

Figure S1. Spatial distribution of SST and Frequency of Occurrence (FOC) for top 5% precipitation (PCT05) in fractional units, based on monthly rainfall data from January through December (J2D) for a) control, b) P4K and c) 4xCO₂, with warm pool SST (302K) outlined in red. Corresponding distributions for stratiform (large-scale) rain in fractional units are shown in d), e) and f) respectively.

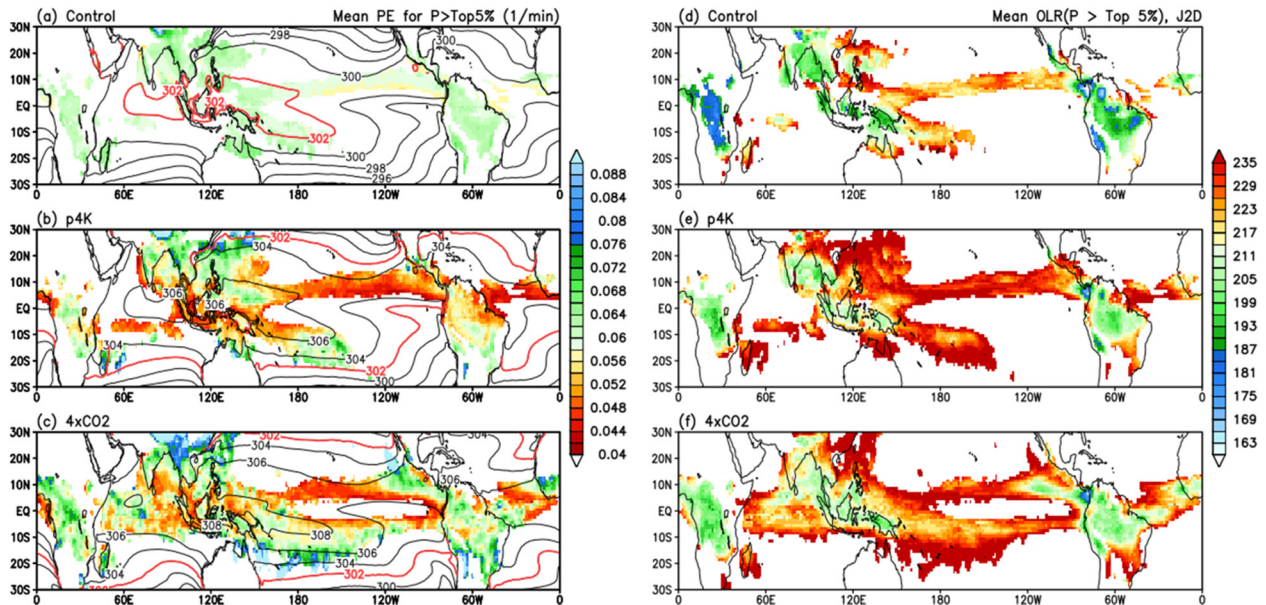


Figure S2. Spatial distribution of SST and precipitation efficiency (PE) for top 5% precipitation (PCT05) in unit of minute⁻¹, based on monthly rainfall data from January through December (J2D) for a) control, b) P4K and c) 4xCO₂, with respective warm pool SST outlined in red. Corresponding distributions for outgoing longwave radiation (OLR) in units of (Watt m⁻²) are shown in d), e) and f) respectively.

Table S1. Extreme tropical monthly precipitation intensity threshold (mm/day) as a function of top-percentile rain rate for ocean-only, land-only and ocean+land, under Control, P4K and 4xCO₂ respectively. Numbers in bracket in first column represent total number of grid-points for the entire tropics (30°S-30°N).

		5%	1%	0.5%	0.25%	0.1%	0.05%	0.01%
Ocean (192984)	Control	9.61	12.41	13.64	15.53	19.16	21.44	26.12
	P4K	11.65	15.80	17.67	19.38	21.81	23.62	27.92
	4xCO2	13.53	18.42	20.40	22.35	24.92	26.82	31.24
Land (66216)	Control	12.60	18.13	21.37	24.16	28.16	30.88	43.16
	P4K	14.89	19.73	22.31	25.06	28.20	30.04	42.48
	4xCO2	17.19	23.07	25.64	29.14	33.65	37.97	51.95
Ocean+	Control	10.04	13.34	15.25	18.20	22.32	25.06	31.64
Land (259200)	P4K	11.61	15.89	17.92	19.76	22.93	25.64	30.54
	4xCO2	12.95	18.37	20.77	23.32	26.89	30.72	39.48