

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 5 March 2017

Object: Jupiter – Io-B

Observer: JB

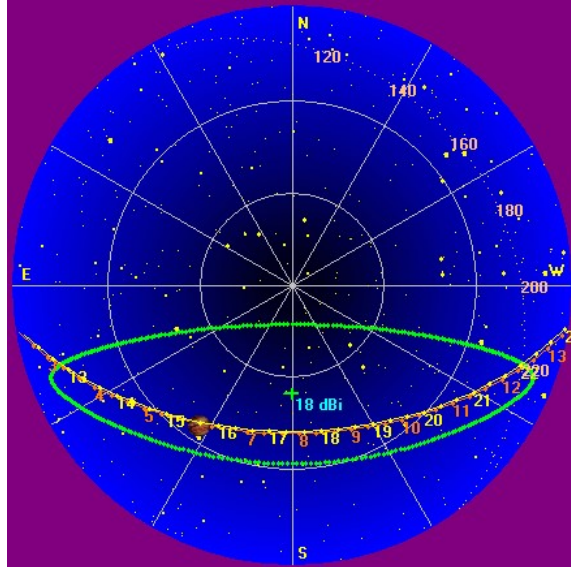
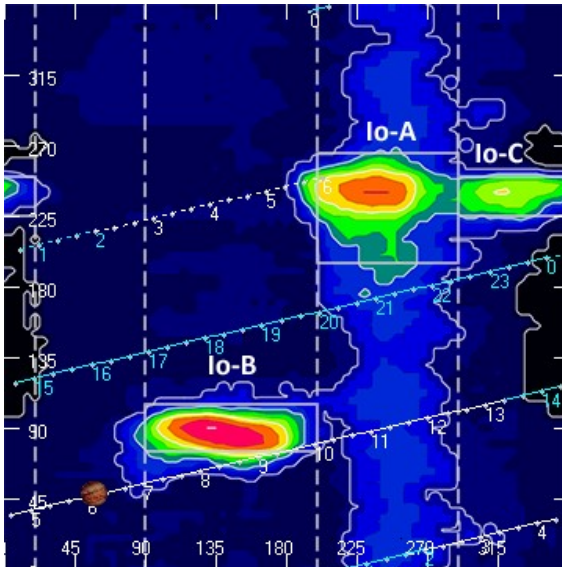
Start of pass:	0607 UT	Planetary K-index:	2
Jupiter Altitude:	36.4 degrees	Jupiter Azimuth:	146.9 degrees
Jupiter CML:	57.04	Jupiter Io Phase:	047.34
Jupiter RA:	13:23	Jupiter Dec:	-07:06
Hour Angle:	-01:45	Polarization	RCP
Sun Altitude:	-54.8 degrees	Sun Azimuth:	017.8 degrees
Sun RA:	22:57	Sun Dec:	-06:41

End of pass:	0816 UT		
Jupiter Altitude:	41.9 degrees	Jupiter Azimuth:	188.1 degrees
Jupiter CML:	135.04	Jupiter Io Phase	065.43
Hour Angle:	00:24	Modulation lane avg	152 kHz/sec
Sun Altitude:	-39.2 degrees	Sun Azimuth:	059.8 degrees

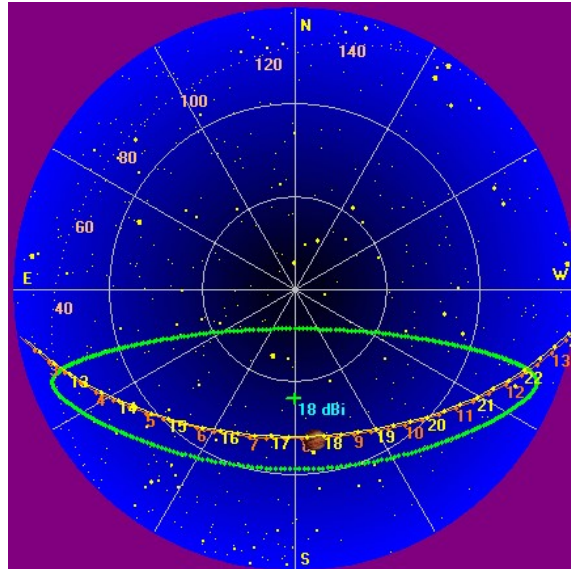
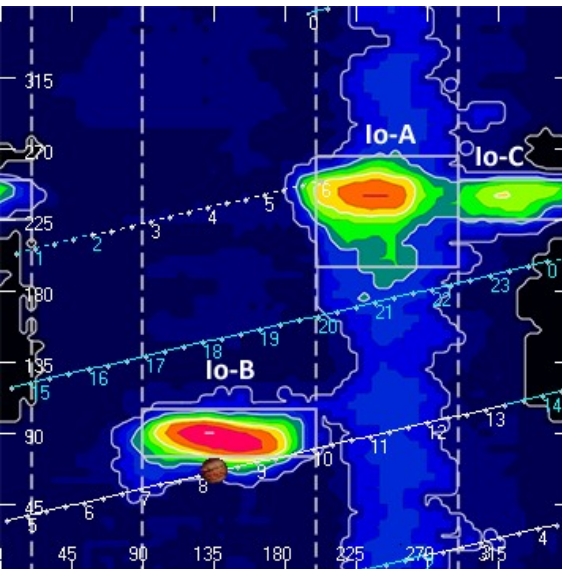
Observations made using:

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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Settings for RSP1

Gain Reduction = 3
Center frequency = 20 MHz (changed several times during storm)
Bandpass = 8 MHz
SR = 12 MHz
FS = 2^9
Integration time (s) = 0.1
Offset = 0.1
Gain = 6

RSS

CO = 0
CG = .4

Beginning between the non-Io-C and Io-B region, this was another weak to moderate strength Io-B storm. Populated by L-bursts and a few S-burst clusters. A large percentage of the emissions were slightly above the galactic background, while others were several dB stronger. Positive drift modulation lanes with a measured average of 152 kHz/sec were seen throughout the entire storm. Emissions were very weak, but the expected Io-B early vertex positive drift emissions were identifiable, 0712-0715 UT, there were negative drift emissions within the overall positive drift emissions, such as 0713-0713:30 UT. S-bursts measured at 0838 UT peaked at 400,000 kK.

0607 UT

Very weak L-burst emission
20-23 MHz
Modulation lanes present

0635 UT

L-bursts
24-21 MHz
Positive modulation lanes

0637 UT

24-22 MHz
L-bursts
Positive modulation lanes

0645 UT

Very weak L-bursts
24-23 MHz
Positive modulation lanes

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0656 UT

L-bursts
22-19 MHz

All emissions are very weak. Barely above GB.

0701 UT – 0702 UT

Stronger L-bursts
Possible N-event at 23 MHz

0713 UT

L-bursts
23-17 MHz
Negative drift
147 kHz/sec positive modulation lanes

0745 UT

Curious “hot” spot.

0808 UT

Negative drift 18-17 MHz

0821 UT

Much stronger emission
Modulation lanes appear to have changed

0835 UT

Modulation lanes still different from start of storm

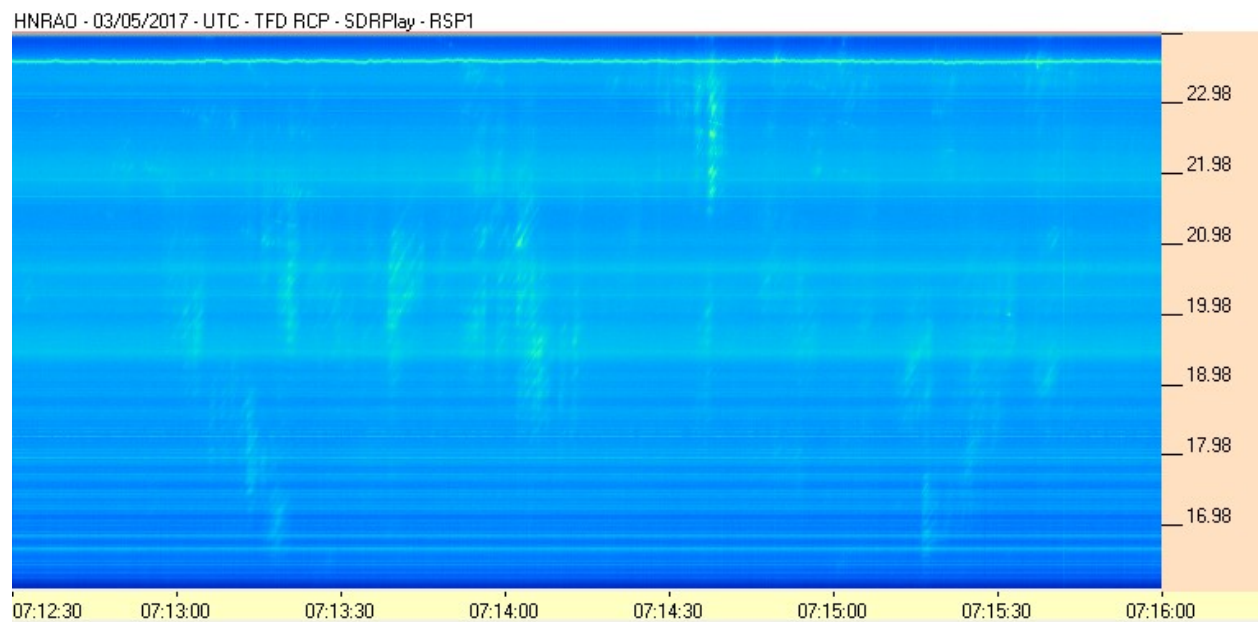
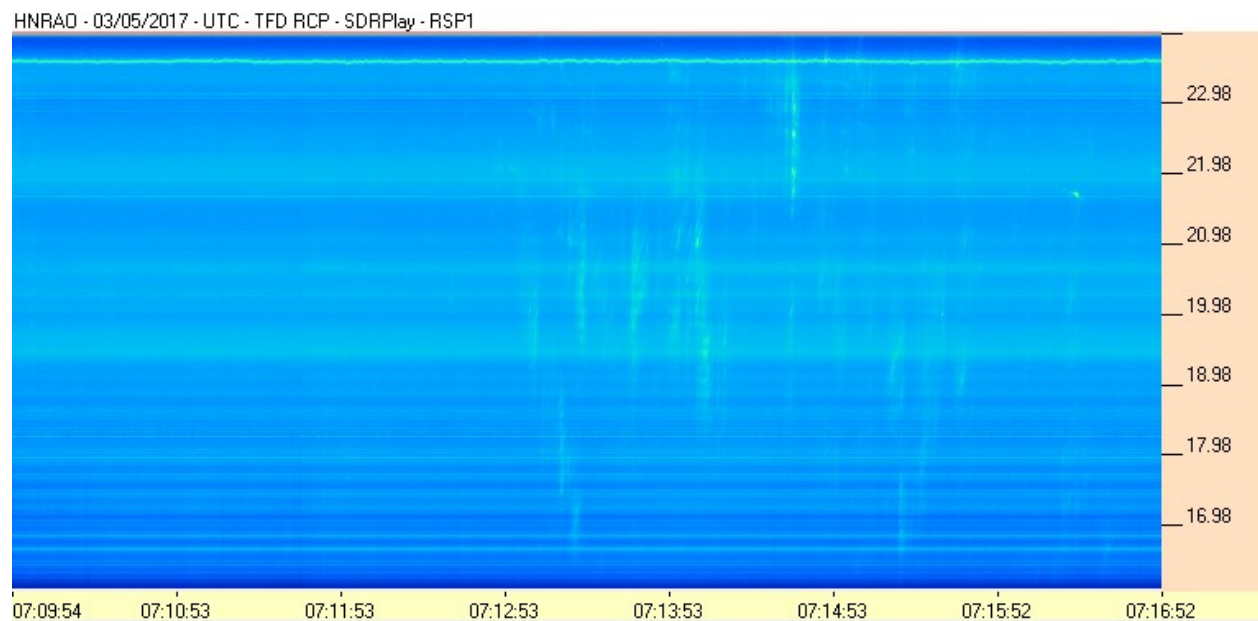
0837 UT – 0843 UT

Clusters of S-bursts passing through JOVE frequency at 20.1 MHz
SkyPipe trace recording them

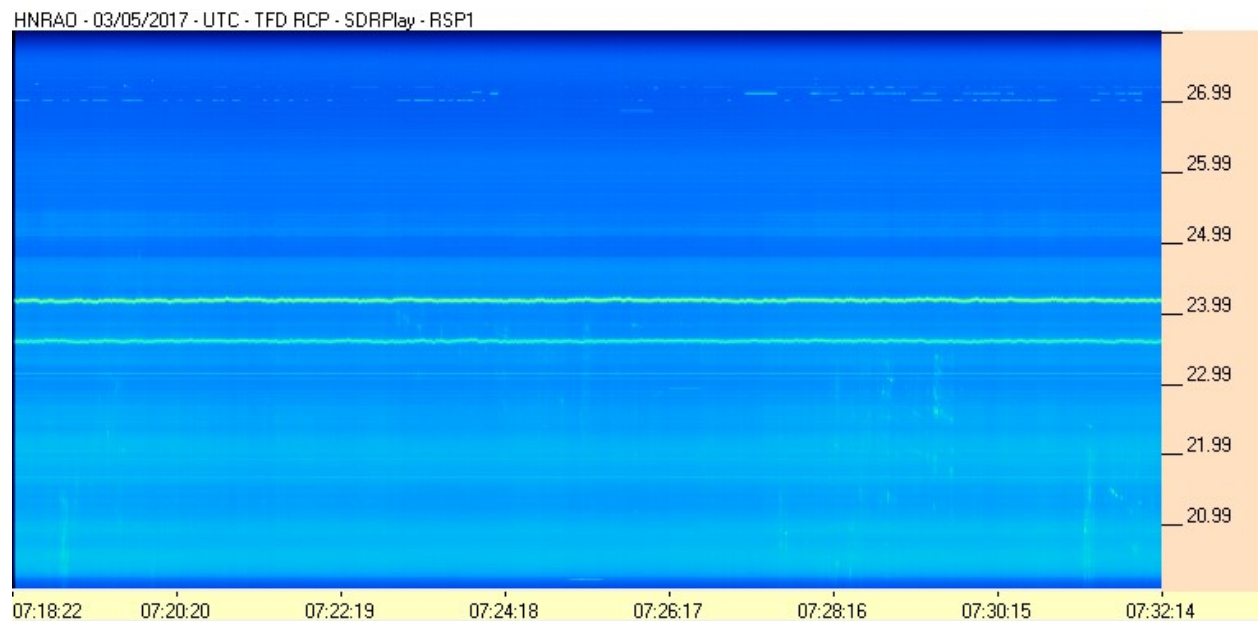
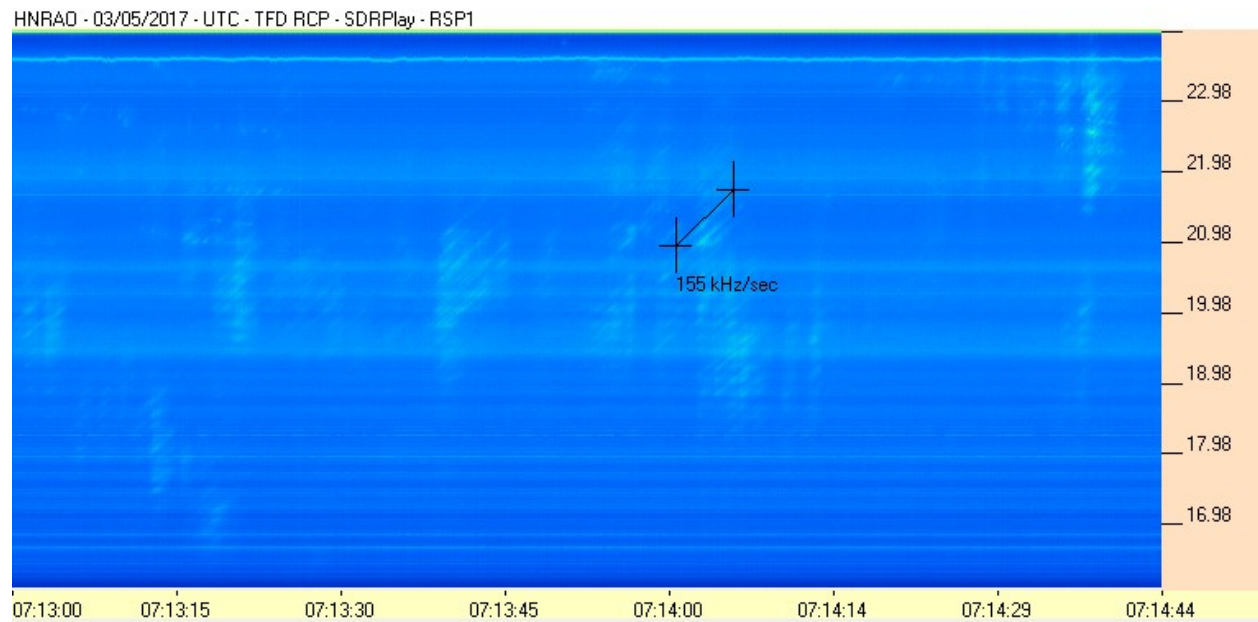
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SDRPlay/RSP1/TFD Pair



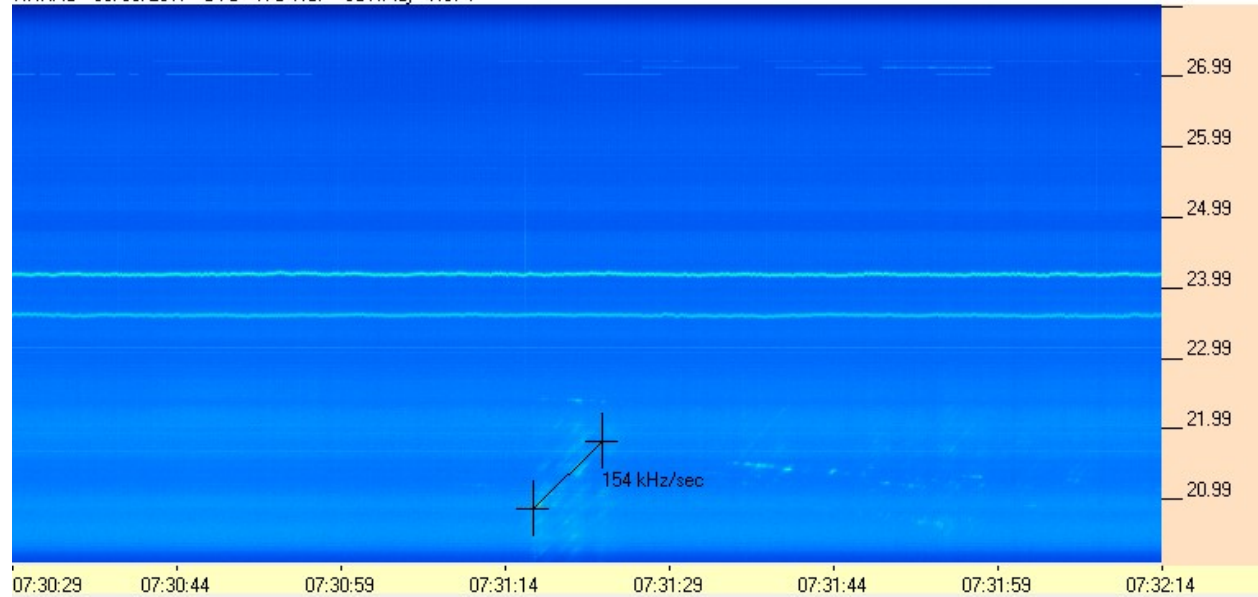
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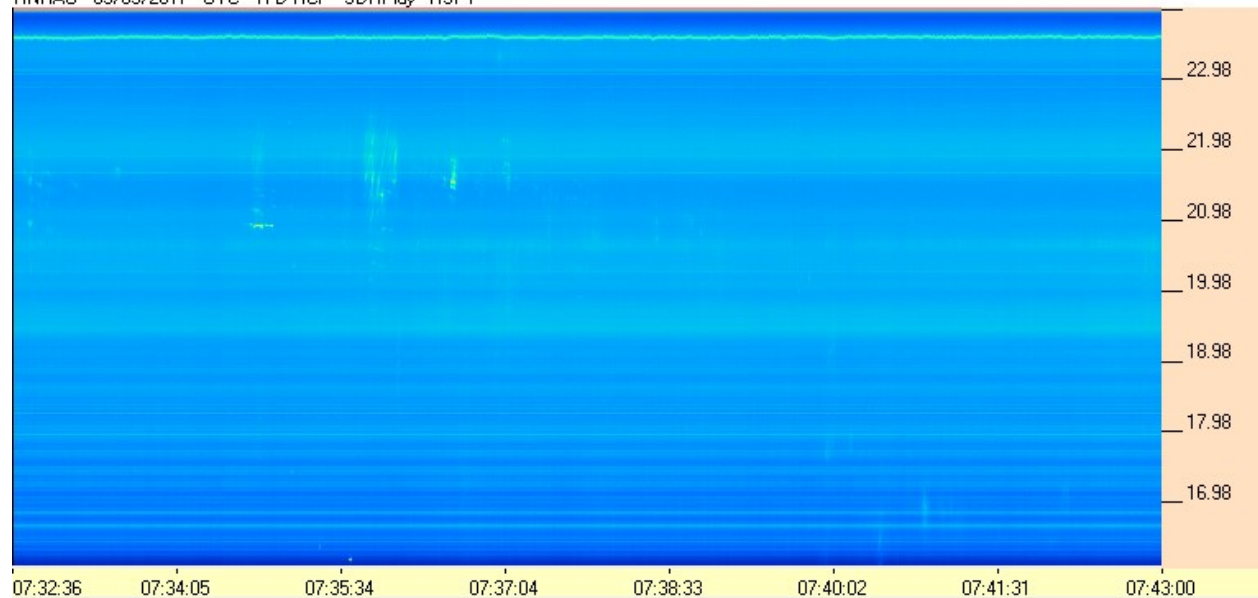
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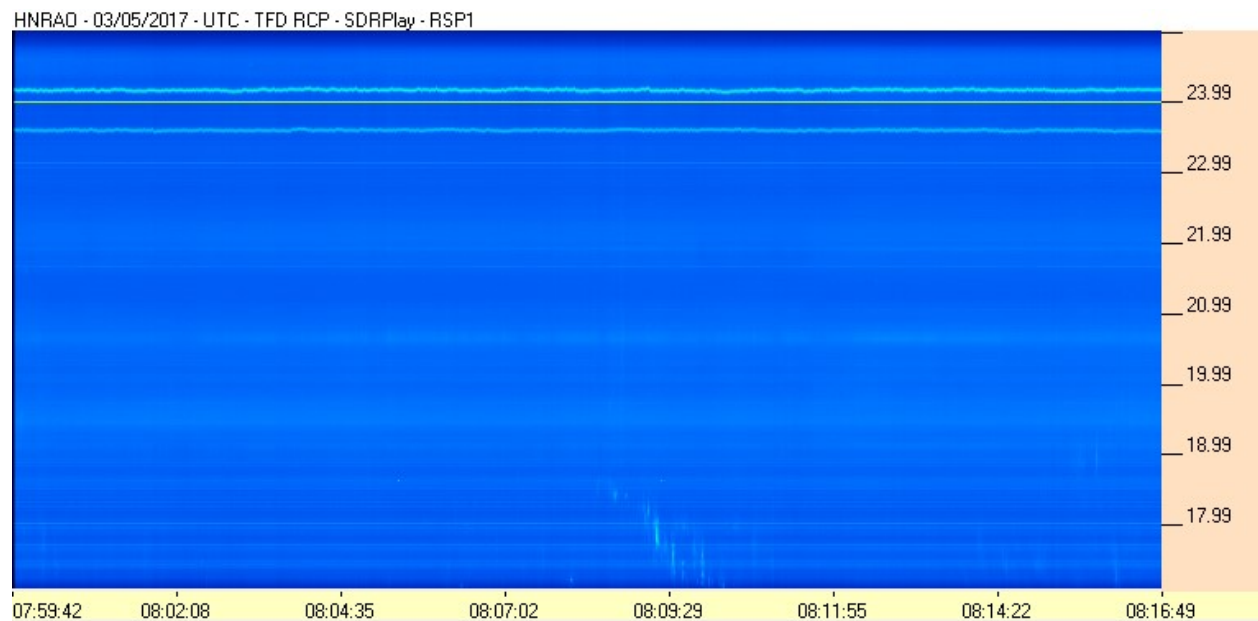
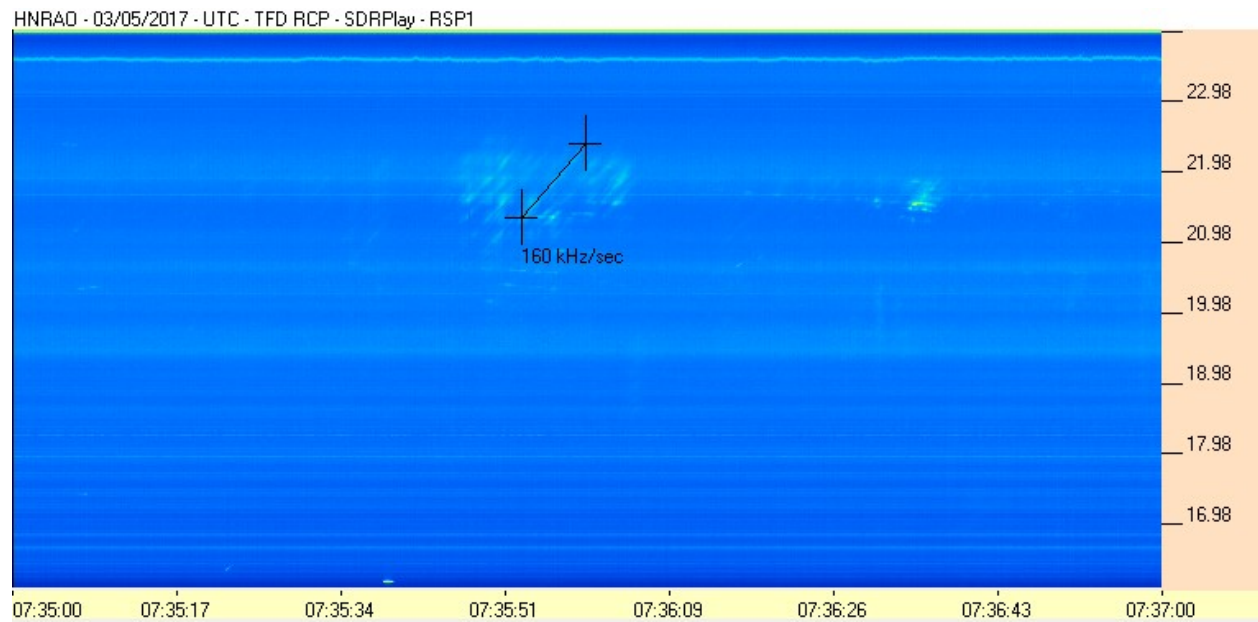
HNRAO - 03/05/2017 - UTC - TFD RCP - SDRPlay - RSP1



HNRAO - 03/05/2017 - UTC - TFD RCP - SDRPlay - RSP1



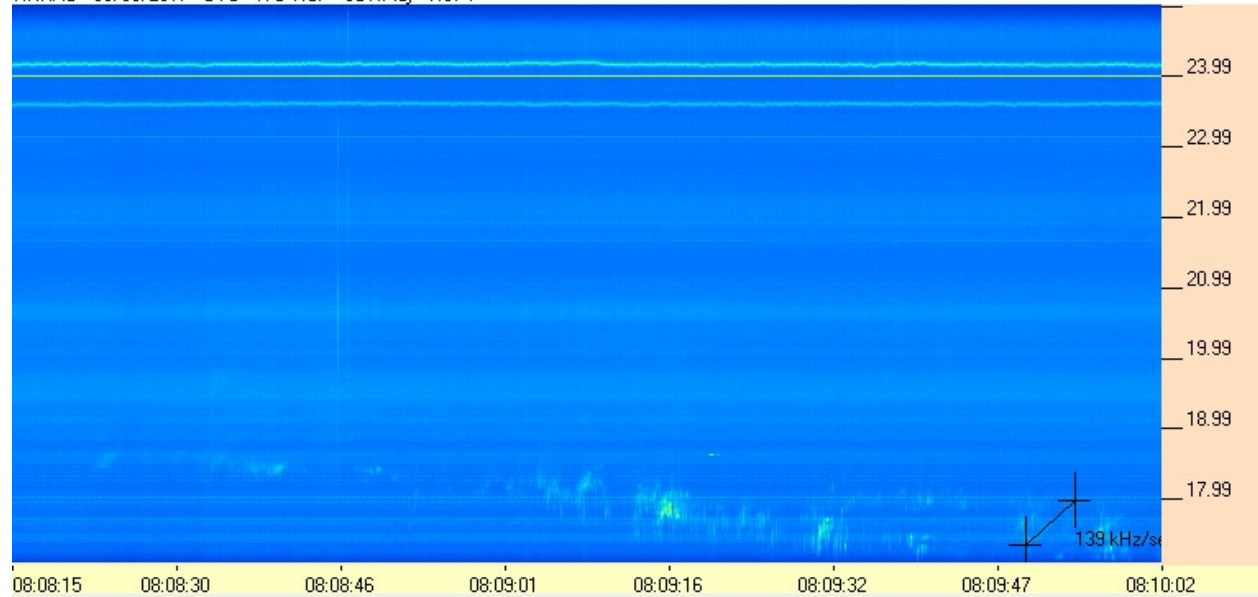
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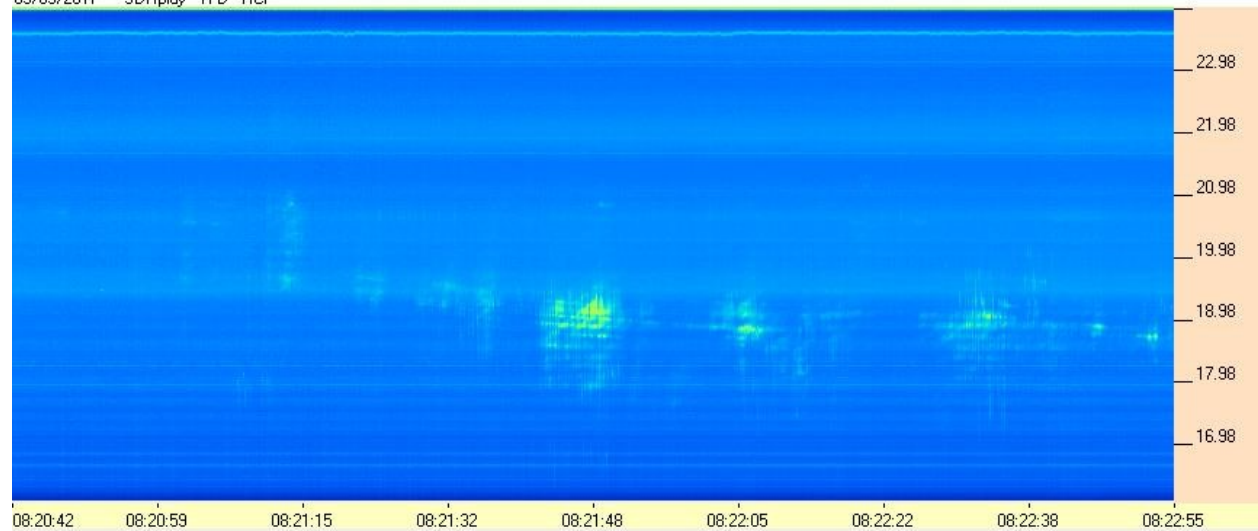
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HNRAO - 03/05/2017 - UTC - TFD RCP - SDRPlay - RSP1



03/05/2017 - - SDRplay - TFD - RCP

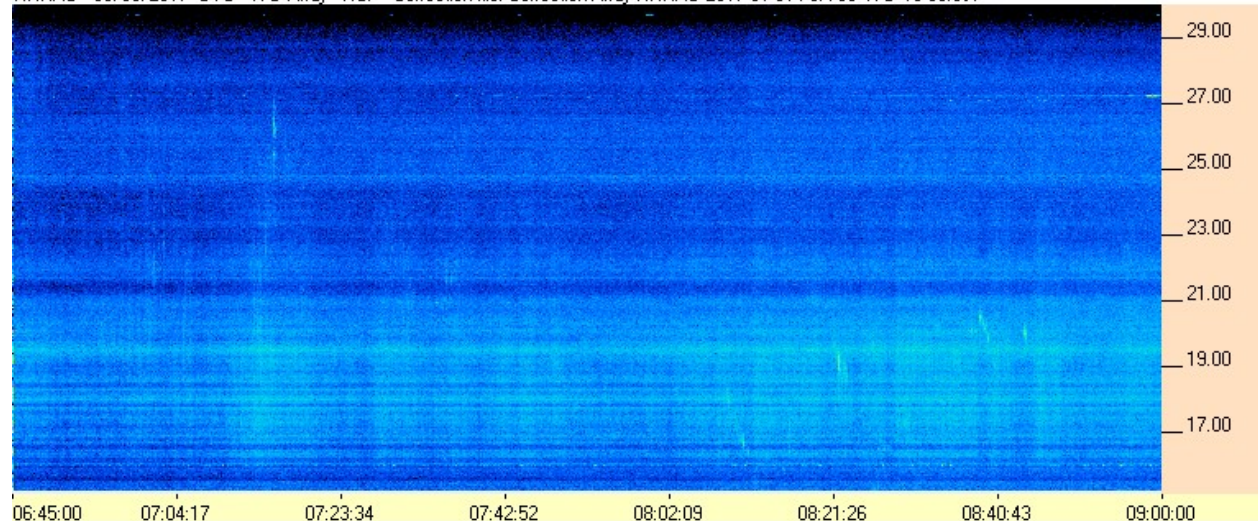


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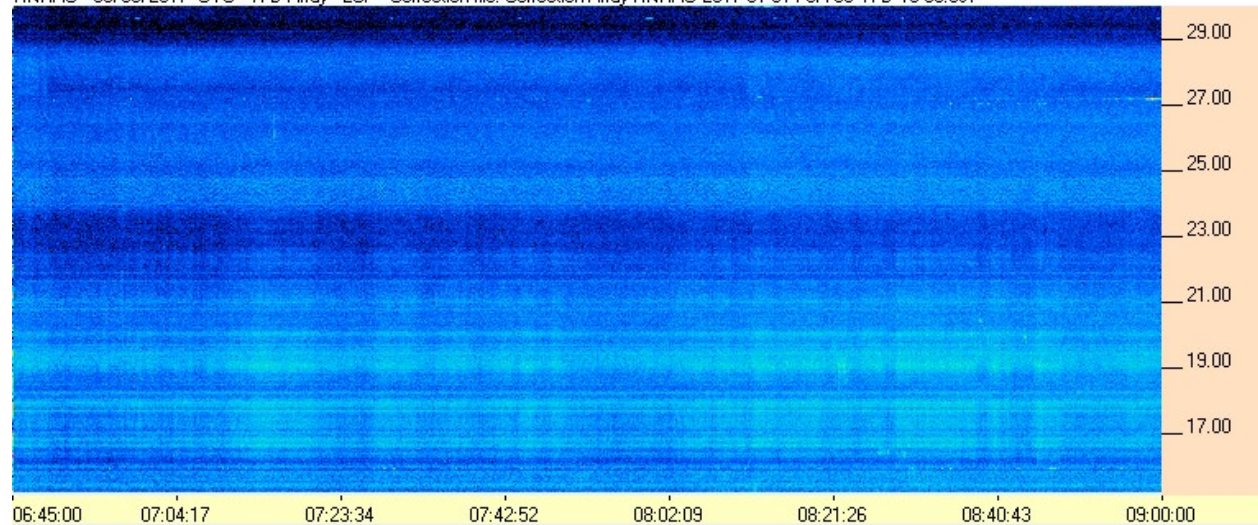


FSX-8S/TFD Pair

HNRAO - 03/05/2017 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



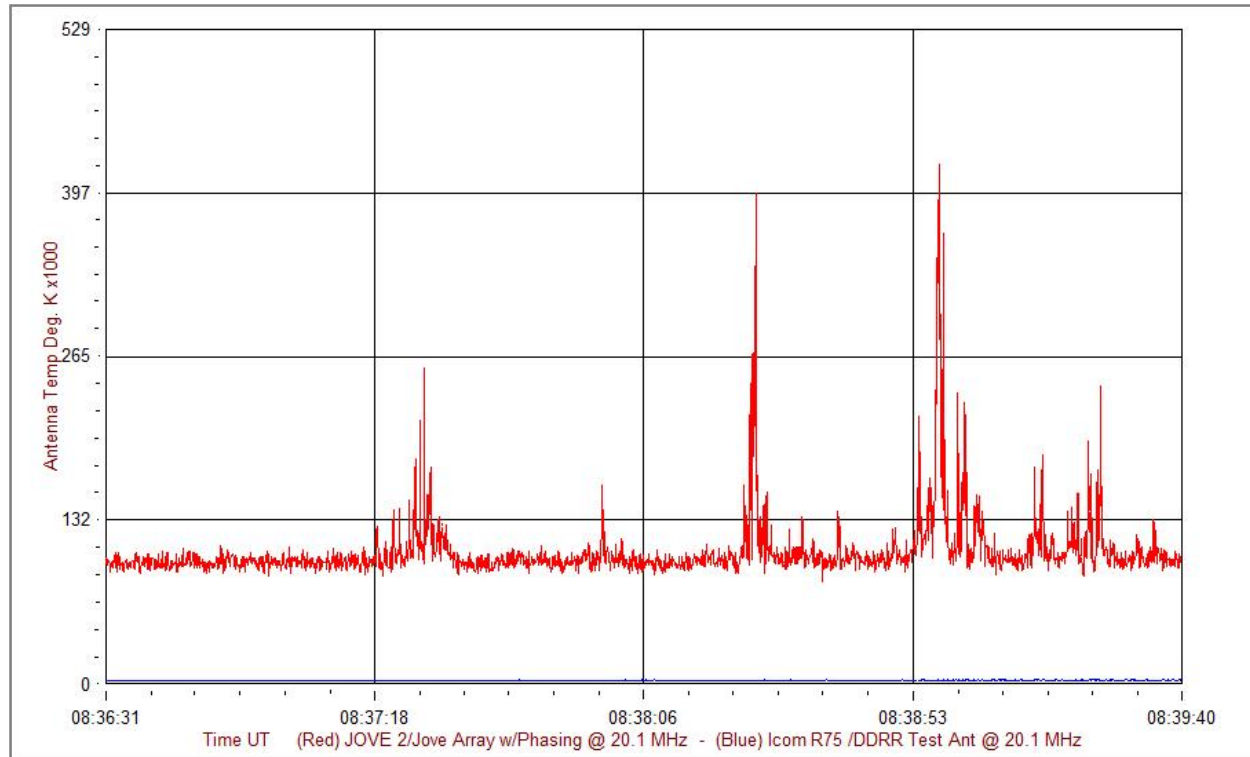
HNRAO - 03/05/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



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Radio JOVE/JOVE dipole pair



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