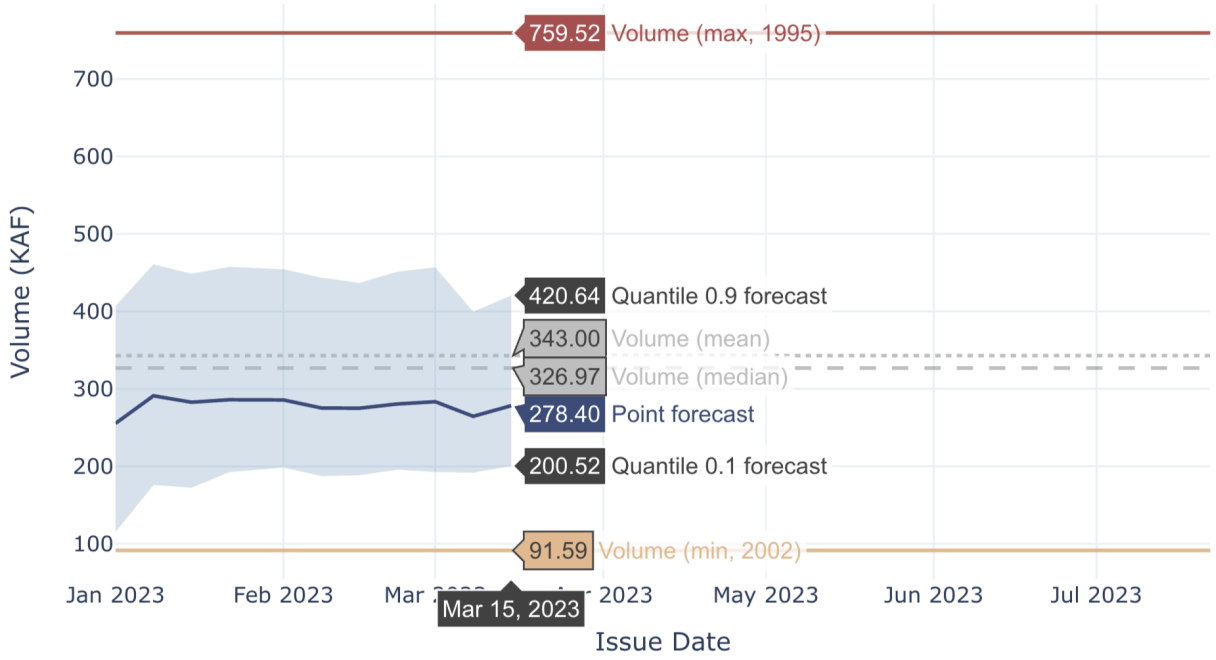
Water Supply Forecast - Pueblo Reservoir Inflow

Issue Date: 2023-03-15
Forecast Period: Apr-Jul

Figure 1: Water supply forecast and uncertainty bounds



The water supply forecast for April-July 2023 at Pueblo Reservoir Inflow is below normal, at 85% of median (278 KAF), with 10th and 90th percentile forecasts ranging from 61% to 129% (201 to 421 KAF). Compared to the previous forecast, there is a slight increase. However, there is no noticeable trend across different forecast issue dates. The uncertainty bound range also consistently gets smaller as we get closer to the seasonal month period.

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

Feature	Issue Date: 2023-03-15 Value	% Feature contribution Q0.5	Q0.1	Q0.9	Rel	Previous Issue Date: 2023-03-08 Value	% Feature contribution Q0.5	Q0.1	Q0.9
Base		**38.3%**	**19.8%**	**36.9%**	**1.69**		**40.4%**	**33.0%**	**36.5%**
Snowpack		**25.8%**	**33.1%**	**26.8%**	**0.51**		**20.5%**	**23.0%**	**23.3%**
SNOTEL/CDEC	101%	19.3%	25.4%	26.6%	0.86	94%	15.9%	6.4%	23.0%
UA-SWANN	49%-95%	3.2%			0.19	51%-78%	2.2%	5.1%	
ERA5-Land	87%	3.3%	7.7%	0.2%	0.29	80%	2.5%	11.6%	0.2%
Precipitation		**15.4%**	**7.9%**	**7.0%**	**2.18**		**18.1%**	**11.3%**	**9.0%**
SNOTEL/CDEC	100%	3.0%	7.9%	7.0%	1.39	97%	4.9%	3.2%	9.0%
UA-SWANN	51%-67%	12.4%			2.53	54%-69%	13.2%	8.1%	
Drought		**8.9%**	**27.5%**	**10.4%**	**1.28**		**9.3%**	**22.4%**	**11.7%**
PDSI	-1.45	7.7%	24.7%	6.1%	1.54	-1.45	7.7%	17.1%	5.7%
Soil water	89%-102%	1.1%	2.8%	4.2%	0.60	89%-99%	1.6%	5.3%	6.0%
Others		**2.9%**	**1.5%**	**7.3%**	**0.81**		**2.6%**	**6.9%**	**7.7%**
Temperature	-1.30	0.4%	0.1%	0.0%	0.87	0.25	0.4%	0.2%	0.1%
Snow cover	58% (66%)	1.2%	0.7%	6.6%	0.95	63% (71%)	1.0%	4.9%	6.9%
Snow albedo	99%	0.1%	0.1%	0.2%	0.16	96%	0.1%	0.4%	0.3%
Leaf area index	1.42-2.86	1.2%	0.6%	0.4%	1.16	1.42-2.85	1.2%	1.4%	0.4%
SEAS51 Forecast		**8.6%**	**10.1%**	**11.7%**	**0.93**		**9.0%**	**3.3%**	**11.7%**
Snowpack	161%-166%	4.0%	7.1%	6.0%	0.88	161%-166%	4.0%	2.4%	6.5%
Precipitation	93%-95%	1.6%	2.2%	1.4%	0.85	93%-95%	1.6%	0.6%	1.4%
Temperature	-3.20; -1.93	3.0%	0.8%	4.3%	1.08	-3.20; -1.93	3.3%	0.3%	3.8%

The forecast output is mostly driven by base predictors (historical average) rather than snowpack, where snowpack relative contribution is 0.51 times lower than the average of all sites. Snowpack and precipitation from all data sources report below-normal to normal levels, ranging from 51% to 101%. Drought indicators, PDSI, is classified as “mild drought”, and soil water volume for all layers ranges from 89% to 102% of normal.

For the uncertainty bounds, both 10th and 90th percentile forecasts are driven by all predictors without UA-SWANN data.