

How well can we simulate mesoscale cloud organisation as observed during EUREC4A ?

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It has become clear over the last couple of years that shallow cumulus convection over the subtropical oceans has a strong tendency to develop itself into a rich variety of spatial cloud structures. It is particularly challenging to simulate these mesoscale cloud patterns. On the one hand, it requires turbulence resolving resolutions of 100 m to represent the vertical convective mixing processes while at the same time domains of several hundreds of kilometres are required to represent the large mesoscale cloud structures.

In this study we present a number of simulation techniques ranging from idealised Large Eddy Simulations (LES) with periodic boundary conditions to simulations with operational Storm Resolving Models (SRMs) and assess their capability to reproduce the mesoscale structures such as observed during the EUREC4A period.

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