

IV. Oxygen Isotopic Composition in the Cores from Mizuho Station

The cores taken from Mizuho Station (70°41.9'S, 44°19.9'E; 2230 m a.s.l.) in 1971–1972 were transported to the cold room at the Institute of Low Temperature Science, Hokkaido University. After the stratigraphic observation of the cores, appropriate samples for oxygen isotope determination were collected. All the samples in a liquid state were brought to the laboratory of Water Research Institute, Nagoya University.

The experimental procedures for oxygen isotope determination are essentially the same as those described by EPSTEIN and MAYEDA (*Geochim. Cosmochim. Acta*, **4**, 213–224, 1953). The $^{18}\text{O}/^{16}\text{O}$ ratio of CO_2 equilibrated isotopically with a water sample was measured with a double collector mass spectrometer (Varian Mat CH-7) in the Department of Earth Sciences, Nagoya University. Analytical results are given in $\delta^{18}\text{O}$ notation as follows,

$$\delta^{18}\text{O} = \frac{(^{18}\text{O}/^{16}\text{O})_{\text{sample}} - (^{18}\text{O}/^{16}\text{O})_{\text{SMOW}}}{(^{18}\text{O}/^{16}\text{O})_{\text{SMOW}}} \times 1,000 (\text{‰})$$

SMOW: Standard Mean Ocean Water

and analytical error is $\pm 0.2\text{‰}$.

The results are given in Tables 1 and 2.

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Table 1. $\delta^{18}\text{O}$ values in the depth of 20.62–22.94 m of the core.

Depth (m)	$\delta^{18}\text{O}$ (‰)	Depth (m)	$\delta^{18}\text{O}$ (‰)	Depth (m)	$\delta^{18}\text{O}$ (‰)
20.62	−35.6	21.53	−37.2	22.33	−37.3
20.73	−37.1	21.58	−38.6	22.36	−39.4
20.77	−39.4	21.70	−37.5	22.39	−38.5
20.98	−39.5	21.88	−37.9	22.56	−39.7
21.19	−38.0	21.92	−36.5	22.73	−36.8
21.25	−39.4	21.96	−38.6	22.76	−35.8
21.29	−39.9	22.04	−39.7	22.86	−36.7
21.33	−36.7	22.12	−40.1	22.94	−35.8
21.40	−39.1	22.25	−38.5		

Table 2. $\delta^{18}\text{O}$ values of the thick and fine-grained layers with little developed depth hoar in the cores from Mizuho Station.

Depth (m)	$\delta^{18}\text{O}$ (‰)	Depth (m)	$\delta^{18}\text{O}$ (‰)	Depth (m)	$\delta^{18}\text{O}$ (‰)
4.72	-30.3	24.20	-37.4	42.26	-37.7
5.79	-32.8	25.77	-35.8	43.30	-39.1
6.29	-33.7	26.87	-37.0	44.10	-38.5
7.74	-33.6	27.82	-36.8	45.05	-37.9
8.48	-32.7	28.56	-34.7	46.44	-34.8
9.81	-31.9	29.50	-36.7	47.69	-35.3
10.24	-33.9	30.85	-39.3	48.42	-35.8
11.68	-33.9	31.78	-41.2	49.30	-33.5
12.90	-33.6	32.94	-37.9	50.12	-34.8
13.80	-35.6	33.97	-36.3	50.70	-35.1
14.35	-33.5	34.53	-34.7	52.12	-33.9
15.81	-37.7	35.83	-34.6	52.80	-33.3
16.42	-38.3	36.62	-34.0	53.80	-34.3
17.27	-37.5	37.42	-35.5	55.03	-34.9
18.28	-35.8	38.63	-34.8	56.30	-34.7
19.40	-34.3	39.48	-35.9	57.30	-35.9
20.62	-35.6	40.38	-36.9	57.96	-36.0
21.58	-38.6	41.46	-38.4	59.33	-36.0
22.25	-38.5	41.68	-34.7	60.33	-35.7
22.94	-35.8	41.70	-35.8		