



## Applicability of Channel flow as an extrusion mechanism of the Higher Himalayan Shear Zone from Sutlej, Zanskar, Dhauliganga and Goriganga Sections, Indian Himalaya

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Mukherjee & Koyi (1,2) evaluated the applicability of channel flow extrusion of the Higher Himalayan Shear Zone (HHSZ) in the Zanskar and the Sutlej sections based on field- and micro-structural studies, analytical- and analog models. Further work on the Dhauliganga and the Goriganga sections of the HHSZ reveal complicated structural geology that is untenable to explain simply in terms of channel flow. For example, in the former section, flexure slip folds exist in a zone spatially separated from the upper strand of the South Tibetan Detachment System (STDSU). On the other hand, in the later section, an STDSU- in the sense of Mukherjee and Koyi (1)- is absent. Instead, a steep extensional shear zone with northeasterly dipping shear plane cuts the pre-existing shear fabrics throughout the HHSZ. However, the following common structural features in the HHSZ were observed in these sections. (1) S-C fabrics are the most ubiquitous ductile shear sense indicators in field. (2) Brittle shearing along the preexisting ductile primary shear planes in a top-to-SW sense. (3) Less ubiquitous ductile compressional shearing in the upper part of the shear zone including the STDSU. (4) A phase of local brittle-ductile extension throughout the shear zone as revealed by boudins of various morphologies. (5) The shear zone is divisible into a southern non-migmatitic and a northern migmatitic zone. No special structural dissimilarity is observed across this lithological boundary.

Keywords: Channel flow, Extrusion, Higher Himalaya, Structural Geology, Shear zone, Deformation

### References

1. Mukherjee S, Koyi HA (in press) Higher Himalayan Shear Zone, Sutlej section: structural geology and extrusion mechanism by various combinations of simple shear, pure shear and channel flow in shifting modes. International Journal of Earth Sciences.
2. Mukherjee S, Koyi HA (in press) Higher Himalayan Shear Zone, Zanskar Indian Himalaya: microstructural studies and extrusion mechanism by a combination of simple shear and channel flow. International Journal of Earth Sciences.