



Climate-vegetation interactions in the coupled RegCM4 - CLM4.5 CNDV model

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We use the latest version of International Center for Theoretical Physics (ICTP) regional climate model (RegCM4) coupled with the Community Land Model version 4.5 (CLM4.5) including a dynamic vegetation model to study biogeophysical feedbacks in the climate system related to vegetation composition and structure.

Sets of parallel experiments are conducted over the Africa and South America CORDEX domains using the RegCM4-CLM4.5 in its standard configuration and with the CNDV activated (CLM 4.5 with both the Carbon Nitrogen and the Dynamic Vegetation Model activated). The potential role of regional vegetation feedbacks within the climate system and the impact of climate variability and change on the ecosystem dynamics is assessed for both domains. In addition, the sensitivity to initial vegetation conditions and different idealized climate forcings is investigated.

Preliminary results show that the changes in the climate forcing can have substantial effects on the dynamics and evolution of different vegetation types over both domains, and that the vegetation coupling can have a substantial effect on the simulated regional climate regimes.

Our results thus indicate on the one hand that climate change can have profound effects on the evolution of important ecosystems for the two regions, and on the other that vegetation dynamics can indeed affect the climate response at the regional scale.