

Reconstructions of past cyanobacteria flora from ice core samples on Gregoriev Glacier, Kyrgyz Tianshan

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Cryoconite, a microbe-mineral aggregate found on glaciers worldwide is formed by the action of microbial phototrophs, principally Cyanobacteria.

The species composition of cyanobacteria in the ice cores could reflect the environmental condition at that time. Thus, these microorganisms in ice cores could be useful to reconstruct past environments. Despite the ecological importance in glacial environments, the phylogeographic distributions and genetic structures of glacial cyanobacteria are still highly limited.

We report results of cyanobacterial species and their evolution by molecular DNA analysis collected from the ice core samples collected on Gregoriev Glacier, Kyrgyz Tianshan. We reconstruct the organisms and their interactions within the community and with the environment on the sampled sites. We also present detailed pictures of cyanobacterial distribution patterns on glaciers over the Arctic, Antarctic, and Asian high mountains combination of 16S rRNA and 16S-23S internal transcribed spacer (ITS) regions. The results implied cyanobacteria could migrate across Asian glaciers for the last 10,000 years.

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