



The influence of spatial organization of convection on the large-scale circulation

Max Popp and Sandrine Bony

Laboratoire de Météorologie Dynamique (LMD), Paris, France (max.popp@lmd.jussieu.fr)

The spatial organization of convection in the tropics may potentially have a large influence on the state of the tropical atmosphere and on climate sensitivity. Simulations with spatially uniform boundary conditions, the so-called radiative-convective equilibrium (RCE) setup, suggest that the organization has a large influence on the humidity, temperature and cloudiness of the domain. In such simulations the convection tends to organize into small clusters while most of the domain is in a dry state of weak subsidence. Different forms of spatial organization of convection are also found in observations within the intertropical convergence zone (ITCZ), which raises the question of whether different spatial patterns of convective organization affect the large-scale state and motions of the tropical atmosphere. Therefore, we perform idealized simulations in which we force different pattern of convective organization and study the response of the atmosphere. Preliminary results suggest that the large-scale circulation can be substantially affected by the pattern of spatial organization of the convection. This highlights the large influence that zonal heterogeneities can have on the zonal-mean meridional circulation in the tropics.