

Advances in Stratigraphy and Geochronology

Virtual Seminar Series of the Stratigraphy and Chronology Commission (SACCOM) of INQUA

Thursdays at 9 am USA EST, 2 pm London, 3 pm Paris, and 10 pm Beijing time.

The third talk of the weekly series is on May 6,
given by:

Dr. Pinkey Bisht (Wadia Institute of Himalayan Geology, Dehra Dun, India)

"Chronology and climatic implications of the late Quaternary glaciation in Central Himalaya with special focus in the Upper Kali Ganga valley, Uttarakhand"



Dr. Pinkey Bisht is a Scientist in Wadia Institute of Himalayan Geology, India. Her current research in Quaternary geology includes: the understanding of depositional environments, and the stratigraphy of Quaternary glacial and fluvial systems. The use of geomorphological mapping and morphostratigraphic approaches to investigate landscape dynamics in glacial and periglacial region and geochronological reconstructions of Quaternary processes based on optically stimulated luminescence (OSL) dating. Most of her research on glacial landforms and depositional systems has focused on field-based reconstruction of regional patterns of palaeoglaciation. This also involves the establishment of numerical chronologies (OSL) to identify the absolute timings of past glaciation and deglaciation and their correlation to known climatic and other forcing mechanism.

Abstract: Timing, geographic extent and magnitude of Quaternary glaciations of the Himalaya, Tibetan Plateau and the surrounding mountains has attracted significant interest in order to understand the climatic implications of past glaciations. The relict glaciogenic sediments can be used to reconstruct the temporal and spatial variability of the late Quaternary glaciations. Although some progress has been made in generating the glacial chronological data, however, the exact mechanism and forcing factors of glaciation is yet to be established in the Himalayan region. This study is therefore important, as this would provide the first glacial chronology of the region which is situated in the Transitional climatic zone of ISM and Westerlies that will help in understanding the sensitivity of the valley glaciers to the climate variability. In the present study, the field survey and optically stimulated luminescence (OSL) dating of moraines from the valley provides a record of glacial fluctuations between marine isotope stages (MIS 3) to the Mid-Holocene. The chronology of moraines shows glacial advances in the valley during 52.8 ± 3 – 34.5 ± 2.2 ka (MIS 3), followed by its termination that continued until ($\sim 30.3 \pm 2$ ka) depicted by the vertical decrease in ice volume of a recessional moraine. The second glacial advance occurred during $\sim 22.2 \pm 1.1$ – 21.4 ± 1.2 (global last glacial maximum; LGM), followed by one re-advance/standstill occurred following MIS-2 at 16.1 ± 0.1 ka (late-glacial) and $\sim 4.4 \pm 0.4$ – 4.2 ± 0.1 ka (Mid-Holocene) in the Central Himalaya. The timing of this glacier advance is consistent with the studies from other regions of Himalaya. Given the timing of these glacier activities in the Yankti Kuti valley which are approximately in agreement with the North Atlantic climate oscillations (Heinrich events), signifying the potential correlations between these abrupt climate changes and glacial fluctuation.

For more details of the full seminar series please go to the SACCOM webpage at: <https://www.inqua.org/commissions/saccom/ifg>. Please see the Zoom link below.

ZOOM LINK:

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