Characterising the shape, size and orientation of cloud-feeding coherent boundary layer structures

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Convective clouds interact with their immediate environment, both at cloud level and below-cloud in the boundary layer, and through this may affect their own development and organisation. One of the aims of the GENESIS project is to quantify this by making a systematic study of coherent boundary layer structures and their interaction with moist convection, based on analysis of Large-Eddy Simulations.

The aim is to provide new insight into the two-way interaction between clouds and their environment, and through this aid the development of convection schemes with better representation of sub-grid variability, specifically by producing a statistical description of the forcing from below cloud base.

Using tools developed to identify and track cloud-triggering coherent structures we will present results on how ambient characteristics affects their length-scales, orientation and magnitude of coherent structures feeding convective clouds. Specific focus will be given to the effects of changing surface Bowen ratio and strength of ambient wind shear.