cover in the polar region. The continuous existence of the open water polynya even in the severe winter shows that two phenomena, namely vigorous frazil ice production and sweeping it away with a strong wind blowing, simultaneously occur there. The open water polynya, therefore, serves as an efficient ice factory much more than the sheet ice growth.

The purpose of this study is to clarify the atmosphere-ocean interaction through the processes of high-sea ice production. Laboratory experiments were performed in which the processes of frazil ice production and the resulting convection were examined as a function of air temperature ($-10 \sim -30$°C) and wind speed (2–10 m/s). A plexiglass test tank ($0.4 \times 2 \times 0.6$ m in dimension) was filled with salt water (32 permils in salinity) and set in a large cold room. The wind was blowing on the water surface from one side. The convection phenomena in the test tank were observed with a schlieren optical system. The edge position of a frazil ice layer which was accumulated on the lee was advancing against the wind. The processes of frazil ice production markedly changed with wind speed. The higher the wind speed, the thicker frazil ice layer composed of fine crystals formed, whereas at the lower wind speed the thinner frazil ice sheet was advancing windward. The advancing rate of frazil ice layer increased with lowering air temperature but did not depend on wind speed noticeably. The rate of frazil ice production increased with increasing wind speed and lowering air temperature, the wind effect was much larger. At the higher wind speed, a significant amount of supercooled water that formed on the open water surface was efficiently transported into the interior of the water tank through the wind-driven circulation as well as the instability in density, which results in the production of a large amount of frazil ice in the interior of the water tank.

From these experimental observations, it was found that the following four typical regions exist during the processes of frazil ice production; (1) Fast ice sheet (most close to the wind and common ice growth); (2) Open water (region of frazil ice production); (3) Ice edge (brine exclusion mainly occurs in this region); (4) Frazil ice layer (this forms on the lee and is gradually advancing windward).

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GLACIOLOGICAL CHARACTERISTICS OF AN ANTARCTIC INLAND PLATEAU (ABSTRACT)

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Glaciological observations on the high plateau were made along a route of the oversnow traverse by the 26th Japanese Antarctic Research Expedition in 1985. The shape of the dome-like plateau (Valkyrjedomen), which is the second highest in Antarctica, and the position of ice divides have been known more than before. The highest place of this dome was found at 77° 22′S, 39°37′E with an altitude of 3807 m by the use of Navy Navigation Statellite System.

The surface slope, net accumulation, configuration of snow surface, ram hardness, 10 m snow temperature and others were observed. From these results, the characteristics of katabatic winds region were not found in the region higher than the altitude around 3400–3600 m, which

was about 400 m higher than such altitude in the case of Mizuho Plateau. Surface slopes change to less than 2×10^{-3} in the higher area from such altitudinal boundaries in both cases of the present study and Mizuho Plateau.

From the observation of surface configuration, it was known that the directions of prevailing winds changed from southeast in the katabatic winds region to northeast around the highest place of the dome. On the basis of these results, patterns of atmospheric circulation over the plateau and its relation with the glaciological aspects are briefly discussed.

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DIAMETER MEASUREMENTS OF A 700-M DEEP BORE-HOLE AT MIZUHO STATION, EAST ANTARCTICA (ABSTRACT)

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The closure rate was obtained by measuring the change in diameter of the bore-hole. The diameter measurements were firstly made on 3rd August 1984, the second day after the completion of the drilling. It was repeated eighttimes for one year and a half, and the last measurements were carried out on 19th January 1986.

The strain rate of the bore-hole was calculated from these observations. It decreased with time at shallow depths continuously, indicating that the steady state had not been reached for the observation period. At deeper depths, the strain rate decreased in the early period, but icreased at later stages, taking a minimum value in between. The minimum strain rate was achieved earlier at deep depths than at shallow depths. A power law was obtained between the minimum strain rate and the shear stress at various depths.

The power law was compatible with that derived from observations of surface flow at Mizuho Plateau.

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