



## **Analysis of the low level jet in the severe weather environment in the La Plata Basin, South America.**

Ernani Nascimento, Maurício Oliveira, and Vanessa Ferreira

Grupo de Modelagem Atmosferica, Universidade Federal de Santa Maria, Santa Maria, Brazil (ernani.nascimento@ufsm.br)

During the last fifteen years a large body of work addressing the importance of the synoptic-scale Low Level Jet (LLJ) to the regional climate in South America has emphasized the role played by such feature in the strong meridional transport of heat and moisture from the tropics (the Amazon basin) to the subtropics (the La Plata Basin; LPB). Despite being recognized as a crucial forcing mechanism for the development of deep moist convection in the LPB, the influence of the SALLJ in the environments that are favorable to severe thunderstorms and tornadoes in that part of the world deserves a more detailed look.

Utilizing a large dataset of operational soundings from southern Brazil and central-northeastern Argentina for the period from 1996 to 2015, this study analyzes the relative frequency with which a LLJ is present in atmospheric profiles that are potentially conducive for severe deep convection. Such profiles are characterized based on an objective approach that identifies the simultaneous presence of high values of conditional instability and lower-tropospheric moisture, moderate to strong mid-level lapse rates, and strong vertical wind shear. Distinct criteria for detecting a LLJ are tested in this study in order to allow the identification of LLJs that are located higher above the PBL; environmental hodographs are also analyzed to better characterize the presence of LLJs in those atmospheric profiles flagged as potentially favorable for severe convection. The analysis will also verify if the presence of the LLJ in such profiles is accompanied by elevated mixed layers and a capping inversion.