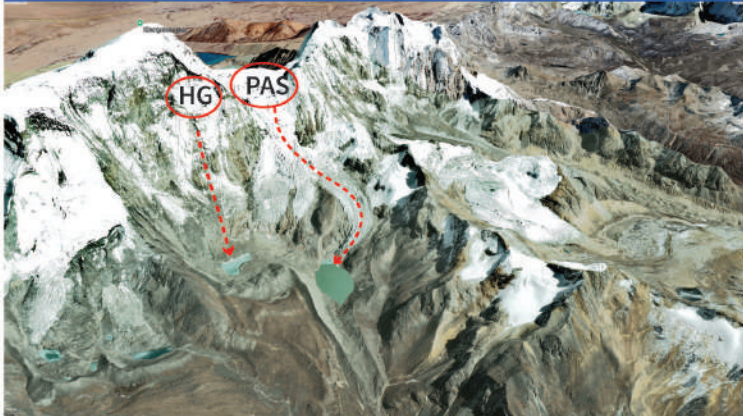


Preliminary Hazard Assessment of High Risk Glacial Lakes of Category 'A' in Sikkim



YULHE KHANGSE LAKE (No. 11 High Risk Lake)



Preliminary assessment carried out by scientific team of Science & Technology Department, Government of Sikkim

- Elevation: 4992m, Area: 19 Ha, Volume: 7 million m³
- Steep gradient from head wall possessing threat of Hanging glacier (HG) and potential avalanche site (PAS)
- Melting of main glacier may expand the lake towards NW direction, where new glacial lake is also in the formation stage.
- Free flow natural outlet exists in between the lateral moraines

GURUDONGMAR LAKE A,B & C (No. 12, 13 & 14 High Risk Lake)



Preliminary assessment carried out by scientific team of Science & Technology Department, Government of Sikkim

- Gurudongmar Lake (A)- Elevation 5164 m, Area 113 Ha, Volume 60 million m³
- Gurudongmar Lake (B)-Elevation 5225 m, Area 101 Ha, Volume 53 million m³
- Gurudongmar Lake (C)-Elevation 5254 m, Area 121 Ha, Volume 65 million m³
- Gurudongmar Lake (A) alone is not vulnerable, however the compounded impact from B and C lakes may trigger Glacial floods from Lake (A)
- The two glacial lakes (B & C) are unsafe due to presence of many potential avalanche site (PAS) and Hanging glacier (HG), high lake volume of lakes B, C and A
- Unstable lateral moraine of Lake B prone to slope failures, Lake (C) is newly formed glacial lake, Glacier tongue and lake (C) is in direct contact that can generates massive calving and volume is increasing rapidly
- No natural clear cut outlet of Lake B and C, vulnerable moraine dam of Lake B & C. Natural outlet exist for Lake A

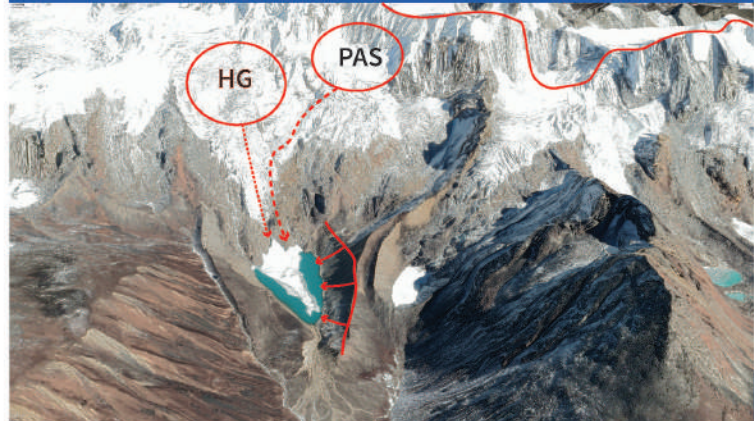
KHANGCHUNG CHHO (No. 15 High Risk Lake)



Preliminary assessment carried out by scientific team of Science & Technology Department, Government of Sikkim

- Elevation: 5320 m, Area: 183 Ha, Volume: 106 million m³
- Largest lake and continuously expanding; very high volume
- Glacier tongue and lake is in direct contact that can generates massive calving of Ice
- Multiple potential avalanches sites (PAS) around the lake followed by Hanging glacier (HG)
- Limited Freeboard
- Natural outlet exists

TENCHUNGKHA LAKE (No. 16 High Risk Lake)



Preliminary assessment carried out by scientific team of Science & Technology Department, Government of Sikkim

- Elevation: 4800 m, Area: 14 Ha, Volume: 5 million m³
- Steep gradient from head wall possessing threat of falling hanging glacier(HG)/ice cliff (IC) and presence of potential avalanche site (PAS)
- Unstable lateral moraine prone to slope failures
- Natural outlet exists; stable moraine dam



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