

Mesoscale organization of trade-wind clouds: lessons from EUREC4A and questions

Tuesday, 17 May 2022 09:15 (30 minutes)

Shallow convection exhibits a large diversity of spatial organizations at the mesoscale. Over the past years, a few prominent patterns of trade-wind clouds have been identified over the tropical western Atlantic. These patterns depend on environmental conditions and exert different radiative impacts. This raises two questions: What are the physical processes underlying changes in the mesoscale patterns of shallow clouds? And does the organization of shallow convection matter for cloud feedbacks? The EUREC4A field campaign (<http://eurec4a.eu>) which took place in Jan-Feb 2020 near Barbados, offers a wealth of observations to help address these questions. We will review some insights from the campaign on these issues, and will show that the observations raise additional questions. We will discuss some promising directions of research, and will present a proposal for coordinated simulations of the mesoscale organization of convection with a hierarchy of models.

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Session Classification: Shallow convection