

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: June 2, 2018

Object: Jupiter – Io-C

Observer: JB/RF

Start - Time UT:	0349	Planetary K-index:	3-4
Jupiter Altitude (deg):	33.9	Jupiter Azimuth (deg):	184.8
Jupiter CML:	254.29	Jupiter Io Phase:	228.23
Jupiter RA (hr/min):	14:53	Jupiter Dec (hr/min):	-15:17
Hour Angle (hr/min):	00:16	Polarization	LCP
Sun Altitude (deg):	-24.5	Sun Azimuth (deg):	338.9
Sun RA (hr/min):	04:32	Sun Dec (hr/min):	21:55

End – Time UT:	0651	De:	-3.3
Jupiter Altitude (deg):	17.5	Jupiter Azimuth (deg):	230.5
Jupiter CML:	4.33	Jupiter Io Phase	254.17
Hour Angle (hr/min):	03:19	Duration (min):	302
Sun Altitude (deg):	-23.3	Sun Azimuth (deg):	25.1
Max Frequency MHz	24	Min Frequency MHz	16

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	-3.12 dB	#3 Linear	Port 4 +3 dB	04/10/2018
SDRPlay RSP1	Experimental*					

JOVE dipoles phased @ 32 degrees for 2017-2018 season

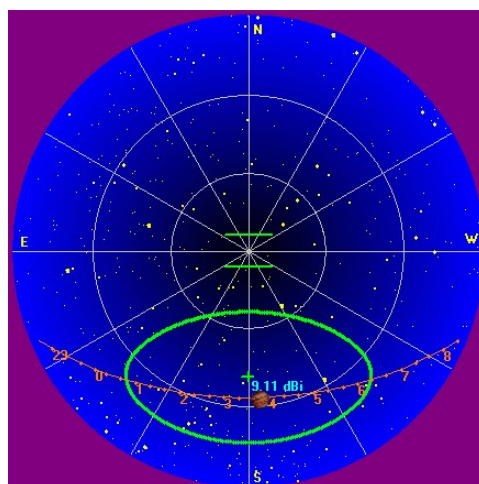
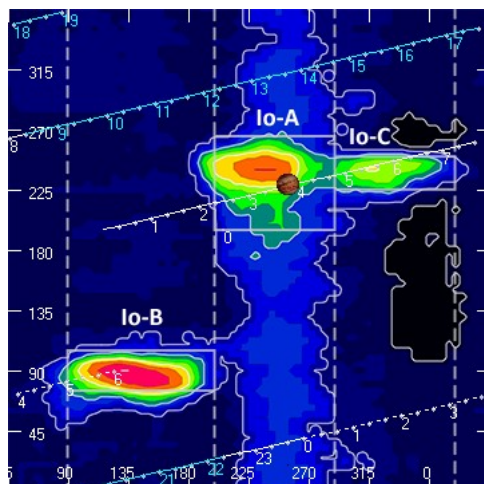
TFD array phased @ 35 degrees for 2017-2018 season

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

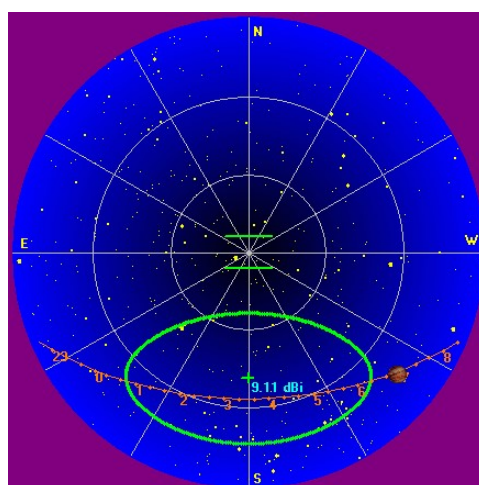
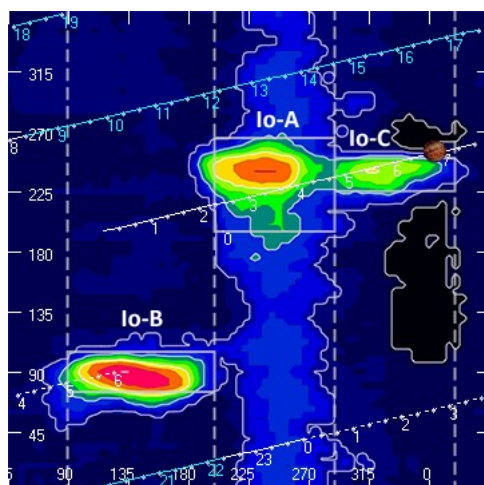
* Used for testing and evaluating antenna systems

Software Radio Sky Spectrograph 2.8.50

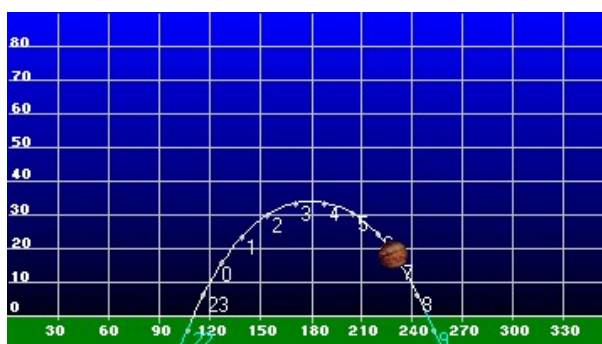
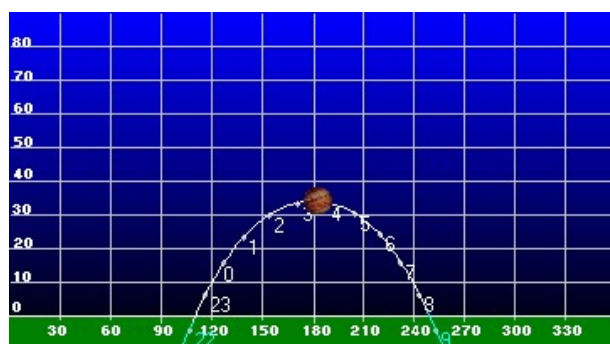
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Beginning of Pass



End of Pass



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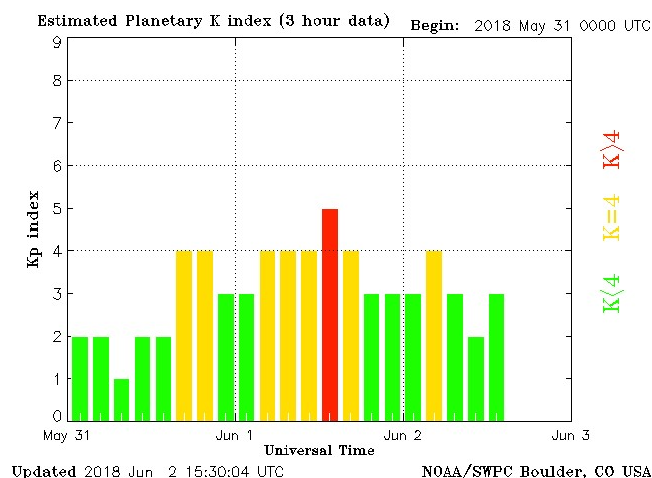


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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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An LCP Io-C storm observed with the FSX-8S/TFD spectrograph, the SDRPlay RSP2/TFD spectrograph and the Radio JOVE 2 receiver/JOVE dipole array.

Observing conditions were very good. Very little RFI for the duration of the storm, with only faint traces of distant lightning seen in the spectrograms.

A mix of both L-burst and S-burst emissions, with L4 modulation lanes. Scintillation was very apparent from beginning to end.

There were two events worth noting in this storm. The first was an N-event, starting at 0436 UT, of nearly 10-minute duration, centered between 20 MHz and 21 MHz. The second was a curious -20 kHz/sec slope feature at 0502 UT. The slope of this feature does not match the -76 kHz/sec L4 modulation lane slopes beside it.

One lone S-burst was measured at 0455 UT. It reached 282 kK @ 20.1 MHz measured with a calibrated linear dipole. This data record was submitted to the Radio JOVE Data Archive.

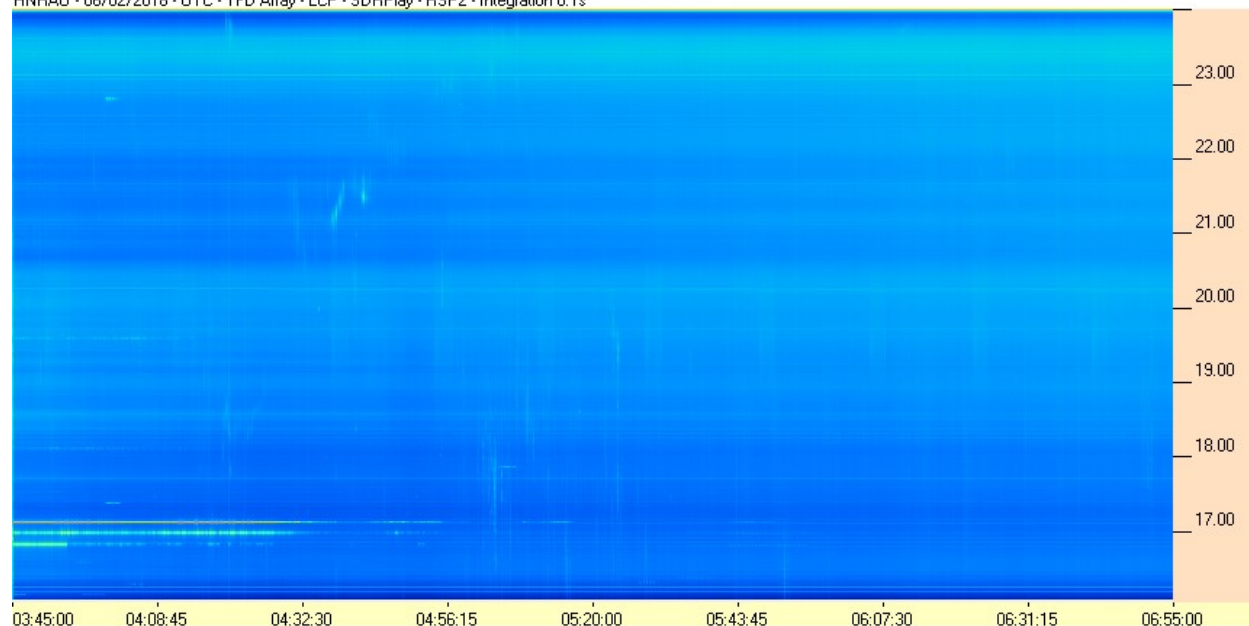
EOR

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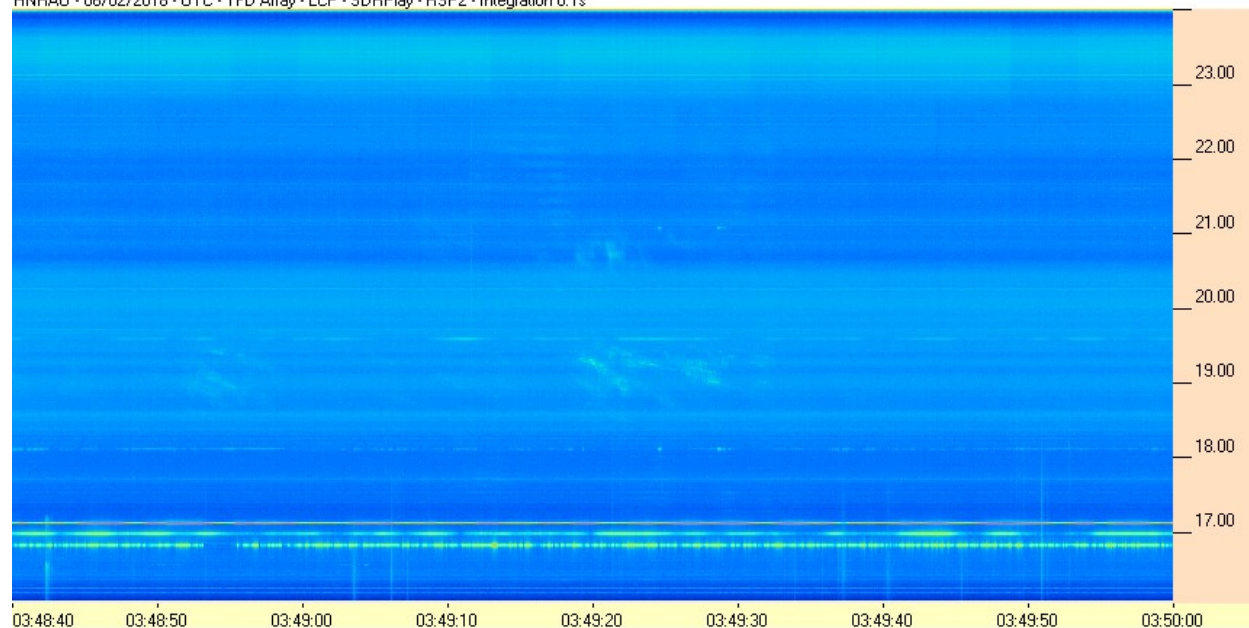


SDRPlay RSP2 / TFD Array

HNRAO - 06/02/2018 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s



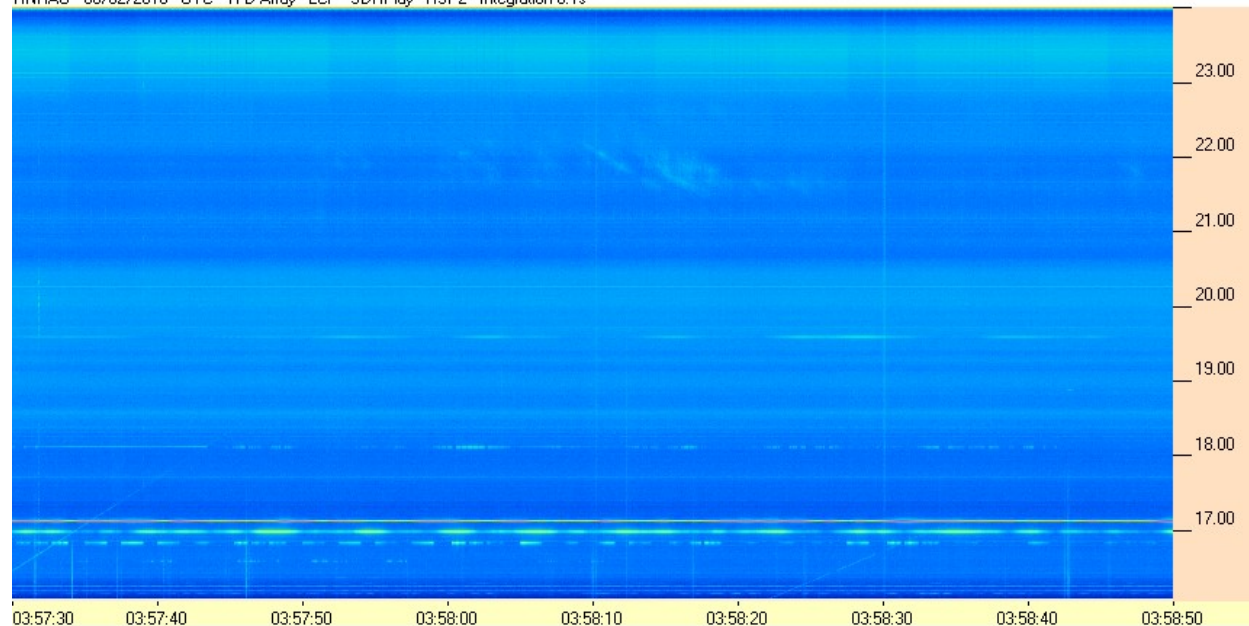
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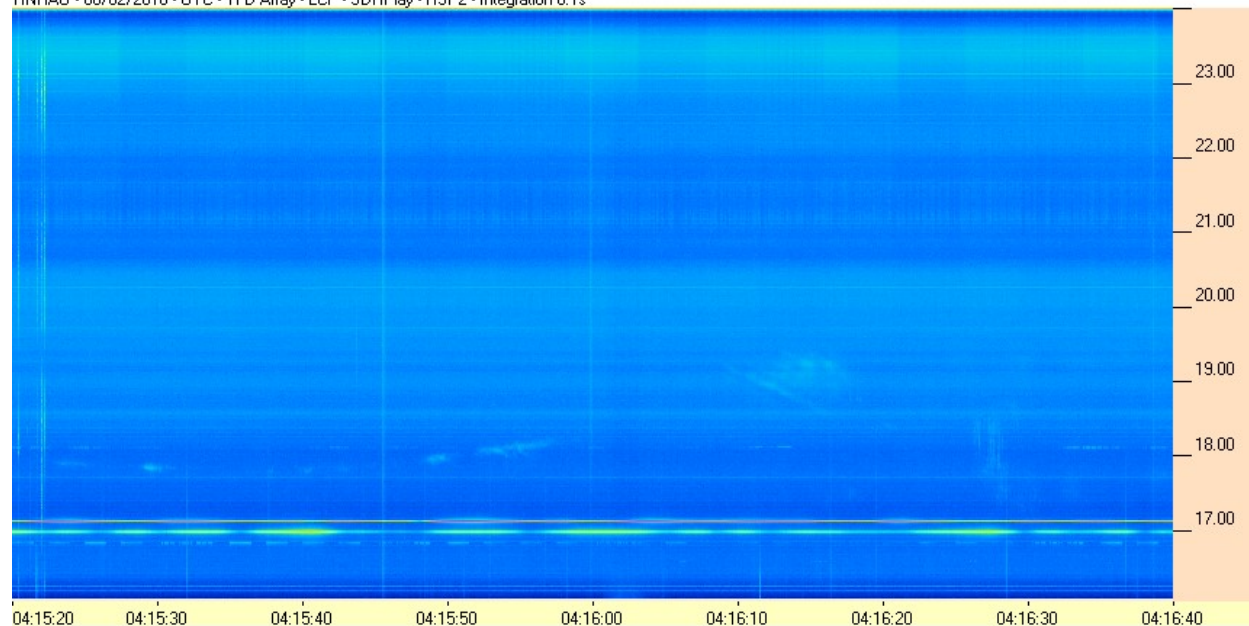
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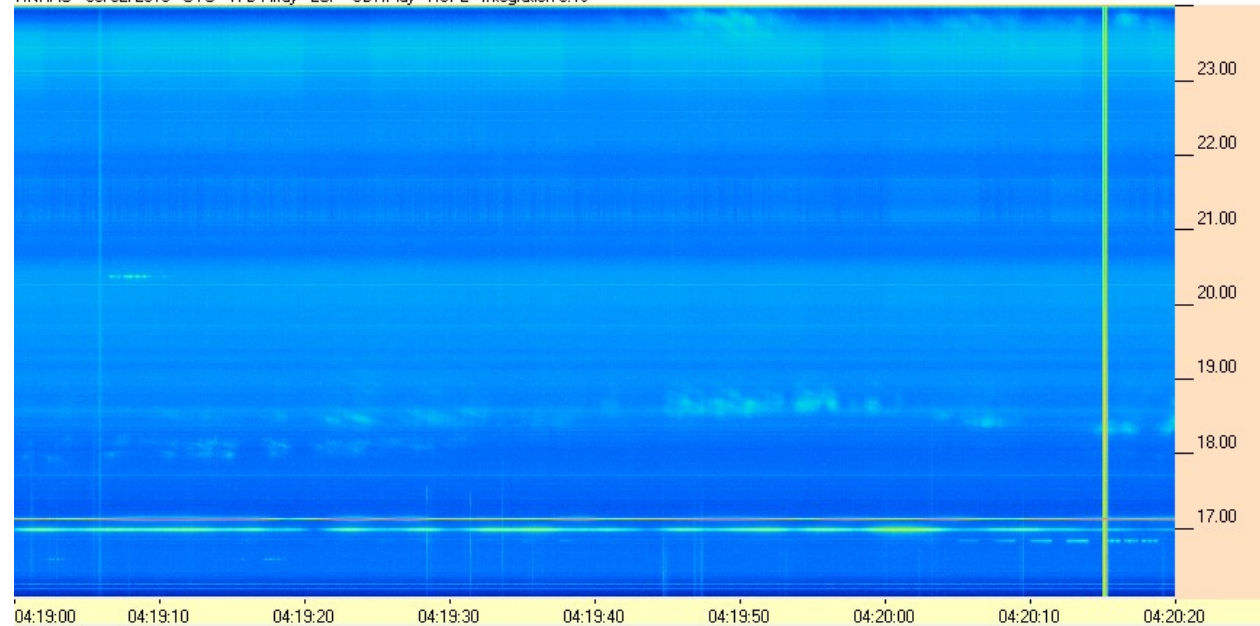
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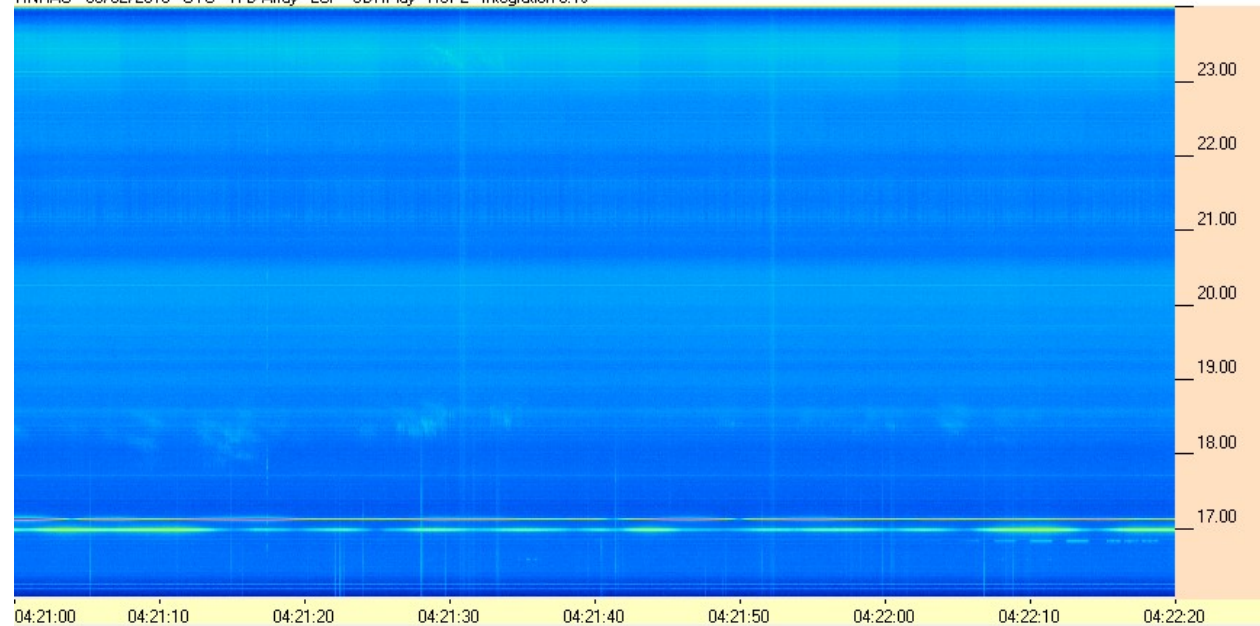
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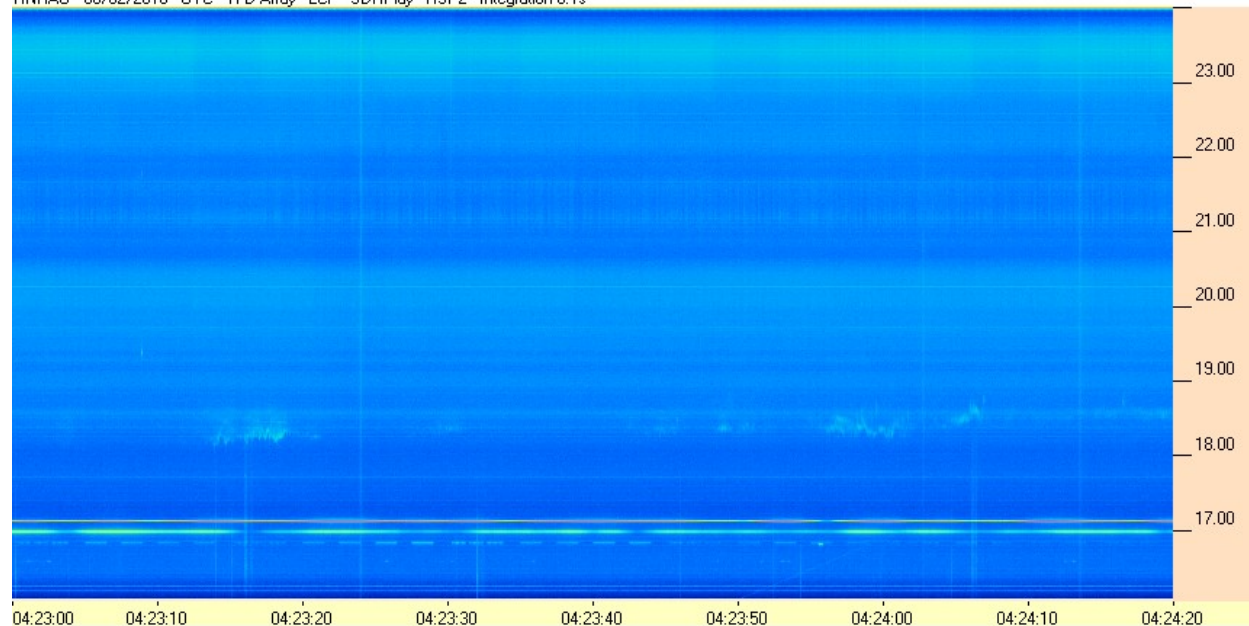
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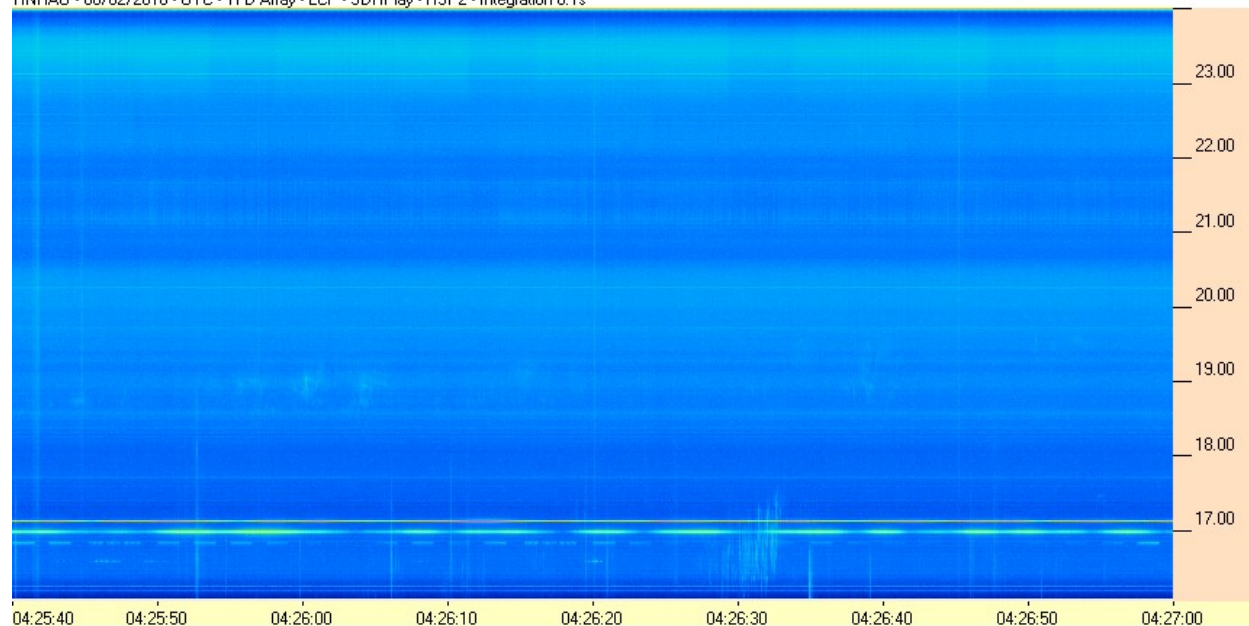
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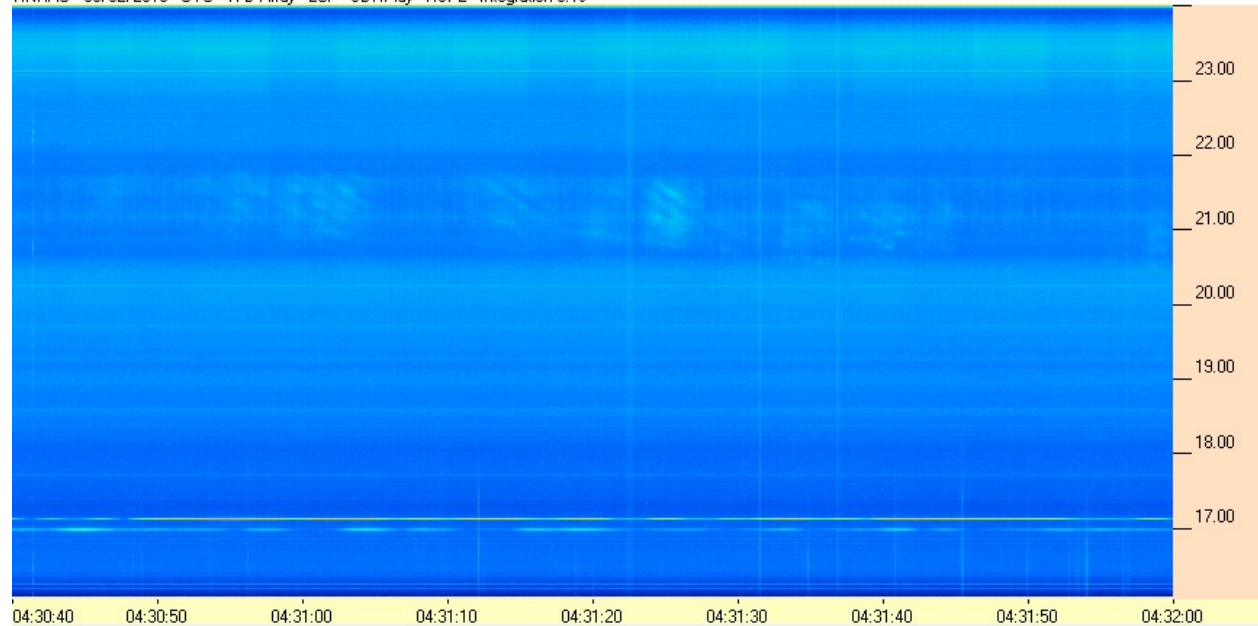
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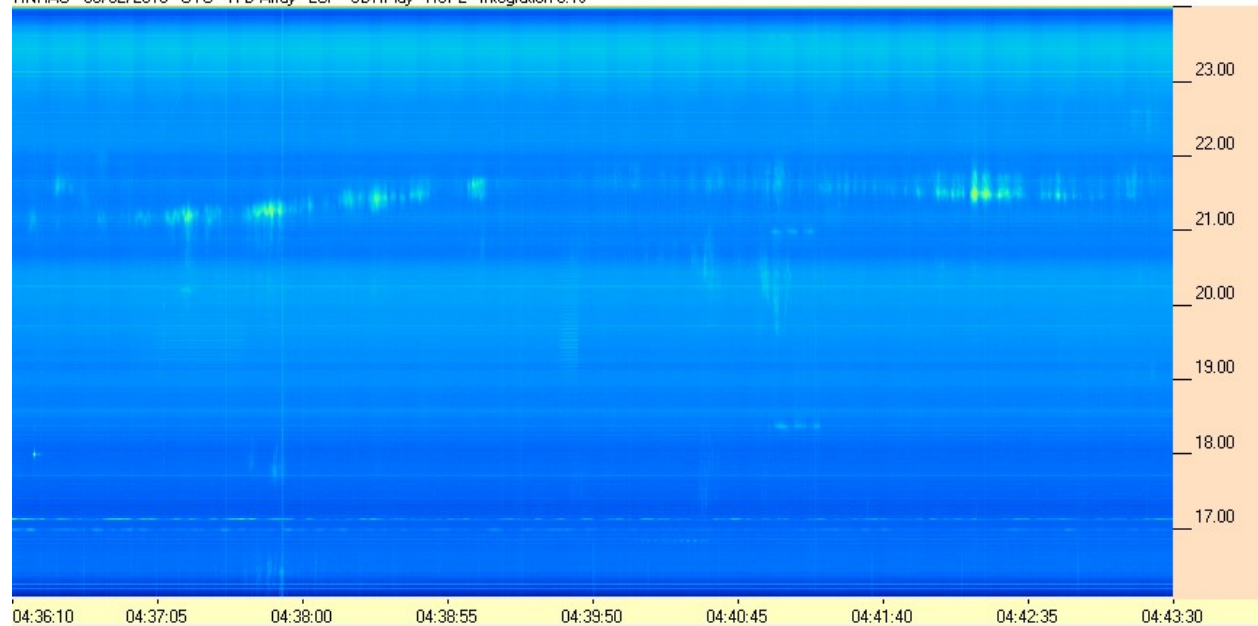
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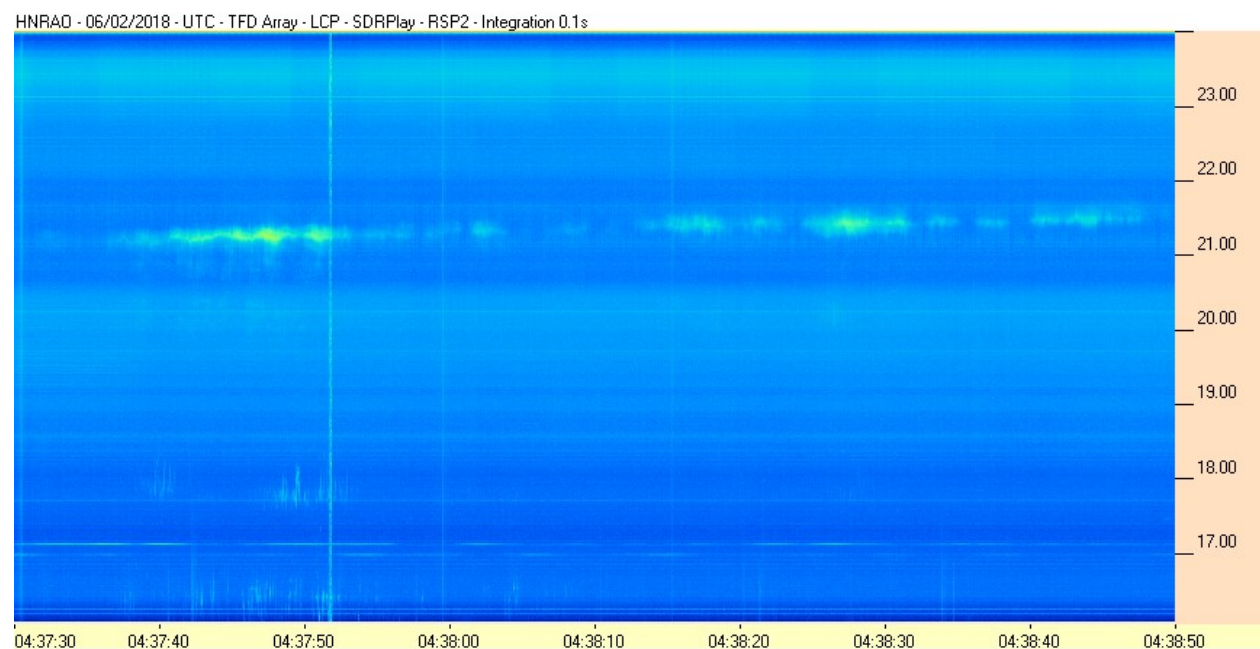
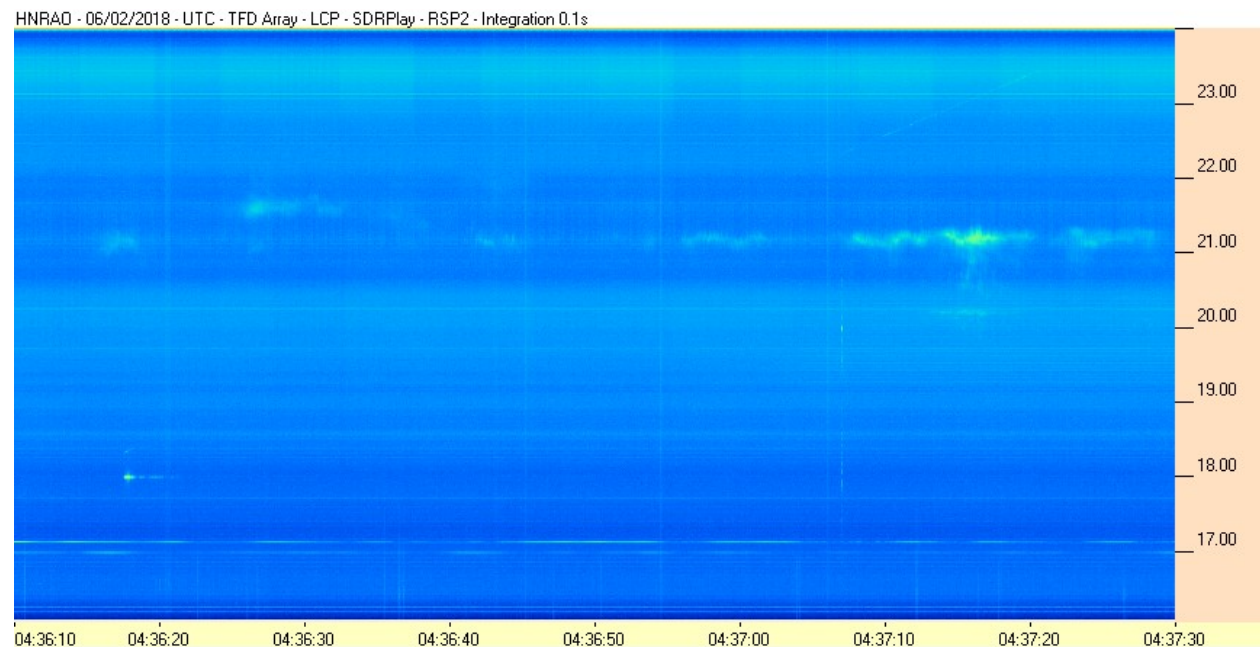
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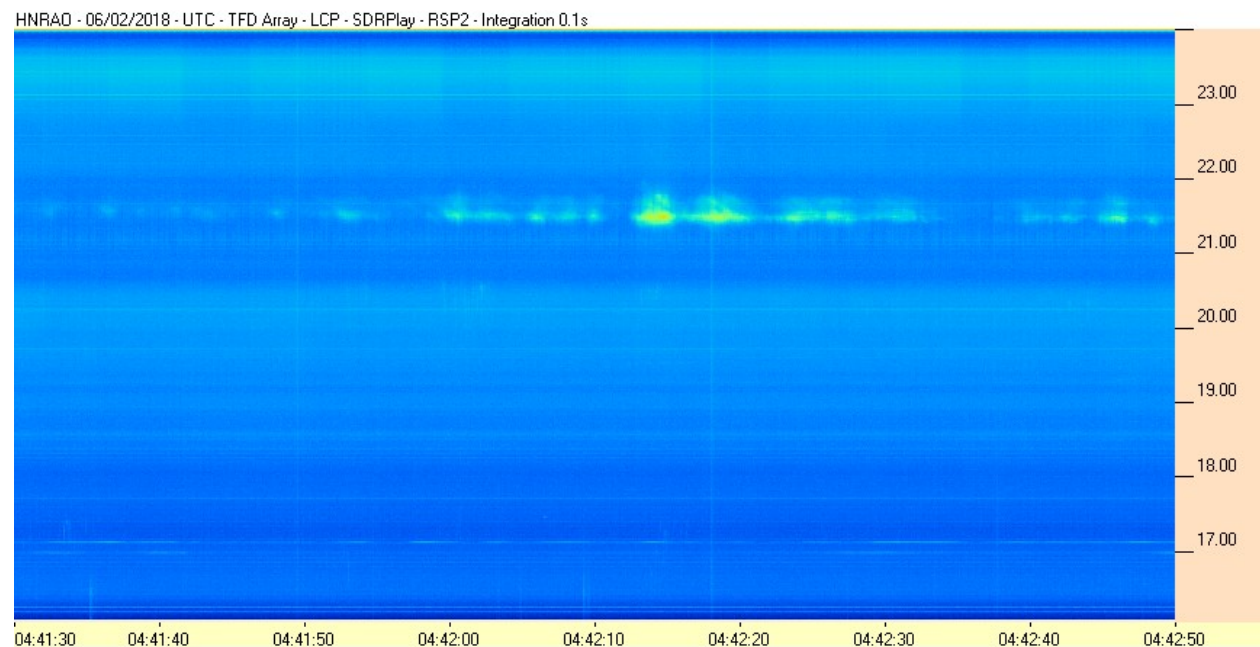
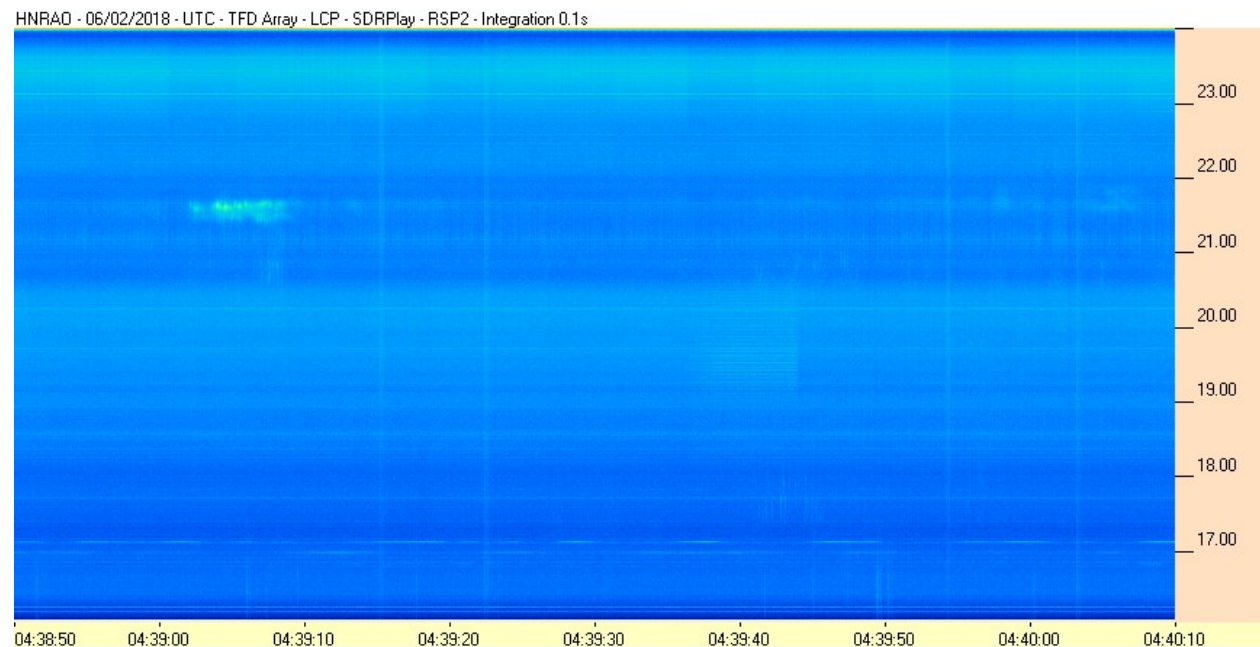
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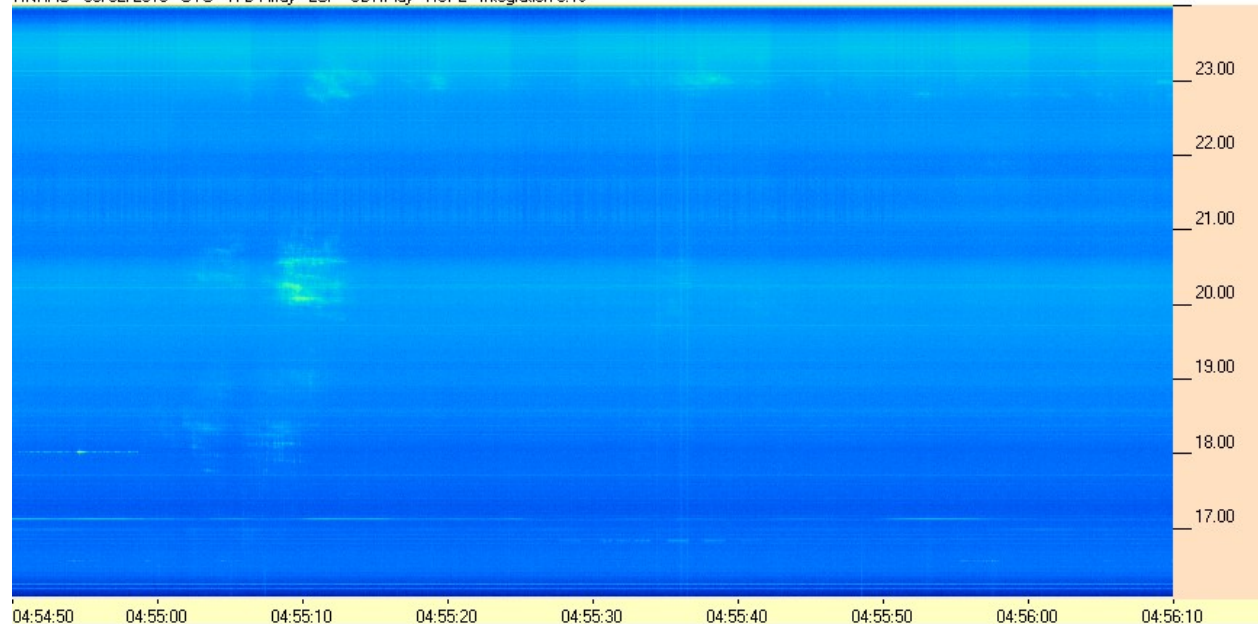
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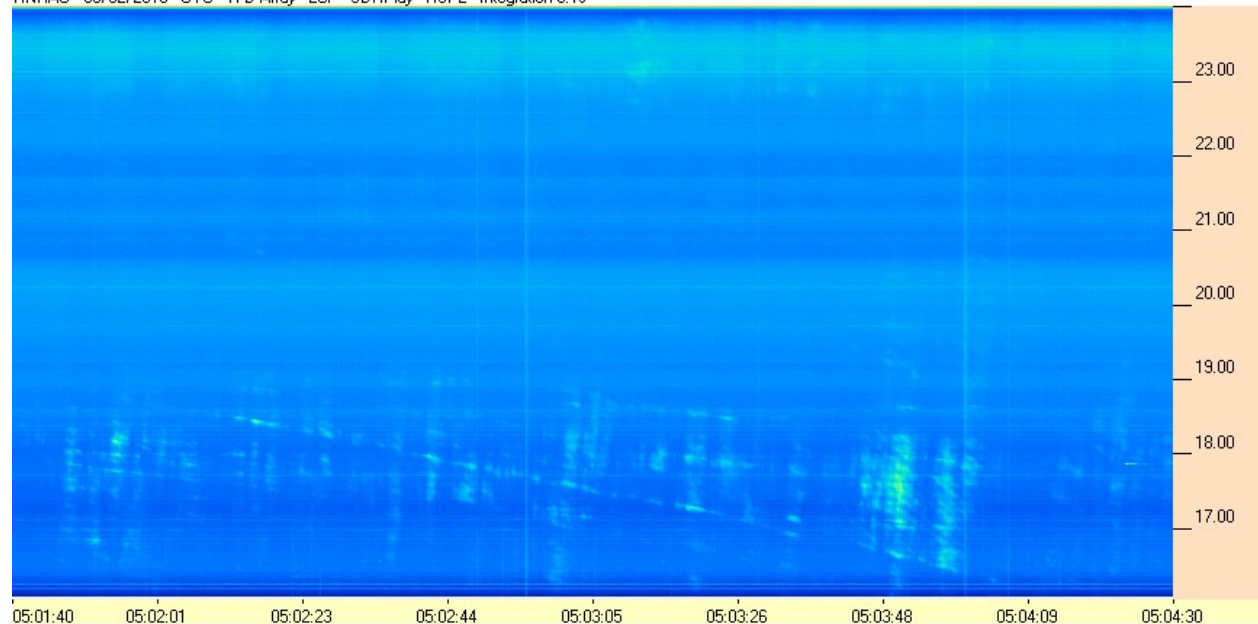
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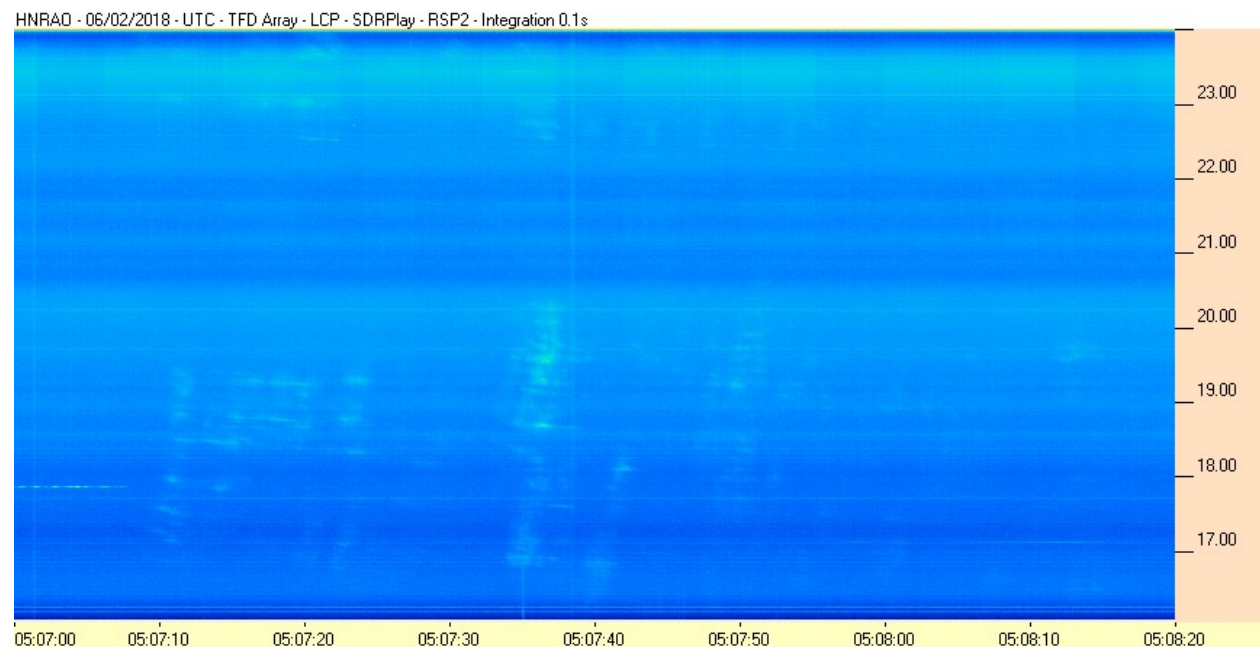
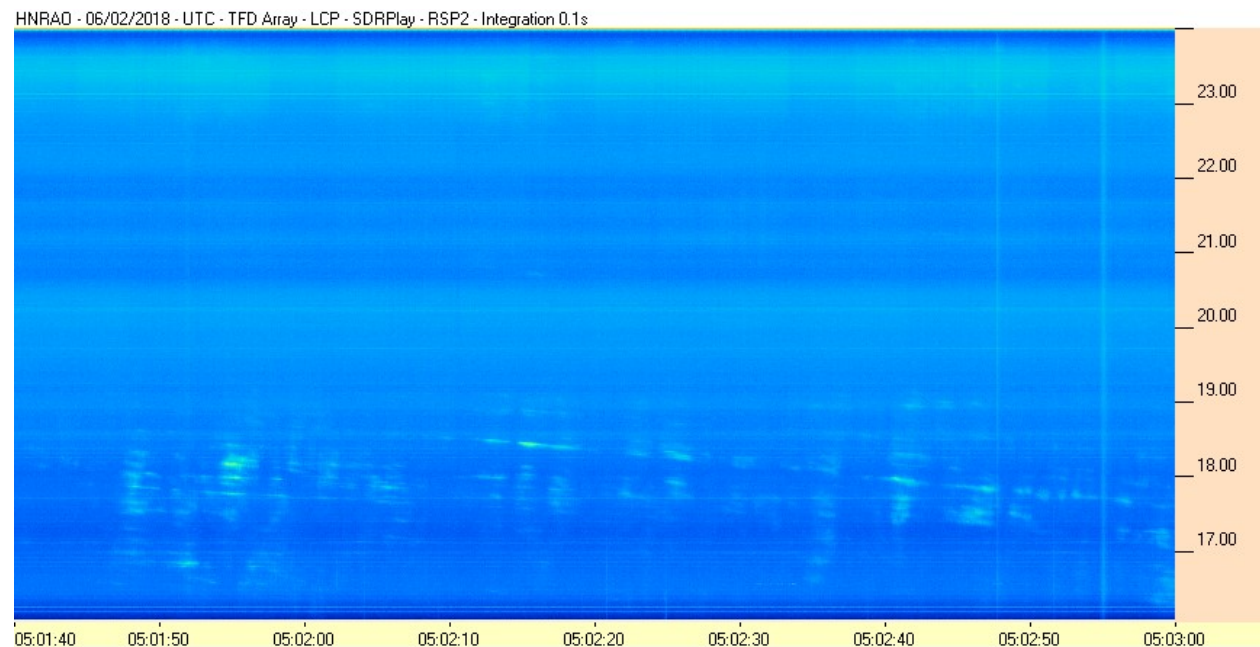
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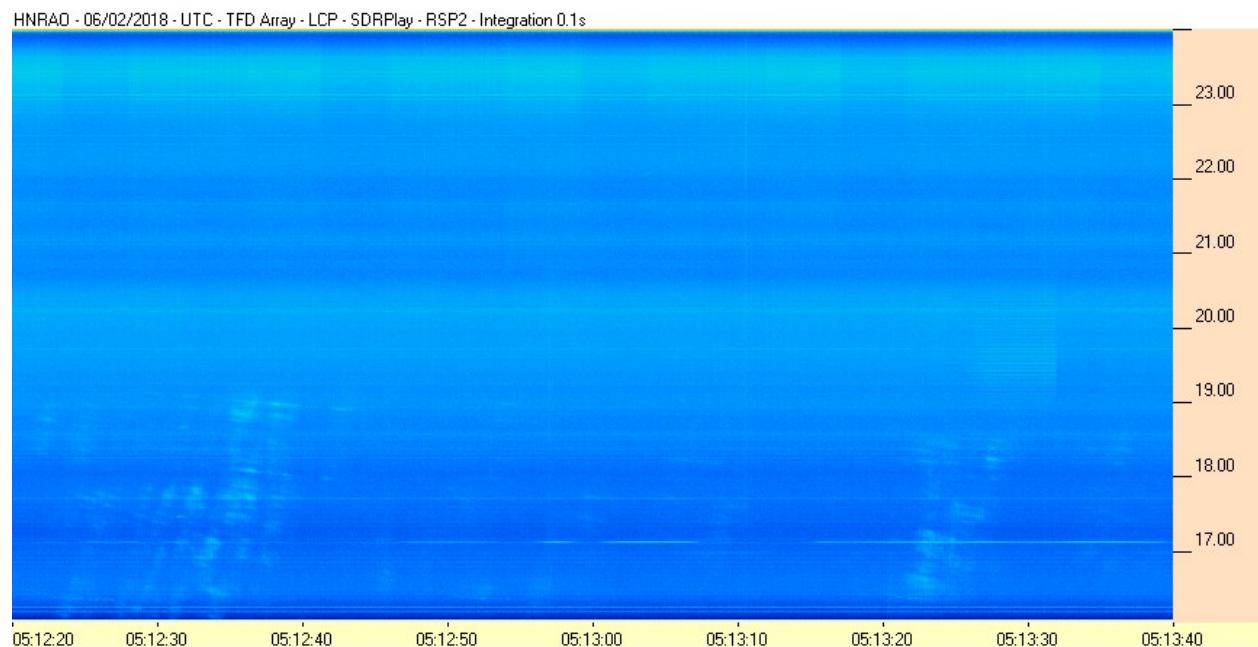
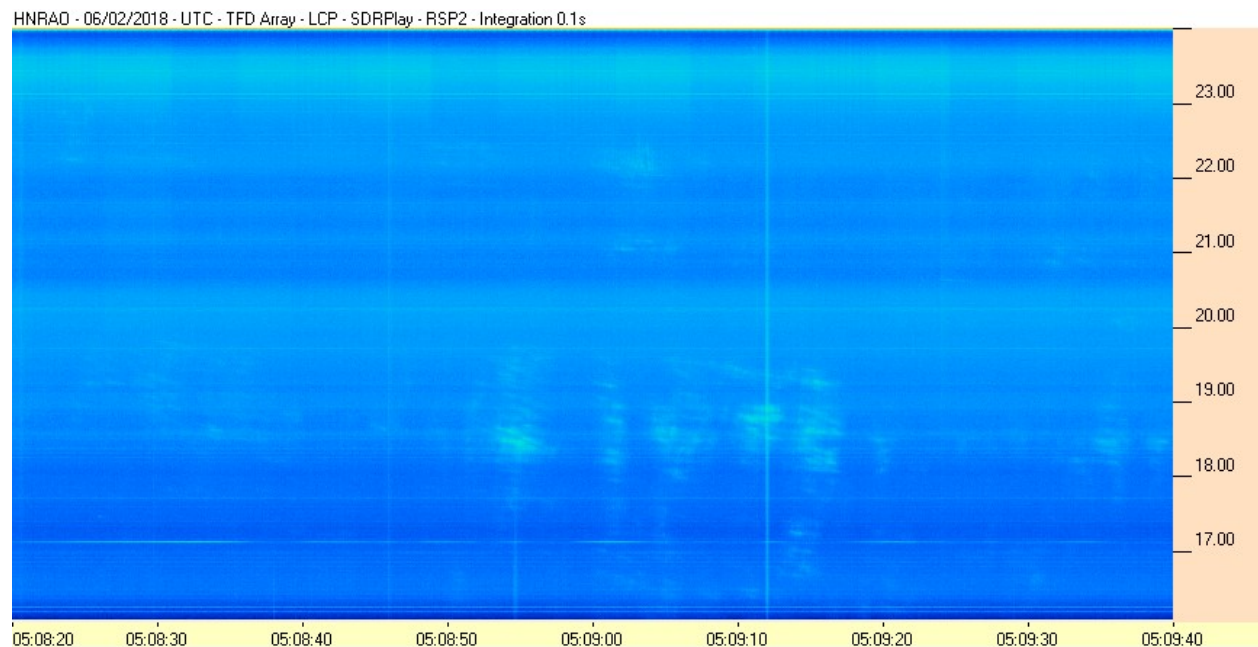
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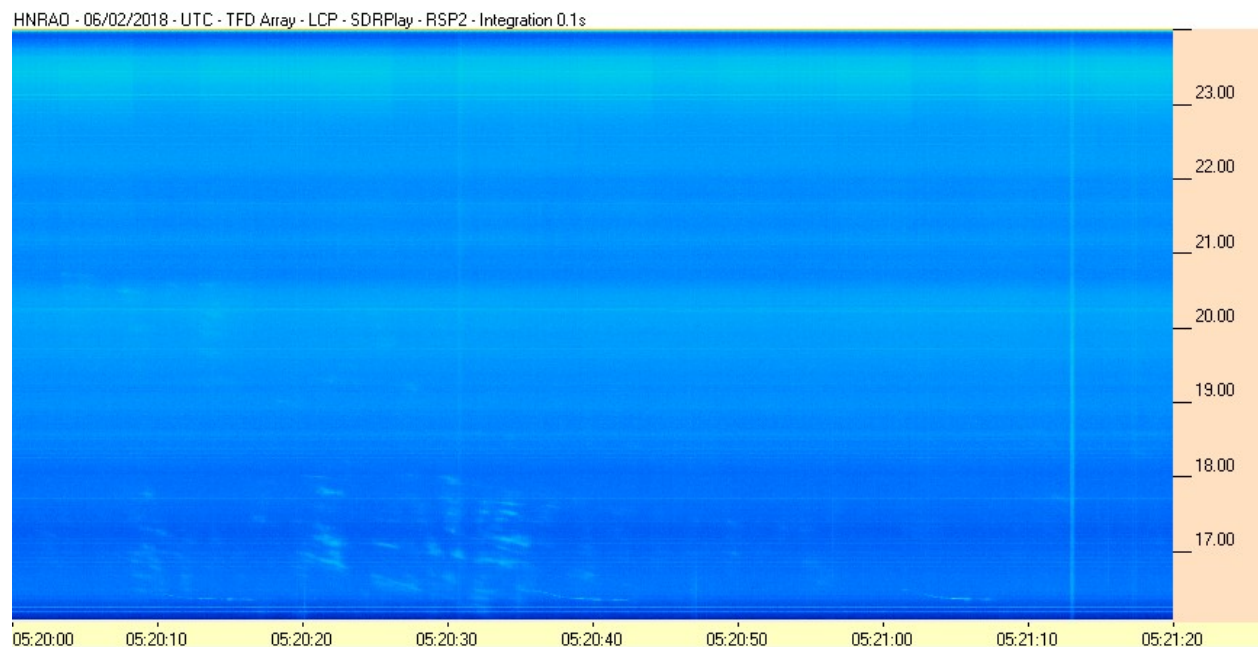
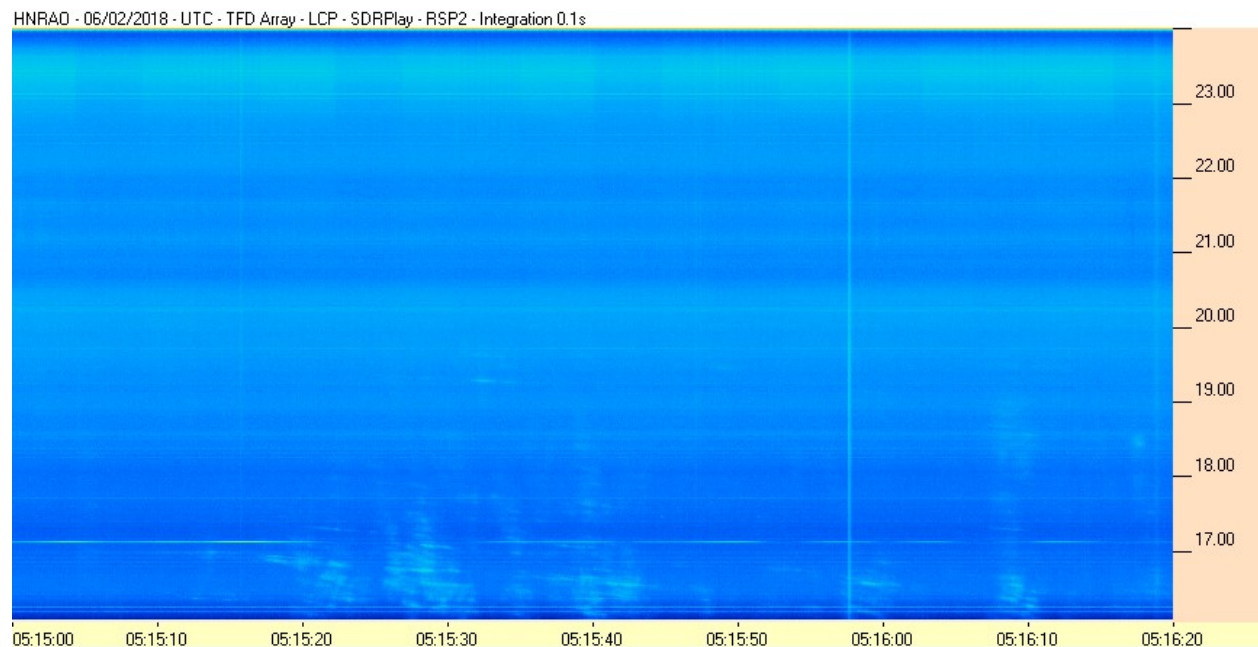
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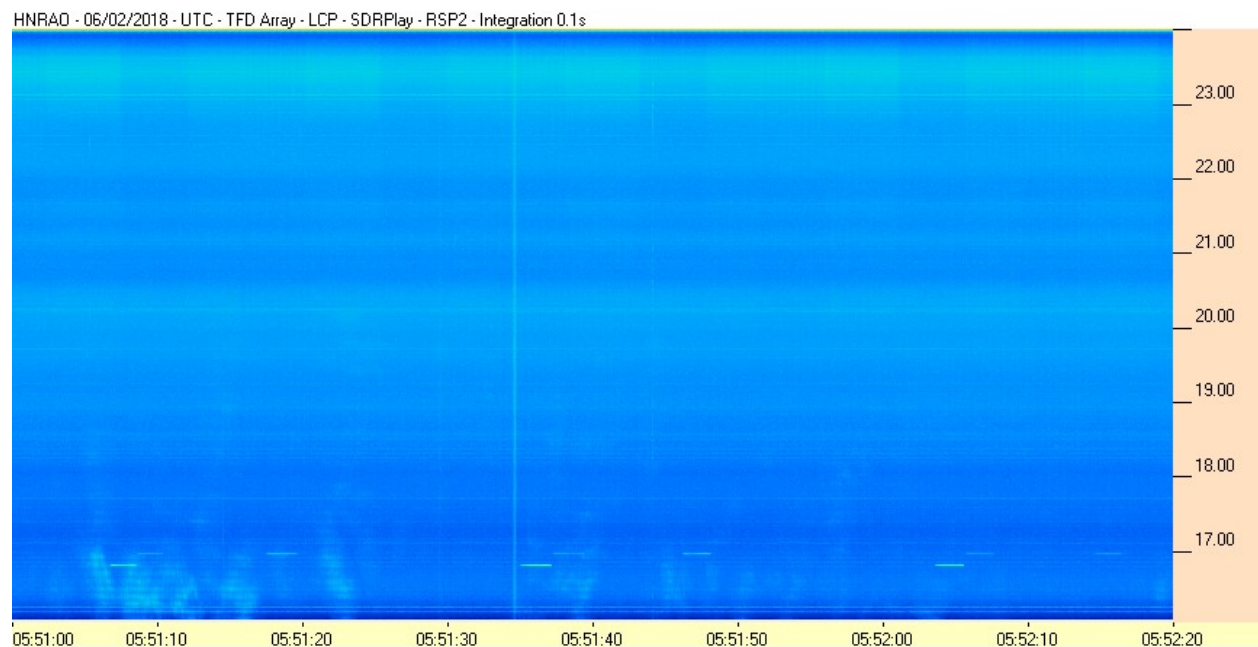
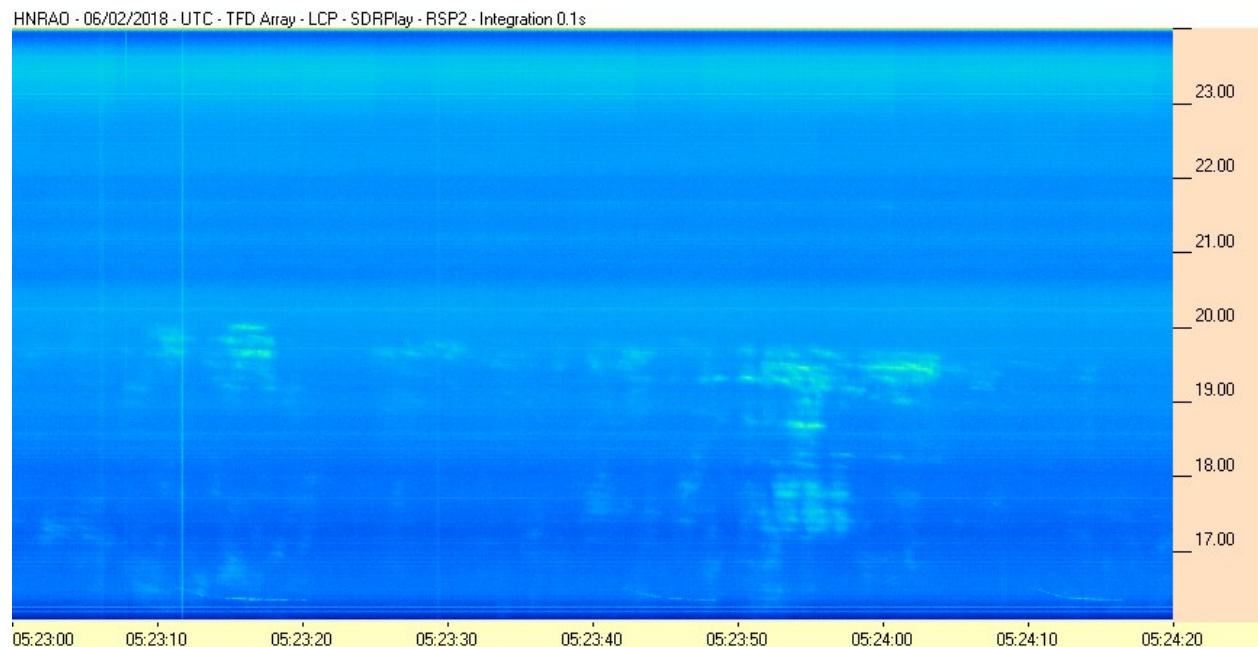
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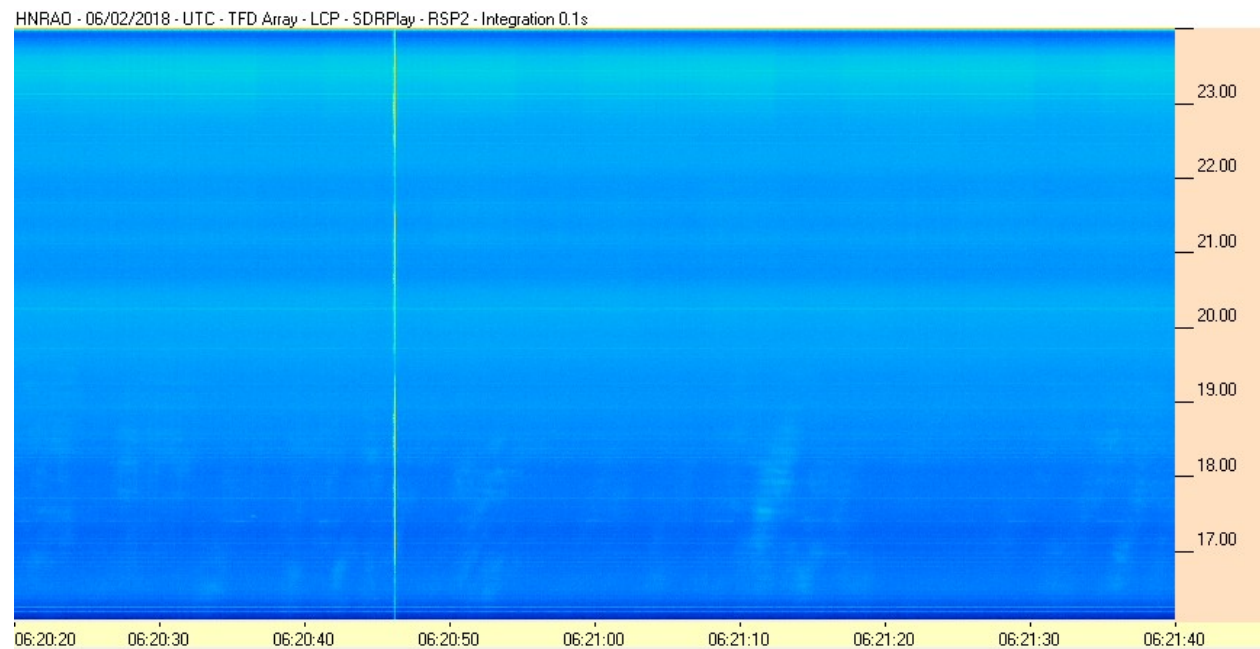
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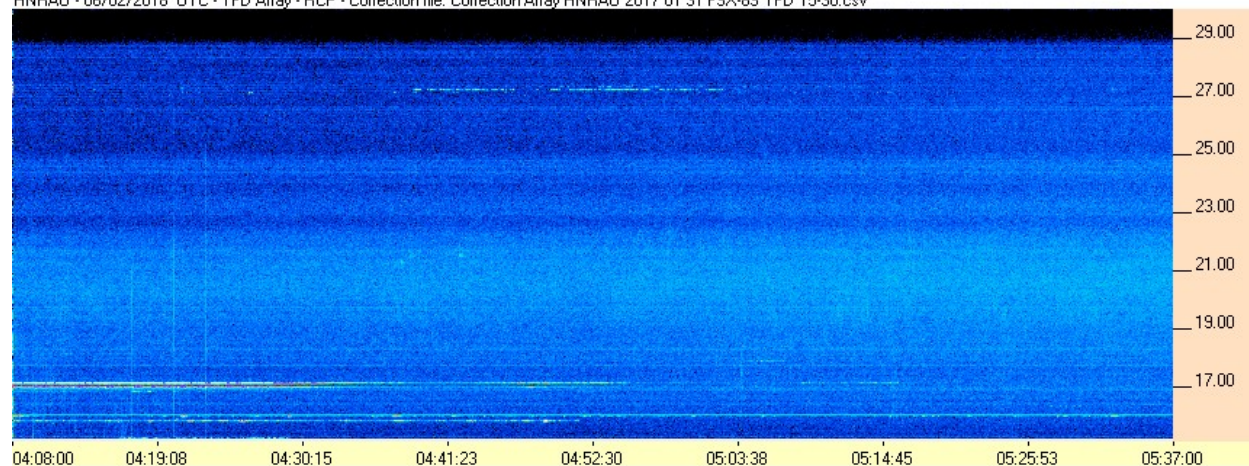


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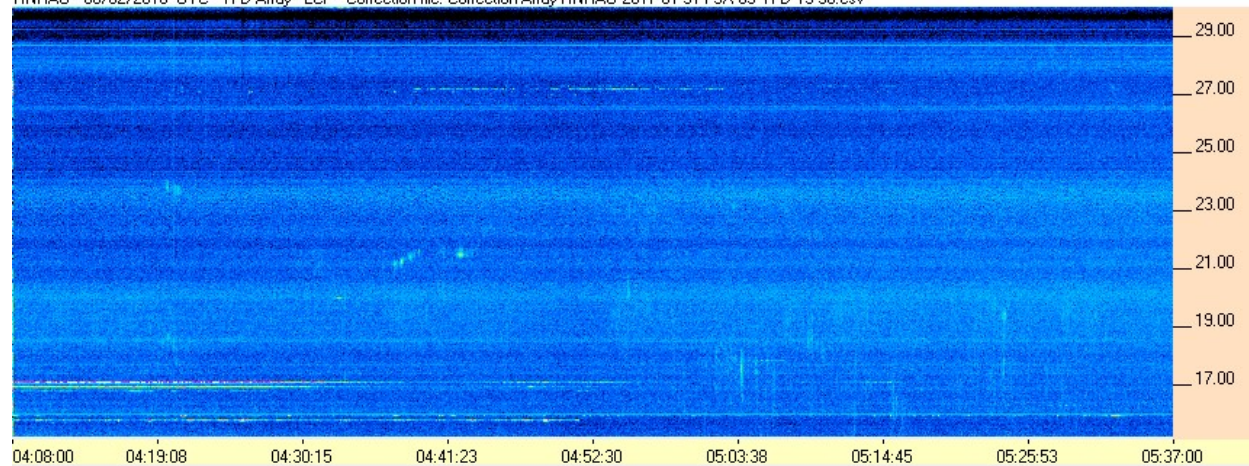


FSX-8S / TFD Array

HNRAO - 06/02/2018 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO - 06/02/2018 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

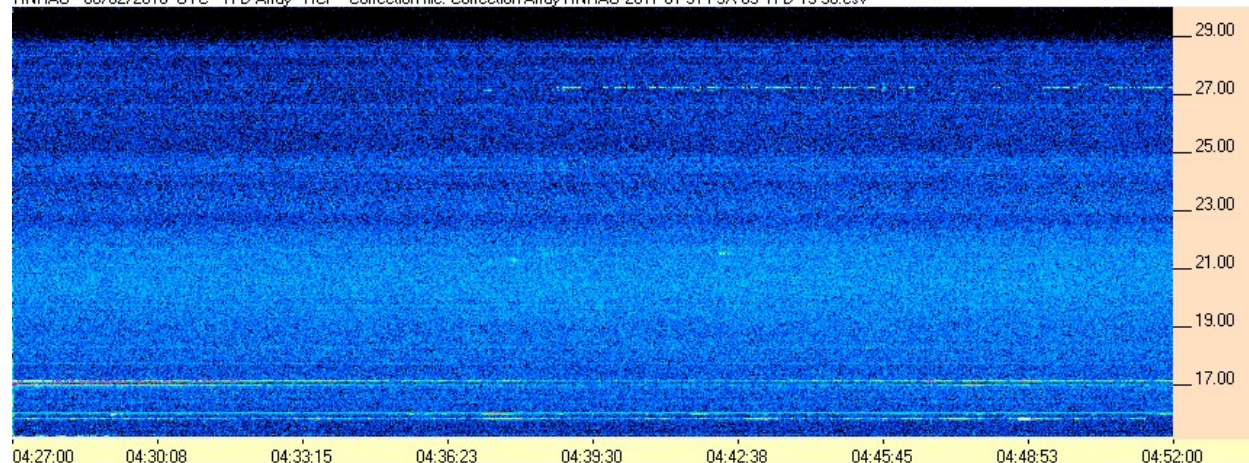


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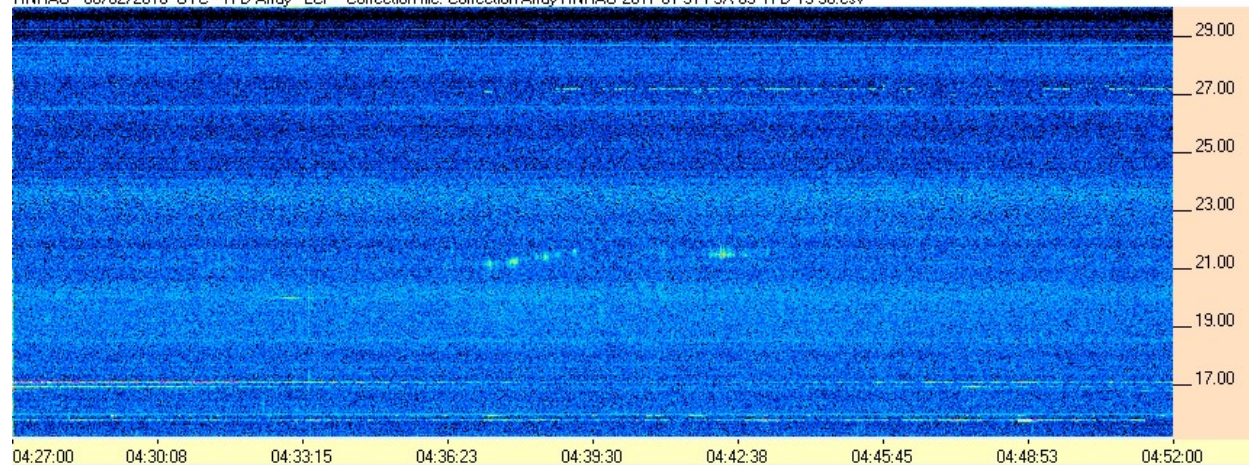
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Radio JOVE 2 Receiver/JOVE dipole array

