



Ice dynamics of Himalayan glaciers (Himachal Pradesh, India) using TerraSAR-X/TanDEM-X data.

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Mountain glaciers are the natural indicators of climate change. Himalaya is a part of widely spread mountain range consisting of second largest ice mass after polar region. The glaciers in Himalaya are located in Himachal Pradesh and other territories of India. The precipitation in the region is influenced by both Indian summer monsoon and mid-latitude winter westerlies. The glacier discharge influences the river basins and provides fresh water for various infrastructural necessities of urbanization in the state.

The study aims to estimate the ice thickness and volume change during the decade (2011-2000) and annually during 2011-2014. For this, TanDEM-X DEMs are subtracted from the SRTM C/X band DEM of 2000. In addition, ice flow dynamics are quantified by the constellation of TerraSAR-X/TanDEM-X data using SAR offset tracking method. The primary investigations reveal that the terminus velocity of Bada Shigri (G077683E32169N), the biggest glacier of the state, Chhota Shigri(G077513E32227N), a bench-mark glacier, and other glacier (G077547E32162N) in 2011 found out to be < 2cm/day. The upper stream velocities of the glaciers are increased linearly and influenced by glacier tributaries.