

September, 2025

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

**Subject:** Reference to letter No. 493/USDMA-2024 dated 7<sup>th</sup> June 2024 and email dated 04.11.2024.

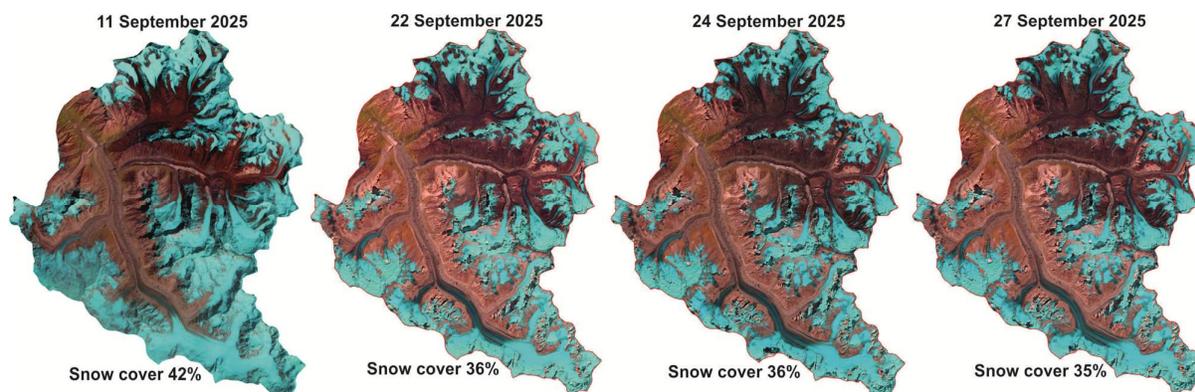
Dear Sir,

With reference to the above-mentioned letter regarding the submission of the monthly progress report for the project entitled “**Long-term Monitoring of Gangotri Glacier, Garhwal Himalaya,**” sponsored by the Uttarakhand State Disaster Management Authority (USDMA) and implemented by the **Wadia Institute of Himalayan Geology (WIHG)** since March 2022, the project focuses on systematic mapping and monitoring of the Gangotri Glacier and its associated glacial lakes, collection of meteorological and hydrological data, assessment of glacier-related hazards, and dissemination of information on potential risks to USDMA. In this regard, it is informed that during October–November 2023, a monitoring network consisting of two Automatic Weather Stations (AWS), one Automatic Water Level Recorder (AWLR), and two broadband seismic stations was successfully installed within the basin.

During September 2025, the watch and ward team conducted a field visit to the Gangotri Glacier region for snout monitoring. Observations indicated that melting of the Meru Glacier had resulted in the formation of a persistent meltwater stream emerging from its terminus, which flowed continuously and discharged into the Bhagirathi River (**Figure 1**). Sustained flow through this channel caused noticeable deepening and incision along the left lateral moraine, indicating active erosional modification of the moraine structure. Similarly, the meltwater channel emerging from the terminus of the Raktvarn Glacier on the right side exhibited comparable flow conditions. Collectively, these observations highlight that both the left and right tributary glaciers are actively contributing to ongoing morphological changes at the Gangotri Glacier snout. The observations indicate that both tributary glaciers and the main trunk are actively contributing under ablation-dominated conditions.



**Figure 1.** View of the snout of the Gangotri Glacier (Gomukh) during September, showing streams emerging from the Meru and Raktavan glaciers and merging to the Bhagirathi River.



**Figure 2.** Images showing the temporal distribution of seasonal snow-cover during the month of September 2025 in the Gangotri Glacier basin up to Bhojwasa.

Enhanced meltwater discharge from all three glaciers was observed, likely driven by glacier ice ablation and the absence of significant fresh snowfall within the basin. These field observations are supported by analyses of cloud-free satellite imagery from Landsat 9 (**11<sup>th</sup> September**) and Sentinel-2 (**22<sup>nd</sup>, 24<sup>th</sup>, and 27<sup>th</sup> September**), which revealed a clear decline in snow-covered area from **42% on 11 September to 36% by 22<sup>nd</sup> September**, followed by near-stable conditions at **35% by 27<sup>th</sup> September**. The reduction in snow cover and the persistence of meltwater channels indicate ablation-dominated conditions during late-monsoon to pre-winter seasonal periods. Continuous discharge from the main trunk and tributaries has contributed to measurable deepening and incision along the lateral moraines, reflecting active erosional modification of the snout region under these ablation-driven conditions. Residual snow remained largely confined to higher elevations and shaded areas, with reduced melt rates likely influenced by decreasing air temperatures and lower incoming solar radiation.

*Overall, the analysis indicates that the Gangotri Glacier reaches its seasonal minimum snow extent by late September, just prior to the onset of winter accumulation during October–November. Concurrent field inspections confirmed that the monitoring instruments installed at the Bhojwasa and Chirwasa sites were functioning properly. Additionally, integrated satellite observations and field assessments revealed no evidence of debris flows, major glacial lake formation, or significant geomorphic disturbances in the Gangotri Glacier region; however, a few small supraglacial lakes were identified within the glacier’s ablation zone.*

Thank you for your attention to this matter.

*Amit Kumar*

**Dr. Amit Kumar**  
**Scientist C**

**Wadia Institute of Himalayan Geology, Dehradun**