

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: July 16, 2019

Object: Jupiter – Io-A

Observer: Jim Brown

Start - Time UT:	0315	Planetary K-index:	0
Jupiter Altitude (deg):	26.7	Jupiter Azimuth (deg):	188.0
Jupiter CML:	213.0	Jupiter Io Phase:	260.4
Jupiter RA (hr/min):	16:57	Jupiter Dec (hr/min):	-22:10
Hour Angle (hr/min):	00:31	Polarization	RCP
Sun Altitude (deg):	-21.2	Sun Azimuth (deg):	328.9
Sun RA (hr/min):	07:33	Sun Dec (hr/min):	21:41

End – Time UT:	0334	De:	-2.7
Jupiter Altitude (deg):	26.1	Jupiter Azimuth (deg):	192.9
Jupiter CML:	224.49	Jupiter Io Phase	263.11
Hour Angle (hr/min):	00:50	Duration (min):	19
Sun Altitude (deg):	-22.9	Sun Azimuth (deg):	333.3
Max Frequency MHZ	24	Min Frequency MHZ	16

Data from Radio-Jupiter Pro 3.8.2

Observatory Configuration

Spectrograph Receiver	Antenna	Polarization	System Loss	Multicoupler	Multicoupler port	Calibrated
FSX-8S	TFD	RCP LCP	-8.35 dB -7.59 dB	#2 RCP #1 LCP	Port 1 +10dB Port 1 +10dB	Twice daily Twice daily
FSX-2	LWA	RCP/LCP manual select		N/A	N/A	N/A
SDRPlay RSP2	TFD	RCP	-8.35 dB	#2 RCP	Port 2 +3dB	Twice daily
SDRPlay RSP2	TFD	LCP	-7.59 dB	#1 LCP	Port 2 +3dB	Twice daily
JOVE I	TFD	RCP	-8.35 dB	#2 RCP	Port 3 +3 dB	04/20/2018
JOVE I	TFD	LCP	-7.59 dB	#1 LCP	Port 3 +3 dB	04/20/2018
JOVE II	Jove dipoles	Linear	-3.66 dB	#3 Linear	Port 4 +3 dB	4/19/2019
SDRPlay RSP1	Experimental*					

JOVE dipoles phased @ 32 degrees for 2018-2019 season

TFD array phased @ 35 degrees for 2018-2019 season

LWA antenna phased @ 35 degrees and orientation for observation: 45 degrees

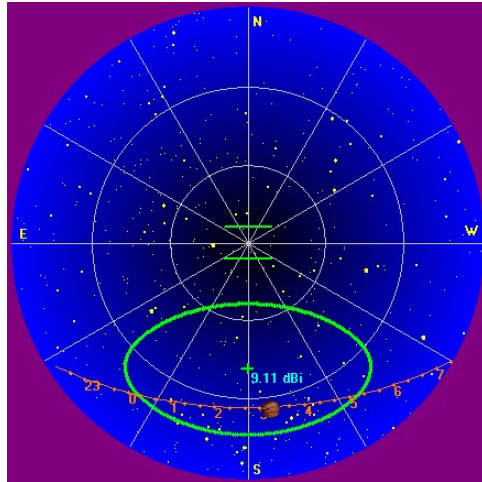
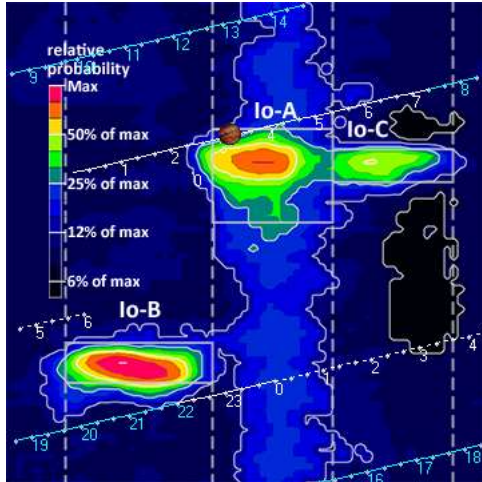
* Used for testing and evaluating antenna systems

Software Radio Sky Spectrograph 2.8.50

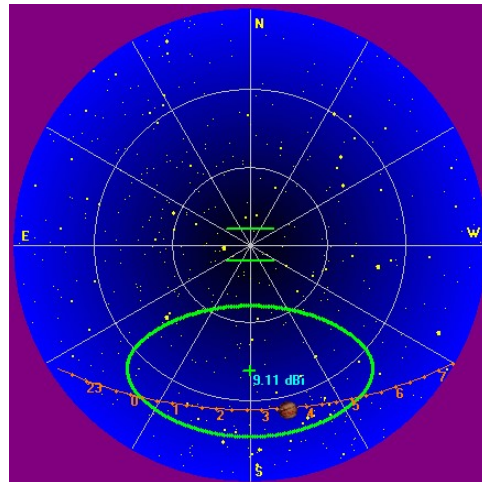
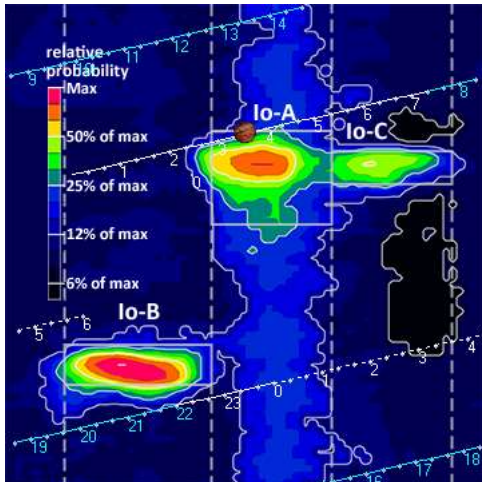
Red = Offline

All times are synced with a local GPS locked NTP server.

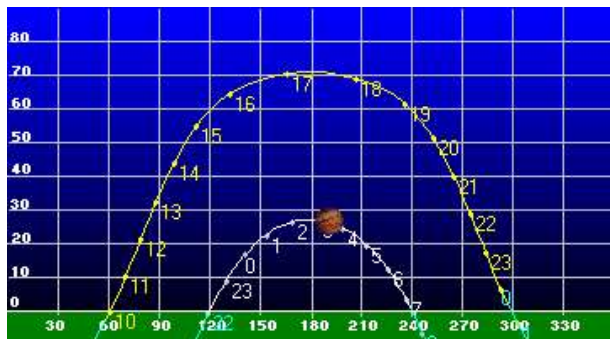
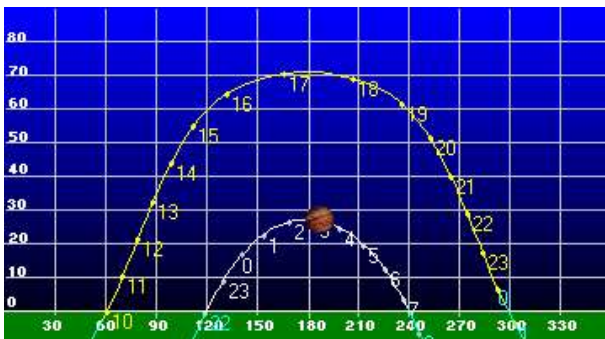
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Beginning of Pass



End of Pass



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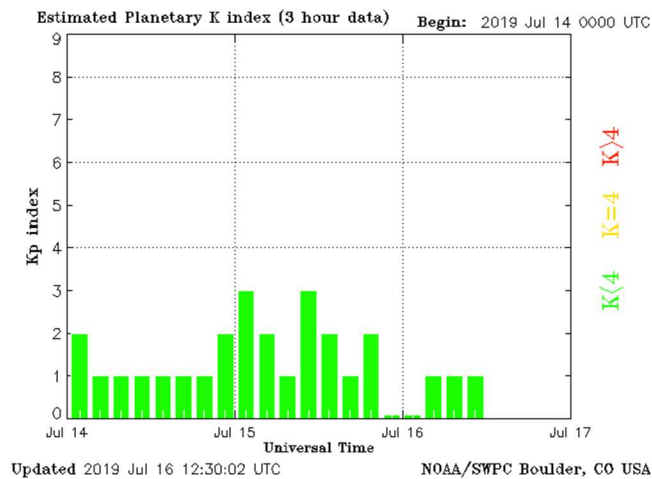


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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>

Modulation Lanes Designations*	
L - Burst	S-Burst
L1 - No lanes	S1 - No lanes
L2 - Positive slope	S2 - Positive slope
L3 - Cross hatched	S3 - Cross hatched
L4 - Negative slope	S4 - Negative slope

*Modulation Lanes in the Dynamic Spectra of Jovian L-bursts, J.J. Riihimaa, Astron. & Astrophys. 4, 1970



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All observatory spectrographs and receivers functioning normally. No known issues. Heavy RFI received with JOVE II system. RFI was approximately 260 kK at the beginning of the storm and rose to 520 kK by the end. Since this was a very weak storm, no data was observed with this telescope. Source of RFI unknown. Thunderstorms and lightning close enough to display in data. Didn't affect the data.

A weak Io-A storm with L-bursts. No S-bursts observed. Positive drift emissions with L4 modulation lanes. Modulation lanes began to "blur" at 0319:35 UT. Scintillation observed.

Nothing else of note.

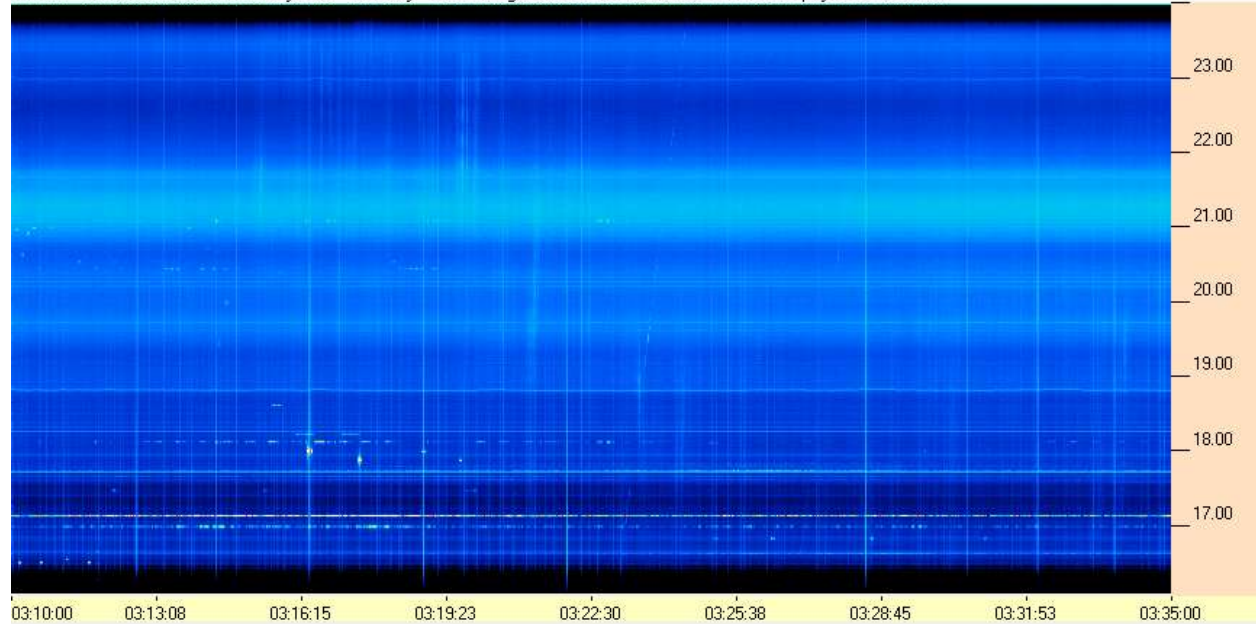
EOR

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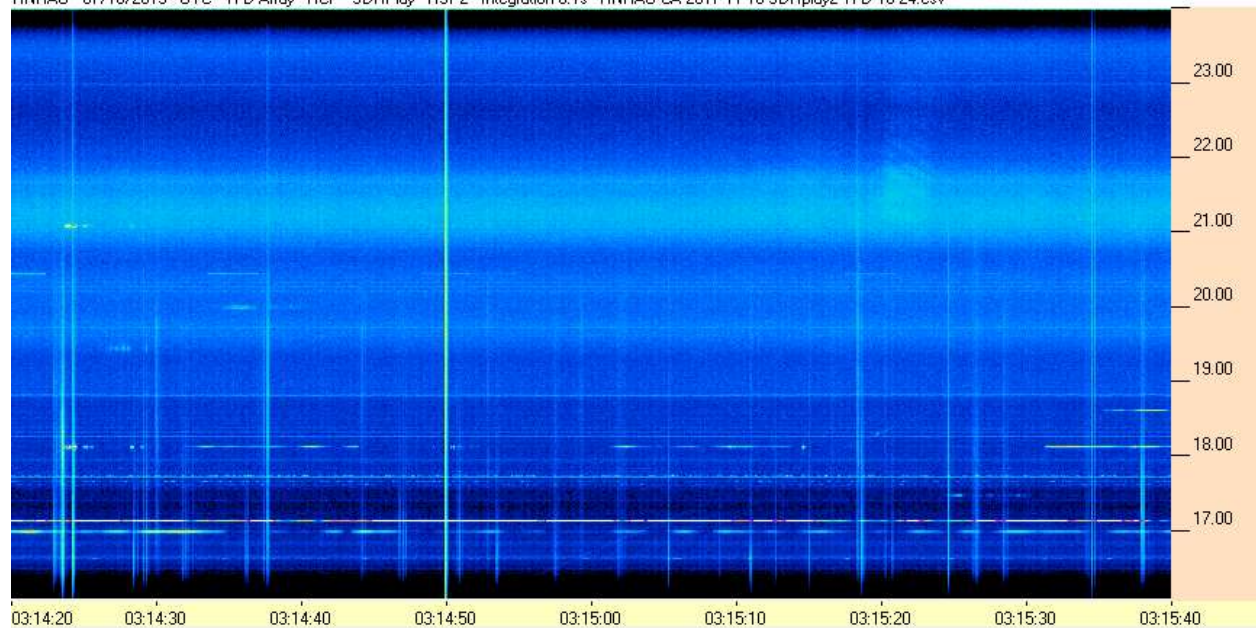


SDRPlay RSP2 / TFD Array

HNRAO - 07/16/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



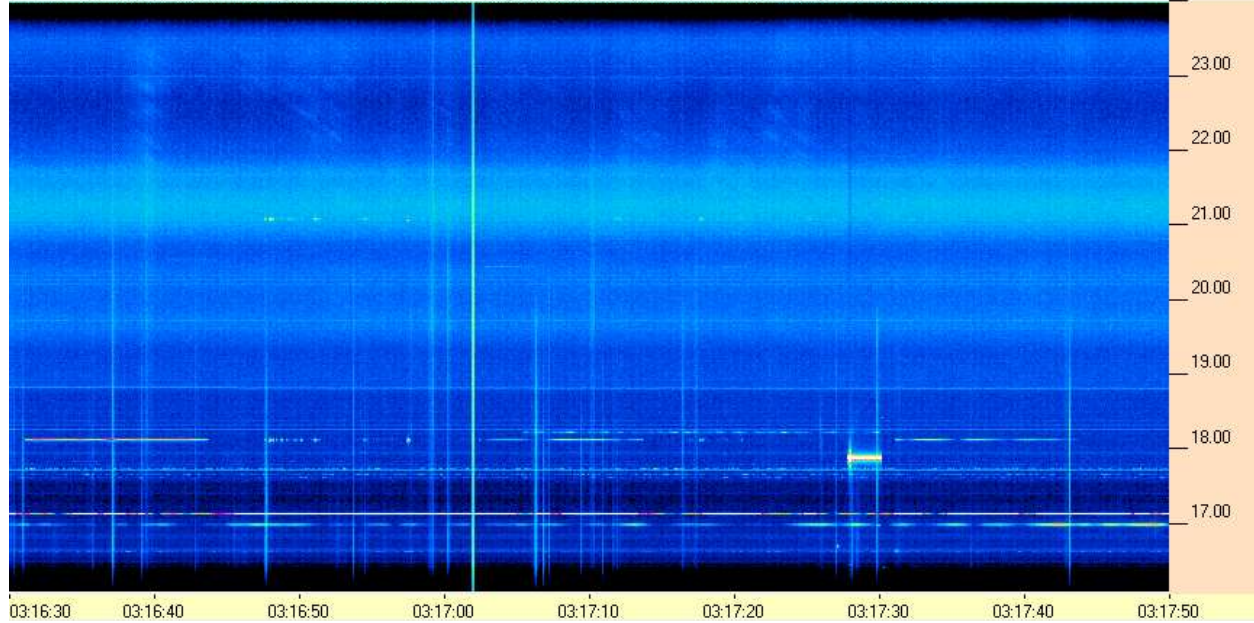
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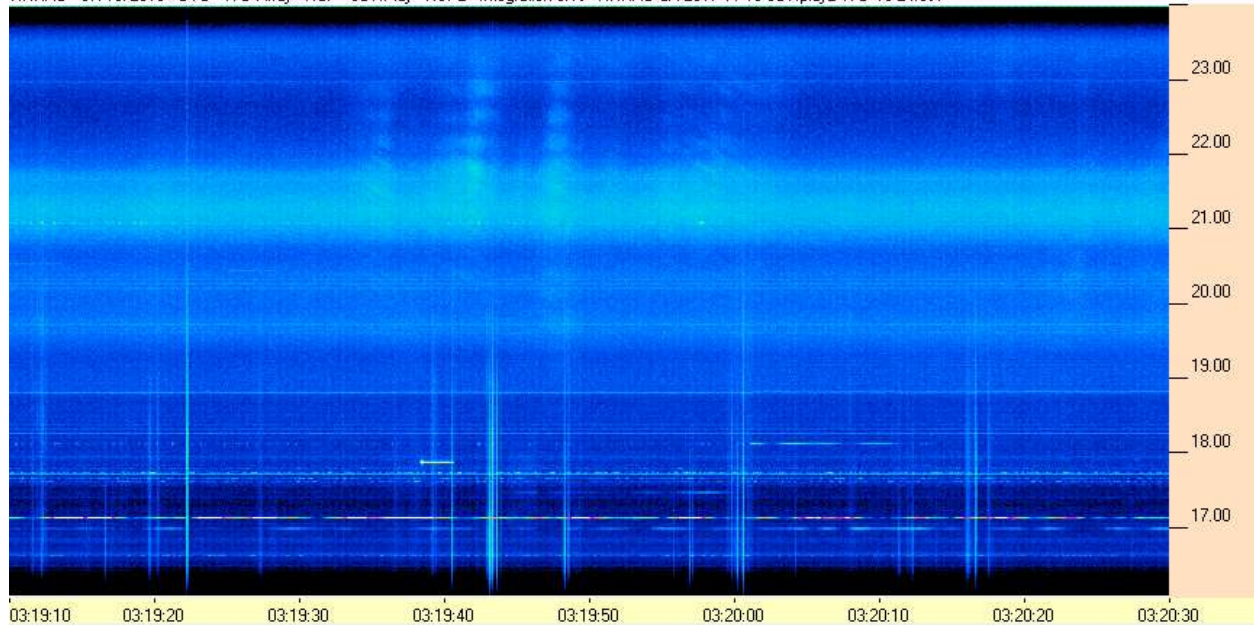
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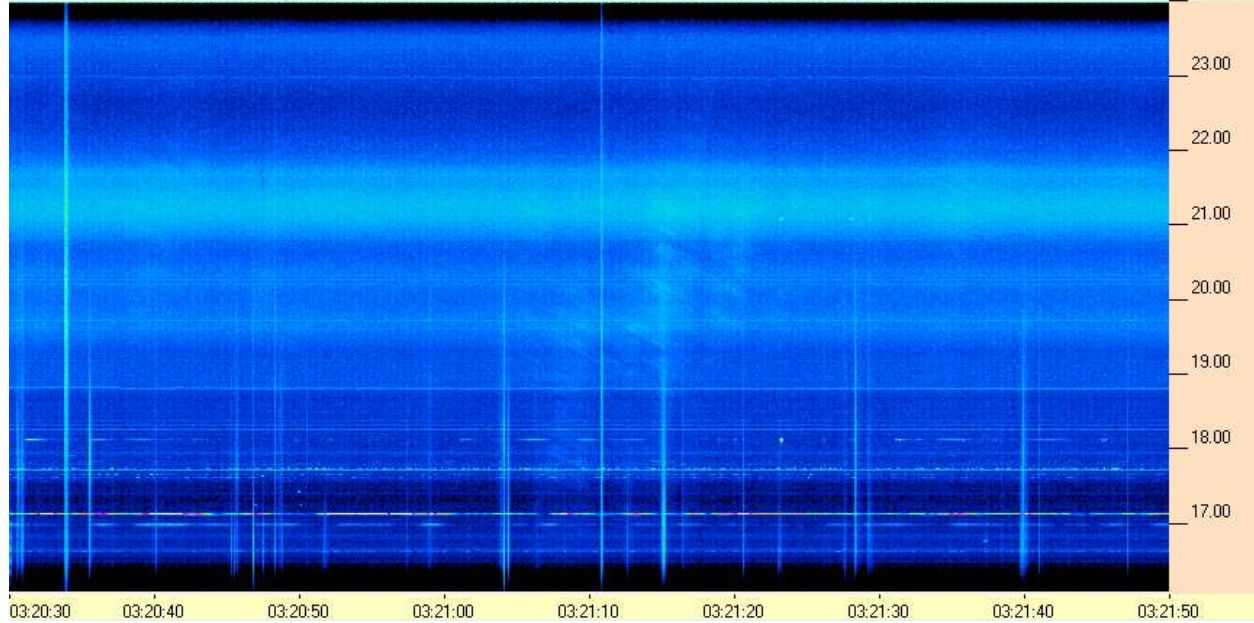
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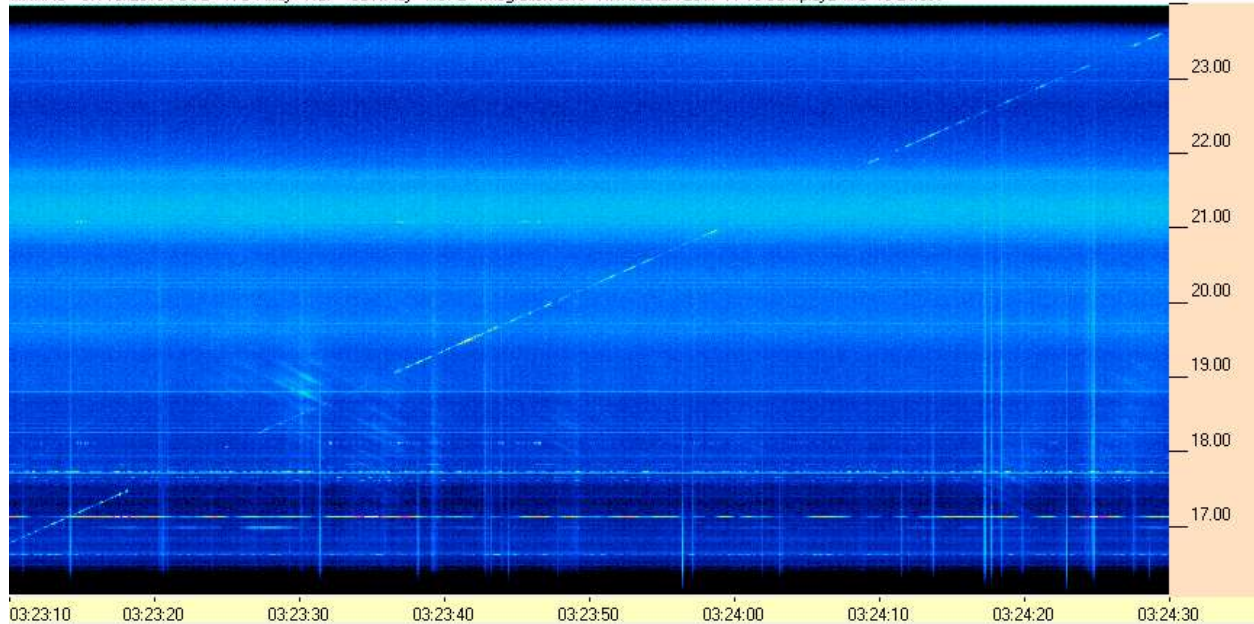
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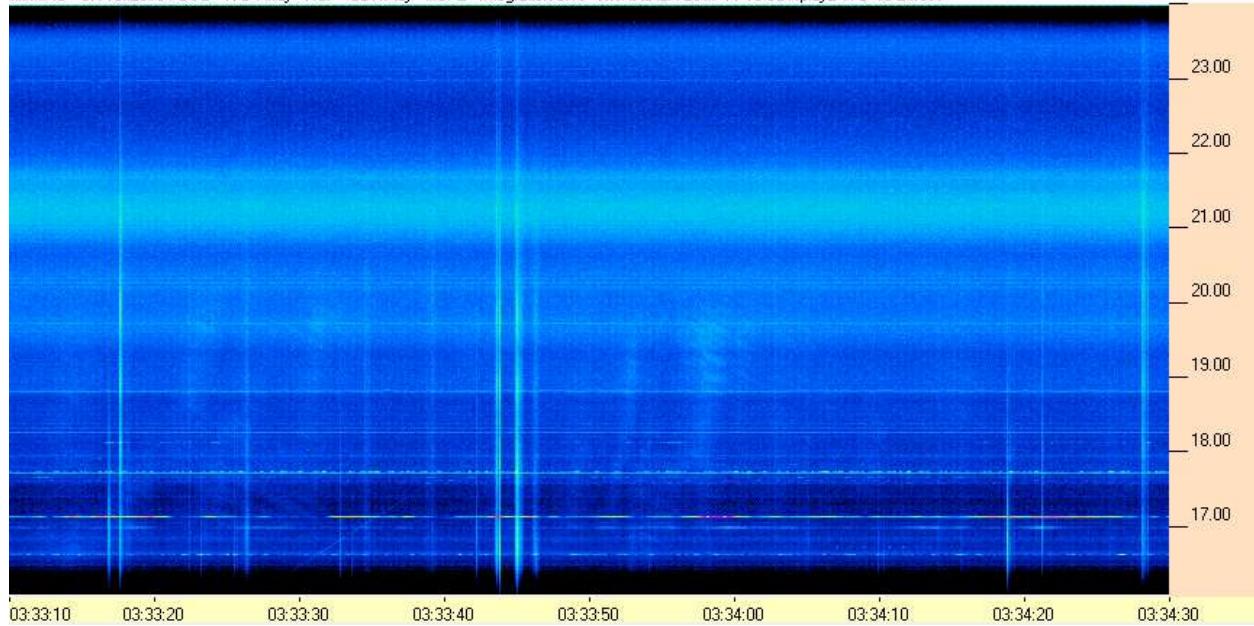
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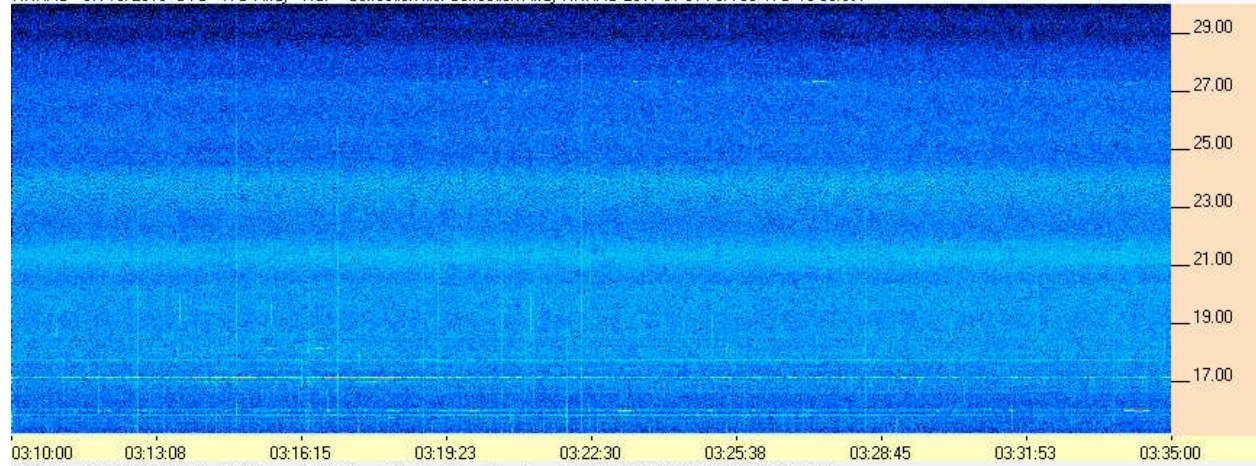


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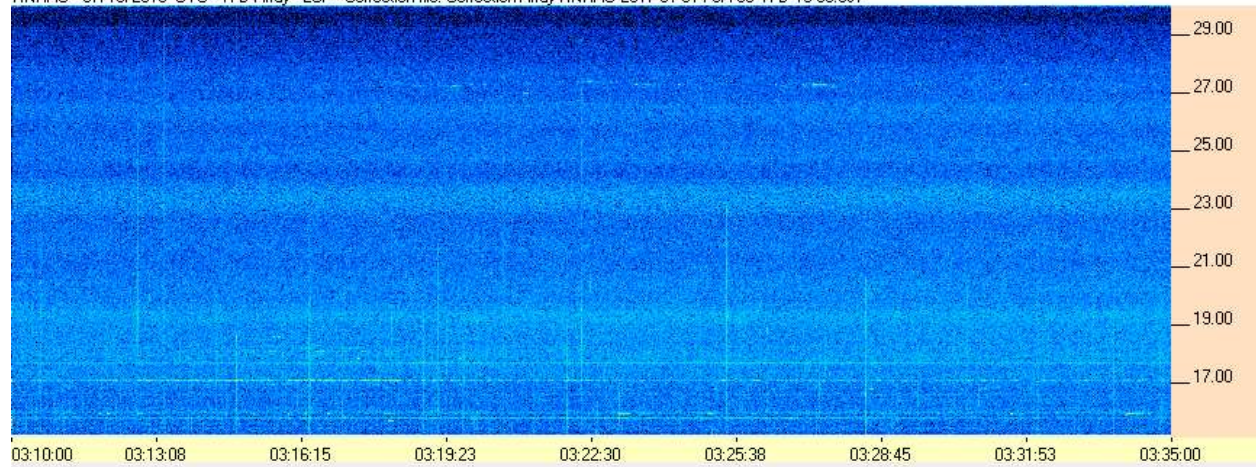


FSX-8S / TFD Array

HNRAO - 07/16/2019 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO - 07/16/2019 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

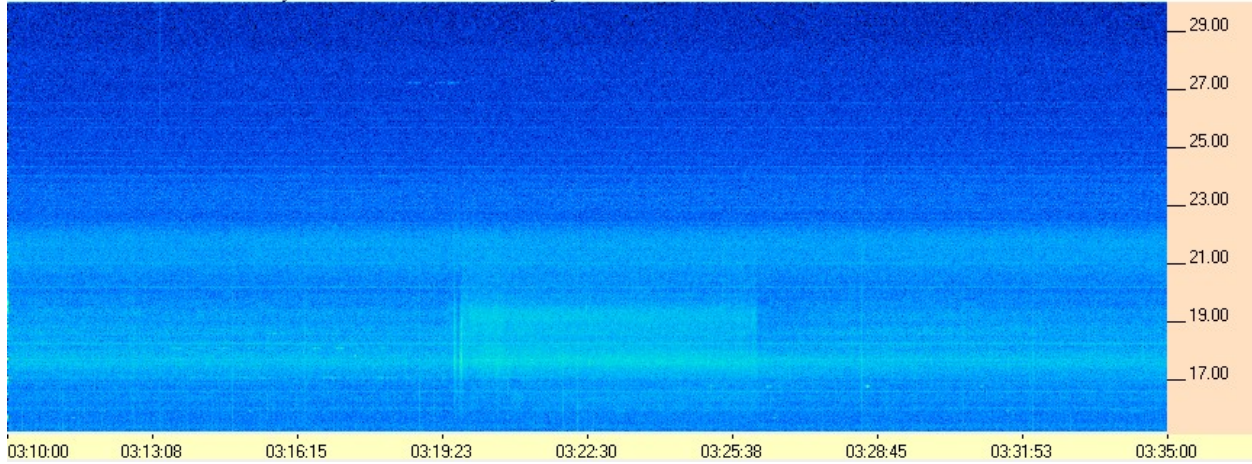


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FSX-2 / LWA

HNRAO - 07/16/2019 UTC - LWA Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-2 LWA 15-30.csv



Radio JOVE II / JOVE Dipole array

