

**PARALLEL SESSION B : FRONTIER DOWNSCALING TOOL  
B2: HUMAN-CLIMATE REGIONAL INTERACTIONS, TOWARDS RESMS**

**The role of land use change over Amazon Forest in simulating climatology and extreme hydroclimatic indices**

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The most important anthropogenic influences on climate are the emission of greenhouse gases and land use change (LUC). In particular, the Amazon (AMZ) basin is a highly vulnerable area to climate change due to substantial modifications of the hydroclimatology of the region expected as a result of LUC forcing. However, the magnitude of these changes is still highly uncertain. The goal of this work was to analyze the simulated Amazon deforestation and its impacts on climate and changes of three extreme hydroclimatic indices (Heat Wave Day Index, HWD; Maximum Consecutive Dry Day index, CDD; and fraction of precipitation above the 95th intensity percentile, R95). In this work we used the Common Land Model version 4.5 coupled within the Regional Climate Model (RegCM4) over CORDEX South America Domain. We perform one simulation with RegCM4 default land cover map (CtrlExp) and one simulation under deforestation scenario (LUCExp), i.e., we changed all broadleaf evergreen trees tropical to C3 grass. Both simulations were driven by Era Interim reanalysis. The climate change signal due to AMZ deforestation is evaluated by comparing the climatology of the CtrlExp with the LUCExp. The results show a dipolar response consisting of reduced precipitation over eastern AMZ and an increased precipitation over western AMZ. Concerning the temperature we found a predominant positive signal change over all AMZ. The extreme indices analysis shows increases in HWD, CDD and R95, implying a regime shift towards more intense, less frequent rain events and increasing risk of heat wave in LUCExp. These last results also show a remotely effect of extreme indices over other regions in SA continent.

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