SUPPLEMENTARY MATERIAL

to the manuscript

Assessing the potential impacts of climate change on droughts in East Africa using CORDEX-CORE regional climate models' simulations: A focus on Tanzania

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Table S1. Monthly minimum temperature statistics (°C) for Tanzania based on the CRU dataset (1971–2020).

	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	CV (%)	Skew-ness	Kur-tosis	MK test	Sens slope
Jan	18.37	19.71	17.25	0.52	2.83	0.14	0.02	0.46***	0.02
Feb	18.36	19.49	17.29	0.49	2.65	−0.01	0.11	0.38***	0.02
Mar	18.46	19.67	17.51	0.48	2.60	0.26	−0.33	0.38***	0.02
Apr	18.19	19.42	17.58	0.39	2.16	0.65	0.41	0.29**	0.01
May	16.68	17.80	15.93	0.43	2.52	−0.32	−0.29	0.32**	0.01
Jun	15.02	16.26	13.65	0.62	4.09	−0.08	−0.53	0.49***	0.03
Jul	14.25	15.24	13.21	0.48	3.35	−0.002	−0.13	0.37***	0.02
Aug	15.20	16.48	14.20	0.55	3.62	0.15	−0.41	0.53***	0.03
Sep	16.38	17.37	14.96	0.51	3.09	−0.18	0.01	0.57***	0.03
Oct	17.70	18.88	16.51	0.52	2.93	−0.03	0.15	0.44***	0.02
Nov	18.41	19.33	17.52	0.44	2.37	−0.15	−0.56	0.57***	0.02
Dec	18.52	19.42	17.54	0.42	2.28	0.07	−0.08	0.52***	0.02

Note: * – P-value < 0.05, ** – P-value < 0.01, *** – P-value < 0.001

Table S2. Monthly maximum temperature statistics (°C) for Tanzania based on the CRU dataset (1971–2020).

	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	CV (%)	Skew-ness	Kur-tosis	MK test	Sens slope
Jan	28.60	29.75	27.04	0.59	2.06	−0.25	−0.21	0.21*	0.01
Feb	29.01	30.18	27.45	0.63	2.19	−0.43	−0.11	0.20*	0.01
Mar	29.02	30.52	27.87	0.55	1.89	0.51	0.05	0.11	0.01
Apr	28.13	29.26	27.16	0.52	1.86	0.31	−0.69	0.16	0.01
May	27.47	28.58	26.51	0.49	1.78	−0.44	−0.24	0.23*	0.01
Jun	26.85	27.68	25.76	0.48	1.77	−0.30	−0.69	0.37***	0.02
Jul	26.60	27.73	25.46	0.46	1.73	0.04	−0.14	0.47***	0.02
Aug	27.65	28.36	26.44	0.47	1.68	−0.62	−0.45	0.49***	0.02
Sep	29.15	30.22	27.93	0.47	1.60	0.03	0.28	0.33***	0.01
Oct	30.01	31.16	28.53	0.50	1.66	−0.61	0.92	0.39***	0.02
Nov	29.59	30.86	28.44	0.66	2.22	−0.01	−0.77	0.21*	0.01
Dec	28.68	29.98	27.21	0.64	2.22	−0.07	−0.42	0.22*	0.01

Note: * – P-value < 0.05, ** – P-value < 0.01, *** – P-value < 0.001

Table S3. Precipitation statistics (mm/day) for Tanzania based on the CRU dataset (1971–2020).

	Mean (mm/ day)	Max. (mm/ day)	Min. (mm/ day)	StDev. (mm/ day)	CV (%)	Skew-ness	Kur-tosis	MK test	Sens slope
Jan	4.82	7.51	3.02	1.05	21.78	0.51	−0.05	0.06	0.01
Feb	4.74	7.46	2.92	1.10	22.61	0.39	0.21	0.08	0.01
Mar	5.23	8.08	3.56	1.02	19.40	0.74	0.84	0.1	0.01
Apr	4.76	7.22	3.08	0.90	18.85	0.38	−0.15	−0.15	−0.02
May	2.19	3.77	0.72	0.64	28.98	0.17	−0.03	−0.14	−0.01
Jun	0.58	1.08	0.21	0.20	34.10	0.14	−0.38	−0.08	−0.002
Jul	0.33	0.89	0.13	0.16	48.64	0.97	1.32	−0.11	−0.002
Aug	0.39	0.71	0.16	0.14	36.24	0.48	−0.48	−0.06	−0.001
Sep	0.68	1.32	0.20	0.24	35.63	0.73	0.42	0.09	0.002
Oct	1.32	2.99	0.70	0.48	36.12	1.48	2.90	0.22	0.01
Nov	3.32	6.38	1.60	1.11	33.45	0.48	0.01	0.11	0.01
Dec	4.78	7.84	2.10	1.25	26.20	0.15	0.32	0.05	0.01

Table S4. Projected maximum temperature statistics (°C) for selected locations in Tanzania under the RCP2.6 and RCP8.5 scenarios for the period (2021–2100).

	RCP2.6					RCP8.5				
	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	MK test	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	MK test
Bukoba	26.82	29.72	22.62	0.84	0.00	28.26	33.31	23.67	1.38	0.57***
Iringa	27.17	32.99	21.68	1.40	−0.02***	28.68	35.87	22.98	1.86	0.43***
Kigoma	26.90	29.35	24.41	0.74	0.02***	28.21	32.23	24.37	1.26	0.57***
Kilimanjaro	30.13	37.08	22.30	1.90	−0.02***	31.46	39.59	22.63	2.12	0.30***
Morogoro	29.22	34.66	23.19	1.45	0.00	30.58	37.36	23.85	1.79	0.39***
Mwanza	27.74	32.74	22.65	1.48	0.01	29.02	35.34	23.00	1.80	0.34***
Songea	28.16	33.66	22.44	1.84	0.00	29.80	37.87	22.76	2.23	0.40***
Tabora	30.21	35.48	23.63	1.88	−0.01**	31.71	39.21	23.94	2.26	0.32***
Tanga	30.94	36.38	25.79	1.91	−0.02***	32.20	39.22	26.30	2.12	0.28***
Zanzibar	28.38	31.56	25.35	1.23	0.01*	29.55	34.19	25.43	1.55	0.37***

Note: * – P-value < 0.05, ** – P-value < 0.01, *** – P-value < 0.001

Table S5. Projected minimum temperature statistics (°C) for select locations in Tanzania under the RCP2.6 and RCP8.5 scenarios for the period (2021–2100).

	RCP2.6					RCP8.5				
	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	MK test	Mean (°C)	Max. (°C)	Min. (°C)	StDev. (°C)	MK test
Bukoba	21.07	21.56	20.18	0.18	0.05	22.67	24.69	20.90	1.16	0.91***
Iringa	16.33	16.75	15.79	0.16	0.04	17.86	19.89	16.02	1.12	0.91***
Kigoma	23.73	24.07	22.88	0.20	−0.06	25.15	26.98	23.52	1.03	0.89***
Kilimanjaro	18.11	18.49	17.68	0.17	−0.03	19.61	21.61	17.86	1.10	0.91***
Morogoro	19.01	19.37	18.50	0.17	0.18*	20.41	22.31	18.74	1.03	0.91***
Mwanza	20.82	21.29	19.13	0.27	−0.10	22.36	24.30	20.67	1.09	0.88***
Songea	17.67	18.05	17.22	0.16	0.07	19.23	21.38	17.37	1.14	0.92***
Tabora	18.90	19.41	17.66	0.24	−0.07	20.63	22.86	18.60	1.25	0.89***
Tanga	24.08	24.50	23.63	0.17	0.04	25.43	27.32	23.84	1.01	0.91***
Zanzibar	25.71	26.09	25.24	0.15	0.08	26.91	28.66	25.44	0.91	0.90***

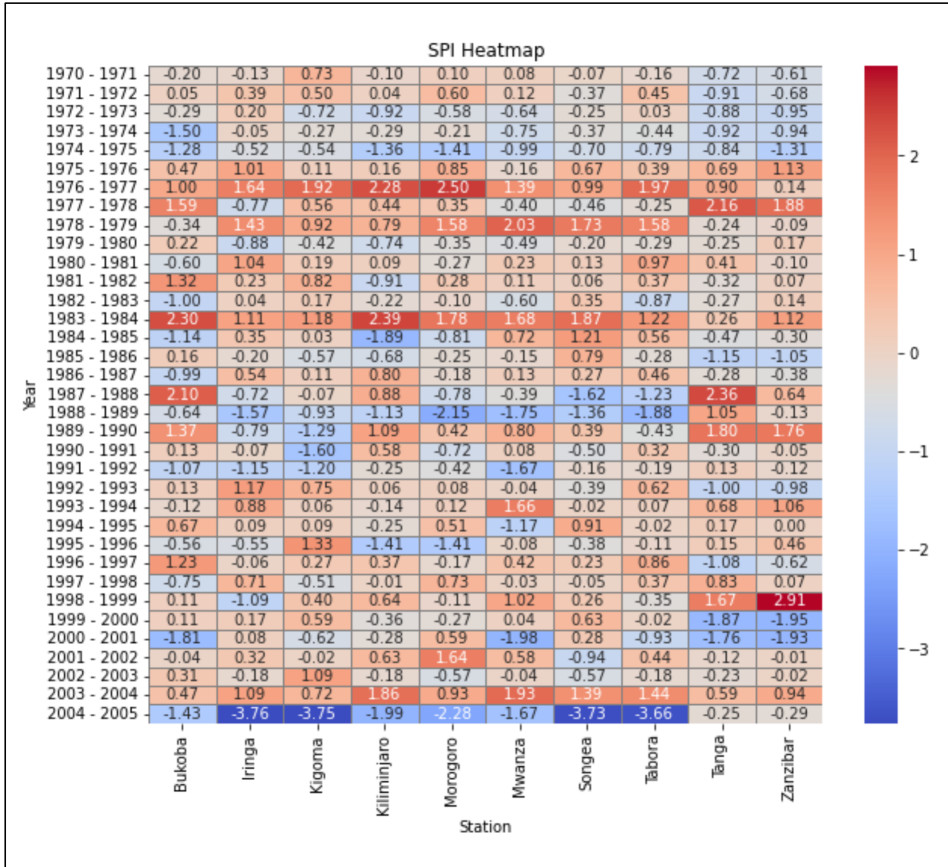Note: * – P-value < 0.05, ** – P-value < 0.01, *** – P-value < 0.001

Fig. S6. SPI-12 Heatmap for Tanzania stations under the historical period (1970–2005).
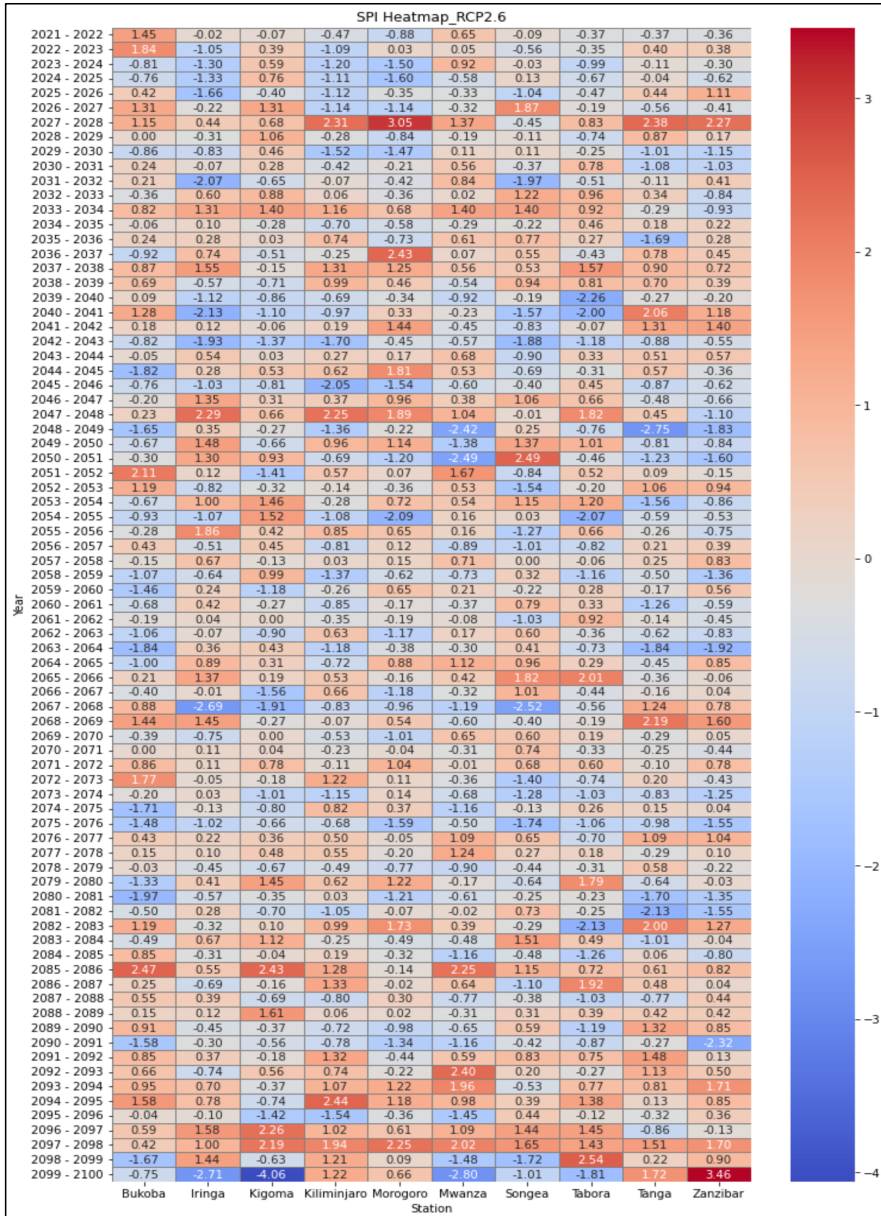
Fig. S7. Heatmap for Tanzania stations for the projection period (2021–2100) under RCP2.6 scenario.
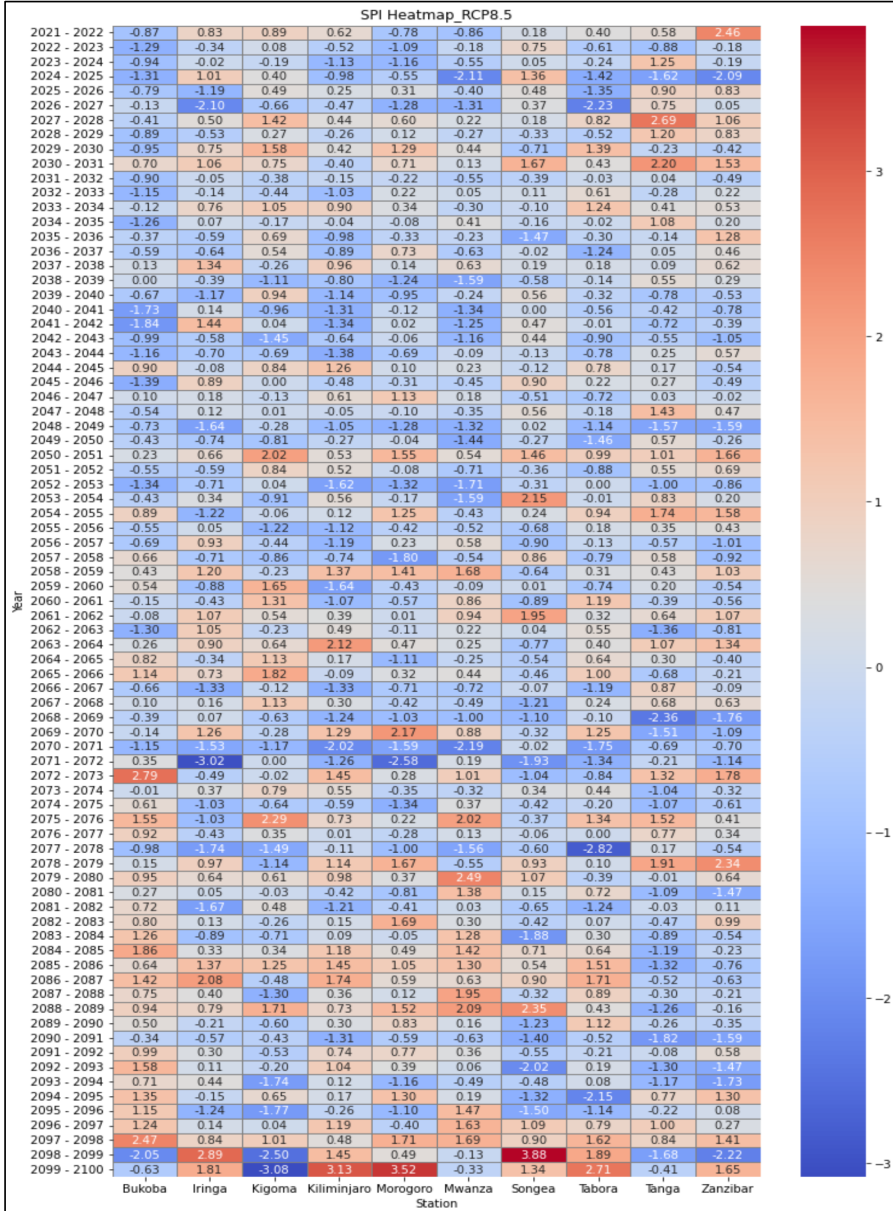
Fig. S8. Heatmap for Tanzania stations for the projection period (2021–2100) under RCP8.5 scenario.