

## Software Task Priorities (In Play / In the Queue) - 8/20/07

Ken

1. \_dot0 and \_0 for subspin resolution (for John - tbd)
2. SCM Reconciliation (awaiting SCM code from SCM Team)
2. Add code to clean up the power ripples, and the 8/32Hz noise for SCM (If not already done)
3. implementation of the removal of the spin-independent and -dependent offsets (for John - tbd)
4. Themis SCM CAL File Processing
5. Themis Developers Guide
6. Themis System Administrators Guide

Jim L.

1. IDPU very busy, packet time stamps off 1 sec (Created QA version of L1's for Scientist verification).
2. Correct Spin period, Spin Plane, sun pulse data. Doc update. BugzID=29 (for Vassilis - tbd)
2. Spin model does not capture slow drifts in spin rate. BugzID=46.
3. Separate file Latest State version. BugzID=62. (for Jim McFadden - tbd)
3. Adjustments to EFI timing, FBK and FFT. BugzID=36. (for John - tbd).
4. ESA Sweep Modes put into Moments L1 CDF. BugzID=42. (For Davin)
5. When FGM range changes in the middle of a packet. Post Proc maybe a solution to eliminate the spike. BugzID=44.
6. Unexpected transfer frames time matched packet time yet in the past. BugzID=38.
7. Spin Model L1 CDF. BugzID=29.
8. L1 File definitions Document. BugzID=xx.

Tim

tbd

Jim M.

1. Sort out Issues with SPDF L2 cdf's for ESA, FGM and SST
2. Sort out with Tim Interface Issues with production (l2gen issues, AE update Pat's working)
2. Default for Load FIT and MOM to be L1 (for Davin)
2. High-pass filter function.(for Vassilis)
3. FIT/MOM (Onboard) in separate L2 cdf's (for Vassilis)
4. tsmooth2 needs to accept a time keyword (say, seconds) rather than # of points. (for Vassilis, Davin)
5. GUI Mods
  - a. thm\_ui\_config bug found by Davin
  - b. No dialogue box appears for save ascii, no file location in msg box
  - c. See email with history file ...231920 abort.
  - d. button for postscripts (for Stephen Mende)
  - e. Upper flatfile button (for Vassilis, work with Kate / UCLA Splash)
6. GUI Mods
  - f. current plot window - tell you which one (for UCLA)
  - g. Save Ascii - fix precision, add header (with Pat for UCLA)
  - h. Label S/C Position button (GSE or GSN - default) (for UCLA)
  - i. De-Gap widget add units
  - j. DP - Delete or Overview Plot or Clear History - warning message
  - k. Long Variable Names truncated in IDL-D
  - l. Lower flatfile button (for Vassilis / Chris Russell)

Pat

1. AE index in the overview plots-revision and reprocessing - done
2. Generalized vector data rotation routine. BugzID=47. (for Vassilis - tbd)  
field aligned coordinate transformations - done  
minimum variance analysis. BugzID=56.  
model aligned coordinates. BugzID=58.  
boundary normal coordinates. BugzID=59.
3. Tsyganenko model in IDL. BugzID=57.
4. 5 probe overview (Tohban scripts) on the web
5. thm\_load\_state should accept the coordinate keyword. BugzID=47.
6. Tplot auto scaling. BugzID=41.
6. invalid inputs to the version keyword

Bryan

1. Modify th\_load\_state to load highest version file, no suffix BugzID=51.
2. upgrade thm\_load to work with probe assignments
3. make a b/w colormap for a single tplot panel.
4. move functionality of thm\_load\_state2 into thm\_load\_state and delete thm\_load\_state2
4. Shadow Indicator (for Vassilis - using functionality in ...load\_state2 and tplot roi)
5. Multiple enhancements concerning keywords, valid\_names and thm\_load routines

Christine

1. Create Angular spectrograms (Christine for Davin - tbd)

UCLA

1. Clean-up the power ripples from the FGM data.
2. Geo and SM Coord Transforms

### Software Tasks (Unprioritized)

1. (From Ken) For proper tplotting there really should be an array of NaNs thrown into a data point inserted somewhere into that 8 hour data gap. I wouldn't go doing this w/o John's blessing, though. He may already have an idea about how to deal with that. (To be discussed)
2. The master state L1 CDF contains a global attribute "Data\_version". This attribute does not get updated when the V01 or V02 state CDFs are produced. If Data\_version is supposed to correspond to the V00, V01, V02 etc. designations, it needs to be updated each time the version is incremented. If this attribute has some other purpose according to the ISTP standard, then we should introduce a new attribute or variable that can be used to differentiate one version from another. (BugzID=48)
3. The lzp\_wrapper and process\_lzp\_dir scripts are designed to process the entire suite of L1 probe data products. To do a partial reprocessing (for example, to reprocess a certain type of L1 CDF to incorporate a bug fix) currently requires a lot of hacking to create new versions of the scripts that bypass the processing of products that don't need to be updated. It would be better if these scripts allowed some parameters to control which products get produced. To preserve compatibility with the existing THEMIS SOC interface, the default behavior should be to process everything if no additional arguments are passed. (BugzID=49)
4. There are several command line utilities in the L0 to L1 processing tools which need to read or write all records of a given CDF variable. For example, the V01 and V02 state CDFs get their spinper/spinphase updated with such a bulk operation; the "nonmon" tool for testing timestamp monotonicity in the L1 CDFs pulls all the timestamp data out of the CDF into an array where it can be checked. There are several functions supporting those sorts of operations, and these functions are duplicated in the source code of several command line utilities. These common routines should be factored out and put in a library, to eliminate the possibility of a bug fix not being implemented in all the places where the equivalent function is defined. (BugzID=50)

5. When the l2 gen scripts are run in batch mode on the cron, the cron complains that it cannot output to display 0:0 probably because there is not display available during batch operation(Bugzilla ID=53)
6. The version option for themis software distributions, currently only has one option, unspecified. I think the options should be: unspecified release-2.\* trunk. Although, you guys may be able to come up with a better list, anything is better than unspecified. We might also want to have more options for components...i.e ssl\_general,themis, gui, etc...(BugID=54)
7. Write a perl script that searches the distribution and finds every fx that calls a given idl fx. While it is possible to find every function that a given idl function calls, we don't have any fx for searching in the other direction. A tool like this would be useful because then when we change an fx we can quickly find out what fxs this change might affect(i.e create bugs in). Thus making it easier to resolve bugs and manage the idl distro. Also, writing a script to do this would be cake. ...(BugID=60)
8. When data is rotated plot titles are not updated to refer to the new variables/transformations. (BugzID=65)
9. The current VC->L0 processing scripts leave behind a lot of temporary files that aren't strictly needed, once the extracted packets have been merged into the L0 products directories. These files are often useful for debugging, (e.g. figuring out which VC files contributed to a given L0 \*.pkt file) but end up consuming a great deal of disk space. Useless files (like all.tlm, derived from the original VC file) should be deleted before the processing script exits. The useful information (like which L0 products were affected by the VC file being processed) can perhaps be stored more efficiently (e.g. recording the packet file name, maybe the list of extents) in lieu of keeping the contents of the temporary \*.pkt files around forever. (BugID=66).
10. The existing L0 to L1 processing code works one packet at a time, decommutating each packet in isolation, then moving on to the next. There are certain times when it would be helpful to look ahead to the next packet before processing the current packet. For example, consider a sample rate change from 4 samples/sec to 32 samples/sec. The rate change isn't seen until a packet arrives with the new rate code in the header. By that time, the previous packet has already been processed, and its sample data and timestamps already written into the CDF. The timestamps from the later samples in the packet are likely to be incorrect, resulting in non-monotonic sample times at the boundary between packets. If the packet handling routines were passed "current" and "next" packets, rather than just the current packet, it would be possible to detect and perhaps even correct such occurrences before the CDF is written. (Bugzilla ID=67).
11. The TDAS tools, as released, do not allow convenient access to flatsat data, which is stored with the rest of the probe data using the designation "thf". Some tools do not recognize 'f' as a valid probe ID; I believe there is at least one routine out there interpreting 'f' to mean "all probes". It appears that some of the scientists are using their own hacked versions of TDAS to look at flatsat data. We need to get those changes into the distro, so that non-programmers (e.g. TOHBAN) can work with flatsat data. BugID=68).
12. string\_element does not add to embedded structures (BugzID=69)