HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 30 March 2017

Object: Jupiter – Io-B

Observer: JB/RF

Start of pass:	**0321 UT**	**Planetary K-index:**	**3**
Jupiter Altitude:	**30.1 degrees**	**Jupiter Azimuth:**	**131.2 degrees**
Jupiter CML:	**123.56**	**Jupiter Io Phase:**	**073.61**
Jupiter RA:	**13:14**	**Jupiter Dec:**	**-06:05**
Hour Angle:	**-02:44**	**Polarization**	**RCP**
Sun Altitude:	**-38.6 degrees**	**Sun Azimuth:**	**320.9 degrees**
Sun RA:	**00:28**	**Sun Dec:**	**03:04**

End of pass:	**0500 UT**		
Jupiter Altitude:	**41.0 degrees**	**Jupiter Azimuth:**	**158.6 degrees**
Jupiter CML:	**183.42**	**Jupiter Io Phase**	**087.51**
Hour Angle:	**-01:04**		
Sun Altitude:	**-46.0 degrees**	**Sun Azimuth:**	**353.1 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 (2) and RSP2 (1)

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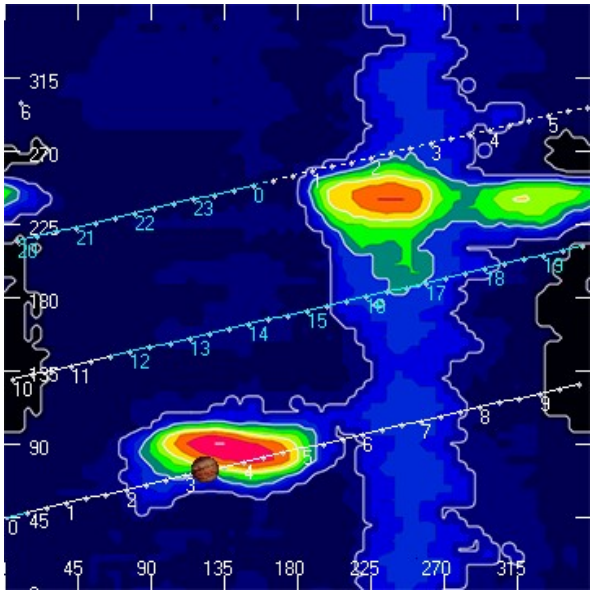
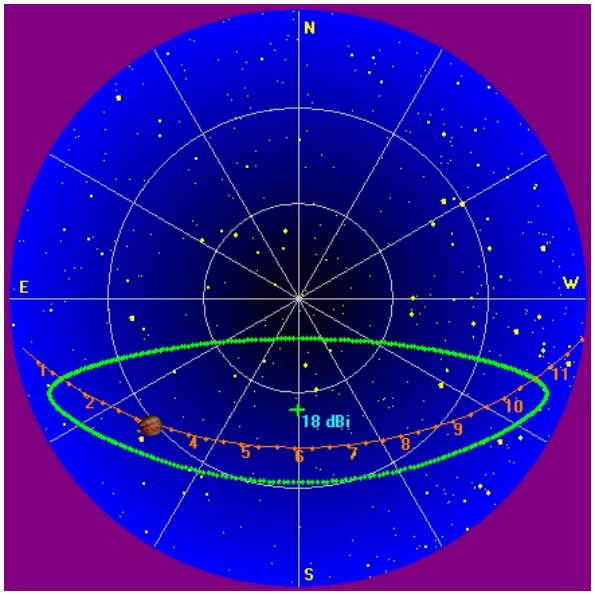
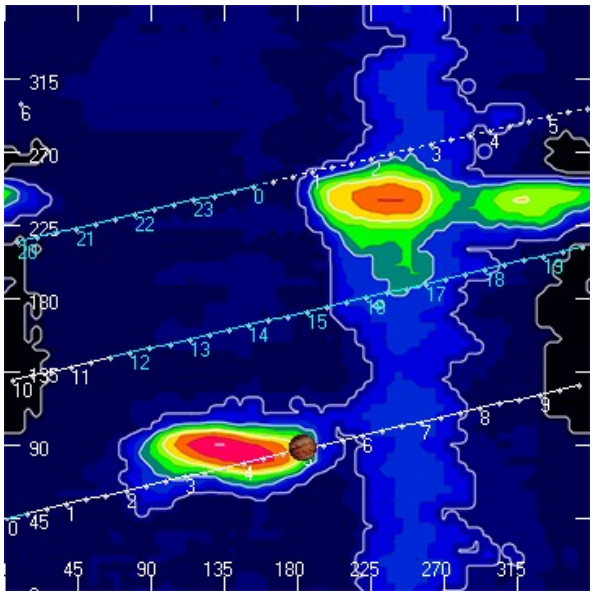
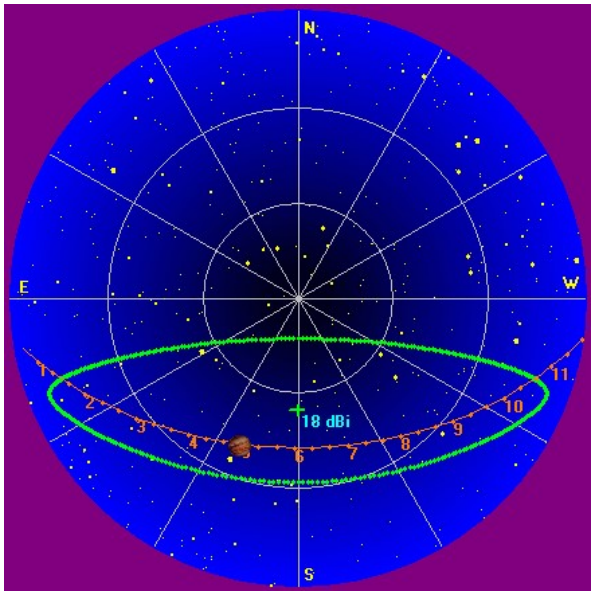




Beginning of Pass





End of Pass

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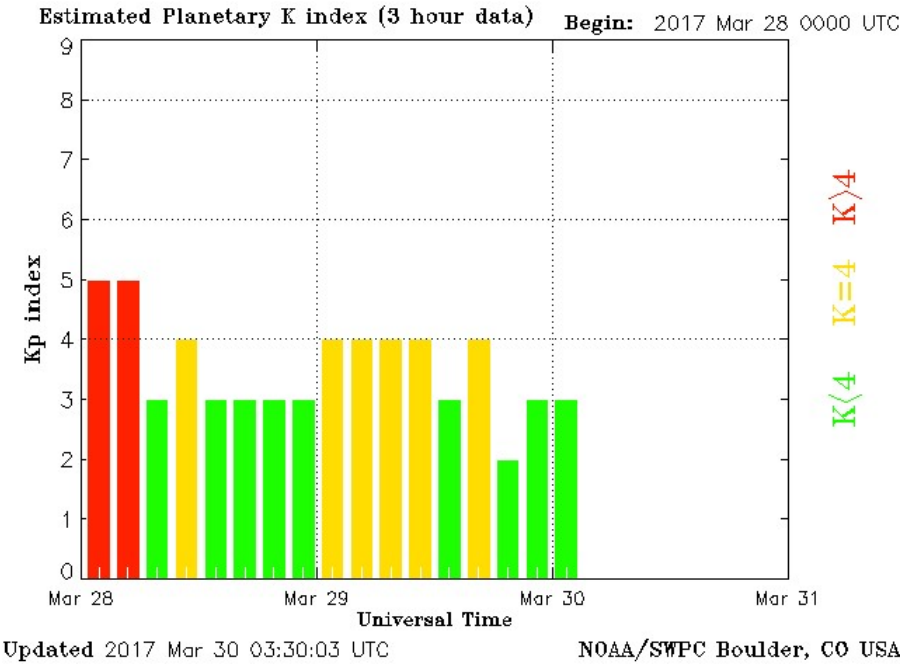

A strong Io-B pass composed almost exclusively of S-bursts, with few L-bursts observed. All emissions were RCP. Several N-events, one of which was very long in duration and had substantial drift over the time of its existence. There were several periods of intense S-burst activity. A unique event at the start of the pass at 0325 UT began at approximately 17 MHz, jumped to slightly over 19 MHz, then jumped back to 17.5 MHz in slightly over 30 seconds.

Positive drift modulation lanes measured at various points during the pass ranged from a high of 159 kHz/sec to a low of 96 kHz/sec with an average of 126 kHz/sec. 15 measurements were made during the pass. Analysis of the change in drift rates did not reveal any correlation between time of pass and degree of slope, however, the method used to measure slope introduces a small degree of error.

S-bursts recorded on SkyPipe from the Radio JOVE receiver and JOVE phased dipoles showed levels as high as 400 kK bursts.

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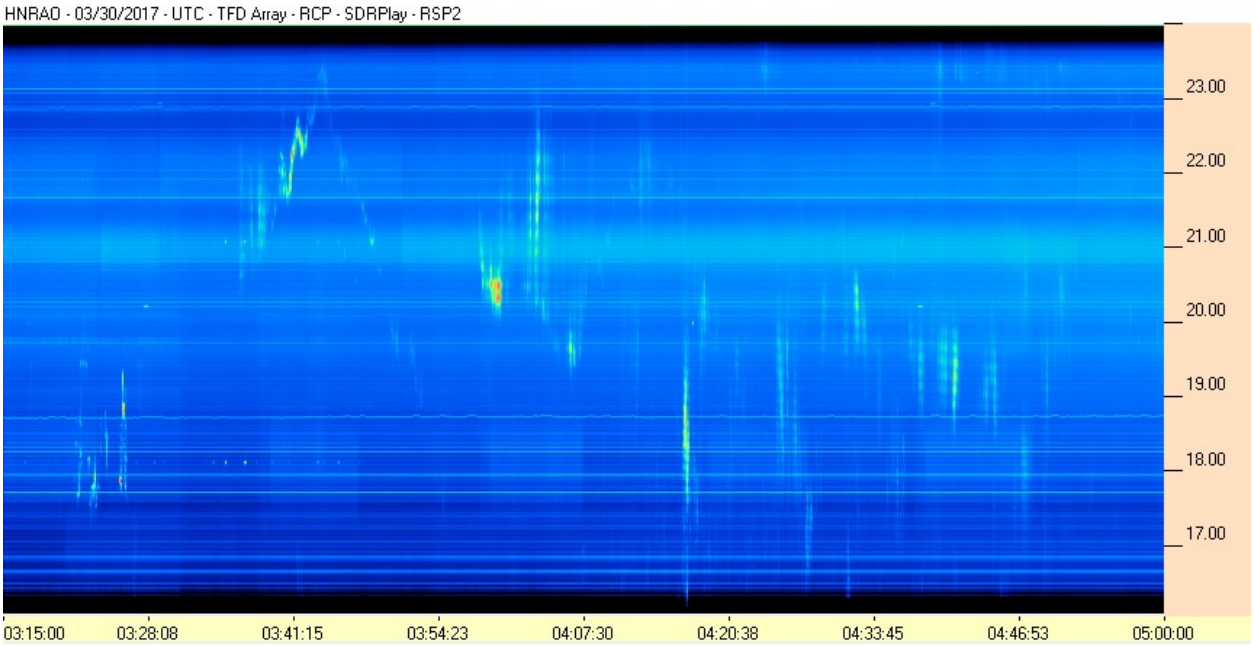
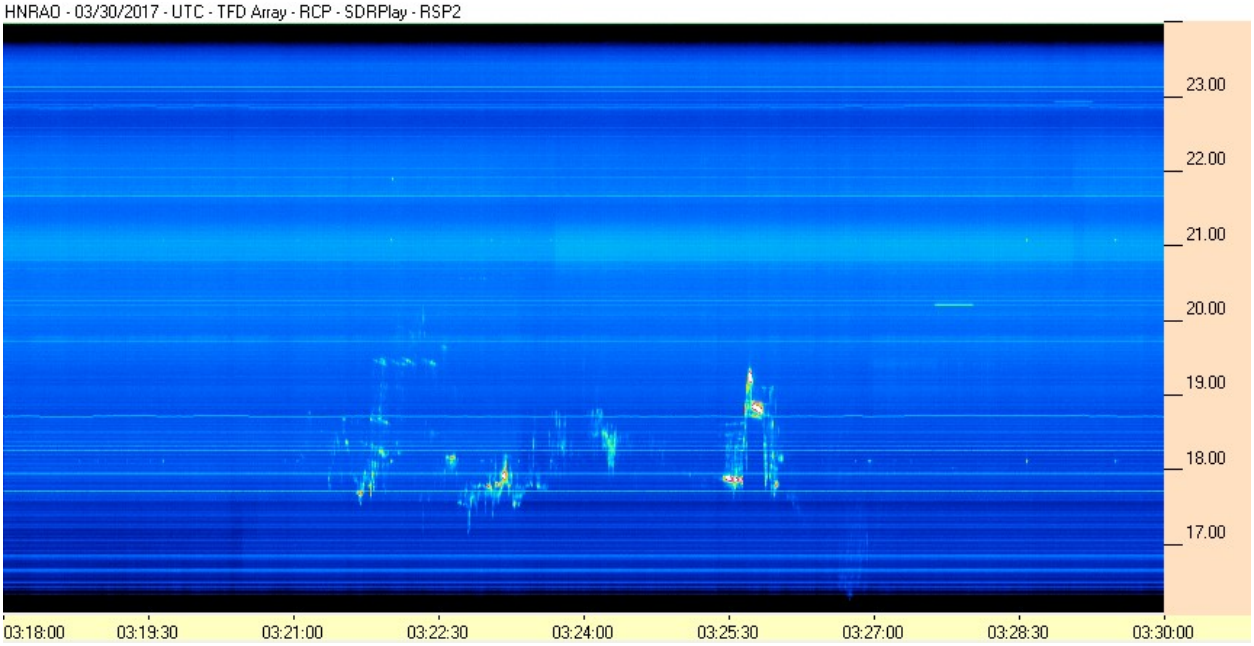
RSP2/TFD Pair





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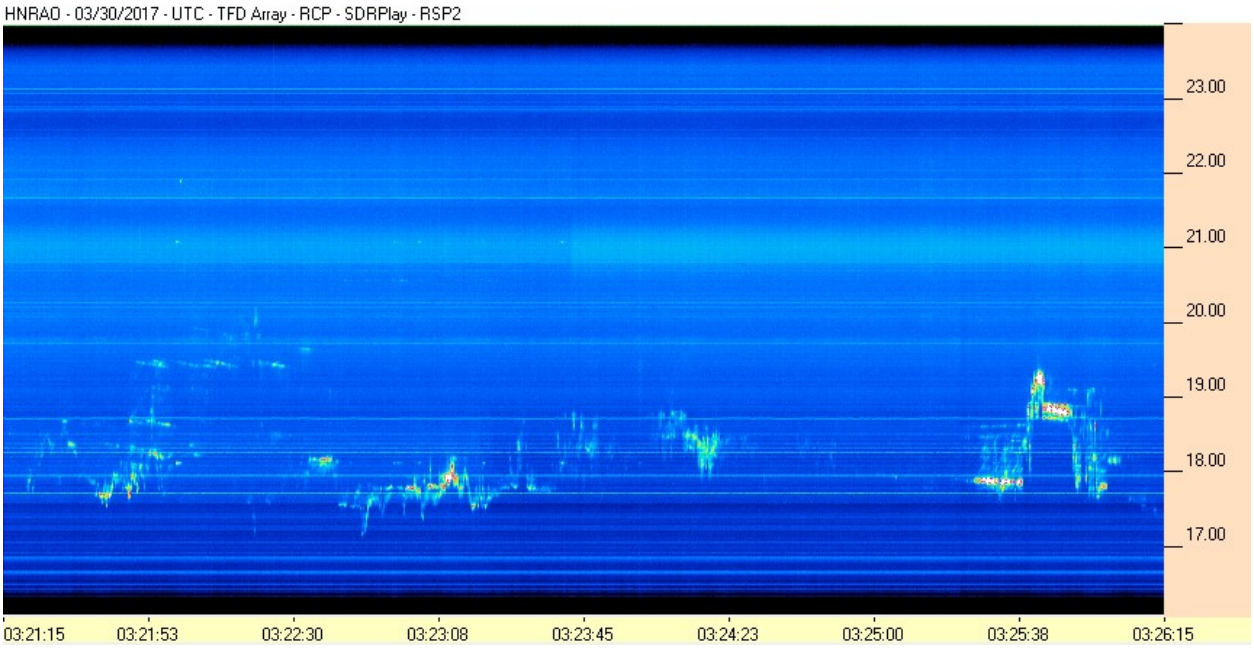

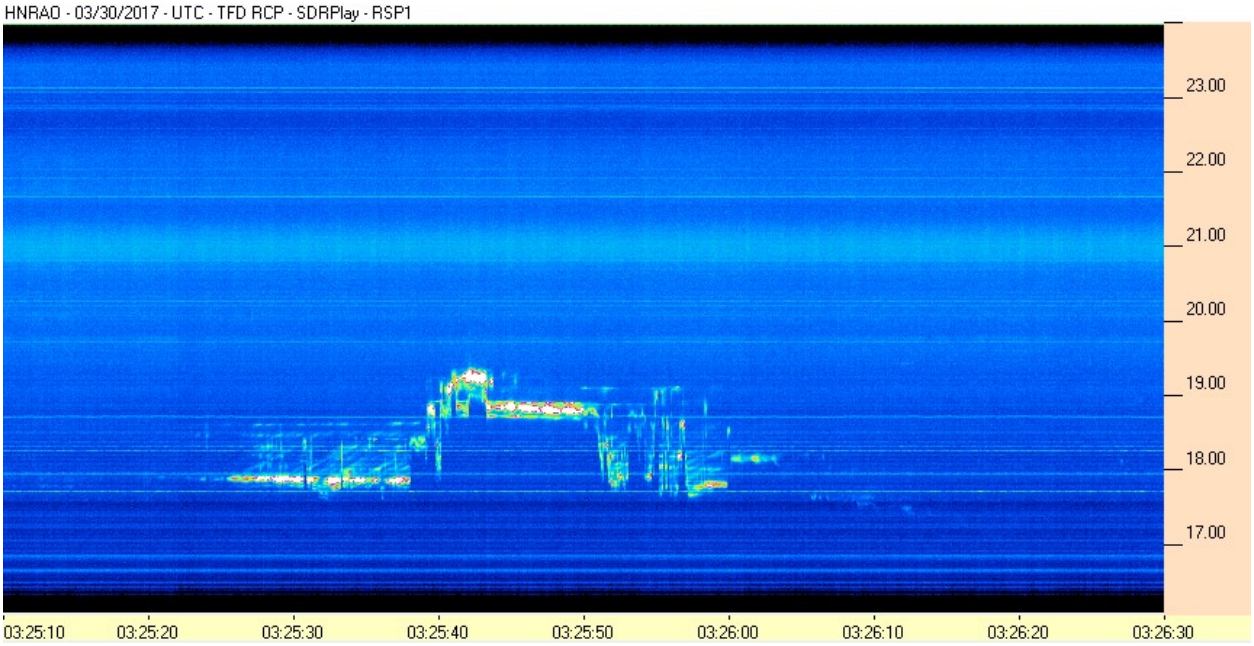

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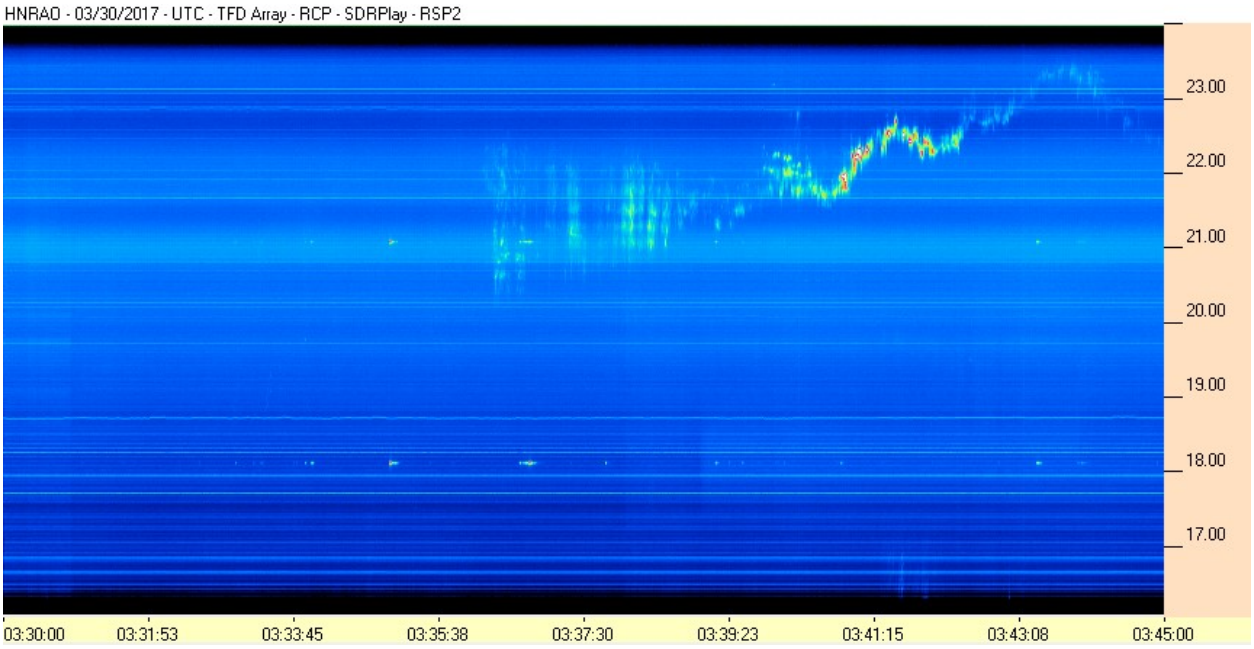

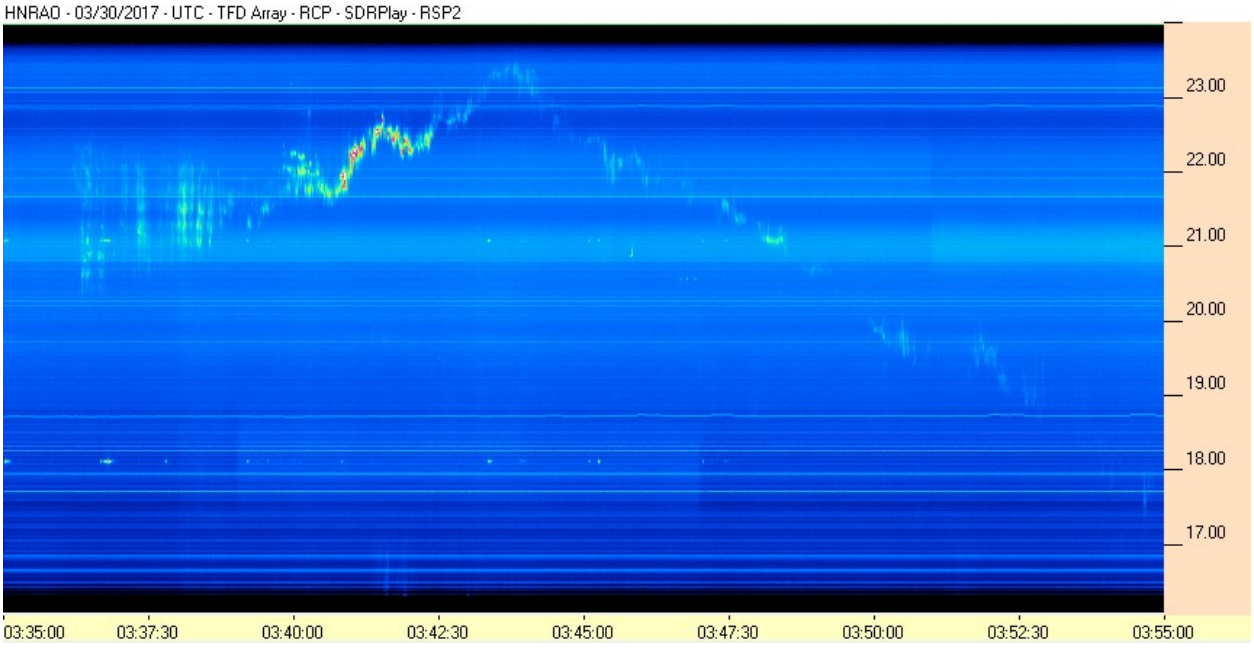

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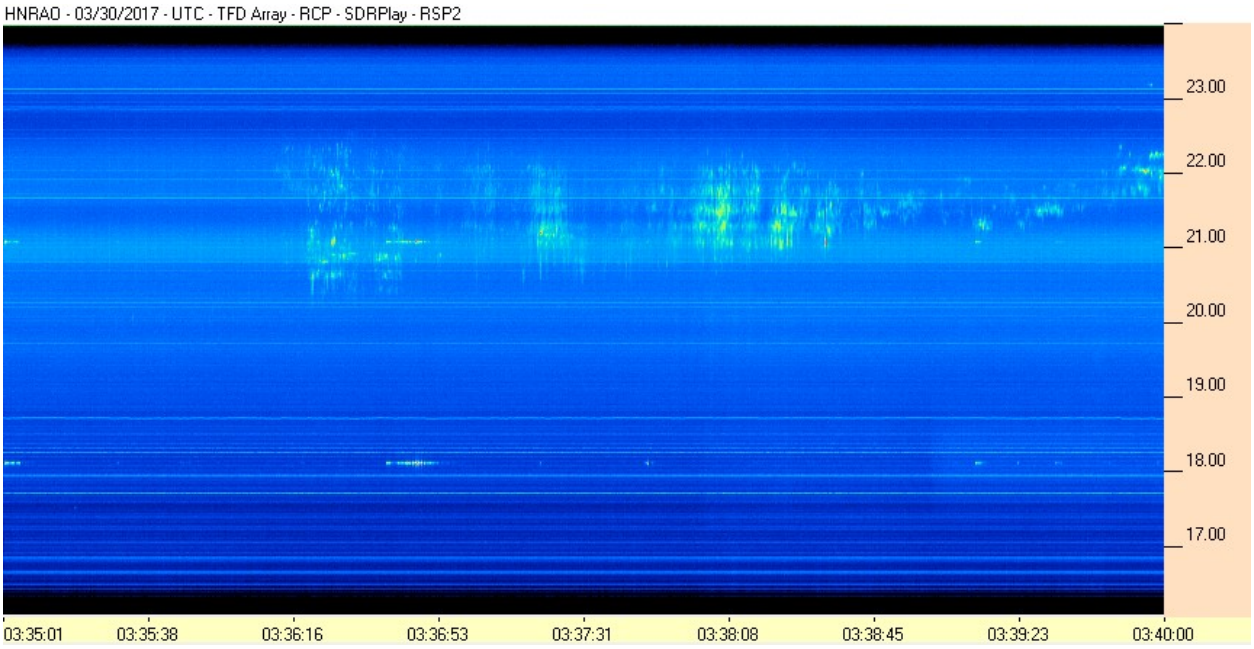

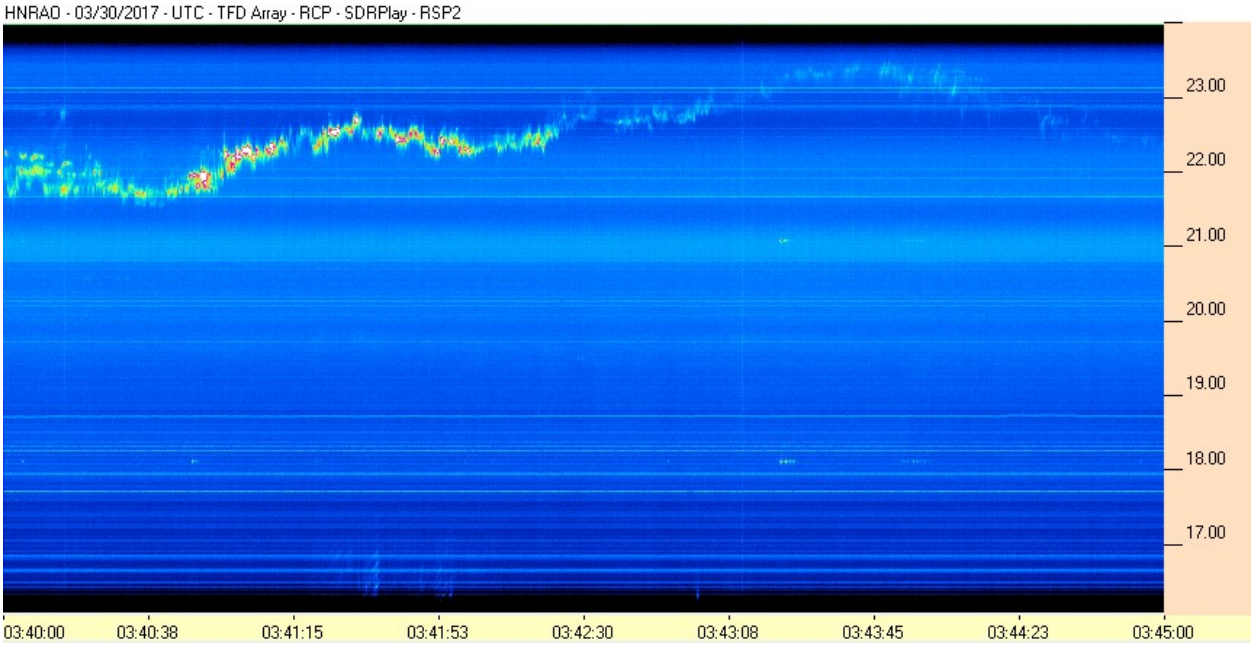

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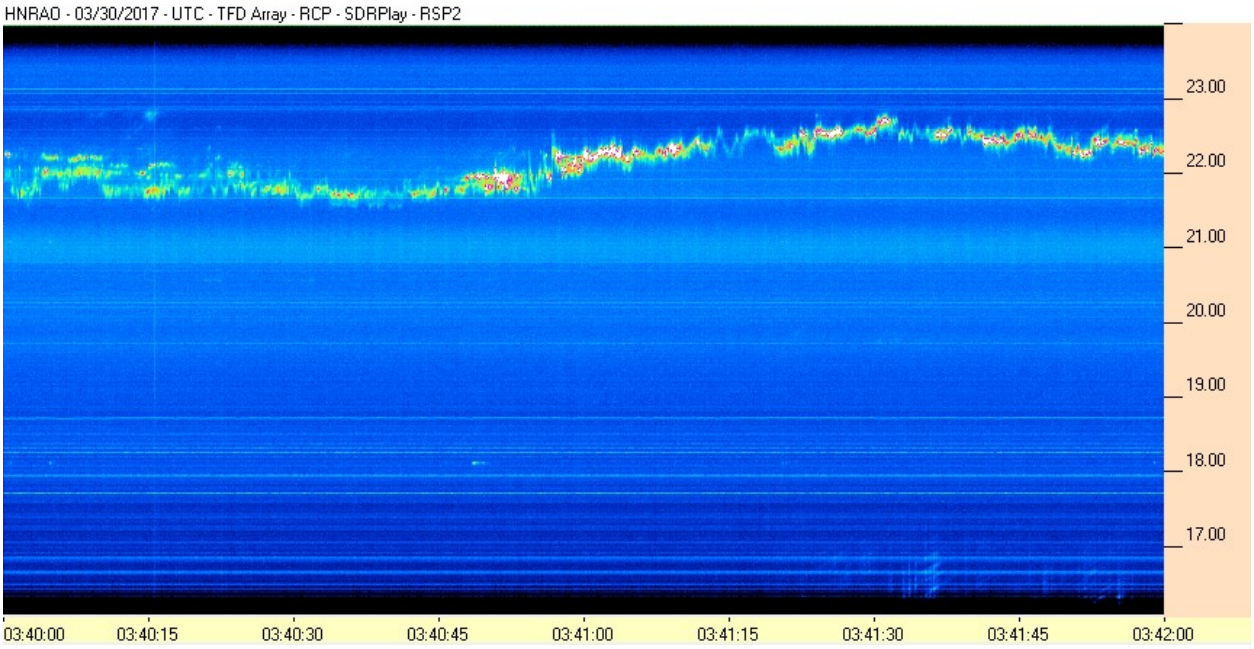

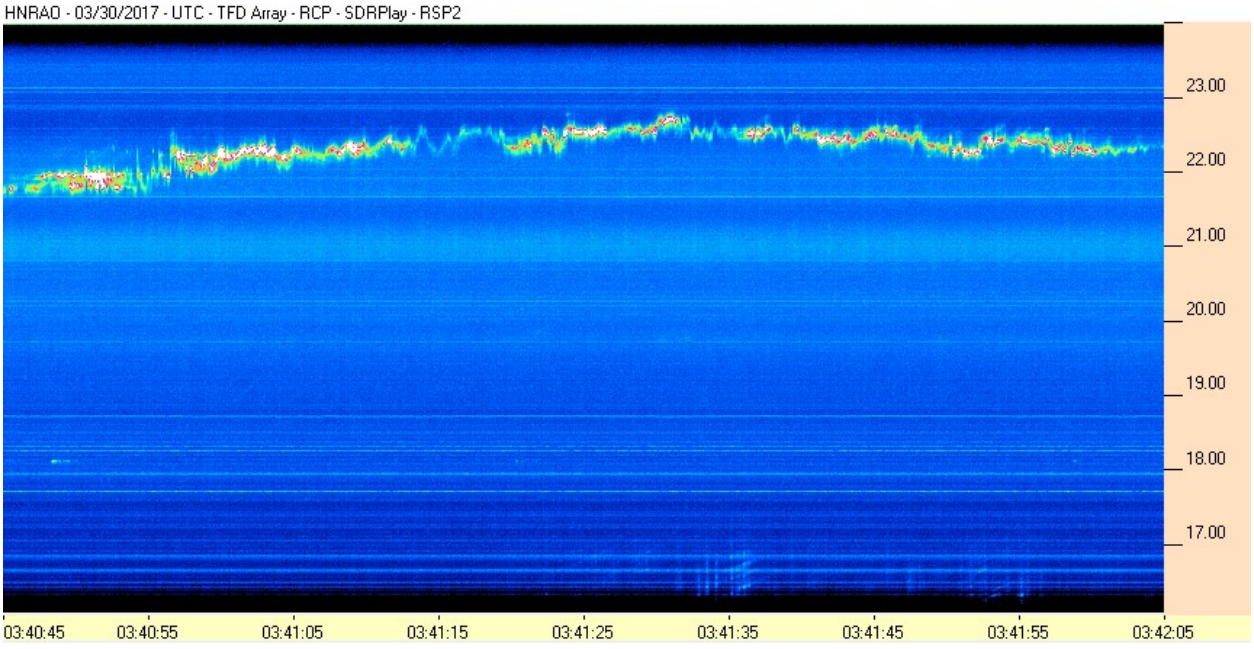

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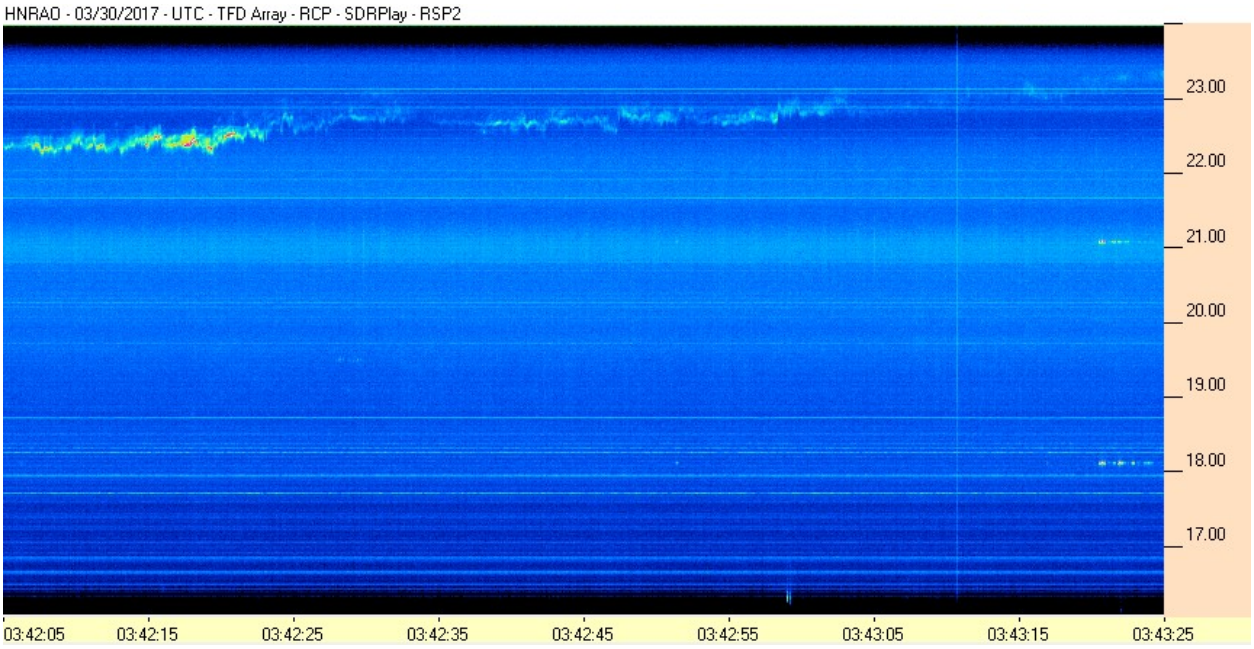

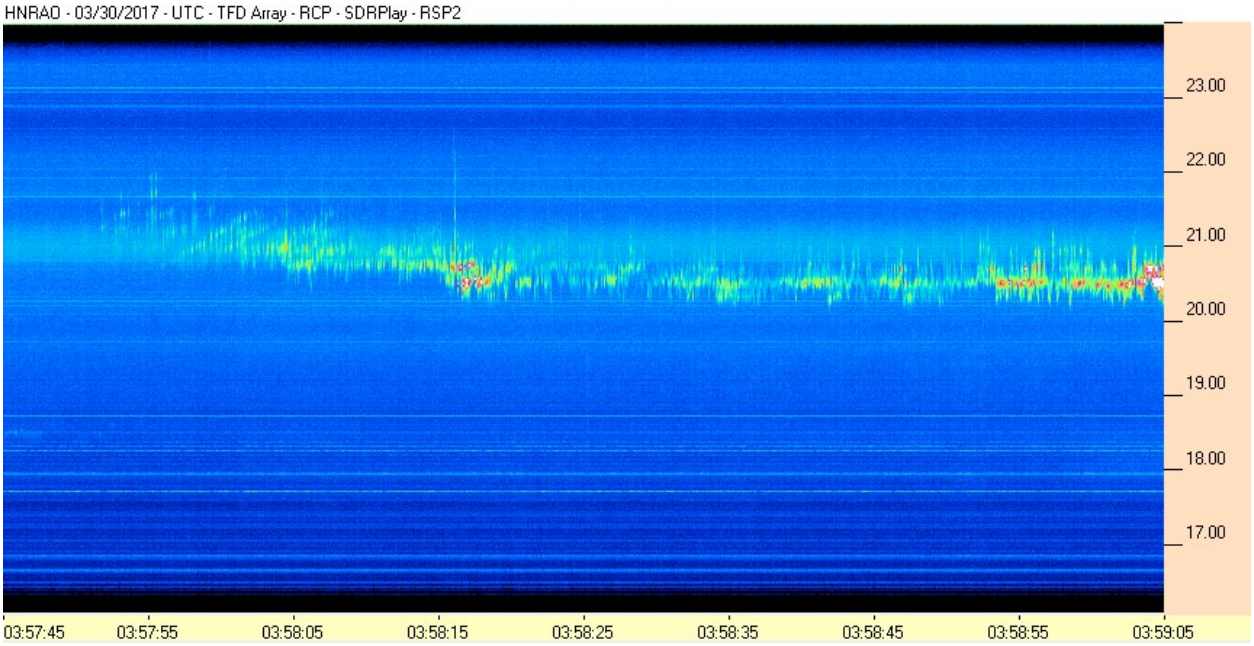

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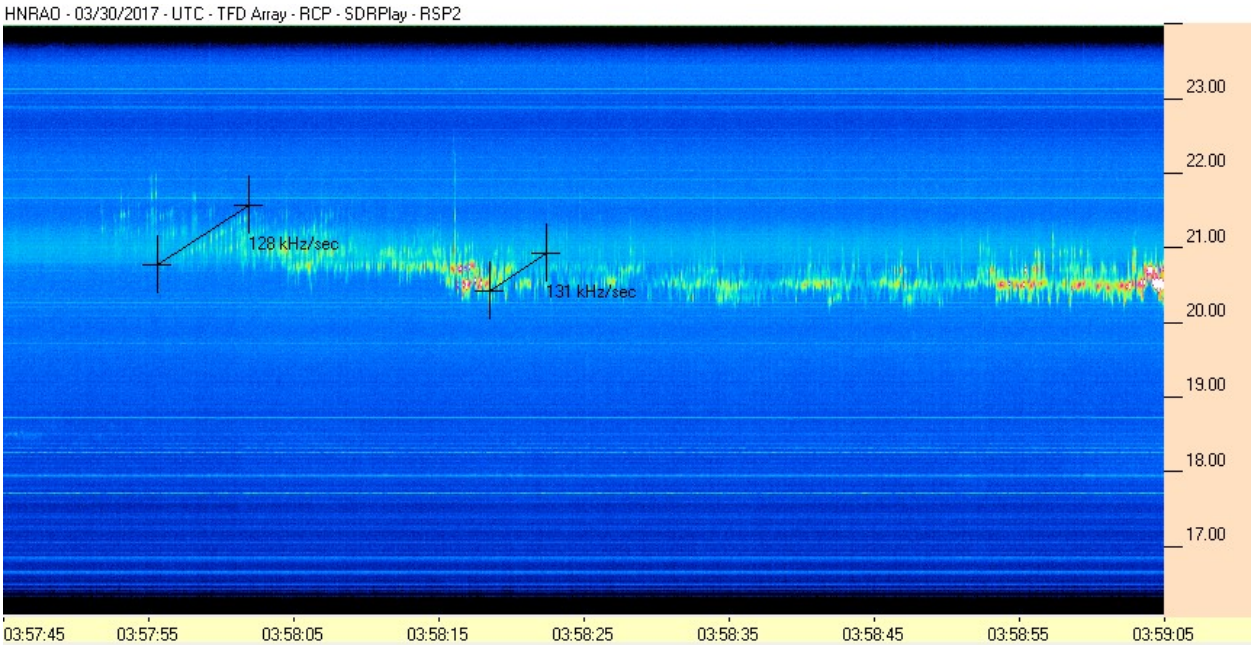

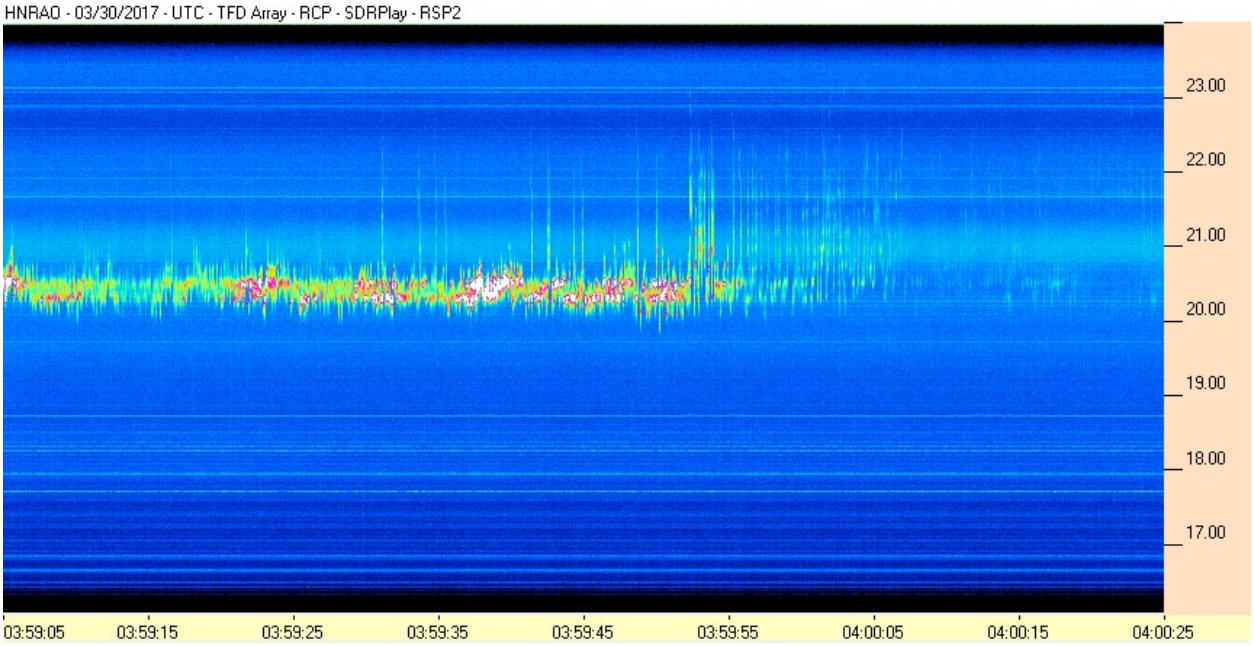

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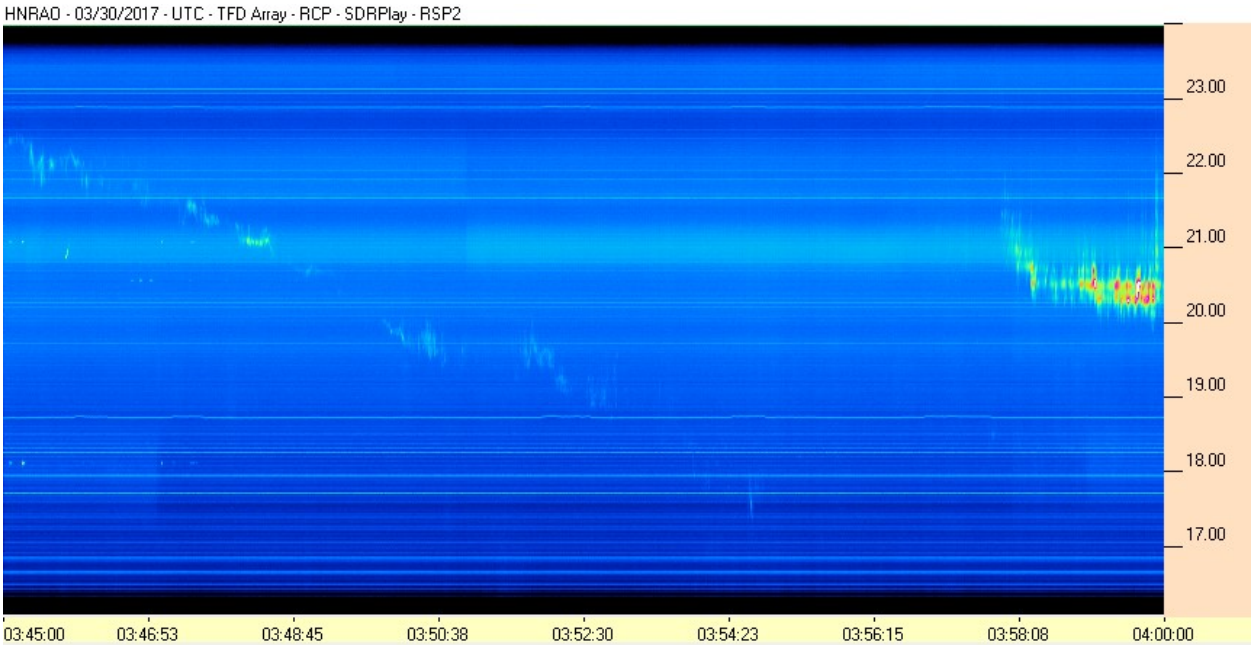

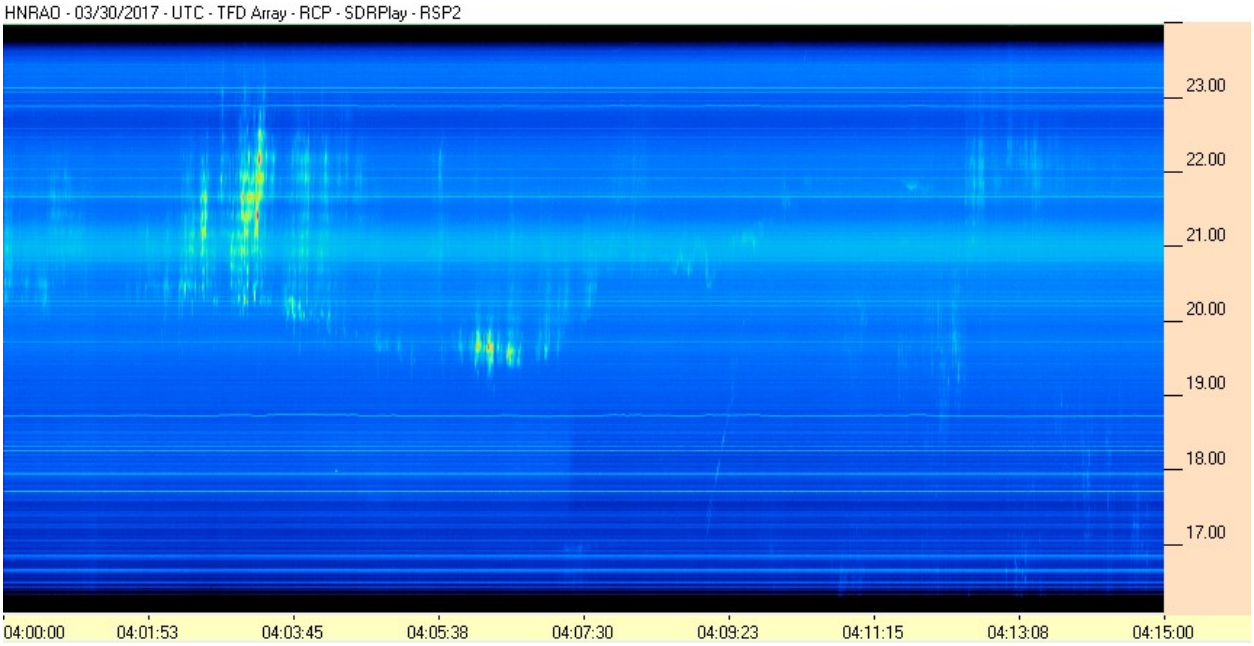

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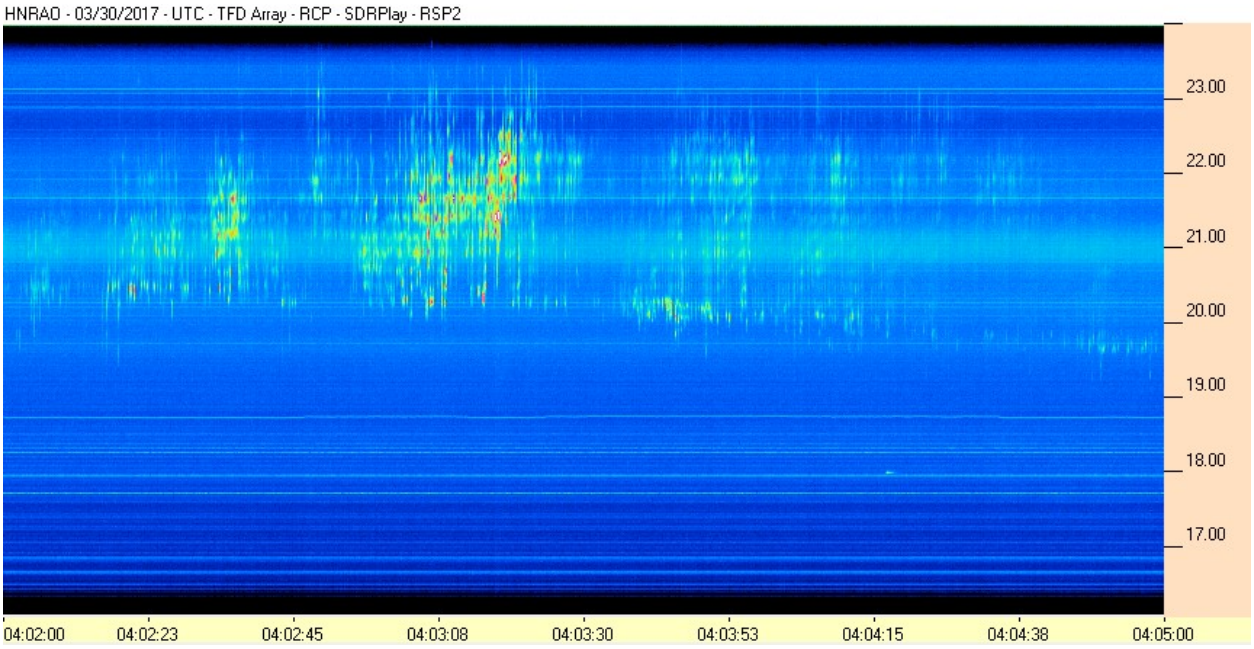

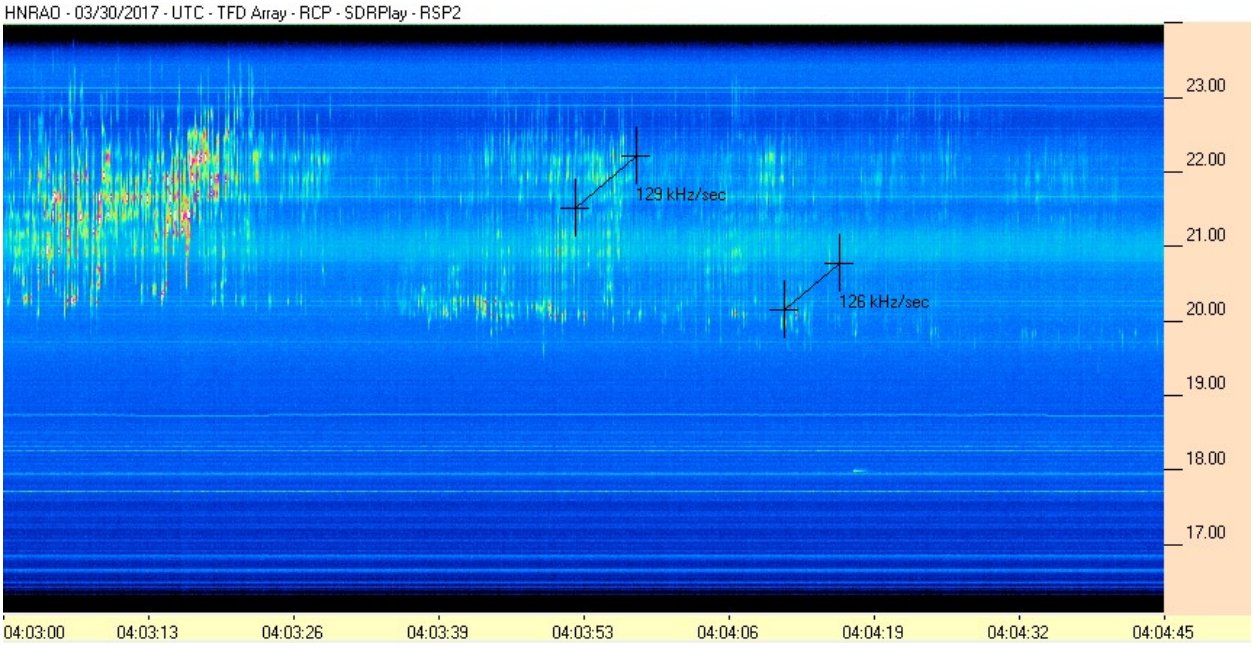

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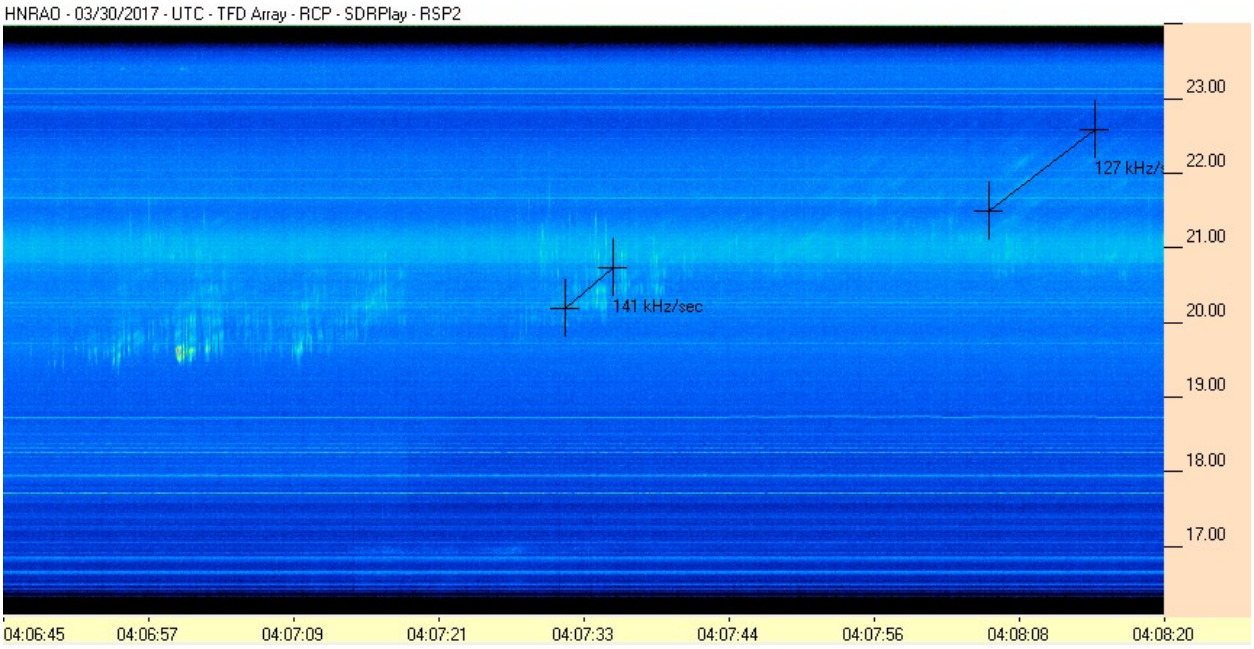

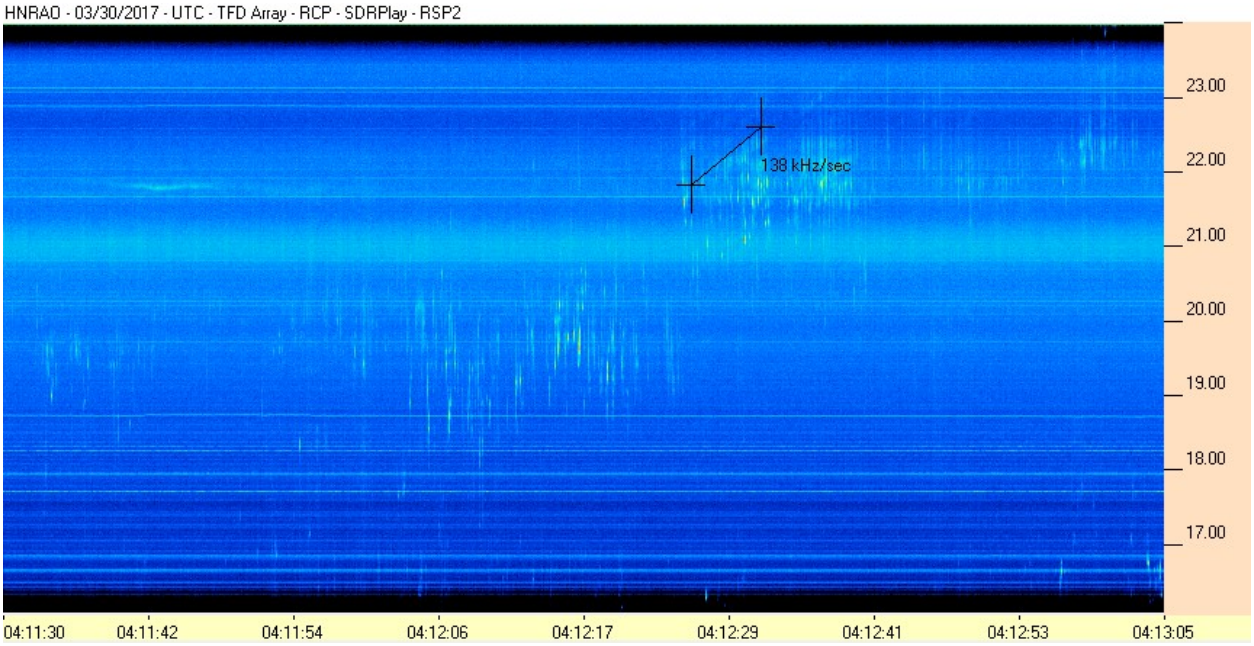

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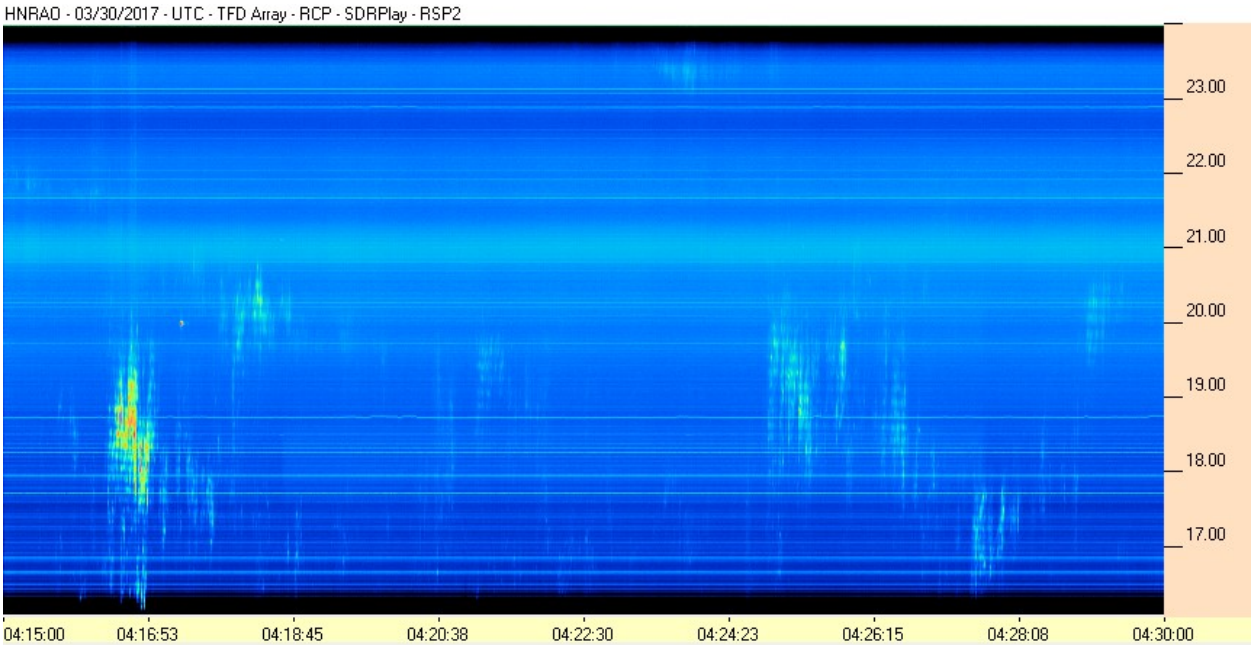

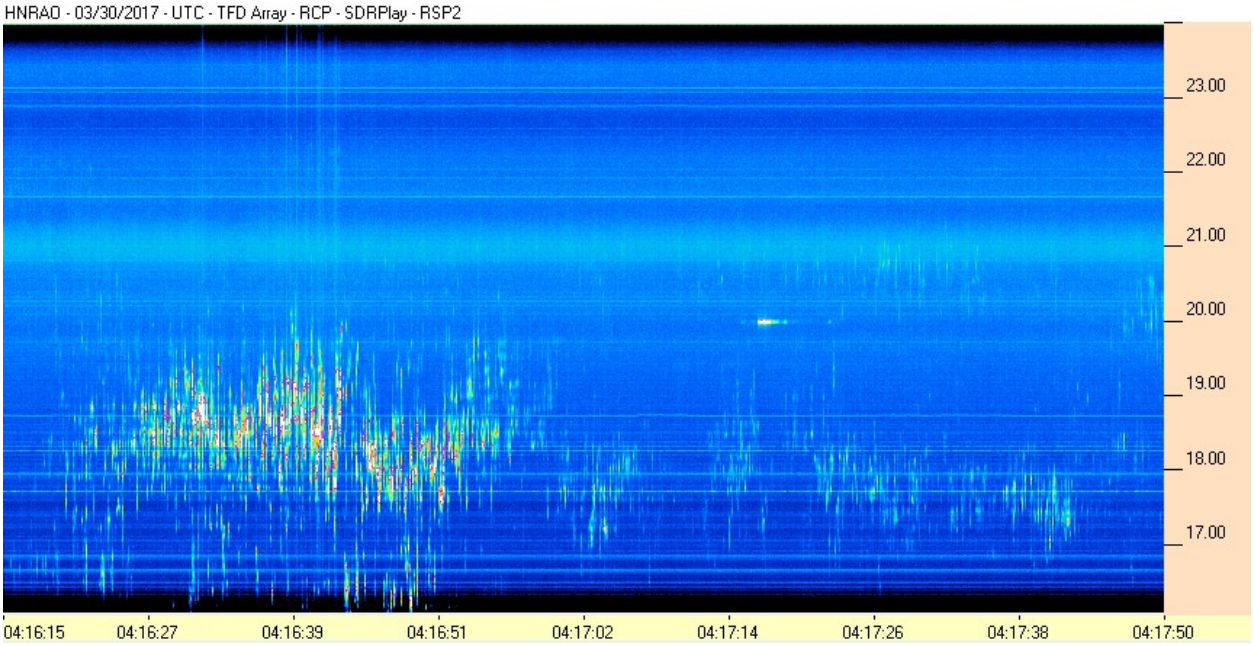

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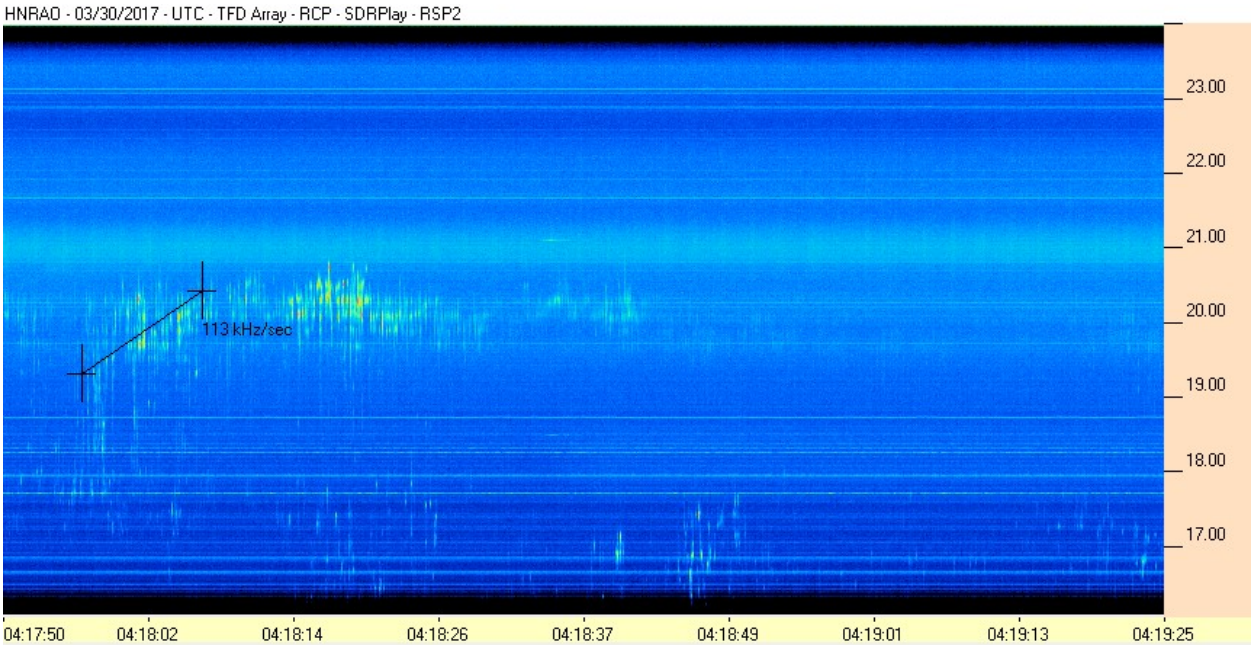
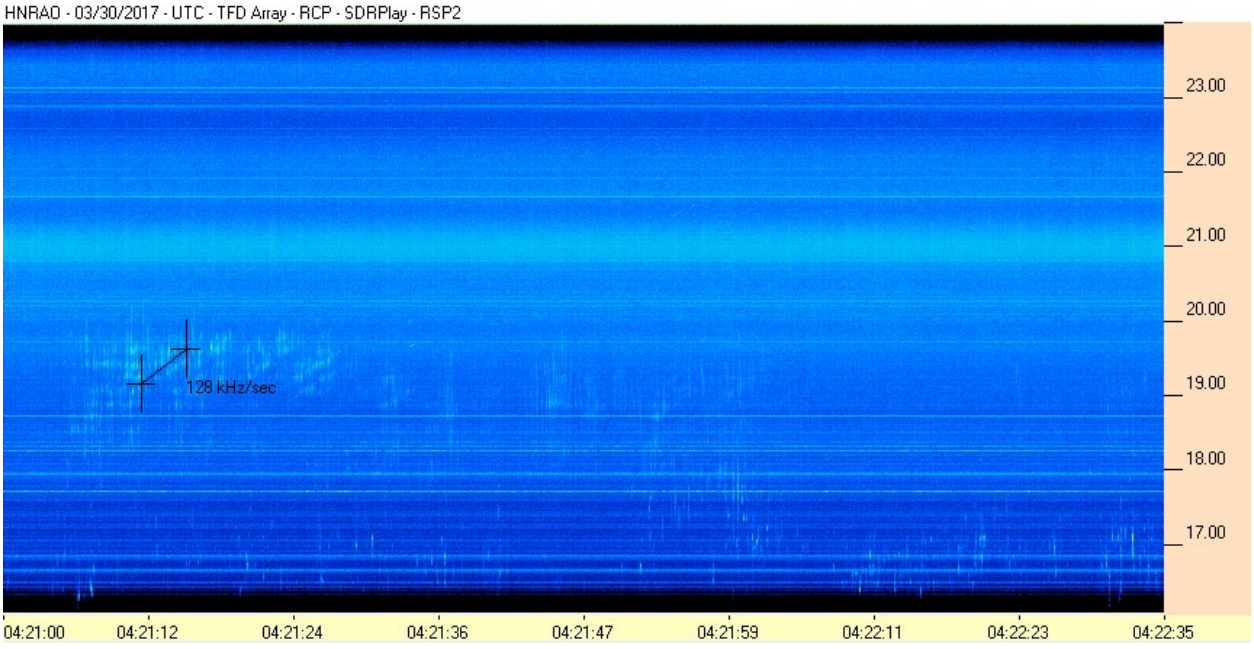
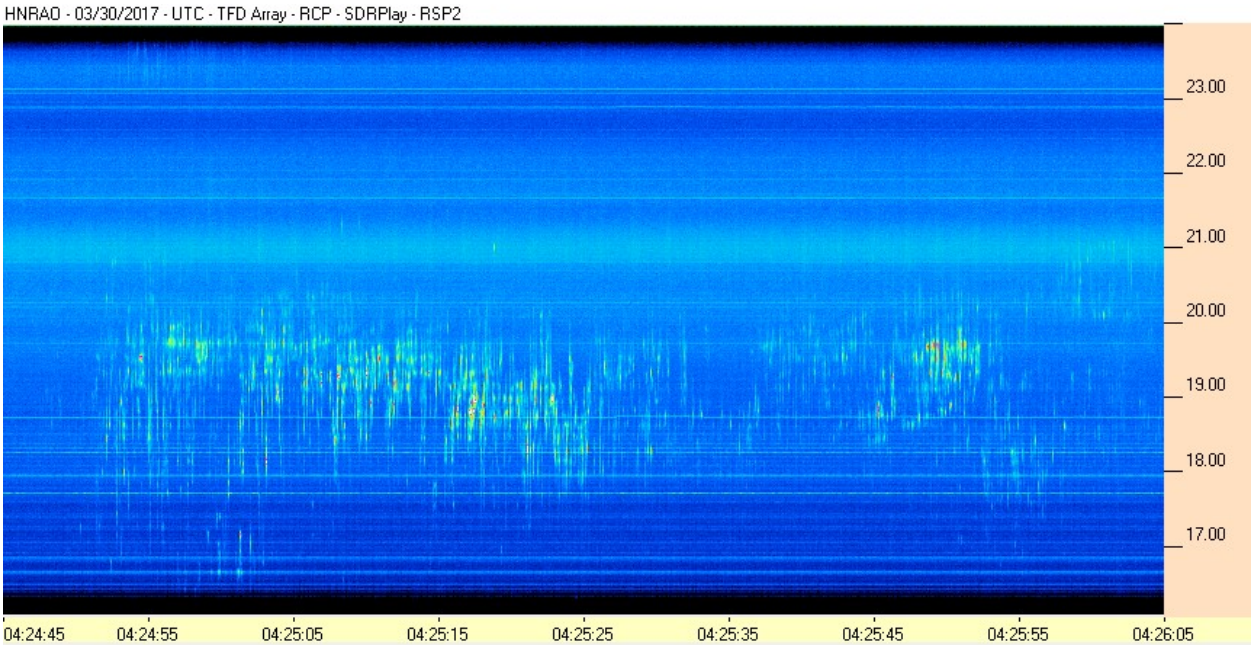
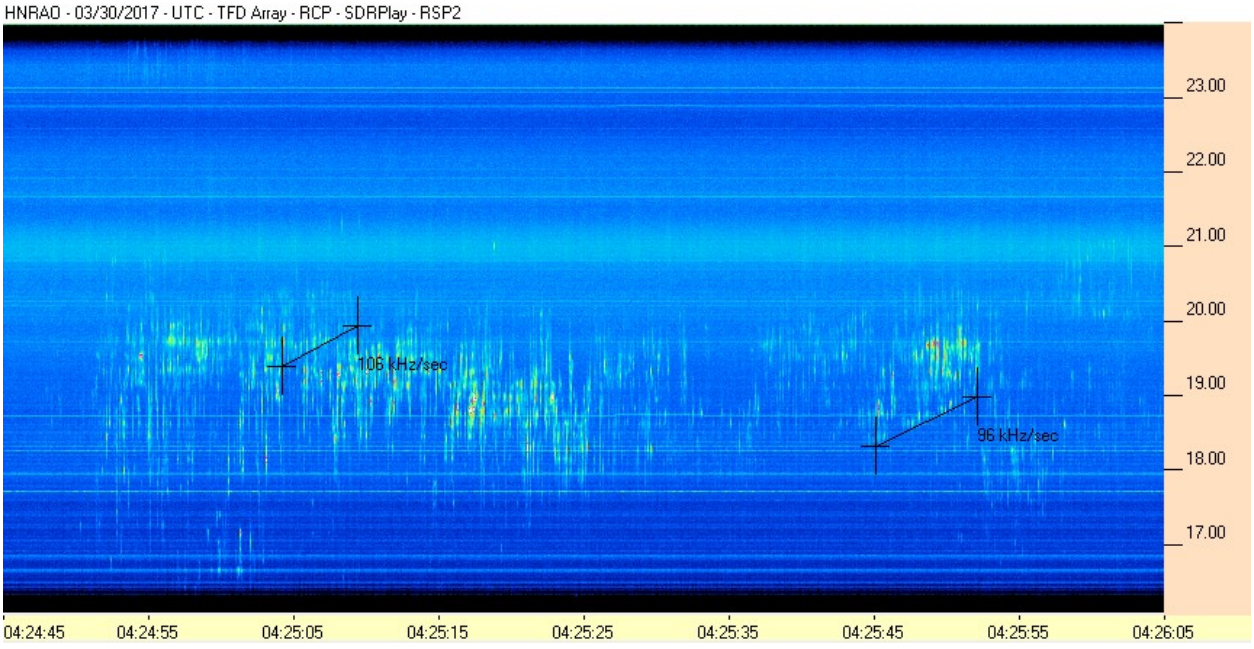





HNRAO - 03/30/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
23.00
22.00
21.00
20.00
19.00
18.00
17.00
04:24:45
04:24:55
04:25:05
04:25:15
04:25:25
04:25:35
04:25:45
04:25:55
04:26:05


HNRAO - 03/30/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
108 kHz/sec
96 kHz/sec
23.00
22.00
21.00
20.00
19.00
18.00
17.00
04:24:45
04:24:55
04:25:05
04:25:15
04:25:25
04:25:35
04:25:45
04:25:55
04:26:05

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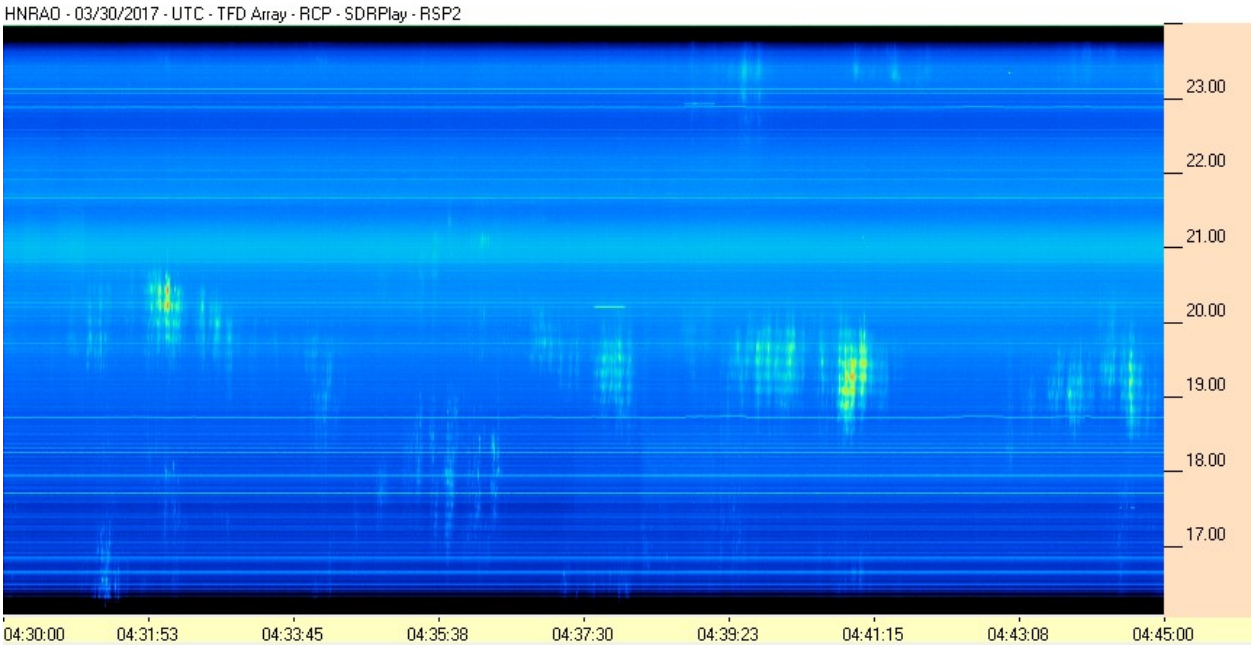

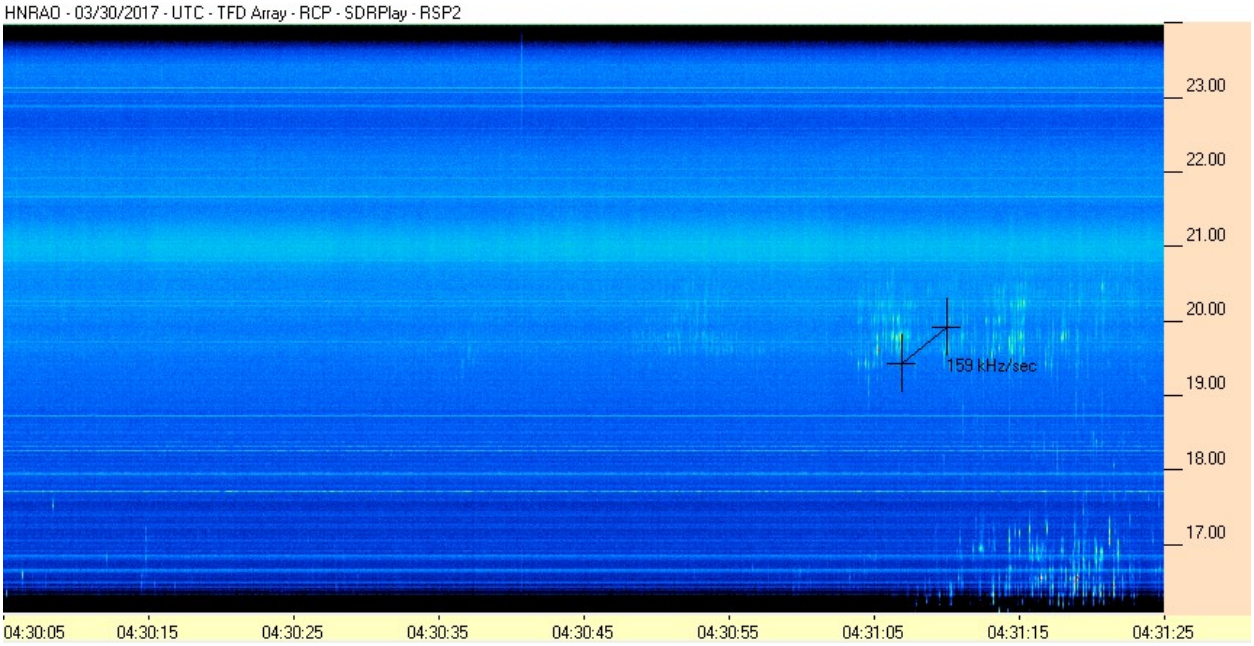

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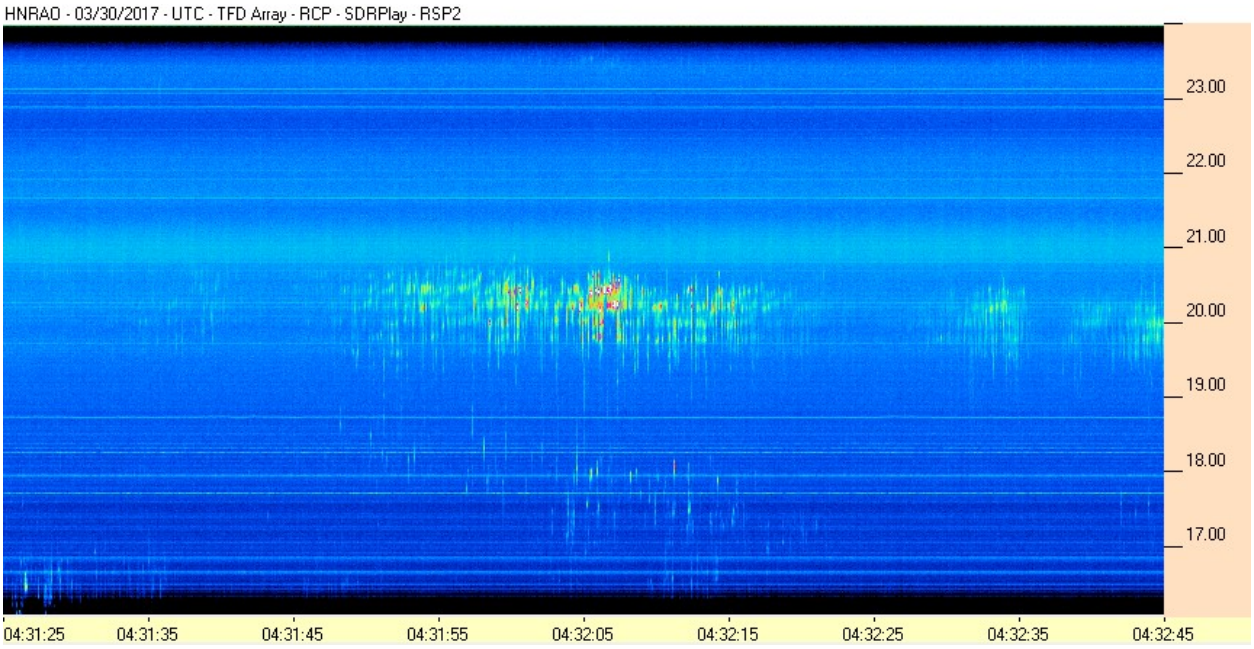
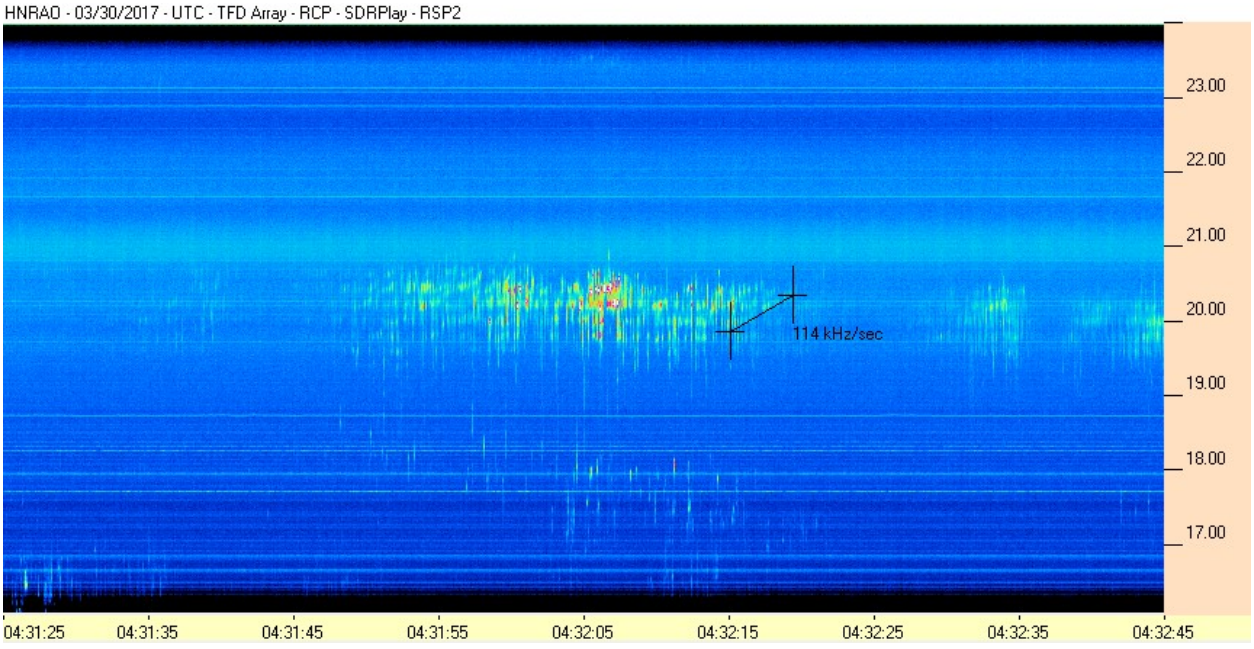
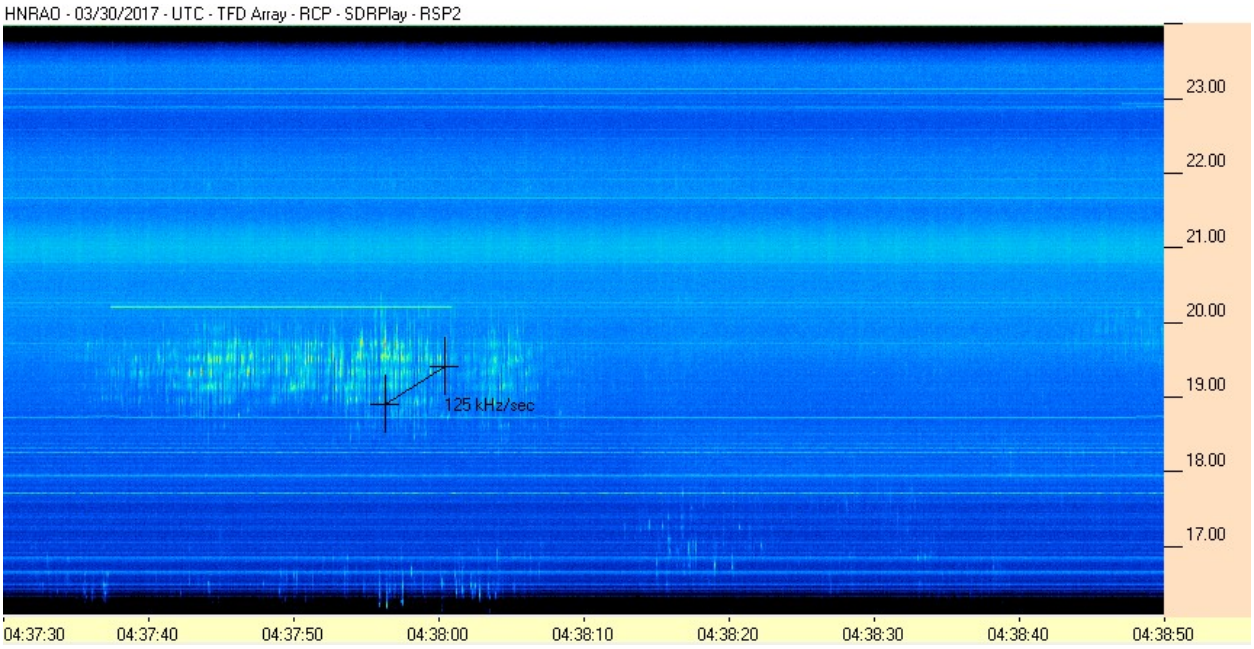
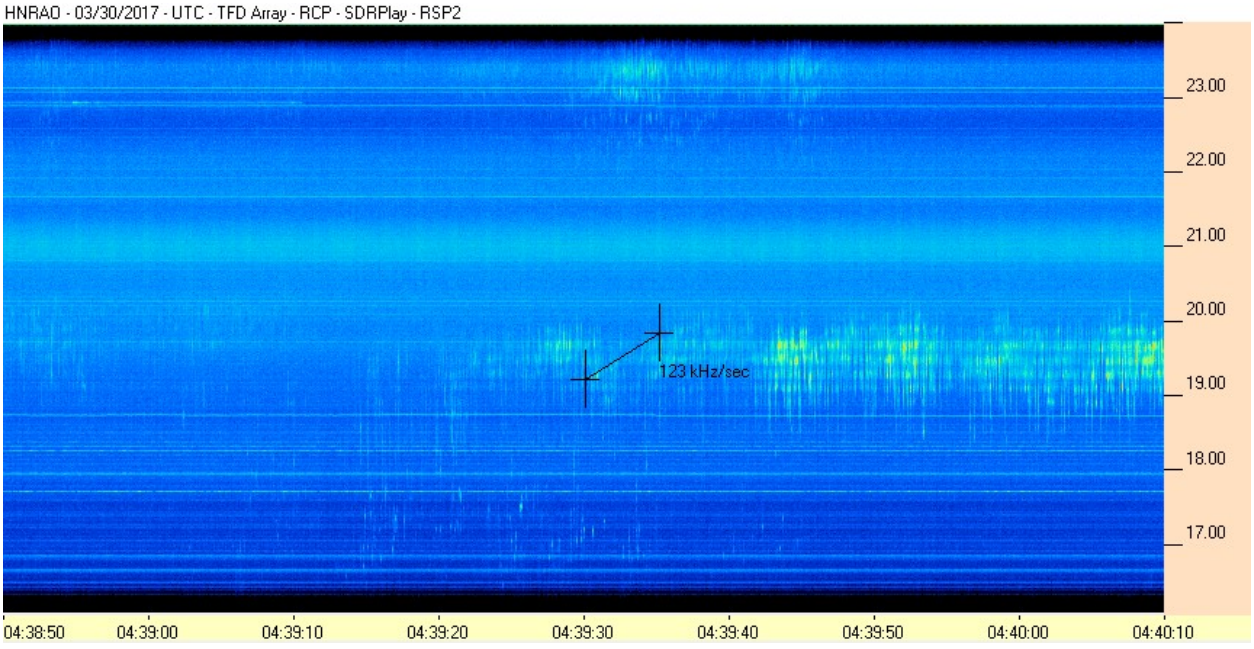
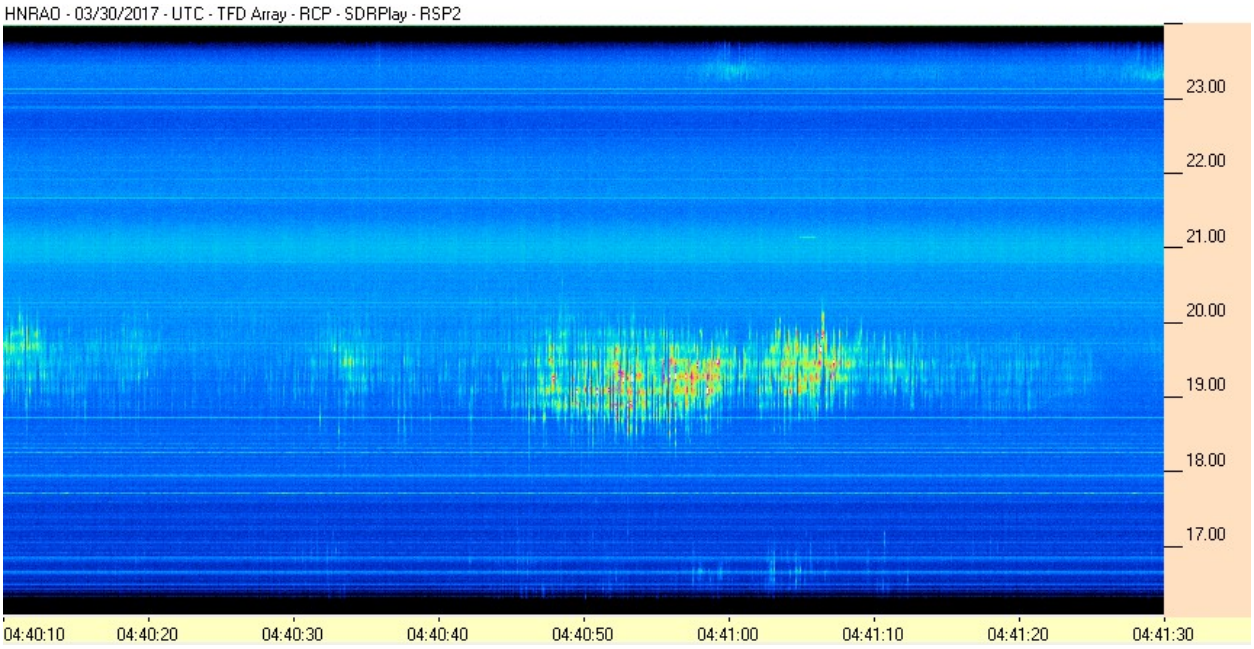
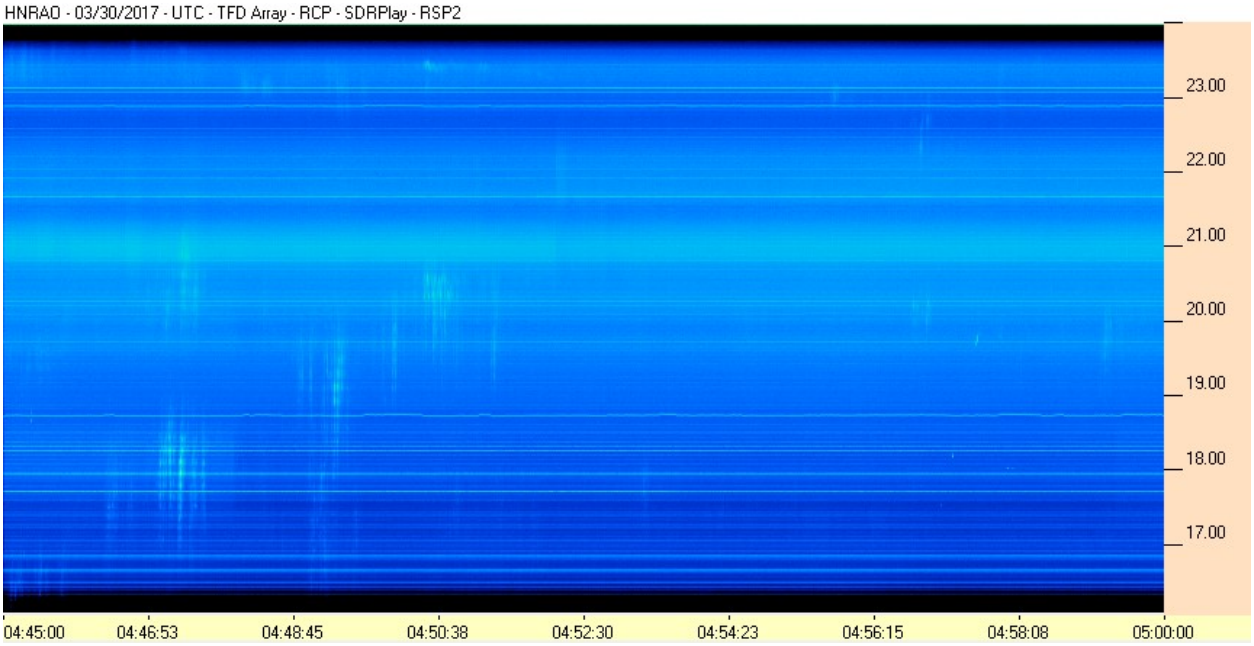




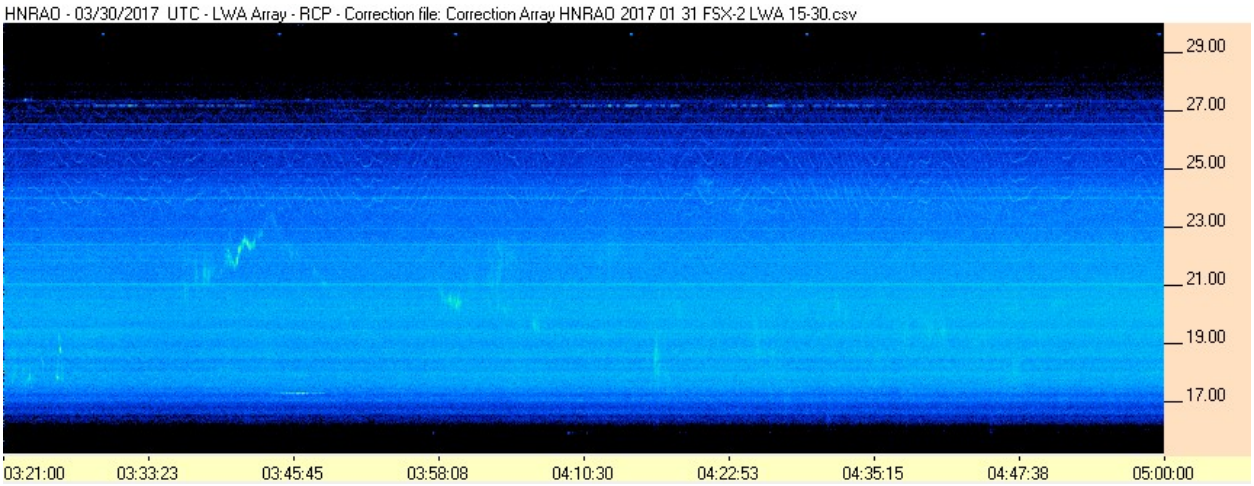

HNRAO - 03/30/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
125 kHz/sec
23.00
22.00
21.00
20.00
19.00
18.00
17.00
04:37:30
04:37:40
04:37:50
04:38:00
04:38:10
04:38:20
04:38:30
04:38:40
04:38:50


HNRAO - 03/30/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
123 kHz/sec
23.00
22.00
21.00
20.00
19.00
18.00
17.00
04:38:50
04:39:00
04:39:10
04:39:20
04:39:30
04:39:40
04:39:50
04:40:00
04:40:10

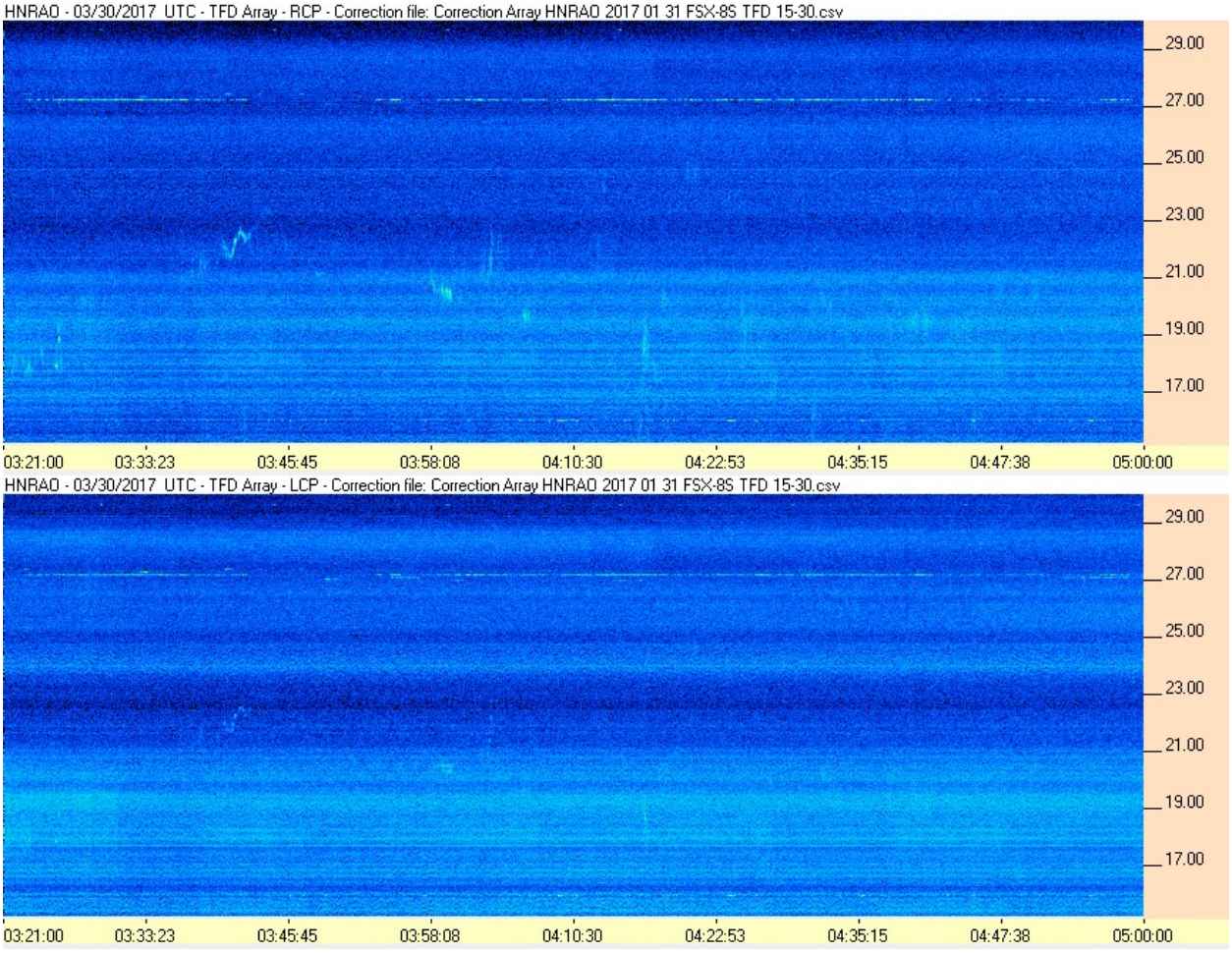




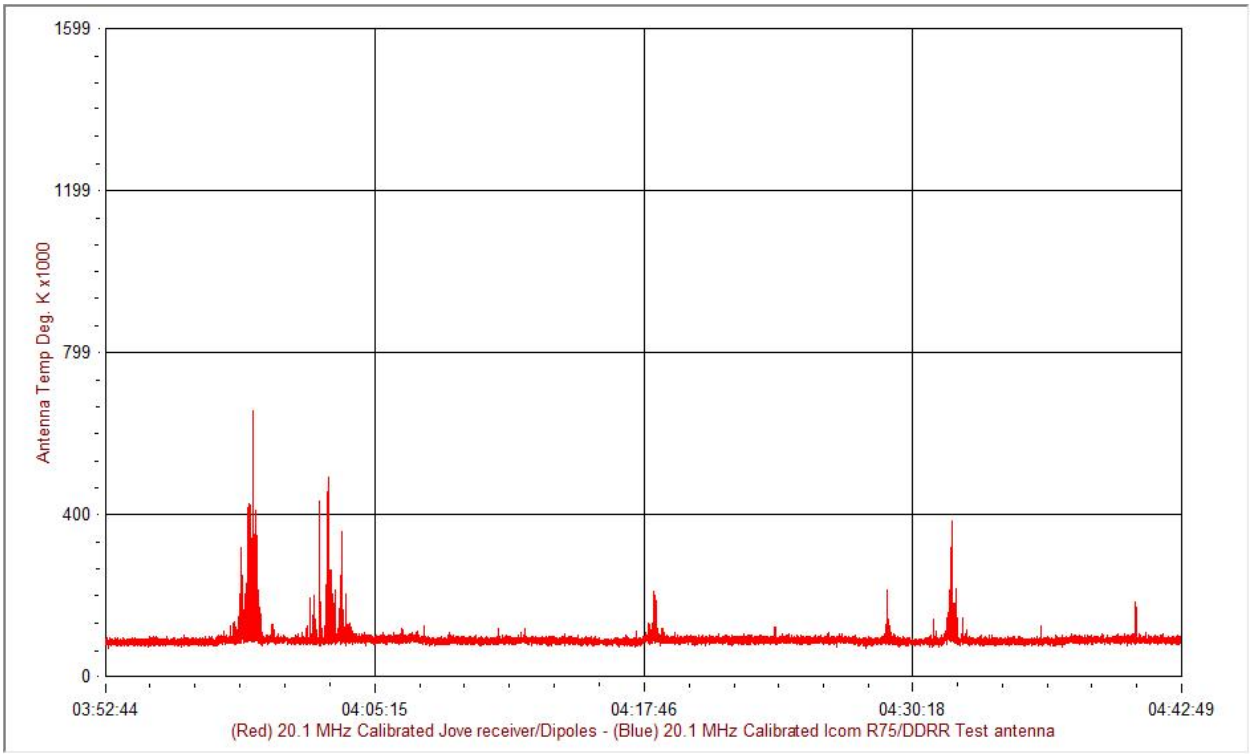
FSX-2/LWA Pair



FSX-8S/TFD Pair



Radio JOVE/Dipole Pair


1599
1199
799
400
0
Antenna Temp Deg. K x1000
03:52:44
04:05:15
04:17:46
04:30:18
04:42:49
(Red) 20.1 MHz Calibrated Jove receiver/Dipoles - (Blue) 20.1 MHz Calibrated Icom R75/DDRR Test antenna

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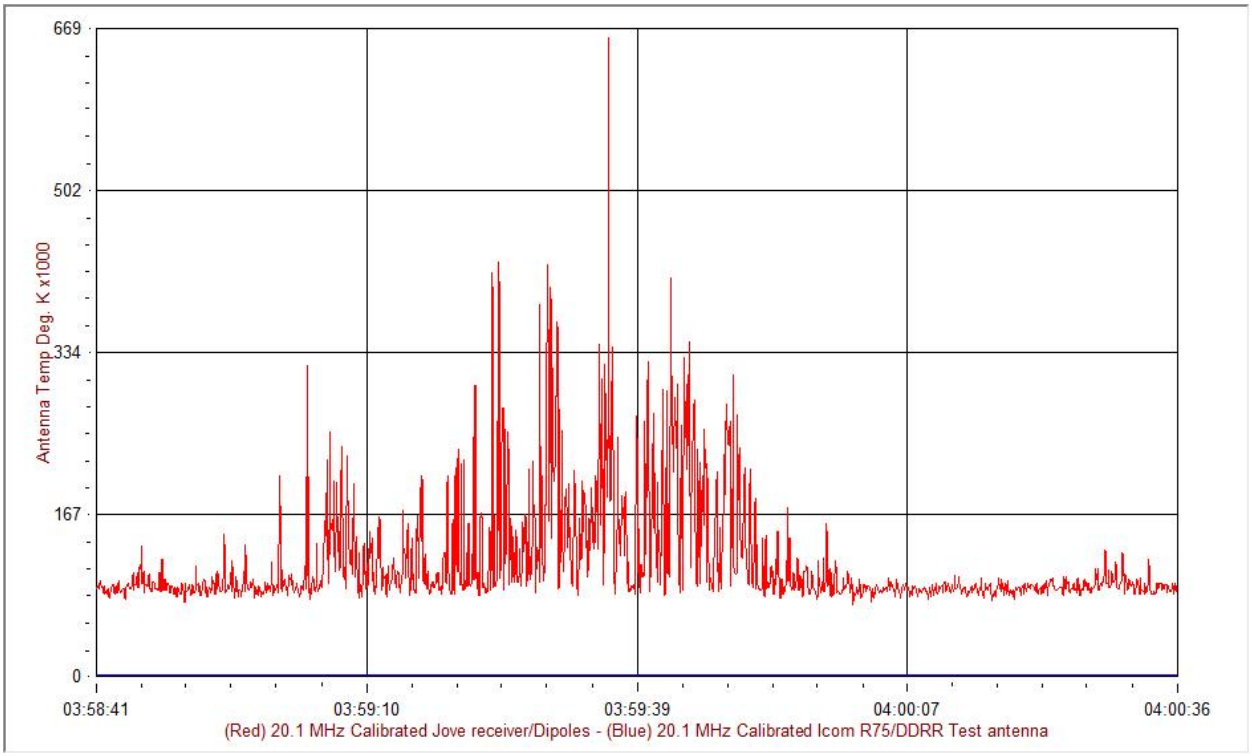

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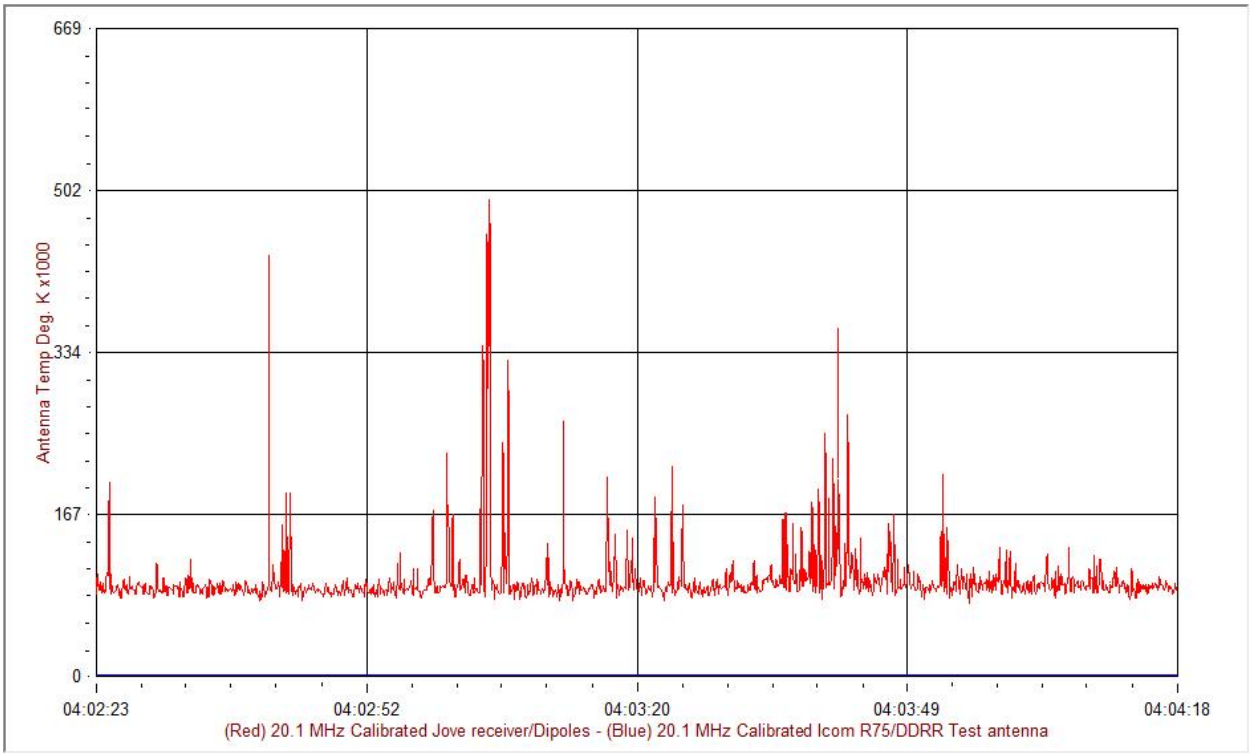
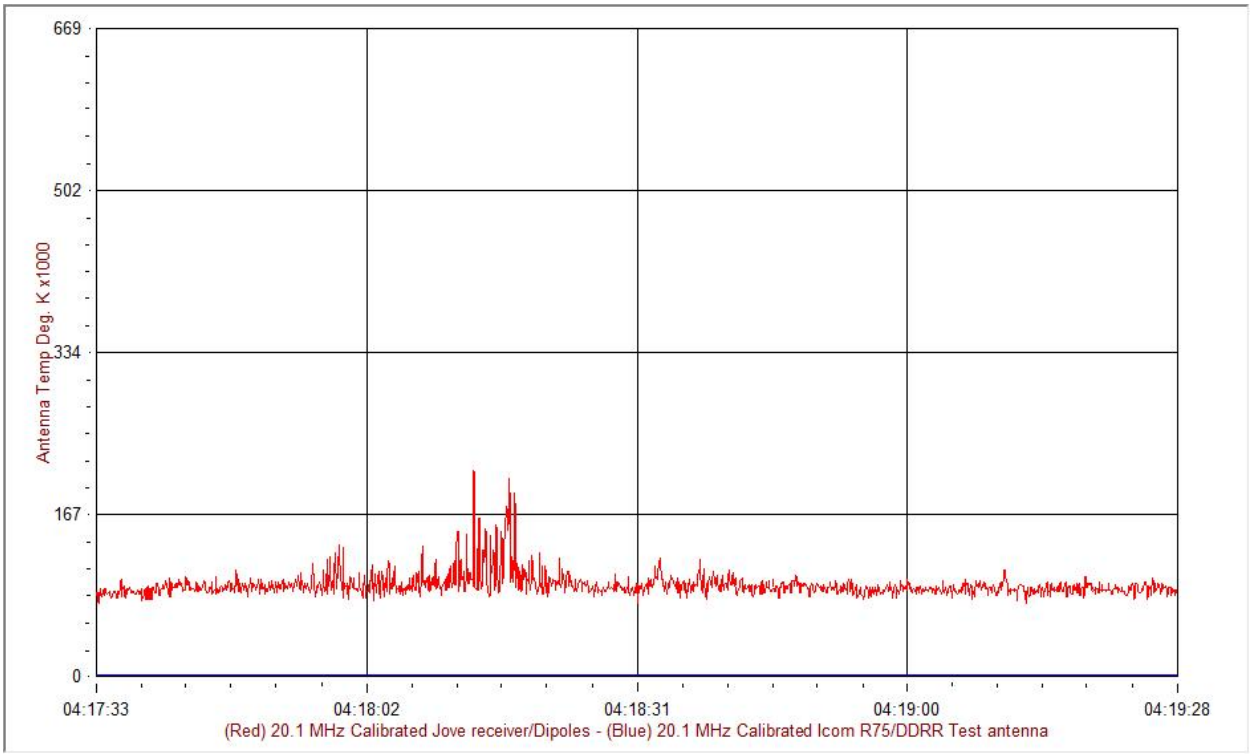
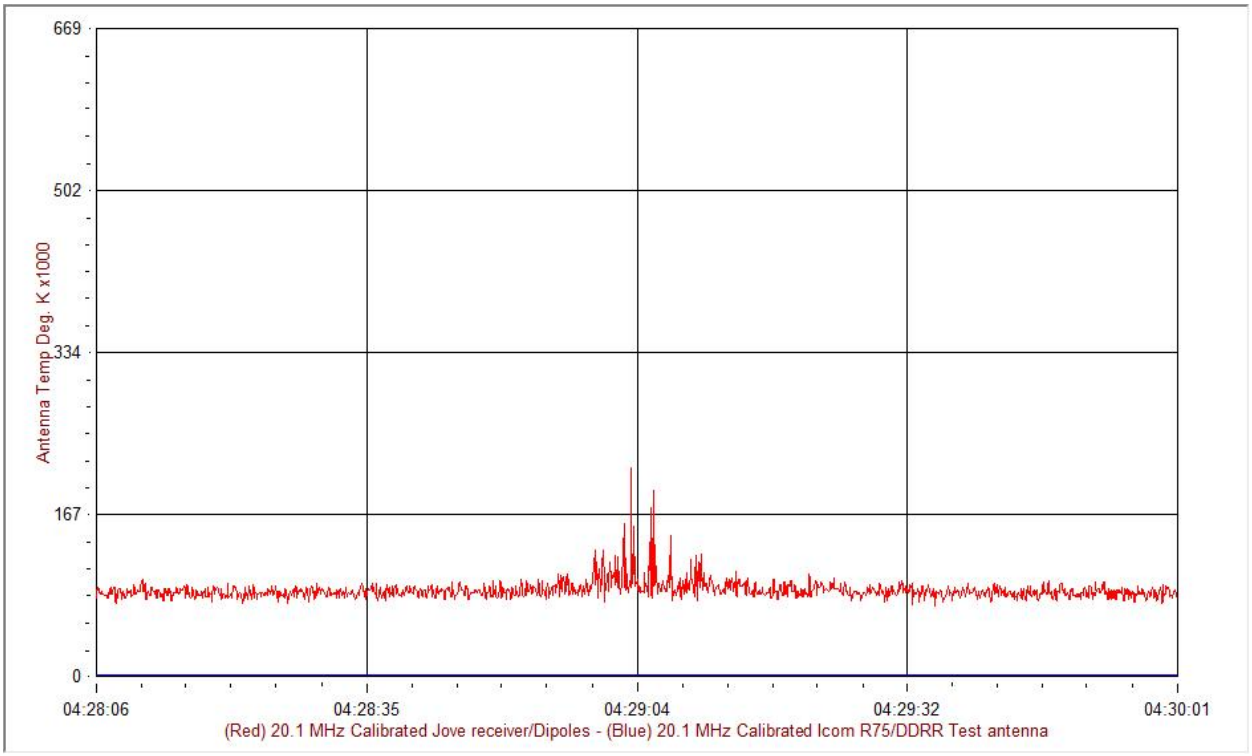
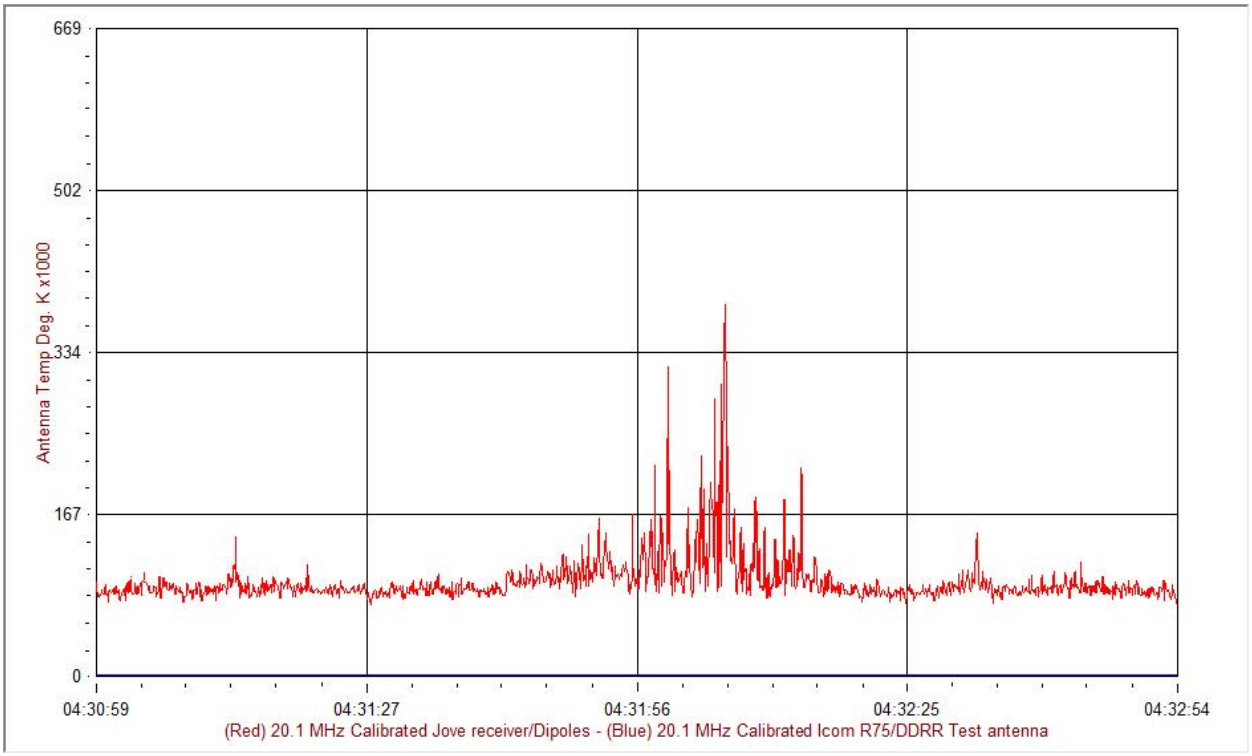



669
502
334
167
0
Antenna Temp Deg. K x1000
04:17:33
04:18:02
04:18:31
04:19:00
04:19:28
(Red) 20.1 MHz Calibrated Jove receiver/Dipoles - (Blue) 20.1 MHz Calibrated Icom R75/DDRR Test antenna


669
502
334
167
0
Antenna Temp Deg. K x1000
04:28:06
04:28:35
04:29:04
04:29:32
04:30:01
(Red) 20.1 MHz Calibrated Jove receiver/Dipoles - (Blue) 20.1 MHz Calibrated Icom R75/DDRR Test antenna


669
502
334
167
0
Antenna Temp Deg. K x1000
04:30:59
04:31:27
04:31:56
04:32:25
04:32:54
(Red) 20.1 MHz Calibrated Jove receiver/Dipoles - (Blue) 20.1 MHz Calibrated Icom R75/DDRR Test antenna