

Metadata Details

Title

A Comparative Study of Quiet Day Variation of the Geomagnetic Field at Dakshin Gangotri (India) and Novolazarevskaya (USSR) in Antarctica.

Science Keywords

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| Category | Solid Earth |
| Topic | Geomagnetism |
| Expedition Year | 1985-1986 |
| ISO Topic | Geodesy |

Summary

Abstract

The duration of the summer camp of the Fifth Indian Scientific Expedition to Antarctica coincided with an excellent spell of geomagnetic calm interspersed with severe disturbances. A comparative study of the quiet day features of the geomagnetic field at two nearby Antarctic stations was carried out. It was seen that the diurnal variation pattern at the USSR and the Indian magnetic stations were comparable but not on a one-to-one basis, with H component showing a greater difference. The day-to-day variability in the field at both stations was largest near 04 hrs UT, perhaps close to the 'Harang' discontinuity. The variability in the meridional component (D), being least, was in conformity.

Purpose

The Fifth Indian Scientific Expedition to Antarctica set up a temporary magnetic variation station at Dakshin Gangotri. The equipment used was a 3-component fluxgate magnetometer oriented to respond to magnetic field changes in H (Horizontal), Z (Vertical) and D (Declination) components. The output was connected to a strip chart voltage recorder with the sensitivity of 100 nT/volt for all three components. It is well known that USSR runs an uninterrupted magnetometer network in Antarctica one of which is located at Novolazarevskaya near the Indian station at Dakshin Gangotri. At Novolazarevskaya fully temperature compensated Bobrov quartz sensors with photographic registration have been utilised with sensitivity of $H = 126$ nT/cm, $Z = 102$ nT/cm and $D = 146$ nT/cm. In the southern hemisphere the magnetic field variations, strongly dependent on corrected geomagnetic latitude and magnetic local time, can show significant differences between two geographically nearby locations.

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