

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: September 6, 2018

Object: Jupiter – Io-B

Observer: Unattended

Start - Time UT:	1841	Planetary K-index:	2
Jupiter Altitude (deg):	22.2	Jupiter Azimuth (deg):	138.6
Jupiter CML:	116.06	Jupiter Io Phase:	084.89
Jupiter RA (hr/min):	15:01	Jupiter Dec (hr/min):	-16:15
Hour Angle (hr/min):	-02:39	Polarization	RCP
Sun Altitude (deg):	51.0	Sun Azimuth (deg):	216.2
Sun RA (hr/min):	10:54	Sun Dec (hr/min):	06:58

End – Time UT:	1945	De:	-2.9
Jupiter Altitude (deg):	29.0	Jupiter Azimuth (deg):	153.9
Jupiter CML:	154.74	Jupiter Io Phase	093.94
Hour Angle (hr/min):	-1:34	Duration (min):	64
Sun Altitude (deg):	42.2	Sun Azimuth (deg):	235.6
Max Frequency MHz	24	Min Frequency MHz	15

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	TFD	RCP	-8.35 dB	#2 RCP	Port 2 +3dB	Twice daily
SDRPlay RSP2	TFD	LCP	-7.59 dB	#1 LCP	Port 2 +3dB	Twice daily
JOVE 1	TFD	RCP	-8.35 dB	#2 RCP	Port 3 +3 dB	04/20/2018
JOVE 1	TFD	LCP	-7.59 dB	#1 LCP	Port 3 +3 dB	04/20/2018
JOVE II	Jove dipoles	Linear	-3.66 dB	#3 Linear	Port 4 +3 dB	08/21/2018
SDRPlay RSP1	Experimental*					

JOVE dipoles phased @ 32 degrees for 2017-2018 season

TFD array phased @ 35 degrees for 2017-2018 season

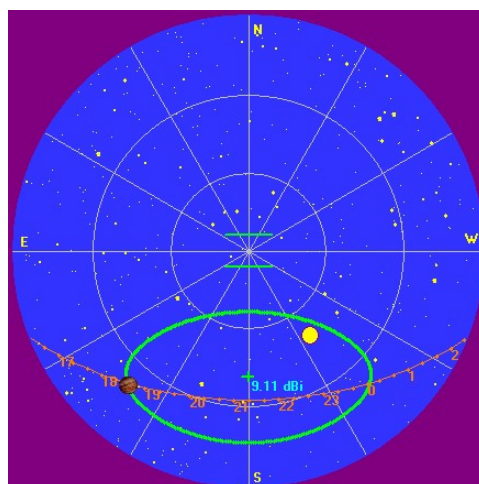
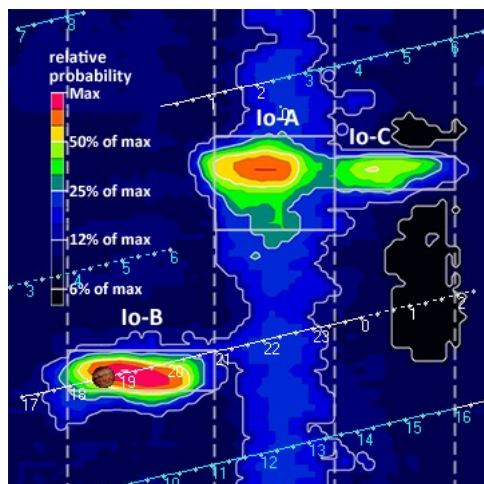
LWA antenna phased @ 35 degrees and orientation for observation: 45 degrees

* Used for testing and evaluating antenna systems

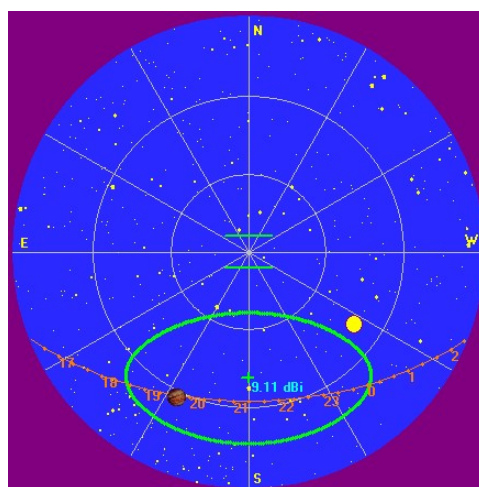
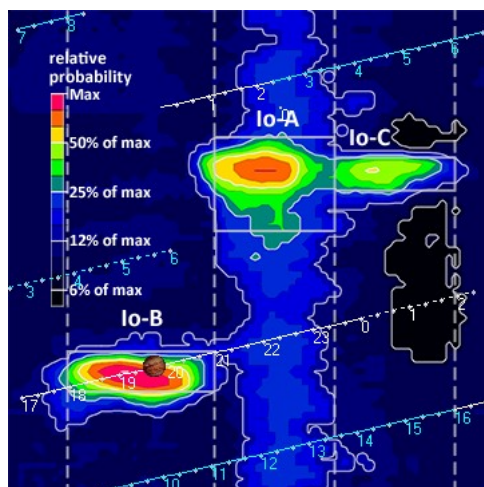
Software Radio Sky Spectrograph 2.8.50

Red = Offline

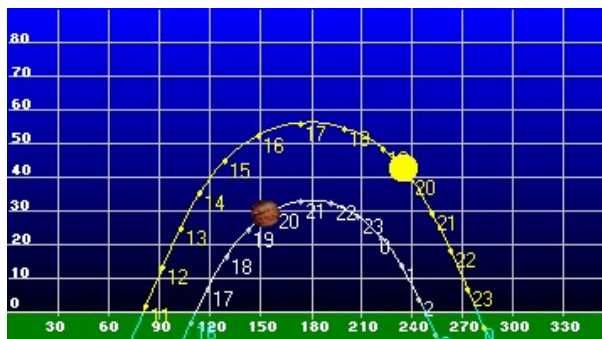
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Beginning of Pass



End of Pass



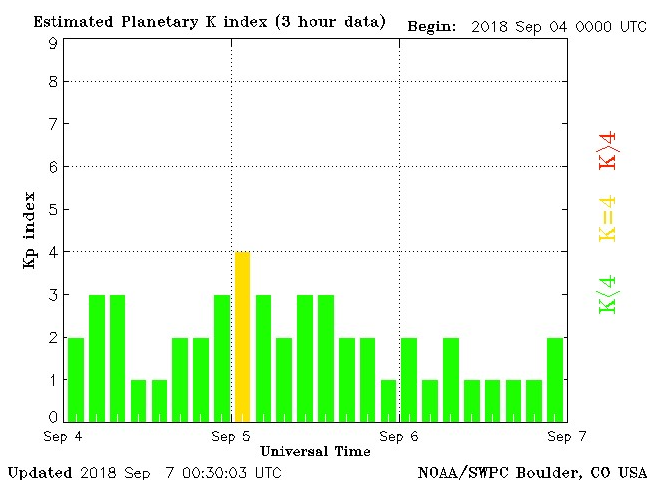
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



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	



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



All four spectrographs were collecting data as well as the Jove II / Jove dipole array combination. The only data observable was on the SDRPlay RSP2 / TFD array spectrograph.

Weather conditions at the observatory were partly cloudy, but a band of heavy thunderstorms were passing north and east of the observatory resulting in a great deal of lightning in the spectra. Broadcast stations were strong between 16 MHz and 18 MHz.

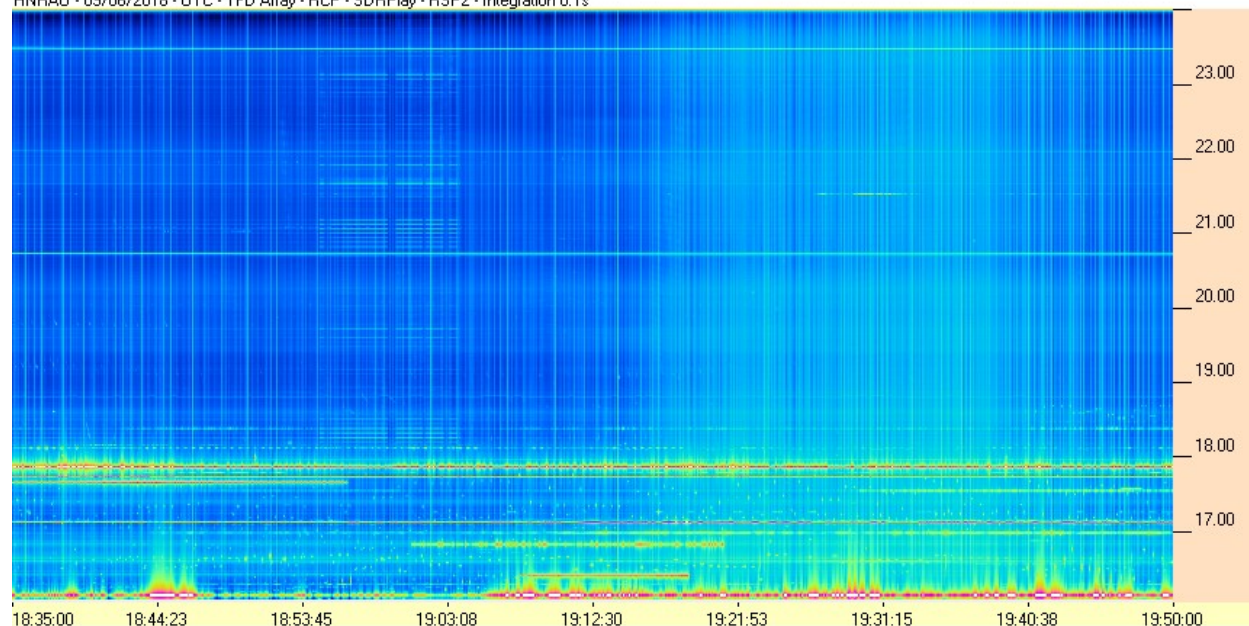
A daytime Io-B storm consisting primarily of RCP S-bursts. No S-burst modulation lanes were observed; however, scintillation was present. There were L2 modulation lanes observed at the very end of the storm.

Other than this being a daytime observation with the sun in the sky, there was nothing else of special note.

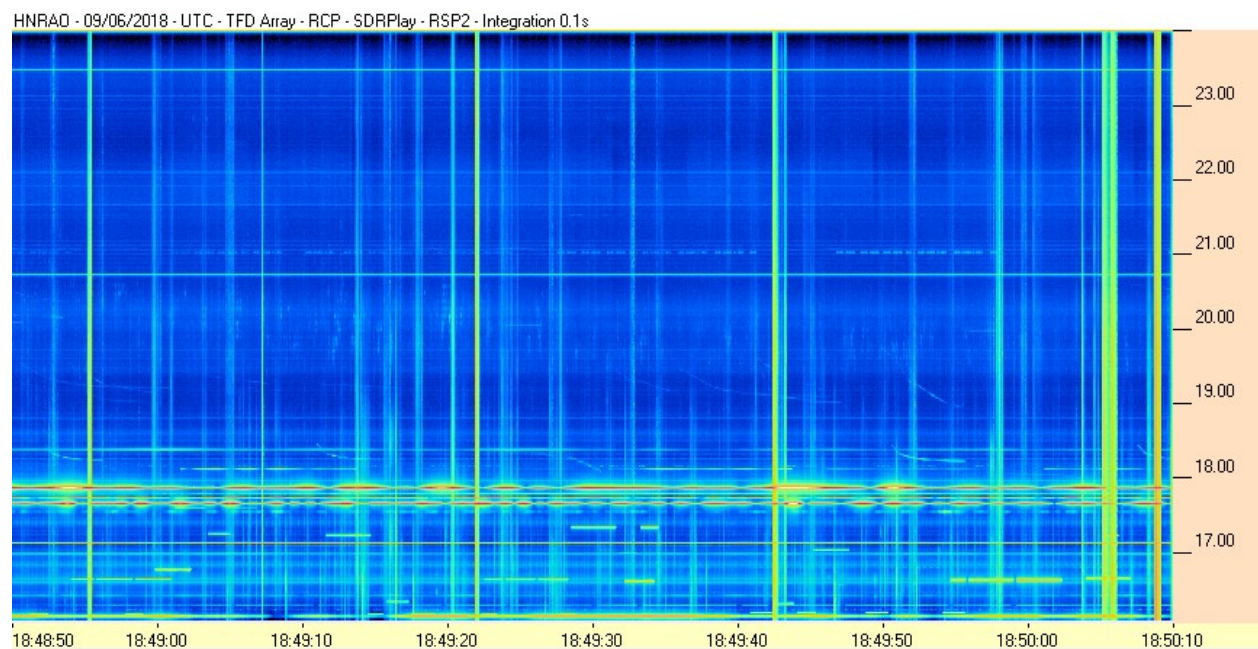
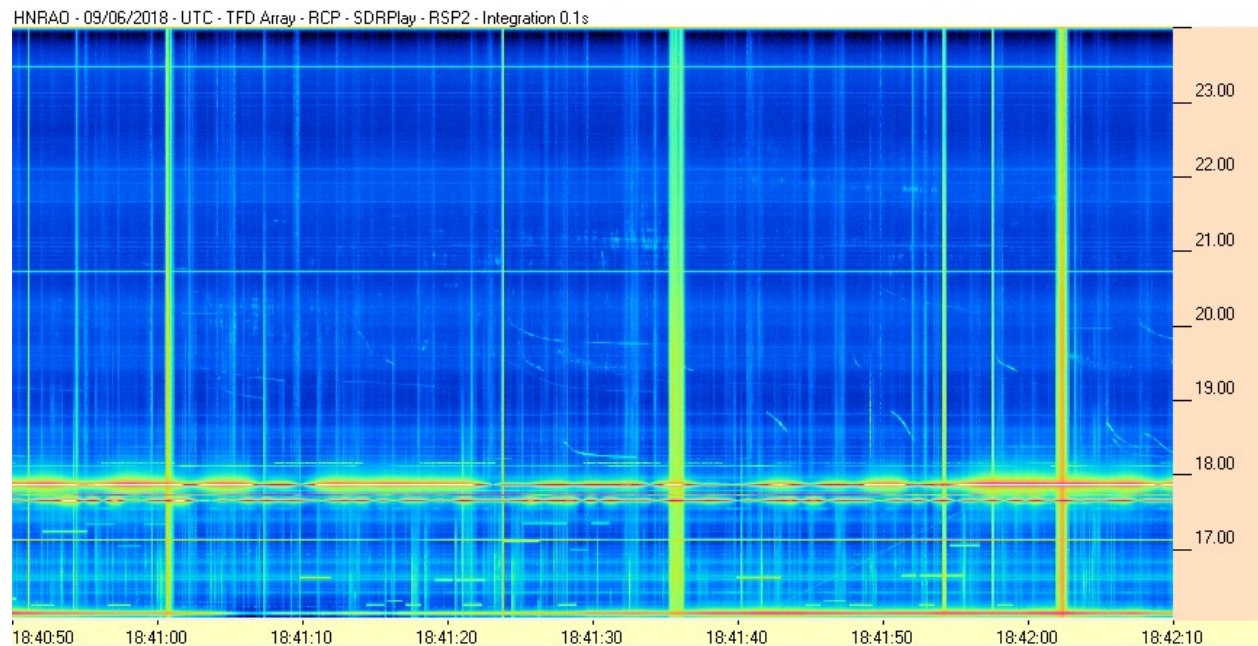
EOR

SDRPlay RSP2 / TFD Array

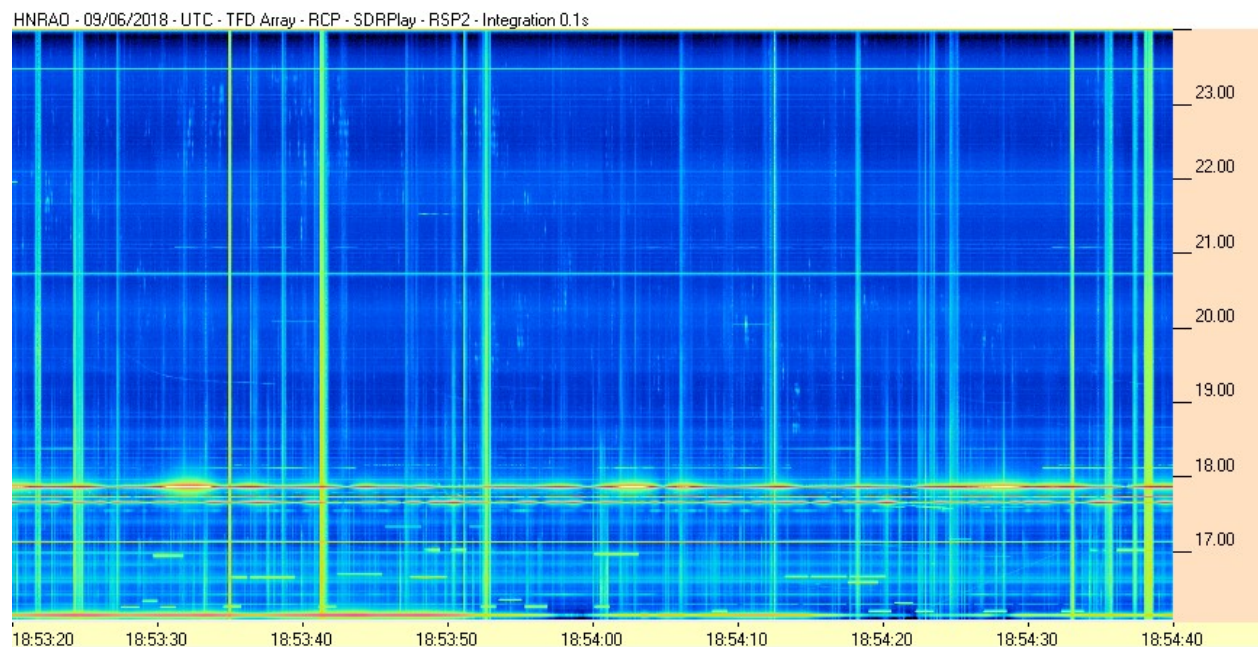
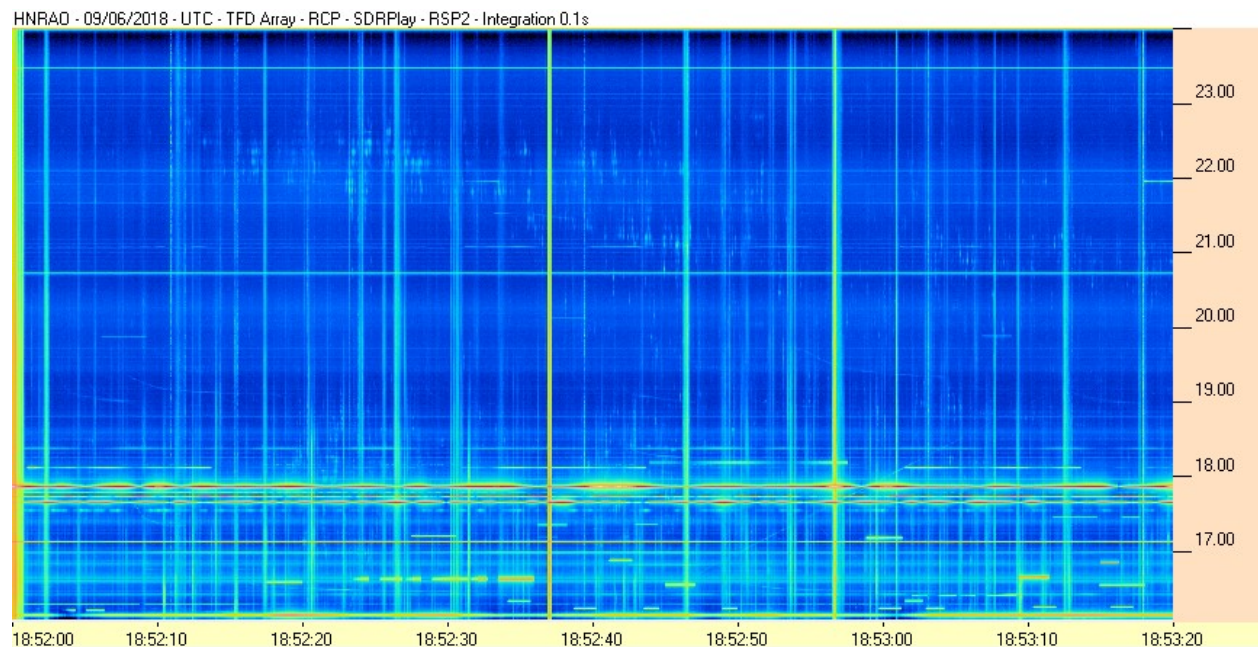
HNRAO - 09/06/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s



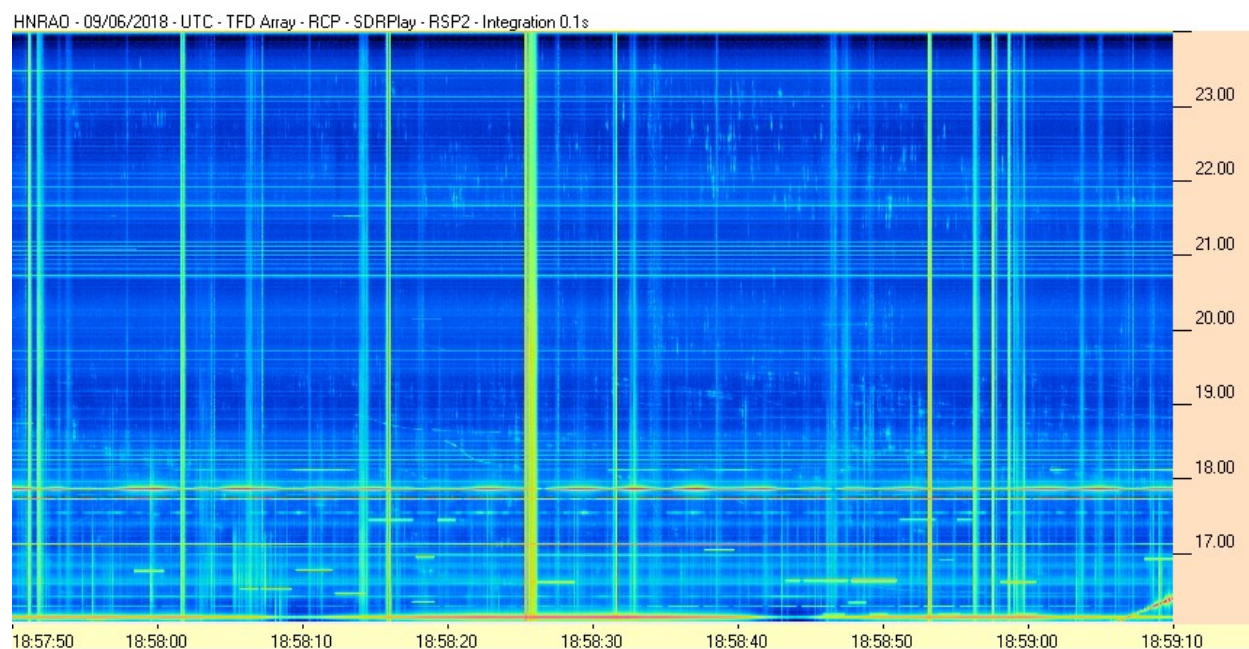
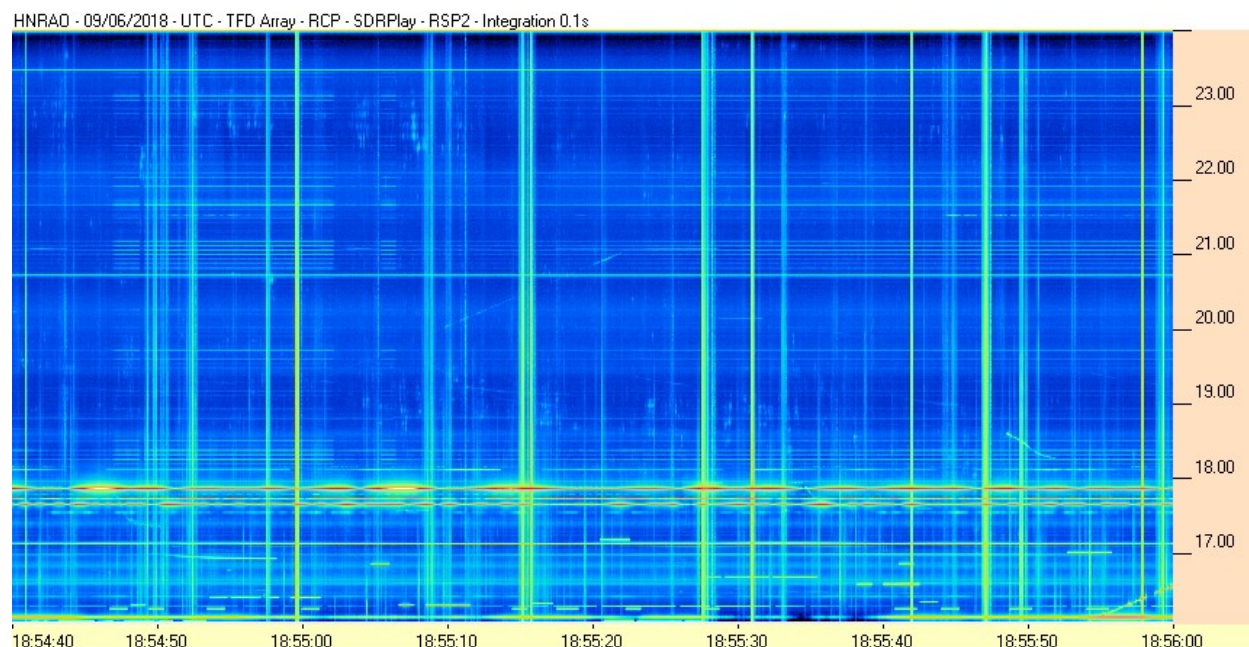
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



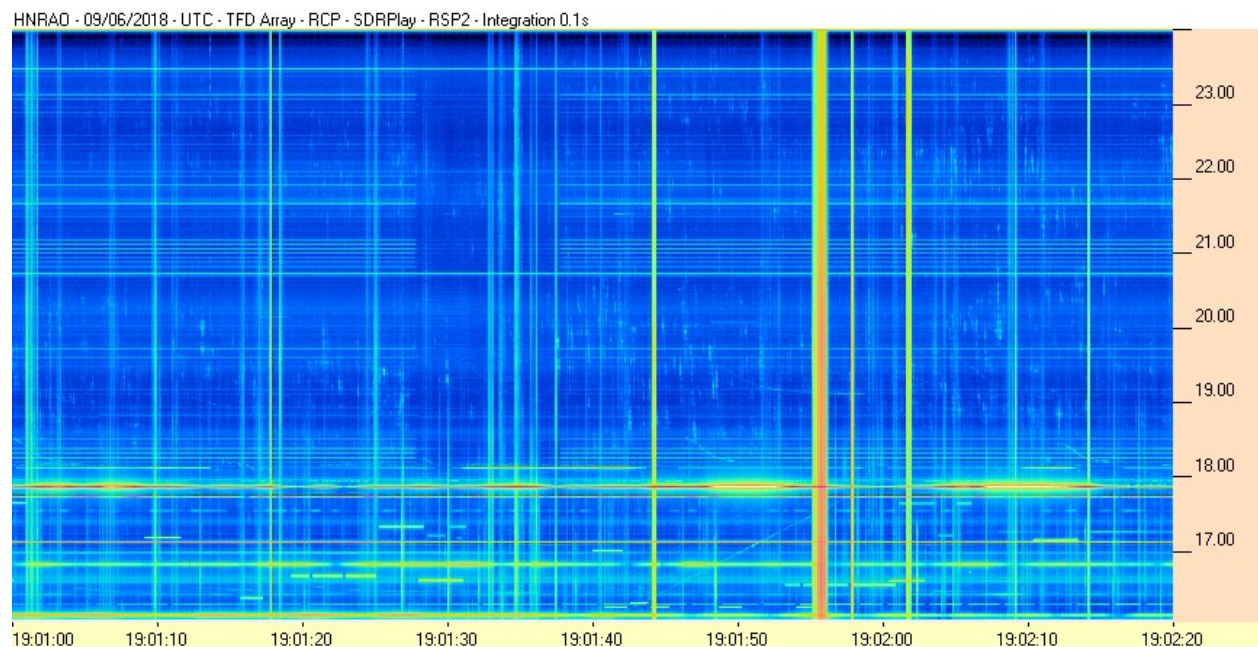
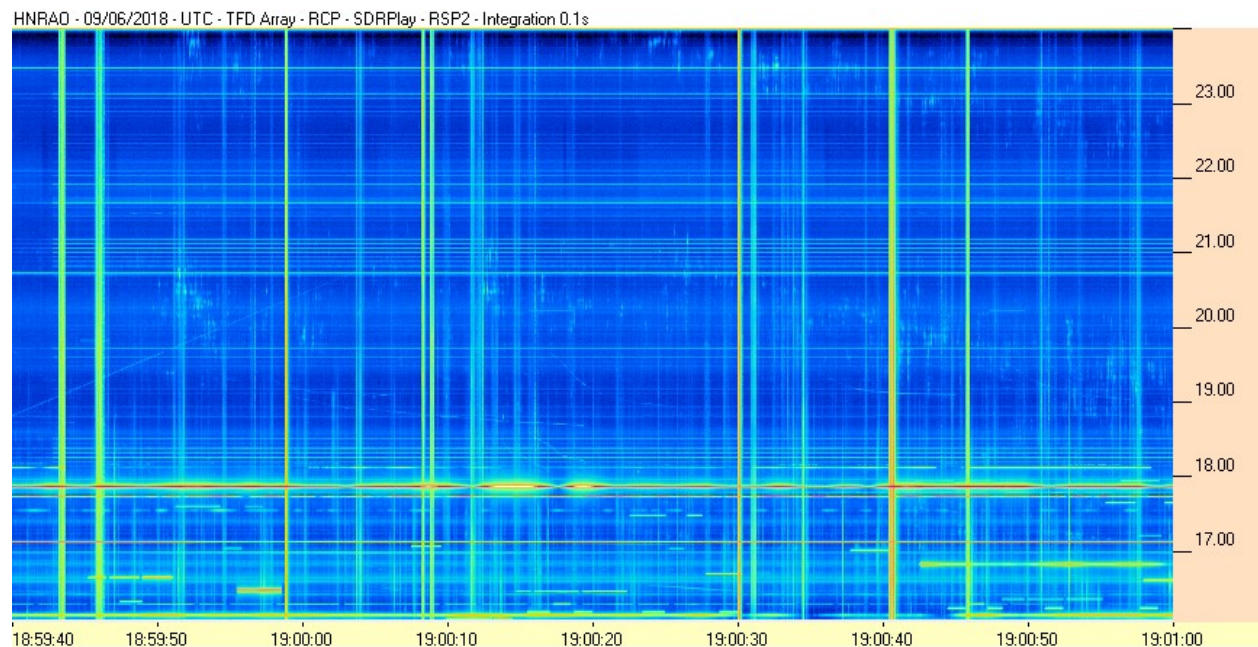
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



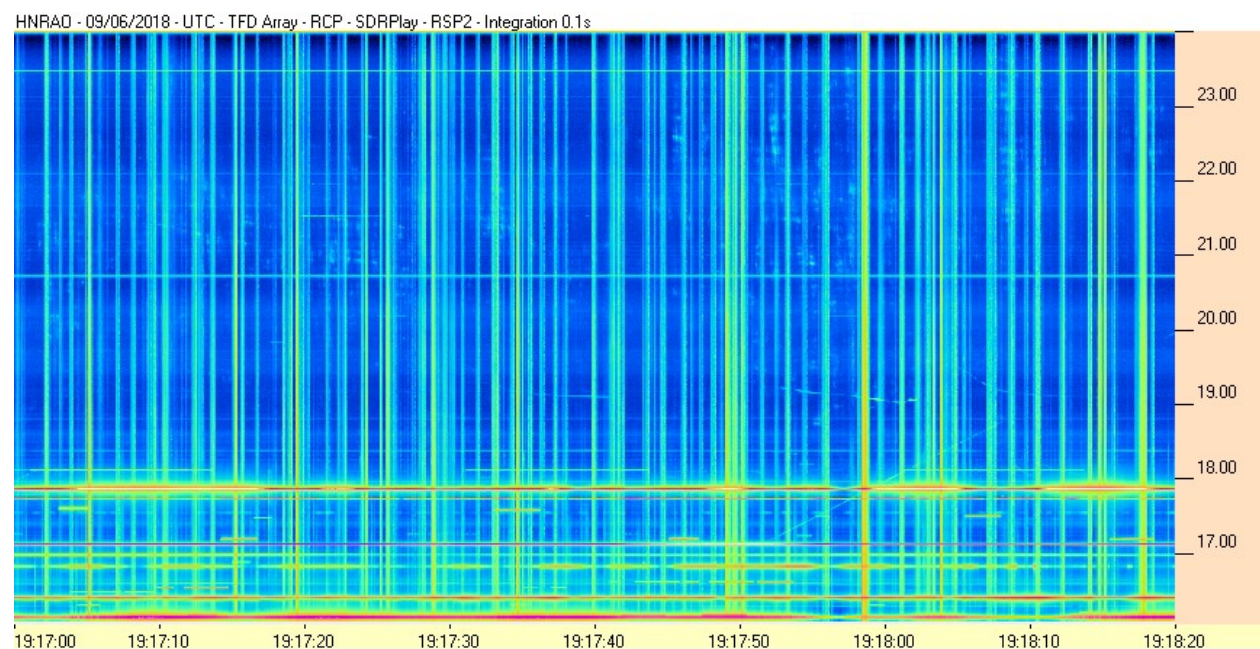
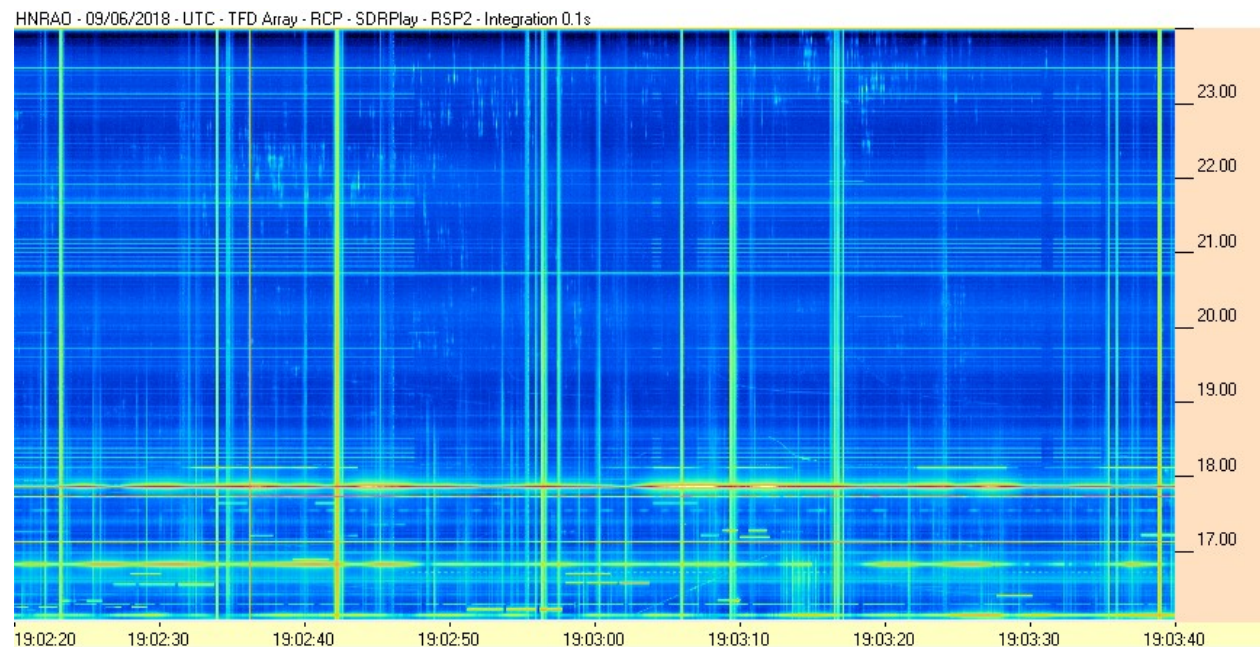
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



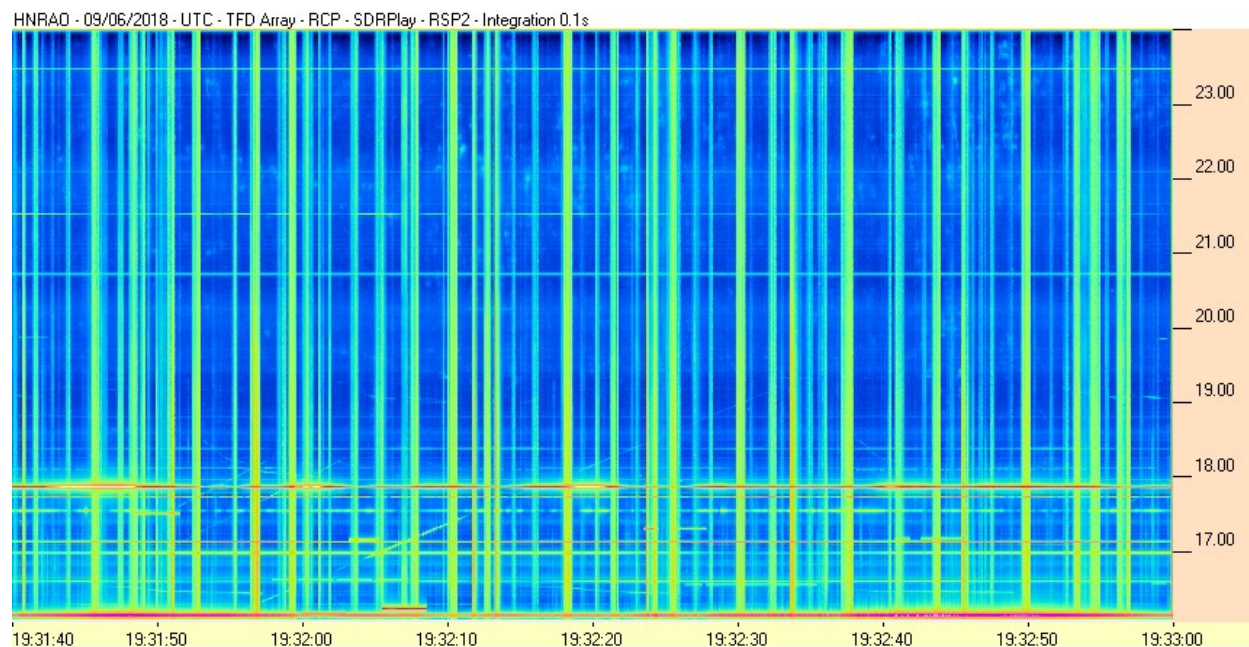
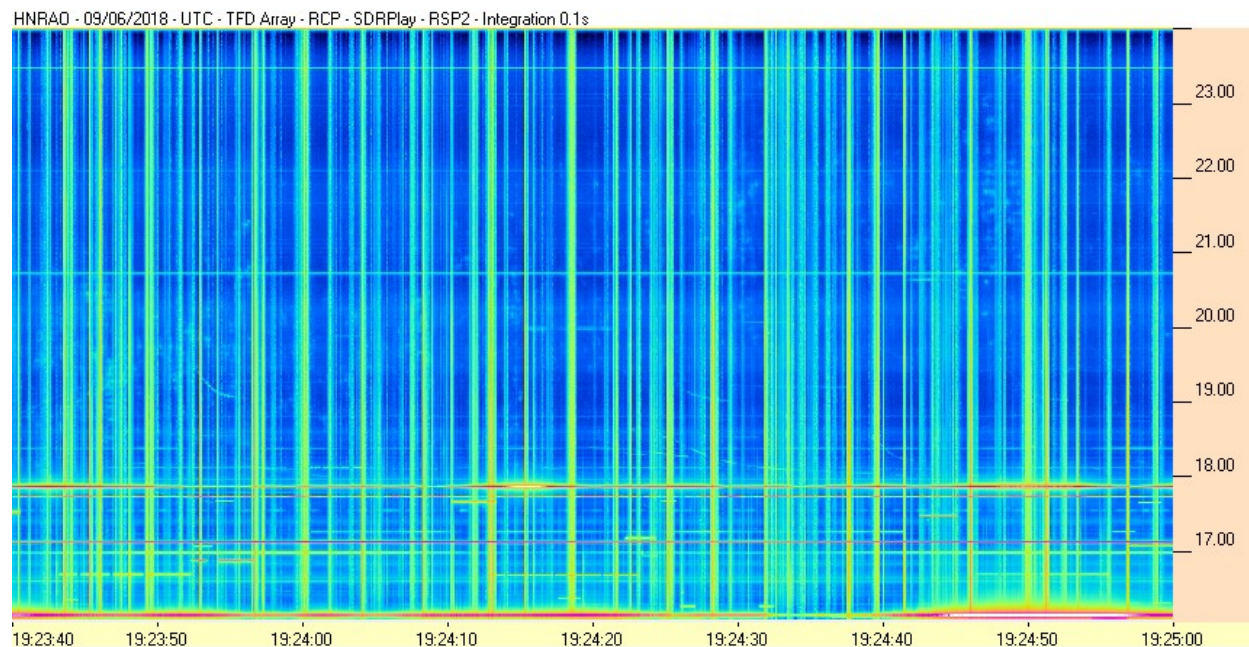
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

