Glacial Lake Outburst Flood in Lahaul and Spiti district, Himachal Himalaya, India

Sudden, large river flow caused by an outburst of a glacier lake is generally termed Glacier Lake Outburst Flood (GLOF). The outburst may be caused by the failure of the damming moraine due to its own instability or glacier and/or snow collapse into the lake and may lead to overtopping and eventually to failure of the damming barrier. GLOFs are not a new phenomenon but with the worldwide receding of glaciers and rising temperature the probability of their occurrence has risen in many mountain ranges. Lahaul and Spiti district is tectonically very fragile and totally comes under mountainous ranges of Central/Inner Himalaya and Trans Himalaya. Most of the glacial lakes in the Himalayan region are known to have formed within the last 5 decades, and a number of Glacial Lake Outburst Flood (GLOF) events have been reported in this region. Glacial lake formation is currently being observed in the glaciated regions of the Lahaul and Spiti district and is the most visible and probably the most dramatic consequence of climate change in the area. Glacial lake outburst floods and associated geo hazards like flashflood, landslide and avalanches are common in the district. Mapping of glacial lakes has been done using Normalized Difference Water Index (NDWI) and Normalized Difference Pond Index (NDPI). Two major glacial lakes Samudratapu glacial lake and Geepang Gath glacial lakes have been identified as area of interest as both are showing increase in their areal coverage.