Correlation coefficients among the variables by watersheds

We performed correlation analysis among all (eight) the variables collected, and we selected the variables that are not collinear but important for the predictions of streamflow in the study area. The greener cells of the tables indicate the higher correlation between the variables.

Table S1. Alamosa sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.062	0.275	-0.178	-0.169	-0.052	-0.052	-0.291	0.388
Sublimation (J/kg)		-0.300	-0.292	-0.289	-0.327	-0.327	-0.239	0.220
Soil Moisture (kg/m3)			0.582	0.590	0.585	0.585	0.141	-0.344
Snow Albedo (%)				1.000	0.864	0.864	0.297	-0.801
Snow Cover					0.860	0.860	0.294	-0.804
Snow Depth (m)						1.000	0.239	-0.527
SWE (kg/m2)							0.239	-0.527
Precipitation (mm)								-0.301

Table S2. Chama below Elv Dam, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.000	0.198	-0.082	-0.081	0.093	0.093	-0.093	0.112
Sublimation (J/kg)		-0.413	-0.402	-0.392	-0.467	-0.467	-0.237	0.309
Soil Moisture (kg/m3)			0.765	0.757	0.792	0.792	0.363	-0.642
Snow Albedo (%)				0.997	0.841	0.841	0.302	-0.772
Snow Cover					0.840	0.840	0.302	-0.754
Snow Depth (m)						1.000	0.262	-0.517
SWE (kg/m2)							0.262	-0.517
Precipitation (mm)								-0.185

Table S3. Conejos sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.074	0.099	-0.242	-0.238	-0.086	-0.086	-0.310	0.396
Sublimation (J/kg)		-0.371	-0.336	-0.333	-0.398	-0.398	-0.270	0.244
Soil Moisture (kg/m3)			0.648	0.651	0.690	0.690	0.263	-0.463
Snow Albedo (%)				1.000	0.859	0.859	0.369	-0.810
Snow Cover					0.855	0.855	0.367	-0.812
Snow Depth (m)						1.000	0.311	-0.526
SWE (kg/m2)							0.311	-0.526

Precipitation (mm)								-0.327

Table S4. Costilla sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.079	0.189	-0.228	-0.225	-0.096	-0.096	0.107	0.287
Sublimation (J/kg)		-0.240	-0.376	-0.376	-0.351	-0.352	-0.134	0.301
Soil Moisture (kg/m3)			0.544	0.555	0.641	0.641	0.302	-0.449
Snow Albedo (%)				0.998	0.914	0.914	0.081	-0.765
Snow Cover					0.919	0.919	0.087	-0.764
Snow Depth (m)						1.000	0.121	-0.578
SWE (kg/m2)							0.121	-0.578
Precipitation (mm)								0.118

Table S5. Culebra sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.065	0.078	-0.201	-0.206	-0.114	-0.114	0.085	0.258
Sublimation (J/kg)		-0.155	-0.265	-0.255	-0.221	-0.221	-0.107	0.298
Soil Moisture (kg/m3)			0.513	0.516	0.611	0.611	0.237	-0.428
Snow Albedo (%)				0.998	0.878	0.878	-0.066	-0.827
Snow Cover					0.877	0.877	-0.061	-0.818
Snow Depth (m)						1.000	0.029	-0.586
SWE (kg/m2)							0.029	-0.586
Precipitation (mm)								0.171

Table S6. Del Norte sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.103	0.180	-0.244	-0.233	-0.042	-0.042	-0.197	0.406
Sublimation (J/kg)		-0.086	-0.121	-0.126	-0.091	-0.091	-0.192	0.221
Soil Moisture (kg/m3)			0.601	0.613	0.691	0.691	0.131	-0.413
Snow Albedo (%)				0.999	0.866	0.866	0.101	-0.841
Snow Cover					0.866	0.866	0.097	-0.842
Snow Depth (m)						1.000	0.090	-0.551
SWE (kg/m2)							0.090	-0.551
Precipitation (mm)								-0.106

Table S7. Embudo sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.068	0.062	-0.166	-0.164	-0.085	-0.085	0.052	0.186
Sublimation (J/kg)		-0.326	-0.313	-0.297	-0.351	-0.352	-0.152	0.326
Soil Moisture (kg/m3)			0.601	0.597	0.673	0.673	0.272	-0.527
Snow Albedo (%)				0.997	0.906	0.906	0.075	-0.682
Snow Cover					0.908	0.908	0.080	-0.665
Snow Depth (m)						1.000	0.091	-0.531
SWE (kg/m2)							0.091	-0.531
Precipitation (mm)								0.066

Table S8. Hondo sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.141	0.009	-0.317	-0.318	-0.202	-0.202	-0.088	0.430
Sublimation (J/kg)		-0.336	-0.434	-0.435	-0.408	-0.408	-0.157	0.336
Soil Moisture (kg/m3)			0.467	0.481	0.532	0.532	0.242	-0.381
Snow Albedo (%)				0.999	0.910	0.910	0.099	-0.756
Snow Cover					0.908	0.908	0.101	-0.762
Snow Depth (m)						1.000	0.124	-0.545
SWE (kg/m2)							0.124	-0.544
Precipitation (mm)								0.025

Table S9. Lajara sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.012	0.290	-0.130	-0.133	-0.020	-0.020	-0.084	0.147
Sublimation (J/kg)		-0.334	-0.324	-0.314	-0.356	-0.356	-0.276	0.280
Soil Moisture (kg/m3)			0.627	0.621	0.646	0.646	0.320	-0.511
Snow Albedo (%)				0.999	0.860	0.860	0.312	-0.799
Snow Cover					0.856	0.856	0.310	-0.792
Snow Depth (m)						1.000	0.284	-0.538
SWE (kg/m2)							0.284	-0.538
Precipitation (mm)								-0.228

Table S10. Los Pinos sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.046	0.227	-0.163	-0.162	-0.057	-0.057	-0.217	0.209
Sublimation (J/kg)		-0.398	-0.384	-0.380	-0.431	-0.431	-0.315	0.268
Soil Moisture (kg/m3)			0.671	0.676	0.664	0.664	0.341	-0.508
Snow Albedo (%)				0.999	0.862	0.862	0.438	-0.793
Snow Cover					0.857	0.857	0.437	-0.794

					SWE	Precipitation	Avg. Temperature
Snow Depth (m)					1.000	0.381	-0.519
SWE (kg/m2)						0.381	-0.519
Precipitation (mm)							-0.353

Table S11. Lucero sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.134	0.066	-0.307	-0.307	-0.190	-0.190	-0.111	0.432
Sublimation (J/kg)		-0.308	-0.450	-0.450	-0.413	-0.414	-0.198	0.346
Soil Moisture (kg/m3)			0.409	0.424	0.465	0.465	0.226	-0.337
Snow Albedo (%)				0.999	0.914	0.914	0.153	-0.747
Snow Cover					0.912	0.912	0.154	-0.754
Snow Depth (m)						1.000	0.149	-0.538
SWE (kg/m2)							0.149	-0.538
Precipitation (mm)								-0.032

Table S12. Pueblo de Taos sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.105	0.034	-0.203	-0.201	-0.125	-0.125	0.027	0.211
Sublimation (J/kg)		-0.329	-0.379	-0.380	-0.324	-0.325	-0.115	0.354
Soil Moisture (kg/m3)			0.468	0.483	0.505	0.505	0.243	-0.493
Snow Albedo (%)				0.998	0.948	0.948	0.036	-0.669
Snow Cover					0.951	0.951	0.041	-0.672
Snow Depth (m)						1.000	0.061	-0.542
SWE (kg/m2)							0.062	-0.542
Precipitation (mm)								0.129

Table S13. Red River bl sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.118	-0.061	-0.287	-0.288	-0.219	-0.219	0.033	0.370
Sublimation (J/kg)		-0.230	-0.330	-0.331	-0.314	-0.315	-0.104	0.296
Soil Moisture (kg/m3)			0.487	0.496	0.550	0.550	0.271	-0.466
Snow Albedo (%)				0.997	0.945	0.944	0.019	-0.725
Snow Cover					0.951	0.951	0.027	-0.716
Snow Depth (m)						1.000	0.064	-0.586
SWE (kg/m2)							0.064	-0.586
Precipitation (mm)								0.162

Table S14. Saguache sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.150	0.118	-0.331	-0.332	-0.164	-0.164	0.055	0.440
Sublimation (J/kg)		-0.372	-0.509	-0.510	-0.518	-0.518	-0.139	0.343
Soil Moisture (kg/m3)			0.463	0.473	0.528	0.528	0.181	-0.349
Snow Albedo (%)				0.998	0.866	0.866	0.000	-0.810
Snow Cover					0.865	0.865	0.005	-0.802
Snow Depth (m)						1.000	0.071	-0.542
SWE (kg/m2)							0.071	-0.542
Precipitation (mm)								0.153

Table S15. San Antonio sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	-0.044	0.416	0.023	0.027	0.124	0.124	-0.040	0.012
Sublimation (J/kg)		-0.381	-0.389	-0.381	-0.431	-0.432	-0.307	0.300
Soil Moisture (kg/m3)			0.684	0.687	0.685	0.685	0.308	-0.532
Snow Albedo (%)				0.999	0.858	0.858	0.339	-0.803
Snow Cover					0.854	0.854	0.339	-0.795
Snow Depth (m)						1.000	0.306	-0.528
SWE (kg/m2)							0.306	-0.528
Precipitation (mm)								-0.244

Table S16. Santa Cruz sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.103	-0.001	-0.212	-0.210	-0.101	-0.101	0.055	0.298
Sublimation (J/kg)		-0.285	-0.265	-0.254	-0.285	-0.286	-0.126	0.296
Soil Moisture (kg/m3)			0.588	0.582	0.686	0.686	0.250	-0.484
Snow Albedo (%)				0.998	0.867	0.867	0.071	-0.662
Snow Cover					0.868	0.868	0.078	-0.649
Snow Depth (m)						1.000	0.092	-0.494
SWE (kg/m2)							0.092	-0.494
Precipitation (mm)								0.151

Table S17. Santa Fe River sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.087	0.065	-0.177	-0.174	-0.139	-0.139	0.118	0.181
Sublimation (J/kg)		-0.411	-0.422	-0.428	-0.383	-0.384	-0.080	0.328
Soil Moisture (kg/m3)			0.551	0.556	0.583	0.584	0.298	-0.437
Snow Albedo (%)				0.993	0.961	0.961	0.084	-0.595
Snow Cover					0.971	0.971	0.094	-0.582
Snow Depth (m)						1.000	0.096	-0.523
SWE (kg/m2)							0.096	-0.523
Precipitation (mm)								0.220

Table S18. Trinchera sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.111	0.088	-0.304	-0.308	-0.208	-0.208	-0.074	0.376
Sublimation (J/kg)		-0.232	-0.308	-0.306	-0.264	-0.265	-0.198	0.293
Soil Moisture (kg/m3)			0.438	0.440	0.471	0.471	0.365	-0.332
Snow Albedo (%)				0.999	0.892	0.892	0.142	-0.781
Snow Cover					0.891	0.891	0.143	-0.781
Snow Depth (m)						1.000	0.154	-0.551
SWE (kg/m2)							0.154	-0.551
Precipitation (mm)								-0.090

Table S19. Ute Creek sub basins, correlation coefficient among all the variables

Variables	Sublimation	Soil Moisture	Albedo	Snow Cover	Snow Depth	SWE	Precipitation	Avg. Temperature (deg C)
Streamflow (ac-ft.)	0.147	0.164	-0.353	-0.349	-0.231	-0.231	0.036	0.446
Sublimation (J/kg)		-0.193	-0.335	-0.328	-0.280	-0.280	-0.127	0.319
Soil Moisture (kg/m3)			0.259	0.273	0.355	0.355	0.380	-0.206
Snow Albedo (%)				0.998	0.880	0.880	0.044	-0.770
Snow Cover					0.880	0.879	0.050	-0.763
Snow Depth (m)						1.000	0.082	-0.532
SWE (kg/m2)							0.083	-0.532
Precipitation (mm)								0.038