



Use of mesoscale models in operational severe weather forecast over large cities in Brazil – Results from the SOS-CHUVA Project

Edmilson D. Freitas (1), Luiz Machado (2), Rachel Albrecht (1), Enzo Todesco (1), Jean Peres (1), Andréia Bender (1), Isabela Siqueira (1), Jorge Martins (3), Leila Martins (3), Ricardo Hallak (1), Éder Vendrasco (2), Madeleine Sanchez (2), and Lianet Hernandez (2)

(1) Universidade de São Paulo, Instituto de Astronomia, Geofísica e Ciências Atmosféricas, Departamento de Ciências Atmosféricas, São Paulo, Brazil (efreitas@model.iag.usp.br), (2) Instituto Nacional de Pesquisas Espaciais, (3) Universidade Tecnológica Federal do Paraná

A large Project aiming the nowcasting of severe weather is under development in the southeast of Brazil. The SOS-CHUVA project evolve the use of ground-based instruments, including different sensors and a Dual Polarimetric Radar, satellite derived products, and numerical modeling. In this work we will present some results of the numerical operational forecast system that is running. Five different case studies simulated by the Brazilian developments on the Regional Atmospheric Modeling System (RAMS) will be analyzed, stressing situations where severe weather was satisfactorily forecasted and the type of the mesoscale system that occurred (e.g., squall line or supercell). Simulations show that besides the turbulence parameterization, the correct land use identification and the way that urban areas are considered in the model are a determinant factor for the success of the forecast. In some cases, the influence of anomalous heating observed in the metropolitan areas of Campinas and São Paulo is identified as responsible for increasing the atmospheric instability and for the triggering or intensification of the thunderstorms observed. Cases that were not well represented by the model will also be presented with possible causes or weakness of the model in representing such events.