

REGIONAL COMPARATIVE STUDIES ON MICROPARTICLES IN POLAR ICE CORES (ABSTRACT)

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SEM observations have been carried out since 1987 with microparticles contained in medium and shallow depth ice cores retrieved at Mizuho Station (1984: 70°42'S, 44°20'E, 2230 m) and at the Advance Camp (1985, 74°12'S, 34°59'E, 3200 m) in East Queen Maud Land, Antarctica. Results of observations including morphological classification of particles have been published (HIGASHI *et al.*: Bull. Glaciel Res., 8, 31, 1990). Addition of observational data from cores of shallow depth at Mizuho, and Asuka Stations (1989: 71°34'S, 24°08'E, 930 m) in Antarctica, and also at Site J in Greenland (1989: 66°52'N, 46°16'W, 2030 m) enabled us to compare regionally the characters of microparticles.

The number of particles larger than 0.6 μm is on the order of 500 per 0.05 ml of melt water (the same unit in the following) for Mizuho cores (depth, 0–400 m) and of 1500 for depth shallower than 80 m at the Advance Camp, whereas it is of 500 for deeper depth between 100–200 m. It is also on the order of 500 for the 200 m core at Site J, but if we consider the much larger accumulation rate in south central Greenland than in interior Antarctica, the fall rate of microparticles at Site J must be 5 times larger than in the Mizuho area. For Asuka core, we can also evaluate the larger fall rate, some 8 times that at Mizuho. Many pollen particles were observed in surface snow near Asuka, a new finding in Antarctica.

Morphology and results of Energy Dispersive Spectral elementary analysis data for microparticles in ice cores were compared with those of stratospheric microparticles catalogued in NASA Cosmic Dust Catalogues. In average, the elemental ratio of the particles in the cores resembled that of non-cosmic particles in the stratosphere, but it was difficult to identify origins of individual particles. A full account of results will be published after collecting data from deeper depth cores (400–700 m) of Mizuho, which is now in progress.

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