Geophysical Research Abstracts
Vol. 19, EGU2017-10637, 2017
EGU General Assembly 2017

Shallow-cumulus cloud feedback: model uncertainties and perspectives of observational constraint

Sandrine Bony
CNRS, LMD/IPSL, UPMC, Paris, France (sandrine.bony@lmd.jussieu.fr)

Shallow-cumulus clouds constitute the most prominent cloud type on Earth, and their response to changing environmental conditions is critical for climate sensitivity. Research over the last decade has pointed out the importance of the interplay between clouds, convection, turbulence and circulation in controlling this response. Unfortunately, numerical models represent this interplay in diverse ways, which translates into different shallow-cumulus cloud feedbacks in climate change. Climate models predict that the cloud-base cloud fraction is very sensitive to changes in environmental conditions, while process models suggest that it is very resilient to such changes. To understand and solve this contradiction, a field campaign named EUREC4A (Elucidating the role of clouds-circulation coupling in climate) will be organized in the lower Atlantic trades in Jan-Fev 2020. The scientific objectives of this campaign will be presented, and the experimental strategy envisioned to reach these objectives will be discussed.