



May 2017 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

Telephone Conference: 1-888-677-0012

Pass Code: 91999

Presentation available after brief at:

www.nwrfc.noaa.gov/presentations/presentations.cgi

Multiple NWRFC Job Openings for a Senior Hydrologist and Hydrologist/Meteorologist

(Posted: Friday, April 21, 2017 to Monday, May 8, 2017)

Please follow this link to our NWRFC Employment Page for more information: [Click Here.](#)

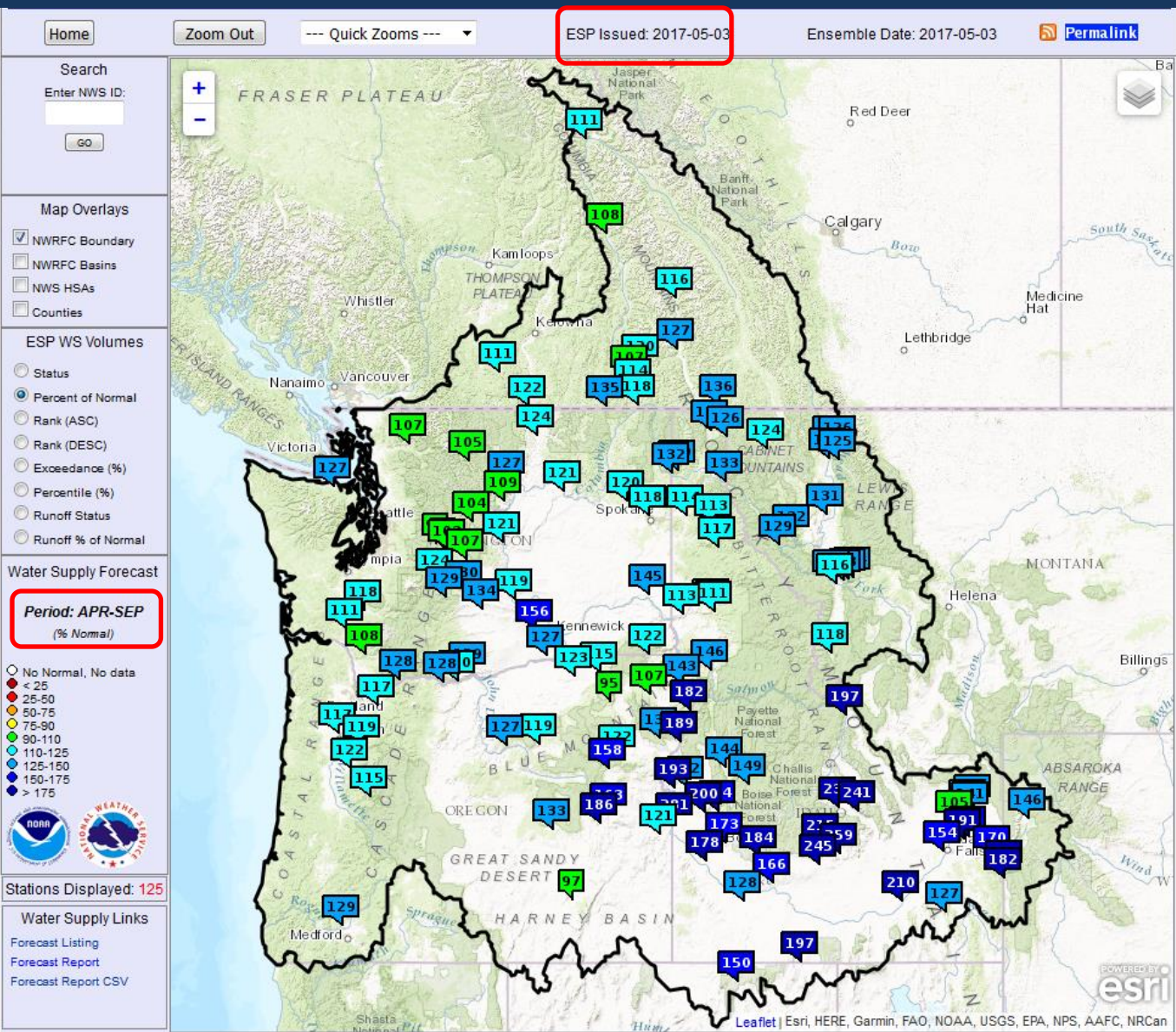
Kevin Berghoff, NWRFC
W-ptr.Webmaster@noaa.gov
(503) 326-7291



Water Supply Summary



www.nwrfc.noaa.gov/ws/



West of Cascades:

- Well above normal

East of Cascades:

- Well above normal throughout the Upper Columbia and Snake River basins

Primary drivers:

- Snowpack distribution
- Weather yet to come



Volume Forecast Inputs



■ Observed Conditions:

- Precipitation
- Temperature
- Snowpack
- Soil moisture

Model “states”

■ Future Conditions (Anticipated and Statistical):

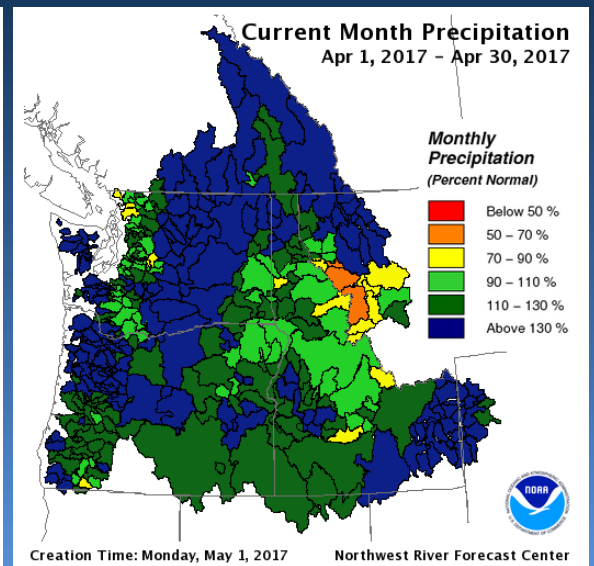
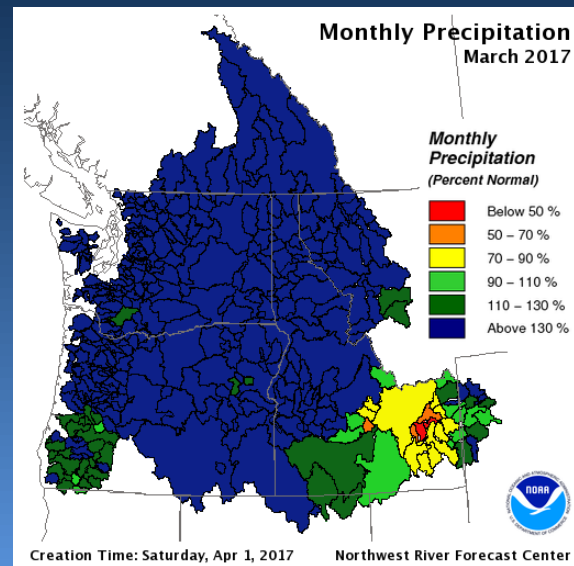
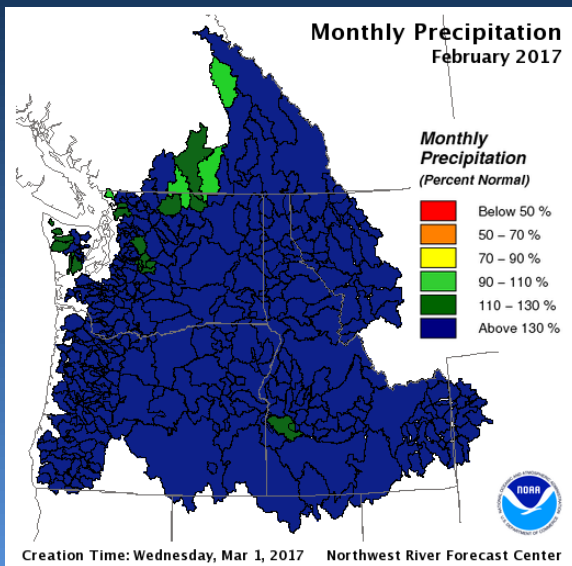
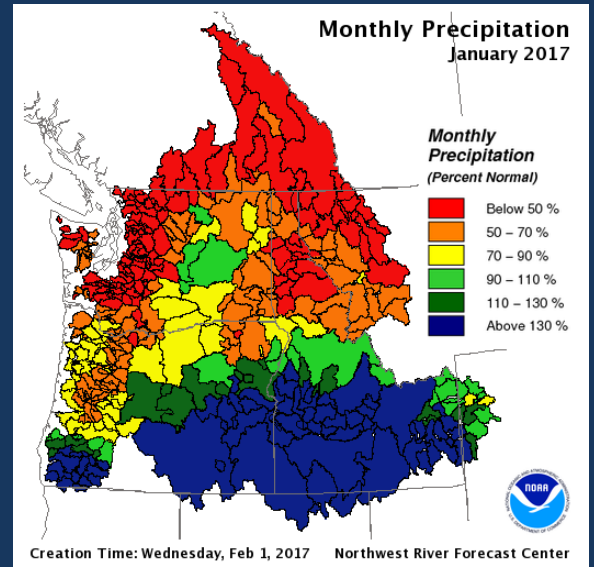
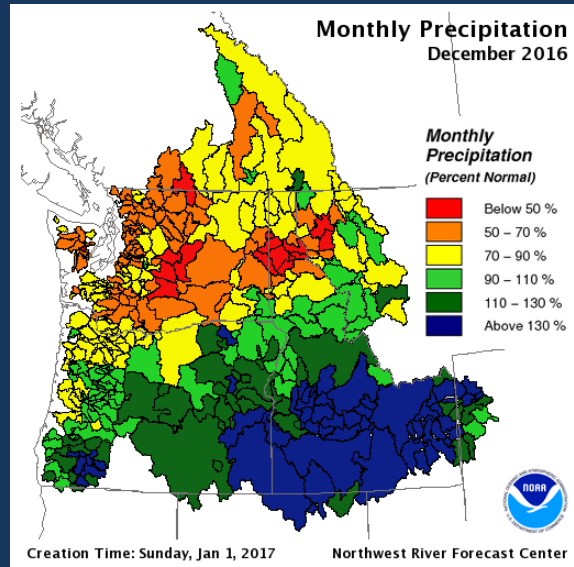
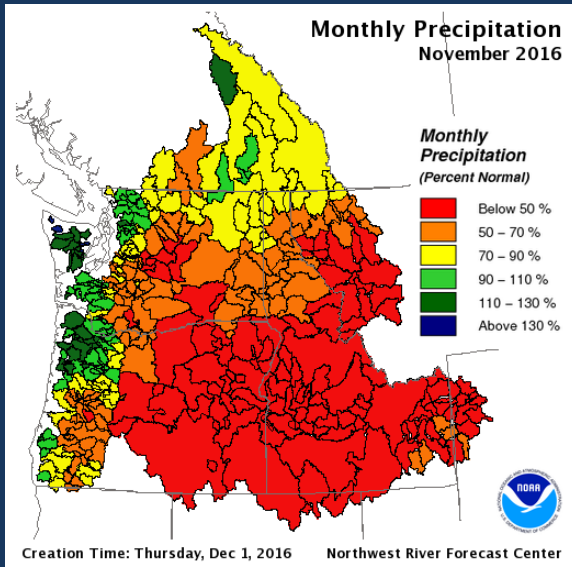
- 0, 5, or 10 days of QPF/QTF
- Ensemble of precipitation and temperature climatology appended thereafter

Model
“forcings”



Observed Monthly Precipitation

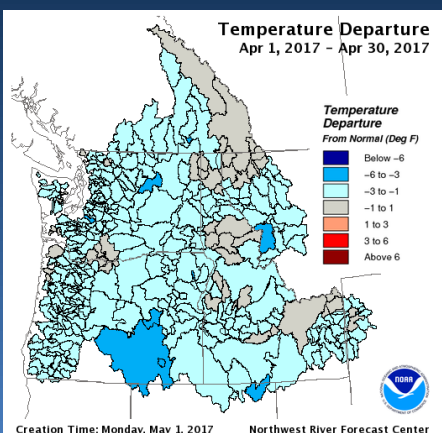
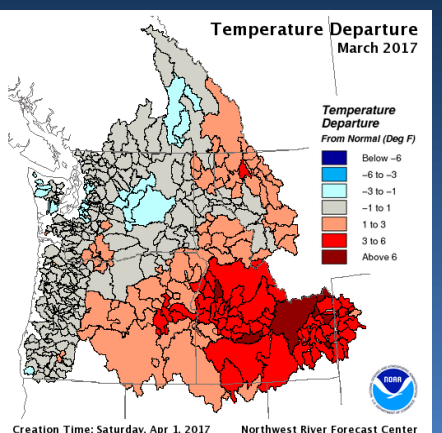
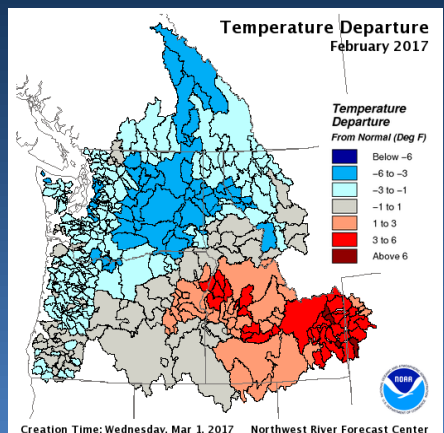
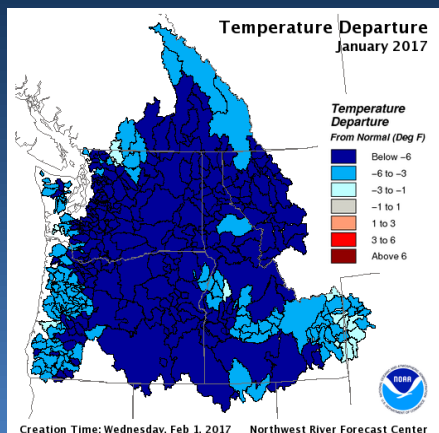
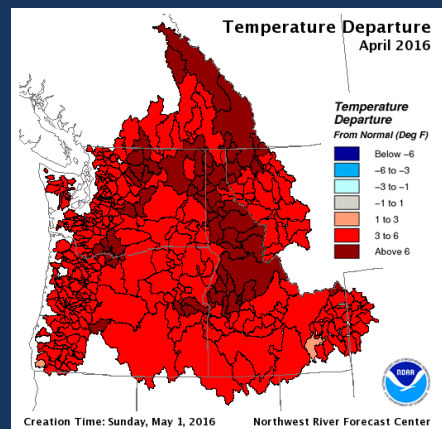
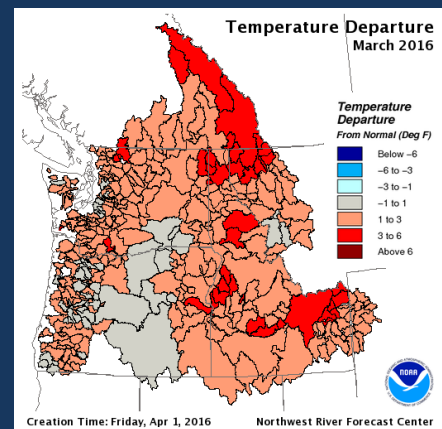
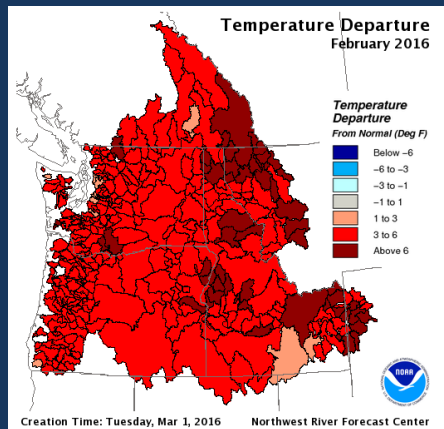
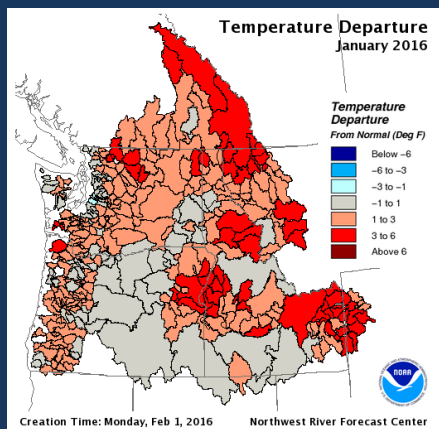
www.nwrfc.noaa.gov/water_supply/wy_summary





Observed Temperature Departures

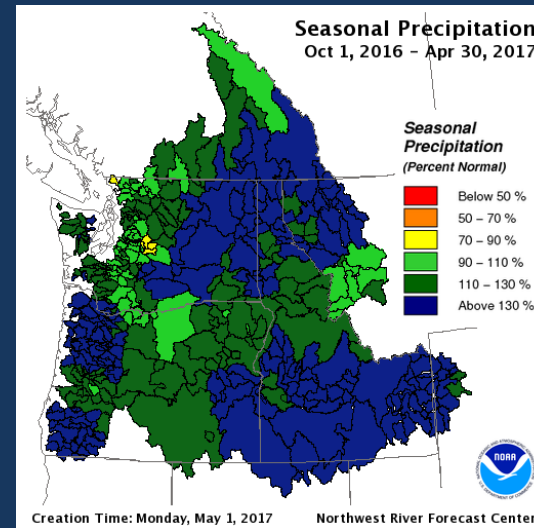
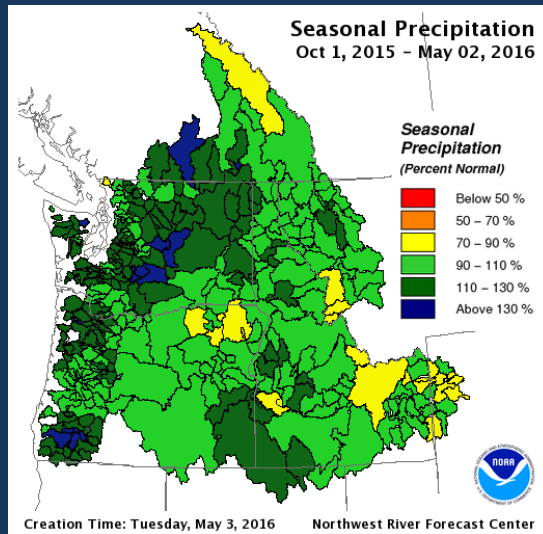
Water Year 2016 / 2017 comparison





Observed Wateryear Precipitation

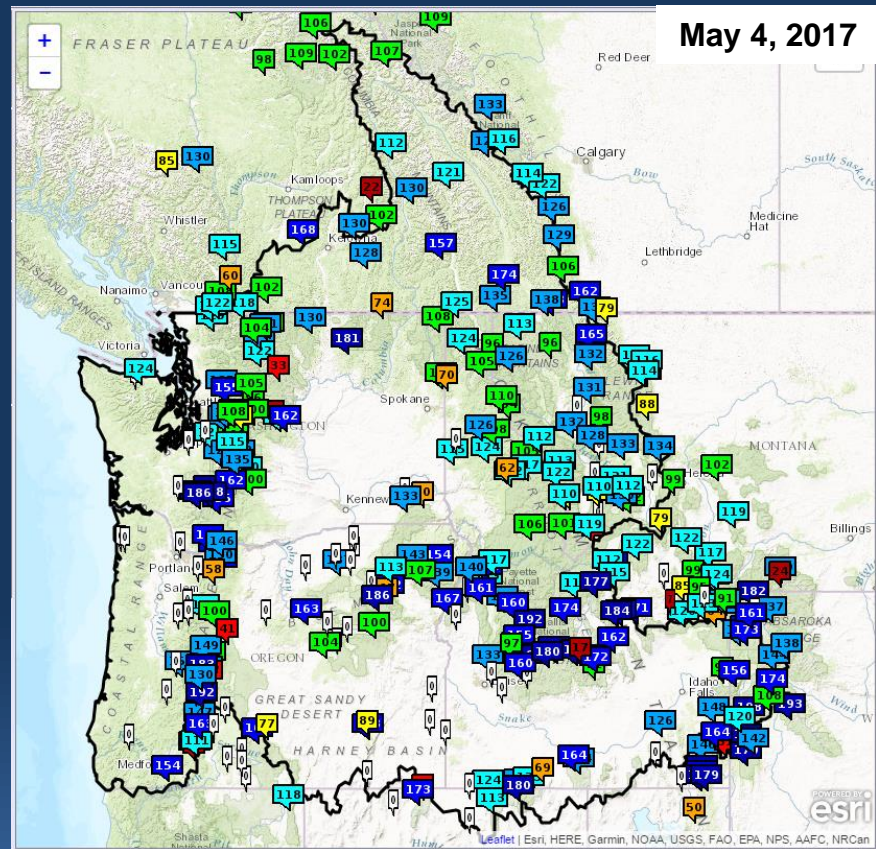
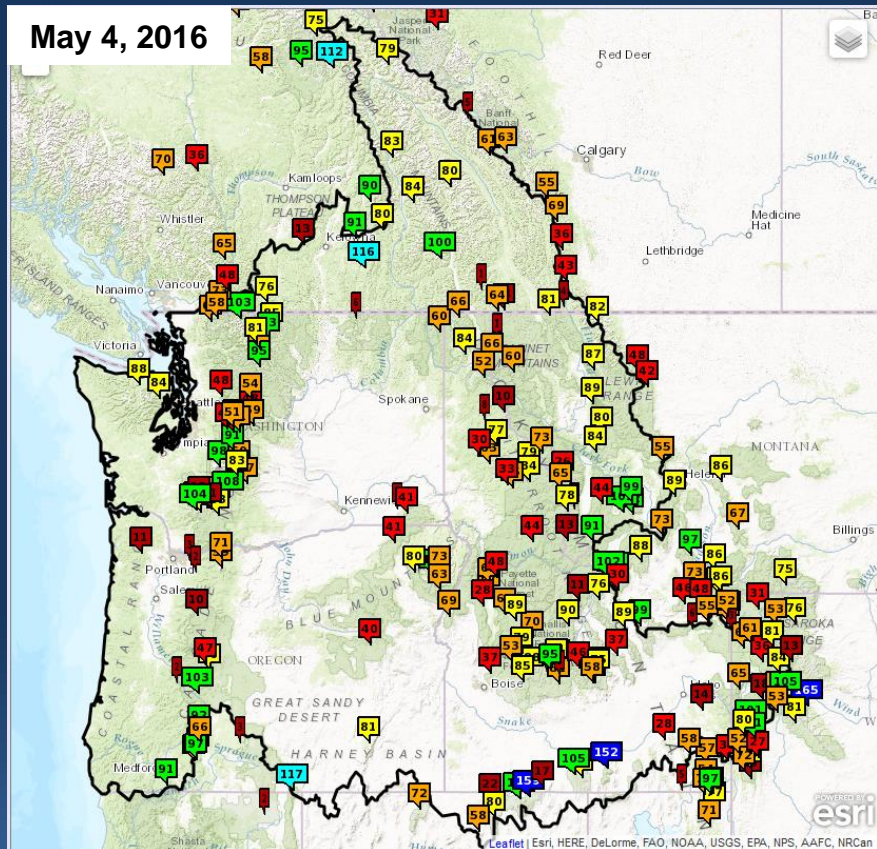
www.nwrfc.noaa.gov/water_supply/wy_summary



DIVISION NAME	WY 2016 % NORM	WY 2017 % NORM
Columbia River above Arrow Lakes	94	113
Kootenai River	102	135
Pend Oreille River	102	132
Spokane River	107	132
Columbia River above Grand Coulee	101	113
Snake River above American Falls	93	152
Snake River above Ice Harbor	101	138
Columbia River above The Dalles	103	129
Western Washington	111	112
Western Oregon	113	141

Observed Snowpack Conditions

www.nwrfc.noaa.gov/snow



- **May 2016 Snowpack**

- Warm temperatures in April – Record SWE loss throughout region

- **May 2017 Snowpack**

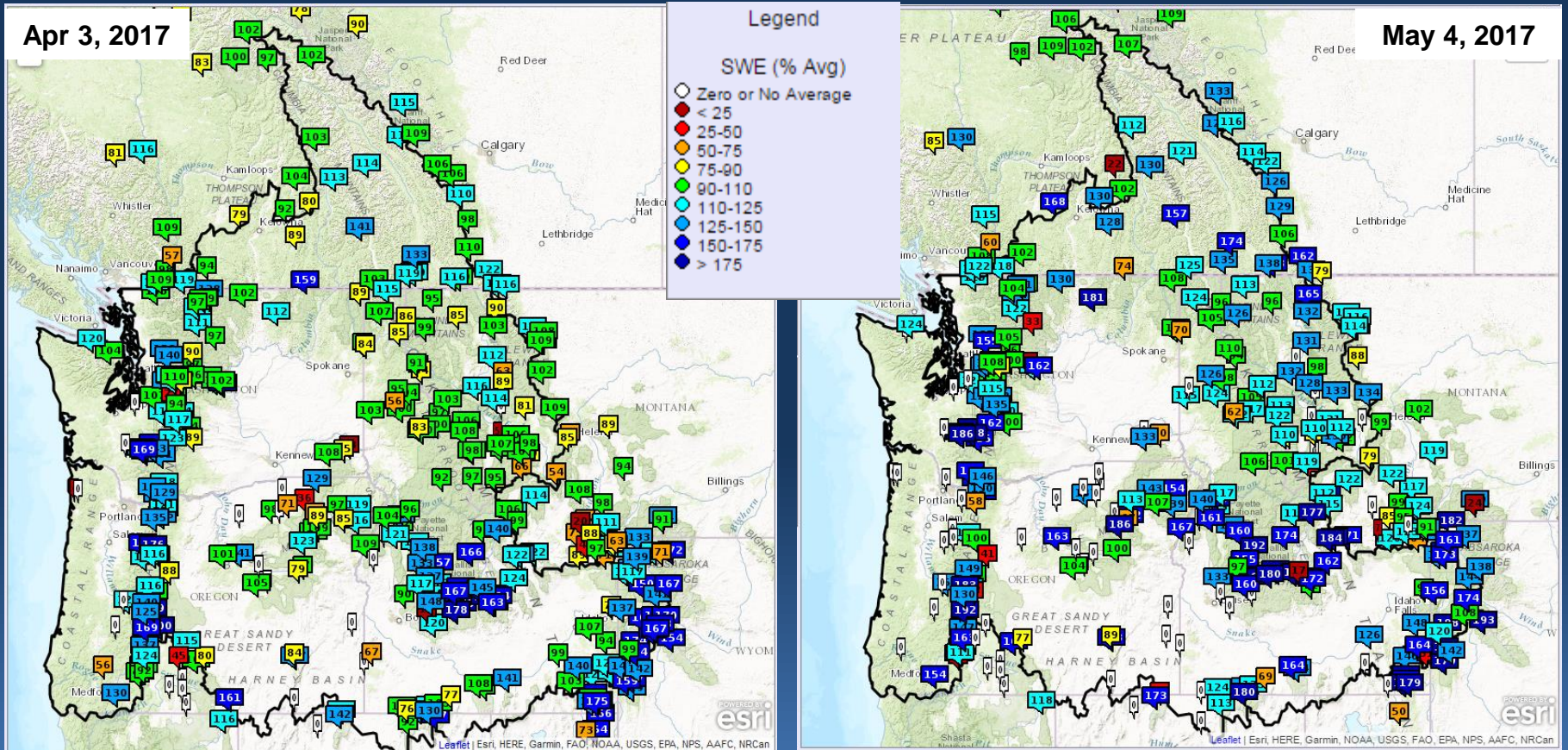
- Near record SWE in Snake – well above average in Upper Columbia

- Observed snow water equivalent (SWE) values provided by:

- Natural Resources Conservation Service (NRCS) SNOTEL network, and Environment Canada (EC) Automated Snow Pillow network

Observed Snowpack Conditions

www.nwrfc.noaa.gov/snow

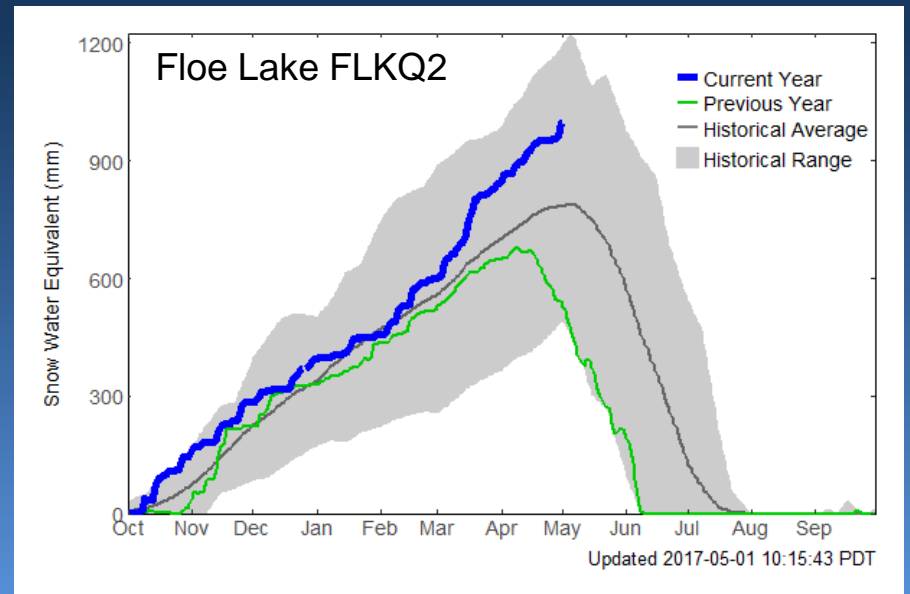
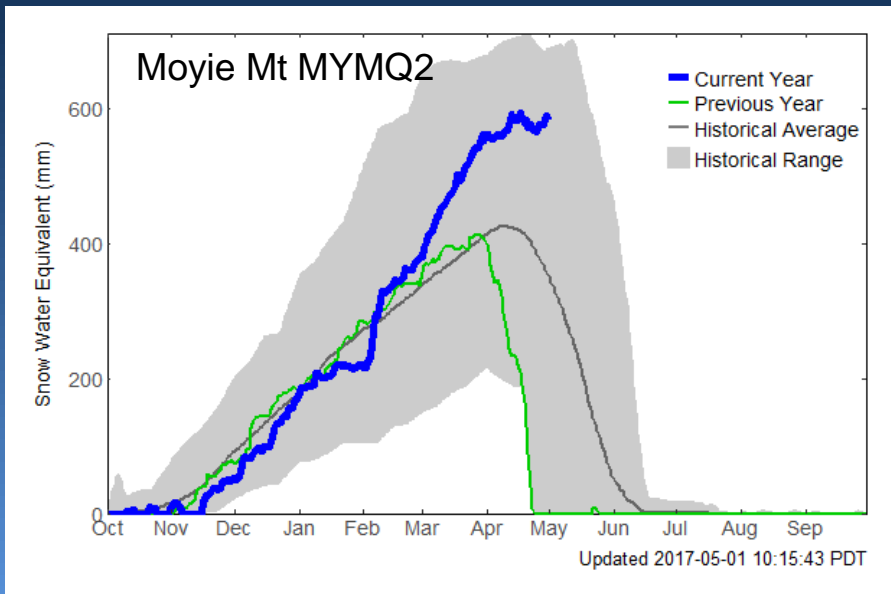
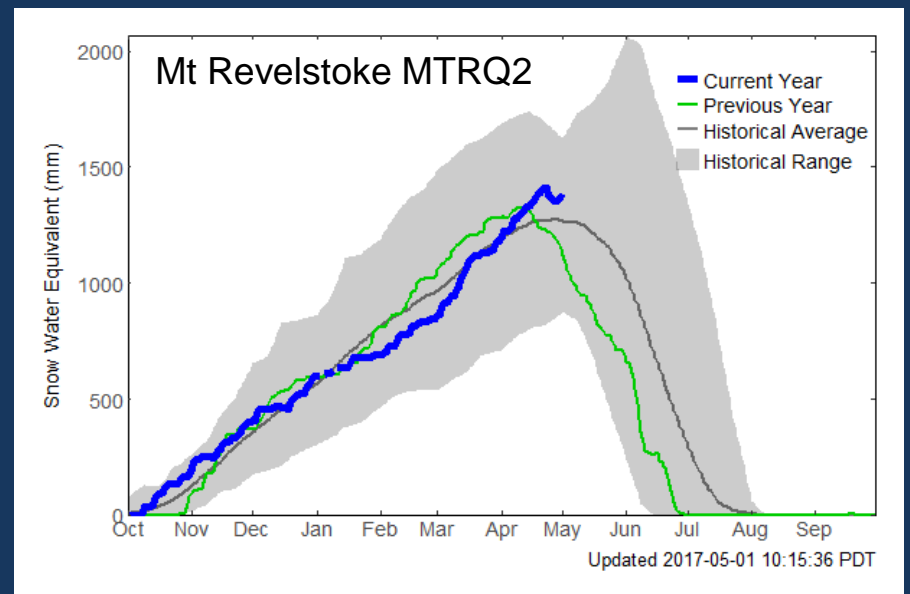
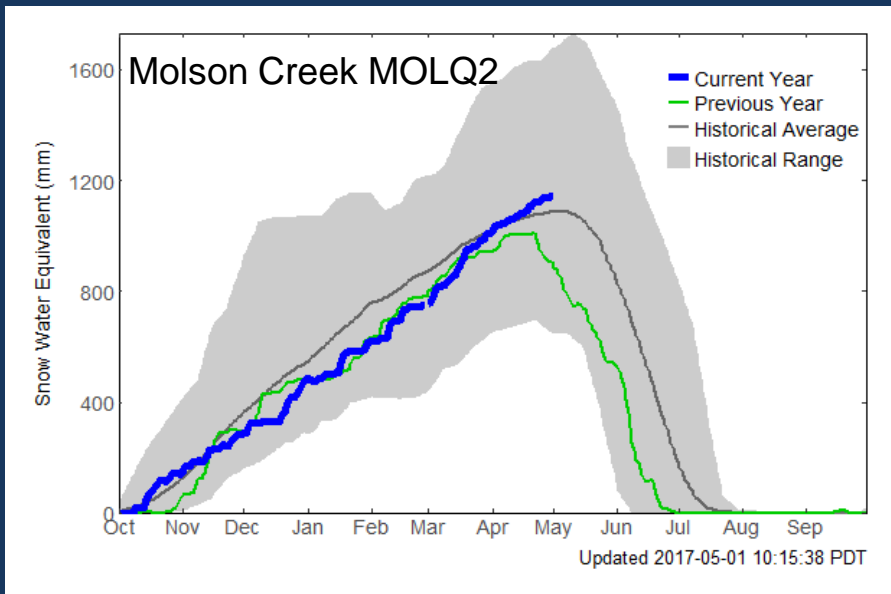


- Still well above normal throughout the Columbia/Snake basin



Observed Snowpack Conditions

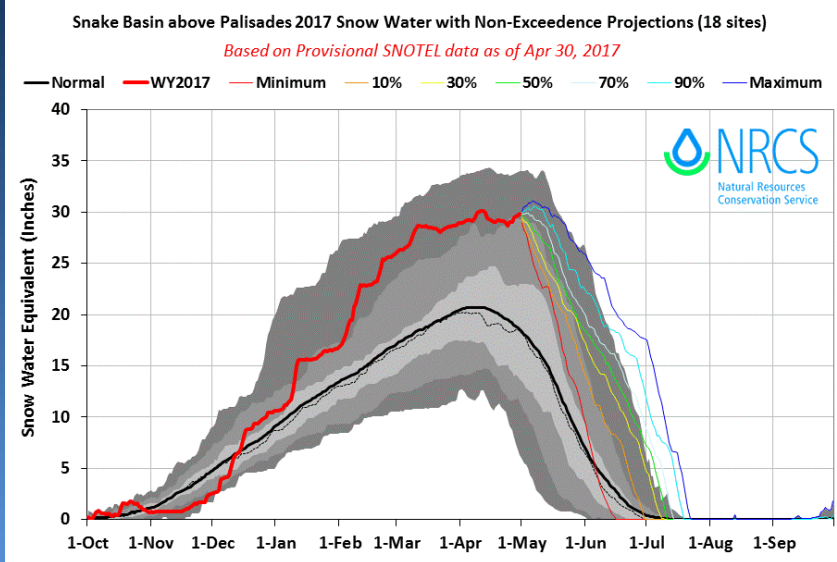
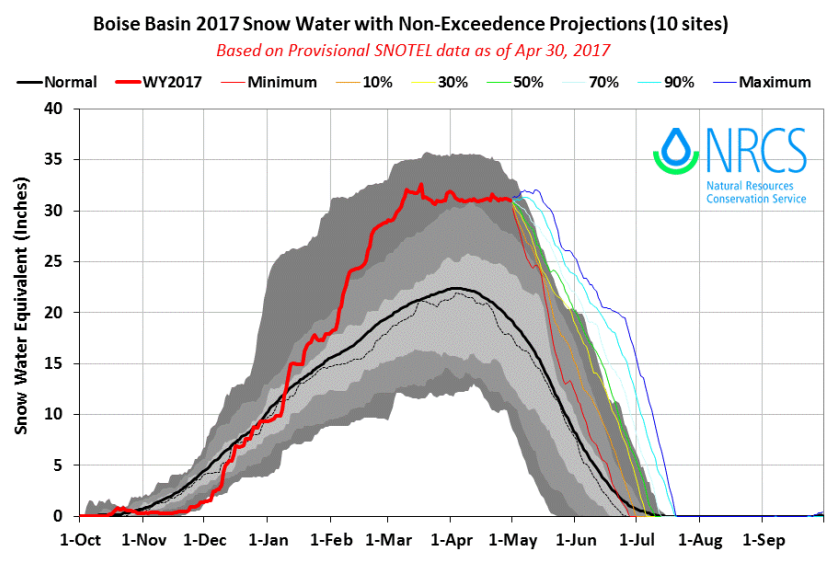
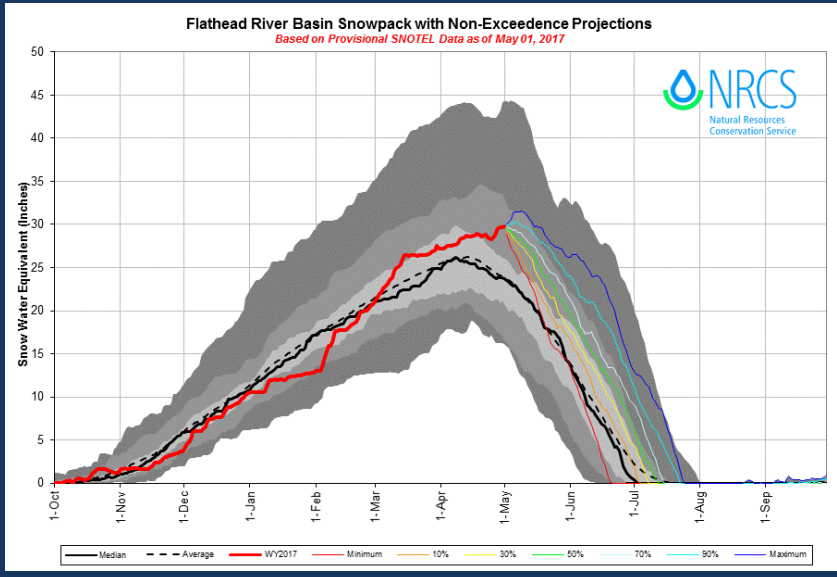
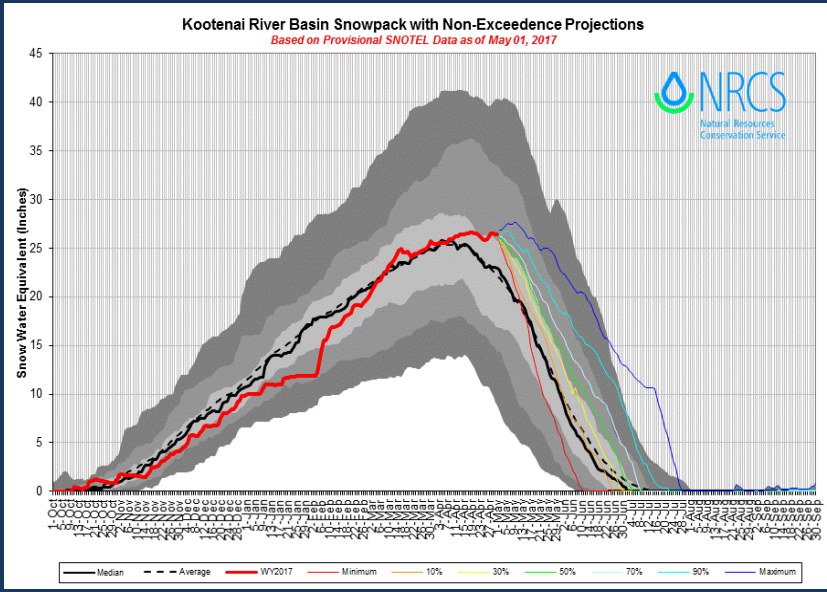
Environment Canada (EC) Automated Snow Pillow network



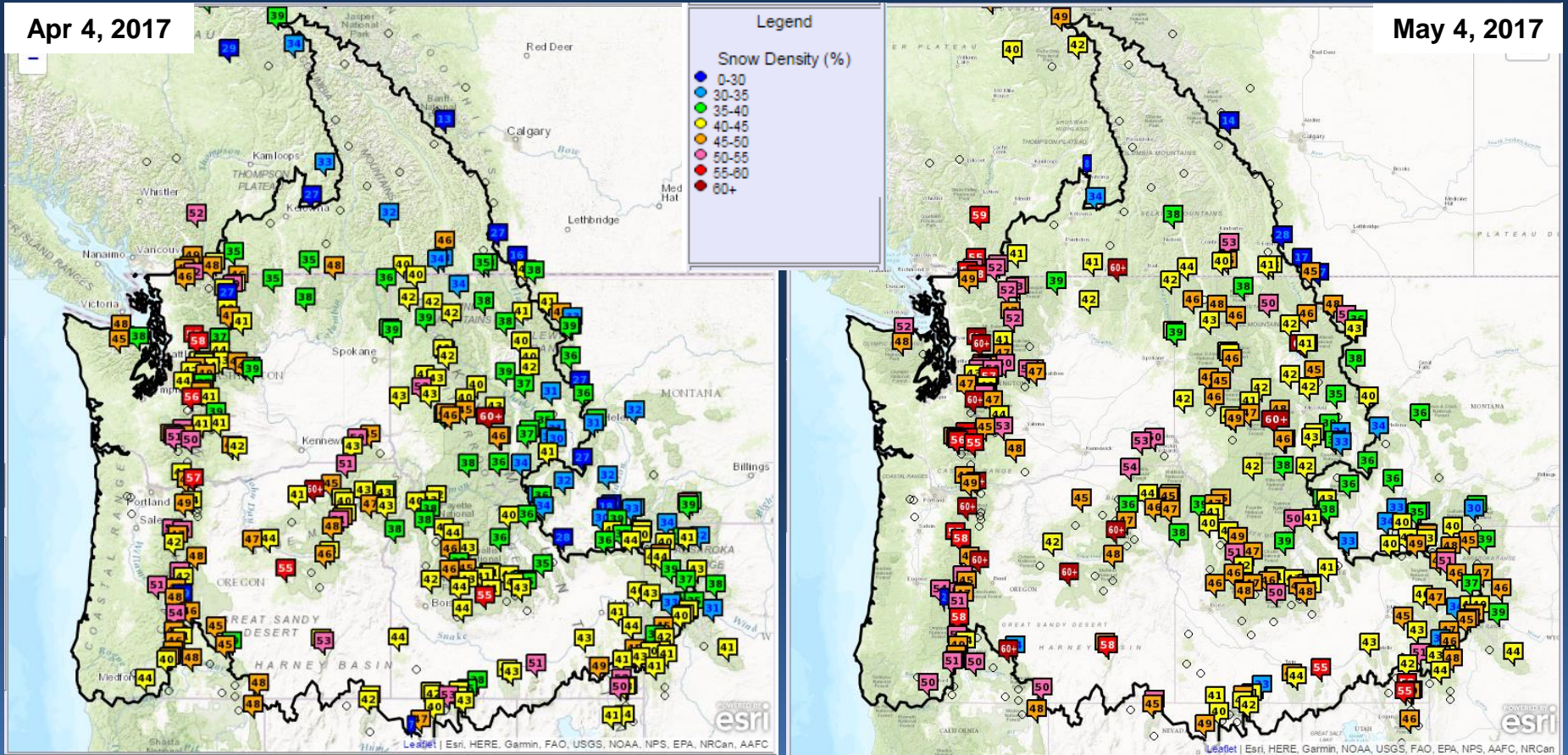


Basin Average SWE

Natural Resources Conservation Service (NRCS) SNOTEL network



Observed Snowpack Density/Ripeness

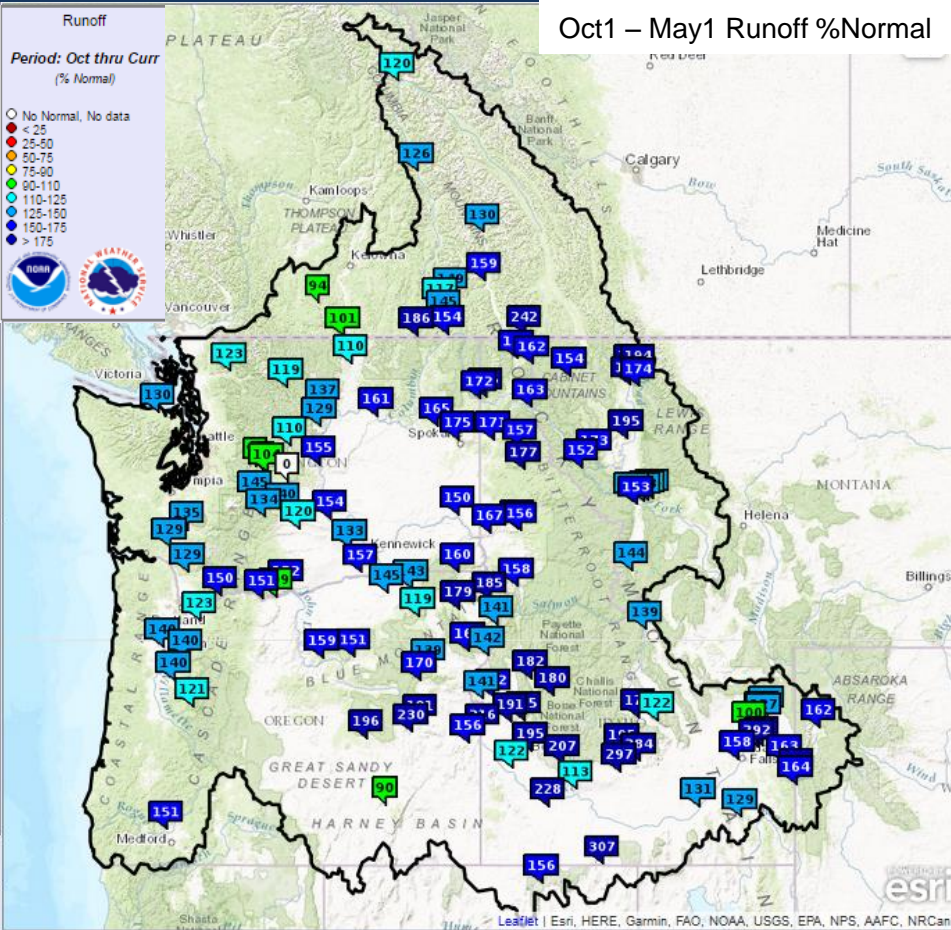


These images are now available on our website

<https://www.nwrhc.noaa.gov/snow/index.html?version=20160408v2>



Observed Runoff Conditions



LOCATION	Oct1-May1 % NORM	Jan1 – May1 % NORM	April % NORM
Columbia River – Arrow Lakes	117	101	104
Kootenai River – Queens Bay	160	141	138
Columbia River – Birchbank	145	129	121
Pend Oreille River – Albeni Falls	172	168	152
Spokane River – Long Lake	165	175	141
Columbia River - Grand Coulee	161	152	141
Snake River - American Falls	131	150	206
Snake River – Lower Granite	150	173	173
Columbia River – The Dalles	151	158	158

- Well above normal runoff for all areas



Volume Forecast Inputs



■ Observed Conditions:

- Precipitation
- Temperature
- Snowpack
- Soil moisture

Model “states”

■ Future Conditions (Anticipated and Statistical):

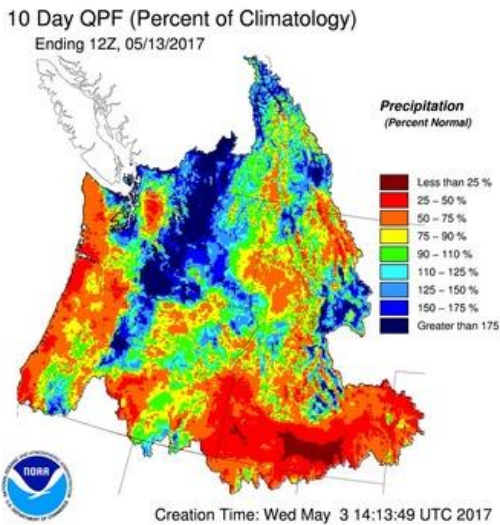
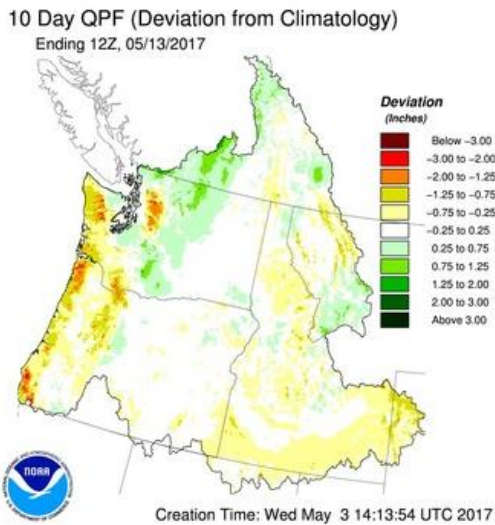
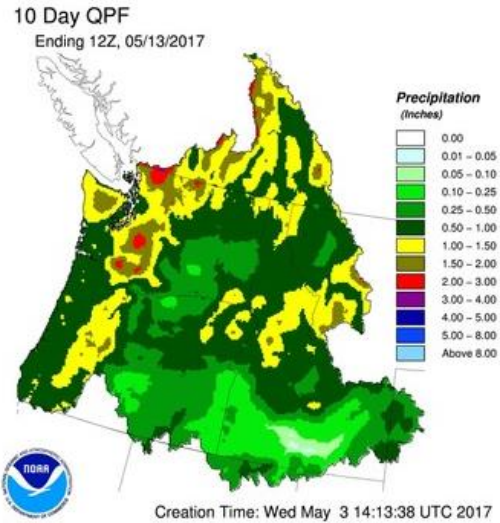
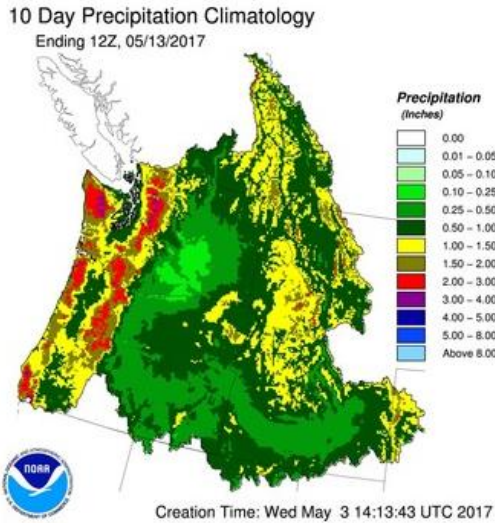
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Model “forcings”

Deterministic Forcings (QPF and QTF)

www.nwrfc.noaa.gov/water_supply/wy_summary

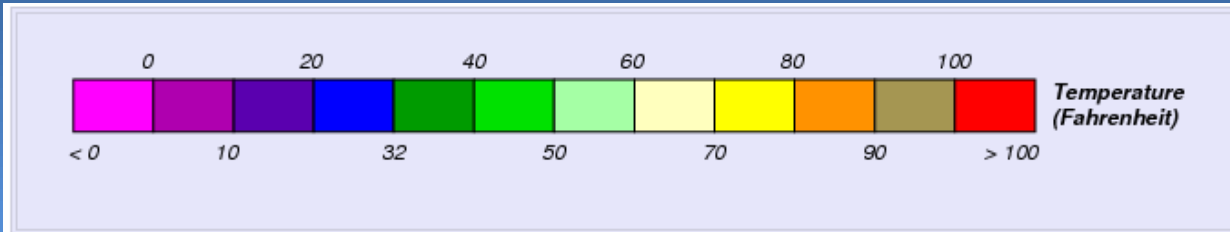
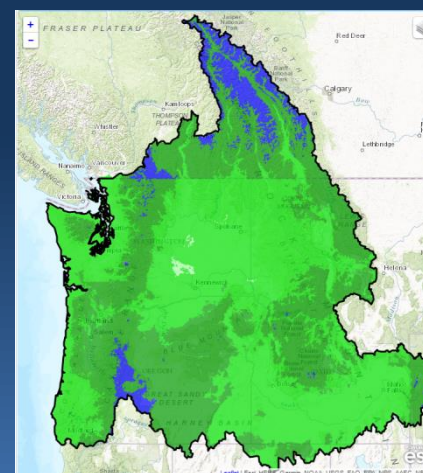
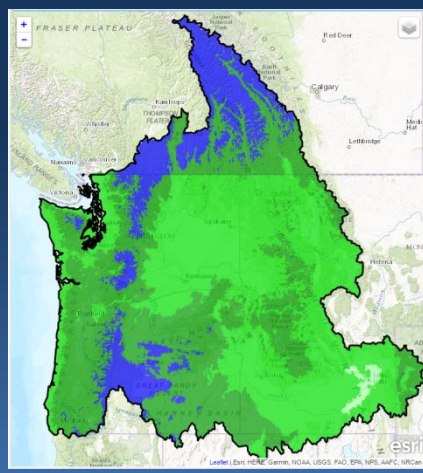
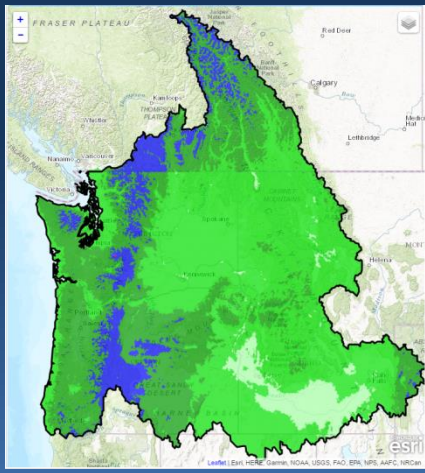
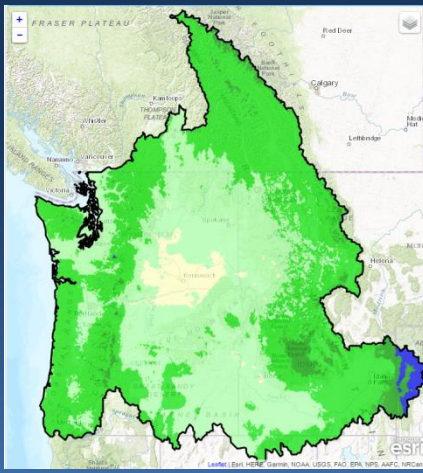
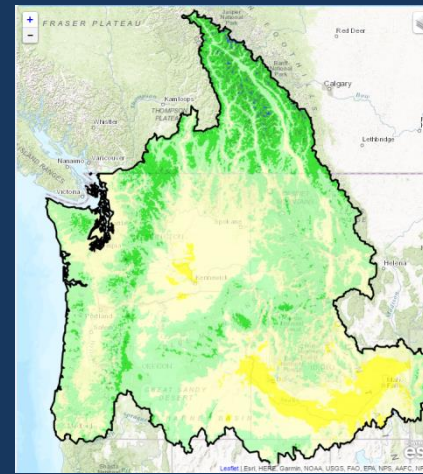
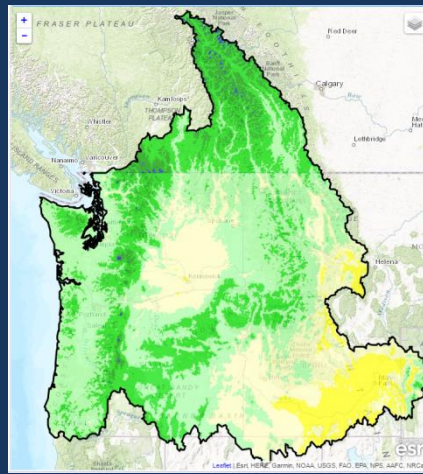
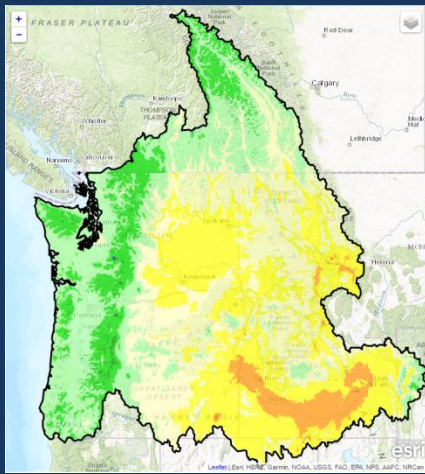
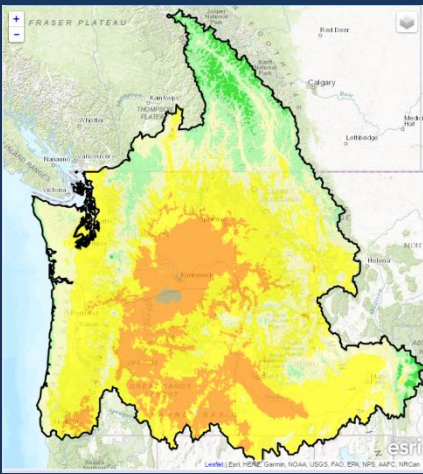
10 Day Forecast Precipitation: Volume Analysis



- Generally drier than normal conditions forecasted over next 10 days, particularly in the Snake River Basin
- 10 day precip forecast can significantly affect ESP volume forecast

Deterministic Forcings (QPF and QTF)

Max/Min Temps 5/4 – 5/7





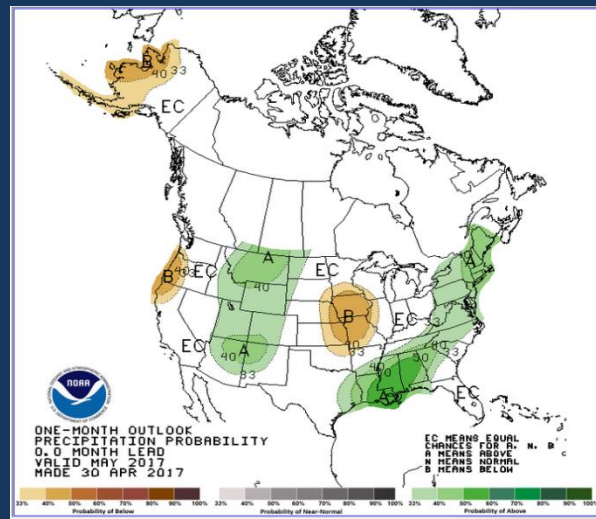
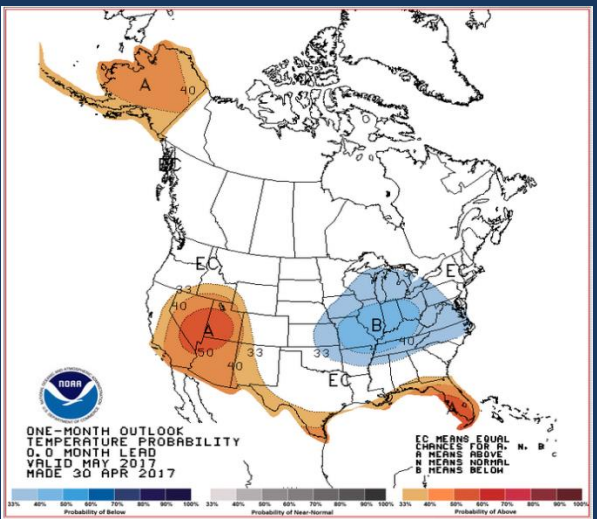
Climate Outlook

www.cpc.ncep.noaa.gov

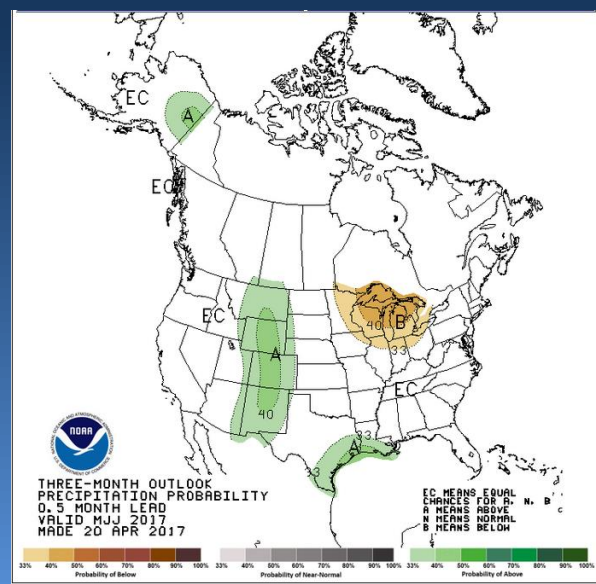
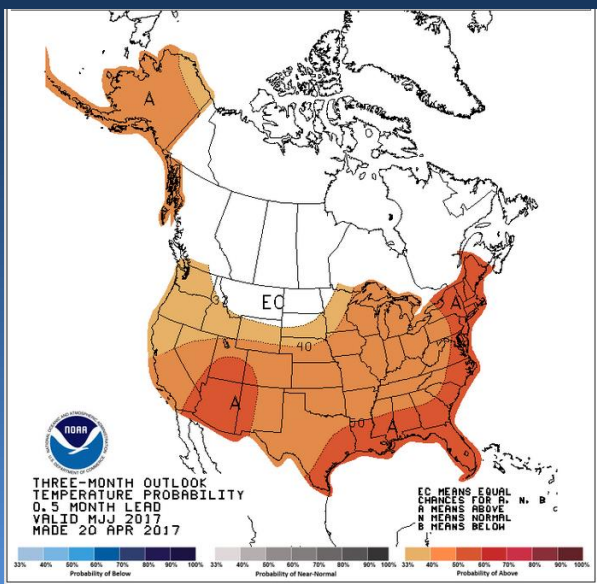
Temperature

Precipitation

Current Month Outlook



Three Month Outlook

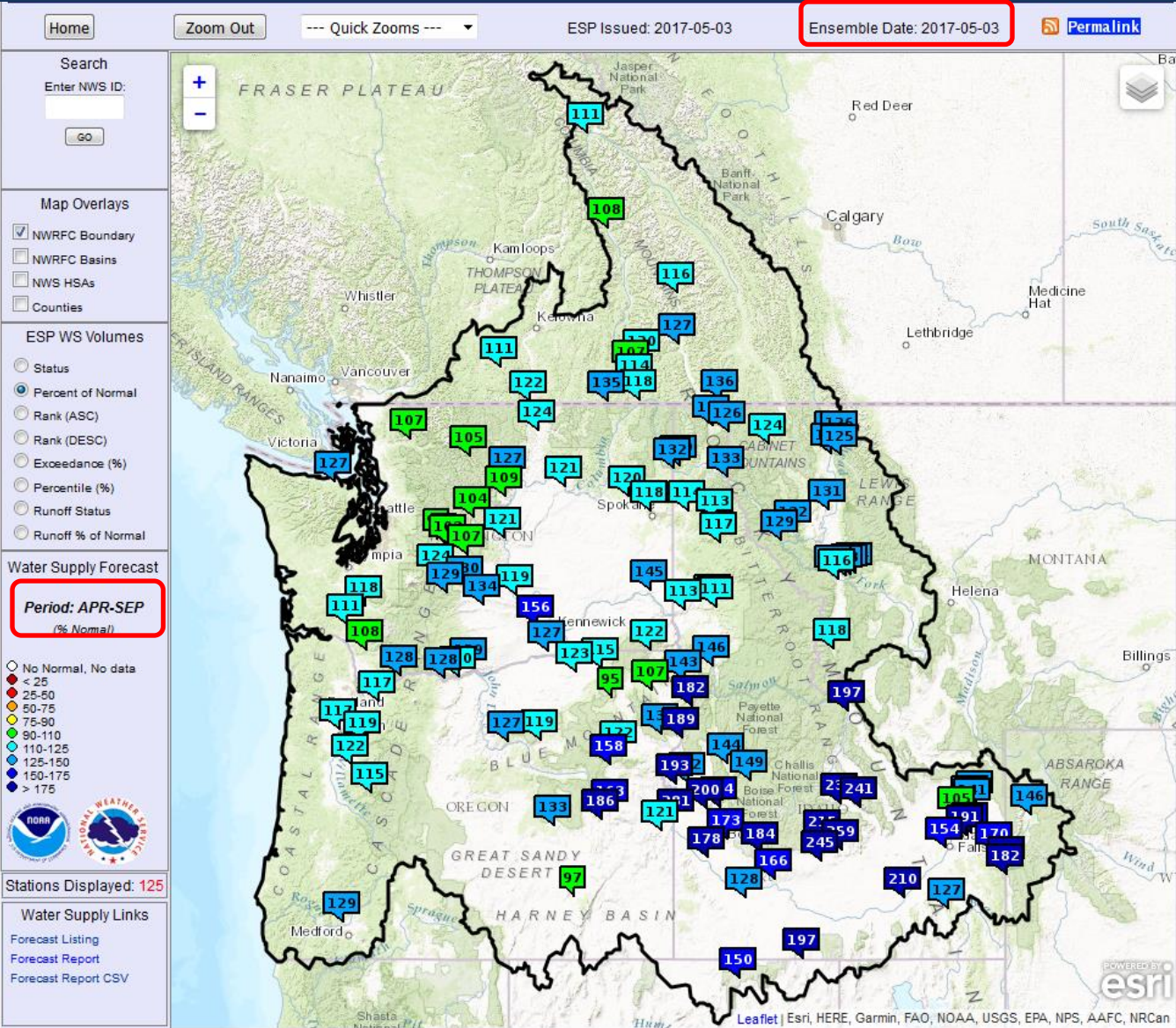




ESP Water Supply Forecasts



www.nwrfc.noaa.gov/ws/



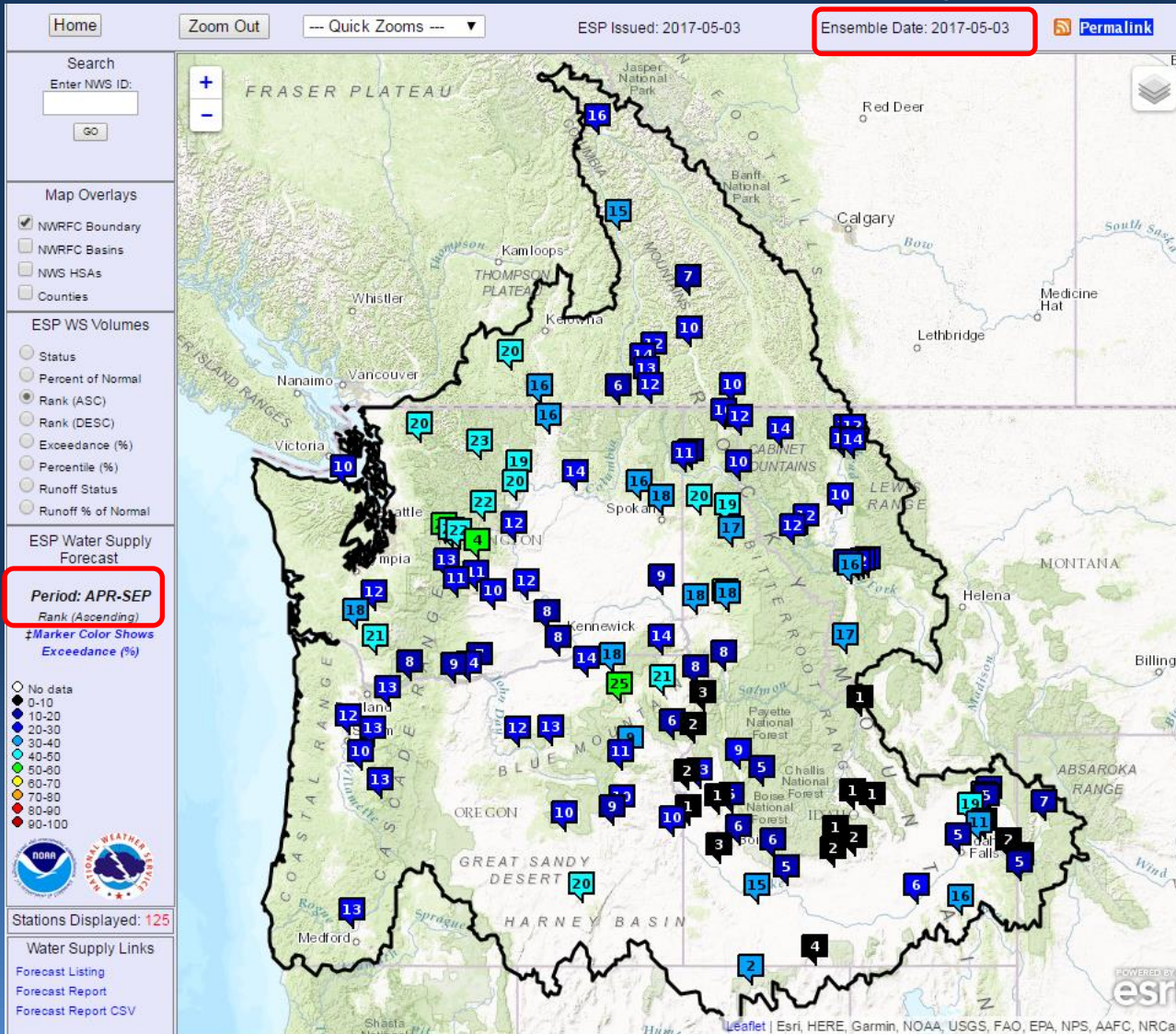
LOCATION	APR – SEP % / Rank
Columbia River – Mica Dam	110 / 16
Kootenai River – Libby Dam	121 / 14
SF Flathead River – Hungry Horse Dam	123 / 14
Spokane River – Lake Coeur D Alene	111 / 20
Columbia River – Grand Coulee Dam	120 / 14
Snake River – Jackson Lake	148 / 7
Snake River – Palisades Dam	172 / 2
Snake River – American Falls Dam	214 / 6
Snake River – Lower Granite Dam	144 / 9
Columbia River – The Dalles Dam	126 / 9



ESP Forecast Ascending Rank



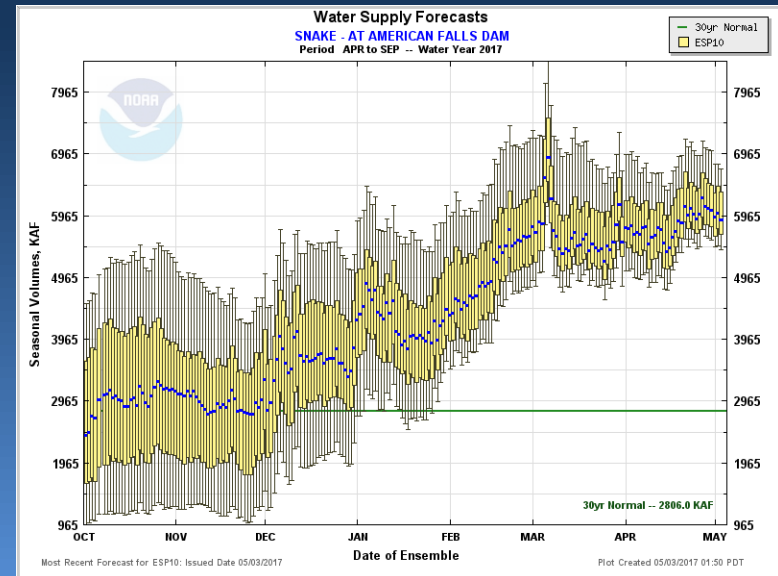
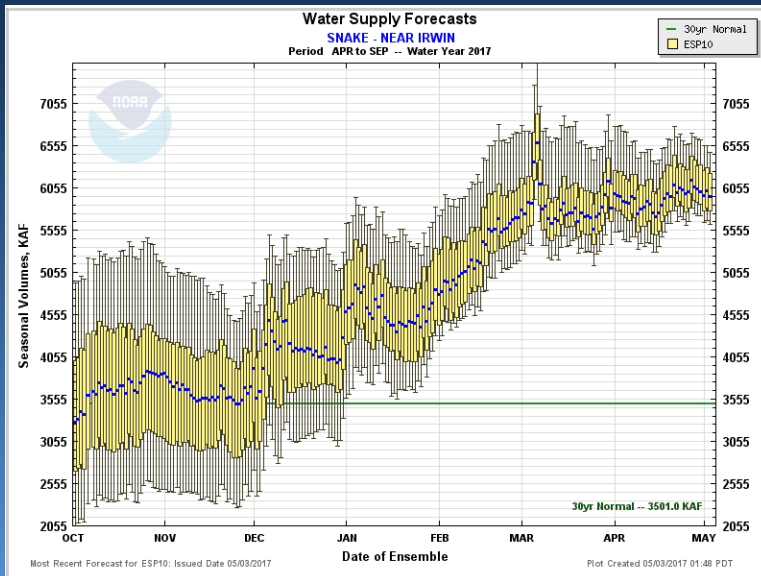
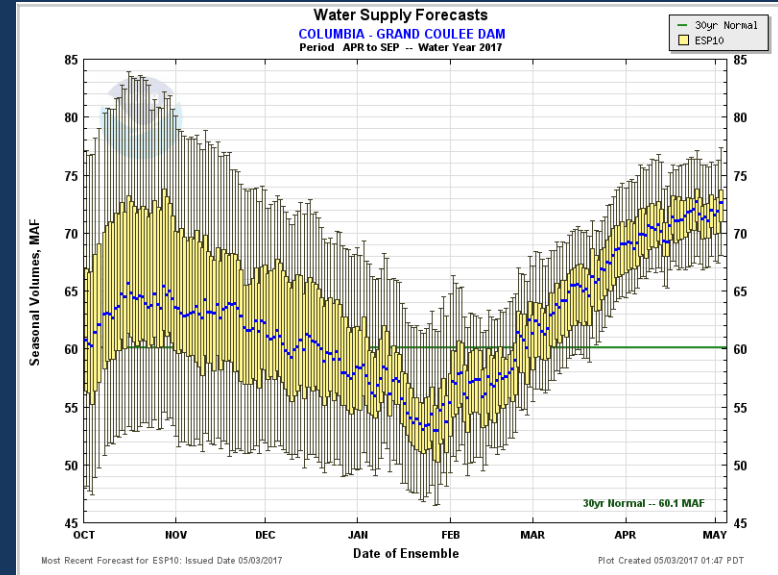
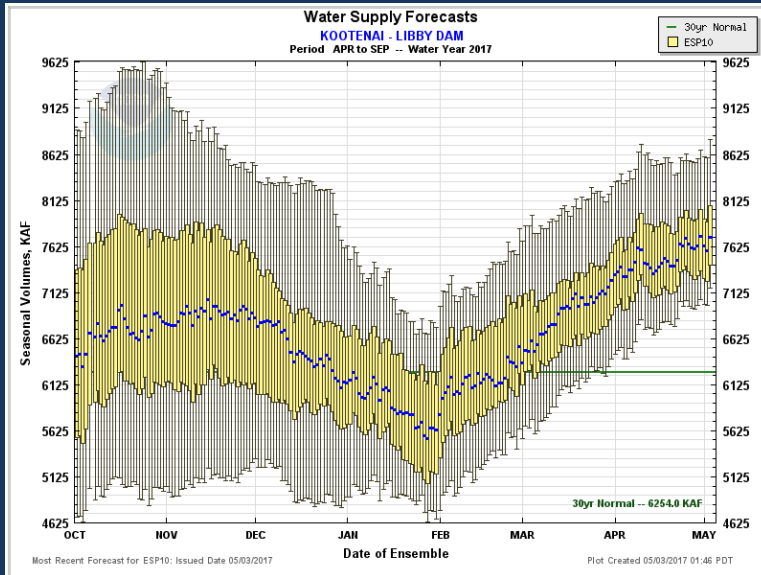
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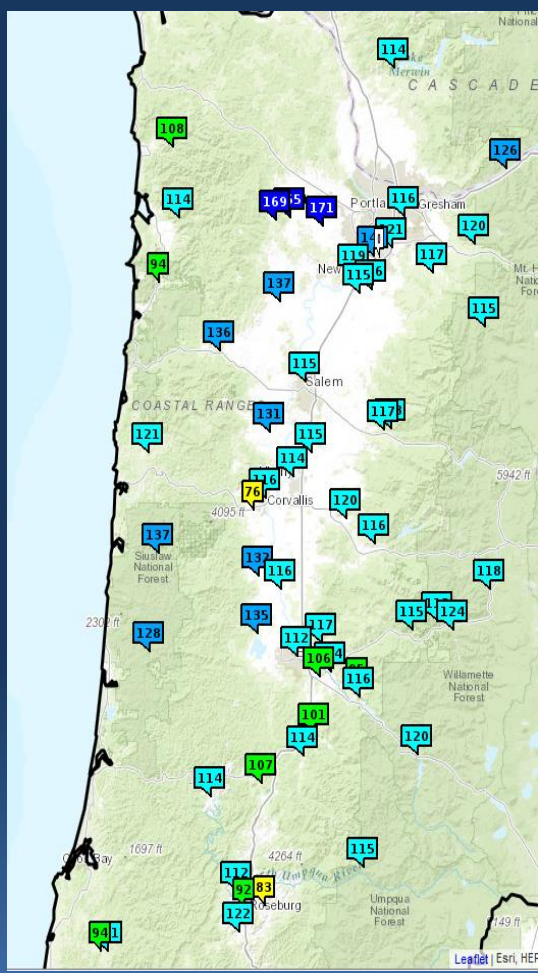
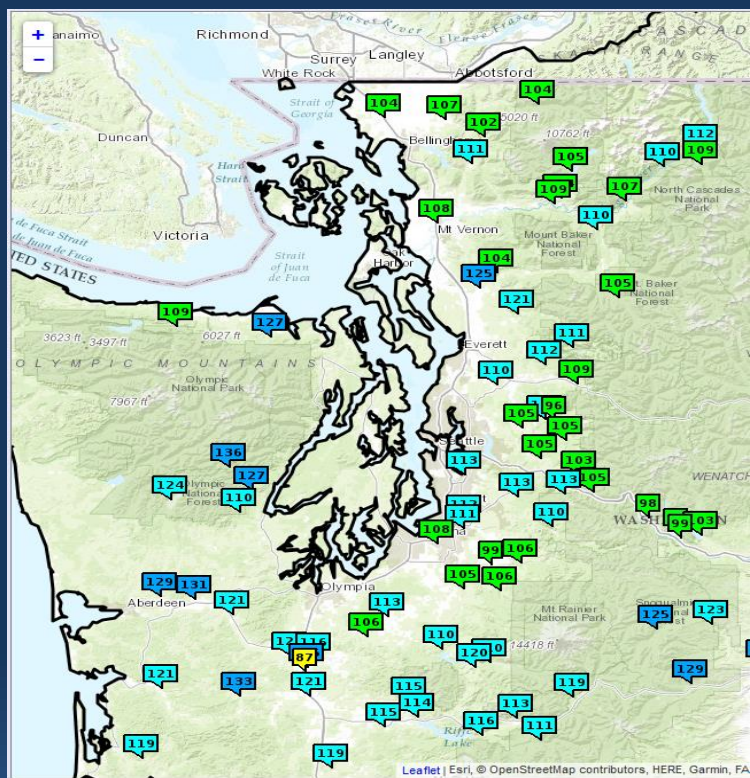


Water Supply Forecasts





ESP Natural Volume Forecasts



LOCATION	APR – SEP % NORM
Skagit River – Concrete	109
Stillaguamish River - Arlington	125
Snohomish River - Monroe	110
Cedar River – Renton	113
Cowlitz River – Castle Rock	113
Chehalis River – Porter	121
Dungeness River – Sequim	127

LOCATION	APR – SEP % NORM
Lewis River – Merwin	114
Clackamas River – Estacada	117
Tualatin River – Farmington	171
Nehalem River – Foss	108
Mckenzie River – Vida	115
Coast Fk Willamette River – Goshen	106
Willamette River – Salem	115
Siuslaw River – Mapleton	128
Umpqua River – Elkton	114
SF Coquille River – Myrtle Point	94
Rogue River – Grants Pass	125
Illinois River – Agness	133



Various Volume Products



www.nwrfc.noaa.gov/ws/

Select Period: APR-SEP

COLUMBIA - THE DALLES DAM (TDAO3) Period Rankings - 1960 to 2017

APR-SEP Normal - 92704 (KAF)

Rank	Year	Period Volume (KAF)	Percent of Normal	Exceedance Probability*
1	1997	140882.53	152	1.724 %
2	1974	139553.70	151	3.448 %
3	1972	134988.91	146	5.172 %
4	2011	132942.00	143	6.897 %
5	1971	126886.56	137	8.621 %
6	2012	123883.00	134	10.345 %
7	1976	122859.91	133	12.069 %
8	1982	122792.81	132	13.793 %
9	1999	117735.82	127	15.517 %
10	1996	116548.73	126	17.241 %
11	1965	114237.00	123	18.966 %
12	1969	112383.00	121	20.690 %
13	2017	111097.15	120	22.414 %
14	1984	110491.42	119	24.138 %
15	1964	110085.00	119	25.862 %
16	1967	109353.00	118	27.586 %
17	1975	108837.19	117	29.310 %
18	1983	107255.60	116	31.034 %
19	1991	106899.81	115	32.759 %
20	1961	102357.00	110	34.483 %
21	2006	102010.17	110	36.207 %
22	1978	100340.51	108	37.931 %
23	2002	98750.36	108	39.655 %

Close Data/Normals Rankings **ENSO / Runoff** Adjustments Verification Verify All Years Archive Monthly Water Supply Forecasts Help

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2017

Official Forecast
10 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04

Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)
APR-SEP	105314	111097	120	120	92704
APR-JUL	90699	96671	121	109	79855
APR-AUG	99624	105088	120	113	87532
JAN-SEP	139573	145356	127	144	114216
JAN-JUL	124957	139929	129	142	101368
OCT-SEP	161645	167428	128	178	130518

5 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04

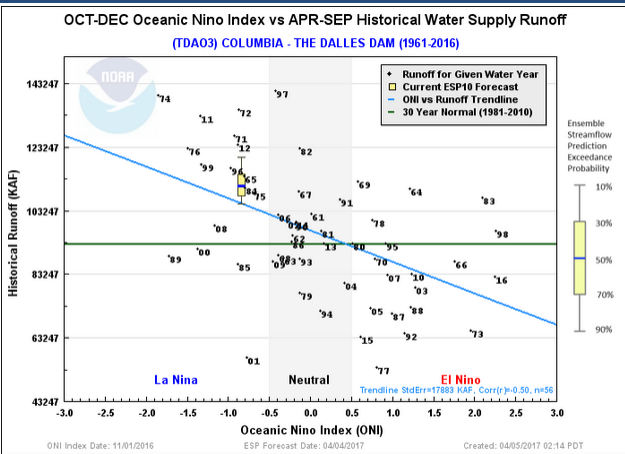
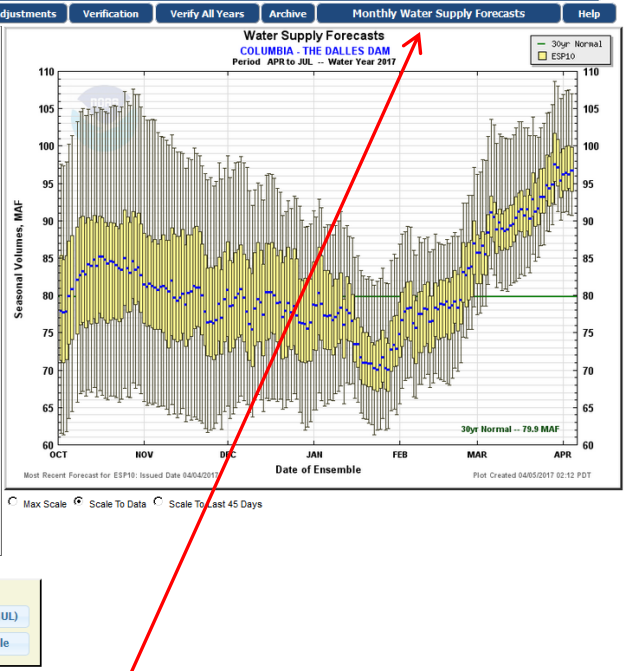
Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)
APR-SEP	105741	112261	121	121	92704
APR-JUL	91329	96877	121	107	79855
APR-AUG	99824	105220	120	116	87532
JAN-SEP	140000	146520	127	156	114216
JAN-JUL	125588	131135	129	141	101368
OCT-SEP	162072	168592	129	178	130518

0 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04

Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)
APR-SEP	102678	109815	118	119	92704
APR-JUL	88760	95117	119	104	79855
APR-AUG	96448	103646	118	113	87532
JAN-SEP	136937	144074	126	153	114216
JAN-JUL	123039	129377	128	139	101368
OCT-SEP	159009	166155	127	175	130518

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

Overview: ESP10 ESP5 ESP0 Data Files: CSV (ESP10 / APR-JUL) Forecast Ensemble



Options

Station Identifier: TDAO3

Climate Index

Index: ONI

Period: OND

Runoff / Forecast Type: Water Supply

Runoff Period: APR-SEP

Water Year Range: 1961 - 2017

Plot Forecast:

Press Refresh when ready.

Description

The Oceanic Nino Index (ONI) is the 3 month running average of the sea surface temperature (SST) anomaly for the Nino 3.4 region. The ONI is used by NOAA to make official ENSO phase classifications. Source: ONI index is courtesy of NOAA's Climate Prediction Center (Click Here)

Water Supply Volume Monthly Forecasts (ESP10) for Water Year 2017

(TDAO3) COLUMBIA - THE DALLES DAM

Volumes, MAF

Month

Box Runoff ESP10 Forecast 30 Year Average

Box Created: 04/05/2017 02:09 PDT


COLUMBIA - THE DALLES DAM Forecasts For Water Year 2017						COLUMBIA - THE DALLES DAM Forecasts For Water Year 2017						COLUMBIA - THE DALLES DAM Forecasts For Water Year 2017								
ESP Monthly Water Supply Forecast						ESP Monthly Water Supply Forecast						ESP Monthly Water Supply Forecast								
10 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04						5 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04						0 days QPF: Ensemble: 2017-04-04 Issued: 2017-04-04								
Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)	Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)	Forecast Period	90 %	50 %	Average	10 %	30 Year Average (1961-2010)			
OCT	7734	8300	9110	8000	7734	OCT	7734	8300	9110	8000	7734	OCT	7734	8300	9110	8000	7734			
NOV	9099	9612	10267	9099	9099	NOV	9099	9612	10267	9099	9099	NOV	9099	9612	10267	9099	9099			
DEC	6272	6810	7267	6272	6272	DEC	6272	6810	7267	6272	6272	DEC	6272	6810	7267	6272	6272			
JAN	4758	5011	5267	4758	4758	JAN	4758	5011	5267	4758	4758	JAN	4758	5011	5267	4758	4758			
FEB	5628	6392	6928	5628	5628	FEB	5628	6392	6928	5628	5628	FEB	5628	6392	6928	5628	5628			
MAR	20508	20508	20508	20508	20508	MAR	20508	20508	20508	20508	20508	MAR	20508	20508	20508	20508	20508			
APR	19252	21913	187	24652	2301	13008	APR	19747	22296	161	25600	2301	13008	APR	19500	20950	152	24200	2301	13008
MAY	24670	28659	119	25558	25354	25354	MAY	24670	28659	119	25558	25354	MAY	24670	28659	119	25558	25354	25354	25354
JUN	20107	24670	113	23593	20157	JUN	24590	29348	112	23372	20157	JUN	24994	29276	112	23367	20157	20157	20157	
JUL	13067	15666	108	16267	14636	JUL	13629	15448	106	16416	14636	JUL	13067	15448	107	16362	14636	14636	14636	
AUG	7212	8510	109	8193	7677	AUG	7194	8392	108	8799	7677	AUG	7192	8291	109	8620	7677	7677	7677	
SEP	4962	6836	103	7354	5372	SEP	5000	6895	103	7350	5372	SEP	5000	6895	103	7350	5372	5372	5372	

Move the mouse over the desired "Forecast Tab" to update graph. *Please Monthly Tab

ESP10 Forecast Ensemble ESP5 Forecast Ensemble ESP0 Forecast Ensemble




Data Downloads



Northwest River Forecast Data Download

Home Close


- ESP Ensembles
 - NOTICE OF CHANGE
 - Water Supply
 - Natural
 - Unadjusted
- Forcings
- Runoff



Northwest River Forecast Center Data Download

Home Close

- CHPS Hydrologic Model Output
- ESP Ensembles
- Forcings
 - README
 - Points
 - Forecast Precipitation
 - Observed Precipitation
 - Forecast Temperature
 - Observed Temperature
 - Grids
 - NetCDF

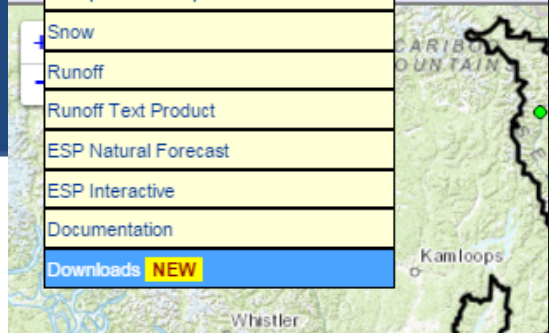


Northwest River Forecast Data Download

Home Close

- ESP Ensembles
- Forcings
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 - Water Supply
 - Natural
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River and Hydrology	Water Supply	Observations
Please join us	Forecast Map	Water Supply
	Forecast Listing	Monday, February 1, 20
	Forecast Report	ly, February 4,
	Forecast Text Product	Registration
	Live Briefing Schedule	look forward to
	Precipitation/Temperature	
	Snow	
	Runoff	
	Runoff Text Product	
	ESP Natural Forecast	
ESP Interactive		
Documentation		
Downloads NEW		





May 2017 Water Supply Briefing

National Weather Service, Northwest River Forecast Center

Questions?

Presentation available after brief at:
www.nwrfc.noaa.gov/presentations/presentations.cgi

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