

DISCUSSION

Comment

(Comment on the Paper "Morphology and recession of Miyar glacier, Lahaul - Spiti District, Himachal Pradesh" by K.C. Prashra and S. Dasgupta, published in the Journal of the Geological Society of India, V.46(4), Oct. 1995, pp.409-412).

It is in the context of my personal work on valley glaciers in Himalaya that I seek the following clarifications from the authors :

1. Emphasis of the title of the paper is on morphology of Miyar Glacier but has not been described in terms of shape, the features, the orientation and the dynamics. The description of moraines forms a separate study under glacial morphology. Moreover, the morphology and geomorphological features of the Himalayan glaciers is complex and hence cannot possibly be described in a short paper. No mention of 'tier' moraines, be it recessional or lateral at various heights indicative of different episodes of recession of the glacier has been made. The evidences which could document the equilibrium phase are not given except for a passing reference to the stacking of material at a place on glacier.

2. Intense ablation and numerous crevasses are normal part of a valley glacier. In a high gradient valley glacier, the differential flow of glacial mass is not an unusual process. Relating such features to snout area only does not seem logical.

3. Finally, valley glaciers are there to retreat. I have not observed so far any glacier which is advancing in Himalayas nor is there any such published work. Moreover, the rate of recession on the basis of a Toposheet (1:50,000 scale) cannot be specific as the position of the snout maked on such a scale by surveyors (not glaciologists) has chances of misinterpretation, and cannot be relied upon in a specific case. The exact definition and position of a snout needs careful study for a longer duration of time. An icecore moraine may be confused with the actual snout of the glacier as seems the case here (see Figs.4&6). As such, the rate of recession mentioned in the paper raises some doubts in one's mind.

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Reply

1. At the outset, the nature and scope of the work referred in the paper needs to be precisely understood. The objective, as has been made clear in the paper itself, was to record certain observations on the Miyar glacier during the course of a mapping assignment of the Central Crystallines of the Great Himalayan regions of Lahaul, Himachal Pradesh. The preliminary nature of work carried out within limited timeframe need not be confused with the detailed glaciological studies stretching over a long period, which only could enable studies in greater detail, covering all aspects including orientation, dynamics, tier moraines and evidences for phase equilibrium.

The description of moraines in the paper under the head 'Description of Glacier' does not appear to be out of place, particularly when the title of the paper also deals with the recession of the glacier. It is only by showing the disposition and location of the lateral and

terminal moraines (Figs.4&5) that the shrinkage and recession of the glacier (1060 m from the terminal moraine) could be better understood.

2. True, ablation zone and crevasses are normal part of all valley glaciers. But the observation that this zone in case of Miyar Glacier extends to about seven kilometres upstream of the snout will not be true of all other valley glaciers as well. The features of intense ablation (Fig.6) are not confined to the snout area as has been mistakenly supposed by the reader. These are ubiquitous all along the frontal segment as far as about seven kilometres from the snout.

3. 'The valley glaciers are there to retreat'— Well, the authors have also said the same in regard to the Miyar Glacier. But the point here is not so much as to show the recessionary trend of the glacier alone, but also find out, even though approximately, the amount of recession on the basis of preliminary studies.



Fig.1. Snout of the Miyar Glacier

It goes without saying that the study of a glacier over a sufficiently long period and with the help of a detailed map would add to the precision. But in case of time constraint, preliminary nature of studies could always be carried out and approximate inferences drawn on the basis of field observations aided by tape-compass measurements and map (1:50,000). The information thus gathered along with photo-illustrations and fixing of cairns with respect to the position of snout could be useful when further detailed glaciological studies of this glacier will be taken up.

There arises no question of confusing glacier snout with icecore moraines. Fig.4 entirely represents moraines spread upto about one kilometer downstream of the snout in an 'inactive area', whereas Fig.6 depicts an ablated segment of the glacier itself, about 1.5 km, upstream of the snout. The snout of the Miyar glacier, defined by 25 m high sub-vertical ice-well with torrents gushing out from its base is too prominent a feature to be mistaken for exclusive moraines (Fig.1). So the doubts in the reader's mind with regard to the rate of recession, at least on this count, are not well founded.