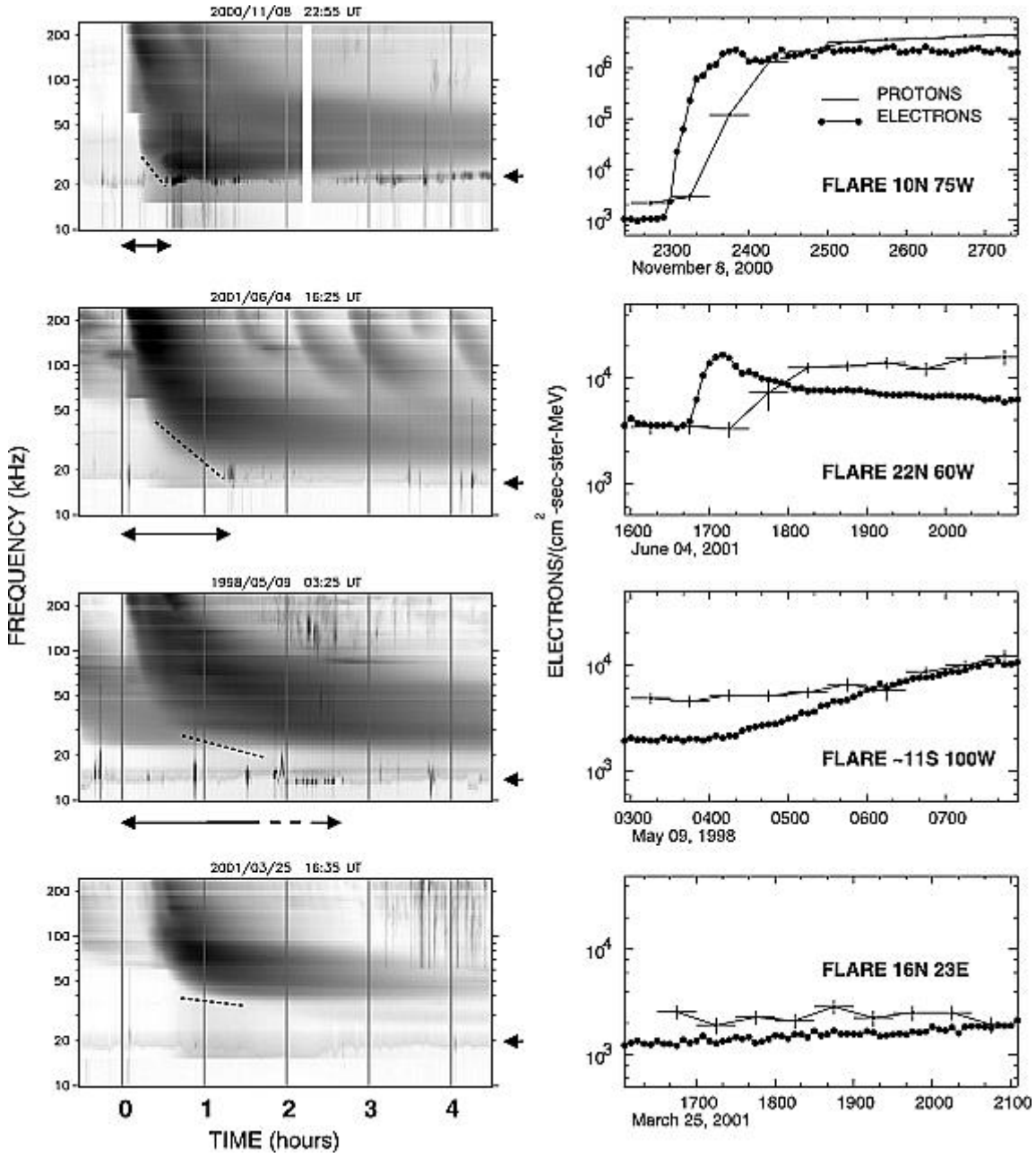
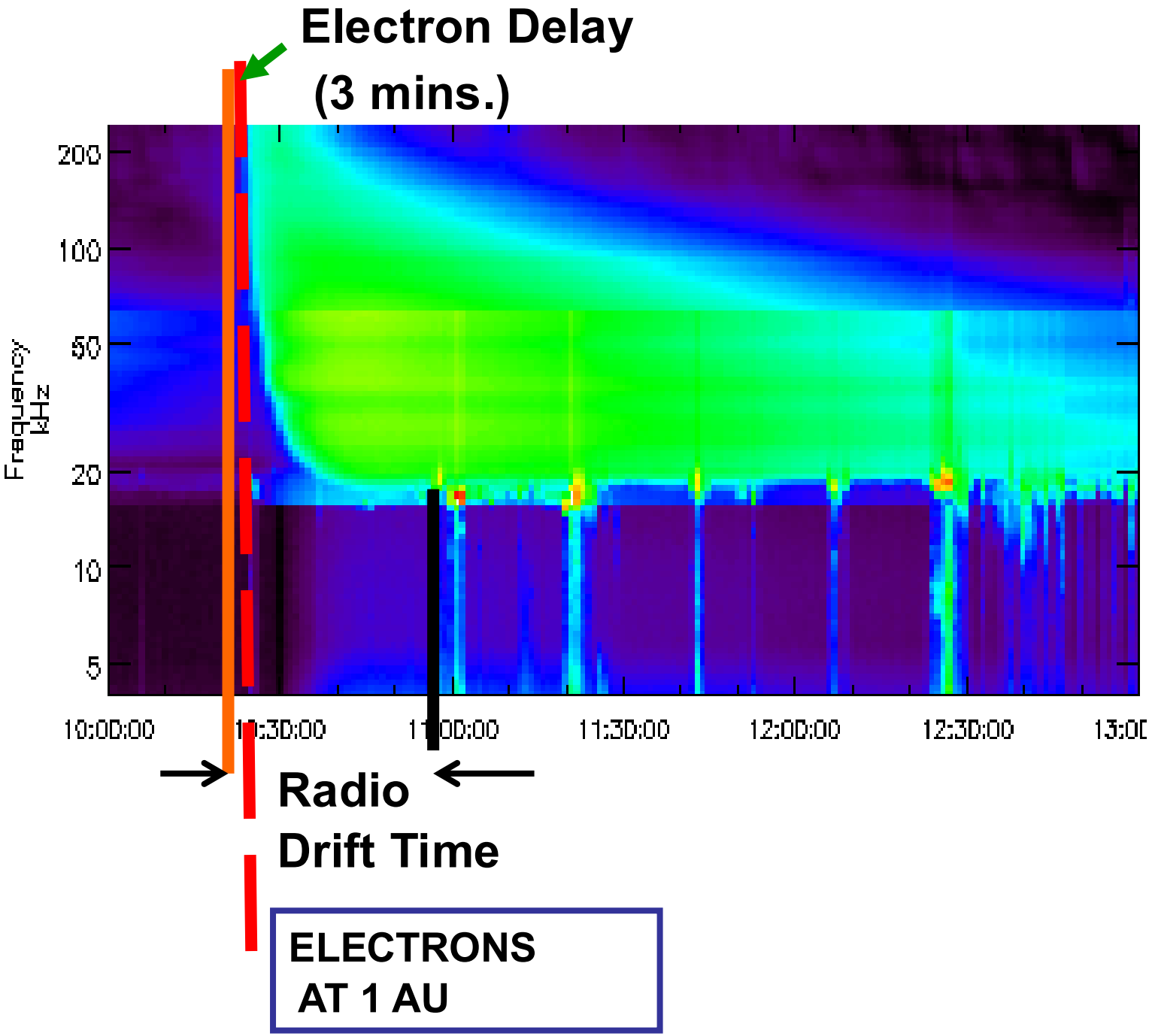
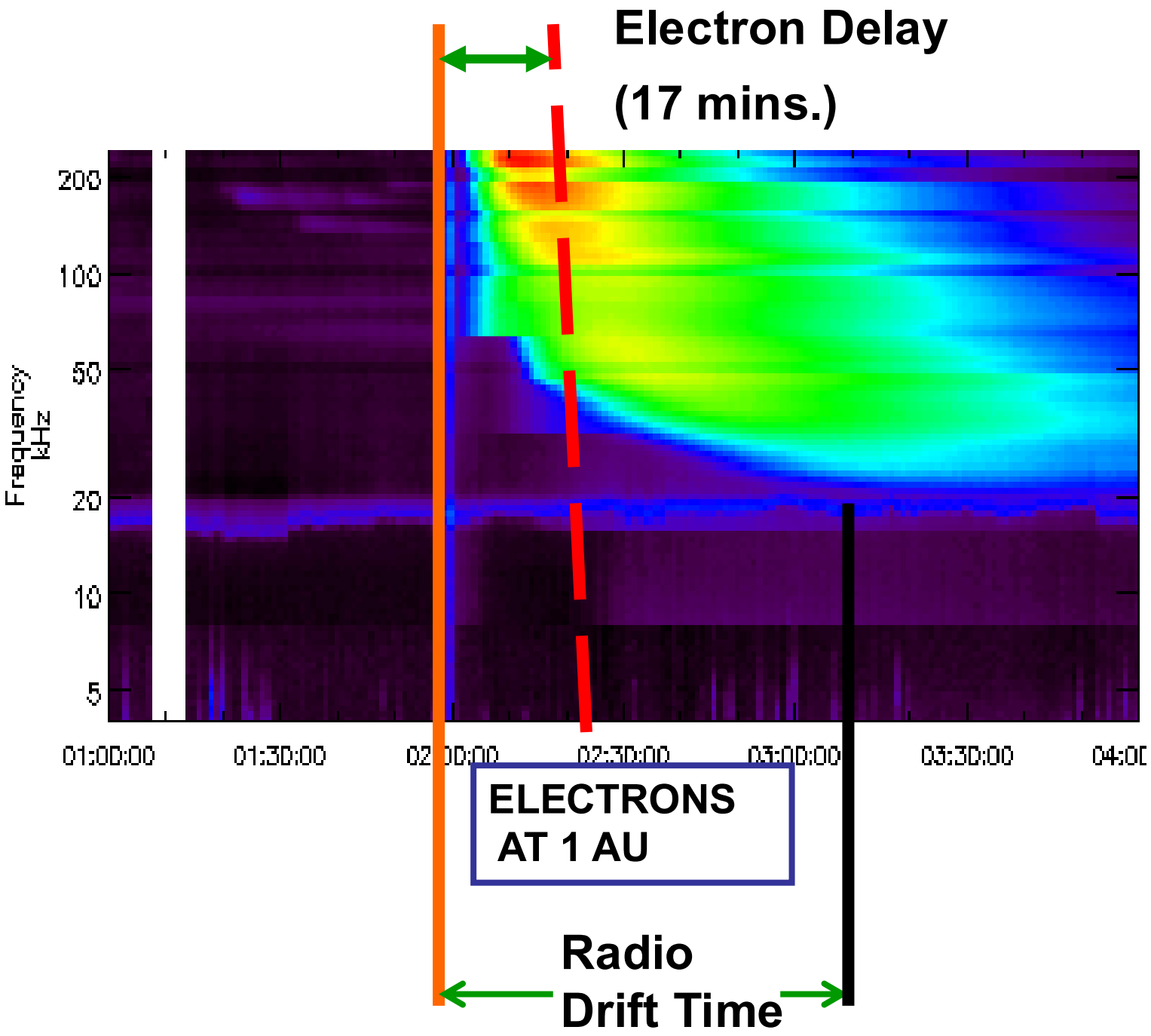
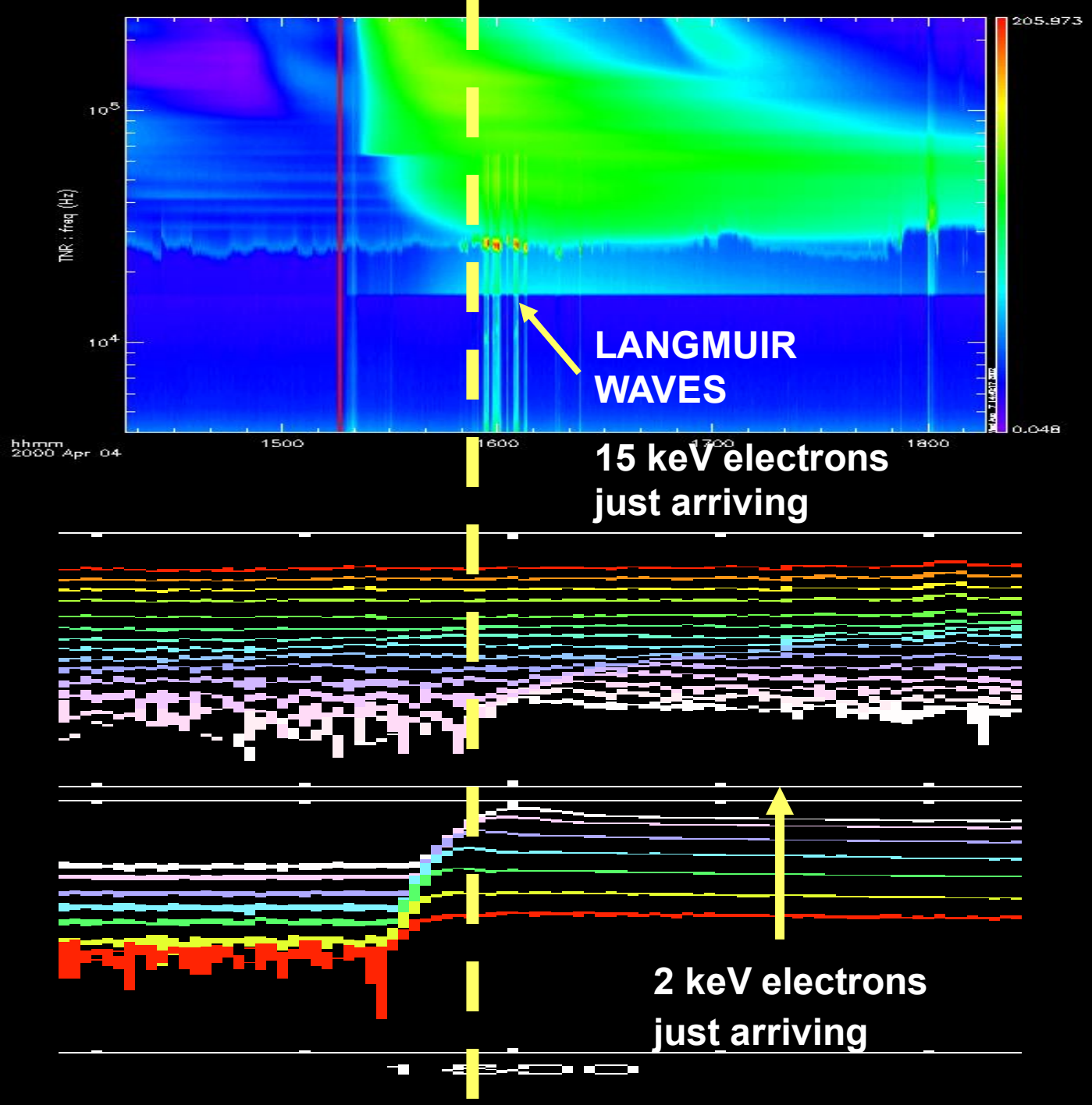
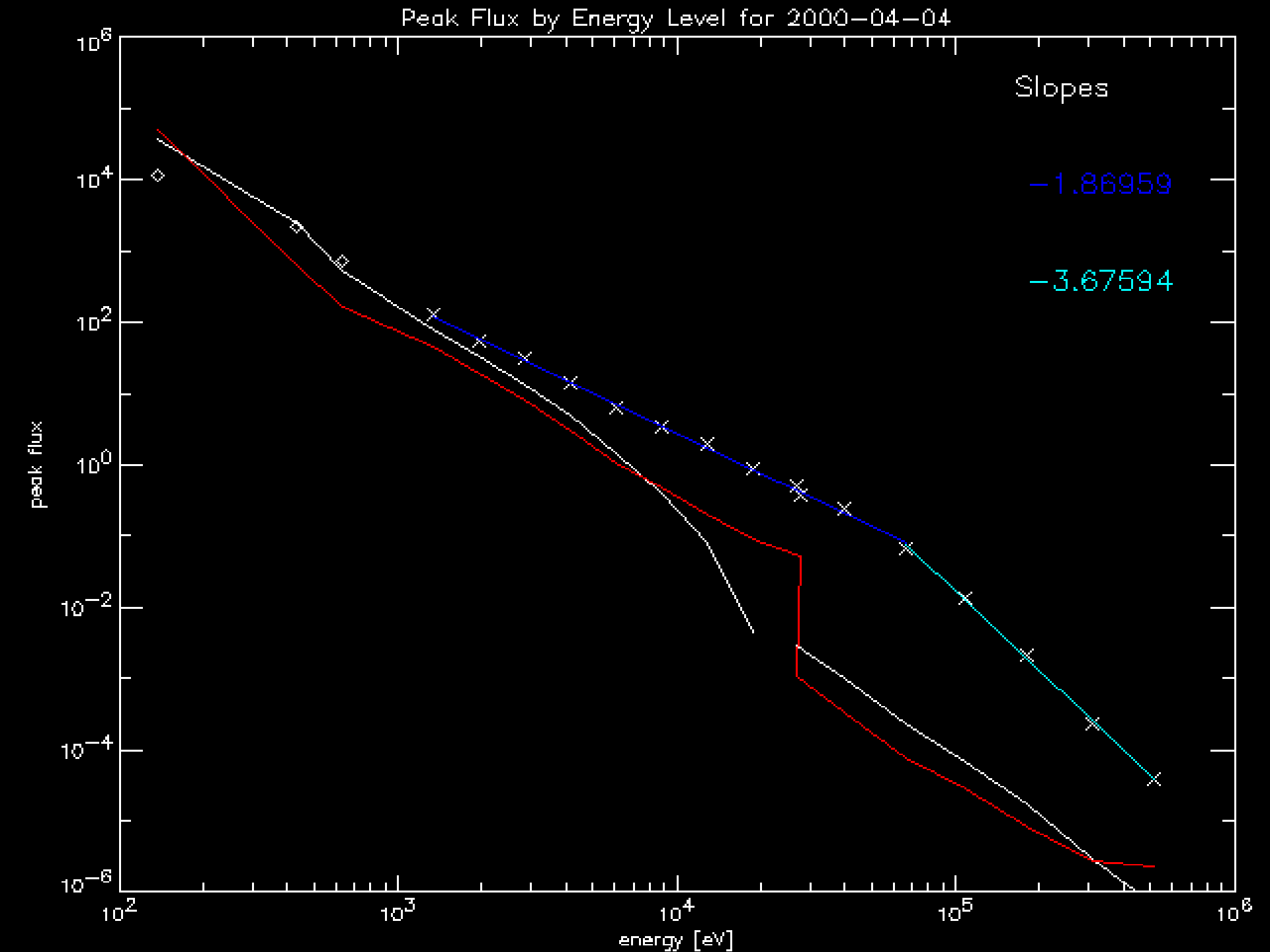

2000/11/08 22:55 UT
2001/06/04 16:25 UT
1998/05/09 03:25 UT
2001/03/25 16:35 UT
FREQUENCY (kHz)
TIME (hours)
ELECTRONS/(cm -sec-ster-MeV)
PROTONS
ELECTRONS
FLARE 10N 75W
November 8, 2000
FLARE 22N 60W
June 04, 2001
FLARE ~11S 100W
May 09, 1998
FLARE 16N 23E
March 25, 2001

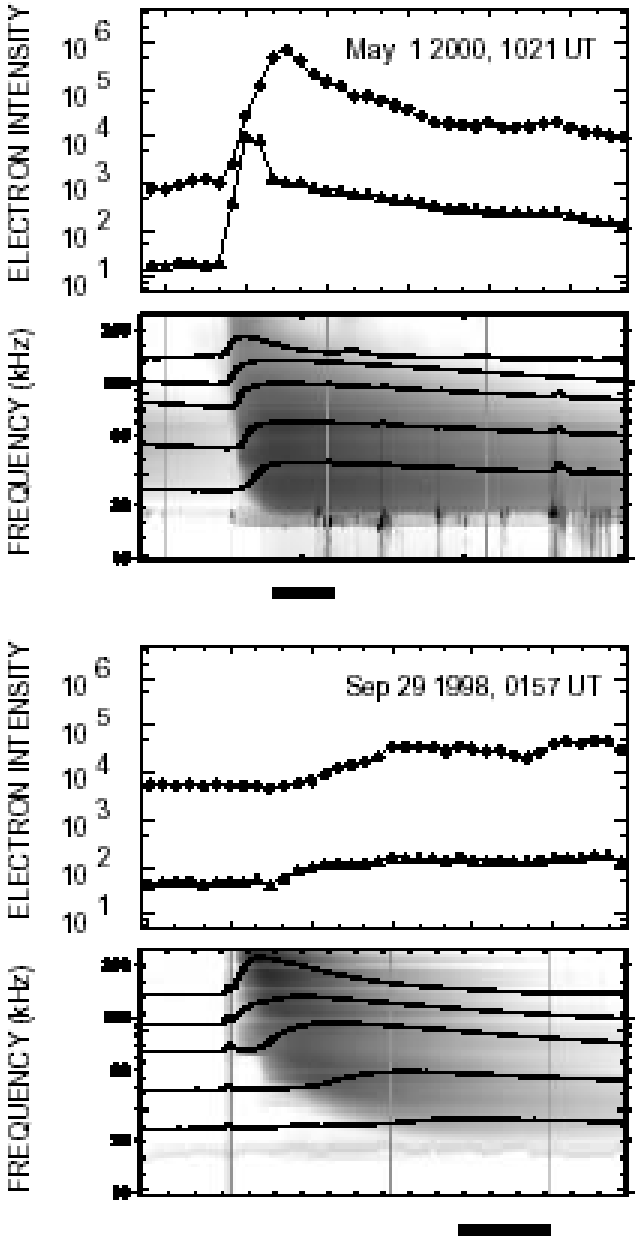

Electron Delay
(3 mins.)
200
100
50
20
10
5
Frequency
kHz
10:00:00
11:30:00
12:00:00
12:30:00
Radio
Drift Time
ELECTRONS
AT 1 AU

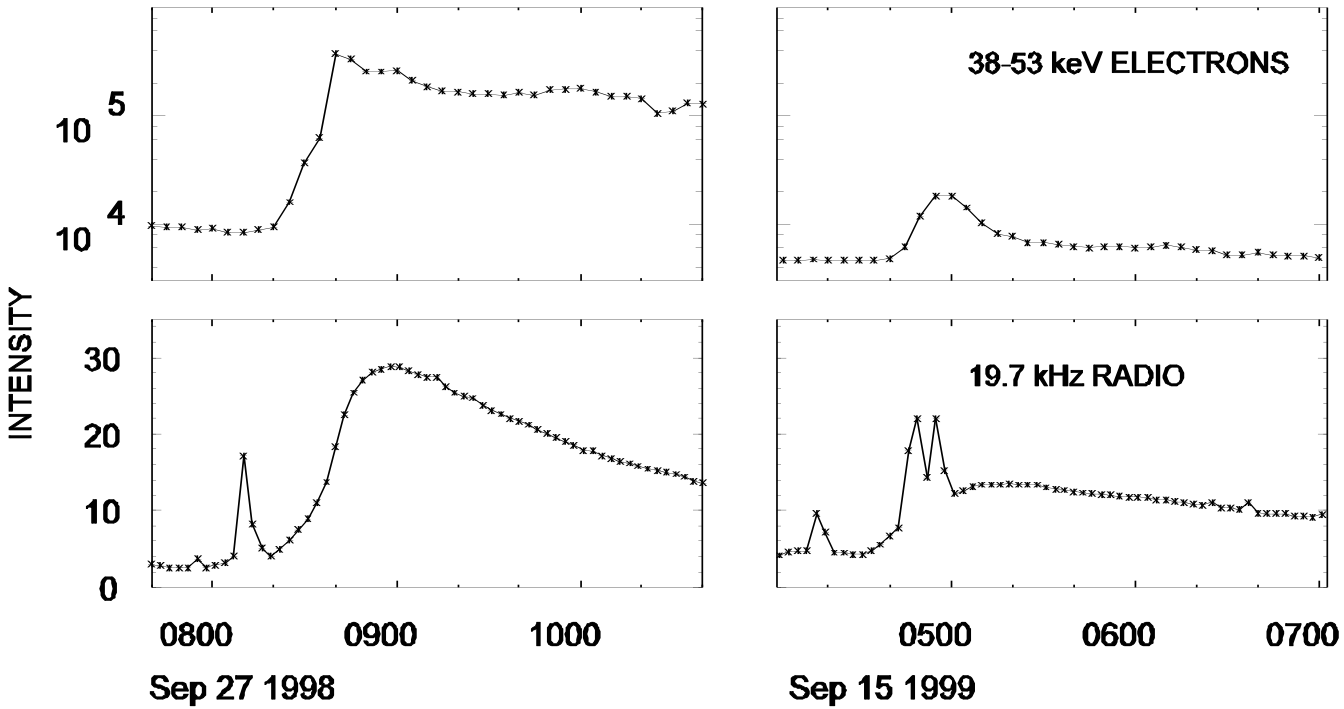

Electron Delay
(17 mins.)
Frequency
kHz
200
100
50
20
10
5
01:00:00
01:30:00
02:30:00
03:30:00
ELECTRONS
AT 1 AU
Radio
Drift Time

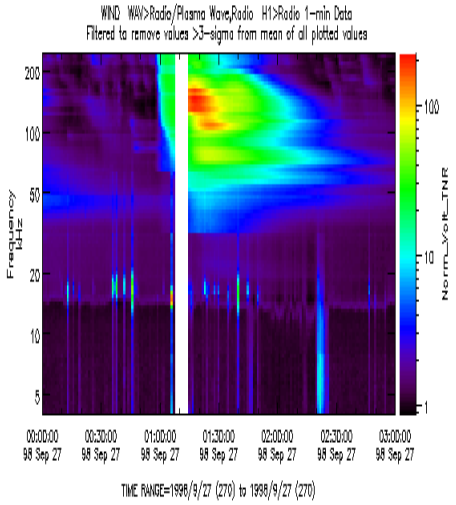
TWO POPULATIONS?


205.973
0.048
10^5
10^4
TNR: freq (Hz)
hhmm
2000 Apr 04
1500
1600
1700
1800
LANGMUIR
WAVES
15 keV electrons
just arriving
0.14 keV
0.2 keV
0.29 keV
0.43 keV
0.63 keV
0.92 keV
1.3 keV
2 keV
2.8 keV
4.2 keV
6.1 keV
8.9 keV
13 keV
20 keV
27 keV
40 keV
66 keV
108 keV
187 keV
310 keV
517 keV
2 keV electrons
just arriving

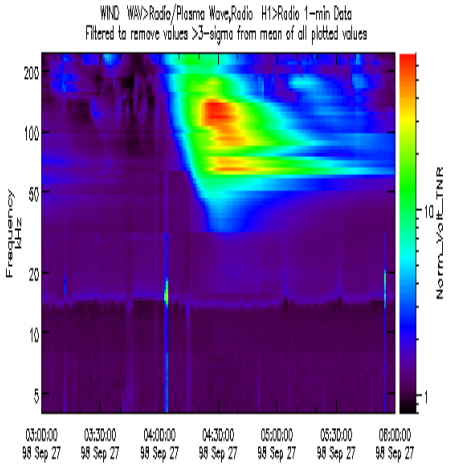

Peak Flux by Energy Level for 2000-04-04
Slopes
-1.86959
-3.67594
peak flux
energy [eV]
10^6
10^4
10^2
10^0
10^-2
10^-4
10^-6
10^2
10^3
10^4
10^5
10^6


ELECTRON INTENSITY
10 6
10 5
10 4
10 3
10 2
10 1
May 1 2000, 1021 UT
FREQUENCY (kHz)
ELECTRON INTENSITY
10 6
10 5
10 4
10 3
10 2
10 1
Sep 29 1998, 0157 UT
FREQUENCY (kHz)

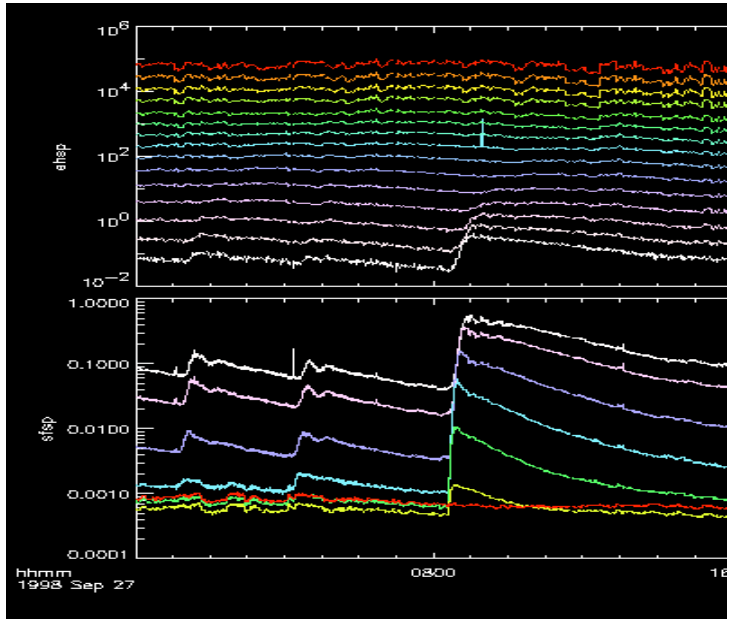

38-53 keV ELECTRONS
19.7 kHz RADIO
INTENSITY
10 5
10 4
30
20
10
0
0800
0900
1000
0500
0600
0700
Sep 27 1998
Sep 15 1999

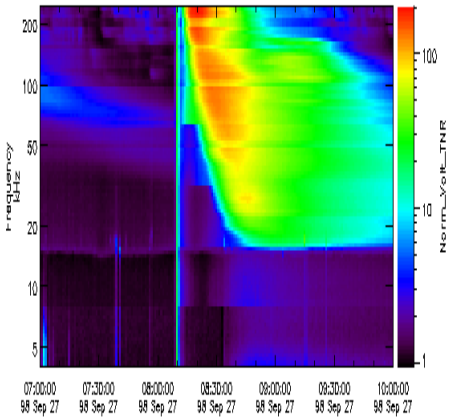


Please acknowledge data provider, M. L. Kaiser at GSFC and CDAWeb when using these data.
Key Parameter and Survey data (labels K0,K1,K2) are preliminary browse data.
Generated by CDAWeb on Fri Apr 12 23:12:43 2002



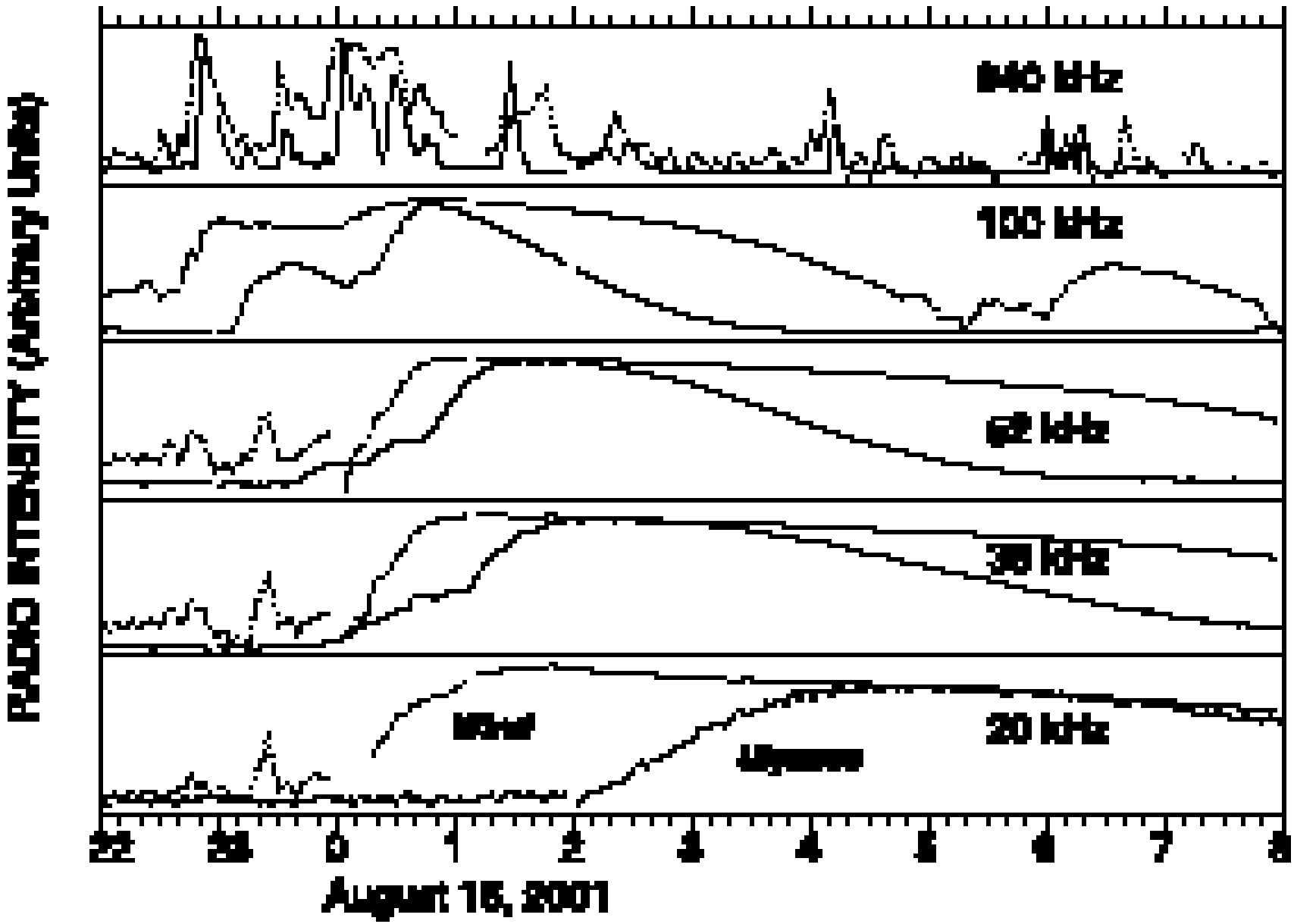
Please acknowledge data provider, M. L. Kaiser at GSFC and CDAWeb when using these data.
Key Parameter and Survey data (labels K0,K1,K2) are preliminary browse data.
Generated by CDAWeb on Fri Apr 12 23:14:36 2002

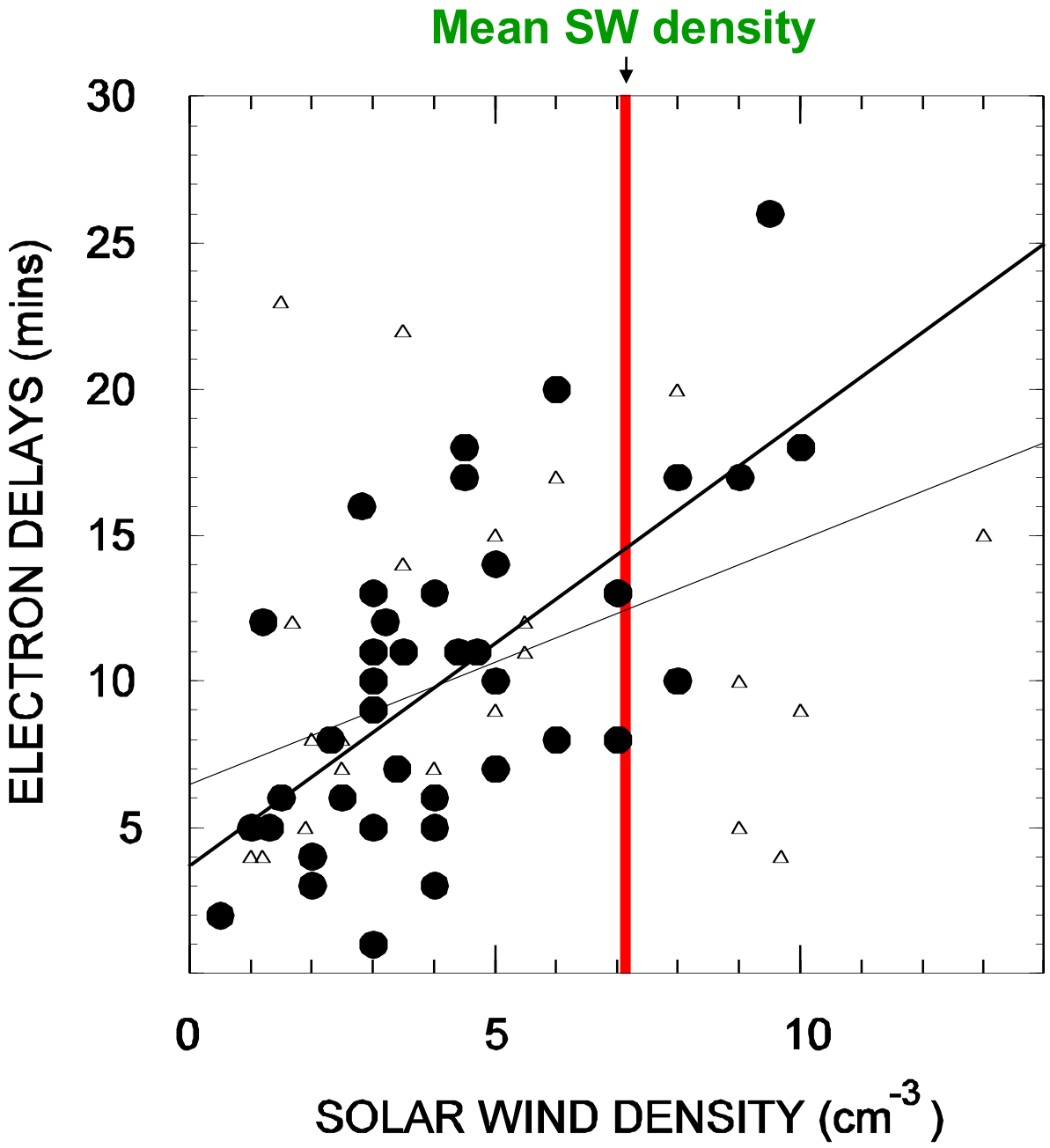


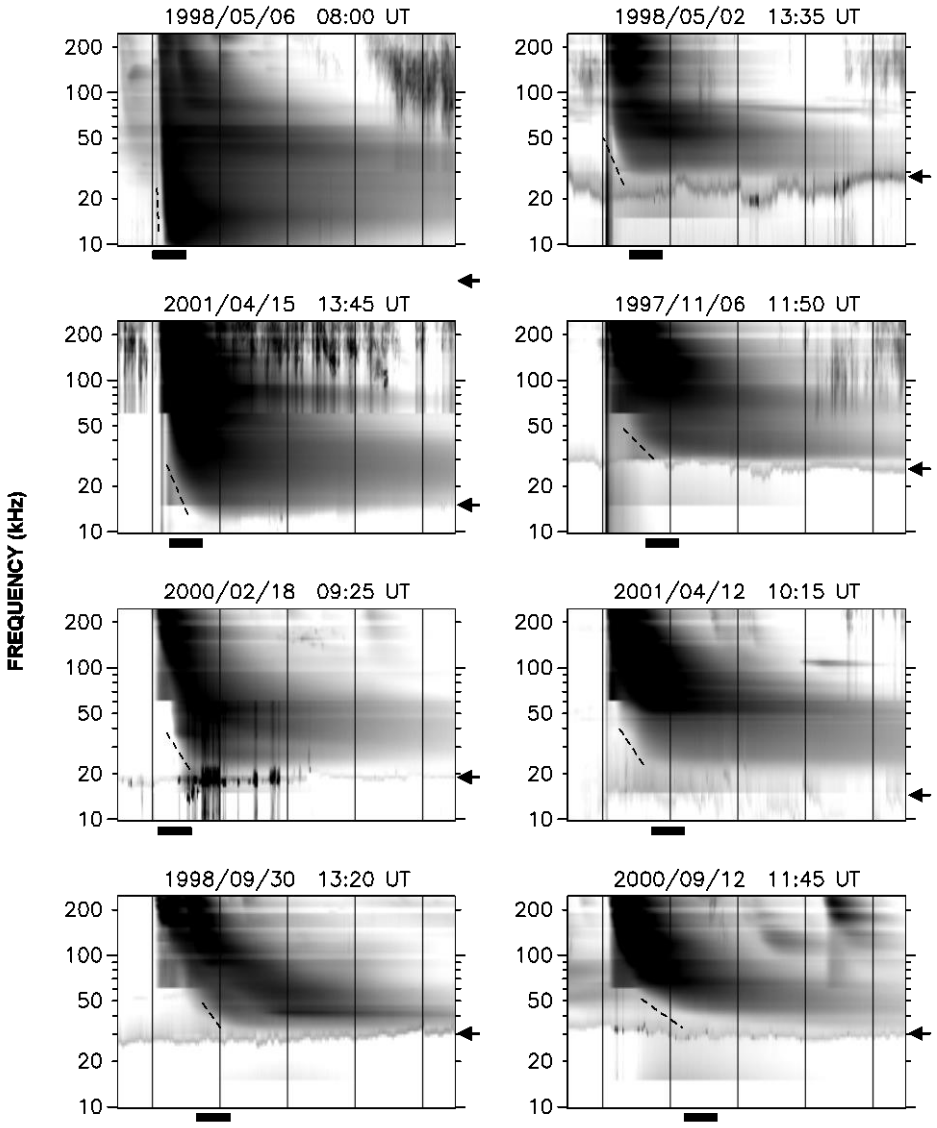


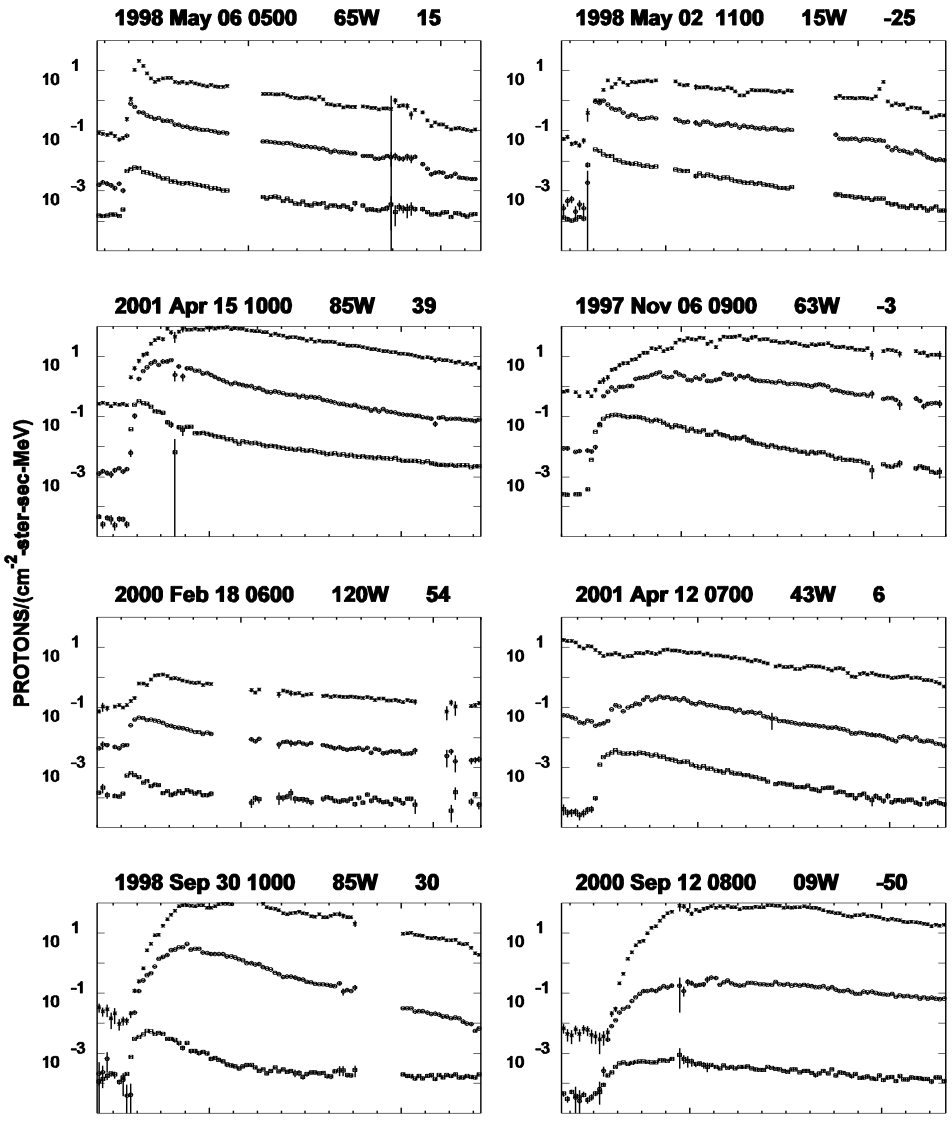
Please acknowledge data provider, M. L. Kaiser at GSFC and CDAWeb when using these data.
Key Parameter and Survey data (labels K0,K1,K2) are preliminary browse data.
Generated by CDAWeb on Fri Apr 12 23:15:47 2002

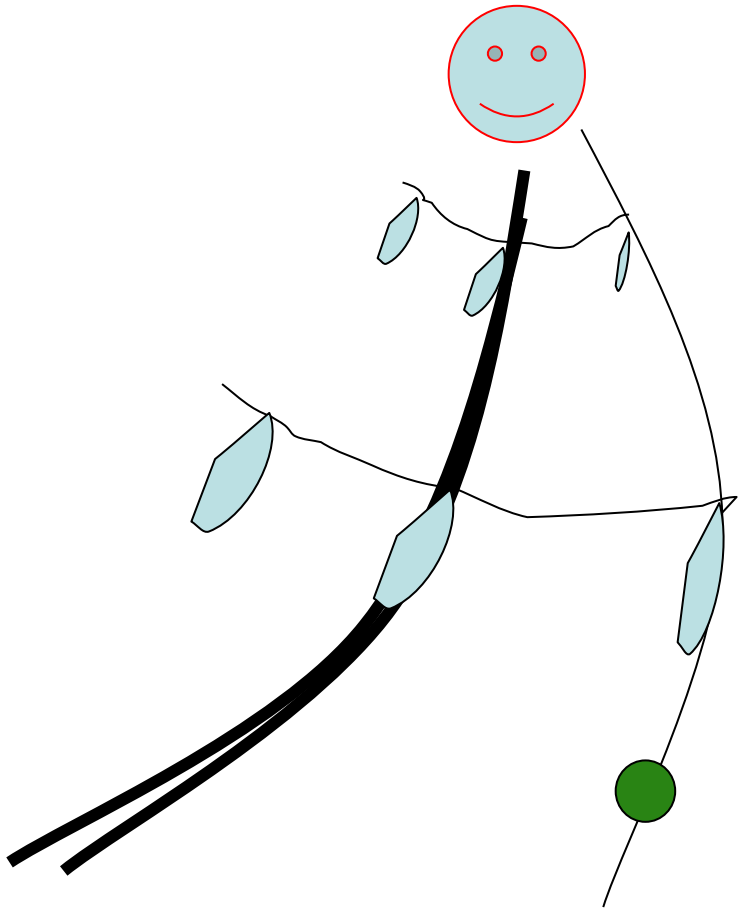
ANOMALOUS DELAYS

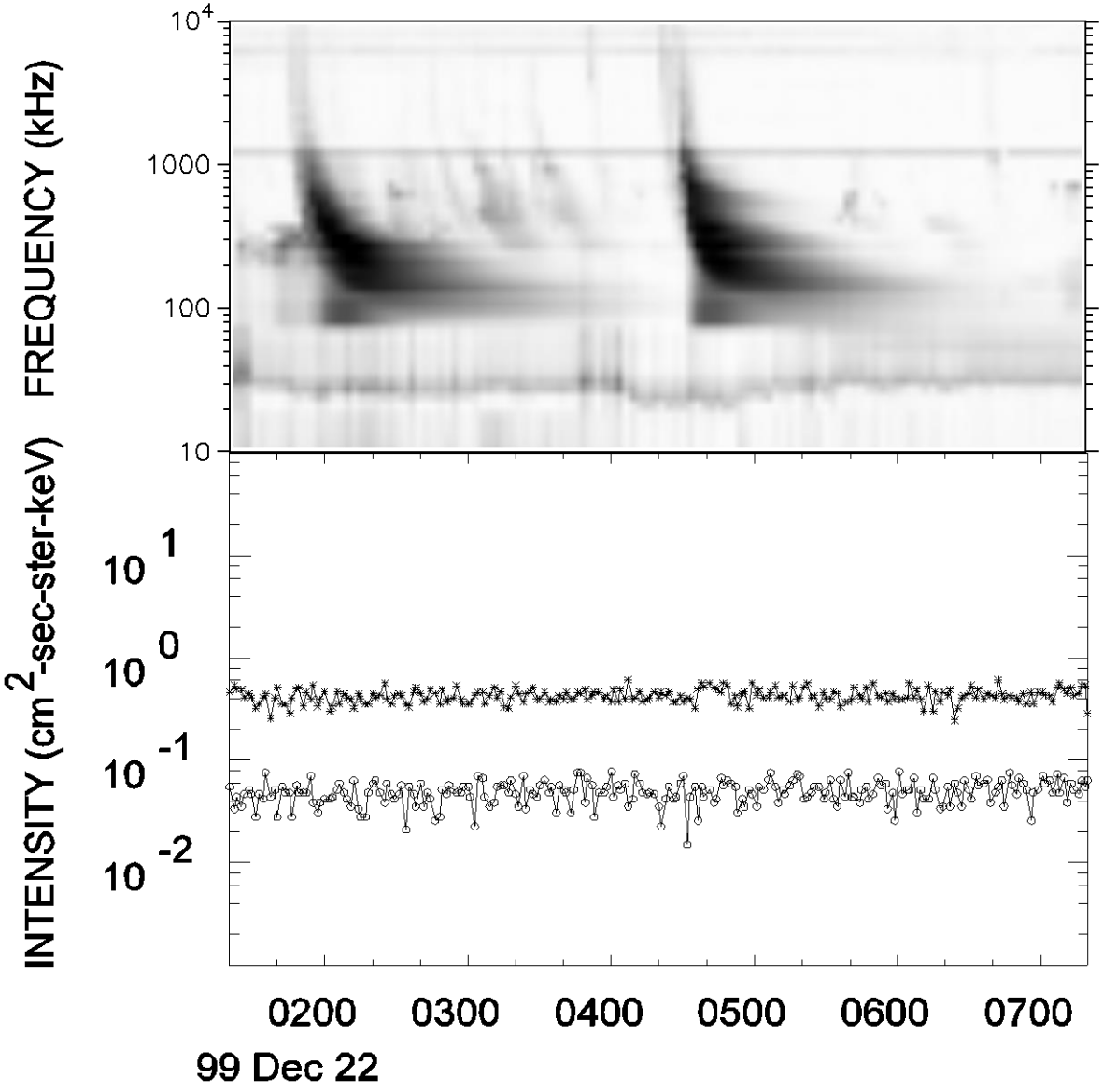

RADIO INTENSITY (Arbitrary Units)
640 kHz
100 kHz
62 kHz
30 kHz
20 kHz
22
23
0
1
2
3
4
5
6
7
8
August 15, 2001

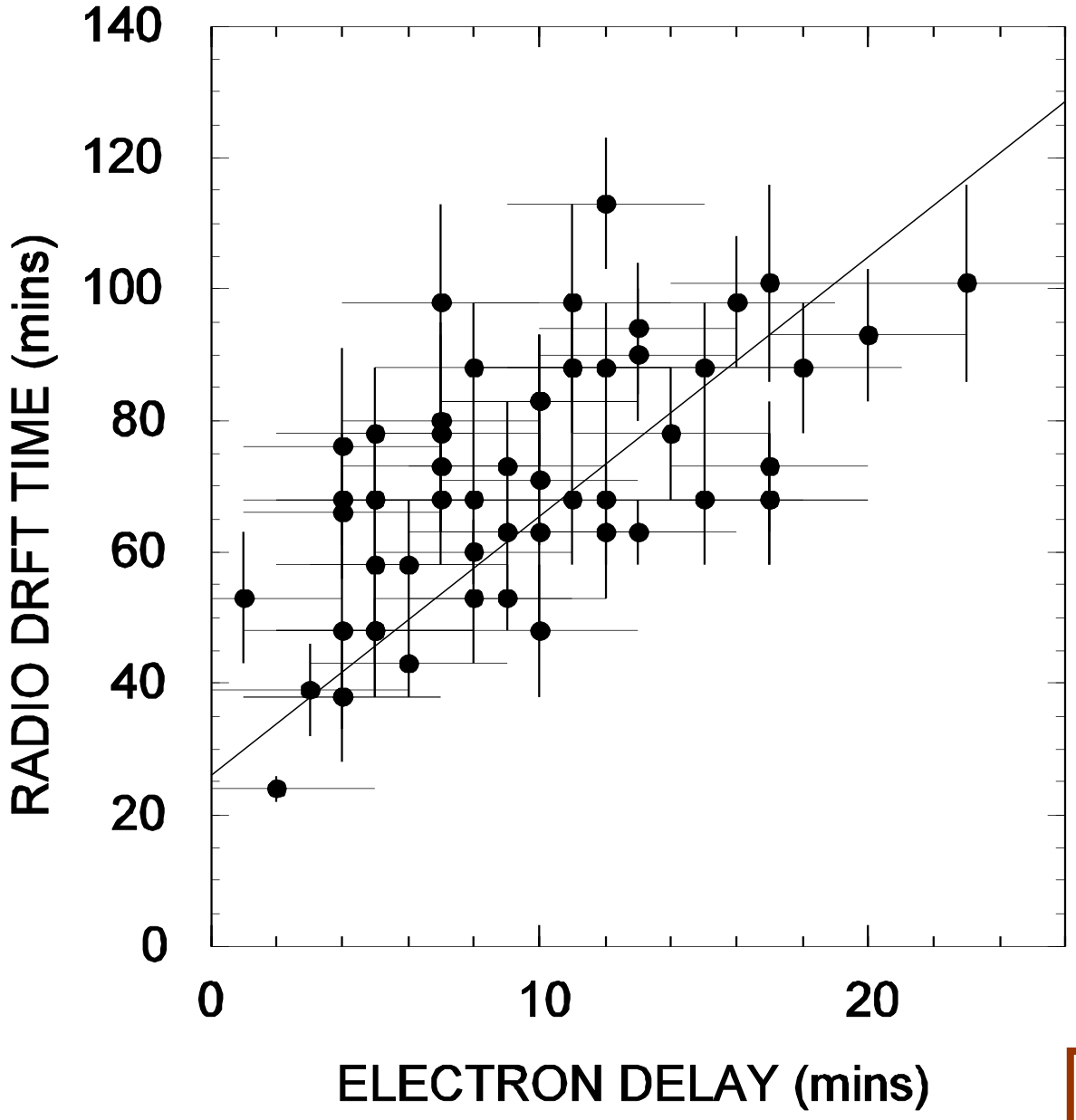

Mean SW density
30
25
20
15
10
5
ELECTRON DELAYS (mins)
0
5
10
SOLAR WIND DENSITY (cm-3)


1998/05/06 08:00 UT
1998/05/02 13:35 UT
2001/04/15 13:45 UT
1997/11/06 11:50 UT
2000/02/18 09:25 UT
2001/04/12 10:15 UT
1998/09/30 13:20 UT
2000/09/12 11:45 UT
FREQUENCY (kHz)
200
100
50
20
10

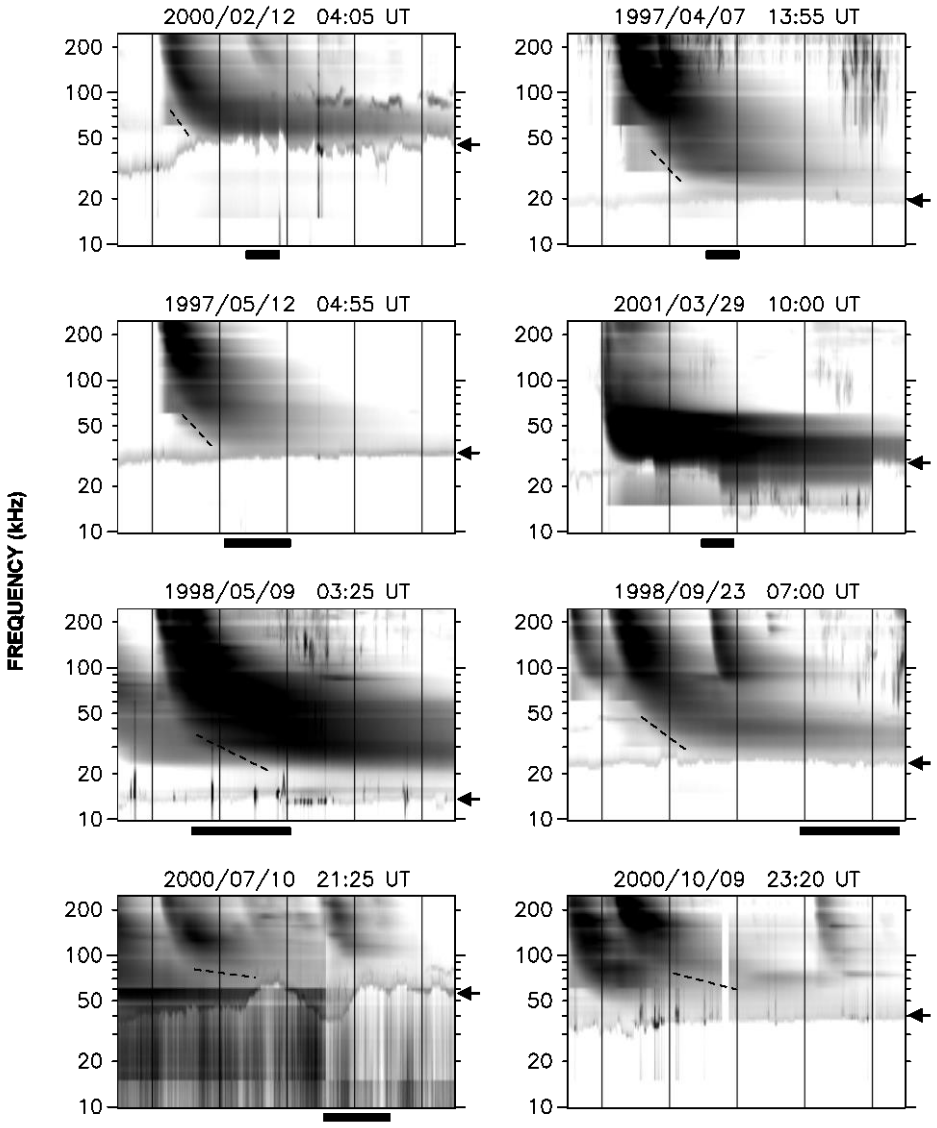

1998 May 06 0500 65W 15
1998 May 02 1100 15W -25
2001 Apr 15 1000 85W 39
1997 Nov 06 0900 63W -3
2000 Feb 18 0600 120W 54
2001 Apr 12 0700 43W 6
1998 Sep 30 1000 85W 30
2000 Sep 12 0800 09W -50
PROTONS/(cm-2-ster-sec-MeV)
10 1
10 -1
10 -3

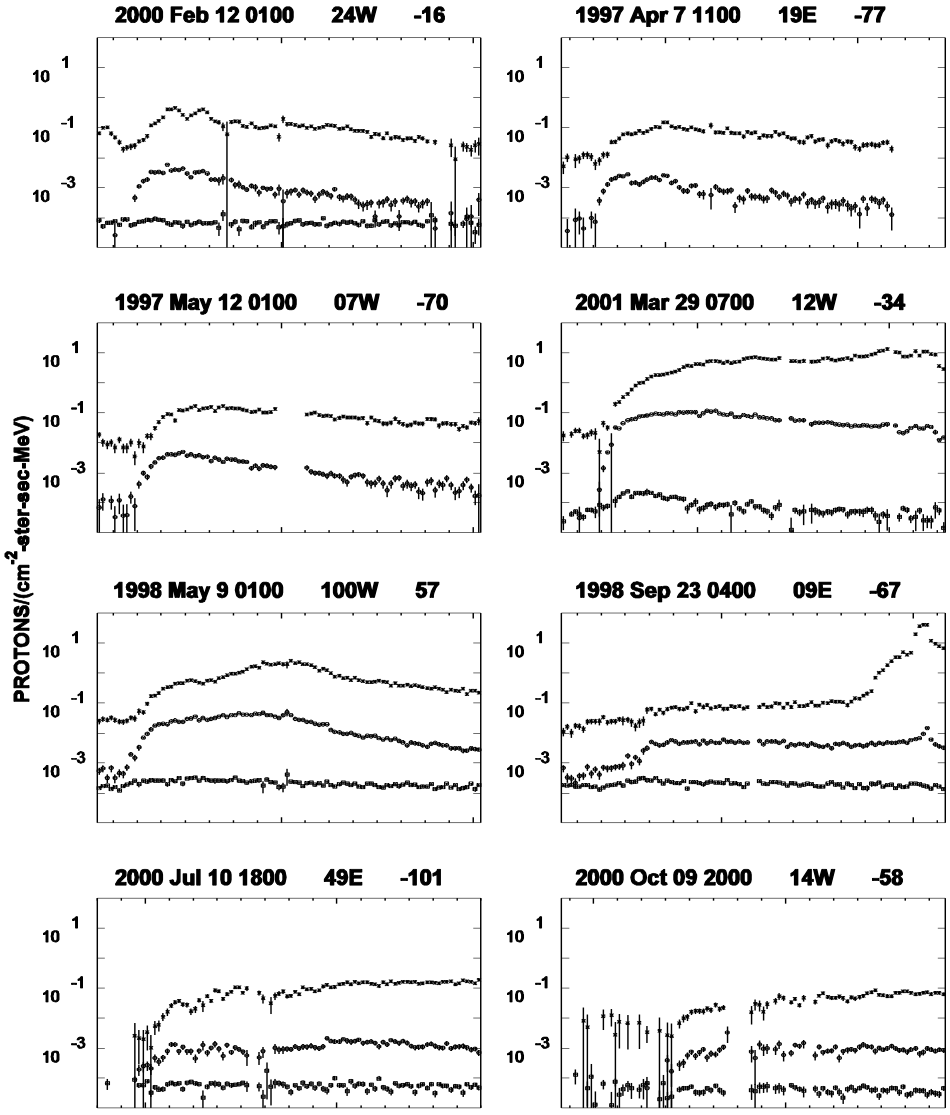


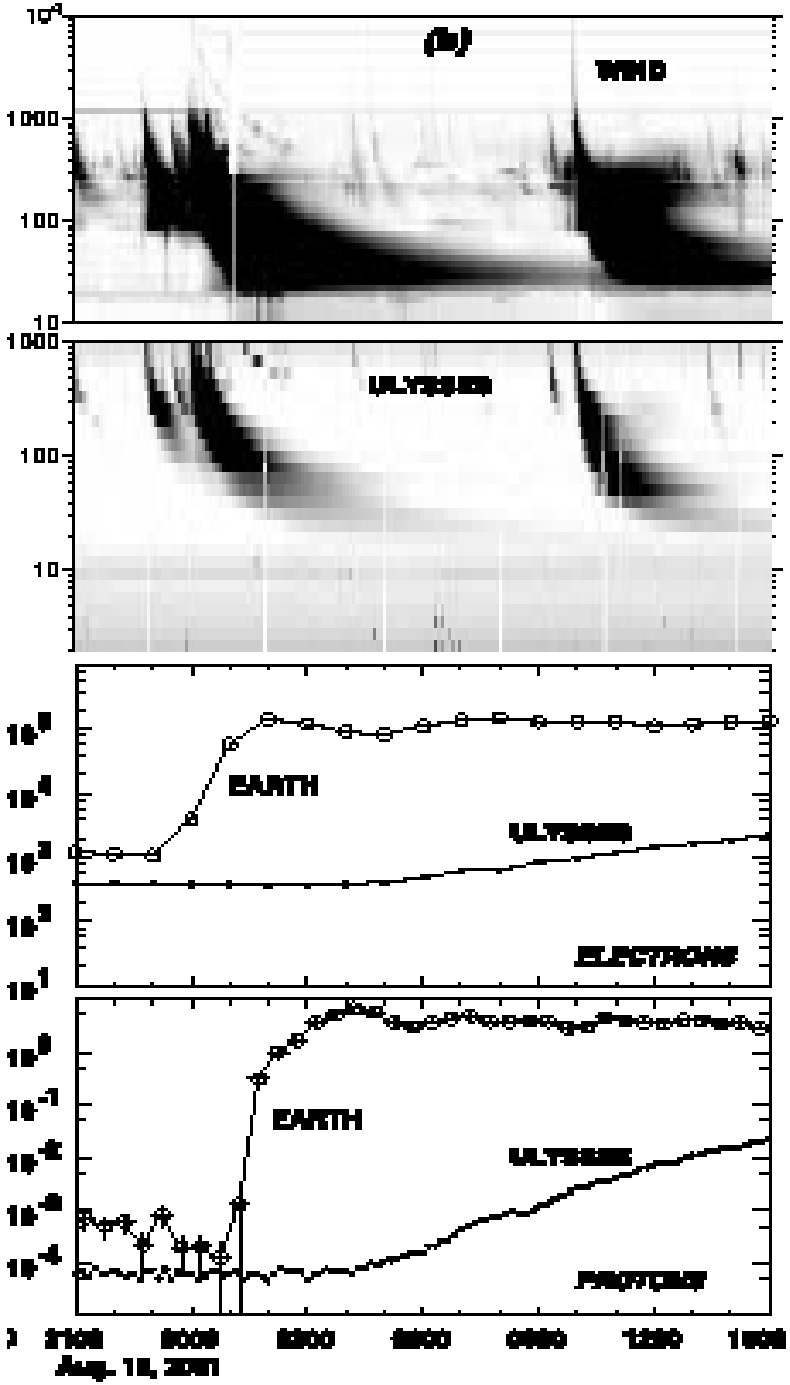

FREQUENCY (kHz)
10^4
1000
100
10
INTENSITY (cm^2-sec-ster-keV)
10 1
10 0
10 -1
10 -2
0200
0300
0400
0500
0600
0700
99 Dec 22


140
120
100
80
60
40
20
0
RADIO DRFT TIME (mins)
0
10
20
ELECTRON DELAY (mins)

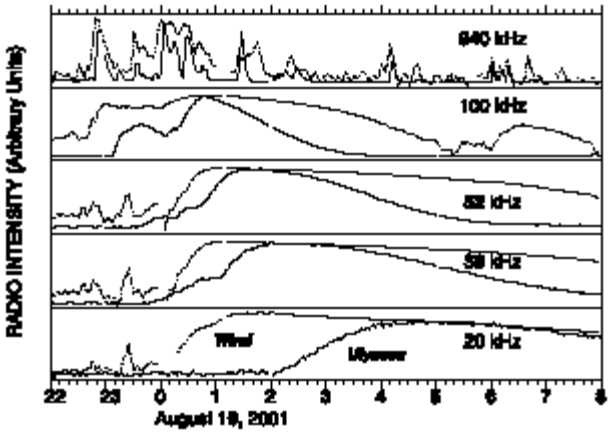
CANE, 2003

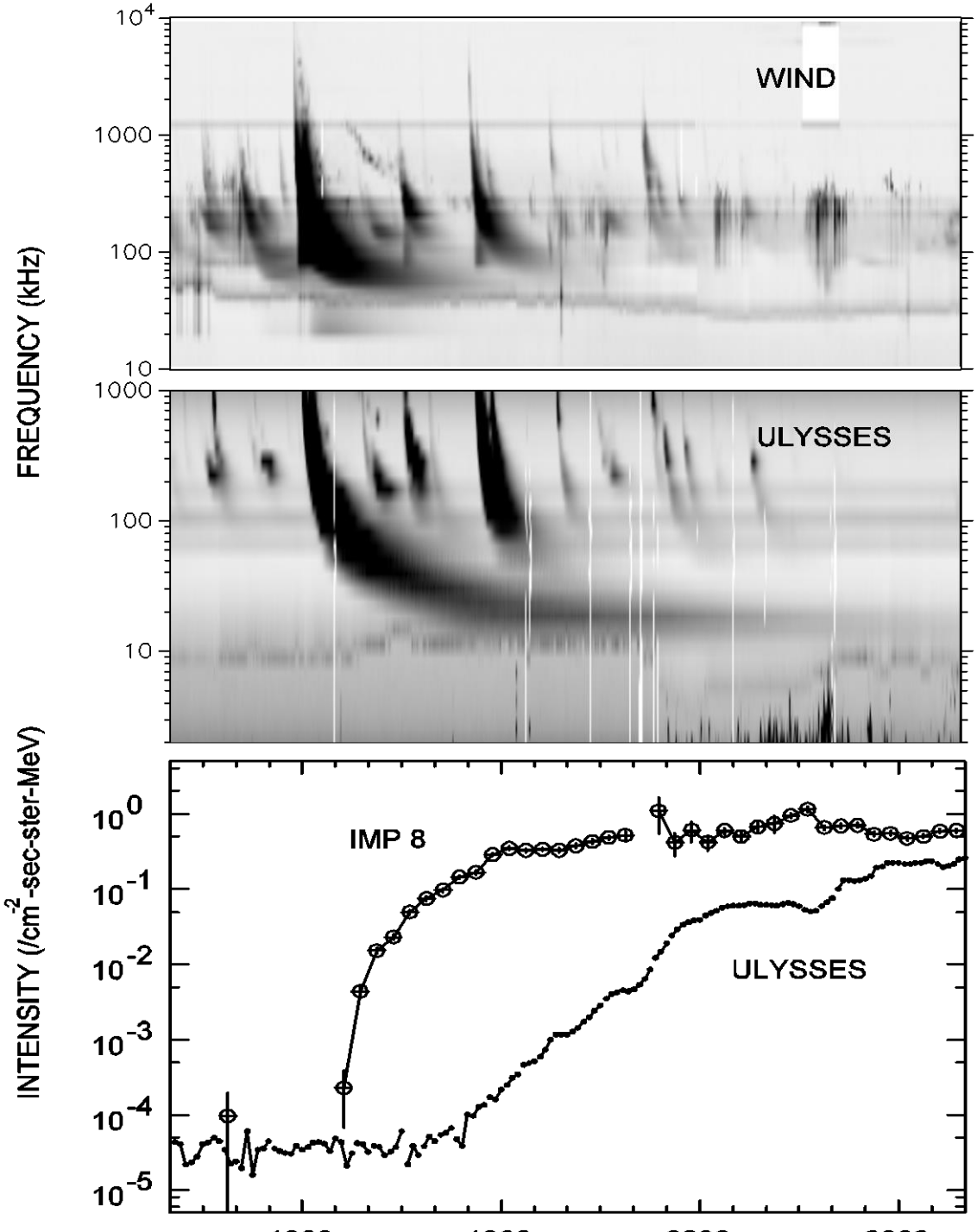

2000/02/12 04:05 UT
1997/04/07 13:55 UT
1997/05/12 04:55 UT
2001/03/29 10:00 UT
1998/05/09 03:25 UT
1998/09/23 07:00 UT
2000/07/10 21:25 UT
2000/10/09 23:20 UT
FREQUENCY (kHz)
200
100
50
20
10


2000 Feb 12 0100 24W -16
1997 Apr 7 1100 19E -77
1997 May 12 0100 07W -70
2001 Mar 29 0700 12W -34
1998 May 9 0100 100W 57
1998 Sep 23 0400 09E -67
2000 Jul 10 1800 49E -101
2000 Oct 09 2000 14W -58
PROTONS/(cm-2-ster-sec-MeV)
10 1
10 -1
10 -3



TYPE III-I BURST SEEN BY WIND AND ULYSSES. THE EMISSION AT 20 kHz IS DELAYED AT ULYSSES. THIS MUST BE BECAUSE THE ELECTRONS ARRIVE LATER AND TAKE LONGER TO TRAVEL THE SAME EFFECTIVE RADIAL DISTANCE




FREQUENCY (kHz)
10^4
1000
100
10
WIND
1000
100
10
ULYSSES
INTENSITY (/cm^{-2}-sec-ster-MeV)
10^0
10^{-1}
10^{-2}
10^{-3}
10^{-4}
10^{-5}
IMP 8
ULYSSES

CONCLUSIONS

ELECTRON DELAYS OCCUR IN THE INTERPLANETARY MEDIUM AND *NOT* AT THE SUN

NO EVIDENCE FOR TWO POPULATIONS