

Snow algal community on glaciers in Suntar Khayata region, Russia Siberia

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Snow algae are cold tolerant algae adapted to cold environments. They are observed on glaciers worldwide, they photosynthesize and bloom during melting season.

According to previous studies, the structure of snow algal community varied with regions of the world. It is important to clarify geographic distribution of snow algal community, for understanding the influence on the ecology, evolution and a dispersion process of snow algae, and also frozen snow dissolution.

The Suntar Khayata region, Russia is a mountain range located in the north side in the Sea of Okhotsk. There are about 200 glaciers. In this area, observation about snow algae has not done yet. So, we aim to reveal the snow algal community of this area with quantitative analysis. Investigation places are four glaciers of this area. Sampling carried out twice, July and August.

In this area, two taxa of green algae and five taxa of cyanobacteria were observed. It was thought that these snow algae were common taxa in the ablation period of this area. The total algal biomass was large in the bare ice area, and it fell in the snow coverage area. Within bare ice area, The total biomass shows a tendency to become smaller by the lower stream side. Moreover, the altitudinal distributions of each species of snow algae were mostly in agreement between glaciers. *Anc. nordenskioldii* was dominant species in bare ice area and *Chloromonas* sp. was dominant species in snow covered area. These features were common among four glaciers which investigated.

On the other hand, it also became clear that there is the different feature for every glacier. At the glacier which flows through the southern slope of a mountain range, the total algal biomass became larger than other glaciers.

With advance of ablation period, it also was observed that the structure of snow algal community on the glacier surface changed. When ablation progressed at a certain point of the glacier and the surface condition changed from snow to ice, the dominant species also changed from *Chloromonas* sp. to *Anc. nordenskioldii*. Moreover, filamentous cyanobacteria were not observed in early stages of ablation period at a glacier but, 1 month later, these cyanobacteria observed at same glacier. It revealed that the seasonal change of snow algal community is late for other glaciers in some glaciers.

The result obtained from this research was compared with other glaciers where the previous study already done. The glacier of Suntar Khayata region was dominated by green algae and *Anc. Nordenskioldii* is observed. These were the features which are common to the glacier of many North Pole regions.

By this research, the feature of the snow algal community of Suntar Khayata region became clear quantitatively for the first time. The structure of snow algal community of this area had a tendency which shows the feature which is common to the glacier of the North Pole region. Moreover, it was confirmed that snow algal community in the same area not only shows common features such as altitudinal distribution and dominant species, but also shows characteristic feature such as pattern of the biomass and seasonal variation by glaciers. The possibility that a difference occurred for the process of detailed ablation at the glaciers in the same area and the possibility that the influence to glacier melting by snow algae changes during ablation period were suggested.

Keywords: snow algae, community structure, mountain glacier, arctic, Saiberia, Suntar Khayata