

K4LED

Georgia Amateur Radio Astronomy Observatory

Observation Date: 06-21-2018, 0:00:00 to 23:59:00 UTC

Location: Lat. 34.42322 N, Lon. -84.49413 W (Jasper, GA 30143)

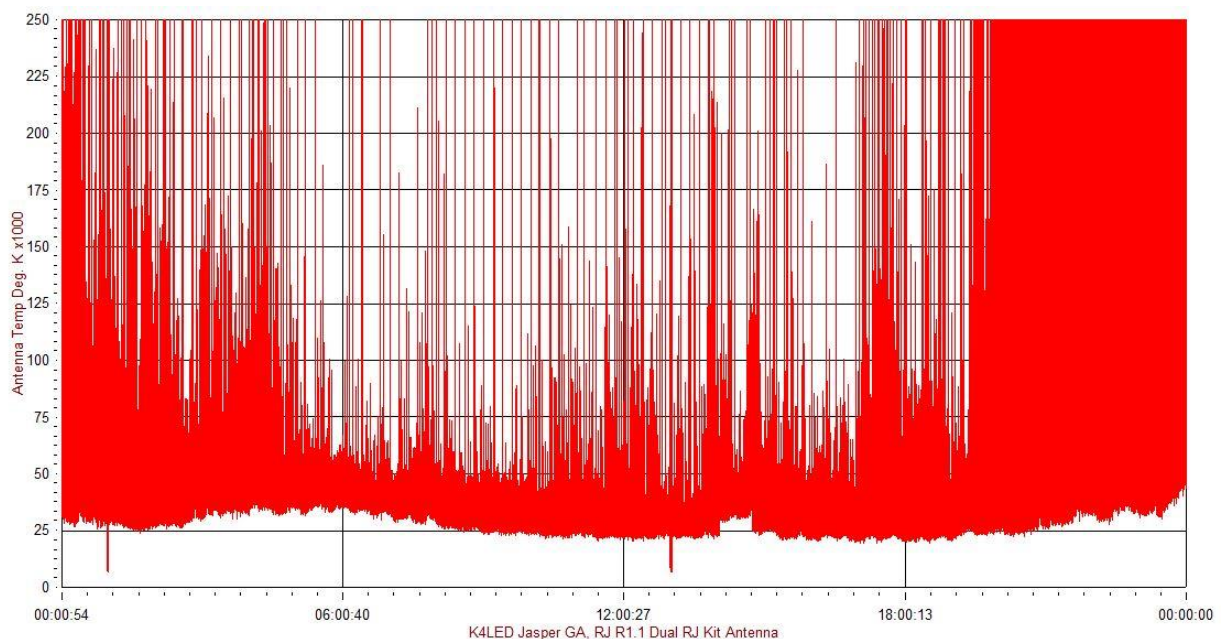
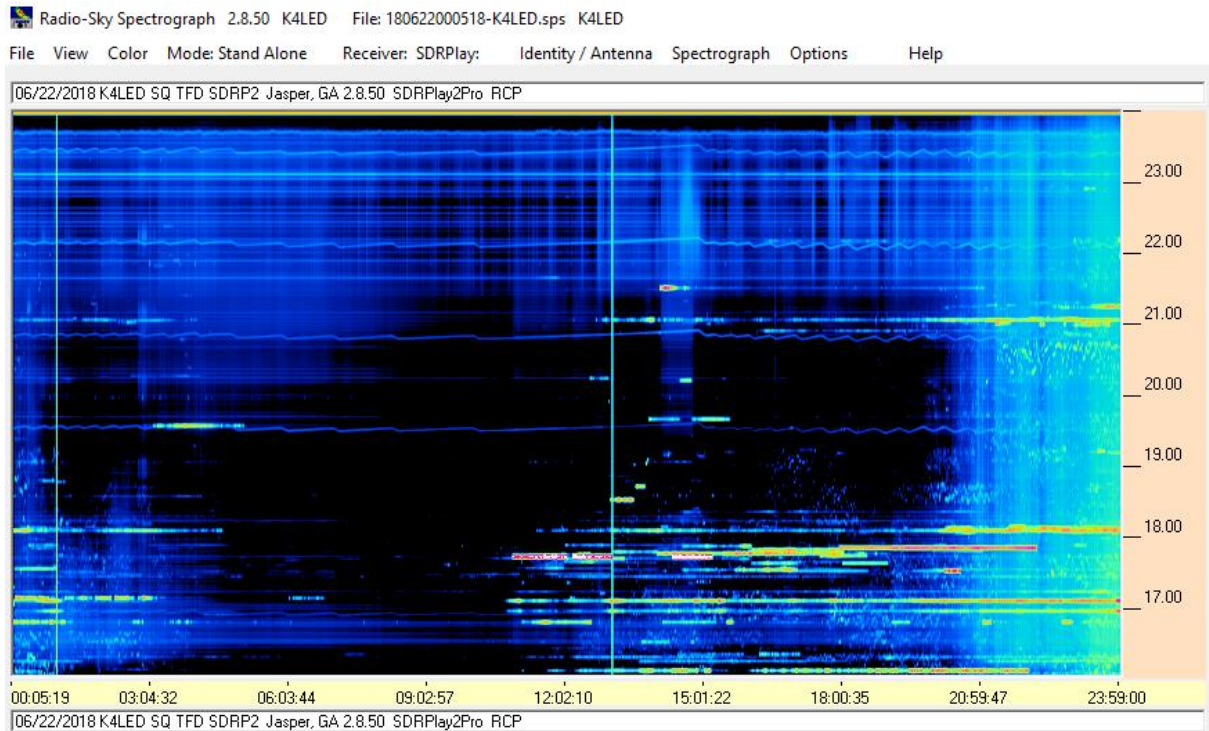
Object: TP, GB, Solar

Observer: Larry E. Dodd

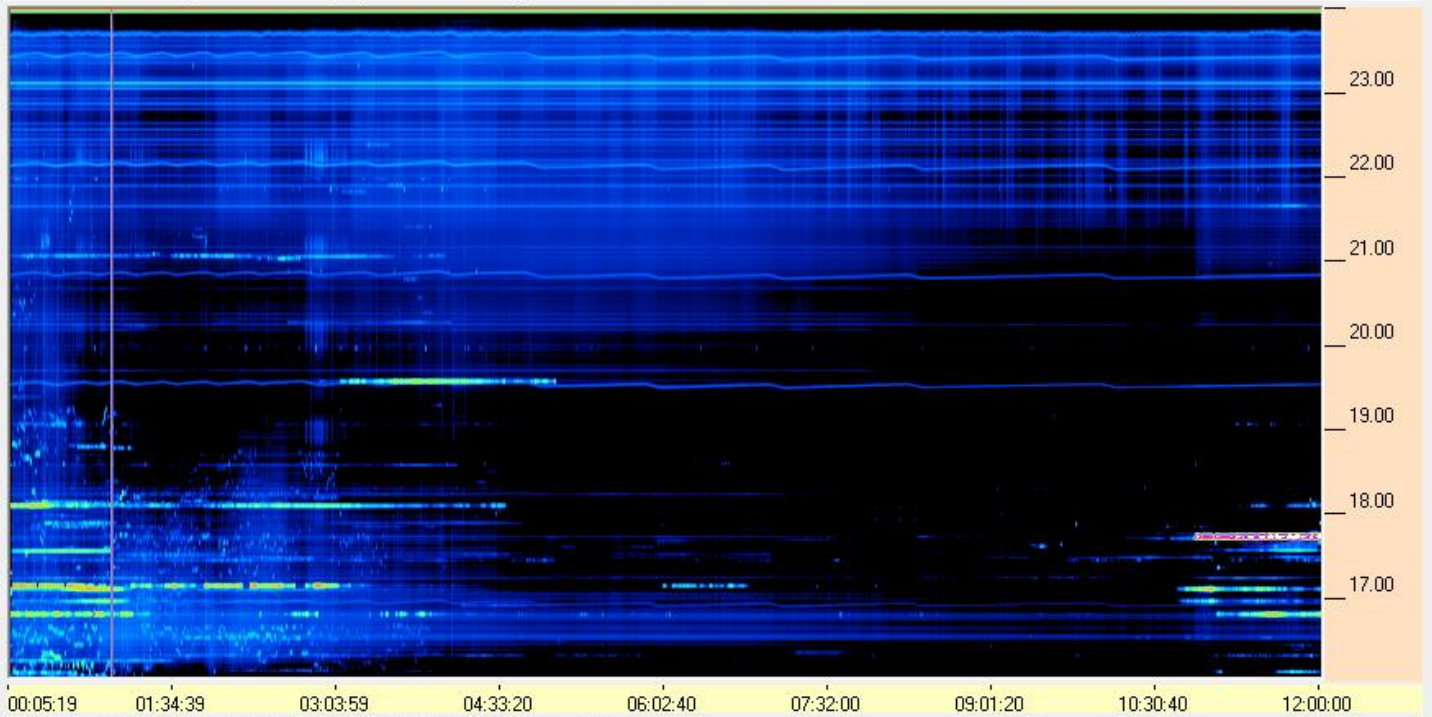
Receivers: FSX11, SDRPlay2PRO, RJ1.1

Software: SkypipeII 2.7.34, Spectrograph 2.8.50

Antennas: Radio Jove Dual Dipole Kit, Typinski Square TFD

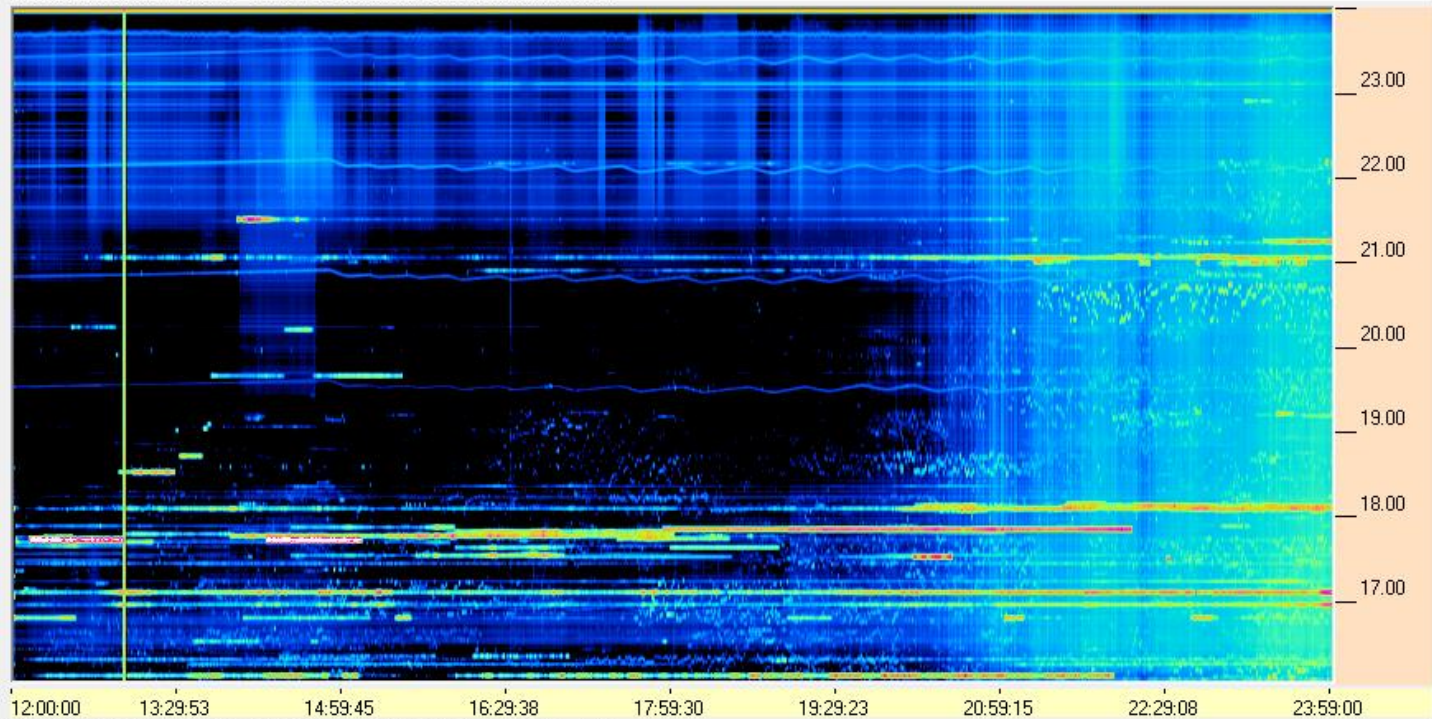


06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP



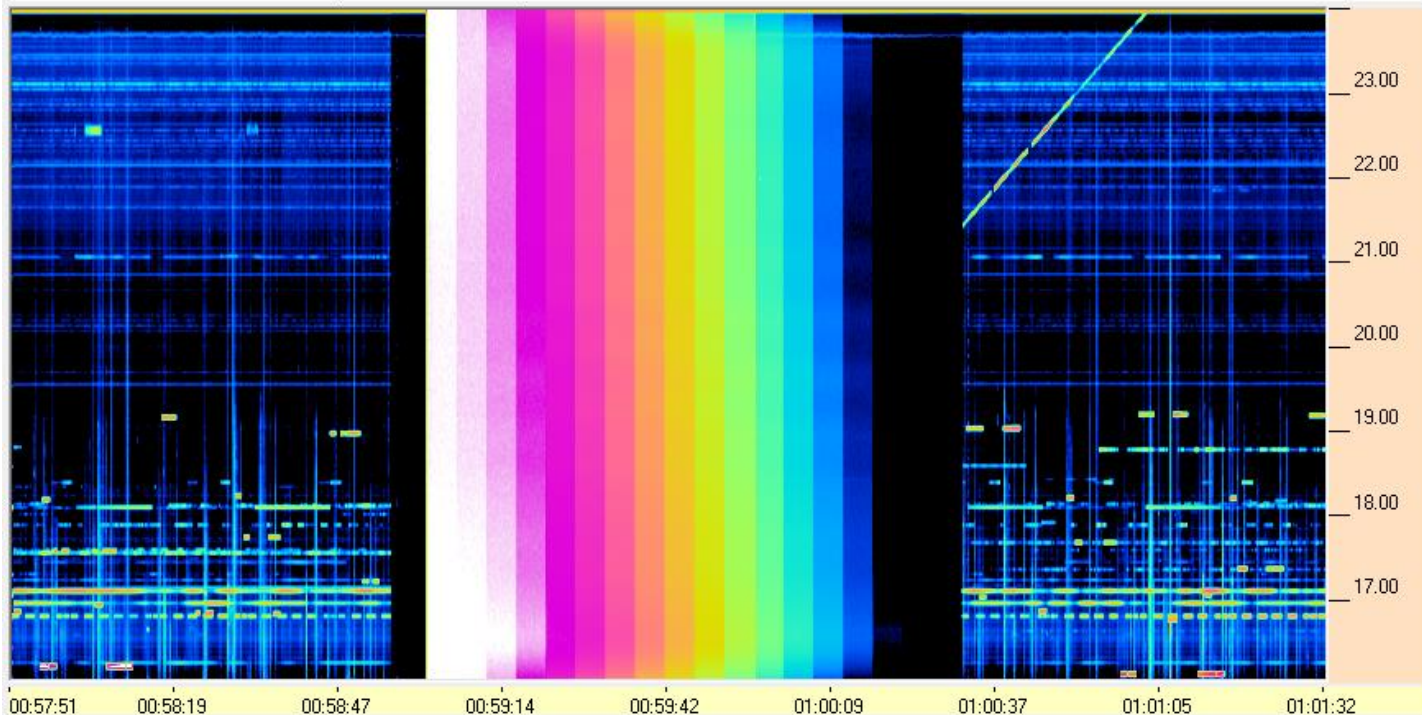
06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP

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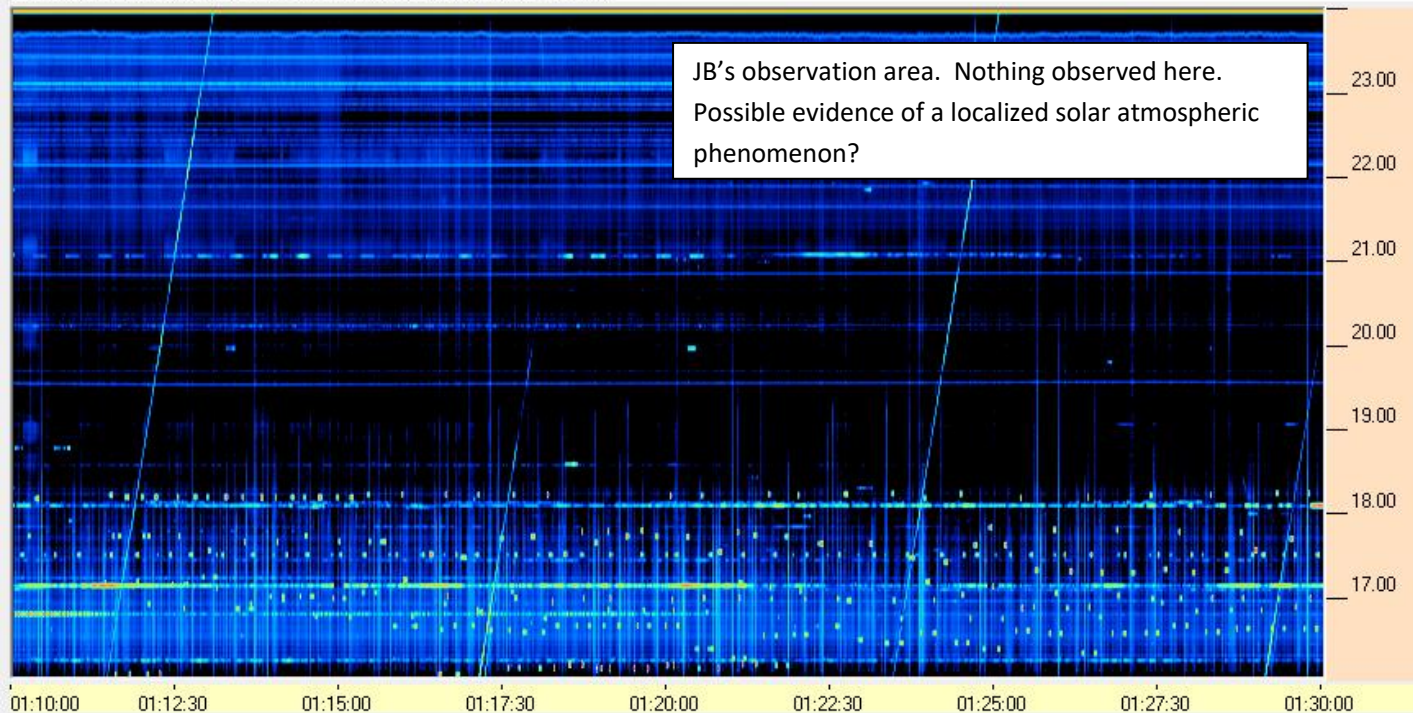
06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP

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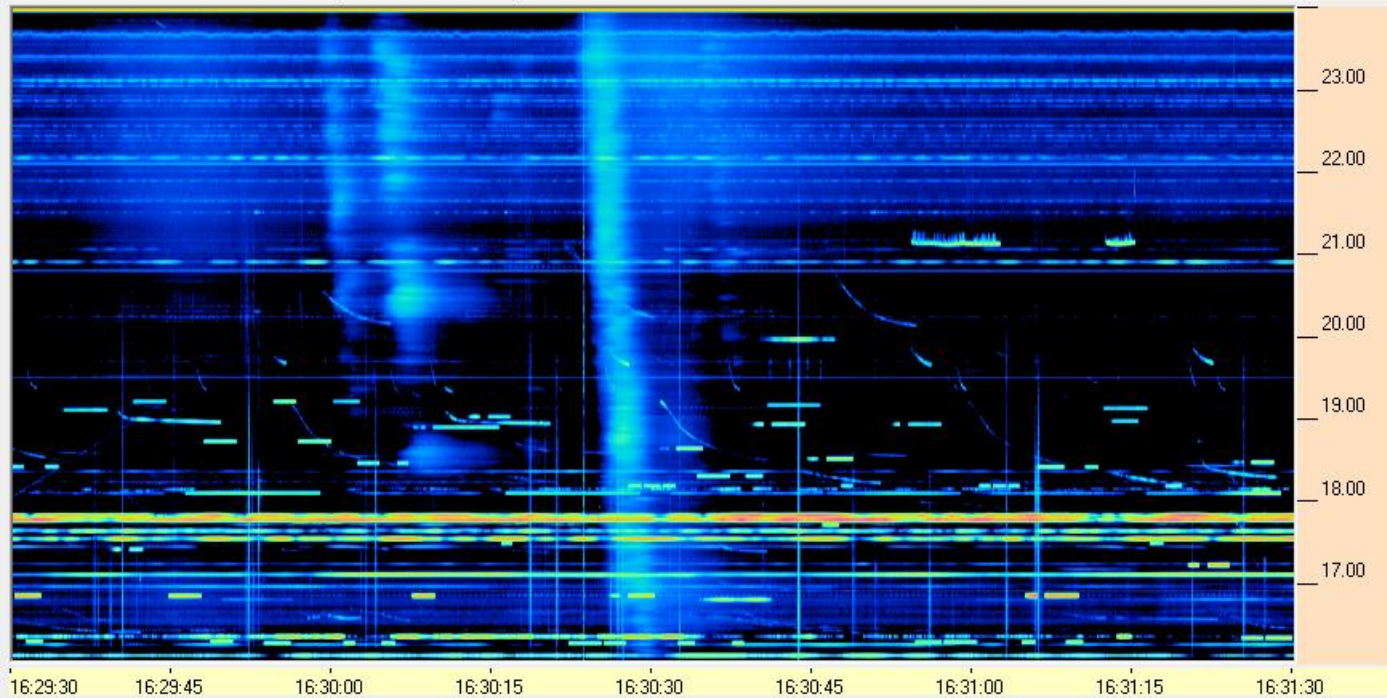
[06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP



JB's observation area. Nothing observed here.
Possible evidence of a localized solar atmospheric phenomenon?

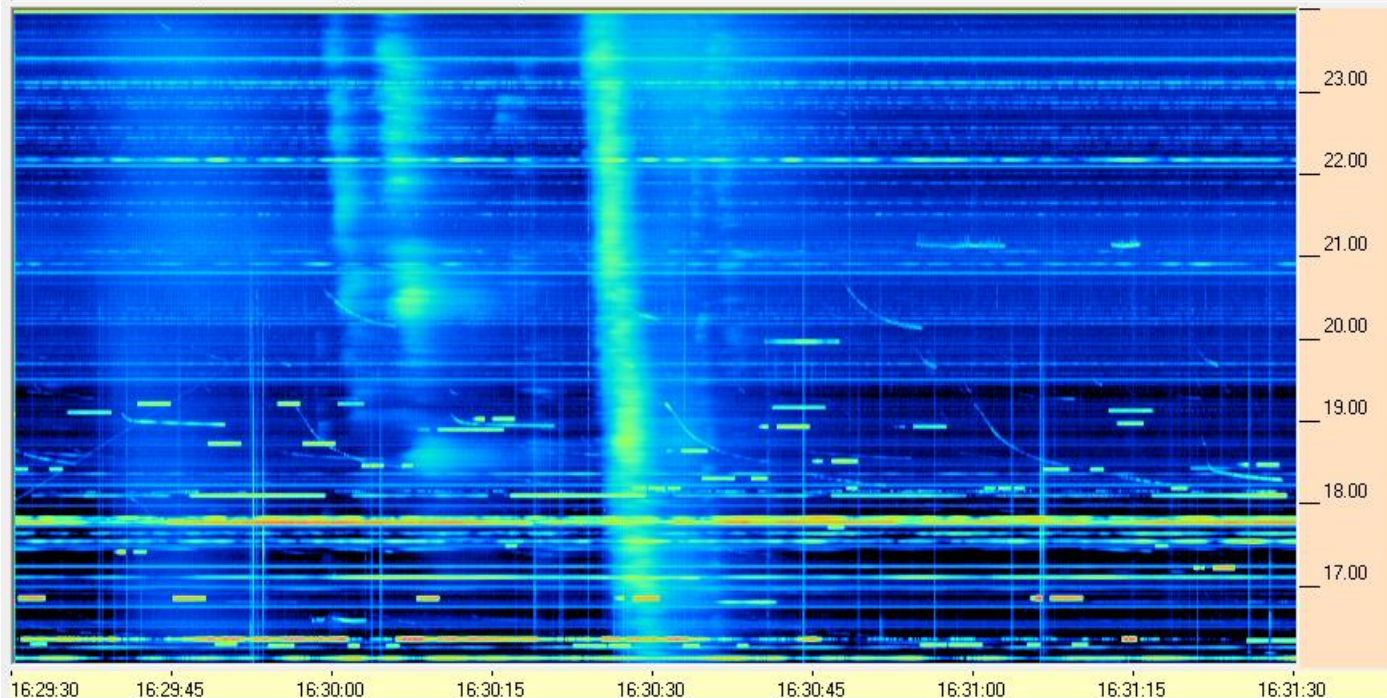
[06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP

06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP



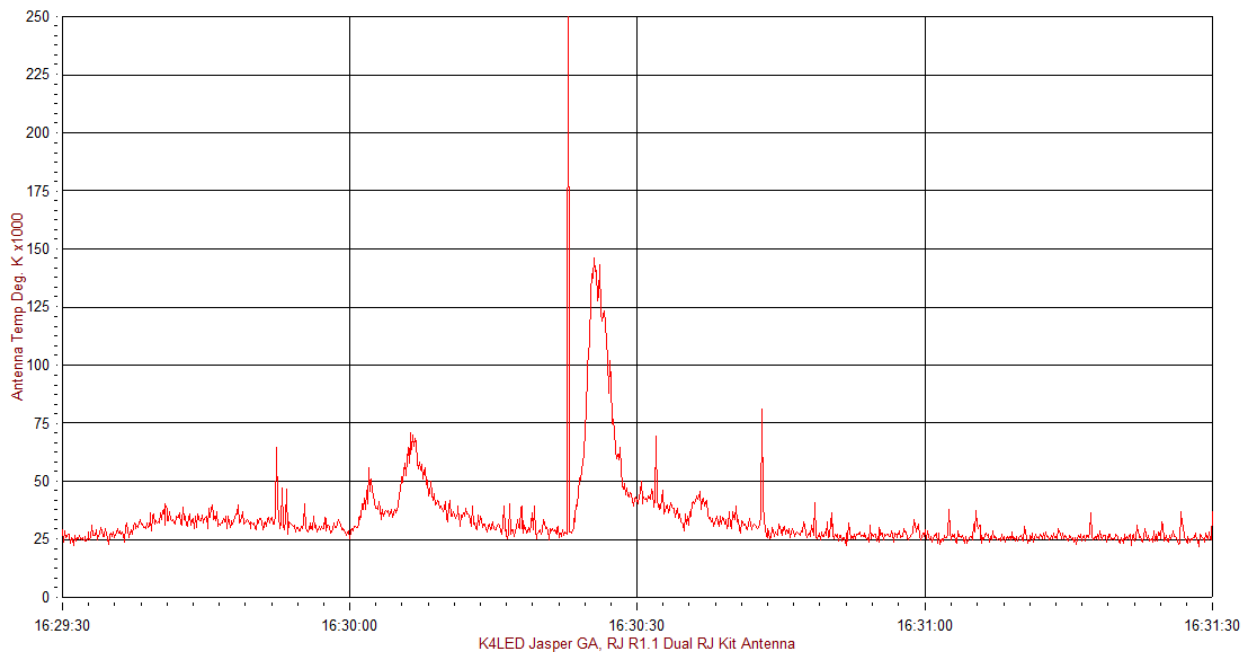
06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP

06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro LCP

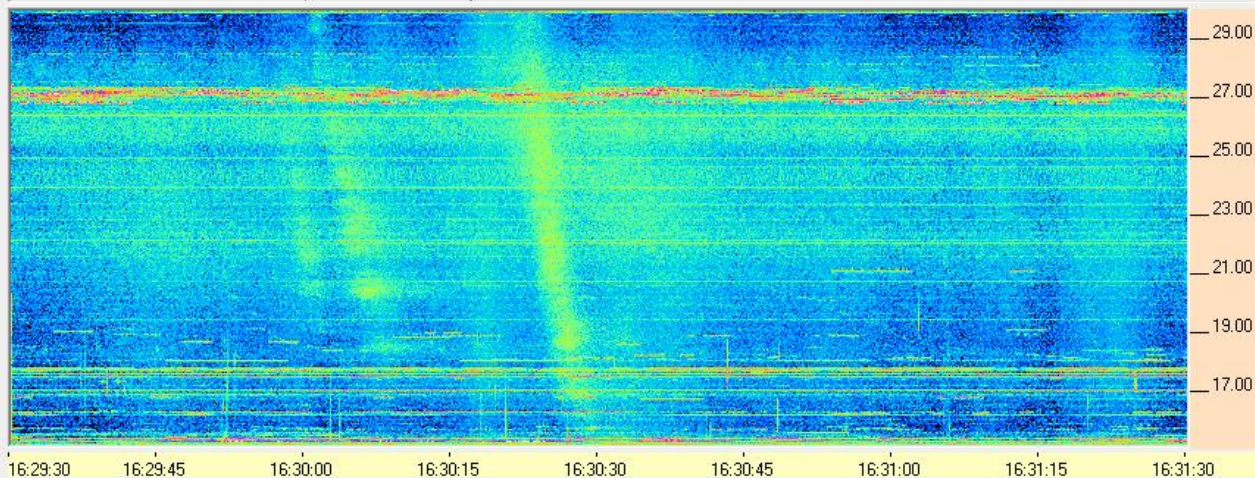


06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro LCP

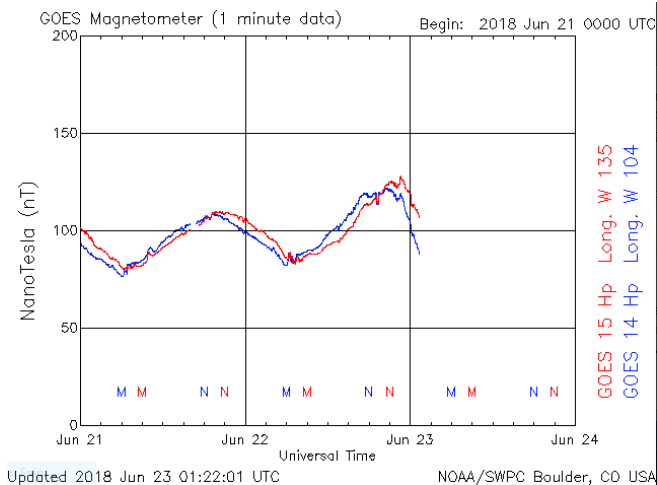
Start Chart



06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP



06/22/2018 K4LED SQ TFD SDRP2 Jasper, GA 2.8.50 SDRPlay2Pro RCP





Station YYYY DAY DDD HHMMSS P1 FFS S AXN PPS IGA PS
 Eglin AFB 2018 Jun22 173 163000 RSF 1 713 100 03+ 79

foF2 5.251
 foF1 4.44
 foF1p 4.51
 foE 3.36
 foEp 3.36
 fxI 6.03
 foEs 3.43
 fmin 1.00
 MUF(D) 19.07
 M(D) 3.63
 D N/A
 h`F 142.5
 h`F2 355.0
 h`E 85.9
 h`Es 100.0
 hmF2 204.7
 hmF1 152.3
 hmE 92.3
 yF2 41.8
 yF1 83.7
 yE 5.8
 B0 158.4
 B1 1.00
 C-level 11
 Auto:
 Artist5
 500200



NoVal
 NNE
 E
 W
 Vo-
 Vo+
 SSW
 X-
 X+
 SSE
 NNW

D 100 200 400 600 800 1000 1500 3000 [km]
 MUF 5.8 5.9 6.2 6.7 7.4 8.4 11.4 19.1 [MHz]
 44501280.tmp / 440fx512h 25 kHz 2.5 km / DPS-4D EG931 084 / 30.5 N 273.5 E

ShowIonogram v 1.0

References for Interpreting the Ionogram:

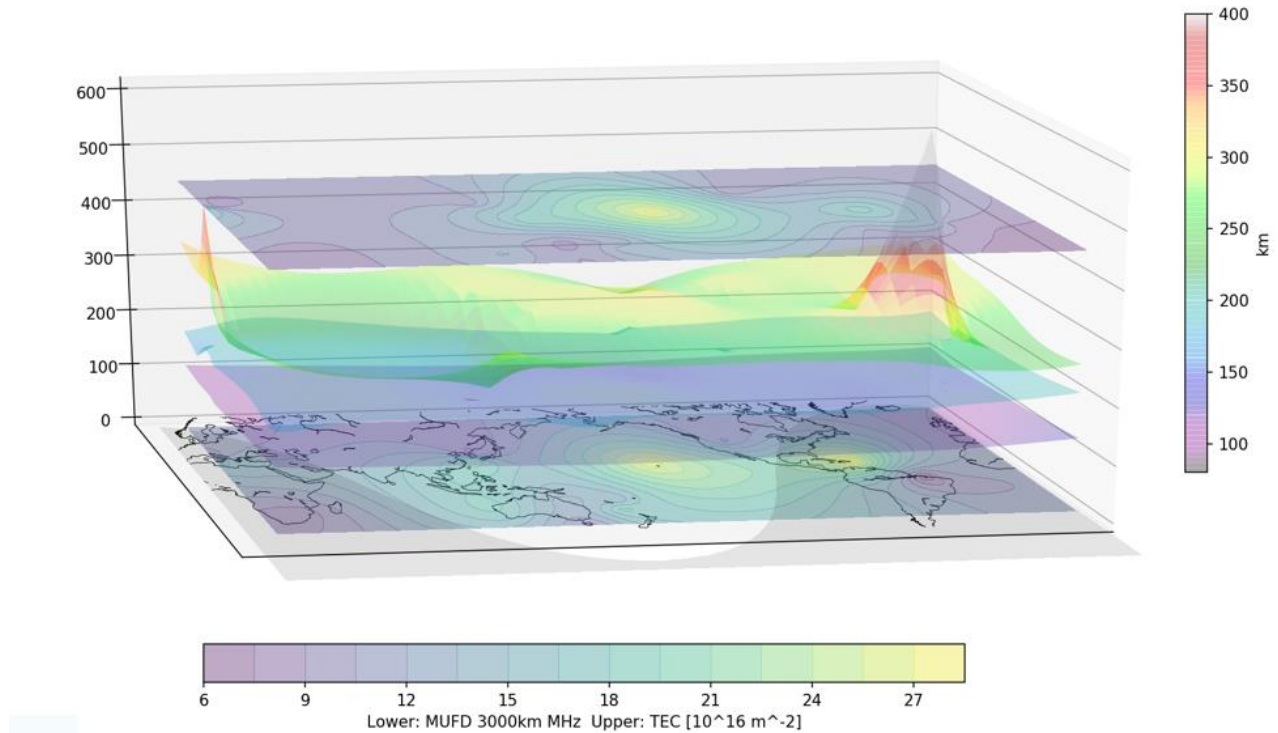
http://www.sws.bom.gov.au/IPSHosted/INAG/uag_23a/UAG_23A_indexed.pdf

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.404.5517&rep=rep1&type=pdf>

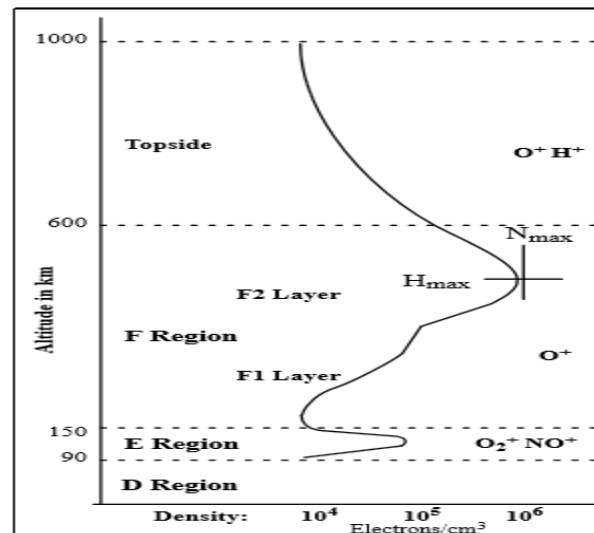
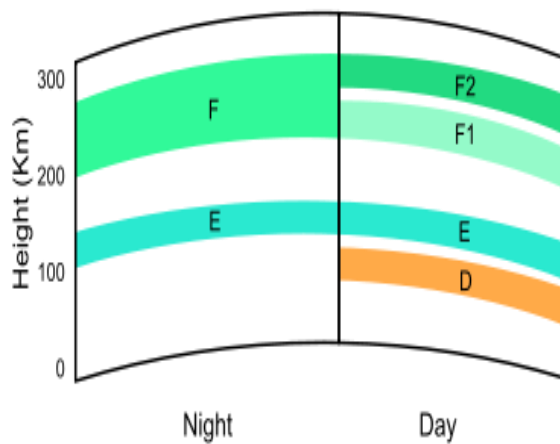
<https://www.hfunderground.com/wiki/index.php/Ionosonde>

Ionosphere Layers, MUF, Total Electron Content

MUF TEC E, F1, F2 Max Height 2018-06-23 01:25



Data Global Ionospheric Radio Observatory (GIRO) Principal Investigator Prof. B. W. Reinisch UMass Lowell



The **critical frequency** is the limiting frequency at or below which a radio wave is reflected by an ionospheric layer at vertical **incidence**. If the transmitted frequency is higher than the **plasma frequency** of the ionosphere, then the electrons cannot respond fast enough, and they are not able to re-radiate the signal. It is calculated as shown below:

$$f_{\text{critical}} = 9 \times \sqrt{N}$$

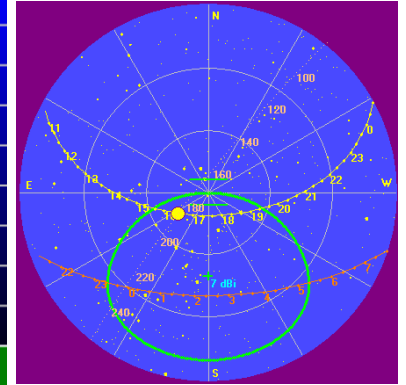
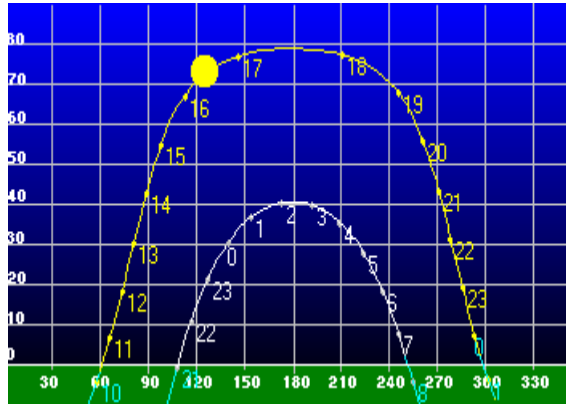
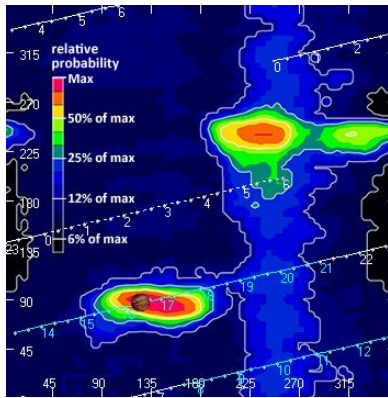
where N = electron density per m^3 and f_{critical} is in Hz.

The Maximum Usable Frequency (MUF) is defined as the upper frequency limit that can be used for transmission between two points at a specified time.

$$f_{\text{muf}} = \frac{f_{\text{critical}}}{\sin \alpha}$$

where α = **angle of attack**, the angle of the wave relative to the **horizon**, and $\sin$ is the **sine** function.

Reference: <https://en.wikipedia.org/wiki/Ionosphere>



Radio-Jupiter Pro 3.8.2 (GMT)

File Options Display Tools Window Help

YYYY MM DD
Date 2018 06 22 cal

HH MM SS
Time 16 30 00 GMT

update
Using Fixed Time

Lat : 34.25.23.5
Long: 84.29.38.8 W

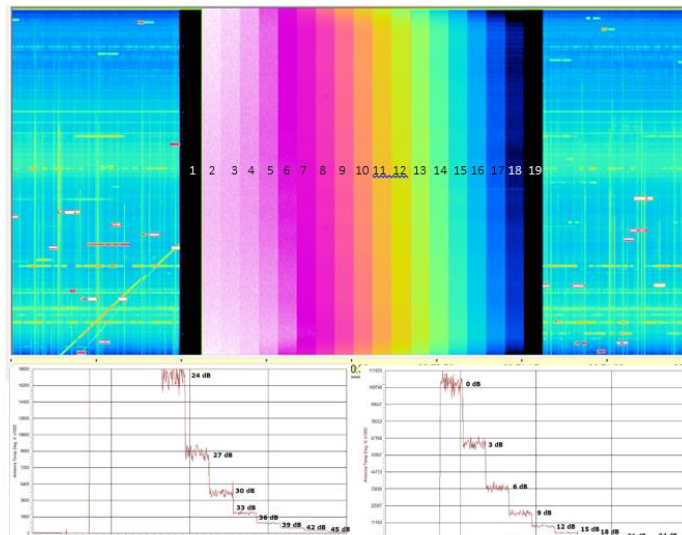
Jupiter

ALT: -55.0
AZ: 064.1
HA: -09.51
Rise: 21:06
Set: 07:42
RA: 14.46
DEC: -14.51
CMIII: 125.78
Io SGC: 086.87

Sun

ALT: 72.6
AZ: 125.0
HA: -01.02
Rise: 10:25
Set: 00:44
RA: 05:57
DEC: 23:26
LMST: 04:55:15

AUTOMATED CALIBRATION COLOR BAR TEST PATTERN AND DATA ACTUAL MEASURED DATA



STEP	TEMPERATURE	ATTENUATION
1	>1 kK	101 dB
2	104.0 MK	0 dB
3	66.9 MK	3 dB
4	36.3 MK	6 dB
5	19.1 MK	9 dB
6	9.6 MK	12 dB
7	4.5 MK	15 dB
8	2.3 MK	18 dB
9	1.2 MK	21 dB
10	602.0 kK	24 dB
11	296.6 kK	27 dB
12	133.0 kK	30 dB
13	92.2 kK	33 dB
14	51.6 kK	36 dB
15	32.0 kK	39 dB
16	22.6 kK	42 dB
17	17.9 kK	45 dB
18	12.0 kK	48 dB
19	>1 kK	101 dB