

Examining increasing potential for storms with global warming

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Increases in convective available potential energy (CAPE)—the energy available to a parcel of air as it rises through a cloud that is warmer than its surroundings, causing it to rise—may increase the potential for severe storms. Model simulations have shown that global warming will increase CAPE in the tropics, but scientists do not fully understand why this occurs or what the implications may be for future precipitation intensity.

Providing a step toward better understanding of CAPE, Singh and O'Gorman show that the increase in tropical CAPE with warming occurs over a wide range of temperatures in simulations with different atmospheric [carbon dioxide concentrations](#).

Based on their simulations and radiosonde observations from the tropical western Pacific, the authors developed a simple model in which mixing of the surrounding dry air into the cloud reduces cloud buoyancy more in warmer atmospheres. They show that this model can account for the increase in CAPE with warming, suggesting that changes in CAPE may not necessarily reflect changes in cloud buoyancy and hence storm intensity.

More information: Singh, M. and O'Gorman, P. Influence of entrainment on the thermal stratification in simulations of radiative-convective equilibrium, *Geophysical Research Letters*. DOI: [10.1002/grl.50796](https://doi.org/10.1002/grl.50796), 2013 [onlinelibrary.wiley.com/doi/10 ... 2/grl.50796/abstract](http://onlinelibrary.wiley.com/doi/10.1002/grl.50796/abstract)

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