

Reconstructions of past flora using DNA analysis from ice core samples on Gregoriev Glacier, Kyrgyz Tienshan

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Analyses of ice cores have often been used as a means to reconstruct past environments. The species composition of the organism such as microorganism and plant in the ice cores could reflect the environmental condition at that time. Thus, organisms in ice cores could be useful to reconstruct past environments. However, analysis of the biological contents of ice cores is still very limited. It is difficult to get ancient DNA information, so knowledge of the paleoenvironments still has limited.

In this study, we examined DNA from the bottom part of ice core sample (about 13,000 years old) collected on the Gregoriev Glacier, Kyrgyz Tienshan. Genes of plant and microorganism were subjected to PCR amplification and nucleotide sequencing. Our results implied that DNA from preserved organisms can be recovered from the bottom part of ice core, leading reconstructions of past flora. We showed that ice sheet currently existing about 100m of ice was not existed in about 13,000 years old and glasses were inhabited. Biological information could be used as an environmental marker for pastenvironmental studies.