A STUDY OF THE STRUCTURE OF LOW-LEVEL KATABATIC WINDS AT MIZUHO STATION, EAST ANTARCTICA (ABSTRACT)

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The low-level katabatic wind profiles, which have shapes similar to those of the low-level jet (LLJ) wind profiles, are often observed during strong winds in the summer period at Mizuho Station, which is located at 70°42′S, 44°20′E in East Antarctica. The profiles may be classified according to the height of the maximum wind speed, z_m, found below 30 m height. The behavior of z_m and of conditions in the layer above z_m are explained well by the normalized frequency, $f_N = Nz/U$ at 30 m, whose value can be used to predict the existence of an LLJ wind profile. Subsidence and inertial oscillations above z_m are related closely to the height and time variations of z_m. Thus, not only effects emanating upward from the surface but also momentum and heat transported downward from above are significant for the evolution of z_m.

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OBSERVATIONS OF HOLLOW-PRISM SNOW CRYSTALS AT MIZUHO STATION, ANTARCTICA (ABSTRACT)

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The observations of snow crystals have been made using a stereoscopic microscope at Mizuho Station, Antarctica during the period from March 1979 and January 1980. Hollow prisms were observed rather in excess together with different shapes of snow crystals, and the mean values of the crystal size and the size ratio c/a of the hollow prisms were 293 μm and 3.6, respectively. The size ratio c/a of the hollow prisms did not depend on the length along a-axis, but depended only on the length along c-axis, and the size ratio c/a increased with increase of the length along c-axis. By comparing the observational values with the experimental ones, it is estimated that the mean value in supersaturation during the whole period when hollow prisms were observed is about 10%, and it is inferred from the experimental form of observed hollow prisms and their growth conditions that hollow prisms observed at Mizuho Station grew by a two-dimensional nucleation mechanism.

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