

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: January 9, 2019

Object: Jupiter – Io-C

Observer: Unattended

Start - Time UT:	1200	Planetary K-index:	2
Jupiter Altitude (deg):	15.7	Jupiter Azimuth (deg):	138.6
Jupiter CML:	303.24	Jupiter Io Phase:	238.83
Jupiter RA (hr/min):	16:46	Jupiter Dec (hr/min):	-21:44
Hour Angle (hr/min):	-02:53	Polarization	LCP
Sun Altitude (deg):	-07.3	Sun Azimuth (deg):	113.3
Sun RA (hr/min):	19:14	Sun Dec (hr/min):	-22:22

End – Time UT:	1400	De:	-2.8
Jupiter Altitude (deg):	26.4	Jupiter Azimuth (deg):	166.3
Jupiter CML:	15.7	Jupiter Io Phase	255.64
Hour Angle (hr/min):	-00:53	Duration (min):	120
Sun Altitude (deg):	11.6	Sun Azimuth (deg):	133.6
Max Frequency MHz	22.5	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	-3.66 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

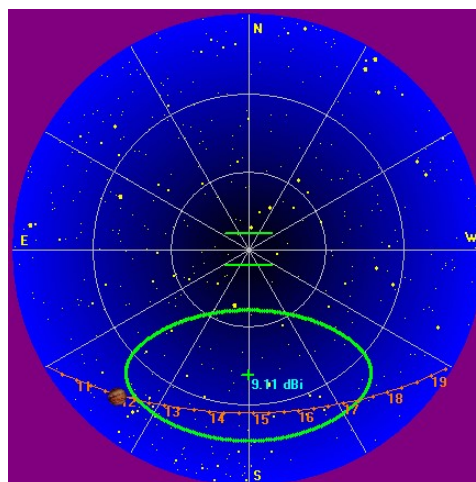
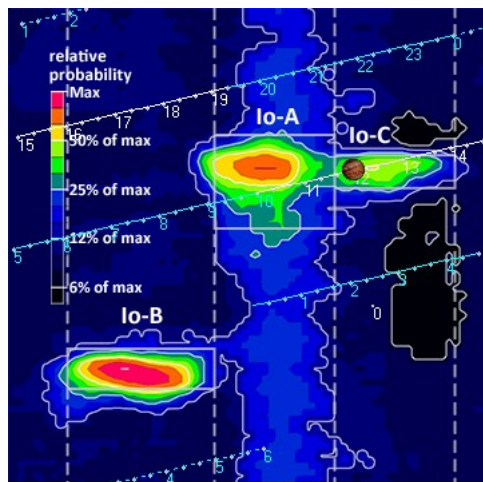
LWA antenna phased @ 35 degrees and orientation for observation: 45 degrees

* Used for testing and evaluating antenna systems

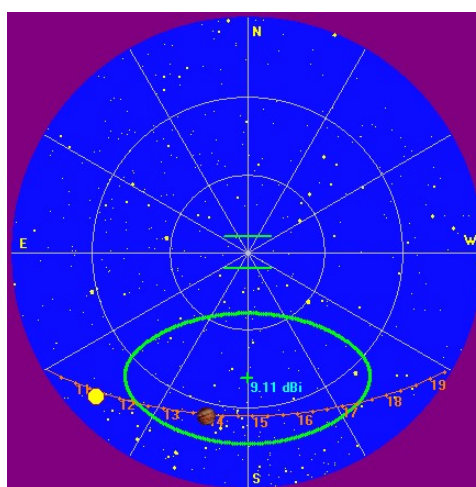
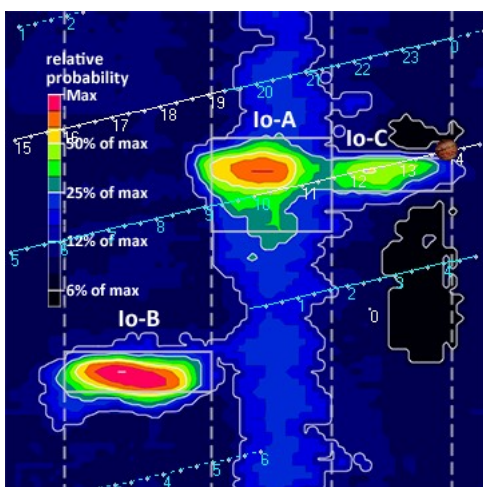
Software Radio Sky Spectrograph 2.8.50

Red = Offline

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Beginning of Pass



End of Pass



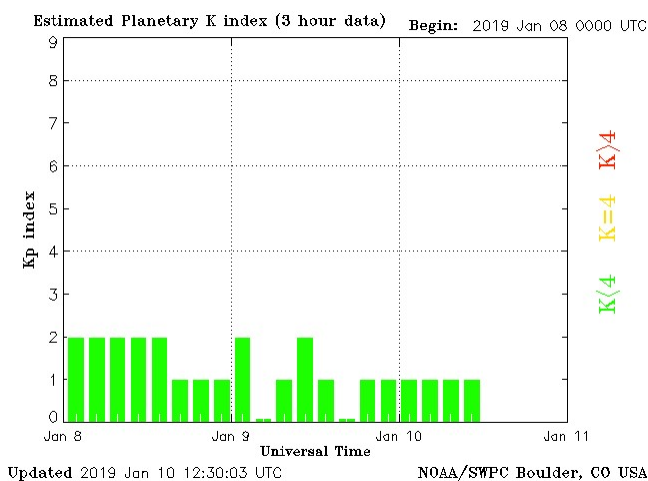
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MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	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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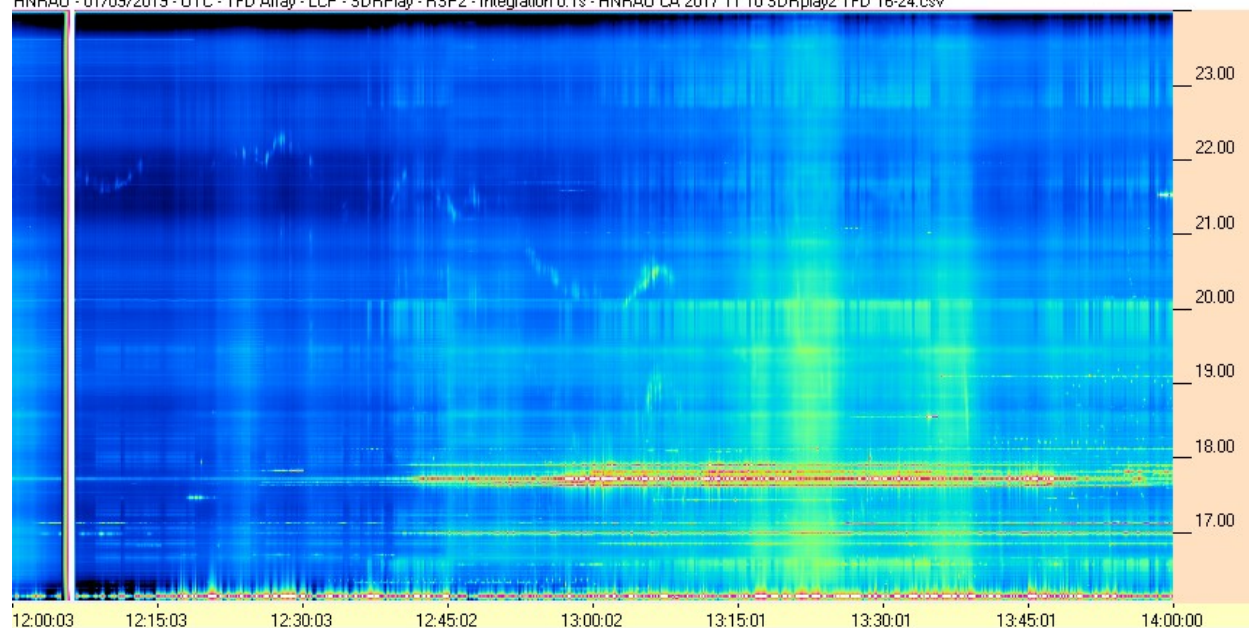
Despite terrible RFI and precipitation static interference, a good Io-C event. The Io-C storm was observed with the FSX-8S/TFD Array, SDRPlay RSP2/TFD Array and the Jove II Receiver/Jove dipoles. Negative drift, LCP S-bursts from 22.5 MHz to 16 MHz. The strongest S-burst observed reached 1100 kK as recorded by the calibrated SkyPipe chart. Storm consisted of a series of N-events composed solely of S-bursts. There were no visible L-bursts during the storm. No modulation lanes were visible. Parts of the N-event showed parallel emissions separated by a MHz +/- . Emissions began near 22.5 MHz and drifted down to 16 MHz over the 120 minutes of emission. Many of the N-events lasted from one to several minutes in duration. All the Radio Jove data has been uploaded to the Radio Jove data archive.

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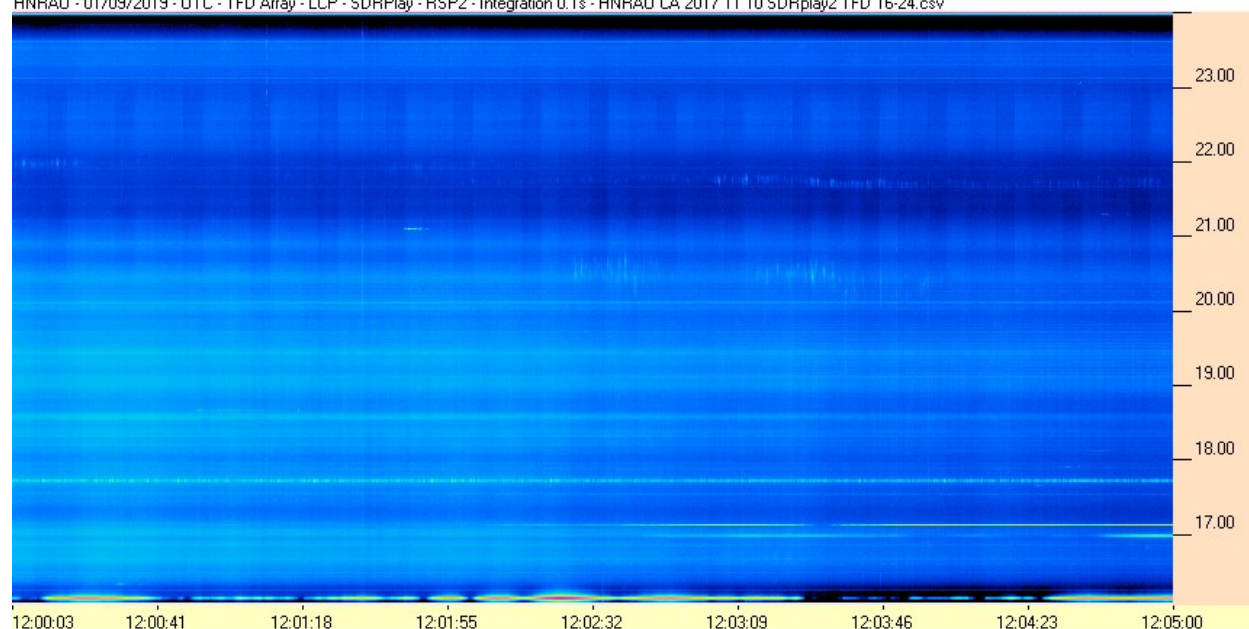


SDRPlay RSP2 – TFD Array

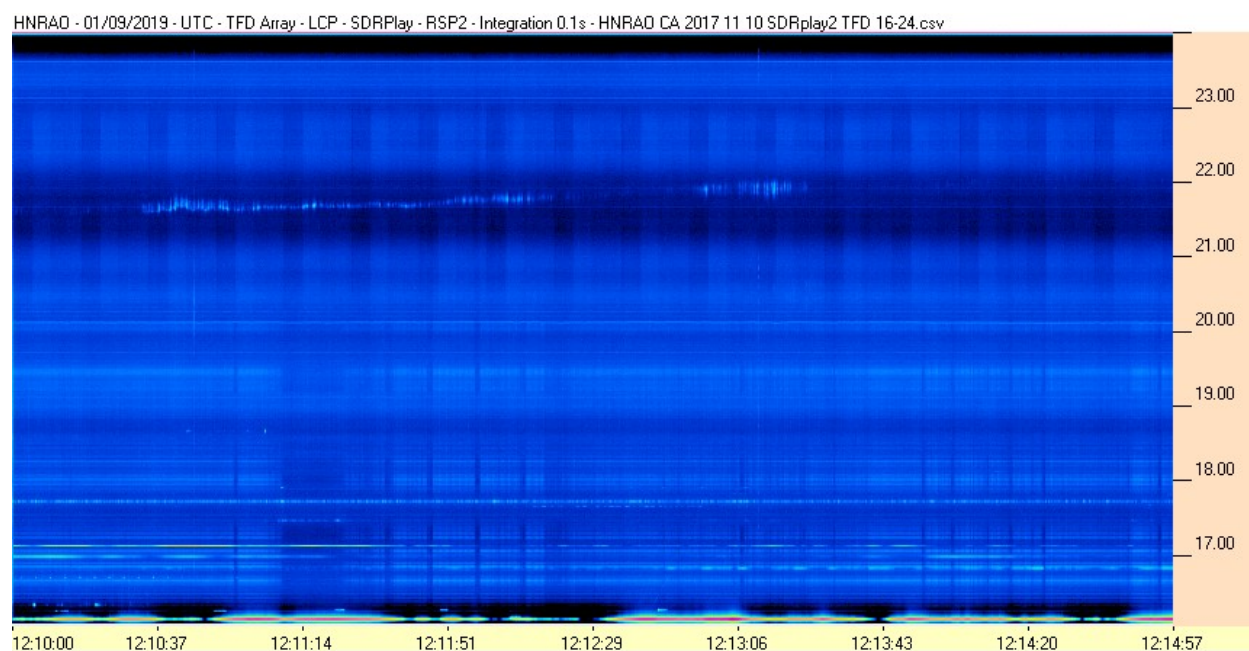
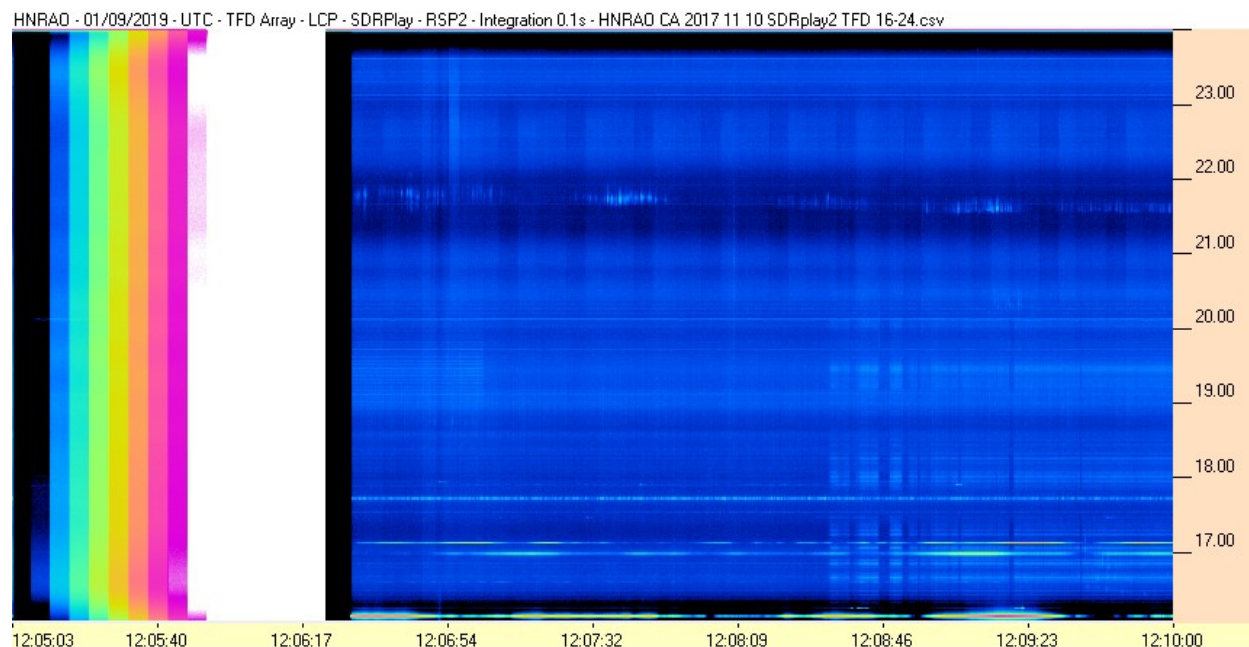
HNRAO - 01/09/2019 - UTC - TFD Array - LCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



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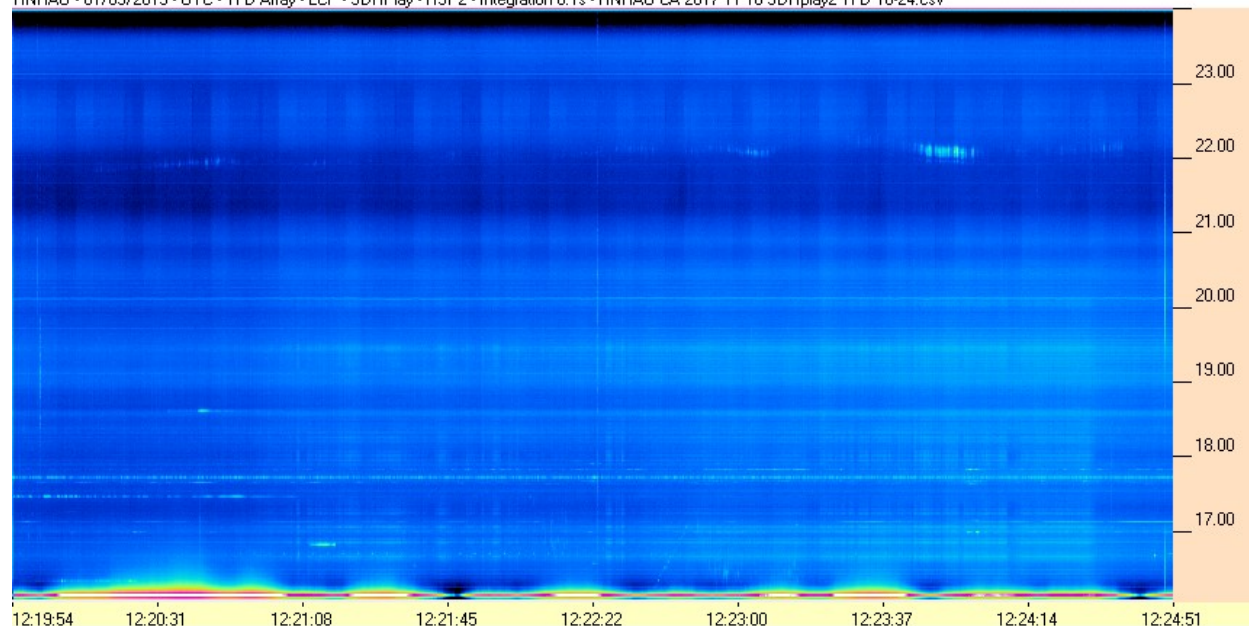
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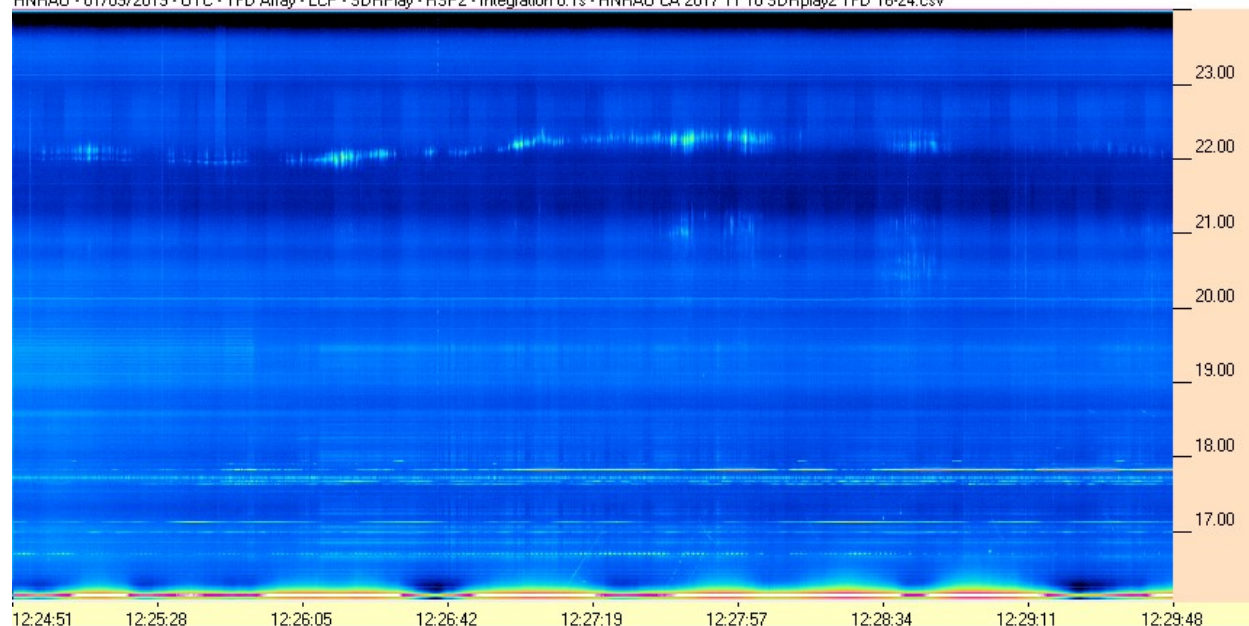
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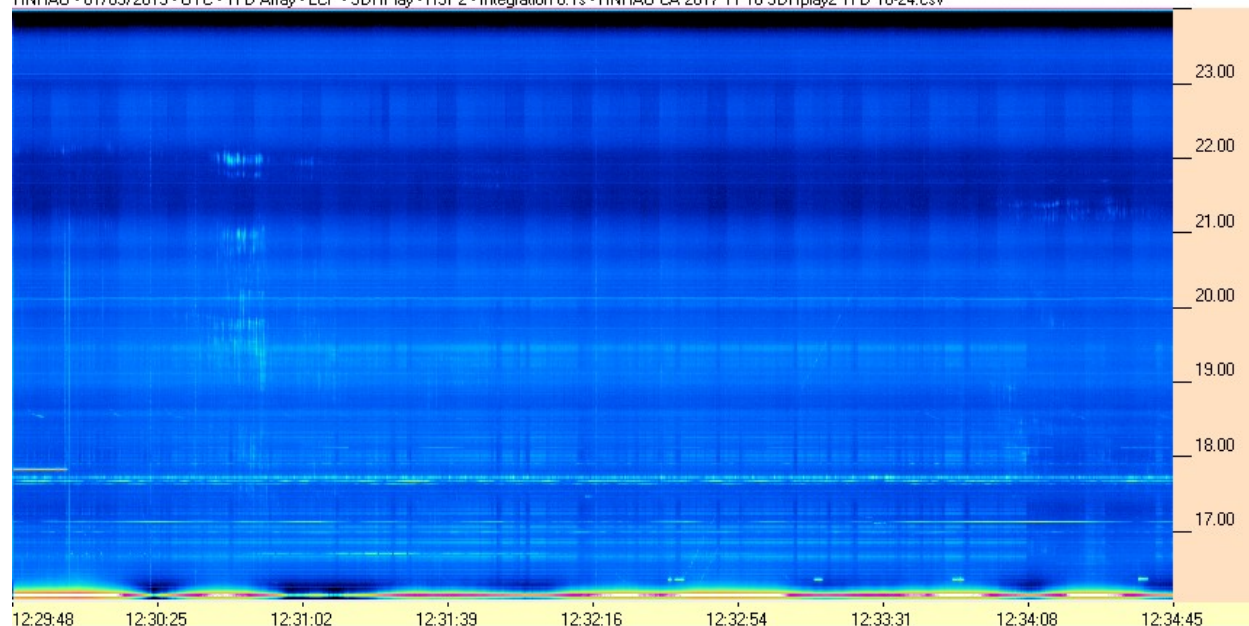
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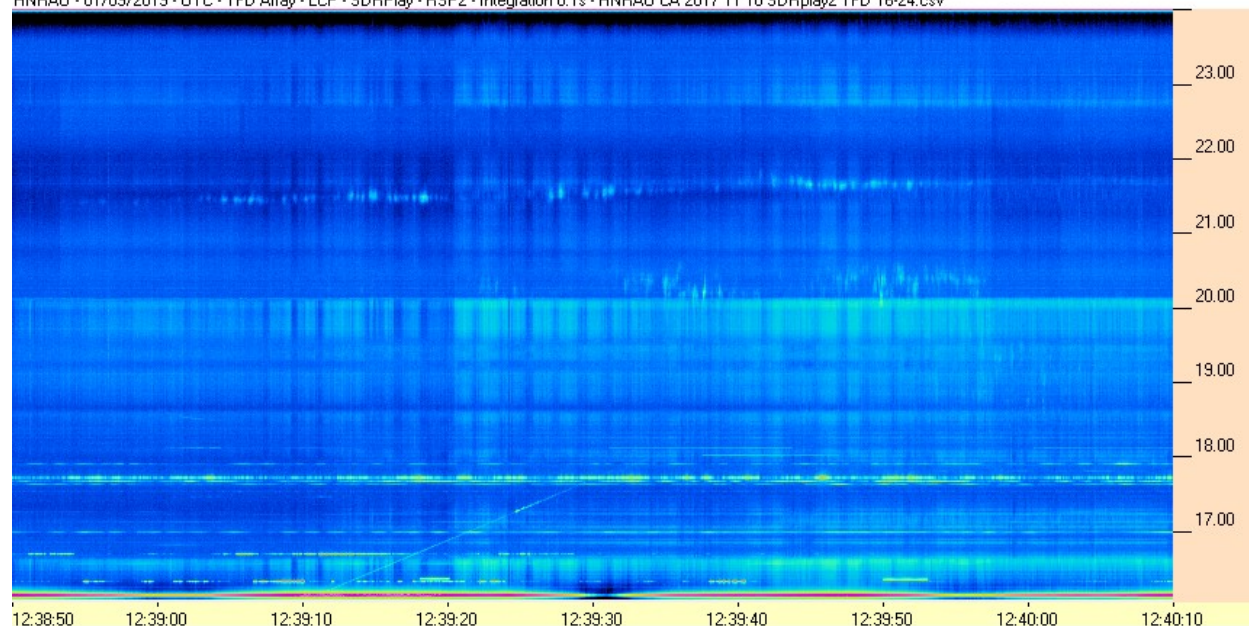
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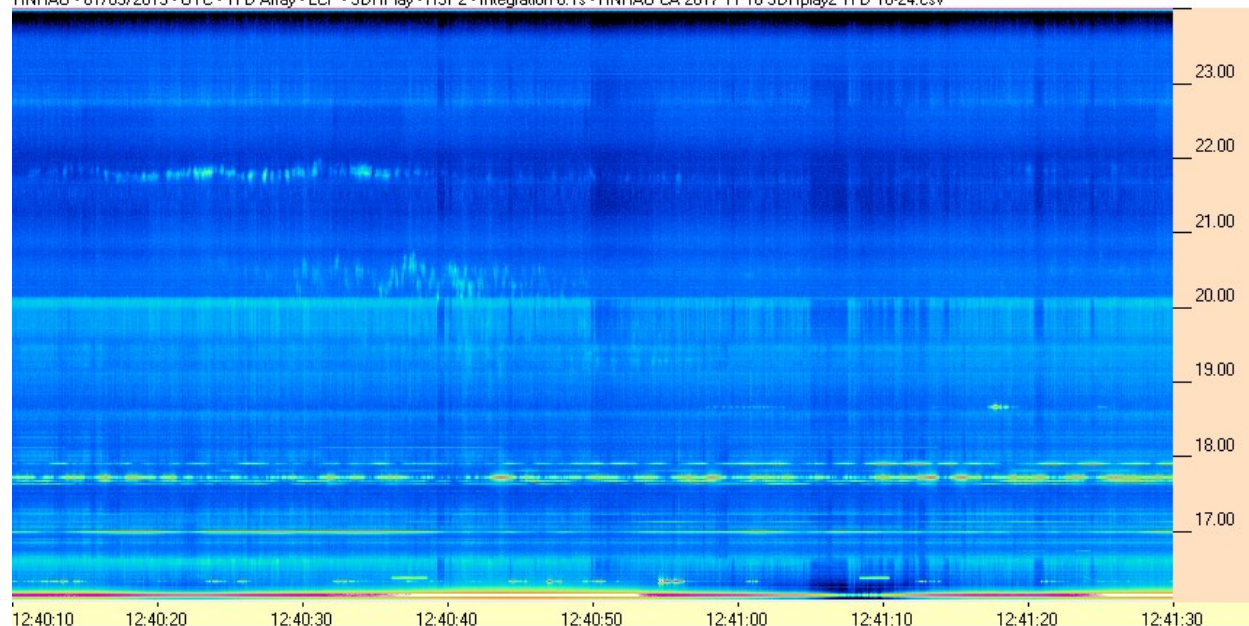
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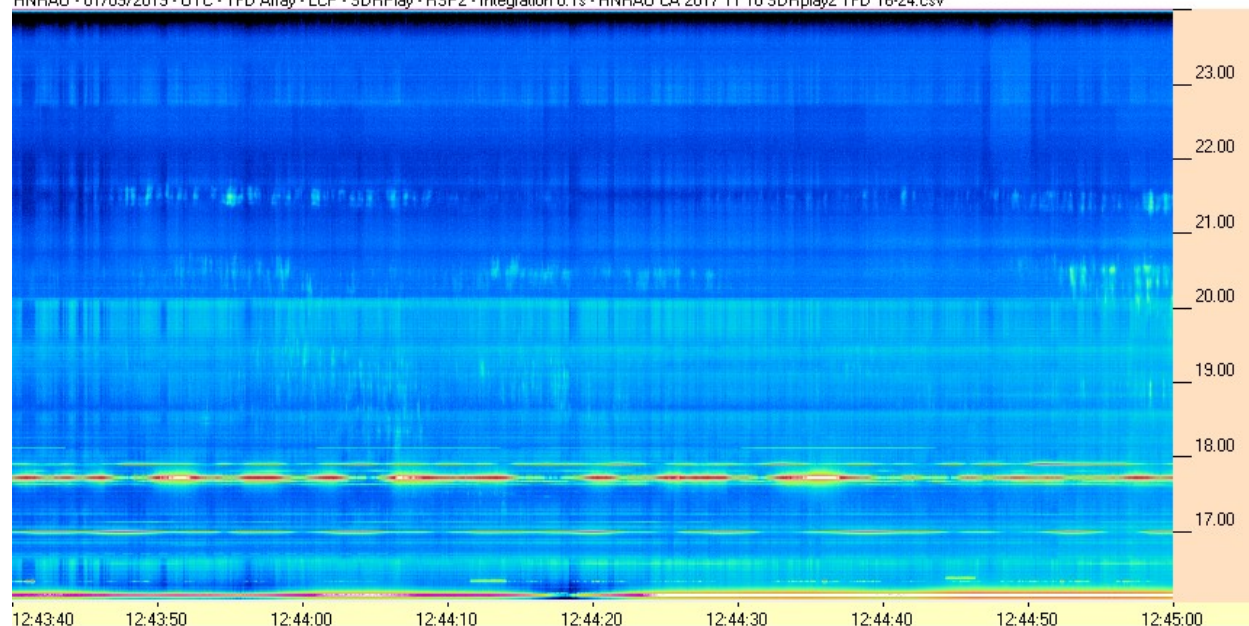
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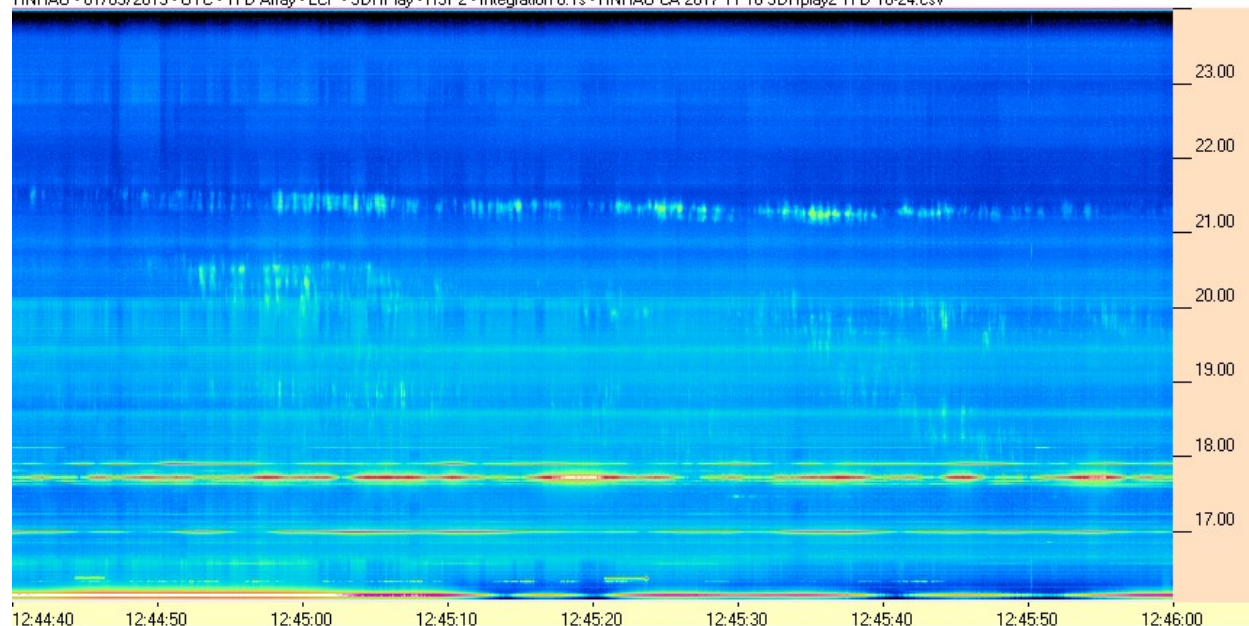
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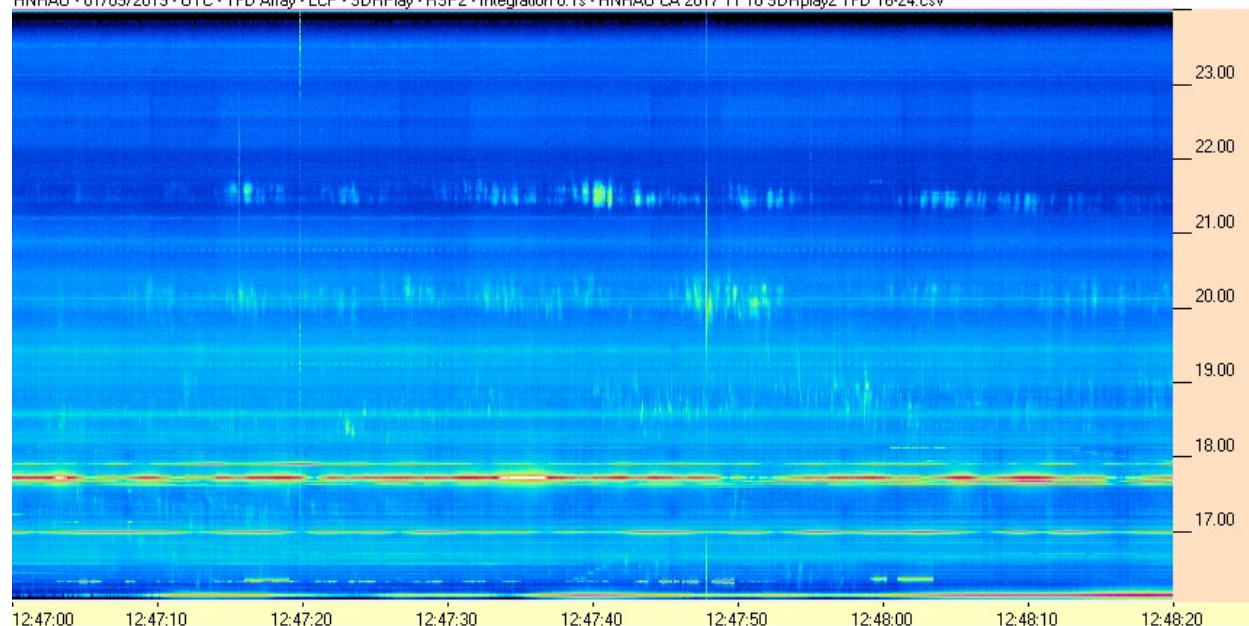
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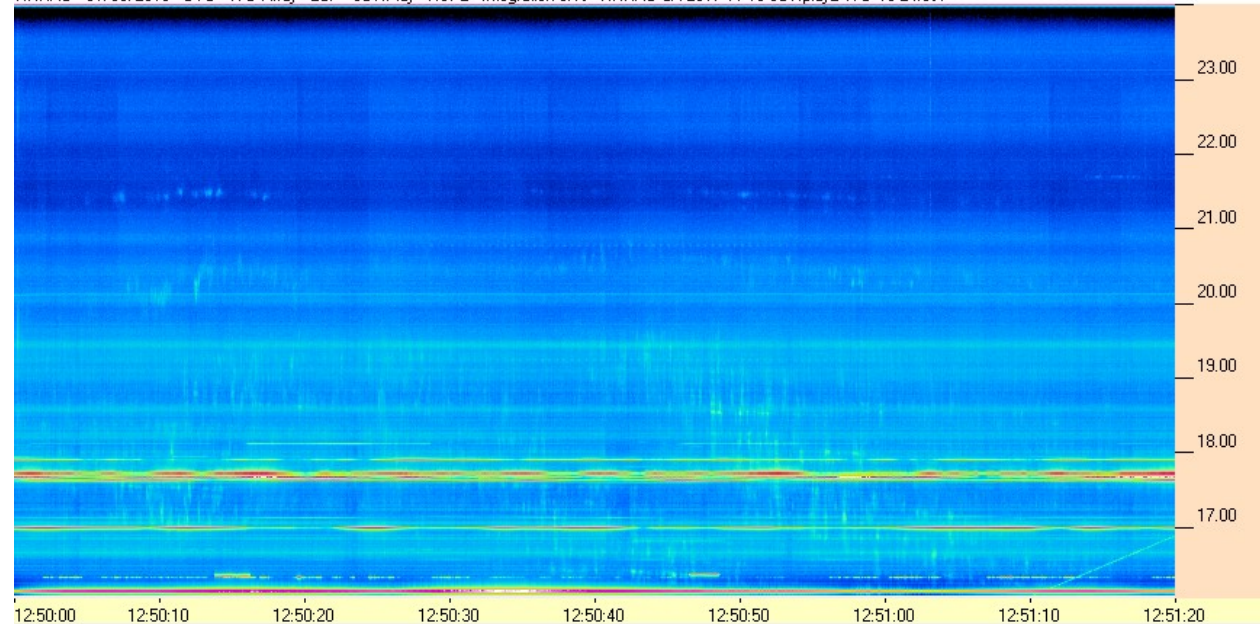
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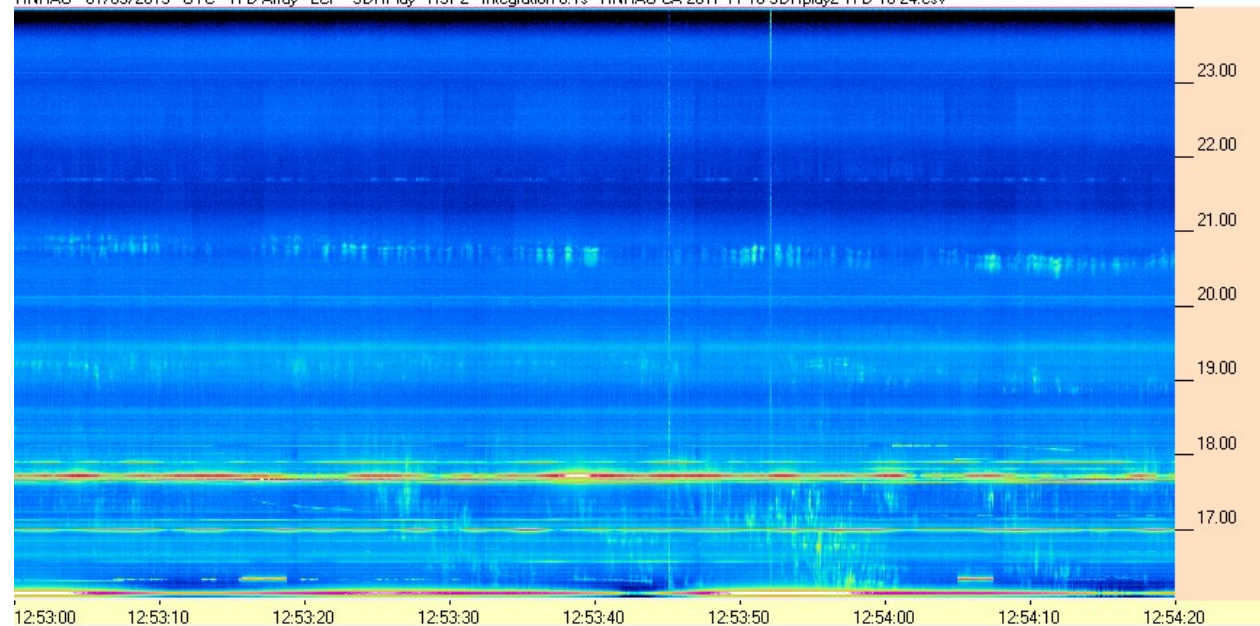
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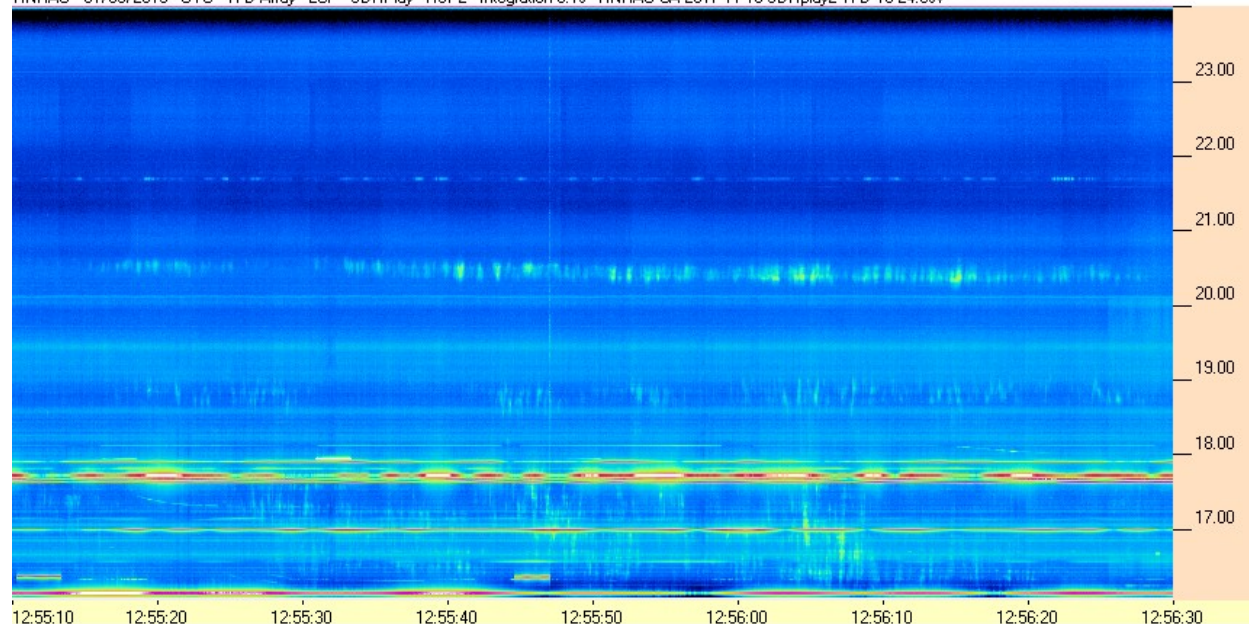
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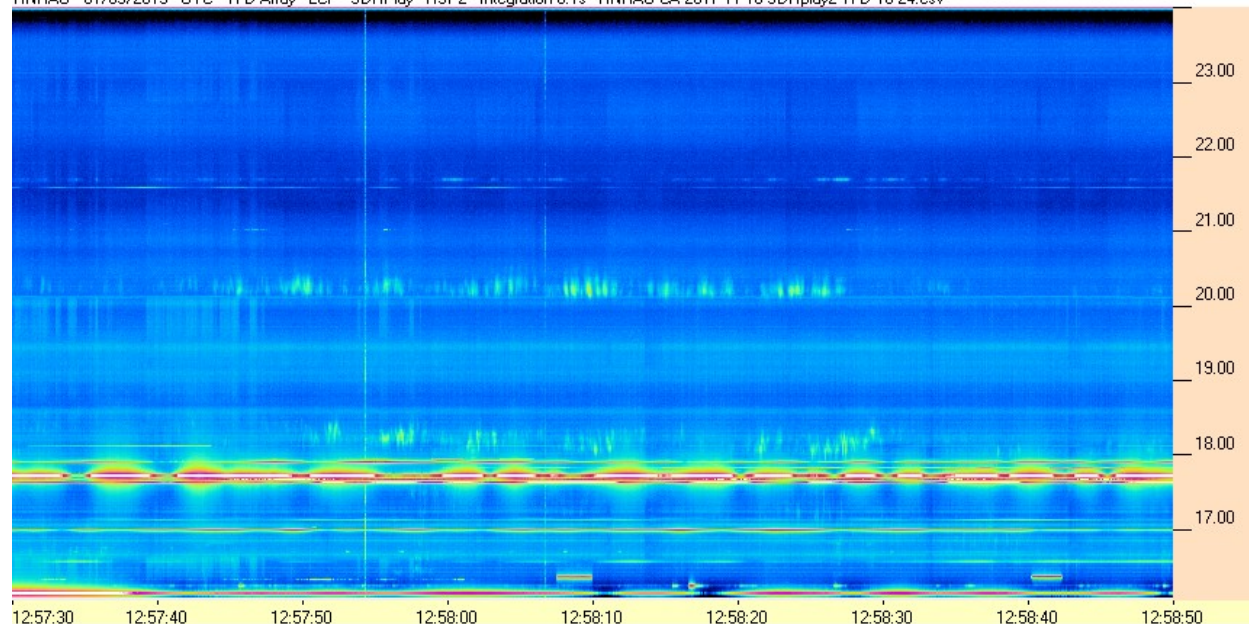
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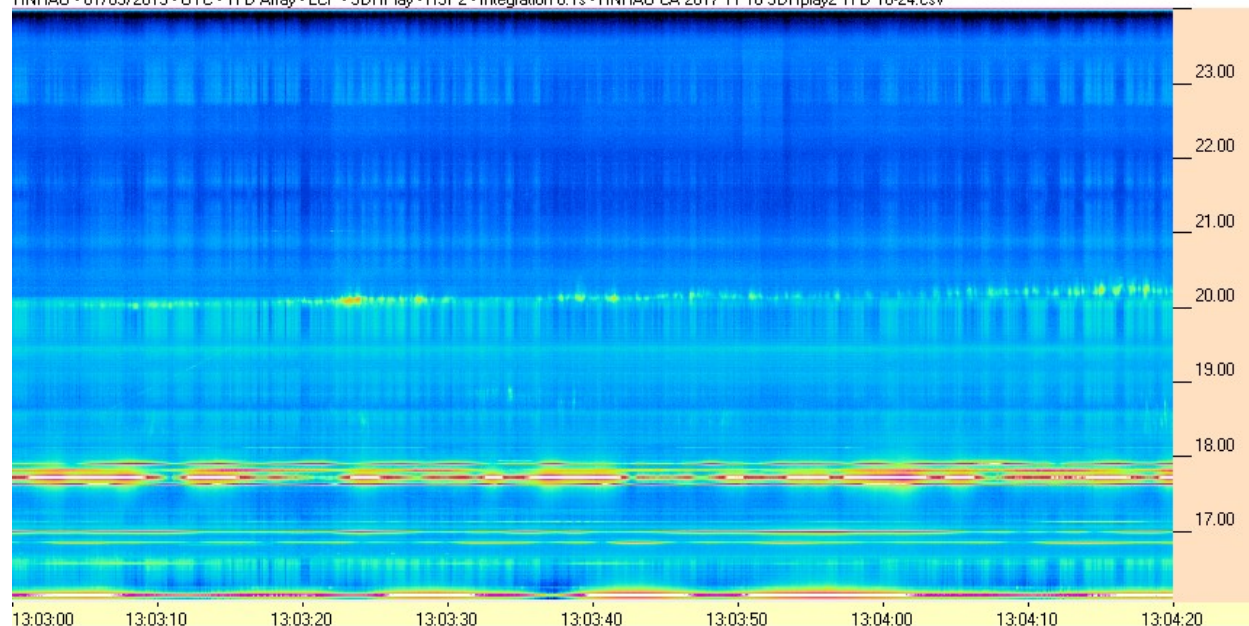
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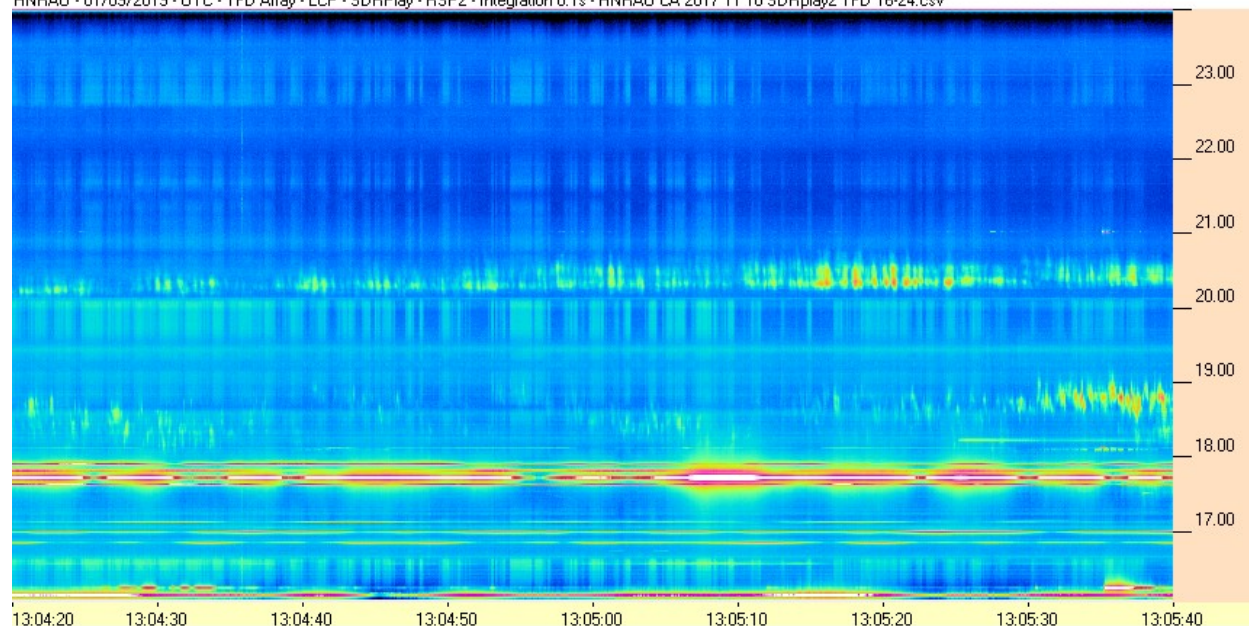
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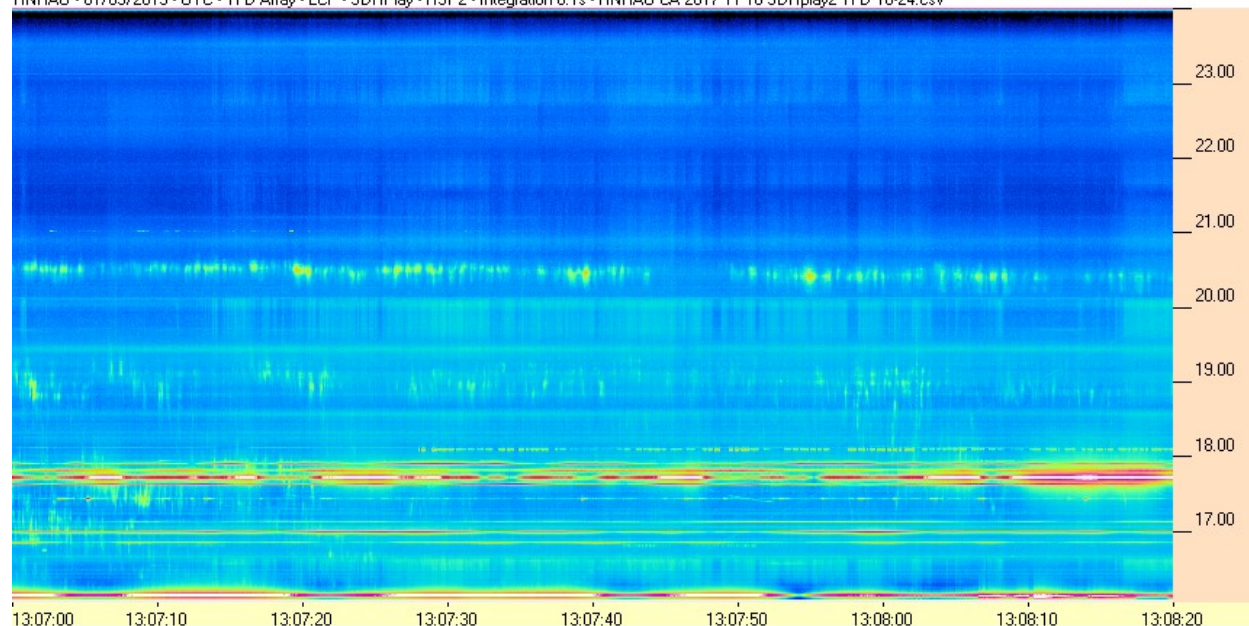
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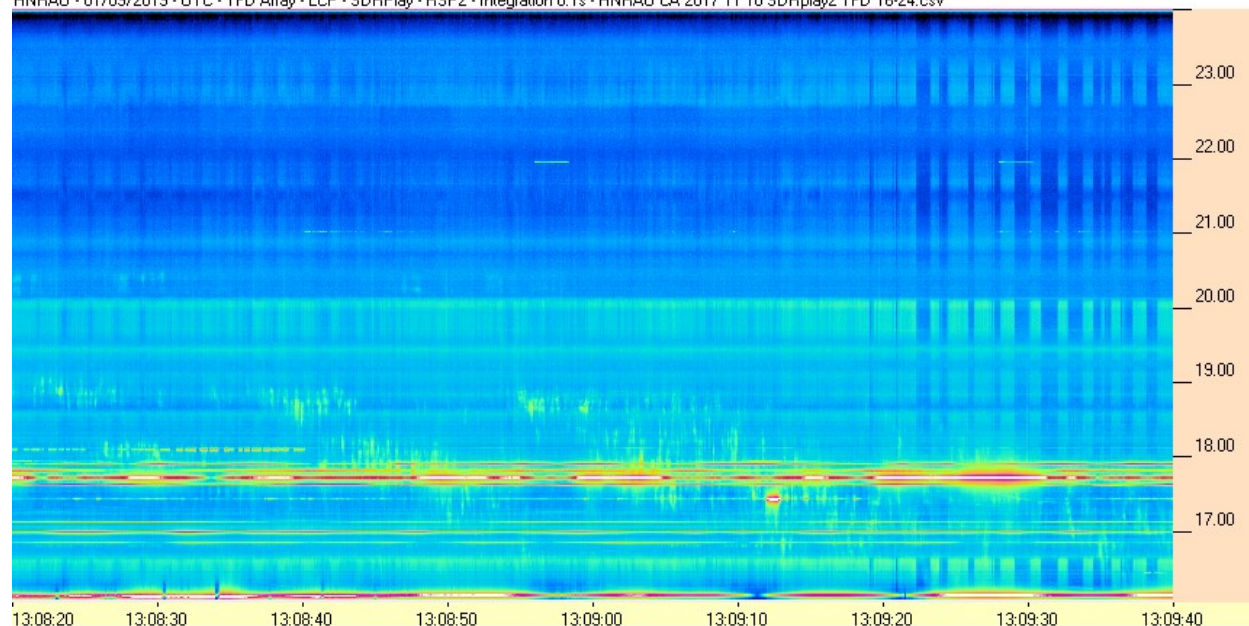
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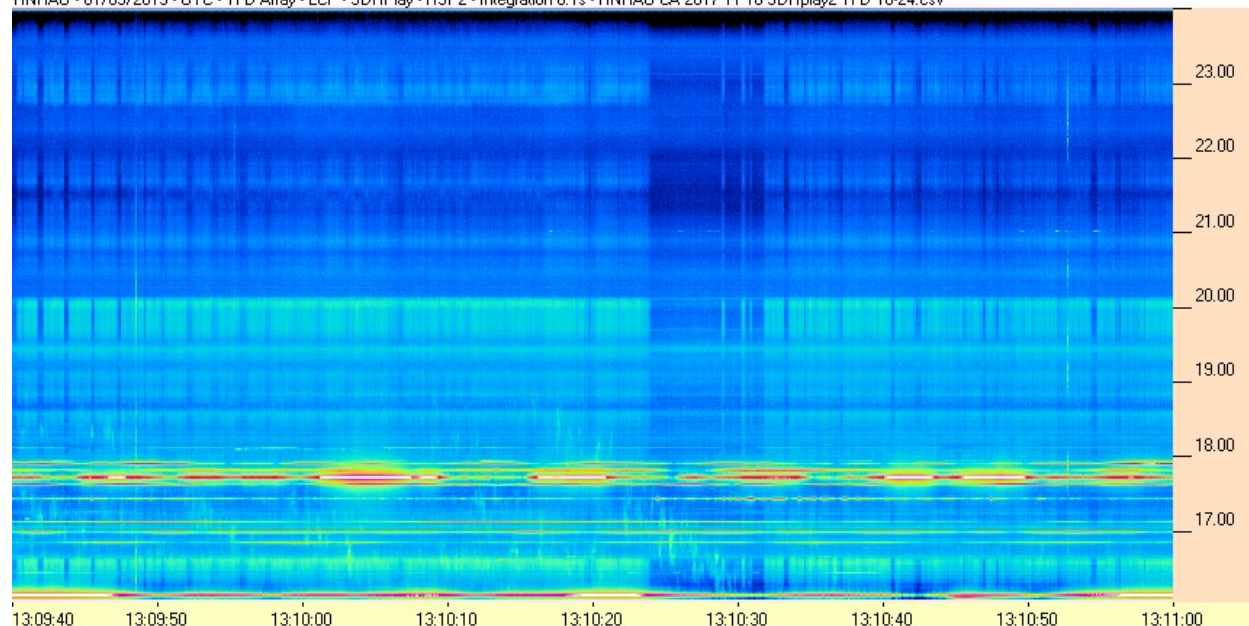
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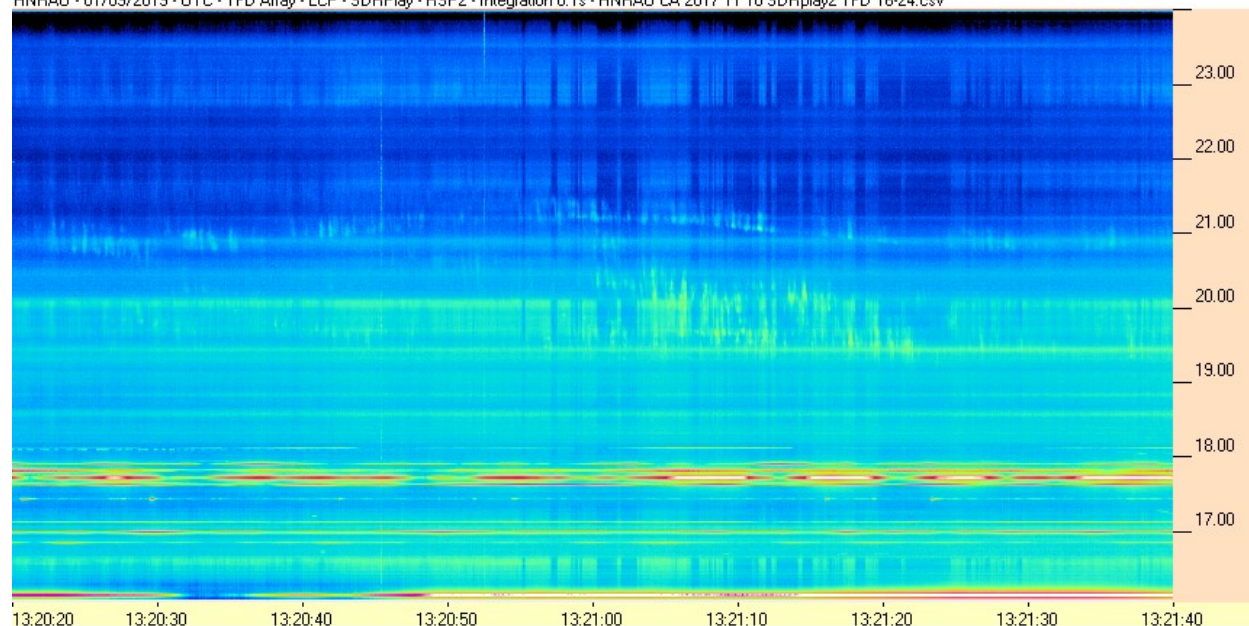
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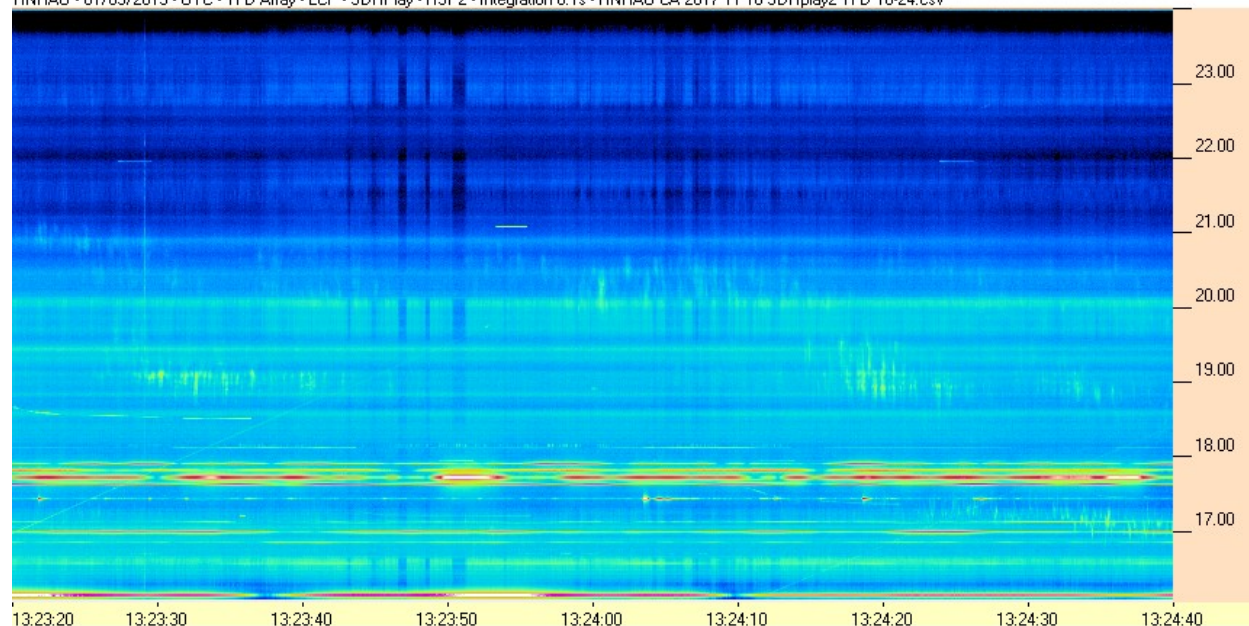
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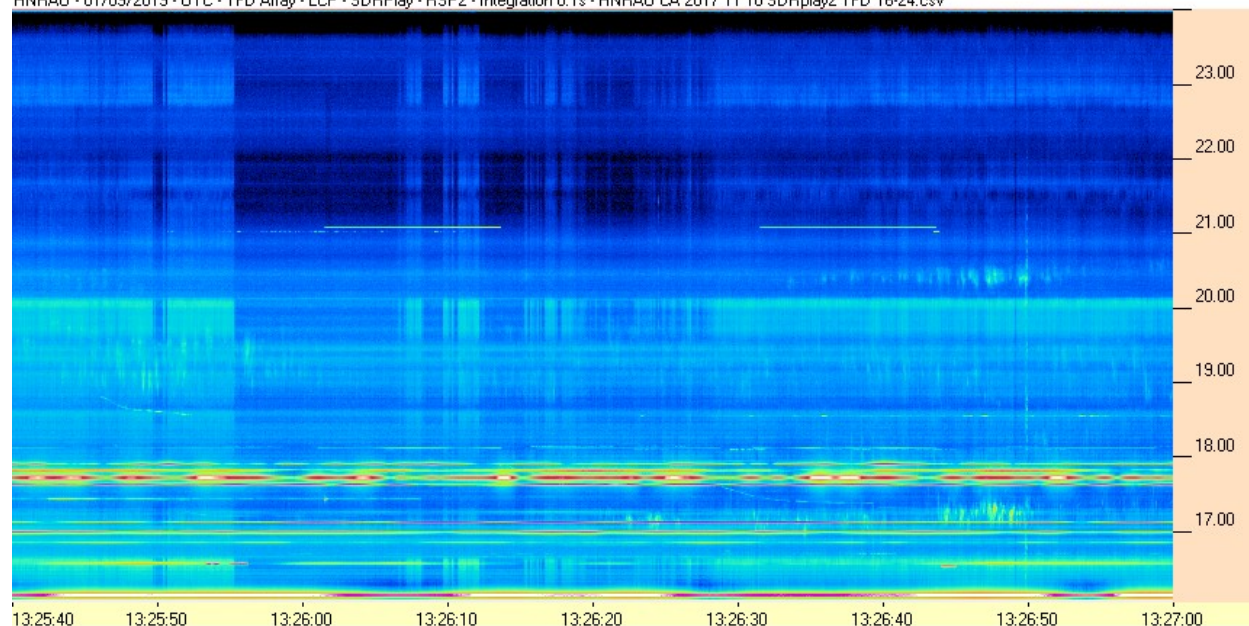
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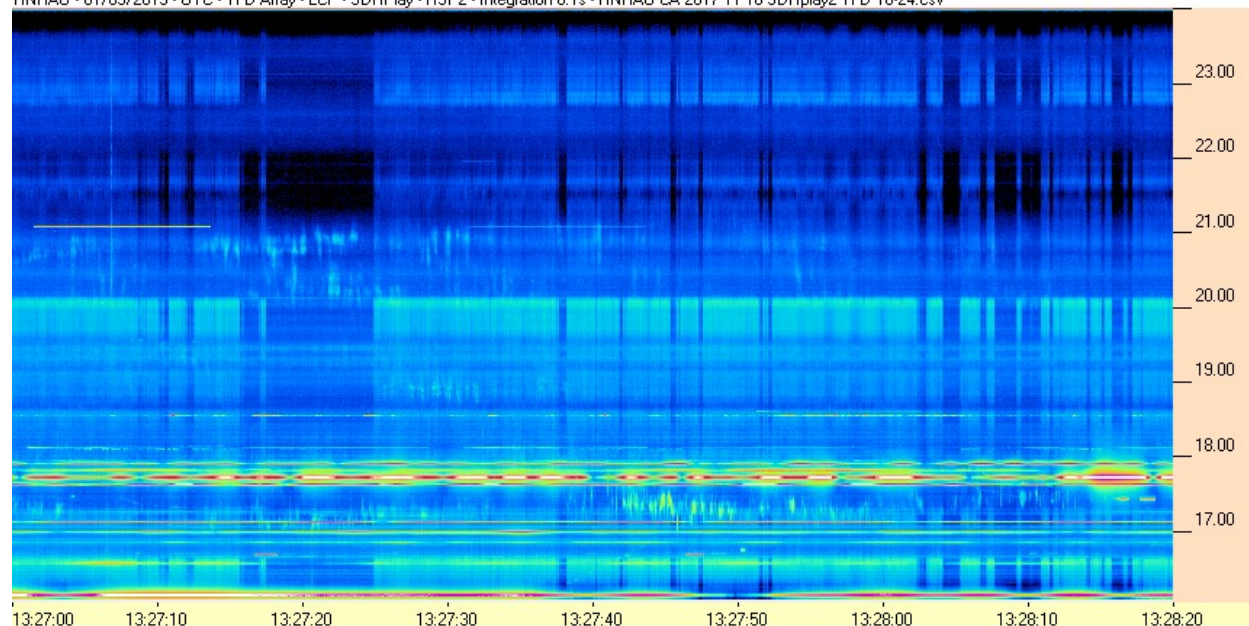
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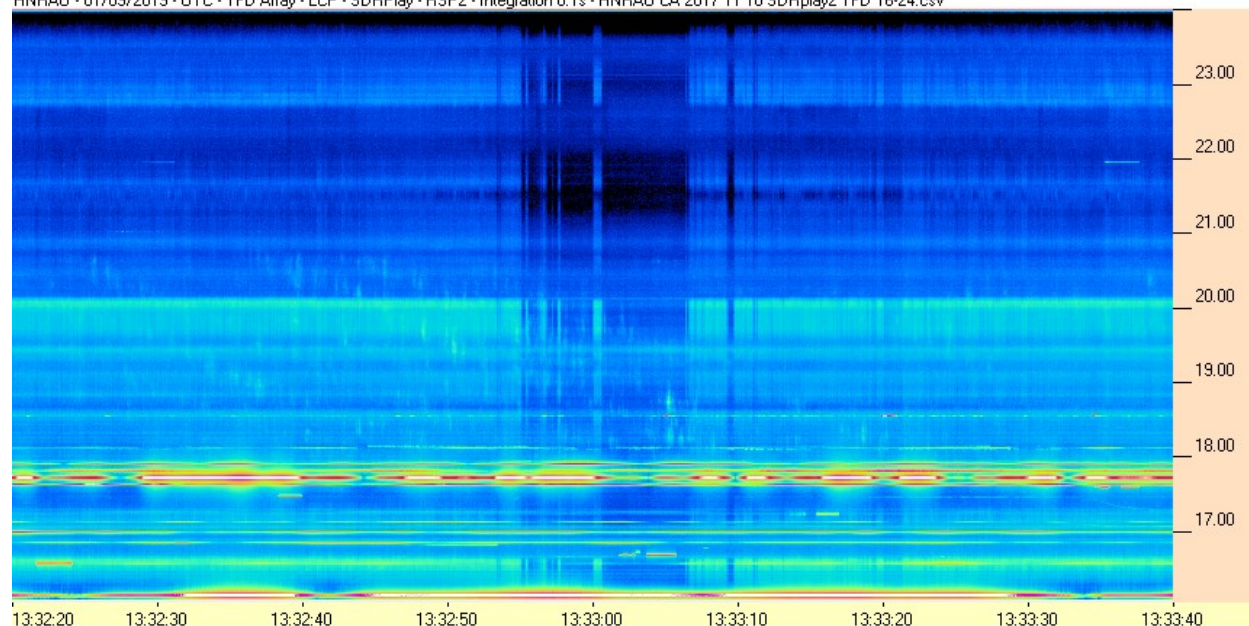
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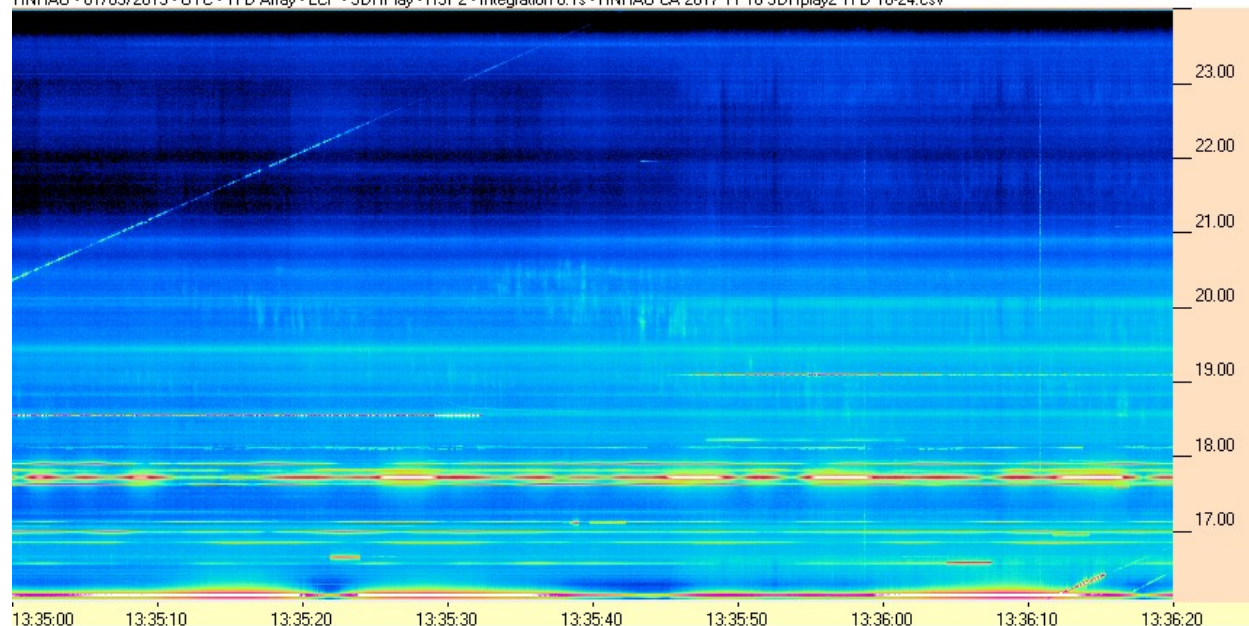
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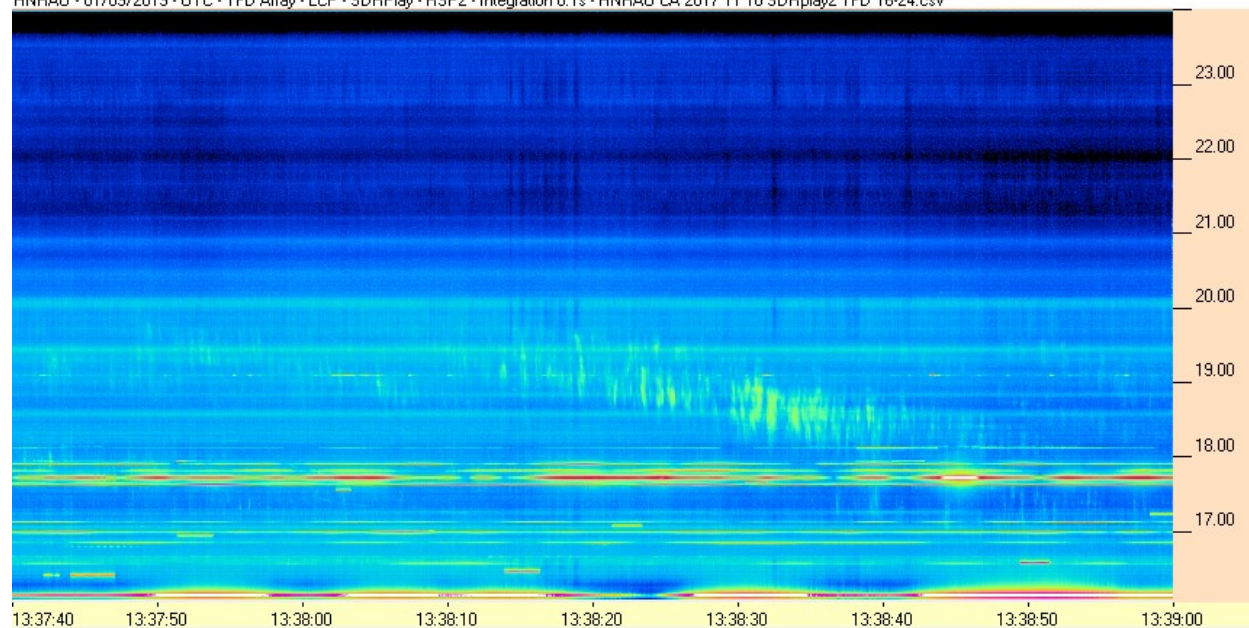
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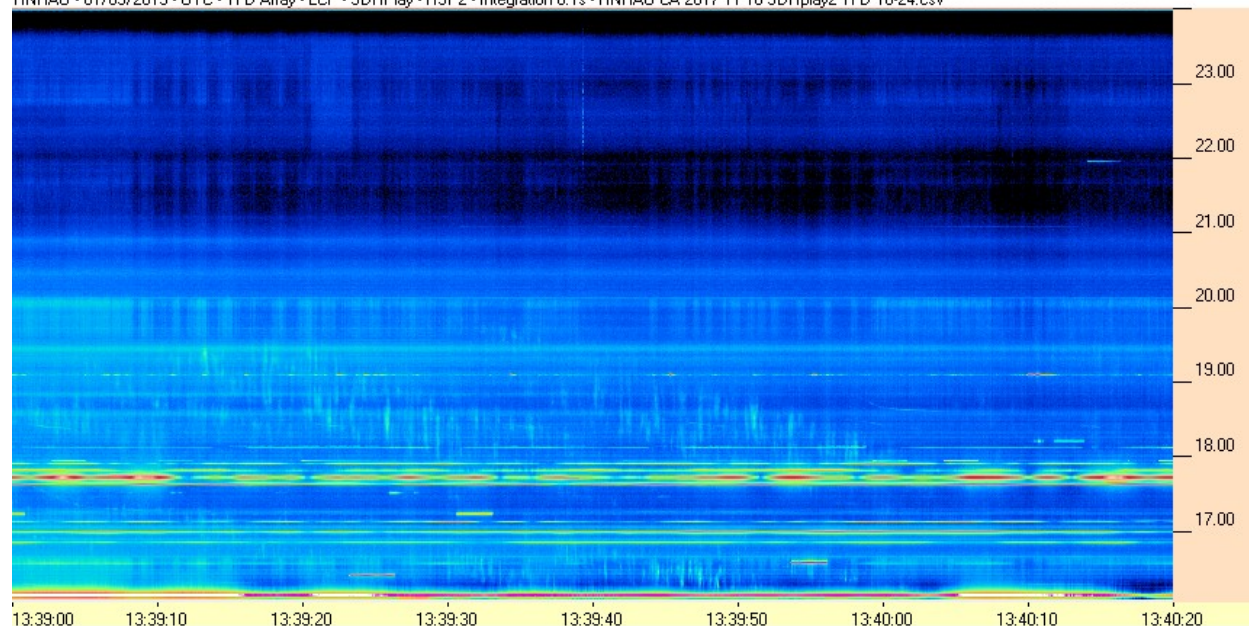
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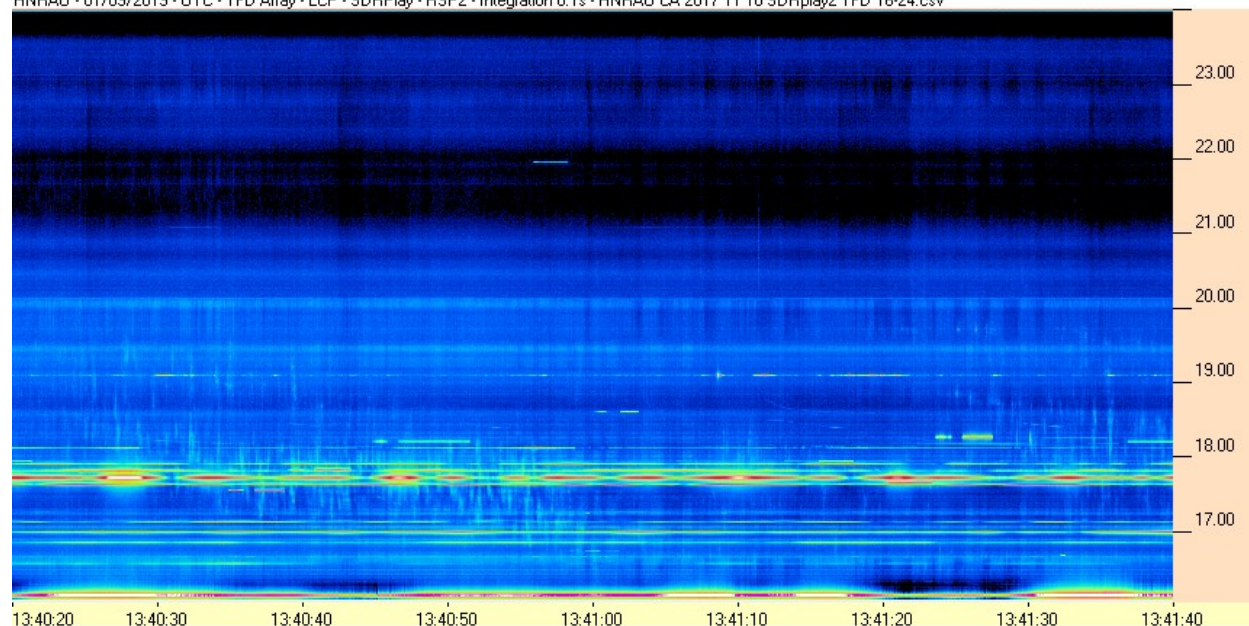
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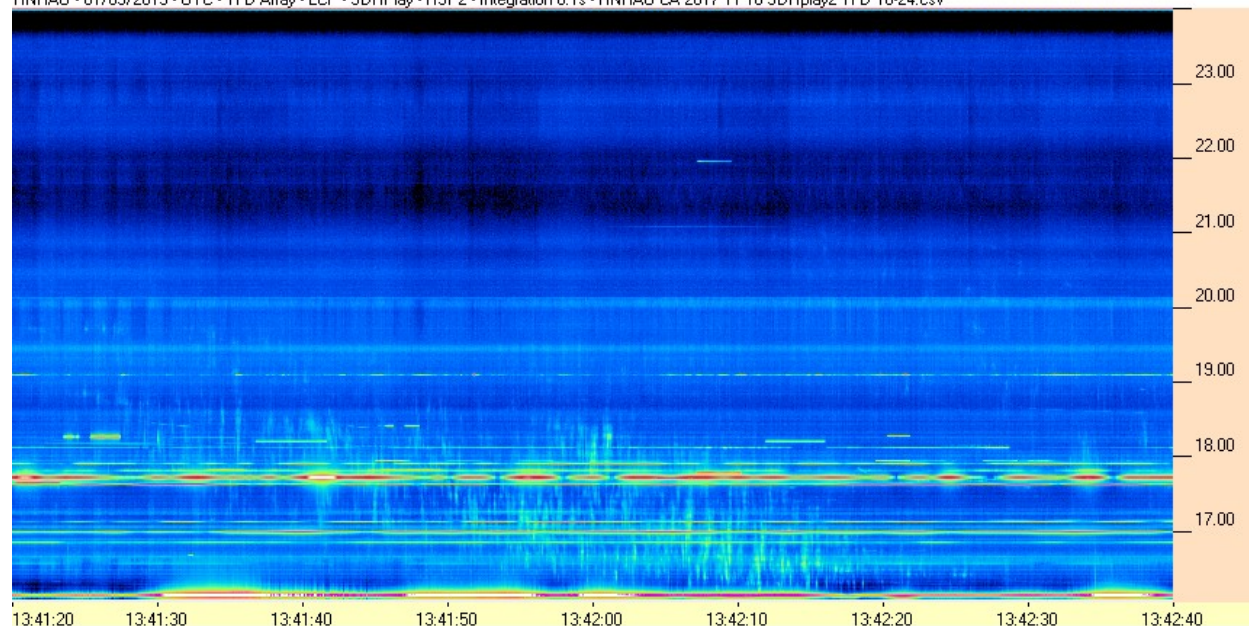
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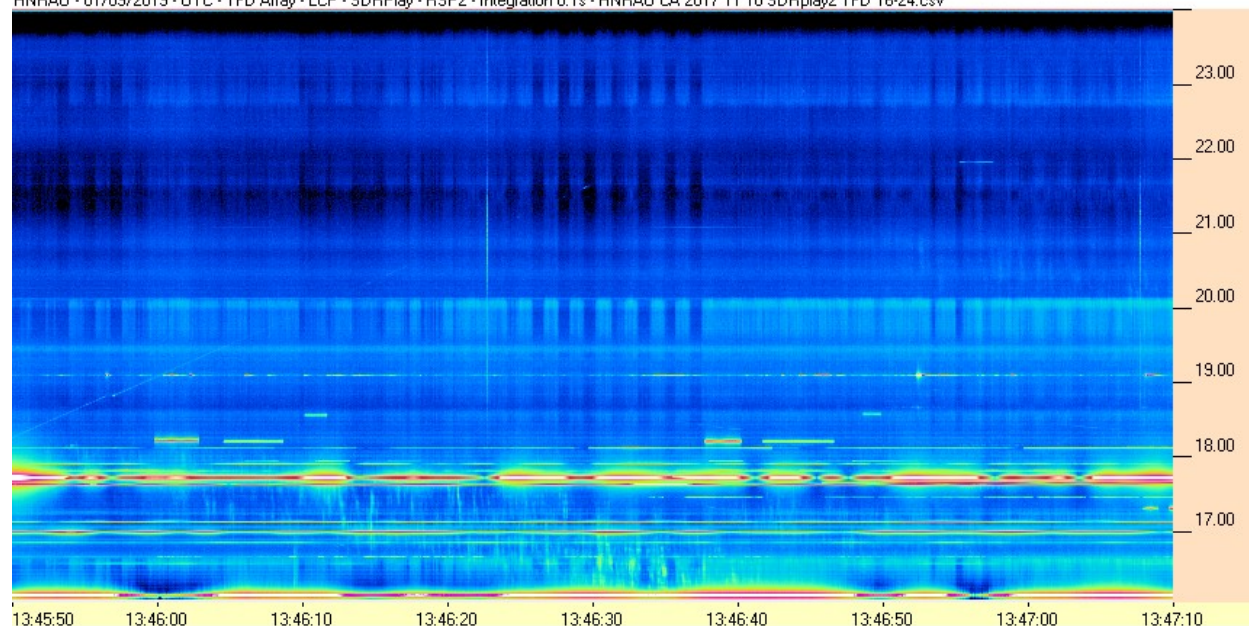
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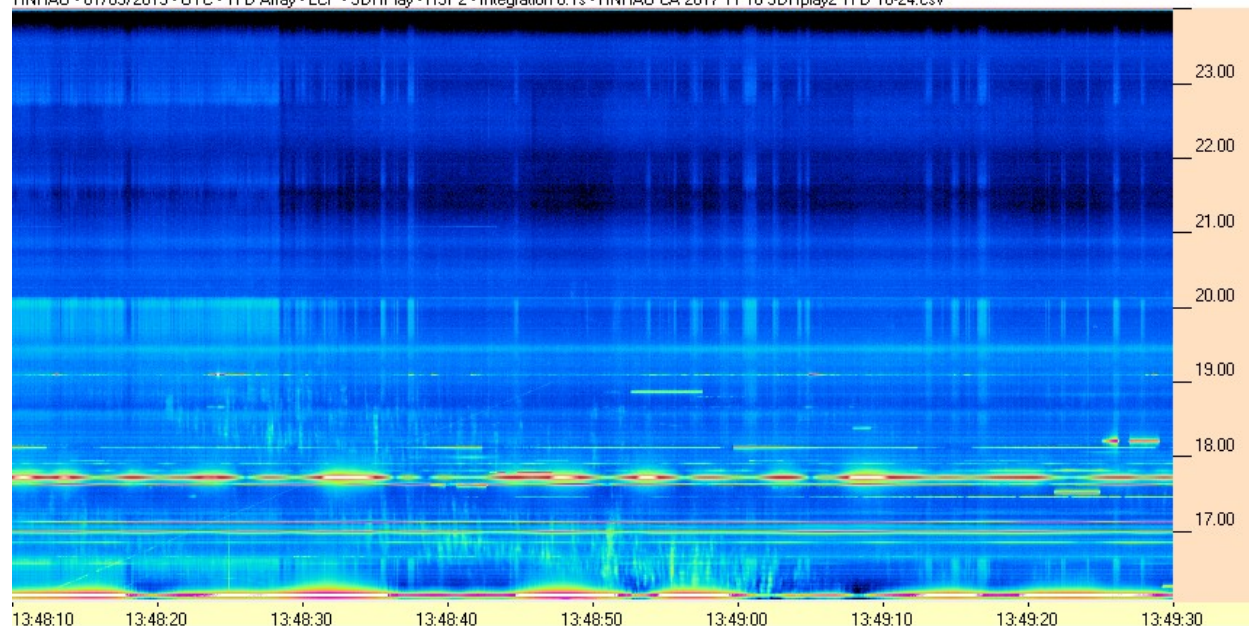
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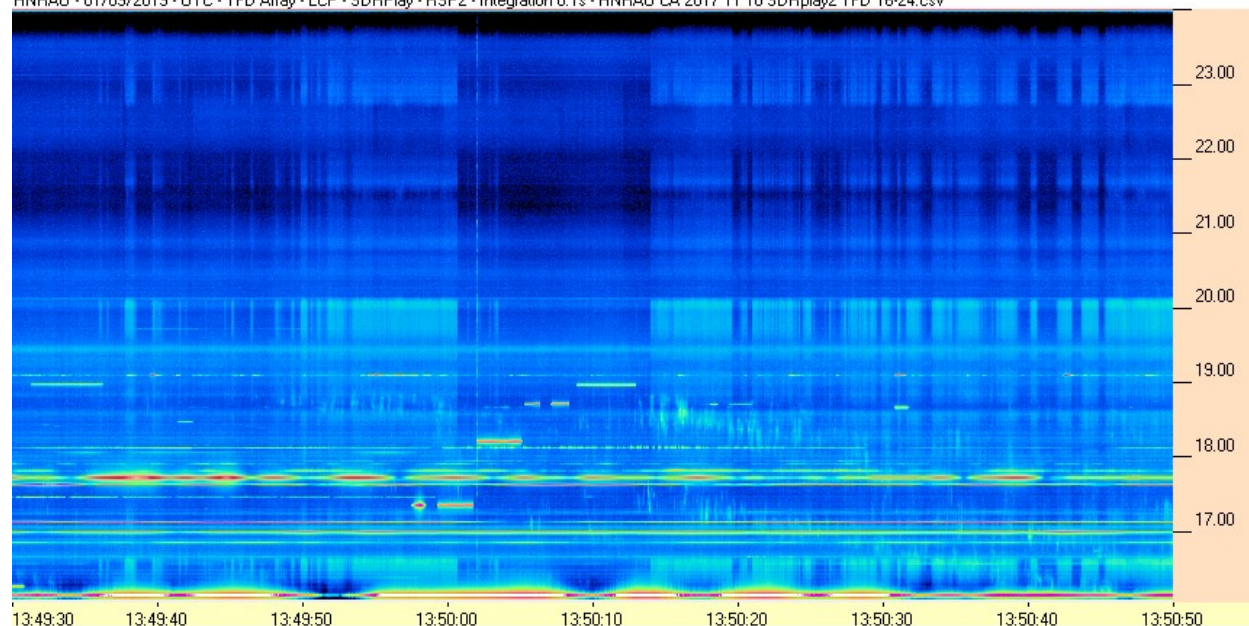
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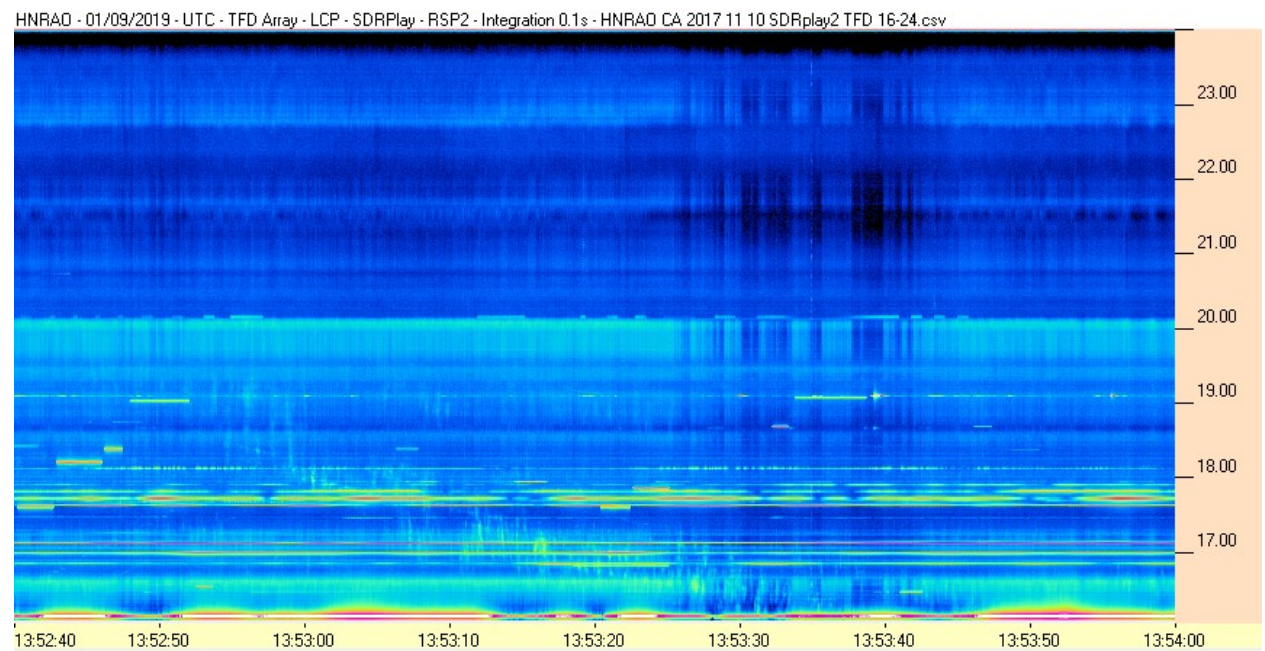
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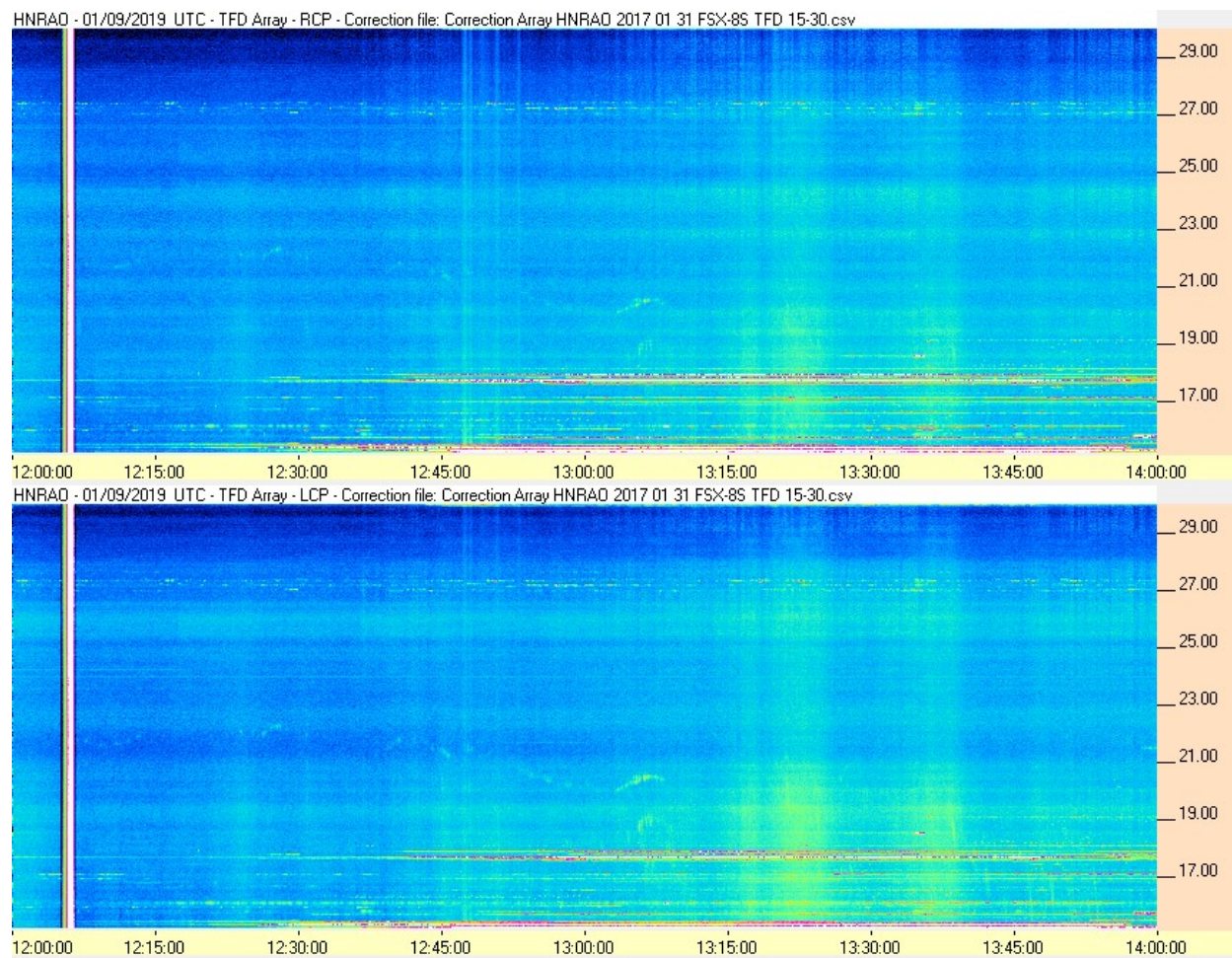
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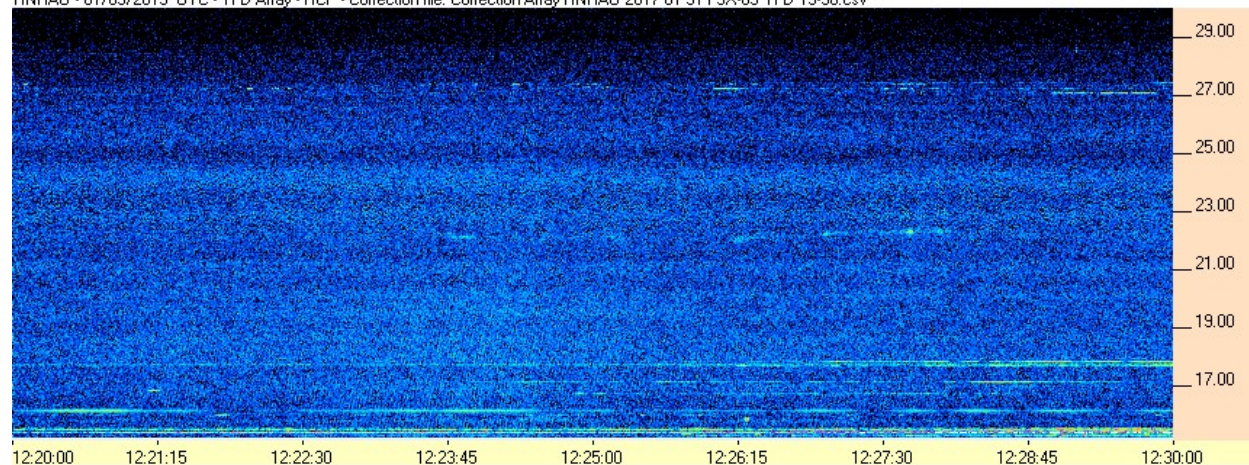
FSX8S – TFD Array



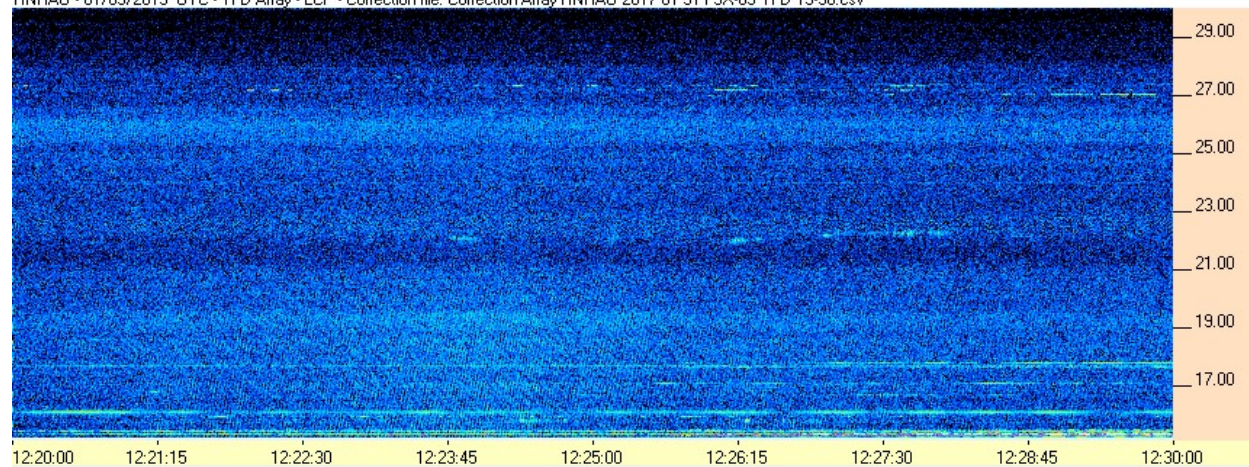
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HNRAO - 01/09/2019 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



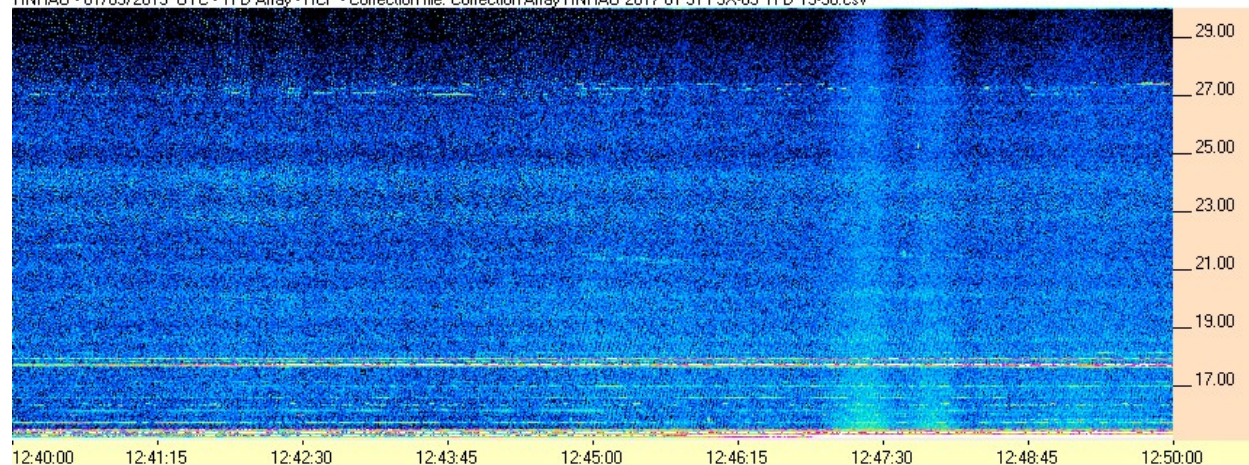
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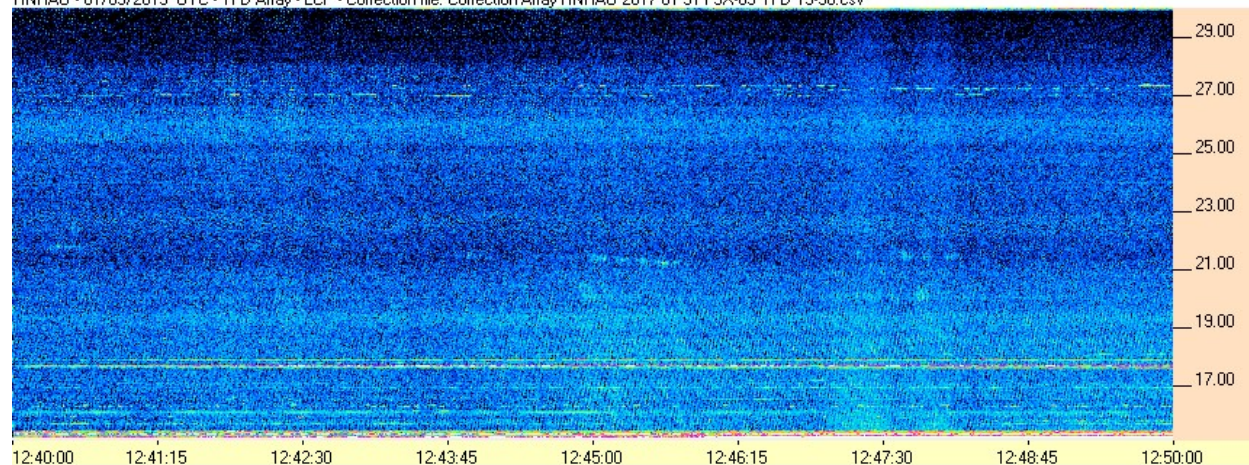
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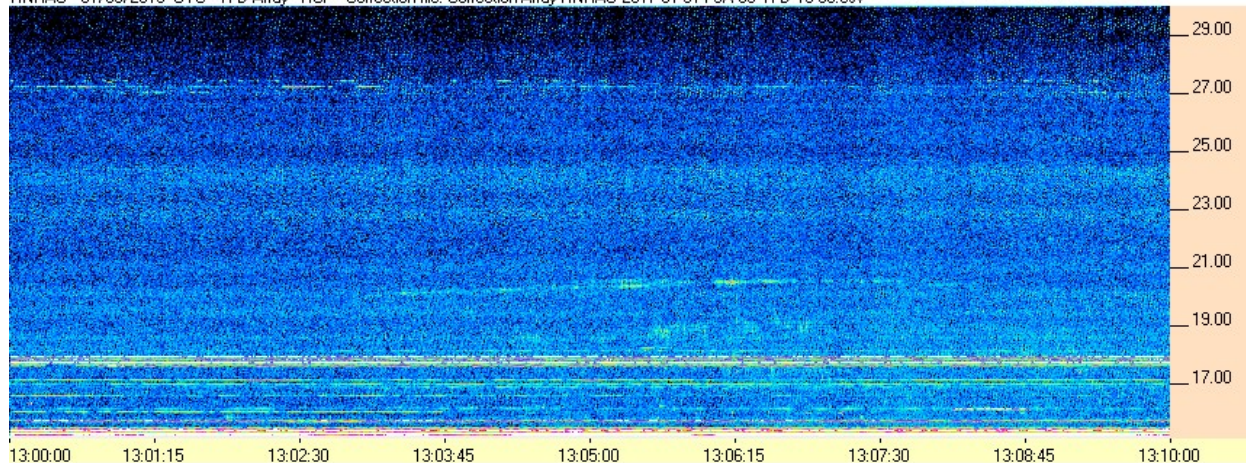
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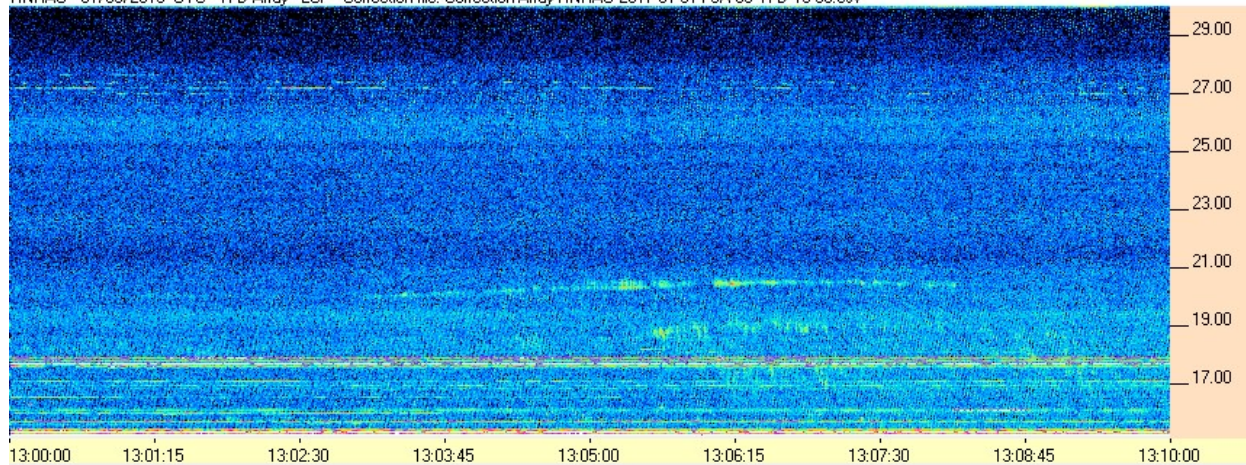
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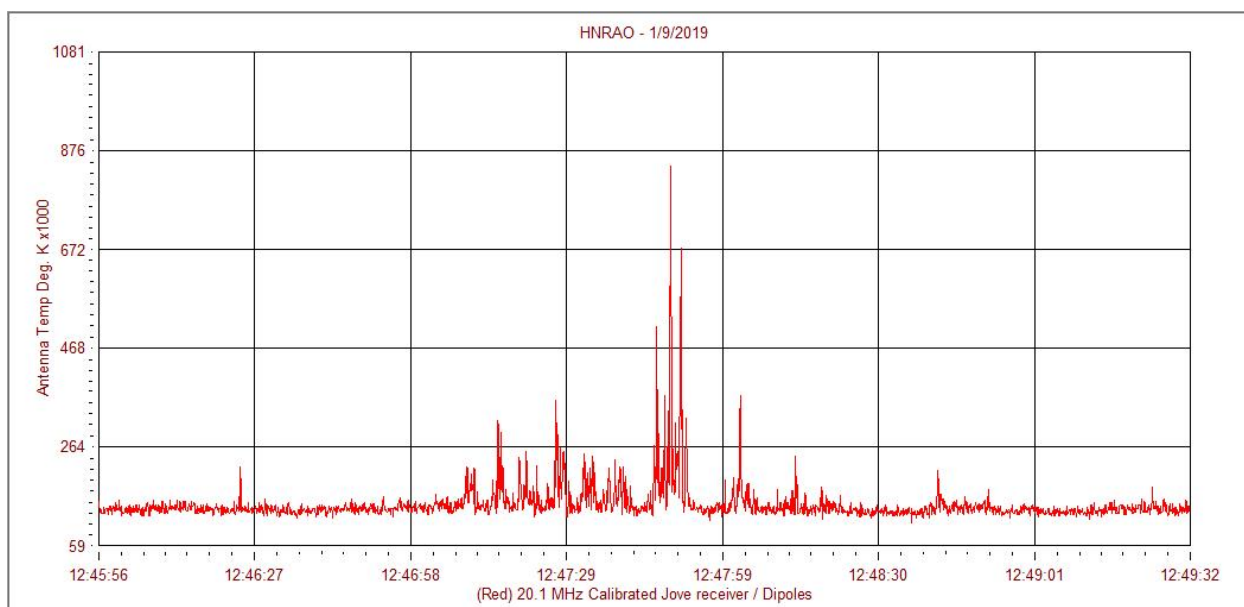
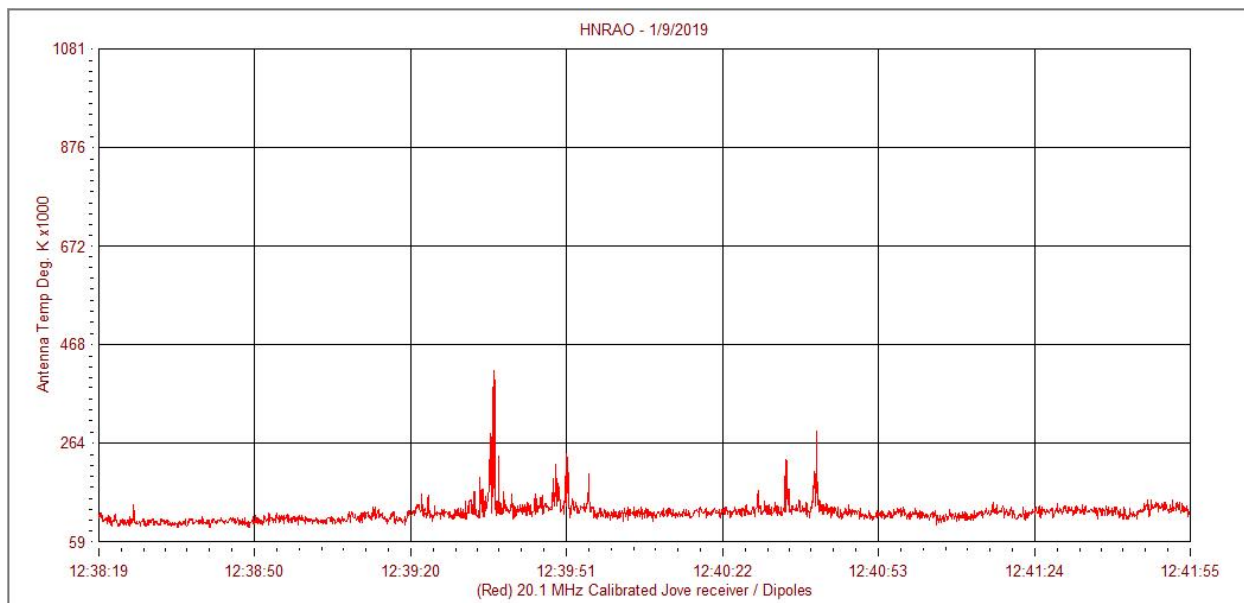
HNRAO - 01/09/2019 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



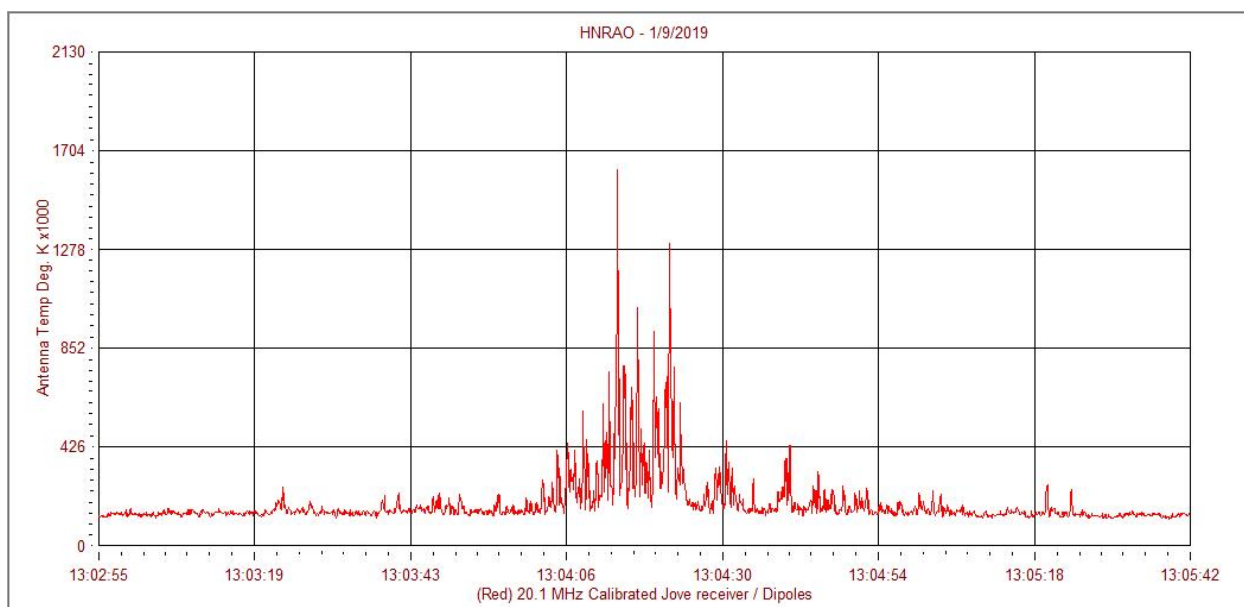
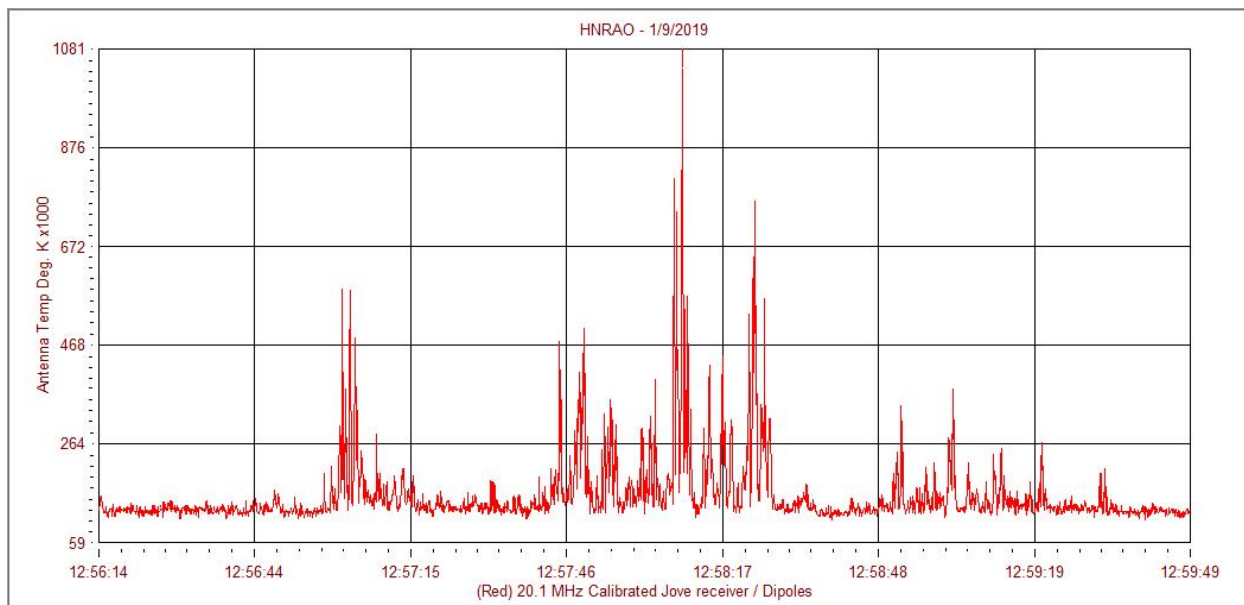
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Jove II Receiver – Jove Dipoles



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

