HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 8 February 2018

Object: Jupiter Io-B

Observer: Unattended

Start of pass:	**0720**	**Planetary K-index:**	**1**
Jupiter Altitude (deg):	**0.89**	**Jupiter Azimuth (deg):**	**121.7**
Jupiter CML:	**129.72**	**Jupiter Io Phase:**	**093.30**
Jupiter RA (hr/min):	**15:18**	**Jupiter Dec (hr/min):**	**17.04**
Hour Angle (hr/min):	**-04:06**	**Polarization**	**RCP**
Sun Altitude (deg):	**-55.1**	**Sun Azimuth (deg):**	**052.1**
Sun RA (hr/min):	**21:20**	**Sun Dec (hr/min):**	**-15:34**

End of pass:	**0834**		
Jupiter Altitude (deg):	**19.9**	**Jupiter Azimuth (deg):**	**136.3**
Jupiter CML:	**174.94**	**Jupiter Io Phase**	**103.81**
Hour Angle (hr/min):	**-2:51**		
Sun Altitude (deg):	**-42.6**	**Sun Azimuth (deg):**	**072.0**

Observatory Configuration

Spectrograph Receiver	Antenna	Polarization	System Loss	Multicoupler	Multicoupler port	Calibrated
FSX-8S	TFD	RCP/LCP	-7.70 dB	#1 LCP #2 RCP	Port 2 +3dB Port 2 +3dB	Twice daily
FSX-2	LWA	RCP/LCP manual select		N/A	N/A	N/A
SDRPlay RSP2	TFD	RCP	-7.70 dB	#1 LCP	Port 3 +3dB	Twice daily
SDRPlay RSP2	TFD	LCP	-7.70 dB	#2 RCP	Port 3 +3dB	Twice daily
SDRPlay RSP1	Jove dipoles	Linear	-3.19 dB	N/A	N/A	12/29/2017
JOVE II	Jove dipoles	Linear	-3.19 dB	N/A	N/A	12/29/2017
JOVE 1	TFD	RCP	-7.70 dB	N/A	N/A	
JOVE 1	TFD	LCP	-7.70 dB	N/A	N/A	

JOVE dipoles phased for 2017-2018 season
LWA antenna orientation for observation: 67.5 degrees

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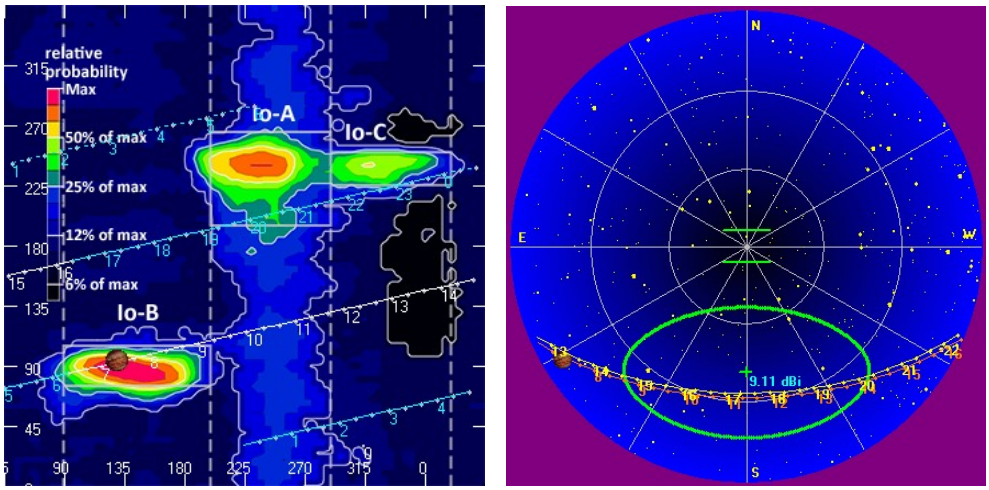
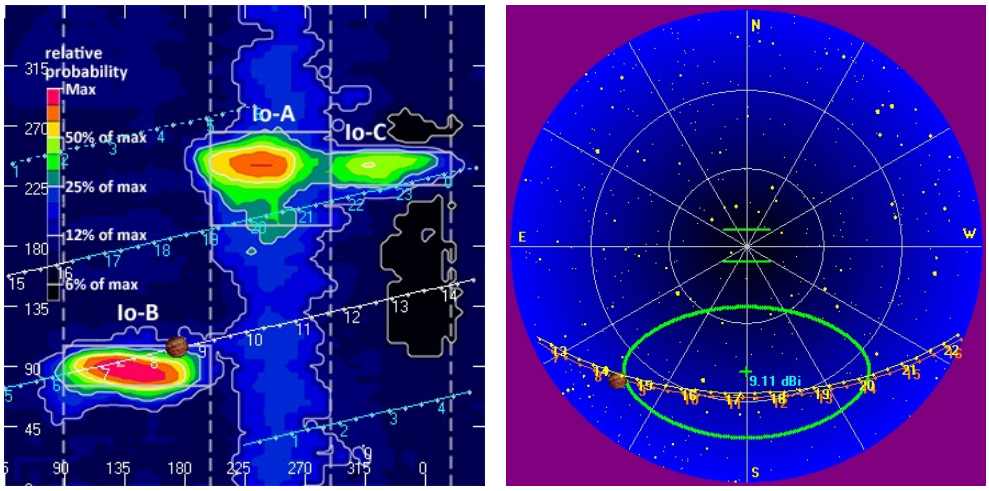


Beginning of Pass



End of Pass

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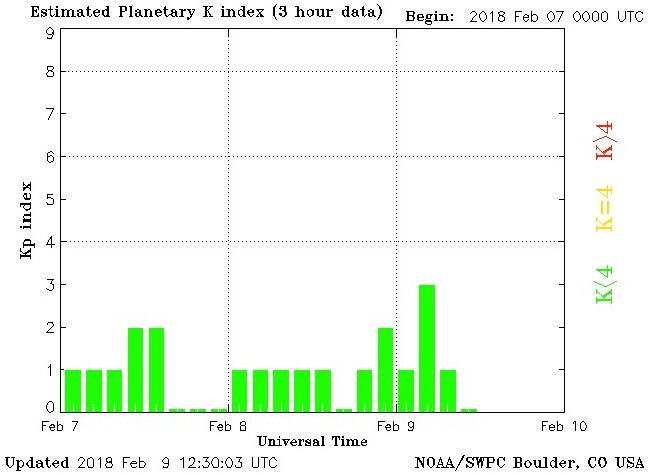
MODE	CML RANGE	Io RANGE	MAX F	POLAR	ARC	NOTES
Io-D	0-200	95-130	18	LH	Early	Also called "fourth source"
Io-B	(105 - 185)	(80-110)	39.5	RH	Early	Also called "early source"
non Io-B	80-200	0-360	38	RH	Early	Voyager info
Io-A	(200-270)	(205-260)	38	RH	Late	Also called "main source"
non-Io-A	(230-280)	0-360	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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A very weak Io-B storm of predominantly S-bursts. Jupiter just above the horizon so modulation measurements would be unreliable do to Jupiter being so far off axis.

Weak emissions began at 0720 UT with what appear to be S-bursts between 18 and 21 MHz. Another extremely weak grouping for several seconds at 0726:30 UT at 18.5 MHz. Another brief S-burst grouping at 0129 UT at 19 MHz. At 0739 there was yet another very brief group of S-bursts between 18 and 20 MHz. Moving higher in frequency, there was yet another very weak group of what appear to be L-bursts between 21 and 23 MHz. A stronger group of L-bursts between 16 and 17.5 MHz. This was followed by a weak grouping at between 17 and 20 MHz of S-bursts between 20 and 23 MHz between A brief grouping of S-bursts at 0759 UT between 17 and 21 MHz. At 0802:20 there was a few seconds of what appear to be L-bursts at 16.5 MHz. A stronger but weak grouping of L-bursts between 18 and 21 MHz from 0825 UT to 0826 UT. This group have Faraday lanes due to Jupiter being so far off axis. Some weak modulation lanes can be seen between 0827 and 0829 UT. Measurements of these lanes show 114 kHz/sec at 20 MHz, but accuracy is questionable as Jupiter is still 3 hours from transit. A relatively stronger brief group of L-bursts at 0834 UT appeared at 19 MHz. Coming into the beam of the TFD array, I measured a modulation lane at 18 MHz to be 133 kHz/sec. This measurement can be considered accurate as it falls within the beam of the antenna. This was the last of the emissions that were within the boundaries of the Io-B area. There are emissions after this but fall within the Non-Io-C CML/Io range.

EOR

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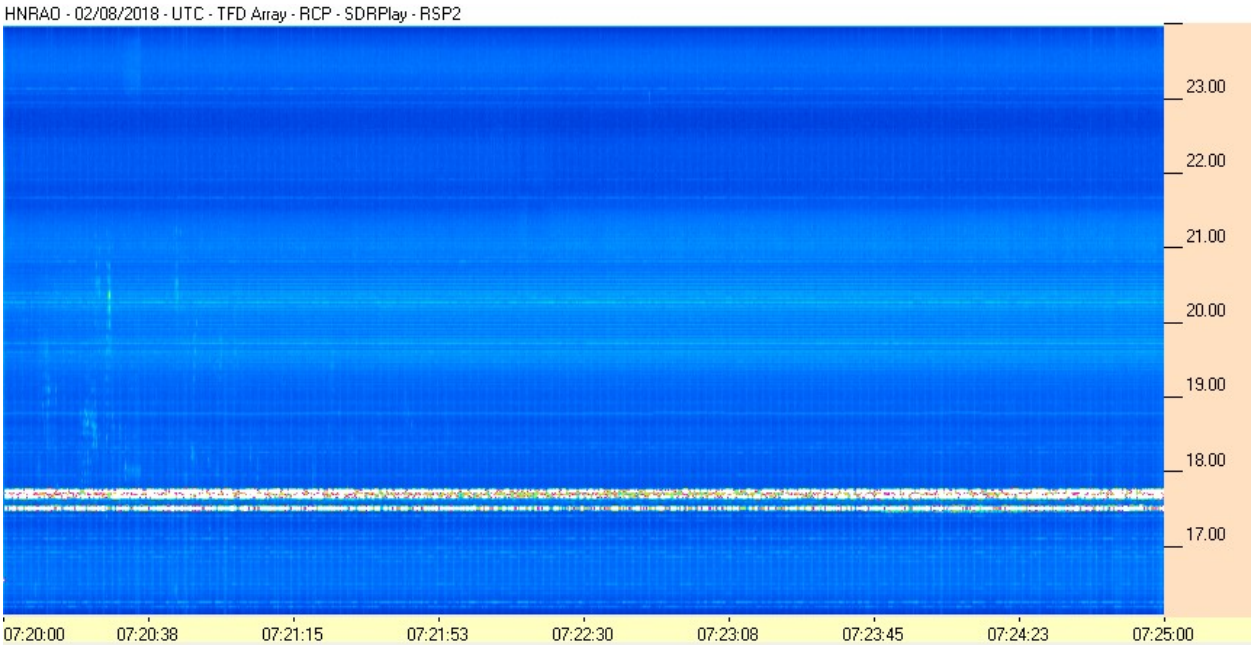

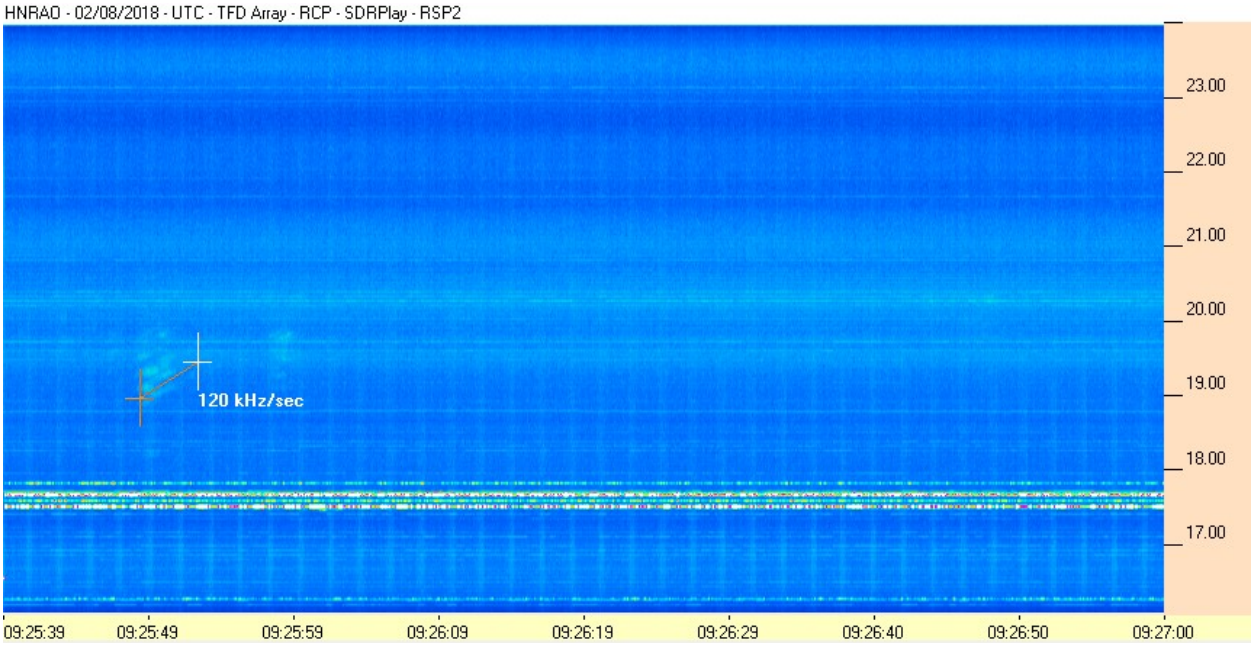

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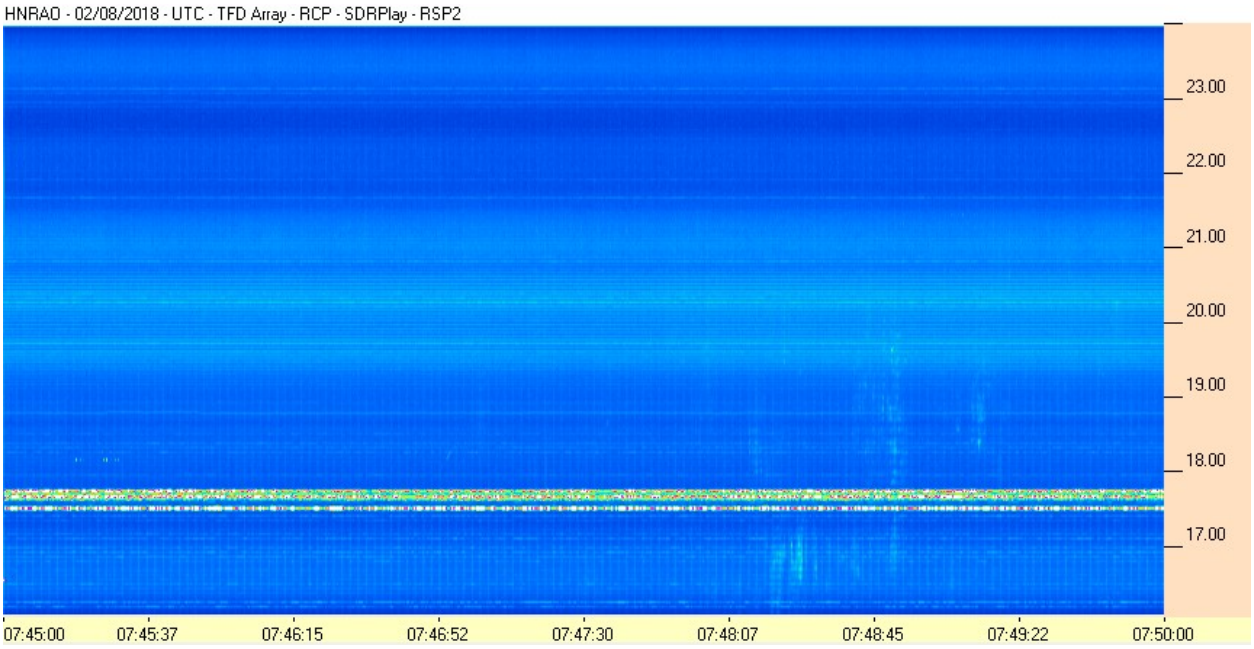

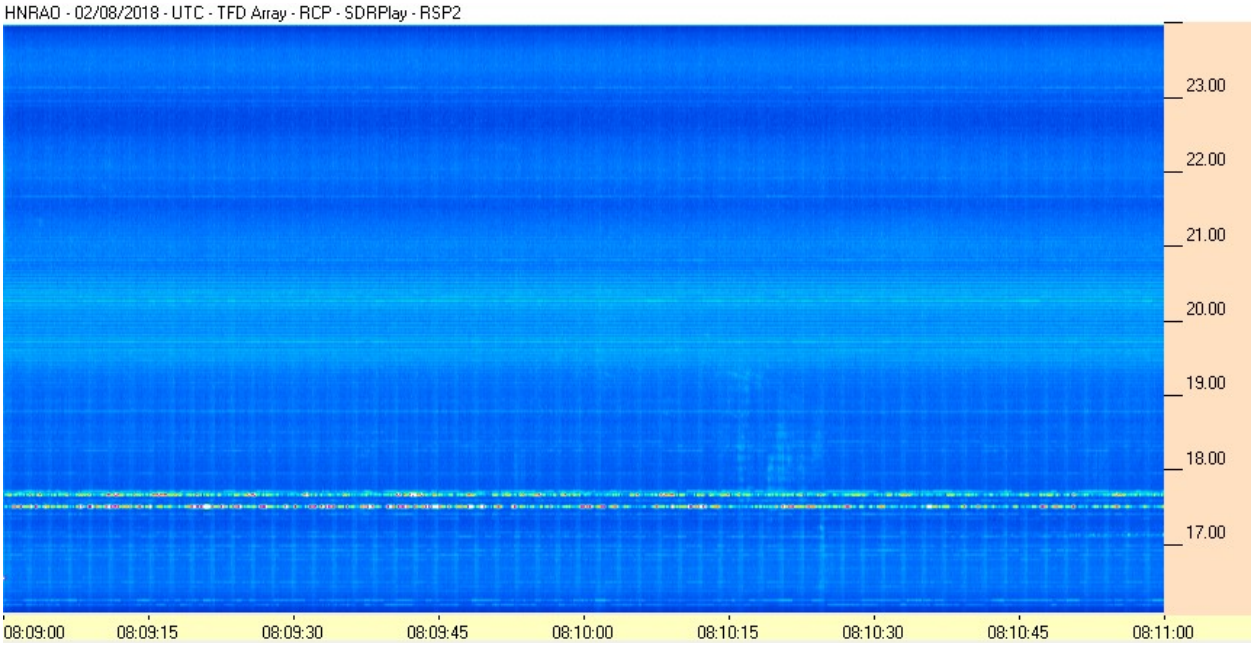

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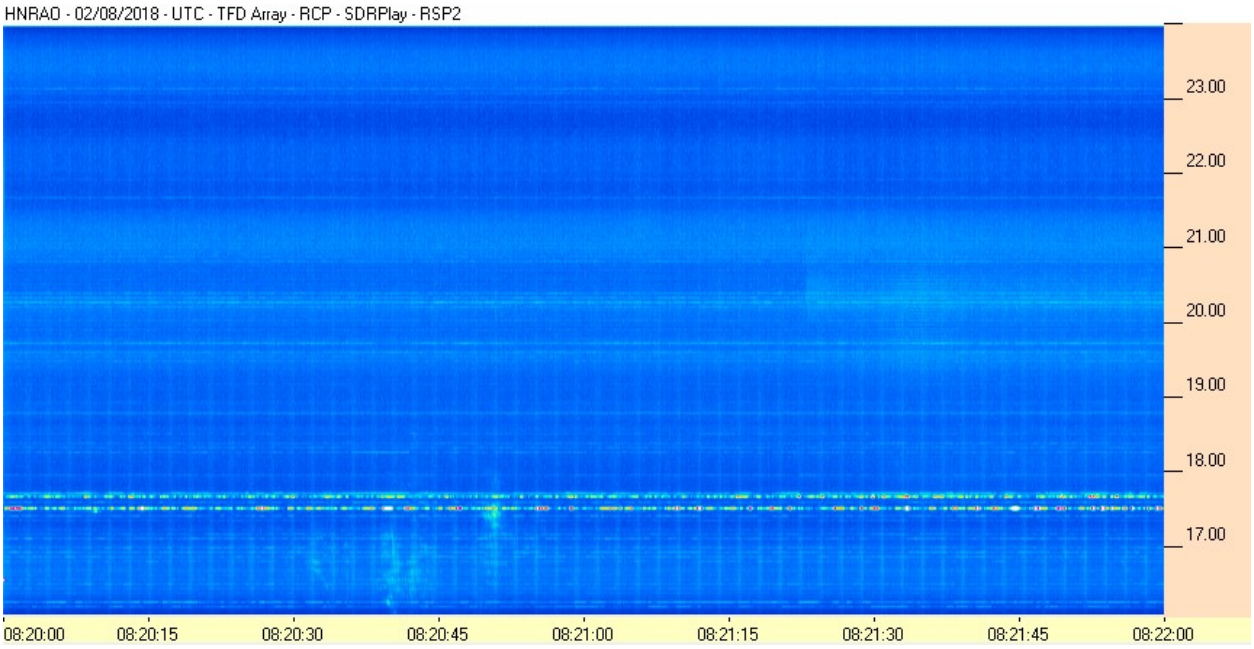

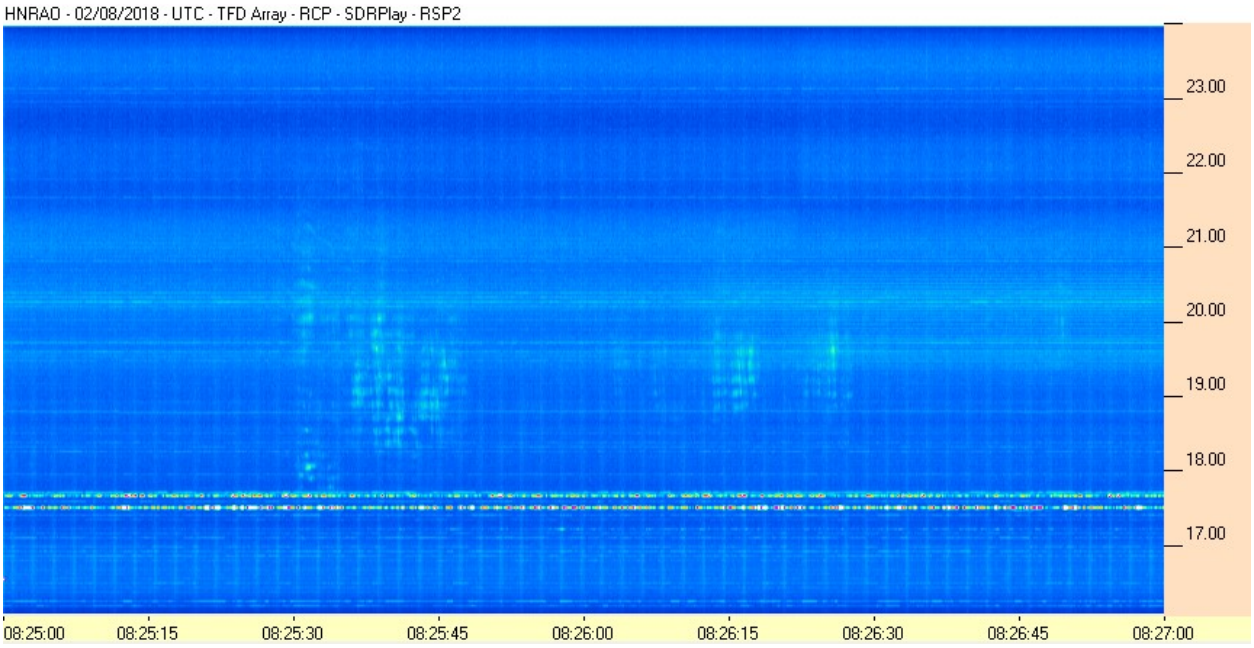

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