HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 2 April 2018

Object: Jupiter – Io-B

Observer: Unattended

Start - Time UT:	**0608**	**Planetary K-index:**	**1**
Jupiter Altitude (deg):	**26.6**	**Jupiter Azimuth (deg):**	**149.9**
Jupiter CML:	**148.08**	**Jupiter Io Phase:**	**068.47**
Jupiter RA (hr/min):	**15:20**	**Jupiter Dec (hr/min):**	**-17:06**
Hour Angle (hr/min):	**-0:52**	**Polarization**	**RCP**
Sun Altitude (deg):	**-43.7**	**Sun Azimuth (deg):**	**017.2**
Sun RA (hr/min):	**00:39**	**Sun Dec (hr/min):**	**04:10**

End – Time UT:	**0654**		
Jupiter Altitude (deg):	**30.2**	**Jupiter Azimuth (deg):**	**161.7**
Jupiter CML:	**175.9**	**Jupiter Io Phase**	**074.93**
Hour Angle (hr/min):	**-1:06**		
Sun Altitude (deg):	**-40.1**	**Sun Azimuth (deg):**	**031.9**
Max Frequency MHz	**16**	**Min Frequency MHz**	**22**

Observatory Configuration

Spectrograph Receiver	Antenna	Polarization	System Loss	Multicoupler	Multicoupler port	Calibrated
FSX-8S	TFD	RCP LCP	-7.95 dB -7.95 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	-7.95 dB	#2 RCP	Port 2 +3dB	Twice daily
SDRPlay RSP2	TFD	LCP	-7.95 dB	#1 LCP	Port 2 +3dB	Twice daily
JOVE 1	TFD	RCP	-7.95 dB	#2 RCP	Port 3 +3 dB	03/08/2018
JOVE 1	TFD	LCP	-7.95 dB	#1 LCP	Port 3 +3 dB	03/08/2018
JOVE II	Jove dipoles	Linear	-3.12 dB	#3 Linear	Port 4 +3 dB	02/20/2018
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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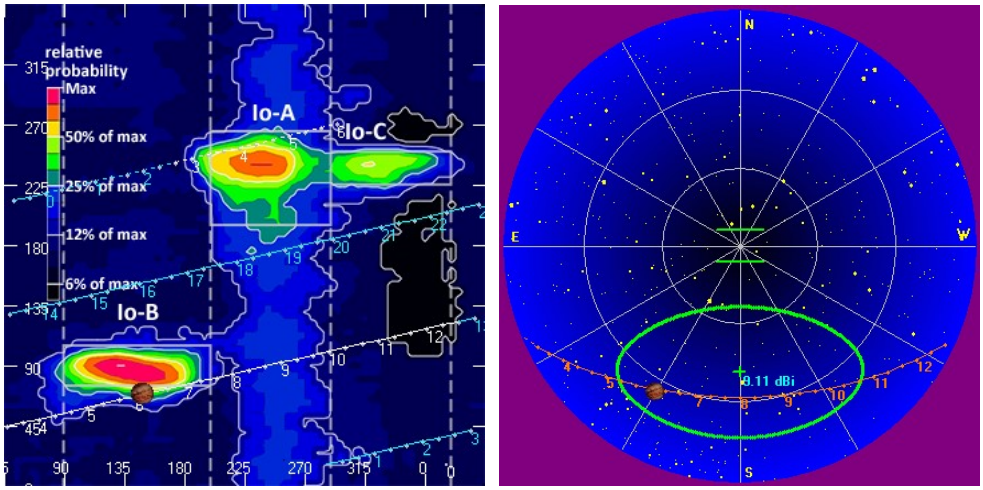
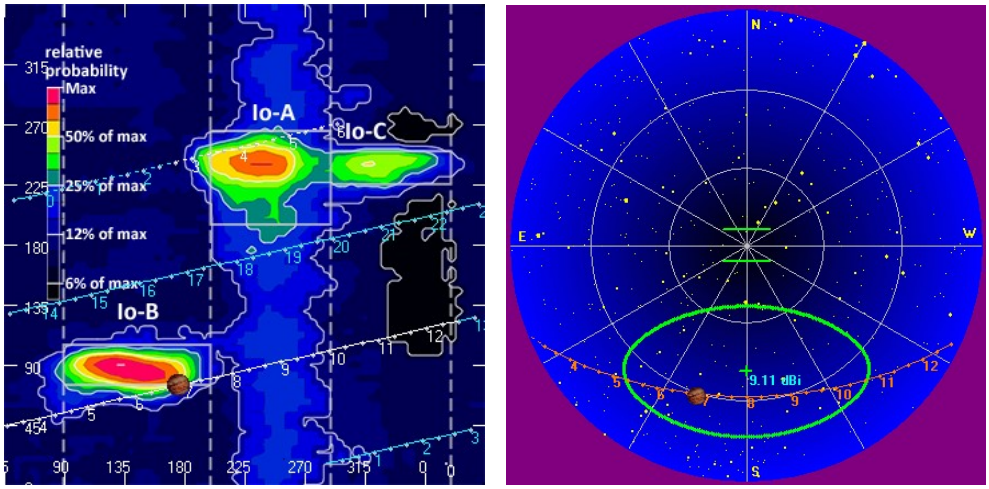


Beginning of Pass



End of Pass

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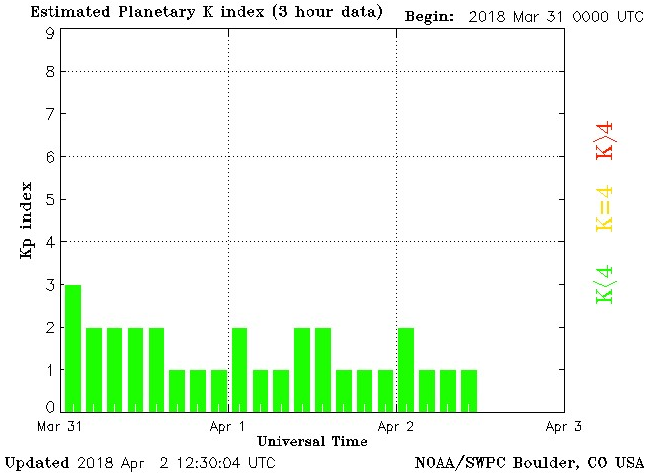
MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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	



Typical of the Jupiter storms since December 2017, this was a relatively brief and weak storm.

Emissions were dominated by S-bursts, both as singular grouping, as well as numerous N-events. There were L-bursts as well. Emissions were an arc spanning from 16 MHz and rose to a maximum of 22 MHz before descending to 16 MHz.

Emissions were not continuous but rather came in groups of differing lengths and spacings. No apparent pattern was obvious.

S2 modulation lanes were present throughout the storm.

Emissions were below the noise floor of the FSX-8S & TFD array, and as such were not visible. The emissions were slightly above the noise floor of the FSX-2 & LWA array and as such are just barely visible.

There were some brief S-bursts recorded with the Radio Jove II receiver and linearly polarized Jove dipoles but the Radio Jove I receiver and TFD RCP/LCP polarized array only saw them rise slightly above the noise floor of the receiver in both RCP and LCP.

Nothing else of note.

EOR

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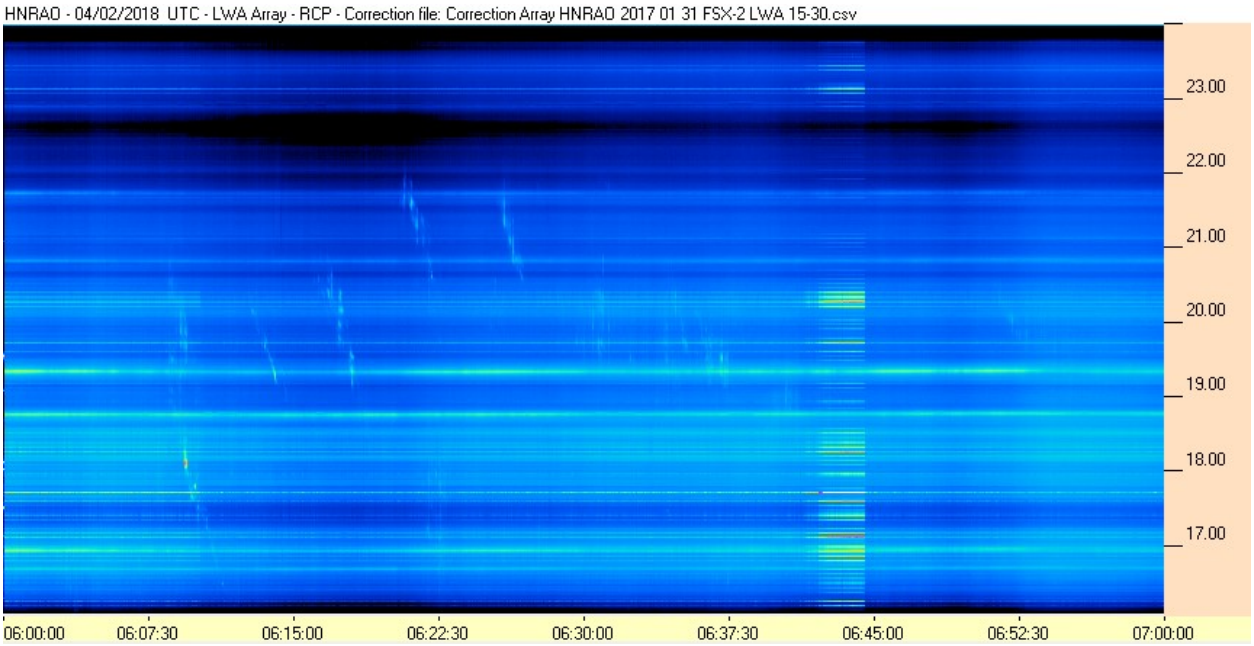
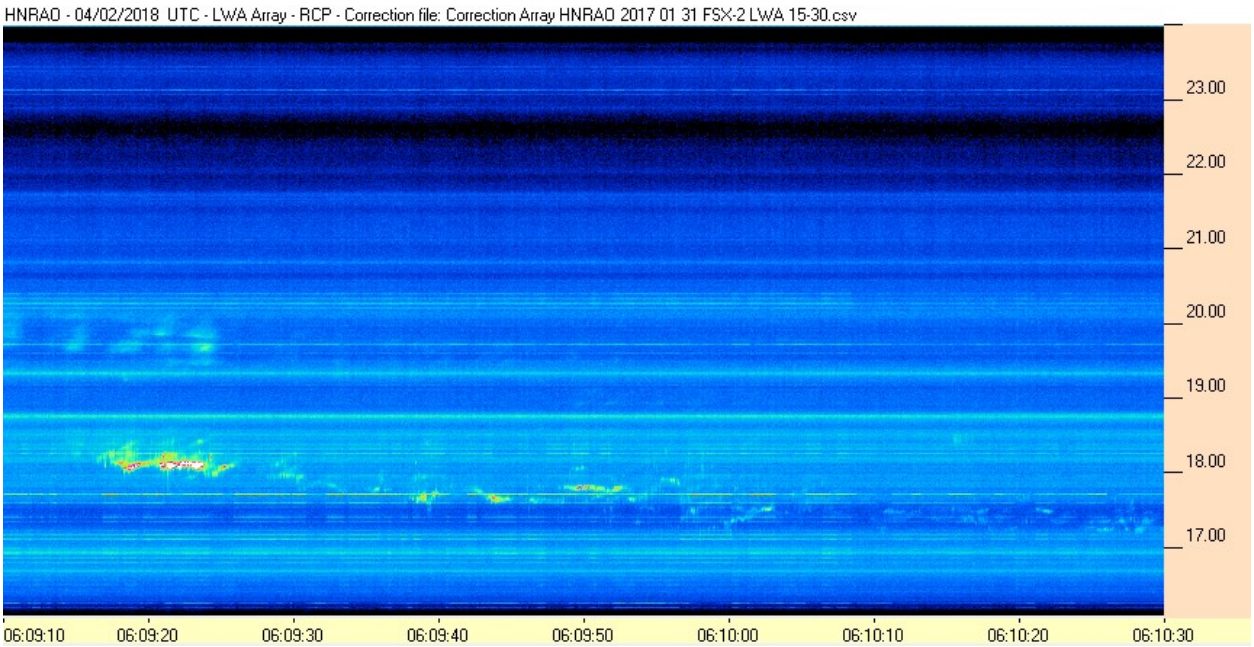
SDRPlay / TFD Array





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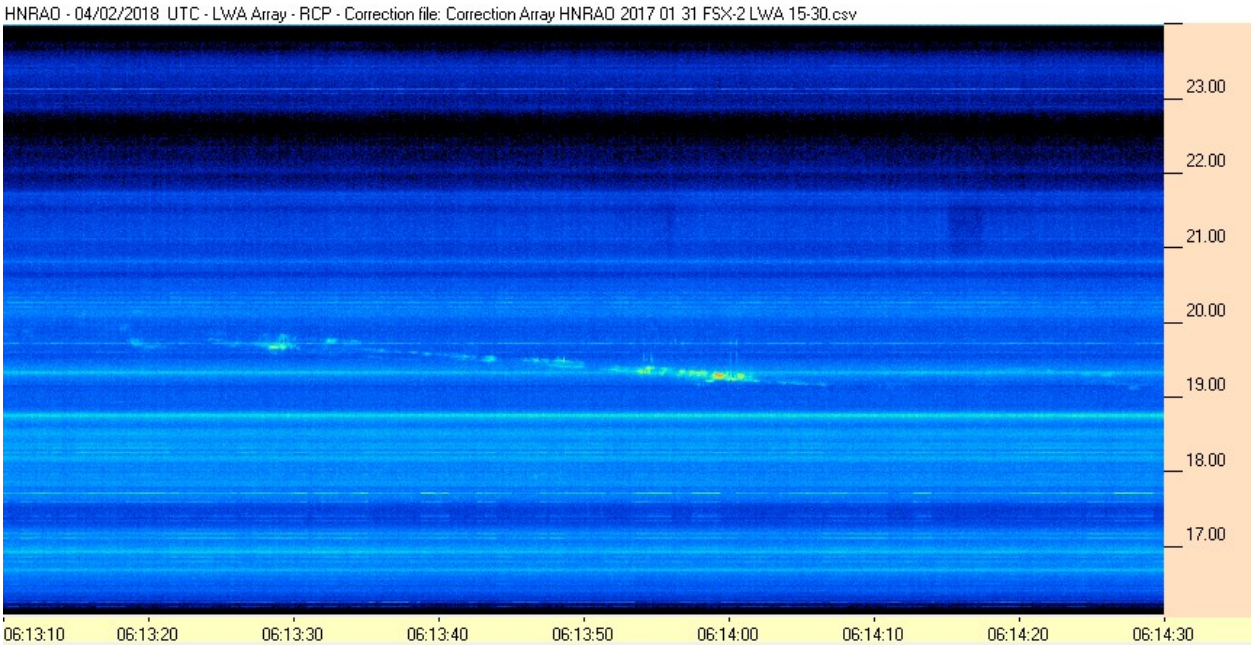

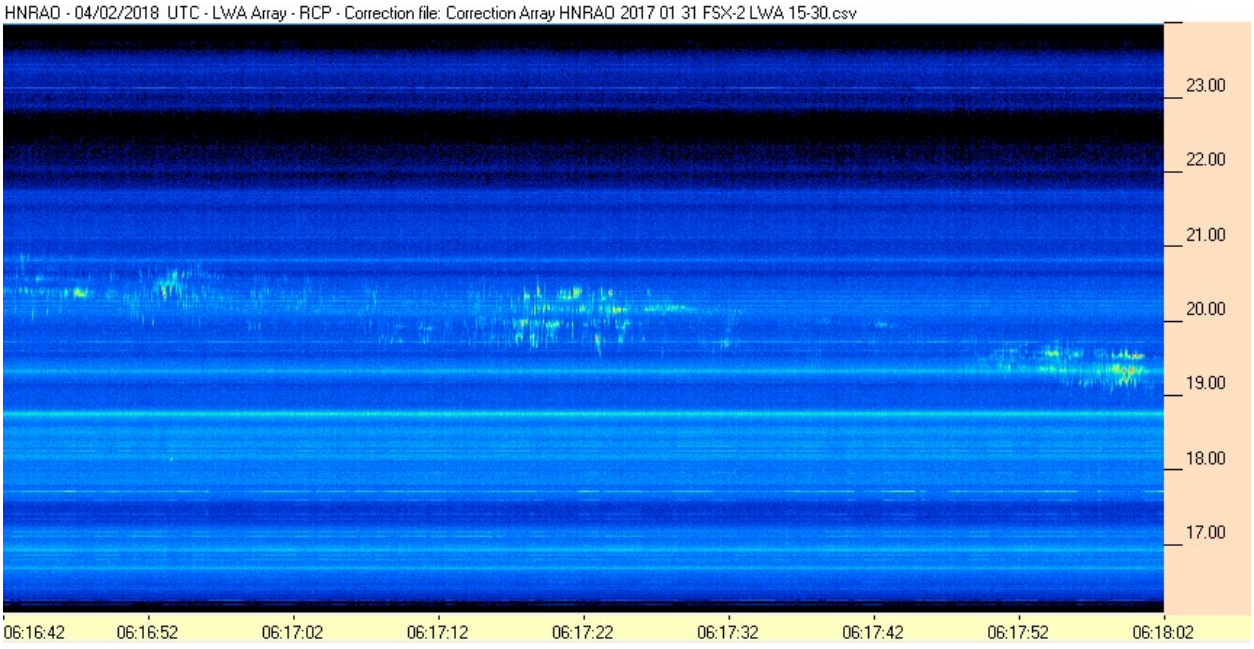

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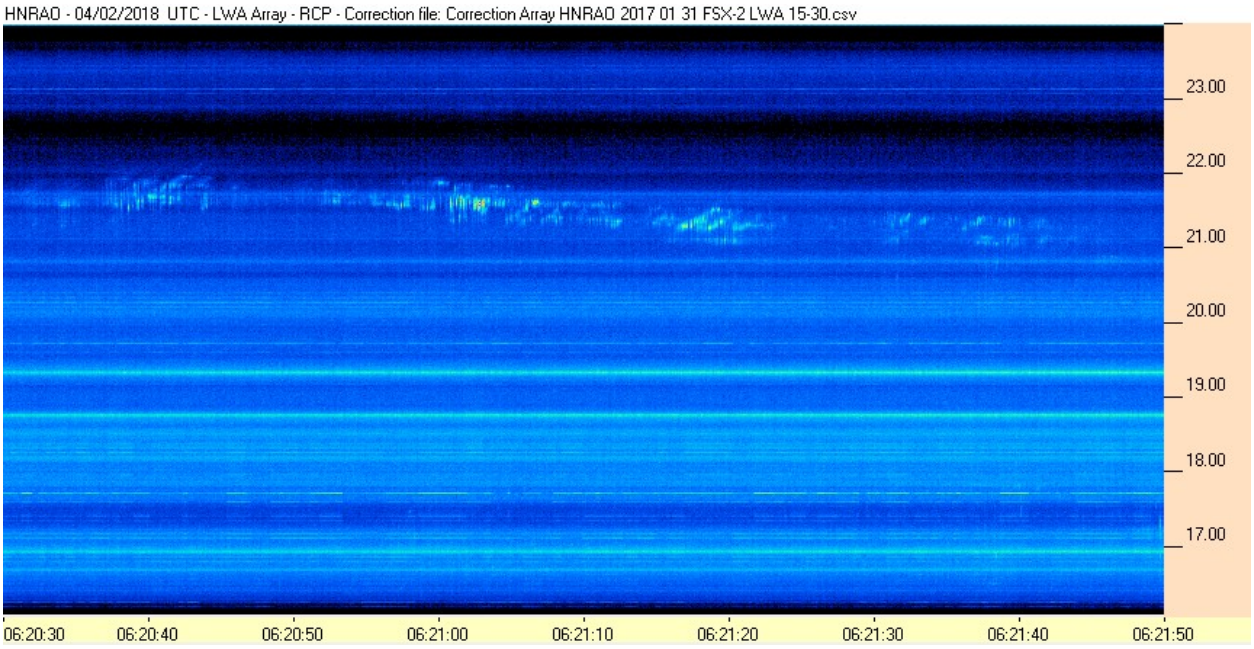
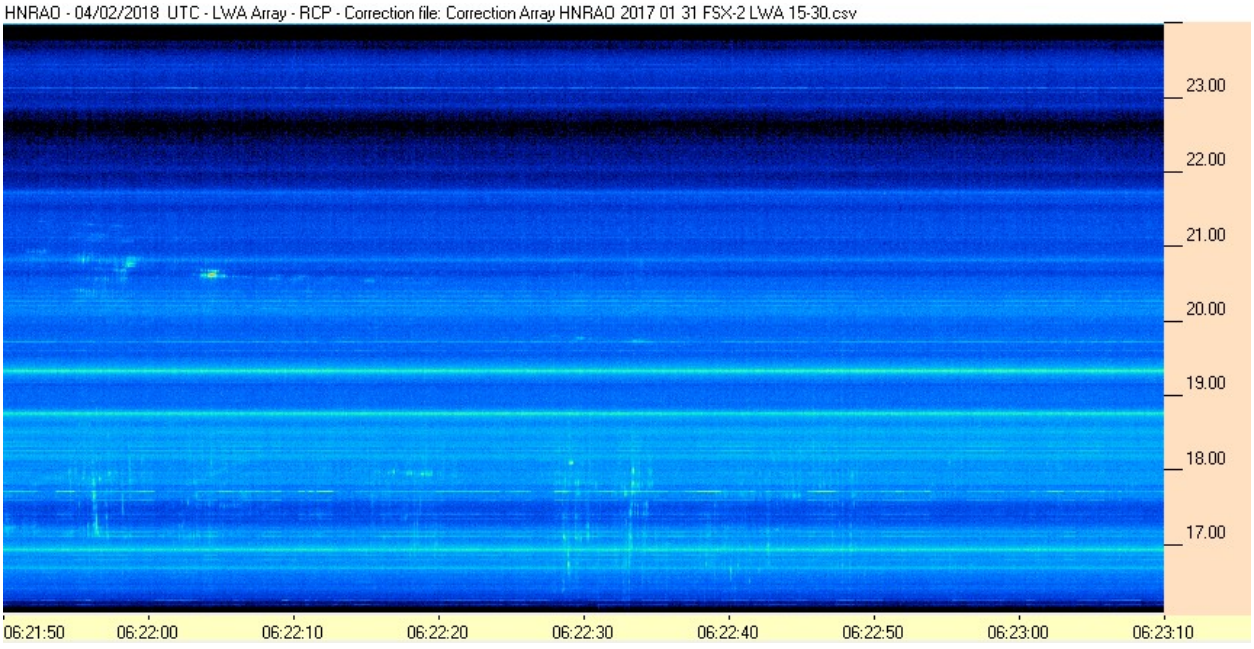
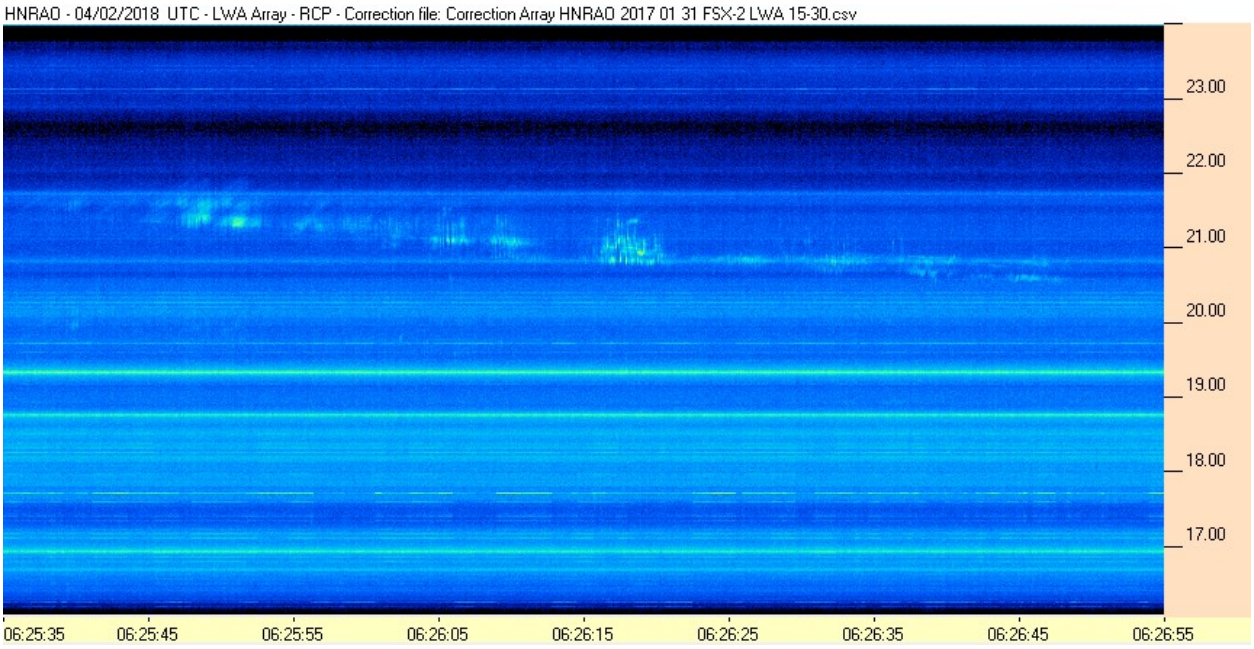
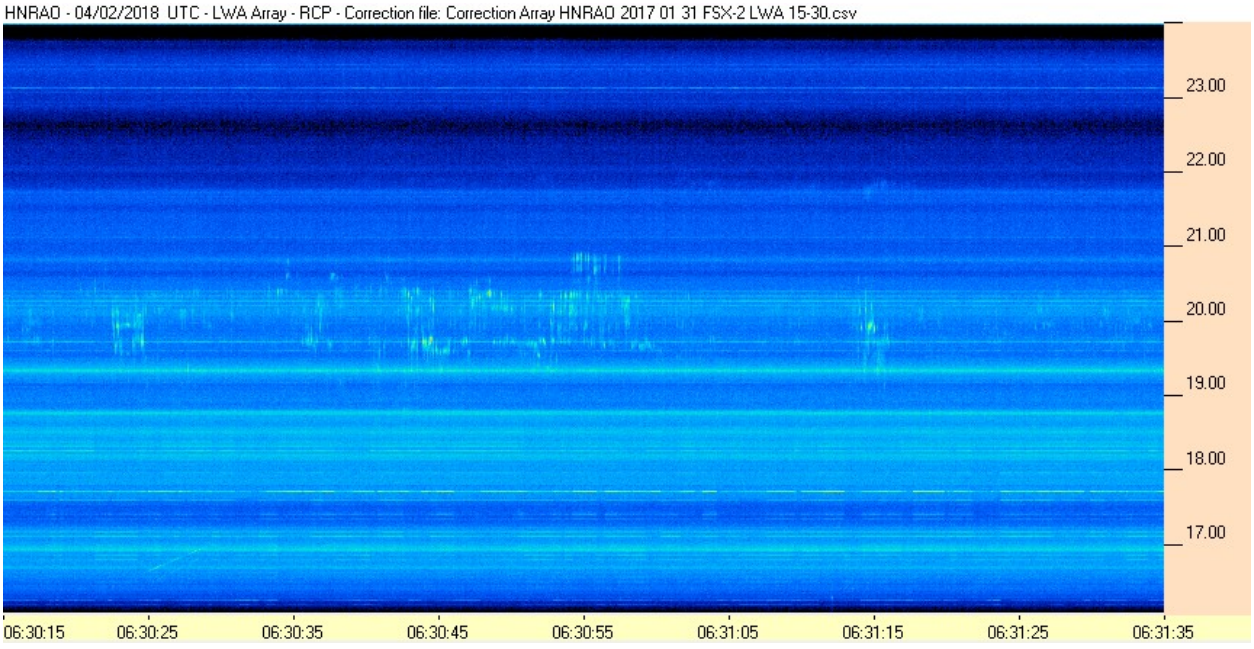





HNRAO - 04/02/2018 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv
23.00
22.00
21.00
20.00
19.00
18.00
17.00
06:25:35
06:25:45
06:25:55
06:26:05
06:26:15
06:26:25
06:26:35
06:26:45
06:26:55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06:30:35
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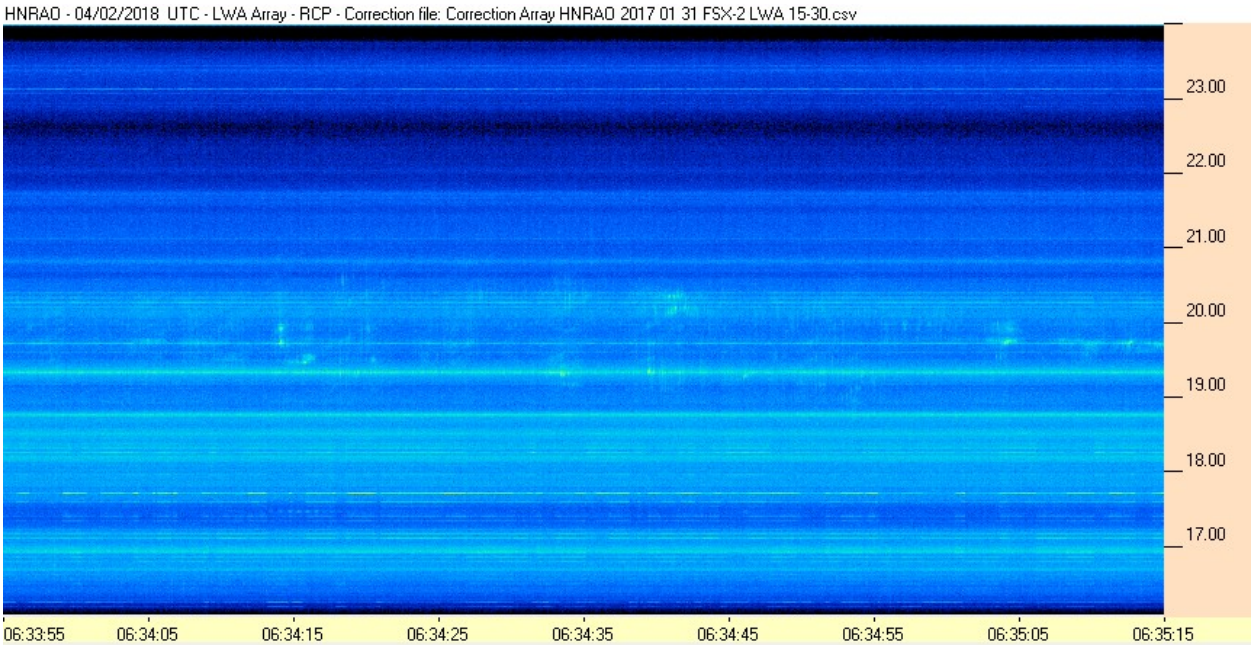
06:31:05
06:31:15
06:31:25
06:31:35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23.00
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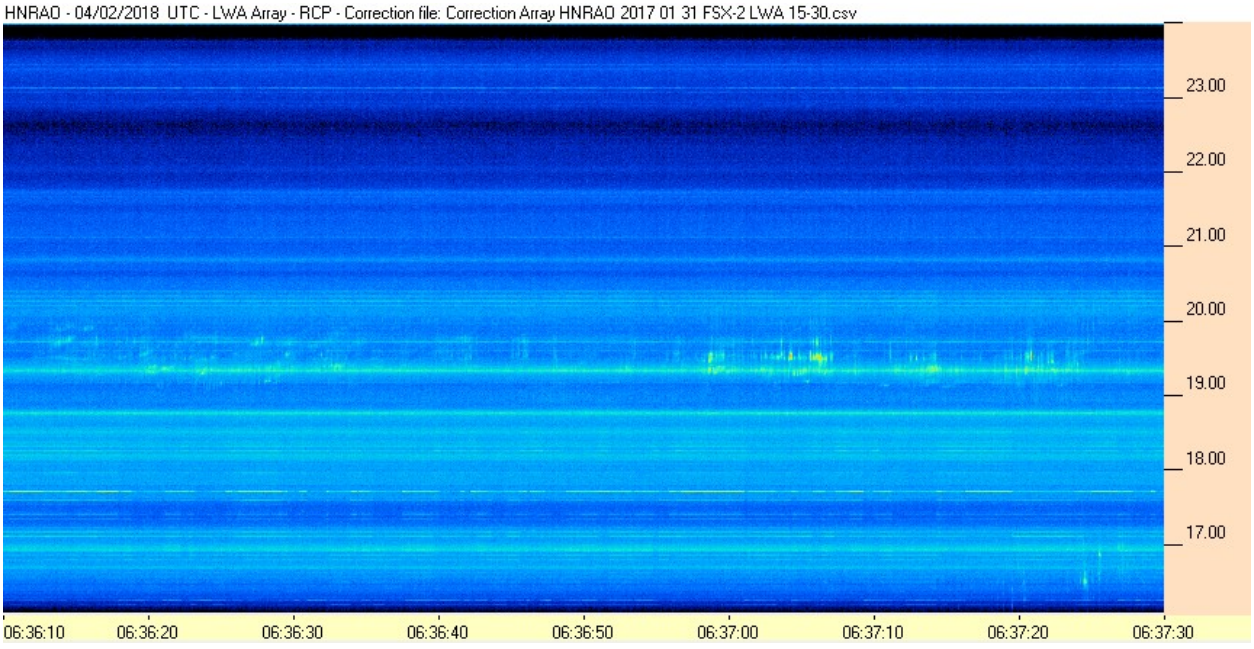
06:34:45
06:34:55
06:35:05
06:35:15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20.00
19.00
18.00
17.00
06:36:10
06:36:20
06:36:30
06:36:40
06:36:50
06:37:00
06:37:10
06:37:20
06:37:30

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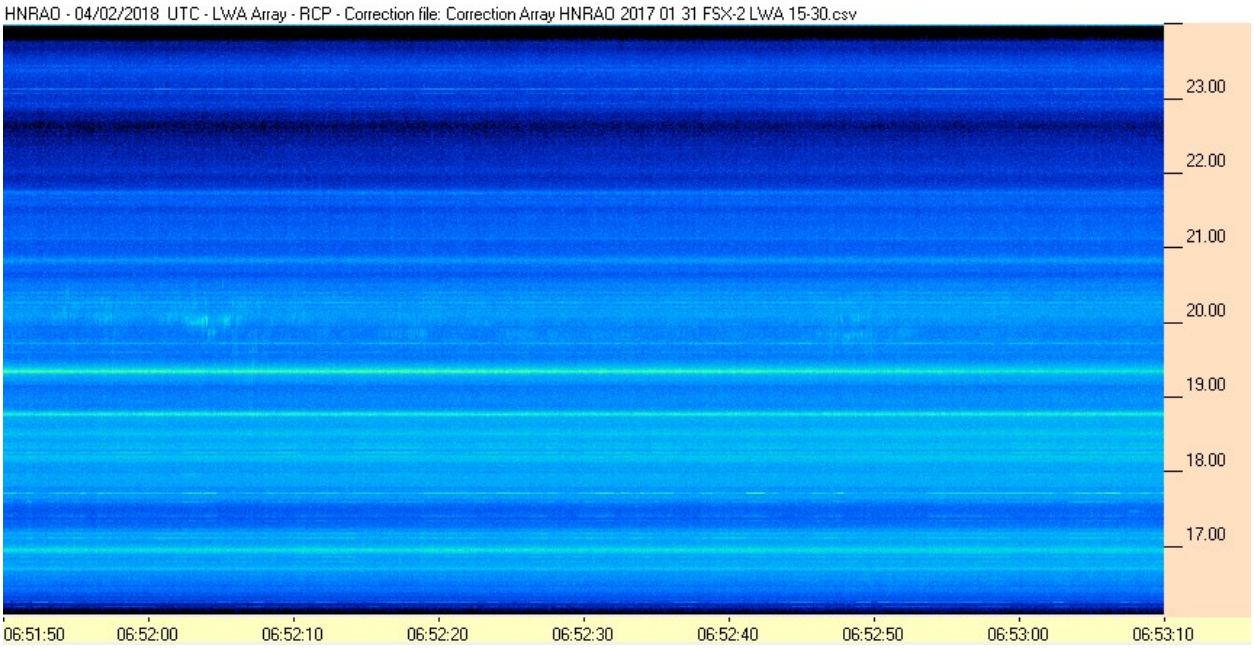
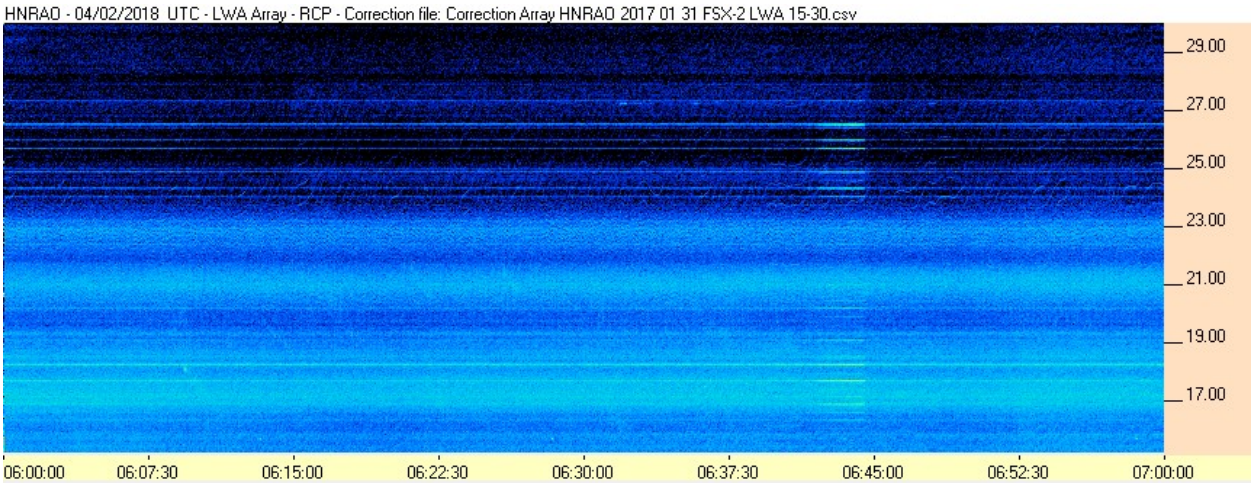


FSX-2 / LWA Array



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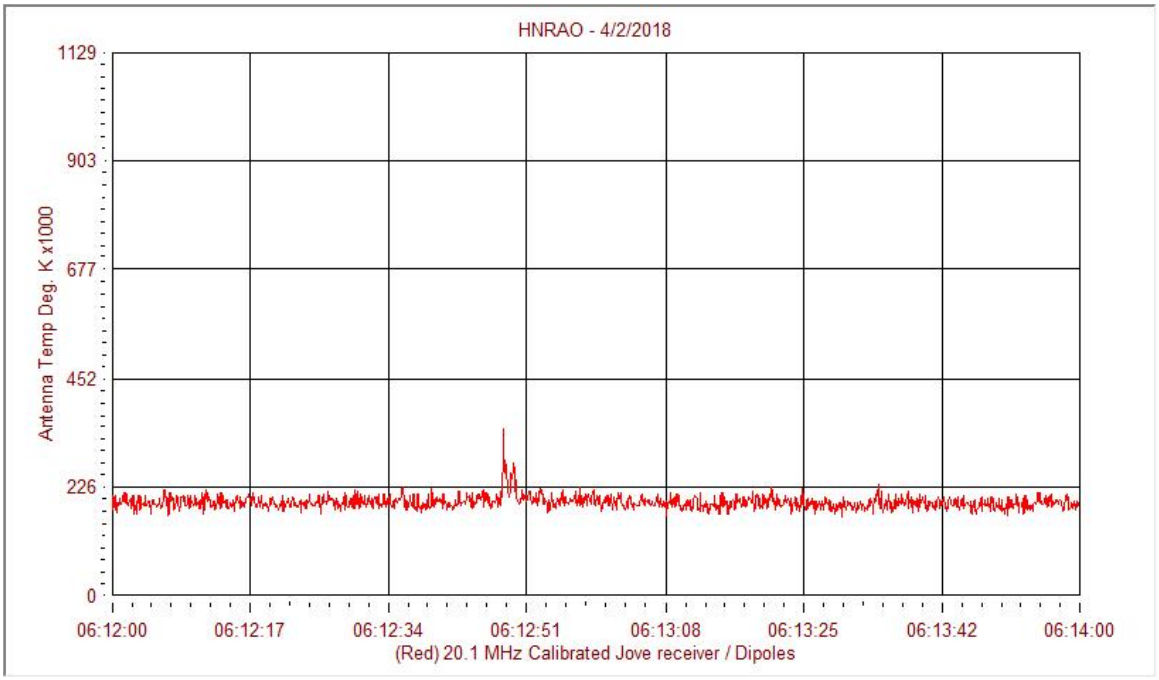
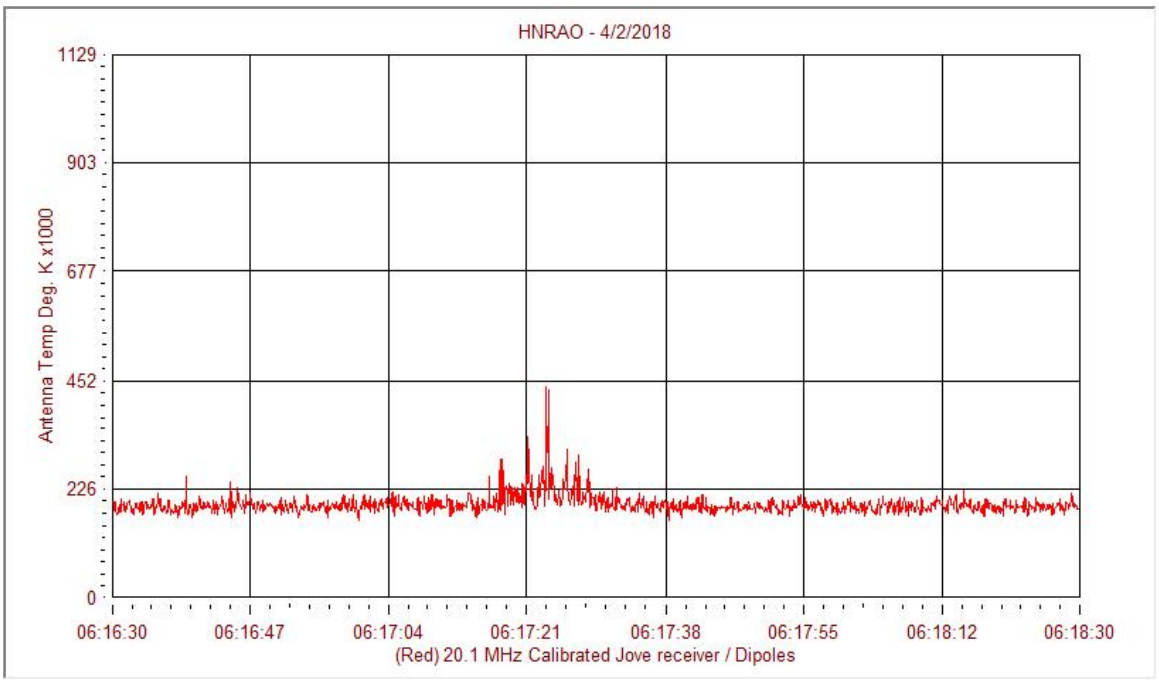
Jove Receiver/Jove Dipoles





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