

GLACIAL GEOMORPHOLOGY OF THE CHORABARI GLACIER, GARHWAL HIMALAYA

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The work deals mainly with the study of the landforms made by the Chorabari glacier in the Garhwal Himalaya, U.P. The basin area of the glacier is about 38 sq.km. whereas the area covered by the glacier is 15 sq.km. The glacier is also fed by several hanging glaciers. The length of the glacier is about 6 km.

Snout: There are two snouts of the glacier, one in the left margin of the glacier and the other in the right margin. Both are at almost the same height i.e., 3,800masl. The origin point of the Mandakini is mainly from the right snout of the glacier. Melt-out water from the left snout also feeds the water of the Mandakini and meets the main channel about 100 m northwest of the Kedarnath temple. It appears that this was a part of a single glacier, which has been divided into two parts separated by its medial moraine before receding (Figure-1). Originally, there was only one glacier when it was in its advancing stage. Excessive receding has thinned the glacier to such an extent that it could not disturb its own medial moraine and has been divided into two parts, thus forming two Chorabari snouts.

Moraines: Some of the observations and interpretations of moraines in the active zone of the glacier are as follow.

- a) The main medial moraine is now playing an active role in the glacier activities. It is acting as the left lateral moraine of the main glacier and right lateral moraine of the tributary glacier, though the tributary glacier has a common accumulation zone with the main glacier. This suggests that the glacier has undergone a vast amount of receding due to which its own medial moraine has divided the main glacier into two parts. As a result, two separate snouts of the same glacier have developed.

- b) The left snout has retreated about 200m more than the right snout, suggesting that the left glacier is thinning faster than the right one.
- c) There was a readvance of the glacier before the final stage of retreat, which was indicated by the presence of new lateral moraine (present) near the snout, within the earlier lateral moraine. This advance was smaller in size as compared to the earlier glacier before retreat.

Cycles of advance and retreat: In order to study different cycles of advance and retreat of the Chorabari glacier, different loops of lateral and terminal moraines have been studied in its inactive zone (i.e. the zone which is no longer in contact with the glacier).

A series of five well-defined lateral and terminal morainic loops are noticed in the inactive zone of the Chorabari glacier. These morainic loops have been used as the basis for reconstructing the glacier history in defining the sequence of glacier episodes before its complete deglaciation from this zone.

The moving ice body, which formed the stage II landforms, did not have the energy to destroy the existing larger landforms of stage I, but it could only modify its lateral and ground moraines. This suggests that the glacier energy associated with the formation of smaller superimposed landforms of the later stage was of a lower order and insufficient to significantly alter the pre-existing landforms. These loops suggest that, after their development, no major movement of the glacier took place in the region.

Figure 1. Accumulation (partial) and Ablation zones of the Chora bari glacier in which the main medial (in foreground) has divided the glacier in two parts

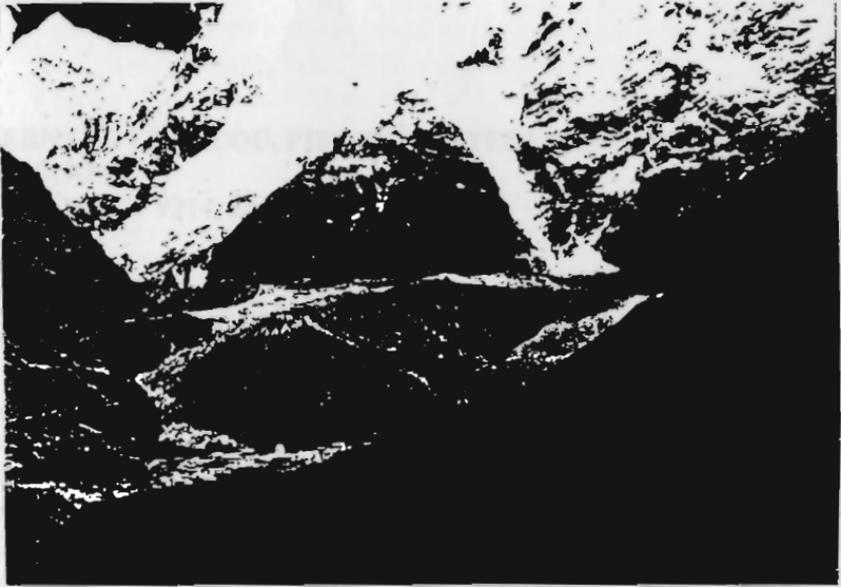


Figure 1. The whole view of the Chora bari glacier, showing accumulation and ablation zones. The main medial moraine (in foreground) has divided the glacier in two parts. The image shows a wide view of the glacier system, with a prominent medial moraine ridge in the foreground that splits the glacier into two main sections. The background features steep, rocky mountain slopes with patches of snow and ice.