

The June final WSF sets BiOp actions as defined in table below.
Other projects provided for informational purposes only.

Forecast Point	Forecast Period	Forecast	BiOp Actions to be Determined
Hungry Horse	April – August Provided by Reclamation	January, February, March Final	Sets min. flows at Hungry Horse and Columbia Falls
	May – September Provided by Reclamation	January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May, June Final	Sets VARQ refill flows
The Dalles	April – August Provided by NWRFC	April Final	Sets spring flow objective at McNary Dam
		May Final	Sets end of September draft limits at Hungry Horse and Libby
		July Final	Sets end of August draft limit at Grand Coulee
Lower Granite	April – July Provided by NWRFC	April Final	Sets spring flow objective at Lower Granite
		June Final	Sets summer flow objective at Lower Granite
Libby	April – August Provided by Corps Seattle District	December Final	Sets end of December variable draft target
		January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May Final	Sets Libby min. sturgeon flow volume and min. bull trout flows for after sturgeon pulse through Sept. Sets VARQ FRM targets and VARQ refill flows
		June Final	VARQ refill flows
Dworshak	April – July Provided by Corps Walla Walla District	January through June Final	Manage for reservoir FRM and refill

June 3, 2015

Hungry Horse Dam – Official Water Supply Forecast

Jun-Jul: 515 kaf (60%)

Jan-Jul: 2,026 kaf (97%)

Apr-Aug: 1,382 kaf (71%)

May-Sep: 1,076 kaf (64%)

The minimum flows remain the same:

Columbia Falls: 3,500 cfs

Hungry Horse: 900 cfs

Mary Mellema

River and Reservoir Operations

U.S. Bureau of Reclamation

PN Regional Office

Boise, ID 83706

***Hungry Horse Dam official forecast computed by the Bureau of Reclamation (on previous page).
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Water Supply Forecasts

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SF FLATHEAD - HUNGRY HORSE DAM (HHWM8)
Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	1337	1384	70	1485	1988
APR-JUL	1248	1279	68	1378	1871
APR-AUG	1295	1332	69	1441	1936
JAN-SEP	2020	2067	93	2168	2215
JAN-JUL	1938	1969	94	2068	2098
OCT-SEP	2319	2366	97	2467	2447

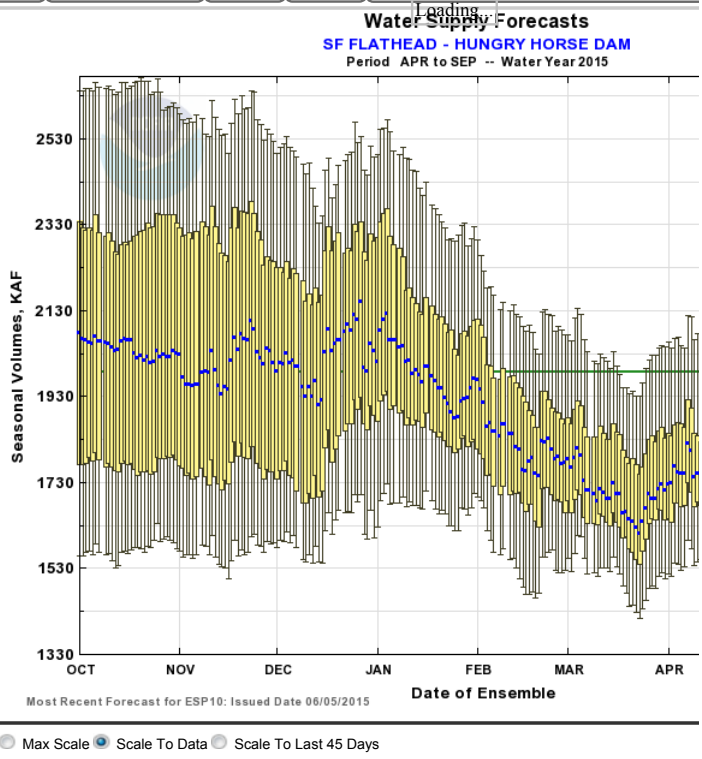
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	1346	1409	71	1535	1988
APR-JUL	1255	1302	70	1436	1871
APR-AUG	1301	1355	70	1495	1936
JAN-SEP	2029	2092	94	2219	2215
JAN-JUL	1945	1992	95	2126	2098
OCT-SEP	2329	2392	98	2518	2447

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	1371	1455	73	1618	1988
APR-JUL	1281	1344	72	1497	1871
APR-AUG	1328	1403	72	1553	1936
JAN-SEP	2055	2139	97	2302	2215
JAN-JUL	1971	2034	97	2187	2098
OCT-SEP	2354	2438	100	2601	2447

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



Overlay ESP10 ESP5 ESP0

Data Files

CSV (ESP10 / APR-SEP)

Zoomout

Forecast Ensemble

APR-SEP



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The Dalles Dam JUNE forecast is not used for implementation of BiOp actions.
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Water Supply Forecasts

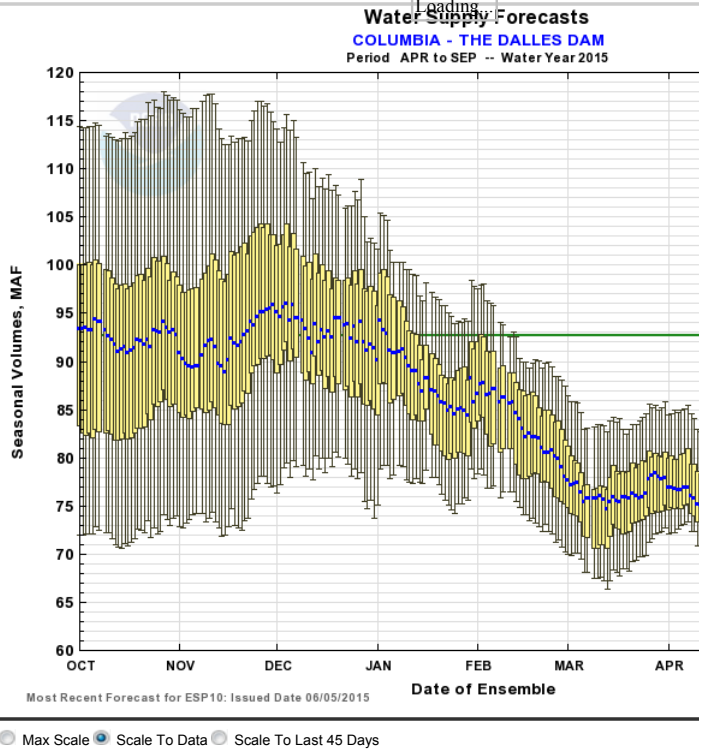
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Beta Monthly Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2015					
Official Forecast					
<input type="checkbox"/> 10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	63660	65327	70	67878	92704
APR-JUL	54098	55193	69	57112	79855
APR-AUG	59342	60894	70	62882	87532
JAN-SEP	93826	95495	84	98049	114216
JAN-JUL	84590	85685	85	87604	101368
OCT-SEP	112328	113997	87	116551	130518

5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	63615	66103	71	69491	92704
APR-JUL	54216	55854	70	57976	79855
APR-AUG	59576	61602	70	64247	87532
JAN-SEP	93783	96288	84	99670	114216
JAN-JUL	84708	86346	85	88468	101368
OCT-SEP	112285	114791	88	118172	130518

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	64394	67056	72	70858	92704
APR-JUL	54687	56743	71	59820	79855
APR-AUG	60276	62666	72	66048	87532
JAN-SEP	94564	97228	85	101059	114216
JAN-JUL	85179	87235	86	90312	101368
OCT-SEP	113067	115730	89	119561	130518

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



Overlay

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SNAKE - LOWER GRANITE DAM (LGDW1)
Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	12321	12436	56	12690	22279
APR-JUL	10592	10655	54	10866	19848
APR-AUG	11422	11493	54	11757	21091
JAN-SEP	20559	20673	69	20928	29872
JAN-JUL	18880	18943	69	19154	27440
OCT-SEP	25275	25390	73	25645	34667

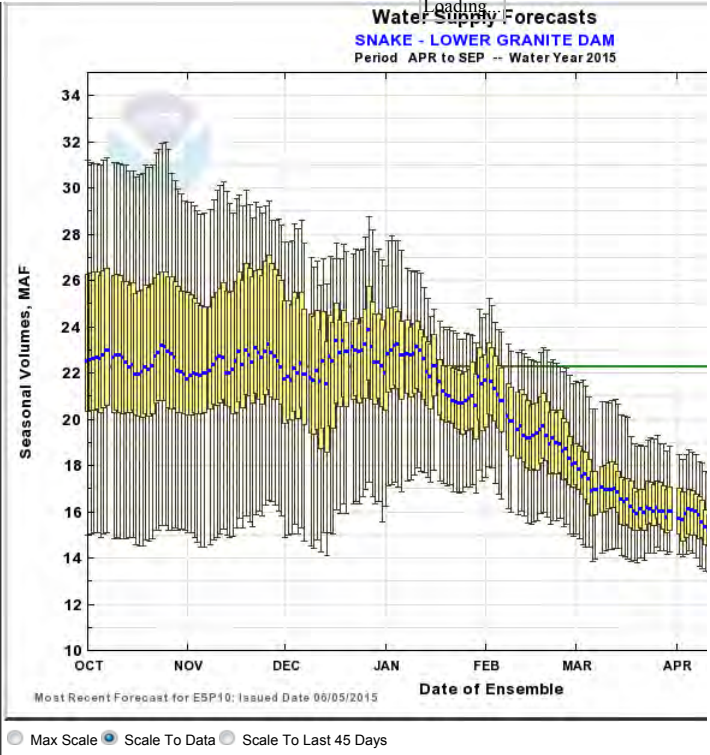
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	12334	12568	56	12917	22279
APR-JUL	10610	10742	54	11102	19848
APR-AUG	11433	11589	55	11996	21091
JAN-SEP	20572	20805	70	21154	29872
JAN-JUL	18898	19030	69	19390	27440
OCT-SEP	25288	25522	74	25871	34667

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	12391	12747	57	13515	22279
APR-JUL	10641	10915	55	11598	19848
APR-AUG	11485	11778	56	12537	21091
JAN-SEP	20629	20984	70	21753	29872
JAN-JUL	18929	19203	70	19886	27440
OCT-SEP	25345	25701	74	26470	34667

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



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Data Files

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Zoomout Forecast Ensemble

APR-SEP



Libby : June Runoff Forecast & Flood Control Calculation

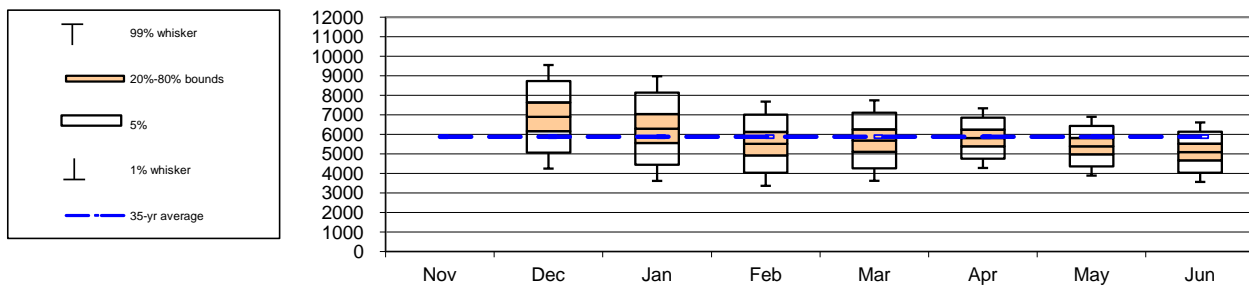
WY 2015

Runoff Forecast and Flood Control				1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average	
Most Probable Runoff Volume:		Apr-Aug	5090	KAF	5885	86%	6282	81%
		Apr-Jul	4627	KAF	5342	87%	5720	81%
		May-Jul	4058	KAF	4821	84%	5199	78%

Seasonal Flood Control VARQ Flood Control Implemented								
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast		6899	6297	5523	5683	5808	5396	5090
First-of-Month Elev	2448.5	2435.3	2410.6	2409.8	2412.9	2419.2	2420.9	2426.9

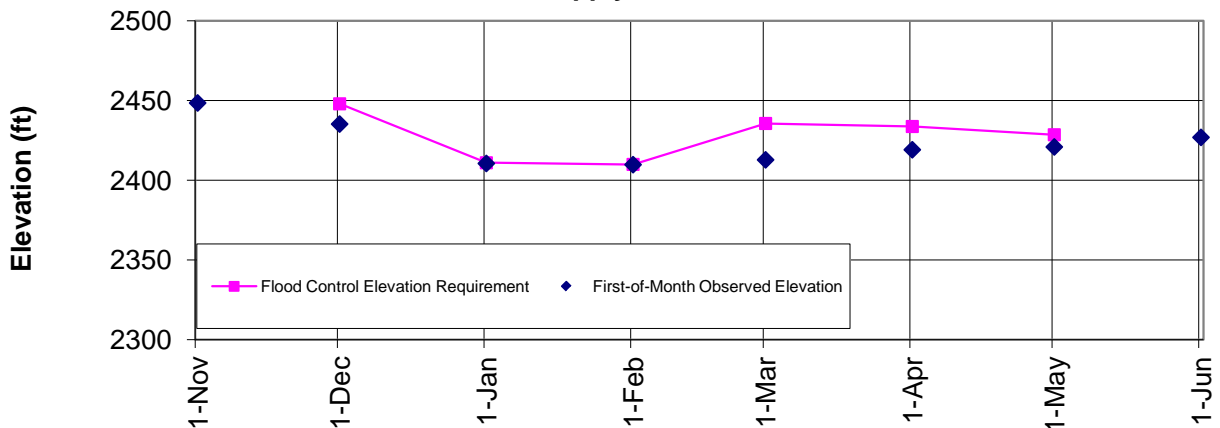
Date >>	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr
Flood Control Space	500	2000	2037	1032	1112	1324
Flood Control Elevation	2448.0	2411.0	2410.0	2435.7	2433.8	2428.6

Spread of values around expected forecast



Libby Flood Control Elevations - 2015

Latest water supply forecast: Jun



Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Joel Fenolio (206) 764-6683 or Kevin Shaffer (206) 764-3660.
2. If a prior month's forecast as published in this document is different than what was originally published in the issue month, then the earlier forecast has been adjusted to reflect updated values for precipitation or streamflow.

Libby Dam official forecast computed by the Corps Seattle District (on previous page).
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 Water Supply Forecasts

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KOOTENAI - LIBBY DAM (LYDM8)
 Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	4724	5053	81	5479	6254
APR-JUL	4097	4293	80	4576	5342
APR-AUG	4459	4706	80	5099	5885
JAN-SEP	5752	6082	88	6506	6914
JAN-JUL	5155	5351	89	5634	6002
OCT-SEP	6737	7067	91	7492	7806

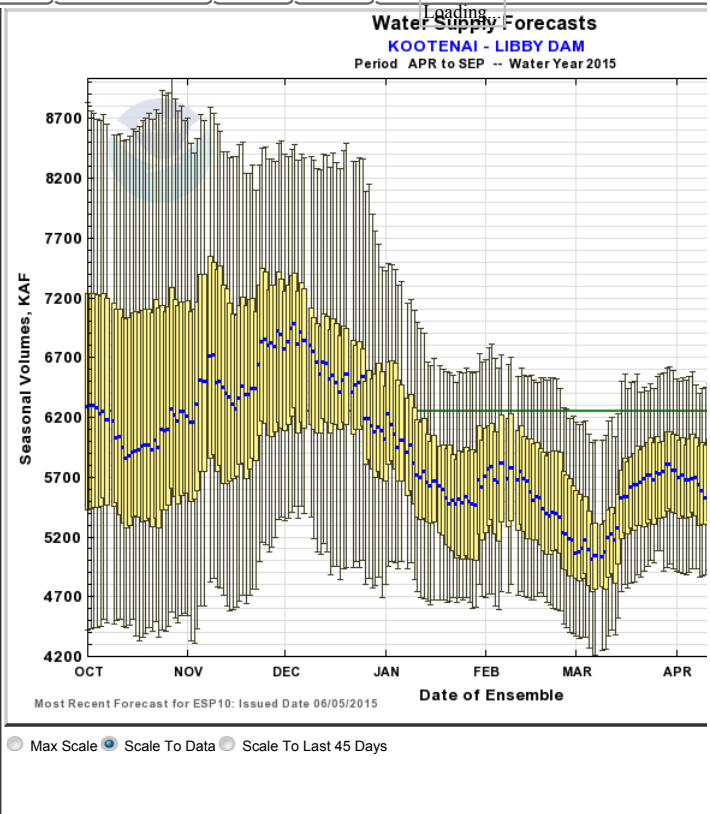
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	4770	5045	81	5575	6254
APR-JUL	4100	4348	81	4742	5342
APR-AUG	4459	4757	81	5239	5885
JAN-SEP	5797	6072	88	6603	6914
JAN-JUL	5158	5406	90	5800	6002
OCT-SEP	6782	7057	90	7588	7806

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	4825	5188	83	5989	6254
APR-JUL	4168	4453	83	5084	5342
APR-AUG	4568	4907	83	5589	5885
JAN-SEP	5852	6217	90	6997	6914
JAN-JUL	5226	5511	92	6142	6002
OCT-SEP	6837	7202	92	7982	7806

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



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Zoomout

Forecast Ensemble

APR-SEP



Pending finalization of official June water supply forecast for Dworshak.
See unofficial forecast from RFC on next page.

Dworshak Dam official forecast computed by the Corps Walla Walla District (on previous page).
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 Water Supply Forecasts

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

NF CLEARWATER - DWORSHAK DAM (DWR11)
Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	1238	1267	49	1330	2575
APR-JUL	1137	1155	48	1214	2419
JAN-SEP	2662	2690	78	2753	3445
JAN-JUL	2564	2582	78	2641	3289
OCT-SEP	3164	3192	82	3255	3891

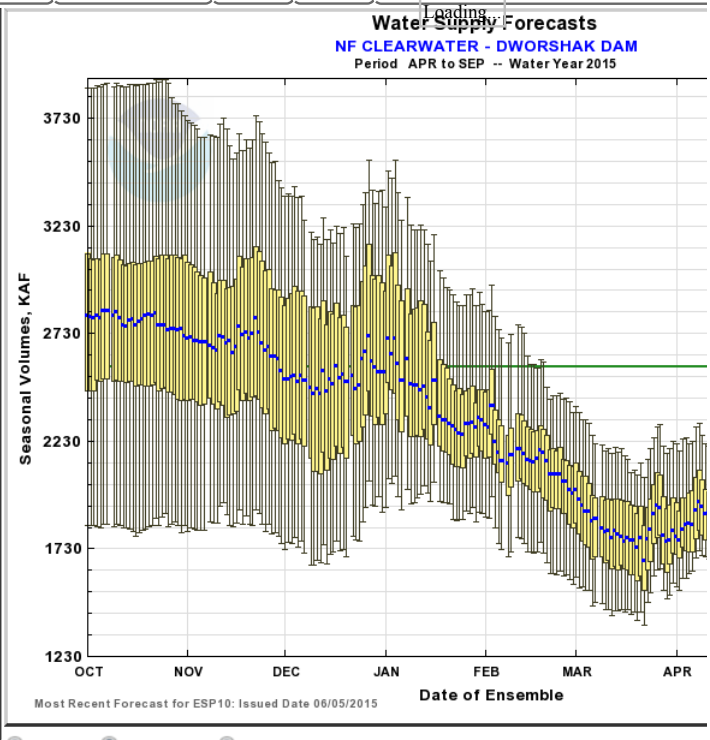
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	1246	1294	50	1355	2575
APR-JUL	1144	1184	49	1243	2419
JAN-SEP	2669	2717	79	2778	3445
JAN-JUL	2571	2611	79	2670	3289
OCT-SEP	3171	3219	83	3280	3891

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	1254	1321	51	1445	2575
APR-JUL	1157	1206	50	1327	2419
JAN-SEP	2678	2744	80	2868	3445
JAN-JUL	2584	2633	80	2754	3289
OCT-SEP	3180	3246	83	3370	3891

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



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Data Files

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Zoom out

Forecast Ensemble

APR-SEP



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Grand Coulee Dam forecasts are not used for implementation of BiOp actions.
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COLUMBIA - GRAND COULEE DAM (GCDW1)
 Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	45330	46915	78	49337	60110
APR-JUL	38439	39527	77	41339	51015
APR-AUG	42509	43998	78	45992	56763
JAN-SEP	61073	62657	91	65069	68694
JAN-JUL	54434	55522	93	57334	59599
OCT-SEP	71729	73314	95	75725	76824

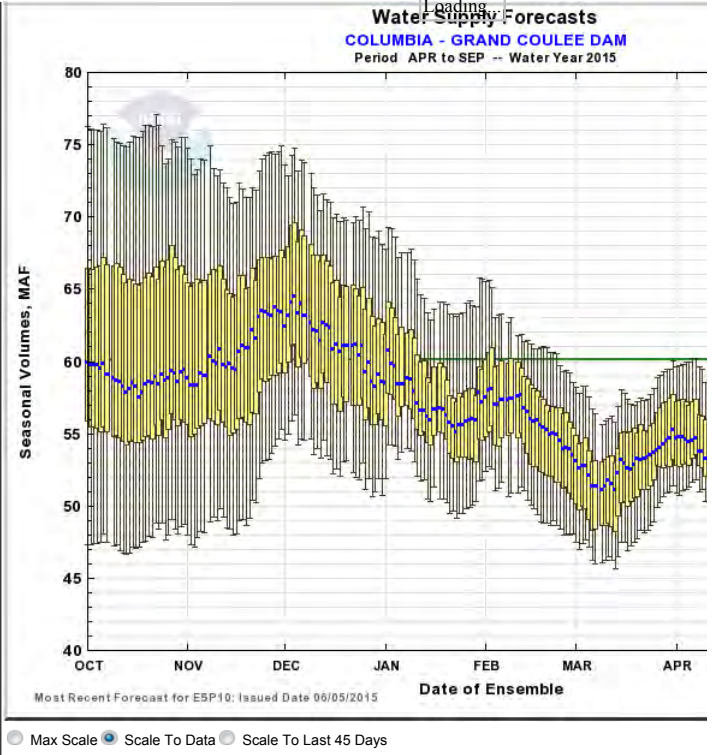
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	45292	47675	79	50673	60110
APR-JUL	38549	39935	78	41968	51015
APR-AUG	42612	44493	78	46933	56763
JAN-SEP	61042	63417	92	66284	68694
JAN-JUL	54544	55930	94	57963	59599
OCT-SEP	71698	74073	96	76941	76824

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	45693	48493	81	51604	60110
APR-JUL	38674	40739	80	43061	51015
APR-AUG	43009	45368	80	48297	56763
JAN-SEP	61440	64239	94	67351	68694
JAN-JUL	54669	56734	95	59056	59599
OCT-SEP	72096	74895	97	78007	76824

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



Overlay

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 ESP5
 ESP0


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Albeni Falls Dam forecasts are not used for implementation of BiOp actions.
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Water Supply Forecasts

Beta Monthly Water Supply Forecasts

PEND OREILLE - ALBENI FALLS DAM (ALFW1)
Forecasts for Water Year 2015

Official Forecast

10 days QPF: Ensemble: 2015-06-05 Issued: 2015-06-05

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	8246	8448	66	9001	12815
APR-JUL	7443	7586	64	8096	11777
APR-AUG	7877	8049	65	8609	12354
JAN-SEP	13436	13639	90	14195	15226
JAN-JUL	12671	12814	90	13324	14189
OCT-SEP	15724	15928	93	16484	17218

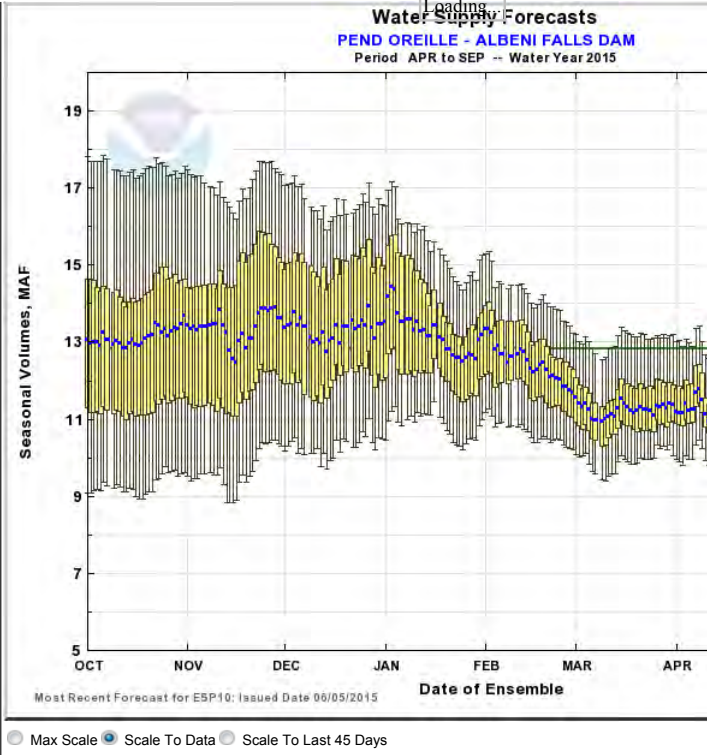
5 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	8297	8552	67	9138	12815
APR-JUL	7481	7692	65	8168	11777
APR-AUG	7910	8171	66	8736	12354
JAN-SEP	13487	13743	90	14330	15226
JAN-JUL	12709	12920	91	13396	14189
OCT-SEP	15775	16031	93	16619	17218

0 days QPF Ensemble: 2015-06-05 Issued: 2015-06-05

APR-SEP	8370	8786	69	9588	12815
APR-JUL	7577	7881	67	8616	11777
APR-AUG	8008	8354	68	9215	12354
JAN-SEP	13561	13978	92	14781	15226
JAN-JUL	12805	13109	92	13844	14189
OCT-SEP	15850	16266	94	17069	17218

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Overlay

ESP10 ESP5 ESP0

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