

**Evolution of Indian Summer Monsoon dynamics  
over the Cenozoic: a multi-proxy record from the  
Bay of Bengal**

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The evolution of the Indian Summer and East Asian monsoons have been linked to Himalayan Tibetan uplift on tectonic time scales (Ma). A recent paleoflora study [1] has suggested that the uplift of the Himalaya above the Tibetan plateau around 20 Ma intensified the modern Indian Summer monsoon (ISM) by 15 Ma thereby confirming the importance of the orographic effect of the Himalaya indicated by climate models [2]. Oceanic studies of the ISM evolution provides conflicting evidence for the timing of the intensification of the ISM; the Bay of Bengal [3] record suggests 8 Ma and an extended Arabian Sea [4] record suggests 12 to 13 Ma, both periods tentatively linked to the tectonic evolution of the Tibetan plateau. These ISM records are predominantly based on the erosion proxies from the Bay of Bengal and wind-driven upwelling proxies in the Arabian Sea. In this study, we present additional data from the Andaman Sea to test the widely accepted view of initial strengthening of the ISM around 8 Ma or earlier. We will utilise semi-continuous sedimentary succession from the Andaman Sea (sites U1447 0 to 9.5 Ma and U1448 0 to 5 Ma; ~12 to 14 Ma) and the southern Bay of Bengal (site U1443 ~17 to 35 Ma) obtained through recent IODP drilling (expedition 353) to reconstruct ISM evolution.

We will present preliminary results of bulk elemental concentrations and ratios obtained from portable X-ray fluorescence and percent terrestrial, calcium carbonate and total organic fraction data. Together with clay mineralogy data we will evaluate terrigenous flux and marine productivity and evaluate periods of ISM strengthening in the critical period 8 to 20 Ma to distinguish between competing claims for tectonic-climate linkage in southern Asia.

[1] Ding et al. (2017), *Geology*, 215-218. [2] Boos and Kuang (2010) *Nature*, 218-222. [3] France-Lanord and Derry (1994) *GCA*, 4809-4814. [4] Gupta et al. (2015) *P3*, 160-167.