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## Spatial patterns of precipitation in shallow convection during EUREC<sup>4</sup>A

**Jule Radtke**<sup>1,2</sup>, Ann Kristin Naumann<sup>1,2</sup>, Felix Ament<sup>1,2</sup>, and Martin Hagen<sup>3</sup>

<sup>1</sup>Meteorological Institute, Center for Earth System Research and Sustainability, Universität Hamburg, Hamburg, Germany

<sup>2</sup>Max Planck Institute for Meteorology, Hamburg, Germany

<sup>3</sup>Deutsches Zentrum für Luft- und Raumfahrt (DLR), Institut für Physik der Atmosphäre, Oberpfaffenhofen, Germany

Fields of shallow convection exhibit a rich spatial variability forming patterns of various shape, size and arrangement, commonly denoted as organization and often associated with precipitation. To understand either might require understanding both. However, the distribution and patterns of precipitation in shallow convection have received little attention so far.

We investigate whether spatial patterning matters for the amount or intensity of precipitation in a scene. Are details of the spatial distribution important? Therefore, we analyse if and how the number, size and spatial arrangement of rain objects vary with scene precipitation rates. To do so, we exploit observational data from the C-band radar PoldiRad installed during the EUREC<sup>4</sup>A measurement campaign scanning a sector with approximately 200 km range east of Barbados in the western tropical Atlantic and compare to storm resolving simulations with ICON.

Our analyses suggest that it is mostly the precipitating area, which is determined by the number and size of rain objects, that regulates scene rainfall amounts. Especially the tail of large objects increases widening the spread in rain object sizes with increasing scene rainfall. While ICON captures this behaviour qualitatively, it overall simulates too small objects that rain too intense. We conclude that the extent of precipitation objects is more relevant for scene precipitation rates than a close spacing of objects.