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Title:	Investigating the sensitivity of glaciers to climate variability since the MIS-2 in the upper Ganga catchment (Saraswati valley), Central Himalaya
Authors:	Sharma, Shubhra (/jspui/browse?type=author&value=Sharma%2C+Shubhra)
Keywords:	Paleo-glaciation Central Himalaya Indian Summer Monsoon Mid-latitude Westerlies
Issue Date:	2019
Publisher:	Elsevier
Citation:	Geomorphology, 346.
Abstract:	<p>Moraines, outwash gravel terraces, fluvial drapes and lacustrine sequences are used to infer the pattern of glacial fluctuations in the Saraswati valley (upper Ganga catchment). Located in transitional climatic zone between dry steppe of the Tibetan plateau in the north and sub-humid higher Himalaya in the south, the Saraswati valley has preserved evidence of four glacier advances. These are identified as the Saraswati Glacial Stage (SGS)-1 (oldest) to SGS-4 (youngest). Based on the relative dating and luminescence ages obtained on younger advances, the SGS-1 is ascribed to pre-Marine Isotopic Stage (MIS)-2. The SGS-2 is dated to the MIS-2 (<math>24.5 \pm 2.8</math>–<math>21.2 \pm 2.0</math> ka); the SGS-3 is speculatively ascribed to the Younger Dryas (YD) and the SGS-4 is suggested to be of the mid-Holocene (~6 ka) age. The bifurcated moraine ridges of SGS-2 represent standstill conditions during the post-Last Glacial Maximum (LGM) period. The deglaciation is represented by outwash gravel terraces, impounded sedimentary (lacustrine) sequences and fluvial drapes overlying and abutting the moraines are dated to early-mid (<math>11.9 \pm 0.9</math>–<math>7.5 \pm 0.6</math> ka) and late Holocene (<math>3.3 \pm 0.2</math>–<math>1.7 \pm 0.3</math> ka) intensified/moderate Indian Summer Monsoon. Considering the timing of glacial advances and stand-still condition, it is proposed that across the orographic barrier (rain shadow valleys), glaciers responded sensitively to the intensified anticyclonic flow of the cooler Mid-latitude Westerlies; implying that in a monsoon dominated transient climatic zone, even the rain shadow valleys responded sensitively to temperature changes.</p>
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