

Oral.5: **10:15-10:30. A Mesoscale Convective System over the tropical Andes: role of the Orinoco Low-level Jet and PBL schemes**

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Abstract

Mesoscale Convective Systems (MCSs) that form over the northwestern Amazon can affect the tropical Andes, contributing to precipitation over important human settlements and ecosystems in the region. We investigate a MCS event over the Andes-Amazon transition region that was preceded by a strengthened Orinoco Low-Level Jet (OLLJ). We explore the role of the OLLJ and the flow in the vicinity of the Andes on the size and movement of the MCS over the Andes, via sensitivity experiments with different grid spacings (12, 4 and 1.3km) and different boundary layer (PBL) schemes. We find that the OLLJ event helped with the moisture transport and provided lines of low-level convergence. The PBL scheme is critical in the organization and movement of the MCS near and over the Andes. PBL schemes with stronger flow are also associated with stronger gradients, since the Andes provide blocking in all cases. Therefore simulations with stronger flow exhibited stronger convergence areas, with larger and more organized simulated MCSs that moved further over the Andes, with cloudiness patterns more similar in size and trajectory to the observed event. This suggests that the PBL scheme strongly modulates moisture transport and convergence within the OLLJ, affecting the simulation of MCSs. Additional simulations comparing the statistics of size and passage of MCSs over the Andes originating in the northwestern Amazon region could help to better predict severe weather events over parts of the Andes.