

SUG Minutes – 21 Mar 2017

In attendance

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

Station Reports – **New Info in RED**

Tom – Nothing new.

Dick – Nothing new.

Jim B – Now has four spectrographs running: FSX-2, FSX-8S, and two SDRPlay SP1's, one for RCP and one for LCP.

Chuck H –

Larry –

Andy –

Wes – Now has an SDRPlay RSP1 up and running. Fighting trying to get both spectros (FSX-1S and SDRPlay) to be able to serve data at the same time. Still with intermittent RFI.

Francisco – Cleared some area within the RHO dome for the receiver hardware. Ran a multi-hour test of a Jove receiver on a calibrator for stability. Erection of the TFD array requires cutting of some bushes.

Dave – Nothing new.

Discussion – New Info in RED

CML-Io Phase Plane

More discussion of how the increased observing bandwidth and spectrograms make it far easier to “see” Jovian DAM nowadays. Also that frequencies below 18 MHz will extend Io-C past its shown high probability area on the UF phase plane since that map was constructed from 18, 20, and 22 MHz data.

Jim Sky asked the very interesting question of whether the presently rather negative D-sub-e might have something to do with seeing the southern hemisphere sources for a longer period of time since we now have a better view of them. Nobody had an answer, but everyone thought it was a pretty interesting question worthy of investigation.

Again with the phase plane, Dave mentioned that viewing spectrograms down to 15 or 16 MHz will make an Io-C event go longer than it does when seen only at 18 MHz. Chuck brought up the fact that Jovian DAM is far easier to see in a spectrogram than it is in single-frequency strip charts that were analyzed to derive the current phase plane probability map used in RJP.

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/>

Faraday Banding

Dave attempted to explain why Faraday banding occurs due to the changing of the polarization ellipse's position angle with respect to a linear antenna's wires. This can also happen in a circularly polarized array constructed of linear elements, especially when the source is low on the horizon and at a position that creates a response imbalance between the two orthogonal sets of wires. This is why Dave sometimes sees Faraday banding in the TFD array – and some times does not (if the low elevation source is, say 45 degs azimuth to both sets of orthogonal wires, both responses are equally lousy and not imbalanced and the array remains circularly polarized).

HEC Grant - SDRPlay

All have been marveling at Jim Brown's nice spectra which seem to show many negatively sloped modulation lanes. Wes also has produced SDRPlay spectra showing the same thing. Efforts are underway to characterize the RSP1 version of the SDRPlay.

Dick wondered if it might be a good idea to contact Nathan Towne to see if he has time to write the interface between the RSP2 version and RSS; and, if so, whether some HEC funding might help. Chuck said he would contact Nathan to see what Nathan thinks.

Shing expressed the desire to have more data soon from each station to do a data comparison for a HEC Grant progress report.

After much discussion back and forth, it was agreed that we would *try* to use an amplitude range of 0 to 500 kK and a 1-hour time span in our submissions to the Jove Archive for Jupiter observations for the next couple weeks and see how it goes.

Software

Jim Sky is currently working on trying a new method to cure the RSS publishing issue. Jim asked if observers would send him some SPS files of well-defined arcs for his updating efforts with his spectral sonification program. The current version of the sonification program is here: <http://www.radiosky.com/sonification.html>

Latest version of RSS is 2.8.30

http://radiosky.com/spec/Spectrograph_Update_2_8_30.exe

Latest version of RSP is 2.7.15

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

Solar Comparison

Dick wrote up and sent around a comparison of the 11 Feb 2017 solar burst at 1800 UTC. Analysis of antenna temperatures normalized for antenna beam patter, beam steering, and

location of the sun with respect to the beam show an approximate 6 dB variation between stations. Dave wondered how much of this we can blame on the ionosphere. Dick wondered how much might be due to assumptions and approximations made during the beam pattern analysis.

Shing noted that there is a 5 to 10 second difference in arrival time between Tom's spectrogram and Dave's. Tom said he sets his system clock by hand once a day and that it should be within 2 seconds of UTC.

This Type III solar burst is also unusual in that it has a positive sloped leading edge on the time-frequency plane, preceded by faint negative frequency drift streamers.

Archiving

Jim S has released a new version of the PDS copy utility, which will load an observer's data onto the portable PDS hard drive and remember which files were loaded so as not to duplicate them on the next go around. See email from Jim S on 20 Feb 2017 for PDF instructions and download link. <http://radiosky.com/Copy2PDSDriveInstall.exe>

Mark mentioned that one can send the PDS hard drives direct to him in Los Angeles. Jim S mentioned that if the drive organization is in doubt, one can send the drive to him in Kentucky and Jim will re-organize it into the organization format the PDS expects.

Jim B asked how often data uploads are expected; Jim S said that the idea the PDS is used to is quarterly updates, but noted this may be too often for Radio Jove.

PDS online Radio Jove data repository: <http://ppi.pds.nasa.gov/radiojove/>

Jim S has successfully loaded a 200+ MB file to the Jove Archive. The file size limit is now supposed to be 300+ MB. Jim B noted that there is no specific place to load an SPS file in the Jove archive. Dave noted that one can stick it anywhere, but that it would be nice to have a spectral data label.

**Next SUG Telecon Tuesday, 04 Apr 2017 at 5:00 pm EST (2100 UTC)
(844) 467-6272, 352297#**