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**ABSTRACTS**

Local Organizers SCIENCE  
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## F2-p-1

F2:Remote Sensing of Ice

### lake Ice Helicopter Radiometry

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### Introduction

The problem of ice depth air—borne monitoring is very important for some regions (West Siberia, for example). It is possible to use the radiometric method, because of its very strong sensitivity to presence and depth of ice or the water surface.

### Two—frequency measurements of ice thermal radio emission and results of ice depth profiles determination

The radiometric measurements on wavelengths 0,8 and 3 cm of the thin lake ice were carried out in spring conditions (last stage of melting) and in fall conditions (new ice after night freezing) in 1992. The radiometric system included also 2-channel tape recorder. In calibration procedure the well known brightness temperatures of the forest and of the free water have been used.

The profiles of the ice depth is retrieved on the base of two-layered model, which takes into account the interference of thermal radioemission. The analysis method is worked out to determine not only the ice depth along flight line, but also mean square variations of depth in the foot-print. In the fig.1 is shown an example of brightness temperatures at 0,8(dotted) and 3 cm (dashed) along with recovered ice depth(solid) on the line of flight along the lake.

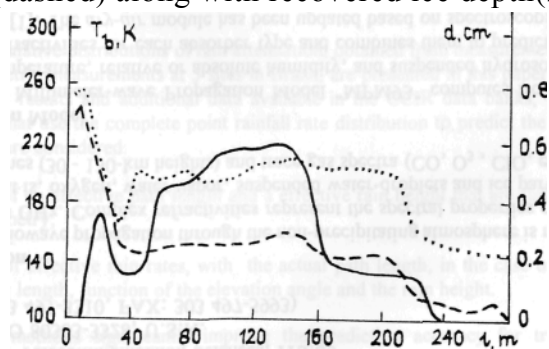


Fig.1. Brightness temperatures  $T_b$  and ice depth  $d$  along flight line ( $l$  - distance)

### Discussion and conclusions

The results of our investigations lead to the conclusion, that the two-frequency method can be useful in the case of very thin ice, where the radar method is hardly applied.