be obtained after approximately 10^4 years when started from 1000 m ice thickness all over the basin. The obtained stable surface topography shows its sensitive dependence on the bedrock topography. There appeared a tendency that the bottom temperature of the downstream of the Glacier is higher than the melting point, which may conform the suggested instability of the ice sheet near the central stream line of the Shirase Glacier (S. MAE: J. Glaciol., **24**, 53, 1979).

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ASSUMPTION OF SNOW TEMPERATURE NEAR SHIRASE GLACIER FROM ANALYSIS OF RADIO ECHO SOUNDING DATA (Abstract)

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Radio echo sounding was carried out in 1980 near the Shirase Glacier in East Antarctica. As radar echo intensity observed from a layer depends on refractive index which is a function of density, temperature and depth, intensity is a function of temperature and depth in the region where the density is nearly constant. As temperature is a function of depth, a relationship between temperature and depth was calculated using an intensity of radar echo and a value of surface temperature (actually snow temperature at 10 m depth) which had already been surveyed in a position. The profile of complex dielectric constant and temperature were calculated in other positions where radio echo soundings had been carried out in 1980 using the relationship between temperature and depth. In this calculation $\varepsilon_r=3.168+0.535\times\varepsilon_i$ was supposed when $\varepsilon_i\geqq 5.6\times10^{-3}$ and $\varepsilon_r=5.6\times10^{-3}$ was supposed when $\varepsilon_i<5.6\times10^{-3}$, where ε_r and ε_i were real and imaginary parts of dielectric constant, respectively. As snow temperature near the Shirase Glacier was assumed by these calculations, the comparison between this result and actual measurement in future will be necessary.

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NEUTRON ACTIVATION ANALYSIS OF SPHERULES FROM BARE ICE NEAR THE ALLAN HILLS AND AN ICE CORE FROM MIZUHO STATION (Abstract)

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Spherules contained in the Antarctic ice at two sites are studied in terms of their concentrations of refractory trace elements by means of instrumental neutron activation analyses (INAA). Results of INAA are consistent with those of

energy dispersive X-ray microanalyses (EDXMA) and X-ray diffraction photographies (XDP). A spherule from the Allan Hills has structures of Mg-rich olivine and magnetite with high Fe, Ni and S contents, which are similar to those of the Allende meteorite and Brownlee particles. It is enriched with siderophile elements such as Co, Ni, Os, Ir and Au by factors of 1.5–3 relative to chondritic abundances. Two spherules from Mizuho Station have a perovskite structure with high Cr and Fe contents, show unusual abundance in rare earth elements; Nd and Sm are highly enriched in them by factors of 2.5–10 relative to those of the terrestrial perovskites. Another one with stainless-steel-like composition (Fe; 65%, Cr; 10%, Ni; 7% in weight) from Mizuho Station shows a similar concentration of rare earth elements, depressed by a factor of 0.02 relative to those of the perovskite spherules.

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SEASONAL VARIATION OF pH VALUES IN SNOW AT HALLEY BASE AND MIZUHO STATION, ANTARCTICA (Abstract)

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Profiles of pH in 1.7 m deep pit samples and a 21.8 m deep core obtained at Brunt Ice Shelf near British Halley Base in 1982 indicate clear seasonal variation with an annual minimum in summer. Furthermore, pH of drifted snow collected at Mizuho Station from February 1977 to January 1978 shows also clear seasonal variation, being high (5.4–5.7) during a period from early March to early November and low (4.8–5.3) during summer. The decrease in pH values in summer may be mainly due to the enhancements of fallout of sulfuric acid aerosol derived from stratospheric sulfate gases which subsided during summer.

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SEASONAL VARIATION OF OXYGEN ISOTOPIC COMPOSITION OF DRIFTING SNOW AT MIZUHO STATION, EAST ANTARCTICA (Abstract)

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The variation of oxygen isotopic composition ($\delta^{18}O$) of fallen snow at Syowa Station is caused by the supply of ^{18}O-rich water vapor resulting from the approach of circumpolar cyclone (K. KATO: Nature, **272**, 46, 1978). However, that of drifting snow at Mizuho Station in the austral winter of 1974 was not attributable to the same cause (KATO *et al.*: Mem. Natl Inst. Polar Res., Spec. Issue, **7**, 245, 1978). In order to know the seasonal variation of $\delta^{18}O$ of drifting snow at Mizuho Station and to investigate the transportation process of water vapor to the station and the formation process of snow (cooling process for its formation), samples of drifted snow at the station were collected during the course of 1977 and their $\delta^{18}O$ values were determined.