**High Resolution Monitoring of GLOF Vulnerable Lakes using Indian EO Data – The Paradigm Shift**

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***ABSTRACT***

Globally in the last three decades, the number of glacial lakes and their surface area have increased by 54% and 11%, respectively. It has been noticed that the eastern Himalaya has most of these glacial lakes due to its geographical settings and climatic factors. Many of these lakes represent a GLOF hazard. In the present study, the freely available IRS LISS-IV (5.8m, multispectral) data is utlised for monitoring the selected GLOF vulnerable lakes. The temporal changes in, Chubda lake, Bhutan and Bailangcuo, Gongzhangcuo lakes, Tibet region are monitored at 1:10,000 scale using cloud-free, end-of-ablation seasons, LISS-IV (Resourcesat-2&2A) data. The results highlight the continuous expansion of these lakes. Chubda lake has inundated around 29.4ha (21.5%) of additional area during 2015 to 2023, with the steepest change of 14.2ha observed during 2018 to 2021.  Bailangcuo lake shows expansion of 27.86ha (13.29 %) in the period 2015-2023. Lake Gongzhangcuo though only has expanded by 17.54ha, however, this amounts to 53.57% increase in the lake extend during the period of 8 years (2015-2023). The majority of the expansion of these lakes has come at the expense of retreating glaciers, which is also mapped in the study. The derived results are in tune with the published literature. The study highlights the potential of LISS-IV(Mx) data in high-resolution monitoring of glaciers and glacial lakes. Under the ambit of Indian Space Policy-2023, the LISS-IV(Mx) data, available since 2003, is made ‘free and open’ in the public domain. The free and open availability of this data reduces the financial burden from the glacier and glacial lake mapping activity. This initiative of providing free access to LISS-IV(Mx) data, by the Department of Space, Government of India, has the potential to bring the paradigm shift in the global efforts towards continuous monitoring of glacial lakes to achieve UN’s SDG-11 (Disaster Risk Reduction).

**Keywords:** Glacial Lake, GLOF, LISS-IV, Indian Space Policy-2023, SDG-11