

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 11 February 2017

Object: Jupiter – Io-C

Observer: JB

Start of pass:	0538 UT		
Jupiter Altitude:	19.5 degrees	Jupiter Azimuth:	119.2 degrees
Jupiter CML:	325.28	Jupiter Io Phase:	244.79
Jupiter RA:	13:27	Jupiter Dec:	-07:32
Hour Angle:	-03:45	Polarization	LCP
Sun Altitude:	-63.8 degrees	Sun Azimuth:	005.2 degrees
Sun RA:	21:33	Sun Dec:	-14:34

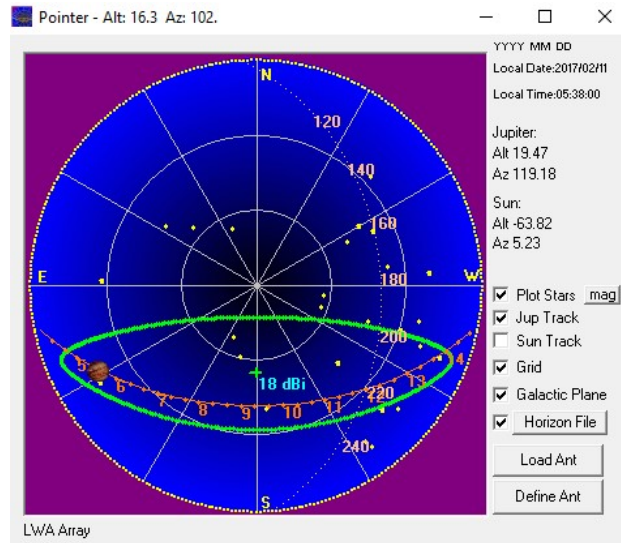
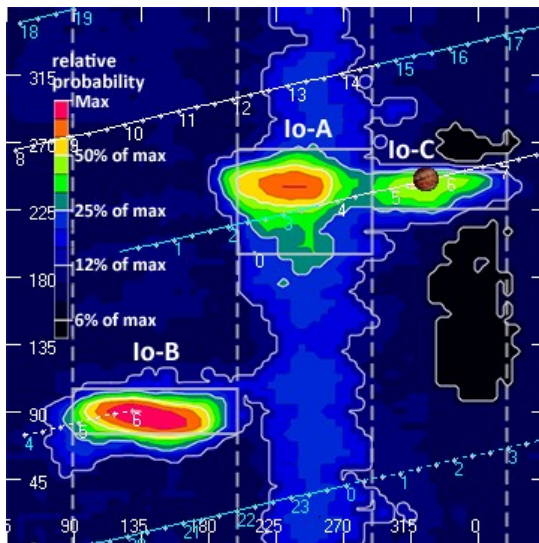
End of pass:	0700 UT		
Jupiter Altitude:	31.7 degrees	Jupiter Azimuth:	137.3 degrees
Jupiter CML:	14.86	Jupiter Io Phase	256.47
Hour Angle:	-02:22		
Sun Altitude:	-57.2 degrees	Sun Azimuth:	043.9 degrees

Observations made using:

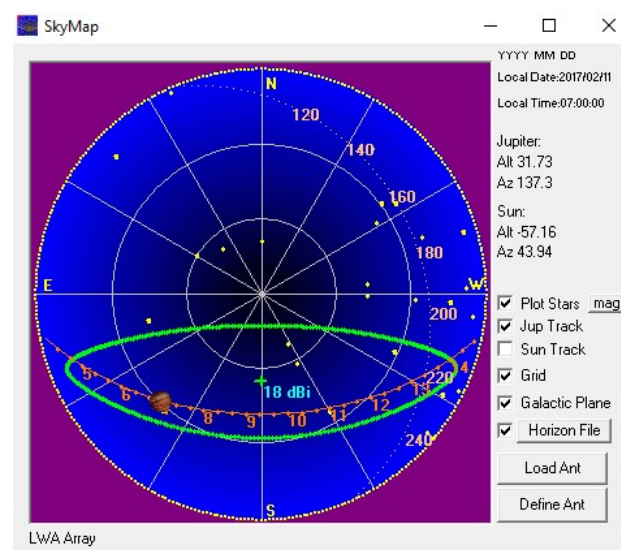
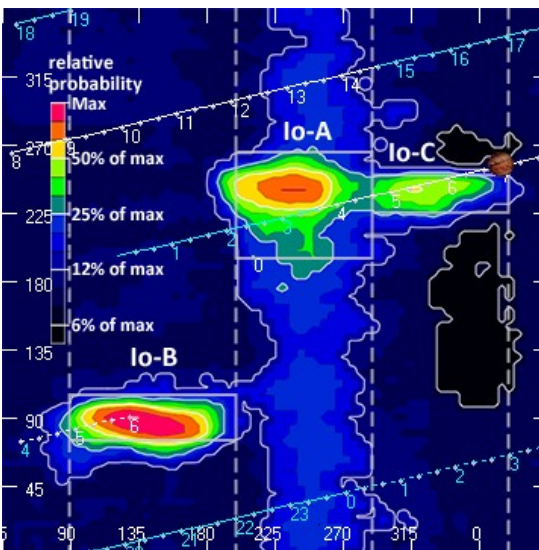
1. FSX-8S fed by the TFD array
 - a. 7.7 dB loss between TFD and Multicouplers.
 - b. Connect to array through HNRAO Multicoupler #1 and #2, port 2
 - i. HNRAO Multicoupler #1 – TFD/LCP
 - ii. HNRAO Multicoupler #2 – TFD/RCP
 1. Port 1 having 10 dB of gain, all other ports have 3 dB gain.
2. FSX-2 fed by the LWA array directly
 - a. LWA element configuration – 90 degrees
3. JOVE 2 receiver fed by phased JOVE dipoles @ 10' – phased (12' phase cable) for 2016-17 season
 - a. Calibrated 4 February 2017
 - b. 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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A much better Io-C pass this morning, and some of the strongest emissions I've seen in this apparition. The dual polarization of the FSX-8S/TFD pair allowed me to watch both RCP and LCP, but I was unable to switch the FSX-2/LWA over to LCP mode. However, because of Jupiter's position relative to my local meridian, might not have been as critical as it seems. At such off-axis observations, polarization can become difficult to differentiate, and while Io-C is typically LCP, in my case, RCP would not be unexpected.

Emissions began with some L-burst activity but changed over to S-burst activity throughout most the pass. Local RFI made it difficult to tell, but it appeared to change over to L-bursts at the end.

Undetermined modulation lanes due to local RFI.

There was activity at 20.1 MHz Radio JOVE frequency. One burst exceeded 287 kK (see below)

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0538 UT
First signs of emissions
L-bursts
15-16 MHz

0545 UT
Quiet since last L-burst
Emissions begin about 21 MHz down to 15 MHz
Possibly S-bursts

0529 UT
Brief power line RFI

0554 UT
Beginning of what appears to be an S-burst chain
Very consistent at about 20 MHz and another below it just below 18 MHz.
Some very energetic activity

0559 UT
20 MHz S-burst chain ends

0600 UT
Lower S-burst chain beginning to descend in frequency slightly.
More S-burst activity between 15 and 16 MHz.

0601 UT
20 MHz S-burst chain resumes

0602 UT
20 MHz S-burst chain ends again
Strong S-burst activity between 15 and 16 MHz
Activity ends 0603 UT

0608 UT
Weak S-bursts 20 MHz and 17 MHz

0612 UT
0612 UT – 0614 UT – Weak S-burst activity. Spotty at 20 MHz 15-20 seconds at 16 MHz.

0616 UT
Power line RFI – mild but in the 21-15 MHz range.

0620 UT
More S-bursts 18-19 MHz. Appear to be ascending.

0622 UT
S-bursts continue. Holding consistent between 18-19 MHz.
Stronger activity at 0621:51 UT until 0622 UT

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0625 UT

Quiet until a stronger S-burst vertical emission from 15-18 MHz.

With the line noise RFI, I can't tell if there are modulation lanes present or not.

0630 UT

Quiet until 0631 UT. Stronger activity both at 20 MHz and a descending line from 17-15 MHz

With the RFI, it's difficult to tell if it's transitioning to L-bursts or continued S-burst activity.

0638 UT

Another cluster of S-bursts?

0640 UT

A small cluster, possibly L-bursts between 17-19 MHz.

0641-0642 UT, another grouping between 15-17 MHz

0645 UT

Strong parallel, vertical bursts 15-17 MHz

0646 UT

Probably the strongest burst yet. Looks like an L-burst.

0649 UT

Strong group at 15 MHz.

Storm appears to be descending below 15 MHz.

0652 UT

Activity right at the 15 MHz frequency.

0655 UT

More activity at 15 MHz

0700 UT

No further signs of emissions

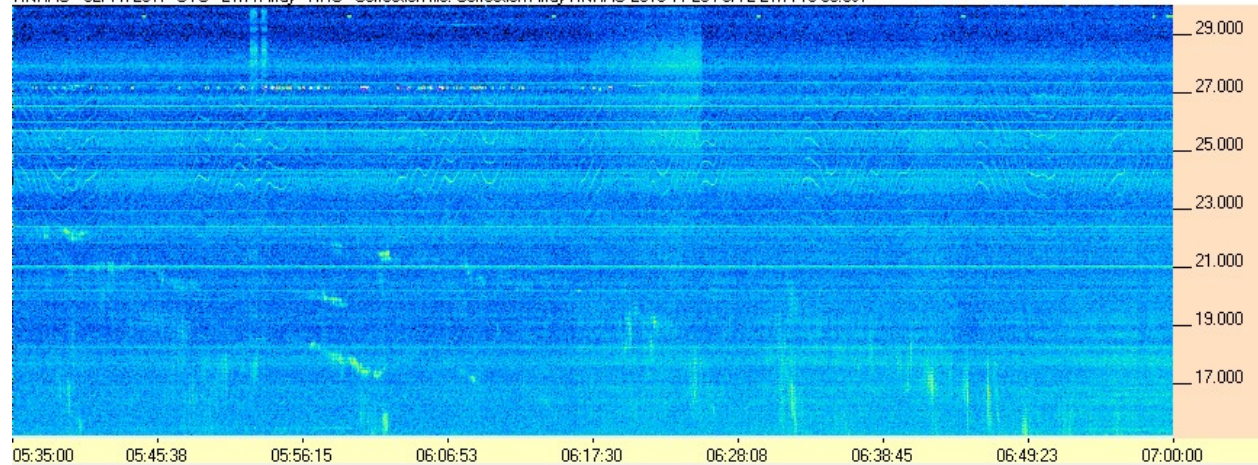
End of Io-C activity

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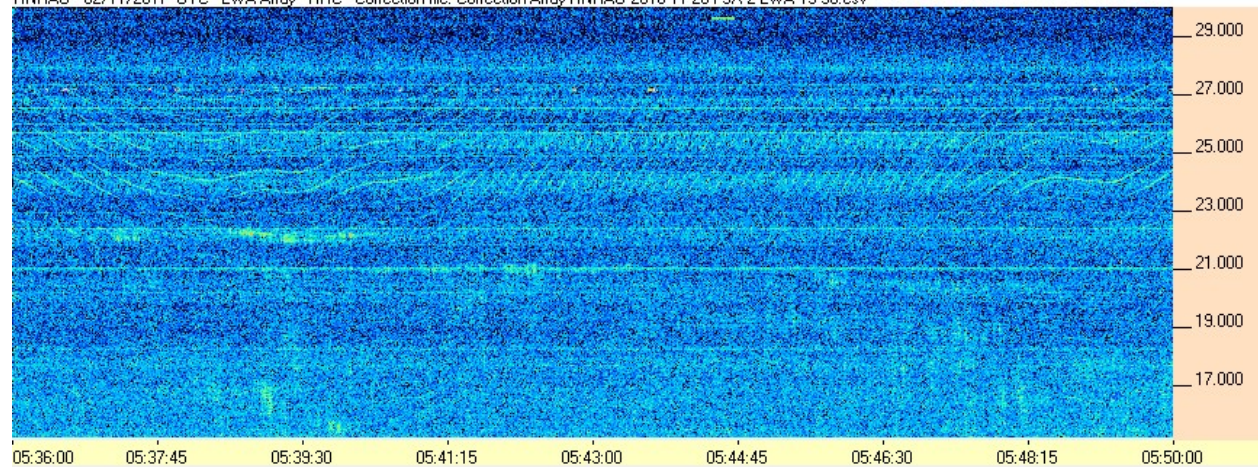


FSX-2/LWA Pair

HNRAO - 02/11/2017 UTC - LWA Array - RHC - Correction file: Correction Array HNRAO 2016 11 20 FSX-2 LWA 15-30.csv



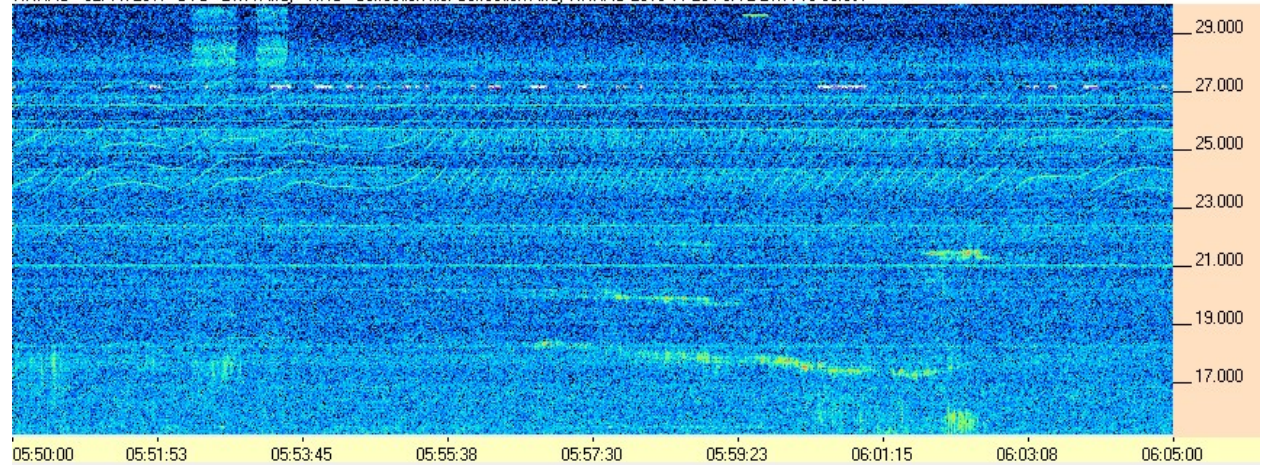
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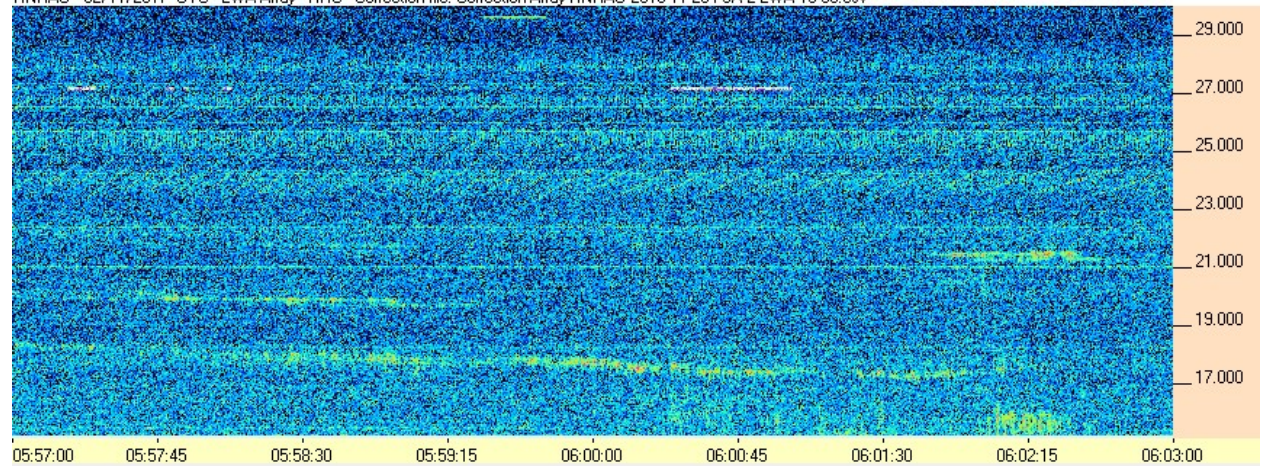
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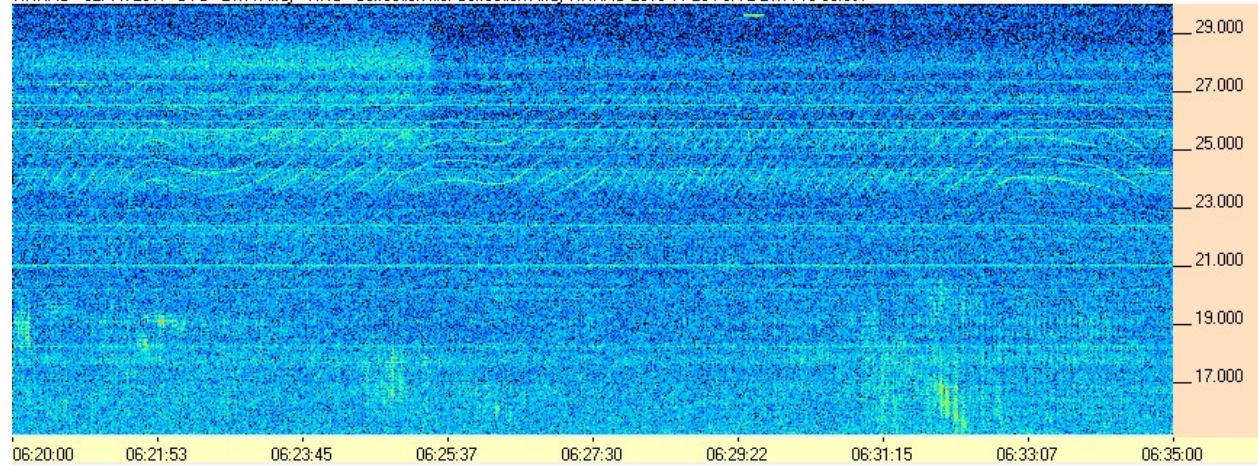
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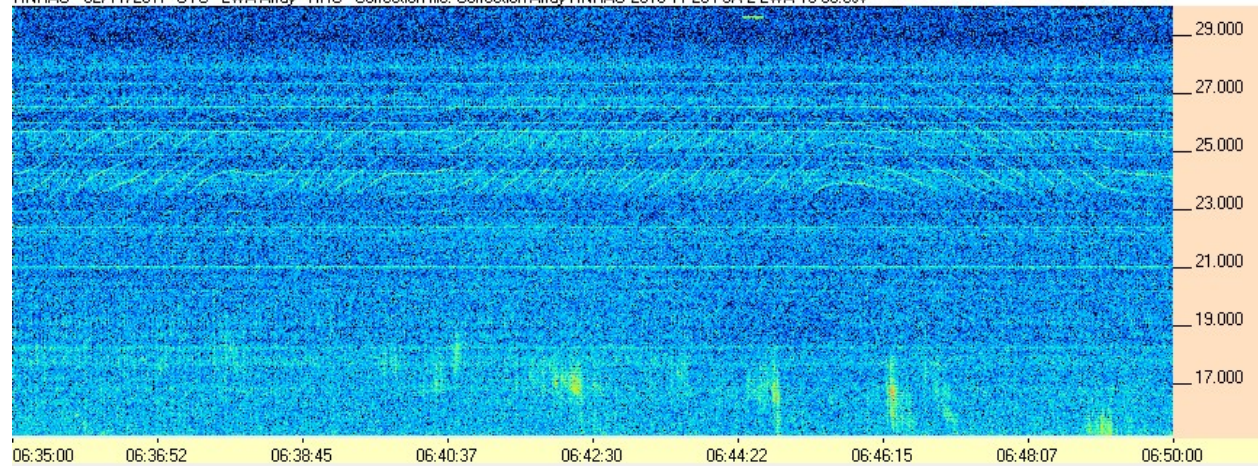
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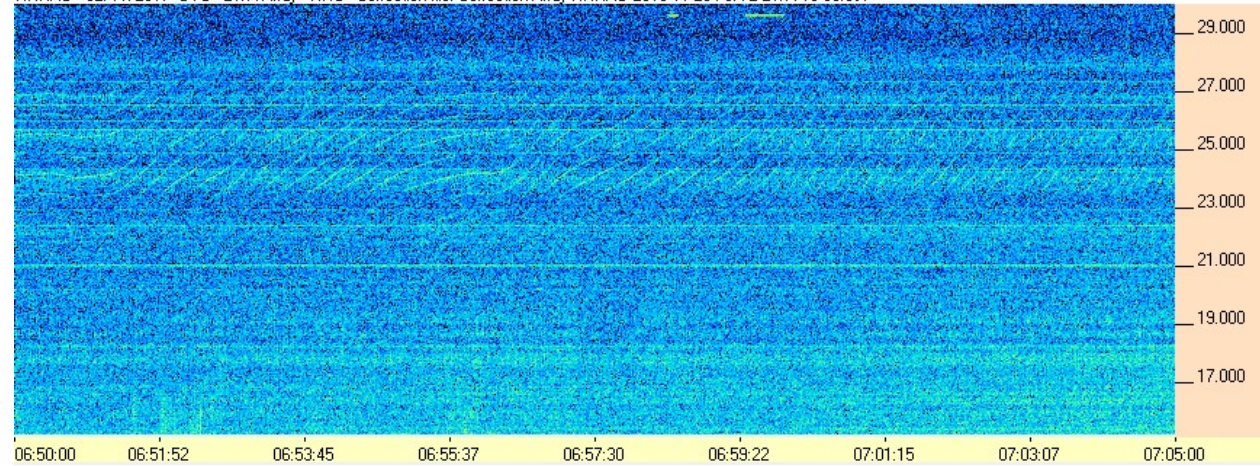
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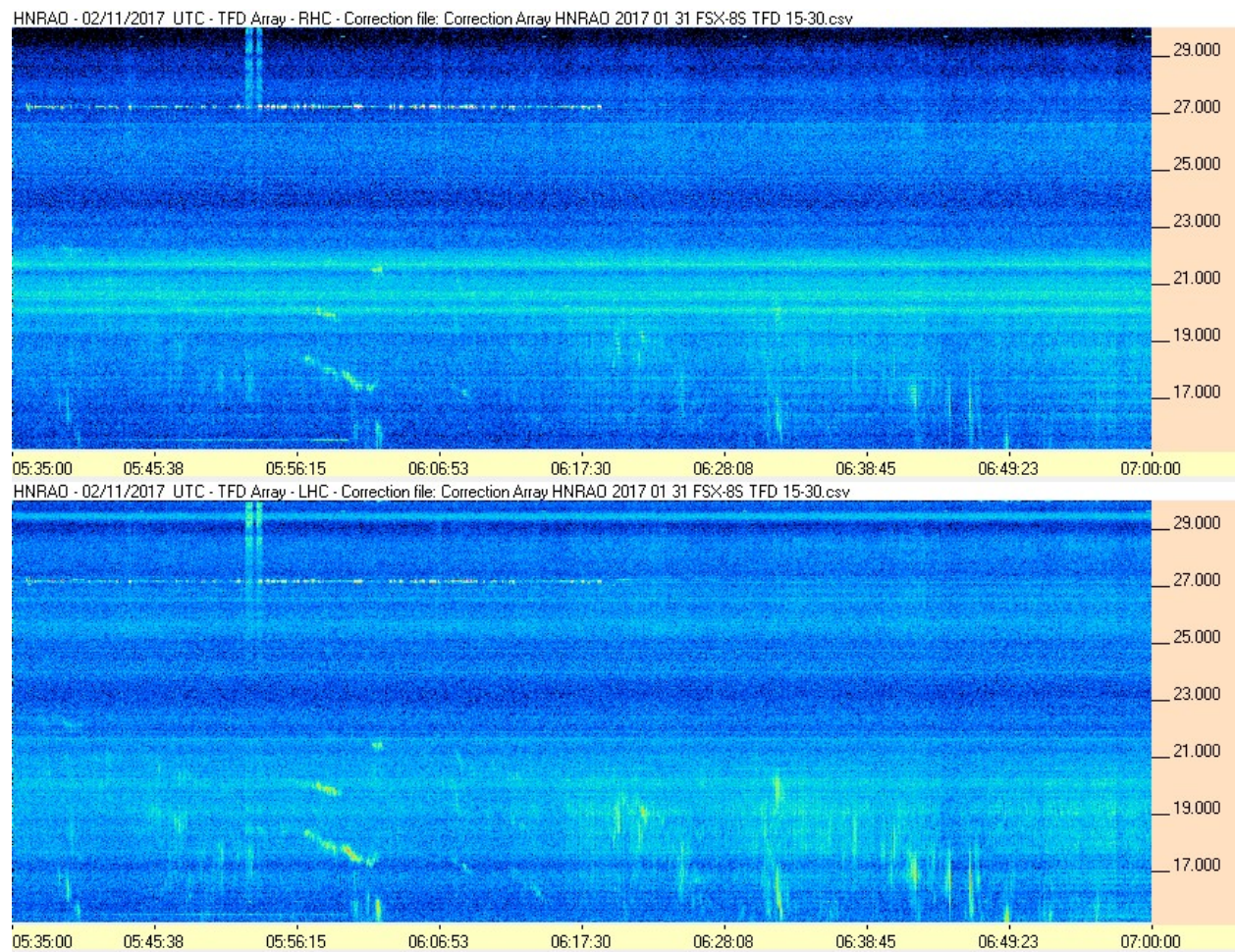
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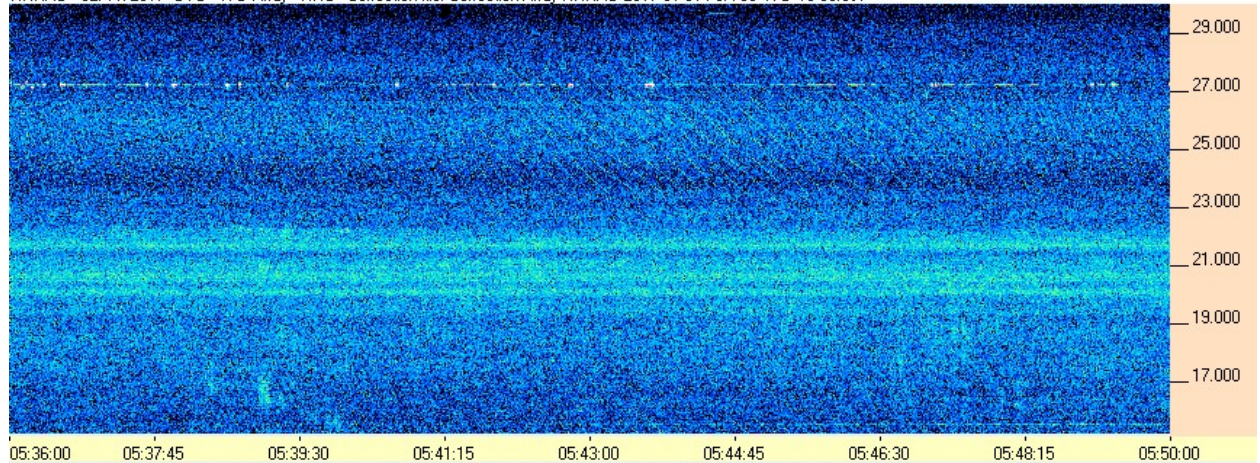
FSX-8S/TFD pair



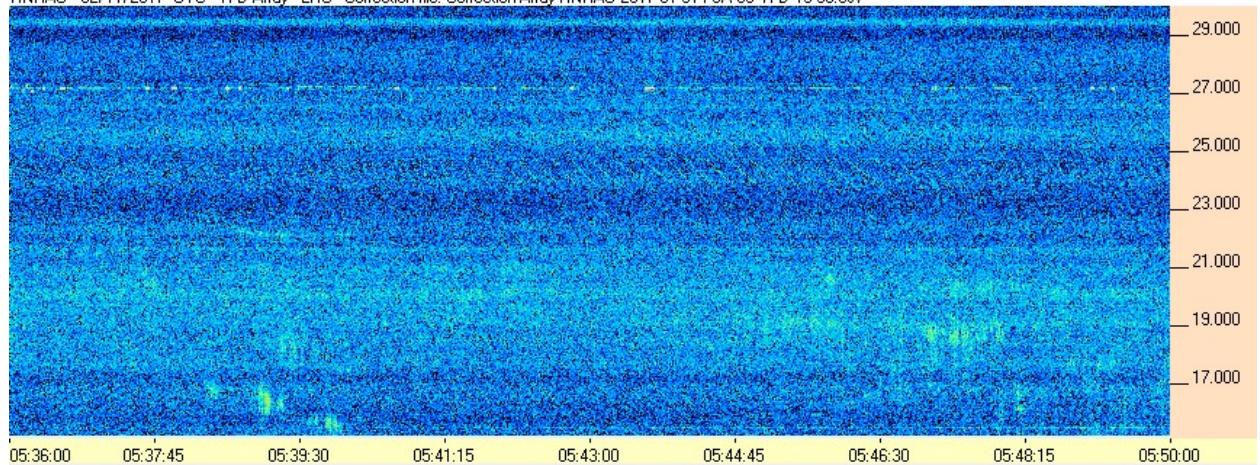
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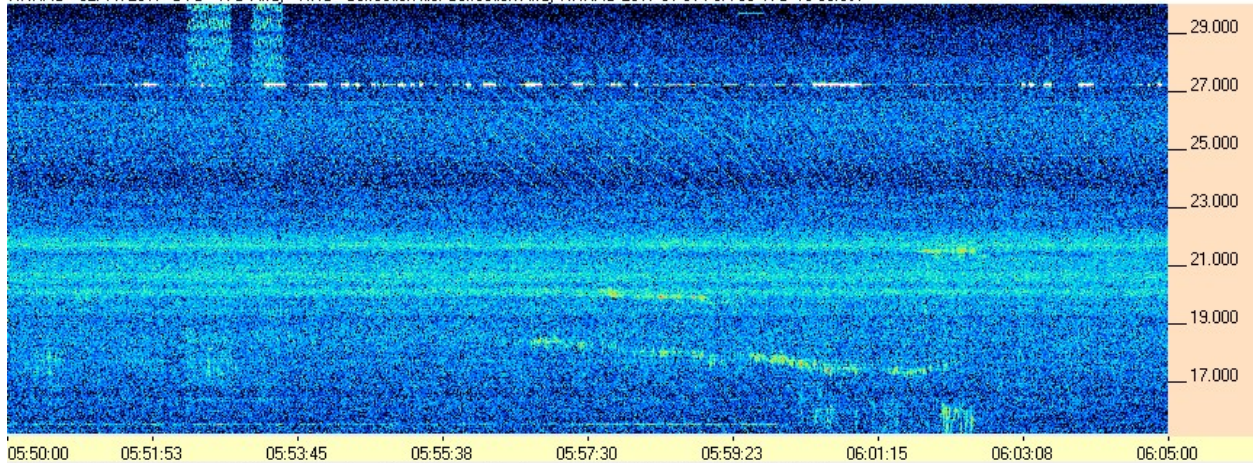
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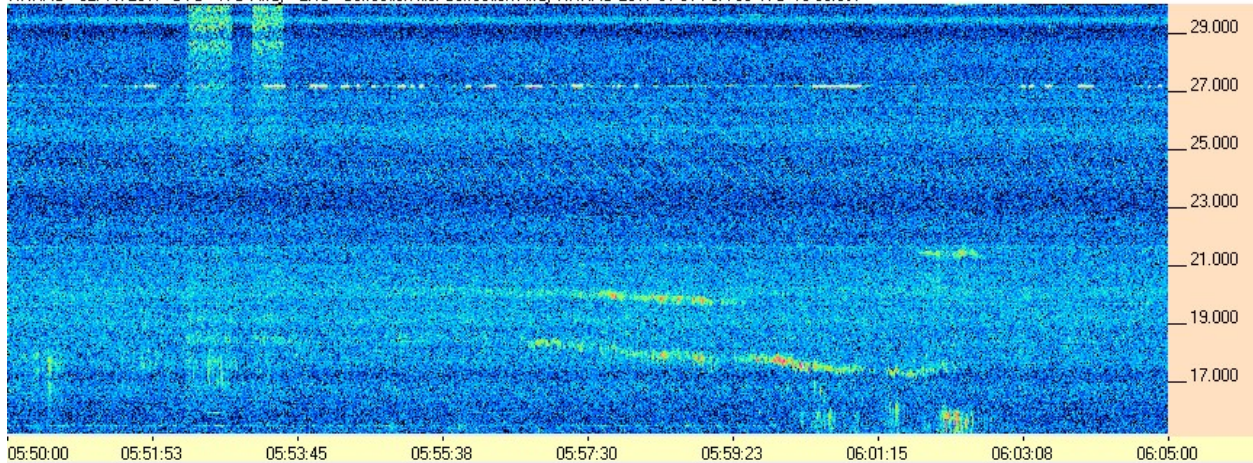
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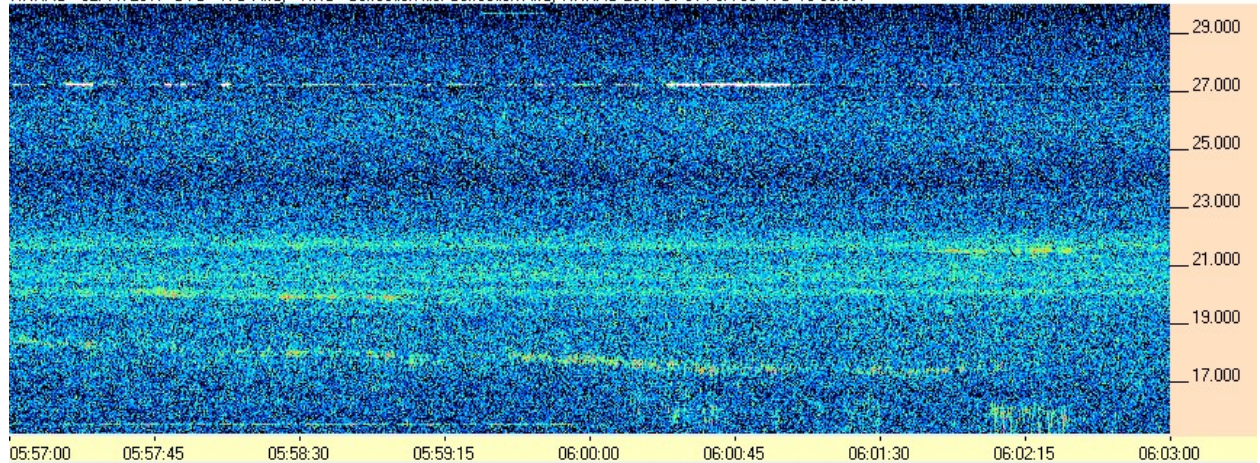
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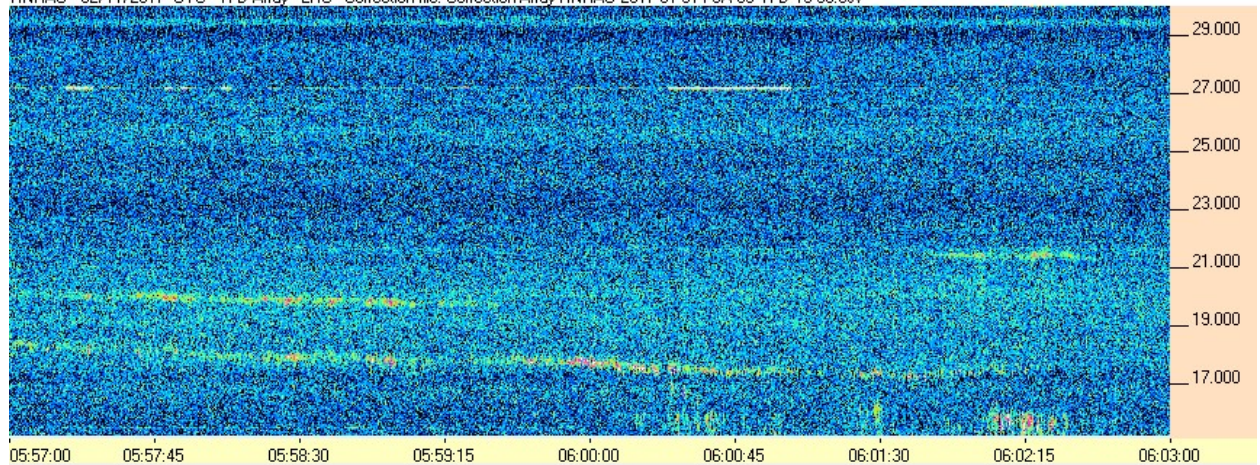
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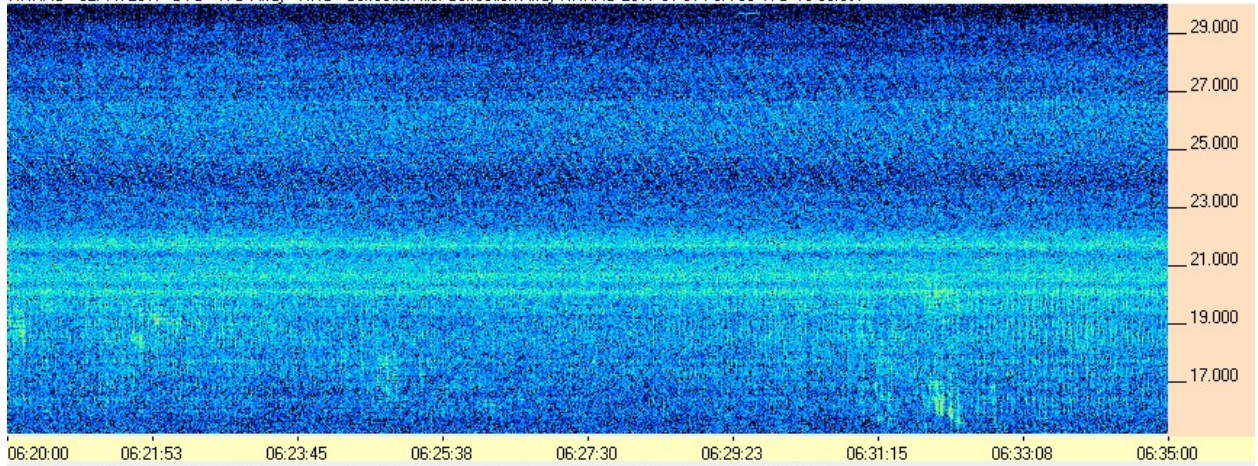
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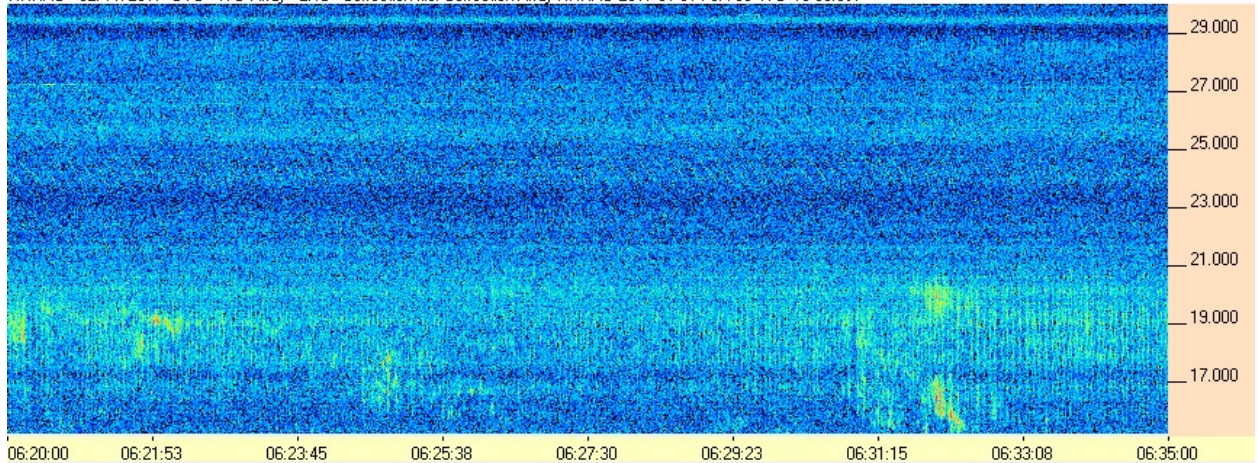
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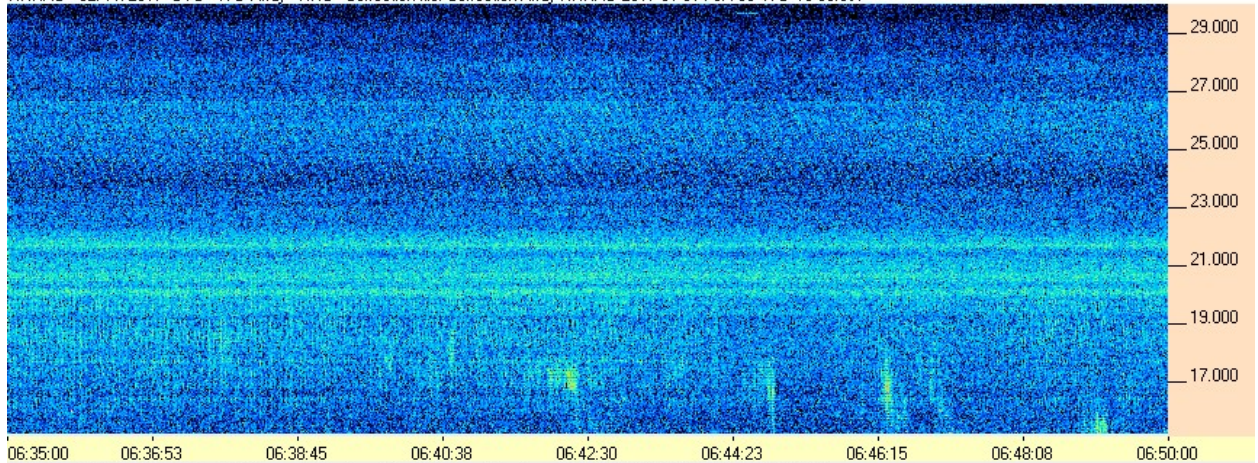
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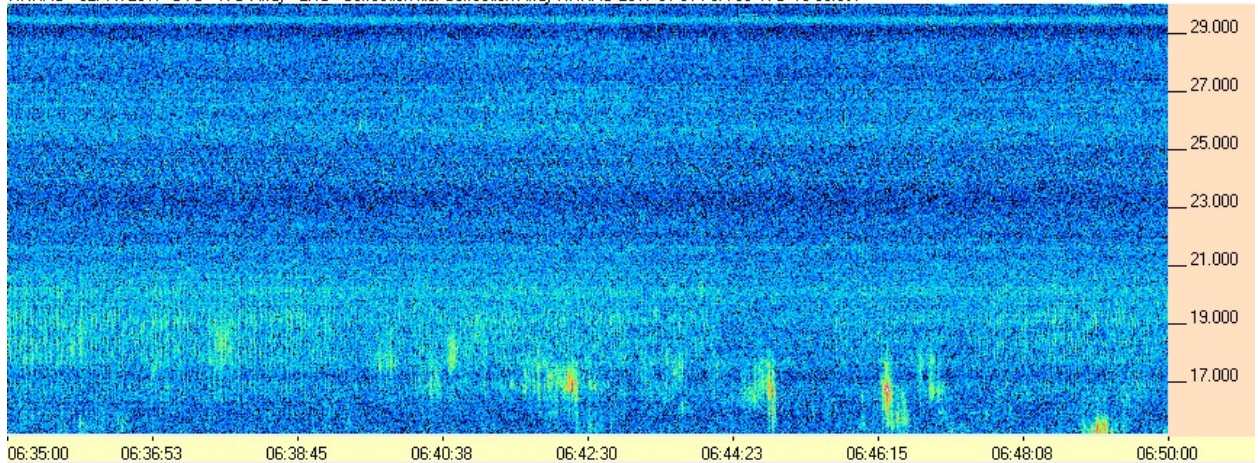
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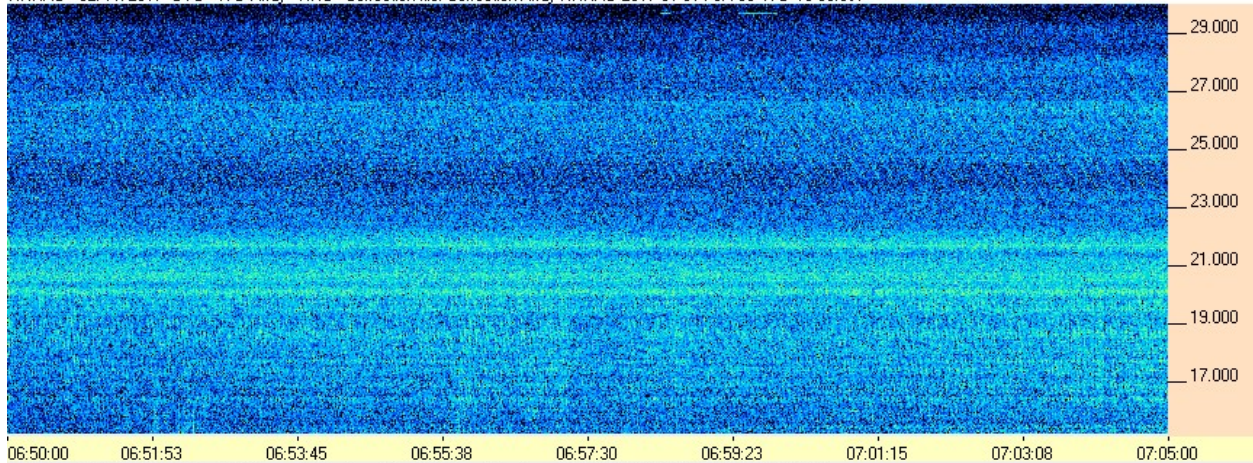
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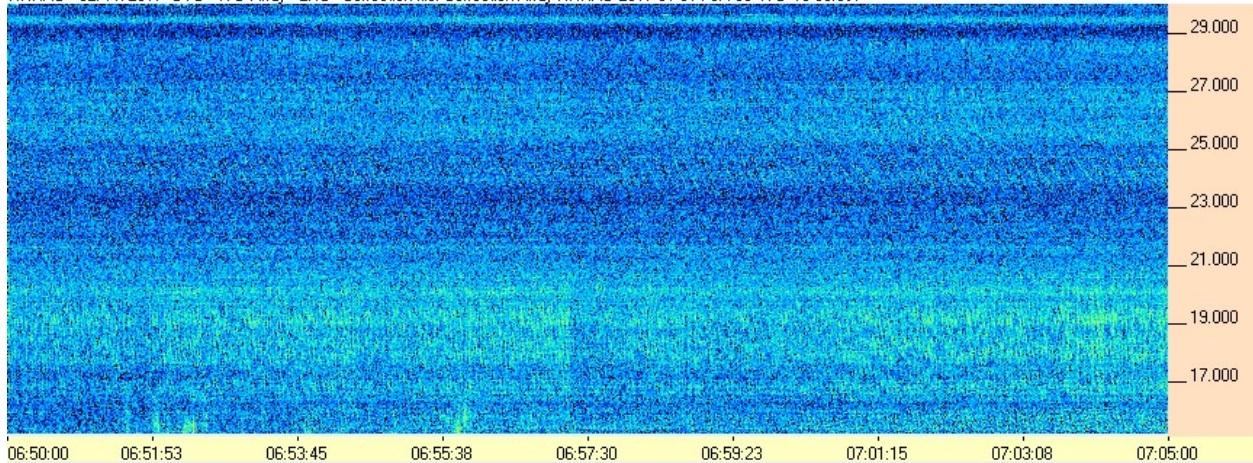
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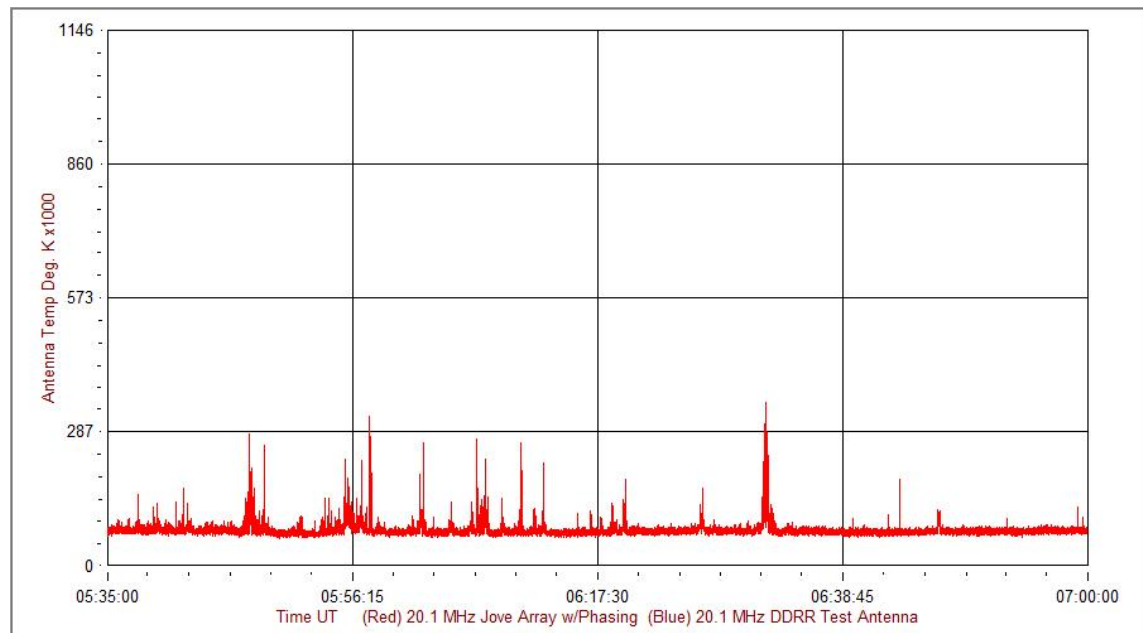


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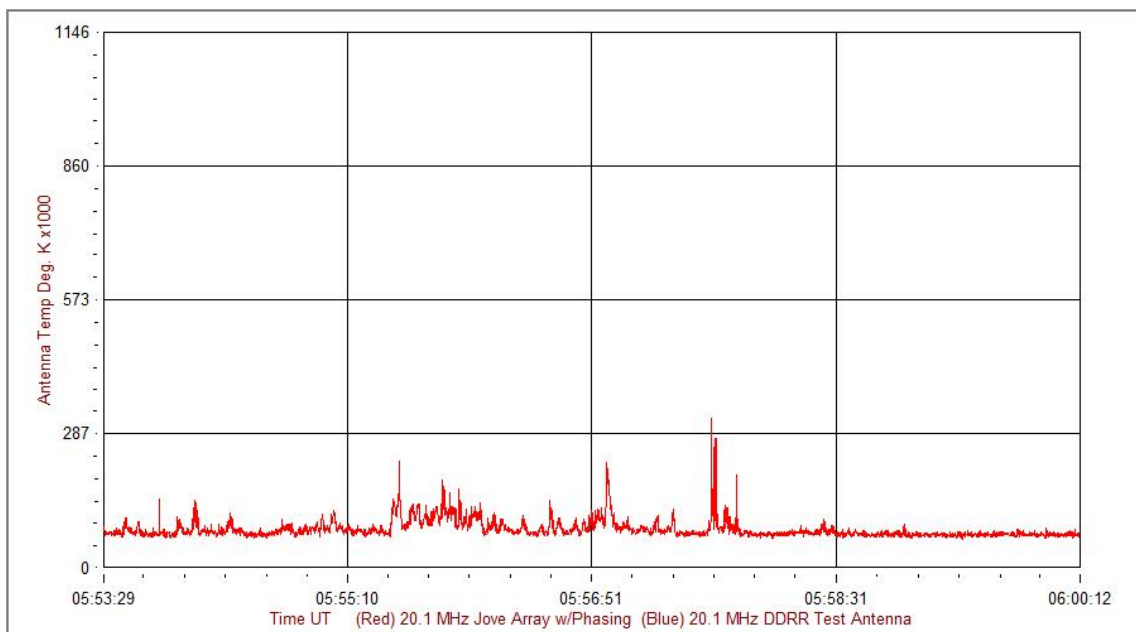
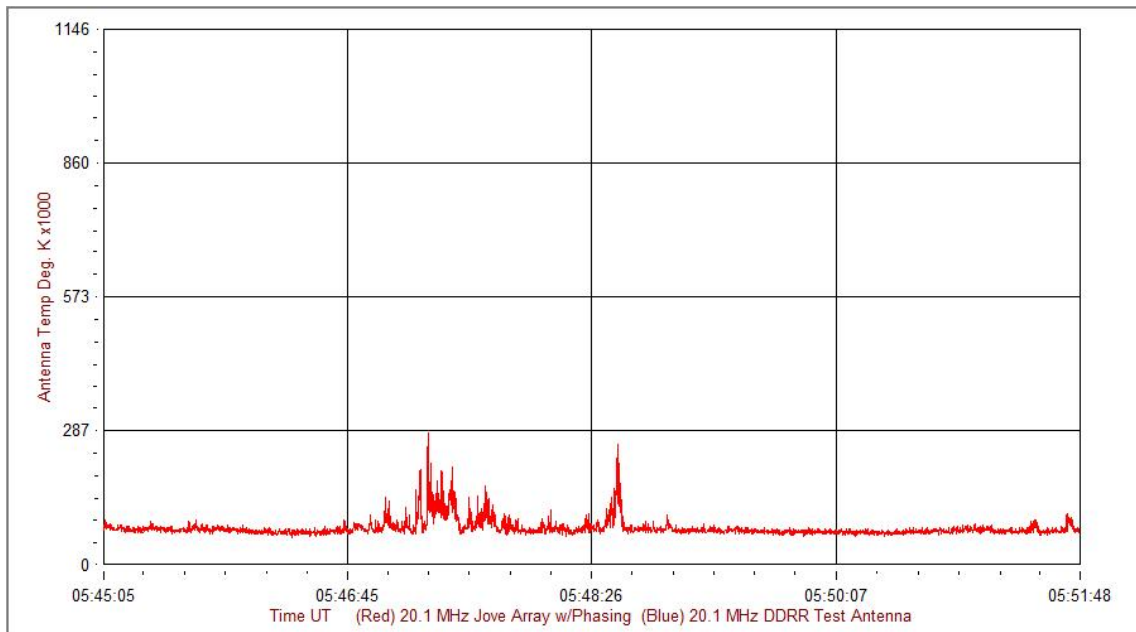


JOVE/Dipole pair

(DDRR data not displayed)



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