

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 18 February 2017

Object: Jupiter – Io-C

Observer: JB

Start of pass:	0654 UT	Planetary K-index:	2 > 1
Jupiter Altitude:	35.5 degrees	Jupiter Azimuth:	143.0 degrees
Jupiter CML:	345.65	Jupiter Io Phase:	240.25
Jupiter RA:	13:26	Jupiter Dec:	-07:27
Hour Angle:	-02:00	Polarization	LCP
Sun Altitude:	-55.9 degrees	Sun Azimuth:	039.5 degrees
Sun RA:	22:00	Sun Dec:	-12:12

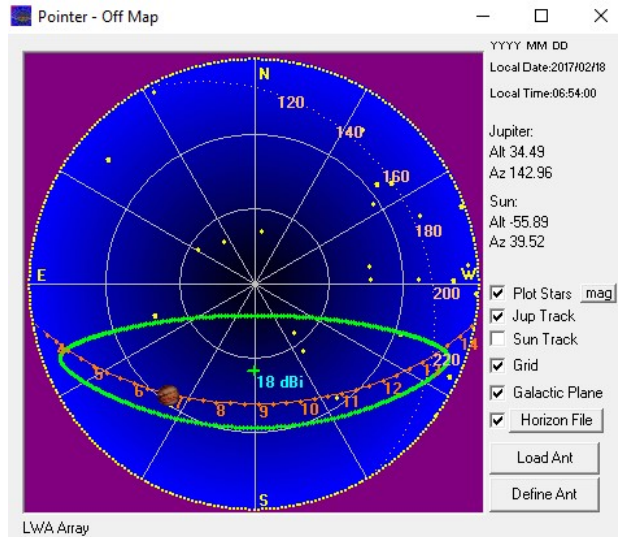
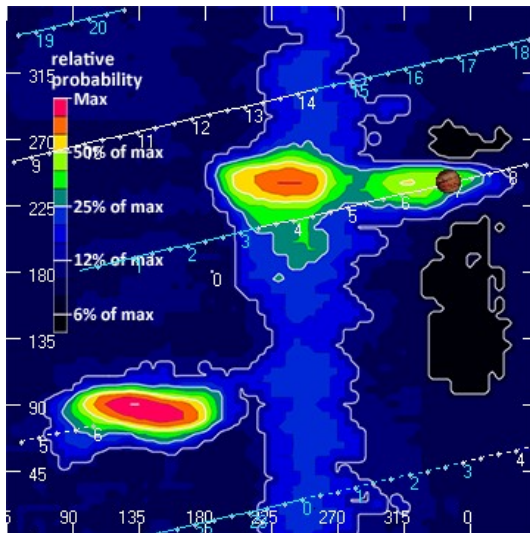
End of pass:	0824 UT		
Jupiter Altitude:	41.4 degrees	Jupiter Azimuth:	170.1 degrees
Jupiter CML:	40.07	Jupiter Io Phase	253.08
Hour Angle:	-00:30		
Sun Altitude:	-42.2 degrees	Sun Azimuth:	066.2 degrees

Observations made using:

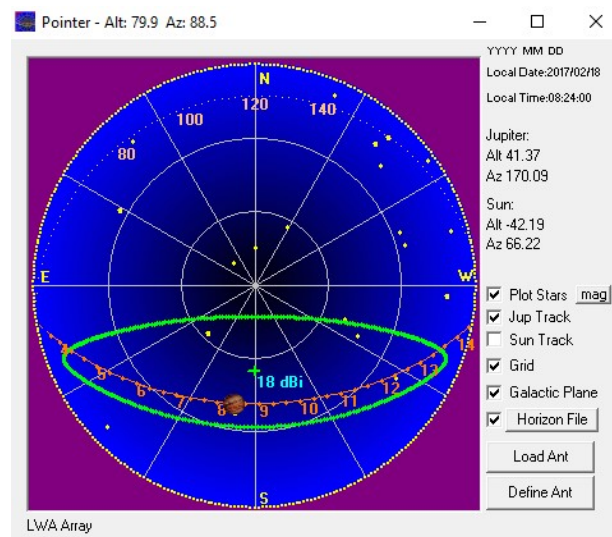
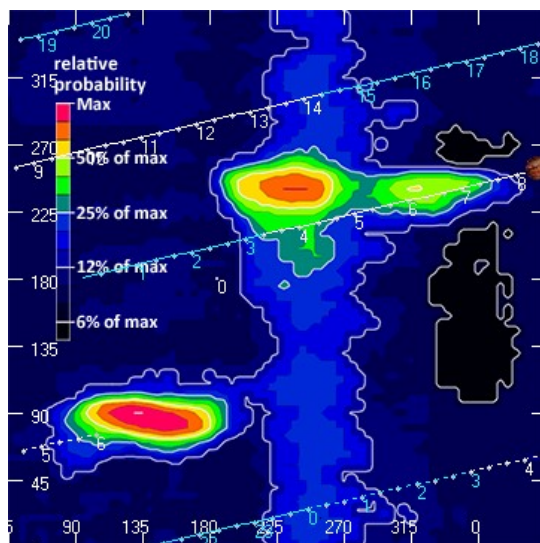
1. FSX-8S fed by the TFD array
 - a. 7.7 dB loss between TFD and Multicouplers.
 - b. Connect to array through HNRAO Multicoupler #1 and #2, port 2
 - i. HNRAO Multicoupler #1 – TFD/LCP
 - ii. HNRAO Multicoupler #2 – TFD/RCP
 1. Port 1 having 10 dB of gain, all other ports have 3 dB gain.
2. FSX-2 fed 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 4 February 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 4 February 2017

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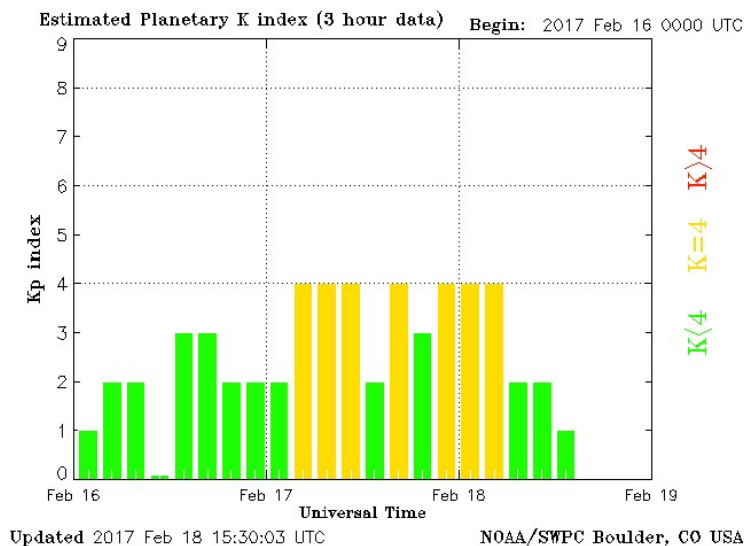
Beginning of Pass



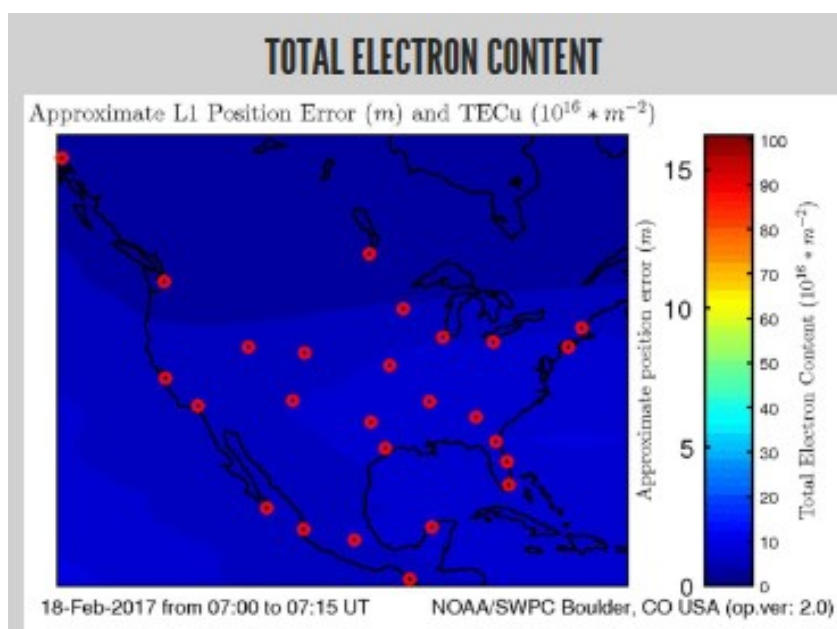
End of Pass

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Observing conditions poor due to RFI, both polarizations.
Observations made remotely so unable to switch FSX-2/LWA pair to LCP.
Planetary K indices began at 4 and ended at 2. (see above chart)
Clear skies.



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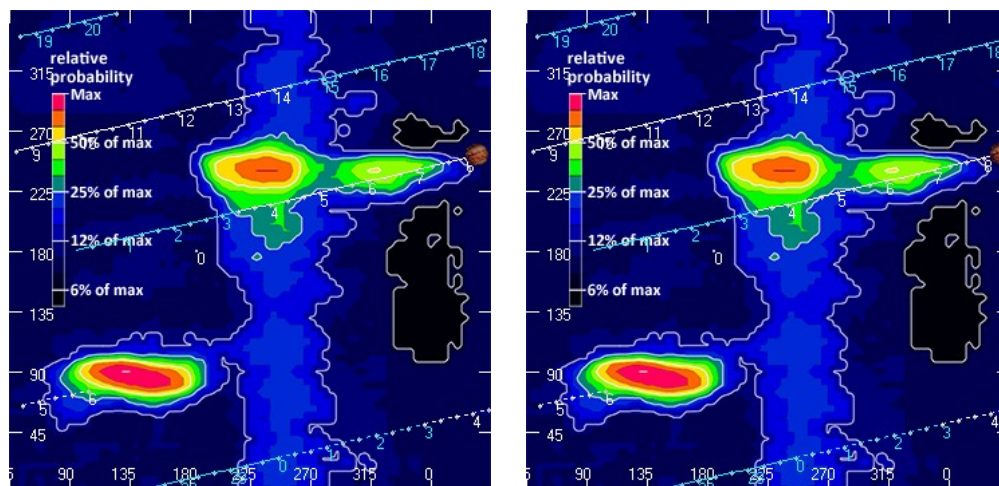


There appeared from this observatory to be two positive drifting arcs. The first from 0654 UT through 0801 UT. A second one from 0814 UT through 8024 UT. First signs of emission began at 0654 UT with last emissions observed at 0824 UT. All emissions were LCP L-bursts. If there were S-bursts present, it would have been impossible to observe them due to RFI.

The first arc was positive drifting starting below 15 MHz, reaching its peak around 20 MHz, then descending until the end, dropping below 15 MHz. The second arc began at 15 MHz and didn't appear to rise higher than 19 MHz.

While the clear majority of L-bursts would be considered weak to very weak as observed here, there were several exceptions that were strong to very strong. The strongest of these were at 0712 UT, 0745 UT during the first arc, and 0823 UT at the end of the second arc. There was a brief N-event between 0747 UT to possibly 0756 UT at 17 MHz.

The second positive drift arc I noted (above) started and ended outside of the traditional CML of Io-C, and continued LCP polarization, could this be Io-D, Non-Io-D, or possibly a changing CML for Io-C?



Note: There was an unusual band opening at 11 PM local time. A very strong broadcast station at 15 MHz was overloading the FSX-8S/TFD Pair. This happened during the period when the Kp index reached 4. Io-C observations were made when Kp index started at 2 and finished at Kp = 1. It is the last image in this report.

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0654 UT
Weak L-bursts 15-17 MHz. Positive drift.

0657 UT
Weak L-bursts @ 17 MHz. Continue positive drift

0700 UT
Weak L-bursts 15-17 MHz.

0703 UT
Weak L-bursts 18 MHz

0708 UT
Weak L-bursts 18 MHz

0710 UT
Weak L-bursts 19 MHz. Continued positive drift.

0712 UT
Strong L-burst. 18 MHz

0717 UT
Weak L-bursts 17-19 MHz.

0720 UT – 0730 UT
Weak L-bursts 19 MHz

0736 UT
Very weak L-burst 20 MHz
Stronger bursts at 15-16 MHz

0745 UT
Very weak L-bursts 17-15 MHz

0747 UT
Weak L-bursts 16 -17 MHz
Beginning of N-event?

0751 UT
Stronger horizontal L-bursts 17 MHz
End of N-event?

0754 UT
Very strong
Continuation of N-event?

0818 UT
Weak L-bursts 15-19 MHz

0820 UT
Weak L-bursts 15 MHz

0822 UT
Strong L-bursts 15 MHz

End of emissions

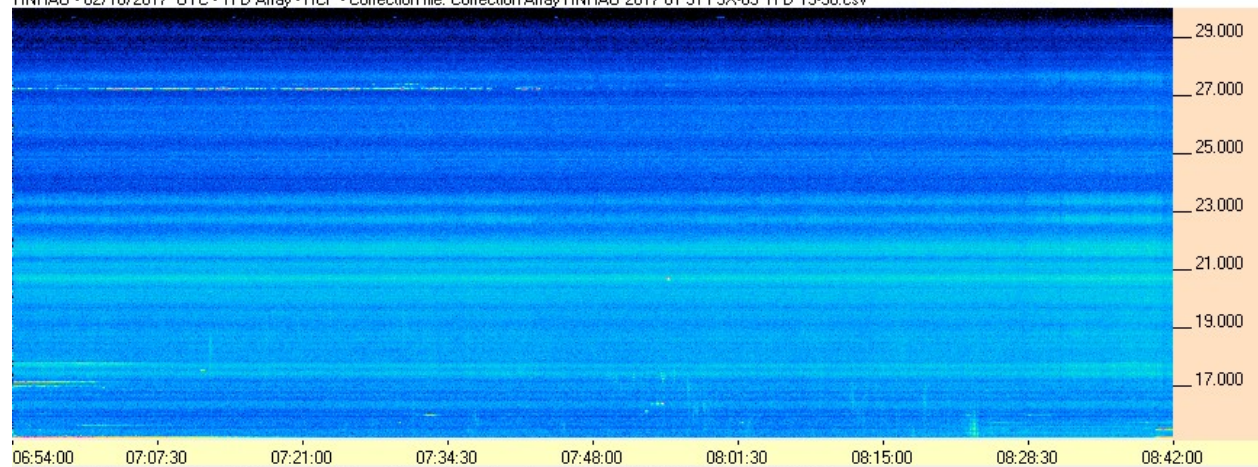
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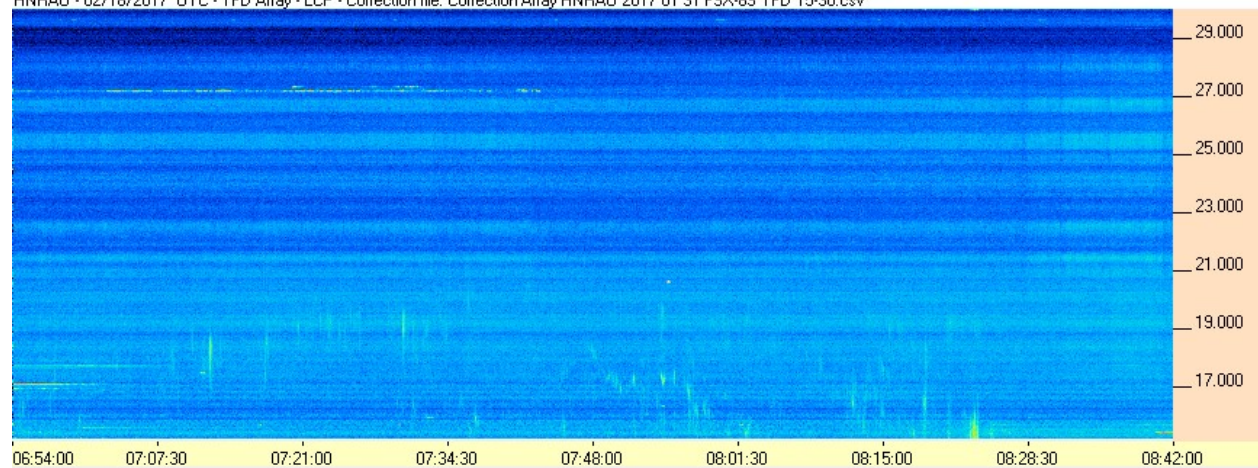
FSX-2/LWA
Unable to manually switch LCP. No data recorded

FSX-8S/TFD

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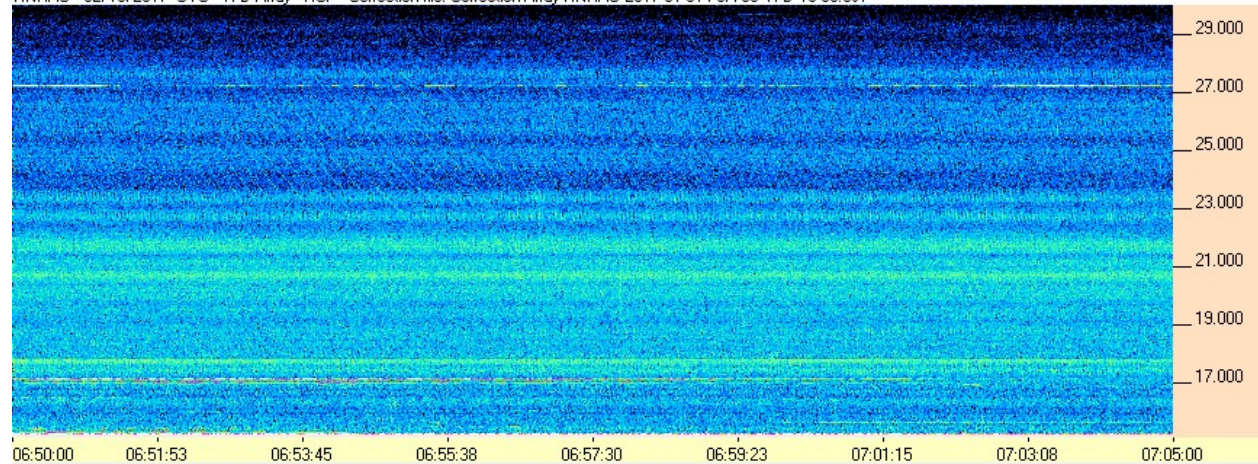
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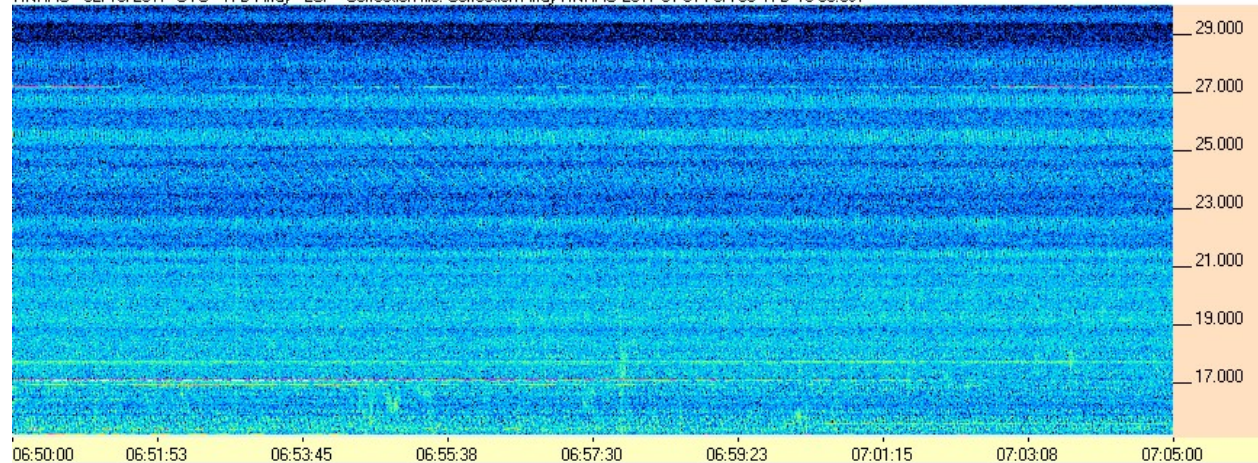
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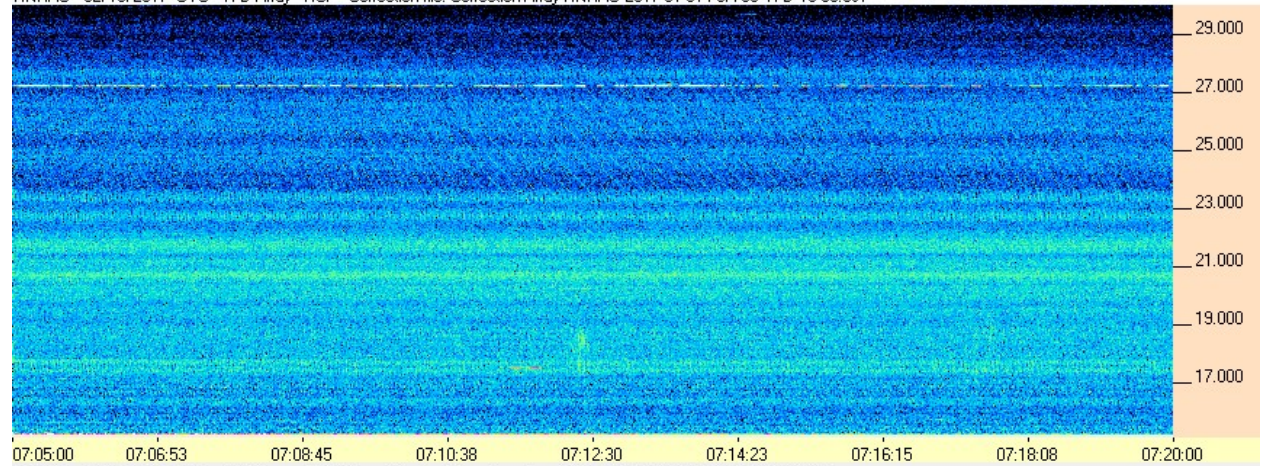
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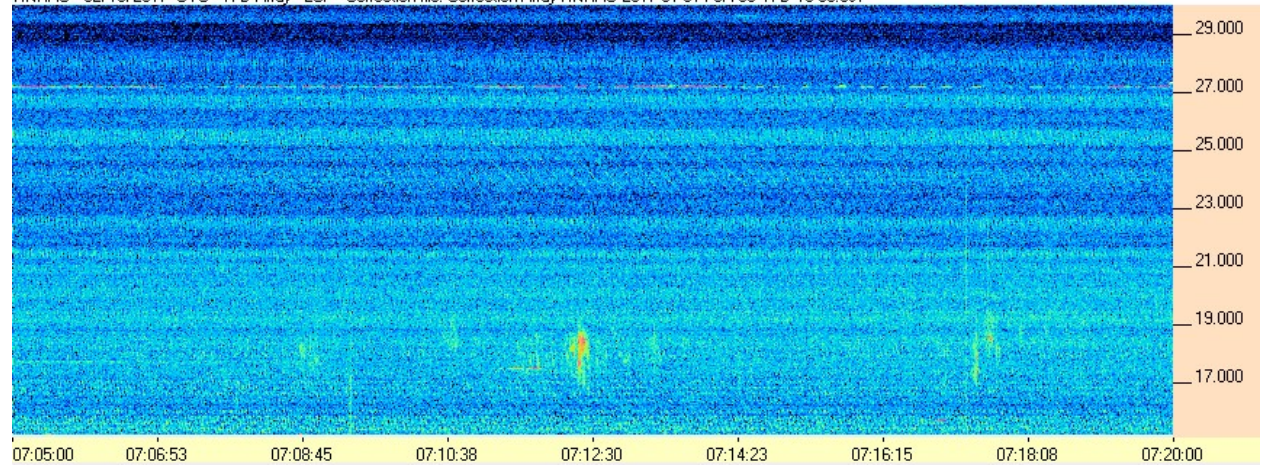
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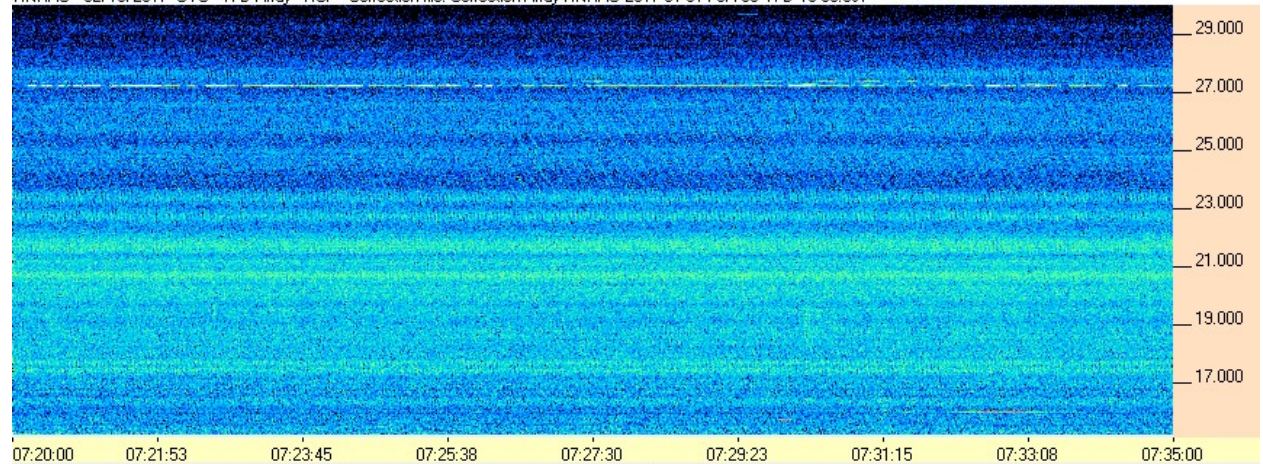
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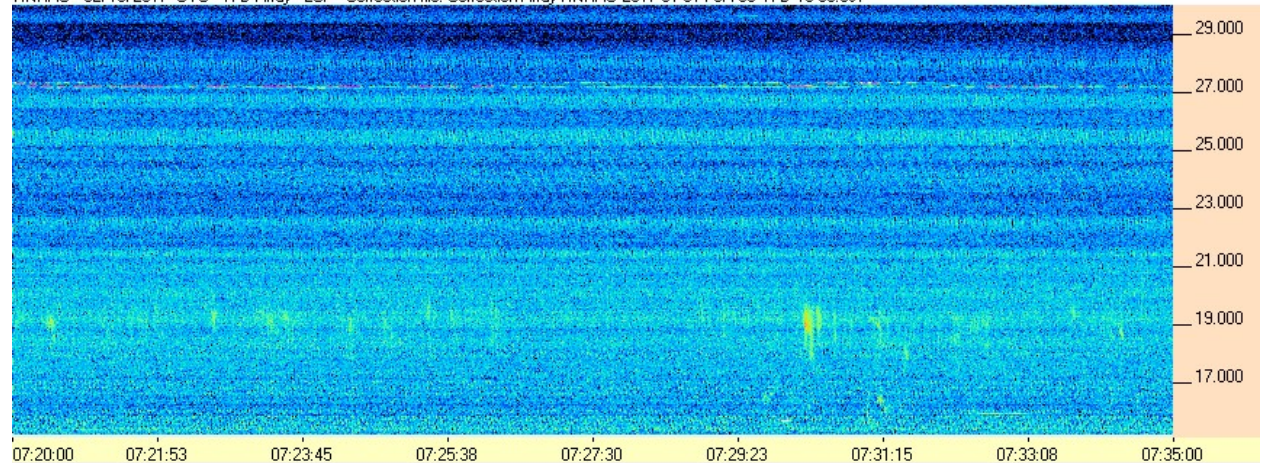
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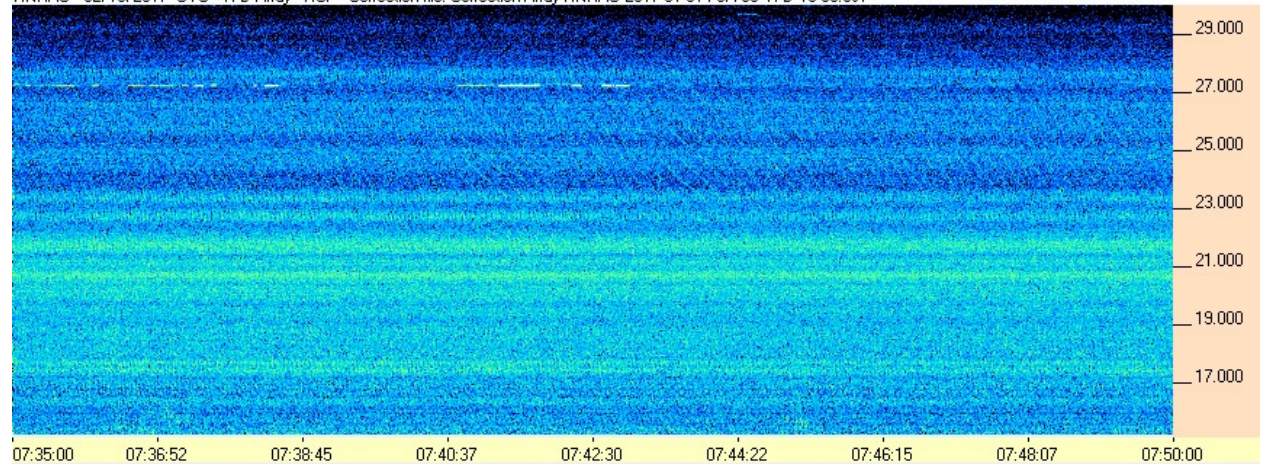
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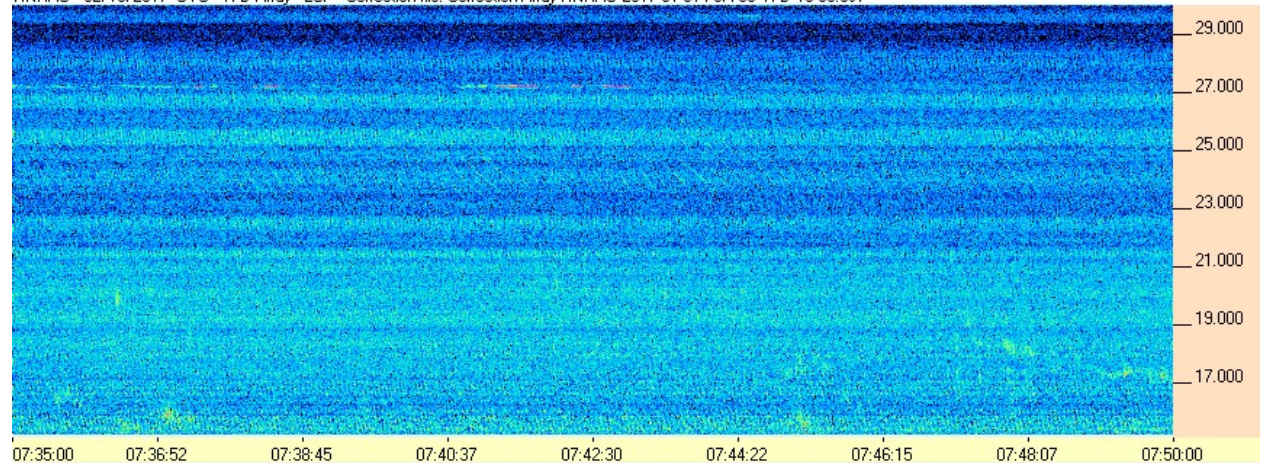
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HNRAO - 02/18/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

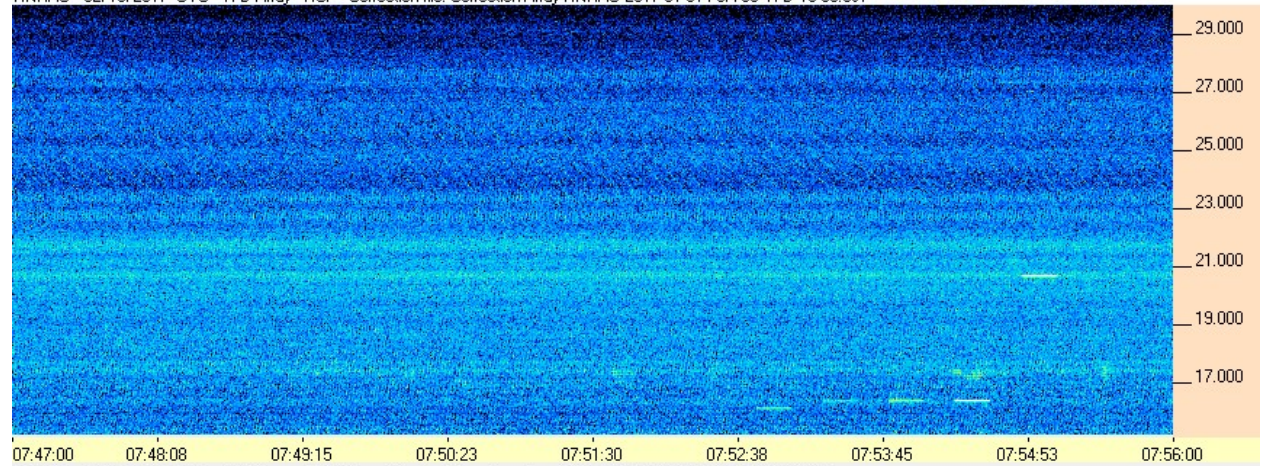


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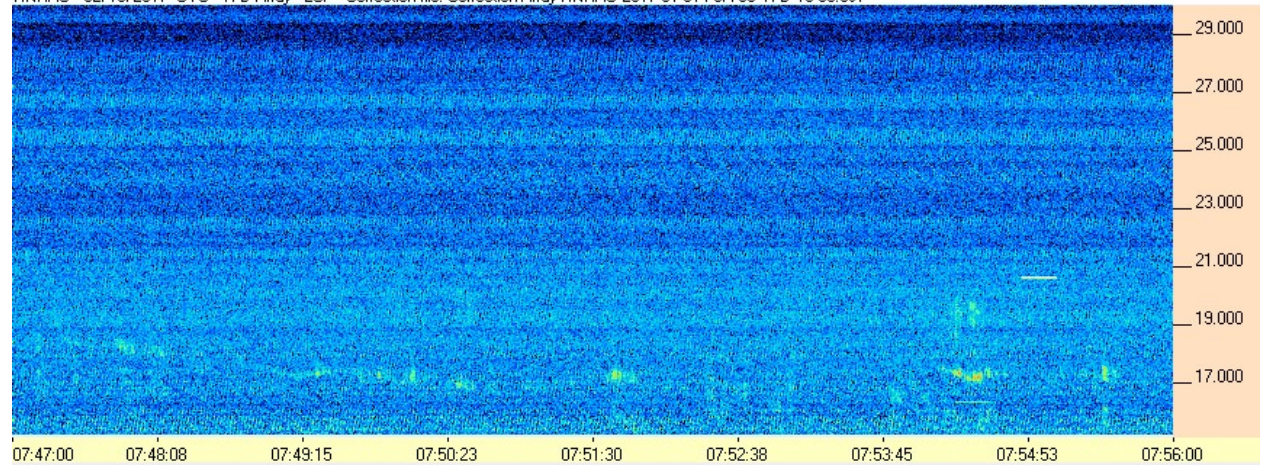
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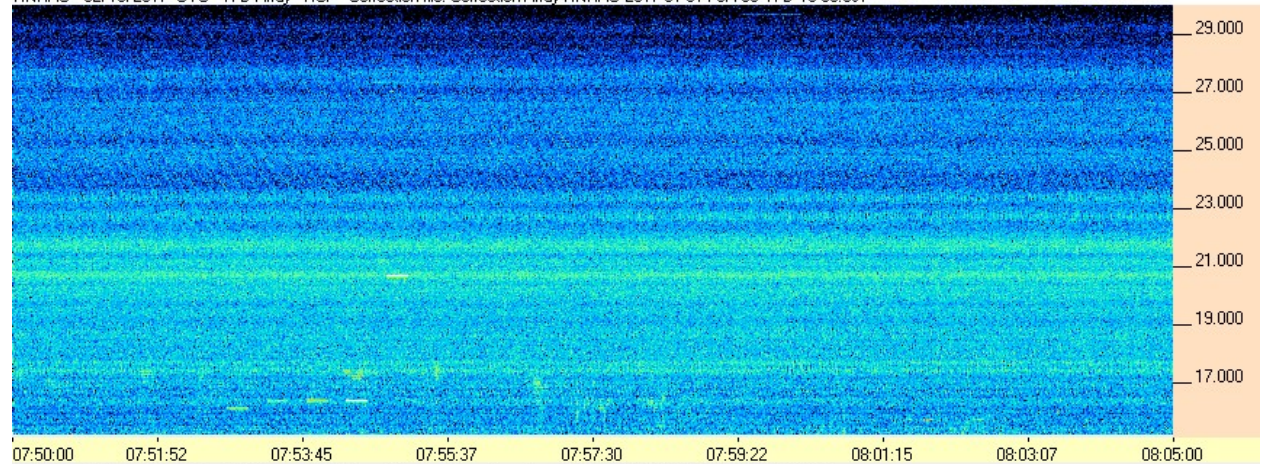
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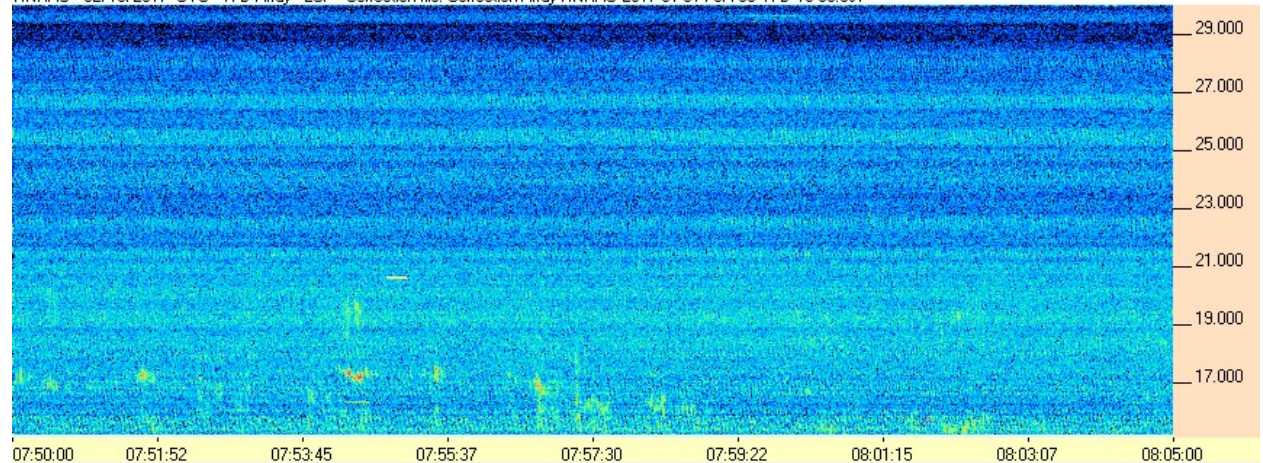
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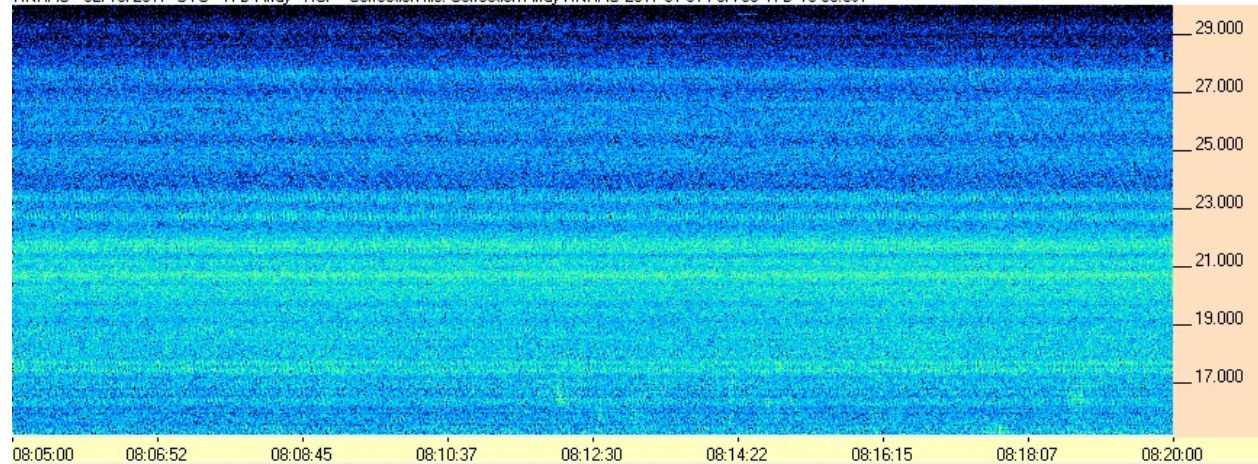
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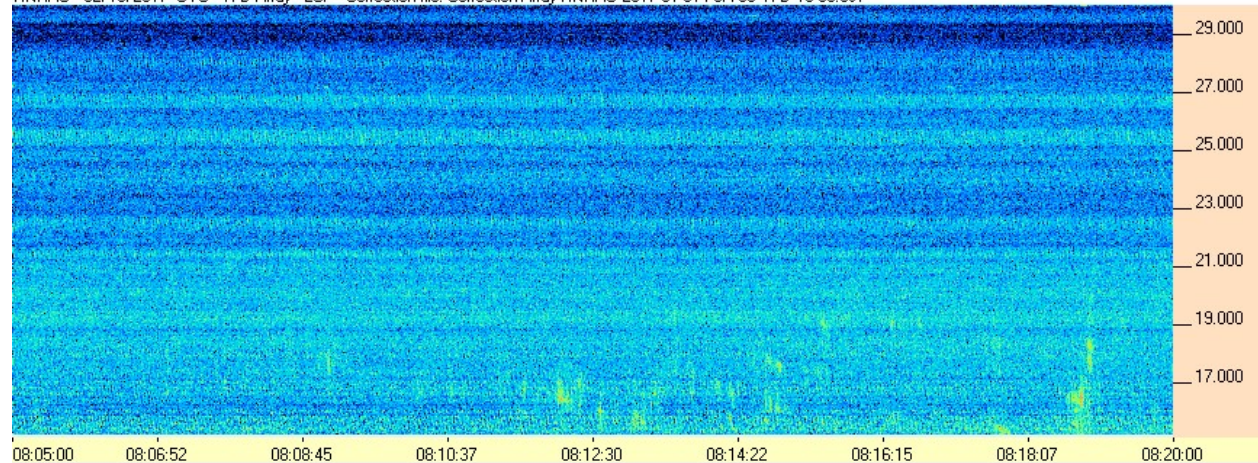
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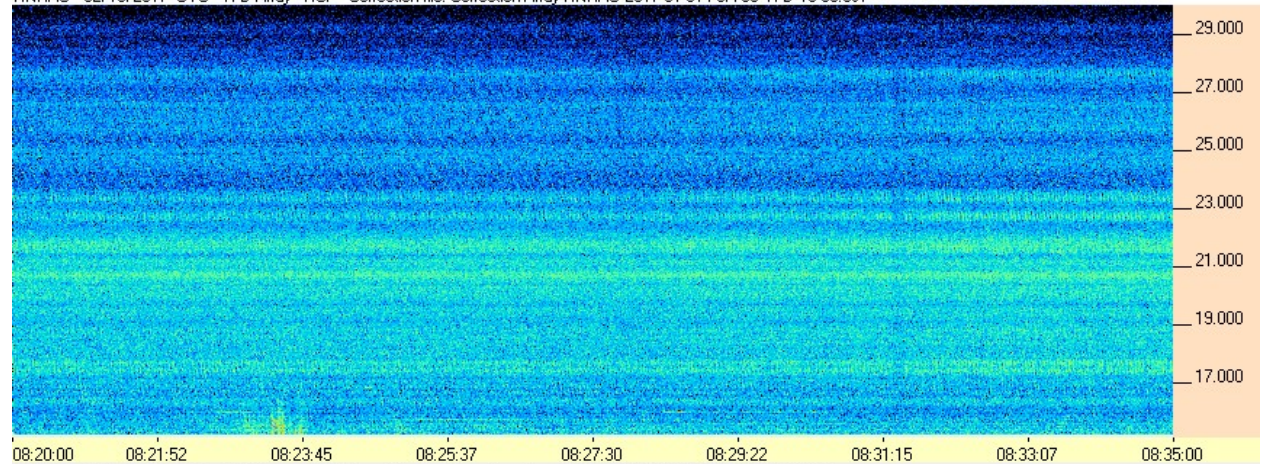
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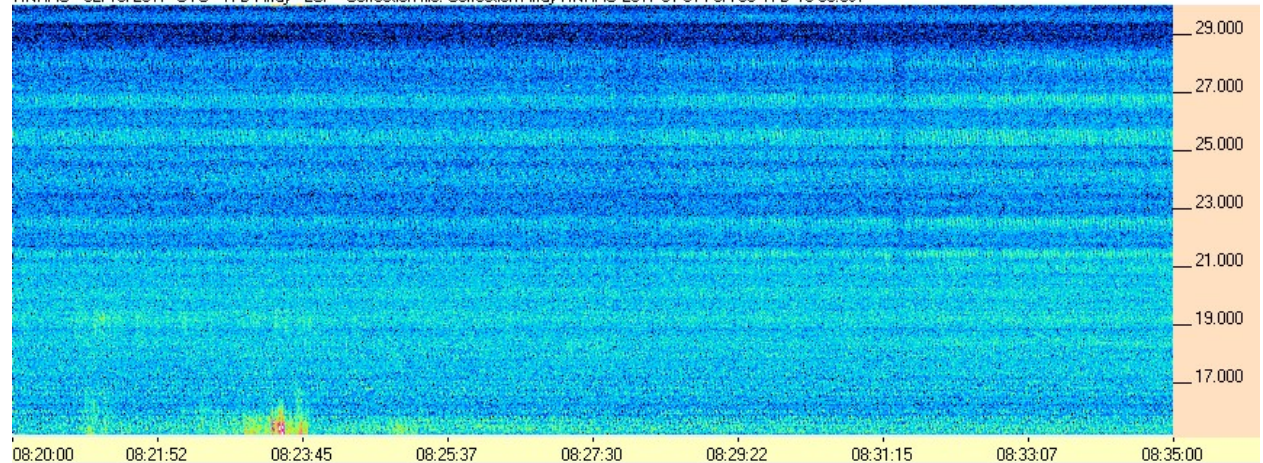
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Very unusual band opening at 11 PM local time. A strong broadcast station (most likely Cuban) overloading the front end of the FSX-8S/TFD Pair. This occurred during a rise in the Kp index to 4.

