



Future increase of west African monsoon due to sea ice melt

A. Menon, A. Levermann, and J. Schewe

Earth System Analysis, Potsdam Institute for Climate Impact Research, Potsdam, Germany (menon@pik-potsdam.de)

The decadal variability of African monsoon rainfall from the millennium simulations of a global coupled climate model is analyzed to understand the variability of rainfall in future. We find that the African summer monsoon rainfall increases in future until 2100 compared to the past variability and shows a slight decrease afterwards in the twenty second century. Unlike Indian monsoon or East Asian monsoon, the African monsoon is more confined towards the equator and might depend largely on inter-hemispheric temperature contrast. The shape of the African land adds further to this dependence. We find that in the future global warming scenario, there will be a change in the surface albedo in the northern hemisphere due to changes in sea ice cover. This changes the temperature distribution between northern and southern hemisphere that will affect equatorial monsoonal circulation. For regions like India and east Asia which lie several degrees away from the equator, other external factors like El-Nino, Eurasian snow cover etc plays an important role. But as far as the equatorial monsoon is considered, the inter-hemispheric temperature contrast seems to play the most important role on longer timescales.