MAGSAT PROGRAM

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THE REDUCTION, VERIFICATION AND INTERPRETATION OF MAGSAT MAGNETIC DATA OVER CANADA

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INTRODUCTION

This investigation is primarily concerned with studies of the magnetic field originating in the solid earth, as measured by Magsat. Previously reported techniques have enabled preliminary magnetic anomaly maps for high northern latitudes to be produced.

TECHNIQUES and RESULTS

Research into a new approach for altitude adjustments for Magsat or similar data acquired over a range of altitudes is progressing. The technique shows promise not only in the production of refined anomaly maps but also in the derivation of regional charts of the magnetic elements from satellite and ground data.

Correlations between Magsat anomalies and other geophysical and geological data were outlined in previous reports. These correlations are being explored further and quantitative modelling of some features has begun. However, the detailed form of some anomalies may change as the maps are refined by the technique noted above. Emphasis is being given to the Canadian regions, although analogous features elsewhere are being considered.

PUBLICATIONS

R.L. Coles, G.V. Haines, G. Jansen van Beek, A. Nandi, and J.K. Walker. Magnetic anomaly maps from 40°N to 83°N derived from MAGSAT satellite data, Geophysical Research Letters, 9, 281-284, 1982.

L.R. Newitt, E. Dawson, R.L. Coles, and A. Nandi. Magnetic charts of Canada derived from MAgsat data, Geophysical Research Letters, 9, 246-249, 1982.

CONCLUSIONS

Although details may change, the Magsat anomaly maps provide a new insight into the interrelationships among the various geological regimes.