

Metadata Details

Title

Delineation of Tectonic Features of Schumacher Oasis, East Antarctica Using Total Field Geomagnetic Profiling.

Science Keywords

Category	Solid Earth
Topic	Geomagnetism
Expedition Year	1993-1994
ISO Topic	Geodesy

Summary

Abstract

Delineation of tectonic features of Schirmacher Oasis (S.O.) using total field geomagnetic profiling needs skill because: a. The exposed rocks have little magnetic contrast and have undergone multiple episodes of metamorphism, migmatization and deformation. b. The lithological contacts are sharp and generally steeply dipping, with the faults and shears trending east-west. c. Topography is very rugged, dotted by numerous water bodies during summer and the north-south extent of S.O. on an average is 1.0 km and d. Geomagnetic storms are sudden, large, frequent and long lasting, allowing few fortuitous windows for meaningful observations.

Purpose

The main objective of the present magnetic survey was to obtain magnetic response of the geological units and structural features inferred from the photo-geological map of Bormann et al. (1986). Accordingly several traverses were planned and laid. A close station spacing (5-6m) was found necessary in view of the peculiar geology and the magnetic properties of rocks described above. Observations were made only on relatively magnetic quiet days, which are rare in these parts. Longer profiles were not possible because of (i) very rugged, uneven topography and (ii) numerous water bodies with meltwater accumulating in the troughs. A Portable Proton Precession magnetometer (Geometries G 816/826 A) with an accuracy of 1.0 nT was used for the field measurements. Another Proton Precession magnetometer (NGRI 600 R), also with 1.0 nT accuracy, was continuously run at Maitri coupled to a poly-chart recorder (T0A ETR 200 A) for monitoring the diurnal variation of the earth's total magnetic field.

Data Center