

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 20 May 2017

Object: Jupiter – Non-Io-A

Observer: Unattended

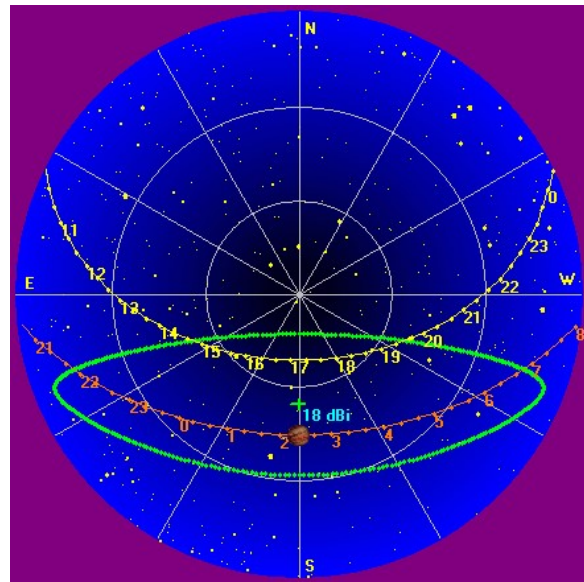
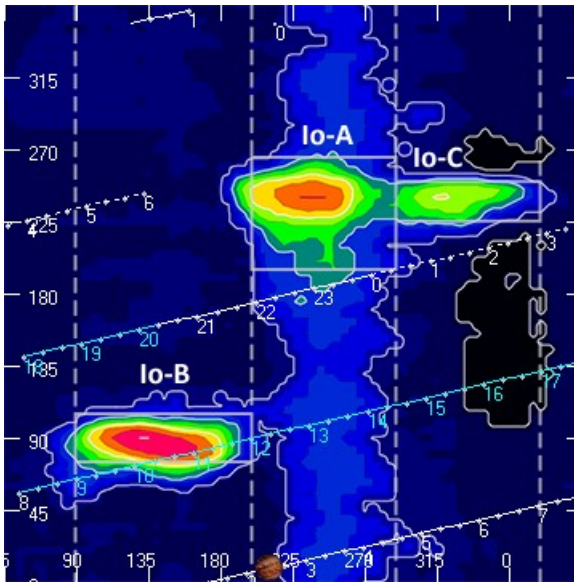
Start of pass:	0223 UT	Planetary K-index:	4
Jupiter Altitude (deg):	45.3	Jupiter Azimuth (deg):	180.1
Jupiter CML:	210.21	Jupiter Io Phase:	008.87
Jupiter RA (hr/min):	12:53	Jupiter Dec (hr/min):	-04:00
Hour Angle (hr/min):	00:00	Polarization	RCP
Sun Altitude (deg):	-18.3	Sun Azimuth (deg):	318.5
Sun RA (hr/min):	03:41	Sun Dec (hr/min):	19:35

End of pass:	0252 UT		
Jupiter Altitude (deg):	44.8	Jupiter Azimuth (deg):	190.4
Jupiter CML:	227.74	Jupiter Io Phase	012.93
Hour Angle (hr/min):	00:30		
Sun Altitude (deg):	-21.7	Sun Azimuth (deg):	324.8

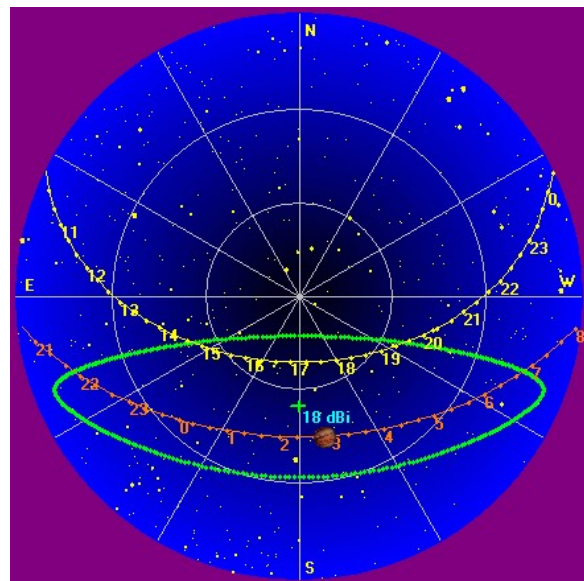
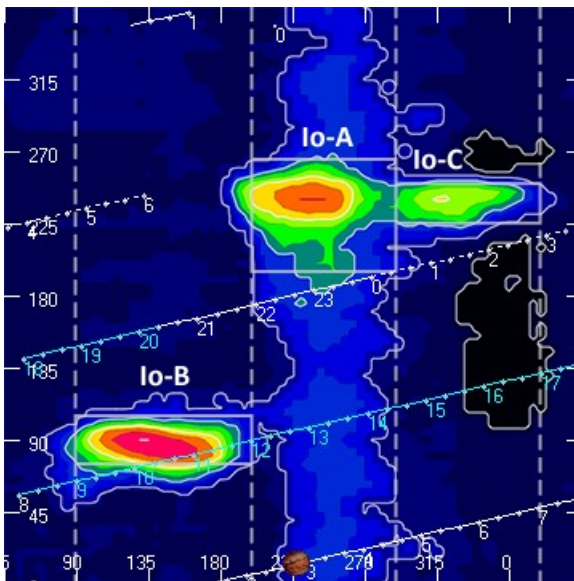
Observations made using:

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 @ 13'
 - a. 12' 6" phase cable - phased for 2016-17 season
 - b. Calibrated 19 April 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 19 April 2017
5. SDRPlay
 - a. RSP1 (2) and RSP2 (1)

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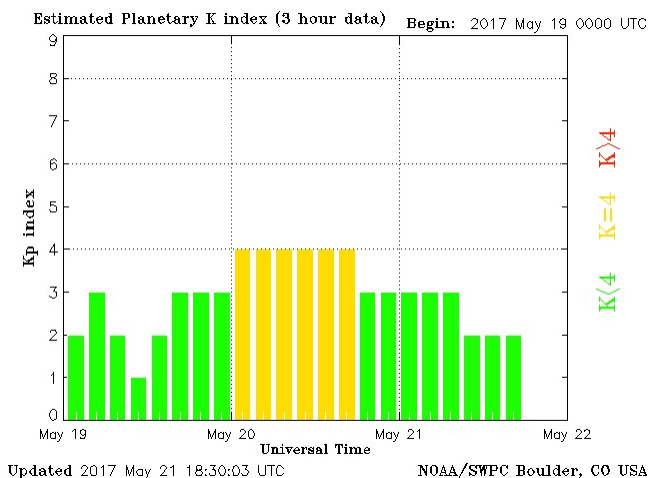


Beginning of Pass



End of Pass

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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>

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After a period of weak activity, this Non-Io-A is much stronger.

Negative drift L-bursts with negative drift modulation lanes.

A number modulation lanes measured and a table can be found at the end of this report. Consistent with earlier observations, the higher in frequency measured, the higher the drift rate. Some lanes appear narrower at the lower frequencies and widen as frequency increases and some appear to maintain their width no matter the frequency.

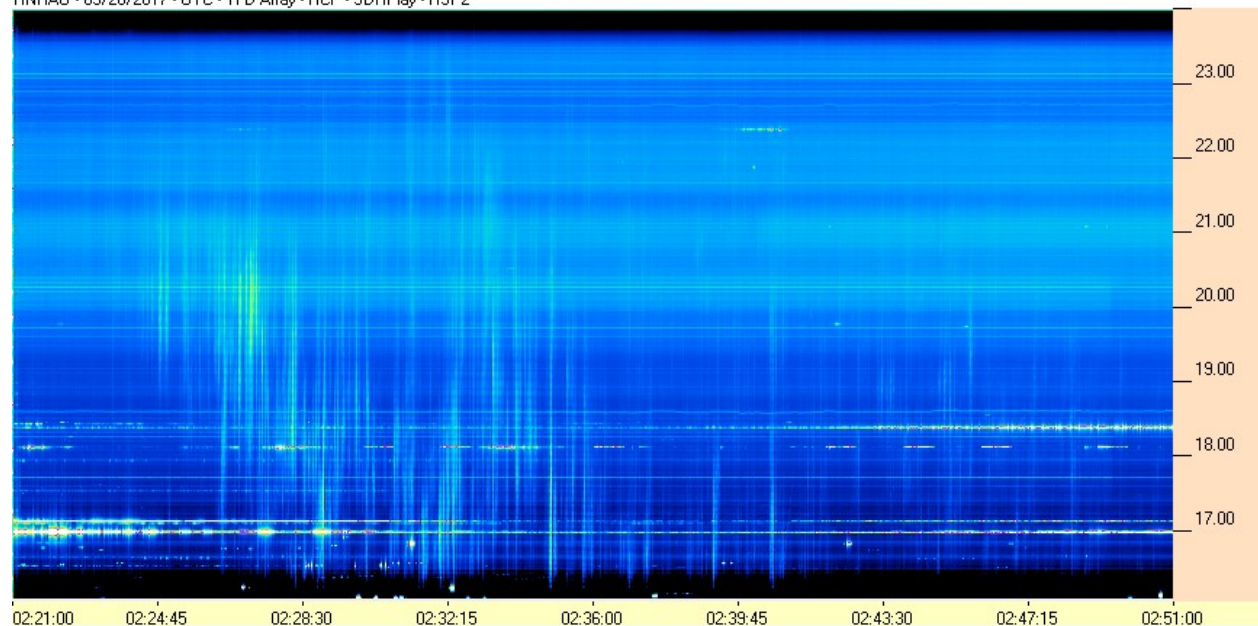
Emissions spanned 15 MHz to 24 MHz.

Storm observed with all RCP instruments; FSX-2, FSX-8S and SDRPlay RSP2.

Currently the Radio JOVE dipoles are not phased and being used to make measurements of the galactic background at zenith. One single burst was recorded on SkyPipe.

SDRPlay RSP2/TFD Pair

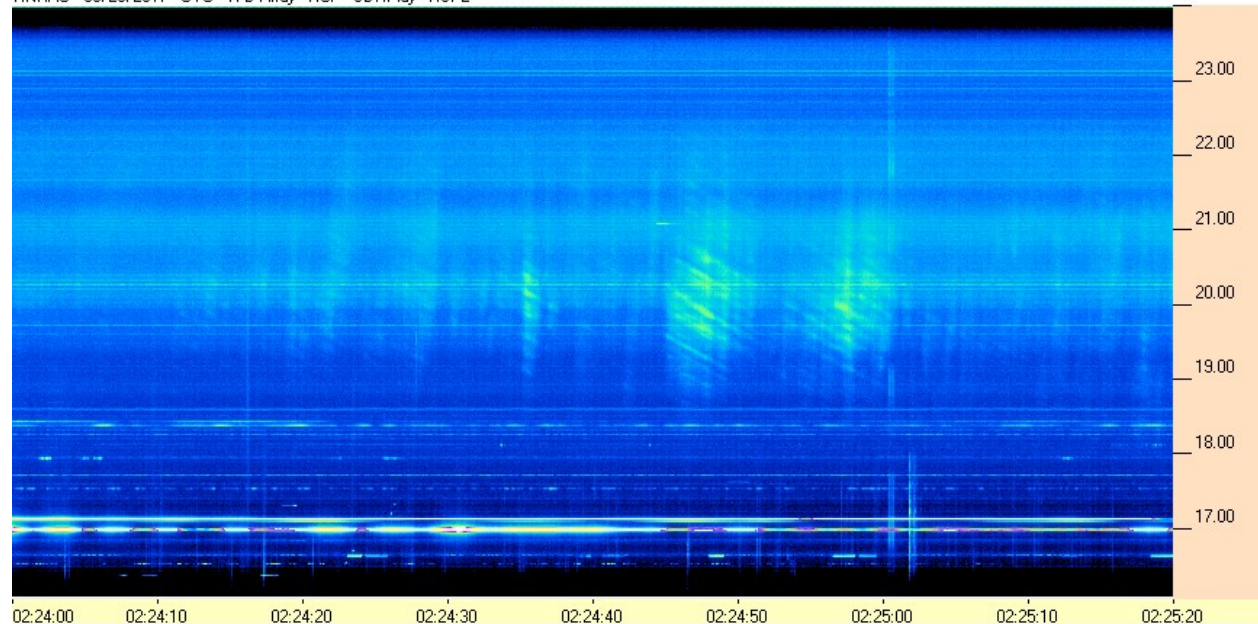
HNRAO - 05/20/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2



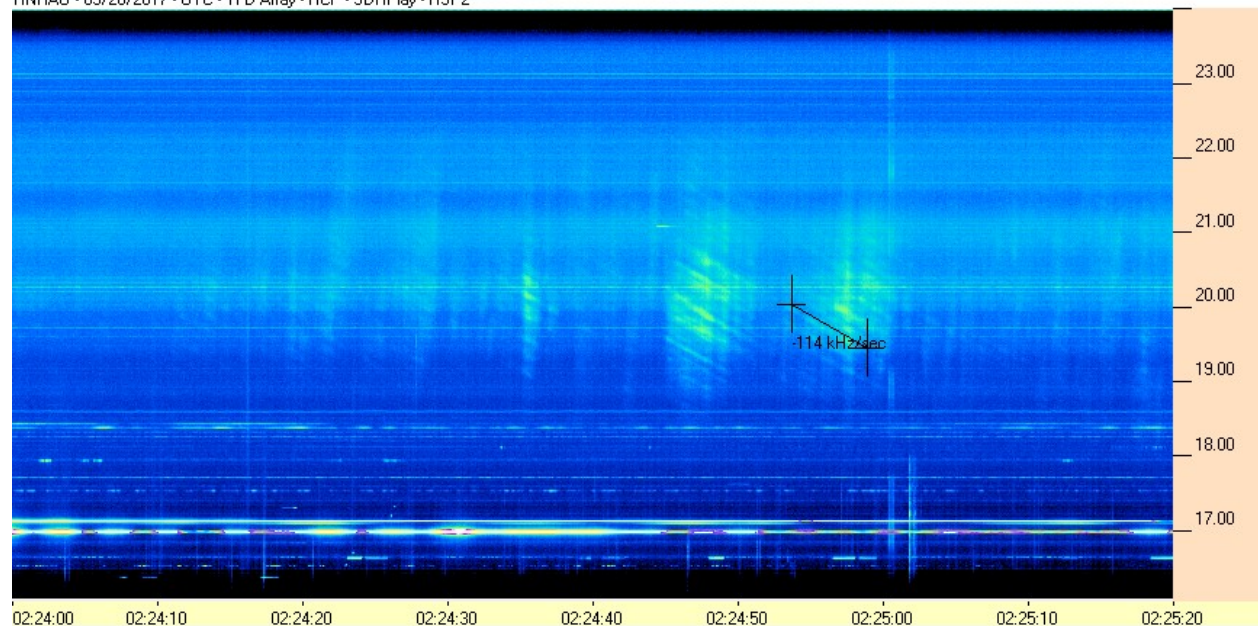
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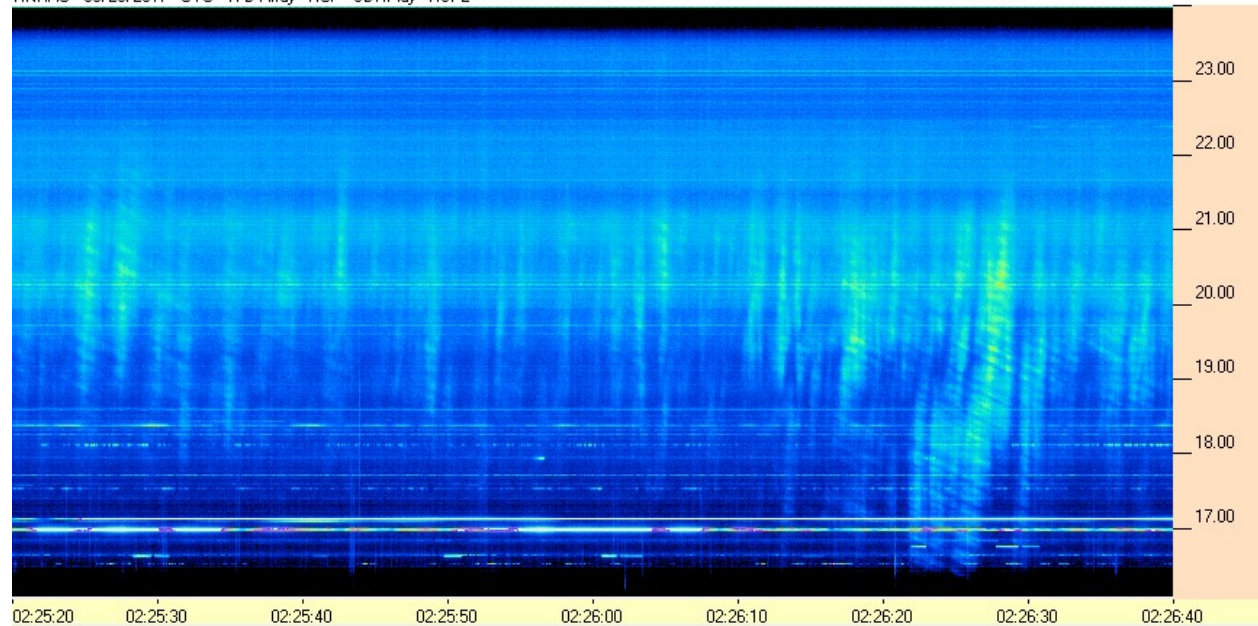
HNRAO - 05/20/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2



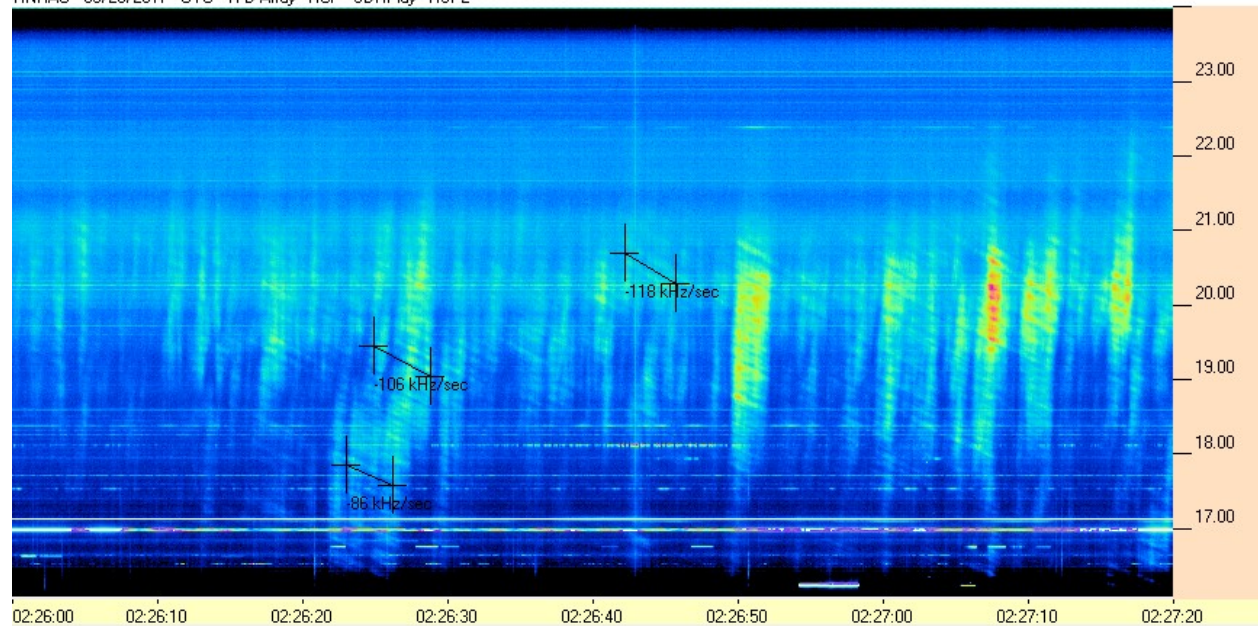
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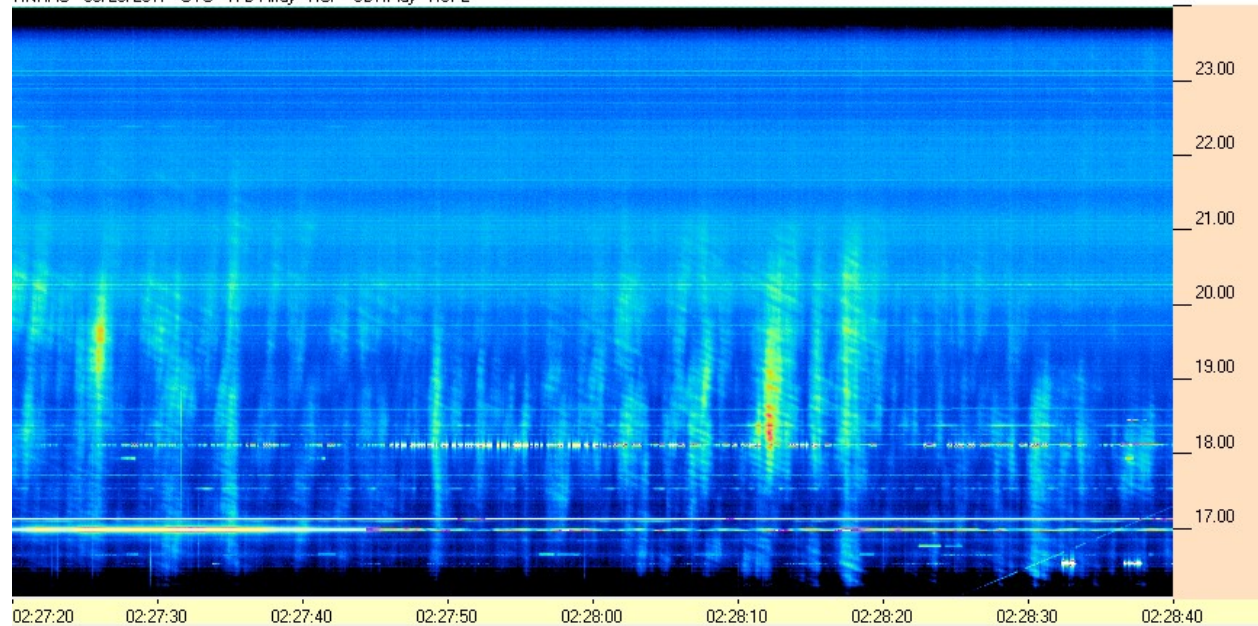
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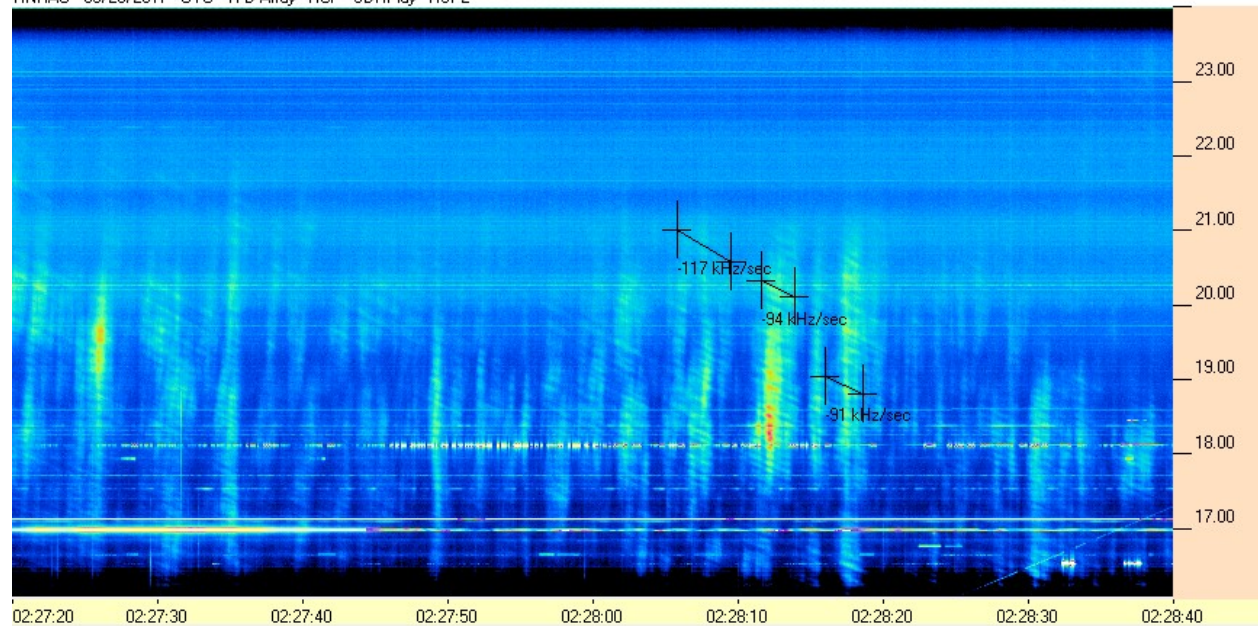
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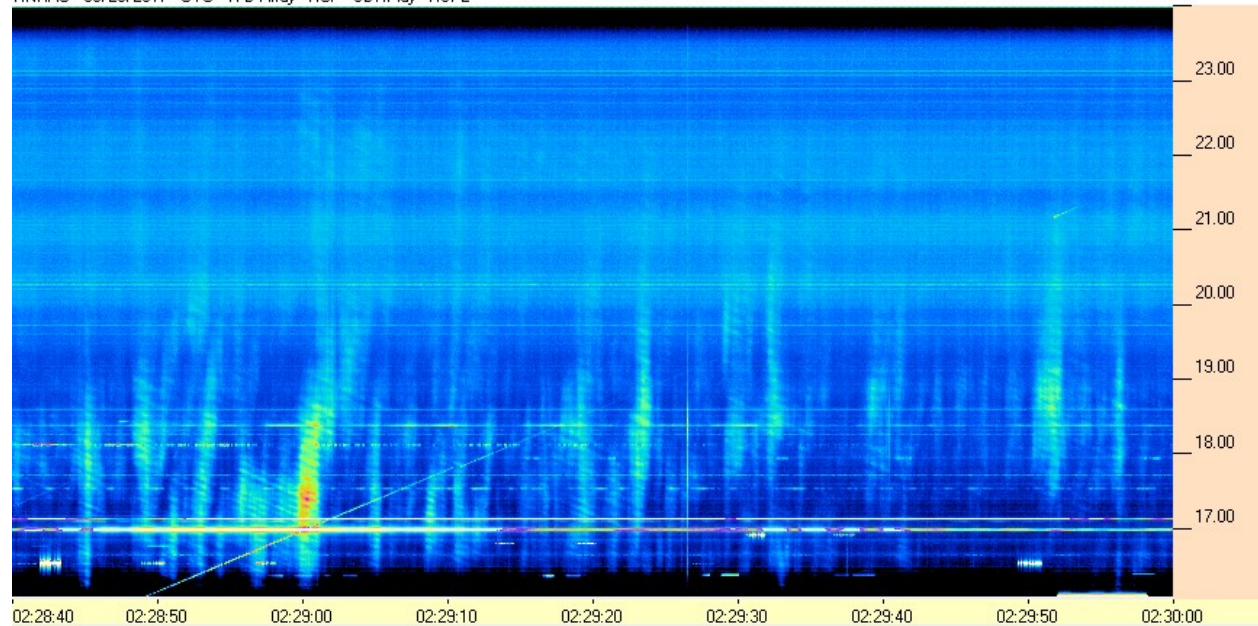
HNRAO - 05/20/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2



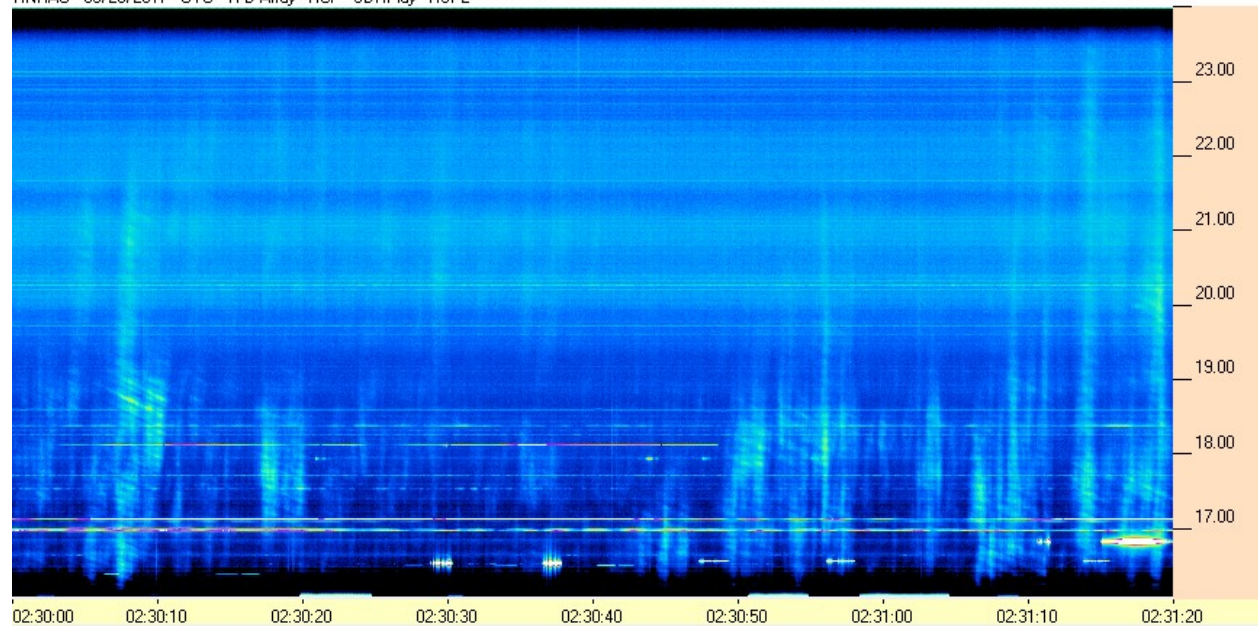
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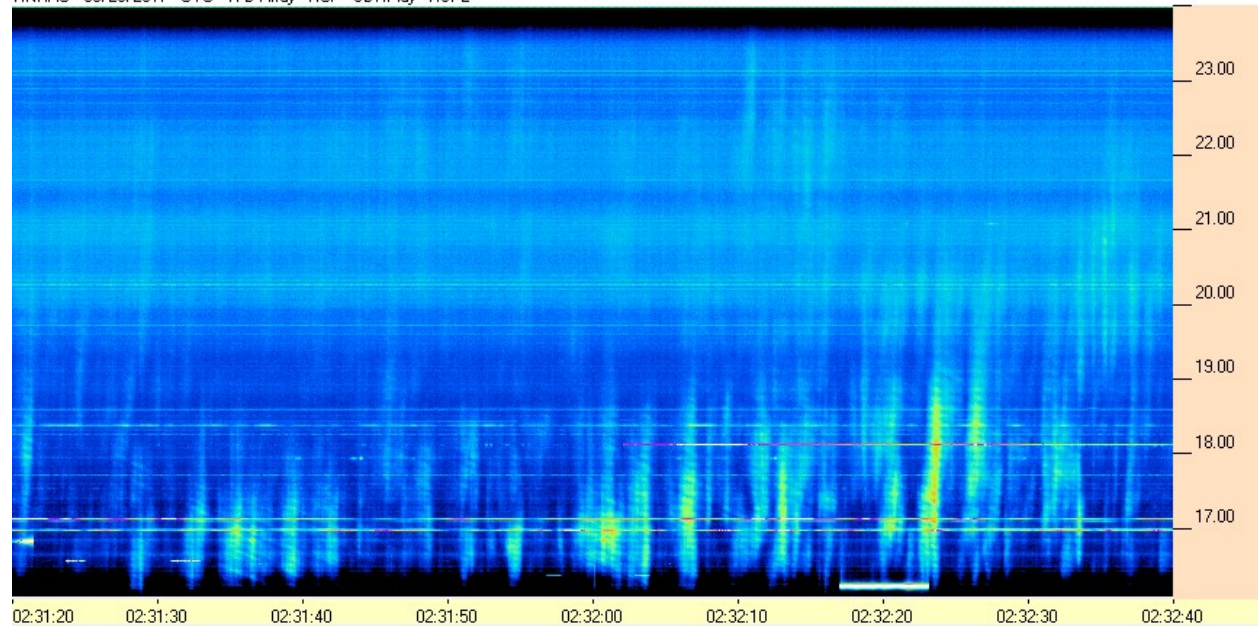
HNRAO - 05/20/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2



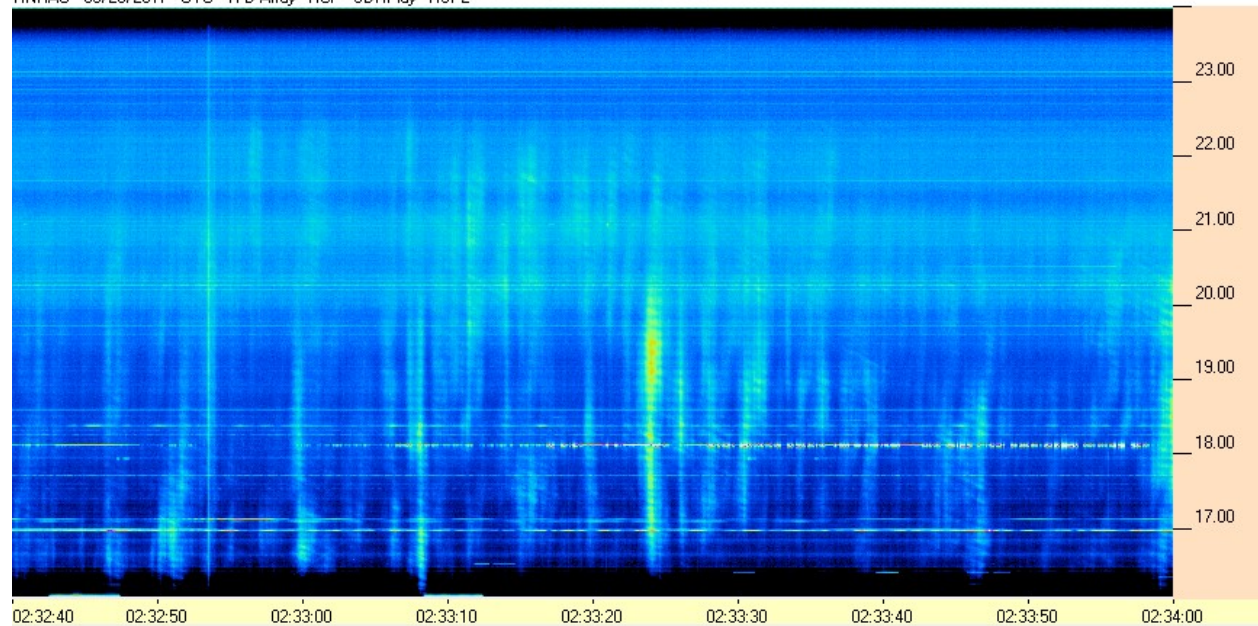
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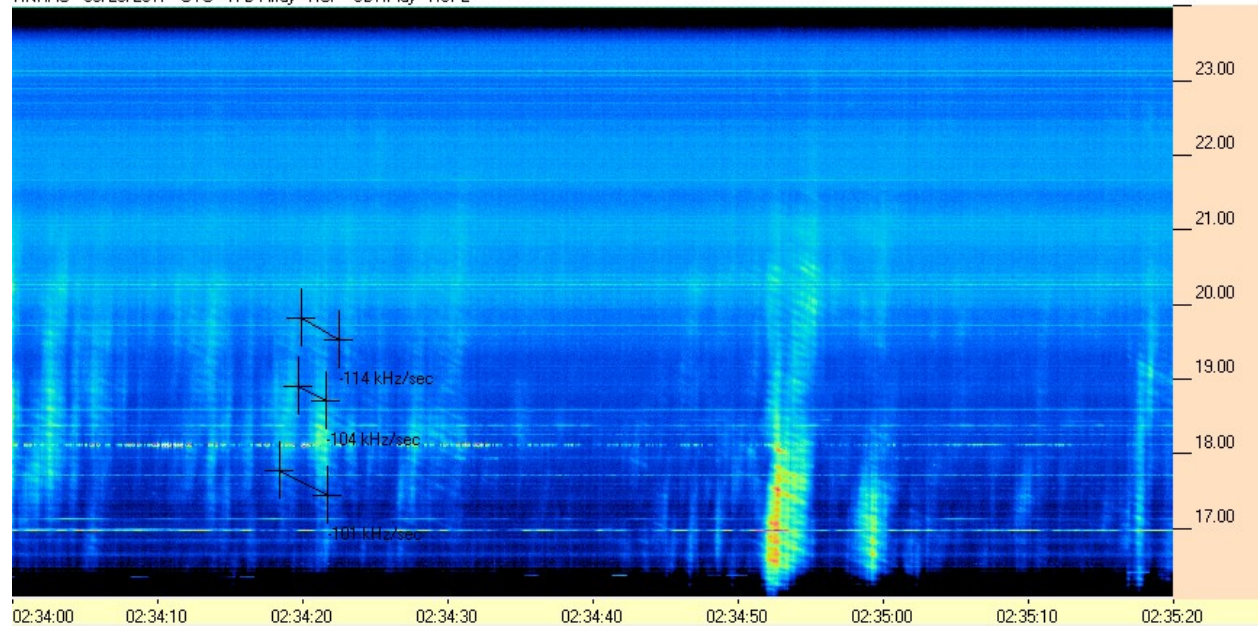
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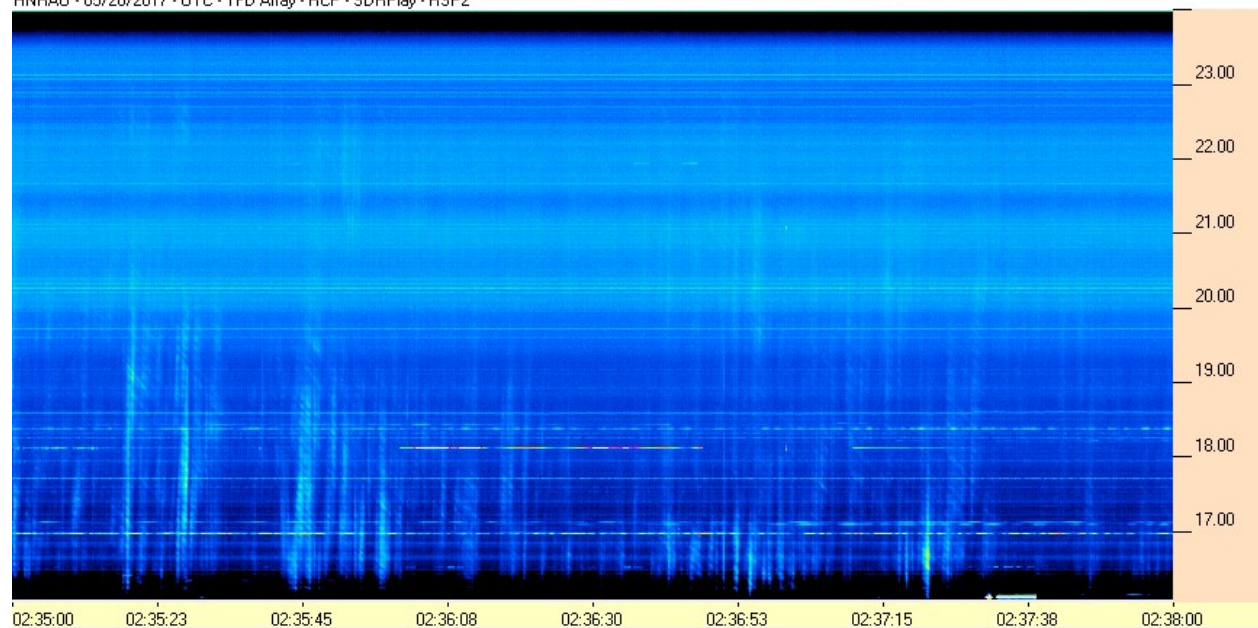
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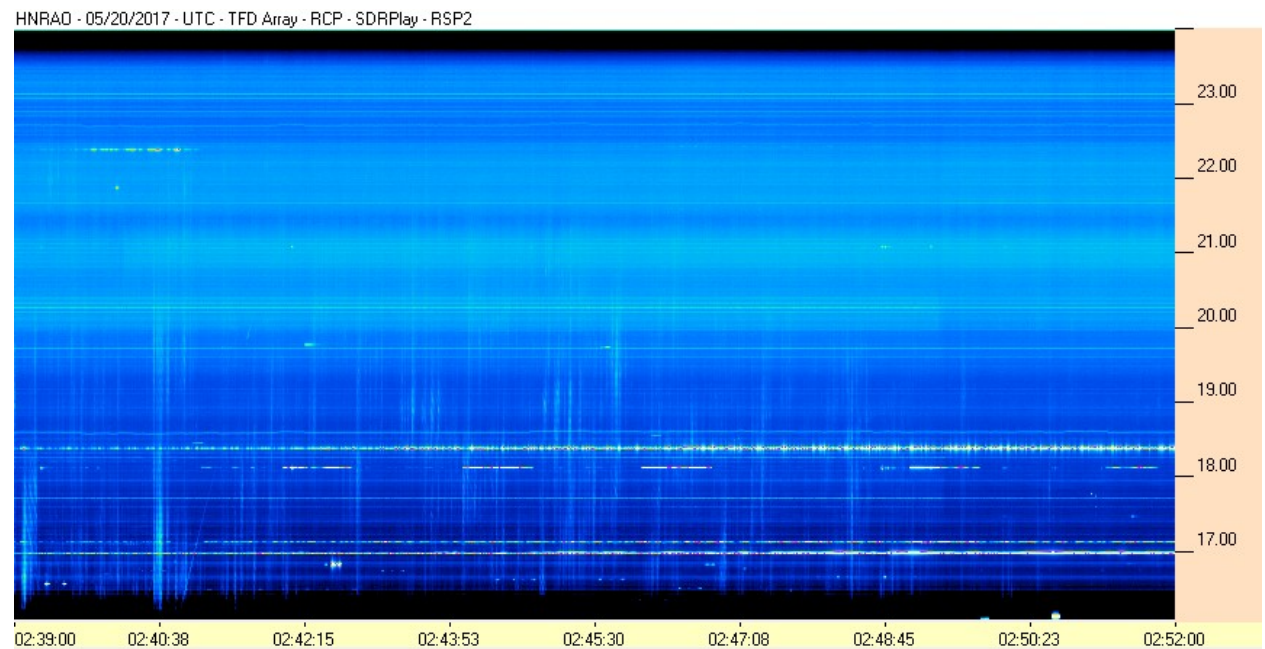
HNRAO - 05/20/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2



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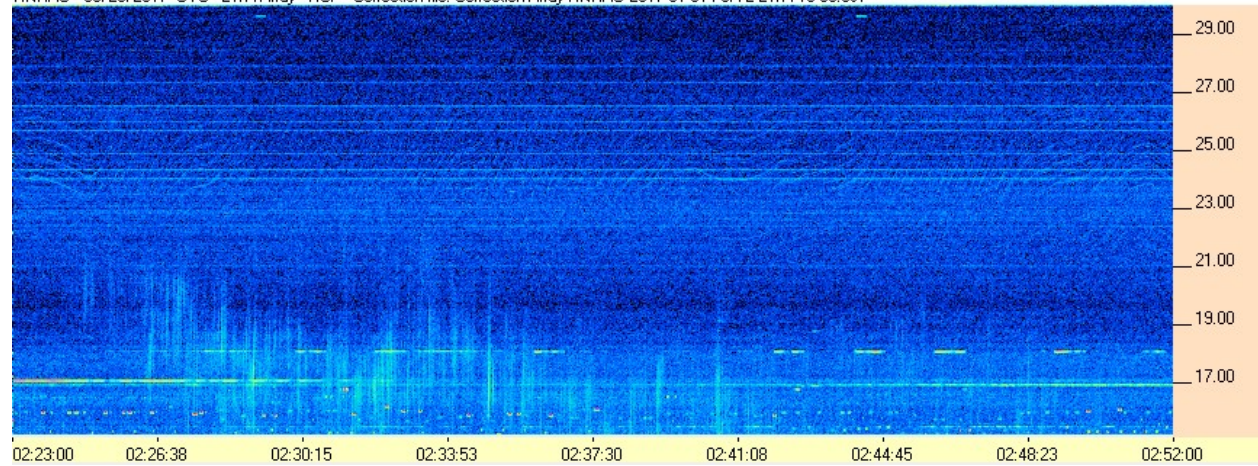


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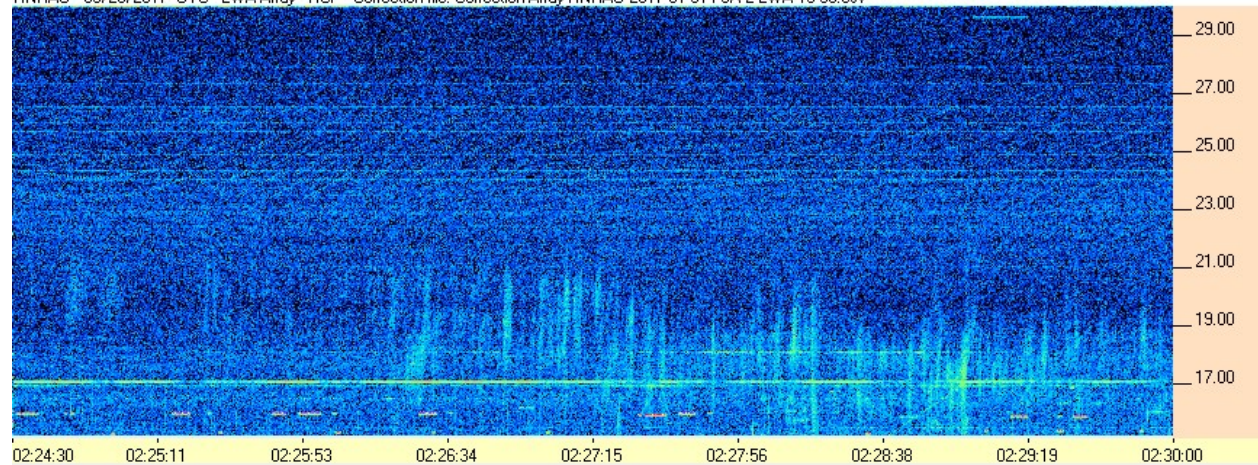


FSX-2/LWA Pair

HNRAO - 05/20/2017 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv



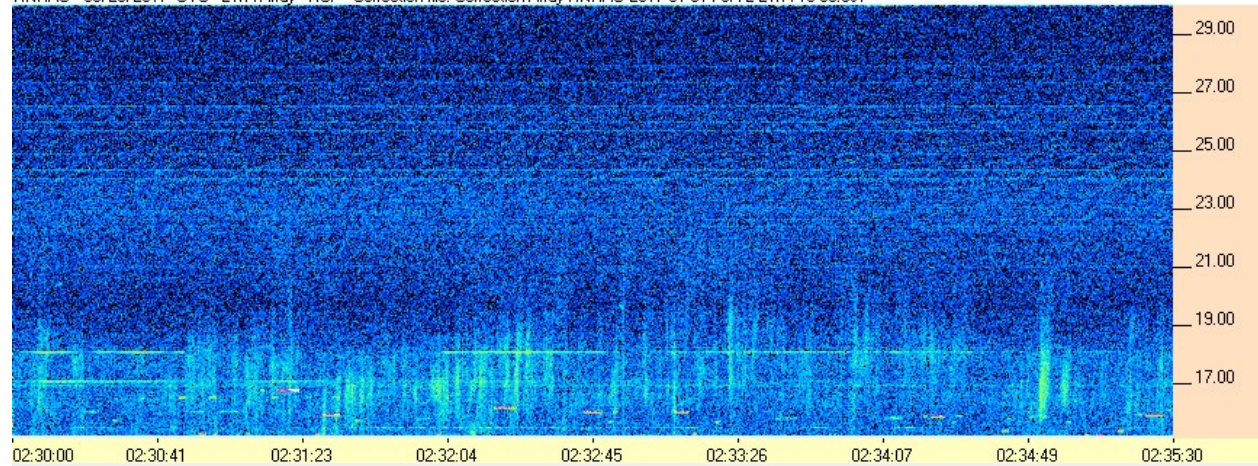
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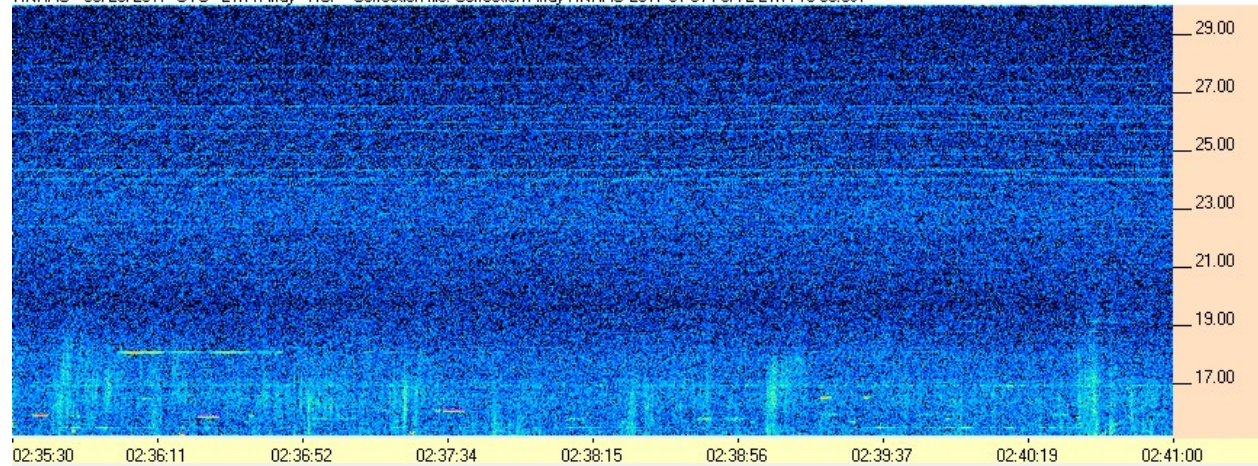
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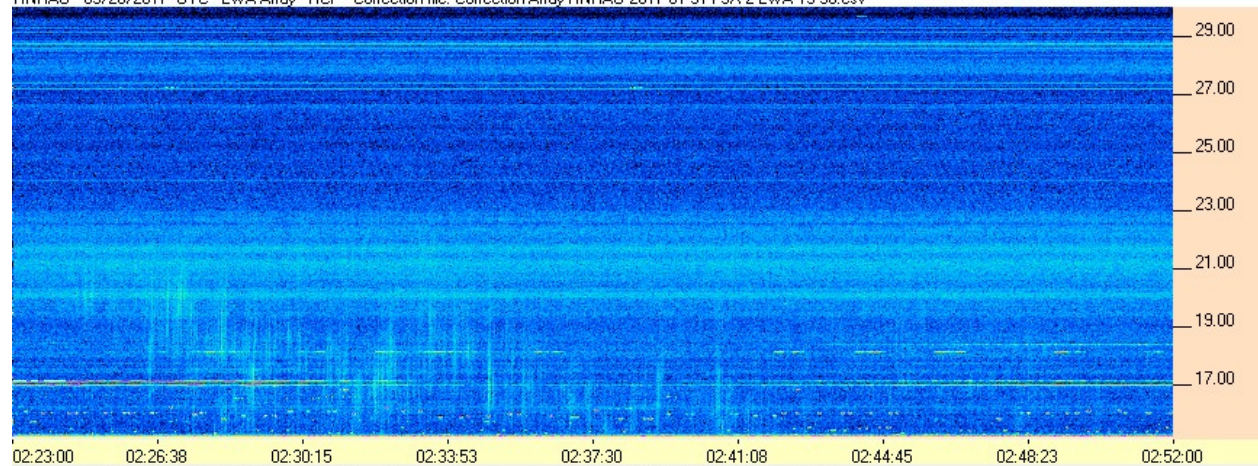


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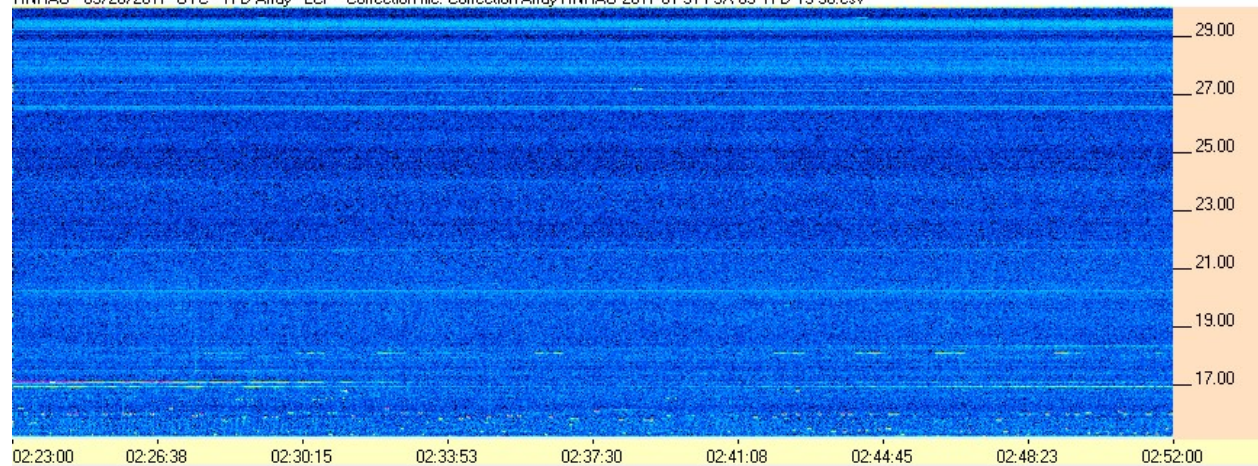


FSX-8S/TFD Pair

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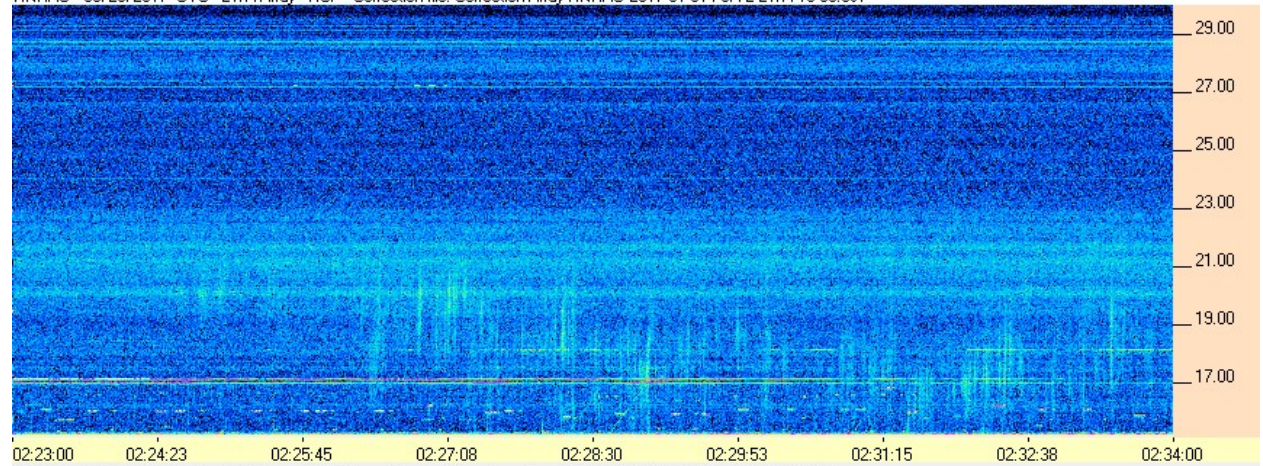
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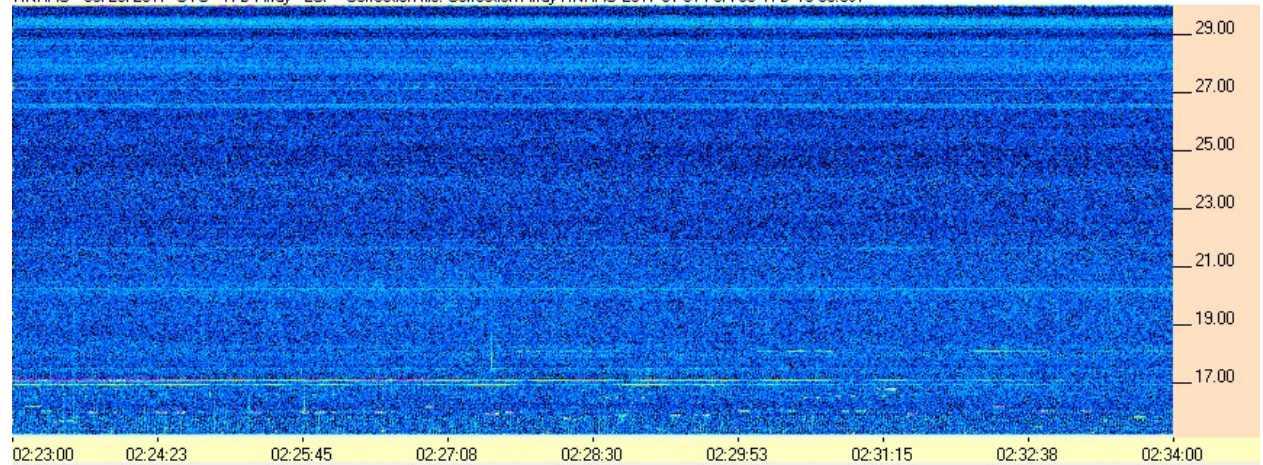
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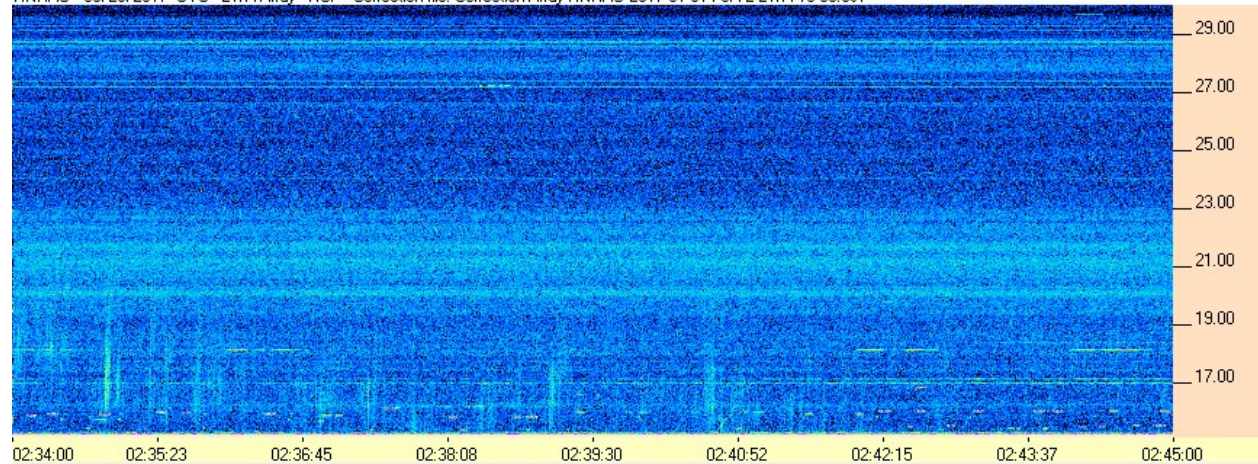
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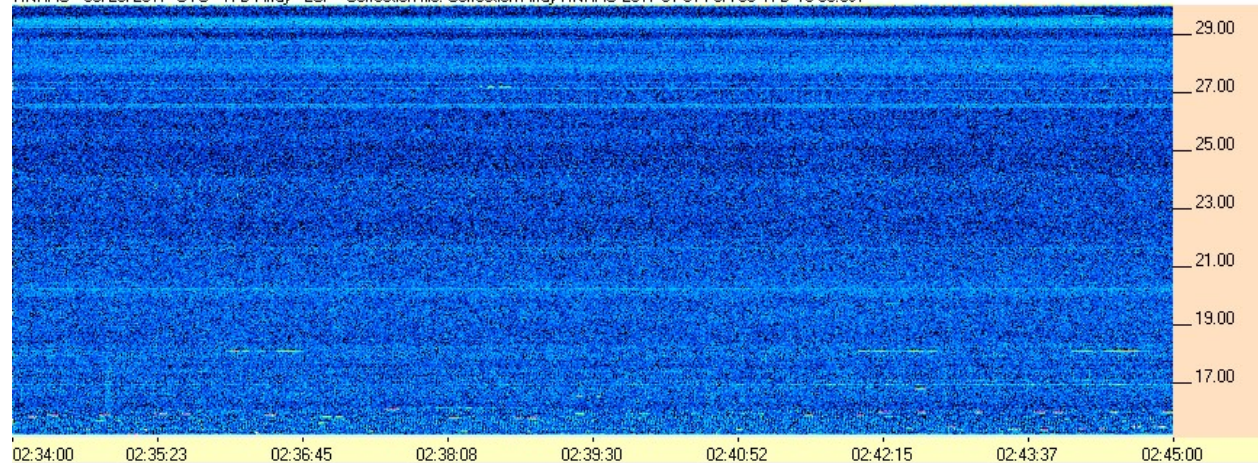
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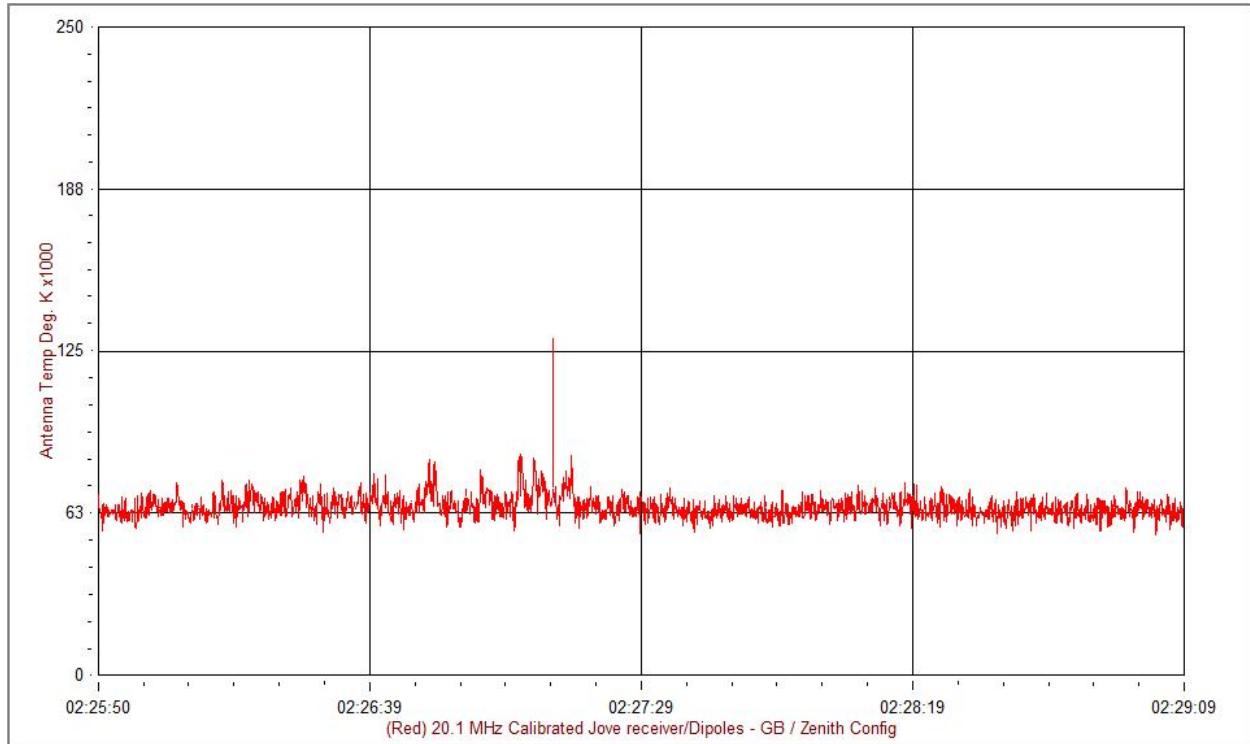
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Radio JOVE/Dipole Pair



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Measured Modulation Lanes of Storm

Time Start	Time Stop	Mid Time	Freq 1 - MHz	Freq 2 - MHz	Slope kHz/sec
5/20/2017 02:24	5/20/2017 02:24	5/20/2017 02:24	19400	19990	-113.5
5/20/2017 02:25	5/20/2017 02:25	5/20/2017 02:25	19006	19518	-102.3
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	19105	19302	-109.3
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	19046	19262	-98.4
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	17531	17806	-102
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	18987	19400	-106
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	20246	20659	-118.1
5/20/2017 02:26	5/20/2017 02:26	5/20/2017 02:26	17511	17786	-86.1
5/20/2017 02:28	5/20/2017 02:28	5/20/2017 02:28	19734	20069	-107.9
5/20/2017 02:28	5/20/2017 02:28	5/20/2017 02:28	20285	20600	-104.9
5/20/2017 02:28	5/20/2017 02:28	5/20/2017 02:28	20541	20974	-117
5/20/2017 02:28	5/20/2017 02:28	5/20/2017 02:28	20069	20285	-94.1
5/20/2017 02:28	5/20/2017 02:28	5/20/2017 02:28	18751	18987	-90.8
5/20/2017 02:34	5/20/2017 02:34	5/20/2017 02:34	18337	18554	-108.2
5/20/2017 02:34	5/20/2017 02:34	5/20/2017 02:34	19046	19302	-102.3
5/20/2017 02:34	5/20/2017 02:34	5/20/2017 02:34	19774	19479	-113.5
5/20/2017 02:34	5/20/2017 02:34	5/20/2017 02:34	18849	18652	-103.6
5/20/2017 02:34	5/20/2017 02:34	5/20/2017 02:34	17708	17373	-101.4
				Average	-104.41
				Median	-104.25