

SNOW ACCUMULATION RATE AT SNØFJELLAFONNA,  
NORTHWESTERN SPITSBERGEN, SVALBARD  
(ABSTRACT)

Takao KAMEDA<sup>1</sup>, Shuhei TAKAHASHI<sup>1</sup>, Kaoru IZUMI<sup>2</sup>,  
Kumiko GOTO-AZUMA<sup>3</sup>, Shiro KOHSHIMA<sup>4</sup>, Okitsugu WATANABE<sup>5</sup>  
and Jon Ove HAGEN<sup>6</sup>

<sup>1</sup>*Kitami Institute of Technology, Koencho 165, Kitami 090*

<sup>2</sup>*Research Institute for Hazards in Snowy Areas, Niigata University, Niigata 950-21*

<sup>3</sup>*Nagaoka Institute of Snow and Ice Studies, NIED, STA, Suyoshi-cho 187-16, Nagaoka 940*

<sup>4</sup>*Biological Laboratory, Faculty of Science, Tokyo Institute of Technology, 12-1,  
Okayama 2-chome, Meguro-ku, Tokyo 152*

<sup>5</sup>*National Institute of Polar Research, 9-10, Kaga 1-chome, Itabashi-ku, Tokyo 173*

<sup>6</sup>*Norwegian Polar Research Institute, N-1330 Oslo, Norway*

Two ice cores (83.92 m and 24.41 m depth) were obtained at one of the highest areas in northwestern Spitsbergen in Svalbard (Snøfjellafonna) by the Japanese Arctic Glaciological Expedition 1992, with cooperation from the Norwegian Polar Research Institute. Water samples were prepared for chemical and biological analyses at 15 cm intervals from the surface to 44.14 m depth in the 83.92 m ice core. The rest of the ice cores were stored in a cold room at Ny-Ålesund, Svalbard. Tritium concentration of the 83.92 m ice core was continuously measured from 16.87 m depth to 28.195 m depth at 15 cm intervals. The highest peak of the Tritium concentration was found in the depth range between 20.49 m and 20.635 m. This layer probably corresponds to the 1963 layer which is known to be the highest peak layer of the Tritium concentration in the Greenland Ice Sheet. The mean annual accumulation rate above the 1963 layer was calculated to be 0.48 m/year in water equivalent. Electrical conductivity (EC) of the same ice core was also measured at the same interval from the surface to 44.14 m depth. 31 major peaks of EC were observed from the surface to the 1963 layer (20.635 m depth), which corresponds to 0.45 m/peak in water equivalent. Thus, most of the peaks are probably identical with annual layer boundaries at which ions in firn/ice are concentrated. 25 major peaks of EC were observed from 20.64 m to 44.14 m depth. Assuming that the 56 (=31+25) peaks of EC are annual layer boundaries, the ice at 44.14 m depth should have been deposited in the mid-1930 s.

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