



Regional climate model study on the impact of tectonic and orbital forcing on East African climate

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The development of the East African Rift System (EARS) caused by tectonic forcing is supposed to influence the regional climate in East Africa. However, also changes in the Earth's orbital parameters have an influence on climate. To analyse the influence of both tectonic and orbital forcing a regional climate model is applied. The regional model used in this study is the non-hydrostatic CLM, which is the climate version of the regional weather prediction model of the German Meteorological Service and which is developed as a community effort of several universities and research centers (www.clm-community.eu). The regional simulations are driven by different global simulations performed with the coupled ocean-atmosphere general circulation model ECHO-G. To analyse the impact of the development of the EARS different topographies representing different stages of the development are applied in the models. The results indicate that the tectonic forcing has a strong impact on precipitation in this region. To analyse the impact of orbital forcing orbital parameters leading to a strong change in insolation are chosen. One example is the last interglacial at 125000 years before present where the seasonality of insolation on the northern (southern) hemisphere is enhanced (weakened) compared to present-day conditions. The simulation of this timeslice shows a strong impact of orbital forcing on precipitation in Africa.