

Poster.2: . **Mesoscale Convective Systems in the Colombian Caribbean: Insights from ConvectionPermitting simulations**

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**Abstract**

Mesoscale Convective Systems (MCSs) have an important role in tropical hydrometeorology and in the occurrence of extreme weather events, especially near the Andes. The Colombian Caribbean (CC) is surrounded by the Caribbean Sea and the Andes, and it has been recognized as a region where MCSs are frequent; however processes associated with their Convective Initiation (CI) are not fully documented. Convection-Permitting (CP) simulations present the opportunity of resolving mesoscale aspects associated with CI in complex terrain. This work presents the diagnosis of two MCS events in the CC. Mesoscale conditions were analyzed with the Weather Research and Forecasting (WRF) model at CP resolutions. Both events initiated near the Andes and decayed over the sea, presented low pressure zones over the CC, with an Easterly Wave influencing one of the events. WRF indicated that one event presented southerly winds channeled within the Andes, reaching high speeds and providing convergence lines over the CC. In the second case, the convergence lines were formed by northward winds from the Andes foothills, a sea breeze and low-level inland flow. The latter accelerated at night probably due to the reduction in drag from the reduced surface warming and its effect on the turbulent flux of momentum. This study might contribute to understanding the mechanisms behind the formation of MCSs, and the skills of CP simulation for representing such mechanisms, in a complex tropical region as the CC.