



Assessment of RegCM4.6.1 over La Plata Basin: annual cycle and extreme events of precipitation

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At the end of 2017-year the Abdus Salam International Centre for Theoretical Physics (ICTP) became available the version 4.6.1 of Regional Climate Model (RegCM). In the context of “CORDEX Flagship Pilot Study: Extreme precipitation events in Southeastern South America: a proposal for a better understanding and modeling”, the purpose of this study is to assess the performance of the RegCM4.6.1 in simulating daily precipitation extreme events over La Plata Basin (LPB). RegCM4.6.1 was nested in the ERA-Interim reanalysis in a domain covering the South America using 25 km of horizontal grid spacing from December 2004 to December 2015. Two simulations were carried out; one with Community Land Model (CLM4.5; RegCLM) and the other one with Biosphere-Atmosphere Transfer Scheme (BATS; RegBATS) to solve the surface-atmosphere interaction processes. Both simulations used Emanuel as cumulus convection scheme. Simulations were compared with the precipitation analysis from Climate Prediction Center (CPC) and the estimates from Tropical Rainfall Measuring Mission (TRMM). Extreme events were identified from the percentile of 95% by season. For the mean annual cycle over LPB, RegBATS simulated precipitation amounts similar to CPC and TRMM, while RegCLM underestimated it from April to October. This reflects in larger proximity of the percentile of 95% of precipitation in RegBATS and CPC in each season of the year. In terms of number of extreme events by year and season all datasets indicate only in winter a positive trend, but which is statistically significant only in the TRMM. Both simulations present a temporal evolution of the number of extremes of precipitation similar to the observations but they disagree in the number of extreme events. For each season of the year, the simulations are also able to reproduce the years with larger observed number of extreme events, although with different number of events.