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## The Bengal Fan sediment archive: a record of Himalayan tectonics, climate, and/or drainage routing change between source and sink?

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The Bengal Fan IODP Exp 354 core provides a Neogene record of eastern and central Himalayan exhumation. U-Pb analyses of detrital zircons from this sediment archive shows that from ~ 4 Ma, there was a major increase in grains aged <300 Ma, indicating a major increase in contribution from the Trans-Himalaya (Blum et al., Nature SR, 2018). Detrital rutile U-Pb and detrital zircon fission track data from the same archive (Najman et al, GSAB 2019) indicates an approximately coeval increase in exhumation rate from the Eastern Himalayan Syntaxis. Thus an attractive explanation to explain the increase in Transhimalayan input may be that it was caused by initiation of exhumation of the syntaxis from beneath its Transhimalayan cover. However, a similar dataset obtained from the proximal foreland basin Siwalik deposits (Govin et al., in review) indicates an earlier onset to syntaxial exhumation, compared to that recorded in the distal sediment archive. We consider therefore whether climate change may be responsible for the increased Transhimalayan input: onset of Northern Hemisphere glaciation may have increased the proportion of erosion in the higher, glaciated, regions of the Transhimalaya, compared to that part of the orogen south of the suture zone. Analyses of Hf isotopic composition of detrital zircons to assess the possibility that drainage basin changes may explain the increase in material at 4 Ma, are ongoing. The difference in timing of the syntaxial exhumational signal between the proximal and distal archives may be the result of downstream dilution, or may result from sequestration of material on the shelf, with release to the deep ocean during sea level low stands.

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