



Large-scale flow leading to precipitation in the Peruvian Altiplano

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The South American Altiplano is a high-level plateau (around 4000m) situated in the central Andes between 15°S and 22°S. The rainfall in the Southern Hemisphere (SH) summer (December – January) is nearly the only water resource for the population and the agriculture. The Climandes project, a development project between MeteoSwiss and the Peruvian National Service of Meteorology and Hydrology (SENAMHI) aims at providing climate services for this region, among them seasonal forecasts which can greatly help for the planning of agricultural activities. However, the complex topography of the Andes poses a severe challenge for models to predict local climate especially precipitation.

We aim to explore whether large scale patterns are better represented in the models and could be used to improve seasonal forecast products for the region. For this we first derived the statistical relationships between the atmospheric patterns and local precipitation using large-scale fields and trajectories calculated from ERA-interim data and observational data from SENAMHI.

First results of the trajectory analysis show three distinct hotspots of moisture uptake leading to precipitation in the region. In agreement with previous studies we found that geopotential height and the wind field at 200hPa are the main influencing factors.

A first index based on the geopotential height at 200hPa shows good correlations with precipitation data from stations on the Altiplano and can be represented reasonably well by the ECMWF seasonal forecast model.