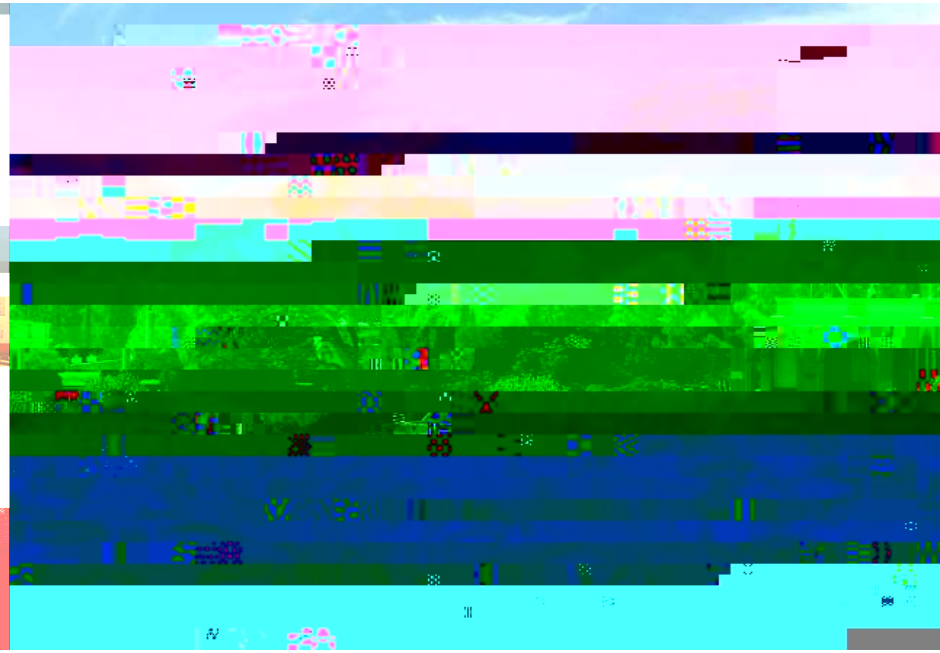


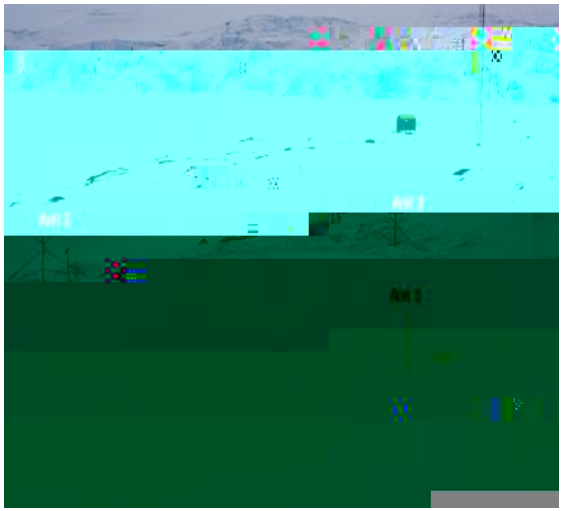
Main contributors:
BC: K.Groves, K. Kraemer
Ebre Observatory: D. Altadill, E. Blanch
RINAN: V. Galushko, Yu. Yampolski, A. Koloskov, A. Sopin, A. Kacsheev

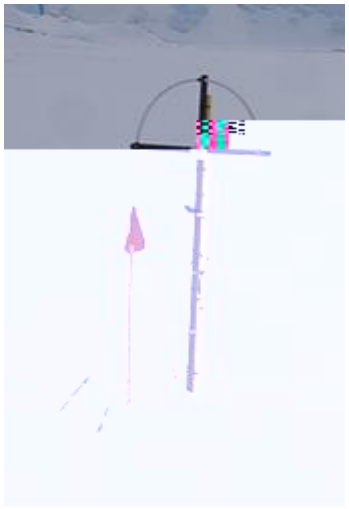
Parameter	Value	Comment
reduces data file storage		

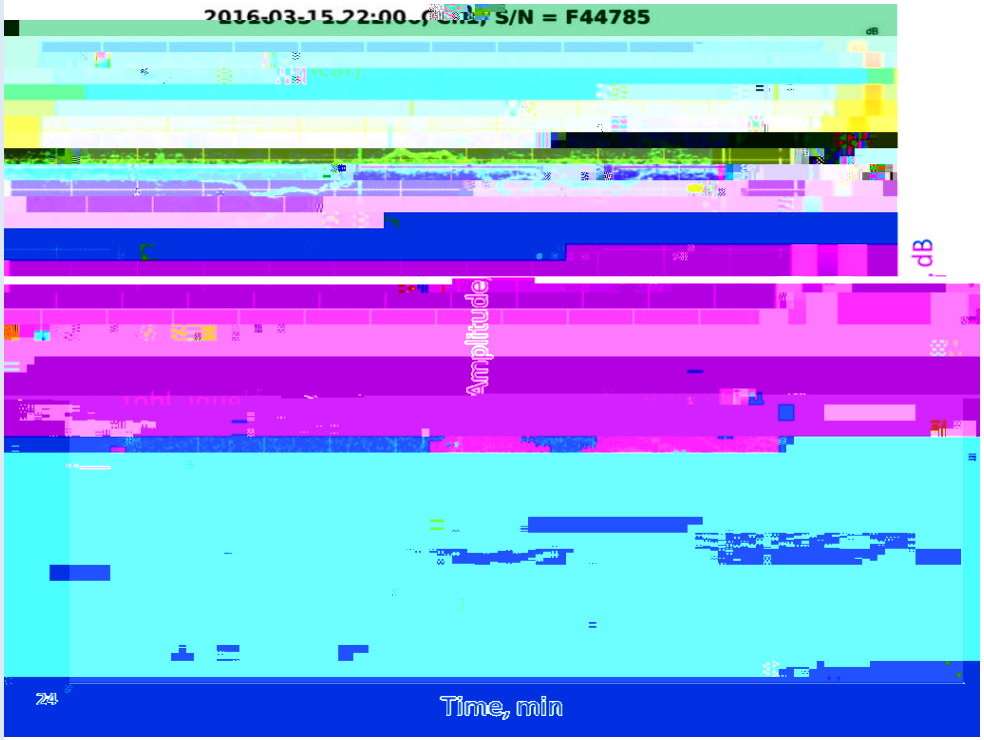
Simultaneous Doppler and angle-of-arrival data for a HF signal on the Vernadsky-Palmer link.

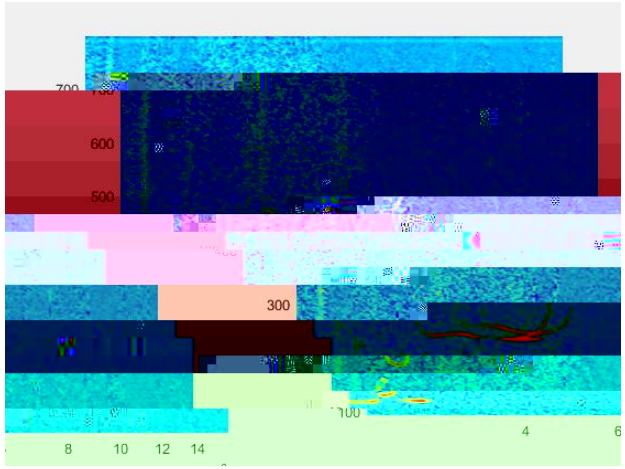

1..10 MHz
200 Hz
USRP
USRP
OctoClock-G

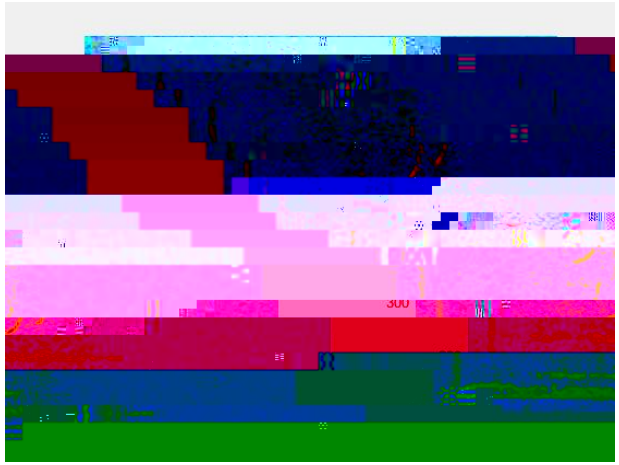

Reference Source
HF Recievers
UPS

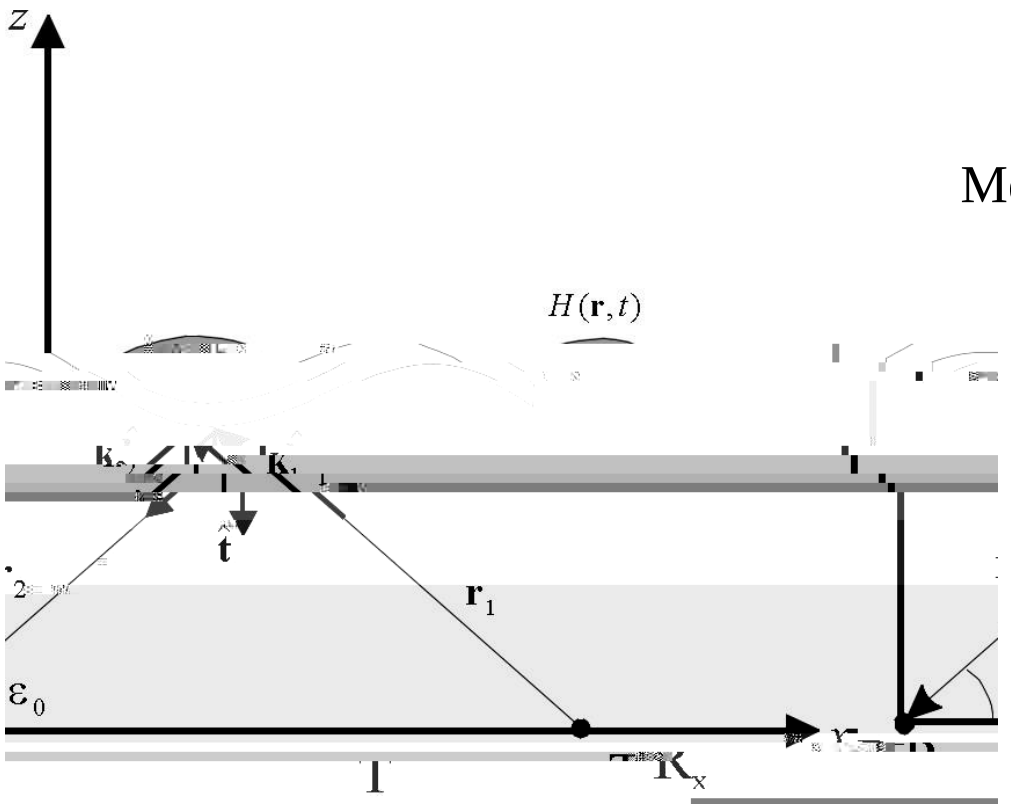





S/N = F44785
dB
Amplitude, dB
24
Time, min


700
600
500
300
100
8
10
12
14
4
6


300



Perfectly reflecting surface model

Measured signal parameters:

Spectral representations:

$$(t) \quad S(\ )e^{i\ t}d$$

$$(t) \quad S(\ )e^{i\ t}d$$

$$f_D(t) \quad S_F(\ )e^{i\ t}d$$

With the use of the spectral representation, one gets solutions

Trajectory parameters spectra: (direct problem)

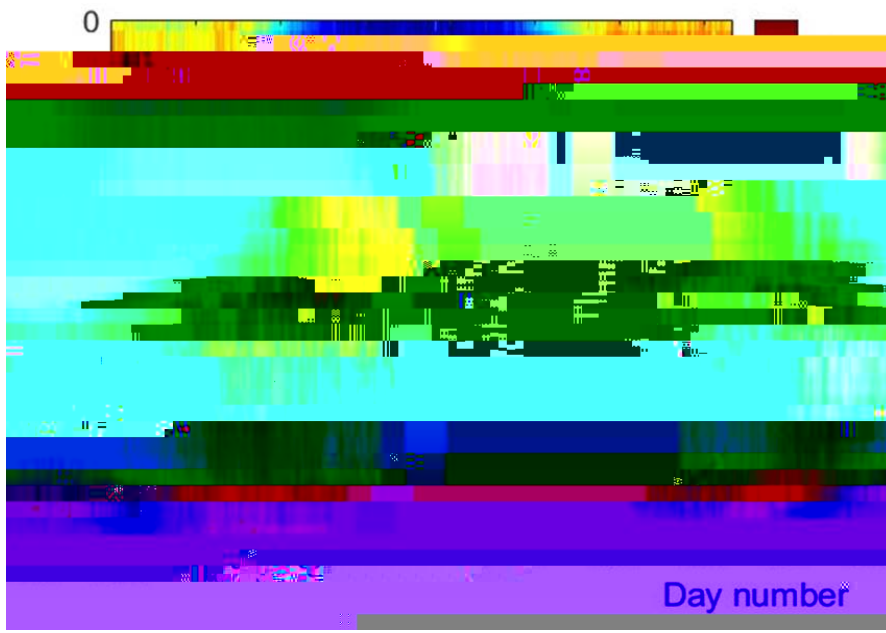
Reflecting surface spectra: (inverse problem)

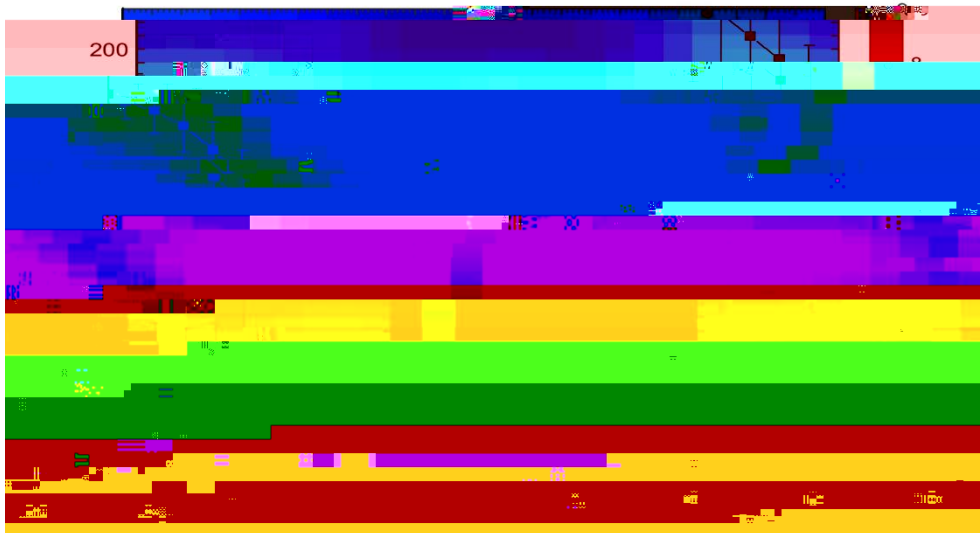
$$N(\quad) \quad \frac{i\ S_F(\quad)}{2H_0 \quad \sin\ _0}$$

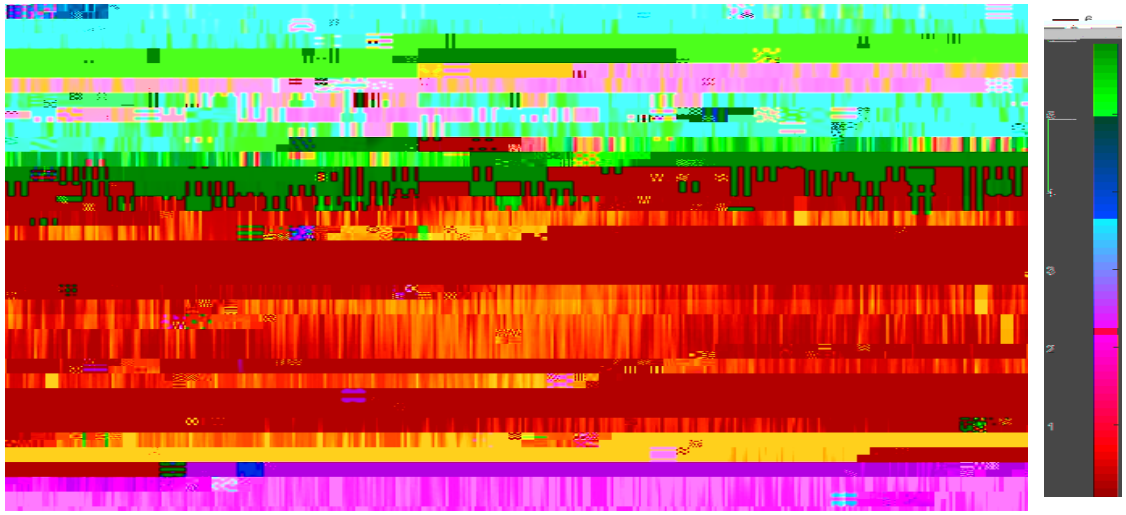
$$\tan\ (\quad) \quad \frac{2H_0 \quad \mathrm{Re}\, S\ (\quad)}{2H_0 \quad \mathrm{Re}\, S\ (\quad)\tan\ _0 \quad \mathrm{Im}\, S_F(\quad)\sin\ _0}$$

$$K(\quad) \quad \frac{2 \quad \mathrm{Im}\, S\ (\quad)\cos\ _0}{\mathrm{Im}\, S_F(\quad)\sin\ (\quad)}$$


Z
To GPS


Day number


200



00

04

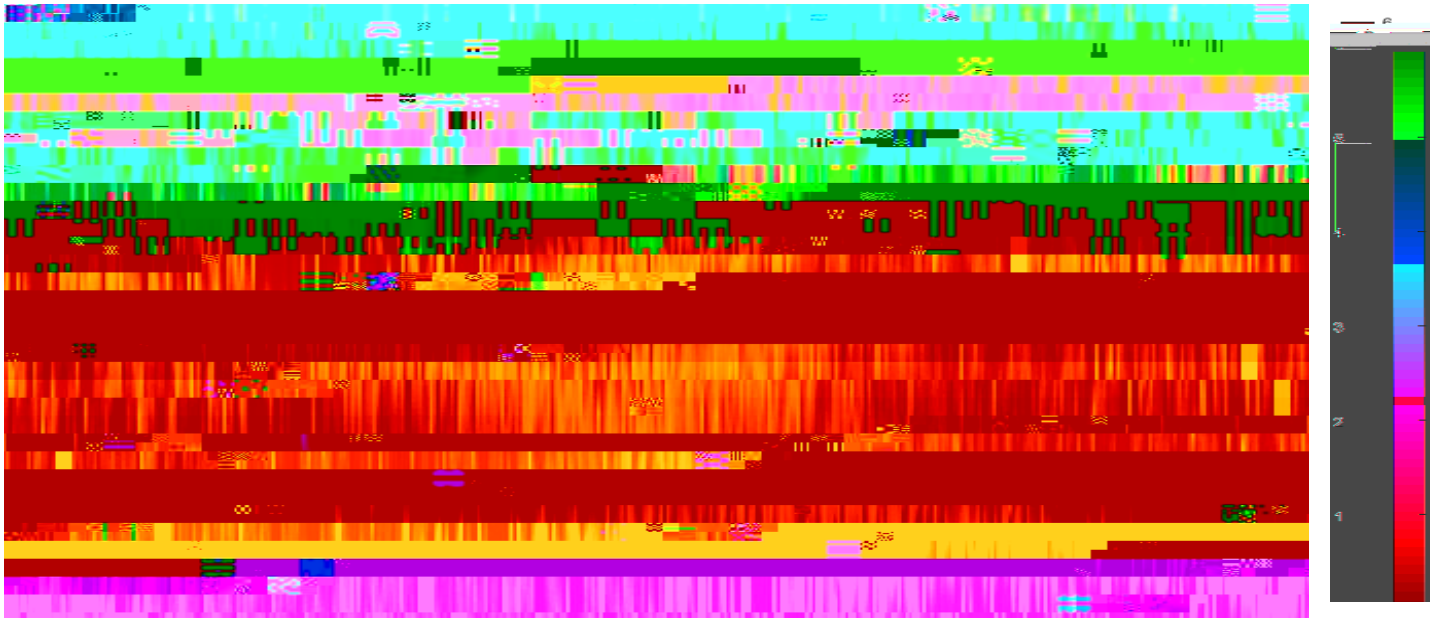
09

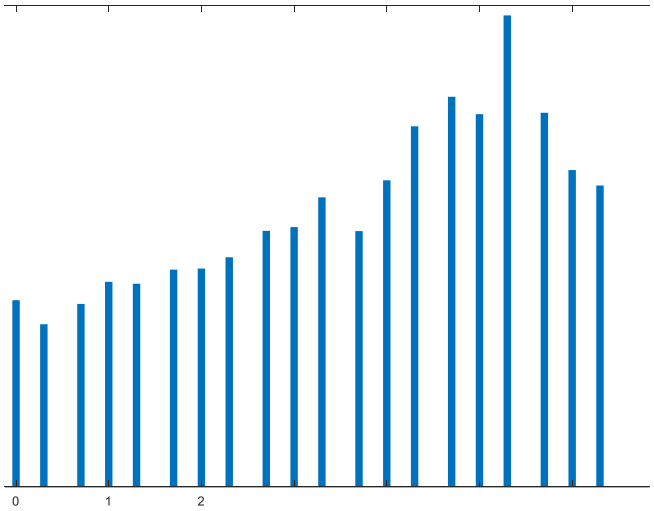
14

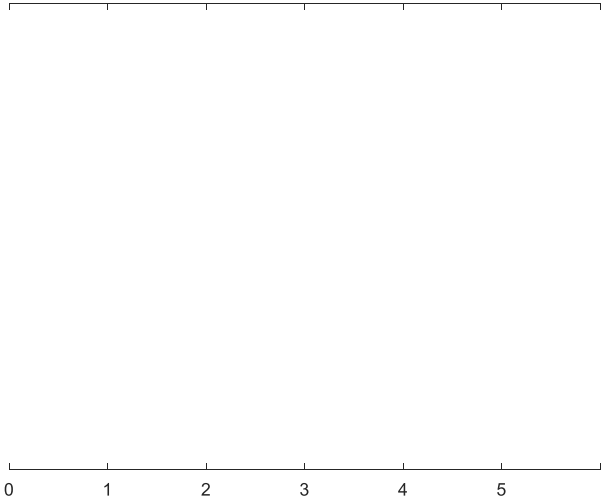
19

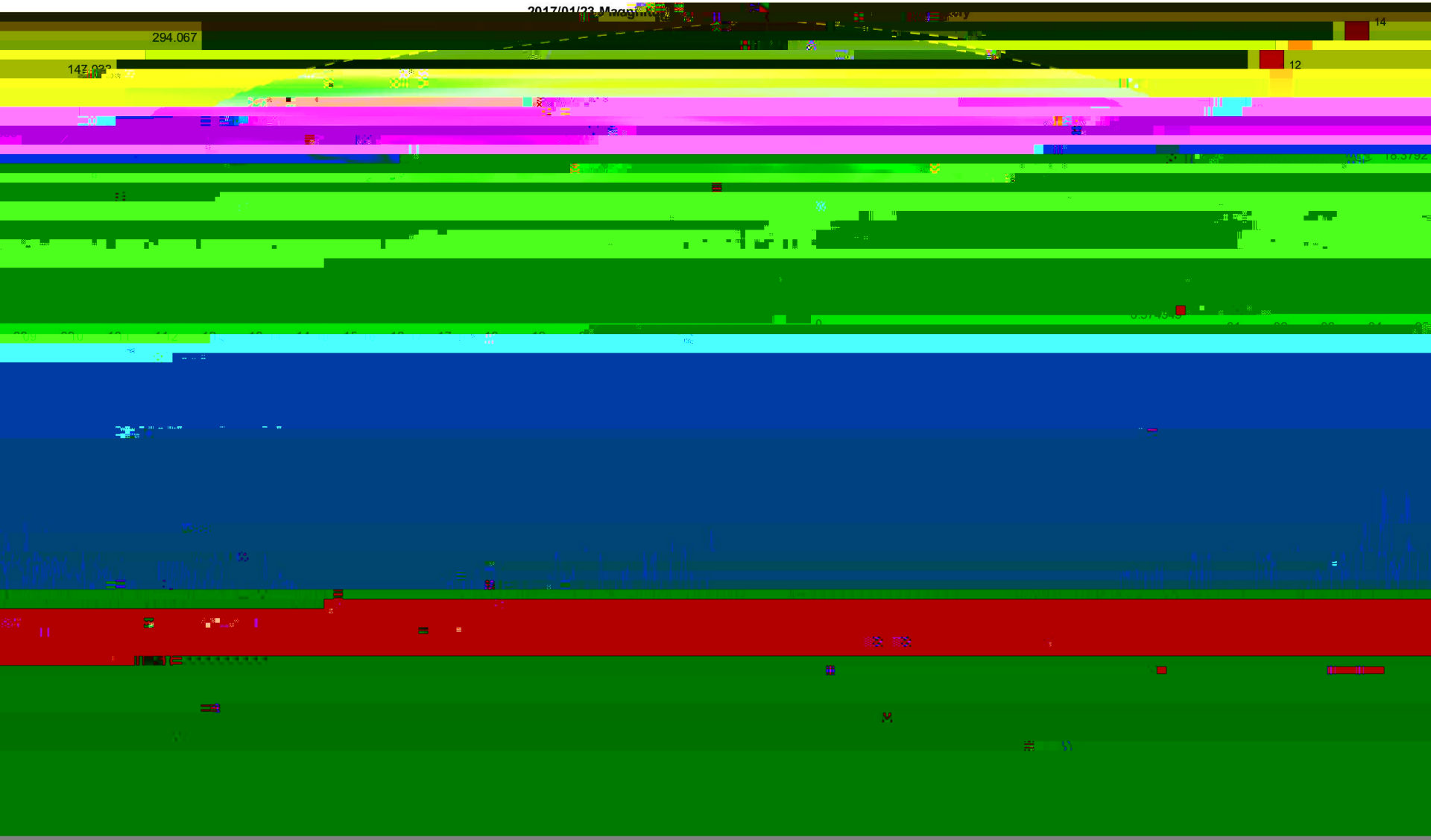
24

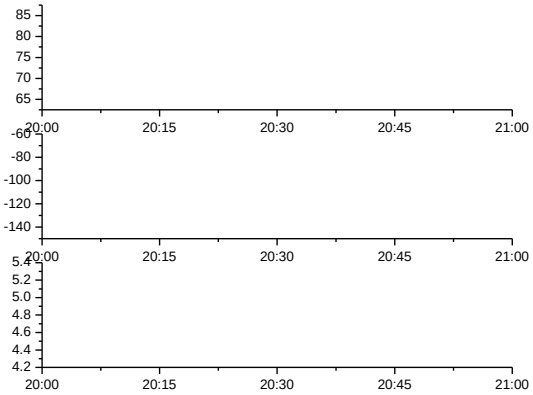
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec




0
1
2


0
1
2
3
4
5

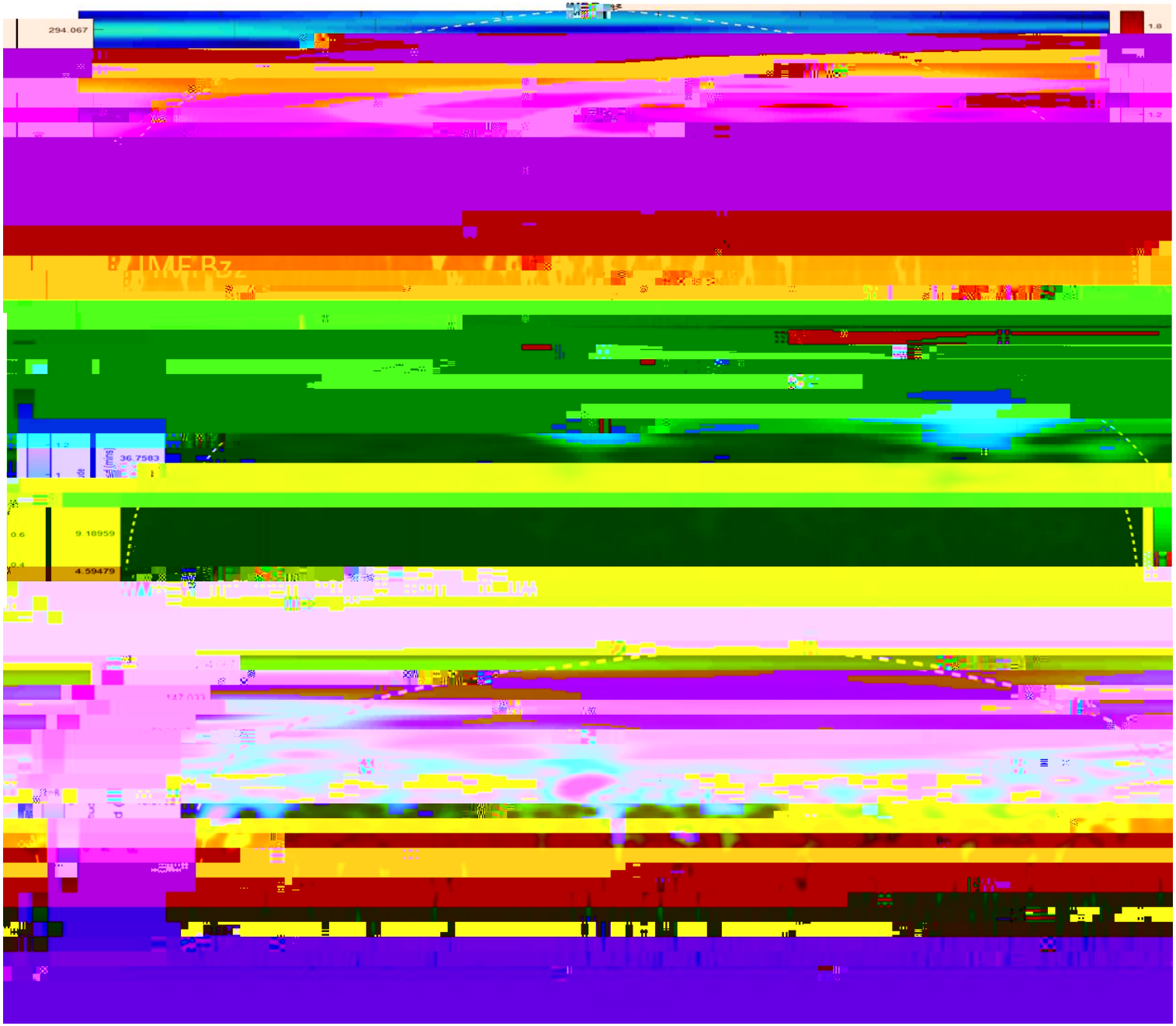

294.067
14
12

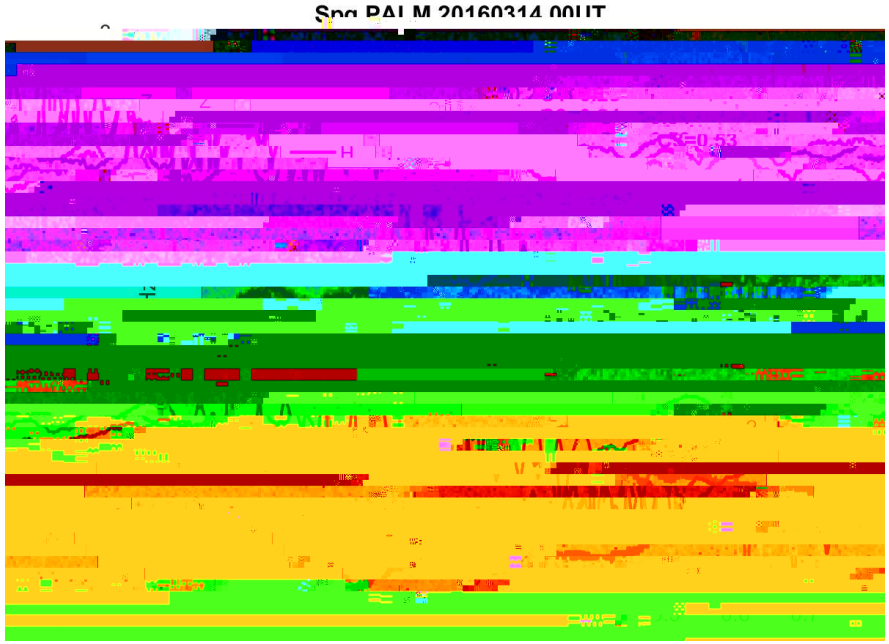

85
80
75
70
65
20:00
20:15
20:30
20:45
21:00
-60
-80
-100
-120
-140
20:00
20:15
20:30
20:45
21:00
5.4
5.2
5.0
4.8
4.6
4.4
4.2
20:00
20:15
20:30
20:45
21:00


June

3
5
6

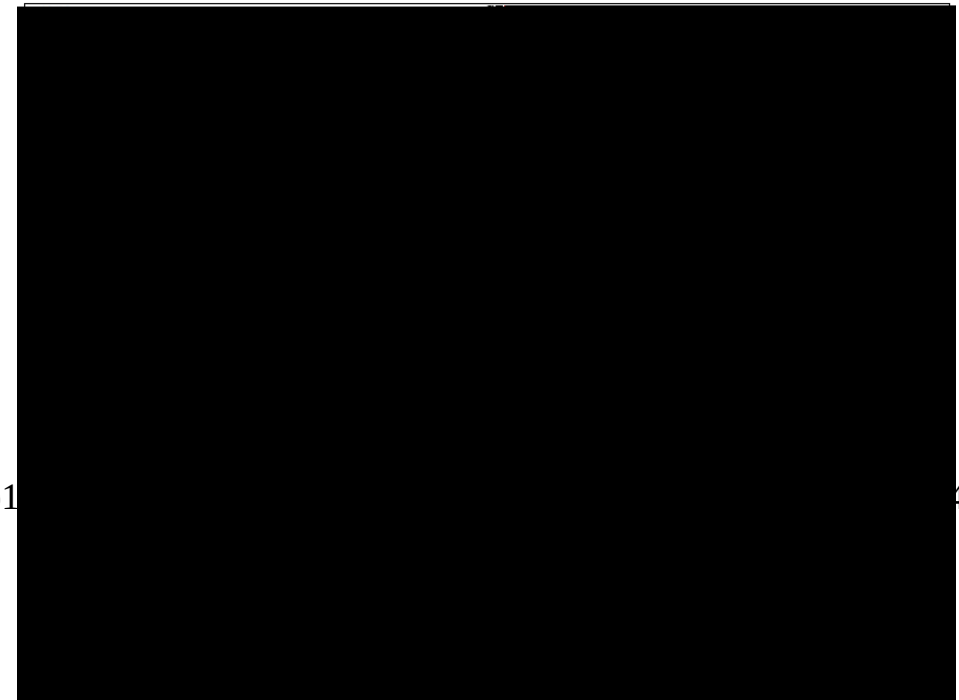

400
600
1000
1200
1400
Time (mins)
Mag field, U
0.05
2.2974
0
200
18.3792
14
15
16
17
18
19
20
21
22
23
01
02
03
04
05
06
07
08
09
10
11
12

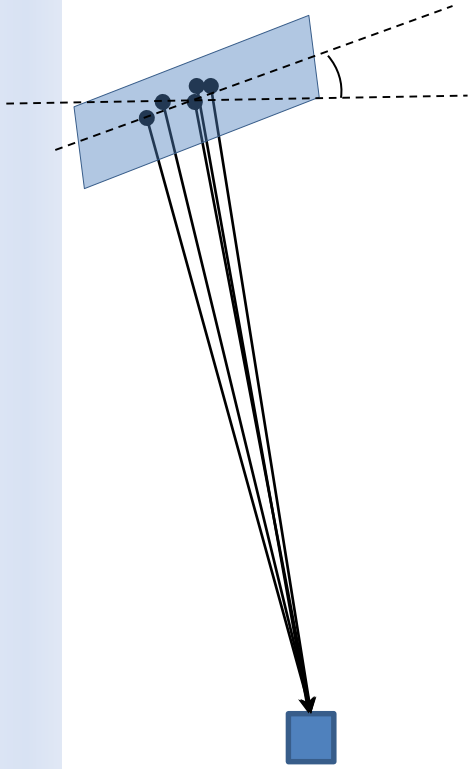

294.067
1.8
1.2
36.7583
0.6
9.18959
0.4
4.59479

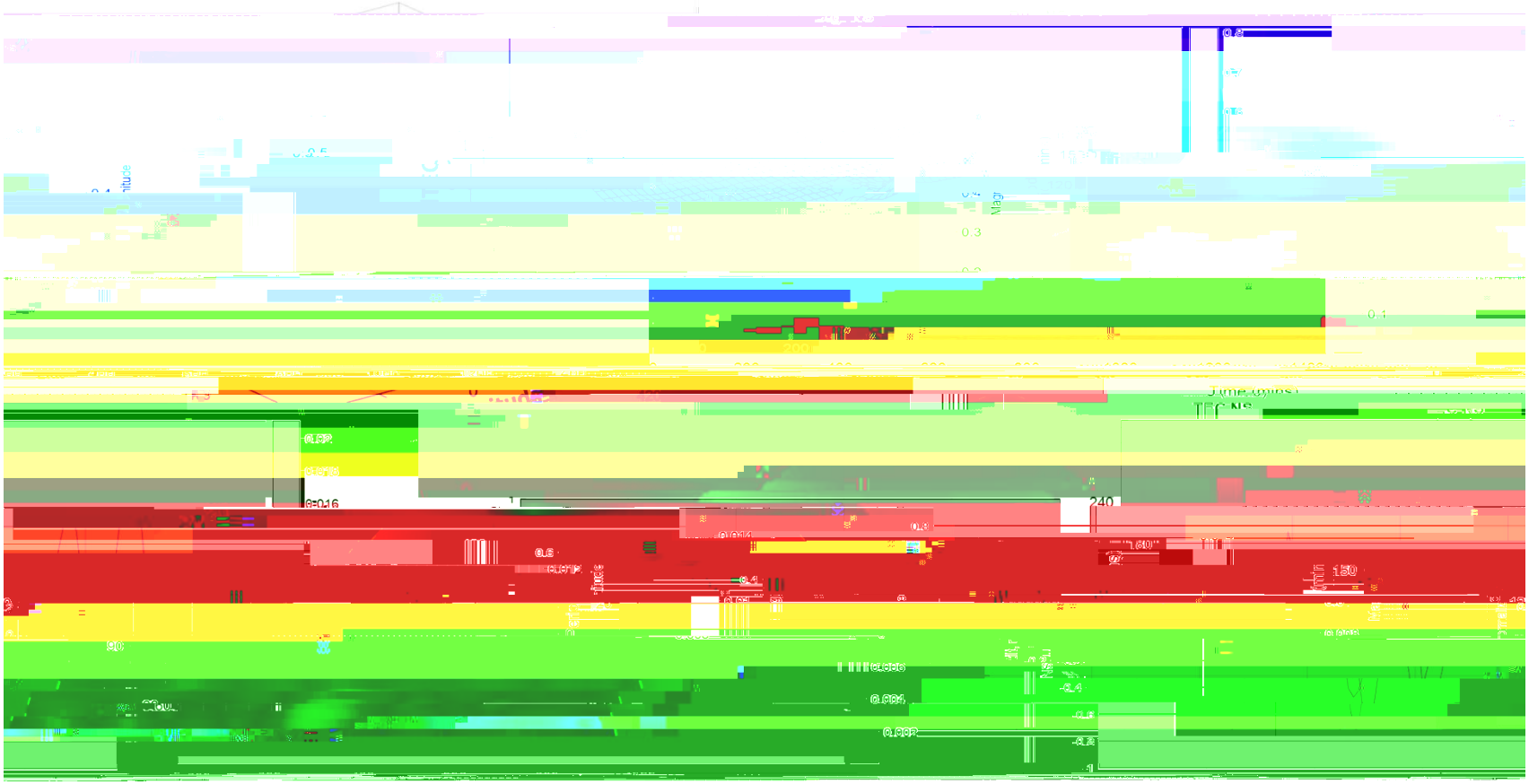



Roquetes
Spain
DIGISONDE 4D
Ionograms
Drift Velocities
LDI
LOWELL
Seville
Malaga
Gibraltar
Agadir

The transmitted signal illuminates a large area in the ionosphere, typically a few hundred kilometers in diameter (top). The transmitted radiowave reflects at every point in the ionosphere where the wave encounters the cut-ofs frequency (index of reflection is zero). If the normal to the surface of equal electron density points exactly towards the sounder, then the reflected ls /P d(ts)]t] TJETQICID 6 24.0binttundernh3( )1

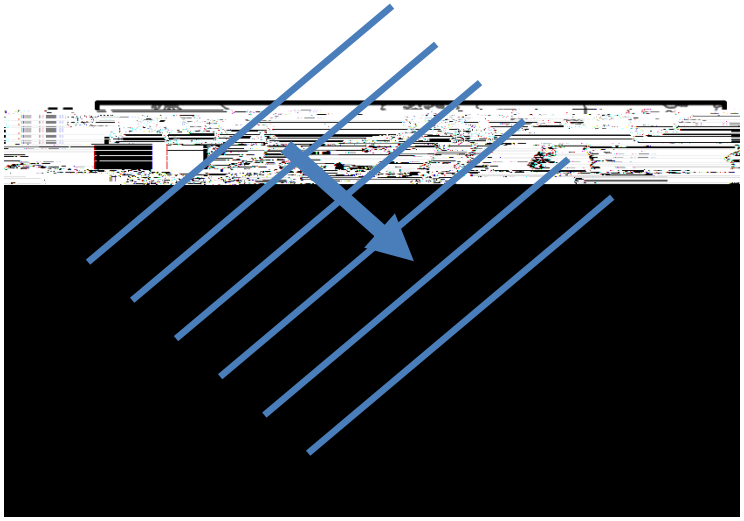




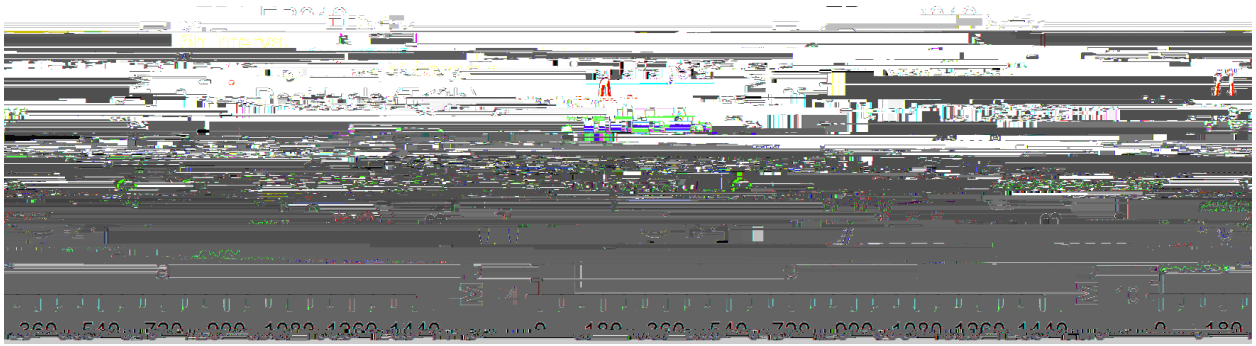


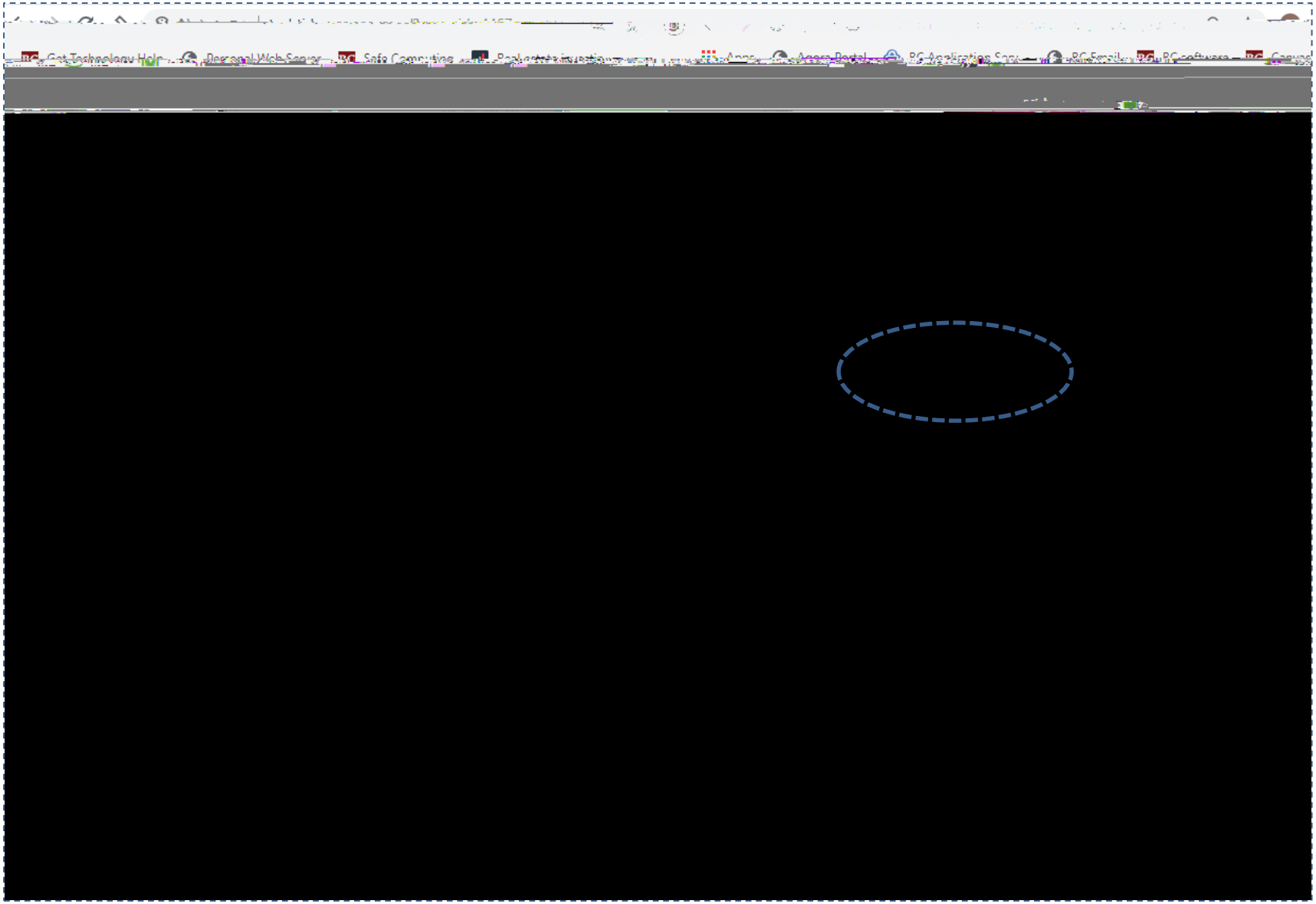
Comparison of the tilts derived from digisonde and

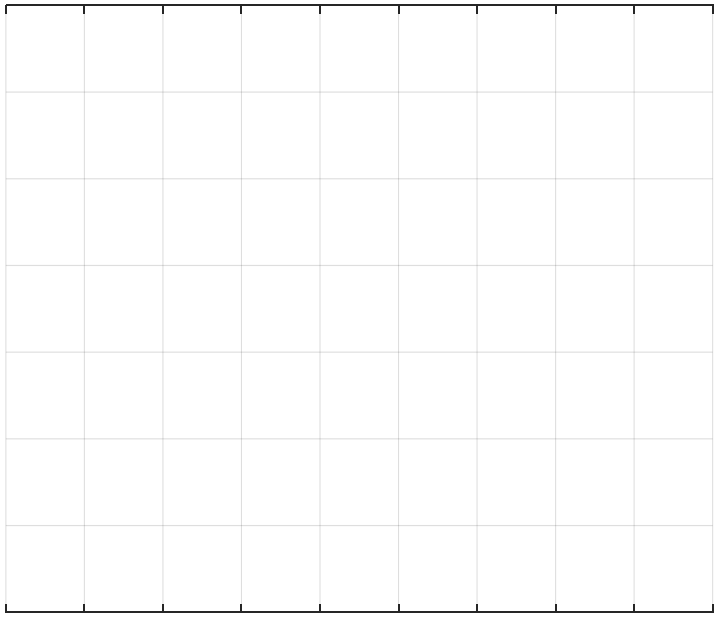

24
22
20
10 240 270 300 330 360
30 60 90 120 150 180
Day of y
10
24
22
20
Time

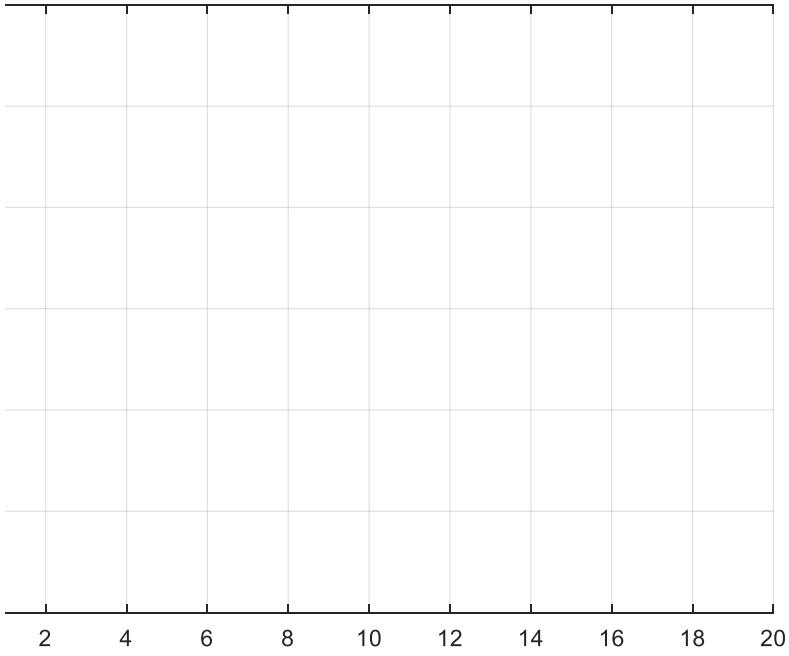


For each i^{th}




Get Technology Help
Personal Web Server
Safe Computing
Apps
Access Portal
BC Application Serv
BC Email
BC software
Canvas




2
4
6
8
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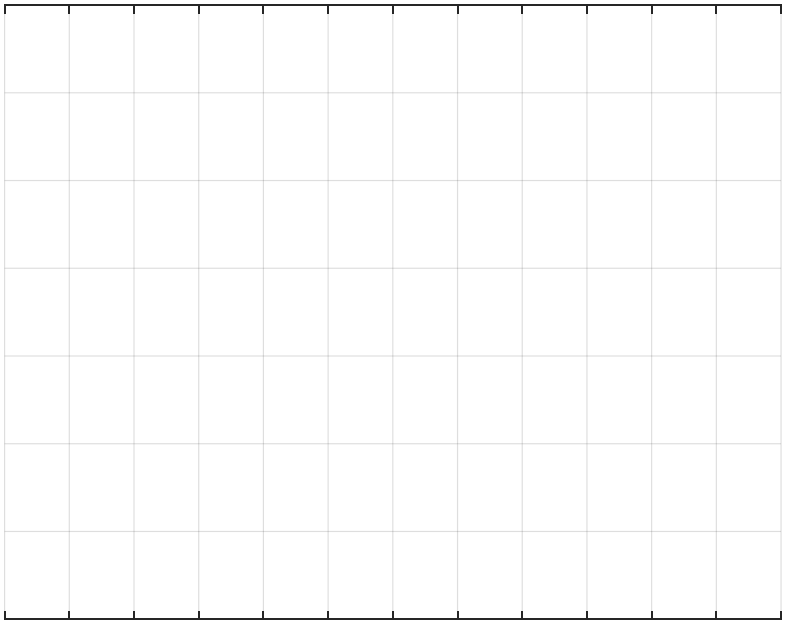
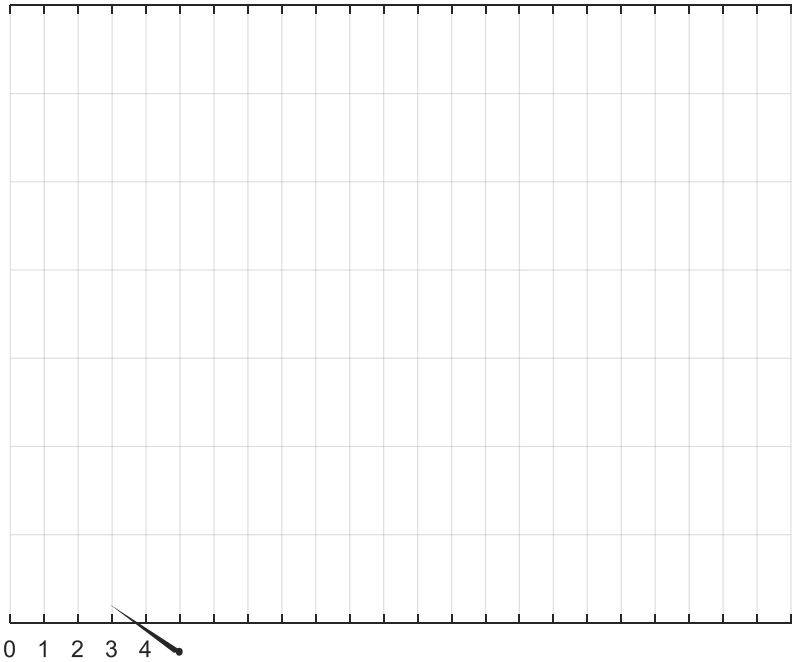
12
14
16
18
20




0 1 2 3 4