

Supplementary Materials to

"Future projections and uncertainties of CMIP6 for hydrological indicators and their discrepancies from CMIP5 over South Korea"

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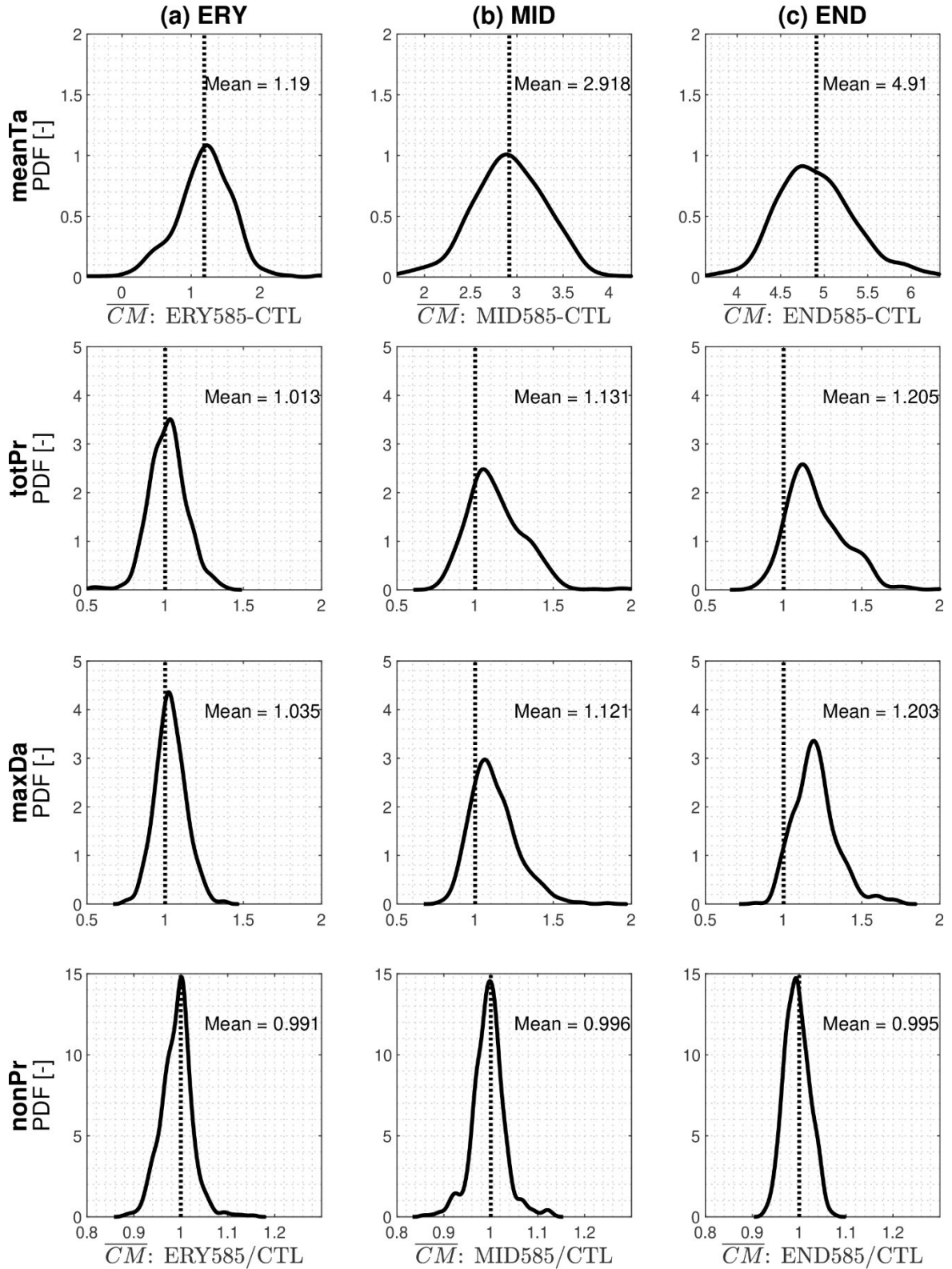


Figure S1. Non-parametric kernel distribution for the FOCs of the \overline{CM} values over South Korea with scenario SSP5-8.5: (a) ERY, (b) MID, and (c) END. Each row plots correspond to indices of meanTa, totPr, maxDa, and nonPr, respectively. The number of data points for making distribution is 520 (40 locations \times 13 (12 months + year)).

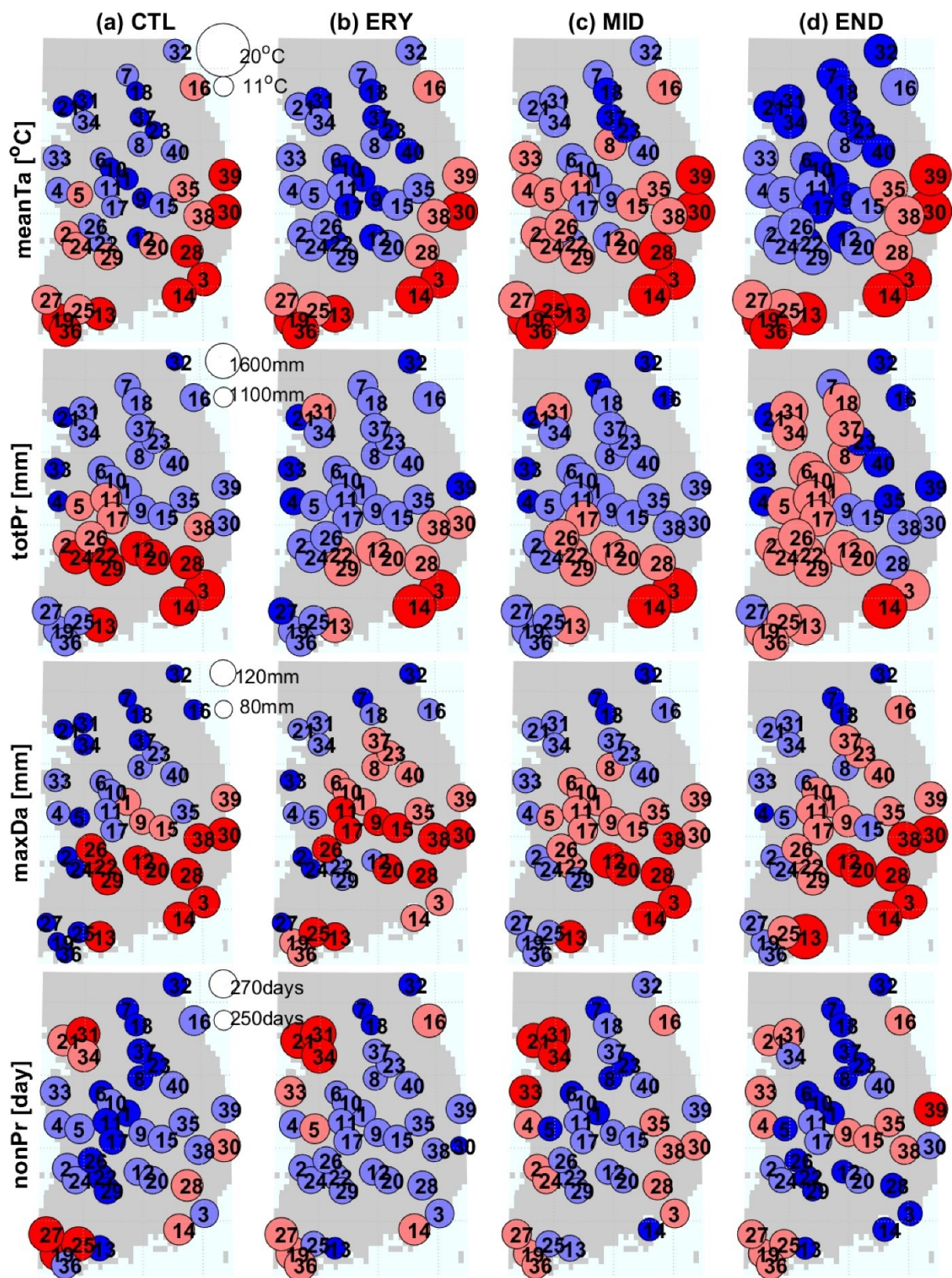


Figure S2. Similar to Fig. 3, but for SSP2-4.5

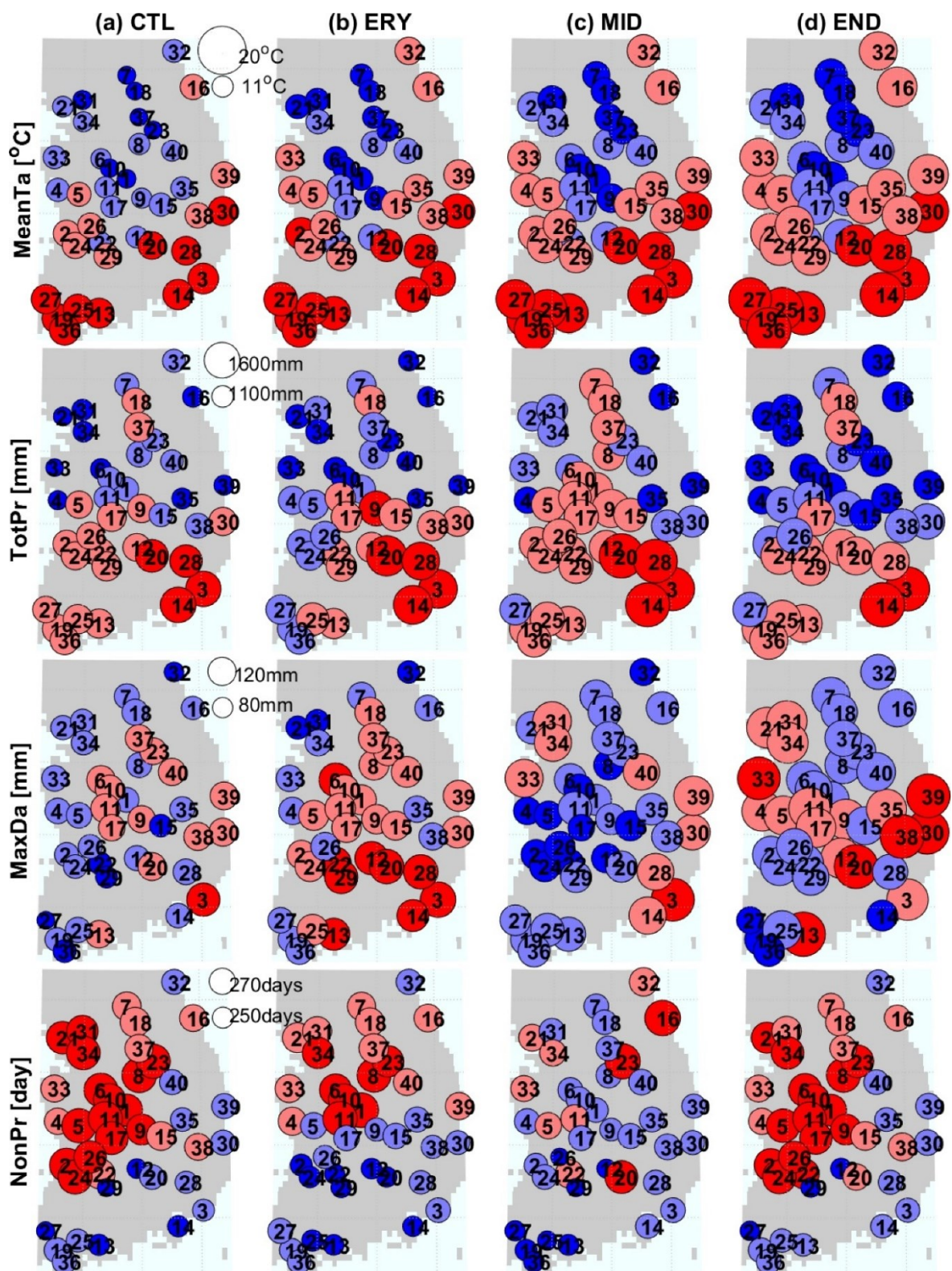


Figure S3. Similar to **Fig. 3**, but for scenario RCP 8.5 of CMIP5.

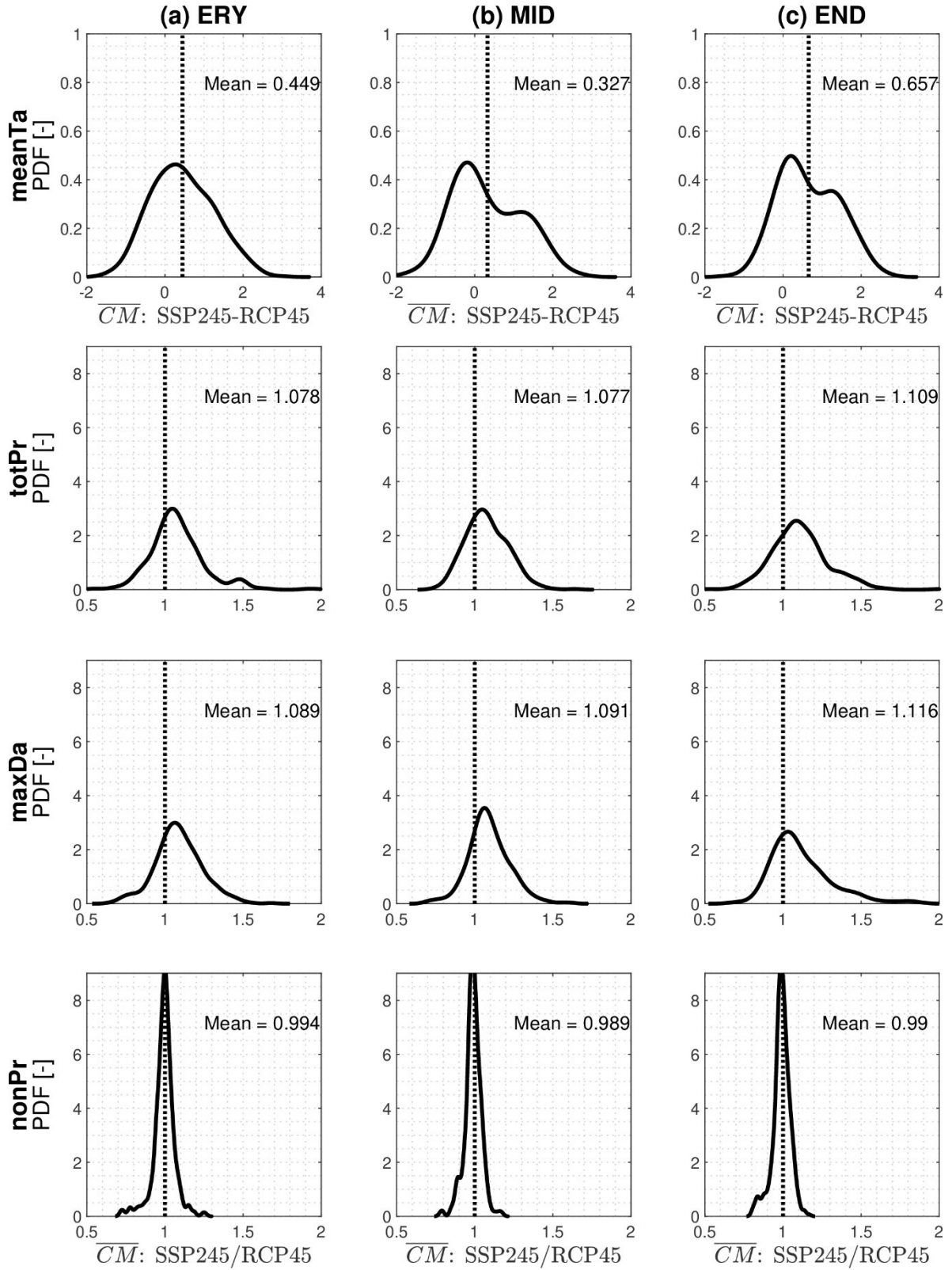


Figure S4. Similar to **Fig. 4**, but for SSP2-4.5 in CMIP6 and RCP 4.5 in CMIP5.

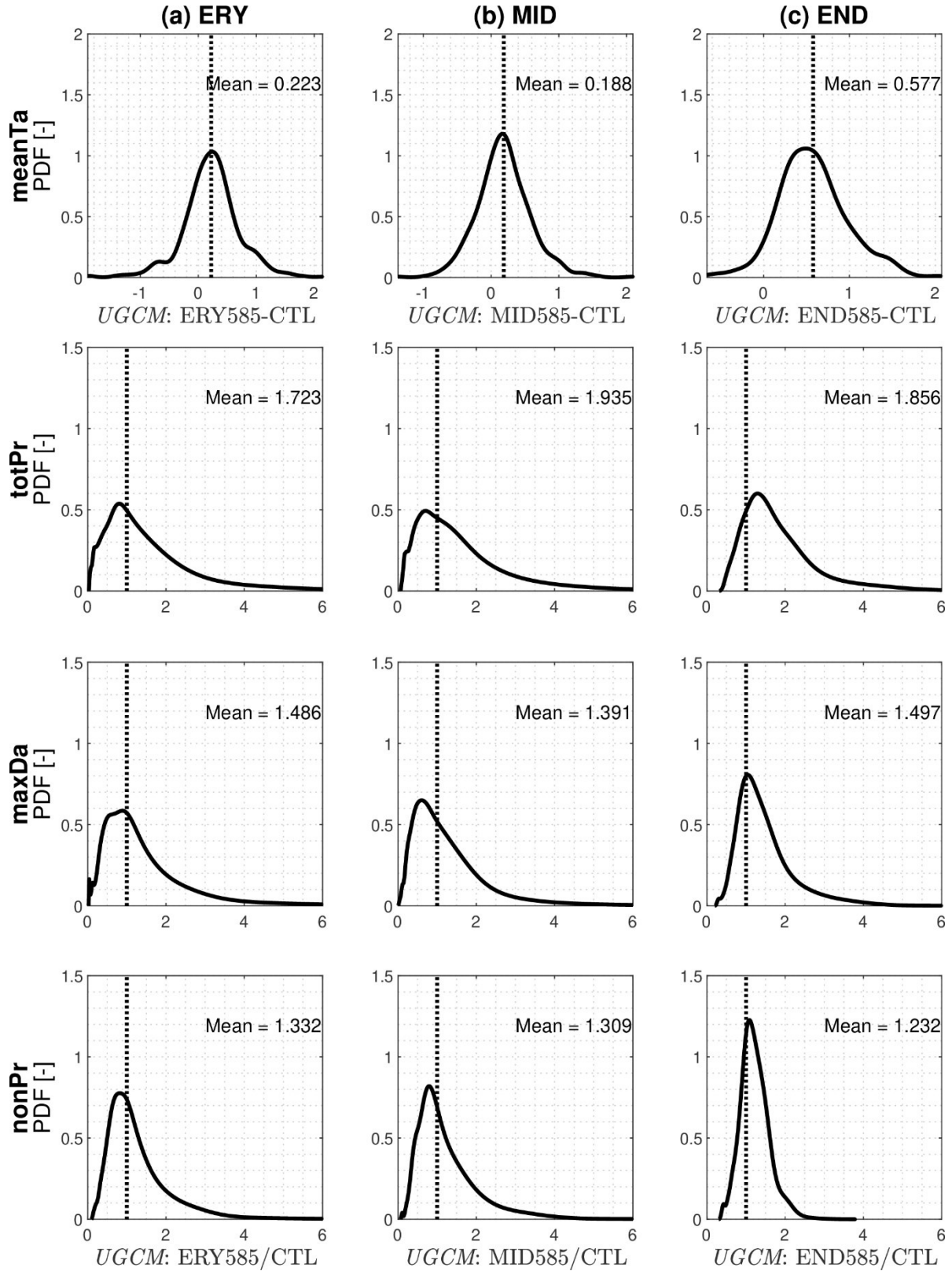


Figure S5. Non-parametric kernel distribution for the FOCs of the *UGCM* values over South Korea with scenario SSP5-8.5: (a) ERY, (b) MID, and (c) END. Each row plots correspond to indices of meanTa, totPr, maxDa, and nonPr, respectively. The number of data points for making distribution is 520 (40 locations \times 13 (12 months + year)).

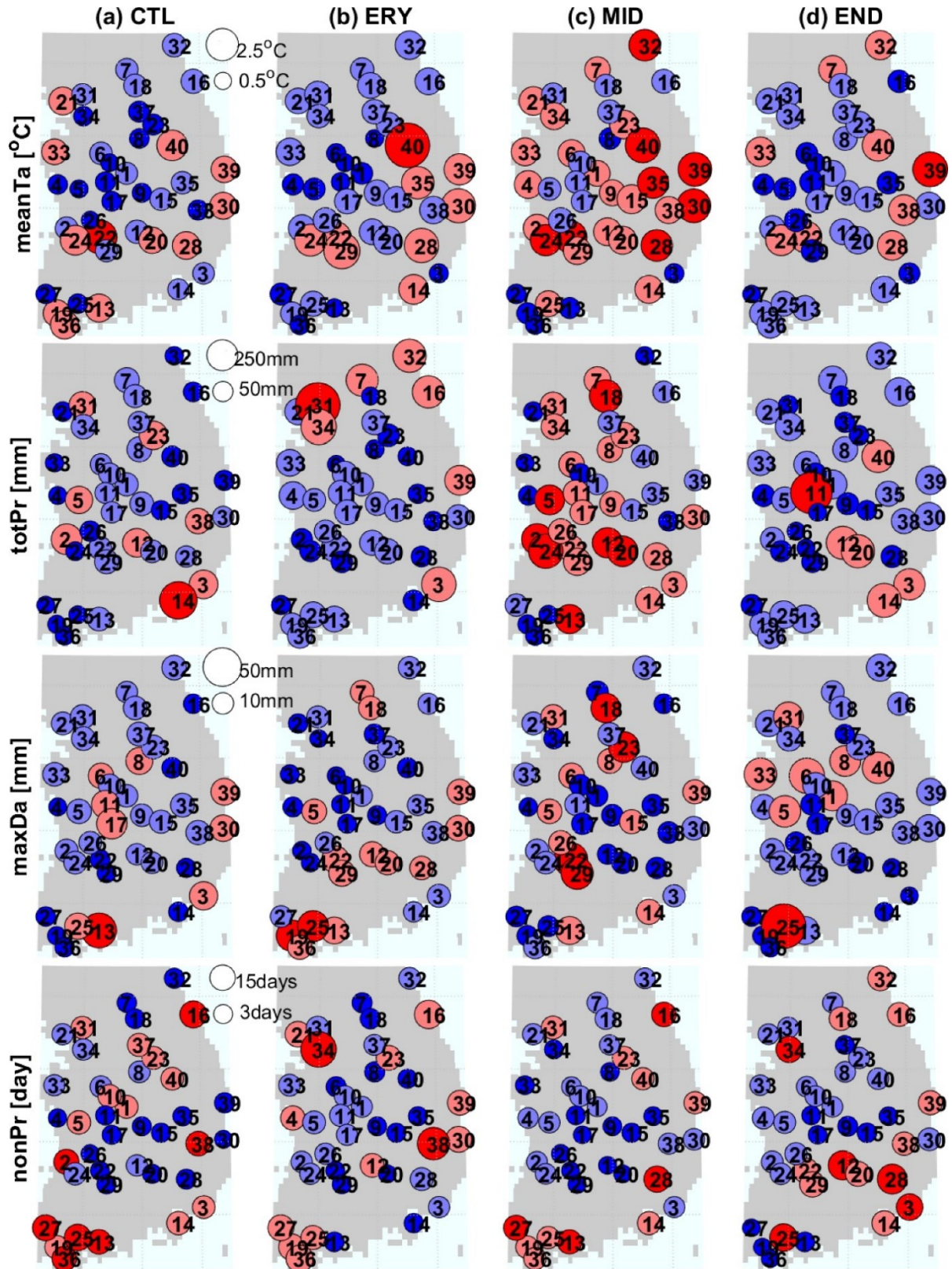


Figure S6. Similar to Fig. 5, but for SSP2-4.5.

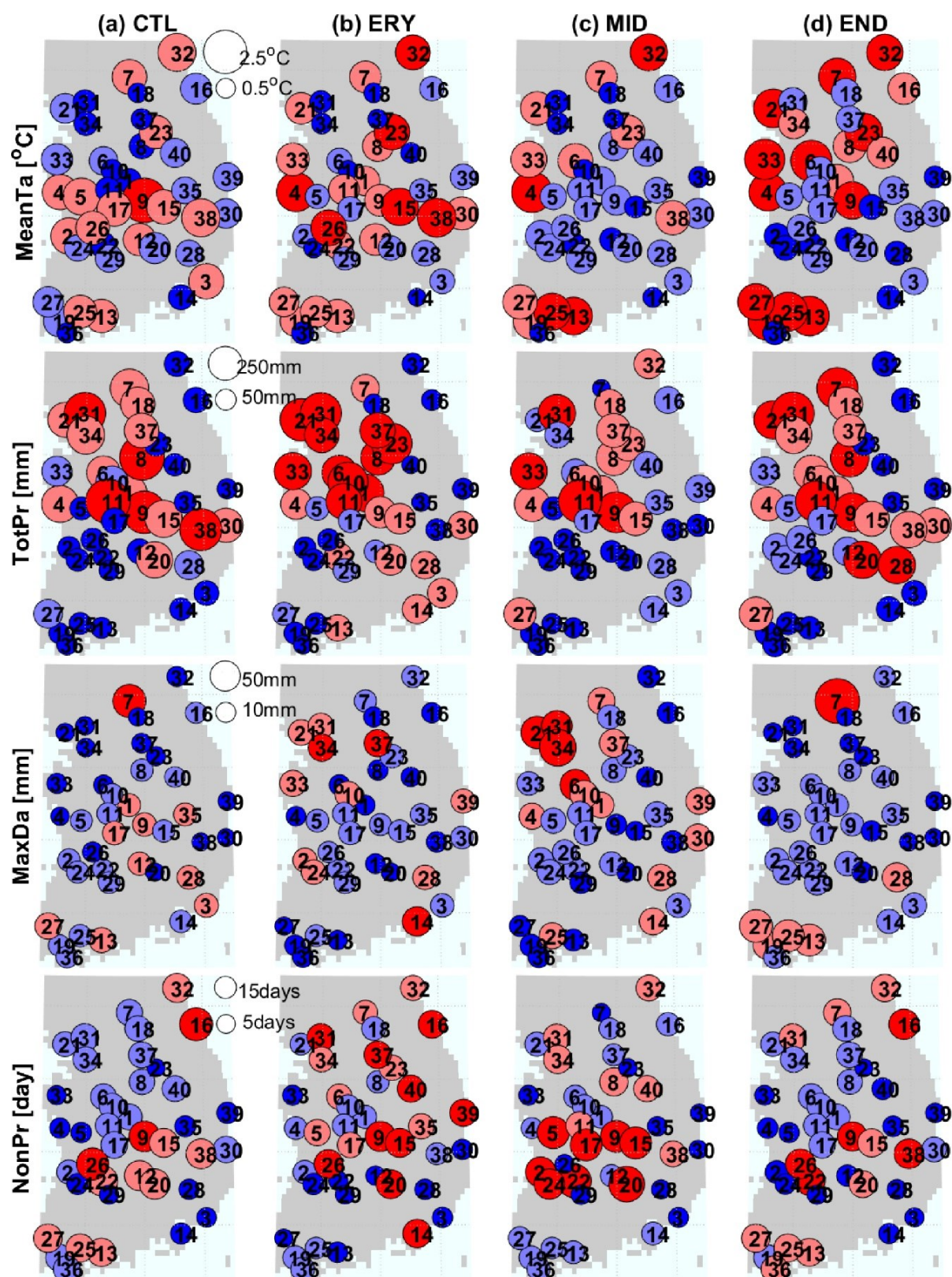


Figure S7. Similar to Fig. 5, but for RCP 8.5 of CMIP5.

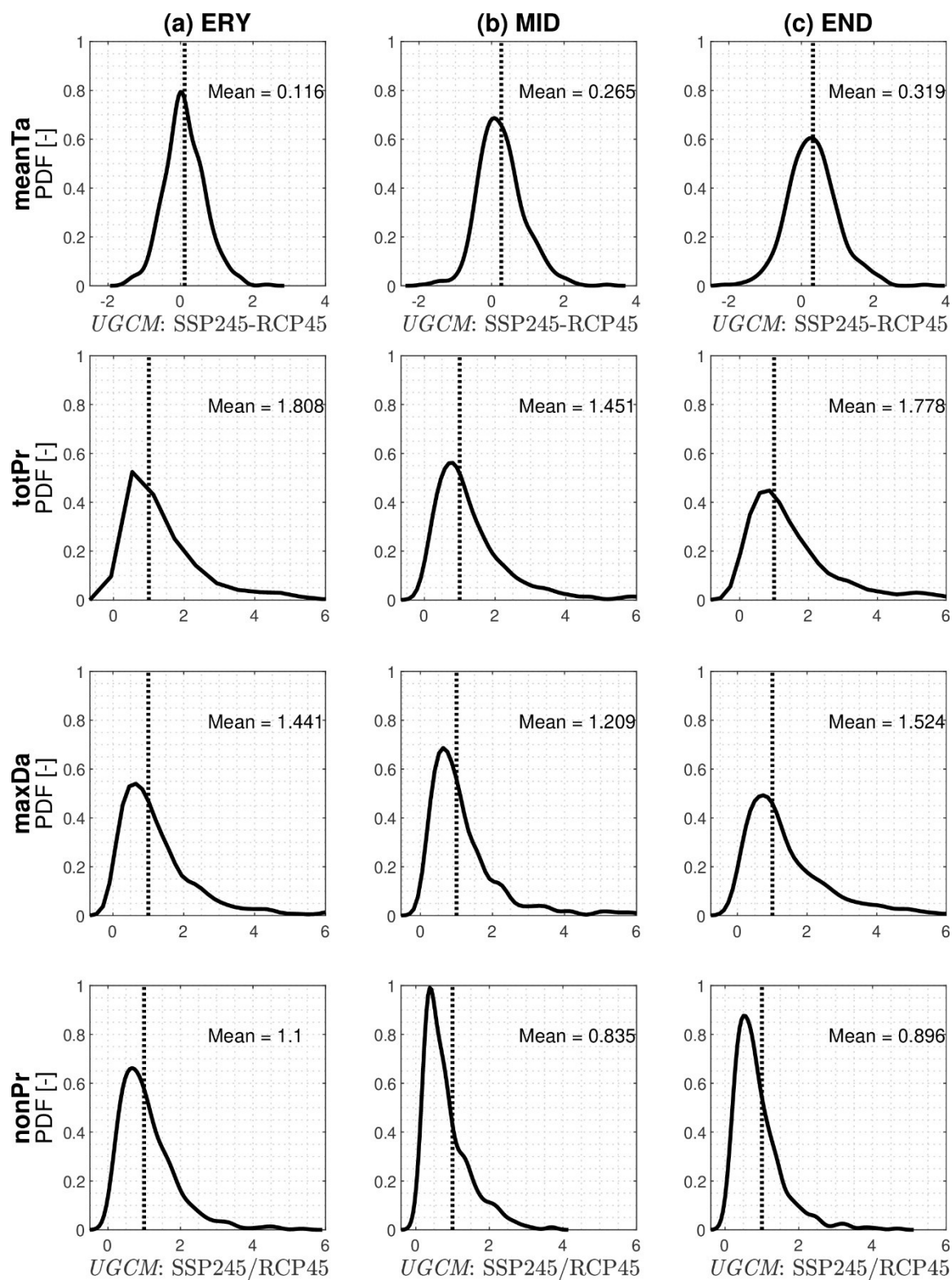


Figure S8. Similar to **Fig. 6**, but for SSP2-4.5 in CMIP6 and RCP 4.5 in CMIP5

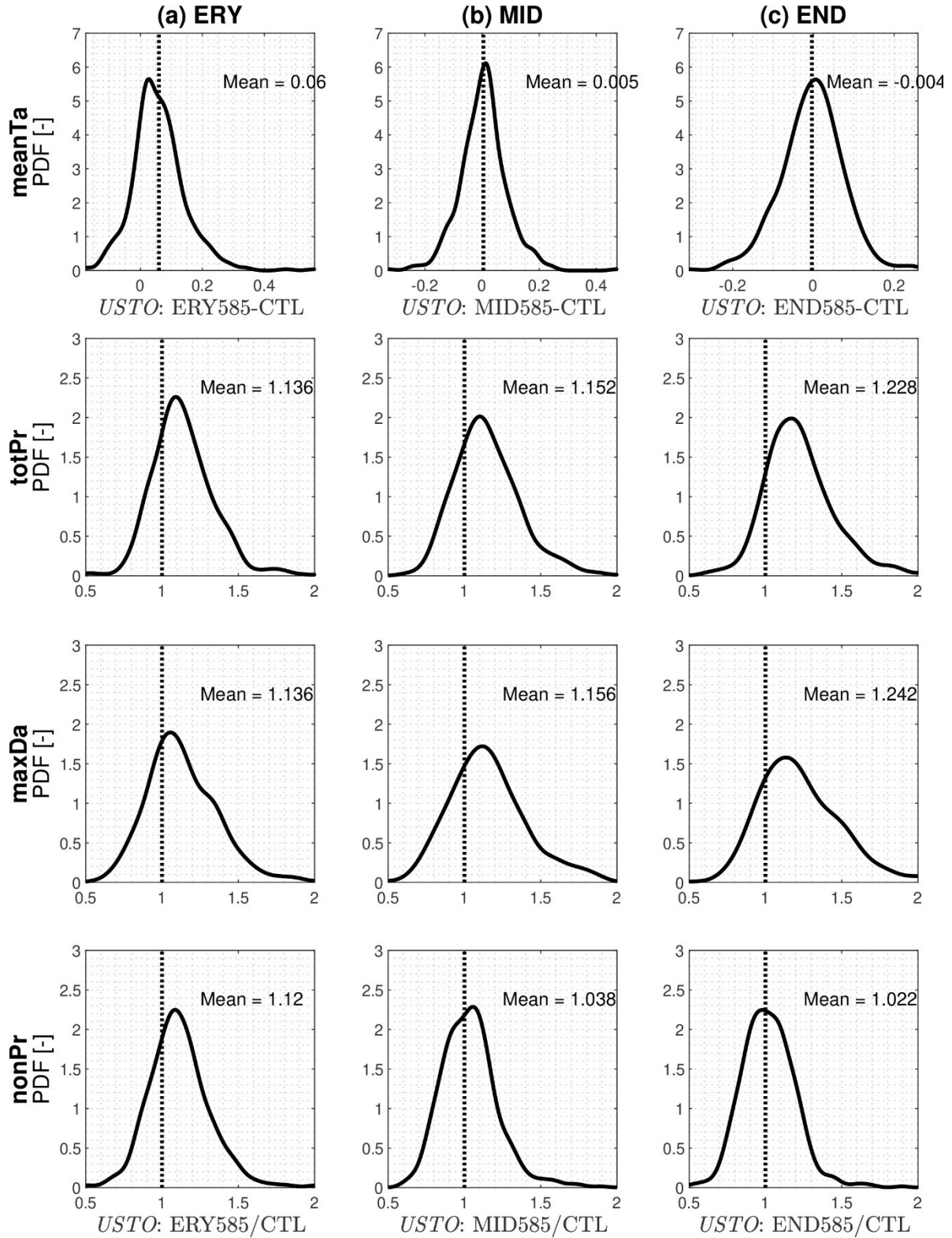


Figure S9. Non-parametric kernel distribution for the FOCs of *STOU* values between future and control period for scenarios of SSP5-8.5: (a) ERY, (b) MID, and (c) END. Each row plots correspond to indices of meanTa, totPr, maxDa, and nonPr, respectively. The number of data points for making distribution is 520 (40 locations \times 13 (12 months + year)).

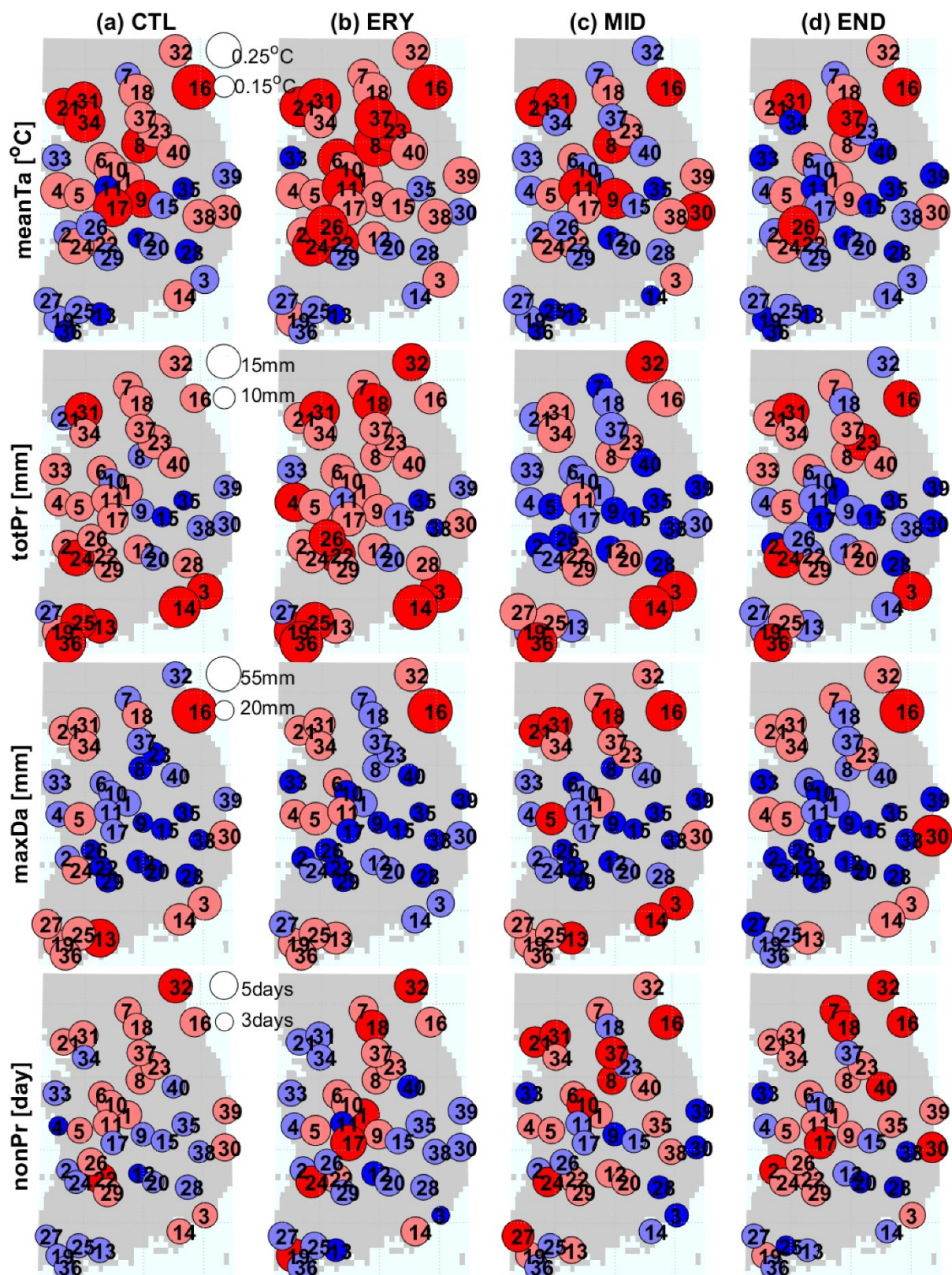


Figure S10. Similar to Fig. 7, but for SSP2-4.5

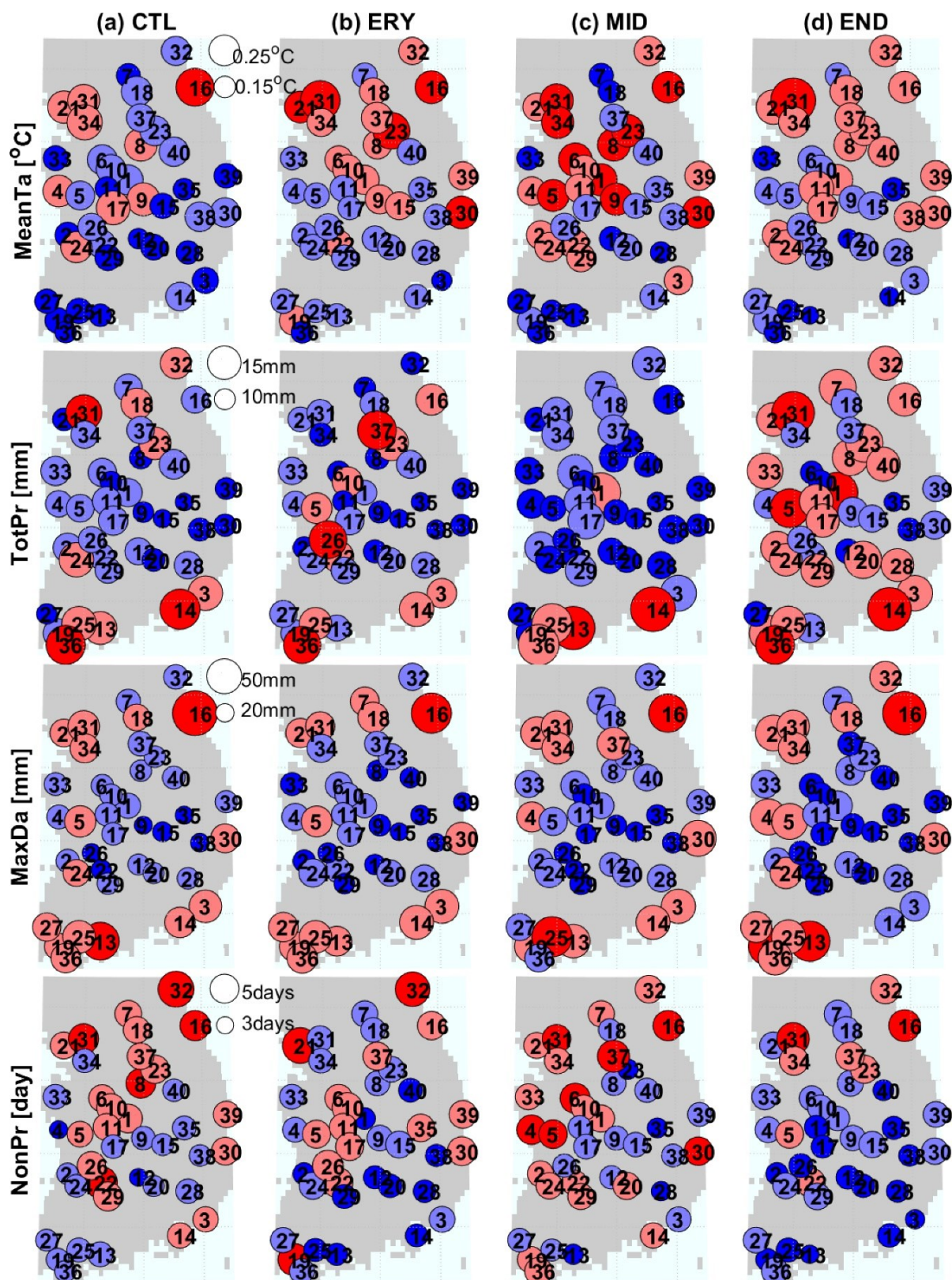


Figure S11. Similar to Fig. 7, but for RCP 8.5 of CMIP5.

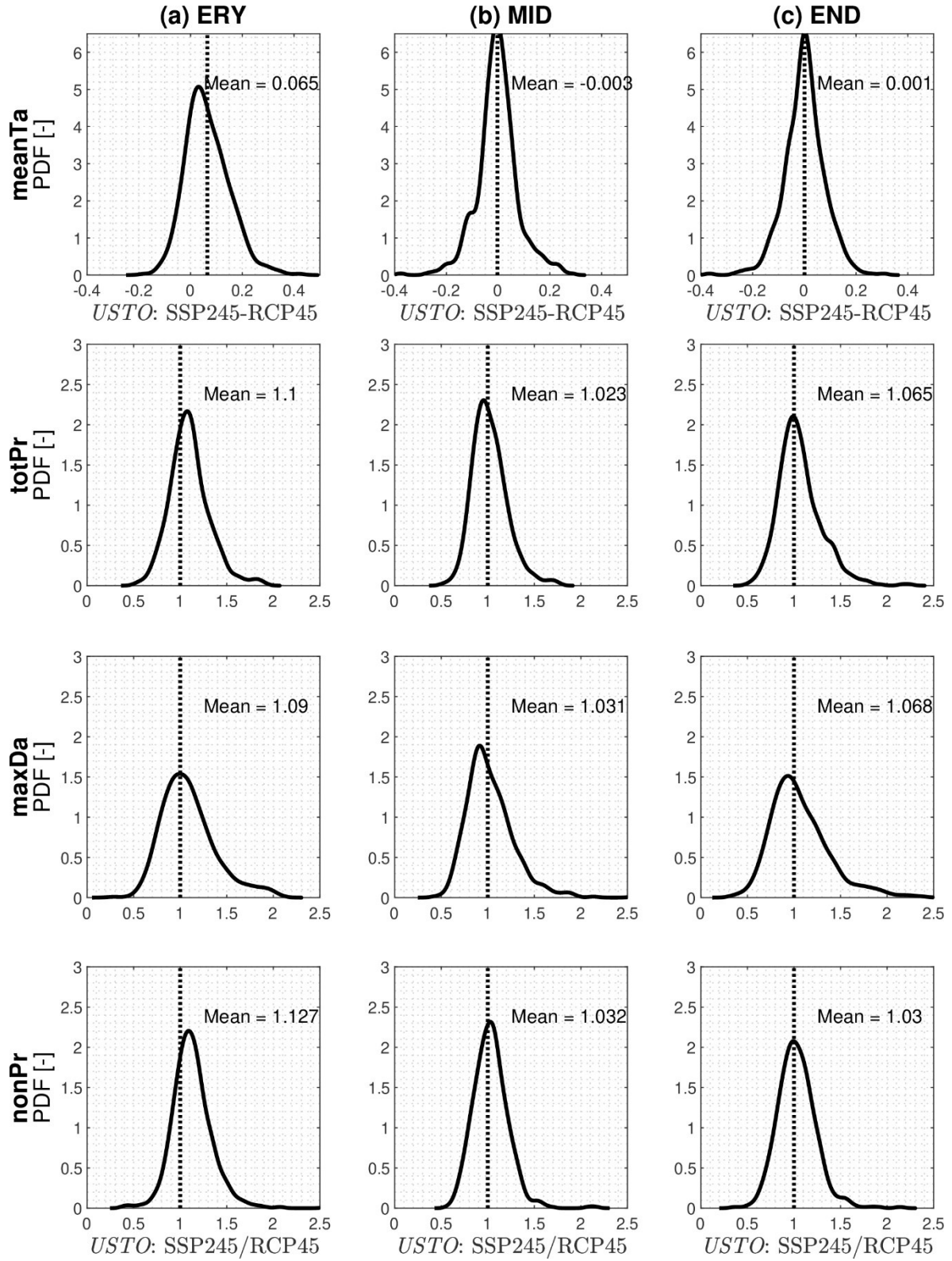


Figure S12. Similar to **Fig. 8**, but for SSP2-4.5 in CMIP6 and RCP 4.5 in CMIP5

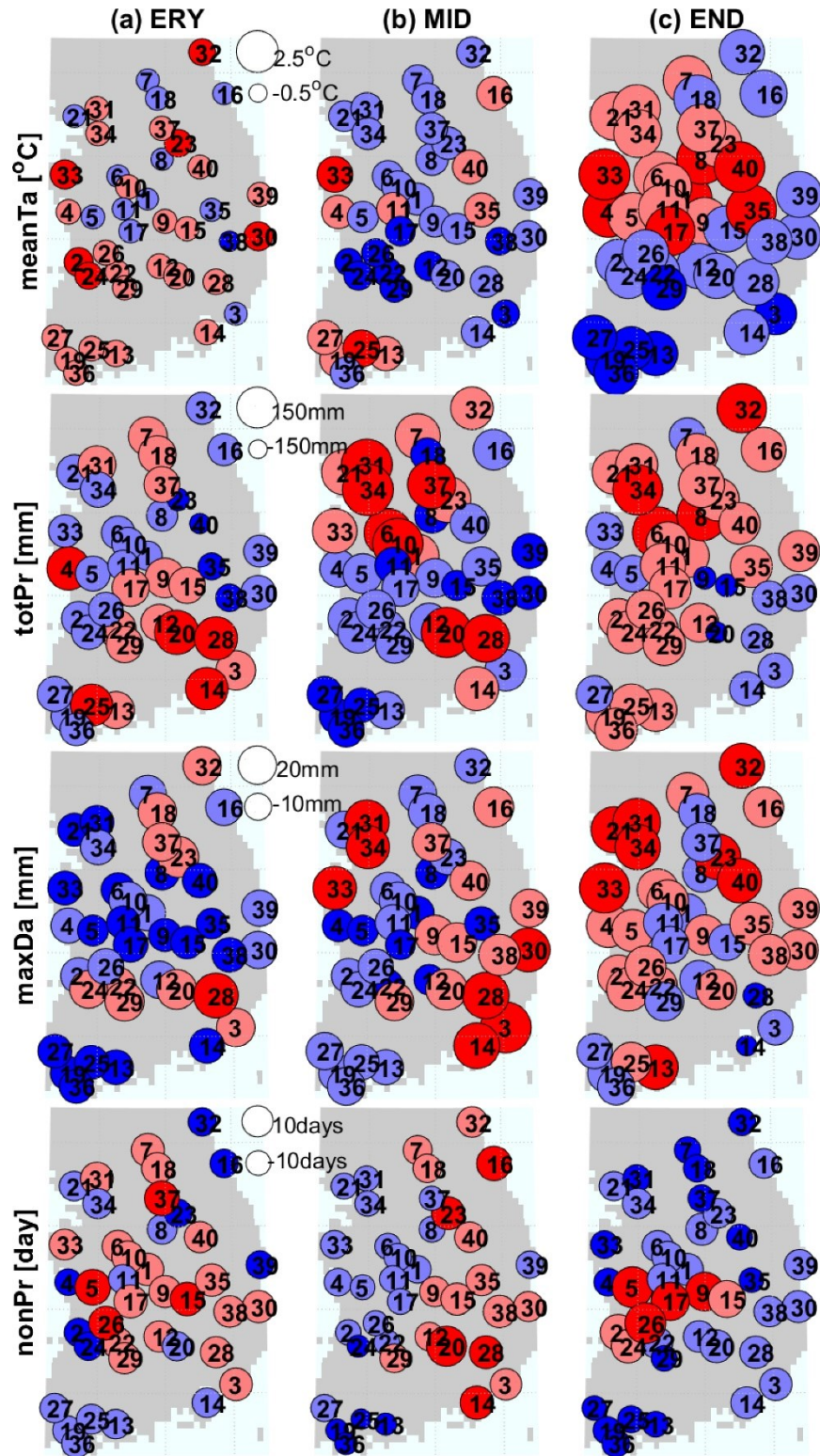


Figure S13. Similar to Fig. 9 but for CMIP5.

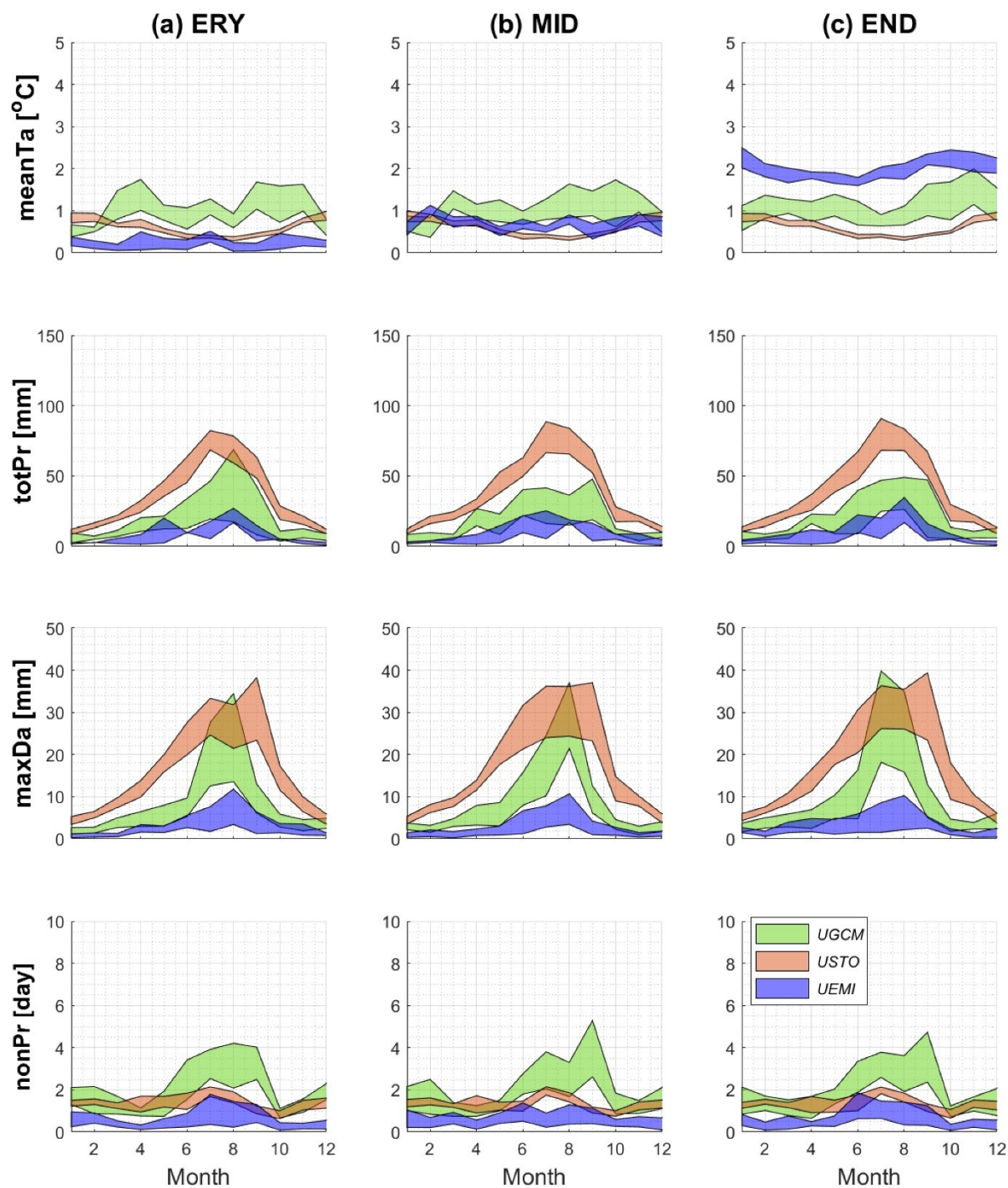


Figure S14. Similar to Fig. 11, but for CMIP5

Table S1: List of 40 stations over South Korea

No.	Station name	Station ID	Latitude	Longitude
1	Boeun	BON	36.488	127.734
2	Buan	BUN	35.727	126.717
3	Busan	BUS	35.105	129.032
4	Boryeong	BYG	36.327	126.557
5	Buyeo	BYO	36.272	126.921
6	Cheonan	CAN	36.762	127.293
7	Chuncheon	CCN	37.903	127.736
8	Cheongju	CEU	36.639	127.441
9	Chupungnyeong	CPY	36.220	127.995
10	Chungju	CUJ	36.970	127.953
11	Daejeon	DJN	36.372	127.372
12	Geochang	GCG	35.667	127.910
13	Goheung	GHG	34.618	127.276
14	Geoje	GJE	34.888	128.605
15	Gumi	GMI	36.131	128.321
16	Gangneung	GNG	37.751	128.891
17	Geumsan	GSN	36.103	127.482
18	Hongcheon	HCN	37.684	127.880
19	Haenam	HNM	34.554	126.569
20	Hapcheon	HPC	35.562	128.170
21	Incheon	ICN	37.478	126.625
22	Imsil	ISL	35.612	127.286
23	Jecheon	JCN	37.159	128.194
24	Jeongeup	JGP	35.563	126.839
25	Jangheung	JHG	34.689	126.920
26	Jeonju	JNJ	35.841	127.117
27	Mokpo	MKP	34.817	126.381
28	Miryang	MYG	35.492	128.744
29	Namwon	NWN	35.421	127.397
30	Pohang	PHG	36.032	129.380
31	Seoul	SEL	37.571	126.966
32	Sokcho	SKC	38.251	128.565
33	Seosan	SSN	36.777	126.494
34	Suwon	SWN	37.272	126.985
35	Uiseong	USG	36.356	128.689
36	Wando	WDO	34.396	126.702
37	Wonju	WNJ	37.338	127.947
38	Yeongcheon	YCN	35.977	128.951
39	Yeongdeok	YDK	36.533	129.409
40	Yeongju	YJU	36.872	128.517

Table S2. Comparisons of the factor of change (FOC) computed as difference (for temperature) or ratio (for precipitation indices) of \overline{CM} , $UGCM$, and $USTO$ values between future and control periods over the 40 locations and 13 (12 months +1 year) between scenario RCP 8.5 for CMIP5 and SSP 5-8.5 for CMIP6.

Index	Period	\overline{CM}		$UGCM$		$USTO$	
		CMIP5	CMIP6	CMIP5	CMIP6	CMIP5	CMIP6
meanTa (°C)	ERY	1.42	1.19	0.04	0.22	-0.002	0.06
	MID	2.98	2.92	0.06	0.19	0.003	0.005
	END	4.67	4.91	0.15	0.58	0.003	-0.004
totPr (%)	ERY	3.5	1.3	60.4	72.3	6.8	13.6
	MID	9.4	13.1	84.2	93.5	14.4	15.2
	END	13.7	20.5	40.1	85.6	17.3	22.8
maxDa (%)	ERY	6.5	3.5	72.9	48.6	8.7	13.6
	MID	11.8	12.1	84.2	39.1	17.0	15.6
	END	17.1	20.3	52.2	49.7	19.8	24.2
nonPr (%)	ERY	-0.6	-0.9	15.6	33.2	1.6	12
	MID	0.3	-0.4	14.8	30.9	0.0	3.8
	END	0.2	-0.5	1.5	23.2	-0.2	2.2