

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 29 January 2018

Object: Jupiter – Io-A

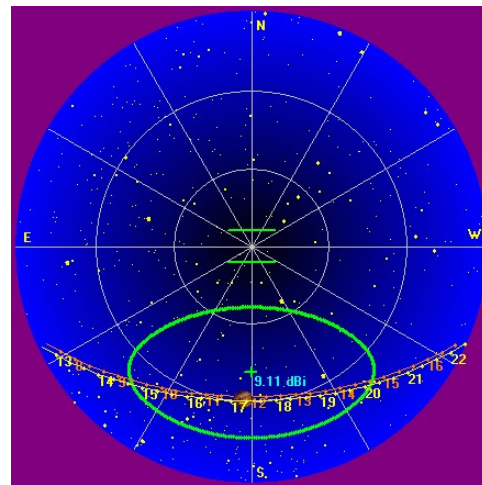
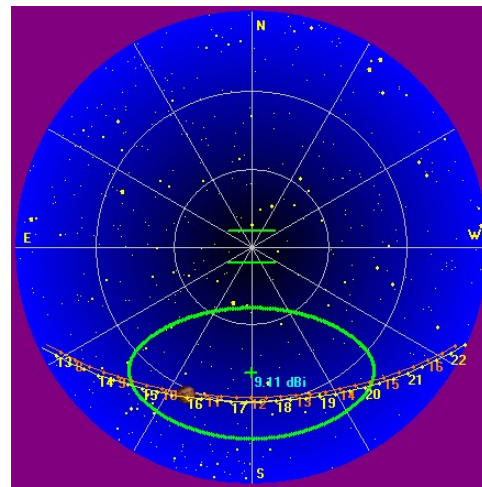
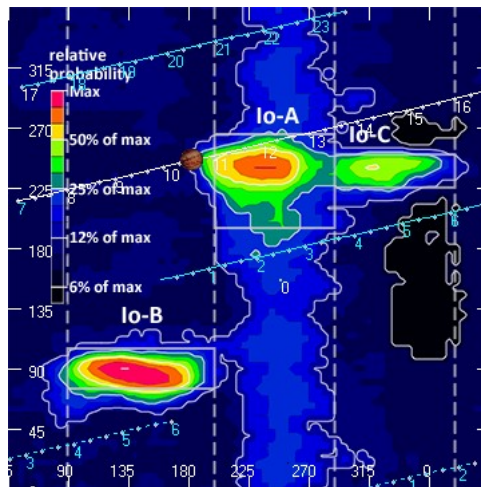
Observer: Unattended

Start of pass:	1035	Planetary K-index:	1
Jupiter Altitude (deg):	29.1	Jupiter Azimuth (deg):	156.4
Jupiter CML:	182.42	Jupiter Io Phase:	245.91
Jupiter RA (hr/min):	15:14	Jupiter Dec (hr/min):	-16.49
Hour Angle (hr/min):	-01:26	Polarization	RCP
Sun Altitude (deg):	-21.6	Sun Azimuth (deg):	096.2
Sun RA (hr/min):	20:40	Sun Dec (hr/min):	-18:23

End of pass:	1150		
Jupiter Altitude (deg):	32.4	Jupiter Azimuth (deg):	177.0
Jupiter CML:	227.76	Jupiter Io Phase	256.51
Hour Angle (hr/min):	-00:11		
Sun Altitude (deg):	-07:7	Sun Azimuth (deg):	107.7

Observations made using:

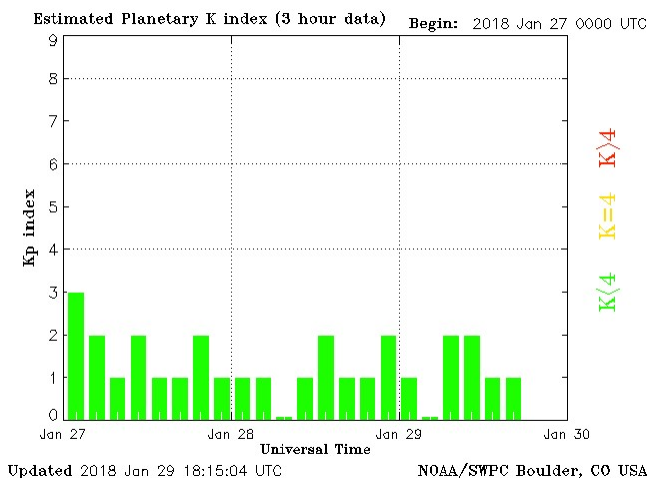
1. FSX-8S fed by the TFD array
 - a. 7.7 dB loss between TFD and Multicouplers.
 - b. Connect to array through HNRAO Multicoupler #1 and #2, port 2
 - i. HNRAO Multicoupler #1 – TFD/LCP
 - ii. HNRAO Multicoupler #2 – TFD/RCP
 1. Port 1 having 10 dB of gain, all other ports have 3 dB gain.
2. FSX-2 fed by the LWA array directly
 - a. LWA element configuration – 67.5 degrees
3. JOVE 2 receiver fed by phased JOVE dipoles @ 13'
 - a. 12' 6" phase cable - phased for 2016-17 season
 - b. Calibrated 1 Jan 2018
 - c. Connected to dipoles through HNRAO Multicoupler #3, port 1.
 - i. -3.19 dB loss between Multicoupler and dipoles.
4. JOVE 1 receiver fed by TFD/RCP. JOVE 1 receiver fed by TFD/LCP
 - a. Calibrated 1 Jan 2018
 - b. Connected to TFD through HNRAO Multicouplers #1 & #2, port 1.
5. SDRPlay
 - a. RSP1 (TFD/LCP) and RSP2 (TFD/RCP)



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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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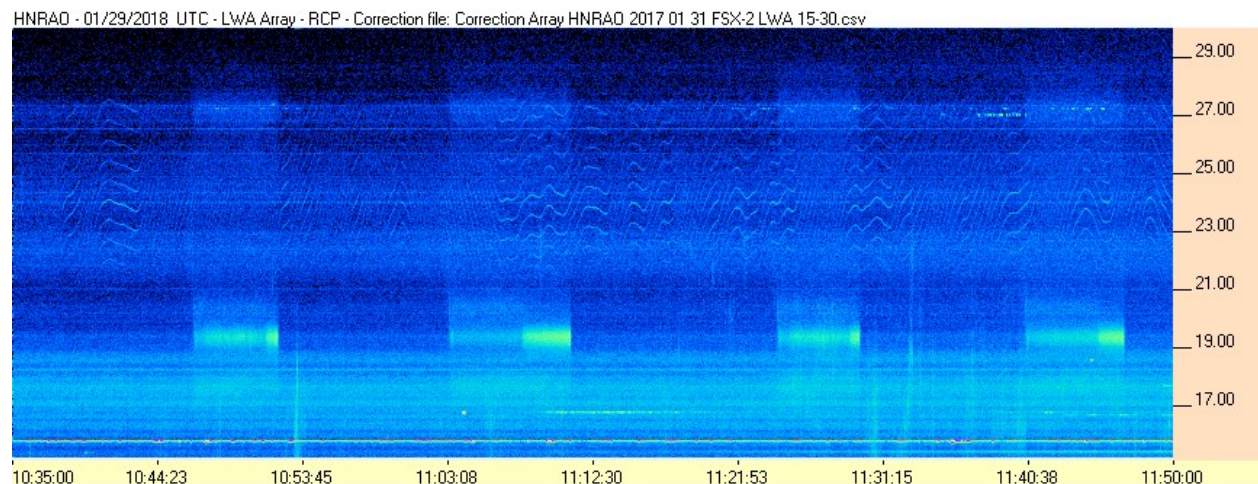


An Io-A storm with RCP L-bursts, 24-14 MHz. L4 modulation lanes were present throughout the storm. Weak L-bursts were recorded on SkyPipe from the Radio JOVE/JOVE phased dipoles.

Observed with all three spectrographs and antenna arrays. The best emissions were observed with the SDRPlay RSP2/TFD array pair.

Modulation lanes were measured at various times and frequencies throughout the emission period. A graph of the resulting measurements is presented at the end of this report.

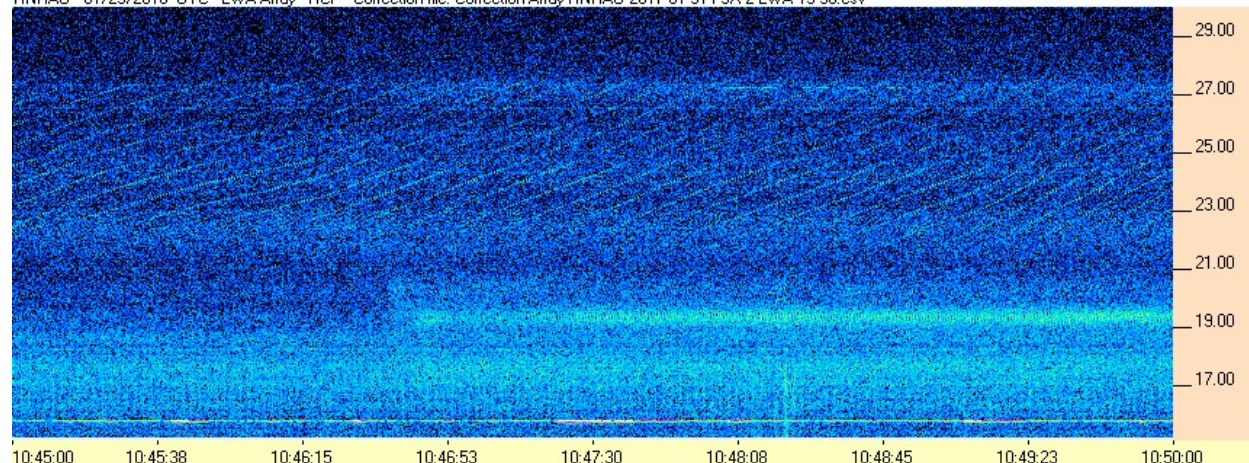
FSX-2/LWA Pair



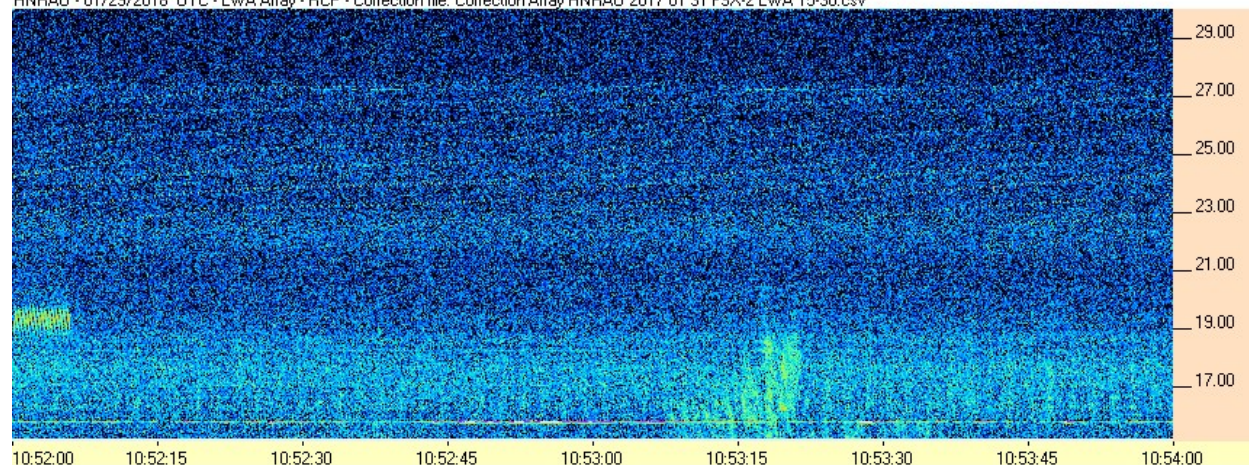
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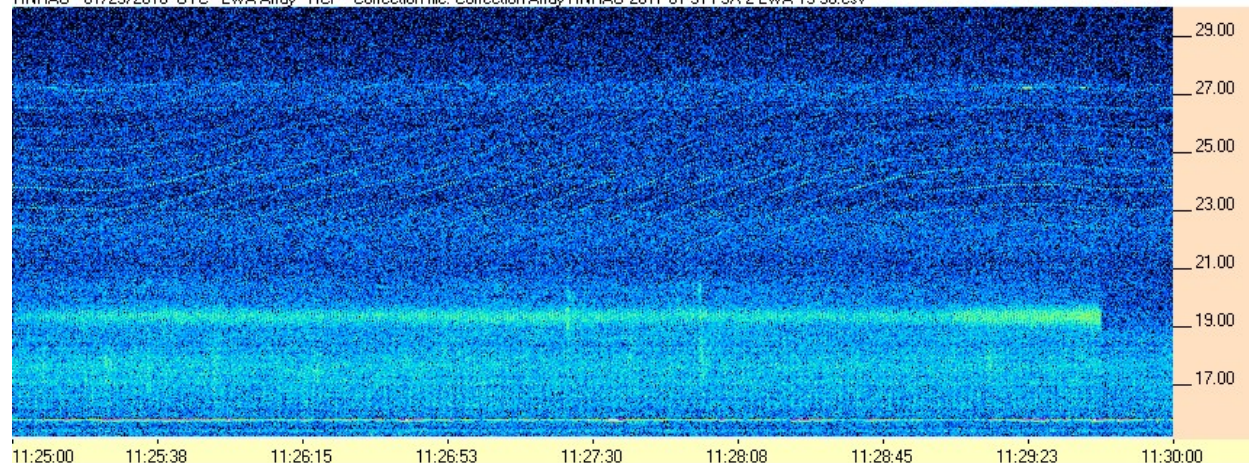
HNRAO - 01/29/2018 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv



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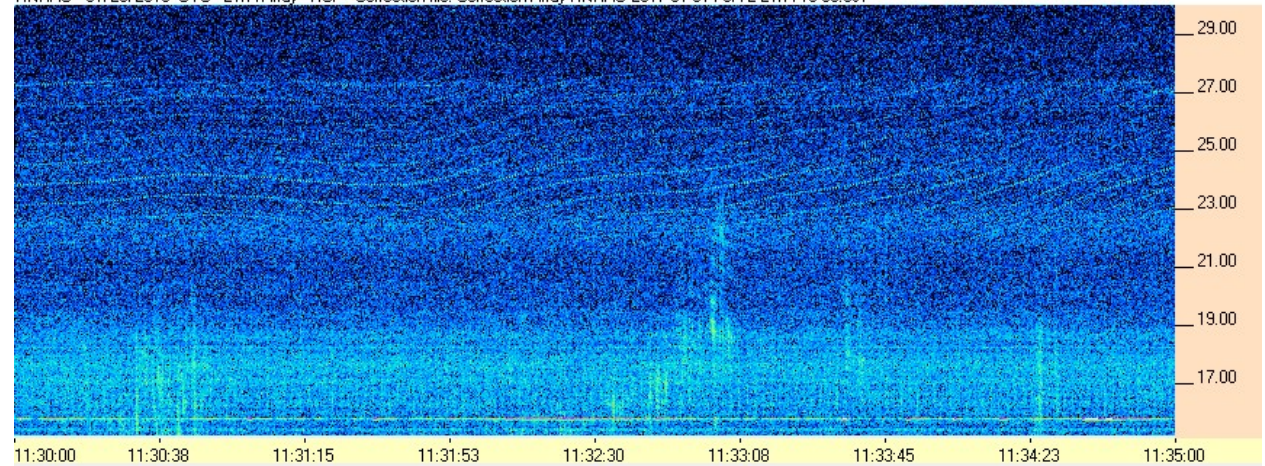
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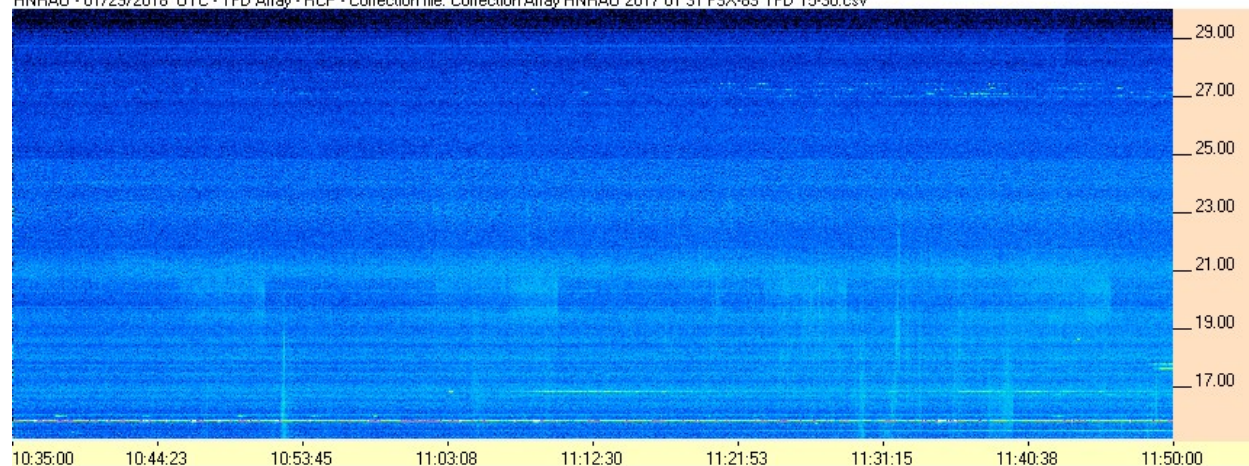


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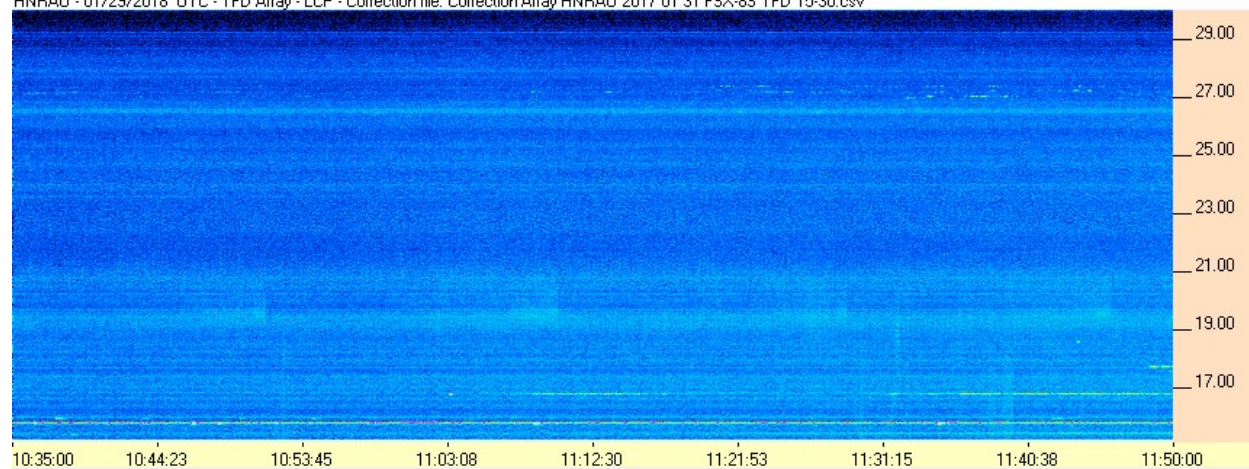


FSX-8S/TFD Pair

HNRAO - 01/29/2018 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



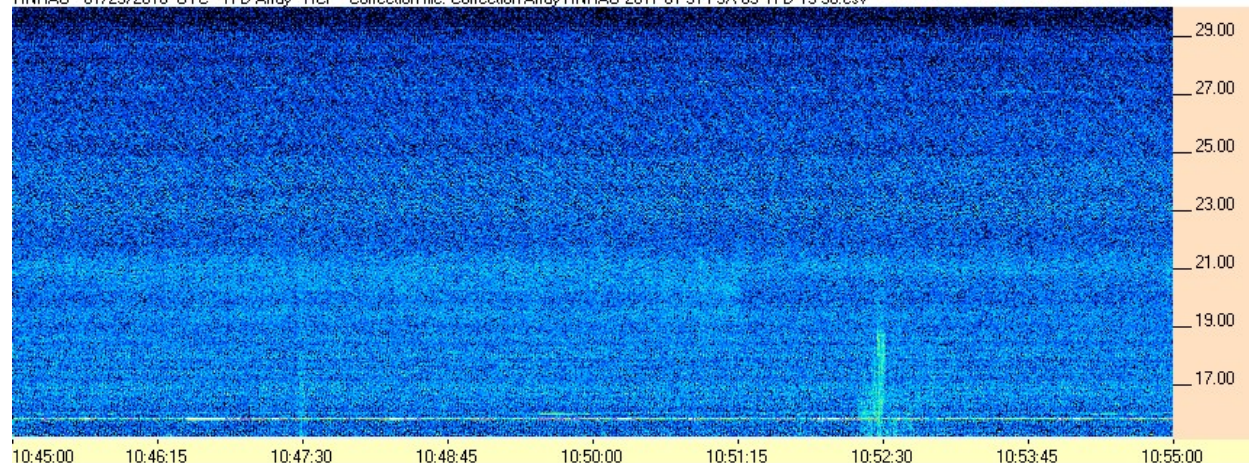
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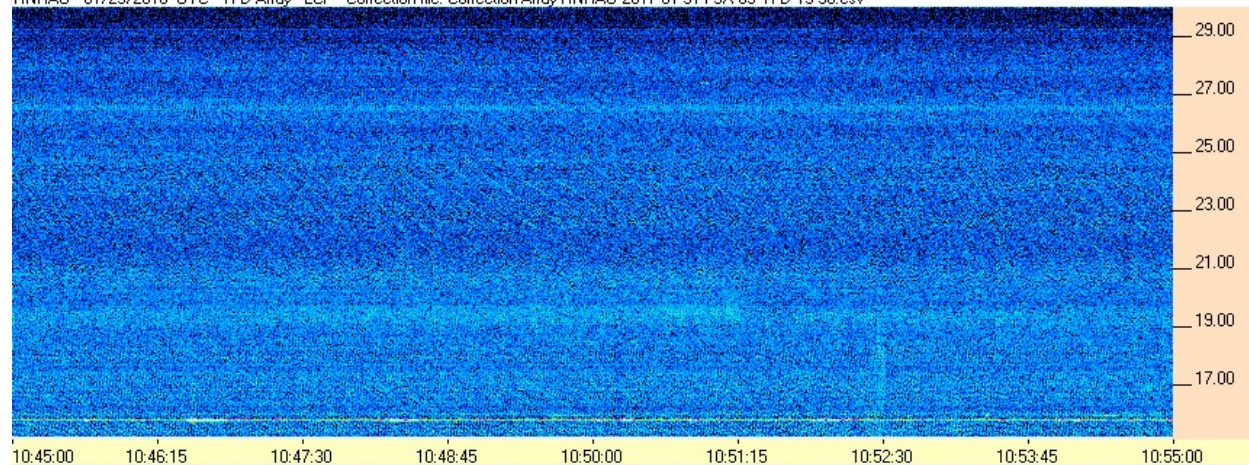
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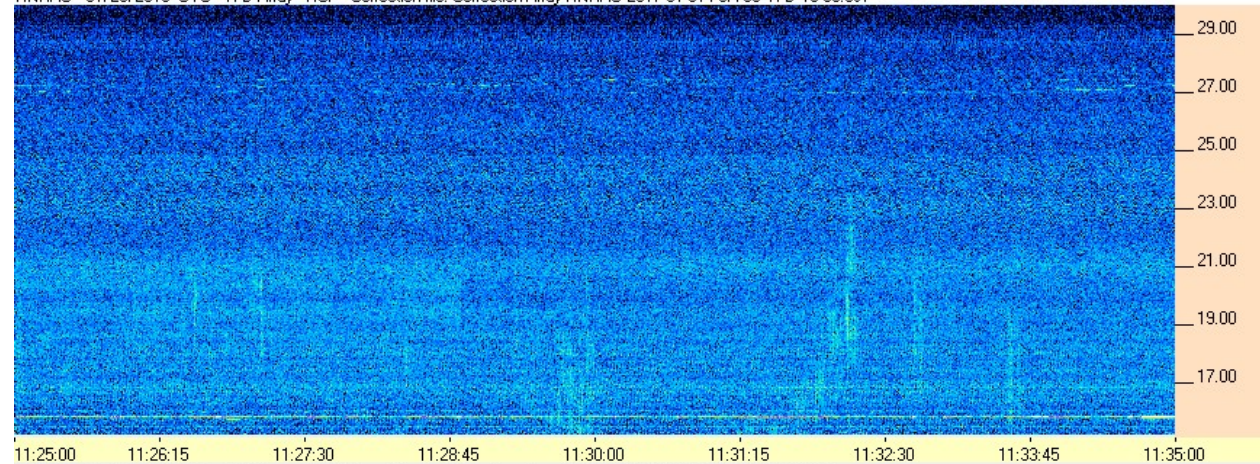
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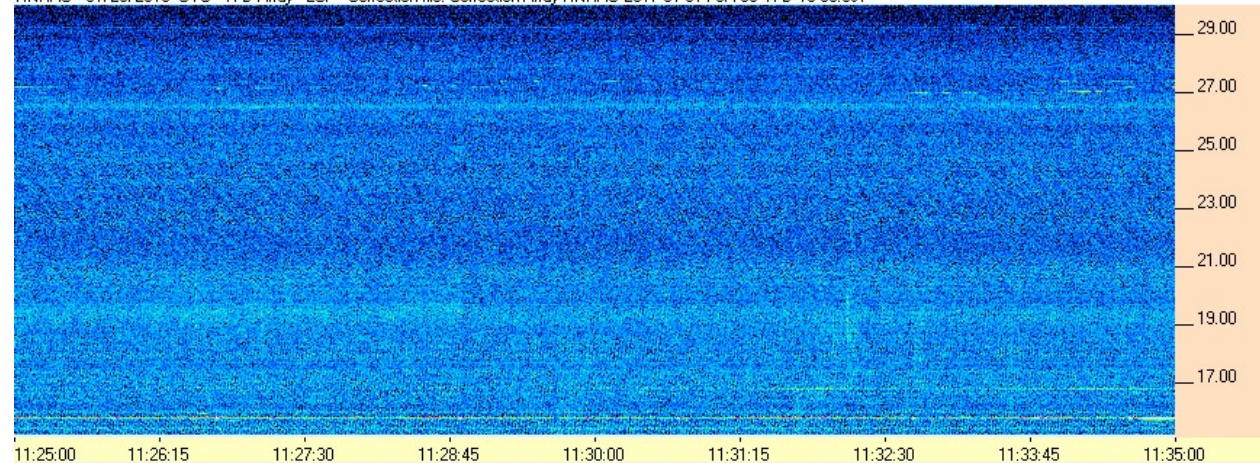
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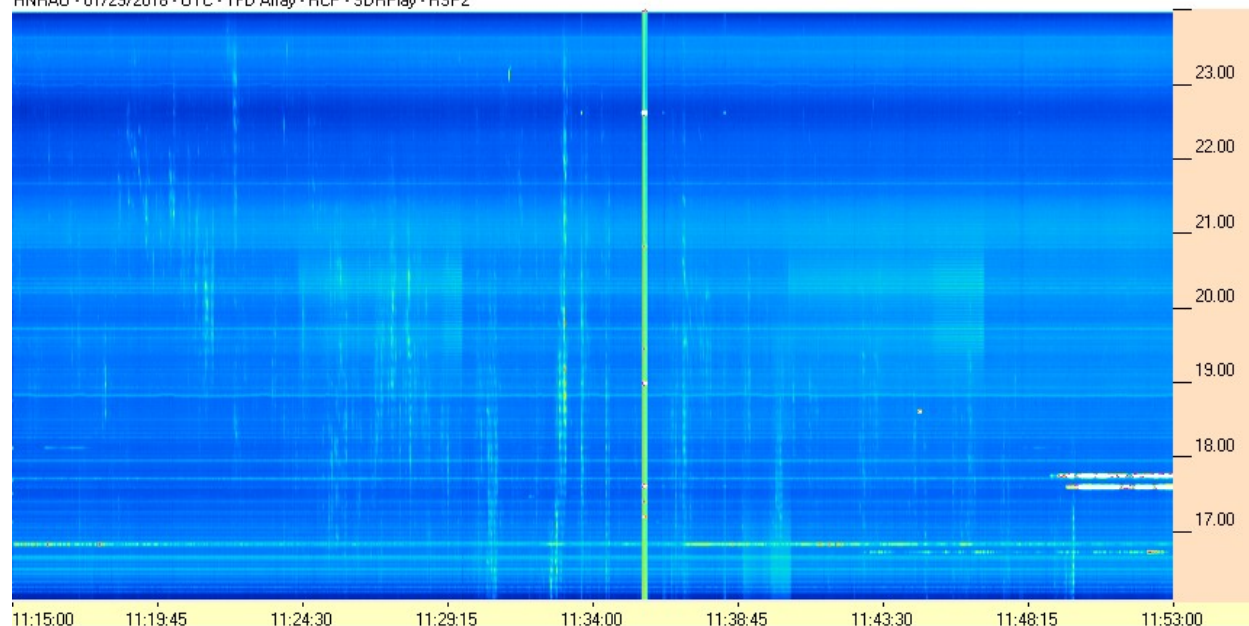


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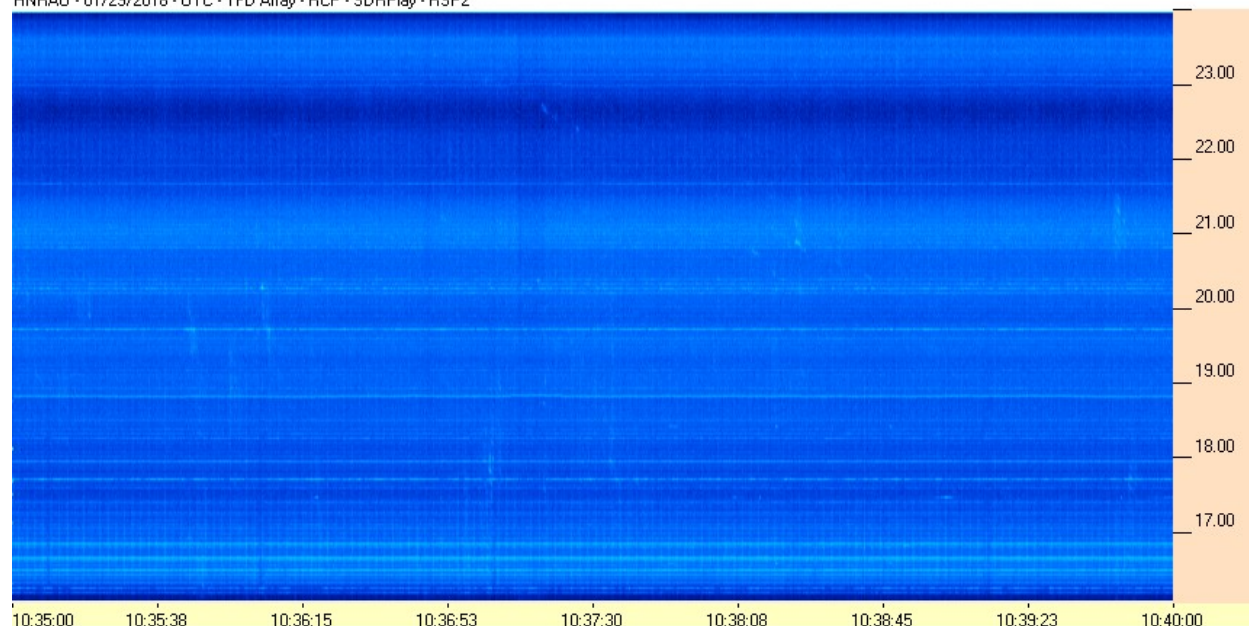


SDRPlay RSP2/TFD Pair

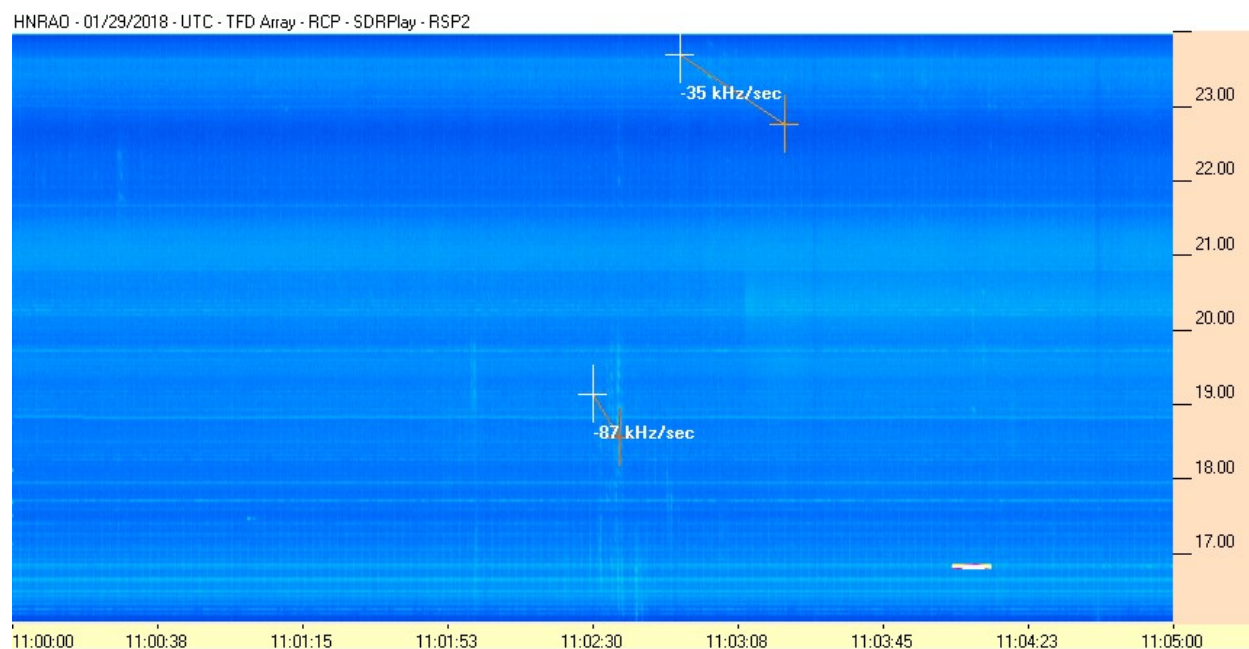
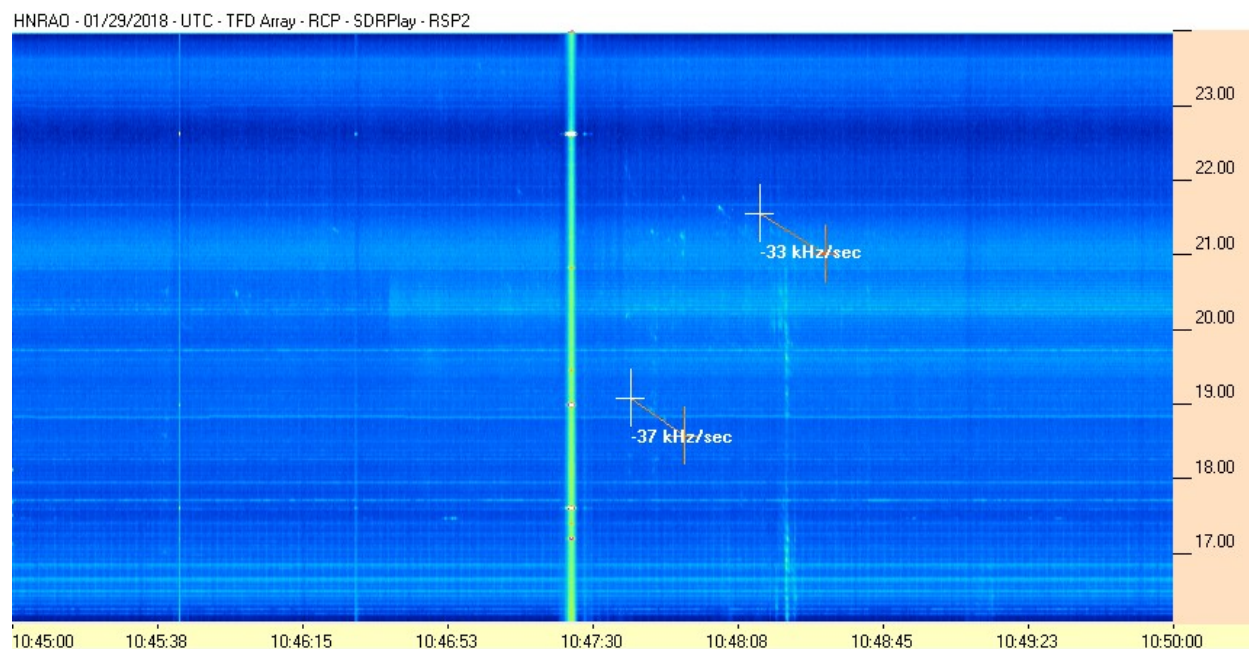
HNRAO - 01/29/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2



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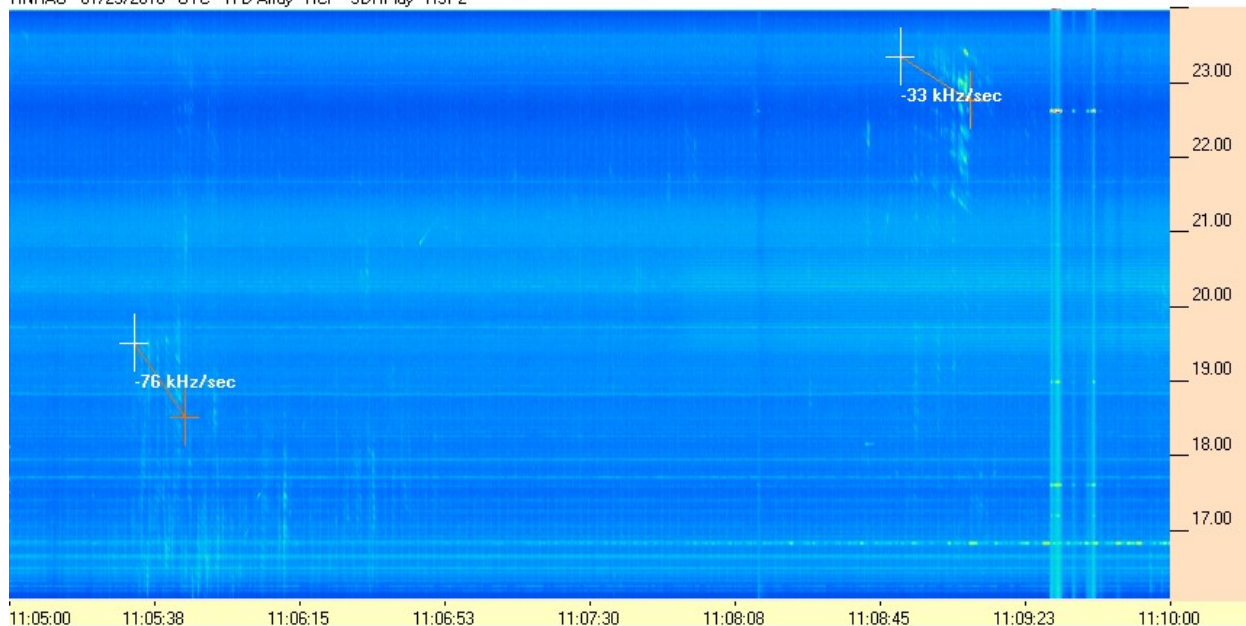
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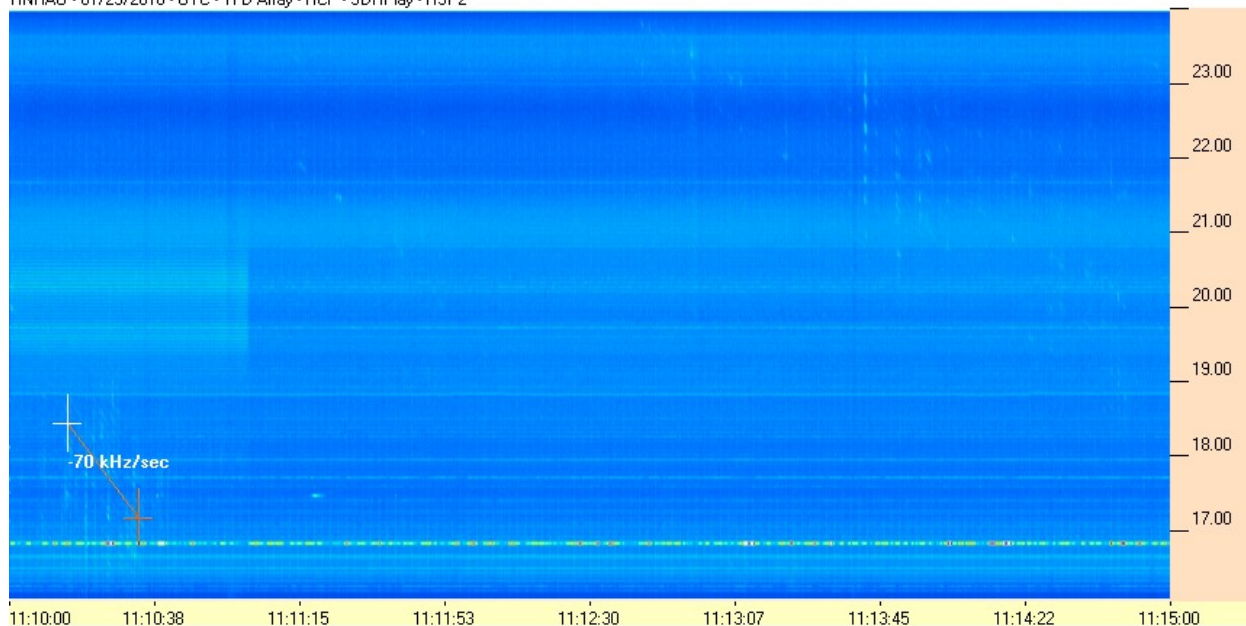
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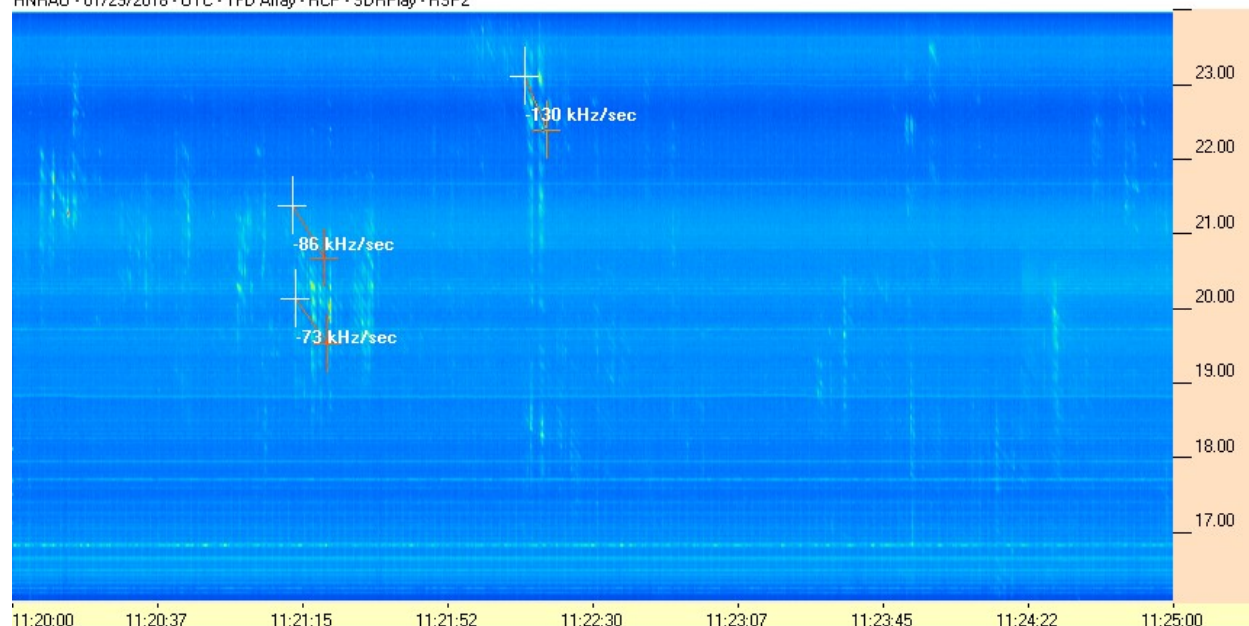
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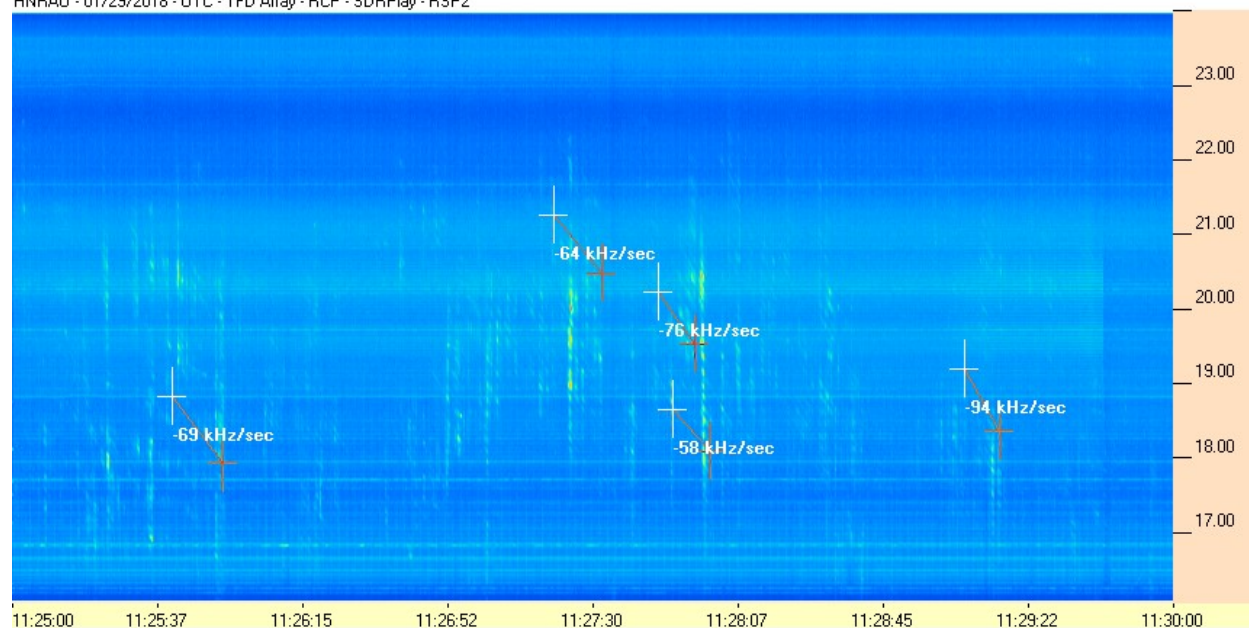
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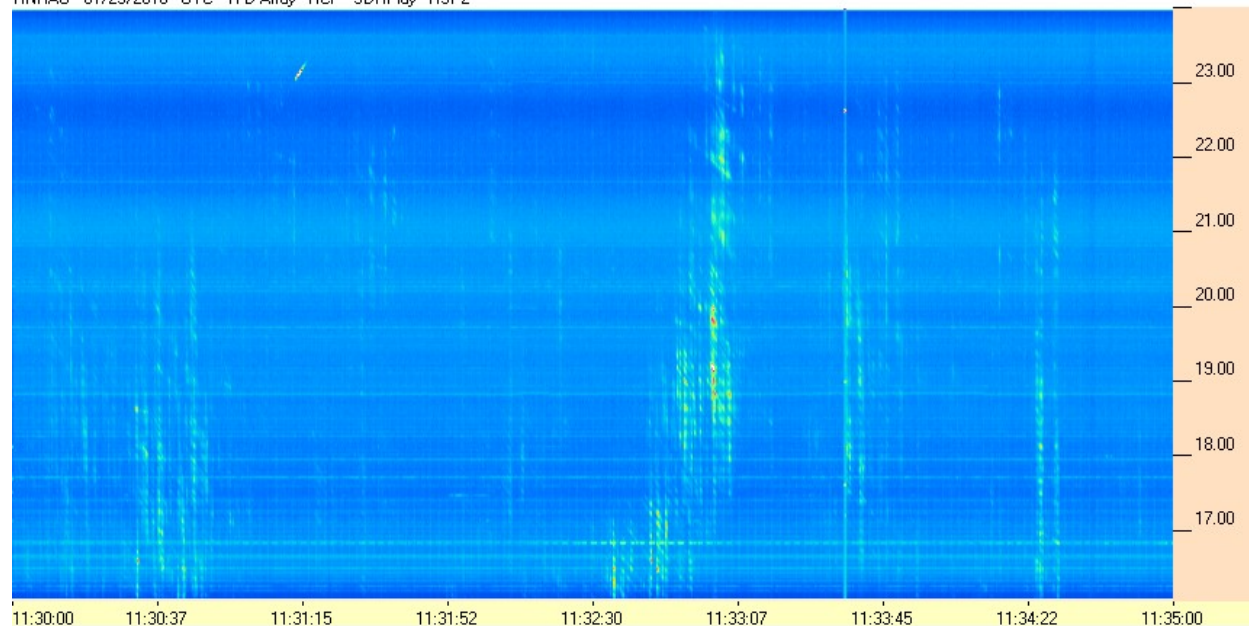


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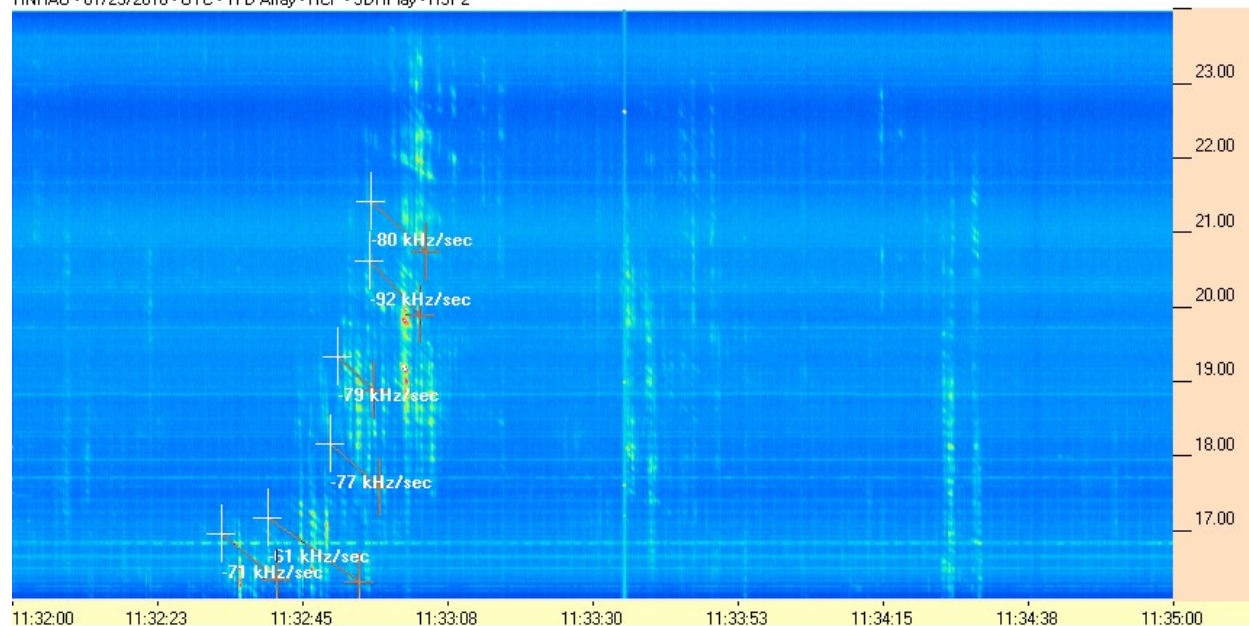
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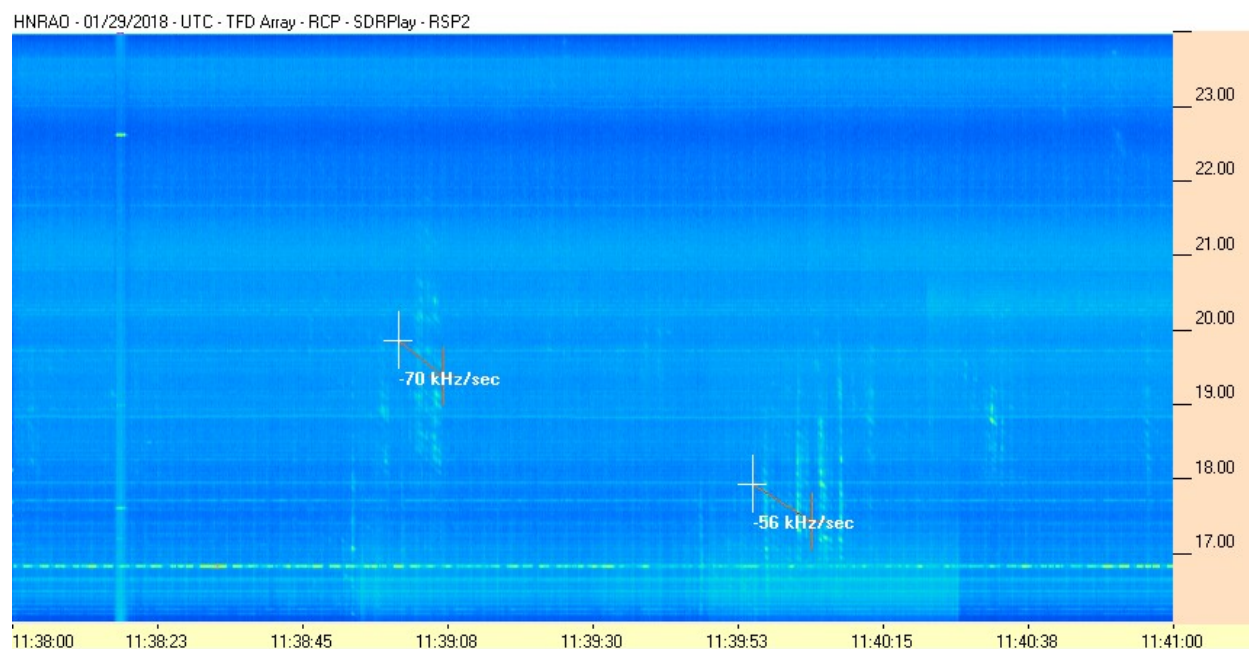
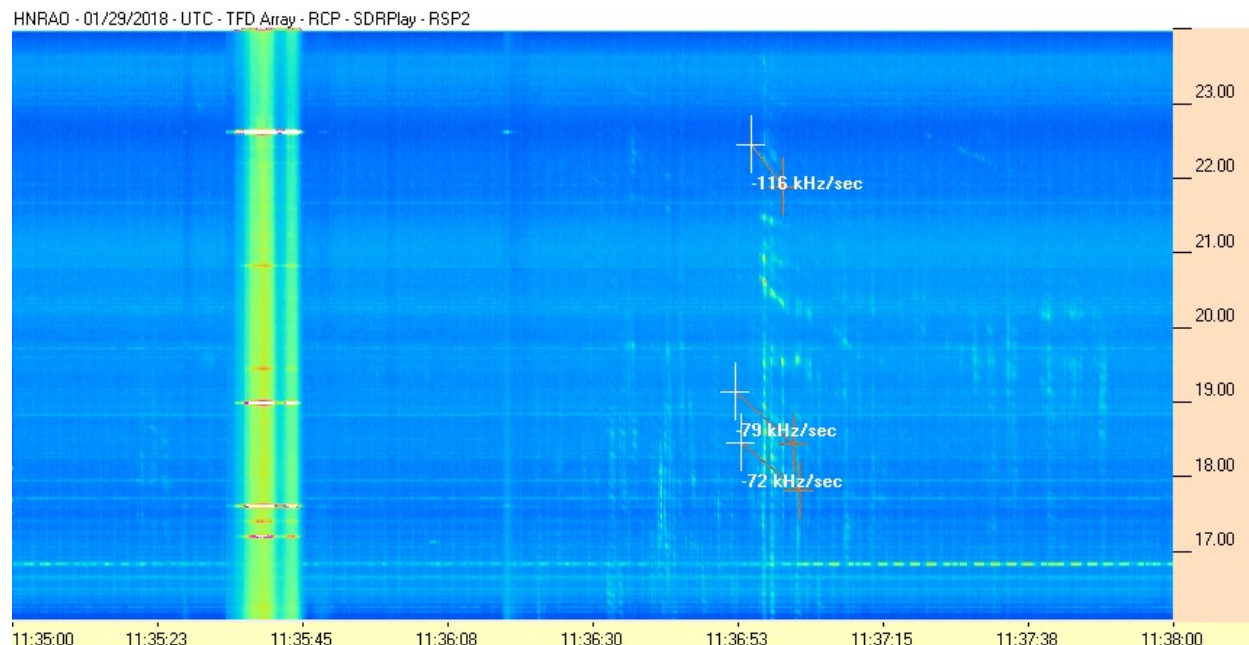


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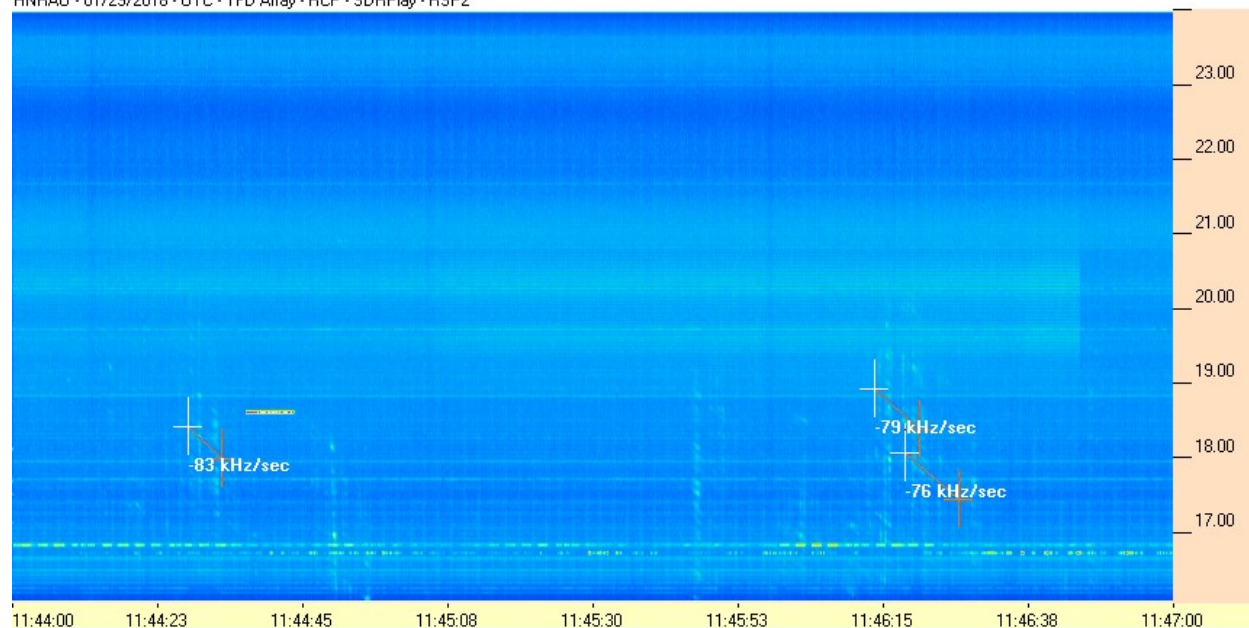
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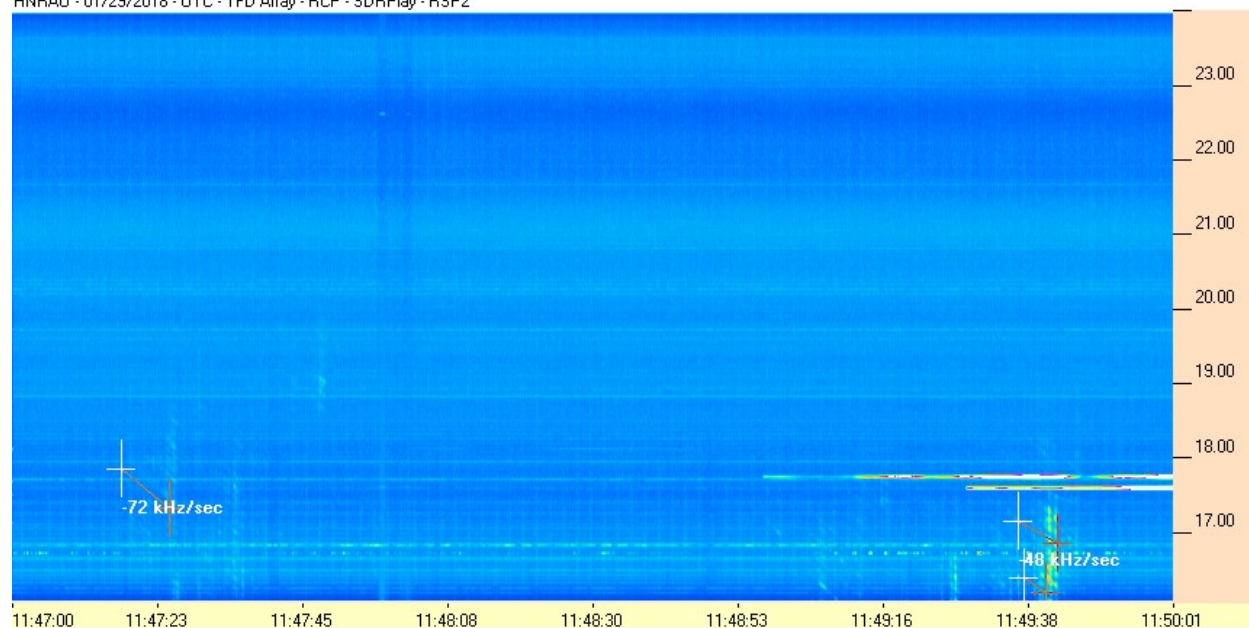
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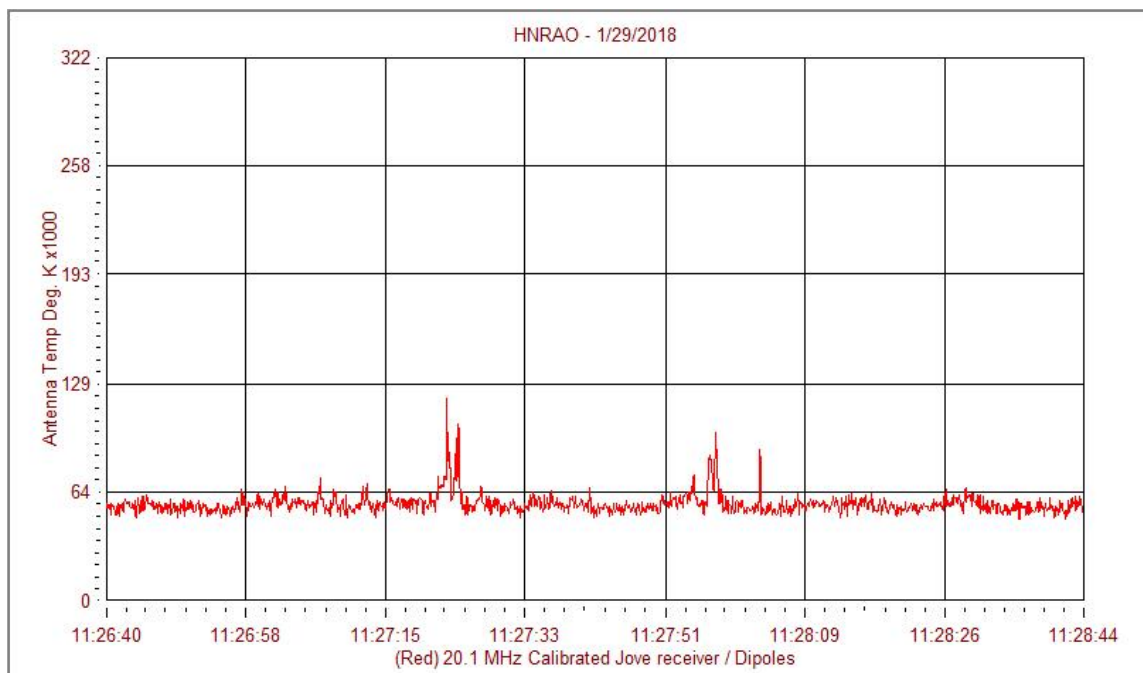
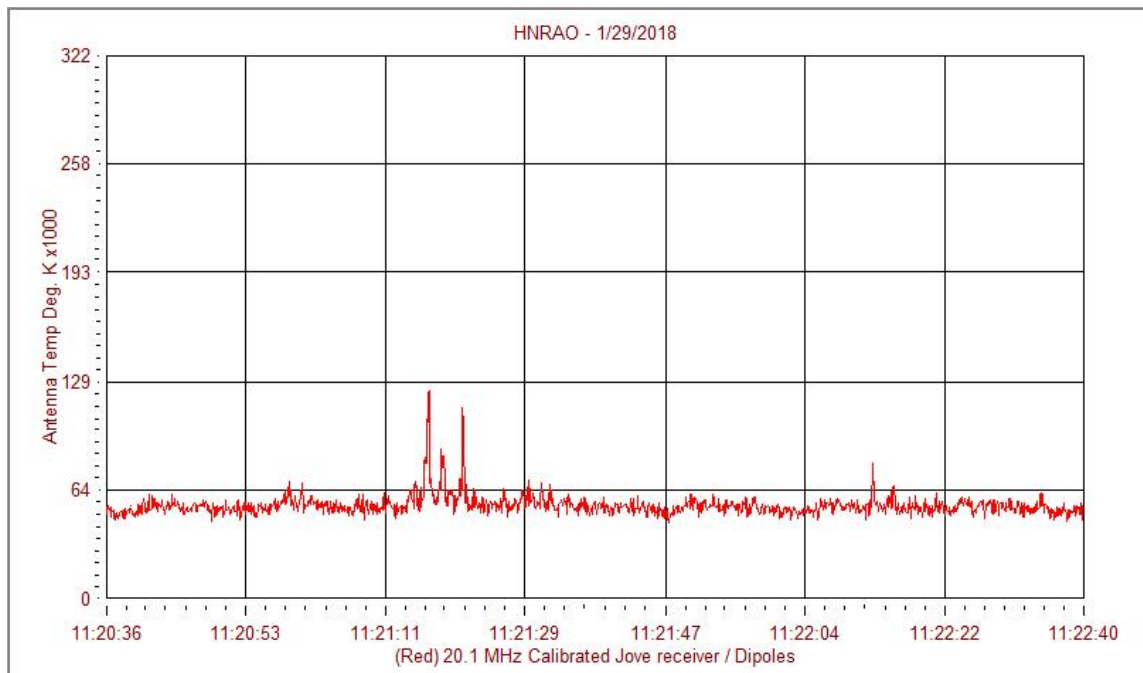
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Radio JOVE/JOVE Dipoles



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