

Variation of Biological Activity on an Asian Glacier Recovered from a Shallow Ice Core

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There is a diverse biological community on the snow and ice surface of glaciers. Recent changes regarding glaciers reported in many parts of the world may affect biological community on glaciers. Temporal variation of biological activity on a Himalayan glacier was recovered from a 15 m deep ice core drilled in 1998. The tritium, dust, and stratigraphy showed that the core covers 37 years (1962-98). Microscopy revealed that the core contained cells of snow algae (green algae and cyanobacteria) growing on the glacial surface. The core record showed that total cell volume biomass of the snow algae annually varied. In particular, the biomass in 1990s is significantly larger than before, indicating their significant bloom in the period. The annual variation of biomass was compared with the variations of dust flux, mass balance, stable isotope, and chemical compositions. The comparison suggests that the increase of snow algae may be attributed to the combination of climate warming and nutrient enrichment on the glacial surface in 1990s.