



## **The evolutionary response of the South and East Asian summer monsoon climate to orbital forcing in transient simulation of the Holocene with a coupled climate model**

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Recent paleoclimate records show an asynchronous change of the summer monsoon precipitation in East Asia during the Holocene (e.g. Cai et al., 2010). Whether the South and East Asian summer monsoon (Indian and East Asian summer monsoon) precipitation decreased gradually or abruptly during the middle to late Holocene is subject of ongoing debate and contrasting hypotheses exist: (a) the South-East summer monsoon weakened abruptly between around 5-4.5 ka BP (e.g. Morrill et al., 2003) and (b) more gradually, mimicking decreasing orbitally induced solar insolation (e.g. Gupta et al., 2003).

To better understand the dynamics of the South and East Asian summer monsoon system as well as the relationship with other climate features during the Holocene, an ocean-sea ice-atmosphere coupled climate model (Kiel climate model, KCM) is employed to perform a transient simulation of the Holocene. The time-varying external forcing is composed of the Earth's orbital configuration in terms of eccentricity, obliquity and precession with a 10 times acceleration scheme.

The model results show regional differences in the response of the South and East Asian summer precipitation to changes in insolation.