



Mapping the Interplay of ET and Topography on Precipitation Processes in the Eastern Andes

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We present recent work toward elucidating the role of evapotranspiration in the hydrometeorology of the eastern Andes Mountains using realistic and quasi-idealized ET withdrawal experiments with WRF at very high resolution (~1 km grid spacing). The results show that evapotranspiration fluxes modulated by landform govern moist processes in the lower troposphere, including cloud formation and precipitation processes that account for daily precipitation amounts as high as 50-70% depending on synoptic conditions and season. Using parsimonious model experiments and observations for the Amazon basin and the Central Andes, we demonstrate that vegetation acts as a “terrestrial hydrostat” regulating precipitation locally by controlling atmospheric moist instability, and remotely through changes in atmospheric transport patterns.

References

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