

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: August 21, 2019

Object: Jupiter – Io-A

Observer: JB

Start - Time UT:	2212:30	Planetary K-index:	0
Jupiter Altitude (deg):	21.1	Jupiter Azimuth (deg):	149.8
Jupiter CML:	198.5	Jupiter Io Phase:	186.81
Jupiter RA (hr/min):	15:52	Jupiter Dec (hr/min):	-22:10
Hour Angle (hr/min):	-02:02	Polarization	RCP
Sun Altitude (deg):	20.5	Sun Azimuth (deg):	269.2
Sun RA (hr/min):	09:56	Sun Dec (hr/min):	12:37

End – Time UT:	2345:56	De:	-2.6
Jupiter Altitude (deg):	26.8	Jupiter Azimuth (deg):	172.7
Jupiter CML:	255.03	Jupiter Io Phase	200.07
Hour Angle (hr/min):	-00:28	Duration (min):	93
Sun Altitude (deg):	02.9	Sun Azimuth (deg):	284.1
Max Frequency MHz	20	Min Frequency MHz	16

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 #1	TFD	RCP	-8.35 dB	#2 RCP	Port 2 +3dB	Twice daily
SDRPlay RSP2 #2	TFD	LCP	-7.59 dB	#1 LCP	Port 2 +3dB	Twice daily
JOVE II HNRAO #2	Jove dipoles	Linear	-3.66 dB	#3 Linear	Port 4 +3 dB	7/19/2019

Radio JOVE dipoles phased @ 32 degrees for 2018-2019 season

Typinski AN-TFD-24-4 array phased @ 35 degrees for 2018-2019 season

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

Radio Sky Spectrograph software version 2.9.26

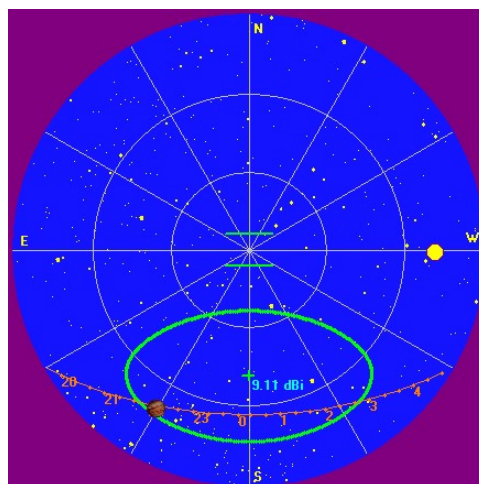
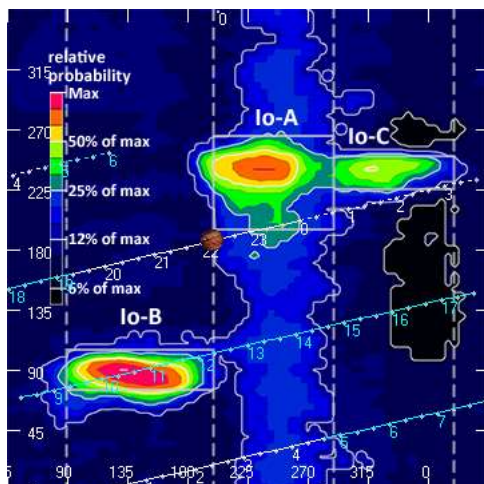
Radio-SkyPipe software version 2.7.33

Radio-Jupiter Pro software version 3.8.2

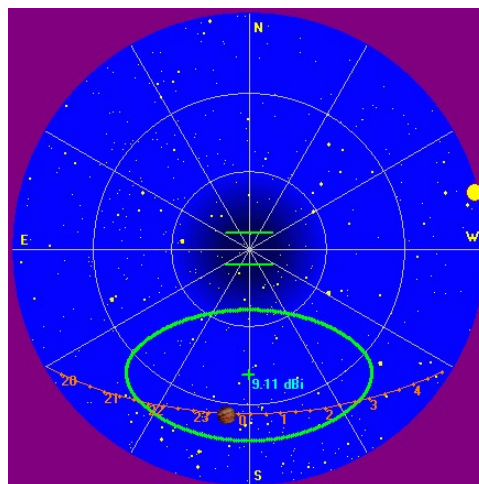
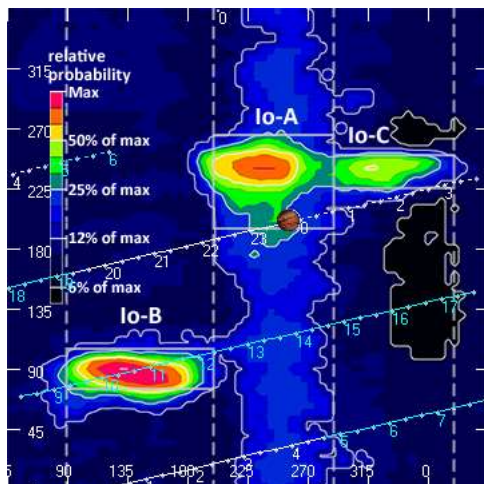
Network Time Server GpsNtp-Pi, Reeve Engineering

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

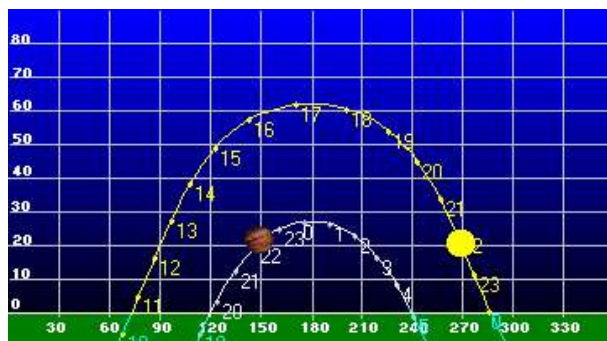
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Beginning of Pass



End of Pass



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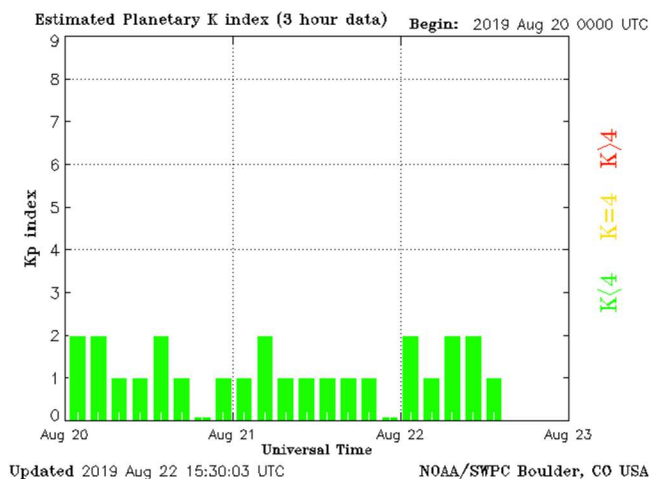


MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360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

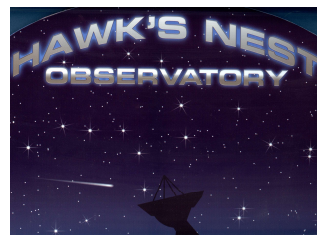
<https://www.radiosky.com/jupmodes.html>

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 spectrographs and antennas functioning normally. No known issues. RFI in spectrographs was moderate. Bright vertical lines are foreign broadcast stations and bright horizontal lines / bands are from an unidentified RFI source. Even though emissions never rose higher than 20 MHz, RFI from unknown source made the SkyPipe data unusable.

This Io-A storm was very weak. L-bursts were observed. Most emissions were barely above GB as observed here. There were L4 modulation lanes which made identification possible of the few emission bursts that there were.

Nothing else of note.

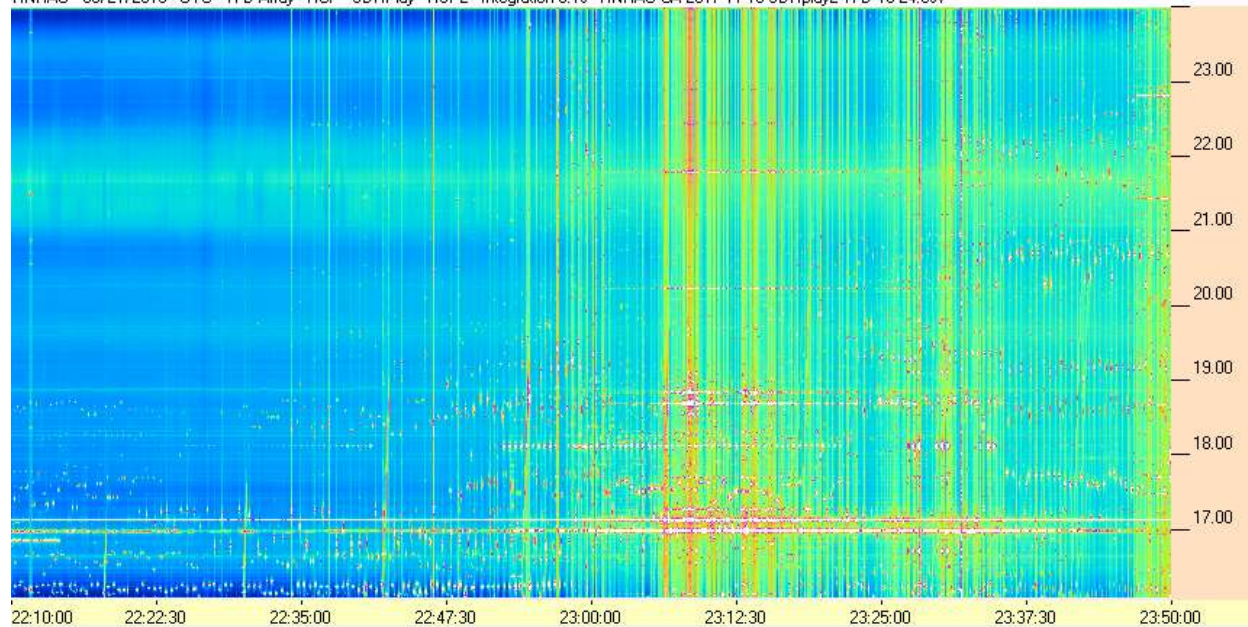
EOR

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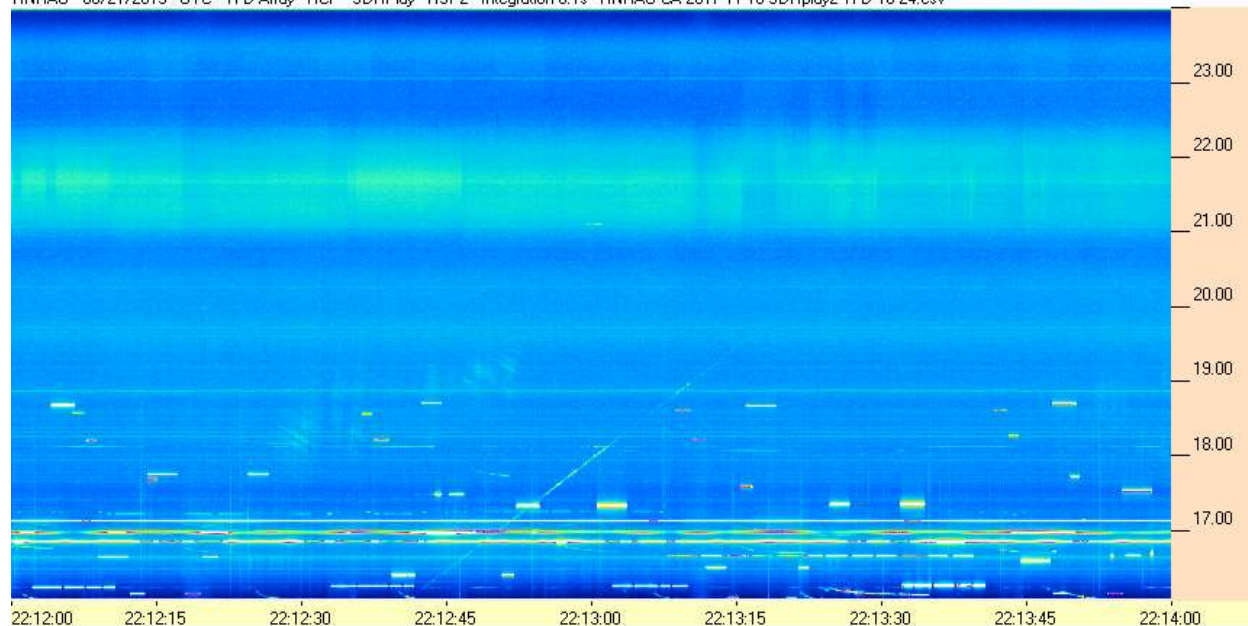


SDRPlay RSP2 / TFD Array

HNRAO - 08/21/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



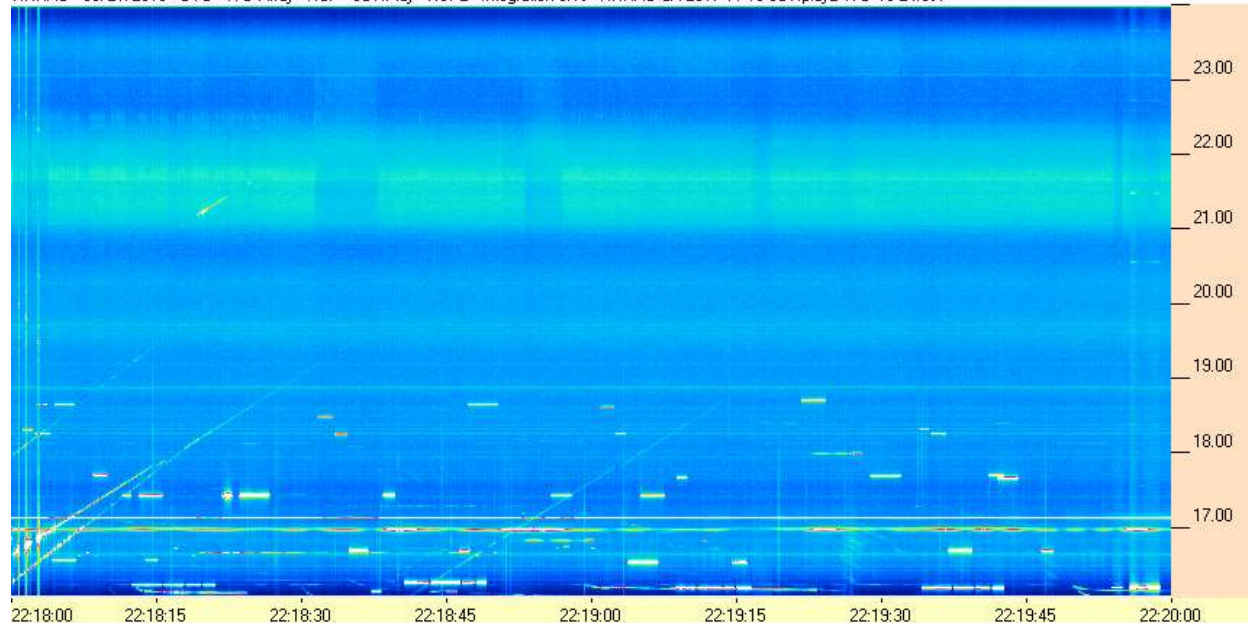
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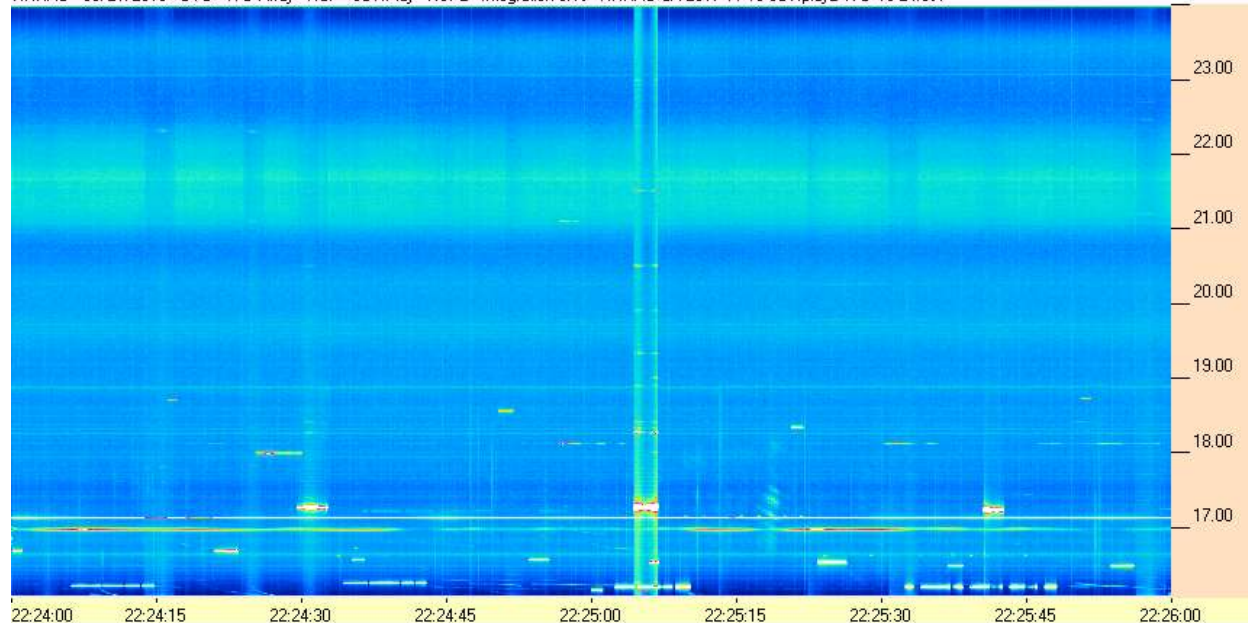
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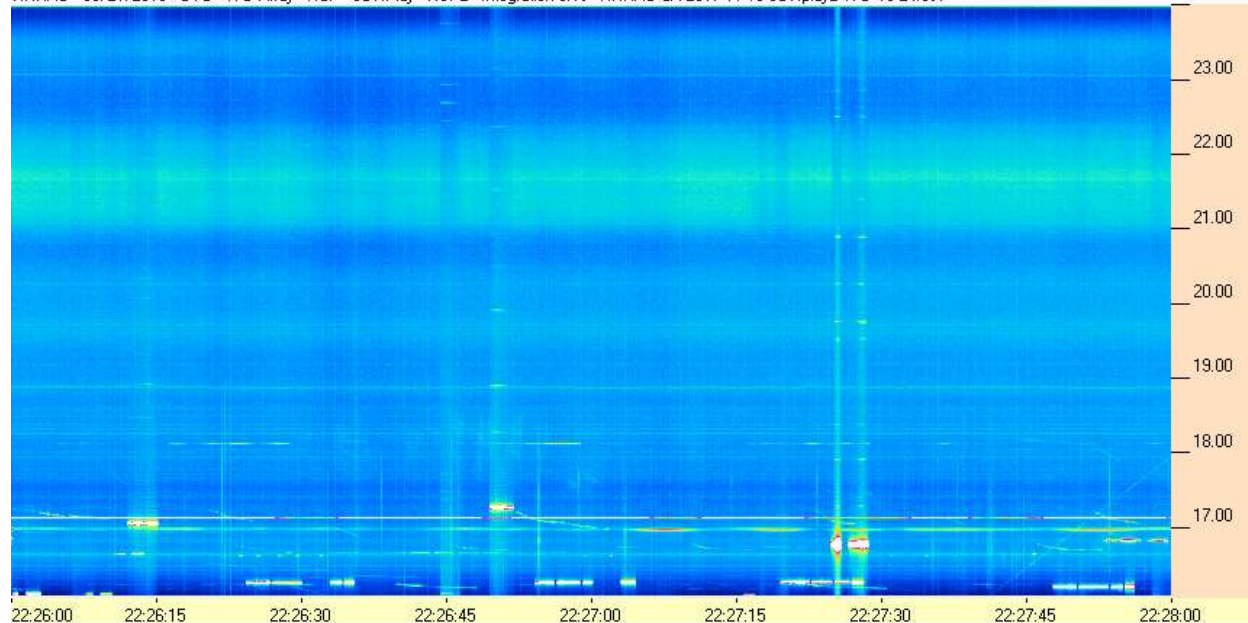
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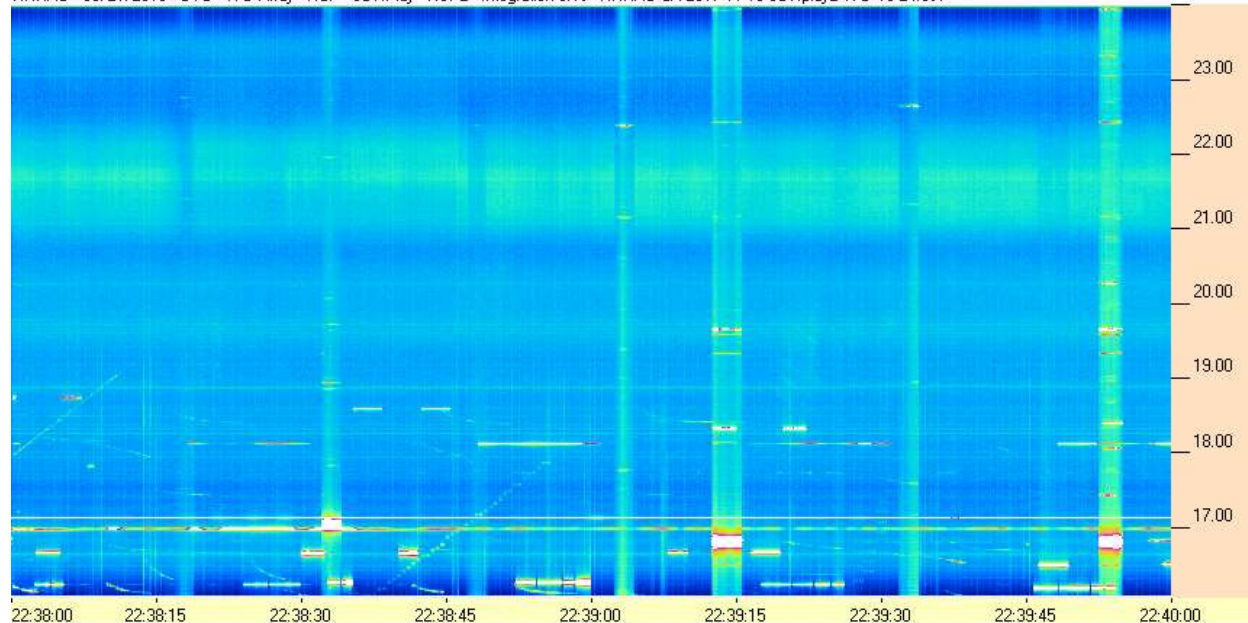
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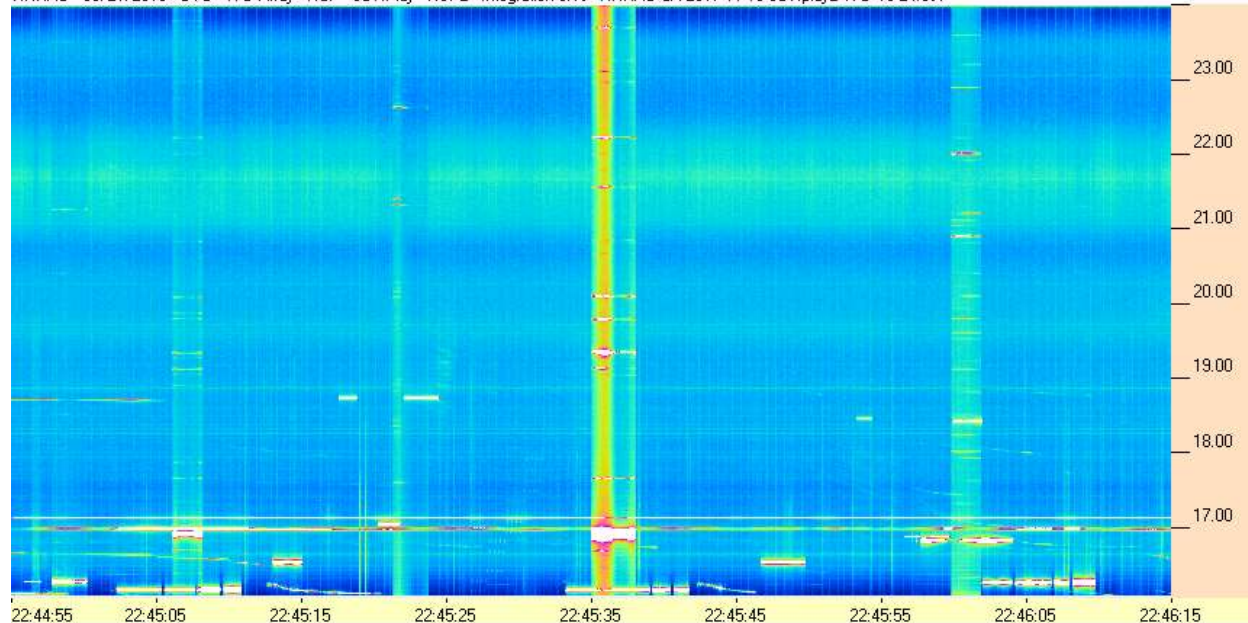
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JOVE II / JOVE Dipole Array

