HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 10 July 2017

Object: Jupiter – Non-Io-A

Observer: Unattended

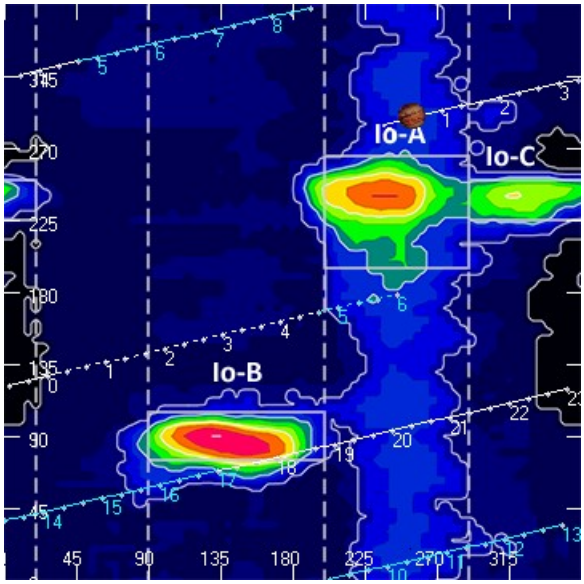
Start of pass:	**0033 UT**	**Planetary K-index:**	**3**
Jupiter Altitude (deg):	**40.5**	**Jupiter Azimuth (deg):**	**210.0**
Jupiter CML:	**256.7**	**Jupiter Io Phase:**	**289.96**
Jupiter RA (hr/min):	**12:54**	**Jupiter Dec (hr/min):**	**-04:23**
Hour Angle (hr/min):	**01:30**	**Polarization**	**RCP**
Sun Altitude (deg):	**01.6**	**Sun Azimuth (deg):**	**298.7**
Sun RA (hr/min):	**07:10**	**Sun Dec (hr/min):**	**22:28**

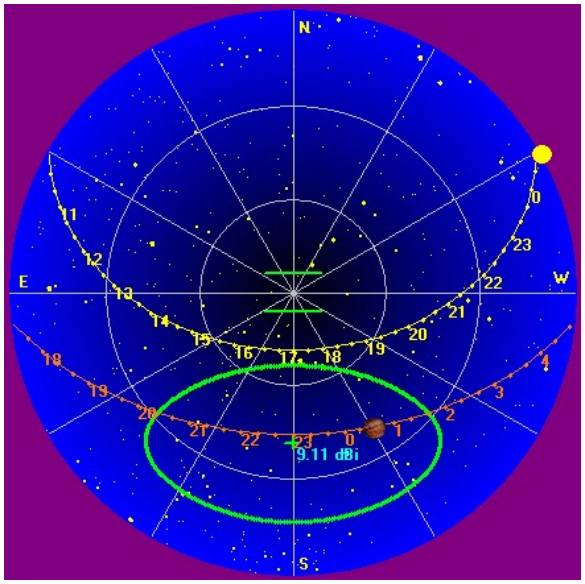
End of pass:	**0053 UT**		
Jupiter Altitude (deg):	**38.4**	**Jupiter Azimuth (deg):**	**215.9**
Jupiter CML:	**268.79**	**Jupiter Io Phase**	**292.77**
Hour Angle (hr/min):	**01:50**		
Sun Altitude (deg):	**-01.7**	**Sun Azimuth (deg):**	**302.0**

Observations made using:

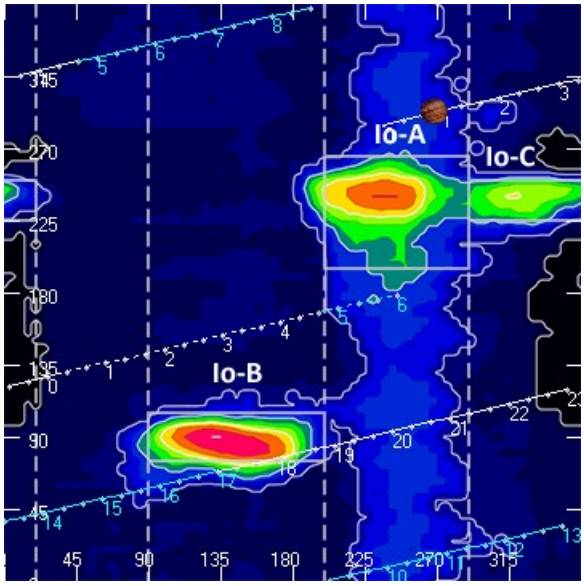
1. FSX-8S fed by the TFD array
    a. 7.7 dB loss between TFD and Multicouplers.
    b. Connect to array through HNRAO Multicoupler #1 and #2, port 2
        i. HNRAO Multicoupler #1 – TFD/LCP
        ii. HNRAO Multicoupler #2 – TFD/RCP
            1. Port 1 having 10 dB of gain, all other ports have 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 1 June 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)

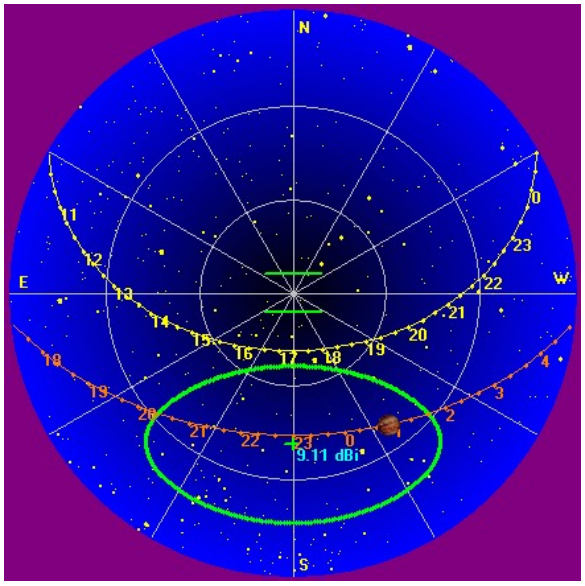
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq





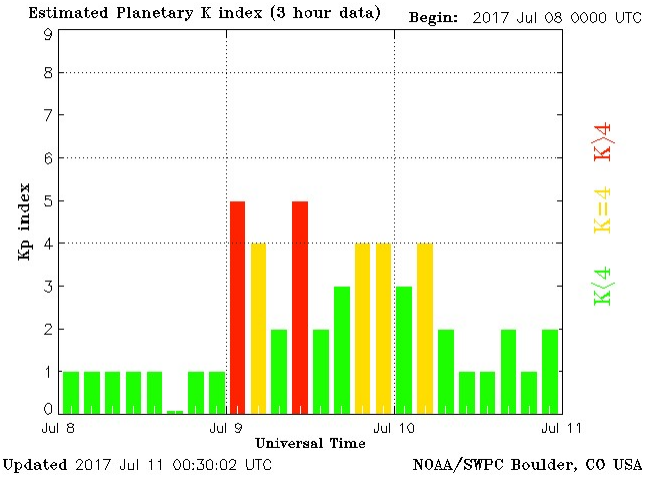
Beginning of Pass





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

A brief Non-Io-A storm. Negative drift L-bursts with negative drift modulation lanes. Moderately strong bursts punctuated by several periods of strong bursts throughout the storm. Not as sharp in detail and clarity as earlier storms this iteration, possibly due to ionospheric conditions due to its proximity to sunset.

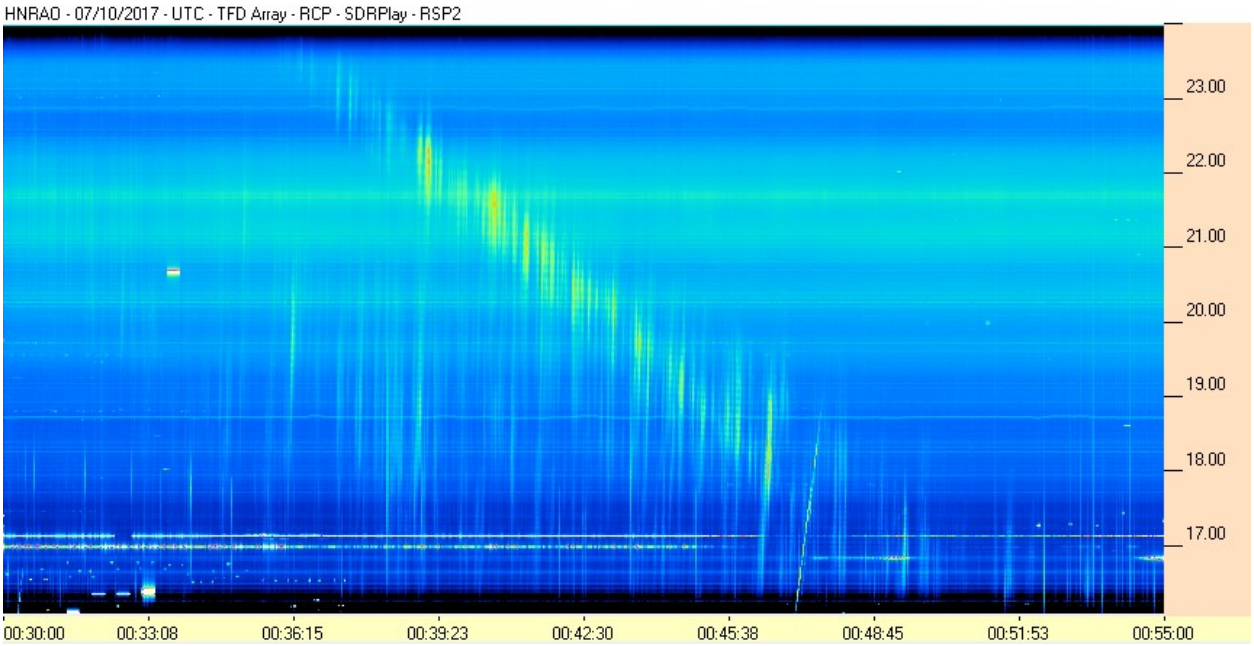
Weaker vertical lines are distant lightning events, typical at this time of the year.

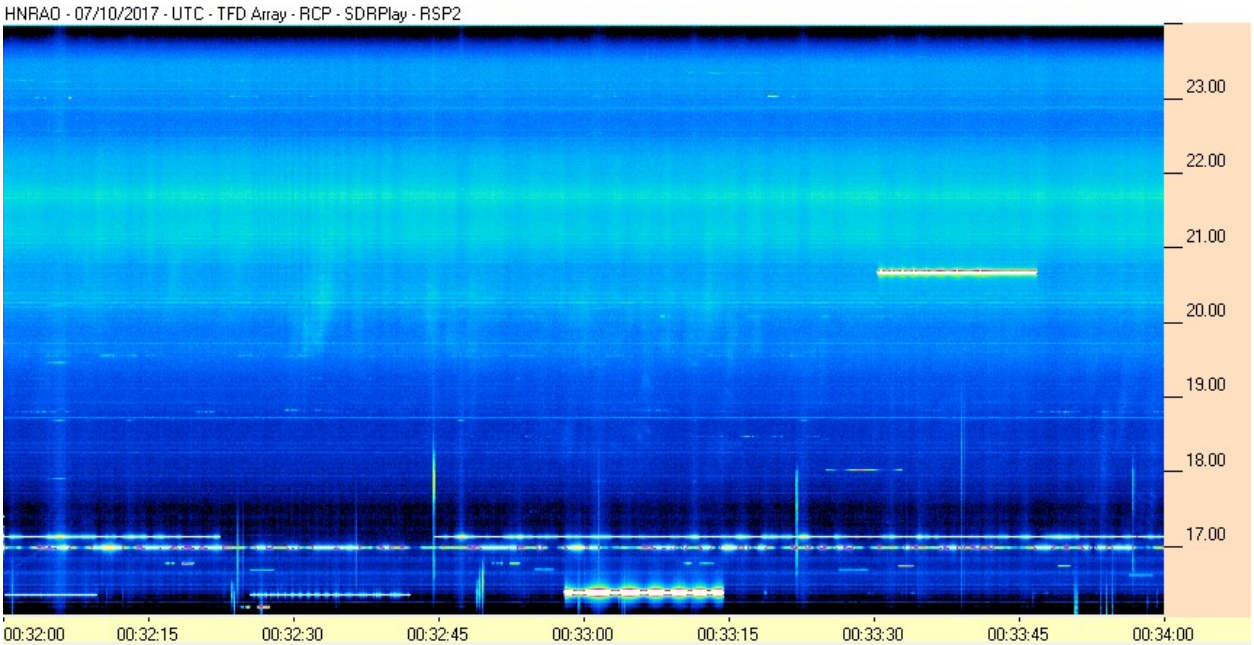
Event observed by SDRPlay RSP2/TFD, FSX-2/LWA and FSX-8S/TFD.

A brief period of L-bursts about 2 dB above GB was recorded with the Radio JOVE receiver and phased dipoles.

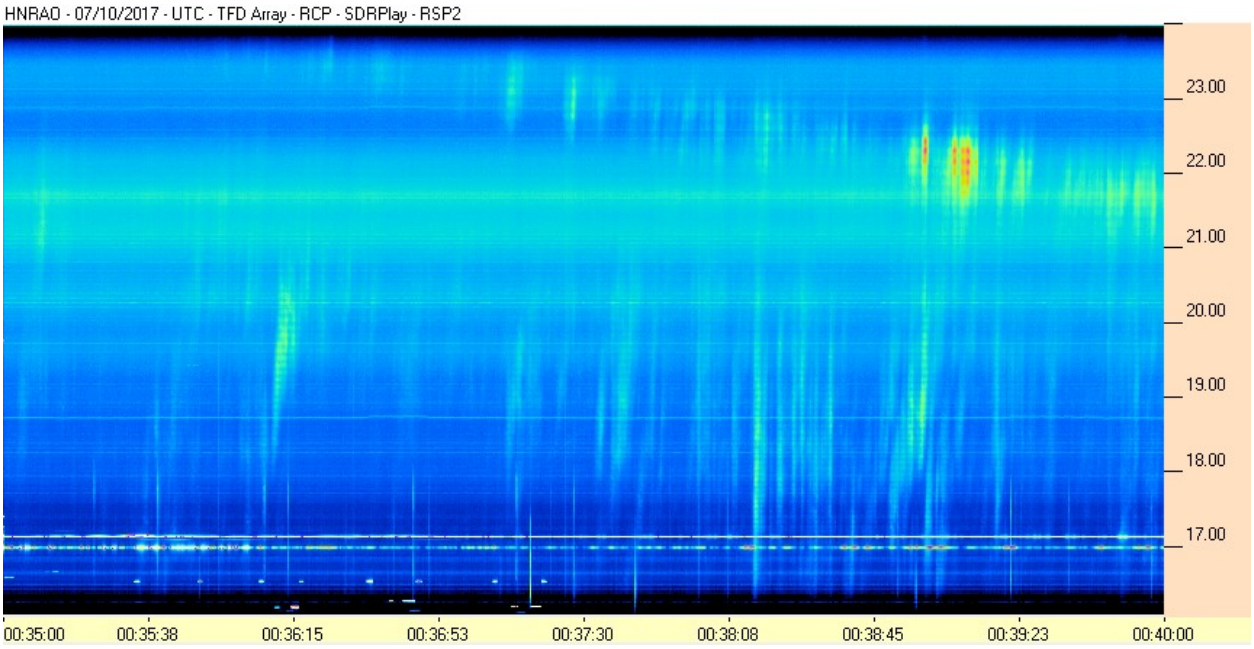
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

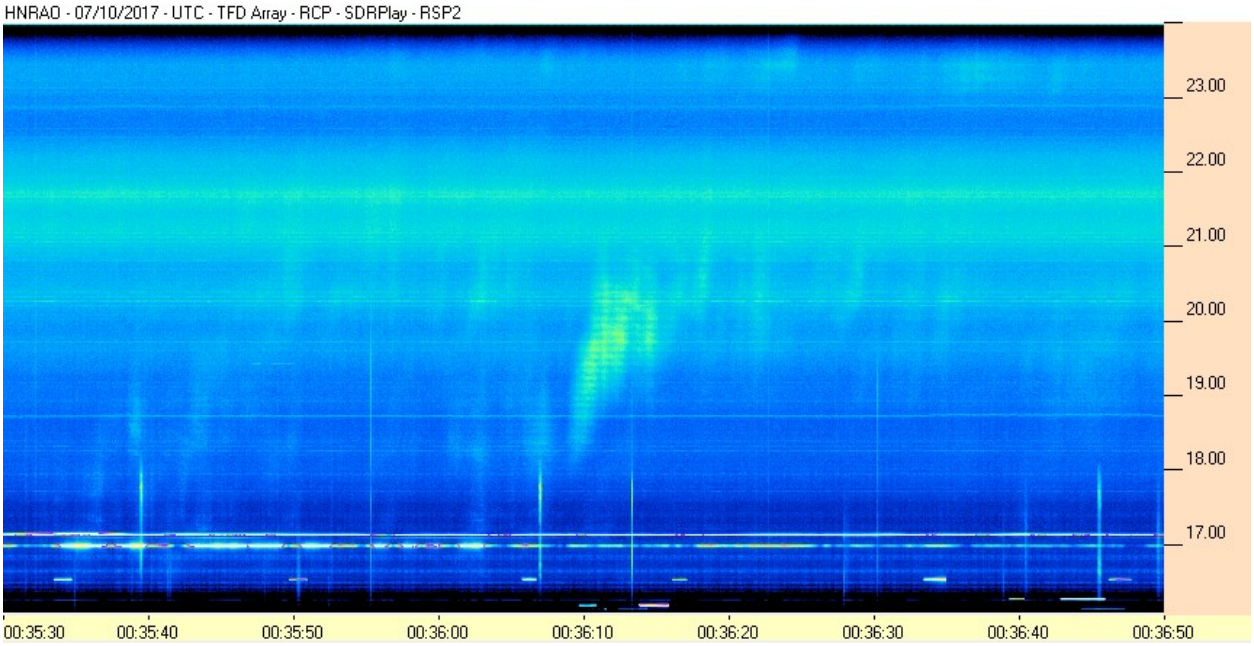
SDRPlay RSP2/TFD Pair



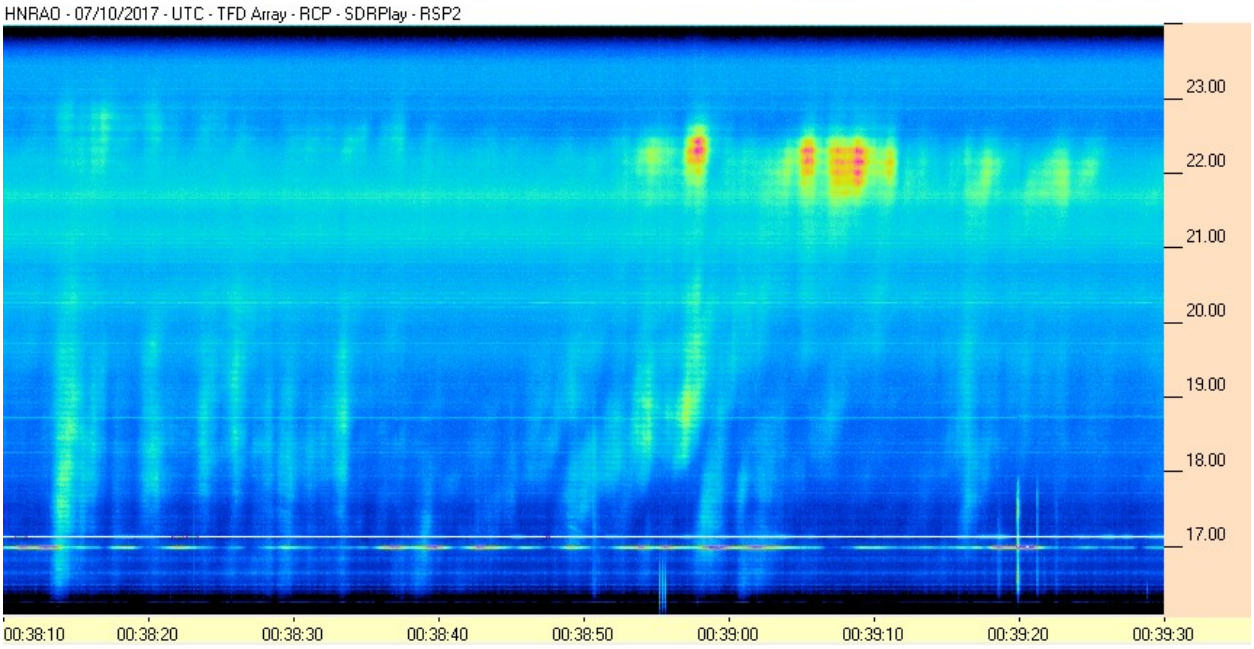


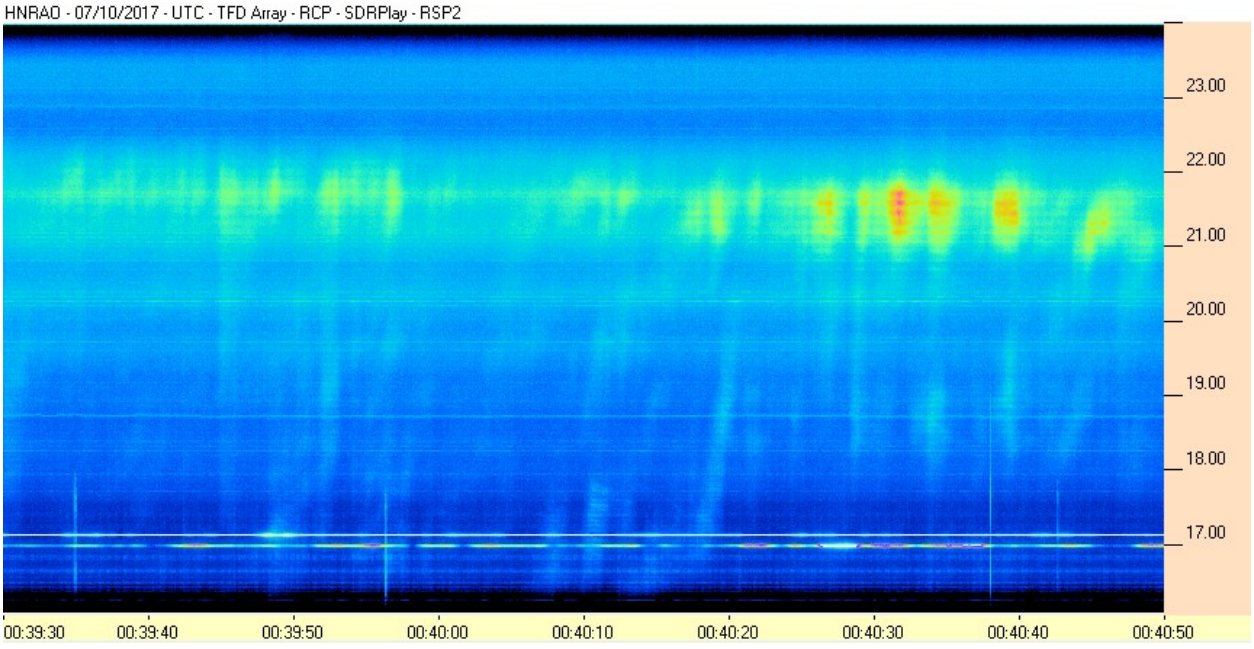
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



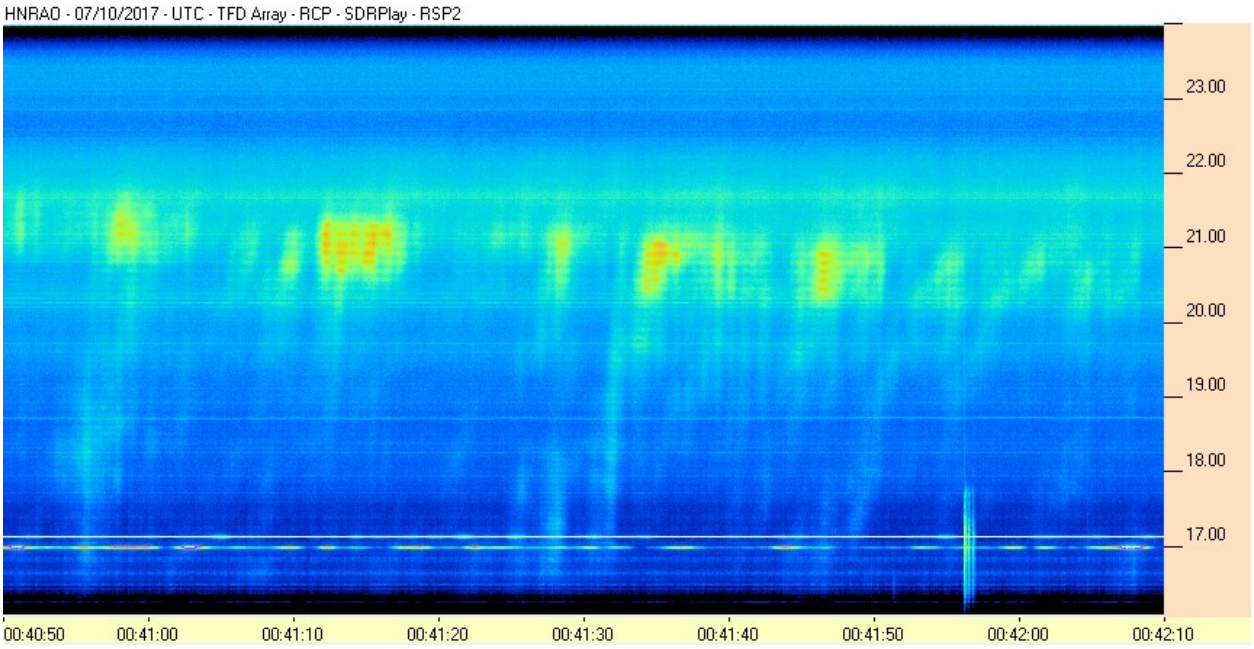


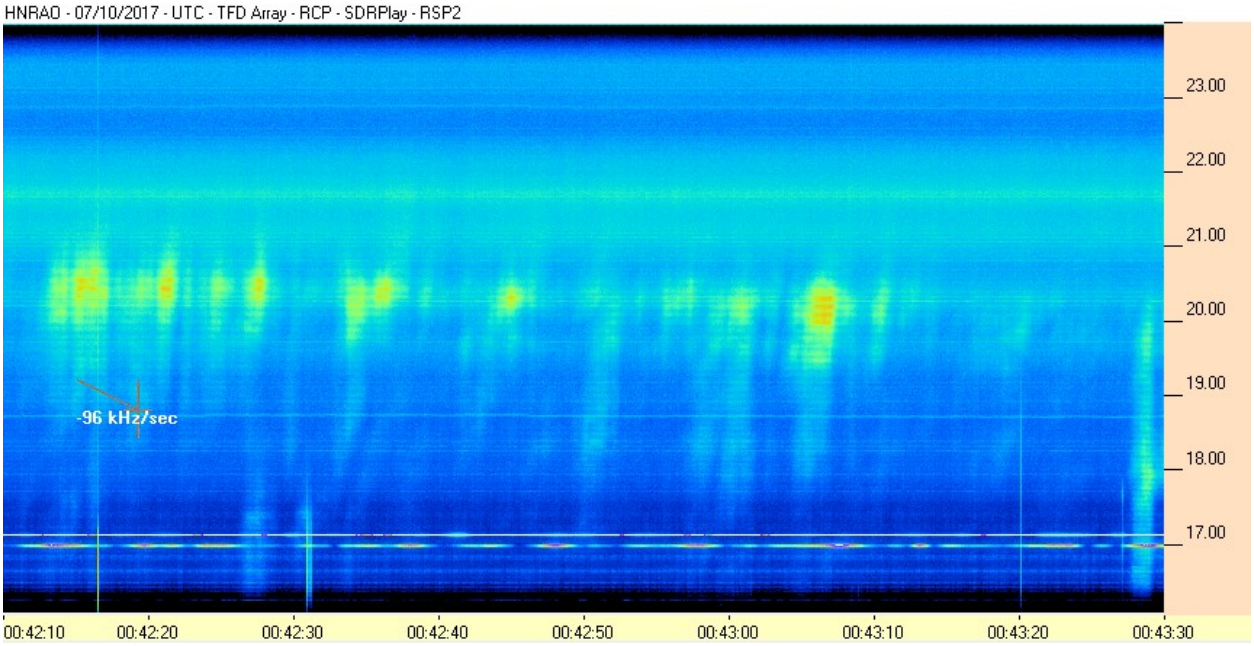
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



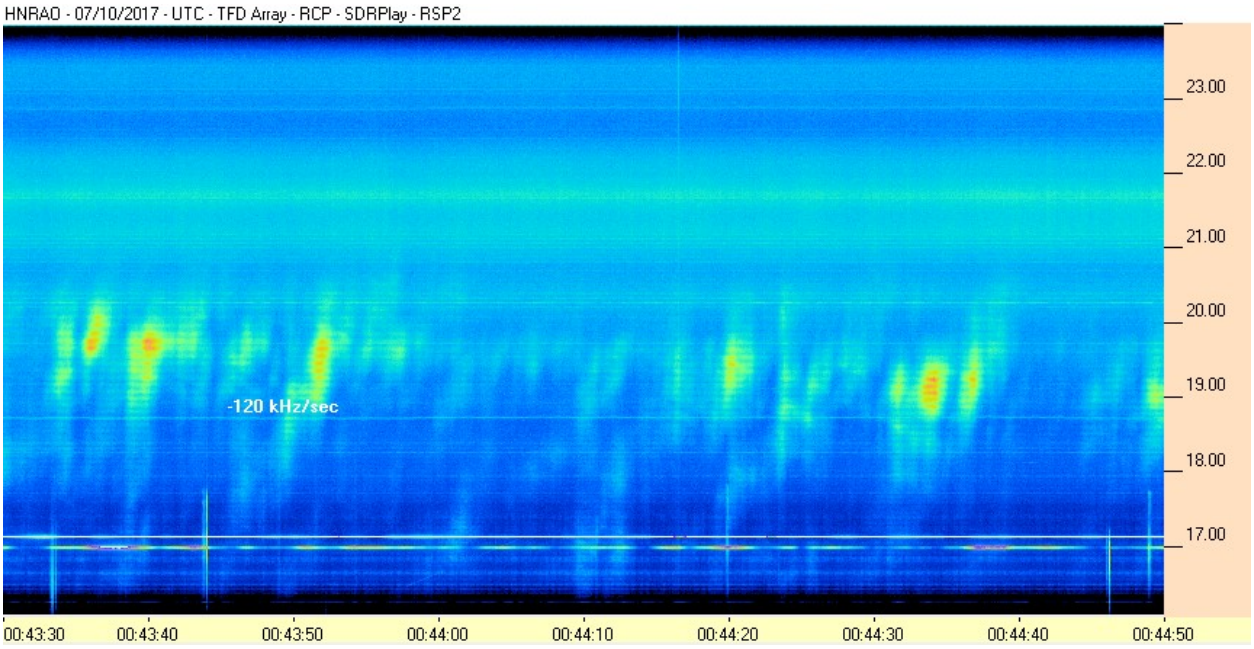


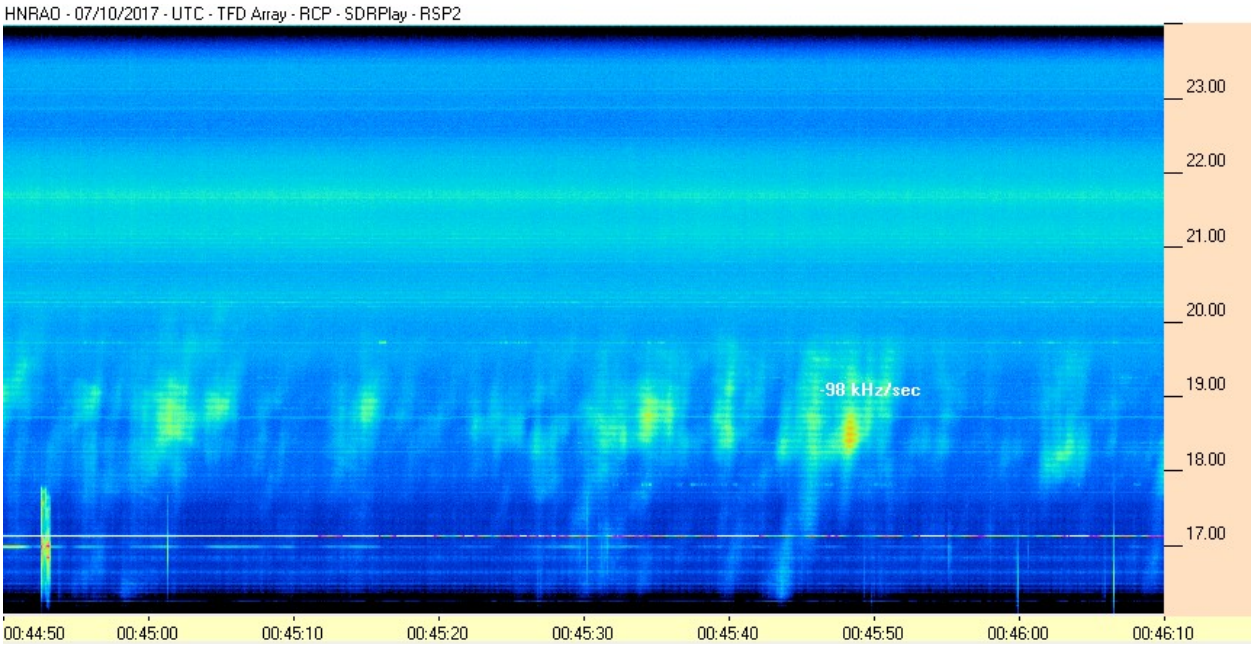
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



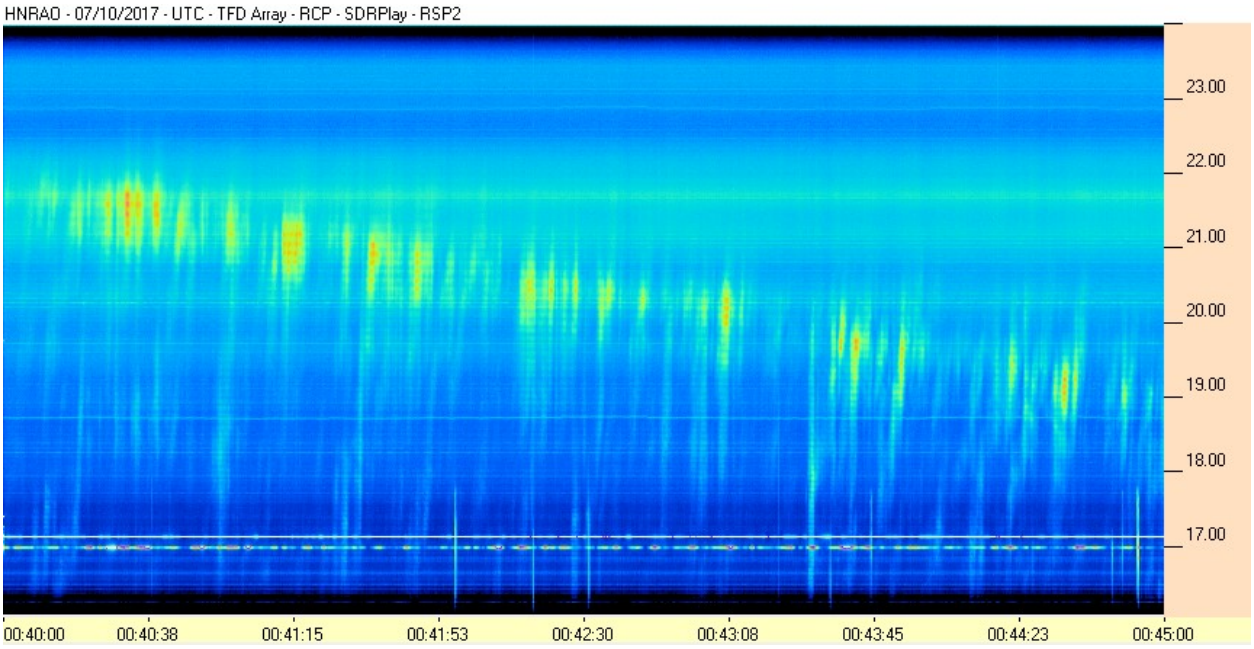


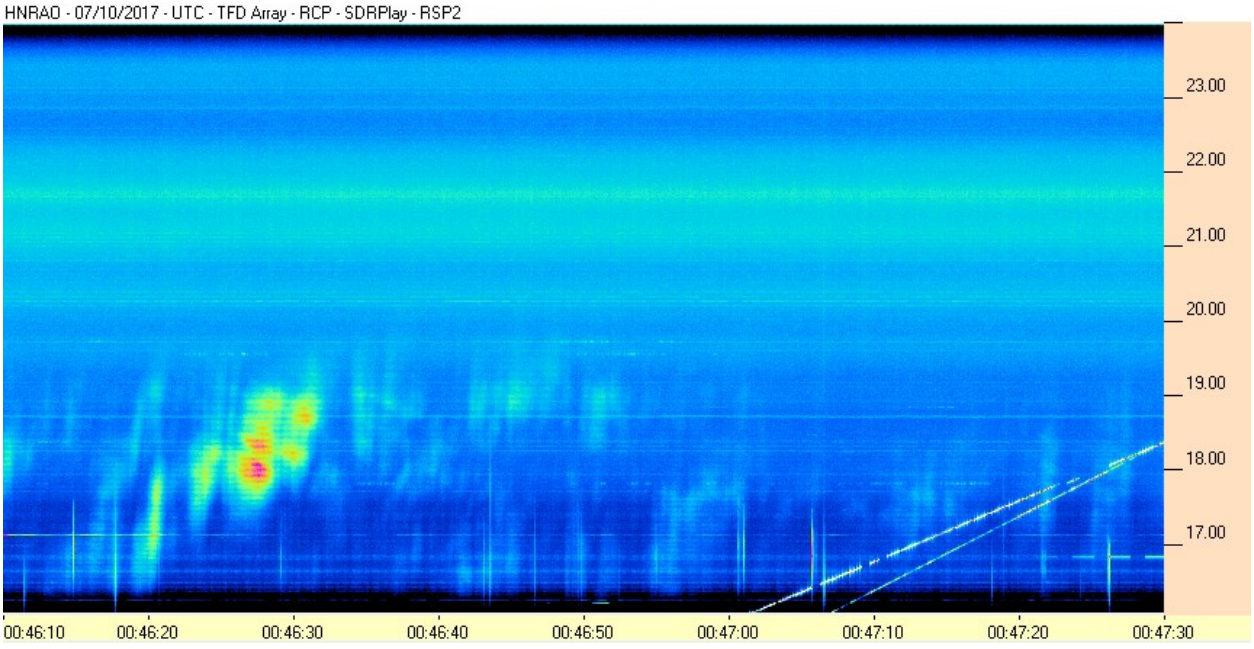
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

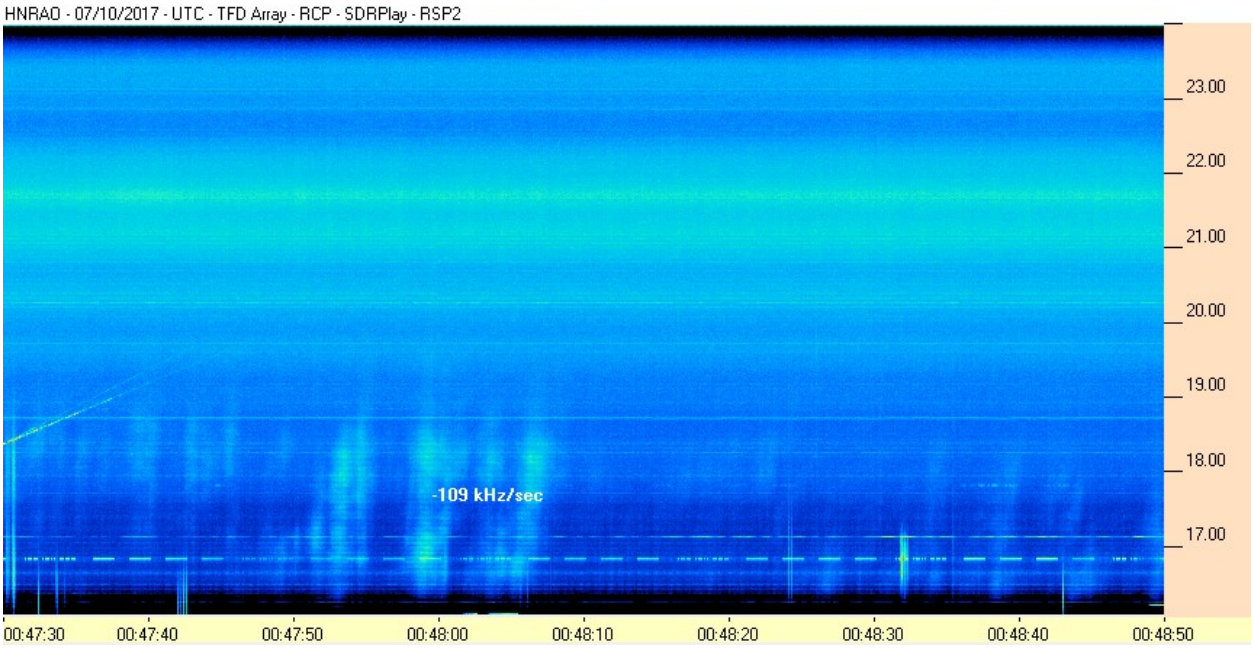


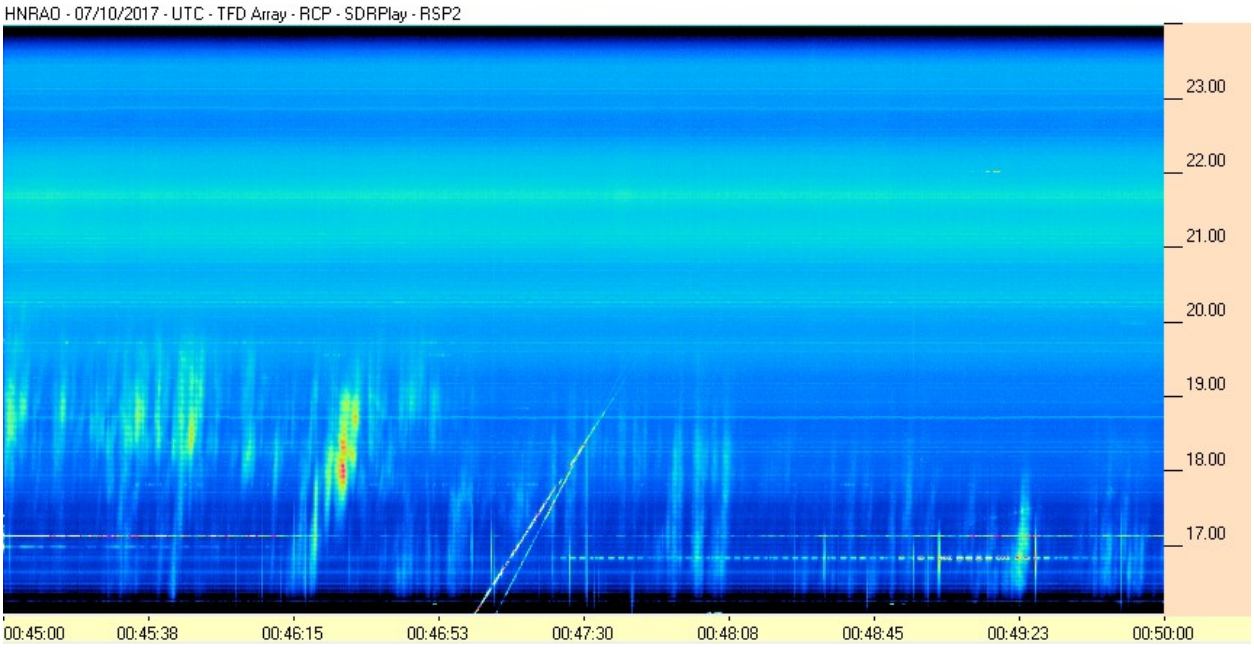


HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

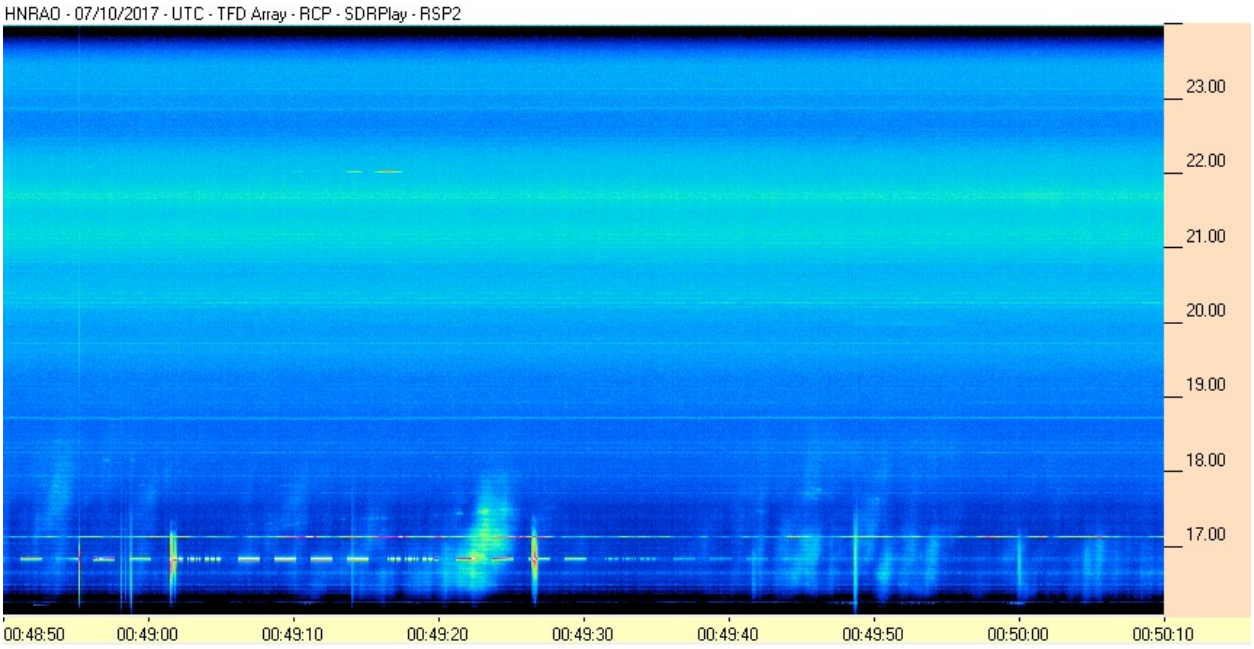


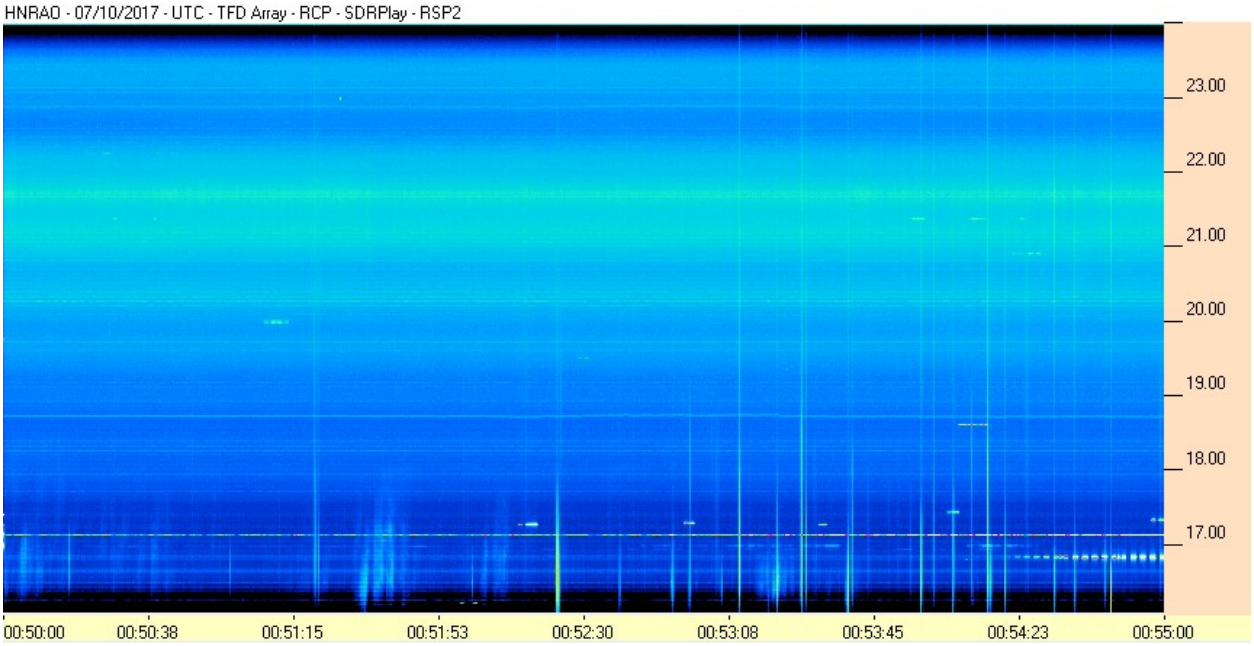



HNRAO - 07/10/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
-109 kHz/sec
23.00
22.00
21.00
20.00
19.00
18.00
17.00
00:47:30
00:47:40
00:47:50
00:48:00
00:48:10
00:48:20
00:48:30
00:48:40
00:48:50

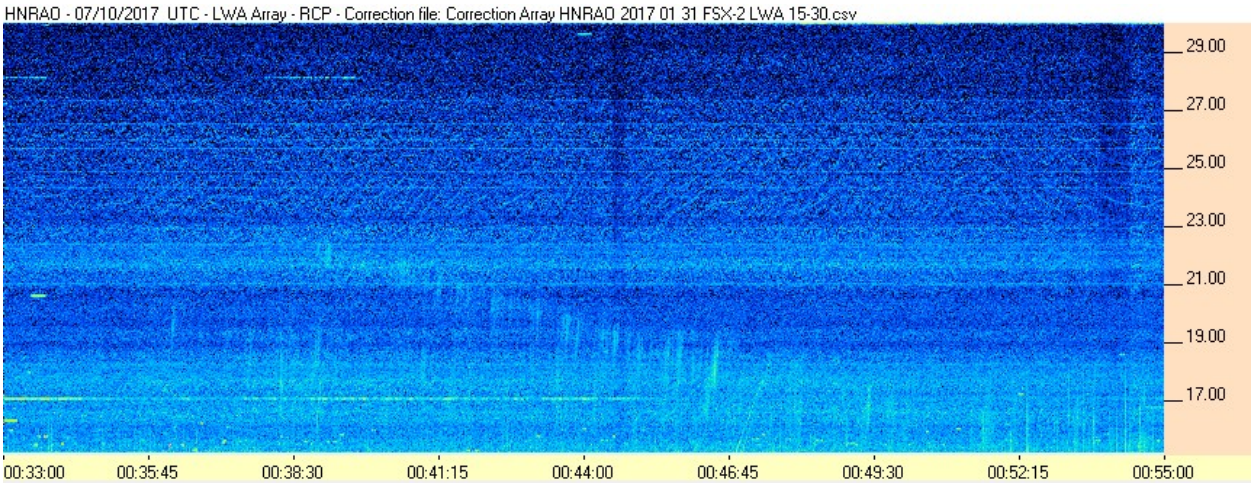

HNRAO - 07/10/2017 - UTC - TFD Array - RCP - SDRPlay - RSP2
23.00
22.00
21.00
20.00
19.00
18.00
17.00
00:45:00
00:45:38
00:46:15
00:46:53
00:47:30
00:48:08
00:48:45
00:49:23
00:50:00

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

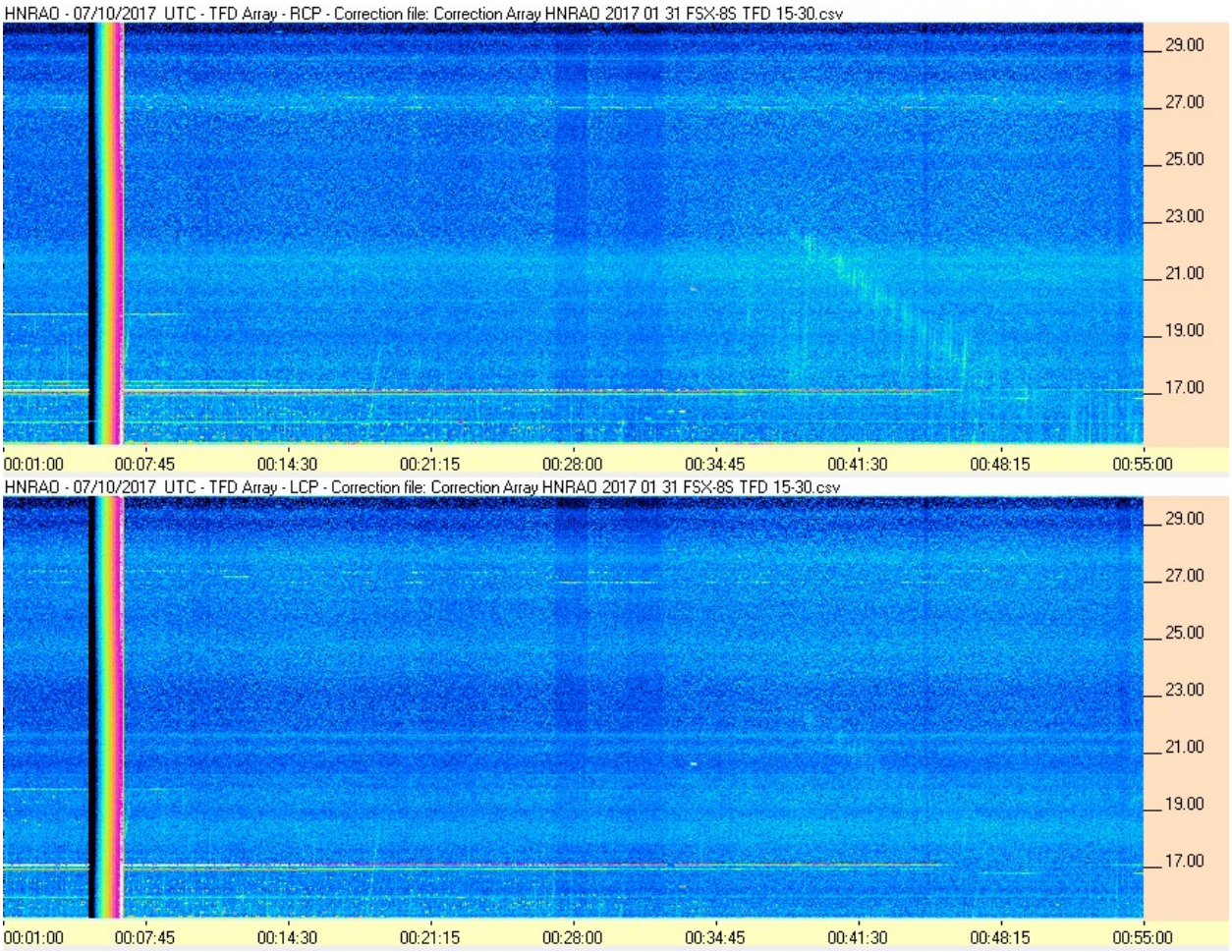


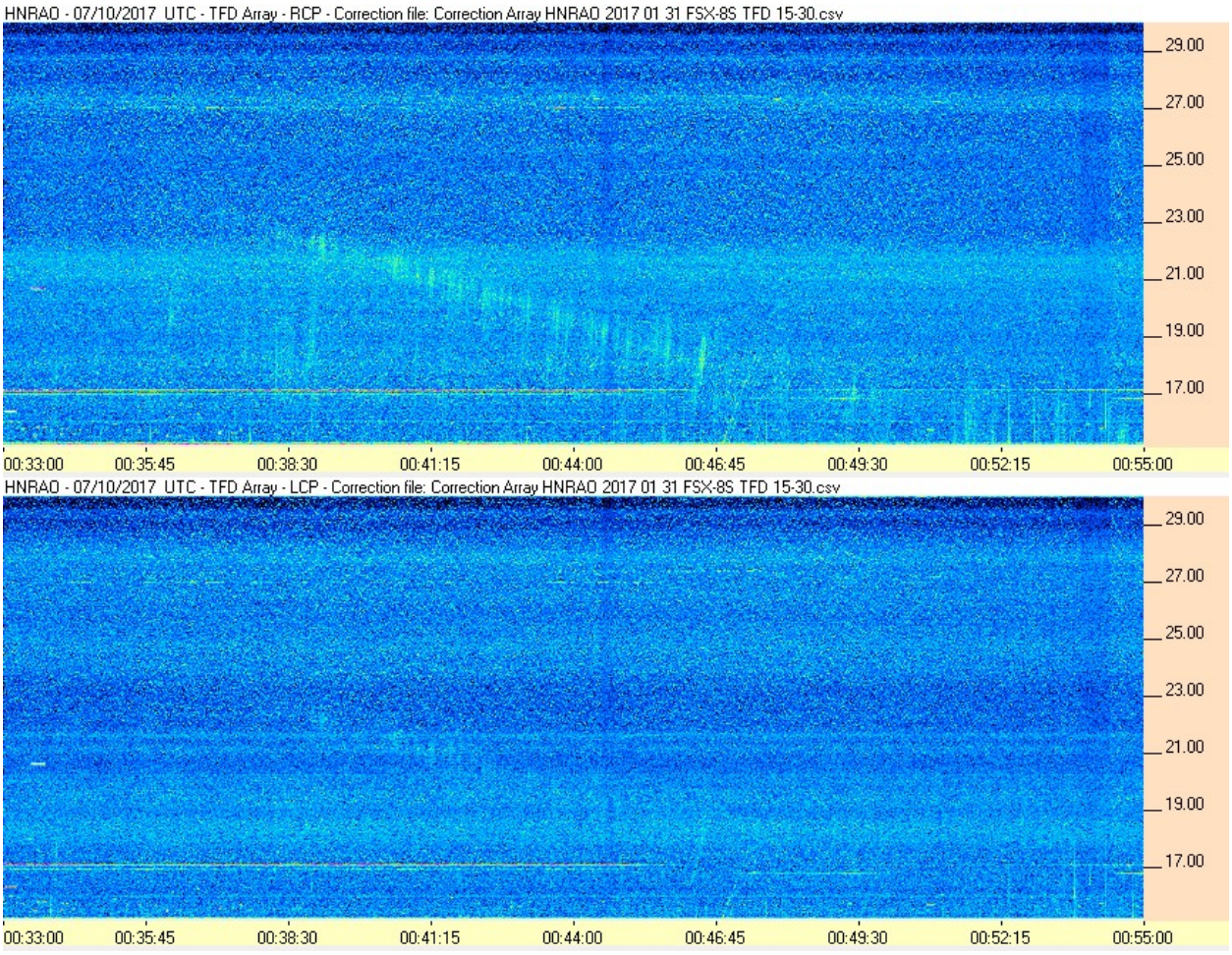


FSX-2/LWA Pair



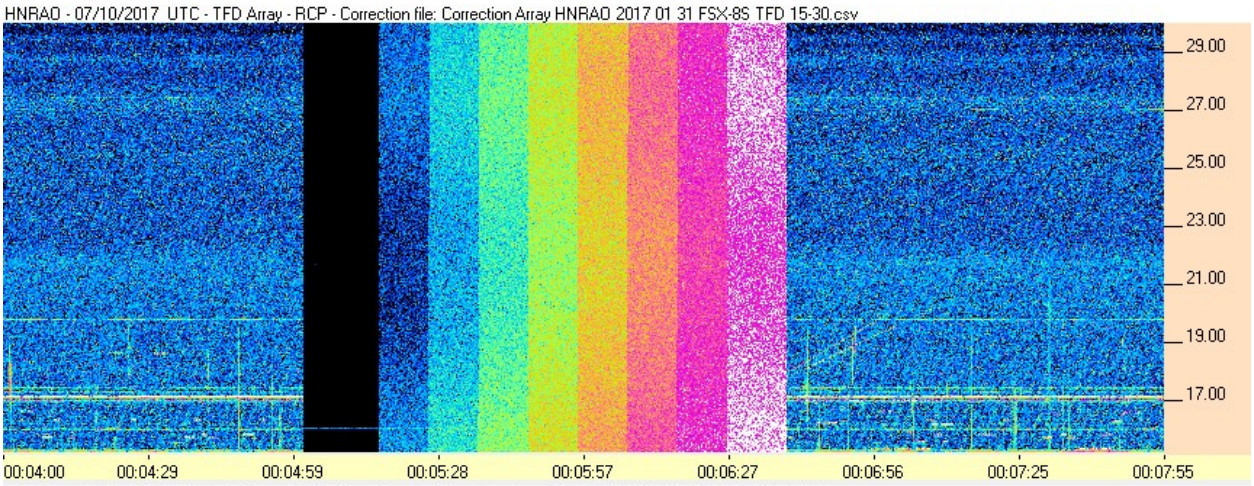
FSX-8S/TFD Pair



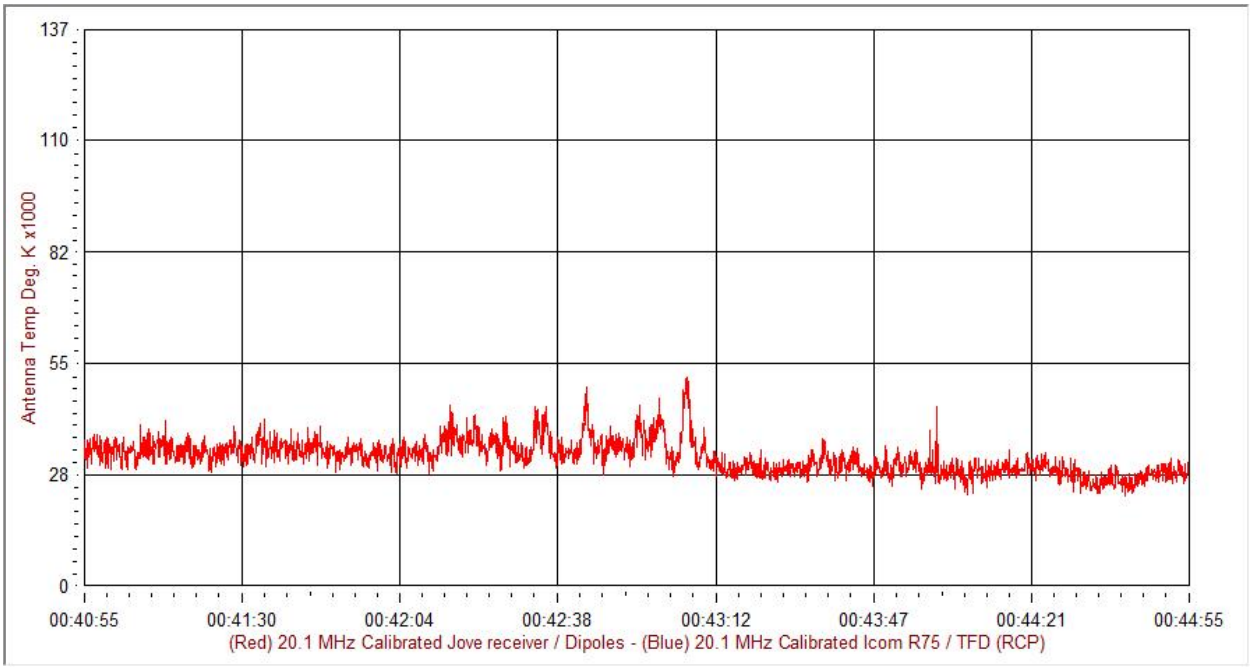

HNRAO - 07/10/2017 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv
29.00
27.00
25.00
23.00
21.00
19.00
17.00
00:33:00
00:35:45
00:38:30
00:41:15
00:44:00
00:46:45
00:49:30
00:52:15
00:55:00
HNRAO - 07/10/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv
29.00
27.00
25.00
23.00
21.00
19.00
17.00
00:33:00
00:35:45
00:38:30
00:41:15
00:44:00
00:46:45
00:49:30
00:52:15
00:55:00

Calibration Sequence

GB, 1 kK, 6 kK, 10 kK, 22 kK, 45 kK, 90 kK, 190 kK, 380 kK, 750 kK, GB



SkyPipe/JOVE phased dipoles



Measured modulation lane drift rate slope

Start Time UT	Stop Time UT	Mid Time UT	Start Freq MHz	End Freq MHz	Mid Freq MHz	Slope kHz/sec
7/10/2017 00:42	7/10/2017 00:42	7/10/2017 00:42	19	19	19	-96.1
7/10/2017 00:43	7/10/2017 00:43	7/10/2017 00:43	19	19	19	-119.8
7/10/2017 00:45	7/10/2017 00:45	7/10/2017 00:45	19	20	19	-98.4
7/10/2017 00:48	7/10/2017 00:48	7/10/2017 00:48	17	18	18	-109.3