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Improved Definition of Crustal Anomalies for Magsat Data Quarterly Report No. 5

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The following is a description of the progress made on the external field and modeling program in the fifth quarter of this project.

Final editing and reduction of the equatorial ground observatory data set was completed. These data will soon be distributed to the MAGSAT investigator community through the Data Center. Plots of declination, and the vertical and horizontal components of the time varying field were generated from these data. Appropriate baselines were derived and the deviations from these levels can be used as a continuous measure of the external variations at ground level in the sub-auroral regions. They may also be useful as qualitative measures of the intensity of external field activity.

In addition to these data a number of other ancillary data sets have been assembled for dissemination. These include: 1) Kp and Ap - the planetary magnetic indexes, 2) the international magnetic character indexes Cp, 3) compilations of magnetic storm sudden commencements, 4) time of interplanetary magnetic sector changes and 5) Dst the storm time disturbances measure. These data will be distributed through the Data Center.

Processing of the MAGSAT component data was begun again with the arrival of the "fine attitude" component data. Previous reductions of the Magsat "intermediate attitude" yielded residues of the order of 100-200 nT, clearly not of sufficient precision for crustal analysis. The fine attitude data, with its increased pointing resolution, is reducing these residuals by an order of magnitude. With the receipt of newer magnetic field models whose expansions include secular variation terms "fine attitude" data may be reduced for longer periods into the mission than the first few weeks. These reductions are proceeding.