



Asian and African monsoon teleconnections during the Holocene

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The seasonal cycle of insolation during the Early to Mid-Holocene was more contrasted, due to the orbital configuration of the Earth, resulting in a warmer and shorter summer in the Northern Hemisphere. Summer monsoon systems were enhanced according to paleoclimate records synthesis and climate simulations. Here, the different responses of Indian, East-Asian and African monsoons to those changes in the insolation forcing are analyzed for the climates of 6000 and 9500 years ago (6 and 9.5 kyr BP) and of the preindustrial period, using ocean-atmosphere coupled simulations. Insolation was stronger during the Northern Hemisphere summer at 9.5 kyr BP, also at 6 kyr BP but with a one month lag of the maximum of insolation towards autumn. The aim of this study is to analyze the responses of several monsoon systems to such different forcings, in terms of amplitude, timing and regional differences at the seasonal time scale, and to understand their mechanisms. We have previously shown that the increase in precipitation over the Indian subcontinent is large between 9.5 and 6 kyr BP whereas it is not significant over the Sahel. The aim of this study is to understand this different behaviour between the two monsoon systems during the Holocene. We have conducted specific experiments to test the teleconnection between the Indian monsoon and the Mediterranean region and the African monsoon, at different time scales.