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Continuous measurements of surface water vapor isotopic ratios in the Bolivian Andes during the monsoon period: influence of regional convection and air masses mixing

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The isotopic composition of surface water vapor has been monitored since October 2013 in the Bolivian Andes on the Chacaltaya GAW Station (CHC). This platform is located at 16.21degree S and 68.08 degree W (elevation 5240m a.s.l) in the north western ridge of Mount Chacaltaya. Water vapor measurements have been recorded by a Picarro instrument (L2130-i model) which is based on Wavelength-Scanned Cavity Ring Down Spectroscopy (CRDS). We focus here on the data interpretation at the synoptic scale from October 2013 to January 2014. This time period corresponds to the transition between dry and wet seasons and also includes some local and regional intense convective periods. Several processes are recorded in the isotopic composition of water vapor at the synoptic scale and two majors processes will be discussed: (1) dehydrated air parcels are mixed with moist air advected from the Amazon basin and (2) deep tropical convection over the Amazon basin produces the largest isotopic variability (up to 20 per mil in oxygen 18).