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How is convective organization promoted by stochastic shallow convection?

The focus of my talk will be on the interaction between parameterized shallow convection and resolved deep convection in convection-permitting simulations. The shallow convection is parameterized by a stochastic approach that uses a uniform spatial distribution of clouds, so no convective organization is represented at the subgrid scales. Nevertheless, such stochastic shallow convection impacts the resolved flow dynamics and promotes the development of deeper resolved clouds that organize in a substantially different way compared to a case where shallow convection is not parameterized. Spurious organization of the convective circulations developed by under-resolved convective dynamics are now replaced by more turbulent but well-organized structures. I will discuss the physical mechanisms of coupling between the parameterized stochastic convection and resolved convection and the resulting convective organization in a case study over the tropical Atlantic and one case study over central Europe.

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Session Classification: Modelling and Parameterising Deep Convective Organisation

Track Classification: Organisation in Shallow Convection