

# Supporting Information for “Circus tents, convective thresholds and the non-linear climate response to tropical SSTs”

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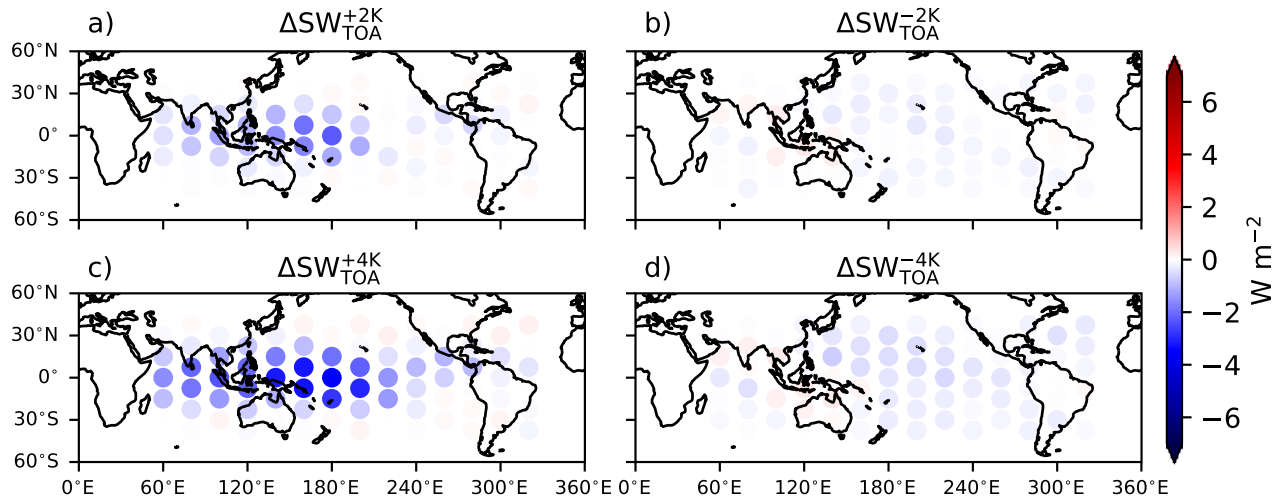
## Contents of this file

Figures S1-S5.

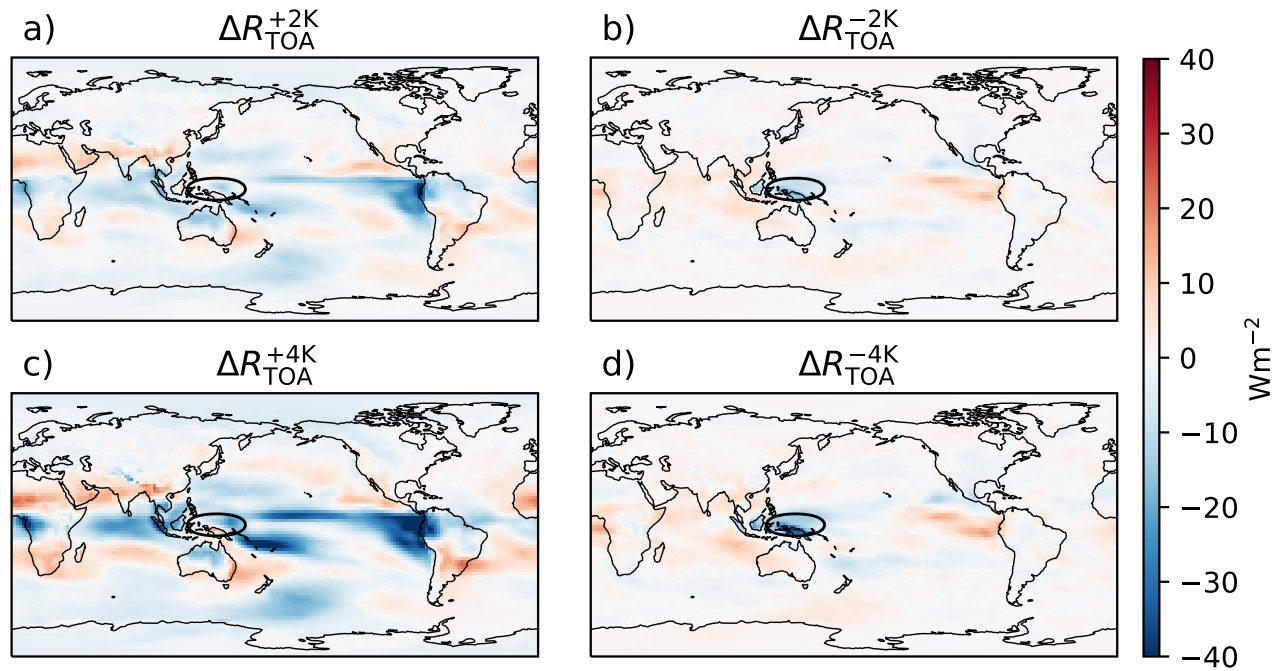
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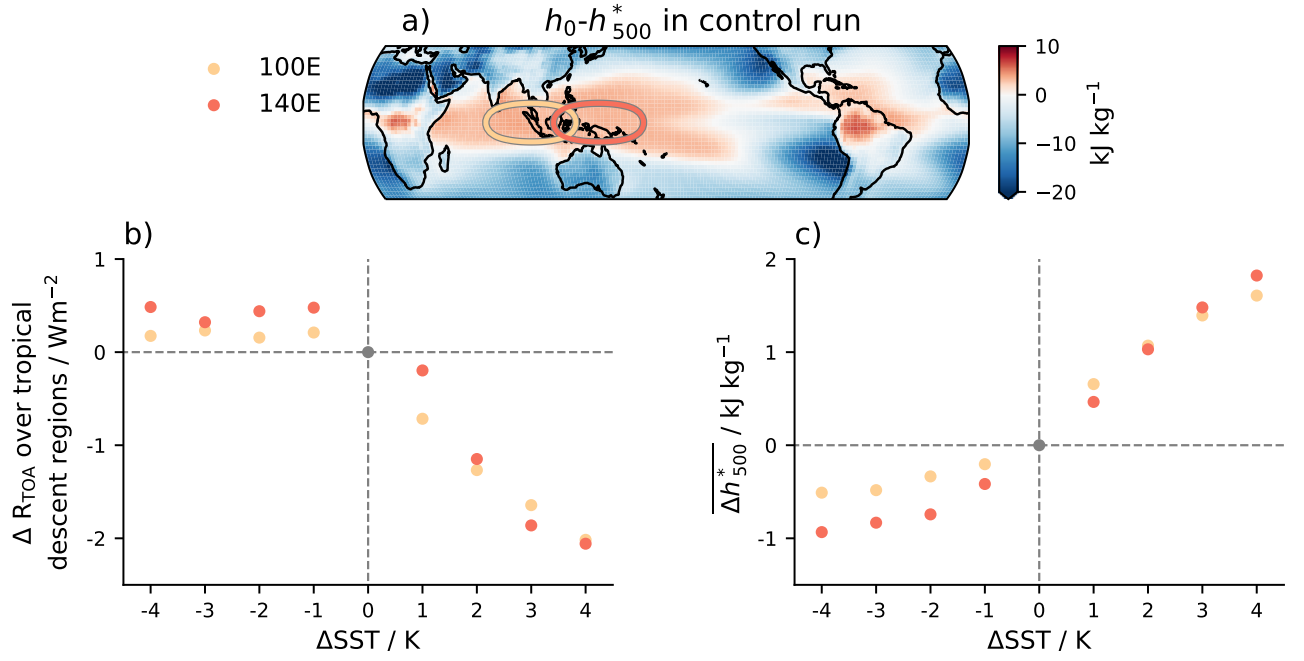
September 28, 2022, 2:47pm



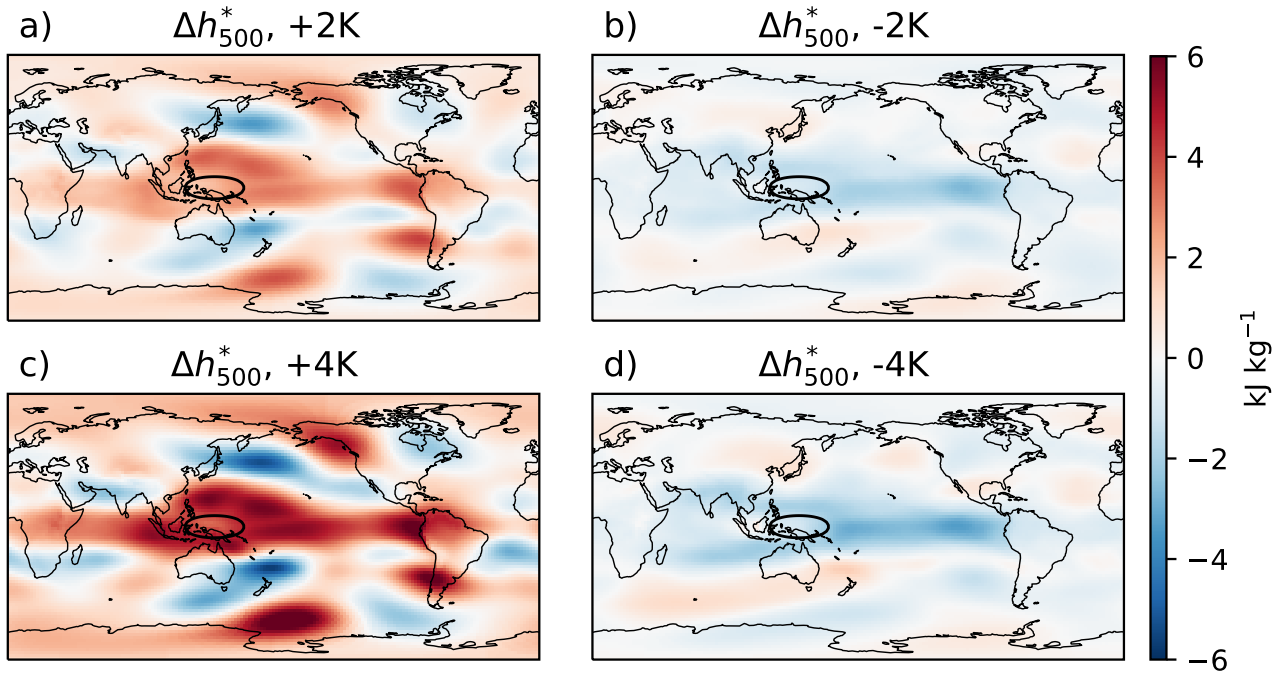
**Figure S1.** As in Figure 1 of the main text, but for SW TOA changes.



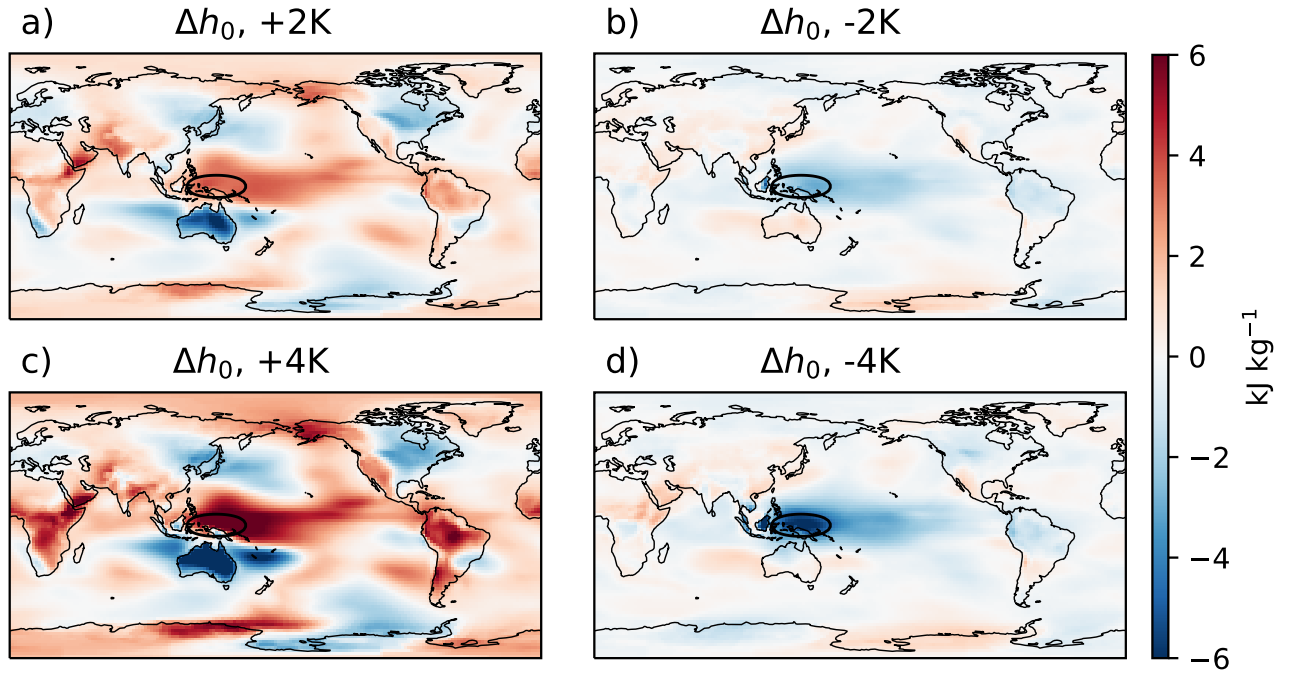
**Figure S2.** Spatial maps of the time-averaged  $\Delta R_{TOA}$  for a patch in the Western Pacific warm pool (140°E, 0°N) for  $\Delta SST = \pm 2K$  (a,b) and  $\Delta SST = \pm 4K$  (c,d).



**Figure S3.** As in Figure 2 of the main text, but in panel b we plot the change in  $R_{\text{TOA}}$  averaged over tropical regions where  $\omega_{500} > 0$  in the control run (to pick out low cloud subsidence regions). We also plot the two patches in deeply convective regions. This figure illustrates how the  $\Delta R_{\text{TOA}}$  response to negative  $\Delta \text{SST}$  anomalies in convective regions is linear over a very small region, but quickly saturates.



**Figure S4.** Spatial maps of the time-averaged  $\Delta h_{500}^*$  for a patch in the Western Pacific warm pool (140E, 0N) for  $\Delta \text{SST} = \pm 2\text{K}$  (a,b) and  $\Delta \text{SST} = \pm 4\text{K}$  (c,d).



**Figure S5.** Spatial maps of the time-averaged  $\Delta h_0$  for a patch in the Western Pacific warm pool (140E, 0N) for  $\Delta \text{SST} = \pm 2\text{K}$  (a,b) and  $\Delta \text{SST} = \pm 4\text{K}$  (c,d).