

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: May 6, 2020

Object: Jupiter – Io-A

Observer: Unattended

Start - Time UT:	1014:40	Planetary K-index:	0
Jupiter Altitude (deg):	28.4	Jupiter Azimuth (deg):	178.9
Jupiter CML:	191.65	Jupiter Io Phase:	187.21
Jupiter RA (hr/min):	19:56	Jupiter Dec (hr/min):	-20:55
Hour Angle (hr/min):	-00:04	Polarization	RCP
Sun Altitude (deg):	00.3	Sun Azimuth (deg):	068.7
Sun RA (hr/min):	02:48	Sun Dec (hr/min):	16:10

End – Time UT:	1055		
Jupiter Altitude (deg):	27.8	Jupiter Azimuth (deg):	189.6
Jupiter CML:	216.04	Jupiter Io Phase	198.65
Hour Angle (hr/min):	00:36	Duration (min):	41
Sun Altitude (deg):	07.6	Sun Azimuth (deg):	075.1
Max Frequency MHz	24	Min Frequency MHz	16
J/S Angular Separation	107.1	De:	-1.3

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	5/1/2020

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

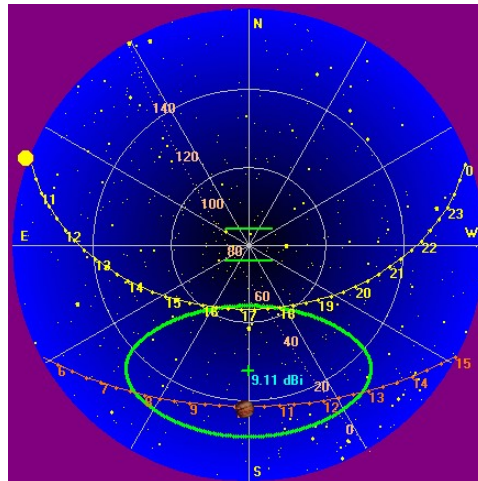
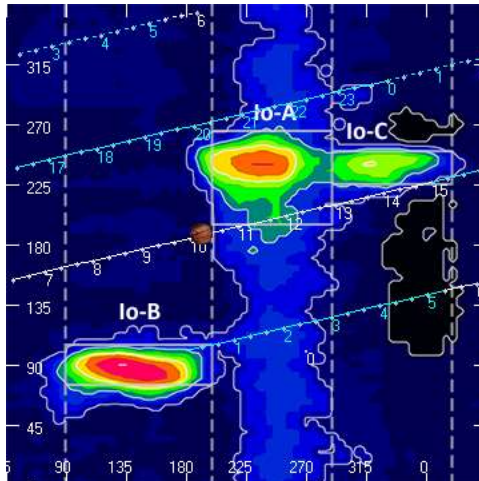
Radio Sky Spectrograph software version 2.9.30

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

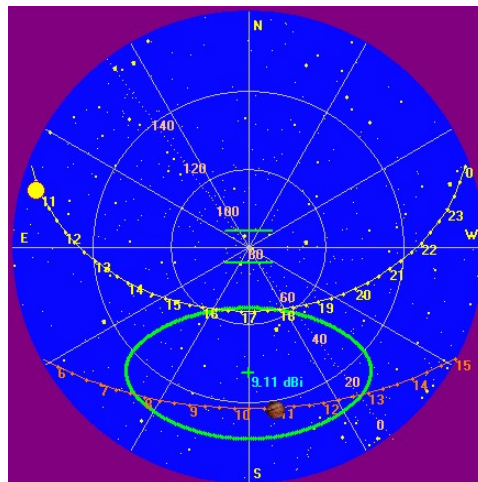
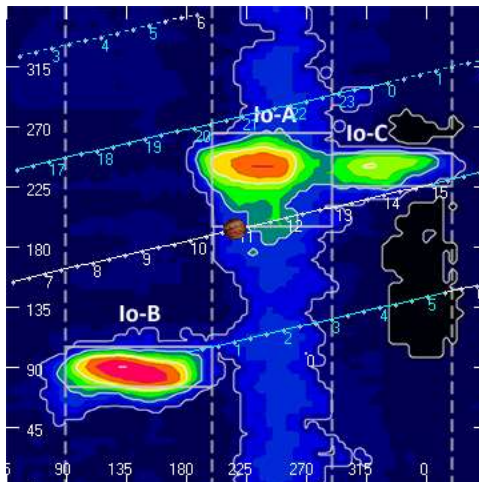
Network Time Server GpsNtp-Pi, Reeve Engineering

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

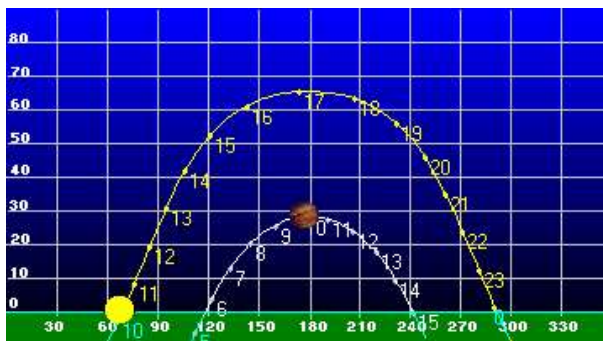
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Beginning of Pass



End of Pass



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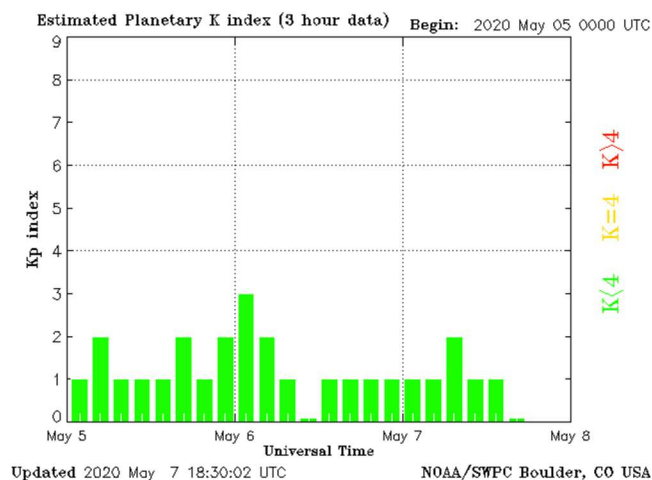


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360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



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Weather at observatory:

Clear. High of 49.

Status of observatory equipment:

All spectrographs running. Data collected with both FSX spectrographs as well as the SDRPlayRSP2/RCP spectrograph. The SDRPlay RSP2/LCP spectrograph was running but not saving data due to software issue. Radio JOVE radio telescope was operational but RFI made any observations impossible.

This was a brief Io-A storm consisting of L-bursts with L4 modulation lanes. Emissions were only slightly above GB with the strongest approximately +/- 3dB above GB. Planetary scintillation is exhibited in the emission patterns. Only the SDRPlay RSP2/RCP spectrograph collected any data. Emissions were too weak to be observed with either FSX spectrograph.

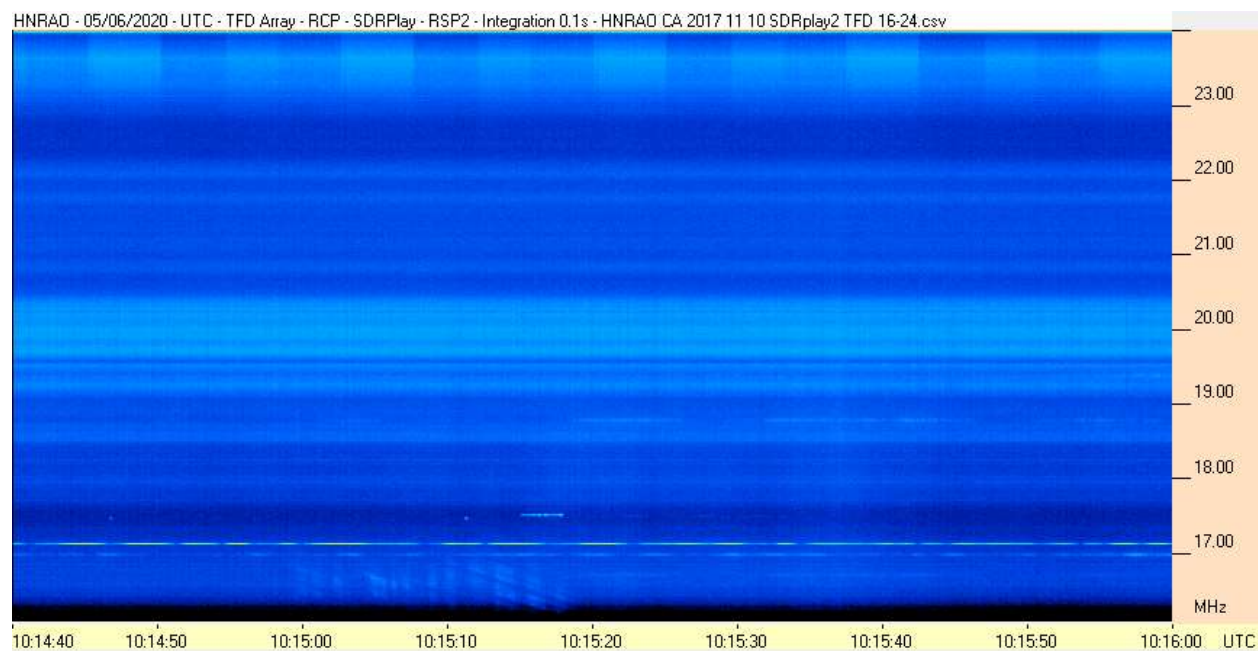
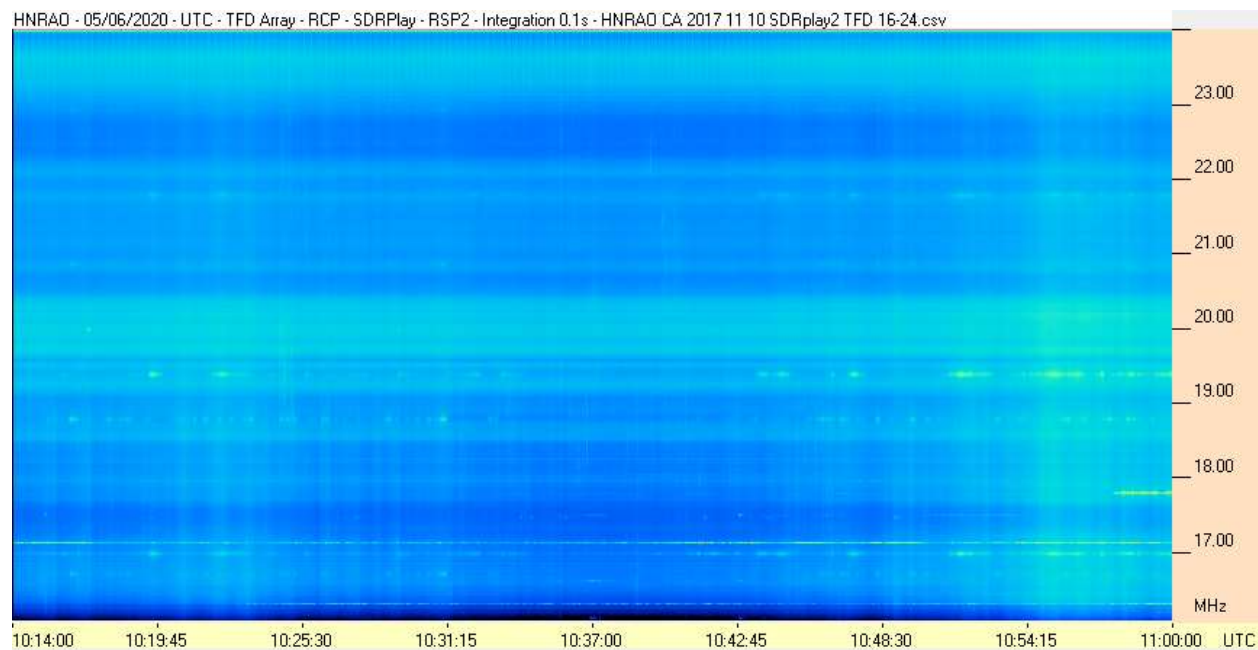
The only thing of note is how early the emissions were observed, relative to the established Io-A area. Given the observing conditions, I would have expected any emissions at all to be observed nearer the 1130 – 1200 UT area.

EOR

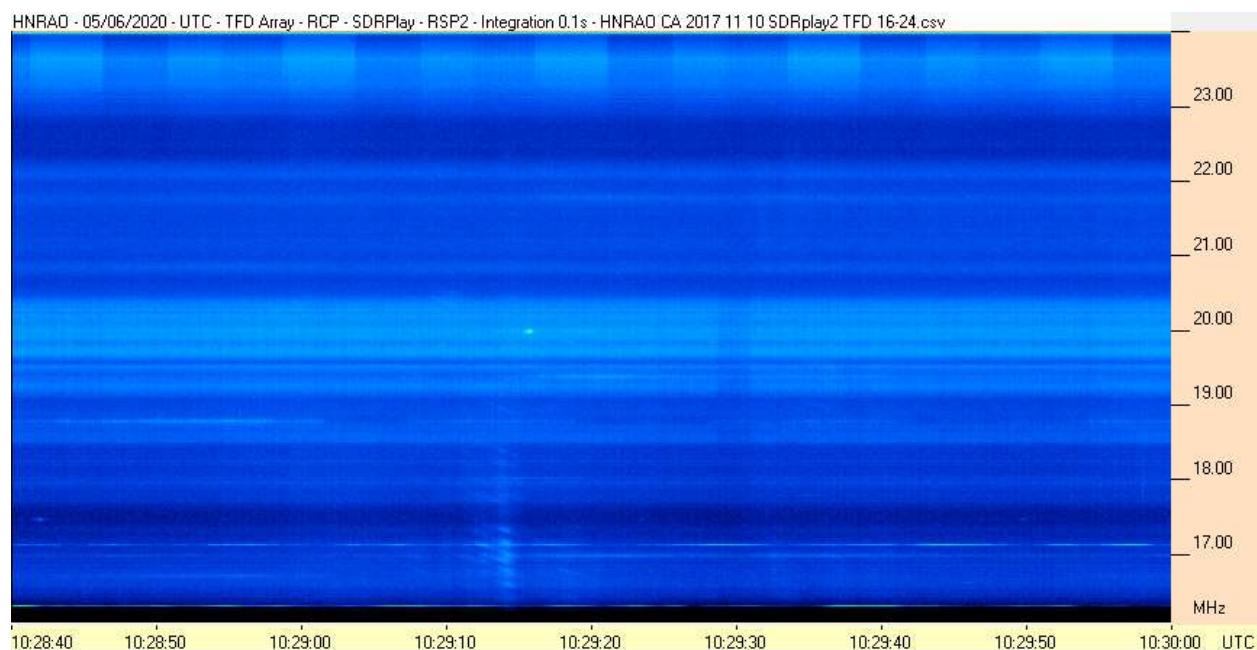
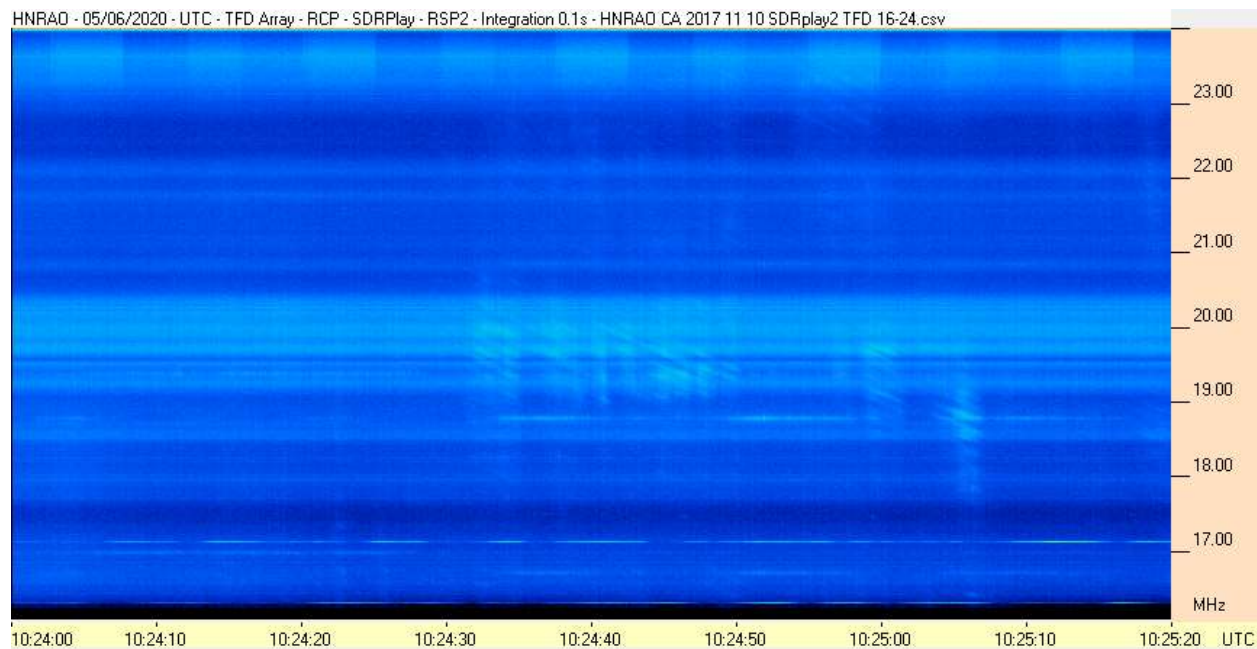
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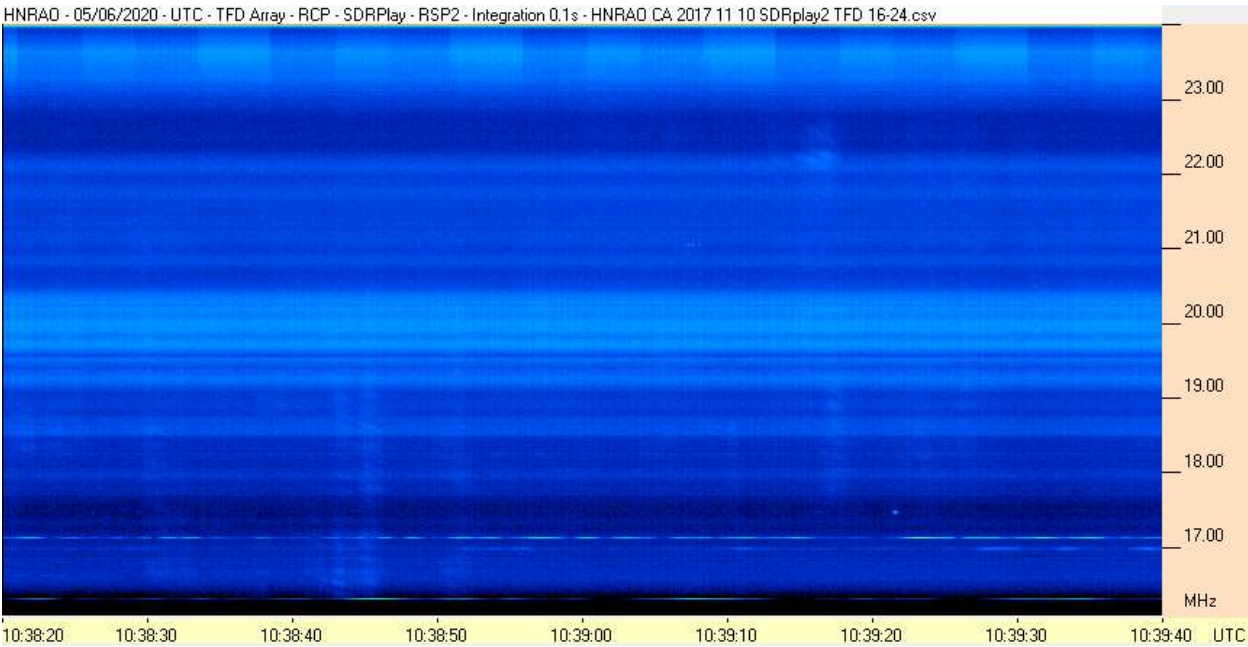
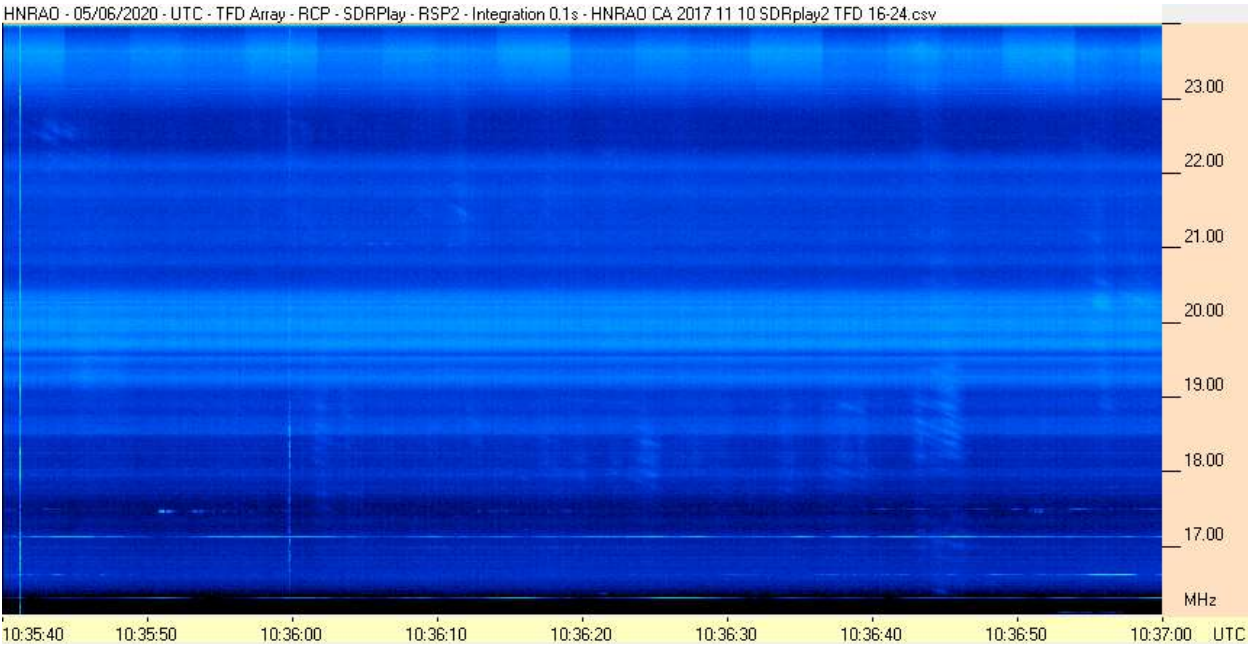
SDRPlay RSP2 / RCP – TFD Array



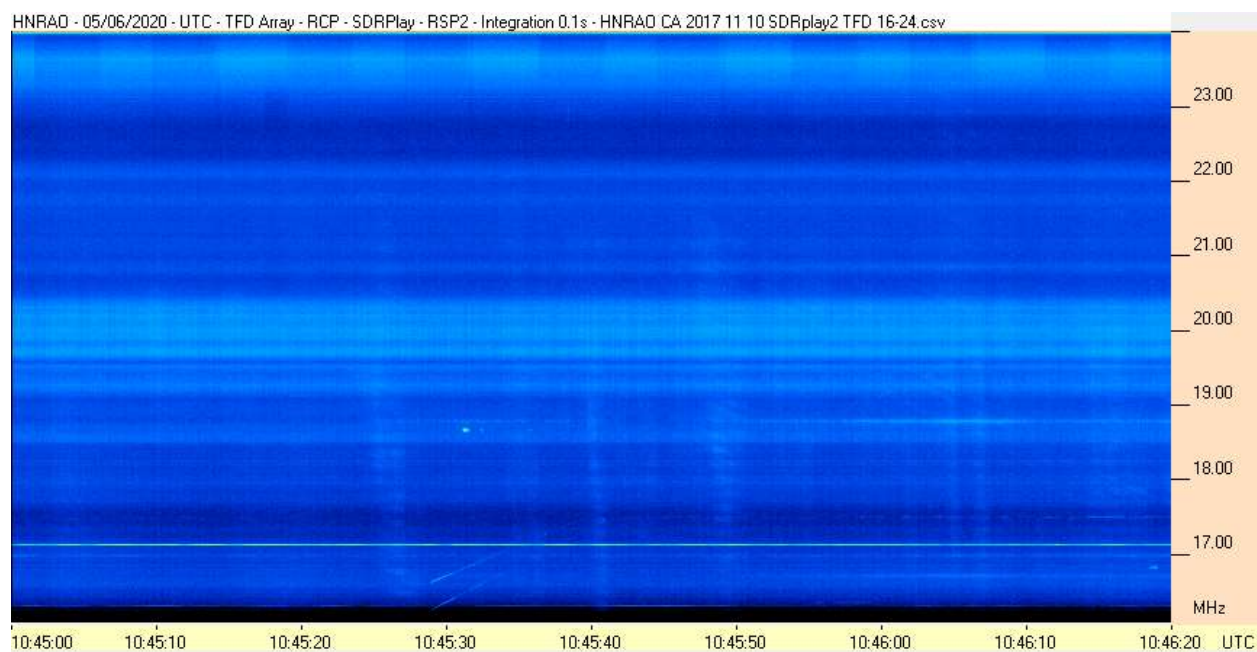
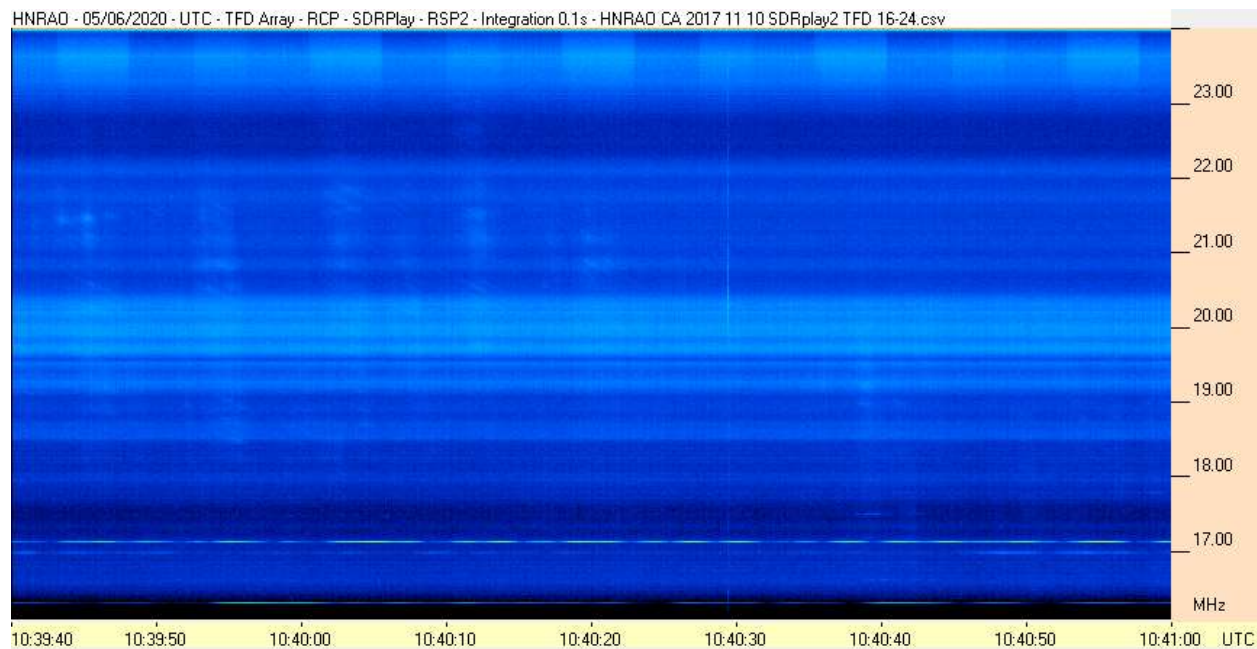
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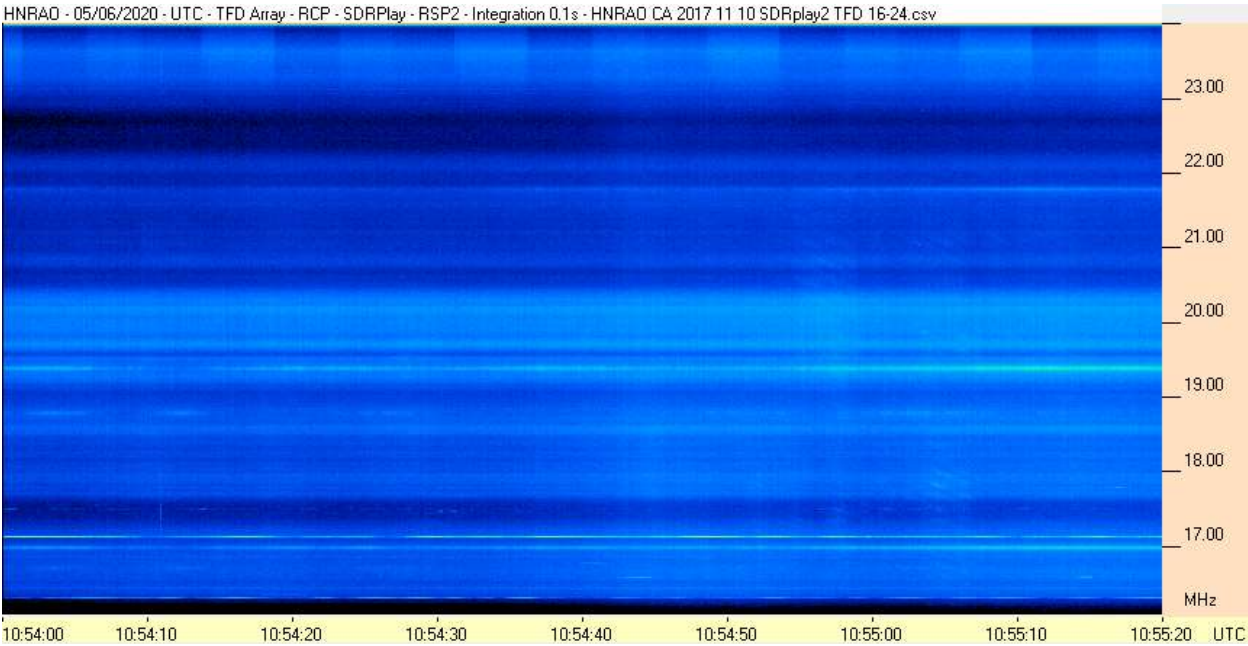
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FSX-8S / TFD Array

