

Table S1. The temporal and spatial extent of the hydro-climatic variables used in the study at the Thuli Bheri River Basin, Nepal.

SN	Station Index	Station Name	Lat. (Deg.)	Long. (Deg.)	Elevation (masl)	Station type	Temporal Period	Resolution
1	303	Jumla	29.28	82.17	2300	Synoptic	1981-2014	Daily
2	304	Guthi Chaur	29.28	82.32	3080	Precipitation	1981-2014	Daily
3	310	Dipal Gaun	29.27	82.22	2310	Climatology	1981-2014	Daily
4	312	Dunai	28.93	82.92	2058	Climatology	1981-2014	Daily
5	404	Jajarkot	28.70	82.20	1231	Precipitation	1981-2014	Daily
6	418	Maina Gaun	28.98	82.28	2000	Precipitation	1981-2014	Daily
7	501	Rukumkot	28.60	82.63	1560	Precipitation	1981-2014	Daily
8	513	Chaur Jhari Tar	28.63	82.20	910	Climatology	1981-2014	Daily
9	514	Musikot (Rukum)	28.63	82.48	2100	Climatology	1981-2014	Daily
10	616	Gurja Khani	28.60	83.22	2530	Climatology	1981-2014	Daily
11	265	Rimma	28.71	82.28	550	Streamflow	1981-2014	Daily

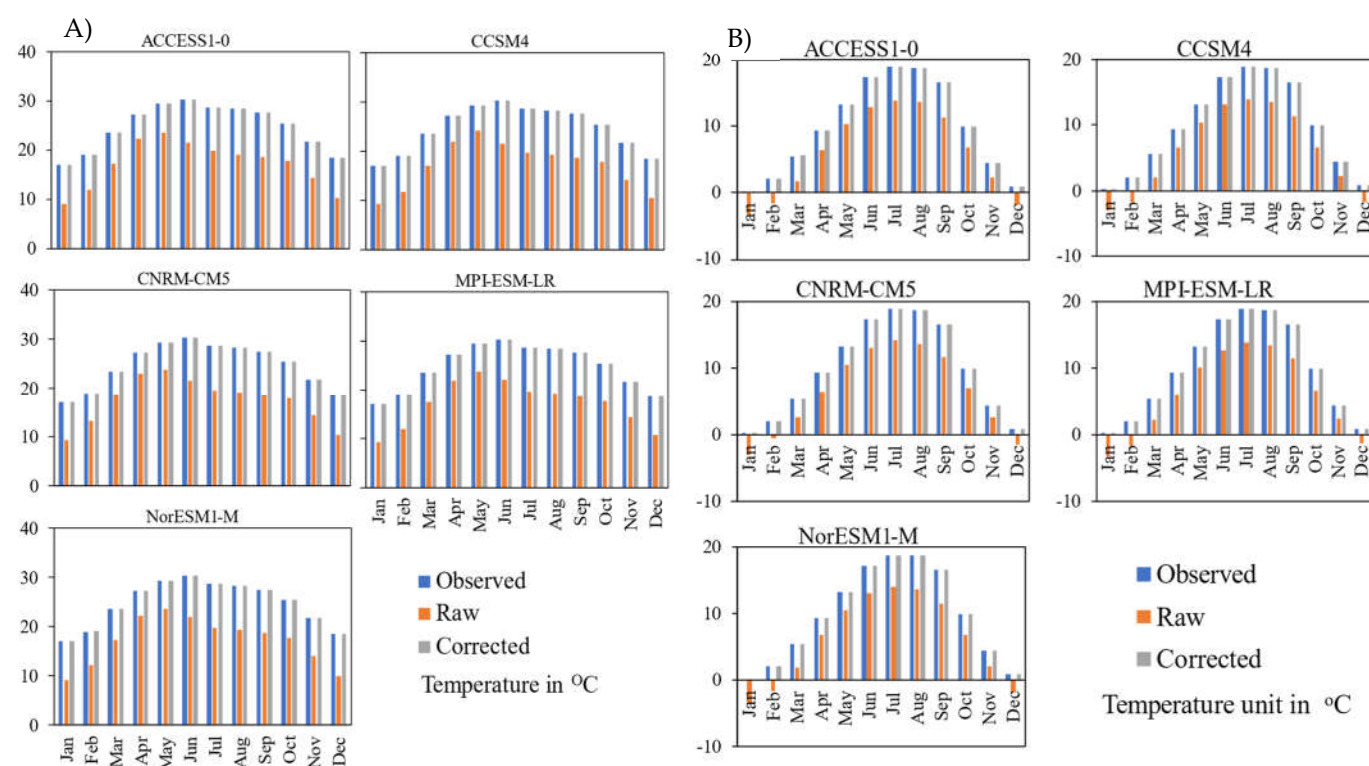


Figure S1. Ensemble average monthly distribution of (A) maximum and (B) minimum temperature for different climate models before and after bias correction. Each subplot represents the monthly distribution for different climate models (i.e., ACCESS1-0, CCSM4, CNRM-CM5, MPI-ESM-LR, and NorESM1-M). The 'Observed' data represents the ground station data, 'Raw' data represents the climate model data before correction is applied, and 'Corrected' represents the climate model data after applying the correction. The ensemble is obtained by taking the average from two ground stations.

Table S2. The statistical performance of the maximum and minimum temperature at two ground stations for all the climate models before and after applying the bias corrections. ‘Raw’ represents the data before bias correction is applied, and ‘BC’ represents the data after applying bias correction.

Climate Model	Statistical Indicator	Maximum Temperature				Minimum Temperature			
		Station 303		Station 513		Station 303		Station 513	
		Raw	BC	Raw	BC	Raw	BC	Raw	BC
ACCESS 1-0	R ²	0.83	0.79	0.51	0.87	0.88	0.95	0.95	0.96
	r	0.91	0.89	0.72	0.93	0.94	0.98	0.97	0.98
	Mean	10.03	20.59	24.22	28.85	-0.64	4.72	12.70	14.80
	Stdev	5.84	4.51	4.96	5.08	6.40	7.59	6.23	6.28
	RMSE	10.87	2.07	5.99	1.83	5.98	1.67	2.93	2.03
	RSR	1.86	0.46	1.21	0.36	0.93	0.22	0.47	0.32
CNRM-CM5	R ²	0.84	0.82	0.46	0.87	0.89	0.94	0.95	0.96
	r	0.91	0.90	0.68	0.93	0.95	0.97	0.97	0.98
	Mean	10.60	20.59	24.28	28.85	-0.05	4.72	12.92	14.80
	Stdev	5.62	4.45	5.05	5.08	6.12	7.58	6.20	6.27
	RMSE	10.27	1.92	6.12	1.89	5.45	1.80	2.81	2.10
	RSR	1.83	0.43	1.21	0.37	0.89	0.24	0.45	0.34
GFDL-CM3	R ²	0.82	0.79	0.53	0.85	0.88	0.95	0.94	0.96
	r	0.91	0.89	0.73	0.92	0.94	0.98	0.97	0.98
	Mean	10.05	20.59	24.00	28.85	-0.60	4.72	12.75	14.80
	Stdev	6.17	4.52	4.81	5.10	6.46	7.59	6.23	6.28
	RMSE	10.92	2.11	6.07	2.02	5.97	1.67	2.98	2.10
	RSR	1.77	0.47	1.26	0.40	0.92	0.22	0.48	0.33
MPI-ESM-LR	R ²	0.86	0.82	0.52	0.85	0.88	0.95	0.94	0.96
	r	0.93	0.90	0.72	0.92	0.94	0.98	0.97	0.98
	Mean	10.09	20.59	24.26	28.85	-0.65	4.72	12.71	14.80
	Stdev	5.77	4.47	4.92	5.09	6.25	7.58	6.16	6.28
	RMSE	10.77	1.93	5.94	2.01	6.02	1.67	2.98	2.08
	RSR	1.87	0.43	1.21	0.39	0.96	0.22	0.48	0.33
NorESM1-M	R ²	0.85	0.81	0.53	0.87	0.89	0.95	0.95	0.96
	r	0.92	0.90	0.73	0.94	0.95	0.98	0.97	0.98
	Mean	10.05	20.59	24.18	28.85	-0.53	4.72	12.83	14.80
	Stdev	6.00	4.50	4.94	5.08	6.60	7.58	6.23	6.27
	RMSE	10.85	1.98	5.97	1.83	5.81	1.69	2.88	2.08
	RSR	1.81	0.44	1.21	0.36	0.88	0.22	0.46	0.33

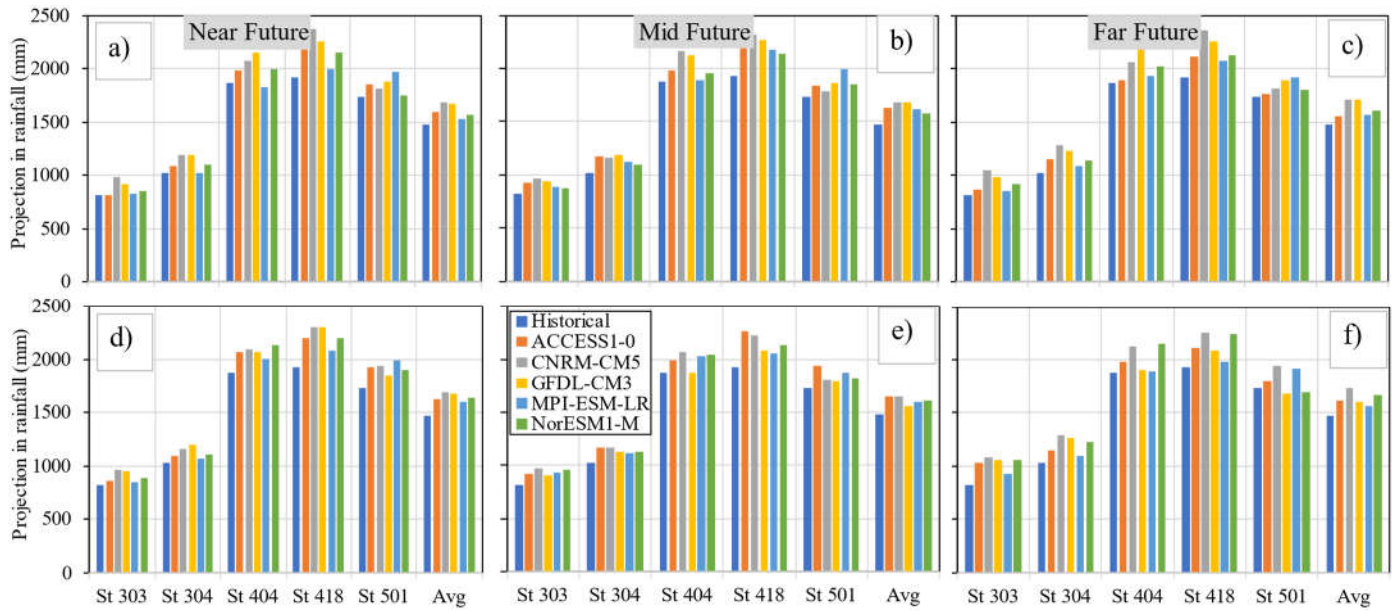


Figure S2: Temporal projection (mm) in precipitation pattern at various stations using multiple climate models for three future time windows, namely, Near Future (2020-2040), Mid Future (2041-2070), and Far Future (2071-2100) under RCP 4.5 (a, b & c) and RCP 8.5 (d, e & f)

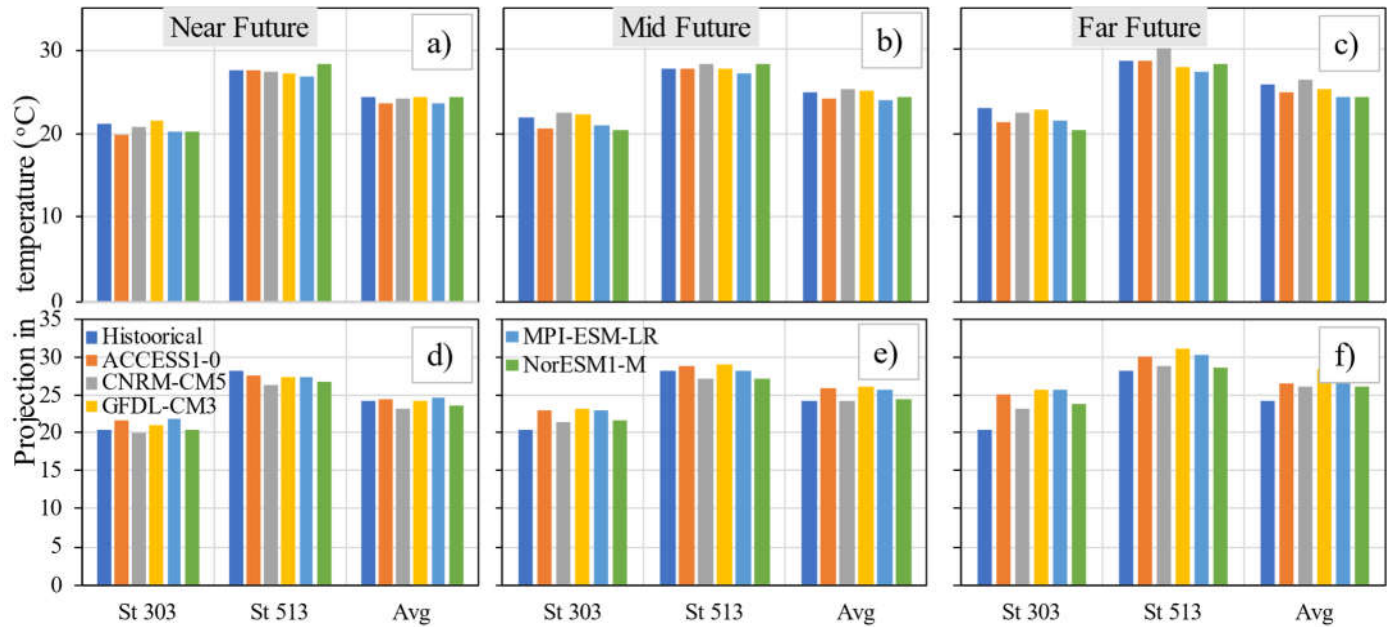


Figure S3: Temporal projection in maximum temperature (°C) pattern at various stations using multiple climate models for three future time windows, namely, Near Future (2020-2040), Mid Future (2041-2070), and Far Future (2071-2100) under RCP 4.5 (a, b & c) and RCP 8.5 (d, e & f)

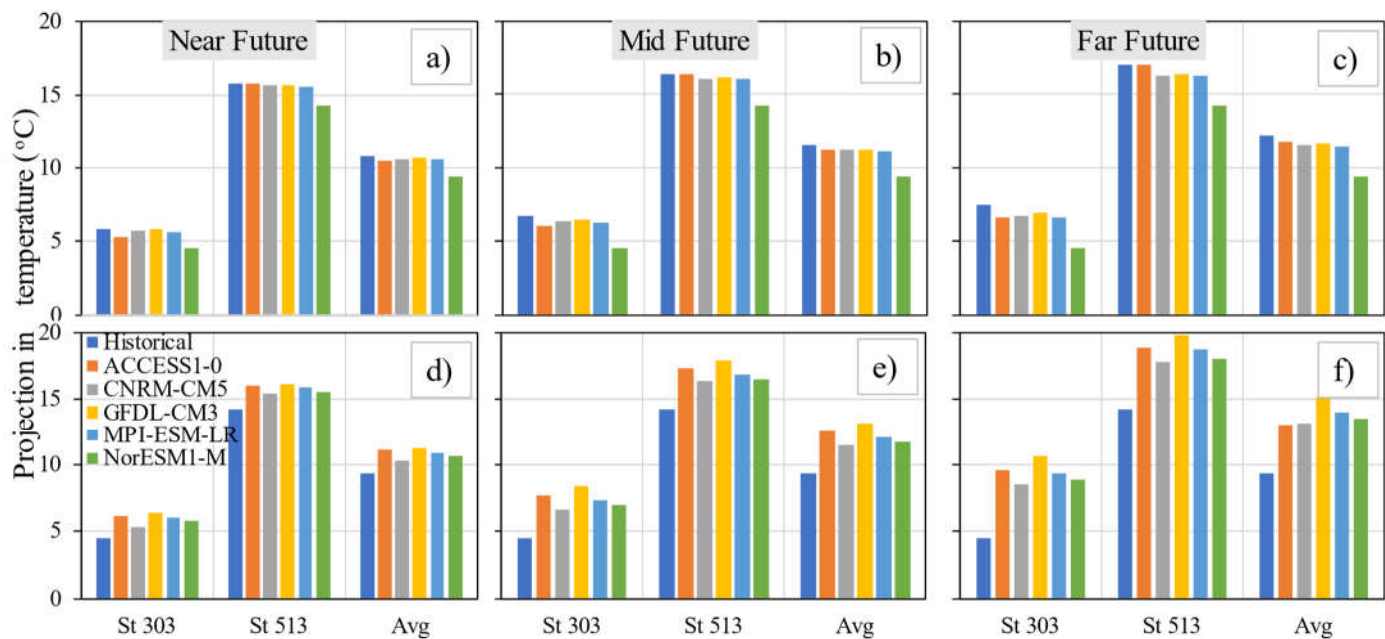


Figure S4: Temporal projection in minimum temperature (°C) pattern at various stations using multiple climate models for three future time windows, namely, Near Future (2020-2040), Mid Future (2041-2070), and Far Future (2071-2100) under RCP 4.5 (a, b & c) and RCP 8.5 (d, e & f)

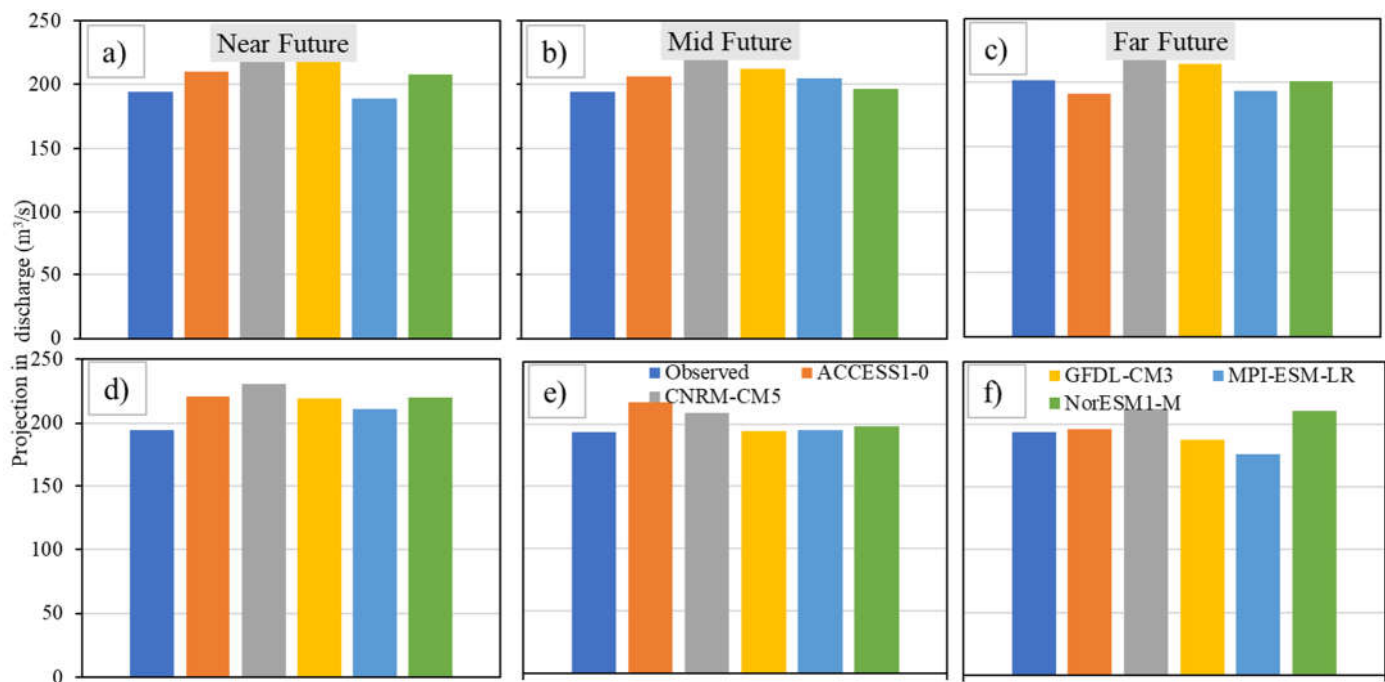


Figure S5: Temporal projection in streamflow (m³/s) pattern at various stations using multiple climate models for three future time windows, namely, Near Future (2020-2040), Mid Future (2041-2070), and Far Future (2071-2100) under RCP 4.5 (a, b & c) and RCP 8.5 (d, e & f)

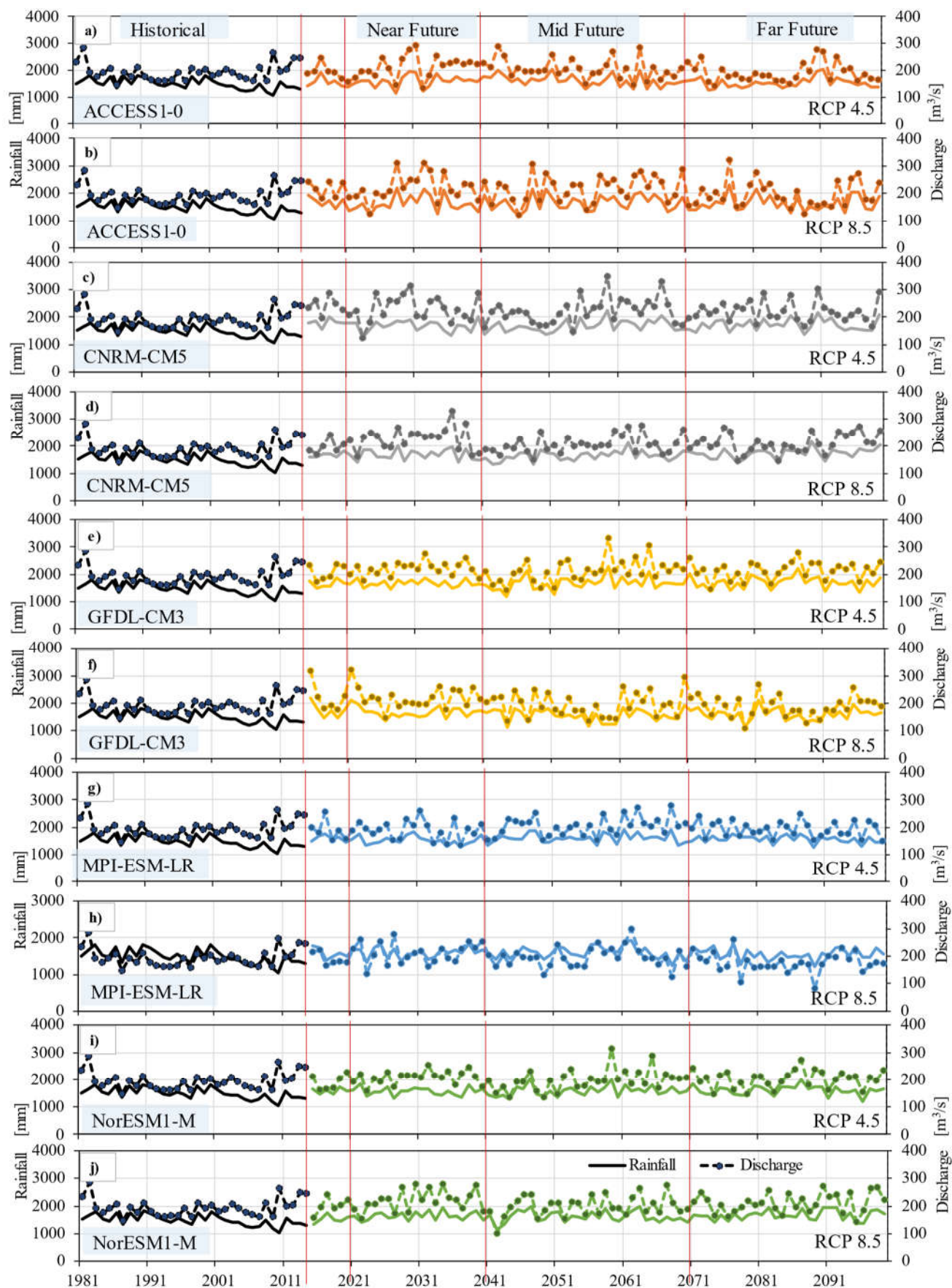


Figure S6: Temporal relation between precipitation (mm) and streamflow (m³/s) pattern at various stations using multiple climate models for three future time windows, namely, Near Future (2020-2040), Mid Future (2041-2070), and Far Future (2071-2100) under RCP 4.5 (a, c, e,