small (about 15 cm/a) in the middle part between 2000 m and 2400 m, and intermediate (about 30 cm/a to 20 cm/a) in the higher part above 2400 m.

Redistribution of drifting snow was estimated by a calculation of drifting snow convergence, based on the dependence of katabatic wind speed on topography and the relation between drifting snow and wind speed. The calculated convergence was large positive at around 800 m a.s.l., negative between 2000 m and 2400 m a.s.l., and negligibly small above 2400 m a.s.l. Taking account of this drifting snow convergence into the accumulation rate, the observed variation of accumulation rate with elevation was well explained.

(Received February 14, 1990)

SNOW OBSERVATIONS BY MSR (ABSTRACT)

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The Marine Observation Satellite (MOS)-1 is the first Japanese earth observation satellite, launched in February 1987. It has a Microwave Scanning Radiometer (MSR) with the frequencies of 23.8 GHz and 31.4 GHz.

On February 9 and 10, 1988, an MOS-1 airborne verification program for snowpack was carried out by the National Space Development Agency (NASDA), in the central part of Hokkaido, Japan. Several flights were carried out by an aircraft-mounted MSR, synchronized with MOS-1, together with field experiments for obtaining ground truth data of the snowpack in the same area.

Seven test sites were set up along the flight route from Iwamizawa to Sapporo at appropriate intervals. Snowpack parameters such as density, temperature profiles, snow depth, stratigraphy and so forth were measured at each site using pits digged in the snowpack. Continuous observations of the microwave properties and stratigraphic features of the snowpack were also carried out at the site in Sapporo using an FM-CW radar with frequency 6–12 GHz.

A comparison between ground truth data and data obtained by MSR for snowpack was made and the following are concluded:

1) The brightness temperature obtained by the MSR exhibits a remarkable sensitivity to snow depth and water equivalent of snowpack.

2) Snow depth/water equivalent and the brightness temperature obtained by MSR are correlated with a regression line having a negative slope. However, when the snowpack is covered with a new snow layer, the regression line slope is inverted.

3) The seasonal variations in the brightness temperature obtained by MSR on MOS-1 are correlated with those of snow depth and snow extent in the area.

(Received November 27, 1989; Revised manuscript received February 26, 1990)