

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 6 March 2017

Object: Jupiter – Io-A

Observer: JB/RF

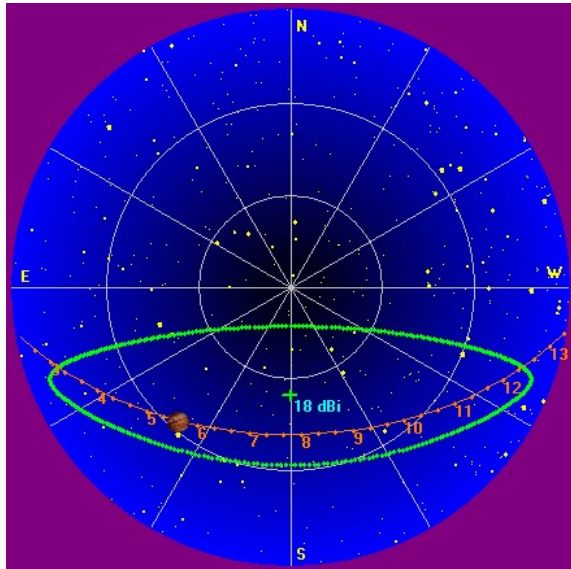
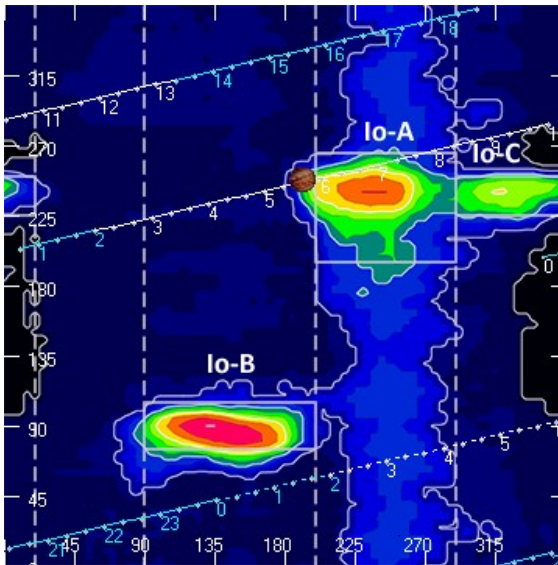
Start of pass:	0541 UT	Planetary K-index:	4
Jupiter Altitude:	34.0 degrees	Jupiter Azimuth:	140.9 degrees
Jupiter CML:	191.99	Jupiter Io Phase:	247.09
Jupiter RA:	13:23	Jupiter Dec:	-07:04
Hour Angle:	-02:13	Polarization	RCP
Sun Altitude:	-55.5 degrees	Sun Azimuth:	0006.6 degrees
Sun RA:	23:01	Sun Dec:	-06:19

End of pass:	0634 UT		
Jupiter Altitude:	39.3 degrees	Jupiter Azimuth:	156.0 degrees
Jupiter CML:	224.04	Jupiter Io Phase	254.64
Hour Angle:	-01:14		
Sun Altitude:	-52.4 degrees	Sun Azimuth:	028.5 degrees

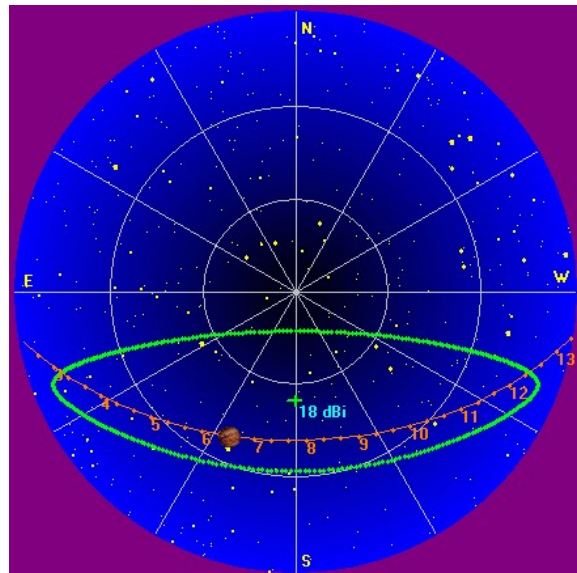
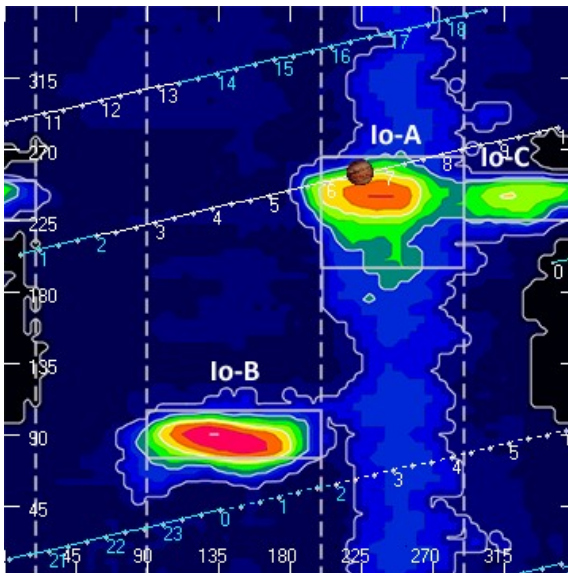
Observations made using:

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 – 90 degrees
3. JOVE 2 receiver fed by phased JOVE dipoles @ 10'
 - a. 12' phase cable - phased for 2016-17 season
 - b. Calibrated 6 March 2017
 - c. Connected to dipoles through HNRAO Multicoupler #3, port 1.
 - i. 3.165 dB loss between Multicoupler and dipoles.
4. Icom R75 receiver fed by experimental DDRR antenna directly.
 - a. Calibrated 6 March 2017
5. SDRPlay
 - a. RSP1 and RSP2

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Beginning of Pass



End of Pass

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A respectable Io-A pass began this morning with first emissions observed here at 0541 UT with the SDRPlay/RSP1 TFD array combination. A positive drift, late vertex arc, along with negative drift modulation lanes dominated the storm. ("Late" and "Early" refer to arrival time of the vertex of the spectral feature of the emission.)

L-bursts with a positive drift, measured with the RSP1/TFD at 0602 UT as 65 kHz/sec, and 66 kHz with the FSX-8S/TFD pair. Some L-bursts were barely above the galactic background, while some were respectable in their intensity.

Modulation lane drift rates were measured throughout the storm and slope values ranged from (beginning till end) -76 kHz/sec to -115 kHz/sec to -109 kHz/sec, and finally -80 kHz/sec with an average of -95 kHz/sec. This indicates that the slope values changed throughout the storm.

As has been the norm for this observatory during this Jupiter iteration, power line RFI has dominated both the FSX-2/LWA array and FSX-8S/TFD array spectrographs. While the SDRPlay/RSP1 (using RCP port 4 of the TFD multicoupler #2) is also affected, it is not as bad due to digital signal processing.

There were radio JOVE L-bursts recorded at 0604 UT. A SkyPipe chart of the event with the corresponding spectrograph image is at the end of this report.

Notes:

The SDRPlay/RSP1 (a Software Defined Radio) unit is currently under test and evaluation. Some changes in image quality are due to software adjustments made during the storm. These show as vertical changes. Horizontal variations in intensity across the spectrograph are power line RFI.

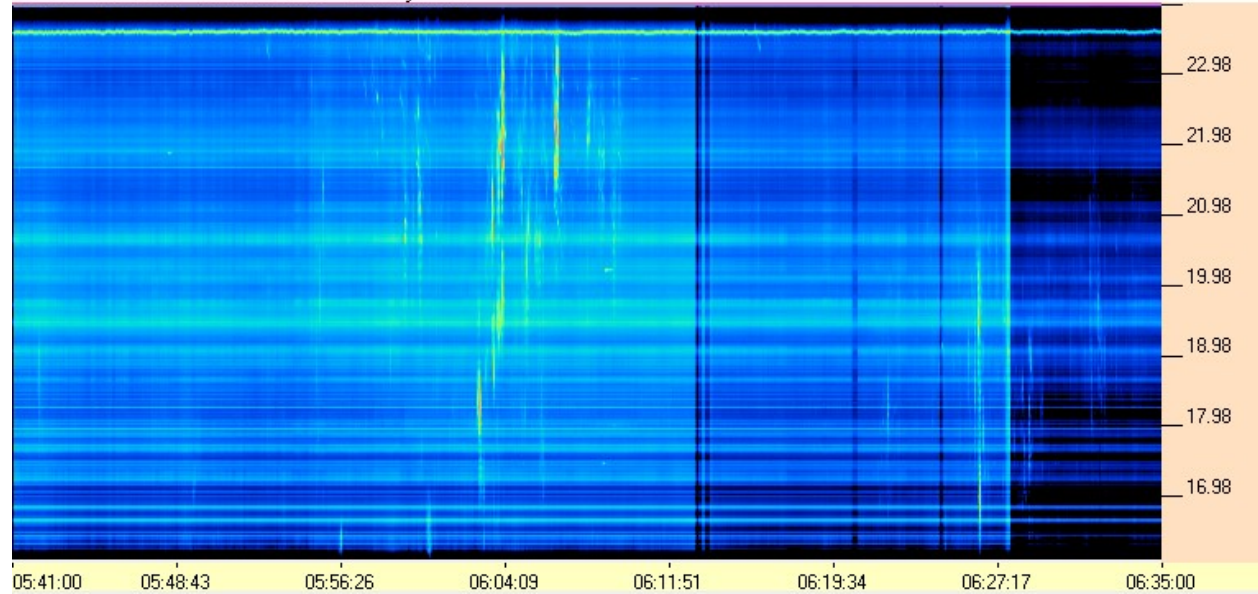
There is no data from the FSX-2/LWA array due to a computer failure.

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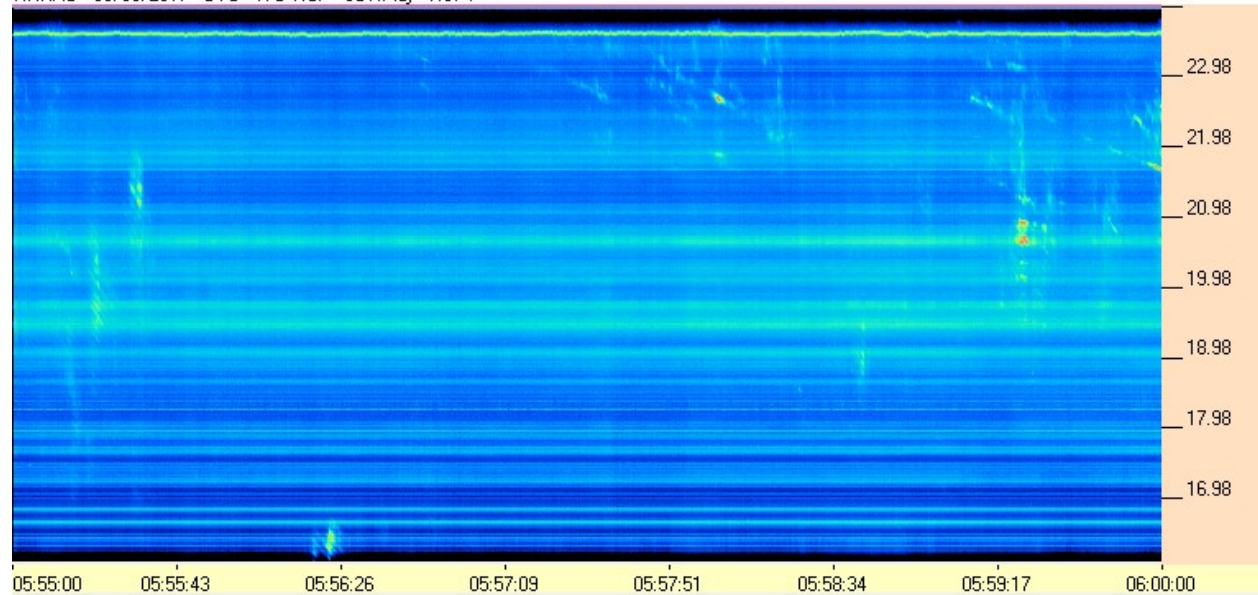


SDRPlay/RSP1/TFD Pair

HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



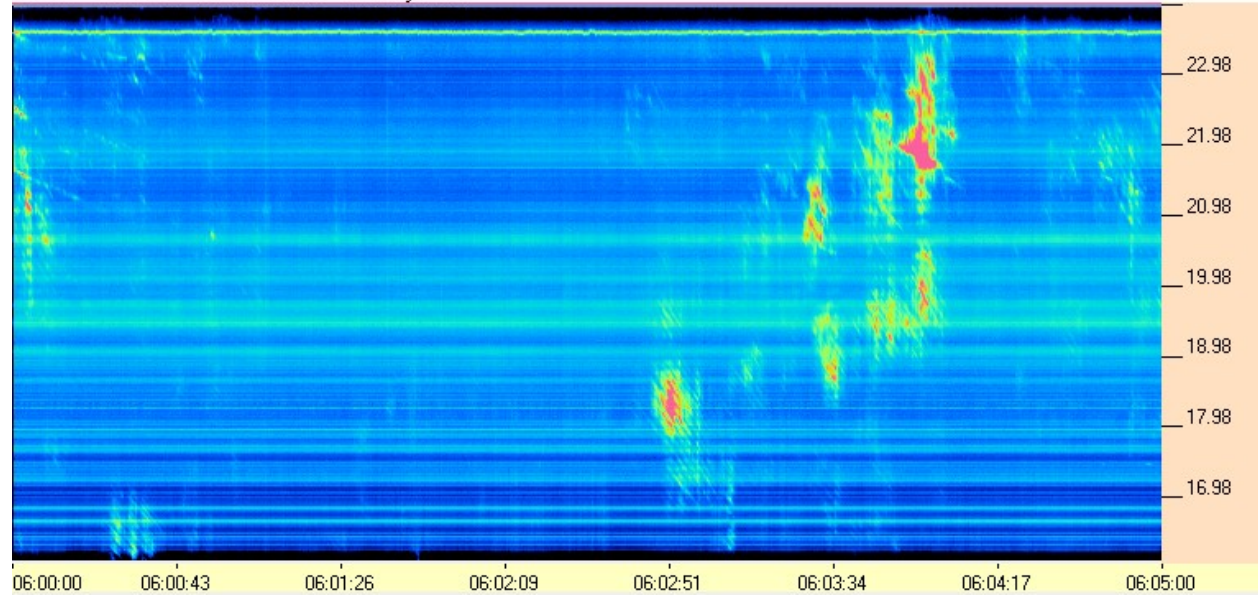
HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



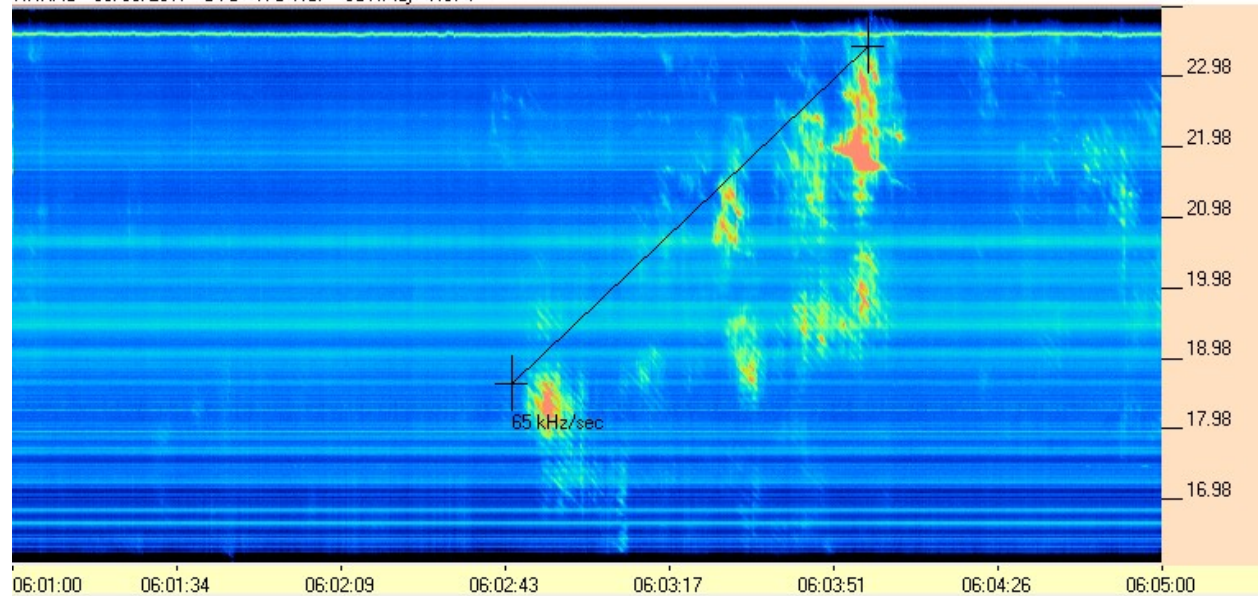
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HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



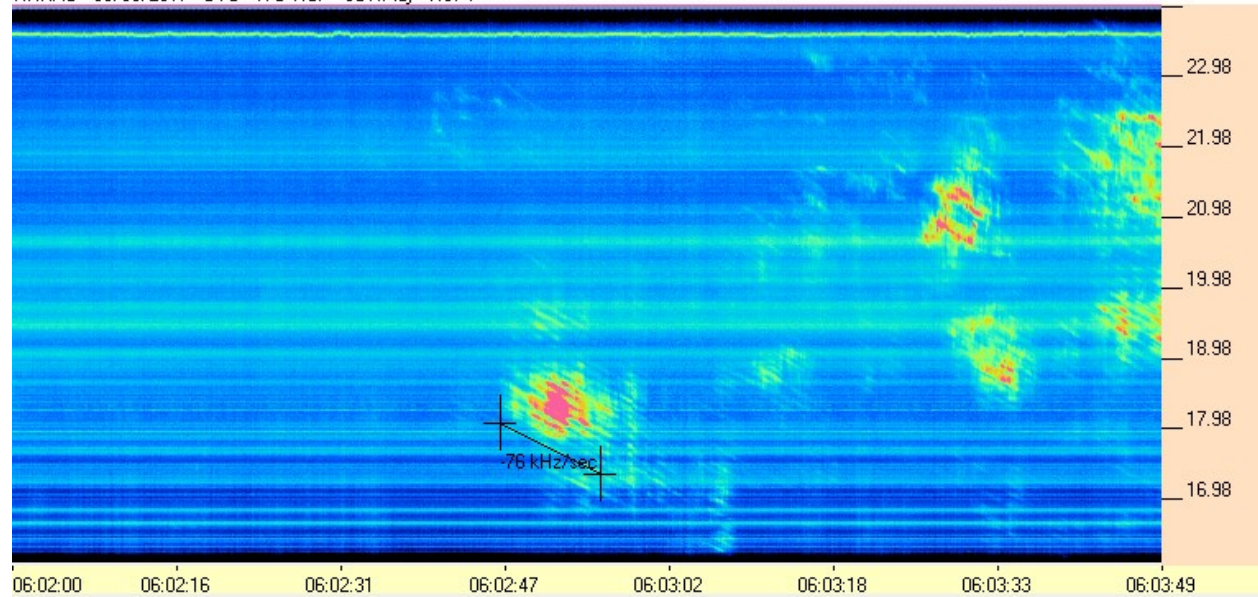
HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



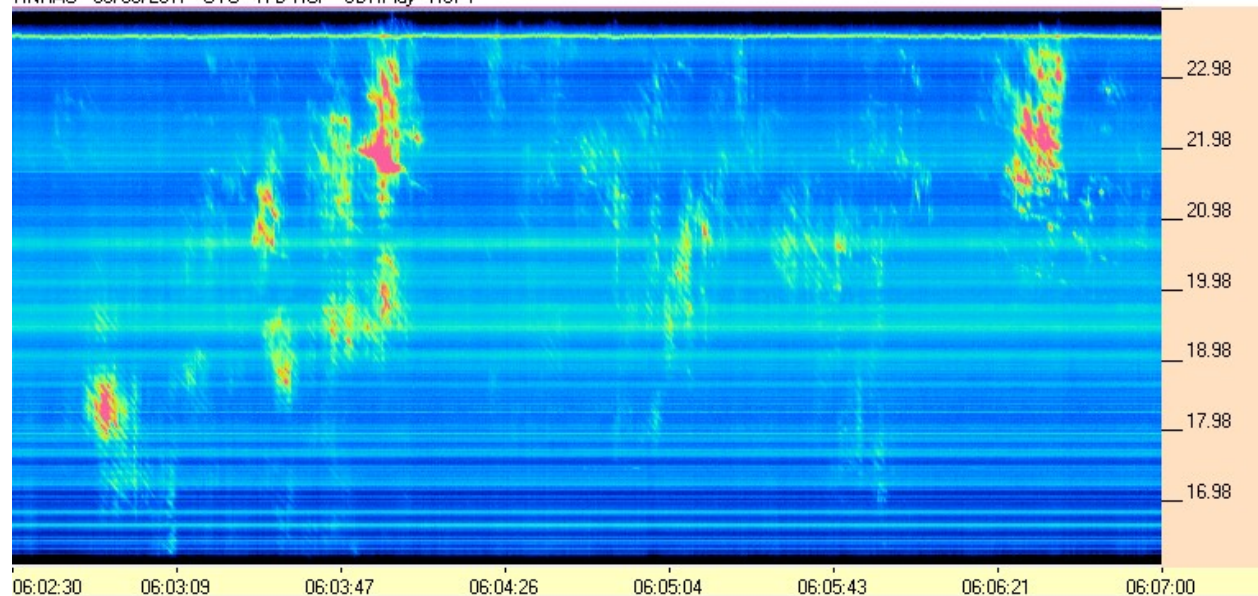
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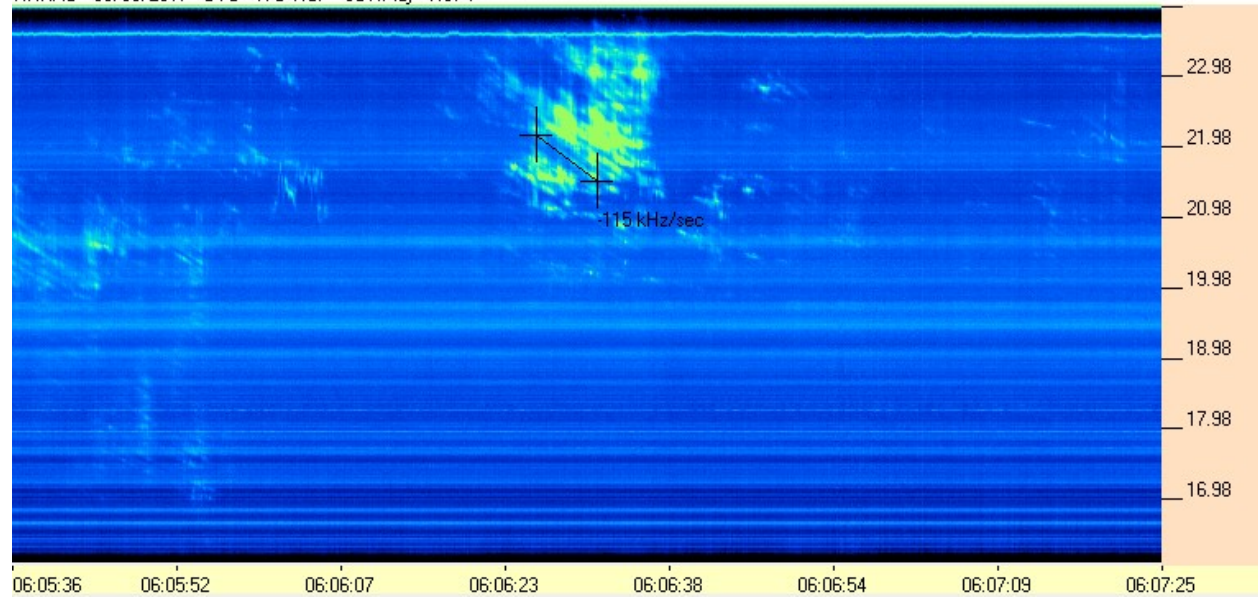
HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



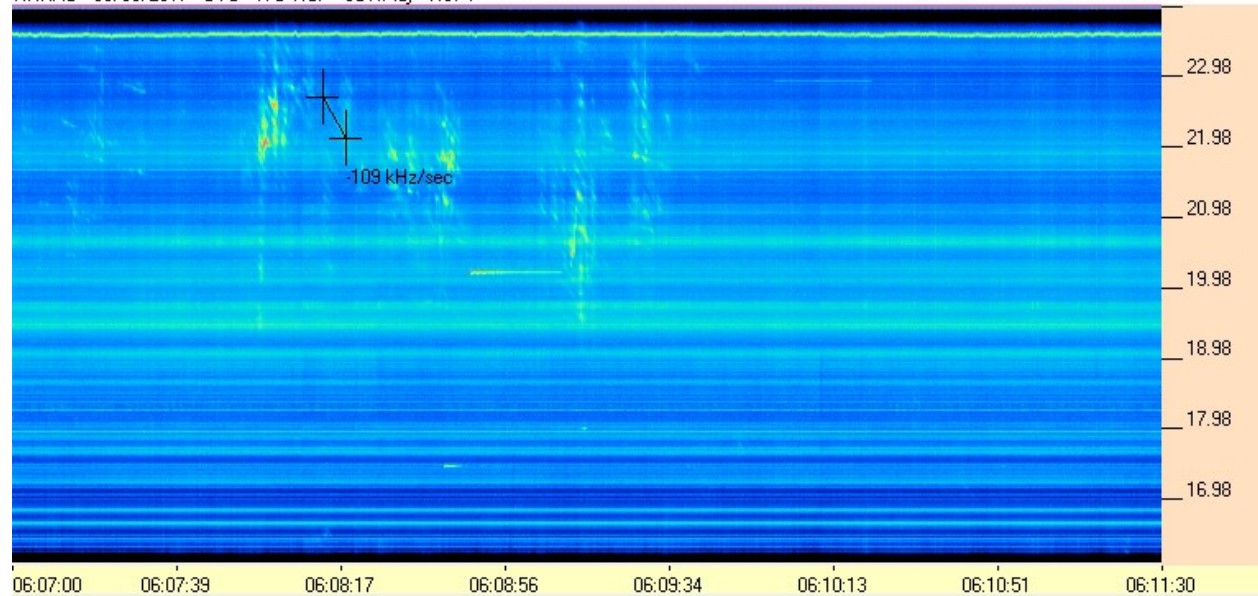
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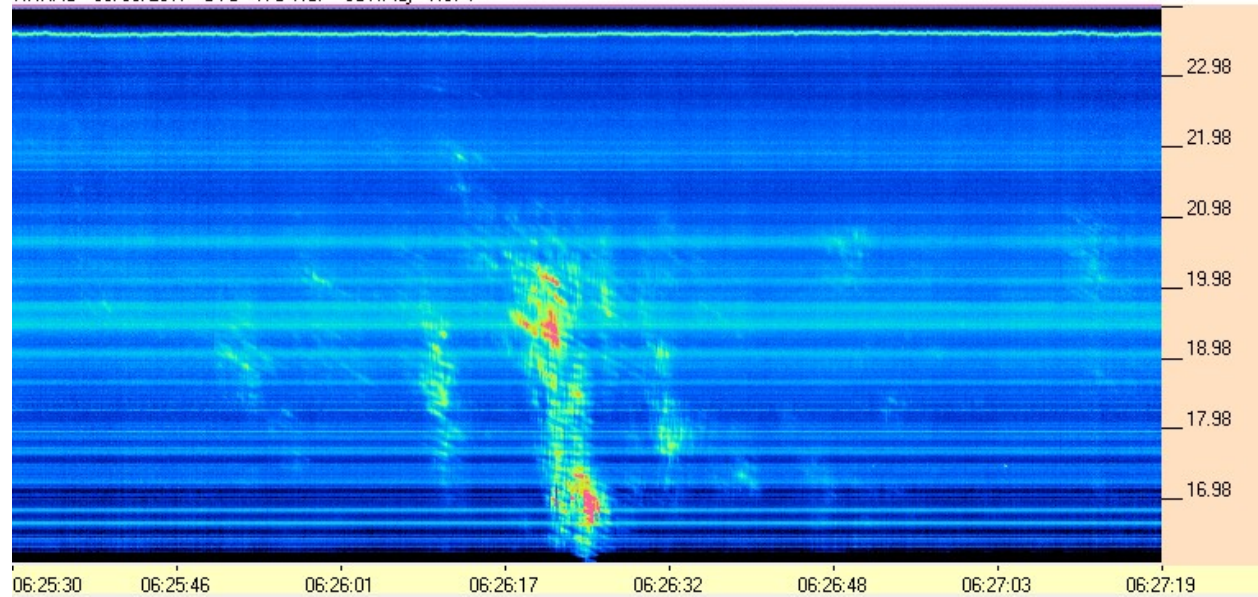
HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1



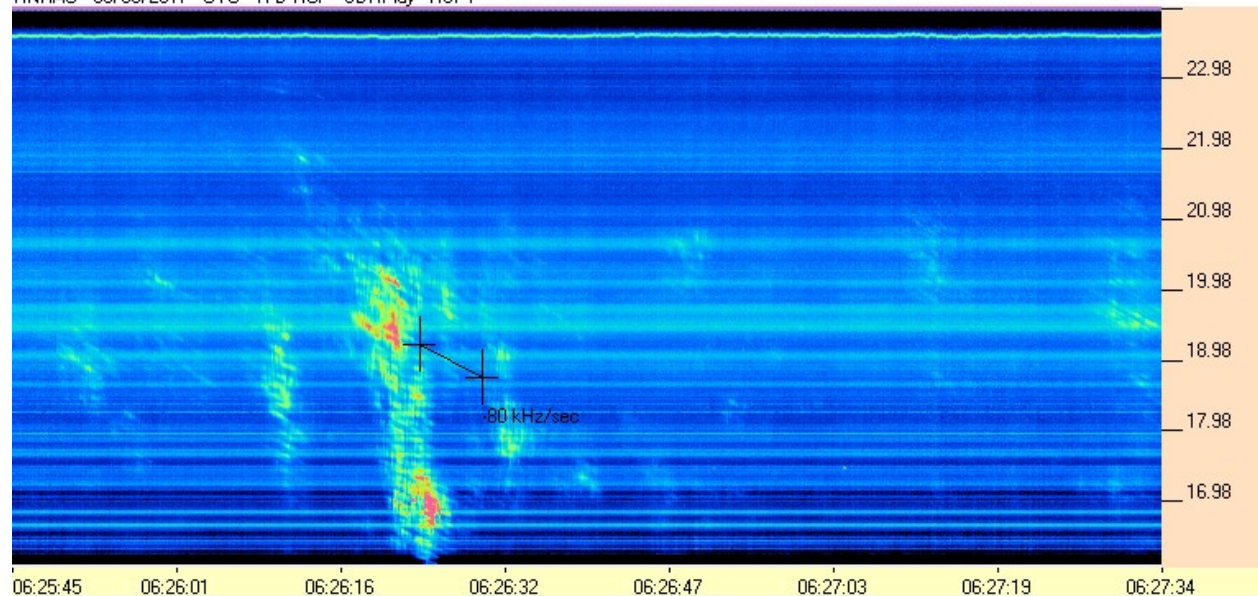
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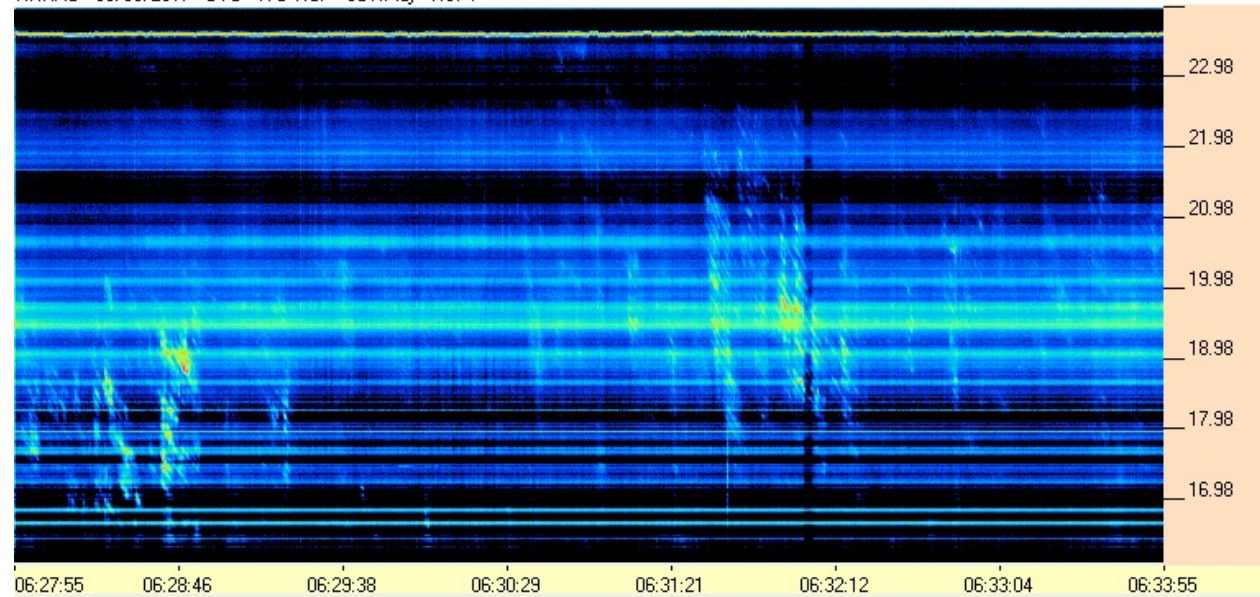
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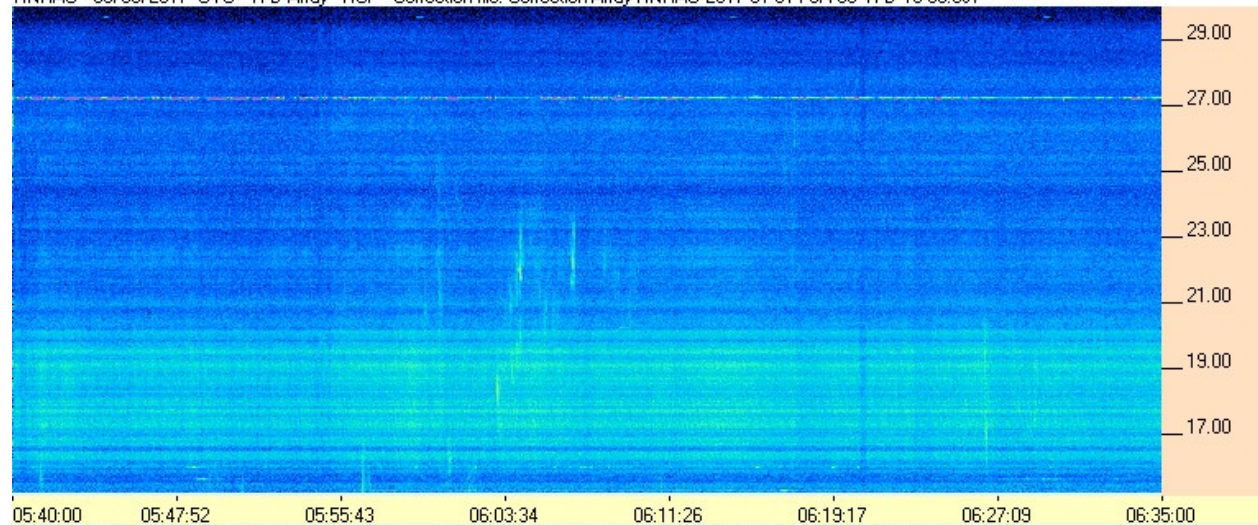


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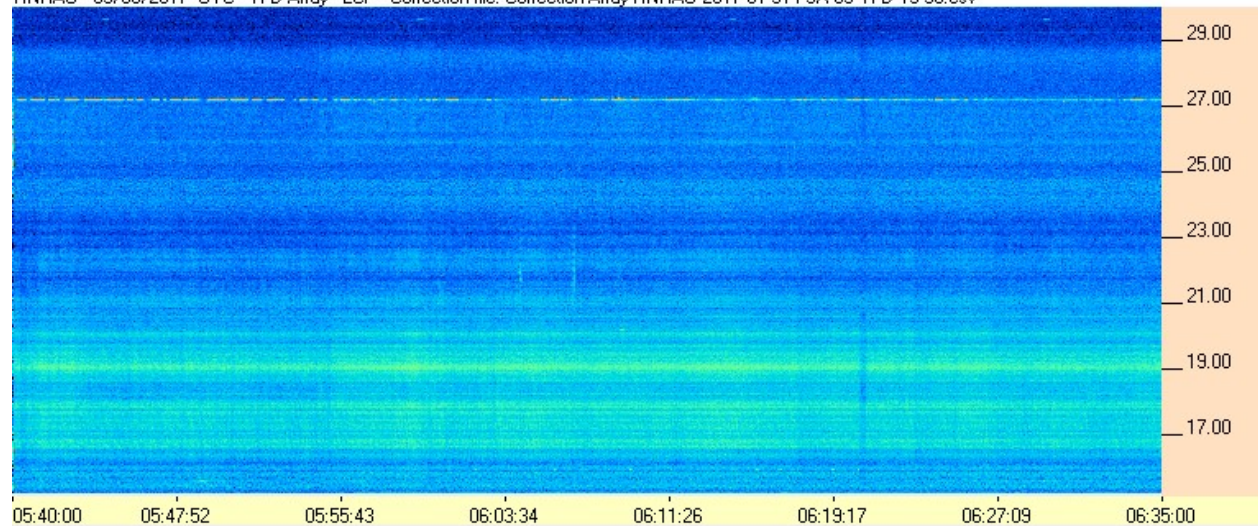


FSX-8S/TFD Pair

HNRAO - 03/06/2017 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



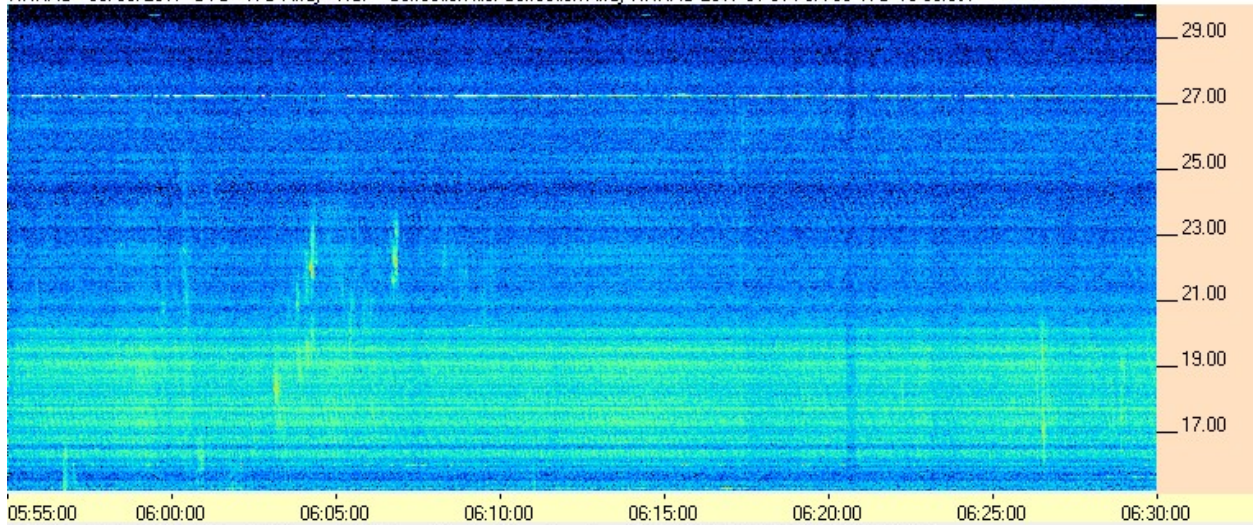
HNRAO - 03/06/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



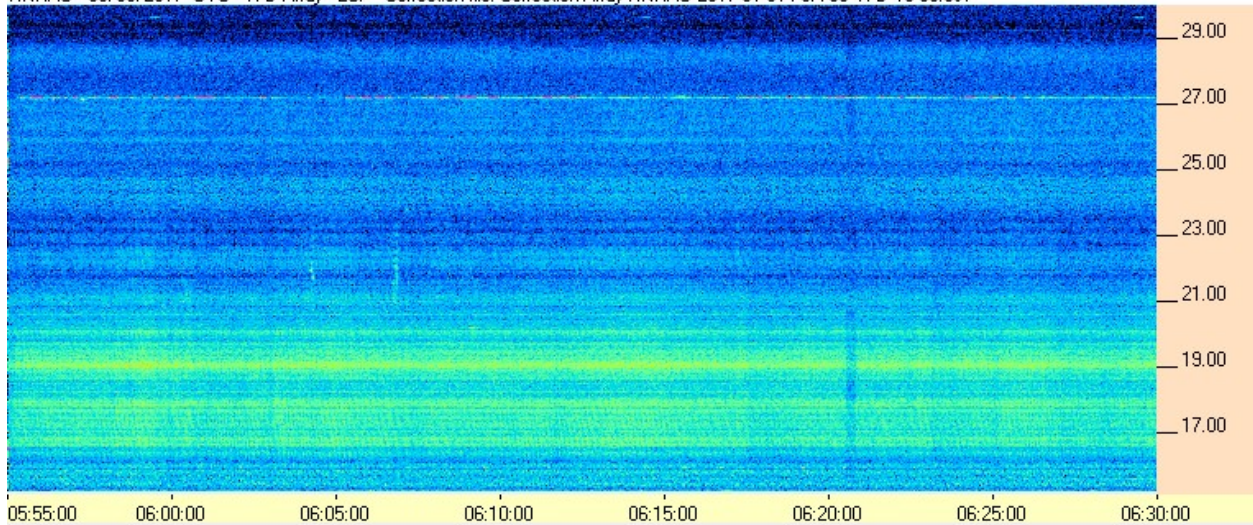
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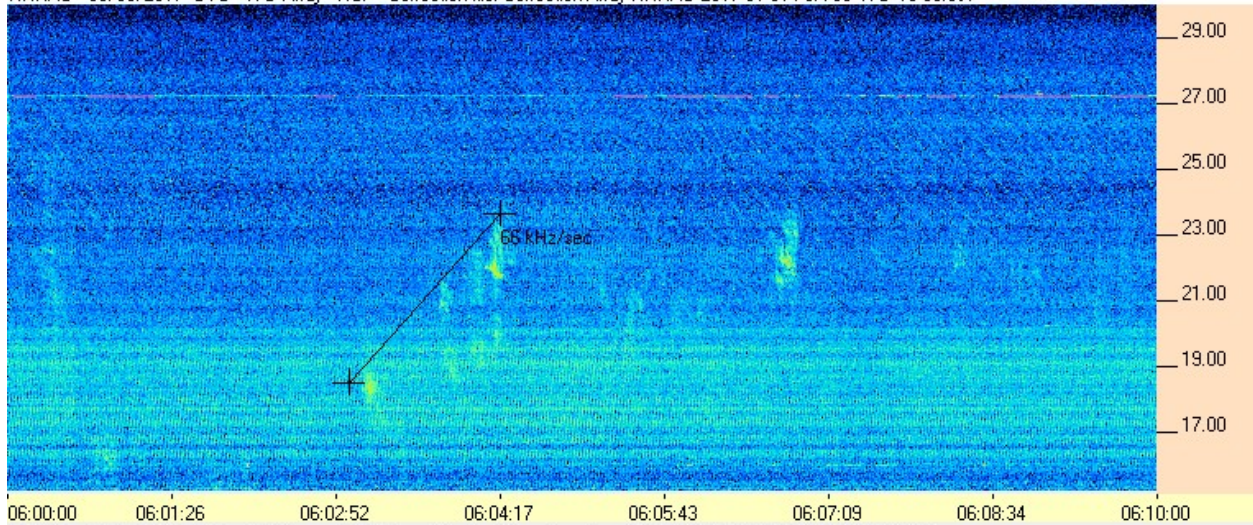
HNRAO - 03/06/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



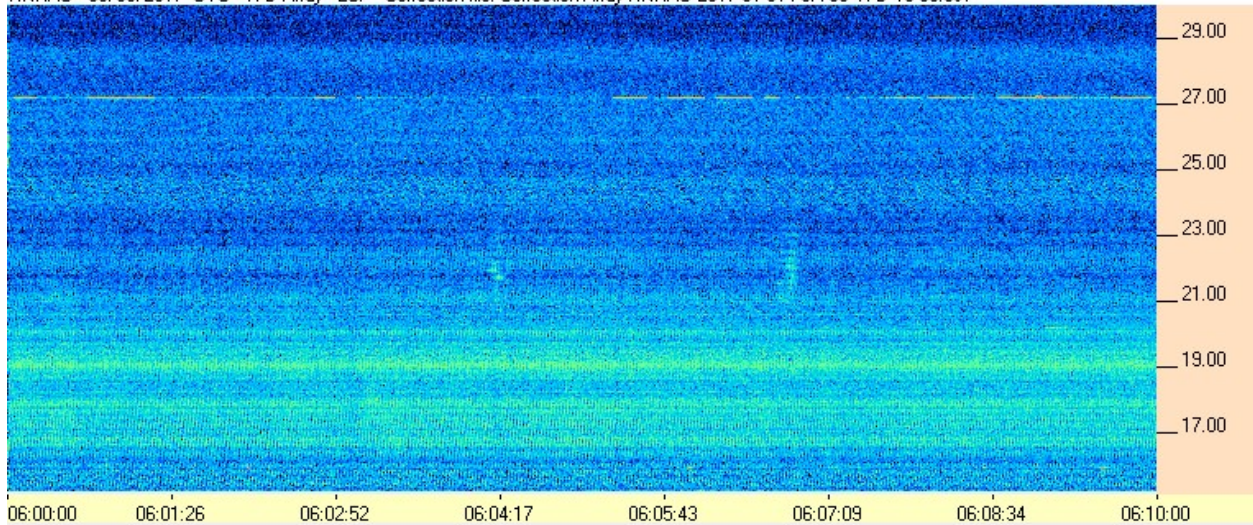
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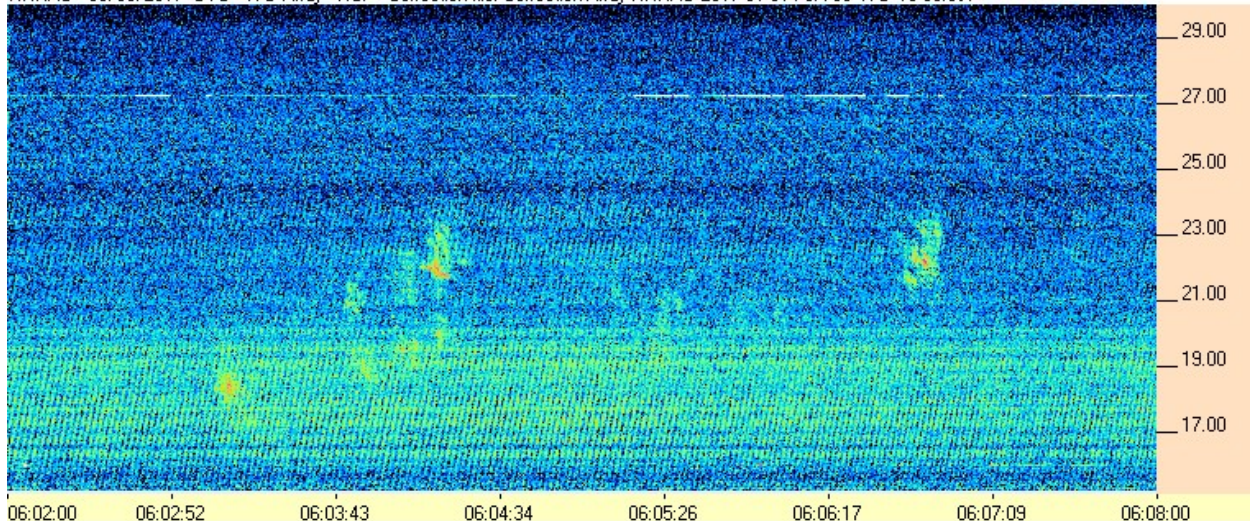
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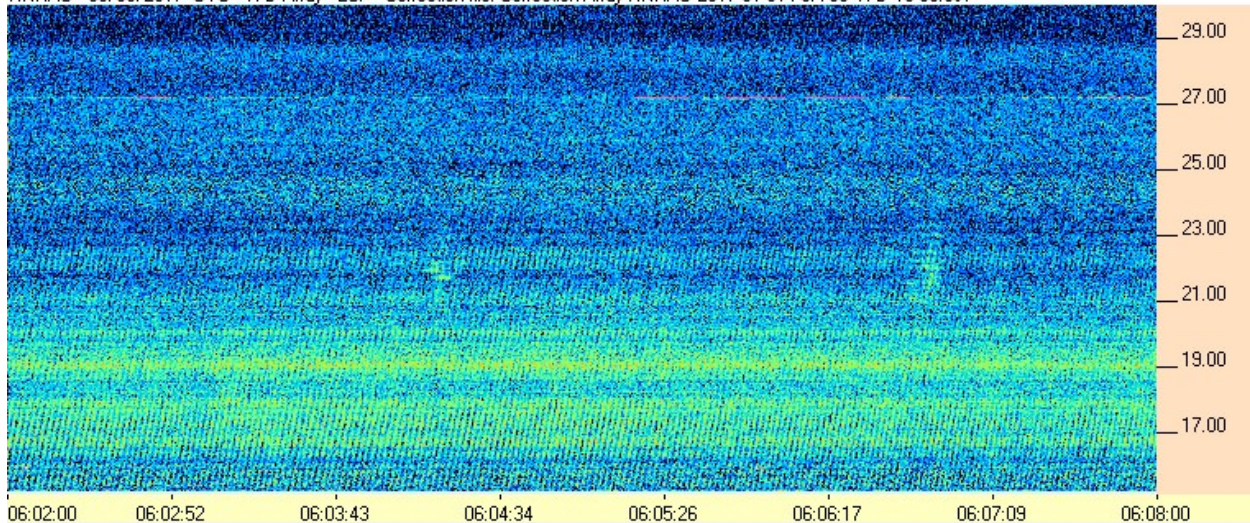
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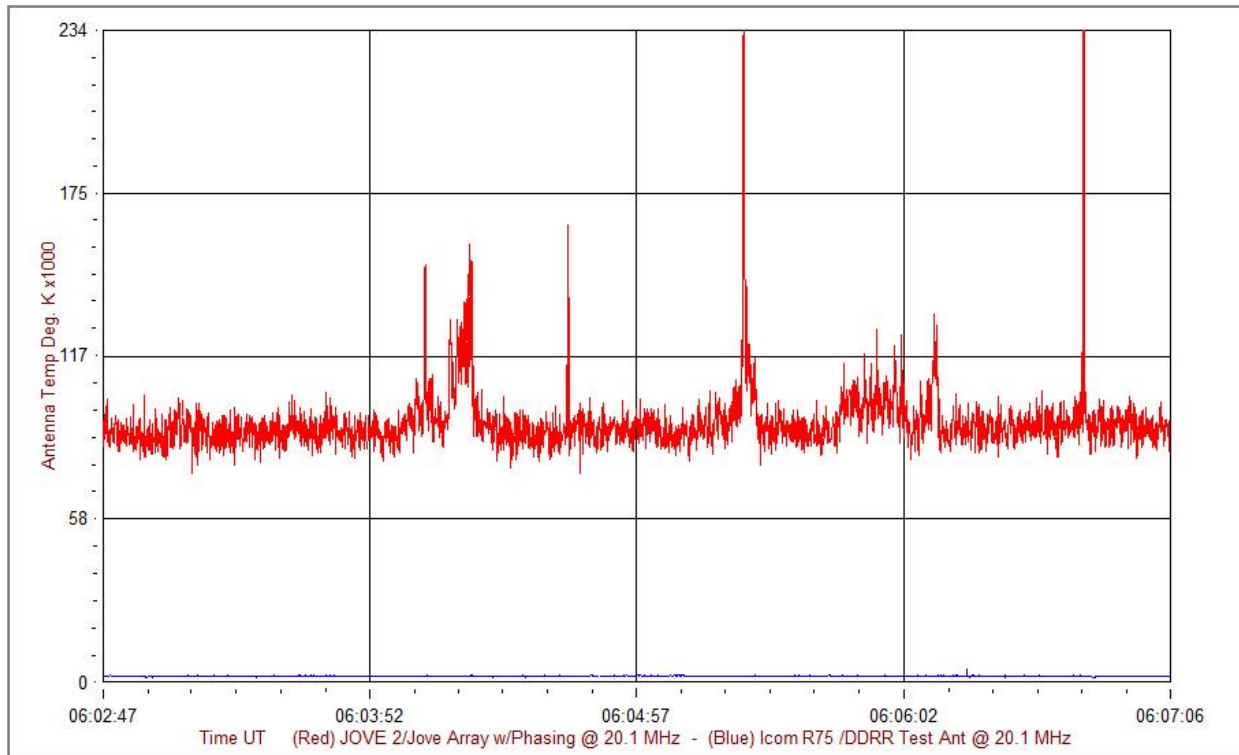
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JOVE Receiver/JOVE Dipole pair @ 20.1 MHz



HNRAO - 03/06/2017 - UTC - TFD RCP - SDRPlay - RSP1

