

# Enhanced weathering input from Himalaya to the Indian Ocean since the late Eocene: Evidence from seawater Nd isotope in the Bay of Bengal

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Enhanced silicate weathering induced by the uplift of the Himalayan-Tibetan Plateau (HTP) has been considered as the major cause of  $p\text{CO}_2$  decline and Cenozoic cooling. However, this hypothesis remains to be validated, largely due to the lack of a reliable reconstruction of the HTP weathering flux. Here, we present a 37-million-year record of the difference in the seawater radiogenic neodymium isotopic composition ( $\Delta\varepsilon_{\text{Nd}}$ ) of Ocean Drilling Program (ODP) sites between the northern and central Indian Ocean, which indicates the contribution of regional weathering input from the South Asian continent to the Indian Ocean. The results show a long-term increase in  $\Delta\varepsilon_{\text{Nd}}$  and thus provide the first critical evidence of enhanced South Asian weathering input since the late Eocene. The evolution coincided well with major pulses of surface uplift in the HTP and global climatic transitions. Our foraminiferal  $\varepsilon_{\text{Nd}}$  record suggests that tectonic uplift and silicate weathering in South Asia, especially in the Himalayas, might have played a significant role in the late Cenozoic cooling.