Geophysical Research Abstracts
Vol. 12, EGU2010-11660, 2010
EGU General Assembly 2010

South American low level jet structure using a regional climate model

Armelle Reca Remedio, Susanne Pfeifer, and Daniela Jacob
Max Planck Institute for Meteorology, Hamburg, Germany (armelle.remedio@zmaw.de)

Strong meriodional near surface winds at the eastern side of the Andes characterizes the South American low level jet. Based on previous studies, these northerly winds are present throughout the year and are mainly responsible for transporting moisture from the Amazon Basin to the La Plata Basin. It also plays a key role in generating the mesoscale convective systems which results in heavy precipitation near the La Plata Basin. In this study, an attempt is made to understand the mechanism between low level jet and its associated mesoscale convective systems.

The low level jet structure and its relationship to mesoscale convective systems are investigated using the MPI regional climate model, REMO. The boundary conditions are taken from the ERA-INTERIM reanalysis for the period 1989 to 2008 with a few decades of spin-up. The domain of the model is similar to the prescribed CORDEX region which covers the whole continent at 50 km resolution.

The seasonal variations of the low level jet simulations and the associated heavy precipitation events are described. During the austral summer, where the strength of the low level jet is prominent, the daily spatial distribution of the near surface winds and precipitation are validated using reanalysis data and observations from extensive field campaigns such as the SA LLJ Experiment (SALLJEX) during November 2002 to February 2003. The 6-hourly vertical distribution of meridional winds at the region of maximum low level jet determines the occurrence of a diurnal variation with stronger wind speeds at night time. The occurrence and frequencies of the low level jet are also determined.