

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: April 22, 2018

Object: Jupiter – Non-Io-C

Observer: Unattended

Start - Time UT:	0641	Planetary K-index:	2
Jupiter Altitude (deg):	32.7	Jupiter Azimuth (deg):	182.1
Jupiter CML:	301.48	Jupiter Io Phase:	184.26
Jupiter RA (hr/min):	15:13	Jupiter Dec (hr/min):	-16:36
Hour Angle (hr/min):	00:07	Polarization	RCP
Sun Altitude (deg):	-34.0	Sun Azimuth (deg):	026.2
Sun RA (hr/min):	01:52	Sun Dec (hr/min):	11:33

End – Time UT:	0707	De:	-3.4
Jupiter Altitude (deg):	32.2	Jupiter Azimuth (deg):	189.5
Jupiter CML:	317.2	Jupiter Io Phase	187.94
Hour Angle (hr/min):	00:33	Duration (min):	18
Sun Altitude (deg):	-31.5	Sun Azimuth (deg):	033.2
Max Frequency MHz	19	Min Frequency MHz	15

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

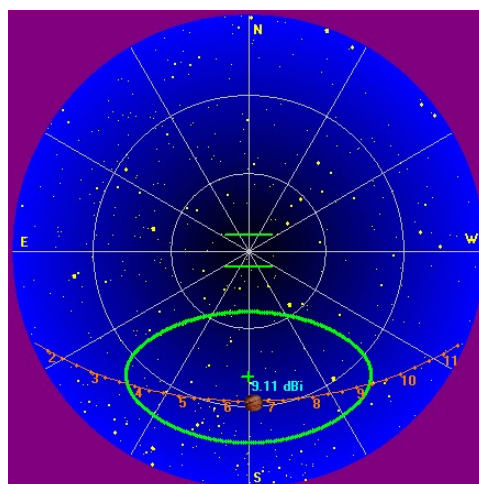
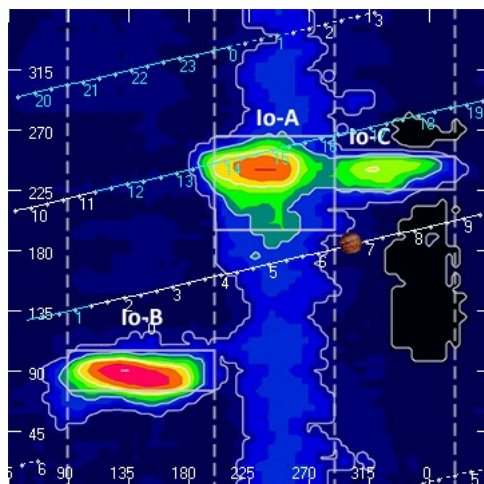
TFD array phased @ 35 degrees for 2017-2018 season

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

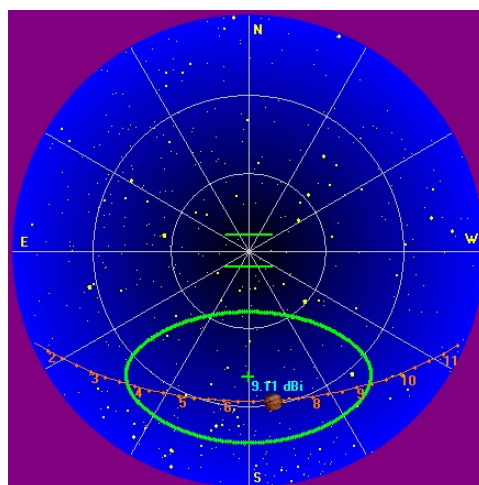
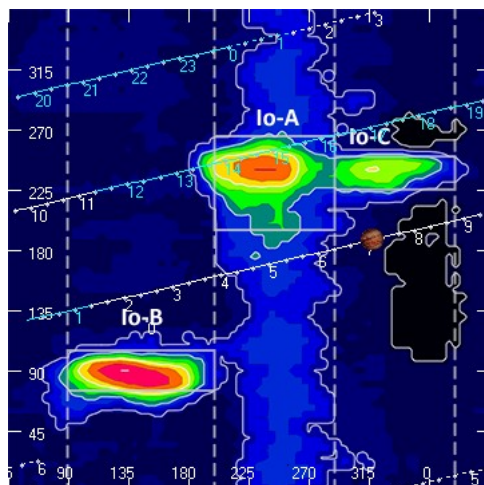
* Used for testing and evaluating antenna systems

Software Radio Sky Spectrograph 2.8.50

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Beginning of Pass



End of Pass

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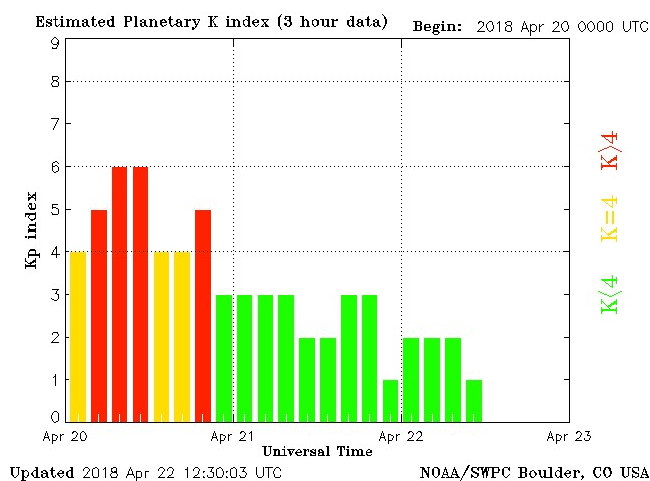


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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 extremely weak Non-Lo-C storm. Most emission, with a few exceptions were barely above the GB. Storm began with diffuse L-bursts at 17 MHz. Emissions dropped to 16 MHz at 0651 UT. Negative slope L4 modulation lanes began to appear at 0655 UT. There were only 4 measurable modulation lanes observed. There were no other modulation lanes seen. While still diffuse, a stronger burst appeared at 0701 UT between 16 & 17 MHz possibly 3 dB (+/-) above GB. The last visible emissions were seen here at 0707 UT. Total duration from first emission visible to last was 18 min. LCP records for the same time revealed nothing. Given how weak emissions were observed, it's reasonable to conclude that if Jupiter were not at transit, it's unlikely anything would have been seen.

Some emissions were observed with the FSX-2 / LWA Array and FSX-8S / TFD Array, but in both cases, emissions were slightly above GB.

Emissions never rose above 19 MHz so no SkyPipe record. Given the weak intensity of emissions and the liner nature of the Jove dipoles, it's unlikely that any of the emissions would have been detected even if they had reached above 20 MHz.

Nothing else worth noting.

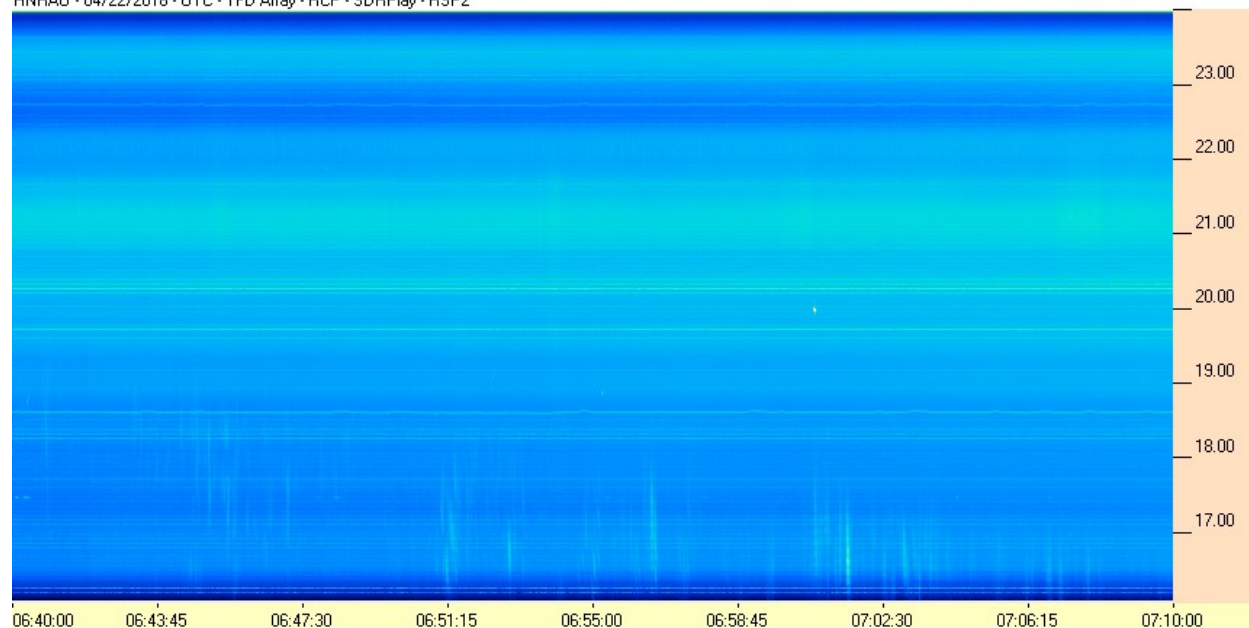
EOR

SDRPlay RSP2 / TFD Array

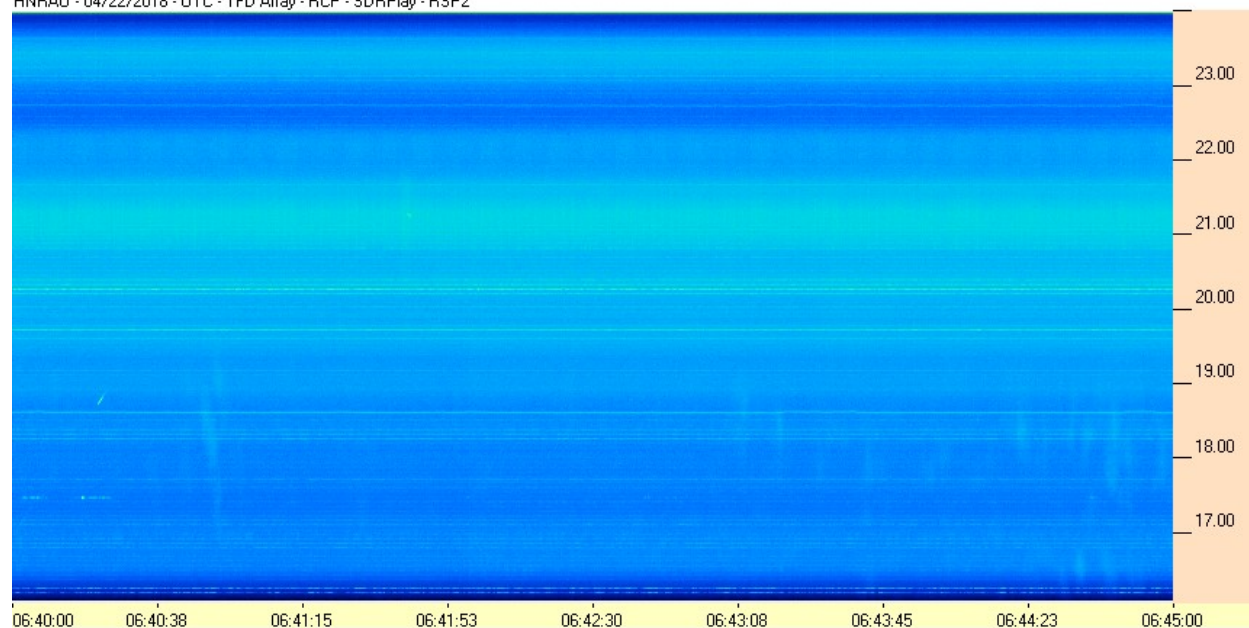
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HNRAO - 04/22/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2



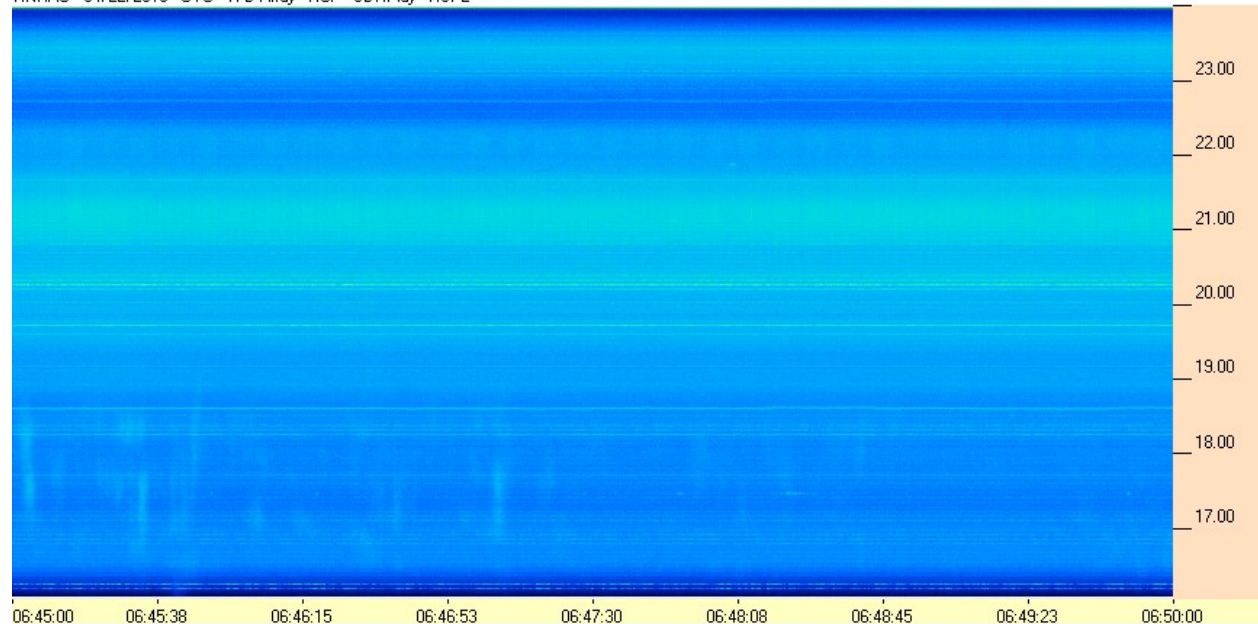
HNRAO - 04/22/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2



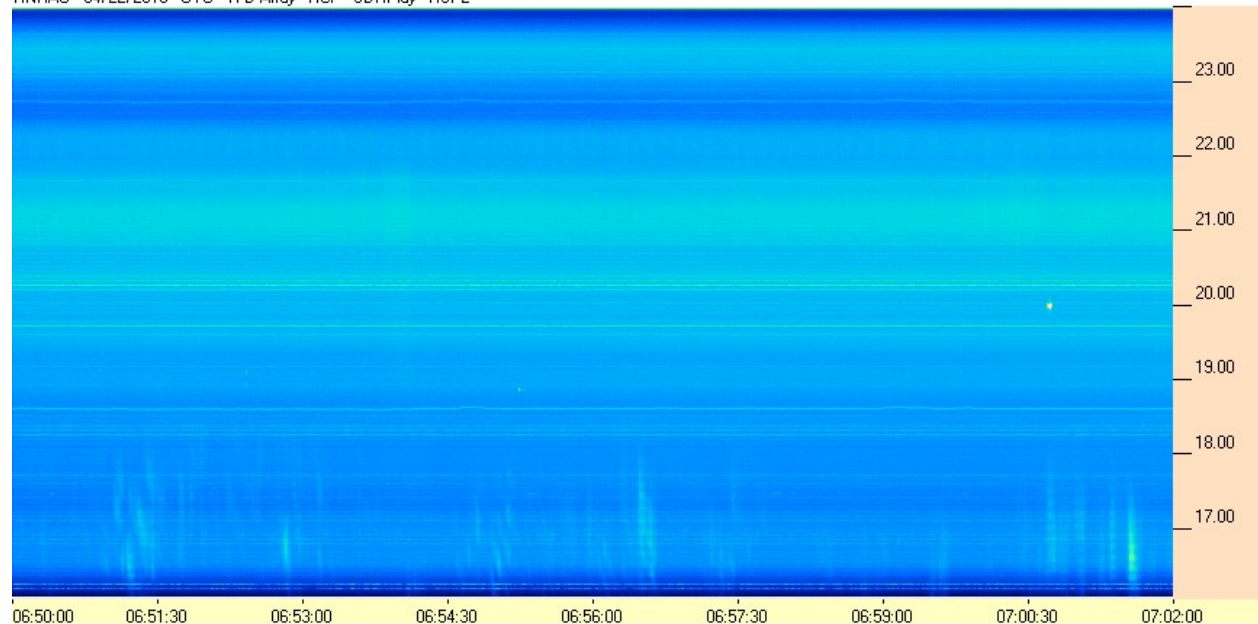
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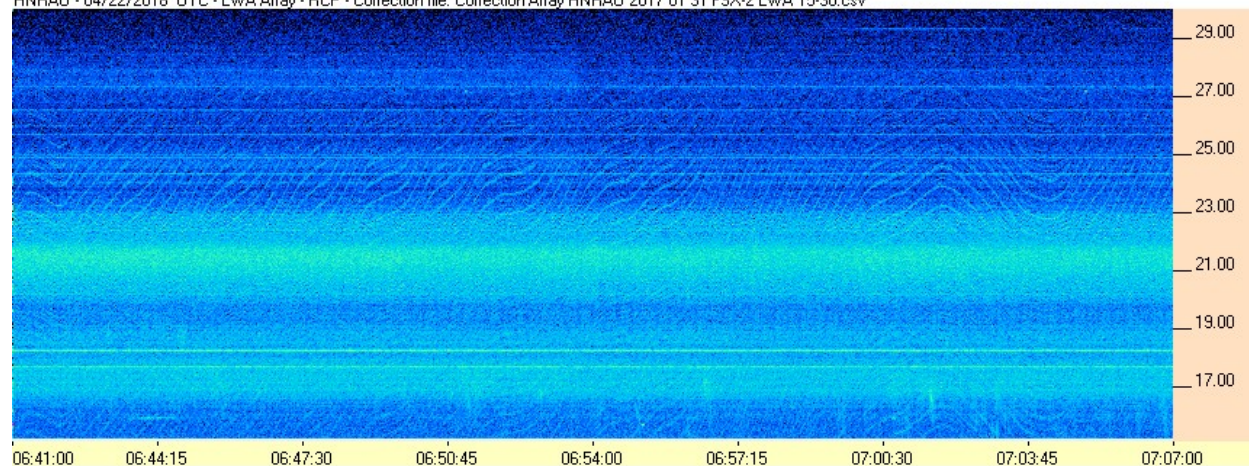


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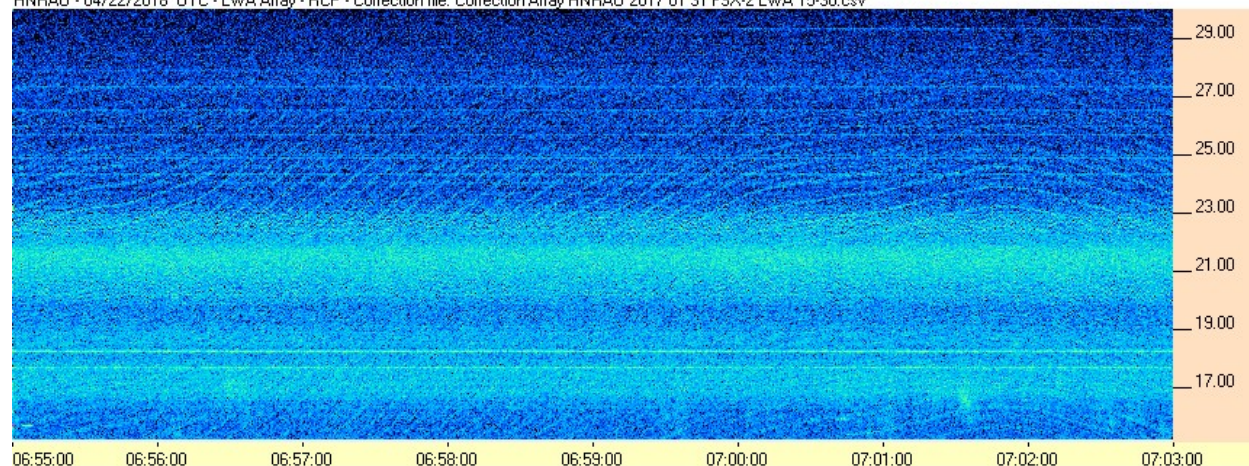


FSX-2 / LWA Array

HNRAO - 04/22/2018 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv



HNRAO - 04/22/2018 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv

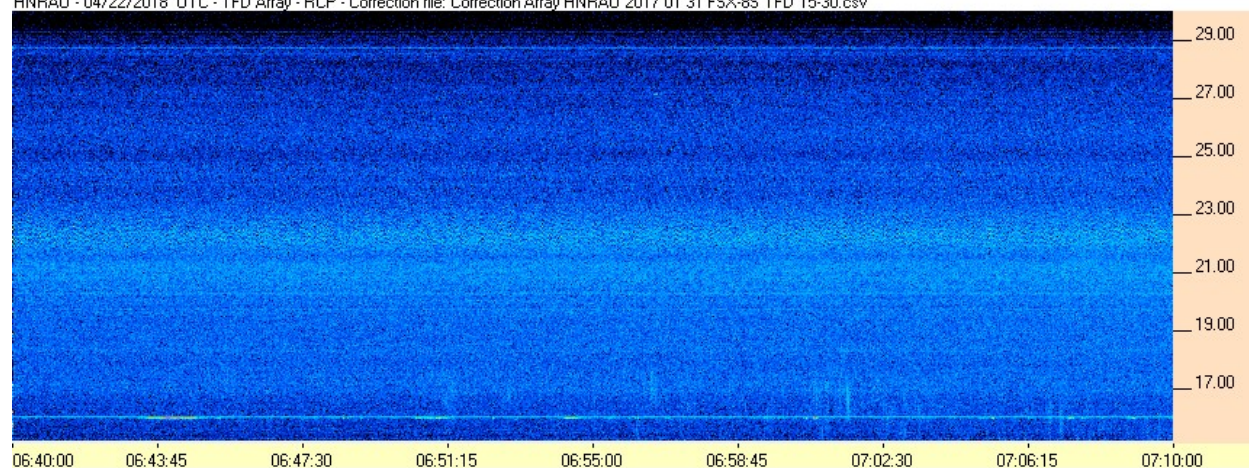


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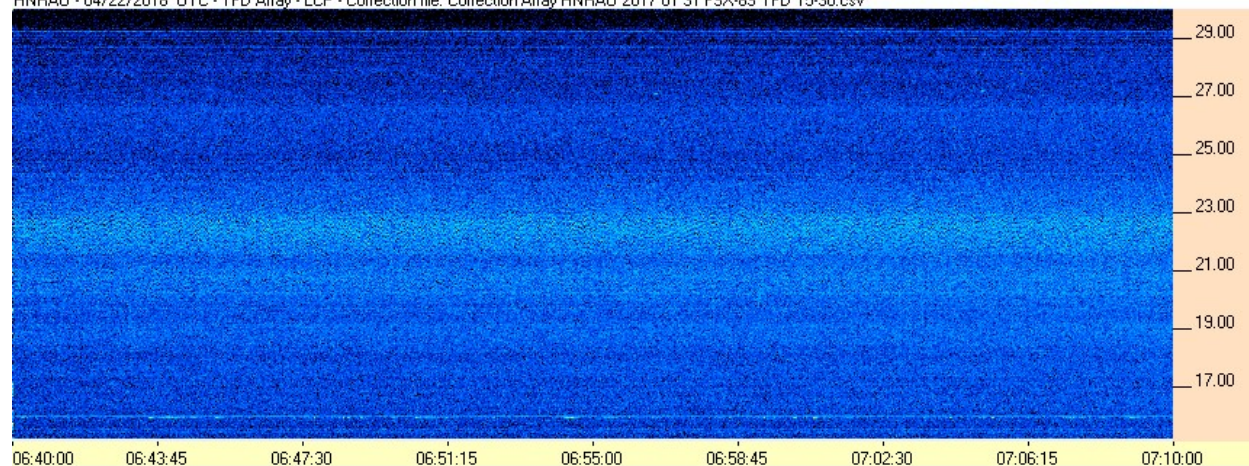


FSX-8S / TFD Array

HNRAO - 04/22/2018 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



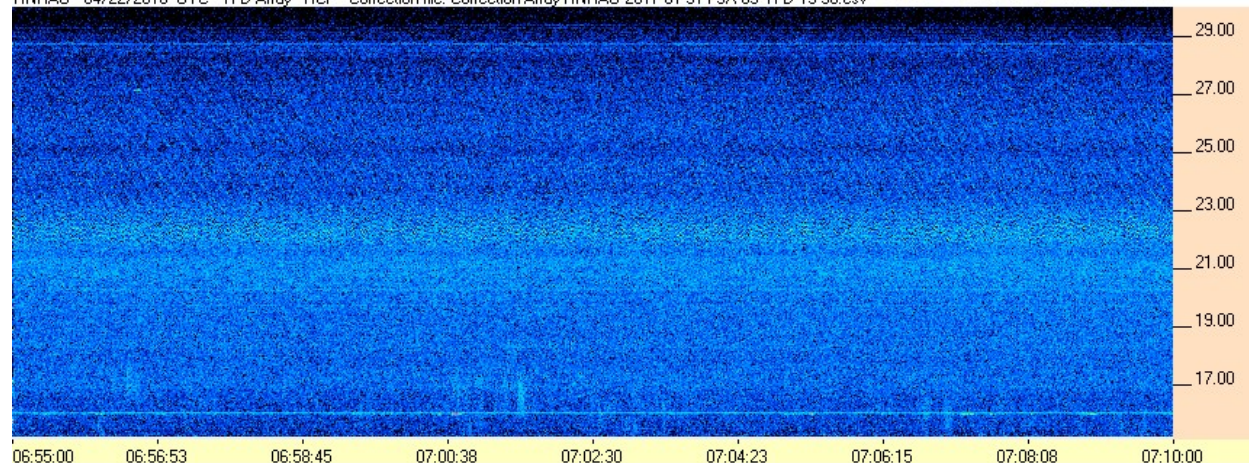
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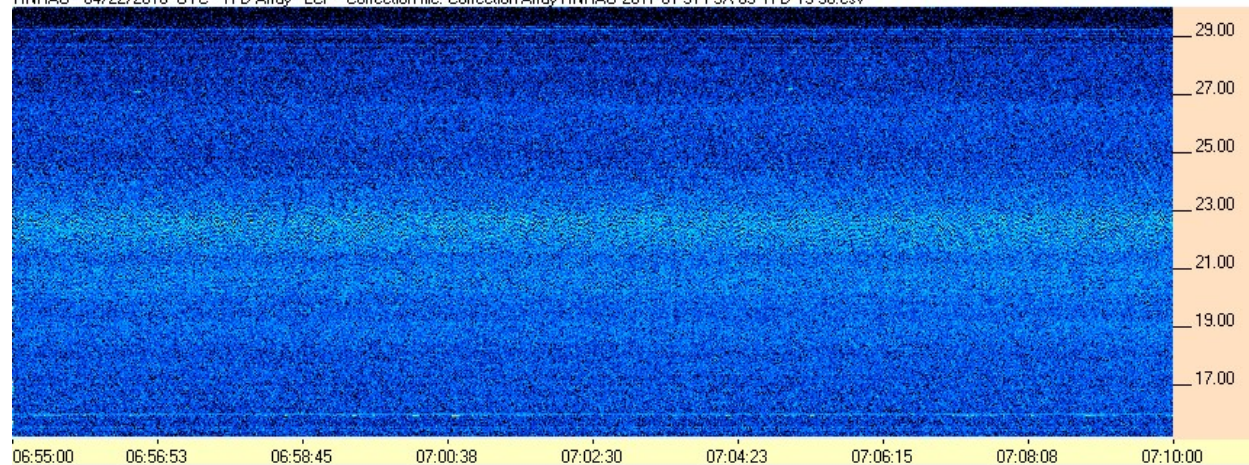
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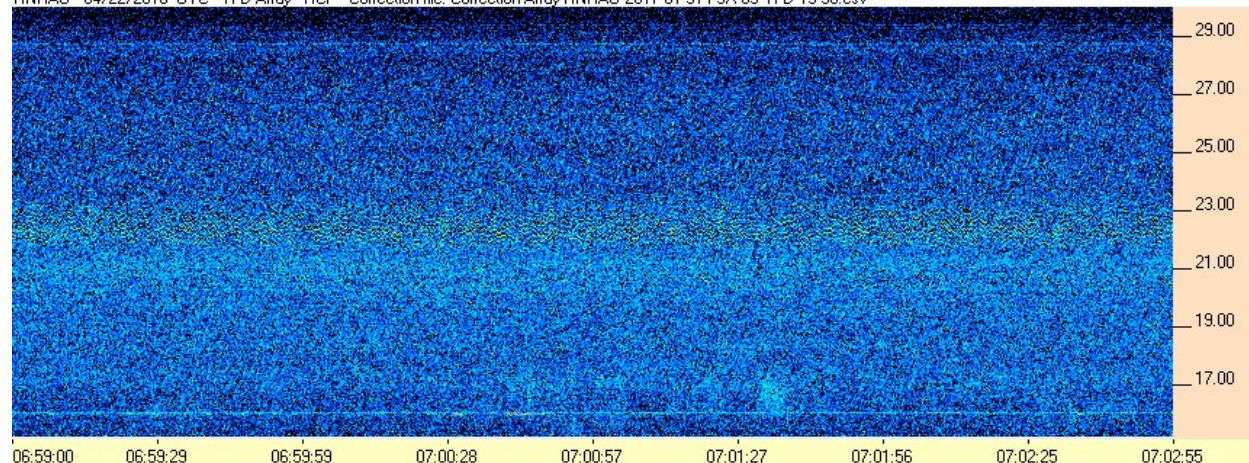
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