



Temporal precipitation variability in the Tropical Andes by means of vertically pointing-band radar (MRR) observations

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Precipitation in the Tropical Andes is characterized by a high spatio-temporal variability due to the pronounced topography and the local circulation patterns. Generally, numerous precipitation observations are available in this region but these observations often exhibit uncertainties and are usually not available on a sub-daily temporal resolution. Therefore, a detailed analysis of diurnal precipitation variability is not possible.

In this study, we present an evaluation of two high-temporal resolution data sets derived from vertically pointing k-band radars (micro rain radars MMR-2) at two sites in the Tropical Andes. These data were collected in Huaraz (Peru) and Balzay (Ecuador) between February 2017 and January 2018. We analysed the annual and diurnal precipitation characteristics and conducted a precipitation classification (deep convection, shallow convection, stratiform) using the fall velocities and a Fuzzy-Logic approach.

Initial results show that the majority of precipitation events at both sites are shorter than 3 hours. Precipitation in Huaraz shows a pronounced diurnal cycle during the rainy season when most events occur between 14:00 and 24:00 local time. This diurnal cycle is less pronounced in Balzay, where more night-time events were observed. The afternoon events at both sites show deep and shallow convection characteristics whereas the night-time events all showed stratiform precipitation features.