Oxygen isotopic analysis and annual layer determination of H72 ice core in east Dronning Maud Land, Antarctica

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Japanese Antarctic Research Expeditions (JARE) have collected data on snow accumulation rate, stratigraphic profiles and paleo-environmental records from shallow ice cores along the traverse routes in east Dronning Maud Land, Antarctica. It is now possible to discuss the changes in past climate and surface mass balance of the ice sheet. Shallow ice cores are collected at several locations in the last decade to estimate the variation of proxy climate records of temperature and precipitation. These cores are part of the International Trans-Antarctic Scientific Expedition (ITASE) program, which plans to extend the Antarctic record of change in climate, atmospheric chemistry and surface mass balance back to about 200 years ago, and contribute to an understanding of the interaction between global changes and the Antarctic continent. The 73.29m ice core was obtained in September 1998 at H72 in east Dronning Maud Land, Antarctica by JARE-39. Development of an annually resolved ice-core series is recognized as an essential component of the ITASE program because of the need for comparison. Several methods have been used to date the ice cores. Stable isotopic measurements of ice have classically been employed as a proxy for temperature and accumulation by annual layer counting in the dry snow zones of Antarctica. In this report, we determined the annual layers of the H72 ice core by oxygen isotopic analysis.