HRLAMENS - A PILOT PROJECT ON ENSEMBLE PREDICTION USING HIGH RESOLUTION LIMITED AREA MODELS

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ABSTRACT

The Center for Weather Forecast and Climate Studies (CPTEC), the University of Buenos Aires (UBA) and the Federal University of Paraná (UFPR) have been working on a project with focus on prediction of high impact weather events in the La Plata Basin (LPB). This project had been assembled following the framework of a Research and Development (ReD) project of the World Weather Research Program (WWRP). A recommendation from the Joint Scientific Committee-WWRP of adding a high-resolution component to the project, motivated a proposal for a mutual collaboration between CHUVA and LPB-ReD projects, which was presented and accepted by the occasion of the first CHUVA workshop. The main objective of the present work is to describe the details of this cooperative effort of combining global and high resolution models in an multi-model, multi-boundary ensemble that operates during the Sta. Maria campaign of the CHUVA project. The ensemble is composed of a core of 5 model configurations (2 executions of the BRAMS model plus 3 of the WRF model), which were integrated using CPTEC's supercomputing facilities, plus four other configurations, which were integrated on the participating institutions facilities. This core was designed to be driven by selected members of global Ensemble Prediction Systems (CPTEC and NCEP) and also to be homogeneous in domain size, horizontal and vertical resolution (2 km of grid space and 41 levels). Partner institutions participating in the project (WRF-UBA-UNNE, WRF-Argentina SMN, WRF-UFSM and MESO-NH-LA) have assisted the multi-model composition with their own model configurations. A selection procedure based on spatial pattern resemblance was developed to choose one member, likely the best one, to drive the high resolution LAM. Some insights on the role of the large scale, represented by the EPS boundary conditions, on the quality of the forecast are given. A companion work will give details an assessment of this intercomparison focused on precipitation forecasts quality during 4 particular events, when organized convection has been observed