

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



Date: 15 April 2017

Object: Jupiter – Io-D

Observer: Unattended

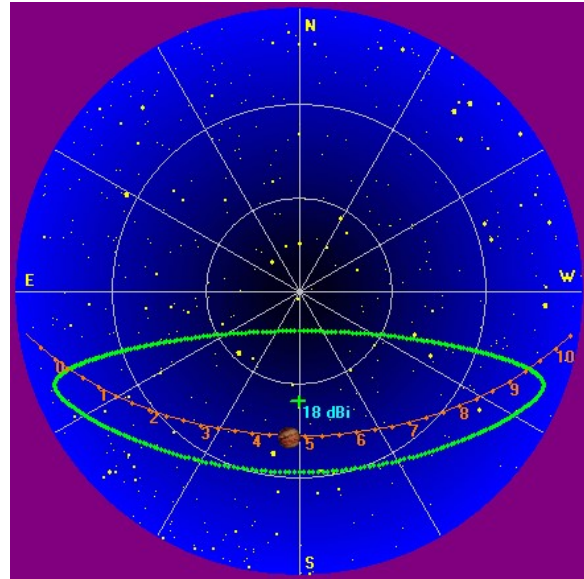
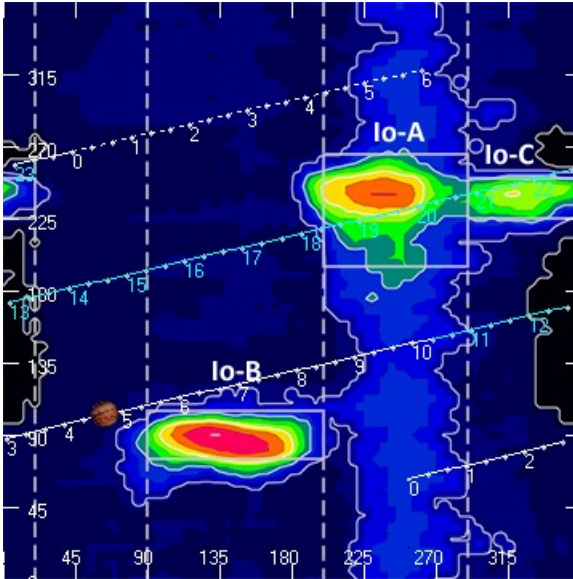
Start of pass:	0443 UT	Planetary K-index:	
Jupiter Altitude:	43.9 degrees	Jupiter Azimuth:	176.3 degrees
Jupiter CML:	63.8	Jupiter Io Phase:	102.85
Jupiter RA:	13:06	Jupiter Dec:	-05:18
Hour Angle:	00:11	Polarization	LCP
Sun Altitude:	-39.6 degrees	Sun Azimuth:	349.8 degrees
Sun RA:	01:27	Sun Dec:	0:08

End of pass:	0623 UT		
Jupiter Altitude:	39.6 degrees	Jupiter Azimuth:	209.5 degrees
Jupiter CML:	124.26	Jupiter Io Phase	116.94
Hour Angle:	01:30		
Sun Altitude:	-37.7 degrees	Sun Azimuth:	021.5 degrees

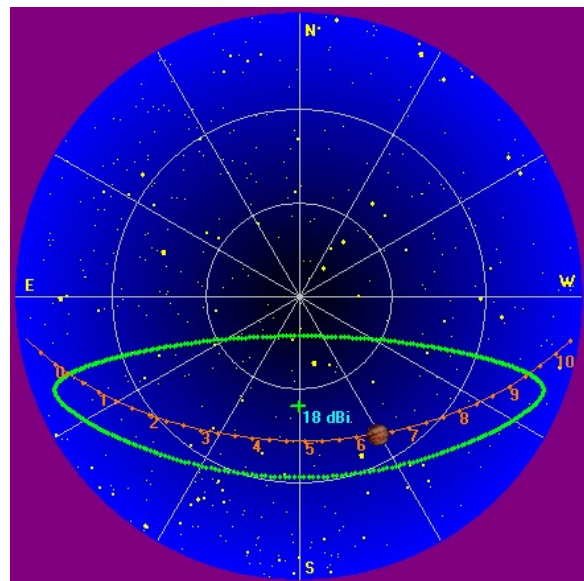
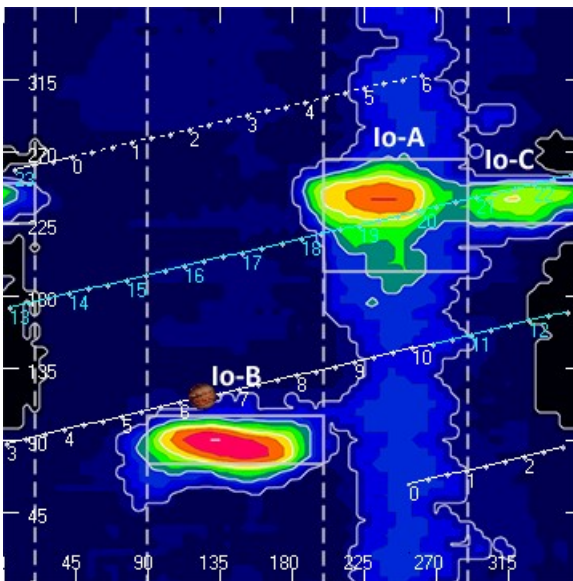
Observations made using:

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 @ 10'
 - a. 12' phase cable - phased for 2016-17 season
 - b. Calibrated 6 March 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 6 March 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



Positive drift Io-D emissions with what appear to be a mix of L-bursts, S-bursts, N-events and wavy N-like features. These N-like features are unlike other Jupiter emissions and will require additional investigation. If these types of emissions are present in other Io-D passes, it's possible they are unique to Io-D. Time of pass was an hour and 30 minutes and spanned 15 MHz to approximately 20 MHz. In the future, during this CML, the SDRPlay RSP unit will be adjusted downward in frequency for these lower frequency observations.

Questionable modulation lane drift rate measurements were made at sites that appeared to be clear modulation lanes. It was entirely possible that these were not modulation lanes, but simply the drift rate of the N-like events. In either case, three values were measured; -52 kHz/sec, -97 kHz/sec and -82 kHz/sec.

At 0531 UT, there appears to be two S-burst clusters nested in the wavy N-like features.

Specifically notable features at 0515:11 UT to 0515:22 UT with a sudden dip then rise, and a lazy M feature at 0530:19 UT.

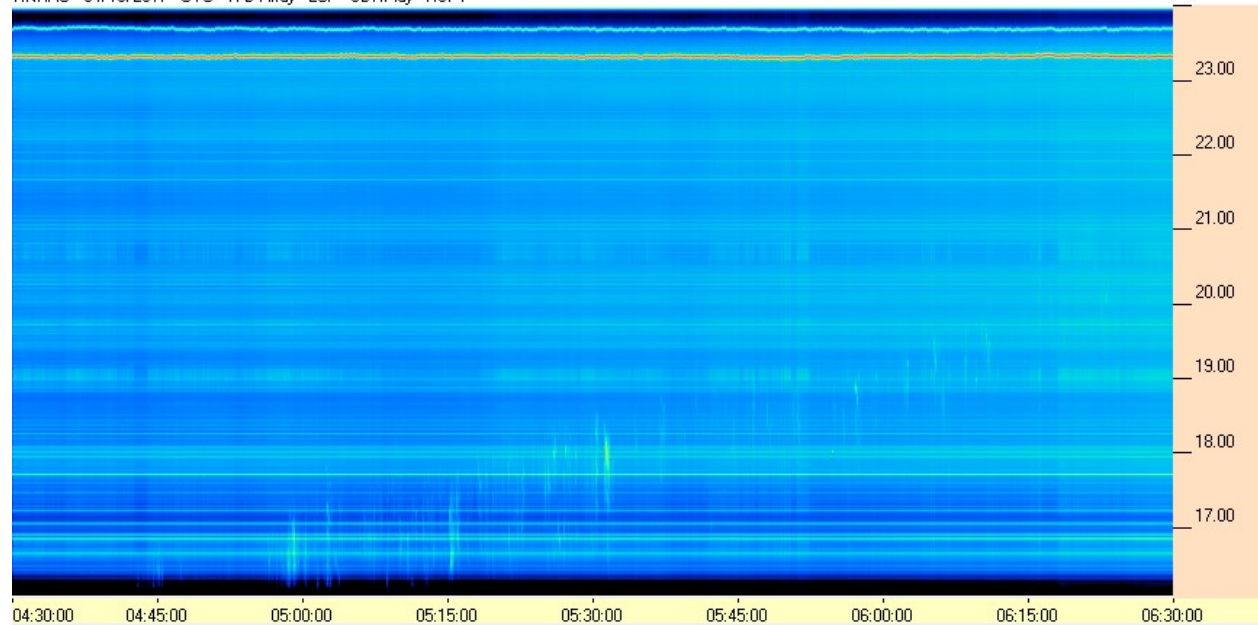
Io-D emissions were unique and unexpected. Further investigation and study will determine if these are typical to Io-D.

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

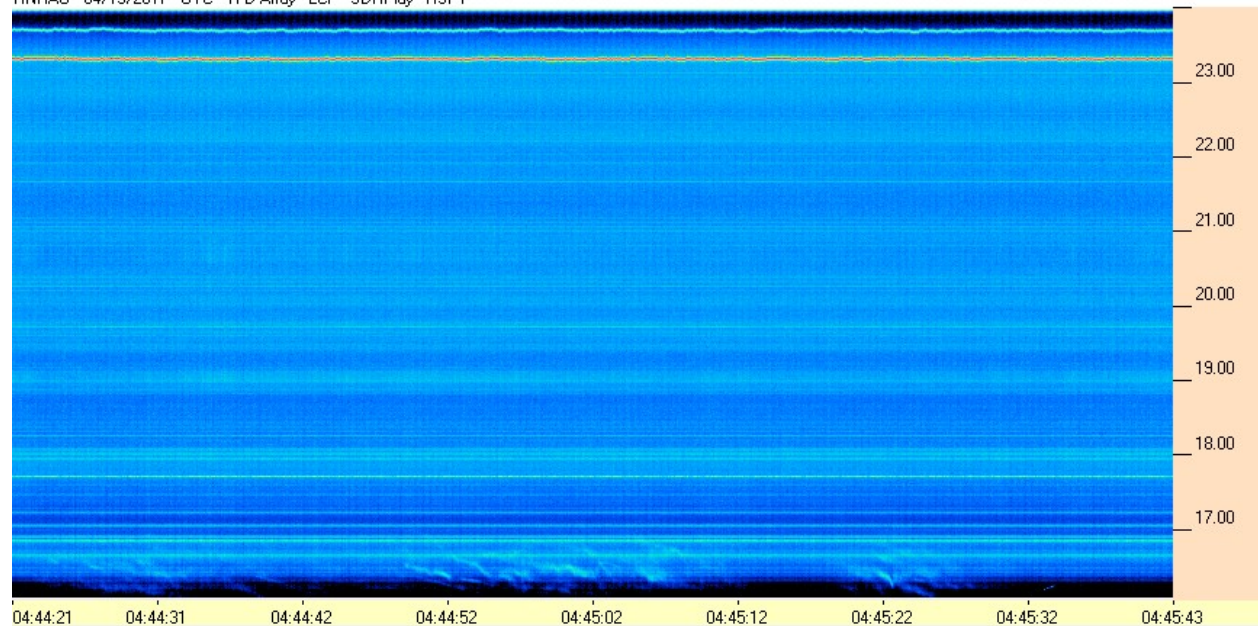


SDRPlay RSP1/TFD Pair

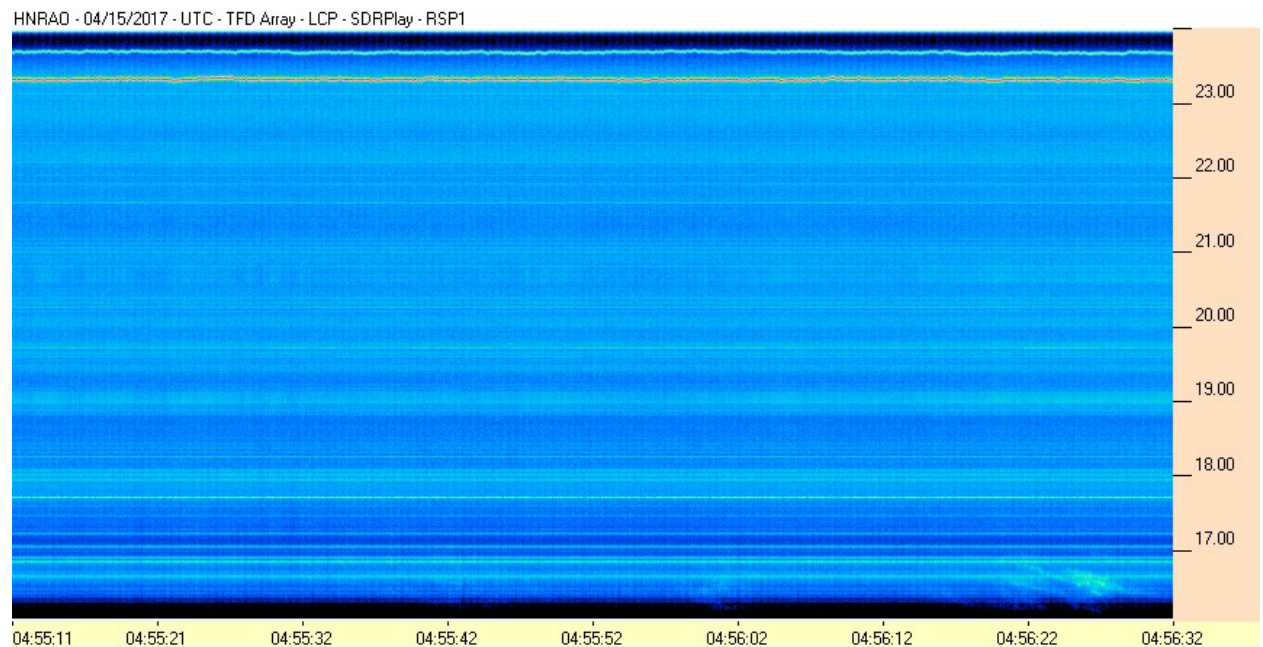
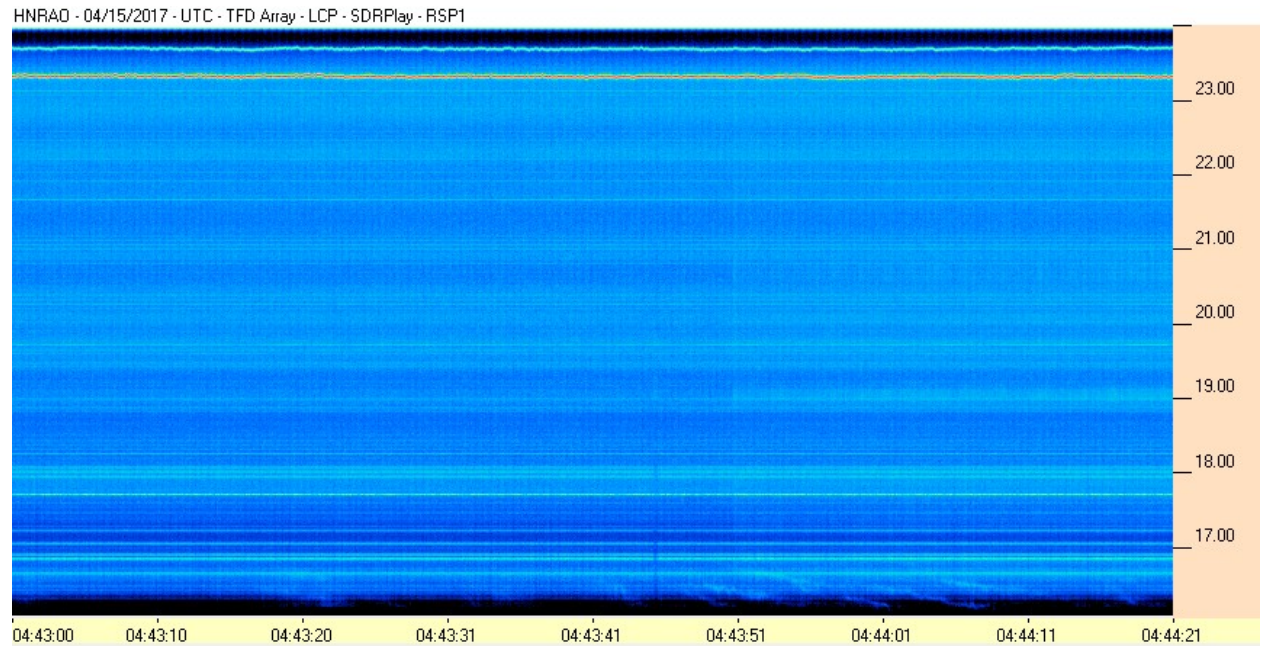
HNRAO - 04/15/2017 - UTC - TFD Array - LCP - SDRPlay - RSP1



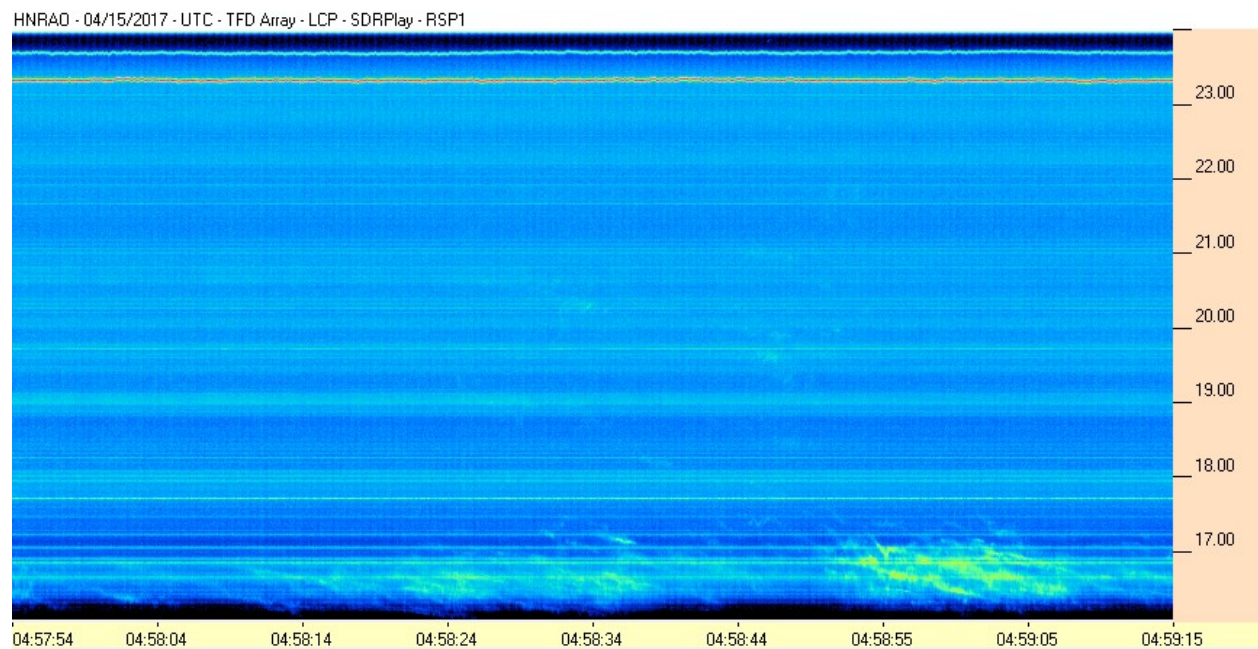
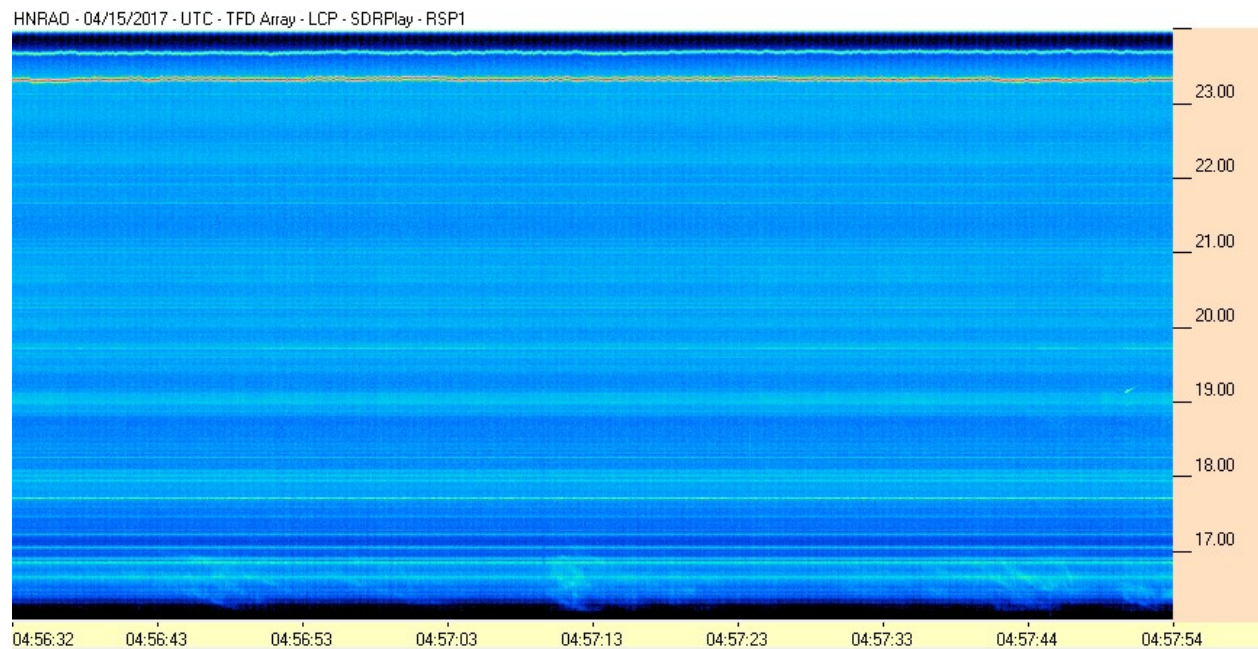
HNRAO - 04/15/2017 - UTC - TFD Array - LCP - SDRPlay - RSP1



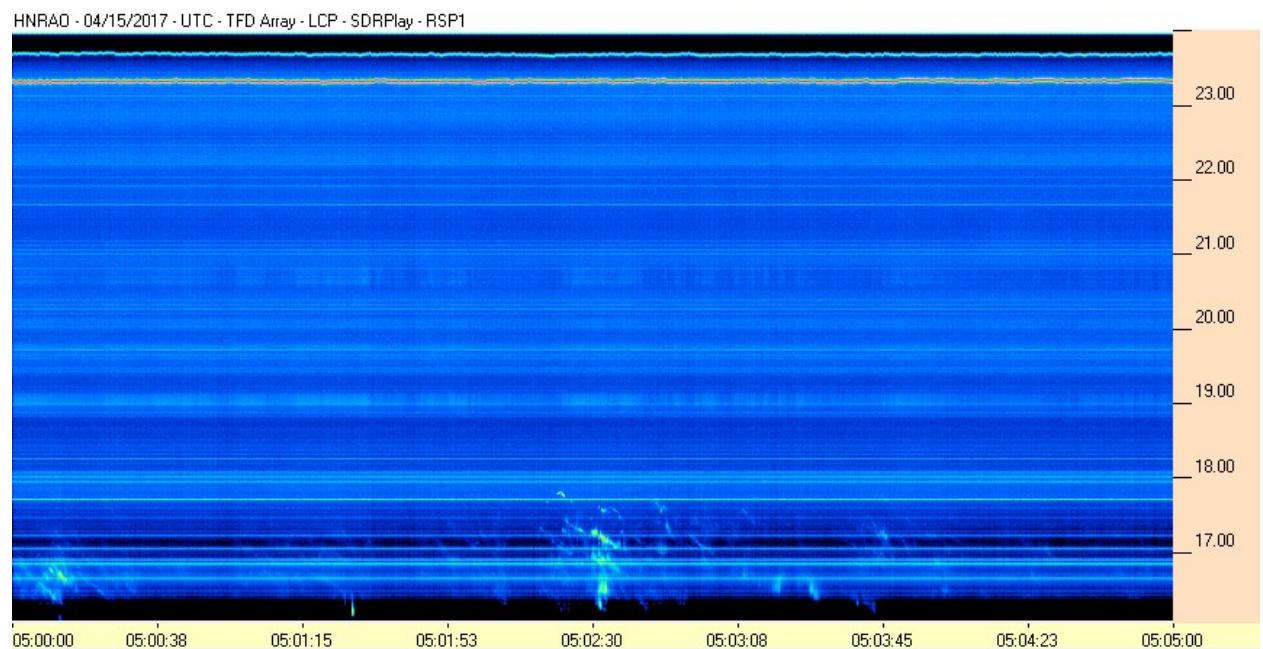
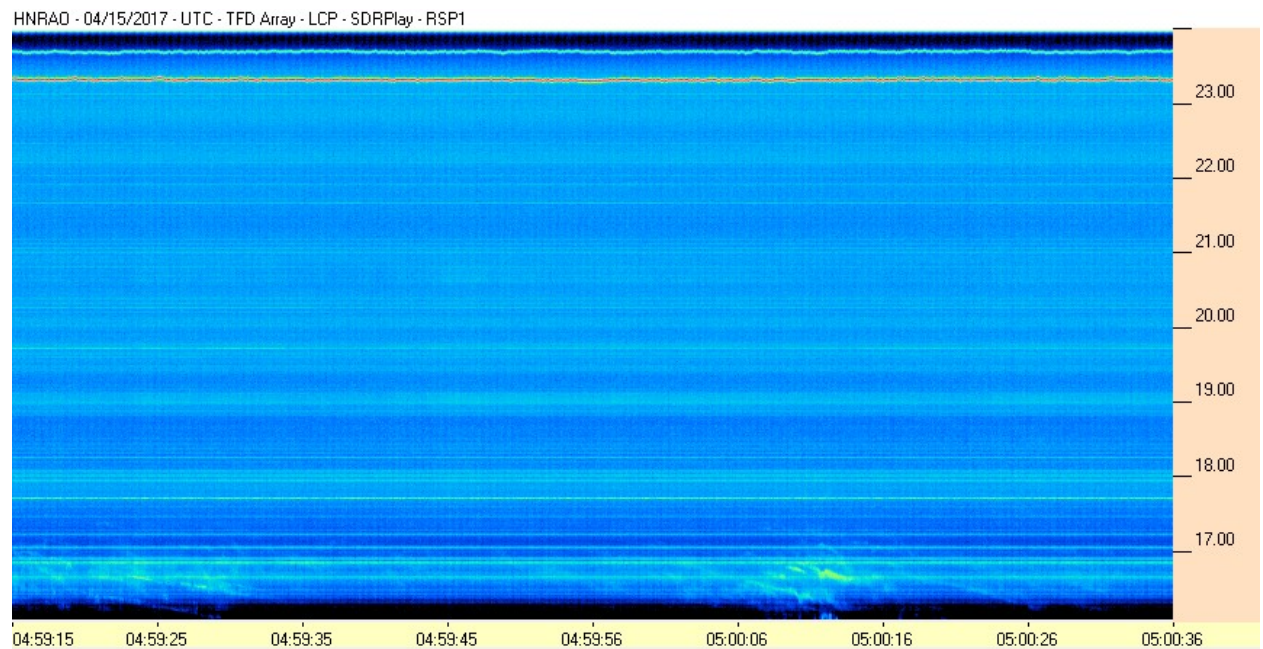
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



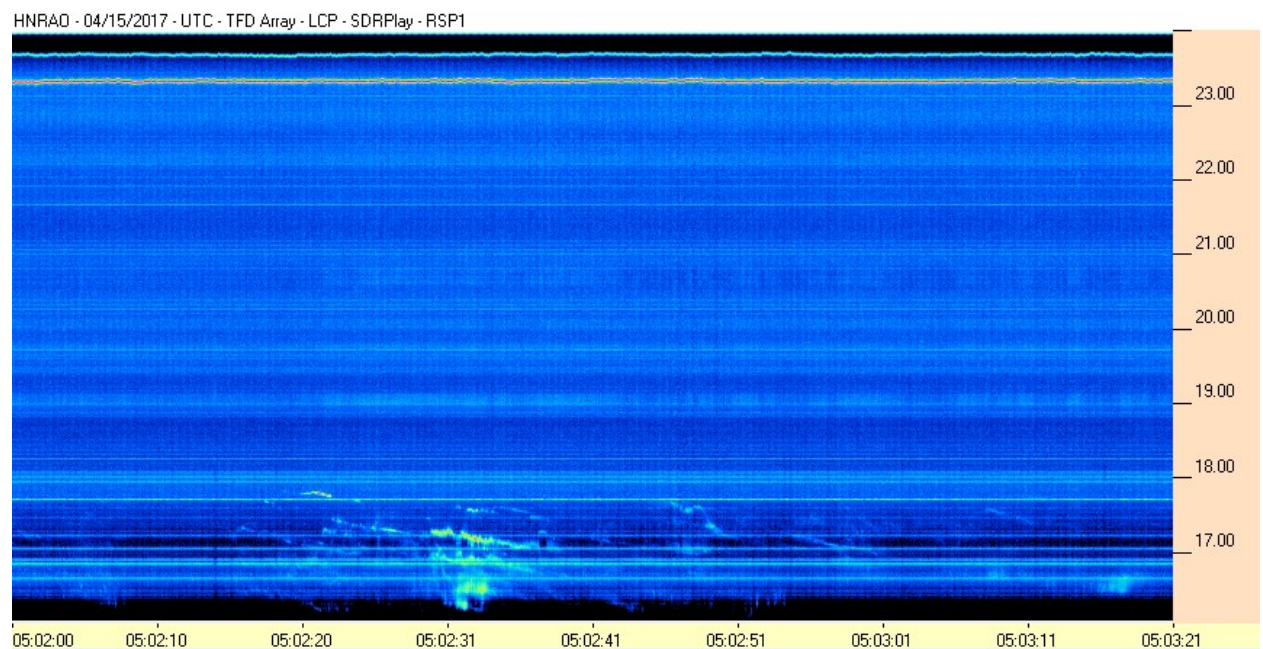
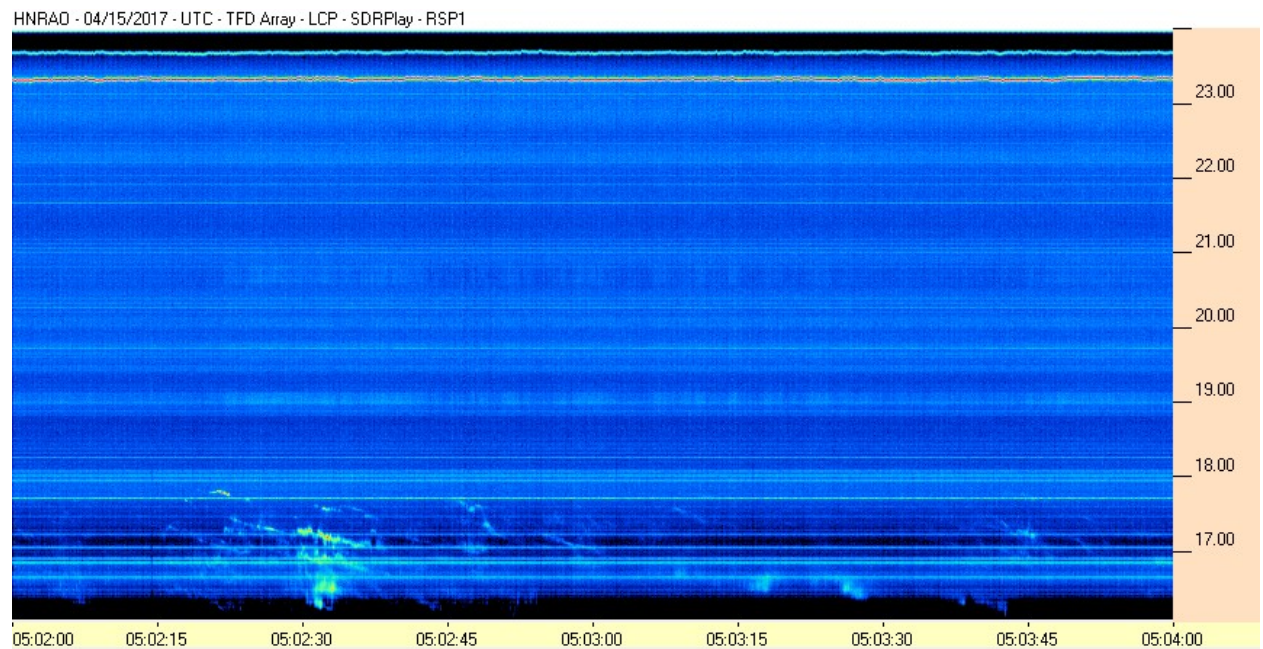
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



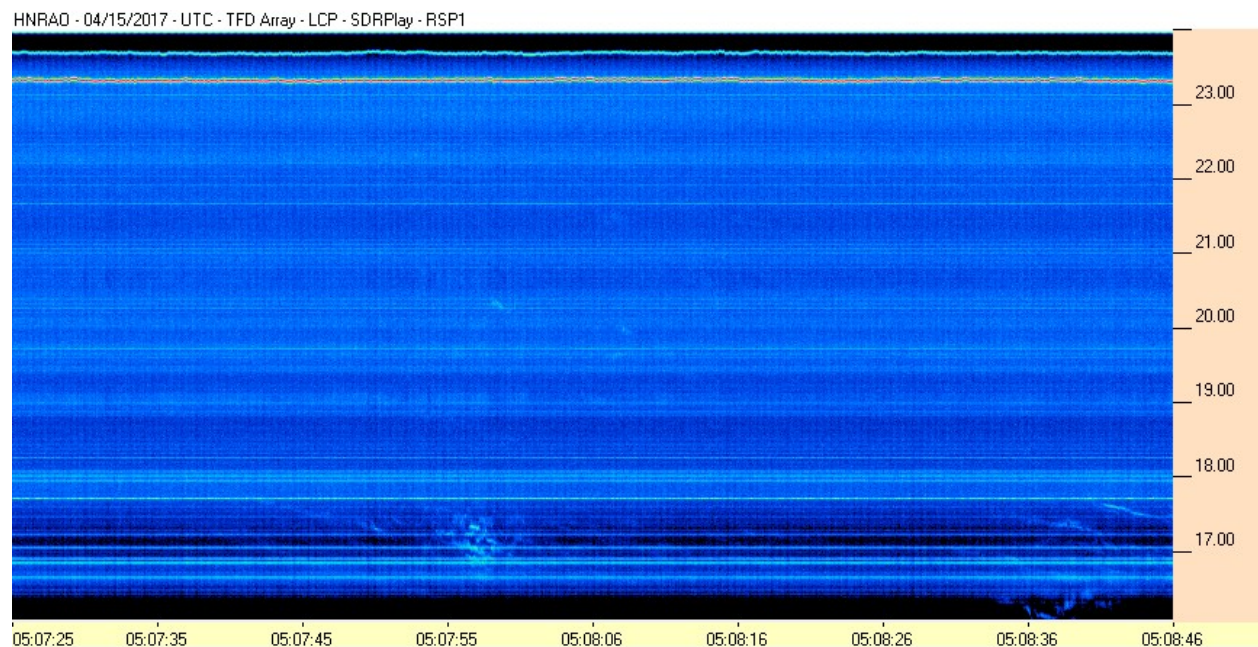
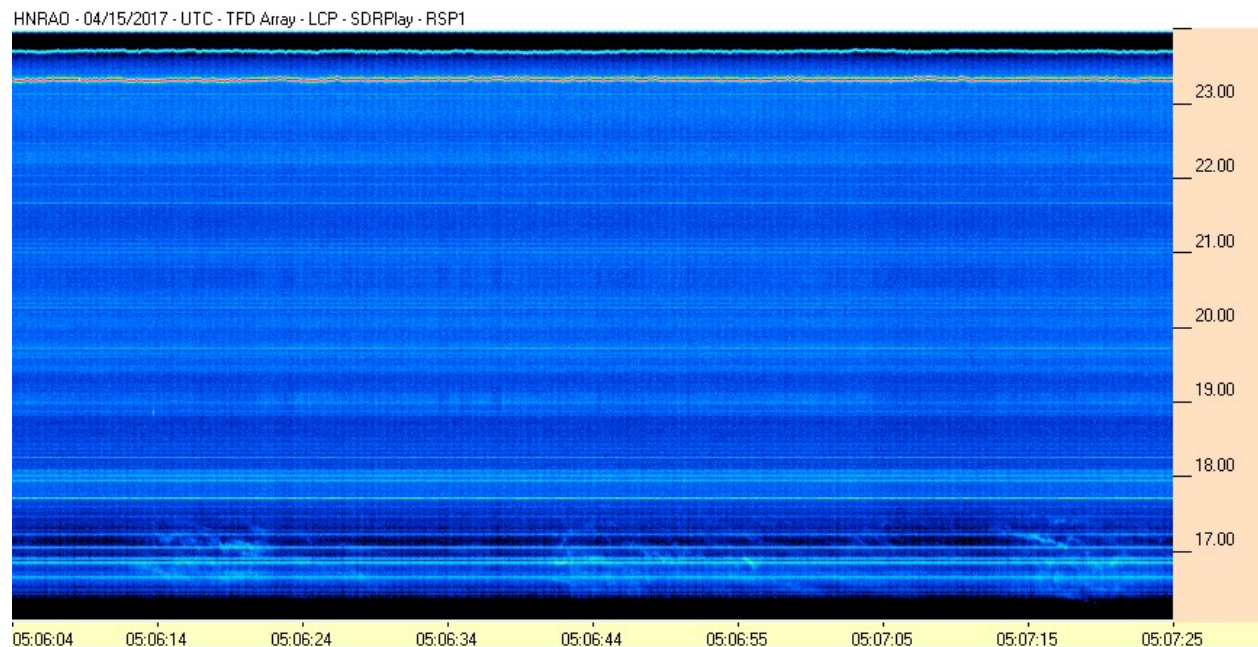
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



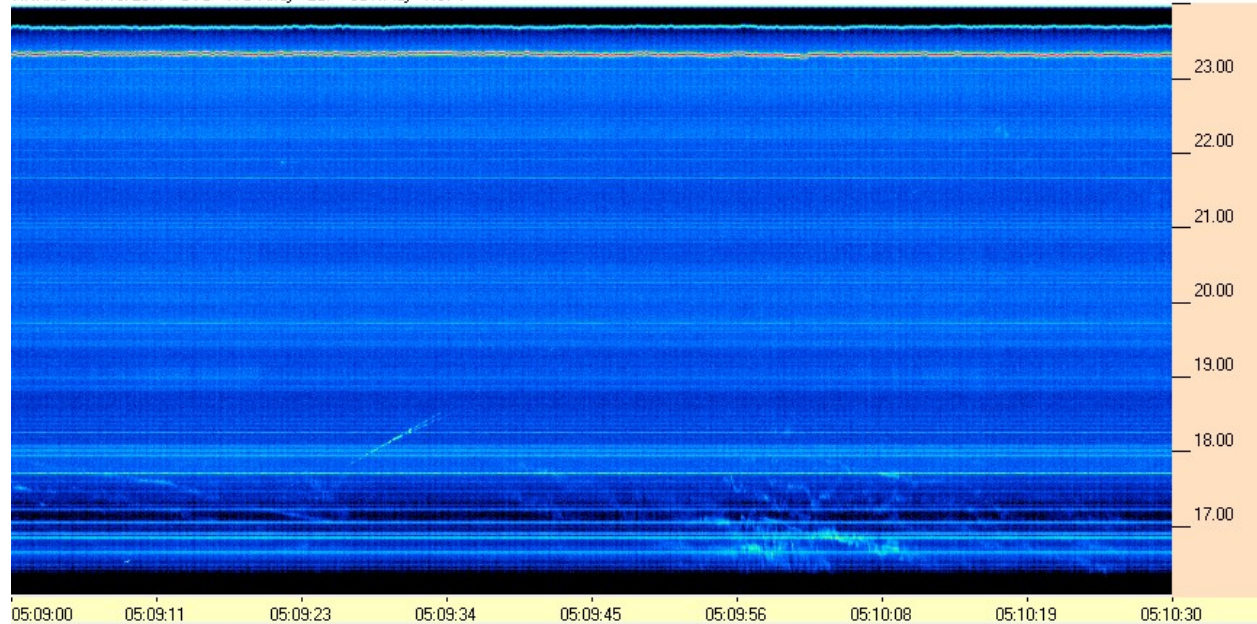
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



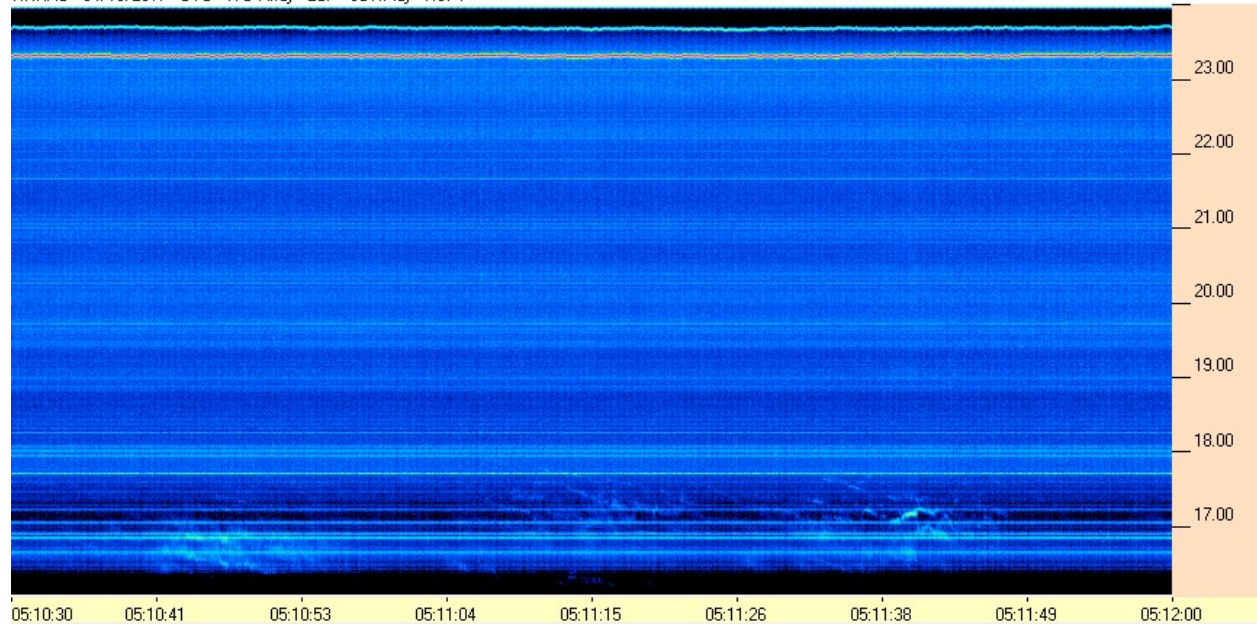
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



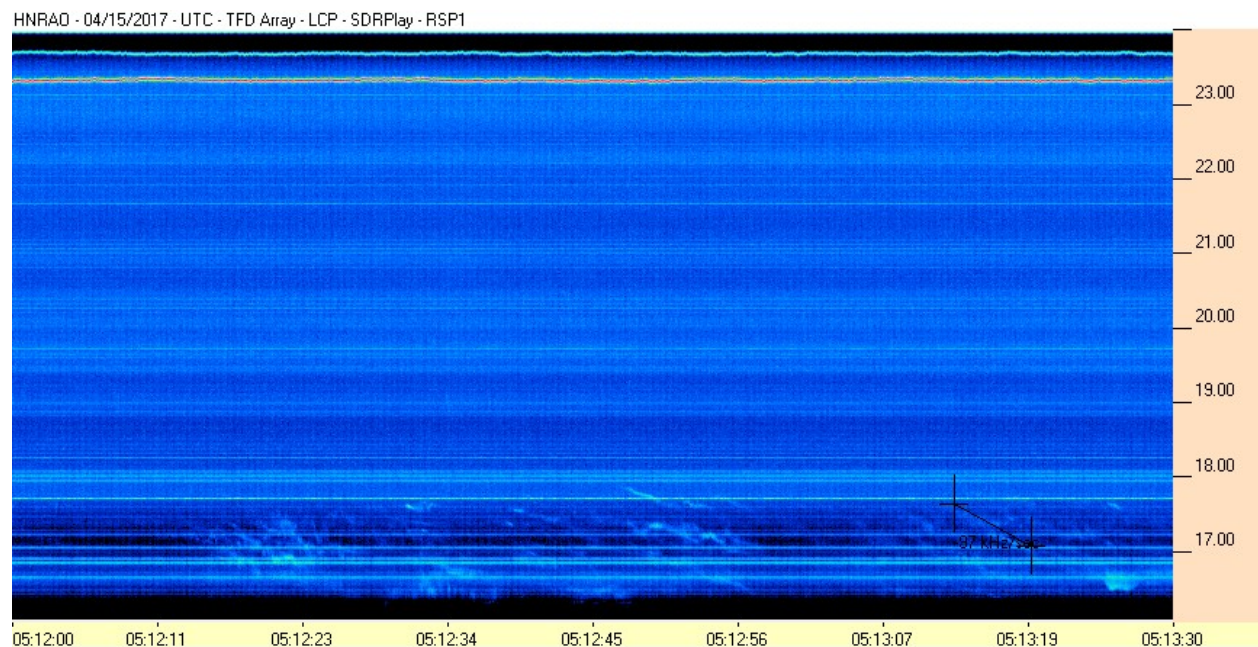
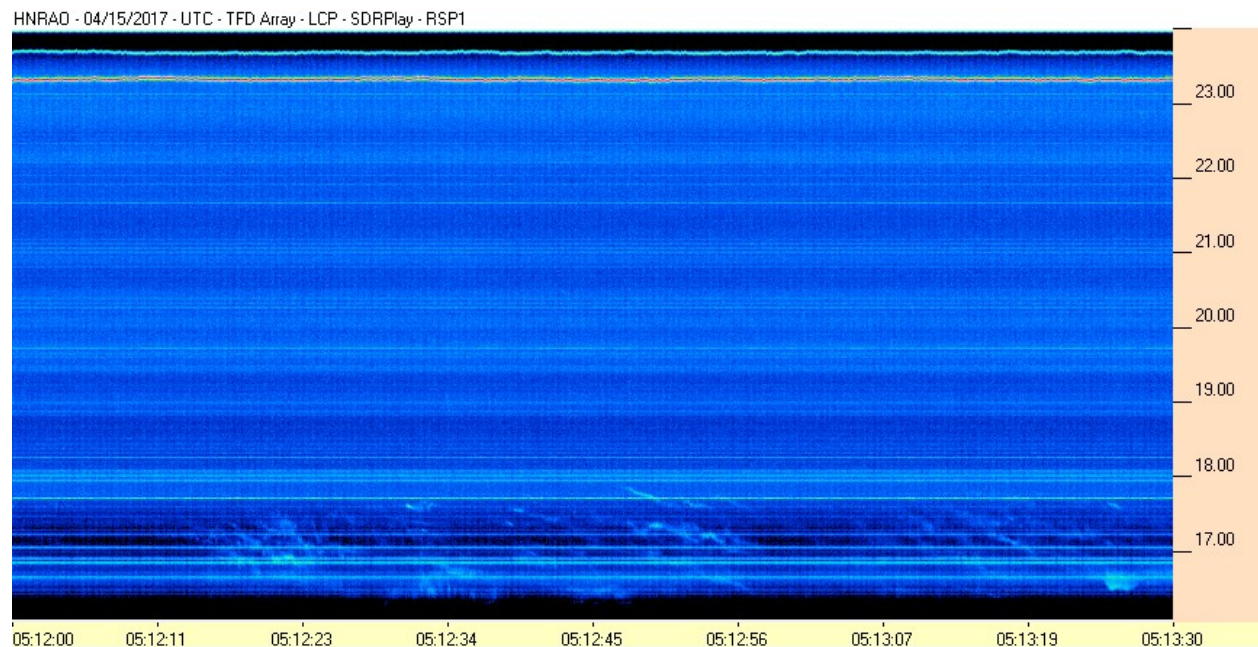
HNRAO - 04/15/2017 - UTC - TFD Array - LCP - SDRPlay - RSP1



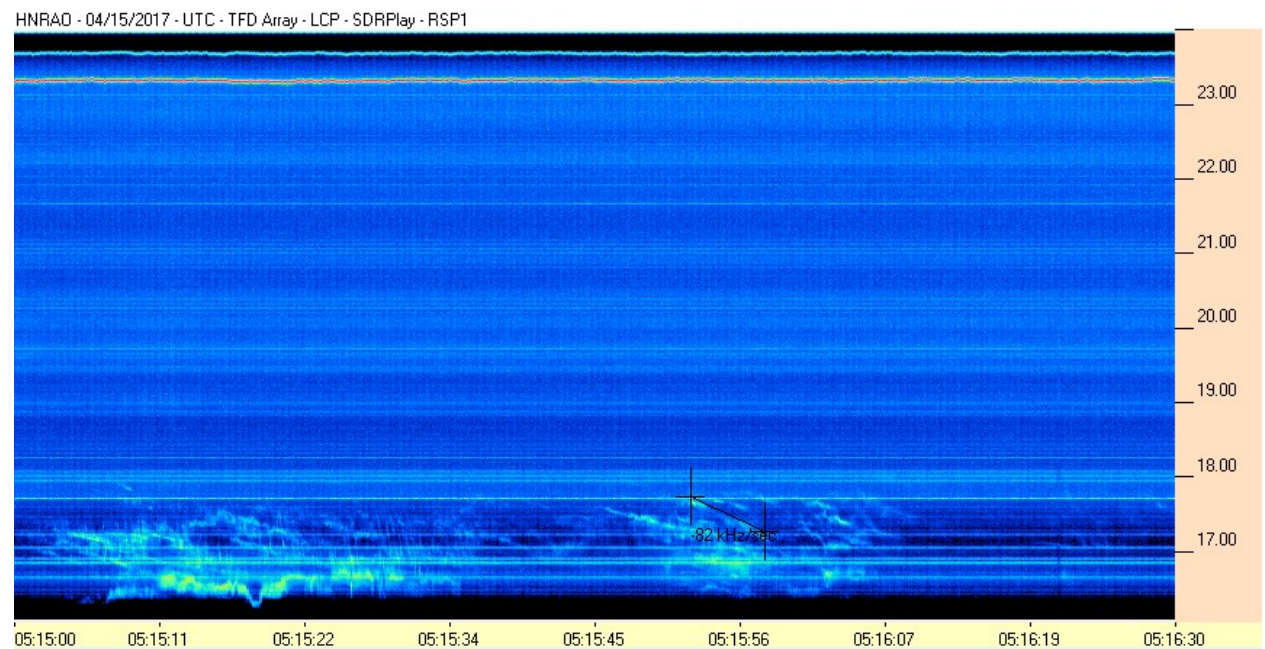
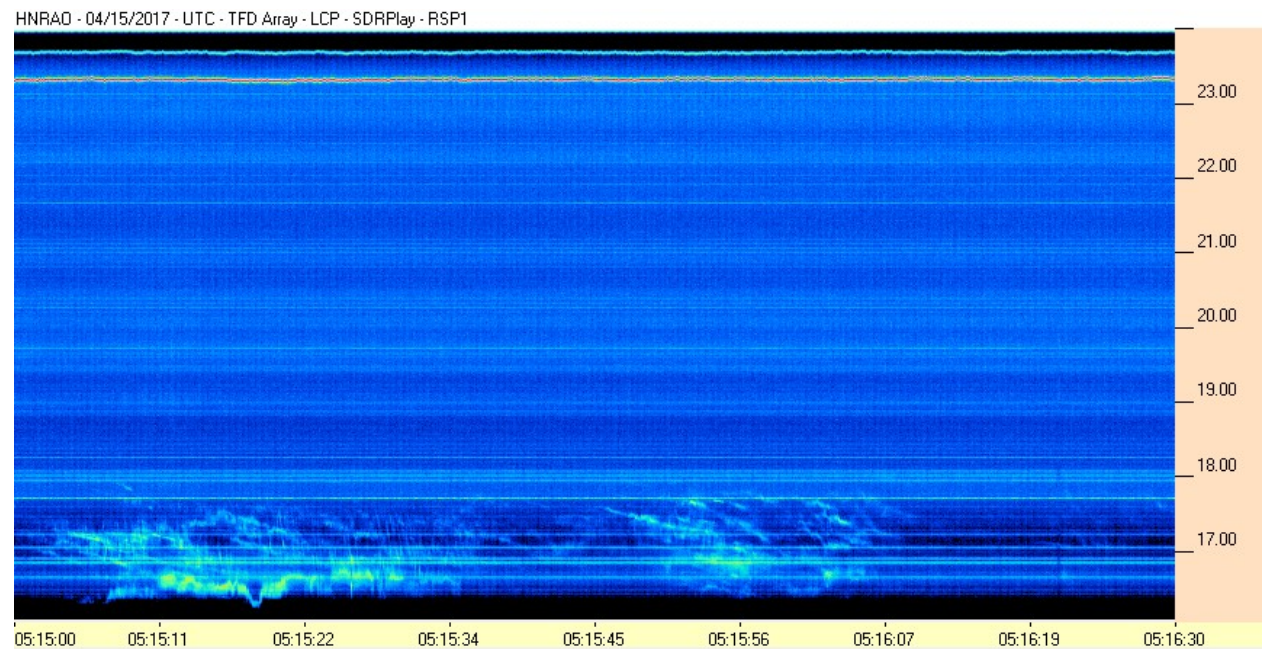
HNRAO - 04/15/2017 - UTC - TFD Array - LCP - SDRPlay - RSP1



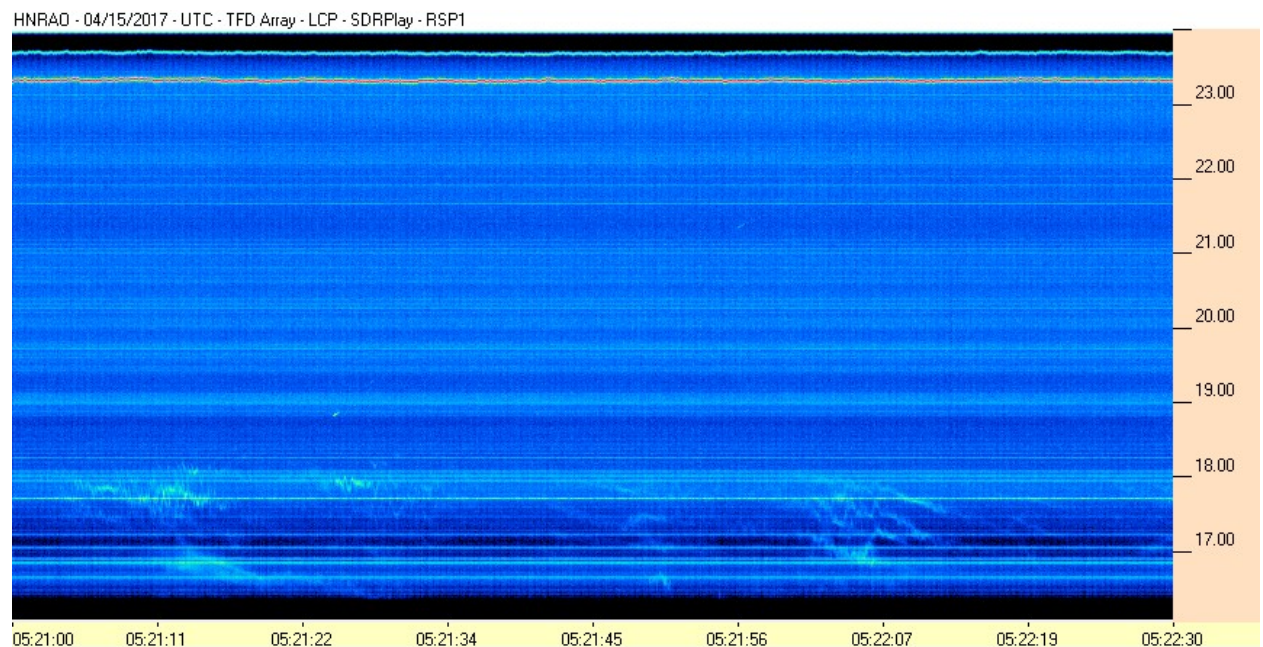
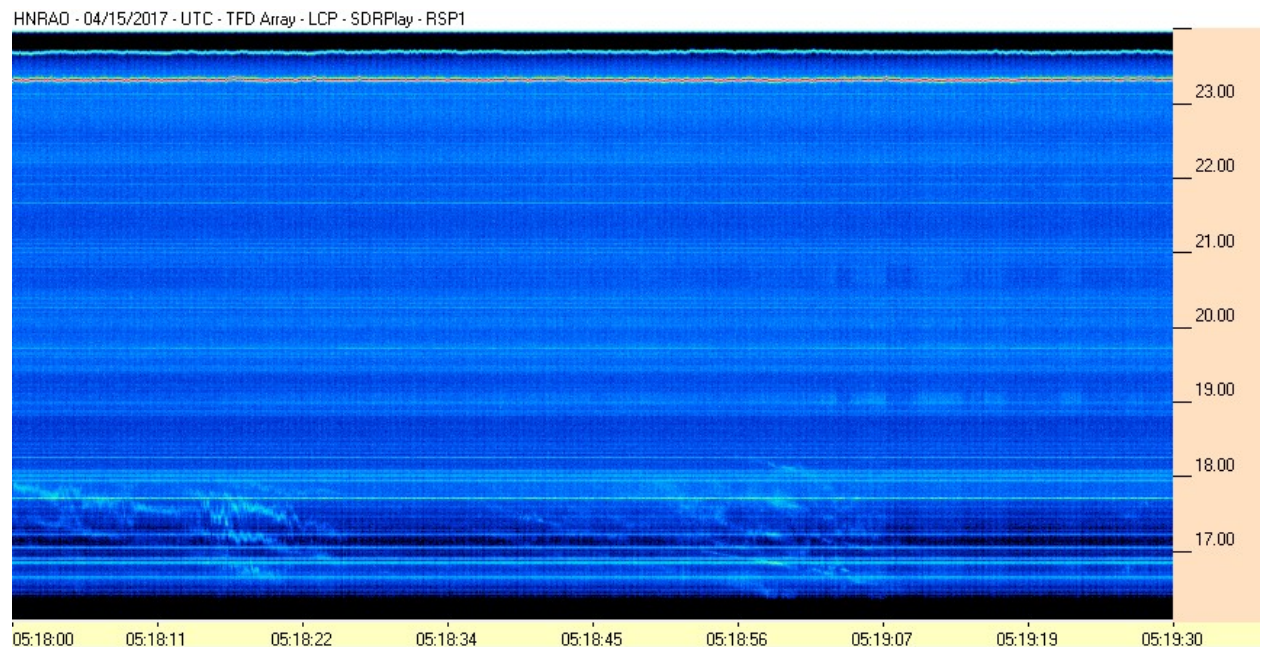
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



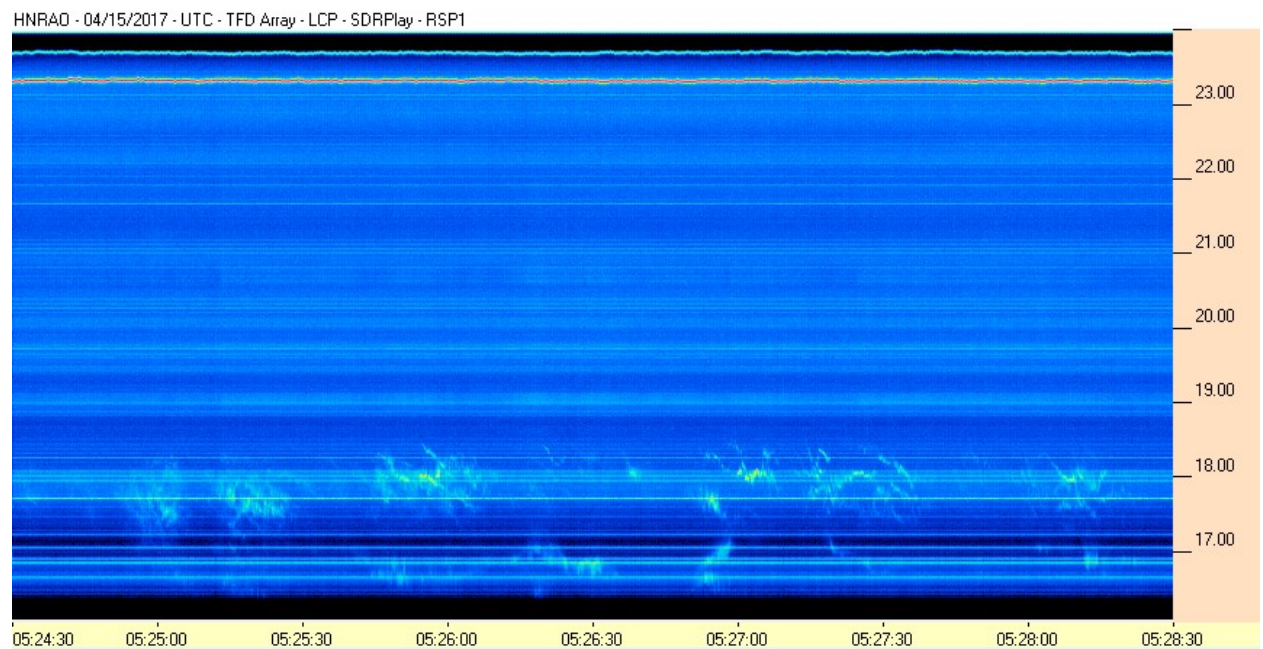
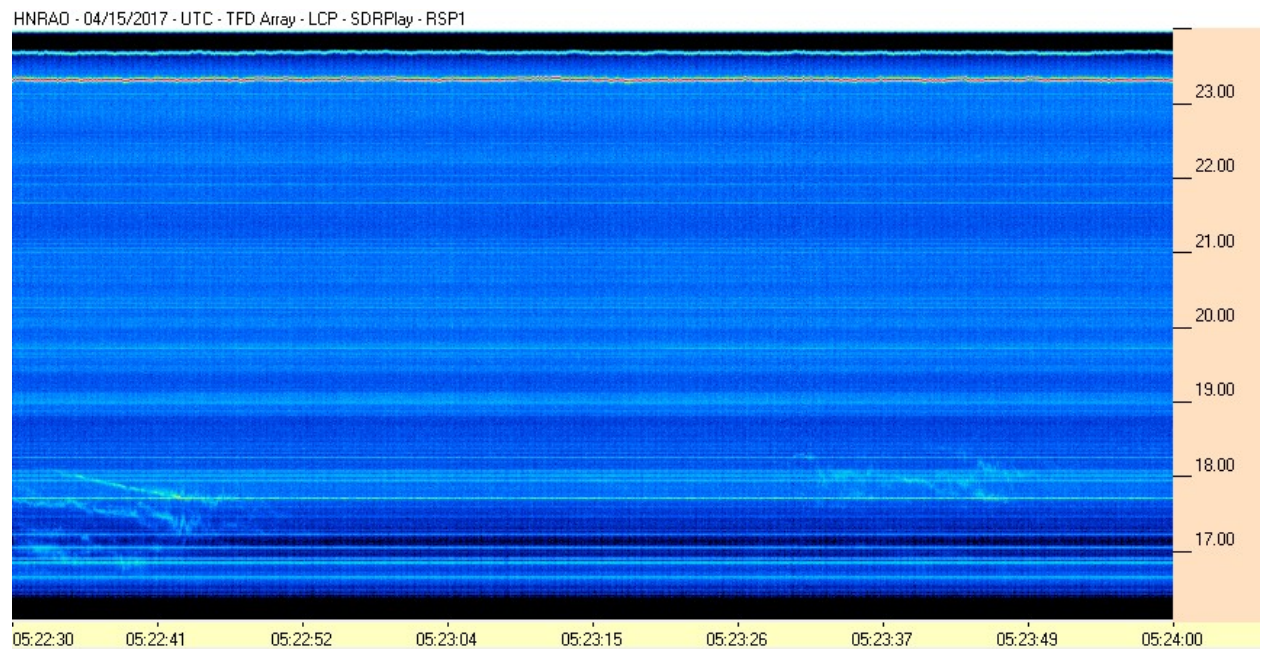
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



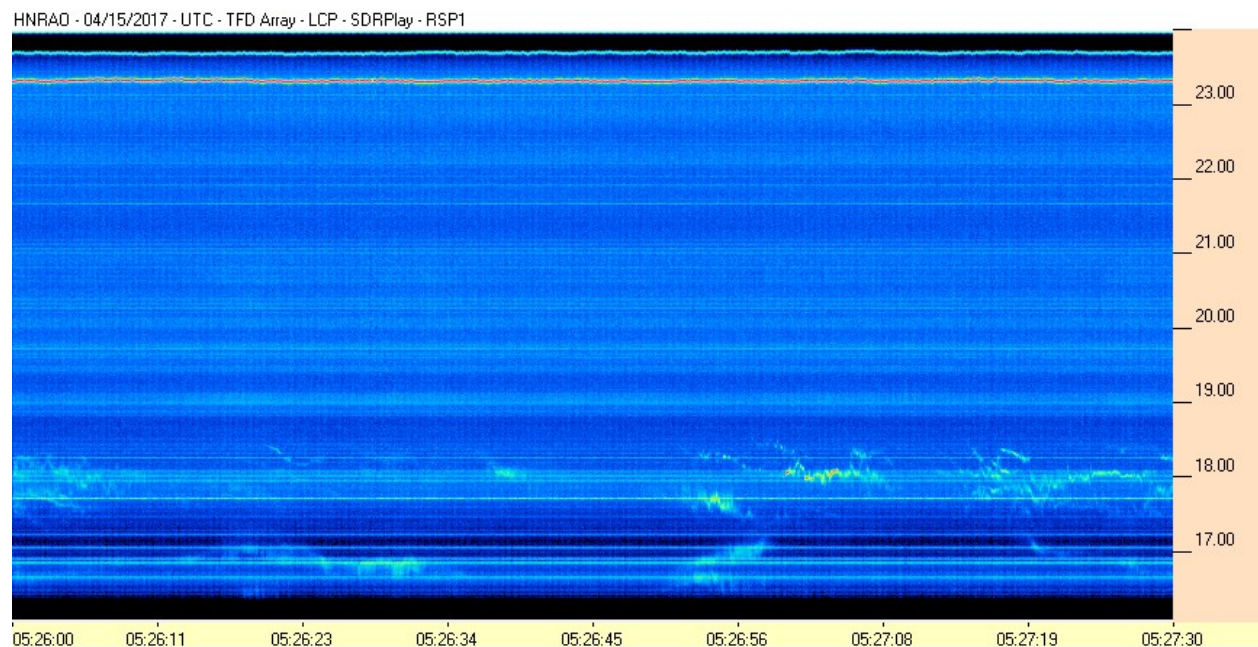
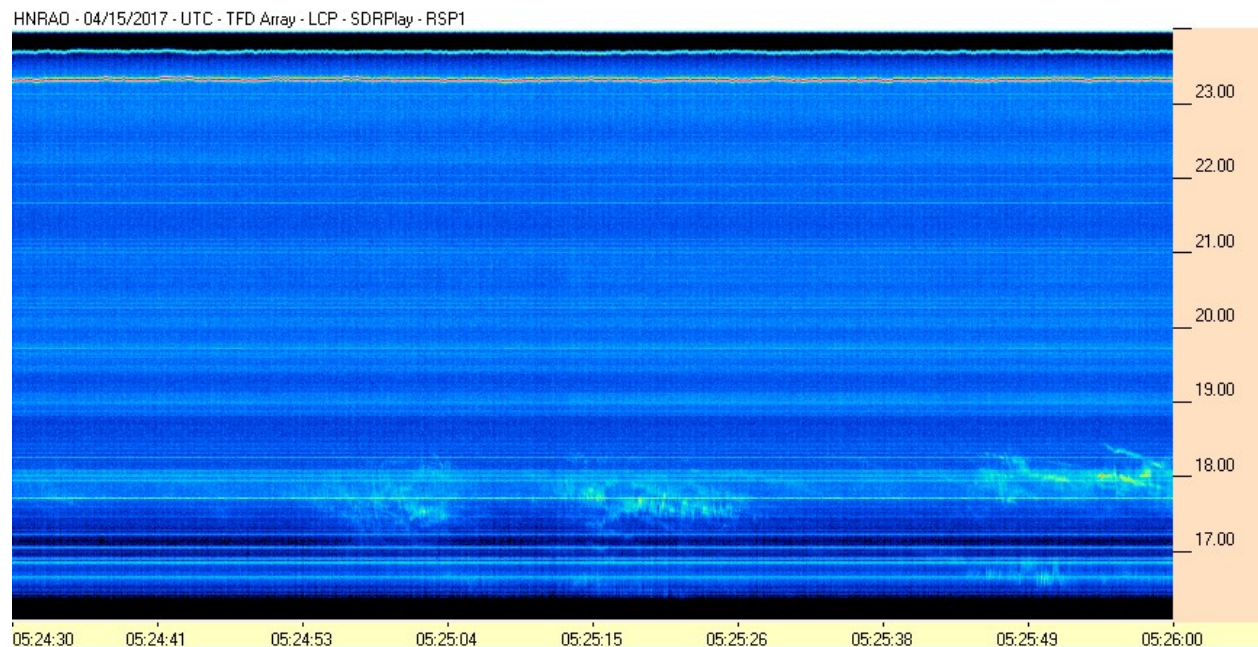
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



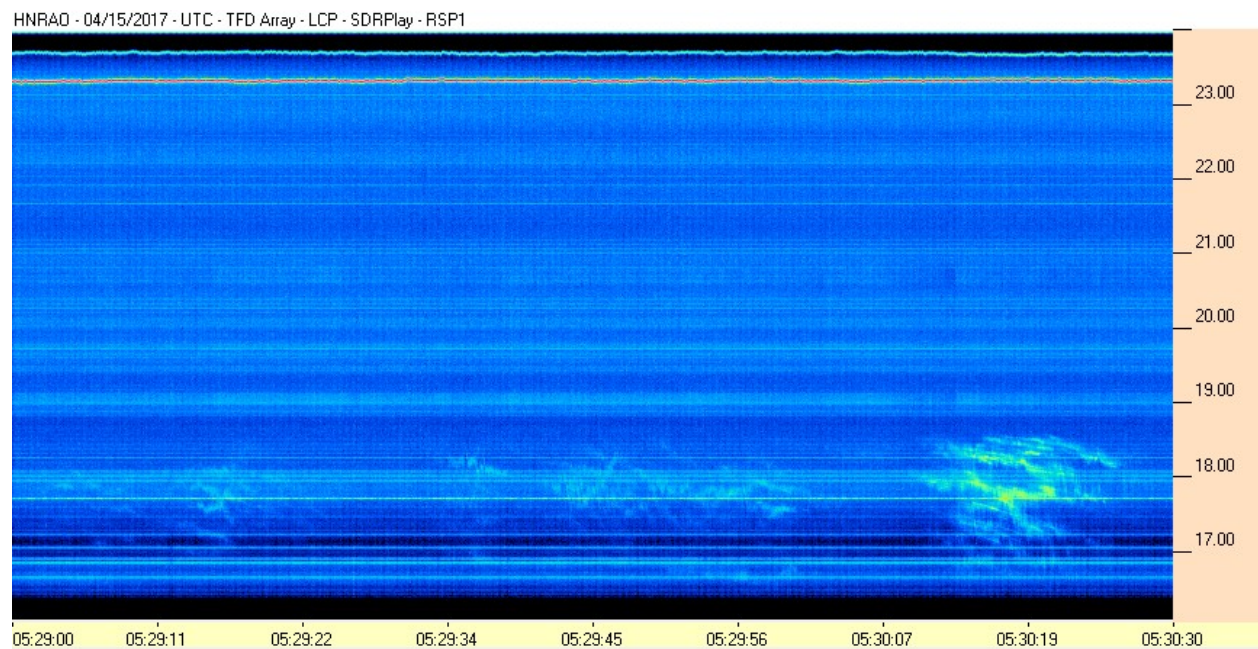
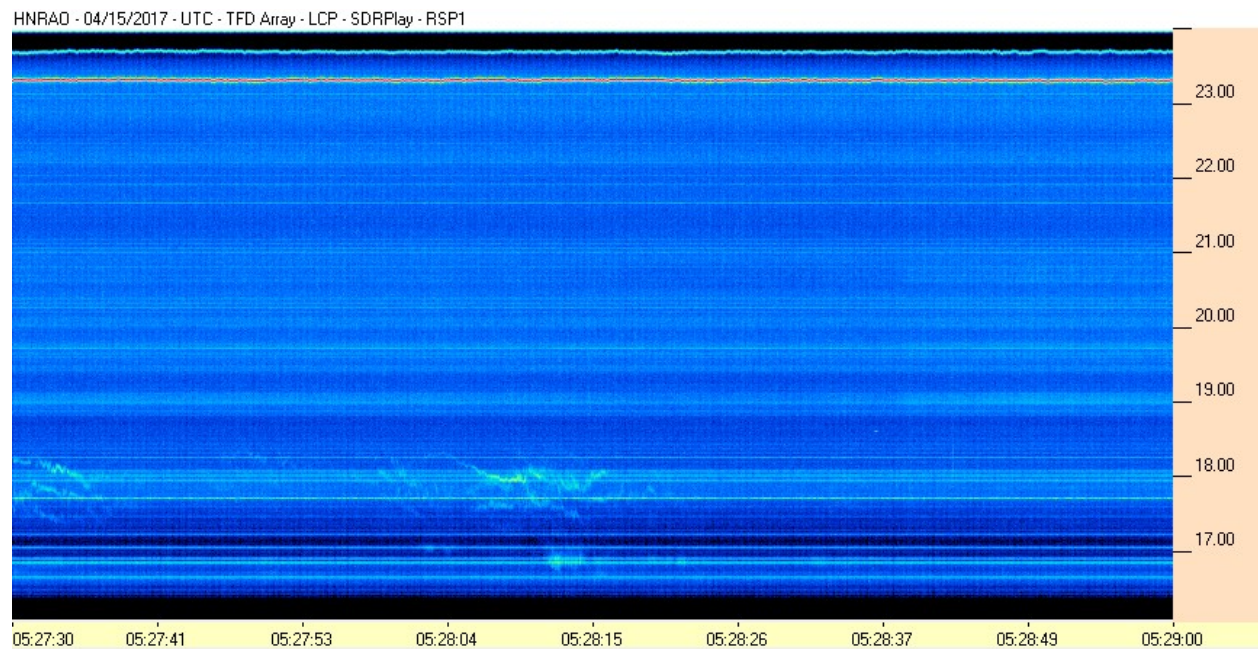
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



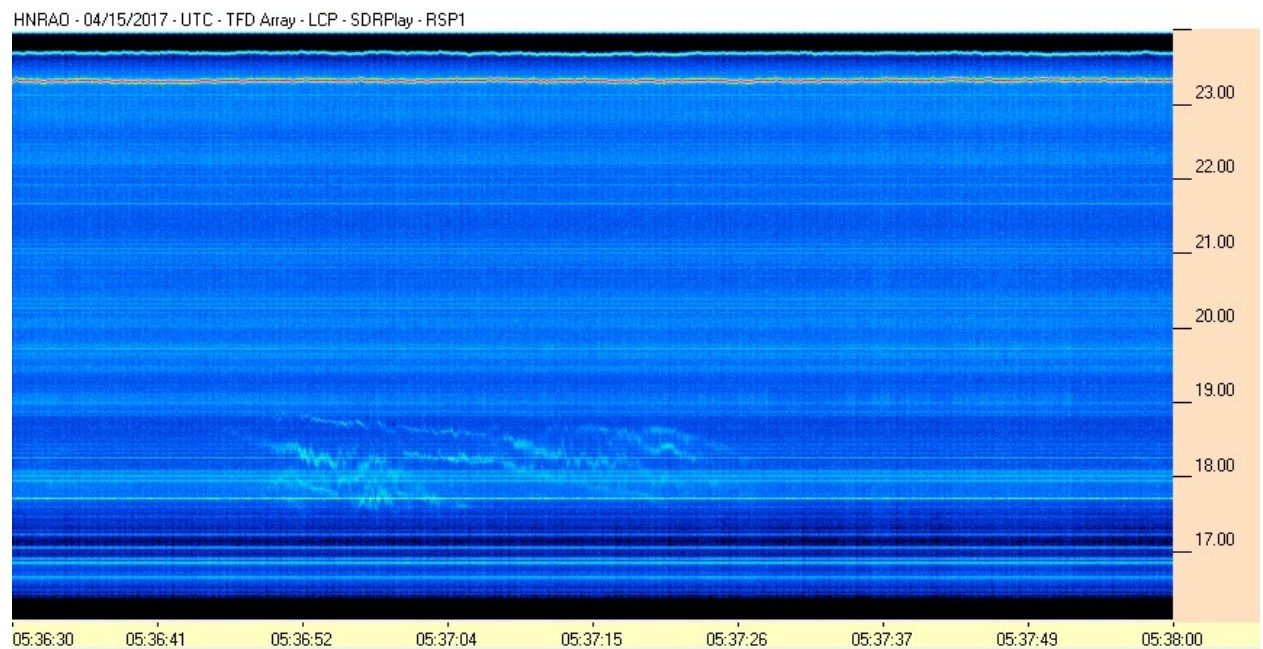
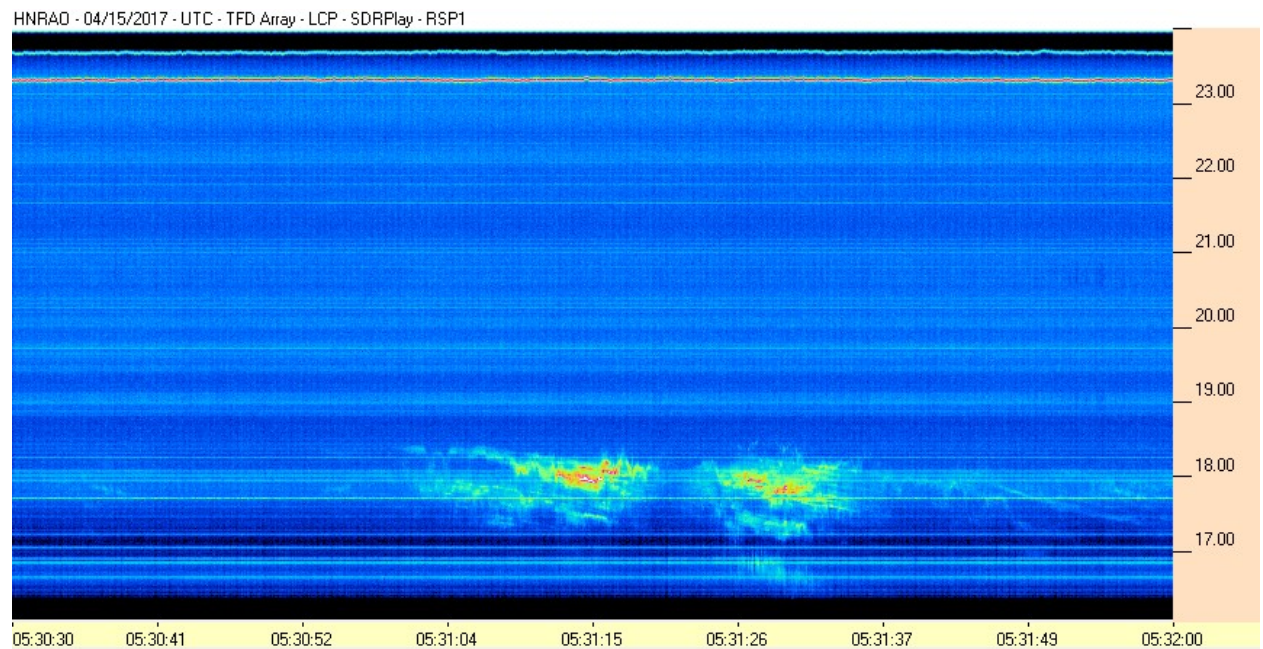
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



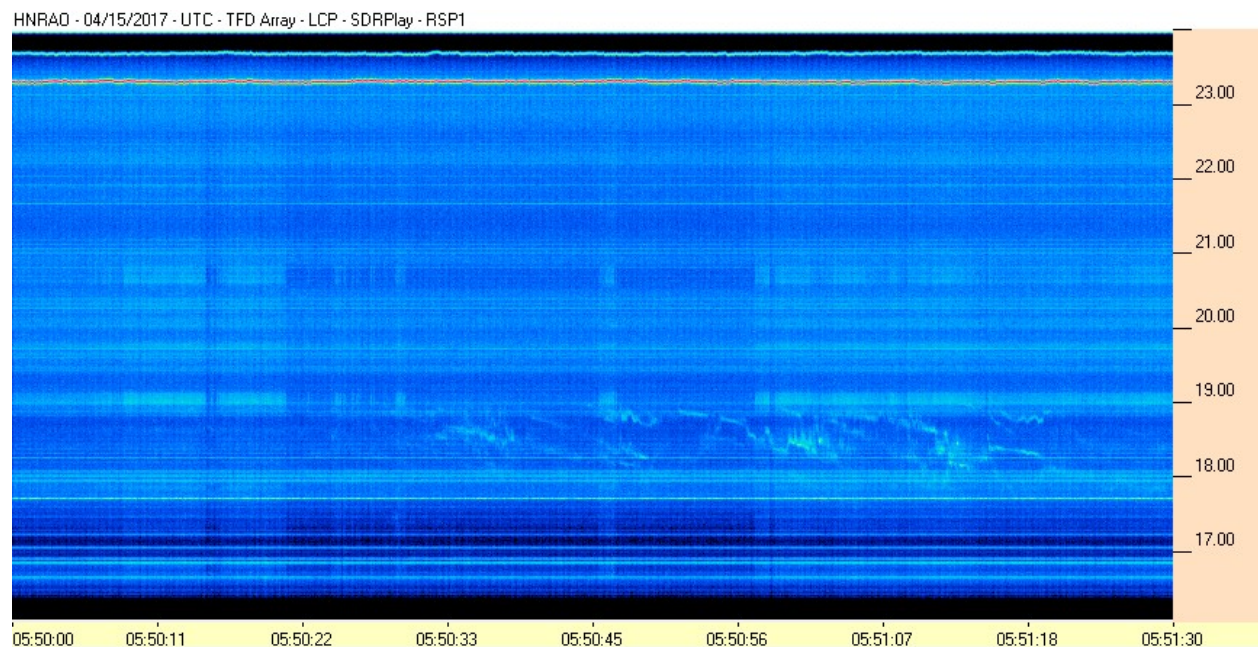
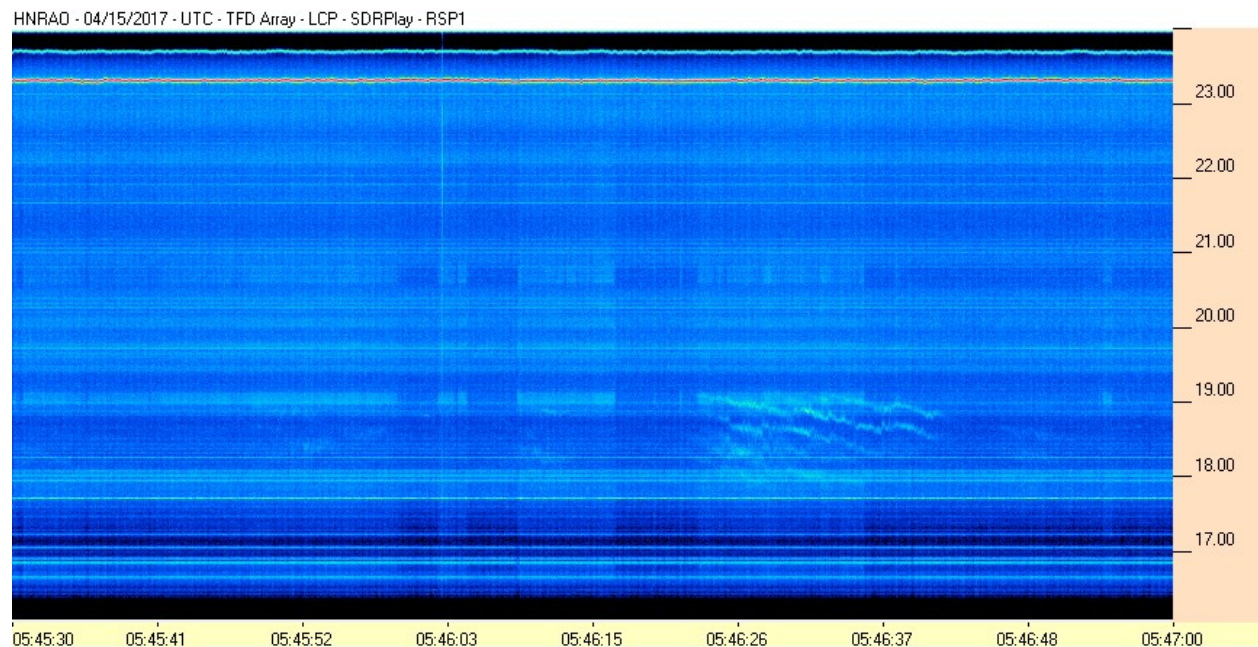
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



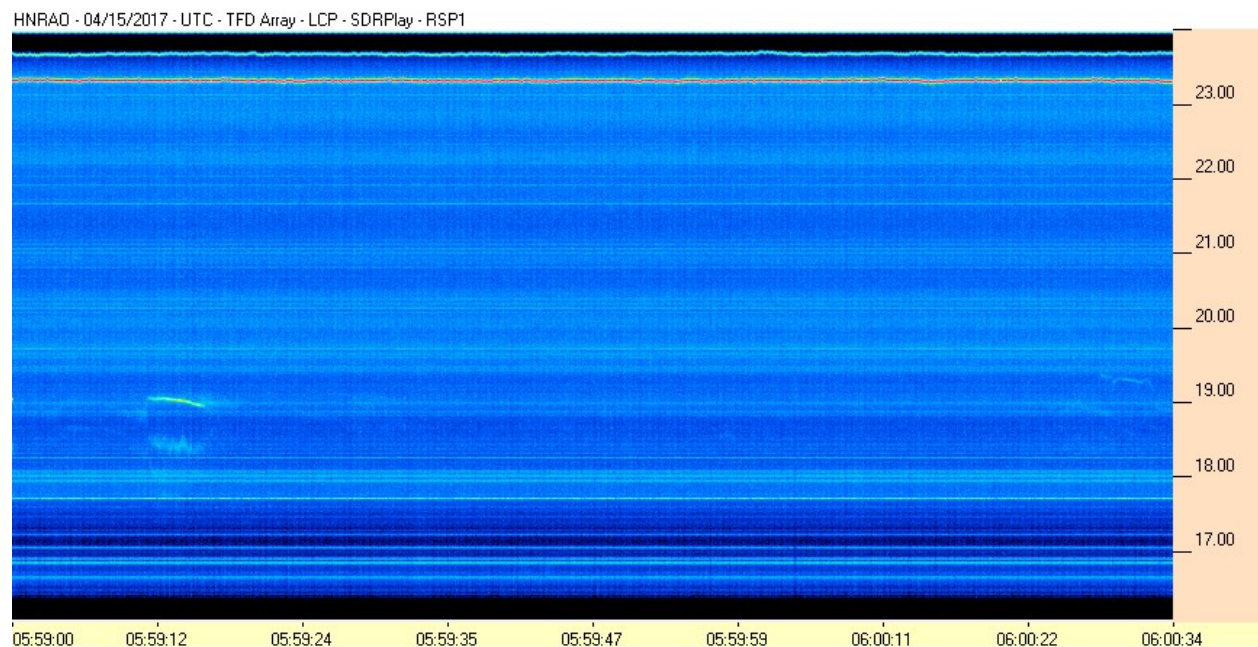
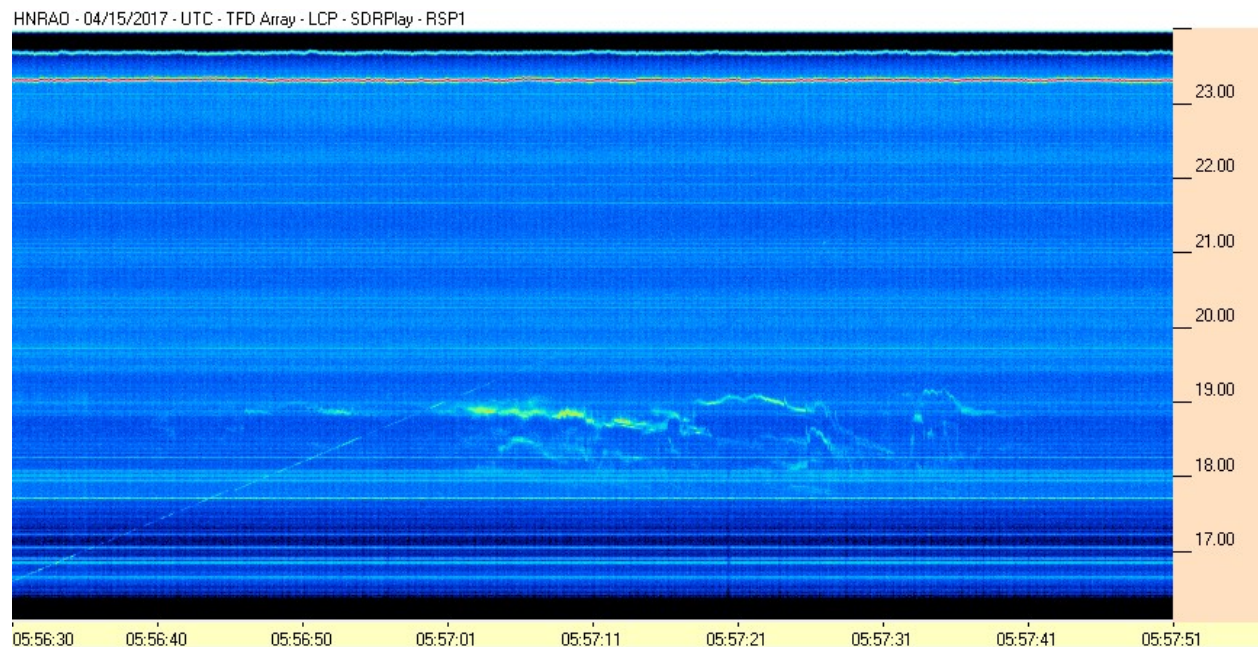
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



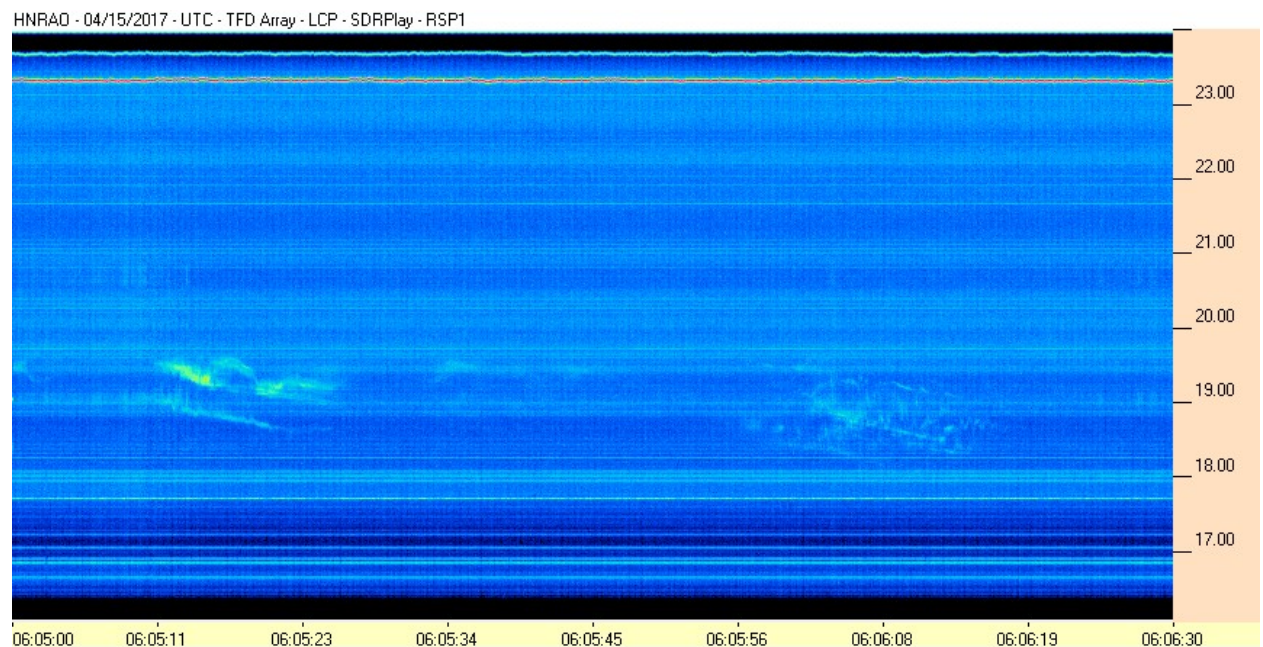
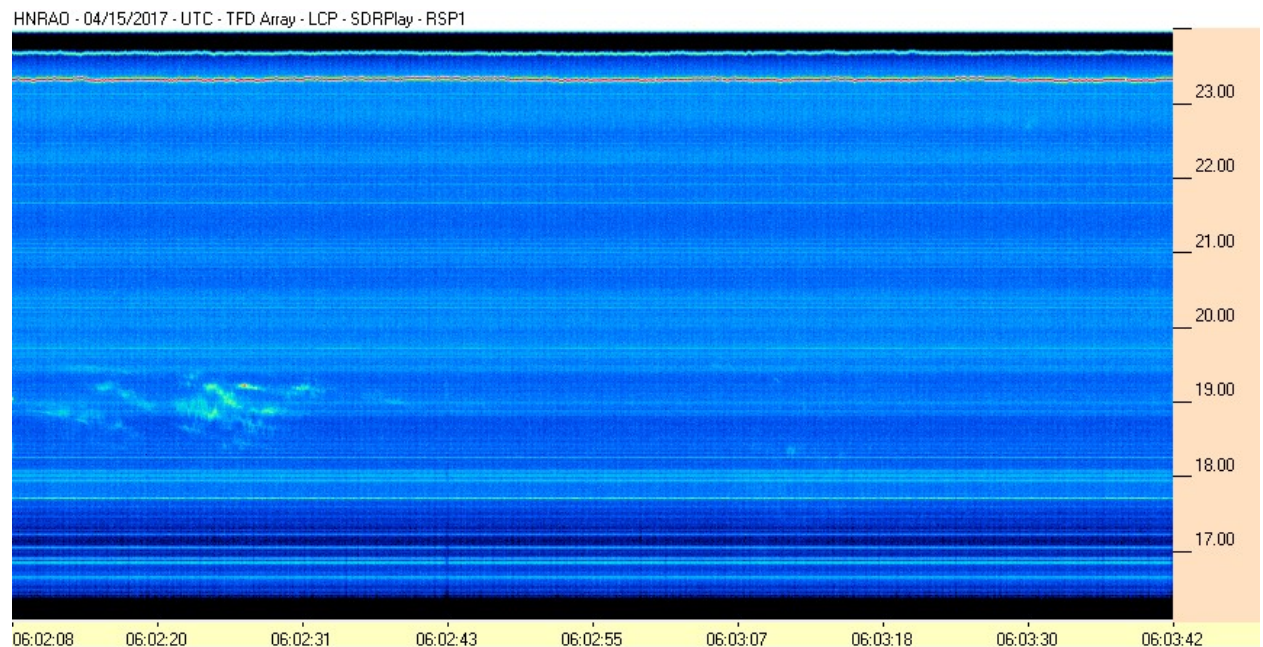
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



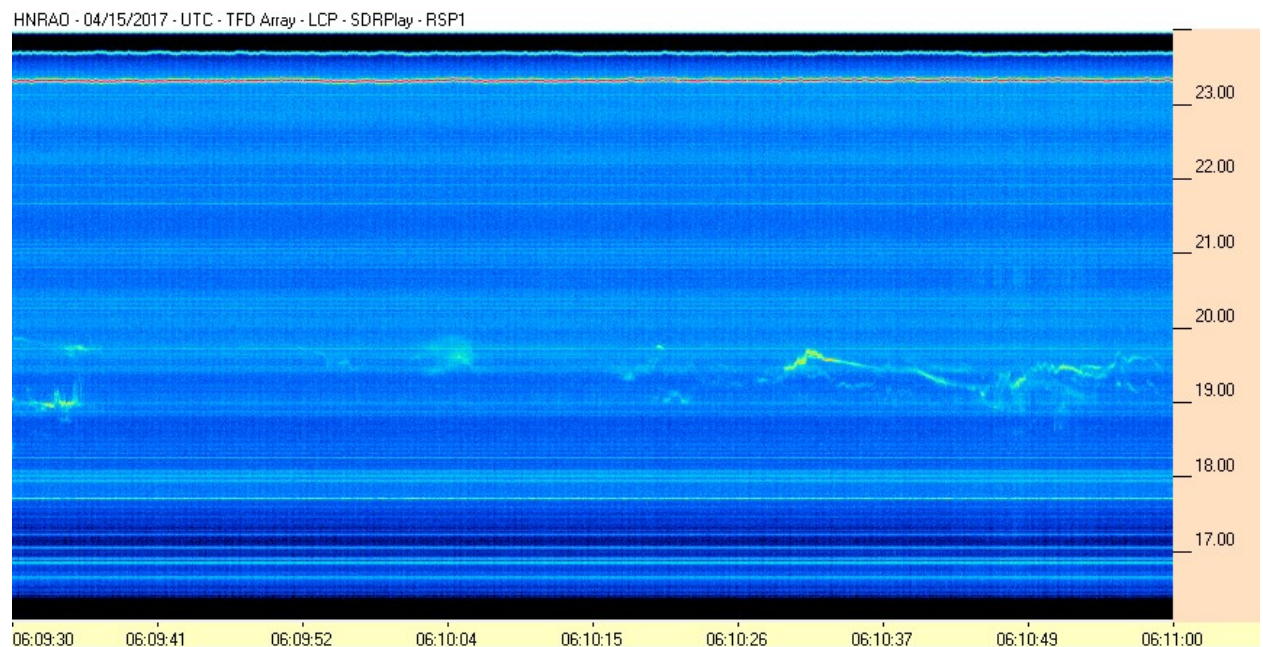
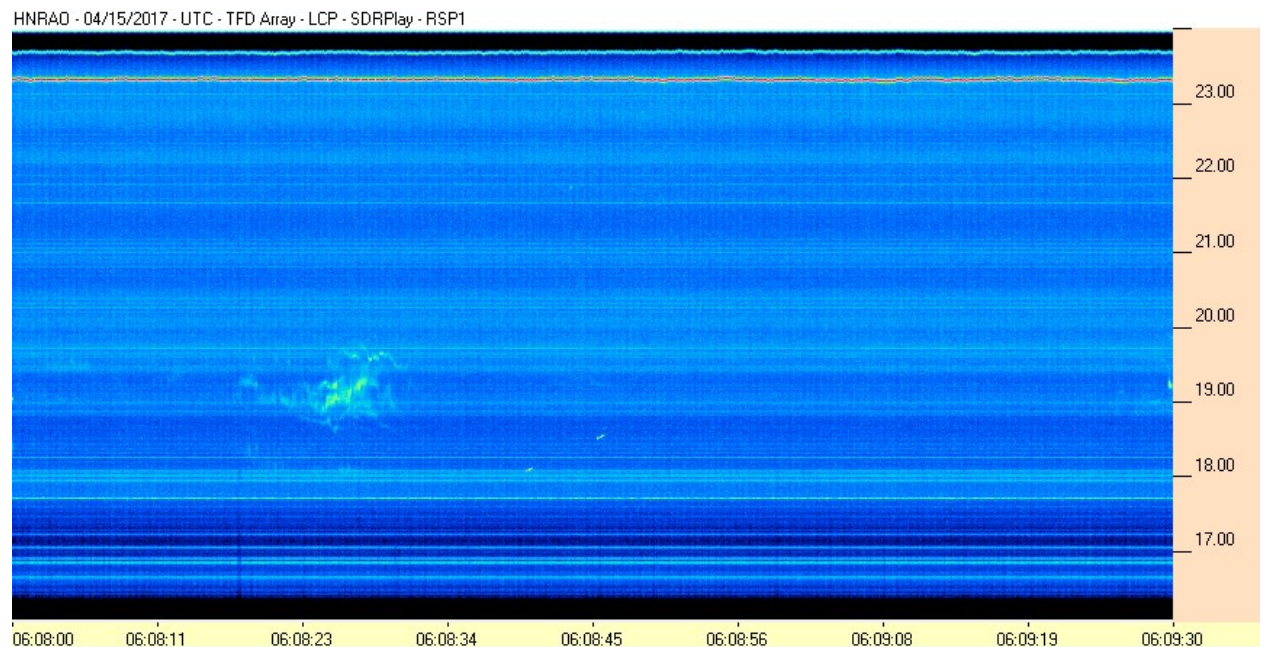
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



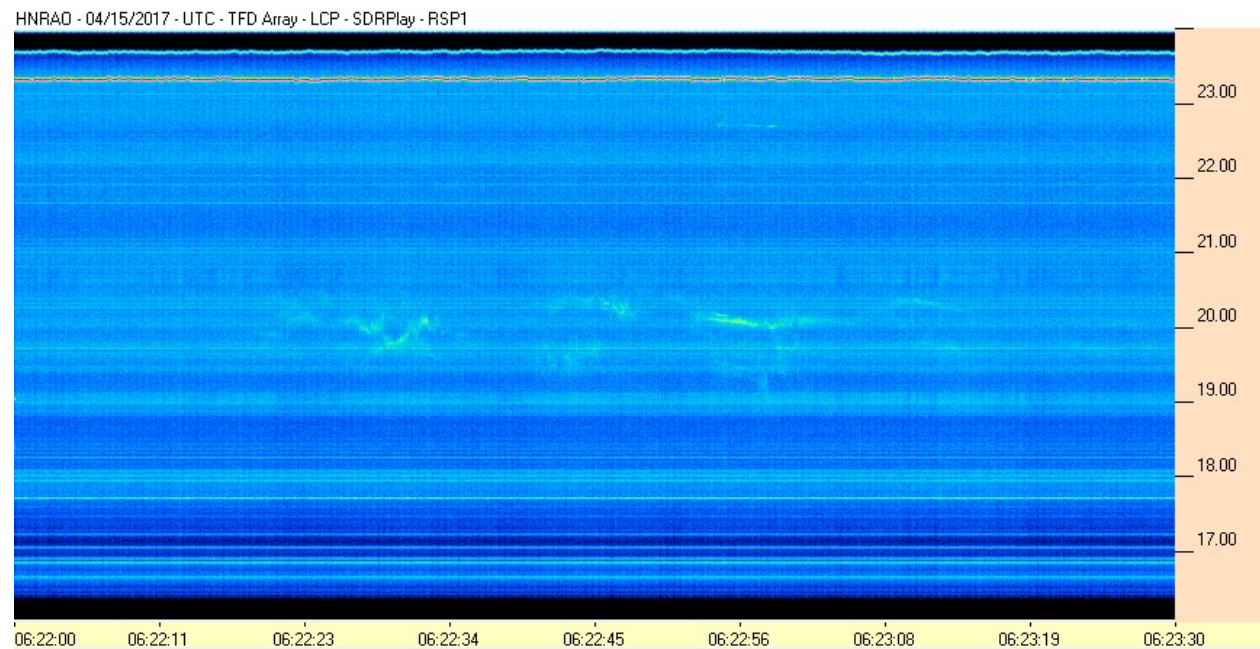
HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

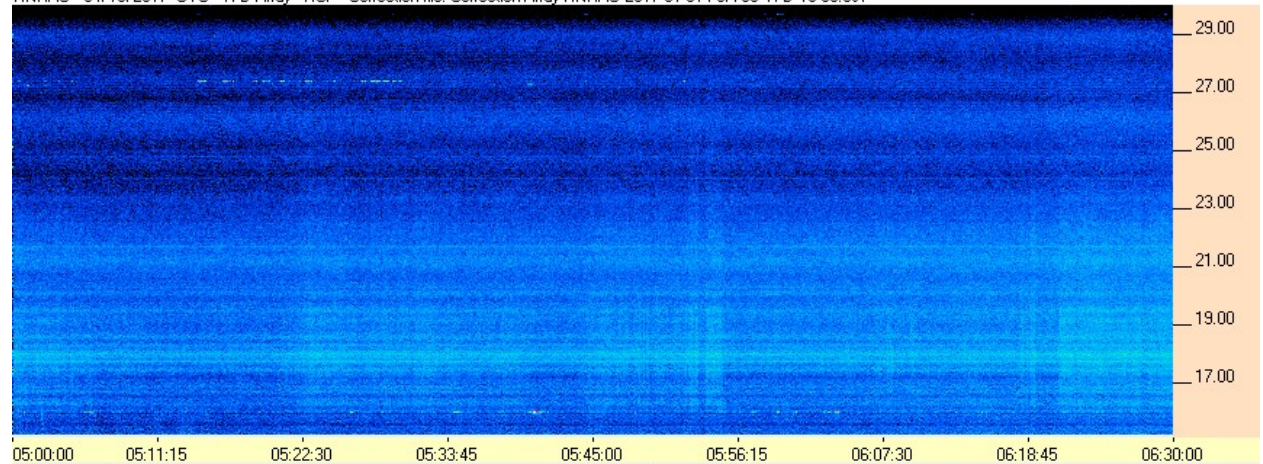


FSX-8S/TFD Pair

HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq



HNRAO - 04/15/2017 UTC - TFD Array - RCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv



HNRAO - 04/15/2017 UTC - TFD Array - LCP - Correction file: Correction Array HNRAO 2017 01 31 FSX-8S TFD 15-30.csv

