

Geospatial model for glacier assessment along Karakoram Hindu Kush Ranges; A case study of Passu Glacier, Hunza

Dedar Karim; Alamgeer Hussain and Dilshad Bano

*Focus Humanitarian Assistance Pakistan
deedar.karim@focushumanitarian.org*

Abstract

The northern area of Pakistan hosts the most glaciers outside the polar region which are more than 5000. Glaciers are the silent indicators of climate change; they are retreating in response to a wide variety of topographic conditions and climate factors like increasing temperature, low precipitation and human activity. Region-wise glaciers, HKH regions suffer the maximum depletion of glaciers due to the climate change and anthropogenic activities in general and the Himalayan, Karakorum and Hindu Kush (HKH), in particular, are the worst sufferers. The general change of glacier extend is different in the Karakoram compared to observations for the majority of glaciers on the globe. The Karakoram Range are geologically young and fragile and are vulnerable to even insignificant changes in the climatic system. Although climate change has trans-boundary effect yet very few studies have been conducted in Karakoram region regarding the impacts of climate change on glaciers so far. Satellite observation of the mountain top lakes in the region have revealed a retreating of glacier length and steady increase in the size and volume of many of these glacial lakes at high altitudes, enhancing the possibility of a devastating outburst flood affecting sizeable populations, damaging socio-economic infrastructure and development assets in the Karakoram Range.

The retreating of glacier in Karakorum Range is significance evidence of climate change. There is increase awareness that glacier related hazards have been more wide spread than the documentary records suggest that climatic and geomorphologic methods to identify Climate change impact on glaciers are especially important in a region experiencing rapid urban development toward hazardous zones, wide spread land use change and the construction of water and energy resource projects on major rivers. New GIS and Remote Sensing techniques based on the image classification, interpretation of aerial photographs, satellite imagery, digital elevation models and development of spatial database will enabling more detail about past and present climate change impacts on glaciers to generate. The need for vigilance in assessing glacier behaviors toward climate change is apparent.