

Soil water fluxes projections from global climate models of CMIP5 in South America and its regional impact

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Summary

The several variables involved in soil-atmosphere interaction were analyzed in South America from seven Global Climate Models (GCM) of CMIP5. Two different periods were used: 1970-2005 as climate reference for historical experiment and 2065-2100 for projections under the Representative Concentration Pathways scenario RCP 8.5. We assessed the climate sensitivity of soil moisture and runoff to precipitation and evapotranspiration focused on the rainfed agriculture region of Argentina. The analysis revealed which are the more sensible variables for each GCM. Finally, future changes in water fluxes based on future scenarios of climate change were analyzed in South America for the more sensible variables. Even though both precipitation and evapotranspiration are projected to increase, some models showed that soil water fluxes respond to increases in precipitation. Based on the results of this study, the ensemble of soil moisture and runoff is not recommended but we better suggest to study separately only for those variable sensible to climate change.

Keywords: Water balance; soil-atmosphere interaction; future emission