

2.17 DIURNAL CYCLE OF PRECIPITATION AND WINDS IN CENTRAL PERUVIAN ANDES, USING CLOUD AND WIND PROFILING RADARS

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The diurnal cycle in the central Andes of Peru is strong, at elevations above 3500 m almost all the rainfall is observed in the afternoon and early night and it is associated to convective clouds that extend in the vertical until 13000 masl. Also, at that time the echo-top heights in the Andes are higher than in the Amazon. Nevertheless, according to 15 years of TRMM PR observations the convective clouds do not become organized into larger systems, the precipitation systems observed in the central Andes of Peru are small and medium size in term of their horizontal extension (25 km² 24700 km²). During the night, the vertical profiles of reflectivity and winds measured by radars show that convective profiles turns into profiles with a bright band typical of stratiform precipitation and the vertical updrafts turn into downward winds. Also, the drop size distribution show less large drops at that time. This continues during early morning when according to the TRMM PR almost all the rainfall is stratiform and the echo-top height reach lower altitudes compared to the afternoon and lower altitudes than in the Amazon. On average, based in the TRMM PR observations, in the Mantaro Valley, 60% of daily rainfall is stratiform, and 40% is convective.