HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: May 27, 2018

Object: Jupiter – Io-B

Observer: Unattended

Start - Time UT:	**0411**	**Planetary K-index:**	**2**
Jupiter Altitude (deg):	**33.8**	**Jupiter Azimuth (deg):**	**183.5**
Jupiter CML:	**83.9**	**Jupiter Io Phase:**	**89.80**
Jupiter RA (hr/min):	**14:56**	**Jupiter Dec (hr/min):**	**-15:27**
Hour Angle (hr/min):	**00:12**	**Polarization**	**RCP**
Sun Altitude (deg):	**-26.8**	**Sun Azimuth (deg):**	**344.3**
Sun RA (hr/min):	**04:08**	**Sun Dec (hr/min):**	**20:57**

End – Time UT:	**0600**	**De:**	**-3.3**
Jupiter Altitude (deg):	**27.2**	**Jupiter Azimuth (deg):**	**213.2**
Jupiter CML:	**149.8**	**Jupiter Io Phase**	**105.10**
Hour Angle (hr/min):	**02:02**	**Duration (min):**	**189**
Sun Altitude (deg):	**-27.3**	**Sun Azimuth (deg):**	**012.9**
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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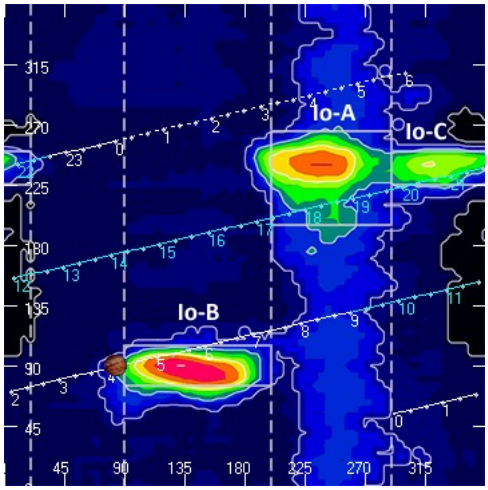
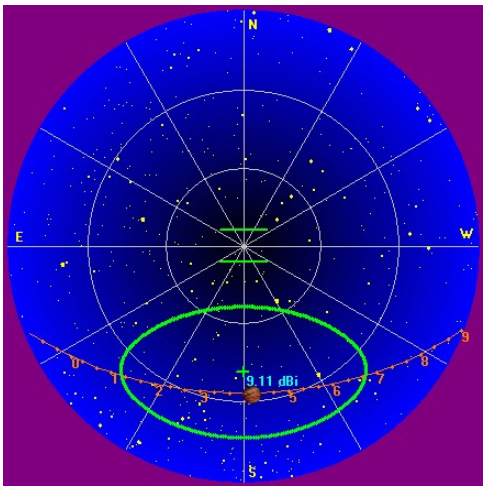
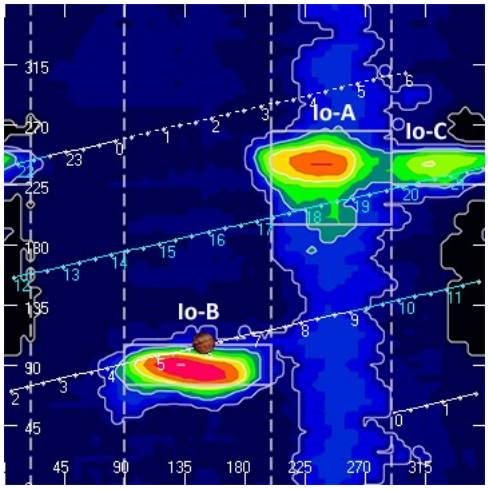
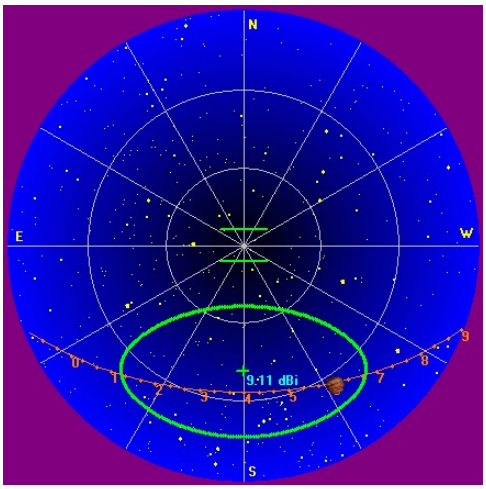


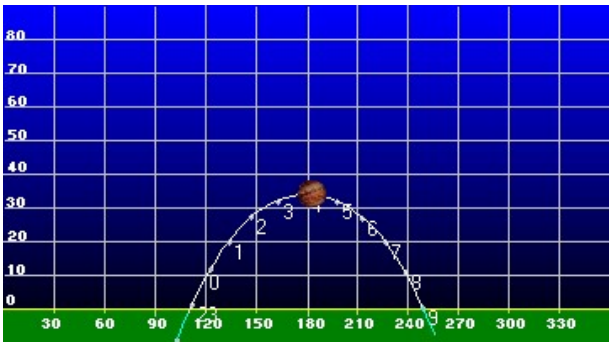


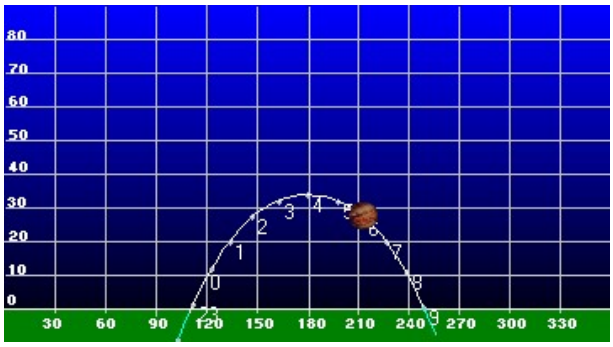
Beginning of Pass





End of Pass



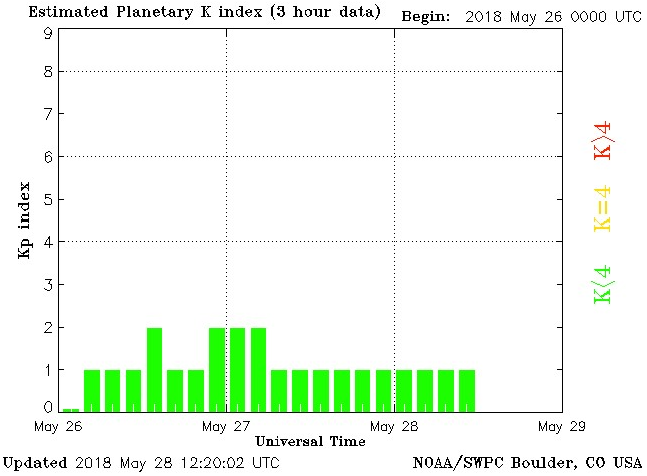


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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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This storm was observed with the FSX-2/LWA array and the SDRPlay RSP2/TFD array. The emissions were not visible in the FSX spectrograph.

For some unknown reason, the FSX-8S spectrograph ceased to operate and required a computer reboot to remedy the situation. As a result, there was no data collected with the FSX-8S spectrograph.

The proximity of a thunderstorm can be seen in the periodic bright vertical lines.

A weak Io-B storm consisting primarily of RCP S-bursts. L-bursts are seen at the beginning, but the S-bursts dominate the emissions. There were many S3 modulation lanes. L-bursts were not well defined and nebulous.

Nothing remarkable about this storm other than it's intensity and the S3 modulation lanes.

EOR

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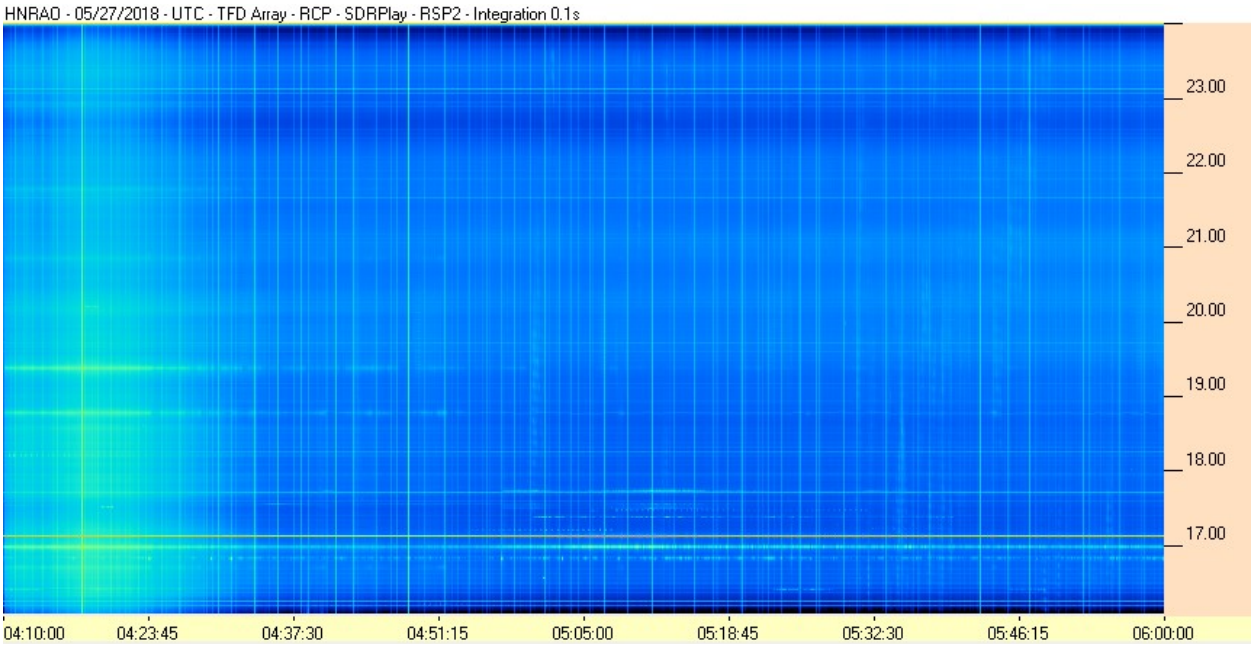
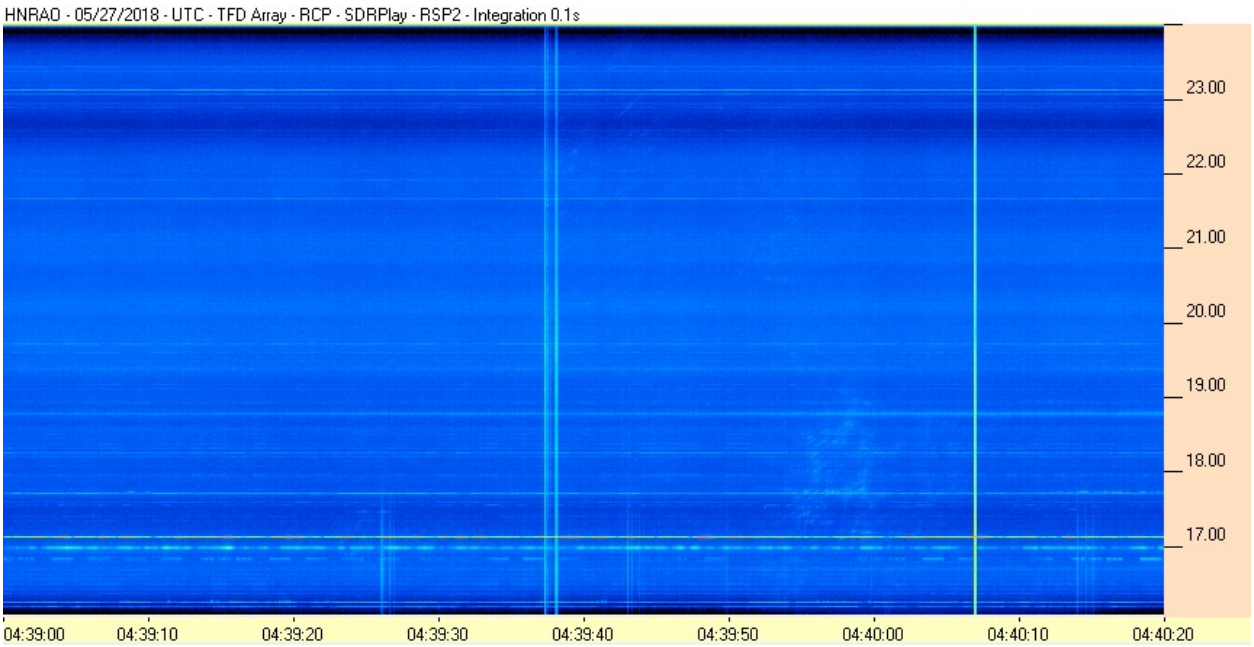
SDRPlay RSP2 / TFD Array





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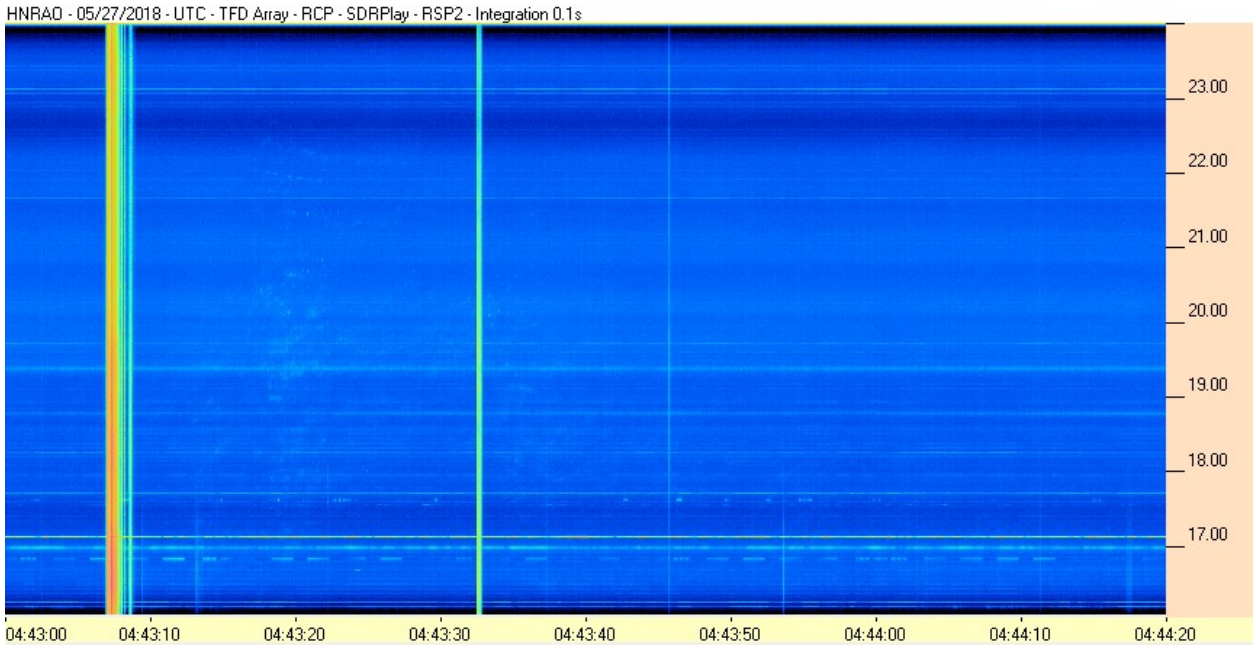

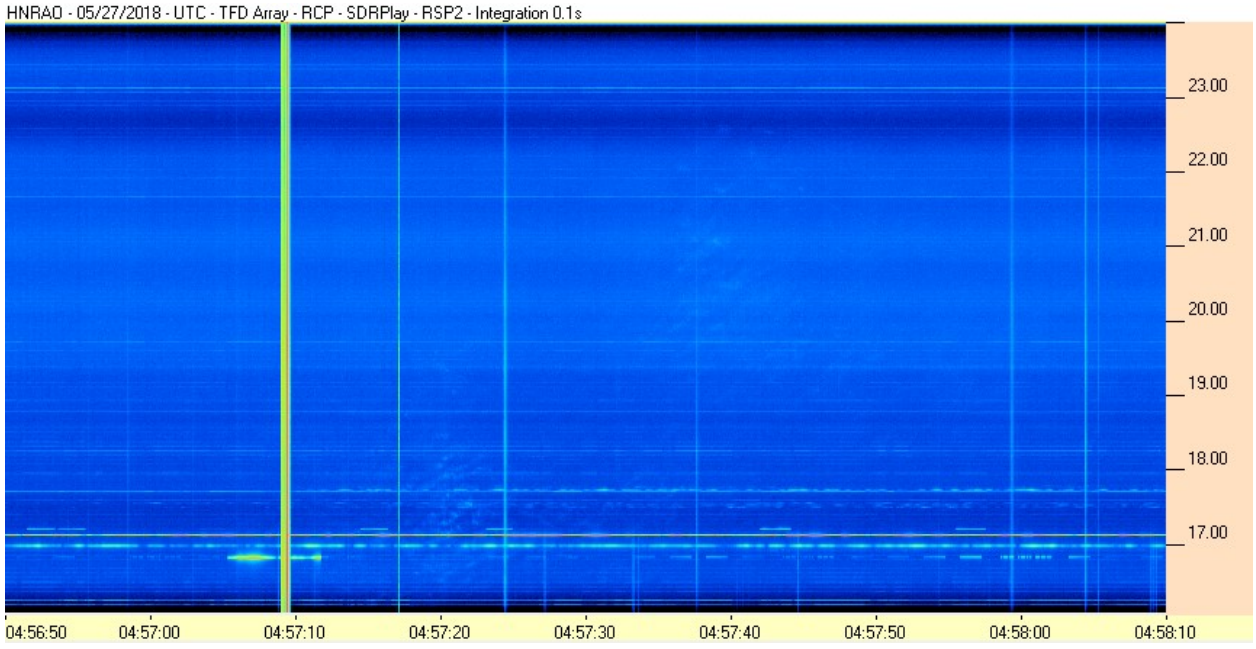

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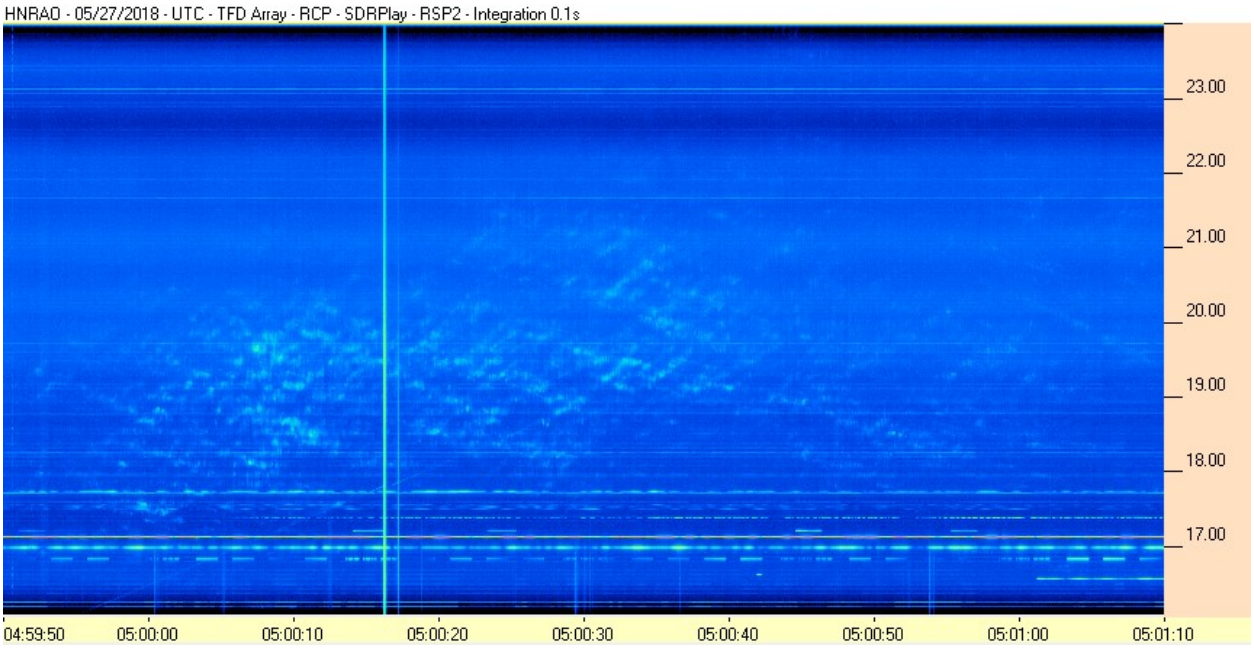

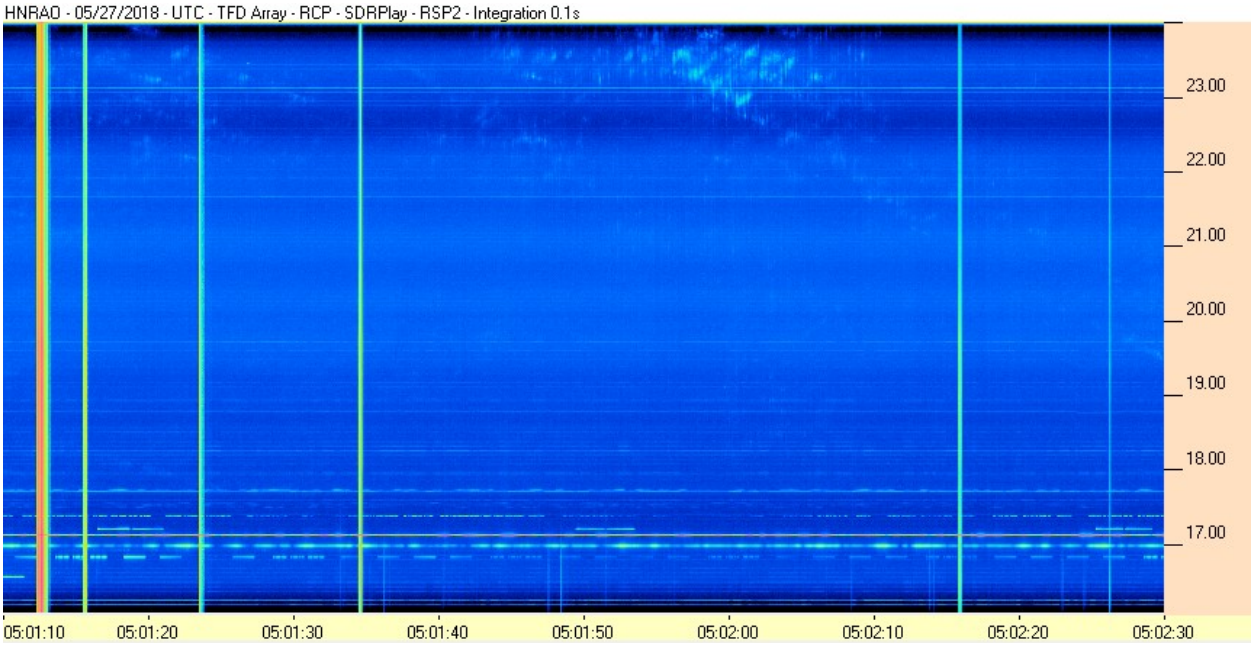

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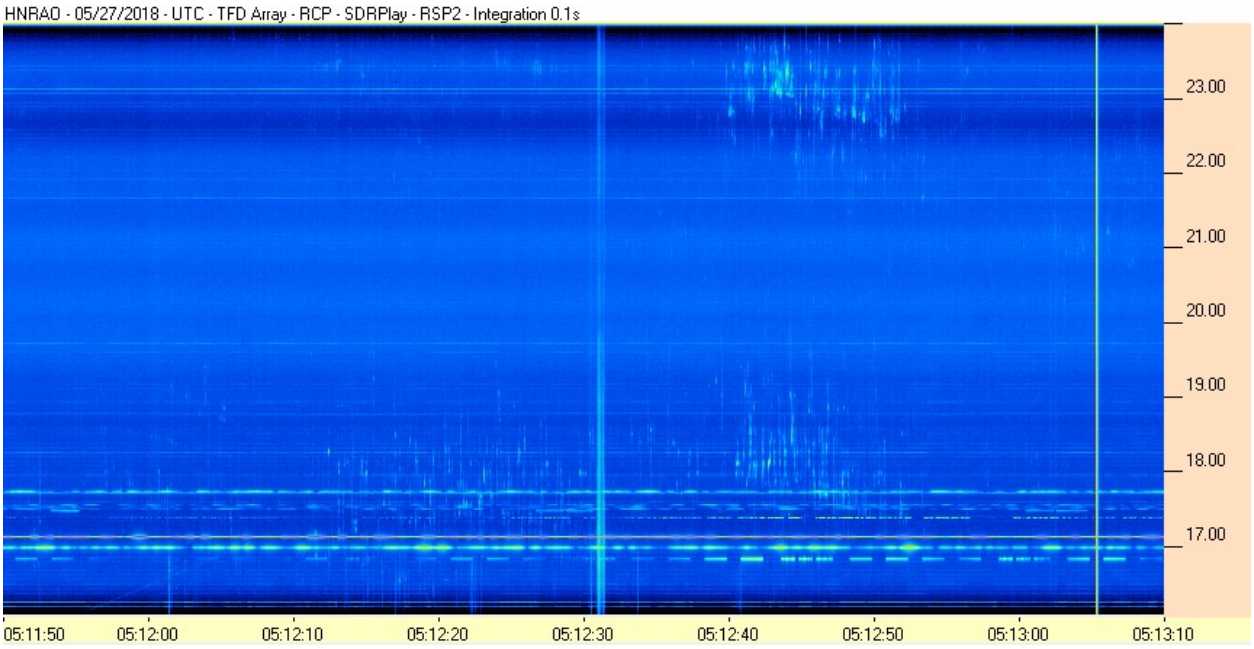

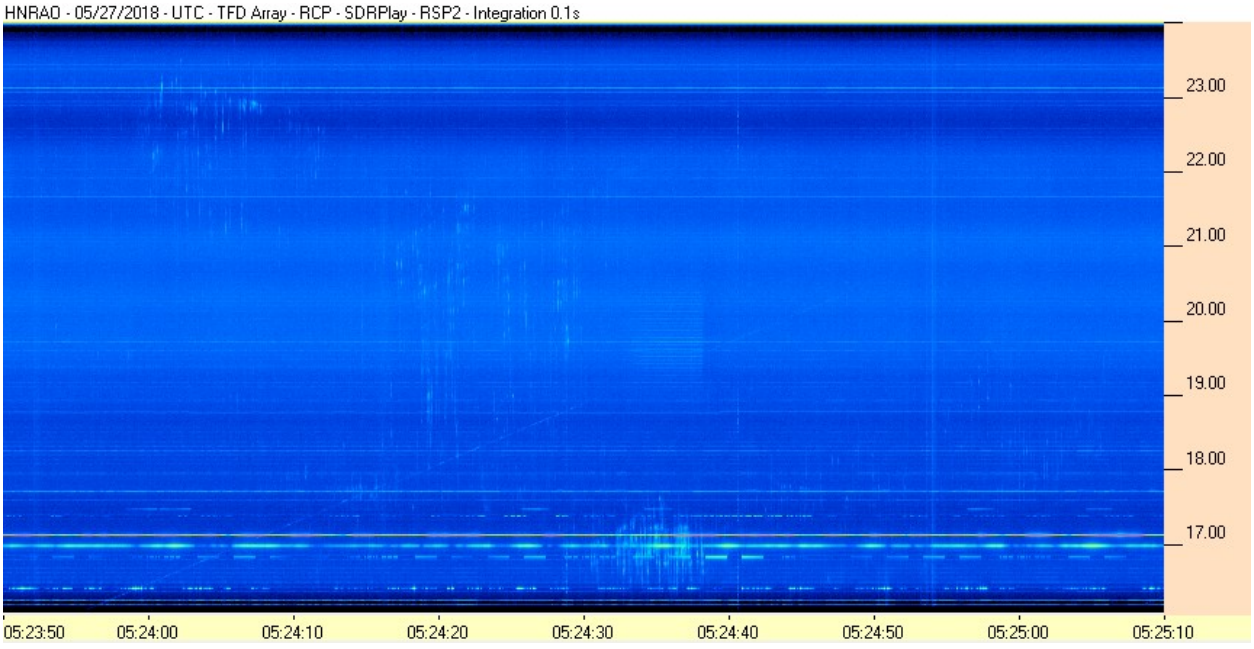

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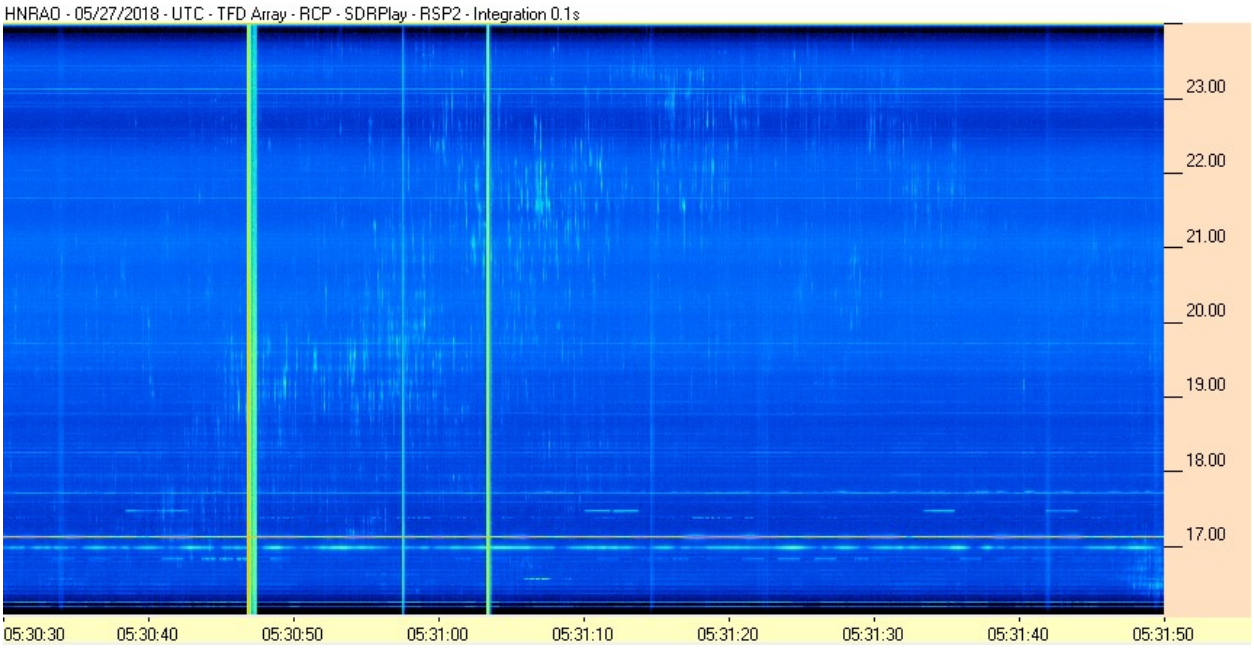

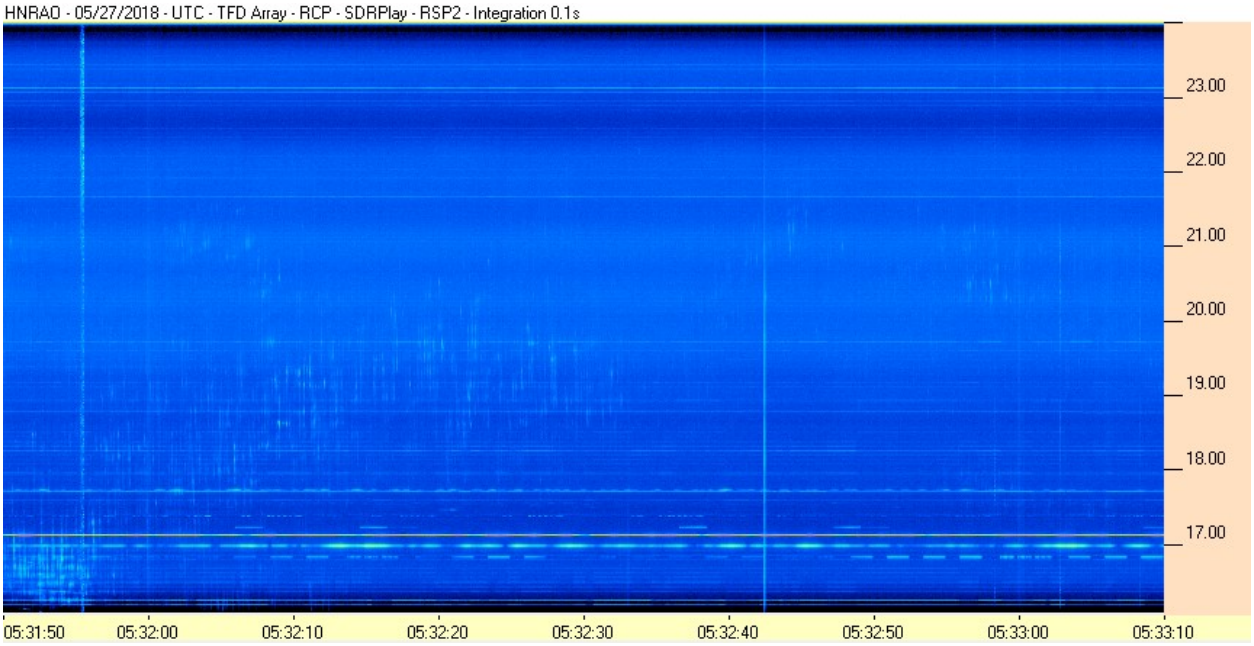

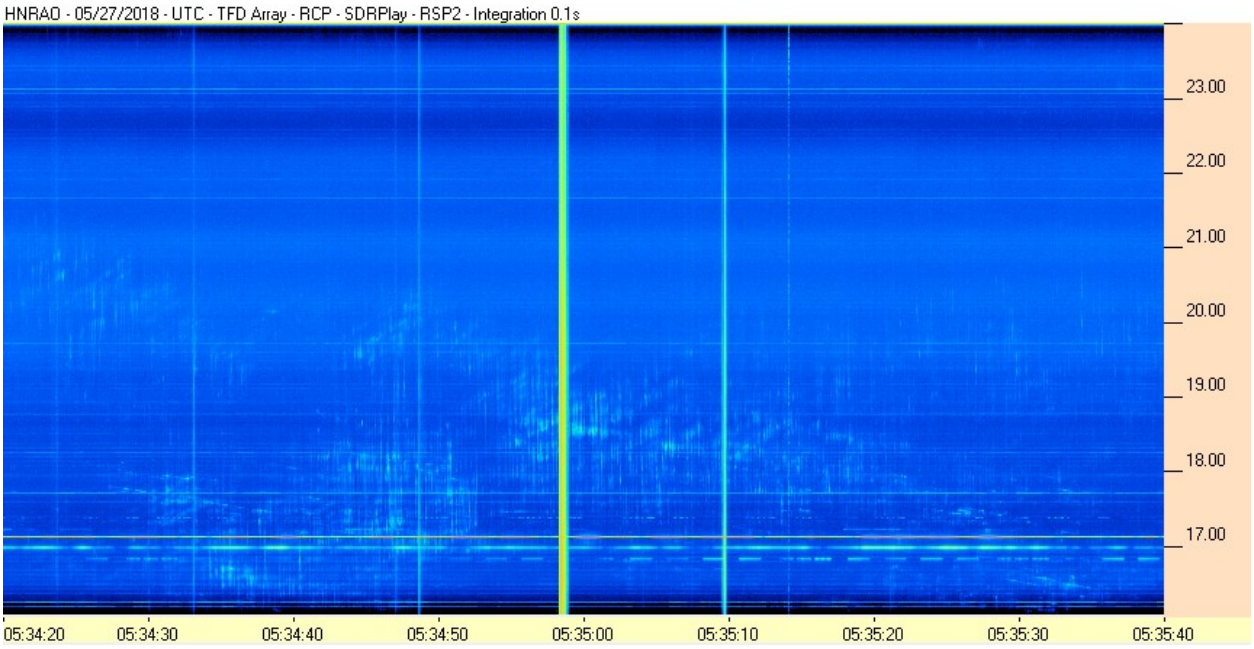
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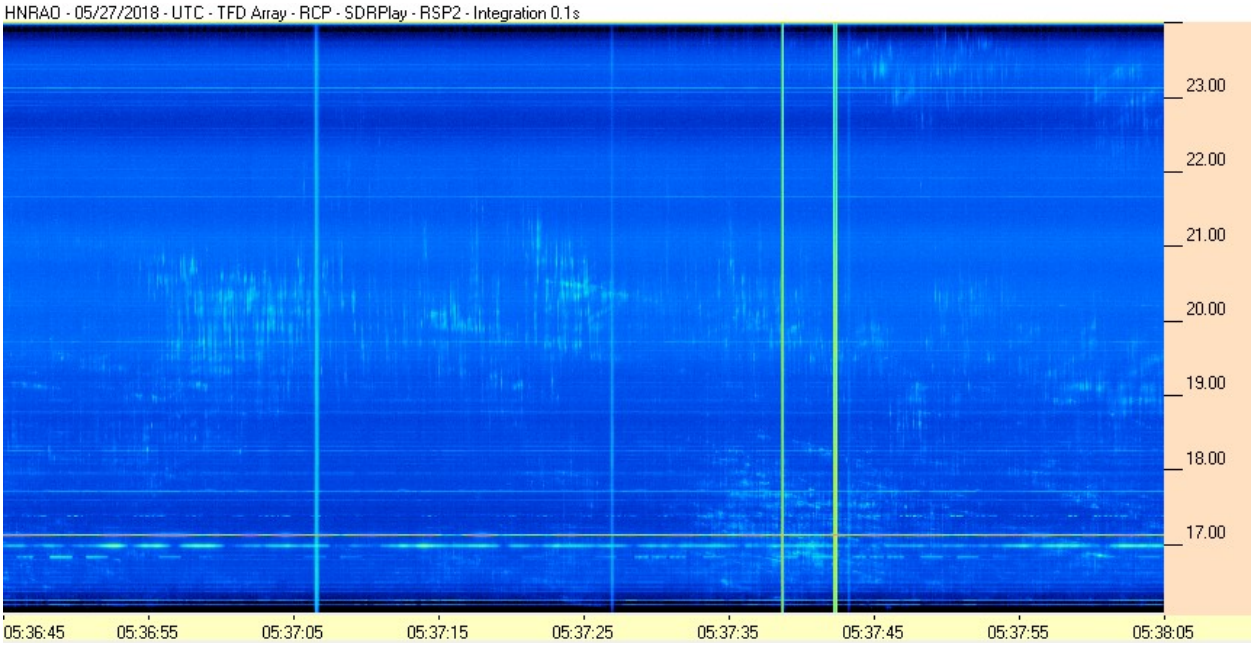
23.00
22.00
21.00
20.00
19.00
18.00
17.00
05:34:20
05:34:30
05:34:40
05:34:50
05:35:00
05:35:10
05:35:20
05:35:30
05:35:40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23.00
22.00
21.00
20.00
19.00
18.00
17.00
05:36:45
05:36:55
05:37:05
05:37:15
05:37:25
05:37:35
05:37:45
05:37:55
05:38:05

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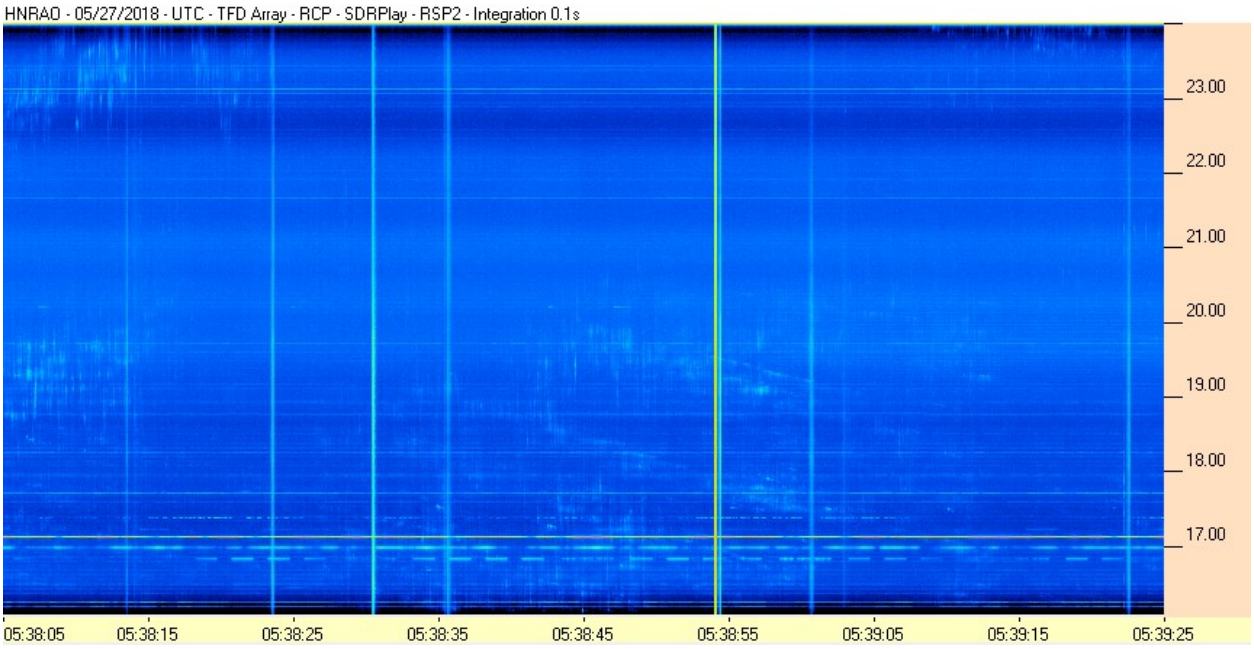

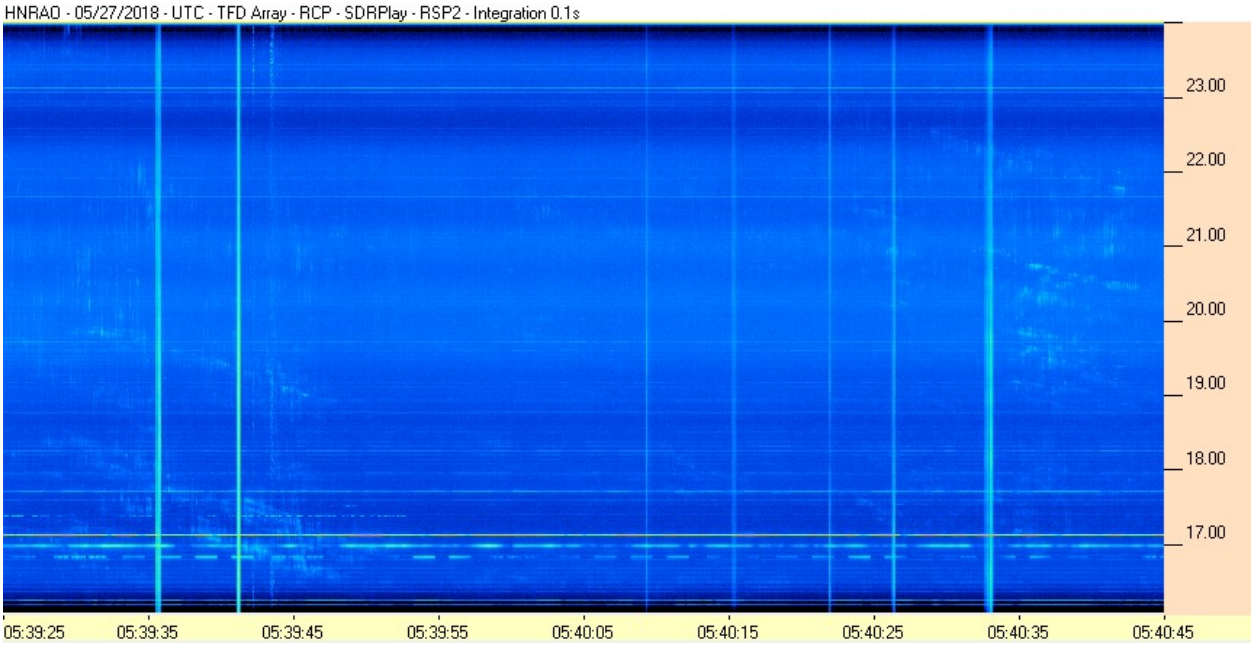

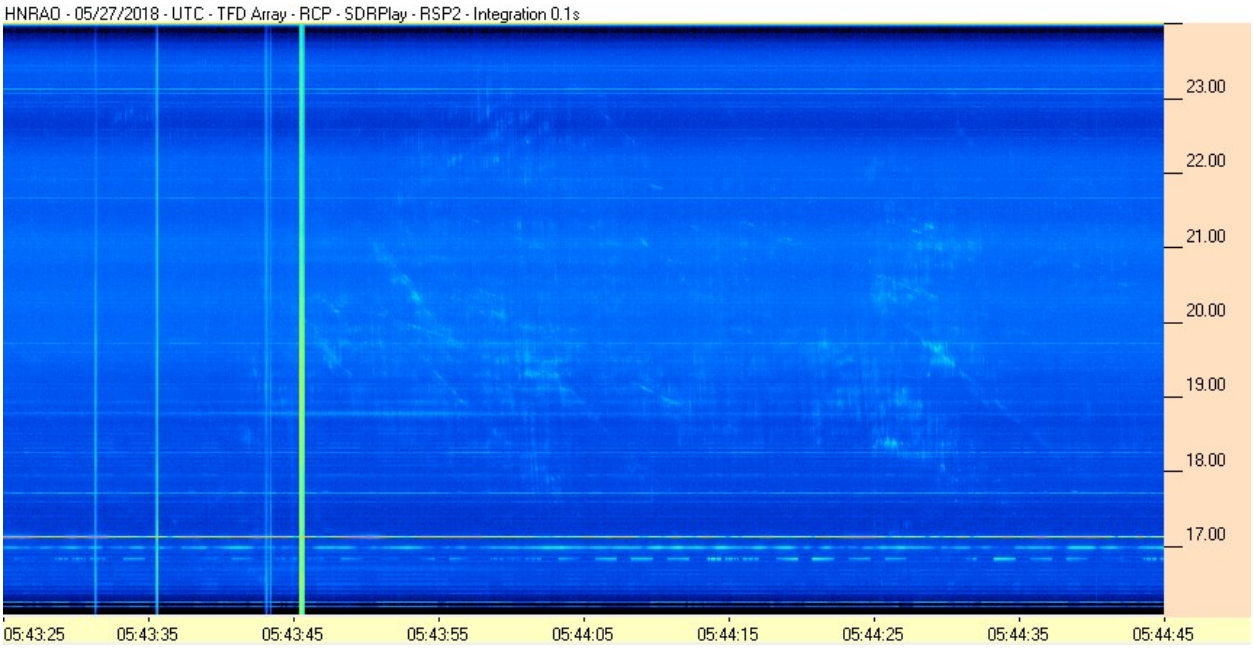
HNRAO - 05/27/2018 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s
23.00
22.00
21.00
20.00
19.00
18.00
17.00
05:43:25
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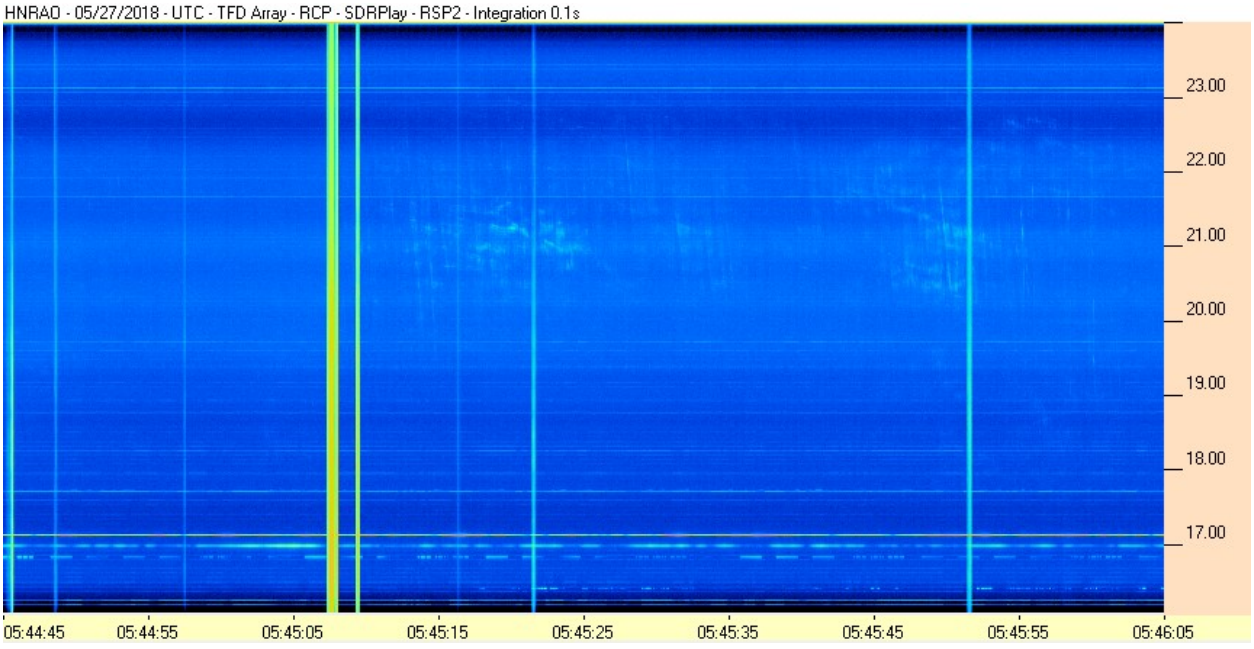
05:44:45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22.00
21.00
20.00
19.00
18.00
17.00
05:44:45
05:44:55
05:45:05
05:45:15
05:45:25
05:45:35
05:45:45
05:45:55
05:46:05

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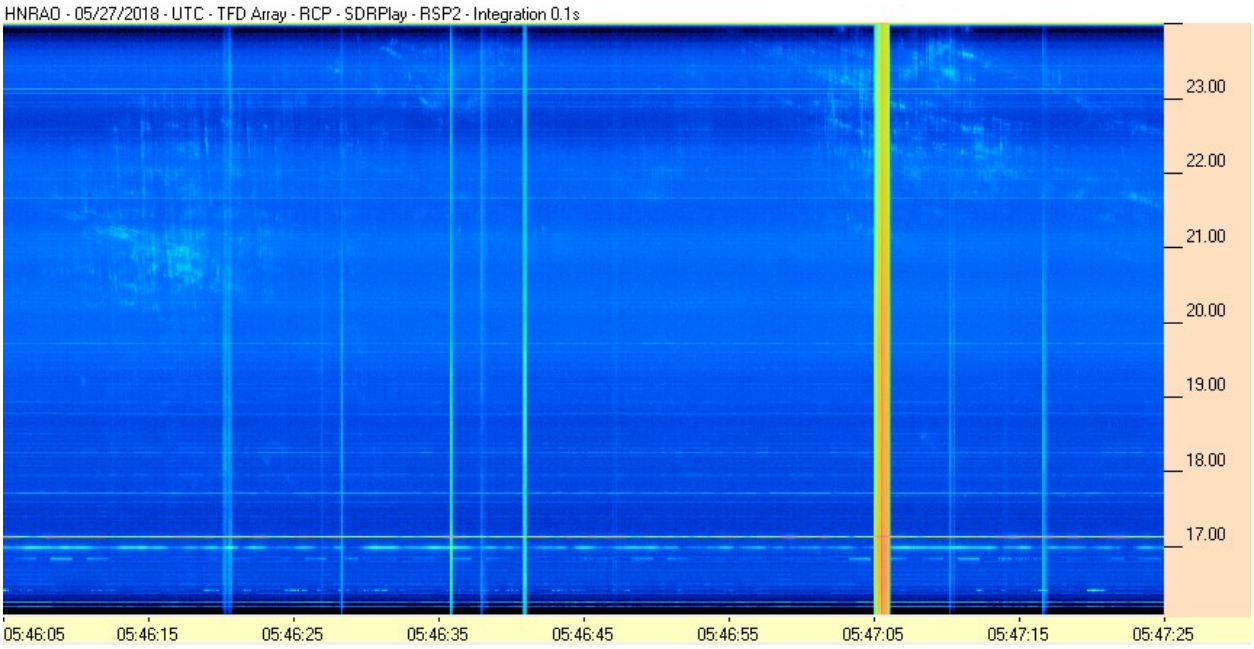

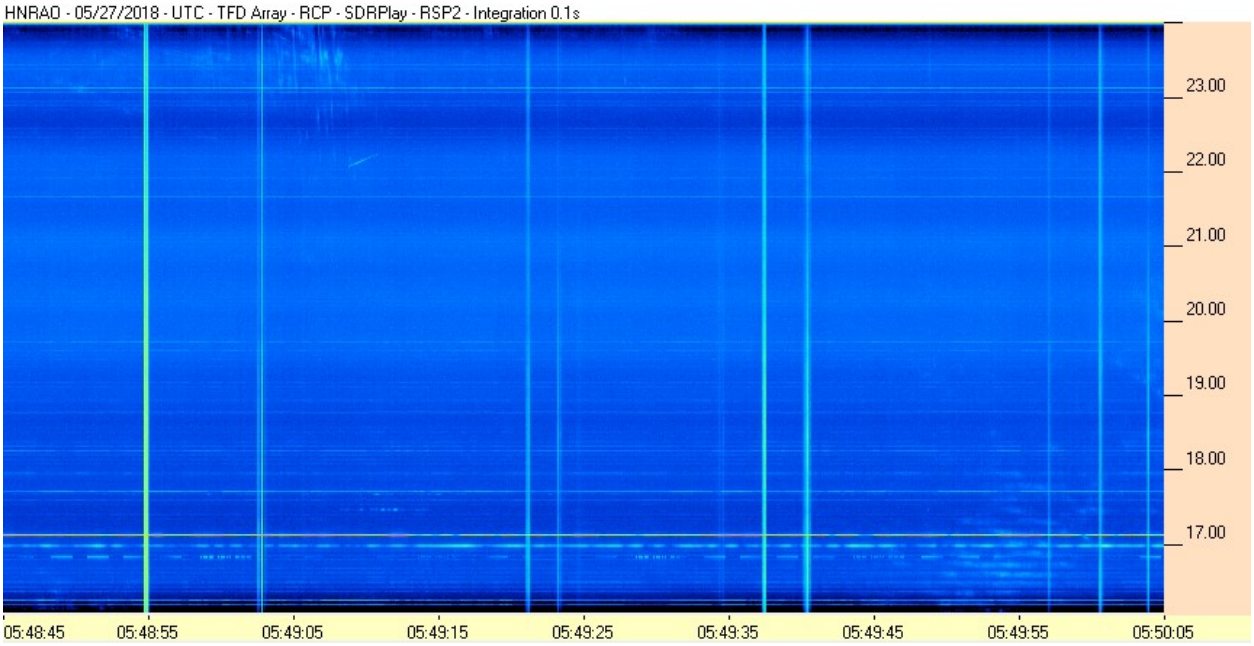

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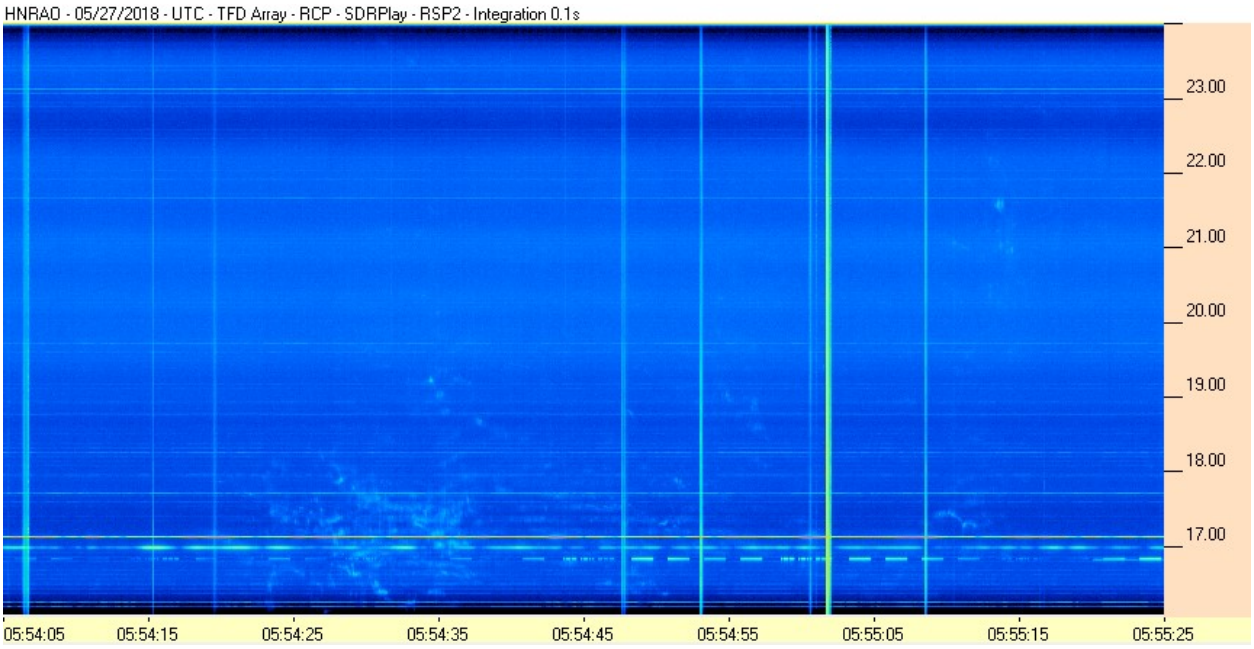

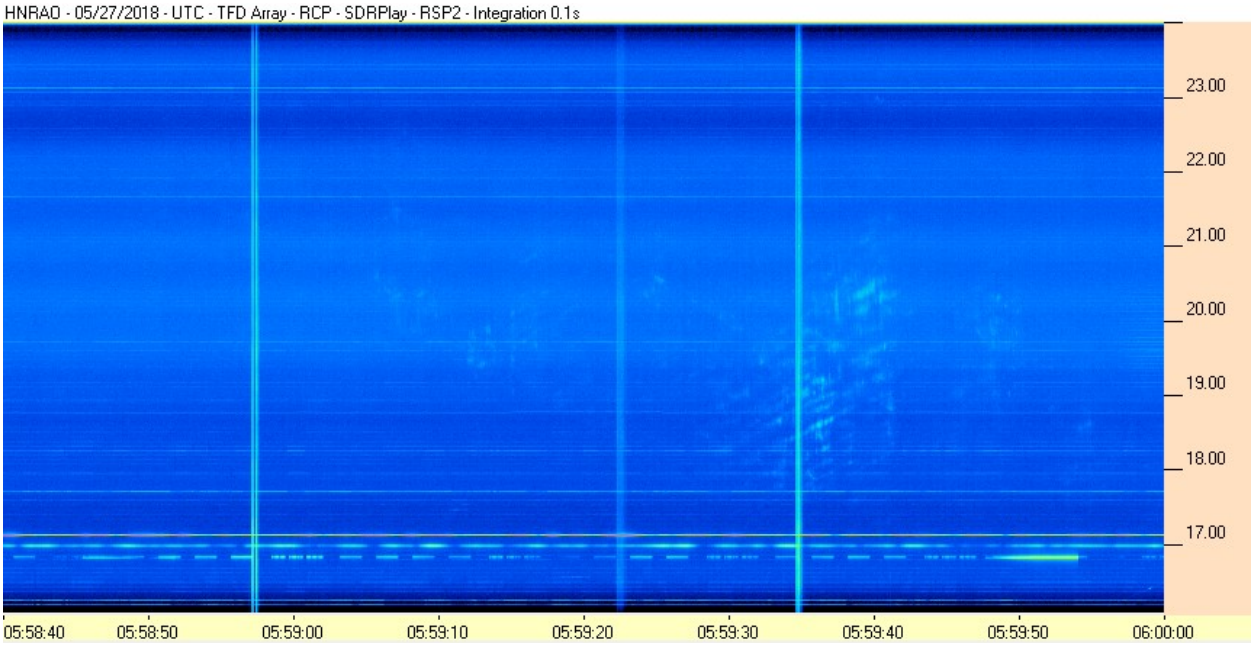

FSX-2 / LWA Array