Snow algal communities and albedo on the glaciers in West Greenland

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Snow microorganisms (Green algae, Cyanobacteria, Fungi, Bacteria) were reported from many glaciers and seasonal snow in various part of the world. It has been reported that snow microorganisms produce the dark colored material (Cryoconite) on the glacier which reduce albedo of the glacier surface and accelerate the glacier melting. The effect of this process was estimated to be large especially in the temperate mountain glaciers where drastic retreat of the glacier was reported., Glaciers in arctic region will be largely affected by global warming in near future, too. Relationship between albedo and snow microorganisms, however, is still not studied well in arctic region. In this study, we studied species composition and biomass of microorganisms on the glaciers and glacier albedo in northwestern parts of Greenland. In the lower parts of glacier (300m a.s.l.) where covered with ice, only *Mesotaenium breggrenii* can be observed. Otherwise, in middle parts (700 m a.s.l.) where covered with ice and snow, *Mesotaenium breggrenii* is dominant, but 4 different species can be observed. In upper parts (800 m a.s.l.) where covered with snow, unidentified round green algae is dominant. Biomass of green algae and cyanobacteria is highest in middle parts of glacier (500 and 700m a.s.l.).

Glacier albedo is higher in lower and higher parts, otherwise lower in middle parts, suggesting that microbial activity reduced the albedo of this glacier.