

Change in chemical species in a re-drilled Dunde ice core, western China.

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A continuation of the ice core records to the present days is of great interest in terms of glaciology and hydrology as well as climatology. A 51-m-deep ice core was re-drilled on the Dunde Ice Cap, western China in 2002 to obtain the recent environments changes of in this region after the last ice core drilling in 1987.

The stratigraphy and density of the ice core showed more than 90% of the ice core consisted of refrozen ice layers, which had made up less than 5% of the annual precipitation in the previous core. This indicates that the ice cap melted more intensely after the last drilling, possibly due to warming. The oxygen isotope record was generally consistent with the previous core findings. However, there has been no significant increase in oxygen isotope during the last two decades, in contrast to the warming trends inferred from melt features in the ice core and the other meteorological records.

On the other hand, major ions contained in ice cores have been analyzed to obtain histories of small amounts of atmospheric fall-out such as rock salts, wind-blown dust, and trace elements resulting from natural and anthropogenic causes. However, it has been generally pointed out that a significant melt should disturb these atmospheric signals. We analyze the major ions in the re-drilled Dunde ice core to examine how deep the melt affect the major ions through the ice core. We find that some obvious signals of major ions still remain even in the melt ice core. We will present what kinds of species and how much degree of signals could survive in the melted ice core.