

Organization development in shallow cumulus precipitating convection

Oumaima Lamaakel, Georgios Matheou

The development of precipitation in trade-wind shallow cumulus boundary layers is an important process because it affects the boundary layer energy balance and has the potential to strongly modulate the convective environment. The development of convective organization is studied using large-eddy simulations of the boundary layer observed during the RICO campaign. The LESs employ extensive horizontal domains, up to 160 x 160 km in the horizontal directions, and fine resolution (40 m). The analysis focuses on the rate of energy transfer to the large-scale and quantifies the time scale of convection organization. Even though horizontal integral length scales are about 15 km, clouds form organized structures of about 100 km. Boundary layer flow statistics depend on the LES domain size and change when the domain is increased from 80 km to 160 km.