

EGU22-11607

<https://doi.org/10.5194/egusphere-egu22-11607>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## Spontaneous aggregation of convective storms

**Caroline muller**, Da Yang, George Craig, Timothy Cronin, Benjamin Fildier, Jan Haerter, Cathy Hohenegger, Brian Mapes, David Randall, Sara Shamekh, and Steven Sherwood

IST Austria

Idealized simulations of the tropical atmosphere have predicted that clouds can spontaneously clump together in space, despite perfectly homogeneous settings. This phenomenon has been called self-aggregation, and results in a state where a moist cloudy region with intense deep convective storms is surrounded by extremely dry subsiding air devoid of deep clouds. We review here the main findings from theoretical work and idealized models, highlighting the physical processes believed to play a key role in convective self-aggregation. We also review the growing literature on the importance and implications of this phenomenon for the atmosphere, notably for the hydrological cycle and for precipitation extremes, in our current and in a warming climate.