Supplement to Observed Diurnal Cycle Change of Tropical Deep Convection Amplifies Surface Warming

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S1 Relation of Brightness Temperature and Ice Water Path

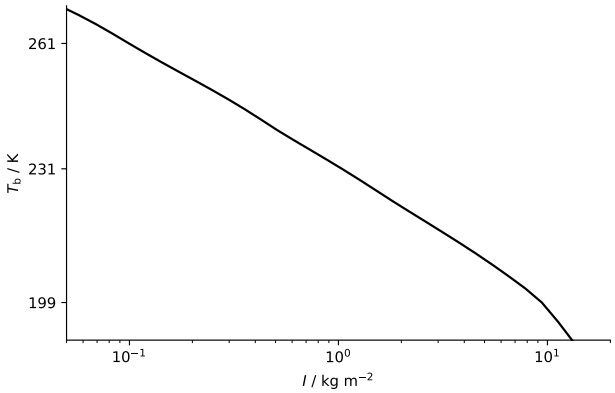

Fig. S1 Brightness temperature (T_b) as a function of ice water path (I) derived from the area constraint.

S2 Total Change in Deep Convective Clouds

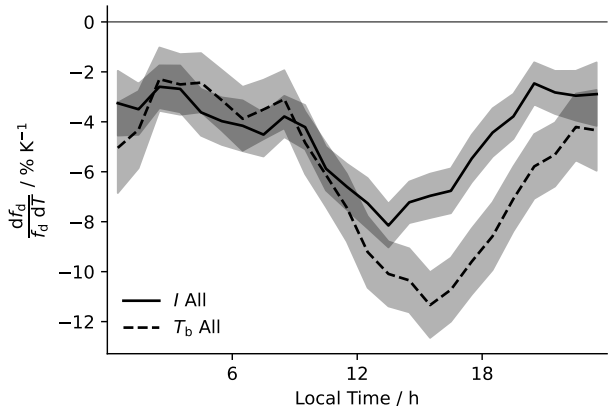

Fig. S2 Change of the deep convective cloud fraction (f_d) with two-meter temperature T in the tropics diagnosed from brightness temperatures (T_b) and ice water path (I).

S3 Diurnal Cycle of Radiative Fluxes

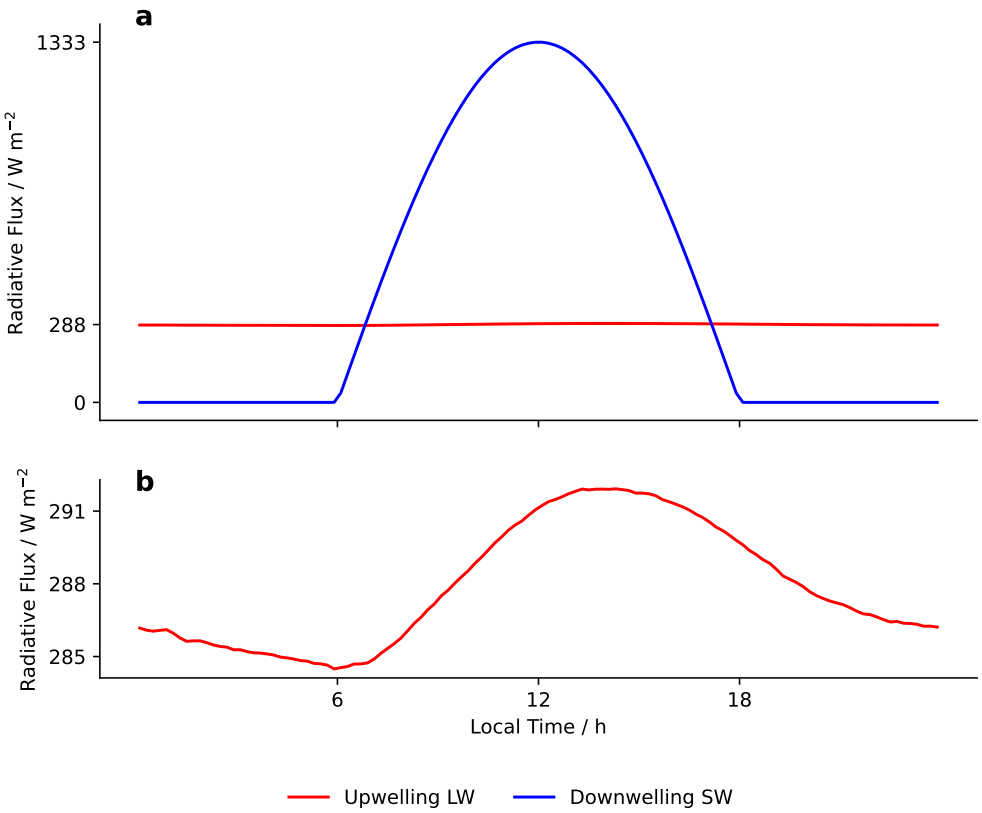

Fig. S3 (**a**) Diurnal cycle of the downwelling shortwave (SW) flux and the upwelling longwave (LW) flux in tropical clear-sky regions. (**b**) Diurnal cycle of only the upwelling LW flux in tropical clear-sky regions.

S4 Albedo

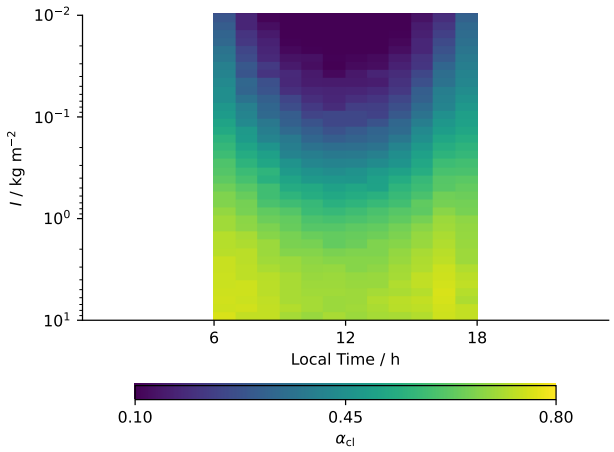

Fig. S4 Cloud albedo (α_{cl}) binned by ice water path (I) and local time.

S5 Bootstrapping of Regression

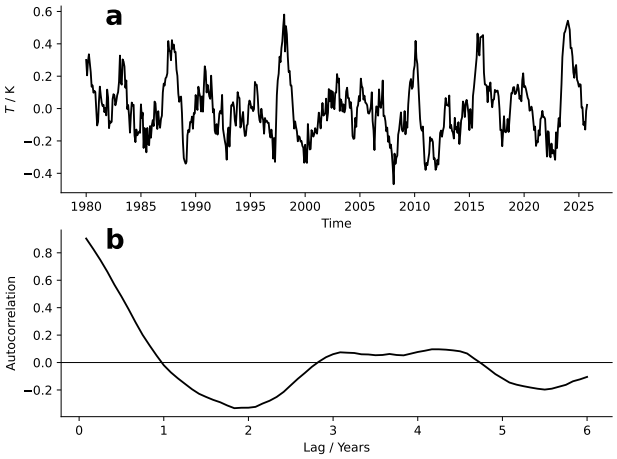

Fig. S5 **a**) Deseasonalized and detrended time-series of monthly mean two-meter temperature (T) and (**b**) autocorrelation of T.

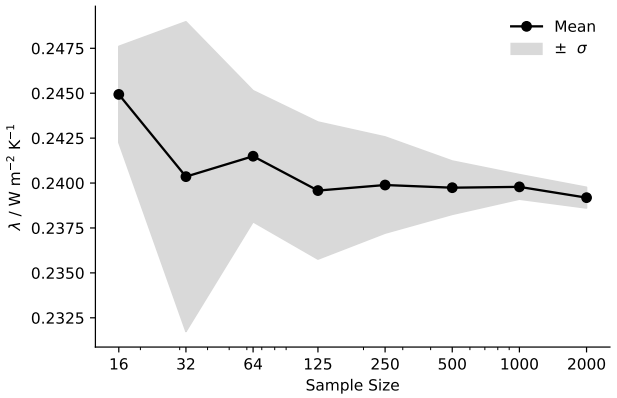

Fig. S6 Feedback from changes in the diurnal cycle of deep convection (λ) for different bootstrap sample sizes. Dots mark the mean estimate from five bootstrap samples with the respective sample size. Grey shading visualises the standard deviation of the mean λ from the five samples.