Response of Himalayan Glaciers to Cold Dessert and Temperate Climates: A Comparative Analysis

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The Himalayan Glaciers are sensitive to the changes in global climate change scenarios as has been reported in various studies. Precent study is an initiative to analyse the response of Himalayan Glaciers to two different climatic regimes. The two glaciers namely Chalong Glacier (75°47´-75°52´ Long. and 34°1´-34°4´ Lat. at an elevation, ranging between 4500-5400 meters above mean sea level) located in Ladakh and Harmukh Glacier (74°53´-74°56´ Long. and 34°23´-34°27´ Lat. at an elevation, ranging between 3820-4900 meters above mean sea level) located in Kashmir valley, experiencing different climates, that is cold-dessert climate and temperate climate respectively, were selected for comparative analysis. Hydro-meteorological data of the glaciers was analysed and multi-temporal analysis of the glaciers was performed using SOI topo sheets (1962), satellite images of the years 1992 (SPOT-HRV-I) and 2005 (IRS LISS III). Significant changes have been observed in the areal extent of these glaciers. Chalong Glacier has receded from 12.57 Sq. Km in 1962 to 5.67 Sq. Km in 2005 and Harmukh Glacier has receded from 5.25 Sq.Km in 1962 to 3.03 Sq. Km in 2005. The net loss in the areal extent of Chalong Glacier is about 54.89 percent and for Harmukh Glacier it is 47.42 percent, with an annual loss of 1.27 percent and 1.10 percent respectively. These figures reveal that Chalong Glacier even being located in the region characterized by cold-dessert climatic conditions is retreating at faster pace than Harmukh Glacier, which is under temperate climatic conditions. Therefore it could be inferred that the glaciers in Himalayas are less sensitive towards changes in local climatic conditions compared to the impact produced by the changes in global climatic regimes, particularly from last four decades.

Key Words: Himalayan, Glaciers, Response, local, Climate, Regimes