

## Self-Aggregation from Cold Pool Interaction and Global Energy Constraints

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Typical explanations for convective self-aggregation invoke the radiative convective equilibrium concept together with a form of circulation feedback. We here show, that the latter would not be needed when considering that cold pool interact. Building a simple model for this interaction, that is, that the probability for new convective cells is increased where cells already exist (essentially a non-linear updraft number density feedback) self-aggregation can be achieved. We map out the phase diagram in terms of the interaction strength between cold pool gust fronts, and find that continuous phase transitions exist, between regions without self-aggregation (homogeneous phases) and regions with self-aggregation (segregated phases). The model shown should be observationally testable and questions, whether circulation feedbacks are strictly necessary.

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