

CHEMICAL AND ISOTOPIC CHARACTERISTICS OF ICE FROM
AN ICE-WEDGE IN SEYMOUR ISLAND (ISLA VCOM.
MARAMBIO), ANTARCTIC PENINSULA
REGION (II) (ABSTRACT)

Kikuo KATO¹ and Masami FUKUDA²

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

²*Institute of Low Temperature Science, Hokkaido University,
Kita-19, Nishi-8, Kita-ku, Sapporo 060*

Even in Antarctica the permafrost and the distinctive ground features such as the polygon and ice-wedge are seen in the regions free of ice cover. Chemical and isotopic characteristics of ice, which forms the polygon and ice-wedge, have not yet been clarified. However, they may provide useful information about the origins of these ice bodies, and the processes and environments of formation of the distinctive ground features.

Seymour Island (Isla Vcom. Marambio) is one of the places free of ice cover. Many ice-wedges and ice-wedge casts were found. In the previous paper KATO *et al.* (Proc. NIPR Symp. Antarct. Geosci., 4, 181, 1990) clarified very specific chemical characteristics of ice from the ice-wedges. Concentrations and compositions of chemical species in the ice body vary in an unexpectedly wide range and are greatly different between the upper and lower parts, even from the same ice-wedge ice body. Vertical profiles of the concentrations and compositions of chemical species are very specific, especially in their taking zigzag courses.

In this study, in order to clarify isotopic characteristics of ice in ice-wedges, the oxygen isotopic compositions ($\delta^{18}\text{O}$) of ice samples from the ice-wedge were determined. Determined values of $\delta^{18}\text{O}$ vary also in an unexpectedly wide range, from small one same as that of new-snow to large one close to that of sea water, even from the same ice body. And vertical profile of $\delta^{18}\text{O}$ is also very specific. A relationship was found between the determined oxygen isotopic and chemical compositions of the ice-wedge ice.

(Received May 13, 1991; Revised manuscript received May 27, 1991)