



Persistent fast Himalayan exhumation since 12 Ma recorded by Apatite and Zircon Fission Track Dating from the Bengal Fan (IODP 354)

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We present a dataset of Apatite and Zircon Fission Track dating from sediments collected in the middle part of the Bengal Fan (IODP expedition 354, 2015). Both AFT and ZFT analysis reveals a dominant age population with very short lag time ($<2.7 \pm 0.7$ Myr for the apatites since at least 12 Ma and $<4.4 \pm 2.6$ Myr since at least 9 Ma for the zircons) indicating 1) a fast source-to-sink transfer of sediment, 2) a paleo-exhumation rates of up to 4 km/Myr and 3) the steady state nature of erosion. Moreover, a dominant population of younger than 3 Ma apatites is also found in the modern drainage system of the Bengal Fan. They are provided by steep and fast exhuming relief of the range controlled by threshold hillslope processes and by the coupled response of landslide erosion to tectonic and fluvial forcing. From the analogy with the modern erosion system and processes, it is suggested that over the last 12 Ma the dominant P1 population was provided by steep Himalayan topographies induced by river stream power and surface uplift sufficiently high to locally reach a topographic threshold where the uplift equals the exhumation. Consequently, the maximum exhumation rate provided by the P1 population of Bengal Fan apatites was not strongly affected by climatic variations like the Indian Summer Monsoon or glacial/interglacial cycles. In the next step, we aim at increasing the resolution of these first results by 1) adding some additional samples in the older depositional strata and 2) double date the existing grains with laser ablation U–Th–Sm/He and U/Pb.