

December, 2024

To,
The Additional Chief Executive Officer (Admin.)
Uttarakhand State Disaster Management Authority,
IT Park Sahastradhra Road

Subject: Monthly Progress Report for the Project “Long-term Monitoring of Gangotri Glacier, Garhwal Himalaya”

Reference: Letter No. 493/USDMA-2024 dated 7th June 2024 and email dated 04.11.2024 regarding the submission of a monthly report.

Dear Sir,

Reference: Letter No. 493/USDMA-2024 dated 7th June 2024 and email dated 04.11.2024 regarding the submission of September and October 2024 monthly reports.

Regarding the above-referenced letter concerning the submission of the monthly progress report for the project titled “**Long-term Monitoring of Gangotri Glacier, Garhwal Himalaya,**” sponsored by the Uttarakhand State Disaster Management Authority (USDMA) and undertaken by the Wadia Institute of Himalayan Geology (WIHG) in March 2022. This project aims to map and monitor the Gangotri glaciers and their associated glacial lakes, collect meteorological and hydrological data, assess glacial hazards, and disseminate information regarding potential threats to The USDMA. In this context, we would like to inform you that a network of 2 Automatic Weather Stations (AWS), 1 Automatic Water Level Recorder (AWLR), and 2 broadband seismic stations was installed in the basin during October and November 2023.

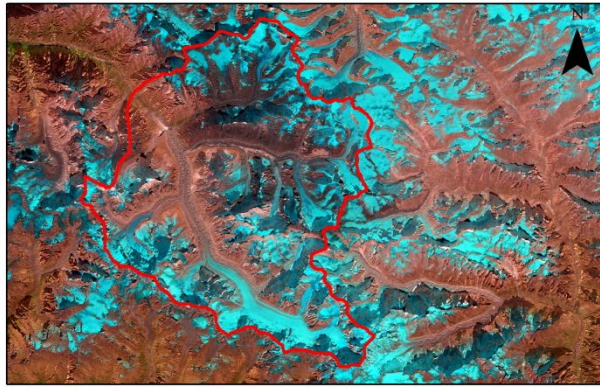
The analysis of snow cover in December, based on Sentinel-2 satellite data, offers valuable insights into the spatial and temporal dynamics of snow (**Annexure 1**). The data reveals an increase in snow cover from 36% on **6th December to 62% on 21st December**, as identified through the imageries of Sentinel-2, emphasizing its effectiveness in monitoring seasonal snow changes. This trend indicates a gradual accumulation of snow, likely influenced by factors such as lower temperatures and increased precipitation during this period. The percentage of snow cover has been calculated for the basin area up to Bhojwasa. Between **16th December and 21st December**, the snow cover fluctuated between **45% and 41%**, respectively showing signs of melting due to clear sky conditions.

Moreover, observations confirm that there were no debris flows or lake development near the Gangotri Glacier snout time, suggesting relative geomorphic stability despite the observed increased in snow cover.

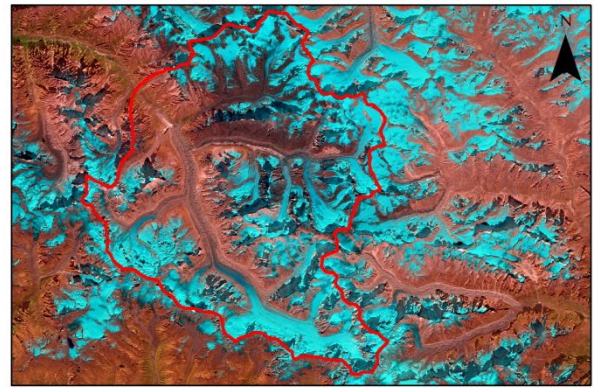
Thank you for your attention to this matter.

Dr. Amit Kumar
Scientist C
Wadia Institute of Himalayan Geology, Dehradun

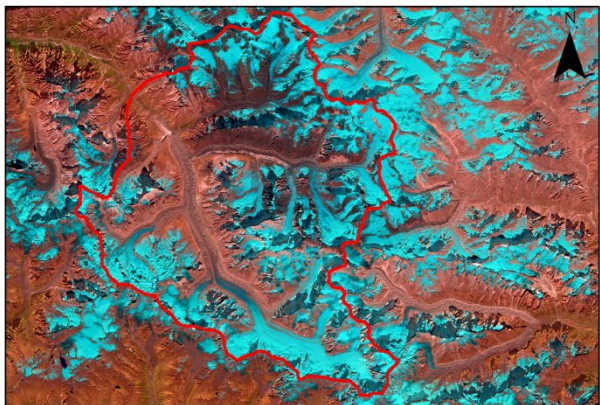
December 2024



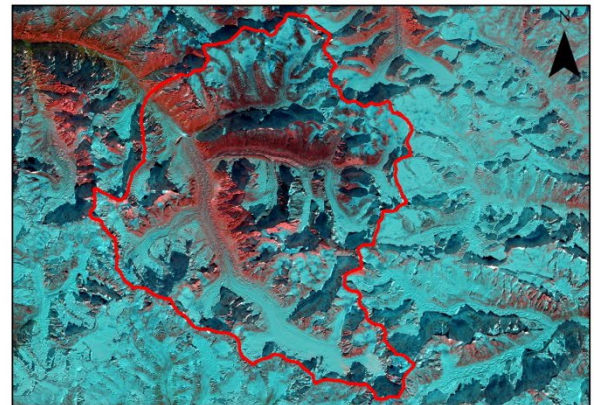
06/12/2024 Snow Cover - 35.79%



16/12/2024 Snow Cover - 45.50%



21/12/2024 Snow Cover - 41%



26/12/2024 Snow Cover - 62.77%

Distribution of snow cover during the month of December 2024