

## **Downscaling of HadGEM2 CMIP5 runs over CORDEX ""Central America"" domain using RAMS**

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The present poster shows preliminary results obtained by the regional climate modeling group from the State University of Ceara (Universidade Estadual do Ceara, UECE) and the State Foundation for Meteorology and Water Resources of Ceará (Fundação Cearense de Meteorologia e Recursos Hídricos, FUNCEME) in the context of the Coordinated Regional Downscaling Experiment (CORDEX). Large-scale forcing comes from CMIP5 simulations from the Hadley Centre Global Environmental Model Version 2 (HadGEM2) including the historical run and the RCP 8.5 scenario. This global model was chosen based on criteria of better representation of some observed characteristics of the climate over target regions (with emphasis on Northeastern South America) and data availability. The atmospheric model used in this study is the Regional Atmospheric Modeling System (RAMS, PIELKE ET AL. 1992; COTTON ET AL. 2003), which has a number of options of physical parameterization for convection, turbulence, radiation, microphysics etc. RAMS has been used successfully in a wide range of applications, including simulation of tropical and mid-latitude convective systems. FUNCEME has been using RAMS for several years (along with the National Center for Environmental Prediction Regional Spectral Model - NCEP- RSM) in its operational seasonal forecast system based on dynamical downscaling. Model horizontal grid comprises 252 by 136 points with 50 km resolution, centered at 10S, 73W. Vertical grid has 29 levels with variable spacing from 100 m close to the surface up to 1.3 km close to the model top. For the simulations described in this paper, radiation fluxes, turbulent transport and cloud microphysics were respectively represented according to the following parameterizations: Chen-Cotton (CHEN and COTTON, 1983), Mellor-Yamada (MELLOR and YAMADA, 1974) and the one-moment scheme by Walko et al. (1995). RAMS surface scheme is the so-called LEAF (land-ecosystem-atmosphere feedback) submodel, which represents the exchanges between the surface and the atmosphere considering a number of processes involving oil, vegetation, water bodies, snow, etc. Convective processes are parameterized following the Kain-Fritsch scheme which produced superior results in validation CORDEX runs using ERA-Interim data.