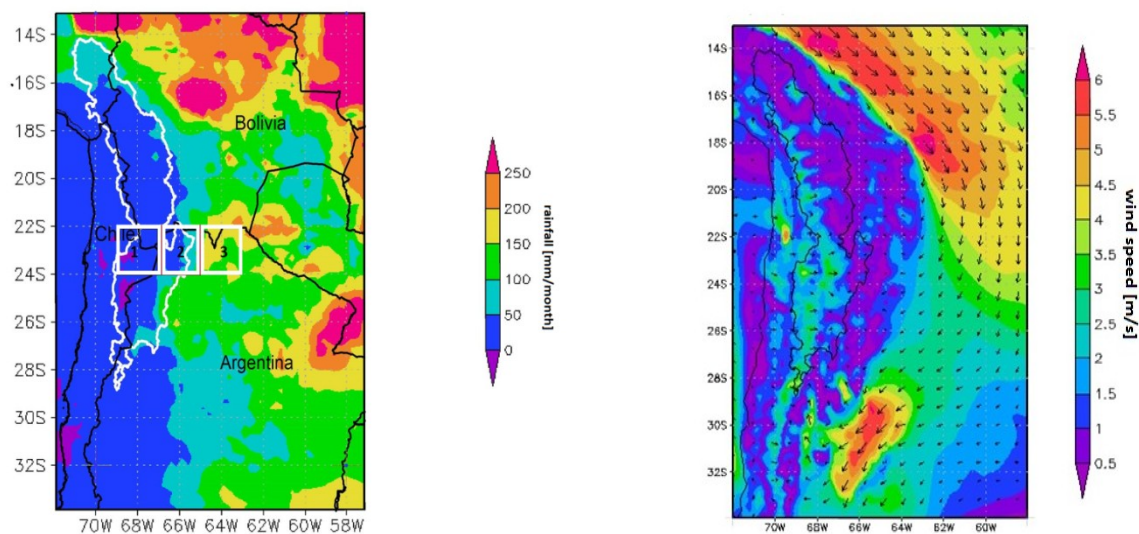


Determining Hydroclimatic Extreme Events Over the South-central Andes

The south-central Andes in NW Argentina are characterized by a strong rainfall asymmetry. In the east-west direction exists one of the steepest rainfall gradients on Earth, resulting from the large topographic differences in this region. In addition, in the north-south direction the rainfall intensity varies as the climatic regime shifts from the tropical central Andes to the subtropical south-central Andes. This study focuses on the investigation of the hydroclimatic extreme events over the south-central Andes. In this study, we use TRMM (Tropical Rainfall Measuring Mission) data, GPS data, meteorological re-analysis, such as ERA-Interim reanalysis of the ECMWF (European Centre for Medium-Range Weather Forecasts) and the high resolution regional climate model (COSMO-CLM) data (<http://www.clm-community.eu/>) to obtain a detailed view of the atmospheric processes related to hydro-meteorological extreme events over the south-central Andes. Here, we divide the area in three different study regions based on elevation: The high-elevation Altiplano-Puna plateau, an intermediate area characterized by intramontane basins, and the foreland area to analyze the correlations between climatic variables and extreme rainfall events in all three domains.



Seasonal mean rainfall for (DJF) generated by the TRMM 3B42 datasets, during (1998-2013) (left) and seasonal mean wind speed and wind vectors for (DJF) at 850hPa, generated by the CCLM, during (1980-2013) (right).