



Characterization of wet and dry spells simulated by RegCM4 over the South America

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RegCM4 simulated rainfall over the South America considering the CORDEX sub-domain is analysed. The simulation uses 50 km of horizontal resolution, 18 vertical levels and ERA-Interim reanalysis as initial and boundary conditions in the period 1989-1997. We have tested the new convective parameterization option that combines the Grell and Emanuel convective schemes, considering the Grell over land and Emanuel over ocean grid points. The global daily rainfall analysis (0.5 degree resolution) from CPC (Climate Prediction Center from NOAA) is used to evaluate the simulated daily precipitation. The characterization of wet and dry spells is conducted considering the mean daily precipitation over three main sub-domains over the South America: Amazon (AMZ), La Plata Basin (LPB) and northeast Brazil (NDE). In terms of climatology, the simulated phase and intensity of the rainfall annual cycle over AMZ and LPB follow the CPC analysis. For the NDE simulation captures the phase of annual cycle of precipitation, but large overestimations occur during the rainy season. Considering daily rainfall, the wet (dry) spell is calculated as consecutive days with daily rainfall above (below) a given threshold during the rainy season. We use the thresholds of 90th and 10th percentiles for wet and dry spells, respectively. These rainfall percentiles are calculated separately to the simulation and CPC analysis. For each analysed region, the dry and wet spells are characterized according to their length and frequency. Over the AMZ and LPB there is a large agreement between CPC and simulation in the characterization of wet events. The simulation overestimates wet events over the NDE, while simulates less dry spells than CPC analysis. This is connected with the large overestimation of precipitation during the rainy season.