

Press release

Comprehensive Hazard Assessment of high-risk glacial lakes in Gyalzing District

The Science and Technology Department, in collaboration with the Mines and Geology Department, Government of Sikkim, has completed a major scientific expedition as part of the ongoing Comprehensive Hazard Assessment of High-Risk Glacial Lakes in Sikkim. The expedition team comprised of 8 experts (glaciologist, geographer, geologist and civil engineer) was carried out from 19th June to 1st July 2025 and focused on three high-risk glacial lakes—Tikip Lake, BhaleyPokhari, and DoodhPokhari, located in the remote and ecologically sensitive Gyalzing District of West Sikkim. All the lakes have been accessed through a continuous 4-5 days of trek from the last motorable village, Yuksam in Gyalzing District.

As part of this multidisciplinary field mission, the team conducted Electrical Resistivity Tomography (ERT) surveys at all three lake sites. These high-resolution geophysical investigations aim to assess the internal structure and stability of the moraine dams that impound these lakes. Such field-based data is crucial for understanding the underlying geological conditions, especially the presence of buried ice, saturated zones, and potential seepage pathways, which significantly influence the risk of Glacial Lake Outburst Floods (GLOFs).

In addition to the ERT surveys, the team also repaired hydrometeorological sensors in the vicinity of the East Rathong Glacier below BhaleyPokhari, integrated with the existing Automatic Weather Station (AWS) infrastructure. These sensors will provide continuous monitoring of key atmospheric parameters such as temperature, precipitation, humidity, and wind dynamics, thereby supporting climate monitoring efforts in the high-altitude region. Besides, lake discharge was also measured for BhaleyPokhari.

The successful completion of this expedition marks a significant step toward strengthening glacial lake risk management in Sikkim through advanced scientific methods and inter-departmental collaboration. The findings from this assessment will contribute to the development of data-driven mitigation strategies, enhance the state's preparedness for climate-induced hazards, and support national-level efforts on disaster risk reduction in the Indian Himalayan Region.



Team performing ERT survey of Tikip Lake to assess moraine stability



Hydrometeorological setup below Bhaley Pokhari near East Rathong Glacier



Discharge measurement in BhaleyPokhari using float method



Team at HMI basecamp