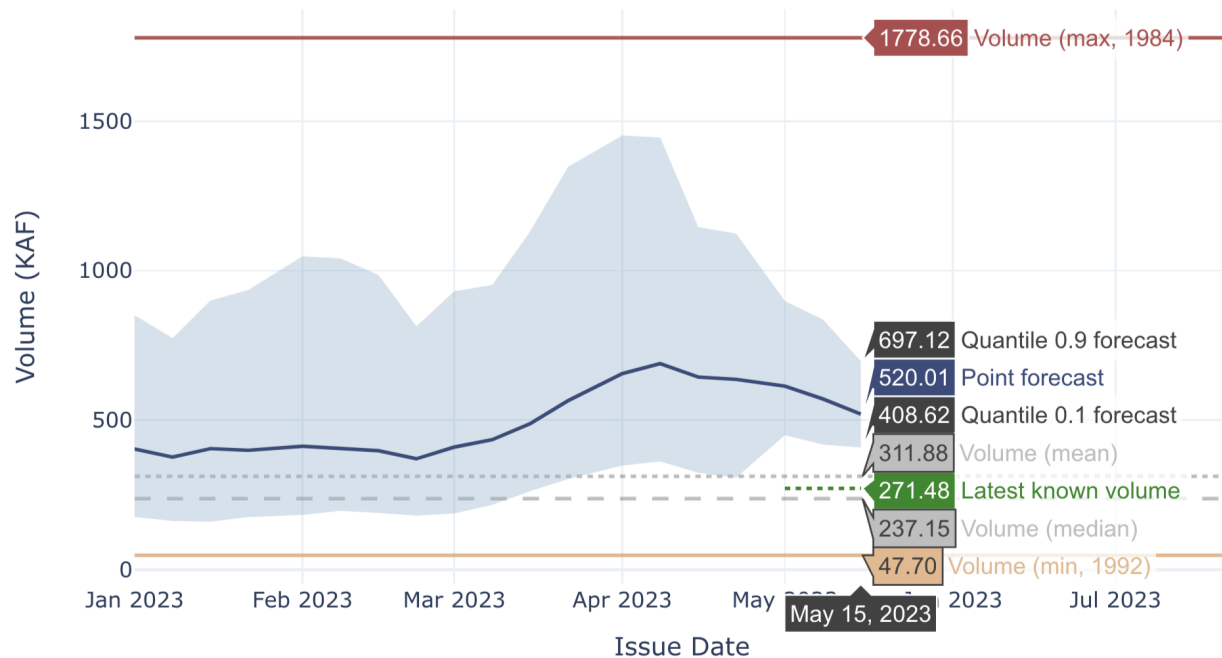


## Water Supply Forecast - Owyhee River Below Owyhee Dam

Issue Date: 2023-05-15

Forecast Period: Apr-Jul

**Figure 1:** Water supply forecast and uncertainty bounds



The water supply forecast for April-July 2023 at Owyhee River Below Owyhee Dam is above normal, at 219% of median (520 KAF), with 10th and 90th percentile forecasts ranging from 172% to 294% (409 to 697 KAF).

Compared to the previous forecast, there is a noticeable downward trend starting in early April 2023. This trend is driven by the decrease in precipitation and snowpack (relative to normal), especially suggesting that the amount of snowpack that translates into water supply volume will be smaller because of warmer-than-normal temperature in May 2023, as shown in the explainability table in the next section.

For the forecast generated at this issue date, the actual water supply in April 2023 is already known (217 KAF, 47% of estimated total) which has been translated from total precipitation in that month and partial snowpack that has melted. The model originally generated the forecast for May-July 2023 (249 KAF, 53% of estimated total). This means that the model explanation in the next section accounts for May-July 2023 rather than the full April-July 2023 period.

**Table 1:** Feature (predictor) of water supply and explainability

Feature	Issue Date: 2023-05-15					Previous Issue Date: 2023-05-08				
	Value	% Feature contribution				Value	% Feature contribution			
		Q0.5	Q0.1	Q0.9	Rel		Q0.5	Q0.1	Q0.9	
<b>Base</b>		<b>35.4%</b>	<b>19.6%</b>	<b>56.4%</b>	<b>1.25</b>		<b>32.2%</b>	<b>20.7%</b>	<b>60.4%</b>	
<b>Snowpack</b>		<b>38.6%</b>	<b>65.3%</b>	<b>27.2%</b>	<b>1.02</b>		<b>43.3%</b>	<b>63.7%</b>	<b>26.3%</b>	
SNOTEL/CDEC	167%	4.4%		14.9%	0.31	188%	12.2%		14.0%	
UA-SWANN	63%-117%	19.9%	65.3%	12.3%	1.50	108%-116%	17.9%	63.7%	12.3%	
ERA5-Land	163%	14.3%			1.35	595%	13.2%			
<b>Precipitation</b>		<b>6.2%</b>	<b>0.8%</b>	<b>16.4%</b>	<b>0.60</b>		<b>5.0%</b>	<b>0.5%</b>	<b>13.3%</b>	
SNOTEL/CDEC	113%	4.4%		13.8%	0.99	117%	3.2%		11.5%	
UA-SWANN	104%-129%	1.8%	0.8%	2.6%	0.30	103%-131%	1.7%	0.5%	1.7%	
<b>Drought</b>		<b>11.8%</b>	<b>3.3%</b>		<b>1.00</b>		<b>11.1%</b>	<b>3.7%</b>		
PDSI	1.51	10.1%	3.3%		1.11	1.56	9.9%	3.7%		
Soil water	94%-109%	1.7%			0.62	94%-174%	1.2%			
<b>Others</b>		<b>2.8%</b>			<b>0.71</b>		<b>3.0%</b>			
Temperature	1.08	0.5%			0.82	-7.50	0.3%			
Snow cover	0.6% (0.7%)	0.4%			0.24	6.8% (1.8%)	1.2%			
Snow albedo	102%	1.1%			2.78	100%	0.8%			
Leaf area index	0.61-0.71	0.8%			0.67	0.61-0.71	0.7%			
<b>SEAS51 Forecast</b>		<b>5.1%</b>	<b>10.9%</b>		<b>0.70</b>		<b>5.5%</b>	<b>11.4%</b>		
Snowpack	146%-262%	2.2%	6.1%		0.64	146%-262%	2.3%	6.4%		
Precipitation	104%-113%	1.3%	2.6%		0.80	104%-113%	1.3%	2.7%		
Temperature	0.65; 1.16	1.7%	2.2%		0.72	0.65; 1.16	1.9%	2.3%		

The forecast output is mostly driven by snowpack, ranging from 63% to 167%. However, the feature contribution becomes negative and lower compared to the forecast made before April because partial snowpack has melted. On the other hand, drought indicator feature contribution is higher, where PDSI, is classified as “slightly wet”, and soil water volume for all layers ranges from 94% to 109% of normal.

For the uncertainty bounds, the 90th percentile forecast is only driven by precipitation and snowpack measurements from SNOTEL/CDEC and UA-SWANN data. On the other hand, the 10th percentile forecast is driven by all predictors without SNOTEL/CDEC and ERA-5 Land data.