HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: August 23, 2019

Object: Jupiter – Io-B

Observer: JB

Start - Time UT:	**0121:30**	**Planetary K-index:**	
Jupiter Altitude (deg):	**25.0**	**Jupiter Azimuth (deg):**	**198.2**
Jupiter CML:	**103.22**	**Jupiter Io Phase:**	**057.46**
Jupiter RA (hr/min):	**16:53**	**Jupiter Dec (hr/min):**	**-22:10**
Hour Angle (hr/min):	**01:11**	**Polarization**	**RCP**
Sun Altitude (deg):	**-14.1**	**Sun Azimuth (deg):**	**300.3**
Sun RA (hr/min):	**09:60**	**Sun Dec (hr/min):**	**12:15**

End – Time UT:	**0315:30**	**De:**	**-2.6**
Jupiter Altitude (deg):	**13.8**	**Jupiter Azimuth (deg):**	**223.7**
Jupiter CML:	**172.13**	**Jupiter Io Phase**	**073.43**
Hour Angle (hr/min):	**03:06**	**Duration (min):**	**114**
Sun Altitude (deg):	**-30.1**	**Sun Azimuth (deg):**	**325.1**
Max Frequency MHz	**22**	**Min Frequency MHz**	**17**

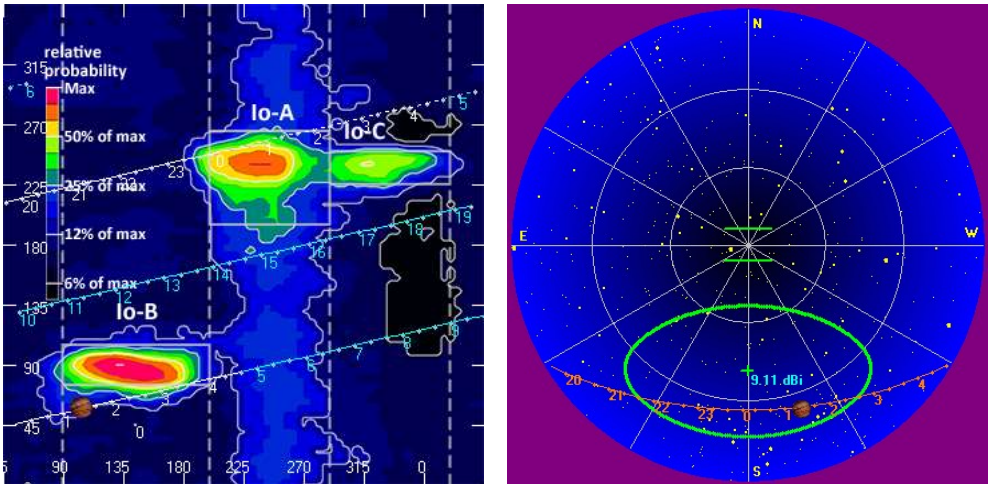
Observatory Configuration

Spectrograph Receiver	Antenna	Polarization	System Loss	Multicoupler	Multicoupler port	Calibrated
FSX-8S	TFD	RCP LCP	-8.35 dB -7.59 dB	#2 RCP #1 LCP	Port 1 +10dB Port 1 +10dB	Twice daily Twice daily
FSX-2	LWA	RCP/LCP manual select		N/A	N/A	N/A
SDRPlay RSP2 #1	TFD	RCP	-8.35 dB	#2 RCP	Port 2 +3dB	Twice daily
SDRPlay RSP2 #2	TFD	LCP	-7.59 dB	#1 LCP	Port 2 +3dB	Twice daily
JOVE II HNRAO #2	Jove dipoles	Linear	-3.66 dB	#3 Linear	Port 4 +3 dB	8/25/2019

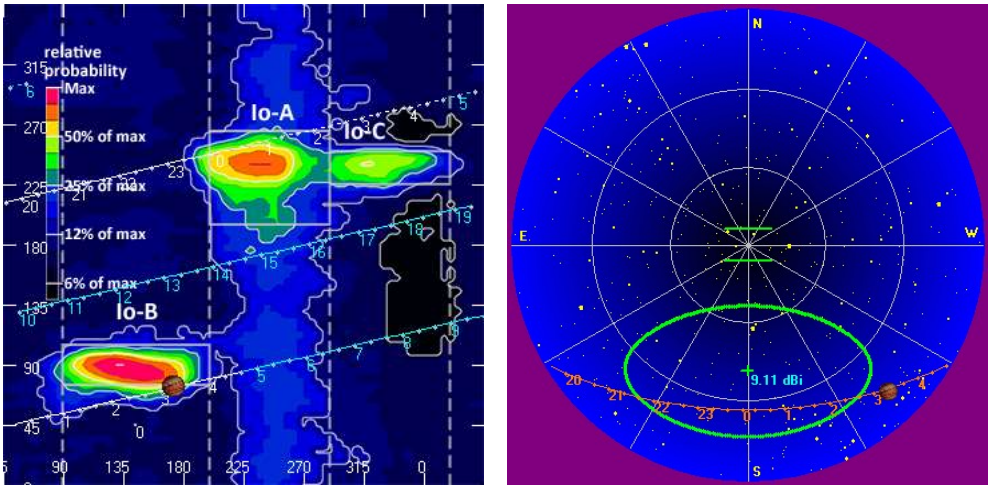
Radio JOVE dipoles phased @ 32 degrees for 2018-2019 season
Typinski AN-TFD-24-4 array phased @ 35 degrees for 2018-2019 season
Four LWA antenna array phased @ 35 degrees and orientation for observation: 45 degrees
Radio Sky Spectrograph software version 2.9.26
Radio-SkyPipe software version 2.7.33
Radio-Jupiter Pro software version 3.8.2
Network Time Server GpsNtp-Pi, Reeve Engineering

All times are synced with a local GPS locked NTP server.

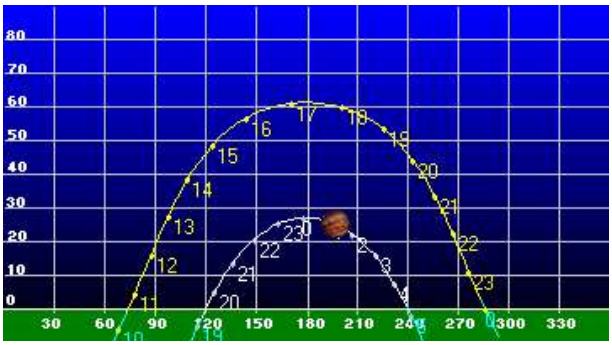
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

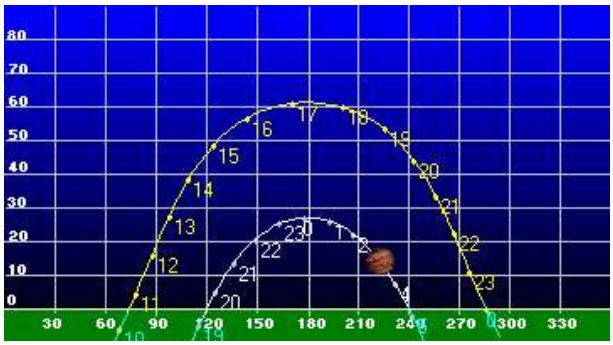


Beginning of Pass



End of Pass





MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	38	RH	Late	
Io-C	(300-20)	(225-260)	36	RH&LH	Late	Also called "third source"
non-Io-C	300-360	0-360	32	RH&LH	Late	Voyager info

https://www.radiosky.com/jupmodes.html

Modulation Lanes Designations*	
L – Burst	S-Burst
L1 – No lanes	S1 – No lanes
L2 – Positive slope	S2 – Positive slope
L3 – Cross hatched	S3 – Cross hatched
L4 – Negative slope	S4 – Negative slope
*Modulation Lanes in the Dynamic Spectra of Jovian L-bursts, J.J. Riihimaa, Astron. & Astrophys. 4, 1970	

All spectrographs and receivers operating except for the FSX-2/LWA array. A power supply issue has caused the telescope to be shut down until a replacement power supply is secured. It is unclear how long the power supply has failed. All antennas functioning normally. No other known issues.

The spectrograph charts show unknown RFI as horizontal bright bands and lines. Unknown RFI in the SkyPipe record rendered that data unusable.

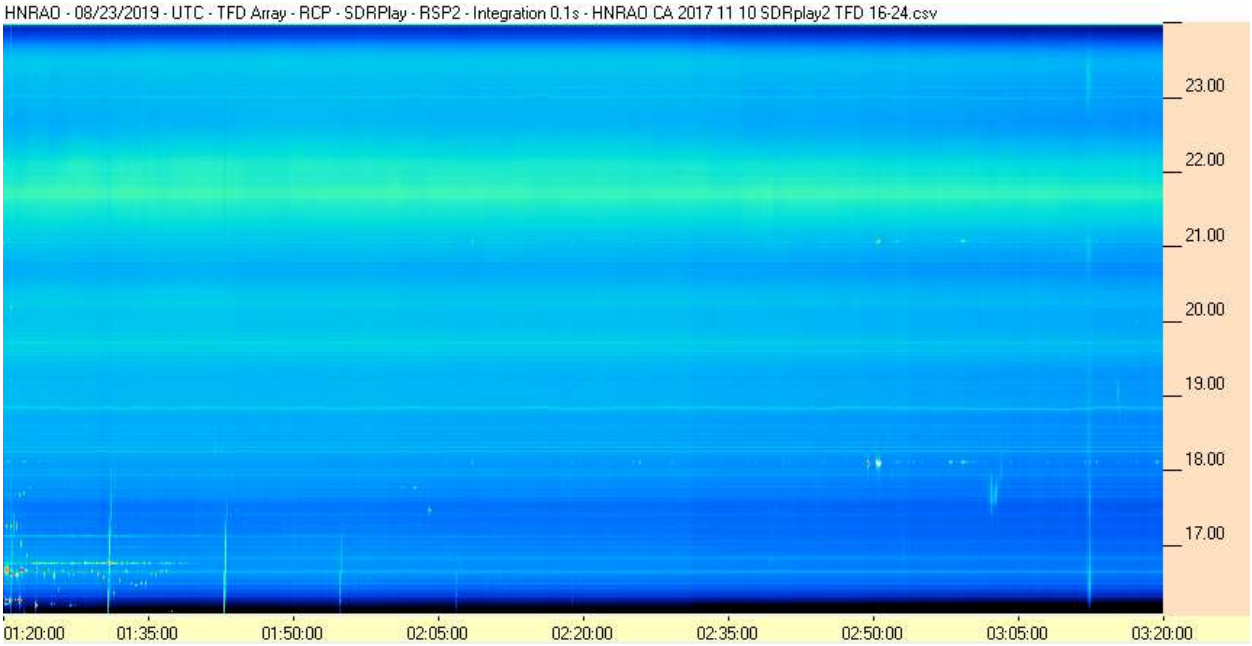
This was a very weak storm and began as RCP L-bursts with visible modulation lanes. There were only a few more, brief, L-burst emissions. The L-bursts were just slightly above GB as observed here. There were S-bursts visible from 0244 UT until the end of the storm. All S-burst emissions were slightly above the GB as seen here with one exception, the long train of S-bursts from 0301 to 0303 UT. This was a very energic group with individual bursts several dB above GB. This group, despite its strength, was only barely seen on the FSX-8S / TFD array.

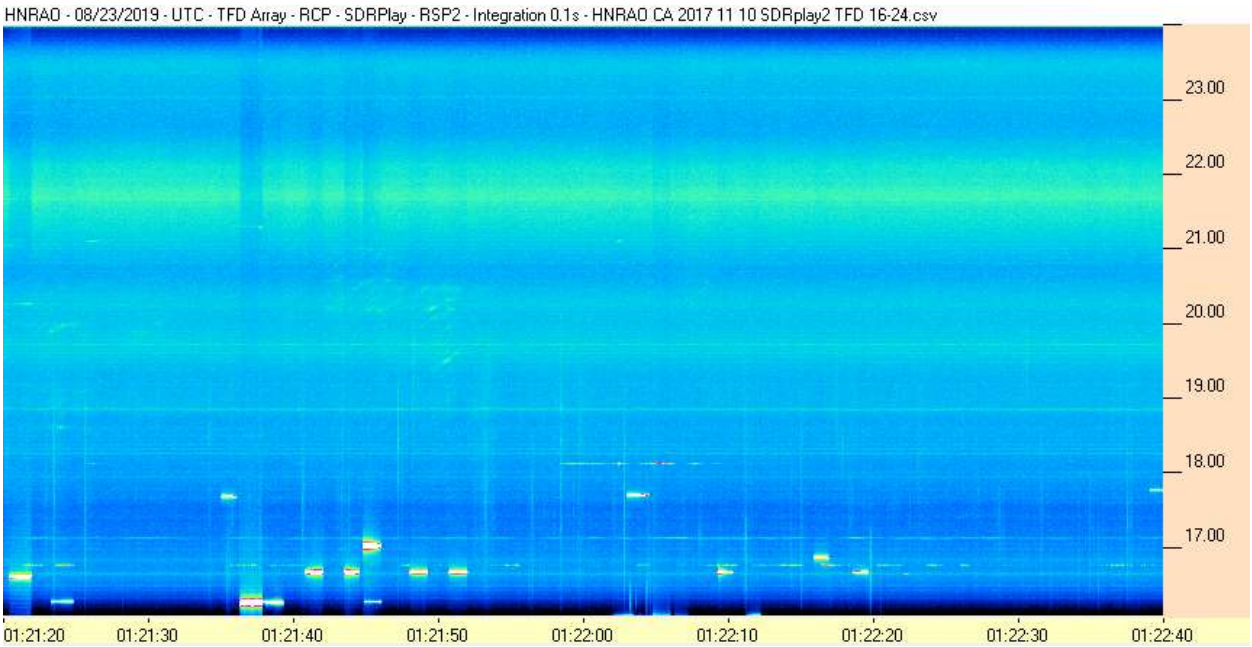
Other than the strong S-burst group, this was a weak, uneventful storm.

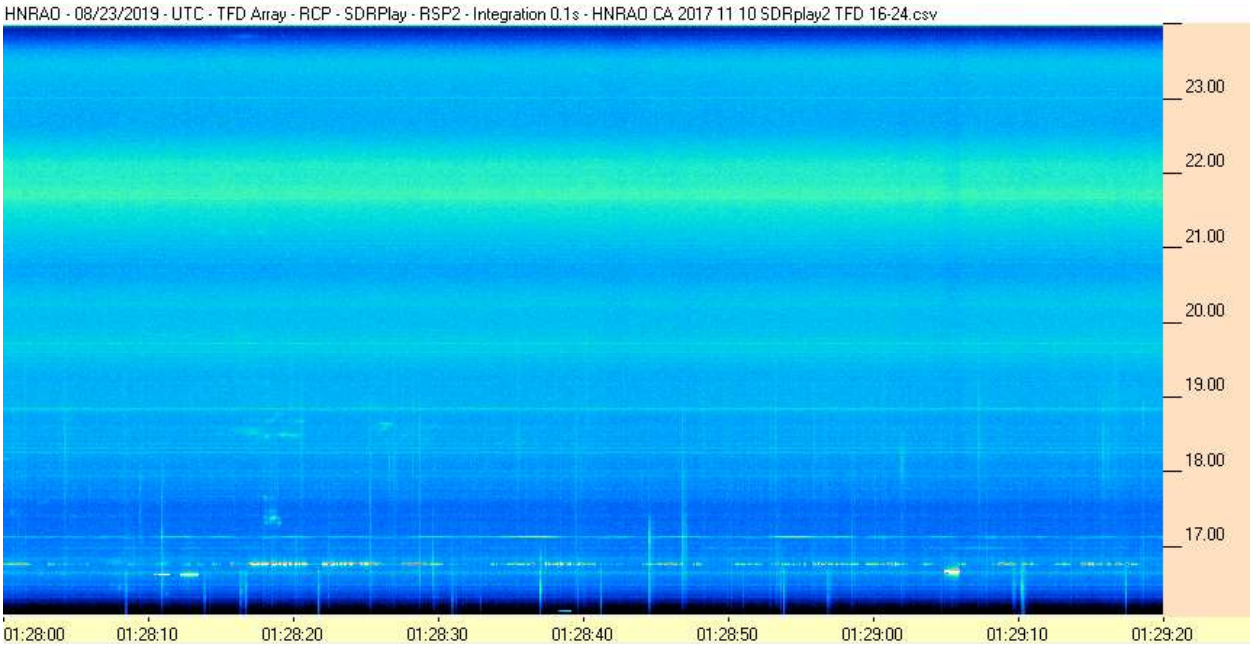
EOR

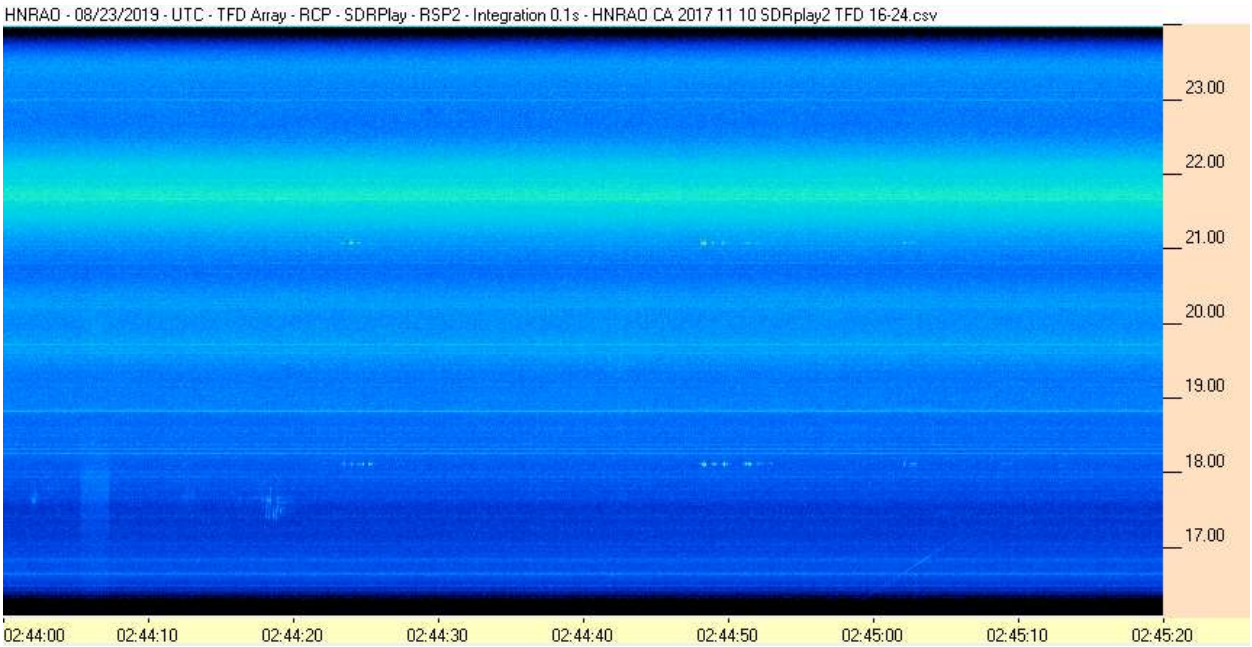
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

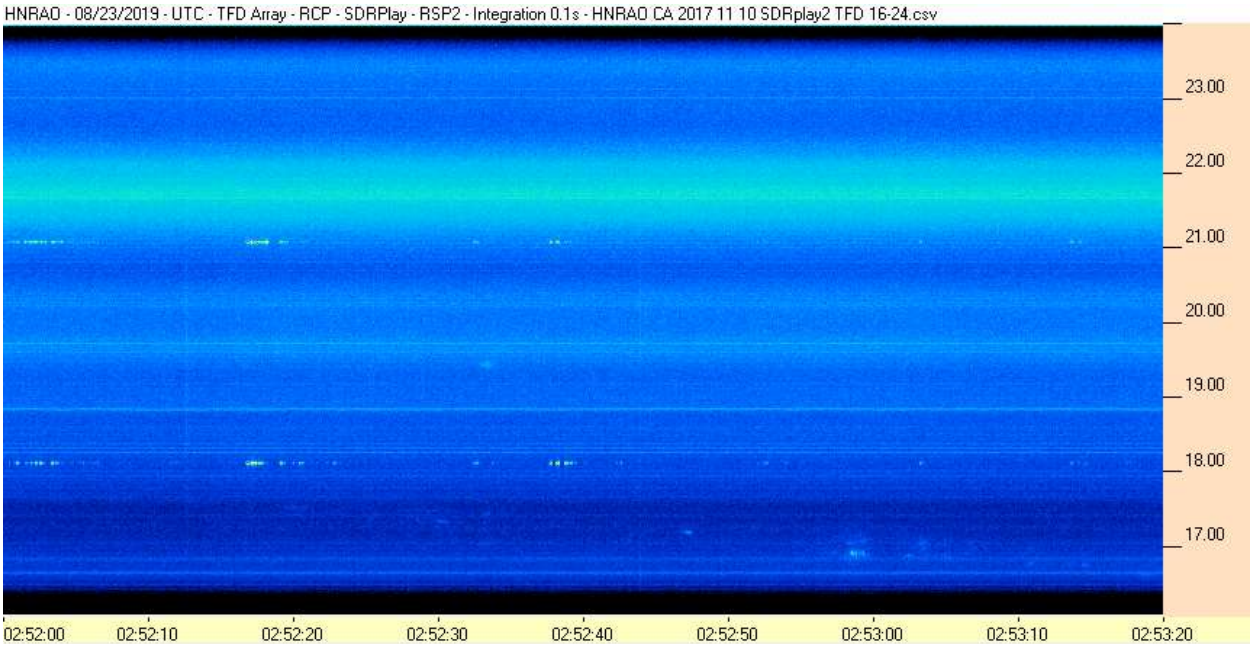
SDRPlay RSP2 / TFD Array

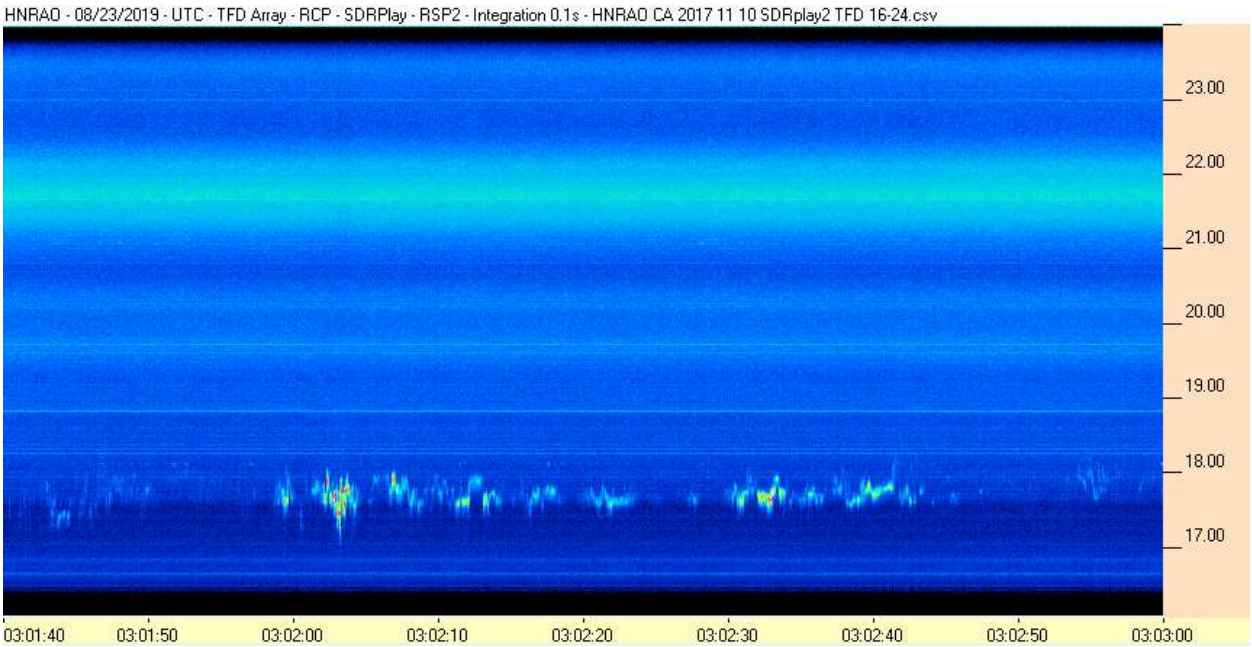


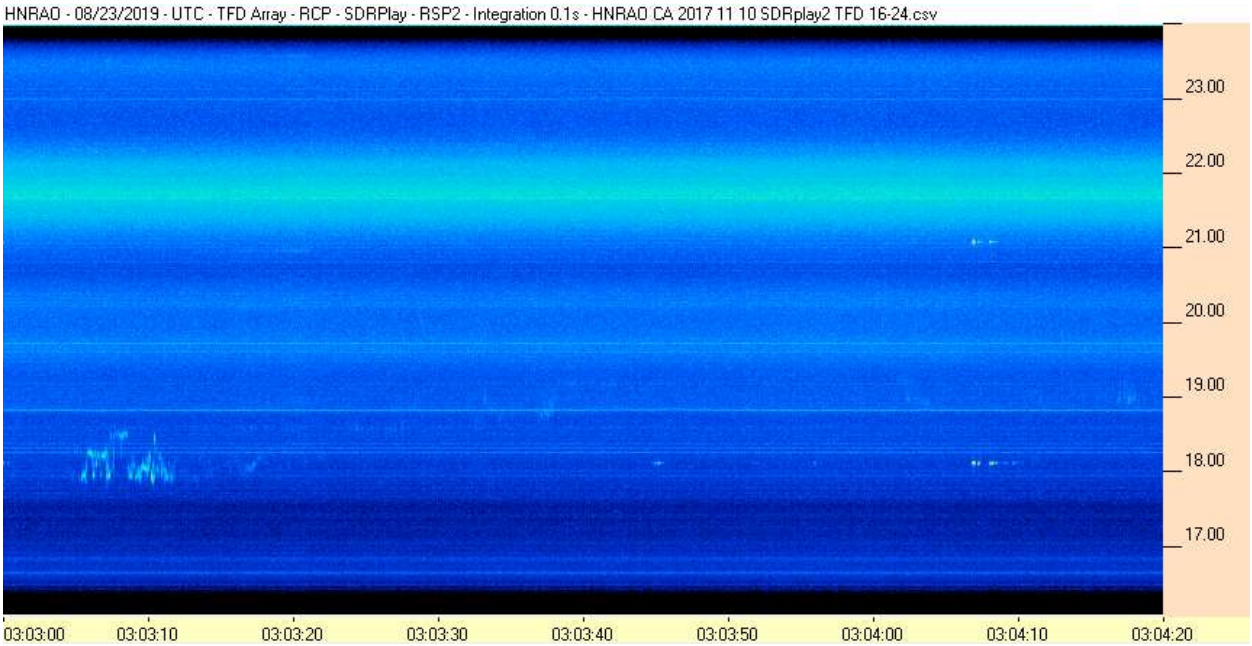


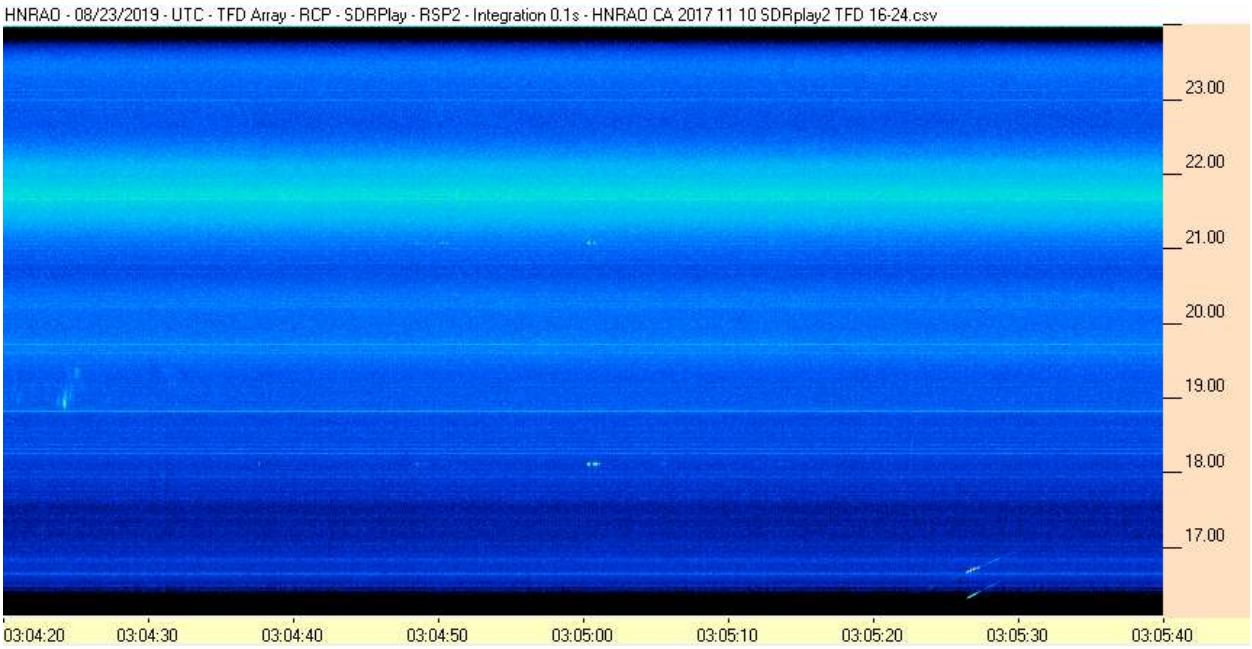

HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
01:28:00
01:28:10
01:28:20
01:28:30
01:28:40
01:28:50
01:29:00
01:29:10
01:29:20

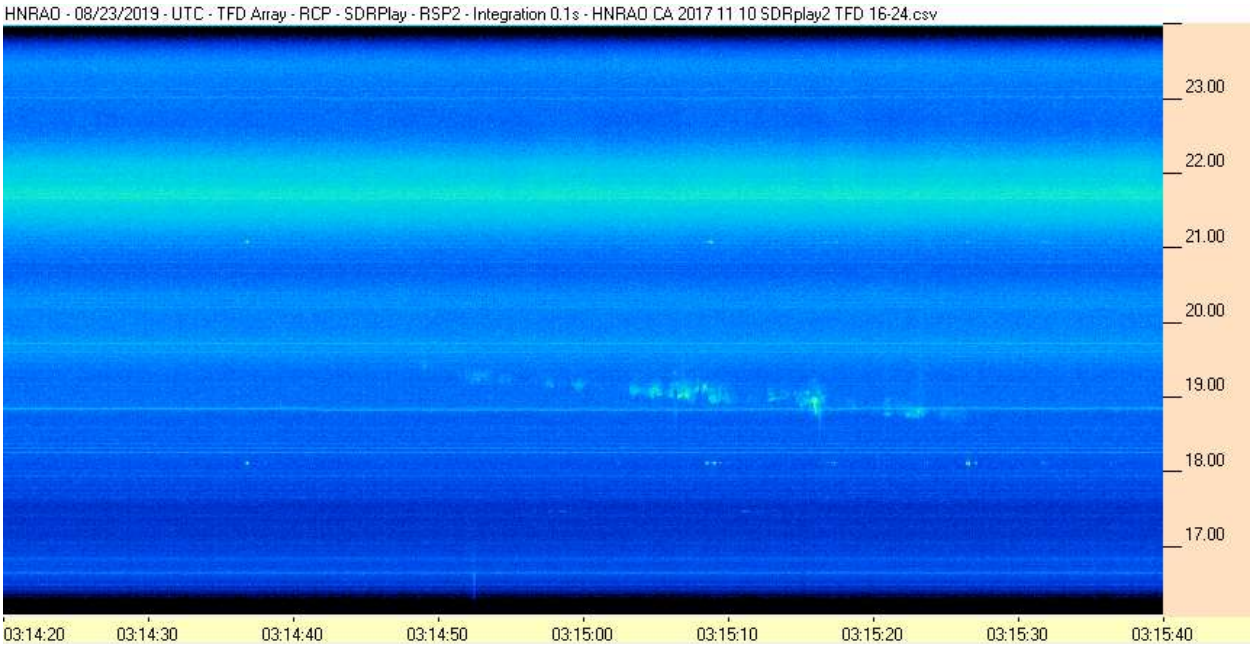

HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
02:44:00
02:44:10
02:44:20
02:44:30
02:44:40
02:44:50
02:45:00
02:45:10
02:45:20


HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
02:52:00
02:52:10
02:52:20
02:52:30
02:52:40
02:52:50
02:53:00
02:53:10
02:53:20

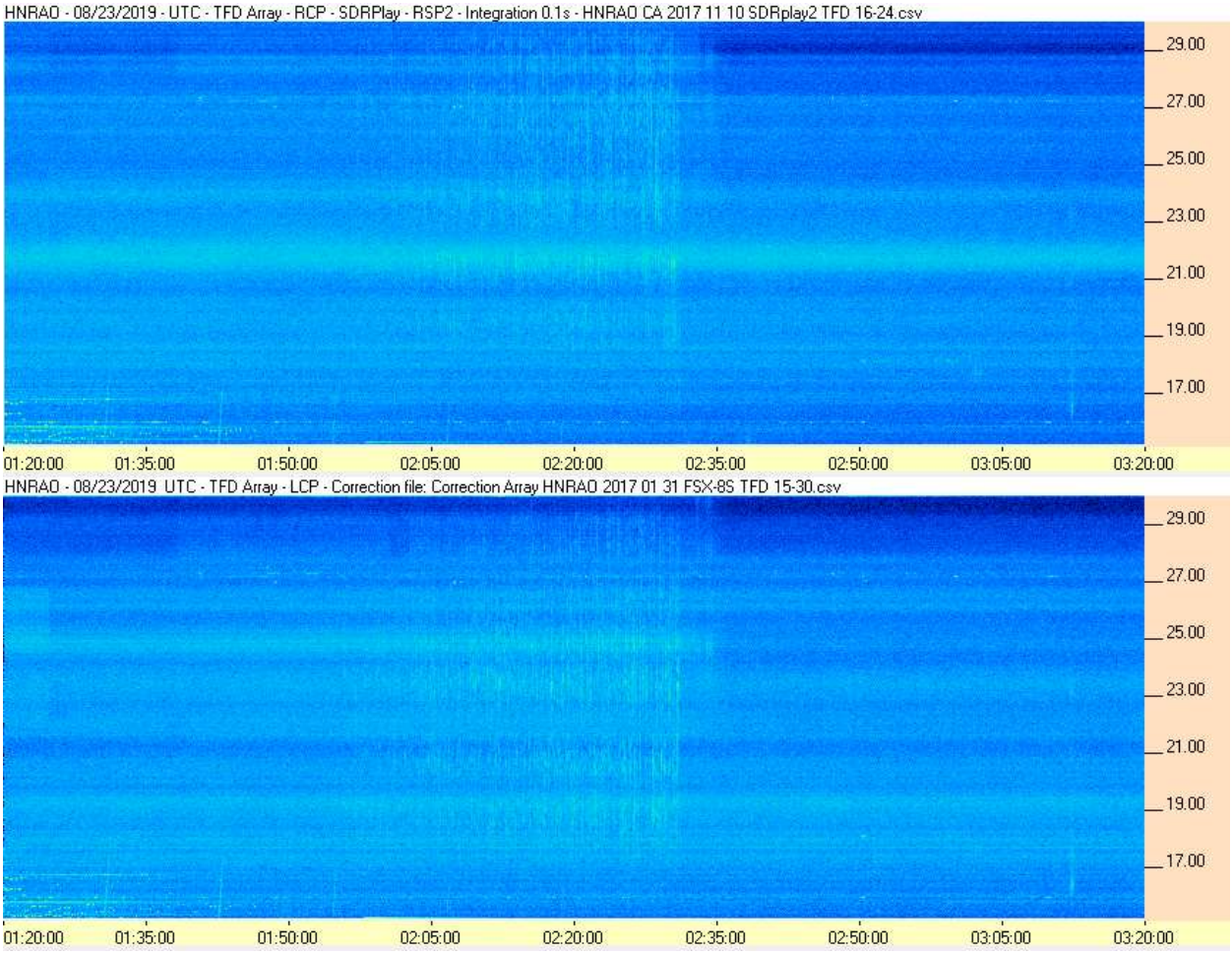

HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
03:01:40
03:01:50
03:02:00
03:02:10
03:02:20
03:02:30
03:02:40
03:02:50
03:03:00

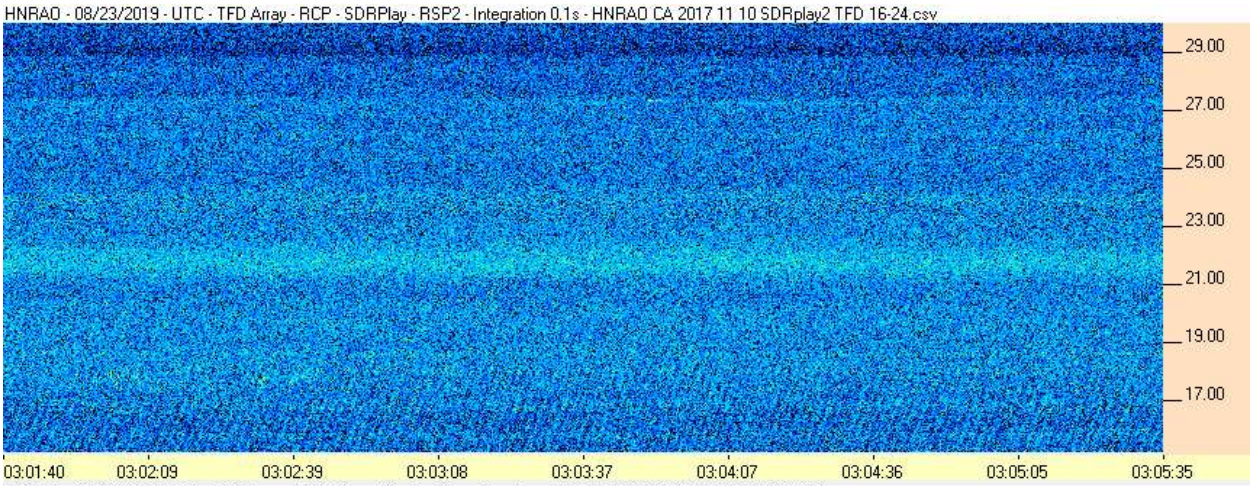

HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
03:03:00
03:03:10
03:03:20
03:03:30
03:03:40
03:03:50
03:04:00
03:04:10
03:04:20

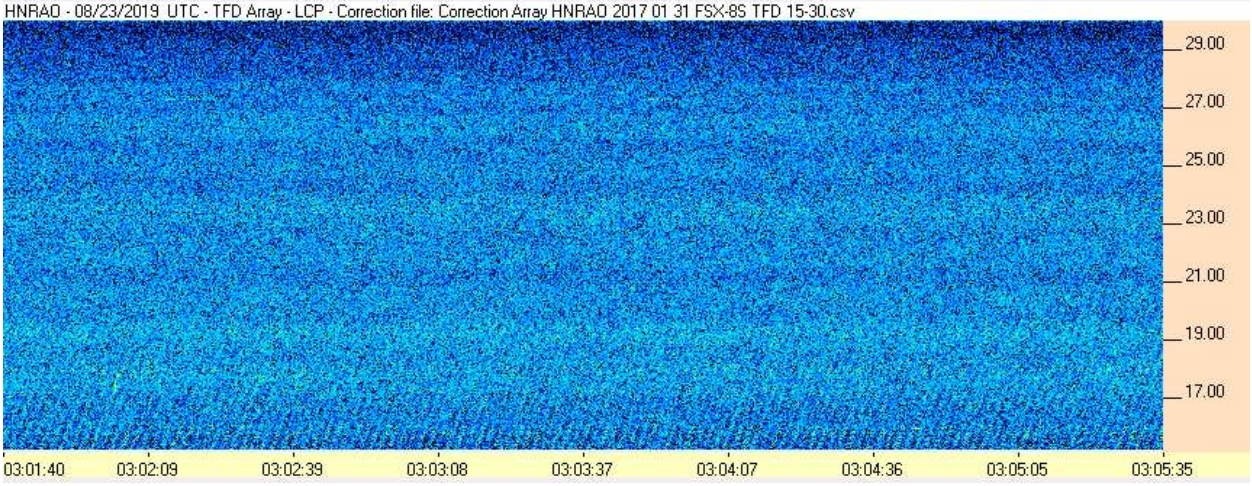

HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
03:04:20
03:04:30
03:04:40
03:04:50
03:05:00
03:05:10
03:05:20
03:05:30
03:05:40


HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
03:14:20
03:14:30
03:14:40
03:14:50
03:15:00
03:15:10
03:15:20
03:15:30
03:15:40

FSX-8S / TFD Array




HNRAO - 08/23/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv
29.00
27.00
25.00
23.00
21.00
19.00
17.00
03:01:40
03:02:09
03:02:39
03:03:08
03:03:37
03:04:07
03:04:36
03:05:05
03:05:35


HNRAO - 08/23/2019 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv
29.00
27.00
25.00
23.00
21.00
19.00
17.00
03:01:40
03:02:09
03:02:39
03:03:08
03:03:37
03:04:07
03:04:36
03:05:05
03:05:35

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

JOVE II Receiver / JOVE Dipole Array