

Poster.4: . **Improved representation of Amazon precipitation by organized convection in storm-resolving simulations**

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Abstract

In this study we investigate whether a better representation of precipitation in the Amazon basin is related to the representation of organized convective systems (OCS). In addition to satellite data, we use ensemble simulations of the ICON-NWP model at 2.5km and 5km storm-resolving resolutions with explicit convection (E-CON) and at 40km coarse resolution, with parameterized convection (P-CON). The main improvements in the representation of Amazon precipitation by E-CON are the distribution of precipitation intensity and spatial distribution in the diurnal cycle. By isolating precipitation from the OCS, it is shown that its representation is essential for those characteristics of Amazon precipitation. E-CON ensembles are able to capture the OCS and mainly its diurnal cycle, but its frequency is reduced compared to observations. The simulated and observed OCSs are then classified into 6 clusters that distinguish nocturnal and diurnal OCSs. In addition, we analyzed the environmental conditions of these clusters. The nocturnal clusters are associated with strong low-level easterly winds, possibly related to the Amazonian low-level jet. The diurnal clusters are rather influenced by surface processes, such as cold pools, which contribute to their propagation. The limited simulation of OCS could be related to deficiencies in the representation of these mechanisms, especially for the diurnal OCS that accounted for a smaller fraction of the total OCS compared to observations.