Preliminary Report on Glacier Inventory in the Dudh Kosi Region*

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Abstract

A glacier inventory was compiled on 664 glaciers in all part of the Dudh Kosi region, east Nepal, on the basis of field observations and air photographs. All glaciers were numbered and the distribution of glaciers was mapped.

1. Introduction

A study for a glacier inventory is fundamental for finding out the characteristics of glacier distributions in a certain area, and is also important for hydroelectric power, irrigation and other domestic supplies.

A pilot study for the glacier inventory in this region has been carried out by Müller (1970). He studied on 166 glaciers of the Nangpo Tsangpo and Imja Khola (river) in the upper-most Dudh Kosi region. Watanabe (1976) studied 80 representative glaciers from Kangchenjunga-Lumba Samba region in the east to Api-Nampa-Saipal-Gurla Mandhata region in the west of the Nepal Himalayas.

The present authors have been making the observations necessary for glacier inventory in the all parts of the Dudh Kosi region, east Nepal, since 1973 as a part of the Glaciological Expedition of Nepal. Field work was carried out in the Dudh Kunda Khola and Luza Drangka (sub-basin AX), Lumding Drangka (sub-basin BX), Nangpo Tsangpo (sub-basin CA and CB), Dudh Kosi (sub-basin DX), Imja Khola (sub-basin EA, EB, EC, ED and EE), Kyashar Drangka, Kusum Drangka and Surke Drangka (sub-basin FA, FB and FC), Hinku Drangka (sub-basin GX) and Hongu Drangka (sub-basin HX).

Flight observations for the glacier inventory are important as already reported by Higuchi et al. (1976) and, in order to take air photographs of glaciers, three flights were carried out in the Dudh Kosi region as follows. 1) 800 colour and 2000 black and white photographs were taken from a Boeing 727 on 23 Dec., 1974, and 2) 300 colour and 400 black and white photographs from a Pilatus Turbo Porter on 30 Nov., 1975, and 3) 300 colour and 500 black and white photographs from a Pilatus Turbo Porter on 4 Nov., 1976.

2. Glacier inventory in the Dudh Kosi region

Glaciers in this region have characteristics that the lower part of the large glaciers, like the Khumbu Glacier, are covered by thick debris. Fushimi (1977) showed that the lower part of the debris-covered glacier was a fossil ice body having no direct relation to the present glacier flow and the present active terminus was situated in the middle part of the debris-covered glacier. However, Müller (1970) and Watanabe (1976) took the fossil ice body for the present glacier terminus. The present glacier terminus can be hardly pointed out by using maps already published or photographs, but it is an important information on the present state of the glaciers to know the location of the

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present glacier terminus. We distinguished the present glacier terminus from the fossil ice body. Glaciers mapped in the present studies are defined to be ice bodies of which length is more than 200 m. A rock glacier as well as the fossil ice body separated from the present glacier are also listed.

A glacier number is indicated by a number of three figures with the third digit being 0 for undiscovered glaciers. Identification systems of glaciers are based on Müller (1970), but sub-basins are necessary and are showed in alphabetical order. A sub-basin X shows that there are less than 99 glaciers in a basin and the basin is not subdivided.

The location and the shape of glaciers are determined by field observations and photographs, and are compiled on the map of “Khumbu Himal” (Schneider, 1965, scale 1:50000) and “Shrong and Hinku” (Schneider, 1974, scale 1:50000). The following elements of the glacier are described; location, orientation, length, area exposed, area covered by debris, highest glacier elevation, lowest-glacier elevation A (present glacier terminus) lowest glacier elevation B (fossil ice body), inclination, classification and description. These glacier classification and description are devised by the authors in order to show characteristics of glaciers in this region. Definitions of each element and the glacier inventory data sheet will be published as a separate paper in near future.

The final compilation of the glacier inventory was made on the map of “Mount Everest Region” (scale 1:100000), the Royal Geographical Society (1975).

The sub-basins, glacier numbers, local glacier names and Müller’s glacier numbers are shown in the Table 1 and the glaciers in the Dudh Kosi region in the attached map.

References


Schneider, E. (1967): The map of the “Khumbu Himal (Everest)”, Ergebnisse des Forschungsunternehmens Nepal Himalaya, Band 1, Lieferung 5, Munchen.

