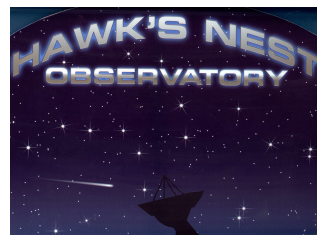


HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: April 6, 2019

Object: Jupiter – Io-A

Observer: Unattended

Start - Time UT:	0633	Planetary K-index:	1
Jupiter Altitude (deg):	10.6	Jupiter Azimuth (deg):	132.7
Jupiter CML:	237.72	Jupiter Io Phase:	264.39
Jupiter RA (hr/min):	17:34	Jupiter Dec (hr/min):	-22:41
Hour Angle (hr/min):	-03:26	Polarization	RCP
Sun Altitude (deg):	-40.5	Sun Azimuth (deg):	025.2
Sun RA (hr/min):	00:53	Sun Dec (hr/min):	05:37

End – Time UT:	0652	De:	-2.8
Jupiter Altitude (deg):	13.2	Jupiter Azimuth (deg):	136.4
Jupiter CML:	249.18	Jupiter Io Phase	249.07
Hour Angle (hr/min):	-03:07	Duration (min):	19
Sun Altitude (deg):	-38.8	Sun Azimuth (deg):	030.9
Max Frequency MHZ	22	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	08/21/2018
SDRPlay RSP1	Experimental*					

JOVE dipoles phased @ 32 degrees for 2017-2018 season

TFD array phased @ 35 degrees for 2017-2018 season

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

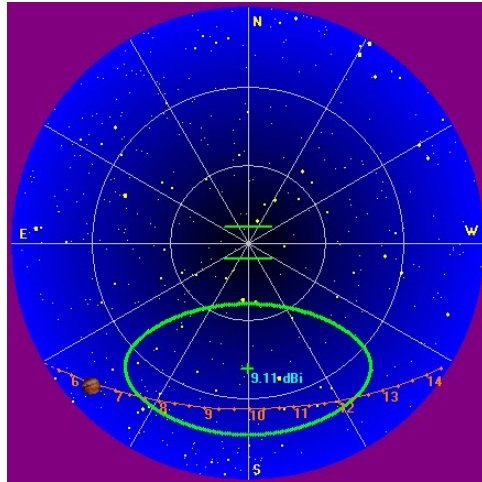
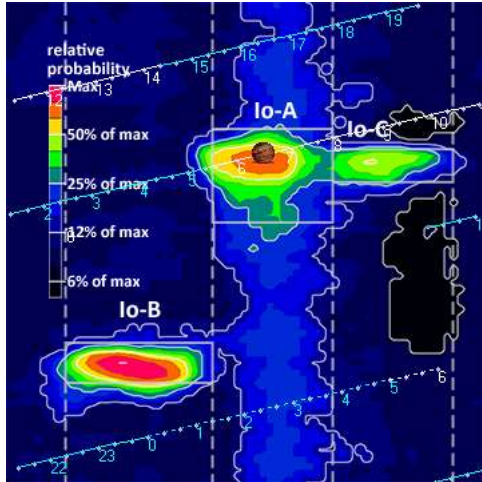
* Used for testing and evaluating antenna systems

Software Radio Sky Spectrograph 2.8.50

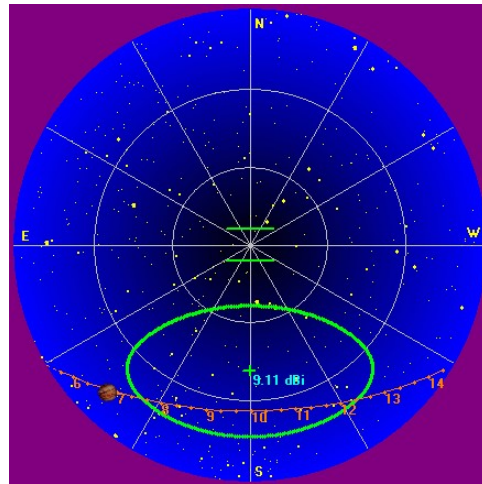
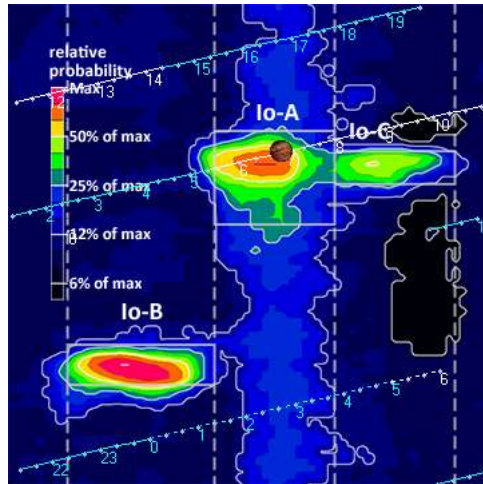
Red = Offline

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

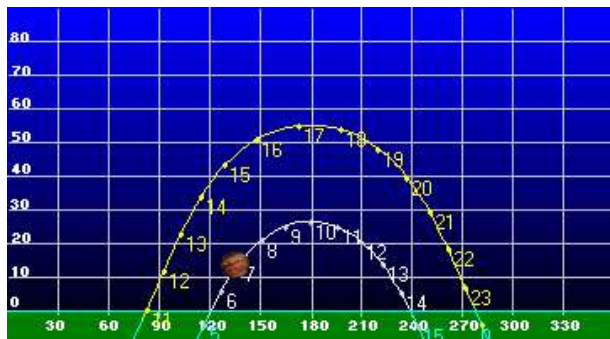
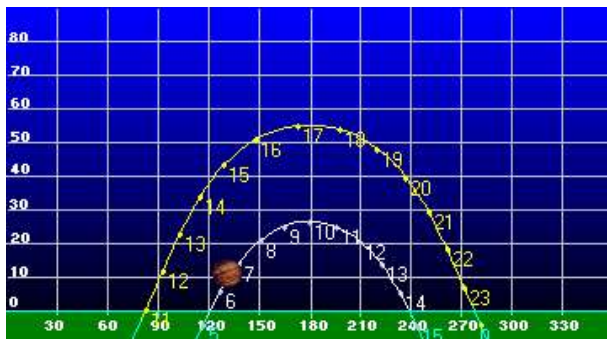
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Beginning of Pass



End of Pass



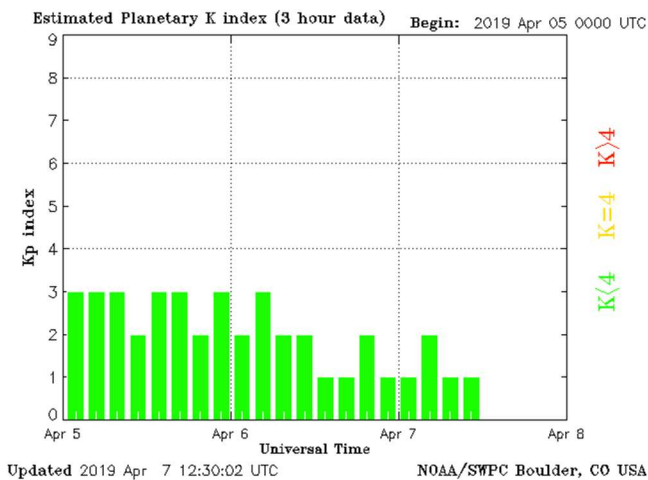
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



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	



HNRAO Observing Log
40.673181 N – 80.437885 W
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A brief, and weak, Io-A storm. Emissions at or slightly above GB. Negative drift L-burst emissions with L4 modulation lanes.

All spectrographs were operational during this storm. The SDRPlay RSP2/TFD array spectrograph was the only instrument to record the event.

Nothing else of note.

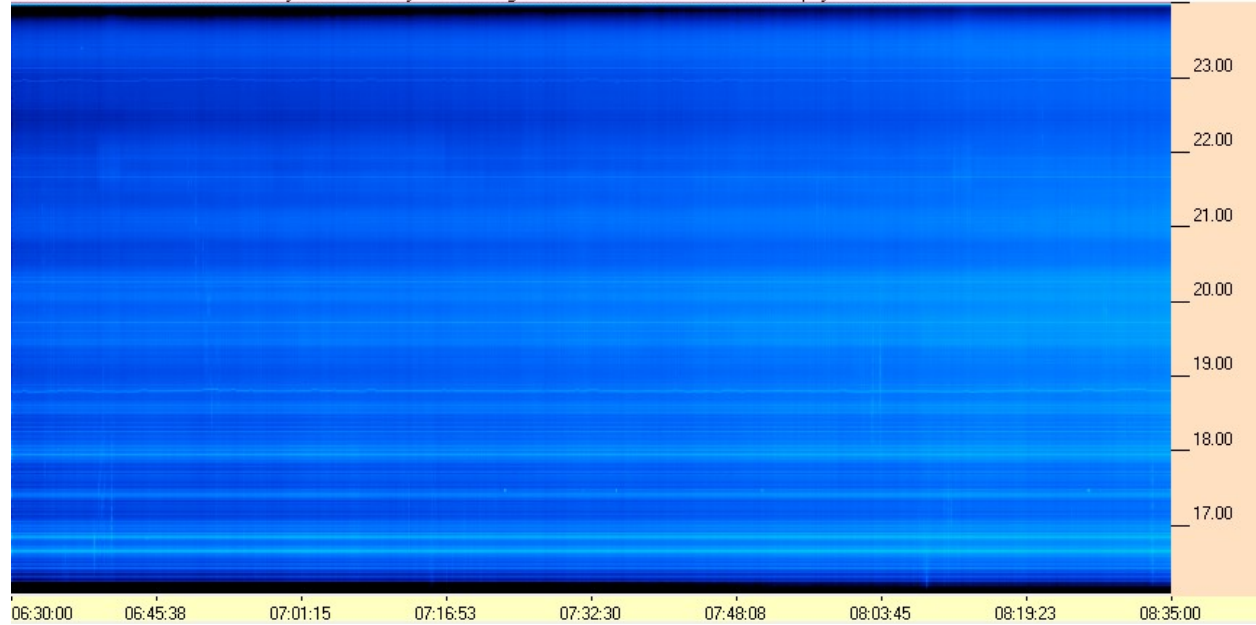
EOR

HNRAO Observing Log
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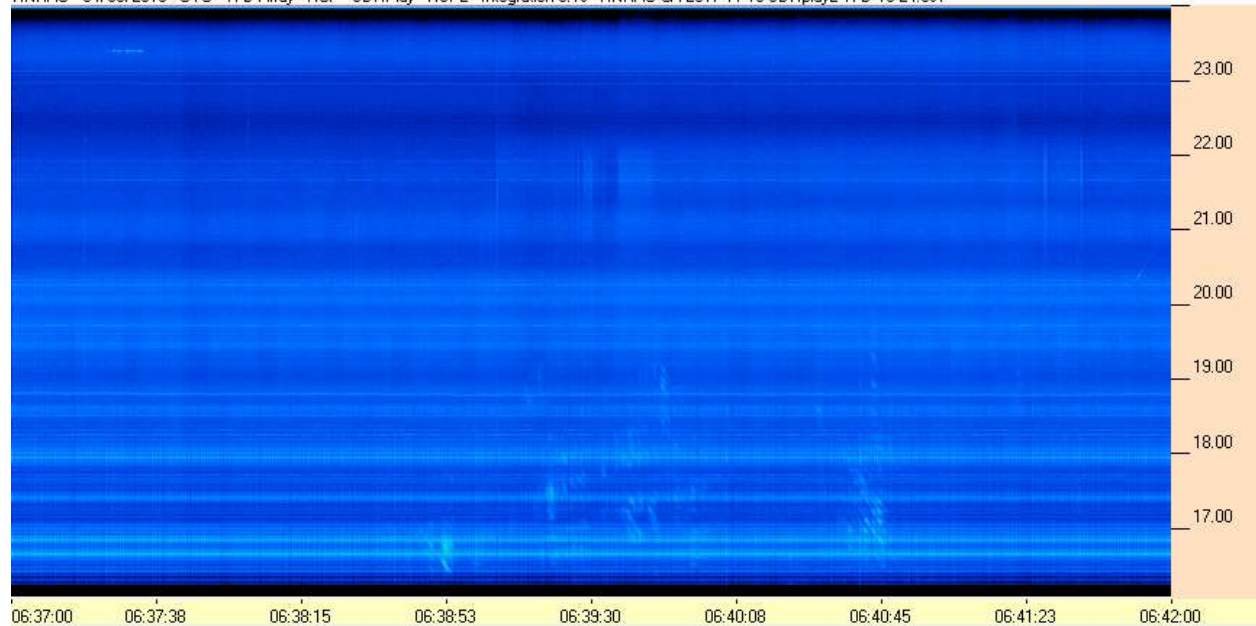


SDRPlay RSP2/TFD Array

HNRAO - 04/06/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



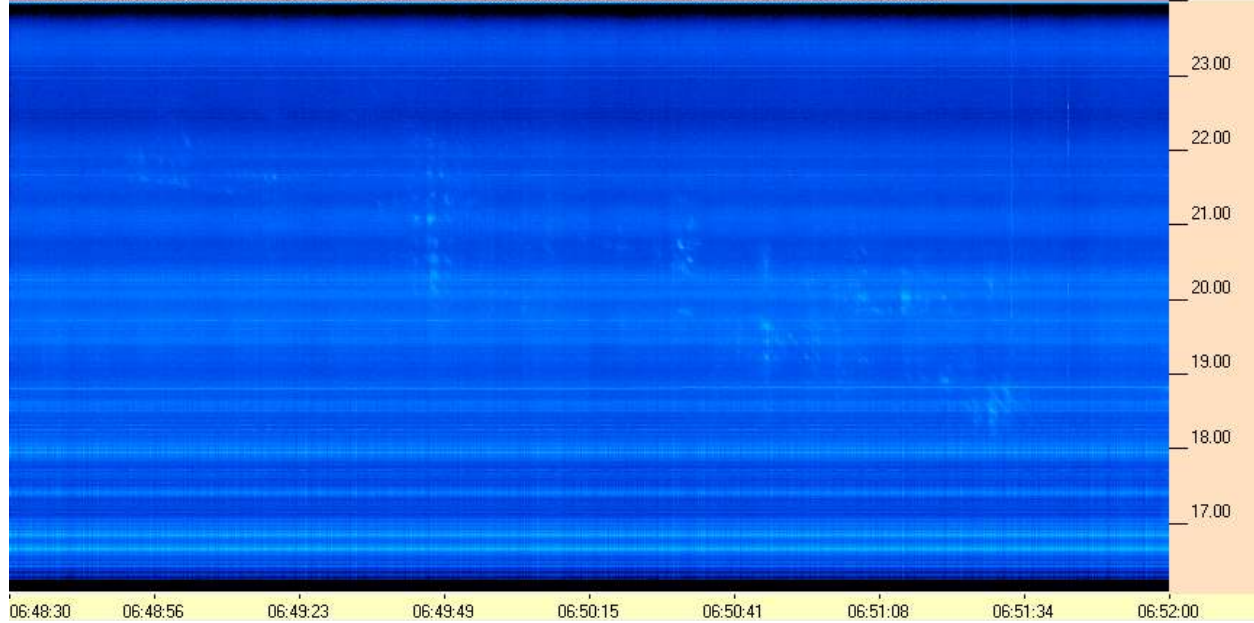
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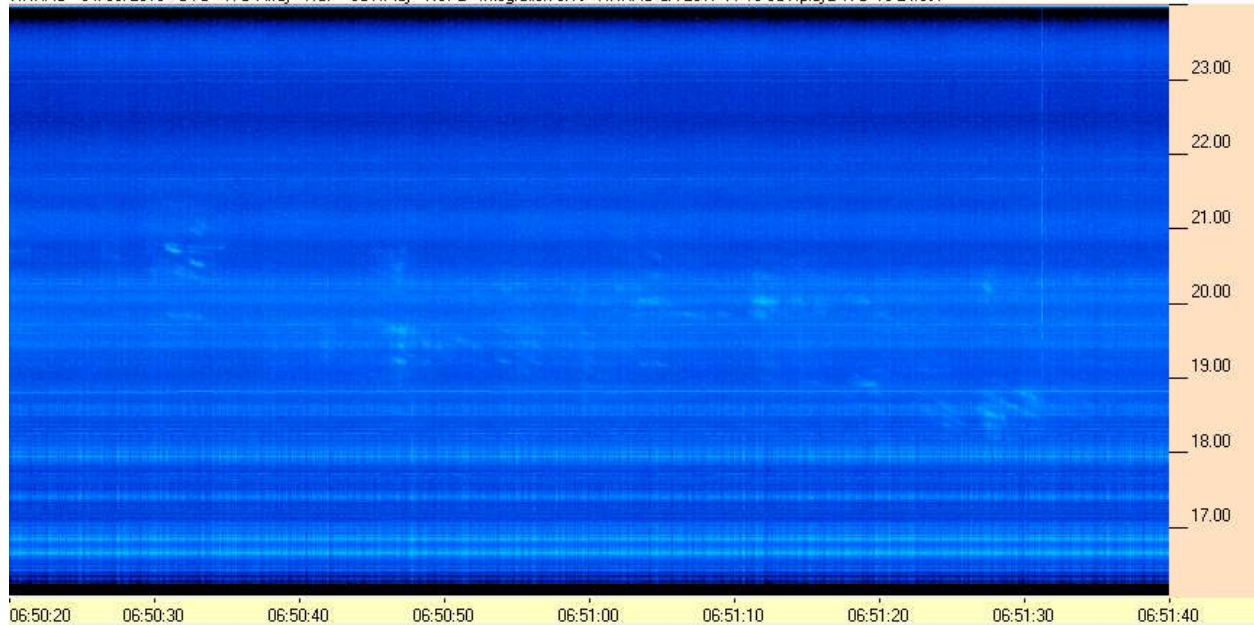
HNRAO Observing Log
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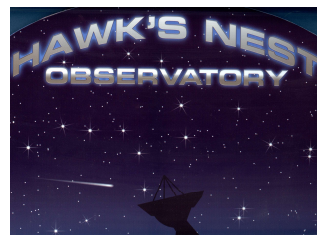
HNRAO - 04/06/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



HNRAO - 04/06/2019 - UTC - TFD Array - RCP - SDRPlay - RSP2 - Integration 0.1s - HNRAO CA 2017 11 10 SDRplay2 TFD 16-24.csv



HNRAO Observing Log
40.673181 N – 80.437885 W
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Mid	Freq 1	Freq 2	Slope	CML	Io Phase	Equipment	Type
4/6/2019 06:40	16645	17531	-75	242.4	247.5	SDRPlay	L4
4/6/2019 06:38	16370	16960	-72.9	241.3	247.2	SDRPlay	L4
4/6/2019 06:39	16763	17373	-72.6	241.8	247.3	SDRPlay	L4
4/6/2019 06:40	17413	17905	-67.4	242.4	247.5	SDRPlay	L4
4/6/2019 06:49	21505	21840	-128.7	247.5	248.7	SDRPlay	L4
4/6/2019 06:49	19951	20344	-103.6	247.9	248.8	SDRPlay	L4
4/6/2019 06:49	21997	22351	-131.2	247.4	248.7	SDRPlay	L4
4/6/2019 06:50	20364	20698	-95.6	248.3	248.9	SDRPlay	L4
4/6/2019 06:50	19085	19538	-100.6	248.5	248.9	SDRPlay	L4
4/6/2019 06:51	20403	20797	-106.4	248.6	248.9	SDRPlay	L4
4/6/2019 06:51	18377	18770	-96	248.9	249	SDRPlay	L4