



Comparison of changes in the intensity and variability of the West African Monsoon simulated by two recent versions of the Global Circulation Model ECHAM

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With the special focus on the simulation of the West African monsoon and the variability of precipitation in West Africa and the Sahelian region, this contribution highlights the differences of the simulated African climate by the Global Circulation Model ECHAM 4 and the new version ECHAM 5. The differences in modeling the present-day climate compared to observations and the simulated precipitation patterns for climate change scenarios are investigated.

For present-day climate the ECHAM 5 model simulates a better precipitation gradient between the dry Sahelian zone and the wet Guinea Coast. This may be related to a more advanced surface parametrization scheme and an improved surface parameter dataset.

The signal for the time period 2070 to 2099 shows in all model versions a clear dipole of an increasing JAS precipitation over the Guinea Coast and a decreasing precipitation amount over the Sahelian region and the Gulf of Guinea. The simulated magnitude varies with the model version and the forcing scenario. Due to the improved present-day climate simulated by ECHAM 5, it is tempting to state that these scenarios are more realistic.

However, other results show an improvement of the simulated variability of precipitation by using a simple vegetation model (SVege). Due to the well-known importance of modeling the vegetation feedbacks even on the global scale, it is planned to couple this vegetation module to the new model version of ECHAM to obtain even more realistic simulations.