

Poster.4: . **Effects of the regional-local circulation on precipitation development in the tropical Andes (Rio Santa Basin).**

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Abstract

The Cordillera Blanca (central Andes of Peru) represents the largest concentration of tropical glaciers in the world. The atmospheric processes related to precipitations are still scarcely studied in this region. The main objective of this study is to understand the atmospheric processes of interaction between local and regional scales controlling the diurnal cycle of precipitation over the Santa River basin located between the Cordillera Blanca and the Cordillera Negra. The rainy season (December–March) of 2012–2013 is chosen to perform simulations with the WRF (Weather Research and Forecasting) model, with two domains at 6 km (WRF-6 km) and 2 km (WRF-2 km) horizontal resolutions, forced by ERA5. WRF-2 km precipitation shows a clear improvement over WRF-6 km in terms of the daily mean and diurnal cycle, compared to in situ observations. WRF-2 km shows that the moisture from the Pacific Ocean is a key process modulating the diurnal cycle of precipitation over the Santa River basin in interaction with moisture fluxes from the Amazon basin. In particular, a channeling thermally orographic flow is described as controlling the afternoon precipitation along the Santa valley.