Supporting Information for

On the Value of Satellite Remote Sensing to Reduce Uncertainties

of Regional Simulations of the Colorado River

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	Baseline			Forcing-Adj			Veg-Adj			Snow-Adj		
	CC	RMSE	Bias	CC	RMSE	Bias	CC	RMSE	Bias	CC	RMSE	Bias
	(-)	(ºC)	(ºC)	(-)	(ºC)	(ºC)	(-)	(ºC)	(ºC)	(-)	(ºC)	(ºC)
Green	0.93	7.36	1.08	0.93	7.44	2.66	0.94	6.12	0.54	0.94	6.37	0.25
	0.86	5.85	-0.62	0.86	5.7	1.1	0.87	5.58	0.99	0.87	5.56	0.67
Upper Colorado	0.91	6.84	1.24	0.91	7.12	2.9	0.92	5.94	1.01	0.92	6.53	0.27
	0.86	5.38	-0.46	0.87	5.37	1.4	0.87	5.29	1.31	0.87	5.25	0.48
Glen Canyon	0.93	7.2	2.37	0.93	7.39	3.15	0.93	6.2	1.29	0.93	6.39	1.31
	0.89	4.83	-0.11	0.89	4.75	0.16	0.9	4.62	0.02	0.9	4.63	-0.07
San Juan	0.92	6.92	1.75	0.92	7.13	2.61	0.93	5.89	0.53	0.92	6.19	0.47
	0.87	5.09	0.27	0.87	4.98	0.62	0.87	4.83	0.46	0.88	4.85	0.27
Grand Canyon	0.92	6.69	1.99	0.92	6.83	2.57	0.93	5.68	0.39	0.93	5.87	-0.41
	0.89	4.77	-1.14	0.89	4.37	-0.18	0.9	4.2	-0.22	0.9	4.15	-0.27
Little Colorado	0.9	7.35	2.04	0.9	7.53	2.78	0.91	6.28	0.4	0.9	6.59	0.65
	0.87	4.77	0.42	0.87	4.65	0.65	0.88	4.48	0.42	0.88	4.51	0.37
Lower Colorado	0.92	6.01	1.74	0.91	6.2	2.29	0.92	5.39	0.38	0.92	5.54	-0.41
	0.91	4.36	-0.79	0.91	4.08	-0.44	0.91	3.98	-0.52	0.92	3.9	-0.54
Gila	0.89	6.06	1.18	0.89	6.21	1.82	0.9	5.5	0.28	0.89	5.77	-0.11
	0.87	4.88	-1.39	0.88	4.54	-0.87	0.88	4.46	-0.93	0.88	4.43	-1

Table S1. CC, RMSE, and Bias of LST of each subbasin for each adjustment step. Results for nighttime are shaded in grey.

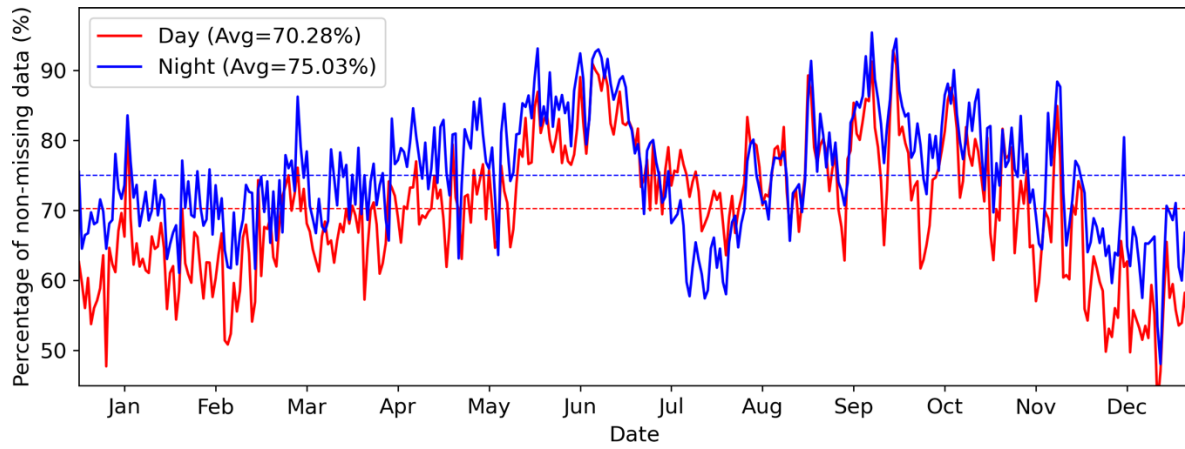



Figure S1. Multiyear daily mean of percentage of pixels with non-missing records of LST from MODIS for daytime and nighttime in the CRB. Overall means shown with dashed horizontal lines.

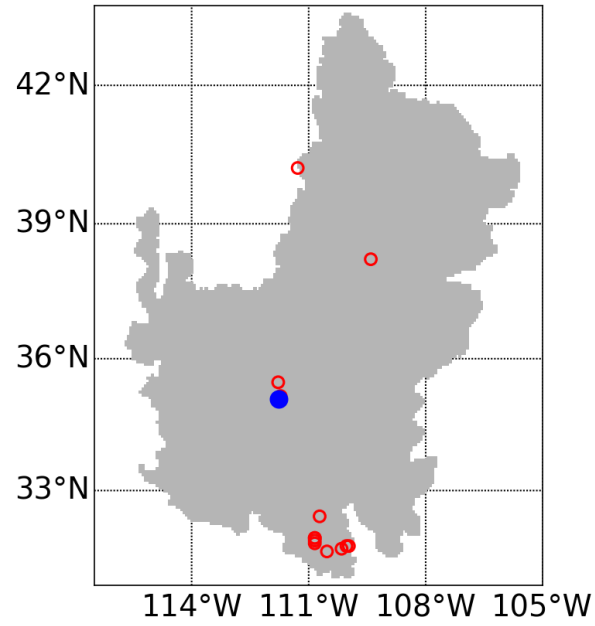



Figure S2. Locations of 14 eddy covariance stations with valid records longer than 300 days during 2003-2018. The location of station Fuf is marked in blue.

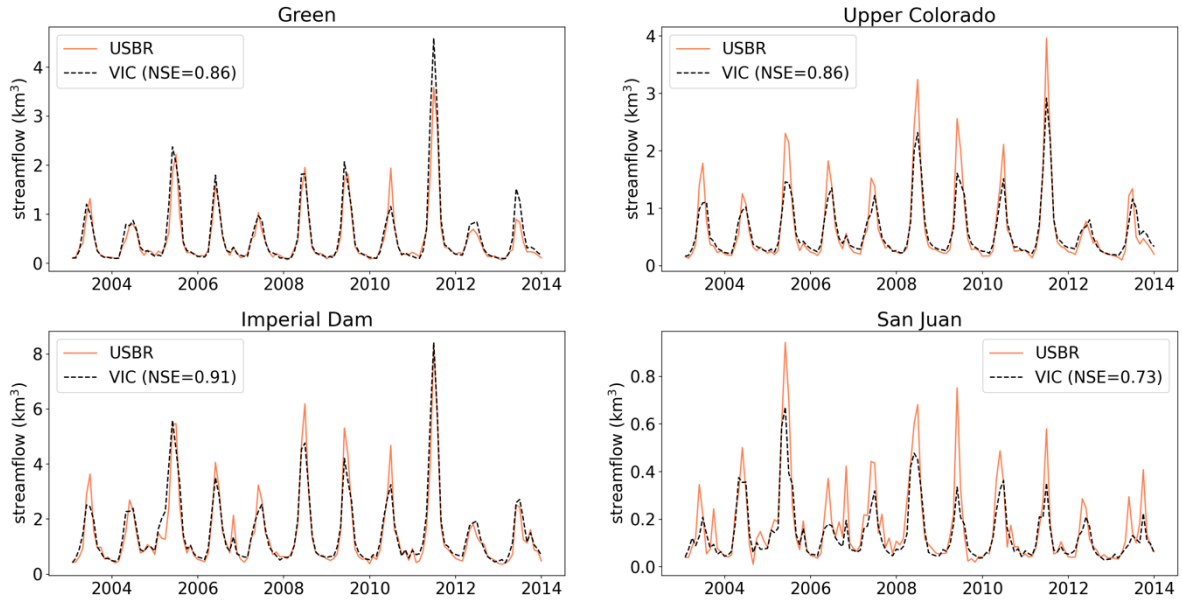



Figure S3. Time series of monthly runoff volume simulated by VIC (black) and the USBR reconstructed naturalized flow (orange) at three subbasins of Fig. 1b and the Imperial Dam (USGS 09429490). Nash-Sutcliffe Efficiency (NSE) is reported in the legend.

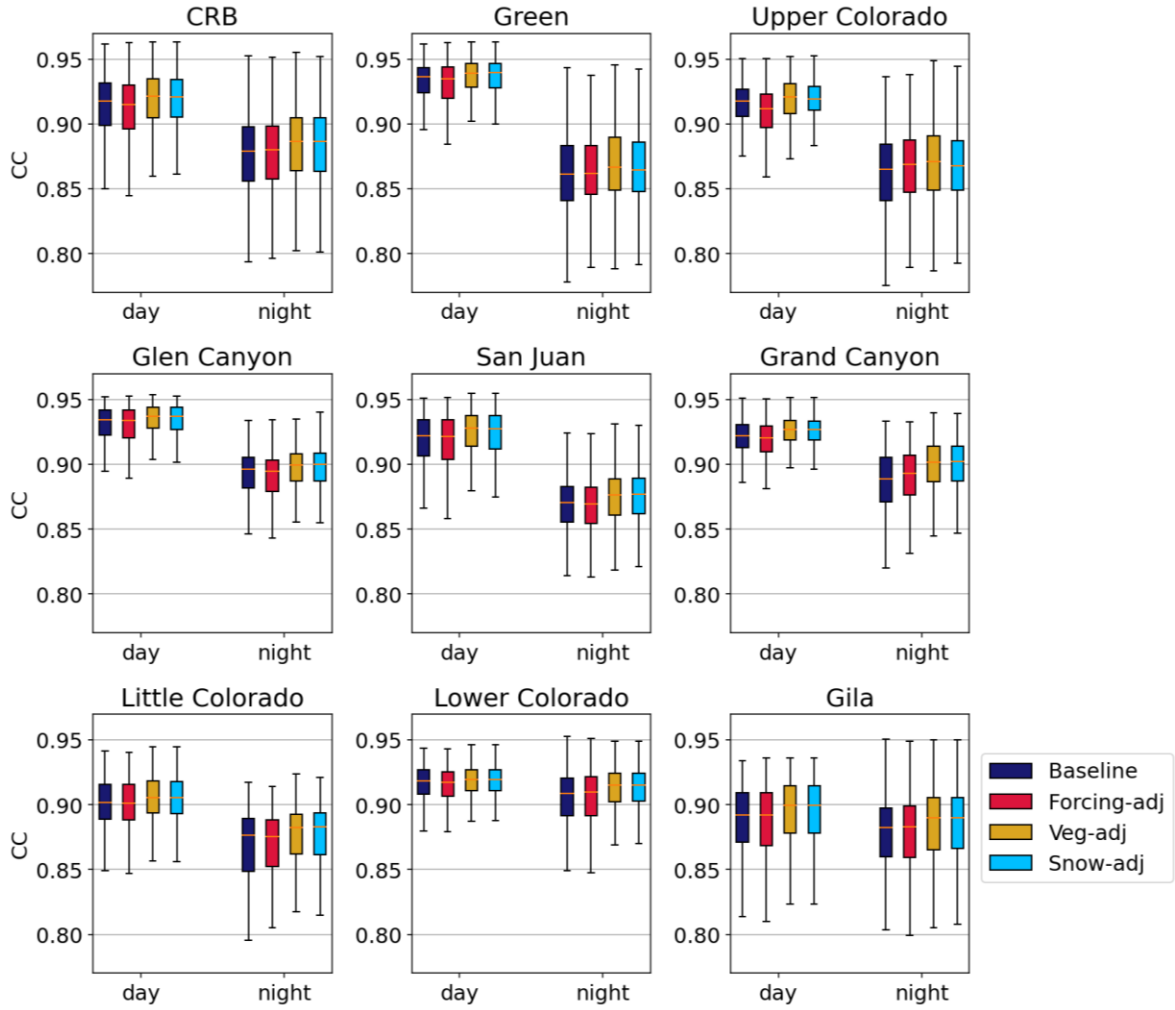



Figure S4. Boxplots of CC derived by comparing VIC and MODIS daytime and nighttime LST at grid cells of the CRB and each subbasin. Different colors indicate the different adjustment steps.

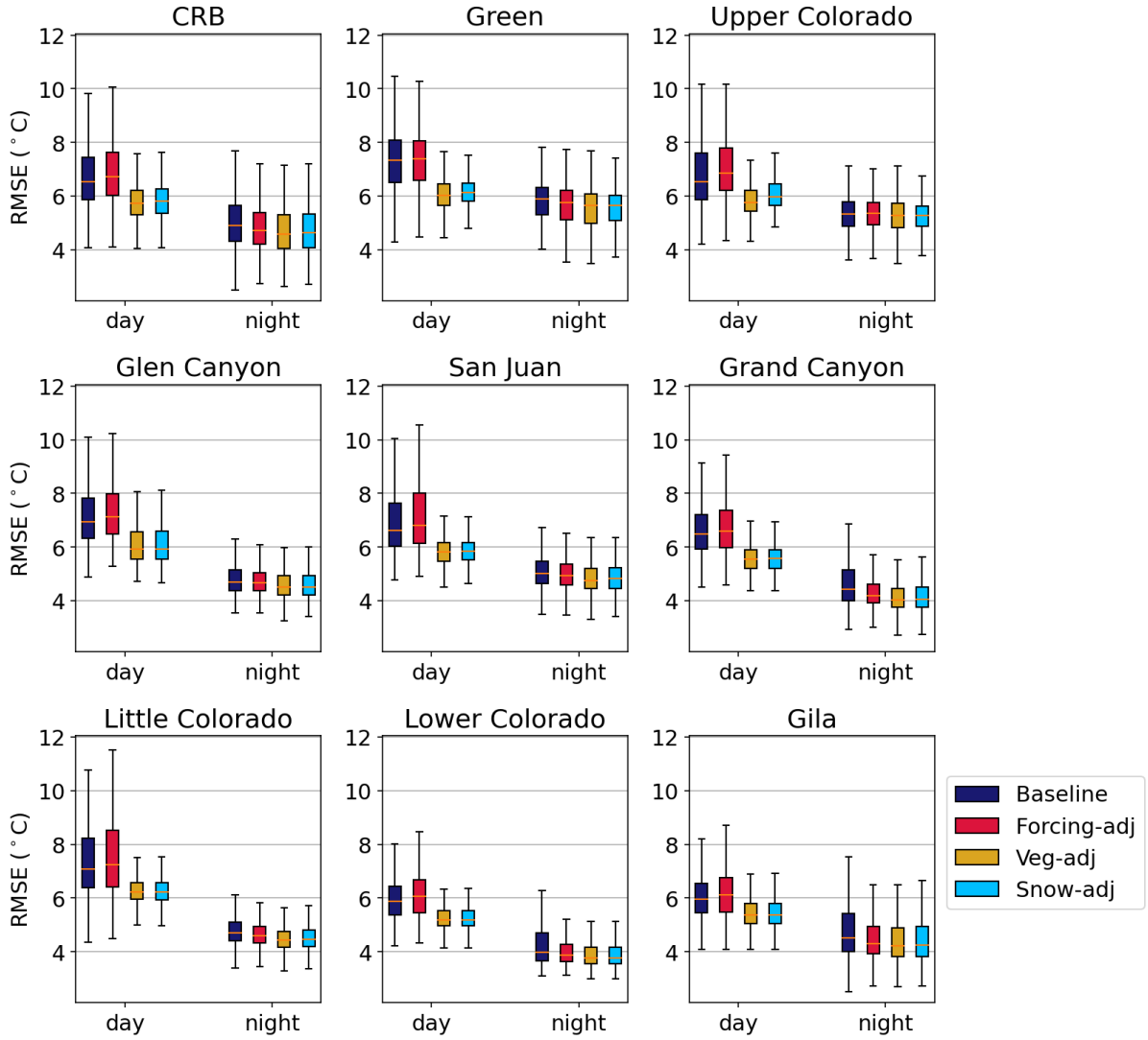
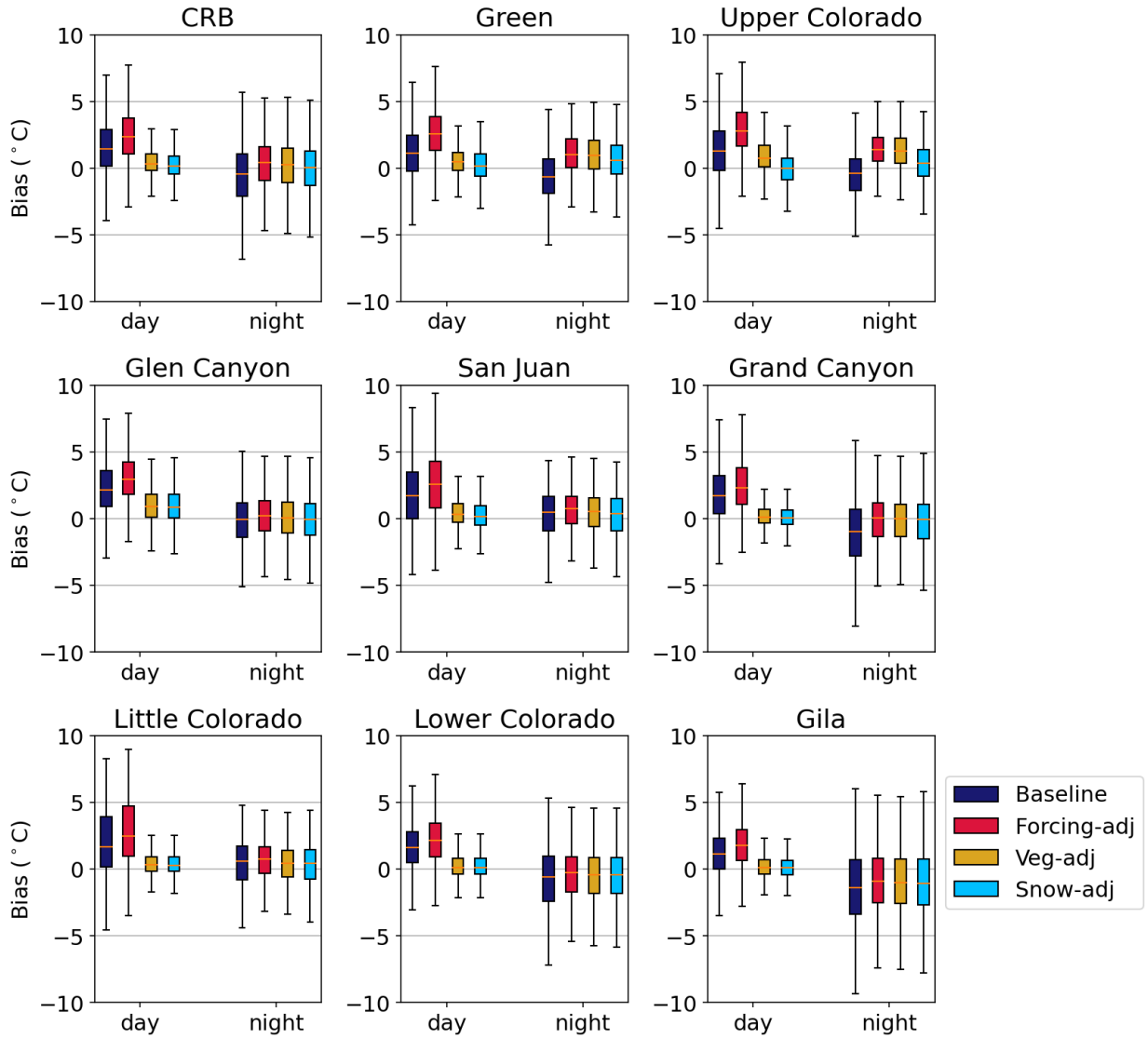



Figure S5. Same as S4 but for RMSE.

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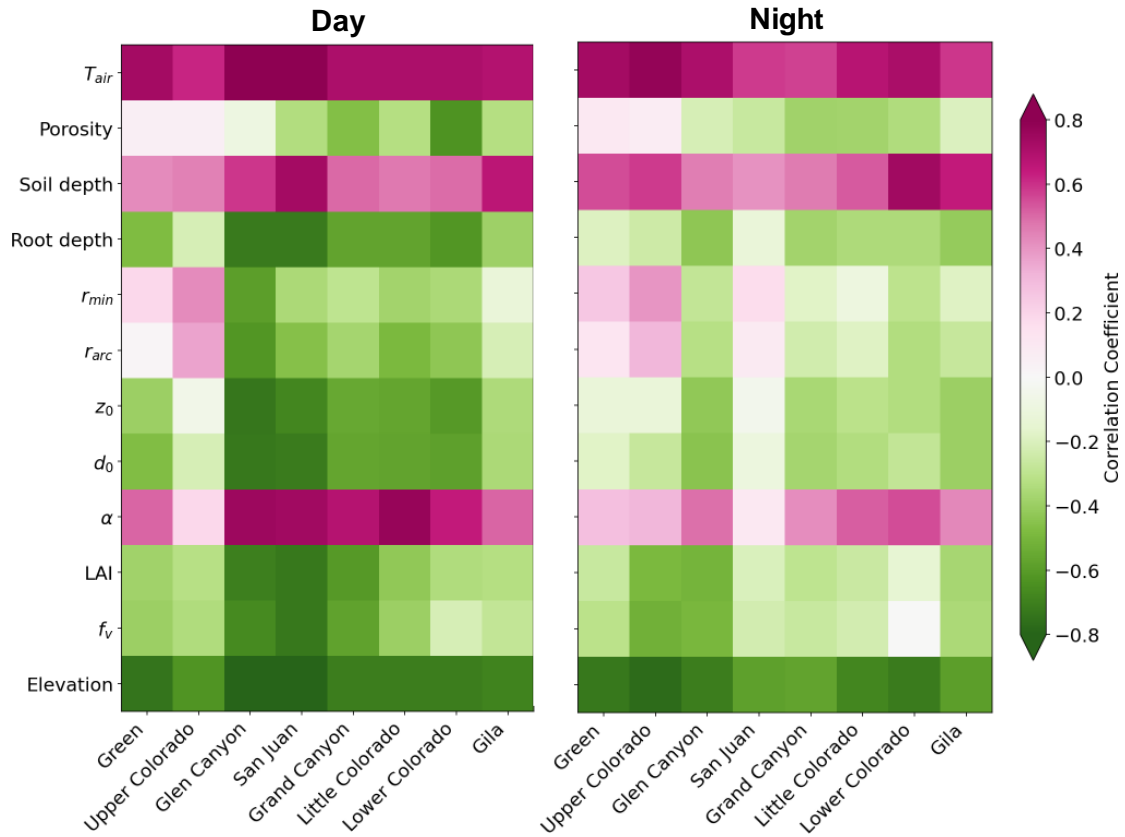
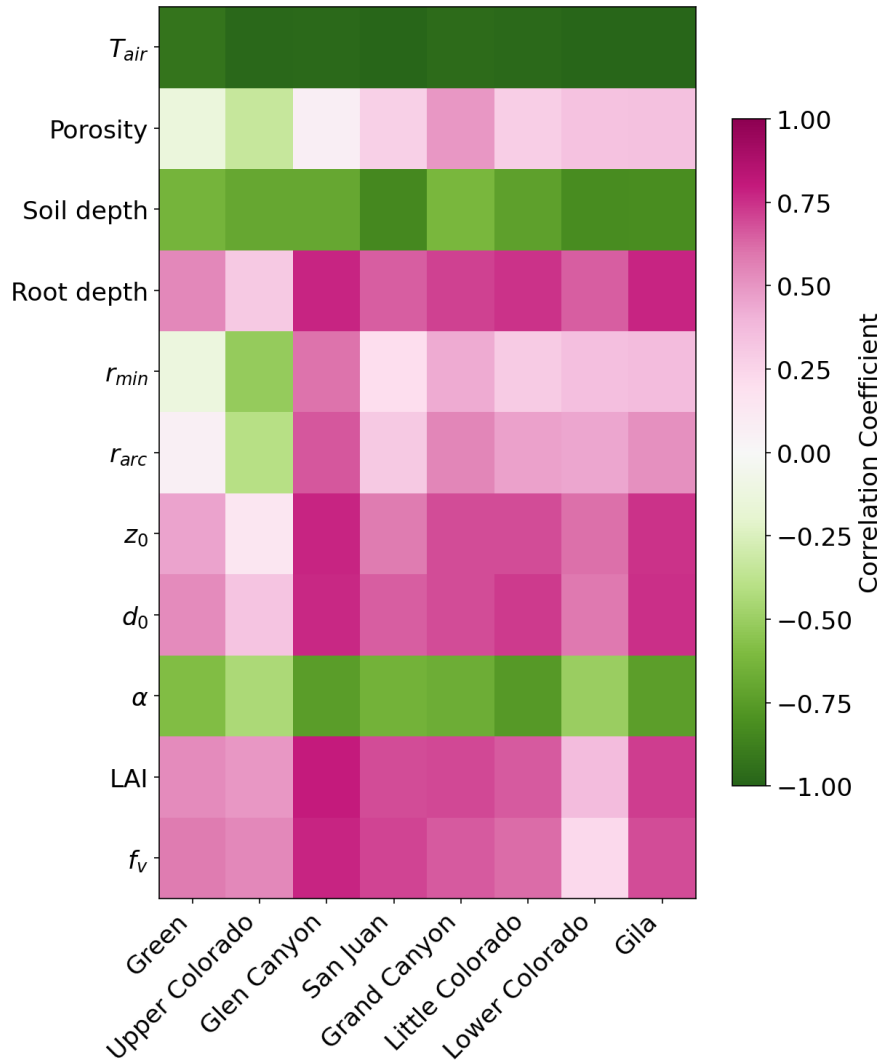


Figure S7. Heatmaps showing the correlation coefficient between T_{air} or key soil and vegetation parameters involved in the energy balance with CC of LST_M and LST_V at each subbasin (left: daytime, right: nighttime) for the baseline simulation.

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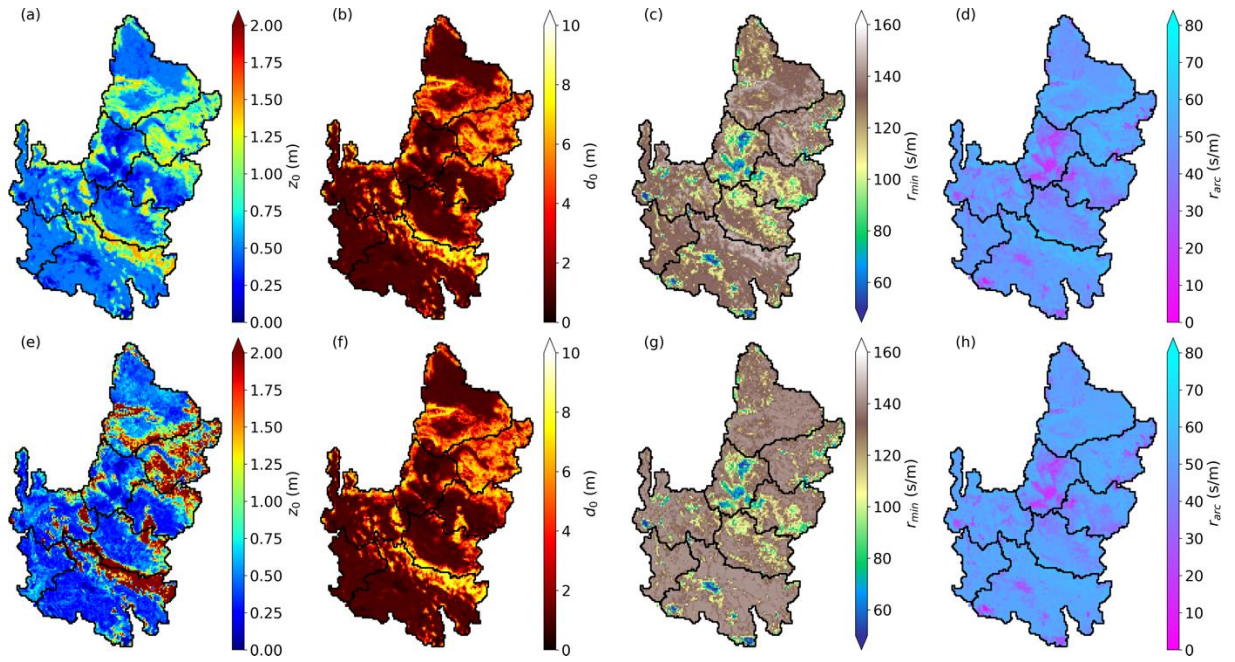
Figure S9. Spatial maps of pixel-averaged vegetation roughness height (z_0), displacement height (d_0), minimal stomatal resistance (r_{min}), and canopy architectural resistance (r_{arc}) for (a to d) baseline and (e to h) Veg-adj simulations.