Semiannual Status Report

for

GLOBAL AURORAL IMAGING – DYNAMICS EXPLORER MISSION

1 January 1993 – 30 June 1993

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1. Progress During Reporting Period

A/B/C. Instrument Health/Operations/Data Transmissions to Iowa

No spacecraft operations or GSFC decommutation took place in the reporting interval.

D. Image Processing at Iowa

99%+ image processing completed for all imaging data at Iowa.

E. Data Archives

Iowa archiving of DESAI images past the 87/035 GSFC archival period is approximately 50% completed.

Copying of all DE1 telemetry data for 81266 through 91049 from platter to 4mm DAT is approximately 70% completed.

80% of all DESAI decom data copied from 1600 bpi 9 track tape to 6250 bpi 9 track tape; 5% of that copied to 4mm DAT tape.

2. Research

A Graduate Research Assistant is developing an automated contour analysis of auroral images from the DESAI database. The goal is to be able to feed DESAI images to the software and let it automatically determine the inner and outer boundaries of the auroral oval of a given set of DESAI images. With these contours established, the software will determine the enclosed polar cap area and (model based) integrated magnetic flux through that area. Through the use of this automated system, it will be possible to analyze a large fraction of the DESAI database and correlate it with various other solar-terrestrial space plasma physics parameters and indices.

The automated software was developed by a research group at Stanford University (funded in part by the Center of Excellence in Space Data and Information Sciences, CESDIS) headed by Ramin Samadani and Domingo Mihovilovic.

At present this software appears to be not very reliable in determining auroral oval contours when given any random DESAI image. The graduate assistant is currently trying to determine the optimum operating parameters for the software.

3. DESAI Data Requests

The following data requests were fulfilled during the reporting period.

Data and software assistance were provided to Pat Reiff, Rice University.

Data, images, and contour analysis were provided to Tuija Pulkkinen, Finnish Meteorological Institute.

Data and software assistance were provided to Bob Meier at the Naval Research Laboratory.

DESAI data and prints were provided to Jim Sharber and Ed Hones, Los Alamos National Laboratory.

Data files through December 1992 were provided to Toshi Iyemoir, World Data Center, Kyoto, Japan.

Software questions were answered and assistance was provided to CDF programming staff at Goddard Space Flight Center. This assistance supported the integration of DESAI MAF images into the CXIT program for viewing MAFs on Xwindow display devices and desktop personal computers.

4. Publications

Anderson, P. C., W. B. Hanson, R. A. Heelis, J. D. Craven, D. N. Baker and L. A. Frank, A Proposed Production Model of Rapid Subauroral Ion Drifts and Their Relationship to Substorm Evolution, J. Geophys. Res., 98, 6069-6078, April 1993.

Baker, D. N., T. I. Pulkkinen, R. L. McPherron, J. D. Craven, L. A. Frank, R. D. Elphinstone, J. S. Murphree, J. F. Fennell, R. E. Lopez and T. Nagai, CDAW-9 Analysis of Magnetospheric Events on 3 May 1986: Event C, J. Geophys. Res., 98, 3815-3834, March 1993.

Frank, L. A. and J. B. Sigwarth, Atmospheric Holes and Small Comets, Rev. Geophys., 31, 1, February 1993.