



Efforts to Mitigate Risks Due to Glacial Lake

Why in News?

The **Jammu & Kashmir government** has intensified efforts to monitor and mitigate the risks of **Glacial Lake Outburst Floods (GLOFs)** in response to the growing threats posed by **glacial lake overflows**.

Key Points

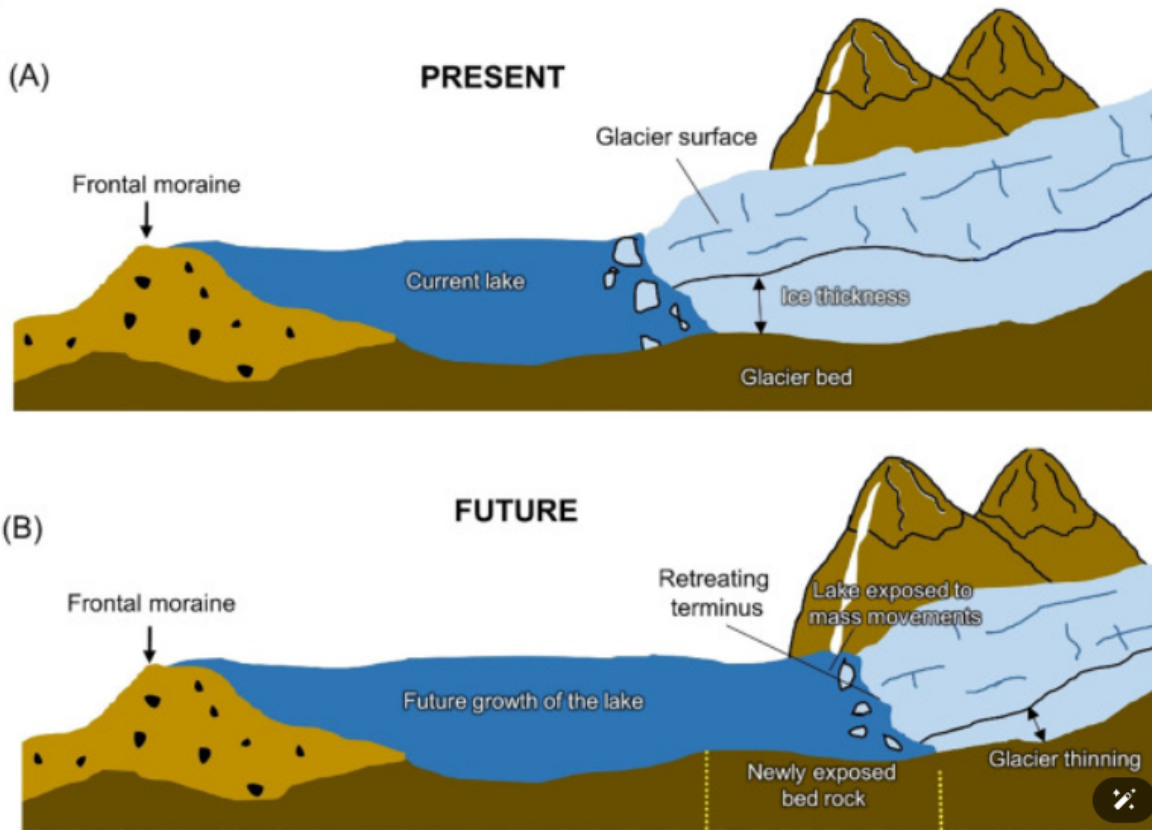
- **Scientific Expeditions for Hazard Preparedness:**
 - The **Department of Disaster Management, Relief, Rehabilitation, and Reconstruction** has initiated scientific expeditions to enhance preparedness and understanding of **GLOF hazards**.
 - These expeditions are collecting valuable data on **lake conditions, environmental factors, and potential GLOF risks**.
- **Study of Glacial Lakes in Kishtwar District:**
 - The Department of Environmental Sciences at the Central University of Jammu, led a comprehensive study on **three critical glacial lakes: Mundiksar, Hangu, and an unnamed lake**.
 - These lakes have been flagged as **high-risk areas for GLOFs**.
 - **Geological Survey of India (GSI)** conducted a detailed study of Bram Sar Lake in Kulgam district to assess its potential GLOF risks.
- **Kashmir Field Expeditions:**
 - In June 2024, the University of Kashmir's Department of Geography & Disaster Management studied two additional glacial lakes in the region.
 - The **expeditions aim to formulate risk mitigation strategies and enhance early warning systems** based on the data collected.
 - **Phase-Wise Implementation:**
 - **Phase One:** Focuses on identifying high-risk glacial lakes using assessments from the **National Disaster Management Authority (NDMA)**, **National Remote Sensing Centre (NRSC)**, and **Central Water Commission (CWC)**.
 - **Phase Two:** Develops and implements specific mitigation measures, including lake-lowering techniques.
 - **Early Warning System (EWS):**
 - A fully functional **GLOF Early Warning System** will be established to enhance preparedness and ensure effective responses to potential GLOF events.
 - In April 2024, the government constituted the **Focused Glacial Lake Outburst Flood Monitoring Committee (FGMC)** to implement targeted mitigation measures for glacial lake overflows.

Glacial Lake Outburst Flood

- A GLOF is a type of **flood** occurring when **water dammed** by a **glacier** or a **moraine** is released suddenly.
- When glaciers melt, the **water** in these glacial lakes **accumulates** behind loose naturally formed '**glacial/moraine dams**' made of ice, sand, pebbles and ice residue.
- Unlike earthen dams, the weak structure of the moraine dam leads to the **abrupt failure** of the moraine dam on top of the **glacial lake**, which holds a large volume of water.

- A catastrophic failure of the dam can release the water over periods of minutes to days causing **extreme downstream flooding**.

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