



Dynamical interactions between katabatic flows and the SALLJ - first Results from a Case Study in a Tropical Mountain Rain Forest Region in southern Ecuador

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Within the DFG research units 402 and 816, several climate stations and a x-band weather radar have been installed and operated over the past six years in a tropical mountain rainforest region in southern Ecuador. Precipitation measurements from this time period show regularly returning early morning rainfall events that can be traced back to mesoscale convective systems forming due to nocturnal instabilities south-east of the research area in the peruvian Amazon basin. The current working hypothesis ascribes the formation of these instabilities to an interaction between nocturnal katabatic flows from the Andean slopes and the South American Low-level Jet (SALLJ). This results in the formation of a local cold front generated by the convergence of the katabatic flow and the SALLJ. In order to verify this hypothesis, mesoscale gridbox models (WRF, MM5) are implemented (i) to compute ideal high-resolution scenarios demonstrating the nocturnal flows and (ii) to obtain adequate theoretical relations. To simulate the MCS, the ideal case simulations shall finally be assimilated into real scenarios with a reduced resolutions of about 3km that can be verified against ongoing radar measurements and satellite remote sensing data. The poster will present the early morning precipitation patterns and discuss their formation in the context of the local cold front genesis. In addition, first results from the ideal high-resolution windfield simulations will be shown that strongly support this hypothesis.