SUG Minutes – 21 Jun 2016

In attendance
Francisco, Tom, Jim T, Nathan, Chuck, Jim S, Dick, Dave

Station Reports – New Info in RED

Tom – Had some weakosh RFI in the spectrograms, wiggles some coax on the Jove array power combiner and the problem went away. Dave offered that maybe wiggling the connector broke through an oxide layer formed on the center conductor. Dick suggested burnishing the center conductor with 600 grit sandpaper. Francisco suggested using Radio Shack contact cleaner, as it leaves a thin film. Dave suggested that maybe this forms an oxygen barrier.

Dick – New hard drive obtained; installation pending.

Whit –

Nathan – Experimental FPGA-based SDR is now talking directly to RSS. Having issues opening a port through the PC / router / modem firewall, otherwise would be serving data.

Jim B – (via email) Broadbanded RFI fixed; CATV pole-mounted box had a loose battery connector. Still working on getting the power company to eliminate the last remnants of line noise.

Wes –

Chuck – MTSU IT dept still working on opening a port through the firewall so Chuck can serve RSS data in real time.

Francisco – Observing a very tiny amount of barely-visible RFI when the air conditioning system is in operation.

Dave – Still with the sporadic problems keeping the DPS saving data for extended periods; still chasing the problem. Jim Sky thinks it is a buffer overflow issue on the PC that happens when some other process (possibly RSPublisher) grabs and holds the CPU's attention.

All observers are urged to keep an engineering log and update their system drawings for the SUG site.

Discussion – New Info in RED

HEC grant

Chuck offered that there has been some slight movement, but nothing official as yet. Still unsure what percentage of the requested funds will be awarded. Chuck noted that there are still plans for future SUG stations. Dave wondered if the glacial speed of things was normal; Jim T offered that indeed it is. Apparently there is major emphasis on observations to be made during the upcoming eclipse. Comment from above (the OMB) was that this is a must-do, must-succeed project (but silence on funding for doing it or succeeding at it). Francisco suggested a portable spectrograph and portable TFD array to be placed in the path of totality. Shing mentioned the need to come up with concrete performance goals and suggested that everyone participate to the best of their ability. No discussion on performance goals or any spectrograph related issues.

JUNO

Chuck mentioned that Masafumi Imai, who is now a post-doc at University of Iowa, sent him an email noting that "Juno is in good health and recoding a wealth of Jovian bursts."

Archiving

Hard drives from the PDS have now been received by all observers interested in providing data to the PDS and PADC.

Jim Sky will work on creating a diagram showing the directory structure to be used. The structure was outlined in Baptiste's email of 6/15/16; however, Dave suggested that a diagram might be a lot easier to use.

Jim Sky agreed with Dave that the definitions of auxiliary/context.ancillary data is still vague. Jim also felt that since the PDS has not made it crystal clear exactly what they want in this regard, perhaps we cannot be expected to get it right on this first go around of hard drive shipments.

Jim S also offered that documents and logs pertaining to the observatory or instruments should be put in a separate folder on the root of the drive, while docs and logs pertaining to a specific data run (or observation) should be placed in the same subdirectory as the observation. No mention if these docs should be identified so as to link them with the specific observation as suggested previously by Baptiste.

Validation is still a fuzzy issue. Observers should ensure (the so-called "self-validation" process) that their data files are readable, that the dates and other metadata are correct. The will be, at some unspecified later time, another round of validation by an as-yet unnamed third party to see if the data meets some as-yet unspecified goals and specifications.

Chuck reminded us of the idea that the SUG members could validate each other's data by spot-checking each other's files.

Dave mentioned Jim Sky's idea of looking at 24 hour spectrograms via a web service. It is imagined that the PDS will run a web-based service to turn all the old SPS files into PNG images for this purpose. Dick suggested that such software running on the observer's machine would be useful for easy self validation before submission. Jim Sky will look into this.

Dick brought up a good what-if scenario: what happens if an observer discovers a bad coax connection? If an observer discovers near the end of the Jupiter season that only one of his two dipoles is connected, it was agreed that the observer must identify the beginning and end dates of this problem and document it so that a researcher can know whether the data being looked at is affected. ***This means that data must somehow be linked to a problem report filed at a future date.*** Dave noted that this sort of situation highlights the **need for observers to keep and maintain an engineering log to the best of their abilities.**

If our data is to have scientific use, a researcher must be able to know the condition of the instrument at the time of interest – that is, they must be able to have full knowledge of all changes and all problems.

Observers will load the hard drives with their 2016 spectral data, any associated ancillary (auxiliary and context) data (see notes from last SUG telecom in black below), then fill the rest of the drive with prior years' data until the drive is full. It is okay to keep the native RSS directory hierarchy when copying to the PDS hard drives.

Excel files should not be used in the ancillary data – please use CSV files instead. The idea is to ensure that the file format is still readable 50 years from now, so the simpler the better.

The vetting process for the data is unclear at this time. The PDS desires someone not associated with the SUG or Jove program, but who is versed in the field, to vet the data. Masafumi has been mentioned as a possible person who could do it. It is thought that vetting will take place annually. Discussion ensued about how it would be good to find out what is required to pass the vetting process sooner rather than later. Baptiste offered that the vetting process is probably to ensure that the data is not saturated and that it is of possible scientific use and that the metadata and notations are consistent for a given data file. Still, it is not completely known for sure what the PDS requires for "validity." Baptiste and Jim S are looking into this question.

Baptiste offered that perhaps the Jove team can validate its own data, but an individual observer CANNOT validate their own data – in other words, we would validate each others' data. Dick offered that this is going to turn into a heavy workload for all observers, to which Jim Sky and Baptiste put forth that some tools could be written to

make the process much easier than trading a bunch of SPS files and looking at them. Jim S will look into such easier methods and report back.

Baptiste mentioned that there will likely be two kinds of data: calibrated an uncalibrated. Calibrated will be in terms of antenna temperature. It was agreed that if a researcher wants flux density, this is where the aux data will come into play, so they can calculate it.

It is felt by all that feedback from the PDS will illuminate many of these open questions once they start to get SUG data.

Efforts also underway to better define the two types on ancillary data, namely "auxillary data" and "context data." Jim reported that aux data should include beam steering and similar information while context data should be a document containing information similar to our SUG station diagrams. It is not yet clear whether the aux and context data need to be of uniform format across all SUG observatories, but it appears that having such uniformity would certainly help the conversion process (taking place in Paris) and any researcher looking at the data.

Baptiste has sent a list of station and instrument abbreviations to the SUG list; observers will let Baptiste know if these abbreviations are okay.

SDRPlay

In addition of Nathan, Jim Sky and Dave have now been able to use an SDRPlay receiver with Nathan's SDRPlay2RSS software to stream data directly to disk (in the form of SPS files). Jim Sky has also been able to use the software in the mode of streaming data directly to RSS. This latter mode has the advantage that a lot of metadata will be recorded in the SPS file that otherwise would not be there.

Update on the progress of the correction array instruction manual.

Waiting on Dave to test the latest release of RSS 2.8.16.

Latest Version of RSS

Latest version of RSS is 2.8.16.

RFI examples for the SUG web site.

Examples received, waiting on Dave to mount the examples on a page on the SUG web site.

CML-Io Phase Plane zone labels

Dave asked if it was truly important to label every bit of emission with a firm, definite label of Io-This or non-Io-That, suggesting that what really matters are the emission

characteristics not the zone labels. Chuck put forth that it is in fact important and that better label definitions would come from analysis of our data. Shing and concurred, citing the lack of any good review paper, suggesting that this is a gap that could be filled by the SUG. Dick suggested that we shouldn't get too hung up on labels as the phase plane is just a map of probabilities and not much else. Francisco suggested two phase planes, one for RCP and one for LCP. Dave mentioned that efforts are underway to do precisely that.

Jovian DAM emission morphology terminology

Jim B mentioned that a recent non-Io-A storm was interesting because the individual bursts had a positive frequency drift, while the overall envelope had a negative frequency drift. Dave wondered if this was abnormal or normal; nobody offered any strong opinions one way or the other.

Dave asked what the proper use of the terms envelope, arc, and burst are. Discussion with Jim T, Chuck, and Dick indicates that the emission envelope is the overall shape of the storm on the time/frequency plane, with separate arcs therein. Bursts form the arcs, but no hard and fast definition of "burst" seems to exist. Chuck mentioned that several terms are explained in the Physics of the Jovian Magnetosphere book.

Next SUG Telecon Tues, 05 Jul 2016 at 5:00 pm EDT (2100 UTC)
(844) 467-6272, 352297#