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# Influence of large-scale subsidence on convective aggregation

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A series of cloud-resolving model experiments is used to investigate the response of convection to imposed large-scale subsidence. Subsidence is favorable to convective aggregation in a non-linear fashion. In our model configuration, the radiative-convective equilibrium exhibits scattered convection and this non-aggregated stationary state exists also for weak subsidence. For large subsidence, an aggregated stationary state exists, and there is a significant range of subsidence intensity for which both aggregated and non-aggregated states co-exist. The aggregated state is, in average, drier than the non-aggregated state and therefore the drying effect of subsidence is weaker on the aggregated than on the non-aggregated state, making the former more resilient to subsidence than the latter. The aggregated state can be analyze in both two-column and moist static energy frameworks, and it appears that the main adjustment to the subsidence forcing is a reduction of the area of the convective patch. We also analyze transient experiments to quantify the contributions of the different physical processes to the aggregation or disaggregation of convection.

**Primary author:** COPPIN, David (University of Auckland)

**Co-author:** Dr BELLON, Gilles (University of Auckland)

**Presenter:** COPPIN, David (University of Auckland)

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