

Recent environmental changes in the Qilian Mountains in China revealed by an ice core

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Decline of water resources, or desertification, is now a large issue in arid regions of the western China. The desertification is possibly due to human activities, such as over use of agricultural water and overgrazing of livestock. But that also may be due to change of natural environments, such as climate changes. In order to evaluate recent changes of natural environments, an ice core has been drilled on the Dunde ice cap, which is located in the Qilian Mountains, China.

The ice core was 51 m deep. Oxygen and deuterium stable isotopes and particle concentrations were analyzed at every 5 cm of the core. The core has been dated with particles variation and a tritium peak of the year 1963. Annual variation of the oxygen stable isotope showed that increasing trend from mid 1850s to mid 1950s, suggesting that climate warming in this region during this period. However, the variation showed no significant trend from 1950s to 2002. This suggests that climate warming is not significant in this period although the warming trend has been reported in the other many places. Annual mass balance (or net accumulation) of the ice core showed that that slightly increased from 1970s to 2000s, suggesting that precipitation on this region has been increased slightly during this period. These results indicate that climate changes could not explain the resent decline of water in this region. Human activities are more likely to cause the decline of water resources.