

ICE CRYSTALS GROWN FROM THE VAPOR AT TEMPERATURES LOWER THAN -17°C (Abstract)

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A series of experiments to grow ice crystals at low temperatures were carried out in the low temperature laboratory of the National Institute of Polar Research by using an unforced air flow cloud chamber, which was designed to grow ice crystals in a stable supercooled cloud at temperatures between the melting point and -25°C . After the cloud chamber was operated continuously for days, a few threads were hung vertically from the top plate. Ice crystals were grown from the vapor on the vertical threads or on solid frost covering the wall of the chamber. Those grown for about 12 hours were sampled and observed under a polarization microscope in the laboratory. The temperature range in which ice crystals are possible to grow was between -17 and -38°C .

Results of the present experiments are as follows: (i) Almost all types of ice crystals grown in the previous free fall experiment with the low temperature range grew in the stable condition of the present study. (ii) Polycrystals were predominant. And those called "Gohei" or "V-shaped ice crystals" were also obtained. (iii) The number of V-shaped crystal's repeated structure in a unit length was about $1/5$ of that of a freely fallen crystal and they grew slower than falling crystals.

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SEA ICE CONDITION AROUND SYOWA STATION, LÜTZOW-HOLM BAY, IN 1981 (Abstract)

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Observations of sea ice around Syowa Station were carried out in 1981 mainly for the safe operation of marine geological survey from the surface of sea ice. Data were obtained by ice thickness measurement, visual observation from the air, and monitoring of ice condition by NOAA-6 satellite images. Usually the fast ice covers Lützow-Holm Bay almost entirely in winter, and a shore recurring polynya is formed along the northeast coast of the bay in late summer. Degree of development of the polynya differs greatly from year to year. As in the case of 1980, the polynya in 1981 enlarged extensively to occupy more than a fourth of the bay area, and survived until the beginning of June. It was very small in 1982. Cyclic change in the development of the polynya seems to exist; controlling factors are not known, but the amount of snow fall on sea ice in early summer appears to be partly responsible for such fluctuation. Ice thickness measurements at 1 to 2 km intervals along the traverse routes 500 km long were done mainly in October; the thickness of first-year ice in the eastern part of the bay ranges from 100 to 140 cm and thins generally toward the eastern coast and the thickness of second-year or multi-year ice in the west increases toward west from 160 to more than 300 cm. Thickness of some old ice seems to exceed 10 m, estimated from the