THEMIS Science Data Analysis Software Monthly Accomplishments – November 2007

THEMIS Science Operations Center (SOC), GBO, Ground Processing and Probe Data Processing Tools

1. The last GBO station was installed at Kuujjuaq (renamed from Nain) and data is being received since 11-5-7. Software, web page and the search algorithm were updated.
2. Release of version 3_00 of server-side Probe Data Processing Tools (tmtools) incorporates vastly improved modeling of probe spin phase and spin period, with typical phase error reduced from 0.5 deg to < 0.1 deg. Several BAU sun pulse processing failure modes are now detected and corrected. A new L1 CDF containing spin model parameters is now produced as part of the standard L0 packet to L1 CDF processing.
3. Three new compression schemes have been implemented in the ground processing software to increase compression performance.

THEMIS Web Site

1. Plot Key added to Overview Plot web page describing the instruments and units of the overview plots.
2. New overview plots with auto scaled limits.
3. 5 Tohban Overview Plots – FGM.

THEMIS Data Products

1. New Level 2 ESA files with ground-processed moments.
2. Unversioned State files have been created that contain the highest version State file for that day.

THEMIS Documentation

1. THEMIS User's Guide Revised

THEMIS Science Data Analysis Software (Release Version Incremental v3.02)

1. The current version (v3.01) of thm_load_state defaults to look for files with a version number 'v01'. For many days in August, September and October, there are no ‘v01’ State files causing an abort. The new thm_load_state (v3.02) will load the highest version of the State file for any given day.

THEMIS Science Data Analysis Software (Bleeding Edge Distribution - post v3.02)

1. Final Improvements to the THEMIS Interface to Haje Korth's wrapper around the Fortran code of Tsyganenko '89, '96, '01 magnetic fields model as well as '04 storm magnetic fields model. This THEMIS interface access's the THEMIS Science Data Analysis Tplot functions and simplifies the parameterization so users can do bulk calculations of large numbers of vectors.
2. Allow Geographic coordinate transformation (GEO) to and from all other supported coordinate systems. Other supported systems are (spg,ssl,dsl,gei,gse,gsm,sm).
3. Added bin1 and bin2d utility functions to the distribution. These allow specialized rebinning of array data.
4. Added wavpol routine to distribution and created wrapper routine twavpol. wavpol provides wav polarization analysis. twavpol integrates wavpol with our tplot package.
5. Implemented a library of routines to do quaternion math in our distribution, including spherical linear interpolation of rotations/quaternions. Use 'libs,'q*' to see cribs and locations.
6. 5 spacecraft overview plots (tohban plots) generating programs for fgm,esa,sst. (Web access currently only for FGM).
7. New overview plot routines online, with auto scaled limits.
8. Overview plots and Tohban plots for SST, ESA, FGM are available from command line.
9. Ability to calculate and plot the angular energy spectrum as a function of phi (DSL coordinates) for ESA and SST full/burst mode data.
10. A new load routine thm_load_spin has been added to allow access to the new spin model L1 CDF, and several interpolation routines are provided to allow efficient calculation of spin phase and spin period at arbitrary times.
11. A new MacBook running OS X has been acquired and configured for TDAS testing.