

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 25 January 2017

Object: Jupiter – Io-B

Observer: JB

Start of pass:	0954 UT		
Jupiter Altitude:	41.2 degrees	Jupiter Azimuth:	168.9 degrees
Jupiter CML:	79.84	Jupiter Io Phase:	061.94
Jupiter RA:	13:26	Jupiter Dec:	-07:30
Hour Angle:	-00:34		
Sun Altitude:	-29.7 degrees	Sun Azimuth:	090.7 degrees
Sun RA:	20:24	Sun Dec:	-19:20

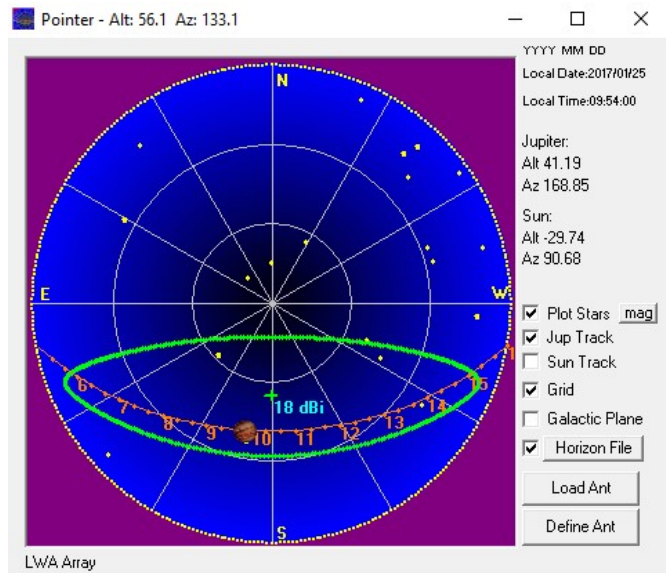
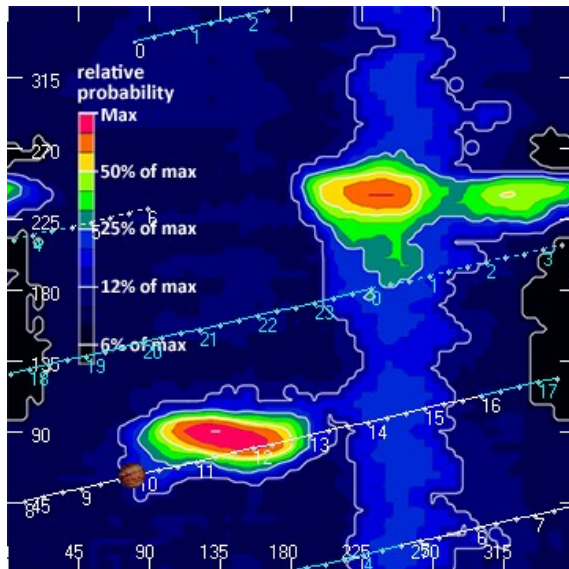
End of pass:	1202 UT		
Jupiter Altitude:	37.1 degrees	Jupiter Azimuth:	209.9 degrees
Jupiter CML:	157.23	Jupiter Io Phase	079.89
Hour Angle:	01:35		
Sun Altitude:	-06.0 degrees	Sun Azimuth:	110.4 degrees

 Observations made using:

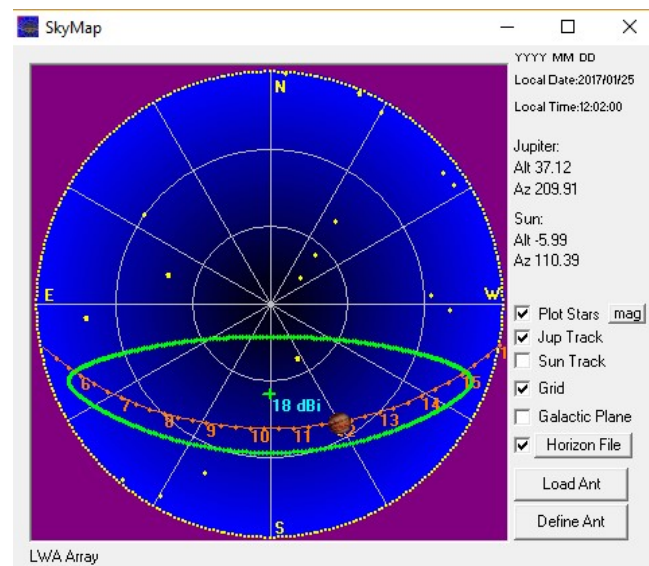
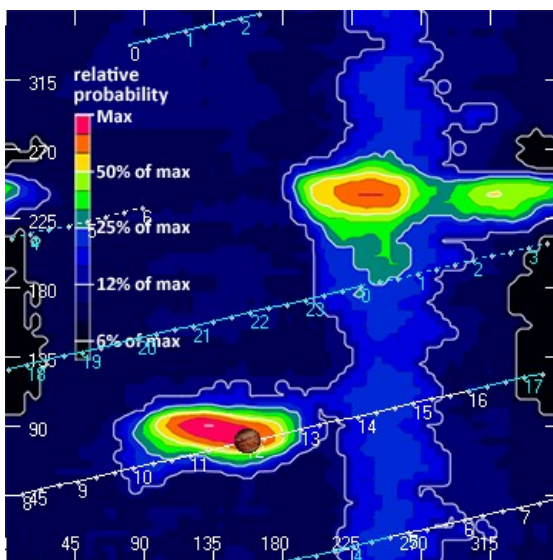
1. FSX-8S fed by the TFD array
 - a. Connect to array through HNRAO Multicoupler #1 and #2, port 2
 - i. HNRAO Multicoupler #1 – TFD/LCP
 - ii. HNRAO Multicoupler #2 – TFD/RCP
 - iii. Port 1 having 10 dB of gain, all other ports on Multicoupler have approximately 3 dB gain.
2. FSX-2 fed by the LWA array directly
 - a. LWA element configuration – 90 degrees
3. JOVE 2 receiver fed by phased JOVE dipoles @ 10' – phased for 2016-17 season
 - a. Calibrated 28 Nov. 2016
 - b. Connected to dipoles through HNRAO Multicoupler #3, port 1.
4. Icom R75 receiver fed by experimental DDRR antenna directly.
 - a. Calibrated 28 Nov. 2016

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Beginning of Pass



End of Pass

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This Io-B storm was another weak and unimpressive event. Observations here were hampered here by power line RFI. It significantly reduced the resolution of what I could observe. The FSX-8S/TFD pair was less hampered by the RFI and observed this storm with more clarity.

It began about 0954 UT with a series of L-bursts at 16 MHz just as it started to enter the Io-B CML region. From start to finish, the storm was dominated by S-bursts. Emissions ranged from 16 MHz to as high as 24 MHz as seen here. The only L-bursts seen here came at the very beginning. There was an extended N-event which was the most significant emissions during this pass. The N-event was seen here to begin about 1128 UT and seemed to end about 1140 UT. Between 1132 UT and 1136 there was weak S-burst activity on my JOVE receiver. LGM in Alachua, FL, and AJ4CO, FL both saw this stronger and longer than I did here. Once again, the ionosphere played a major part in what each station observed. For example, there were S-bursts observed at LGM and not AJ4CO, despite the fact they are only a few miles apart. I observed strong S-bursts here that LGM did not and AJ4CO saw weakly.

Conditions

Bad line noise on FSX-2/LWA

Line noise on FSX-8S/TFD

Line noise making it very difficult to see anything but the strongest signals

Outside temperature 38 degrees F

Cloudy

Nearest lightning 1096 miles

A buzz I've heard before "turns on" for 14 seconds every 17 minutes.

Rises to about 43 kK on SkyPipe.

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1. **0954 UT**
 - a. 16 MHz – L-bursts
2. **1009 UT**
 - a. L-bursts 16 MHz
3. **1012 UT**
 - a. L-bursts 16 MHz
4. **1029 UT – 1329 LMST**
 - a. Jupiter at transit
5. **1122 UT**
 - a. S-bursts 19 MHz
6. **1124 UT**
 - a. S-bursts - 18 MHz
 - b. Stronger @ 1125 UT
 - c. Wes none
 - d. AJ4CO weak
 - e. HNRAO strong
7. **1128 UT**
 - a. S-burst – 23 MHz
 - b. Possibly N-event?
 - c. Followed by weak s-bursts at same frequency
8. **1129 UT**
 - a. S-bursts – 16 MHz
9. **1132 UT**
 - a. S-bursts on SkyPipe
10. **1134 UT**
 - a. Small S-burst cluster @ 24 MHz
11. **1135 UT**
 - a. S-bursts on SkyPipe

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12. 1136 UT

- a. S-bursts on SkyPipe

13. 1137 UT

- a. Continued stream @ 24 MHz
- b. Most definitely N-event

14. 1140 UT

- a. Continued stream @ 24 MHz

15. 1147 UT

- a. Small cluster of S-bursts @ 19 MHz

16. 1152 UT

- a. Small group of s-bursts @ 23 MHz

17. 1202 UT

- a. S-bursts on SkyPipe

18. Line noise continues to be very bad

19. 1204 UT

- a. S-bursts on SkyPipe

20. 1215 UT

- a. Electrical pops on SkyPipe. NOT Jupiter

21. 1242 UT

- a. Cuban broadcast stations beginning to saturate the FSX-8S.
 - i. Very strong signals. Affecting the FSX-2 as well but not as bad.
- b. Not nearly as prominent on LGM or AJ4CO spectrographs
- c. Any Jupiter emissions on the FSX-8S would be difficult if not impossible to see at this point. Cuban broadcast stations overloading spectrograph.

22. 1300 UT

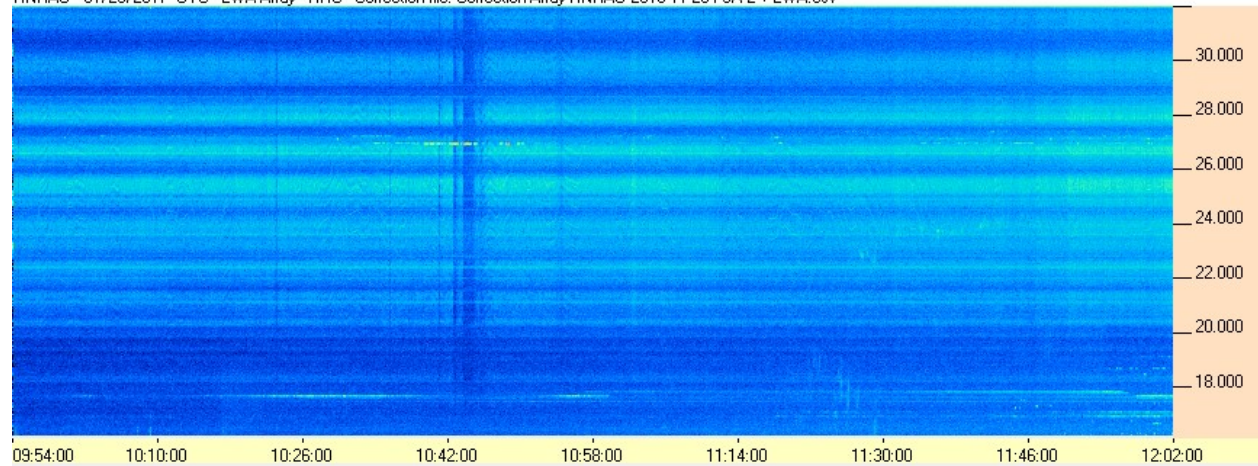
- a. End of observing session.

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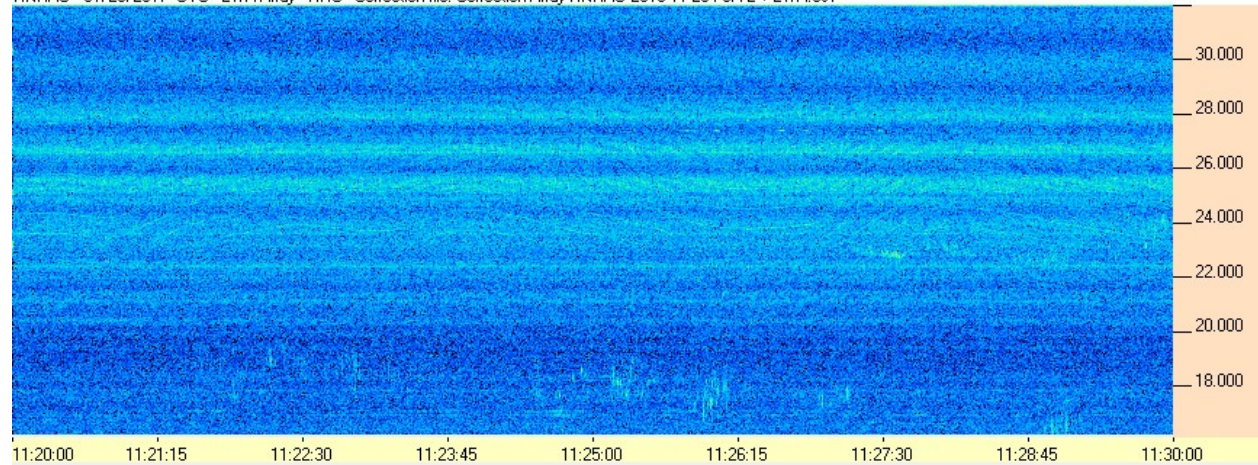


FSX-2/LWA Pair

HNRAO - 01/25/2017 UTC - LWA Array - RHC - Correction file: Correction Array HNRAO 2016 11 20 FSX-2 + LWA.csv



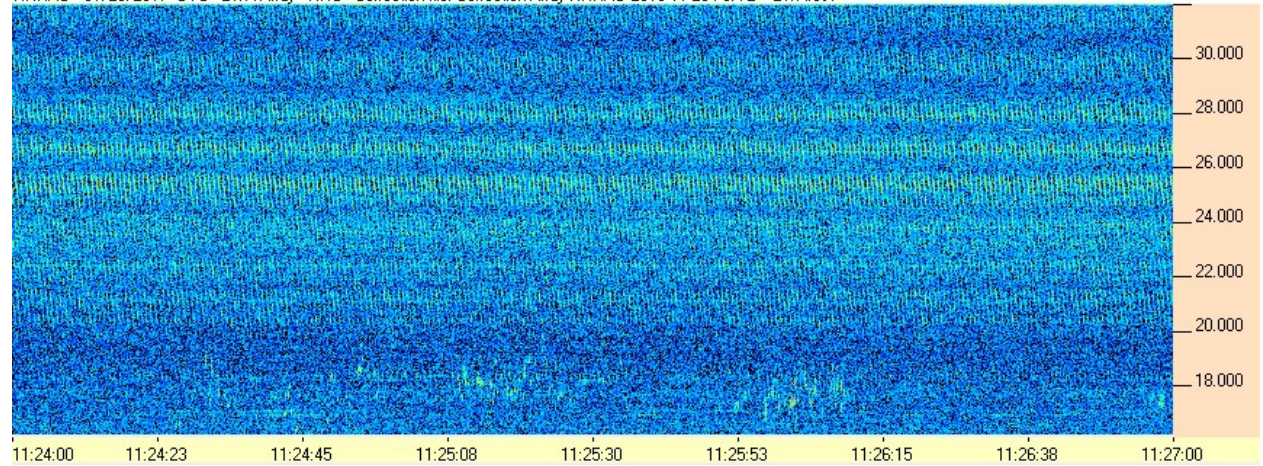
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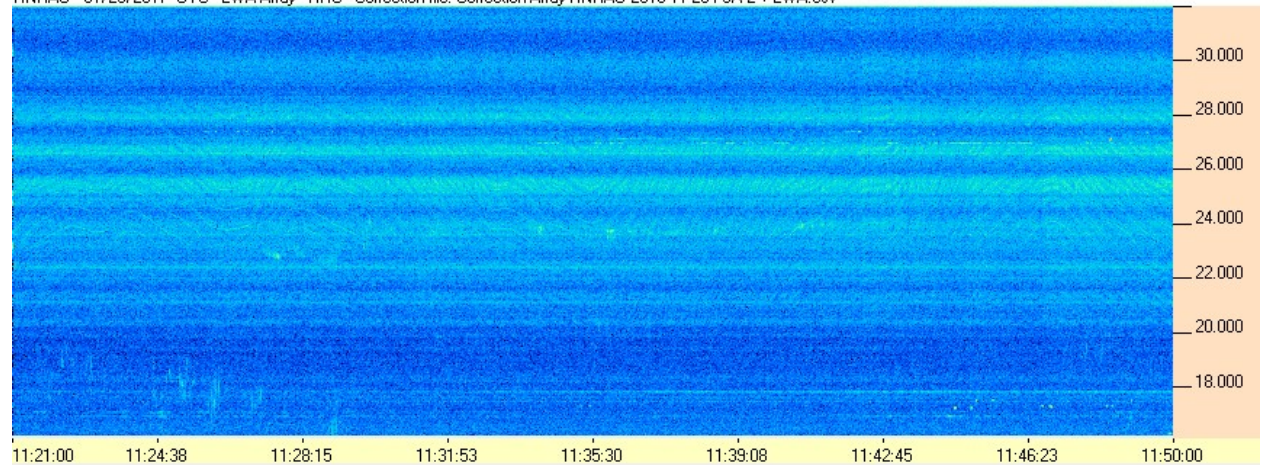
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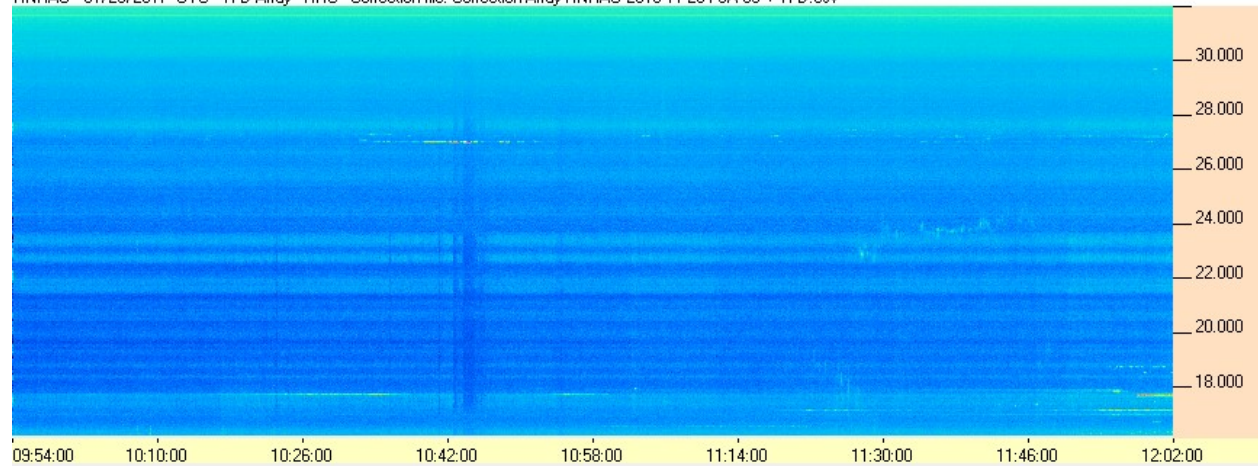


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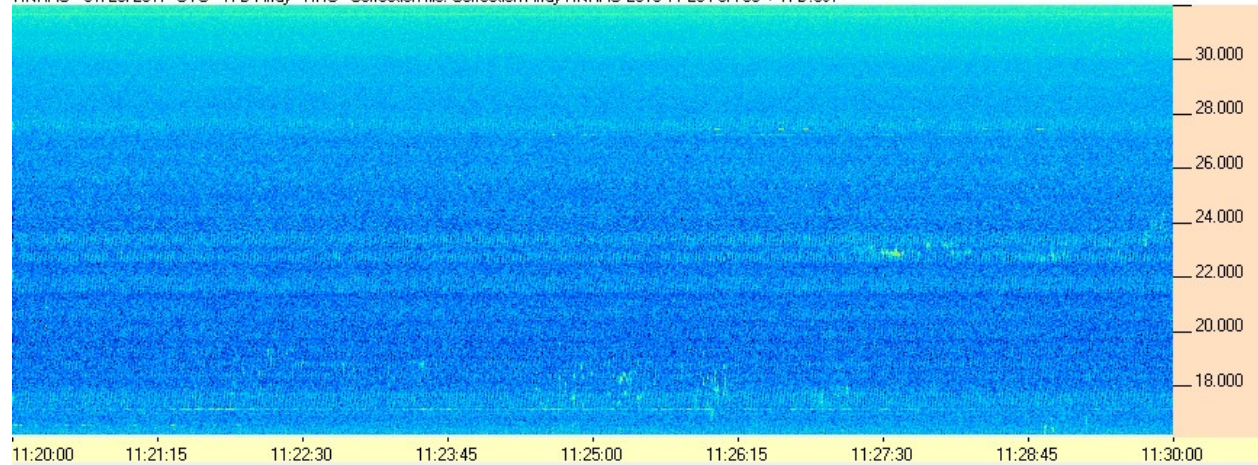


FSX-8S/TFD

HNRAO - 01/25/2017 UTC - TFD Array - RHC - Correction file: Correction Array HNRAO 2016 11 20 FSX-8S + TFD.csv



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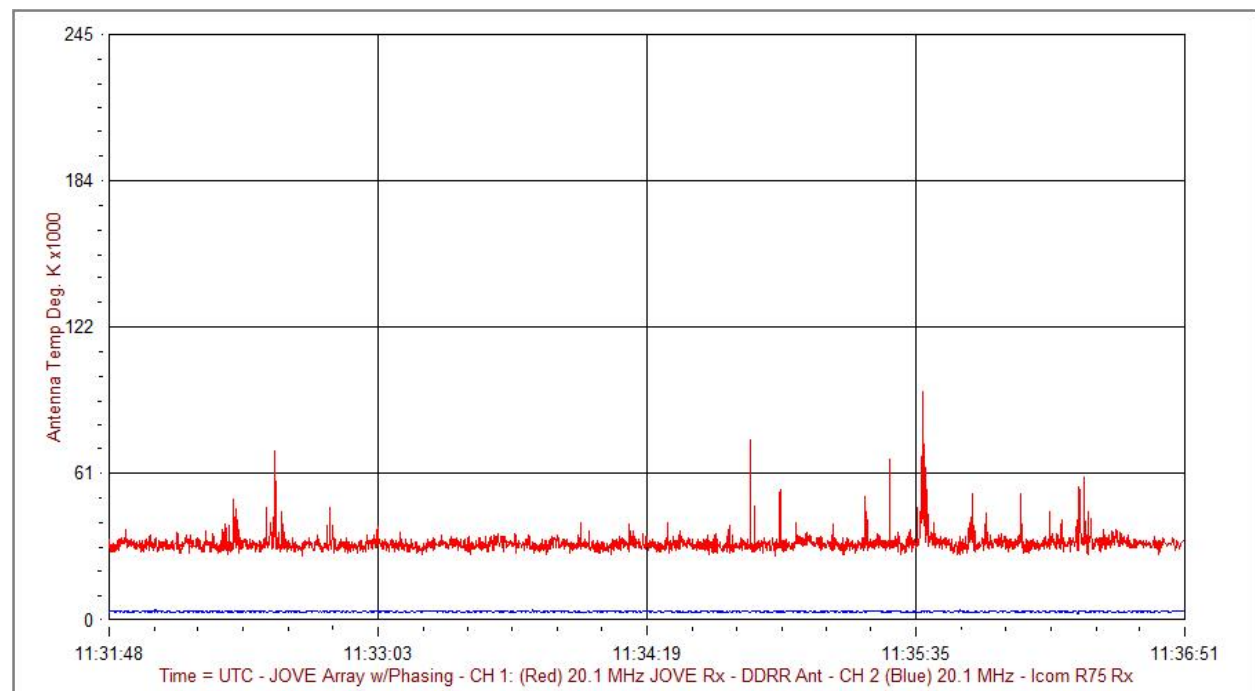
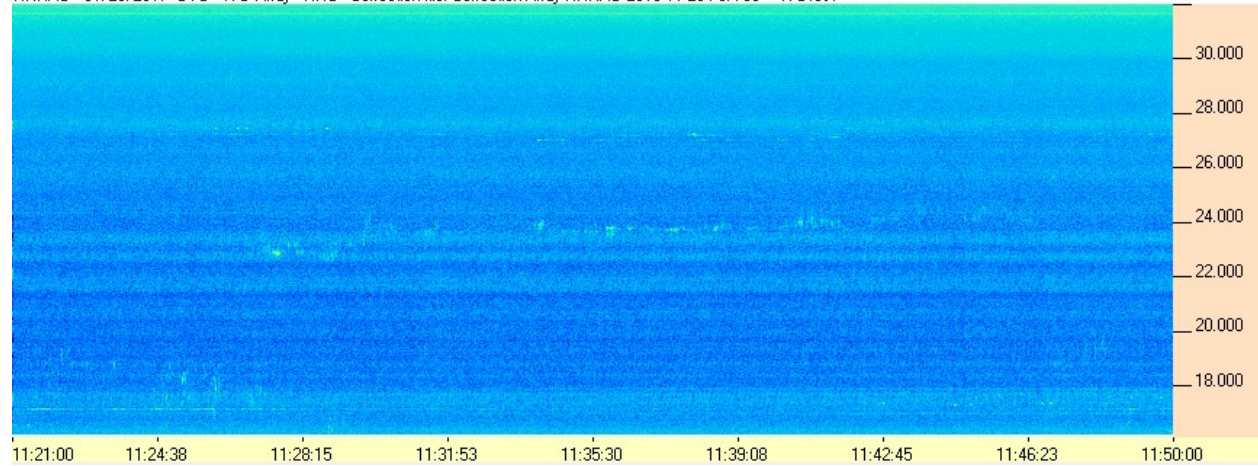


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