Indian Summer Monsoon dynamics during the penultimate deglaciation revealed using multi-proxy records from the northern Bay of Bengal

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Understanding the sequences of events and interplay between oceanic-atmsopheric teleconnections operating during the glacial to interglacial transition is vital in order to constrain the mechanisms that drive major transitions in Earth's background climate state. The Indian Monsoon, a subsytem of the Asian Monsoon, represents one of Earth's most dynamic interactions of oceanic-atmospheric-land processes and it is thus essential to understand the role of the monsoon in propagating rapid climate changes across these transitions. Our understanding of the palaeoclimate of the Indian Summer Monsoon (ISM) has been shaped primarily by indirect inference from wind-driven upwelling proxy records from the Arabian Sea. However, a comprehensive understanding of the ISM has been hindered by spatial and temporal gaps in records from the core monsoon regions with a known moisture source.

Here we present sub-millennial scale multi-proxy records from the core convective region of the ISM, the northern Bay of Bengal (IODP Exp. 353, site U1446), capturing variation in precipitation and river runoff sourced exclusively from the ISM across the penultimate deglaciation (~135 ka) and the subsequent warmth of the last interglacial. Bulk sediment elemental composition and the oxygen isotope ratios of surface dwelling *Globigerinoides ruber (sensu-stricto)* are utilised to reconstruct variability in the strength of terrigenous input and river runoff induced by the ISM. We will show the response of the ISM to internal and external climatic forcing during the penultimate deglaciation. Furthermore, comparing our new records with published records provides new constraints on the degree of coupling between the East Asian Monsoon and the ISM.