HNRAO Observing Log
40.673181 N – 80.437885 W
EN90sq

Date: 31 January 2017

Object: Jupiter – Io-A

Observer: JB

Start of pass:	**0848 UT**		
Jupiter Altitude:	**38.6 degrees**	**Jupiter Azimuth:**	**155.3 degrees**
Jupiter CML:	**223.46**	**Jupiter Io Phase:**	**192.77**
Jupiter RA:	**13:26**	**Jupiter Dec:**	**-07:33**
Hour Angle:	**-01:17**	**Polarization**	**RHC**
Sun Altitude:	**-41.5 degrees**	**Sun Azimuth:**	**077.2 degrees**
Sun RA:	**20:49**	**Sun Dec:**	**-17:48**

End of pass:	**0920 UT**		
Jupiter Altitude:	**40.7 degrees**	**Jupiter Azimuth:**	**165.2 degrees**
Jupiter CML:	**242.8**	**Jupiter Io Phase**	**197.3**
Hour Angle:	**-00:45**		
Sun Altitude:	**-35.5 degrees**	**Sun Azimuth:**	**083.3 degrees**

Observations made using:

1. FSX-8S fed by the TFD array
    a. Connect to array through HNRAO Multicoupler #1 and #2, port 2
        i. HNRAO Multicoupler #1 – TFD/LCP
        ii. HNRAO Multicoupler #2 – TFD/RCP
        iii. Port 1 having 10 dB of gain, all other ports on Multicoupler have approximately 3 dB gains.
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’ – phased for 2016-17 season
    a. Calibrated 28 Nov. 2016
    b. Connected to dipoles through HNRAO Multicoupler #3, port 1.
4. Icom R75 receiver fed by experimental DDRR antenna directly.
    a. Calibrated 28 Nov. 2016

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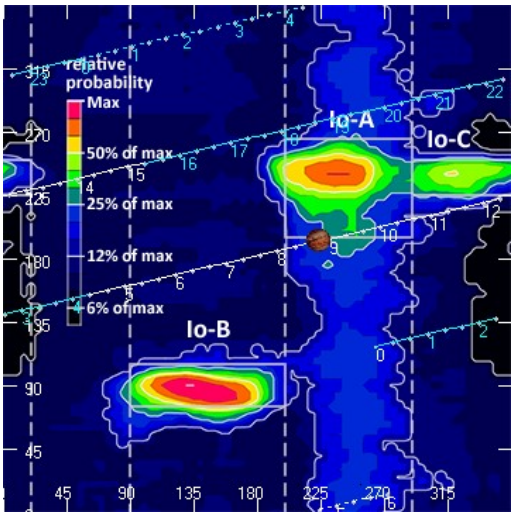
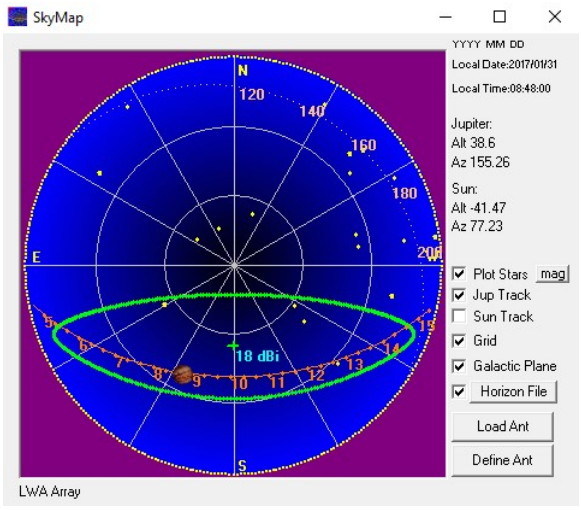
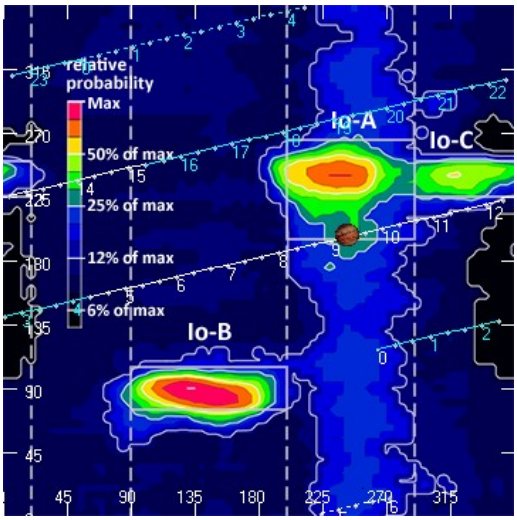
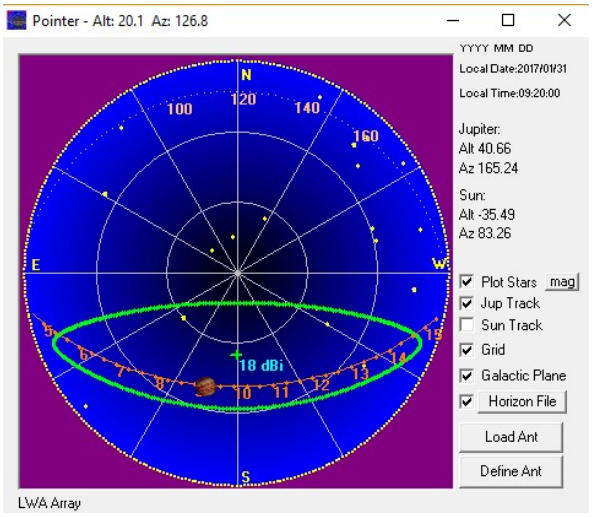




Beginning of Pass





End of Pass

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Conditions
24 degrees F
Cloudy with intermittent light snow
Mild RFI

Observations from 1223 LMST until 1624 LMST
0900 UT until 1300 UT

Galactic center (18 HR RA) passes local meridian at 1438 UT.

Space Weather Prediction Center
http://www.swpc.noaa.gov/

A G1 (Minor) Geomagnetic Storm Watch is valid beginning on 31 January through 01 February 2017 (UTC days) due the anticipated arrival of a co-rotating interaction region in advance of a recurrent, negative polarity coronal hole high-speed stream.

Brief and relatively weak emissions were recorded just before passing through the bottom tip on the Io-A CML plot. Emissions lasted approximately 20 minutes. From this location, it appeared to consist of two different arc groups. Starting about 0845 UT, the emissions started at 16 MHz, reached he peak of the arc about 0857 UT at 21 MHz. The emissions began a negative slope passing beyond 16 MHz about 0903 UT. There were no more emissions visible from this observatory until 0917 UT when the 2nd arc began. Starting below 16 MHz, it reached 18 MHz before dropping and passed below 16 MHz at 0921 UT.

There were negative slope modulation lanes through the emission period. This is best seen in the group of L-bursts at 0858 UT.

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0854 UT
RCP L bursts 16-20 MHZ
Negative slope
0856 UT
Vertical L-bursts
0857 UT
Modulation lanes
Negative slope
0858 UT
Strong L-burst
All emissions so far are 16-20 MHz
Negative drift L-bursts
All emissions have been negative slope
0903 UT
More negative slope
16-17 MHz
Emissions stronger on FSX-2/LWA but visible on FSX-8S/TFD
0918 UT
One L-burst @ 16 MHz
0920 UT
L-bursts
16-18 MHz
NOT showing on LGM, very weak on AJ4CO
Both LGM and AJ4CO show mild power line RFI

---------- Polarization change RHC to LHC ----------

1019 UT
Weak LCP activity – AJ4CO
Io-D? Early Io-C?
FSX-2 switched to LCP
1049 UT
Weak LCP / AJ4CO
17 MHz
1053 UT
Weaker LCP on AJ4CO
16-19 MHz
Nothing on FSX-2/LWA or FSX-8S/TFD
Nothing on LGM

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1100 UT
Weak LCP on AJ4CO 16-18 MHz
Nothing on HNRAO
Nothing on LGM
1122 UT
LCP L-burst AJ4CO (?)
1133 UT
Generating new correction seed files for both spectrographs
15-30 MHz
1147 UT
LCP L-burst AJ4CO 16-20 MHz
Not on HNRAO
Not on LGM
1151 UT
More LCP L-burst activity on AJ4CO. 16-18 MHz
LCP on LGM
No activity on HNRAO
1154 UT
Strong burst AJ4CO
Nothing on LGM
Nothing on HNRAO
1155 UT
Some very weak LCP activity on FSX-8S/TFD
No activity FSX-2/LWA

1258 UT
Cuban broadcast stations beginning to overload FSX-8S/TFD
1300 UT
No further Jupiter emissions
End of observing session.

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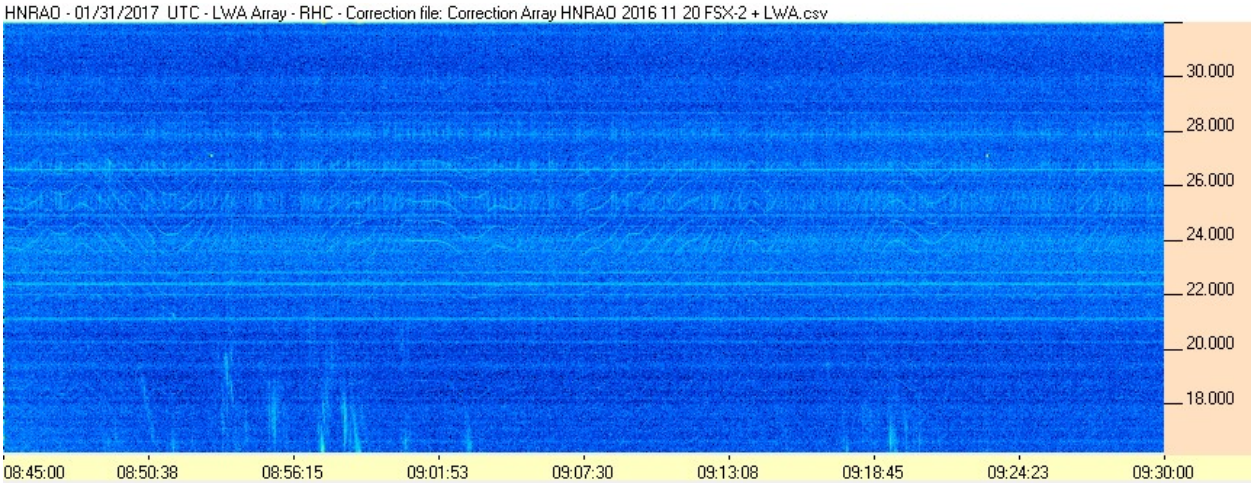

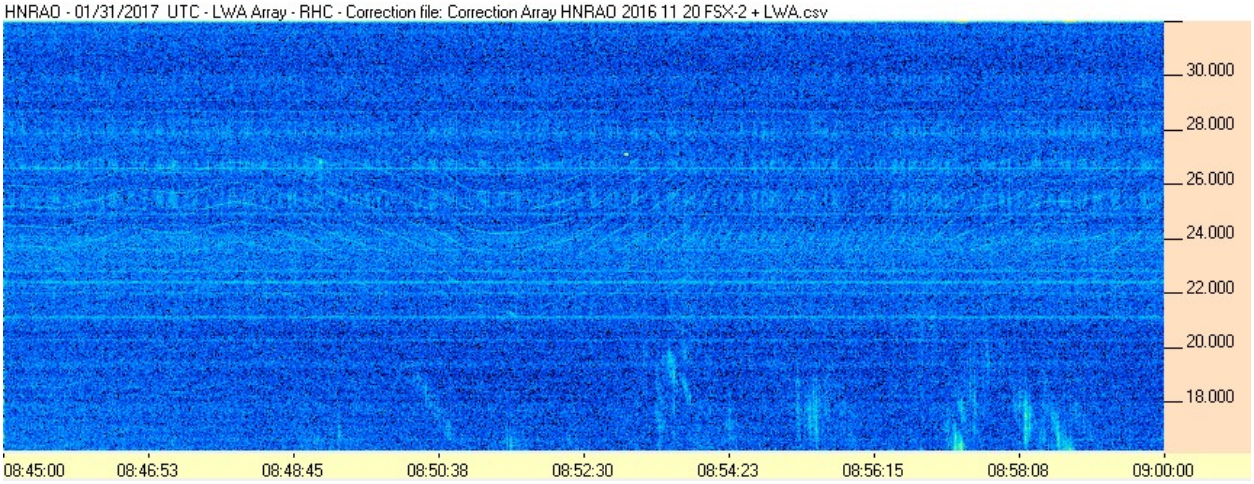

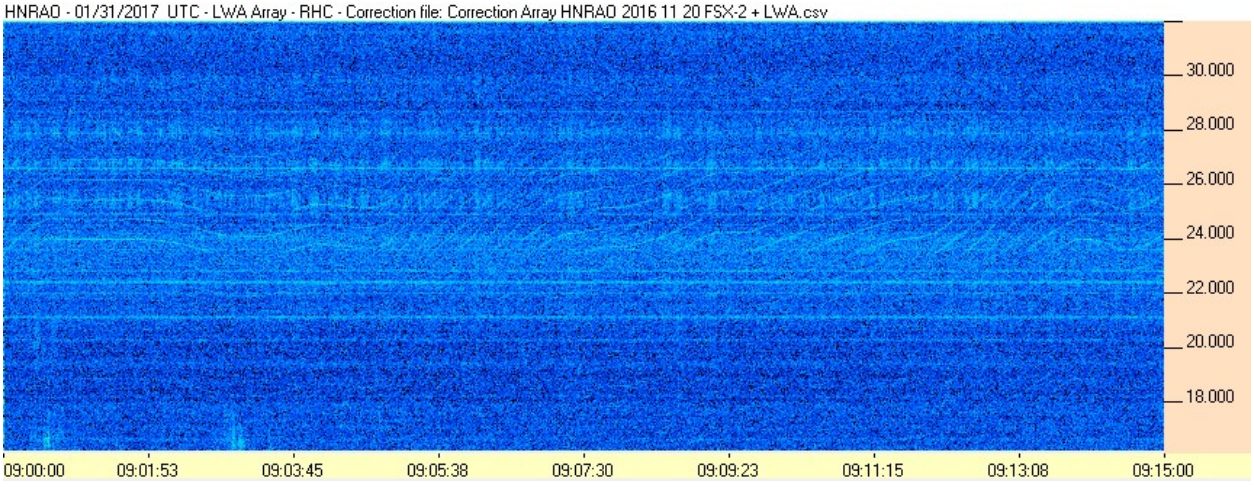

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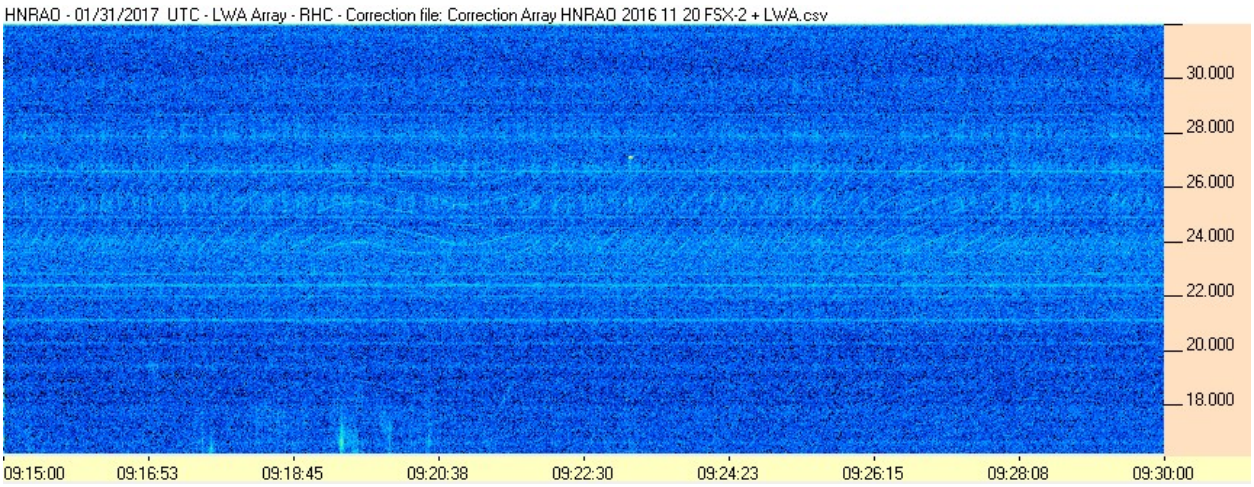

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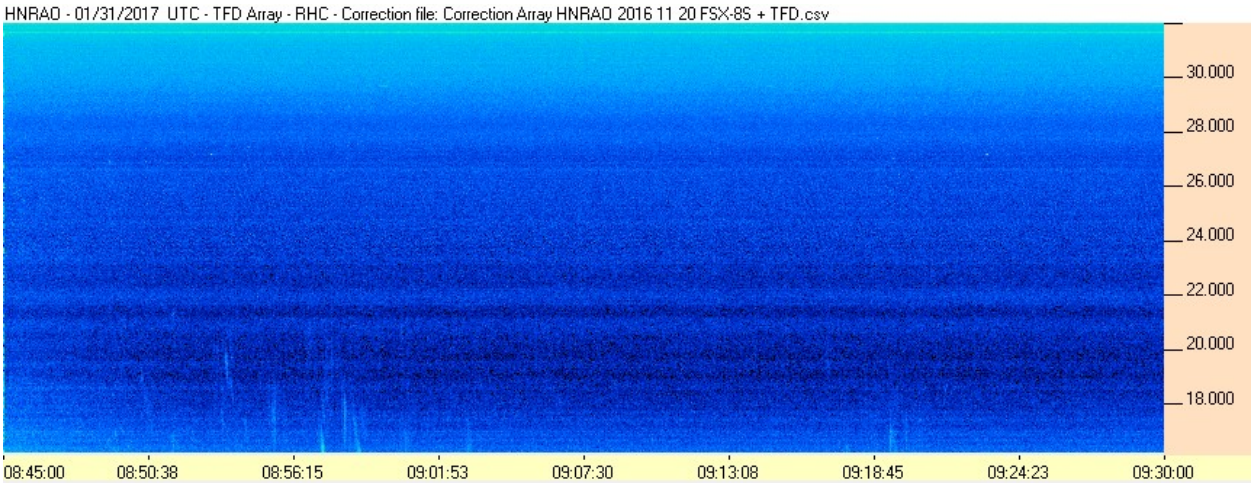
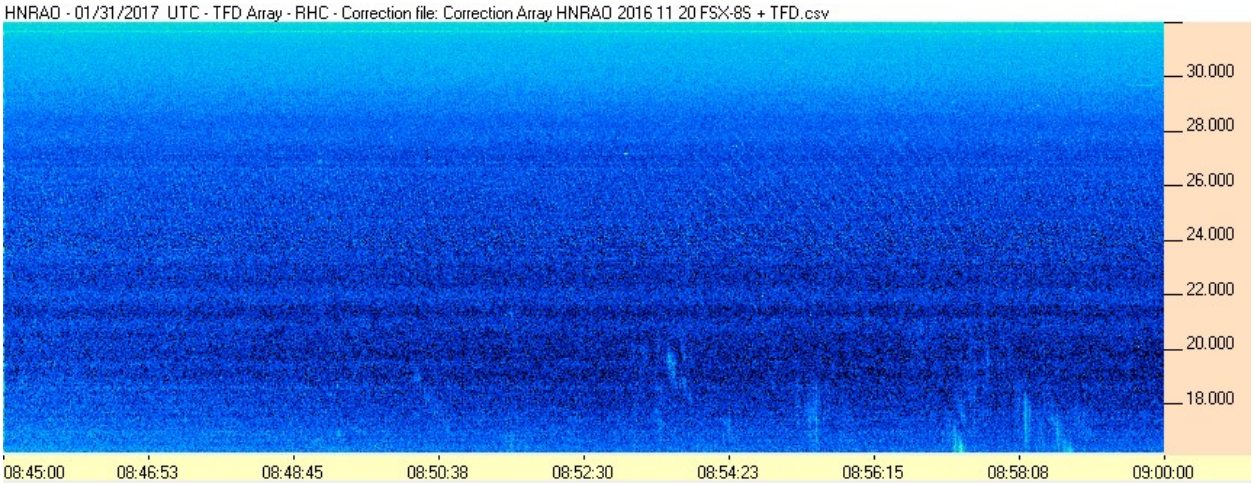
FSX-8S/TFD





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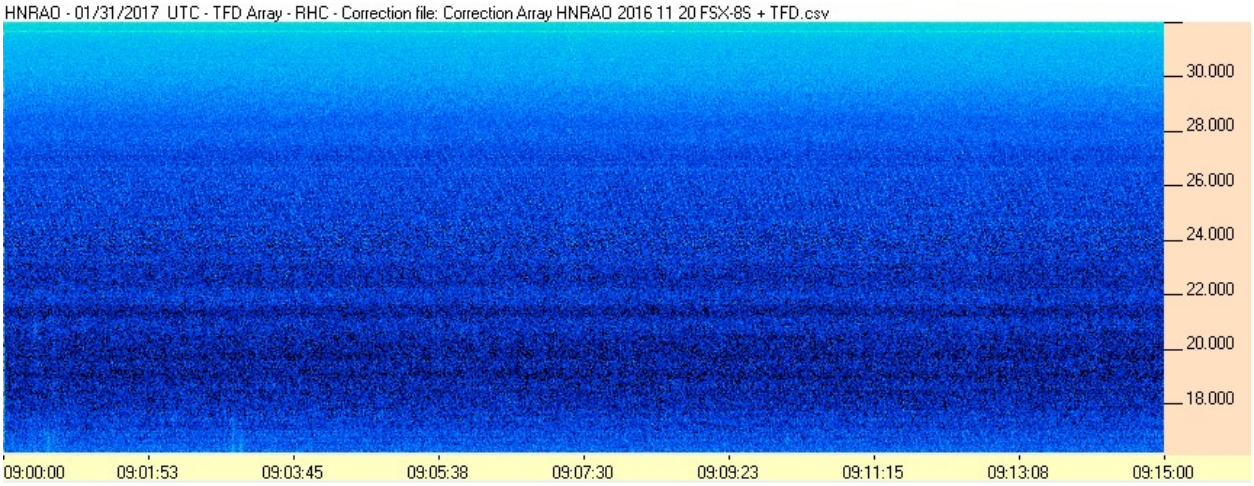

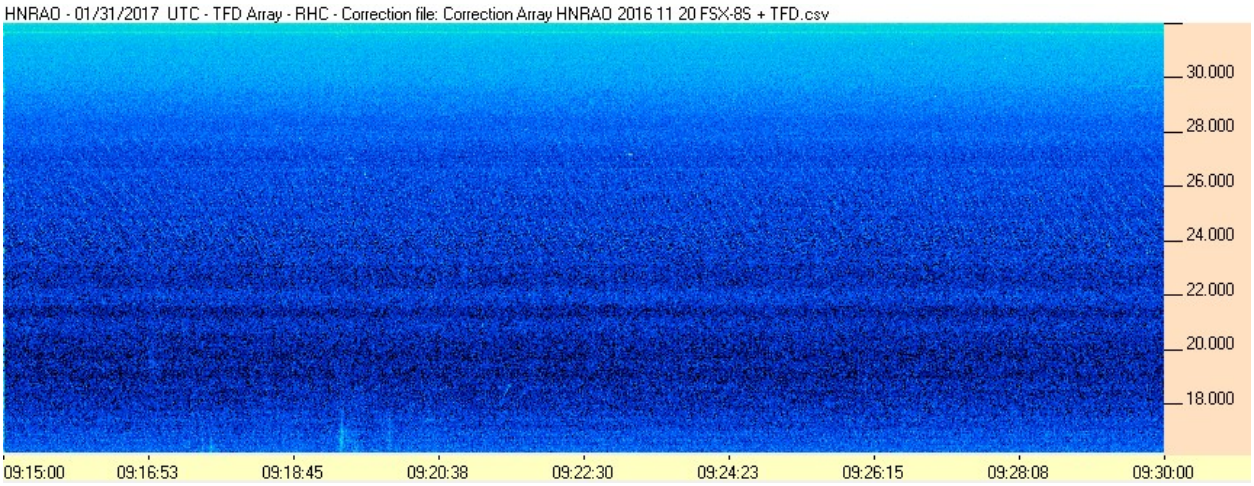

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