

March, 2026

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

Subject: Reference to letter No. 493/USDMA-2024 dated 7th 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 “**Long-term Monitoring of the Gangotri Glacier, Garhwal Himalaya**”, sponsored by the **Uttarakhand State Disaster Management Authority (USDMA)** and undertaken by the **Wadia Institute of Himalayan Geology (WIHG)** since March 2022, the following update is submitted:

In March 2026, two watch and ward undertook a visit to the Gangotri Glacier region to ensure the functioning of instruments installed at monitoring sites. Their inspection covered Bhojwasa, Chirwasa, and Maneri, where they carefully checked the operational status of equipment used for monitoring. The visit was part of routine monitoring efforts aimed at maintaining the data collection, ensuring that the instruments remained working despite the harsh winter conditions.



Figure 1. A photograph capturing the view of Bhojwasa on March 29, 2026, when the region was blanketed in snow and active snowfall was observed. The surrounding peaks and landscape are obscured due to poor weather conditions.

The watch and ward team was planning to visit the snout region to confirm any unusual activity near the Gaumukh area, but due to bad weather conditions, they were unable to proceed (**Figure 1**). During the visit, the watch and ward team checked the Automatic Weather Station installed at Bhojwasa and the broadband seismic station, and found that the data was being recorded in the data logger and that the current air temperature, along with other parameters, was being

displayed correctly (**Figure 2**). The Bhagirathi River is almost silent and is flowing along its original path since the end of the last summer season.

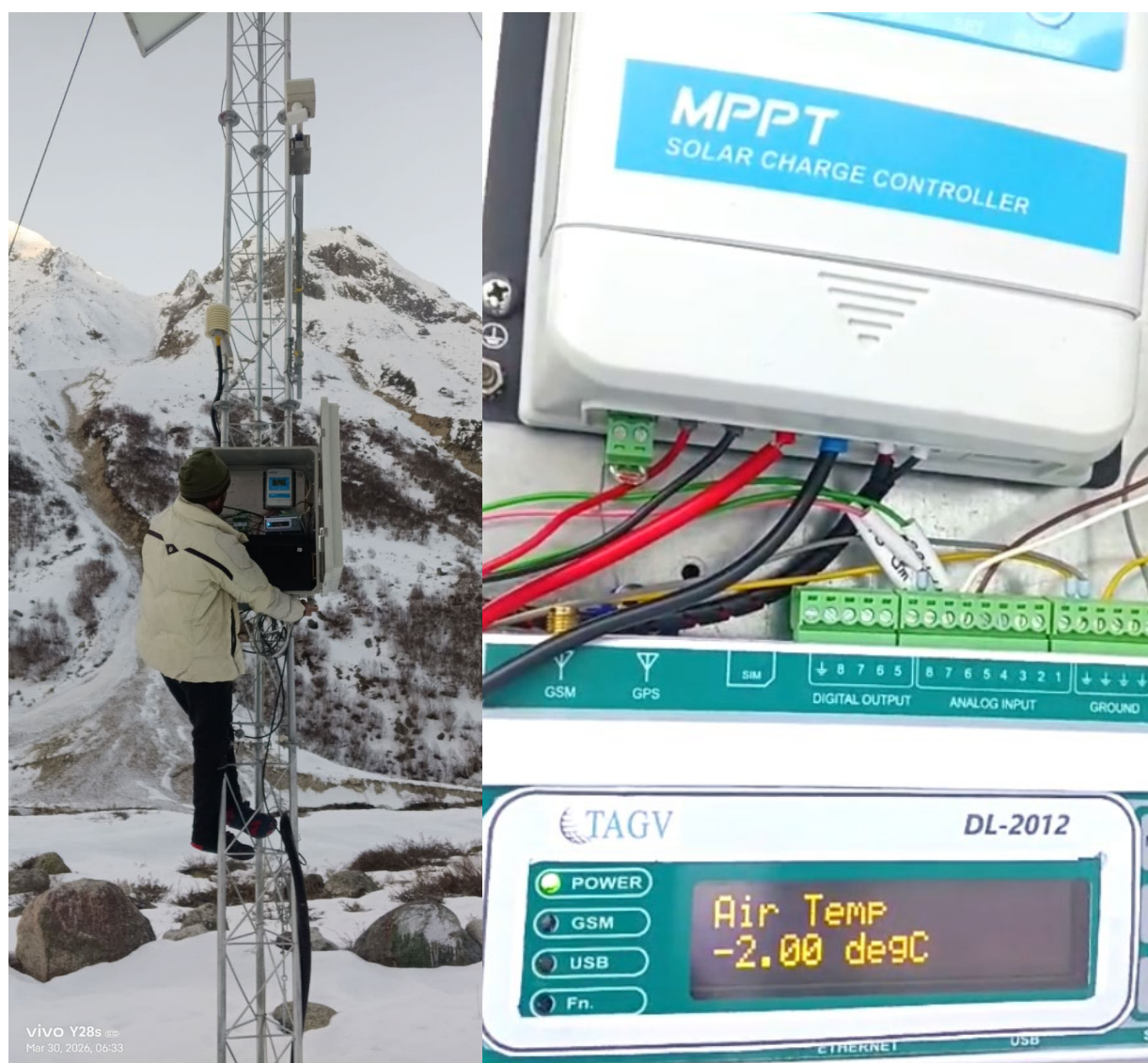


Figure 2. Photograph of the inspection of the Automatic Weather Station at Bhojwasa on 29 March 2026 by the watch and ward team, displaying data under harsh weather conditions.

The team also visited another site of Automatic Weather Station installed at Chirwasa and checked its functionality by connecting a display device to the data logger. They found that the instrument was recording data successfully and that the battery condition was within the normal range. This station is at a lower elevation compared to Bhojwasa; therefore, less snow was observed here compared to the higher elevations in the basin (**Figure 3**).

The month of March witnessed several significant snowfall events in the region. Therefore, to better understand the spatial distribution of snow cover, satellite-based observations were analyzed. For this purpose, freely available Sentinel-2 data were acquired, with scenes selected based on minimum or no cloud cover.

The observations show a period of heavy snow accumulation over the Gangotri Glacier basin, which is different from the gradual ablation pattern seen in February. The evaluation using Sentinel-2 images shows that the snow cover was about 69% at the start of the month (01st

March). It then dropped to about 60% (06th March), which suggests that the snow was still melting early in the month. This downward trend, on the other hand, changes sharply later in the month, with snow cover rising significantly to about 96% (21st March). This means that there was a lot of snow falling and accumulating across the basin (**Figure 4**). We did snow cover estimation (in percent) for the area of the basin up to Bhojwasa to make sure they were the same as the ones we carried out before.

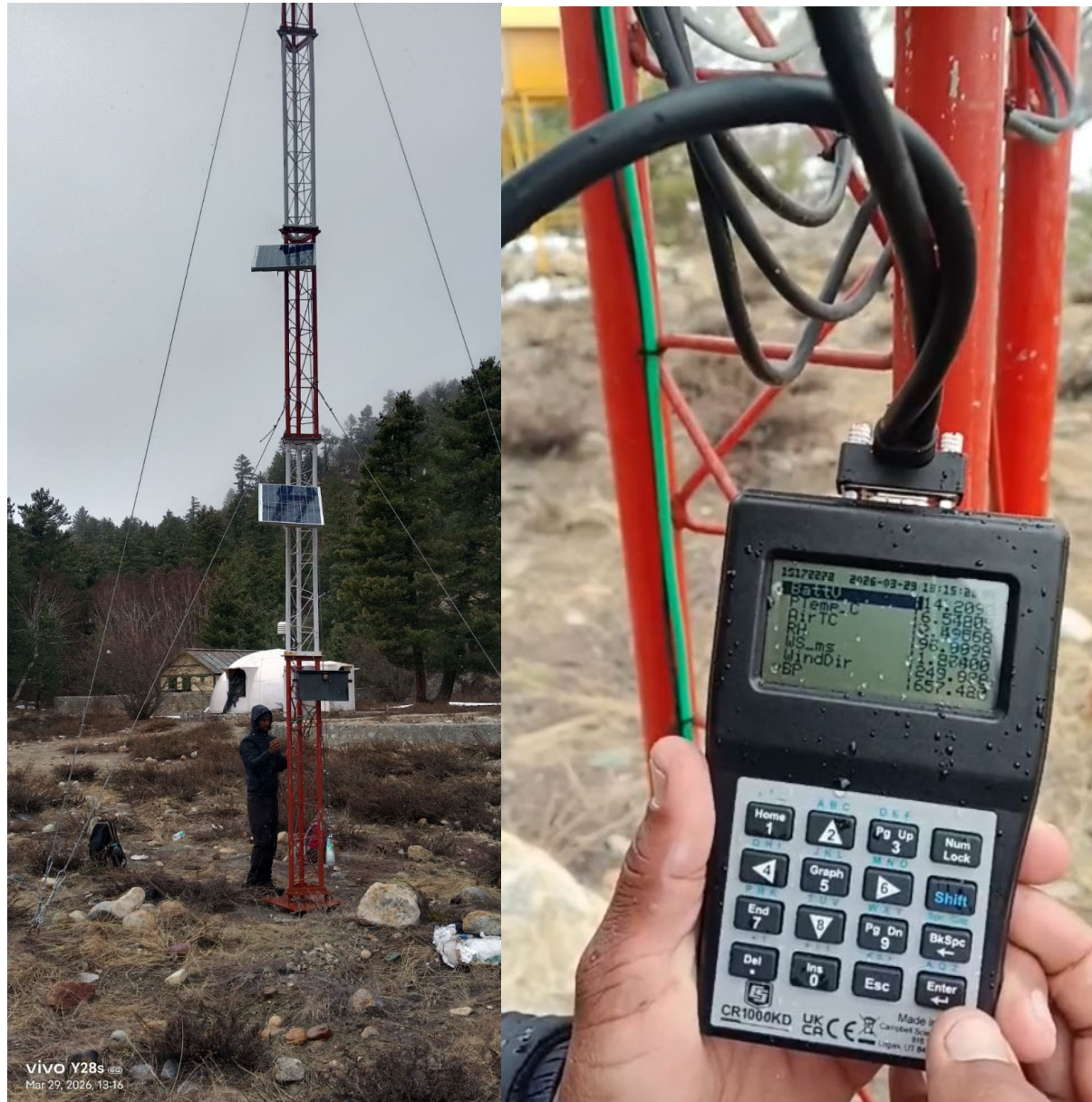


Figure 3. Photograph of the inspection of the Automatic Weather Station at Chirwasa on 29 March 2026 by the watch and ward team, displaying data under harsh weather conditions.

This pattern shows a clear change from losing snow at the beginning of the month to building up a lot of snow at the end of the month. The first drop in snow cover is probably due to higher temperatures and more melting. The quick rise at the end of the month, on the other hand, suggests that there were a lot of snowfalls. February showed a steady drop in snow levels after the peak accumulation, but March shows a very dynamic snow regime with a big build-up at the end of the month. The distribution pattern stays the same across space.

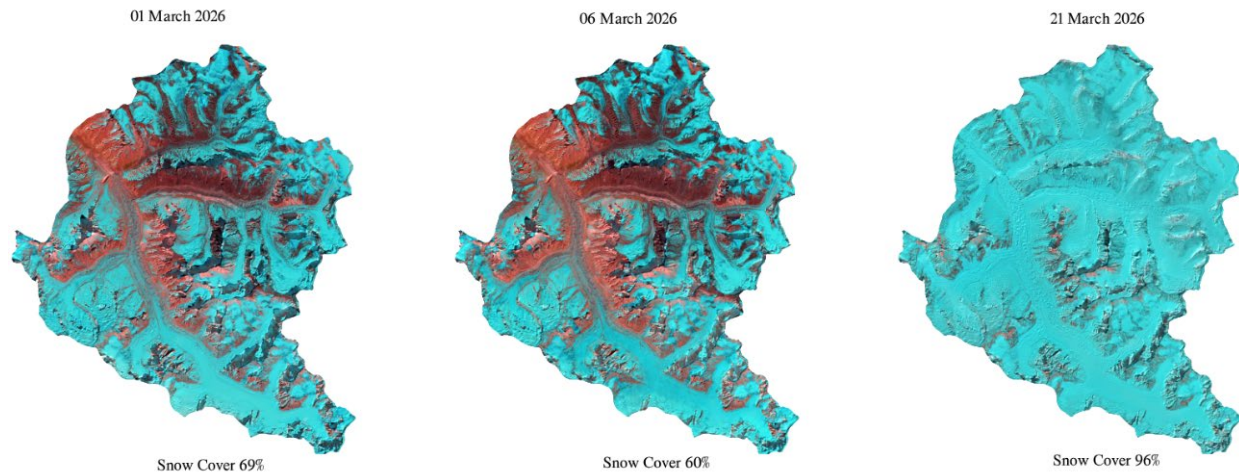


Figure 4. Distribution of snow cover conditions in Bhojwasa during March, derived from Sentinel-2 imagery.

Higher elevations and shaded slopes keep snow cover, while fresh accumulation spreads snow cover into lower elevations when conditions are at their best. In general, these observations show that the snowpack has gotten a lot stronger late in the season. This shows how the dynamics of snow cover can change a lot and how sensitive they are to changes in the climate over the Gangotri Glacier region.

Based on the field visit, it was verified that the instruments installed at Bhojwasa, Chirwasa, and Maneri were functioning properly. Available satellite data and field observations were jointly examined to identify any major events, such as debris flows or the formation of new glacial lakes near Gaumukh. The analysis confirmed the absence of debris flows, major glacial lake development, or significant geomorphological changes in the vicinity of the Gangotri Glacier.

Thank you for your attention to this matter.

Amit Kumar

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