WRWC Model Run

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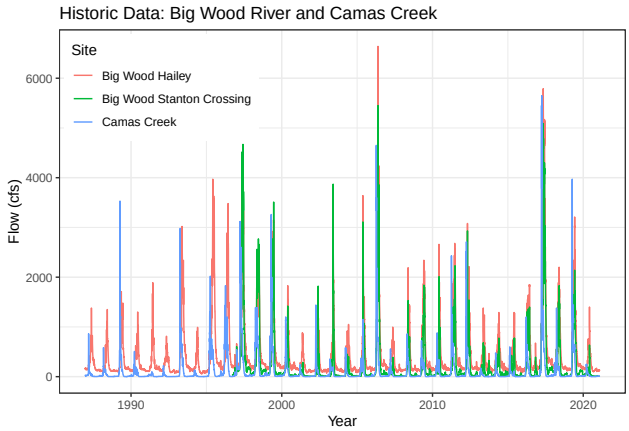
Wood River Model Summary

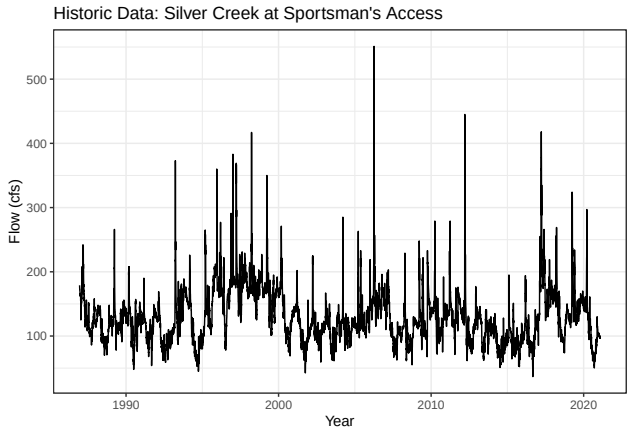
The WRWC Modeling Suite predicts spring air temperatures, total summer runoff volumes, "center of mass", total diversions and timing of delivery calls in the Big Wood River Basin, Camas Creek and Silver Creek. Curtailment dates are currently only predicted in the April model run.

The NRCS Water Supply Report can be found here: https://www.wcc.nrcs.usda.gov/ftpref/states/id/webftp/wsor/2021/borid121.pdf

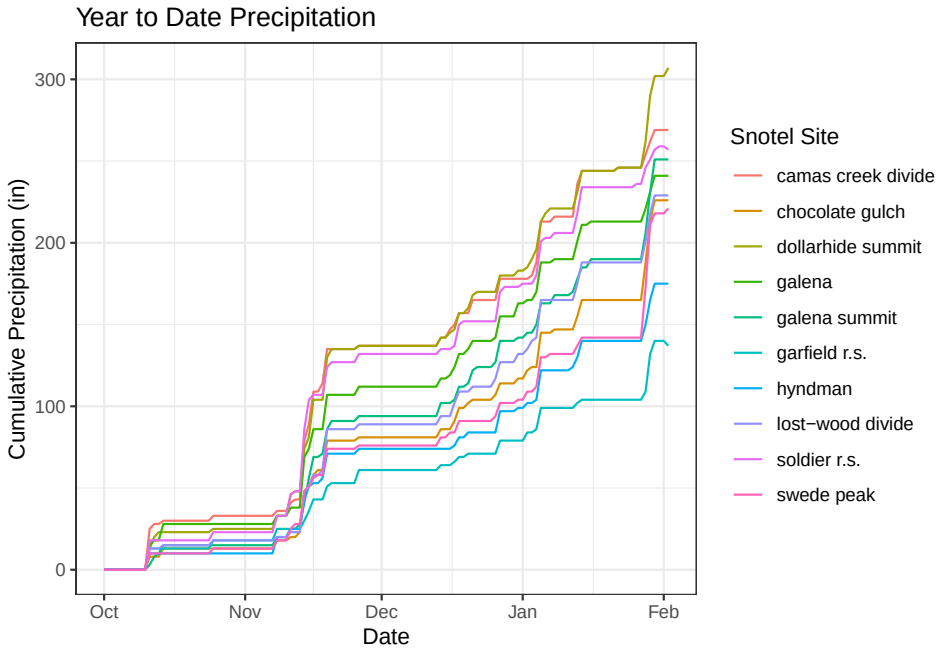
Data Summary

Time series of historic data from each USGS site.





Snotel Data Summary



Site	Feb 1 Hist. Avg.	Mar 1 Hist. Avg.	Apr 1 Hist. Avg.	Feb 01 2021	Per of Avg
Camas Creek Divide	228	280	249	241	106
Chocolate Gulch	208	272	304	211	101
Dollarhide Summit	381	494	610	353	93
Galena	274	356	419	218	80
Galena Summit	322	416	508	267	83
Garfield R.S.	161	217	212	152	94
Hyndman Creek	194	261	311	178	92
Lost-Wood Divide	319	423	520	241	76
Soldier R.S.	213	268	191	183	86
Swede Peak	229	308	370	183	80

Historic mean SWE at each Snotel site, year-to-date SWE, and percent of average.

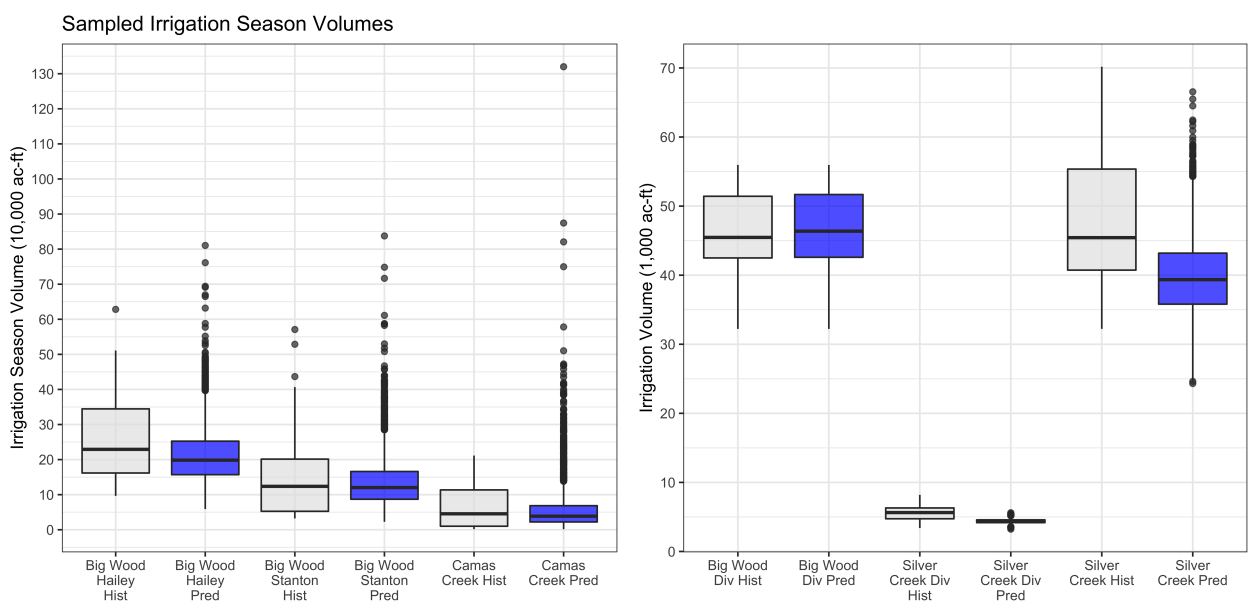
Model Output

Streamflow Volume Model Output

The streamflow models predict "natural" flow on the Big Wood and Camas Creek. This is the actual flow at the gage plus the predicted volume of diversions removed upstream of the gage. They are modeled this way so that curtailment date models can be based off of total surface water delivered to the system.

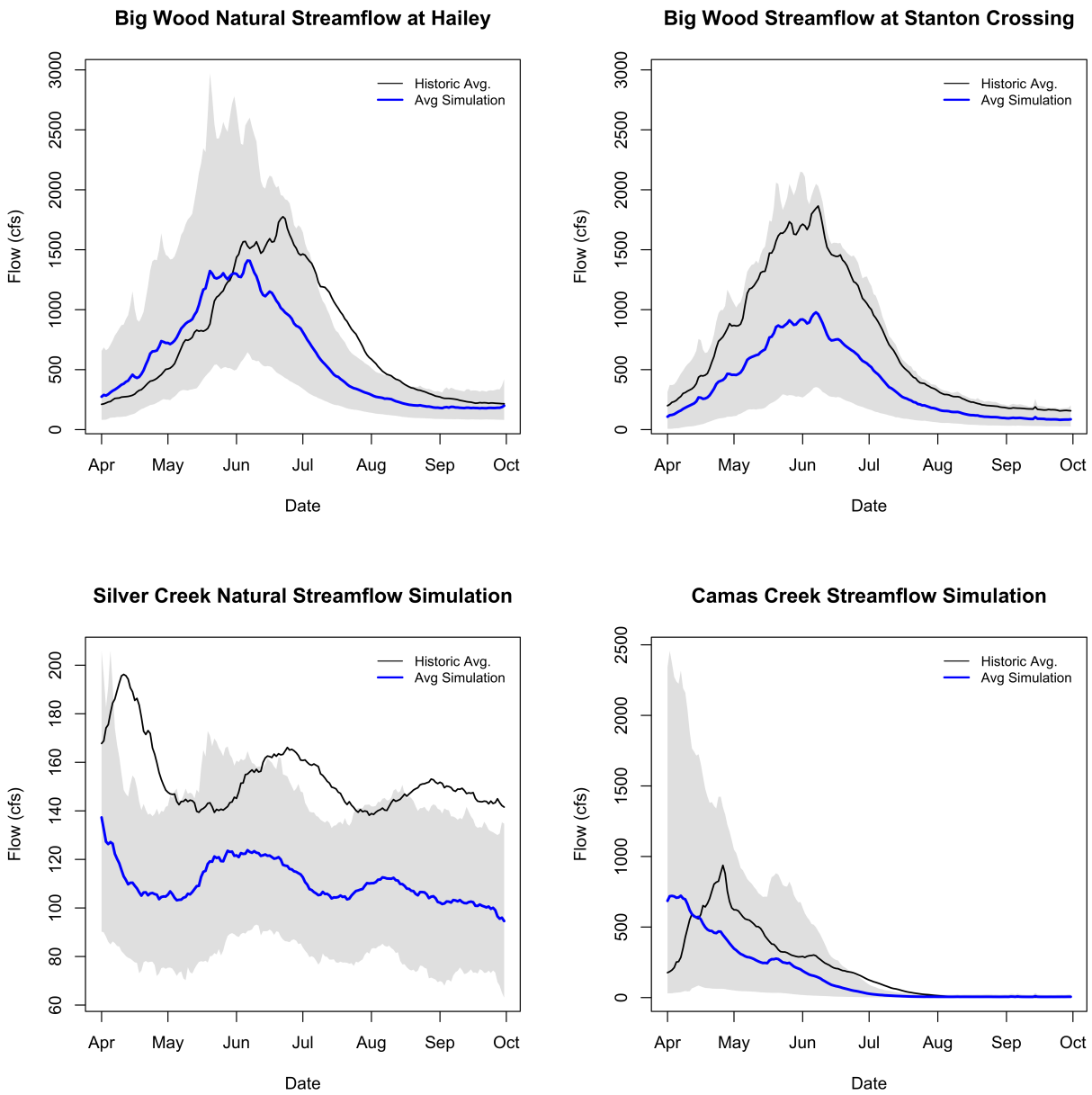
	Winter Vol % of mean	Pred. Vol (ac-ft)	Pred. Vol % of mean	90% exc. (ac-ft)	90% exc. % of mean
Big Wood Hailey	158.6	213911	81.8	125229	47.9
Big Wood Stanton	27.2	136145	62.7	61548	28.4
Camas Creek	52.4	56142	86.5	12787	19.7
Silver Creek	98.8	39854	82.2	32586	67.2

These box plots show the historic range of volumes (grey) and the predicted range of volumes that were calculated for each basin (blue). The boxes represent the 25th - 75th percentiles, the median is the solid line in the middle, and circles are outliers.



Streamflow Simulations

Mean simulated 'natural' streamflow is shown in the solid blue line, the average historic daily 'natural' streamflow is shown in black and the 95% confidence interval around the simulations is shown in the shaded gray area.



Curtailment Date Model Output

While the curtailment date models do fairly well at predicting curtailment dates with historic data (see the adjusted R2 in the table below), the combination of predicted streamflow volumes, diversions and summer temperatures limit their ability to accurately and concisely estimate curtailment dates. The 'sigma' value is the standard error, or the variance around the 'true' value. In many of the curtailment models, this standard error means that the prediction could be off by a week in either direction (early or late). Given the uncertainty in April predictions, there are no curtailment predictions for February or March.

Data Inputs

Data is automatically downloaded from the USGS, NRCS and AgriMet (Fairfield and Picabo).

	Station	HUC	Start	End	Abv
1	BIG WOOD RIVER AT HAILEY ID TOTAL FLOW	17040219	2006-10-01	2021-02-02	bwb
2	BIG WOOD RIVER AT STANTON CROSSING NR BELLEVUE ID	17040219	1996-09-18	2021-02-02	bws
3	CAMAS CREEK NR BLAINE ID	17040220	1987-08-17	2021-02-02	cc
5	SILVER CREEK AT SPORTSMAN ACCESS NR PICABO ID	17040221	1987-08-18	2021-02-02	sc

start	end	site_name	huc8	abv
1992-10-01	2021-02-02	chocolate gulch	219	cg.swe
1979-10-01	2021-02-02	galena	219	g.swe
1978-10-01	2021-02-02	galena summit	219	gs.swe
1979-10-01	2021-02-02	hyndman	219	hc.swe
1979-10-01	2021-02-02	lost-wood divide	219	lwd.swe
1979-10-01	2021-02-02	dollarhide summit	219	ds.swe
1991-10-01	2021-02-02	camas creek divide	220	ccd.swe
1985-10-01	2021-02-02	soldier r.s.	220	sr.swe
1979-10-01	2021-02-02	garfield r.s.	221	ga.swe
1978-10-01	2021-02-02	swede peak	221	sp.swe