

### Supplementary Data

**Table S1.** Basic statistical characteristic values of annual runoff series

River	Length of runoff series	Mean value/mm	Mean square deviation	Coefficient of variation	Coefficient of skewness
Dayekou	30	178.65	0.974	0.221	1.773

**Table S2.** Basic statistical characteristic values of runoff series

Parameter value	$\bar{R}$	$\delta$	$C_v$
Annual river runoff/ mm	178.65	46.38	0.32
Annual precipitation/ mm	386.74	46.55	0.22
Annual average	1.73	0.35	0.17

**Table S3.** Interannual regression statistics of temperature, precipitation and river runoff at Dayekou Basin

Coefficient of multiple	0.844	Standard error	17.218
Coefficient of determination $R^2$	0.701	Observed value	25
Regulation factor $R^2$	0.715		

**Table S4.** Interannual regression statistics of temperature and precipitation and river runoff at Dayekou Basin

	df	SS	MS	F	Significance F
Regression analysis	2	17233.02	9118.01	21.32	0.00008574
Residual error	15	9331.50	319.17		
Grand total	17	26564.52			

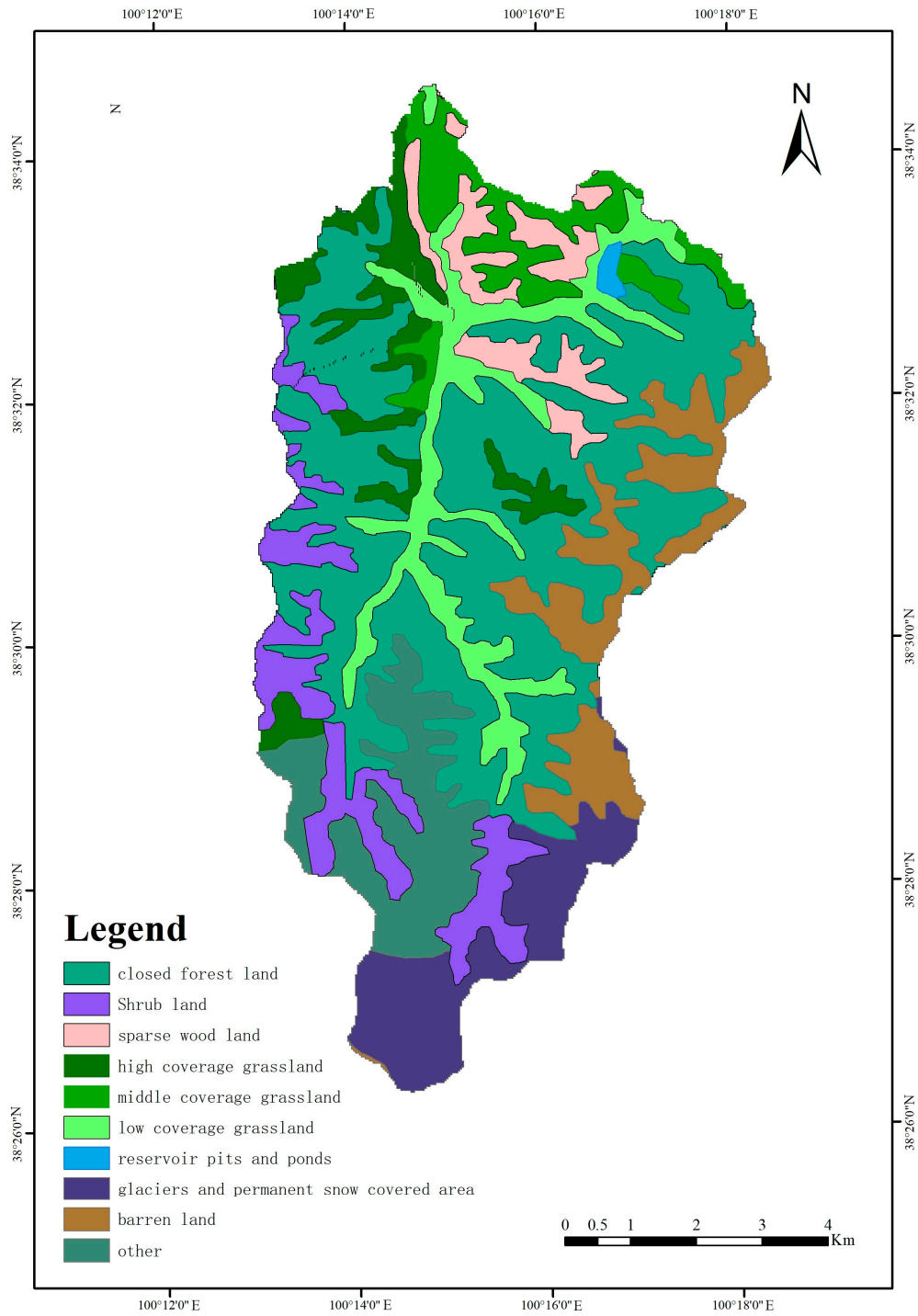
**Table S5.** Interannual regression statistics of temperature and precipitation and river runoff at Dayekou Basin

	Coefficients	Standard error	t Stat	P-value	Lower 95%	Upper 95%	Lower limit	Upper limit 95.0%
Intercept	-28.52	33.83	-0.71	0.46	-98.08	41.04	-98.08	41.04
Annual average	27.02	12.57	3.47	0.06	2.78	51.26	2.78	51.26
Annual precipitation/m	0.61	0.13	5.41	0	0.44	0.78	0.44	0.78

**Table S6.** Measured and predicted temperature, precipitation and river runoff at Dayekou Basin

Month		1	2	3	4	5	6	7	8	9	10	11	12
Air temperature/ °C	m	-16.07	-7.37	-0.26	5.28	8.94	11.14	11.64	10.44	7.64	3.24	-2.86	-10.56
	a	-11.77	-8.89	-4.26	2.82	8.01	12.51	14.51	13.01	8.31	1.61	-4.89	-9.99
Precipitation /mm	m	8.23	-3.9	6.24	27.16	48.43	64.33	70.63	65.73	50.83	29.93	9.33	-1.77
	a	2.83	4.73	11.54	20.26	43.83	53.83	82.53	65.63	64.03	17.63	4.93	2.93
Runoff volume /mm	m	2.23	-4.57	0.34	10.98	21.94	30.14	33.54	31.24	24.04	14.04	4.74	1.04
	a	0	0	0.84	5.54	22.92	29.92	37.72	29.12	25.32	11.32	5.62	0.92

**“m” refers to the measured values and “a” refers to the predicted values**



**Figure S1: Map of the study area showing the landcover.**