

A 720,000 years deuterium-excess record from the Dome Fuji ice core, Antarctica

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Stable isotopes of water preserved in the polar ice cores provide earth's climatic history over hundred thousand years. The deuterium ($^2\text{H}/^1\text{H}$) (or oxygen ($^{18}\text{O}/^{16}\text{O}$)) isotope ratios is widely used as an air-temperature proxy. Further, a combined use of these isotopes provides a parameter, deuterium excess, and provides the information on the changes in ocean surface temperature in the moisture source for polar precipitation.

Here we report a preliminary result of the deuterium-excess record from the second Dome Fuji ice core (2400m to 3034m), Antarctica. This deep core was drilled by the Japanese Antarctic Research Expedition at the Dome Fuji station in January 2007. Sample preparations and analysis are now being conducted.

The delta-18O (or delta-D) records shows clear changes in amplitude of glacial-interglacial cycles around Marine Isotope Stage 12 (Mid-Brunhes event). In contrast, the d-excess record shows smaller changes in amplitude suggesting that stable cyclical variations of moisture source regions over past 720,000 years.