

OXYGEN ISOTOPE PROFILES OF DEPOSITED SNOW
IN DIFFERENT DEPOSITIONAL ENVIRONMENTS
OF THE ANTARCTIC ICE SHEET (ABSTRACT)

Yutaka AGETA¹, Kokichi KAMIYAMA², Hideki NARITA³
and Kazuhide SATOW⁴

¹*Water Research Institute, Nagoya University, Furo-cho, Chikusa-ku,
Nagoya 464-01*

²*Geophysical Research Station, Faculty of Science, Kyoto
University, Noguchibaru, Beppu 874*

³*Institute of Low Temperature Science, Hokkaido University,
Kita-19, Nishi-8, Kita-ku, Sapporo 060*

⁴*Nagaoka College of Technology, 888, Nishi-katakai-cho,
Nagaoka 940*

Vertical profiles of oxygen isotopic contents in deposited snow were obtained in the region where katabatic winds prevail (Mizuho Station: 70.7°S, 44.3°E, 2230 m), the inland dome-like plateau (Dome Camp: 77.0°S, 35.0°E, 3761 m) and the transitional zone between them (Advance Camp: 74.2°S, 35.0°E, 3198 m). Ten profiles from a snow trench 10 m wide and 1 m deep, a profile from a snow pit 3 m deep and that from a snow pit 5 m deep were obtained at Mizuho Station, Advance Camp and Dome Camp, respectively. Snow layers were dated on the basis of stake measurements at Mizuho Station, a peak of tritium content (in 1966) at Advance Camp and peaks of tritium and gross β activities (in 1965, 1955) at Dome Camp.

At Mizuho Station, $\delta^{18}\text{O}$ contents have high values around the hiatus layers. However, synchronous relations cannot be found between neighboring profiles, since snow was exchanged due to deposition and erosion by strong winds. Inter-annual variations of oxygen isotopic contents in snow have been preserved better in the inner parts of the ice sheet between the three zones observed in this study. The profile at Dome Camp has good correlation with the inter-annual variation of summer temperature at 5000 gpm above the South Pole. This result suggests that the temperature at this level above the South Pole is representative for air temperature condition over the inland ice sheet, and the meteorological conditions in summer have a strong effect on the transition of the oxygen isotopic content of snow after deposition due to evaporation-sublimation.

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