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¹⁰BE CONCENTRATIONS IN ANTARCTIC ICE

by

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ABSTRACT

Measurements of the cosmogenic isotope ¹⁰Be (T_{1/2} = 1.5 Ma) on Greenland ice cores produced interesting results. Variations in the ¹⁰Be concentrations can be interpreted in terms of changes in the production rate and in atmospheric circulation and deposition. During the Holocene, good agreement between short-term variations in ¹⁰Be and ¹⁴C indicates that the production rate of both isotopes was changing, probably due to solar modulation.

During the last ice age, periods with significantly higher ¹⁰Be concentrations are observed. The good anti-correlation between ¹⁰Be and δ¹⁸O suggests that these intervals correspond to periods of low precipitation rates.

Work on Antarctic ice cores is in progress, but only relatively few ¹⁰Be data have been published yet. ¹⁰Be results from Antarctic ice cores are presented and compared with data from Greenland.

STUDIES ON THE BASAL-ICE ZONE OF FINDELEN GLACIER, SWITZERLAND

by

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ABSTRACT

Basal and englacial debris layers have been observed to coincide distinctly with the location of glacier thrust planes or shear zones, e.g. at Shoestring Glacier (Brugman and Meier 1980) and Variegated Glacier (Kamb and others 1985). They are also evident at Findelen Glacier. Field observations strongly suggest that the mechanics of debris-laden ice can be important for understanding the flow response of certain glaciers. In this paper the material properties of basal ice at Findelen Glacier are examined, as studied with the aid of ice-core drilling techniques.

Ice cores were taken from near the center line of Findelen Glacier during the summer of 1985, for the express purpose of characterizing the basal ice in terms of observed structures, composition and rheology. Related studies were simultaneously performed on bore-hole and

surface strain-rate deformation (Iken and others, unpublished) and bore-hole resistivity (Schütz and Röthlisberger 1985). The ice core, retrieved from the deepest level possible (approximately 4 m above the bed), contained only a minor amount of fine rock debris. The presence of a debris-containing basal-ice zone is strongly suggested by the evidence that further hot-water drilling in the bore holes resulted in abraded drill stems and in the irregular progress of the drill for the few remaining meters to the glacier bed. Therefore, during 1986 samples of debris-laden basal ice were taken from several locations where the basal material was clearly exposed along lateral ice cliffs in the ablation area of the glacier.

Three distinct types of ice at Findelen Glacier were compared: clean bubbly coarse-grained ice taken from above the glacier bed, clean clear coarse-grained ice taken from