EGU2020-19204
https://doi.org/10.5194/egusphere-egu2020-19204
EGU General Assembly 2020

Indian subcontinent hydroclimate and vegetation changes during the last glacial reconstructed by leaf wax stable isotope and pollen analyses on sediments from IODP Site U1446, NW Bay of Bengal

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Understanding past variability and forcing mechanisms of the Asian monsoon system is of key importance for better forecasting its behaviour under future global warming scenarios and how this may affect modern societies and economies. So far, knowledge about long-term monsoon variability in mainland Asia is mainly based on proxy records from Chinese speleothems, primarily recording changes of the East Asian Summer Monsoon (EASM). These records have provided evidence for orbital-scale monsoon variability, driven by Northern Hemisphere summer insolation changes, but also for centennial- to millennial-scale reductions in monsoon precipitation. These so-called Weak Monsoon Intervals (WMIs) occurred synchronously to cold intervals in the North Atlantic realm, e.g. during Heinrich Events, pointing at a close hemisphere-scale climatic teleconnection between the North Atlantic and Asia. However, the exact mechanisms that control short-term monsoon variability are still elusive. Moreover, long-term palaeomonsoon proxy records from the core zone of the Indian Summer Monsoon (ISM) are still relatively scarce compared to those from the EASM realm. To identify possible short-term changes in ISM intensity and reconstruct related hydroclimate and vegetation changes on the Indian subcontinent during the interval ~6–74 ka BP, sediments from IODP Site U1446 in the NW Bay of Bengal have been analysed. This site, being located within the reach of the Mahanadi River, is characterized by high riverine input of terrestrial organic matter and thus ideal for high-resolution analyses of pollen content and the stable hydrogen (δD) and carbon ($\delta^{13}C$) isotope composition of *n*-alkanes from

terrestrial plant leaf waxes. Here we present preliminary results of δD and $\delta^{13}C$ analyses on odd-numbered long-chain *n*-alkanes (*n*-C_{27} to *n*-C_{33},) extracted from the IODP Site U1446 sediments. These indicate several reductions in ISM precipitation during the last glacial, which occurred parallel to cold events in the North Atlantic realm, e.g. during Heinrich events H1, H2, H4, H5 and H6. In combination with pollen and alkenone-based ($U^{K'}_{37}$) sea surface temperature data from the same sediments, we aim at (1) providing a comprehensive and high-resolution reconstruction of past ISM variability and associated vegetation changes on the Indian subcontinent and (2) understanding the trigger mechanisms of centennial- to millennial-scale WMIs, particularly in relation to changes in Indian Ocean oceanography.