

RELATION BETWEEN THE SSM/I BRIGHTNESS TEMPERATURE  
AND DIRECTION OF THE MAXIMUM SURFACE SLOPE IN  
EAST QUEEN MAUD LAND, ANTARCTICA (ABSTRACT)

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We carried out analysis of the microwave brightness temperature of a part of the Antarctic ice sheet using DMSP satellite SSM/I data. The region that we investigated was East Queen Maud Land. The purpose of the study was to investigate the physical process of microwave emission at the surface of the Antarctic ice sheet and to extract the physical parameters of the ice sheet surface. We especially investigated the relation between the surface topography of the ice sheet and the brightness temperature using a digital elevation model (DEM). Preliminary results were as follows:

1) Brightness temperature and emissivity tend to be higher when the direction of maximum surface slope faces eastward. In contrast, they tend to be lower when the direction of maximum surface slope faces westward; 2) If we consider that this fact reflects the variation of accumulation rate, the accumulation rate varies on a scale 100–300 km in the longitudinal direction. This means that when we consider the surface mass balance, variations on this scale are important.

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