

Metadata Details

Title

Observation on the Snow Accumulation/Ablation over Shelf and Continental Ice in Parts of Central Dronning Maud Land, East Antarctica.

Science Keywords

Category	Cryosphere
Topic	Glaciers/Ice Sheets
Expedition Year	1989-1990 1989-1990
ISO Topic	Geodesy

Summary

Abstract

Snow accumulation and ablation patterns over shelf and continental ice in parts of Central Dronning Maud Land, East Antarctica were studied during summer of 1989-90, austral winter of 1990 and summer of 1990-91. While there was negligible addition on the shelf ice near Dakshin Gangotri, between December 1989 and March 1990, the period between March 1990 and end of October 90, recorded a steep rise in accumulation of the order of 15.9 gm/cm². The summer that followed (1st November 90 to March 91) experienced ablation to the tune of 10.3 gm/cm². An year long profile of the snow surface between Maitri and Dakshin Gangotri has revealed a marked accumulation beyond the grounding line as compared to the area close to the Schirmacher oasis. The stake data collected over the continental ice between Maitri and Northern Humboldt has shown heavy accumulation (average 32.5 gm/cm) during austral winter of 1990 and an ablation of 7.4 gm/cm in just one month of summer that followed it.

Purpose

Antarctic icesheet is in approximate state of equilibrium with respect to its height and lateral extent. Hollin (1962) has shown that the altitude of this icesheet is controlled mainly by the flow of ice rather than by accumulation and air temperature. However, in the coastal regions snow accumulation does take place due to deposition of drift snow and its transformation to ice because of melting, drop in temperature and weight of the overriding snow of subsequent periods. Cameron (1964) established that an approximate calculation of the mass balance of Antarctic icesheet can be done by monitoring systematically laid stakes over shelf and continental ice.

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