

Software Task Priorities (In Play / In the Queue) - 2/04/08

Jim L.

1. Feedback on the skeleton of the CDF ESA L1 data file based on the IDL structure's content of the Jim's L0 code from Thomas by 2/11. **Awaiting** feedback from Vassilis, Davin, Jim McFadden, Thomas.
1. Email to send to Tohbans on reporting missing data.
will add chart concerning appid's and then send back to Jim M. for description.
1. Compress and Decompress routines for MOMs. BugzID=81
1. Compress and Decompress routines for Fields. BugzID=81
Test patterns (couple of packets for each appid) for MOMs and Fields verified.
Awaiting output of Flatsat or Orbit Testing
1. PSER, 6 angles – L1 files okay. Is there an issue with SST load routine?
1. L1 File definitions Document. BugzID=xx. (In Progress - target 2/8)
2. Log File Processing (2/8)
 - 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.
2. thm_load_state changes to load L1 spin model cdf by default.
2. 2007 Reprocessing for R-S errors (probably HKP not SCI)
2. thm_cotrans changed to use spin model instead of current method of interpolationg spin period.
Code will be review with Hannes before testing begins. Once Jim complete's his testing Hannes will be asked to QA new functionality.
2. Bfield mid-packet jumps.
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. Red Team MAP questions and updates.
1. Review Mirror site processing - may need to hold them back for new server to get setup.
Users turned back on?
1. Sort out if bit torrent would be helpful with mirror site processing to reduce computer resources used.
1. Mozaics bug on ASI web site - must click +3 sec to get display.
1. When Jim M. finishes his part install Moments Overviews (from Pat) link on the web site – Select Type on the Summary Web Page drop down Menu (ESA Ground MOMS, ESA Onboard MOMS)
2. tsmooth2 needs to accept a time keyword (say, seconds) rather than # of points. (for Vassilis, Davin)
3. GMAG Stack Plots - In progress few more Spikes, limits changed, reprocess. BugzID=86

Jim M.

1. Red Team MAP questions and updates.
1. CDAWeb electron densities issues.
1. Mozaic Processing up to 12/29/7 (from 12/1/7) on 1/29/8. Catch-up expected in 2 weeks or so.
Verify the process works after catch-up.
1. FIT/MOM (Onboard) in separate L2 cdf's, and as part of task put Coord Systems into metadata.
User's Guide, Data Description list need update? **Awaiting** Davin's fix to thm_load_mom.
1. Implement Moment Overviews (from Pat) into production and let Tim know it's ready.
1. thm_load_mom, thm_cotrans and thm_load_esa changes
 - a. Add coord labels to thm_load_mom: Thm_load_mom should properly label the coordinate system of any 3-d data in the dlimits structure.
 - b. Add coord labels to thm_load_esa: Thm_load_esa should properly label the coordinate system of any 3-d data in the dlimits structure.
 - c. thm_load_mom's datatype keyword should be implemented
2. "th?_fgs_sigma" and "th?_efs_sigma" already in L1 CDFs per Jim L. and need to be copied into L2 cdfs.
2. L2 Reprocessing
 - a. Of the 311(!) files that weren't processed, 292 were missed because there is no longer an L1 file present for the appropriate date and instrument. (There must have been files there at some point, though.)
 - b. Of the those files, 18 are FGM files in the time period 2007-04-26 to 2007-05-01. The current L2 process ignores those dates, I believe, because there were issues with the coordinate transforms. I guess that I need to revisit this issue.
 - c. The other one is thb_l1_esa_20071128_v01.cdf. This is odd -- since it had been reprocessed on 25-Dec, and nothing changed in the ESA code between then and this last reprocessing.
2. Extraneous semcal directory under L1 products. BugzID=98.
2. SI_Conversion attribute for peif density is incorrect. It has $10^6 > m^{-3}$ rather than $1e6 > m^{-3}$.
Wait until someone complains before reprocessing. Jim must check other meta-data.
2. Decouple display variable types in the 'Choose Data widget' from the valid data types in thm_load_*.
2. 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.
2. ESA and SST Tohban plots
3. SVD-FIT instead of POLY-FIT - from Vladimir
3. Review Patches for CDF's to increase speed
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

Jim M. (continued)

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. thm_load_gmag bug from Christine.
1. tplotxy and the ttrace_crib mods per Vassilis:
 - a. The tsyganenko routines should allow the user to overwrite elements of the par array with specific parameter arguments.
 - b. tplotxy/plotxy should have an option to perform plotting in a third dimension using coloring to indicate the third dimension.
 - c. tplotxy/plotxy should allow the user to generate multiple plot panels within a window.
 - d. I need to identify an error that occurs with tplot3d only on windows and figure out how to go about fixing it.
2. Write a procedure that will plot spectrographic data versus position. This procedure will be called plotxyz. It should work with plotxy so that line and spectrographic position plots can be mixed in the same way that tplot can perform line and spectrographic time series plots.
2. VMO Deliverables: data product description files
 - a. Review FGM SPASE numerical data and instrument files for all probes.
 - b. Review Ephemeris SPASE numerical data instrument files for all probes.
 - c. Review Observatory files for all probes and the person file for Themis.
 - d.(option 1) Generate an instrument file for Thermal Plasma measurements(Moment Temperature) then numerical data files for this quantity for each probe, repeat this process for other moments.
 - d.(option 2) Generate an instrument file for EFI or SCM and corresponding numerical data files for each probe.
 - d.(option 3) *Cease doing VMO for a bit.*
2. Variable units – generic solution
thm_load_spin.pro, thm_load_state.pro, thm_load_hsk.pro, thm_load_sst.pro
thm_load_esa.pro, thm_load_bau.pro, thm_load_fgm.pro, thm_load_fbk.pro
thm_load_fft.pro, thm_load_fit.pro, thm_load_scm.pro, thm_load_efi.pro
thm_load_trg.pro, thm_load_asi.pro, thm_load_gmag.pro, thm_load_ask.pro
thm_load_mom, thm_load_esa_pkt
2. IDL v7.0
2. Mini language to operate on tplot variables - first provide concept write up
3. boundary normal coordinates. On Hold. BugzID=59.
3. 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~~
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

1. Add ability to calculate pitch angular spectrum
 - a. allow angle bins to be broken down into smaller (user defined) sub-bins
1. Add ability to calculate gyro phase angular spectrum
2. Add ability to convert to GSM coordinates (requested by Kaori)
3. Overplotting of not just lines and spectra, but also spectra over spectra. This means that the gap would be filled if another plot is below it. This way the data would not have to be merged, just tplot has to account for gaps and plot them as true gaps. (Submitted by Vladimir)
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

Michael

1. Develop a prototype version of the EFI offset and correction algorithm.
 - a. Code complete and testing of algorithm in progress
 - b. Document offsets and corrections in data attributes structure.
 - c. Incorporate subtraction/correction code into LOAD/CAL suite (tbd) later after prototype has reached some level of maturity).
2. Build an informational widget to route the output of tplot_names to a text box.
 - a. Study widget building.
 - b. Review J.M.'s thm_ui_error and associated routines.
 - c. Possibly hack tplot (talk to Davin and Jim Mc before doing)

Vladimir

1. Magnetopause Coordinates

Zero order step to create pre-processed solar wind data
Awaiting Vassilis's review of Solar Wind crib and code
2. Shue MP routine
3. Outlier Routine awaiting Vassilis Review
3. 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. (Jim M.)

Vladimir

- c. Overplotting of not just lines and spectra, but also spectra over spectra. This means that the gap would be filled if another plot is below it. This way the data would not have to be merged, just tplot has to account for gaps and plot them as true gaps. -assigned to Bryan

Christian Jacquey and Thomas Moreau

1. Converging toward our primary goal, i.e., to interface the THEMIS data with the CL software. It is almost finish for the ESA data, some details are now being fixed and then we will go to the SST data.
2. We have finished the migration of our server. The mirror THEMIS database is now opened and can be used at the REMOTE DATA DIR for TPLOT. We tested it. It seems to work properly and thus, this could be communicated to the THEMIS community Emmanuel Penou will communicate soon with Tim Quinn on this topic. (*Did this happen?*)
3. Tested TPLOT by using the mirror database as the REMOTE DATA DIR. It seems to work. The possibility of using the CDDP/CESR mirror database as an alternative remote data dir could be opened to the whole THEMIS Community, if you agree.
4. CDDP/CESR is in discussion with the GFI company for prolongating the contract in order to develop and provide the code for producing the new ESA L1 data in the cdf files, as asked by Vassilis. The following sub-actions are planned:
 - a) writing a document describing all the objects to be contained inside the new L1 CDF files.
 - b) sending this document to you for validation of the specifications of the new L1 data.
 - c) developing the code for producing the new ESA L1 files
 - d) testing and validating the code
 - e) writing the code documentation (user guide)
 - f) develop a new version of the TPLOT module reading the new ESA L1 data files.
5. Related to #4.
 - a) define and write a new skeleton cdf file that would be use as a data model for producing the new CDF ESA L1 files. This task needs to reconstruct entirely the skeleton of the CDF ESA L1 data file based on the IDL structure's content of the Jim's L0 code.
 - b) submit skeleton together with a text file listing all items contained within the new model to Jim Lewis for feedback and validation by 1/22.
 - c) Develop the code assigned to create and read L1 ESA cdf files. 3-4 weeks should be sufficient..

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
6. If requesting 1 hour of data using timespan, then load data using one of our load data routines, the load Recommend if there is a fix at the load cdf level.

Hannes

1. V03 - L2 State cdf.
 - a. definitive attitude info
 - b. See email concerning parms ("thx_sci_mode", "thx_hsk_issr_mode")
 - c. quality flag for FGM data
 - d. spin model data (talk to Jim Lewis)

Vassilis

1. Check out Outlier routine, LMN and Solar Wind crib and code from Vladimir.

Davin

1. thm_load_mom - SST calibration onboard mom issue.

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)

Harald

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

Andreas

1. L2 File Definitions Document - awaiting L1 document to be completed to use as template.

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. TBD - print, dprint, msg continue, verbose options for a standard
2. TBD - Mini Language to operate on tplot variables
3. TBA - Tplot FAQ's (Amanda)