Responses of Antarctic and the Southern Ocean temperatures to changes in annual-mean insolation over the past 700,000 years

*Ryu Uemura[1], Dome Fuji ice core Research Group[2]

1. University of the Ryukyus, 2. National Instititute of Polar Research

Antarctic temperature record, based on isotope composition of water (δ D), shows close correlation between temperature and atmospheric CO_2. Many studies suggest that a central role of the temperature variation of the Southern Ocean region for global carbon cycle. Deuterium-excess (d-excess = δ D $-8\delta^{18}$ O) provides the information on the ocean surface conditions in the moisture source for polar precipitation. We show a new d-excess record from the 3,035m-depth Dome Fuji ice core (DF2), which was obtained at the Dome Fuji station. The new part of DF2 core (2400m to 3034m depth) extends back to 700 ky BP with high time-resolution. We reconstructed Antarctic air temperature (T_{site}) and temperature at moisture source region (T_{source}) using the new d-excess data. Relationship between T_{site}, T_{source}, and annual mean insolation will be discussed.

Keywords: ice core, d-excess, glacial interglacial cycle

