

Threat of glacial lake outburst flood to Tehsil Gupis from Khukush lake, District Ghizer, Gilgit, Pakistan

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Glacial lake outburst flood (GLOF) is a powerful natural phenomenon which is very active in the Karakoram Himalayas of Pakistan. In these areas, most of the villages are settled along the banks of the rivers on the debris fan deposits. These debris fans are the product of repeated debris flow events in the main channel to which a number of interconnected creeks contribute their material. These interconnected creeks originate from huge glaciers and glacial moraines at the upper catchments. These glacial deposits form a complex topography with multiple depressions at places. These depressions then change into lakes after getting filled by water from glacial meltdown. As the amount of water increases the pressure on the dam also increases. When the pressure exceeds the holding capacity of the dam, it bursts out which causes flooding in the lower catchments. In most of the cases glacial moraine acts as a barrier or natural dam. This hazard can be handled and controlled by keeping a proper check on the situation of the natural dam which acts as a time bomb with random time adjustment. By calculating the strength of the dam and seasonal fluctuations of water level in these remote lakes, we can build a relationship between the strength of the dam and the volume of the water whose pressure the dam can sustain and retain itself. The other thing which can be done is to increase the preparedness of the community which is settled on the areas lying low along the valley through which water from outbursting lake will ultimately flow. Preparedness can be increased by providing the community with various sets of information about GLOFs including the map marking out the areas which would be inundated from possible outburst of remote lake. This paper aims to create flood attenuation model for Tehsil Gupis and to create a flood map for the areas of greater commercial and economic importance. This paper will target the Khukush Lake and would address the methodology used to create peak flow attenuation model for Tehsil Gupis.