

SUG Minutes – 07 Feb 2017

In attendance

Jim B, Wes, Dick, Francisco, Tom, Jim T, Whit, Shing, Chuck, Dave

Station Reports – New Info in RED

Tom – Now using an old Dell WinXP box with a PCI bus serial card to communicate with the FSX-10S; all seems to be working well. Will be getting a different XP box at some point.

Dick – Nothing new.

Whit – Nothing new at Coho, iced-in pretty well down there. 200 kK background at home in Anchorage, business as usual. Tried observing Jupiter, null results (not surprising with such a high RFI background and weak Jupiter).

Jim B – Re-did the DDDR experimental antenna, re-aligned the RJ receivers, reinstalled OS and all software on the Win10 box.

Wes – Was having problems with RSS suddenly stopping taking data for no apparent reason at random times. Added an internal (PCI bus) serial card to the computer and connected the spectrograph to it. RSS has been running flawlessly ever since (several weeks).

Chuck – Nothing new for Jove; some progress on the eCallisto antenna (rotators are working).

Francisco – Nothing new at home. At RHO, installed one TFD element and ran a Jove receiver and the FSX-7S on it. Seems to be a lot of interference coming from the computer used to run RSS and RSP. The computer was only 35 feet from the antenna. Next step is to find a place in the 18” telescope observatory building for the radio gear and computer(s), which will be well over 100 feet from the antenna.

Andy –

Dave – Both Jove receivers now tracking each other in amplitude very well. Noted that RFI can sometimes be RCP or LCP dominant; unknown why this happens.

Discussion – New Info in RED

Phase Plane

Tom posted a note asking about the apparent prevalence of Io-C beyond the “normal” high probability zone defined by the currently used phase plane probability map. Shing pointed out that these are probabilities, not brick walls. Dave mentioned that the current probability map is based on 38 years of UFRO data from 1957 to 1995, but only at 18, 20 and 22 MHz. Chuck added that it was for all polarizations combined. Shing asked if a new analysis of the phase plane probabilities is indicated. Dave opined that yes, it probably does. Dave also mentioned that there are several phase plane probability maps published and that they all look slightly different.

Dave asked if the high probability zones moved with D-sub-e; Jim T said they move slightly but that this could be the emission source moving or the peak probability moving on the phase plane, we don't know which.

Shing mentioned that perhaps the solar wind has an effect on the shape of the emission cones, distorting them at times, which might make the onset and cessation of emission change relative to CML-III.

A brief article about the phase plane and emission arcs has been published in the most recent issue of the Jove Bulletin.

<http://radiojove.gsfc.nasa.gov/library/newsletters/2016Dec/>

HEC grant

Shing reported that the new grant proposal related to solar observation was declined.

Dick asked if we should proceed with Phase II (calibrators, etc). Shing and Chuck agreed to go ahead with Phase II.

Shing asked what the status of Phase I is; Dick replied that phase I is complete.

Archiving

Dave, Jim B, and Chuck's data are now mounted online at the PDS:

<http://ppi.pds.nasa.gov/radiojove/>

Chuck will check with the Jove web host about the reality of unlimited storage.

Dick asked about archiving spectral data (SPS files) at the Jove Archive. Chuck said that the file size limit is still 25 MB, far too small for 24-hour SPS files.

Shing reiterated the desire for observers uploading jpegs of their strip charts to the archive for the eclipse project to use a 0 to 250 kK y-axis scale.

Shing asked Dave to send a copy of the metadata list (Excel file) to Len.

Dick reviewed the Excel file and observed that the current metadata isn't that useful if a researcher wants to convert the observed noise amplitude to flux (e.g., ant gain, feed loss, beam steering, HPBW, polarization, etc). Shing agreed that these should be in the metadata. Dick requested that the people doing the scientific analysis provide some guidance on what metadata they wish to see based on what science they wish to accomplish. Dave reiterated this request while Dick was fighting a balky telephone connection connection connection connection.

Jim S mentioned that there are 4 years left on the 5-year grant for the PDS to hold RJ data.

Tom asked if the Jove Archive's label of SPD was causing difficulties uploading SPS files. Len said no, the system doesn't care what kind of file it is.

Len mentioned that the size limit in the Jove archive has been fixed, but that Tom still cannot upload his 324 MB SPS file. Dave was successful uploading a 13.5 MB SPD file. Dave suggested that maybe it is a time-out issue, not a size issue (324 MB may take longer to upload than the system permits).

Jim B observed that while the RSP event submitter says an event gets uploaded, it does not show up in the archive calendar. One must upload manually through the archive web interface. Len and Jim S are investigating this.

The question arose as to where the best place is to host the relatively massive amount of SPS files (massive in terms of terabytes). Dave suggested asking the PDS. Chuck mentioned (and Shing verified) that web.com (the radiojove.org web host) offers unlimited storage and unlimited bandwidth for \$10/month. Chuck will call and verify. If this bears true, then the SPS files may be able to be hosted at the radiojove.org site.

Dave suggested using thumb drives to send to one person with high upstream bandwidth to load the files on the archive. This concerns observing sessions pertaining to the eclipse project.

Dave will ping Mark and Todd to see if the raw data (SPS files) submitted by Jove observers to the PDS can be made publicly available.

Dave sent a list (Excel file) to the group on 12/29 listing the metadata elements presently being considered for inclusion in SPS files. Dave asked everyone to review it and provide comments.

Anyone who has not submitted data on a PDS hard drive is asked do so and to contact Jim Sky for any needed help.

Jim S is working on modifications to the data copying program to make it able to handle SPD files as well as SPS files. This will facilitate data transfer of SPD files to the PDS.

Software

Latest version of RSS is 2.8.27

http://radiosky.com/spec/Spectrograph_Update_2_8_27.exe

Latest version of RSP is 2.7.15

http://radiosky.com/skypipe/RSP11_Update_2_7_15.exe

2017 Solar Eclipse

Next eclipse practice session is set for Saturday, Feb 18, 2017.

Dave suggested that even though Len has fixed the file-overwriting issue with the Jove Archive, submitters should still add their station name to their SPD file name before uploading. This will make it easier for researchers to see which SPD files go with what station without having to open each SPD file and read the metadata. Dick and Shing thought this was a good idea.

Shing asked how many participants are there in the eclipse project. Jim T said that while it is difficult to know for sure, 10 to 20 participants are expected to actually make observations.

Shing will ask Jim B about the possibility of time-stamping strip chart data in RSP using both UTC and LMST simultaneously.

There was vigorous debate about what change in observed galactic background (GB) to expect during the eclipse.

Dave thought that the GB should increase as band noise decreased and wondered how it would be possible to extract the change in GB from the change in band noise.

Shing said that the observed GB is affected by absorption in the ionospheric D layer. Dave and Dick thought the F layer reflects some GB. Shing said it does not.

Chuck is thinking hard about what to expect from the GB during the eclipse and will use sunset and sunrise as a loose approximation. He will do an experiment with some

students to look at Jove archive strip chart data surrounding sunrise and sunset to see if there is any evident change in the observed GB. Shing asked for the experiment to also look at local noon and local midnight; Chuck agreed.

Shing put forth that the GB should decrease as the D layer forms at sunrise and increase as the D layer goes away at sunset.

Wes sent around a strip chart for the three hours near sunset on 1/23/2017 that shows a slight decrease in observed T_{sys} a few tens of minutes after sunset. Dave thought this indicated a decline in band noise.

Dave asked what RJ antenna config should be used to observe the GB, since Chuck mentioned during the Eclipse practice telecon that all Jove arrays should be pointed south, toward the Sun. Dave proposed pointing to the D layer shadow; Francisco concurred. Shing and Chuck favored zenith steering. After considering all the advantages of different options (point to the south (to the Sun), to the D-layer shadow, or to zenith), consensus was reached to ask participants to point to zenith. This is the simplest setup (no phasing required) and everyone will have (nearly) the same telescope this way.

Jim Brown mentioned the fact that data at the time of day of the eclipse is very noisy. All agreed that we should start looking at ways to combine and analyze the data, noisy as it is. Chuck & Shing felt that finding the minimum values (between RFI spikes) might do some good.

Shing asked if we could all use the same horizontal and vertical scales for our SkyPipe strip chart plot images in the Jove Archive. Consensus was reached to use a 24 hour horizontal scale and a 0 to 250 kK vertical scale. Jim Sky will write a one-page list of RSP settings for the new people joining the program for the Eclipse project.

Chuck mentioned that it is important to have instruments not on the path of totality to provide control samples during the eclipse.

Jim T asked if spectrograph observers should also provide 20.1 MHz data extracted from the spectral data. Dave mentioned that the data would be much noisier due to the short integration time, but concluded that having such data would be a good thing, more data being better than less data.

**Next SUG Telecon Tuesday, 21 Feb 2017 at 5:00 pm EST (2200 UTC)
(844) 467-6272, 352297#**