Contribution ID: **4** Type: **Talk**

Circling in on Convective Self-Aggregation

Monday, 16 May 2022 11:30 (15 minutes)

In radiative-convective equilibrium simulations, convective self-aggregation (CSA) is the spontaneous organization into segregated cloudy and cloud-free regions. Evidence exists for how CSA is stabilized, but how it arises favorably on large domains is not settled. Using large-eddy simulations, we link the spatial organization emerging from the interaction of cold pools (CPs) to CSA. We systematically weaken simulated rain evaporation to reduce maximal CP radii, R_{max} and find reducing R_{max} causes CSA to occur earlier. We further identify a typical rain cell generation time and a minimum radius, R_{min}, around a given rain cell, within which the formation of subsequent rain cells is suppressed. Incorporating R_{min} and R_{max}, we propose a toy model that captures how CSA arises earlier on large domains: when two CPs of radii $r_{i,j} \in [R_{\text{min}}, R_{\text{max}}]$ collide, they form a new convective event. These findings imply that interactions between CPs may explain the initial stages of CSA.

Primary authors: NISSEN, Silas Boye (Niels Bohr Institute, University of Copenhagen); HAERTER, Jan O. (Niels Bohr Institute, University of Copenhagen)

Presenter: NISSEN, Silas Boye (Niels Bohr Institute, University of Copenhagen)

Session Classification: Convective concepts