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# Temporal facies variation in Himalayan foreland basin, India: Implications to tectonic and climate

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Late Neogene succession of Panjab re-entrant of West central sector of Himalayan foreland basin have been analysed to understand the temporal changes in facies and variability in channel body proportion in terms of stratigraphic base level change and/or accommodation space/ sediment supply. This stratigraphic succession was deposited by high to low sinuosity streams between 11 and 6 Ma in response to episodic tectonic uplift and/or climatic variation. Lack of major incision and unconformity suggests that accommodation space and sediment supply was balanced.

Overall, channel body proportion shows upward increasing trend with a gradual increase in average grain size suggesting gradual rise in stratigraphic base level resulted decrease in accommodation space. Development of thick interval of overbank facies (40 to 80m) with mature paleosol, levee and crevasse splay deposits within the coarsening upward succession suggest expansion of accommodation space due to lowering of stratigraphic base level. Presence of nested channel body at various stratigraphic levels suggests accommodation space was small enough which resulted faster degradation than aggradation.

Abrupt change in stratigraphic architecture at 10 Ma from mudstone- to- sandstone dominated intervals suggests enhanced sediment supply due to rapid uplift in the basinal area and changed the channel pattern from high- to- low sinuosity streams. During this time, precipitation also increased (Sanyal et al., 2004) and aided in providing higher sediment supply. At 8.7 Ma, the influx of conglomerate is related to thrust sheet propagation and high precipitation. Overall the stratigraphic base level changes between 11 and 6 Ma is related to thrust sheet propagation coupled with variation in monsoonal strength linked sediment supply condition.

Keywords: Himalayan Foreland Basin; Panjab re-entrant; Fluvial sedimentology; Neogene

## References

[1] Sanyal, P. Bhattacharya, S.K., Kumar, R., Ghosh, S.K., and Sangode, S.J. Palaeogeogr. Palaeoclim. Palaeoecol., **205**, 23-41. (2004).