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Impact of Southern Amazonian land use change on spatiotemporal climate variability

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The Amazonia river basin is affected by deforestation and increasing land use changes due to an intensified agricultural and industrial land use. These anthropogenic influences may cause major impacts on the regional climate on various spatial and temporal scales. In order to investigate the local impacts on temperature and precipitation we use dynamical downscaling of ECHAM5 data employing the Weather and Research Forecasting Model (WRF) on a 60km and 30km scale. Since previous studies have used simplified assumptions for land use changes or used purely random variations of deforestation, we aim for a realistic representation on the considered spatial scales. We fill this gap with results of the LandSHIFT model provided by the Center for Environmental System Research which accounts for socio-economic and agricultural developments. In this study we focus on the region of Mato Grosso and Pará between 2001 and 2006. The transformation from tropical rain forest to agricultural areas changes the mean and the variability of temperature and precipitation.