
Characterization of compound rainfall and temperature extreme in Senegal : present and future climate

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Abstract

The aim of this study is to characterize the compound rainfall and temperature extreme over Senegal. In order to do this, we analyzed the outputs of six (6) climate models from the Coupled Model Intercomparison Project (CMIP5). The results show a decrease of the mean rainfall and an increase of the surface temperature over Senegal during the near (2031-2050) and far (2071-2090) future. The analysis of the compound extremes during the historical period (1986-2005) shows that the ACCESS1-0, CMCC-CM, HadGEM2-ES and MRI-CGCM3 models and their ensemble mean simulate a high occurrence of the dry/warm mode over the northern and north-eastern parts of Senegal. The individual models and their ensemble mean simulate a strong occurrence of the wet/warm compound extreme over the central-west and southern parts of Senegal. The ensemble mean of the models shows an increase of the dry/warm mode in the north-west, central-west and south-western parts of Senegal during the future. When considering the wet/warm mode, it will decrease in the north-west, central and southern Senegal during the near future and over the whole country during the far future. This study shows that the central and northern parts of the country will need irrigation as an adaptation strategy for the protection of the agricultural sector. Ultimately, this work could be considered as a support for the Senegalese policymakers for the implementation of better planning tools to combat the potential adverse effects associated to climate extremes. All resultats concerning this work will be presented during this Workshop.

Keywords: CMIP5 models, compound extremes, rainfall, temperature, Senegal.

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