Software Task Priorities (In Play / In the Queue) - 12/10/07

Jim L.
1. Compress and Decompress routines for MOMs. BugzID=81
   (On Hold) ready for packets from Peter
1. Compress and Decompress routines for Fields. BugzID=81 (Performance testing in progress)
   ready for packets from Peter
1. Any MAP assignments
1. L1 File definitions Document. BugzID=xx. (In Progress)
2. Split the input telemetry file into (possibly multiple) single-SCID files, then process only the ones that
   correspond to valid THEMIS SCIDs
2. Log File Processing
   a. Issue a log msg for any VC files which contain mixed SCIDs or otherwise invalid transfer frames.
   b. Each processing script should, at the very least, take a command-line option
      specifying a log file where sufficiently-important messages can be written.
   c. Log message format is TBD, but should probably include:
       1) wall clock date/time when the log message was generated
       2) A file or directory name identify the input data that provoked the msg
       3) A severity field (e.g. "info", "warning", "critical")
   d. Modify lzp_wrapper and process_lzp_dir scripts. BugzID=49.
   e. Clean-up current VC->L0 processing scripts temporary files. BugzID=50.
   f. Unexpected transfer frames time matched packet time yet in the past. BugzID=38.
3. Help out with Compression Flatsat Testing
3. L0 to L1 processing: look ahead to the next packet before processing the current packet. BugzID=67
4. FGM range changes in the mid packet. Post Proc maybe a solution to eliminate the spike. BugzID=44.
5. Provide Higher Cadence State Files -   Spin period and spin phase - double precision. BugzID=91
6. Non Monotonic timestamps. BugzID=72

Tim
1. ~~Send Jim McTiernan the new valid gmag stations.~~
1. Investigate retrieval of additional datasets from the Canadian (CARISMA)
       ~~a. Send to U. Alberta IDL code for cdf conversion~~ b. Stats of usage of data for current 5 stations
1. ~~Related Web Sites - updates (JAXA) – see email from Vassilis~~
1. Related Web Sites – Taiwan ASCII and IDL SAVE FTP system for Themis.
1. ~~Update Software drop down menu with link to Accomplishment Monthly Reports ftp site.~~
1. ~~Sort out with Pat Tasks needed to update Filetracker for USN* files.~~
1. Any MAP assignments
2. High-pass filter function.(for Vassilis)
3. tsmooth2 needs to accept a time keyword (say, seconds) rather than # of points. (for Vassilis, Davin)

Jim M.
1. update valid_stations with new gmag stations (Tim will send list) 10/10
1. ~~changes to gui for FBK issue (from Andreas)~~
1. Check in SCM calib files from Hannes 10/17
1. ~~ESA   reprocess gaps in aug oct~~, except for THEMIS 'B' 10/19
1. ~~Check in esa calib file from Jim McFadden (to be sent)~~
1. Awaiting new routine from Jim McFadden then
   a. check in routine and test using the bleeding edge
   b. reprocess all L2 ESA (After AGU 12/17)
   c. units still appear as [nT] and [ADC]. I thought that was eliminated at some point, but they seem to
      have reappeared both in the tohban FGM plots and in the overview plots. Can you fix at least in the
      FGM tohban plots? I suspect it may be because the broken code was fixed in the bleeding edge but
      not in the QA.

Jim M. (continued)
    d. test using the 3.0x branch, build 3.03, release 3.03 (Tim and David)
    e. Reprocess Overview and tohban plots (After AGU 12/17)
1. Confusing plots maybe confusion with tplots options.
1. Vladimir Help Request
    a. fit efs data as zeroes for the dates 2007/3/21 - 28. Isn't it better to put there fill values if you do not
        have measurements?
    b. It would be good to be consistent with the fill values and use the same everywhere - NaN or 0 or
        1.e31. Generally, it is better to use a number as this is a standard everywhere else.
1. Any MAP assignments
1. ESA and SST Tohban plots
1. FIT/MOM (Onboard) in separate L2 cdf's
1. MOM L2 CDF and as part of task put Coord Systems into metadata
1.GMAG Stack Plots - In progress few more Spikes, limits changed, reprocess. BugzID=86
2. SVD-FIT instead of POLY-FIT - from Vladimir
3. Review Patches for CDF's to increase speed Jim M. (Continued)
3. Overview plot change: mode bar seems thick (nothing we can do easily - low priority)
3. Administrator's Guide, Virtual Machine
4. GUI Mods
    a. Save Ascii - fix precision, add header (with Pat for UCLA)
    b. button for postscripts (for Stephen Mende)
    c. thm_ui_config bug found by Davin
    d. No dialogue box appears for save ascii, no file location in msg box
    e. See email with history file ...231920 abort.
    f. Upper flatfile button (for Vassilis, work with Kate / UCLA Splash)
    g. Add new coord transf options to SM, GSM and GEO into GUI
    h. buttons on overview plot sub widget for fgm, esa and sst Tohban plots
5. GUI Mods
    a. current plot window - tell you which one (for UCLA)
    b. Lower flatfile button (for Vassilis / Chris Russell)
    c Label S/C Position button (GSE or GSN - default) (for UCLA)
    d. De-Gap widget add units
    e. DP - Delete or Overview Plot or Clear History - warning message
    f. Long Variable Names truncated in IDL-D

Pat
1. IDL_GEOPACK
    a. Once Hage analysis or possible bug fix found, possibly retest.
        'Bad data is being produced for the z component of the footprint vectors generated by the trace
        routine.'
1. wavepol.pro and twavepol.pro - When cribs from Chris Cully, Bob Strangeway, and others
    received, condense cribs and add to the distribution.
    a. Check in Kaori's crib
1. Sort out with Tim Tasks needed to update Filetracker for USN* files.
1. Any MAP assignments
1. Ground Trac and tplotxy routines and to finalize crib sheet
    cribsheet plots footprints and equatorial trac for 3/23 on probe 'C'.
    IDL scatplot, Harald's routines.
2. New overview plot - summary of fields and moments and a crib sheet that shows people how to
    create spin resolution overviews (bgmom overviews - for Bfield and ground processed moments).
2. VMO Deliverables: data product description files
    Step 1 - vet James Weygand's products
    Step 1 - fgm L2 cdf for one probe, Step 2 - fgm L2 cdf for all probes

2. "th?_fgs_sigma" and "th?_efs_sigma" to the FIT CDFs (L1) and this should make it to the
   L2 CDFs as well,
2. Mini language to operate on tplot variables - first provide concept write up
3. boundary normal coordinates. On Hold. BugzID=59.
4. Christine's code to rotate the XY coord's along Earth direction was very effective. Also it was used by
   others. We need to streamline it, and its very similar to the others you've already written.
4. Tplot auto scaling. BugzID=41.
4. invalid inputs to the version keyword
4. Clean-up of makepng and makegif

Bryan
1a. Create energy spectra using thm_part_moments (esa and sst - full and burst distribution)
    1a.1. Add ENERGY keyword
1b. Create angular spectra using thm_part_moments (esa and sst - full and burst distribution)
    1b.1. Add ANGLE keyword
    1b.2. Incorporate phi angle wrap ability into PHI keyword
1c. Create plotting routine for angular spectrograms (esa and sst - full and burst distribution)
    1c.1. Format tplot variables in THM_PART_GETSPEC depending whether energy/angle keywords set.
1d. Update crib sheet when above changes are made
1e. Add reduced mode capability for energy/angular spectra
2. Generalize code by removing hardwired angle maps (i.e. turn energy/angle bins on/off using dat structure)
2. Add ability to calculate theta angular spectrum
2. Add ability to calculate pitch angular spectrum
2. Add ablity to convert to GSM coordinates (requested by Kaori)
3. thm_load_state - phase I
   a. hardcode (units = "km/s" or "km", or "deg")
   b. finish "no_update" loading option (consult with Davin)
   c. Finishing the coordinate transformation of the thm_load_state data at input, to include transformation
      of spinaxis attitude, need to determine keyword switch, implement the rotation of the spinaxis
      elevation/azimuth from gei to arbitrary coordinates (consult with Pat, Vassilis and Ken)
3. thm_load_state - phase II (consult with Ken)
   a. For STATE CDF files, the following variable attributes should be defined, consistent with they way they
      are defined in the L2 FGM file: units, coordinate_system (consult with Jim L.)
   b. Once defined in the CDF, thm_load_state should take the values from the dlimits.cdf.vatt to set the
      metadata for the tplot variables: dlimits.data_att.units, dlimits.data_att.coord_sys
   c. For thm_load_state, the suffix gets added to support data, but support data is not transformed: if you call
      thm_load_state, coord='gse', suffix='_gse', /get_support_data only the pos and vel get transformed, but
      all get the _gse suffix.
   d. in thm_load_state, the code to delete support data that was loaded for coordinate transformation should
      be just del_data, '*_state_temp'   e. THC braid photoelectrons
4. upgrade thm_load to work with probe assignments
5. move functionality of thm_load_state2 into thm_load_state and delete thm_load_state2
6. Shadow Indicator (for Vassilis - using functionality in ...load_state2 and tplot roi)
7. Multiple enhancements concerning keywords, valid_names and thm_load routines

Ken
1. thm_cal_scm bug using a special Fmax error msg Variable undefined F2.
2. Send David list of GUI bugs
3. Themis SCM CAL File Processing - produce table of contents and assign sections with Patrick R.
4. Themis System Administrators Guide
5. Themis Developers Guide

Harald
1. Validate Tsygenko work from Pat (Feb-March 2008)

Davin
1. split_vec
2. thm_cal_mom

Christine
1. Correlation and dynamic correlation code: include these 2 routines and make a wrapper that works with
   tplot variables (and possibly interpolation if necessary)

Vladimir
1. Help Requests from Vladimir
        a. fit efs data as zeroes for the dates 2007/3/21 - 28. Isn't it better to put there fill values if you do not
           have measurements? - assigned to Jim McTiernan
        b. It would be good to be consistent with the fill values and use the same everywhere - NaN or 0 or
           $1.e31$. Generally, it is better to use a number as this is a standard everywhere else.
            - assigned to Jim McTiernan
1. Magnetopause Coordinates
1. Zero order step to create pre-processed solar wind data
2. Shue MP routine

Thomas Moreau
1. Create IDL code to make an L1 ESA cdf.
2. Create IDL code to read L1 ESA cdf with the same functionality
   as Jim McFadden's L0 code.

UCLA
1. Clean-up the power ripples from the FGM data. (Krishan)
   Awaiting new programmer

Software Tasks To Be Discussed (TBD) / To Be Assigned (TBA)
1. TBA - Tweaks for _dot0 and _0 for subspin resolution (for John - tbd)
2. TBA - Implementation of the removal of the spin-independent and -dependent offsets (for John)
3. TBD - print, dprint, msg continue, verbose options for a standard
4. TBD - Mini Language to operate on tplot variables
5. TBD - Administrator's Guide
6. Hold - Themis E-Field Data (Forrest, John)

THEMIS Science Data Analysis Software Monthly Accomplishments – December 2007

<u>THEMIS Science Operations Center (SOC), GBO, Ground Processing and Probe Data Processing Tools</u>
1. Code added and updated code to handle the additional 9 Alaska ground magnetometers.
   CDFs as well as additional lines on the stack plots are now available.

<u>THEMIS Web Site</u>

<u>THEMIS Data Products</u>

<u>THEMIS Science Data Analysis Software (Release Version Incremental v3.03)</u>
1. GUI FBK data that appear for loading on sub widget.
2. thm_cal_scm bug fix from Ken

<u>THEMIS Science Data Analysis Software (Bleeding Edge Distribution - post v3.02)</u>
1. The generalized vector rotation routine tvector_rotate now uses spherical linear interpolation to interpolate time varying rotation matrices. tvector_rotate now added to the distribution is used with our routines that generate time-varying coordinate transformations for minimum variance analysis and field aligned coordinates.
2. minivar ???
3. Overview plot changes
4. Tohban plot changes
5. ESA Changes
6. GUI FBK data that appear for loading on sub widget.
7. thm_cal_scm bug fix from Ken