



Reconstructing Palaeo-seismic and Palaeo-Climatic signals from Dryland Fluvial Sequences: An example from Kachchh, Western India

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In tectonically active regions, the landscape development is modulated by tectonic processes which lead to formation of characteristic geomorphic signatures and sedimentary succession. Especially in dryland environments the fluvial response to climatic/tectonic processes is more peculiar leading to formation of discrete landforms and sedimentary successions. We investigate dryland fluvial sequences of Kachchh ~ a seismically active landscape, with an aim to study 1) spatial variation in uplift rate of various segments of faults and 2) reconstructing climatic variability during the Late Quaternary Period.

We studied the dryland fluvial sequences which cuts through KMF and KHF using detailed geomorphology, sedimentology, geochemistry and OSL chronology. Our results show three major tectonic events experienced by KMF and KHF during the Late Pleistocene - Holocene Period. Using geomorphic studies we highlight the segmented nature of these faults, this is also corroborated by spatial variation in uplift rate along various segments of these faults. Using palaeomonsoonal proxies we attempt to reconstruct the wet/dry phases experienced by these basins during the Late Pleistocene - Holocene Period. The understanding of wet and dry phases in time along with tectonic events helps us to decouple the fluvial response to climatic as well as tectonic events. For regional comparison we integrate our climate data with western Indian continental margin climatic events. Similarly we compare our uplift rates along various segments of these faults with geophysical data available like InSAR studies and GPS studies.