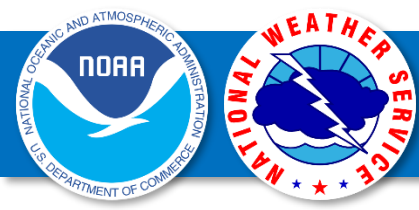


# Northwest River Forecast Center



## Quick Updates: Tools and Resources from the NWRFC 30 Year Normals Update (Runoff, Snow, Precipitation, Temperature)

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# Runoff Normals Update

## Monthly Runoff Estimates

- Record extended: WY49-2020
- Older estimates recomputed
- Posted data after WY20 is 'operational'

30 year normals (WY1991 - 2020)

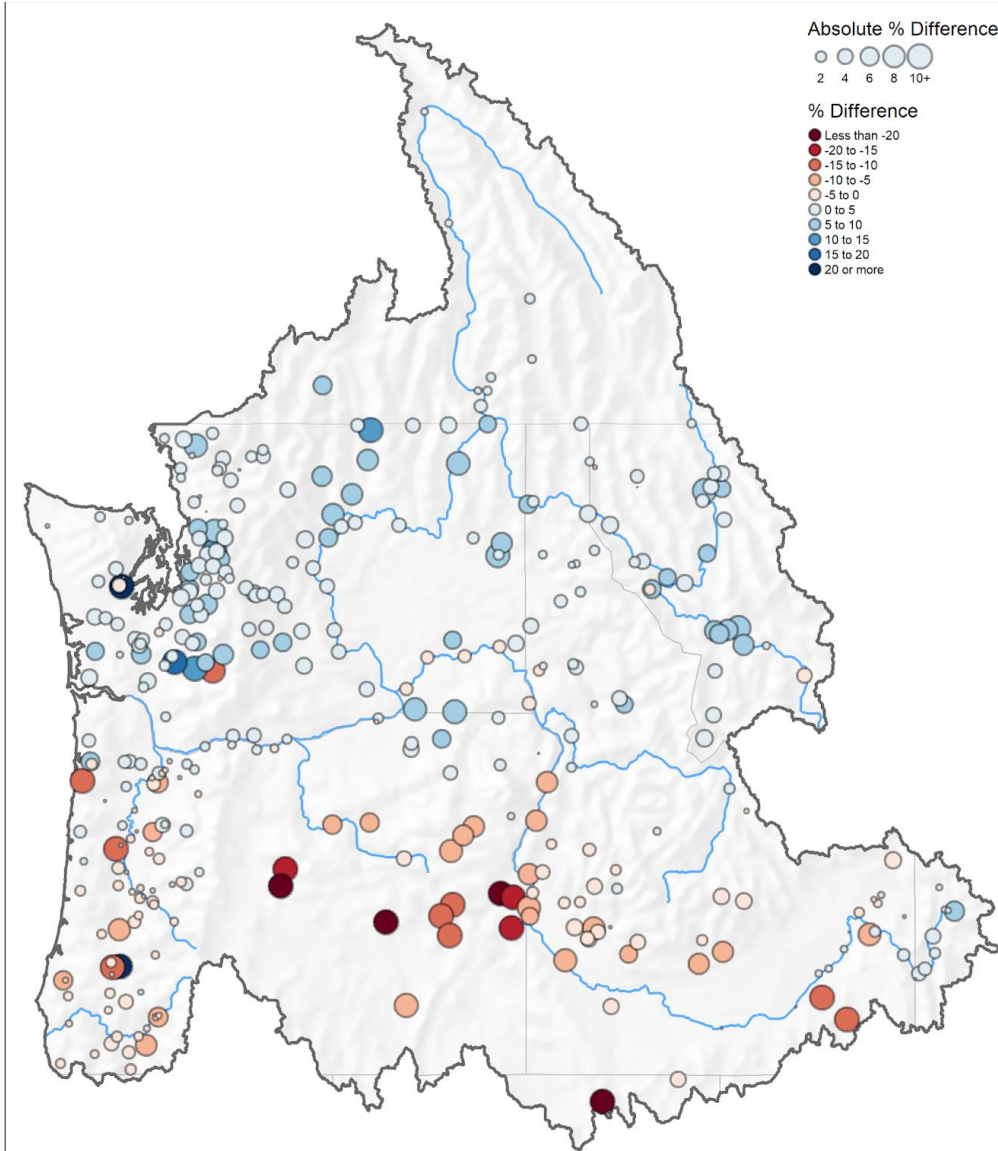
## Adjustment Configurations:

- Natural (fullest, with routing)
- Water Supply (storage only)
- Unadjusted (no adjustment)
- STP (120 day streamflow product for USACE)

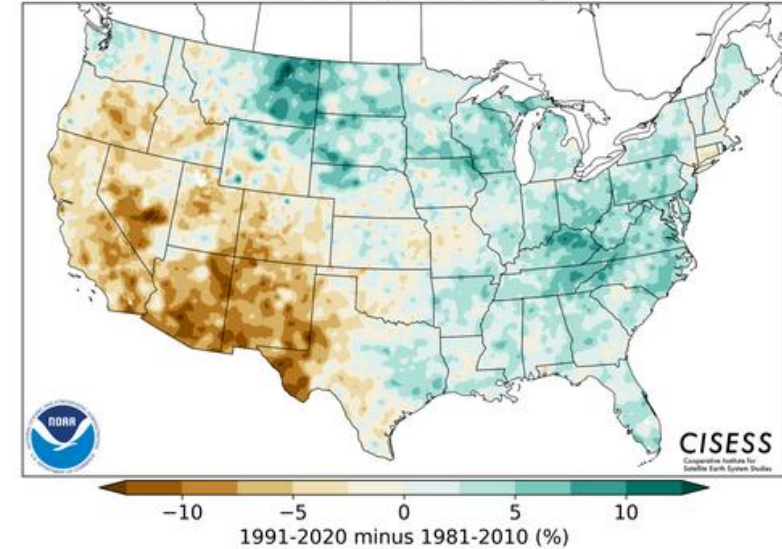
Posted to NWRFC web Oct '21

COLUMBIA - THE DALLES DAM (TDA03) Seasonal Natural Normals in KAF					
	Apr-Sep	Apr-Jul	Apr-Aug	Jan-Jul	Oct-Sep
30-Year Normal 1991-2020	97490.82	83913.21	92086.94	104618.76	134147.13
Previous 30-Year Normal 1981-2010	95649.91	81847.36	90160.87	102176.77	131930.07

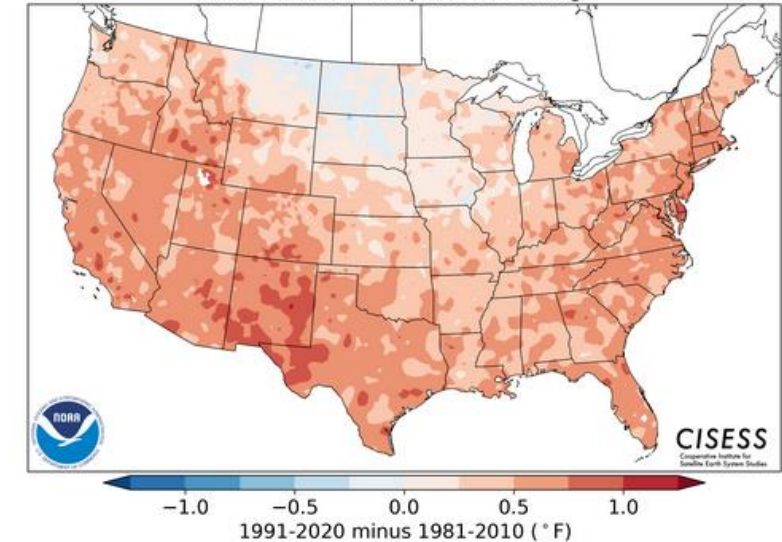
Annual Runoff Change 1991-2020 vs 1981-2010

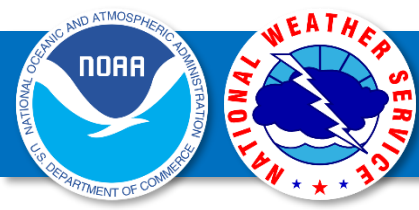


Annual Precipitation Change



Annual Mean Temperature Change



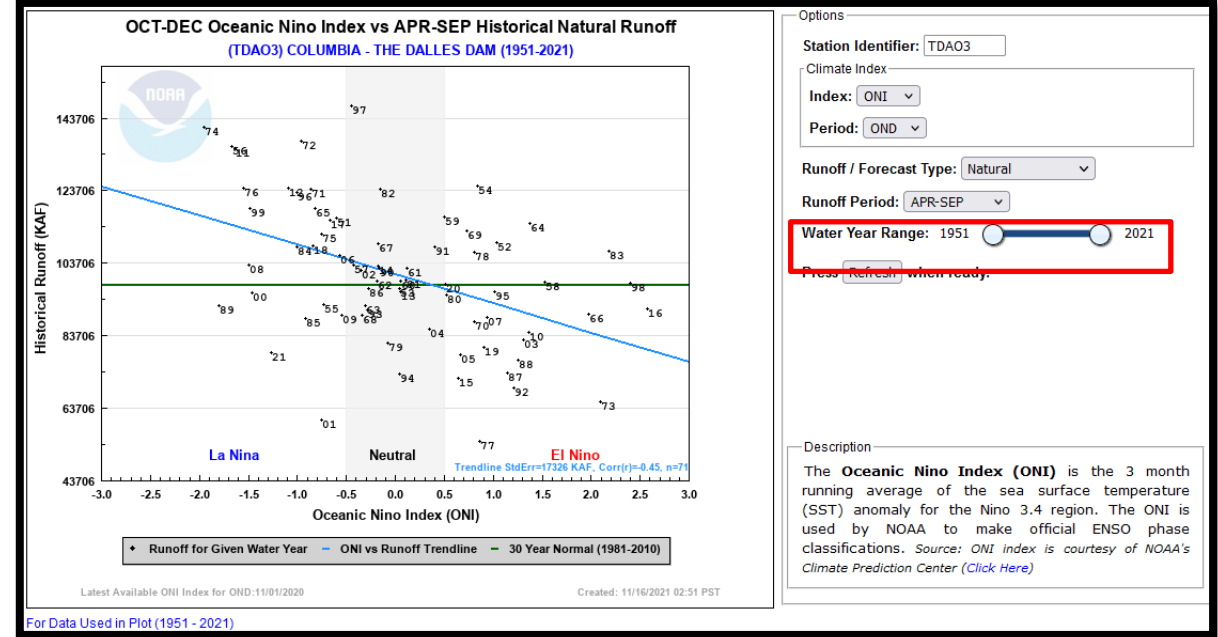


# NWRFC Webpage Runoff Examples

## Monthly Runoff Estimates

COLUMBIA - THE DALLES DAM (TDAO3) Monthly Natural Runoff in KAF												
Calendar Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1948										6866.80	4307.04	4379.38
1949	3540.71	4015.10	8513.31	15020.45	35251.07	21985.00	11220.00	6000.73	4727.37	4400.20	5200.74	5505.01
1950	4353.80	5540.21	9090.27	12654.81	23350.51	30240.78	23393.23	9070.77	5729.74	6090.31	8300.03	8779.57
↕												
2020	5178.52	6004.21	5835.08	10310.00	20700.00	28747.88	17065.70	8820.04	5197.51	5790.00	5517.12	4473.31
2021	5239.70	4010.18	5000.73	9725.01	19270.40	22750.71	15314.10	7435.72	4075.04	4007.31	2814.04	
30-Year Normal 1991-2020	5688.63	6201.36	8815.56	14265.97	26898.13	27023.85	15725.26	8173.73	5403.88	5113.98	5645.86	5487.07
Previous 30-Year Normal 1981-2010	5634.13	6094.26	8601.02	13711.58	25477.73	27081.92	15576.13	8313.51	5489.03	5012.58	5540.45	5397.73

## Historical Climate Indices vs Runoff

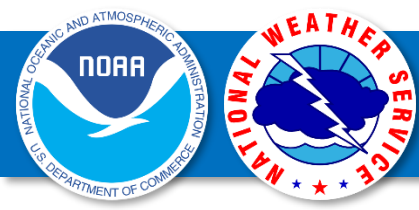


## Runoff Period Rankings

COLUMBIA - THE DALLES DAM (TDAO3) Period Rankings - WY1949 to 2022 APR-SEP Normal - 97491 (KAF)				
Rank	Year	Period Volume (KAF)	Percent of Normal	Exceedance Probability*
1	1997	147065.56	151	1.333 %
2	1974	141229.13	145	2.667 %
↕				
53	2022	90033.30	92	70.667 %

Current Apr-Sep Forecast at The Dalles:

- 53<sup>rd</sup> Wettest - 22<sup>nd</sup> Driest for WY1949-2021 POR
- 92% of 30YR Normal (1991-2020)



# Snow Normals Update

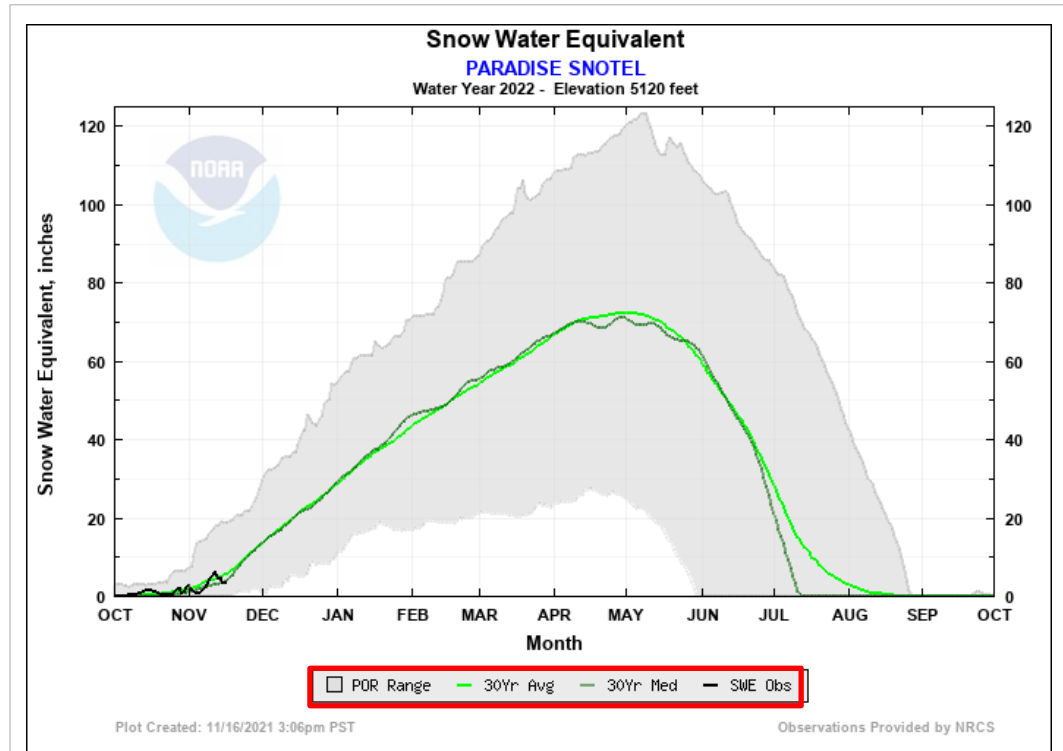
## Snow data critical for NWRFC operations

Sources include:

- Natural Resource Conservation Service
- Agencies associated with British Columbia and Alberta Provinces

Data posted to NWRFC website for internal and external use

- Posted normals provided to NWRFC by NRCS
- Min/max computed by NWRFC
- **Update to NWRFC web expected by end of 2021**



### Daily Statistics (inches)

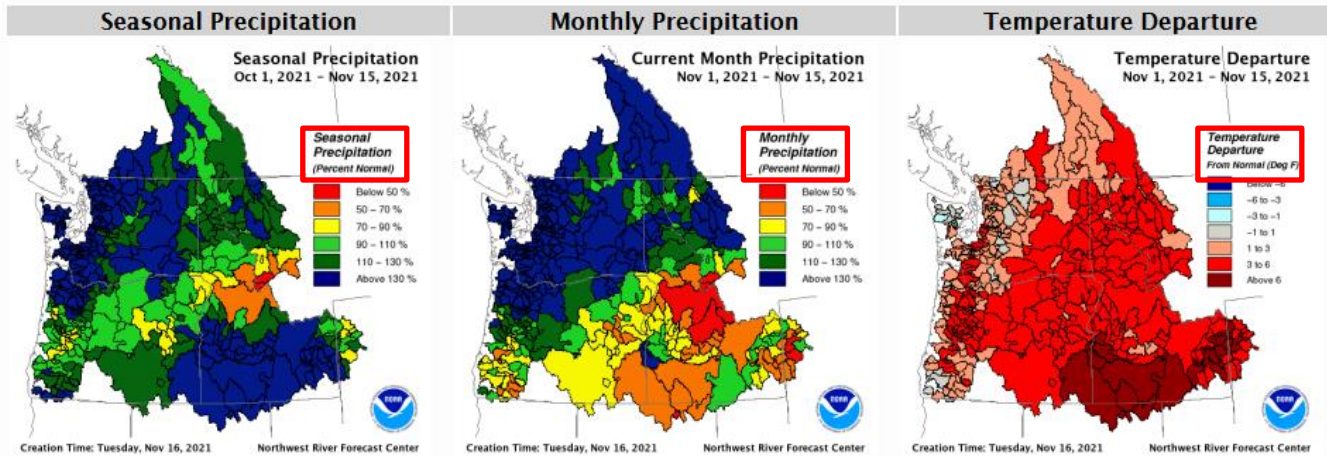
Min	Median	Average	Max
0.00 (1997)	3.80	5.50	18.80 (1984)
30 Year Average: 5.50 inches			
Latest Observation is 3.40 inches which is 62 % of average			
<p><b>Note: The Median/Average is based upon the 30 year period 1981 to 2010.</b>  <b>The Min/Max is based upon the Period Of Record (POR).</b></p>			



# Precipitation & Temperature Normals

## NWRFC Products and Models Depend on Gridded Weather Normals

- Weather inputs to hydrologic models are gridded
- Current model calibration effort based on gridded historical weather
- Heavy use of PRISM 30yr normal for precipitation and temperature
- Contract for PRISM grids for NWRFC domain (US and BC), **expected FY22??**



### Columbia River Main Stem

Seasonal Precipitation (by Basin)	OBSERVED (in)	NORMAL (in)	DEPARTURE (in)	PERCENT of NORMAL
Columbia River Basin abv Grand Coulee	6.4	5.7	0.7	113
Columbia River Basin abv The Dalles	4.7	3.9	0.8	120

