Holocene Climatic Variability in the Indian Monsoon Domain

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The available data on Holocene climate variability from Asia indicates spatio-temporal changes in the precipitation over this vast region. Detailed information on the timing, duration, regionality, and causes of these fluctuations is not well understood, especially over the Indian subcontinent. My work focuses on long core sediments from lake Tso Moriri (78°14'-78°25'N and 32°40'-33°02'E; altitude: 4500 m) situated in climatically sensitive zone of NW Himalayas affected by both mid-latitude westerlies and Indian summer monsoon. Two cores ca.7 m were retrieved from the lake at different water depths (ca. 40m and 105m) in July 2011. Investigations reveal marked changes in grain size, lamination quality, mineralogy, organic and carbonate content suggesting changes in lake level, direction of inflow, and biological productivity that in turn are influenced by regional climate. As the lake lies in a tectonically active region, I have also undertaken detailed geomorphometric (knick-point, Hack index), and drainage pattern analysis of the major inflowing streams to decipher the active tectonics in the region. Sharp changes in river course and slope gradient indicates the presence of an active N-S trending fault in western flank of the lake. The data from lake Tso Moriri will be compared with other high-resolution records from lake Lonar and stalagmites in NE India to reconstruct the forcing mechanism of Holocene climatic variability.