

A snow algal community on the surface and in an ice core of Rikha-Samba Glacier in Western Nepali Himalayas

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Abstract

A snow algal community on Rikha-Samba Glacier in the western Nepali Himalayas was investigated in October, 1998. Examination of surface snow and ice on the glacier revealed that this community consisted of mainly seven taxa including green algae and cyanobacteria. The algal community showed an altitudinal distribution on the glacier: its biomass decreased with increasing altitude and community structure changed with altitude. Snow algae were also found in an ice core drilled at the top of the glacier. The ice core was 15 m deep and spanned 37 years (1962–98) based on the analyses of tritium, dust, and stratigraphy. Snow algae in the ice core included four taxa of snow algae, which were likely the same taxa observed on the glacial surface. The record showed that the biomass and species composition of the snow algae varied among layers in the ice core. Some layers contained algae that were observed only at a lower altitude of the glacier in the studied year. This implies that altitudinal distribution of a snow algal community could shift up or down on the glacial surface from year to year. Although the variation in this algal community in the ice core might be affected by spatial variation and diagenesis of algal cells in the glacial ice, the biomass increase in the 1990s and the variation in species composition are likely to reflect an algal community appearing on the glacial surface.