

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: June 28, 2020

Object: Jupiter – Io-D

Observer: Unattended

Start - Time UT:	0834:20	Planetary K-index:	
Jupiter Altitude (deg):	22.3	Jupiter Azimuth (deg):	208.9
Jupiter CML:	195.12	Jupiter Io Phase:	161.36
Jupiter RA (hr/min):	19:45	Jupiter Dec (hr/min):	-21:32
Hour Angle (hr/min):	01:55	Polarization	LCP
Sun Altitude (deg):	-11.3	Sun Azimuth (deg):	045.3
Sun RA (hr/min):	06:23	Sun Dec (hr/min):	23:20

End – Time UT:	0852:55		
Jupiter Altitude (deg):	20.5	Jupiter Azimuth (deg):	213.1
Jupiter CML:	206.36	Jupiter Io Phase	163.97
Hour Angle (hr/min):	02:14	Duration (min):	18
Sun Altitude (deg):	-08.7	Sun Azimuth (deg):	048.7
Max Frequency MHz	22	Min Frequency MHz	16
J/S Angular Separation	160.5	De:	-1.2

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	Offline

Radio JOVE dipoles phased @ 32 degrees for 2020-2021 season

Typinski AN-TFD-24-4 array phased @ 35 degrees for 2020-2021 season

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

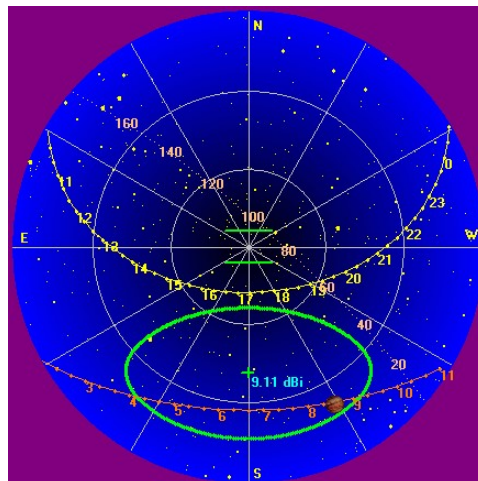
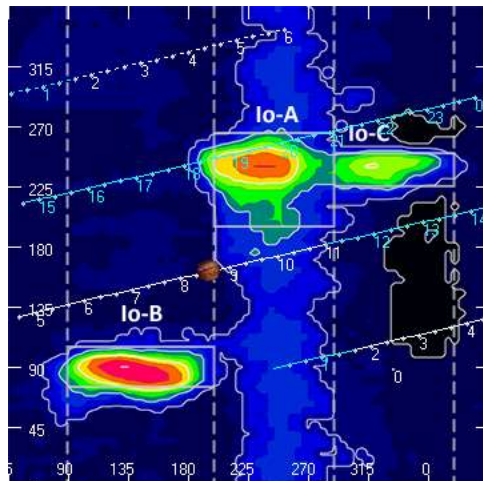
Radio Sky Spectrograph software version 2.9.30

Radio-SkyPipe software version 2.7.33 Radio-Jupiter Pro software version 3.8.2

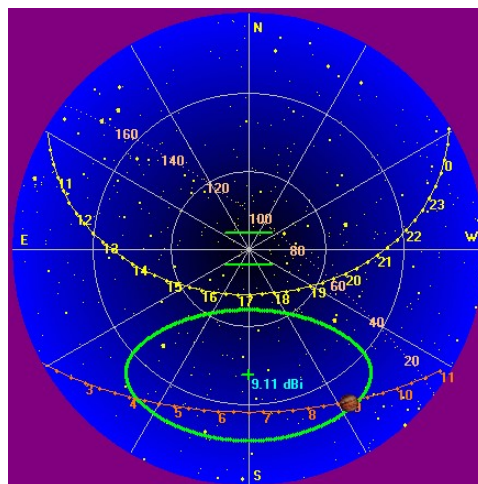
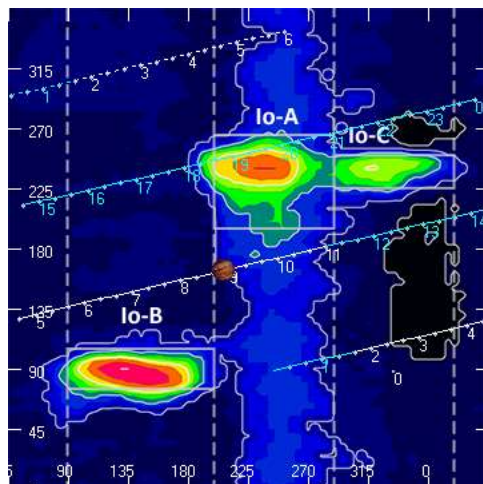
Network Time Server GpsNtp-Pi, Reeve Engineering

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

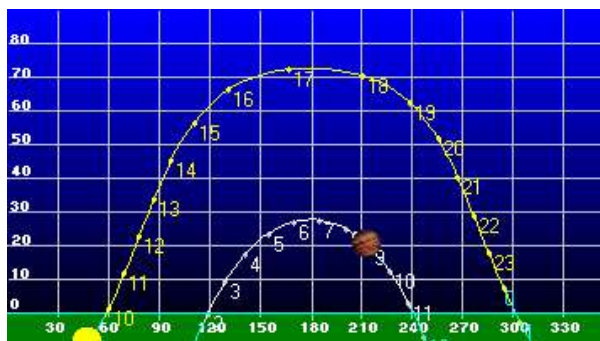
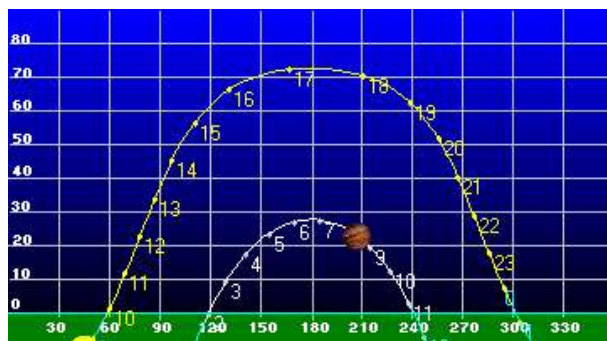
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



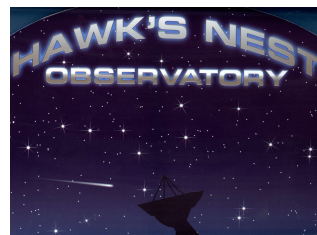
Beginning of Pass



End of Pass



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	

A very brief, LCP Io-D storm with positive drift. This storm was observed with both the LCP spectrographs, the FSX-8S and SDRPlay RSP2 LCP, both using the TFD Array. Predominantly L-bursts with, what appear to be, a 20 second period of L-burst, S-burst mix at 0853 UT. This was also the most energetic emissions from this storm with a bandwidth from 18.5 MHz to 20.4 MHz.

Nothing else of note.

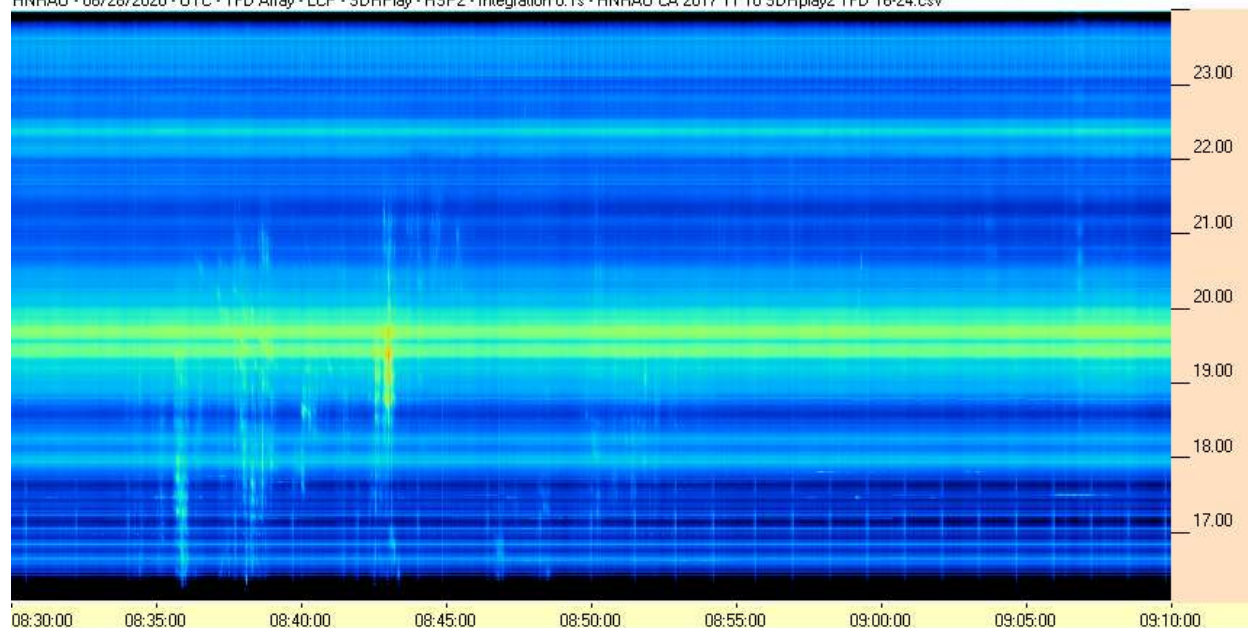
EOR

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

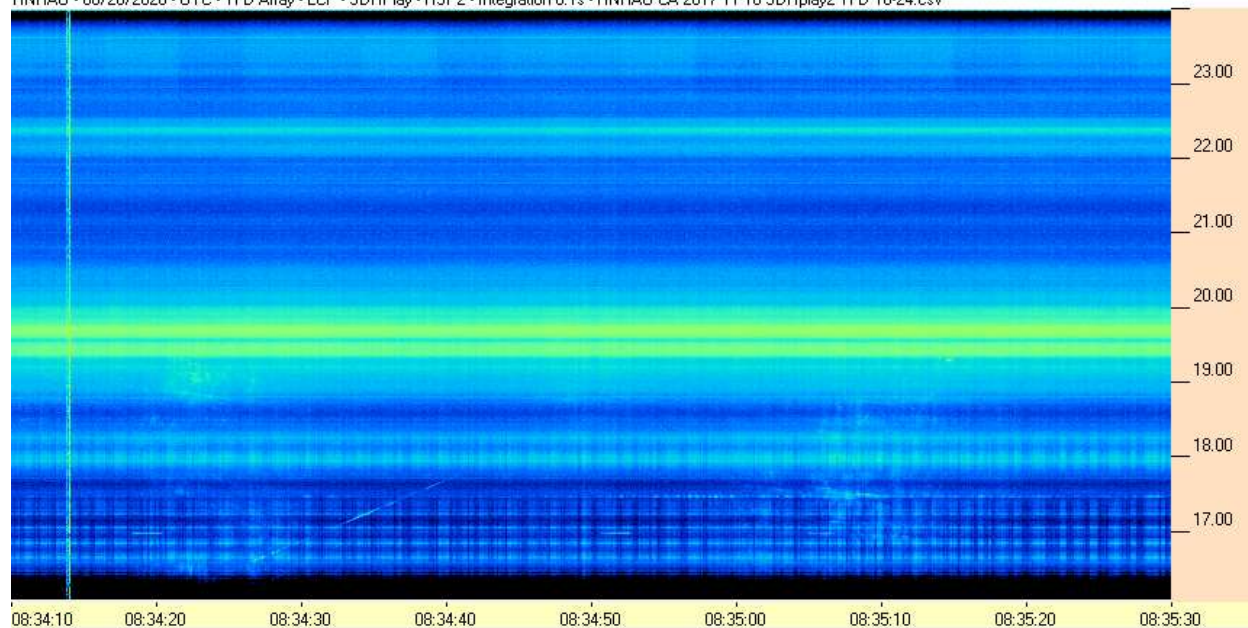


SDRPlay RSP2/LCP / TFD Array

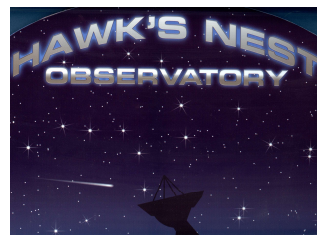
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



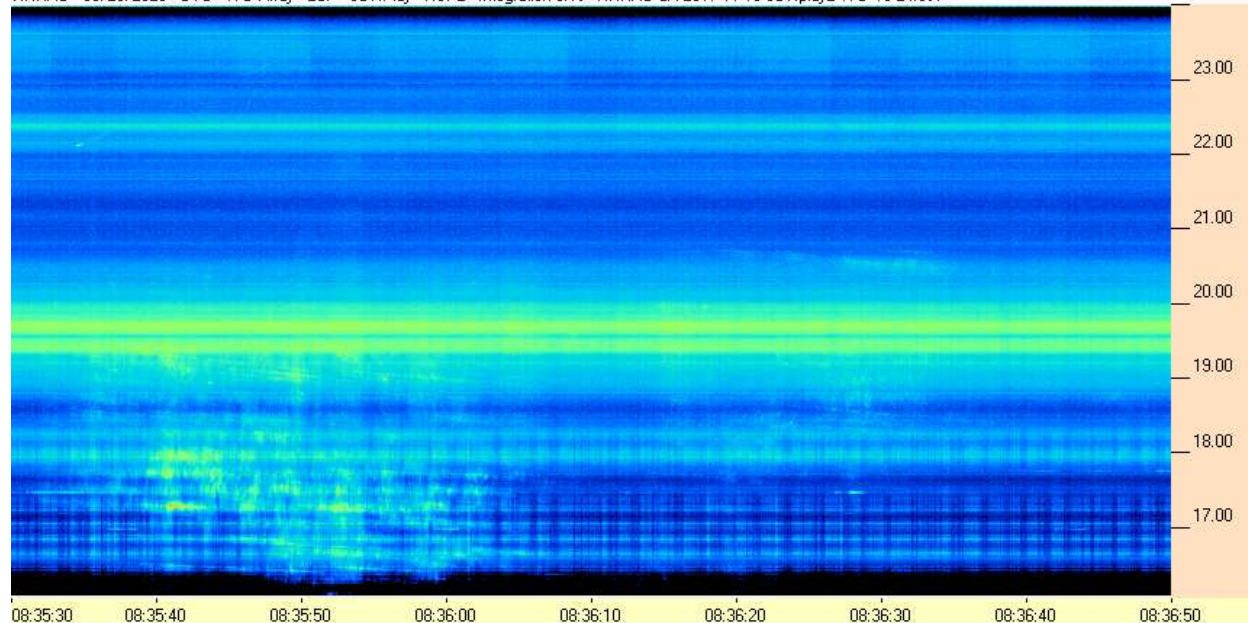
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



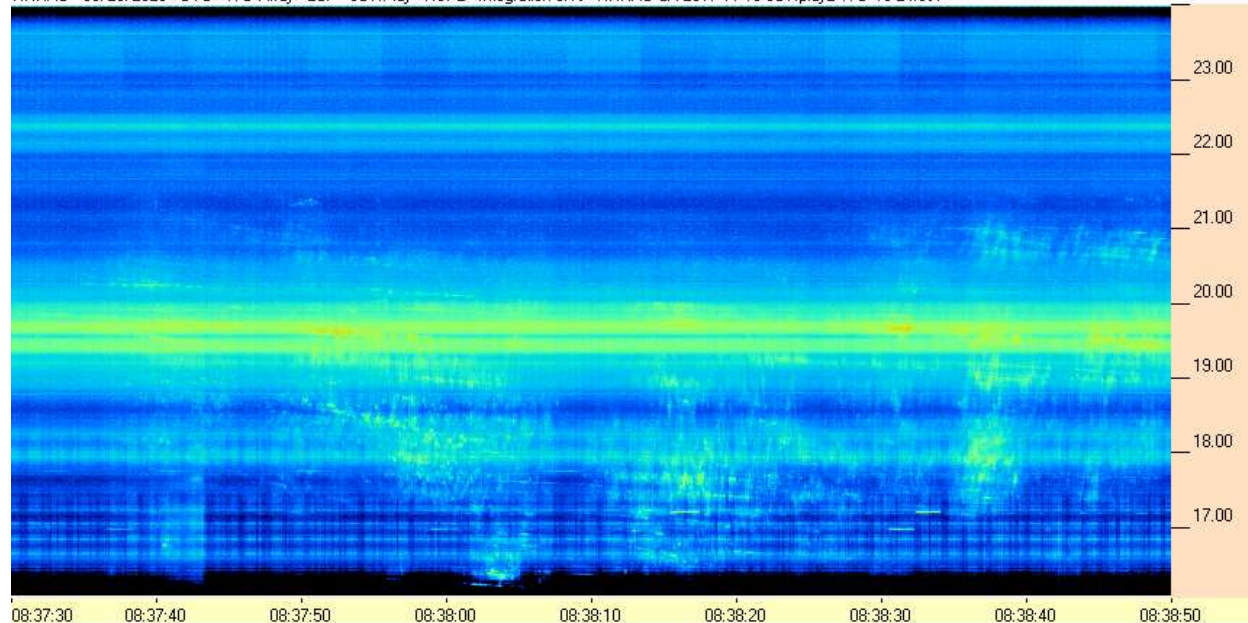
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



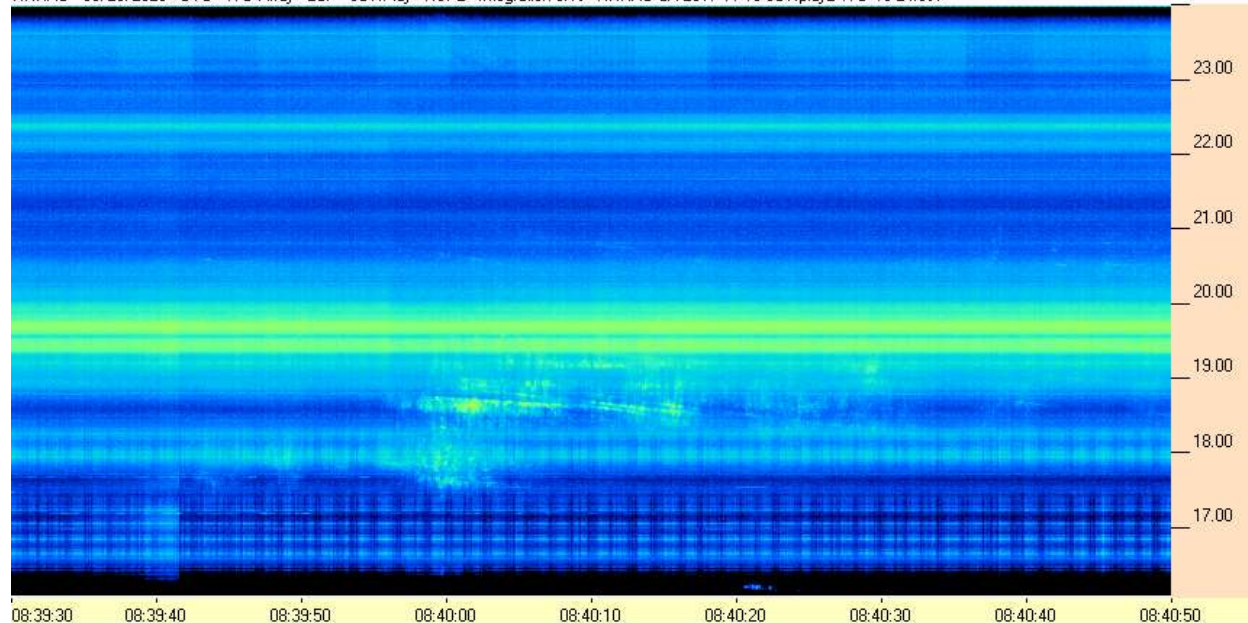
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



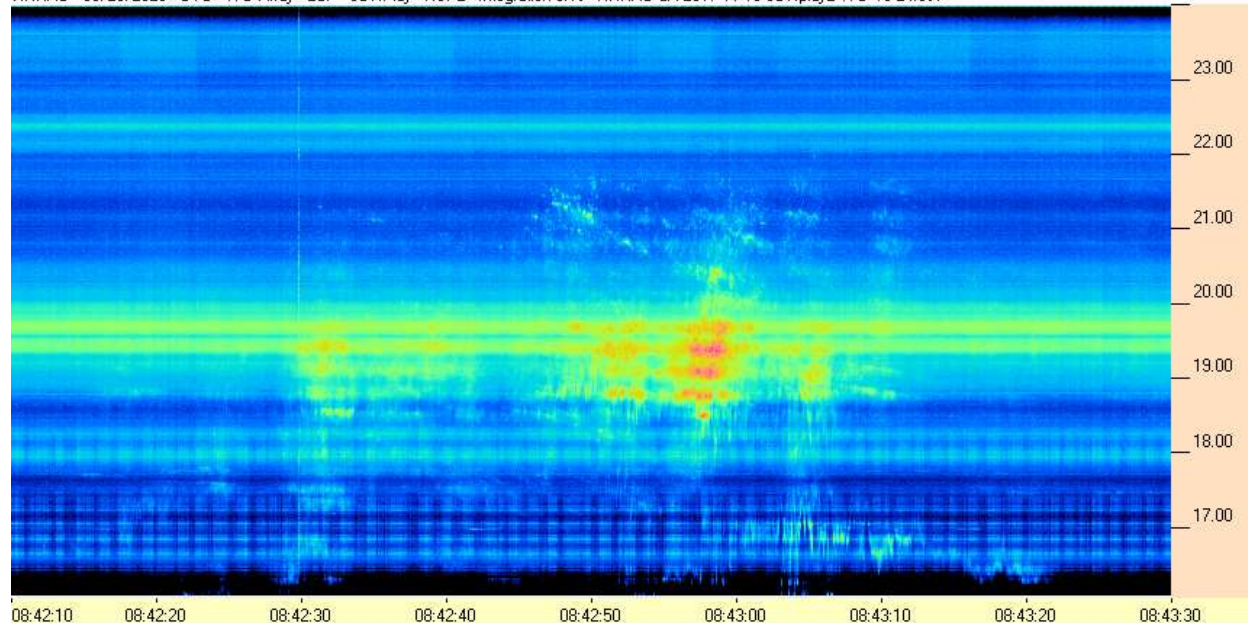
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



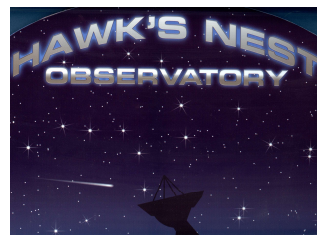
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



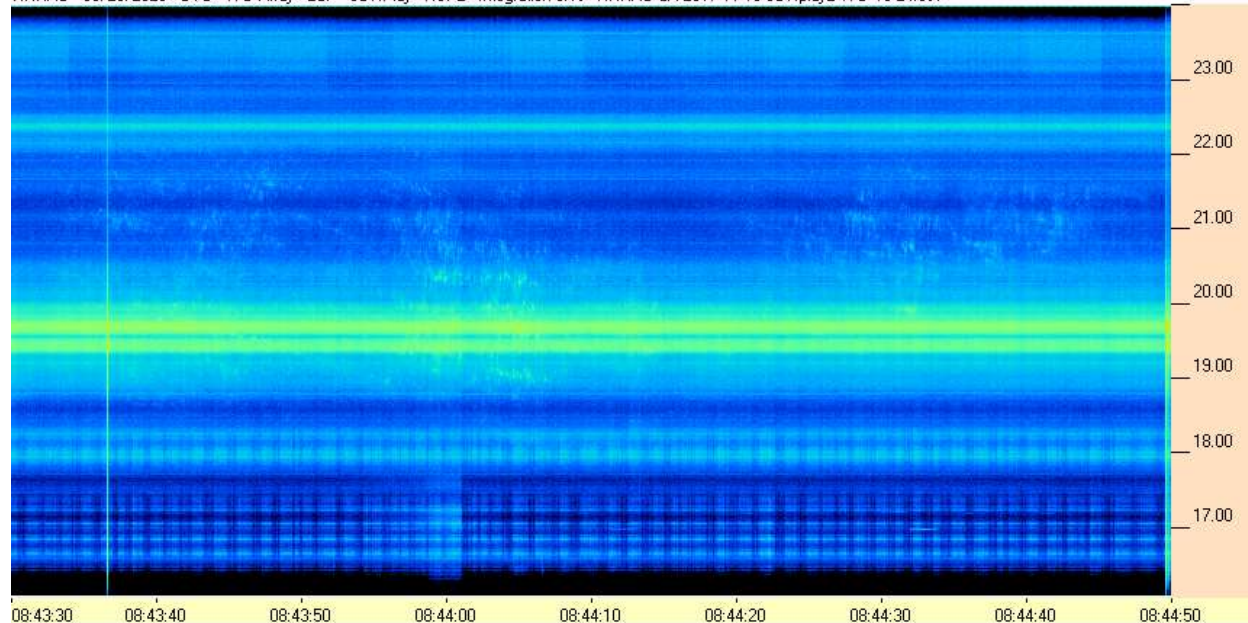
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



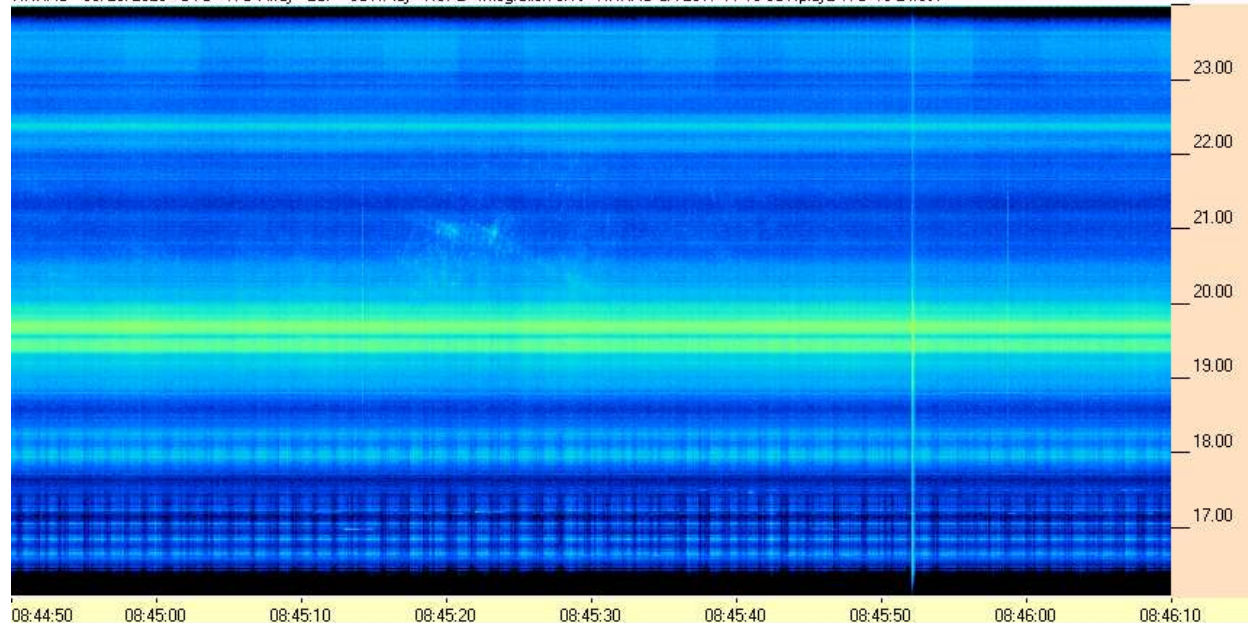
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



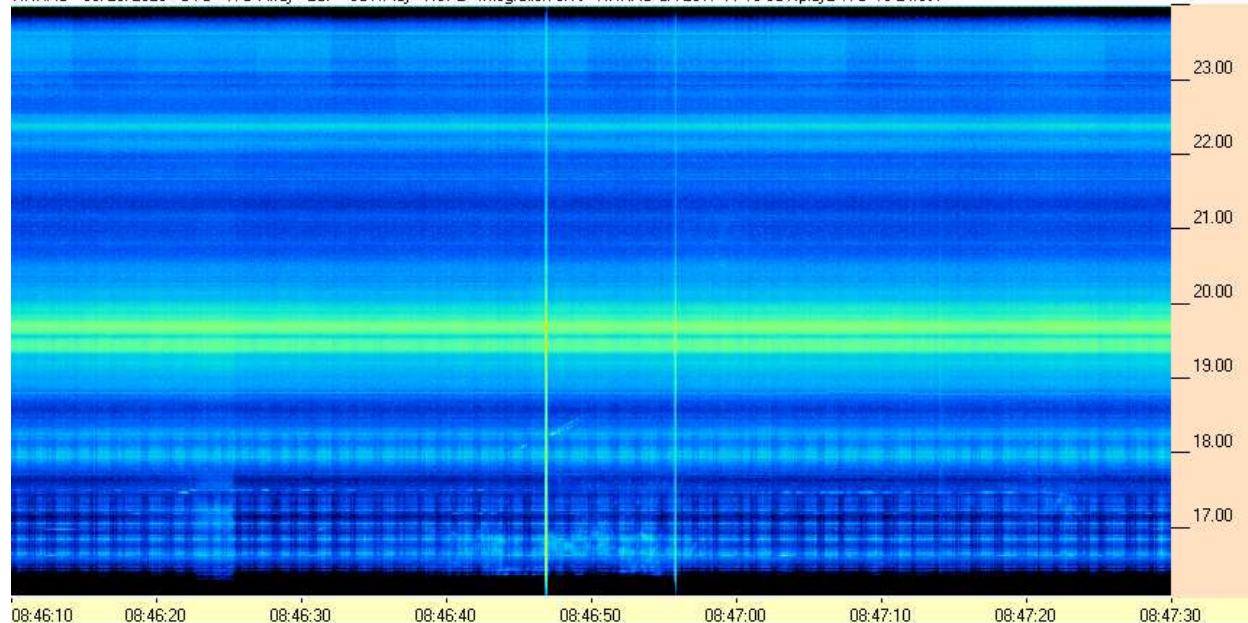
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



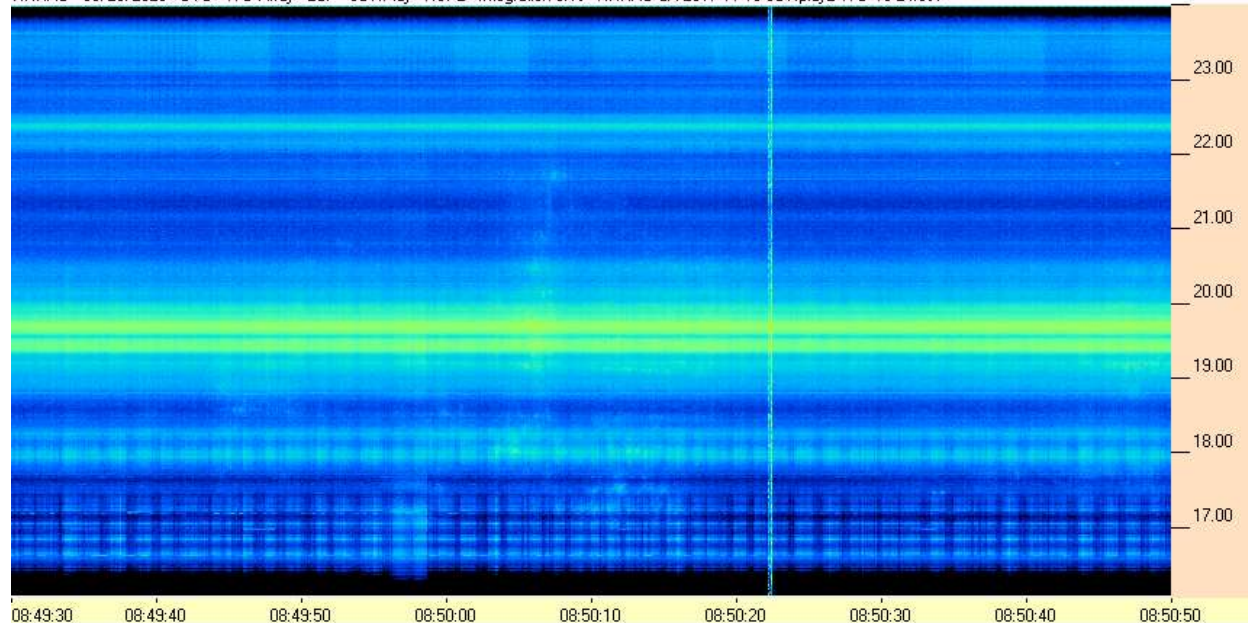
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



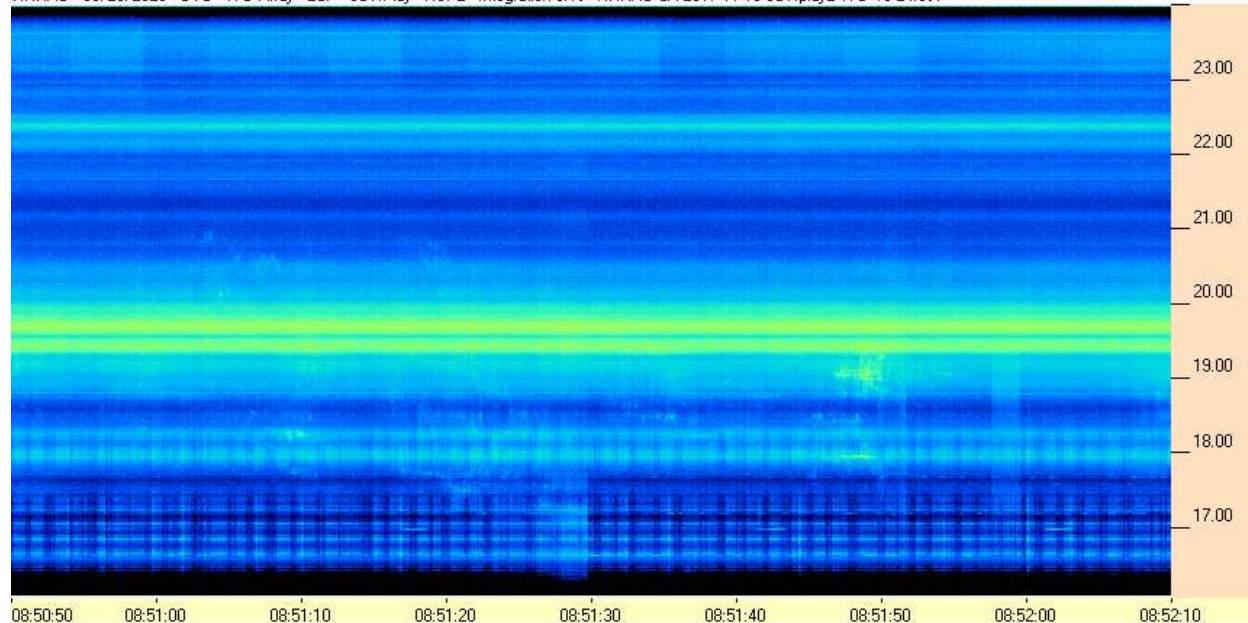
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



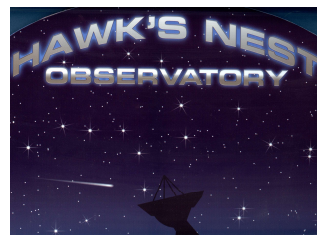
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 06/28/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv

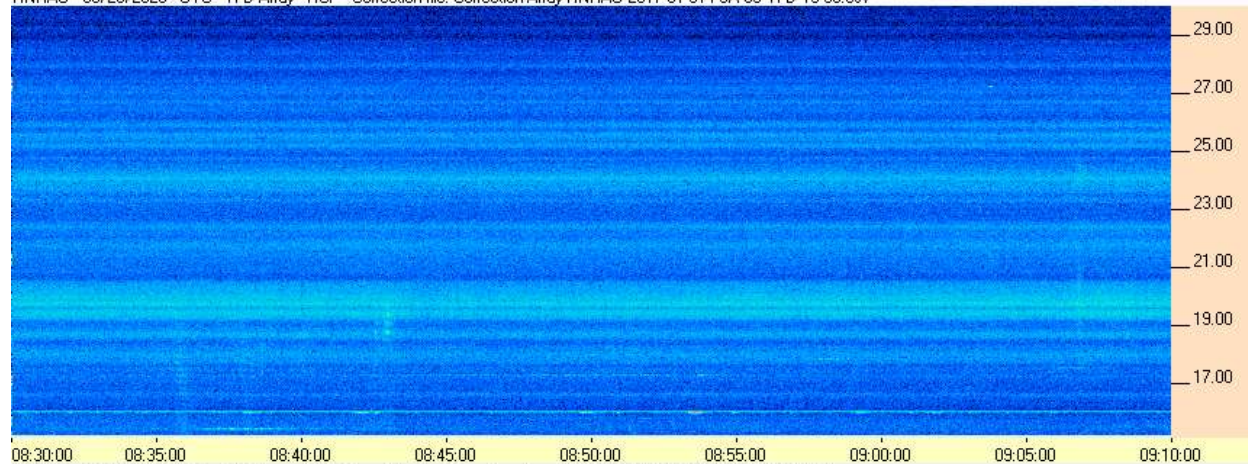


HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

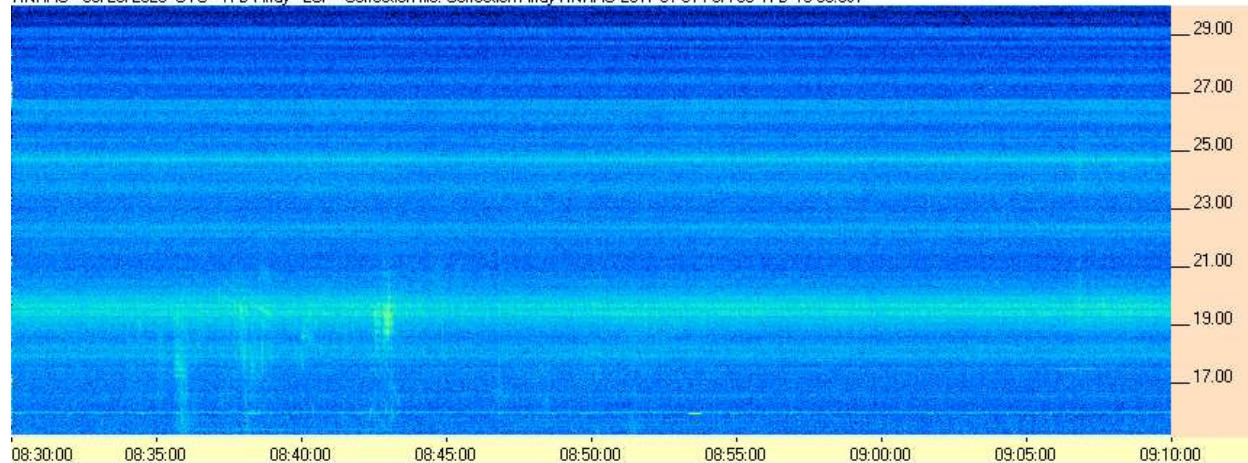


FSX-8S / TFD Array

HNRAO - 06/28/2020 - UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



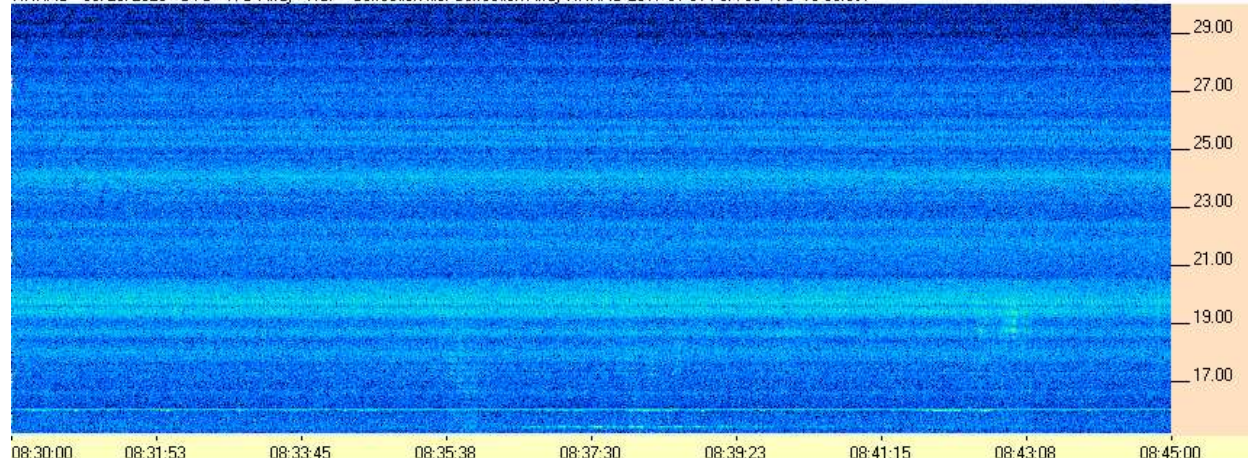
HNRAO - 06/28/2020 - UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 06/28/2020 - UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO - 06/28/2020 - UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

