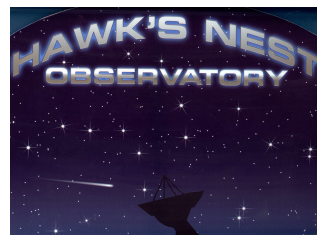


HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: May 17, 2020

Object: Jupiter – Io-C

Observer: Unattended

Start - Time UT:	0633	Planetary K-index:	
Jupiter Altitude (deg):	15.1	Jupiter Azimuth (deg):	136.0
Jupiter CML:	274.25	Jupiter Io Phase:	233.95
Jupiter RA (hr/min):	19:57	Jupiter Dec (hr/min):	-20:55
Hour Angle (hr/min):	-03:04	Polarization	LCP
Sun Altitude (deg):	-27.3	Sun Azimuth (deg):	022.1
Sun RA (hr/min):	03:30	Sun Dec (hr/min):	19:00

End – Time UT:	0922		
Jupiter Altitude (deg):	28.3	Jupiter Azimuth (deg):	176.2
Jupiter CML:	16.42	Jupiter Io Phase	257.74
Hour Angle (hr/min):	-00:14	Duration (min):	235
Sun Altitude (deg):	-06.5	Sun Azimuth (deg):	057.9
Max Frequency MHz	23	Min Frequency MHz	15
J/S Angular Separation	117.6	De:	-1.3

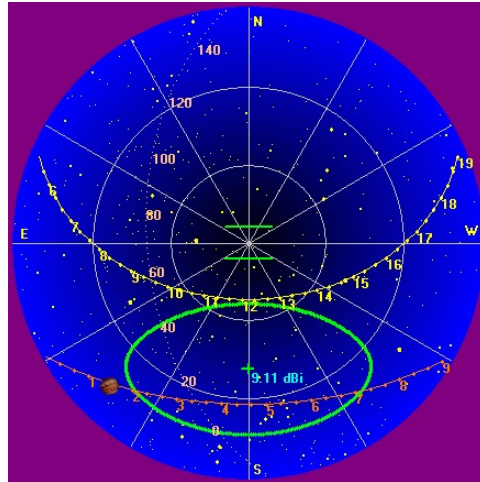
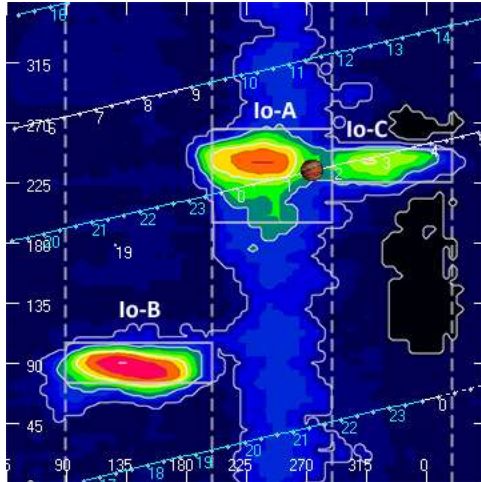
Observatory Configuration

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	Offline

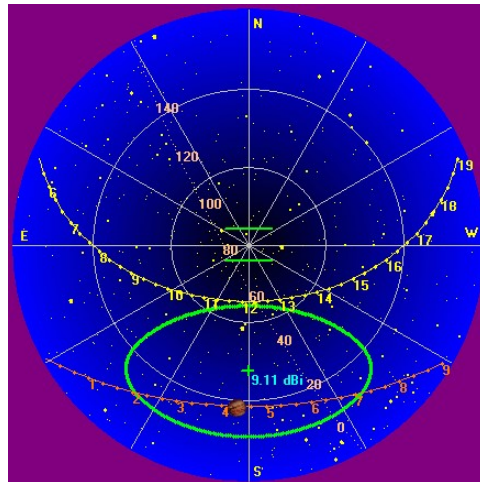
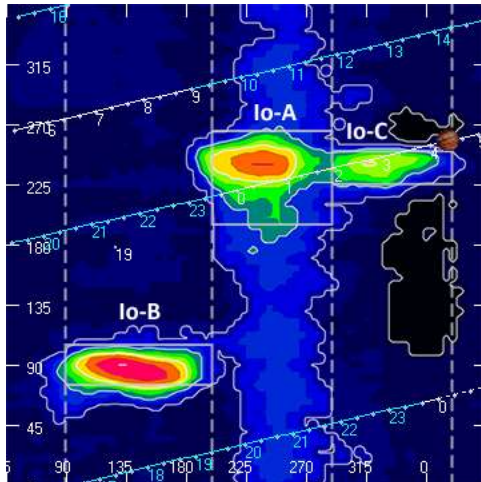
Radio JOVE dipoles phased @ 32 degrees for 2020-2021 season
 Typinski AN-TFD-24-4 array phased @ 35 degrees for 2020-2021 season
 Four LWA antenna array phased @ 35 degrees and orientation for observation: 45 degrees
 Radio Sky Spectrograph software version 2.9.30
 Radio-SkyPipe software version 2.7.33 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.

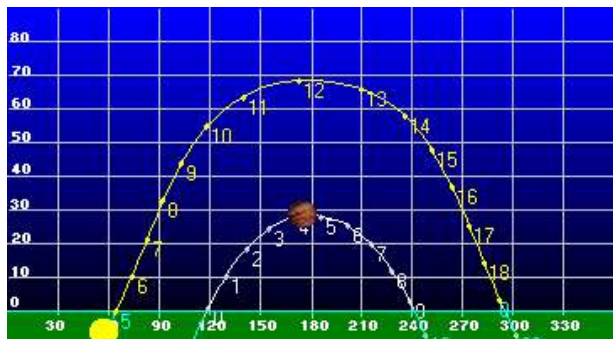
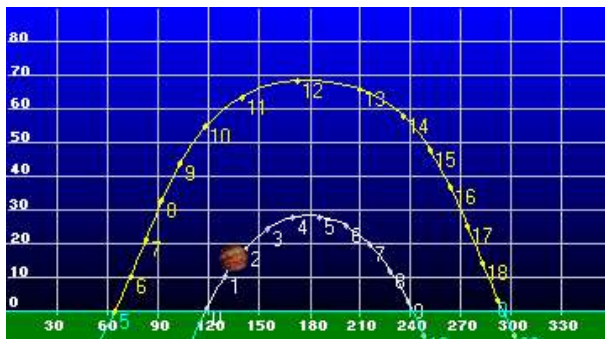
HNRAO Observing Log
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Beginning of Pass



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	

This storm was observed with both LCP spectrographs; the FSX-8S and SDRPlay RSP2, both using the TFD Array and consisted of both L-bursts with L-4 modulation lanes and S-bursts. The storm began with L-bursts at 0633 UT and the S-bursts were first observed at 0810 UT and continued until the end of the storm. Emissions were confined between 15 MHz and 23 MHz. Interplanetary scintillation was evident throughout the duration of the storm. Emissions were near GB to several dB above GB. There was nothing else of note.

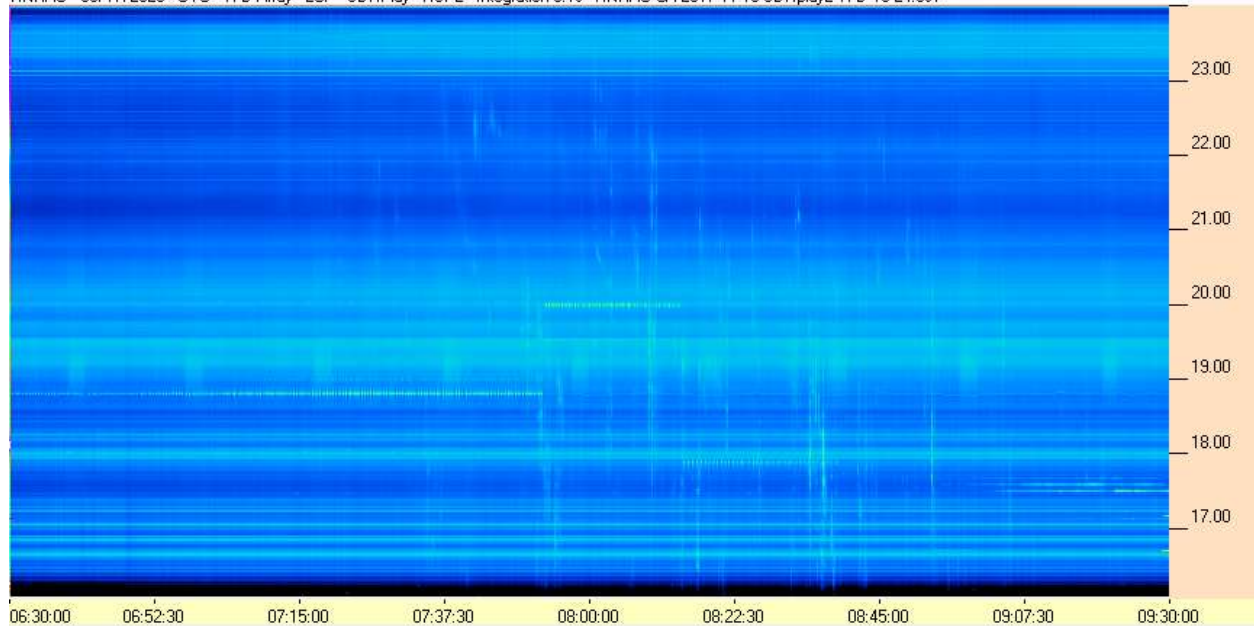
EOR

HNRAO Observing Log
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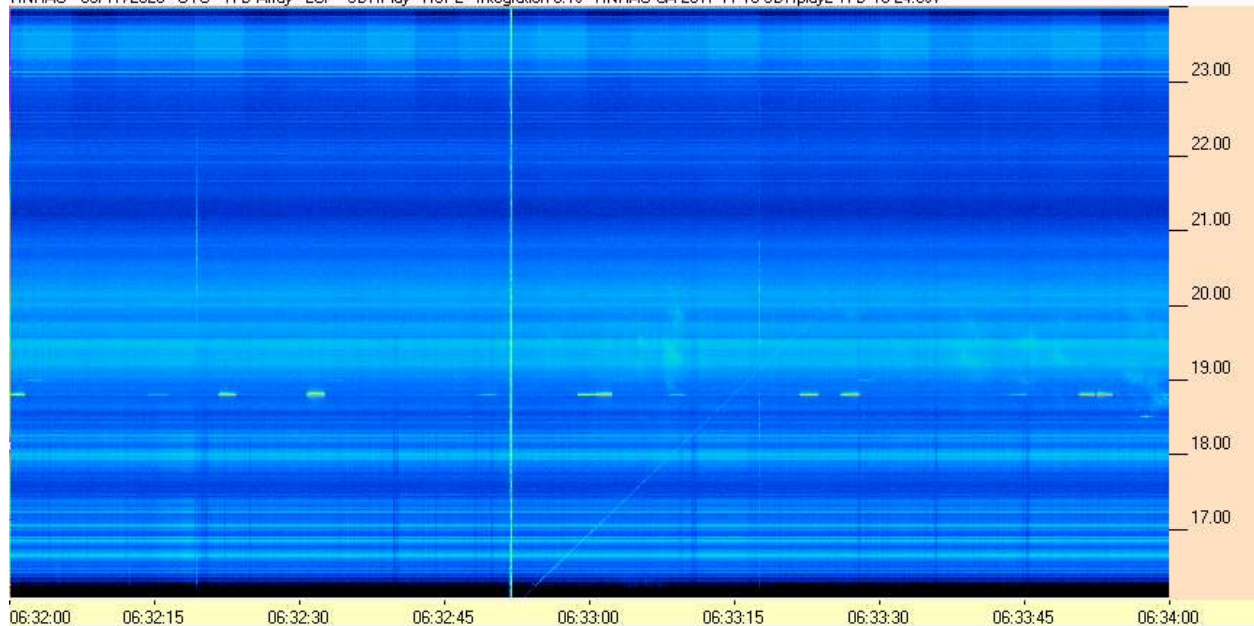


SDRPlay RSP2 / TFD Array

HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



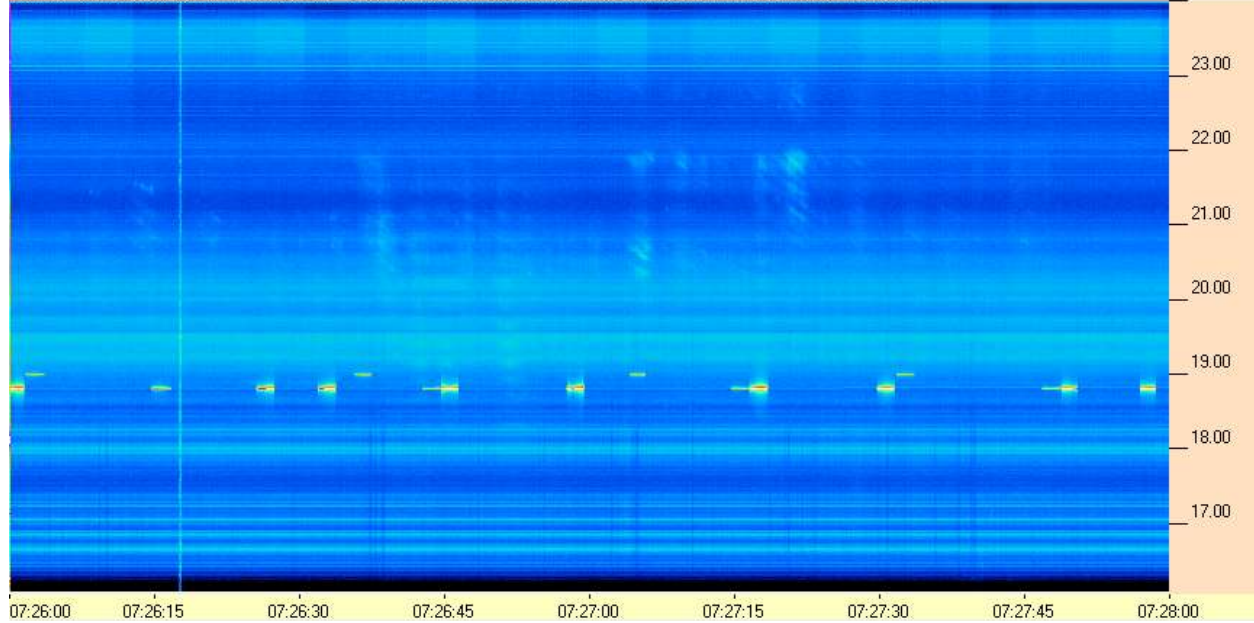
HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



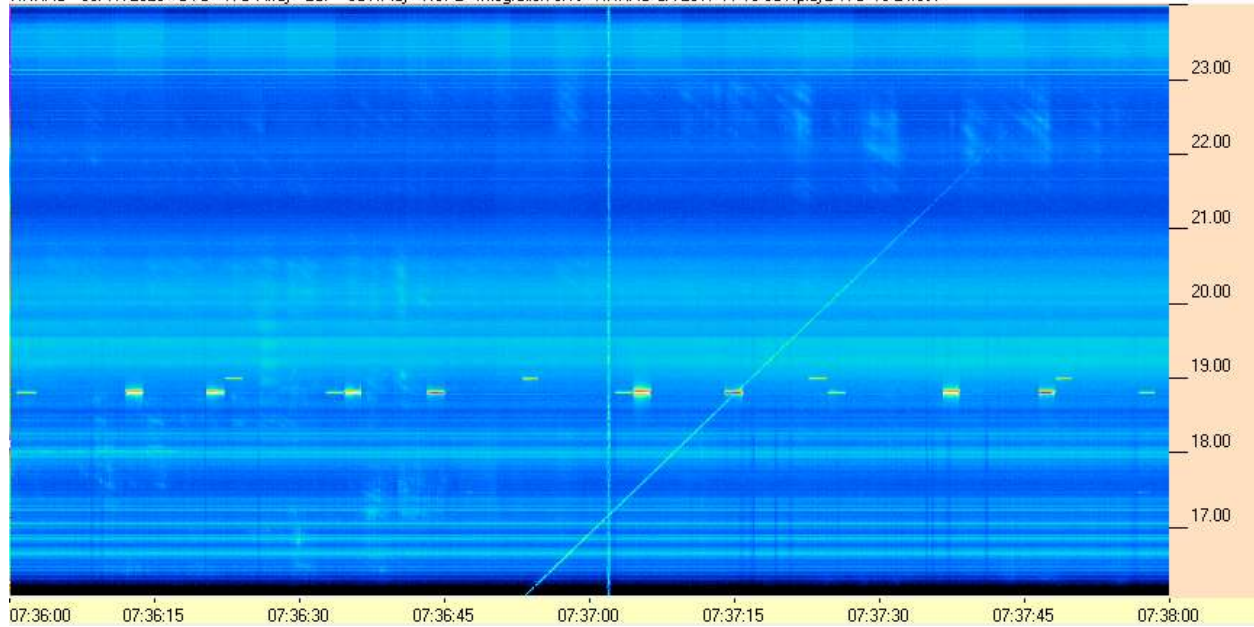
HNRAO Observing Log
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



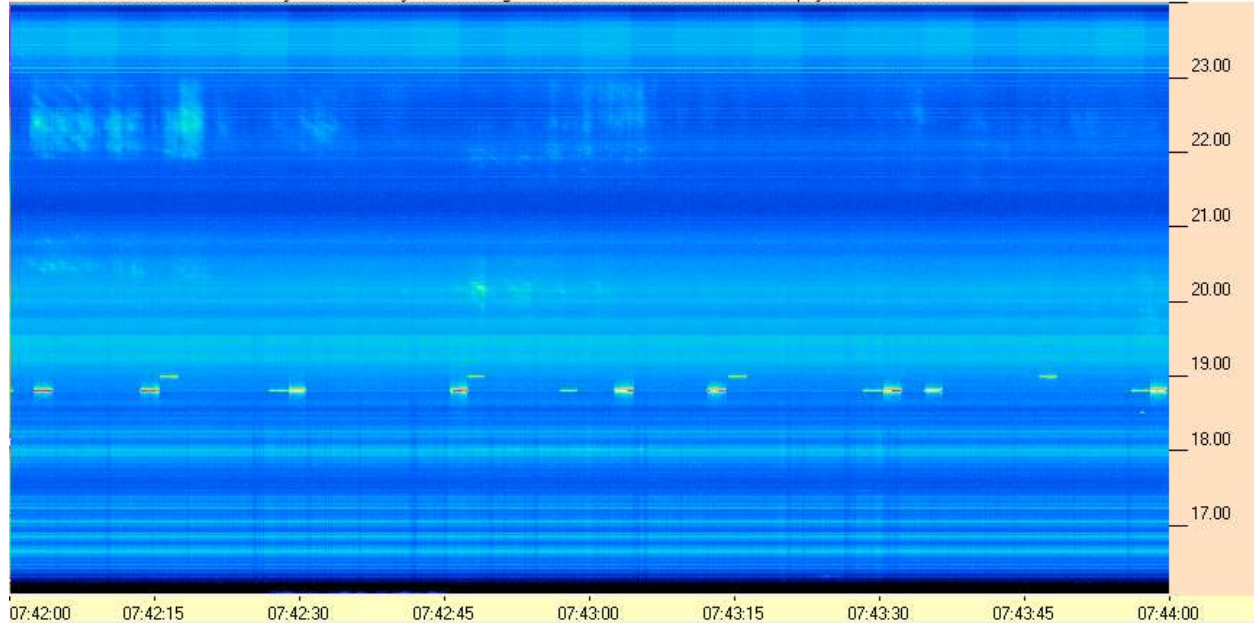
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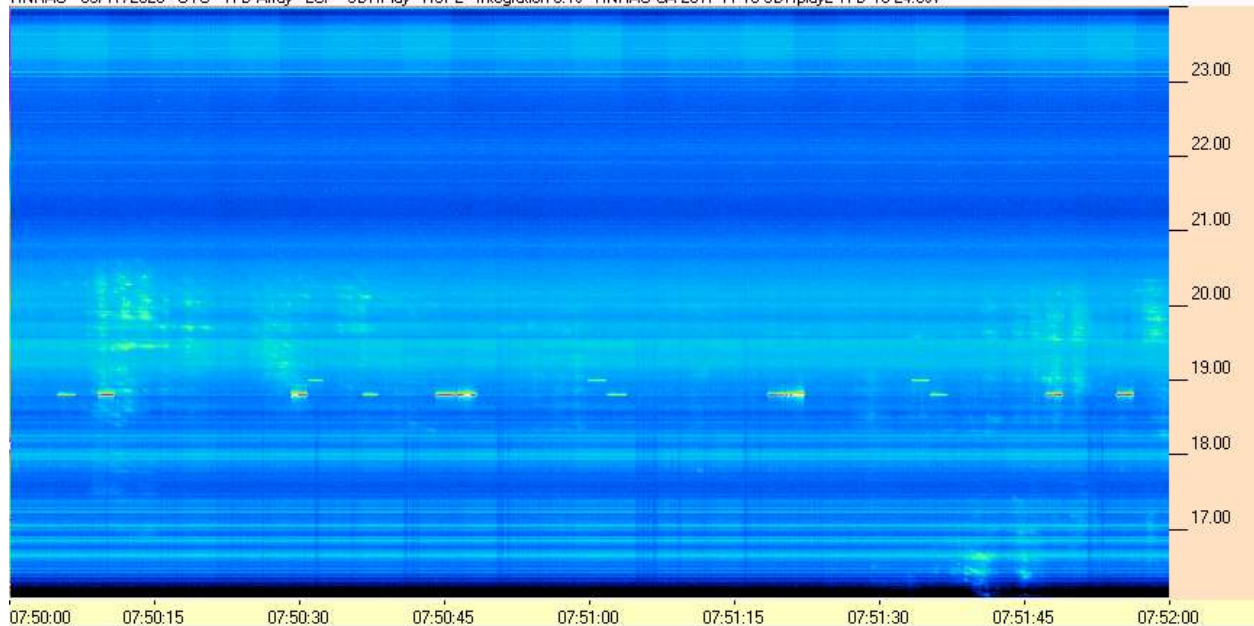
HNRAO Observing Log
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



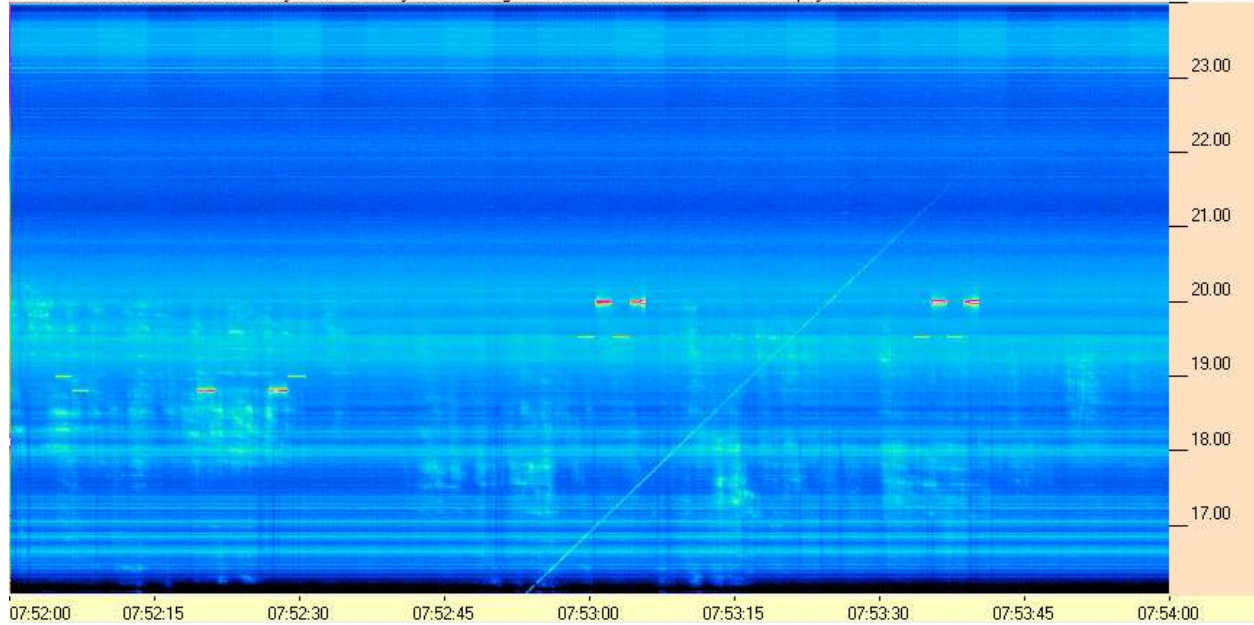
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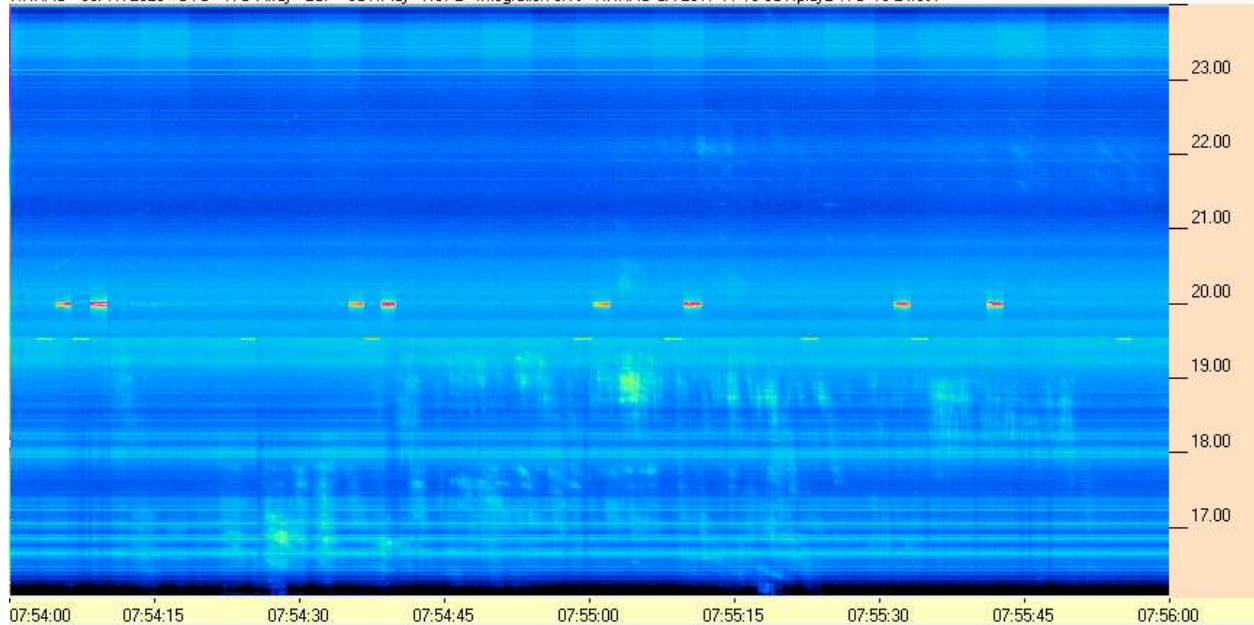
HNRAO Observing Log
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



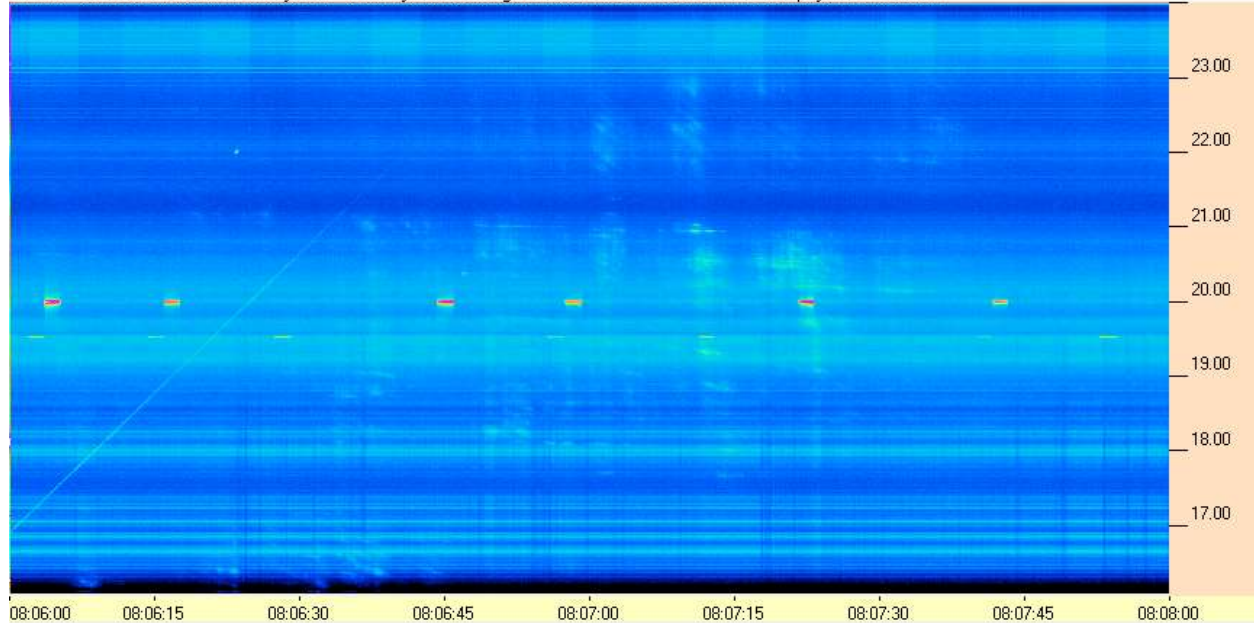
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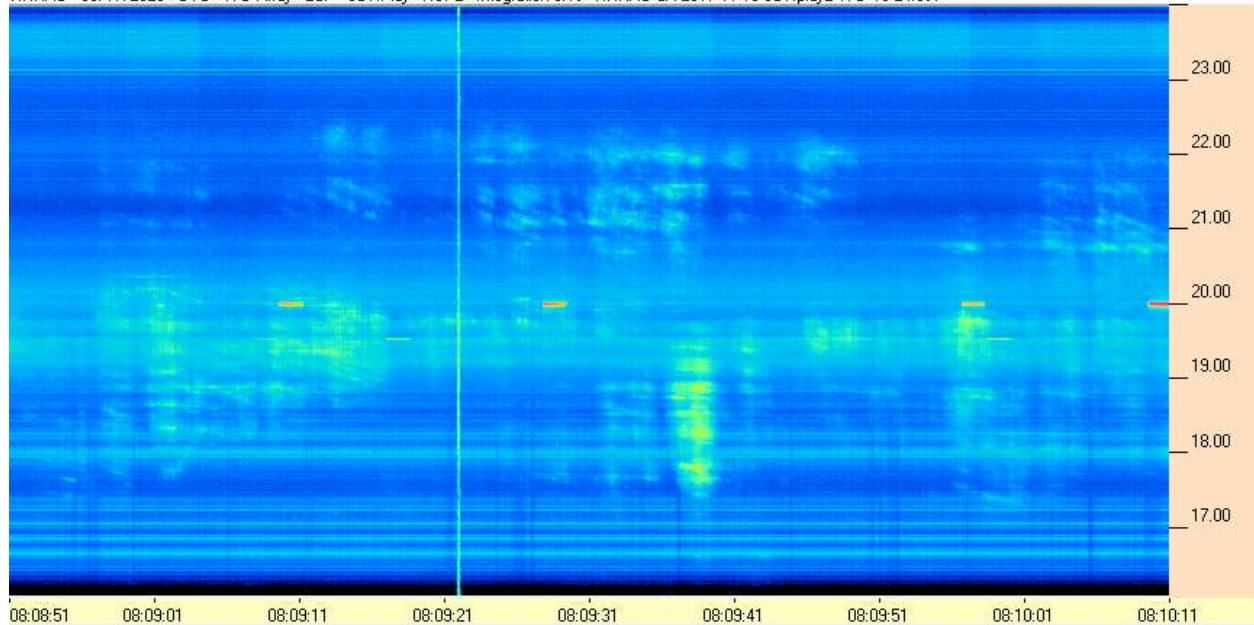
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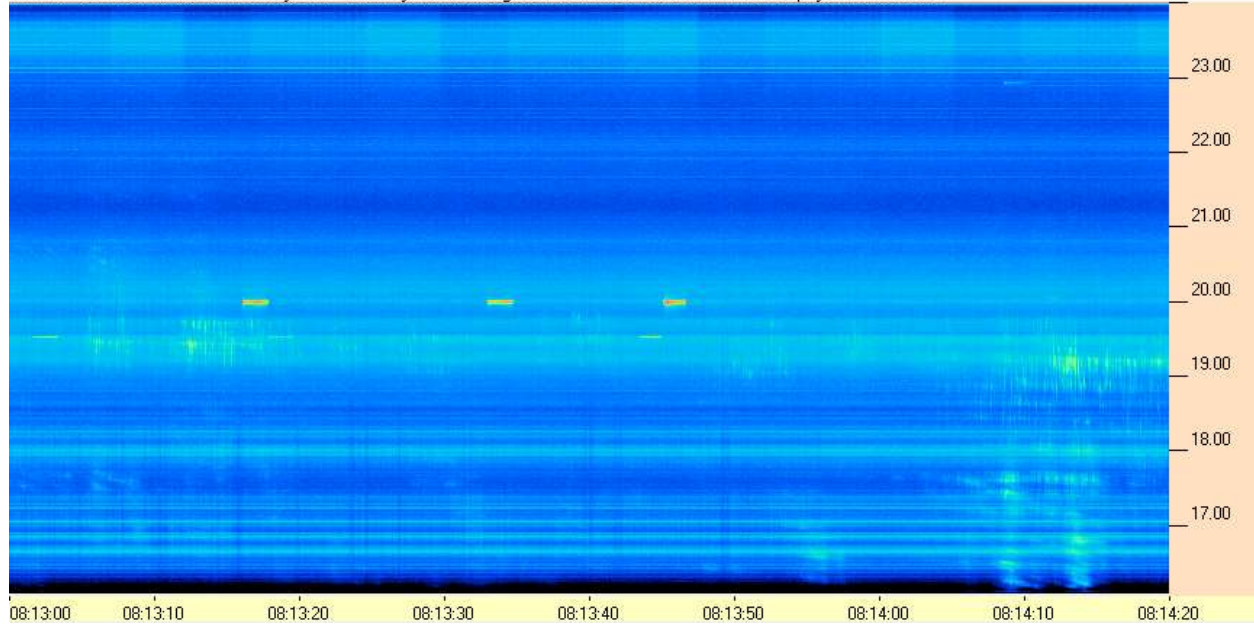
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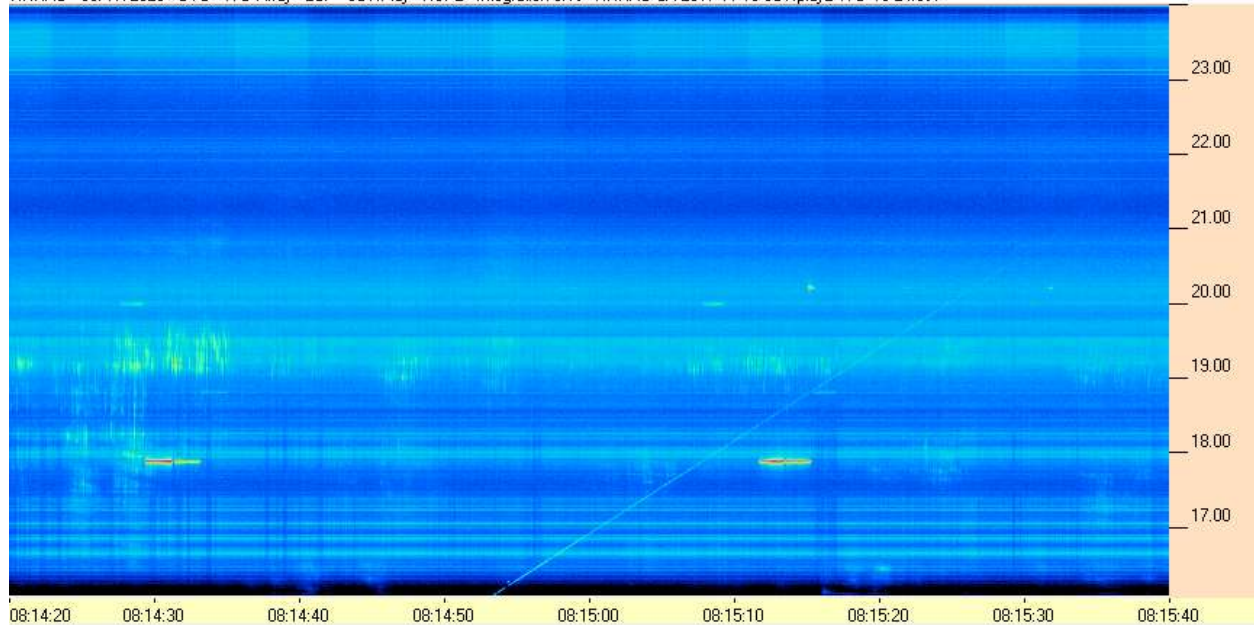
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



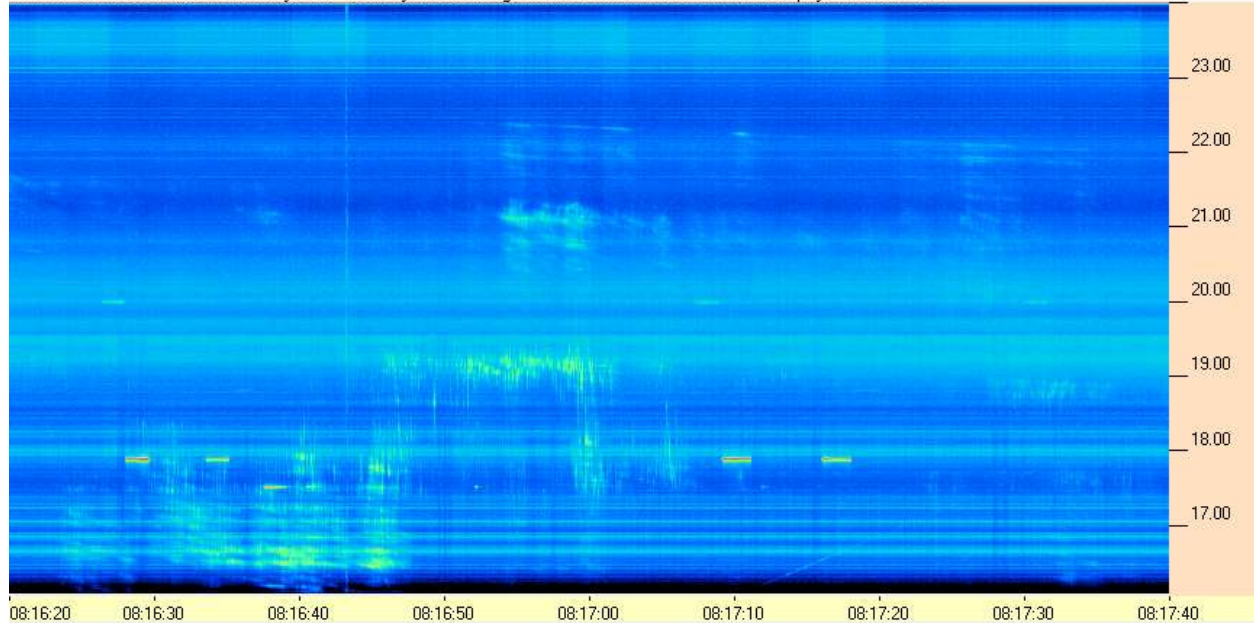
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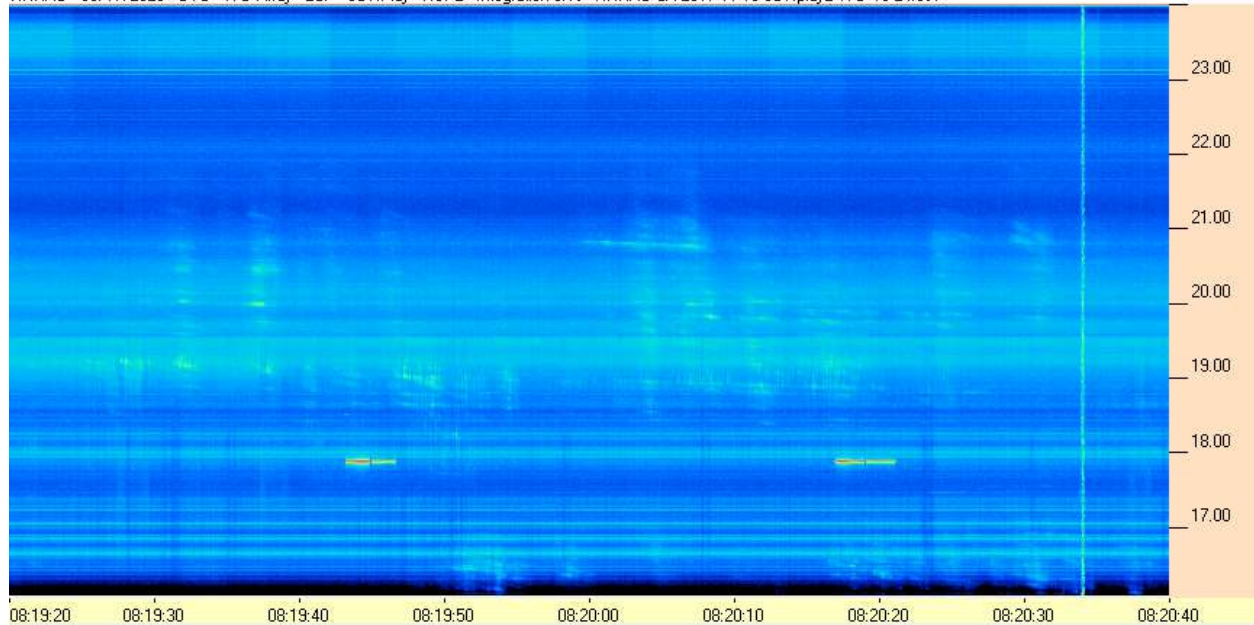
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



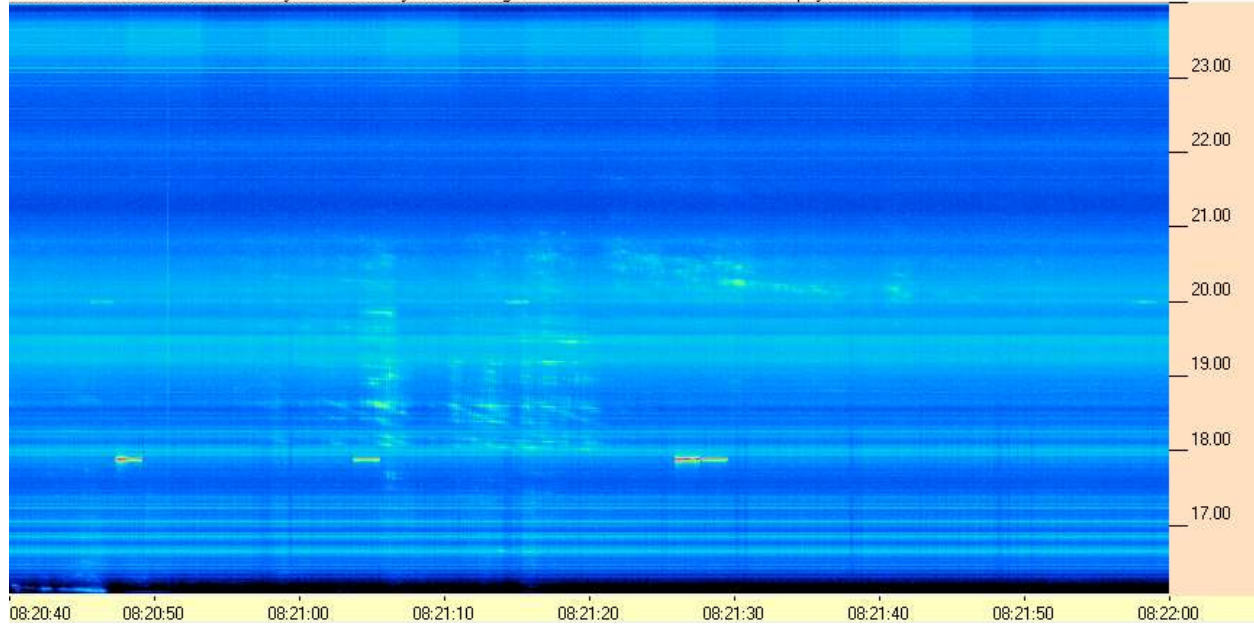
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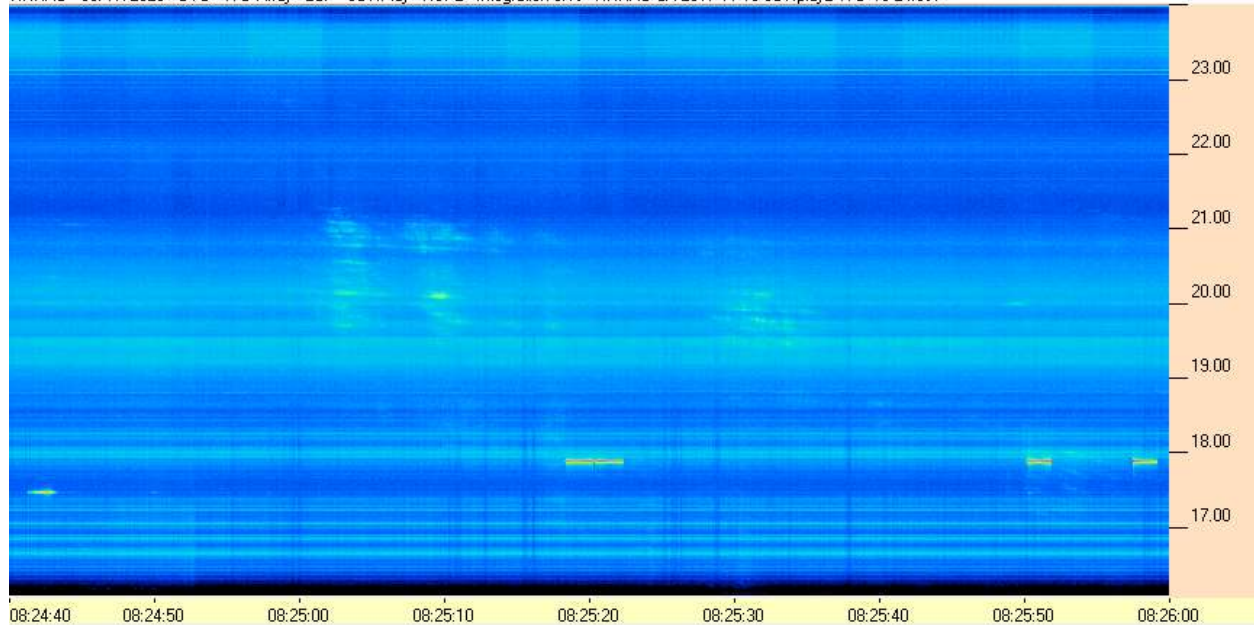
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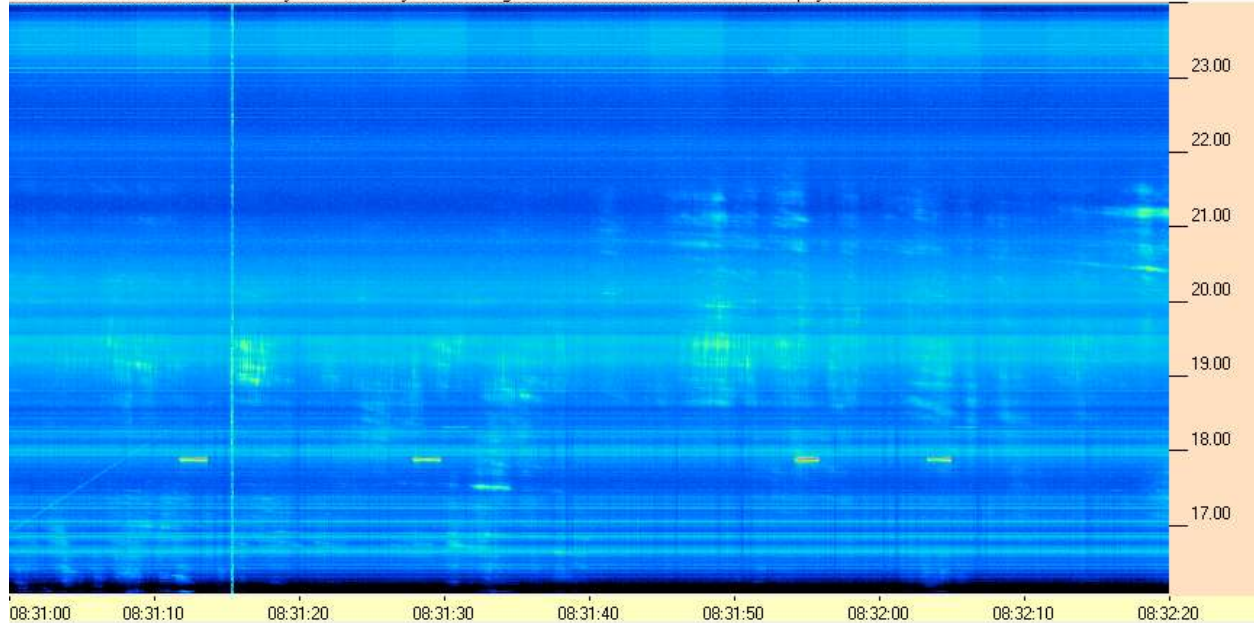
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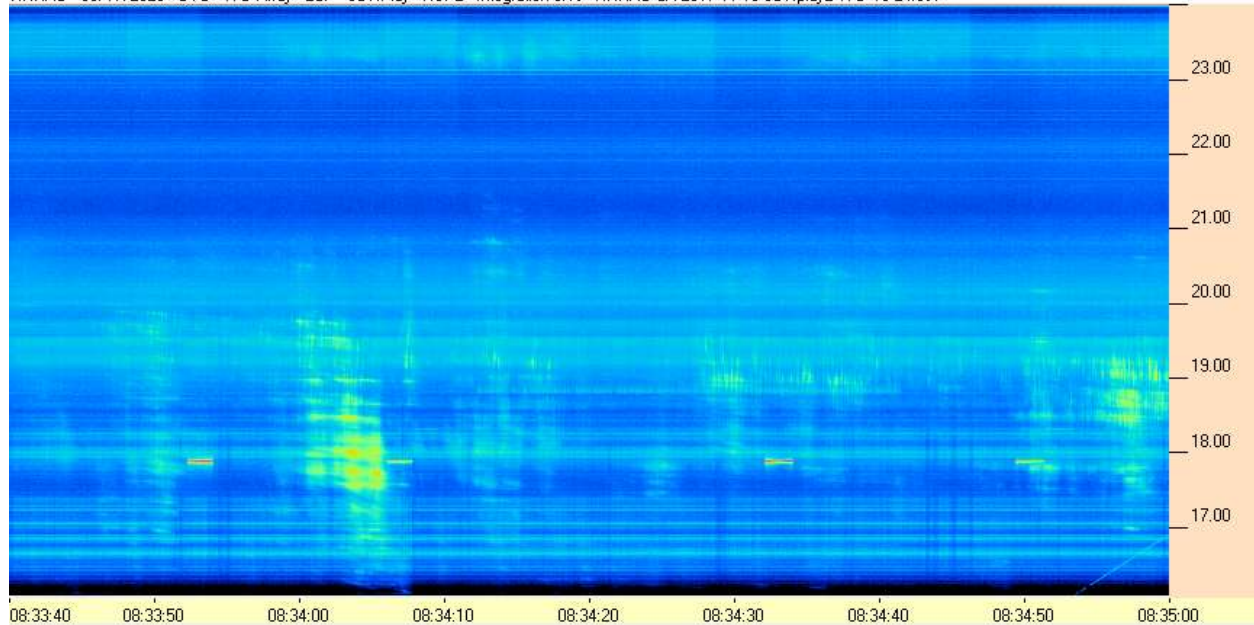
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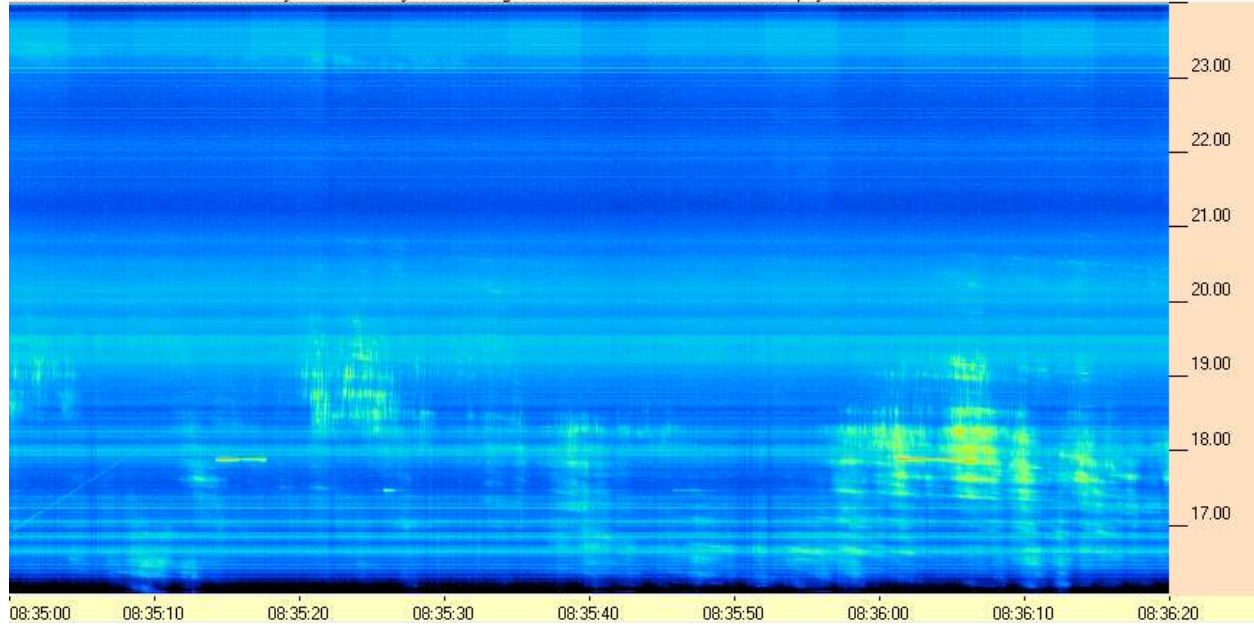
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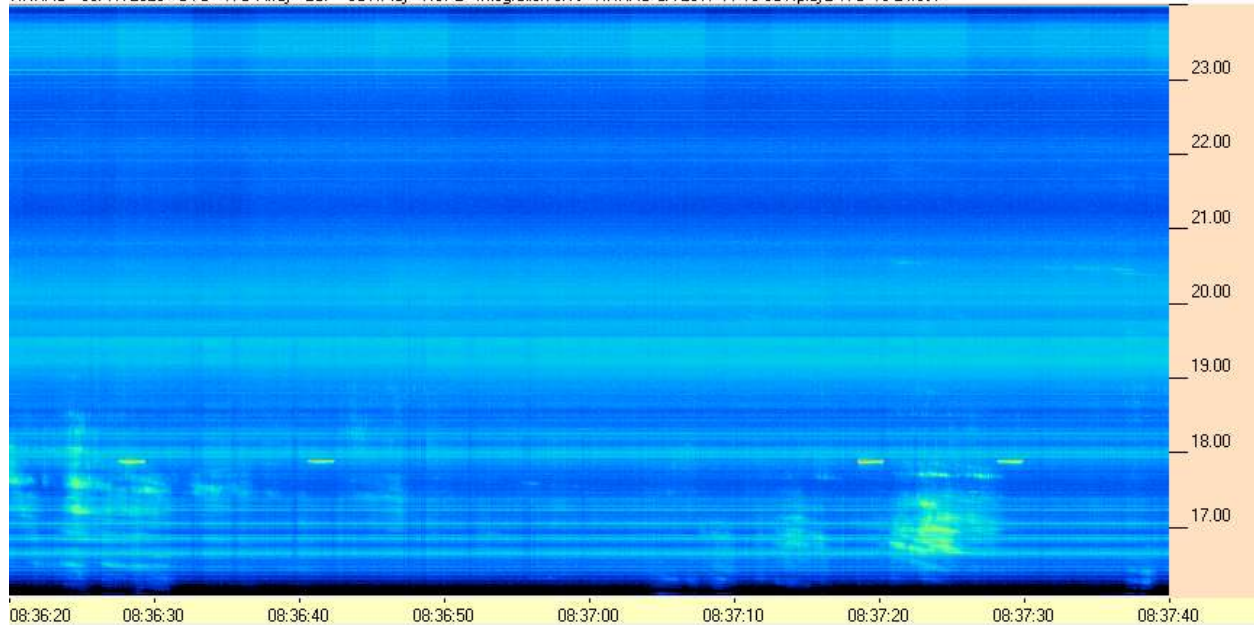
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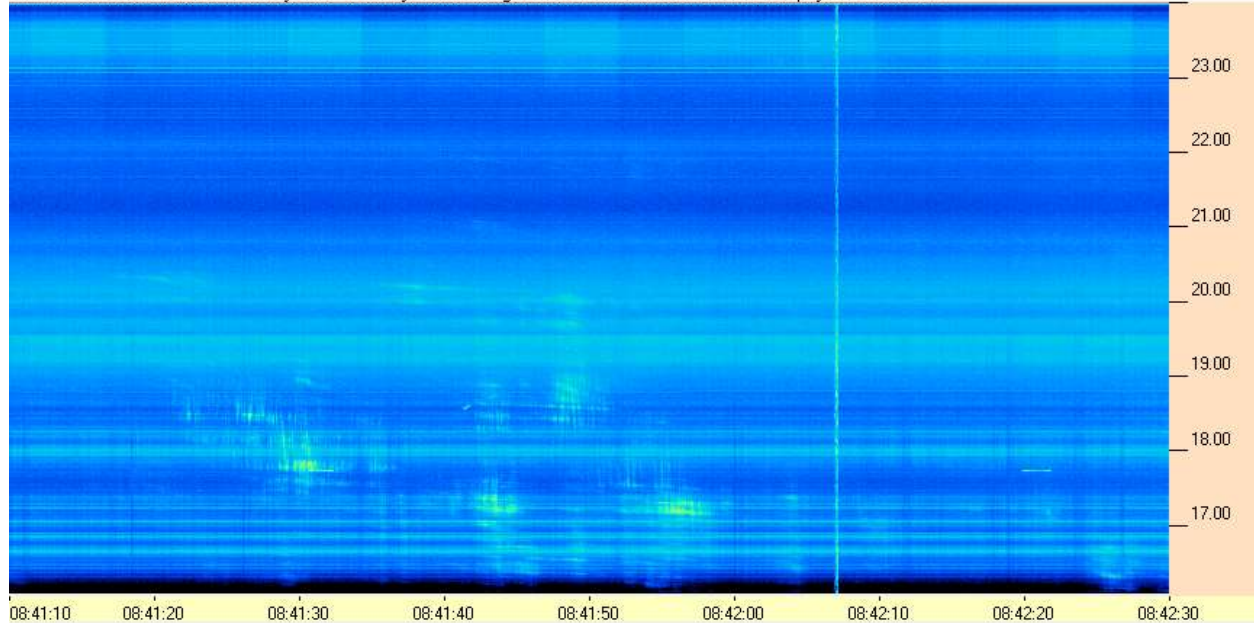
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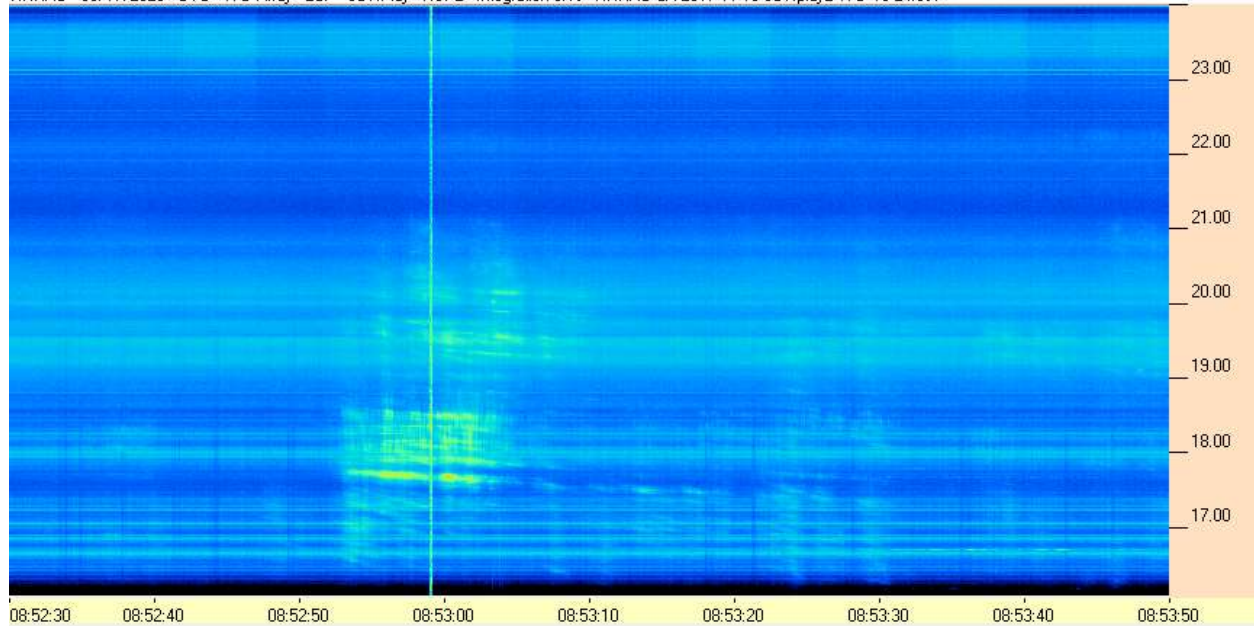
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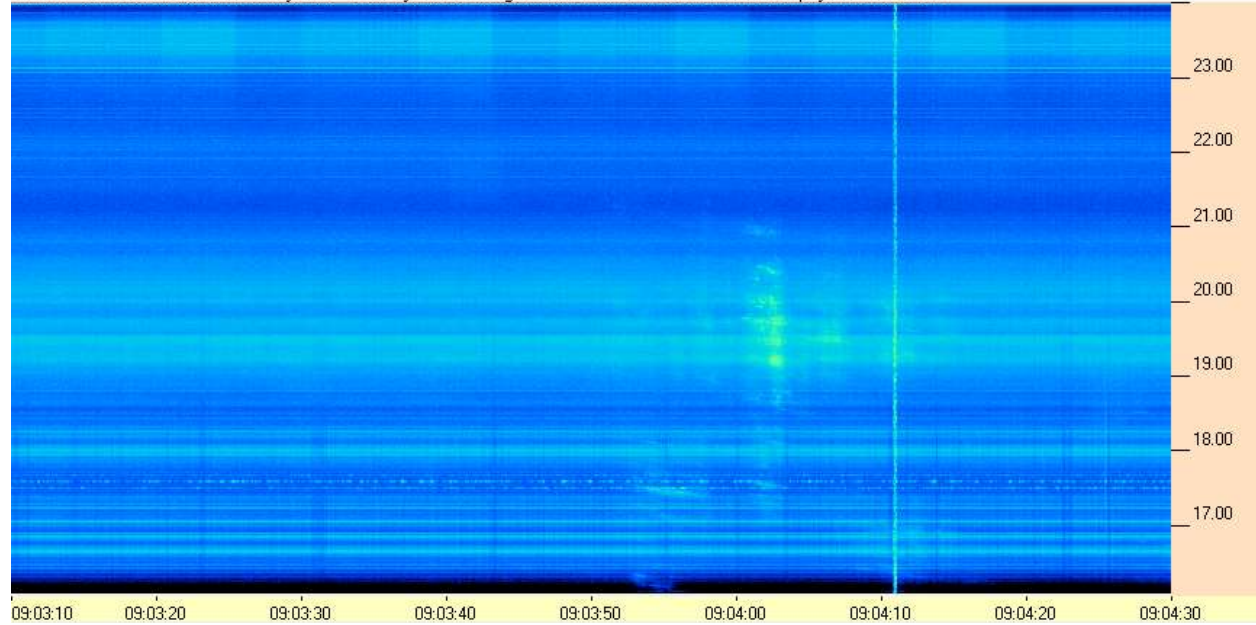
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HNRAO - 05/17/2020 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv

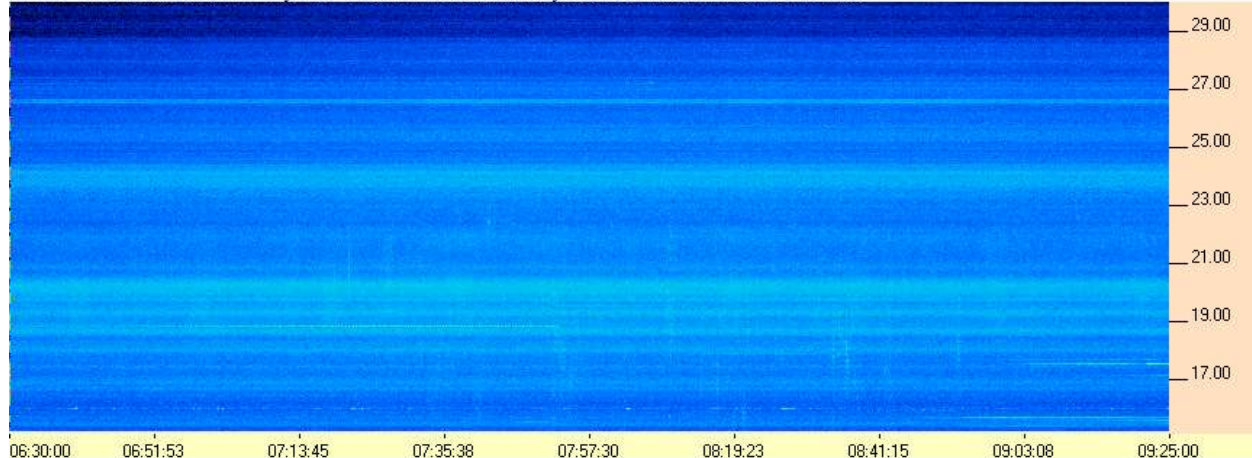


FSX-8S / TFD Array

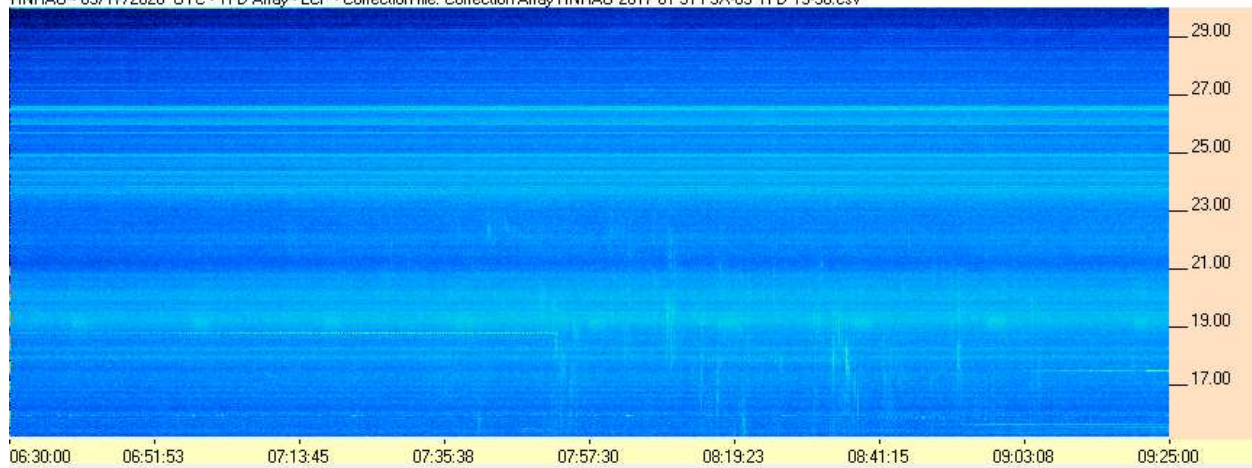
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HNRAO - 05/17/2020 - UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



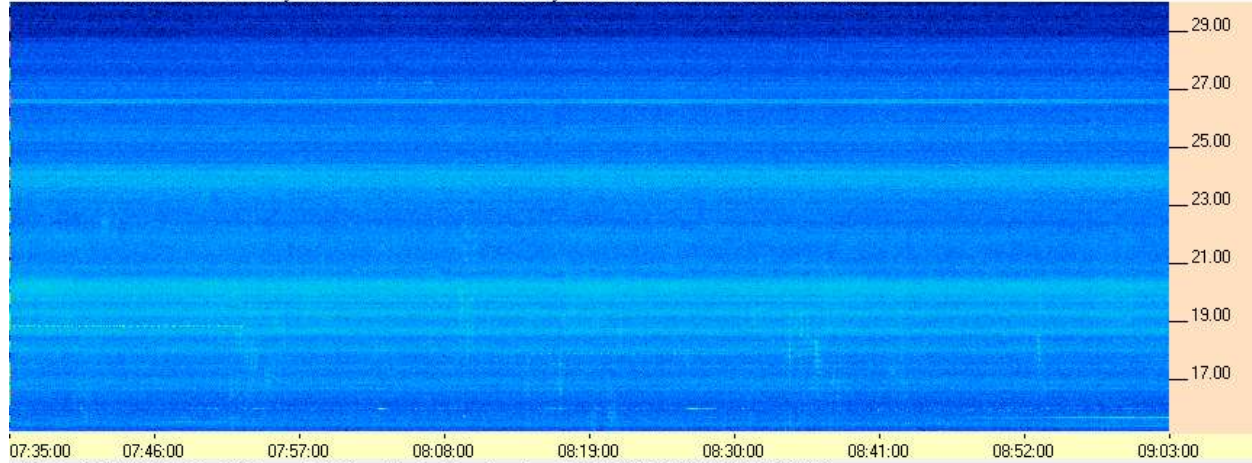
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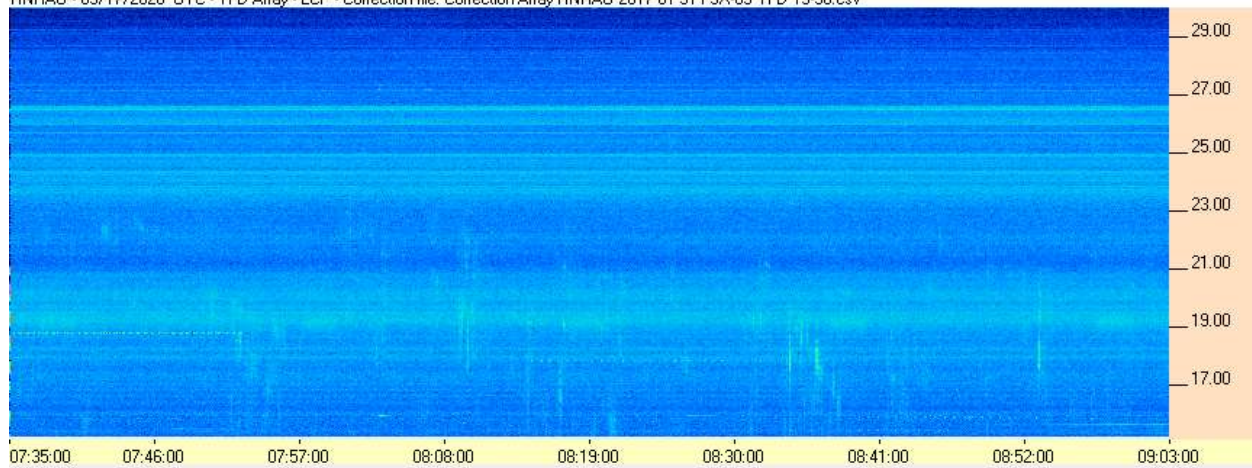
HNRAO Observing Log
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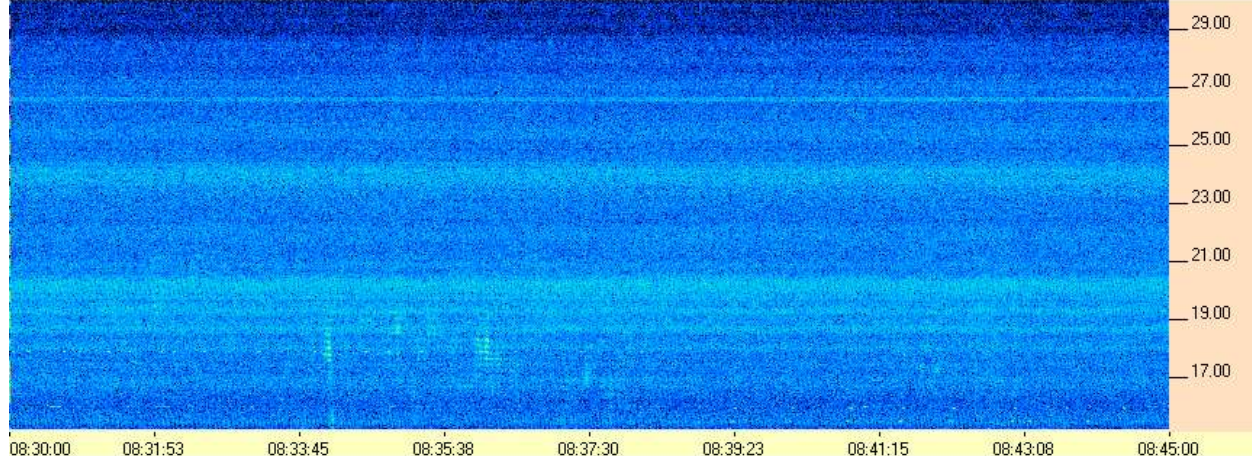
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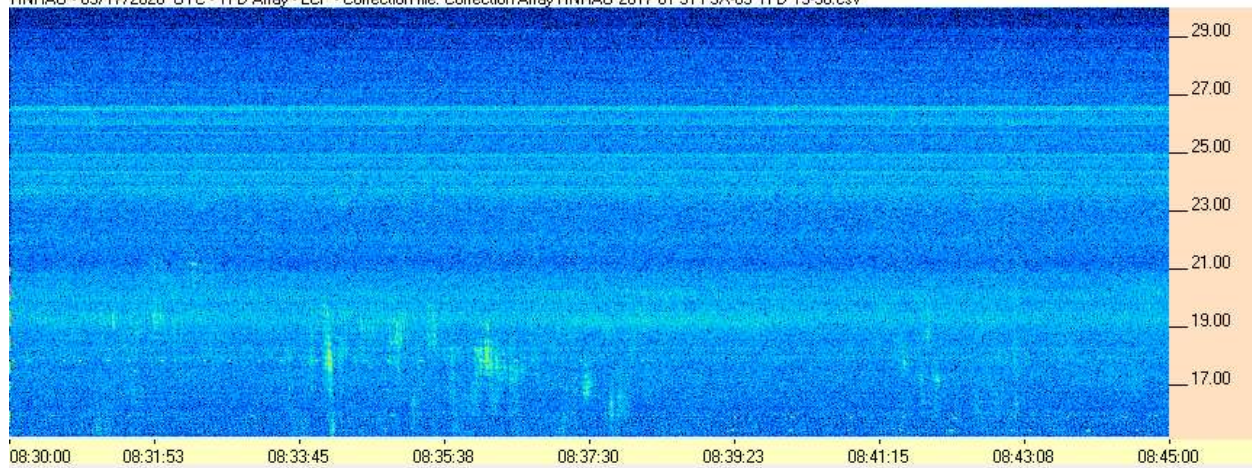
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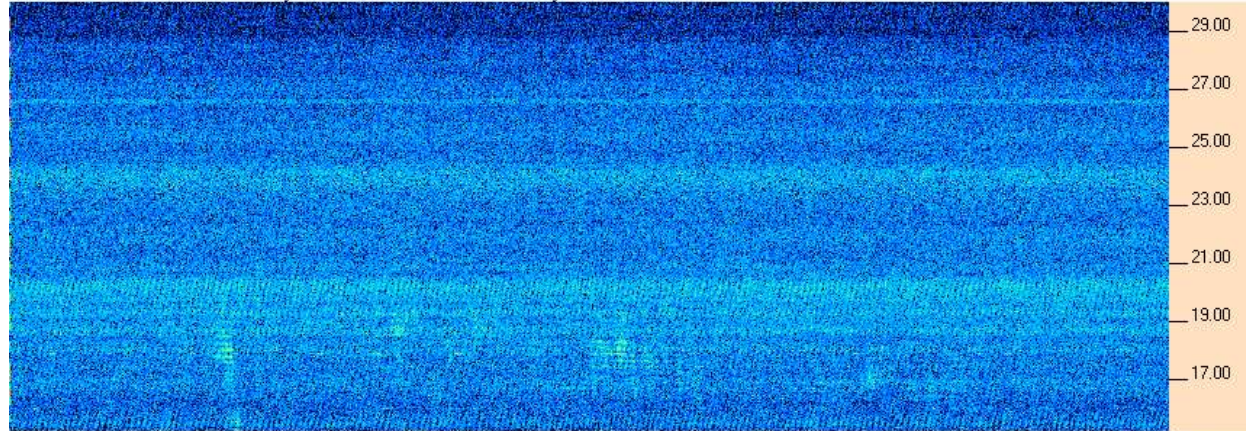
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HNRAO - 05/17/2020 - UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO - 05/17/2020 - UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

