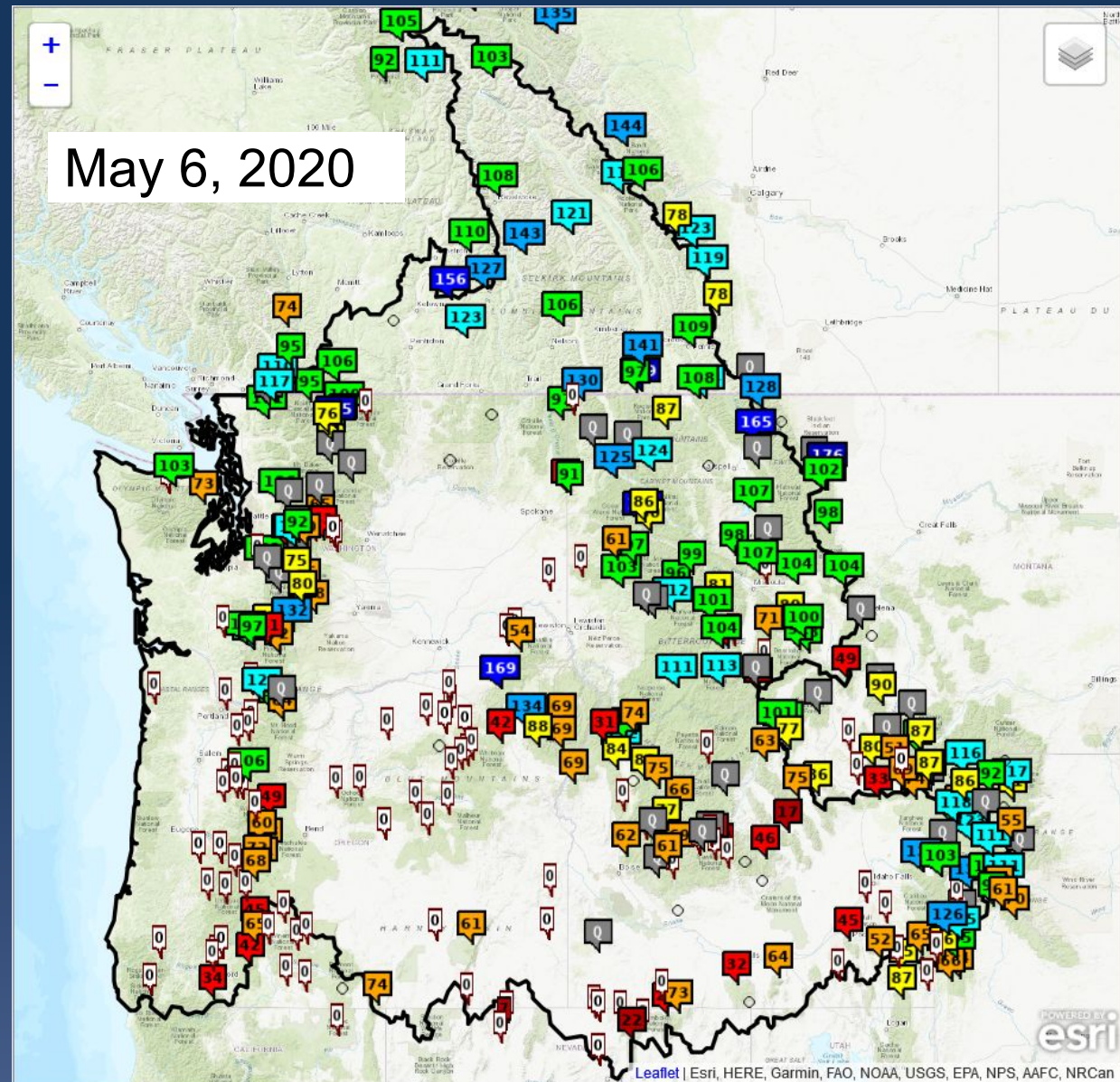
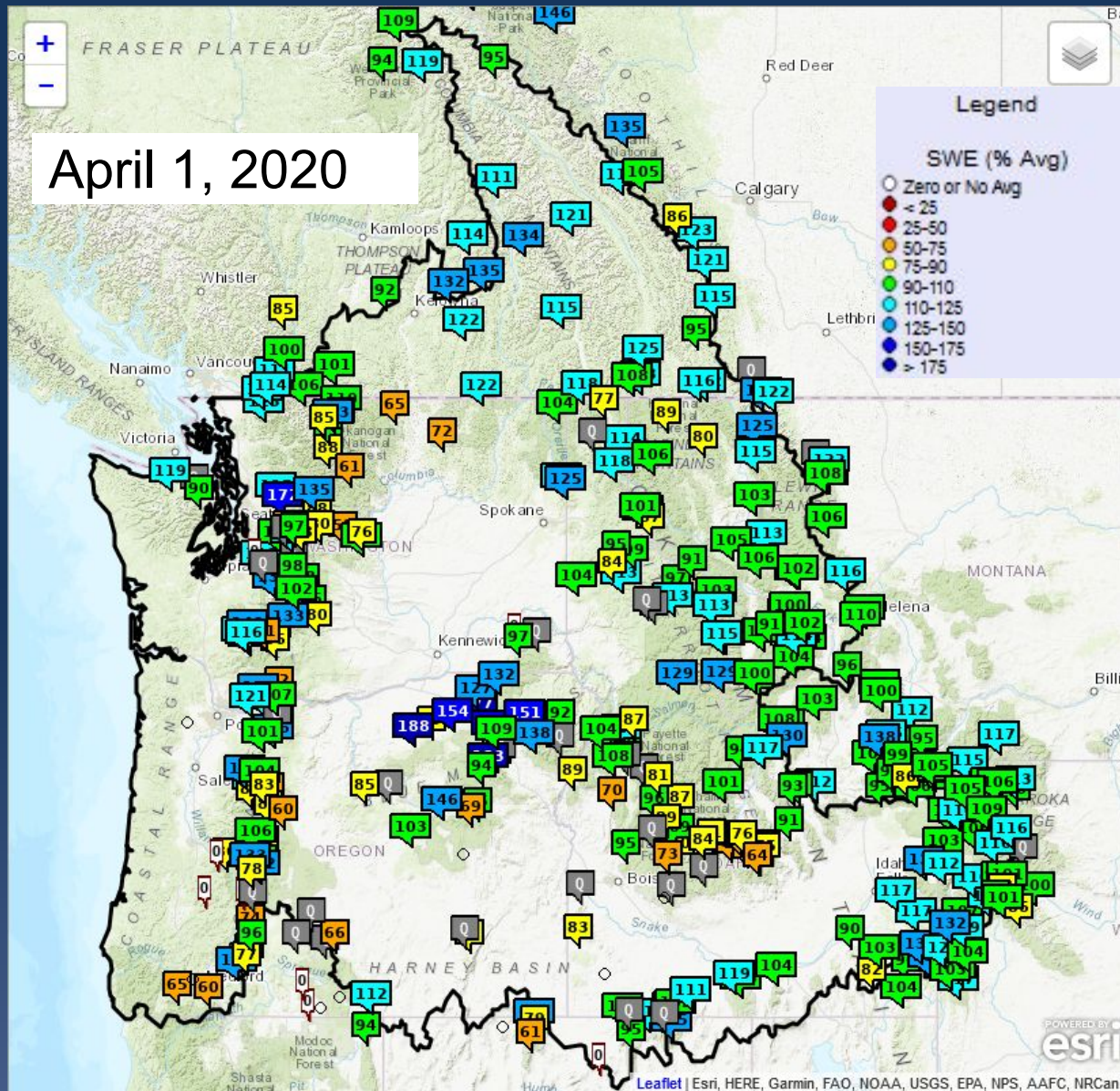
Creation Time: Thursday, May 7, 2020

Northwest River Forecast Center





# Snowpack

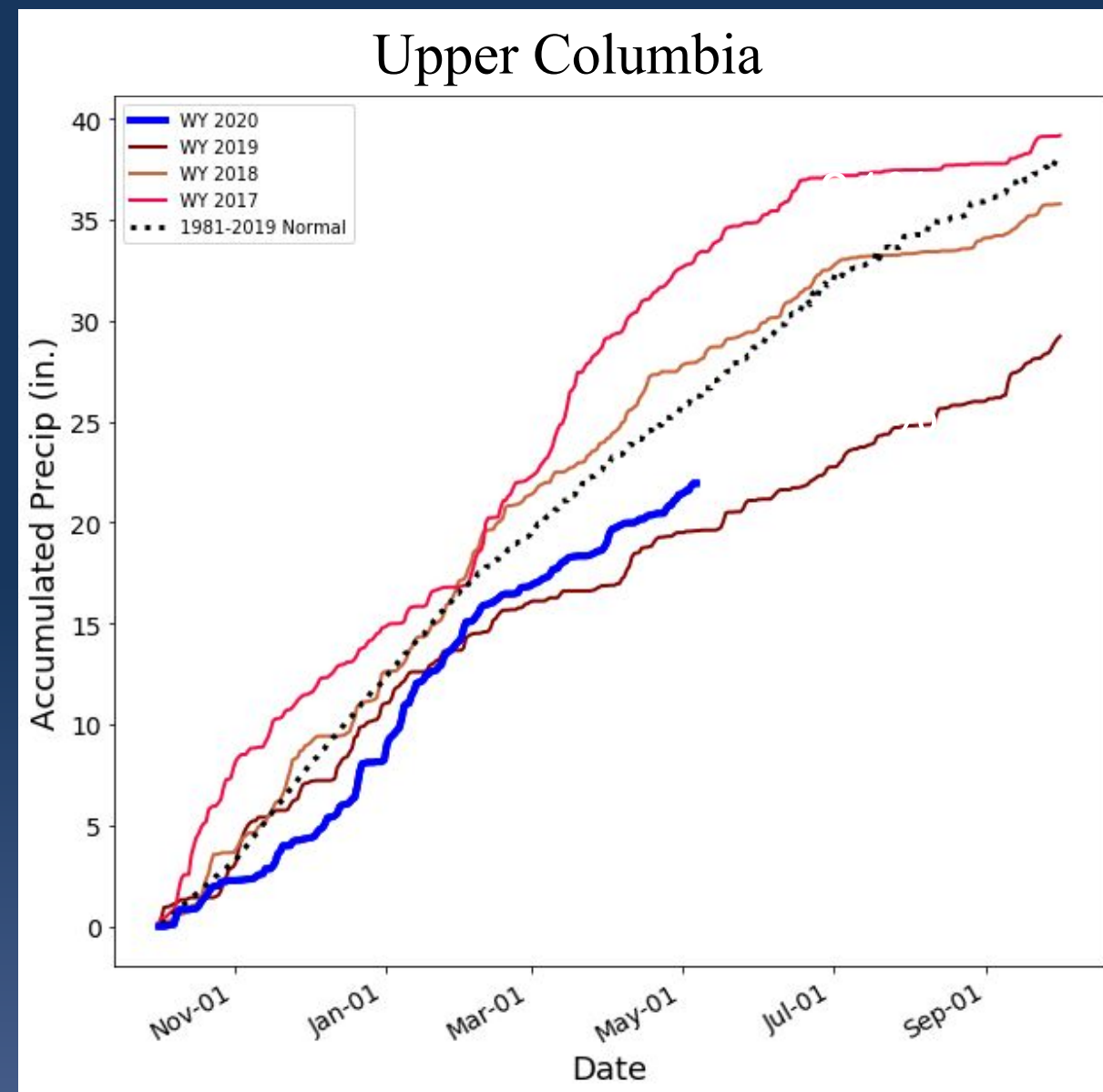
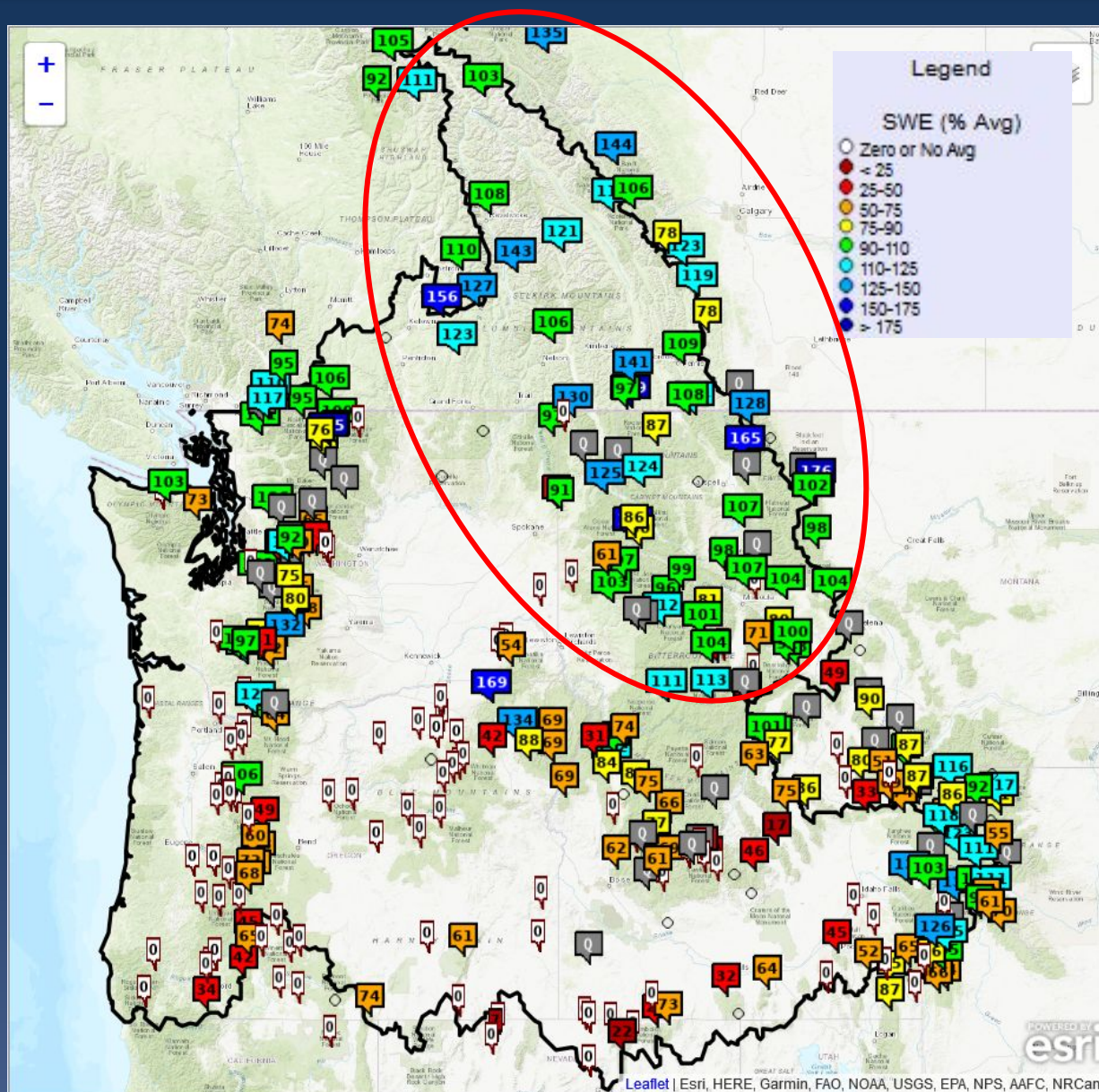


Snow data from NRCS, BC Hydro, and Alberta EP.





# Snowpack and Seasonal Precipitation

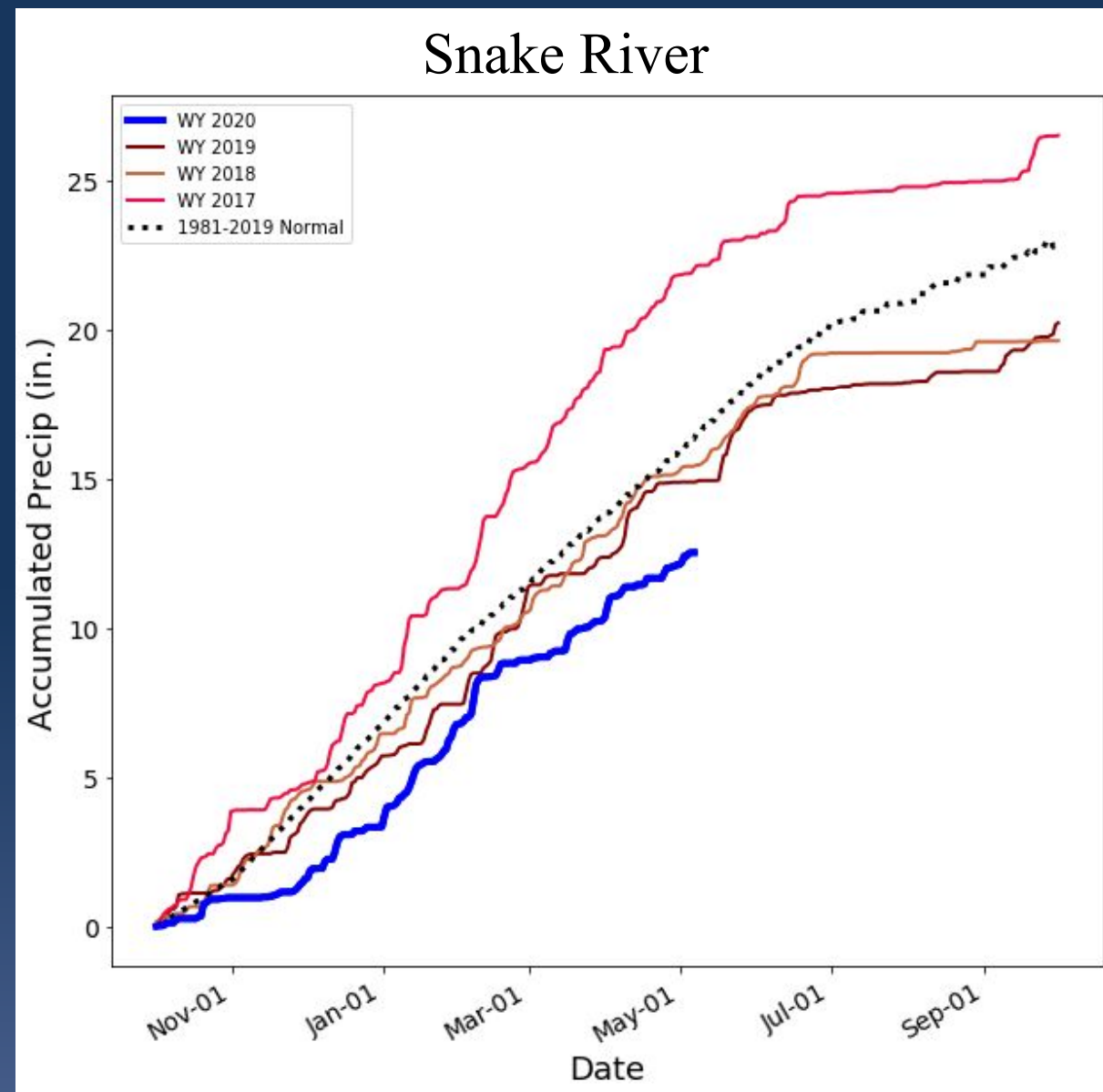
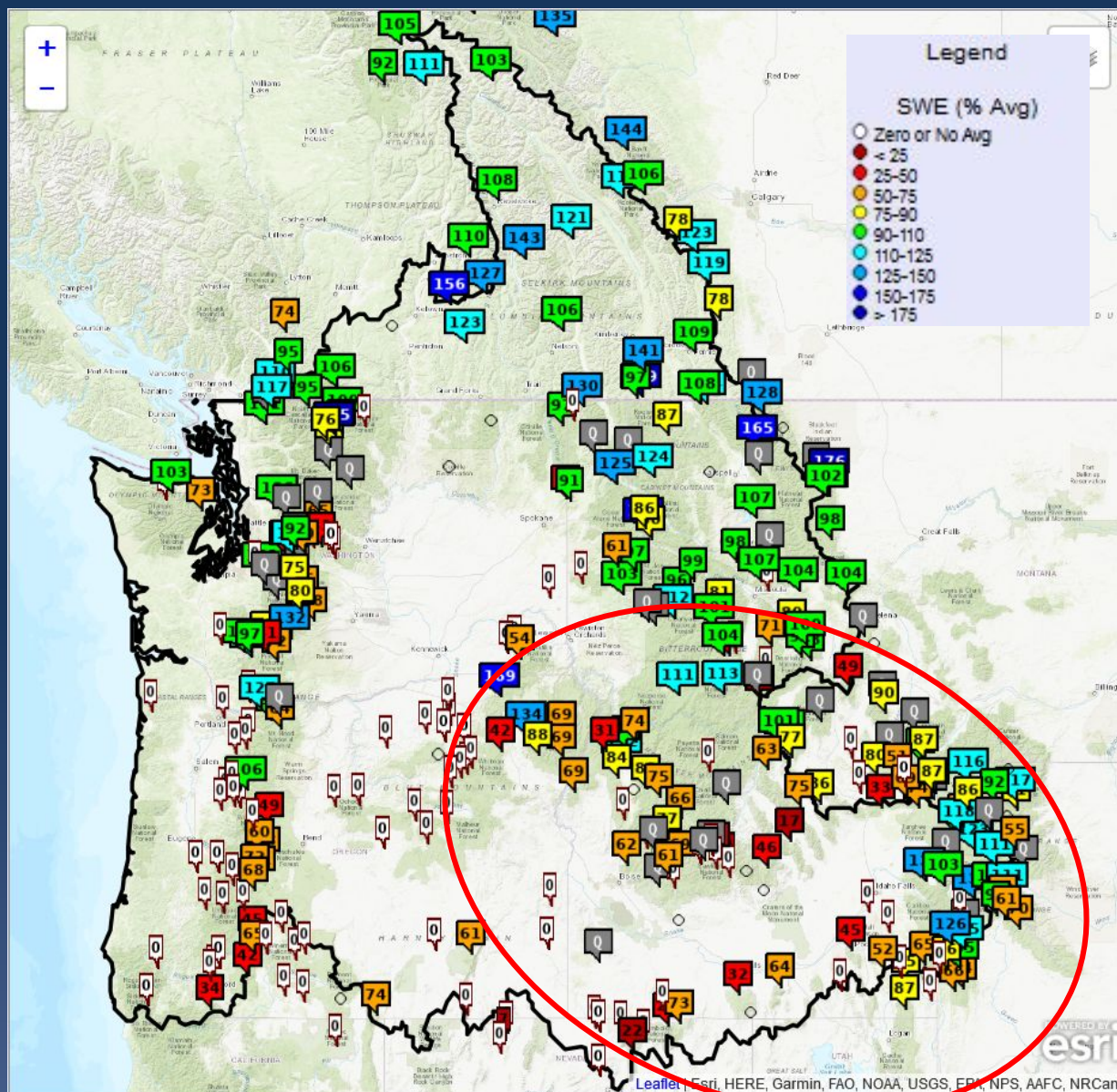


Data as of May 7, 2020. Snow data from NRCS, BC Hydro, and Alberta EP.





# Snowpack and Seasonal Precipitation

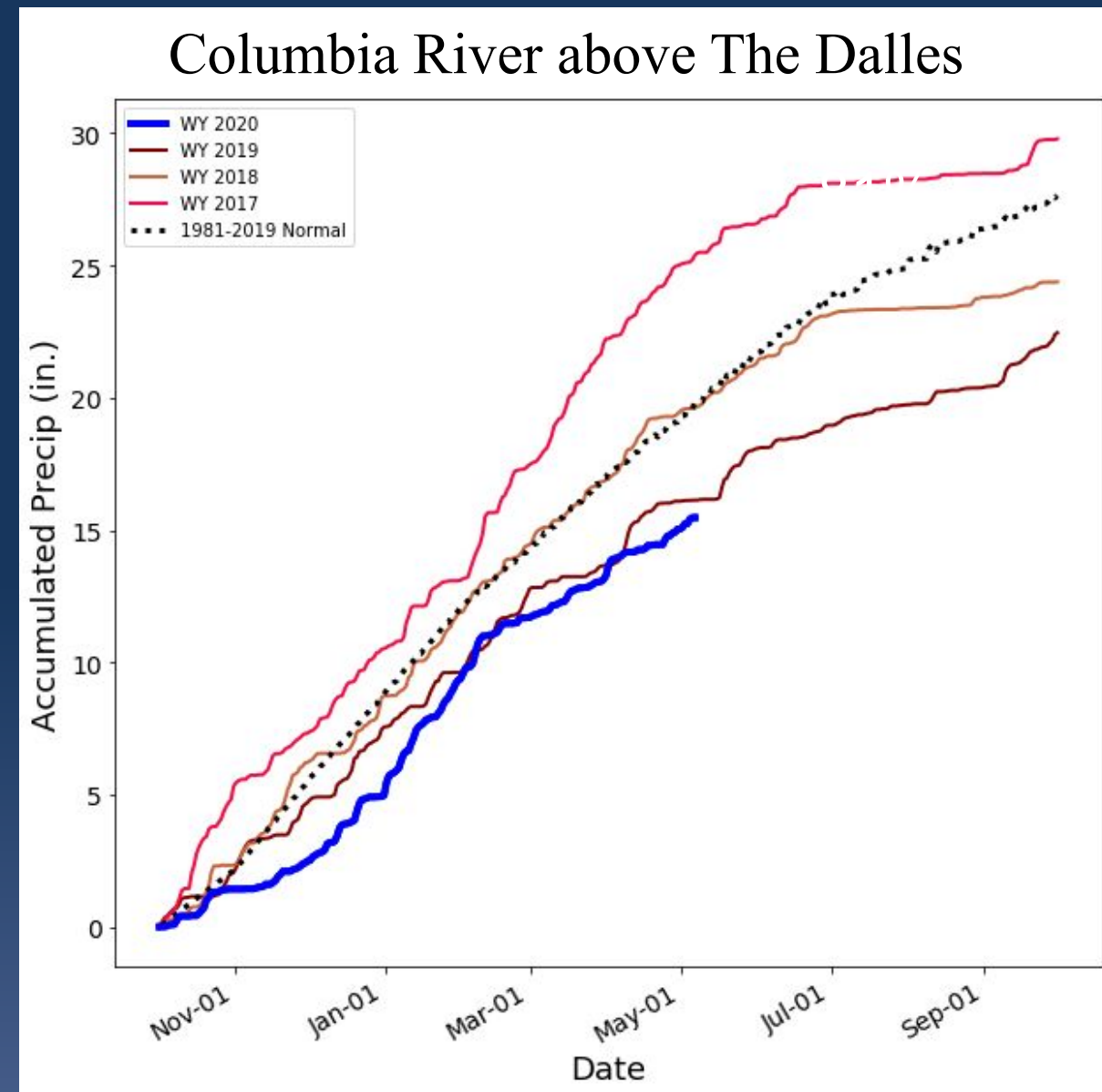
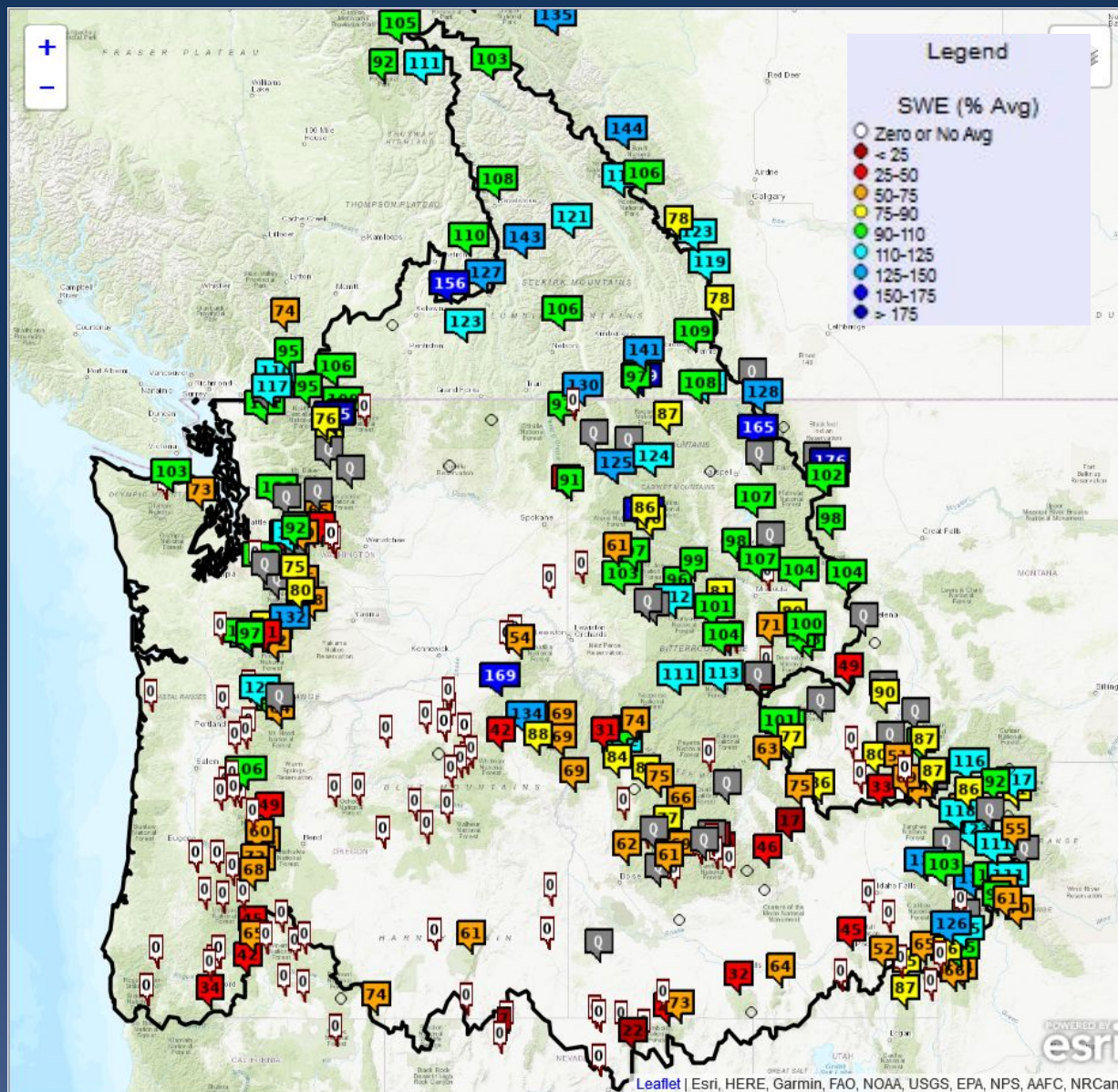


Data as of May 7, 2020. Snow data from NRCS, BC Hydro, and Alberta EP.





# Snowpack and Seasonal Precipitation

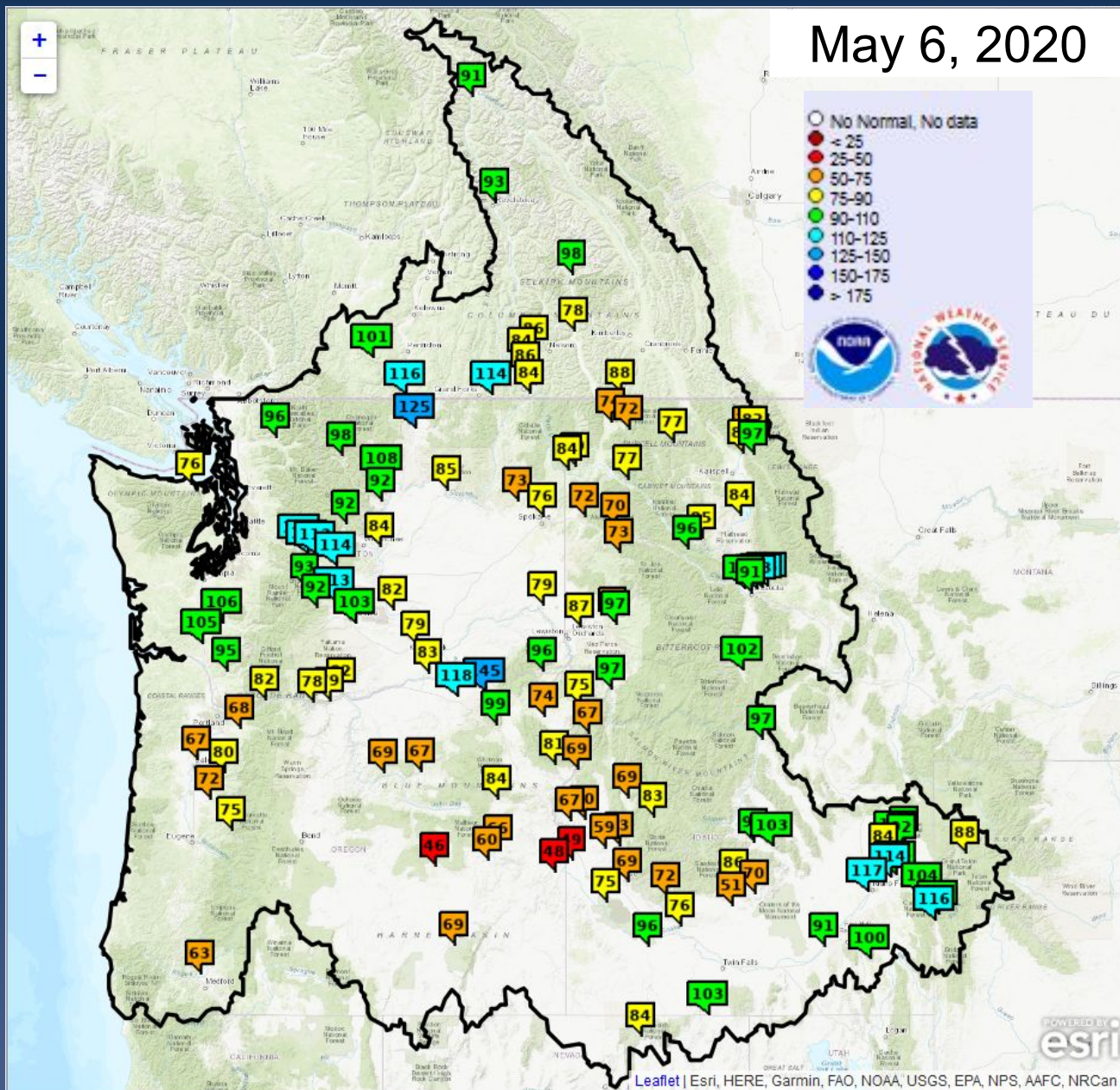


Data as of May 6, 2020. Snow data from NRCS, BC Hydro, and Alberta EP.





# Current Adjusted Runoff Conditions



% of Normal Oct 1– May 5

## UPPER COLUMBIA BASIN

|              |    | <u>Δ (since April 1)</u> |   |
|--------------|----|--------------------------|---|
| MICA         | 91 | -                        | 8 |
| DUNCAN       | 98 | -                        | 8 |
| QUEENS BAY   | 78 | -                        | 5 |
| LIBBY        | 77 | -                        | 5 |
| HUNGRY HORSE | 97 | +                        | 8 |
| GRAND COULEE | 85 | -                        | 5 |

## SNAKE RIVER BASIN

|                |    |   |    |
|----------------|----|---|----|
| AMERICAN FALLS | 91 | - | 3  |
| LUCKY PEAK     | 69 | - | 2  |
| DWORSHAK       | 70 | + | 11 |
| LOWER GRANITE  | 79 | + | 3  |

## LOWER COLUMBIA BASIN

|            |    |   |   |
|------------|----|---|---|
| THE DALLES | 78 | + | 1 |
|------------|----|---|---|

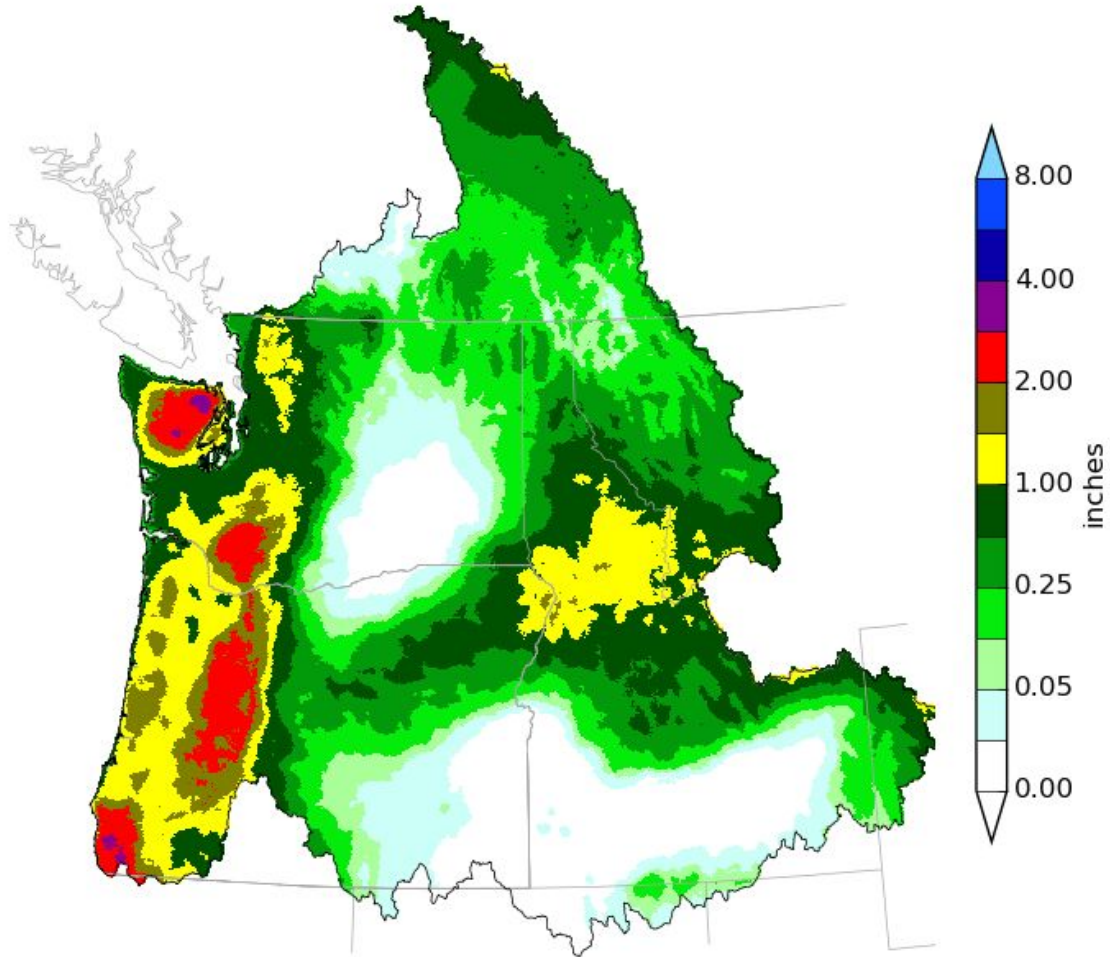




# Precipitation Forecast (May 7-17)



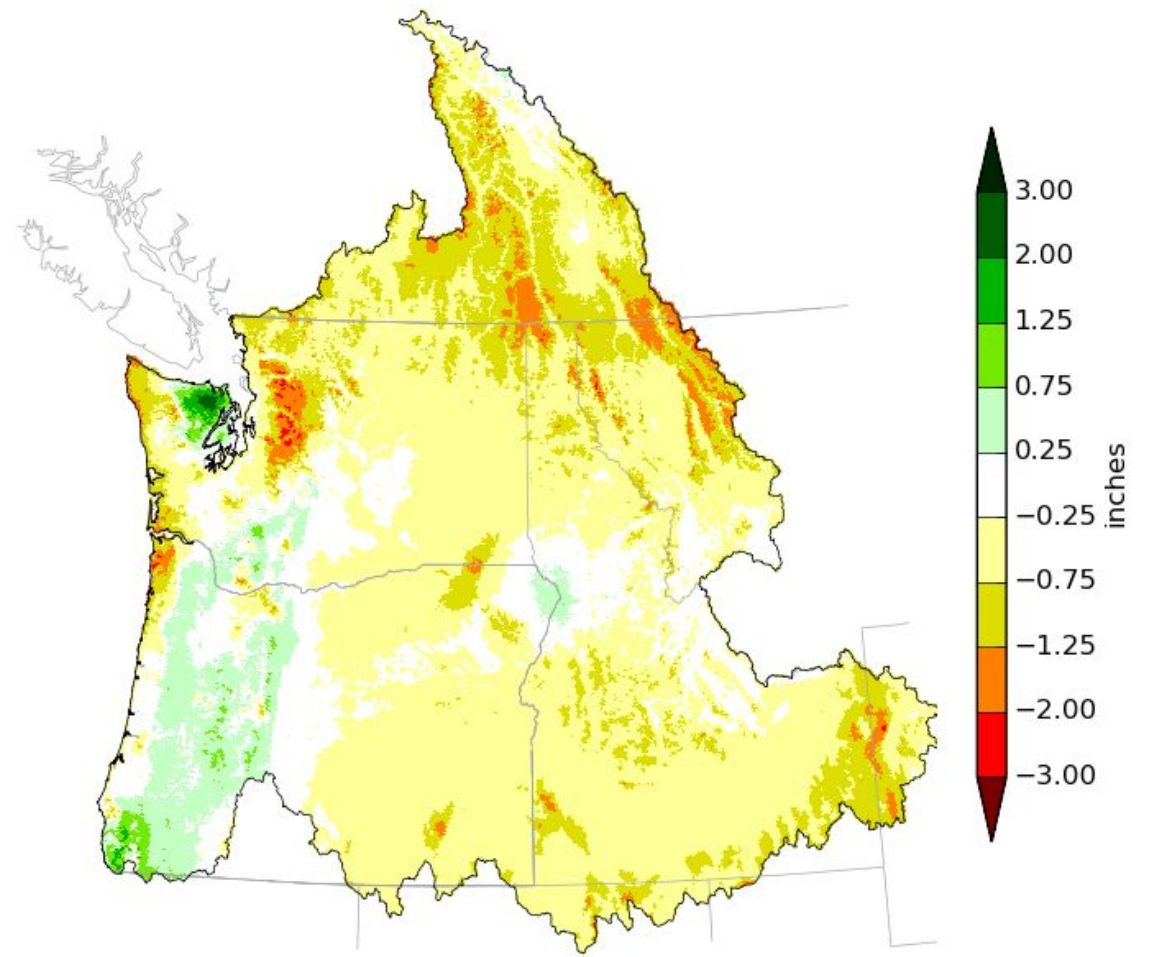
Northwest River Forecast Center  
10 Day QPF, Ending 12Z, 05/17/20



Creation Time: Thu May 7 15:05:01 UTC 2020



Northwest River Forecast Center  
10 Day QPF (Deviation from Climatology), Ending 12Z, 05/17/20

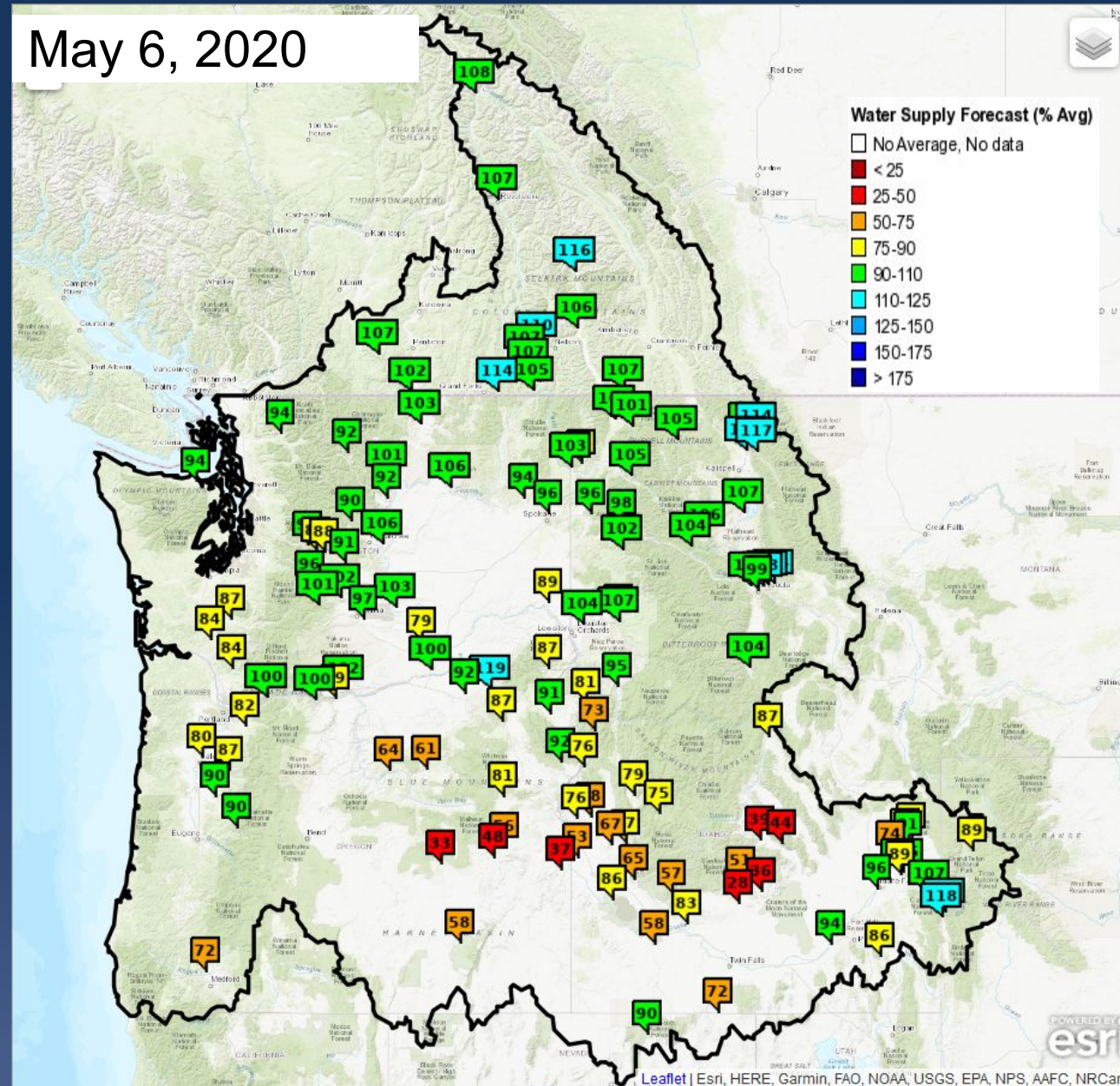


Creation Time: Thu May 7 15:06:18 UTC 2020



# ESP10 Apr-Sep Water Supply Forecasts

May 6, 2020



% of Normal Apr-Sep

## UPPER COLUMBIA BASIN

|              |     | <u><math>\Delta</math> (since Apr 1)</u> |
|--------------|-----|--|
| MICA         | 108 | + 3                                      |
| DUNCAN       | 116 | - 4                                      |
| QUEENS BAY   | 106 | + 3                                      |
| LIBBY        | 105 | + 9                                      |
| HUNGRY HORSE | 117 | + 10                                     |
| GRAND COULEE | 106 | --                                       |

## SNAKE RIVER BASIN

|                |    |     |
|----------------|----|-----|
| AMERICAN FALLS | 94 | - 9 |
| LUCKY PEAK     | 65 | - 7 |
| DWORSHAK       | 96 | + 3 |
| LOWER GRANITE  | 89 | + 3 |

## LOWER COLUMBIA BASIN

|            |     |     |
|------------|-----|-----|
| THE DALLES | 100 | + 2 |
|------------|-----|-----|





# ESP10 Apr-Sep Water Supply Forecasts

## COLUMBIA - GRAND COULEE DAM (GCDW1) Forecasts for Water Year 2020

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

| Forecast Period | Forecasts Are in KAF |       |           |       | 30 Year Average (1981-2010) |
|-----------------|----------------------|-------|-----------|-------|-----------------------------|
|                 | 90 %                 | 50 %  | % Average | 10 %  |                             |
| APR-SEP         | 61304                | 63802 | 106       | 69289 | 60110                       |
| APR-JUL         | 50915                | 53238 | 104       | 58638 | 51015                       |
| APR-AUG         | 56669                | 59679 | 105       | 65219 | 56763                       |
| JAN-SEP         | 68874                | 71371 | 104       | 76858 | 68694                       |
| JAN-JUL         | 58484                | 60808 | 102       | 66207 | 59599                       |
| OCT-SEP         | 76280                | 78778 | 103       | 84265 | 76824                       |

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2020-05-06 Issued: 2020-05-06

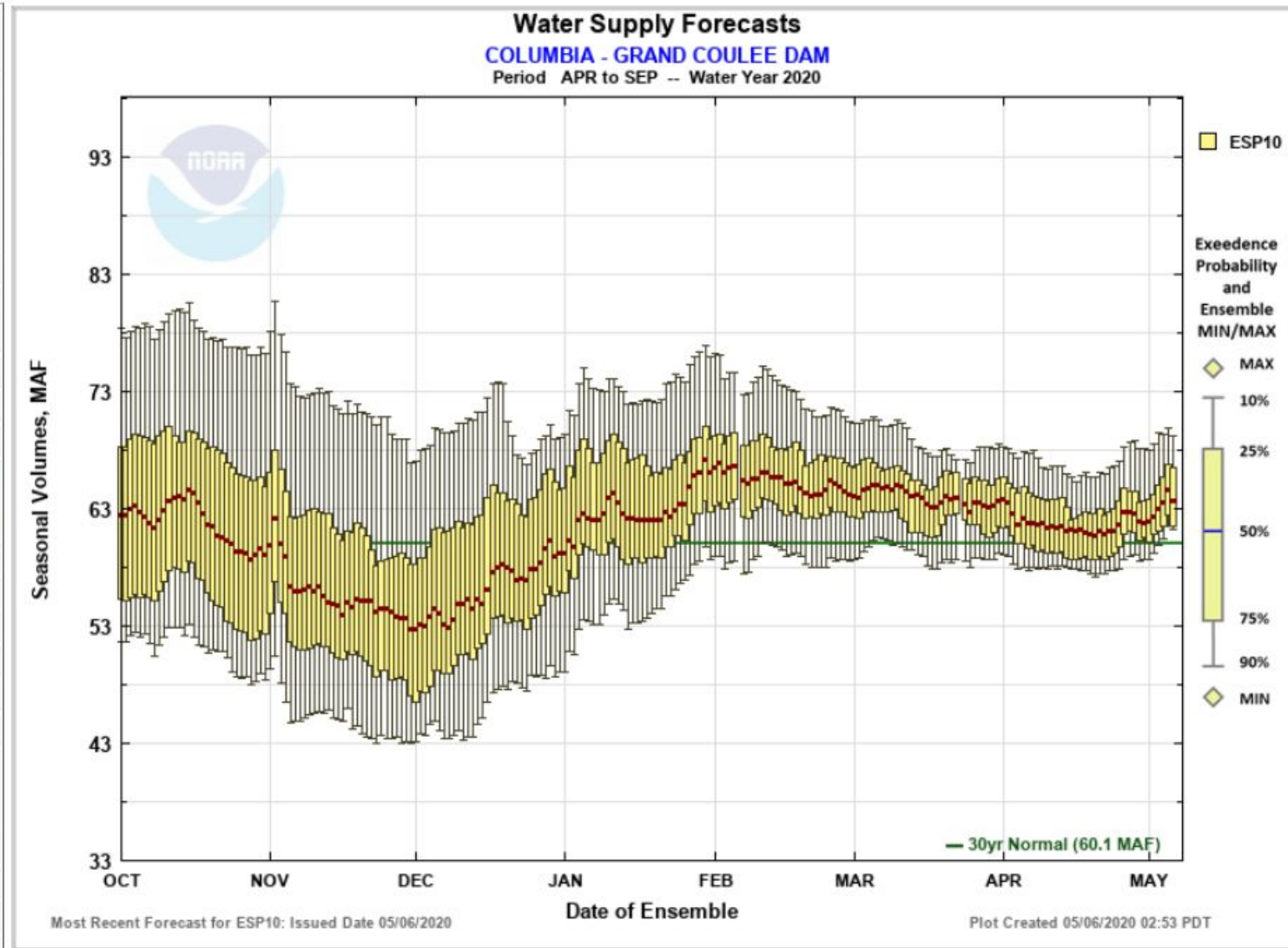
|         |       |       |     |       |       |
|---------|-------|-------|-----|-------|-------|
| APR-SEP | 61300 | 64997 | 108 | 70289 | 60110 |
| APR-JUL | 51495 | 54480 | 107 | 59916 | 51015 |
| APR-AUG | 57383 | 61067 | 108 | 66748 | 56763 |
| JAN-SEP | 68869 | 72566 | 106 | 77858 | 68694 |
| JAN-JUL | 59064 | 62050 | 104 | 67485 | 59599 |
| OCT-SEP | 76276 | 79972 | 104 | 85265 | 76824 |

### Reference

ESP with 0 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

|         |       |       |     |       |       |
|---------|-------|-------|-----|-------|-------|
| APR-SEP | 60190 | 64380 | 107 | 69823 | 60110 |
| APR-JUL | 50763 | 54179 | 106 | 59313 | 51015 |
| APR-AUG | 57061 | 60520 | 107 | 66382 | 56763 |
| JAN-SEP | 67760 | 71949 | 105 | 77392 | 68694 |
| JAN-JUL | 58332 | 61748 | 104 | 66883 | 59599 |
| OCT-SEP | 75166 | 79356 | 103 | 84799 | 76824 |

Move the mouse over the desired "Forecast Period" to display a graph.



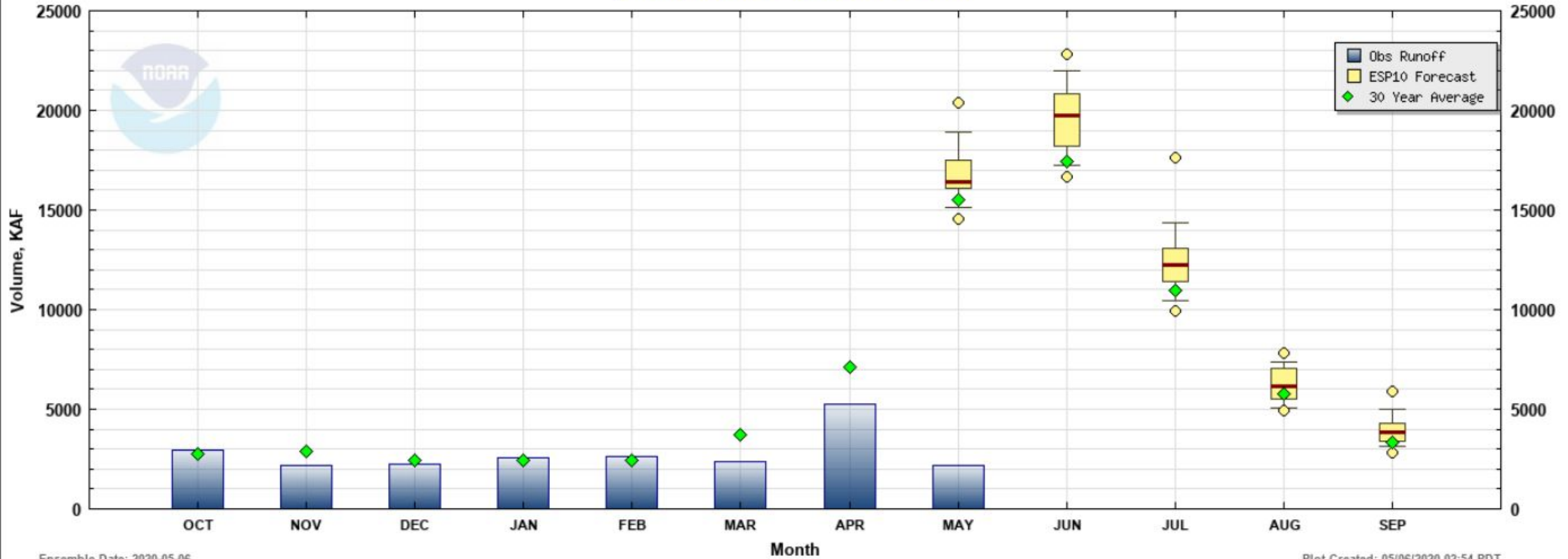
☐ Max Scale ☒ Scale To Data ☐ Scale To Last 45 Days ☐ Show Min/Max Ensemble Volume ☐ Show Tooltips Help





# ESP10 Water Supply Volume Monthly Forecasts

Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2020  
(GCDW1) COLUMBIA - GRAND COULEE DAM







# ESP10 Apr-Sep Water Supply Forecasts

## SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2020

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

| Forecast Period | Forecasts Are in KAF |       |           |       | 30 Year Average (1981-2010) |
|-----------------|----------------------|-------|-----------|-------|-----------------------------|
|                 | 90 %                 | 50 %  | % Average | 10 %  |                             |
| APR-SEP         | 18621                | 19778 | 89        | 22259 | 22279                       |
| APR-JUL         | 16407                | 17270 | 87        | 19632 | 19848                       |
| APR-AUG         | 17545                | 18546 | 88        | 20917 | 21091                       |
| JAN-SEP         | 24106                | 25262 | 85        | 27743 | 29872                       |
| JAN-JUL         | 21891                | 22754 | 83        | 25117 | 27440                       |
| OCT-SEP         | 28020                | 29177 | 84        | 31658 | 34667                       |

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2020-05-06 Issued: 2020-05-06

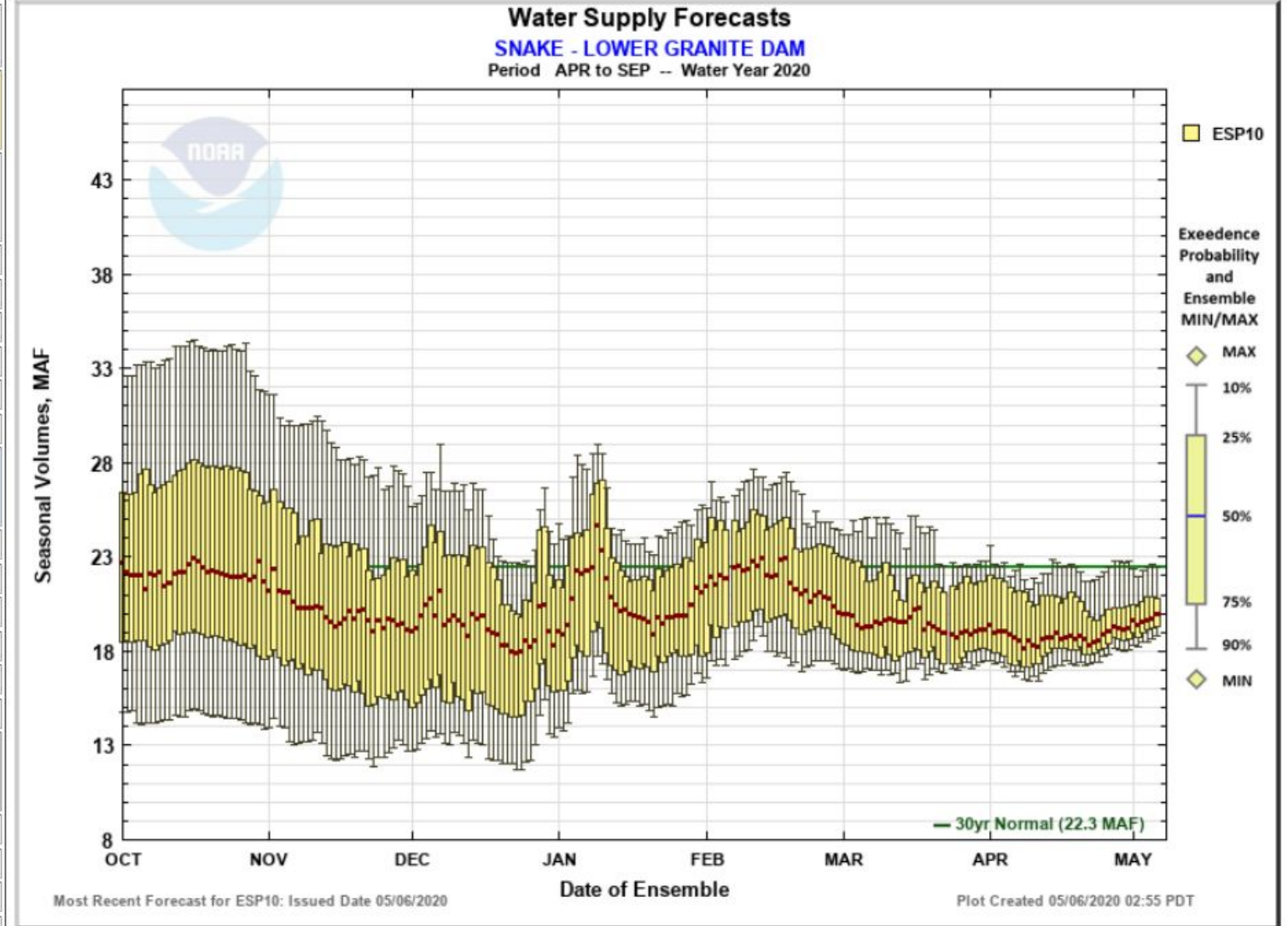
|         |       |       |    |       |       |
|---------|-------|-------|----|-------|-------|
| APR-SEP | 18627 | 19903 | 89 | 23123 | 22279 |
| APR-JUL | 16359 | 17464 | 88 | 20599 | 19848 |
| APR-AUG | 17489 | 18660 | 88 | 21892 | 21091 |
| JAN-SEP | 24111 | 25388 | 85 | 28608 | 29872 |
| JAN-JUL | 21843 | 22948 | 84 | 26083 | 27440 |
| OCT-SEP | 28026 | 29302 | 85 | 32522 | 34667 |

### Reference

ESP with 0 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

|         |       |       |    |       |       |
|---------|-------|-------|----|-------|-------|
| APR-SEP | 18437 | 19760 | 89 | 23330 | 22279 |
| APR-JUL | 16126 | 17281 | 87 | 20617 | 19848 |
| APR-AUG | 17339 | 18439 | 87 | 21959 | 21091 |
| JAN-SEP | 23921 | 25245 | 85 | 28814 | 29872 |
| JAN-JUL | 21611 | 22765 | 83 | 26101 | 27440 |
| OCT-SEP | 27836 | 29159 | 84 | 32728 | 34667 |

Move the mouse over the desired "Forecast Period" to display a graph.

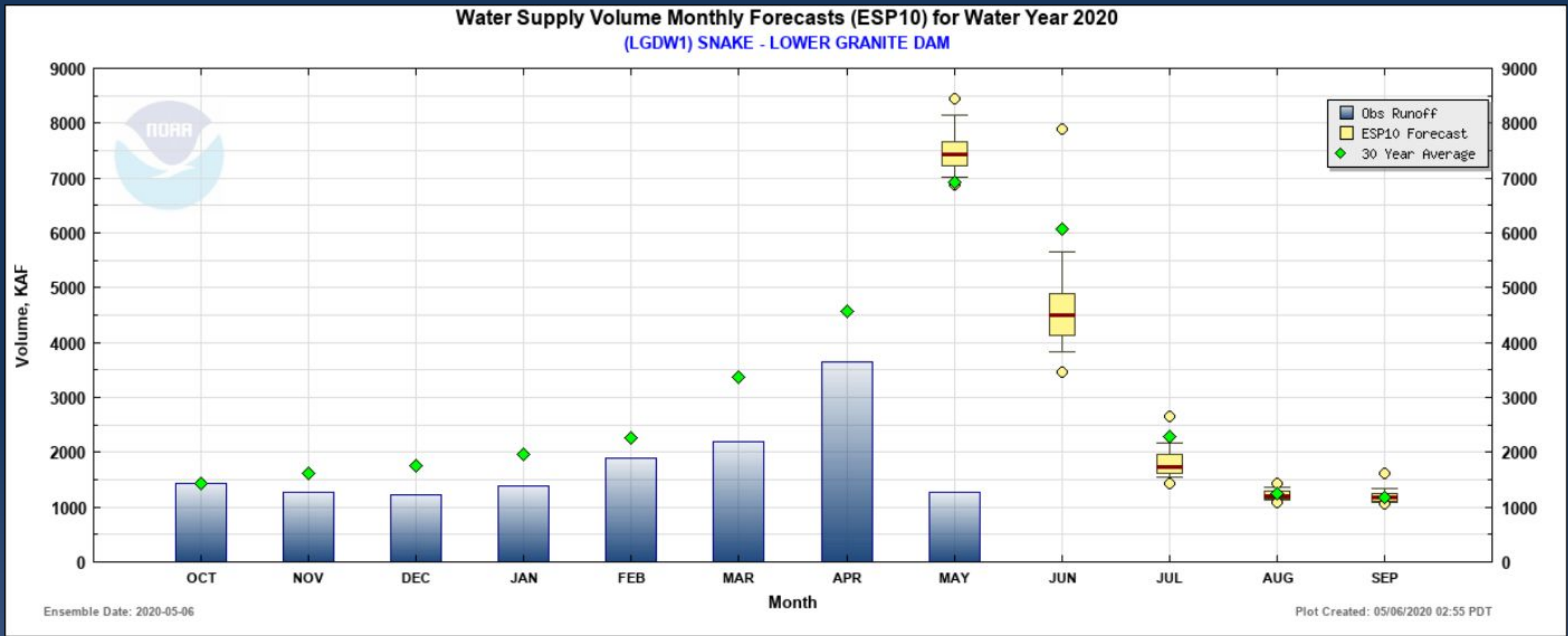


☐ Max Scale ☒ Scale To Data ☐ Scale To Last 45 Days ☐ Show Min/Max Ensemble Volume ☐ Show Tooltips Help





# ESP10 Water Supply Volume Monthly Forecasts







# ESP10 Apr-Sep Water Supply Forecasts

## COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2020

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

| Forecast Period | Forecasts Are in KAF |        |           |        | 30 Year Average (1981-2010) |
|-----------------|----------------------|--------|-----------|--------|-----------------------------|
|                 | 90 %                 | 50 %   | % Average | 10 %   |                             |
| APR-SEP         | 88218                | 92639  | 100       | 100072 | 92704                       |
| APR-JUL         | 74616                | 78382  | 98        | 85566  | 79855                       |
| APR-AUG         | 82511                | 86585  | 99        | 94602  | 87532                       |
| JAN-SEP         | 105205               | 109627 | 96        | 117060 | 114216                      |
| JAN-JUL         | 91604                | 95370  | 94        | 102554 | 101368                      |
| OCT-SEP         | 117530               | 121952 | 93        | 129385 | 130518                      |

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2020-05-06 Issued: 2020-05-06

|         |        |        |     |        |        |
|---------|--------|--------|-----|--------|--------|
| APR-SEP | 88922  | 93408  | 101 | 100596 | 92704  |
| APR-JUL | 75553  | 80236  | 100 | 87091  | 79855  |
| APR-AUG | 83485  | 88226  | 101 | 94873  | 87532  |
| JAN-SEP | 105910 | 110395 | 97  | 117584 | 114216 |
| JAN-JUL | 92541  | 97224  | 96  | 104078 | 101368 |
| OCT-SEP | 118235 | 122720 | 94  | 129909 | 130518 |

### Reference

ESP with 0 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

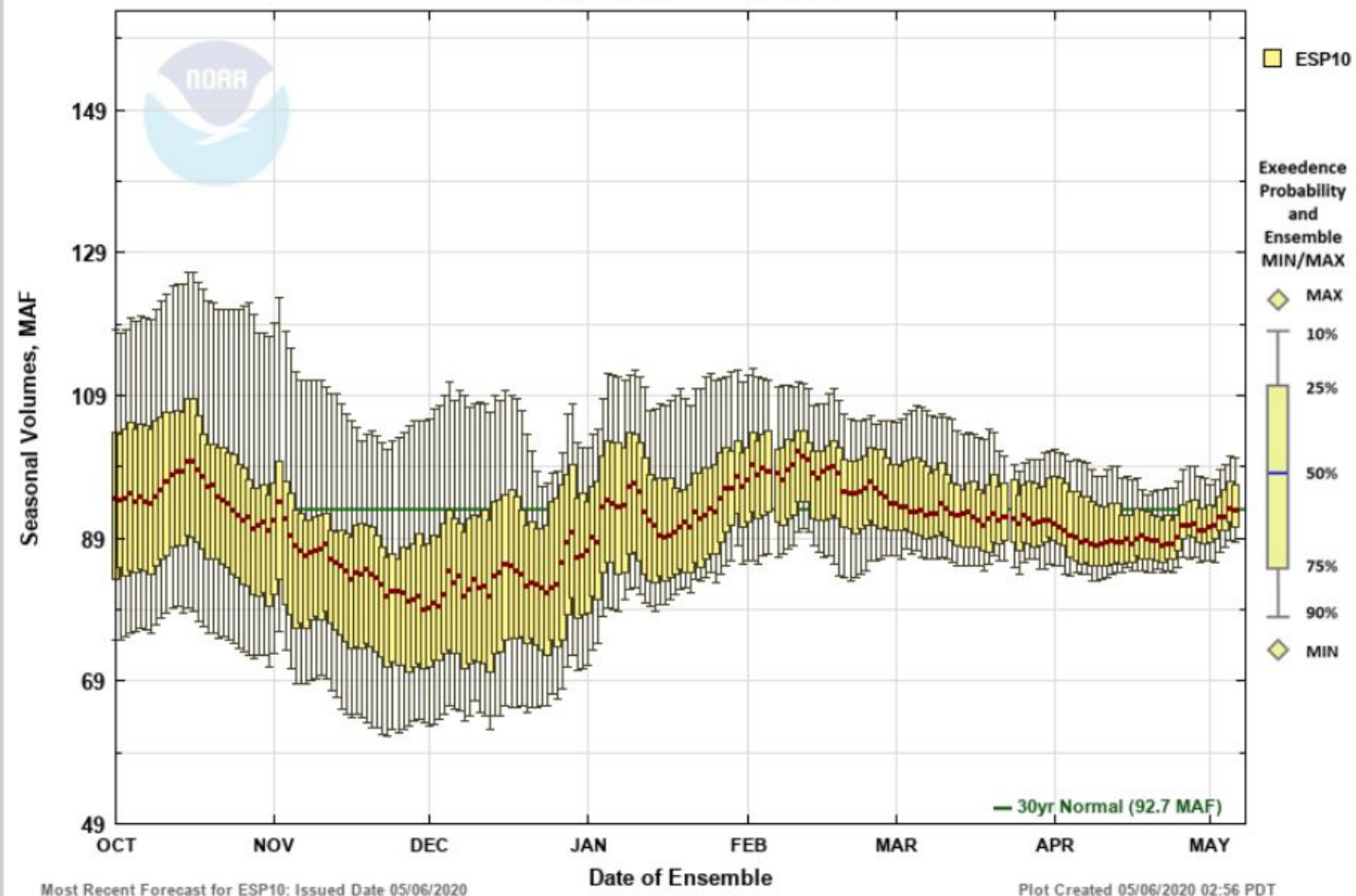
|         |        |        |     |        |        |
|---------|--------|--------|-----|--------|--------|
| APR-SEP | 88244  | 92670  | 100 | 100600 | 92704  |
| APR-JUL | 74956  | 79538  | 100 | 85910  | 79855  |
| APR-AUG | 82780  | 87275  | 100 | 94958  | 87532  |
| JAN-SEP | 105232 | 109658 | 96  | 117588 | 114216 |
| JAN-JUL | 91944  | 96526  | 95  | 102897 | 101368 |
| OCT-SEP | 117556 | 121982 | 93  | 129913 | 130518 |

Move the mouse over the desired "Forecast Period" to display a graph.

## Water Supply Forecasts

COLUMBIA - THE DALLES DAM

Period APR to SEP -- Water Year 2020



☐ Max Scale ☒ Scale To Data ☐ Scale To Last 45 Days ☐ Show Min/Max Ensemble Volume ☐ Show Tooltips Help

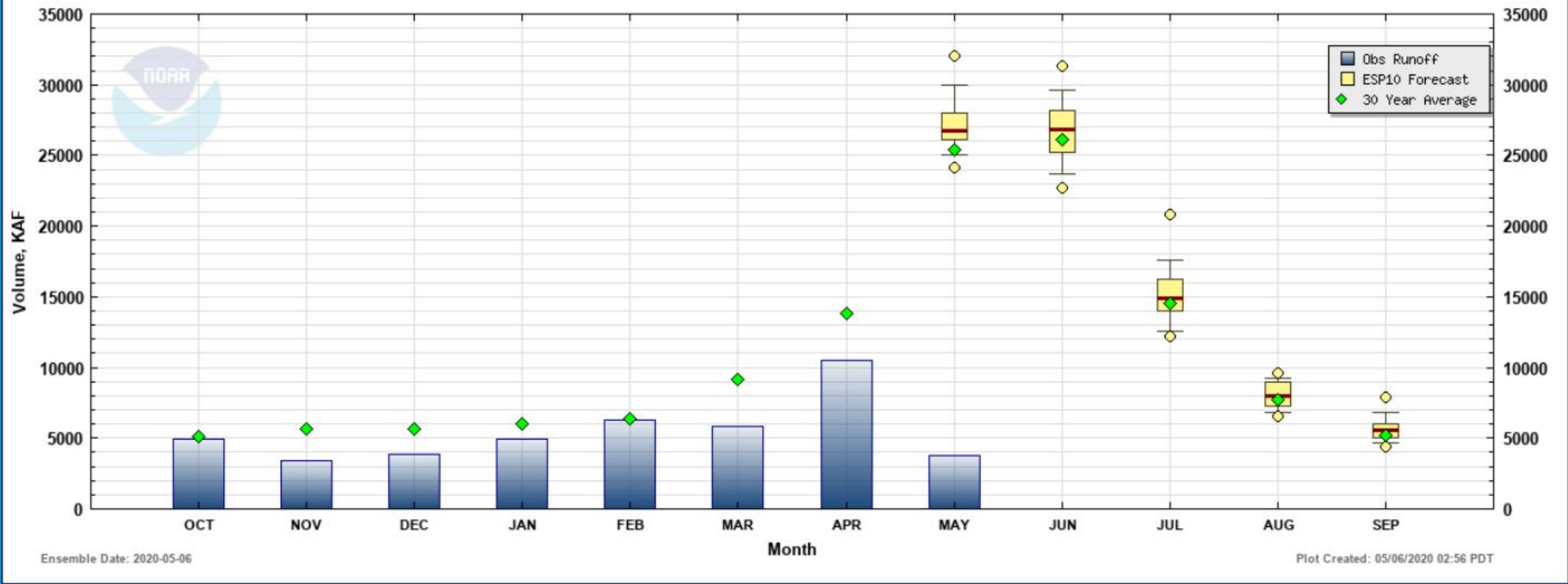




# ESP10 Water Supply Volume Monthly Forecasts

Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2020

(TDAO3) COLUMBIA - THE DALLES DAM







# ESP10 Natural Apr-Sep Forecasts

ESP Natural Forecast

Period: APR-SEP

Forecast (% Normal)

○ No Normal, No Data

● < 25

● 25-50

● 50-75

● 75-90



● 90-110

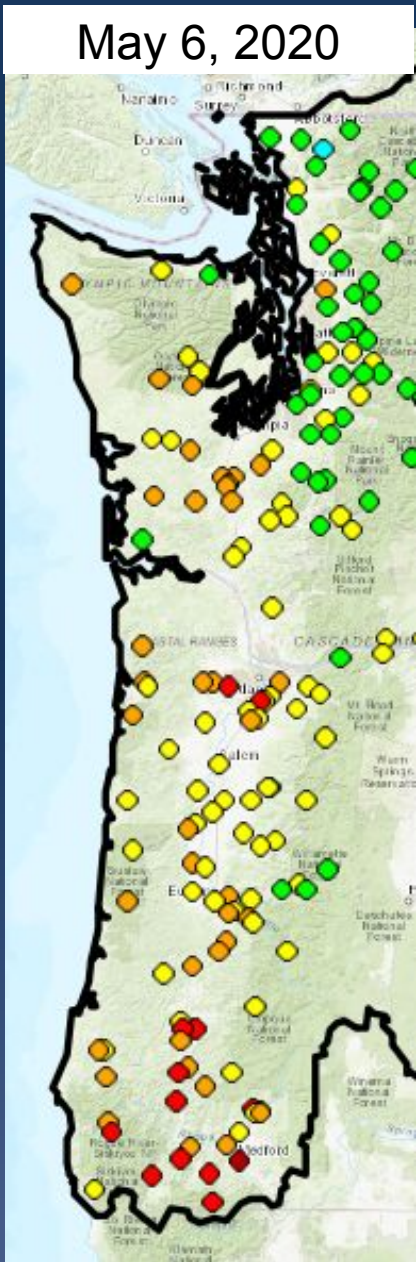
● 110-125

● 125-150

● 150-175

● > 175





## Western Oregon and Washington

| <u>Basin</u>                      | <u>% 30 yr Normal</u> | <u>Δ since Apr 1</u> |
|-----------------------------------|-----------------------|----------------------|
| <b>Washington</b>                 |                       |                      |
| Skagit River near Concrete        | 97%                   | - 9                  |
| Green River Howard Hanson Res     | 84%                   | - 6                  |
| Cowlitz River Mossyrock Reservoir | 88%                   | - 10                 |
| Cowlitz River Mayfield Reservoir  | 87%                   | - 10                 |
| <b>Oregon</b>                     |                       |                      |
| North Santiam At Mehama           | 89%                   | - 2                  |
| Willamette River At Salem         | 78%                   | - 2                  |
| Applegate Reservoir               | 44%                   | - 9                  |



# ESP10 Natural Oct-Sep Forecasts

## WILLAMETTE - AT SALEM (SLMO3) Forecasts for Water Year 2020

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

| Forecast Period | Forecasts Are in KAF |              |           |              | 30 Year Average (1981-2010) |
|-----------------|----------------------|--------------|-----------|--------------|-----------------------------|
|                 | 90 %                 | 50 %         | % Average | 10 %         |                             |
| APR-SEP         | 3642                 | 3949         | 78        | 4755         | 5067                        |
| APR-JUL         | 3258                 | 3502         | 78        | 4259         | 4496                        |
| JAN-SEP         | 9118                 | 9425         | 77        | 10231        | 12226                       |
| JAN-JUL         | 8734                 | 8978         | 77        | 9735         | 11656                       |
| <b>OCT-SEP</b>  | <b>10492</b>         | <b>10799</b> | <b>65</b> | <b>11605</b> | <b>16680</b>                |

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2020-05-06 Issued: 2020-05-06

|         |       |       |    |       |       |
|---------|-------|-------|----|-------|-------|
| APR-SEP | 3440  | 3893  | 77 | 4871  | 5067  |
| APR-JUL | 3069  | 3480  | 77 | 4386  | 4496  |
| JAN-SEP | 8916  | 9369  | 77 | 10347 | 12226 |
| JAN-JUL | 8545  | 8956  | 77 | 9861  | 11656 |
| OCT-SEP | 10290 | 10743 | 64 | 11721 | 16680 |

### Reference

ESP with 0 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

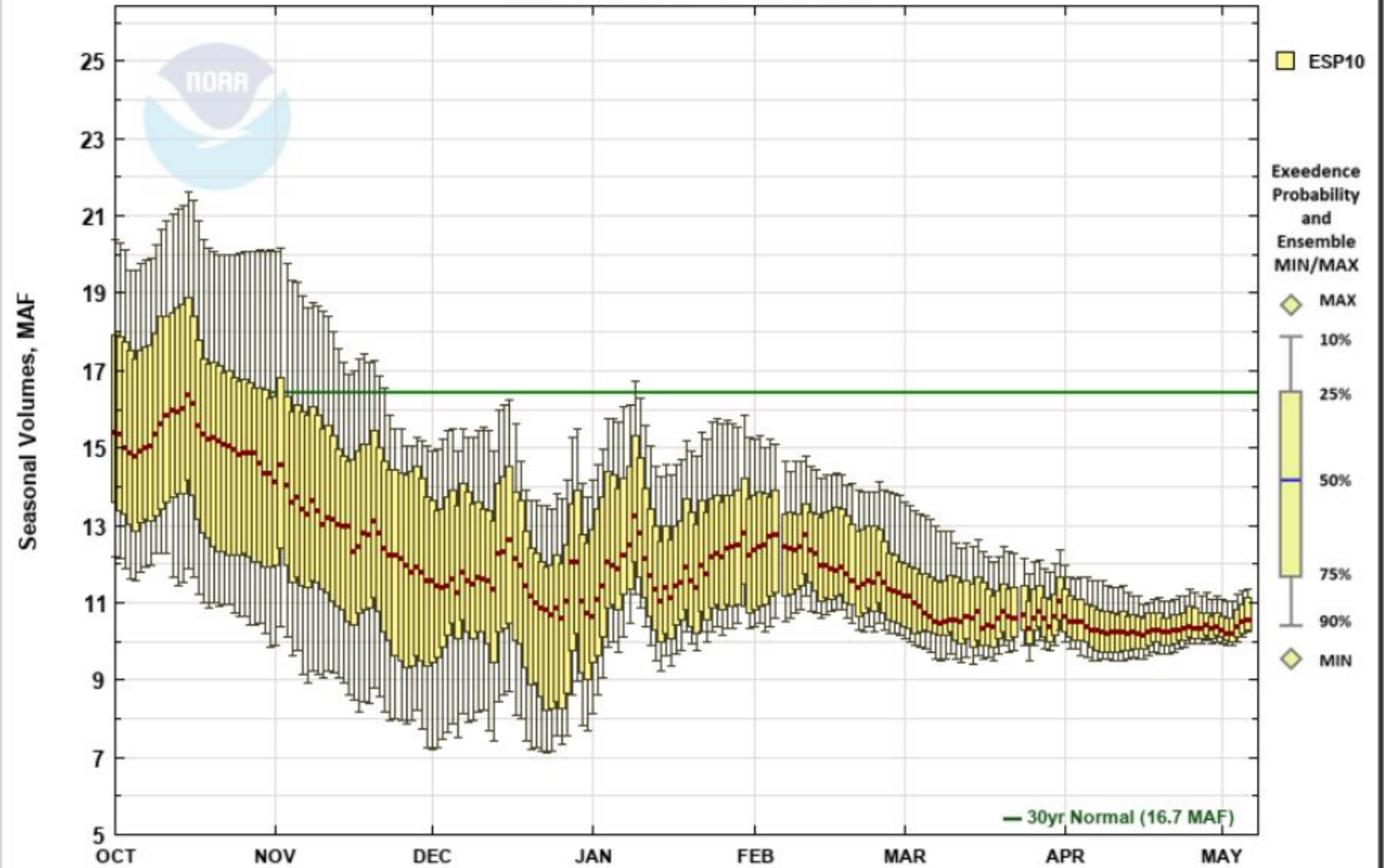
|         |       |       |    |       |       |
|---------|-------|-------|----|-------|-------|
| APR-SEP | 3335  | 3754  | 74 | 4650  | 5067  |
| APR-JUL | 2972  | 3360  | 75 | 4210  | 4496  |
| JAN-SEP | 8811  | 9230  | 75 | 10126 | 12226 |
| JAN-JUL | 8448  | 8836  | 76 | 9686  | 11656 |
| OCT-SEP | 10185 | 10604 | 64 | 11500 | 16680 |

Move the mouse over the desired "Forecast Period" to display a graph.

## Natural Volume Forecasts

### WILLAMETTE - AT SALEM

Period OCT to SEP -- Water Year 2020



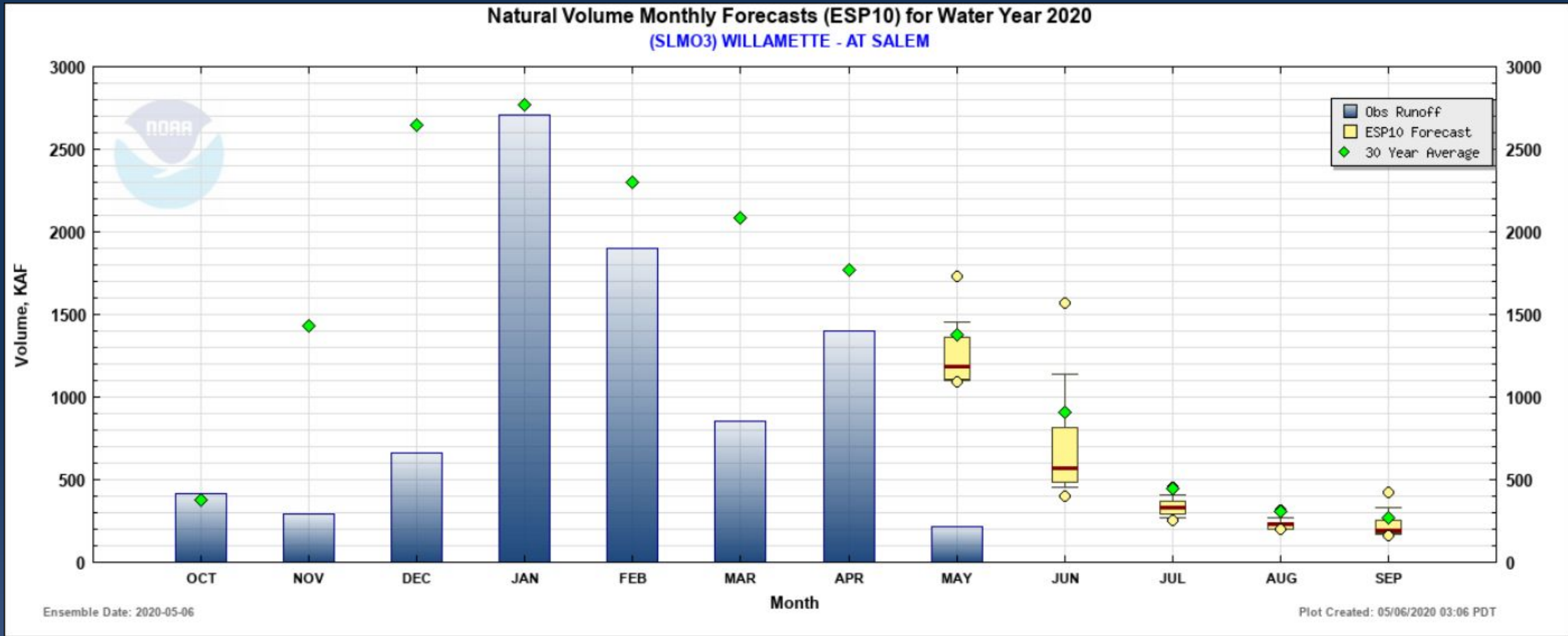
Most Recent Forecast for ESP10: Issued Date 05/06/2020

Plot Created 05/06/2020 03:07 PDT





# ESP10 Natural Volume Monthly Forecasts





# ESP10 Natural Oct-Sep Forecasts

## APPLEGATE - APPLGATE RESERVOIR (APLO3) Forecasts for Water Year 2020

### Official Water Supply

ESP with 10 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

| Forecast Period | Forecasts Are in KAF |      |           |      | 30 Year Average (1981-2010) |
|-----------------|----------------------|------|-----------|------|-----------------------------|
|                 | 90 %                 | 50 % | % Average | 10 % |                             |
| APR-SEP         | 48                   | 51   | 44        | 67   | 116                         |
| APR-JUL         | 46                   | 49   | 45        | 62   | 109                         |
| JAN-SEP         | 98                   | 102  | 41        | 117  | 246                         |
| JAN-JUL         | 96                   | 99   | 41        | 112  | 239                         |
| OCT-SEP         | 116                  | 120  | 40        | 135  | 302                         |

### Experimental Water Supply

HEFS with 15 days EQPF Ensemble: 2020-05-06 Issued: 2020-05-06

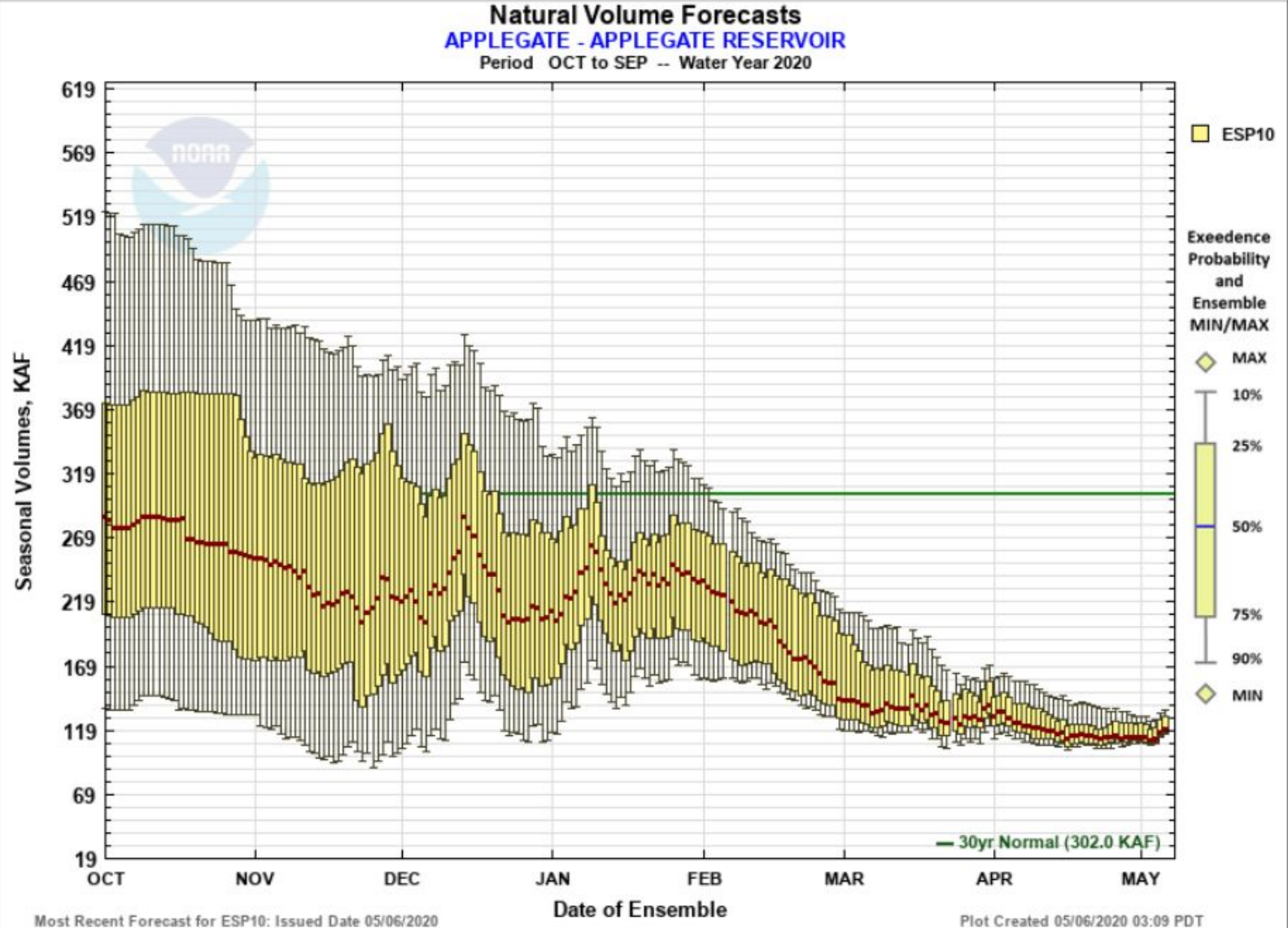
|         |     |     |    |     |     |
|---------|-----|-----|----|-----|-----|
| APR-SEP | 42  | 49  | 43 | 67  | 116 |
| APR-JUL | 40  | 47  | 43 | 63  | 109 |
| JAN-SEP | 93  | 100 | 41 | 118 | 246 |
| JAN-JUL | 91  | 97  | 41 | 114 | 239 |
| OCT-SEP | 111 | 118 | 39 | 136 | 302 |

### Reference

ESP with 0 Days QPF Ensemble: 2020-05-06 Issued: 2020-05-06

|         |     |     |    |     |     |
|---------|-----|-----|----|-----|-----|
| APR-SEP | 39  | 45  | 39 | 66  | 116 |
| APR-JUL | 37  | 43  | 39 | 62  | 109 |
| JAN-SEP | 89  | 95  | 39 | 117 | 246 |
| JAN-JUL | 88  | 93  | 39 | 113 | 239 |
| OCT-SEP | 107 | 113 | 38 | 135 | 302 |

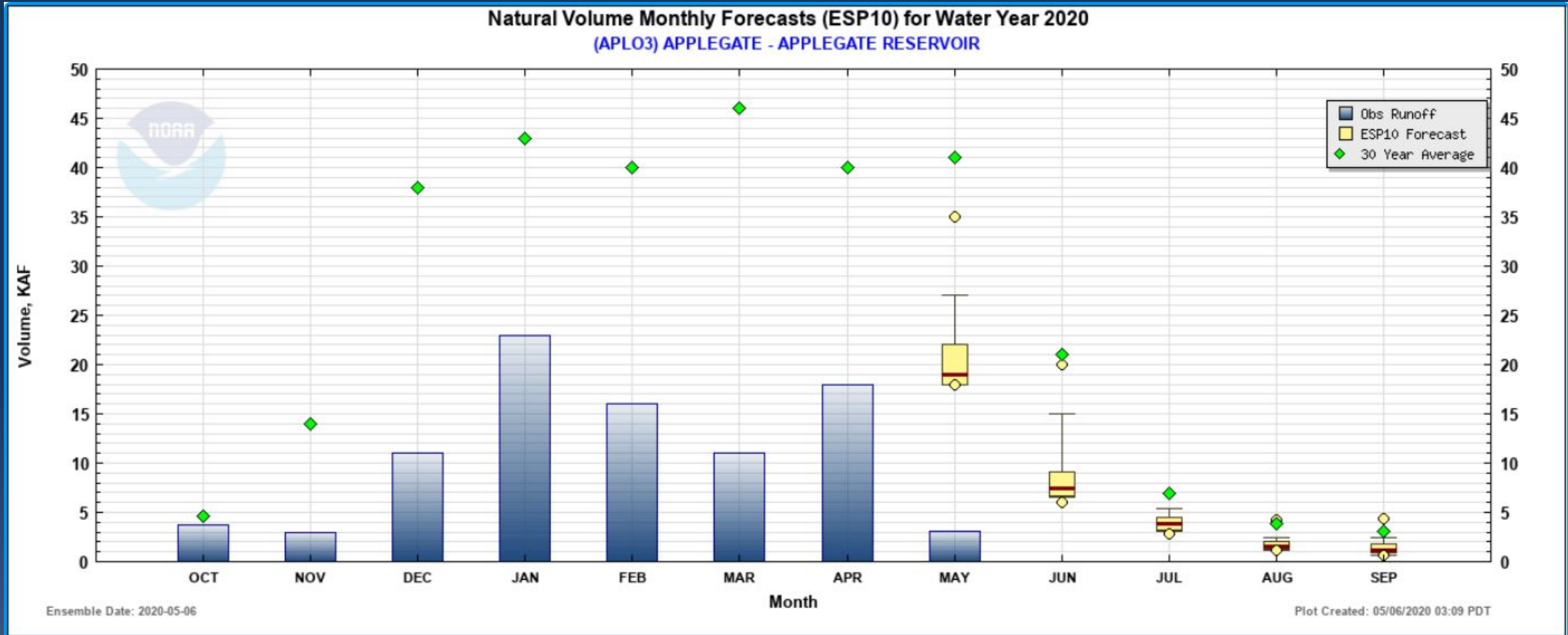
Move the mouse over the desired "Forecast Period" to display a graph.







# ESP10 Natural Volume Monthly Forecasts

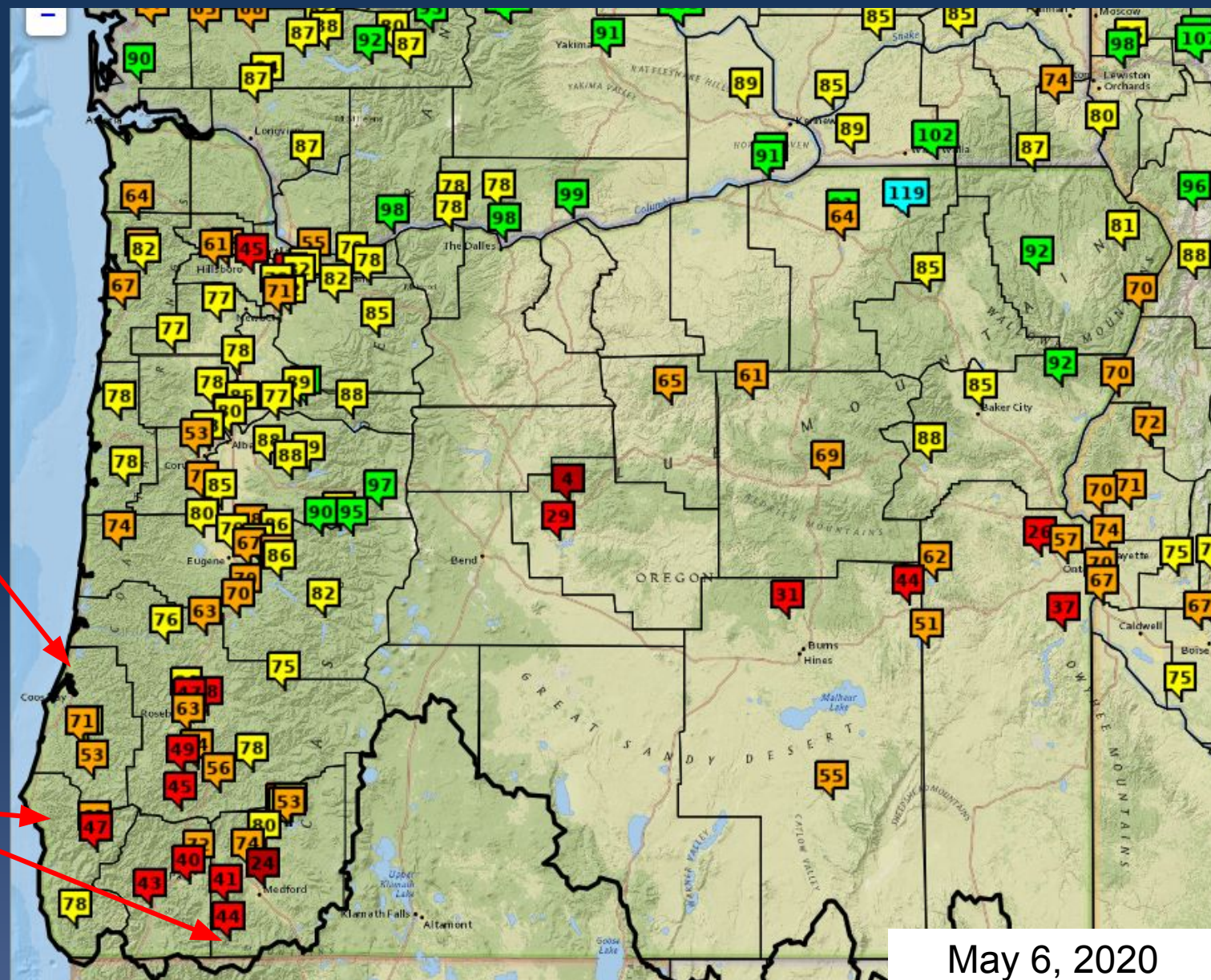




# Oregon Drought Declarations

Drought proclamation requested for Coos County.

Drought declared in Curry, Jackson, and Klamath Counties.



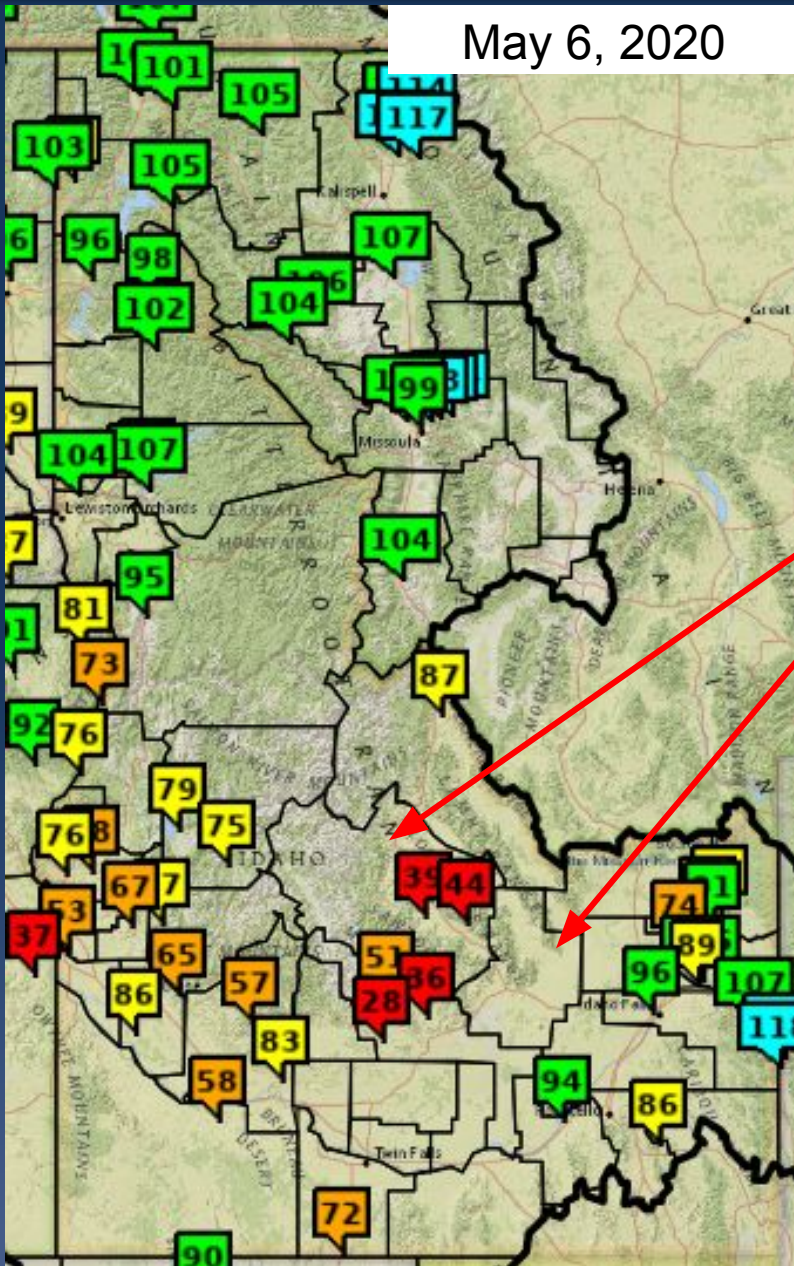
May 6, 2020





# Idaho Drought Declarations

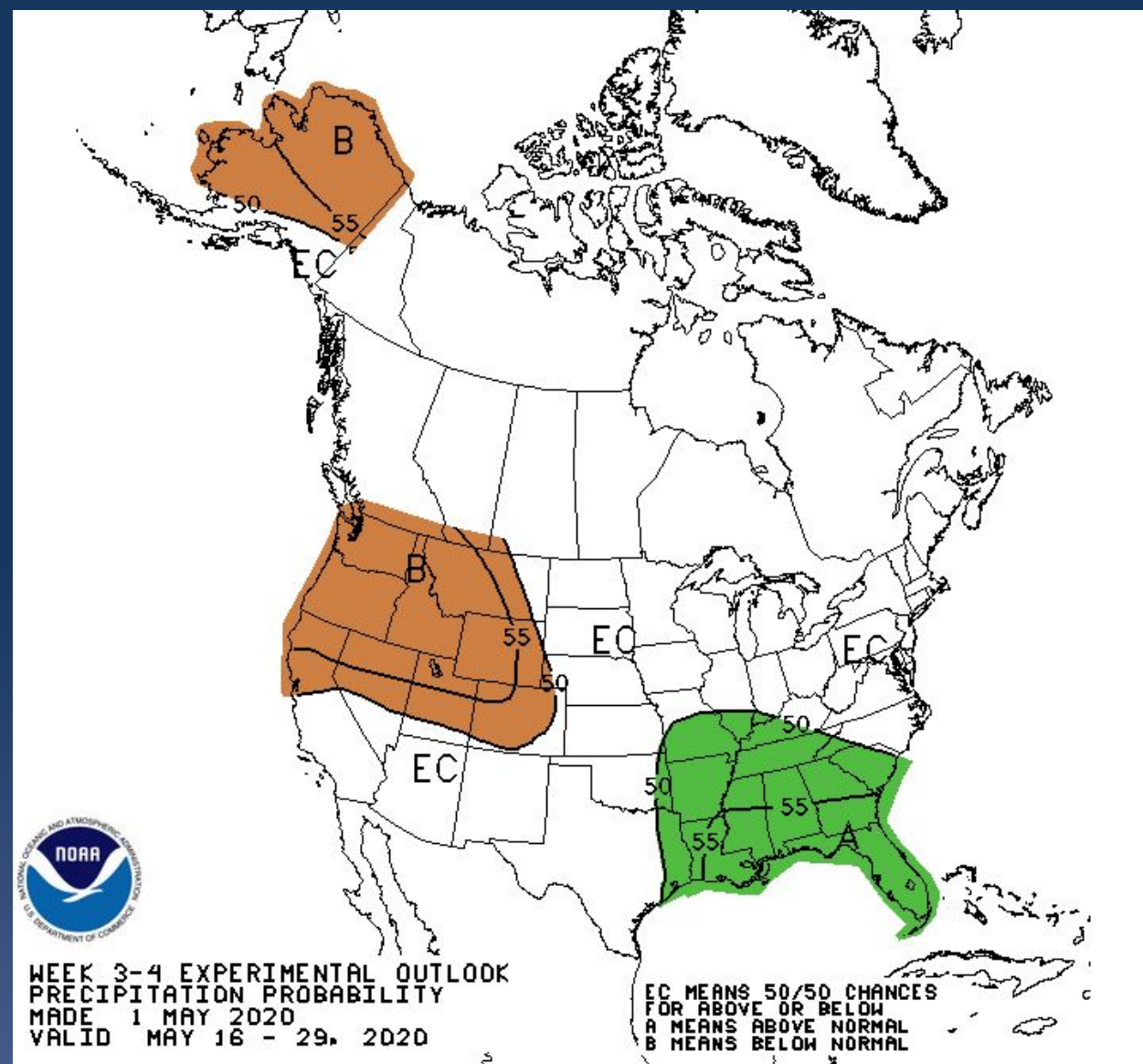
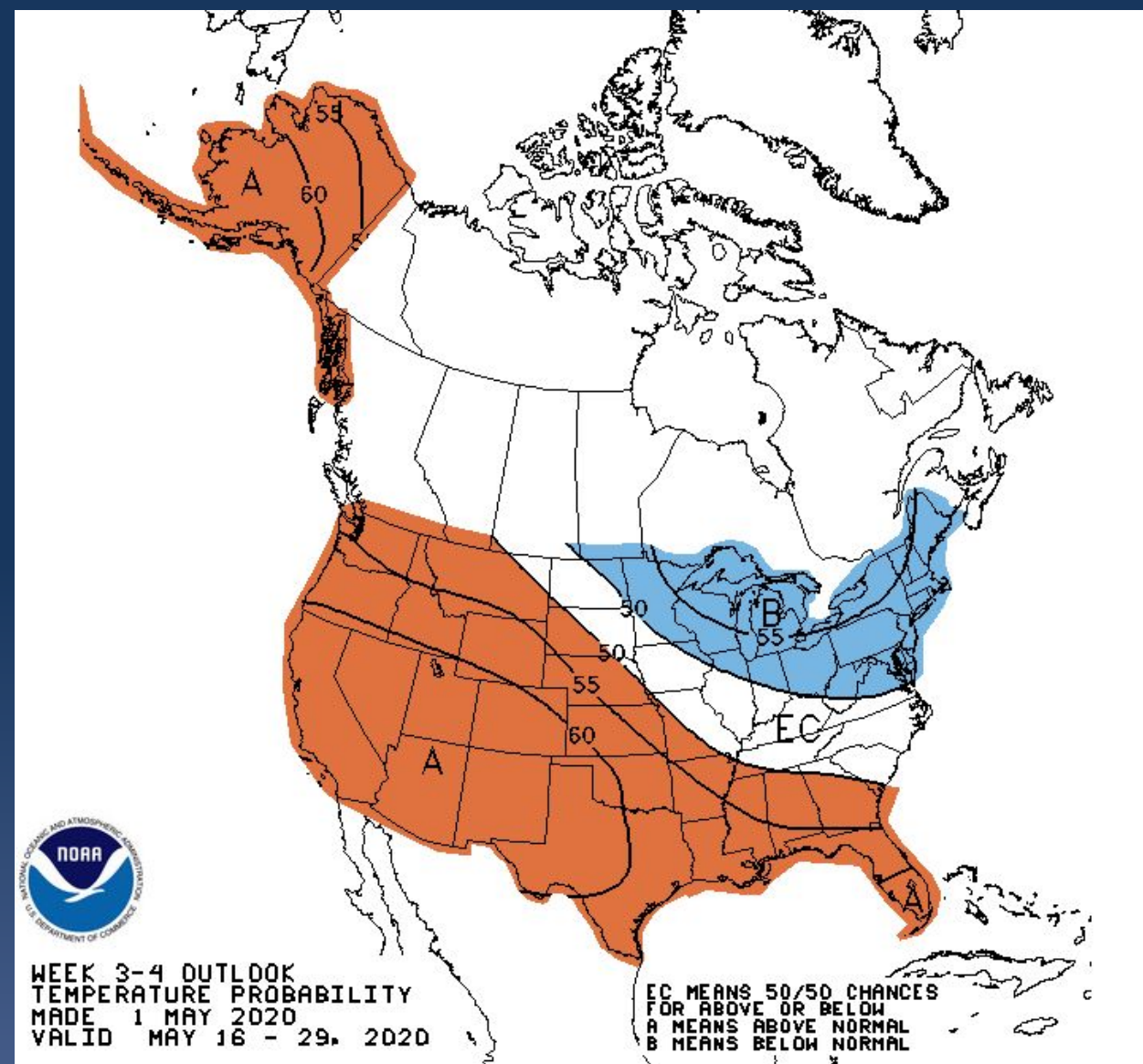
May 6, 2020



State drought declarations in place for Custer and Butte Counties



# CPC Week 3-4 Week Outlook







# Water Year 2020 Summary

## Columbia River Forecasts near to above normal.

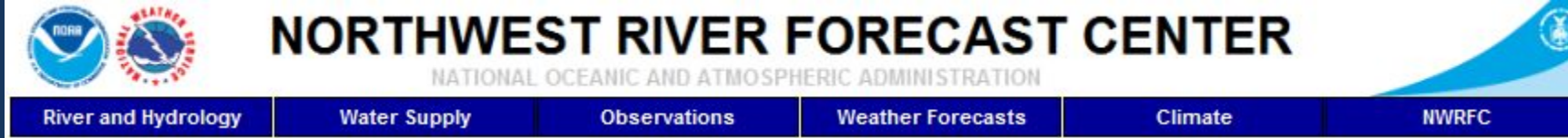
- Higher volume forecasts to the north and east.

## Snake River Forecasts generally below normal.

- Especially dry in Middle Snake from American Falls to the Salmon R confluence.
- State drought declarations for Custer and Butte Counties.
- Forecasts in the Upper Snake above American Falls are near normal.
- Clearwater River has near normal water supply forecast.

## West of the Cascades is a mixed bag.

- Washington Cascade Basins are near normal.
- Olympics, SW Washington and W Oregon below normal, lower to the south.
- State drought declarations for Curry, Jackson, and Klamath Basins.



# Questions?

In order to ask questions using your phone, you will need to enter the **AUDIO PIN** followed by the **#** sign using your phone keypad. The **AUDIO PIN** was provided when you logged into the webinar. If you need to enter the PIN after you are connected, try **#PIN#**

You will be muted until the presenter unmutes you. If you have a question, use the 'Raise Hand' function to let us know to unmute your phone.

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