

Characteristics of correlation between climate and environmental elements from past 720,000 years in Dome Fuji ice core, Antarctica

Hideaki Motoyama[†]; Dome Fuji Ice Core Project members

[†] National Institute of Polar Research, Japan

Leading author: motoyama@nipr.ac.jp

Two deep ice cores (DF1: 2503m and DF2: 3035m) at Dome Fuji, Antarctica have the in-depth information of global environmental change from present to the past for 720,000 years. We made the data set of basic chemical analysis which was analyzed 10cm sample every 50cm from 2400m to 3028m using the DF2 core. The age of this depth was covered from 300,000 to 720,000 years before. Using the DF1 core, major chemical species were carried out using 7-10cm ice samples cut out of the 50 cm-long spaced from 0.5 to 2.5m. All data was averaged by every 5 m. The Correlations between climate and environmental elements were calculated. The indexes of climate and environment are the following elements; MSA-, Cl-, NO₃-, SO₄²⁻, H (calculated from pH.), Na , NH₄ , K , Mg² , Ca² , ss-Na , nss-Cl-, nss-SO₄²⁻, nss-K , nss-Mg² , nss-Ca² , dD, d18O, d-excess, dust, pH and electrical conductivity. There is a feature in correlation respectively by the climatic stage. dD or d18O which becomes the index of the temperature and the environmental elements (for example, Na and Mg) indicate the strong negative correlation, but its degree is different depending on the climatic stages. In particular, environmental changes around Mid-Brunhes event and during AIM event were examined.