HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: May 19, 2018

Object: Jupiter – Io-A

Observer: Unattended

Start - Time UT:	**0130**	**Planetary K-index:**	**0**
Jupiter Altitude (deg):	**19.3**	**Jupiter Azimuth (deg):**	**132.9**
Jupiter CML:	**222.07**	**Jupiter Io Phase:**	**238.36**
Jupiter RA (hr/min):	**14:60**	**Jupiter Dec (hr/min):**	**-15:43**
Hour Angle (hr/min):	**-03:04**	**Polarization**	**RCP**
Sun Altitude (deg):	**-11.3**	**Sun Azimuth (deg):**	**308.1**
Sun RA (hr/min):	**03:35**	**Sun Dec (hr/min):**	**19:18**

End – Time UT:	**0230**	**De:**	**-3.3**
Jupiter Altitude (deg):	**26.6**	**Jupiter Azimuth (deg):**	**146.2**
Jupiter CML:	**257.74**	**Jupiter Io Phase**	**246.77**
Hour Angle (hr/min):	**-02:05**	**Duration (min):**	**60**
Sun Altitude (deg):	**-19.4**	**Sun Azimuth (deg):**	**319.9**
Max Frequency MHz		**Min Frequency MHz**	

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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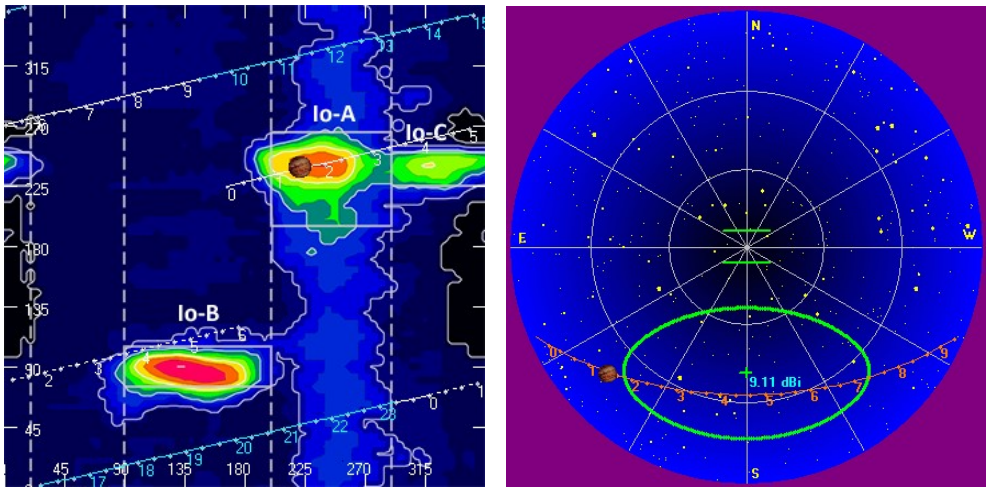
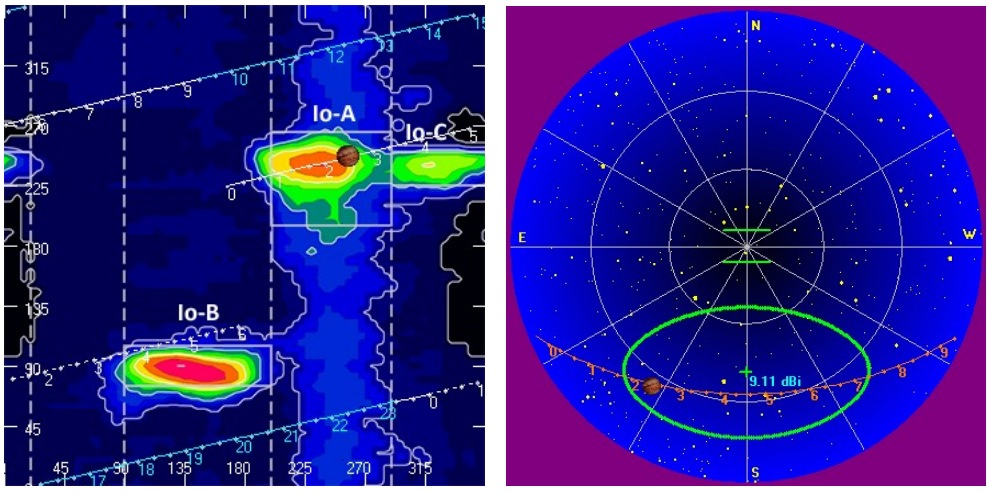


Beginning of Pass



End of Pass

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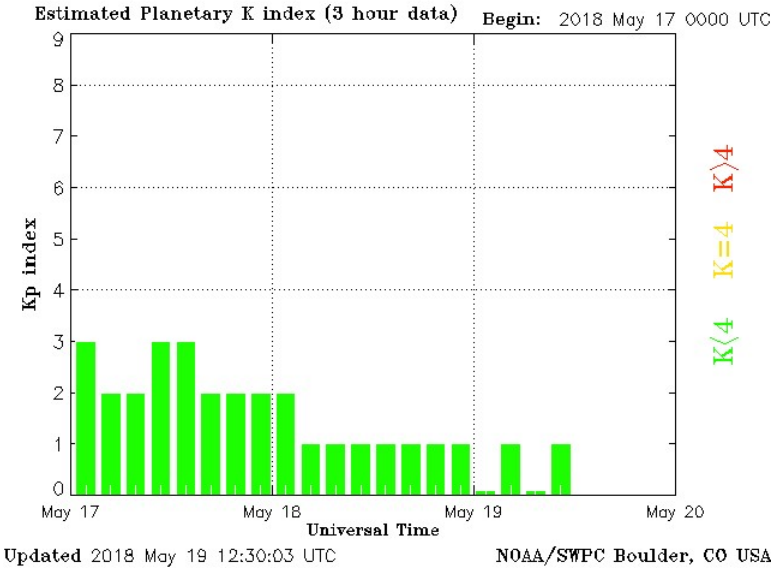
MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360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



Observed with the SDRPlay RSP2/TFD array, FSX2/LWA array, FSX8S/TFD Array and the Jove dual phased dipole array.

While this was a center pass of the Io-A source region, it was very weak. Most emissions were never higher than 1 or 2 dB above GB. L4 modulation lanes from beginning to end, with substantial scintillation affects. Also, due to it's off axis position at the beginning of the emissions, there were apparent Faraday lanes through most of the first half of the pass.

Strongest emissions at 20.1 MHz with Jove dipoles in linear polarization were 1 dB above GB.

While it was visible as slightly above GB in both the FSX spectrographs, it was clear that the SDRPlay RSP2 spectrograph resolved this storm the best.

De has begun to rise and is now -3.3 degrees from -3.4 degrees at the beginning of the month.

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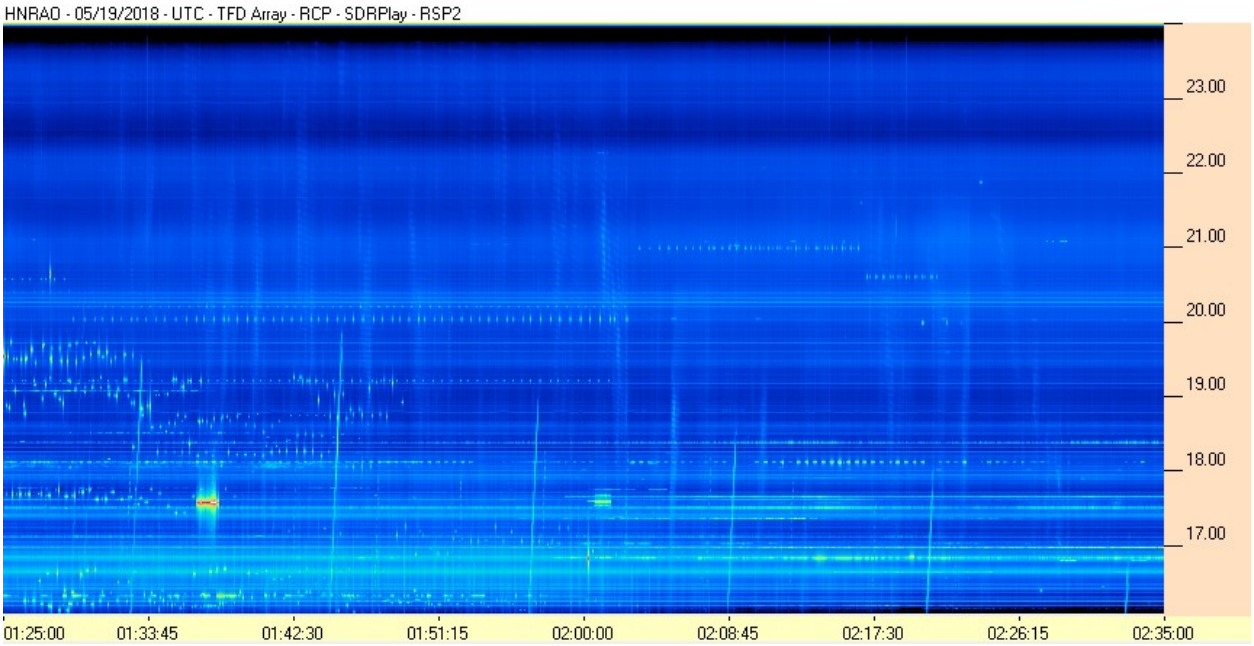
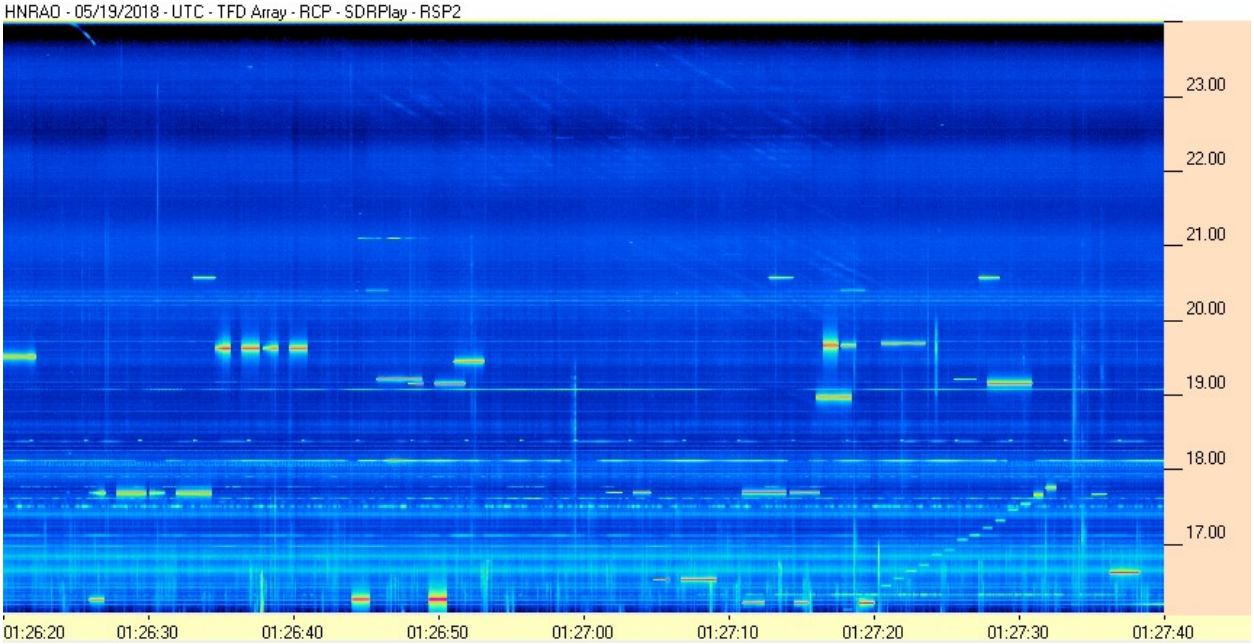
SDRPlay RSP2 / TFD Array





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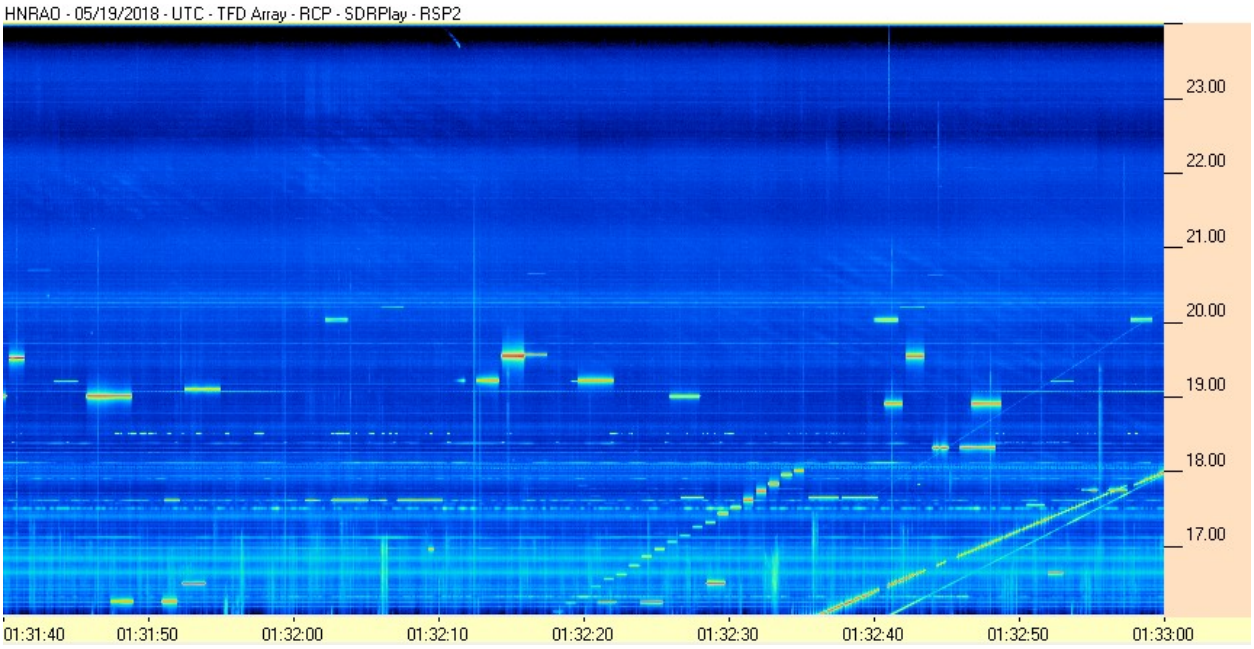

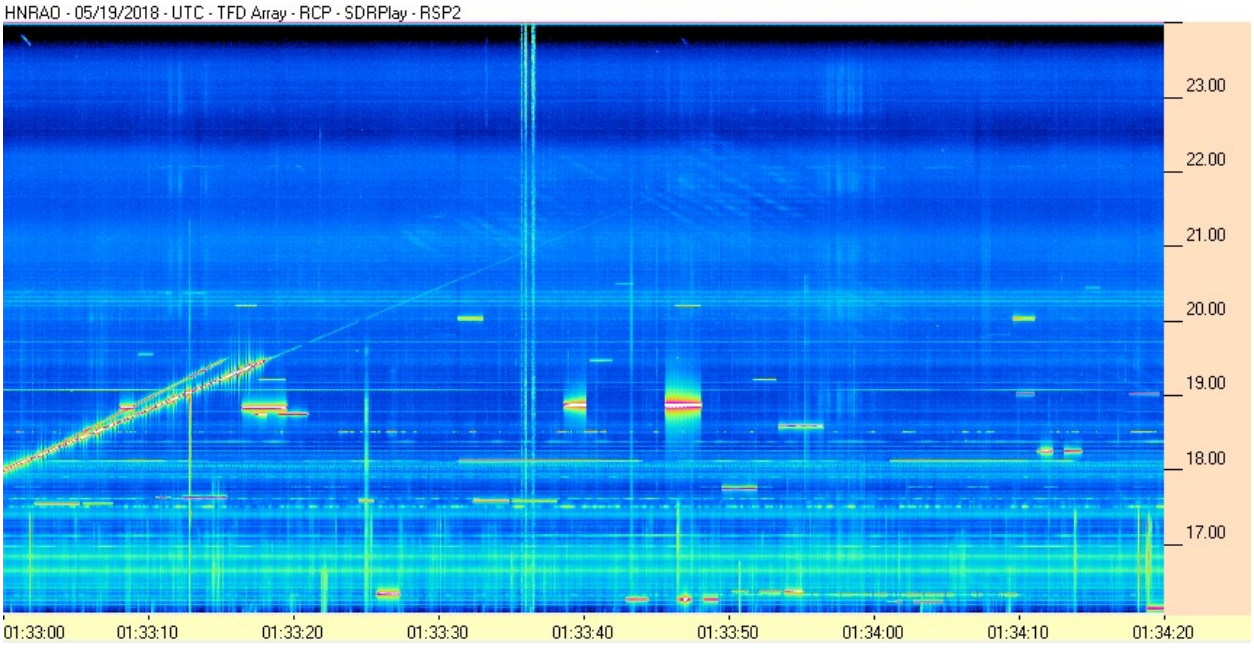

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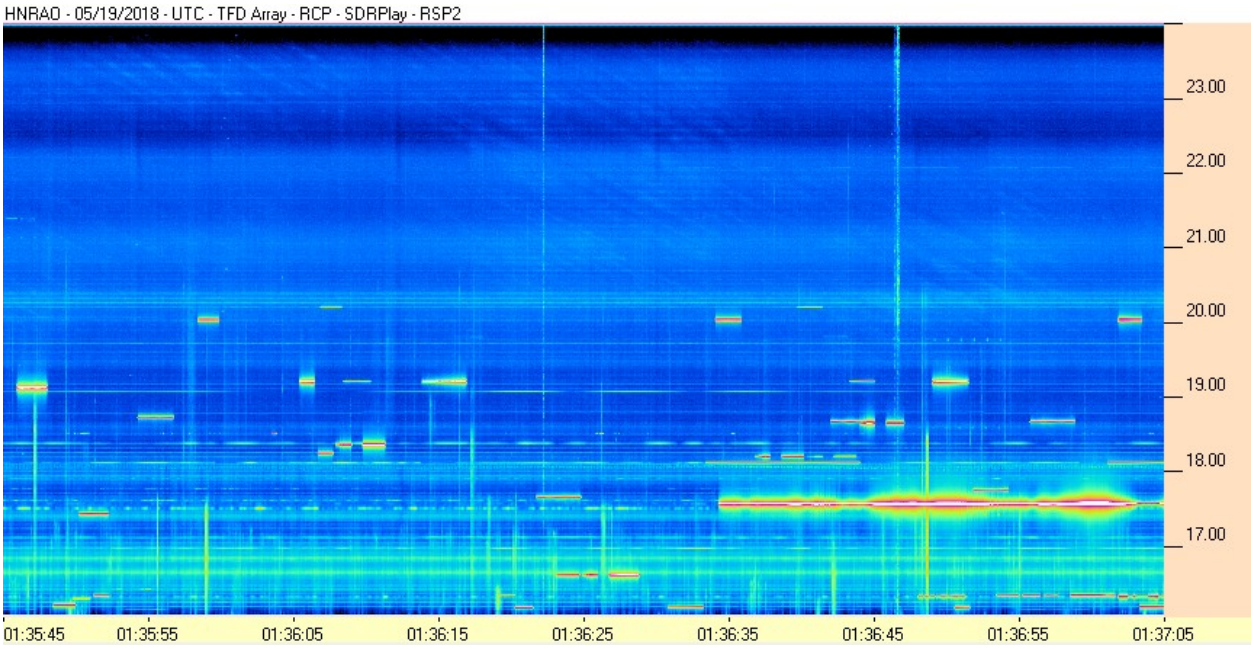

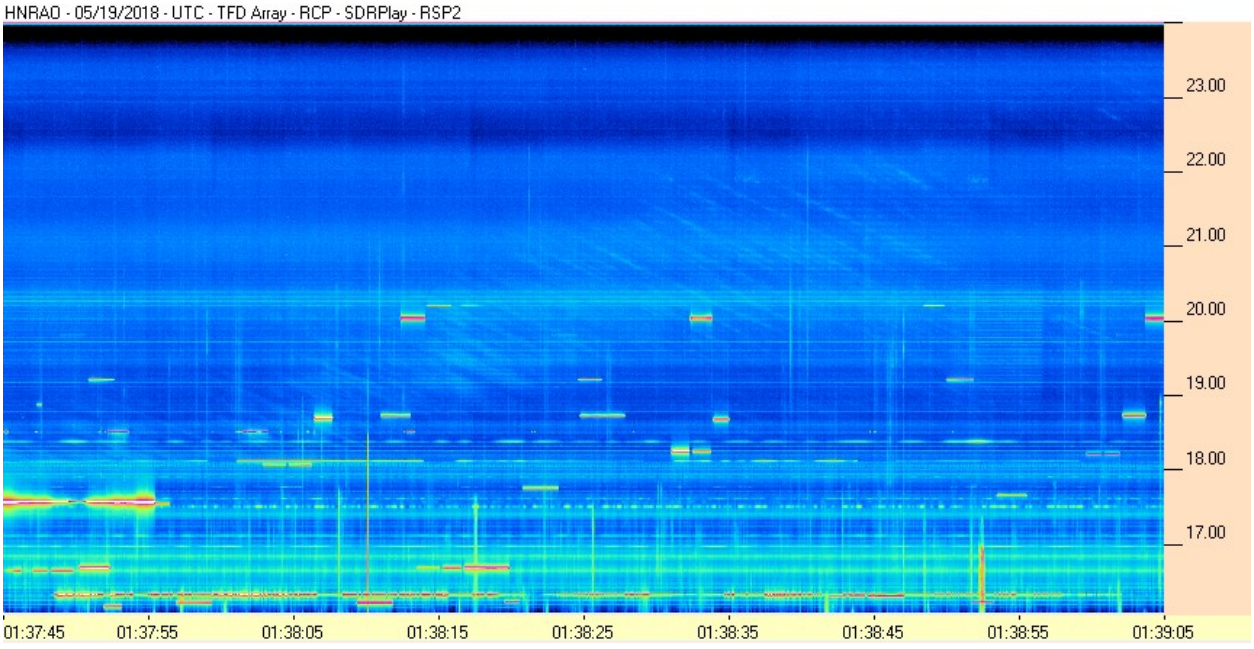

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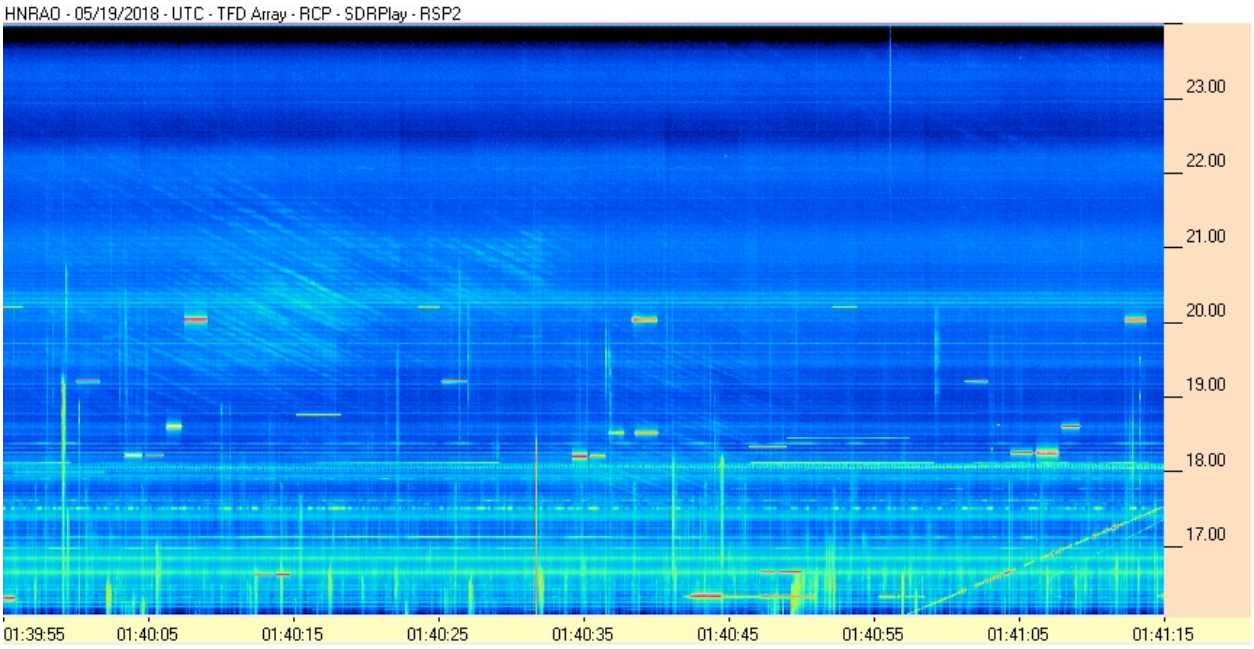

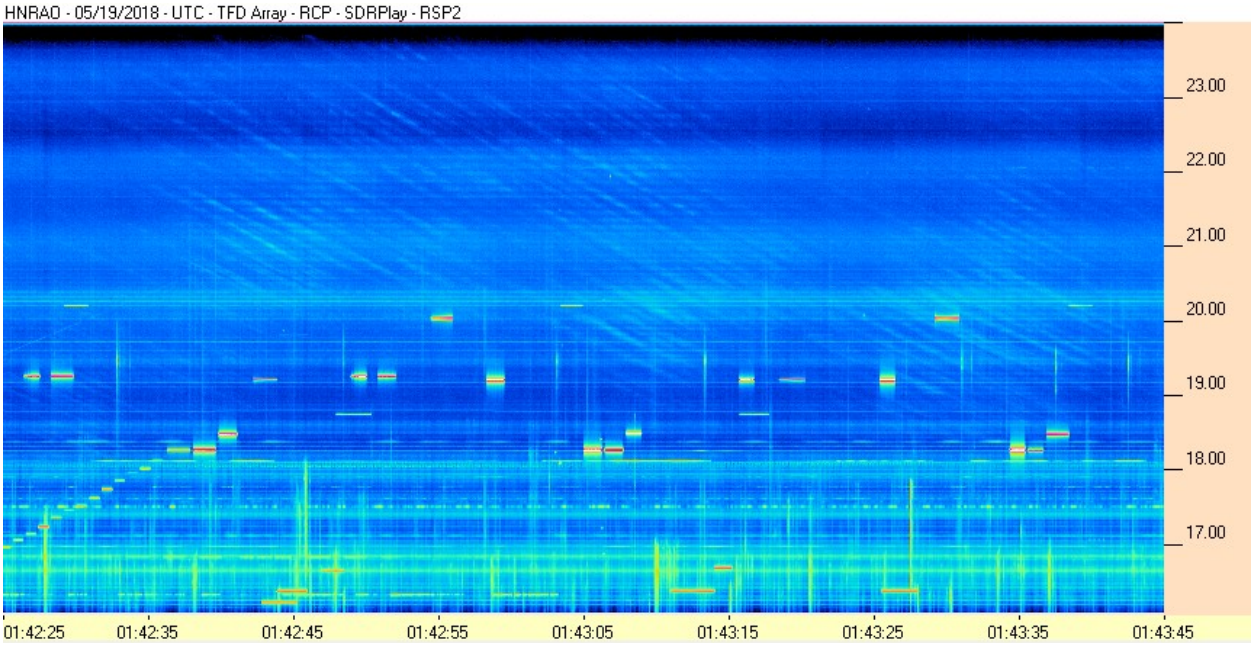

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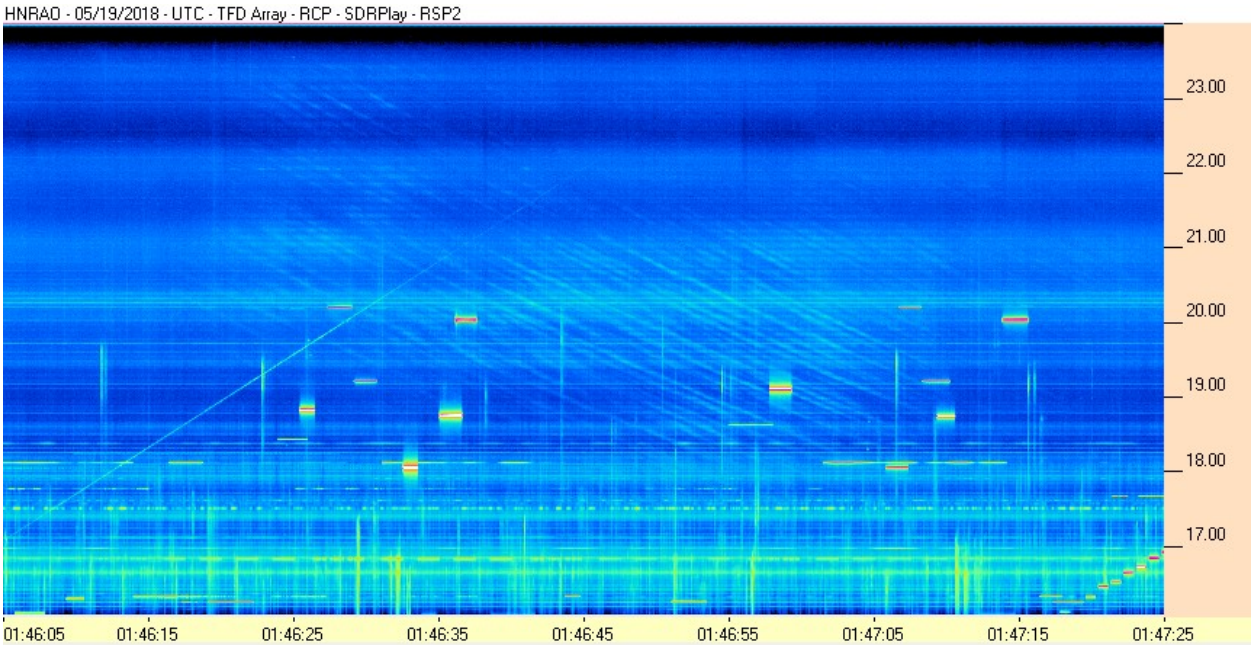

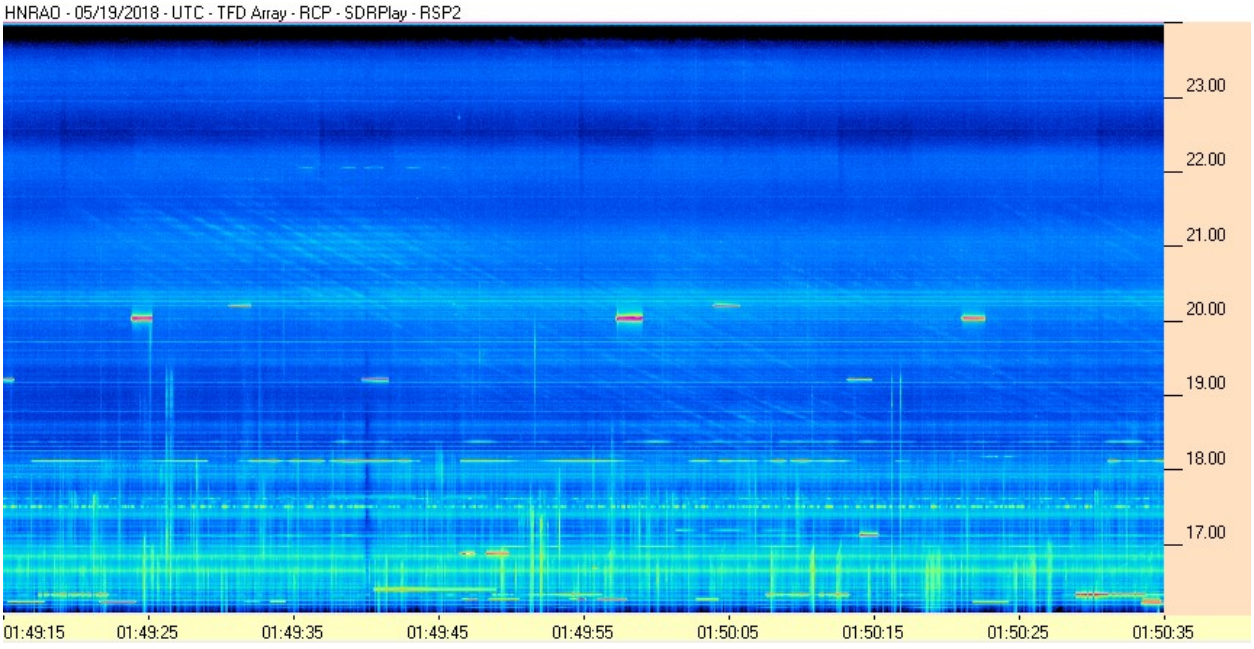

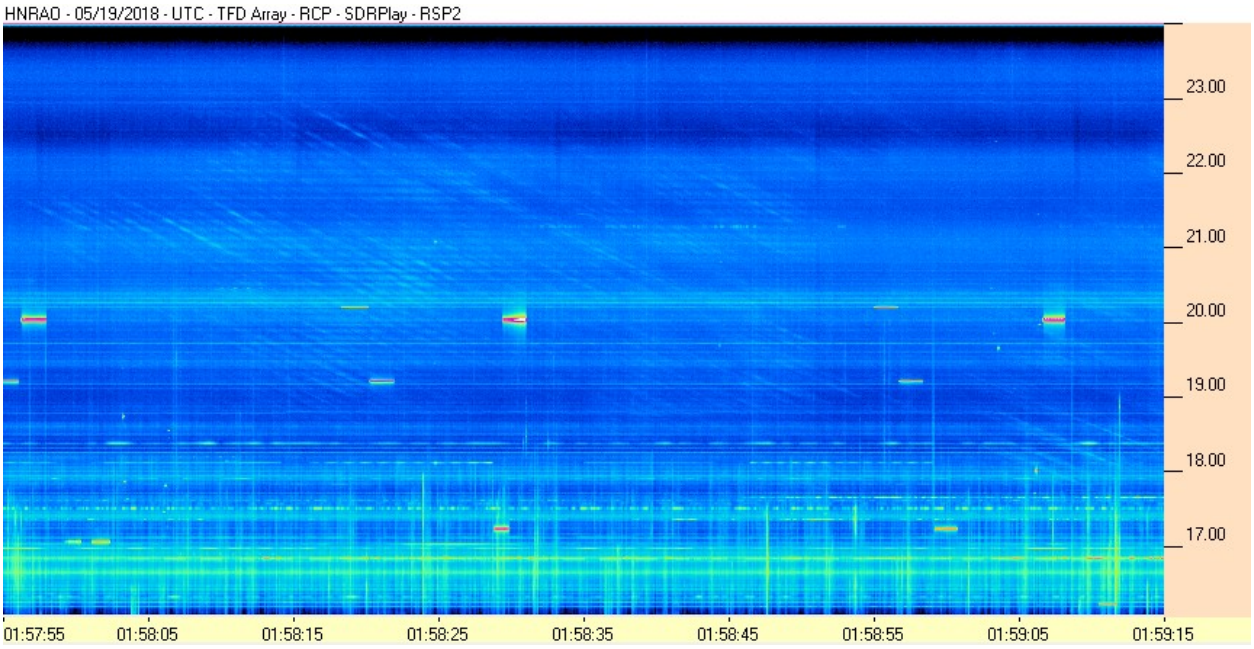
HNRAO - 05/19/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2
23.00
22.00
21.00
20.00
19.00
18.00
17.00
01:57:55
01:58:05
01:58:15
01:58:25
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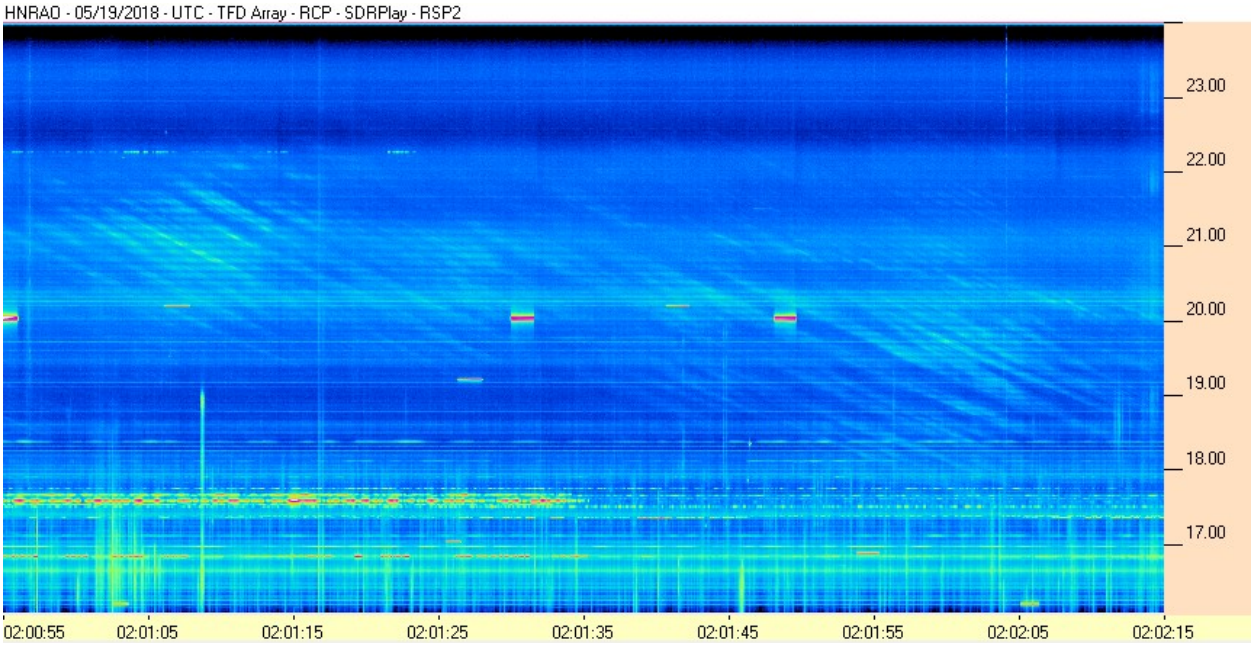
01:58:45
01:58:55
01:59:05
01:59:15


HNRAO - 05/19/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2
23.00
22.00
21.00
20.00
19.00
18.00
17.00
02:00:55
02:01:05
02:01:15
02:01:25
02:01:35
02:01:45
02:01:55
02:02:05
02:02:15

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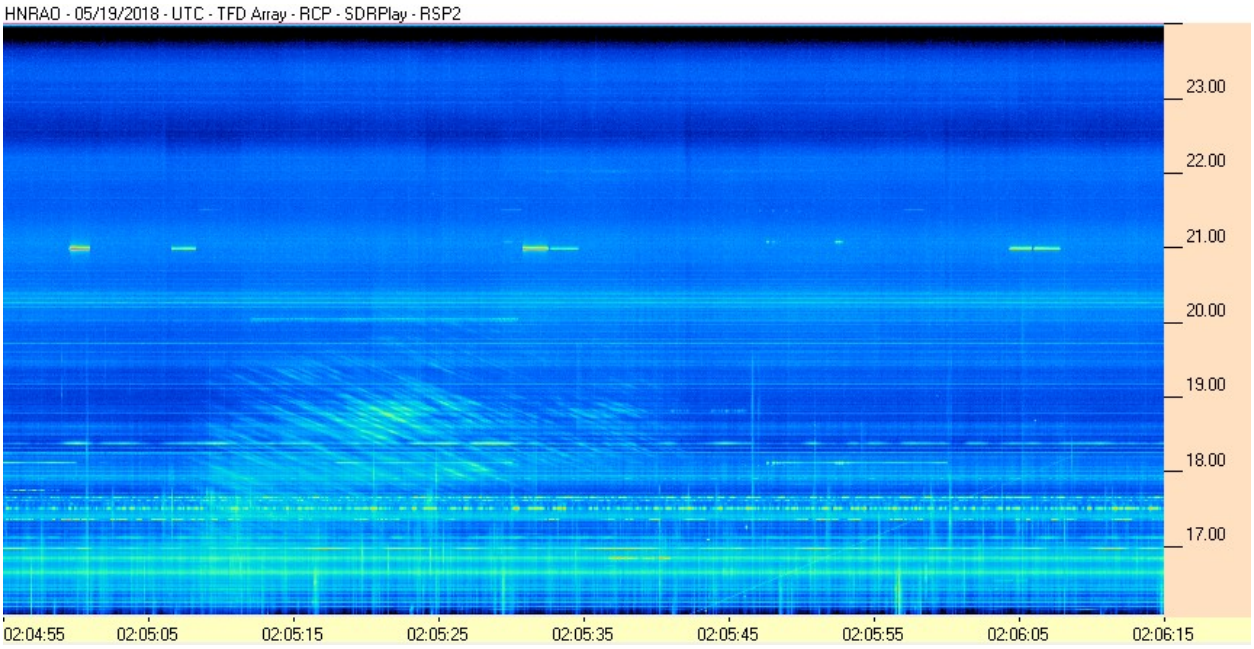

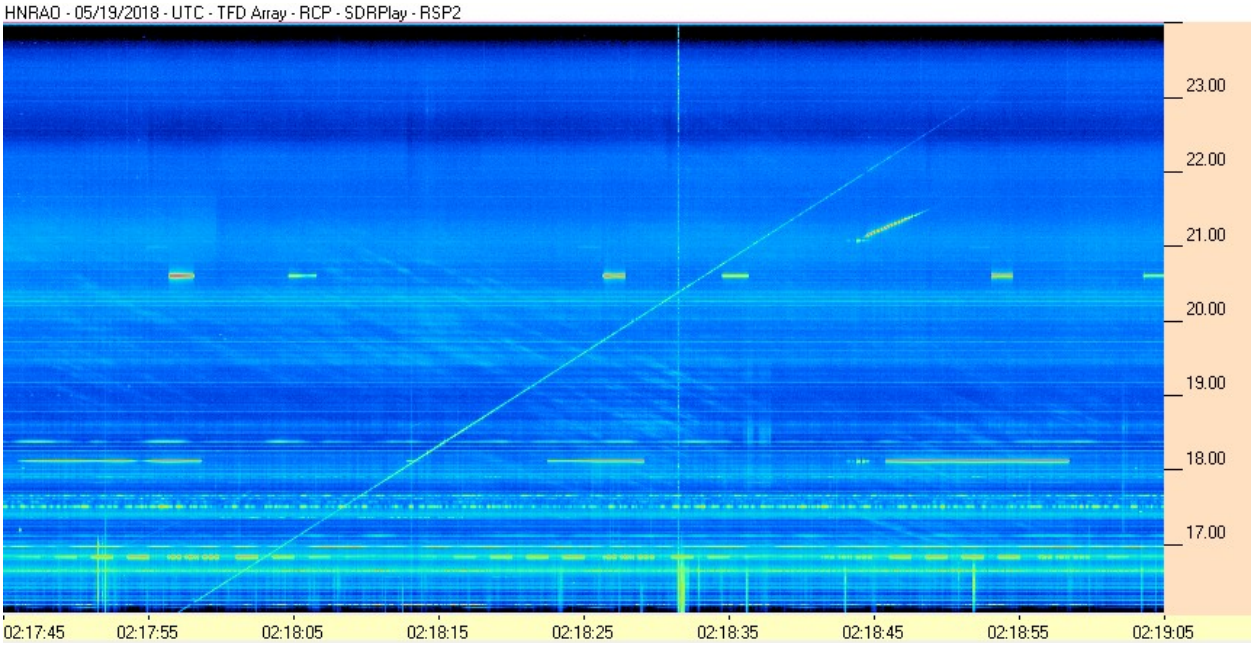

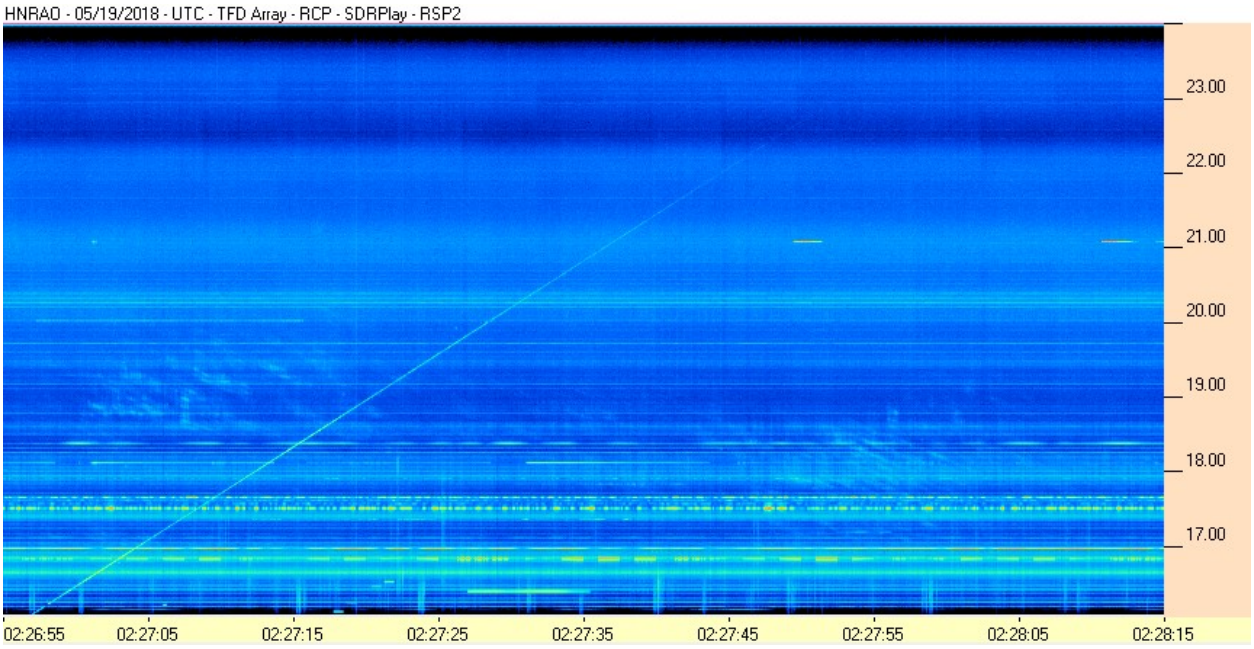
HNRAO - 05/19/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2
23.00
22.00
21.00
20.00
19.00
18.00
17.00
02:26:55
02:27:05
02:27:15
02:27:25
02:27:35
02:27:45
02:27:55
02:28:05
02:28:15

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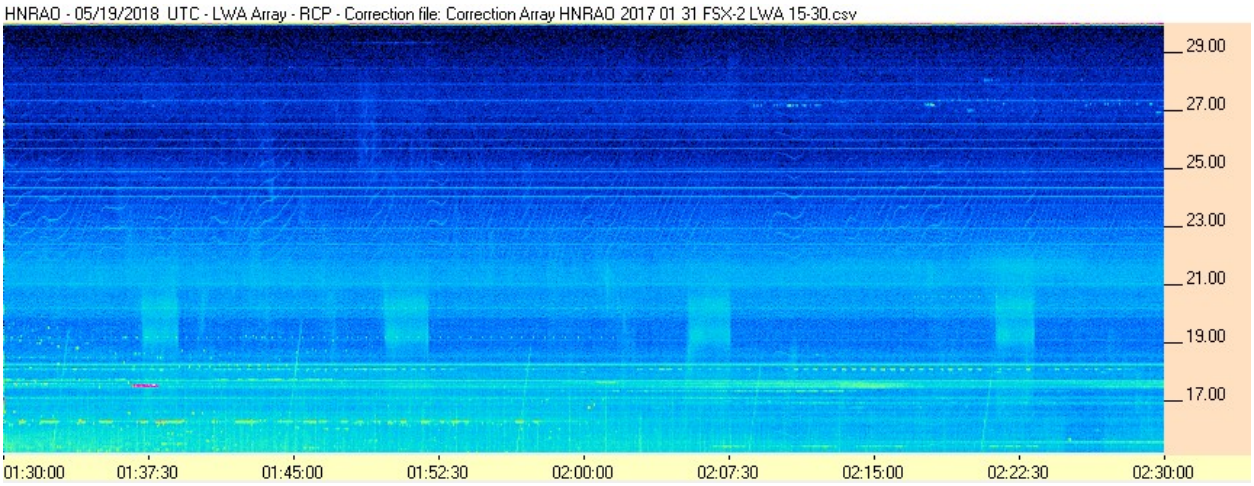
FSX2 / LWA Array



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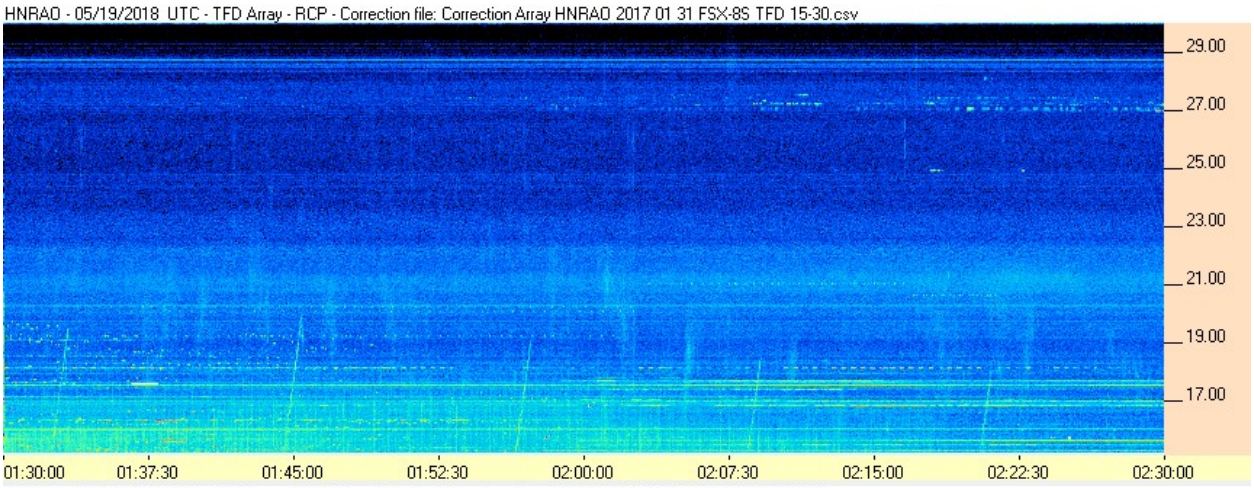
FSX8S / TFD Array



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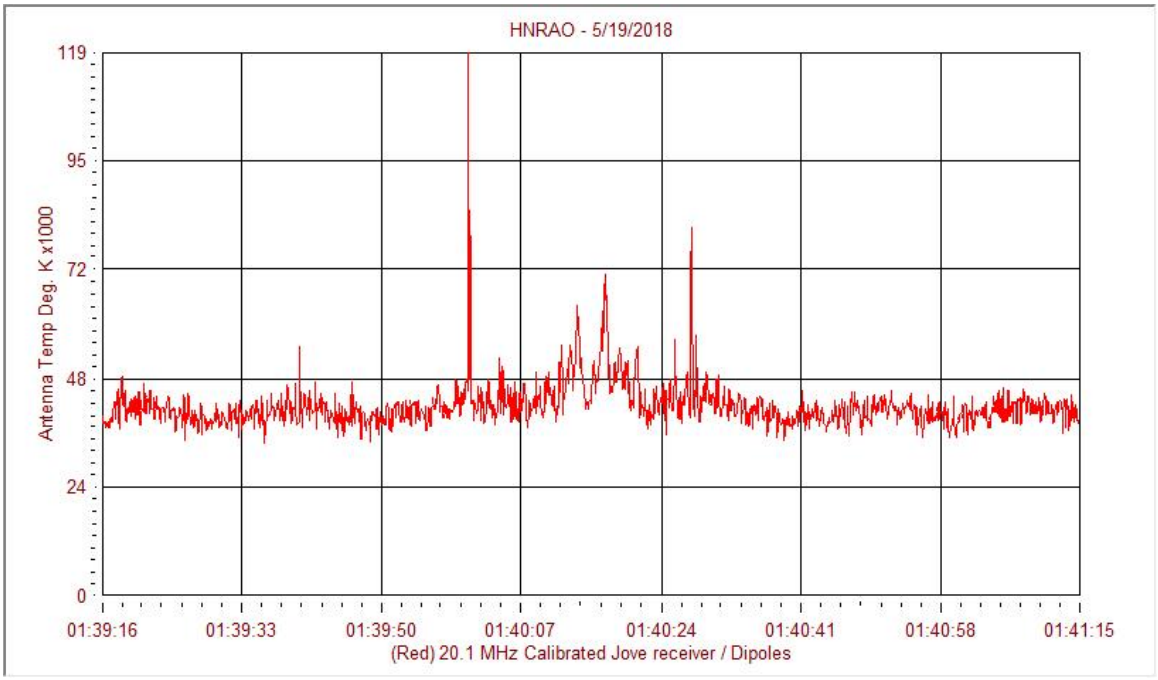
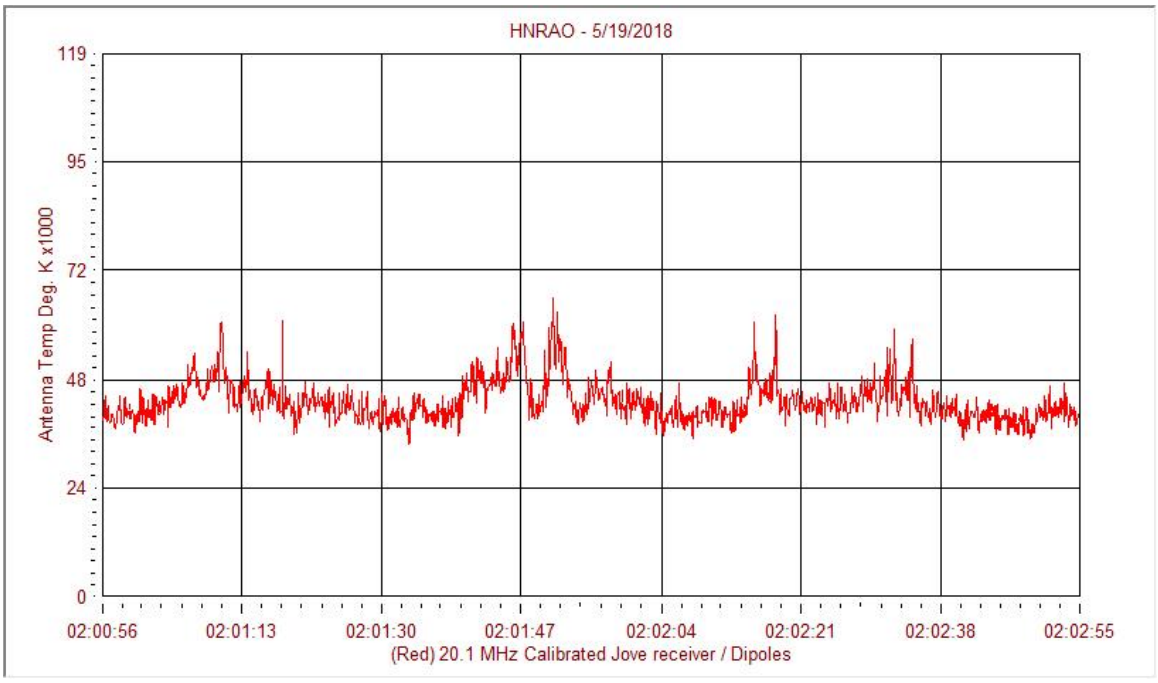
Jove II Receiver / Jove Dipole Array





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