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Effect on glacial melting of organisms on snow and ice: geographical comparison of the organisms and surface albedo of glaciers

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There are diverse organisms on glaciers, such as snow algae, insects, and bacteria. They are specialized to live in such a cold-environment. Biogenic material derived from their activity on glaciers has an effect on glacial surface albedo. The material could reduce surface albedo, then accelerate melting of the glacial surface. We analyzed the biogenic material (cryoconite) collected from many glaciers in the world including Arctic, Alaska, Patagonia, Himalayas, Tibet, and Tienshan. We evaluate the effect of the material on surface albedo for each glacier, then discuss what is responsible for the geographical variation of organisms and their effect on surface albedo.