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Projected Changes in Evapotranspiration Rates over Northeast Brazil

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Climate simulations were performed using a regional model (Regional Atmospheric Modeling System, RAMS 6.0) driven by data from one of the CMIP5 models (Hadley Centre Global Environmental Model, version 2 - Earth System, HadGEM2-ES) over two CORDEX domains (South America and Central America) for the heavy-emission scenario (RCP8.5). Potential evapotranspiraion data from the RCM and from the CMIP5 global models were analyzed over Northeast Brazil, a semiarid region with a short rainy season (usually February to May in its northern portion due to the seasonal shift of the Intertropical Convergence Zone) and over which droughts are frequent. Significant changes in the potential evapotranspiration were found, with most models showing a increasing trend along the 21st century, which are expected to alter the surface water budget, increasing the current water deficit (precipitation is currently much smaller than potential evapotranspiration). Based on the projections from the majority of the models, we expect important impacts over local agriculture and water resources over Northeast Brazil.