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II-1B-7. Frequency Analysis of Selected Storms*

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The time variations of the horizontal and vertical components of the geomagnetic intensity during three magnetic storms have been analyzed for the period range 1–100 seconds. These storms were recorded simultaneously at three stations separated by 700 and 350 km during the International Geophysical Year.

Discussion

Parkinson, W. D.: I have done something similar using not necessarily storms, but any appreciable variations in ordinary magnetograms. I find that the vertical component correlates with some horizontal direction, not necessarily magnetic north. It so happens that in the central USA the correlation is with an easterly variation. If you had taken the power spectrum of Y, instead of H, you would probably have found a power spectrum more like that of Z.

Generally at localities on east or west coasts, the correlation is between vertical and easterly variations, while on north or south coasts the correlation is with north or south variations. This is connected with structure, not just in the crust, but in the mantle. At least I hope this will turn out to be the case.

Whitham, K.: Spectrum analysis of standard-run magnetograms by calculation of autocorrelation functions has been undertaken in Ottwa for observatories over a wide range of latitude. Coherence of long period disturbance is being investigated in a current field program as a function of station separation. A number of results have been published. In addition, rather similar records have been obtained by Canadian aeromagnetic survey companies. The research for possible geological effects in this frequency range is much to be commended.

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* No manuscript has been received and the preprint is reprinted.