

On the Characteristics and Time Variability of the Low Level Jet East of the Andes and the South American Monsoon System

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There are some observational evidences as well as modeling studies that show that the Low Level Jet East of the Andes (hereafter, LLJ) is responsible for most of the moisture and energy transport between these two basins, and the LLJ is a components of the South American Monsoon System. Studies using reanalises and other observational data sets have started to show some characteristics of the LLJ. A field experiment was implemented during the austral summer of 2003 to perform high resolution observations in the characteristics of the LLJ. A science team involving scientists from Brazil, USA, Bolivia, Argentina, Paraguay and Peru is working on the analysis of series of detailed and high resolution surface, upper-air and remote sensing observation, in order to answer this science question:

What is the role of the LLJ on the moisture transport from the Amazon to the La Plata basins? More specific science issues include: the synoptic variability of the LLJ; the spatial structure and time variability from diurnal to intraseasonal time scales; the role of the of the LLJ in the intraseasonal variability of precipitation along the South Atlantic Convergence Zone; the role of the LLJ in the dynamics of the Mesoscale Convective Complexes over the La Plata Basin; the interannual variability of the LLJ; the dependence of the LLJ in relation to SST anomalies in the Pacific and Atlantic; the representation of the LLJ in atmospheric models; and the coupling between the occurrence or not of LLJ episodes and rainfall in the Andean region, east of the Andes, and southern Brazil-northern Argentina.

The extension and upgrading of the current observational network will allow for better and more frequent surface and upper-air directed towards a better understanding of the LLJ, based on a combination of observation and monitoring of circulation and fluxes associated to the LLJ, complemented by regional and global models. Using observations from this field experiment as well as the NCEP reanslyses and SST anomalies from NCEP we studied case studies, seasonal variability as well as interannual and interdecadal variability of the LLJ and its characteristics.