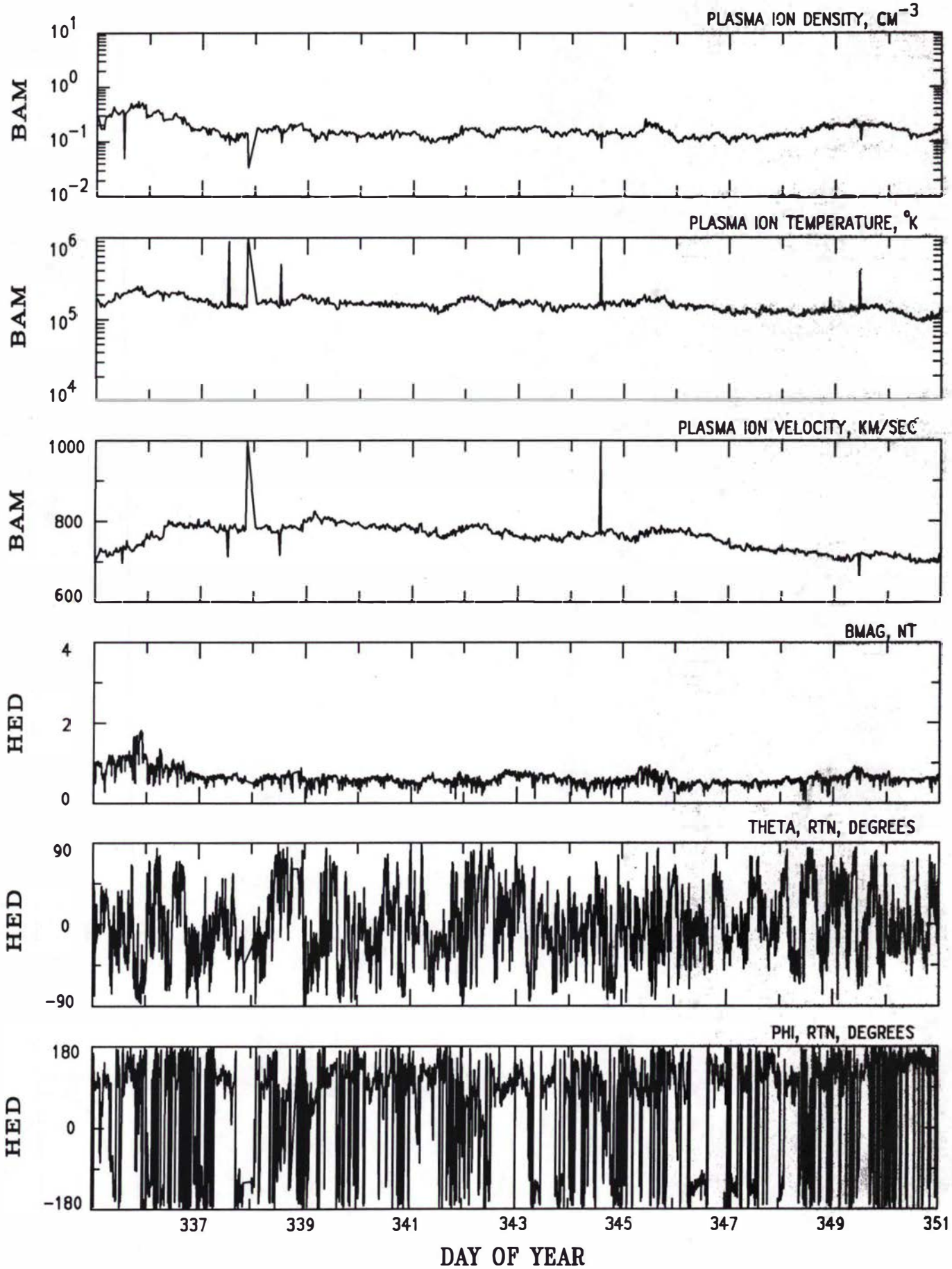
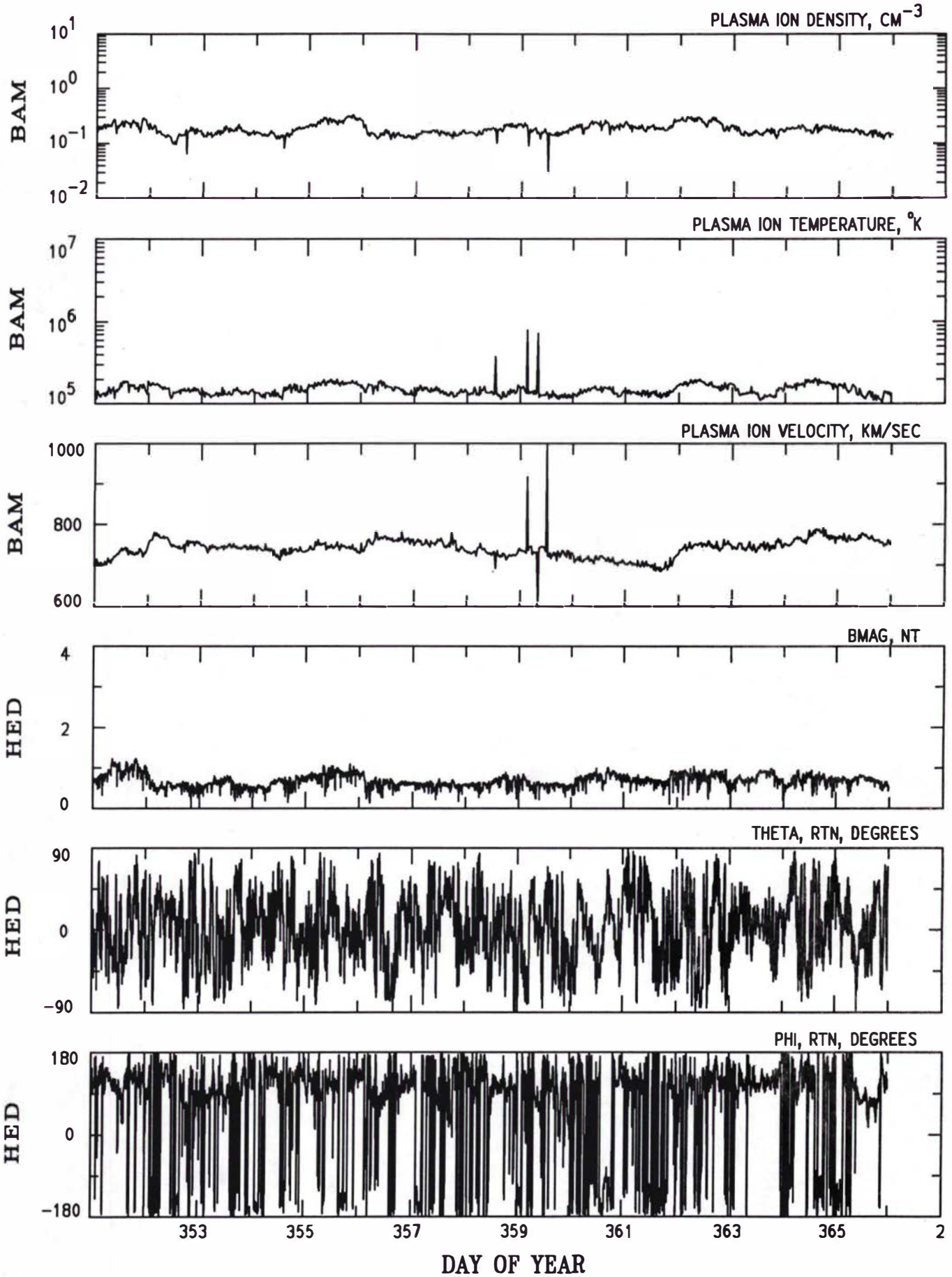
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

93 335 DEC 1 00:00:00.000 – 93 351 DEC 17 00:00:00.000



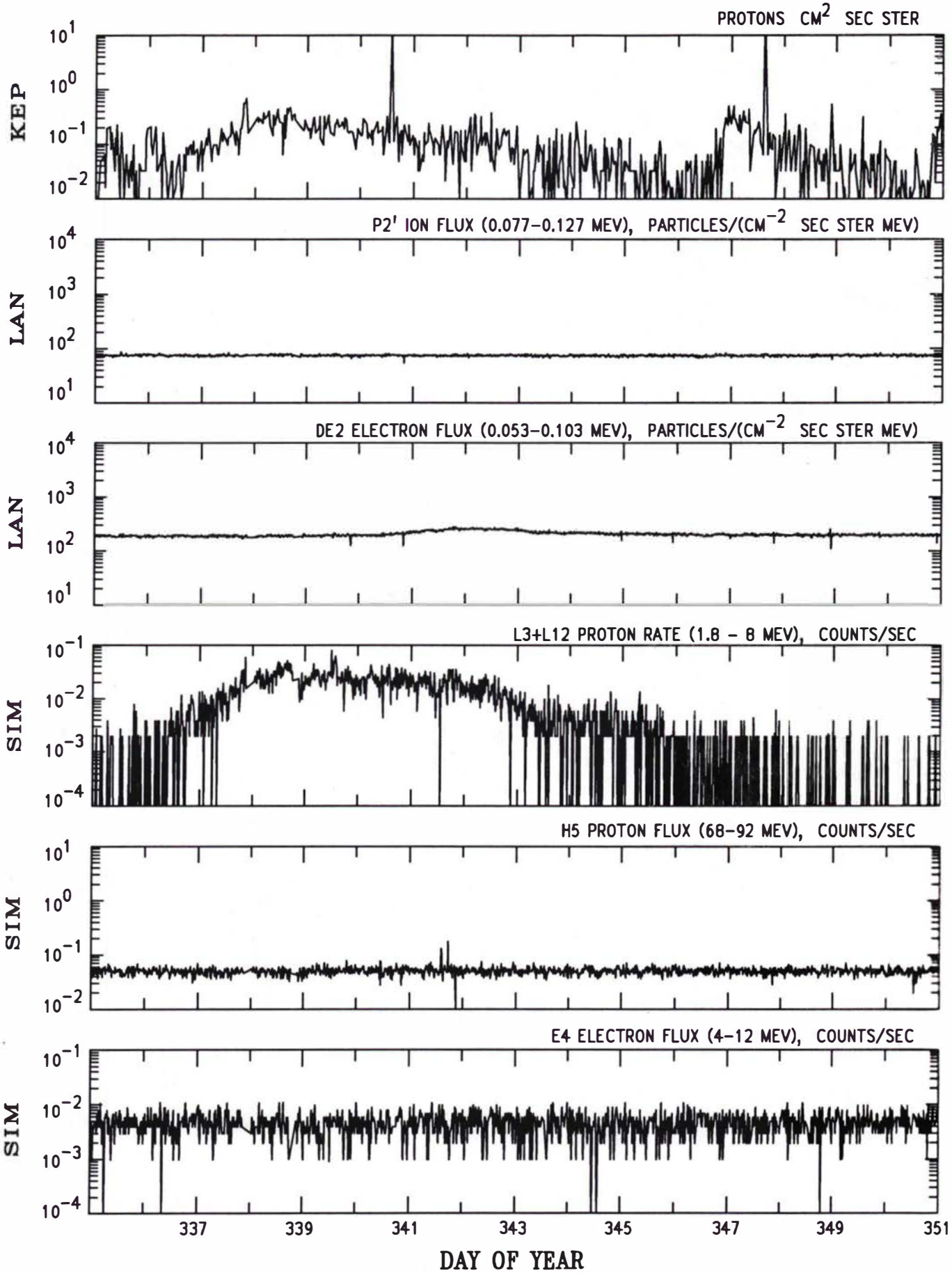
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

93 351 DEC 17 00:00:00.000 – 94 002 JAN 2 00:00:00.000



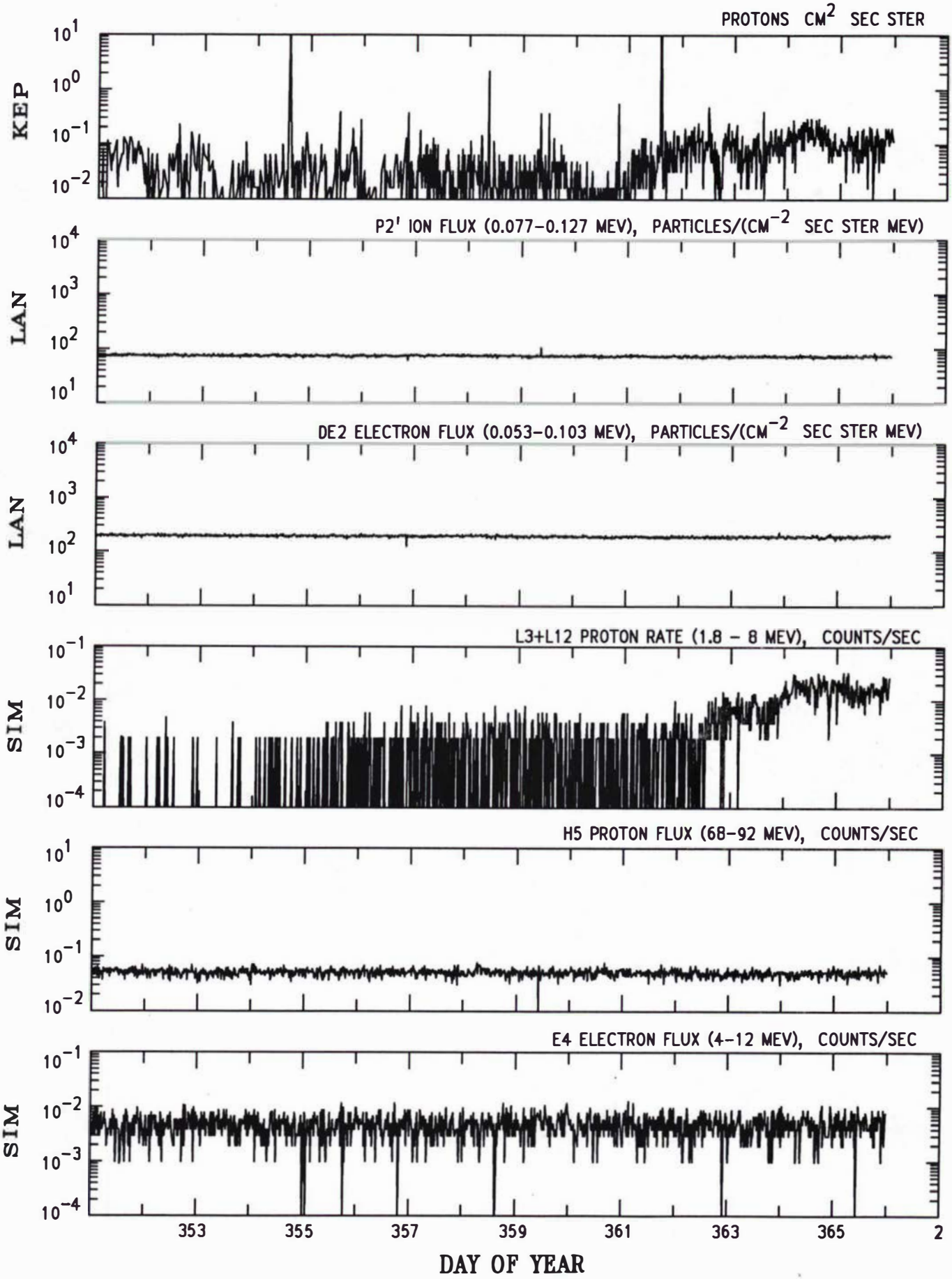
ULYSSES CDR – ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

93 335 DEC 1 00:00:00.000 – 93 351 DEC 17 00:00:00.000



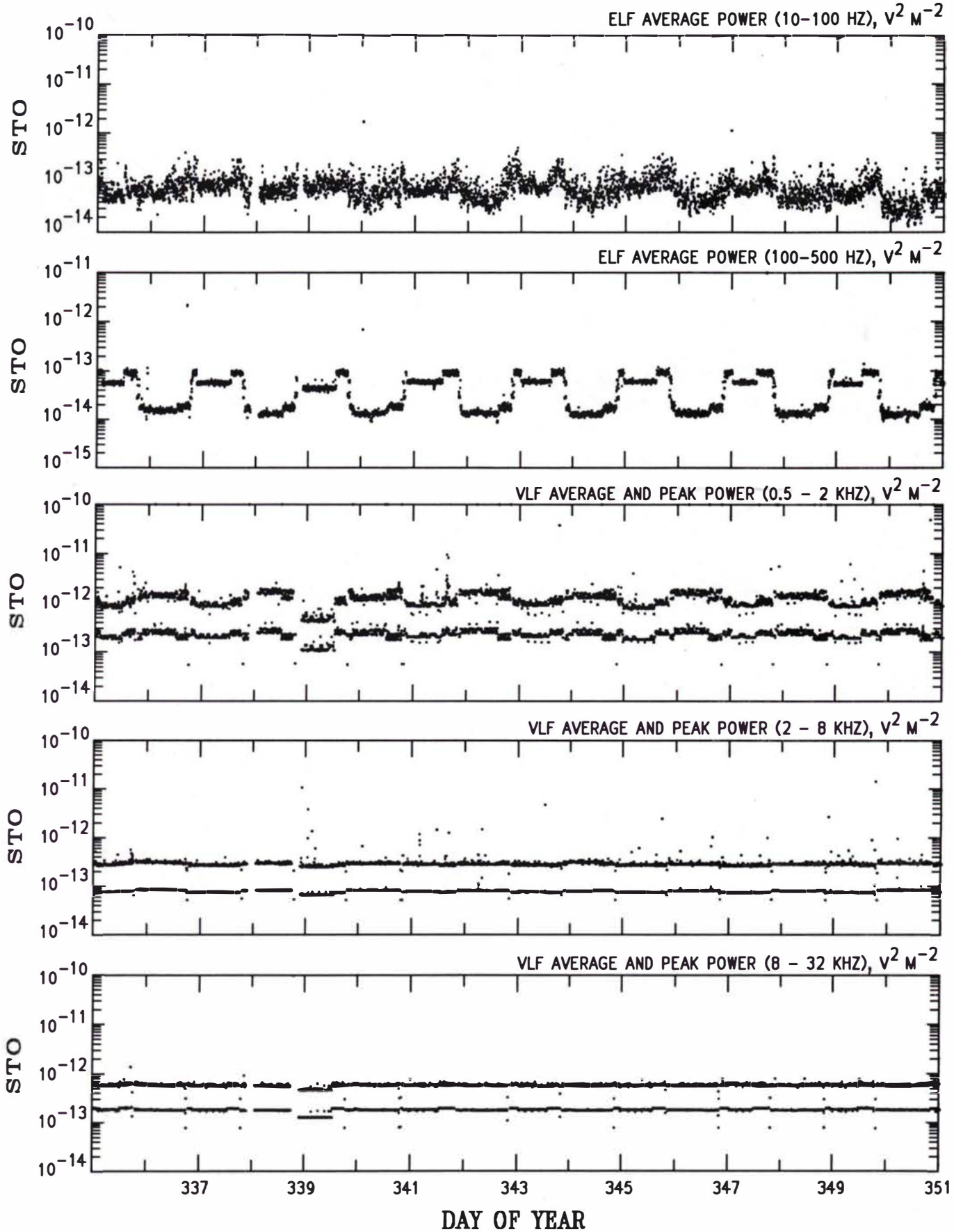
ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

93 351 DEC 17 00:00:00.000 - 94 002 JAN 2 00:00:00.000



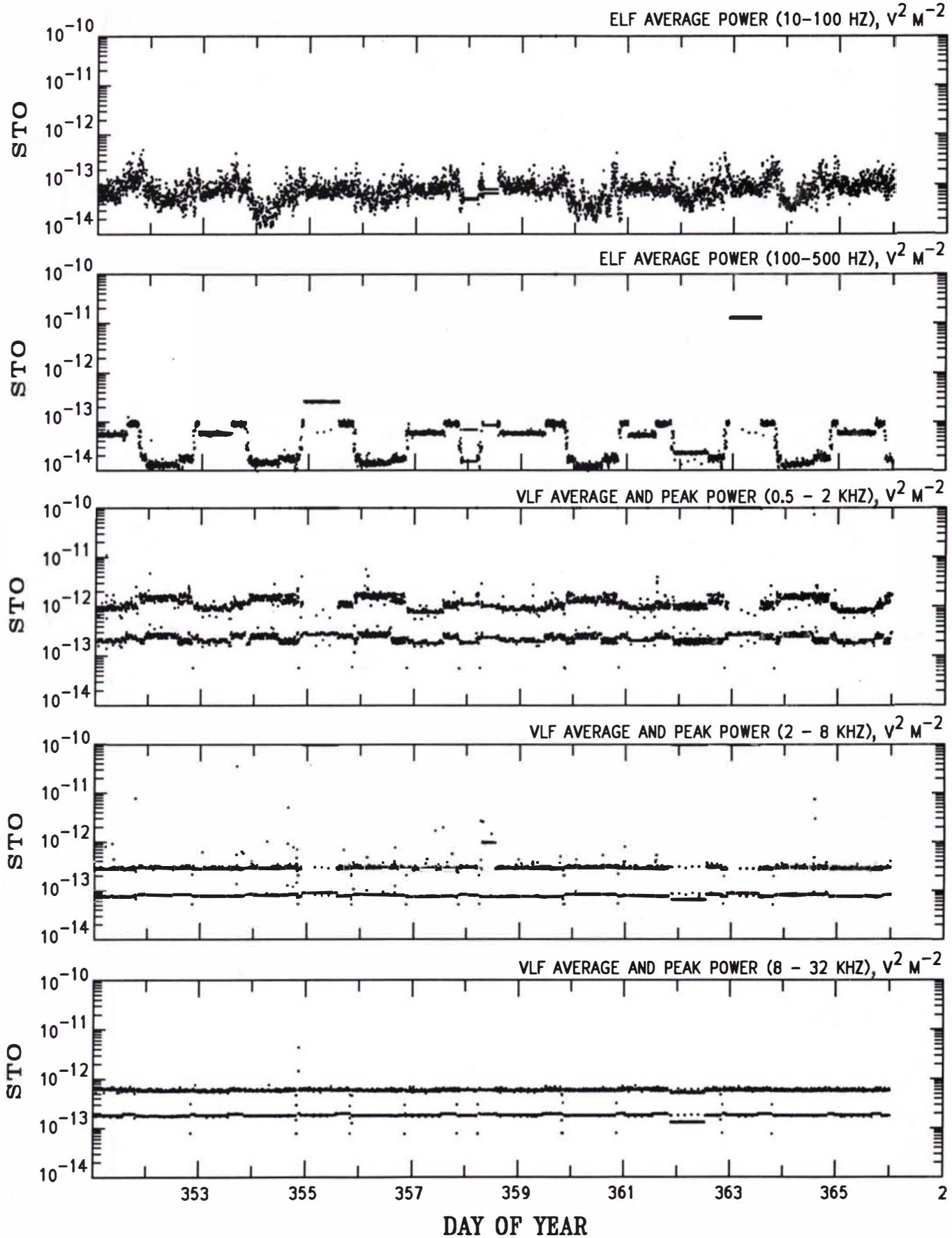
ULYSSES CDR – PLASMA WAVE

93 335 DEC 1 00:00:00.000 – 93 351 DEC 17 00:00:00.000



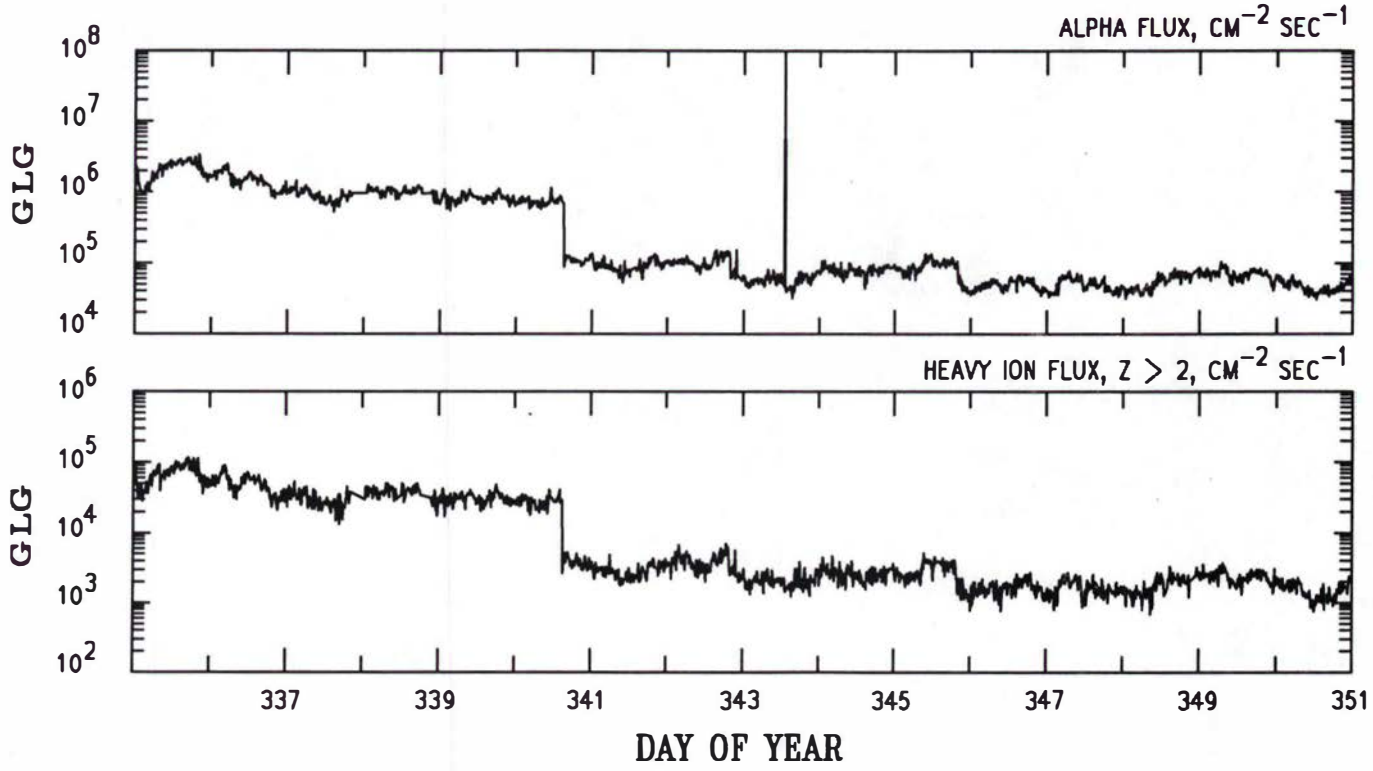
ULYSSES CDR - PLASMA WAVE

93 351 DEC 17 00:00:00.000 - 94 002 JAN 2 00:00:00.000



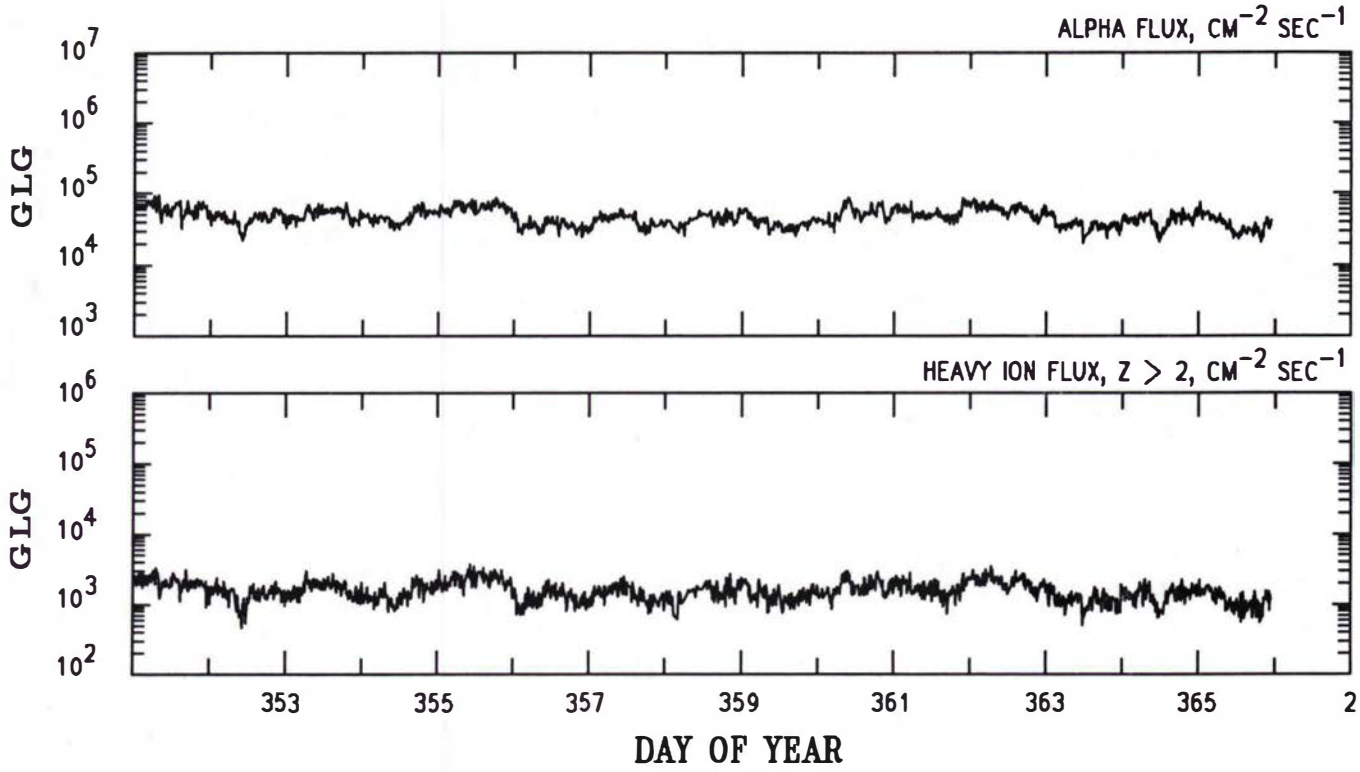
ULYSSES CDR – SOLAR WIND ION COMPOSITION

93 335 DEC 1 00:00:00.000 – 93 351 DEC 17 00:00:00.000



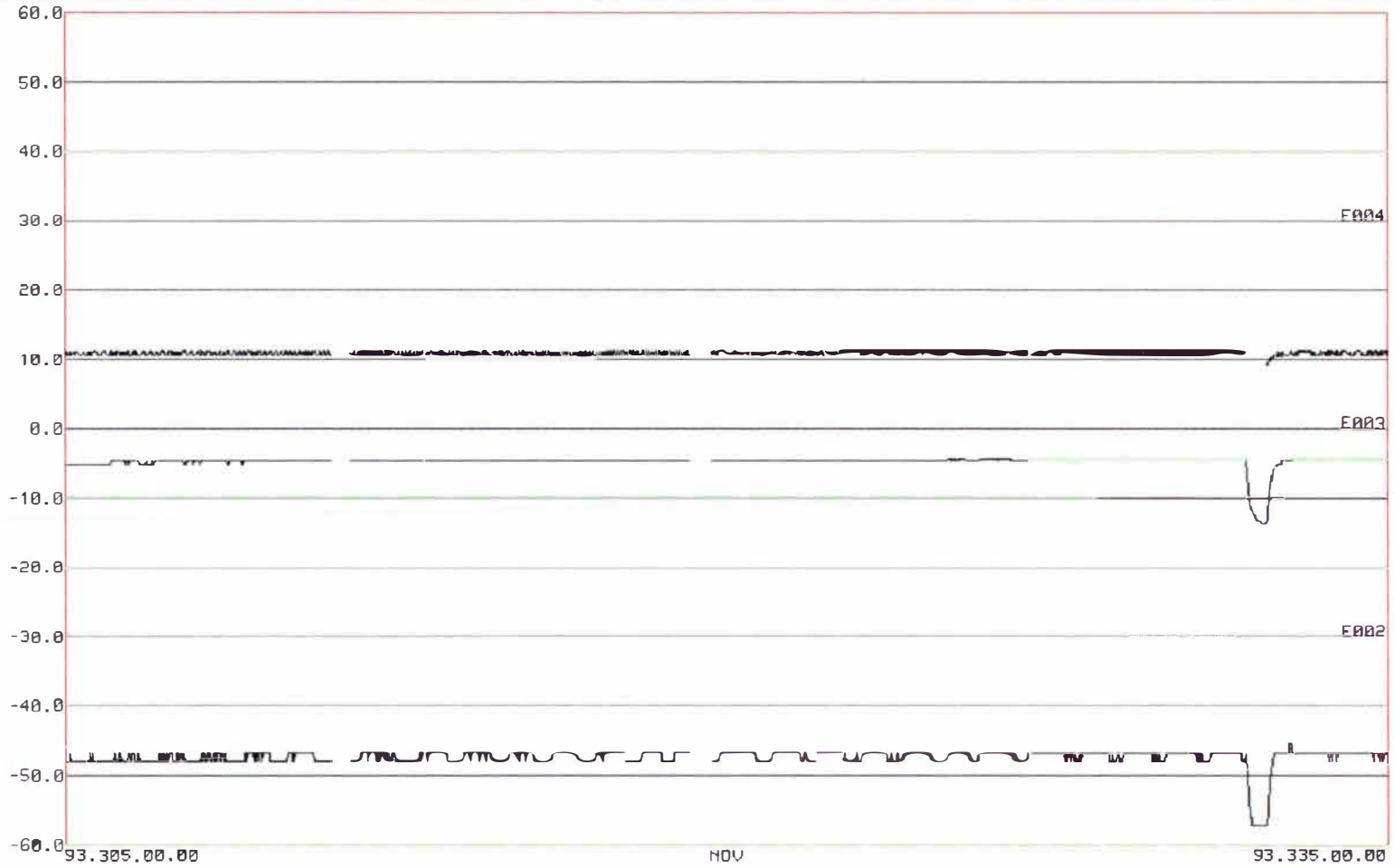
ULYSSES CDR – SOLAR WIND ION COMPOSITION

93 351 DEC 17 00:00:00.000 – 94 002 JAN 2 00:00:00.000



.93.335.00.11.10.251 HUS monthly long term thermal data 818 RET

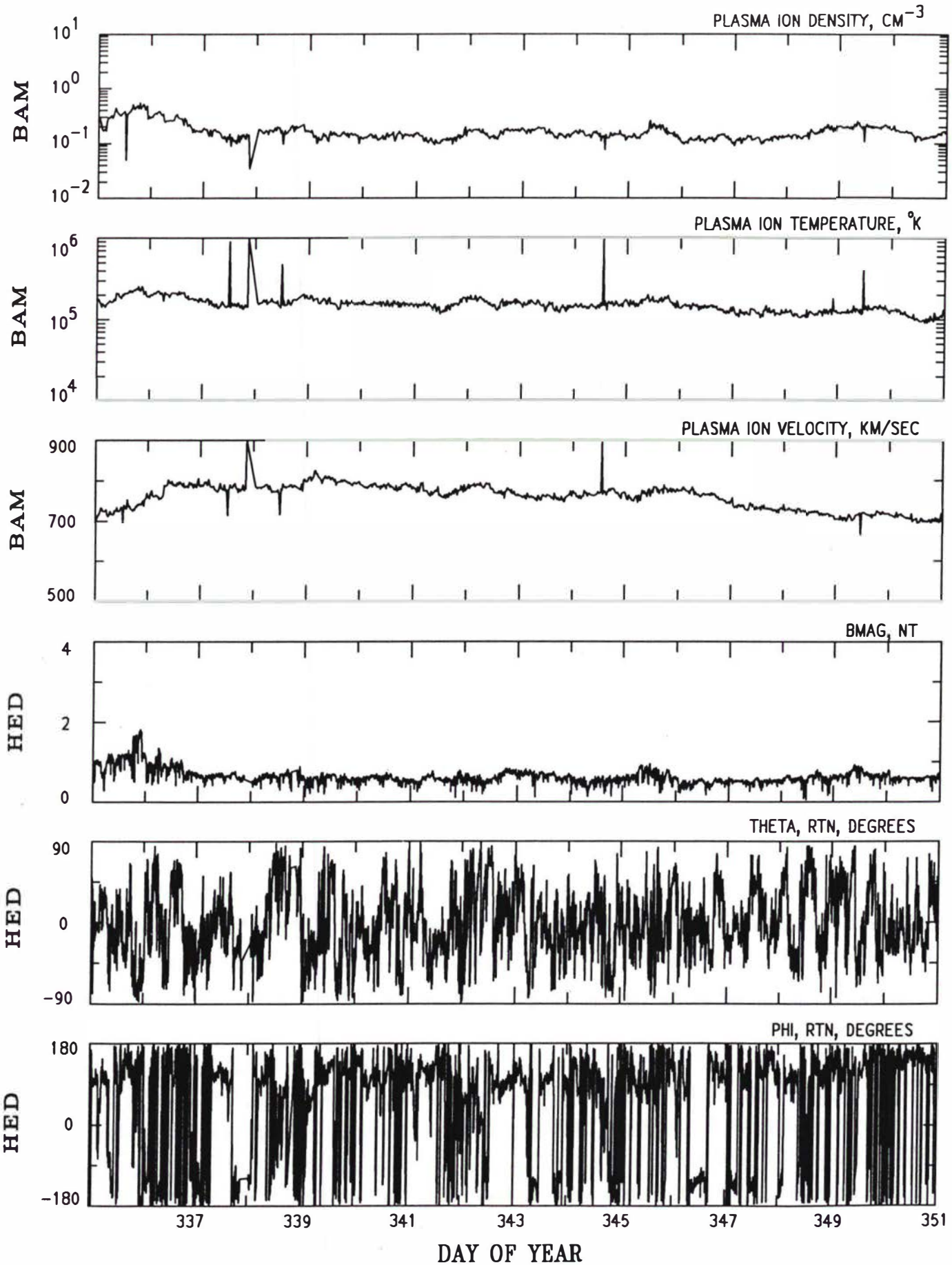
E002 2ARADTMP S/C	-4.4	E003 2BSENTMP S/C	-46.7	E004 2ASENSTMP EX	11.27



Murabel 3/22
1 - 11 December Radio burst from Aql transient

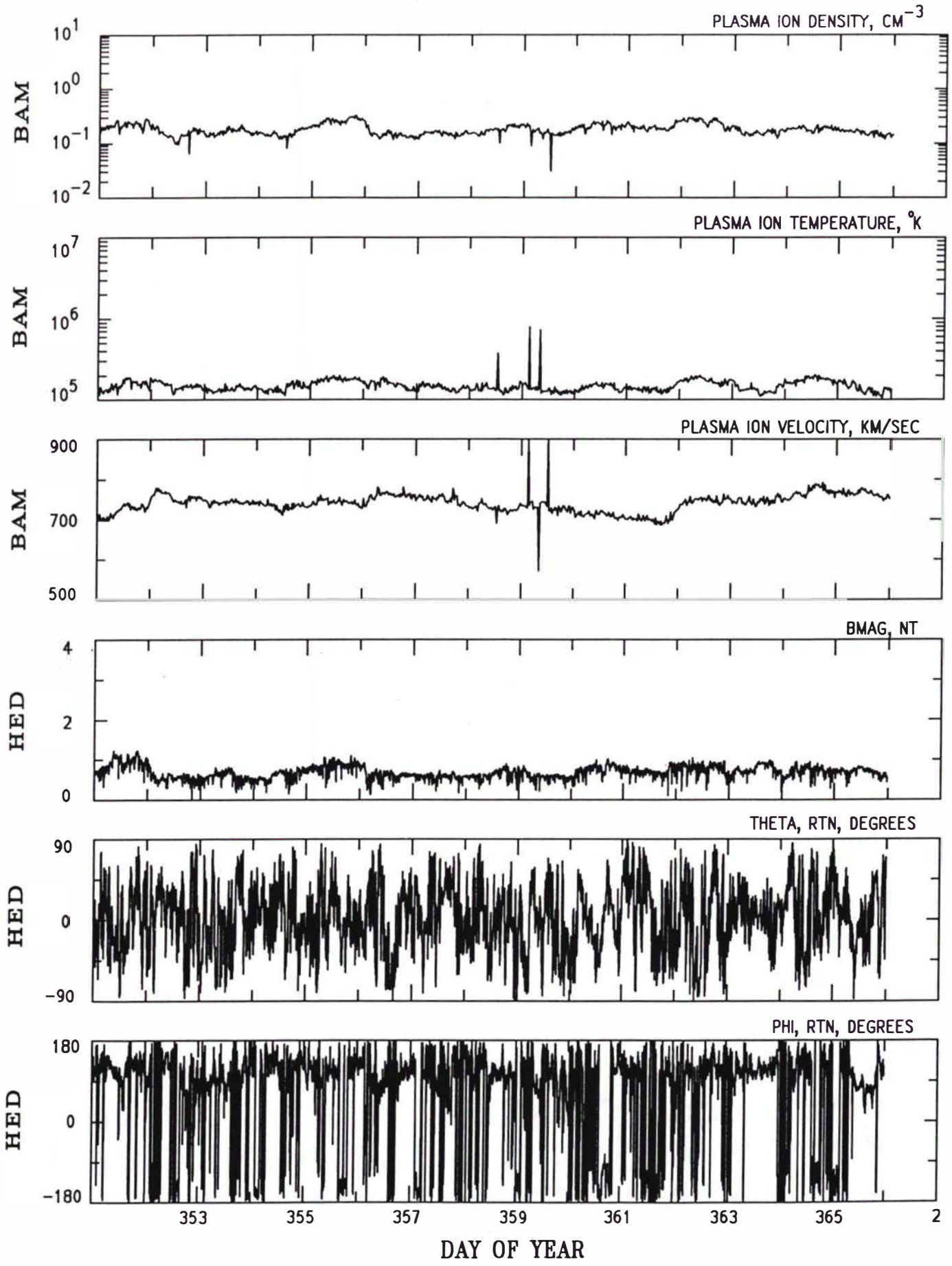
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

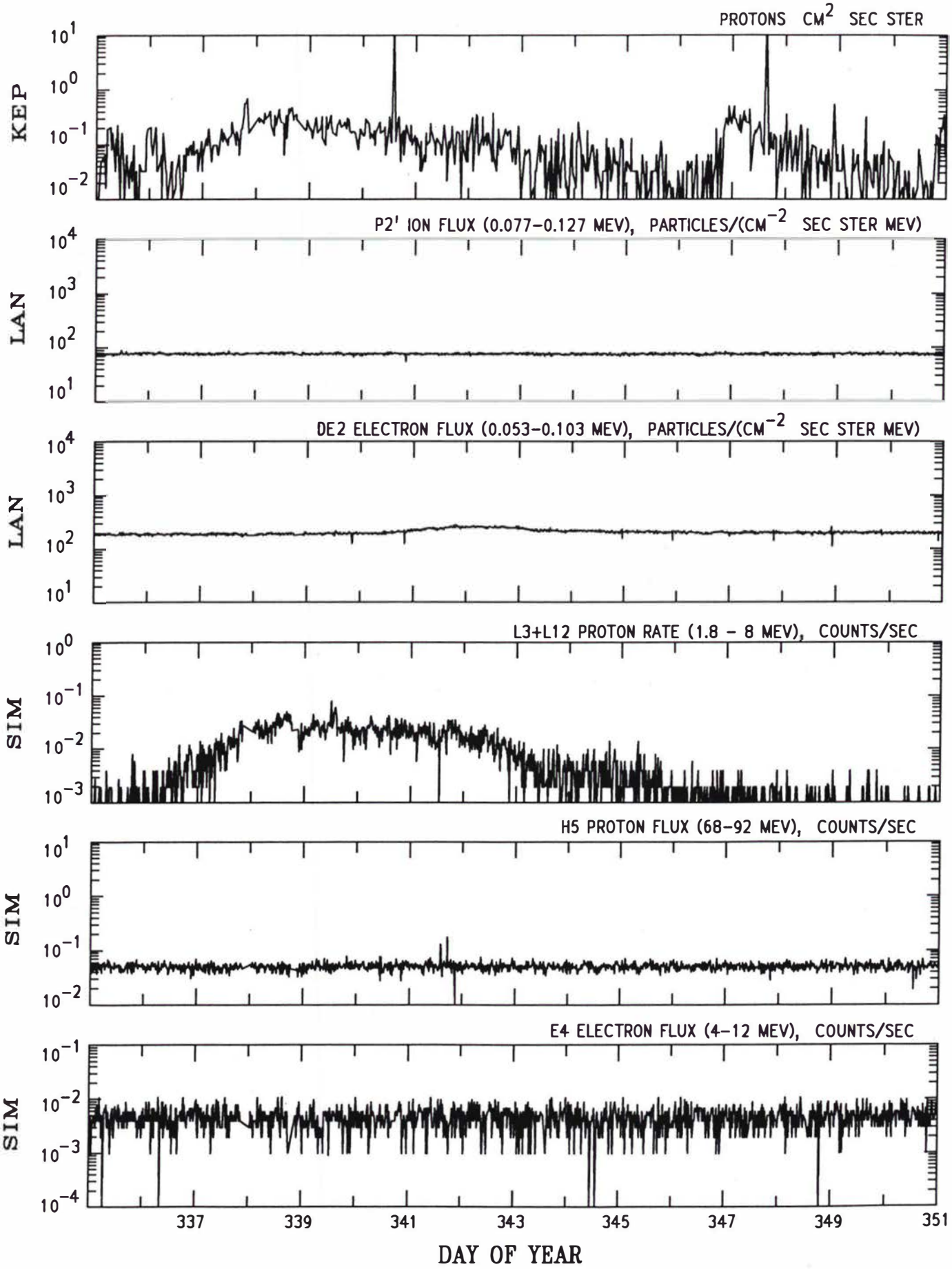
93 335 DEC 1 00:00:00.000 – 93 351 DEC 17 00:00:00.000



ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

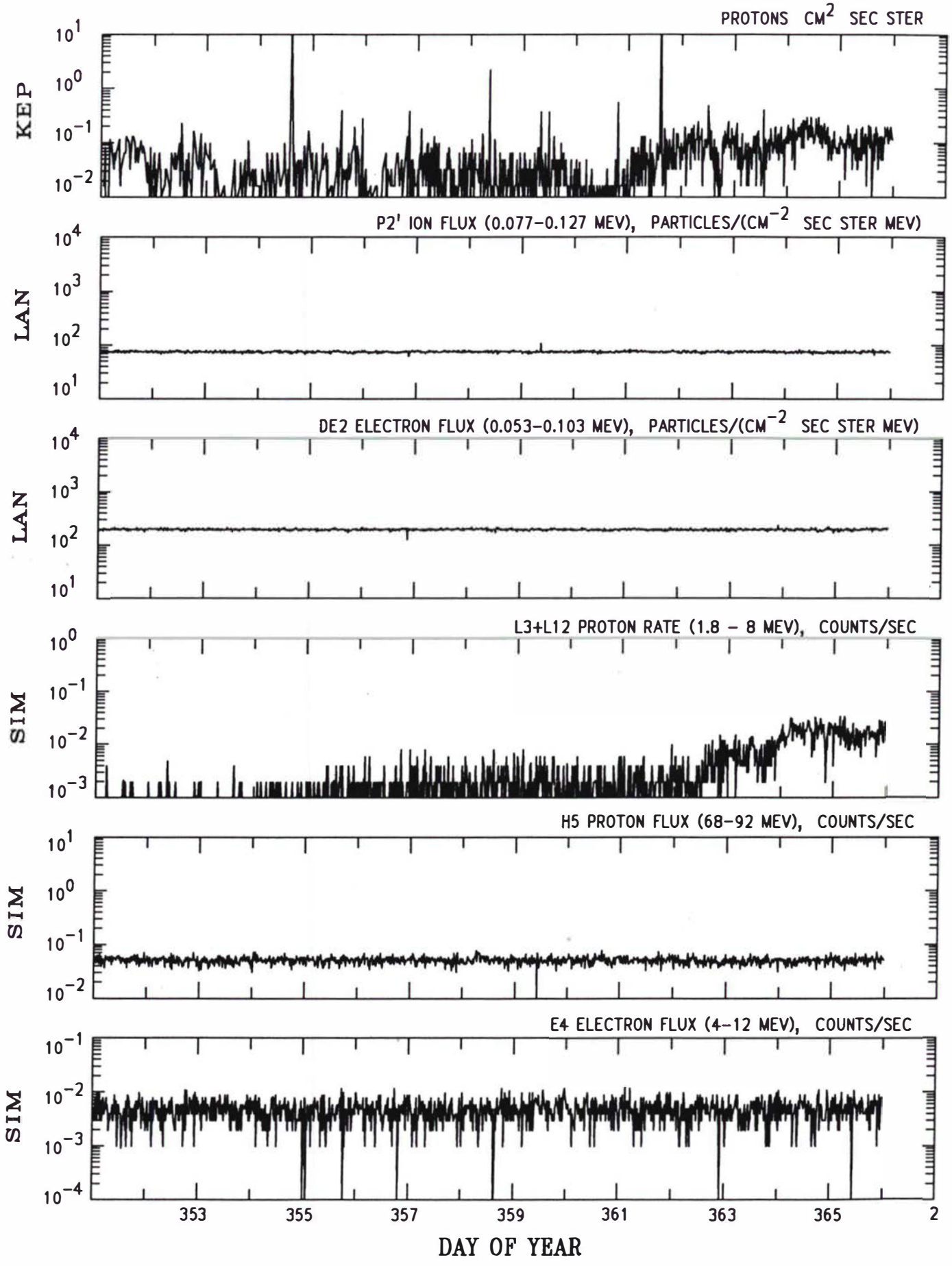
93 351 DEC 17 00:00:00.000 – 94 002 JAN 2 00:00:00.000




ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY
93 335 DEC 1 00:00:00.000 - 93 351 DEC 17 00:00:00.000
PROTONS CM2 SEC STER
KEP
P2' ION FLUX (0.077-0.127 MEV), PARTICLES/(CM-2 SEC STER MEV)
LAN
DE2 ELECTRON FLUX (0.053-0.103 MEV), PARTICLES/(CM-2 SEC STER MEV)
LAN
L3+L12 PROTON RATE (1.8 - 8 MEV), COUNTS/SEC
SIM
H5 PROTON FLUX (68-92 MEV), COUNTS/SEC
SIM
E4 ELECTRON FLUX (4-12 MEV), COUNTS/SEC
SIM
337
339
341
343
345
347
349
351
DAY OF YEAR

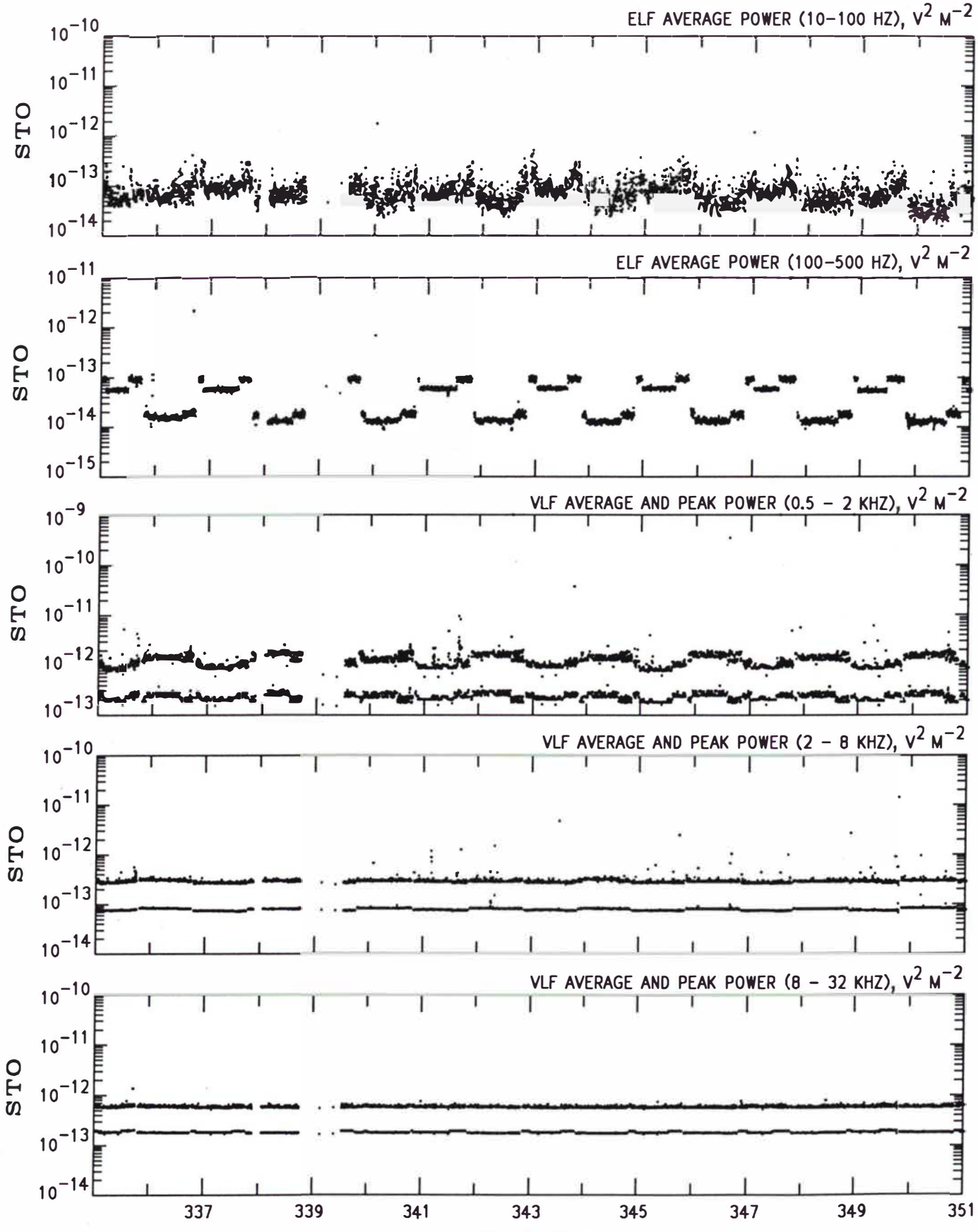
ULYSSES CDR – ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

93 351 DEC 17 00:00:00.000 – 94 002 JAN 2 00:00:00.000



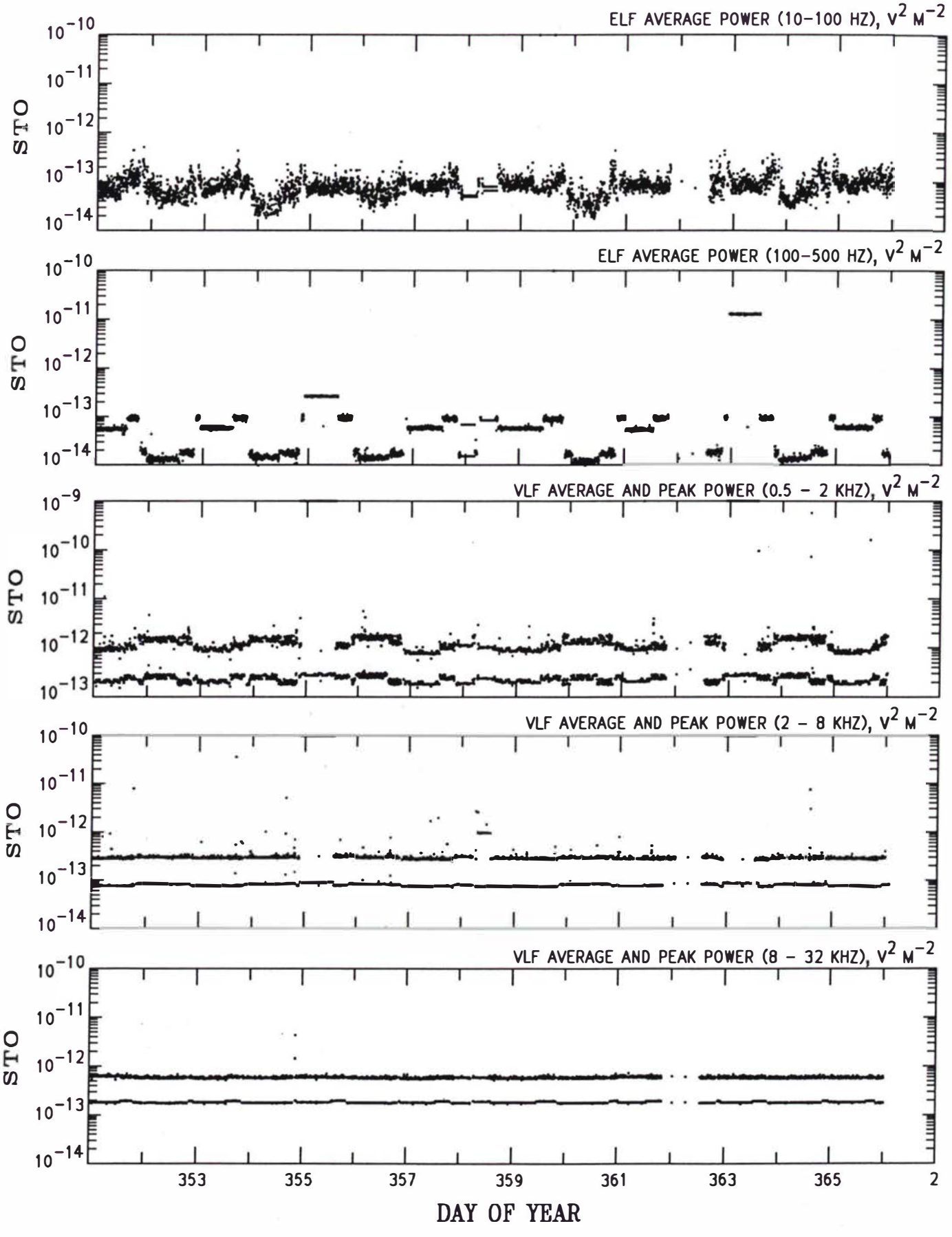
ULYSSES CDR - PLASMA WAVE

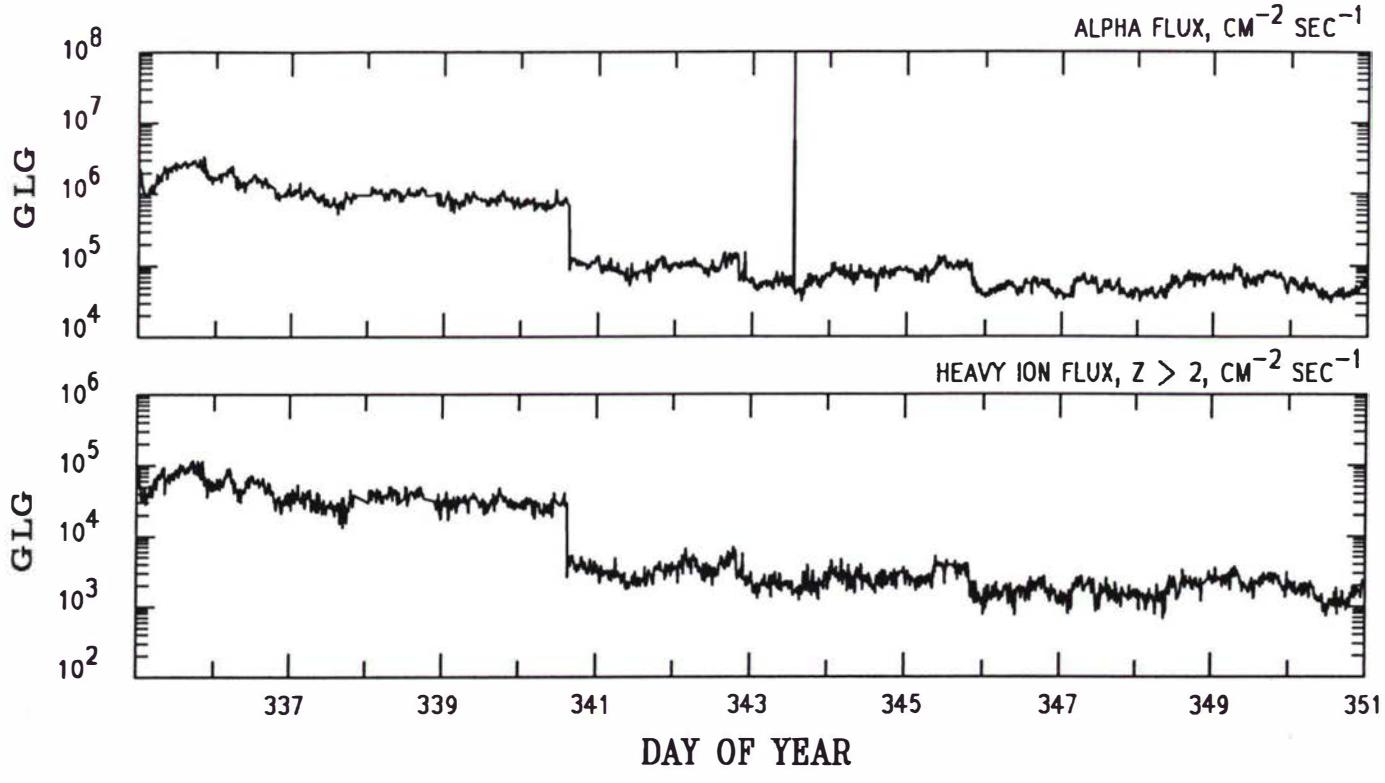
93 335 DEC 1 00:00:00.000 - 93 351 DEC 17 00:00:00.000



ULYSSES CDR - PLASMA WAVE

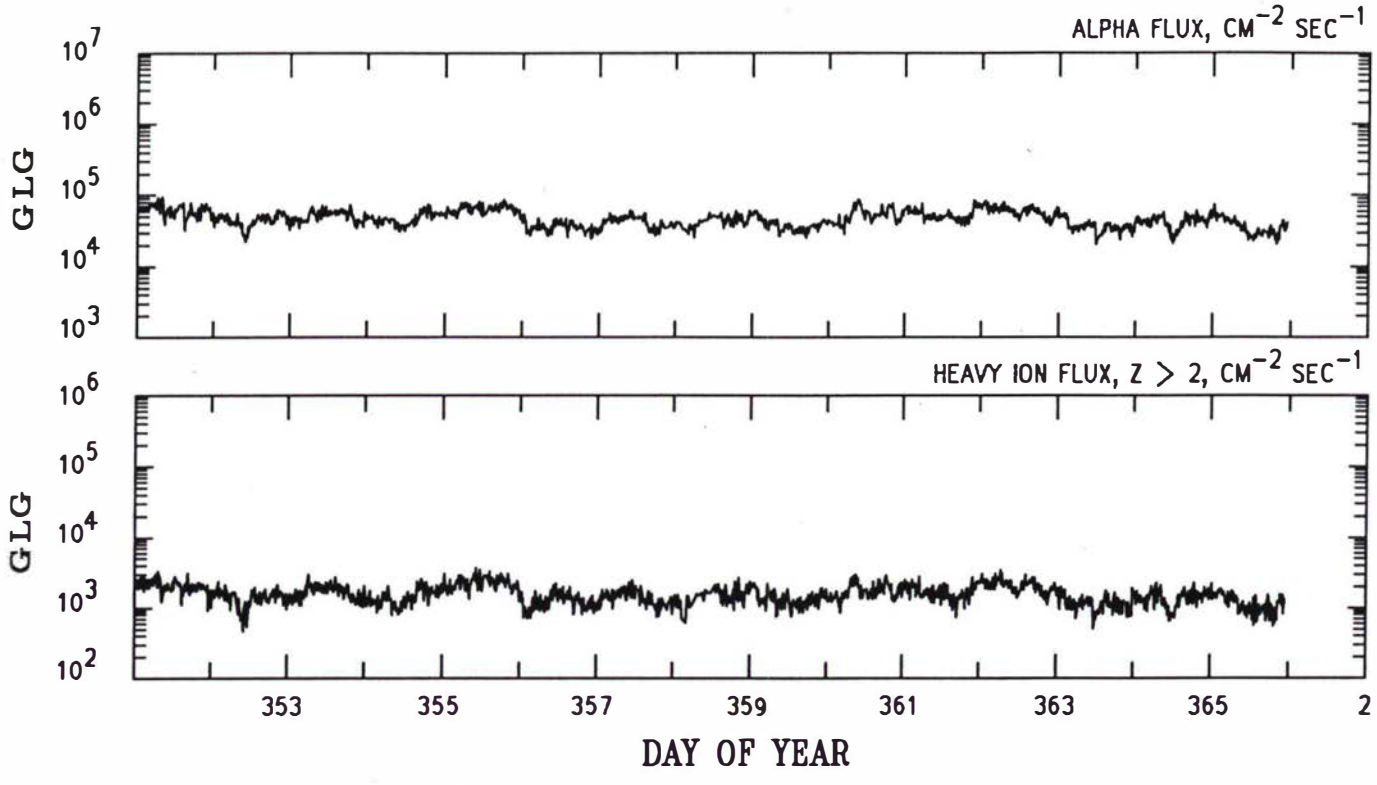
93 351 DEC 17 00:00:00.000 - 94 002 JAN 2 00:00:00.000




ULYSSES CDR - SOLAR WIND ION COMPOSITION
93 335 DEC 1 00:00:00.000 - 93 351 DEC 17 00:00:00.000
ALPHA FLUX, CM^{-2} SEC^{-1}
GLG
10^8
10^7
10^6
10^5
10^4
HEAVY ION FLUX, Z > 2, CM^{-2} SEC^{-1}
GLG
10^6
10^5
10^4
10^3
10^2
337
339
341
343
345
347
349
351
DAY OF YEAR

ULYSSES CDR – SOLAR WIND ION COMPOSITION

93 351 DEC 17 00:00:00.000 – 94 002 JAN 2 00:00:00.000



From ZMYEWSKI@ssl.msfc.nasa.gov Fri Dec 3 08:21:51 1993
Date: Fri, 3 Dec 1993 10:24:37 -0600 (CST)
From: ZMYEWSKI@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02667

TIME: TJD=9322 SECONDS=78534

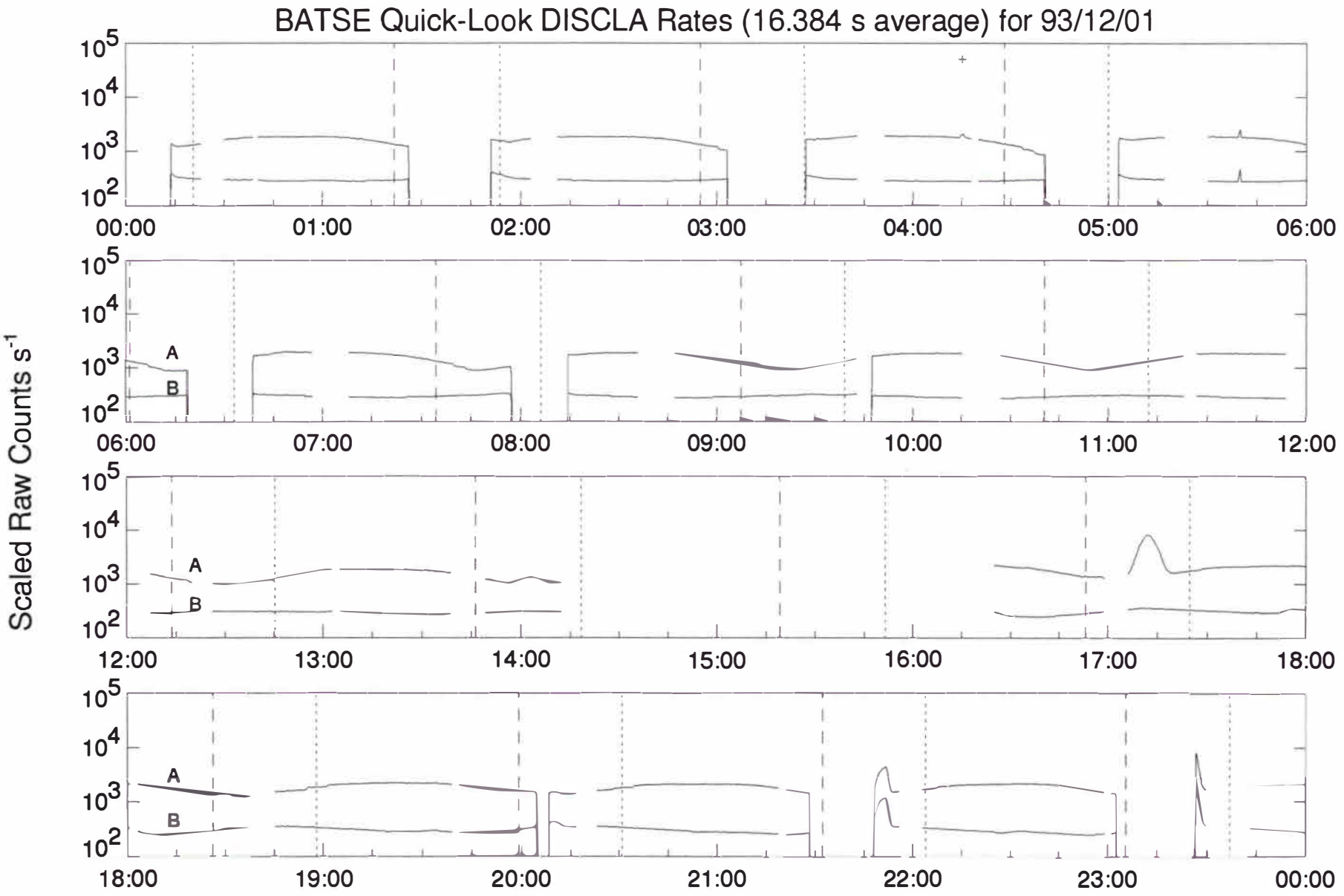
TYPE: ELECTRO SOLAR FLARE TRIGGER SIGNAL:N

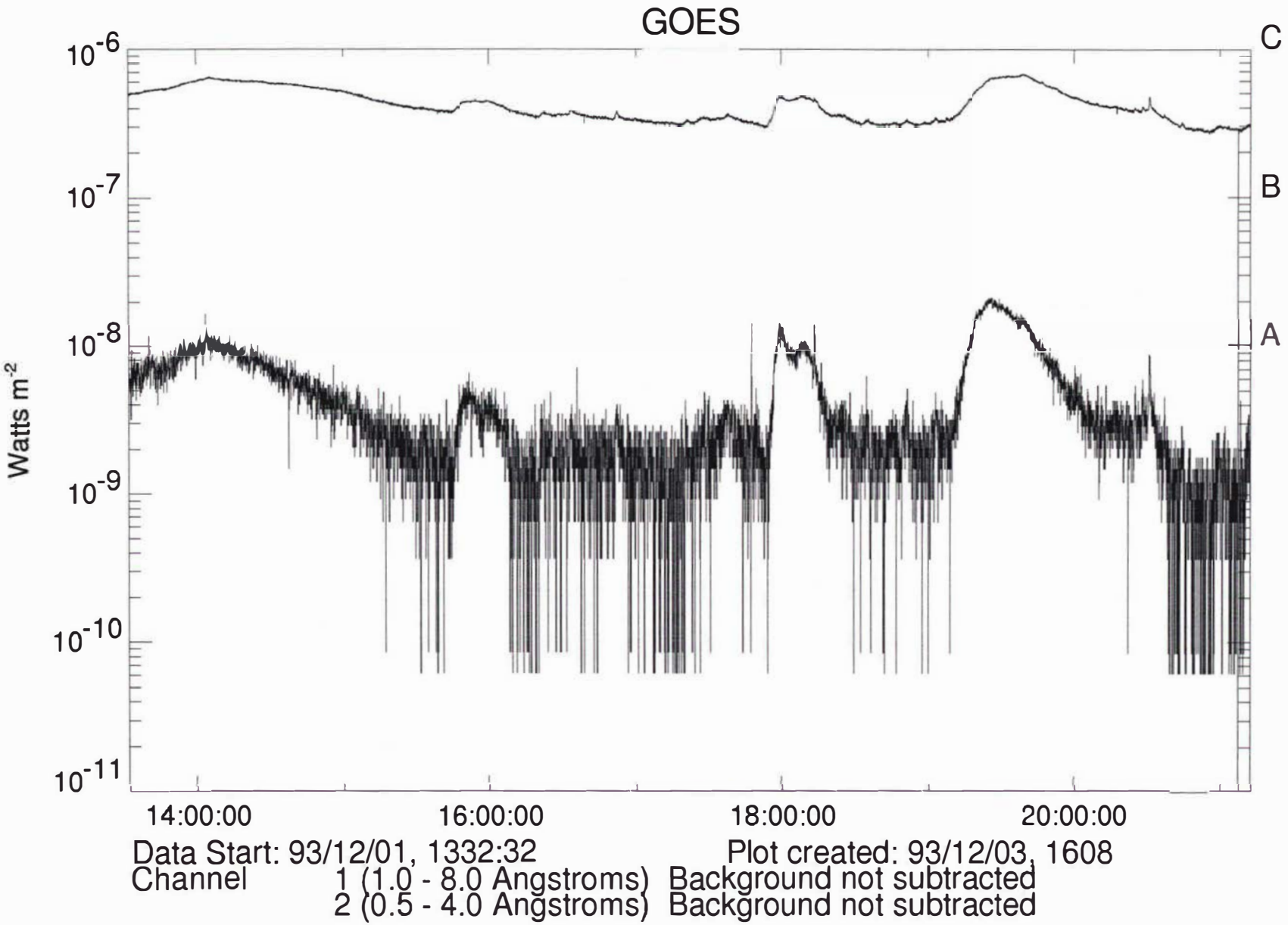
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

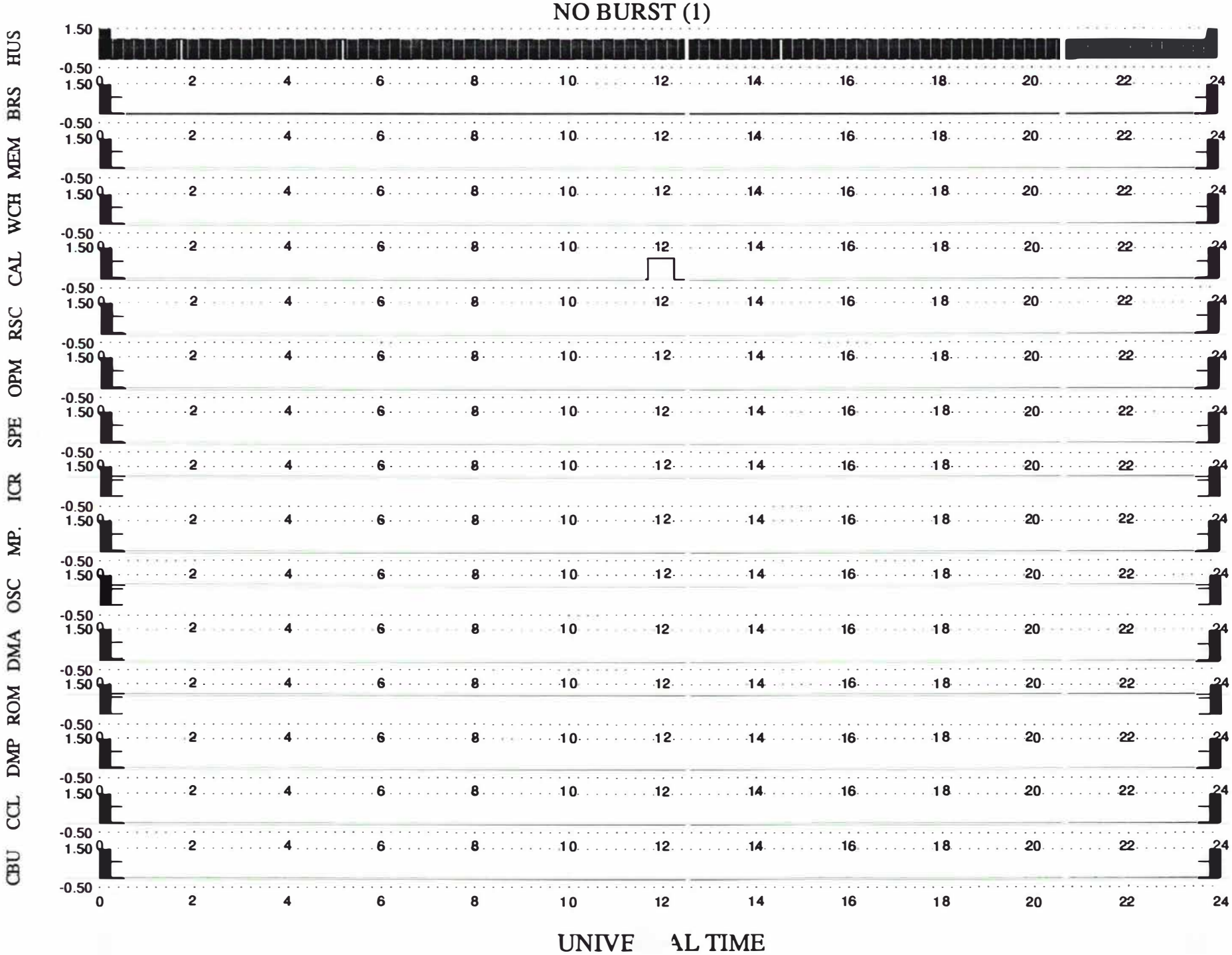
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/01
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/03, 1611 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

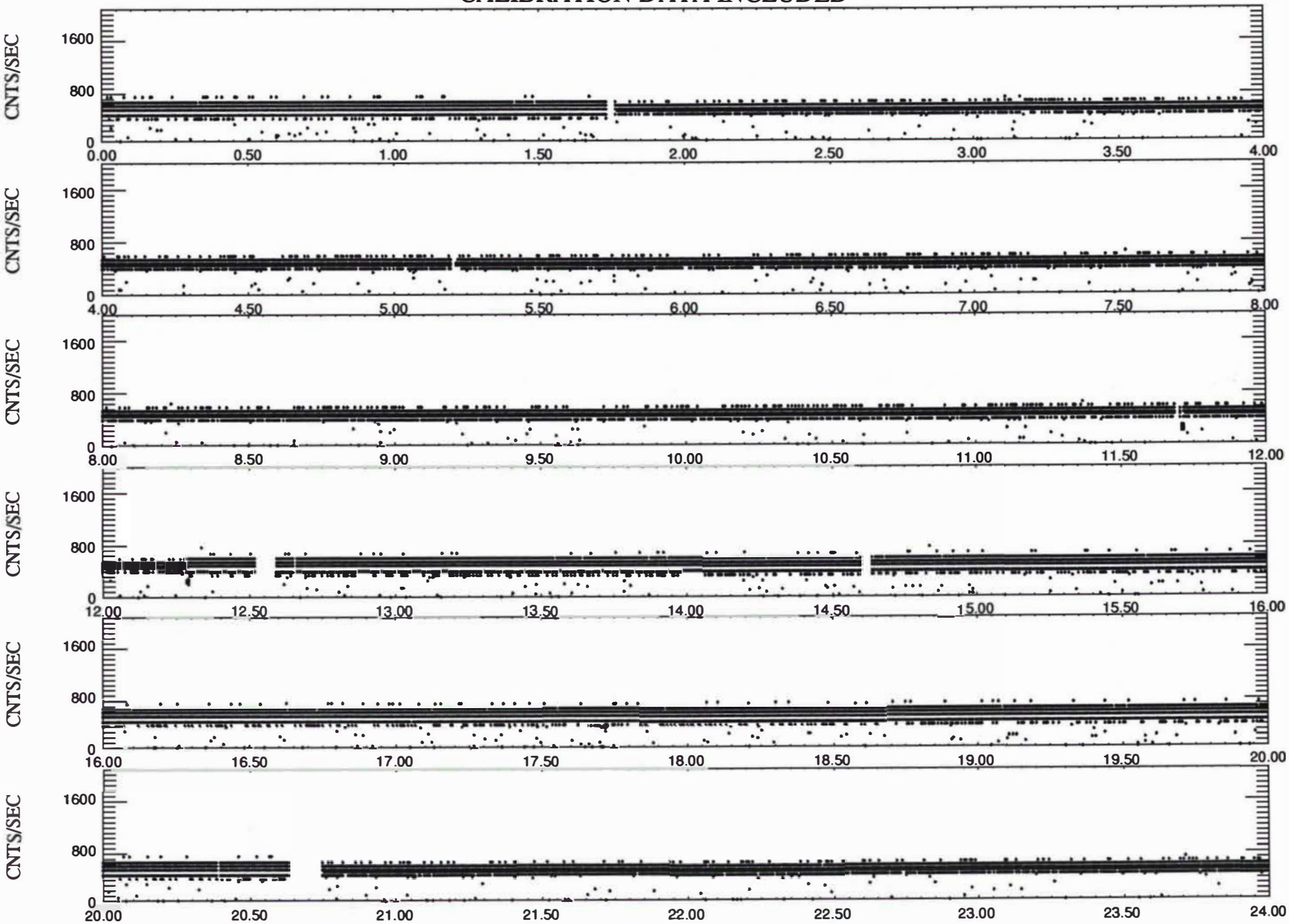

GOES
C
B
A
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
14:00:00
16:00:00
18:00:00
20:00:00
Data Start: 93/12/01, 1332:32
Plot created: 93/12/03, 1608
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 335, year 1993 to day 335, year 1993 1/20/94



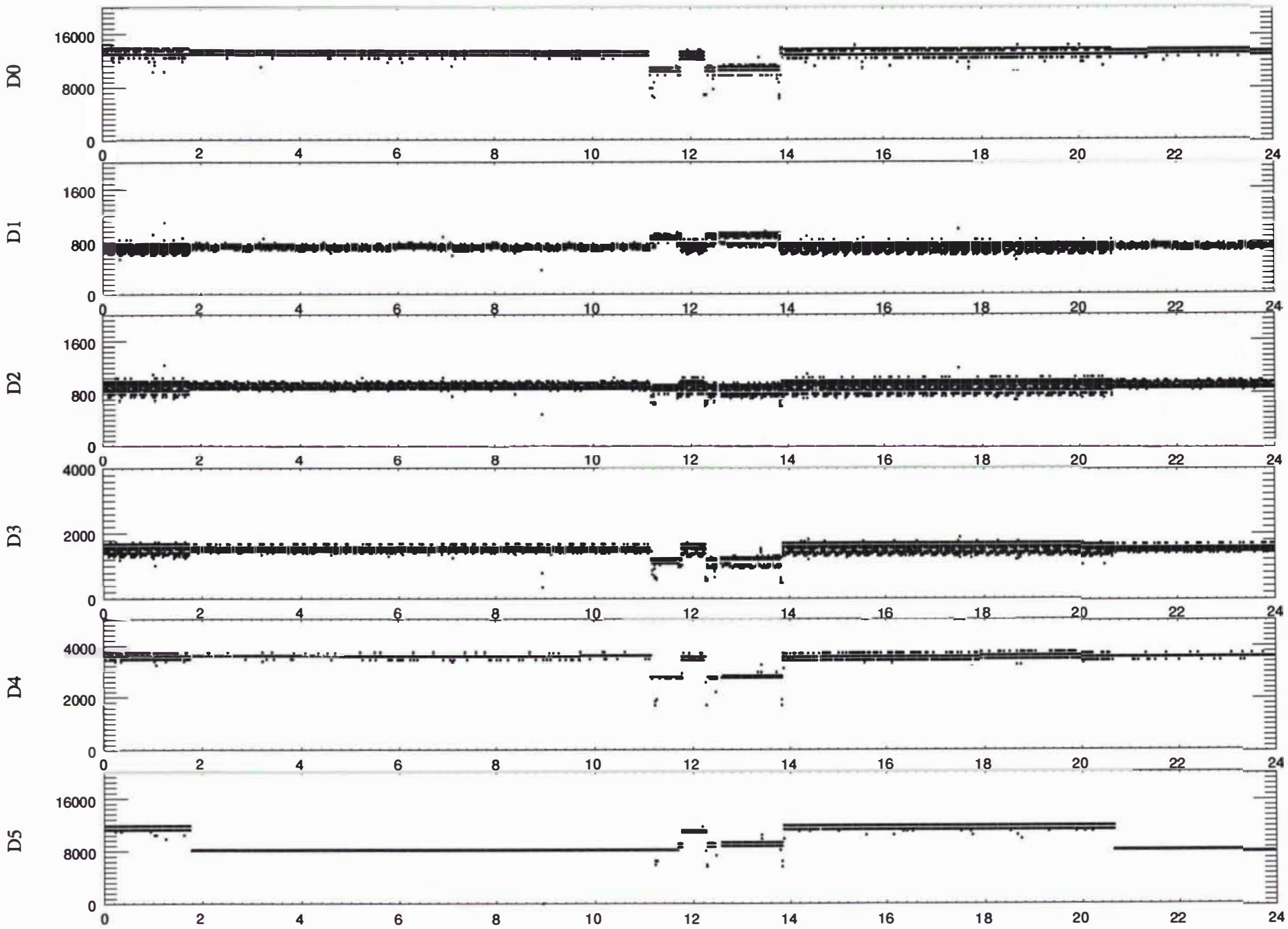
HUS 2A, MODE 1, NOT AVERAGED EDR day 335, year 1993 to day 335, year 1993 1/20/94

CALIBRATION DATA INCLUDED



UNIV 'AL TIME

HUS 2B COUNTS / SEC QEDR day 335, year 1993 to day 335, year 1993 12/2/93



BATSE BURST TRIGGER

NO.: 02668

TIME: TJD=9323 SECONDS=58978

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLES AT A DISTANCE.

BATSE BURST TRIGGER

NO.: 02669

TIME: TJD=9323 SECONDS=64703

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLES AT A DISTANCE.

BATSE BURST TRIGGER

NO.: 02670

TIME: TJD=9323 SECONDS=75654

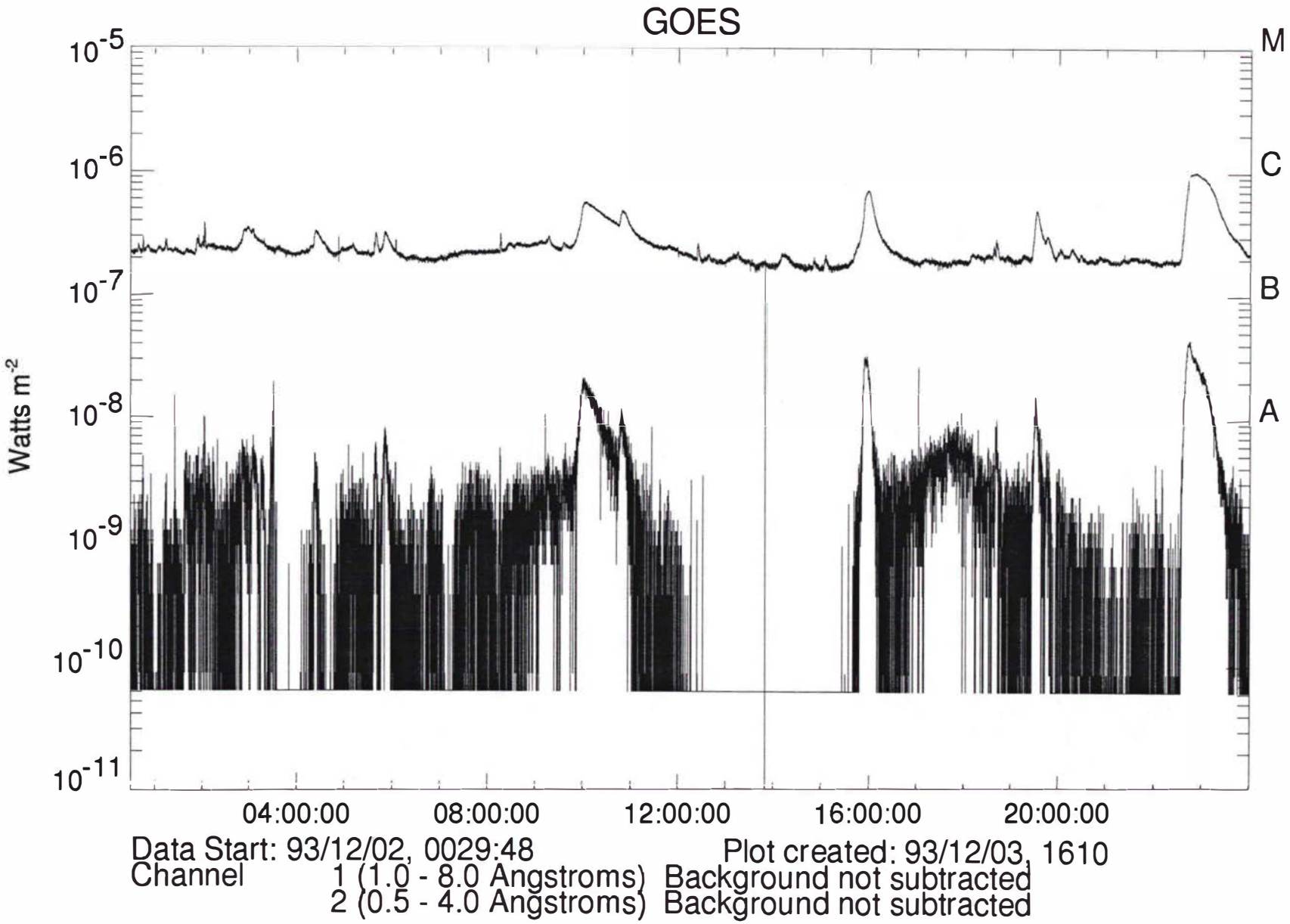
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

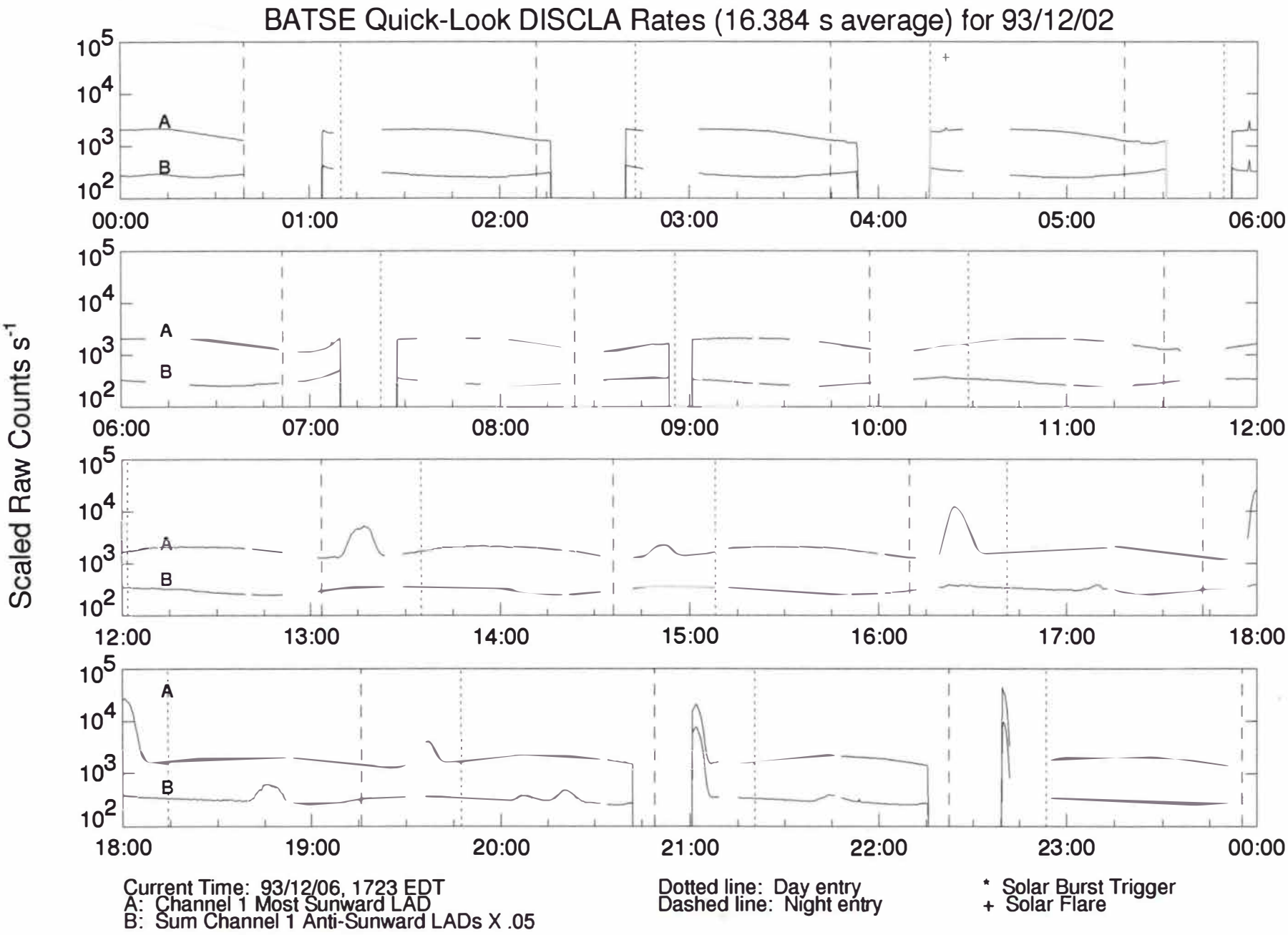
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

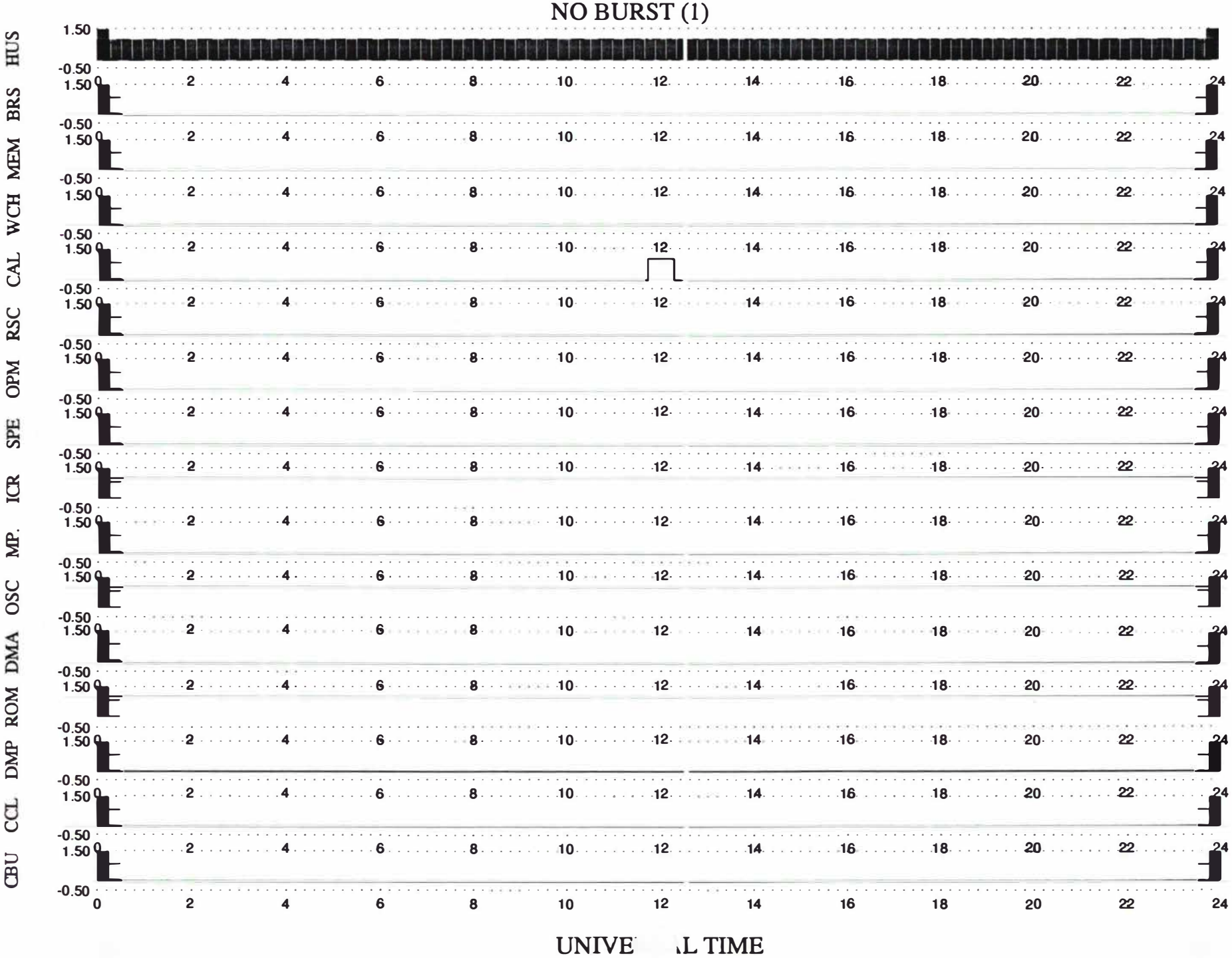
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.


GOES
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/02, 0029:48
Plot created: 93/12/03, 1610
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

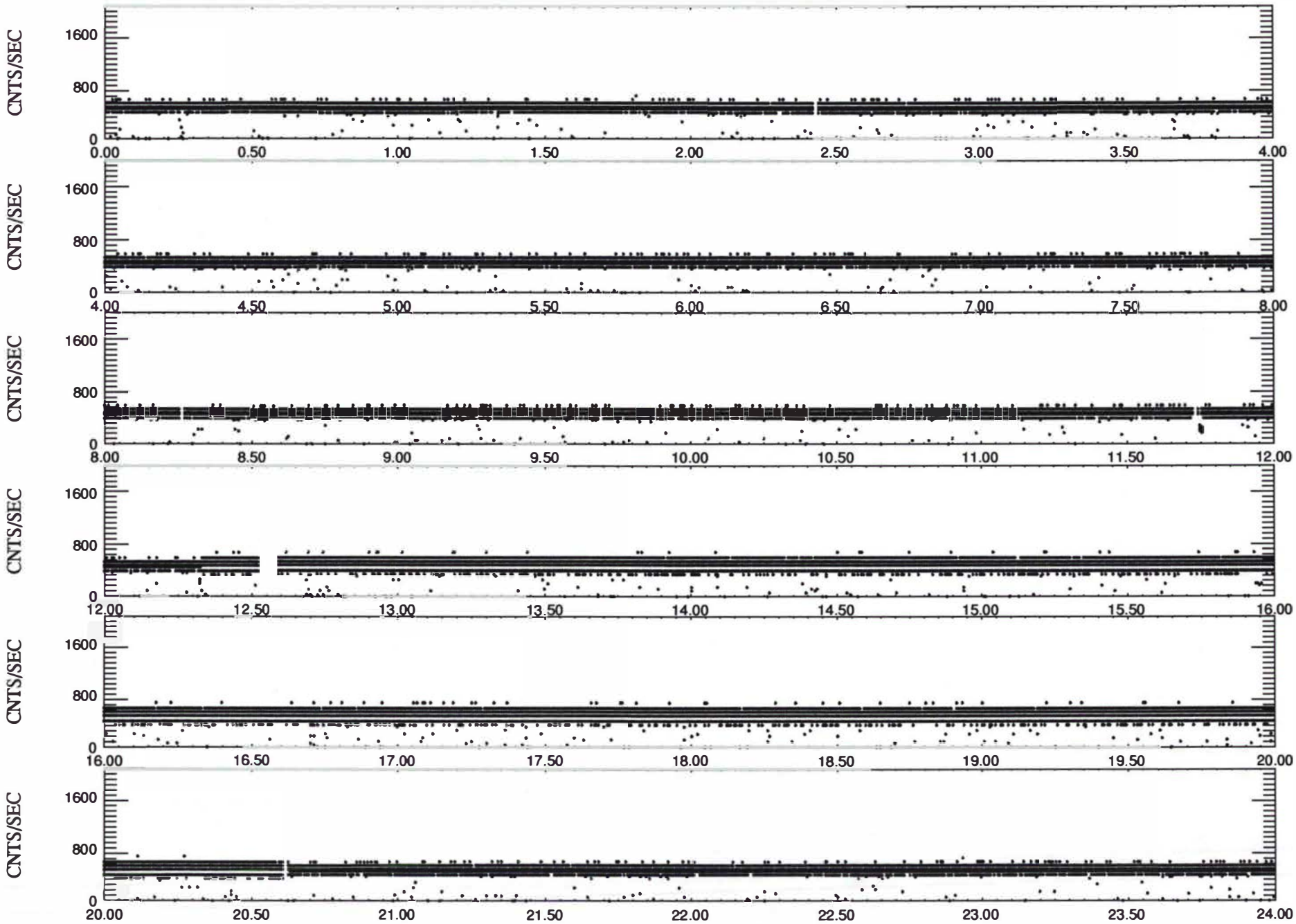

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/02
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/06, 1723 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 336, year 1993 to day 336, year 1993 1/20/94



HUS 2A, MODE 1, NOT AVERAGED EDR day 336, year 1993 to day 336, year 1993 1/20/94

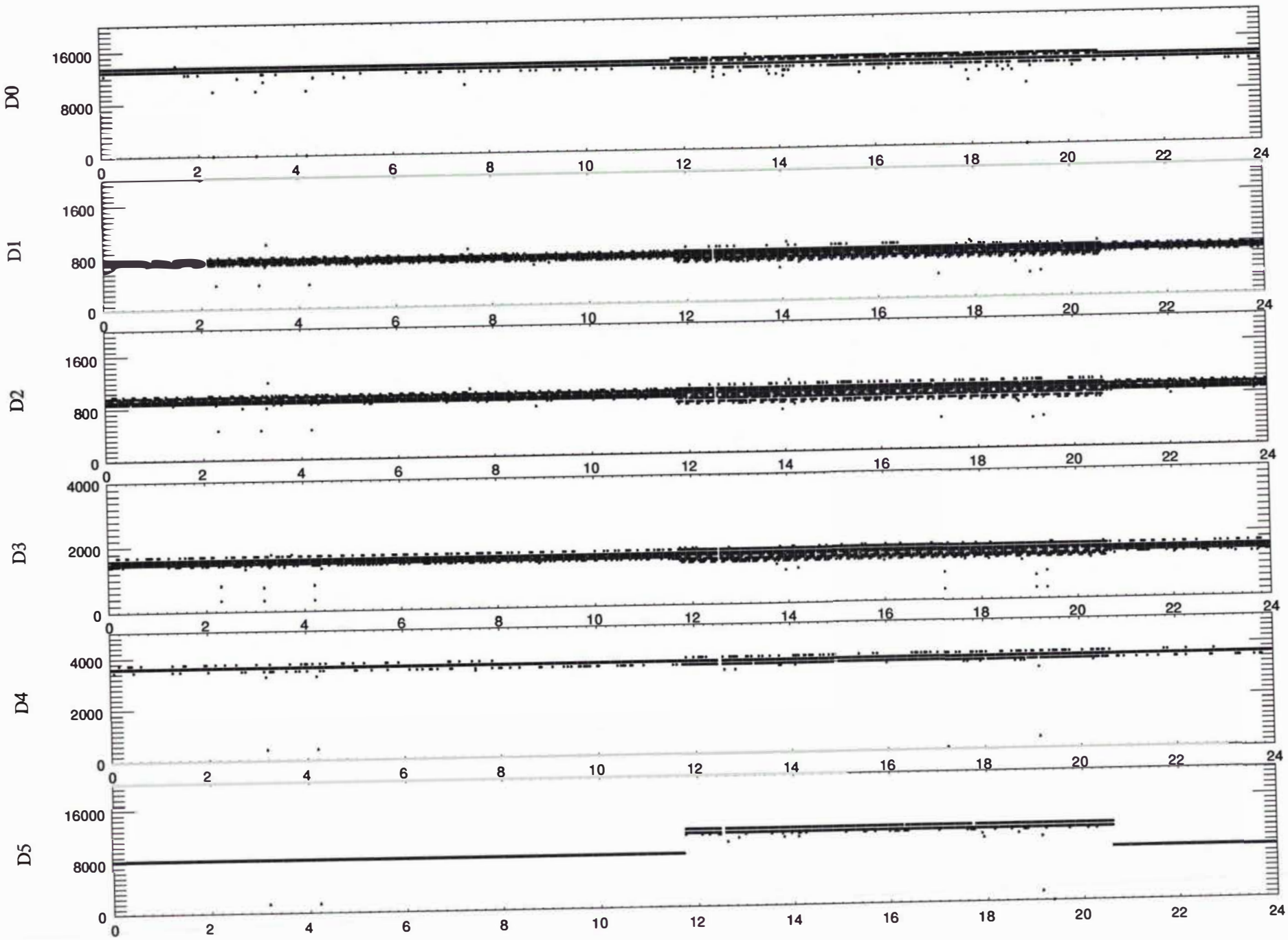
CALIBRATION DATA INCLUDED



UNIV 'AL TIME

HUS 2B COUNTS / SEC QEDR day 336, year 1993 to day 336, year 1993

12/6/93



From HAGEDON@ssl.msfc.nasa.gov Mon Dec 6 08:31:19 1993
Date: Mon, 6 Dec 1993 10:34:25 -0600 (CST)
From: HAGEDON@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2671
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2671
 EVENT OF 1993 DEC  3 DAY OF YEAR=337
 EVENT CROSSING TIME AT BATSE      :  3723. S. OR 01:02:03.0
 COORDINATES ARE    0.000    0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:    8.000    19.000
 BATSE PEAK COUNTING RATE:    1900     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON  3/12/  93 IS:
 RA=  166.449 DEC=  -34.211 DIST=     4.164 AU
 BATSE-ULYSSES DISTANCE =  622894529. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 24.45 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1891.39 SECS.
 CROSSING TIME AT ULYSSES     IS  5614. S. OR   01:33:34 +/-  228.04 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON  3/12/  93 IS:
 RA=  256.141 DEC=  -23.423 DIST=     2.448 AU
 MARS-BATSE DISTANCE =  366281920. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 63.10 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  552.80 SECS.
 CROSSING TIME AT MARS        IS  4276. S. OR   01:11:15 +/-  197.56 SECONDS
```

XJO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2671	931203	9324	03723	1900	008	+19

BATSE BURST TRIGGER

NO.: 02671

TIME: TJD=9324 SECONDS=03723

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=85 AZIMUTH=125 ERROR= DEGREES

COMMENTS:
BURST. WEAK SINGLE SPIKE. DUR.~20 SEC. NOT VISIBLE ABOVE 300 KEV.

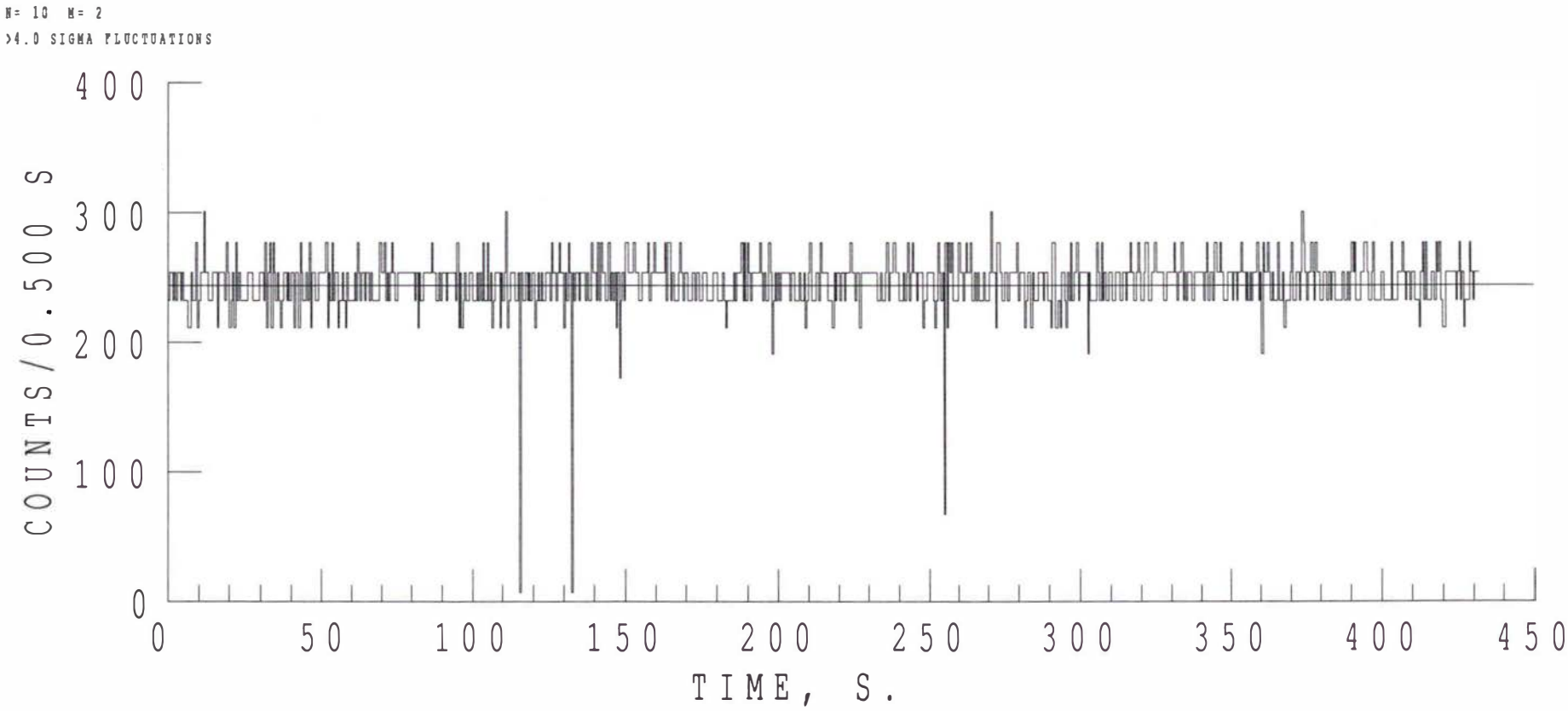
BATSE BURST # 2671

6/12/93

ULYSSES RT

3/12/93 5400.248 s

0- 0 keV



BATSE BURST TRIGGER
NO.: 2672

TIME: TJD=9324 SECONDS=44519

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

BATSE BURST TRIGGER
NO.: 02673

TIME: TJD=9324 SECONDS=58549

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

BATSE BURST TRIGGER
NO.: 02674

TIME: TJD=9324 SECONDS=66882

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON EVENT.

BATSE BURST TRIGGER
NO.: 02675

TIME: TJD=9324 SECONDS=78917

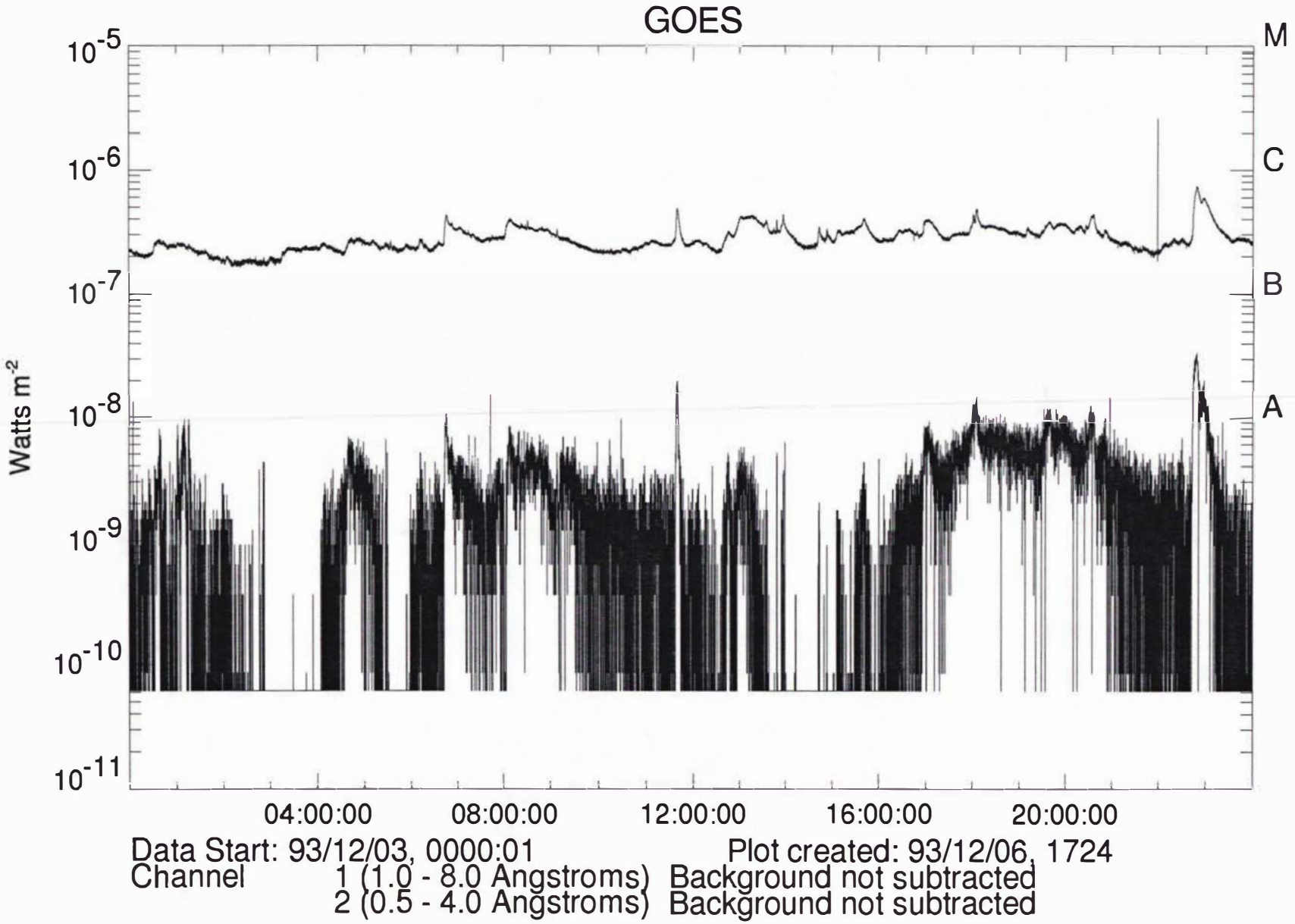
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

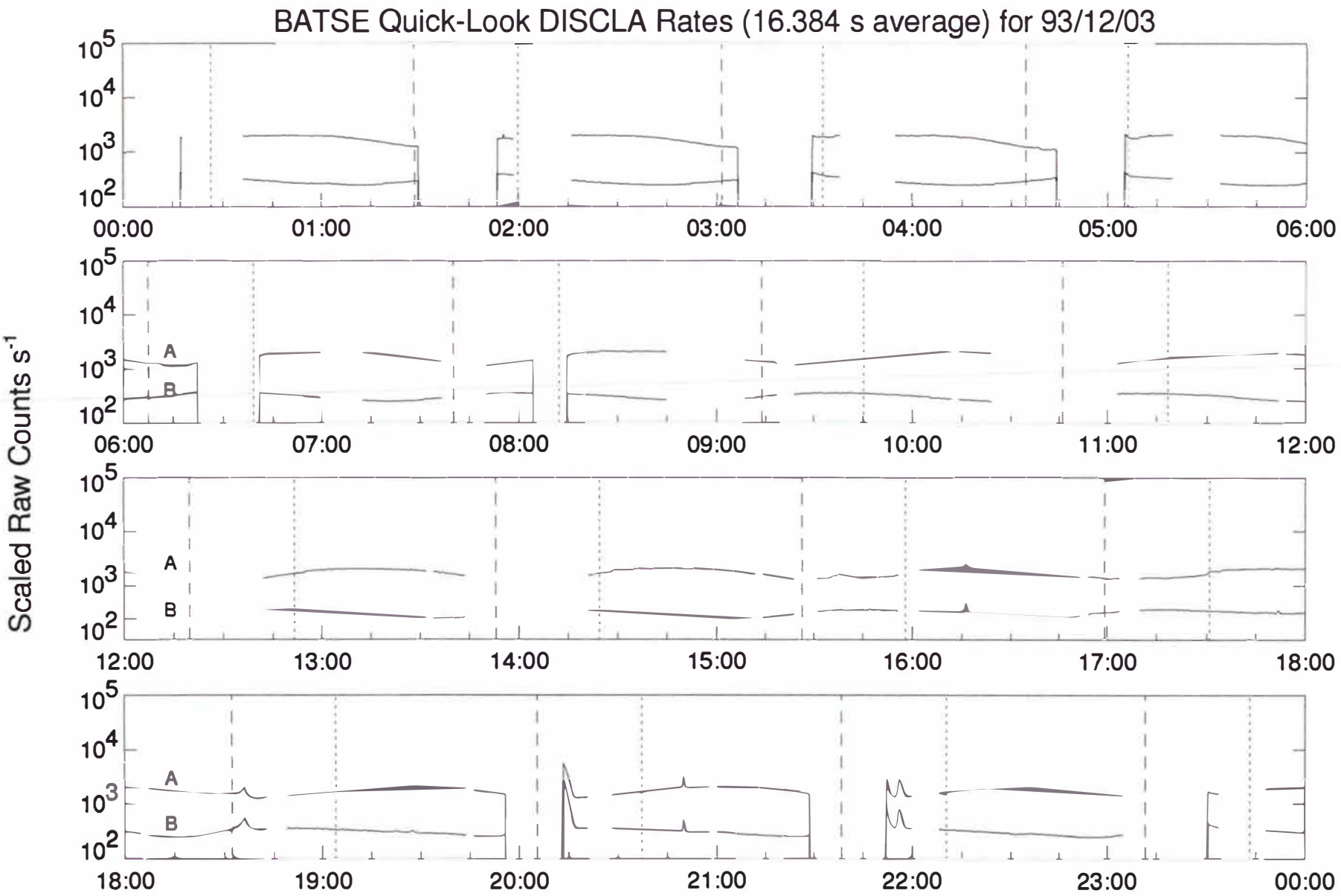
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

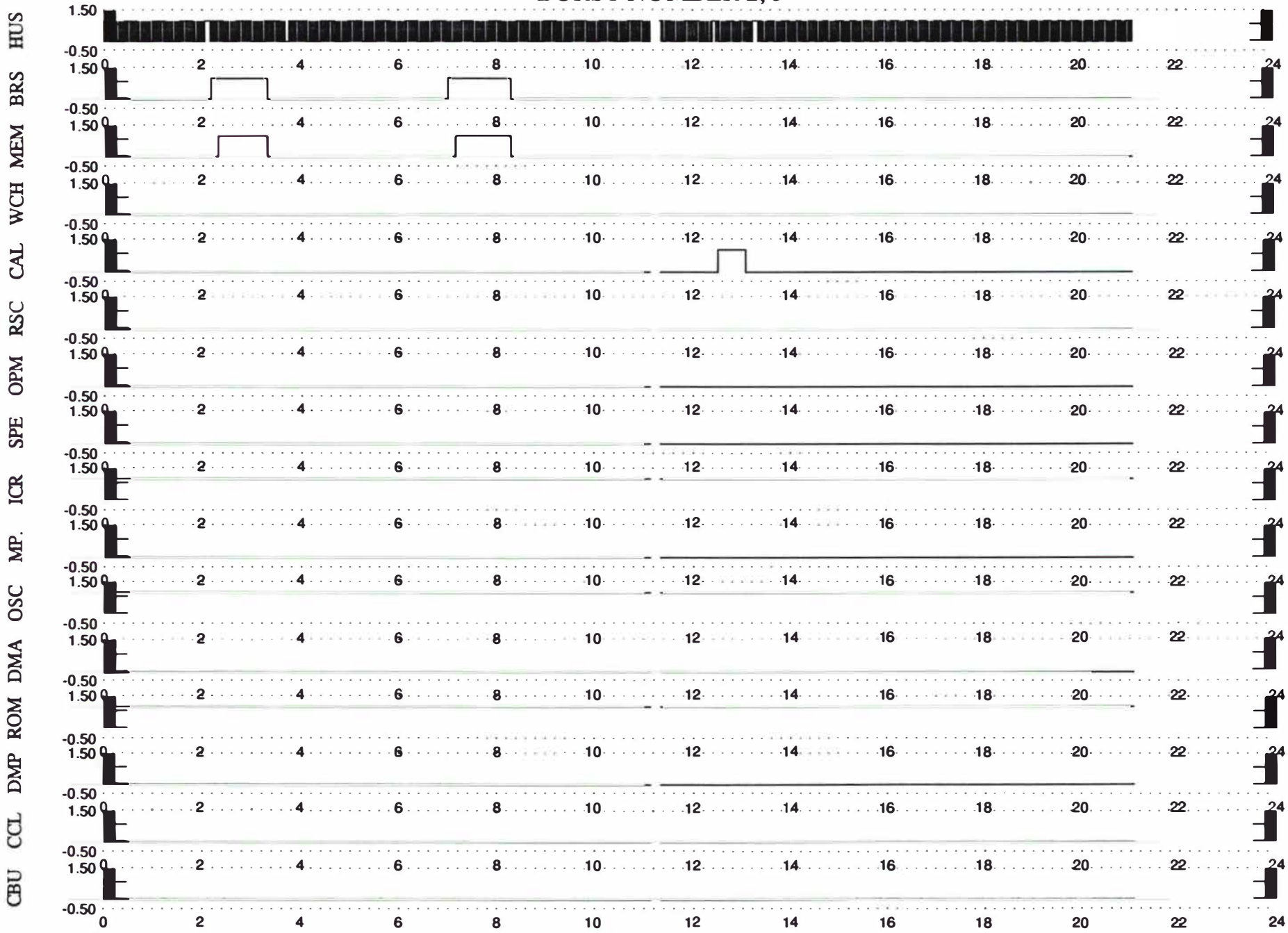
COMMENTS:
ELECTRON EVENT.


GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/03, 0000:01
Plot created: 93/12/06, 1724
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/03
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/06, 1723 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 337, year 1993 to day 337, year 1993 1/20/94

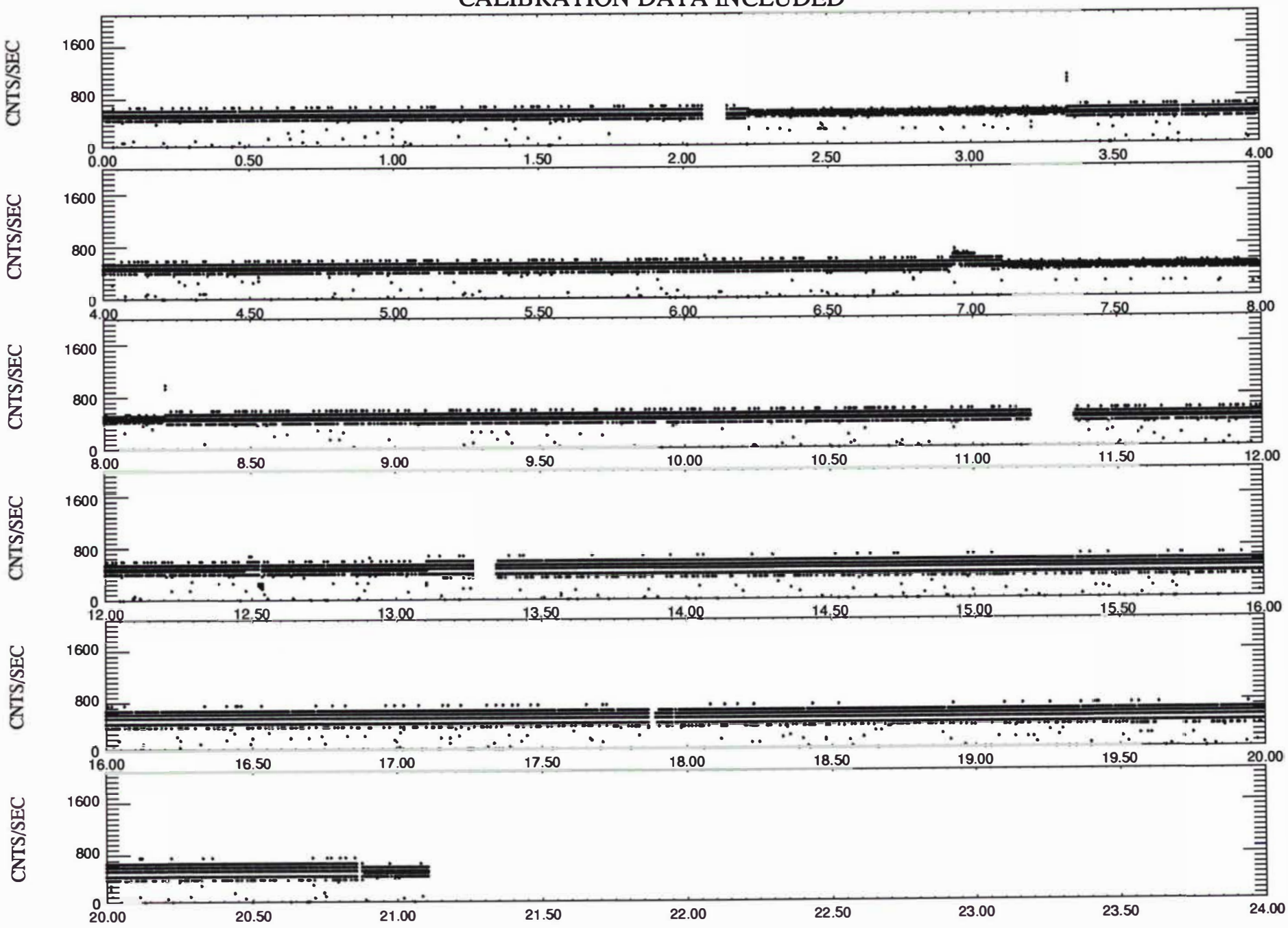
BURST NUMBER 2, 3



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 337, year 1993 to day 337, year 1993 1/20/94

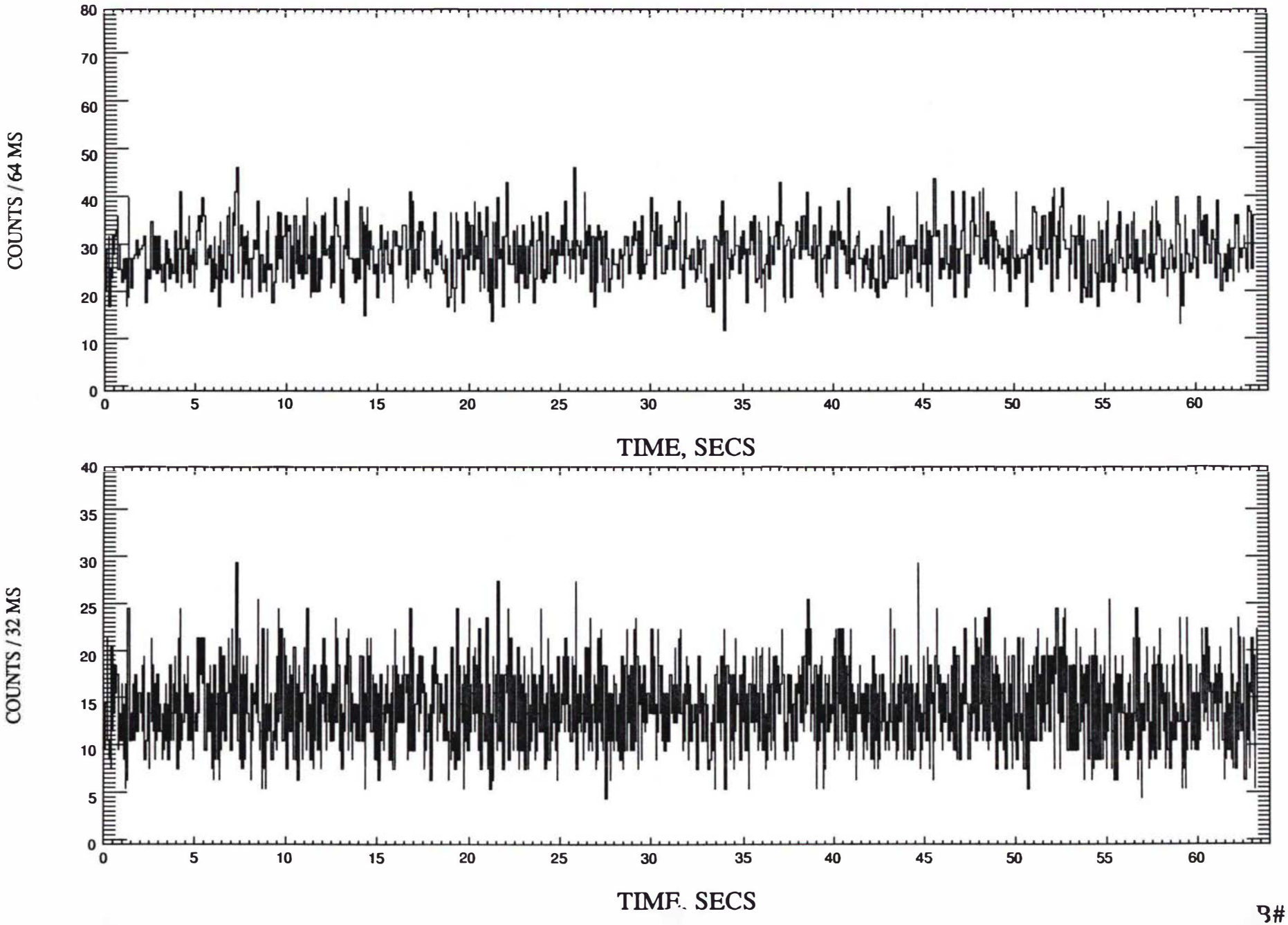
CALIBRATION DATA INCLUDED



UNIV 'AL TIME

HUS 2A TRIGGERED DATA EDR day 337, year 1993 1/20/94

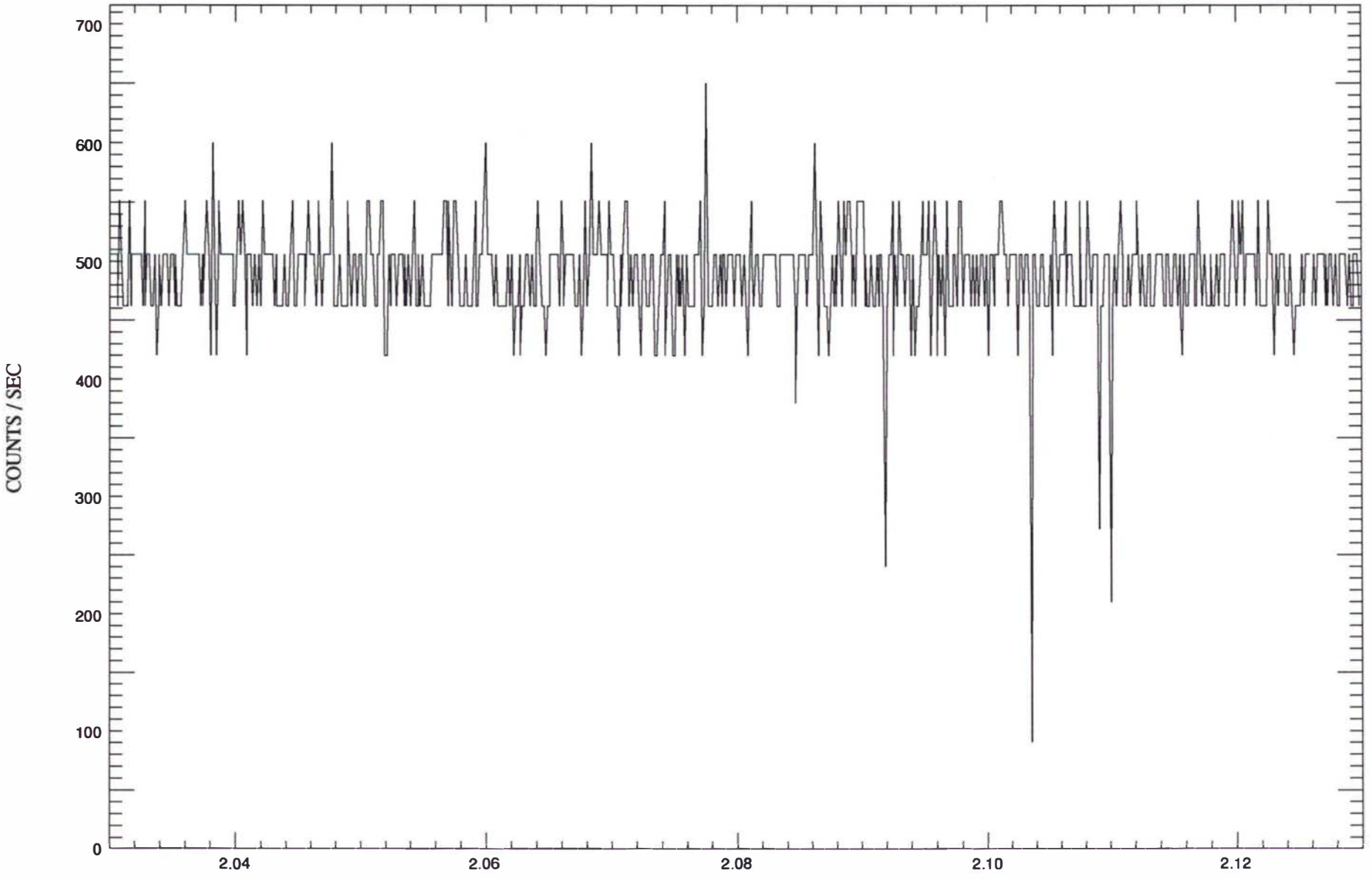
Burst Counter 2 at UT= 2.077714640299 h= 7479.773 s 02:04:39.773



B# 1

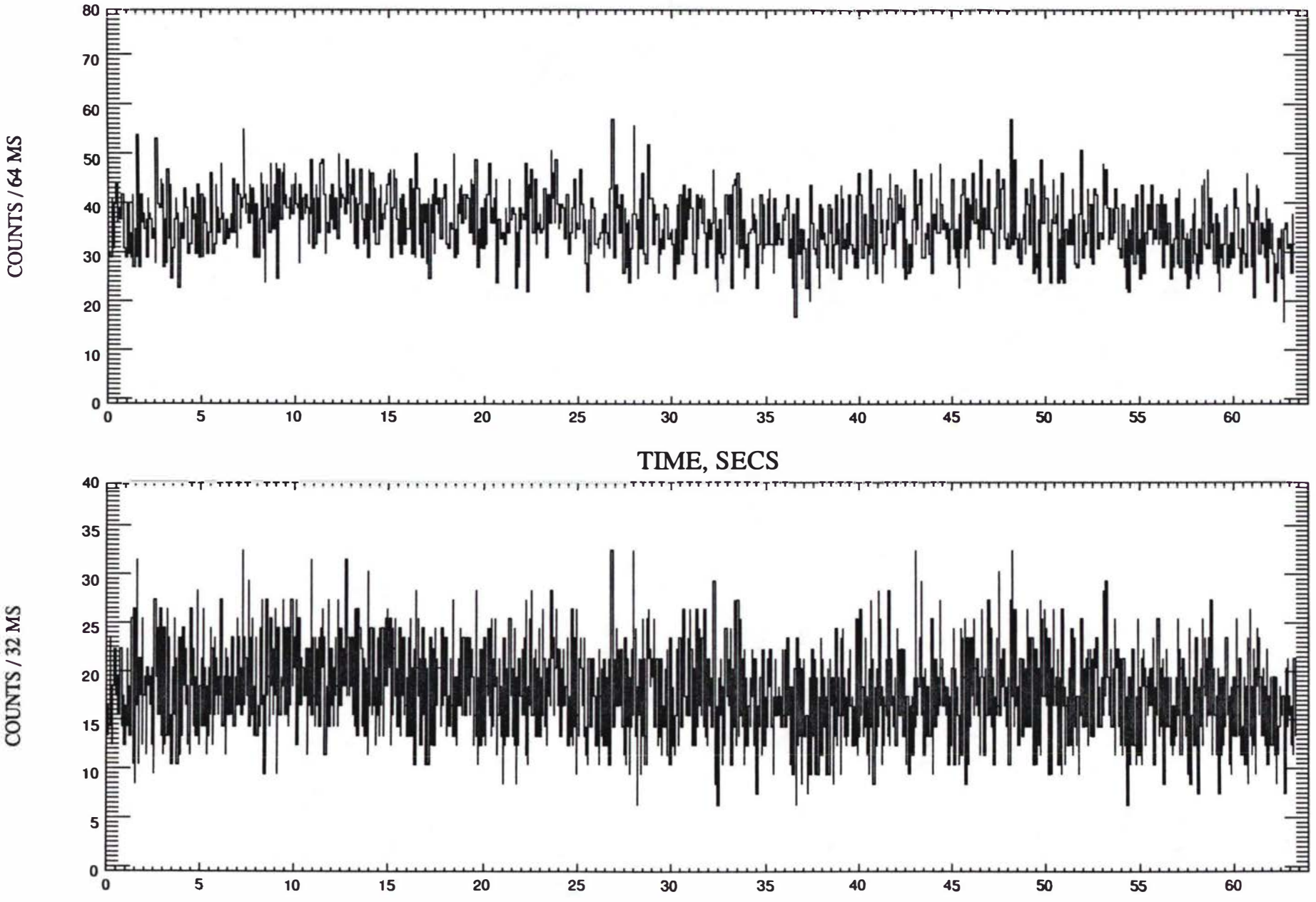
HUS 2A, MODE 1, NOT AVERAGED QEDR day 337, year 1993 to day 337, year 1993 12/6/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 337, year 1993 1/20/94

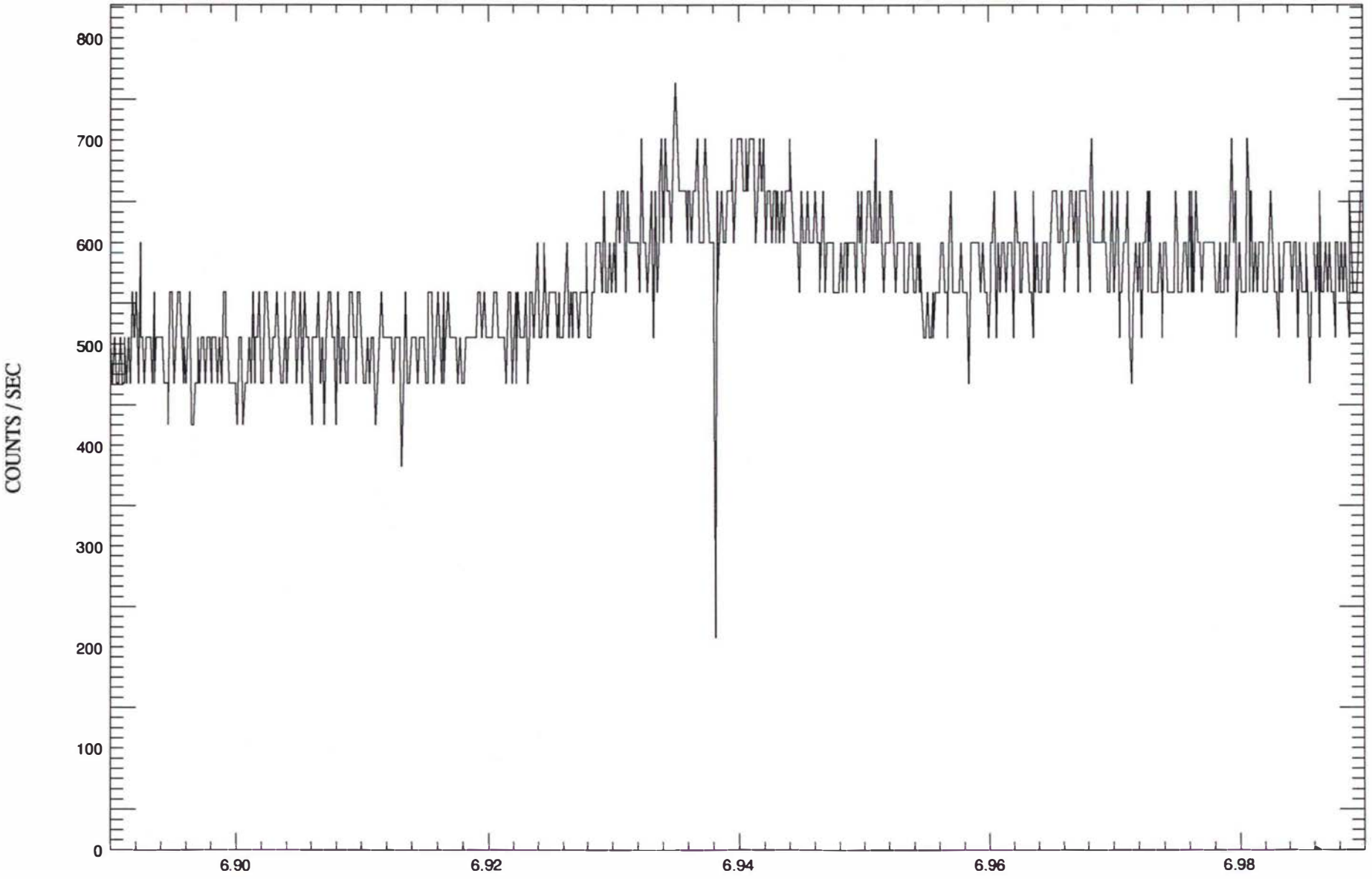
Burst Counter 3 at UT= 6.939661983914 h=24982.783 s 06:56:22.783



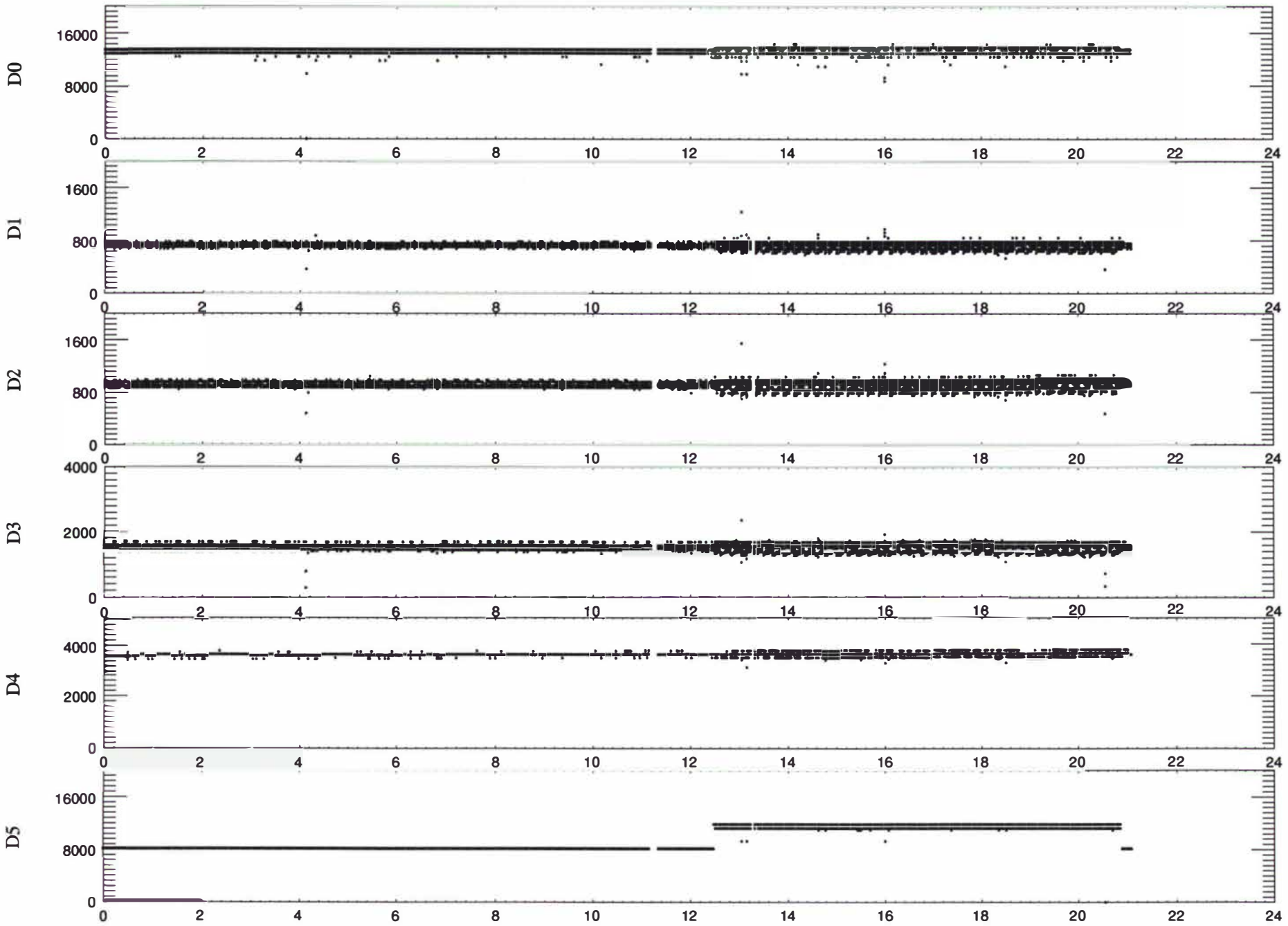
B# 2

HUS 2A, MODE 1, NOT AVERAGED QEDR day 337, year 1993 to day 337, year 1993 12/6/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 337, year 1993 to day 337, year 1993 12/6/93



From ZMYEWSKI@ssl.msfc.nasa.gov Sun Dec 5 13:02:01 1993
Date: Sun, 5 Dec 1993 15:04:49 -0600 (CST)
From: ZMYEWSKI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2676
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2676
EVENT OF 1993 DEC 4 DAY OF YEAR=338
EVENT CROSSING TIME AT BATSE : 35290. S. OR 09:48:10.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 245.000 36.000
BATSE PEAK COUNTING RATE: 109500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 4/12/ 93 IS:
RA= 166.486 DEC= -34.553 DIST= 4.140 AU
BATSE-ULYSSES DISTANCE = 619385354. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 78.42 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 414.65 SECS.
CROSSING TIME AT ULYSSES IS 35705. S. OR 09:55:04 +/- 407.70 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 4/12/ 93 IS:
RA= 256.942 DEC= -23.500 DIST= 2.448 AU
MARS-BATSE DISTANCE = 366202112. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=119.44 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -600.35 SECS.
CROSSING TIME AT MARS IS 34690. S. OR 09:38:09 +/- 175.58 SECONDS

TRIGGER

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2676	931204	9325	35290	109500	245	+36

BATSE BURST TRIGGER

NO.: 02676

TIME: TJD=9325 SECONDS=35290

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=117.7 AZIMUTH=22.5 ERROR= DEGREES

COMMENTS:
GRB LASTING APPROX. 45 SEC. TWO MAIN PEAKS, EACH HAVING MUCH STRUCTURE.
BOTH PEAKS ARE APPROX. 15 SEC. IN DURATION, WITH A 15 SECOND GAP BETWEEN
THE TWO PEAKS. QUITE VISIBLE ABOVE 300KEV.

Helio corr removed

Date: Nov 18 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☑ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution?

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☑ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

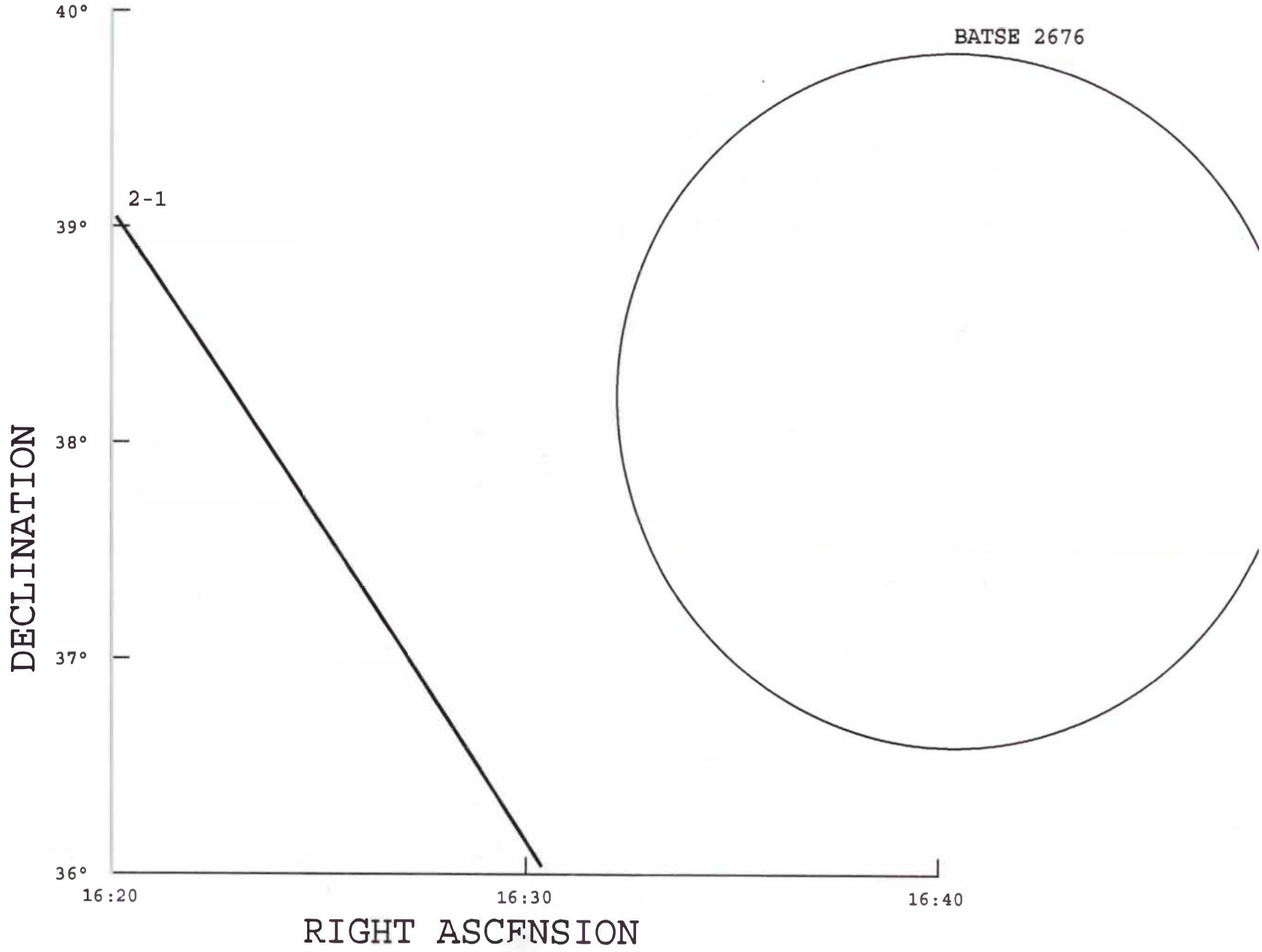
☐ 2000 coordinates used?

☐ Geocentric time used?

☑ ACCESS database updated?

EVENT OF DEC 4, 1993 9:56

5/ 3/98

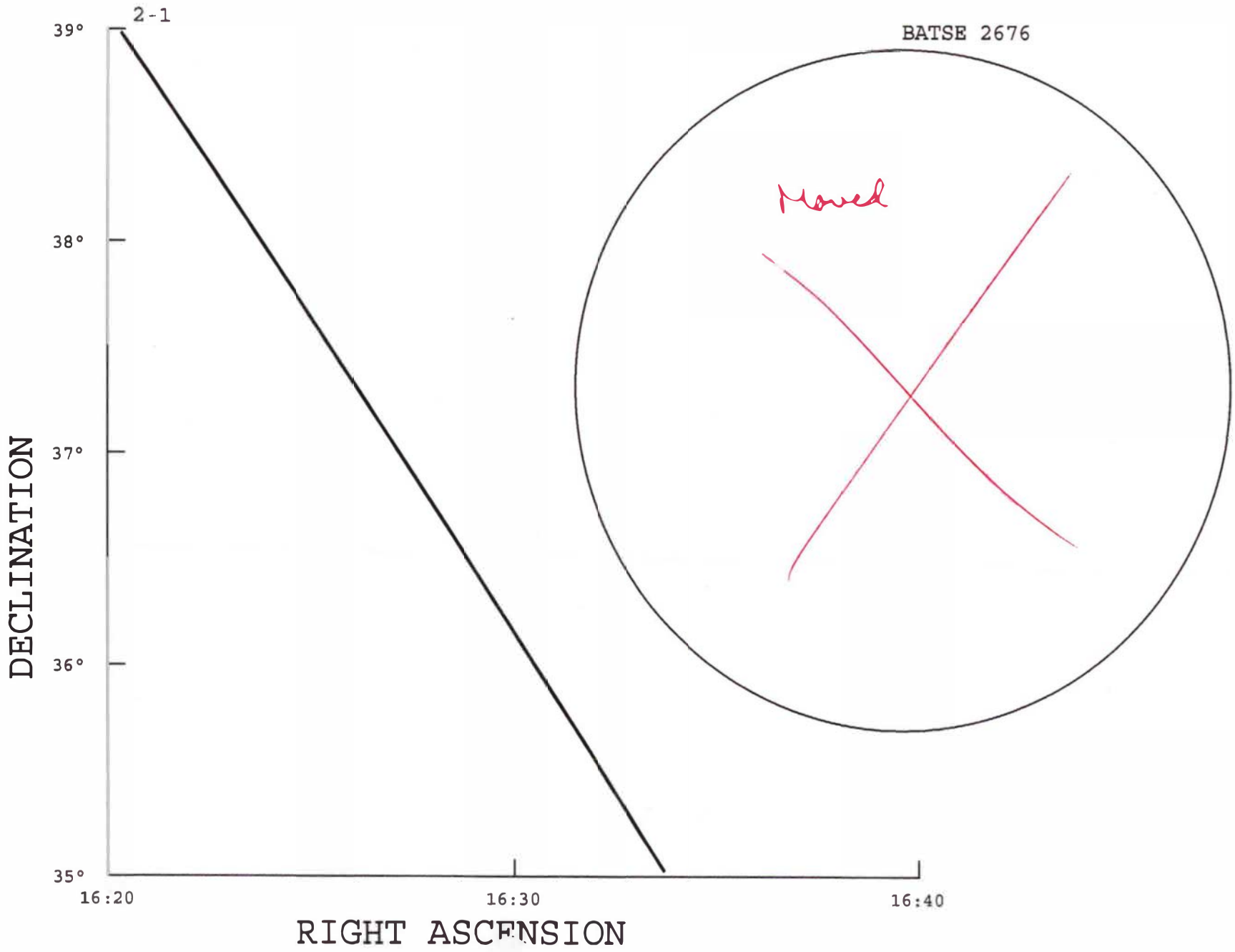


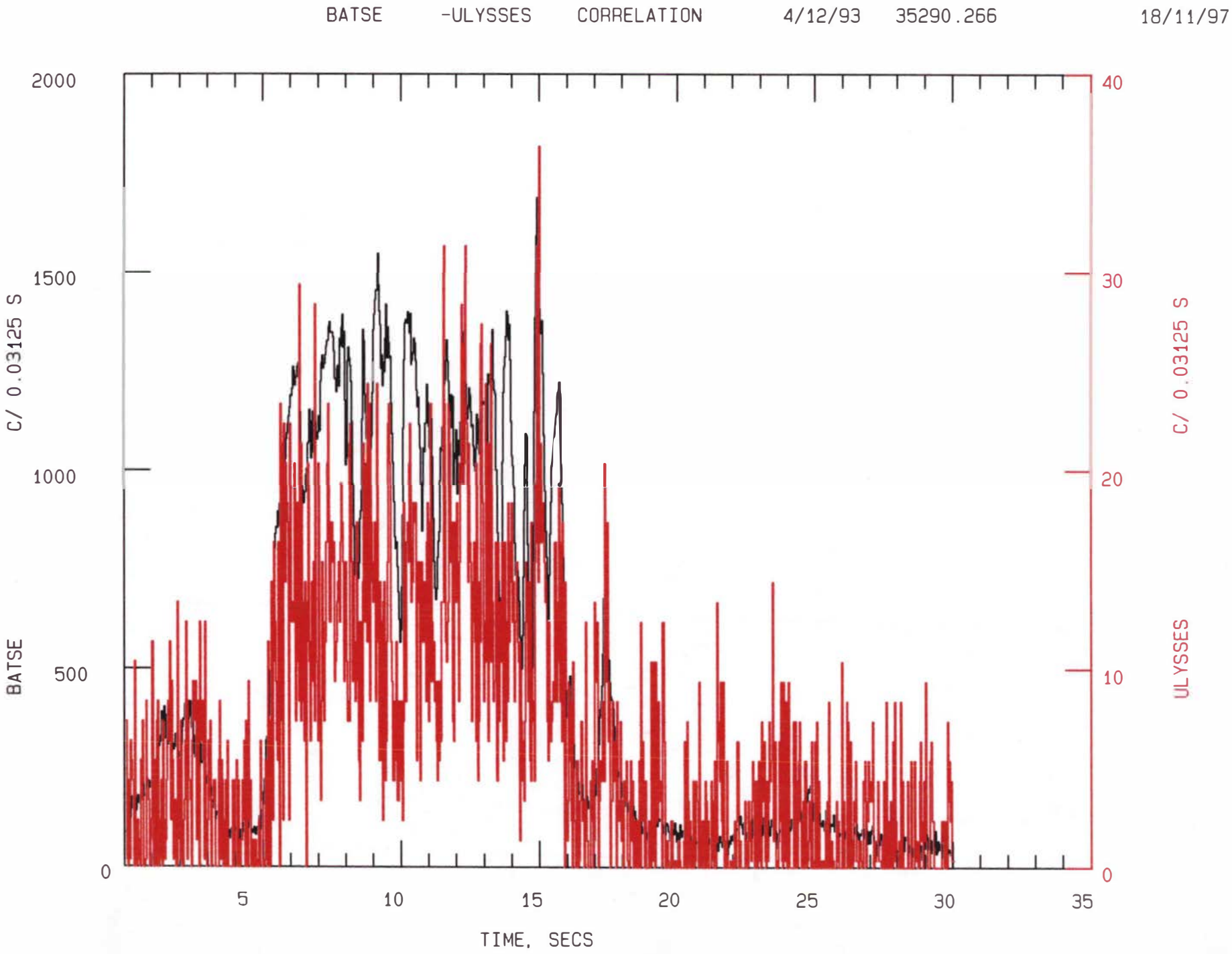
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE

EVENT OF DEC 4, 1993 9:56

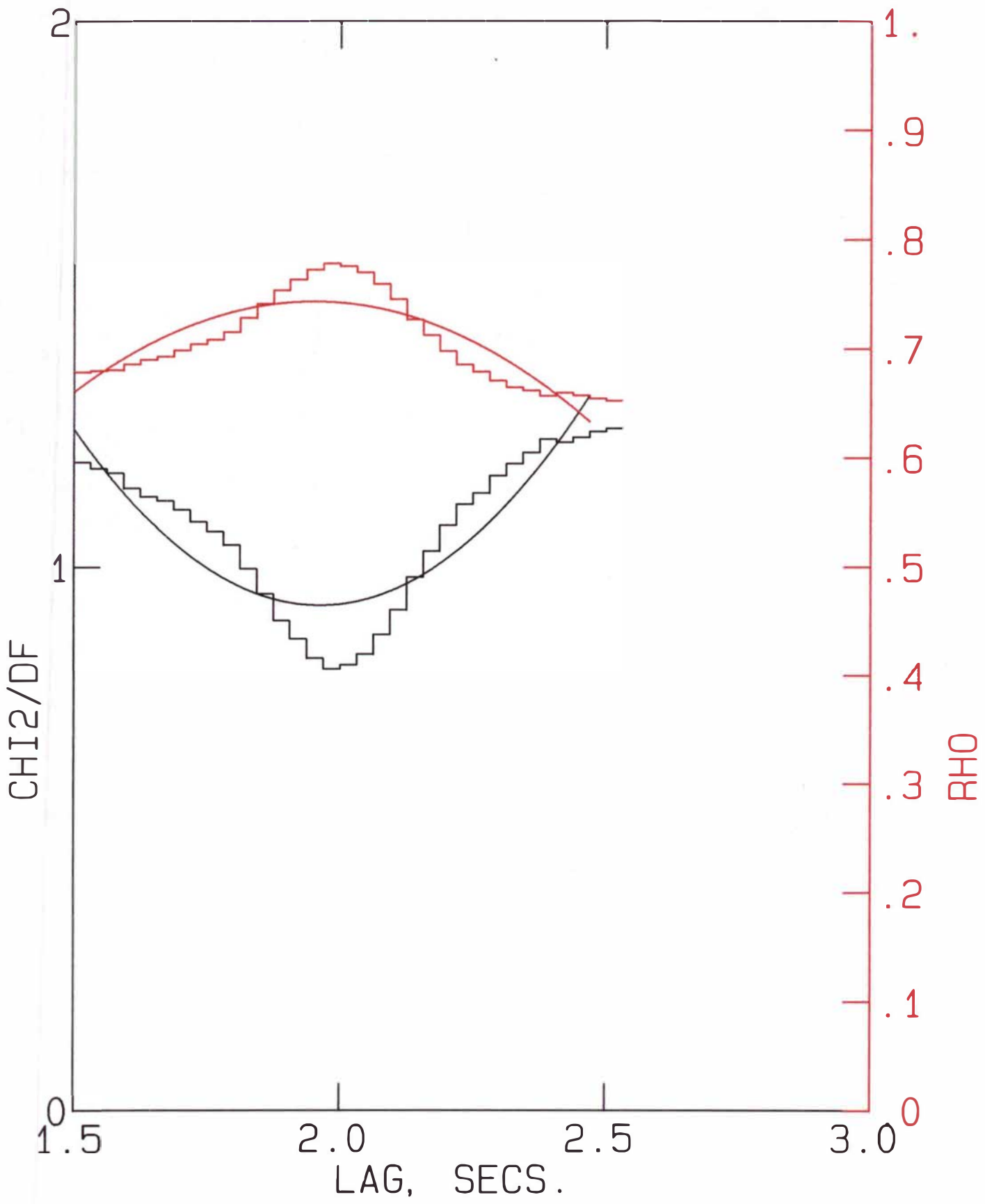
18/11/97

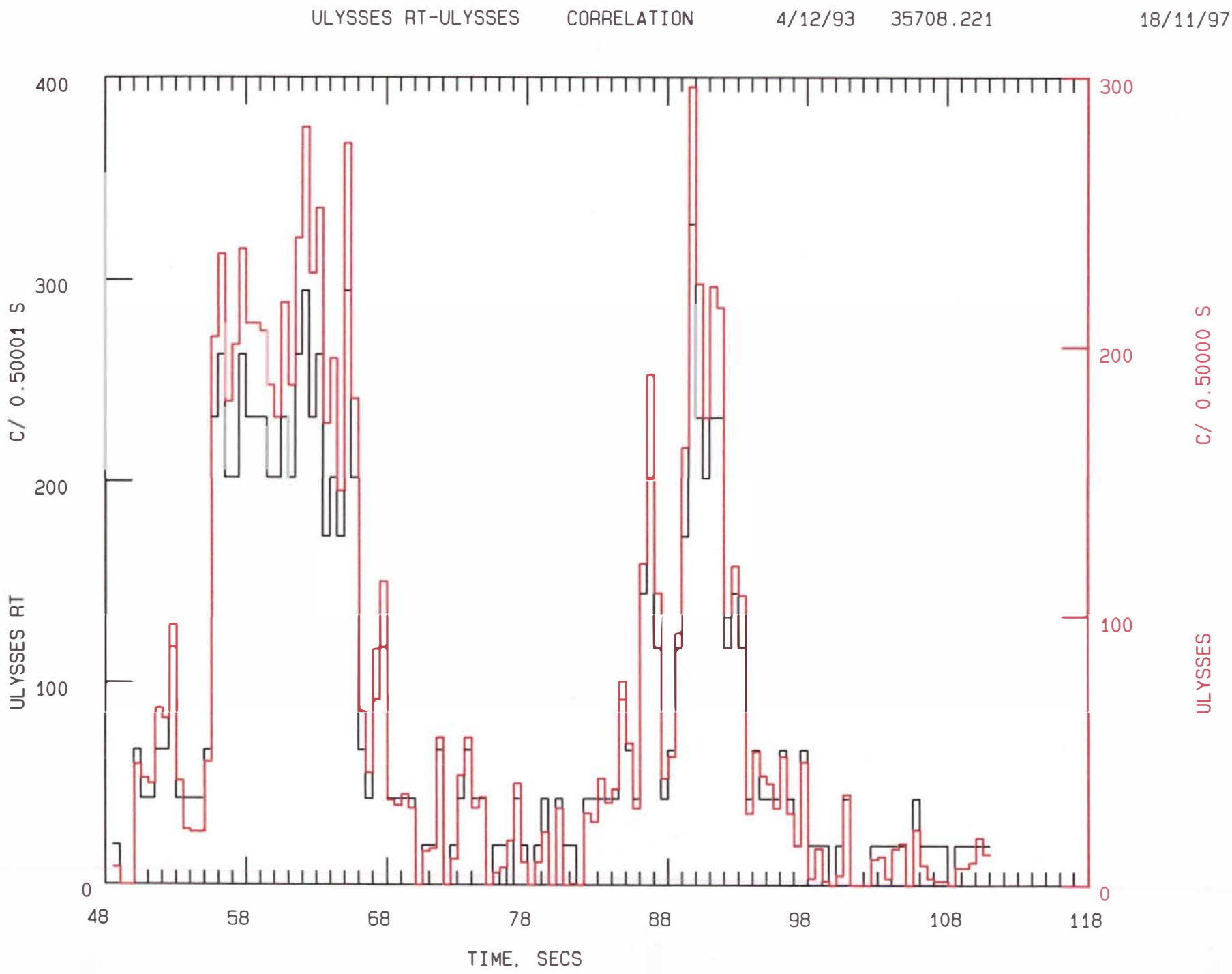
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE



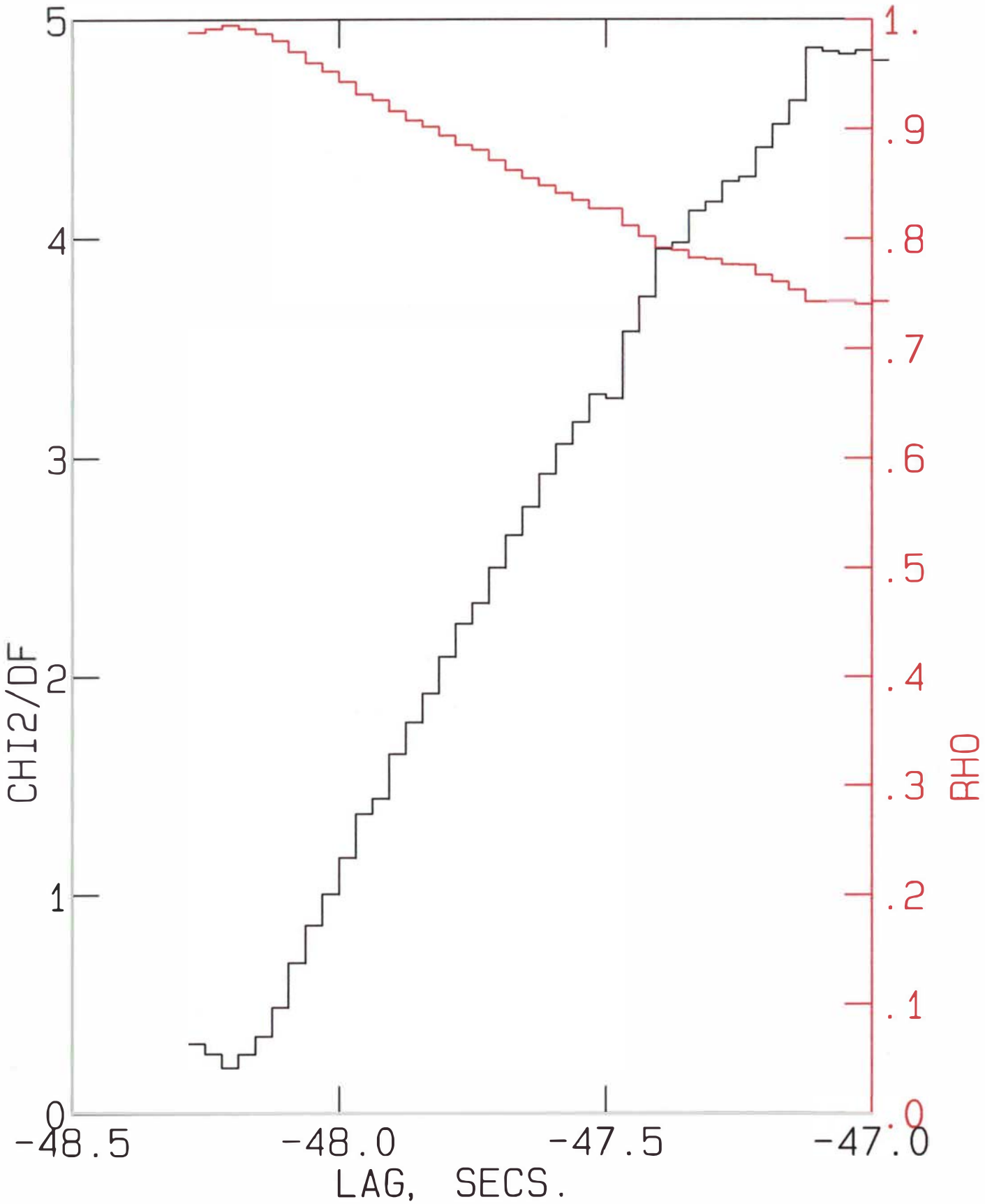

BATSE -ULYSSES CORRELATION 4/12/93 35290.266 18/11/97
2000
1500
1000
500
0
C/ 0.03125 S
BATSE
40
30
20
10
0
C/ 0.03125 S
ULYSSES
5
10
15
20
25
30
35
TIME, SECS

BATSE -ULYSSES CORRELATION 4/12/93 35290.266




ULYSSES RT-ULYSSES CORRELATION 4/12/93 35708.221 18/11/97
400
300
200
100
0
C/ 0.50001 S
ULYSSES RT
300
200
100
0
C/ 0.50000 S
ULYSSES
48
58
68
78
88
98
108
118
TIME, SECS

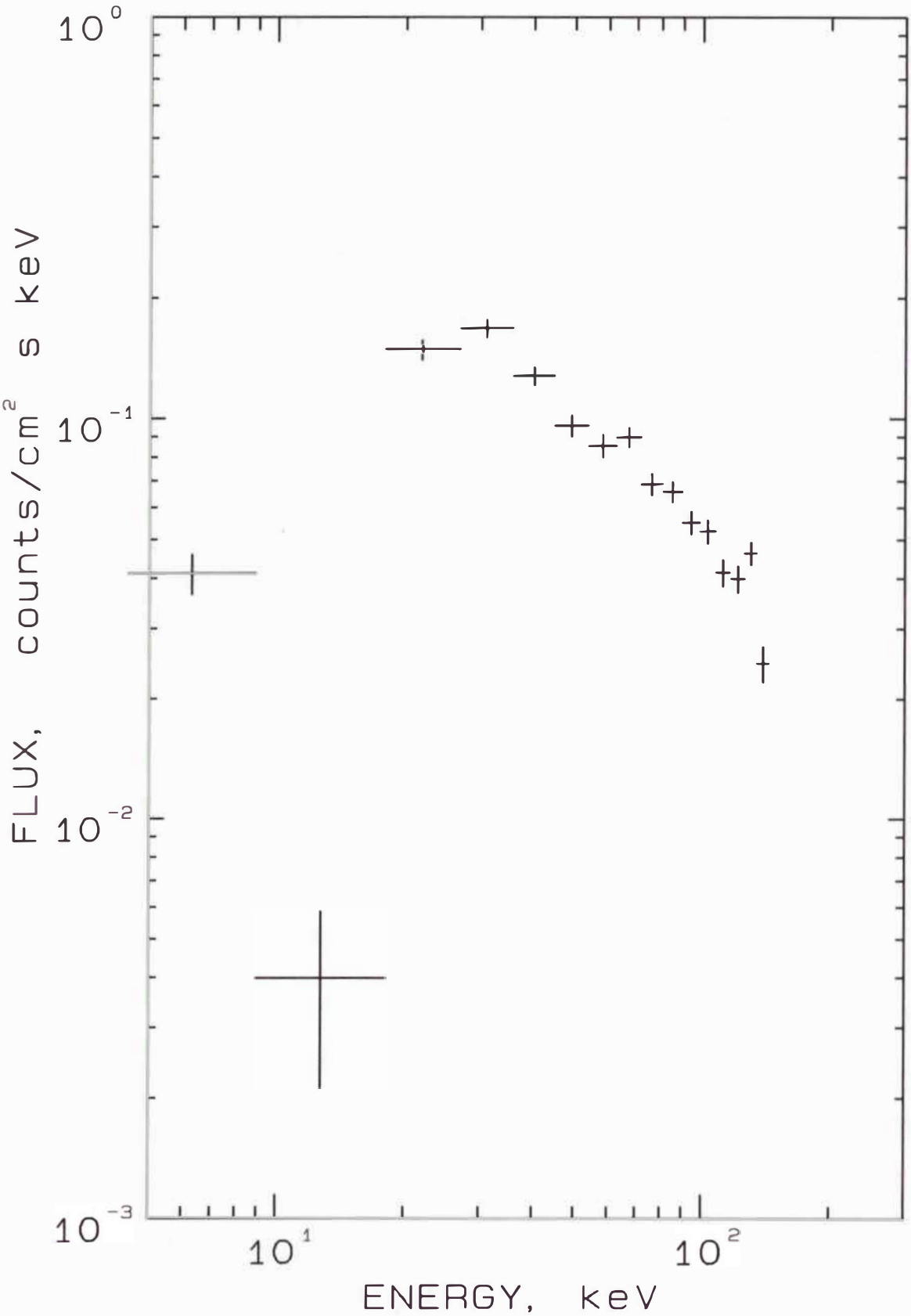
ULYSSES RT-ULYSSES CORRELATION 4/12/93 35708.221

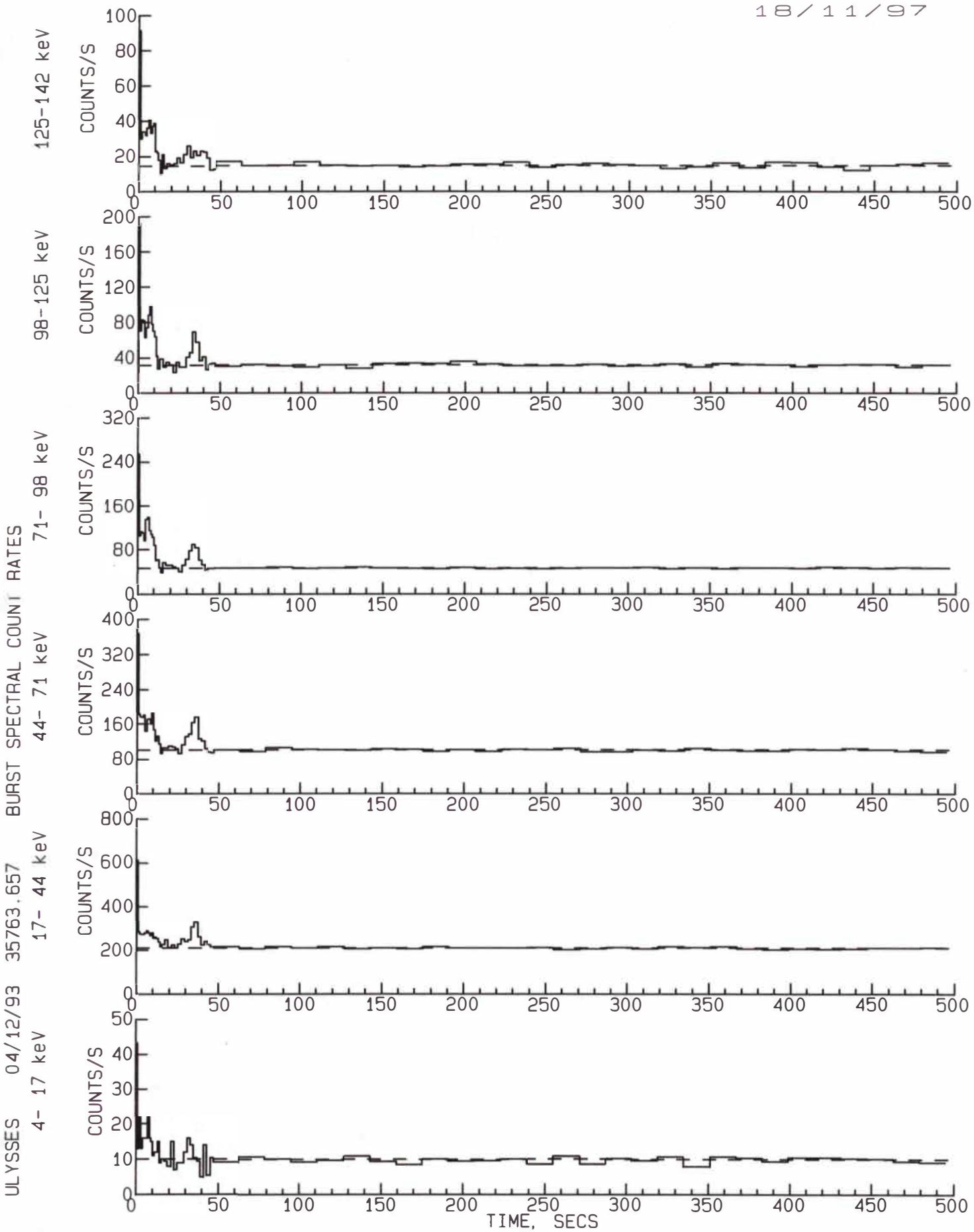


ULYSSES 04/12/93 35763.657

18/11/97

SPECTRUM INTEGRATED OVER 110.9 SECONDS, INTERVALS 2 TO 37




18/11/97
ULYSSES 04/12/93 35763.657 BURST SPECTRAL COUNT RATES
125-142 keV
98-125 keV
71- 98 keV
44- 71 keV
17- 44 keV
4- 17 keV
COUNTS/S
TIME, SECS

ULYSSES 04/12/93 Ttrig=35763.841

21- 143 keV

COUNTS/0.031 S

COUNTS/0.125 S

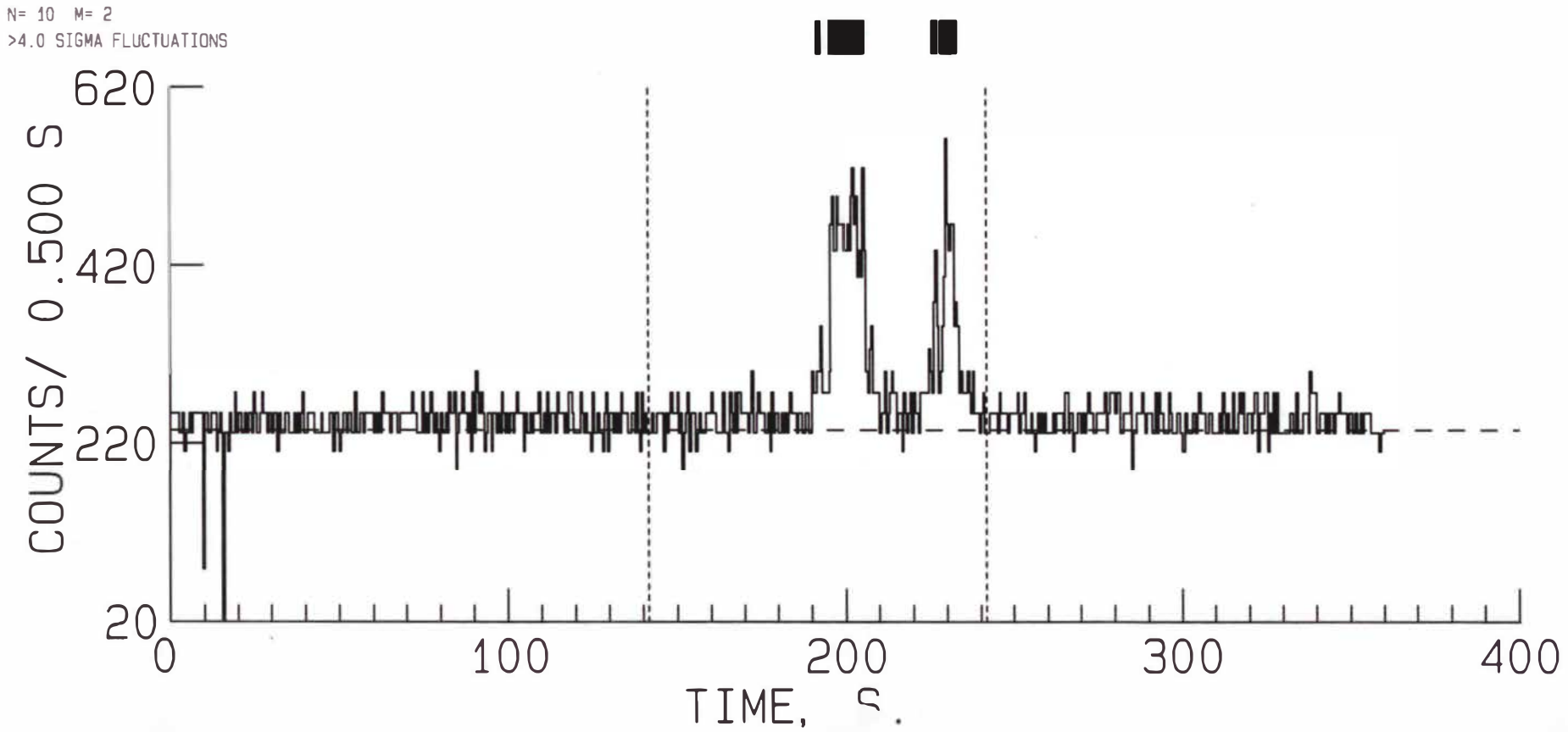
18/11/**

ULYSSES RT

18/11/97

4/12/93 35568.047 s

21- 143 keV



From root Thu Mar 10 14:22 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA05865; Thu, 10 Mar 94 14:22:44
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA23477; Thu, 10 Mar 1994 13:30:14 +0800
Date: Thu, 10 Mar 1994 14:30:44 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: khurley@space6.ssl.berkeley.edu
Message-Id: <940310143044.25e02930@SSTDP2.LANL.GOV>
Subject: dmsp observations
Content-Length: 2472
Status: R

FROM: SMTP%"JTERRELL.LANL.GOV" (JAMES TERRELL) 3/10/04
TO: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU"
SUBJ: DMSP OBSERVATIONS

Kevin:
Here are more additions, questions, or corrections for your GRB list of 930217.
Some of the errors for DMSP data seem to be the matter of interpreting
"NA" as used by me. It means, unless otherwise specified, no peak
apparent in the 20-sec averaged data, but 2-sec data not obtained
and examined. Thus it is not an absolute NO (or N/O unless it is known
that the spacecraft view was obscured by the earth).
Thus NA means that any peak which might show up in full data is
pretty weak, anyway. In your list NA should be left blank, I believe.
We now have data processed through 930128! Thus we will be needing
more events to look for in the DMSP data.--Jim

DATE	UT	DMSP
910208	32238U	DMSP8YES AT 32415.7, 9YES AT 32415.5, 10SAA
910421	33245	DMSP NA (NOT NO) (I.E., SHOULD BE BLANK IN YOUR LIST)
910627	16159	DMSP NA (NOT NO)
910717	16386	DMSP N/O (NOT NO)
911118	68260	DMSP N/O (NO DATA)
920110	33478	DMSP NA (NOT NO)
920229	69677	DMSP NA (NOT N/O)
920404	47506	DMSP NA (NOT N/O)
920414	84166	DMSP NA (NOT N/O) (GRO GRB AT 84163!)
920714	47069	DMSP NA (NOT NO)
920718	77563	DMSP NA (NOT N/O)
920727	43145U	(ULYSSES TIME) BATSE YES AT ? (DMSP NA)
921022	55259	DMSP NA (NOT N/O)
921209	41738	DMSP NA (NOT N/O)
930106	56259	WHY LISTED TWICE (56260)?
930106	56260	DMSP10YES AT 55260.4 (8SAA,11SR)
930309	11269	DMSP NA (NOT NO)
930318	44993U	DMSP NA (BATSE YES! ULYSSES TIME?)
930329	11365	DMSP NA (NOT N/O)
930406	26185	DMSP NA (NOT N/O)
930428	4032	DMSP NA (NOT N/O)
930506	65631	DMSP NA (NOT NO)
930511	892U	(ULYSSES TIME) DMSP NO
930825	31643U	DMSP8YES AT 33477.4(100/S),11YES AT 33477.0(500/S), 10SR
930922	12830U	DMSP NA (NOT NO)
930922	23086U	(BATSE YES AT ?) DMSP10YES AT 23088.1(?70/S),8?,11YES AT 22085.1
930925	73995U	DMSP NA (NOT NO)
930929	31751	(CORRECTED ULYSSES TIME) DMSP NO
931006	18161	(CORRECTED ULYSSES TIME) TO 931111 34178, NUMEROUS: DMSP NA
931006	69587U	DMSP NA (NOT NO)
931006	77510U	(ULYSSES TIME?)(BATSE YES AT ?) DMSP NA (NOT NO)
931031	14795	DMSP11YES AT 14796.8,14810.8 (8SAA,10SAA)
931103	59142	DMSP10YES AT 59152.4,158.4,11YES AT 59151.0,155.0 (8SR)
931131	60360	IS THIS DATE FOR SURE? (DMSP NA, 93/11/30)
931204	35290	DMSP8YES AT 35301.3,10NO AT 156DEG, 11NR
931217	65953U	10YES AT 64188.0,192.0,232.0, 11NO AT 64188 (8SR AT 64188)

Sent to Mahoney Feb 1 94

From khurley@space6.ssl.berkeley.edu Tue Dec 21 14:08:36 1993
Date: Tue, 21 Dec 93 15:06:05
From: khurley@space6.ssl.berkeley.edu
Content-Length: 2178

Dear Tom,

Here is my determination of the position of the December 4 event. I am pretty sure that they sent me a file with the digital data, but I can't find it anywhere, so I did this by eye. There should be a tenfold improvement in accuracy when I find the data.

Kevin

cc: Dave Palmer

SATELLITE POSITIONAL INFORMATION AND BURST ARRIVAL TIME

NO	NAME	DIST. FROM EARTH, KM.		ALPHA, DEG.		DELTA, DEG.	
1	ULYSSES	619375407.0000	+/- 500.0000000	167.08330	+/- .00500	-34.82560	+/-
2	BATSE	6797.0720	+/- 50.0000000	318.29100	+/- .01000	3.10200	+/-

JULIAN DAY NUMBER IS 34305.91 DAYS SINCE 1900 JAN 0.5

17.50 BY 15.00 CM MAP FOR RA= 235.00 TO 255.00, DEC= 28.00 TO 42.00

INTERSATELLITE CORRELATIONS

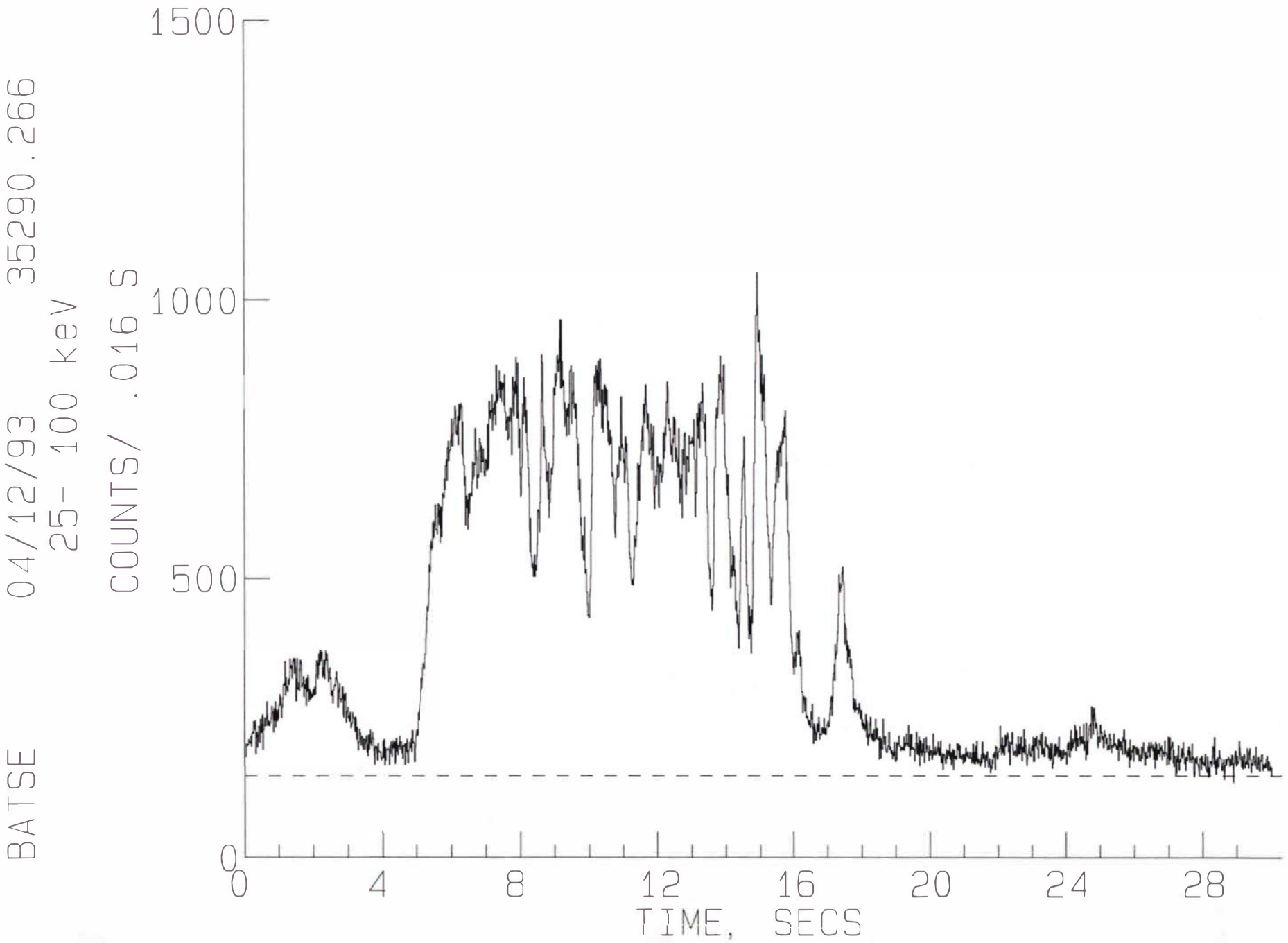
SEPARATION BETWEEN SATELLITES 1 AND 2 IS 2066.03067 LIGHT SECONDS. TIME DELAY IS -
CORRELATION BETWEEN SATELLITE 1(ULYSSES) AND SATELLITE 2(BATSE
GIVES A CIRCLE OF RADIUS 76.913967 DEGREES CENTERED AT ALPHA=347.082932 DEGREES, DELTA= 34.8
ERROR IN DETERMINATION OF RADIUS IS .120559 DEGREES OR 14.467120 ' TOTAL WIDTH
(.006646 DUE TO POSITION, .113913 DEGREES DUE TO TIMING)
INTERSATELLITE TIMING ERROR IS 4000000 MICROSECONDS

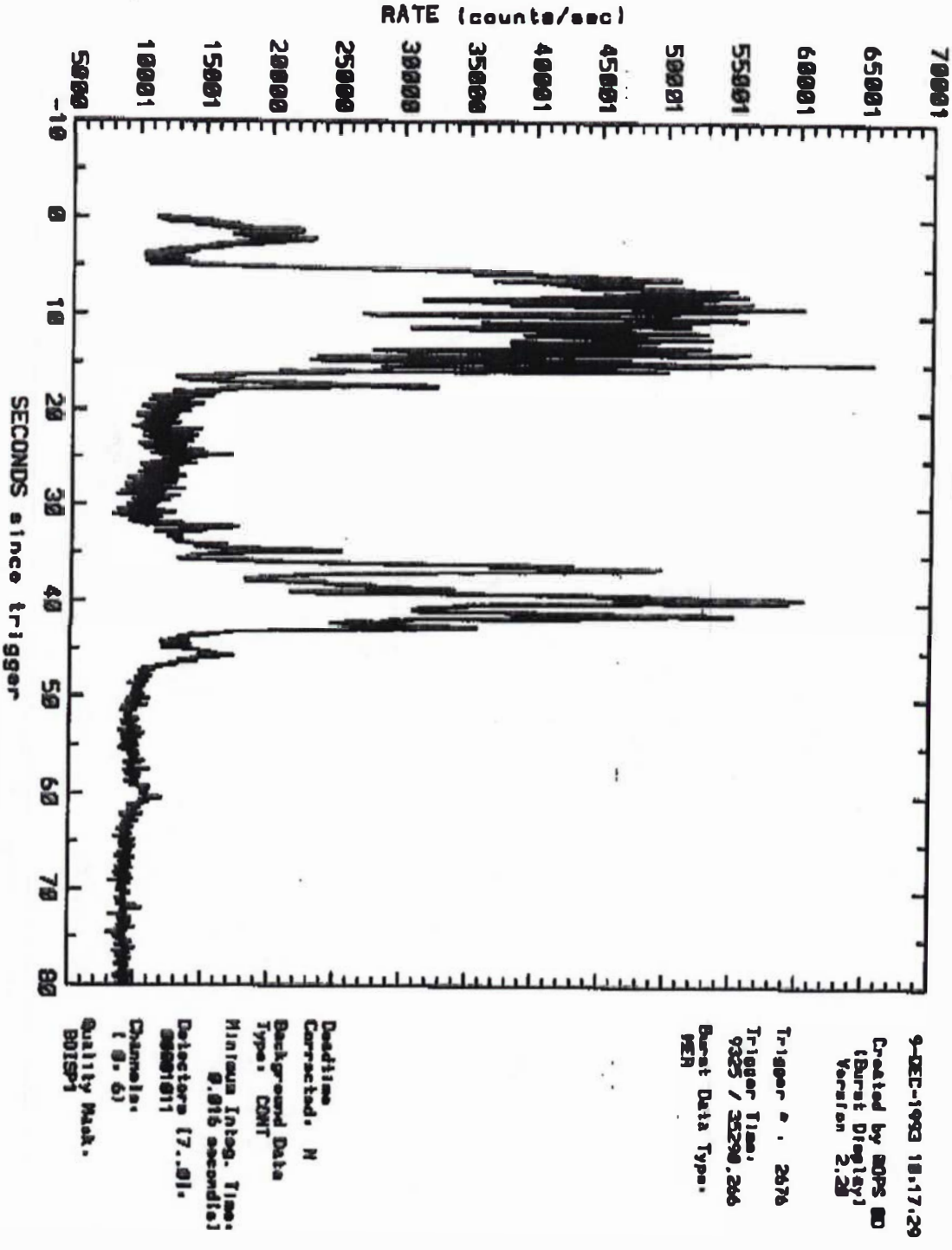
BASED ON THIS ANNULUS, THE EARTH CROSSING TIME IS 35290.270+/- .015 SECS.

AT SATELLITE 1, EARTH SUBTENDS .000589 DEGREES HALF ANGLE CENTERED AT ALPHA=347.083300 DE
AT SATELLITE 2, EARTH SUBTENDS 69.508948 DEGREES HALF ANGLE CENTERED AT ALPHA=138.291000 DE

CIRCLE CENTERED AT ALPHA=245.000 DEG, DELTA= 35.000 DEG, RADIUS= 7.000 DEG WILL BE TRACED WI
MINIMUM DISTANCE BETWEEN THE POINT OR CENTER OF THE CIRCLE AND THE TRIANGULATION ANNULUS IS

SUN IS AT ALPHA=250.783419 DEGREES, DELTA=-22.264746 DEGREES
TODAY IS 21/12/93


BATSE 04/12/93 35290.266
25- 100 keV
COUNTS/ .016 S
1500
1000
500
0
0
4
8
12
16
20
24
28
TIME, SECS


DATA FOR K. HURLEY
RATE (counts/sec)
70001
65001
60001
55001
50001
45001
40001
35000
30000
25000
20000
15001
10001
5000
-10
0
10
20
30
40
50
60
70
80
SECONDS since trigger
9-DEC-1993 18:17:29
Created by BDPS SD
(Burst Display)
Version 2.2B
Trigger # . 2676
Trigger Time:
9325 / 35290.266
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.016 seconds)
Detectors (7..0):
00001011
Channels:
(0: 6)
Quality Mask:
BDISP1

From ZMYEWSKI@ssl.msfc.nasa.gov Sun Dec 5 13:32:07 1993
Date: Sun, 5 Dec 1993 15:35:13 -0600 (CST)
From: ZMYEWSKI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2677
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2677
EVENT OF 1993 DEC 4 DAY OF YEAR=338
EVENT CROSSING TIME AT BATSE : 52515. S. OR 14:35:15.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 207.000 -70.000
BATSE PEAK COUNTING RATE: 2900 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 4/12/ 93 IS:
RA= 166.491 DEC= -34.603 DIST= 4.137 AU
BATSE-ULYSSES DISTANCE = 618870745. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=138.39 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1543.46 SECS.
CROSSING TIME AT ULYSSES IS 50972. S. OR 14:09:31 +/- 264.56 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 4/12/ 93 IS:
RA= 256.942 DEC= -23.500 DIST= 2.448 AU
MARS-BATSE DISTANCE = 366202112. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=125.21 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -704.28 SECS.
CROSSING TIME AT MARS IS 51811. S. OR 14:23:30 +/- 162.58 SECONDS

RT Too weak

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2677	931204	9325	52515	2900	207	-70

BATSE BURST TRIGGER

NO.: 02677

TIME: TJD=9325 SECONDS=52515

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=113.0 AZIMUTH=253.9 ERROR= DEGREES

COMMENTS:
GRB LASTING APPROX. 2 SECONDS. OCCURS DURING A GOES B8.3 SOLAR EVENT.
NOT VISIBLE ABOVE 300KEV.

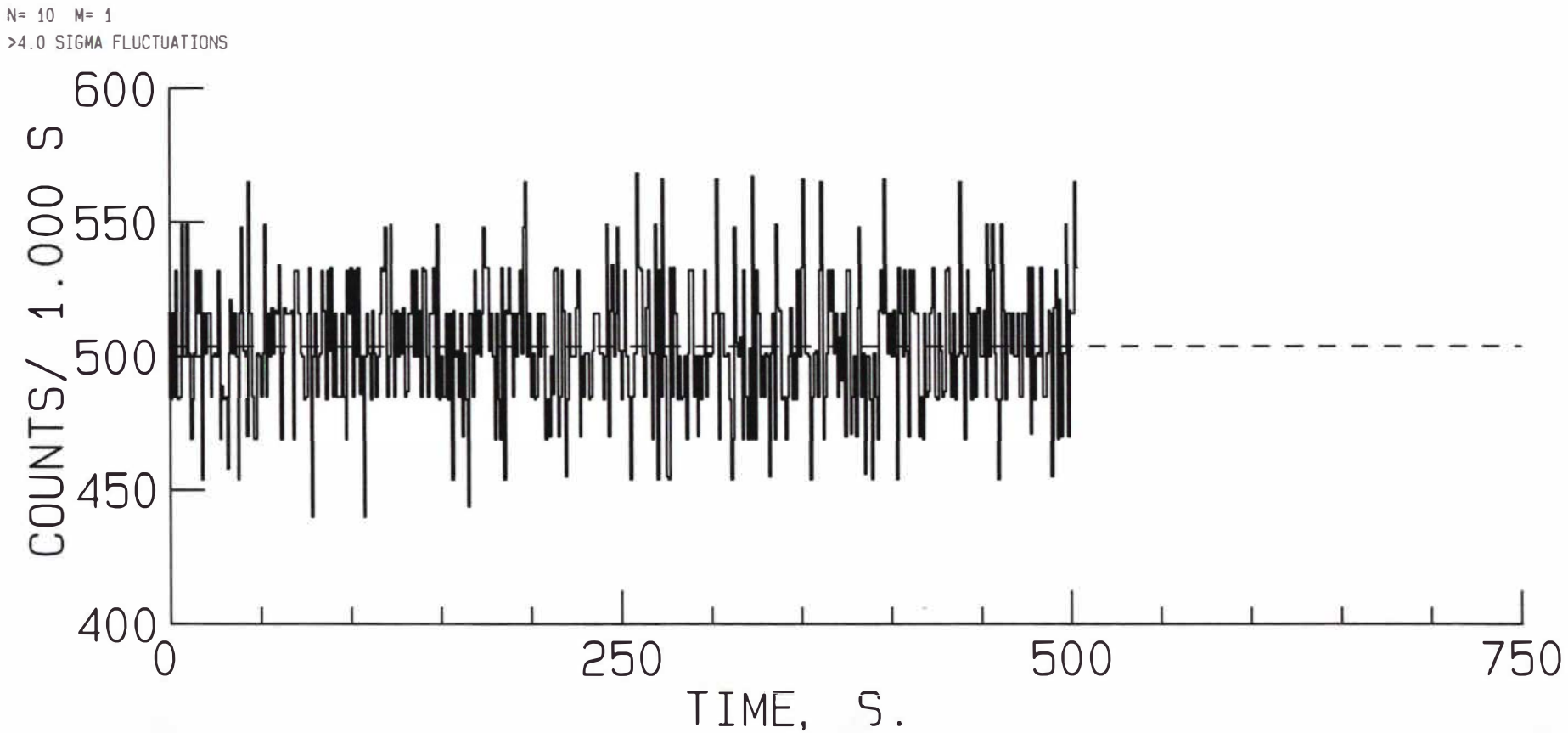
ULYSSES RT

28/ 5/96

4/12/93 50724.029 s

0.250 S INTERVALS REGROUPED BY 4

21- 143 keV



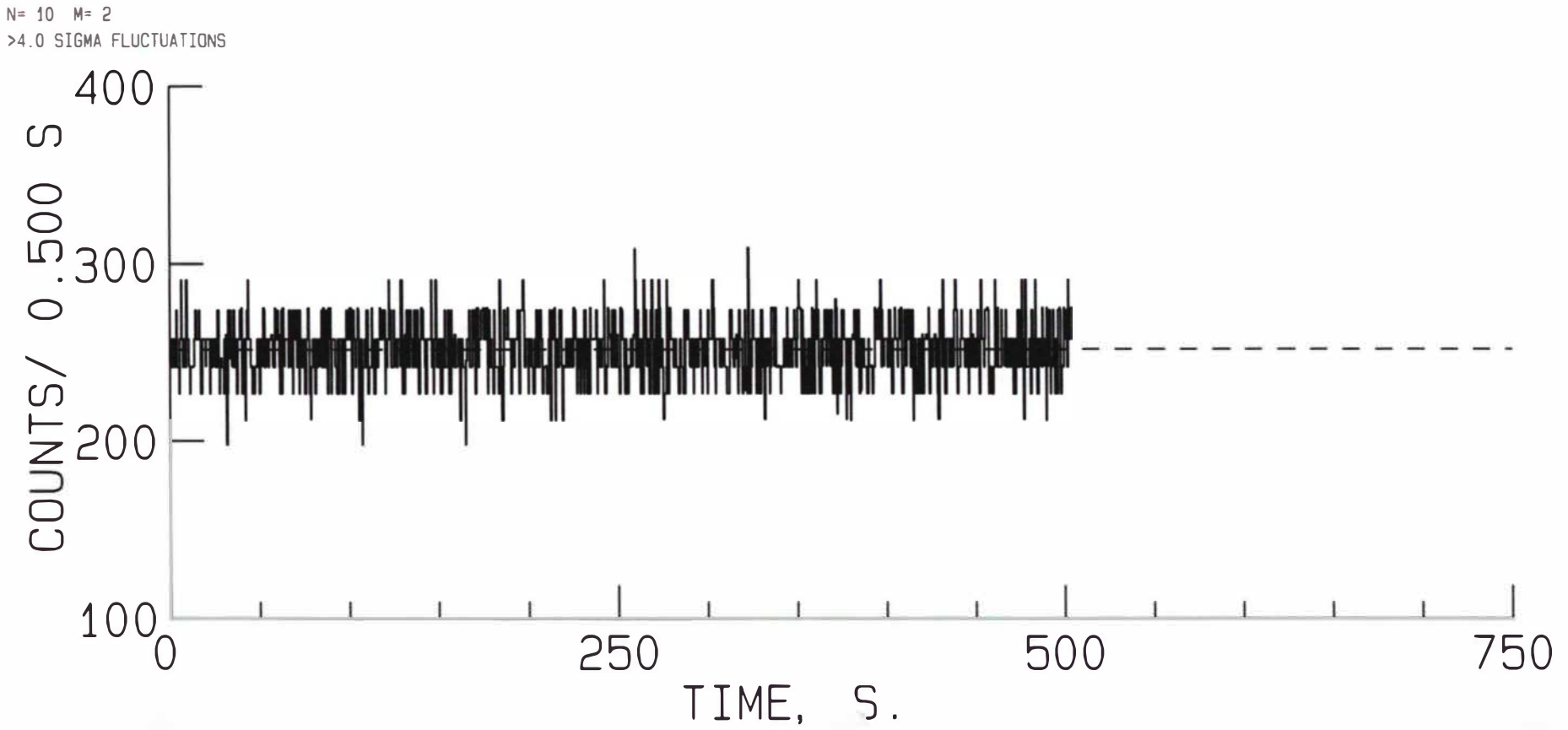
ULYSSES RT

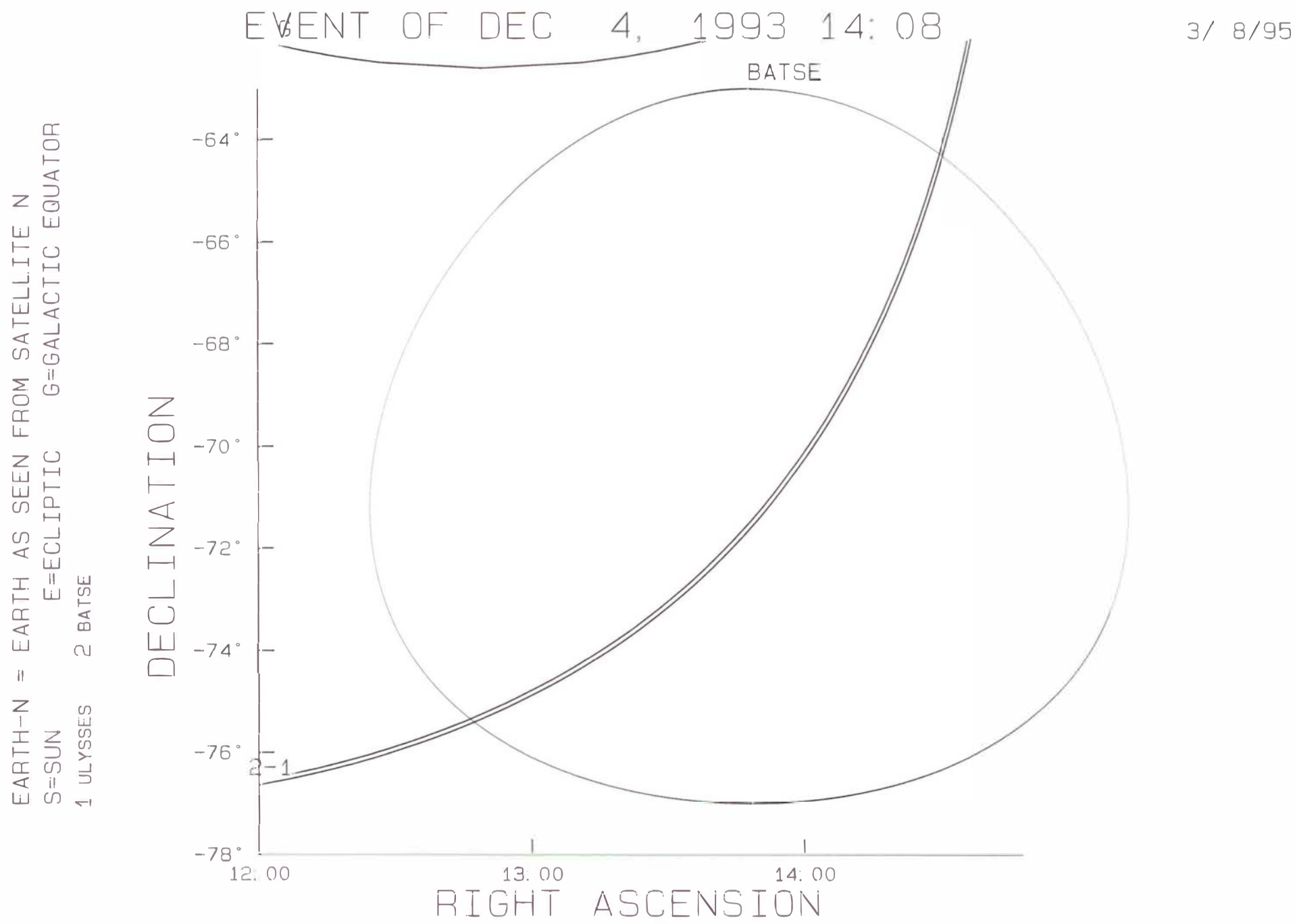
28/ 5/96

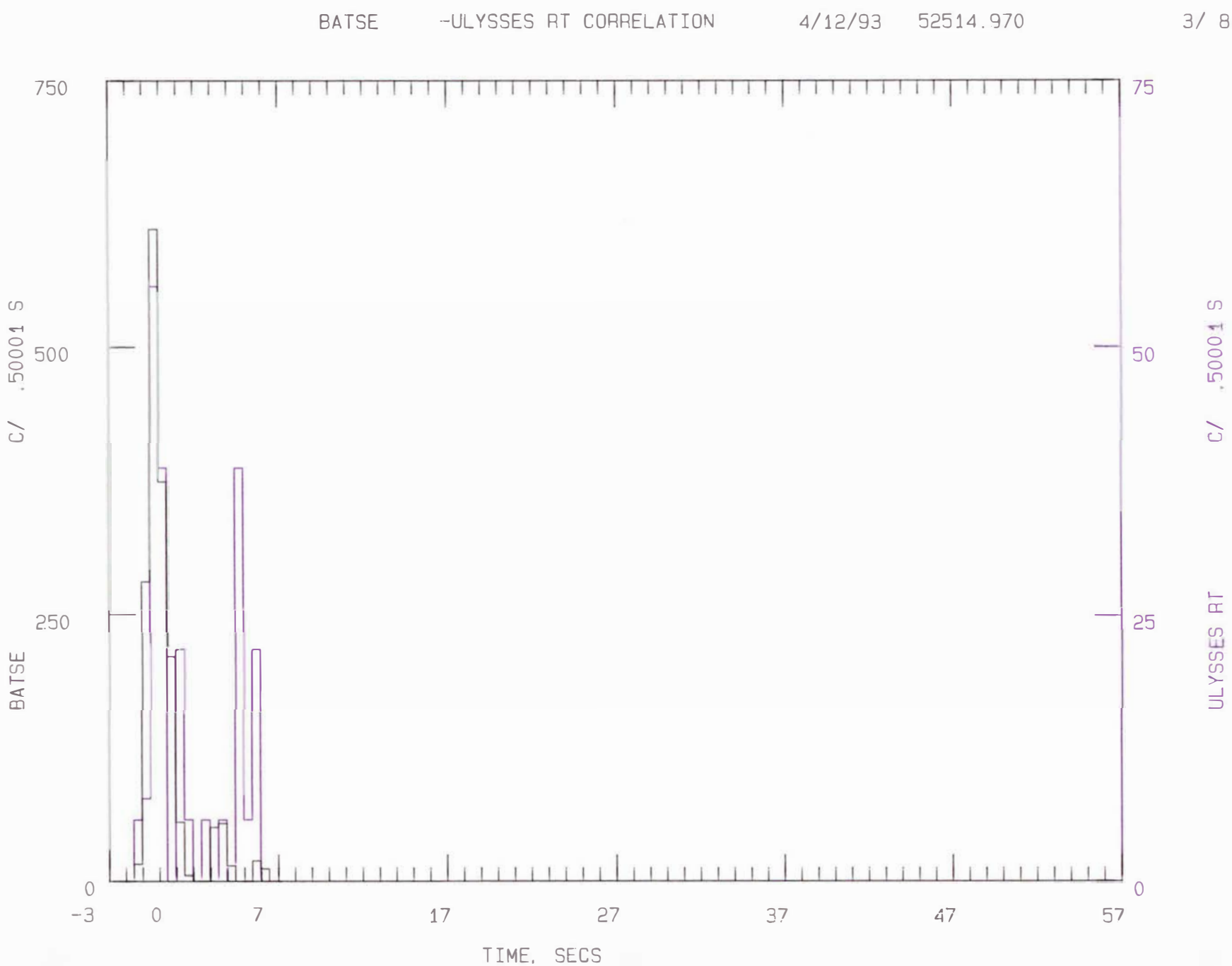
4/12/93 50724.029 s

0.250 S INTERVALS REGROUPED BY 2

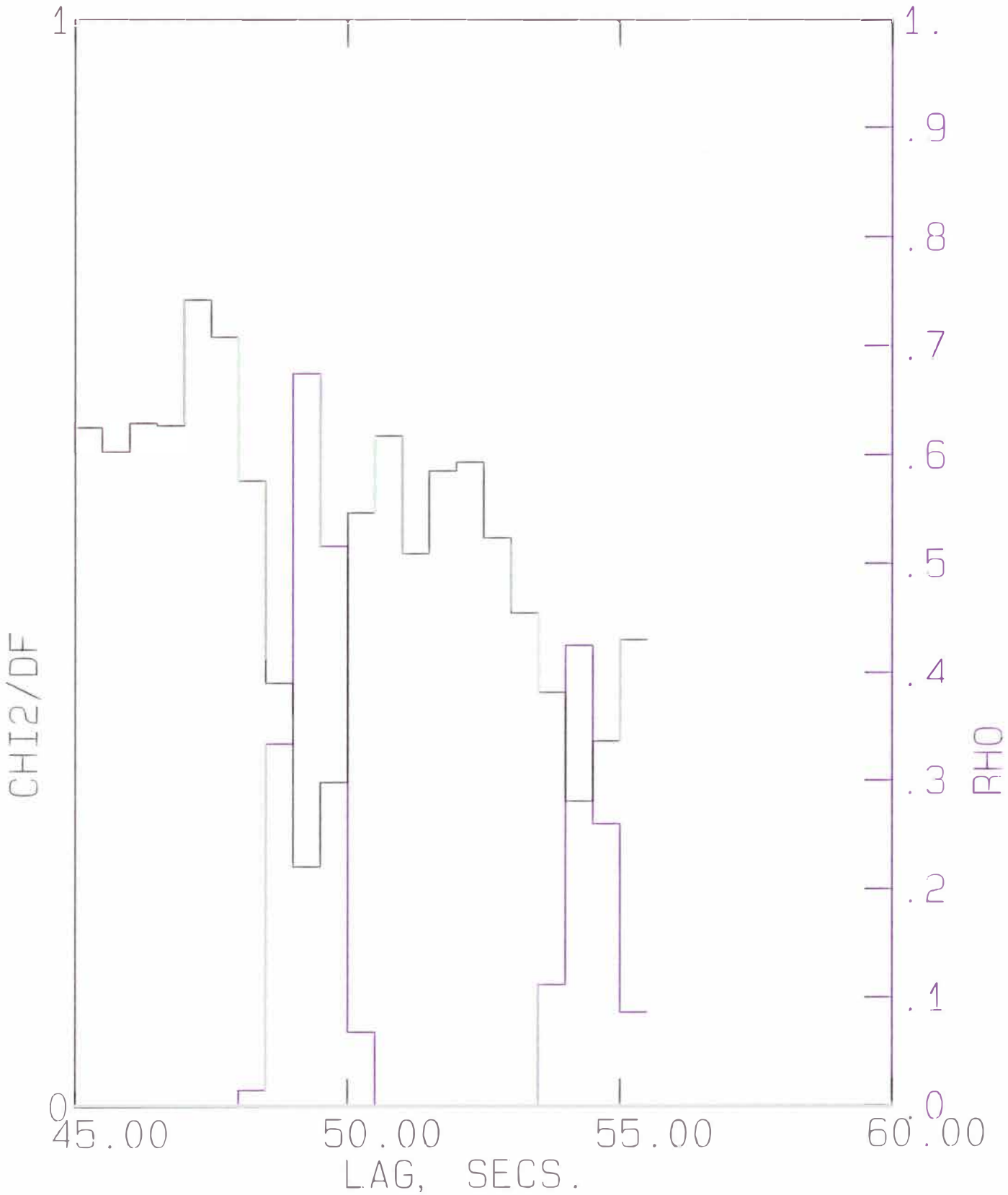
21- 143 keV

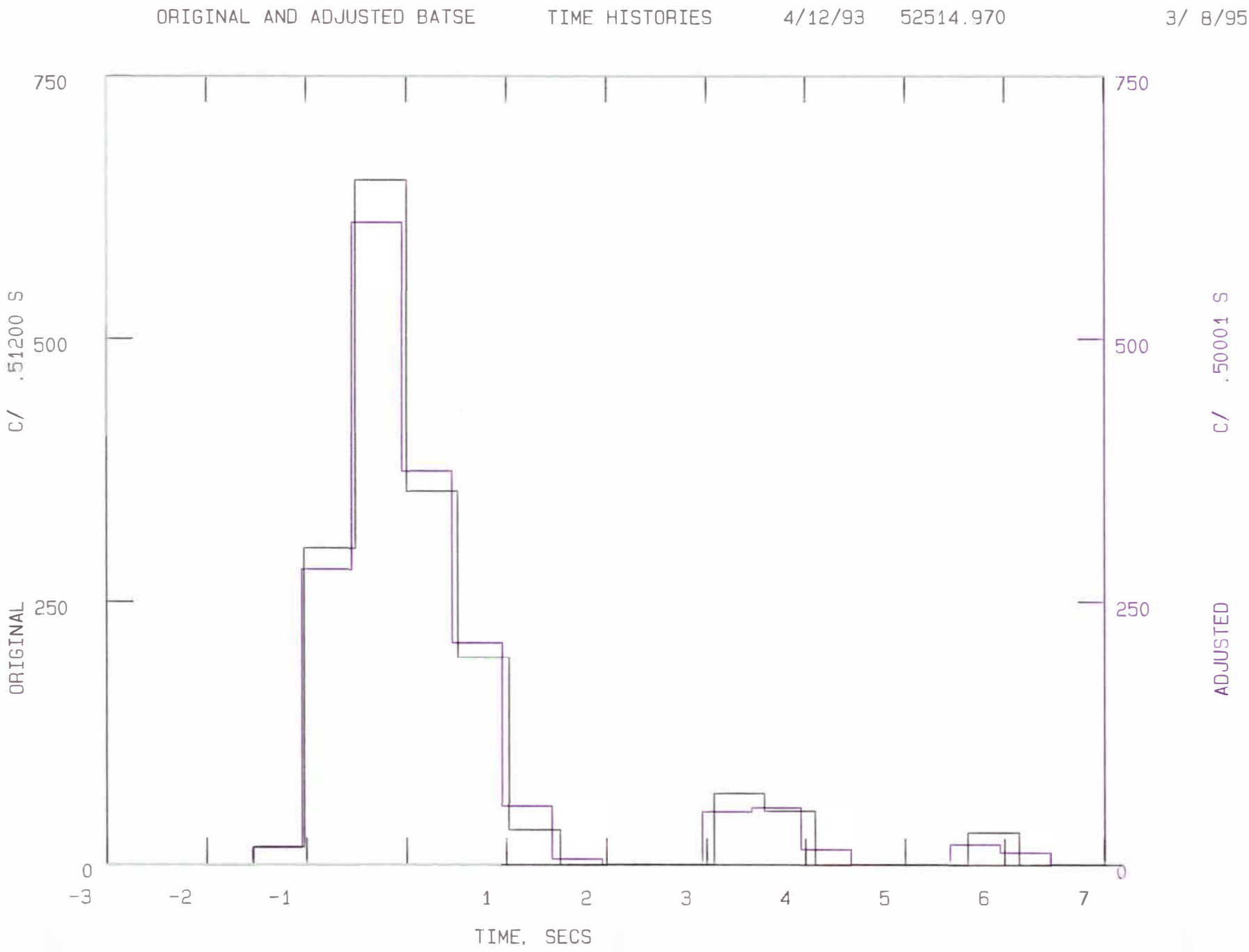



EVENT OF DEC 4, 1993 14:08
3/ 8/95
BATSE
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE
DECLINATION
-64°
-66°
-68°
-70°
-72°
-74°
-76°
-78°
2
1
12.00
13.00
14.00
RIGHT ASCENSION


BATSE -ULYSSES RT CORRELATION 4/12/93 52514.970 3/ 8/95
750
500
250
0
75
50
25
0
C/ .50001 S
BATSE
C/ .50001 S
ULYSSES RT
-3
0
7
17
27
37
47
57
TIME, SECS

BATSE -ULYSSES RT CORRELATION 4/12/93 52514.970



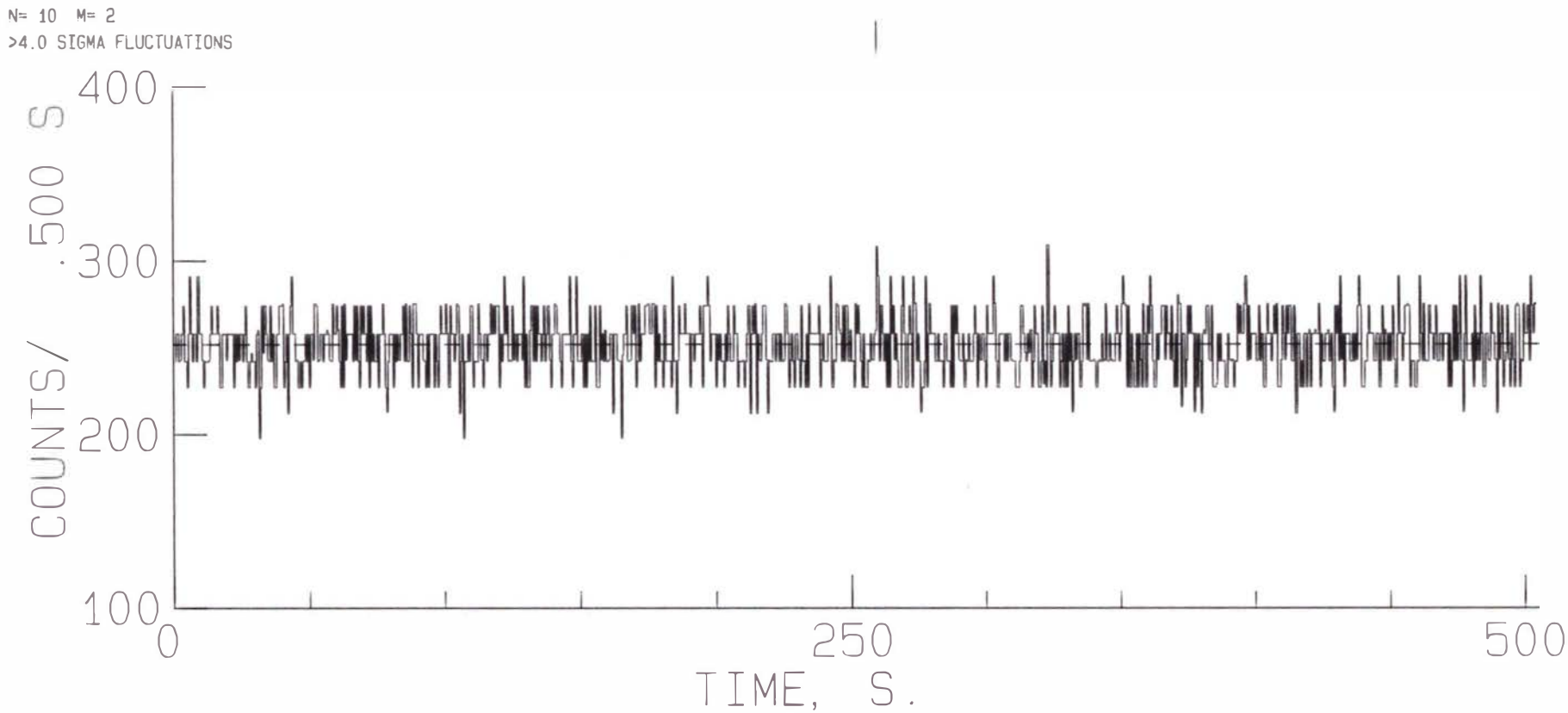

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 4/12/93 52514.970 3/ 8/95
750
500
250
0
ORIGINAL C/ .51200 S
750
500
250
0
ADJUSTED C/ .50001 S
-3
-2
-1
1
2
3
4
5
6
7
TIME, SECS

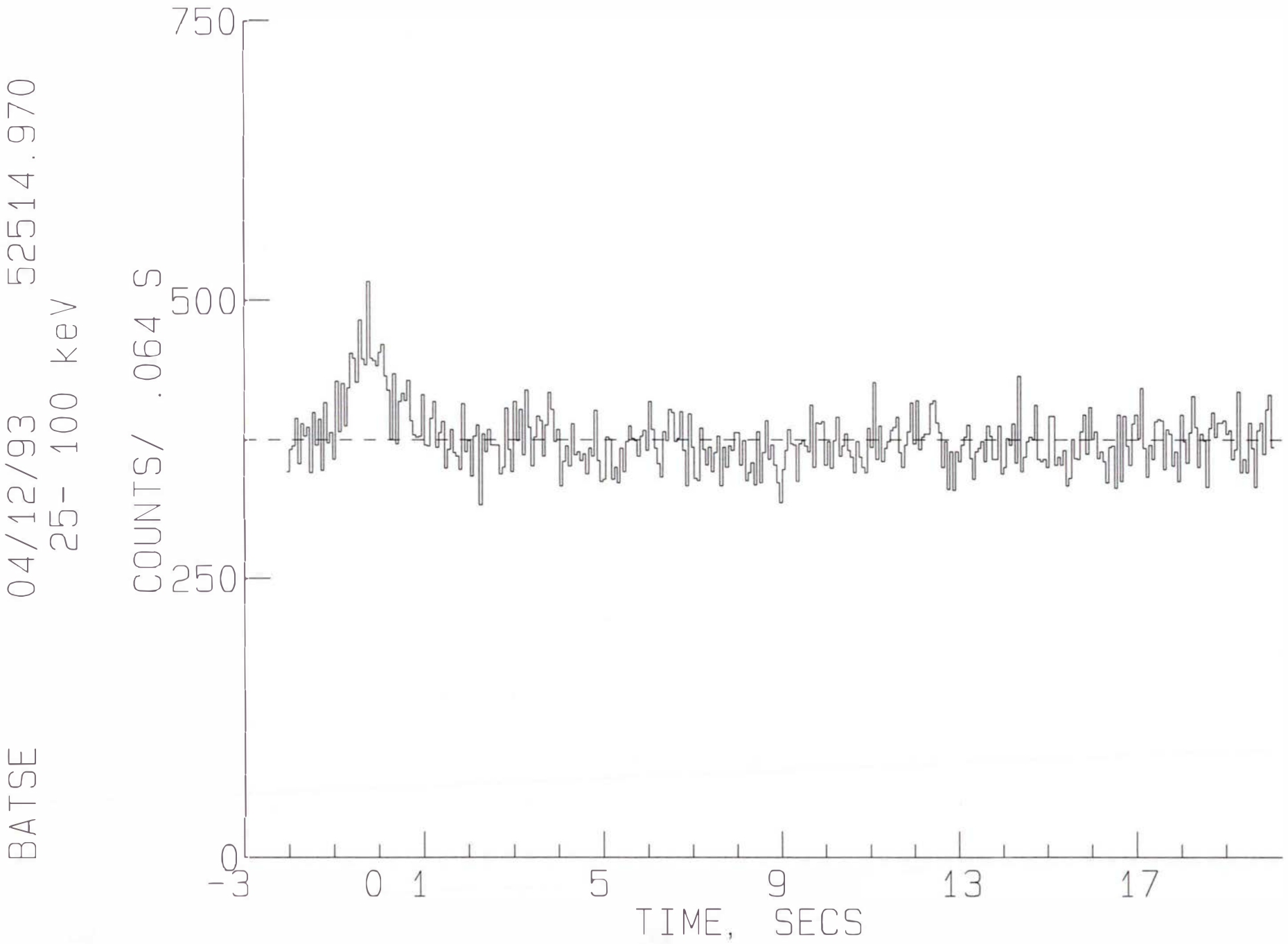
ULYSSES RT 3/ 8/95

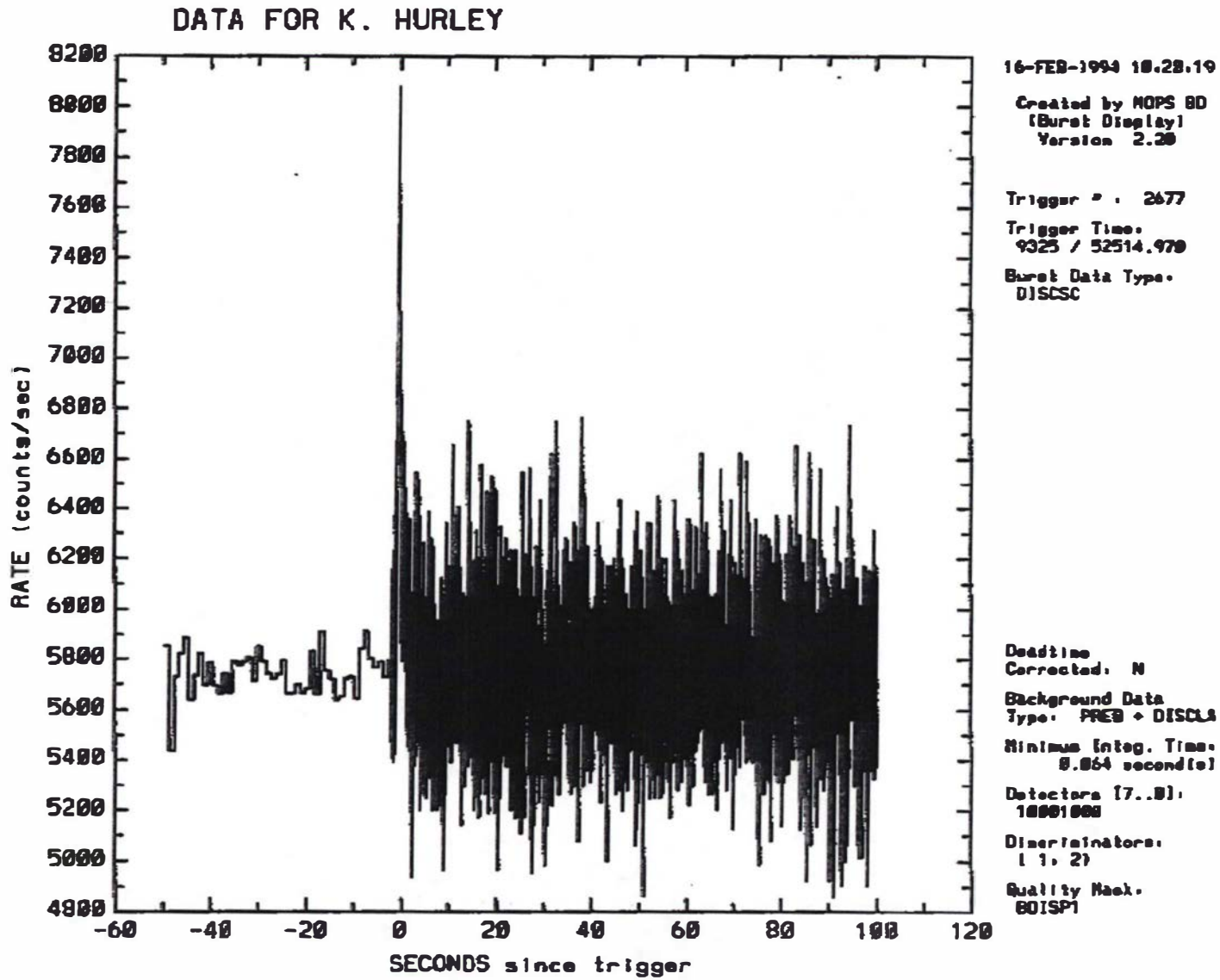
4/12/93 50724.027 s

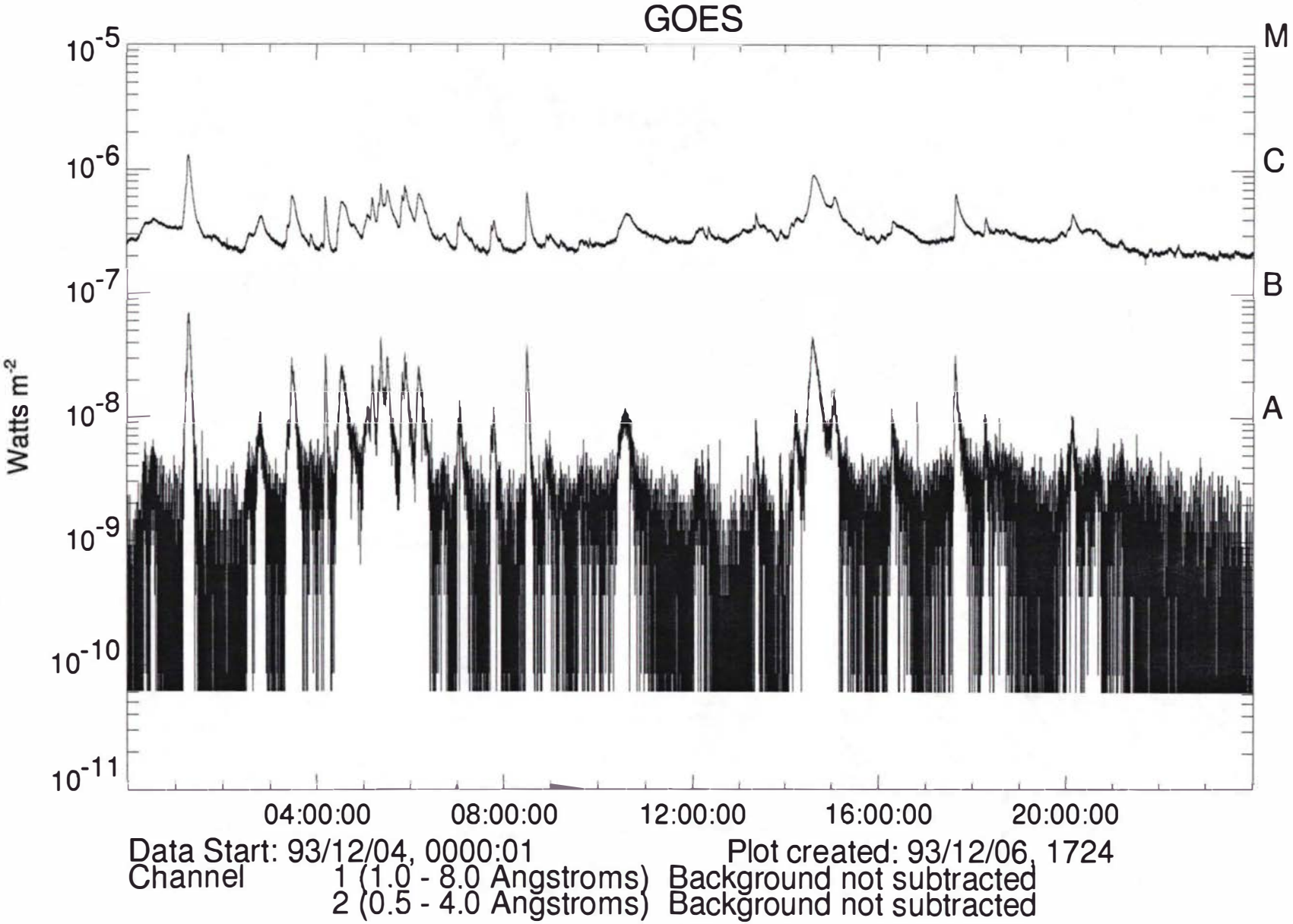
.250 S INTERVALS REGROUPED BY 2

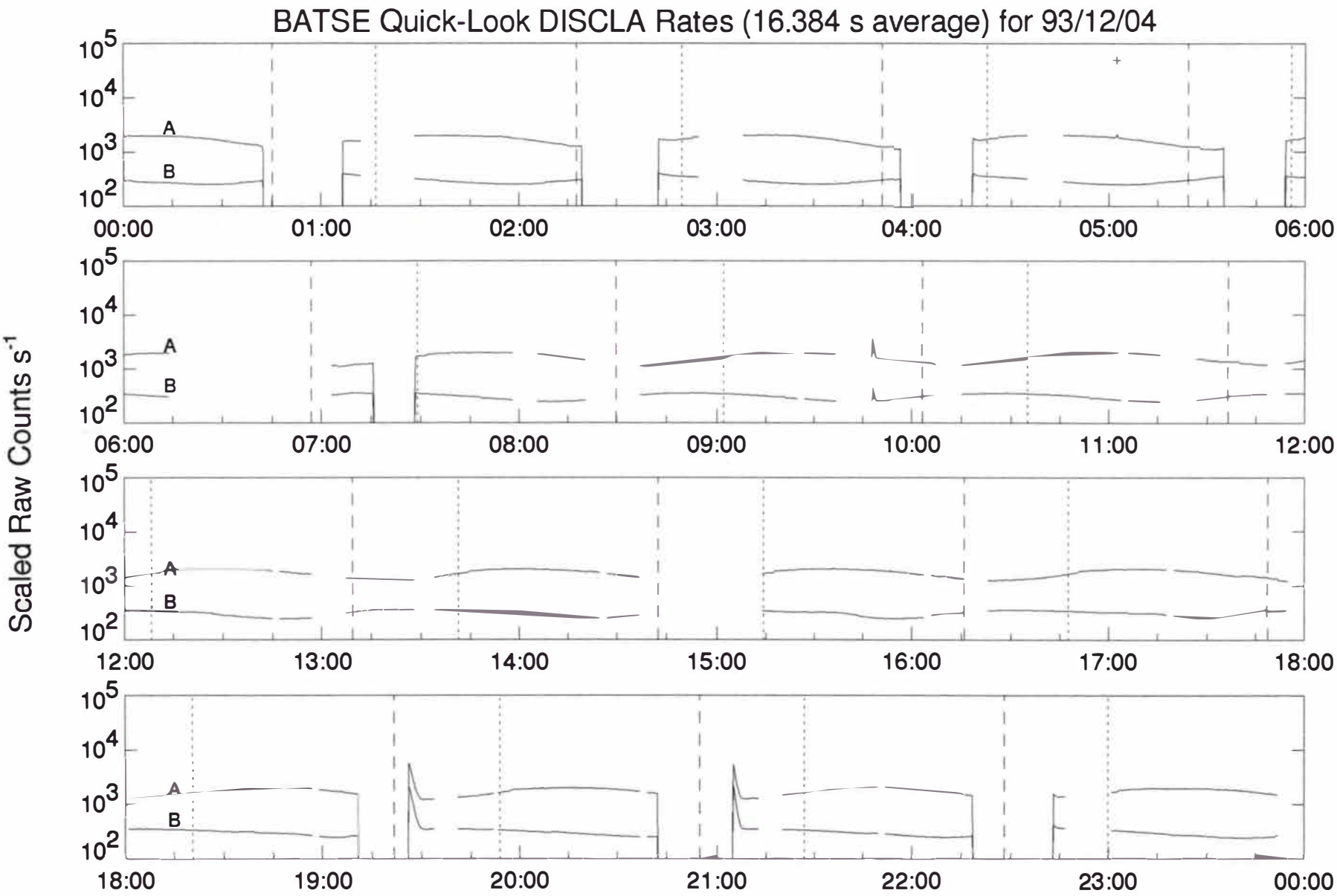
21- 143 keV




BATSE 04/12/93 525514.970
25- 100 keV
COUNTS/ .064 S
750
500
250
0
-3
0 1
5
9
13
17
TIME, SECS

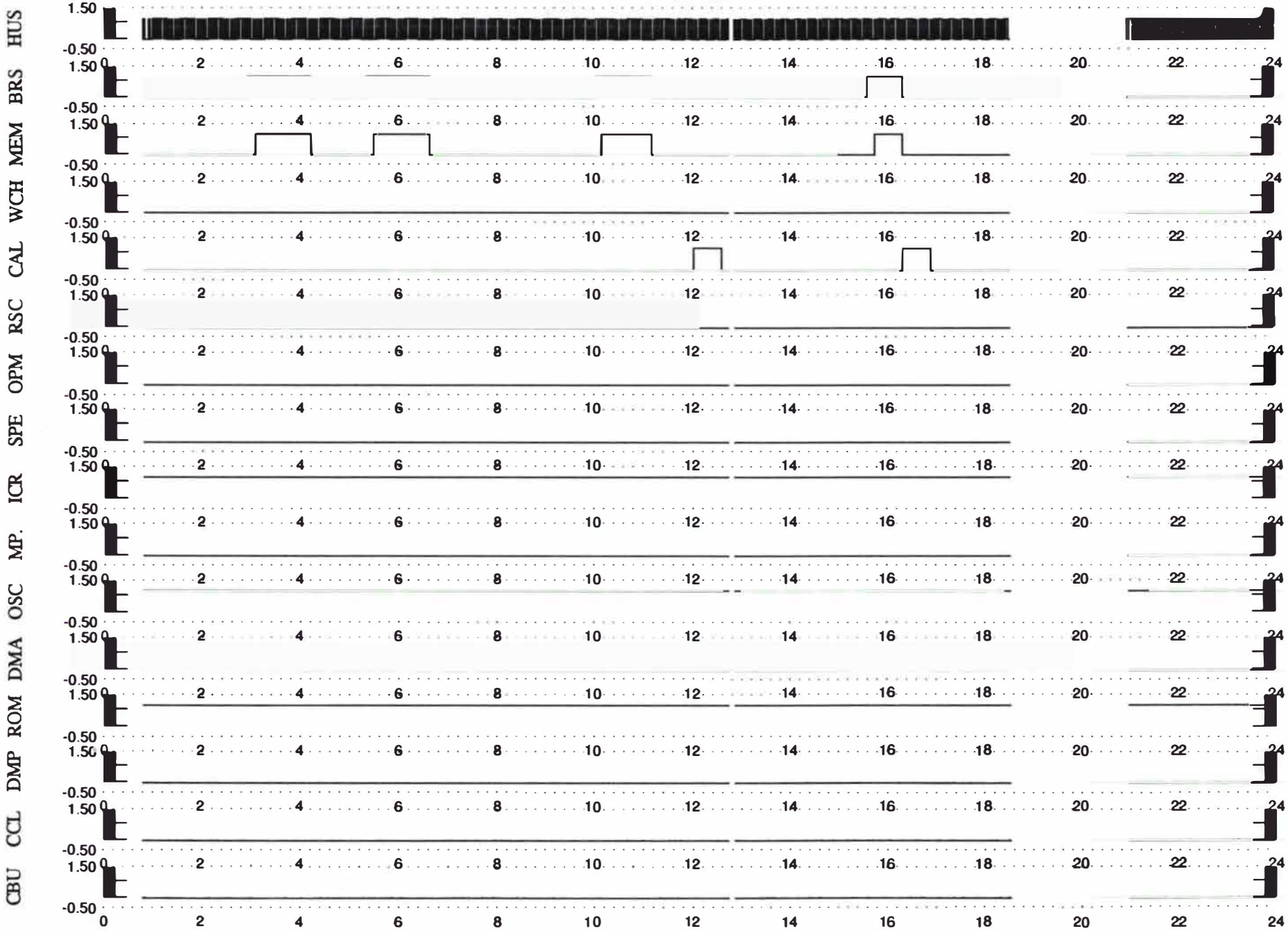

DATA FOR K. HURLEY
RATE (counts/sec)
8200
8000
7800
7600
7400
7200
7000
6800
6600
6400
6200
6000
5800
5600
5400
5200
5000
4800
-60
-40
-20
0
20
40
60
80
100
120
SECONDS since trigger
16-FEB-1994 10.28.19
Created by MOPS BD
(Burst Display)
Version 2.20
Trigger # : 2677
Trigger Time:
9325 / 52514.970
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLS
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
10001000
Discriminators:
(1, 2)
Quality Mask:
BDISP1


GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/04, 0000:01
Plot created: 93/12/06, 1724
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/04
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/06, 1723 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 338, year 1993 to day 338, year 1993 1/20/94

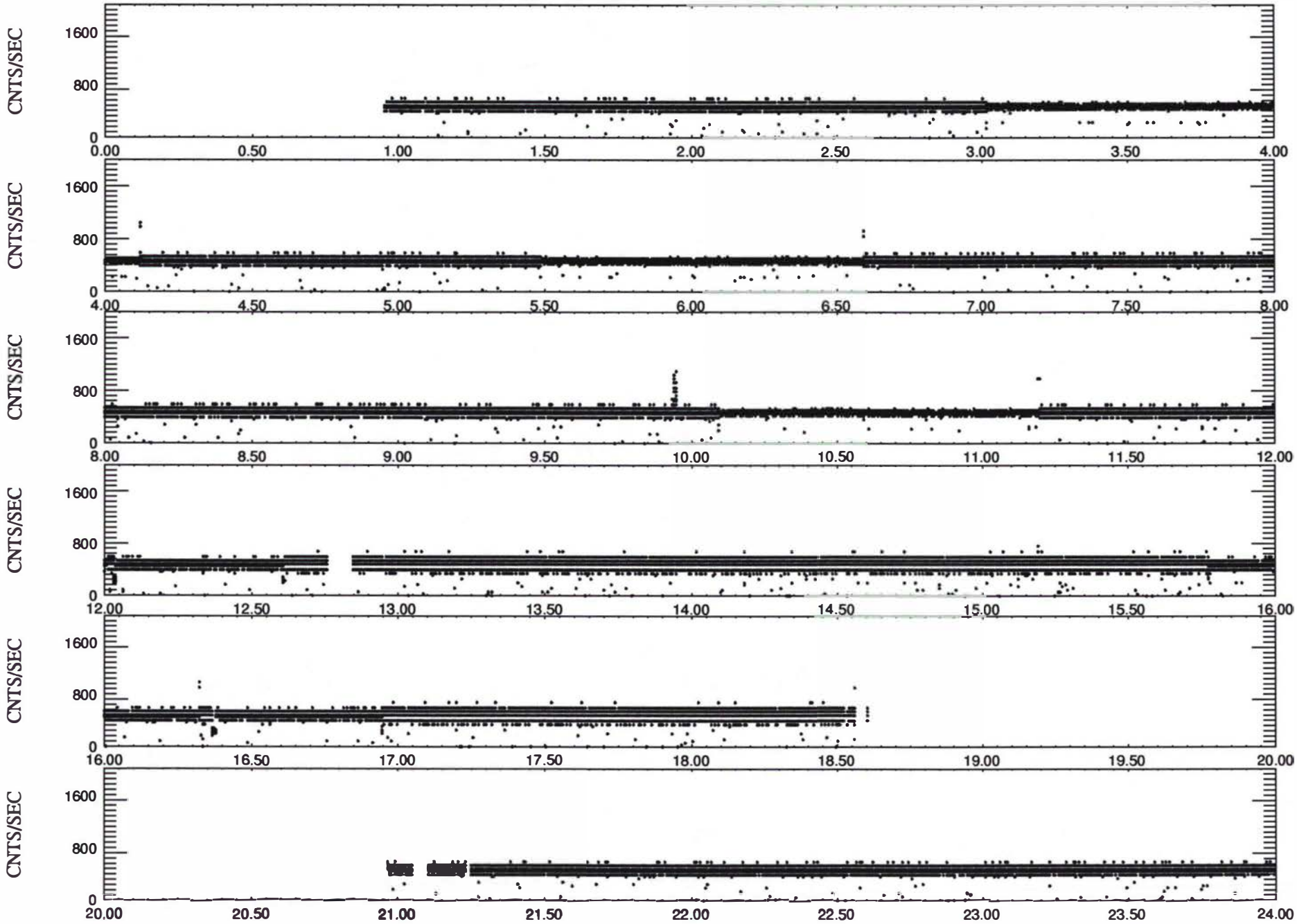
BURST NUMBER 4 - 7



UNIVE \L TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 338, year 1993 to day 338, year 1993 1/20/94

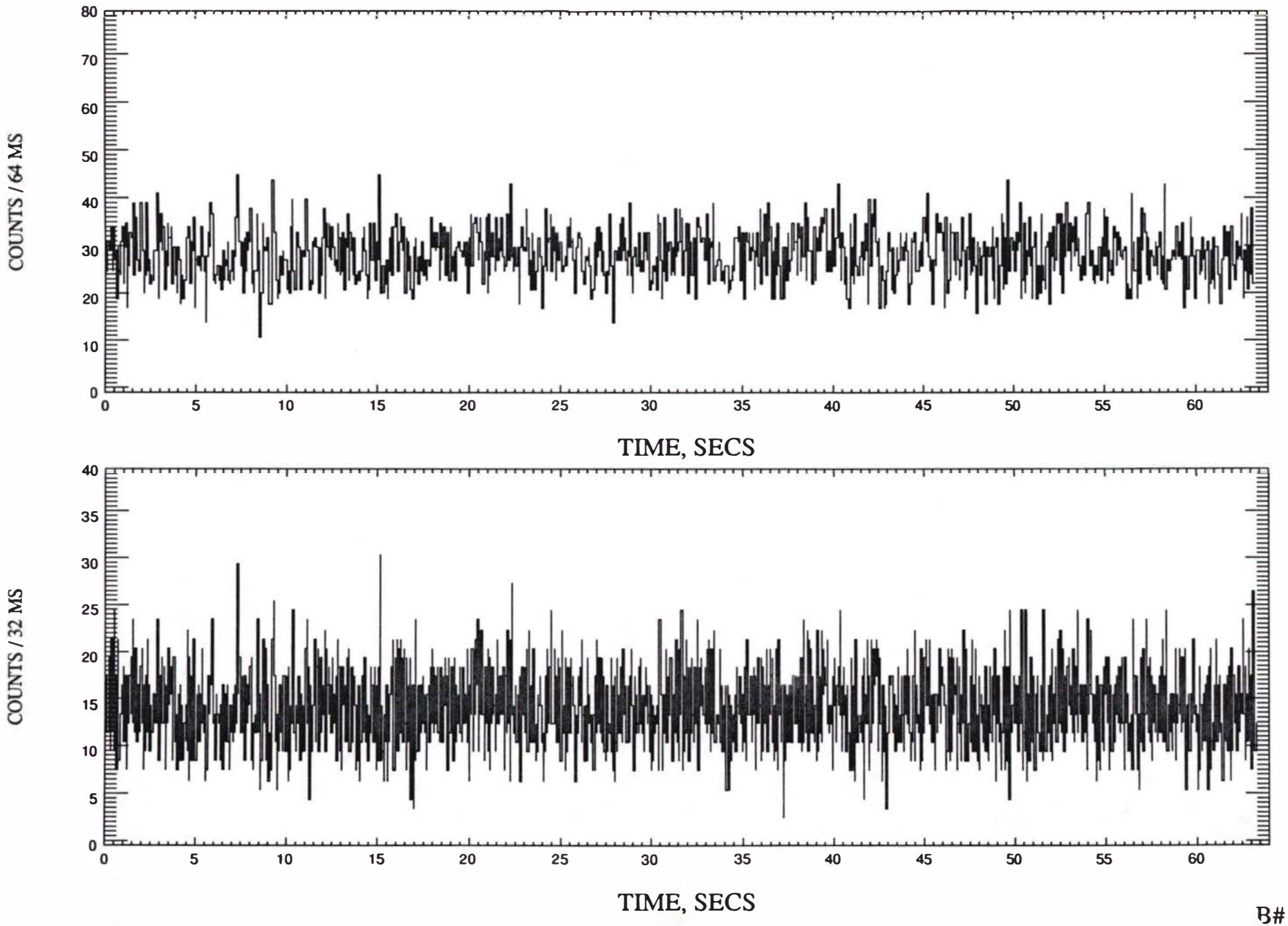
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 338, year 1993 1/20/94

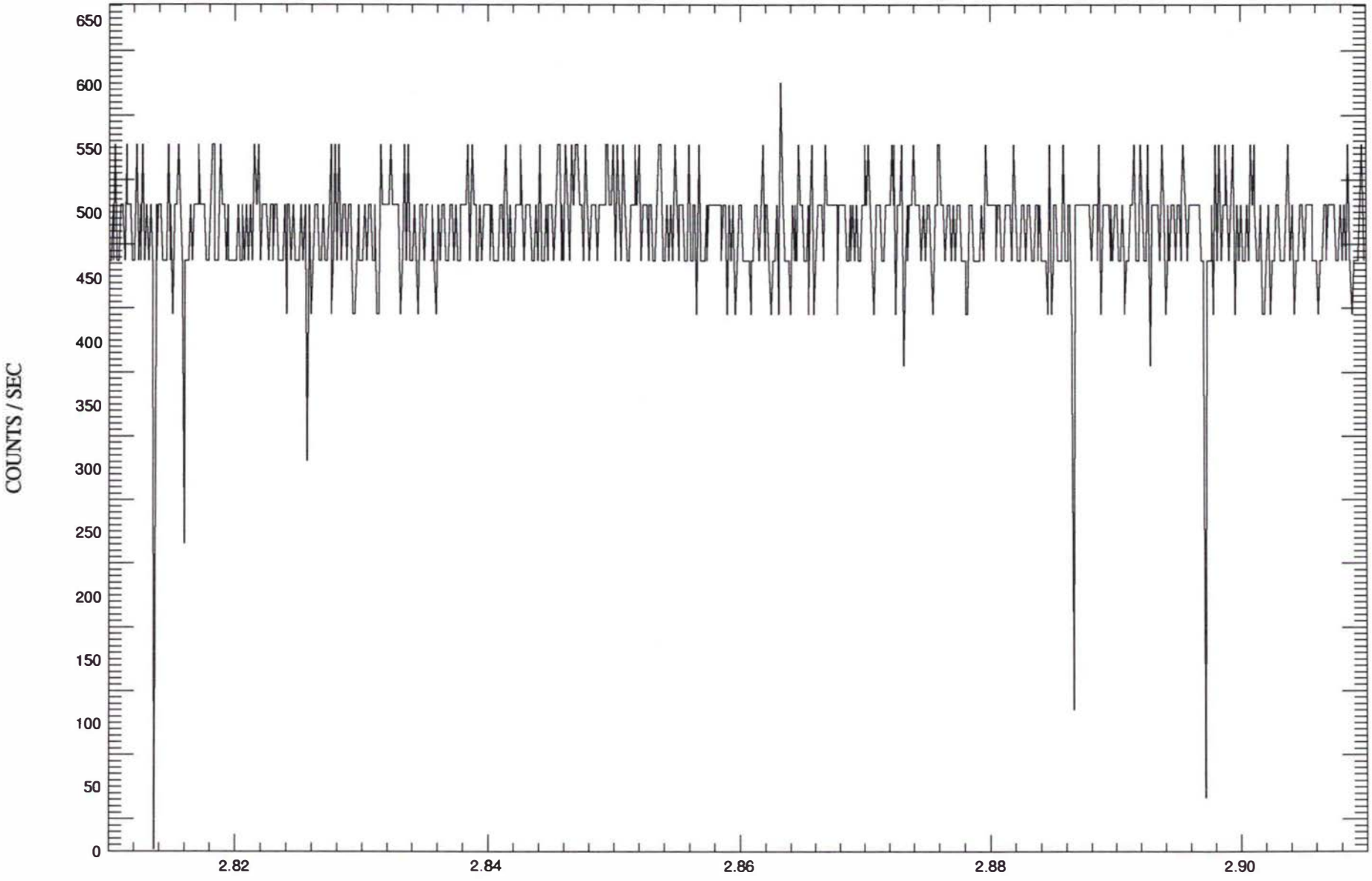
Burst Counter 4 at UT= 2.863443209330 h=10308.396 s 02:51:48.396



B# 1

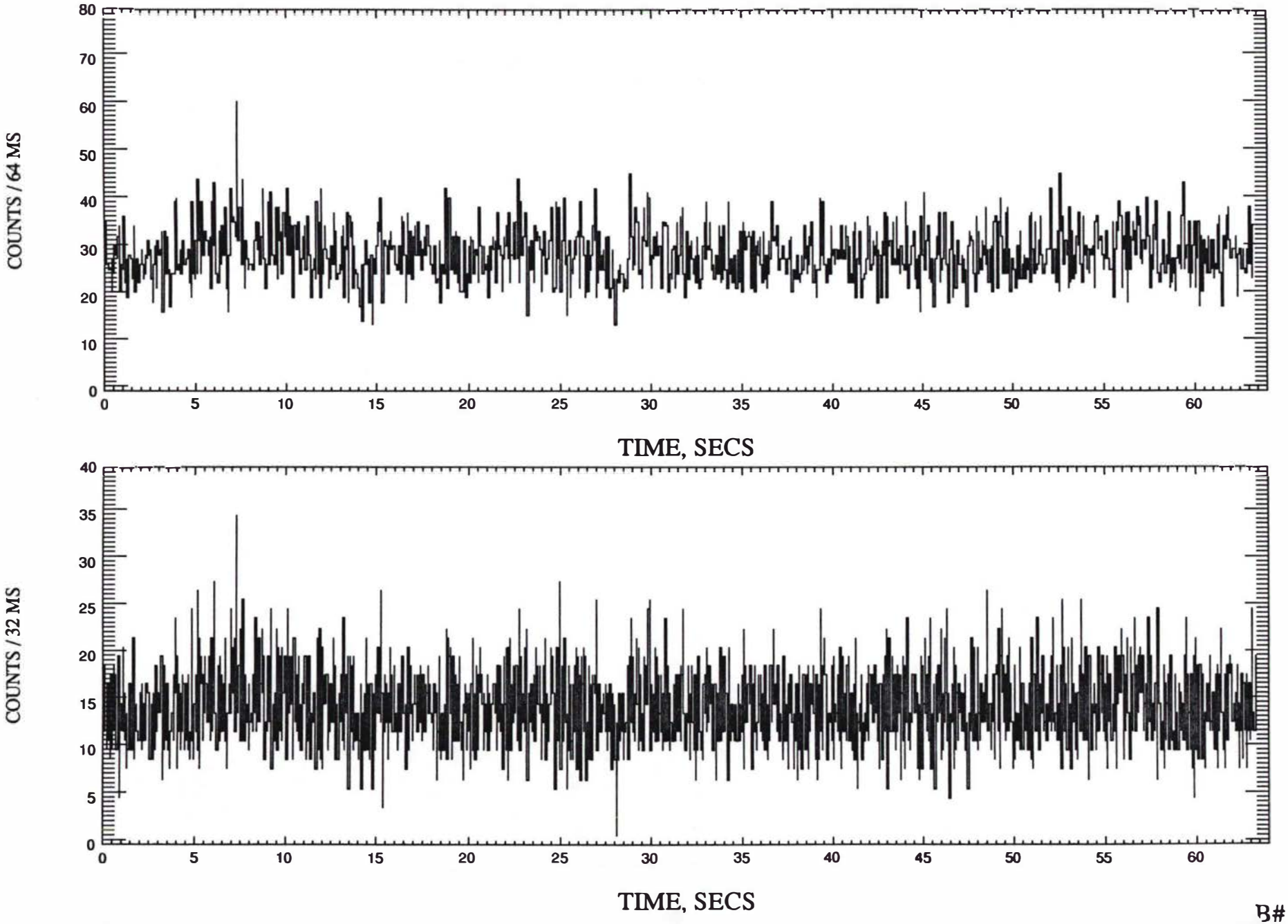
HUS 2A, MODE 1, NOT AVERAGED QEDR day 338, year 1993 to day 338, year 1993 12/6/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 338, year 1993 1/20/94

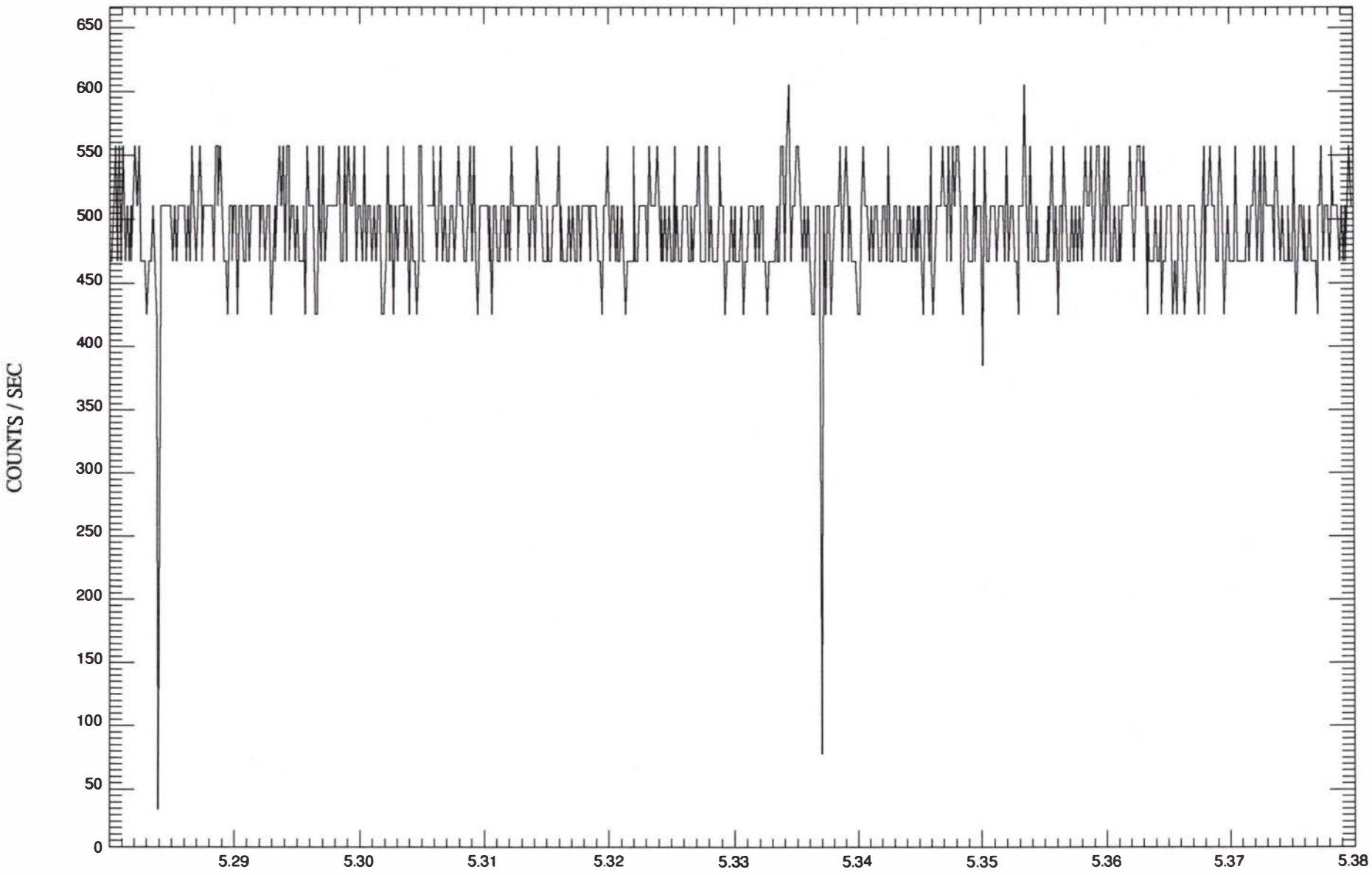
Burst Counter 5 at UT= 5.334452688429 h=19204.030 s 05:20:04.030



B# 2

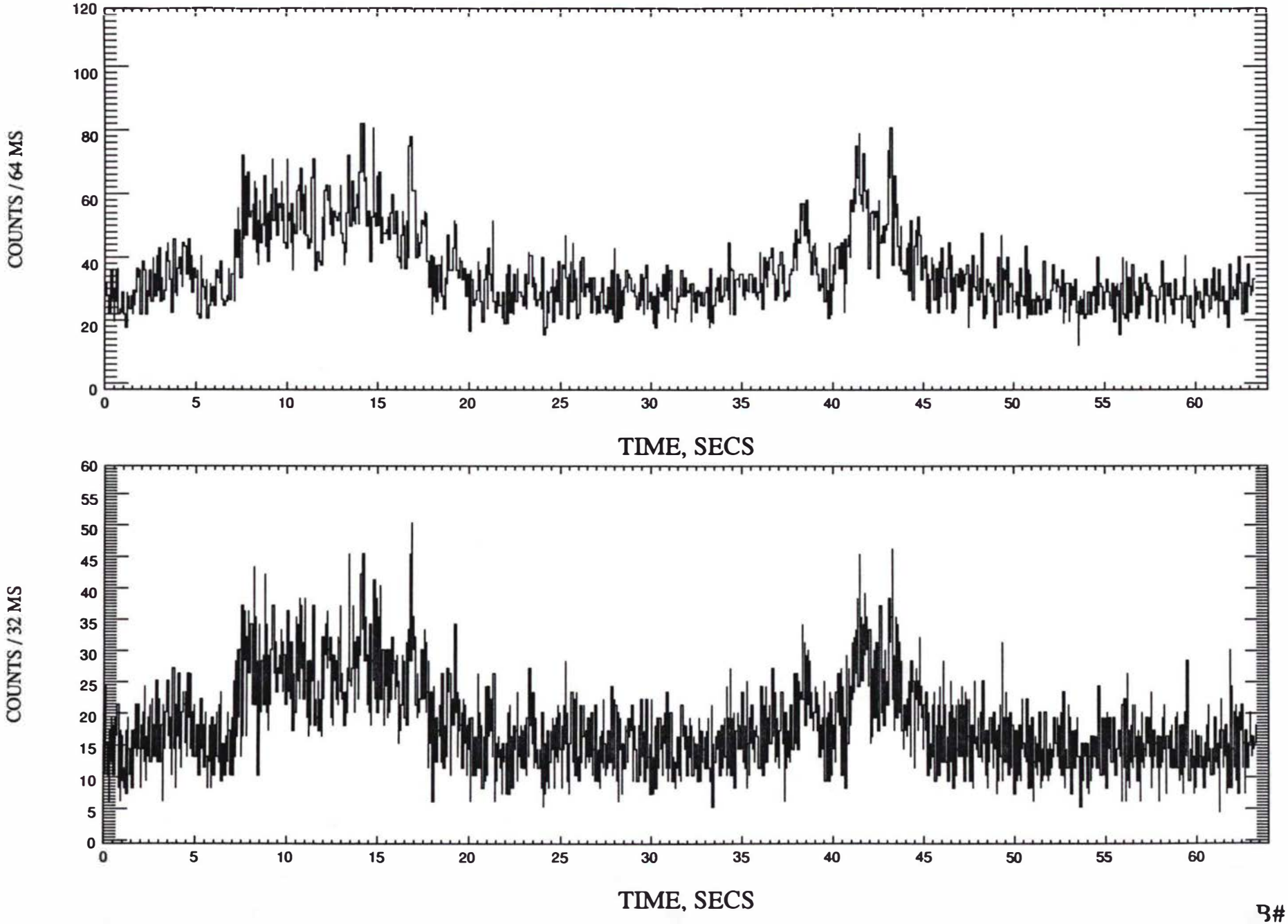
HUS 2A, MODE 1, NOT AVERAGED QEDR day 338, year 1993 to day 338, year 1993 12/6/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 338, year 1993 1/20/94

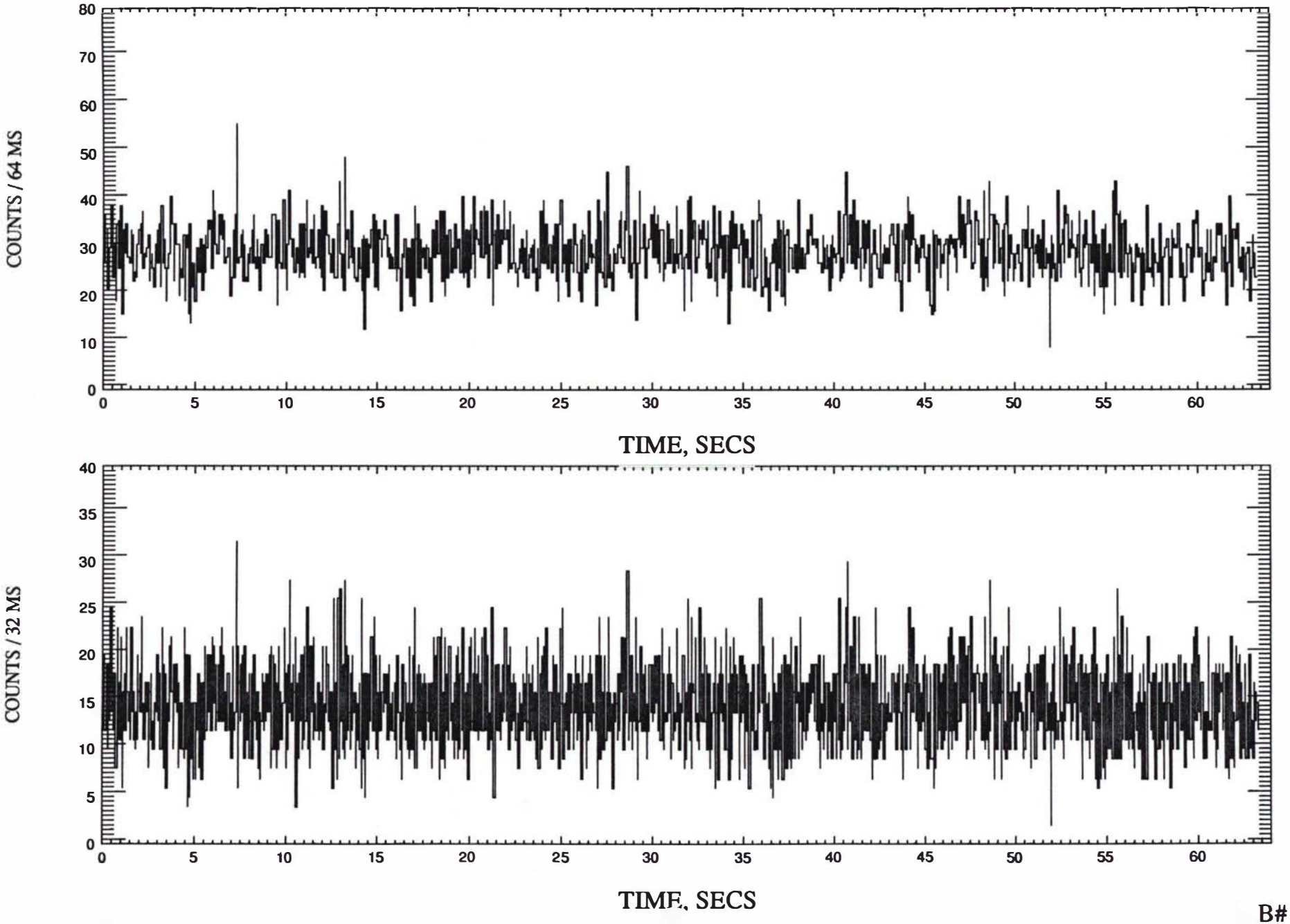
Burst Counter 6 at UT= 9.934349229601 h=35763.657 s 09:56:03.657



B# 3

HUS 2A TRIGGERED DATA EDR day 338, year 1993 1/20/94

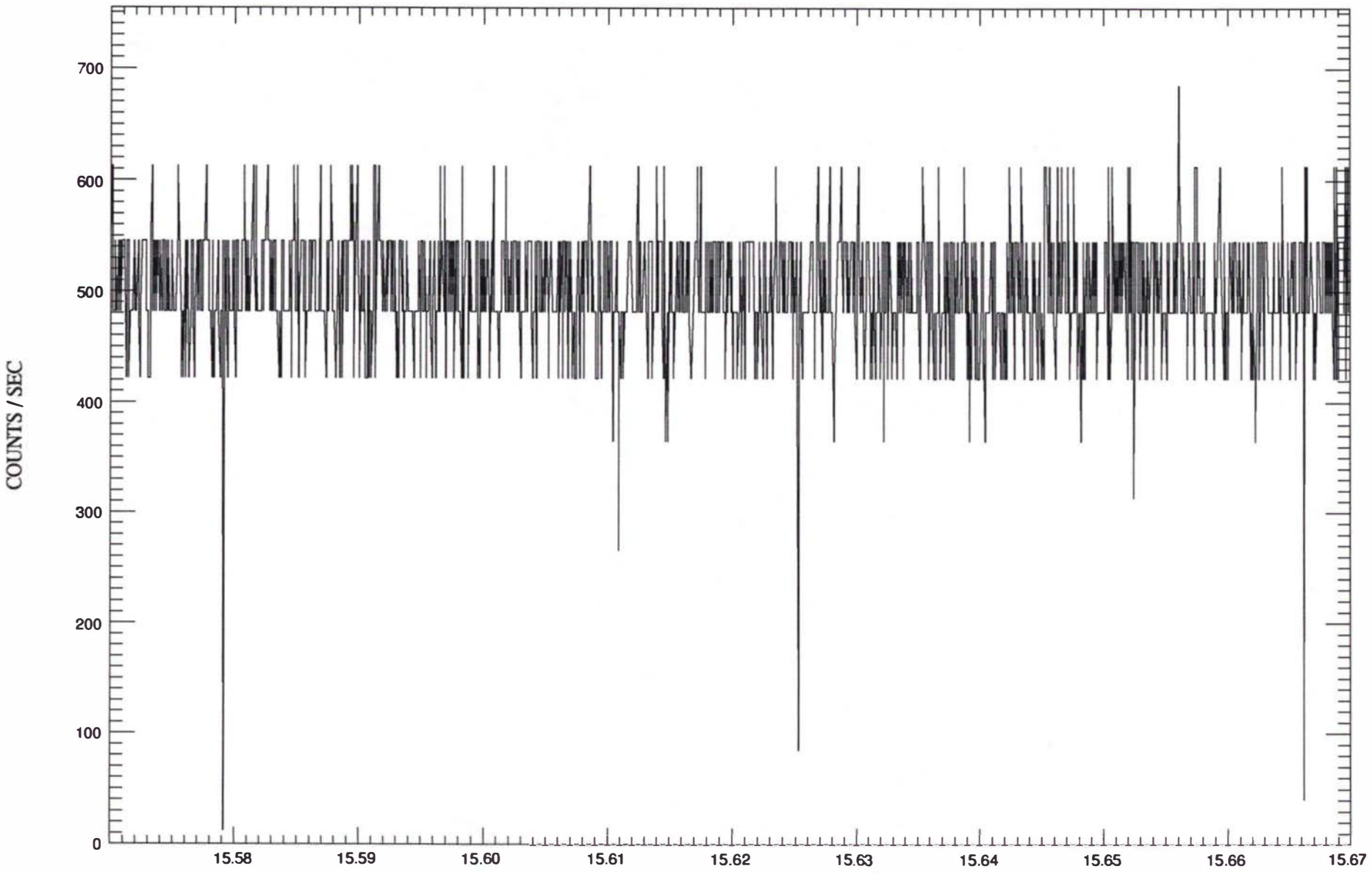
Burst Counter 7 at UT=15.617635409037 h=56223.487 s 15:37:03.487



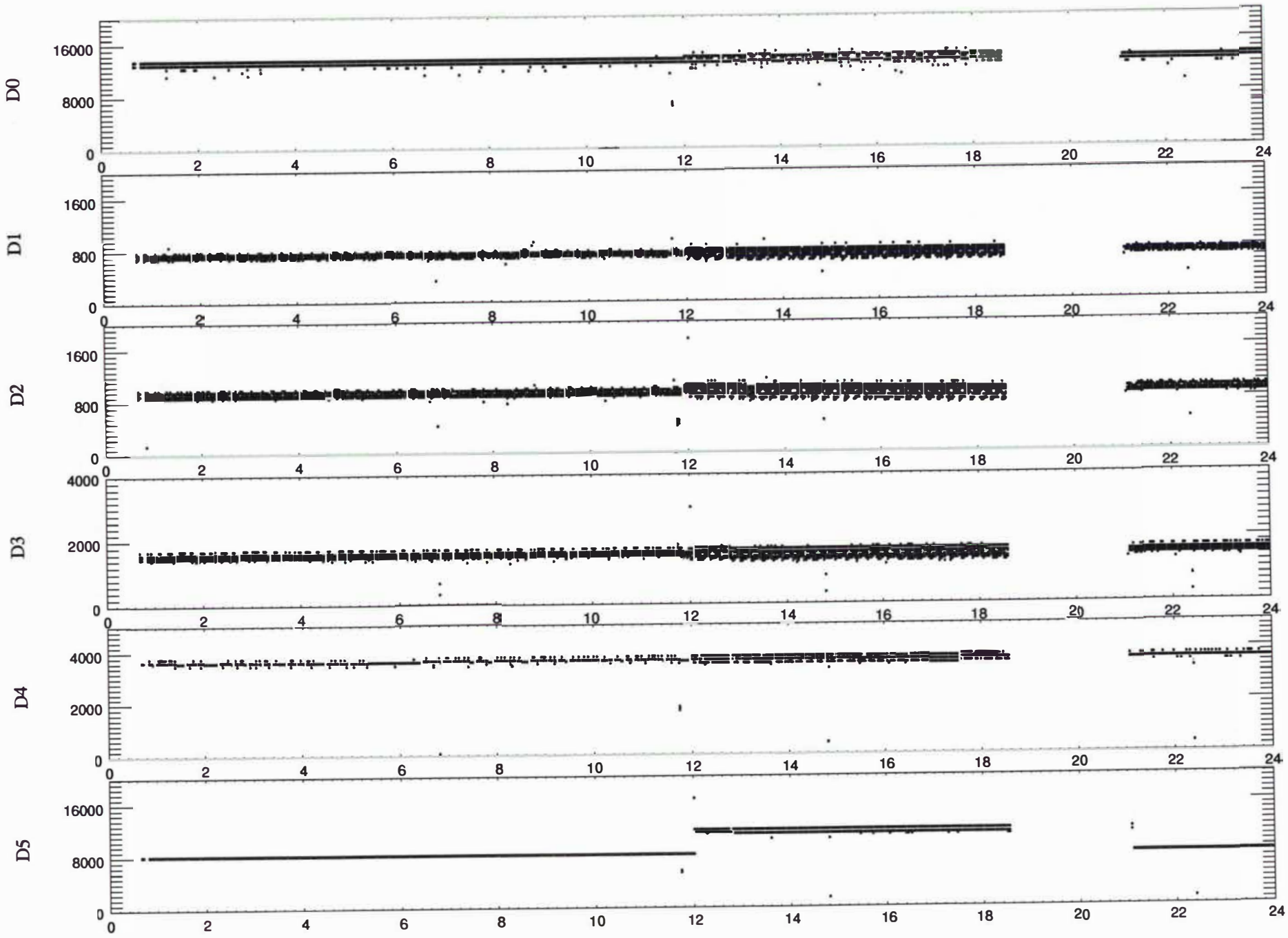
B# 4

HUS 2A, MODE 1, NOT AVERAGED QEDR day 338, year 1993 to day 338, year 1993 12/6/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 338, year 1993 to day 338, year 1993 12/6/93



From MALLOZZI@ssl.msfc.nasa.gov Tue Dec 7 08:03:47 1993
Date: Tue, 7 Dec 1993 10:06:59 -0600 (CST)
From: MALLOZZI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2678
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2678
EVENT OF 1993 DEC 5 DAY OF YEAR=339
EVENT CROSSING TIME AT BATSE : 38575. S. OR 10:42:55.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 246.000 -47.000
BATSE PEAK COUNTING RATE: 3500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 5/12/ 93 IS:
RA= 166.509 DEC= -34.815 DIST= 4.122 AU
BATSE-ULYSSES DISTANCE = 616716147. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=121.31 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1069.03 SECS.
CROSSING TIME AT ULYSSES IS 37506. S. OR 10:25:05 +/- 338.90 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 5/12/ 93 IS:
RA= 257.745 DEC= -23.573 DIST= 2.447 AU
MARS-BATSE DISTANCE = 366117760. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=154.75 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1104.59 SECS.
CROSSING TIME AT MARS IS 37470. S. OR 10:24:30 +/- 73.66 SECONDS

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2678	931205	9326	38575	3500	246	-47

BATSE BURST TRIGGER

NO.: 02678

TIME: TJD=9326 SECONDS=38575

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=140.6 AZIMUTH=268.4 ERROR= DEGREES

COMMENTS:
SINGLE BROAD PEAK BURST OF DURATION APPROX. 40 SECONDS
SLIGHT EMISSION ABOVE 300 KEV

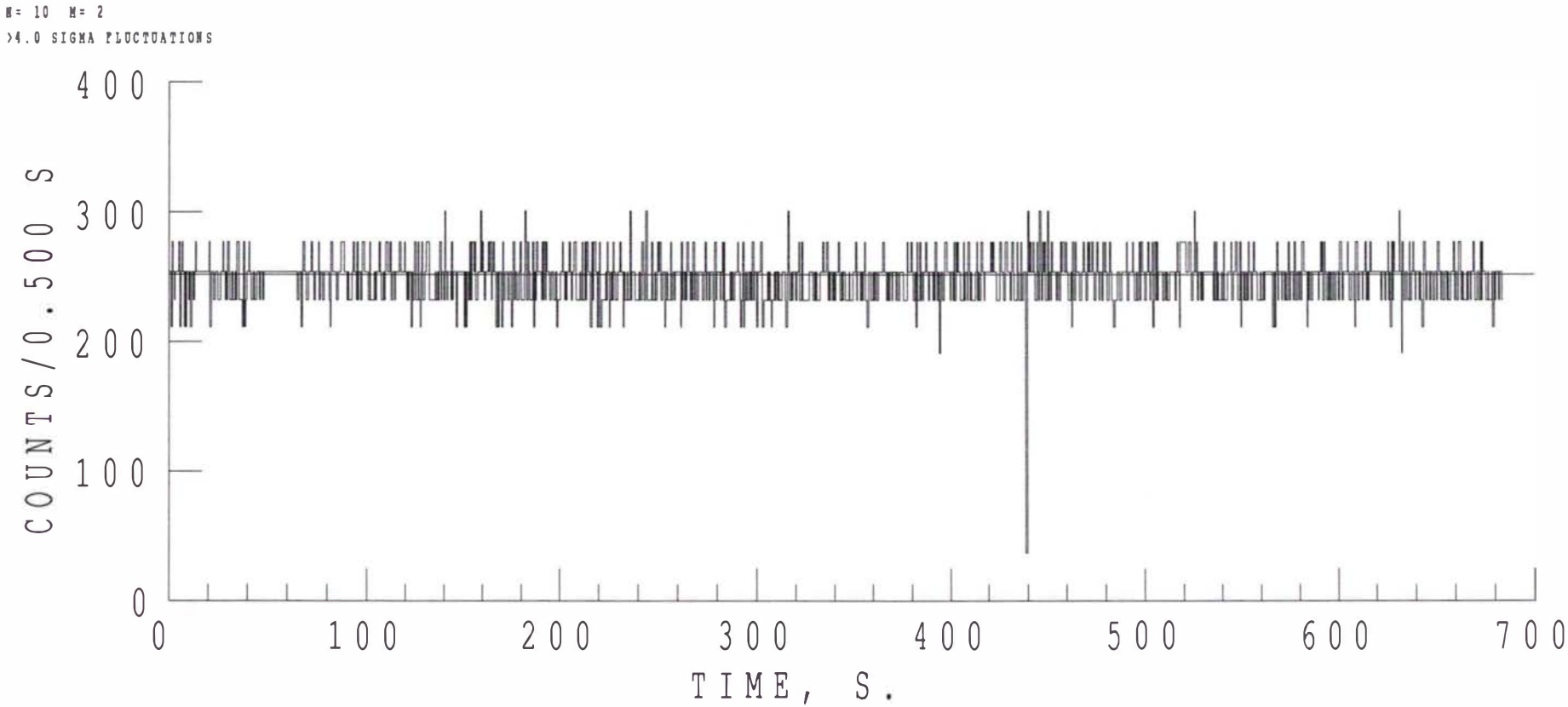
Batse # 2678

7/12/93

ULYSSES RT

5/12/93 37152.395 s

0- 0 keV



From MALLOZZI@ssl.msfc.nasa.gov Tue Dec 7 08:55:41 1993
Date: Tue, 7 Dec 1993 10:58:51 -0600 (CST)
From: MALLOZZI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2679
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2679
EVENT OF 1993 DEC 5 DAY OF YEAR=339
EVENT CROSSING TIME AT BATSE : 53991. S. OR 14:59:51.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 20.000 67.000
BATSE PEAK COUNTING RATE: 77000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 5/12/ 93 IS:
RA= 166.512 DEC= -34.860 DIST= 4.119 AU
BATSE-ULYSSES DISTANCE = 616257393. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 37.48 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1631.19 SECS.
CROSSING TIME AT ULYSSES IS 55622. S. OR 15:27:02 +/- 291.95 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 5/12/ 93 IS:
RA= 257.745 DEC= -23.573 DIST= 2.447 AU
MARS-BATSE DISTANCE = 366117760. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 56.00 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 682.99 SECS.
CROSSING TIME AT MARS IS 54674. S. OR 15:11:13 +/- 186.14 SECONDS

RI

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2679	931205	9326	53991	77000	020	+67

BATSE BURST TRIGGER

NO.: 02679

TIME: TJD=9326 SECONDS=53991

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=063.9 AZIMUTH=077.6 ERROR= DEGREES

COMMENTS:
ERROR IN PREVIOUS MESSAGE (TRIGGER NO. 2679)
SHORT, INTENSE BURST OF DURATION APPROX 0.3 SEC
STRONG EMISSION ABOVE 300 KEV
NOTE CHANGE IN ZENITH ANGLE (NOT IN COMPTEL'S FOV).

Helio corr removed

Date: Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☐ Final ephemeris used?

☐ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad stats

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☐ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

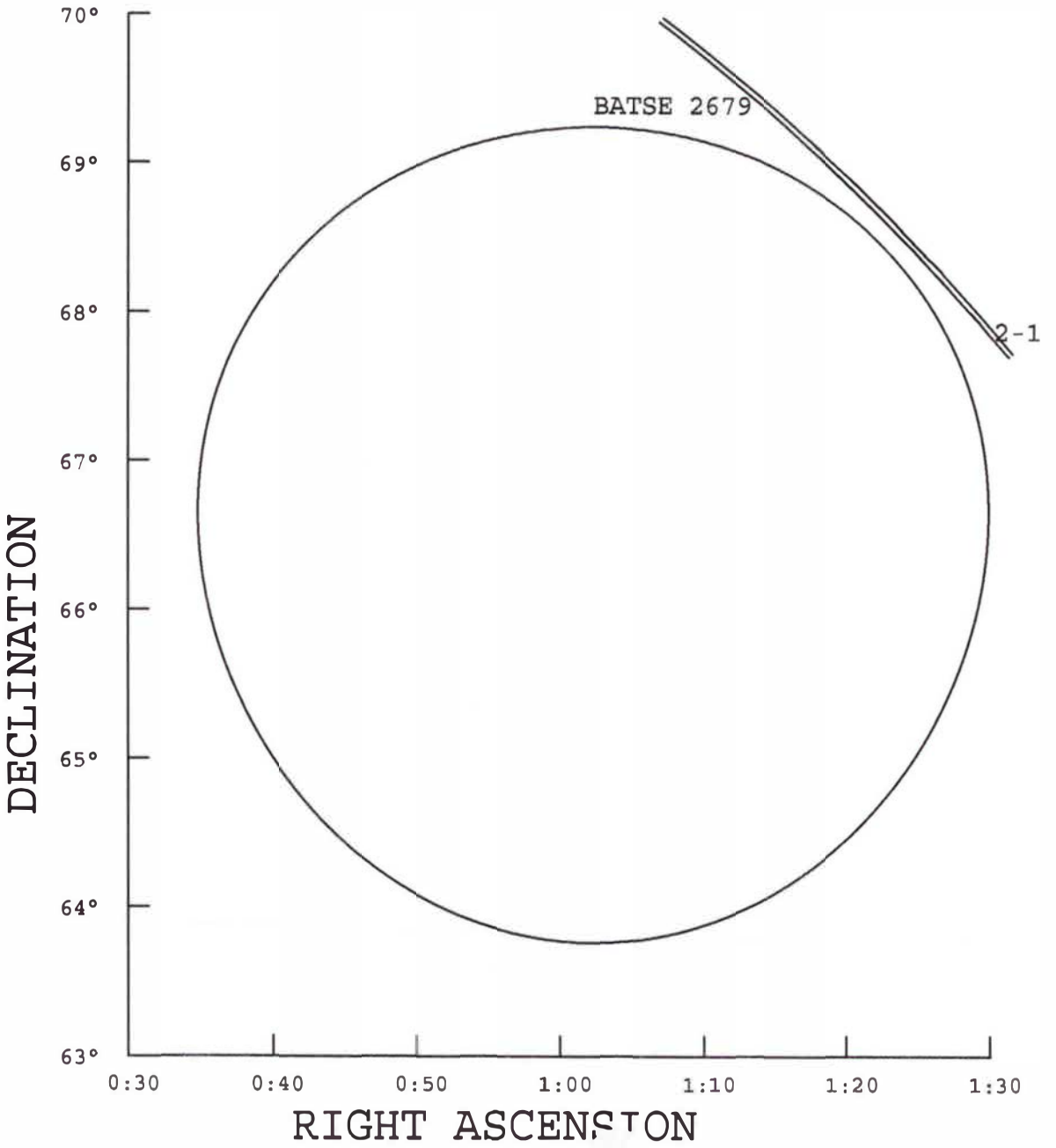
☐ Geocentric time used?

☑ ACCESS database updated?

EVENT OF DEC 5, 1993 15:25

21/ 1/98

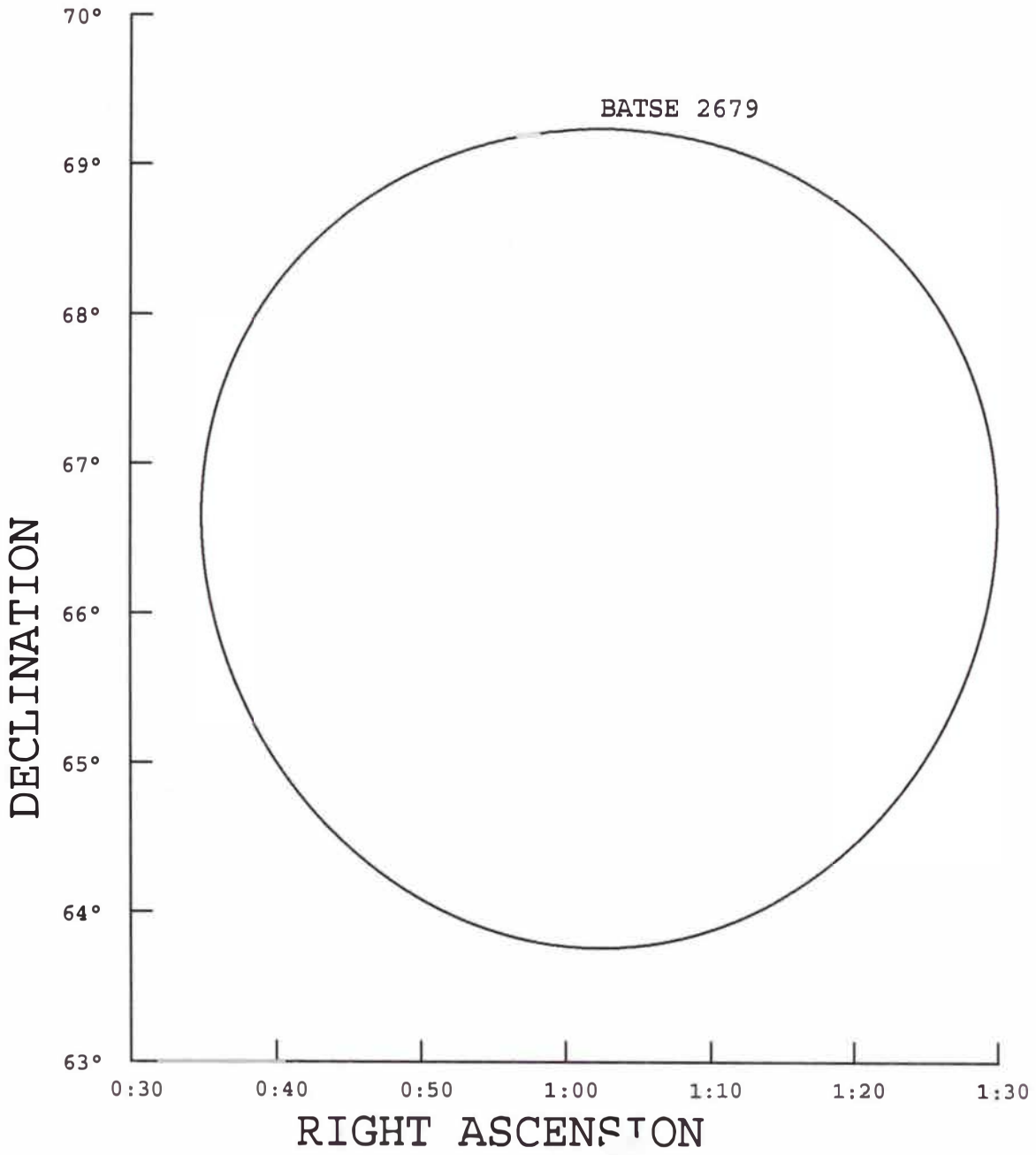
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE

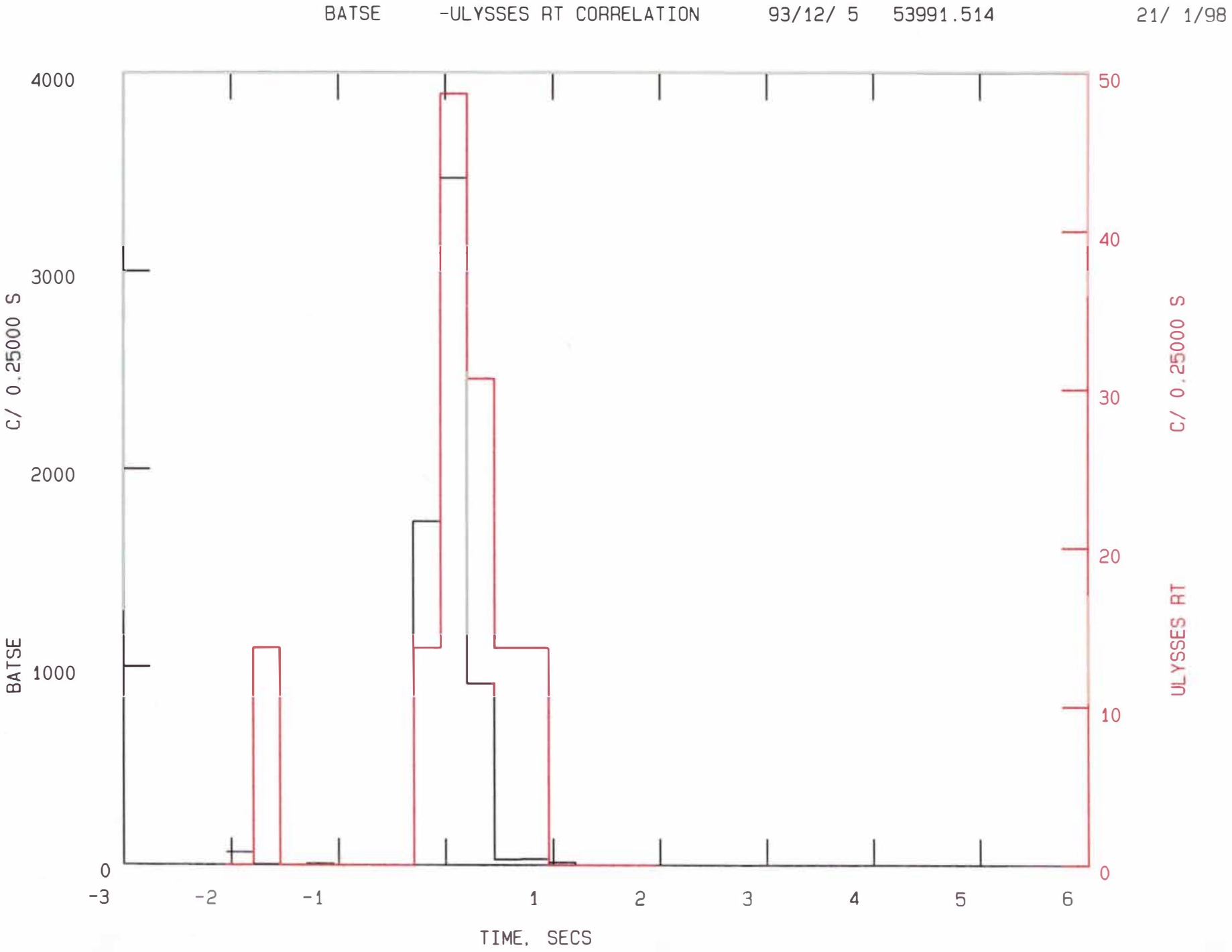


EVENT OF DEC 5, 1993 15:25

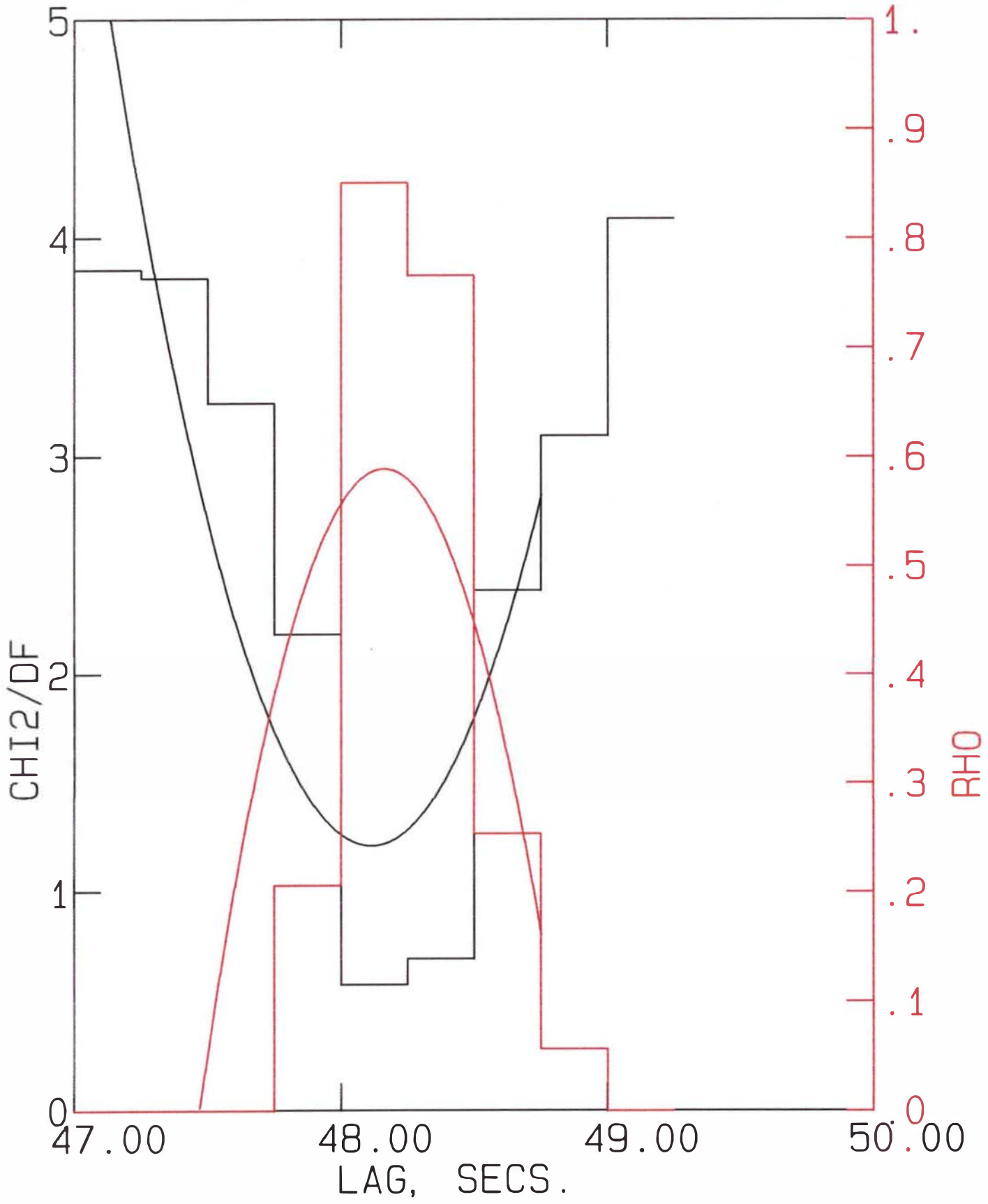
21/ 1/98

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 93/12/ 5 53991.514 21/ 1/98
4000
3000
2000
1000
0
C/ 0.25000 S
BATSE
50
40
30
20
10
0
C/ 0.25000 S
ULYSSES RT
-3
-2
-1
1
2
3
4
5
6
TIME, SECS

BATSE -ULYSSES RT CORRELATION 93/12/ 5 53991.514



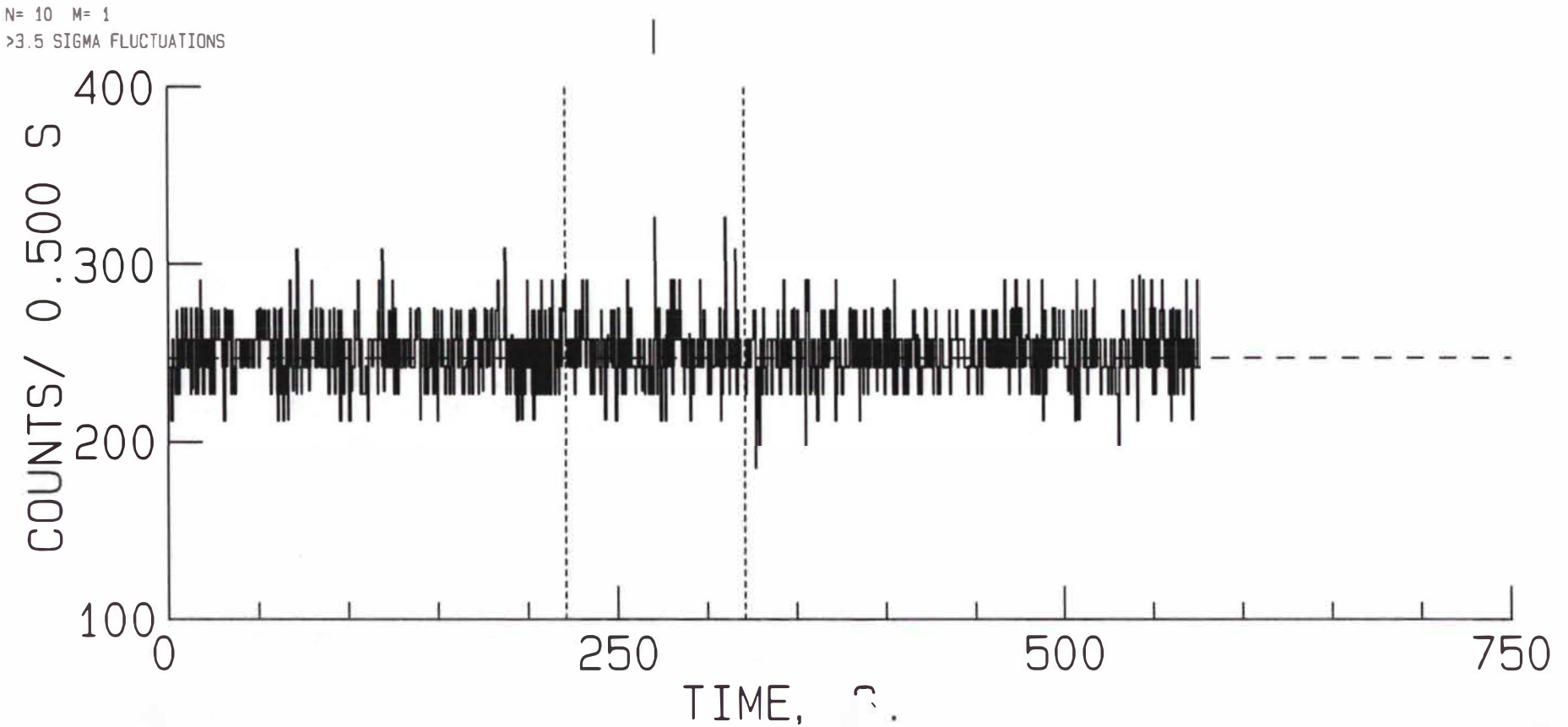
ULYSSES RT

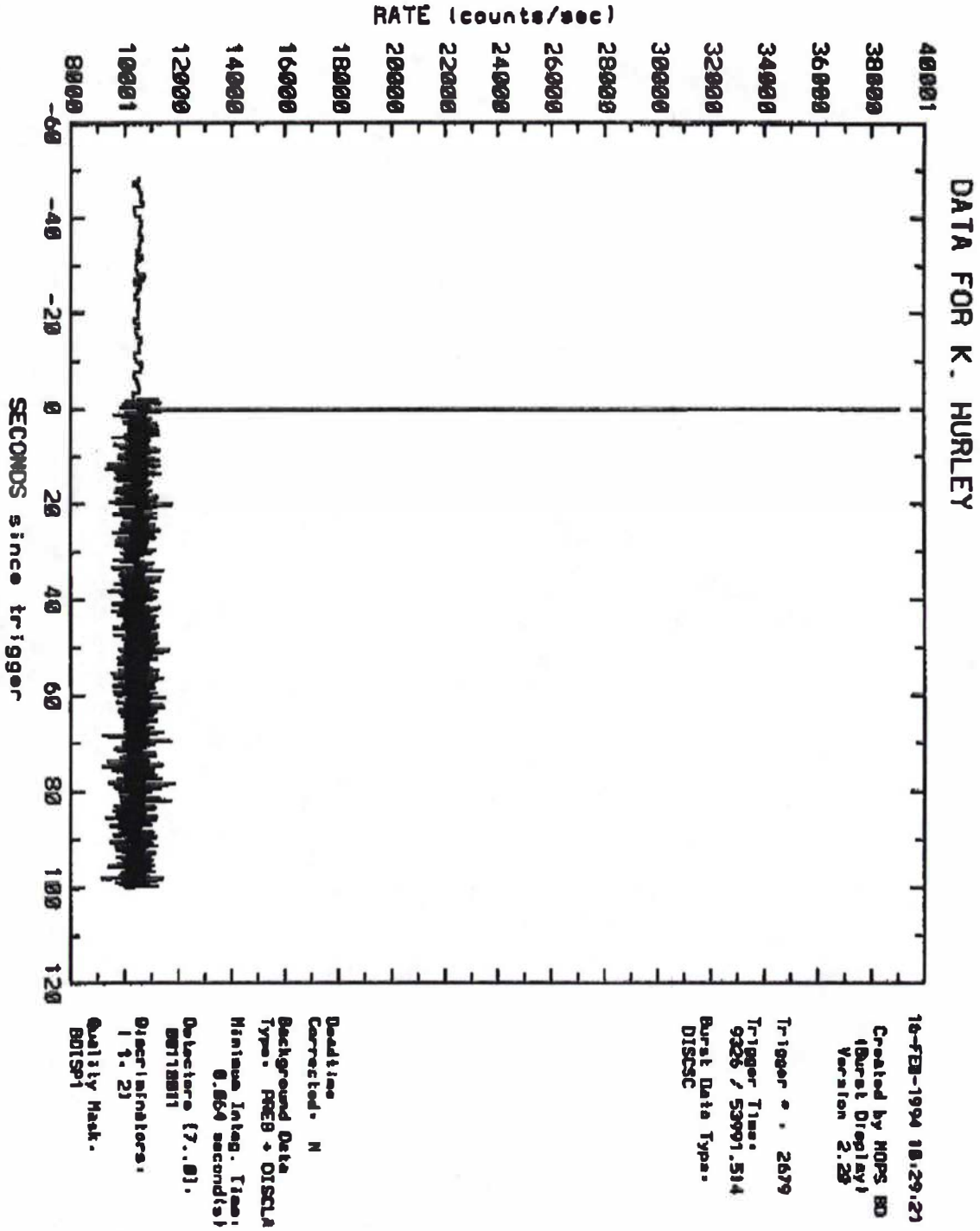
21/ 1/98

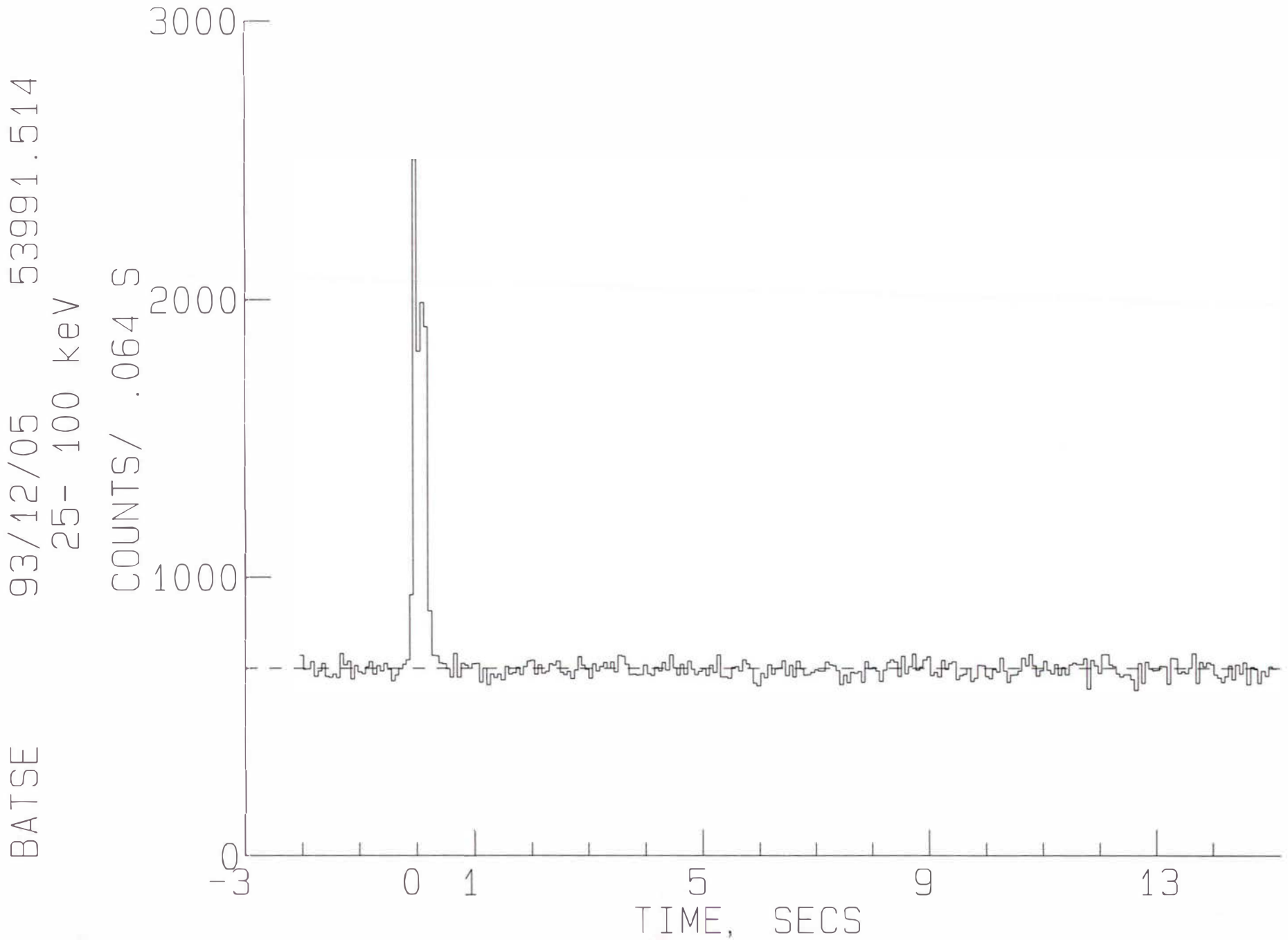
5/12/93 55332.183 s

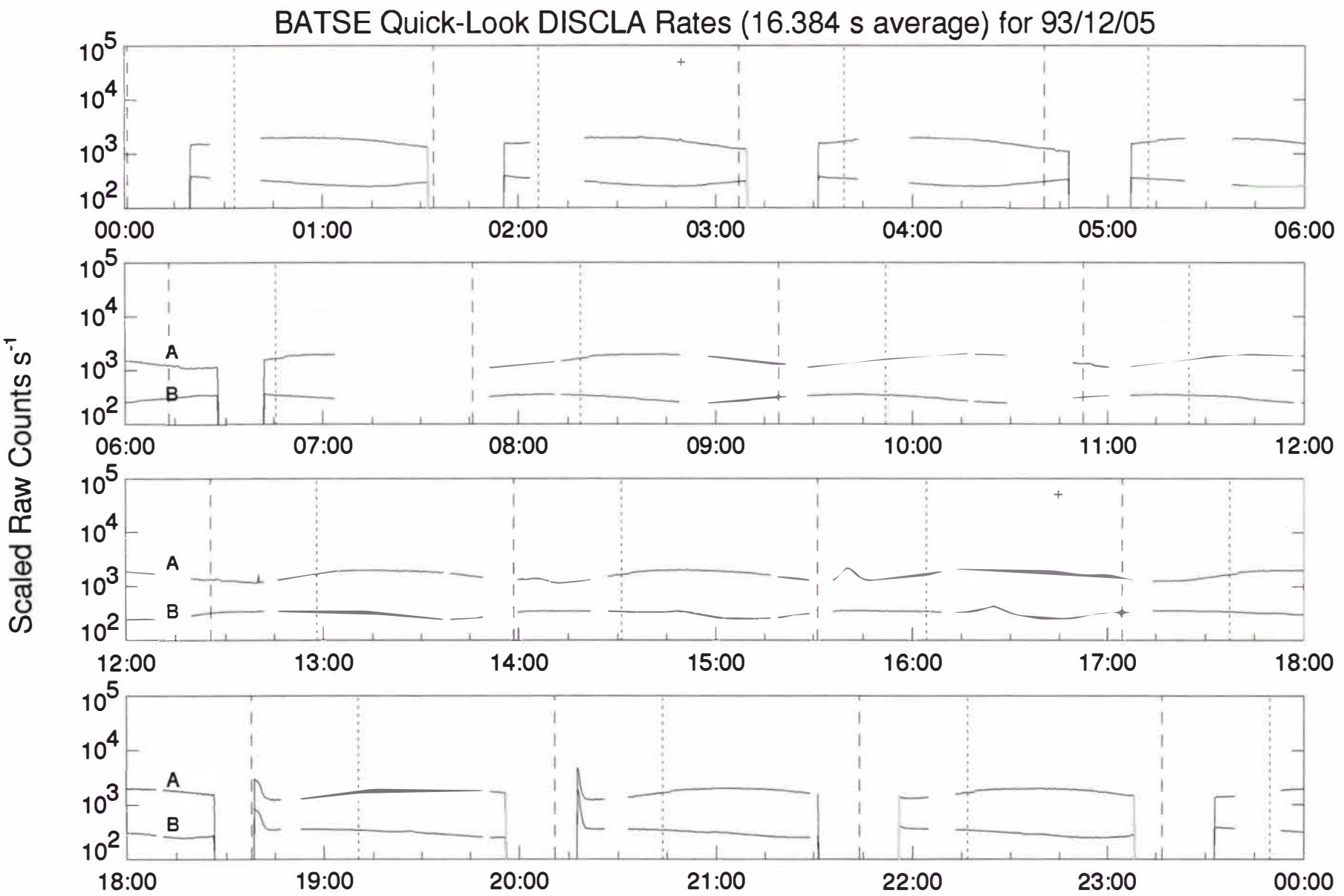
0.250 S INTERVALS REGROUPED BY 2

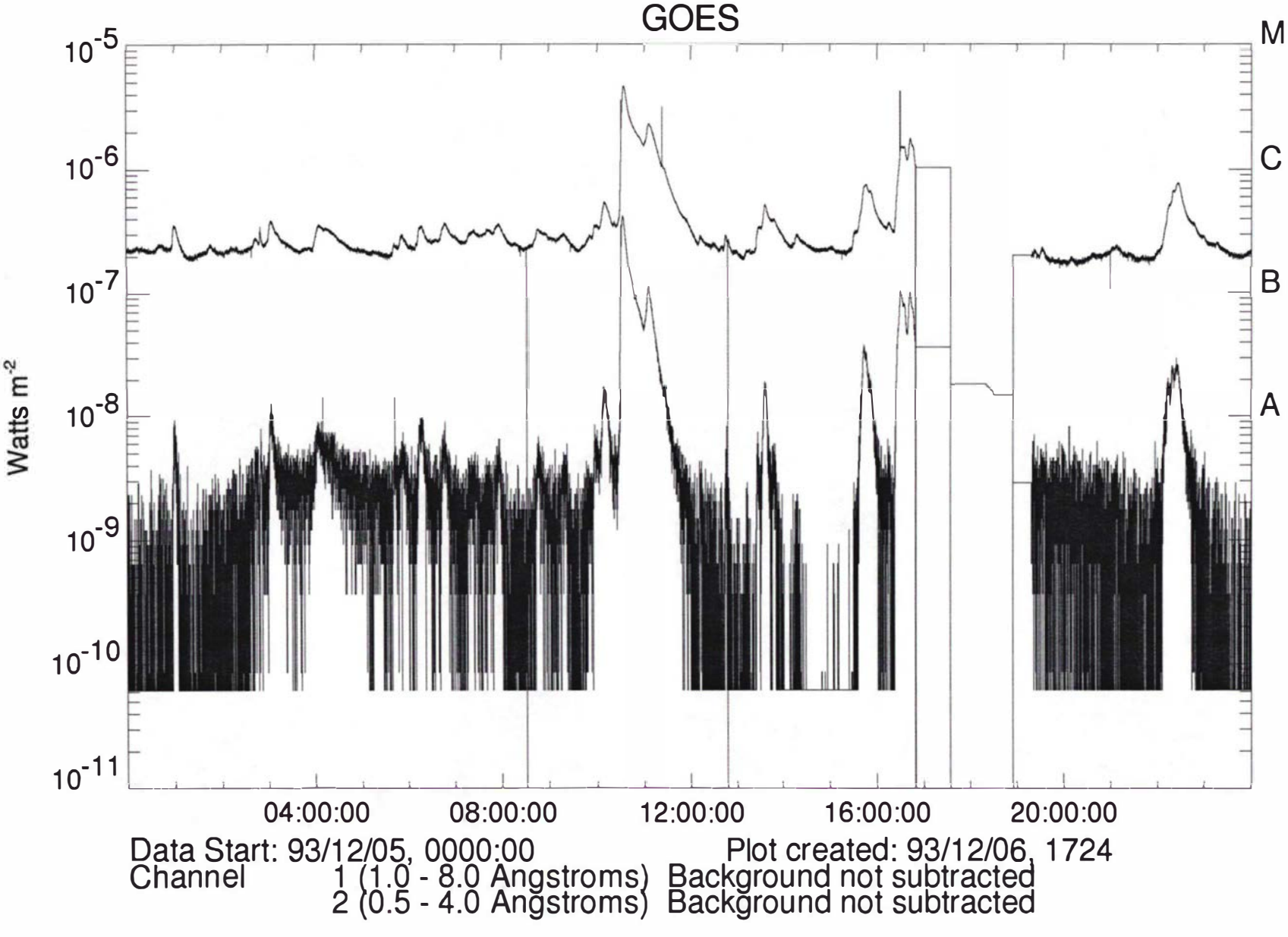
21- 142 keV



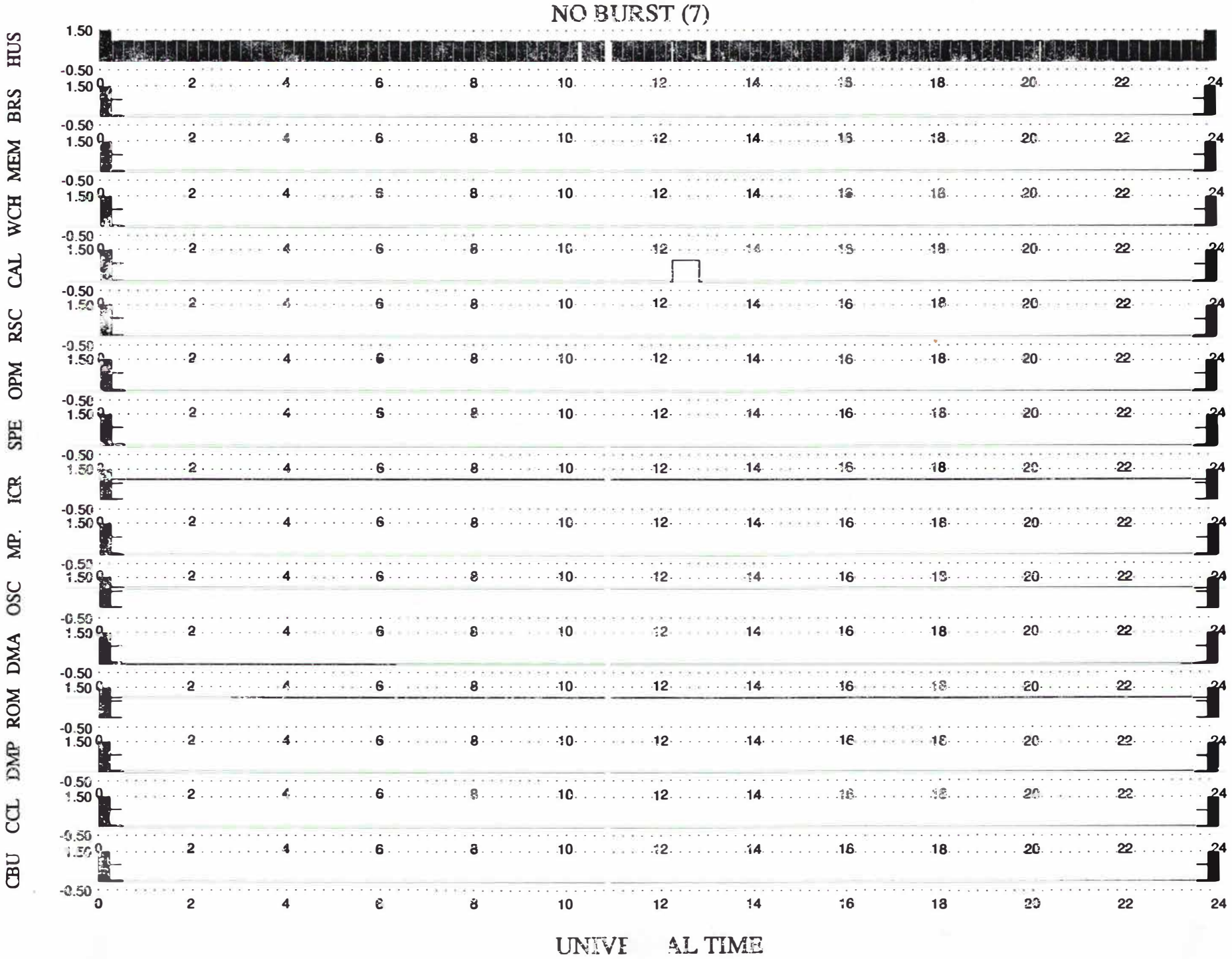

DATA FOR K. HURLEY
RATE (counts/sec)
40001
38000
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10001
8000
-60
-40
-20
0
20
40
60
80
100
120
SECONDS since trigger
16-FEB-1994 18:29:23
Created by HOPS BD
(Burst Display)
Version 2.23
Trigger # . 2579
Trigger Time:
9326 / 53991.514
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds
Detectors (7..0):
00110011
Discriminators:
(1, 2)
Quality Mask:
0015P1


BATSE 93/12/05 53991.514
25- 100 keV
COUNTS/ .064 S
3000
2000
1000
0
-3
0
1
5
9
13
TIME, SECS


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/05
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/07, 1650 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

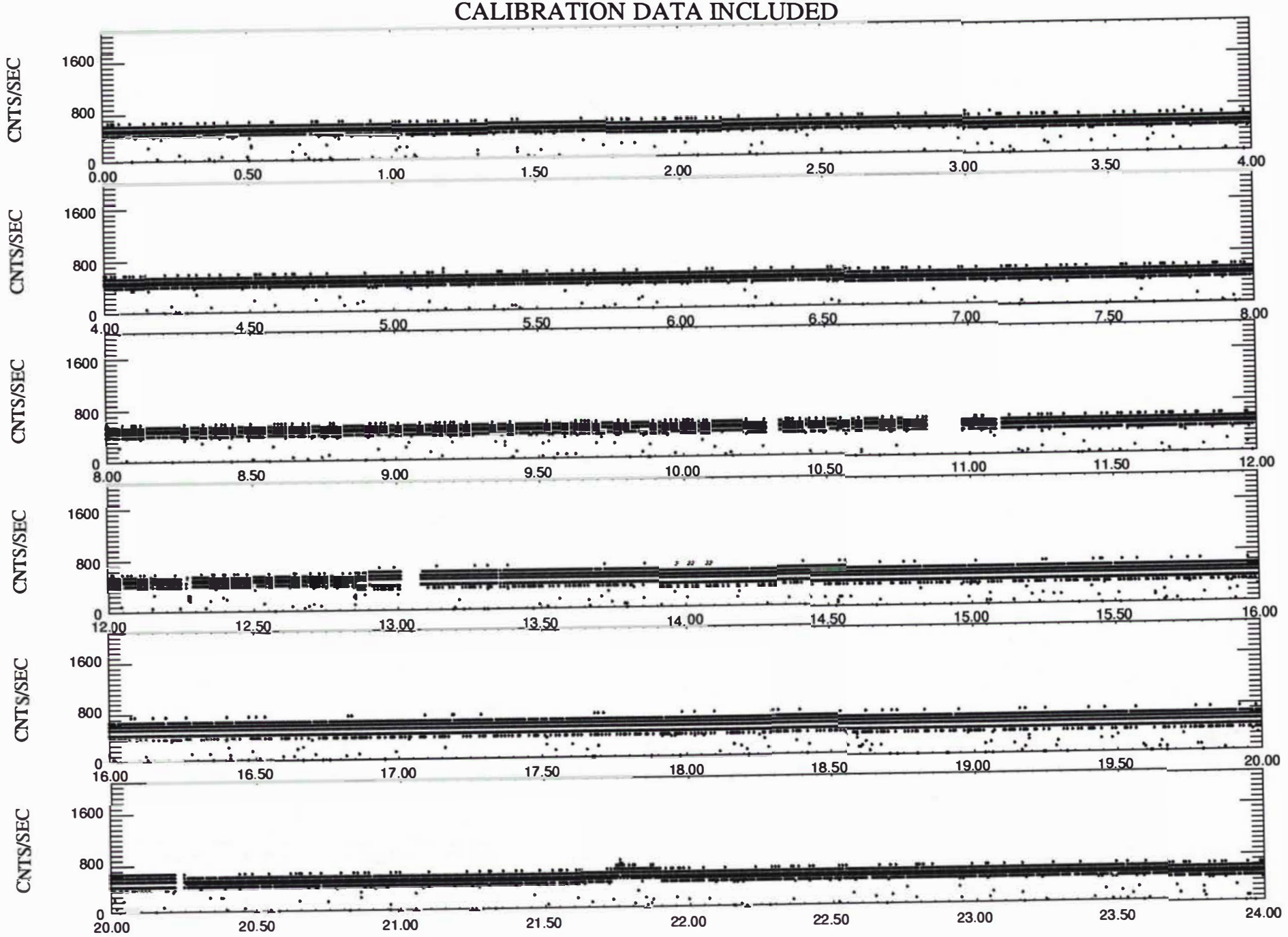

GOES
X
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/05, 0000:00
Plot created: 93/12/06, 1724
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 339, year 1993 to day 339, year 1993 1/20/94



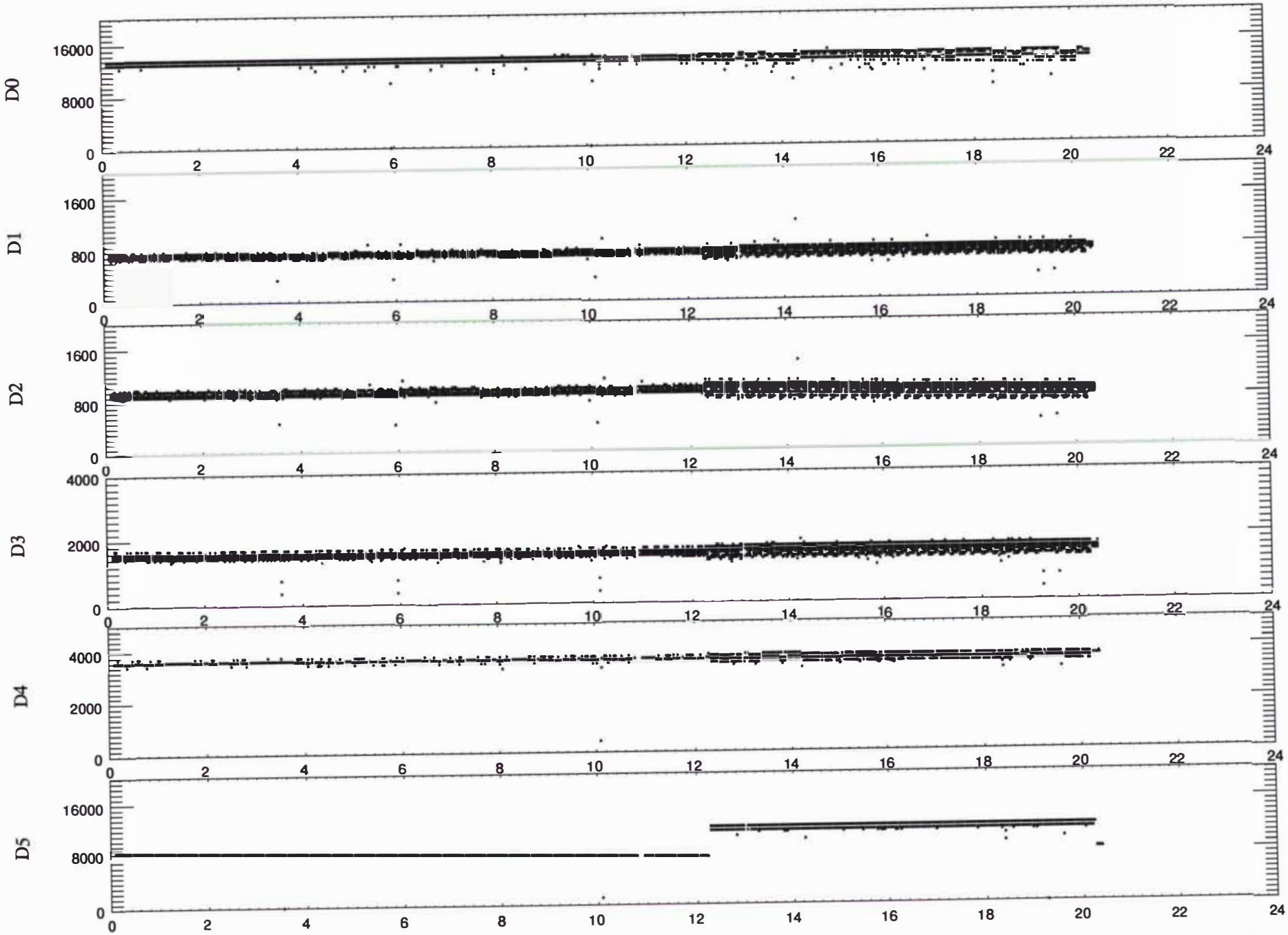
HUS 2A, MODE 1, NOT AVERAGED EDR day 339, year 1993 to day 339, year 1993 1/20/94

CALIBRATION DATA INCLUDED



UNIV SAL TIME

HUS 2B COUNTS / SEC QEDR day 339, year 1993 to day 339, year 1993 12/7/93



Kommers

UNTRIGGERED

ULYSSES RT

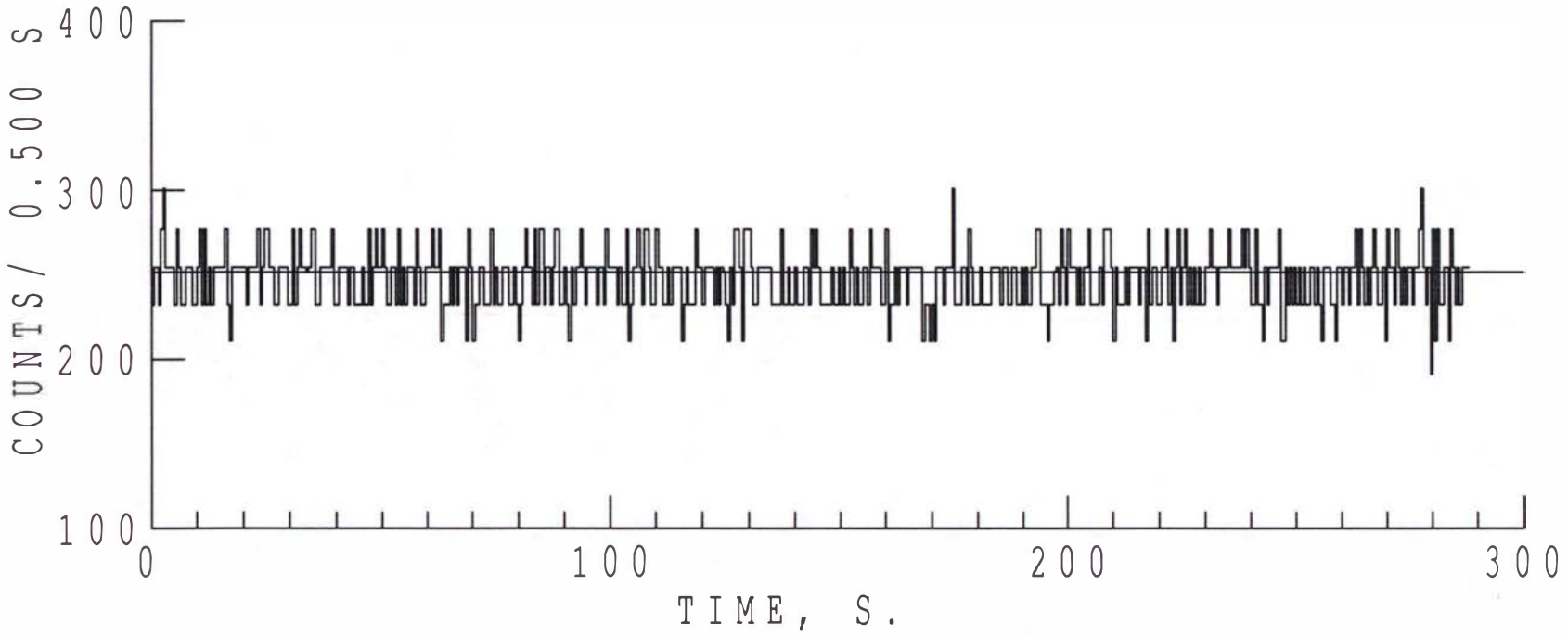
22/ 5/97

6/12/93 37584.230 s

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From MEEGAN@ssl.msfc.nasa.gov Tue Dec 7 12:41:25 1993
Date: Tue, 7 Dec 1993 14:44:37 -0600 (CST)
From: MEEGAN@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2680
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2680
EVENT OF 1993 DEC 6 DAY OF YEAR=340
EVENT CROSSING TIME AT BATSE : 31289. S. OR 08:41:29.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 104.000 5.000
BATSE PEAK COUNTING RATE: 3800 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 6/12/ 93 IS:
RA= 166.525 DEC= -35.047 DIST= 4.107 AU
BATSE-ULYSSES DISTANCE = 614352610. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=109.04 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -668.50 SECS.
CROSSING TIME AT ULYSSES IS 30621. S. OR 08:30:20 +/- 376.17 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 6/12/ 93 IS:
RA= 258.550 DEC= -23.643 DIST= 2.447 AU
MARS-BATSE DISTANCE = 366028864. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 30.80 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1048.76 SECS.
CROSSING TIME AT MARS IS 32338. S. OR 08:58:57 +/- 124.46 SECONDS

ND

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2680	931206	9327	31289	3800	104	+05

BATSE BURST TRIGGER

NO.: 02680

TIME: TJD=9327 SECONDS=31289

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= 14. AZIMUTH=259. ERROR= DEGREES

COMMENTS:
WEAK EVENT WITH 3 PULSES, LASTING ABOUT 6 S. SOFT SPECTRUM,
NOT SEEN ABOVE 300 KEV.

Batse # 2680

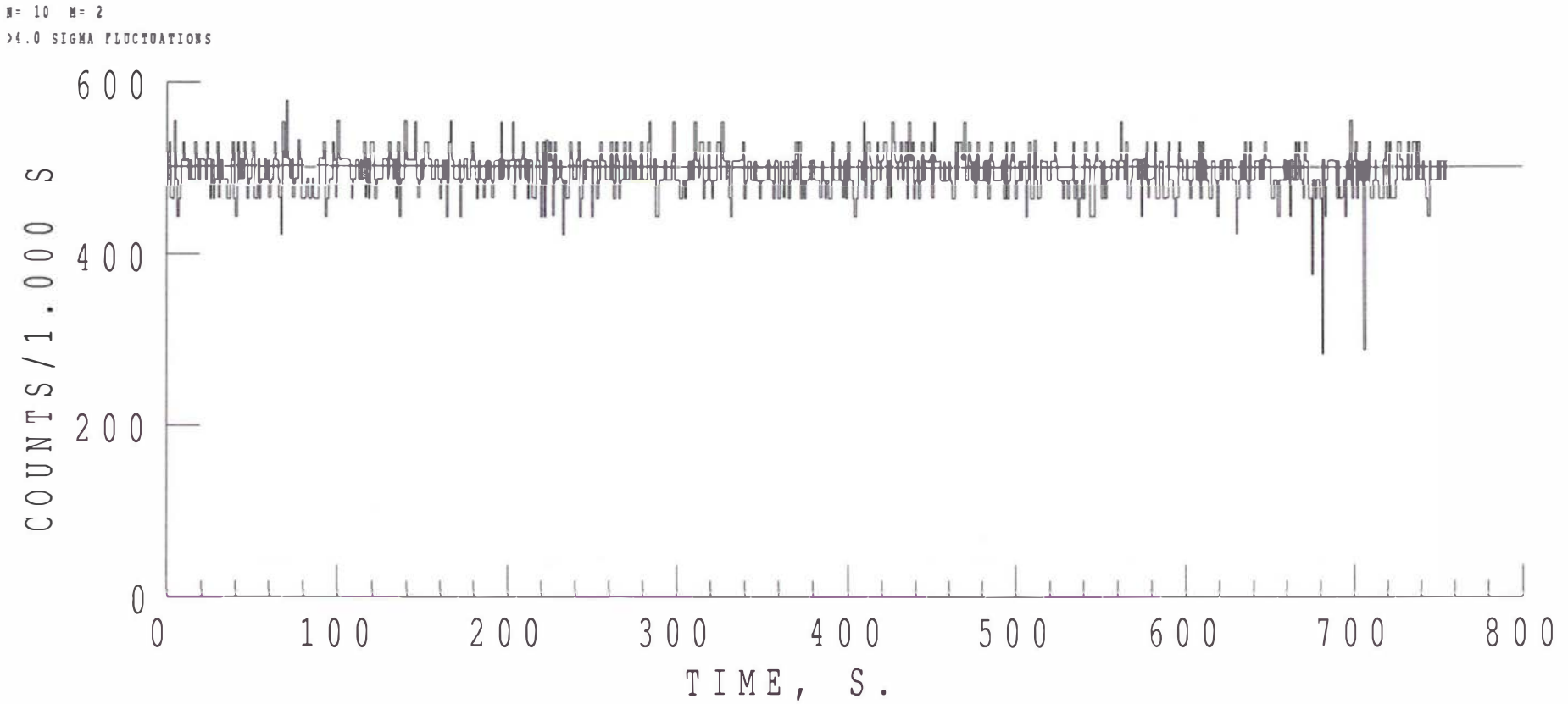
7/12/93

ULYSSES RT

6/12/93 30240.123 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



From MEEGAN@ssl.msfc.nasa.gov Tue Dec 7 12:42:53 1993
Date: Tue, 7 Dec 1993 14:46:04 -0600 (CST)
From: MEEGAN@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2681
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2681
EVENT OF 1993 DEC 6 DAY OF YEAR=340
EVENT CROSSING TIME AT BATSE : 63390. S. OR 17:36:30.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 265.000 -3.000
BATSE PEAK COUNTING RATE: 6700 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 6/12/ 93 IS:
RA= 166.531 DEC= -35.141 DIST= 4.100 AU
BATSE-ULYSSES DISTANCE = 613393870. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 84.83 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 184.44 SECS.
CROSSING TIME AT ULYSSES IS 63574. S. OR 17:39:34 +/- 406.58 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 6/12/ 93 IS:
RA= 258.550 DEC= -23.643 DIST= 2.447 AU
MARS-BATSE DISTANCE = 366028864. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=158.44 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1135.48 SECS.
CROSSING TIME AT MARS IS 62255. S. OR 17:17:34 +/- 60.67 SECONDS

~~RF~~ No - must be a different GRB

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2681	931206	9327	63390	6700	265	-03

BATSE BURST TRIGGER

NO.: 02681

TIME: TJD=9327 SECONDS=63390

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=160. AZIMUTH= 10. ERROR= DEGREES

COMMENTS:
STRONG EVENT LASTING 70 S, WITH A LOT OF STRUCTURE. SEEN ABOVE 300 KEV.

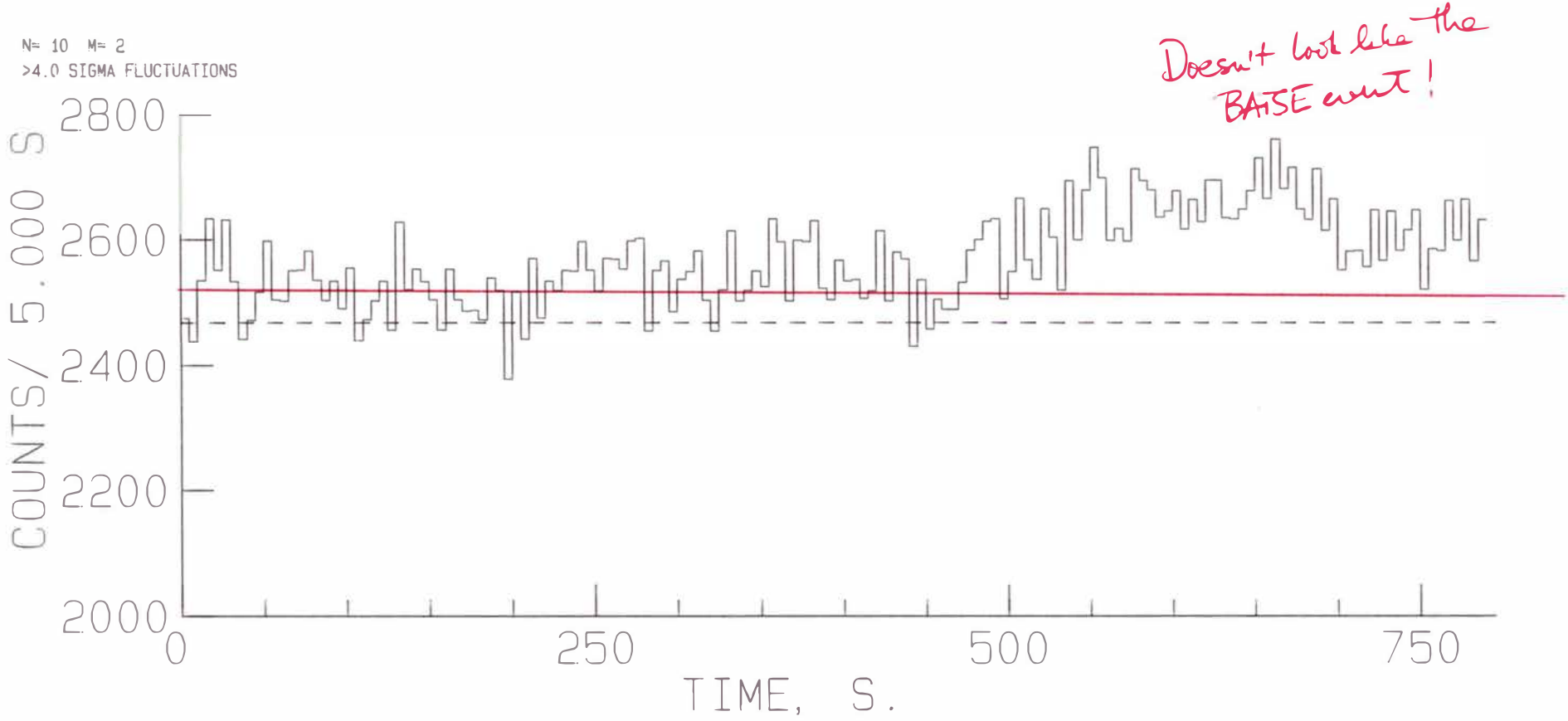
ULYSSES RT

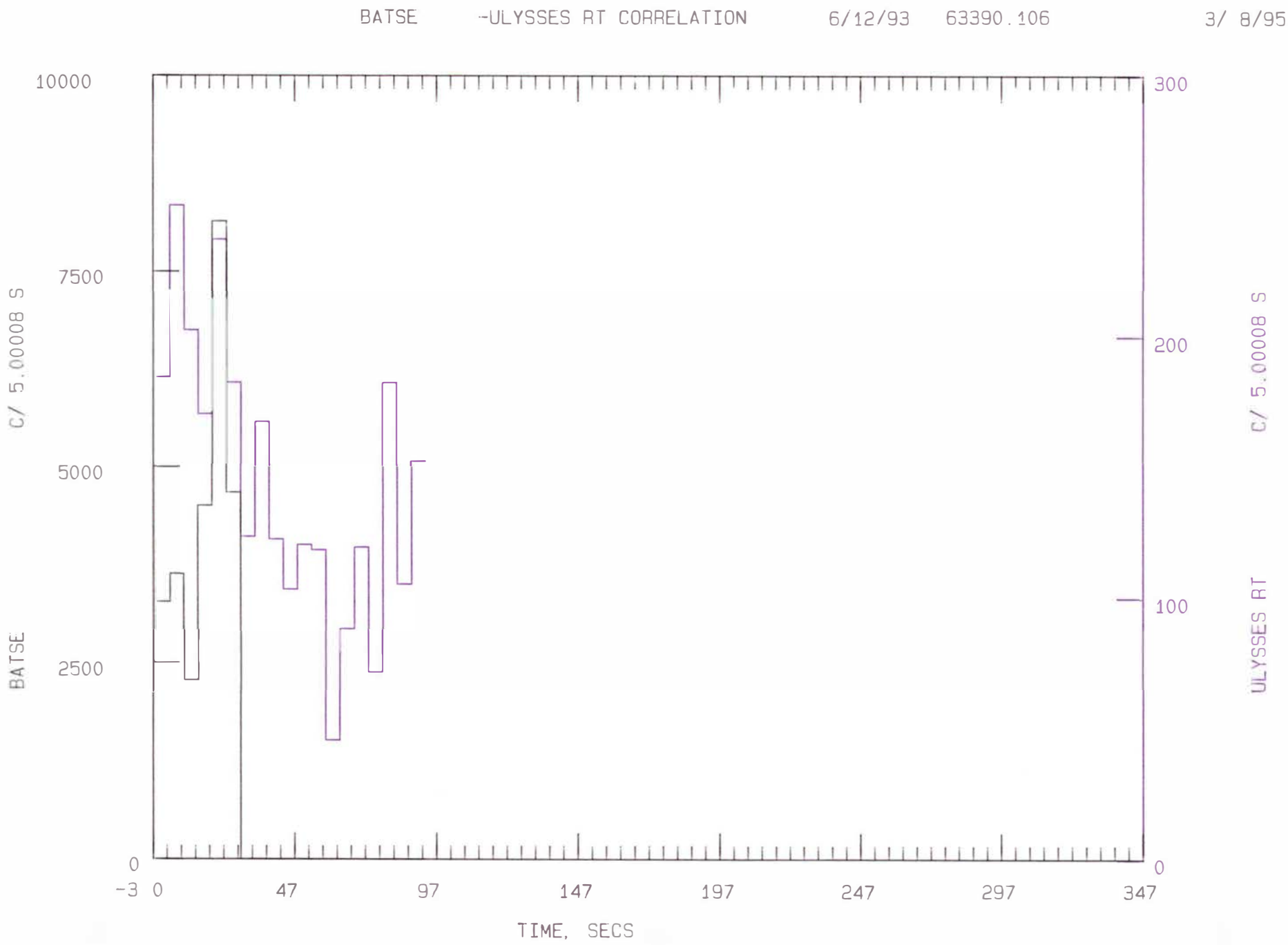
3/ 8/95

6/12/93 63180.137 s

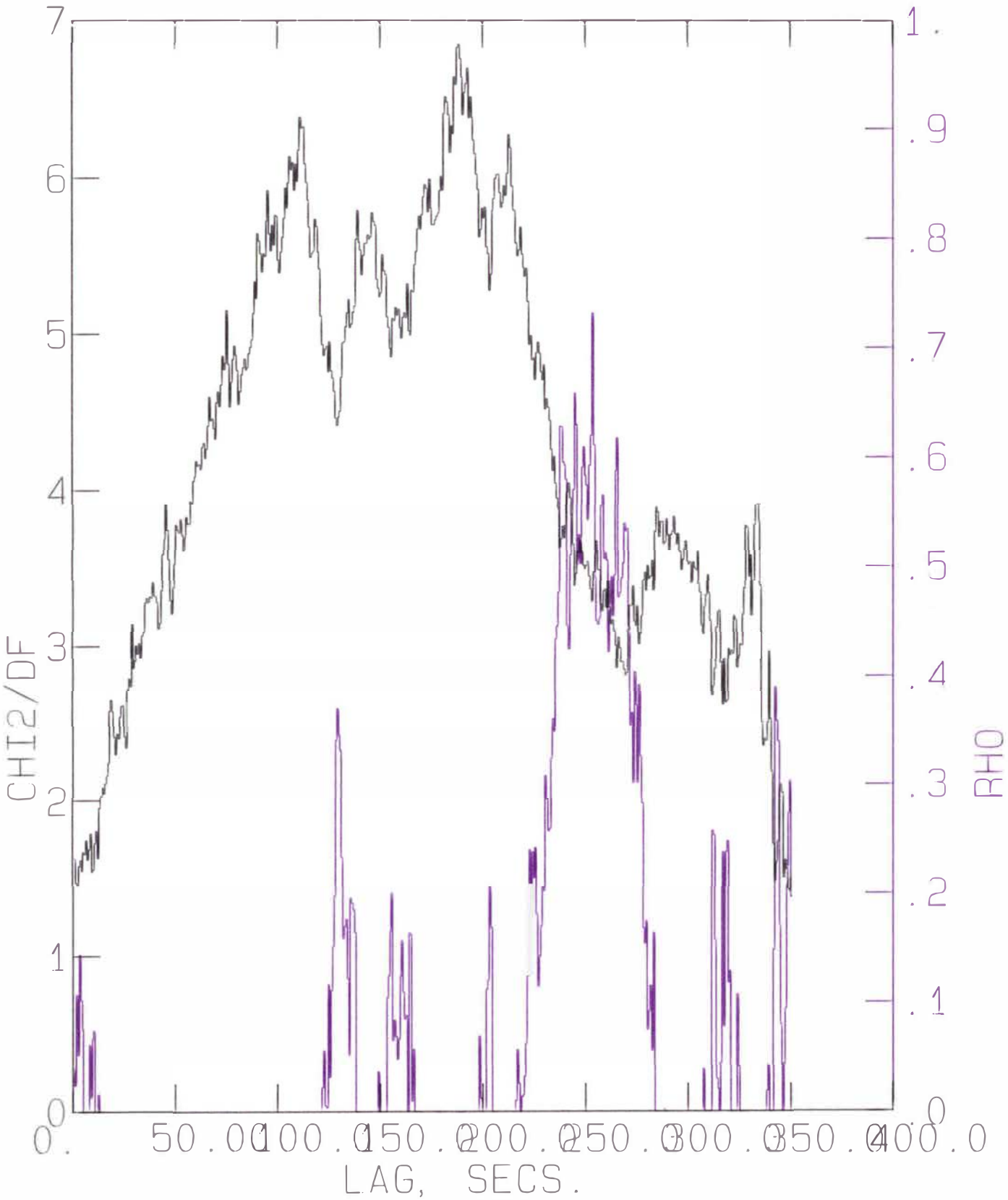
.250 S INTERVALS REGROUPED BY 20

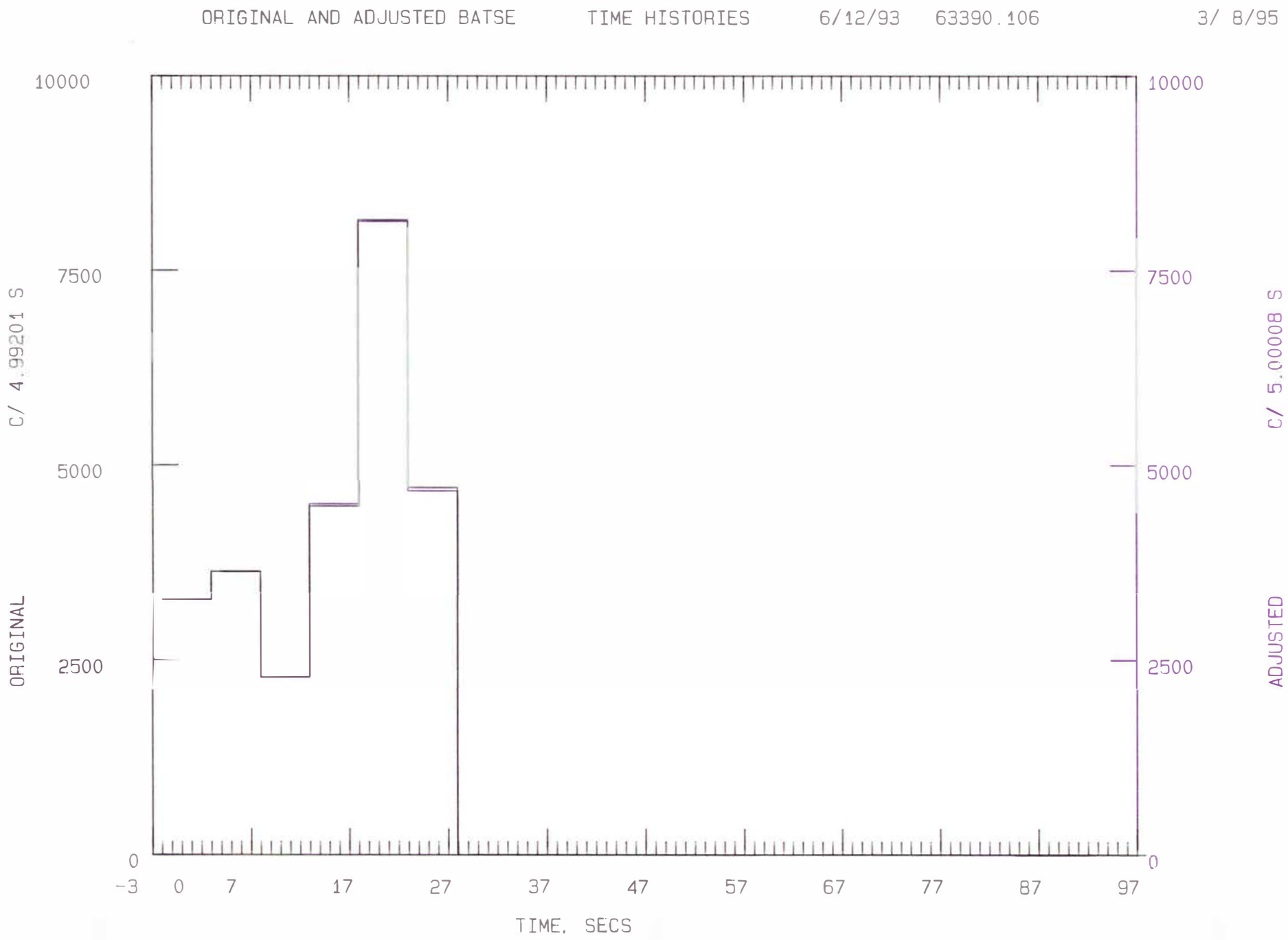
21- 143 keV

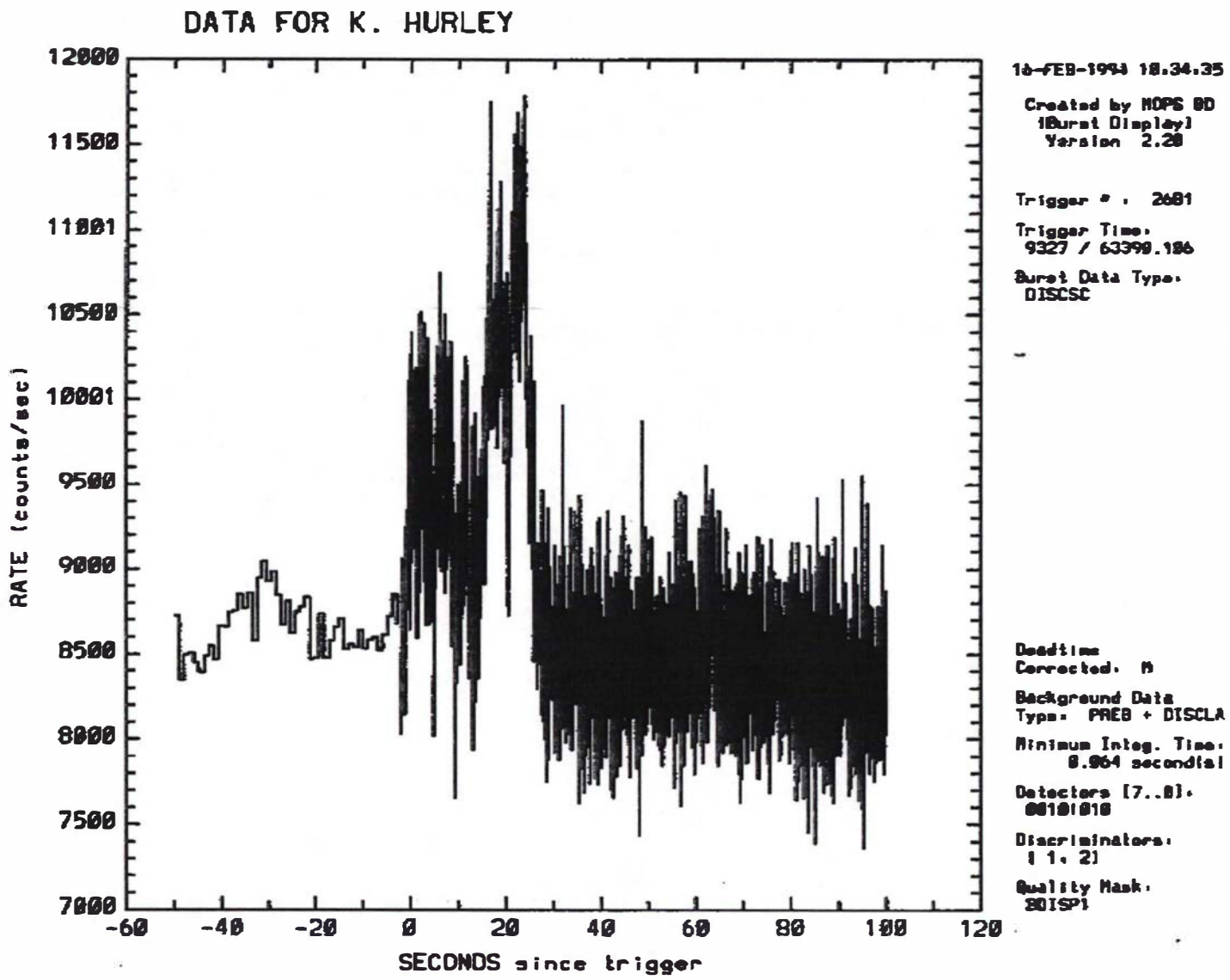


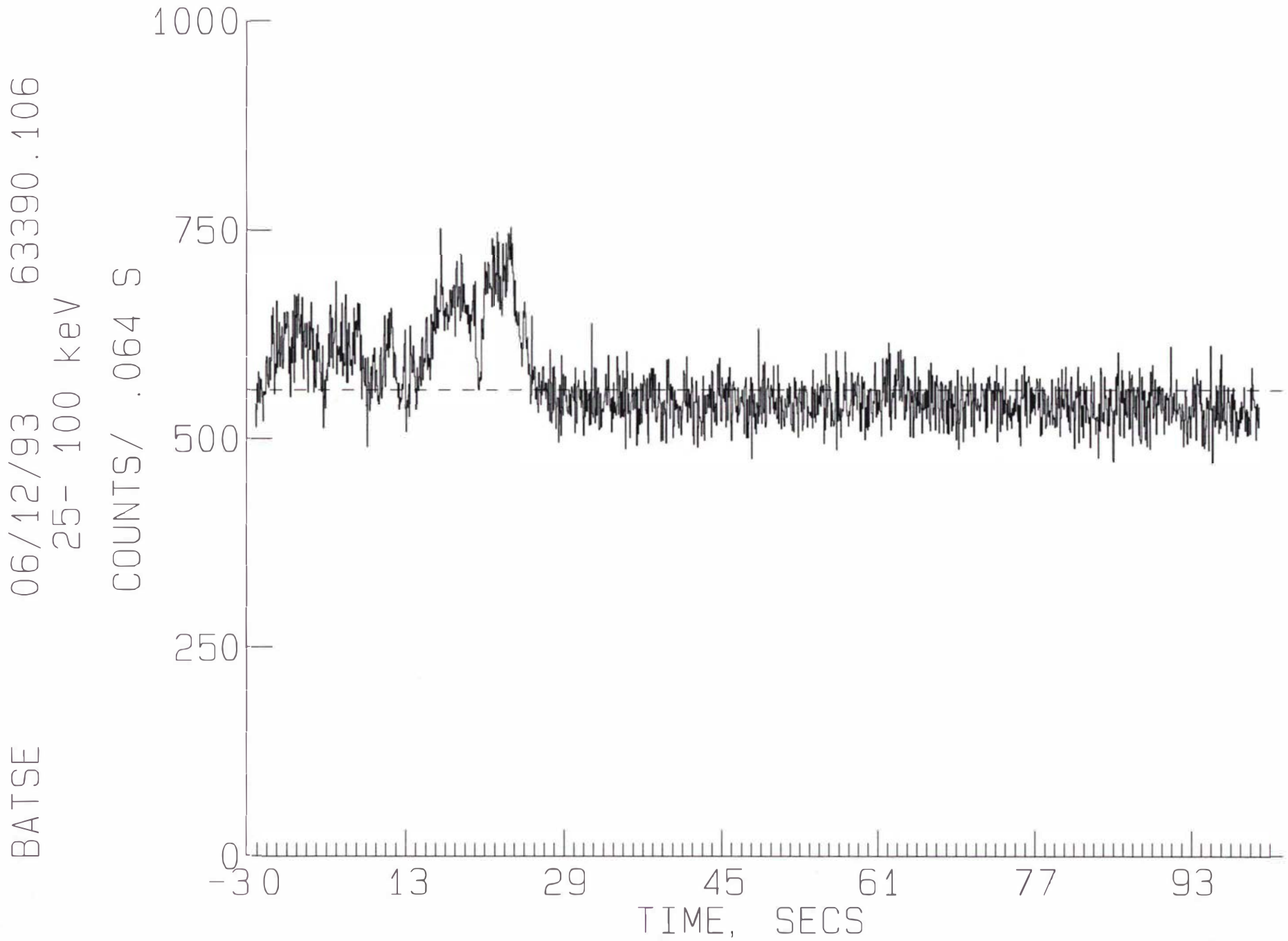

BATSE -ULYSSES RT CORRELATION 6/12/93 63390.106 3/ 8/95
10000
7500
5000
2500
0
BATSE
C/ 5.00008 S
300
200
100
0
ULYSSES RT
C/ 5.00008 S
-3
0
47
97
147
197
247
297
347
TIME, SECS

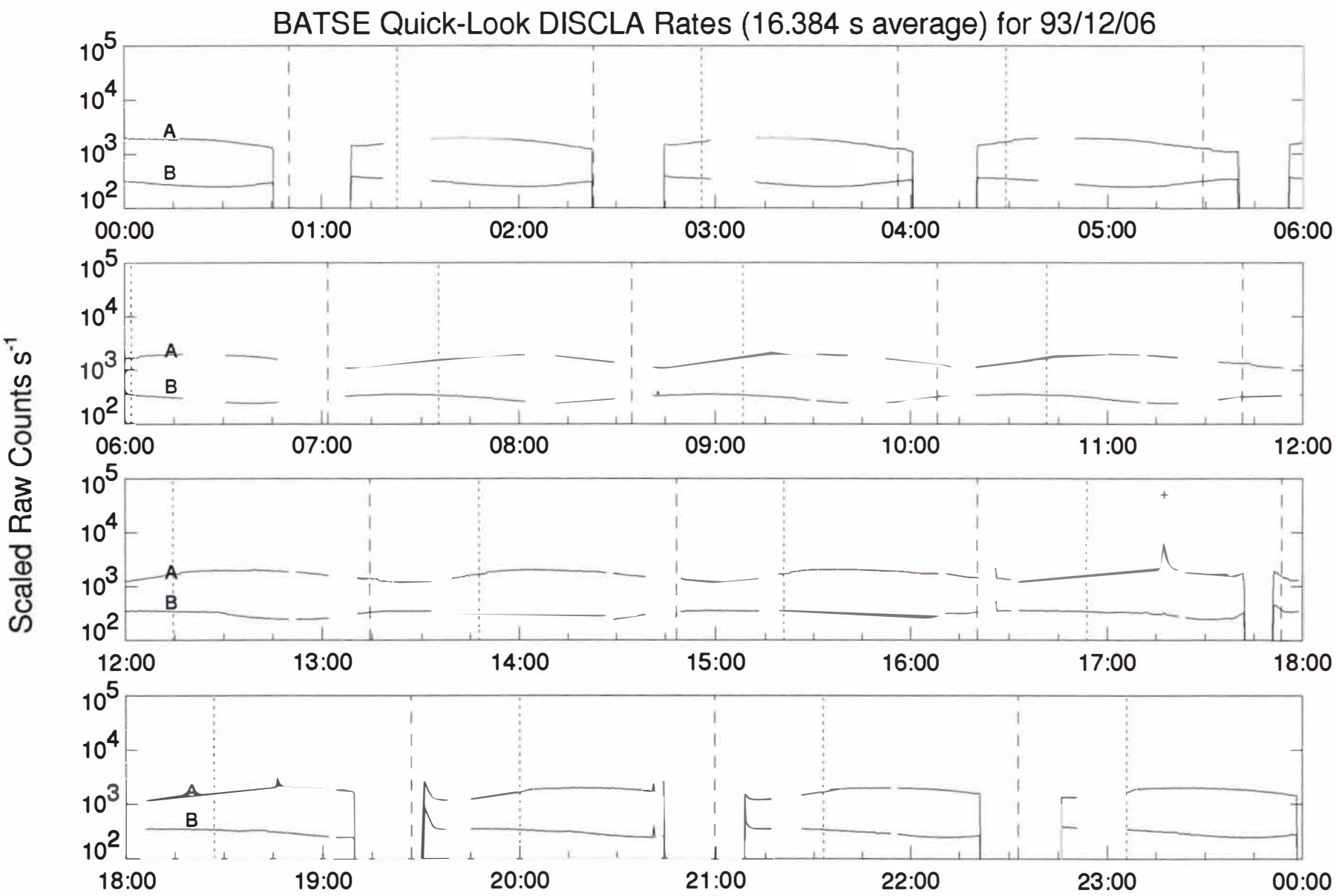
BATSE -ULYSSES RT CORRELATION 6/12/93 63390.106

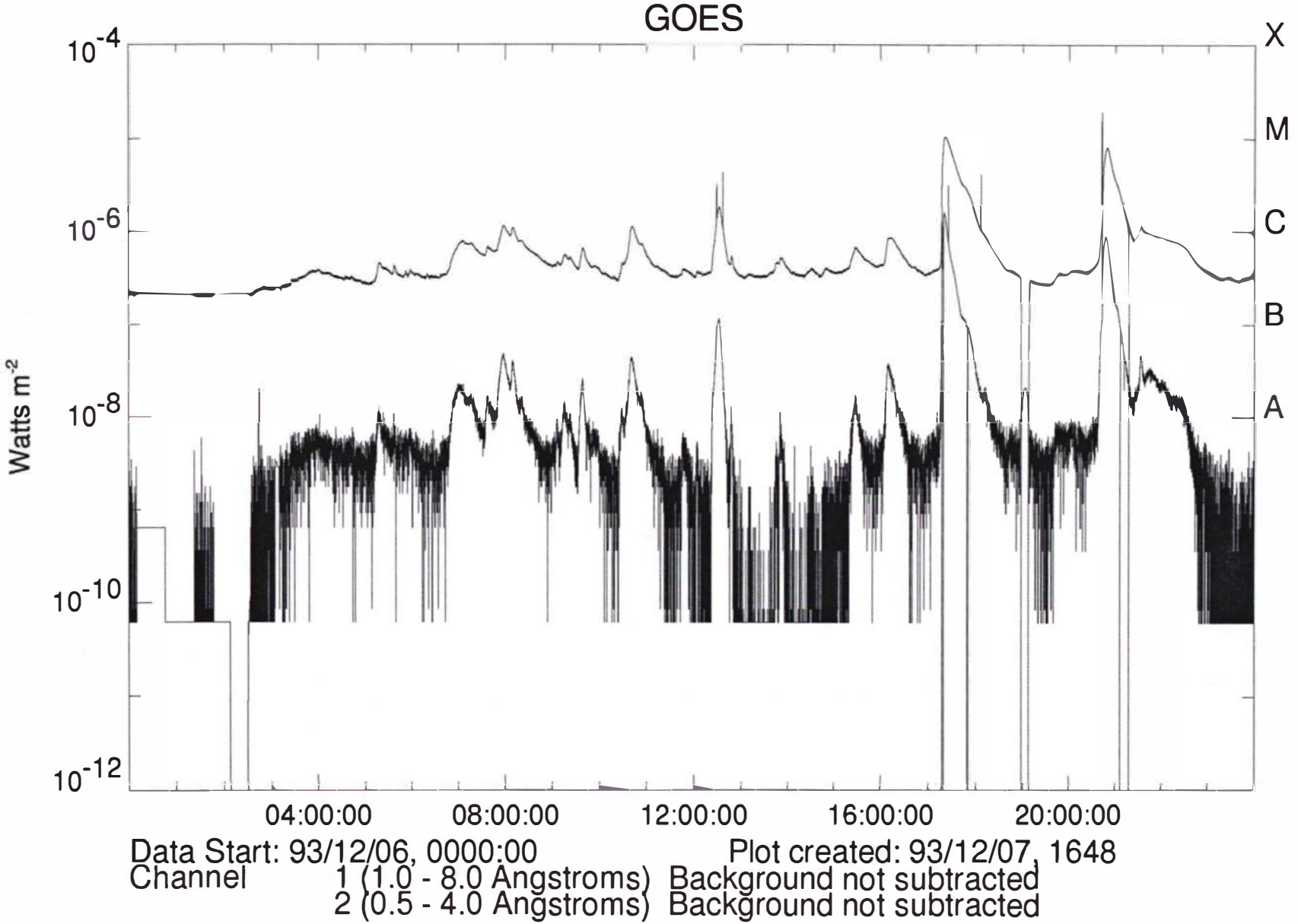



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 6/12/93 63390.106 3/ 8/95
10000
7500
5000
2500
0
C/ 4.99201 S
ORIGINAL
10000
7500
5000
2500
0
C/ 5.00008 S
ADJUSTED
-3
0
7
17
27
37
47
57
67
77
87
97
TIME, SECS


DATA FOR K. HURLEY
RATE (counts/sec)
12000
11500
11001
10500
10001
9500
9000
8500
8000
7500
7000
-60
-40
-20
0
20
40
60
80
100
120
SECONDS since trigger
18-FEB-1994 18:34.35
Created by MOPS BD
(Burst Display)
Version 2.20
Trigger # : 2681
Trigger Time:
9327 / 63399.186
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds
Detectors [7..0]:
00101010
Discriminators:
[1, 2]
Quality Mask:
BDISP1

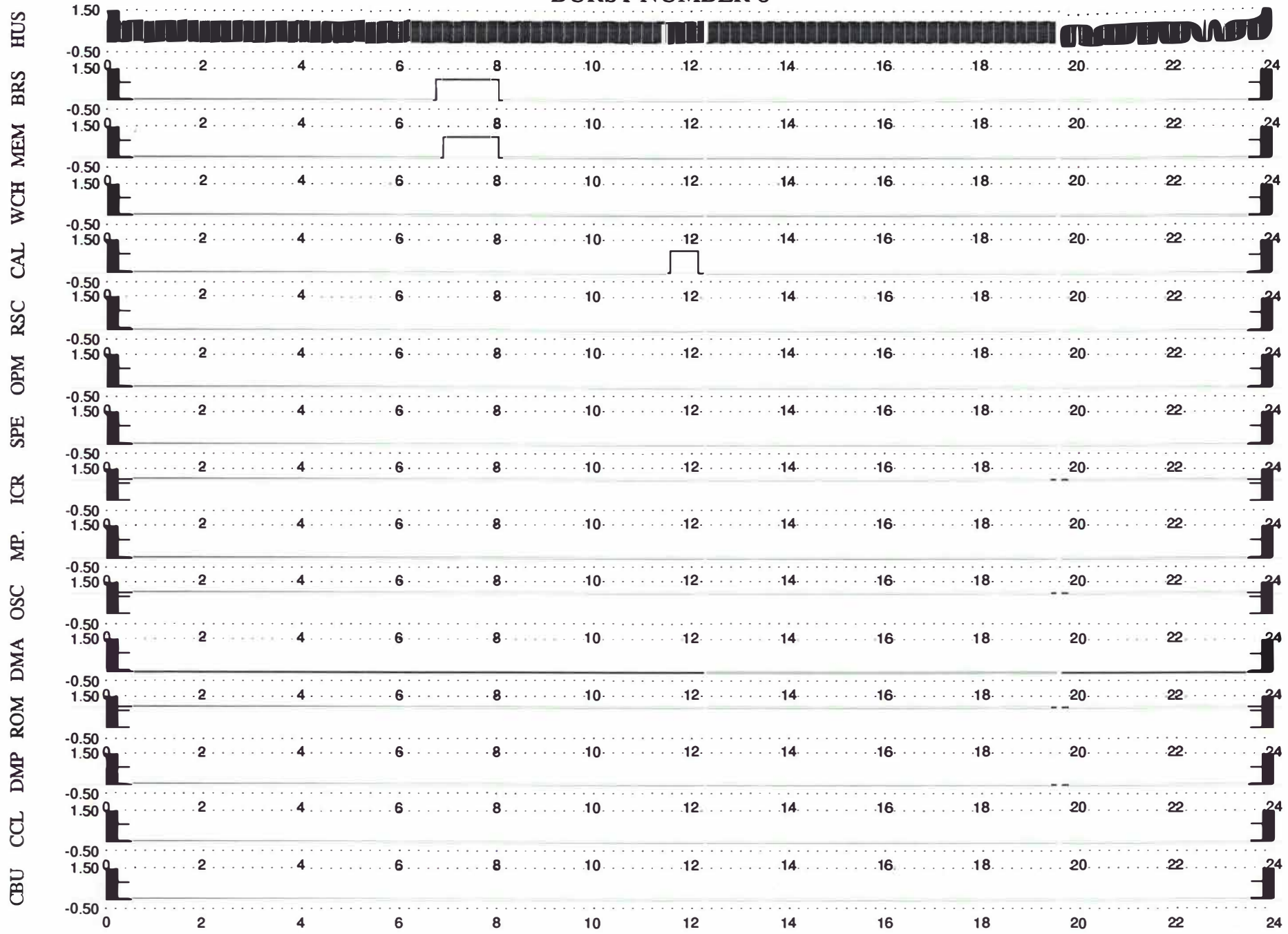

BATSE 06/12/93 63390.106
25- 100 keV
COUNTS/ .064 S
1000
750
500
250
0
-30
13
29
45
61
77
93
TIME, SECS


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/06
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/08, 1123 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


GOES
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/06, 0000:00
Plot created: 93/12/07, 1648
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 340, year 1993 to day 340, year 1993 2/9/94

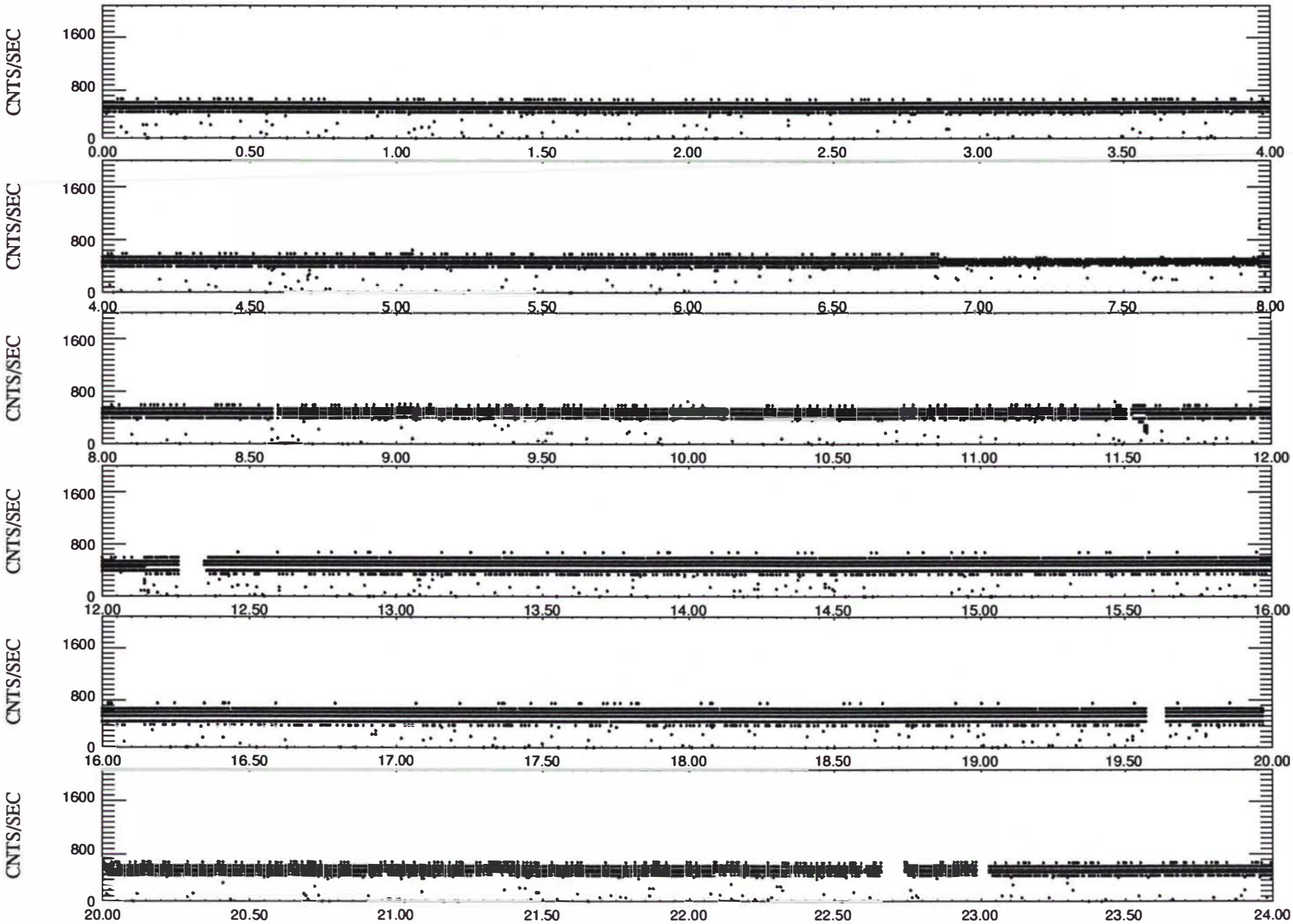
BURST NUMBER 8



UNIVI AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 340, year 1993 to day 340, year 1993 2/9/94

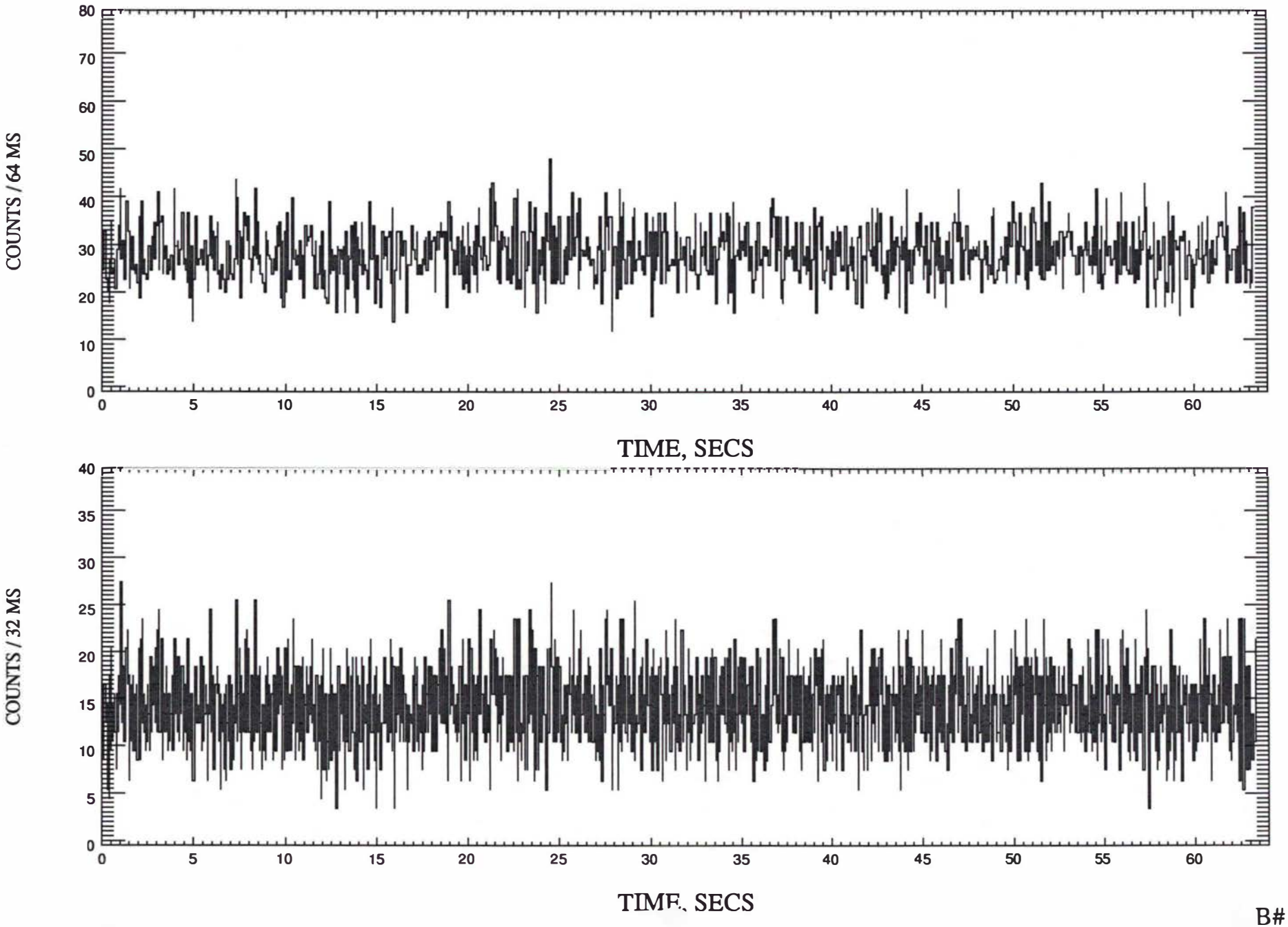
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 340, year 1993 2/9/94

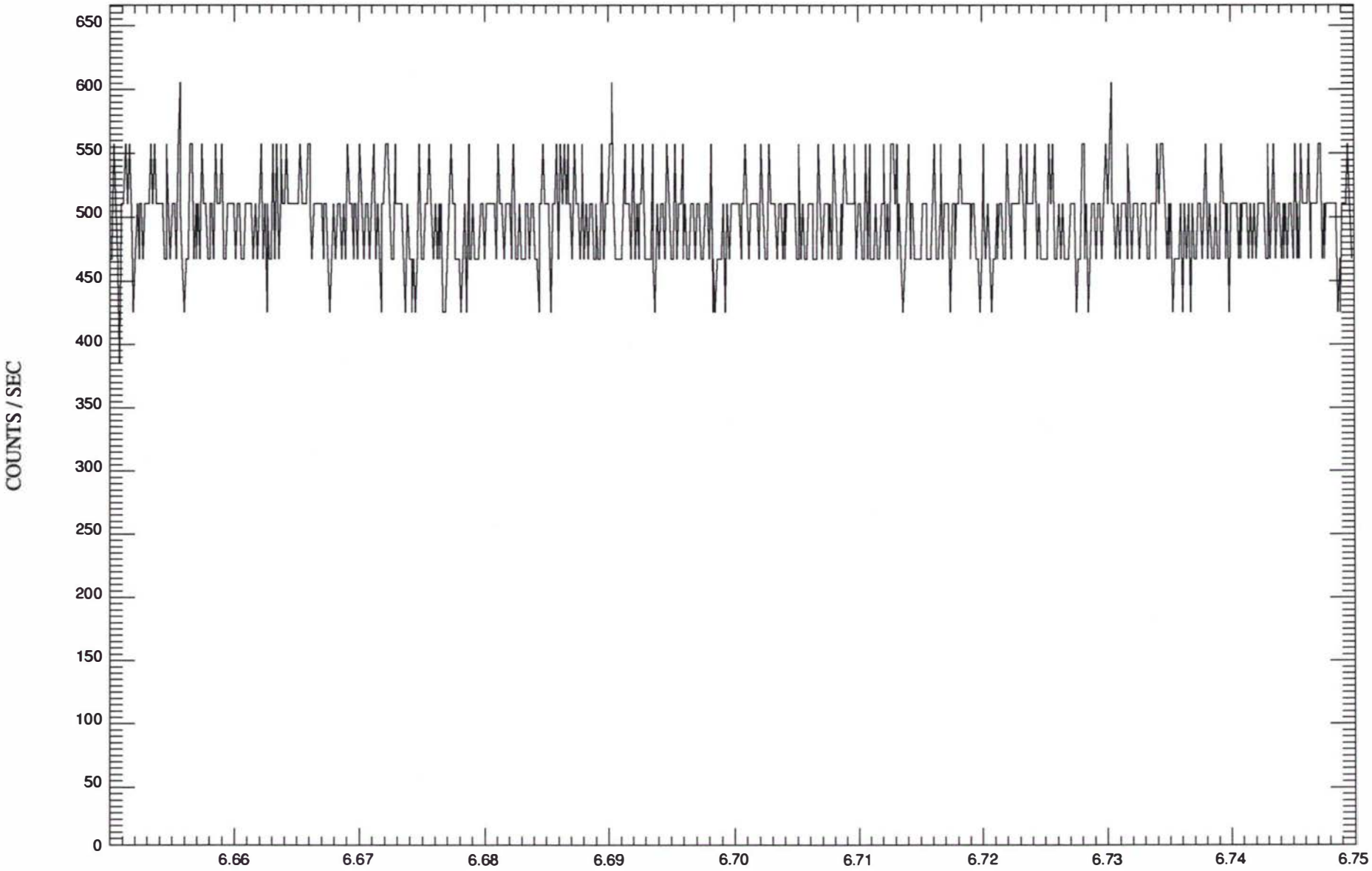
Burst Counter 8 at UT= 6.697193450928 h=24109.896 s 06:41:49.896



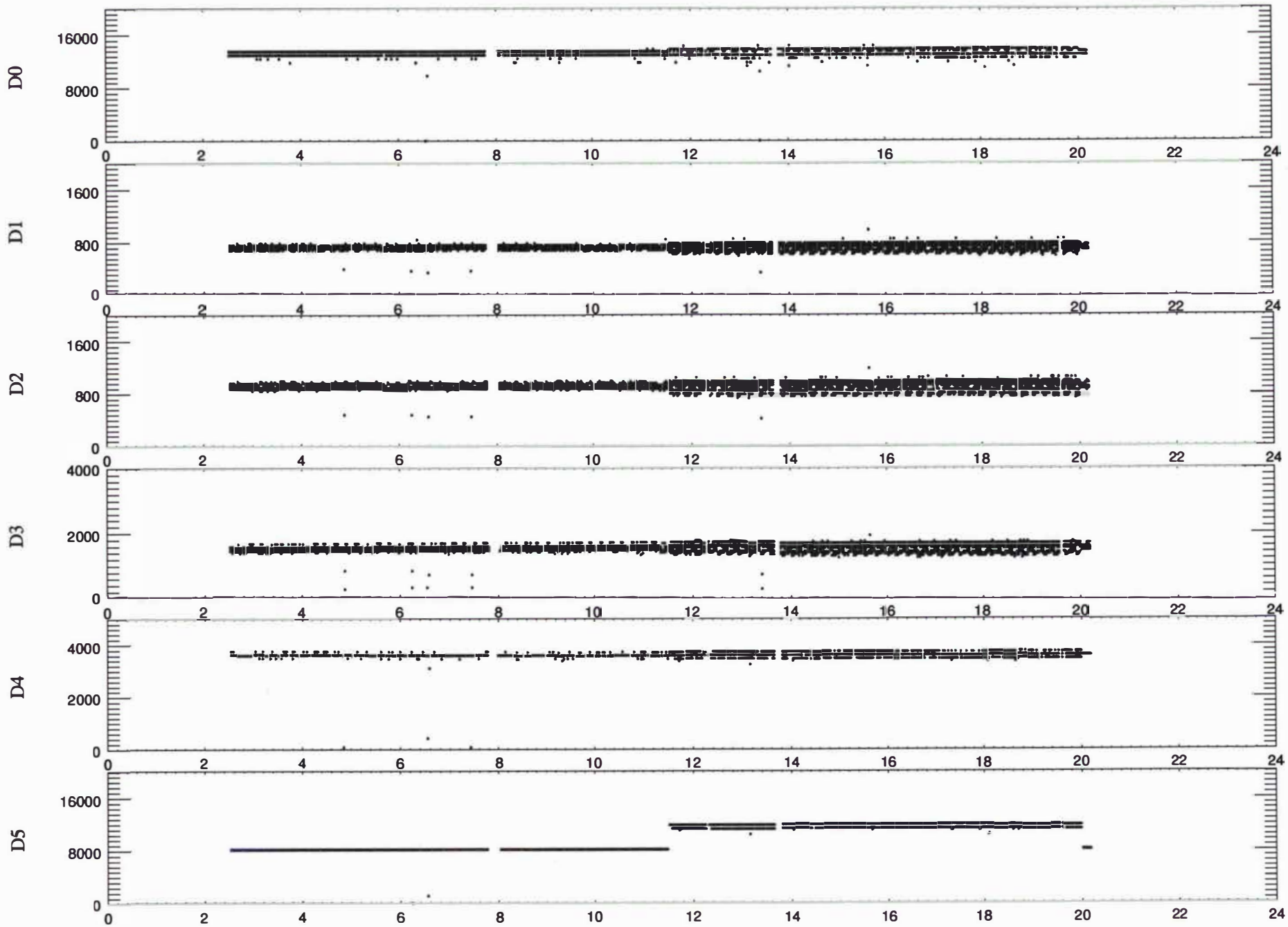
B# 1

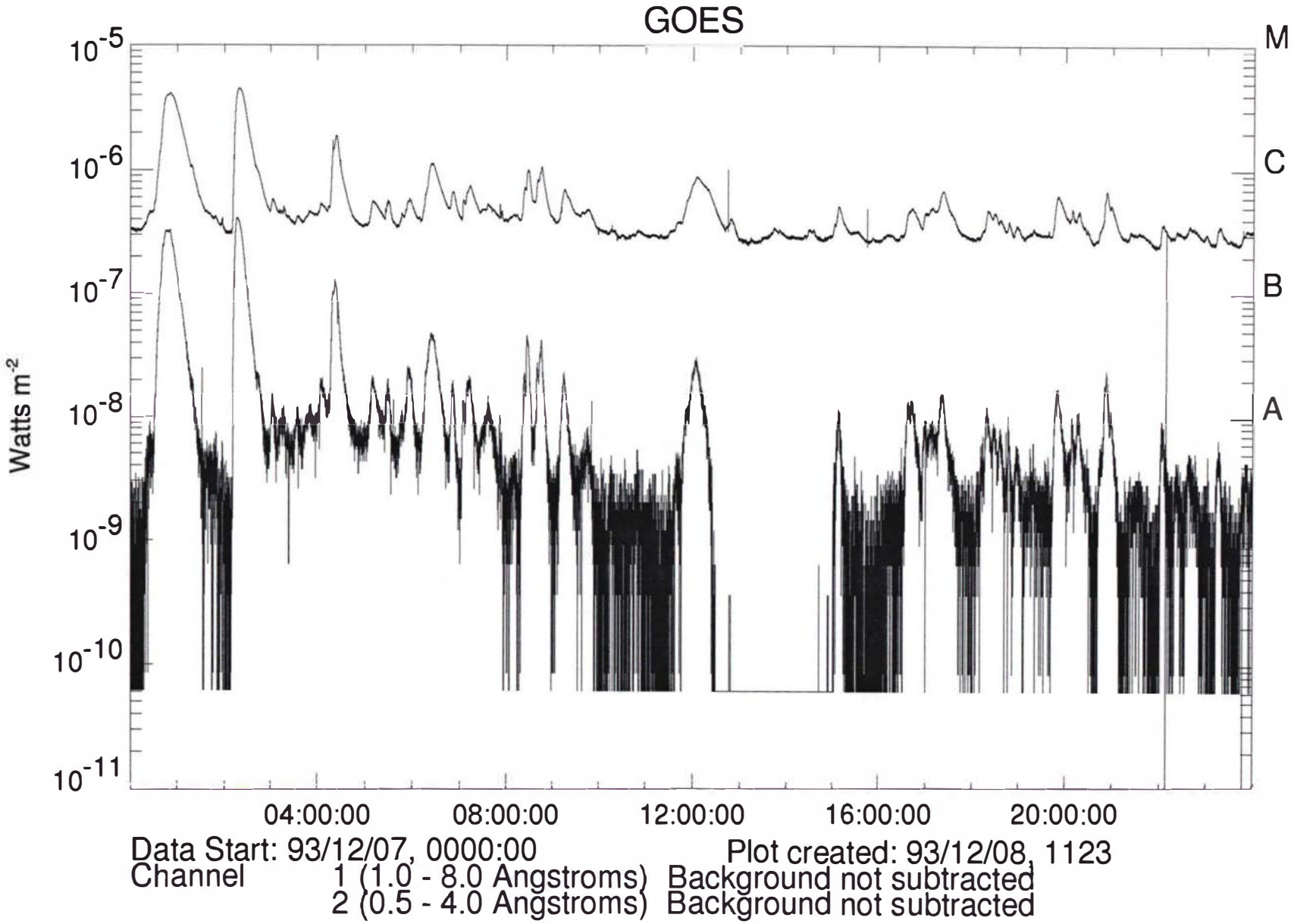
HUS 2A, MODE 1, NOT AVERAGED QEDR day 340, year 1993 to day 340, year 1993 12/7/93

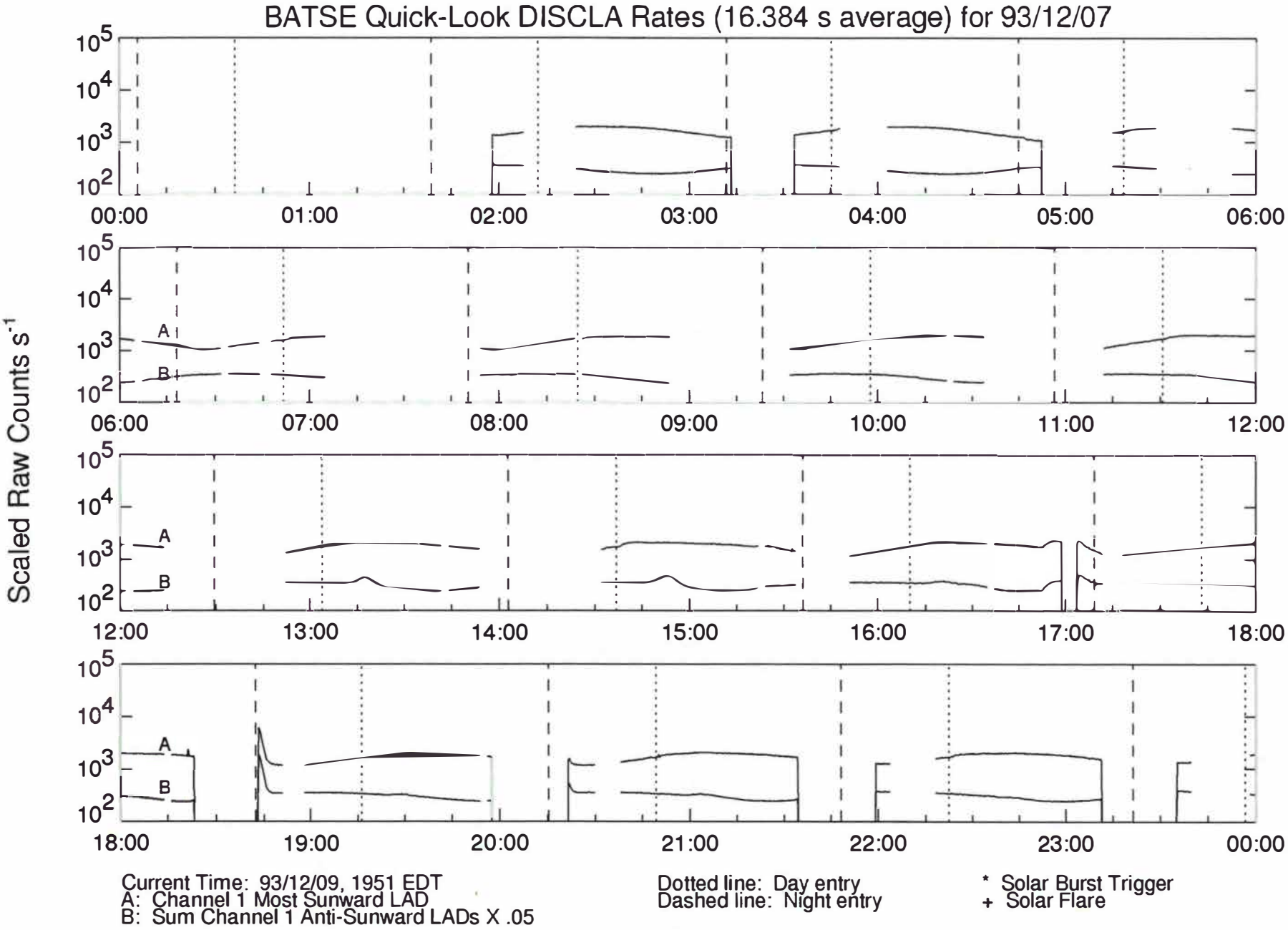
CALIBRATION DATA INCLUDED



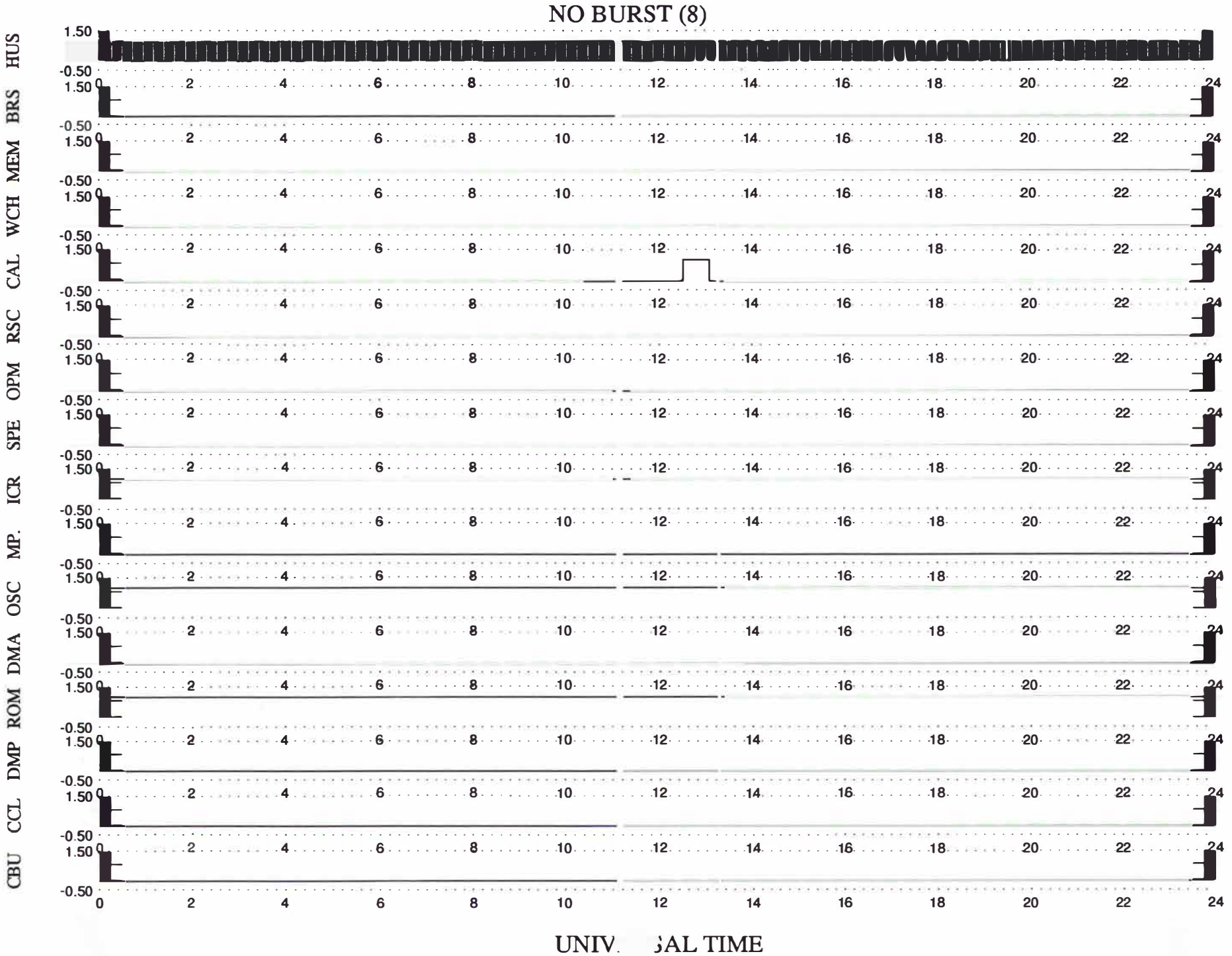
HUS 2B COUNTS / SEC QEDR day 340, year 1993 to day 340, year 1993 12/7/93




GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/07, 0000:00
Plot created: 93/12/08, 1123
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

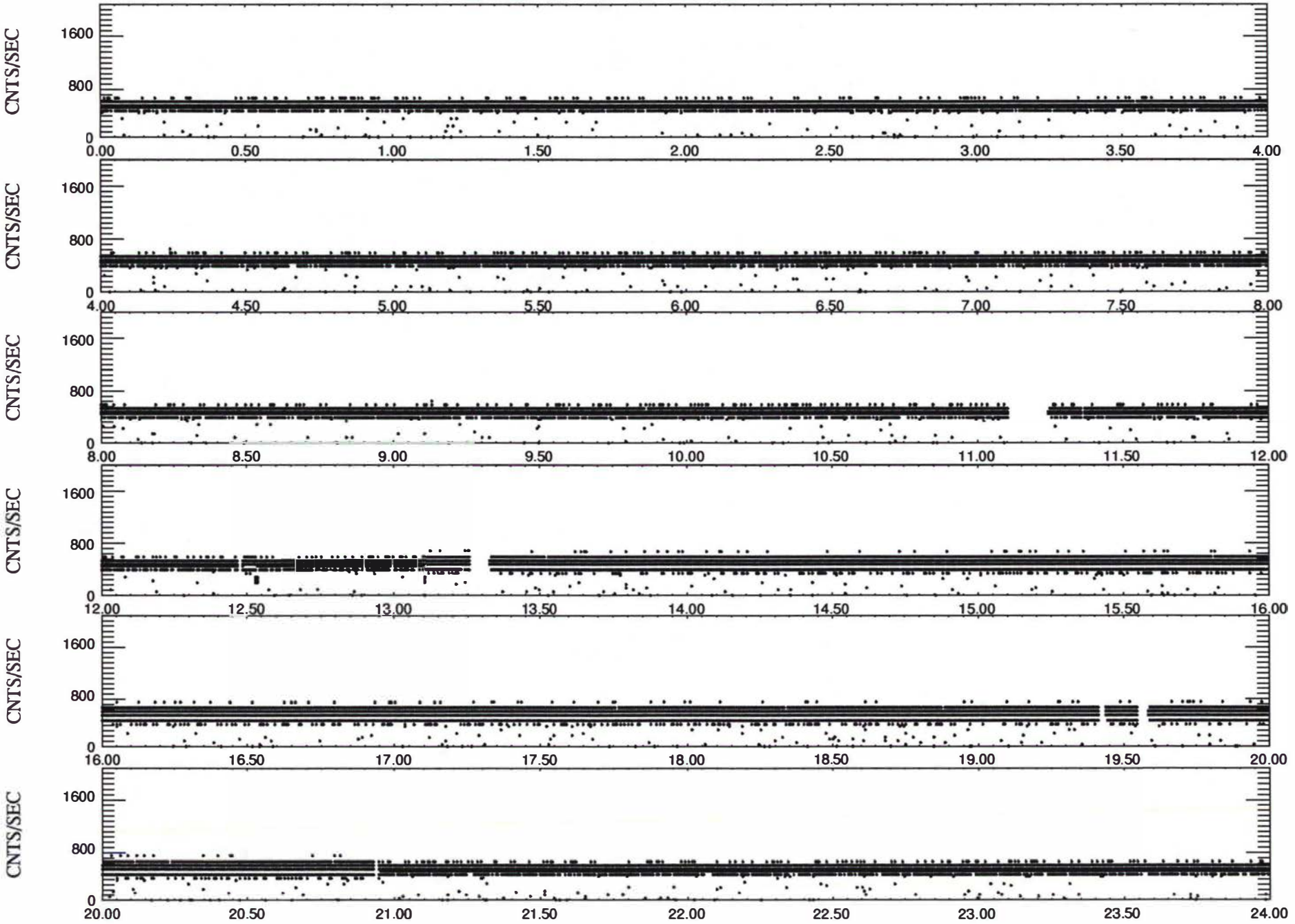

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/07
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/09, 1951 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 341, year 1993 to day 341, year 1993 2/18/94



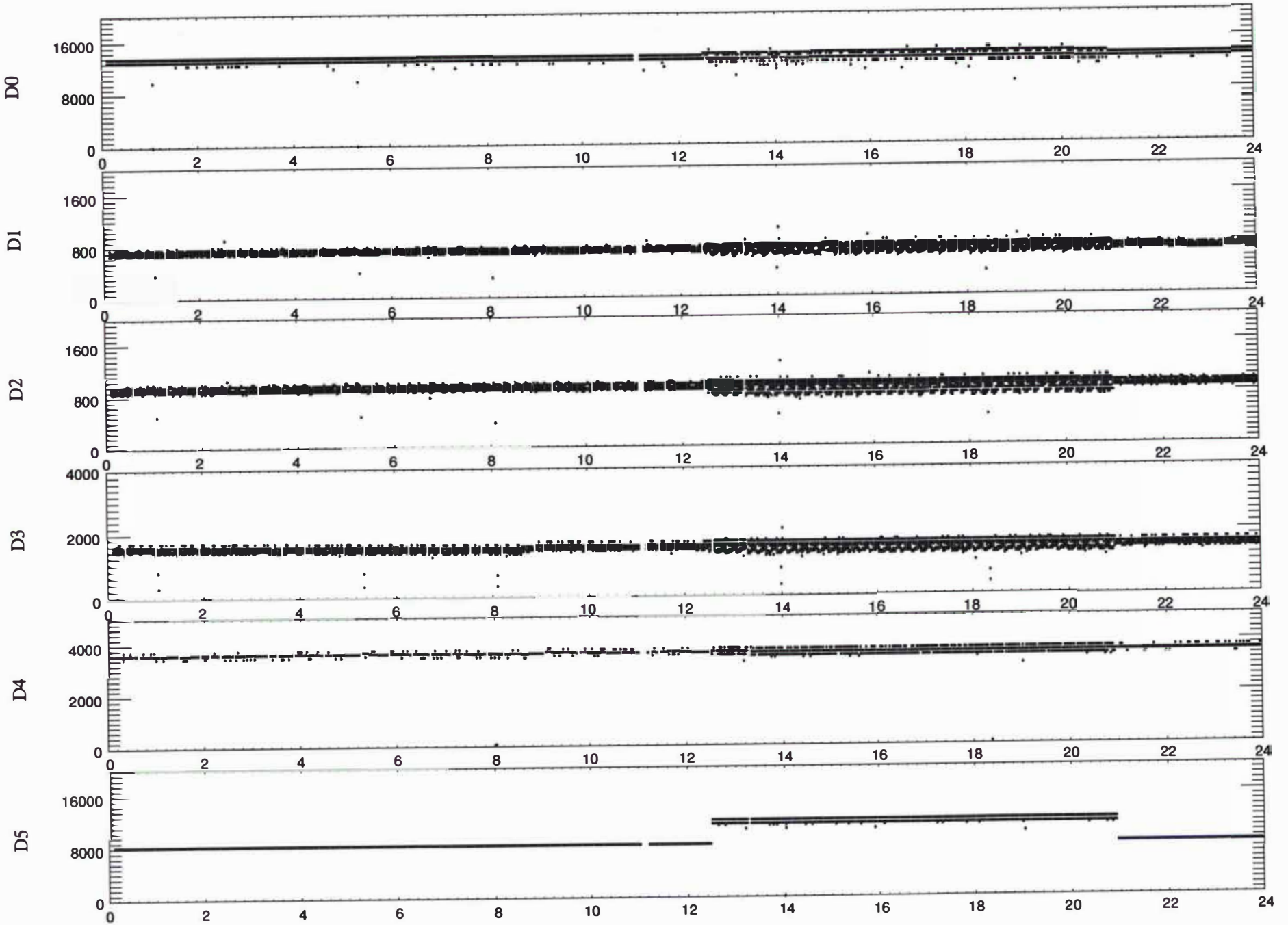
HUS 2A, MODE 1, NOT AVERAGED EDR day 341, year 1993 to day 341, year 1993 2/18/94

CALIBRATION DATA INCLUDED



UNIV SAL TIME

HUS 2B COUNTS / SEC QEDR day 341, year 1993 to day 341, year 1993 12/9/93



From DEAL@fender.msfc.nasa.gov Thu Dec 9 14:05:02 1993
Date: Thu, 9 Dec 1993 16:08:18 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2682
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2682
EVENT OF 1993 DEC 8 DAY OF YEAR=342
EVENT CROSSING TIME AT BATSE : 16639. S. OR 04:37:19.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 212.000 -21.000
BATSE PEAK COUNTING RATE: 10600 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 8/12/ 93 IS:
RA= 166.547 DEC= -35.513 DIST= 4.075 AU
BATSE-ULYSSES DISTANCE = 609616262. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=137.84 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1507.30 SECS.
CROSSING TIME AT ULYSSES IS 15132. S. OR 04:12:11 +/- 264.08 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 8/12/ 93 IS:
RA= 260.165 DEC= -23.769 DIST= 2.445 AU
MARS-BATSE DISTANCE = 365837504. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=135.59 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -871.67 SECS.
CROSSING TIME AT MARS IS 15767. S. OR 04:22:47 +/- 135.03 SECONDS

RI

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2682	931208	9329	16639	10600	212	-21

BATSE BURST TRIGGER

NO.: 02682

TIME: TJD=9329 SECONDS=16639

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=118.0 AZIMUTH=308.8 ERROR= DEGREES

COMMENTS:
GRB OF DURATION ~23S. OBSERVED ABOVE 300KEV.

Helio corr removed

Date: Jul 2 '97

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☐ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? NO

Aberration correction applied to time (Geocentric → Heliocentric)?

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ Does T_0 in data file agree with T_0 in plot?

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

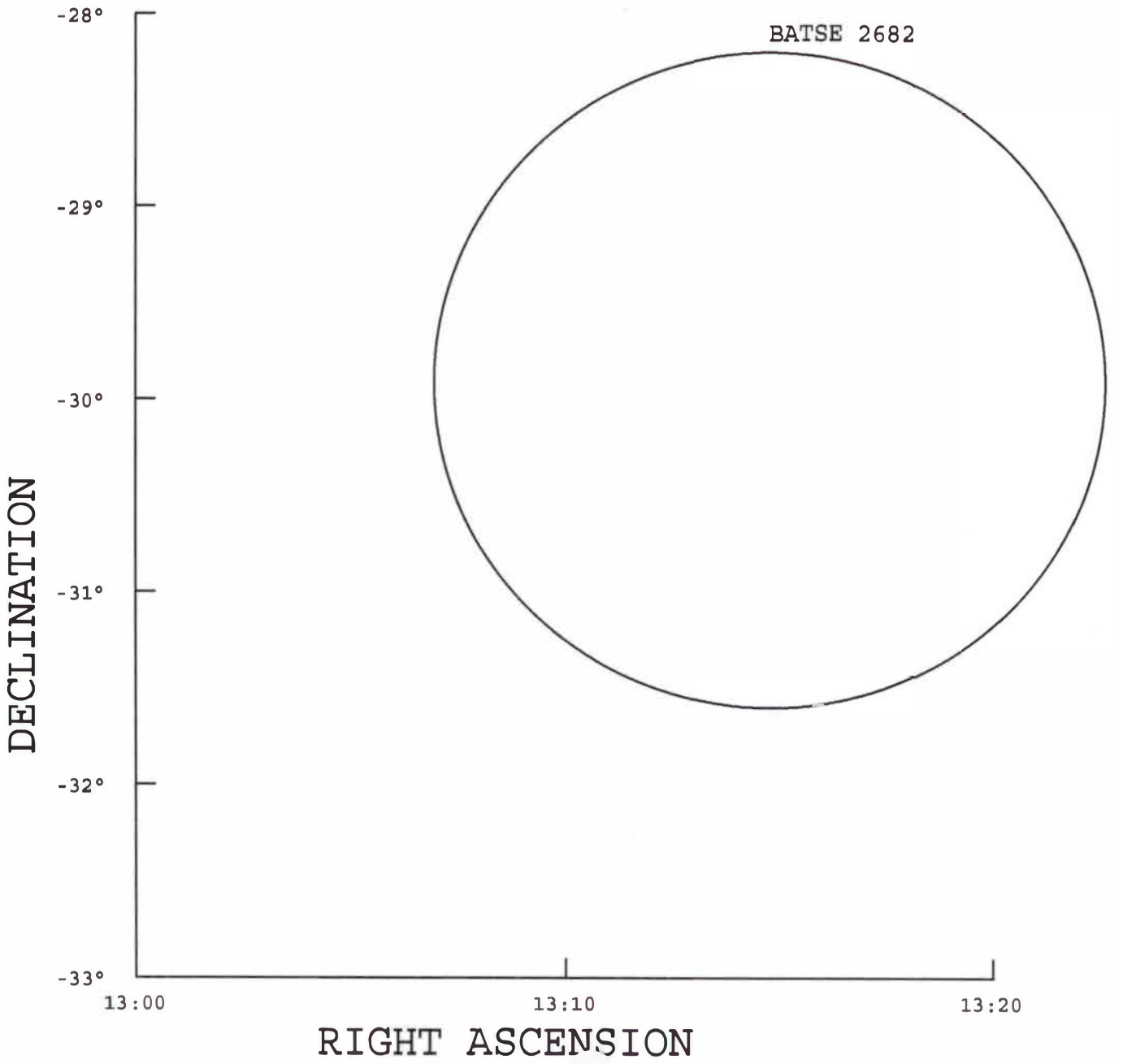
☐ Geocentric time used?

☑ ACCESS database updated?

EVENT OF DEC 8, 1993 4:08

5/ 3/98

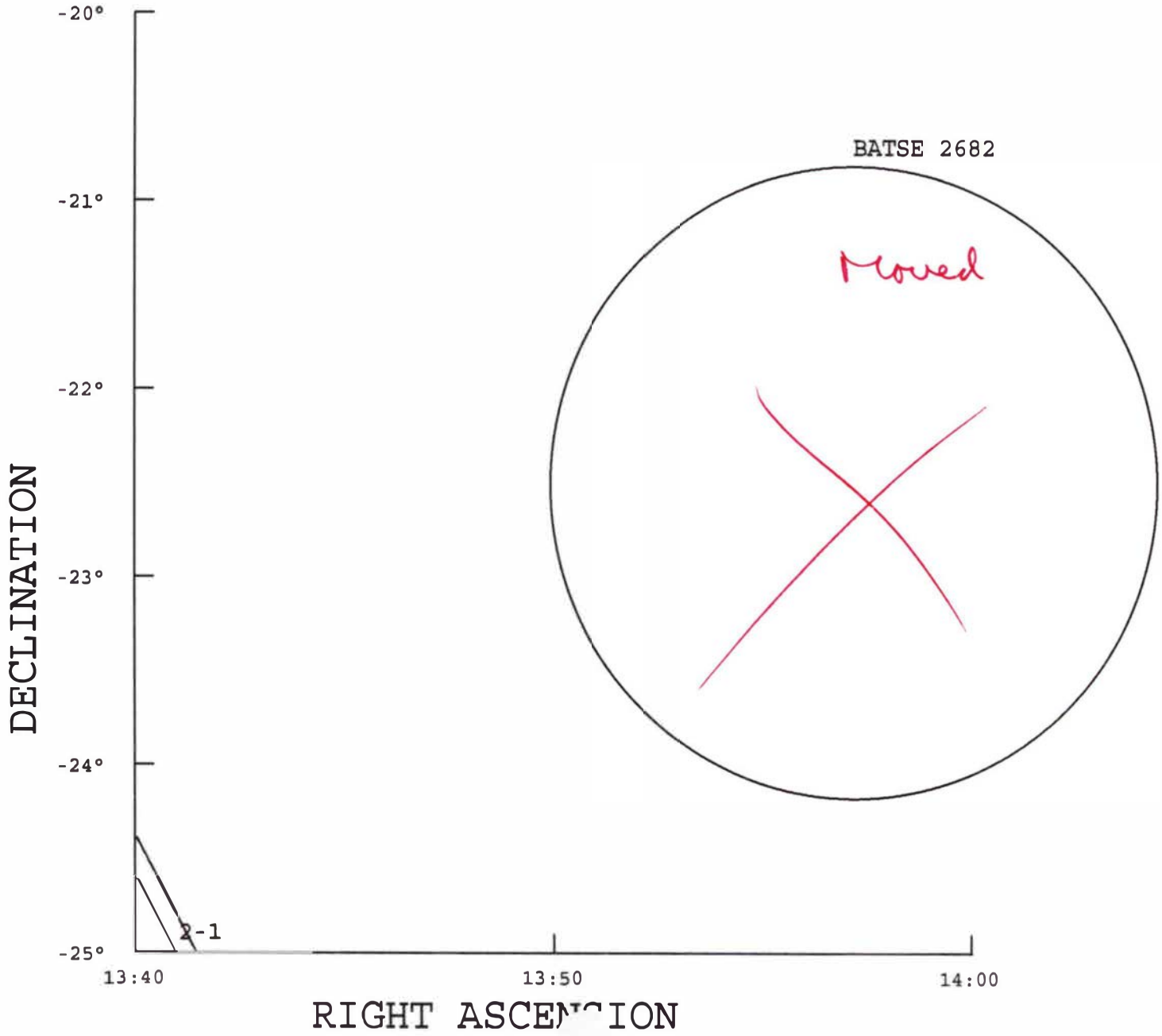
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE

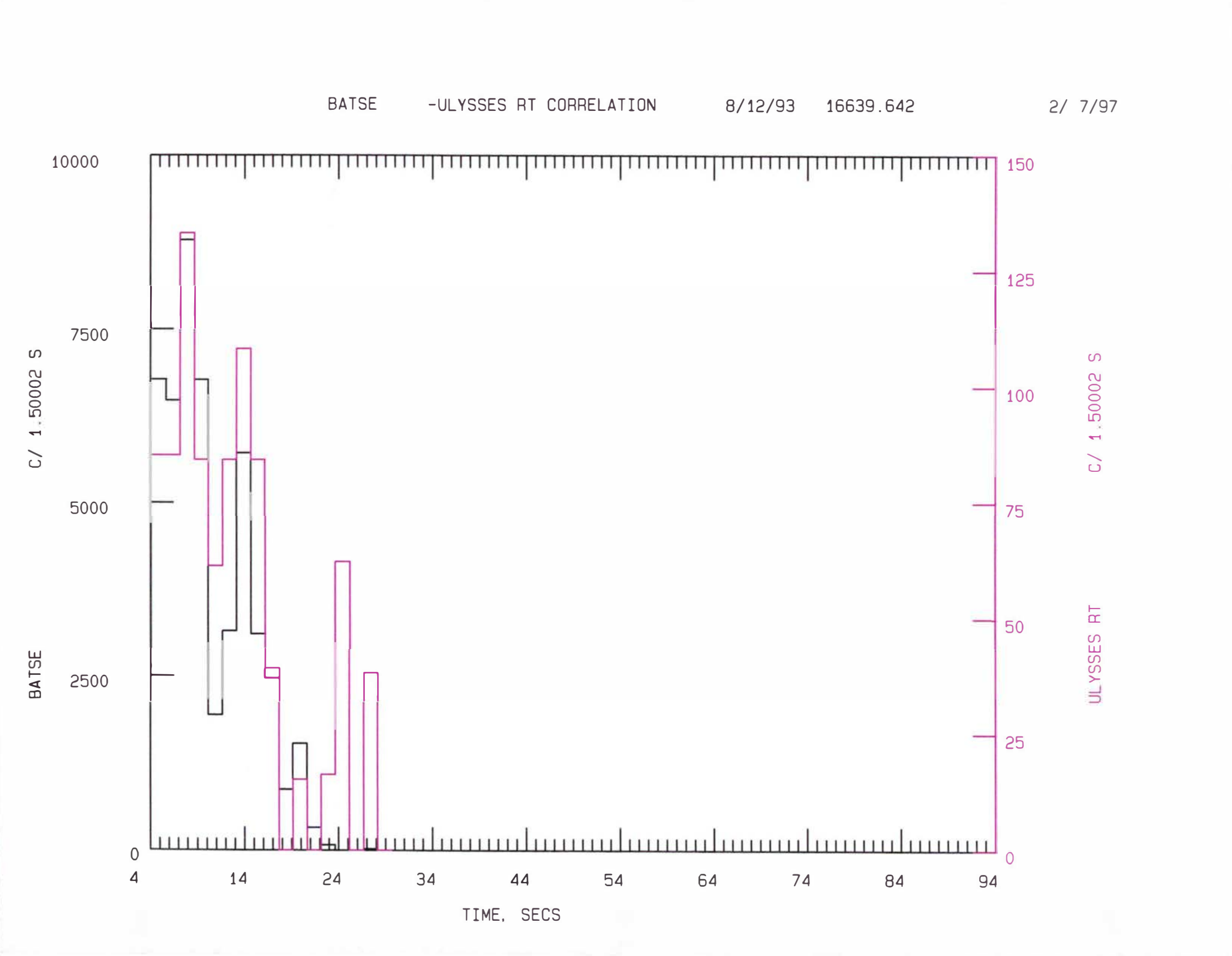


EVENT OF DEC 8, 1993 4:08

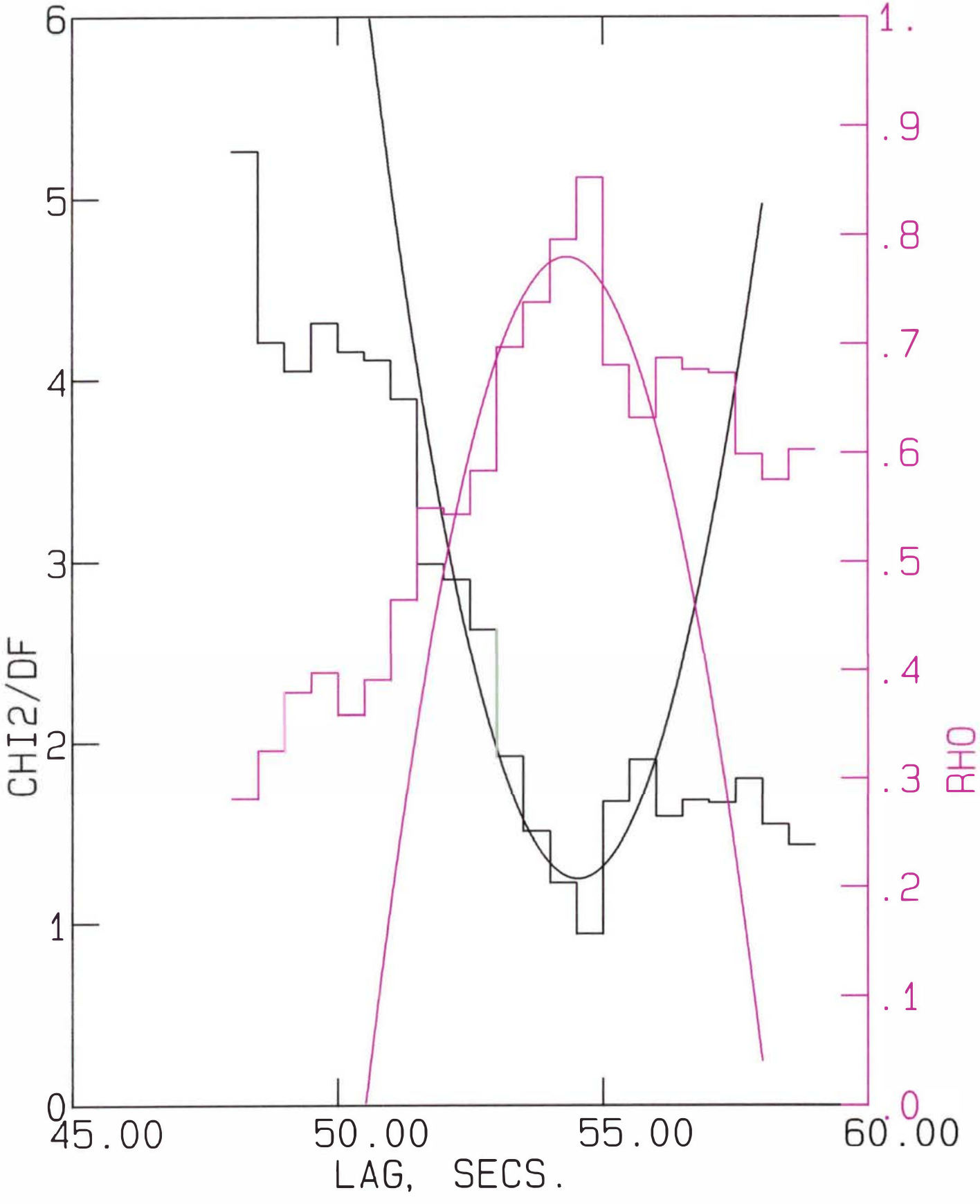
2/ 7/97

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 8/12/93 16639.642 2/ 7/97
10000
7500
5000
2500
0
BATSE
C/ 1.50002 S
150
125
100
75
50
25
0
ULYSSES RT
C/ 1.50002 S
4
14
24
34
44
54
64
74
84
94
TIME, SECS

BATSE -ULYSSES RT CORRELATION 8/12/93 16639.642

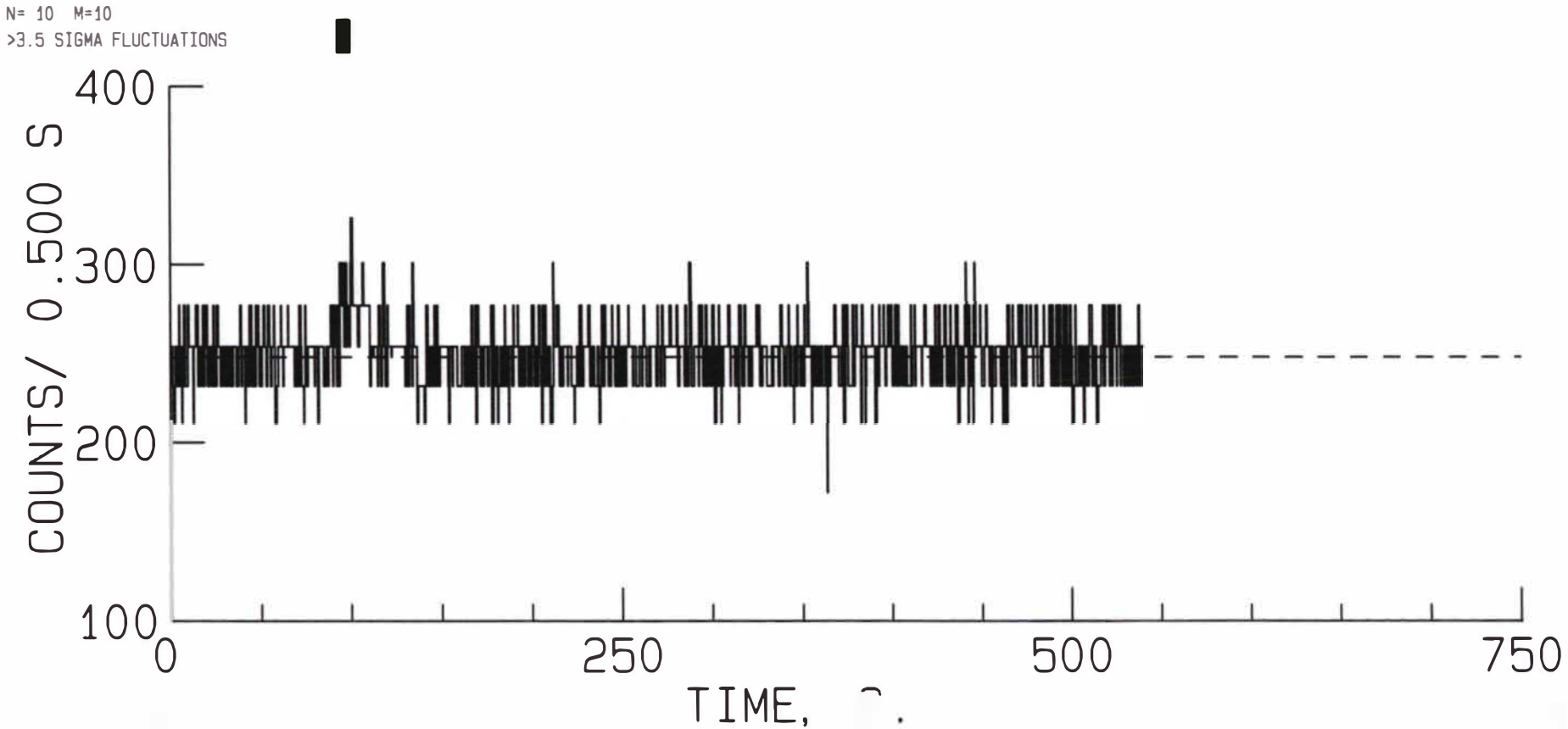


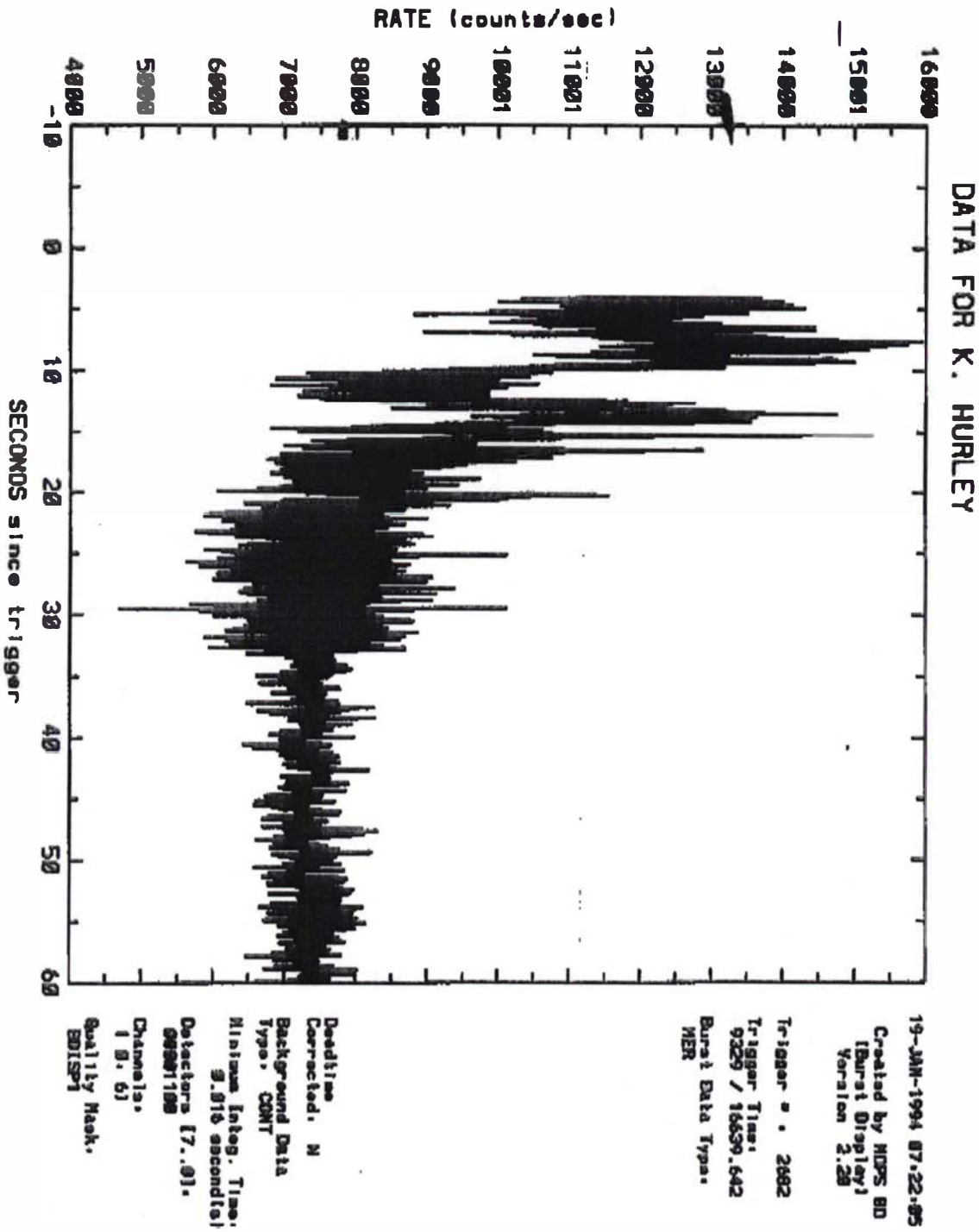
ULYSSES RT

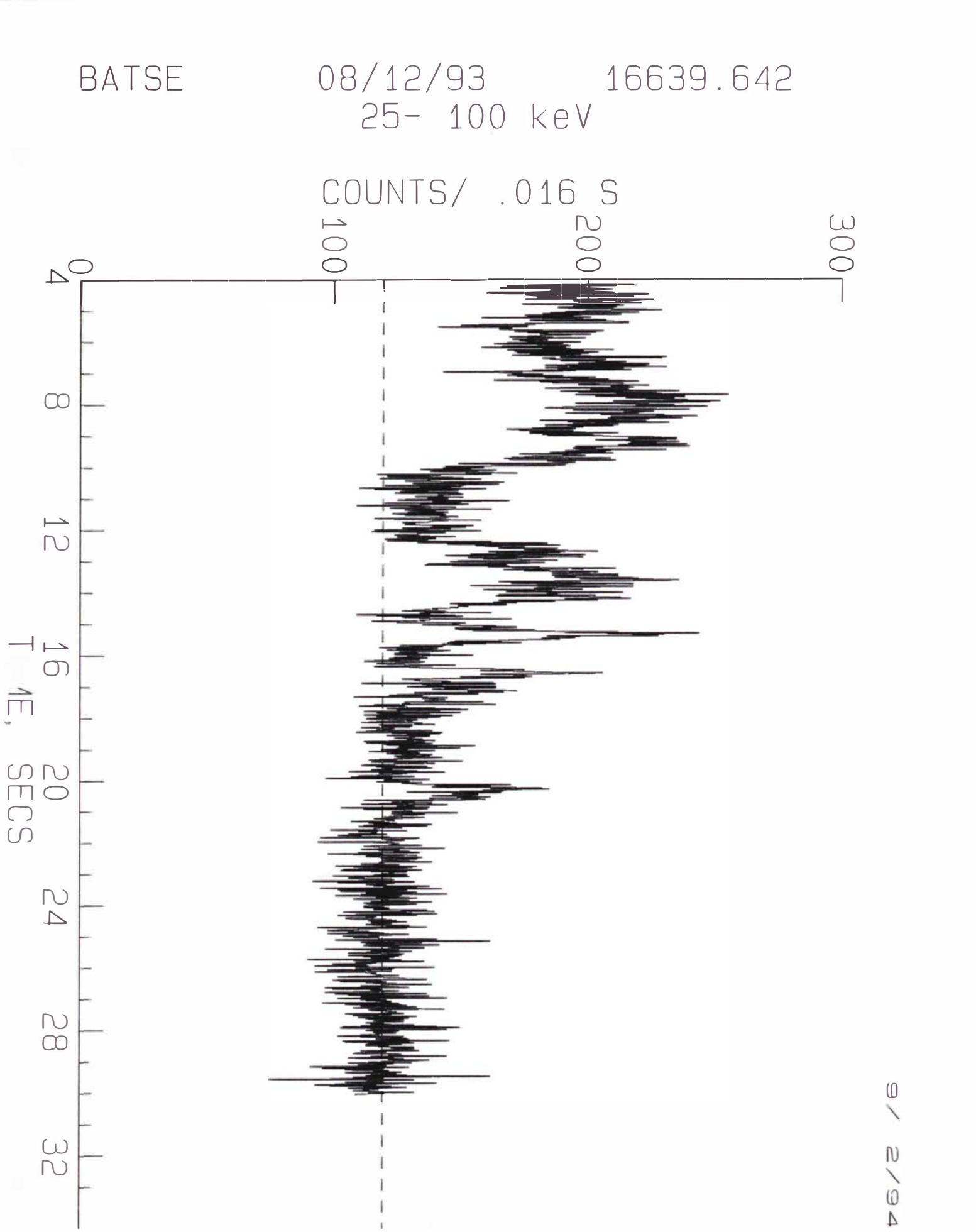
8/12/93 14868.086 s

21- 143 keV

2/ 7/97




DATA FOR K. HURLEY
RATE (counts/sec)
SECONDS since trigger
19-JAN-1994 07:22:05
Created by MDPS BD
(Burst Display)
Version 2.28
Trigger # . 2662
Trigger Time:
9229 / 16639.642
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.016 seconds)
Detectors [7..0]:
Channels:
(0. 6)
Quality Mask:
BDISP1


BATSE 08/12/93 16639.642
25- 100 keV
COUNTS/ .016 S
0
100
200
300
4
8
12
16
20
24
28
32
TIME, SECS
9/ 2/94

From DEAL@fender.msfc.nasa.gov Thu Dec 9 14:07:05 1993
Date: Thu, 9 Dec 1993 16:10:25 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2683
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2683
EVENT OF 1993 DEC 8 DAY OF YEAR=342
EVENT CROSSING TIME AT BATSE : 34480. S. OR 09:34:40.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 220.000 -43.000
BATSE PEAK COUNTING RATE: 12300 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 8/12/ 93 IS:
RA= 166.548 DEC= -35.566 DIST= 4.071 AU
BATSE-ULYSSES DISTANCE = 609082749. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=138.67 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1525.68 SECS.
CROSSING TIME AT ULYSSES IS 32954. S. OR 09:09:14 +/- 259.76 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 8/12/ 93 IS:
RA= 260.165 DEC= -23.769 DIST= 2.445 AU
MARS-BATSE DISTANCE = 365837504. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=141.85 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -959.60 SECS.
CROSSING TIME AT MARS IS 33520. S. OR 09:18:40 +/- 116.31 SECONDS

KI ?

Content-Length: 255

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2683	931208	9329	34480	12300	220	-43

BATSE BURST TRIGGER

NO.: 02683

TIME: TJD=9329 SECONDS=34480

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=124.7 AZIMUTH=282.5 ERROR= DEGREES

COMMENTS:
GRB DURATION ~15S. SINGLE PEAK WITH FAST RISE OBSERVED ABOVE 300KEV.

Helio corr removed

Date: Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad stats

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☐ BATSE ephemeris for T_0? No

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

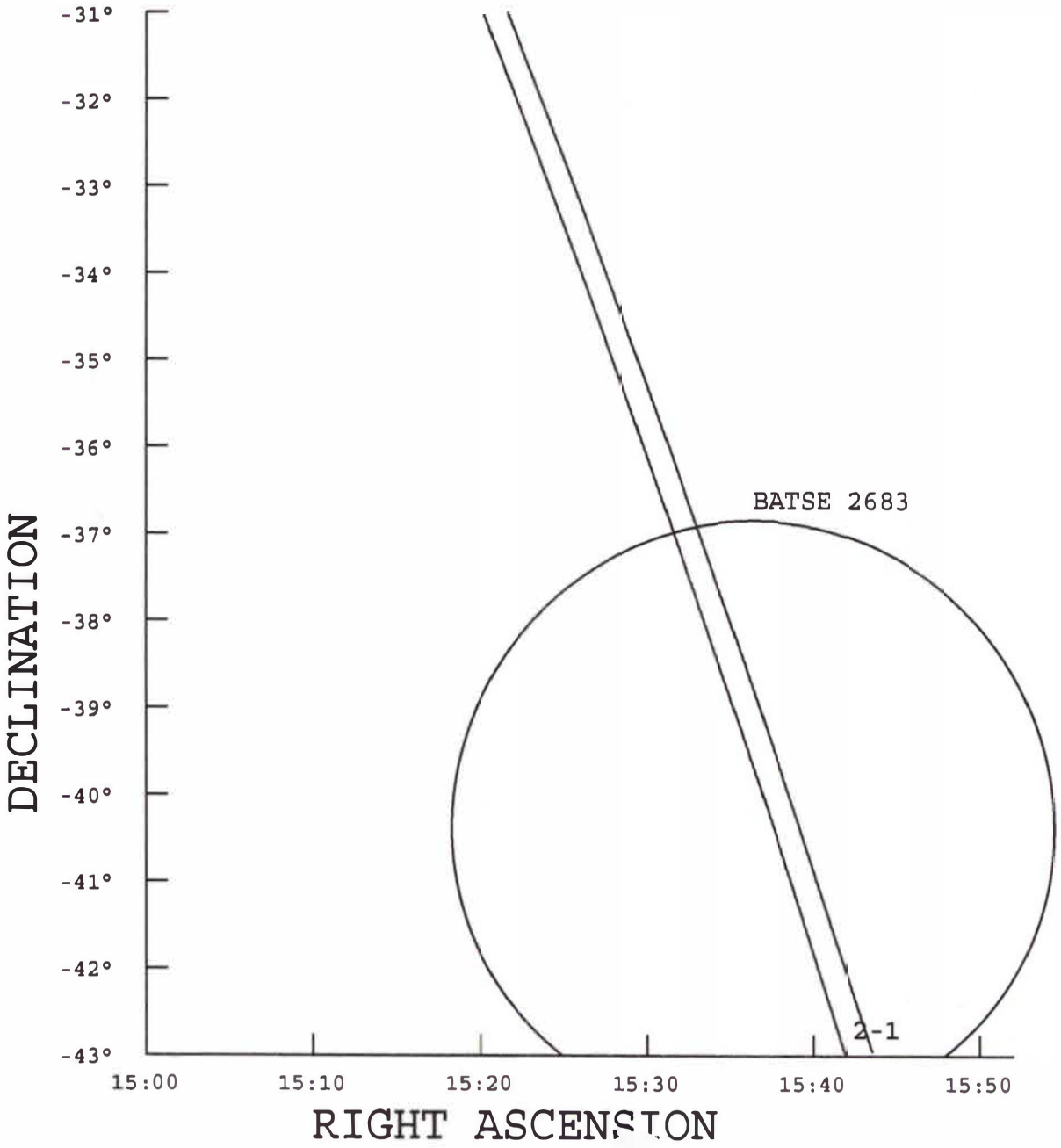
☐ Geocentric time used?

☑ ACCESS database updated?

EVENT OF DEC 8, 1993 9:13

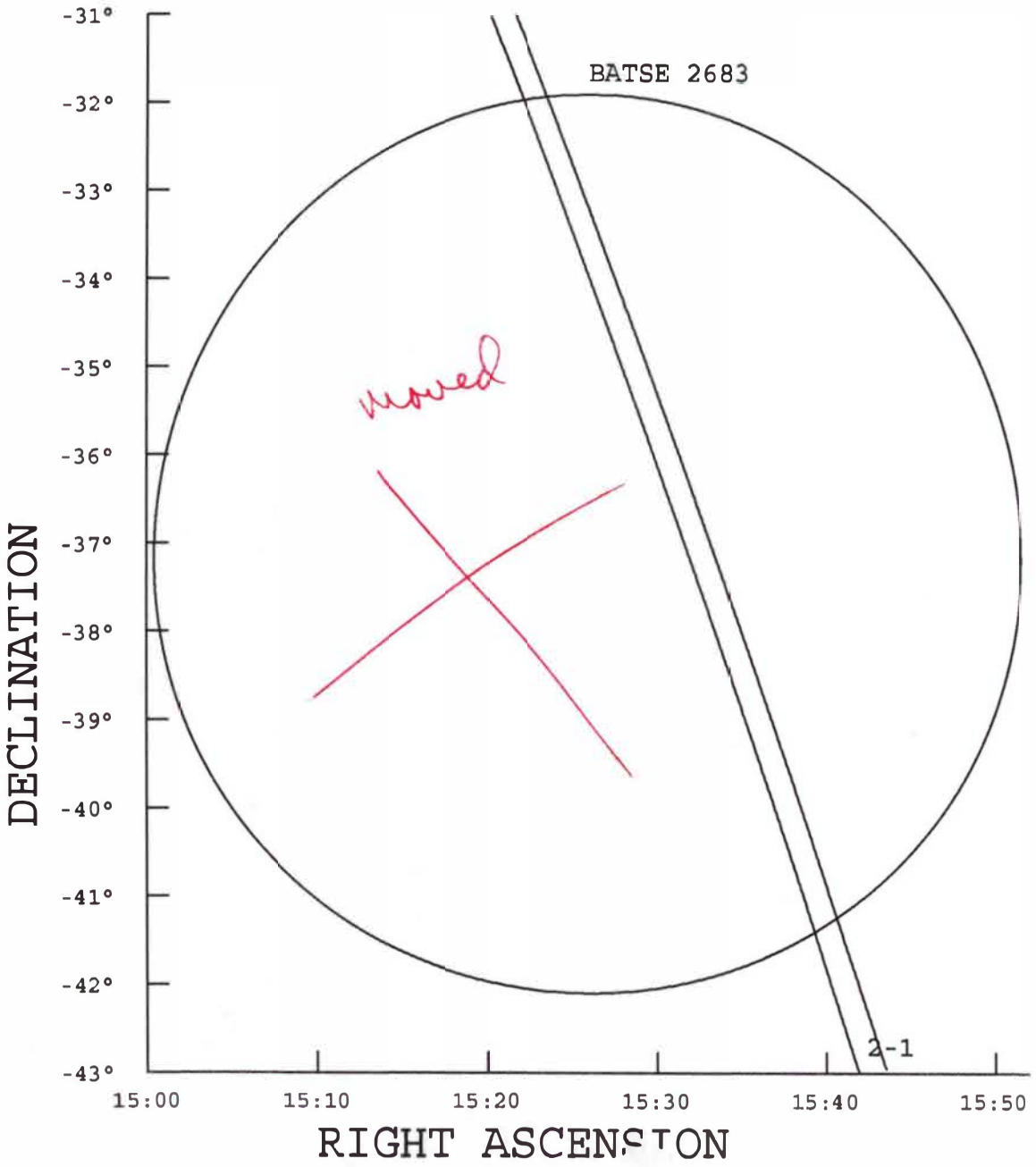
5/ 3/98

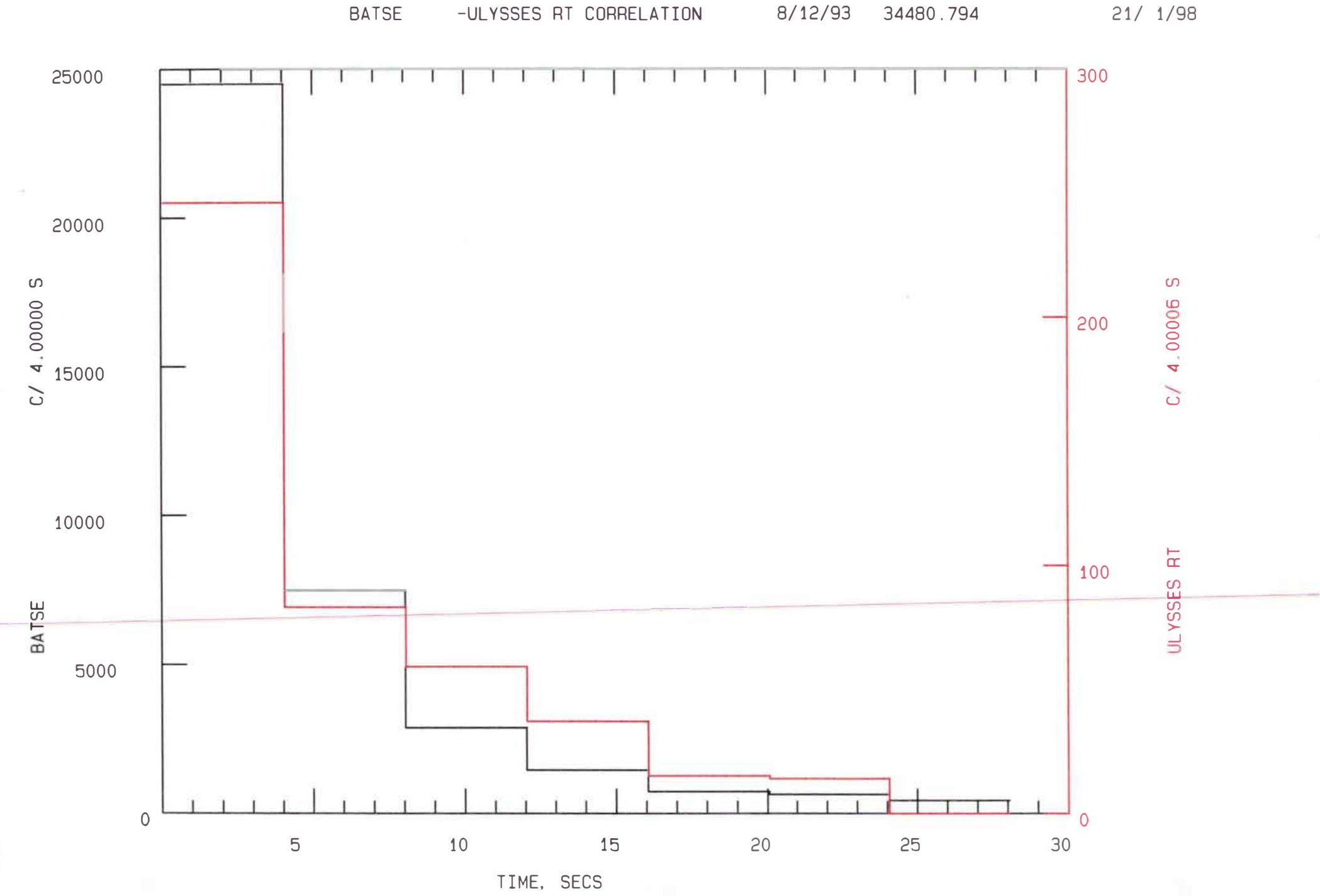
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE



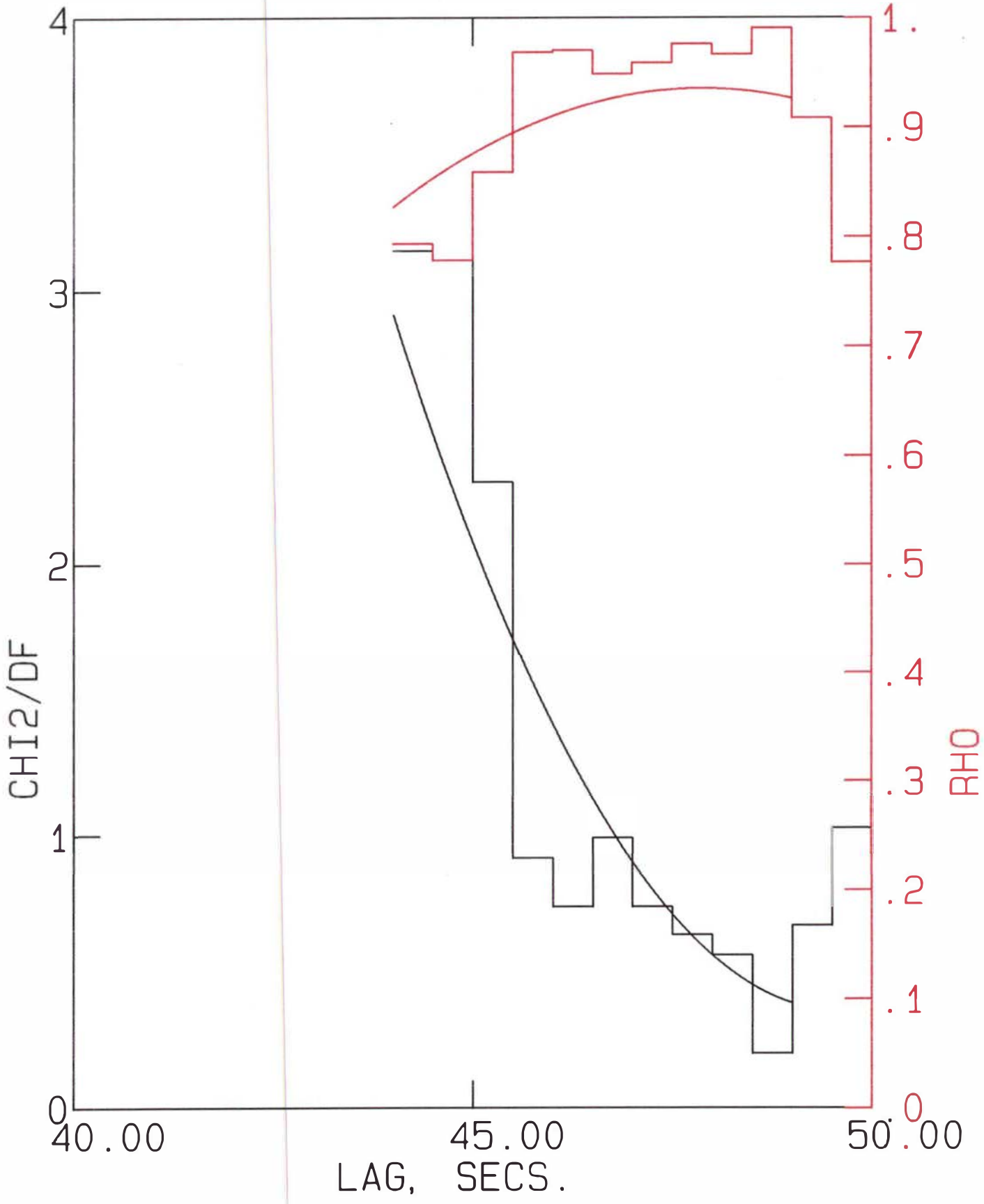
EVENT OF DEC 8, 1993 9:13

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 8/12/93 34480.794 21/ 1/98
25000
20000
15000
10000
5000
0
C/ 4.00000 S
BATSE
300
200
100
0
C/ 4.00006 S
ULYSSES RT
5
10
15
20
25
30
TIME, SECS

BATSE -ULYSSES RT CORRELATION 8/12/93 34480.794

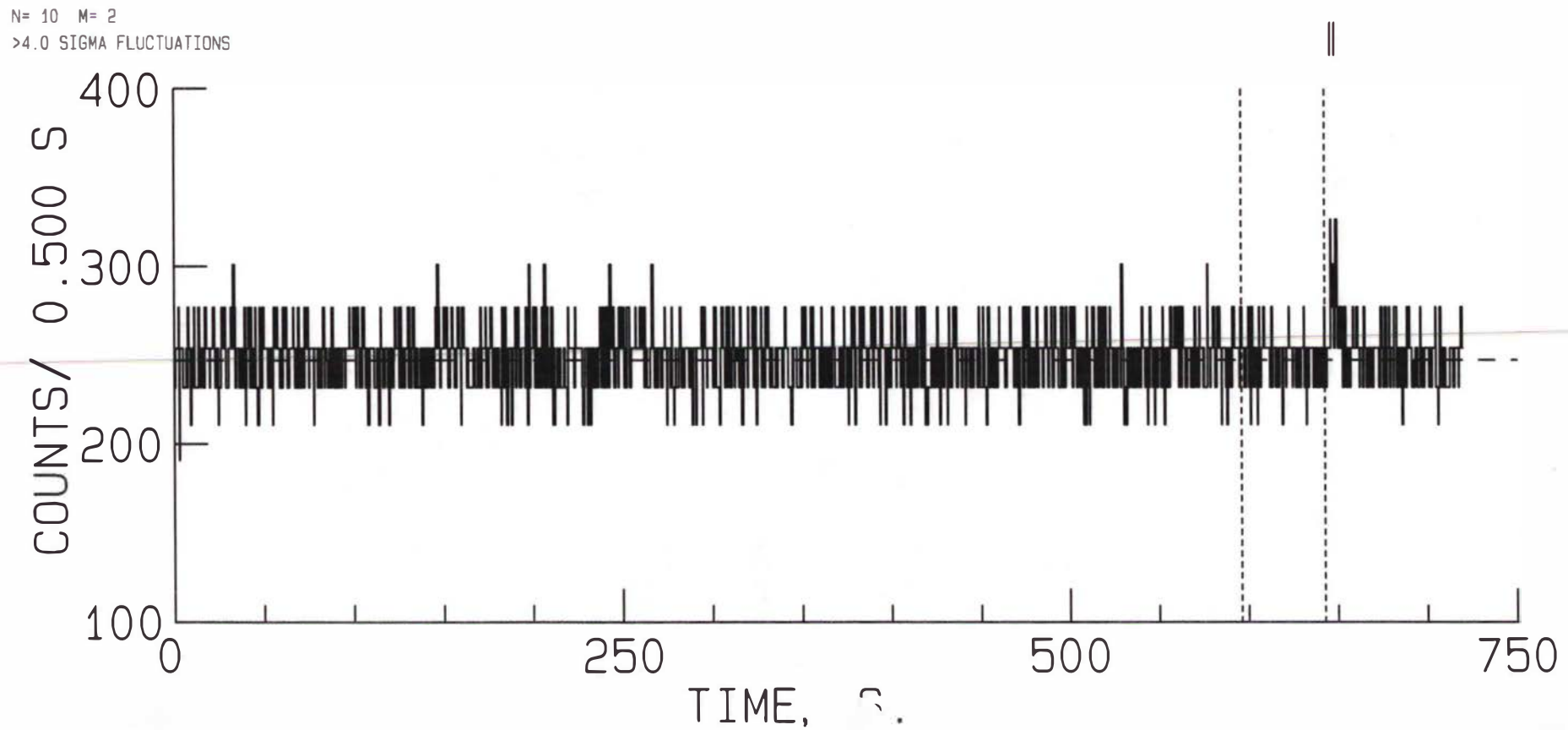


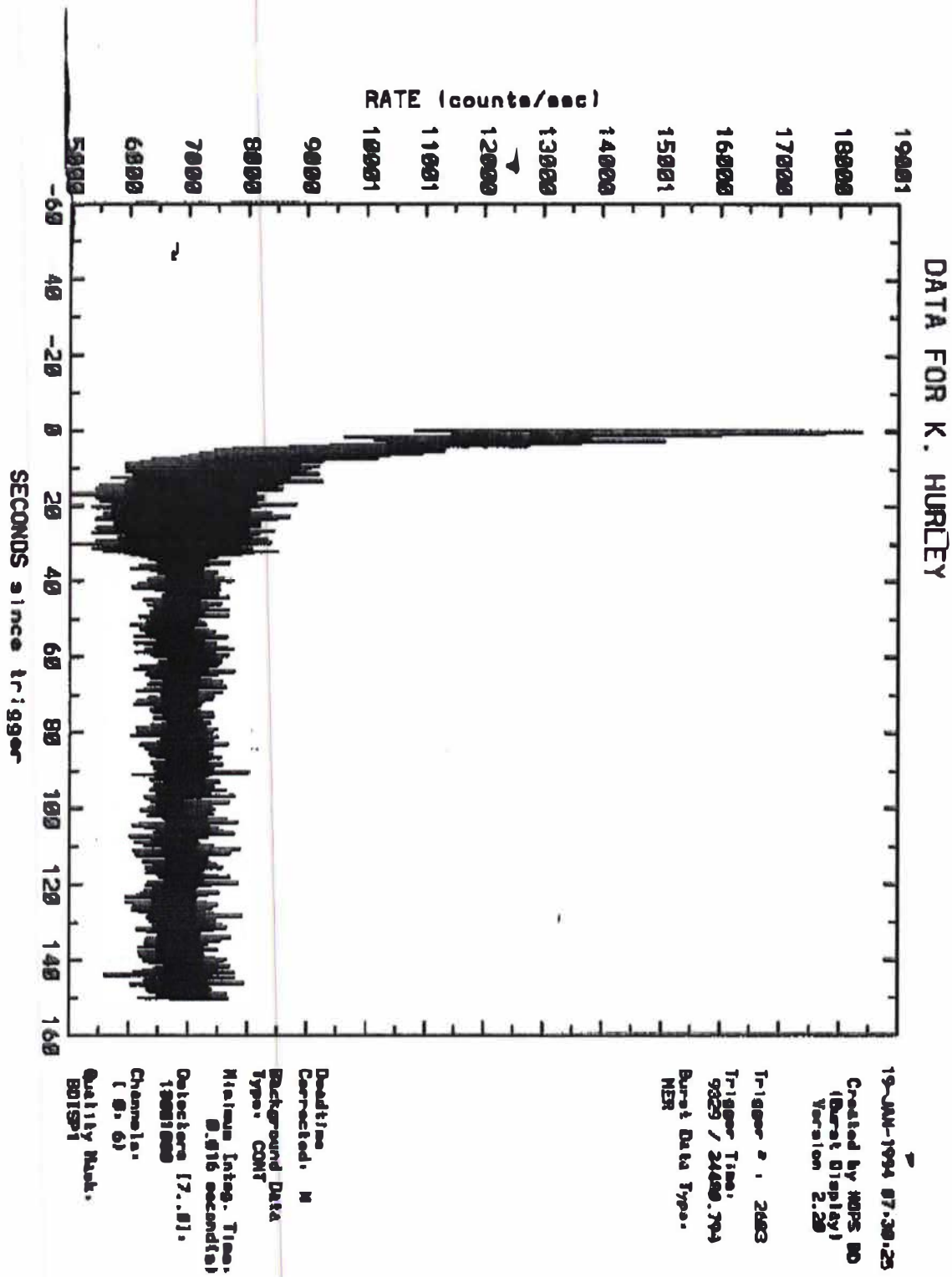
ULYSSES RT

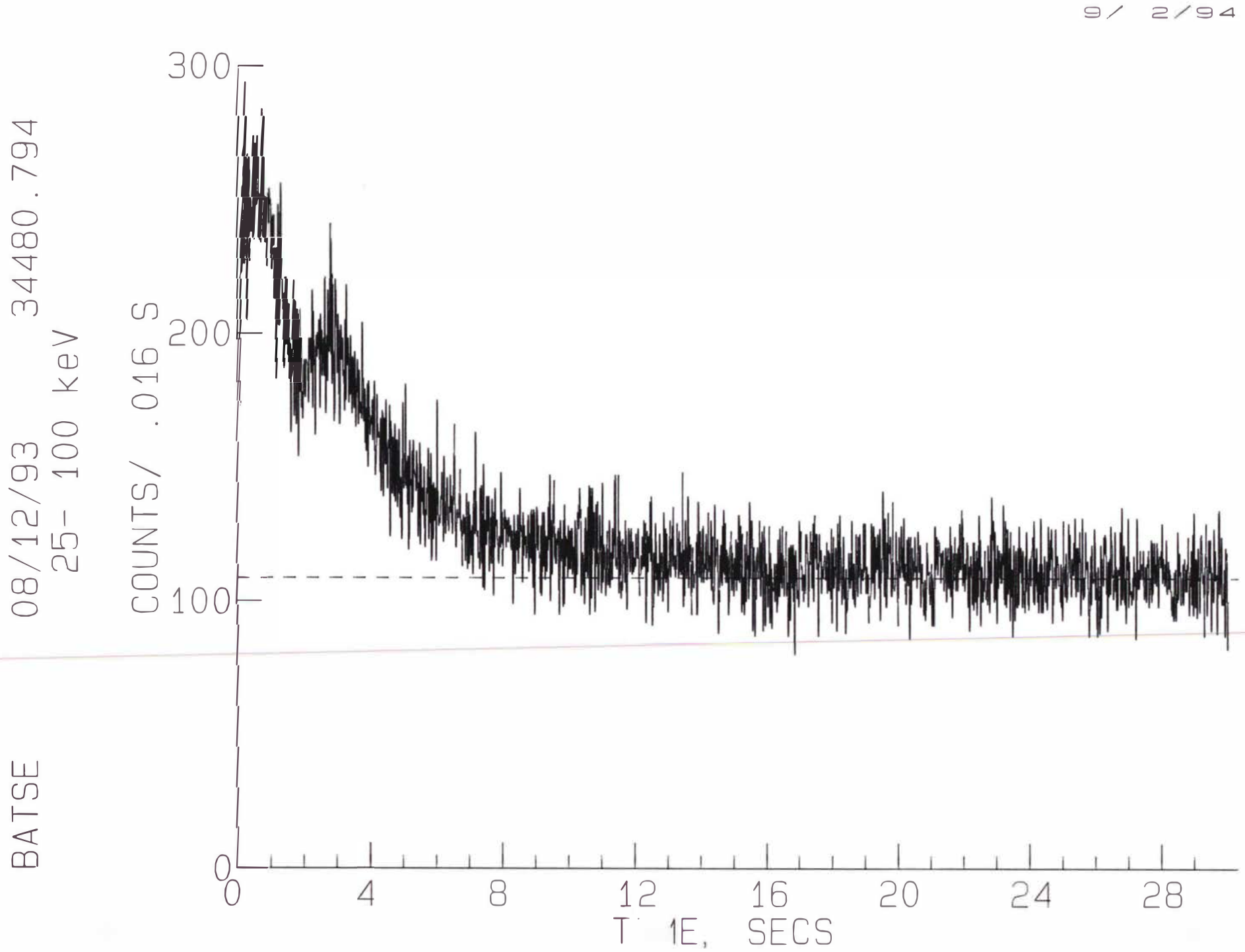
21/ 1/98

8/12/93 32580.355 s

21- 143 keV




DATA FOR K. HURLEY
RATE (counts/sec)
SECONDS since trigger
19-JAN-1994 07:30:25
Created by MOPS RO
(Burst Display)
Version 2.20
Trigger # : 2483
Trigger Time:
9329 / 24480.704
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.016 seconds)
Detectors [7..0]:
Channels:
[0. 6)
Quality Mask:
BOISP1


9/ 2/94
BATSE
08/12/93 34480.794
25- 100 keV
COUNTS/ .016 S
300
200
100
0
0
4
8
12
16
20
24
28
TIME, SECS

From DEAL@fender.msfc.nasa.gov Thu Dec 9 13:54:51 1993
Date: Thu, 9 Dec 1993 15:58:04 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET,
LHEAVXCLINE@fender.msfc.nasa.gov, LHEAVXBARTHELMY@fender.msfc.nasa.gov,
LHEAVXKWOK@fender.msfc.nasa.gov, 15733SCHAEFER@fender.msfc.nasa.gov,
CASS09BAND@fender.msfc.nasa.gov, CASS09GRUBER@fender.msfc.nasa.gov,
CASS09MATTESON@fender.msfc.nasa.gov, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER
NO.: 02684

TIME: TJD=9329 SECONDS=50423

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT

From DEAL@fender.msfc.nasa.gov Thu Dec 9 13:57:19 1993
Date: Thu, 9 Dec 1993 16:00:21 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET,
LHEAVXCLINE@fender.msfc.nasa.gov, LHEAVXBARTHELMY@fender.msfc.nasa.gov,
LHEAVXKWOK@fender.msfc.nasa.gov, 15733SCHAEFER@fender.msfc.nasa.gov,
CASS09BAND@fender.msfc.nasa.gov, CASS09GRUBER@fender.msfc.nasa.gov,
CASS09MATTESON@fender.msfc.nasa.gov, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER
NO.: 02685

TIME: TJD=9329 SECONDS=64553

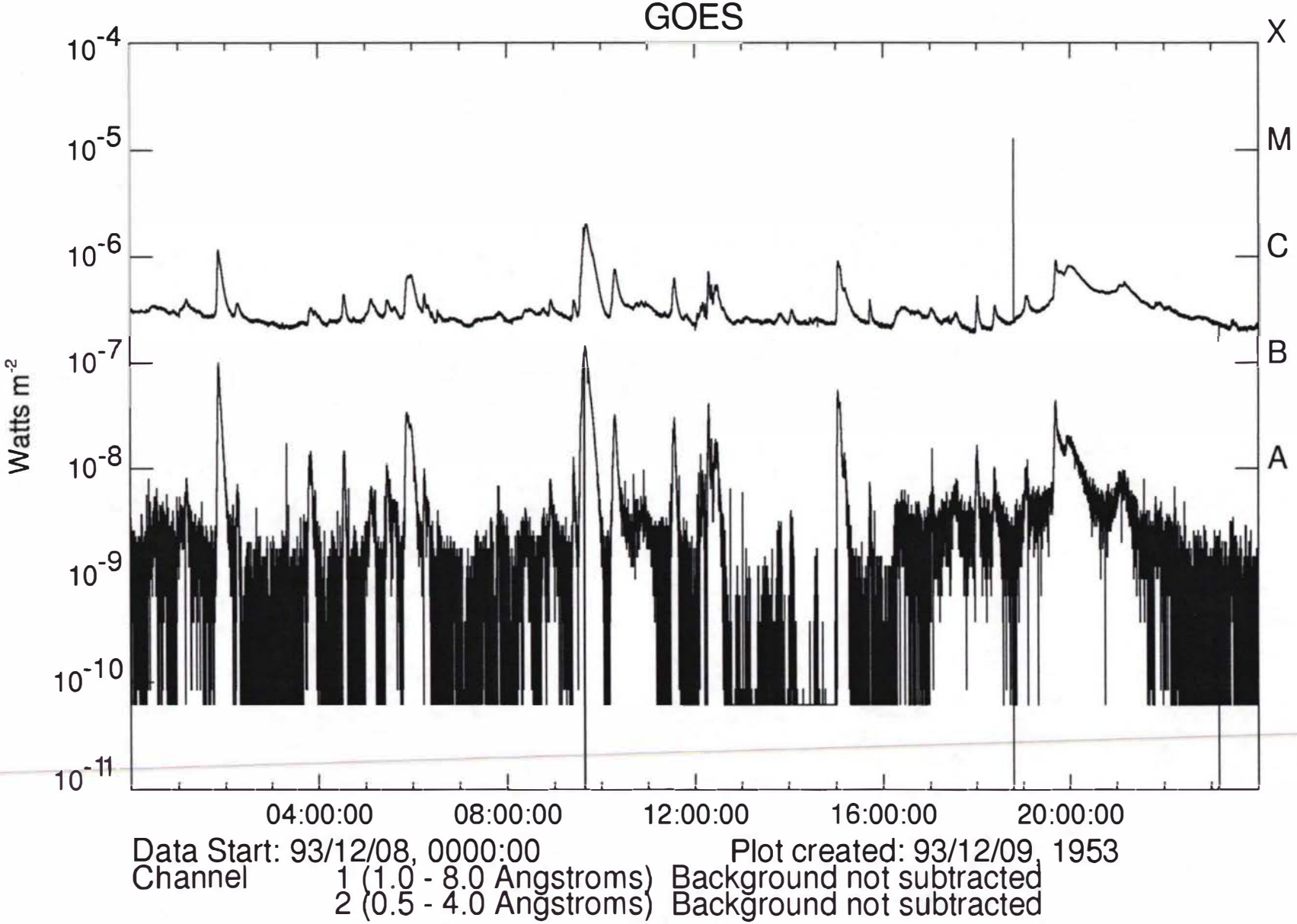
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

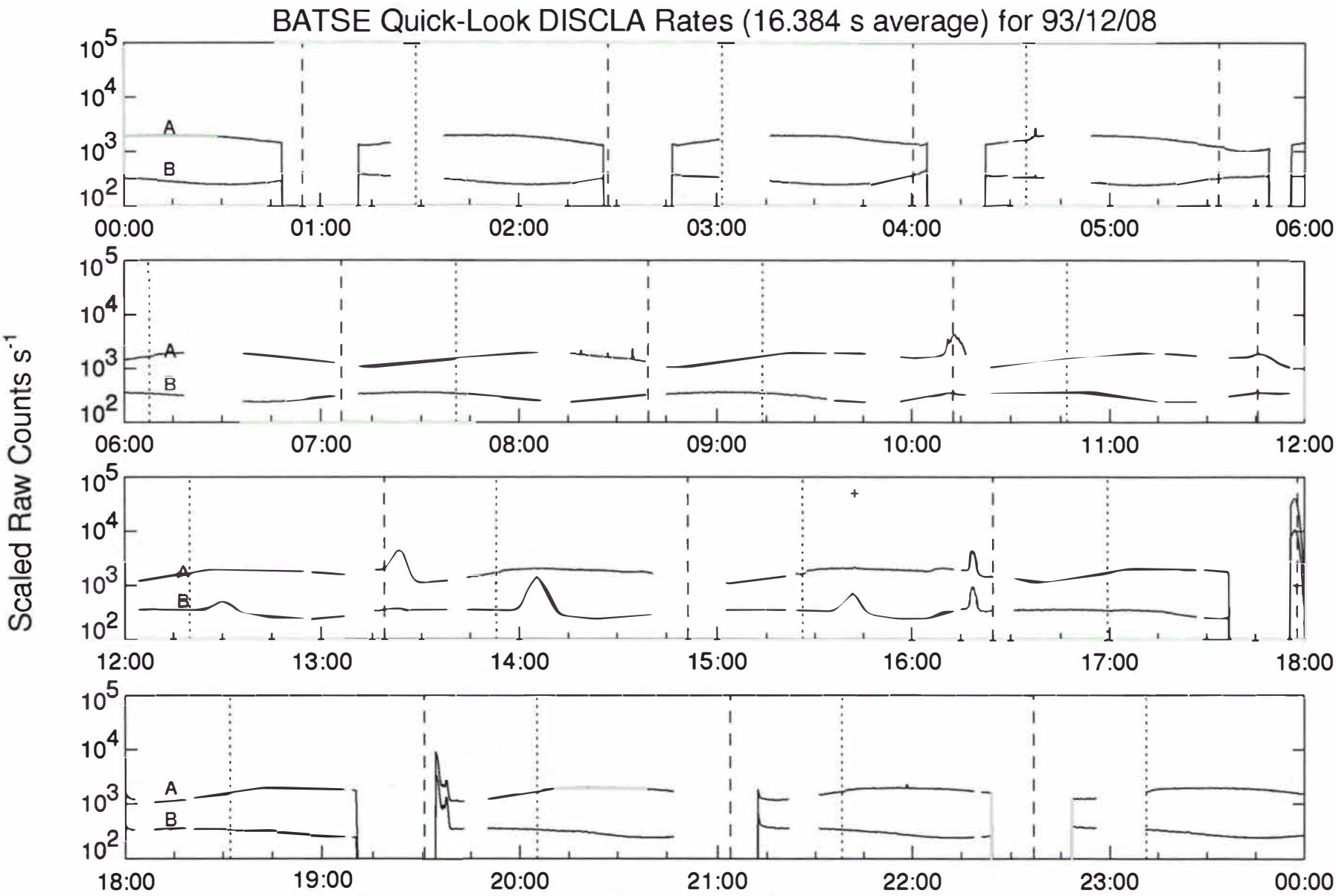
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

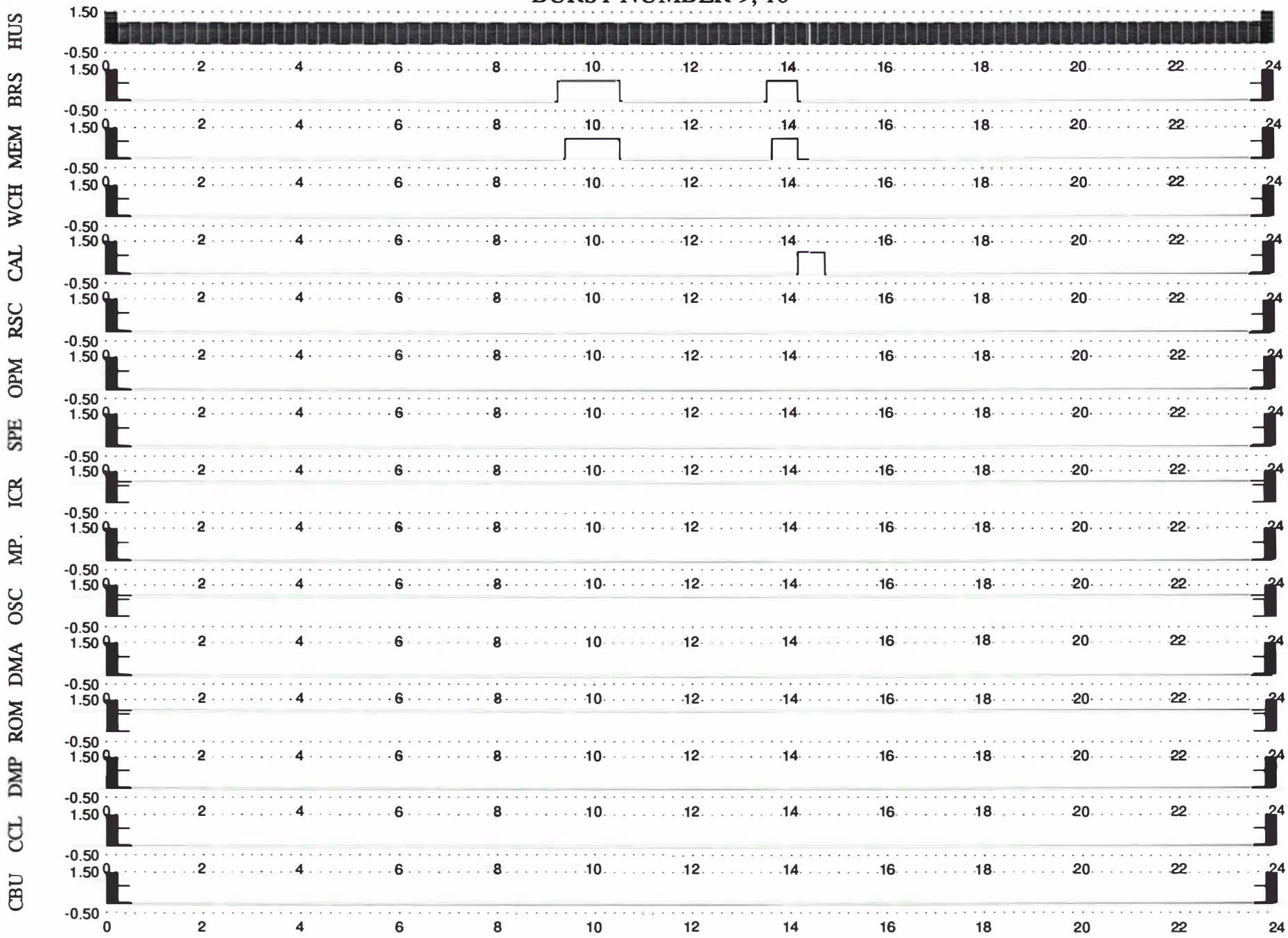
COMMENTS:
PARTICLE EVENT


GOES
X
M
C
B
A
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
10-11
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/08, 0000:00
Plot created: 93/12/09, 1953
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/08
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/13, 1443 EDT
A: Channel 1 Most SunwardLAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 342, year 1993 to day 342, year 1993 2/9/94

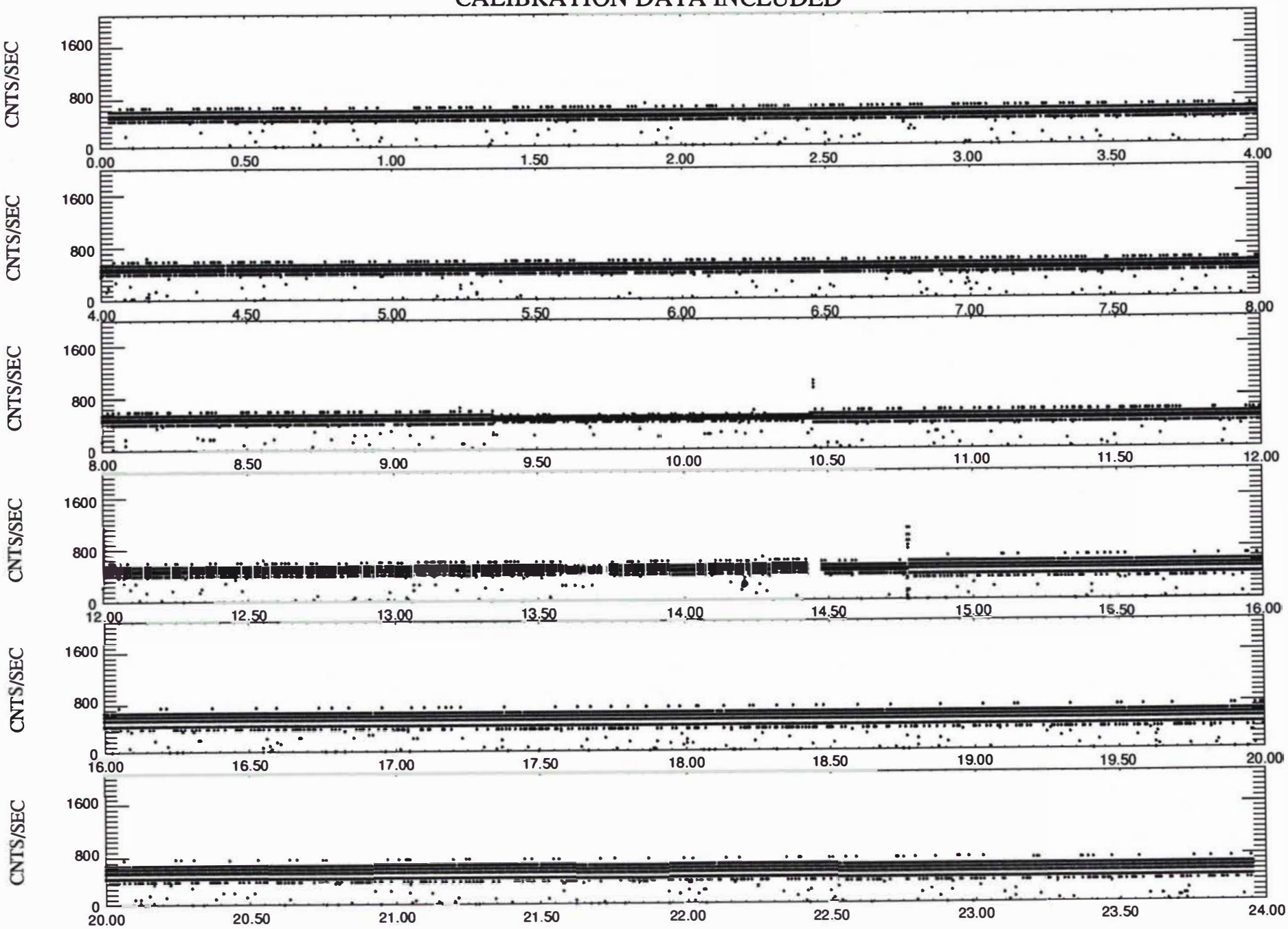
BURST NUMBER 9, 10



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 342, year 1993 to day 342, year 1993 2/9/94

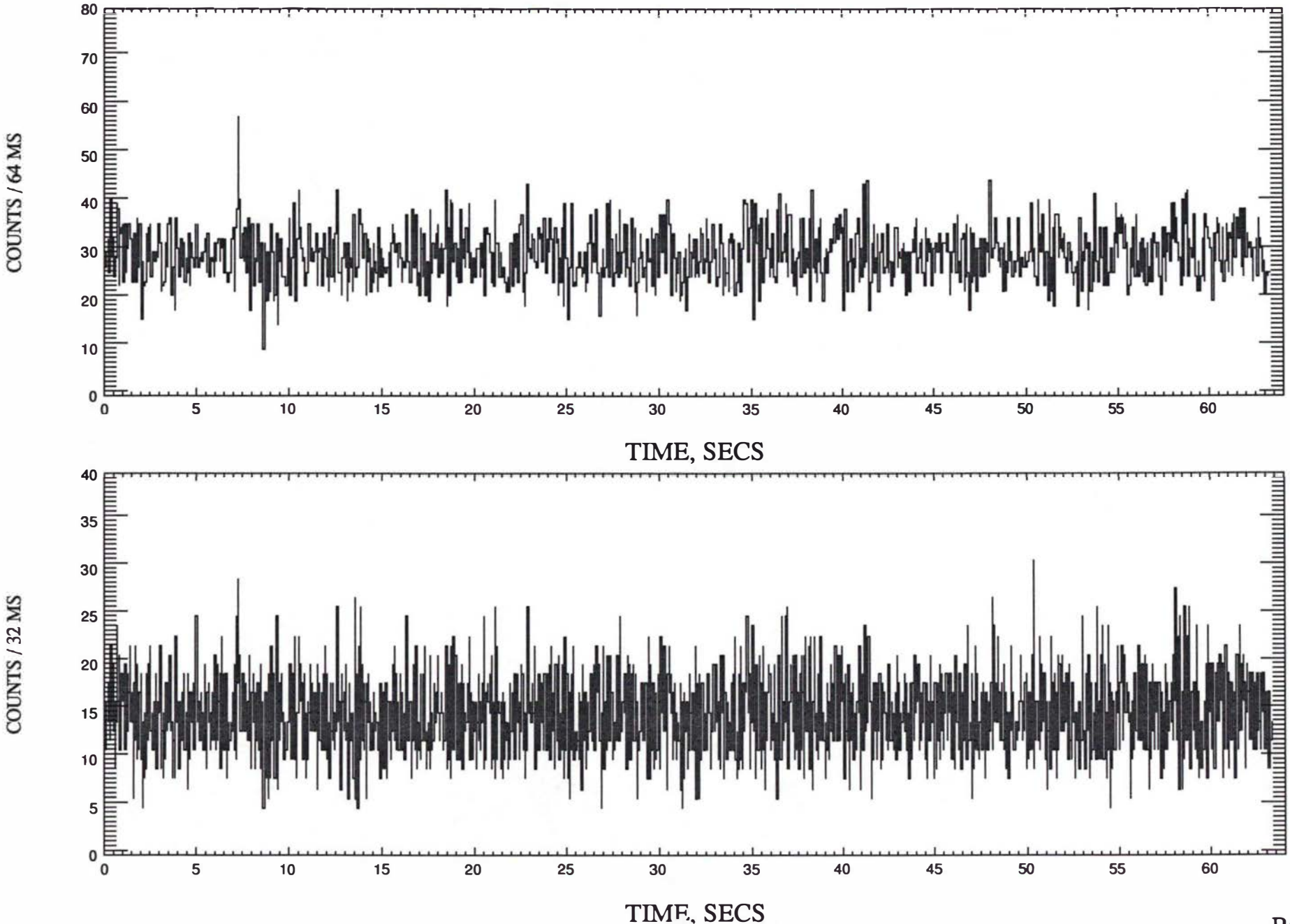
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 342, year 1993 2/9/94

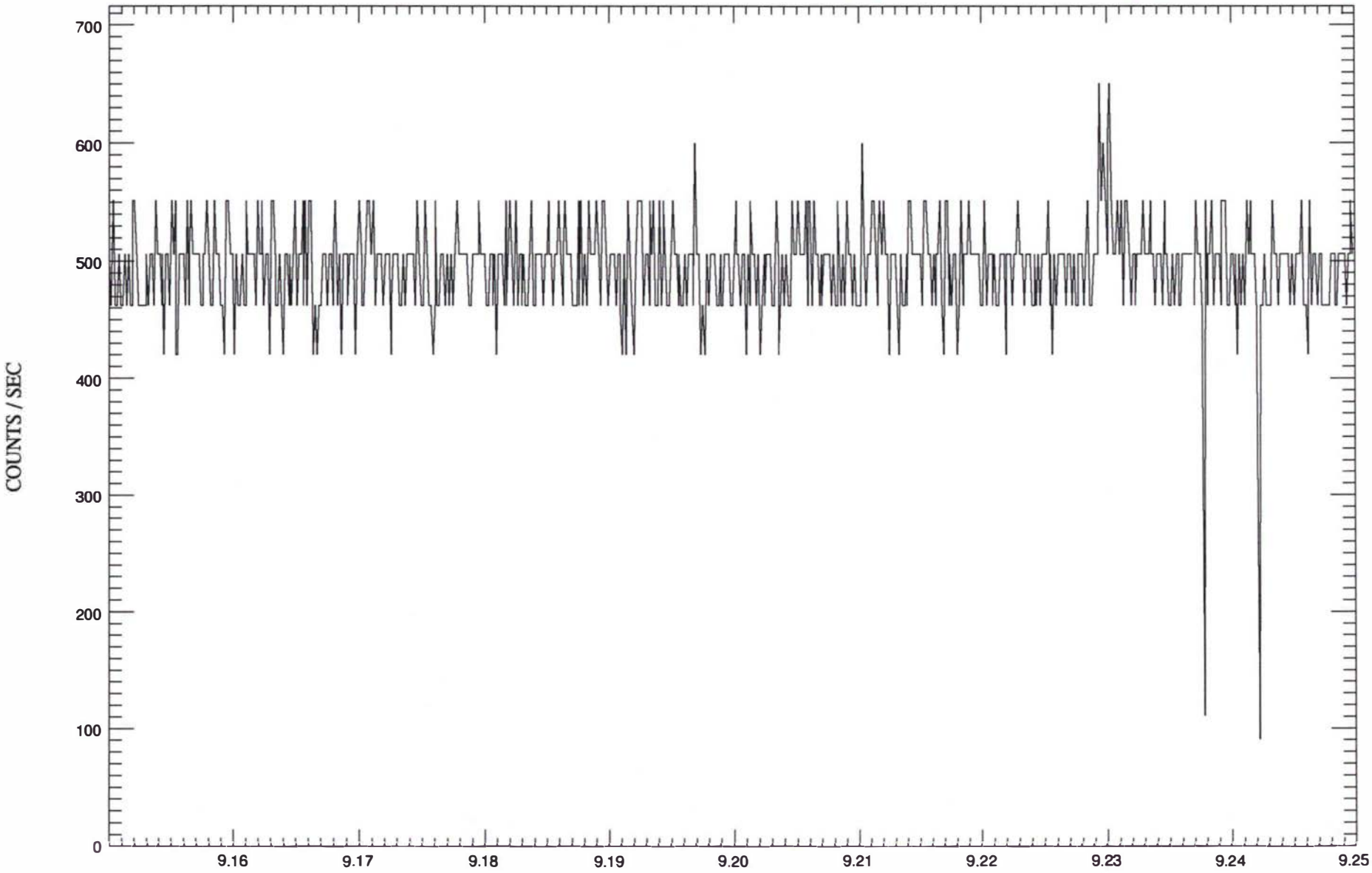
Burst Counter 9 at UT= 9.197184842428 h=33109.865 s 09:11:49.865



B# 1

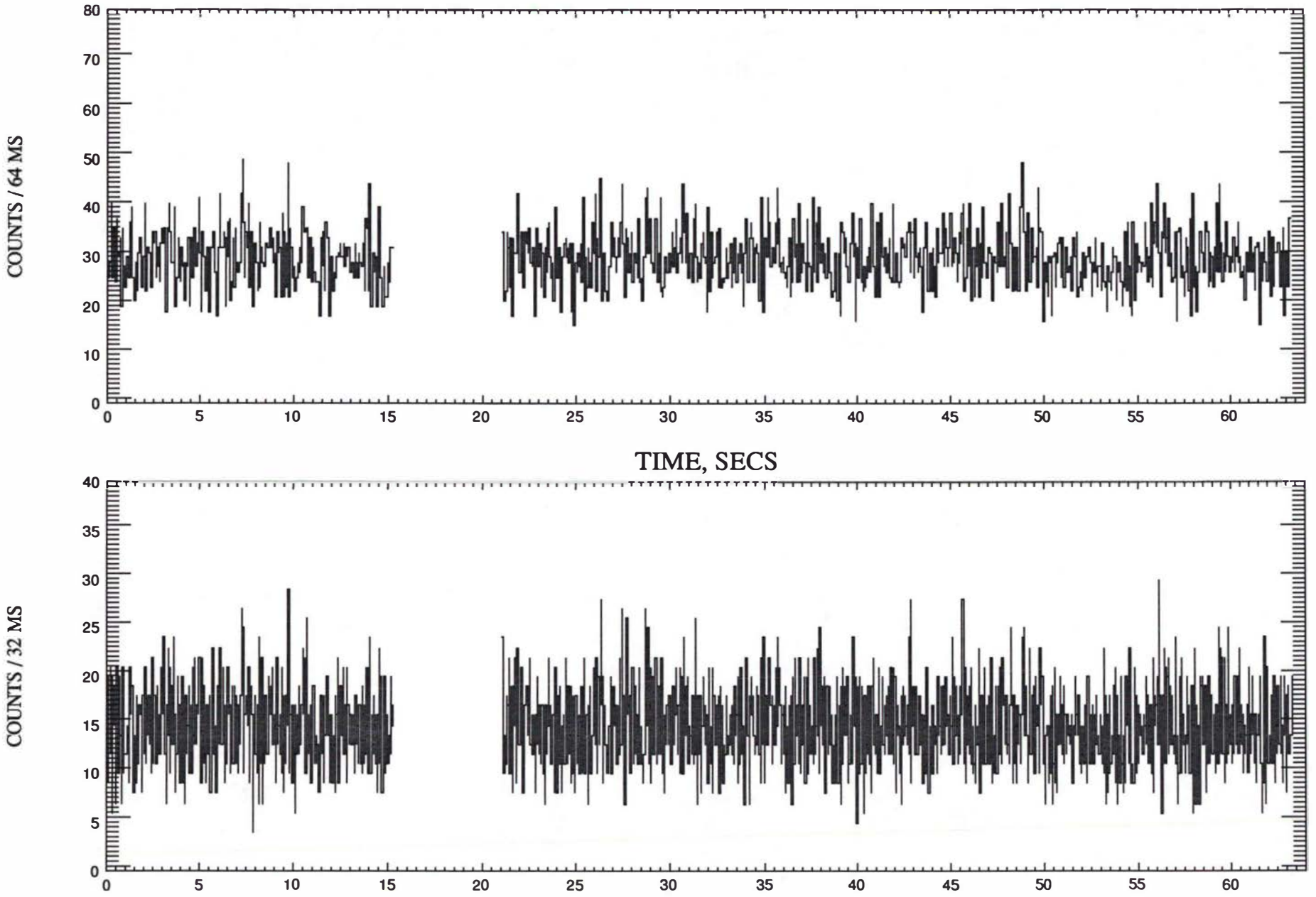
HUS 2A, MODE 1, NOT AVERAGED QEDR day 342, year 1993 to day 342, year 1993 12/9/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 342, year 1993 2/9/94

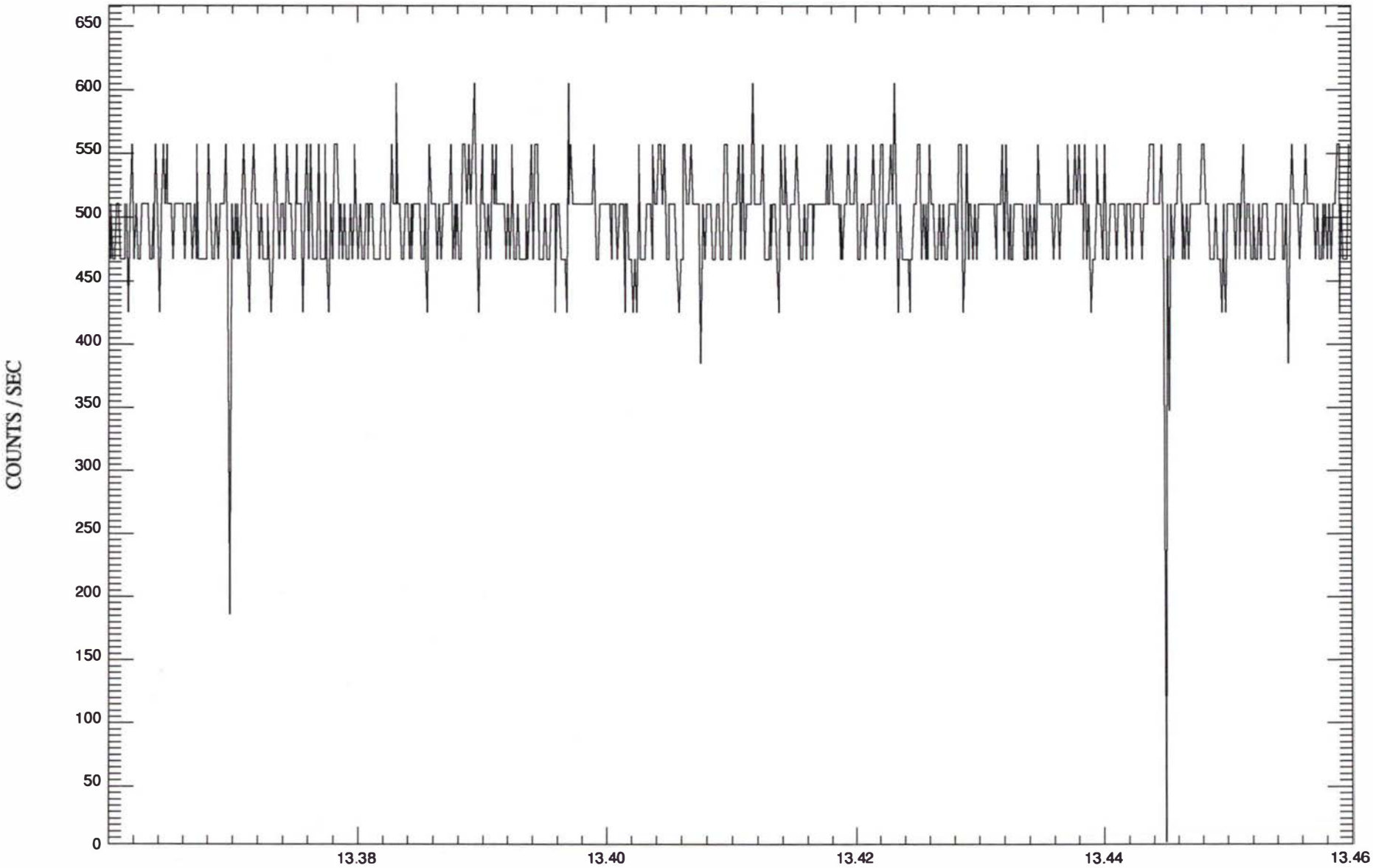
Burst Counter 10 at UT=13.411729202271 h=48282.225 s 13:24:42.225



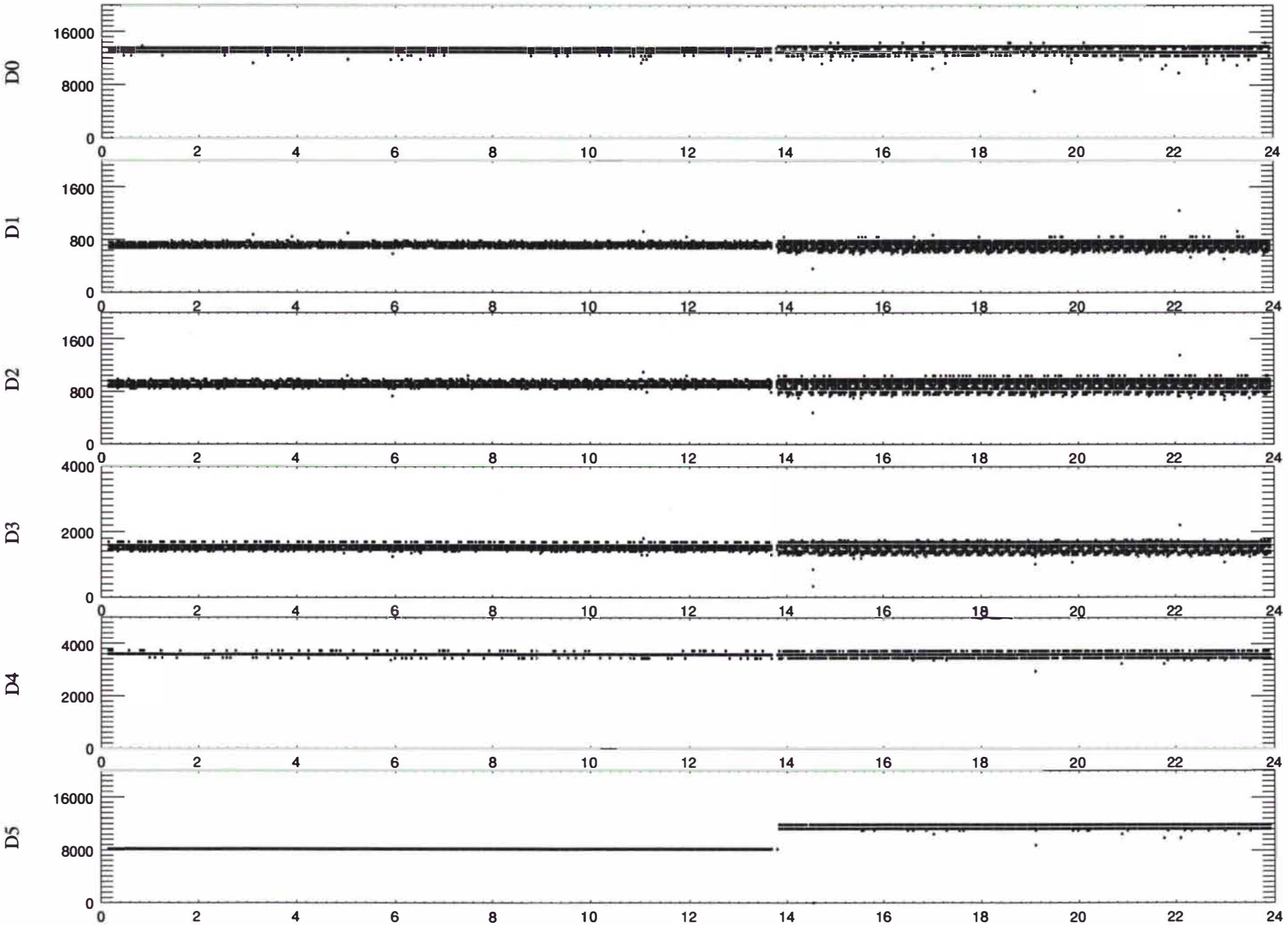
B# 2

HUS 2A, MODE 1, NOT AVERAGED QEDR day 342, year 1993 to day 342, year 1993 12/9/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 342, year 1993 to day 342, year 1993 12/9/93



UNTRIGGERED

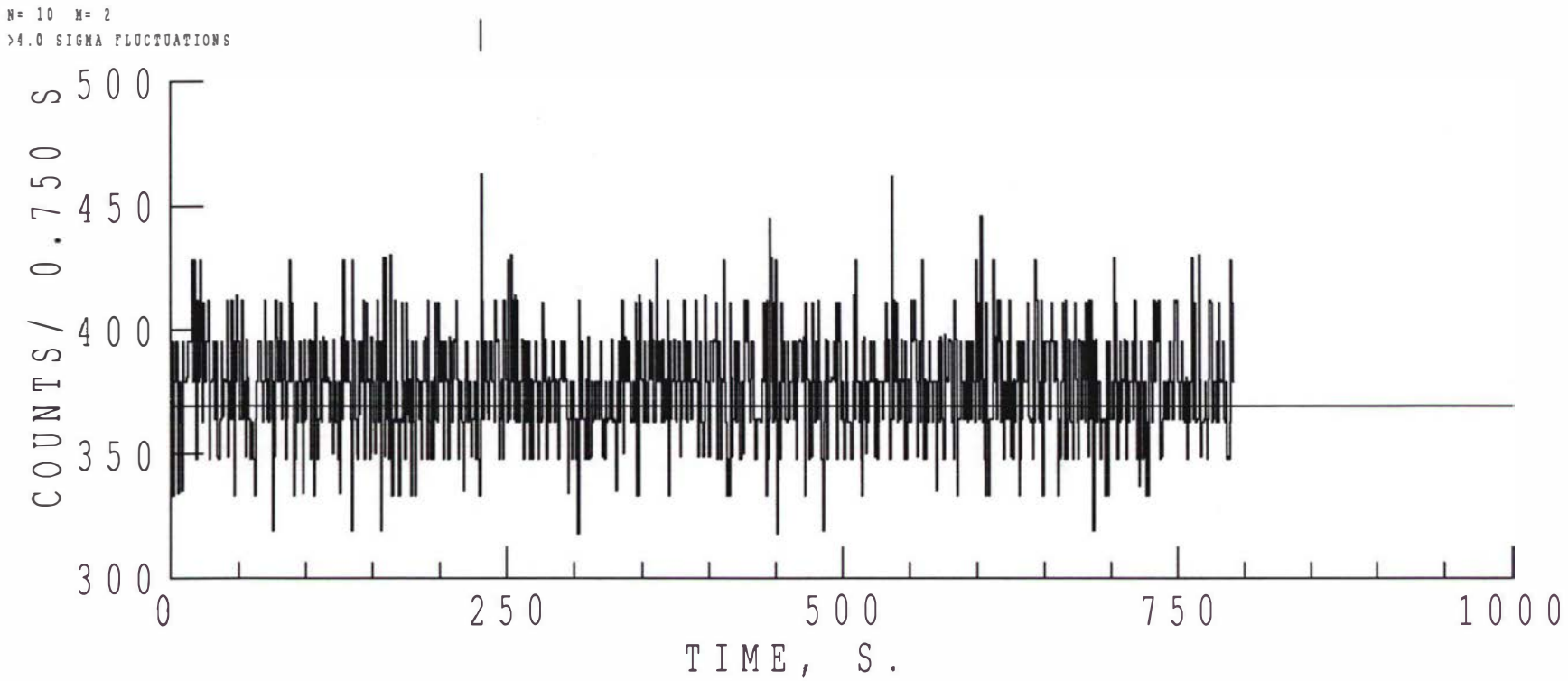
ULYSSES RT

22/ 5/97

9/12/93 77220.133 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 13 09:56:47 1993
Date: Mon, 13 Dec 1993 12:00:15 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2686
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2686
 EVENT OF 1993 DEC  9 DAY OF YEAR=343
 EVENT CROSSING TIME AT BATSE      : 47012. S. OR 13:03:32.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:   2.000   43.000
 BATSE PEAK COUNTING RATE:   1800    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON  9/12/  93 IS:
 RA=  166.552 DEC=  -35.860 DIST=    4.052 AU
 BATSE-ULYSSES DISTANCE =  606119856. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 13.87 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1962.82 SECS.
 CROSSING TIME AT ULYSSES    IS 48975. S. OR   13:36:14 +/-  163.97 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON  9/12/  93 IS:
 RA=  260.975 DEC=  -23.826 DIST=    2.445 AU
 MARS-BATSE DISTANCE =  365735040. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 66.21 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  492.18 SECS.
 CROSSING TIME AT MARS       IS 47504. S. OR   13:11:44 +/-  201.28 SECONDS
```

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2686	931209	9330	47012	1800	002	+43

BATSE BURST TRIGGER

NO.: 02686

TIME: TJD=9330 SECONDS=47012

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=083.0 AZIMUTH=100.4 ERROR= DEGREES

COMMENTS:
BURST, SINGLE SPIKE, LASTING ~0.5S. VISIBLE ABOVE 300KEV.

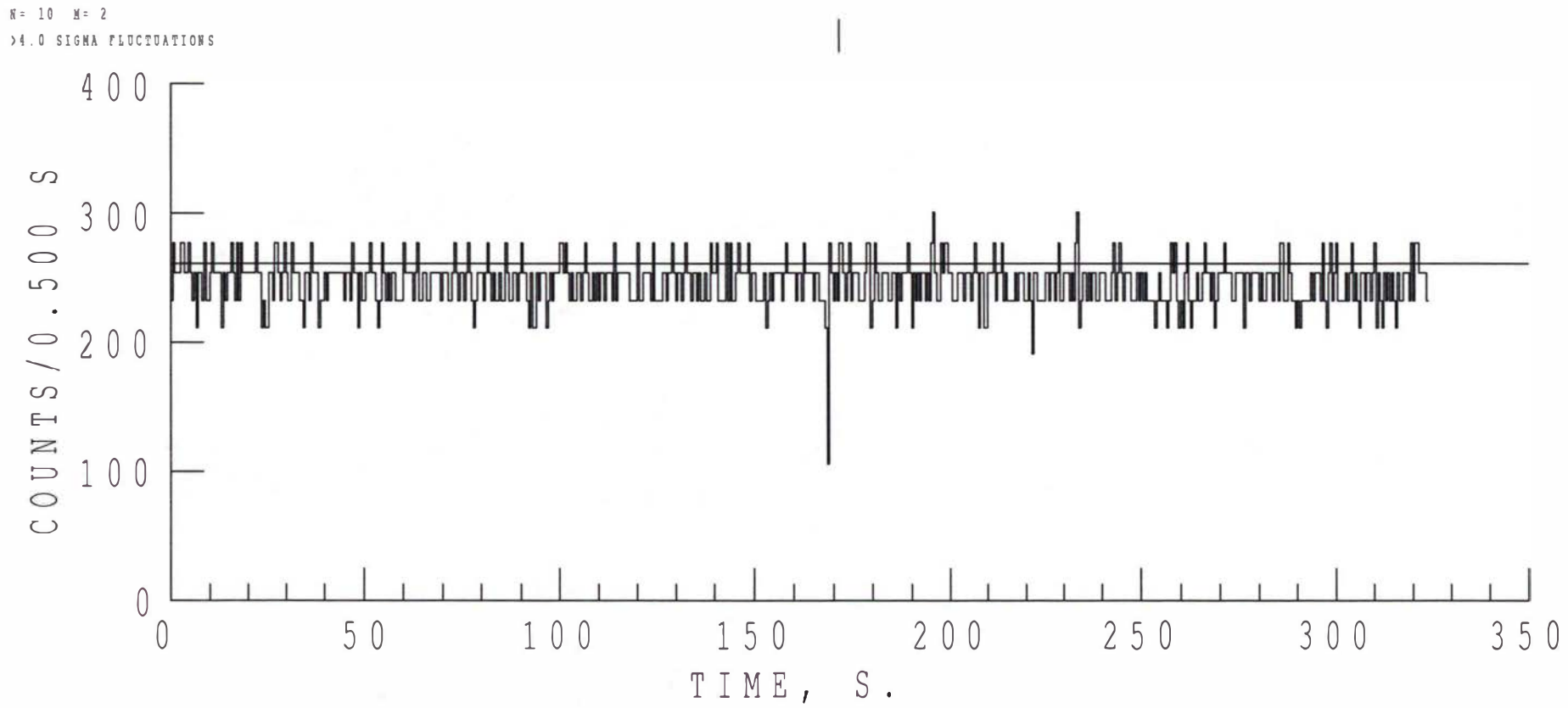
BATSE BURST #2686

13/12/93

ULYSSES RT

9/12/93 48816.449 s

0- 0 keV



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 13 09:45:24 1993
Date: Mon, 13 Dec 1993 11:48:48 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02687

TIME: TJD=9330 SECONDS=61714

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON PREC. EVENT.

From SHARIFF@ssl.msfc.nasa.gov Mon Dec 13 09:58:12 1993
Date: Mon, 13 Dec 1993 12:01:44 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2688
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2688
 EVENT OF 1993 DEC  9 DAY OF YEAR=343
 EVENT CROSSING TIME AT BATSE      : 83511. S. OR 23:11:51.0
 COORDINATES ARE   0.000   0.000        6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 254.000   28.000
 BATSE PEAK COUNTING RATE:   3000    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON  9/12/  93 IS:
 RA=  166.553 DEC=  -35.968 DIST=    4.044 AU
 BATSE-ULYSSES DISTANCE =  605024082. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.88 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  492.25 SECS.
 CROSSING TIME AT ULYSSES    IS 84003. S. OR   23:20:03 +/-  397.27 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON  9/12/  93 IS:
 RA=  260.975 DEC=  -23.826 DIST=    2.445 AU
 MARS-BATSE DISTANCE =  365735040. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=127.74 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -746.71 SECS.
 CROSSING TIME AT MARS       IS 82764. S. OR   22:59:24 +/-  156.16 SECONDS
```

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2688	931209	9330	83511	3000	254	+28

BATSE BURST TRIGGER

NO.: 02688

TIME: TJD=9330 SECONDS=83511

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=128.3 AZIMUTH=024.8 ERROR= DEGREES

COMMENTS:
BURST, FAST RISE EXPONENTIAL DECAY, LASTING ~30S. VISIBLE ABOVE 300KEV.

Batse # 2688

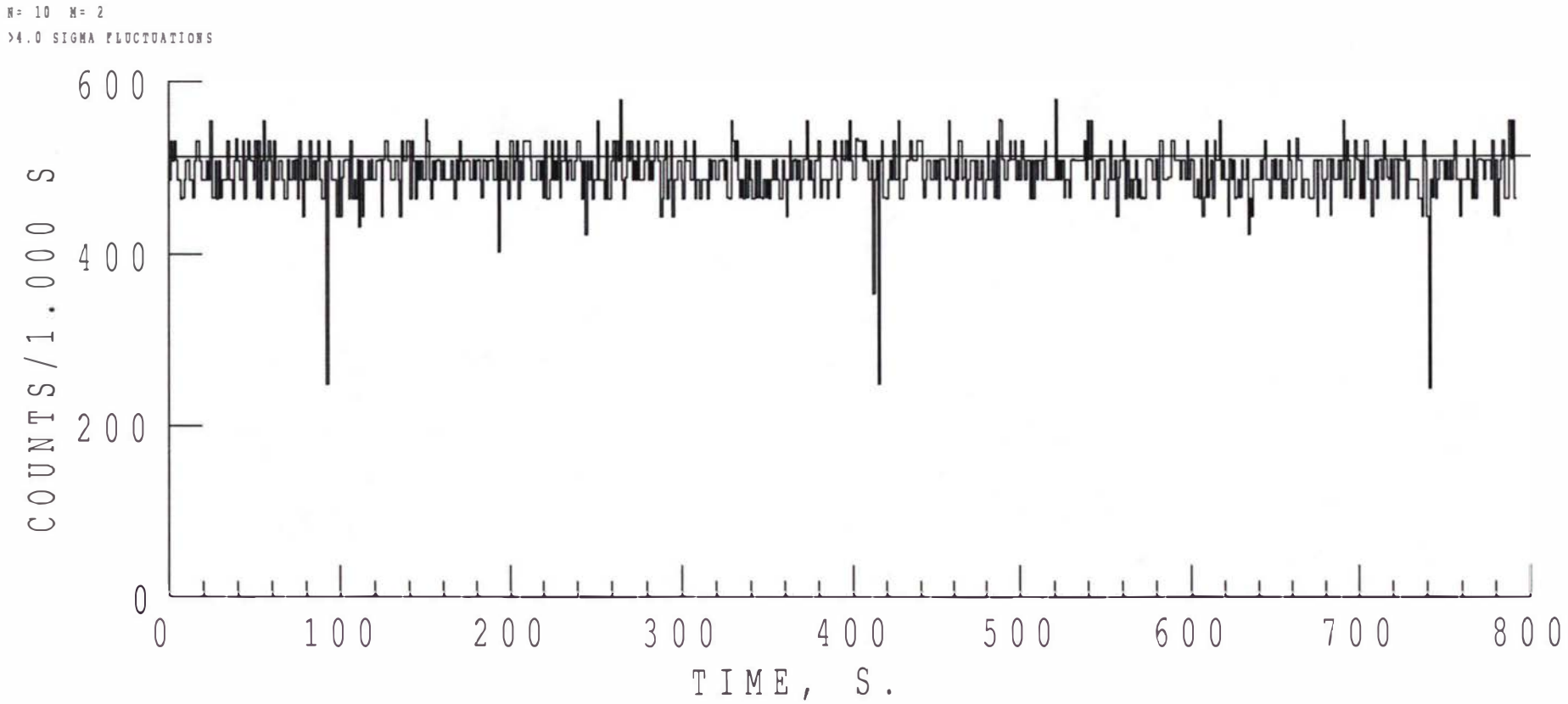
14/12/93

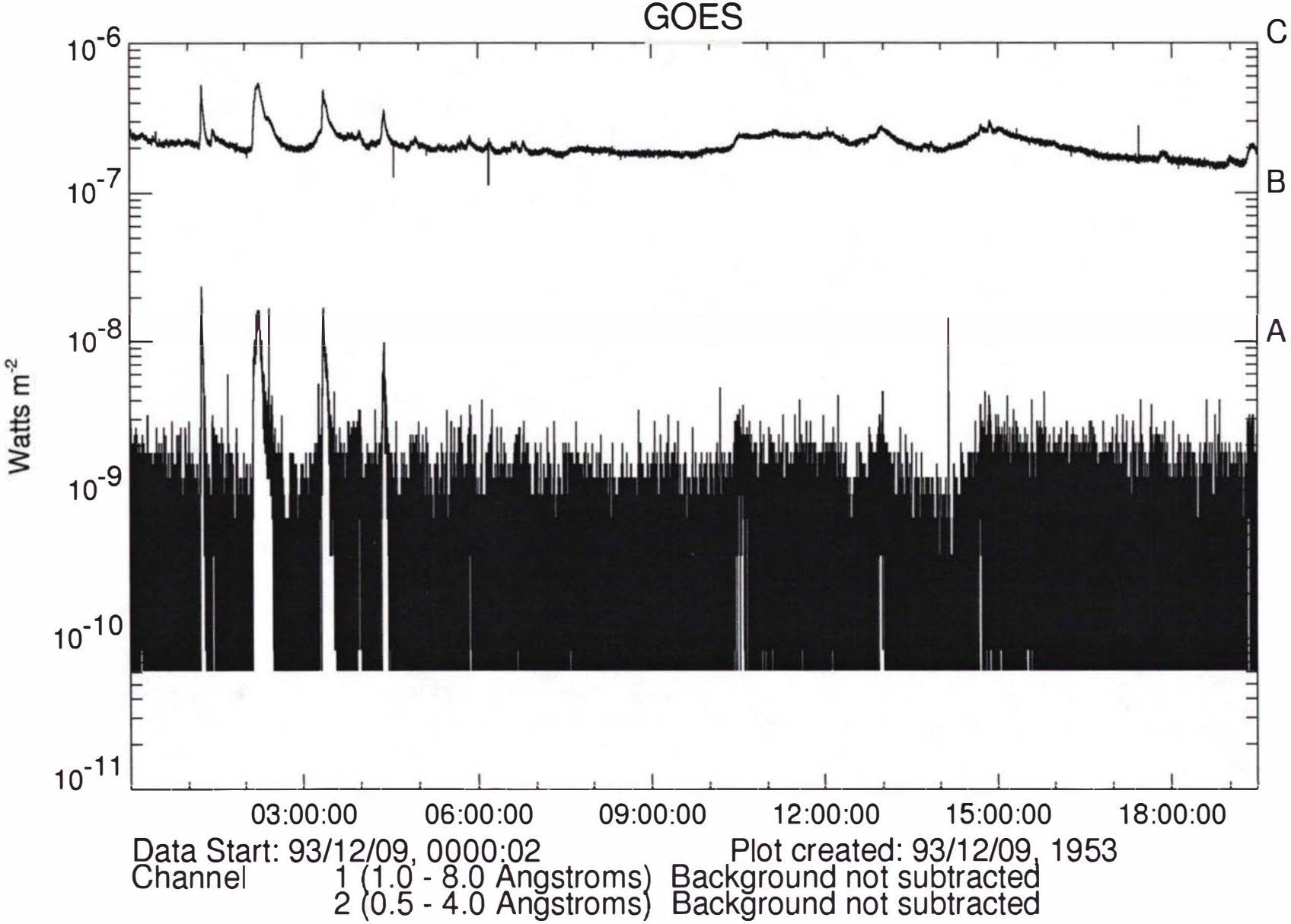
ULYSSES RT

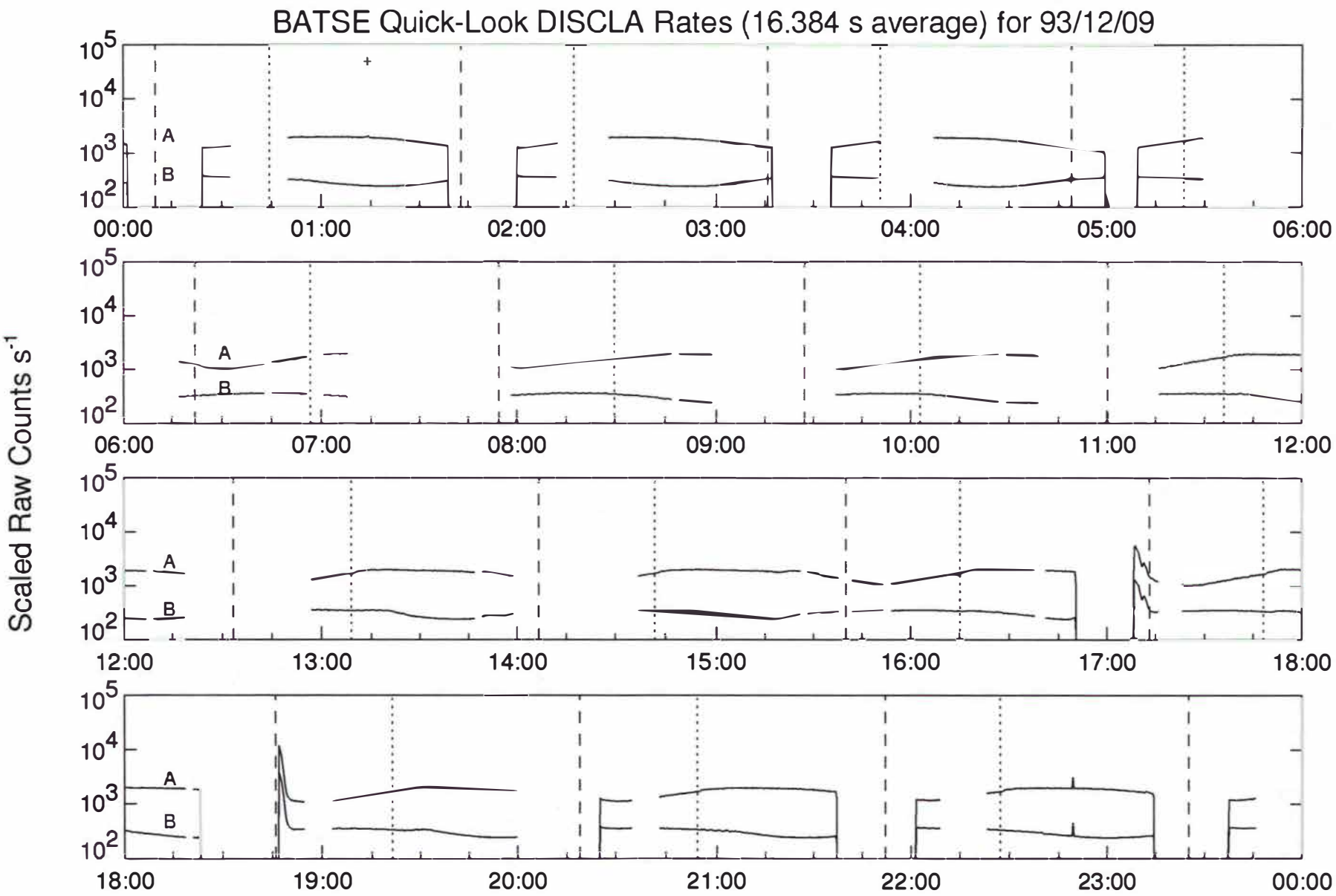
9/12/93 83592.477 s

0.500 S INTERVALS REGROUPED BY 2

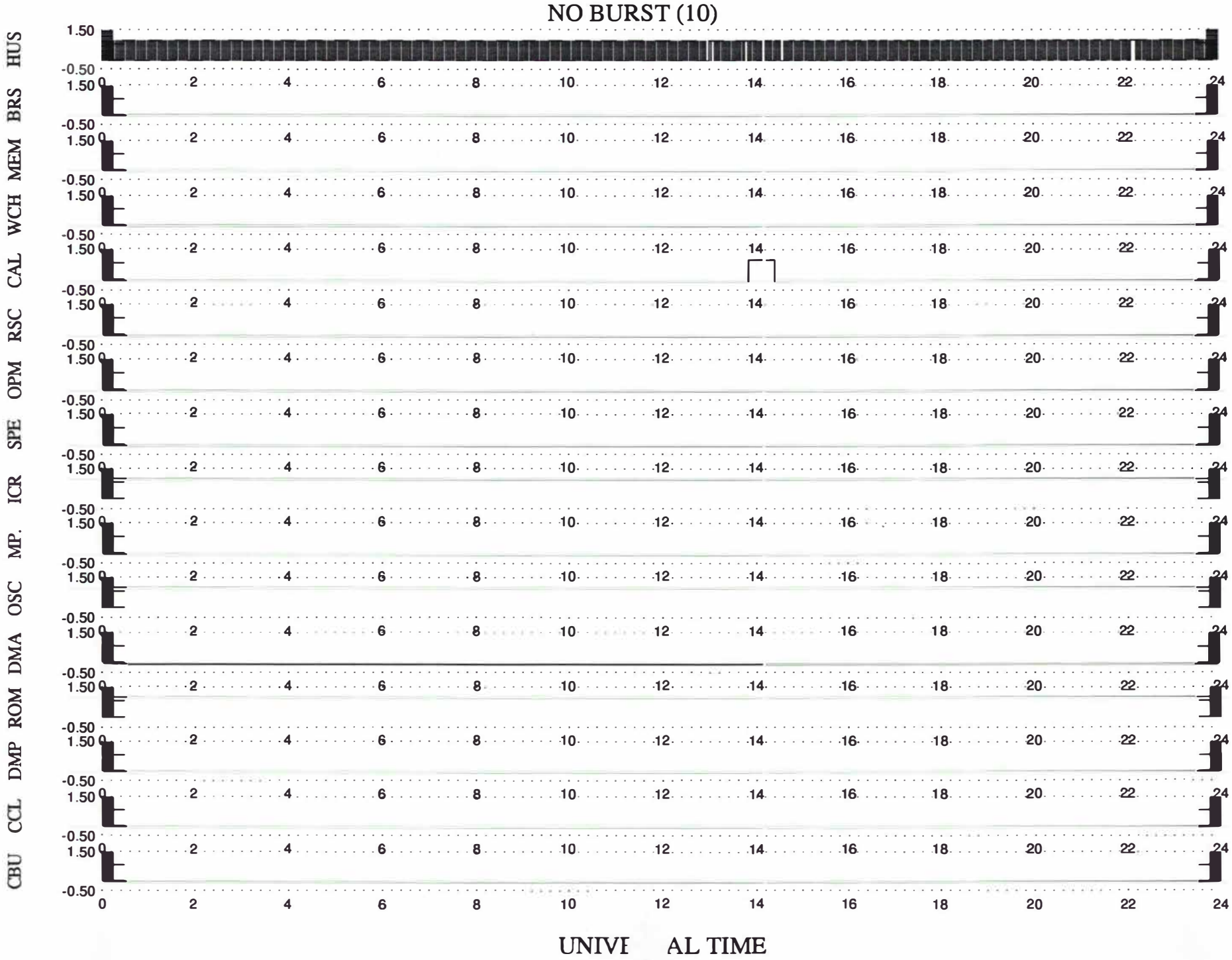
0- 0 keV




GOES
C
B
A
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
03:00:00
06:00:00
09:00:00
12:00:00
15:00:00
18:00:00
Data Start: 93/12/09, 0000:02
Plot created: 93/12/09, 1953
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

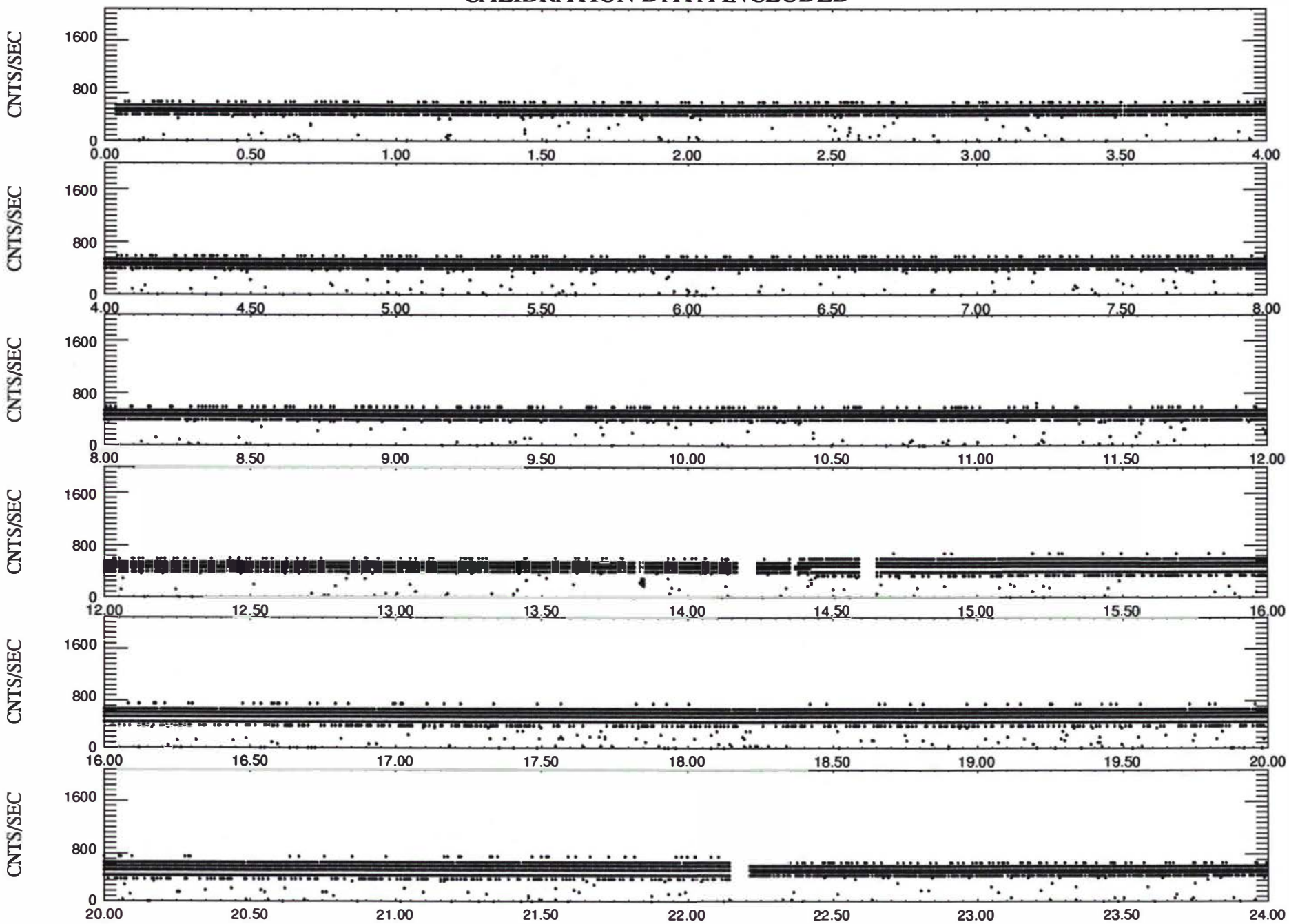

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/09
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/13, 1443 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 343, year 1993 to day 343, year 1993 2/9/94



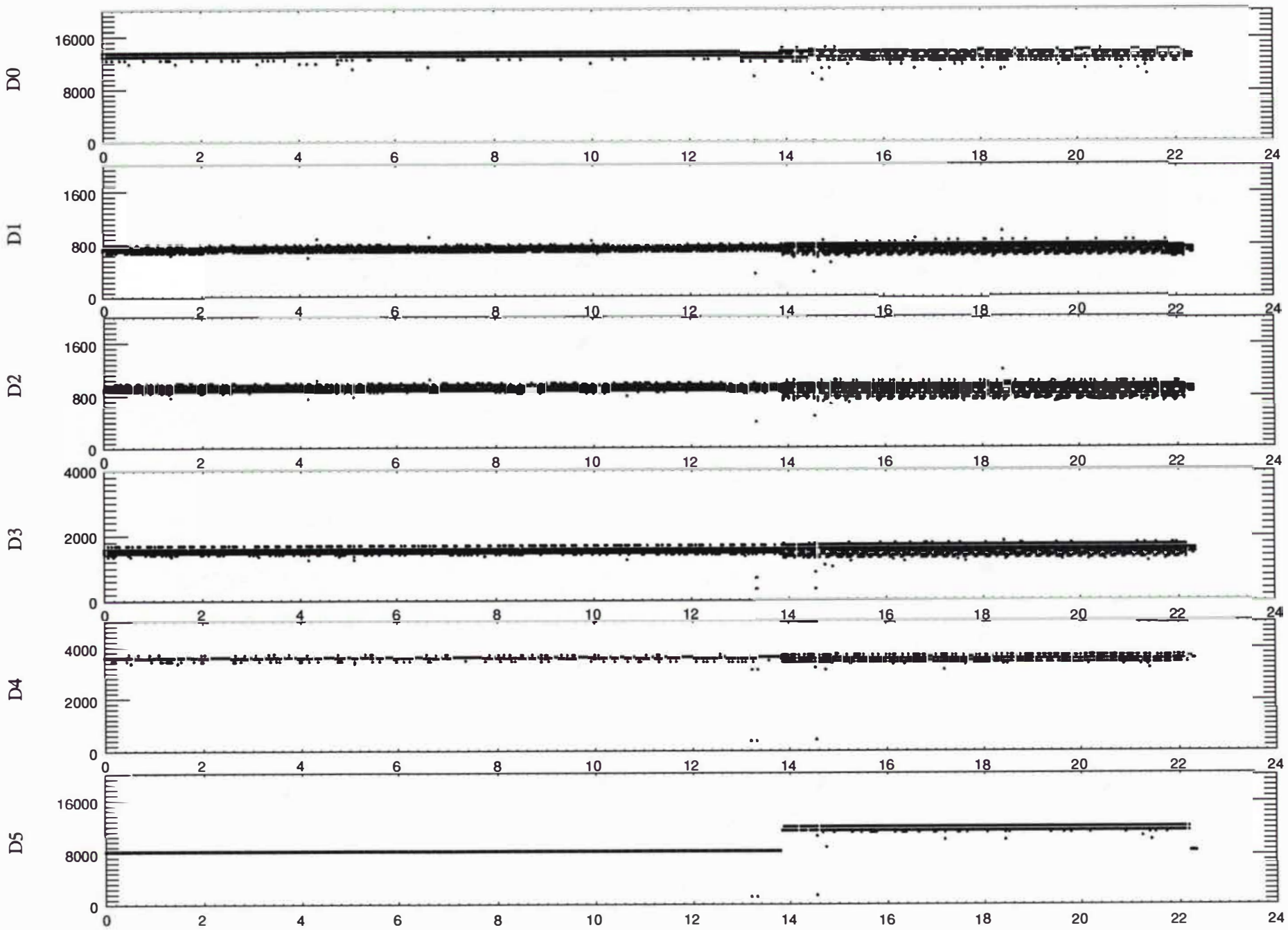
HUS 2A, MODE 1, NOT AVERAGED EDR day 343, year 1993 to day 343, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVF AL TIME

HUS 2B COUNTS / SEC QEDR day 343, year 1993 to day 343, year 1993 12/13/93



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 13 09:59:45 1993
Date: Mon, 13 Dec 1993 12:03:17 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2689
Content-Length: 1135

```
         ******************
         *BATSEARCH PROGRAM*
         ******************

 BATSE BURST #    2689
 EVENT OF 1993 DEC 10 DAY OF YEAR=344
 EVENT CROSSING TIME AT BATSE     : 59517. S. OR 16:31:57.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 357.000   46.000
 BATSE PEAK COUNTING RATE:   3700    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 10/12/  93 IS:
 RA=  166.550 DEC=  -36.154 DIST=    4.032 AU
 BATSE-ULYSSES DISTANCE =  603146549. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 12.59 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1963.53 SECS.
 CROSSING TIME AT ULYSSES    IS 61481. S. OR   17:04:40 +/-  155.93 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 10/12/  93 IS:
 RA=  261.787 DEC=  -23.879 DIST=    2.444 AU
 MARS-BATSE DISTANCE =  365628128. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 69.58 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  425.52 SECS.
 CROSSING TIME AT MARS       IS 59943. S. OR   16:39:02 +/-  204.90 SECONDS
```

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2689	931210	9331	59517	3700	357	+46

BATSE BURST TRIGGER

NO.: 02689

TIME: TJD=9331 SECONDS=59517

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=085.5 AZIMUTH=096.4 ERROR= DEGREES

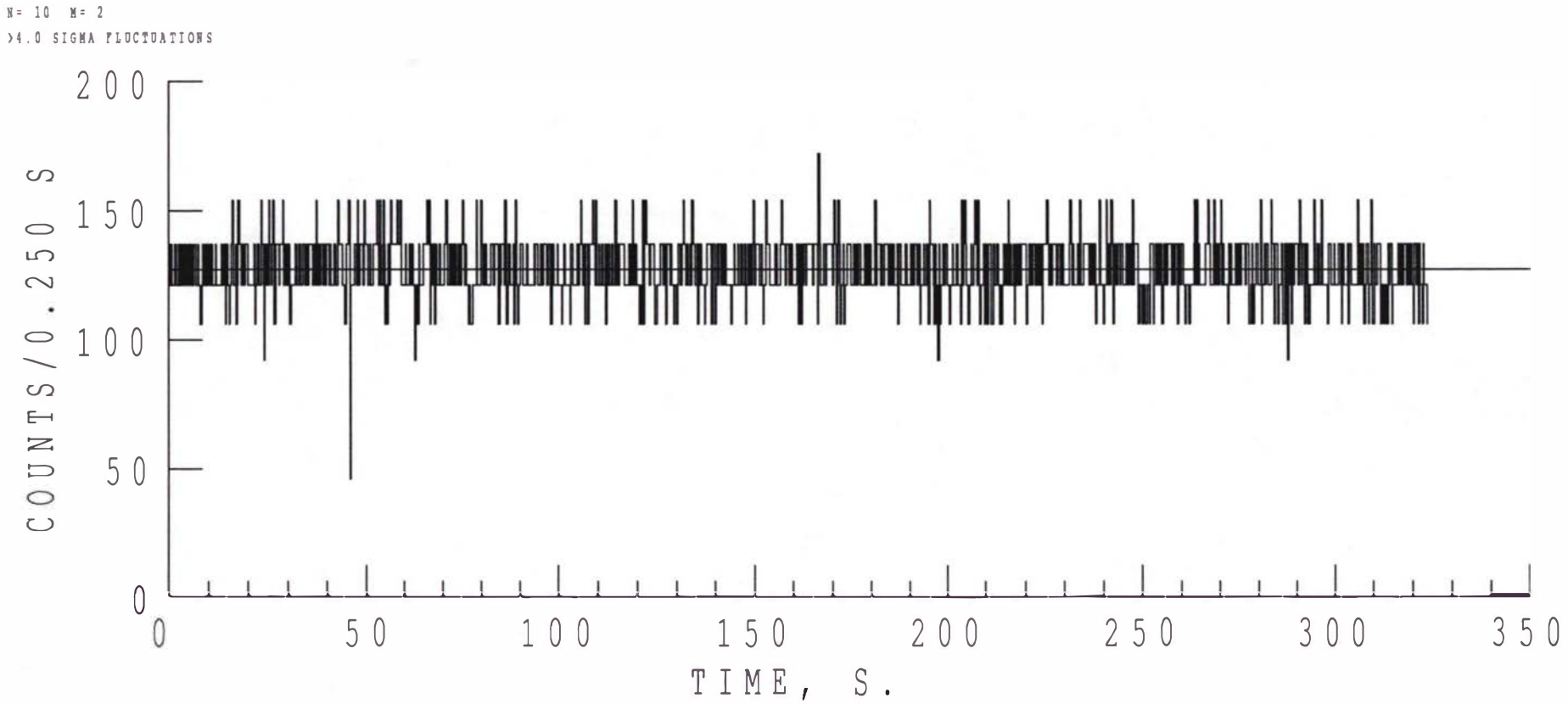
COMMENTS:
BURST, TWO PEAKS, LASTING ~25S. MARGINALLY VISIBLE ABOVE 300KEV.

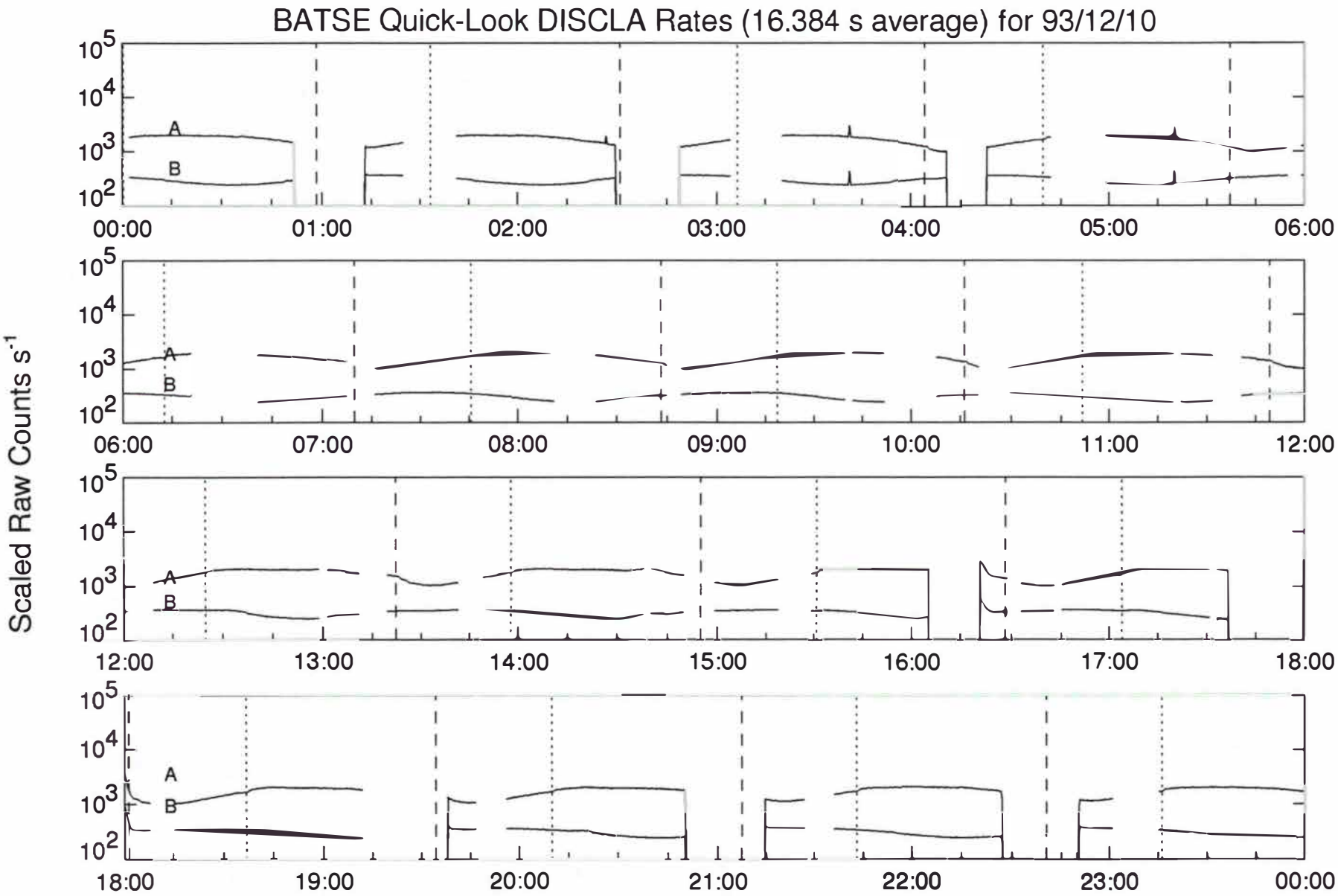
13/12/93

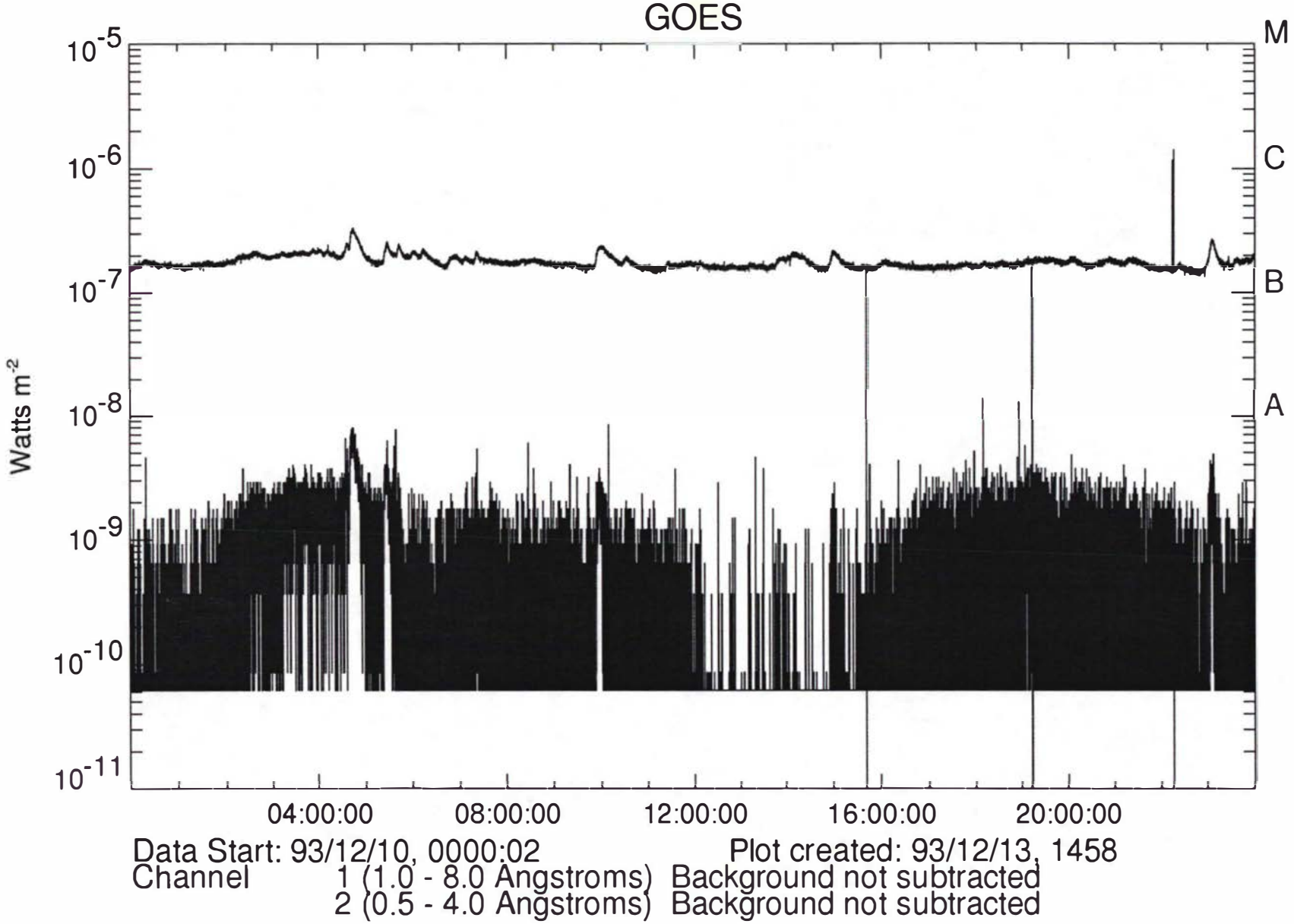
ULYSSES RT

10/12/93 61308.223 s

0- 0 keV

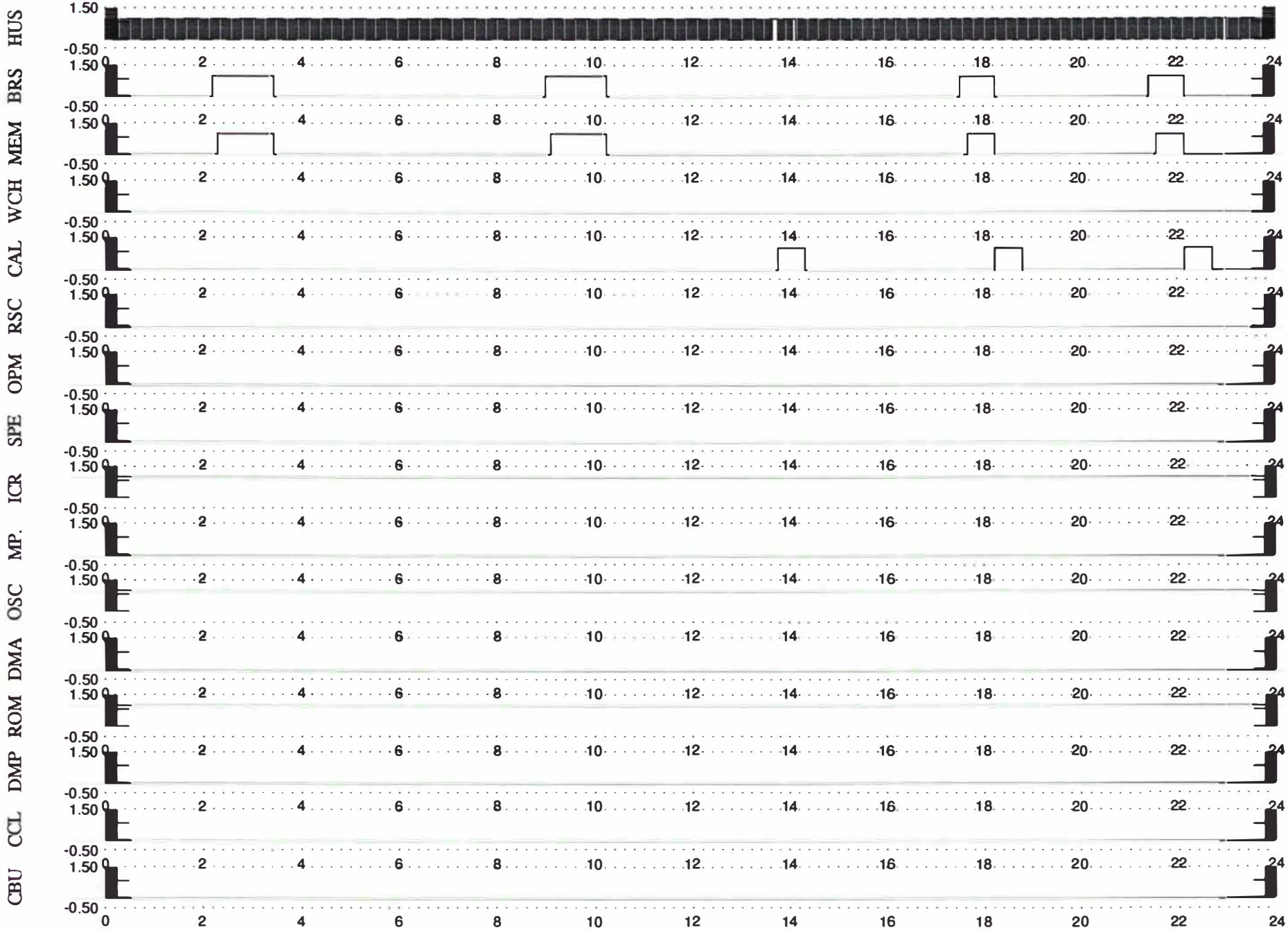



BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/10
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/13, 1443 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/10, 0000:02
Plot created: 93/12/13, 1458
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 344, year 1993 to day 344, year 1993 2/9/94

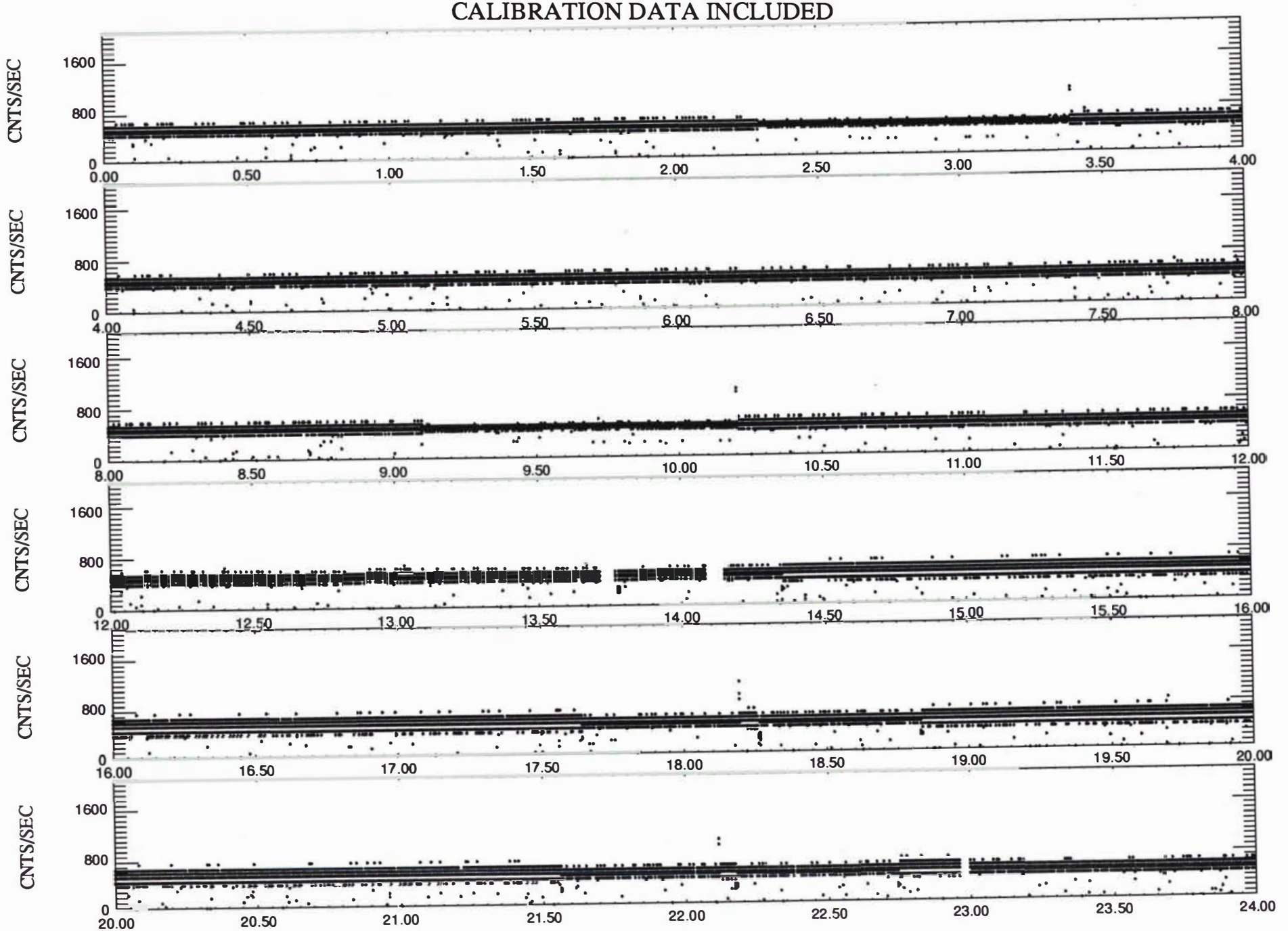
BURST NUMBER 11 - 14



UNIVI AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 344, year 1993 to day 344, year 1993 2/9/94

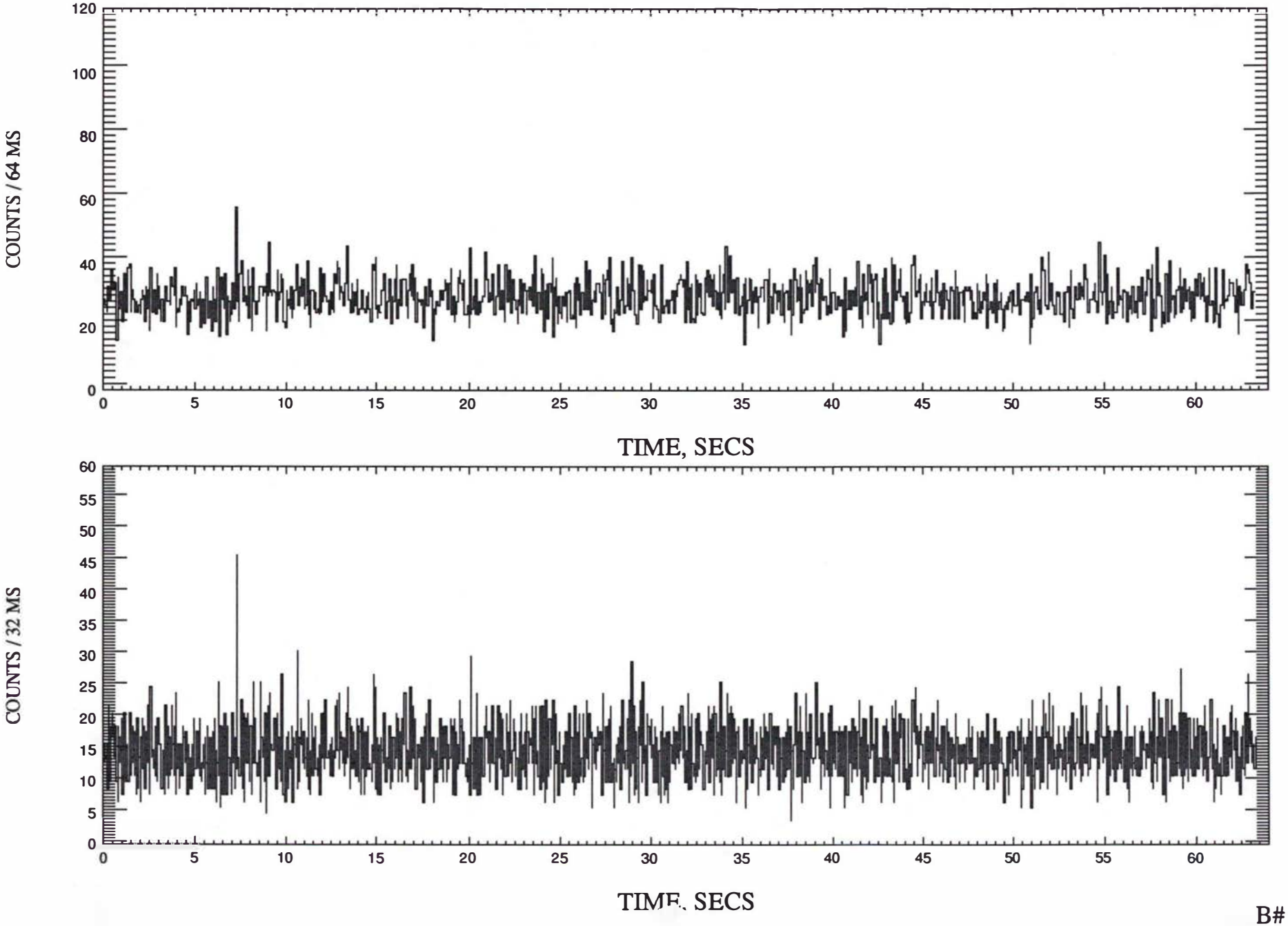
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 344, year 1993 2/9/94

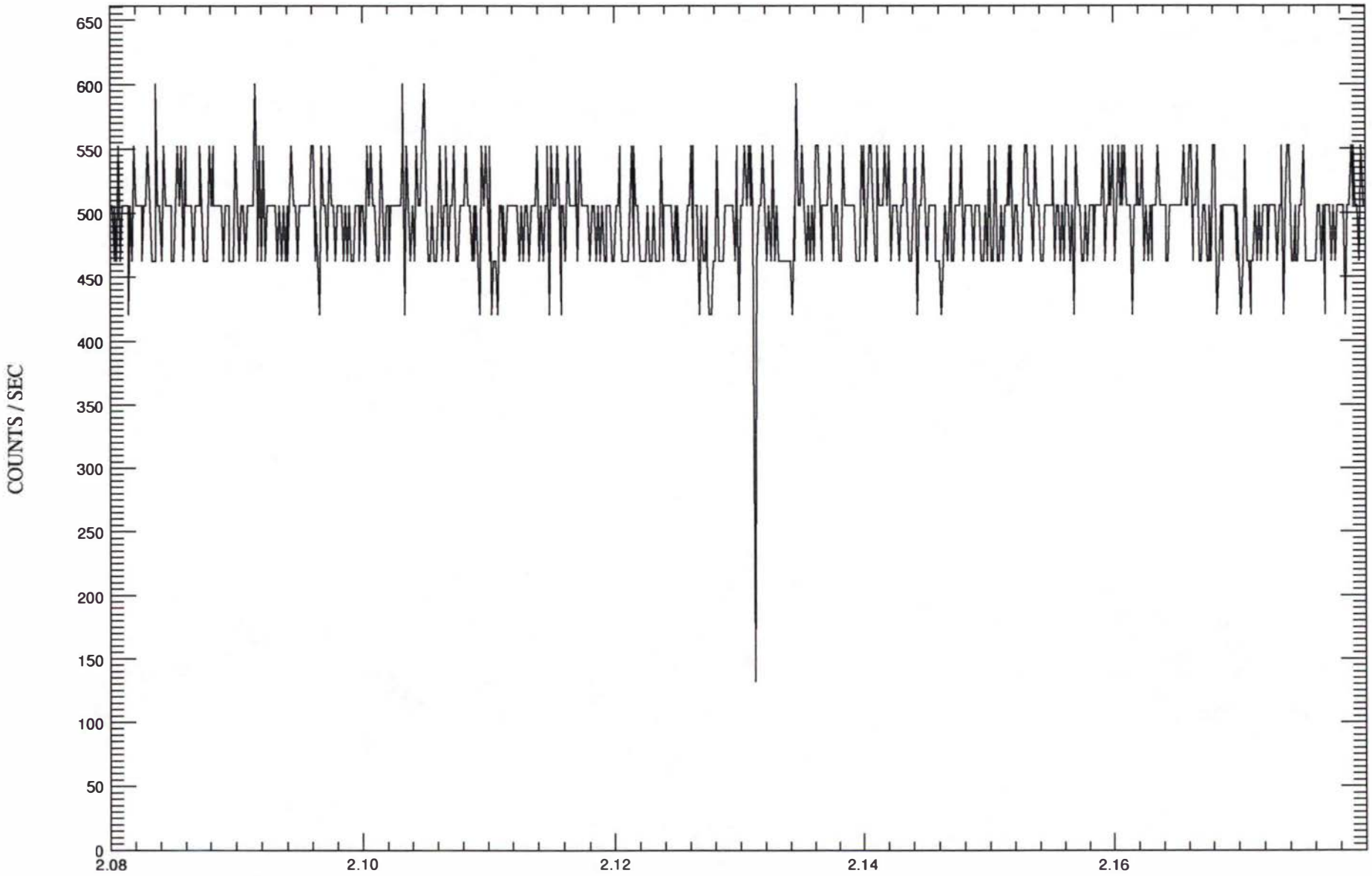
Burst Counter 11 at UT= 2.134648543464 h= 7684.735 s 02:08:04.735



B# 1

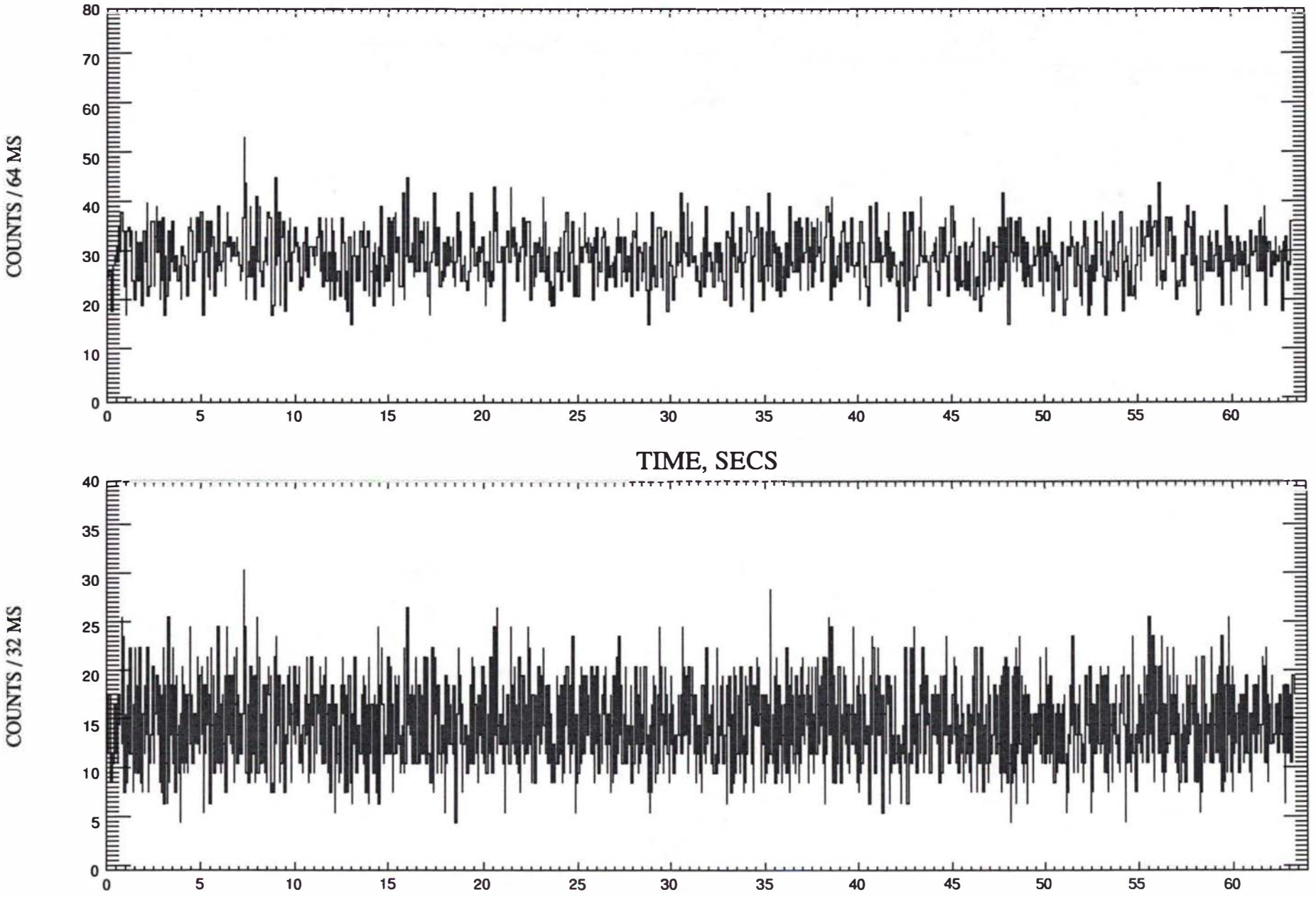
HUS 2A, MODE 1, NOT AVERAGED QEDR day 344, year 1993 to day 344, year 1993 12/13/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 344, year 1993 2/9/94

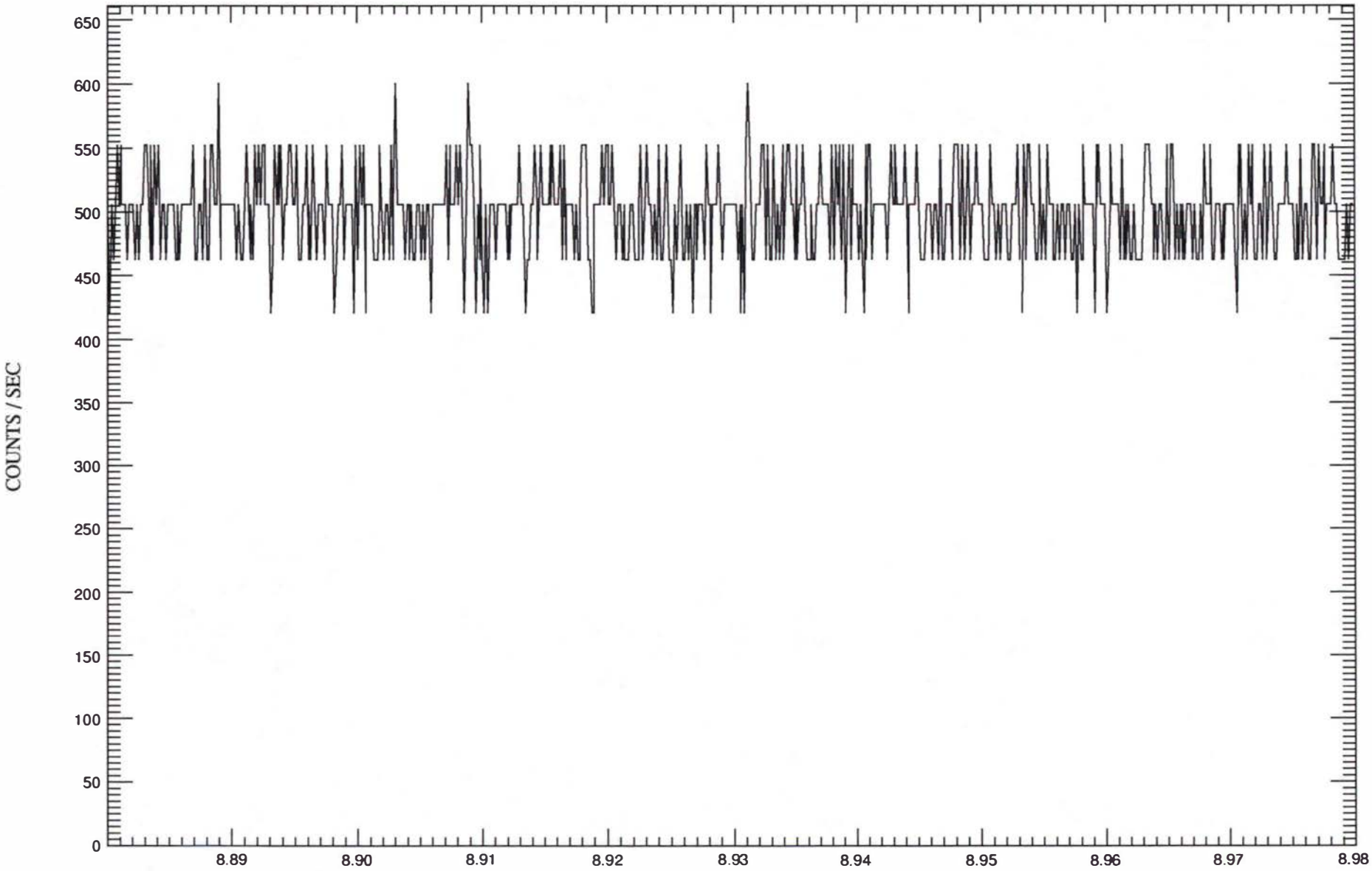
Burst Counter 12 at UT= 8.934725956387 h=32165.013 s 08:56:05.013



B# 2

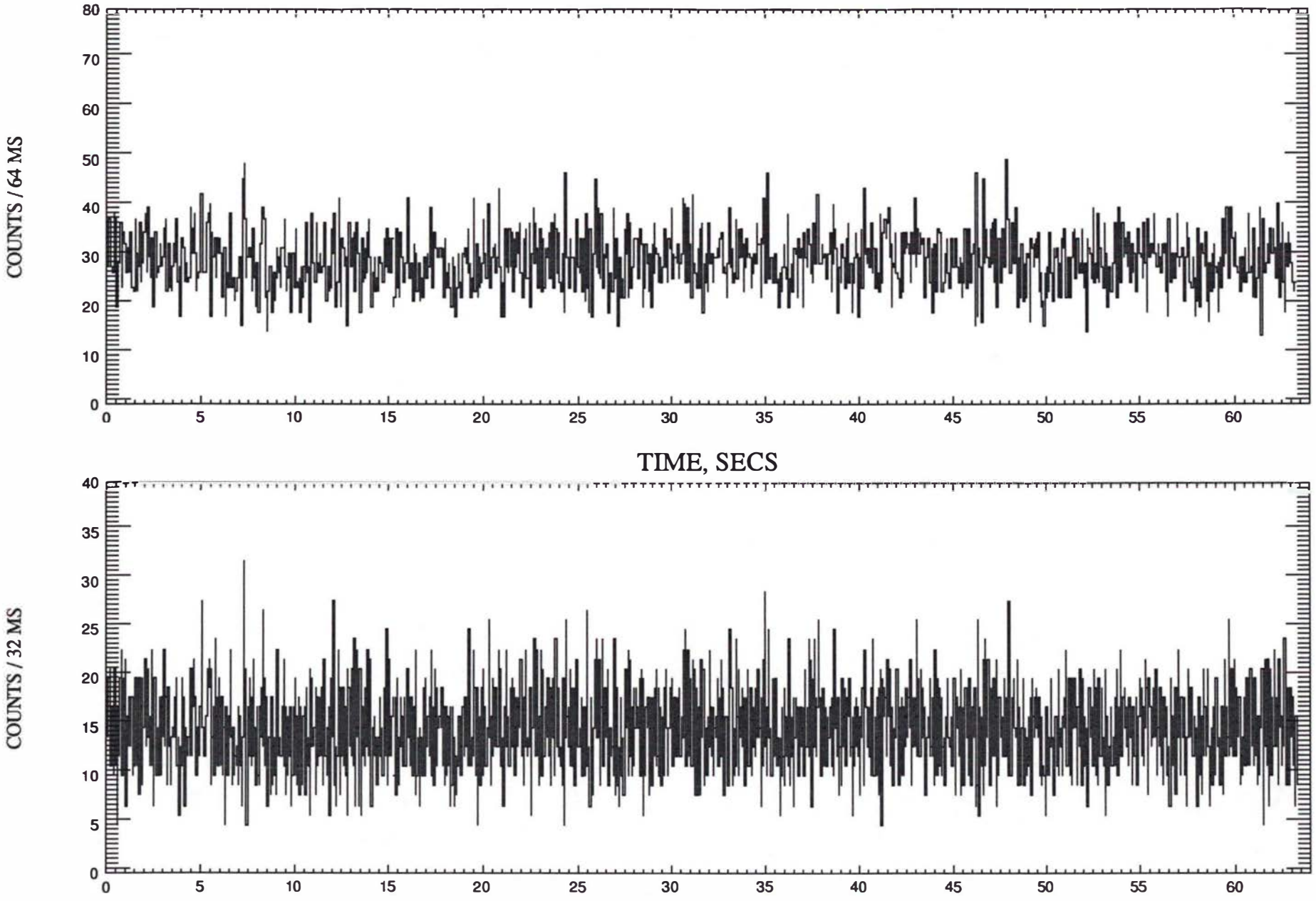
HUS 2A, MODE 1, NOT AVERAGED QEDR day 344, year 1993 to day 344, year 1993 12/13/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 344, year 1993 2/9/94

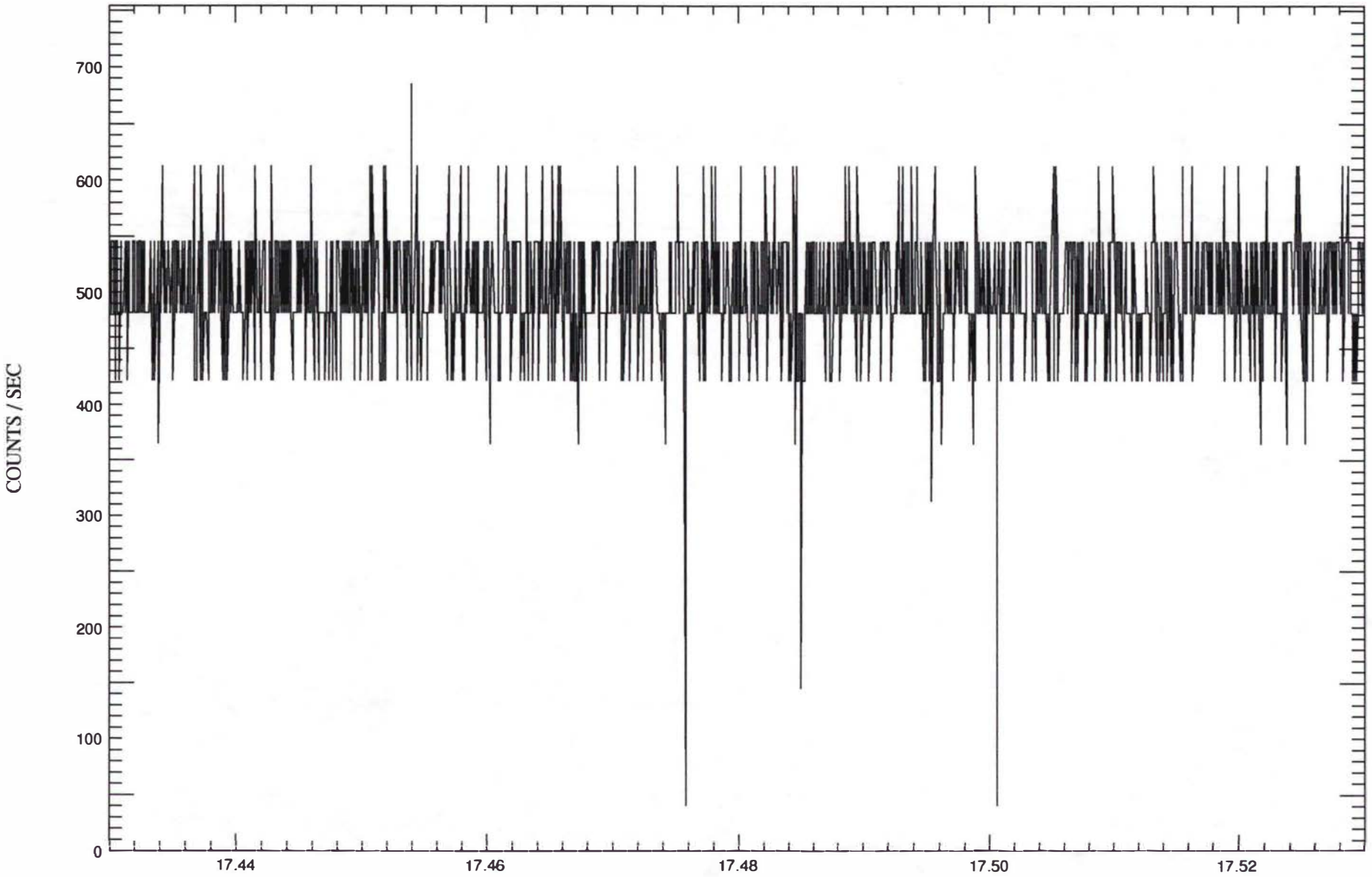
Burst Counter 13 at UT=17.484511867099 h=62944.243 s 17:29:04.243



B# 3

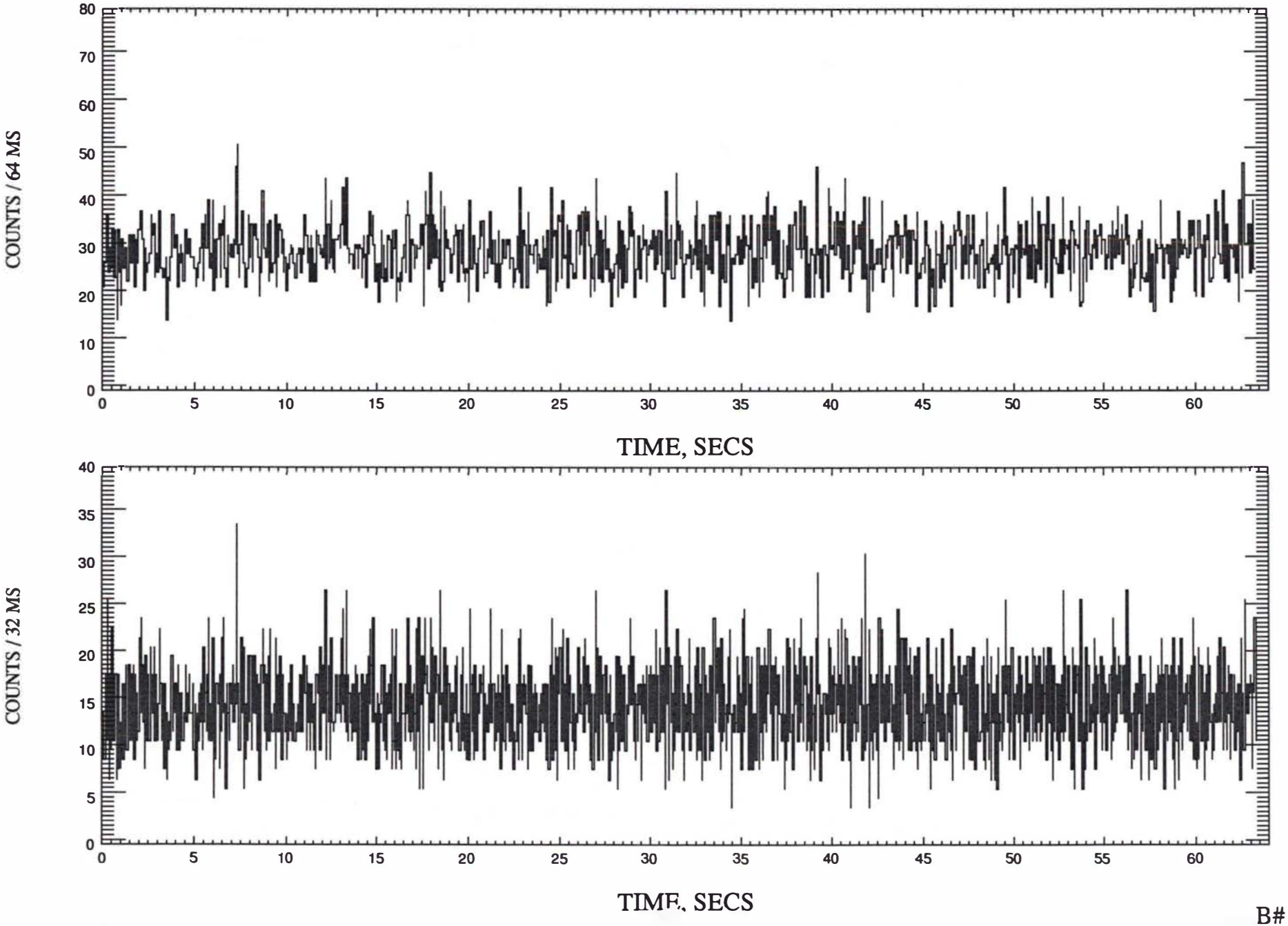
HUS 2A, MODE 1, NOT AVERAGED QEDR day 344, year 1993 to day 344, year 1993 12/13/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 344, year 1993 2/9/94

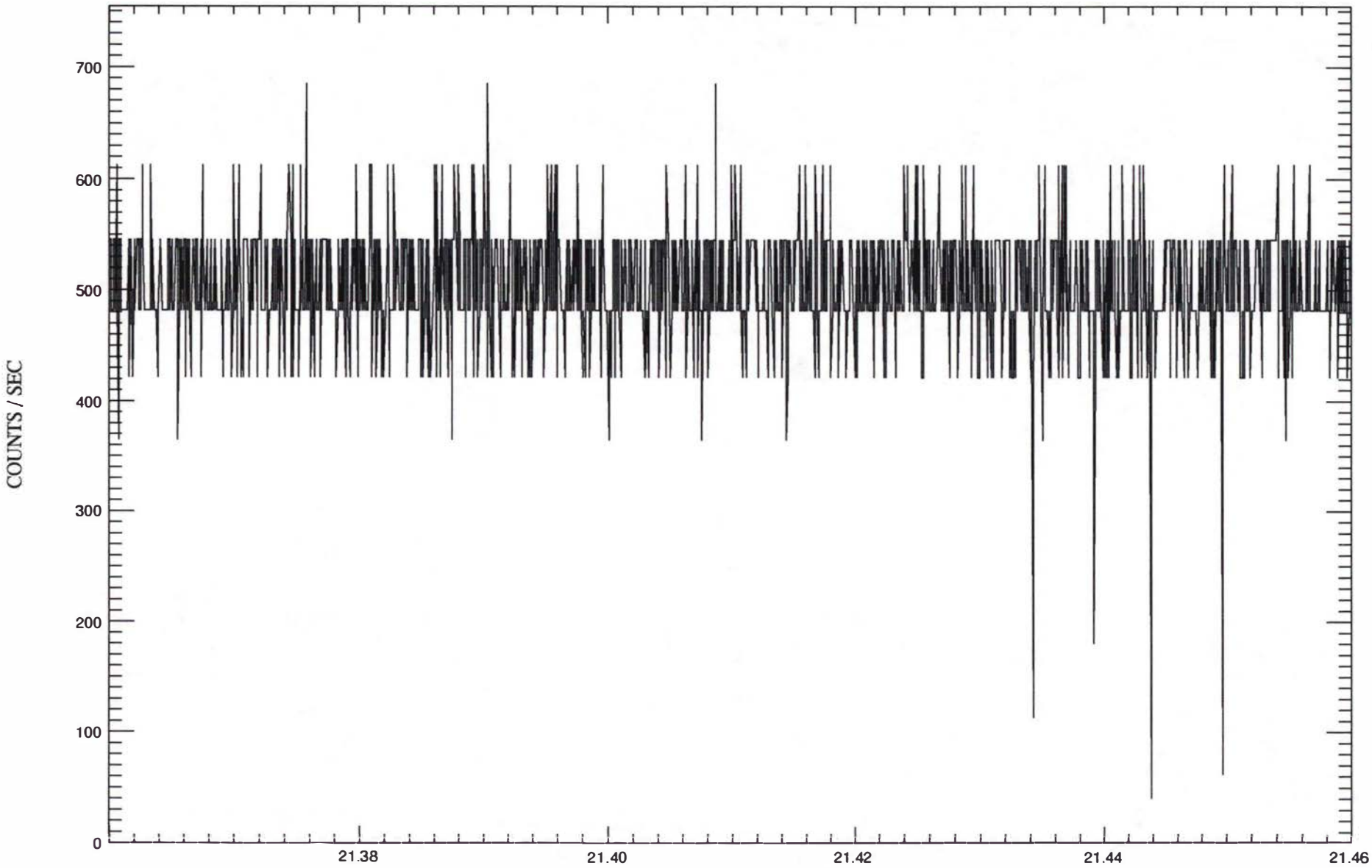
Burst Counter 14 at UT=21.408773769803 h=77071.586 s 21:24:31.586



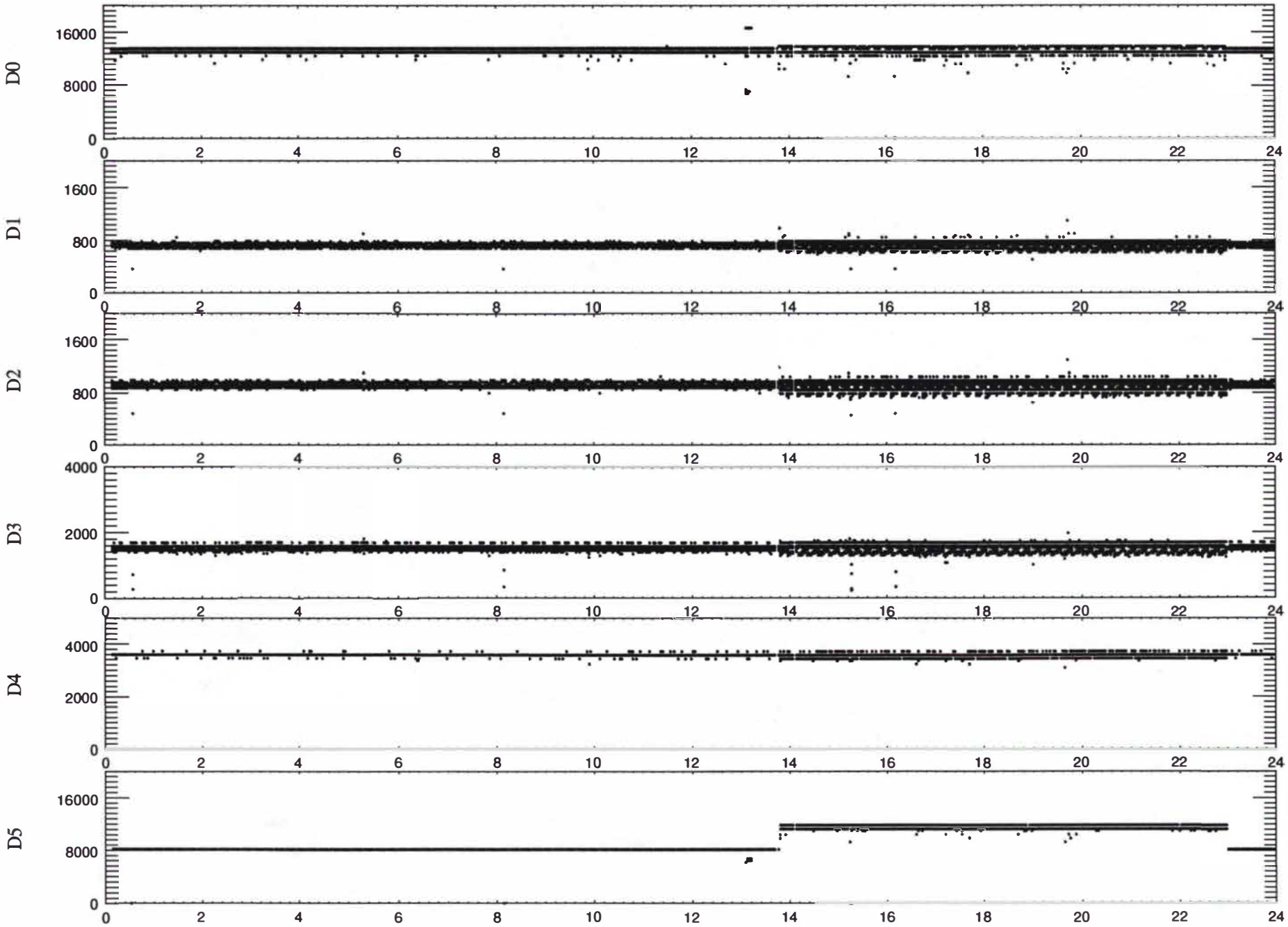
B# 4

HUS 2A, MODE 1, NOT AVERAGED QEDR day 344, year 1993 to day 344, year 1993 12/13/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 344, year 1993 to day 344, year 1993 12/13/93



From BRIGGS@ssl.msfc.nasa.gov Sun Dec 12 20:01:40 1993
Date: Sun, 12 Dec 1993 22:05:11 -0600 (CST)
From: BRIGGS@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2690
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2690
EVENT OF 1993 DEC 11 DAY OF YEAR=345
EVENT CROSSING TIME AT BATSE : 58139. S. OR 16:08:59.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 63.000 37.000
BATSE PEAK COUNTING RATE: 7000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 11/12/ 93 IS:
RA= 166.543 DEC= -36.409 DIST= 4.015 AU
BATSE-ULYSSES DISTANCE = 600589837. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 59.49 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1017.13 SECS.
CROSSING TIME AT ULYSSES IS 59156. S. OR 16:25:56 +/- 365.10 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 11/12/ 93 IS:
RA= 262.601 DEC= -23.927 DIST= 2.443 AU
MARS-BATSE DISTANCE = 365516704. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 21.29 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1136.06 SECS.
CROSSING TIME AT MARS IS 59275. S. OR 16:27:55 +/- 94.09 SECONDS

No

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2690	931211	9332	58139	7000	063	+37

BATSE BURST TRIGGER

NO.: 02690

TIME: TJD=9332 SECONDS=58139

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: 5.5 SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=36.4 AZIMUTH=103.3 ERROR= DEGREES

COMMENTS:
WEAK, SHORT BURST. DURATION ABOUT 0.3 S. UNUSUAL CONCENTRATION OF EMISSION IN 100 TO 300 KEV BAND. SEEN BELOW 50 KEV AND ABOVE 300 KEV.

BATSE Burst #2690

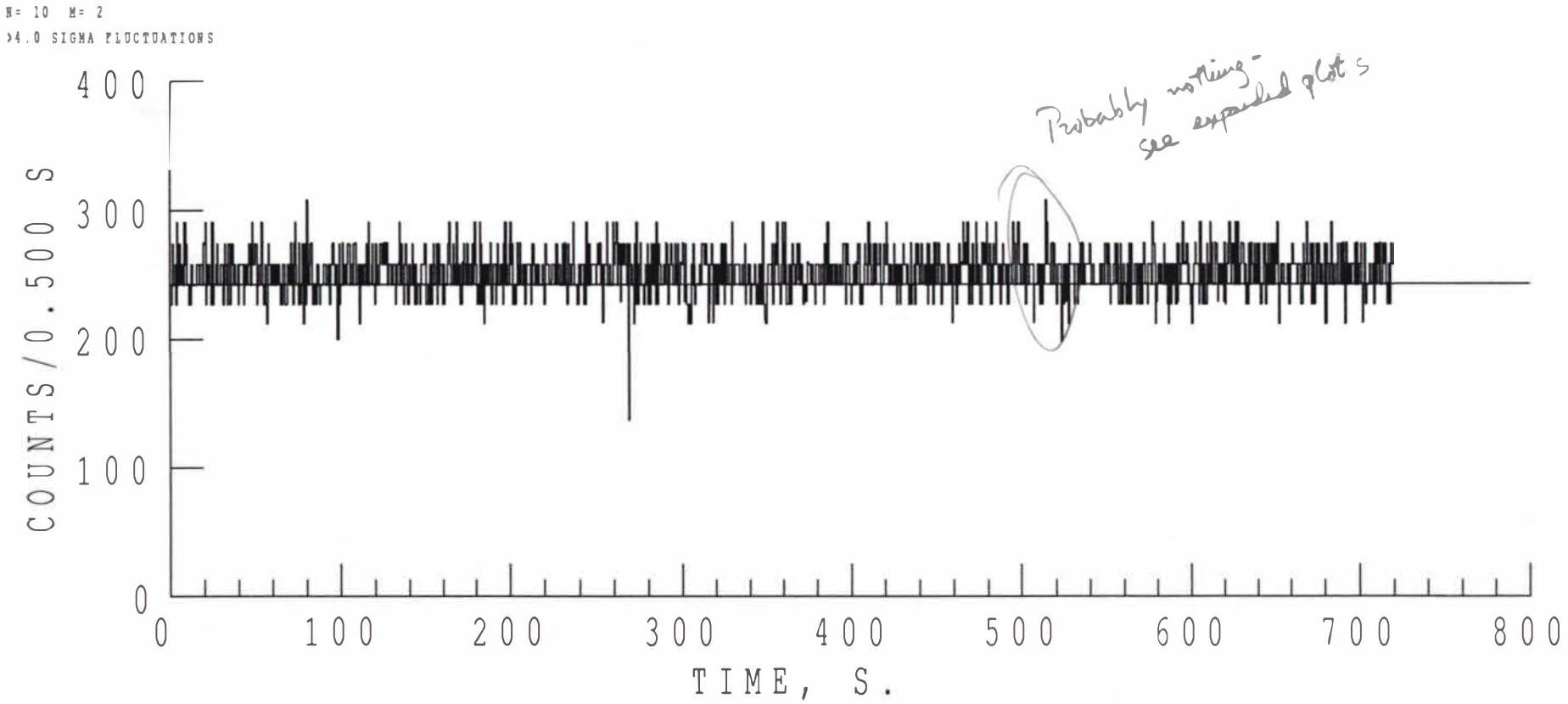
13/12/93

ULYSSES RT

11/12/93 58788.023 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

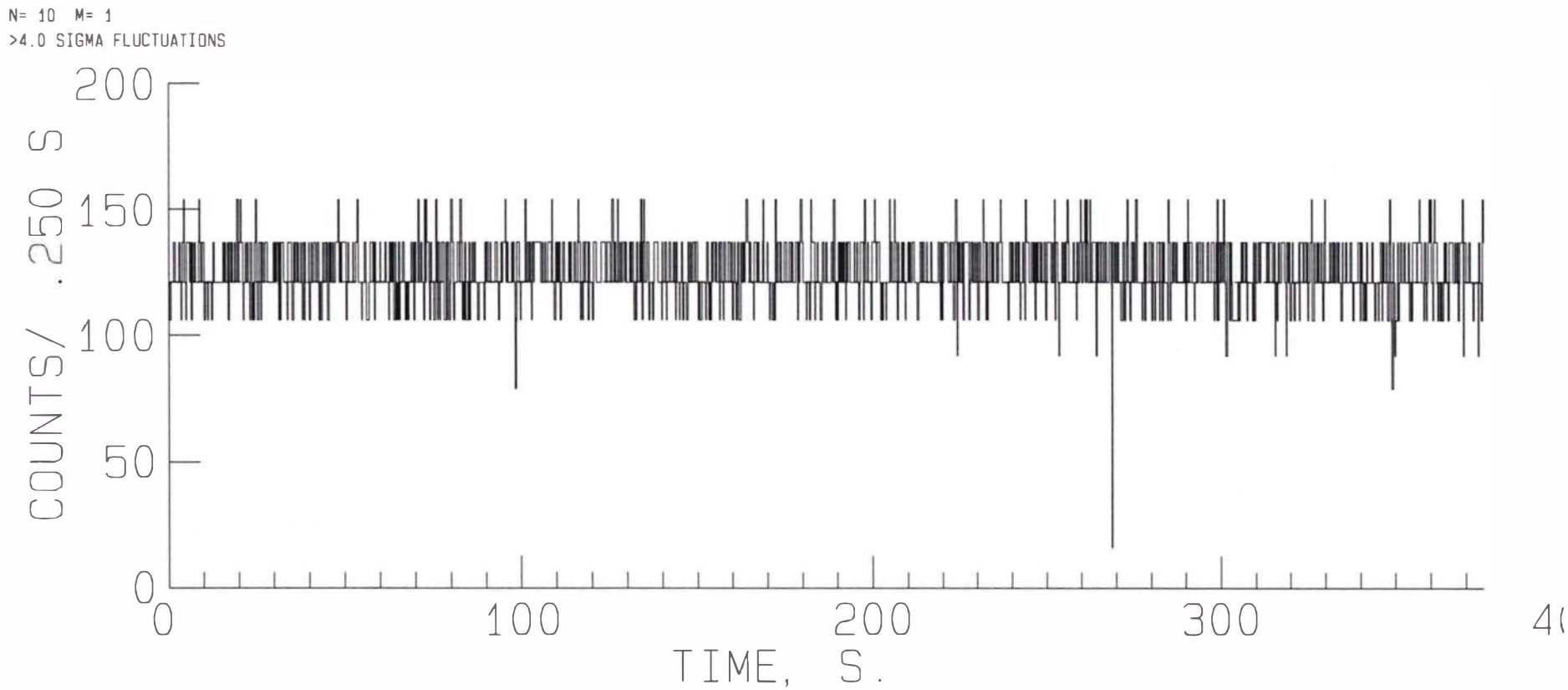


ULYSSES RT

14/12/93

11/12/93 58788.023 s

0- 0 keV

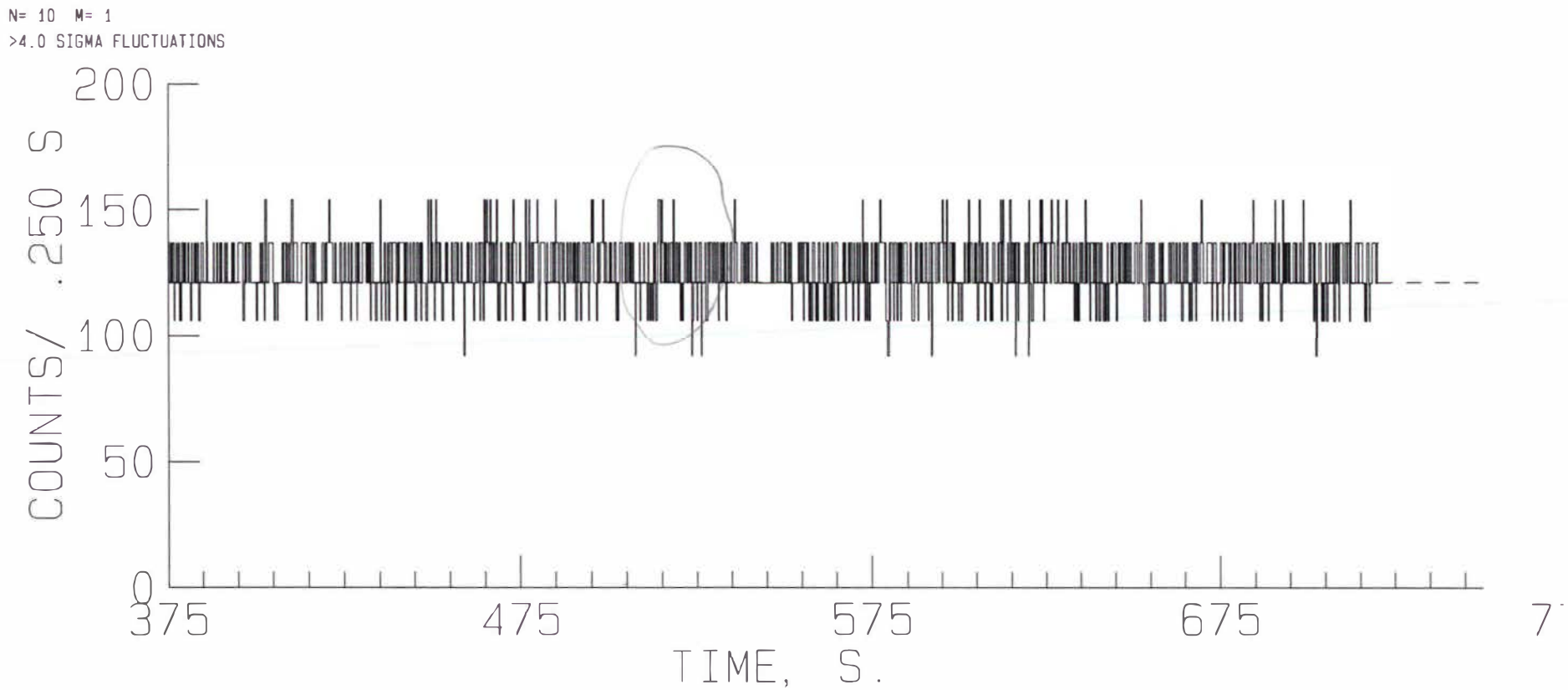


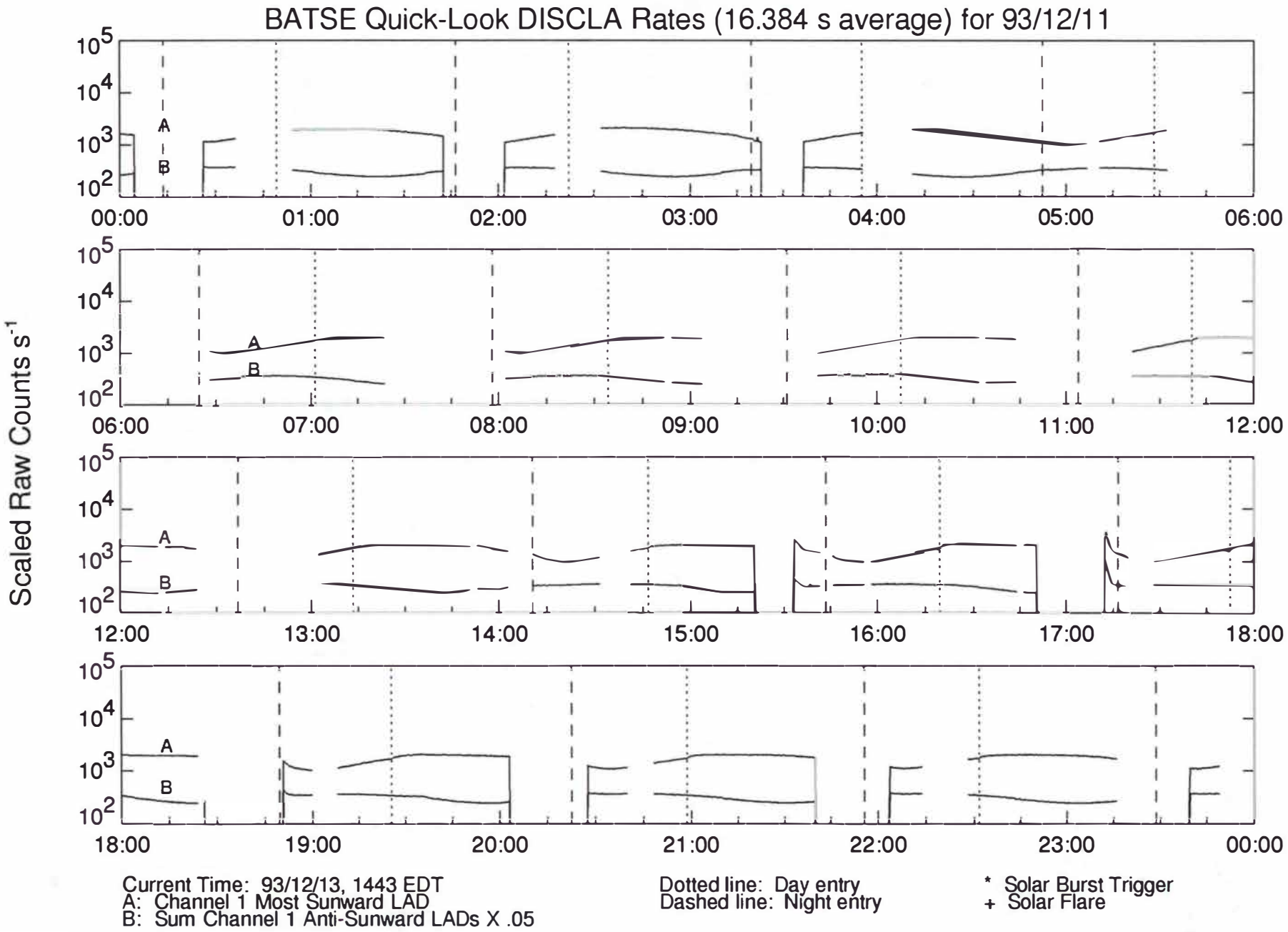
ULYSSES RT

14/12/93

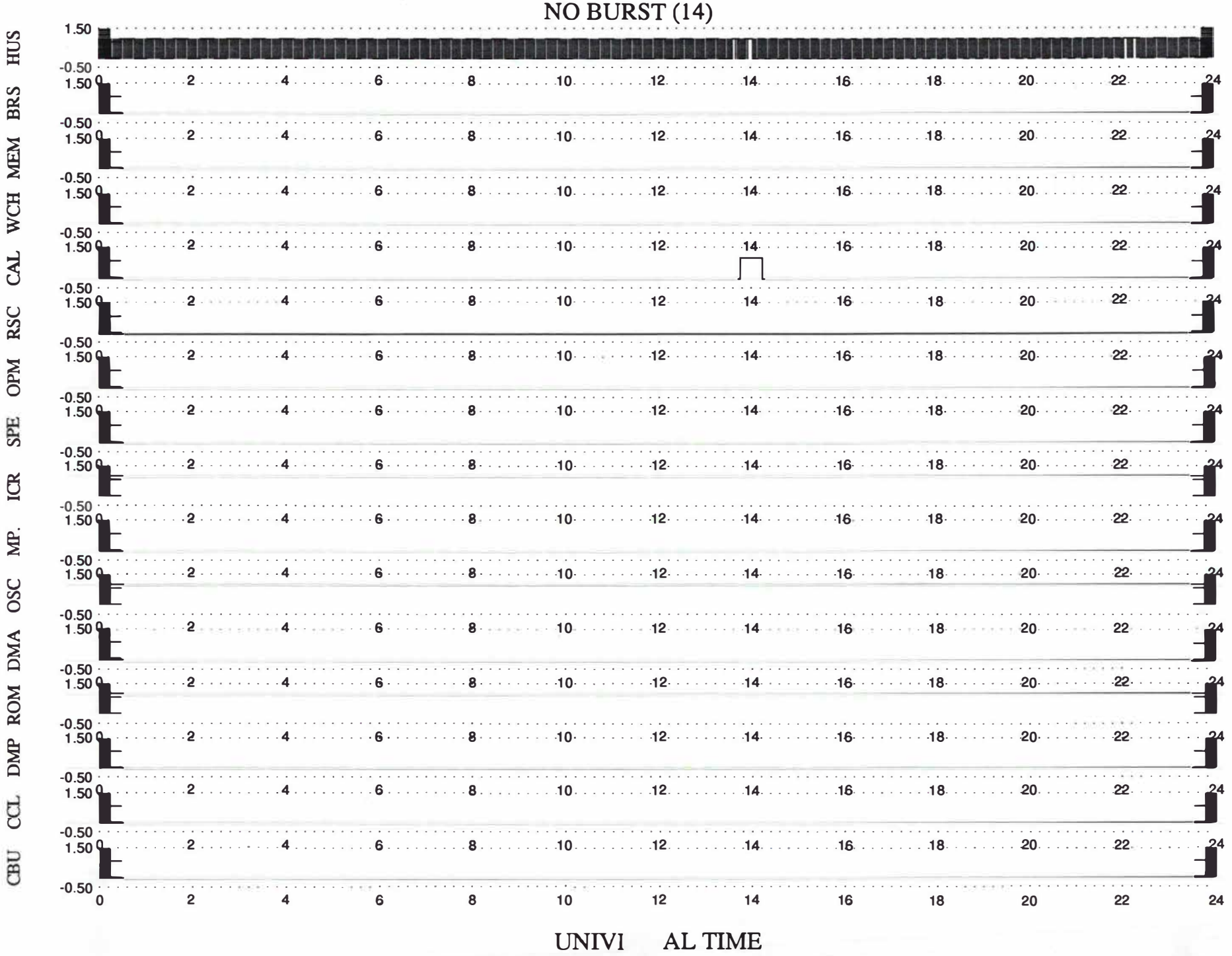
11/12/93 58788.023 s

0- 0 keV



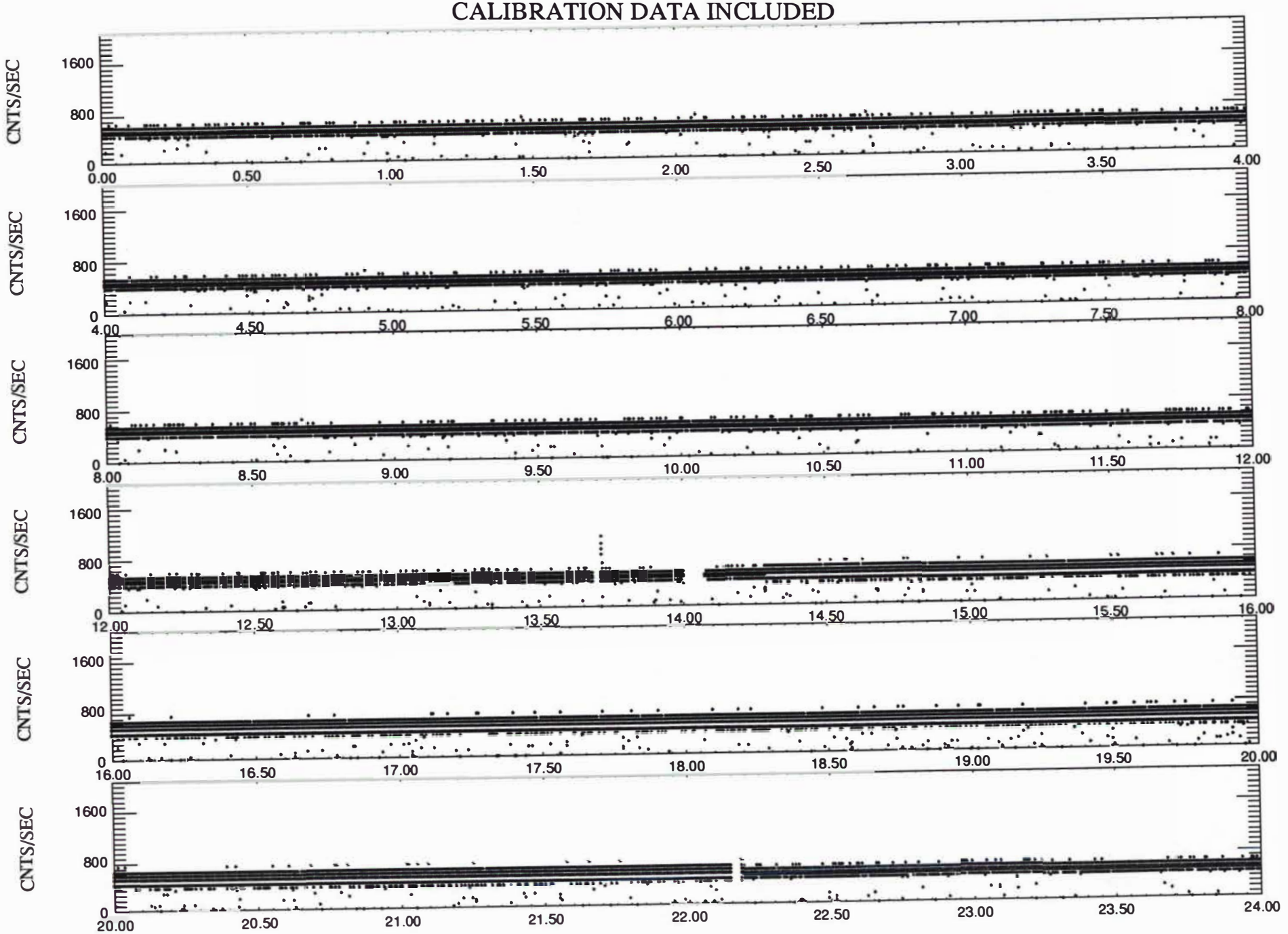

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/11
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/13, 1443 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 345, year 1993 to day 345, year 1993 2/9/94



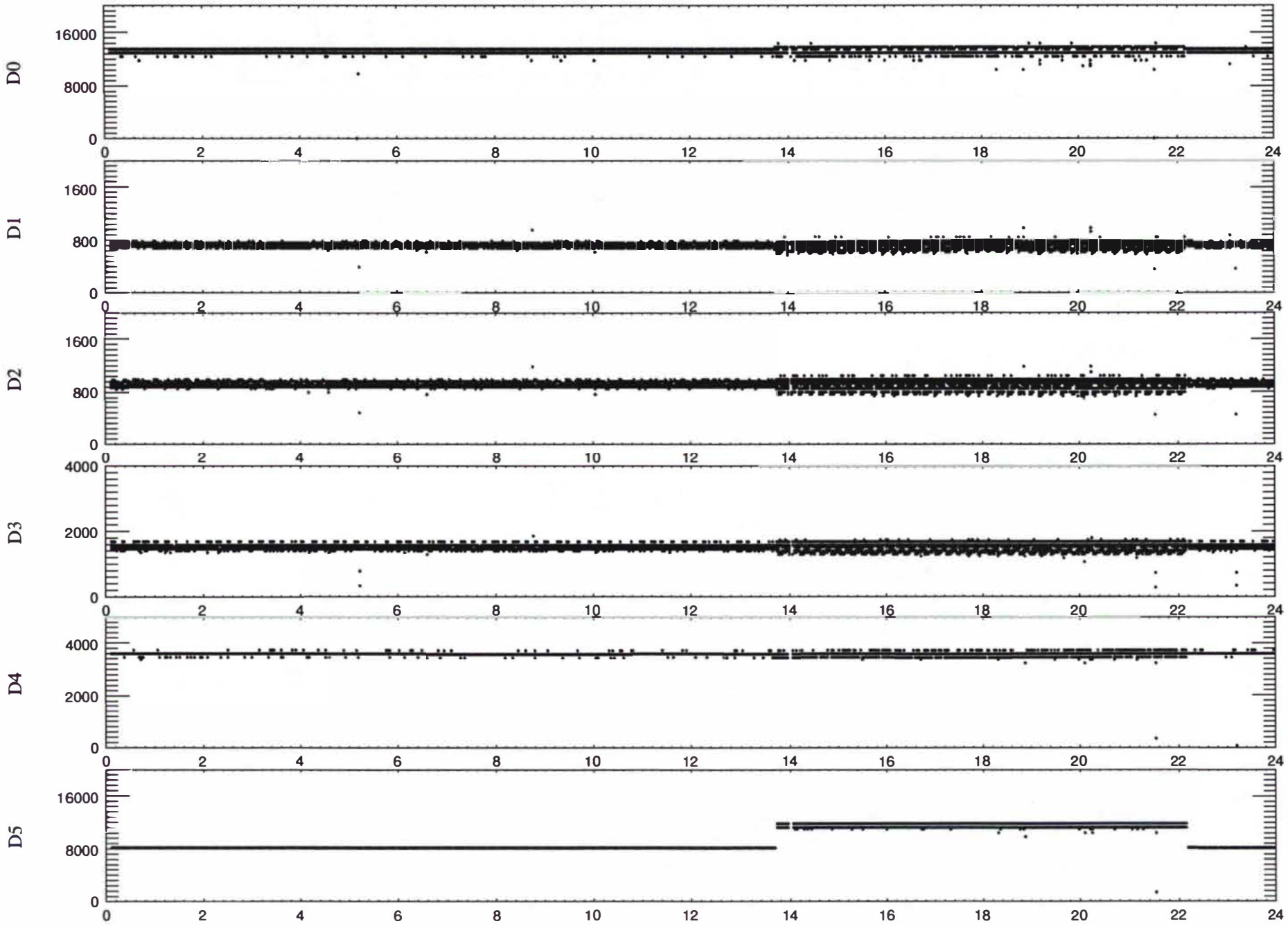
HUS 2A, MODE 1, NOT AVERAGED EDR day 345, year 1993 to day 345, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 345, year 1993 to day 345, year 1993 12/13/93



From MALLOZZI@ssl.msfc.nasa.gov Mon Dec 13 13:42:38 1993
Date: Mon, 13 Dec 1993 15:46:05 -0600 (CST)
From: MALLOZZI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2691
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2691
 EVENT OF 1993 DEC 12 DAY OF YEAR=346
 EVENT CROSSING TIME AT BATSE      : 19747. S. OR 05:29:07.0
 COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 247.000    26.000
 BATSE PEAK COUNTING RATE:    3000     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 12/12/  93 IS:
 RA=  166.537 DEC=  -36.552 DIST=     4.005 AU
 BATSE-ULYSSES DISTANCE =  599155222. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 81.87 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  282.70 SECS.
 CROSSING TIME AT ULYSSES     IS 20030. S. OR   05:33:49 +/-  397.79 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON 12/12/  93 IS:
 RA=  263.416 DEC=  -23.972 DIST=     2.443 AU
 MARS-BATSE DISTANCE =  365400800. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=127.57 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -743.11 SECS.
 CROSSING TIME AT MARS        IS 19004. S. OR   05:16:43 +/-  156.45 SECONDS
```

ND

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2691	931212	9333	19747	3000	247	+26

BATSE BURST TRIGGER

NO.: 02691

TIME: TJD=9333 SECONDS=19747

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=126.9 AZIMUTH=016.9 ERROR= DEGREES

COMMENTS:
SINGLE PEAK BURST WITH FAST RISE AND SLOWER DECAY.
DURATION APPROX. 30 SEC WITH POSSIBLE SLIGHT EMISSION ABOVE 300 KEV

Batse # 2691

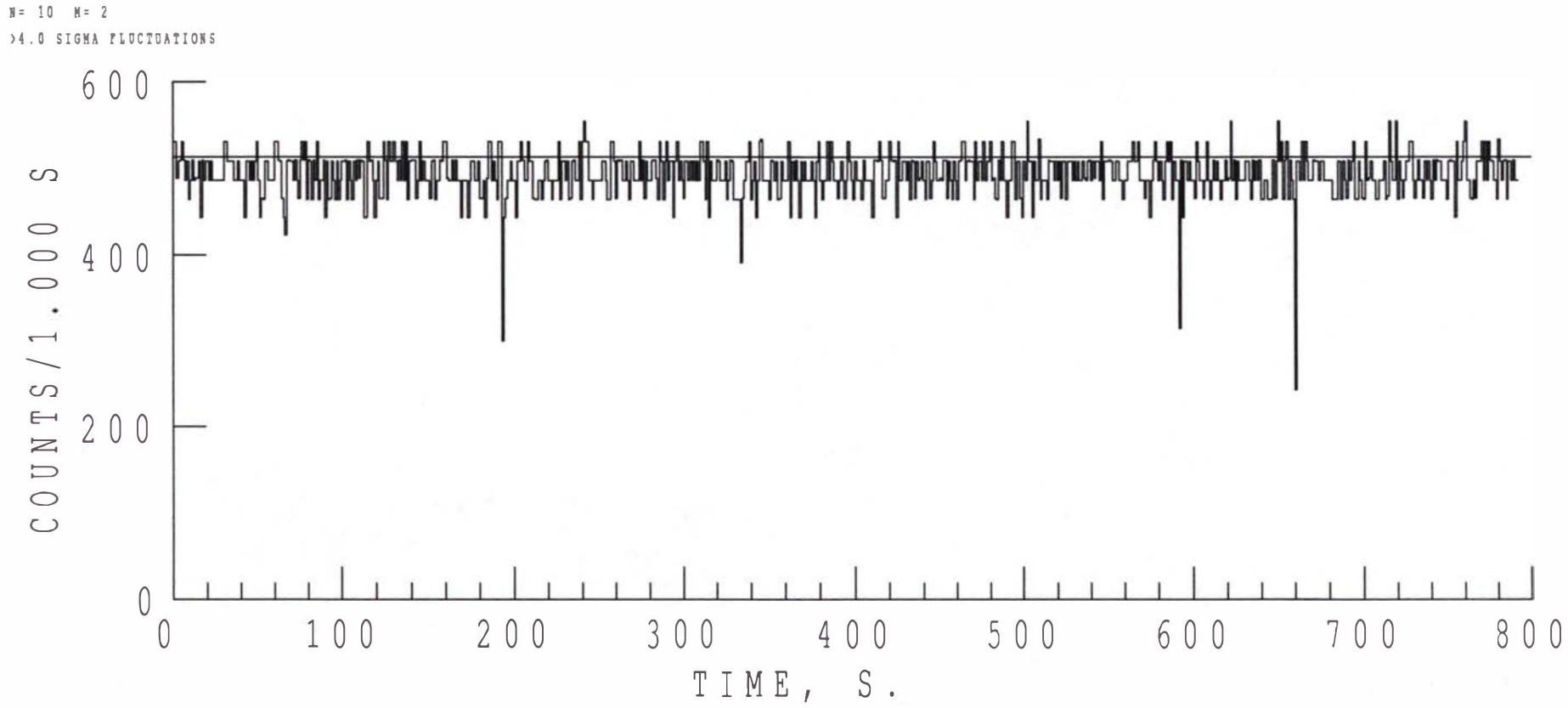
14/12/93

ULYSSES RT

12/12/93 19620.000 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



From MALLOZZI@ssl.msfc.nasa.gov Tue Dec 14 05:38:47 1993
Date: Tue, 14 Dec 1993 7:42:17 -0600 (CST)
From: "ROBERT S. MALLOZZI 205-544-6257" <MALLOZZI@ssl.msfc.nasa.gov>
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1295

BATSE BURST TRIGGER

NO.: 02692

TIME: TJD=9333 SECONDS=48679

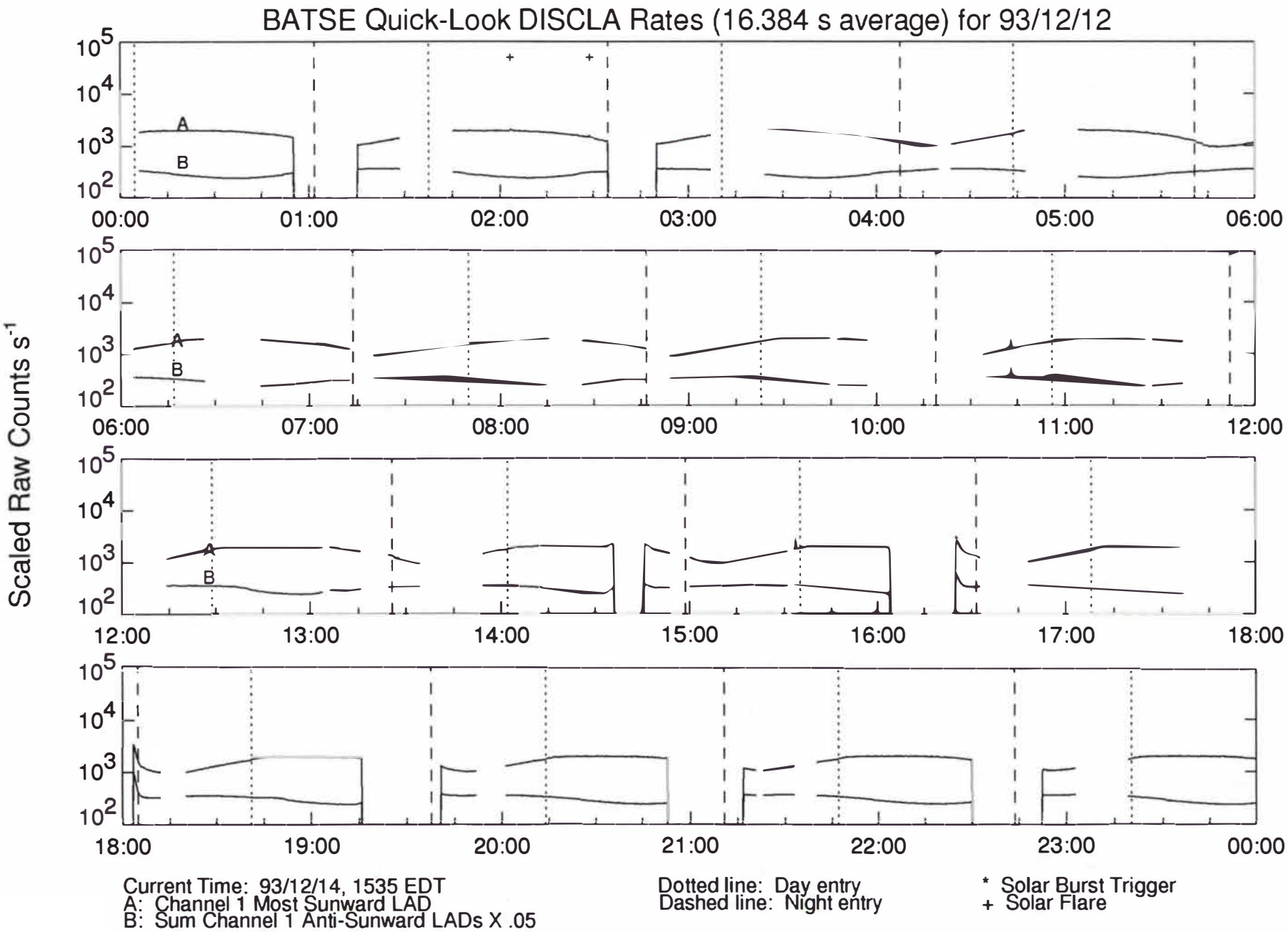
TYPE: UNKNOWN SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

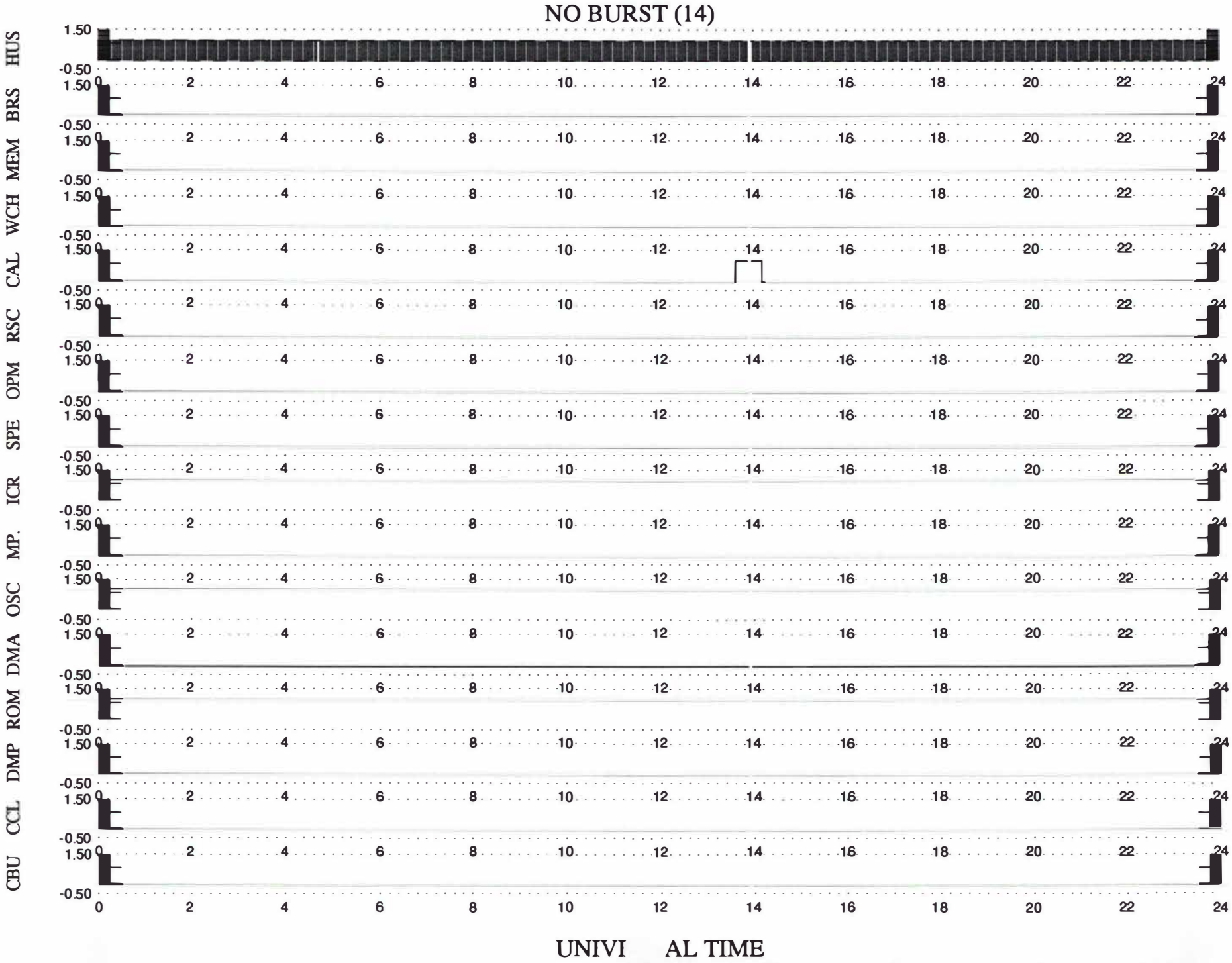
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=113.3 AZIMUTH=345.2 ERROR= DEGREES

COMMENTS:
EXTREMELY SHORT (~2 MS), HARD SPIKE EVENT.
INITIAL LOCATION IS WELL BELOW THE LIMB OF THE EARTH.

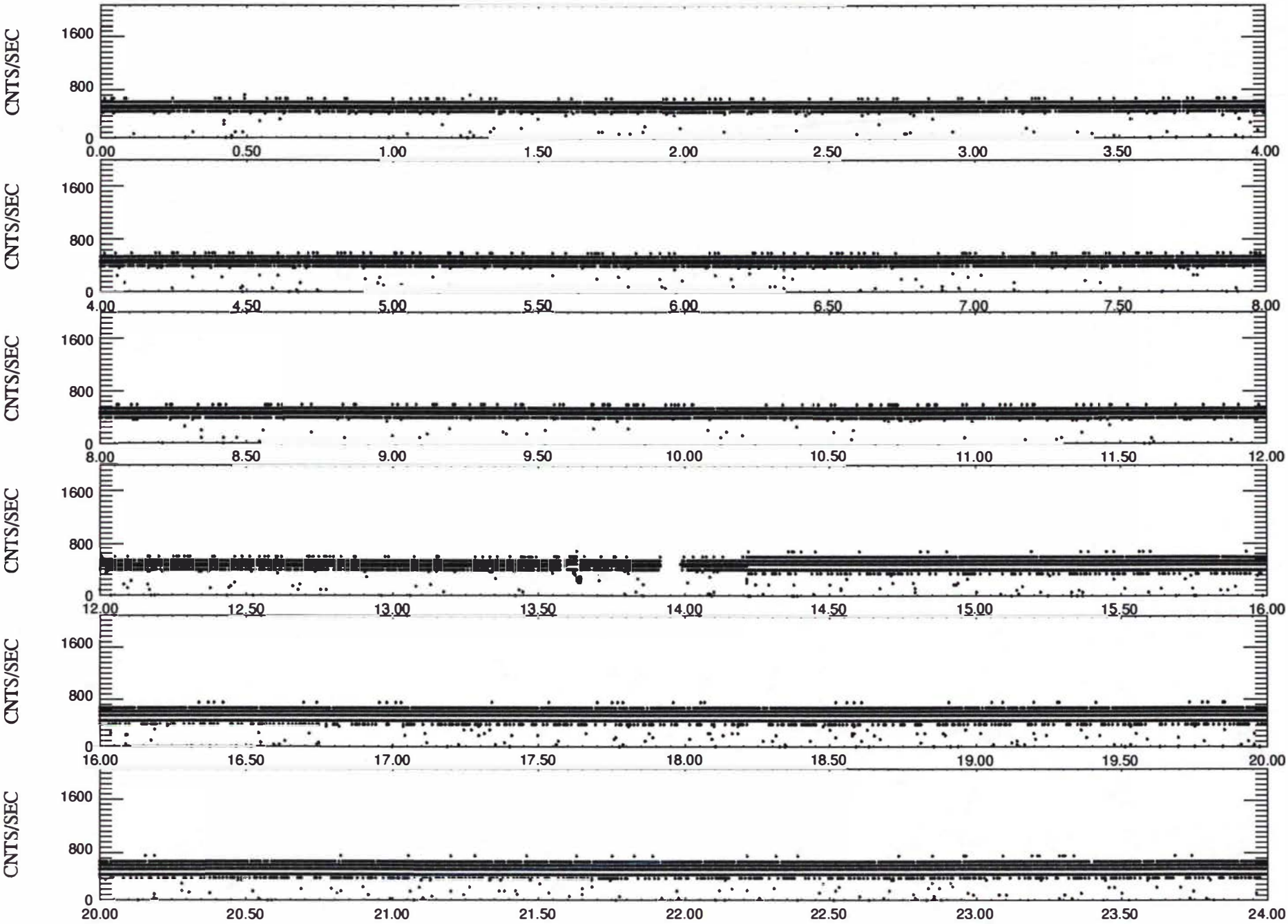

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/12
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/14, 1535 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 346, year 1993 to day 346, year 1993 2/9/94



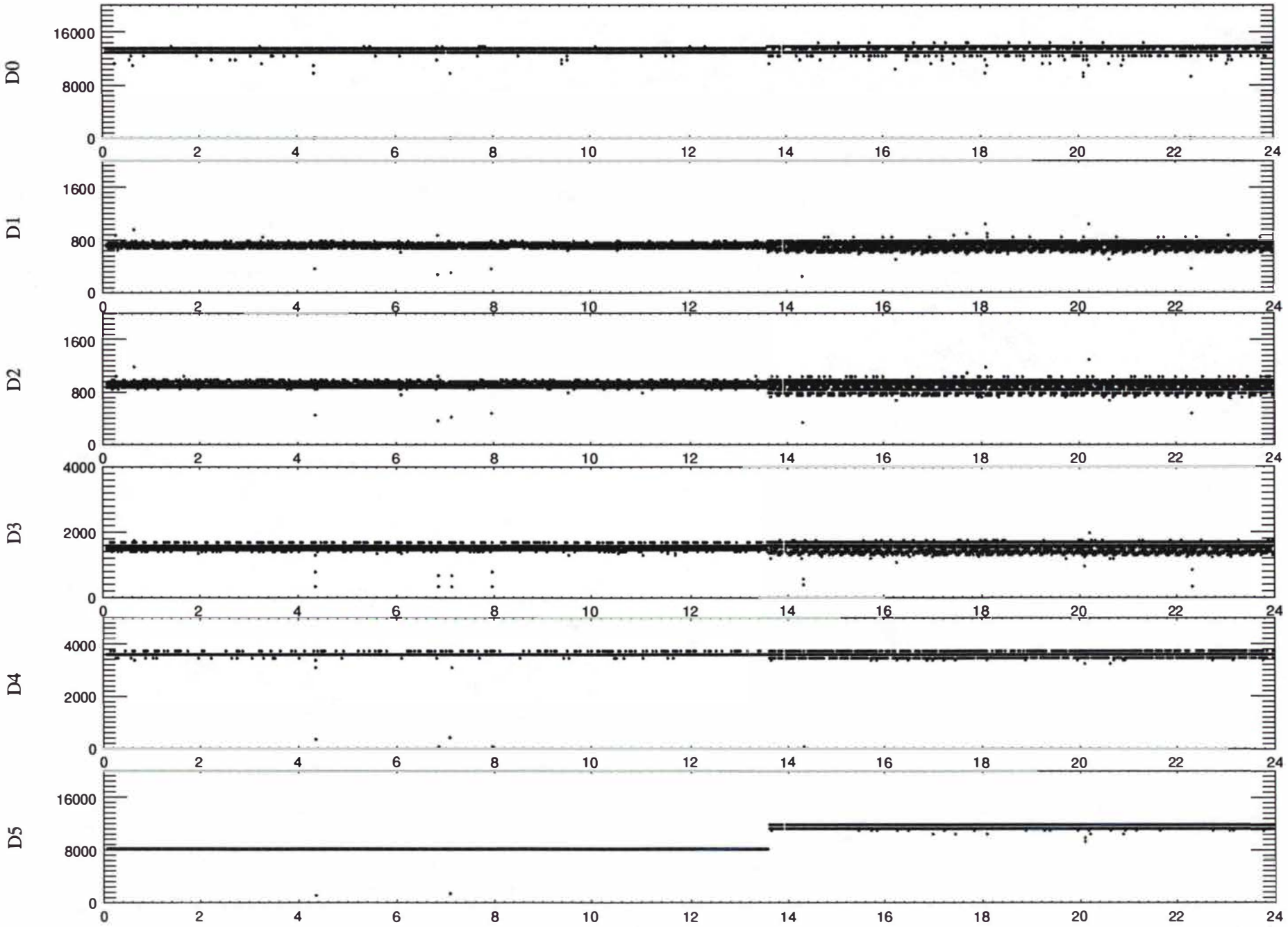
HUS 2A, MODE 1, NOT AVERAGED EDR day 346, year 1993 to day 346, year 1993 2/9/94

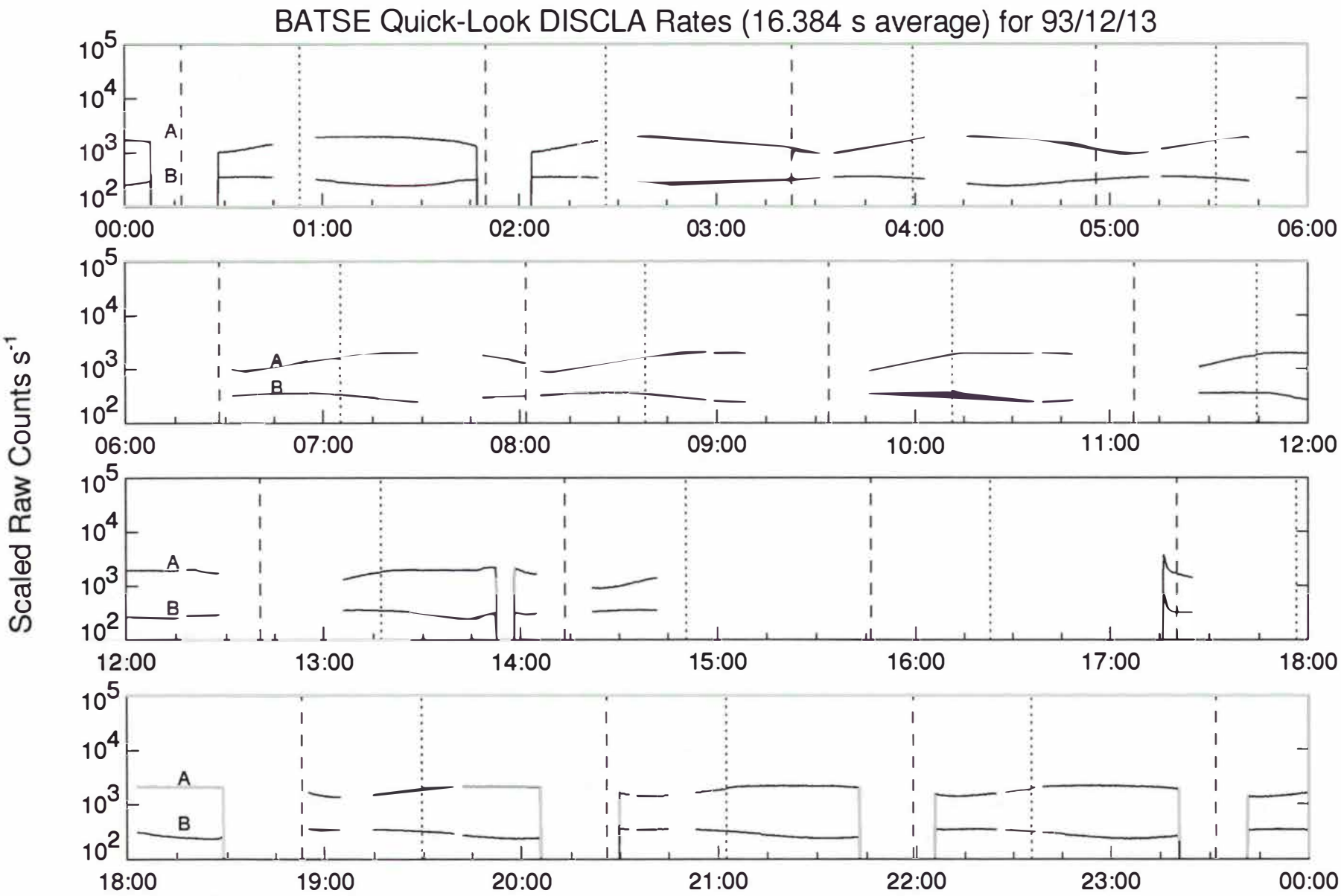
CALIBRATION DATA INCLUDED



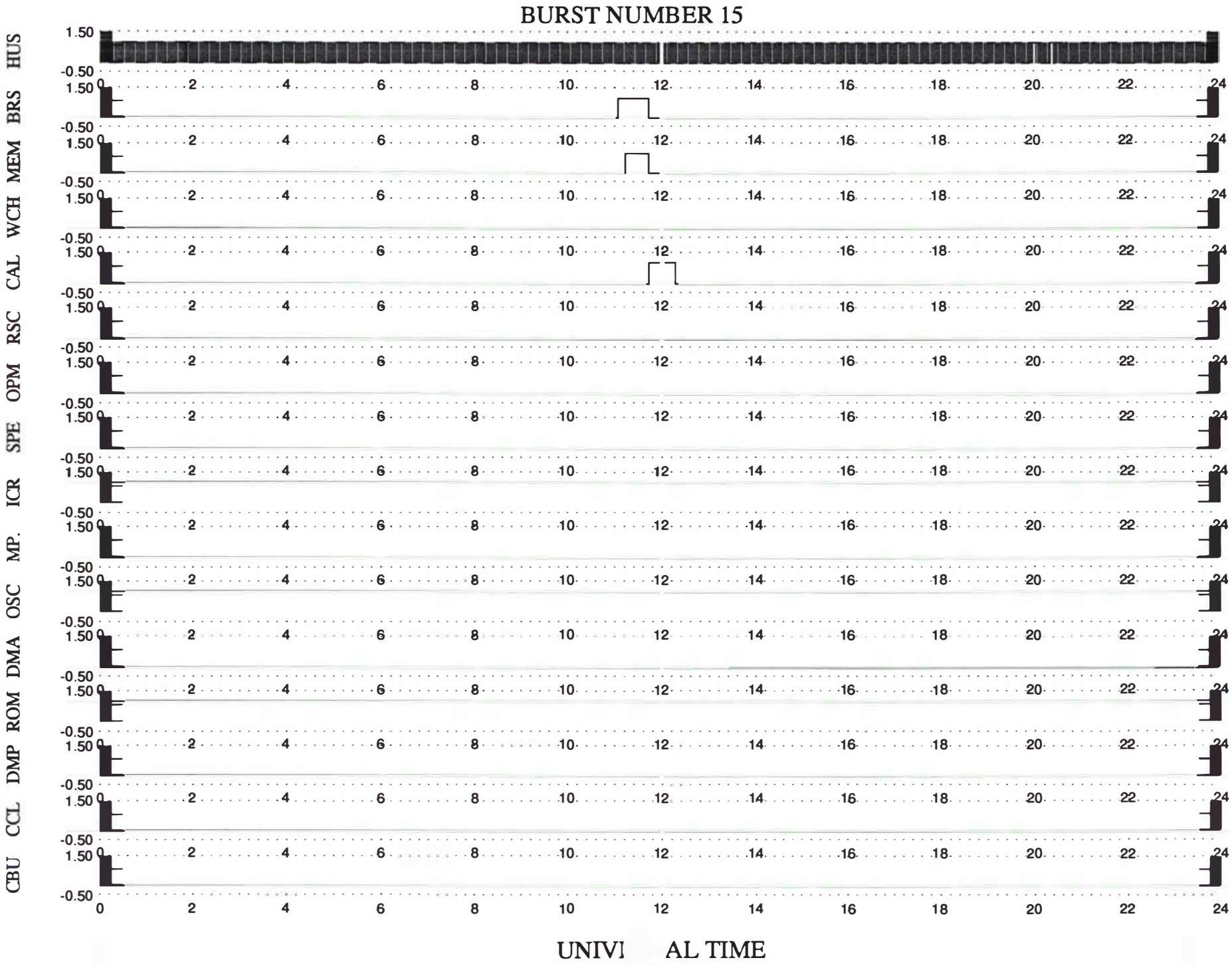
UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 346, year 1993 to day 346, year 1993 12/14/93



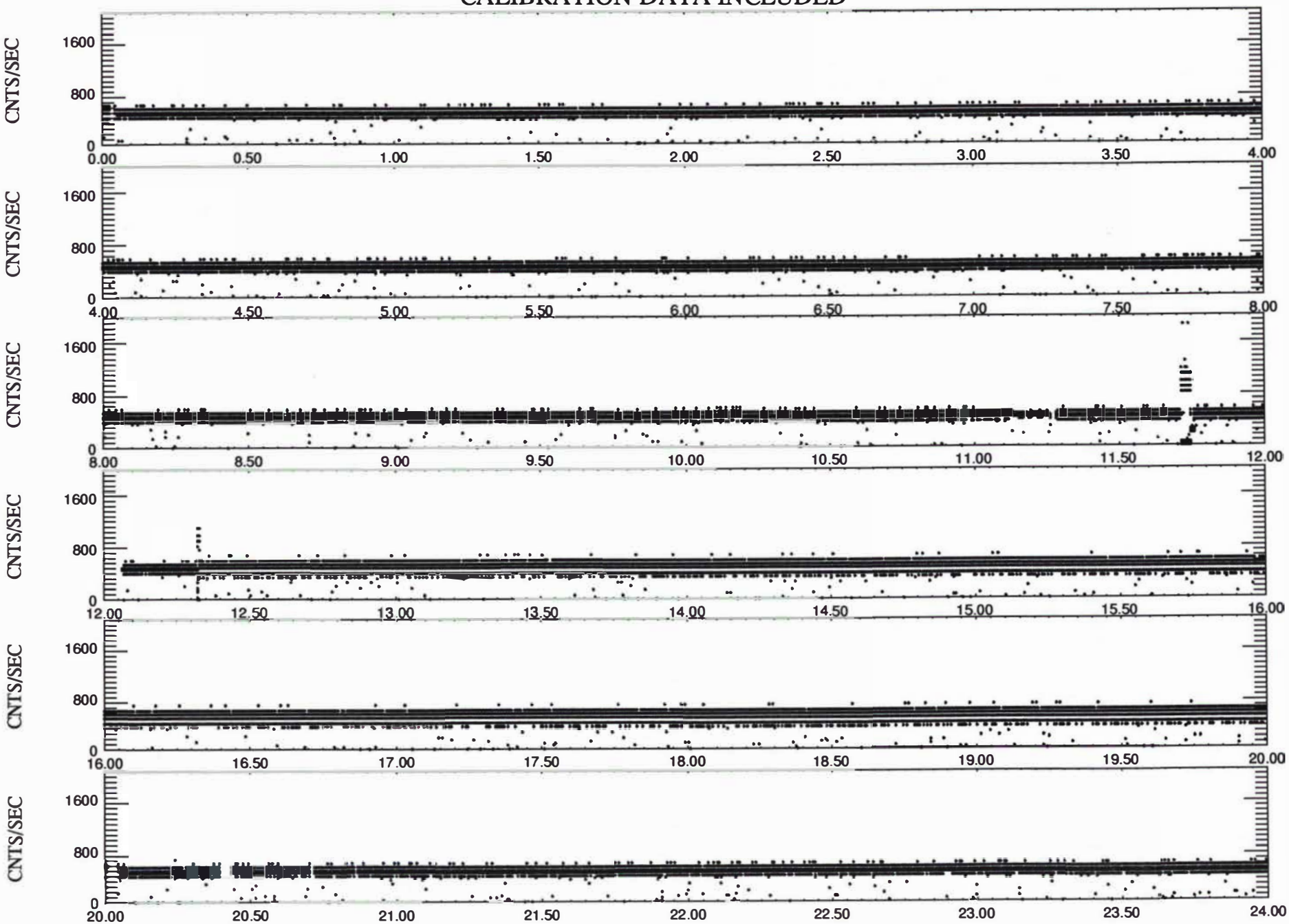

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/13
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/15, 1729 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 347, year 1993 to day 347, year 1993 2/9/94



HUS 2A, MODE 1, NOT AVERAGED EDR day 347, year 1993 to day 347, year 1993 2/9/94

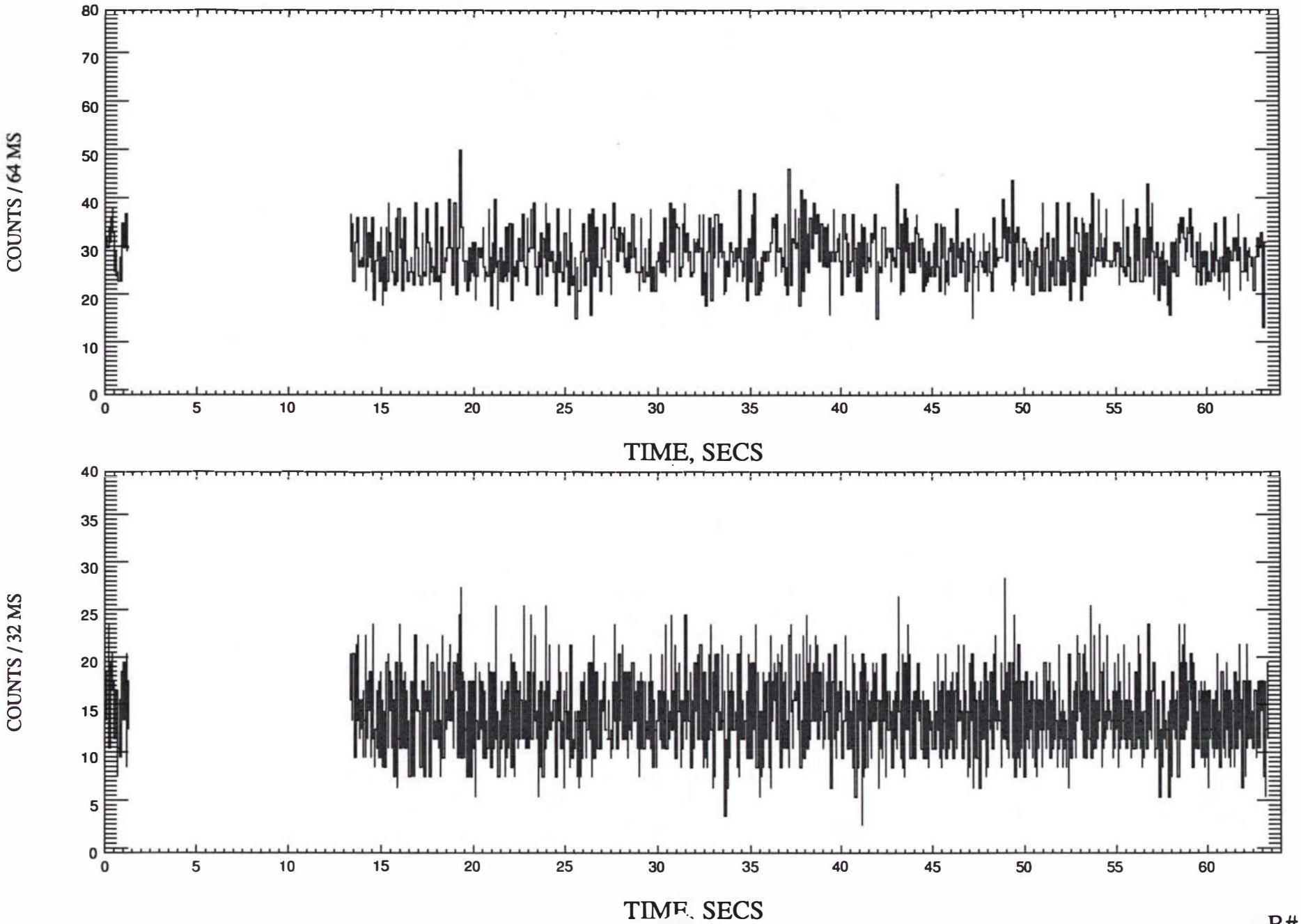
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 347, year 1993 2/9/94

Burst Counter 15 at UT=10.967921596103 h=39484.518 s 10:58:04.518



B# 1

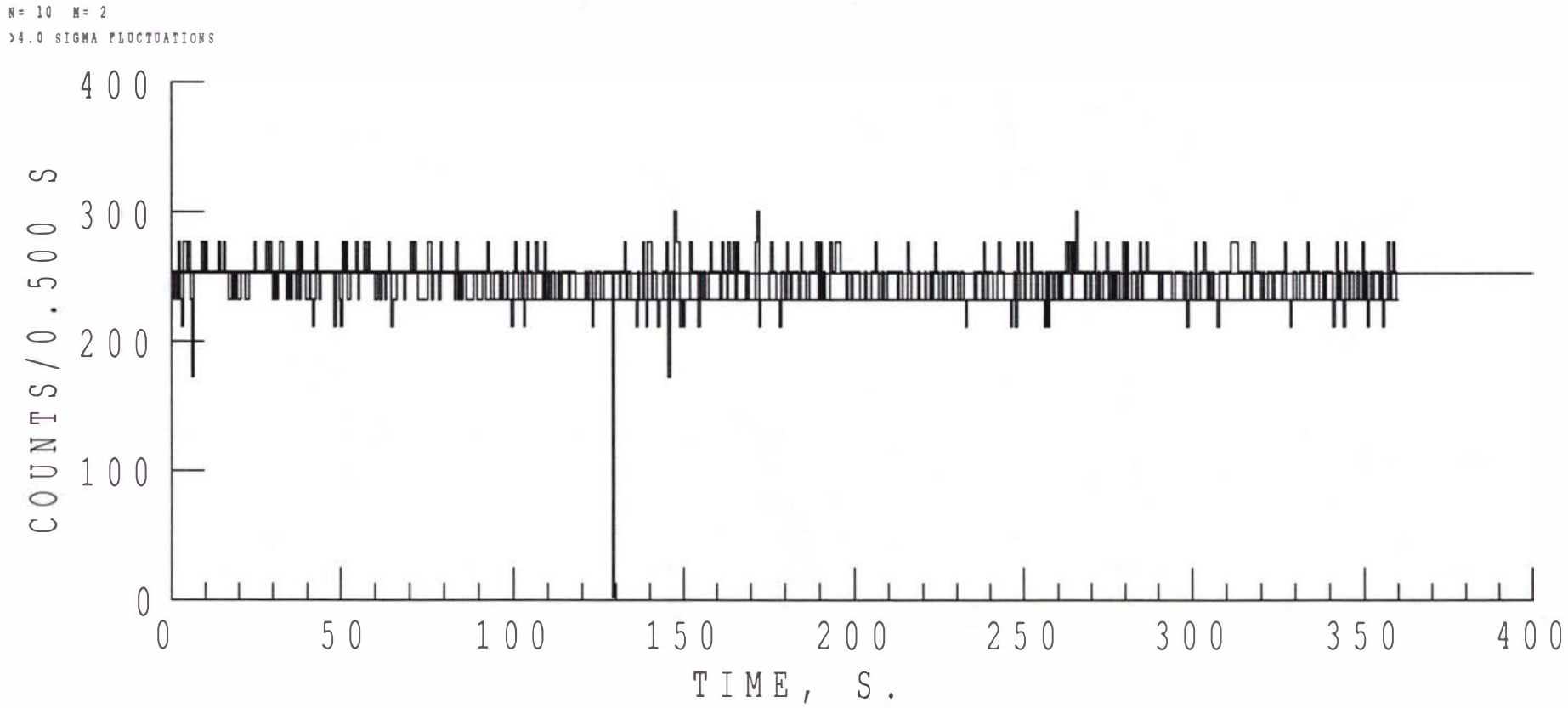
HUS trigger

14/12/93

ULYSSES RT

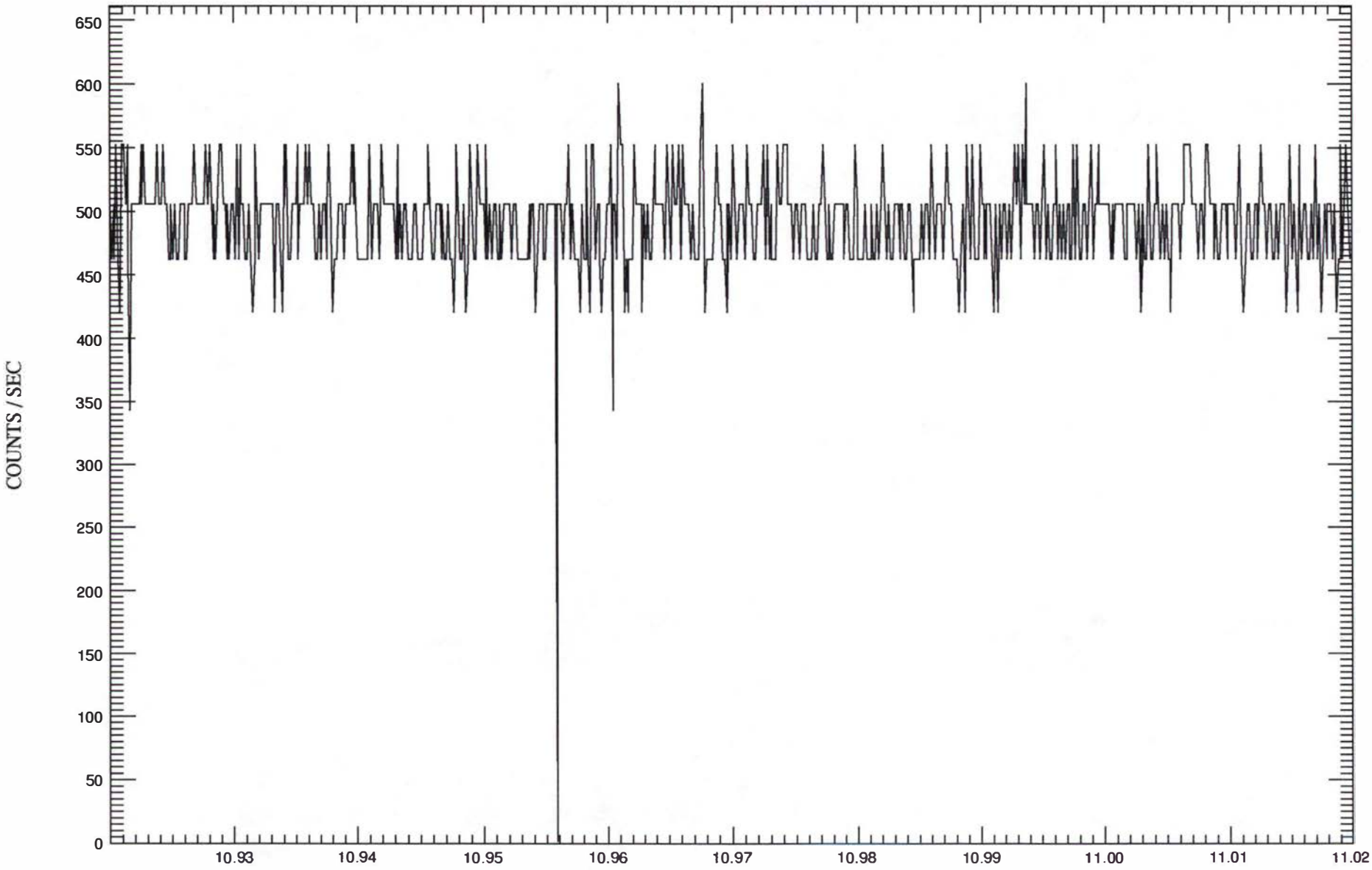
13/12/93 39312.145 s

0- 0 keV

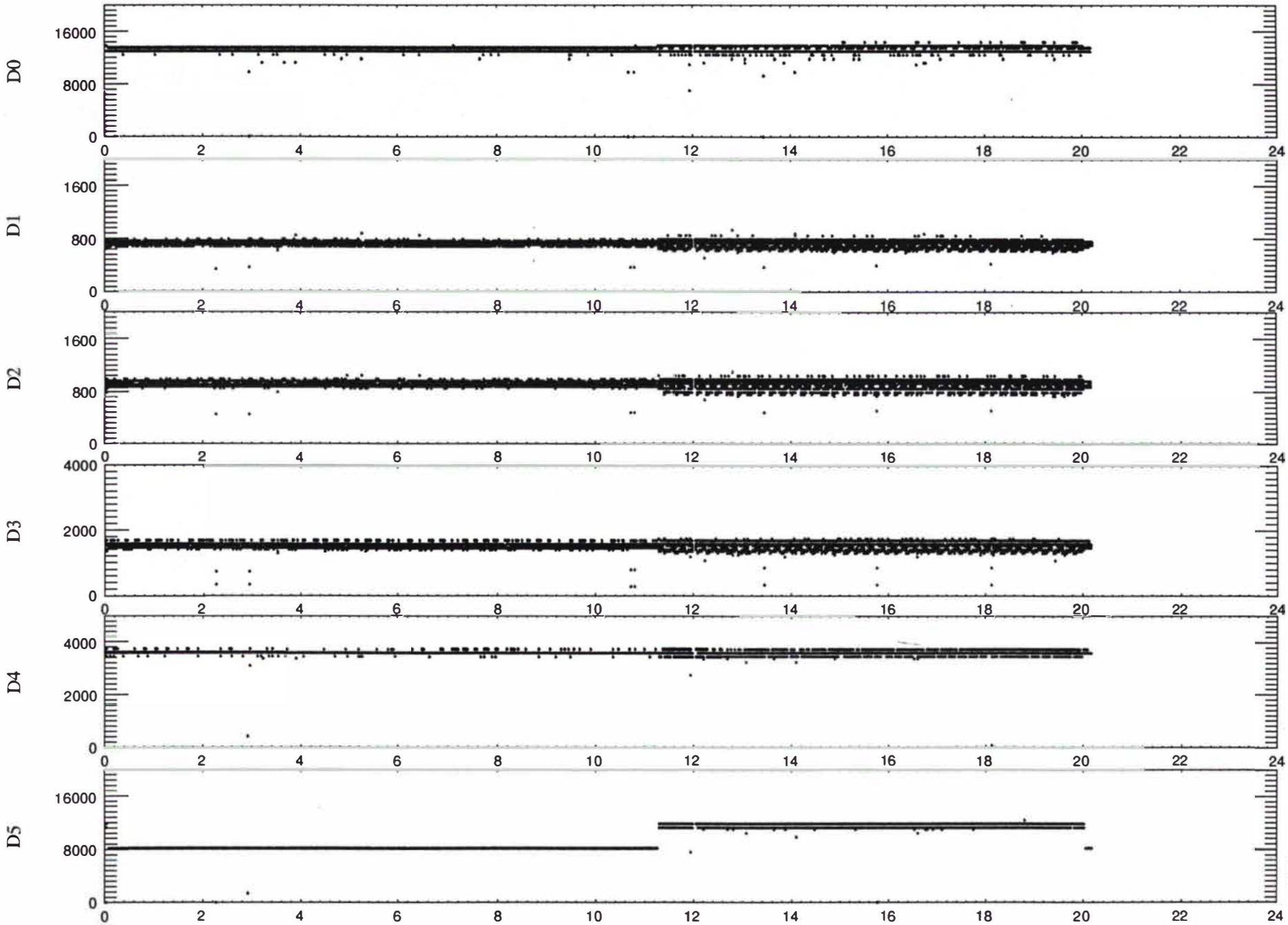


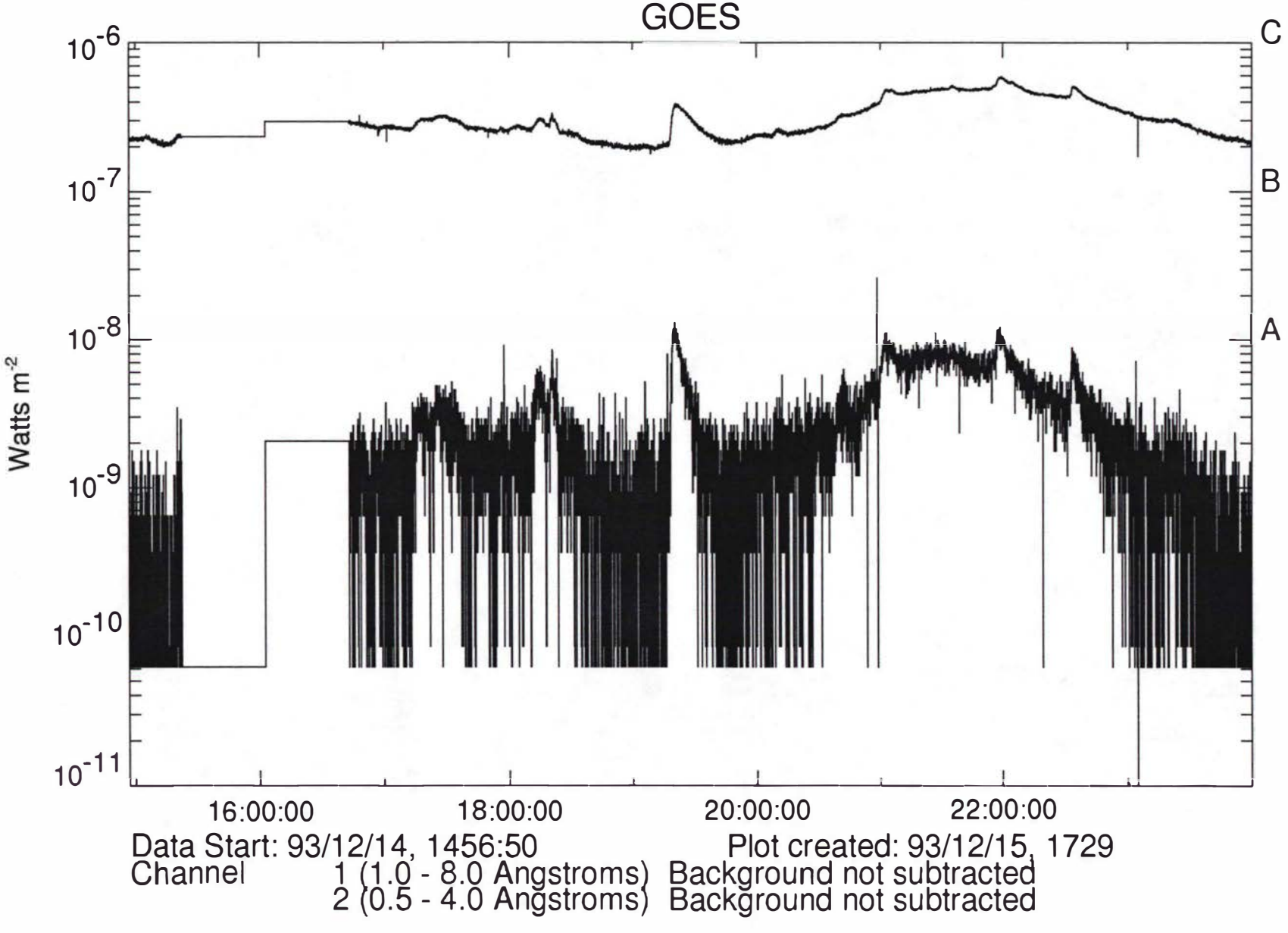
HUS 2A, MODE 1, NOT AVERAGED QEDR day 347, year 1993 to day 347, year 1993 12/14/93

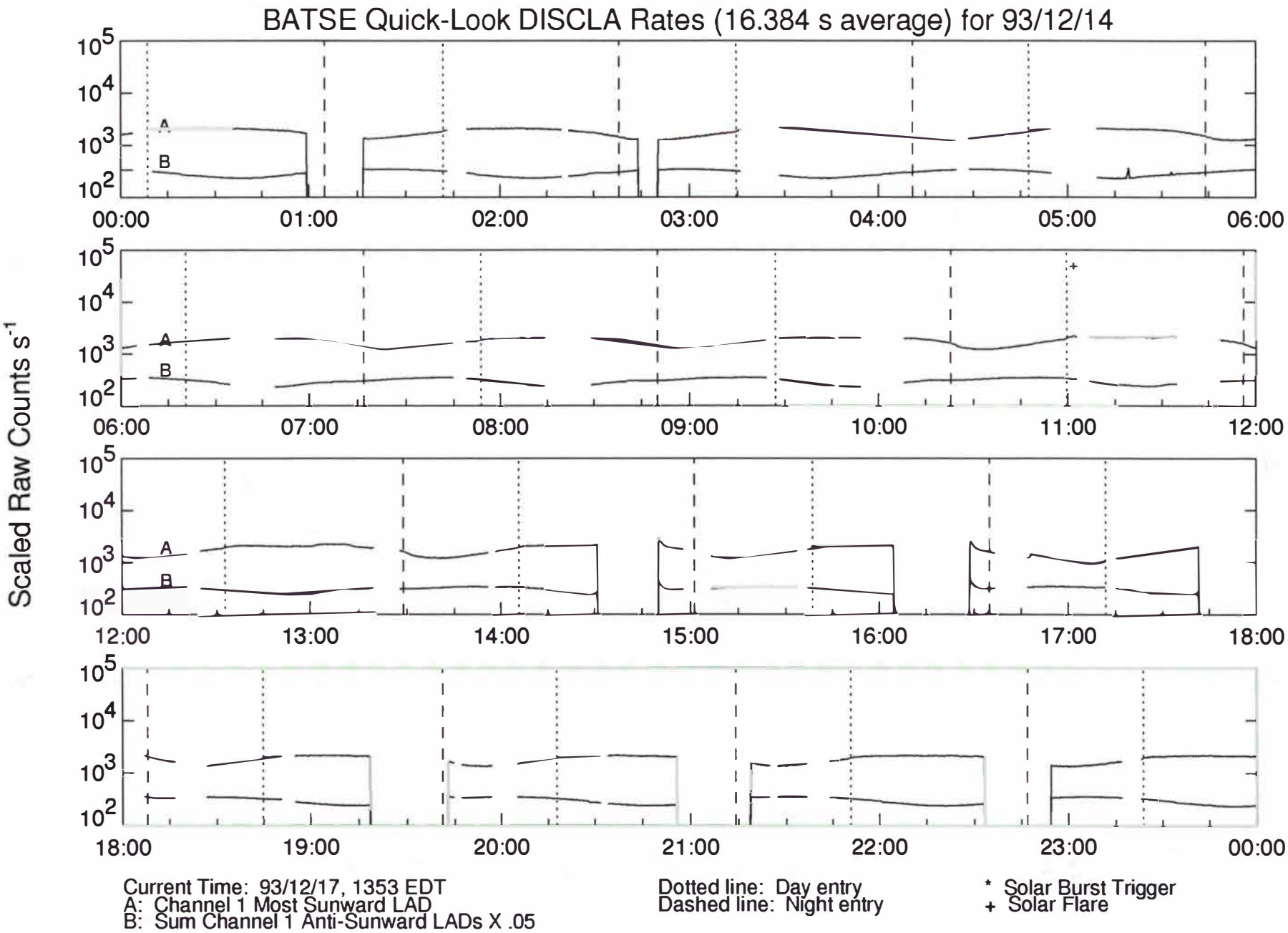
CALIBRATION DATA INCLUDED



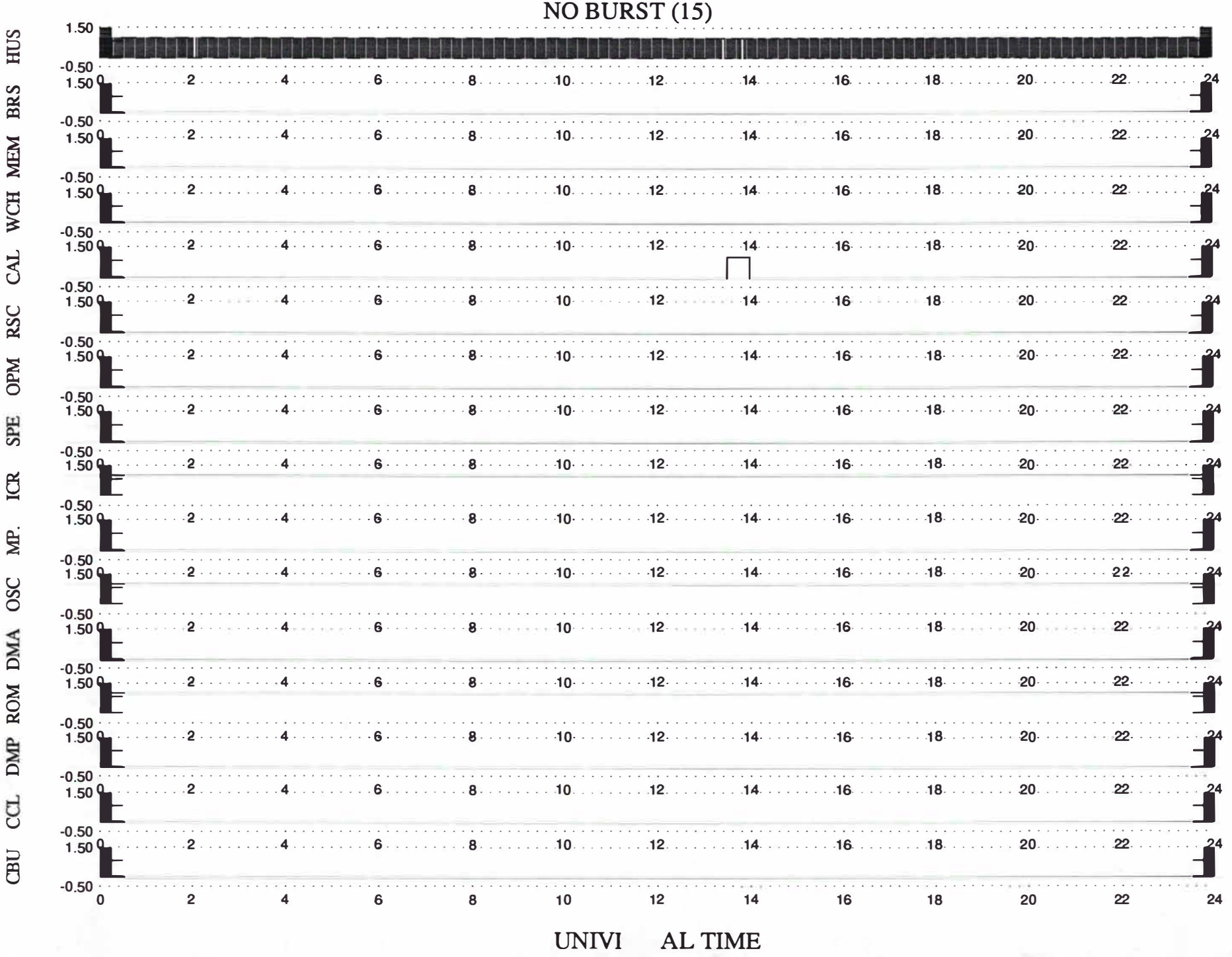
HUS 2B COUNTS / SEC QEDR day 347, year 1993 to day 347, year 1993 12/14/93




GOES
C
B
A
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
16:00:00
18:00:00
20:00:00
22:00:00
Data Start: 93/12/14, 1456:50
Plot created: 93/12/15, 1729
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

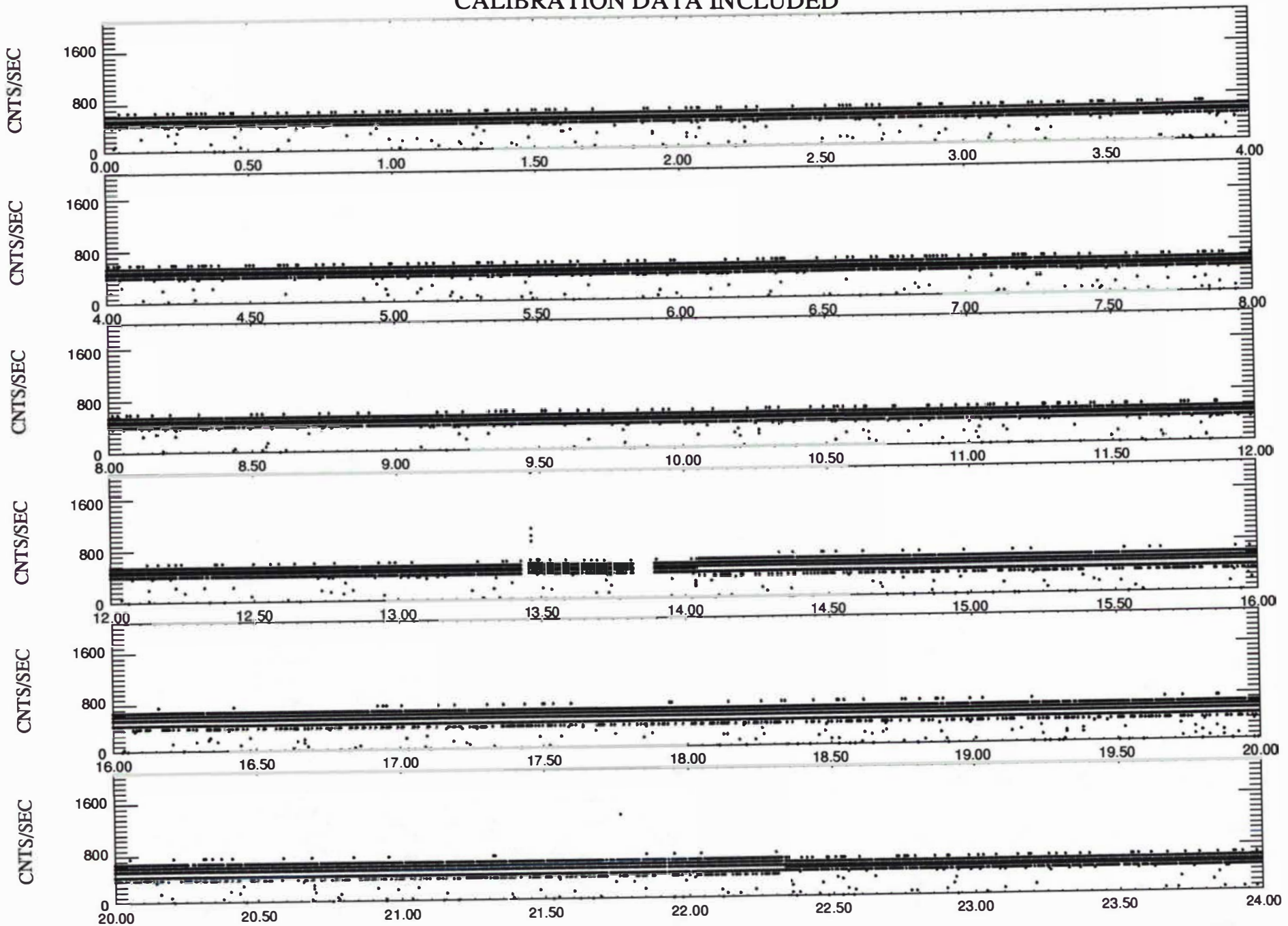

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/14
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/17, 1353 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 348, year 1993 to day 348, year 1993 2/9/94



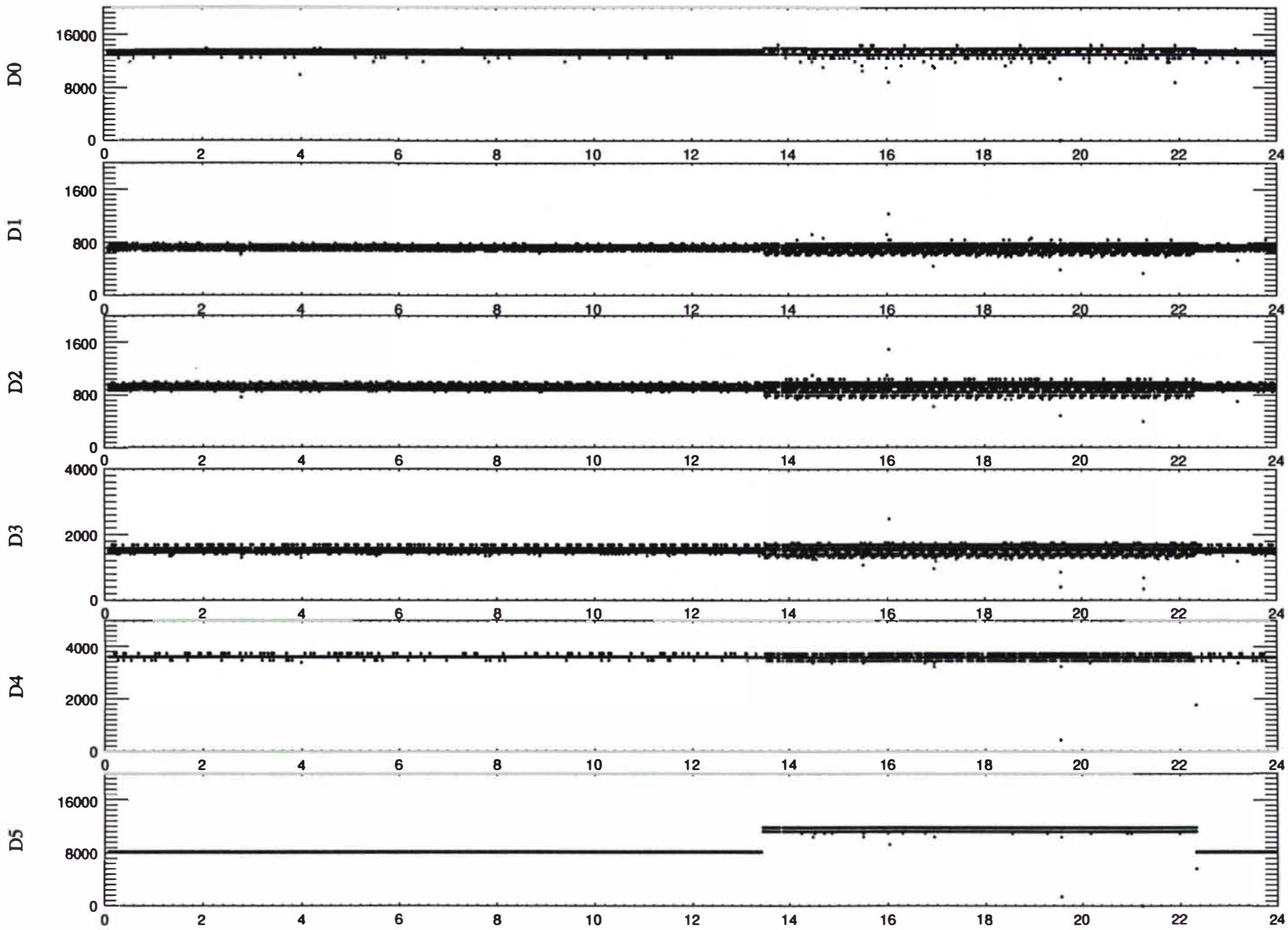
HUS 2A, MODE 1, NOT AVERAGED EDR day 348, year 1993 to day 348, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 348, year 1993 to day 348, year 1993 12/15/93



Kommers

UNTRIGGERED

ULYSSES RT

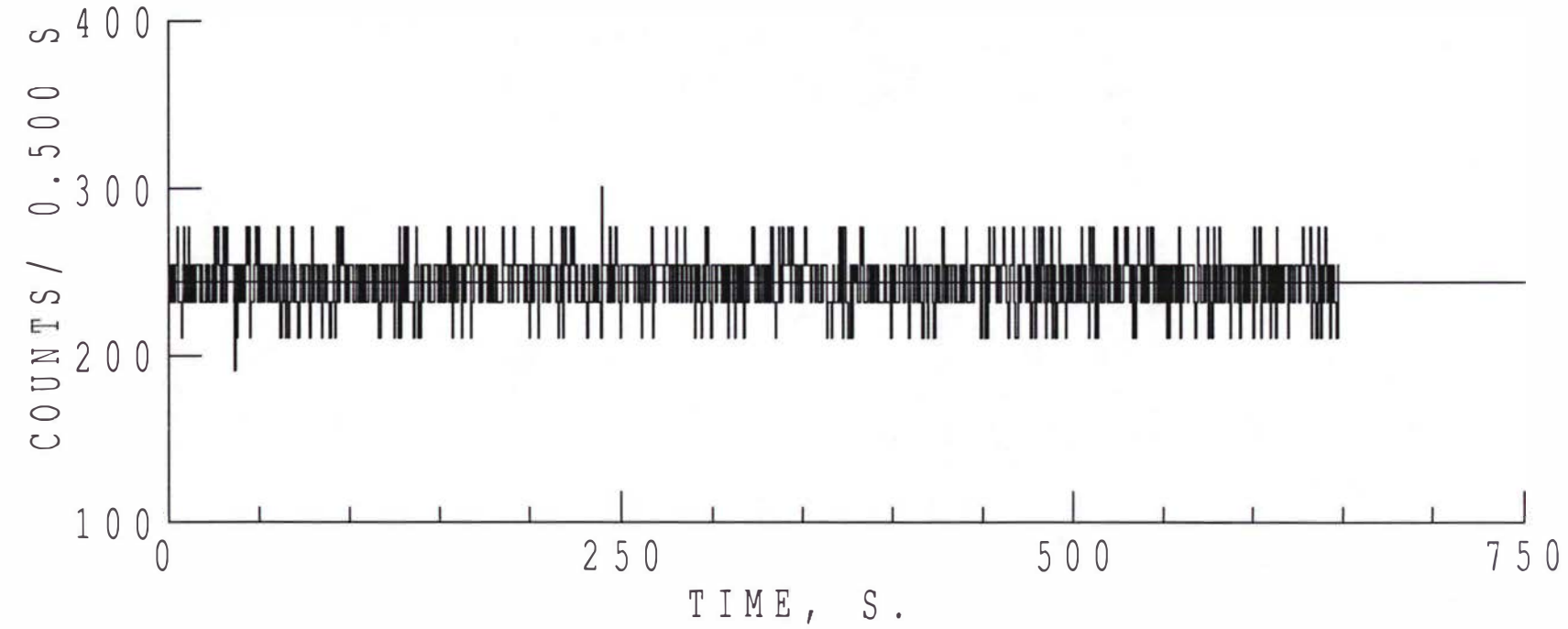
22/ 5/97

15/12/93 11556.388 s

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From DEAL@fender.msfc.nasa.gov Fri Dec 17 09:59:28 1993
Date: Fri, 17 Dec 1993 12:03:13 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2693
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2693
EVENT OF 1993 DEC 15 DAY OF YEAR=349
EVENT CROSSING TIME AT BATSE : 22338. S. OR 06:12:18.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 350.000 -61.000
BATSE PEAK COUNTING RATE: 3800 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 15/12/ 93 IS:
RA= 166.475 DEC= -37.340 DIST= 3.953 AU
BATSE-ULYSSES DISTANCE = 591303967. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 98.38 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -287.52 SECS.
CROSSING TIME AT ULYSSES IS 22050. S. OR 06:07:30 +/- 384.41 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 15/12/ 93 IS:
RA= 265.869 DEC= -24.080 DIST= 2.440 AU
MARS-BATSE DISTANCE = 365026720. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.71 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -489.61 SECS.
CROSSING TIME AT MARS IS 21848. S. OR 06:04:08 +/- 186.12 SECONDS

~~RE~~ NO - too weak

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2693	931215	9336	22338	3800	350	-61

BATSE BURST TRIGGER

NO.: 02693

TIME: TJD=9336 SECONDS=22338

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

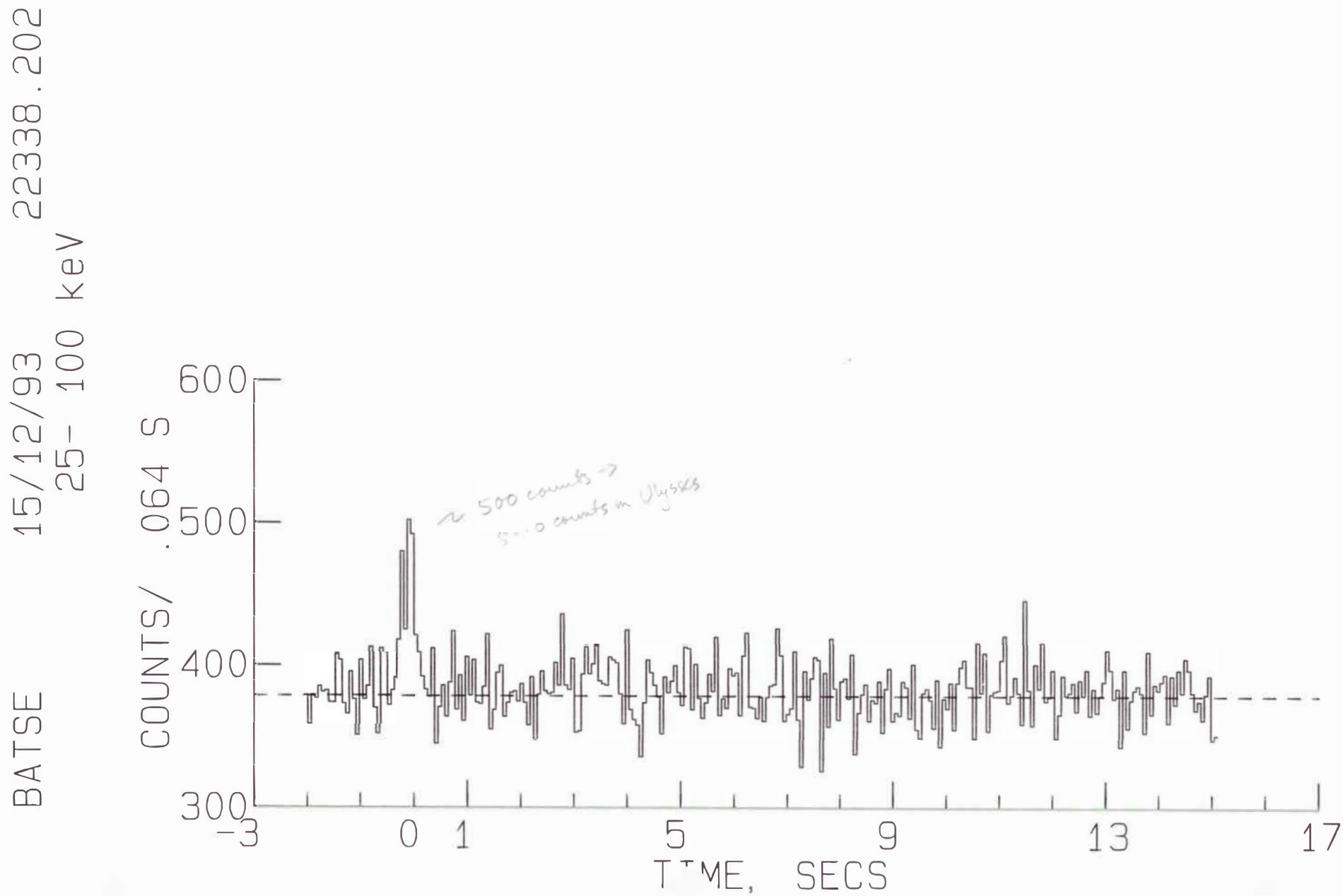
SIGNIFICANCE: SIGMA

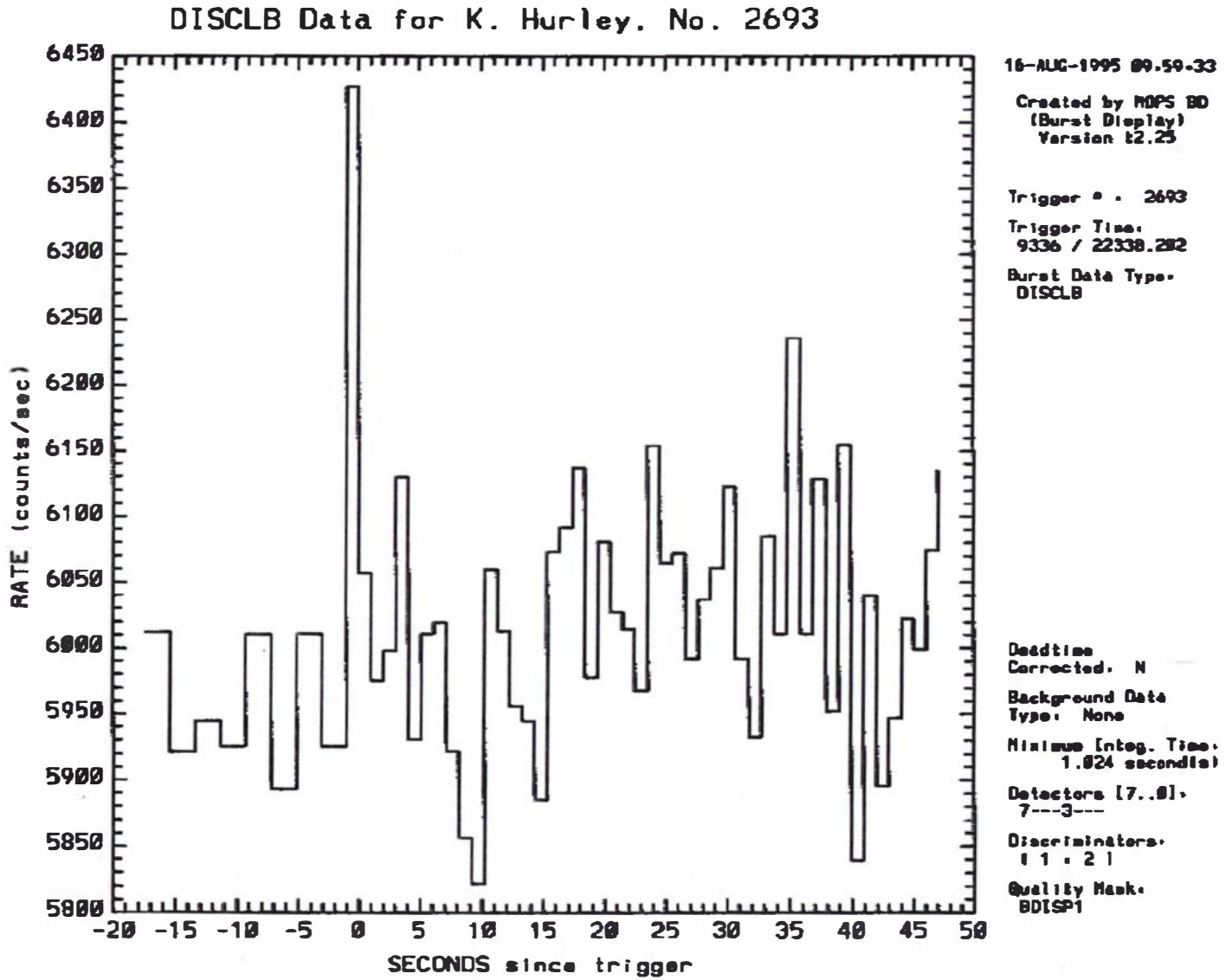
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=129.4 AZIMUTH=303.1 ERROR= DEGREES

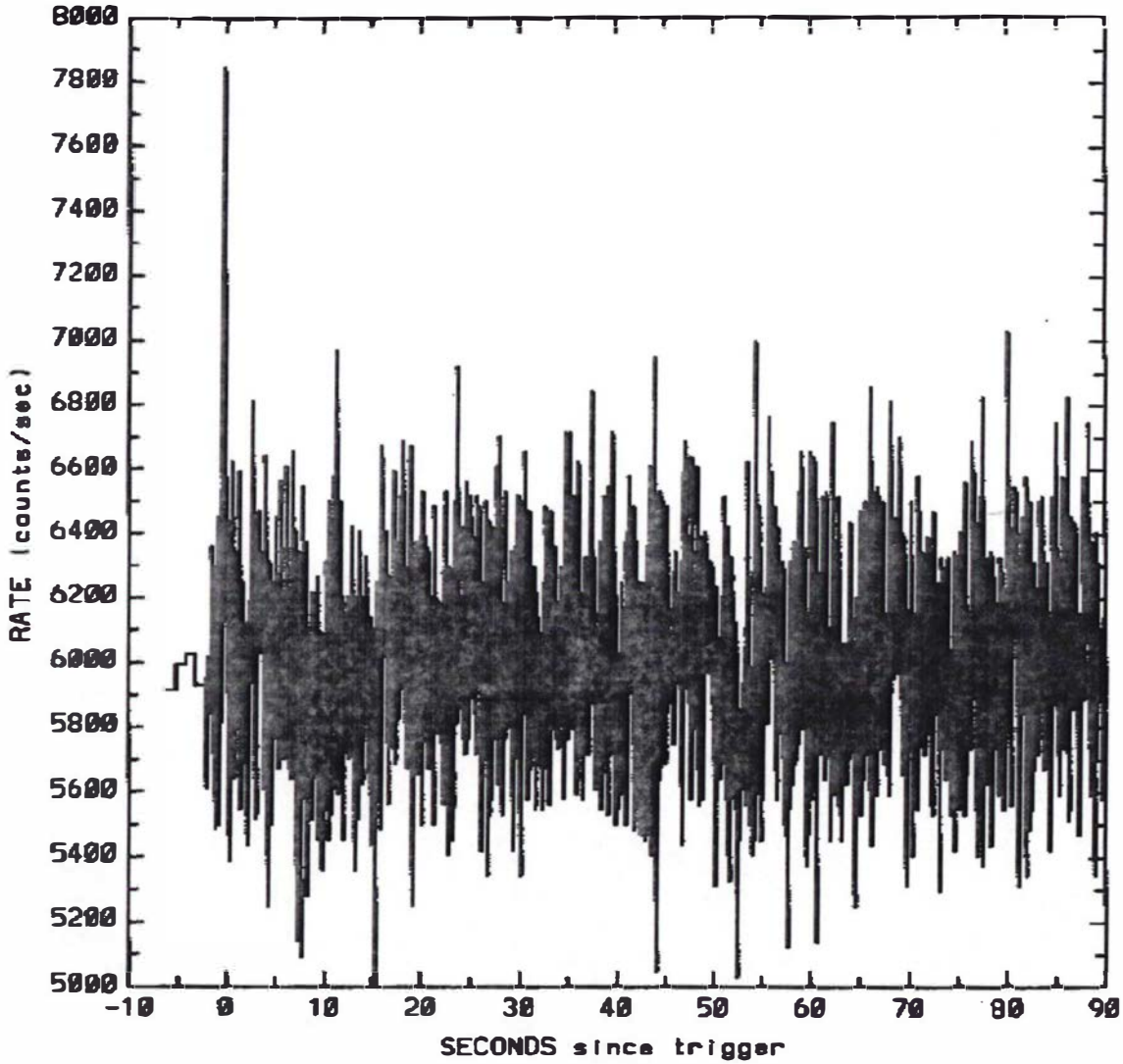
COMMENTS:
SINGLE SPIKE. DUR~ 2S. NOT VISIBLE ABOVE 300KEV.

16/ 8/95


BATSE 15/12/93 22338.202
25- 100 keV
COUNTS/ .064 S
600
500
400
300
-3
0
1
5
9
13
17
TIME, SECS
≈ 500 counts →
5-10 counts in Ulysses


DISCLB Data for K. Hurley. No. 2693
RATE (counts/sec)
SECONDS since trigger
16-AUG-1995 09.59.33
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # . 2693
Trigger Time:
9336 / 22338.282
Burst Data Type:
DISCLB
Deadtime
Corrected. N
Background Data
Type: None
Minimum Integ. Time:
1.024 second(s)
Detectors [7..0]:
7---3---
Discriminators:
[1 . 2]
Quality Mask:
BDISP1

DISCSC Data for K. Hurley, No. 2693



16-AUG-1995 09.56.27

Created by MOPS SD
(Burst Display)
Version t2.23

Trigger # : 2693

Trigger Time:
9336 / 22338.282

Burst Data Type:
DISCSC

Deadtime
Corrected: N

Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 seconds)

Detectors [7..0]:
7---3---

Discriminators:
(1 : 2)

Quality Mask:
BDISP1

BATSE BURST# 2693

ULYSSES RT 4/ 5/98

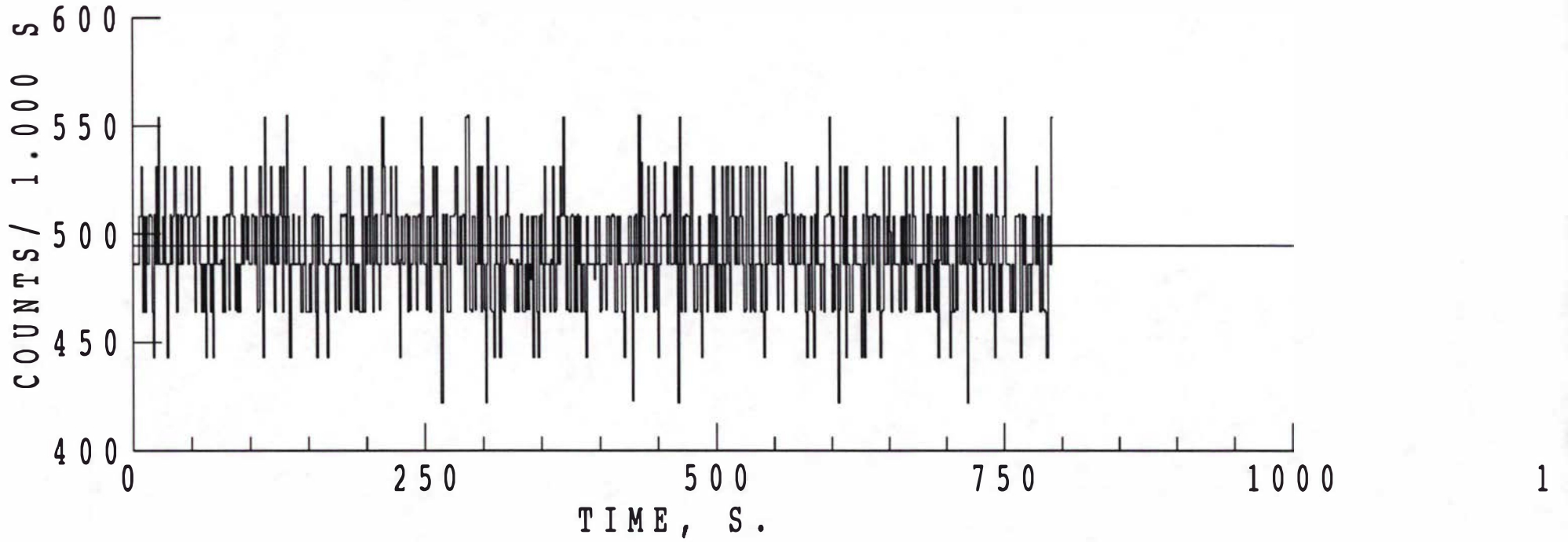
15/12/93 21960.047 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From DEAL@fender.msfc.nasa.gov Fri Dec 17 10:16:23 1993
Date: Fri, 17 Dec 1993 12:20:09 -0600 (CST)
From: DEAL@fender.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2694
Content-Length: 1135

```
         ******************
         *BATSEARCH PROGRAM*
         ******************

 BATSE BURST #     2694
 EVENT OF 1993 DEC 15 DAY OF YEAR=349
 EVENT CROSSING TIME AT BATSE      : 45479. S. OR 12:37:59.0
 COORDINATES ARE   0.000   0.000        6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:  23.000  -18.000
 BATSE PEAK COUNTING RATE:   5800    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 15/12/  93 IS:
 RA=  166.467 DEC=  -37.411 DIST=     3.948 AU
 BATSE-ULYSSES DISTANCE =  590604671. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 65.21 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  825.96 SECS.
 CROSSING TIME AT ULYSSES    IS 46305. S. OR   12:51:44 +/-  373.06 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 15/12/  93 IS:
 RA=  265.869 DEC=  -24.080 DIST=     2.440 AU
 MARS-BATSE DISTANCE =  365026720. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 74.34 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  328.62 SECS.
 CROSSING TIME AT MARS       IS 45808. S. OR   12:43:27 +/-  208.54 SECONDS
```

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2694	931215	9336	45479	5800	023	-18

BATSE BURST TRIGGER

NO.: 02694

TIME: TJD=9336 SECONDS=45479

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=019.3 AZIMUTH=180.3 ERROR= DEGREES

COMMENTS:
SLOW RISE, FAST DECAY. DUR~ 25S.

BATSE #2694

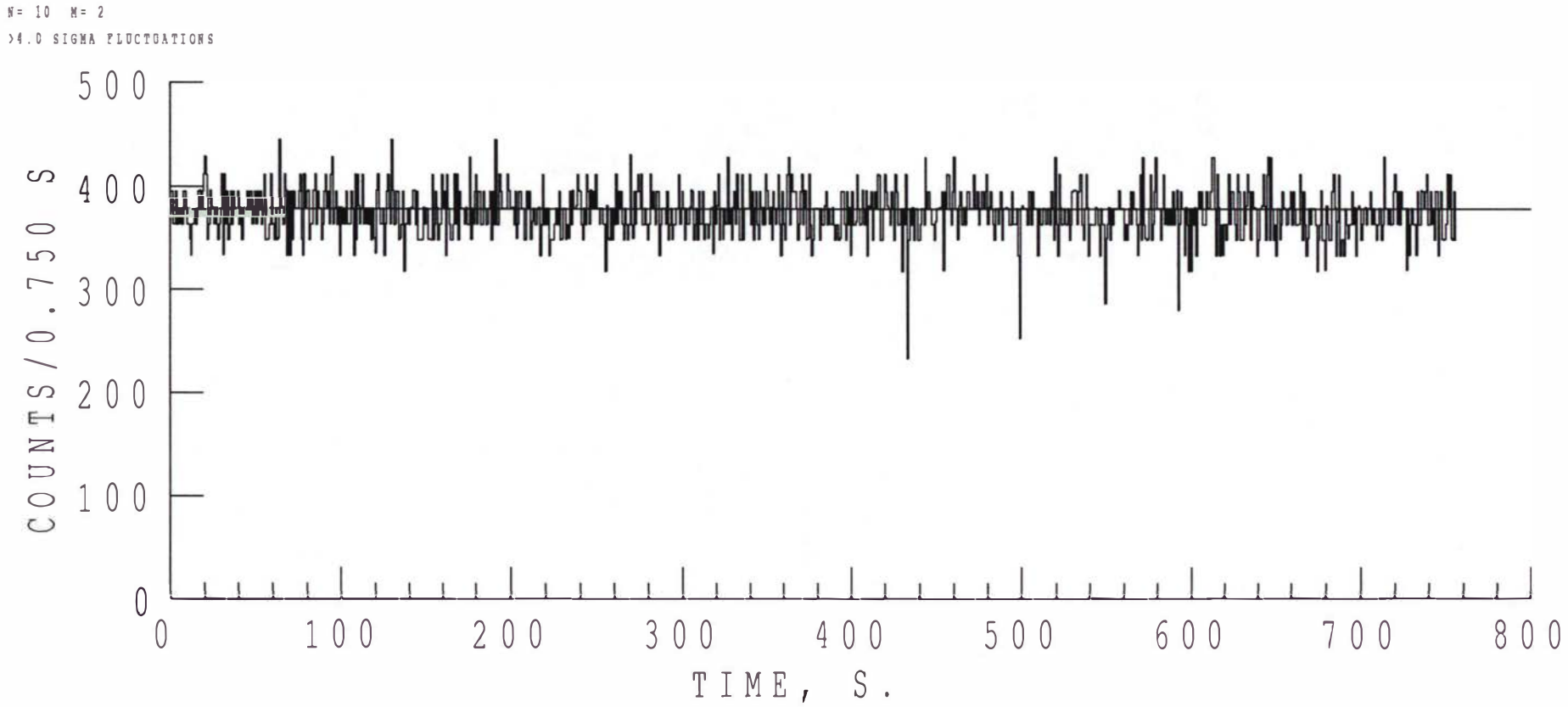
17/12/93

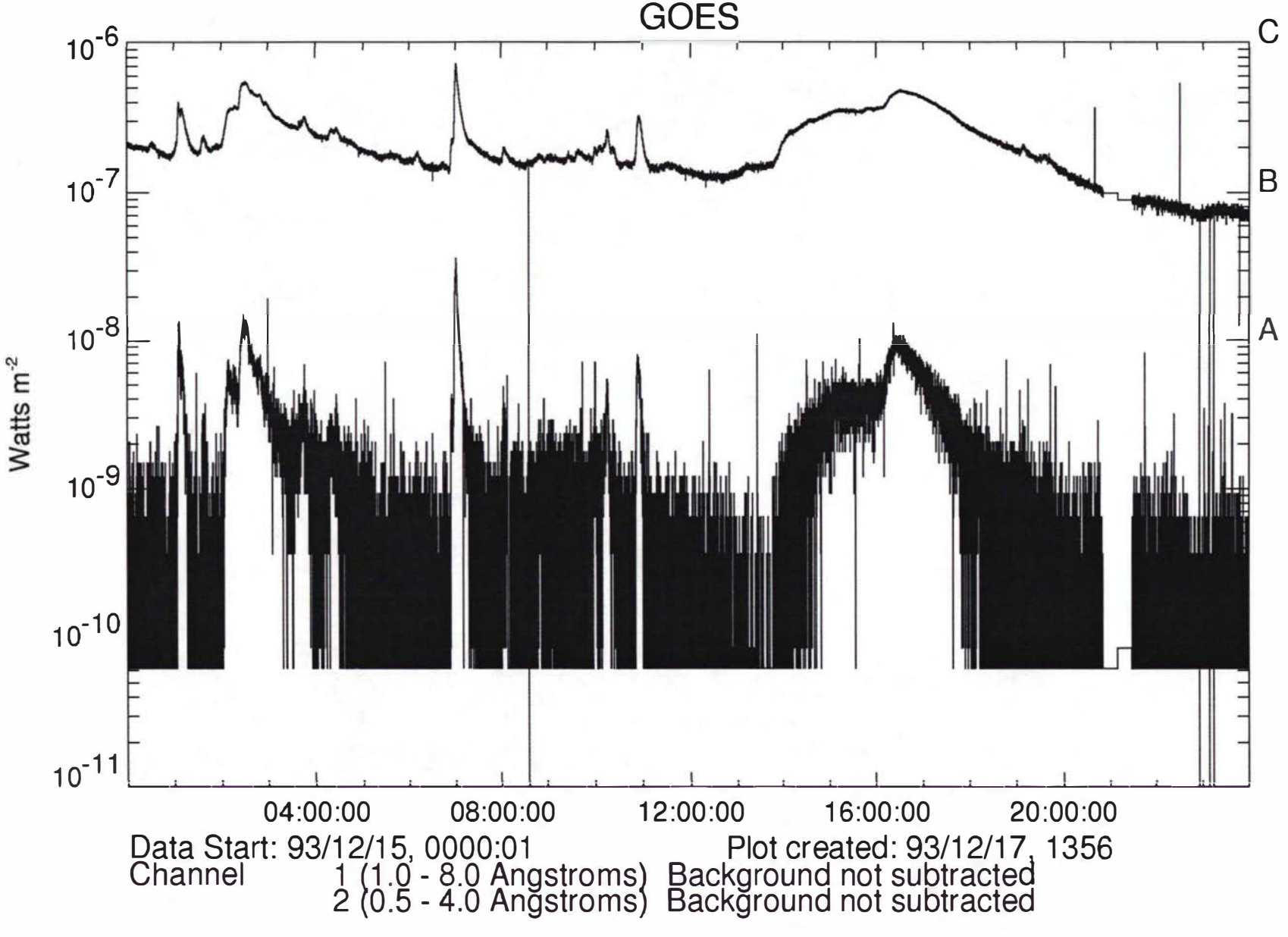
ULYSSES RT

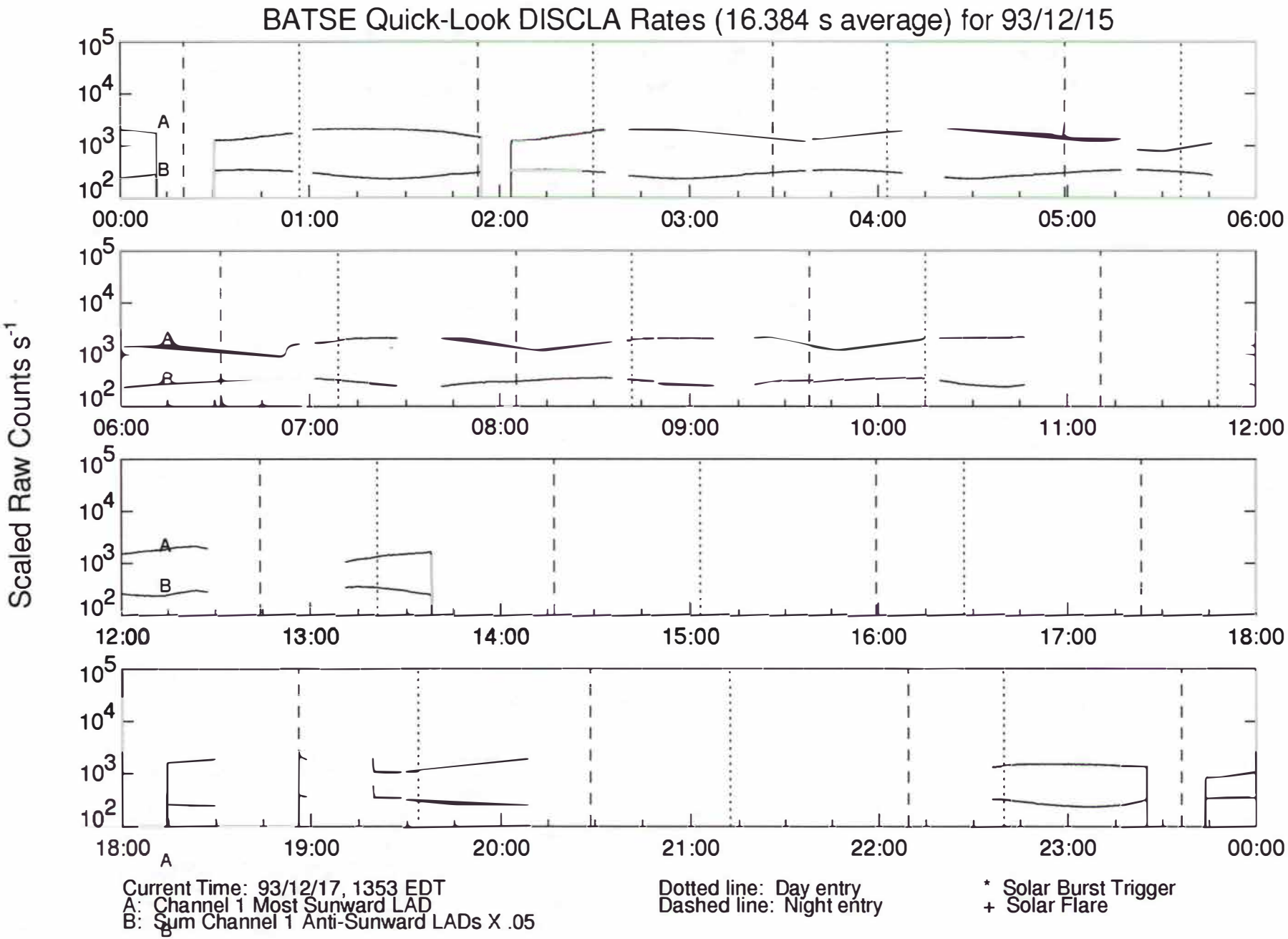
15/12/93 45936.172 s

0.250 S INTERVALS REGROUPED BY 3

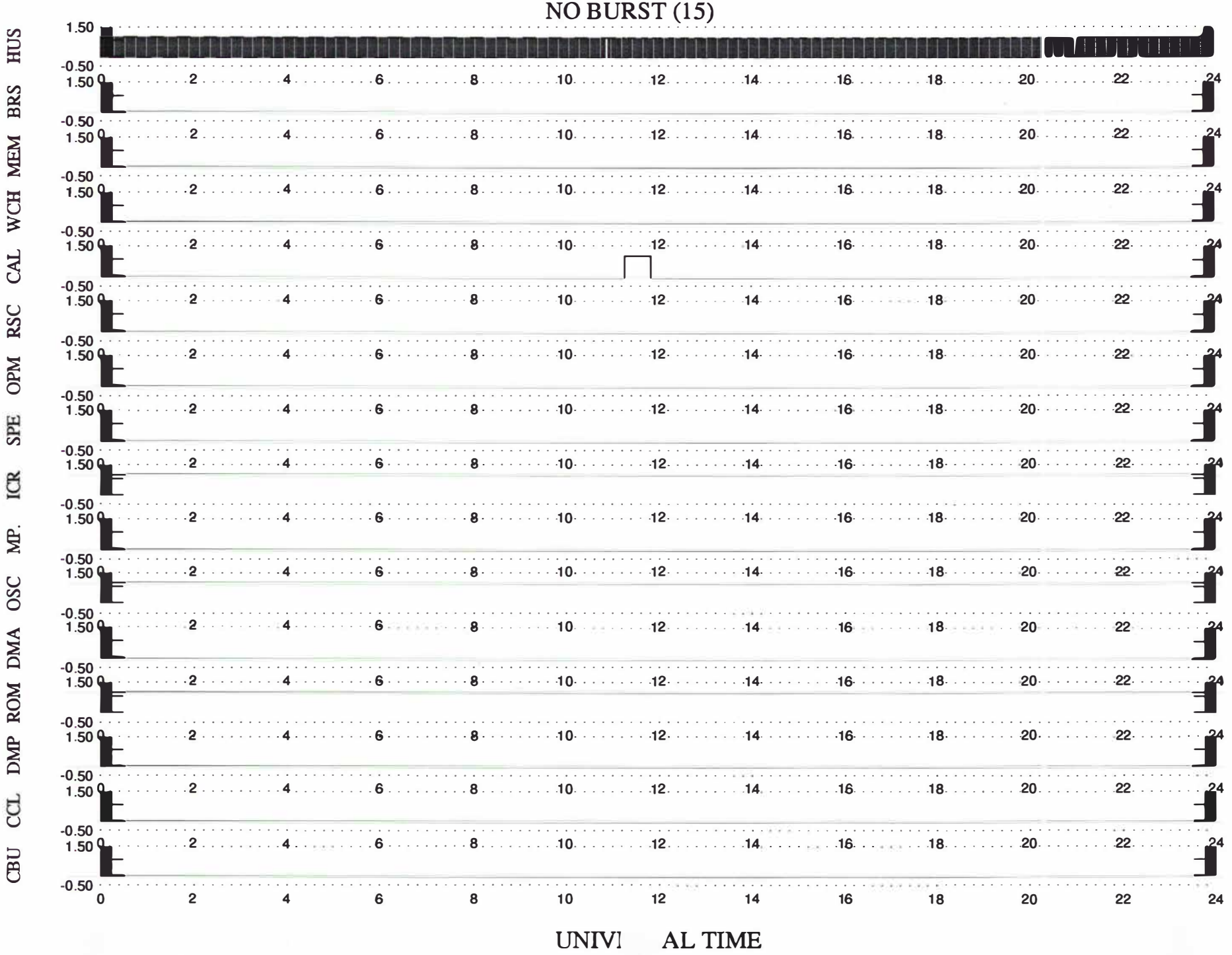
0- 0 keV




GOES
C
B
A
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/15, 0000:01
Plot created: 93/12/17, 1356
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

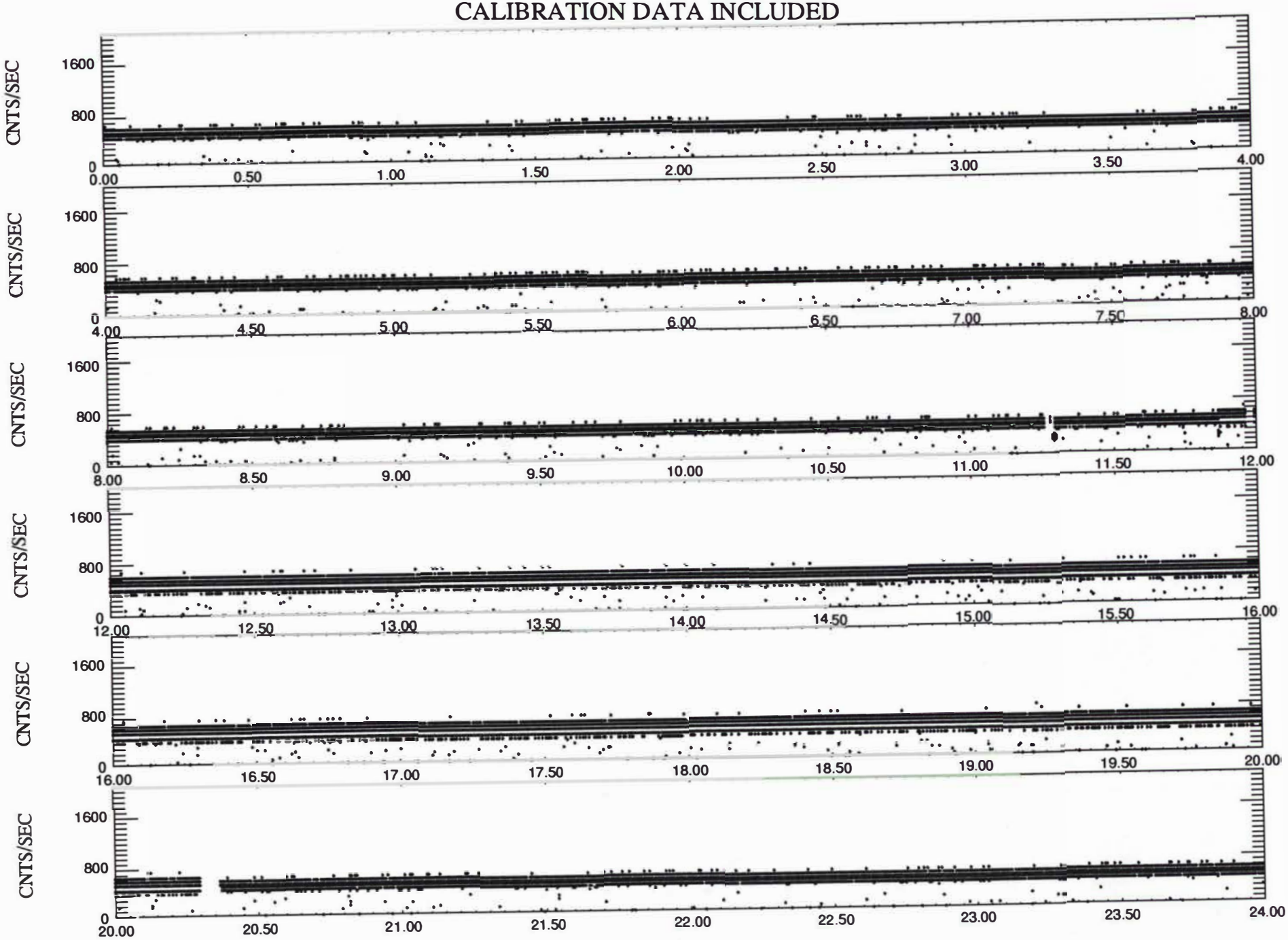

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/15
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/17, 1353 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 349, year 1993 to day 349, year 1993 2/9/94



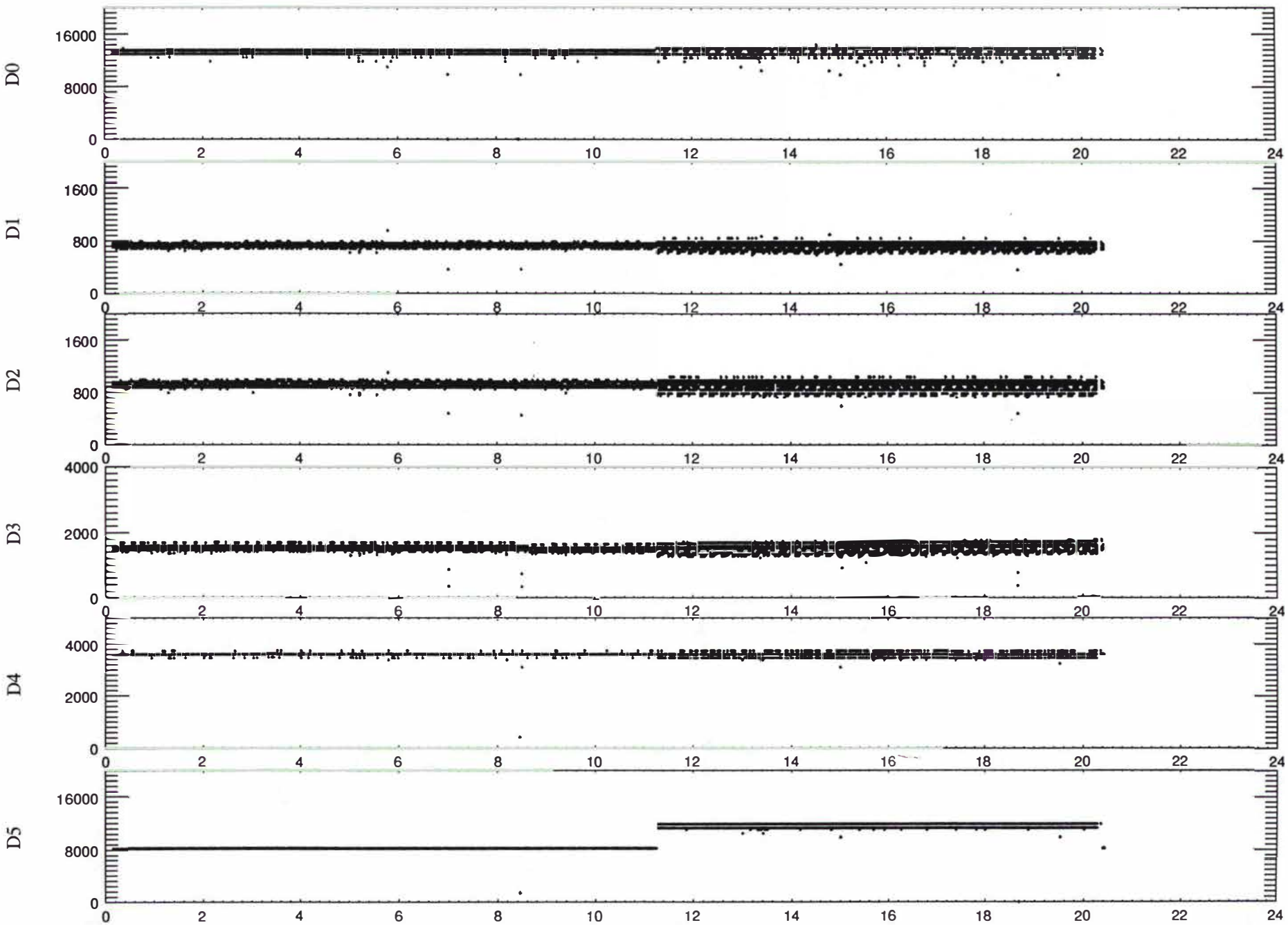
HUS 2A, MODE 1, NOT AVERAGED EDR day 349, year 1993 to day 349, year 1993 2/9/94

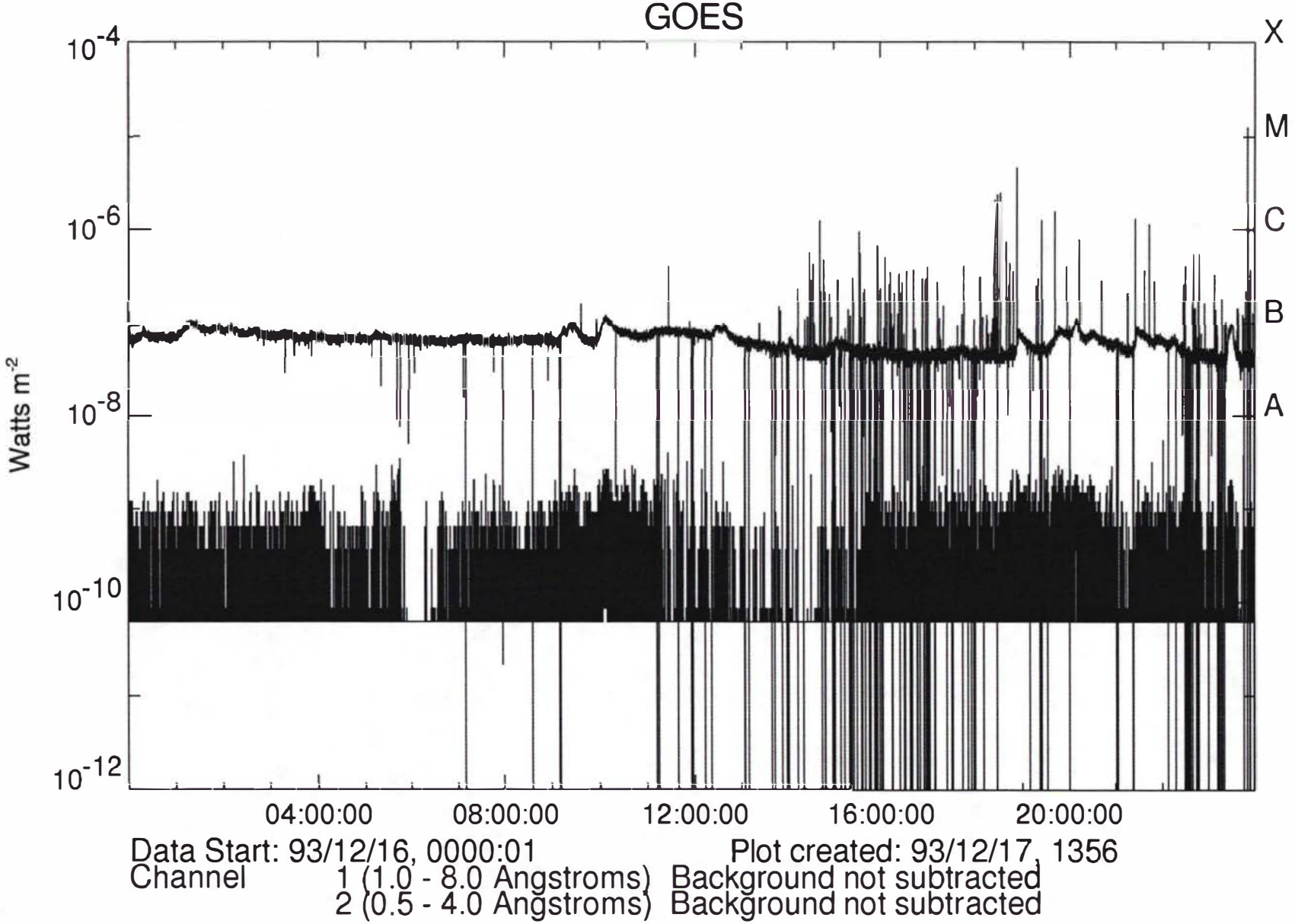
CALIBRATION DATA INCLUDED

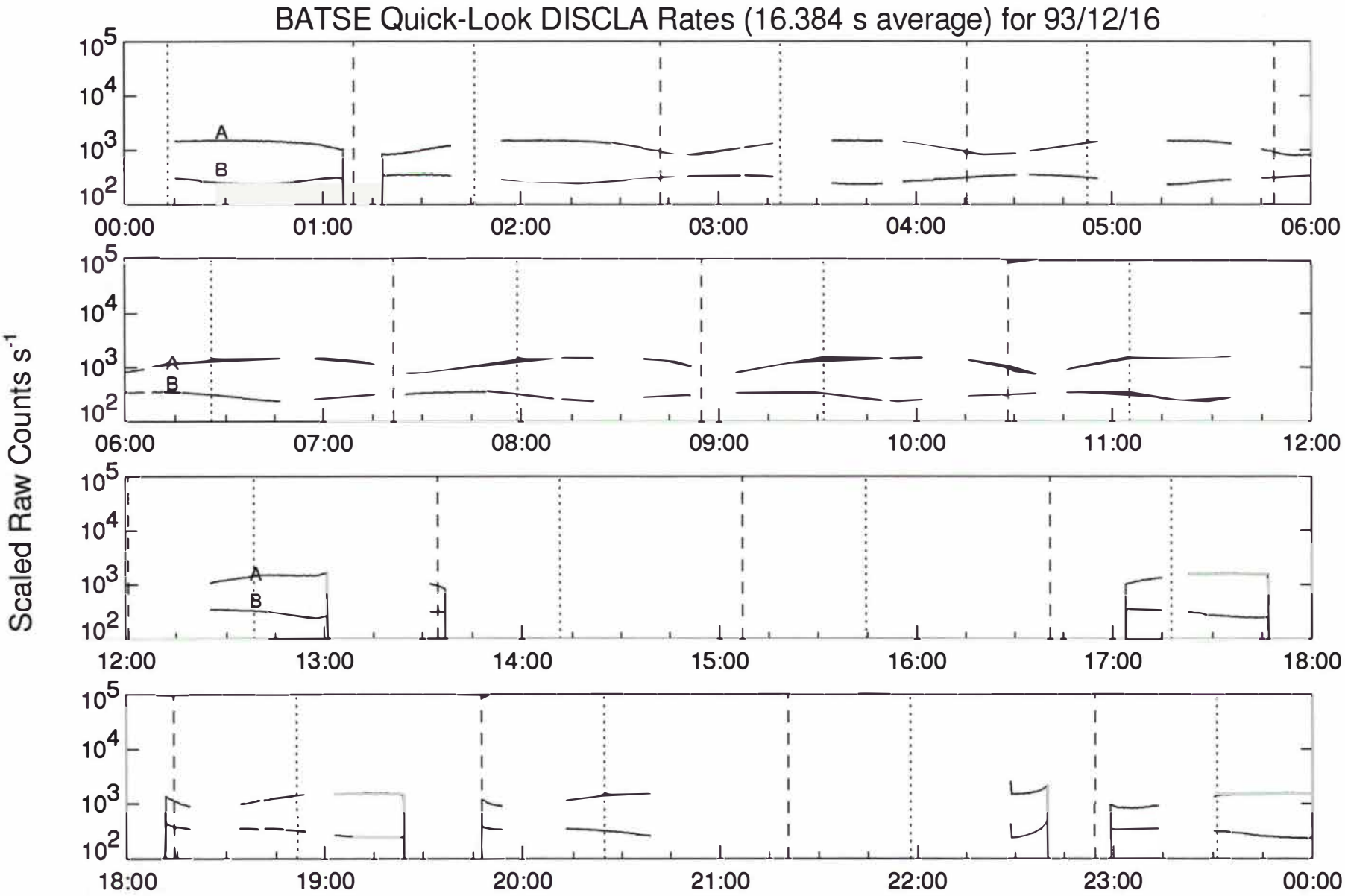


UNIVI AL TIME

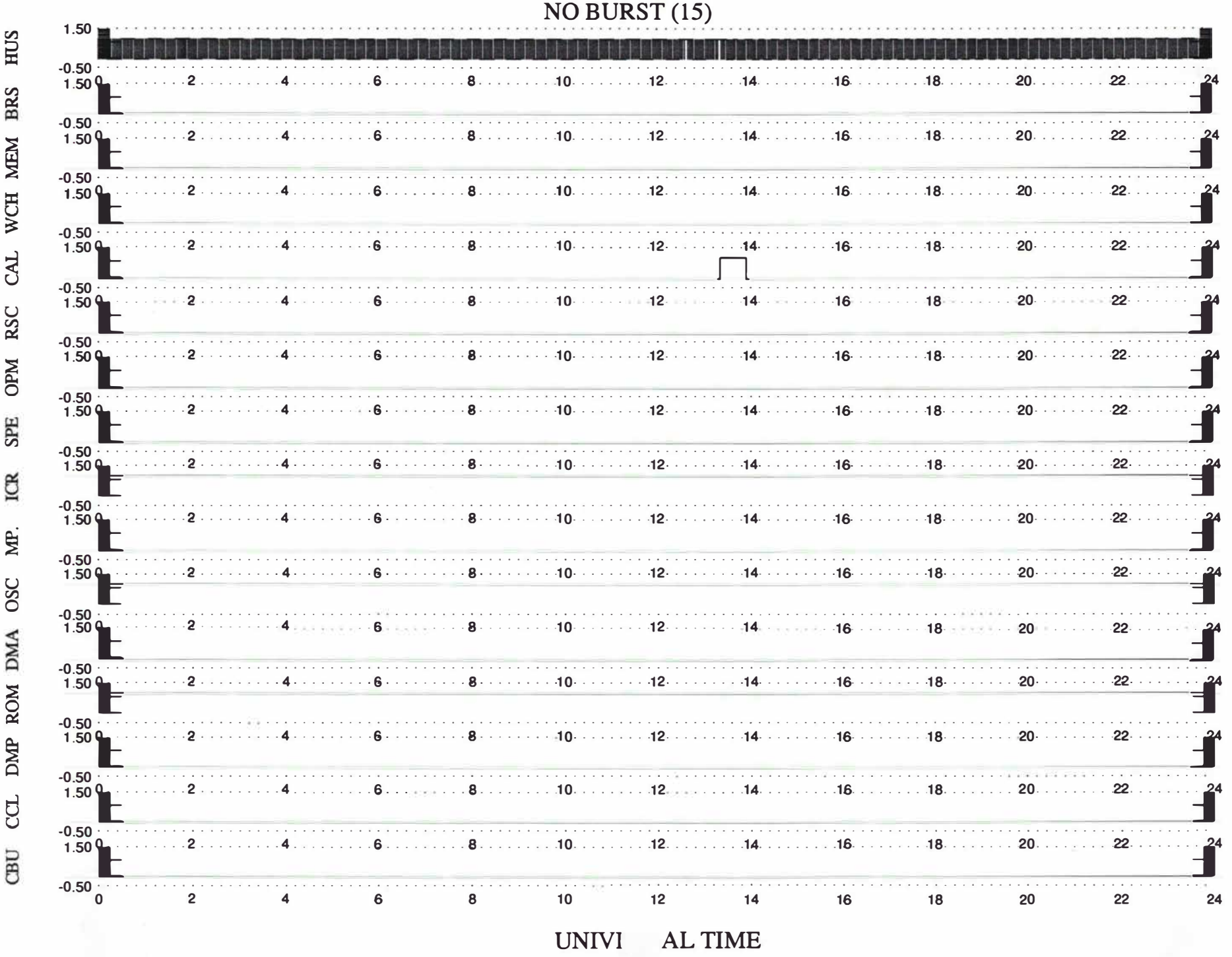
HUS 2B COUNTS / SEC QEDR day 349, year 1993 to day 349, year 1993 12/17/93




GOES
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/16, 0000:01
Plot created: 93/12/17, 1356
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

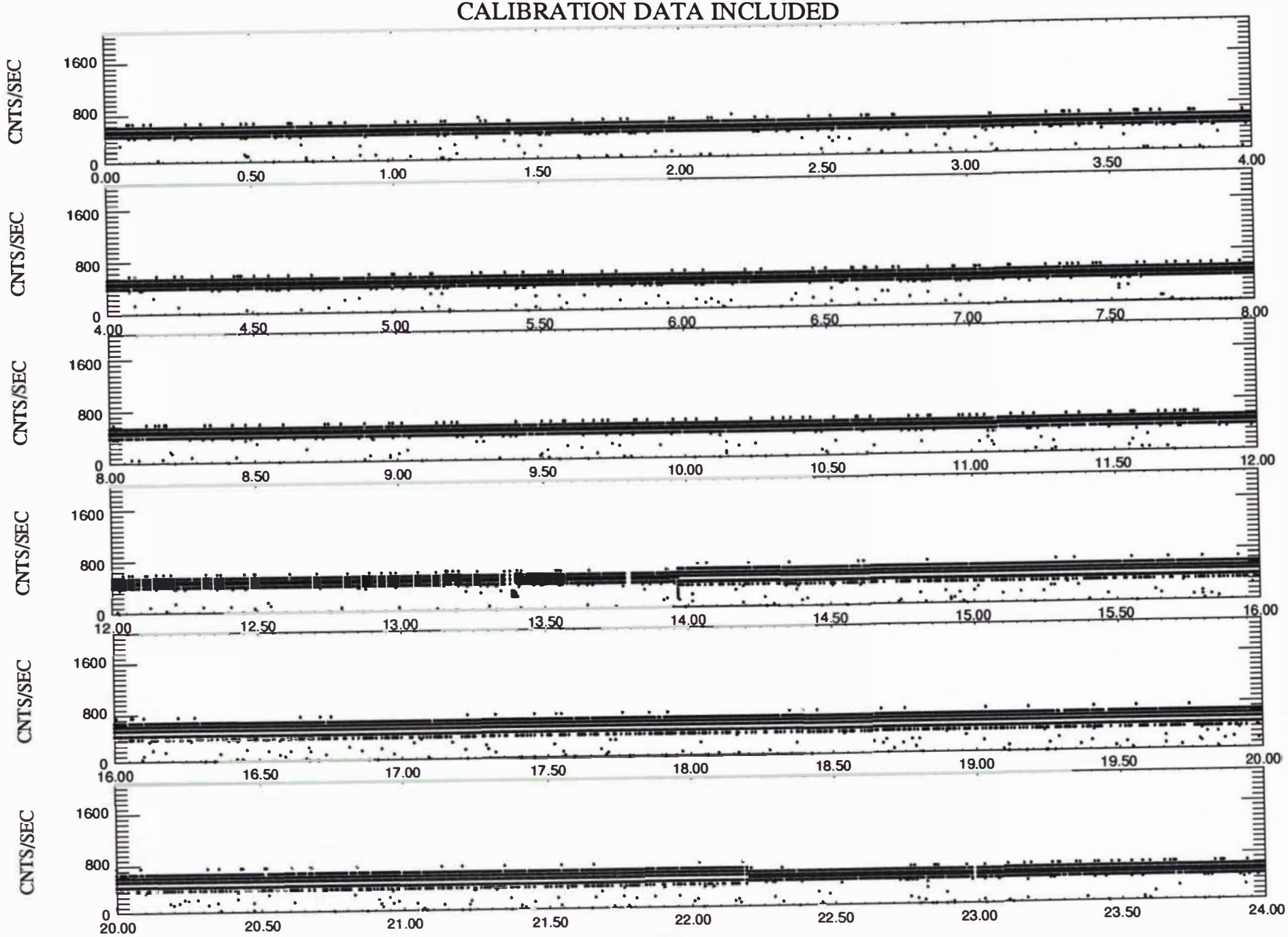

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/16
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/20, 1952 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 350, year 1993 to day 350, year 1993 2/9/94



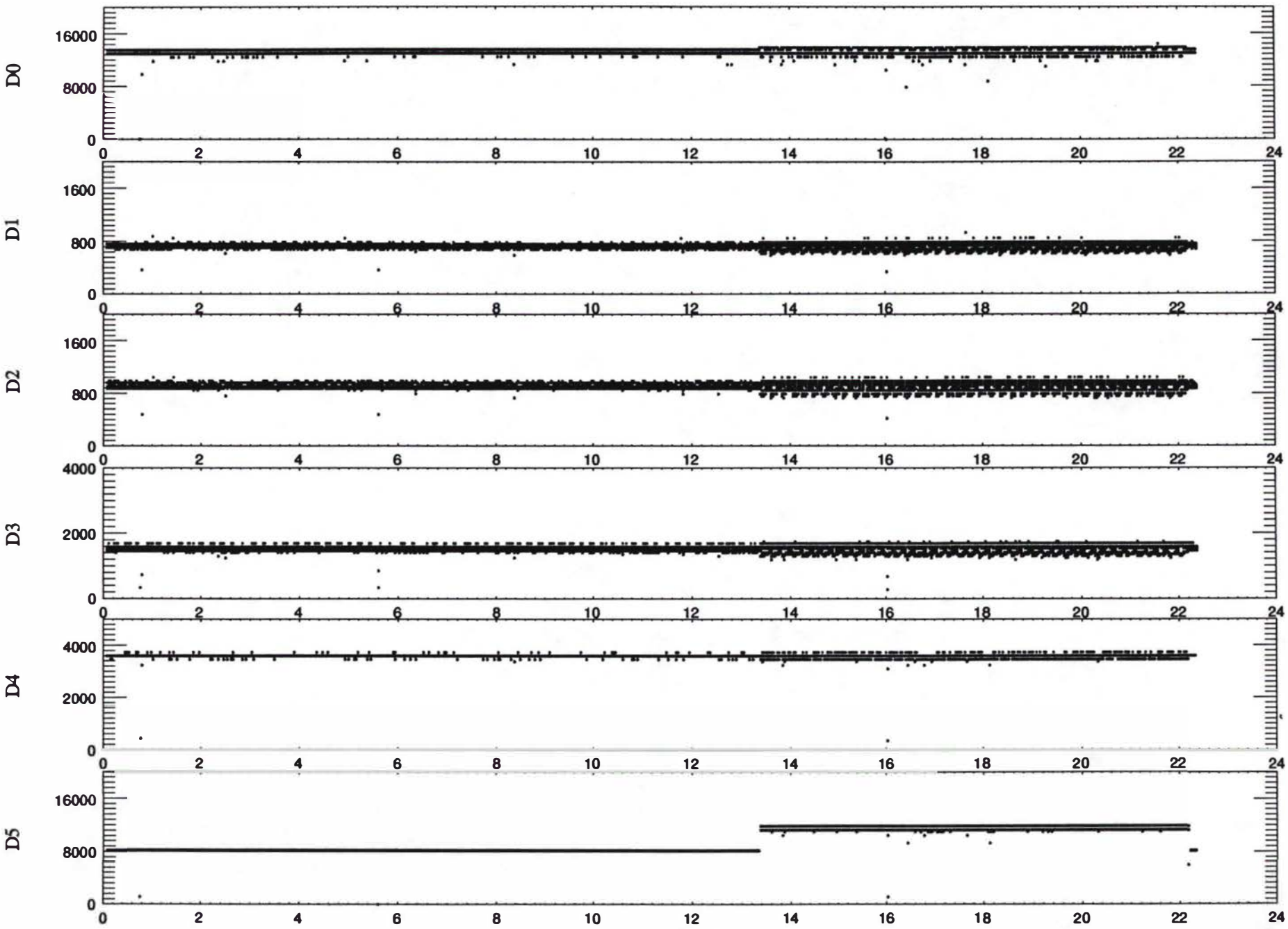
HUS 2A, MODE 1, NOT AVERAGED EDR day 350, year 1993 to day 350, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIV! AL TIME

HUS 2B COUNTS / SEC QEDR day 350, year 1993 to day 350, year 1993 12/20/93



From RICHARDSON@ssl.msfc.nasa.gov Mon Dec 20 11:17:38 1993
Date: Mon, 20 Dec 1993 13:21:33 -0600 (CST)
From: RICHARDSON@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2695
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2695
EVENT OF 1993 DEC 17 DAY OF YEAR=351
EVENT CROSSING TIME AT BATSE : 43839. S. OR 12:10:39.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 12.000 76.000
BATSE PEAK COUNTING RATE: 2000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 17/12/ 93 IS:
RA= 166.396 DEC= -37.930 DIST= 3.914 AU
BATSE-ULYSSES DISTANCE = 585478978. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 39.78 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1500.88 SECS.
CROSSING TIME AT ULYSSES IS 45340. S. OR 12:35:39 +/- 289.73 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 17/12/ 93 IS:
RA= 267.511 DEC= -24.131 DIST= 2.438 AU
MARS-BATSE DISTANCE = 364755872. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 63.13 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 549.85 SECS.
CROSSING TIME AT MARS IS 44389. S. OR 12:19:48 +/- 196.79 SECONDS

No

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2695	931217	9338	43839	2000	012	+76

BATSE BURST TRIGGER
NO.: 02695

TIME: TJD=9338 SECONDS=43839

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=095. AZIMUTH=253. ERROR= DEGREES

COMMENTS:
BURST. WEAK SINGLE PULSE. DUR.~50 SEC. NOT VISIBLE ABOVE 300KEV.

BATSE Burst # 2695

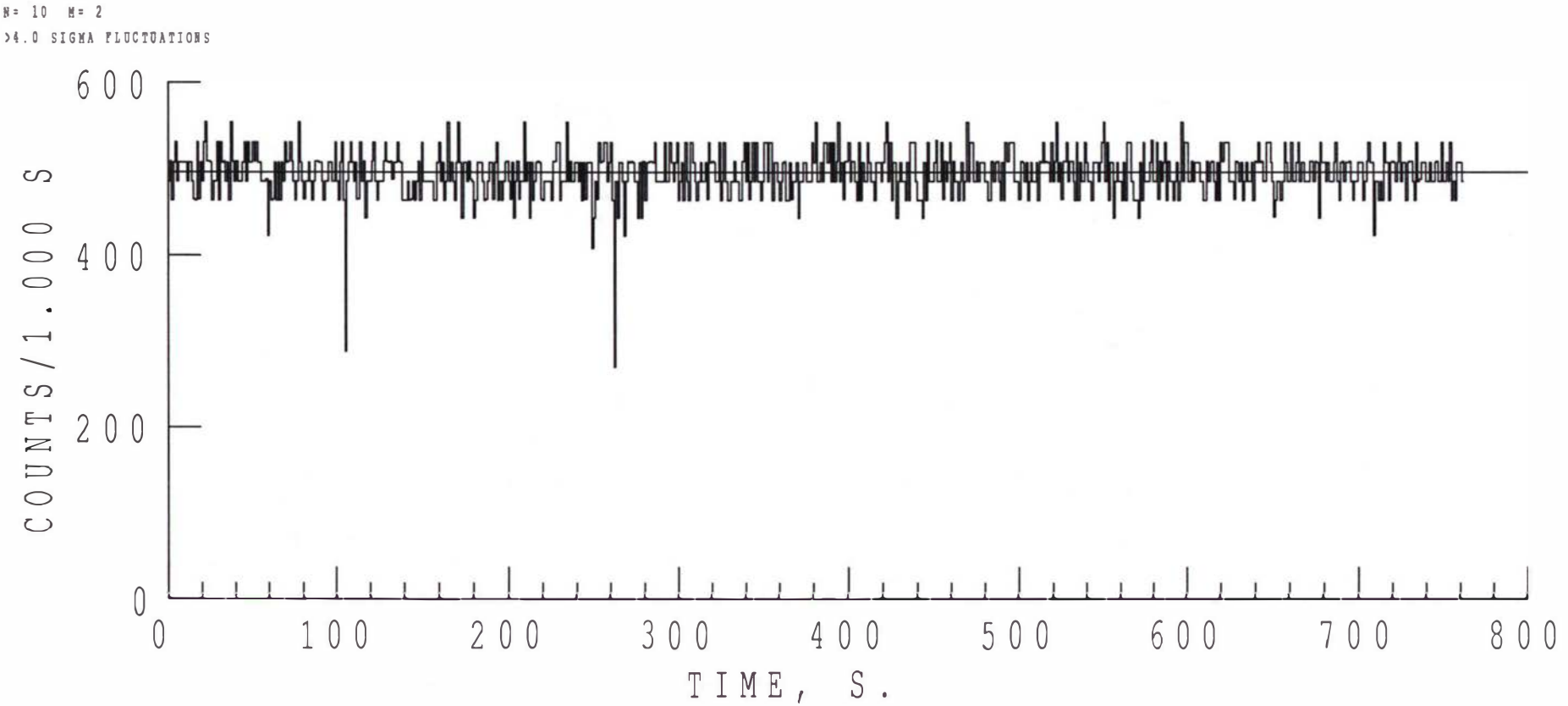
20/12/93

ULYSSES RT

17/12/93 45036.074 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



From khurley@space6.ssl.berkeley.edu Tue Dec 21 14:34:35 1993
Date: Tue, 21 Dec 93 15:32:05
From: khurley@space6.ssl.berkeley.edu
Content-Length: 397

Dear Niels, Rashid, and Oleg

Ulysses triggered on a very intense burst December 17 around 18:19 Ulysses time (Ulysses was about 2000 light seconds from Earth). BATSE did not observe this event, apparently because of a data gap. A WATCH detection would therefore be quite important. The event lasted about 60 seconds, with numerous peaks, and had a fluence around 5 x 10**-5 erg cm**-2.

Kevin

Date: Aug 4 2011

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☐ Jim Schmidling's stat file correction applied?

☐ Final ephemeris used?

☐ Final, CDROM data used?

☐ Were data checked by Joe Springer for 0.5 s errors?

☐ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? Done by eye

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?

☐ BATSE ephemeris for T_0?

☐ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included?

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

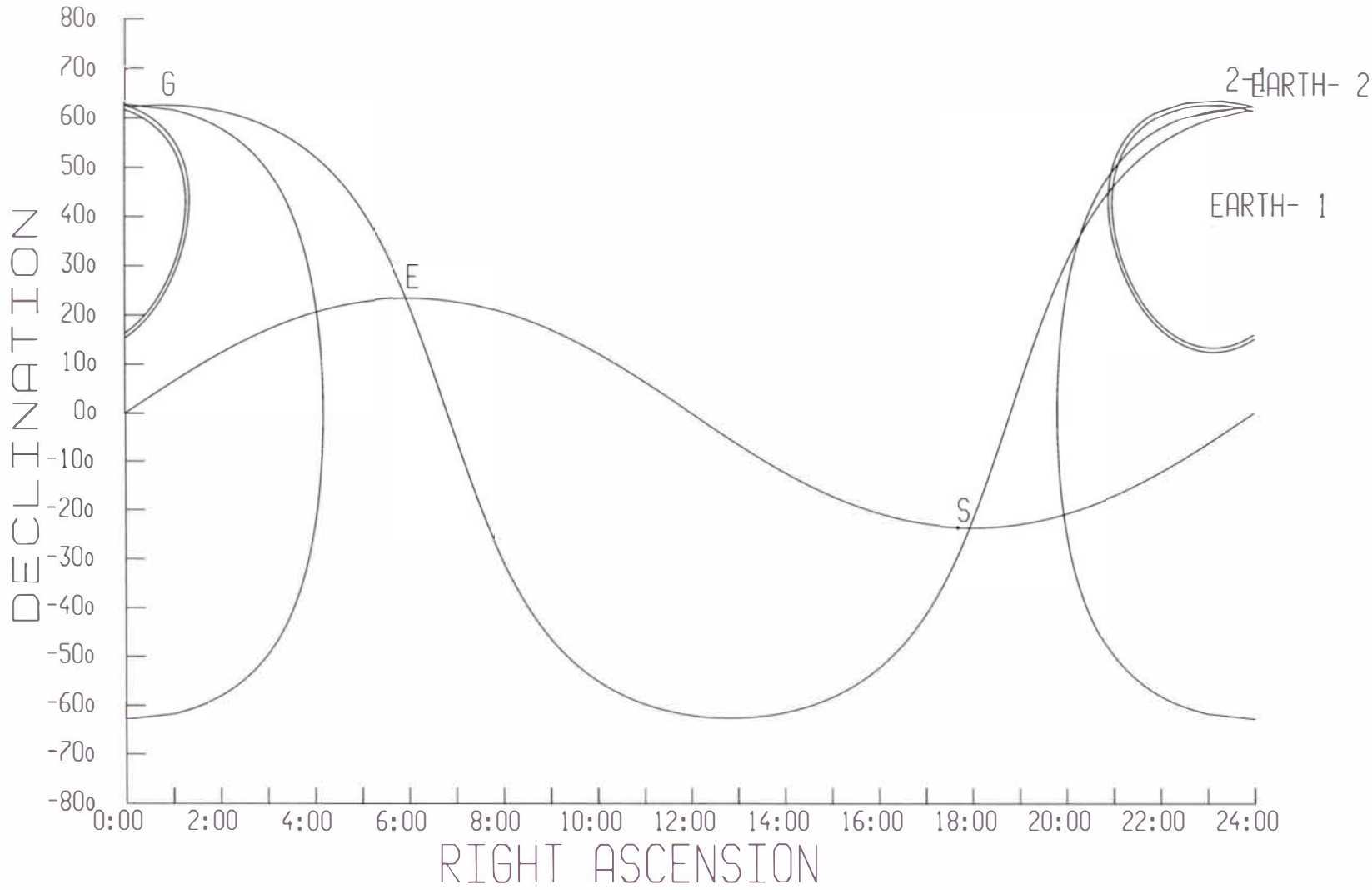
☐ Geocentric time used?

☑ ACCESS and MBL databases updated with identical times?

EVENT OF DEC 17, 1993 18:19

04/08/2011

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 DMSP



From root Thu Mar 10 14:22 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA05865; Thu, 10 Mar 94 14:22:44
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA23477; Thu, 10 Mar 1994 13:30:14 +0800
Date: Thu, 10 Mar 1994 14:30:44 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: khurley@space6.ssl.berkeley.edu
Message-Id: <940310143044.25e02930@SSTDP2.LANL.GOV>
Subject: dmsp observations
Content-Length: 2472
Status: R

FROM: SMTP%"JTERRELL.LANL.GOV" (JAMES TERRELL) 3/10/04
TO: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU"
SUBJ: DMSP OBSERVATIONS

Kevin:
Here are more additions, questions, or corrections for your GRB list of 930217.
Some of the errors for DMSP data seem to be the matter of interpreting
"NA" as used by me. It means, unless otherwise specified, no peak
apparent in the 20-sec averaged data, but 2-sec data not obtained
and examined. Thus it is not an absolute NO (or N/O unless it is known
that the spacecraft view was obscured by the earth).
Thus NA means that any peak which might show up in full data is
pretty weak, anyway. In your list NA should be left blank, I believe.
We now have data processed through 930128! Thus we will be needing
more events to look for in the DMSP data.--Jim

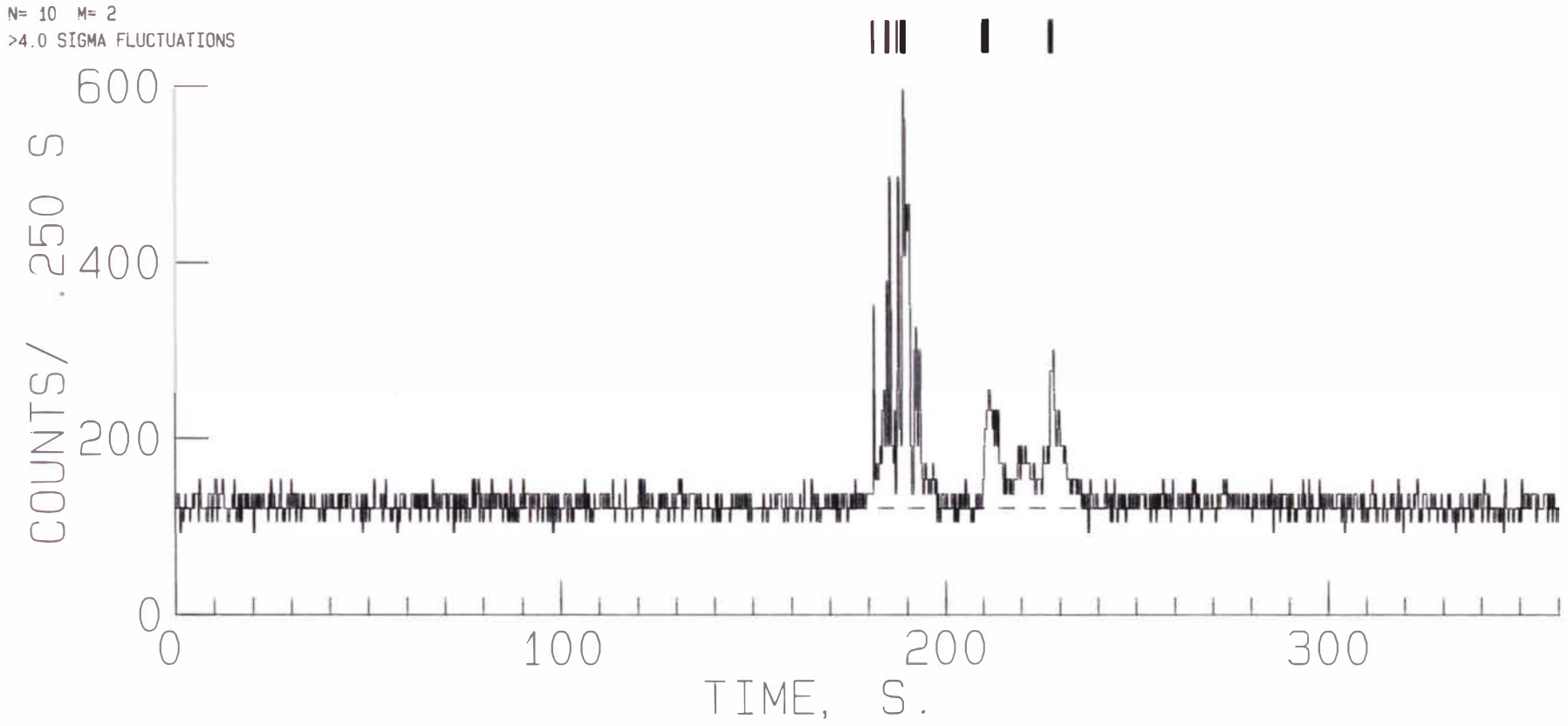
DATE	UT	DMSP
910208	32238U	DMSP8YES AT 32415.7, 9YES AT 32415.5, 10SAA
910421	33245	DMSP NA (NOT NO) (I.E., SHOULD BE BLANK IN YOUR LIST)
910627	16159	DMSP NA (NOT NO)
910717	16386	DMSP N/O (NOT NO)
911118	68260	DMSP N/O (NO DATA)
920110	33478	DMSP NA (NOT NO)
920229	69677	DMSP NA (NOT N/O)
920404	47506	DMSP NA (NOT N/O)
920414	84166	DMSP NA (NOT N/O) (GRO GRB AT 84163!)
920714	47069	DMSP NA (NOT NO)
920718	77563	DMSP NA (NOT N/O)
920727	43145U	(ULYSSES TIME) BATSE YES AT ? (DMSP NA)
921022	55259	DMSP NA (NOT N/O)
921209	41738	DMSP NA (NOT N/O)
930106	56259	WHY LISTED TWICE (56260)?
930106	56260	DMSP10YES AT 55260.4 (8SAA,11SR)
930309	11269	DMSP NA (NOT NO)
930318	44993U	DMSP NA (BATSE YES! ULYSSES TIME?)
930329	11365	DMSP NA (NOT N/O)
930406	26185	DMSP NA (NOT N/O)
930428	4032	DMSP NA (NOT N/O)
930506	65631	DMSP NA (NOT NO)
930511	892U	(ULYSSES TIME) DMSP NO
930825	31643U	DMSP8YES AT 33477.4(100/S),11YES AT 33477.0(500/S), 10SR
930922	12830U	DMSP NA (NOT NO)
930922	23086U	(BATSE YES AT ?) DMSP10YES AT 23086.1(270/S),8?,11YES AT 22085.1
930925	73995U	DMSP NA (NOT NO)
930929	31751	(CORRECTED ULYSSES TIME) DMSP NO
931006	18161	(CORRECTED ULYSSES TIME) TO 931111 34178, NUMEROUS: DMSP NA
931006	69587U	DMSP NA (NOT NO)
931006	77510U	(ULYSSES TIME?)(BATSE YES AT ?) DMSP NA (NOT NO)
931031	14795	DMSP11YES AT 14796.8,14810.8 (8SAA,10SAA)
931103	59142	DMSP10YES AT 59152.4,158.4,11YES AT 59151.0,155.0 (8SR)
931131	60360	IS THIS DATE FOR SURE? (DMSP NA, 93/11/30)
931204	35290	DMSP8YES AT 35301.3,10NO AT 156DEG, 11NR
931217	65953U	10YES AT 64188.0,192.0,232.0, 11NO AT 64188 (8SR AT 64188)

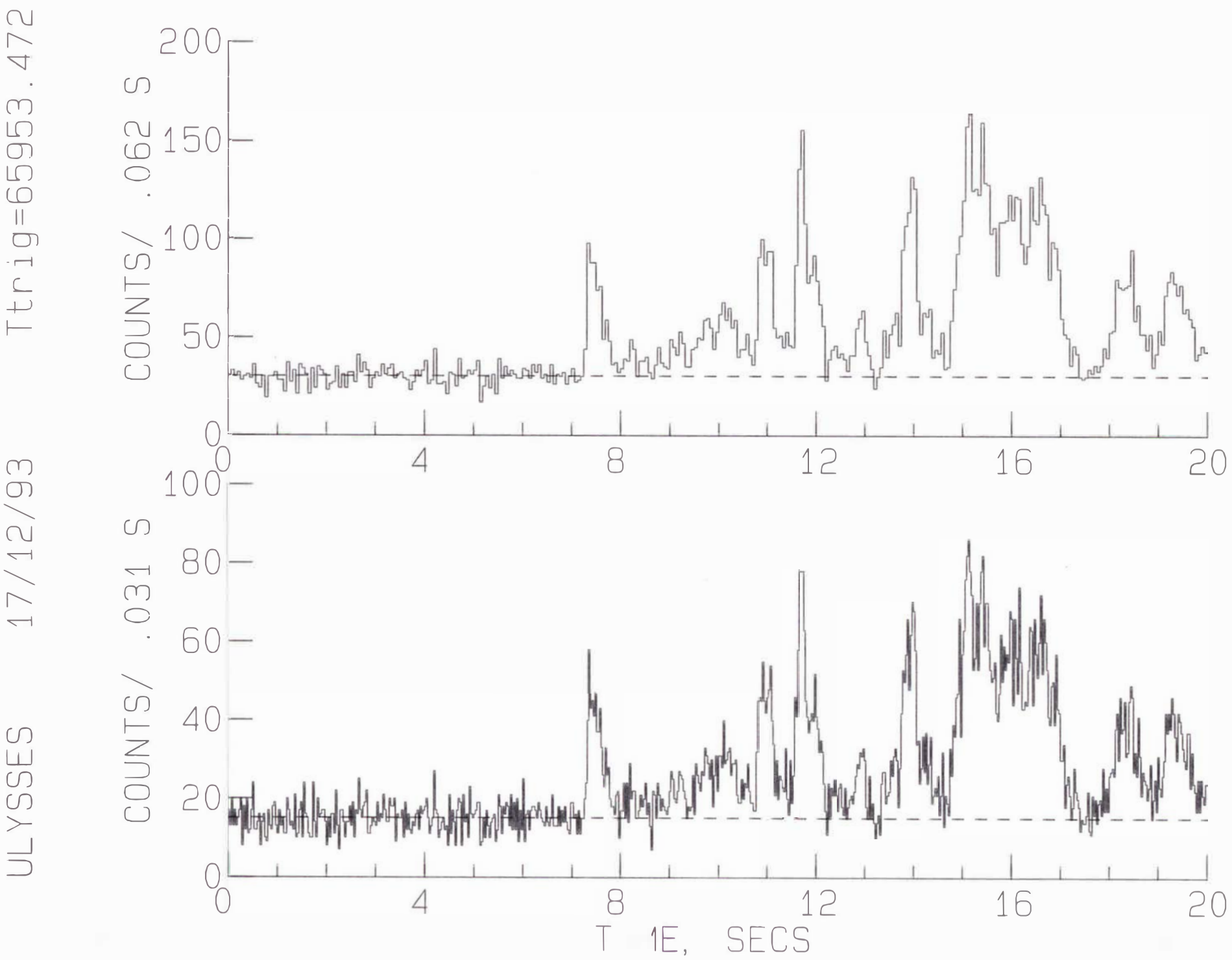
ULYSSES RT

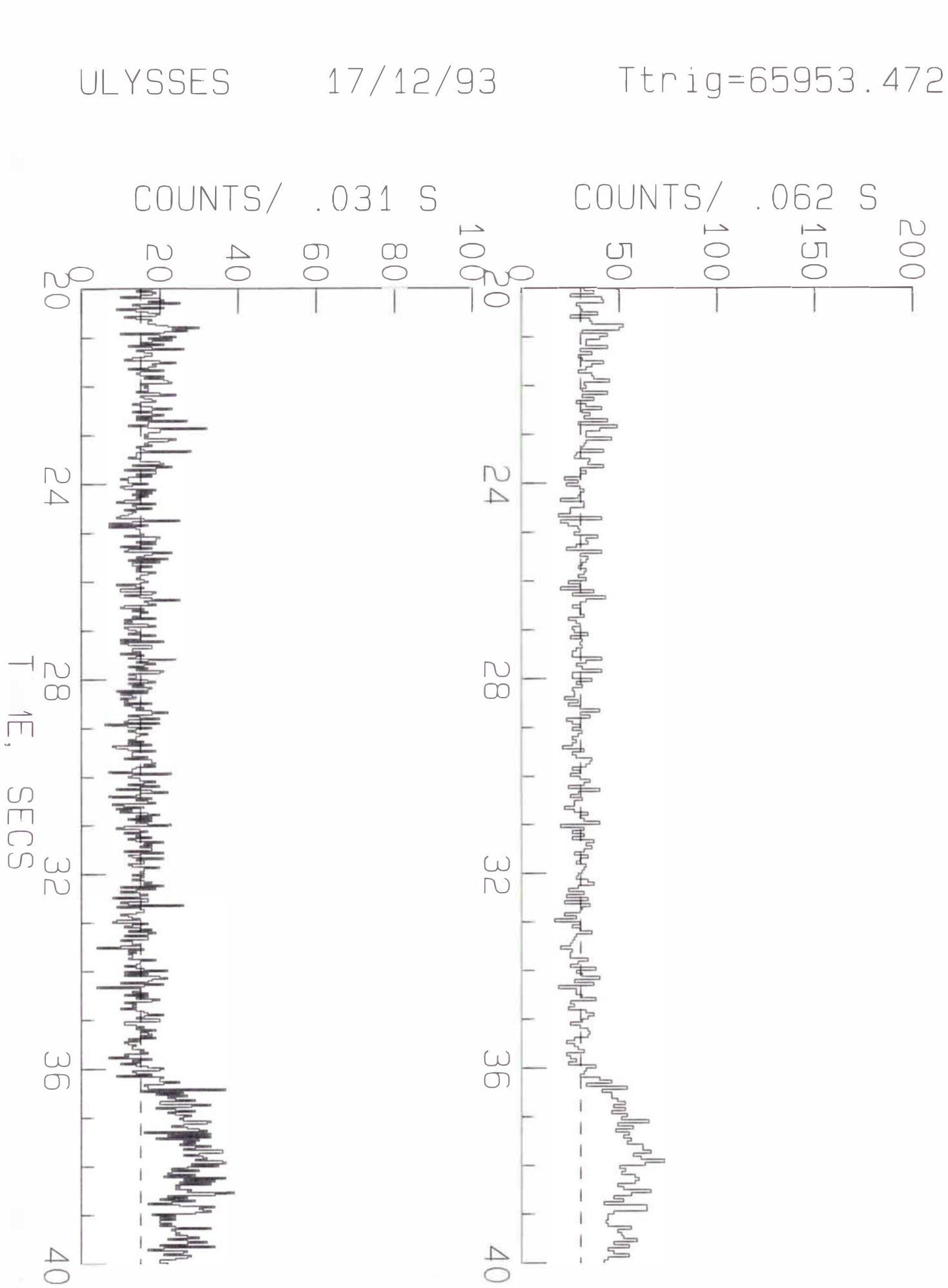
21/12/93

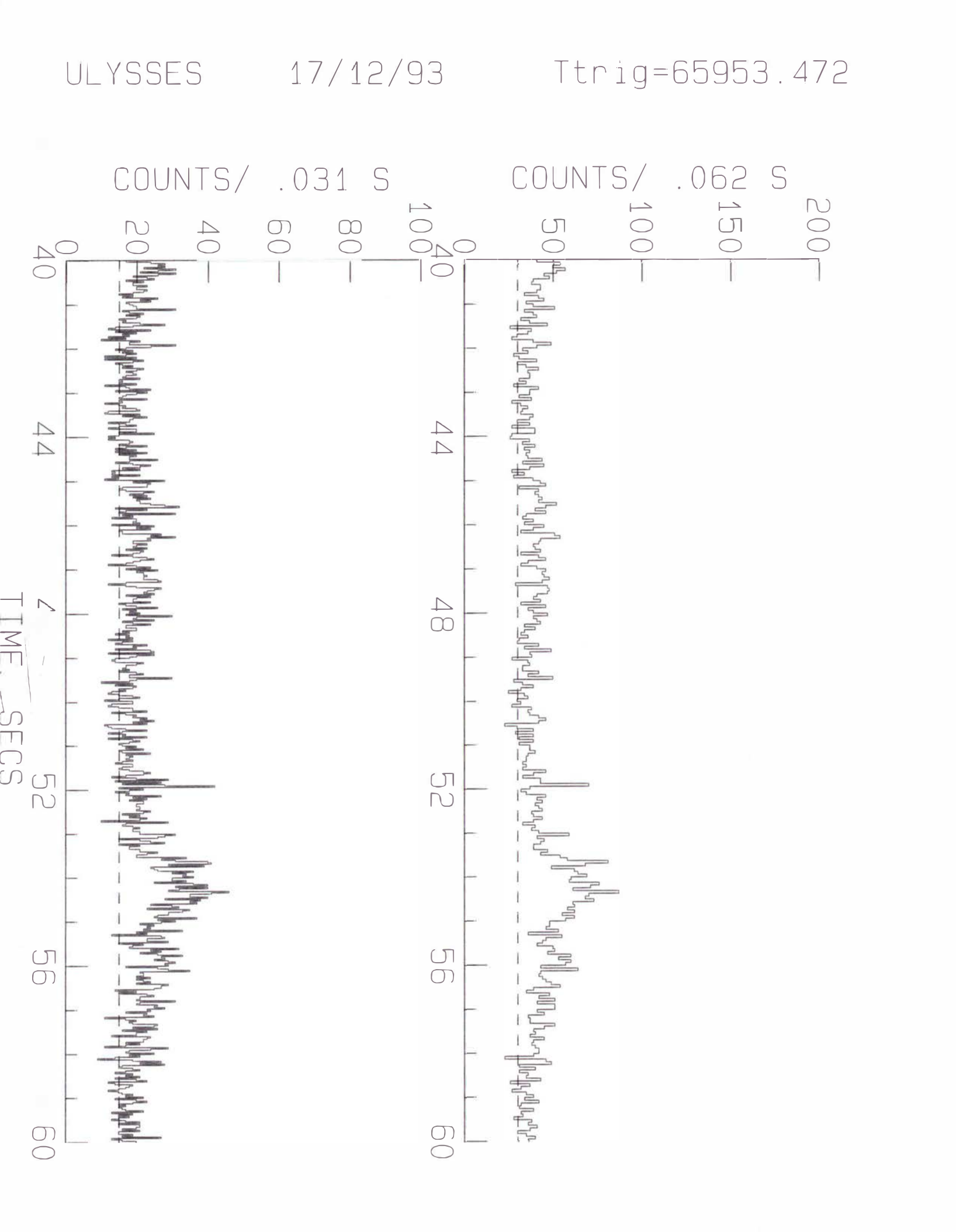
17/12/93 65772.148 s

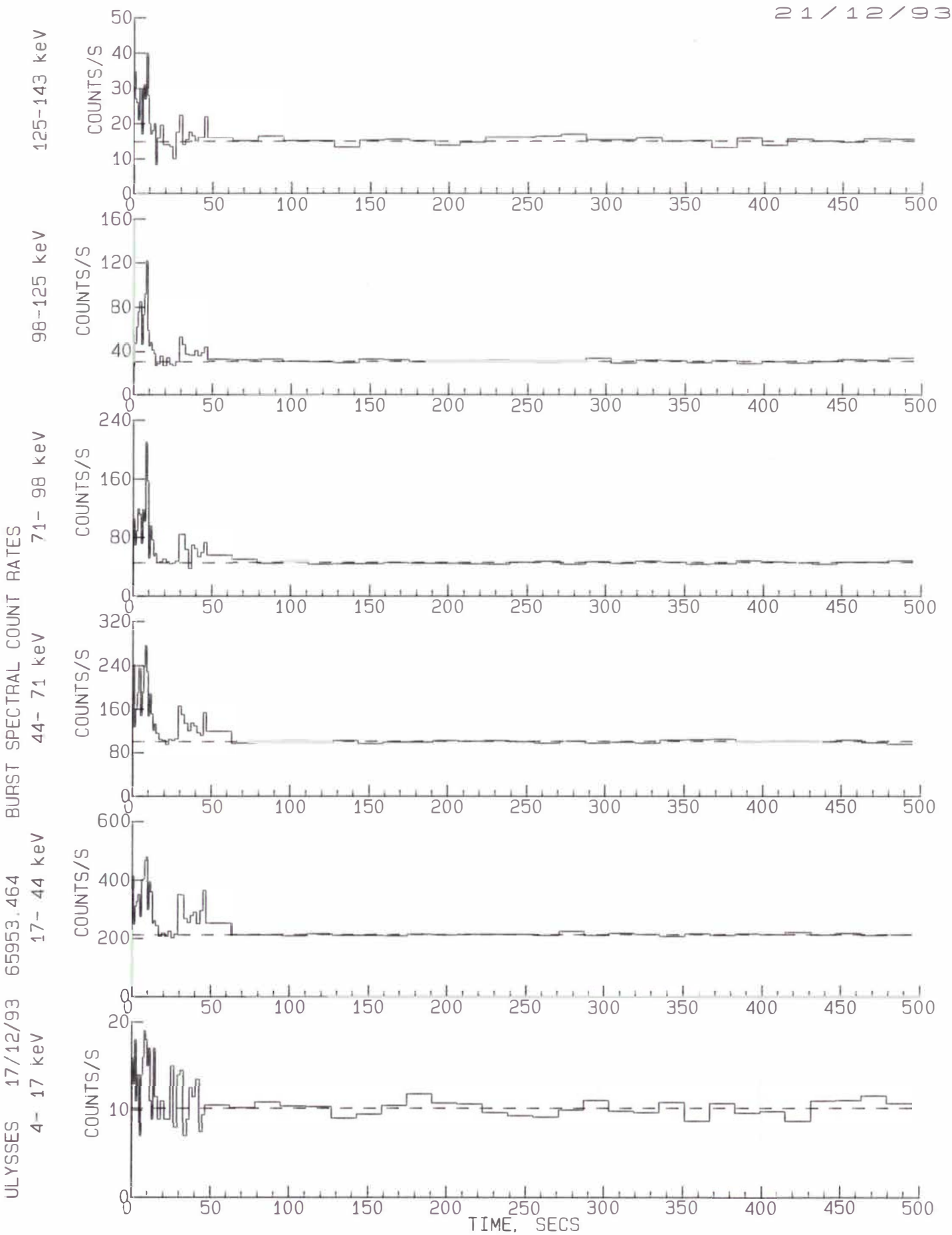
0- 0 keV




ULYSSES 17/12/93 Ttrig=65953.472
COUNTS/ .062 S
200
150
100
50
0
0
4
8
12
16
20
COUNTS/ .031 S
100
80
60
40
20
0
0
4
8
12
16
20
T 1E, SECS


ULYSSES 17/12/93 Ttrig=65953.472
COUNTS/ .031 S
0
20
40
60
80
100
COUNTS/ .062 S
0
50
100
150
200
20
24
28
32
36
40
T-1E, SECS

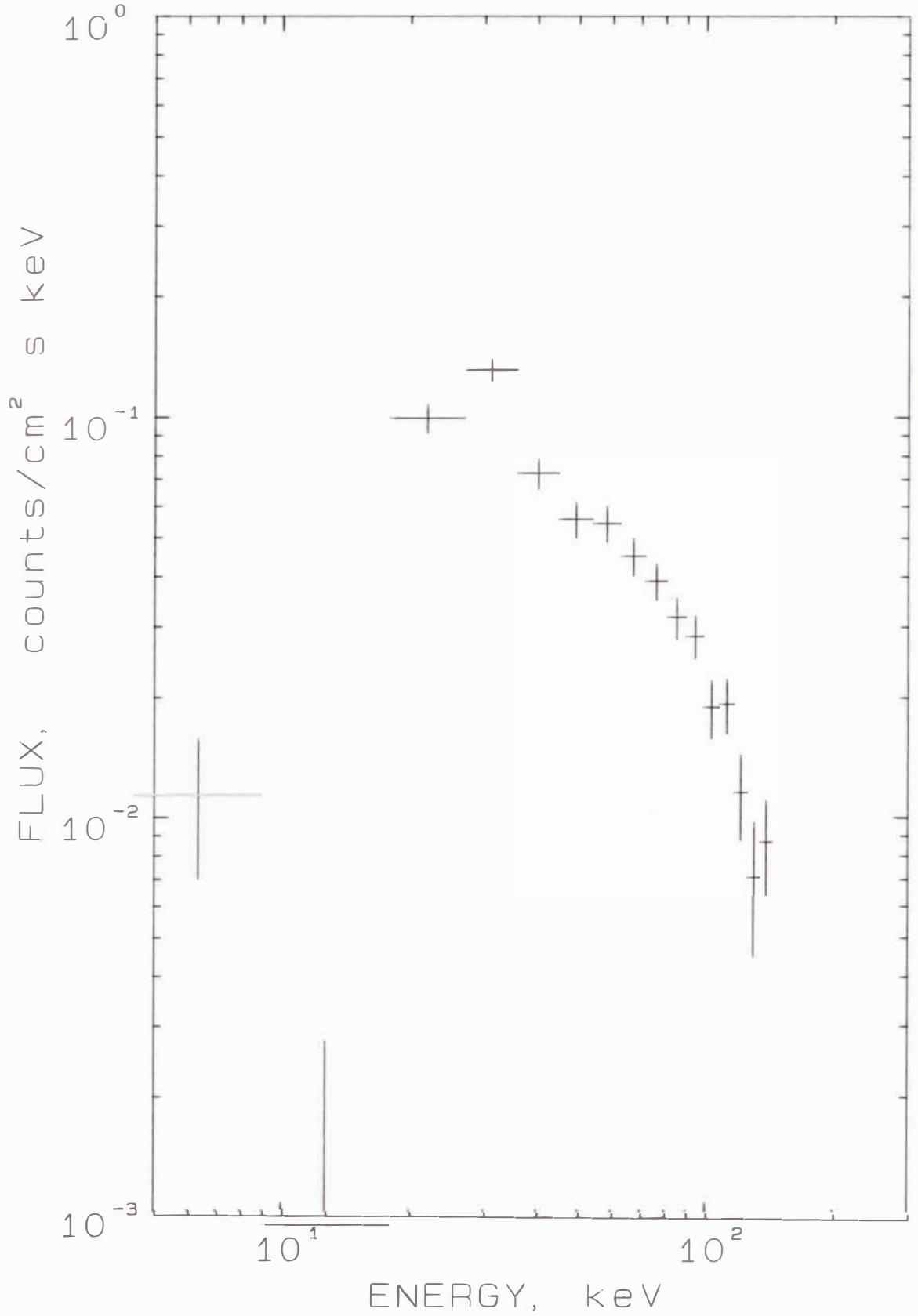

ULYSSES 17/12/93 Ttrig=65953.472
COUNTS/ .031 S
0
20
40
60
80
100
COUNTS/ .062 S
0
50
100
150
200
40
44
48
52
56
60
TIME - SECS

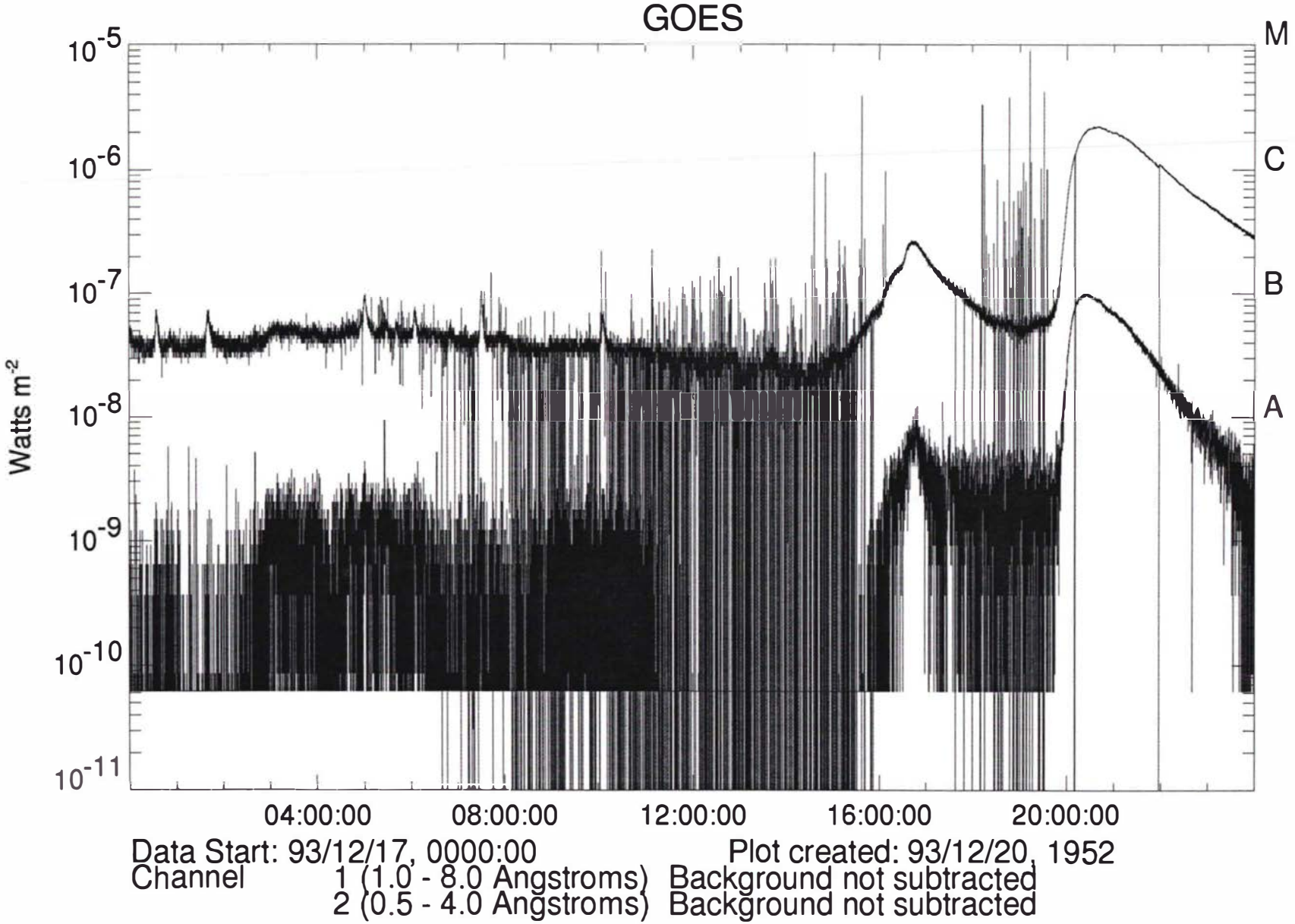

21/12/93
ULYSSES 17/12/93 65953.464 BURST SPECTRAL COUNT RATES
125-143 keV
98-125 keV
71- 98 keV
44- 71 keV
17- 44 keV
4- 17 keV
COUNTS/S
TIME, SECS

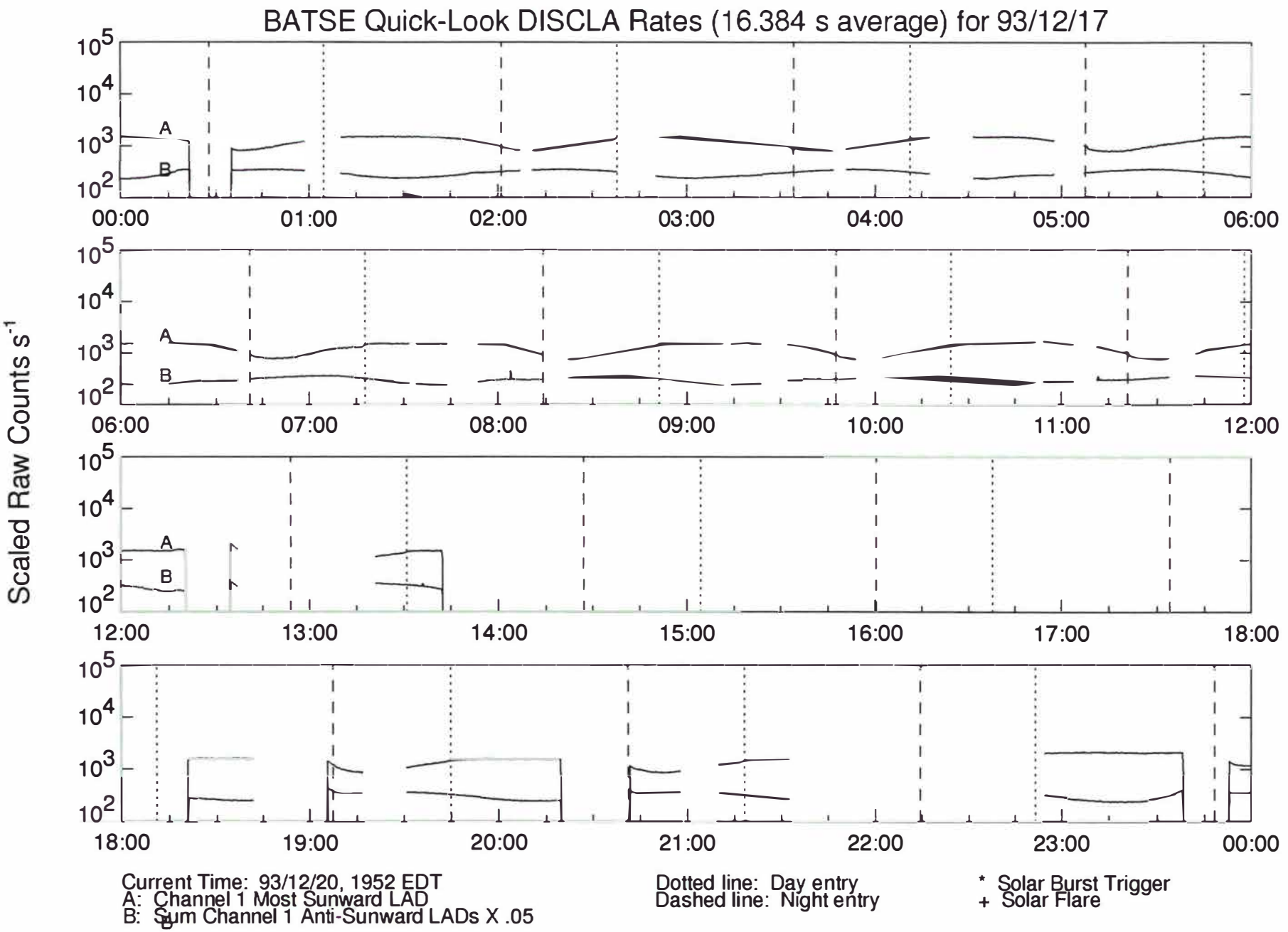
ULYSSES 17/12/93 65953.464

21/12/93

SPECTRUM INTEGRATED OVER 79.0 SECONDS, INTERVALS 2 TO 35

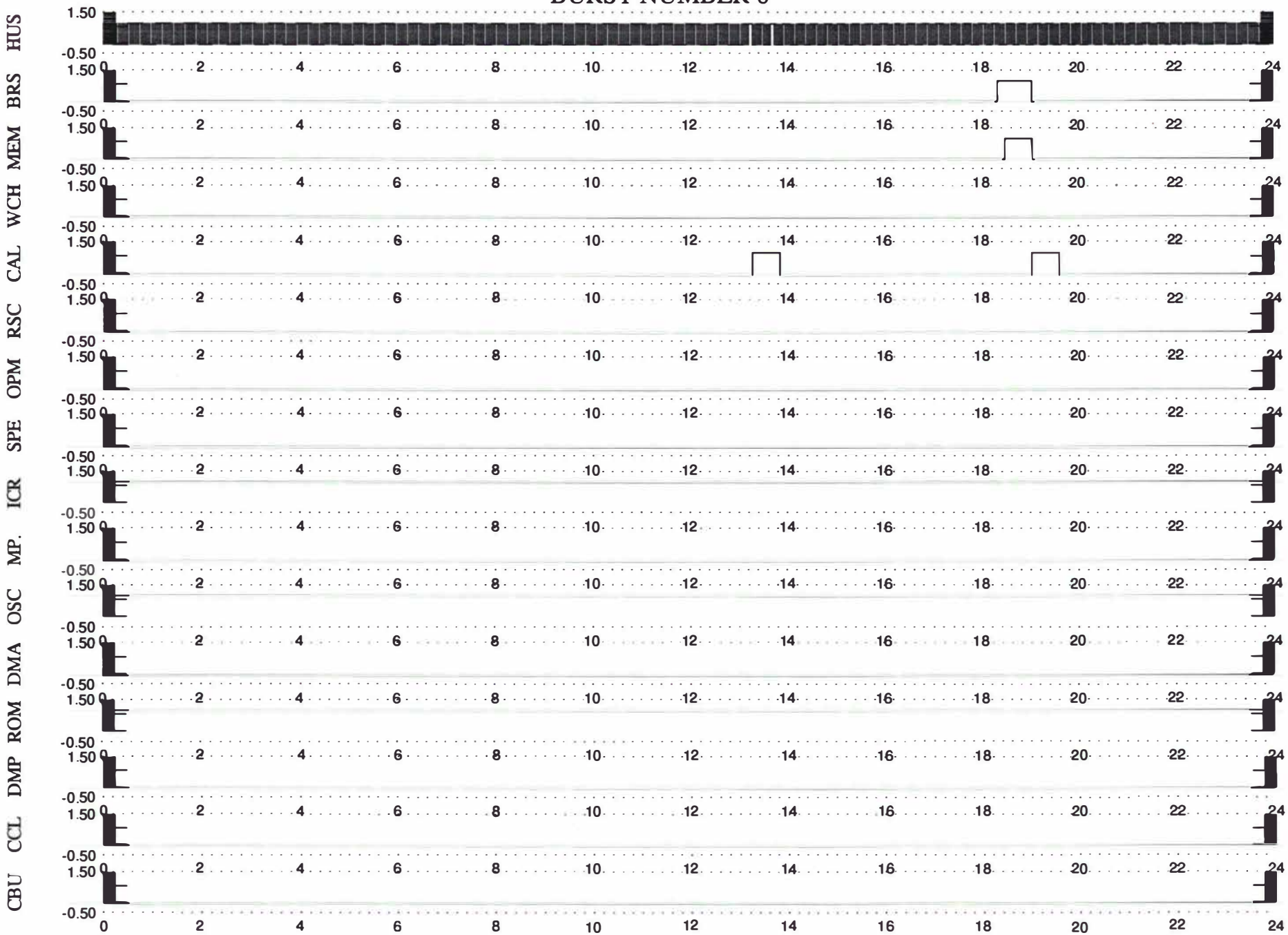



GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/17, 0000:00
Plot created: 93/12/20, 1952
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/17
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/20, 1952 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

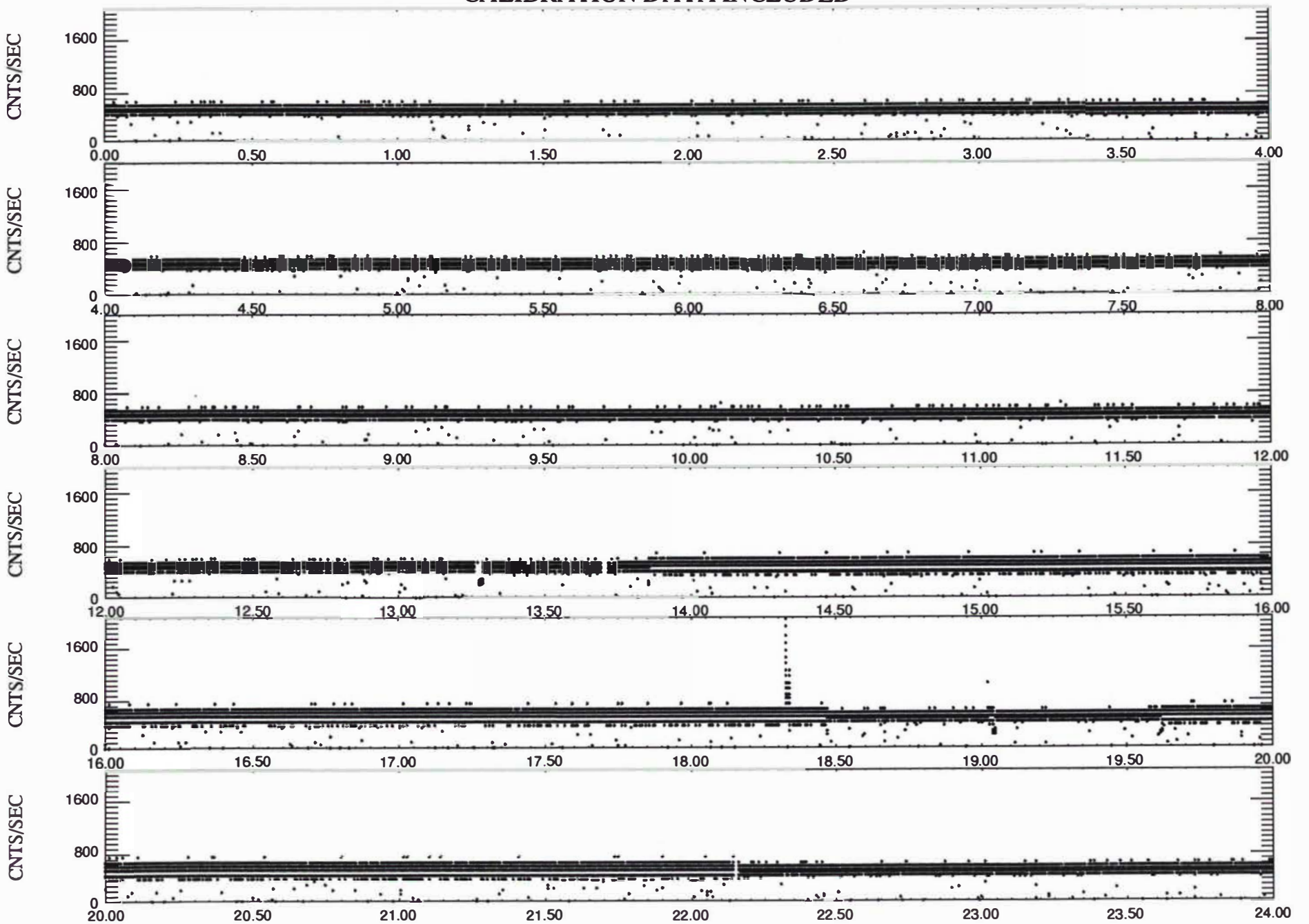
HUS MODES EDR day 351, year 1993 to day 351, year 1993 2/9/94

BURST NUMBER 0



HUS 2A, MODE 1, NOT AVERAGED EDR day 351, year 1993 to day 351, year 1993 2/9/94

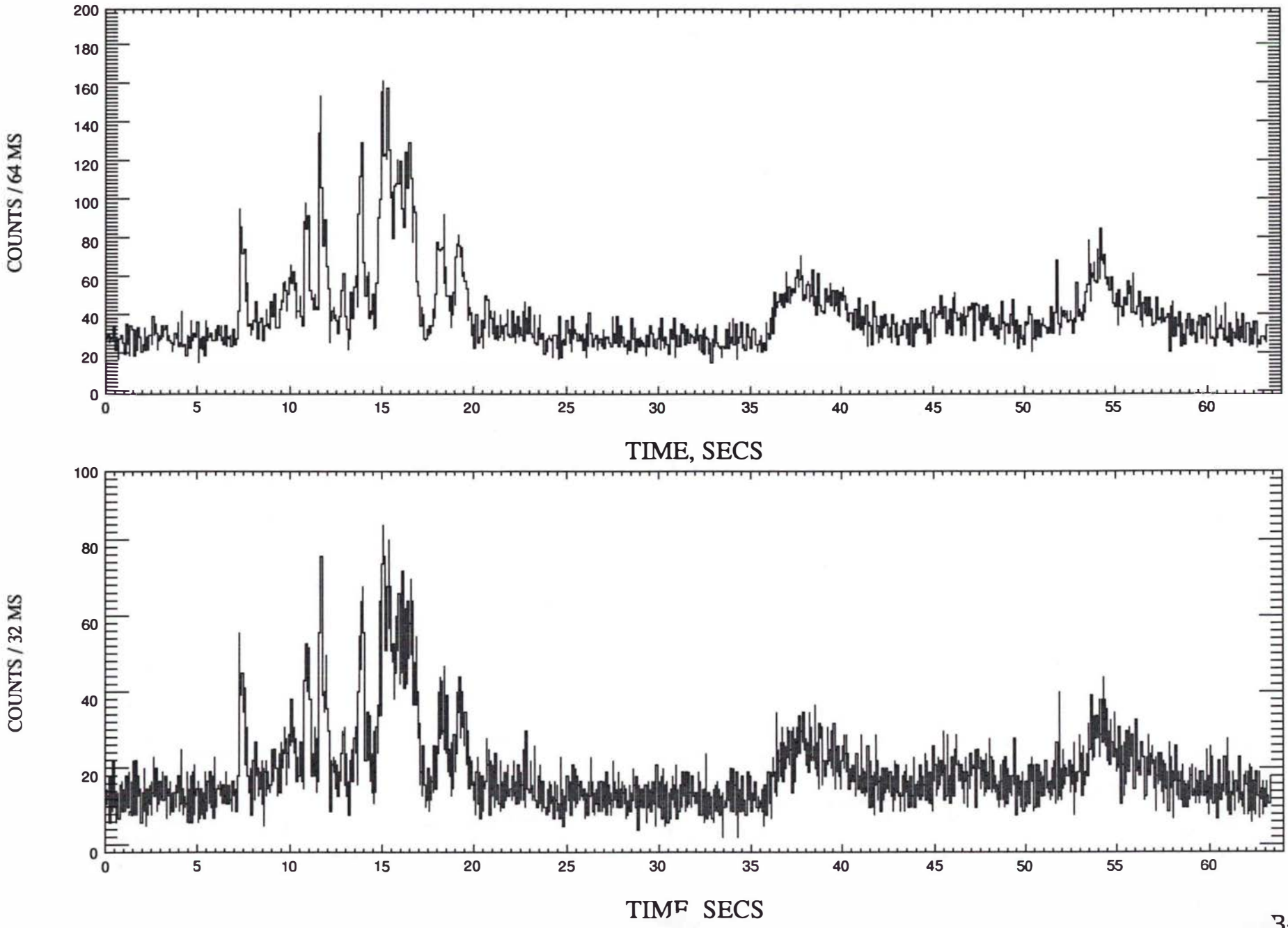
CALIBRATION DATA INCLUDED



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 351, year 1993 2/9/94

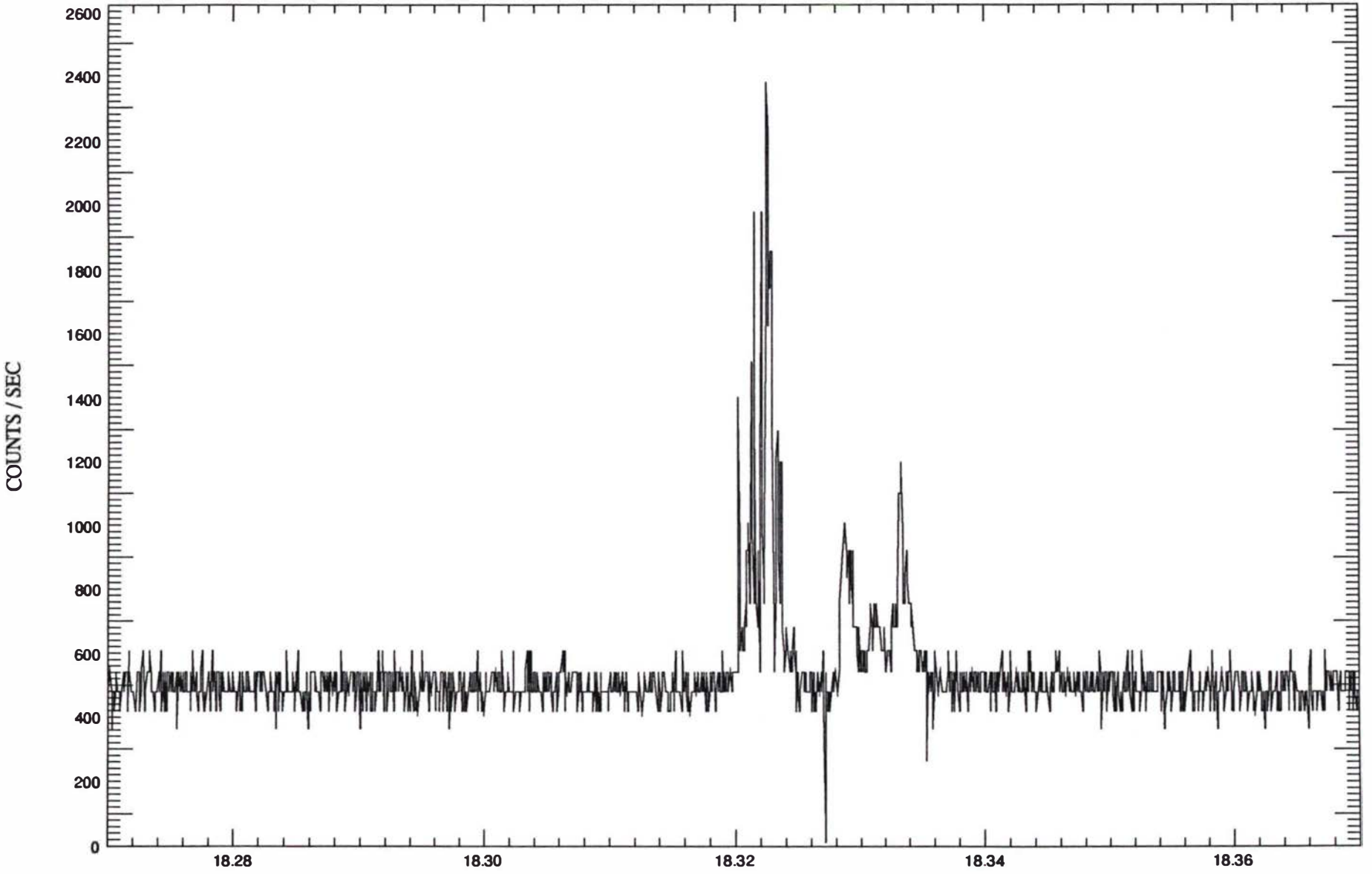
Burst Counter 0 at UT=18.320406769647 h=65953.464 s 18:19:13.464



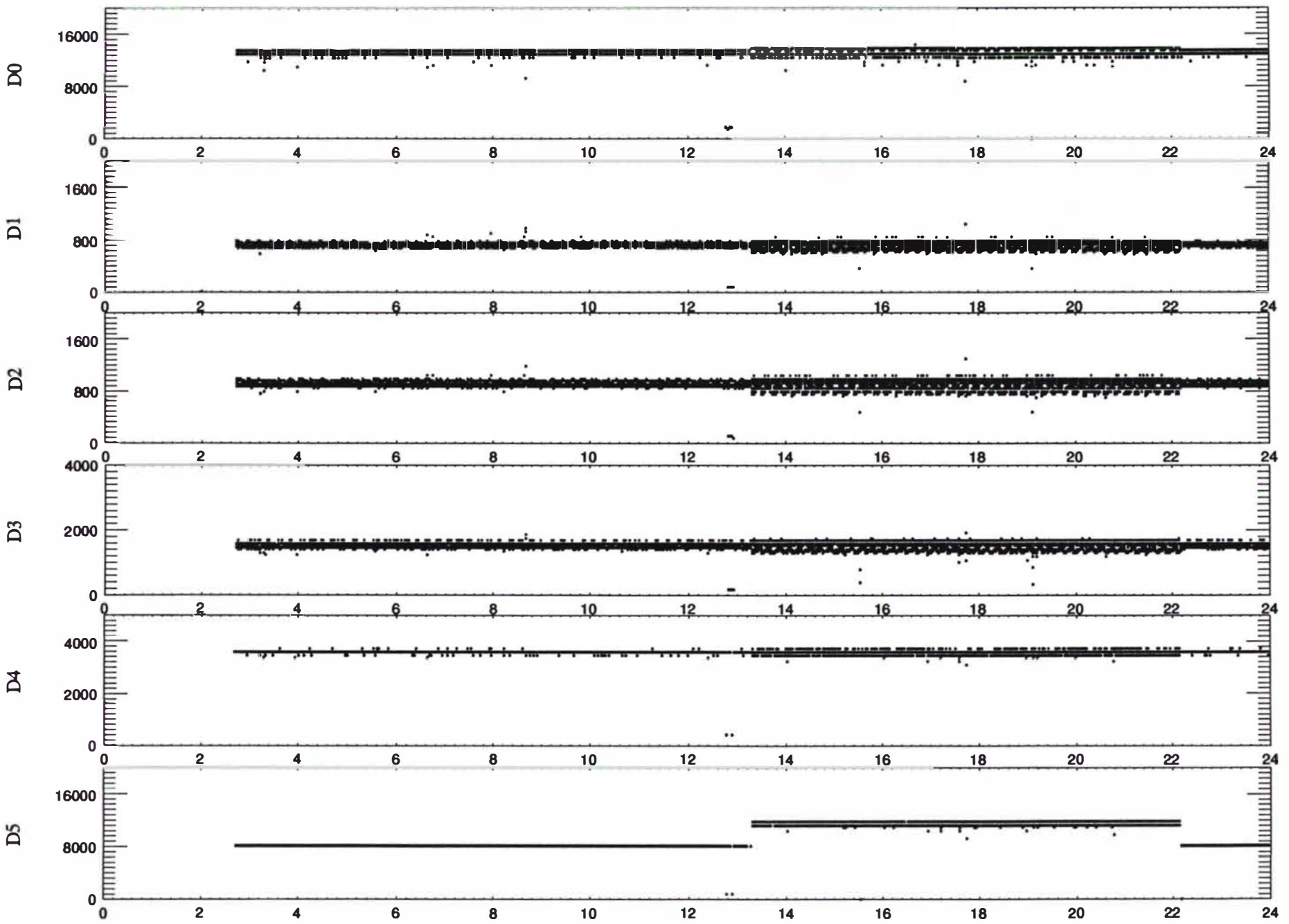
B# 1

HUS 2A, MODE 1, NOT AVERAGED QEDR day 351, year 1993 to day 351, year 1993 12/20/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 351, year 1993 to day 351, year 1993 12/20/93



From ZMYEWSKI@ssl.msfc.nasa.gov Mon Dec 20 09:29:36 1993
Date: Mon, 20 Dec 1993 11:33:32 -0600 (CST)
From: ZMYEWSKI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2696
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #    2696
 EVENT OF 1993 DEC 18 DAY OF YEAR=352
 EVENT CROSSING TIME AT BATSE      : 69842. S. OR 19:24:02.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 241.000   41.000
 BATSE PEAK COUNTING RATE:   4300    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 18/12/  93 IS:
 RA=  166.338 DEC=  -38.272 DIST=    3.891 AU
 BATSE-ULYSSES DISTANCE =  582124422. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.54 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  484.74 SECS.
 CROSSING TIME AT ULYSSES    IS 70327. S. OR   19:32:06 +/-  383.81 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 18/12/  93 IS:
 RA=  268.333 DEC=  -24.150 DIST=    2.437 AU
 MARS-BATSE DISTANCE =  364614176. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=110.08 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -417.60 SECS.
 CROSSING TIME AT MARS       IS 69424. S. OR   19:17:04 +/-  191.98 SECONDS
```

No

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2696	931218	9339	69842	4300	241	+41

```
                BATSE BURST TRIGGER
NO.: 02696

TIME: TJD=9339 SECONDS=69842

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=35.4   AZIMUTH=64.5   ERROR=      DEGREES

COMMENTS:
GRB LASTING APPROX. 50 SECONDS.  YELLOW LIMIT SET IN 1MAXBC0.
```

BATSE BURST # 2696

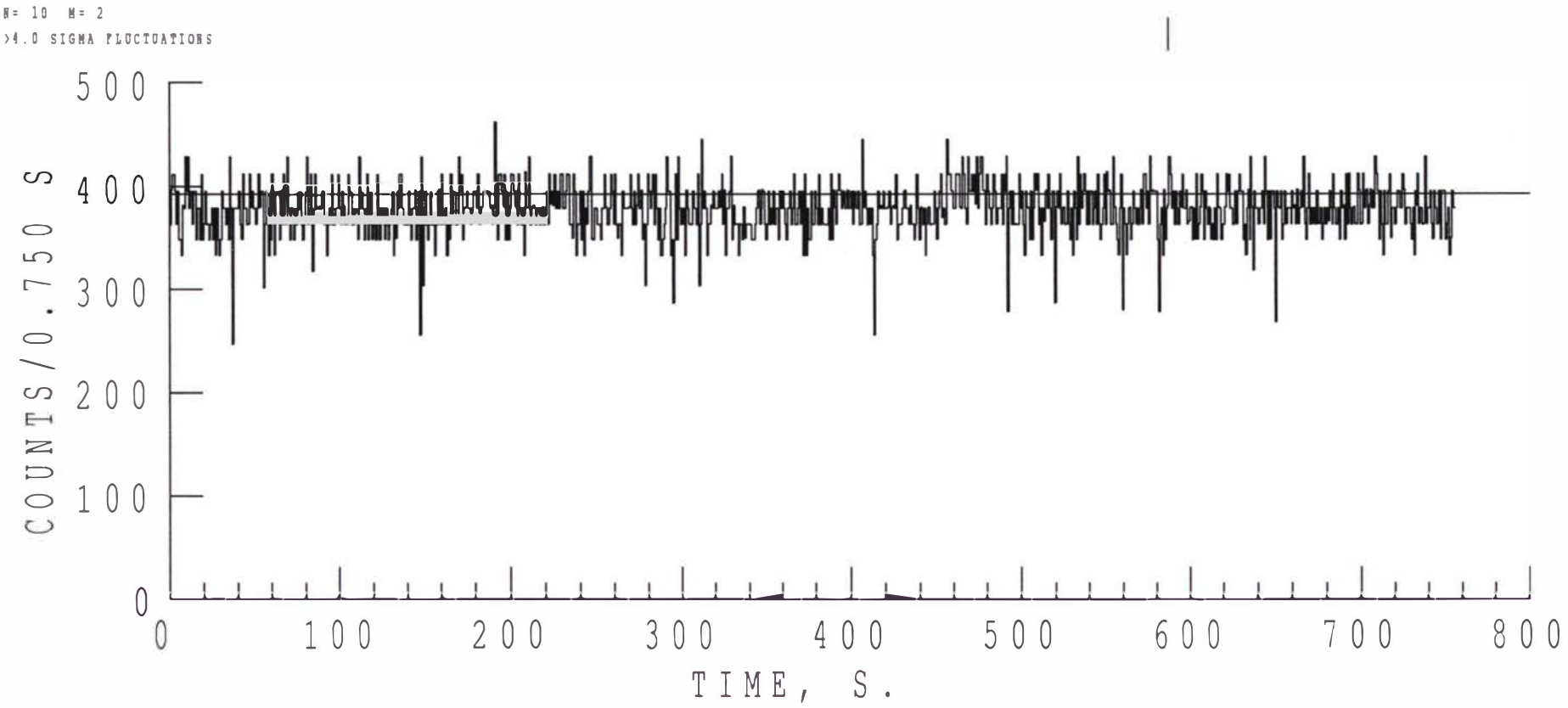
20/12/93

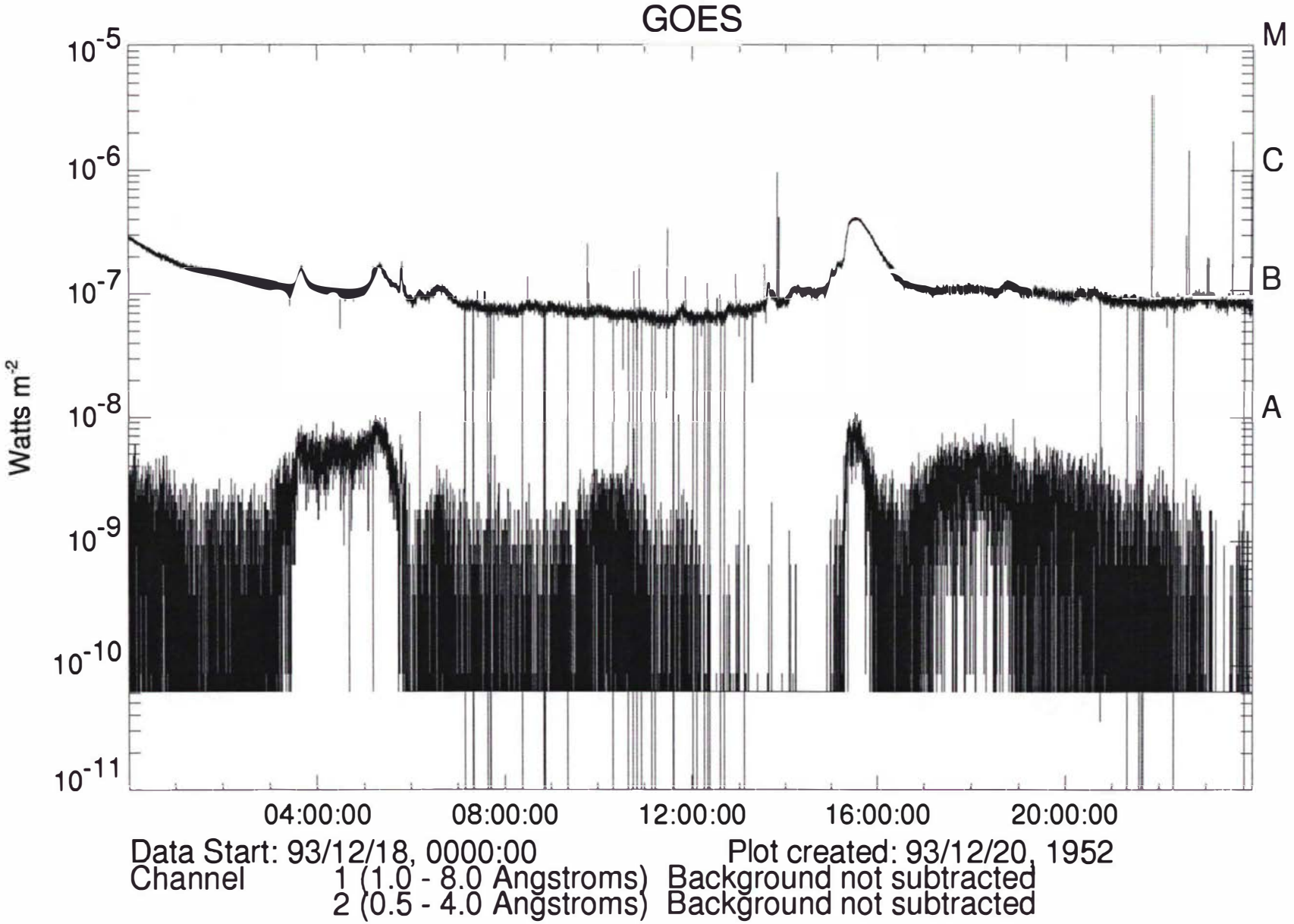
ULYSSES RT

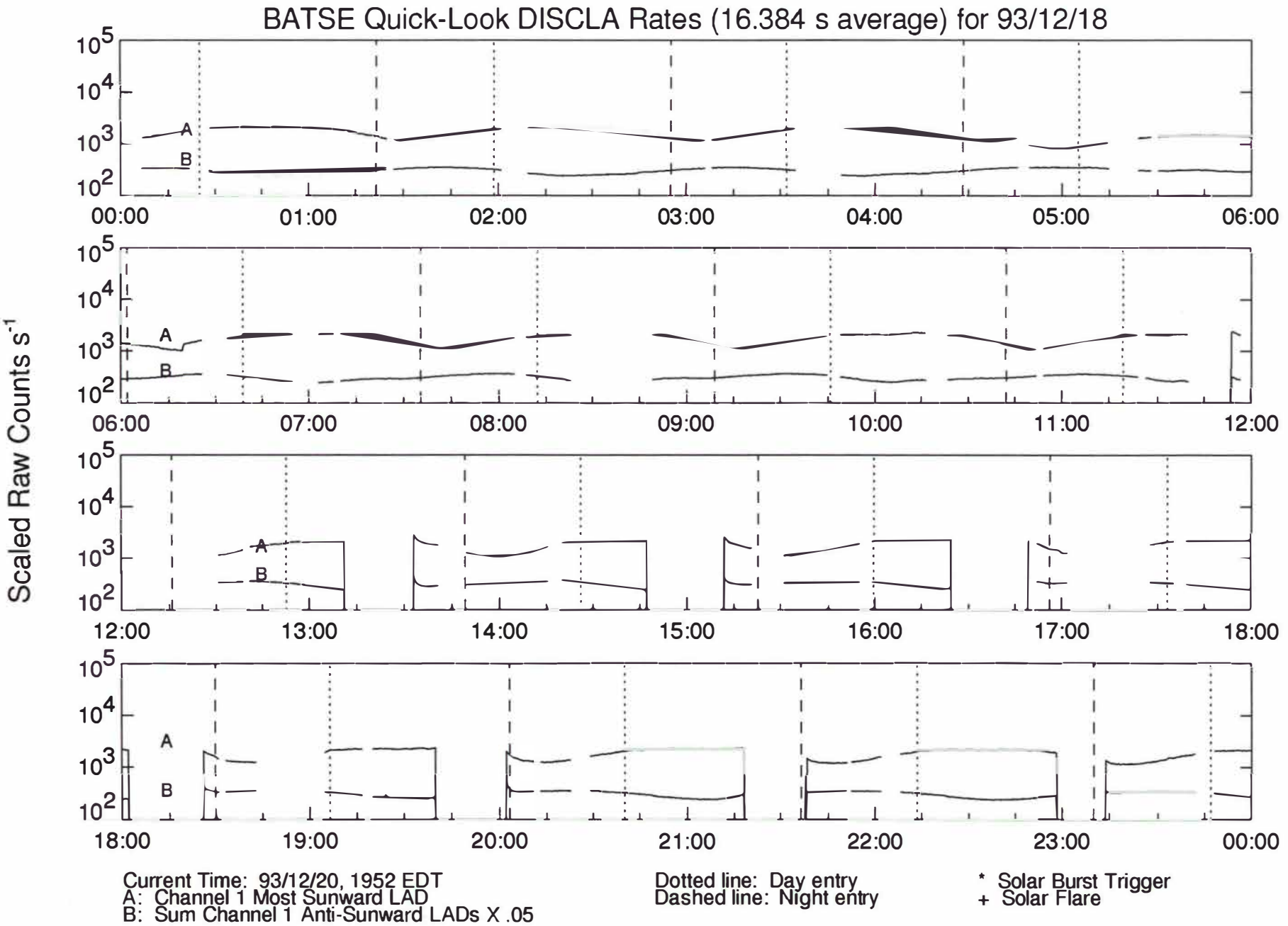
18/12/93 69948.055 s

0.250 S INTERVALS REGROUPED BY 3

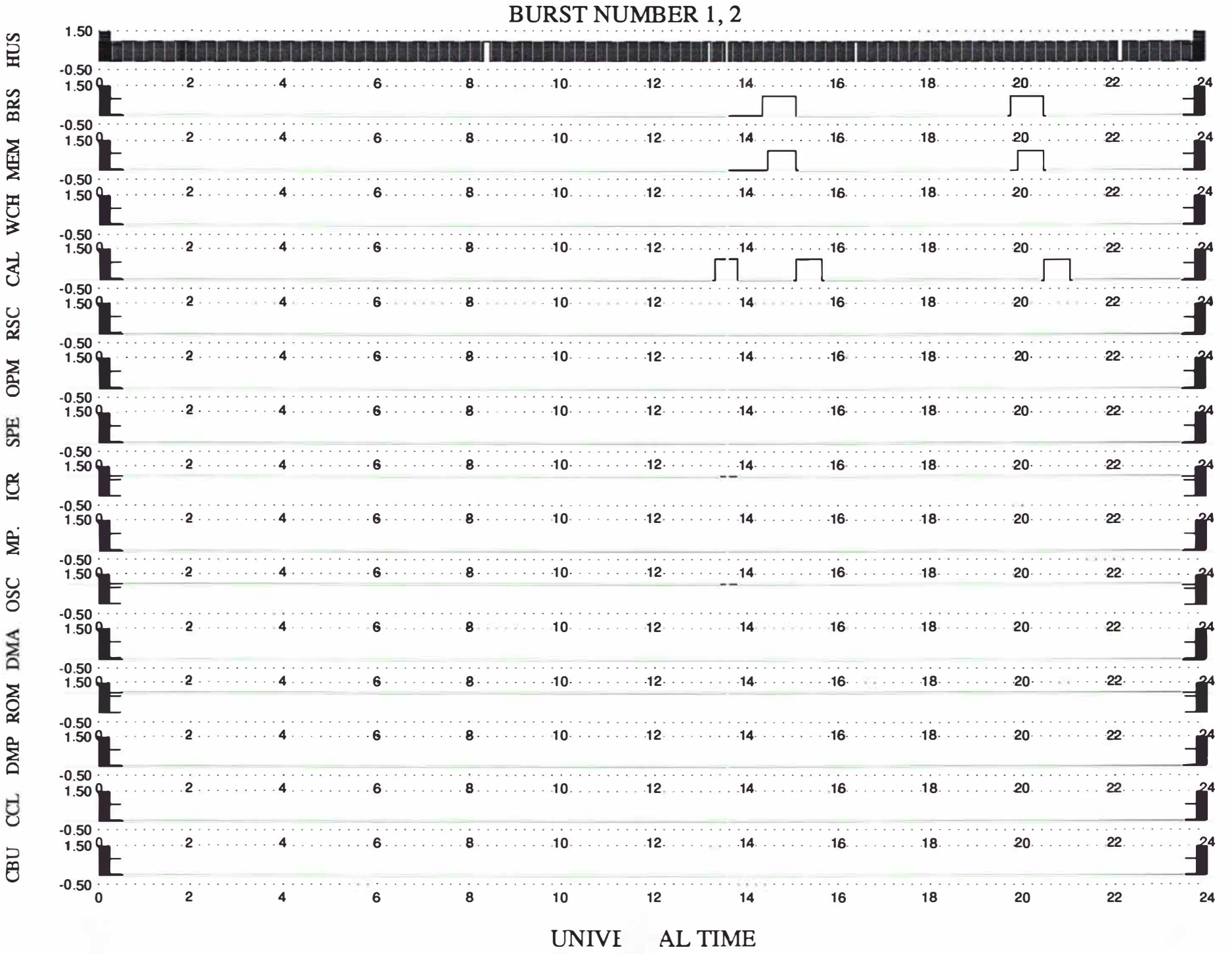
0- 0 keV




GOES
X
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/18, 0000:00
Plot created: 93/12/20, 1952
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

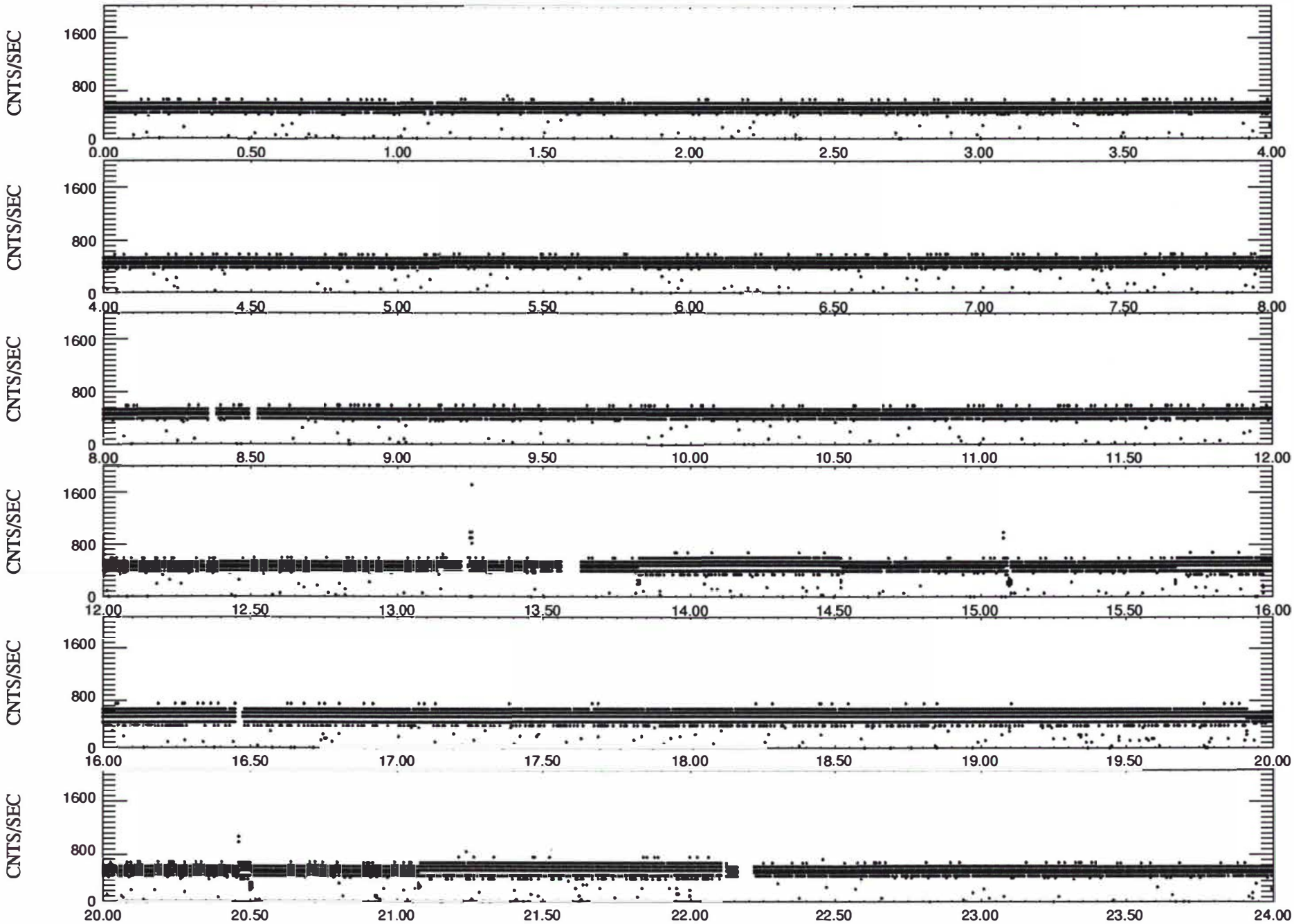

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/18
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 93/12/20, 1952 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 352, year 1993 to day 352, year 1993 2/9/94



HUS 2A, MODE 1, NOT AVERAGED EDR day 352, year 1993 to day 352, year 1993 2/9/94

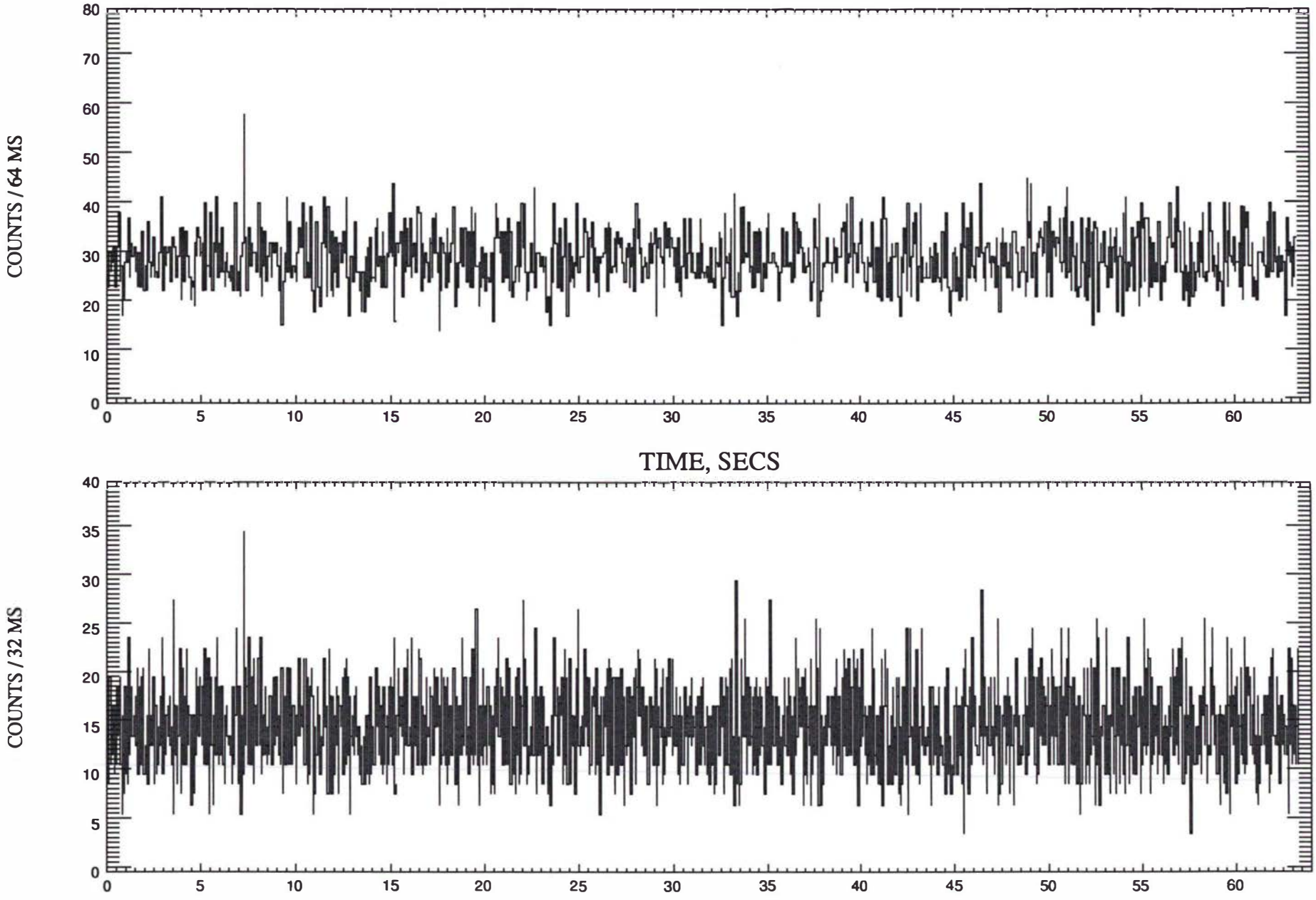
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 352, year 1993 2/9/94

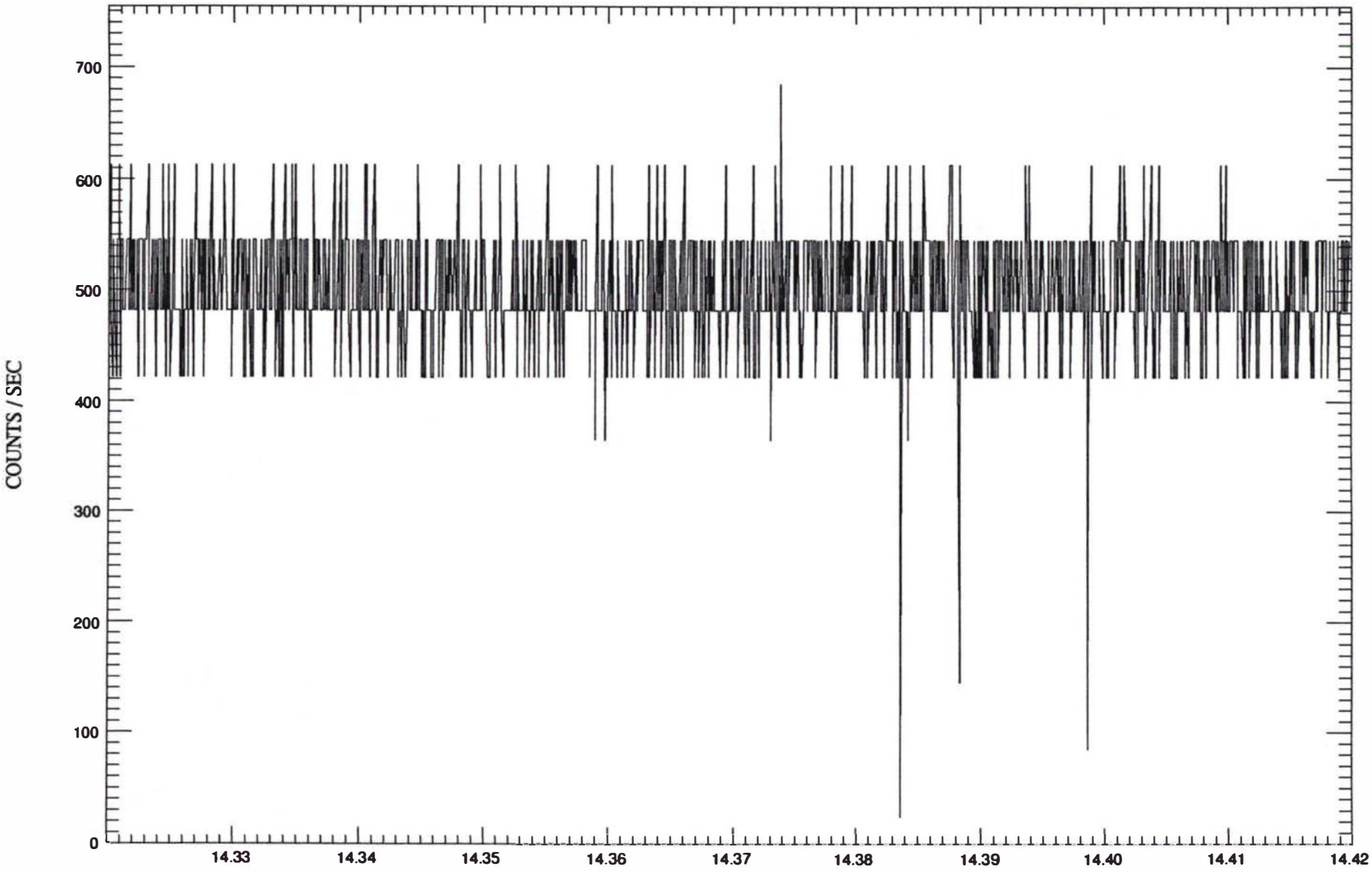
Burst Counter 1 at UT=14.373996399773 h=51746.387 s 14:22:26.387



B# 1

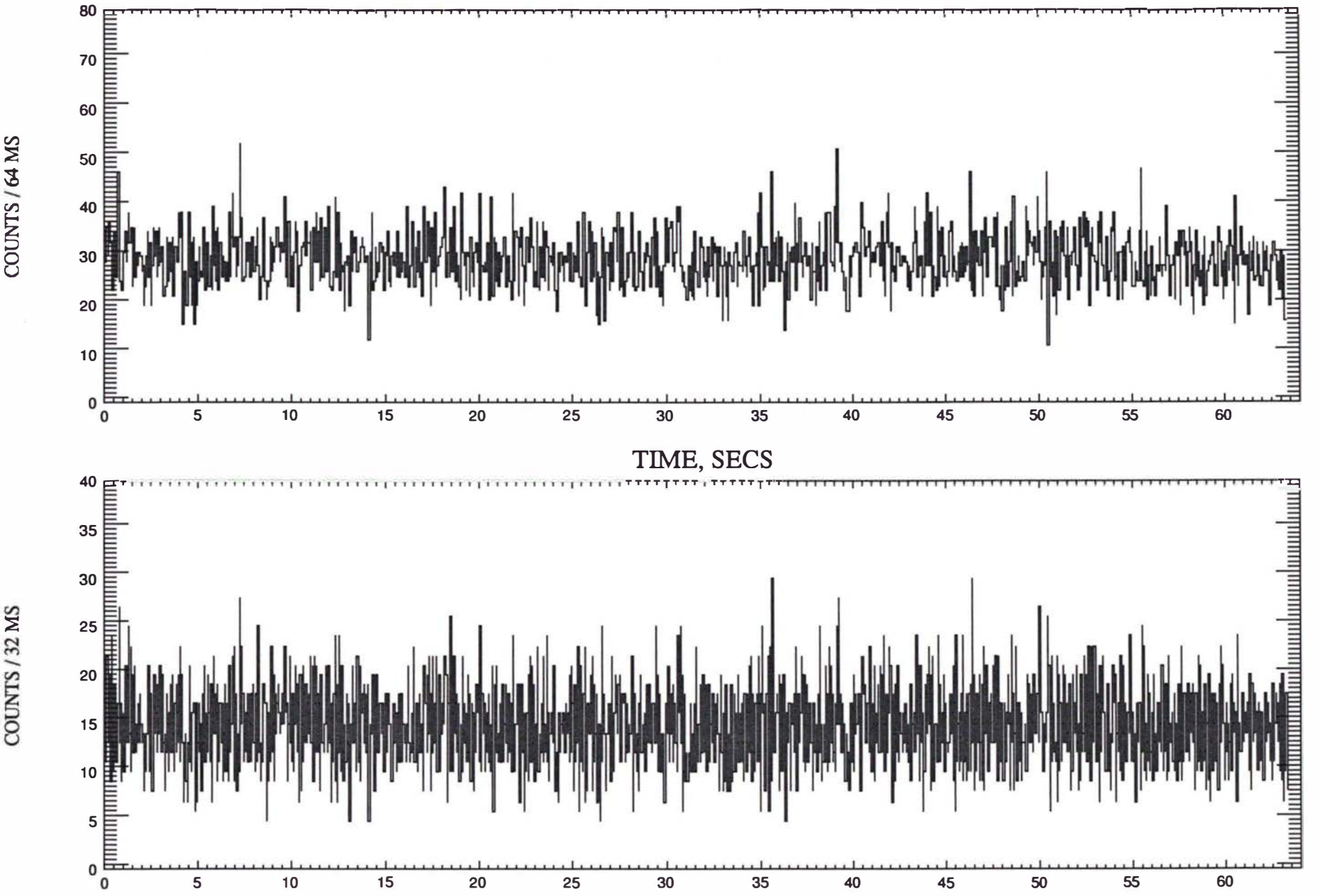
HUS 2A, MODE 1, NOT AVERAGED QEDR day 352, year 1993 to day 352, year 1993 12/20/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 352, year 1993 2/9/94

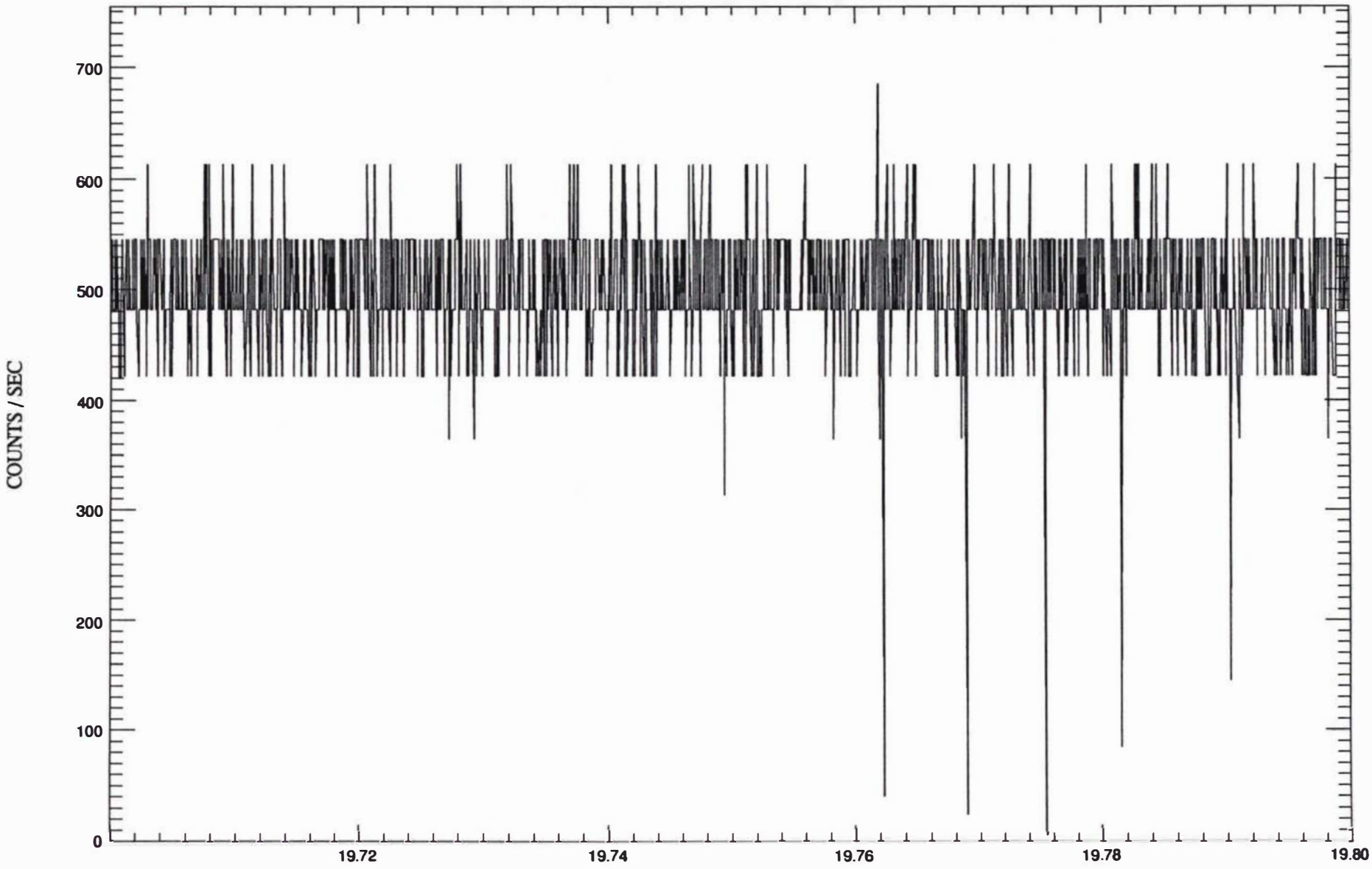
Burst Counter 2 at UT=19.753144692315 h=71111.321 s 19:45:11.321



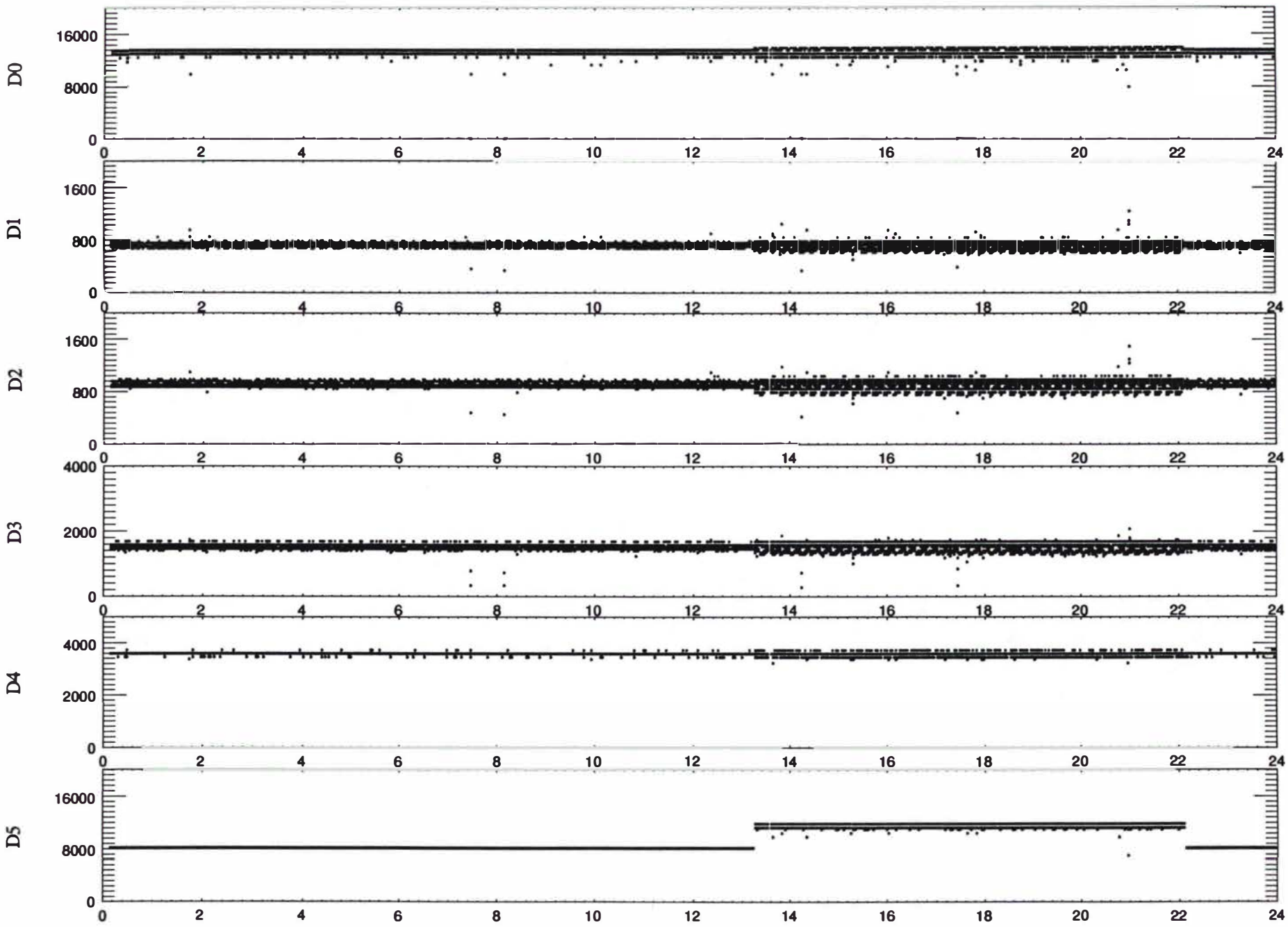
B# 2

HUS 2A, MODE 1, NOT AVERAGED QEDR day 352, year 1993 to day 352, year 1993 12/20/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 352, year 1993 to day 352, year 1993 12/20/93



From MALLOZZI@ssl.msfc.nasa.gov Mon Dec 20 12:56:37 1993
Date: Mon, 20 Dec 1993 15:00:34 -0600 (CST)
From: MALLOZZI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2697
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2697
 EVENT OF 1993 DEC 19 DAY OF YEAR=353
 EVENT CROSSING TIME AT BATSE      :  2766. S. OR 00:46:06.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:  22.000  -71.000
 BATSE PEAK COUNTING RATE:   3900    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 19/12/  93 IS:
 RA=  166.327 DEC=  -38.331 DIST=    3.887 AU
 BATSE-ULYSSES DISTANCE =  581550568. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=112.27 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -735.09 SECS.
 CROSSING TIME AT ULYSSES    IS  2031. S. OR   00:33:50 +/-  350.51 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 19/12/  93 IS:
 RA=  269.157 DEC=  -24.164 DIST=    2.436 AU
 MARS-BATSE DISTANCE =  364468480. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=105.77 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -330.36 SECS.
 CROSSING TIME AT MARS       IS  2436. S. OR   00:40:35 +/-  198.11 SECONDS
```

ND

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2697	931219	9340	02766	3900	022	-71

BATSE BURST TRIGGER

NO.: 02697

TIME: TJD=9340 SECONDS=02766

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=120.4 AZIMUTH=287.3 ERROR= DEGREES

COMMENTS:
SINGLE PEAK BURST OF DURATION APPROX. 22 SECONDS.
EMISSION ABOVE 100 KEV, BUT NOT ABOVE 300 KEV.

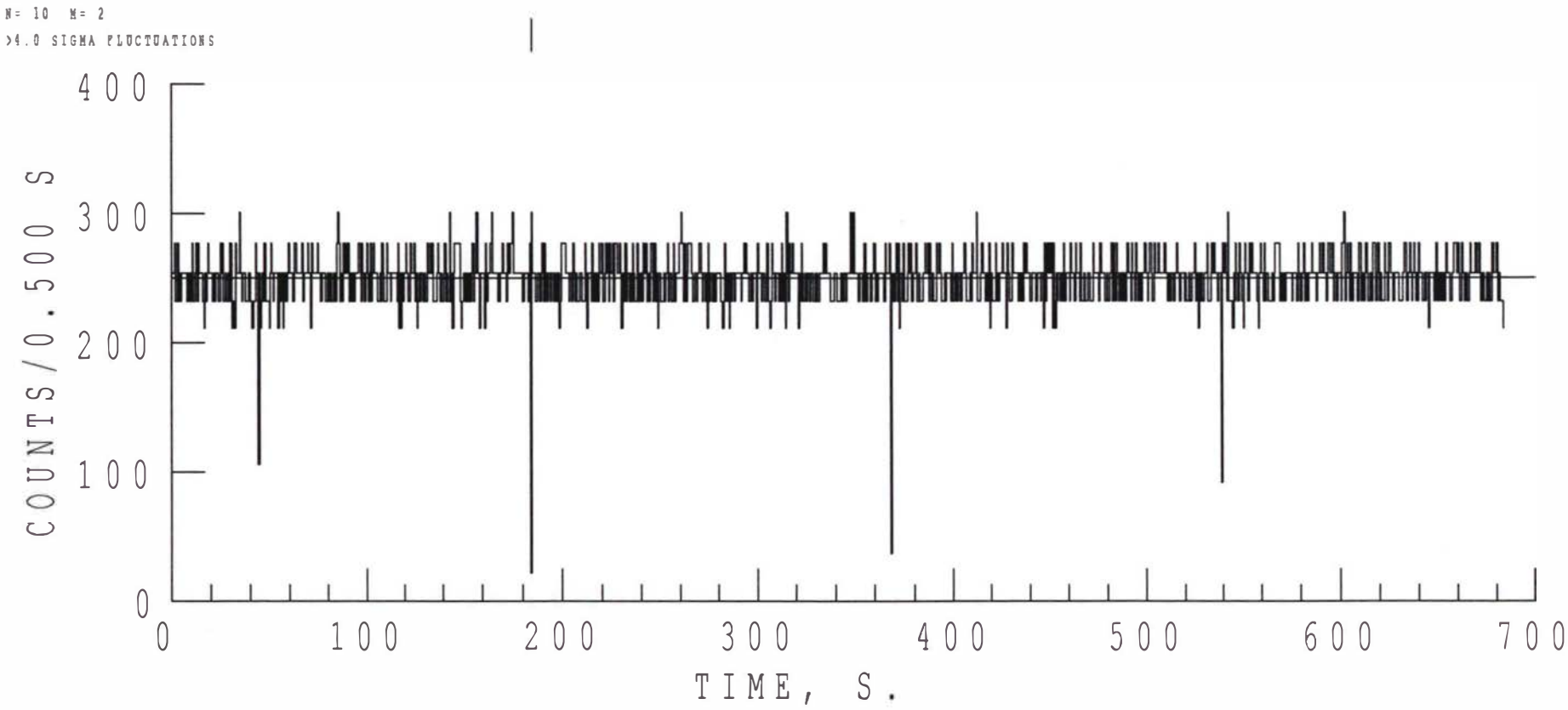
BATSE Burst #2697

20/12/93

ULYSSES RT

19/12/93 1692.081 s

0- 0 keV



From MALLOZZI@ssl.msfc.nasa.gov Mon Dec 20 12:58:06 1993
Date: Mon, 20 Dec 1993 15:02:02 -0600 (CST)
From: MALLOZZI@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2698
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2698
 EVENT OF 1993 DEC 19 DAY OF YEAR=353
 EVENT CROSSING TIME AT BATSE      : 59669. S. OR 16:34:29.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:  12.000    7.000
 BATSE PEAK COUNTING RATE:   1100    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 19/12/  93 IS:
 RA=  166.292 DEC=  -38.505 DIST=    3.876 AU
 BATSE-ULYSSES DISTANCE =  579841992. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 39.13 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1500.35 SECS.
 CROSSING TIME AT ULYSSES    IS 61169. S. OR   16:59:29 +/-  284.70 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 19/12/  93 IS:
 RA=  269.157 DEC=  -24.164 DIST=    2.436 AU
 MARS-BATSE DISTANCE =  364468480. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.45 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  305.37 SECS.
 CROSSING TIME AT MARS       IS 59974. S. OR   16:39:34 +/-  208.94 SECONDS
```

ND

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2698	931219	9340	59669	1100	012	+07

BATSE BURST TRIGGER

NO.: 02698

TIME: TJD=9340 SECONDS=59669

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=159.7 AZIMUTH=126.1 ERROR= DEGREES

COMMENTS:
DURATION APPROX. 40 SECONDS WITH MARGINAL EMISSION ABOVE 300 KEV.
NOT MUCH DATA AVAILABLE.

BATSE BURST # 2698

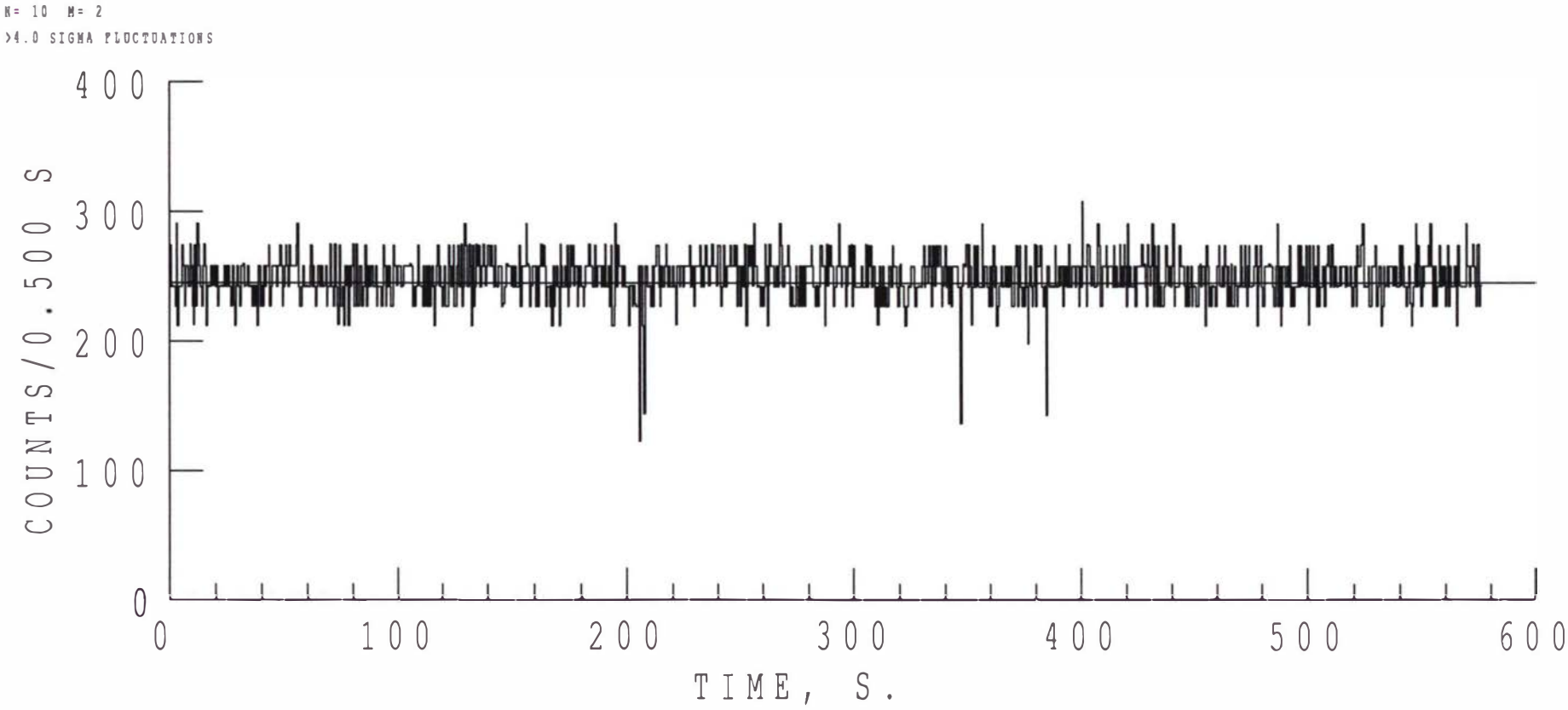
20/12/93

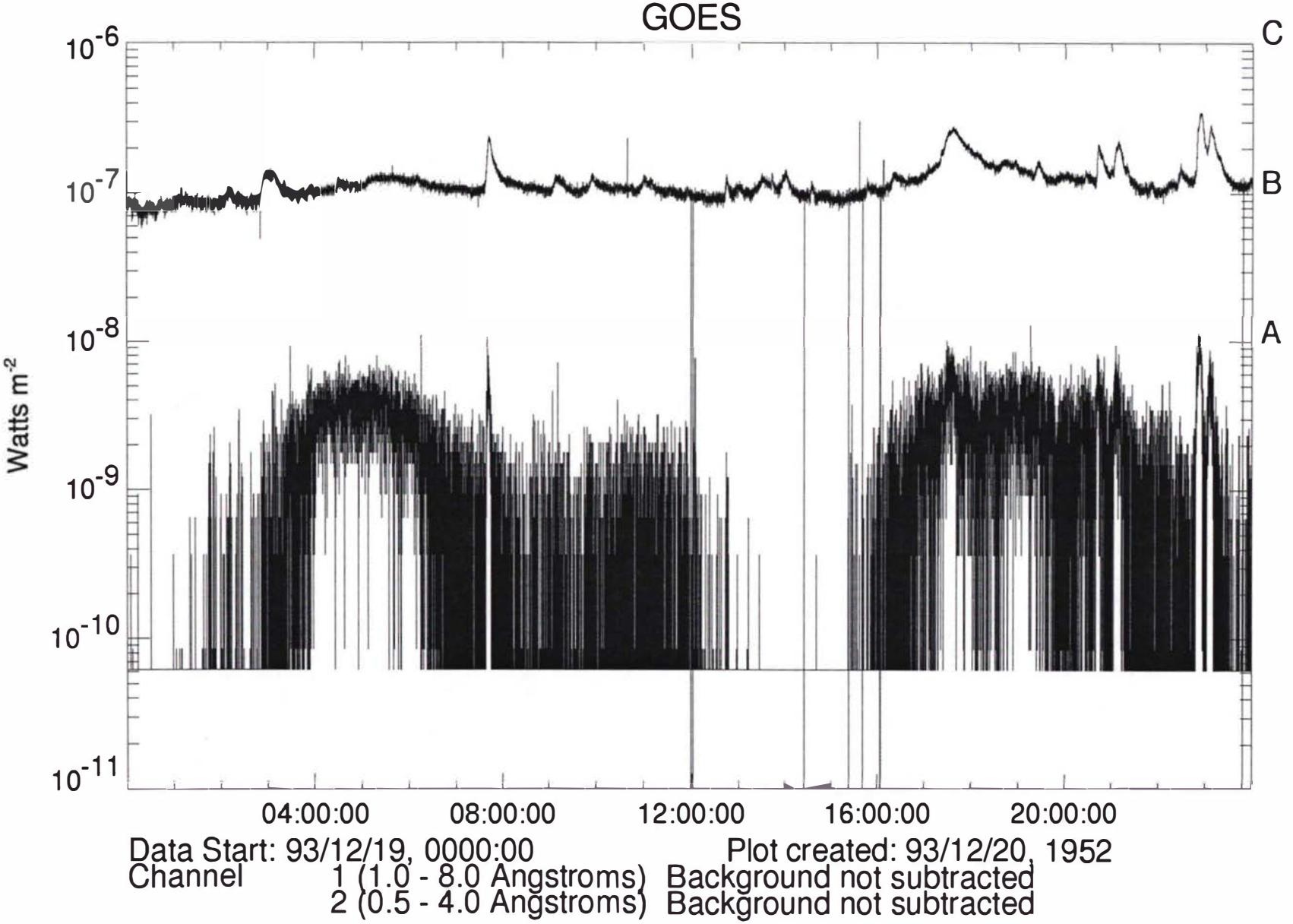
ULYSSES RT

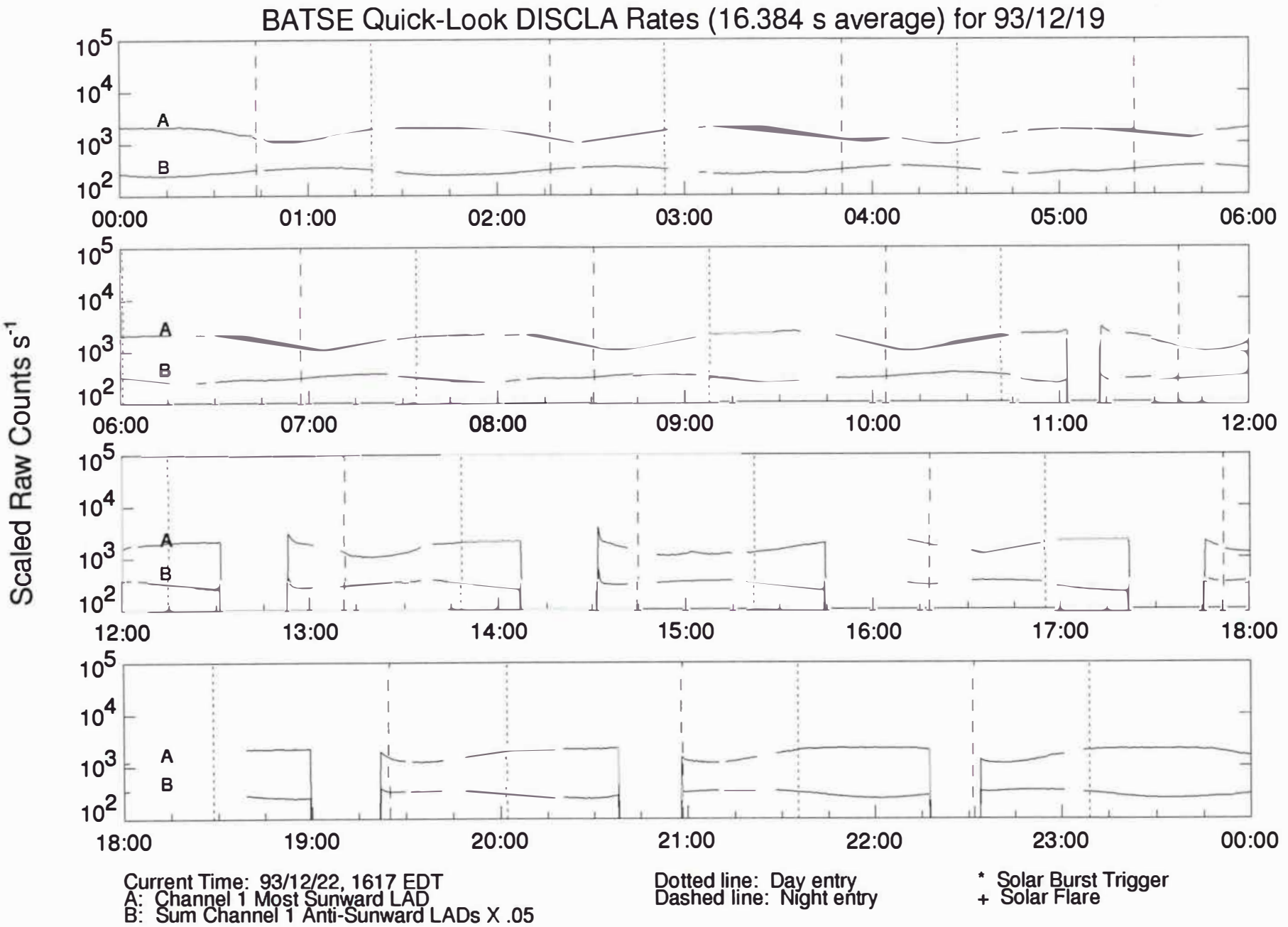
19/12/93 60876.004 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

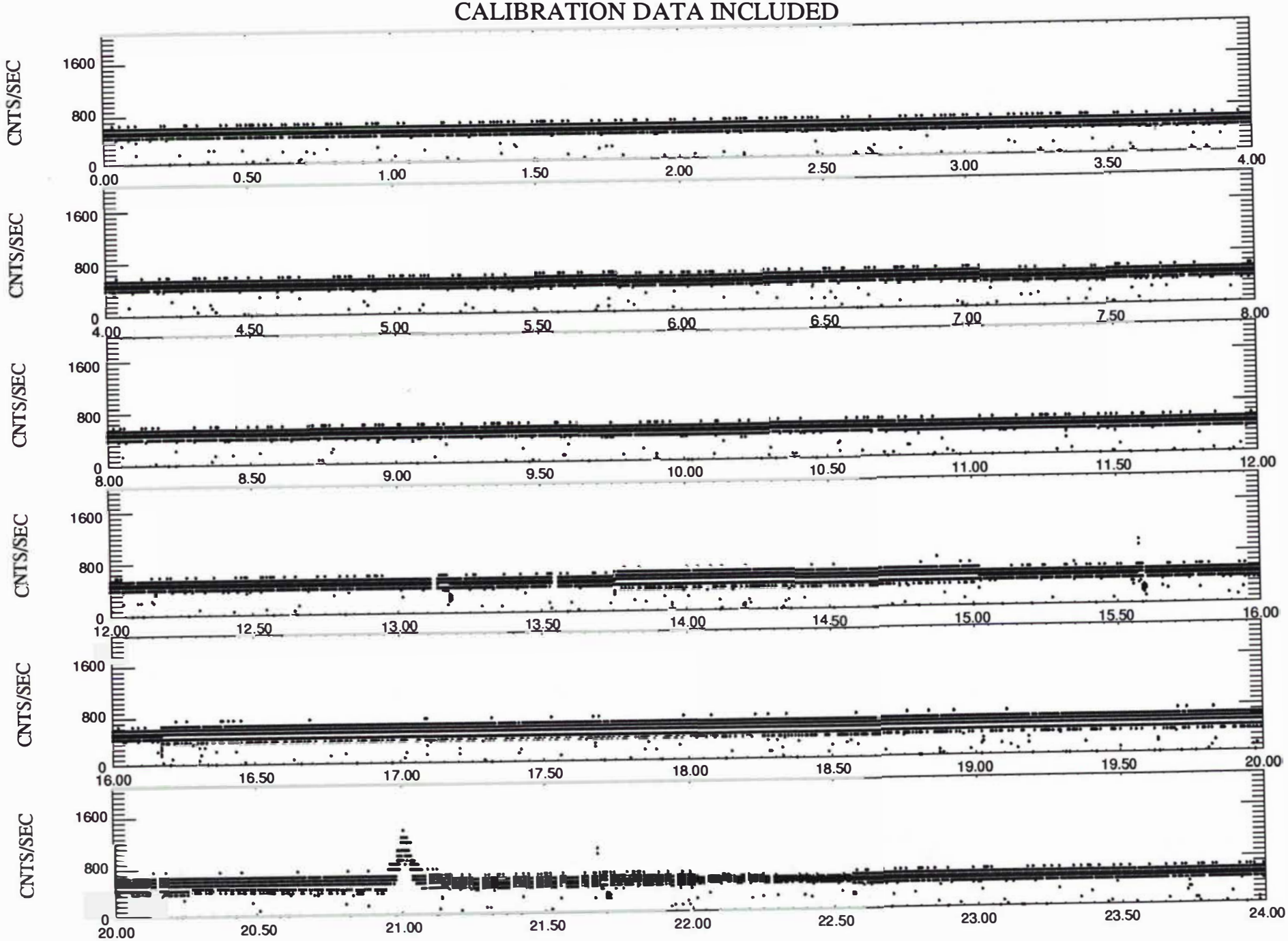



GOES
C
B
A
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/19, 0000:00
Plot created: 93/12/20, 1952
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/19
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/22, 1617 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS 2A, MODE 1, NOT AVERAGED EDR day 353, year 1993 to day 353, year 1993 2/9/94

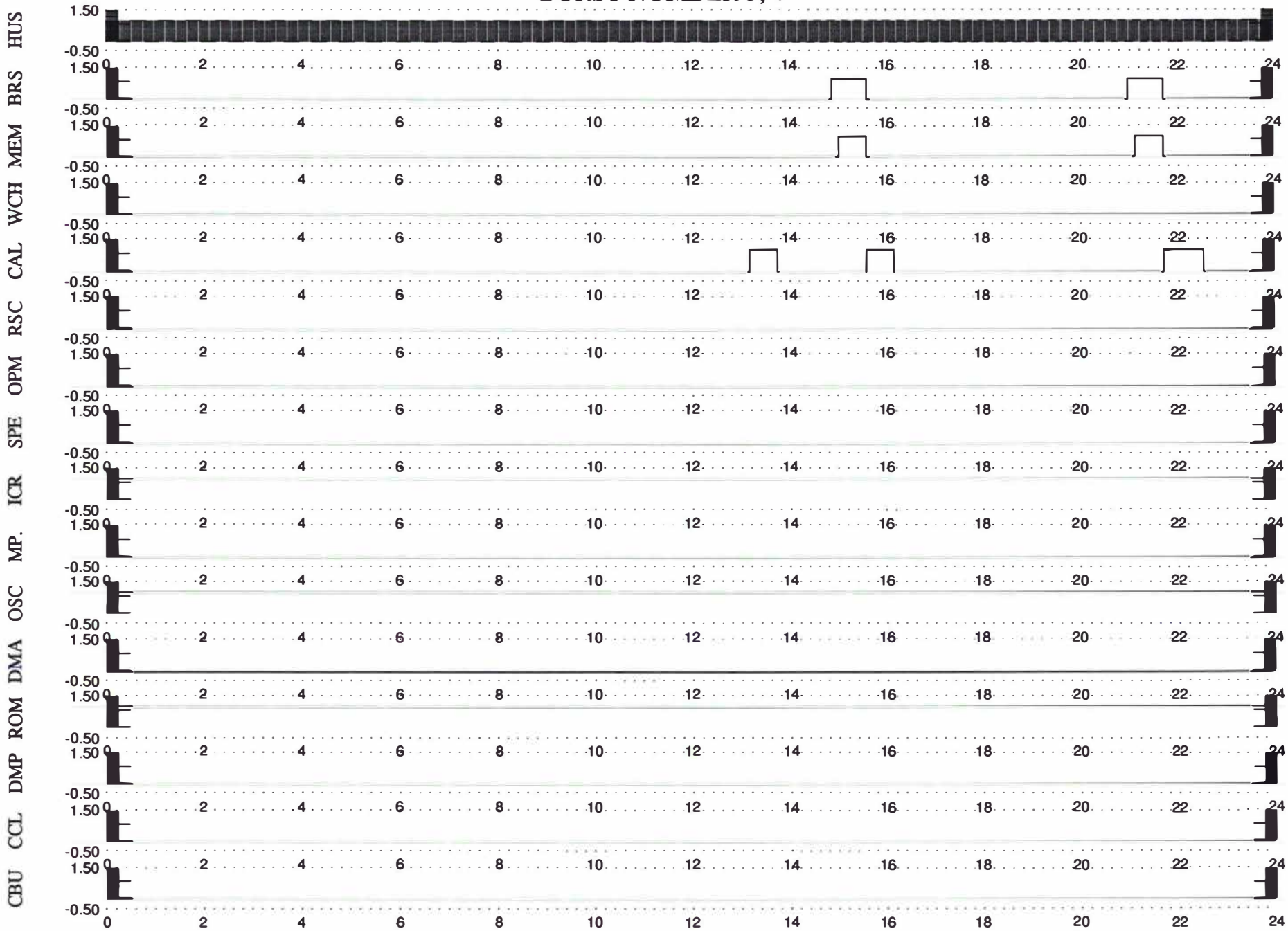
CALIBRATION DATA INCLUDED



UNIVERSAL TIME

HUS MODES EDR day 353, year 1993 to day 353, year 1993 2/9/94

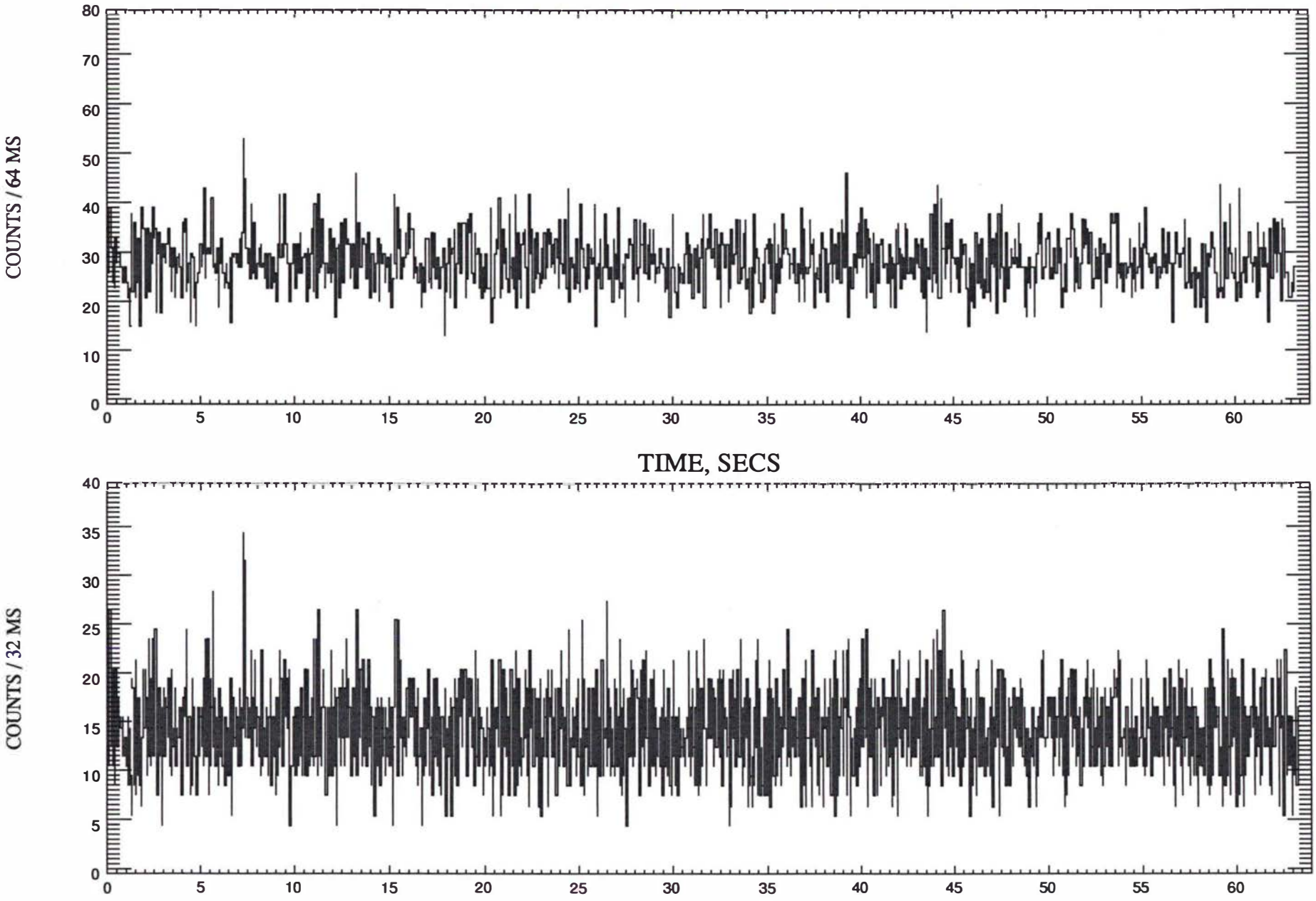
BURST NUMBER 3, 4



UNIVE AL TIME

HUS 2A TRIGGERED DATA EDR day 353, year 1993 2/9/94

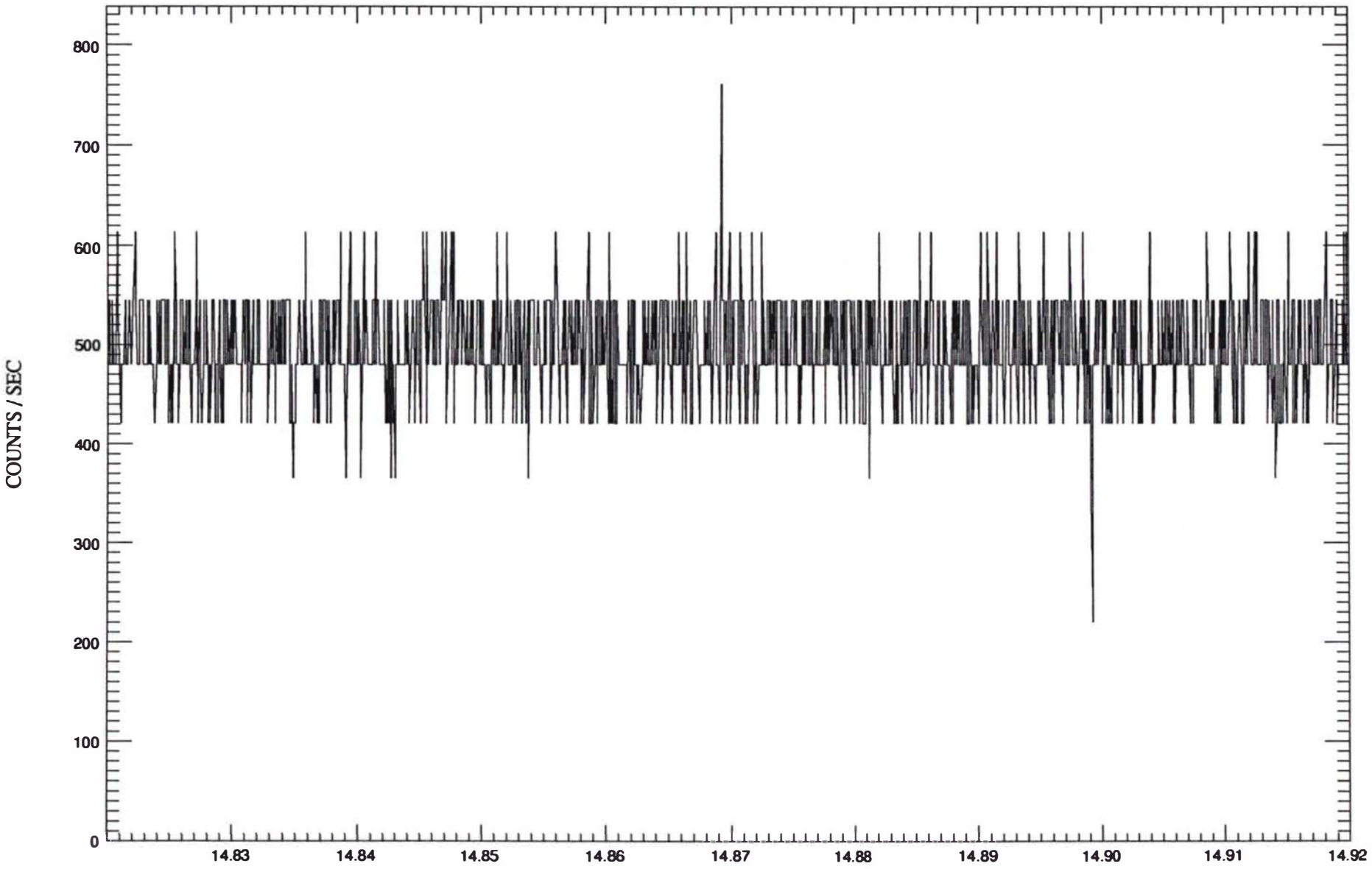
Burst Counter 3 at UT=14.869375440809 h=53529.752 s 14:52:09.752



B# 1

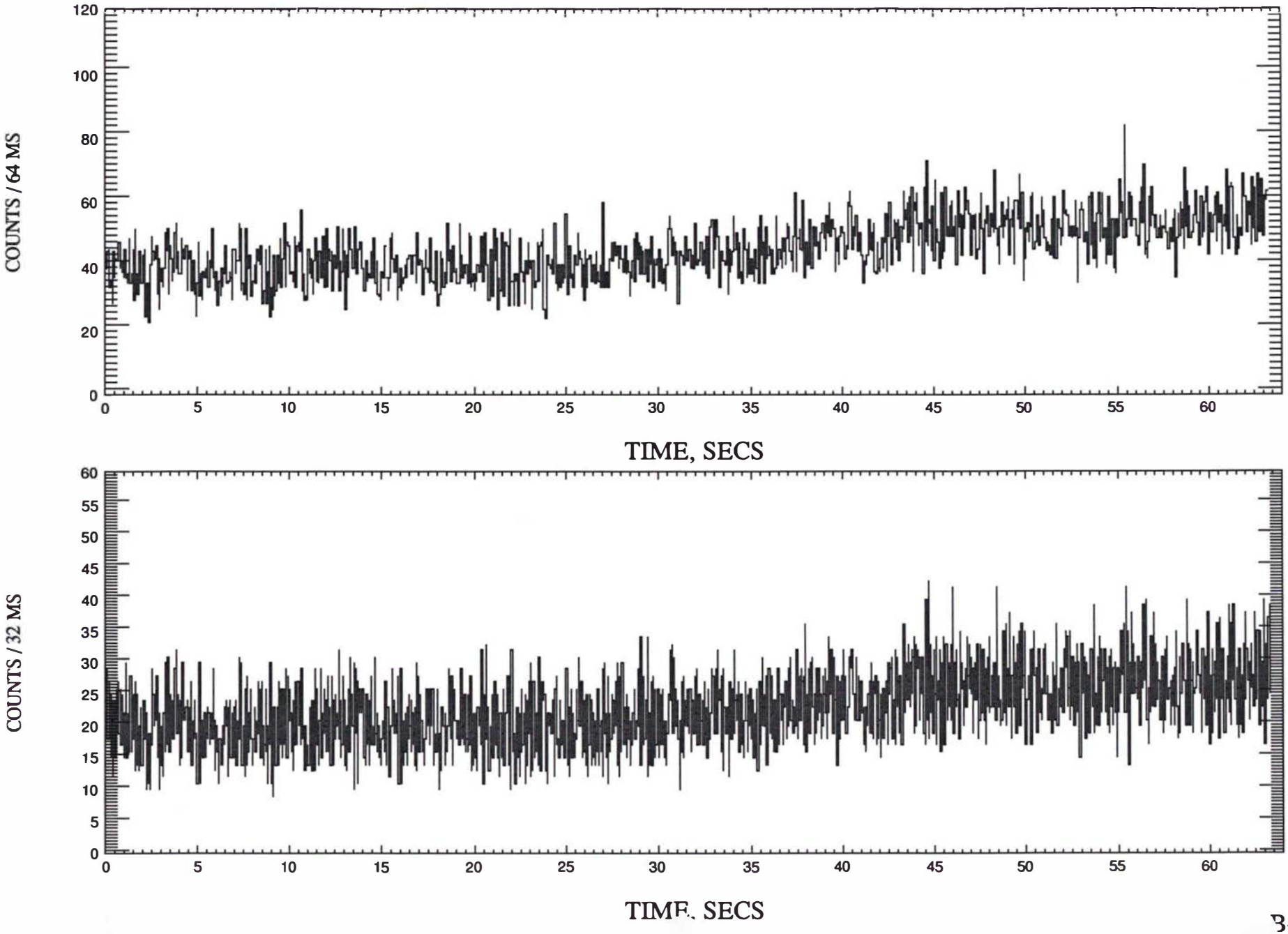
HUS 2A, MODE 1, NOT AVERAGED QEDR day 353, year 1993 to day 353, year 1993 12/20/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 353, year 1993 2/9/94

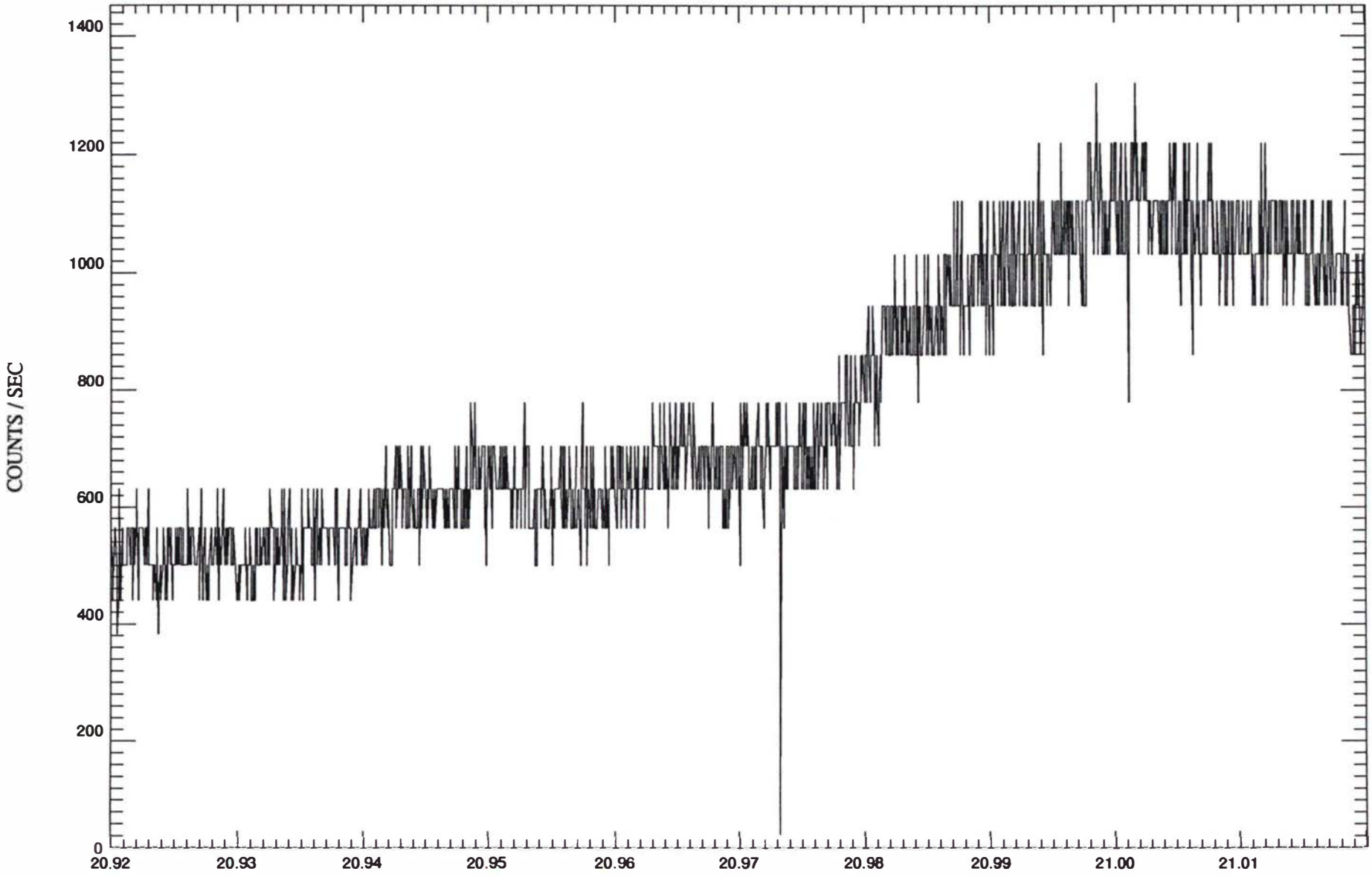
Burst Counter 4 at UT=20.971553399828 h=75497.592 s 20:58:17.592



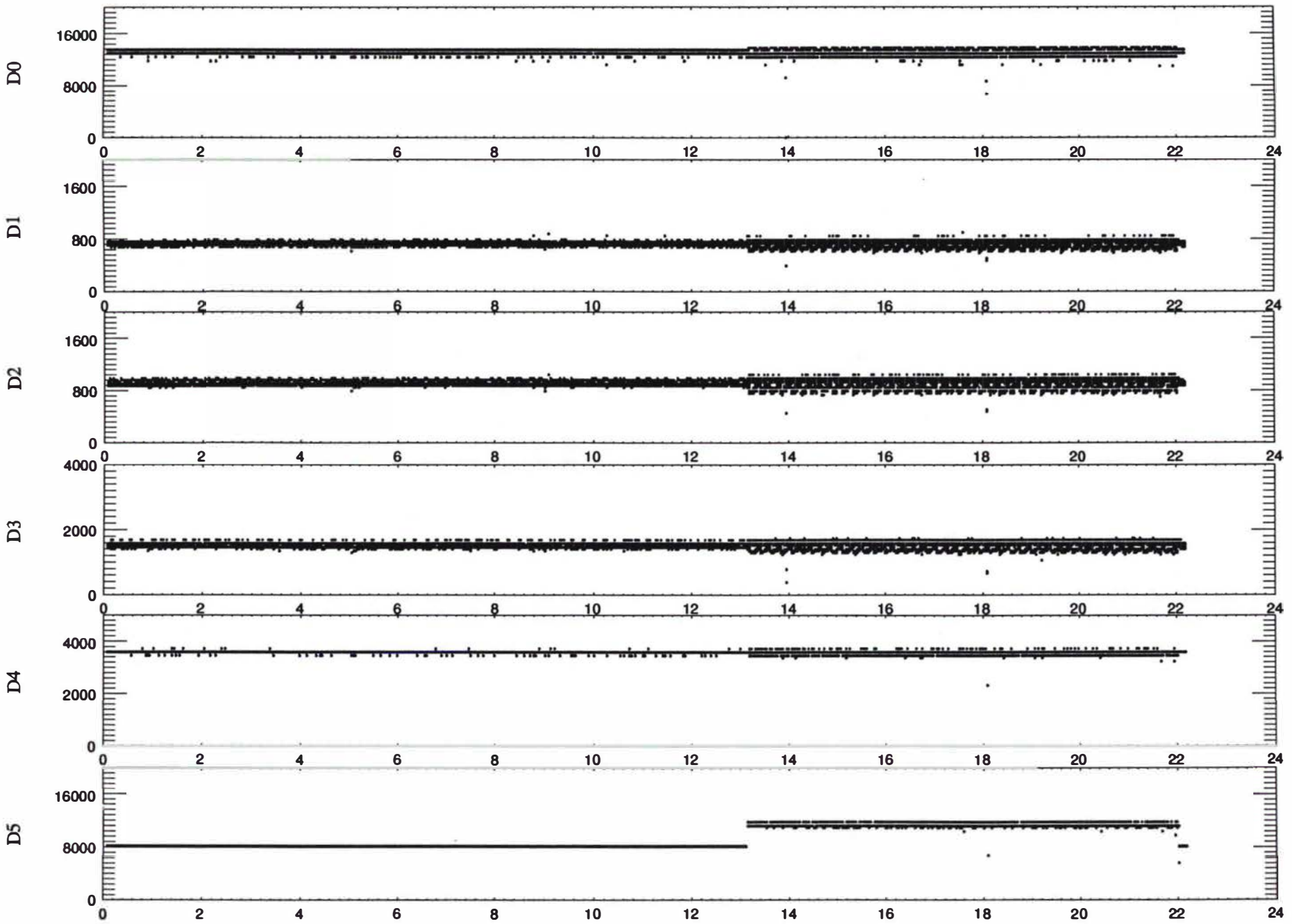
B# 2

HUS 2A, MODE 1, NOT AVERAGED QEDR day 353, year 1993 to day 353, year 1993 12/20/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 353, year 1993 to day 353, year 1993 12/20/93



Kommentar

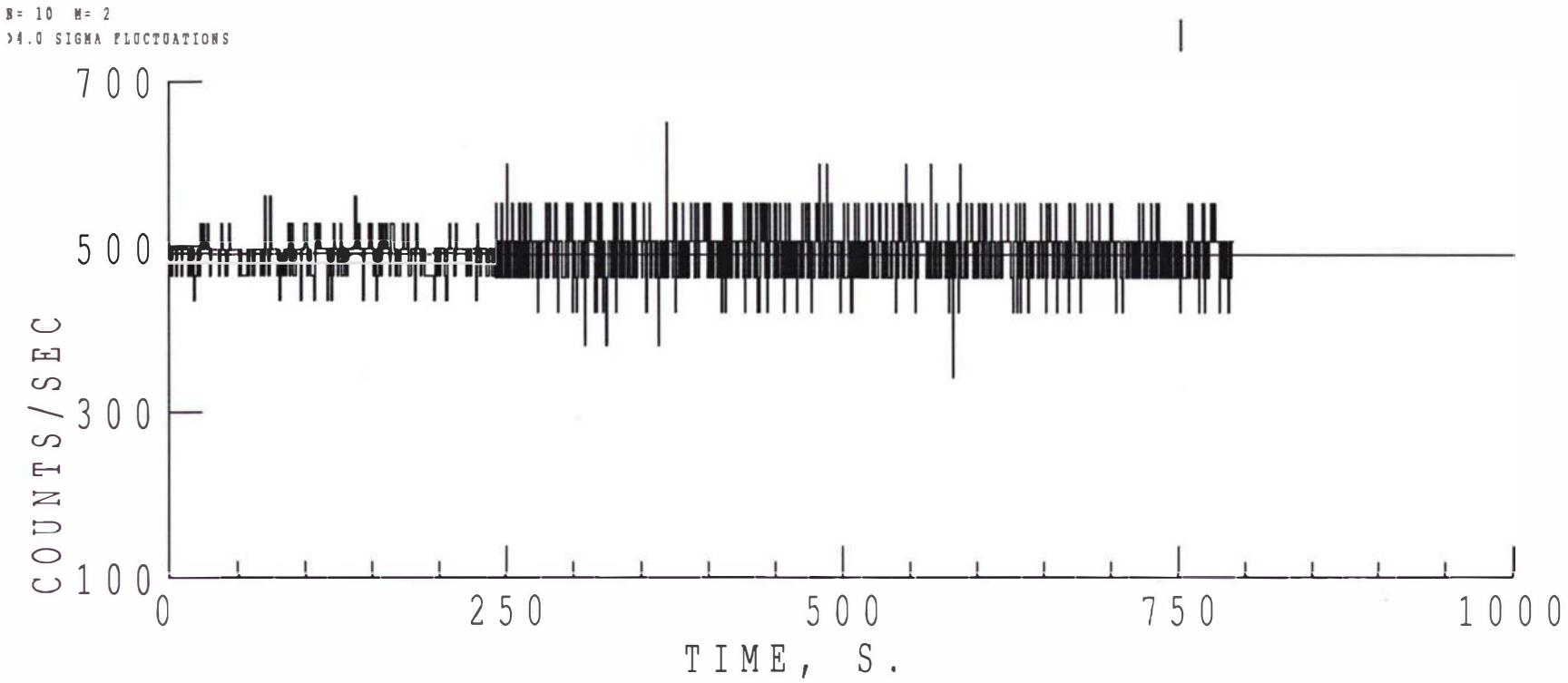
UNTRIGGERED

ULYSSES RT

22/ 5/97

20/12/93 13572.604 s

0- 0 keV



Kommers

UNTRIGGERED

ULYSSES RT

22/ 5/97

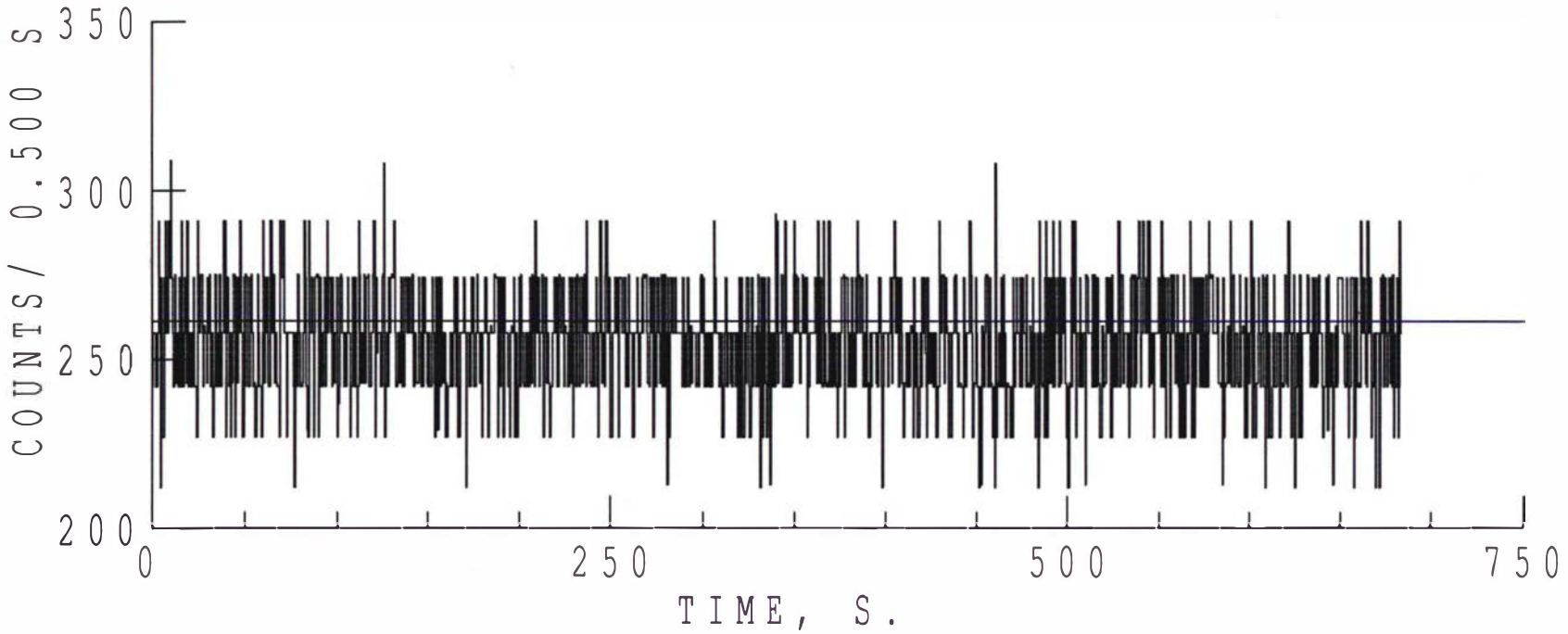
20/12/93 64080.141 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From KOSHUT@ssl.msfc.nasa.gov Tue Dec 21 12:35:17 1993
Date: Tue, 21 Dec 1993 14:39:16 -0600 (CST)
From: KOSHUT@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2699
Content-Length: 1135

```
         ******************
         *BATSEARCH PROGRAM*
         ******************

 BATSE BURST #    2699
 EVENT OF 1993 DEC 20 DAY OF YEAR=354
 EVENT CROSSING TIME AT BATSE      : 57001. S. OR 15:50:01.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 302.000   44.000
 BATSE PEAK COUNTING RATE:  33000    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 20/12/  93 IS:
 RA=  166.237 DEC=  -38.761 DIST=    3.859 AU
 BATSE-ULYSSES DISTANCE =  577343061. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 33.20 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1611.48 SECS.
 CROSSING TIME AT ULYSSES    IS 58612. S. OR   16:16:52 +/-  257.54 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 20/12/  93 IS:
 RA=  269.982 DEC=  -24.175 DIST=    2.435 AU
 MARS-BATSE DISTANCE =  364318816. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=105.78 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -330.48 SECS.
 CROSSING TIME AT MARS       IS 56671. S. OR   15:44:30 +/-  198.01 SECONDS
```

NO - but it was intense enough to be observable

From KOSHUT@ssl.msfc.nasa.gov Tue Dec 21 13:58:06 1993
Date: Tue, 21 Dec 1993 15:26:27 -0600 (CST)
From: KOSHUT@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Cc: KOSHUT@ssl.msfc.nasa.gov
Subject: BATSE Burst 2699
Content-Length: 108

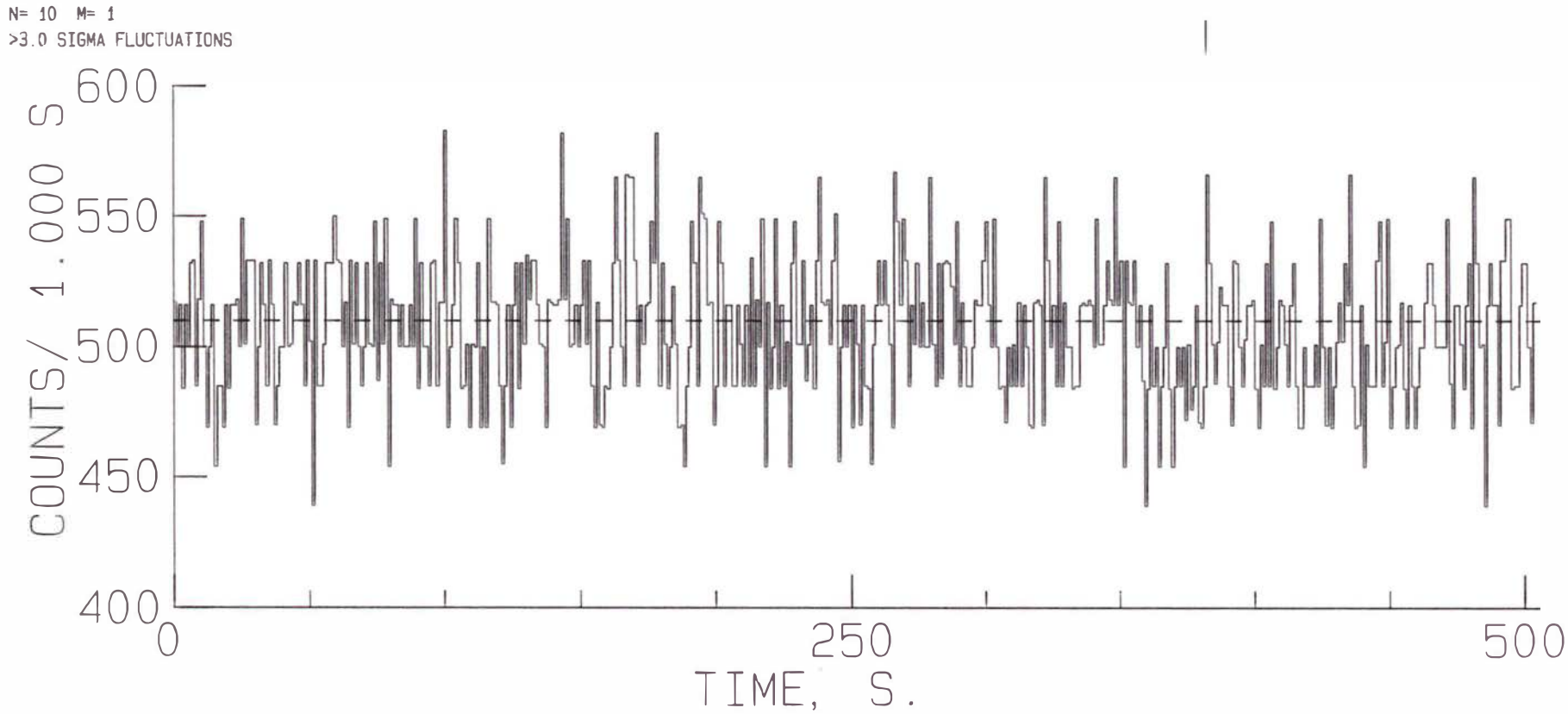
BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2699	931220	9341	57001	33000	302	+44

ULYSSES RT 7/ 8/95

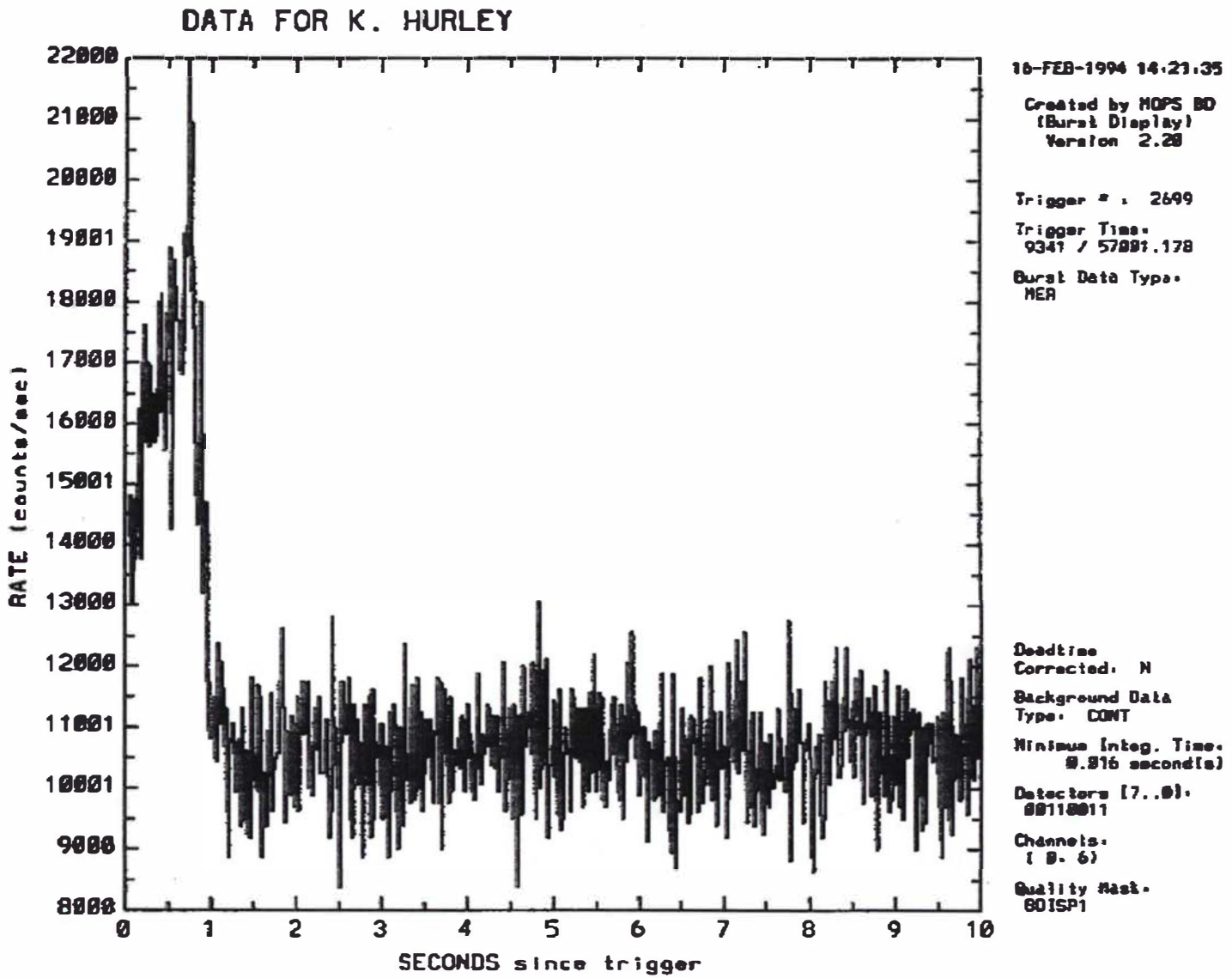
20/12/93 58356.047 s

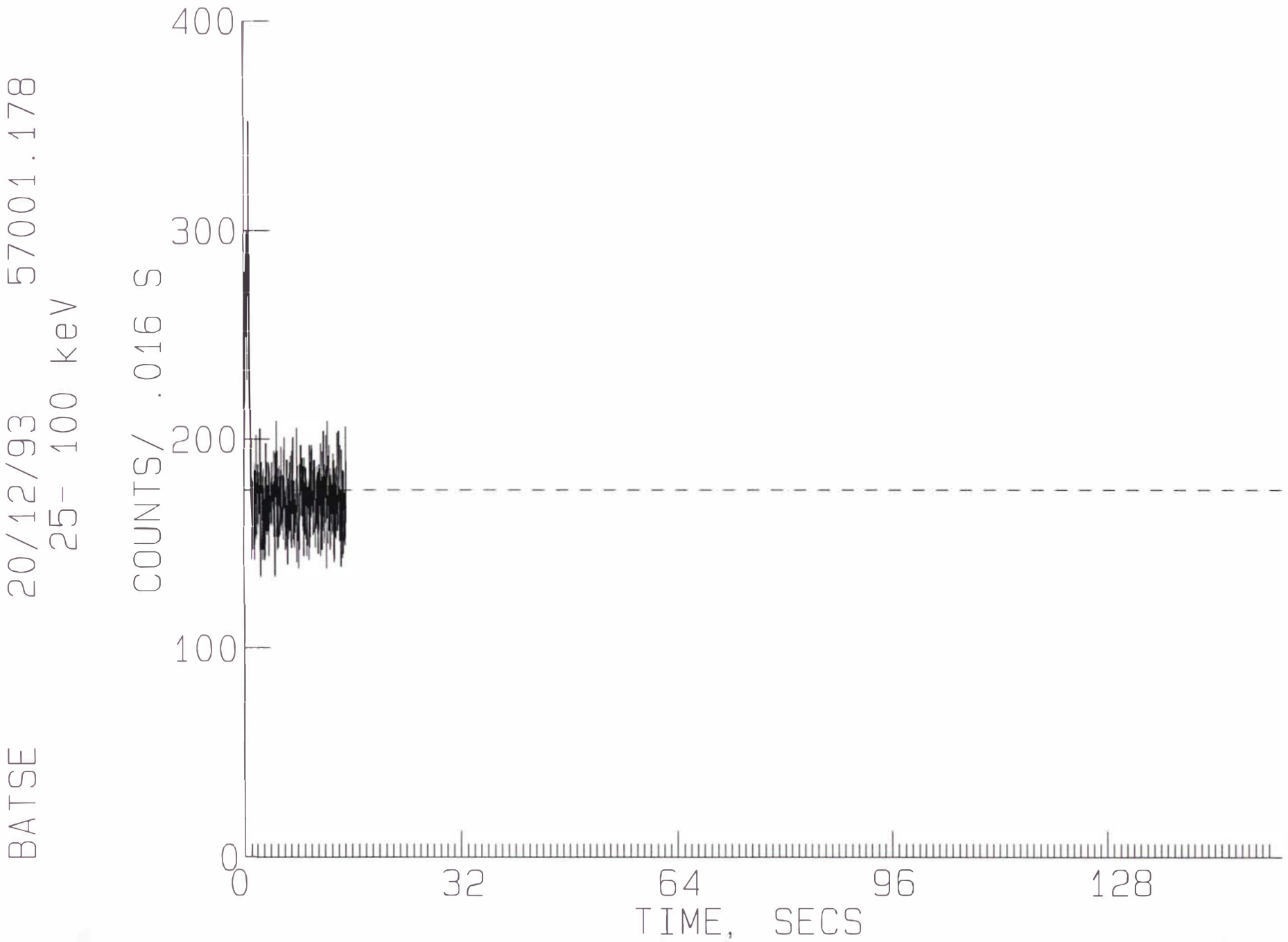
.250 S INTERVALS REGROUPED BY 4

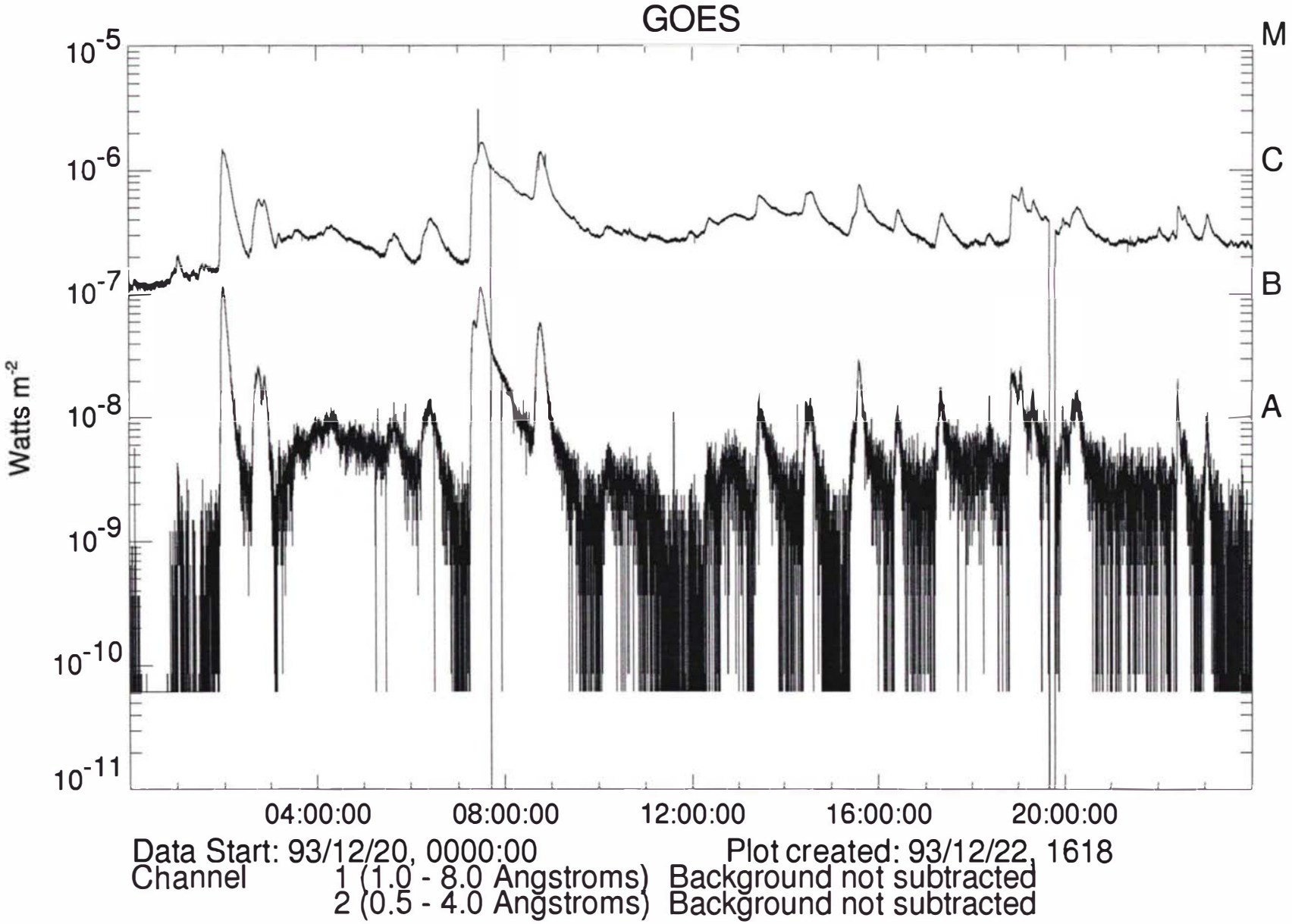
21- 143 keV

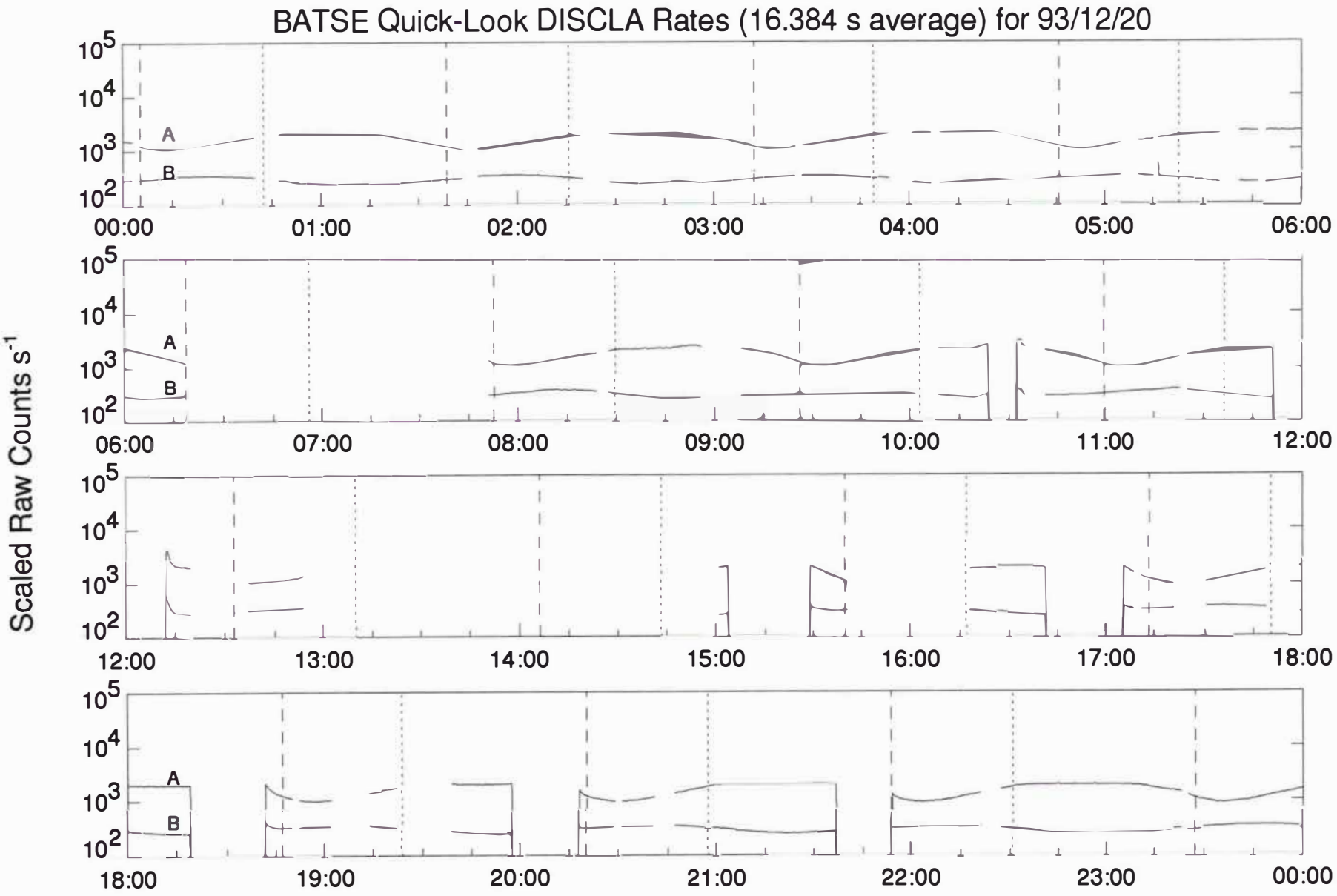


5000 c/s excess × 1 s = 5000 c
⇒ 50 - 100 Ulysses c



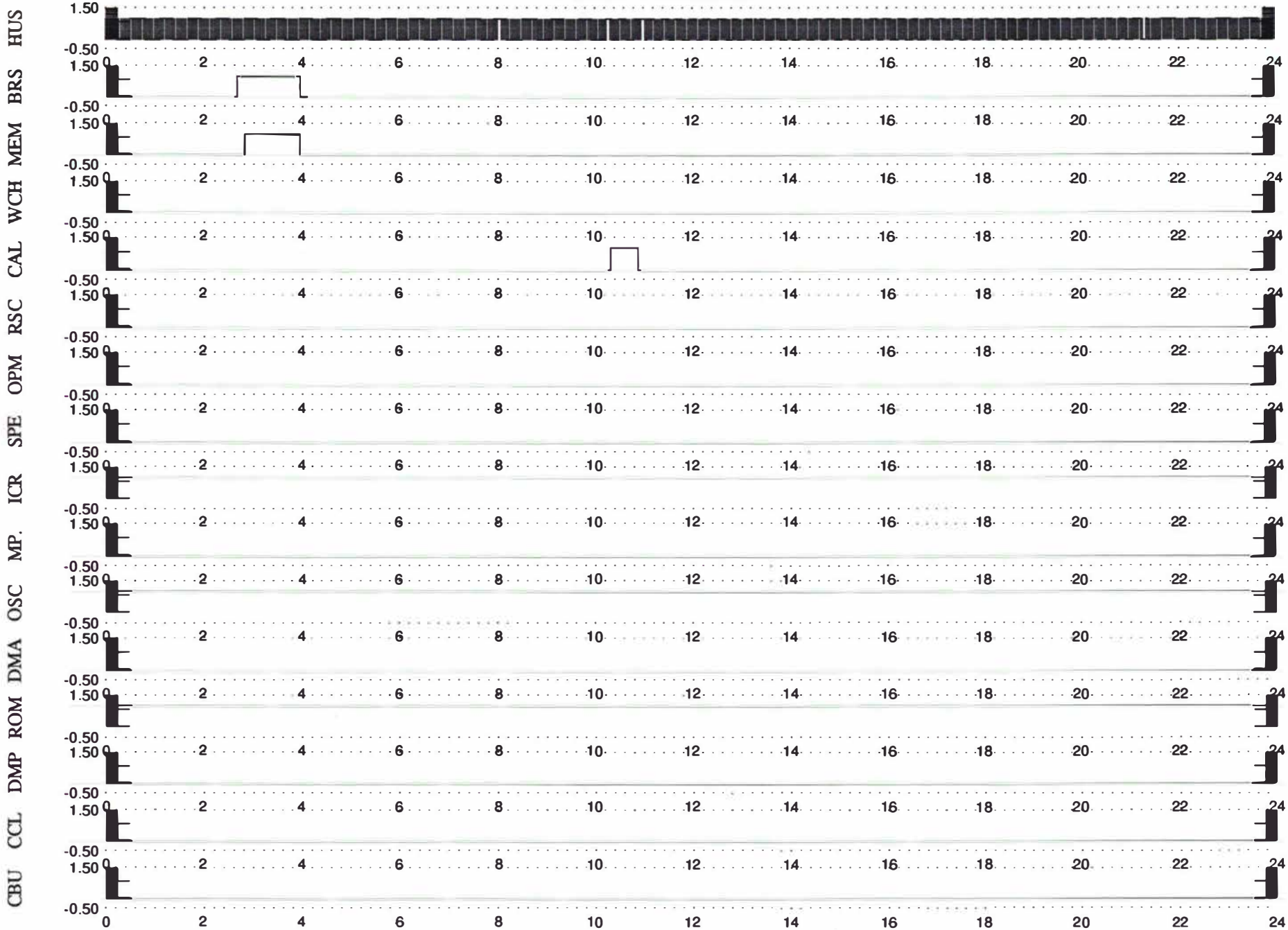

BATSE 20/12/93 57001.178
25- 100 keV
COUNTS/ .016 S
400
300
200
100
0
0
32
64
96
128
TIME, SECS


GOES
M
C
B
A
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/20, 0000:00
Plot created: 93/12/22, 1618
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/20
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 93/12/22, 1617 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

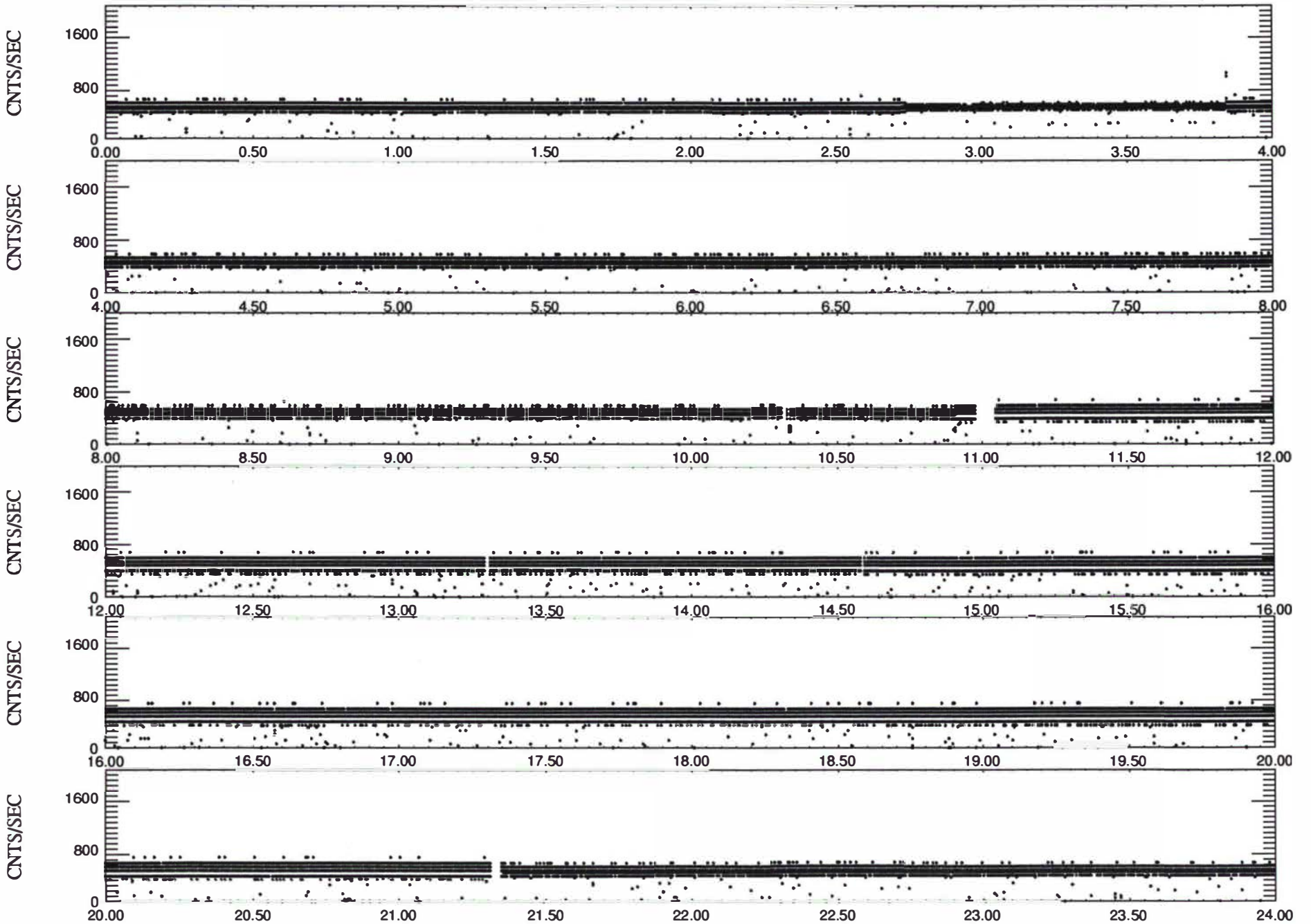
HUS MODES EDR day 354, year 1993 to day 354, year 1993 2/9/94

BURST NUMBER 5



HUS 2A, MODE 1, NOT AVERAGED EDR day 354, year 1993 to day 354, year 1993 2/9/94

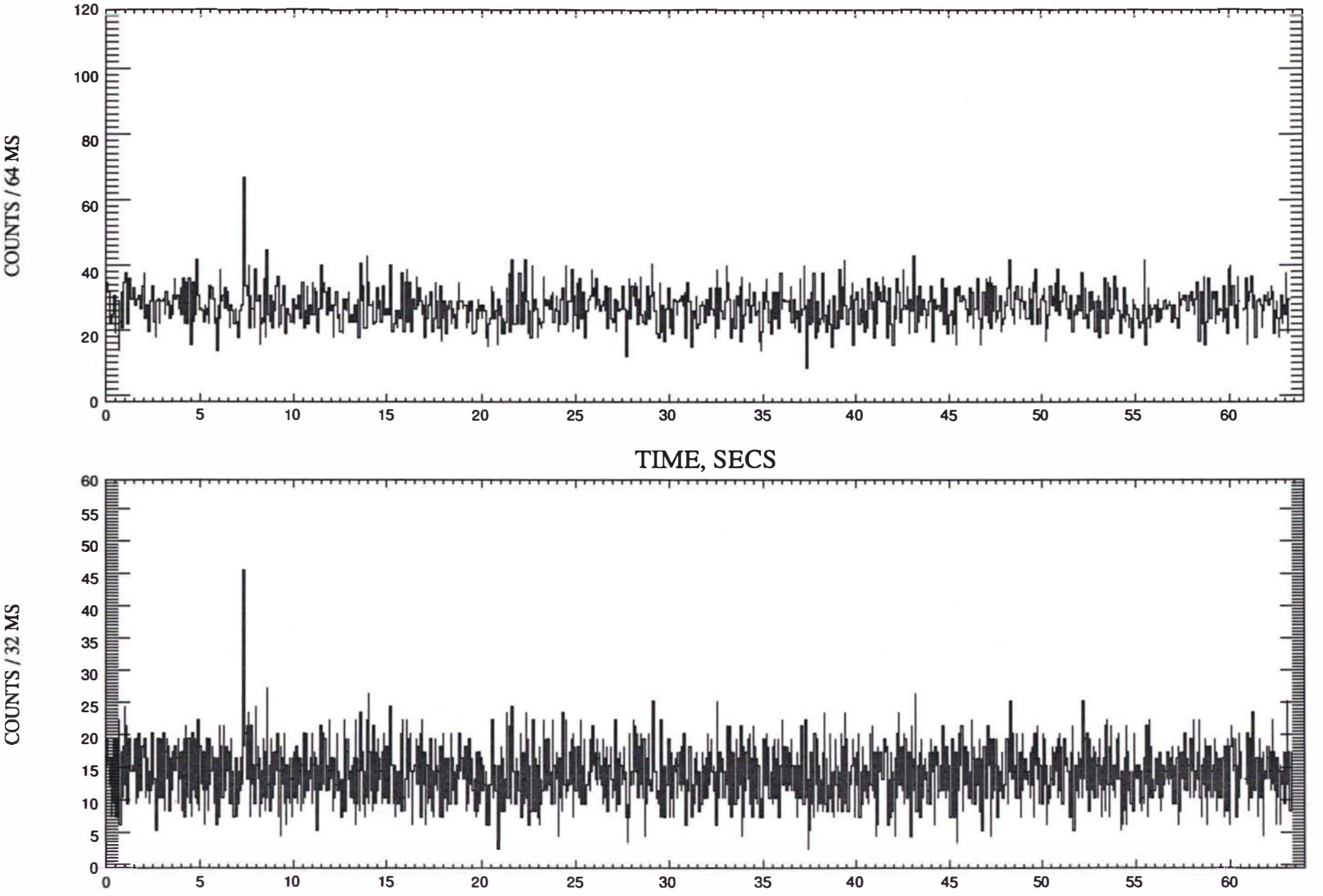
CALIBRATION DATA INCLUDED



UNIVE AL TIME

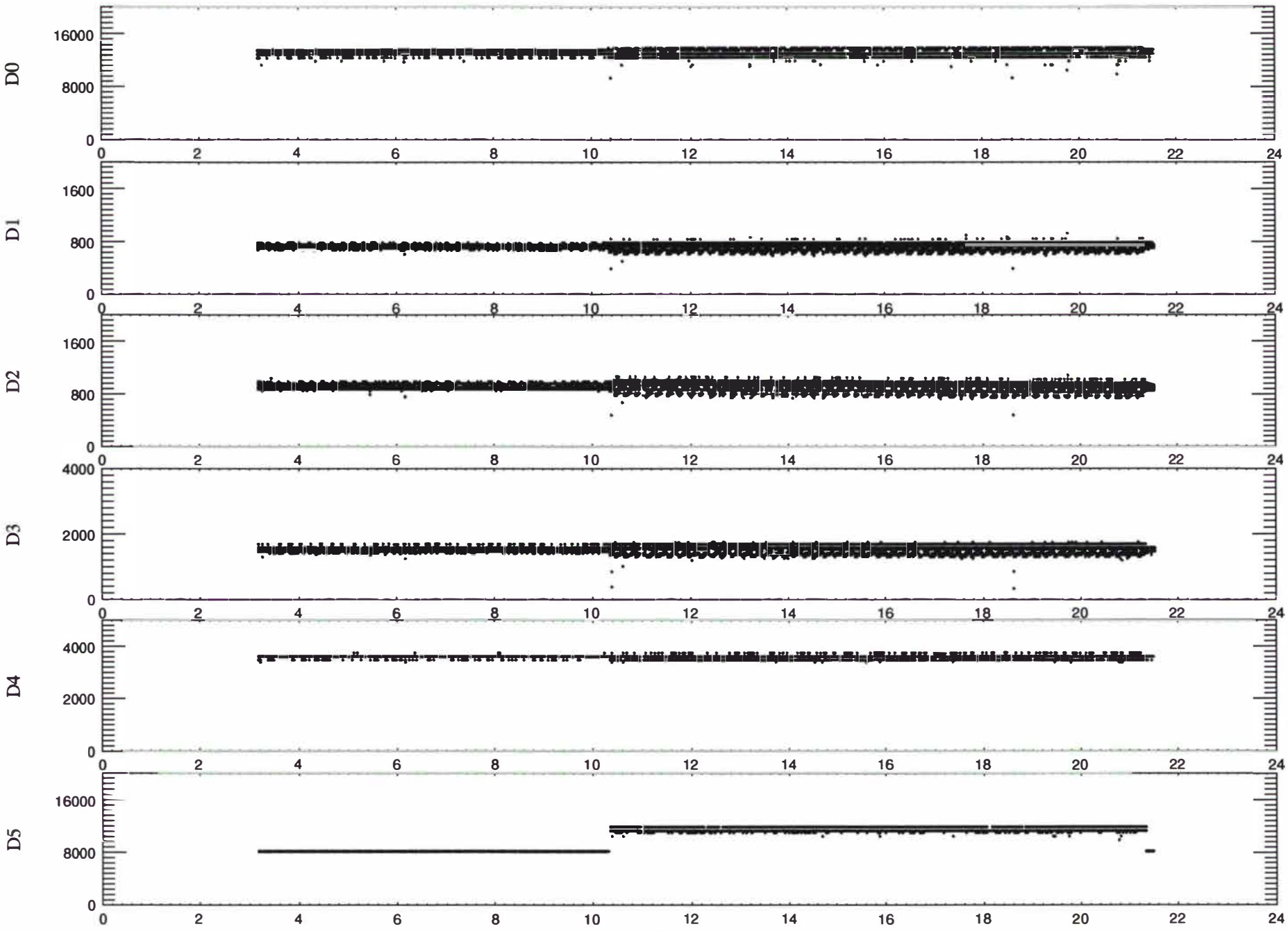
HUS 2A TRIGGERED DATA EDR day 354, year 1993 2/9/94

Burst Counter 5 at UT= 2.578689727783 h= 9283.283 s 02:34:43.283



B# 1

HUS 2B COUNTS / SEC QEDR day 354, year 1993 to day 354, year 1993 12/21/93



****
BATSEARCH PROGRAM
****

BATSE BURST #2700
EVENT OF 1993 DEC 21 DAY OF YEAR=355
EVENT CROSSING TIME AT BATSE : 7790. S. OR 02:09:50.0
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 90.000 -43.000
BATSE PEAK COUNTING RATE: 16000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 21/12/ 93 IS:
RA= 166.211 DEC= -38.875 DIST= 3.852 AU
BATSE-ULYSSES DISTANCE = 576233484. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=124.32 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1083.58 SECS.
CROSSING TIME AT ULYSSES IS 6706. S. OR 01:51:46 +/- 309.17 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 21/12/ 93 IS:
RA= 270.807 DEC= -24.181 DIST= 2.434 AU
MARS-BATSE DISTANCE = 364165400. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 67.18 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 471.03 SECS.
CROSSING TIME AT MARS IS 8261. S. OR 02:17:41 +/- 201.55 SECONDS
02:51:04 +/- 50.85 SECONDS
FOUND
POSITION OF MARS ON 31/10/ 93 IS:
RA= 230.966 DEC= -18.904 DIST= 2.446 AU
MARS-BATSE DISTANCE = 365982100. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 69.72 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 423.23 SECS.
CROSSING TIME AT MARS IS 15218. S. OR 04:13:38 +/- 205.23 SECONDS
S. OR 07:44:36 +/- 87.29 SECONDS
1 SECS.
CROSSING TIME AT MARS IS 76832. S. OR 21:20:32 +/- 209.62 SECONDS
NDS
IGHT TRAVEL TIME ALONG PROJECTED PATH= -231.60 SECS.
CROSSING TIME AT MARS IS 5896. S. OR 01:38:16 +/- 16.51 SECONDS

RI

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2700	931221	9342	07790	16000	090	-43

BATSE BURST TRIGGER
NO.: 02700

TIME: TJD=9342 SECONDS=07790

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= 99. AZIMUTH=269. ERROR= DEGREES

COMMENTS:
STRONG EVENT LASTING ABOUT 70 S. SEEN ABOVE 300 KEV.

Helio corr removed

Date: Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad stats

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

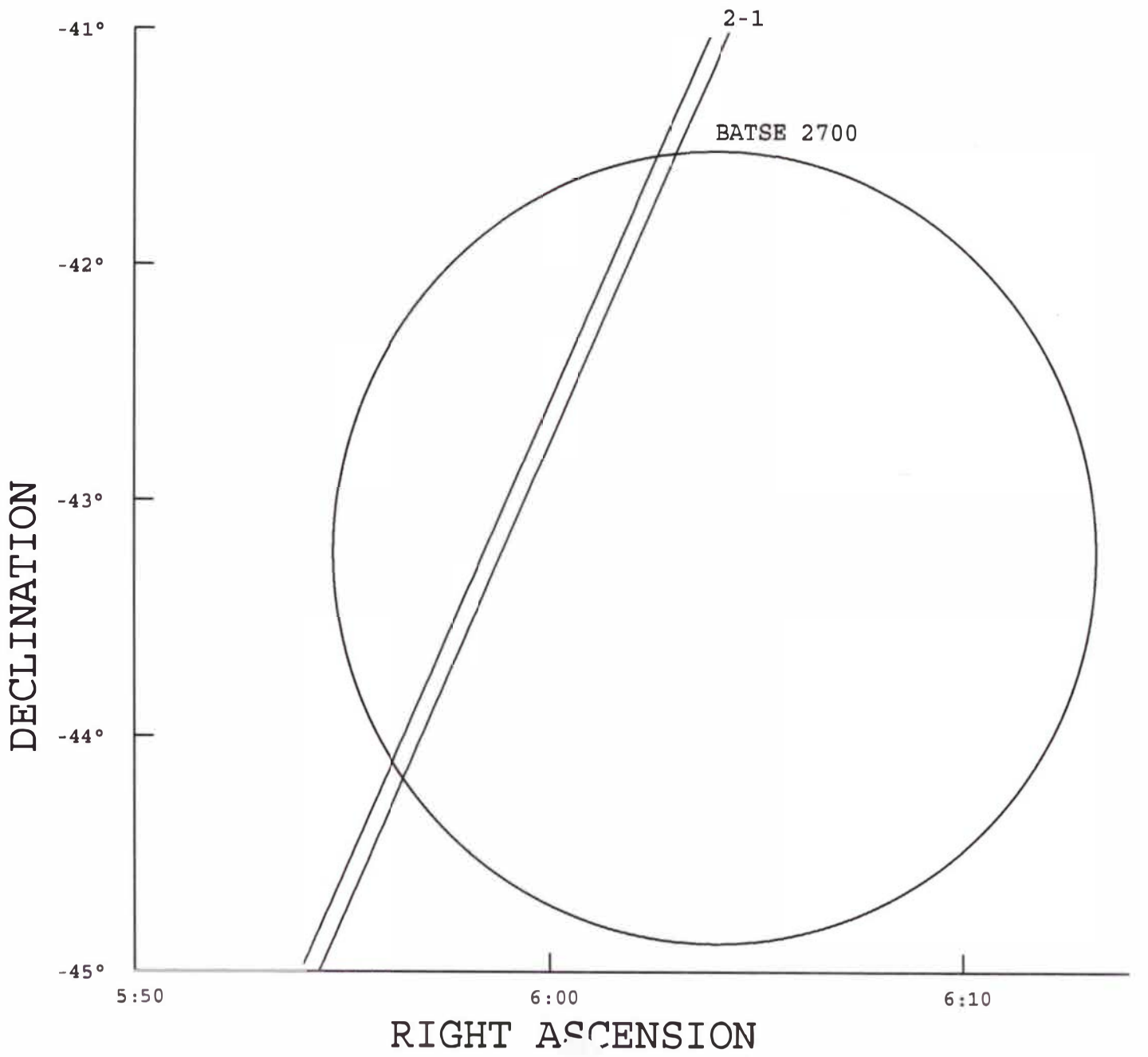
☐ Geocentric time used?

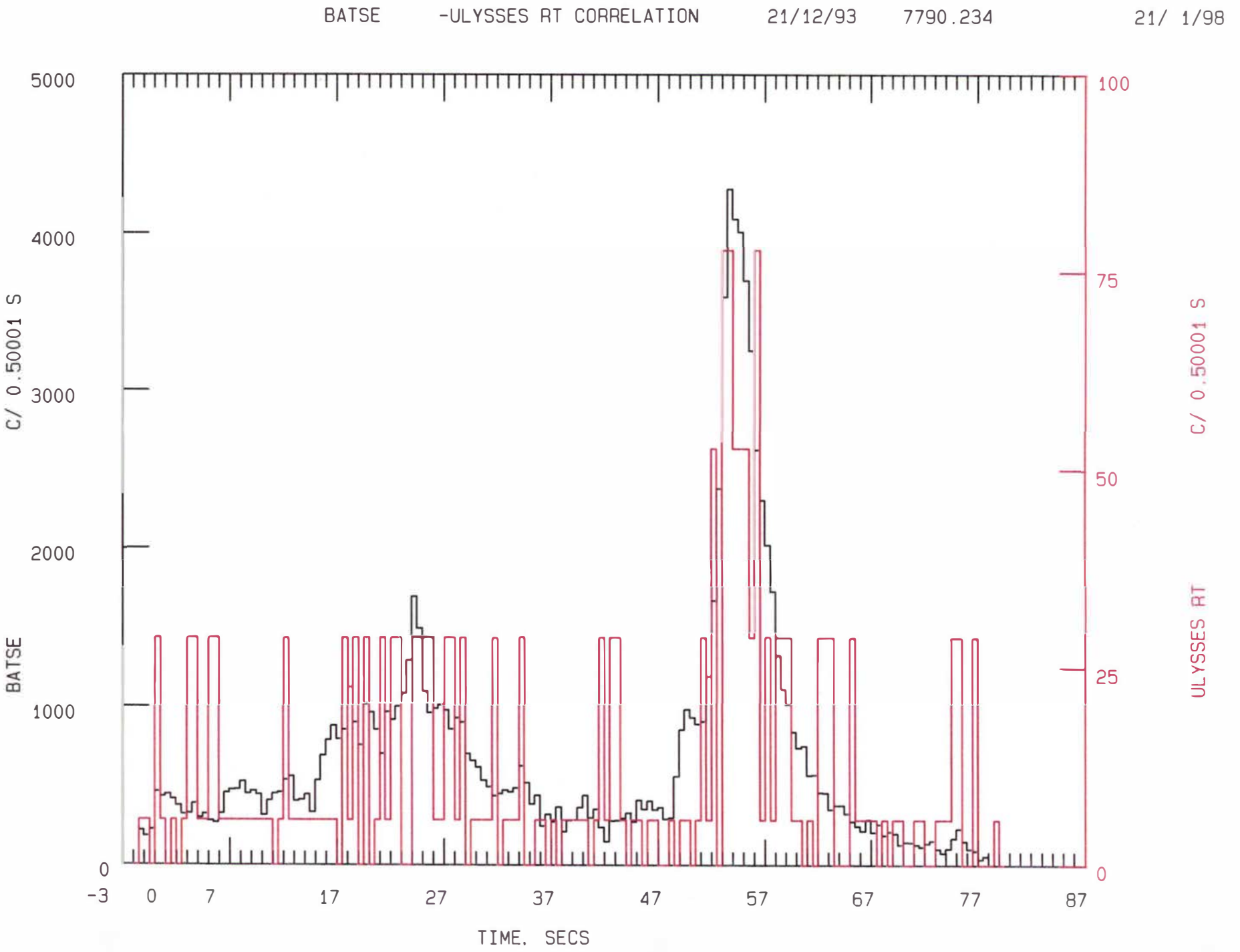
☑ ACCESS database updated?

EVENT OF DEC 21, 1993 1:50

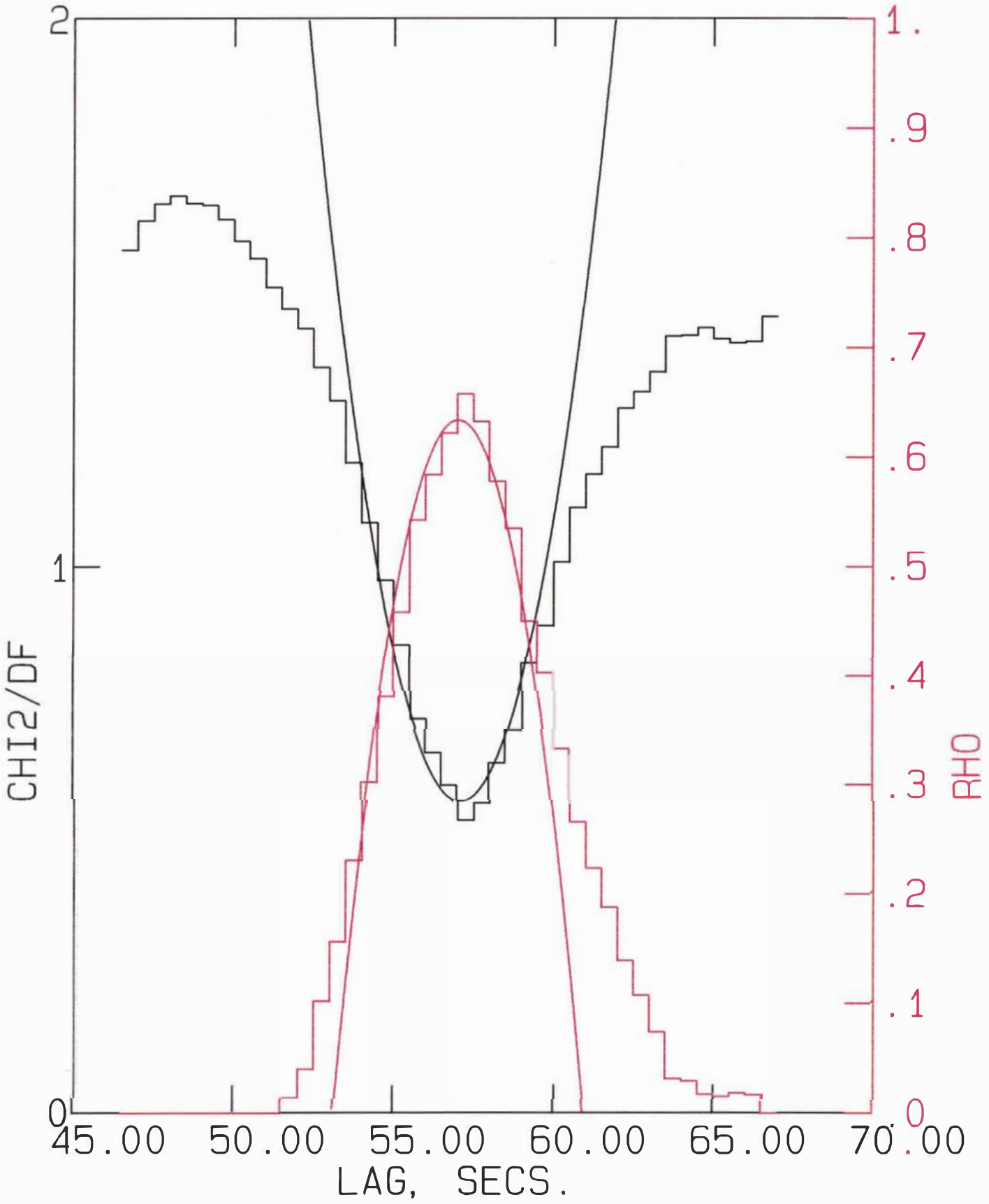
21/ 1/98

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 21/12/93 7790.234 21/ 1/98
5000
4000
3000
2000
1000
0
C/ 0.50001 S
BATSE
100
75
50
25
0
C/ 0.50001 S
ULYSSES RT
-3
0
7
17
27
37
47
57
67
77
87
TIME, SECS

BATSE -ULYSSES RT CORRELATION 21/12/93 7790.234

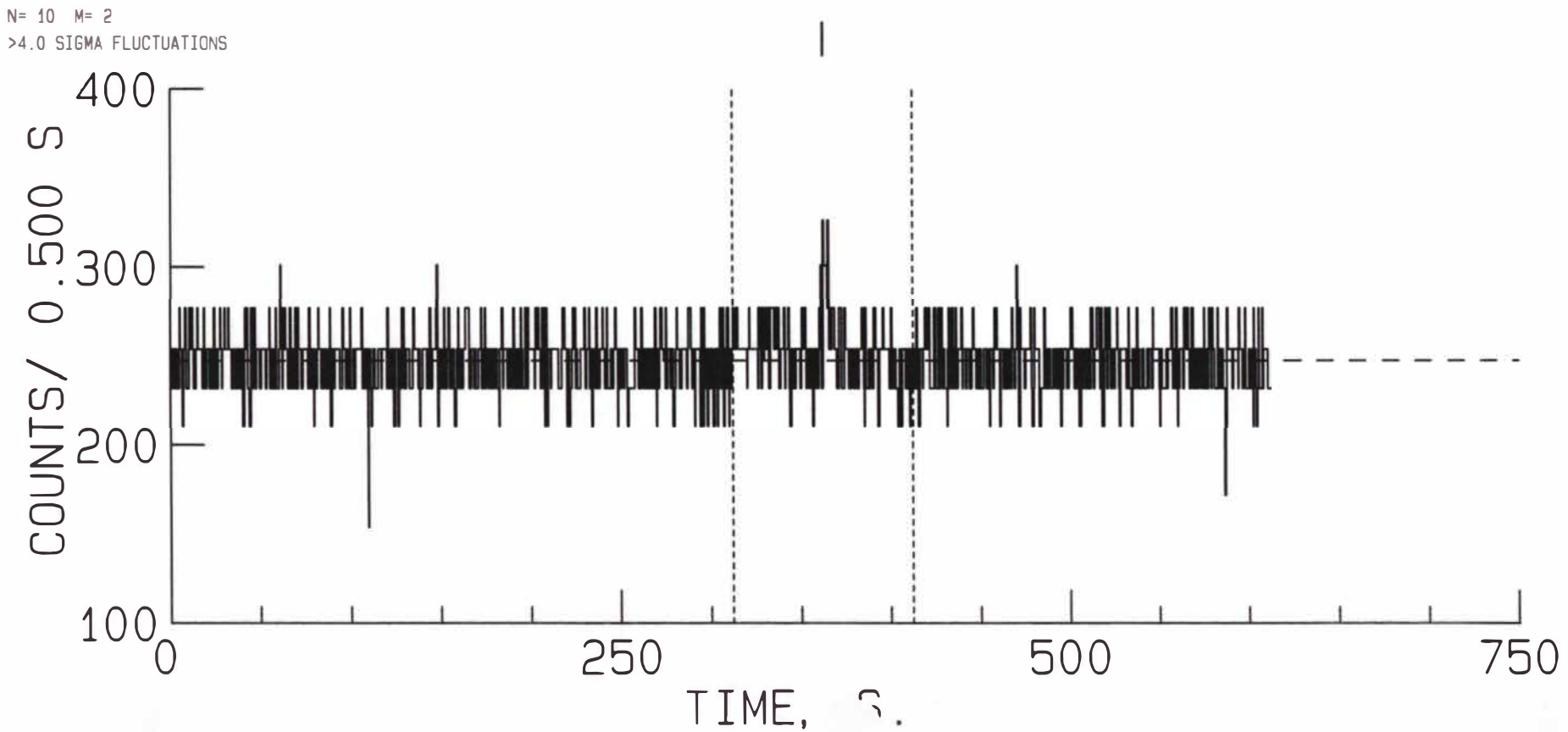


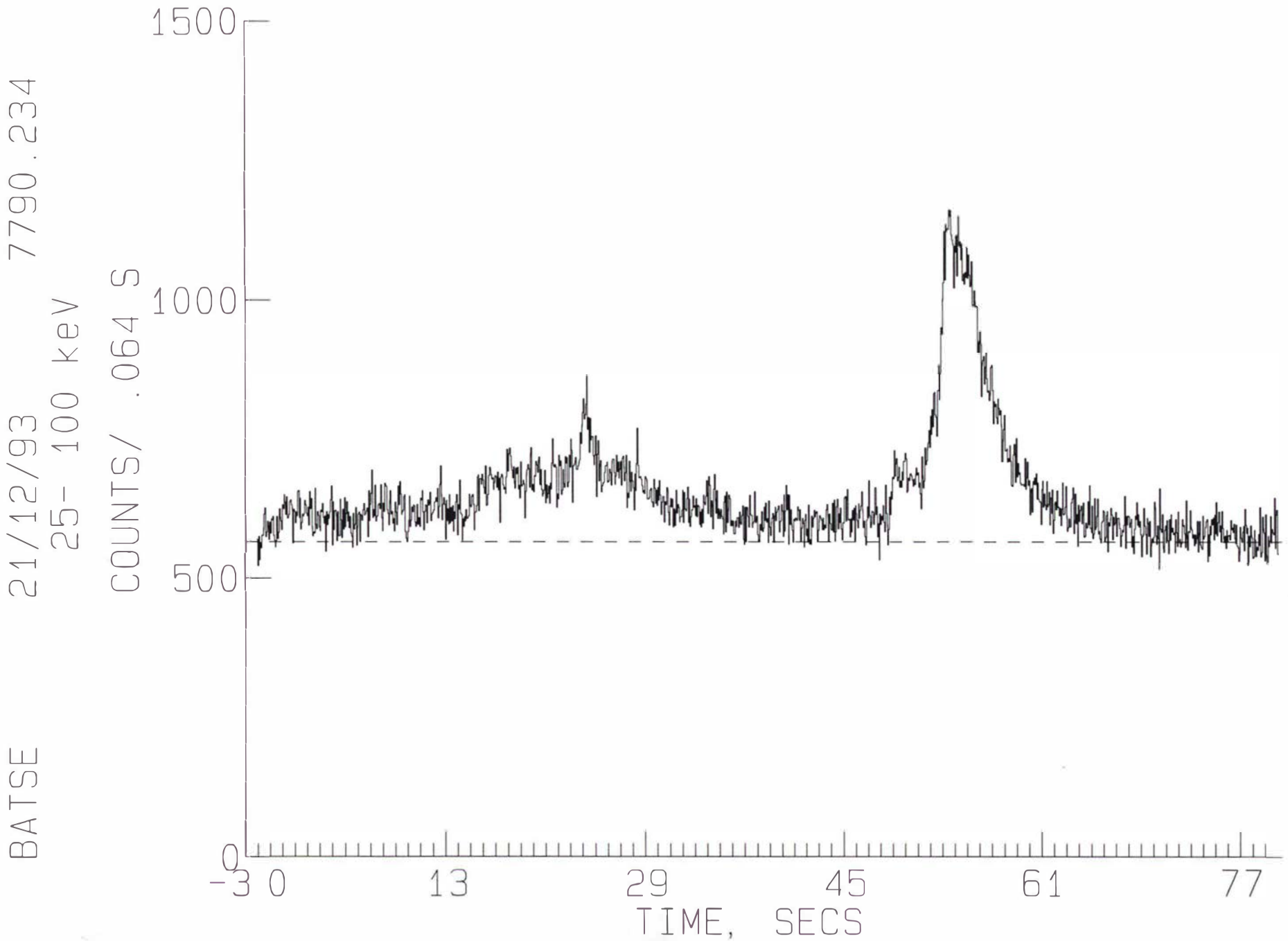
ULYSSES RT

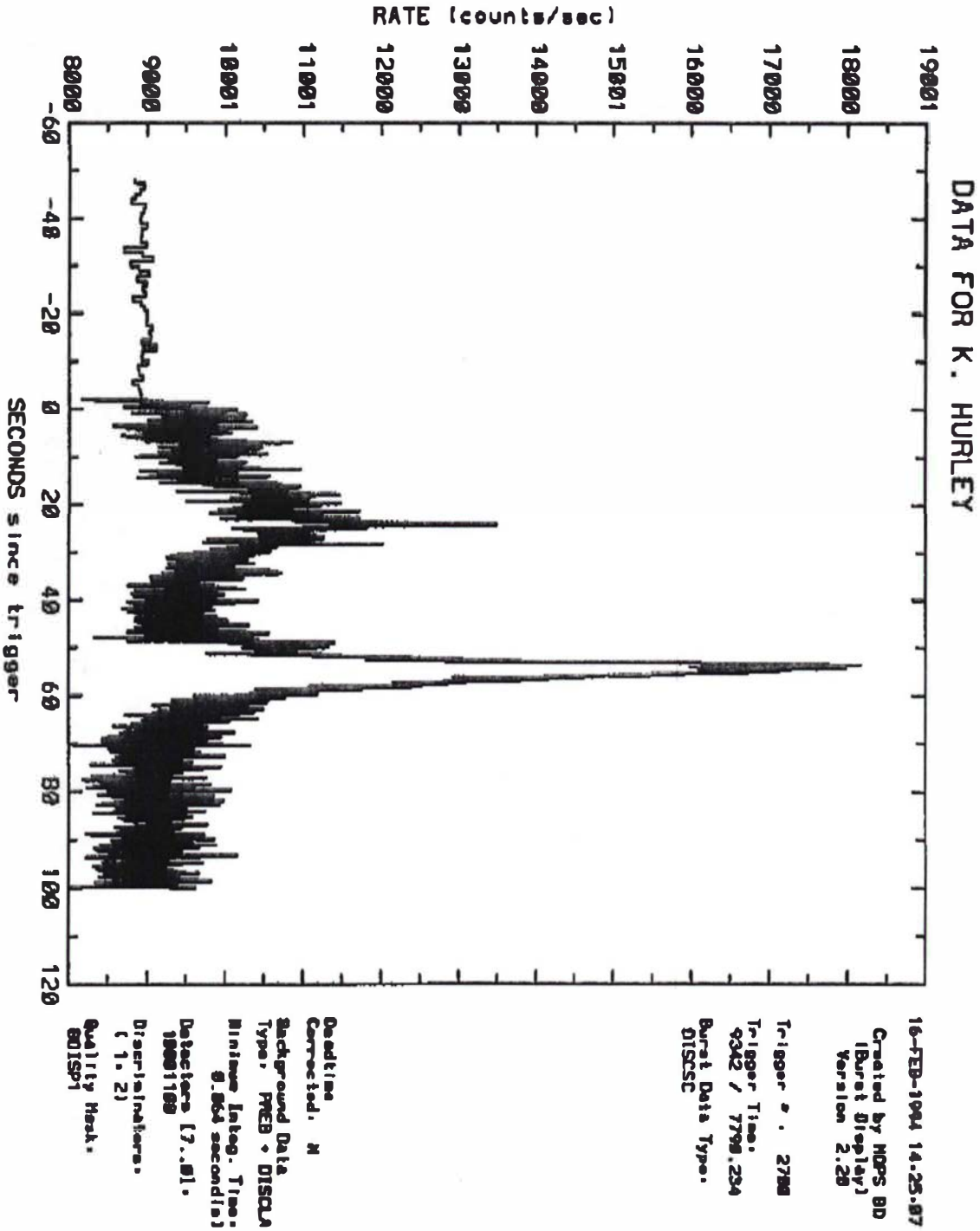
21/12/93 6408.332 s

21- 142 keV

21/ 1/98




BATSE 21/12/93 7790.234
25- 100 keV
COUNTS/ .064 S
1500
1000
500
0
-30
13
29
45
61
77
TIME, SECS


DATA FOR K. HURLEY
RATE (counts/sec)
SECONDS since trigger
16-FEB-1994 14:25:07
Created by HDPS BD
(Burst Display)
Version 2.20
Trigger # . 2788
Trigger Time:
9342 / 7798.234
Burst Data Type:
DISSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds)
Detectors (7..0):
1000100
Discriminators:
(1, 2)
Quality Mask:
0015F1

From MEEGAN@ssl.msfc.nasa.gov Thu Dec 23 08:52:56 1993
Date: Thu, 23 Dec 1993 10:57:02 -0600 (CST)
From: MEEGAN@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2701
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2701
 EVENT OF 1993 DEC 21 DAY OF YEAR=355
 EVENT CROSSING TIME AT BATSE      : 84664. S. OR 23:31:04.0
 COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 232.000  -25.000
 BATSE PEAK COUNTING RATE:    3100     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 21/12/  93 IS:
 RA=  166.153 DEC=  -39.110 DIST=     3.837 AU
 BATSE-ULYSSES DISTANCE =  573960328. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=123.67 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1061.30 SECS.
 CROSSING TIME AT ULYSSES     IS 83603. S. OR   23:13:22 +/-  310.53 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON 21/12/  93 IS:
 RA=  270.808 DEC=  -24.181 DIST=     2.434 AU
 MARS-BATSE DISTANCE =  364165280. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=144.82 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -992.90 SECS.
 CROSSING TIME AT MARS        IS 83671. S. OR   23:14:31 +/-  106.42 SECONDS


                          ND


 BATSE #    Date      TJD      sec    Max ct/s   RA    Dec
   2701    931221     9342    84664      3100    232    -25


                BATSE BURST TRIGGER
NO.: 02701

TIME: TJD=9342 SECONDS=84664

TYPE: BURST                        SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH= 56.   AZIMUTH= 10.   ERROR= 20.  DEGREES

COMMENTS:
WEAK 1 SECOND PULSE.  HARD SPECTRUM, SEEN ABOVE 300 KEV.
```

```
          ******************
          *CATSEARCH PROGRAM*
          ******************

 ATSE BURST # 2701
EVENT OF 1993 DEC 21 DAY OF YEAR=355
EVENT CROSSING TIME AT BATSE      : 84665. S. OR 23:31:04.9
COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 248.830   -27.770
BATSE PEAK COUNTING RATE:  0000    C/S

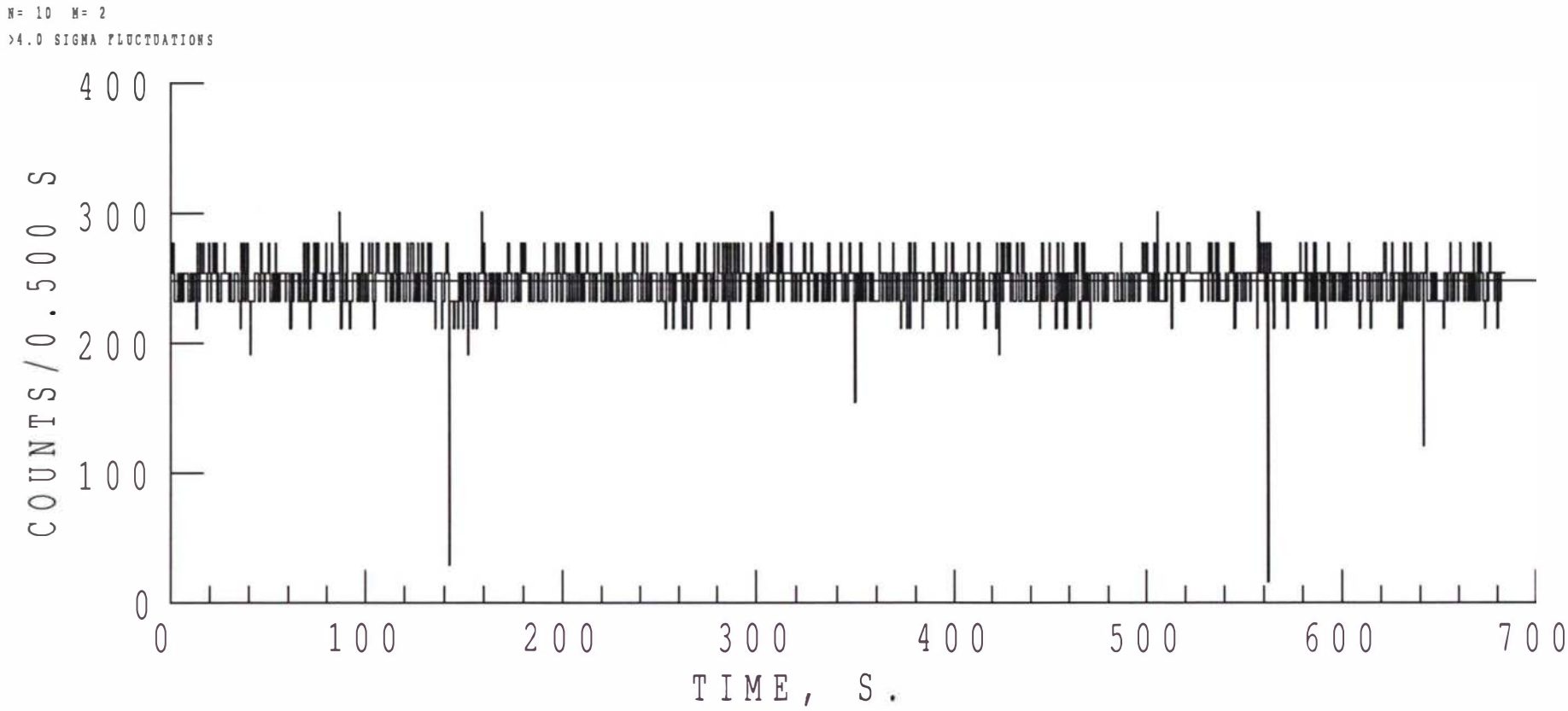
EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 21/12/  93 IS:
RA=  166.217 DEC=  -38.851 DIST=     3.853 AU
BATSE-ULYSSES DISTANCE =  576480608. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL     DIRECTION=112.39 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -732.38 SECS.
CROSSING TIME AT ULYSSES     IS 83933. S. OR 23:18:52.6 +/-  347.57 SECONDS
```

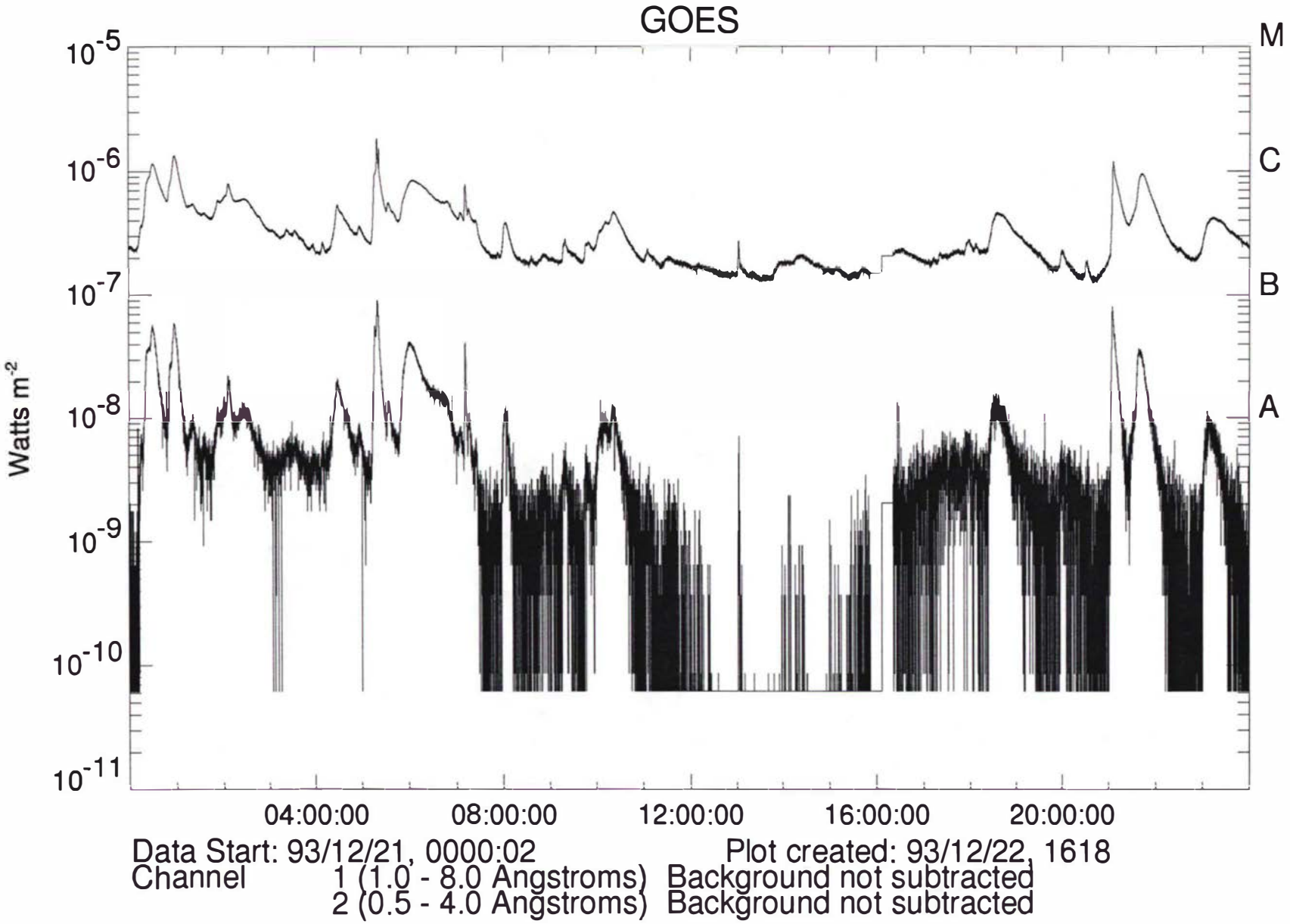
9/11/95

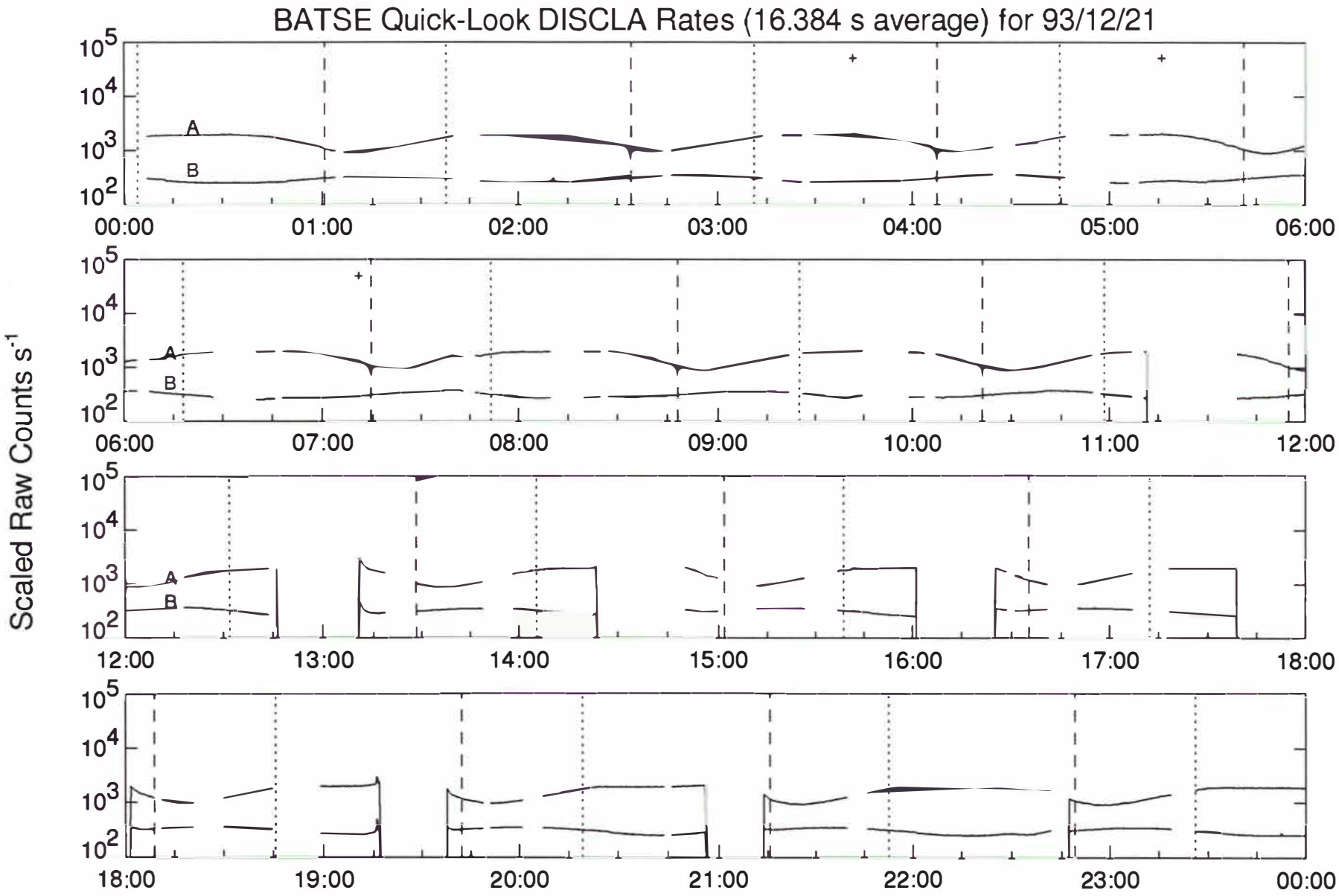
ULYSSES RT

21/12/93 83592.023 s

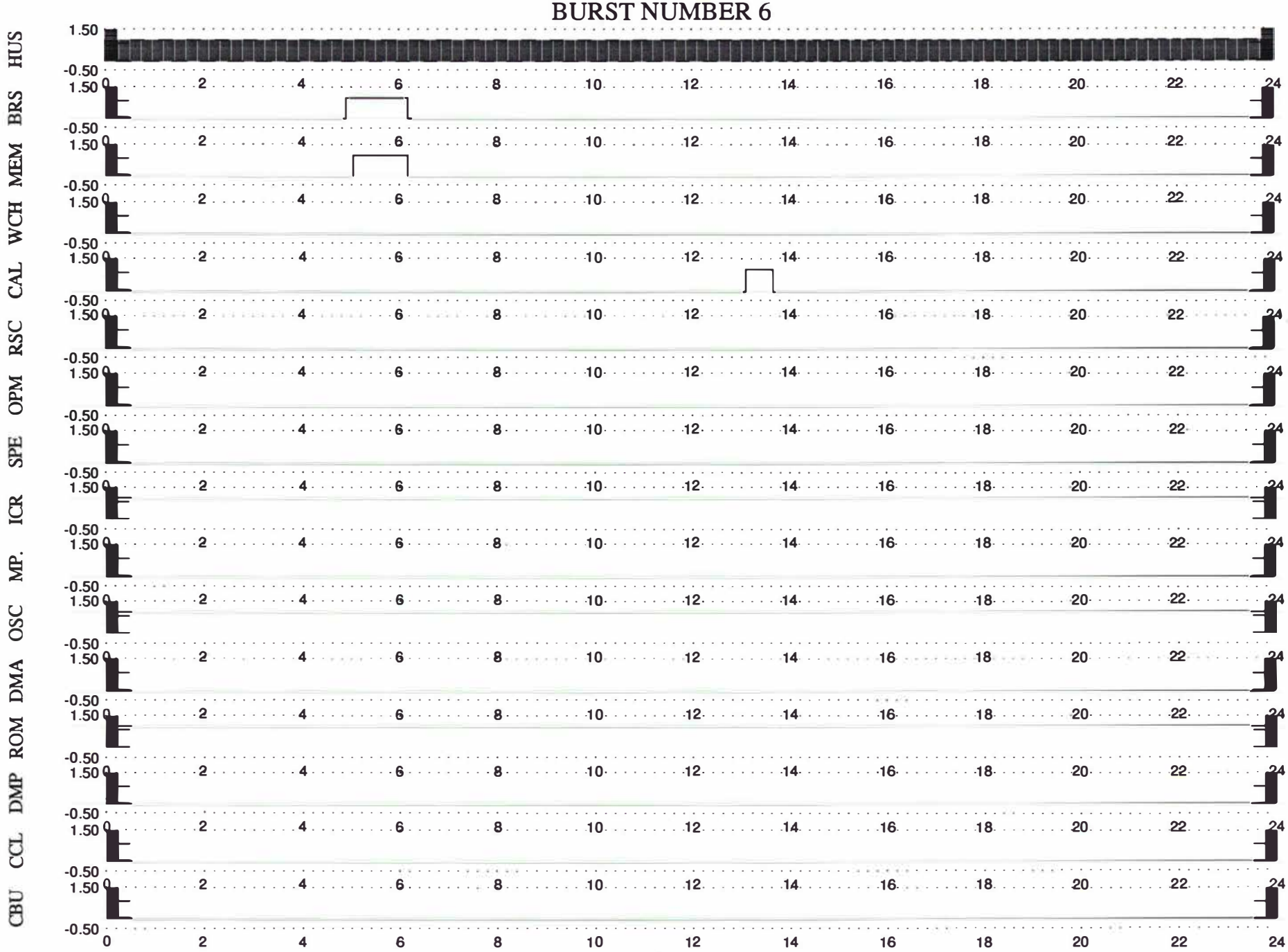
0- 0 keV




GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
10-11
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/21, 0000:02
Plot created: 93/12/22, 1618
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

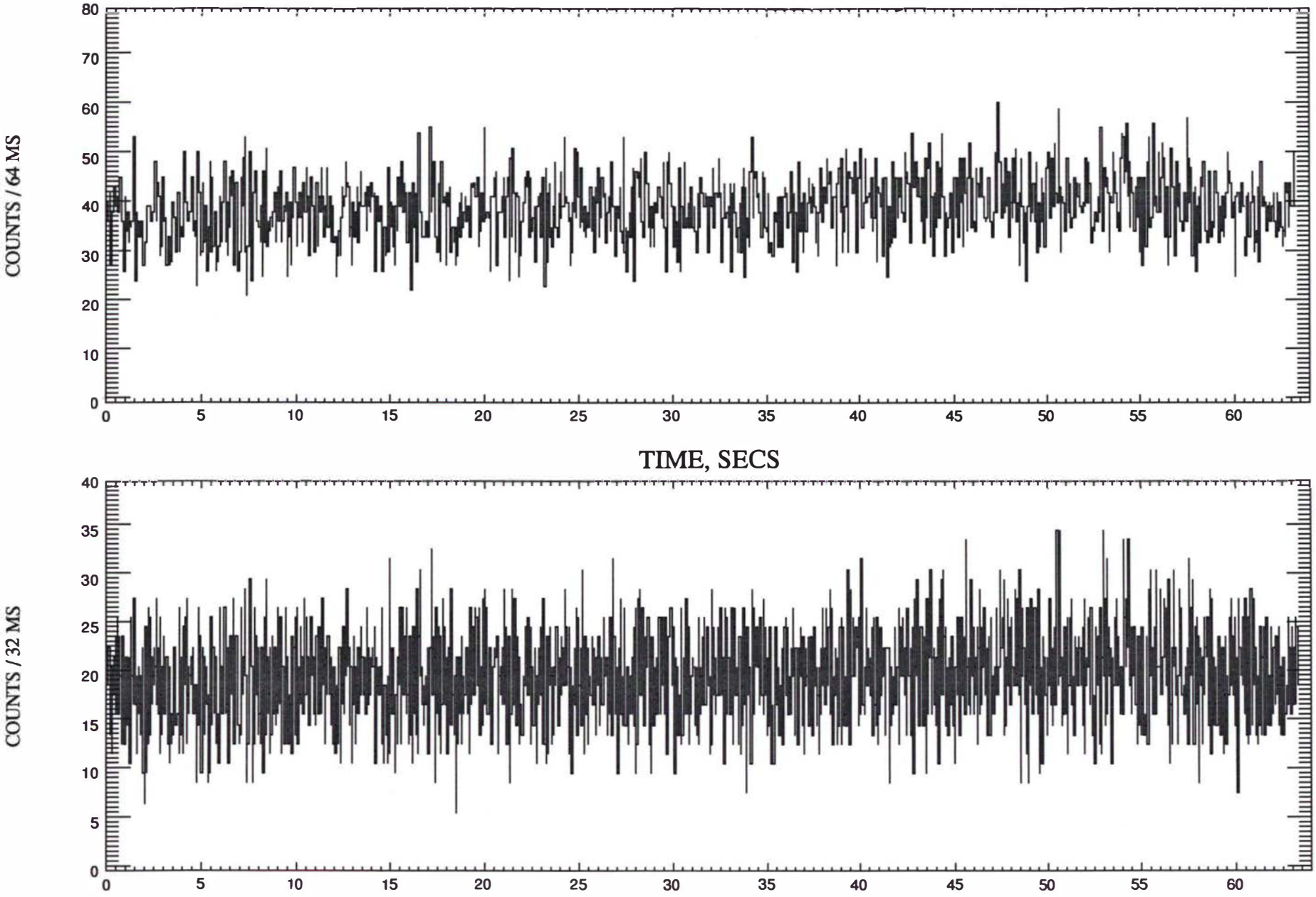

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/21
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 355, year 1993 to day 355, year 1993 2/9/94



HUS 2A TRIGGERED DATA EDR day 355, year 1993 2/9/94

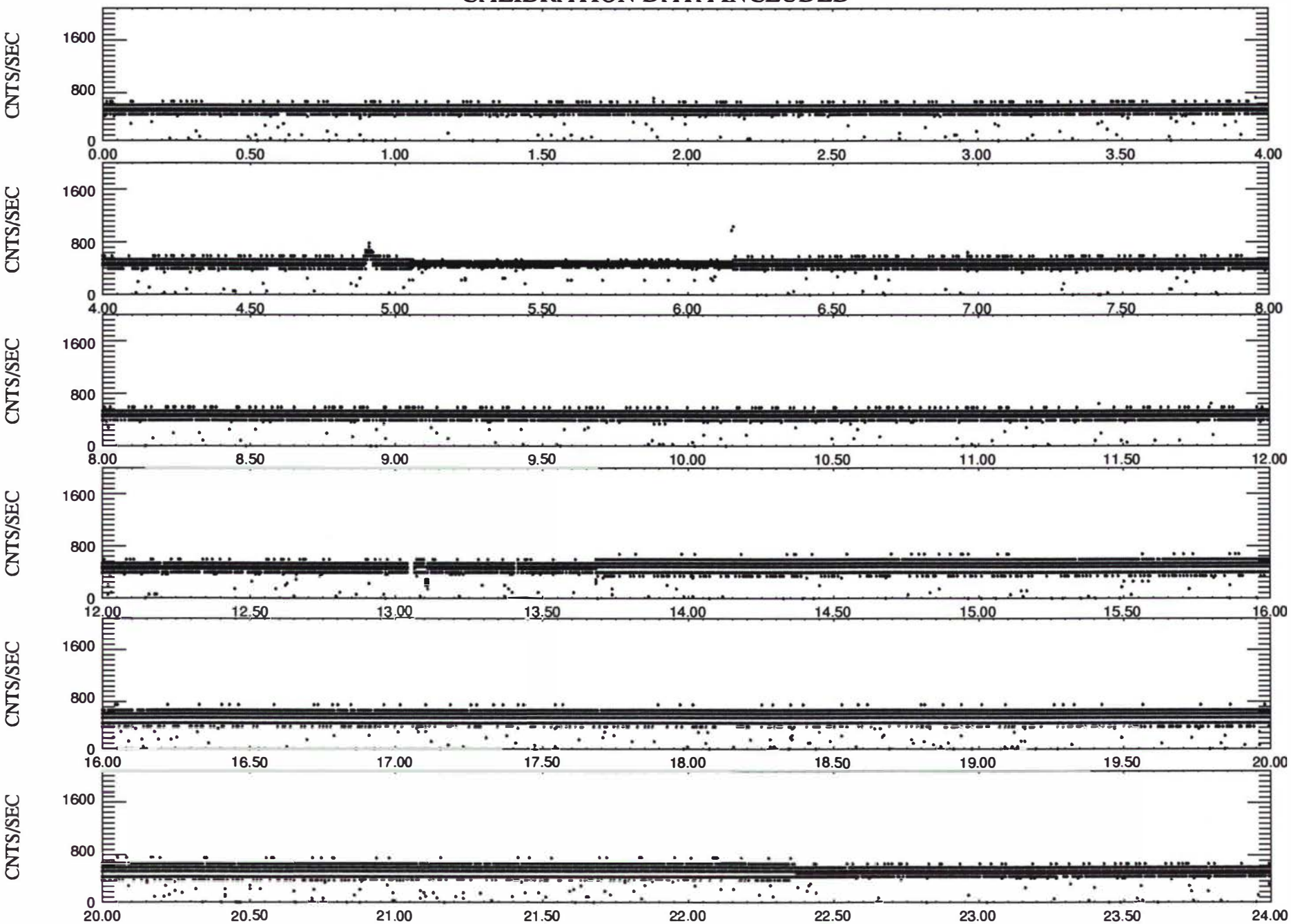
Burst Counter 6 at UT= 4.894962709215 h=17621.866 s 04:53:41.866



B# 1

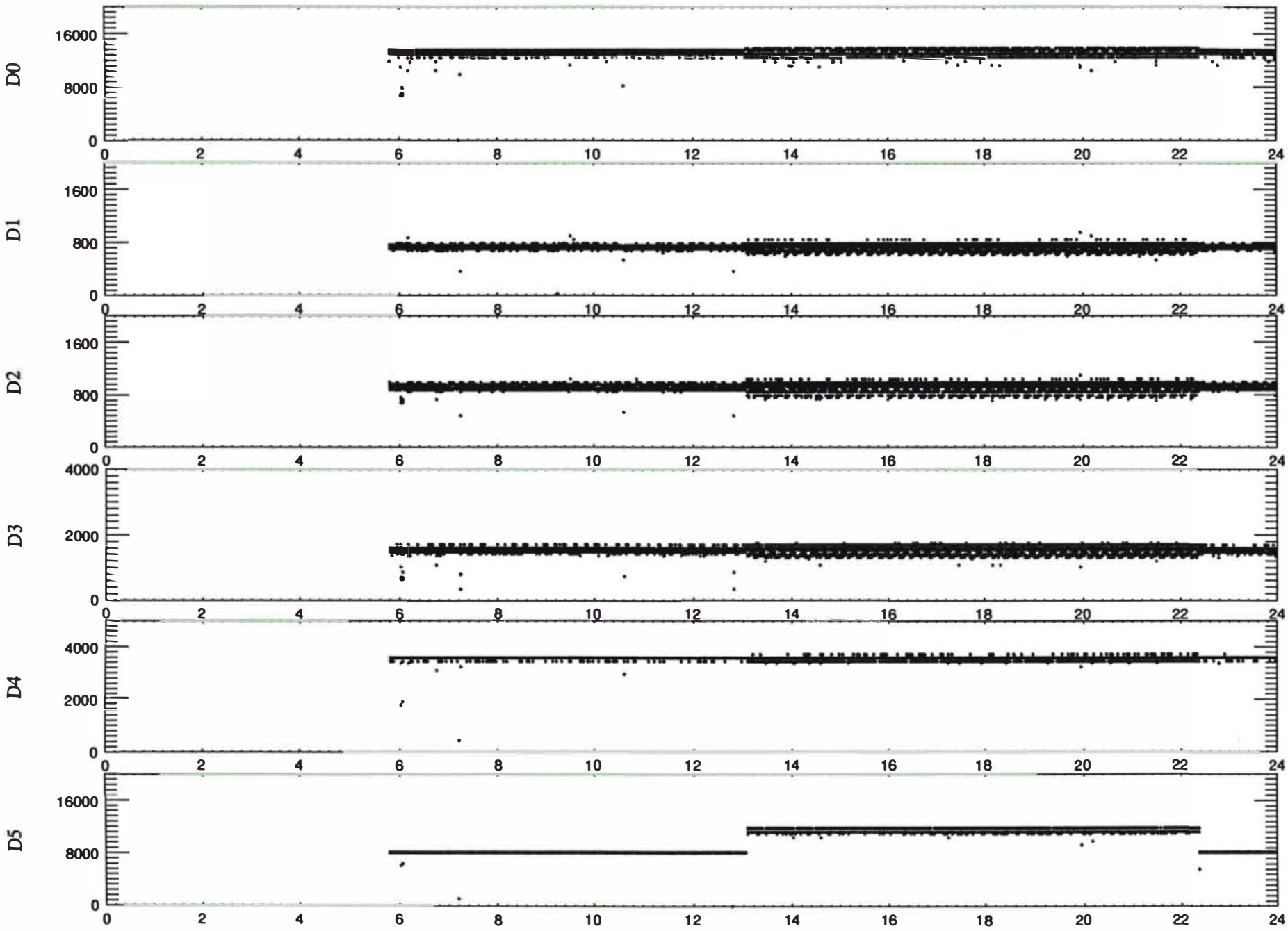
HUS 2A, MODE 1, NOT AVERAGED EDR day 355, year 1993 to day 355, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVERSAL TIME

HUS 2B COUNTS / SEC QEDR day 355, year 1993 to day 355, year 1993 12/28/93



Kommers

UNTRIGGERED

ULYSSES RT

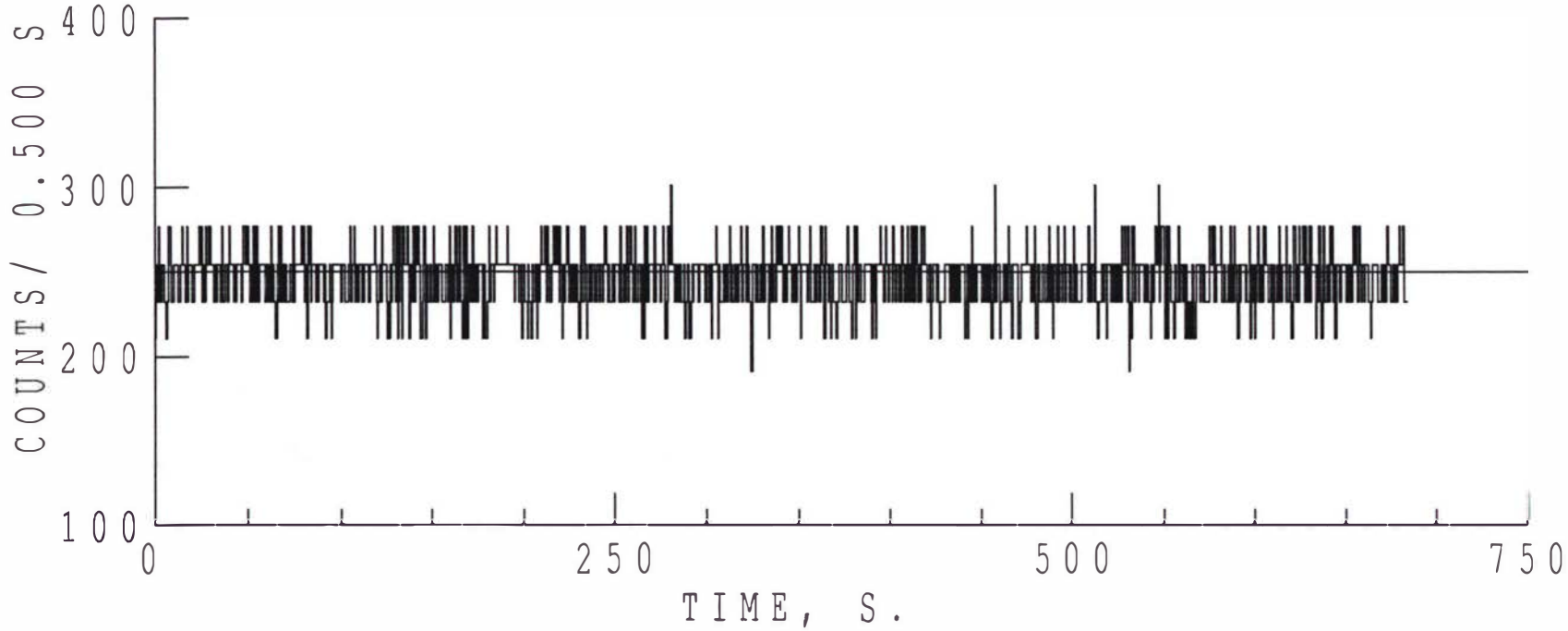
22/ 5/97

22/12/93 11124.238 s

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



Kouwenhoven

UNTRIGGERED

ULYSSES RT

22/ 5/97

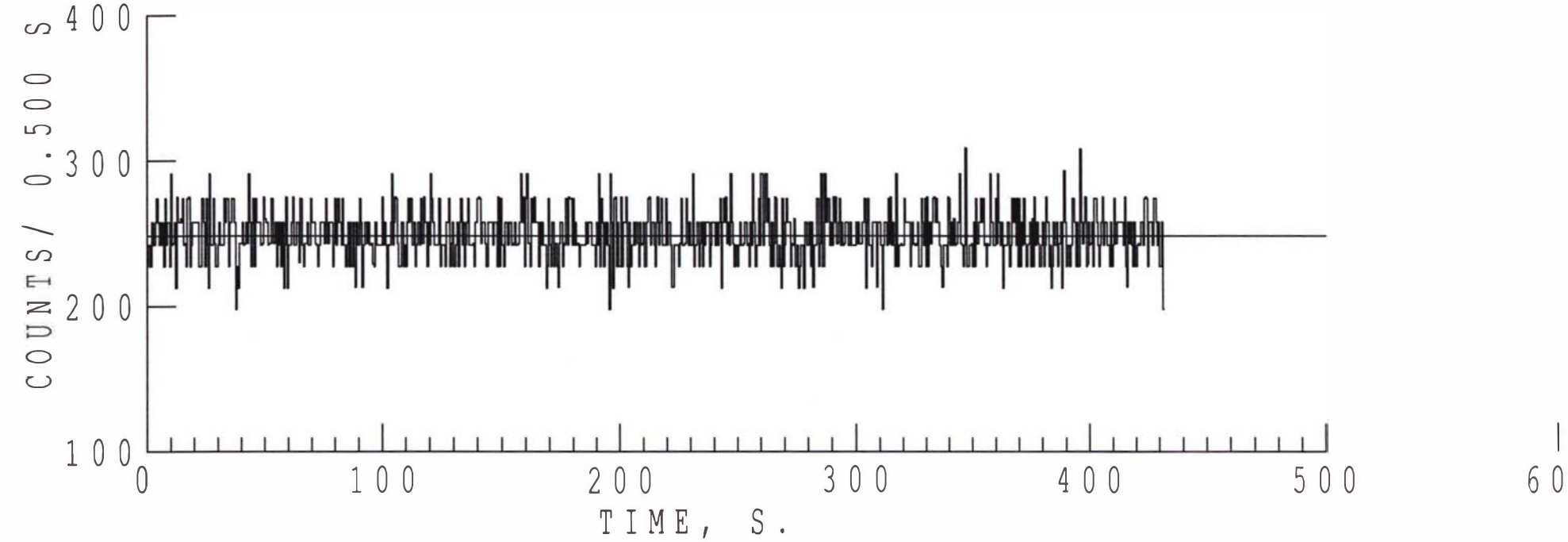
22/12/93 69192.141 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From HENZE@fender.msfc.nasa.gov Thu Dec 23 14:28:24 1993
Date: Thu, 23 Dec 1993 16:32:26 -0600 (CST)
From: HENZE@fender.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET,
LHEAVXCLINE@fender.msfc.nasa.gov, LHEAVXBARTHELMY@fender.msfc.nasa.gov,
LHEAVXKWOK@fender.msfc.nasa.gov, 15733SCHAEFER@fender.msfc.nasa.gov,
CASS09BAND@fender.msfc.nasa.gov, CASS09GRUBER@fender.msfc.nasa.gov,
CASS09MATTESON@fender.msfc.nasa.gov, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 02702

TIME: TJD=9343 SECONDS=62688

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=088.8 AZIMUTH=018.5 ERROR= DEGREES

COMMENTS:
GOES X-RAY M1.4, OPTICAL 1B.
TRIGGERED ON SMALL PRECURSOR. TOTAL DURATION ~60 S.
MAIN PULSE MAX AT ~T+28 S. VISIBLE ABOVE 300 KEV.

From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:52:06 1993
Date: Mon, 27 Dec 1993 10:56:26 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2703
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #    2703
 EVENT OF 1993 DEC 22 DAY OF YEAR=356
 EVENT CROSSING TIME AT BATSE      : 76893. S. OR 21:21:33.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 194.000   32.000
 BATSE PEAK COUNTING RATE:  16500    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 22/12/  93 IS:
 RA=  166.089 DEC=  -39.351 DIST=    3.821 AU
 BATSE-ULYSSES DISTANCE =  571630246. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=104.09 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -464.26 SECS.
 CROSSING TIME AT ULYSSES    IS 76429. S. OR   21:13:48 +/-  364.03 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 22/12/  93 IS:
 RA=  271.634 DEC=  -24.182 DIST=    2.433 AU
 MARS-BATSE DISTANCE =  364008032. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 87.05 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=   62.41 SECS.
 CROSSING TIME AT MARS       IS 76955. S. OR   21:22:35 +/-  211.47 SECONDS
```

RI - but not exactly in the BATSE window

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2703	931222	9343	76893	16500	194	+32

BATSE BURST TRIGGER

NO.: 02703

TIME: TJD=9343 SECONDS=76893

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=024.0 AZIMUTH=118.0 ERROR= DEGREES

COMMENTS:
BURST, COMPLEX, LASTING ~80S. VISIBLE ABOVE 300KEV.

Helio corr removed

Date: 22 Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad stats

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

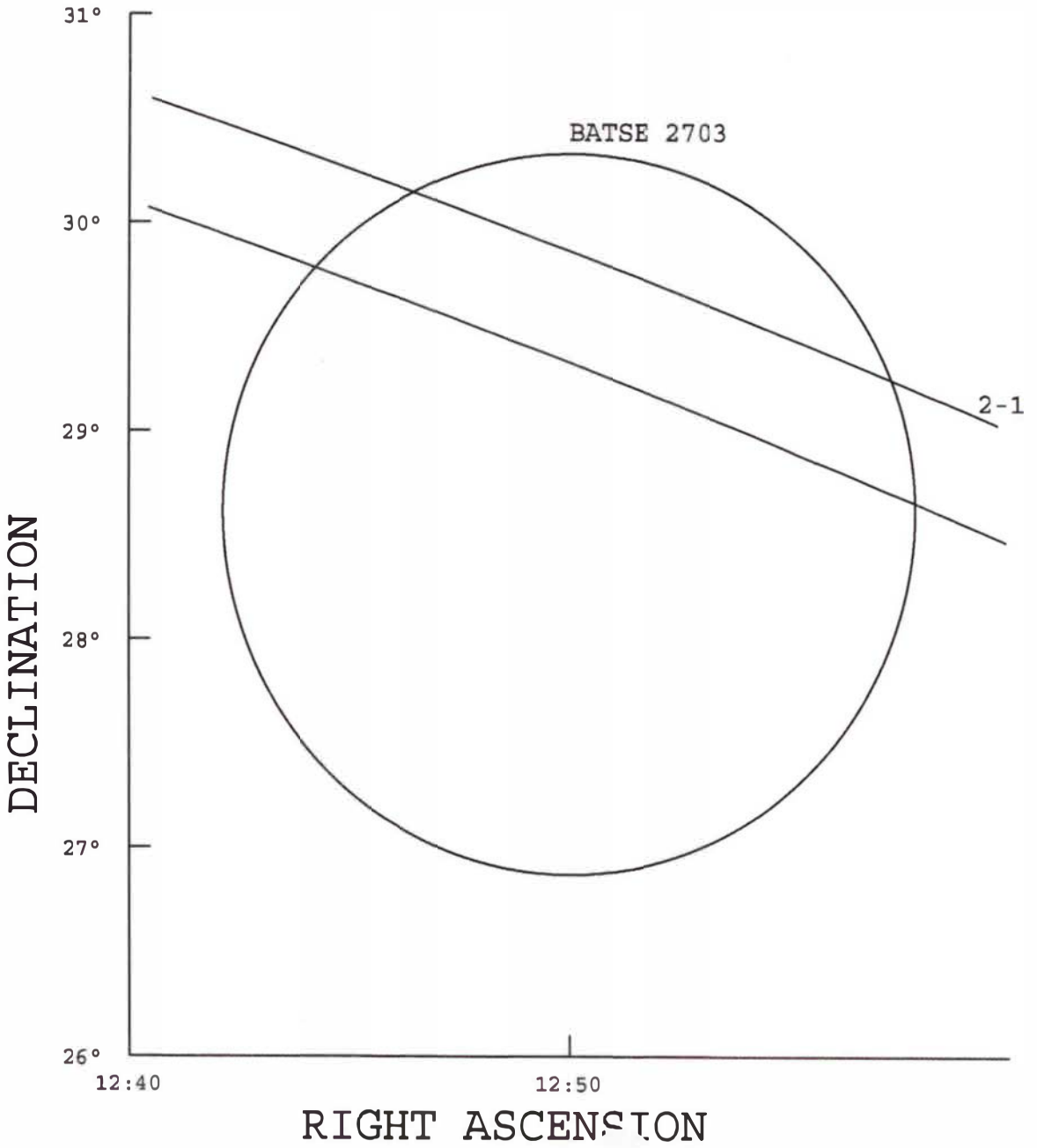
☐ 2000 coordinates used?

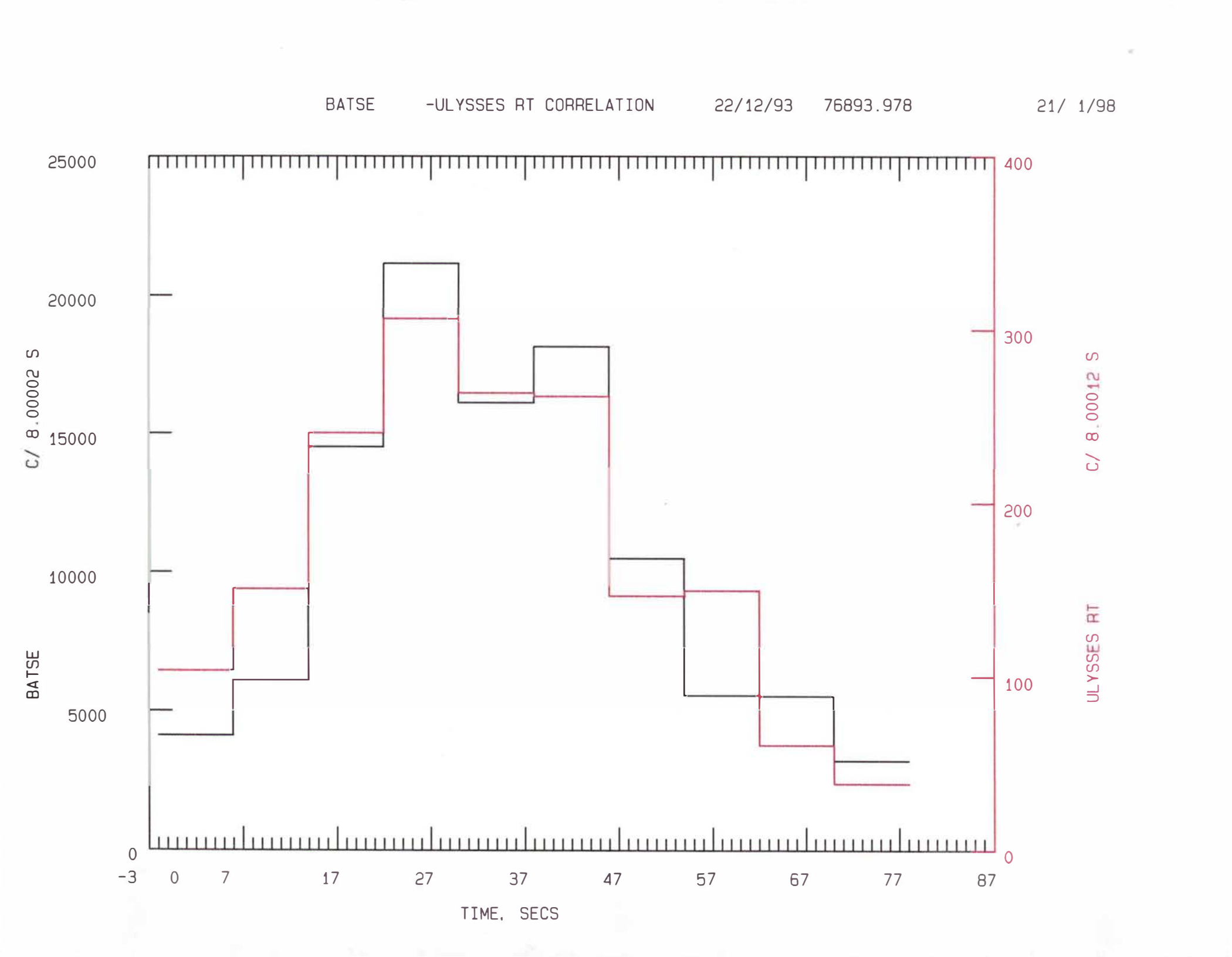
☐ Geocentric time used?

☑ ACCESS database updated?

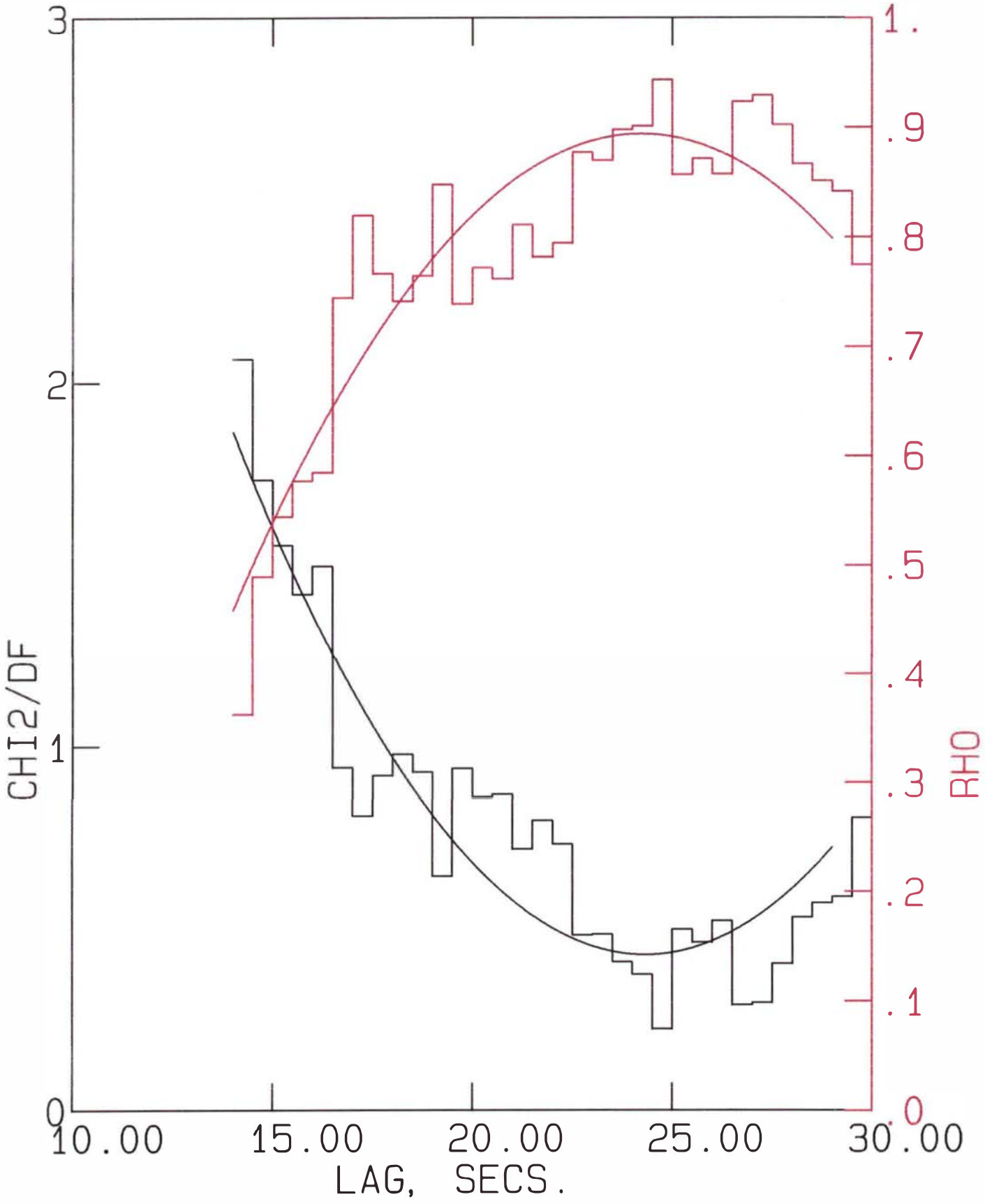
EVENT OF DEC 22, 1993 21:11

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 22/12/93 76893.978 21/ 1/98
25000
20000
15000
10000
5000
0
C/ 8.00002 S
BATSE
400
300
200
100
0
C/ 8.00012 S
ULYSSES RT
-3
0
7
17
27
37
47
57
67
77
87
TIME, SECS

BATSE -ULYSSES RT CORRELATION 22/12/93 76893.978

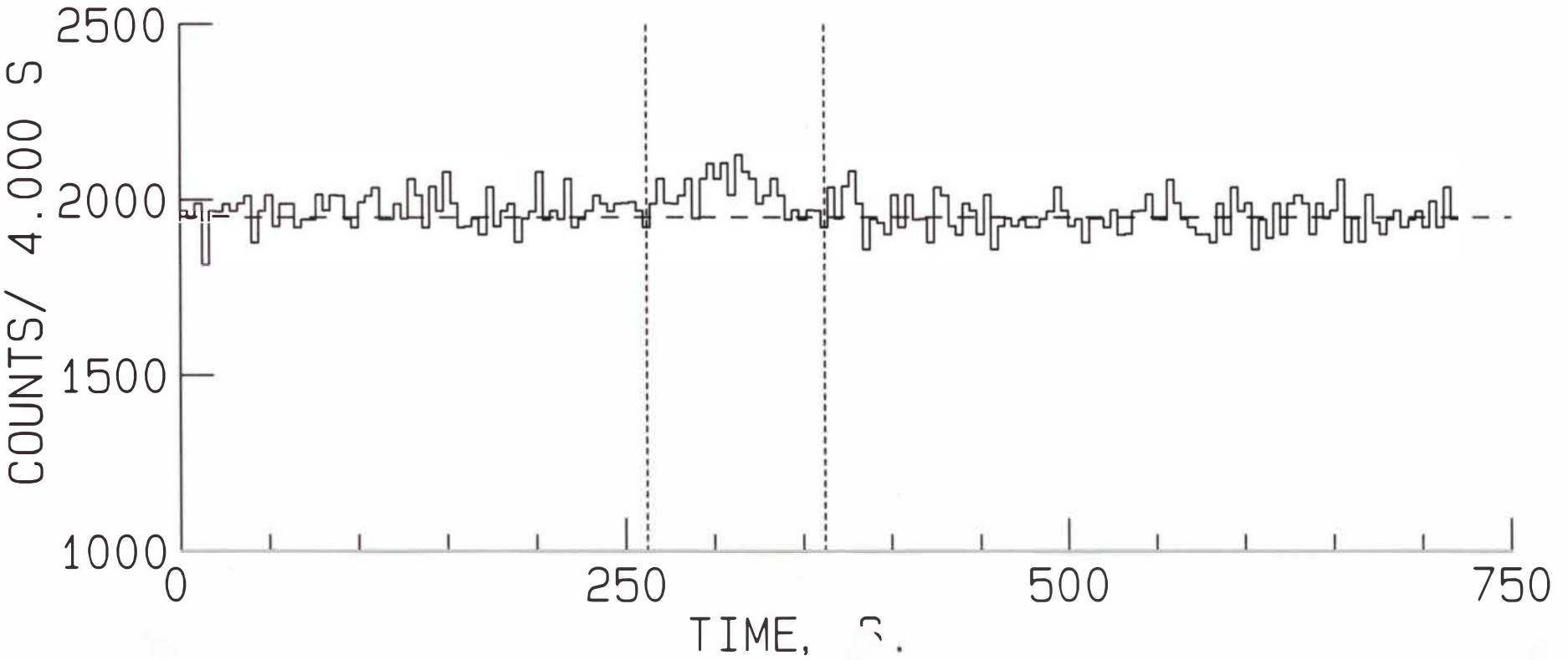


ULYSSES RT 21/ 1/98

22/12/93 76068.244 s

0.500 S INTERVALS REGROUPED BY 8

21- 143 keV



Dave Palmer Dec 29

Dec 27 93 Comptel 76893 s

α	13:00:17	195.07
δ	21:11:24	21.19

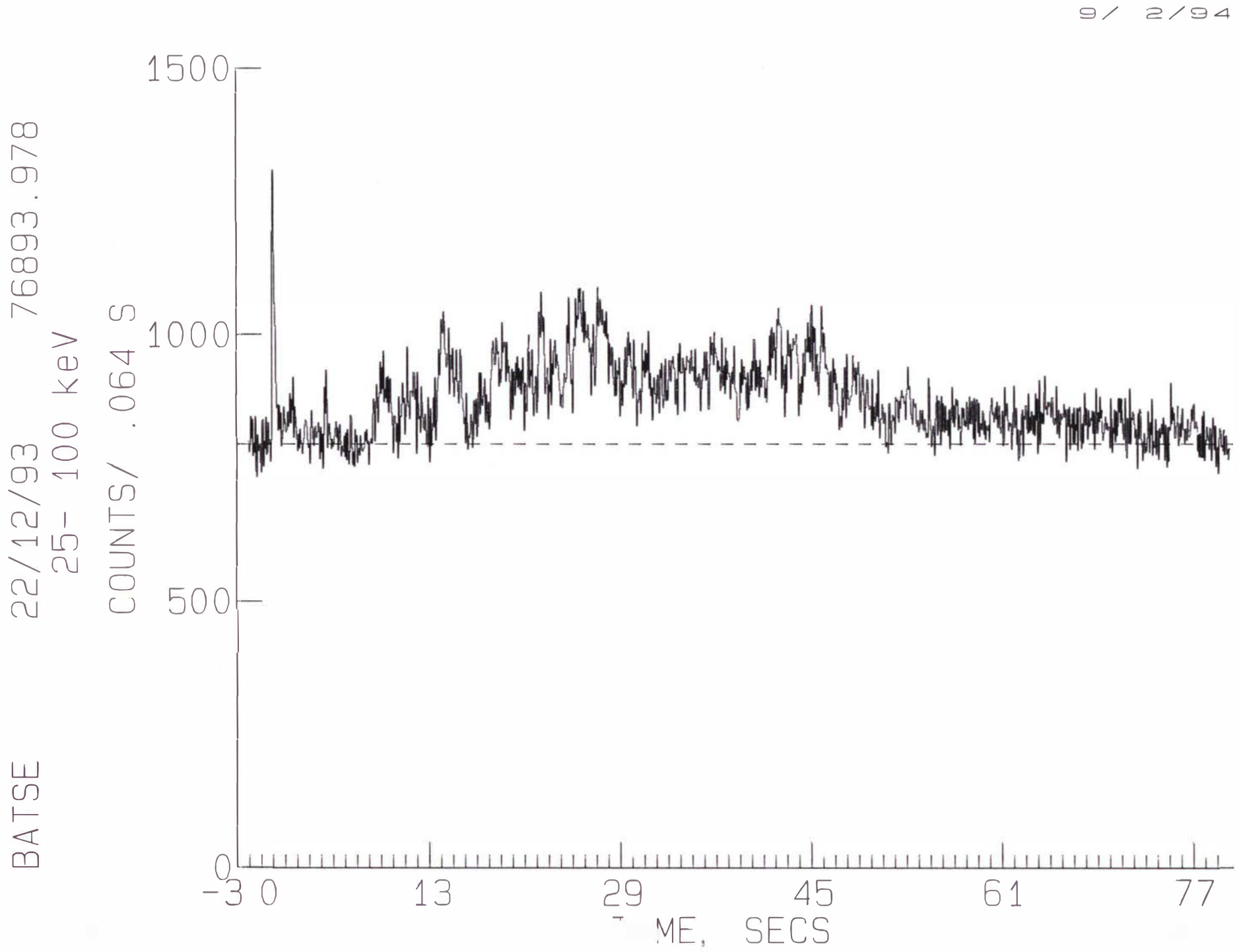
~2-3° error

Complex, ~80 s, visible > 30 keV
76893 s BATSE trigger

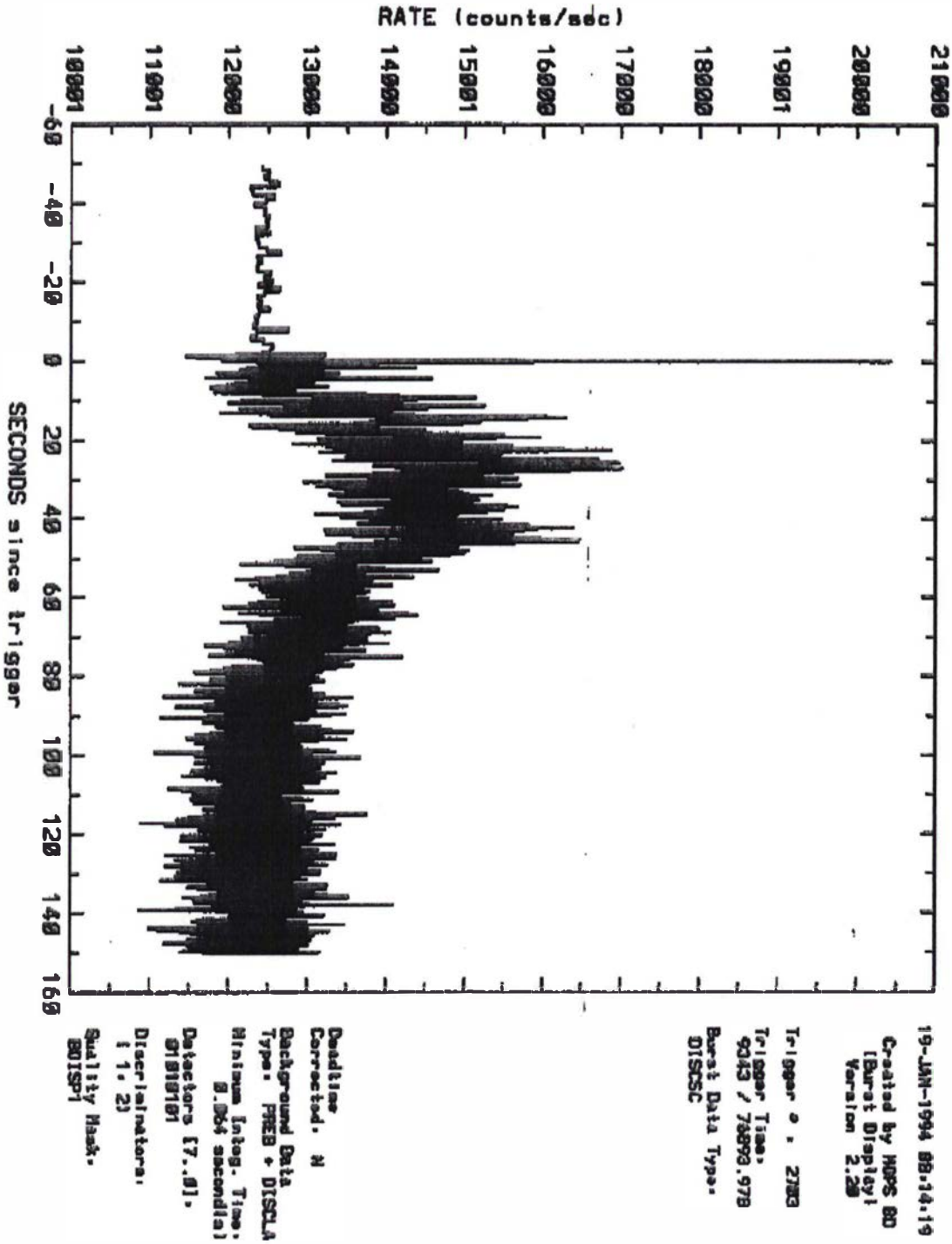
Radio pulse ~ 1 wk later VLBA 3° beam width

6 s long 327 MHz ~3 s rise, fall times.
Highly significant - seen in all dishes.
Parallax => source dist > moon
No signal at 609 MHz

Turned out to be SOLAR radio pulse


9/ 2/94
BATSE 22/12/93 76893.978
25- 100 keV
COUNTS/ .064 S
1500
1000
500
0
-3 0
13
29
45
61
77
ME, SECS

DATA FOR K. HURLEY



From root Fri Dec 24 12:39 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA00434; Fri, 24 Dec 93 12:39:53
Received: from heasfs.gsfc.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA25370; Fri, 24 Dec 93 11:42:09 PST
Received: by heasfs.gsfc.nasa.gov (4.1/1.35)
        id AA08842; Fri, 24 Dec 93 14:46:20 EST
Date: Fri, 24 Dec 93 14:46:20 EST
From: palmer@heasfs.gsfc.nasa.gov (David Palmer)
Message-Id: <9312241946.AA08842@heasfs.gsfc.nasa.gov>
To: khurley@space6.ssl.berkeley.edu
Status: R

From: SMTP%"bmcnamar@NMSU.Edu" 23-DEC-1993 22:34:09.71
To: palmer@tgrs.gsfc.nasa.gov
CC:
Subj: Burst-alert

Date: Thu, 23 Dec 93 20:27:33 MST
From: <bmcnamar@NMSU.Edu>
Message-Id: <9312240327.AA04114@NMSU.Edu>
To: palmer@tgrs.gsfc.nasa.gov
Subject: Burst-alert

    **** Message to the BATSE/COMPTEL/NMSU Rapid Response Network ***

A gamma-ray burst has recently been detected which is in the Comptel
field of view. The following data is provided

Name: grb931222

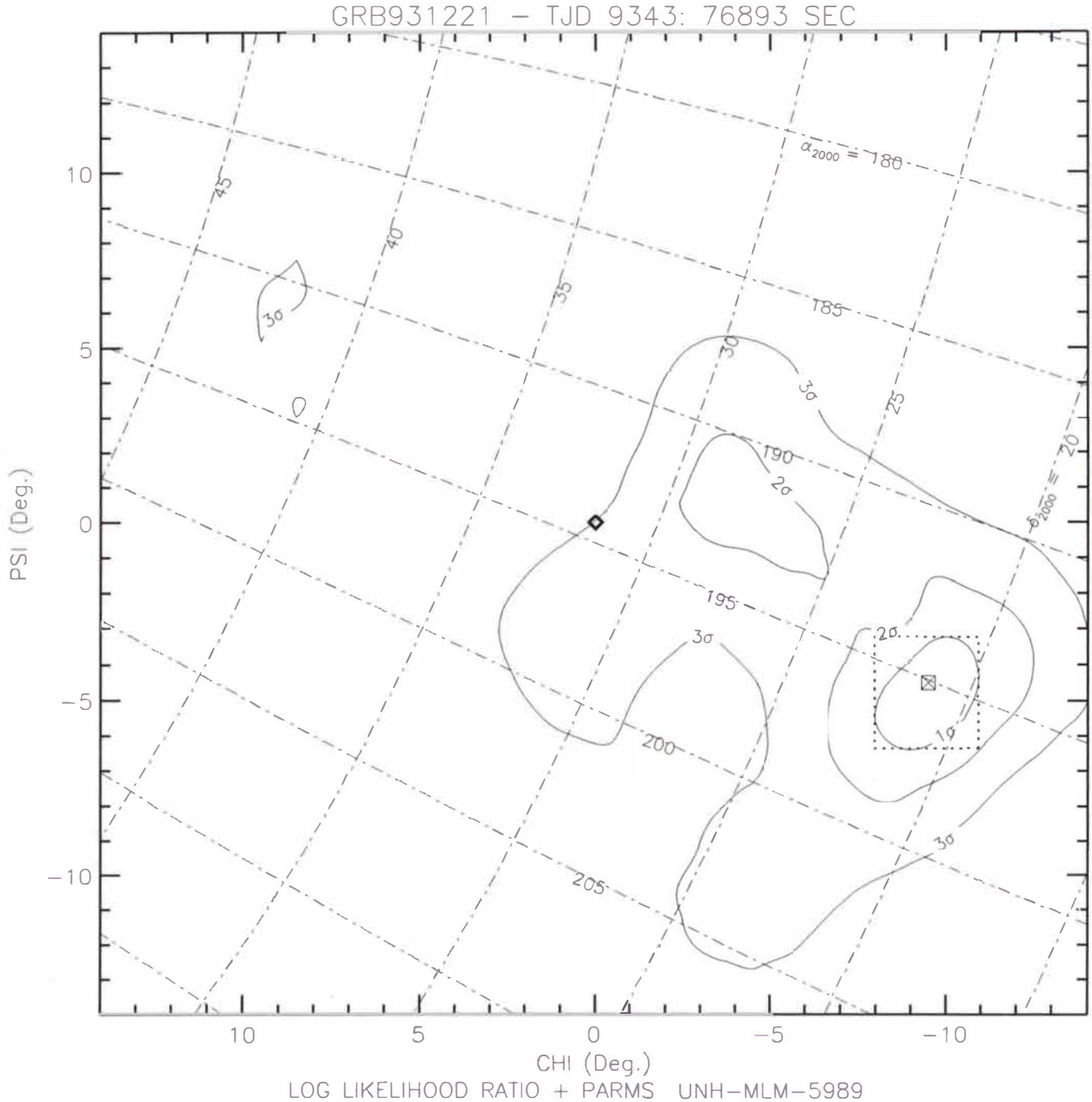
Detection date and time: TDJ 9343 76893sec

Position: ra(2000) = 13 00 17   dec(2000) = 21 11 24

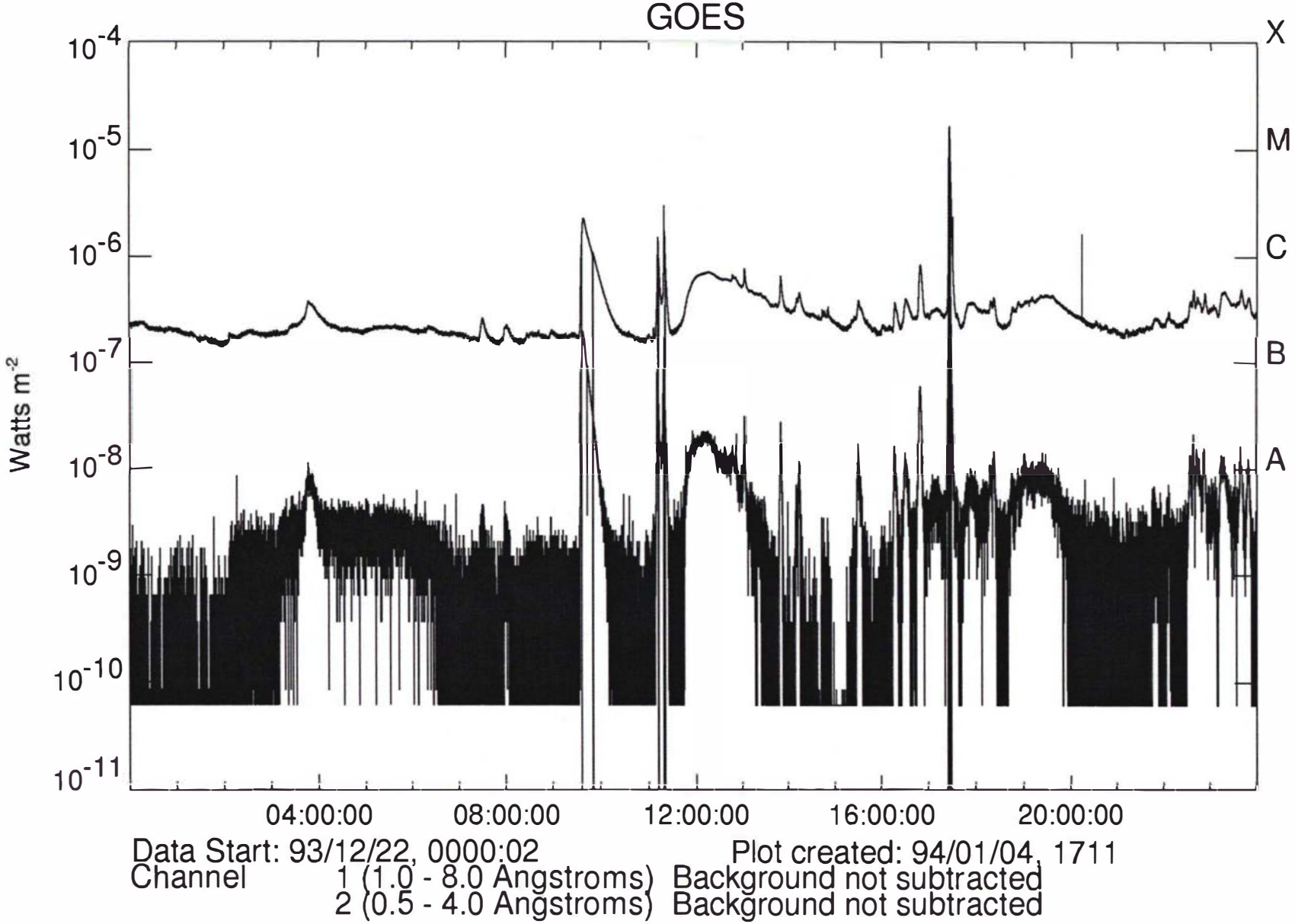
Size of 1 sigma error box: 2X3 degrees

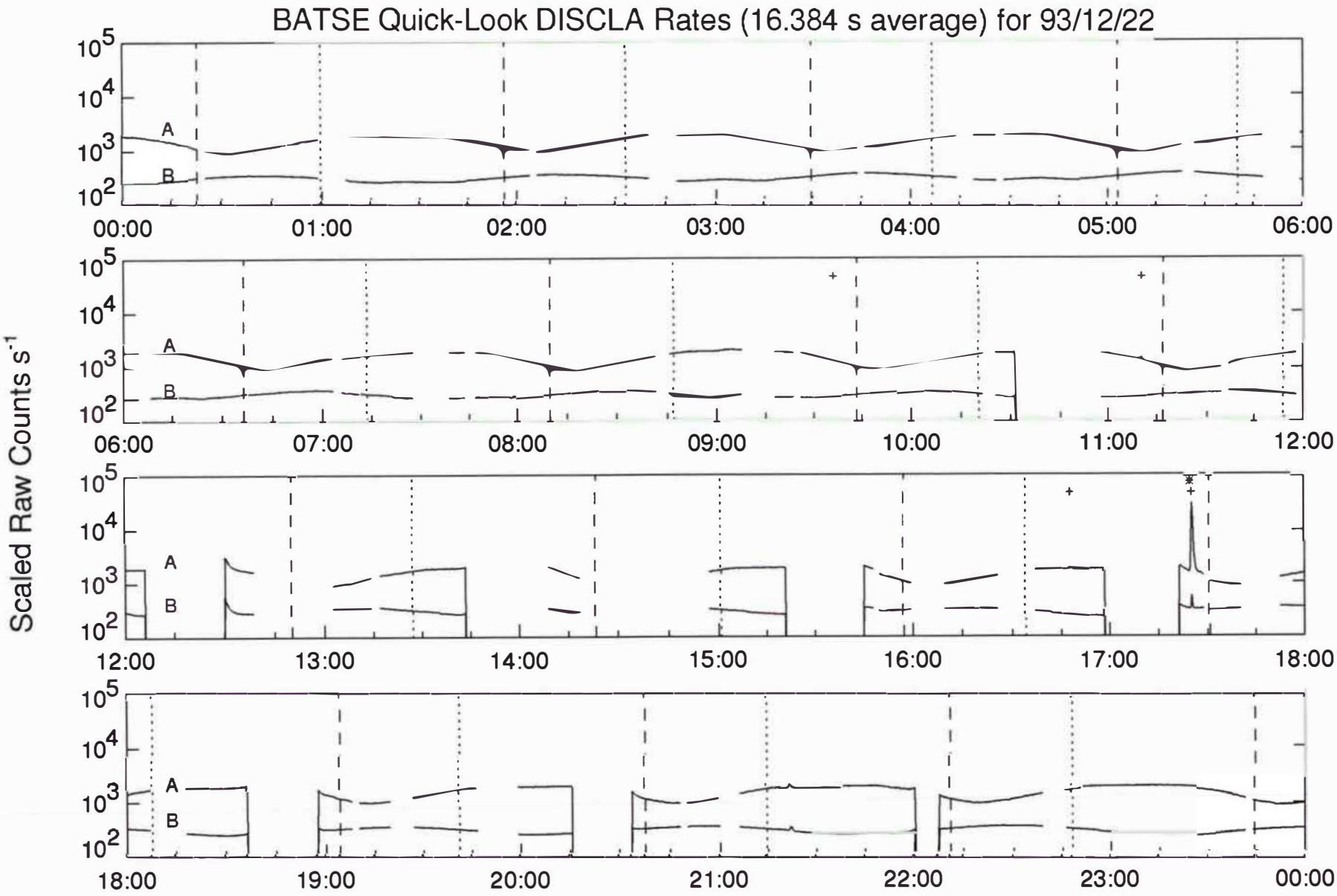
A post script file of the Comptel error box is provided below.

****** Bernie McNamara

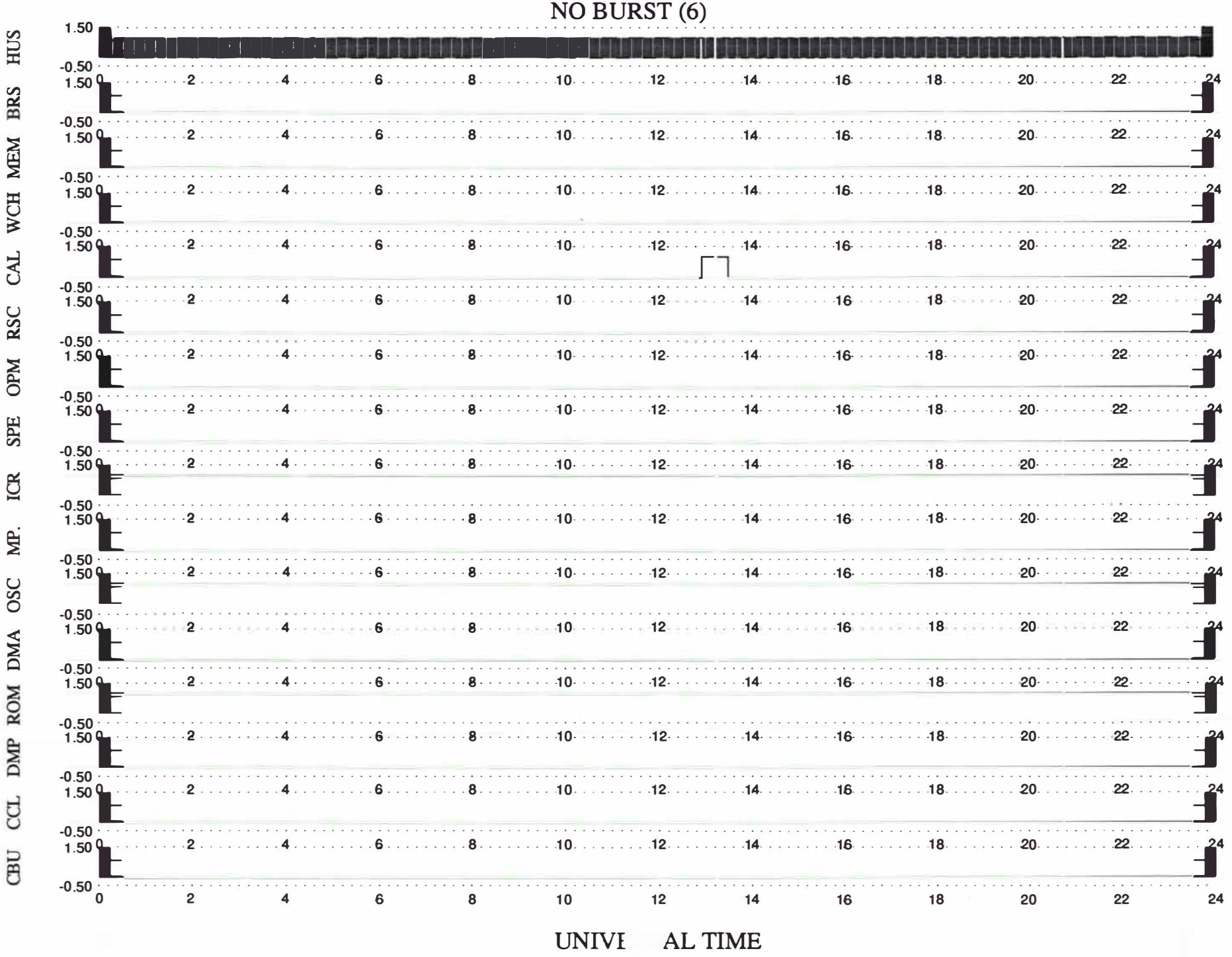


[CHI, PSI]	[α_{2000}, δ_{2000}]	
◇ [0.00, 0.00]	[194.37, 31.67]	BATSE
⊠ [−9.50, −4.50]	[195.07, 21.19]	Max Lik Position
1 [−10.93, −6.37]	[196.34, 19.16]	1σ Error Box Coords
2 [−10.93, −3.23]	[193.24, 20.32]	
3 [−7.98, −3.23]	[194.40, 23.07]	
4 [−7.98, −6.37]	[197.54, 21.88]	


GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
10-11
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/22, 0000:02
Plot created: 94/01/04, 1711
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

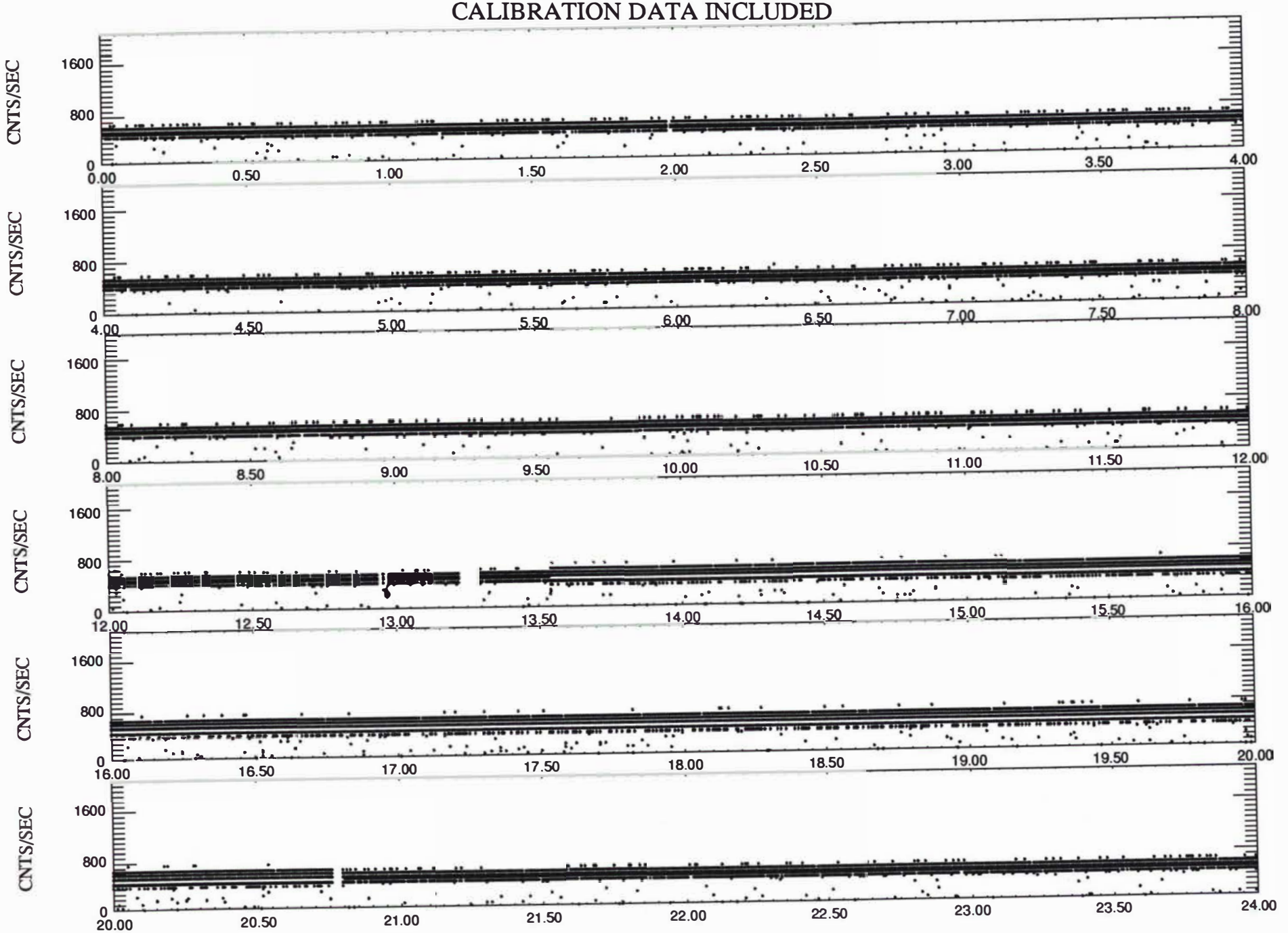

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/22
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 356, year 1993 to day 356, year 1993 2/9/94



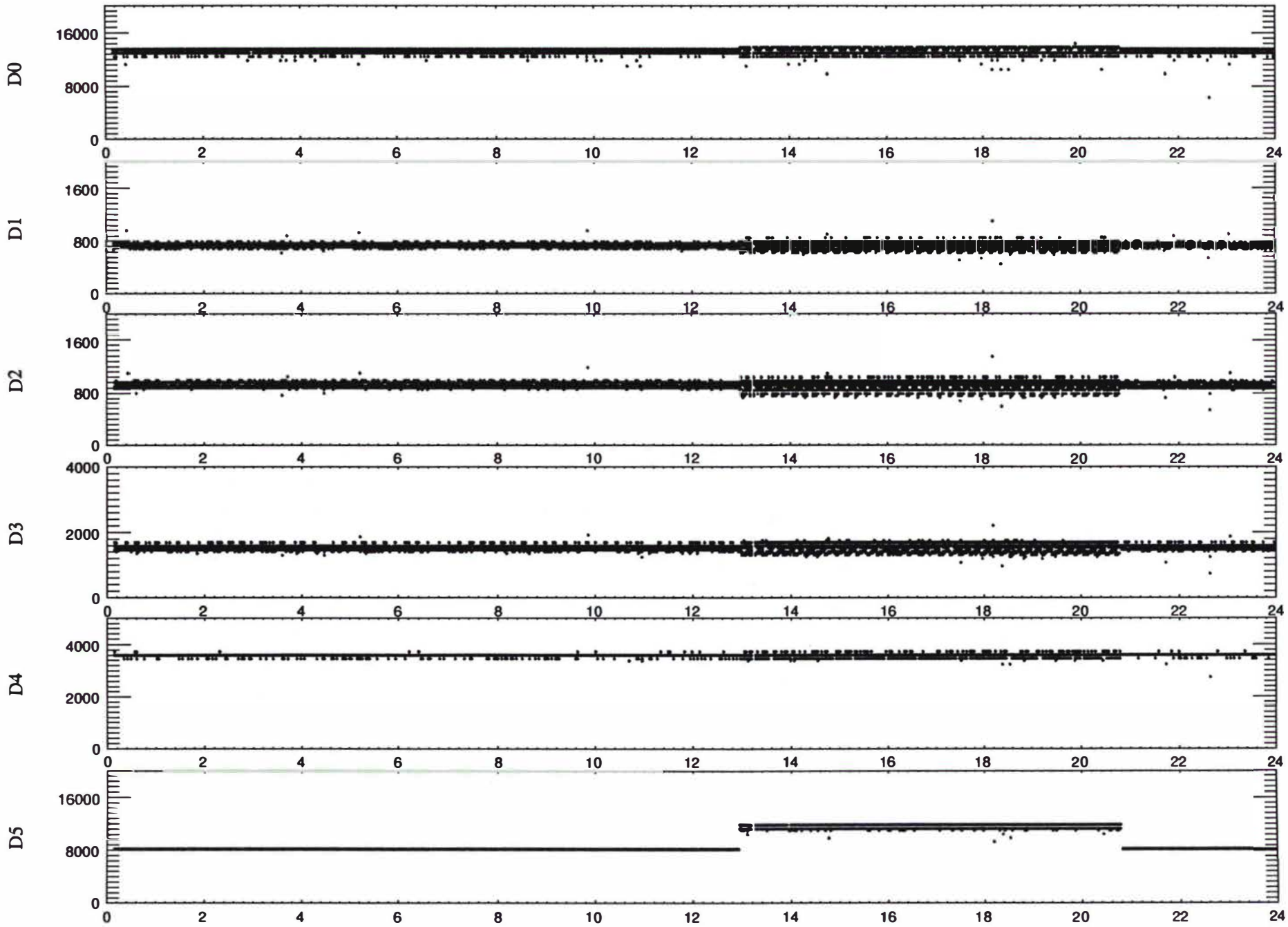
HUS 2A, MODE 1, NOT AVERAGED EDR day 356, year 1993 to day 356, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVERSAL TIME

HUS 2B COUNTS / SEC QEDR day 356, year 1993 to day 356, year 1993 12/28/93



Kouveliotou

UNTRIGGERED

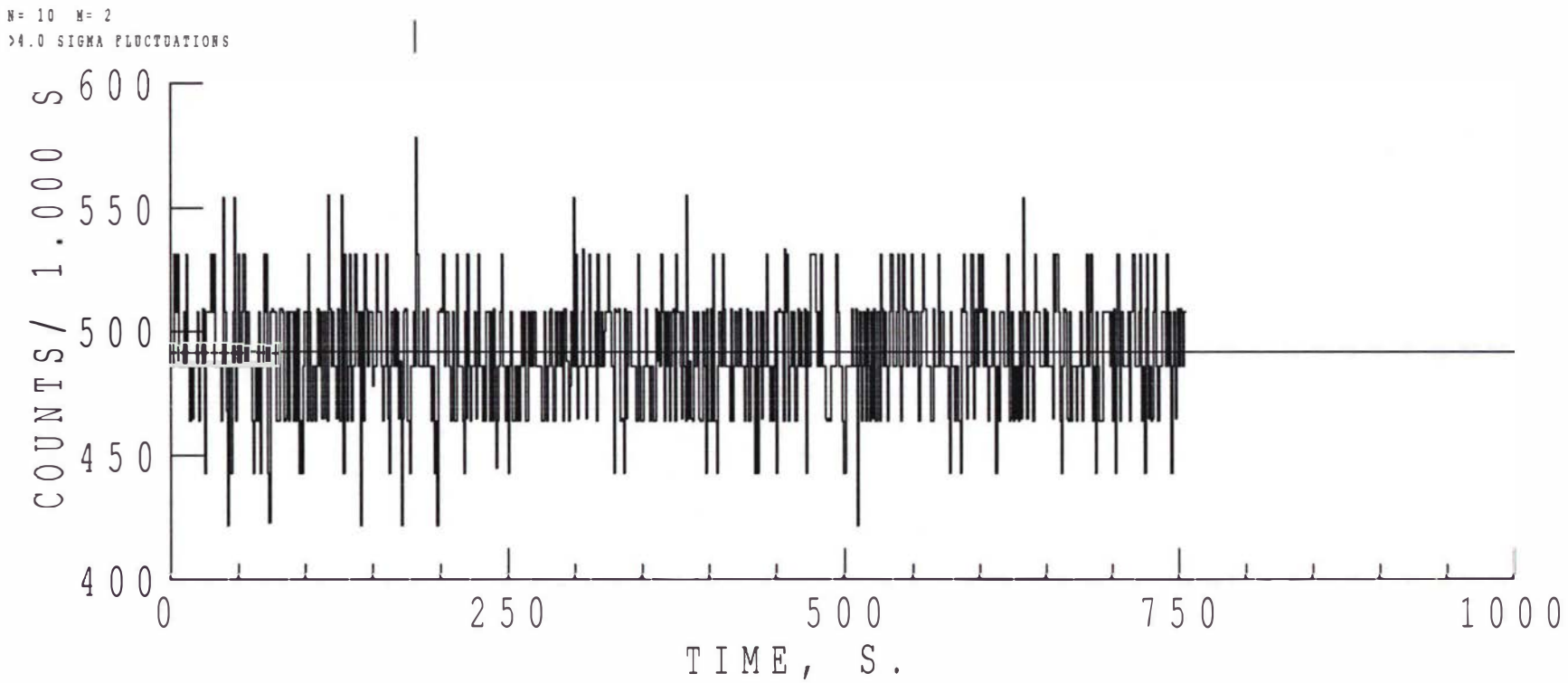
ULYSSES RT

22/ 5/97

23/12/93 6228.497 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:27:24 1993
Date: Mon, 27 Dec 1993 10:31:35 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02704

TIME: TJD=9344 SECONDS=19709

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE GOES C4.4, LASTING ~25S. NOT VISIBLE ABOVE 300KEV.

From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:29:37 1993
Date: Mon, 27 Dec 1993 10:33:52 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02705

TIME: TJD=9344 SECONDS=32345

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, GOES C2.9, LASTING ~25S. NOT VISIBLE ABOVE 300KEV.

```
          ********************
          *BATSEARCH PROGRAM*
          ********************

BATSE BURST #2706
EVENT OF 1993 DEC 23 DAY OF YEAR=357
EVENT CROSSING TIME AT BATSE      : 84860. S. OR 23:34:20.0
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 256.000   41.000
BATSE PEAK COUNTING RATE: 7000      C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 23/12/  93 IS:
RA=  166.004 DEC=  -39.641 DIST=    3.802 AU
BATSE-ULYSSES DISTANCE =  568836917. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 65.26 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  794.08 SECS.
CROSSING TIME AT ULYSSES    IS 85654. S. OR   23:47:34 +/-  361.25 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 23/12/  93 IS:
RA=  272.461 DEC=  -24.179 DIST=    2.432 AU
MARS-BATSE DISTANCE =  363847200. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.05 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -475.22 SECS.
CROSSING TIME AT MARS       IS 84385. S. OR   23:26:24 +/-  186.67 SECONDS
1:04 +/-   50.85 SECONDS
 FOUND
POSITION OF MARS ON 31/10/  93 IS:
RA=  230.966 DEC=  -18.904 DIST=    2.446 AU
MARS-BATSE DISTANCE =  365982100. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 69.72 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  423.23 SECS.
CROSSING TIME AT MARS       IS 15218. S. OR   04:13:38 +/-  205.23 SECONDS
 S. OR   07:44:36 +/-   87.29 SECONDS
1 SECS.
CROSSING TIME AT MARS       IS 76832. S. OR   21:20:32 +/-  209.62 SECONDS
NDS
IGHT TRAVEL TIME ALONG PROJECTED PATH= -231.60 SECS.
CROSSING TIME AT MARS       IS  5896. S. OR   01:38:16 +/-   16.51 SECONDS


  BATSE #   Date     TJD     sec   Max ct/s   RA   Dec
    2706   931223    9344   84860     7000   256   +41


                BATSE BURST TRIGGER
NO.: 02706

TIME: TJD=9344 SECONDS=84860

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=069.6  AZIMUTH=087.4  ERROR=      DEGREES

COMMENTS:
BURST, FAST RISE EXPONENTIAL DECAY, LASTING ~17S. VISIBLE ABOVE 300KEV.
```

BATSE Burst #2706

15/ 2/94

ULYSSES RT

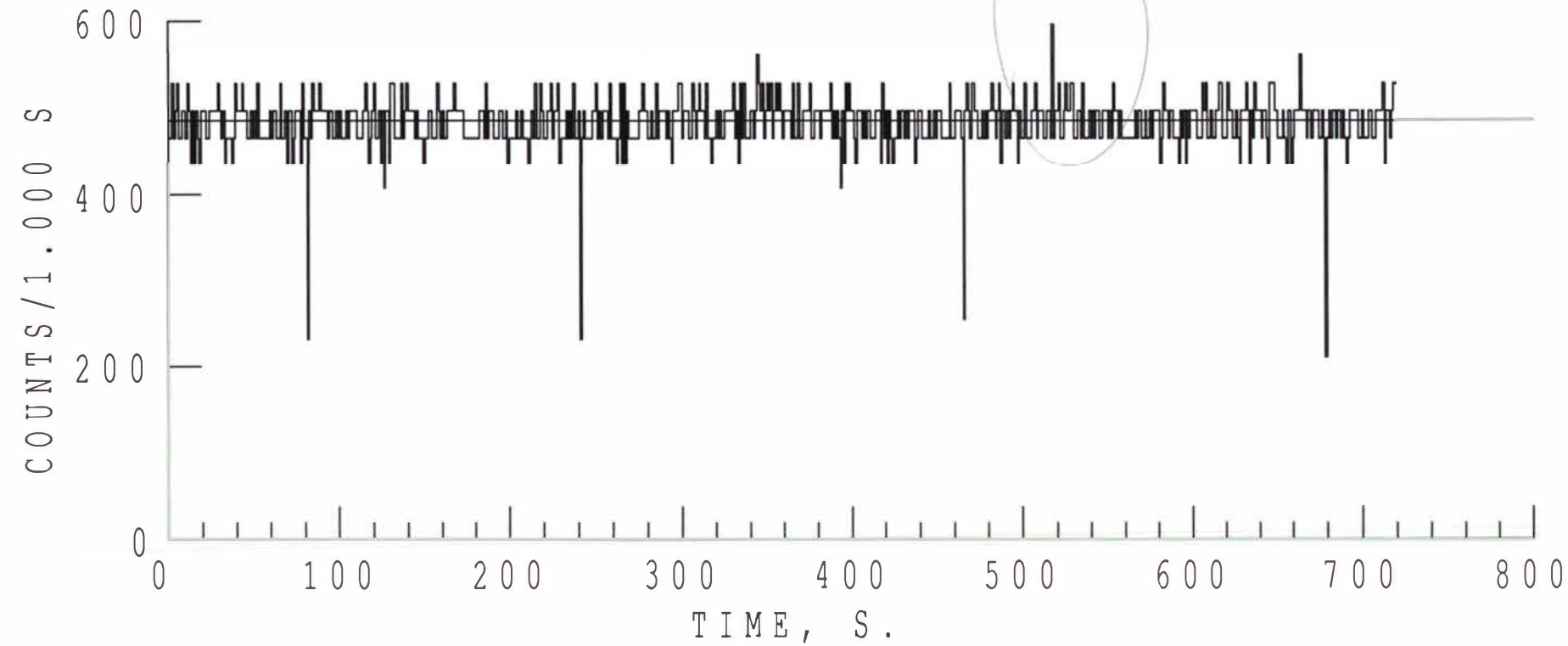
23/12/93 85284.719 s

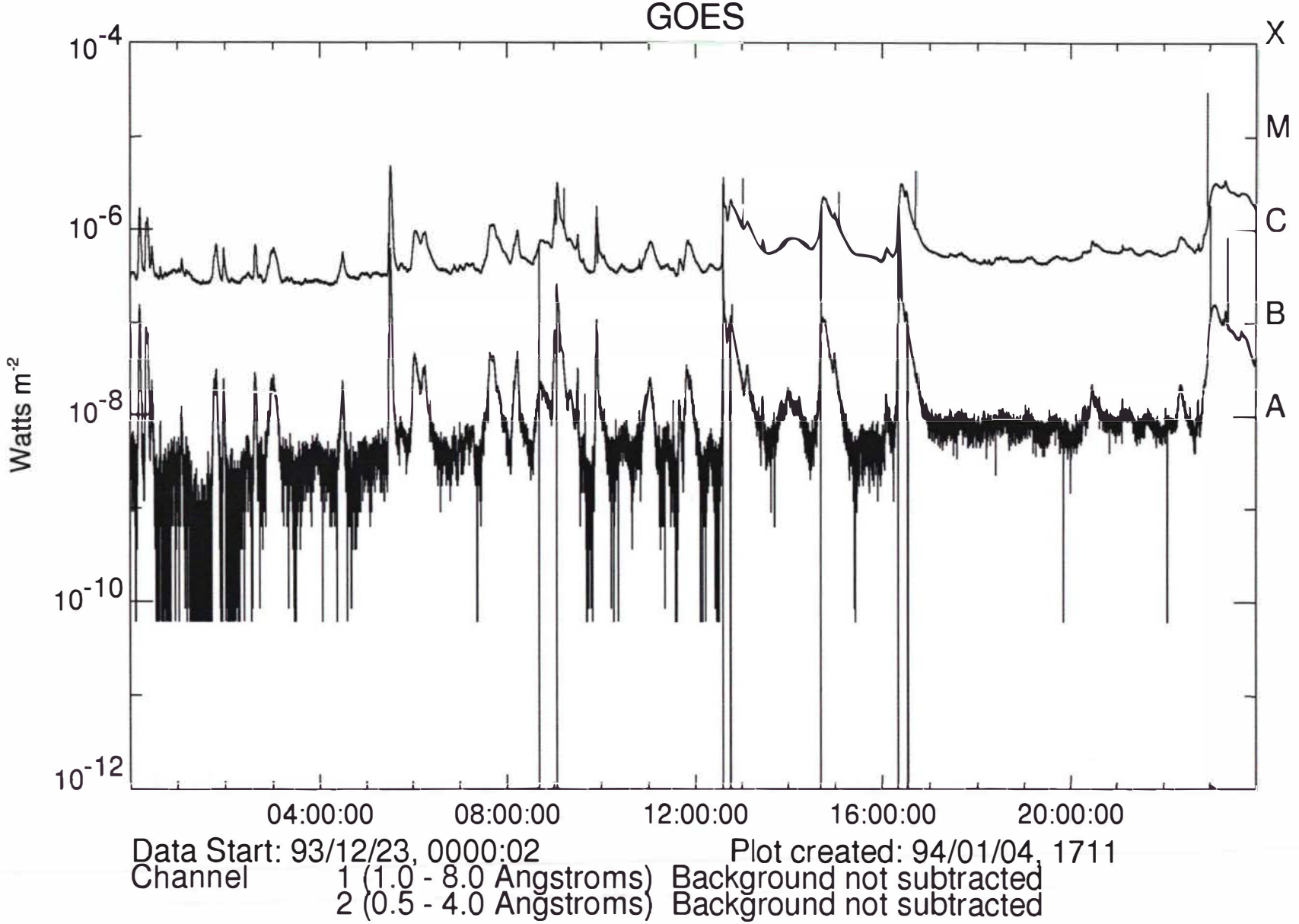
0- 0 keV

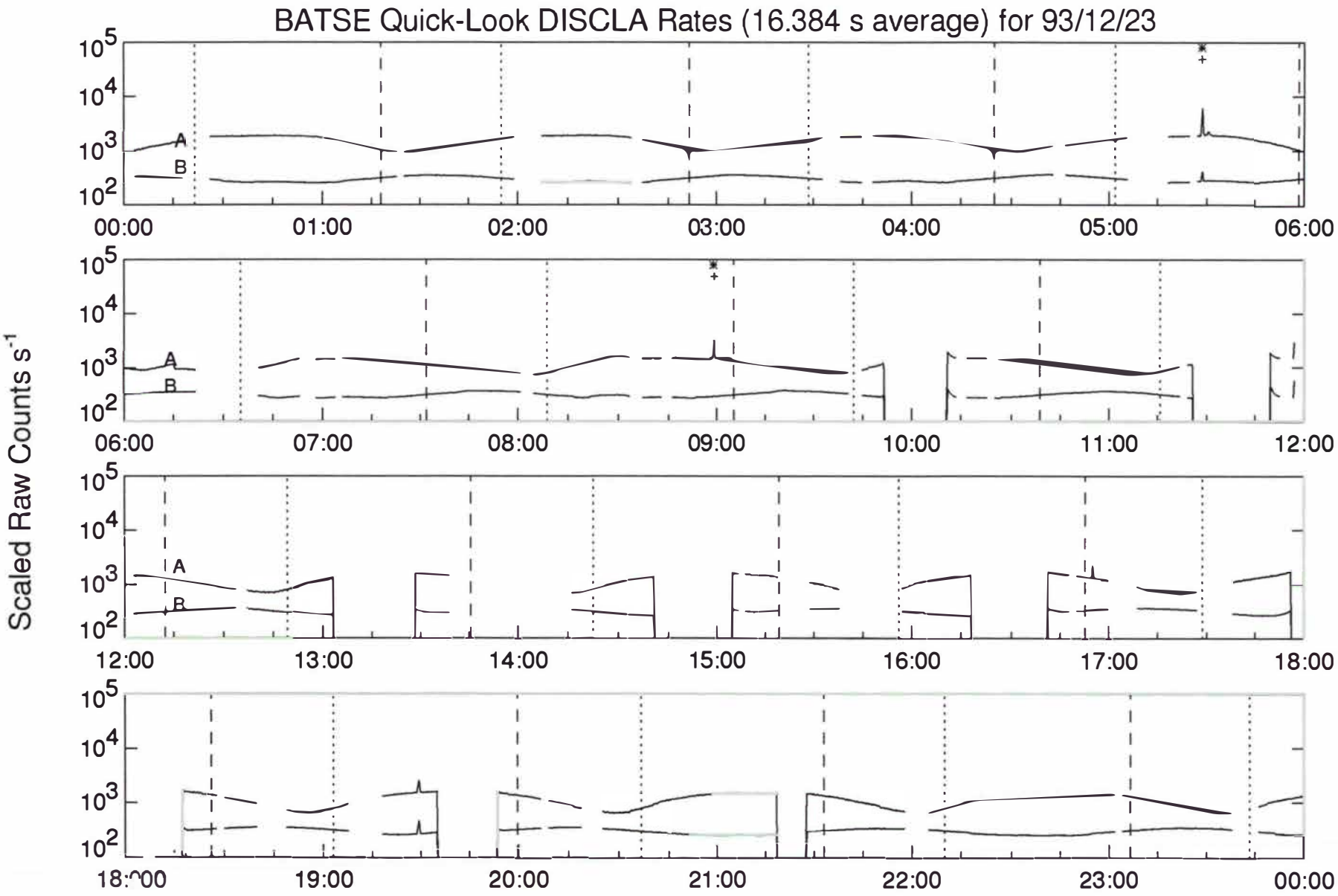
?

N= 10 M= 2

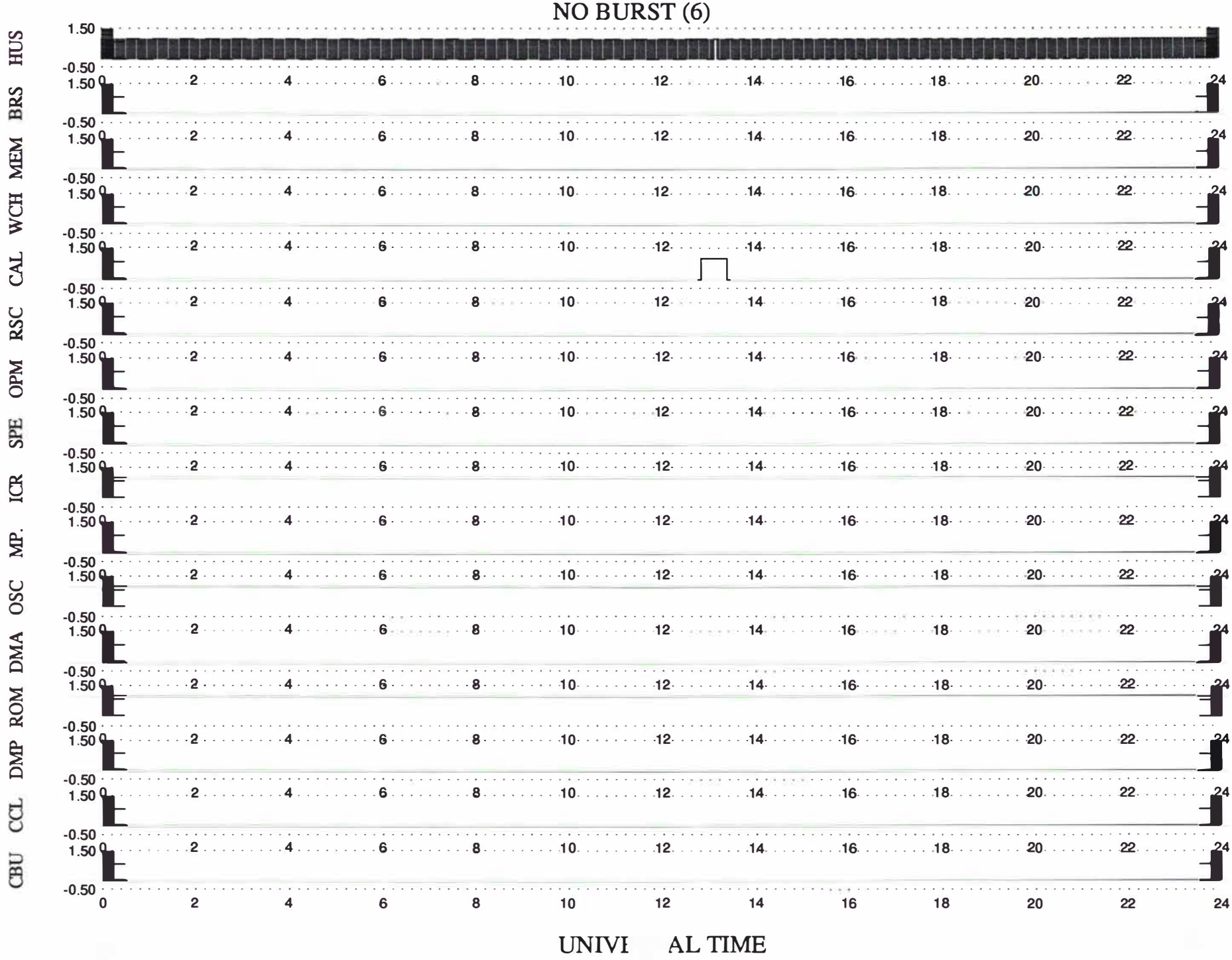
>4.0 SIGMA FLUCTUATIONS




GOES
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/23, 0000:02
Plot created: 94/01/04, 1711
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

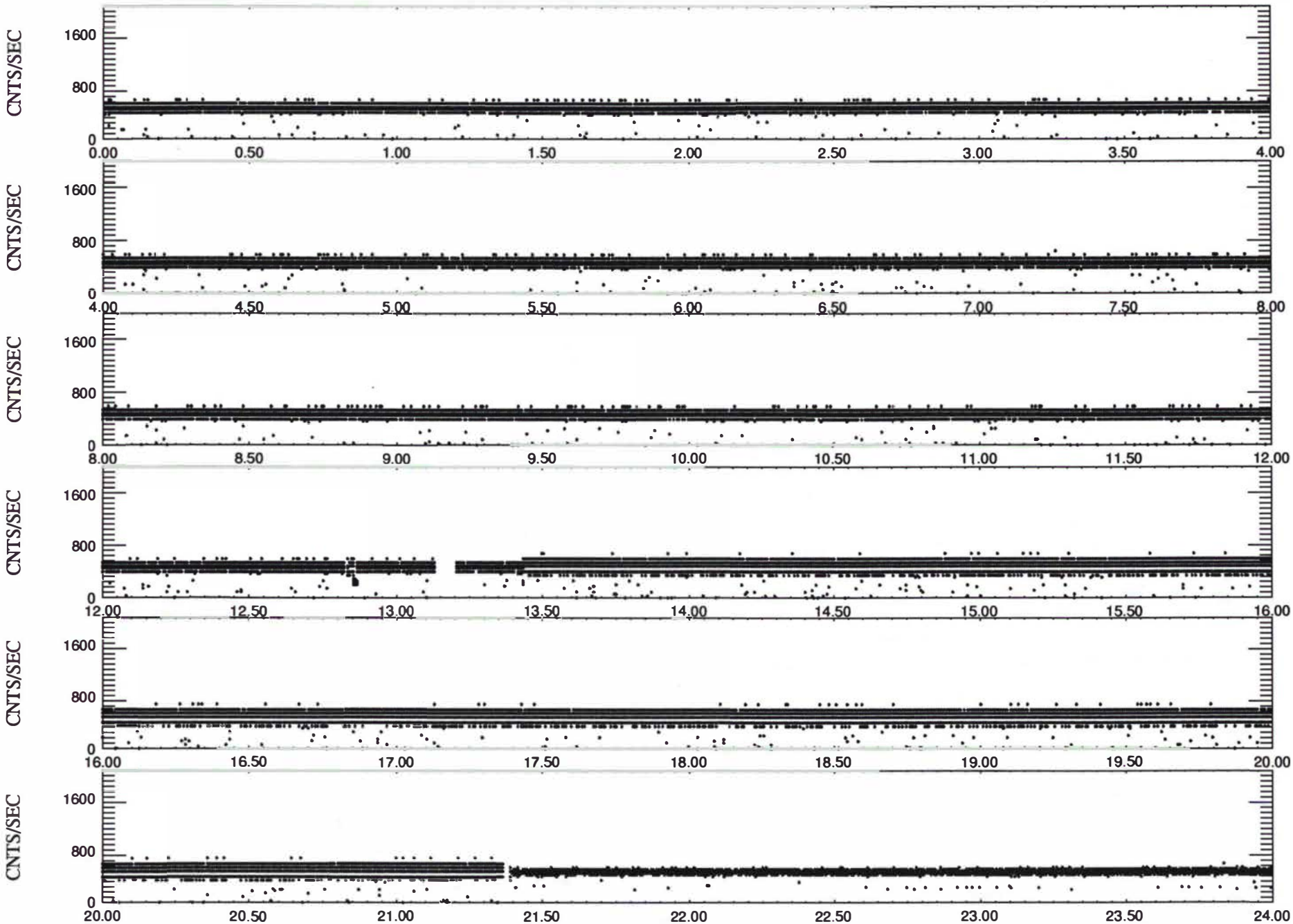

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/23
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 357, year 1993 to day 357, year 1993 2/9/94



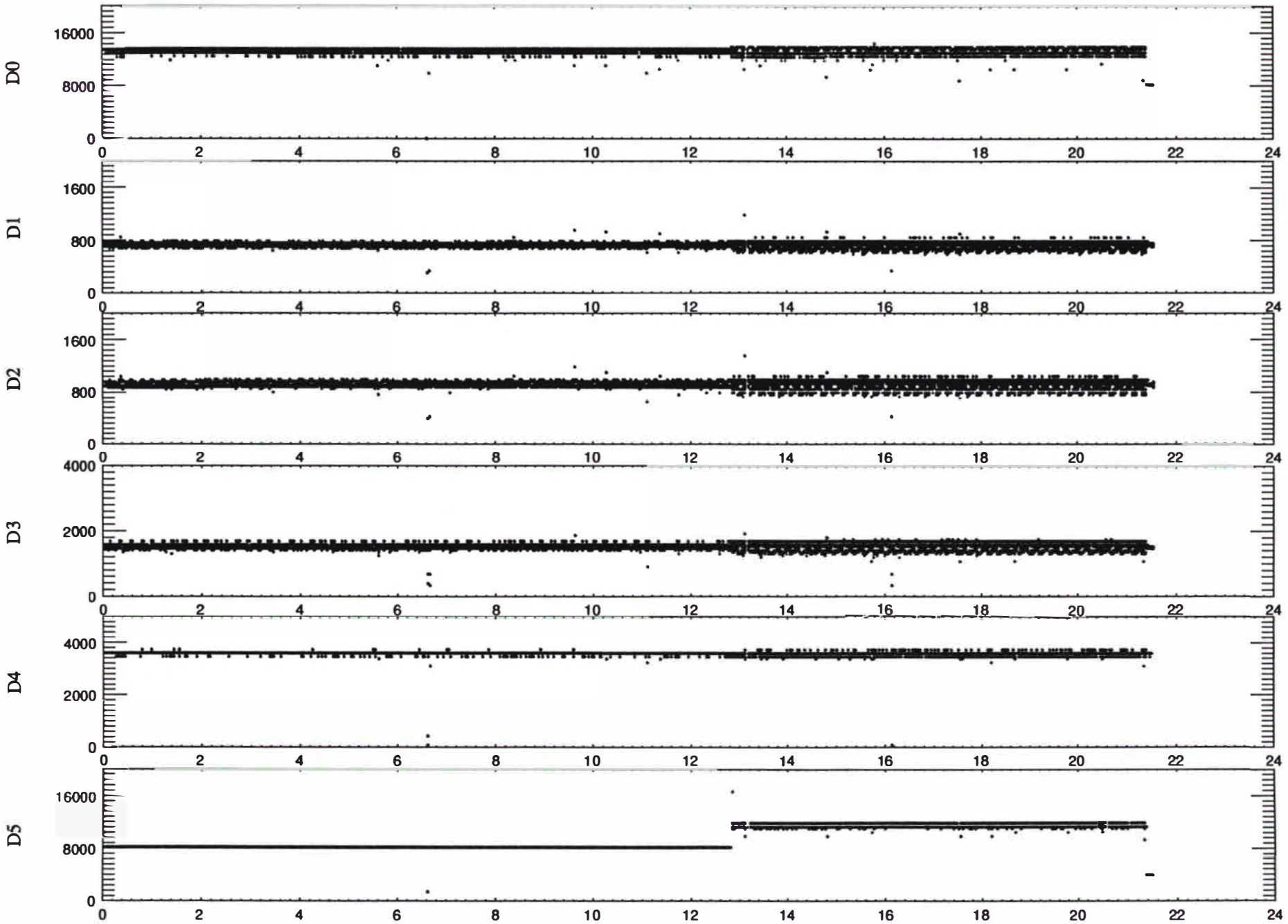
HUS 2A, MODE 1, NOT AVERAGED EDR day 357, year 1993 to day 357, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 357, year 1993 to day 357, year 1993 12/28/93



From ULSRG@jplsp.jpl.nasa.gov Thu Dec 9 14:04:18 1993
Date: Thu, 9 Dec 1993 14:07:42 -0800 (PST)
From: Raul Garcia (reply to ULSSCI) <ULSRG@jplsp.jpl.nasa.gov>
To: KHURLEY@sunspot.ssl.berkeley.edu
Cc: ULSRG@jplsp.jpl.nasa.gov
Subject: 256 BPS ON CHRISTMAS
Content-Length: 502

You will see 2 intervals of 256 bits per second on December 24/25:

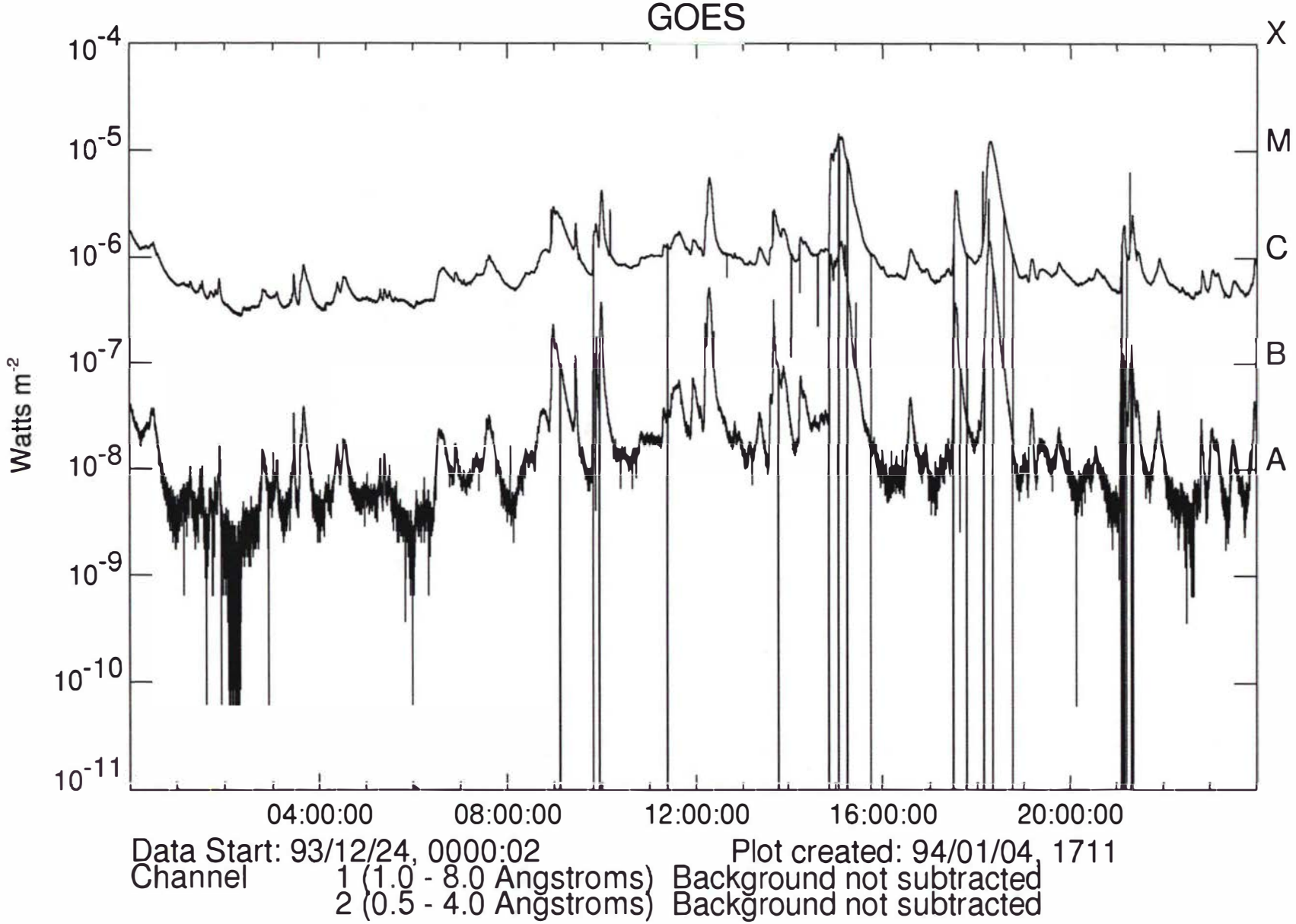
1* 357/21:20 to 358/03:40

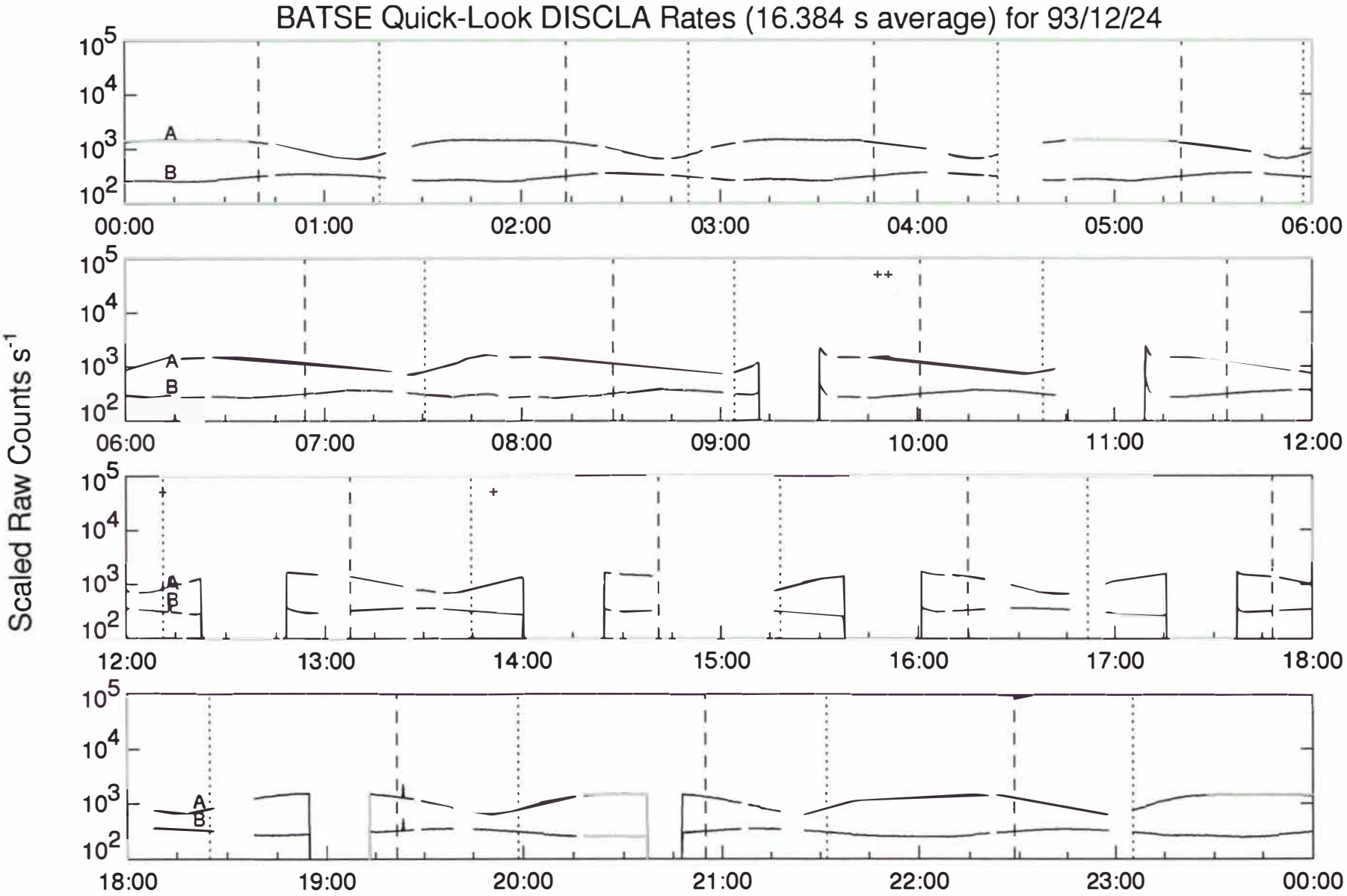
2* 358/06:26 to 358/12:41

This is because DSN is going to observe the Christmas holiday. The extension of the gaps exceeds the capacity of the on-board tape recorder at 512 and therefore we need to lower the recording bit rate to cover them.

Please let us know if you need any special operation related to this event, or if you have any question in relation to it.

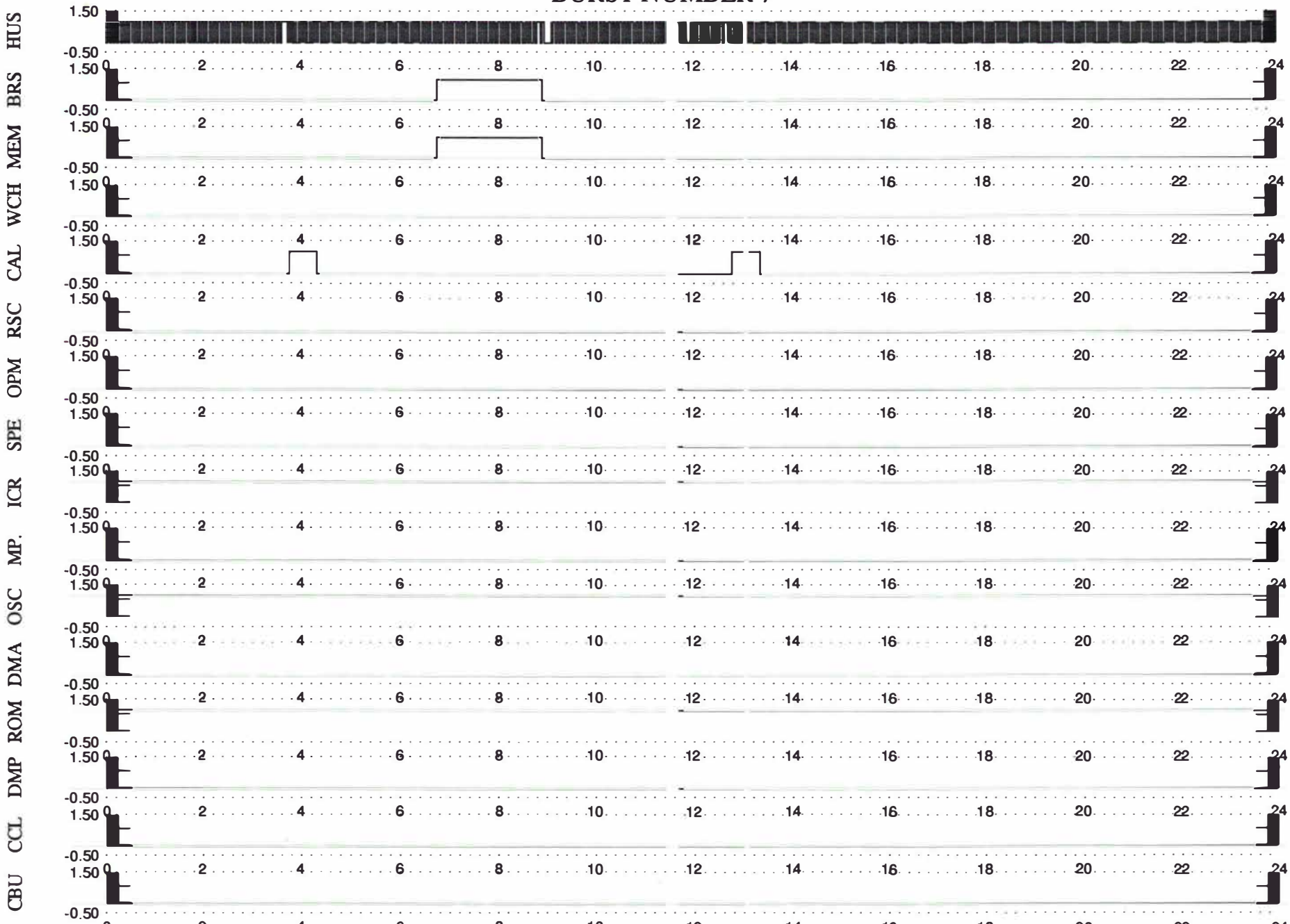
Best Regards, Raul Garcia-Perez


GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
10-11
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/24, 0000:02
Plot created: 94/01/04, 1711
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted


BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/24
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
++
12:00
13:00
14:00
15:00
16:00
17:00
18:00
+
+
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 358, year 1993 to day 358, year 1993 2/9/94

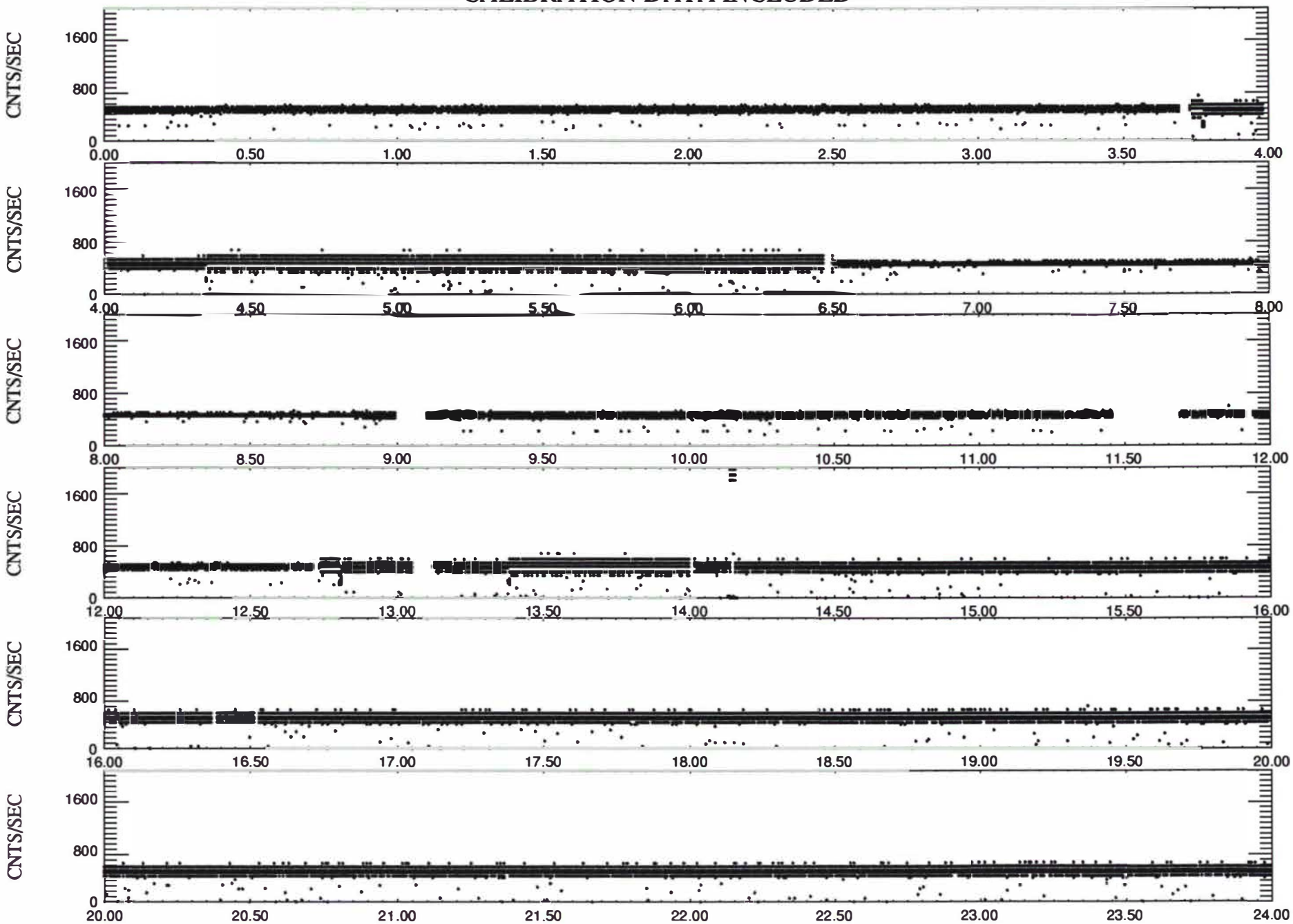
BURST NUMBER 7



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 358, year 1993 to day 358, year 1993 2/9/94

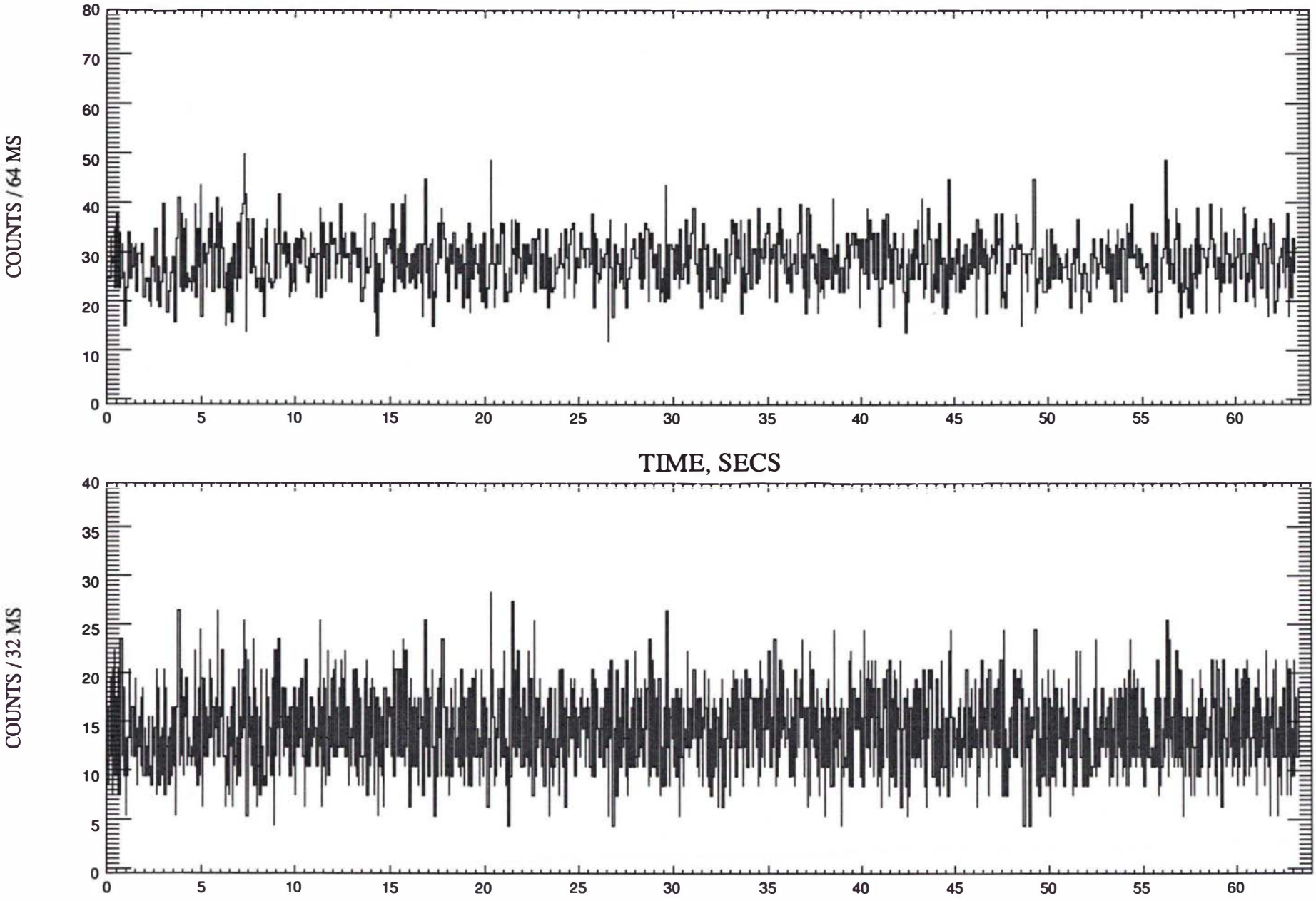
CALIBRATION DATA INCLUDED



UNIVERSAL TIME

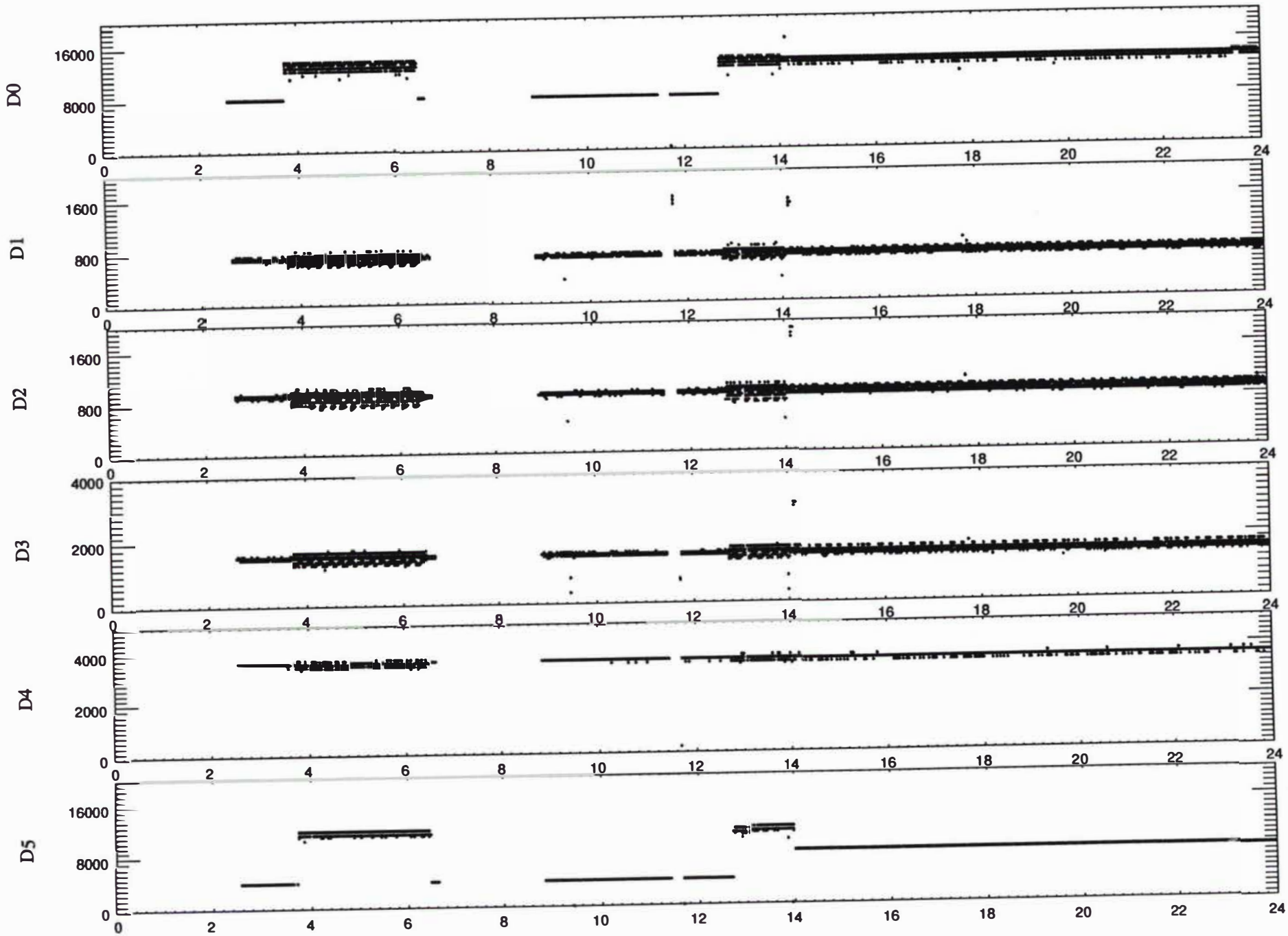
HUS 2A TRIGGERED DATA EDR day 358, year 1993 2/9/94

Burst Counter 7 at UT= 8.787073092990 h=31633.463 s 08:47:13.463



B# 1

HUS 2B COUNTS / SEC QEDR day 358, year 1993 to day 358, year 1993 12/28/93



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:56:14 1993
Date: Mon, 27 Dec 1993 11:00:34 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2707
Content-Length: 1135

```
          ********************
          *BATSEARCH PROGRAM*
          ********************

 BATSE BURST #    2707
 EVENT OF 1993 DEC 25 DAY OF YEAR=359
 EVENT CROSSING TIME AT BATSE      : 18175. S. OR 05:02:55.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:  15.000  -42.000
 BATSE PEAK COUNTING RATE:    600    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 25/12/  93 IS:
 RA=  165.900 DEC=  -39.966 DIST=    3.782 AU
 BATSE-ULYSSES DISTANCE =  565719656. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 86.11 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  128.06 SECS.
 CROSSING TIME AT ULYSSES    IS 18303. S. OR   05:05:03 +/-  378.81 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 25/12/  93 IS:
 RA=  274.118 DEC=  -24.160 DIST=    2.430 AU
 MARS-BATSE DISTANCE =  363514784. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 98.39 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -176.86 SECS.
 CROSSING TIME AT MARS       IS 17998. S. OR   04:59:58 +/-  205.58 SECONDS
```

RI - ~~not likely~~ NO !

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2707	931225	9346	18175	600	015	-42

?

BATSE BURST TRIGGER

NO.: 02707

TIME: TJD=9346 SECONDS=18175

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=146.5 AZIMUTH=304.5 ERROR= DEGREES

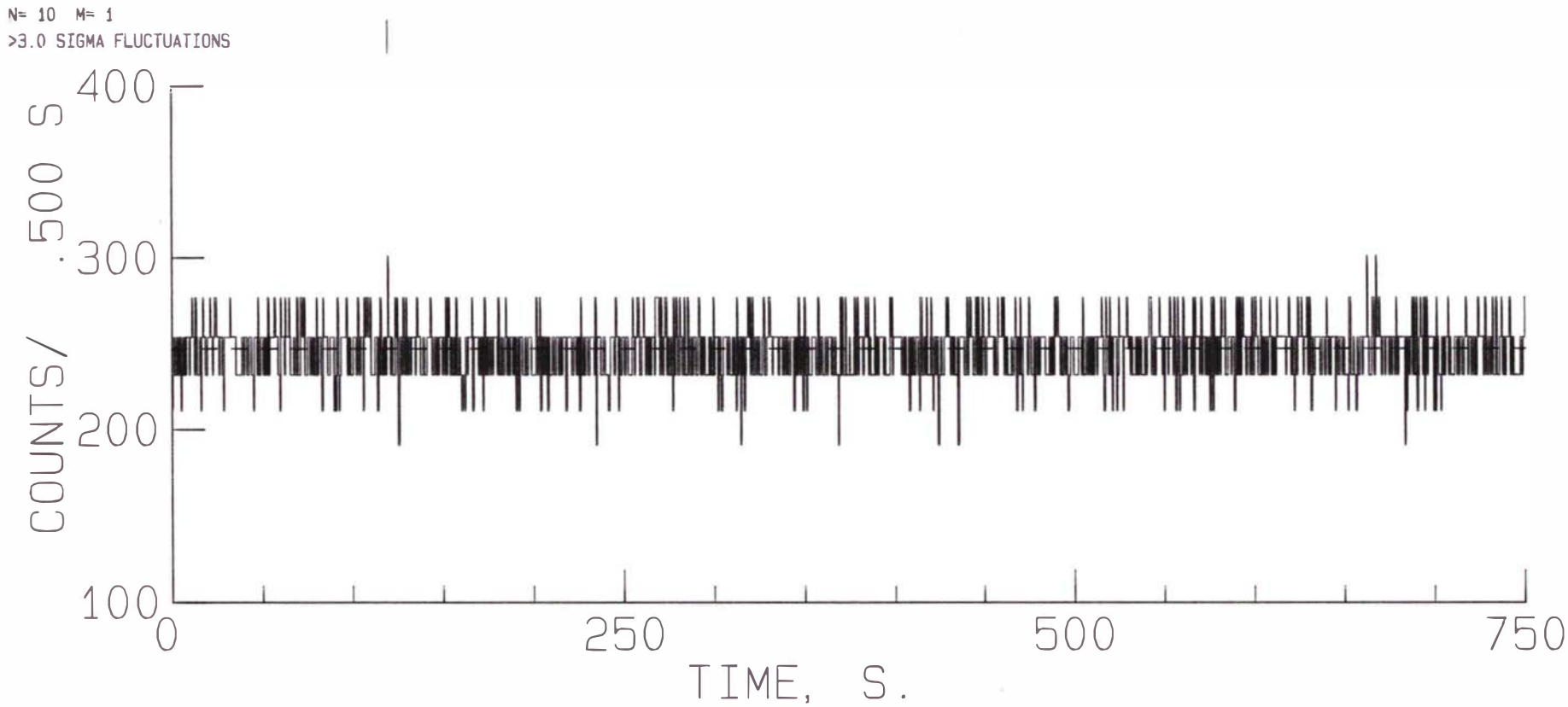
COMMENTS:
BURST, SINGLE SPIKE, LASTING ~0.15S. VISIBLE ABOVE 300KEV.

ULYSSES RT

7/ 8/95

25/12/93 17928.352 s

20- 140 keV



From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:41:41 1993
Date: Mon, 27 Dec 1993 10:45:54 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02708

TIME: TJD=9346 SECONDS=25402

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, GOES C5.8, LASTING ~22S. NOT VISIBLE ABOVE 300KEV.

From SHARIFF@ssl.msfc.nasa.gov Mon Dec 27 08:57:48 1993
Date: Mon, 27 Dec 1993 11:02:09 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2709
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2709
 EVENT OF 1993 DEC 25 DAY OF YEAR=359
 EVENT CROSSING TIME AT BATSE      : 84012. S. OR 23:20:12.0
 COORDINATES ARE    0.000    0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION:    5.000    11.000
 BATSE PEAK COUNTING RATE:    8500     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 25/12/  93 IS:
 RA=  165.831 DEC=  -40.169 DIST=     3.769 AU
 BATSE-ULYSSES DISTANCE =  563778599. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 33.74 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1563.87 SECS.
 CROSSING TIME AT ULYSSES     IS 85576. S. OR   23:46:15 +/-  255.08 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON 25/12/  93 IS:
 RA=  274.118 DEC=  -24.160 DIST=     2.430 AU
 MARS-BATSE DISTANCE =  363514784. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 84.73 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  111.41 SECS.
 CROSSING TIME AT MARS        IS 84123. S. OR   23:22:03 +/-  211.32 SECONDS
```

RI

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2709	931225	9346	84012	8500	005	+11

BATSE BURST TRIGGER

NO.: 02709

TIME: TJD=9346 SECONDS=84012

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=160.2 AZIMUTH=134.3 ERROR= DEGREES

COMMENTS:
BURST, SINGLE PEAK WITH SUBSTRUCTURE, LASTING ~22S. VISIBLE ABOVE 300KEV.

Helio corr removed

Date: Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☐ Final ephemeris used?

☐ Final, CDROM data used?

☐ Were data checked by Joe Springer for 0.5 s errors?

☐ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? No - bad stats

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

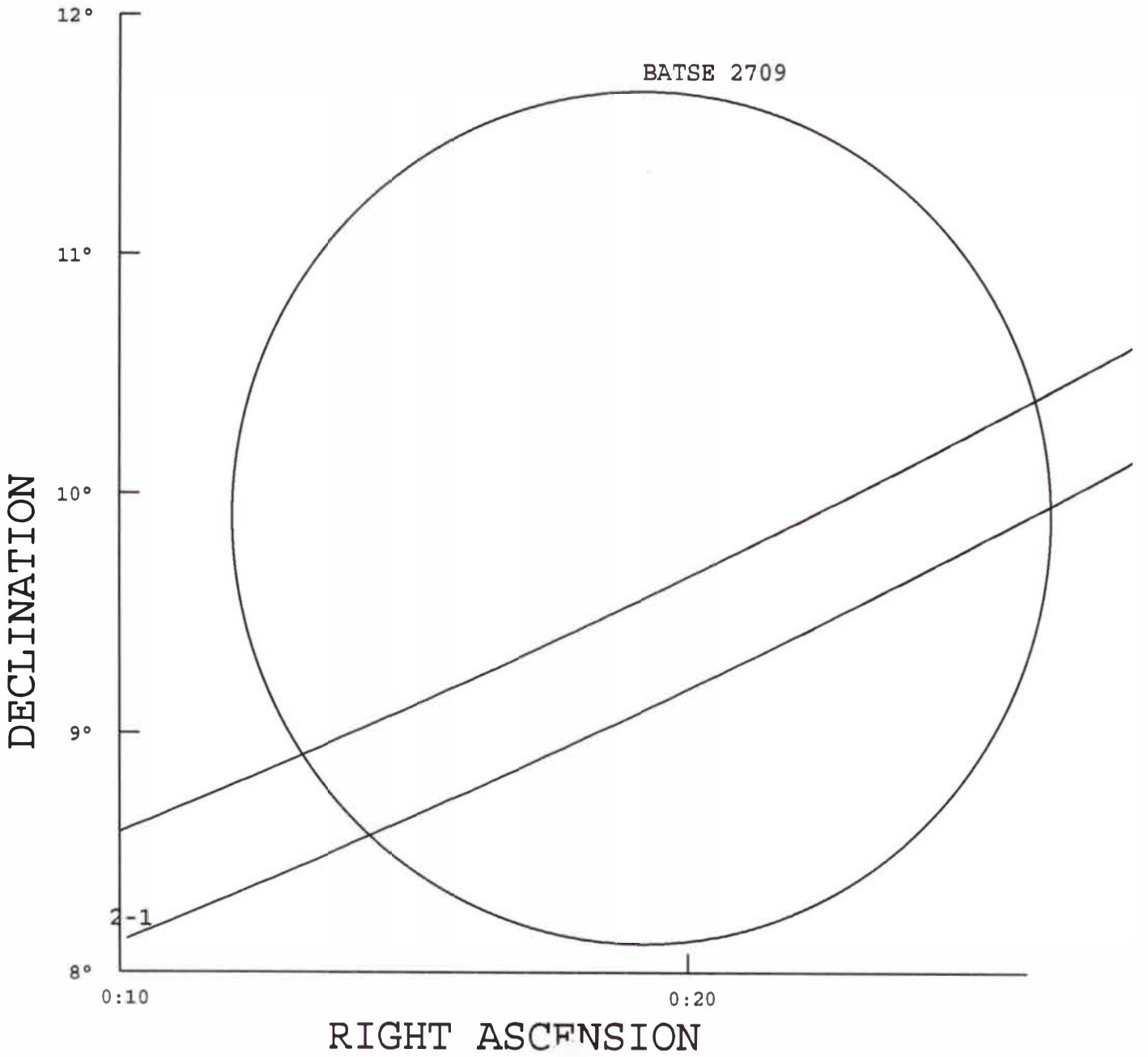
☐ Geocentric time used?

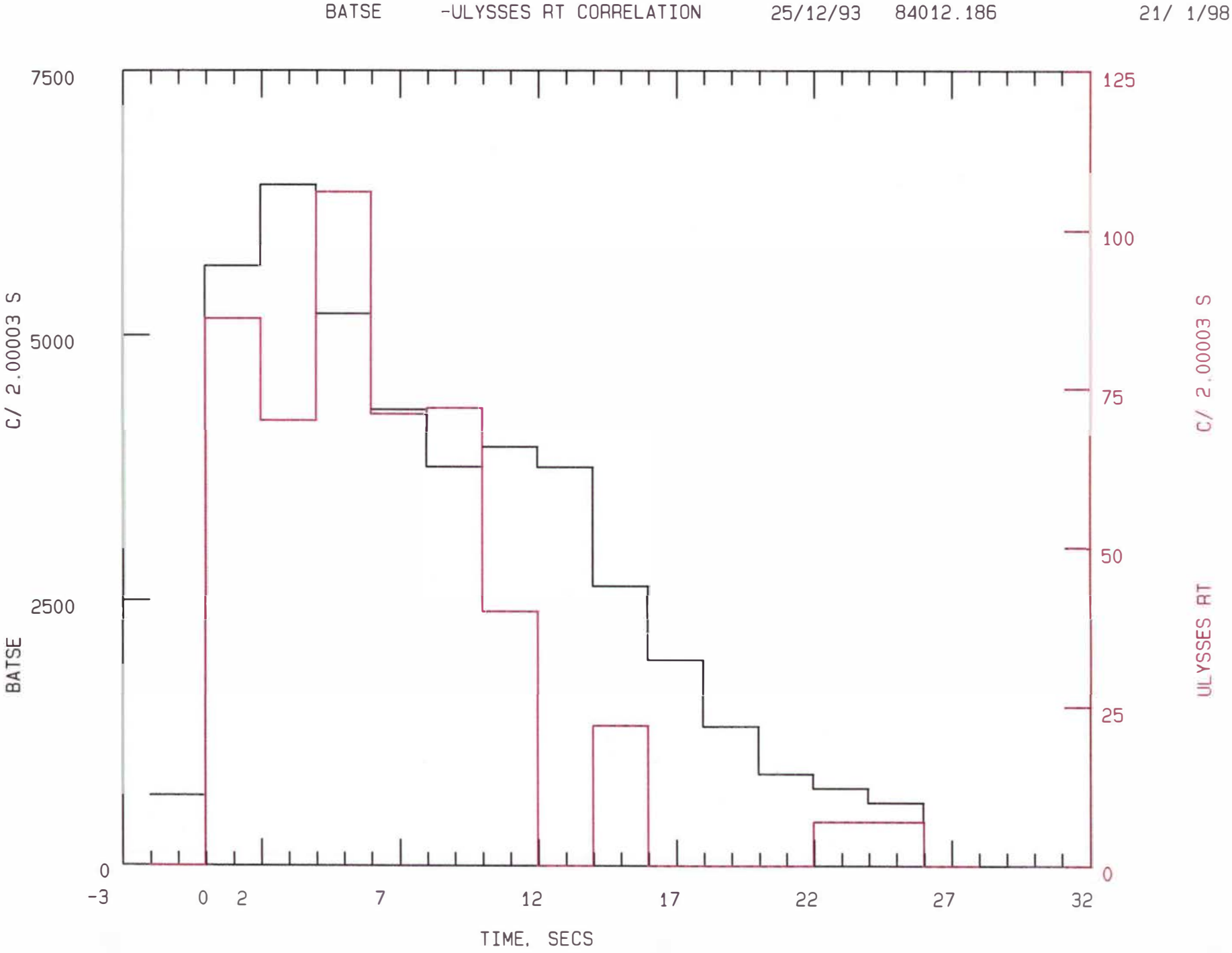
☑ ACCESS database updated?

EVENT OF DEC 25, 1993 23:45

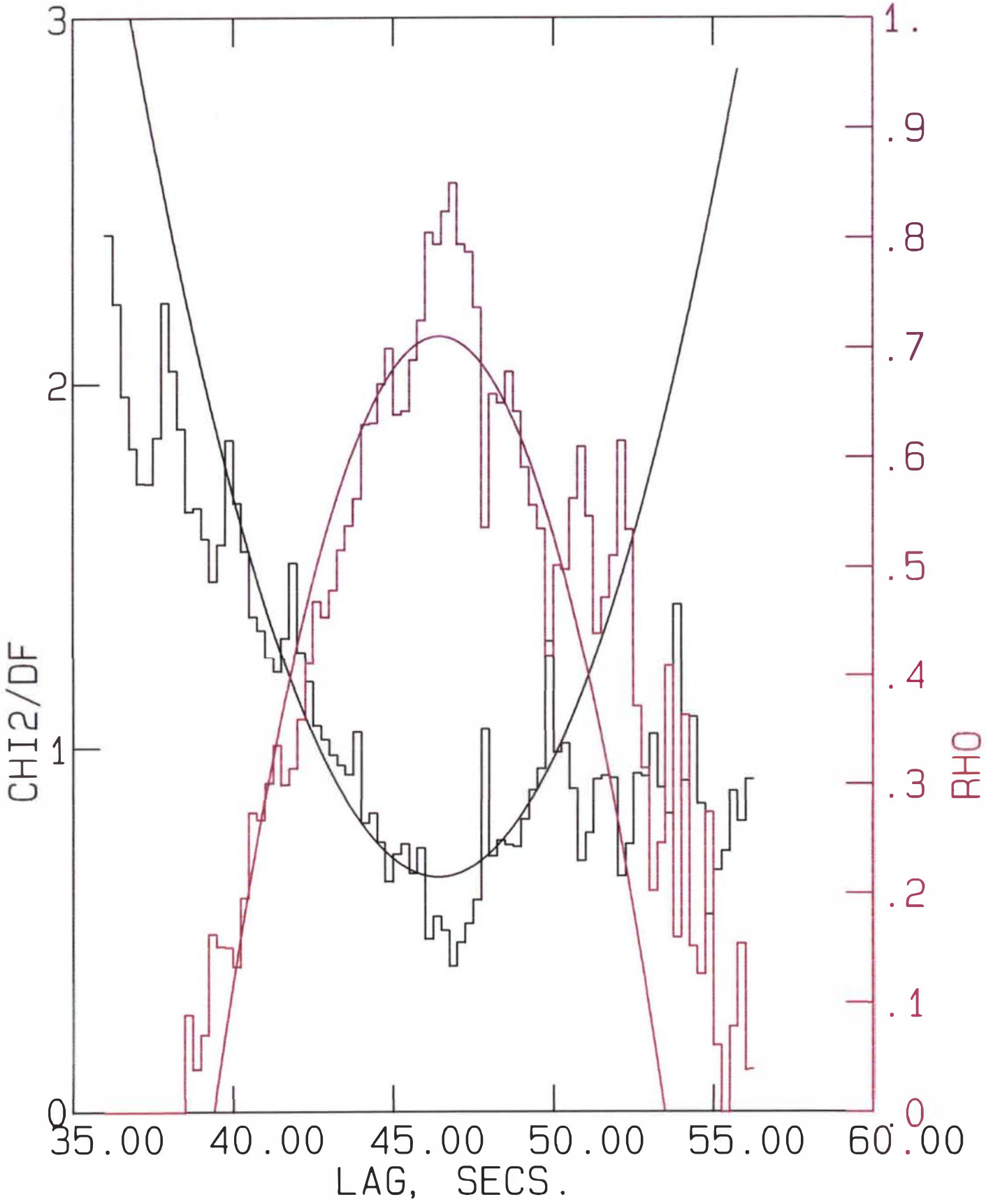
21/ 1/98

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 25/12/93 84012.186 21/ 1/98
7500
5000
2500
0
C/ 2.00003 S
BATSE
125
100
75
50
25
0
C/ 2.00003 S
ULYSSES RT
-3
0
2
7
12
17
22
27
32
TIME, SECS

BATSE -ULYSSES RT CORRELATION 25/12/93 84012.186



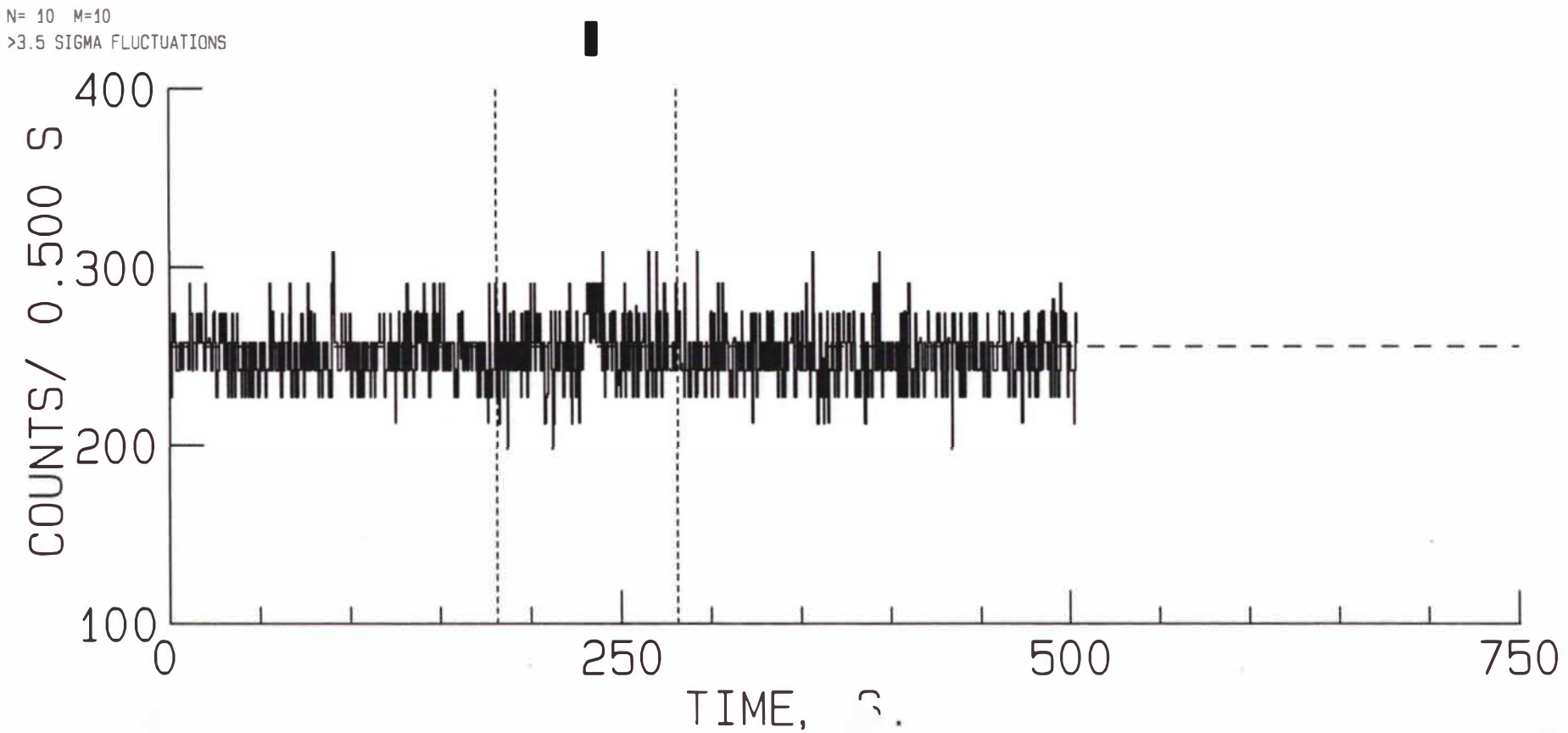
ULYSSES RT

21/ 1/98

25/12/93 85320.149 s

0.250 S INTERVALS REGROUPED BY 2

20- 140 keV



Batse # 2709

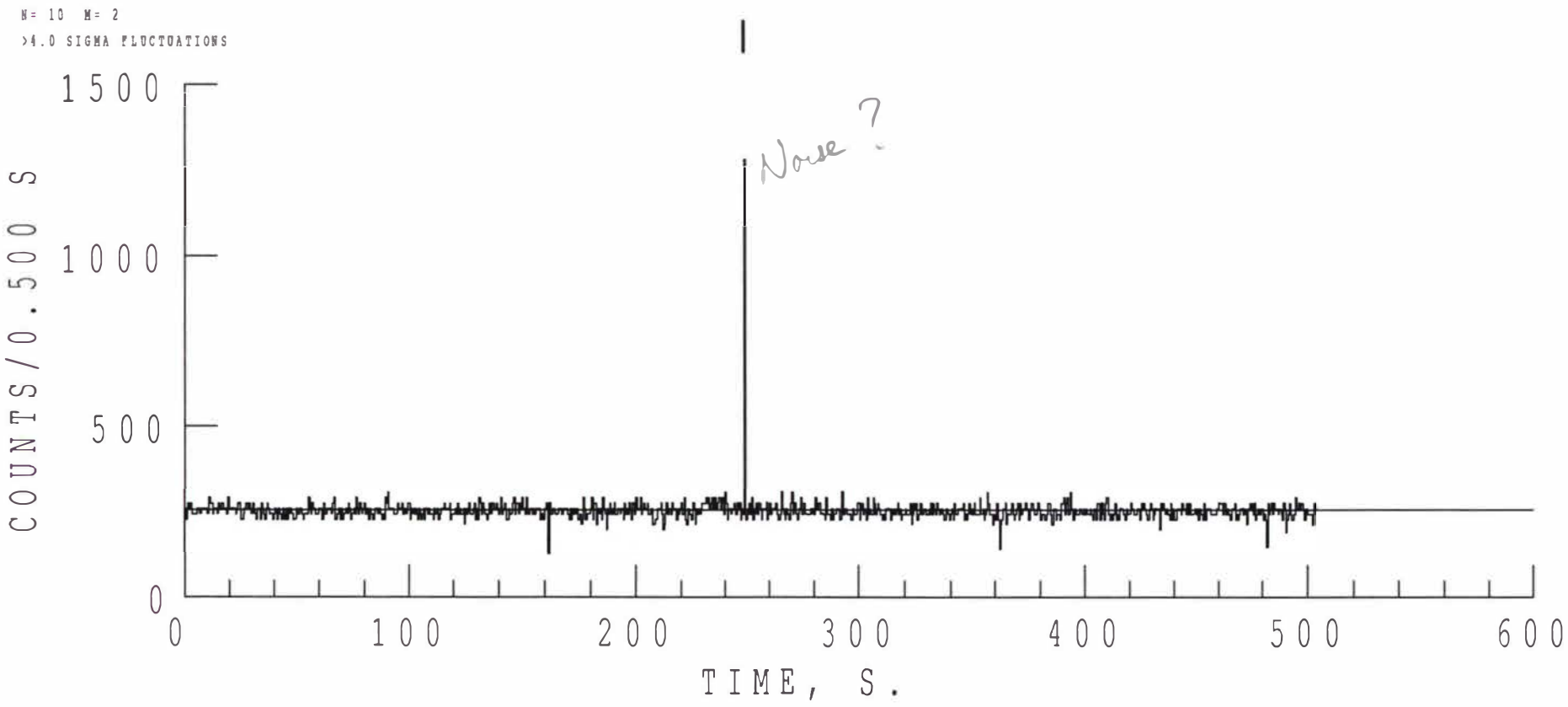
4 / 1 / 94

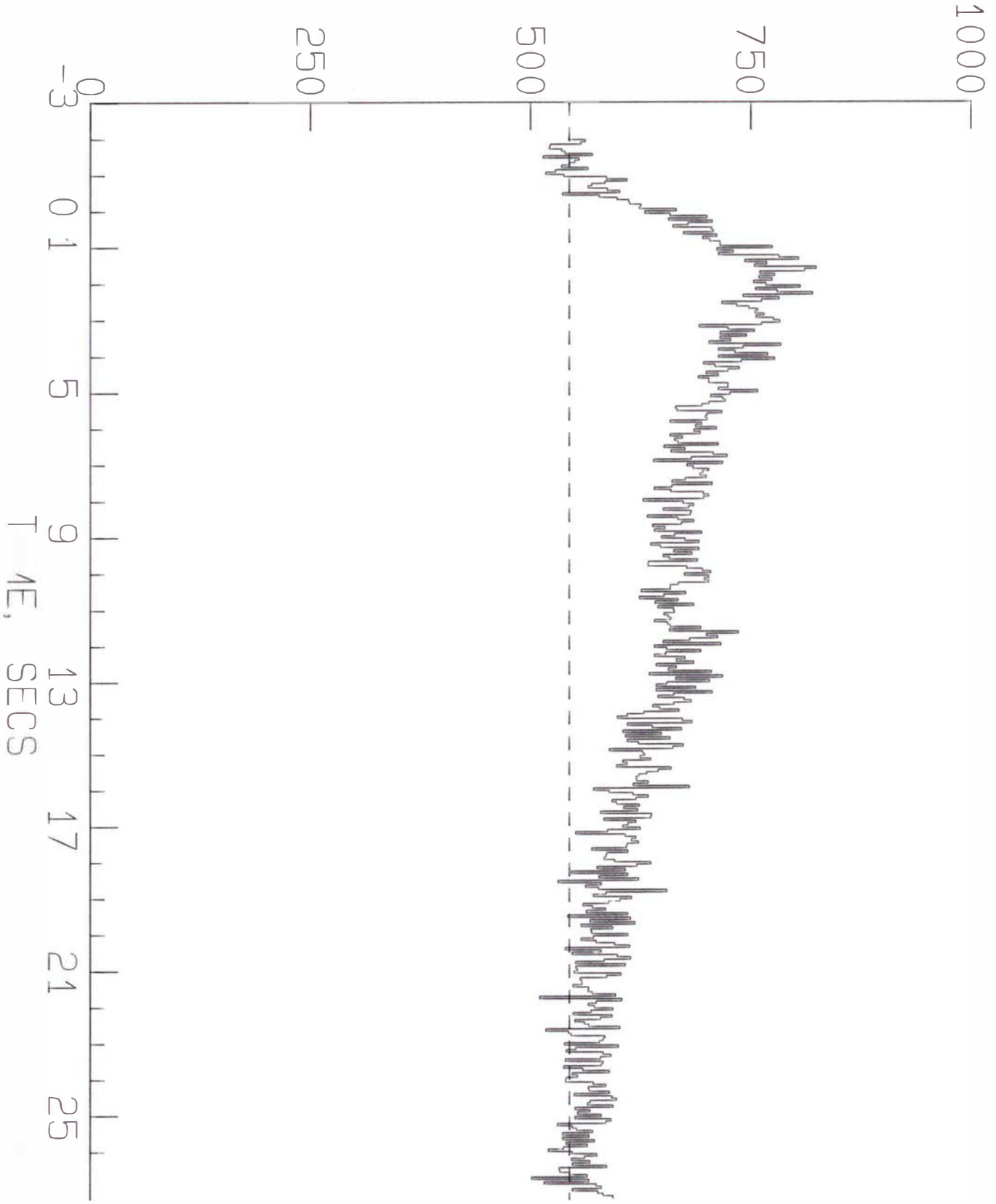
ULYSSES RT

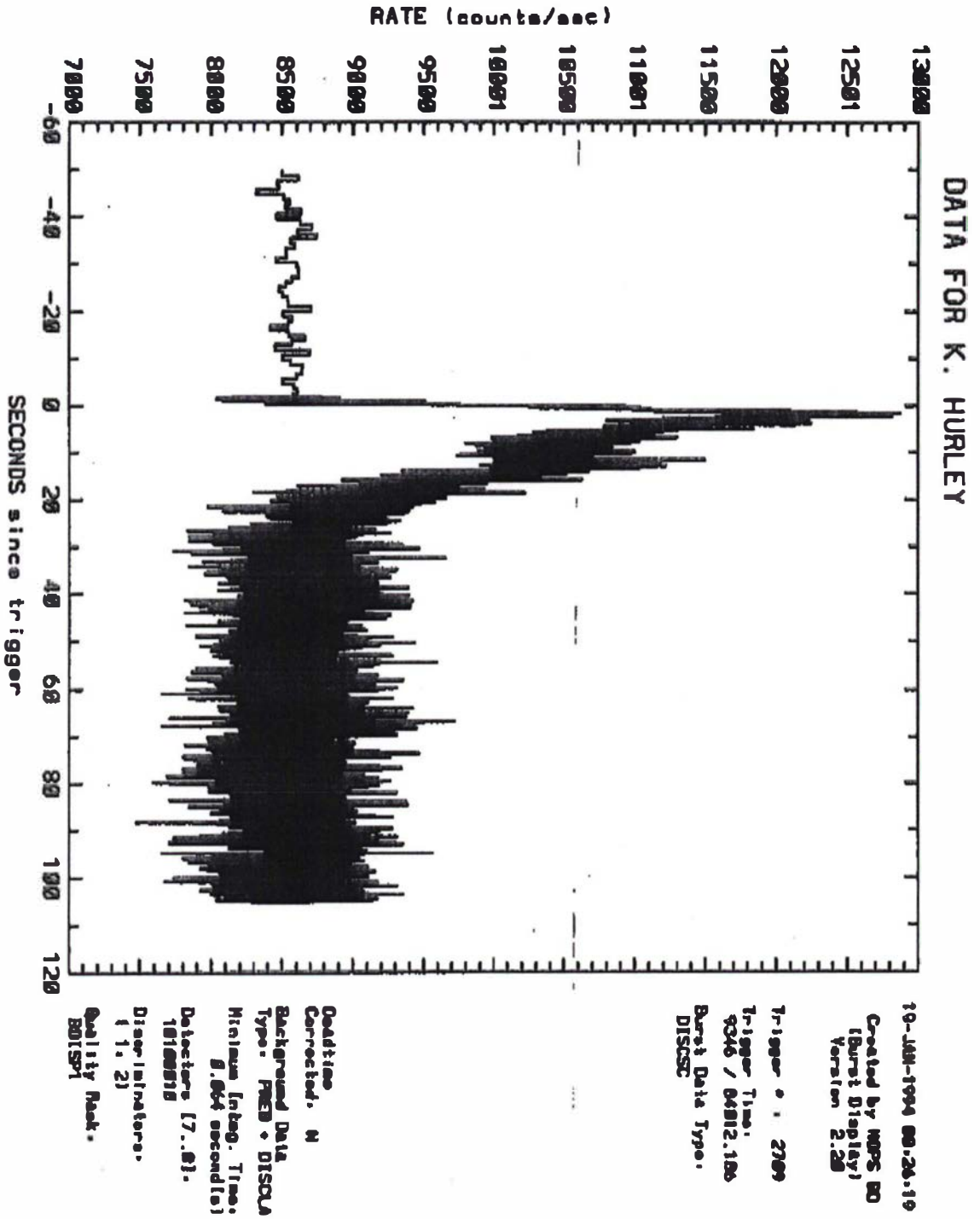
25/12/93 85320.148 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV




BATSE 25/12/93 84012.186
25- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
-3
0
1
5
9
13
17
21
25
T - 4E, SECS


DATA FOR K. HURLEY
RATE (counts/sec)
SECONDS since trigger
Created by MDPS BD
(Burst Display)
Version 2.28
Trigger Time:
9346 / 84812.188
Burst Data Type:
DISCSC
Condition
Corrected: N
Background Data
Type: FREE + DISCLA
Minimum Integ. Time:
0.064 seconds
Detectors [7..0]:
10100000
Discriminators:
(1, 2)
Quality Mask:
BATSPI

From ULSRG@jplsp.jpl.nasa.gov Thu Dec 9 14:04:18 1993
Date: Thu, 9 Dec 1993 14:07:42 -0800 (PST)
From: Raul Garcia (reply to ULSSCI) <ULSRG@jplsp.jpl.nasa.gov>
To: KHURLEY@sunspot.ssl.berkeley.edu
Cc: ULSRG@jplsp.jpl.nasa.gov
 ubject: 256 BPS ON CHRISTMAS
Content-Length: 502

You will see 2 intervals of 256 bits per second on December 24/25:

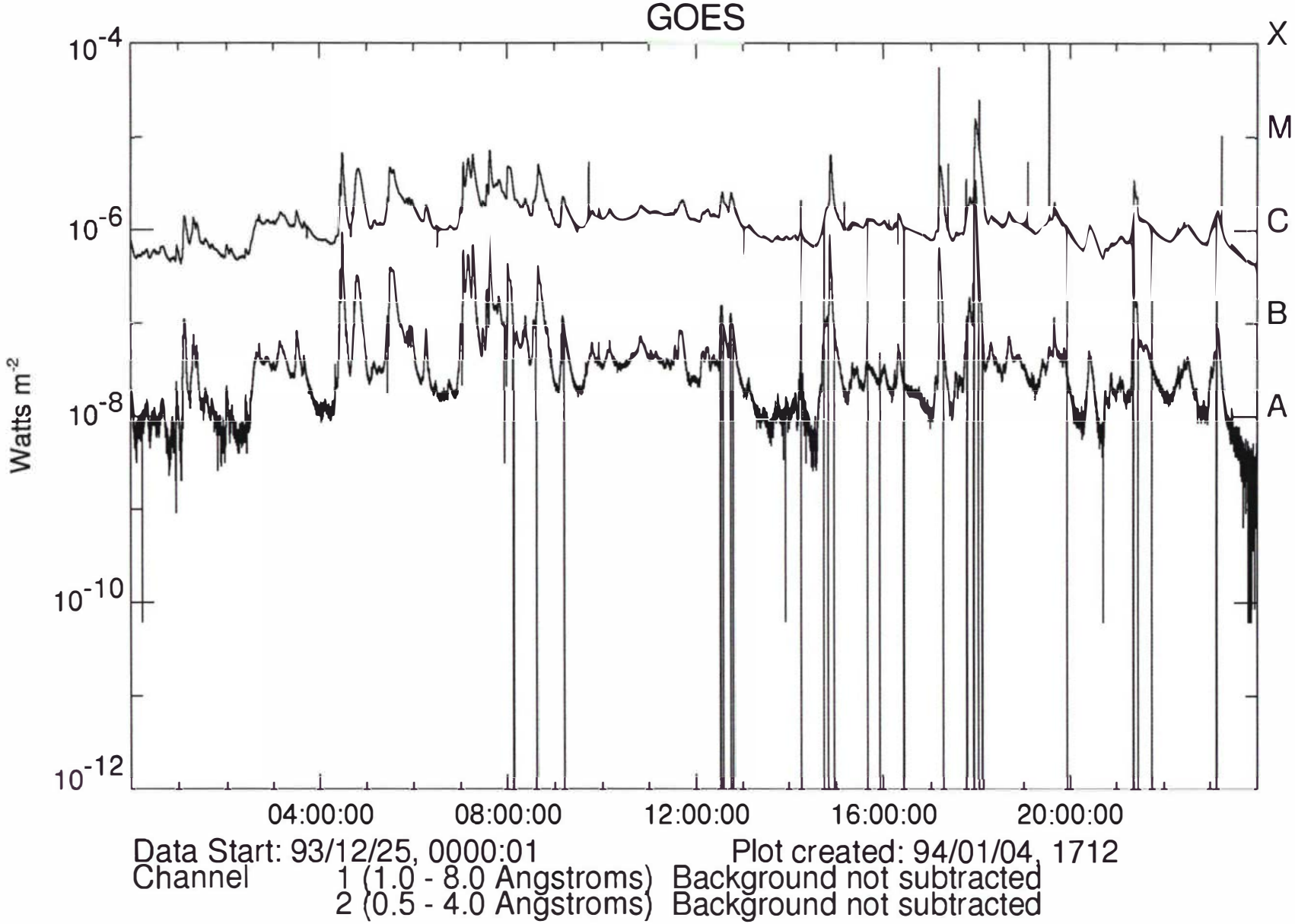
        1* 357/21:20 to 358/03:40

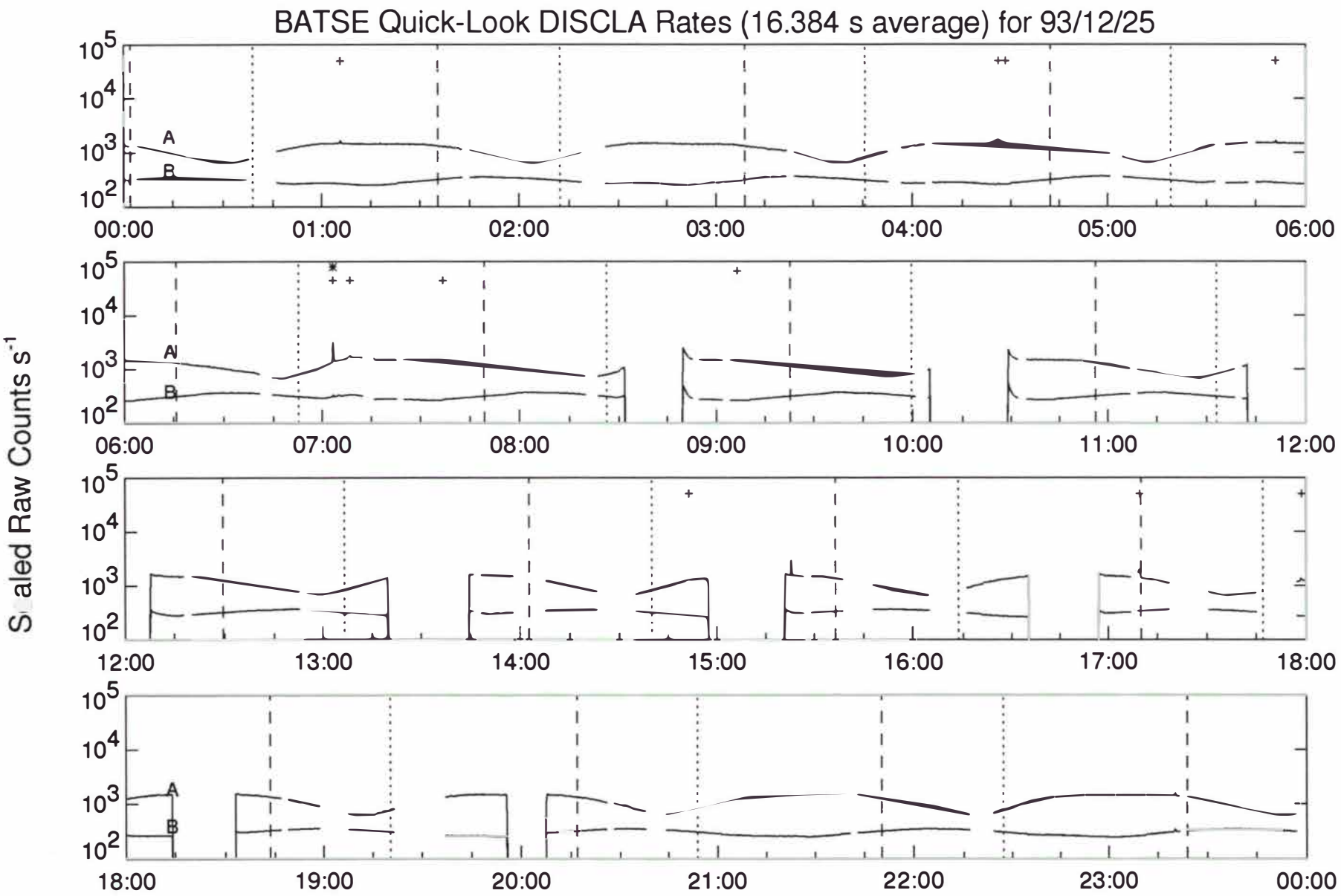
        2* 358/06:26 to 358/12:41

This is because DSN is going to observe the Christmas holiday. The extension
of the gaps exceeds the capacity of the on-board tape recorder at 512
and therefore we need to lower the recording bit rate to cover them.

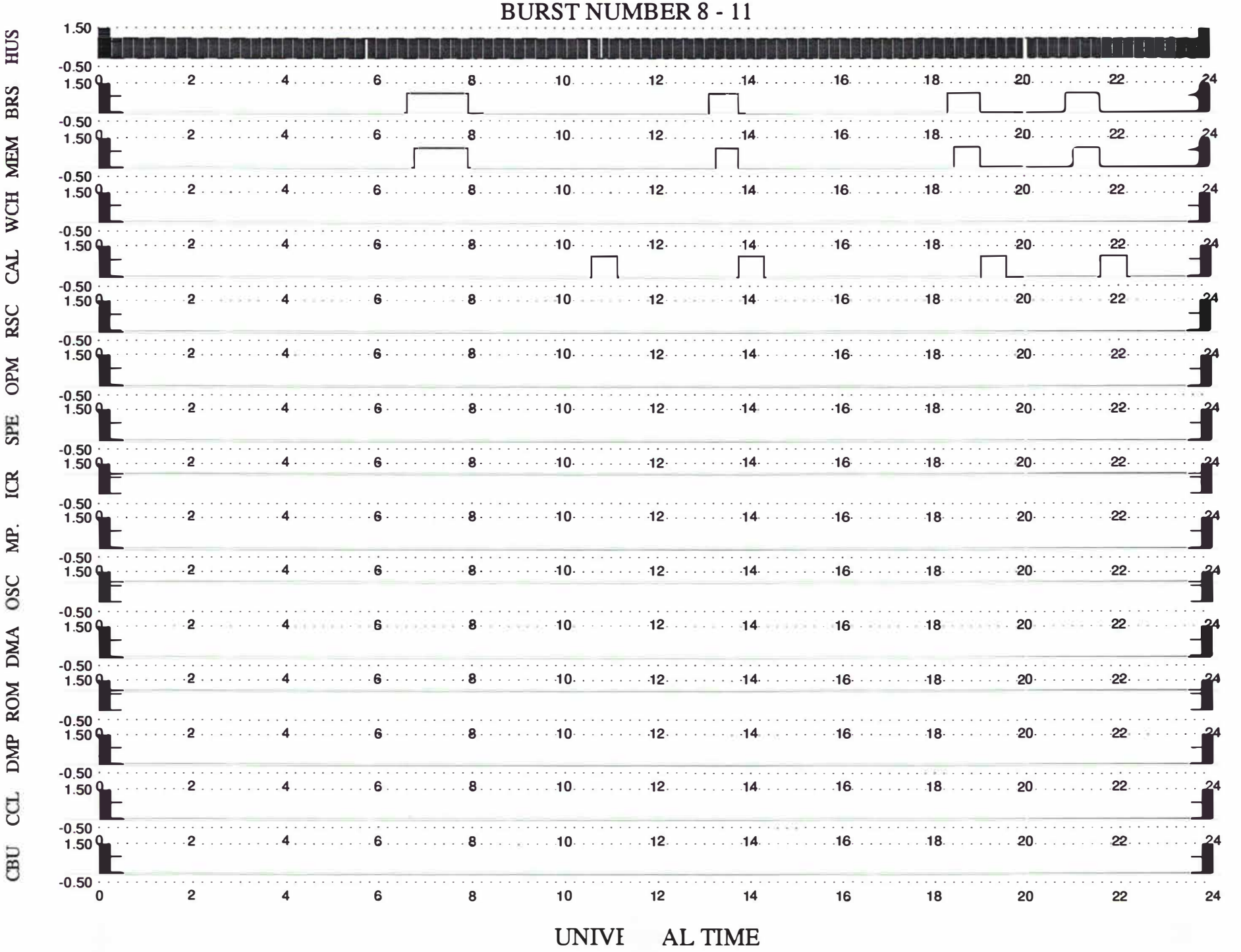
Please let us know if you need any special operation related to this event, or
if you have any question in relation to it.

Best Regards,   Raul Garcia-Perez


GOES
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/25, 0000:01
Plot created: 94/01/04, 1712
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

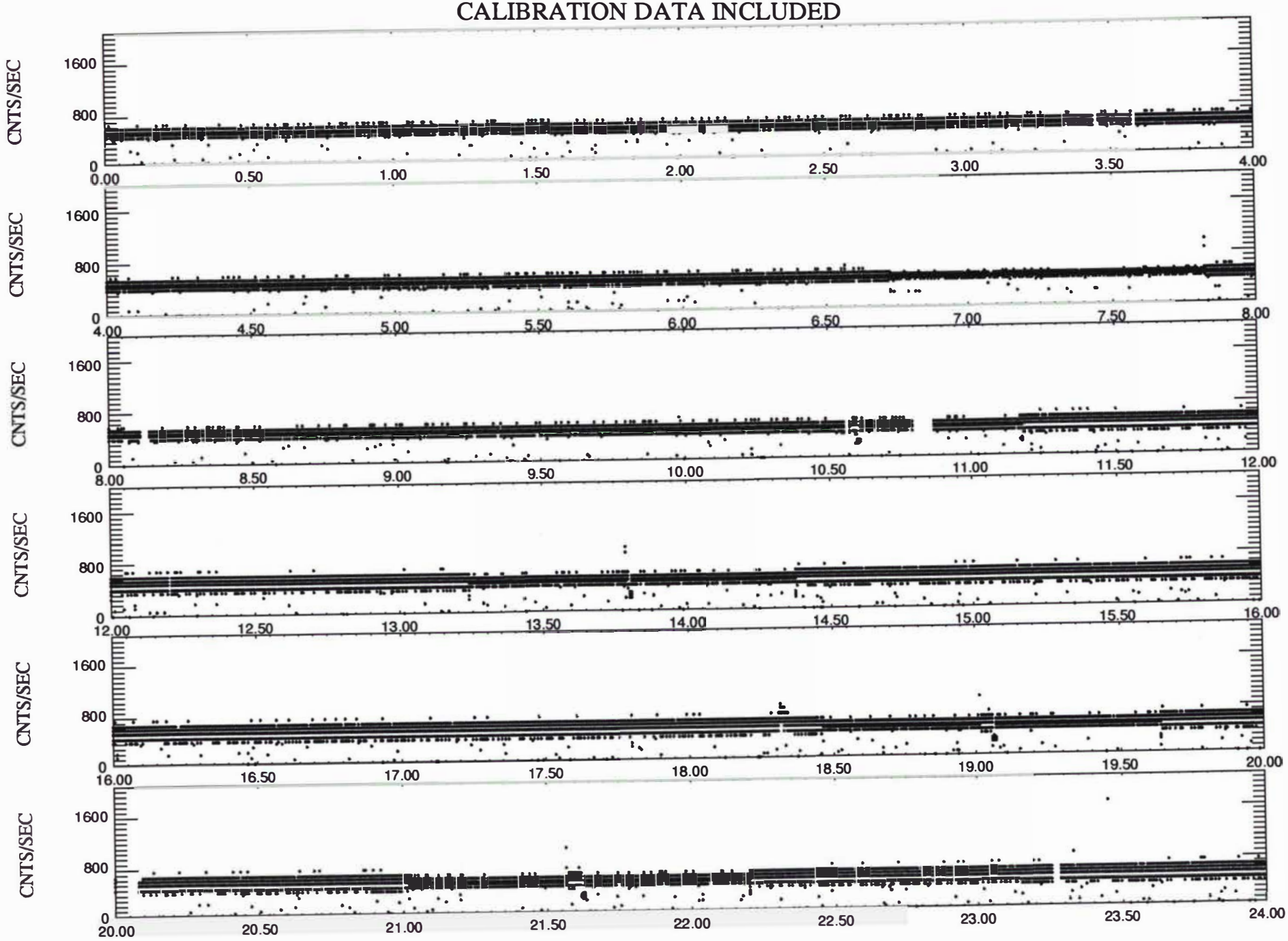

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/25
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 359, year 1993 to day 359, year 1993 2/9/94



HUS 2A, MODE 1, NOT AVERAGED EDR day 359, year 1993 to day 359, year 1993 2/9/94

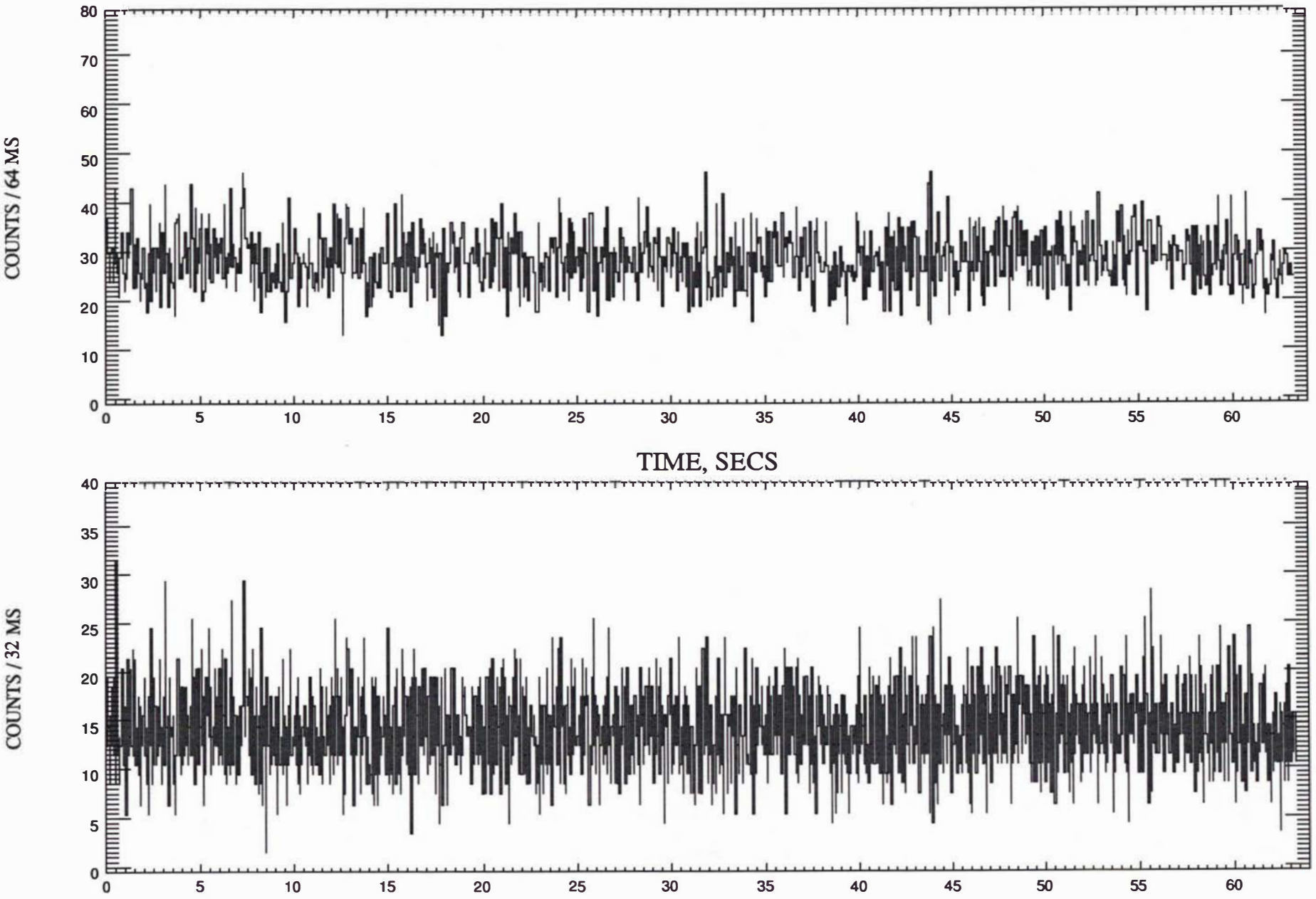
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 359, year 1993 2/9/94

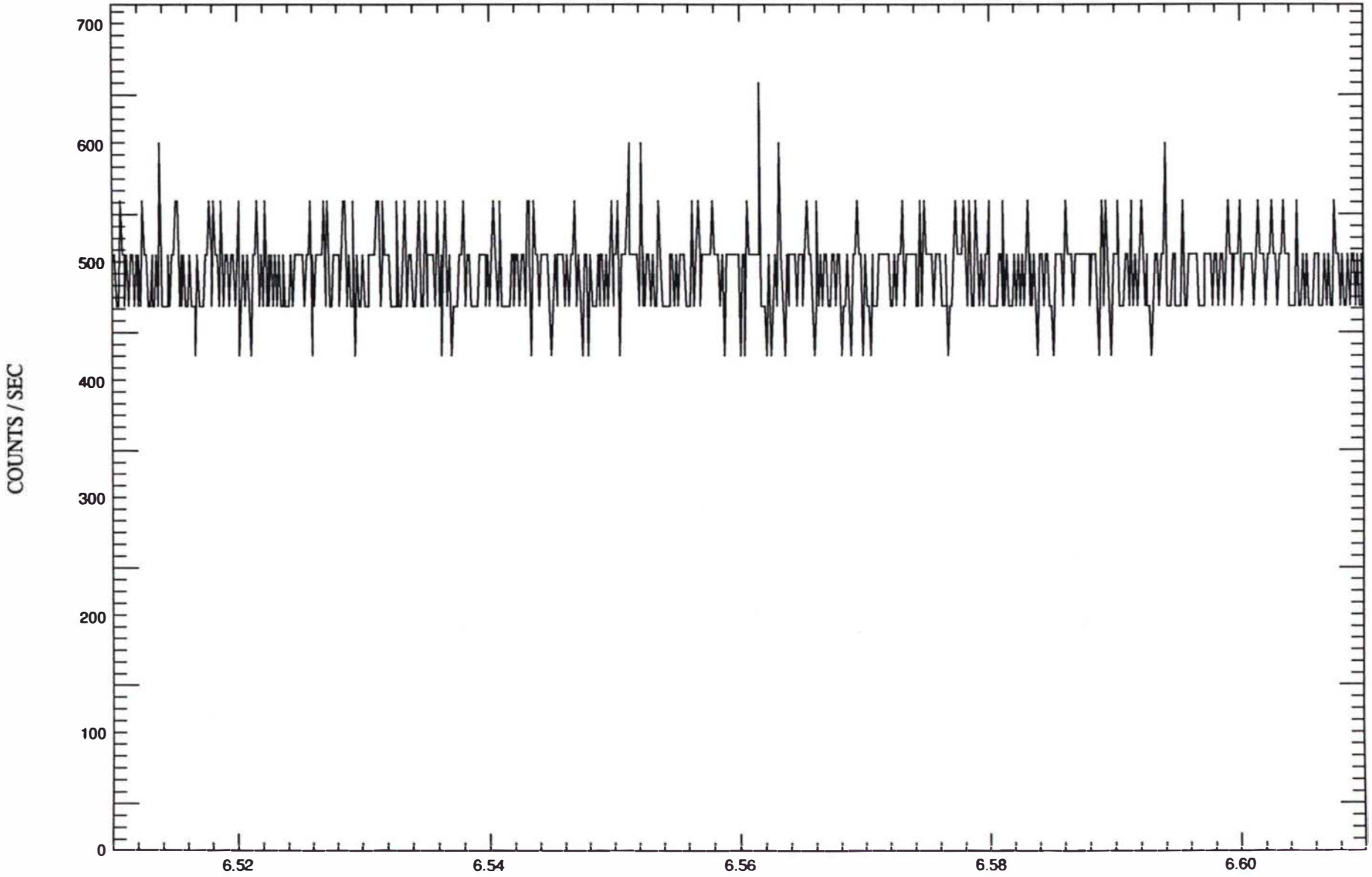
Burst Counter 8 at UT= 6.561682807075 h=23622.058 s 06:33:42.058



B# 1

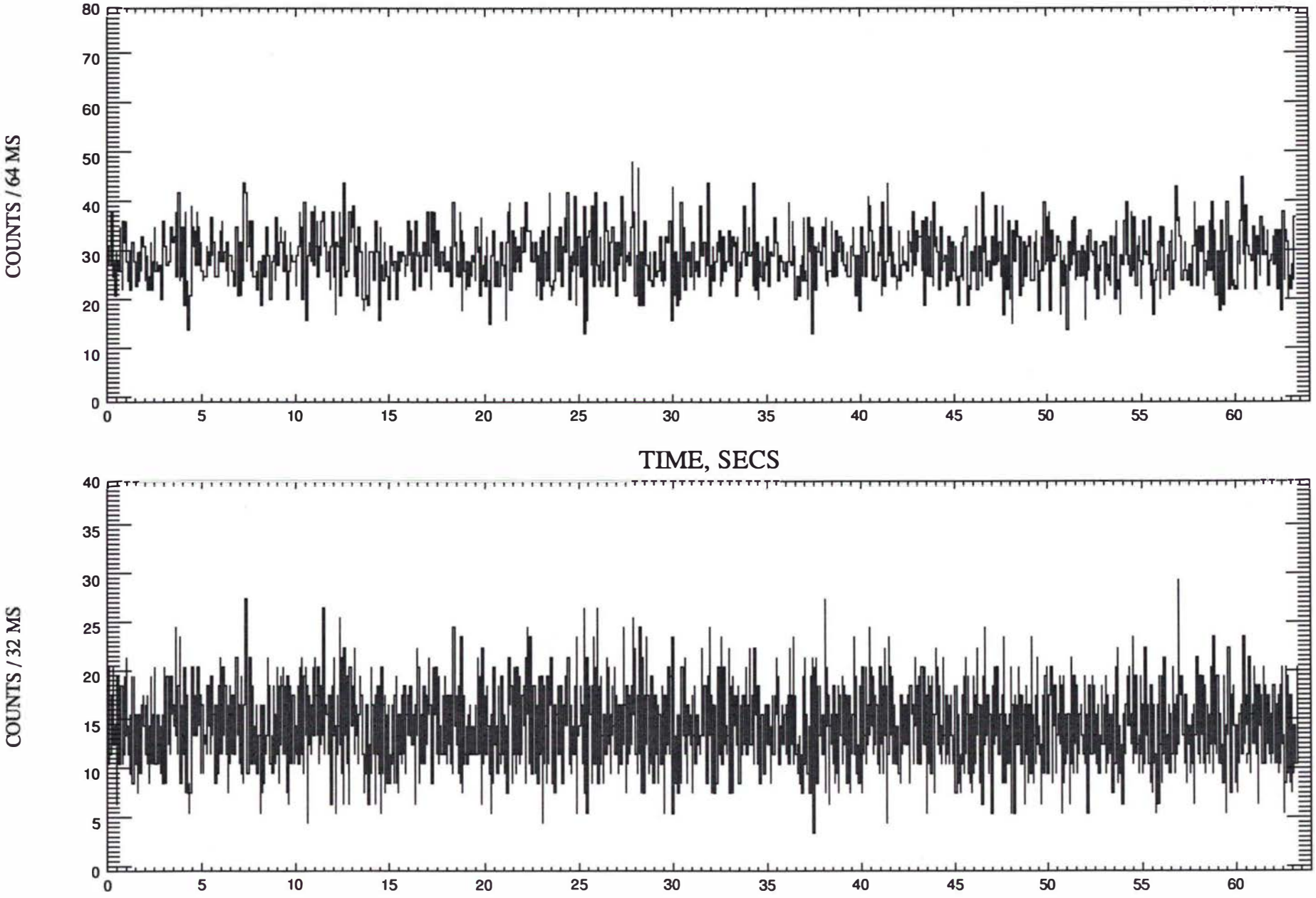
HUS 2A, MODE 1, NOT AVERAGED QEDR day 359, year 1993 to day 359, year 1993 12/28/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 359, year 1993 2/9/94

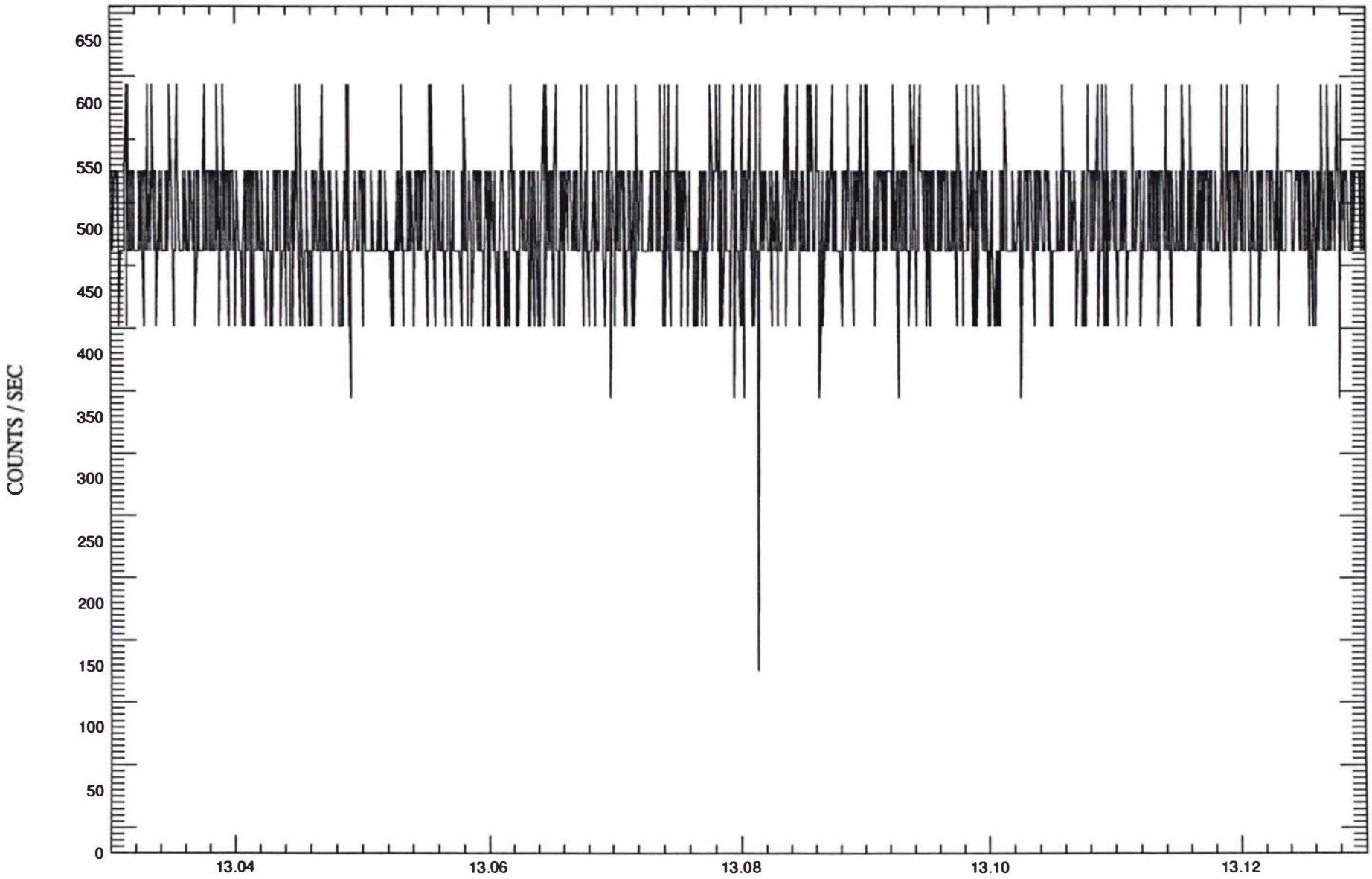
Burst Counter 9 at UT=13.084597905477 h=47104.552 s 13:05:04.552



B# 2

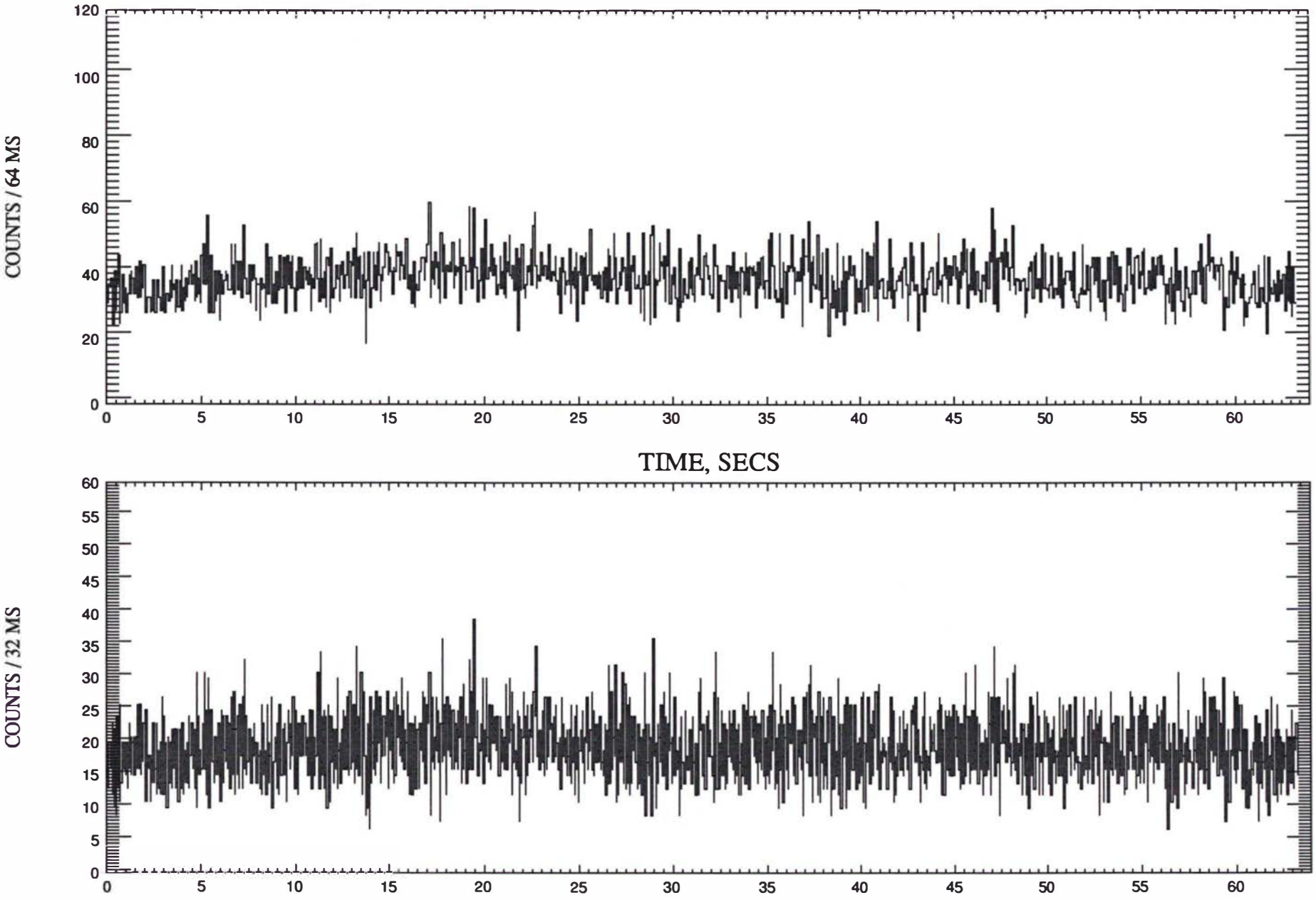
HUS 2A, MODE 1, NOT AVERAGED QEDR day 359, year 1993 to day 359, year 1993 12/28/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 359, year 1993 2/9/94

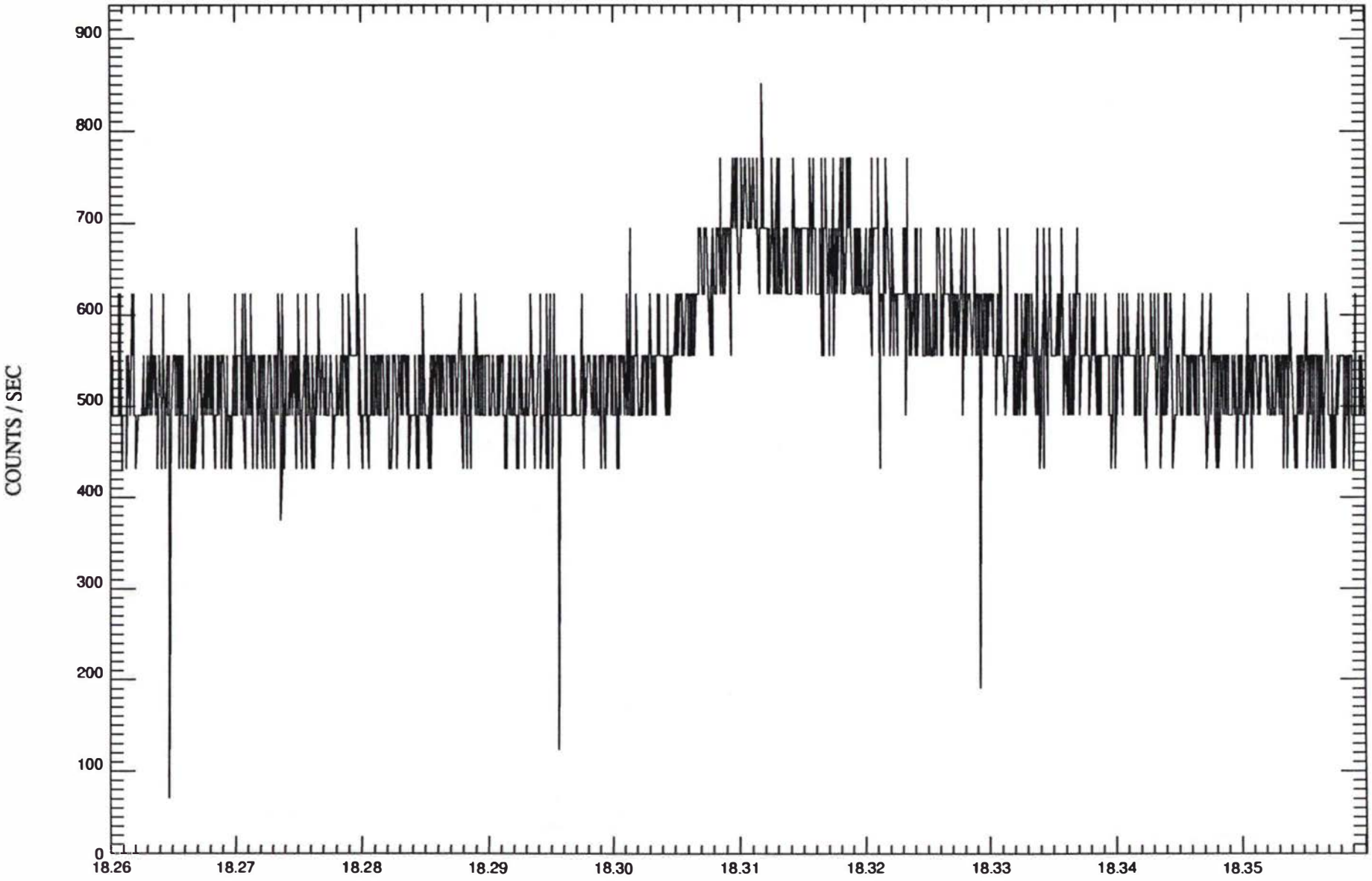
Burst Counter 10 at UT=18.307559894986 h=65907.216 s 18:18:27.216



B# 3

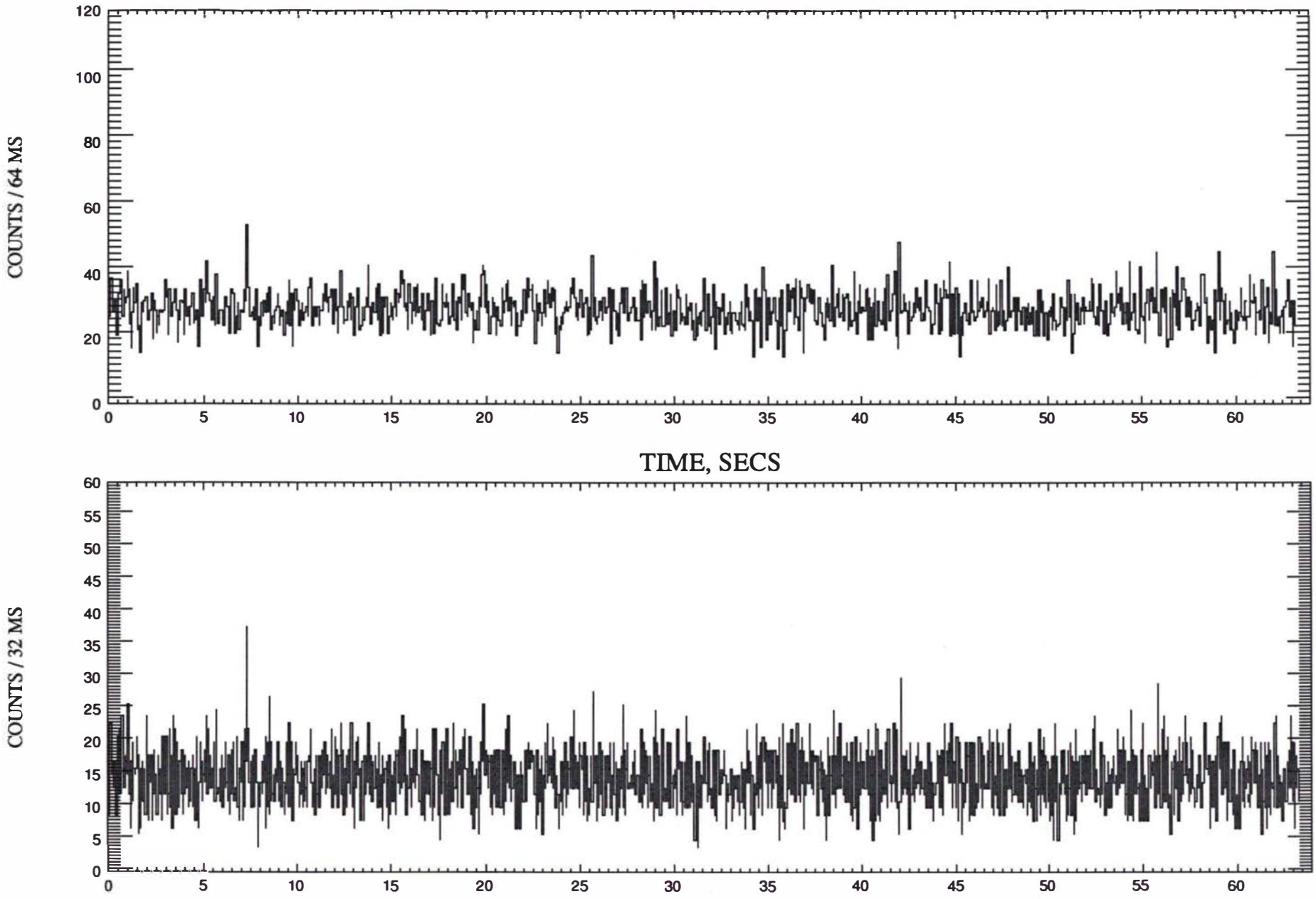
HUS 2A, MODE 1, NOT AVERAGED QEDR day 359, year 1993 to day 359, year 1993 12/28/93

CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 359, year 1993 2/9/94

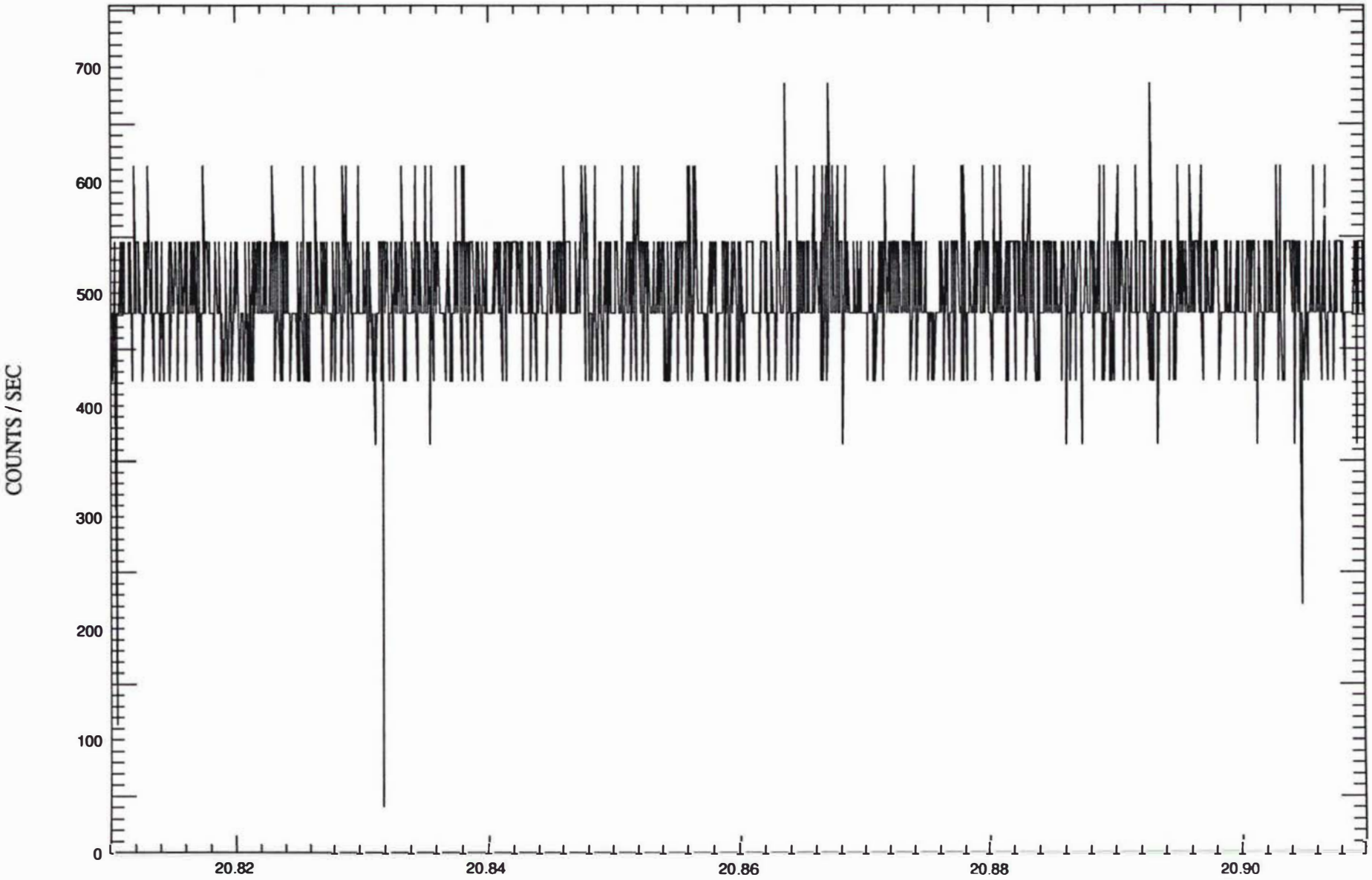
Burst Counter 11 at UT=20.863710615370 h=75109.358 s 20:51:49.358



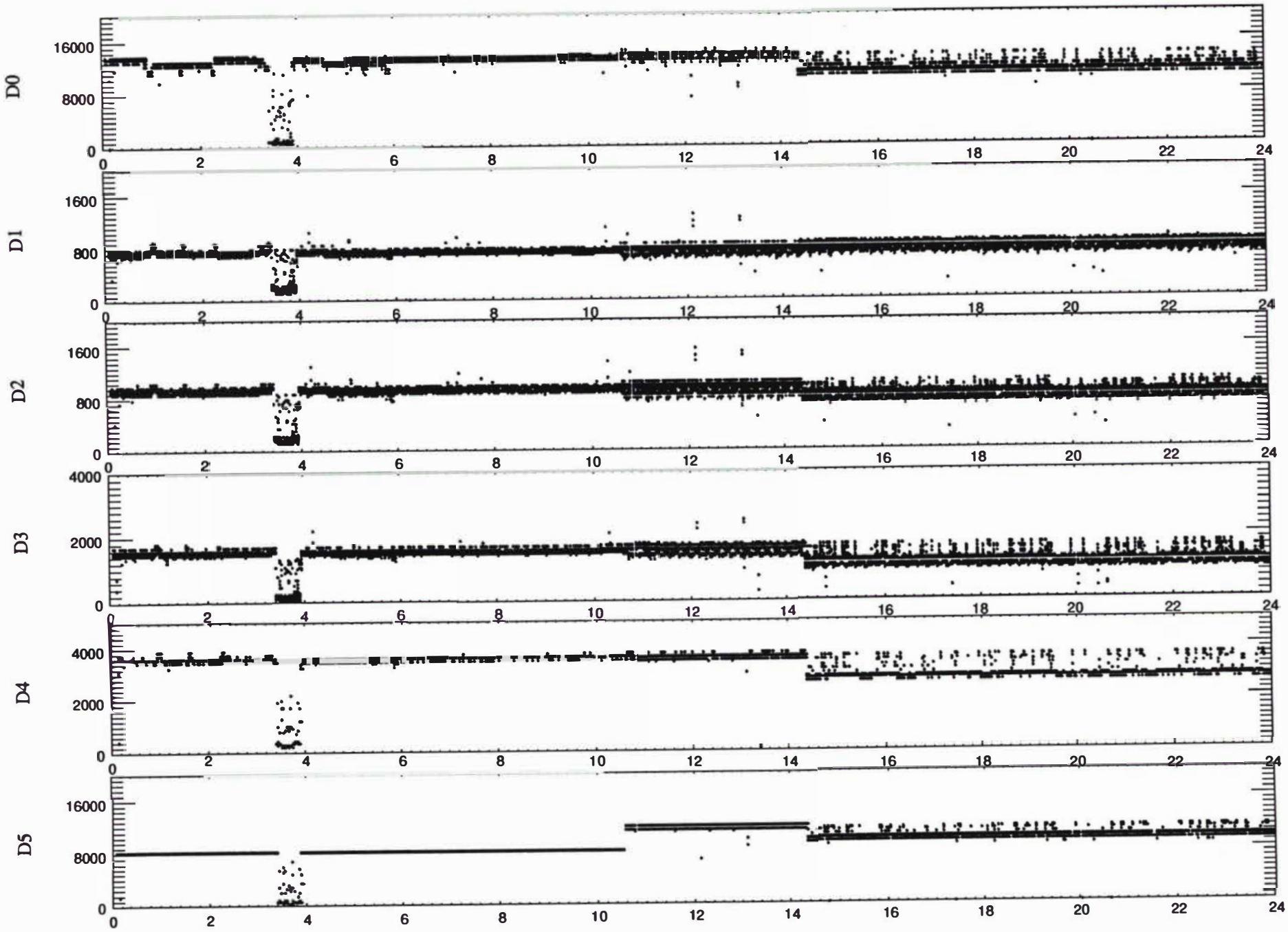
B# 4

HUS 2A, MODE 1, NOT AVERAGED QEDR day 359, year 1993 to day 359, year 1993 12/28/93

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC QEDR day 359, year 1993 to day 359, year 1993 12/28/93



From BRAINERD@ssl.msfc.nasa.gov Mon Dec 27 13:20:29 1993
Date: Mon, 27 Dec 1993 15:24:43 -0600 (CST)
From: "Jim Brainerd, (205) 544-4970" <BRAINERD@ssl.msfc.nasa.gov>
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Cc: BRAINERD@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02710

TIME: TJD=9347 SECONDS=29365

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From BRAINERD@ssl.msfc.nasa.gov Mon Dec 27 13:50:56 1993
Date: Mon, 27 Dec 1993 15:55:14 -0600 (CST)
From: BRAINERD@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Cc: BRAINERD@ssl.msfc.nasa.gov
Subject: Crossing Windows for BATSE Burst 2711
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2711
 EVENT OF 1993 DEC 26 DAY OF YEAR=360
 EVENT CROSSING TIME AT BATSE      : 72669. S. OR 20:11:09.0
 COORDINATES ARE    0.000    0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 209.000   28.000
 BATSE PEAK COUNTING RATE:   4000    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 26/12/  93 IS:
 RA=  165.746 DEC=  -40.400 DIST=    3.754 AU
 BATSE-ULYSSES DISTANCE =  561580951. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=100.69 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -347.39 SECS.
 CROSSING TIME AT ULYSSES    IS 72322. S. OR   20:05:21 +/-  364.31 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 26/12/  93 IS:
 RA=  274.948 DEC=  -24.144 DIST=    2.429 AU
 MARS-BATSE DISTANCE =  363343520. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 97.84 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -165.26 SECS.
 CROSSING TIME AT MARS       IS 72504. S. OR   20:08:23 +/-  205.94 SECONDS
```

RI

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2711	931226	9347	72669	4000	209	+28

BATSE BURST TRIGGER

NO.: 02711

TIME: TJD=9347 SECONDS=72669

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=028.8 AZIMUTH=089.9 ERROR= DEGREES

COMMENTS:
GAMMA-RAY BURST OF 150 SECONDS DURATION. TWO PEAKS, THE FIRST HARDER THAN THE SECOND. BURST SEEN ABOVE 300 KEV.

Helio corr removed

Date: Jan 21 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

☑ Were data checked by Joe Springer for 0.5 s errors?

☑ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?

☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? N/A

2. BATSE Data

☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A

☑ BATSE ephemeris for T_0?

☑ Error circle position and radius from public catalog used?

☐ If MER data were used, is a 30 ms systematic error included? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

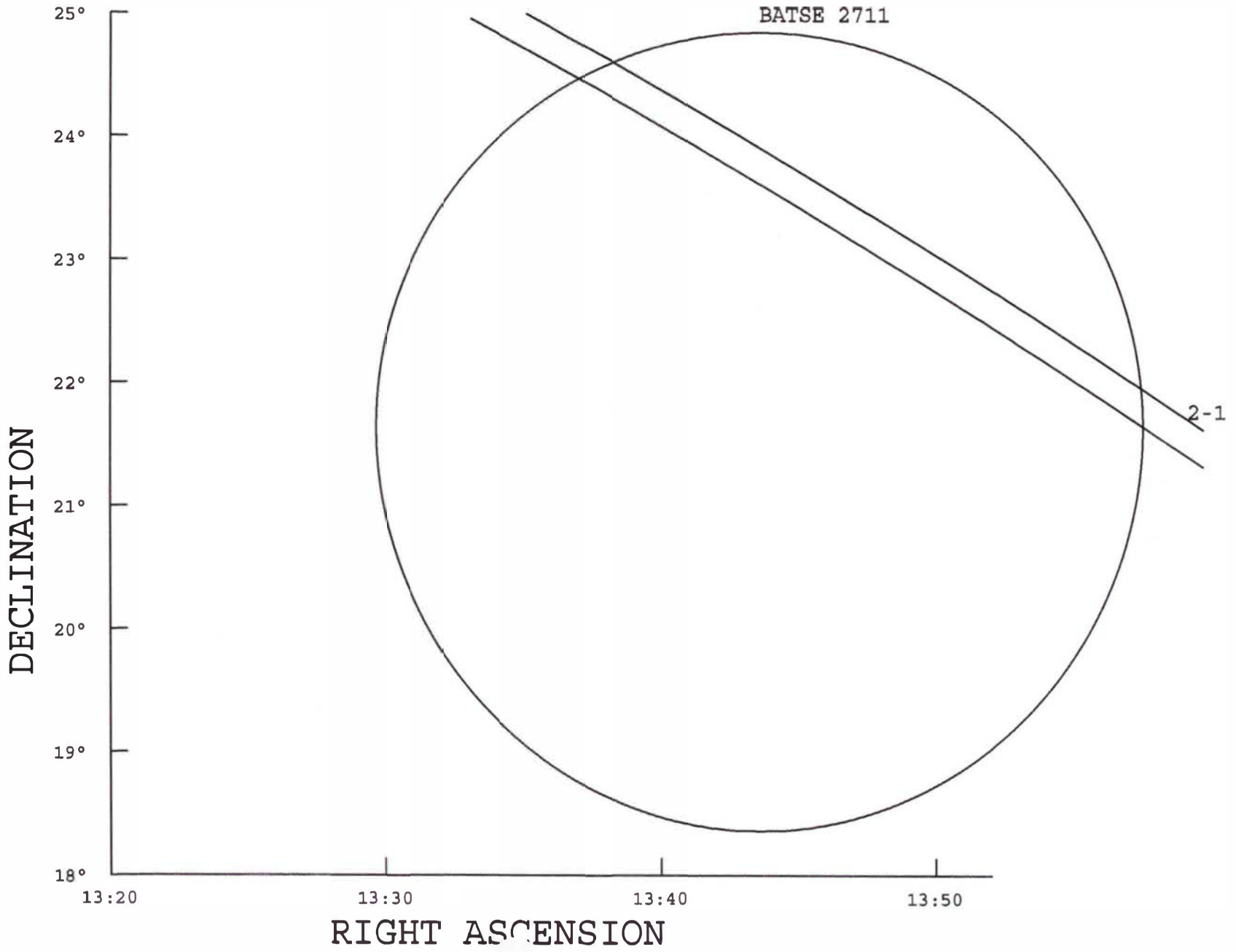
☐ Geocentric time used?

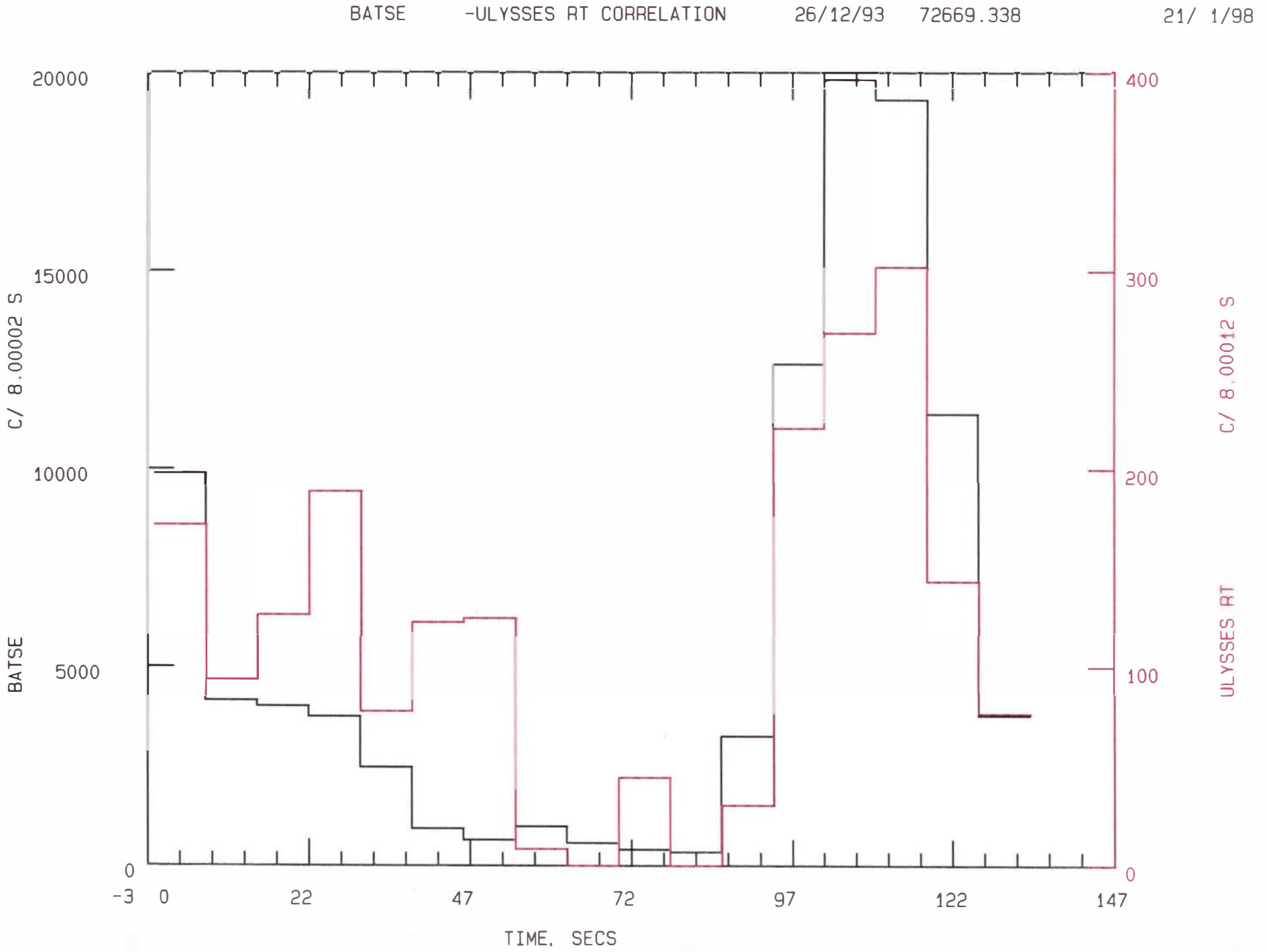
☑ ACCESS database updated?

EVENT OF DEC 26, 1993 20:01

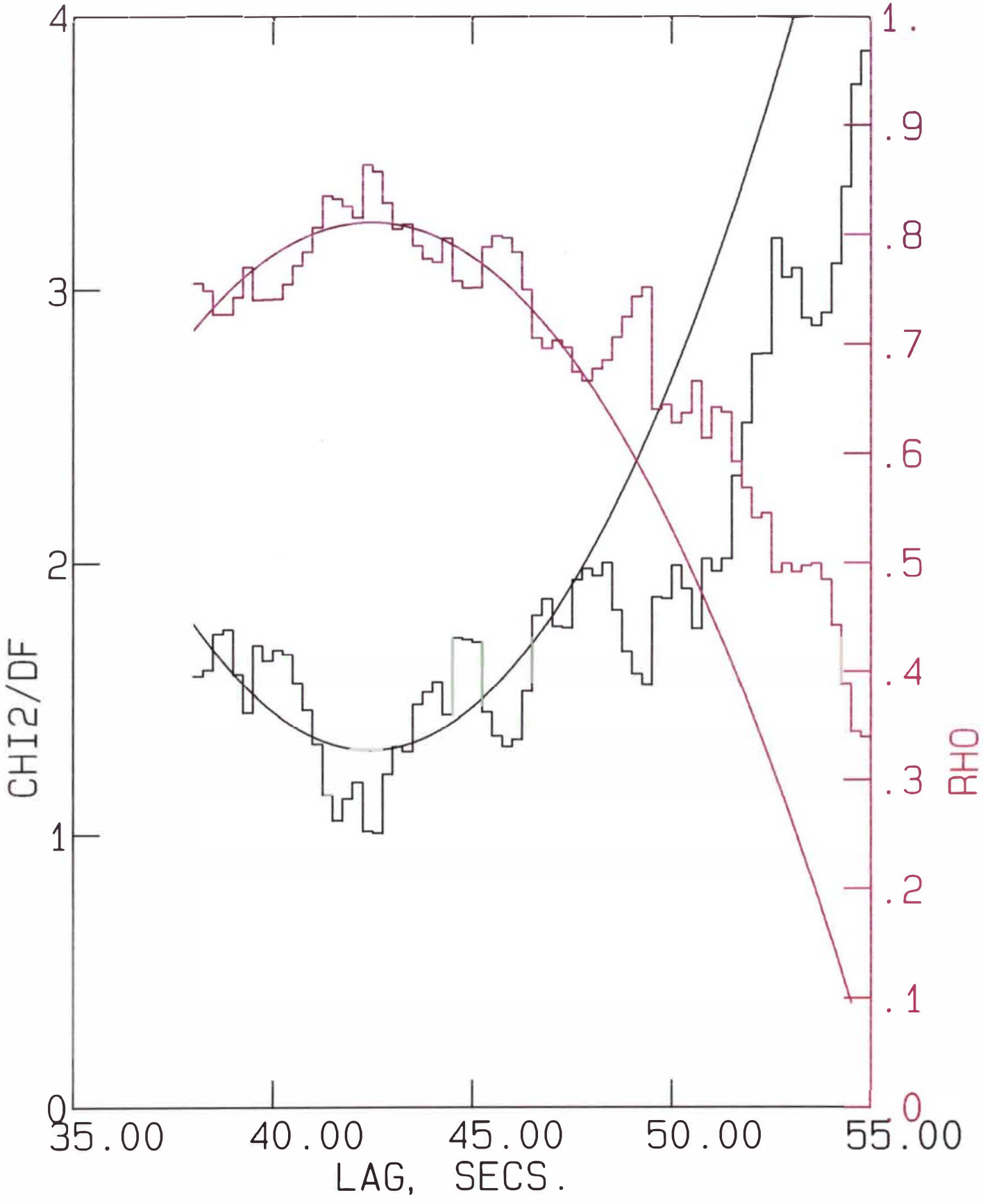
21/ 1/98

N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 26/12/93 72669.338 21/ 1/98
20000
15000
10000
5000
0
BATSE
C/ 8.00002 S
400
300
200
100
0
ULYSSES RT
C/ 8.00012 S
-3
0
22
47
72
97
122
147
TIME, SECS

BATSE -ULYSSES RT CORRELATION 26/12/93 72669.338

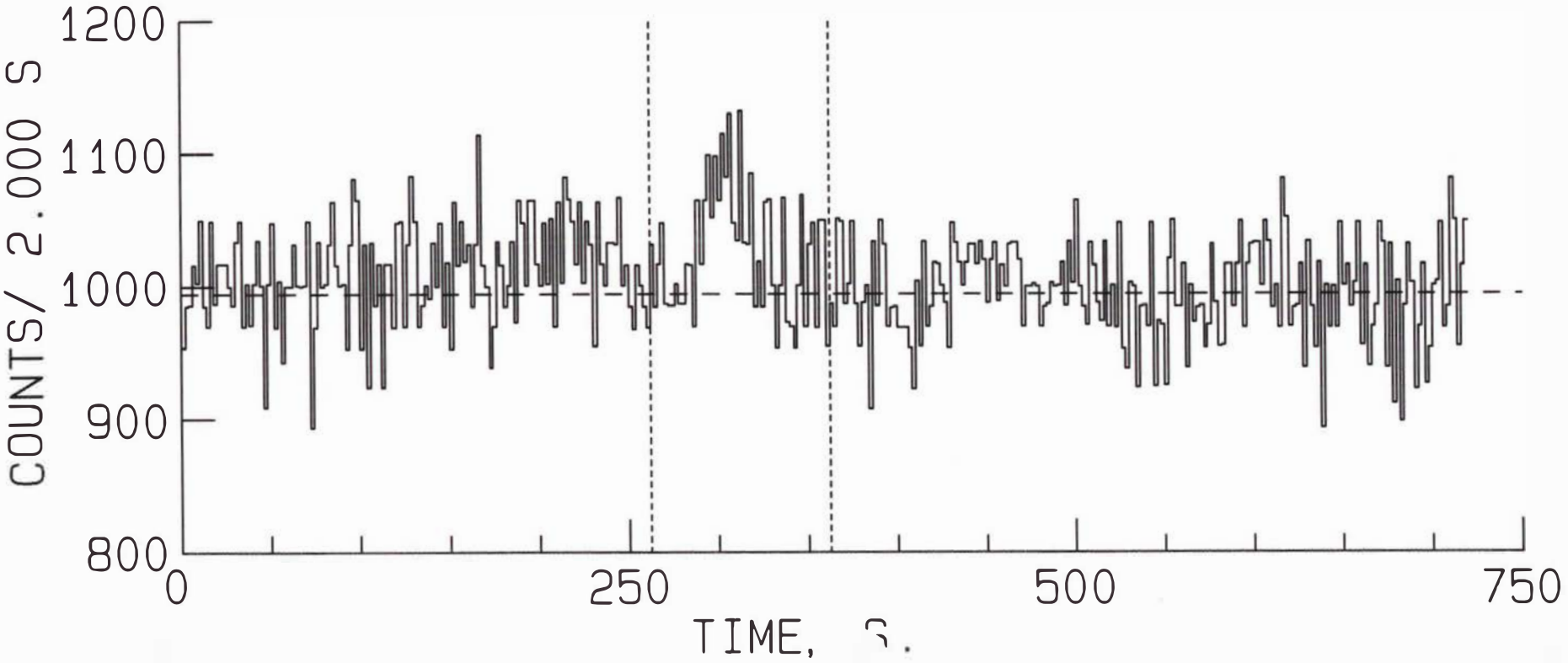


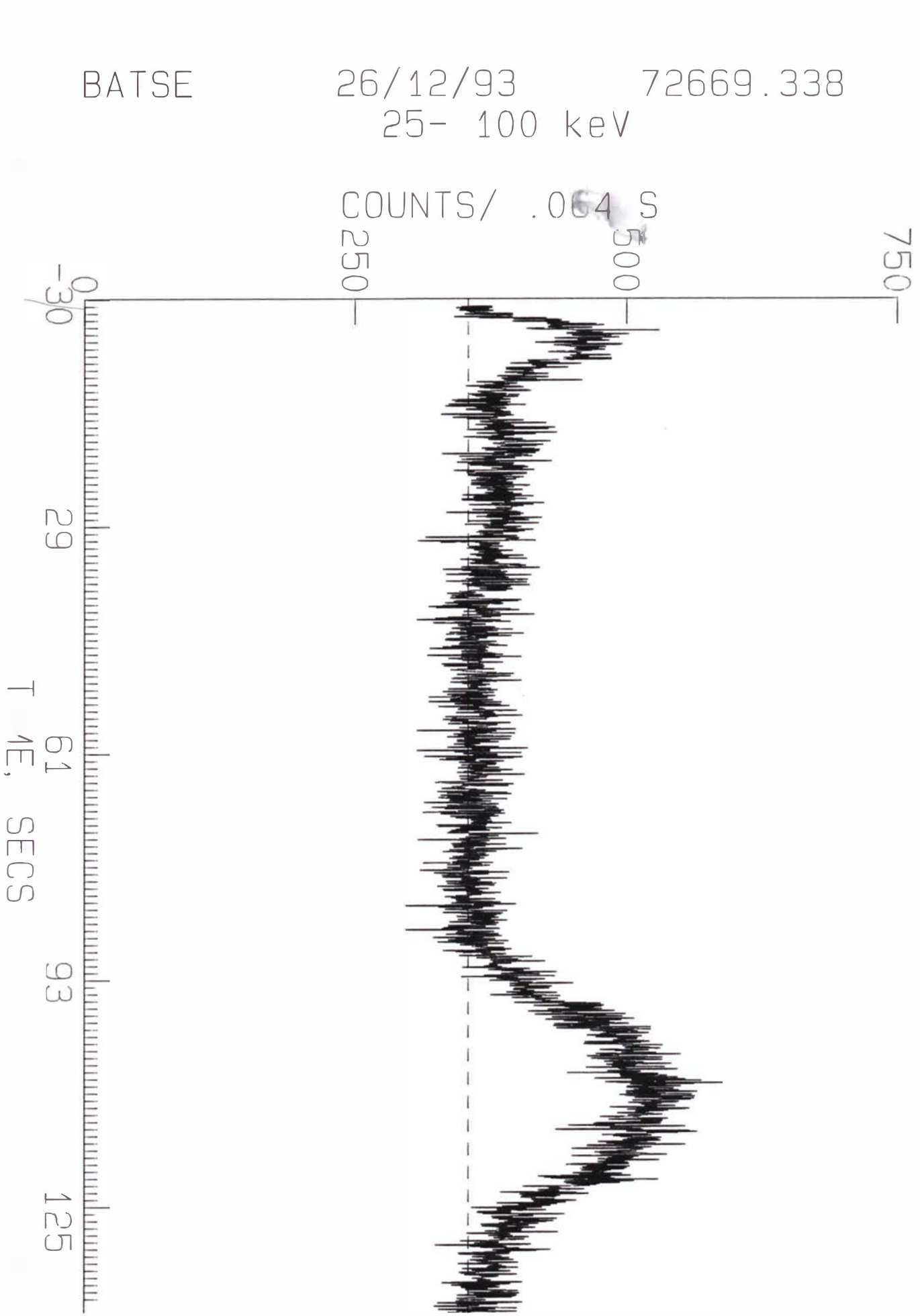
ULYSSES RT 21/ 1/98

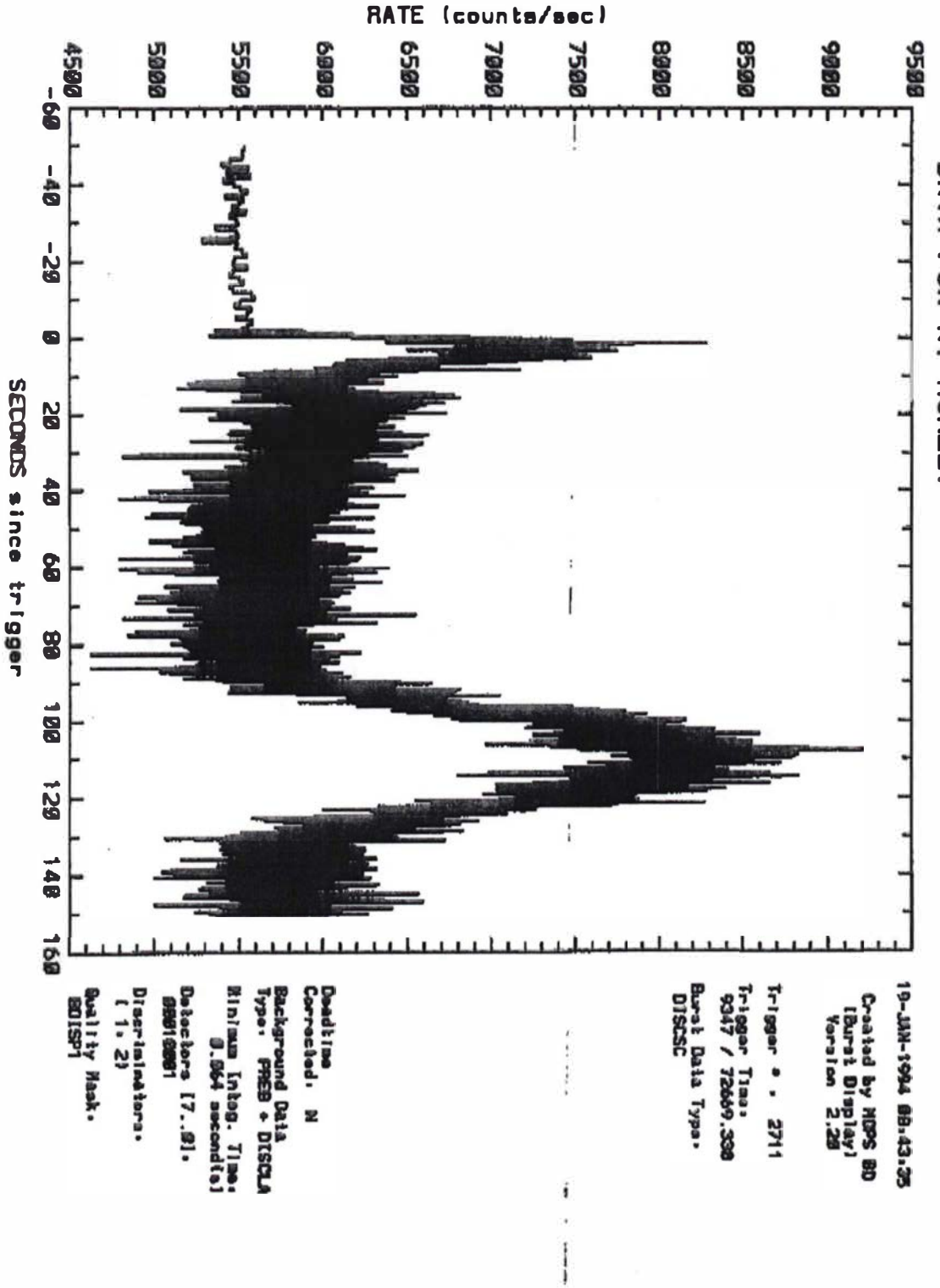
26/12/93 71964.032 s

0.250 S INTERVALS REGROUPED BY 8

21- 142 keV




BATSE
26/12/93
72669.338
25- 100 keV
COUNTS/ .064 S
0
250
500
750
-30
29
61
93
125
T 4E, SECS


DATA FOR K. HURLEY
RATE (counts/sec)
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
-60 -40 -20 0 20 40 60 80 100 120 140 160
SECONDS since trigger
19-JAN-1994 08:43:25
Created by MDPS BD
(Burst Display)
Version 2.28
Trigger # . 2711
Trigger Time:
9347 / 72669.338
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DTSCLA
Minimum Integ. Time:
0.064 seconds)
Detectors [7..0]:
00010001
Discriminators:
(1, 2)
Quality Mask:
BDISPT

From tharriso@NMSU.Edu Wed Aug 24 12:10 PDT 1994
From: tharriso@NMSU.Edu
Date: Wed, 24 Aug 1994 13:10:39 -0600
To: khurley@sunspot.ssl.berkeley.edu
Subject: IPN Data

Dear Kevin:

I am currently in the process of analyzing and writing-up the first year's results from our Rapid-Response Network. We have 10 bursts for which we have obtained some amount of coverage. You have kindly provided me IPN data for four of those bursts. I'd like to get from you the other IPN results if they have been calculated (or letting me know whether they were detected by the IPN). Are these data routinely published (or available from) somewhere? I hate to continually bother you about them.

We appreciate your help, and would welcome your participation on the resulting paper.

-Tom

The bursts for which IPN annuli are needed are:

GRB931031:
BATSE triggered on an intense GRB on 931031 at 04:06:35 UT. The event lasted approximately 15 second(s). Final BATSE location: RA = 329 deg, Dec = +60 deg (~4 deg error circle). ✓

Follow-up observations are encouraged. Intense double episode event. Second pulse appears at ~ T+12 s. Seen well above 300 keV. First pulse lasts ~ 2 s and shows substructure.

GRB931226:
BATSE trigger time: 12/26/93 at 72669 s UT (20:11:09), the BATSE position was RA=208, Dec=28. ✓

GRB940520:
TITLE: BACODINE BURST POSITION NOTICE
NOTICE_DATE: Fri 20 May 94 00:24:46 UT
TRIGGER_NUM: 2984
GRB_RA: 319.88d {+21h 19m 31s} (J2000),
GRB_DEC: +11.40d {+11d 24' 14"} (J2000),
GRB_INTEN: 2805 [cnts] Peak=2805 [cnts/sec]
GRB_TIME: 1300.12 SOD {00:21:40.12} UT
GRB_DATE: 9492 TJD; 140 DOY; 94/05/20

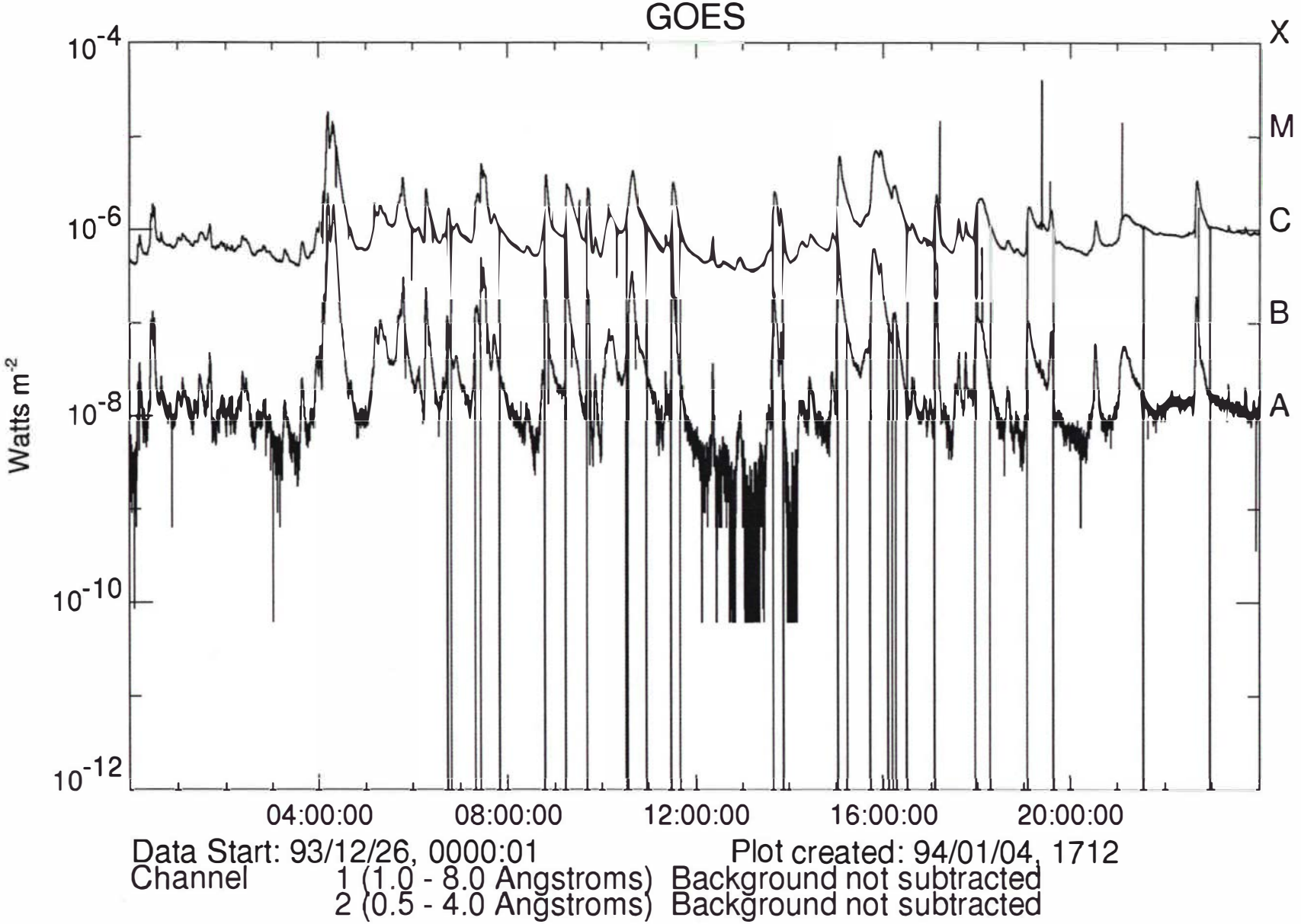
Sent BACODINE/Ulysses annulus 10/19

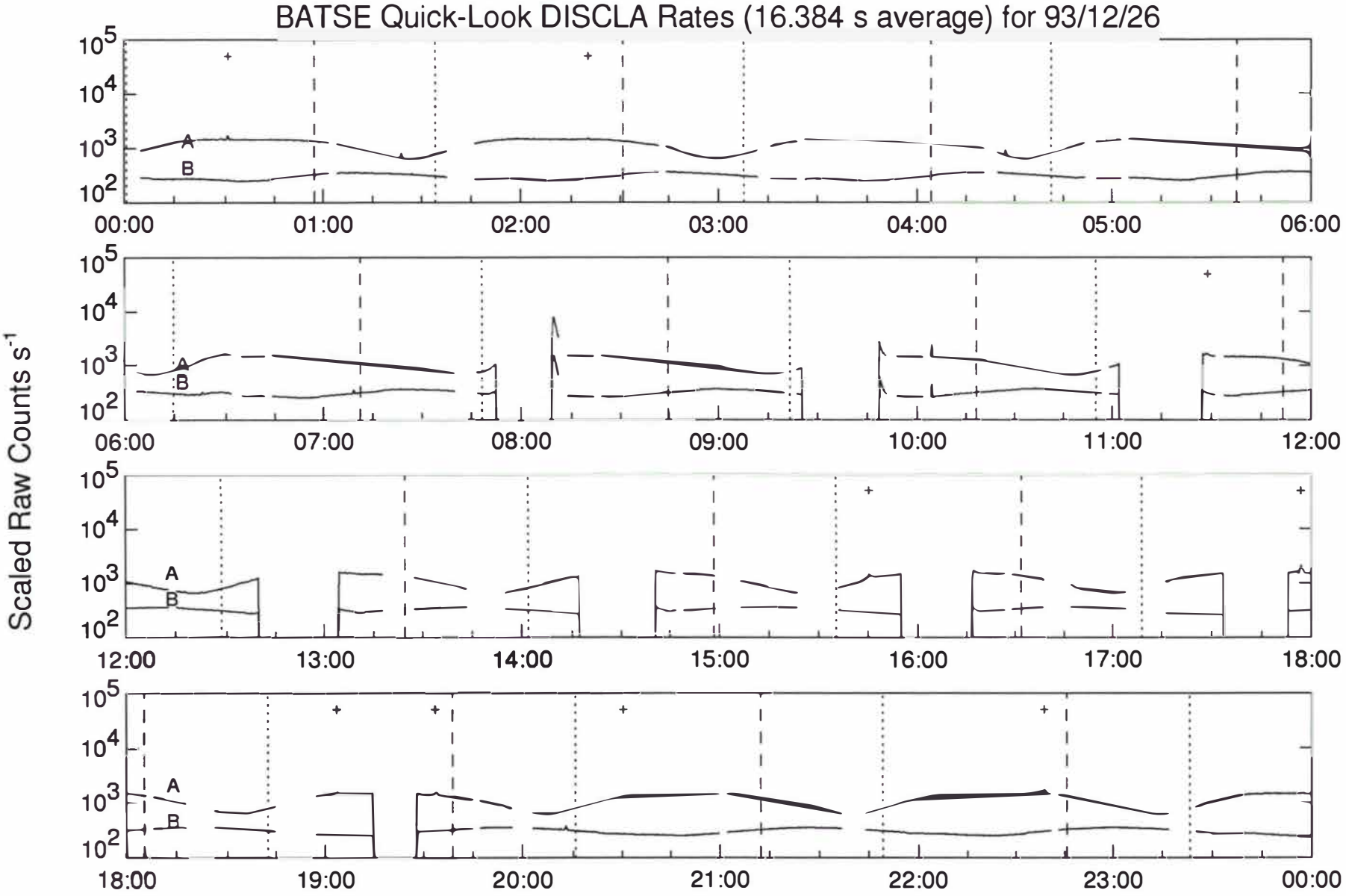
GRB940622:
TITLE: BACODINE BURST POSITION NOTICE
NOTICE_DATE: Wed 22 Jun 94 13:18:19 UT
NOTICE_TYPE: Original
TRIGGER_NUM: 3039
GRB_RA: 300.62d {+20h 02m 30s} (J2000),
GRB_DEC: -40.43d {-40d 26' 03"} (J2000),
GRB_INTEN: 1940 [cnts] Peak=1940 [cnts/sec]
GRB_TIME: 47898.26 SOD {13:18:18.26} UT
GRB_DATE: 9525 TJD; 173 DOY; 94/06/22

✓

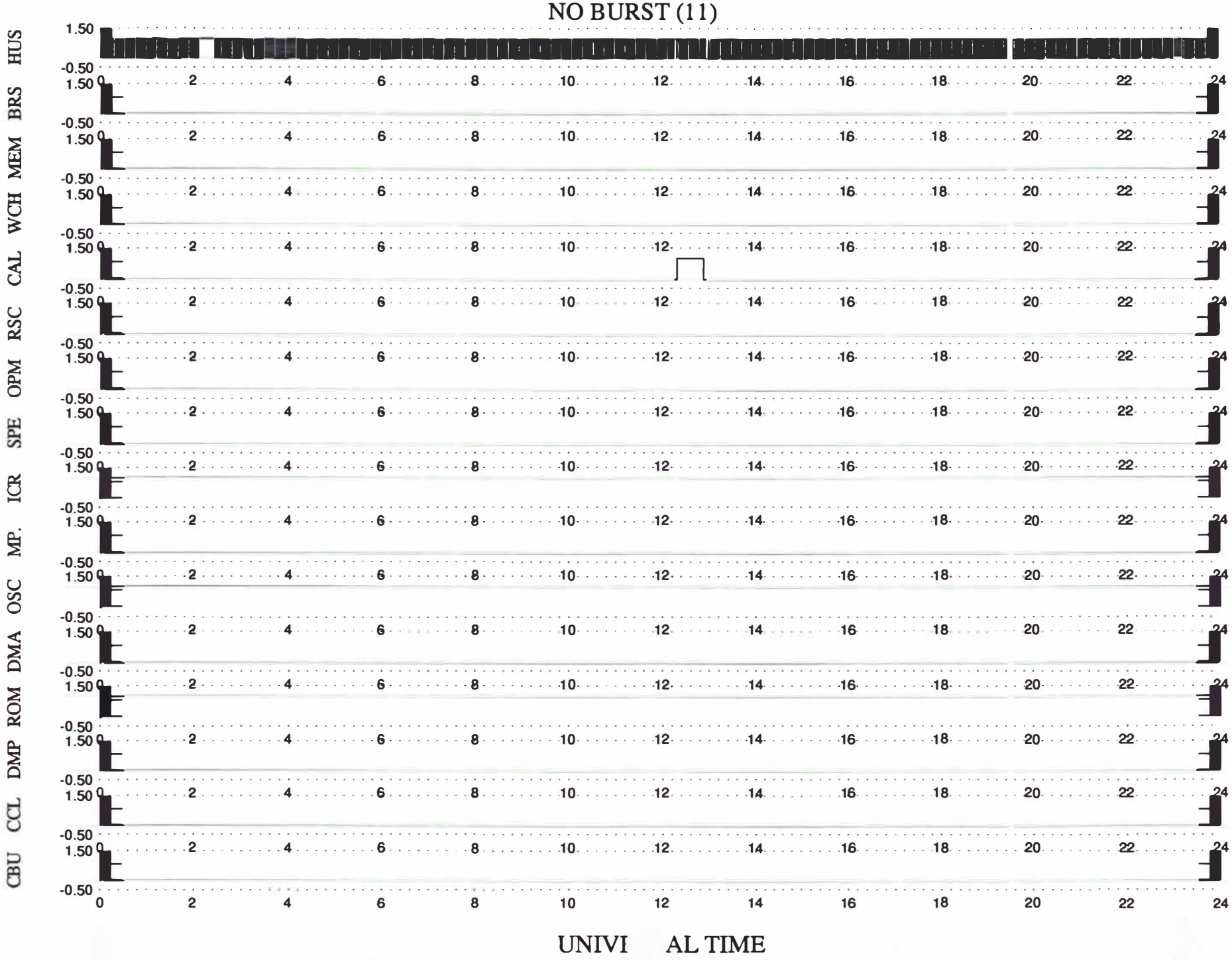
GRB940708:
The BATSE position of the burst is: RA(2000)= 20h 08m Dec(2000)= +21 deg.
TITLE : COMPTEL BURST POSITION NOTICE: GRB940708
NOTICE_DATE: Sat Jul 9 01:16:32 GMT 1994
BURST_DATE : 9541 TJD; 8-JUL-1994
BURST_TIME : 74526.00 SEC; 20:42: 6 UT
BURST_SCZEN: 6.0 Deg.
BURST_SCAZI: 139.0 Deg.
BURST_CLASS: Weak (Approx 37 events)

✓


GOES
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/26, 0000:01
Plot created: 94/01/04, 1712
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

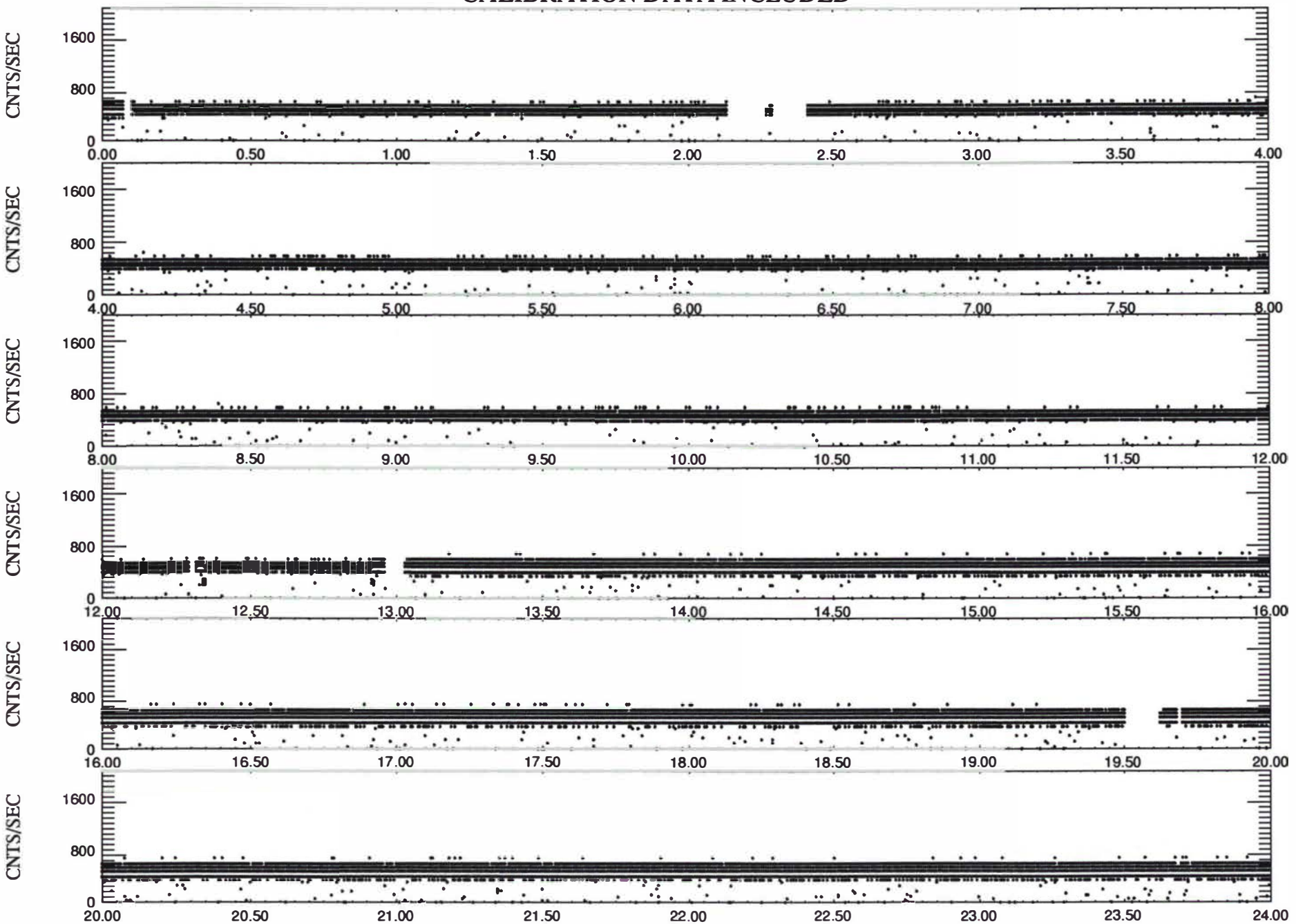

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/26
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 360, year 1993 to day 360, year 1993 2/9/94



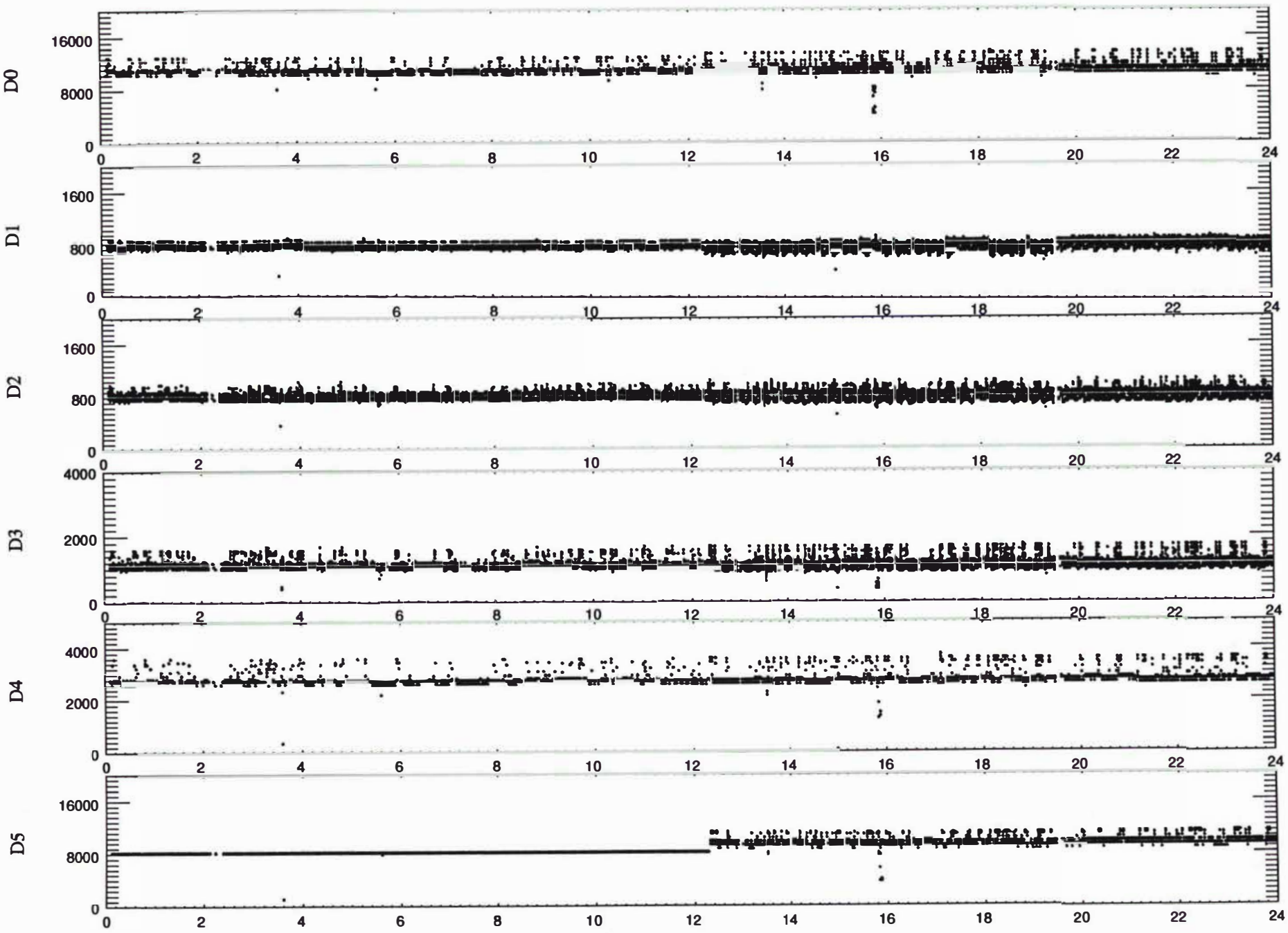
HUS 2A, MODE 1, NOT AVERAGED EDR day 360, year 1993 to day 360, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 360, year 1993 to day 360, year 1993 12/28/93



From KOSHUT@ssl.msfc.nasa.gov Tue Dec 28 18:05 PST 1993
Date: Tue, 28 Dec 1993 14:02:57 -0600 (CST)
From: KOSHUT@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@estec.bitnet, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Type: text
Content-Length: 1366

BATSE BURST TRIGGER
NO.: 02712

TIME: TJD=9348 SECONDS=67891

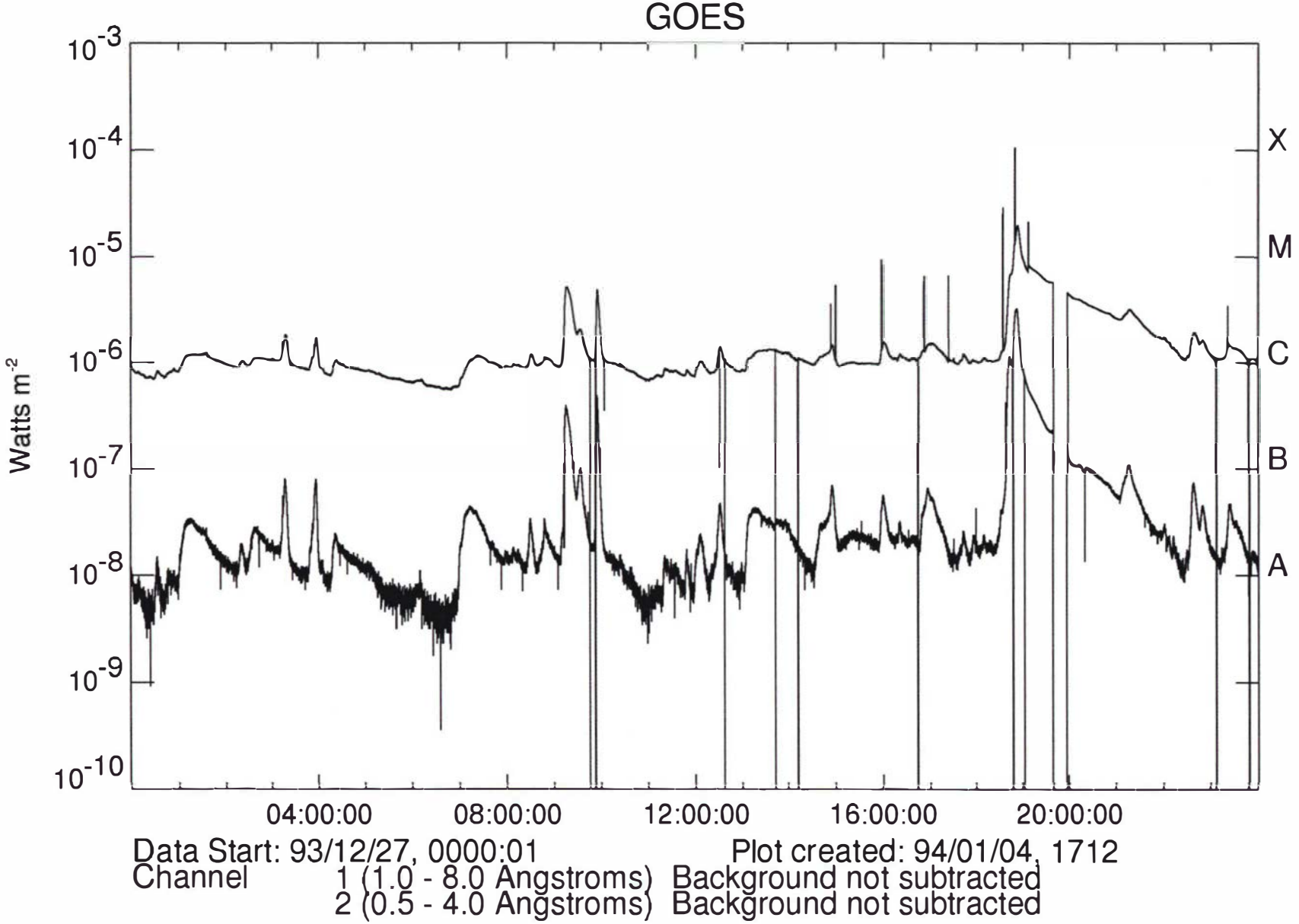
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

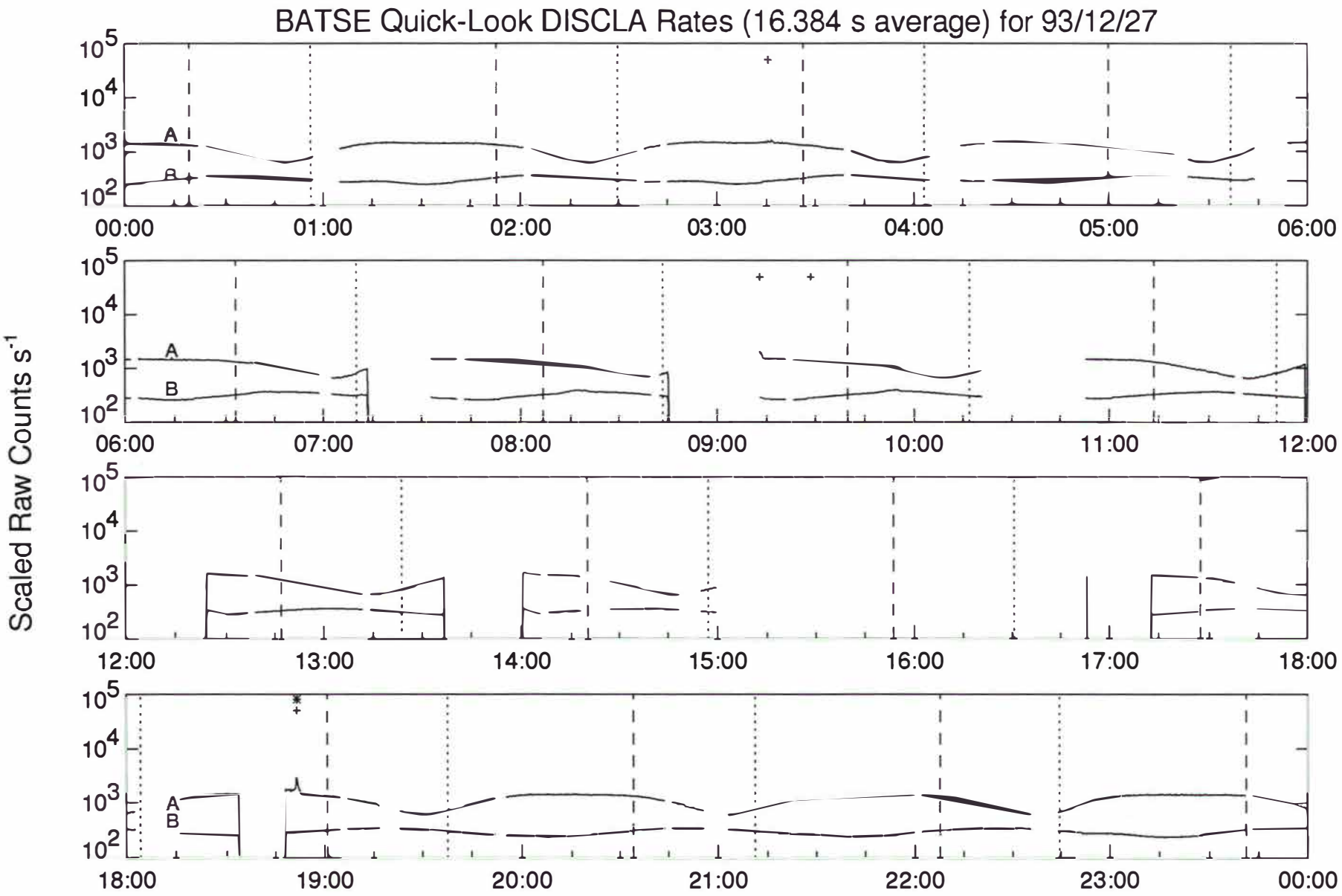
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

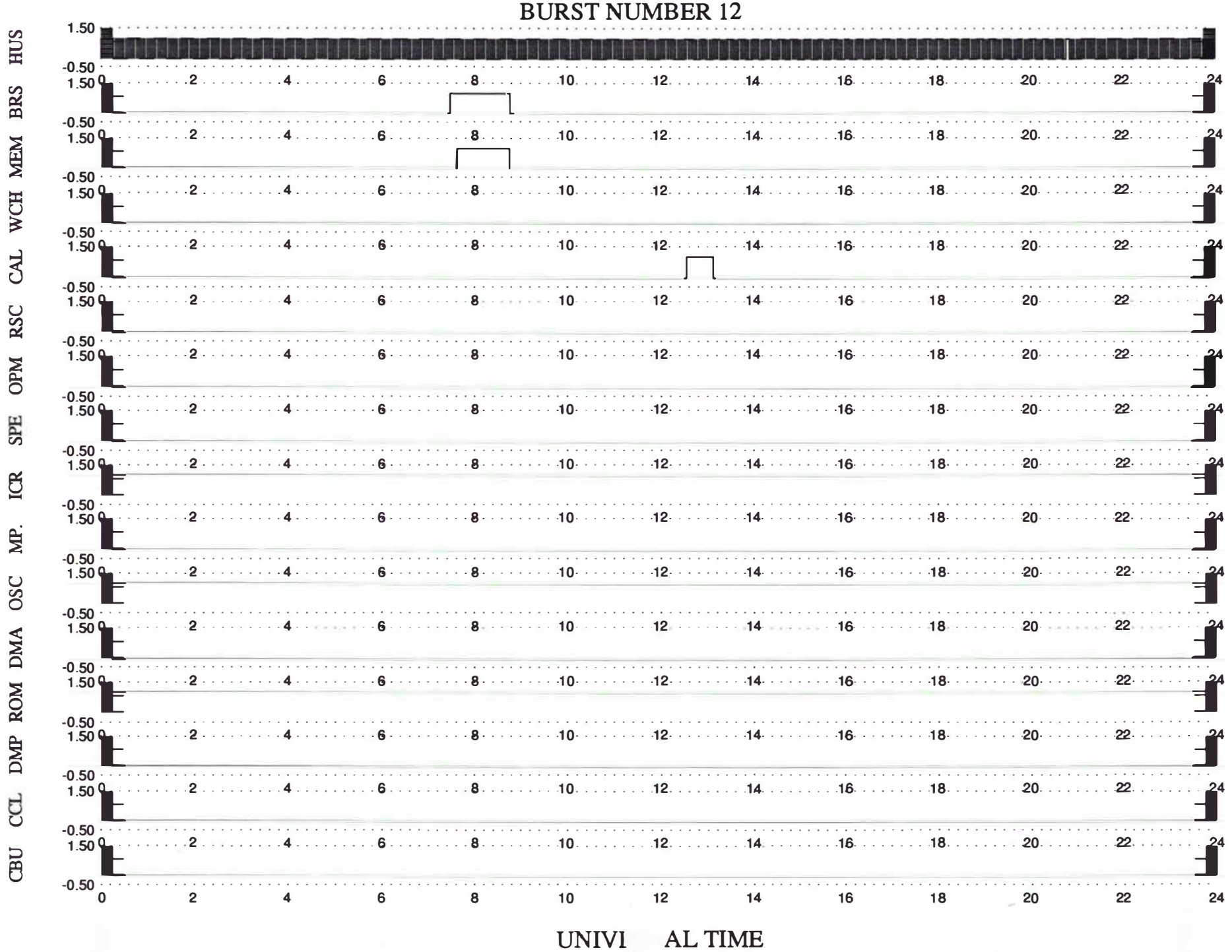
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE OF ~ 200 SECONDS DURATION. THE FLARE STARTS ~ 150 SECONDS BEFORE THE TRIGGER TIME, WITH THE PEAK RATE OBSERVED AT THE TRIGGER TIME. EMISSION ABOVE 100 KEV IS VERY WEAK. CLASSIFIED AS M1.9 FLARE IN GOES X-RAY DATA.


GOES
Watts m-2
10-3
10-4
10-5
10-6
10-7
10-8
10-9
10-10
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/27, 0000:01
Plot created: 94/01/04, 1712
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

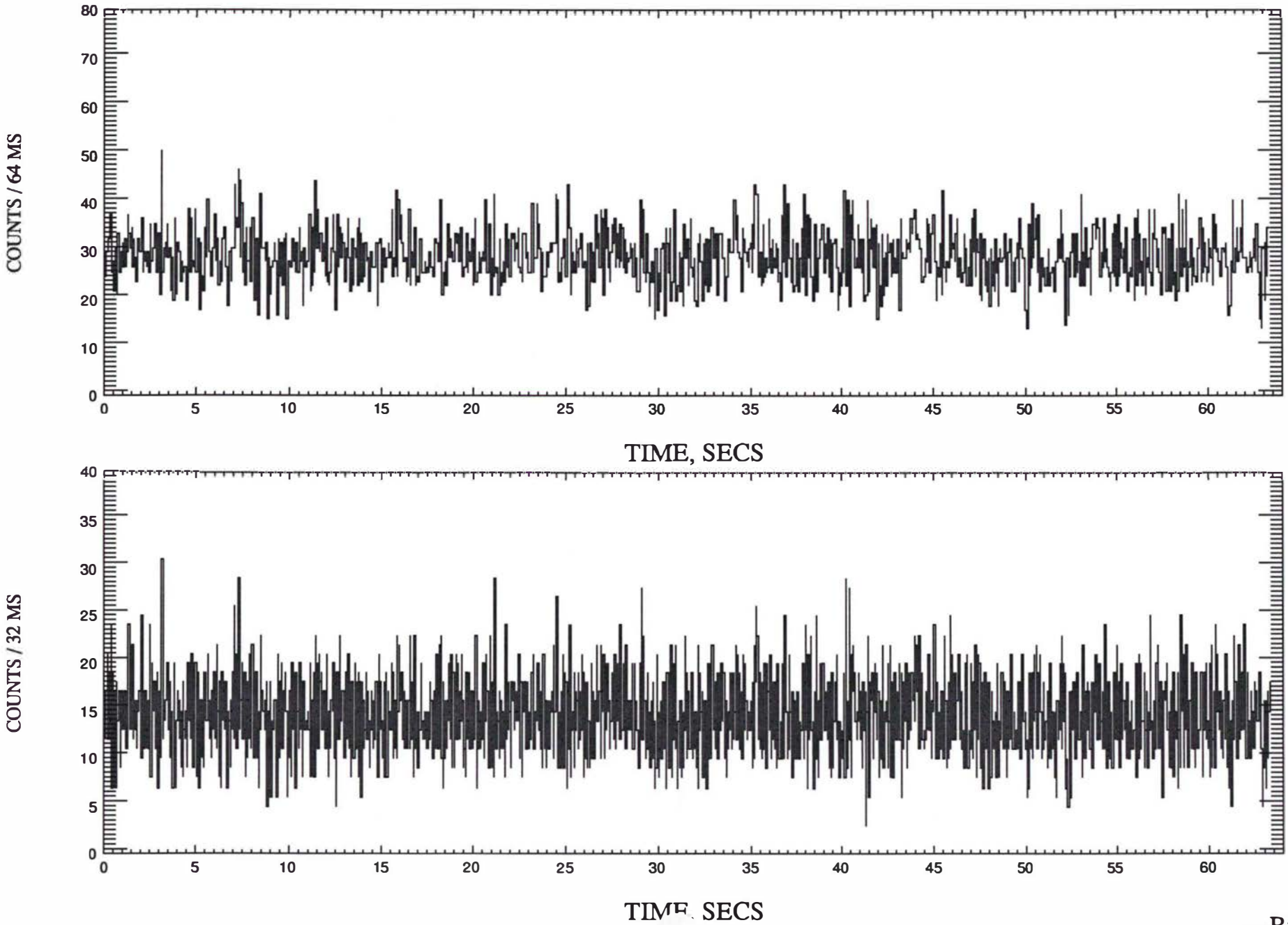

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/27
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 361, year 1993 to day 361, year 1993 2/9/94



HUS 2A TRIGGERED DATA EDR day 361, year 1993 2/9/94

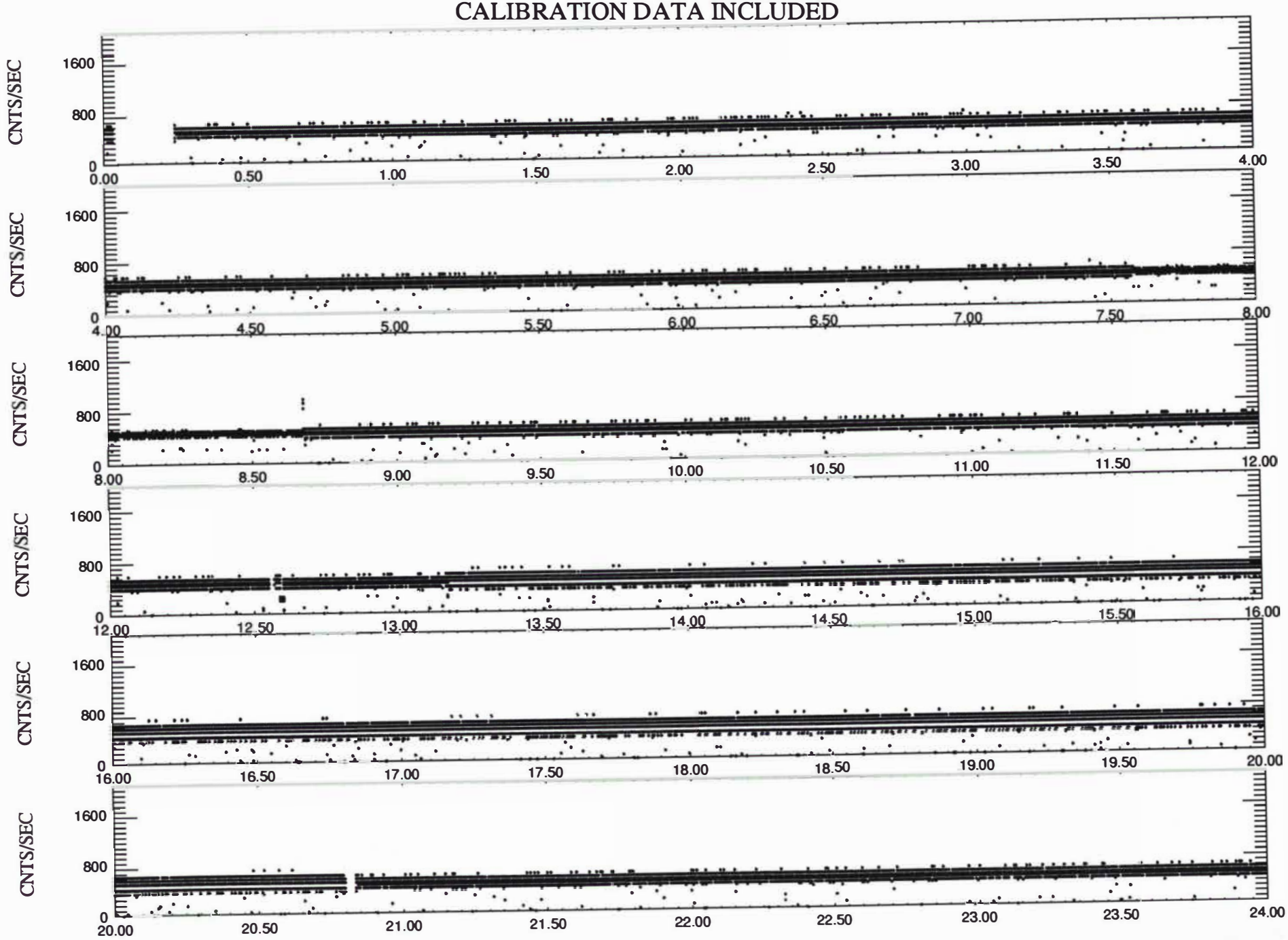
Burst Counter 12 at UT= 7.420842569139 h=26715.033 s 07:25:15.033



B# 1

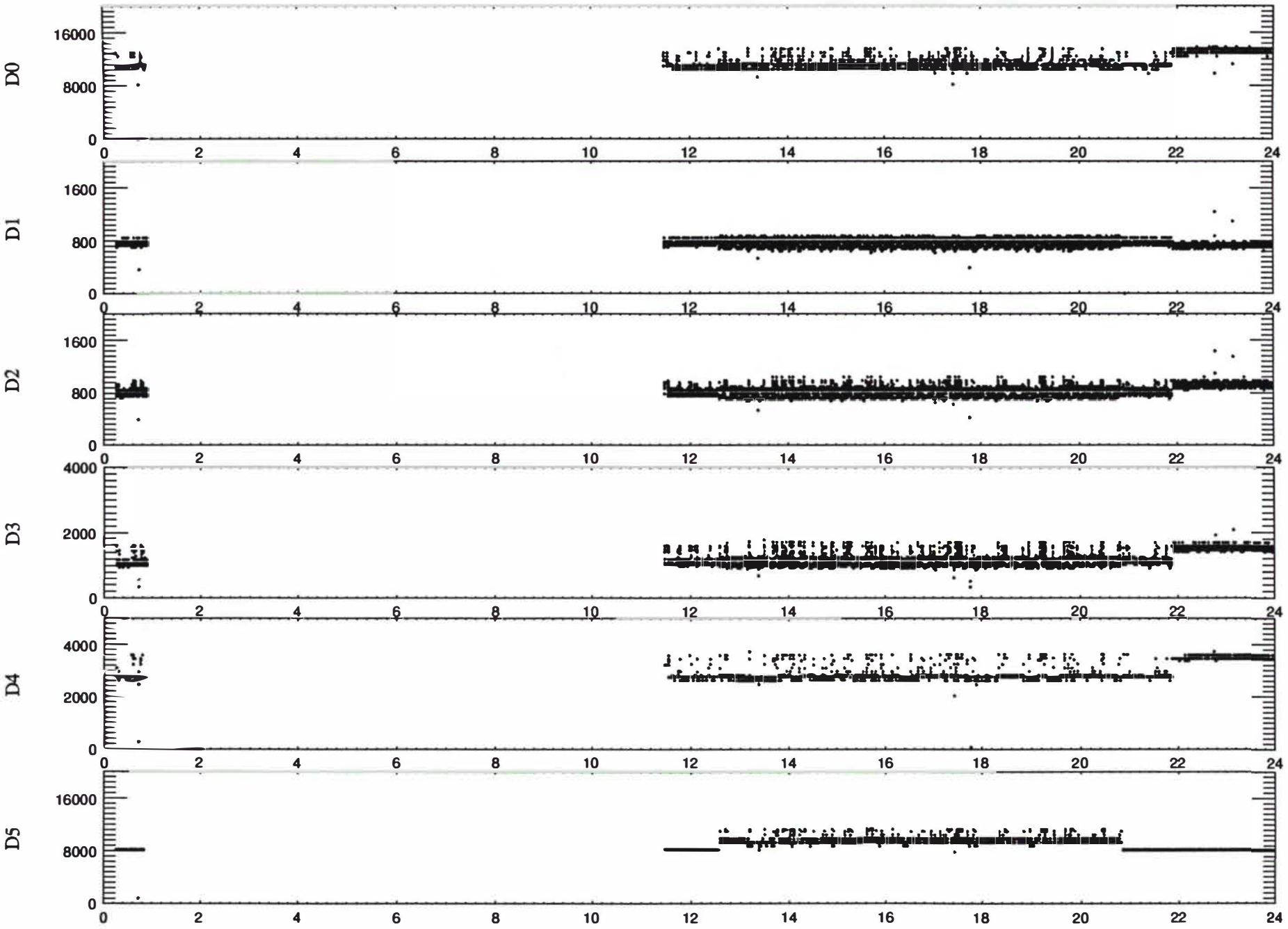
HUS 2A, MODE 1, NOT AVERAGED EDR day 361, year 1993 to day 361, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 361, year 1993 to day 361, year 1993 1/5/94



From MEEGAN@ssl.msfc.nasa.gov Wed Dec 29 12:55 PST 1993
Date: Wed, 29 Dec 1993 14:56:40 -0600 (CST)
From: MEEGAN@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2713
Content-Type: text
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2713
 EVENT OF 1993 DEC 28 DAY OF YEAR=362
 EVENT CROSSING TIME AT BATSE      :  1093. S. OR 00:18:13.0
 COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 230.000    64.000
 BATSE PEAK COUNTING RATE:    5500     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 28/12/  93 IS:
 RA=  165.625 DEC=  -40.710 DIST=     3.734 AU
 BATSE-ULYSSES DISTANCE =  558623266. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 63.74 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  824.56 SECS.
 CROSSING TIME AT ULYSSES     IS  1918. S. OR   00:31:57 +/-  352.63 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON 28/12/  93 IS:
 RA=  276.608 DEC=  -24.098 DIST=     2.426 AU
 MARS-BATSE DISTANCE =  362991296. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 84.72 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  111.48 SECS.
 CROSSING TIME AT MARS        IS  1204. S. OR   00:20:04 +/-  211.02 SECONDS
```

NO

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2713	931228	9349	01093	5500	230	+64

BATSE BURST TRIGGER

NO.: 02713

TIME: TJD=9349 SECONDS=01093

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= 55. AZIMUTH=101. ERROR= DEGREES

COMMENTS:
SMOOTH 20 S PULSE. FAST RISE, EXPONENTIAL DECAY. SEEN ABOVE 300 KEV.

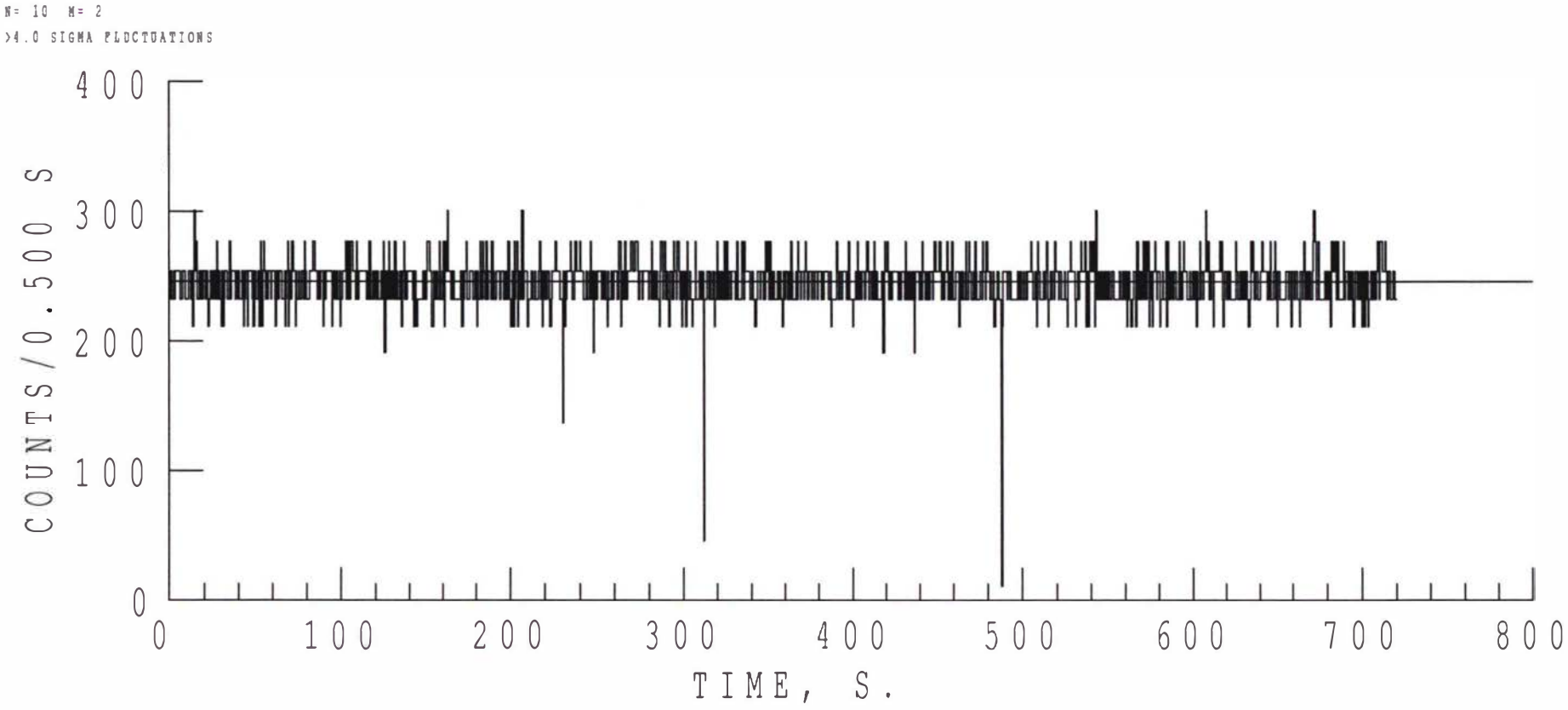
Baker 2713

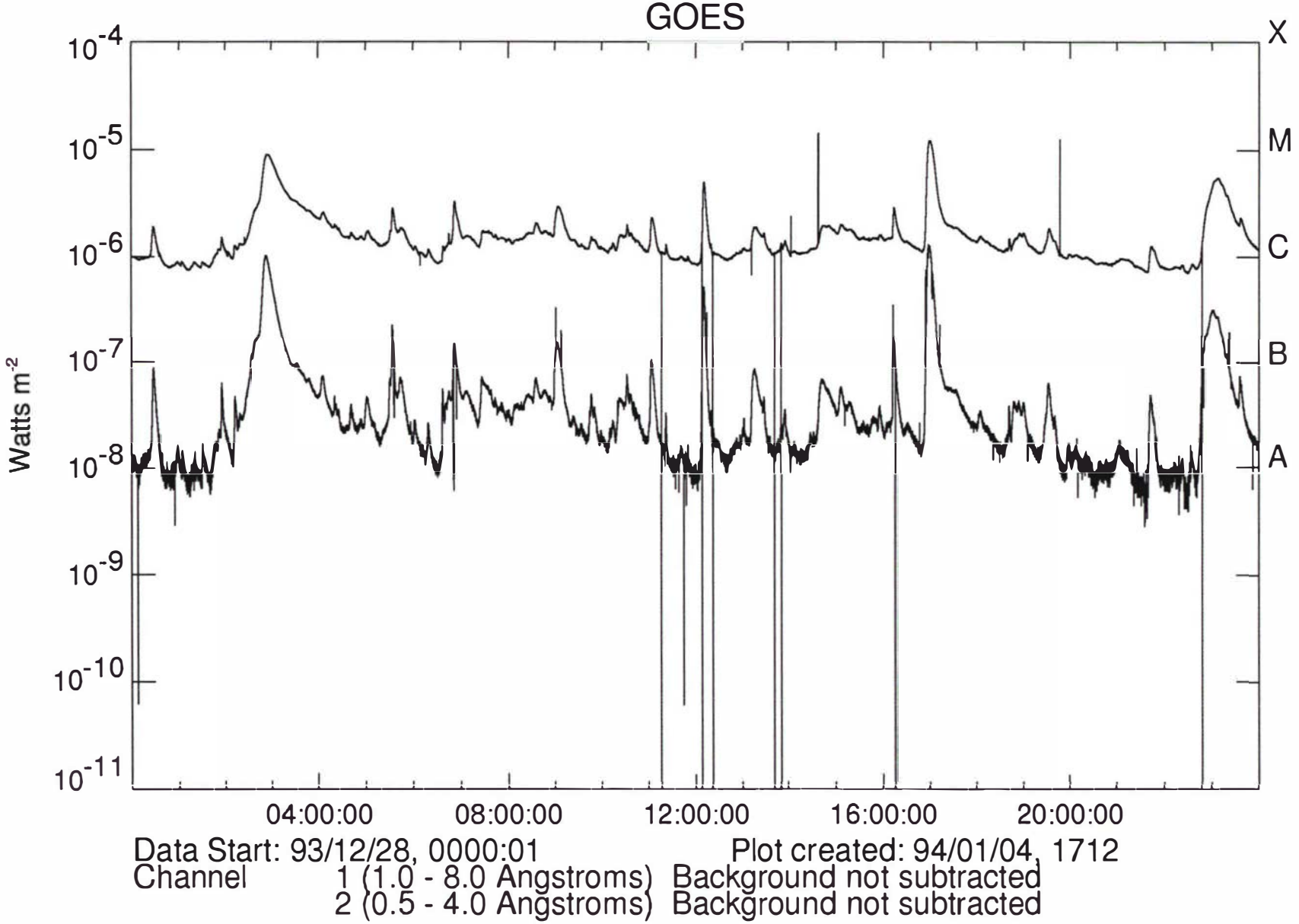
4 / 1 / 94

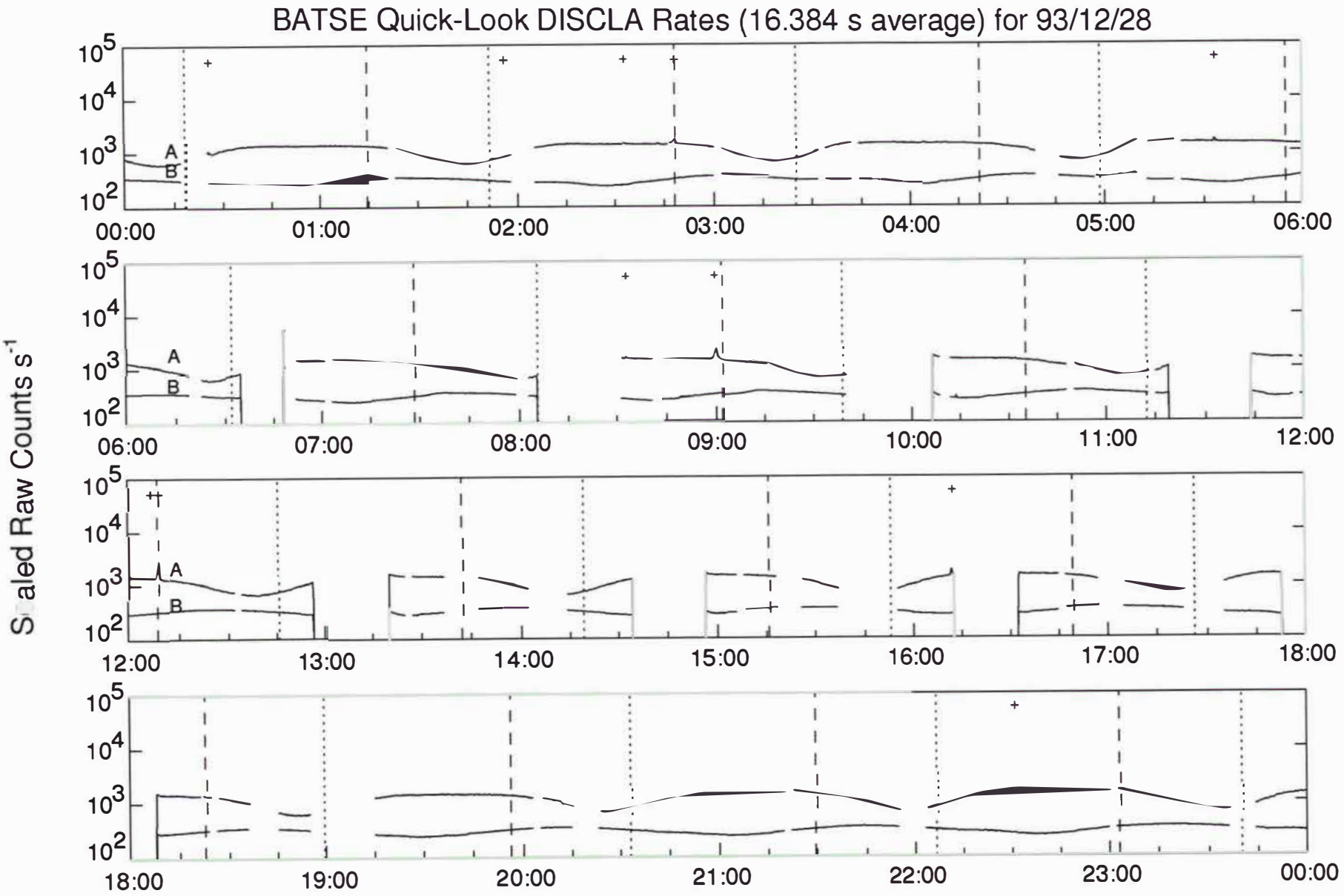
ULYSSES RT

28/12/93 1548.140 s

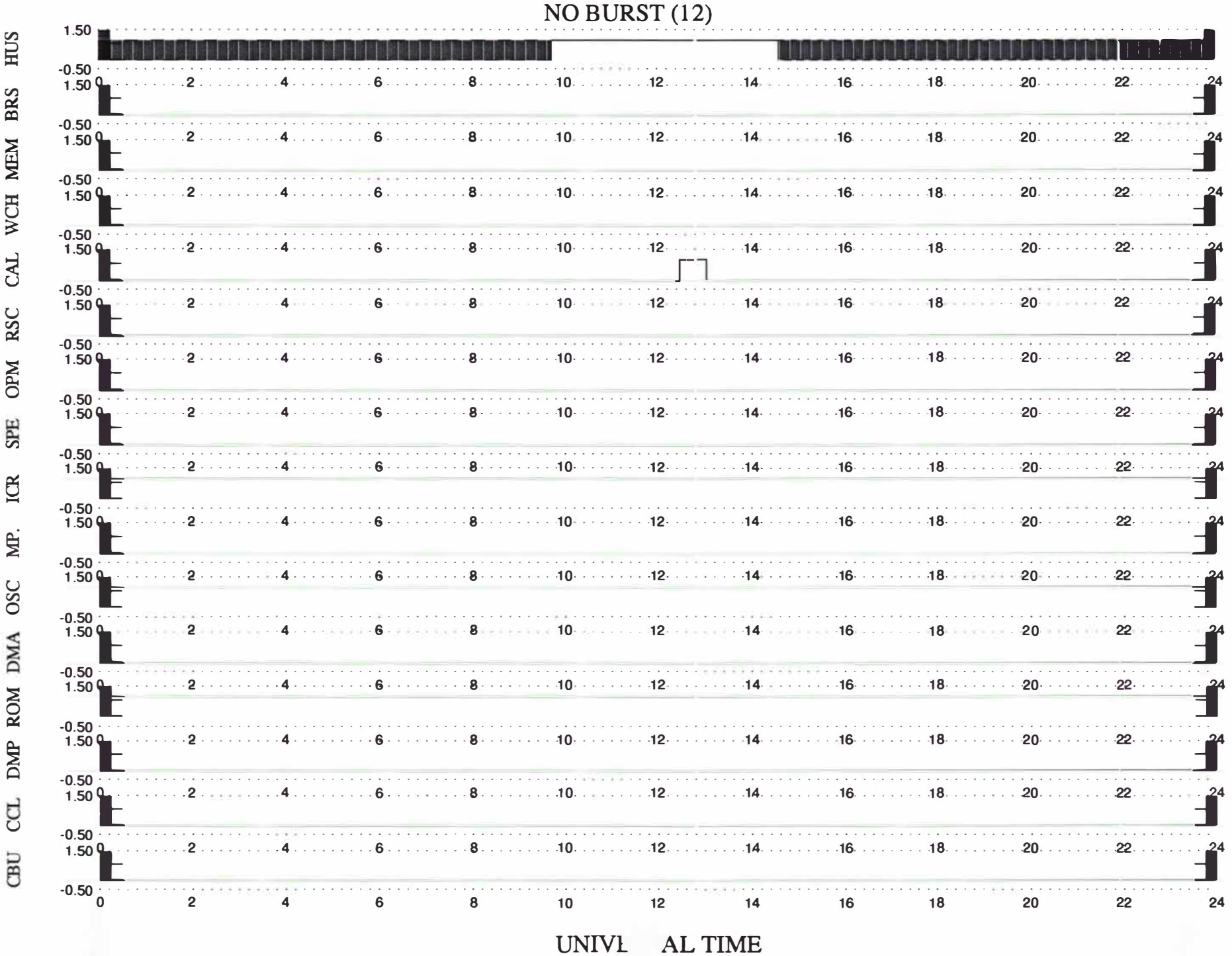
0- 0 keV




GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
10-11
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/28, 0000:01
Plot created: 94/01/04, 1712
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

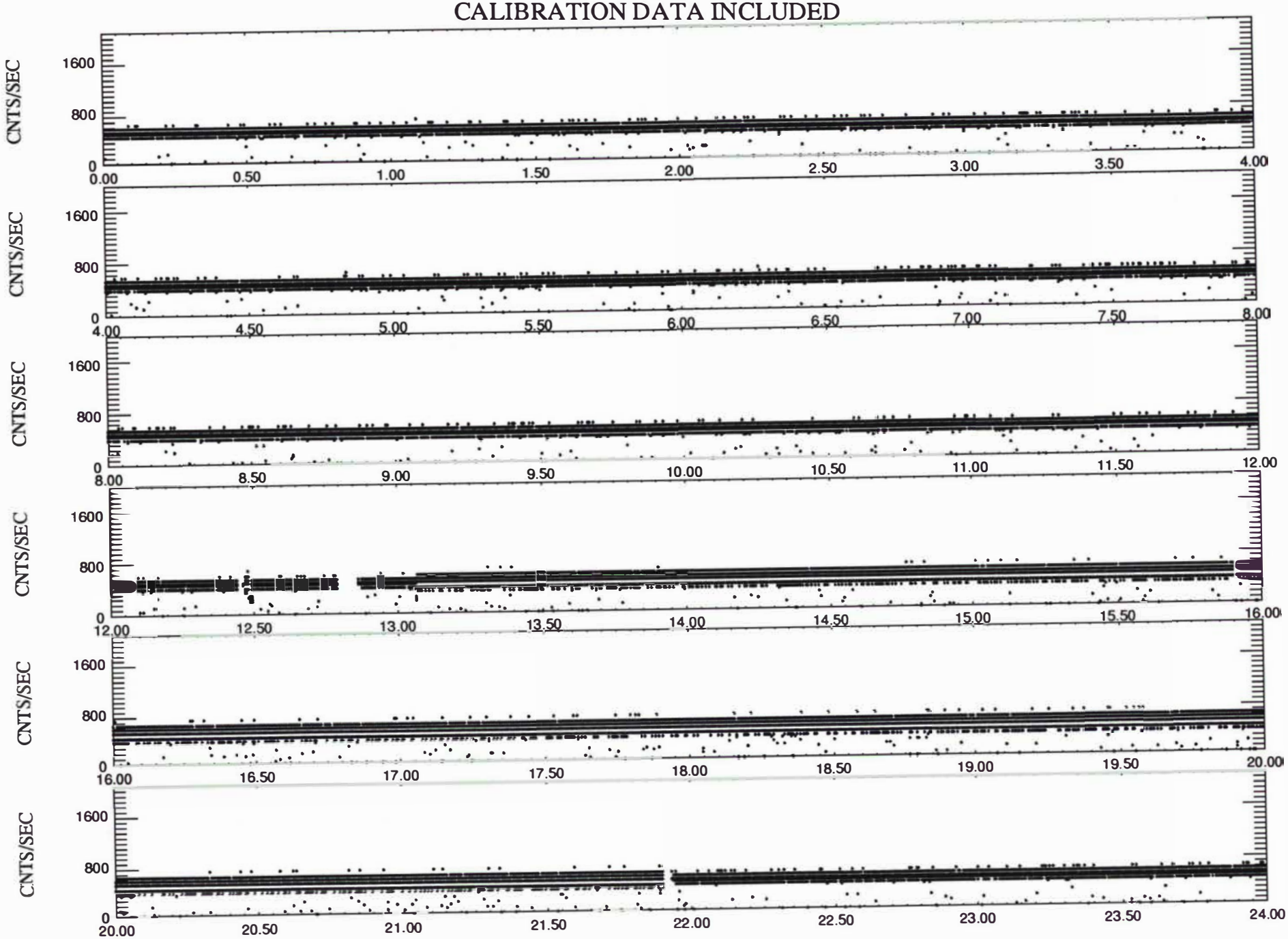

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/28
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 362, year 1993 to day 362, year 1993 2/9/94



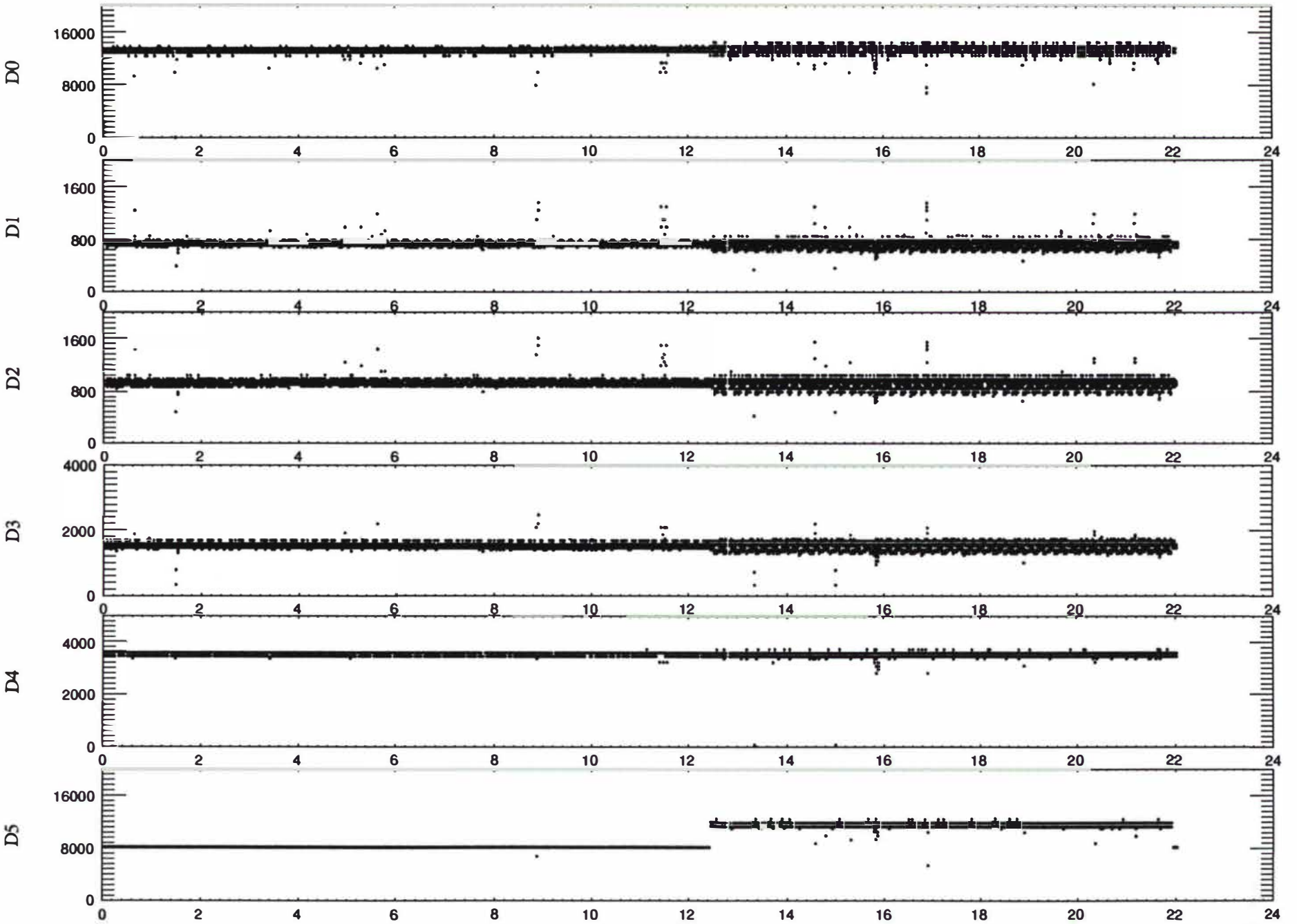
HUS 2A, MODE 1, NOT AVERAGED EDR day 362, year 1993 to day 362, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 362, year 1993 to day 362, year 1993 1/5/94



COMPTEL/BATSE/IPN Burst Localizations

All Coordinates Epoch J2000.0

UB= Ulysses/BATSE UP = Ulysses/PVO BP= BATSE/PVO

		Center		Radius			BATSE Position					COMPTEL Position			
Burst	Rf	Ra	Dec	Radius	(-/+)	D (AU)	Ra	Dec	1σ	Smin	Rf	Ra	Dec	1σ	Smin
GRB910425 UB	1	115.140	23.172	51.733	0.053	2.848	91.29	-22.77	1.02	0.27	3	90.20	-22.20	0.92	0.28
GRB910503 UB	1	117.730	22.657	30.352	0.010	3.042	87.45	38.74	0.87	0.03	3	87.00	38.60	0.44	0.30
GRB910601 UB	1	307.038	-20.538	52.936	0.011	3.708	310.12	32.34	0.17	0.02	3	309.90	32.70	0.46	0.37
GRB910627 UB	1	134.824	18.425	66.820	0.031	4.215	197.99	-2.48	0.28	1.28	3	199.40	-5.00	1.63	0.96
UP	1	133.523	18.792	68.352	0.036	3.621	-	-	-	1.53	-	-	-	-	0.71
GRB910709	NA	NA	NA	NA	NA	NA	172.77	81.67	2.31	NA	3	144.10	75.60	1.80	NA
GRB910814 UB	1	328.558	-13.966	45.699	0.018	4.918	346.35	30.43	0.48	1.89	3	343.80	29.50	0.39	0.19
UP	1	328.287	-14.629	46.428	0.019	4.626	-	-	-	1.87	-	-	-	-	0.17
GRB911118 UB	1	166.979	6.889	30.110	0.017	4.972	167.03	-20.85	0.36	2.37	3	166.30	-22.50	1.11	0.71
UP	1	162.619	8.562	32.018	0.019	4.248	-	-	-	2.29	-	-	-	-	0.75
BP	1	190.131	-2.551	30.766	0.086	0.813	-	-	-	1.76	-	-	-	-	0.23
GRB920622 UB	1	150.167	6.667	41.335	0.009	5.800	162.1	47.17	0.31	0.43	3	162.50	49.20	0.81	2.44
GRB920627 UB	1	150.590	6.327	23.540	0.049	5.869	166.02	-2.58	0.65	5.74		166.80	-8.50	1.18	1.61
GRB920830 UB	1	338.192	0.949	86.268	0.018	?	258.53	-73.99	0.54	1.81	3	259.00	-74.50	1.35	1.78
GRB930118	NA	NA	NA	NA	NA	NA	228.40	-34.30	?	NA	4	221.80	-34.80	1.47	NA
GRB930131 UB	1	161.411	-14.563	22.256	0.011	4.218	182.04	-8.24	2.16	1.09	3	186.20	-7.90	1.77	2.93
GRB930309 UB	1	332.600	14.645	36.601	0.035	3.998	325.41	51.73	0.72	0.93	3	322.70	55.20	0.74	4.67
GRB930612 UB	1	143.974	-11.184	63.928	0.053	4.870	103.07	-69.76	0.4	0.07	3	106.50	-71.00	1.60	0.17
GRB930704 UB	1	146.146	-11.823	82.959	0.113	5.089	100.9	60.8	0.59	2.01	3	99.30	62.80	1.08	0.07
BM	1	159.825	8.635	68.701	2.319	1.981	-	-	-	1.04	-	-	-	-	0.45
GRB931229	NA	NA	NA	NA	NA	NA	240.06	19.7	1.4	NA	3	241.90	21.00	2.35	NA
GRB940217 UB	1	328.736	51.947	69.334	0.050	3.038	29.07	4.55	0.69	0.84	3	30.10	3.10	0.32	0.94
GRB940301 UB	1	321.914	52.508	59.395	0.136	2.953	103.51	64.35	0.35	0.02	3	102.70	64.00	0.40	0.17
GRB940314 UB	1	314.850	51.972	64.530	0.220	?	354.86	-2.14	0.94	0.77	3	356.00	-1.40	1.43	0.92
GRB940520 UB	1	300.149	41.387	40.380	0.133	2.986	323.5	6.93	0.88	0.16	3	324.70	7.70	0.70	0.27
GRB940619 UB	1	303.998	39.140	69.375	0.211	3.039	299.05	-29.89	0.34	0.20	3	298.50	-31.50	1.15	1.44
GRB940708 UB	1	308.119	39.489	17.431	0.038	?	301.58	24.66	1.02	1.61	3	300.50	22.70	1.03	0.56
GRB940728 UB	1	133.614	-41.397	36.245	0.131	?	85.49	-39.87	1.44	0.17	3	85.10	-38.00	1.10	0.75
GRB940921 UB	2	155.516	-55.210	54.361	0.121	2.583	196.59	-18.71	?	6.49	4	207.10	-16.40	0.68	0.75
GRB941017	NA	NA	NA	NA	NA	NA	302.63	11.10	?	NA	4	301.70	13.30	2.10	NA
GRB950208 UB	2	334.715	-27.012	83.397	0.022	2.301	337.06	54.19	?	2.17	4	344.80	56.00	1.95	0.05
GRB950421 UB	2	177.048	-19.097	81.048	0.226	2.171	71.92	-63.03	?	1.41	4	70.10	-61.70	1.43	0.11
GRB950425 UB	2	178.121	-21.566	17.005	0.207	2.154	163.16	-35.21	?	1.90	4	164.90	-33.80	0.34	0.11
GRB950522 UB	2	7.656	42.578	86.989	0.063	2.039	109.57	19.31	?	1.60	4	110.81	20.34	1.14	1.47

1 Hurley, K. et al Huntsville workshop (1995)

2 BACODINE/IPN burst alert messages (Hurley)

3 BATSE 3B Catalog

4 Meegan, C. Priv. Comm. (Trigger Messages)

Smin = minimum distance between point and IPN annulus

COMPTEL/BATSE/IPN Burst Lo ıtions

UB= Ulysses/BATSE UP = Ulysses/PVO BP= BATSE/PVO BATSE Position COMPTEL Position

		Center		Radius								
Burst	Rf	Ra	Dec	Radius	(-/+)	D(AU)	Ra	Dec	1sig	Rf	Ra	Dec	1sig
GRB910425 UB	1	115.140	23.172	51.733	0.053	?	92.40	-18.60	4.11	6	90.20	-22.20	1.28
GRB910503 UB	1	117.730	22.657	30.352	0.010	?	87.20	37.60	4.04	6	87.00	38.60	0.54
GRB910601 UB	1	307.038	-20.538	52.936	0.011	3.708	311.40	33.70	4.07	6	309.90	32.70	0.49
GRB910627 UB	2	134.824	18.425	66.820	?	?	200.00	-3.20	4.01	6	199.40	-5.00	1.90
UP	2	133.523	18.792	68.352	?	?	-	-	-	-	-	-	-
GRB910709	NA	NA	NA	NA	NA	NA	64.20	50.00	15.03	6	144.10	75.60	2.41
GRB910814 UB	2	328.558	-13.966	45.699	0.018	4.918	352.10	32.30	4.03	6	343.80	29.50	0.47
UP	2	328.287	-14.629	46.428	0.019	4.626	-	-	-	-	-	-	-
GRB911118 UB	2	166.979	6.889	30.110	?	?	165.00	-15.60	4.06	6	166.30	-22.50	1.35
UP	2	162.619	8.562	32.018	?	?	-	-	-	-	-	-	-
BP	2	190.131	-2.551	30.766	?	?	-	-	-	-	-	-	-
GRB920622 UB	8	150.167	6.667	41.335	0.003	?	156.30	44.90	4.00	9	162.50	49.20	1.01
GRB920830	NA	NA	NA	NA	NA	NA	258.50	-73.40	4.03	9	259.00	-74.50	1.46
GRB930118	NA	NA	NA	NA	NA	NA	228.40	-34.30	?	7	221.80	-34.80	1.54
GRB930131 UB	3	161.411	-14.563	22.256	0.011	4.218	184.30	-10.90	4.05	9	186.20	-7.90	1.86
GRB930309 UB	8	332.600	14.645	36.601	0.033	?	327.10	49.20	4.03	9	322.70	55.20	0.94
GRB930612 UB	8	143.974	-11.184	63.928	0.053	4.870	114.00	-66.70	?	7	106.50	-71.00	1.61
GRB930704 UB	8	146.146	-11.823	82.959	0.114	5.089	90.30	59.40	?	7	99.30	62.80	1.22
GRB931229	NA	NA	NA	NA	NA	NA	230.60	20.00	?	7	241.90	21.00	2.66
GRB940217 UB	4	328.725	51.950	69.330	0.050	?	27.90	5.10	?	7	30.10	3.10	0.38
GRB940301 UB	5	321.913	52.508	59.260	0.150	?	103.00	64.30	?	7	102.70	64.00	0.42
GRB940314	NA	NA	NA	NA	NA	NA	353.60	-1.20	?	7	355.60	-1.20	1.54
GRB940520 UB	8	300.149	41.387	40.380	0.133	2.986	339.80	-15.82	?	7	324.60	73.76	1.18
GRB940619 UB	8	303.998	39.140	69.375	0.211	3.039	298.70	-33.29	?	7	297.70	-31.90	1.38
GRB940708	?	?	?	?	?	?	301.52	24.92	?	7	300.30	22.70	1.04
GRB940728	?	?	?	?	?	?	86.43	-39.76	?	7	85.00	-37.80	1.08

1 Hurley, K. et al Huntsville workshop (1994)
2 Cline, T. et al Compton Symposium (1993)
3 Hurley, K. et al Huntsville workshop (1994)
4 Hurley, K. et al IAUC 5940 (1994)
5 Hurley, K. et al IAUC 5944 (1994)
6 Fishman, G. et al ApJS 92 229-284 (1994)
7 Meegan, C. Priv. Comm. (Trigger Messages)
8 Hurley, K. Priv. Comm.
9 GROSSC Online BATSE 2B Catalog

From root Wed Aug 10 08:12 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA02206; Wed, 10 Aug 94 08:12:52
Received: by comptel.unh.edu (4.1/SMI-4.1)
id AA12702; Wed, 10 Aug 94 11:23:36 EDT
From: mkippen@comptel.unh.edu (R Marc Kippen)
Message-Id: <9408101523.AA12702@comptel.unh.edu>
Subject: COMPTEL/IPN bursts
To: khurley@space6.ssl.berkeley.edu (Hurley)
Date: Wed, 10 Aug 1994 11:23:35 -0400 (EDT)
X-Mailer: ELM [version 2.4 PL23]
Mime-Version: 1.0
Content-Type: text/plain; charset=US-ASCII
Content-Transfer-Encoding: 7bit
Content-Length: 4437
Status: R

Kevin,

As promised, enclosed is a list of all the bursts which have been localized by COMPTEL since the start of its mission. The COMPTEL part is complete and up-to-date. Only unambiguous detections are included (>3.5 sigma), thus some questionable events you may have seen in the past are absent.

Included are all the IPN annuli I have knowledge of. Any updates/ additions/corrections you could offer would be greatly appreciated. In particular, I am interested in the inter-spacecraft distances and multiple spacecraft measurements which are absent in some cases.

Best regards,

Marc

R. Marc Kippen	Internet: rmkippen@unh.edu
Space Science Center / Morse Hall	
University of New Hampshire	Phone : (603) 862-4703
Durham, NH 03824	FAX : (603) 862-4685

From ULSMG@jplsp.jpl.nasa.gov Wed Dec 29 10:00 PST 1993
Date: Wed, 29 Dec 1993 10:00:58 -0800 (PST)
From: Peggy Greutert (reply to ULSSCI) <ULSMG@jplsp.jpl.nasa.gov>
To: KHURLEY@SUNSPOT.ssl.berkeley.edu
Cc: ULSMG@jplsp.jpl.nasa.gov
Subject: COMMAND REQUEST
Content-Type: text
Content-Length: 187

Please be informed that your command was uplinked at DOY 363/15:44:00 (SCET) and that the value of E011 is now 1490v. Before the command the value was at 1480v.

Regards,
Bryan McMillan

From SHARIFF@ssl.msfc.nasa.gov Mon Jan 3 10:14 PST 1994
Date: Mon, 3 Jan 1994 11:55:37 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@estec.bitnet, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Type: text
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02714

TIME: TJD=9350 SECONDS=22059

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
ELECTRON PREC. EVENT

From SHARIFF@ssl.msfc.nasa.gov Thu Dec 30 13:57 PST 1993
Date: Thu, 30 Dec 1993 15:59:06 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2715
Content-Type: text
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #    2715
 EVENT OF 1993 DEC 29 DAY OF YEAR=363
 EVENT CROSSING TIME AT BATSE     : 26165. S. OR 07:16:05.0
 COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 231.000   20.000
 BATSE PEAK COUNTING RATE:  55000    C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 29/12/  93 IS:
 RA=  165.478 DEC=  -41.053 DIST=    3.712 AU
 BATSE-ULYSSES DISTANCE =  555379457. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 93.96 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -127.79 SECS.
 CROSSING TIME AT ULYSSES    IS 26037. S. OR   07:13:57 +/-  368.92 SECONDS

 EVENT CROSSING TIME AT MARS       WILL BE FOUND
 POSITION OF MARS ON 29/12/  93 IS:
 RA=  277.439 DEC=  -24.069 DIST=    2.425 AU
 MARS-BATSE DISTANCE =  362810464. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=116.86 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= -546.74 SECS.
 CROSSING TIME AT MARS       IS 25618. S. OR   07:06:58 +/-  179.14 SECONDS
```

NO but should have been

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2715	931229	9350	26165	55000	231	+20

BATSE BURST TRIGGER

NO.: 02715

TIME: TJD=9350 SECONDS=26165

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=038.6 AZIMUTH=043.7 ERROR= DEGREES

COMMENTS:
BURST, STRONG SINGLE SPIKE, LASTING ~0.5S. VISIBLE ABOVE 300KEV.

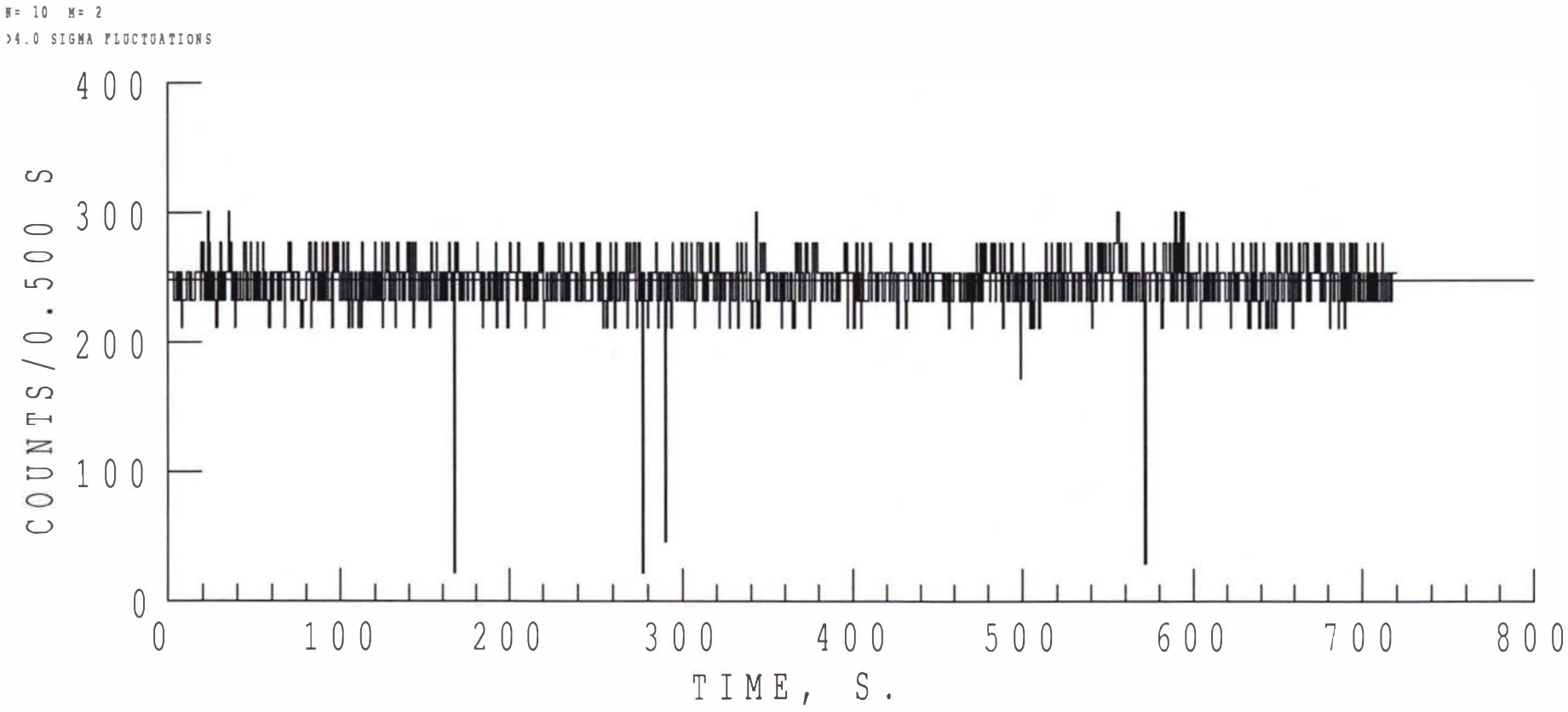
Batse # 2715

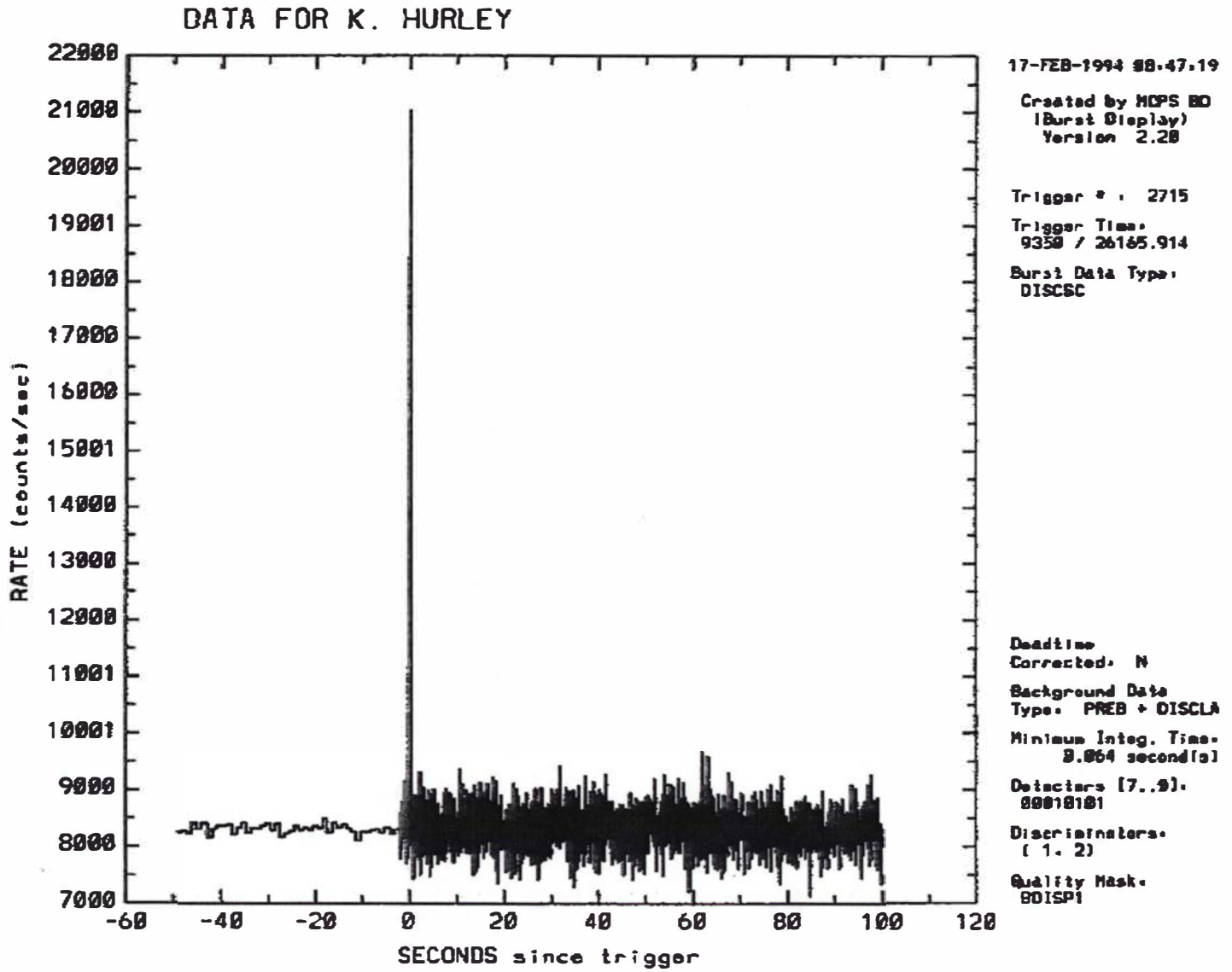
4 / 1 / 94

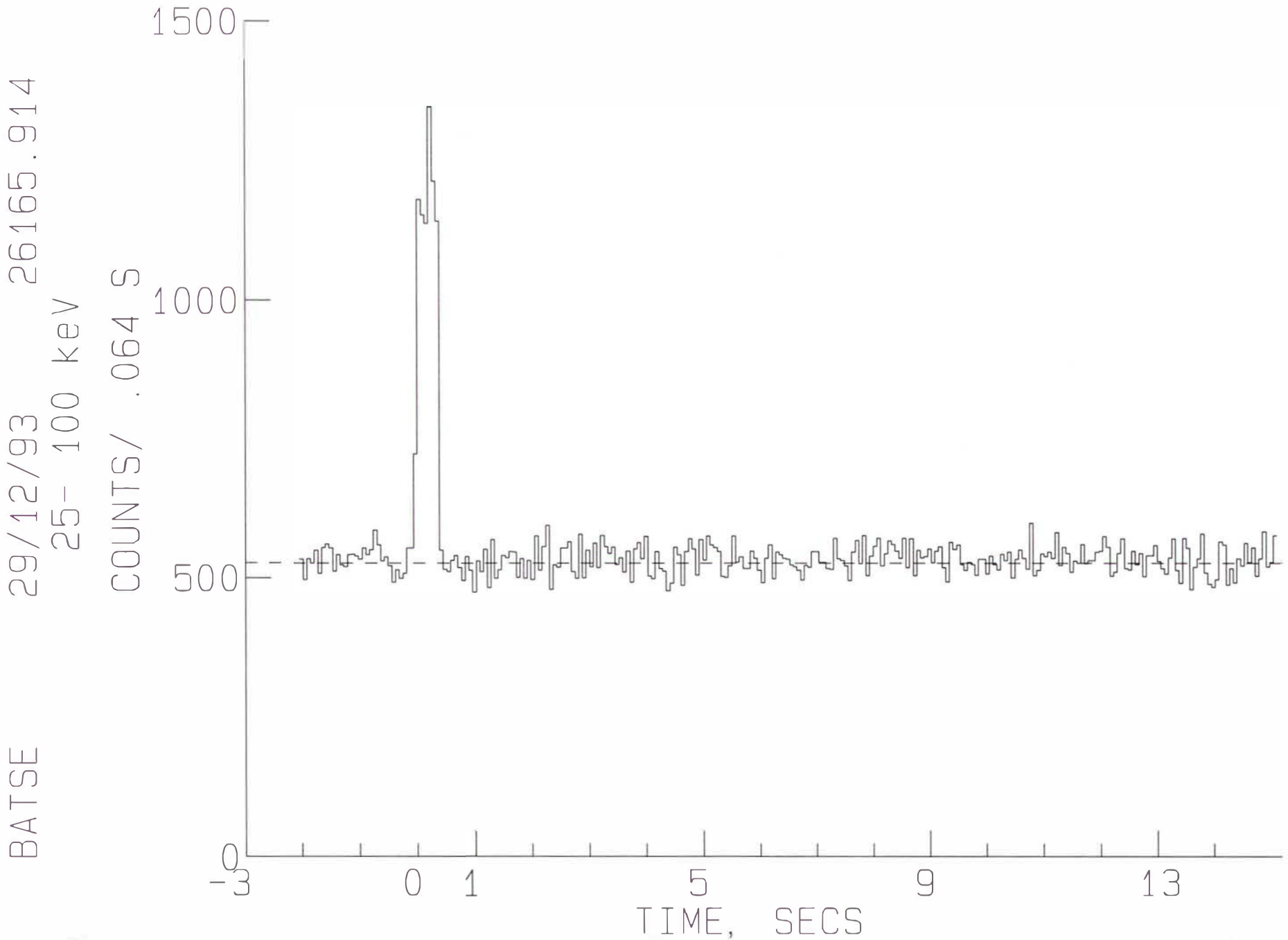
ULYSSES RT

29/12/93 25668.348 s

0- 0 keV




DATA FOR K. HURLEY
RATE (counts/sec)
22000
21000
20000
19001
18000
17000
16000
15001
14000
13000
12000
11001
10001
9000
8000
7000
-60
-40
-20
0
20
40
60
80
100
120
SECONDS since trigger
17-FEB-1994 08:47:19
Created by HCPS BD
(Burst Display)
Version 2.20
Trigger # : 2715
Trigger Time:
9359 / 26185.914
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second[s]
Detectors [7..0]:
00018181
Discriminators:
(1. 2)
Quality Mask:
BDISP1


BATSE 29/12/93 26165.914
25- 100 keV
COUNTS/ .064 S
1500
1000
500
0
-3
0
1
5
9
13
TIME, SECS

From SHARIFF@ssl.msfc.nasa.gov Mon Jan 3 11:11 PST 1994
Date: Mon, 3 Jan 1994 13:13:27 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2716
Content-Type: text
Content-Length: 1135

****
BATSEARCH PROGRAM
****

BATSE BURST # 2716
EVENT OF 1993 DEC 29 DAY OF YEAR=363
EVENT CROSSING TIME AT BATSE : 60255. S. OR 16:44:15.0
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 57.000 37.000
BATSE PEAK COUNTING RATE: 3200 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 29/12/ 93 IS:
RA= 165.431 DEC= -41.158 DIST= 3.706 AU
BATSE-ULYSSES DISTANCE = 554398210. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 54.11 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1084.01 SECS.
CROSSING TIME AT ULYSSES IS 61339. S. OR 17:02:19 +/- 326.58 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND
POSITION OF MARS ON 29/12/ 93 IS:
RA= 277.439 DEC= -24.069 DIST= 2.425 AU
MARS-BATSE DISTANCE = 362810464. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 36.83 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 968.69 SECS.
CROSSING TIME AT MARS IS 61224. S. OR 17:00:23 +/- 140.66 SECONDS

No

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2716	931229	9350	60255	3200	057	+37

BATSE BURST TRIGGER

NO.: 02716

TIME: TJD=9350 SECONDS=60255

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=110.9 AZIMUTH=159.8 ERROR= DEGREES

COMMENTS:
BURST, SINGLE PEAK WITH SUBSTRUCTURE, LASTING ~28S. NOT VISIBLE ABOVE 300KEV.

Batse # 2716

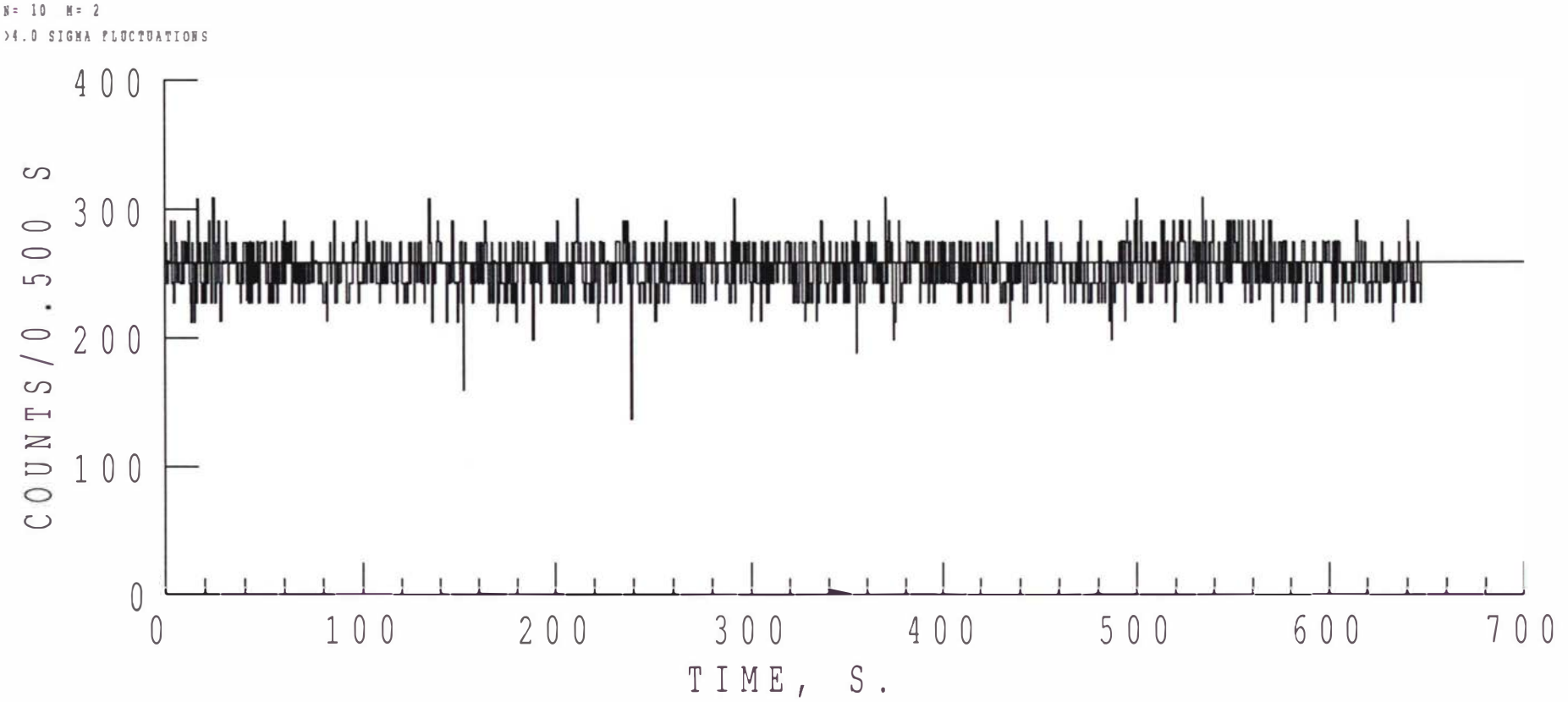
4 / 1 / 94

ULYSSES RT

29/12/93 61020.148 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



From SHARIFF@ssl.msfc.nasa.gov Mon Jan 3 10:44 PST 1994
Date: Mon, 3 Jan 1994 12:45:55 -0600 (CST)
From: SHARIFF@ssl.msfc.nasa.gov
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Type: text
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02717

TIME: TJD=9350 SECONDS=80049

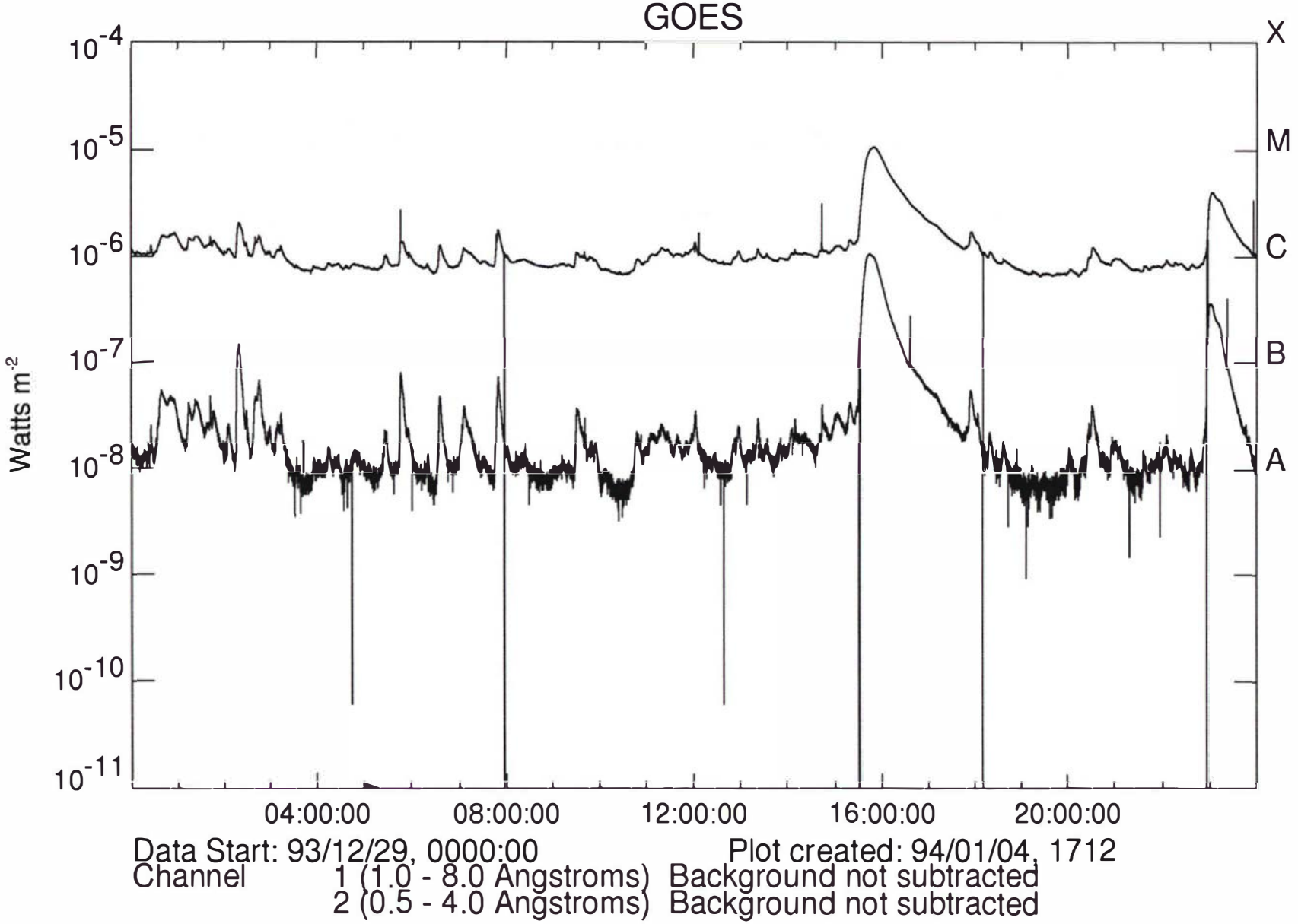
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

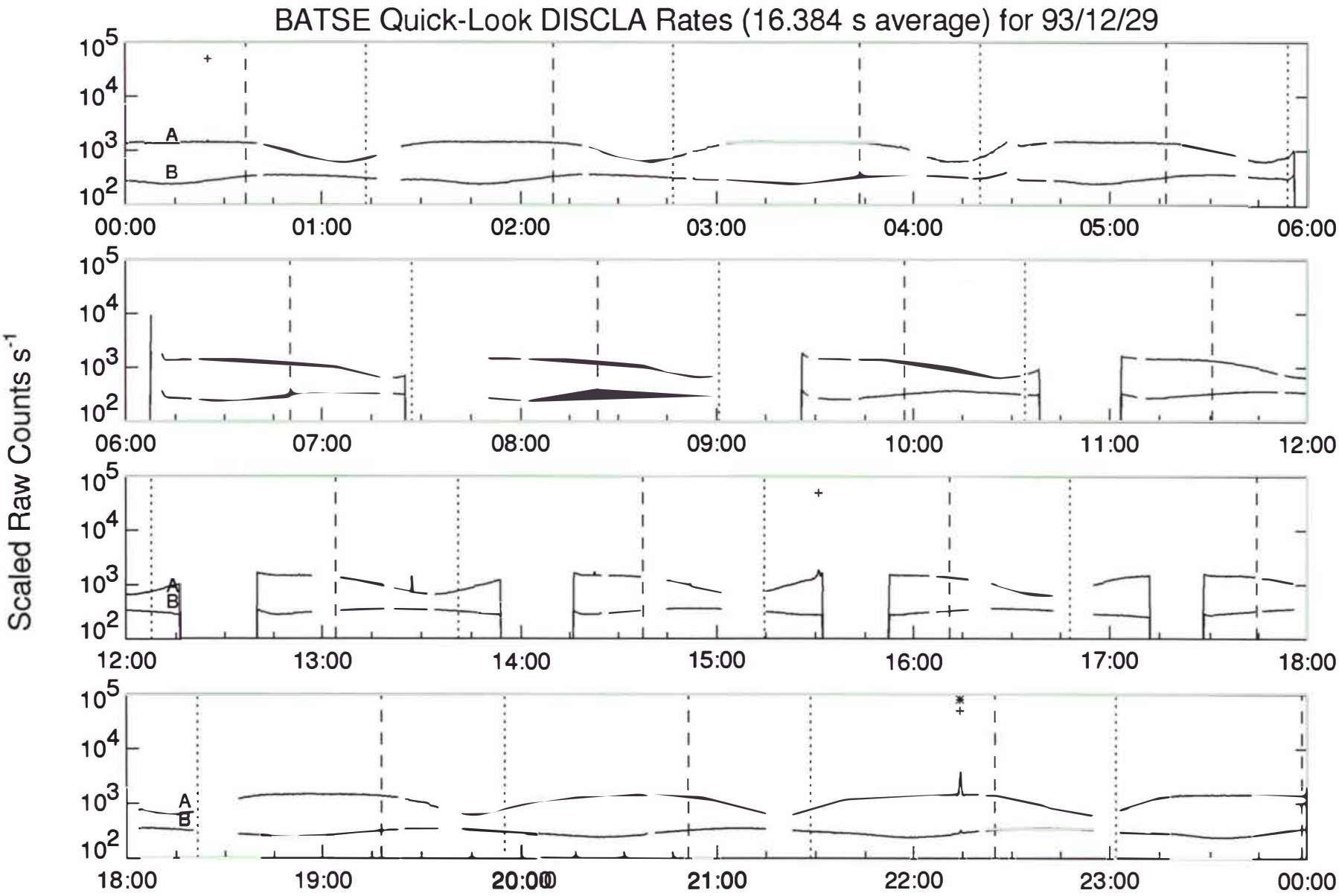
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

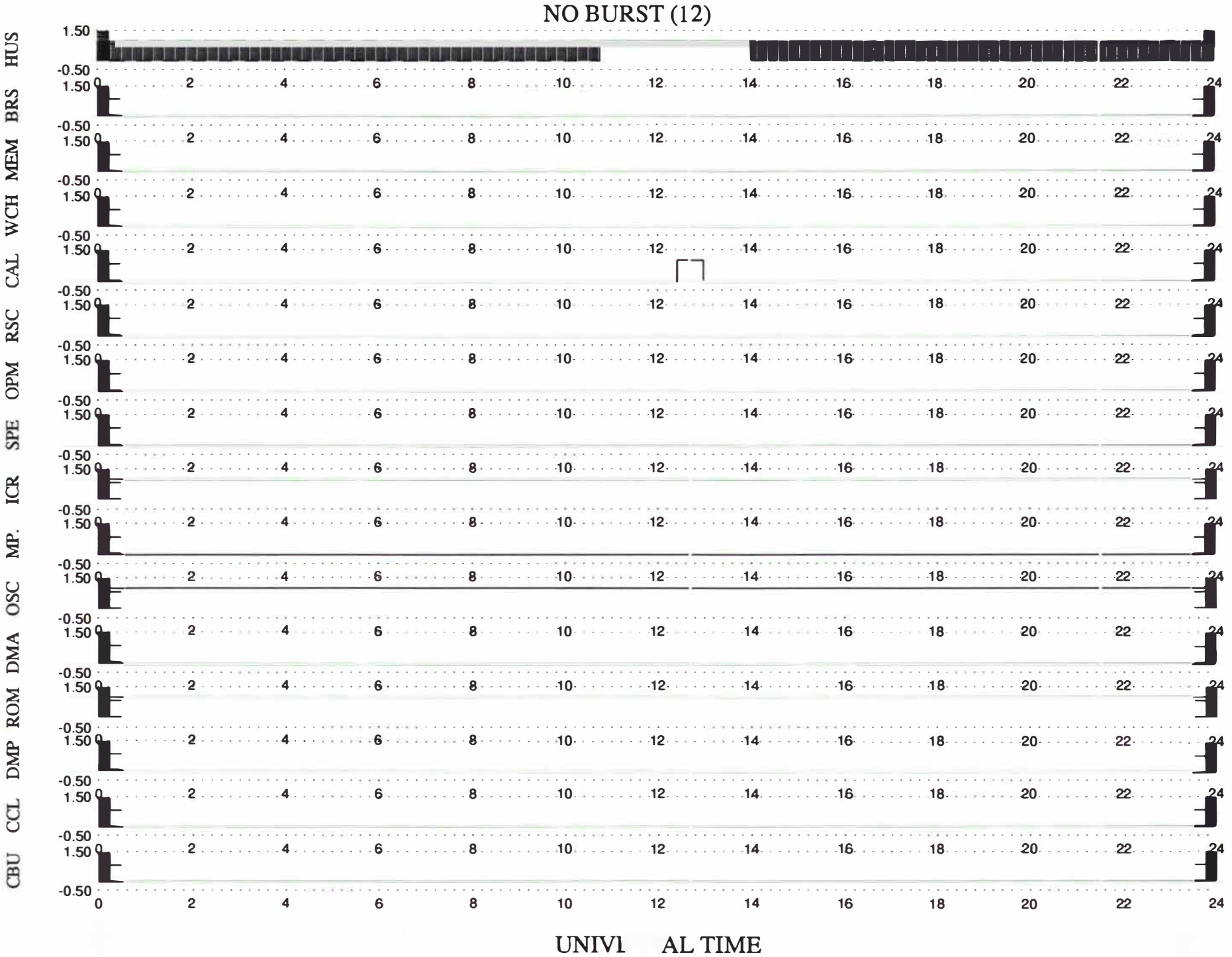
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, UNCLASSIFIED GOES, LASTING ~80S. NOT VISIBLE ABOVE 300KEV.


GOES
10^{-4}
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
10^{-10}
10^{-11}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/29, 0000:00
Plot created: 94/01/04, 1712
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

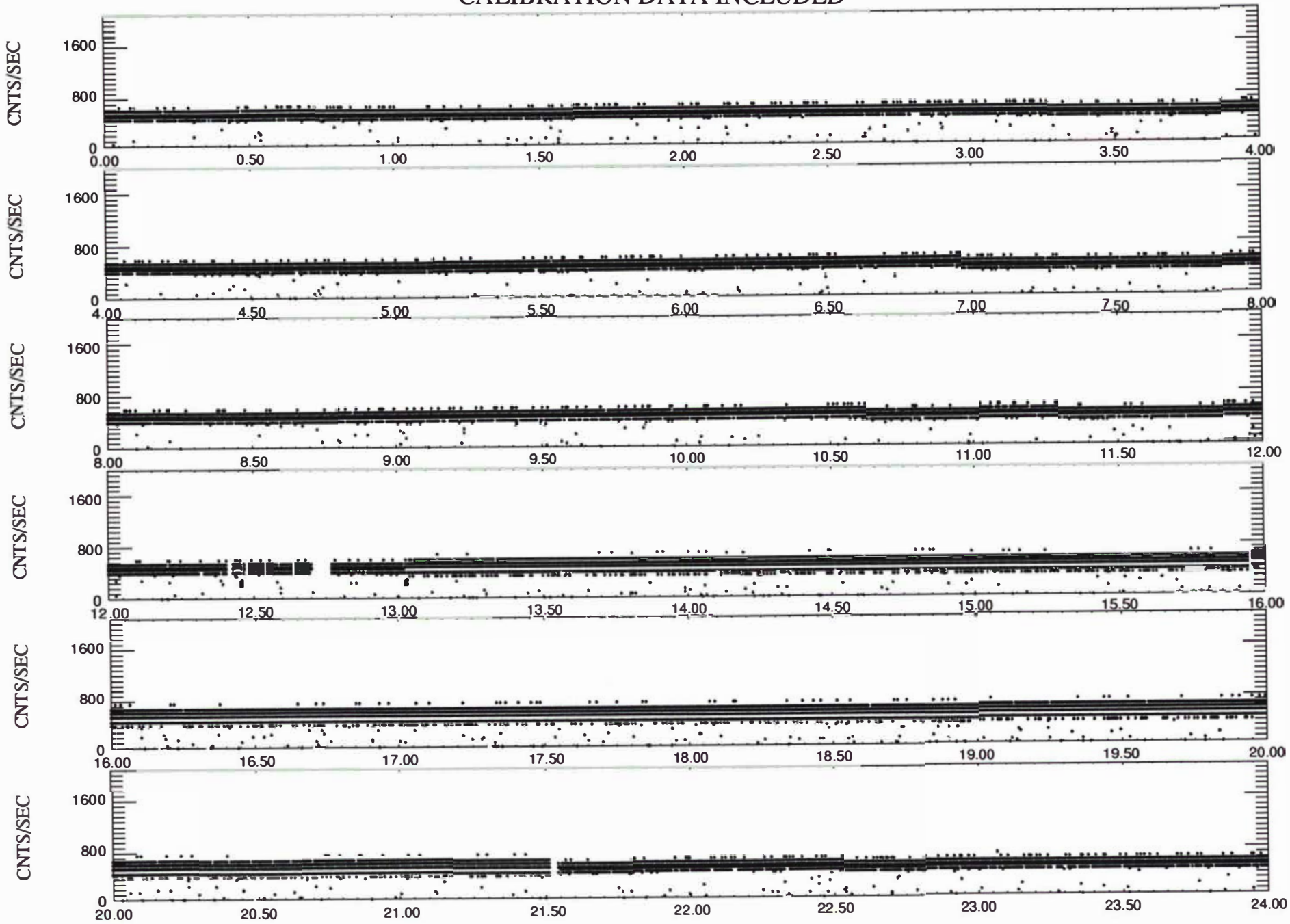

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/29
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 363, year 1993 to day 363, year 1993 2/9/94



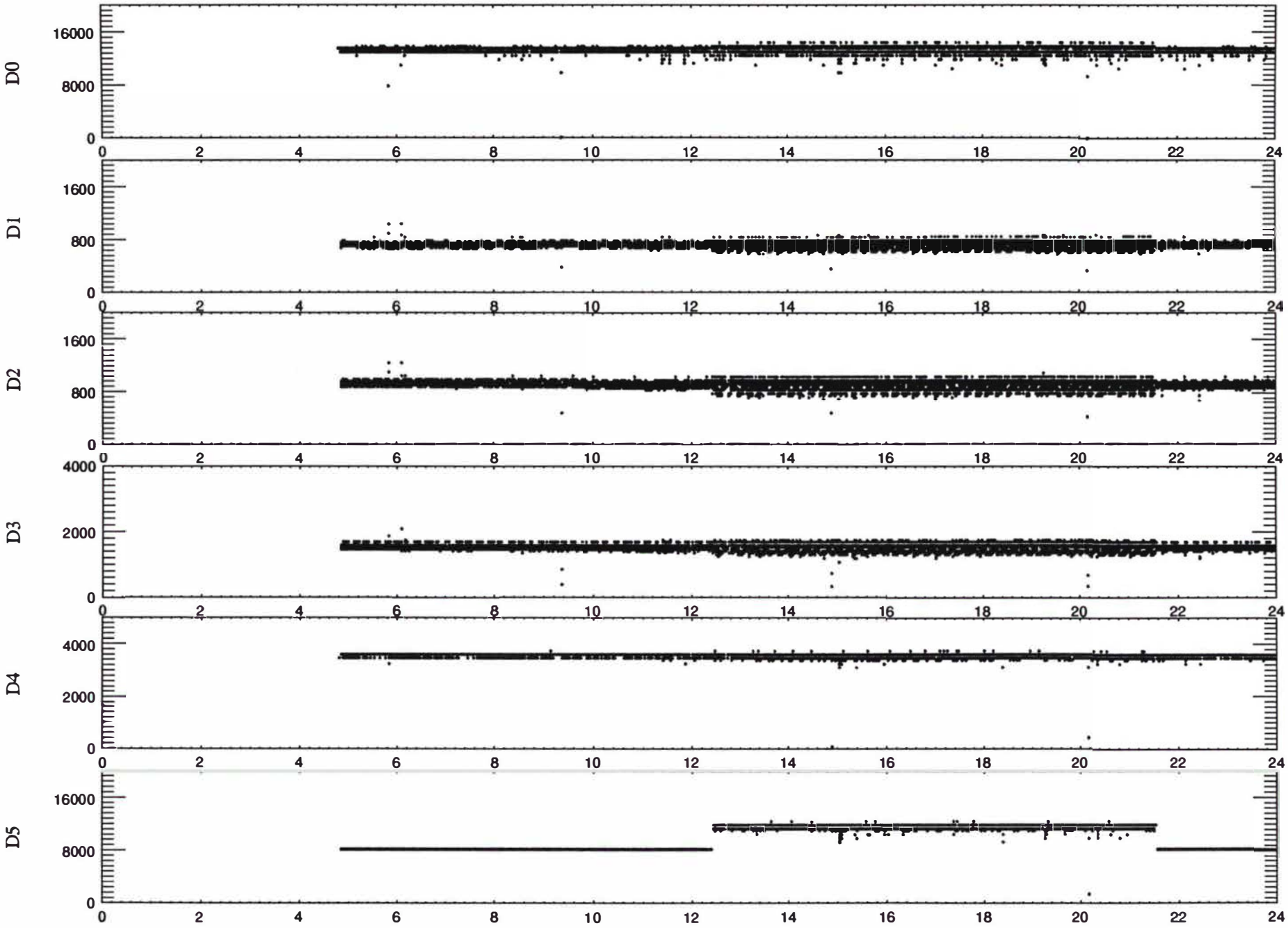
HUS 2A, MODE 1, NOT AVERAGED EDR day 363, year 1993 to day 363, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 363, year 1993 to day 363, year 1993 1/5/94



From BRIGGS@ssl.msfc.nasa.gov Fri Dec 31 14:04 PST 1993
Date: Fri, 31 Dec 1993 16:06:05 -0600 (CST)
From: "Michael S. Briggs, 205-544-7716, Code ES-64, MSFC" <BRIGGS@ssl.msfc.nasa.gov>
To: burst@comptel.unh.edu, GROBAD@ESTEC.BITNET, LHEAVXCLINE@ssl.msfc.nasa.gov,
LHEAVXBARTHELMY@ssl.msfc.nasa.gov, LHEAVXKWOK@ssl.msfc.nasa.gov,
15733SCHAEFER@ssl.msfc.nasa.gov, CASS09BAND@ssl.msfc.nasa.gov,
CASS09GRUBER@ssl.msfc.nasa.gov, CASS09MATTESON@ssl.msfc.nasa.gov,
PACIESAS@ssl.msfc.nasa.gov, HORACK@ssl.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu
Subject: Burst Trigger Message
Content-Type: text
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02718

TIME: TJD=9351 SECONDS=20967

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=96.1 AZIMUTH=9.0 ERROR= DEGREES

COMMENTS:
GOES M1.6

From BRIGGS@ssl.msfc.nasa.gov Sun Jan 2 14:24 PST 1994
Date: Sun, 2 Jan 1994 16:26:03 -0600 (CST)
From: BRIGGS@ssl.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Subject: Crossing Windows for BATSE Burst 2719
Content-Type: text
Content-Length: 1135

```
         ********************
         *BATSEARCH PROGRAM*
         ********************

 BATSE BURST #     2719
 EVENT OF 1993 DEC 30 DAY OF YEAR=364
 EVENT CROSSING TIME AT BATSE      : 73609. S. OR 20:26:49.0
 COORDINATES ARE    0.000    0.000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 202.000    40.000
 BATSE PEAK COUNTING RATE:    6500     C/S

 EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
 INTERPOLATED POSITION OF ULYSSES ON 30/12/  93 IS:
 RA=  165.288 DEC=  -41.465 DIST=     3.687 AU
 BATSE-ULYSSES DISTANCE =  551522953. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 91.98 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  -63.57 SECS.
 CROSSING TIME AT ULYSSES     IS 73545. S. OR   20:25:45 +/-  368.24 SECONDS

 EVENT CROSSING TIME AT MARS        WILL BE FOUND
 POSITION OF MARS ON 30/12/  93 IS:
 RA=  278.270 DEC=  -24.035 DIST=     2.424 AU
 MARS-BATSE DISTANCE =  362626560. KM.
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 84.51 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=  115.82 SECS.
 CROSSING TIME AT MARS        IS 73725. S. OR   20:28:44 +/-  210.80 SECONDS
```

No

BATSE #	Date	TJD	sec	Max ct/s	RA	Dec
2719	931230	9351	73609	6500	202	+40

BATSE BURST TRIGGER

NO.: 02719

TIME: TJD=9351 SECONDS=73609

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=26.3 AZIMUTH=100.5 ERROR= DEGREES

COMMENTS:
TOTAL DURATION ABOUT 2.5 S. TWO OR THREE SPIKES.
STRONGEST IN THE 100 - 300 KEV BAND

BATSE BURST# 2719

ULYSSES RT 4/ 5/98

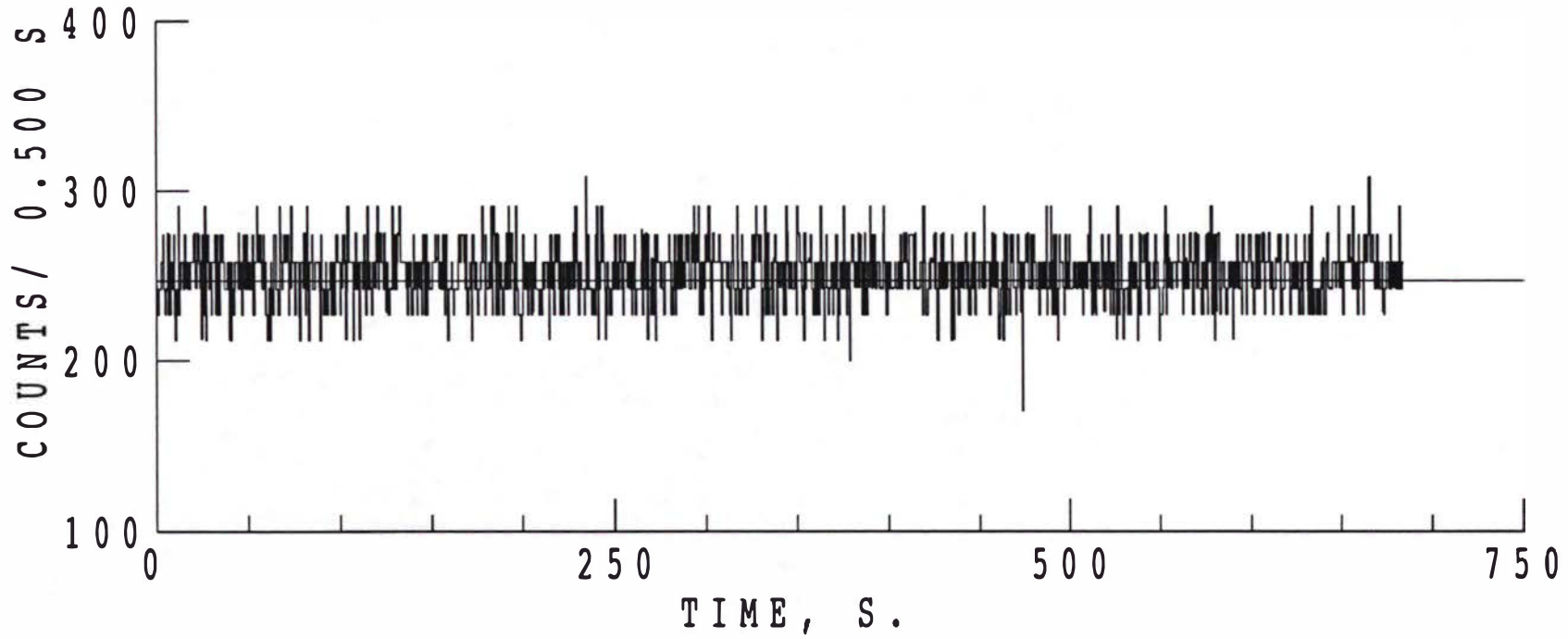
30/12/93 74196.195 s

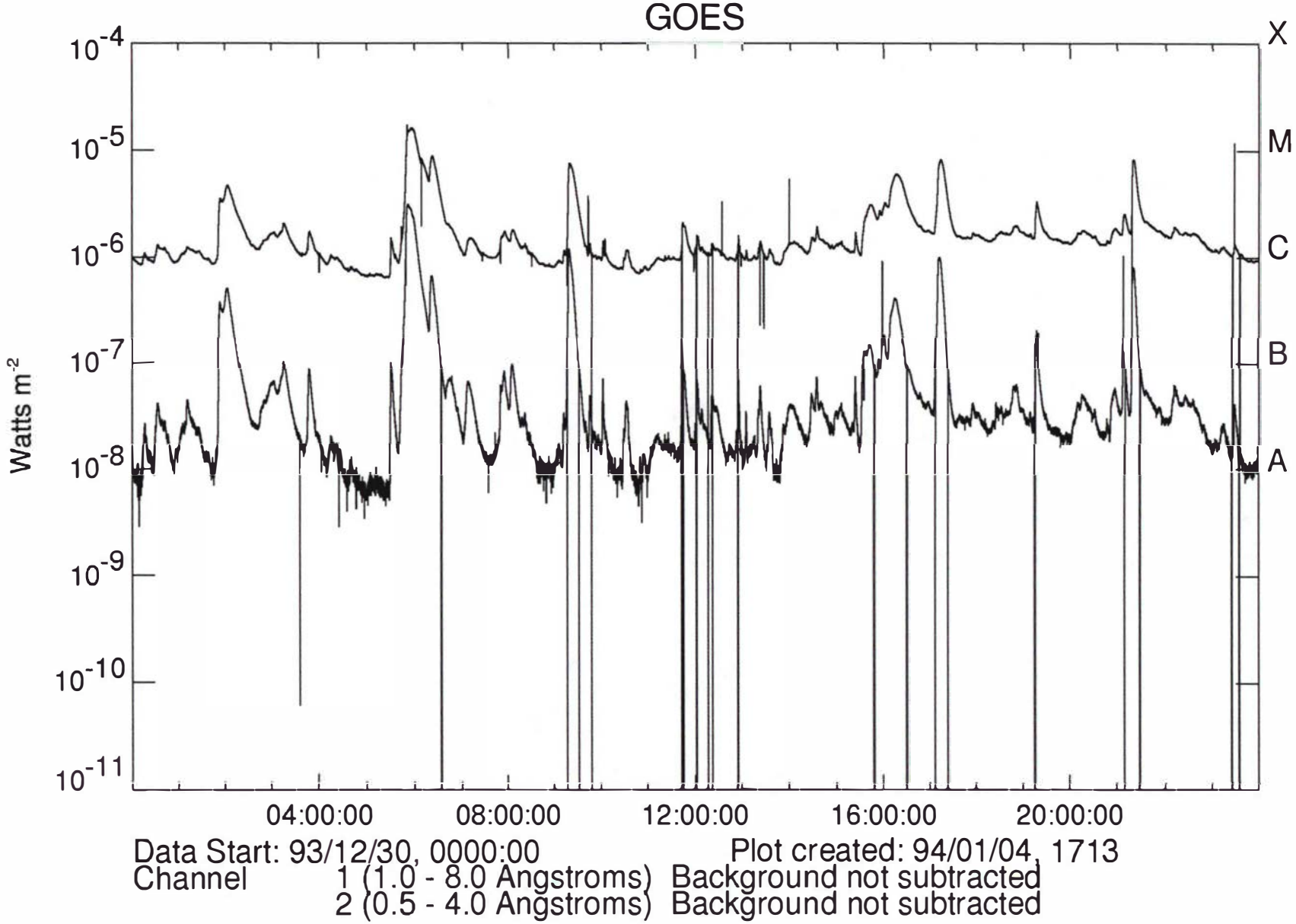
0.250 S INTERVALS REGROUPED BY 2

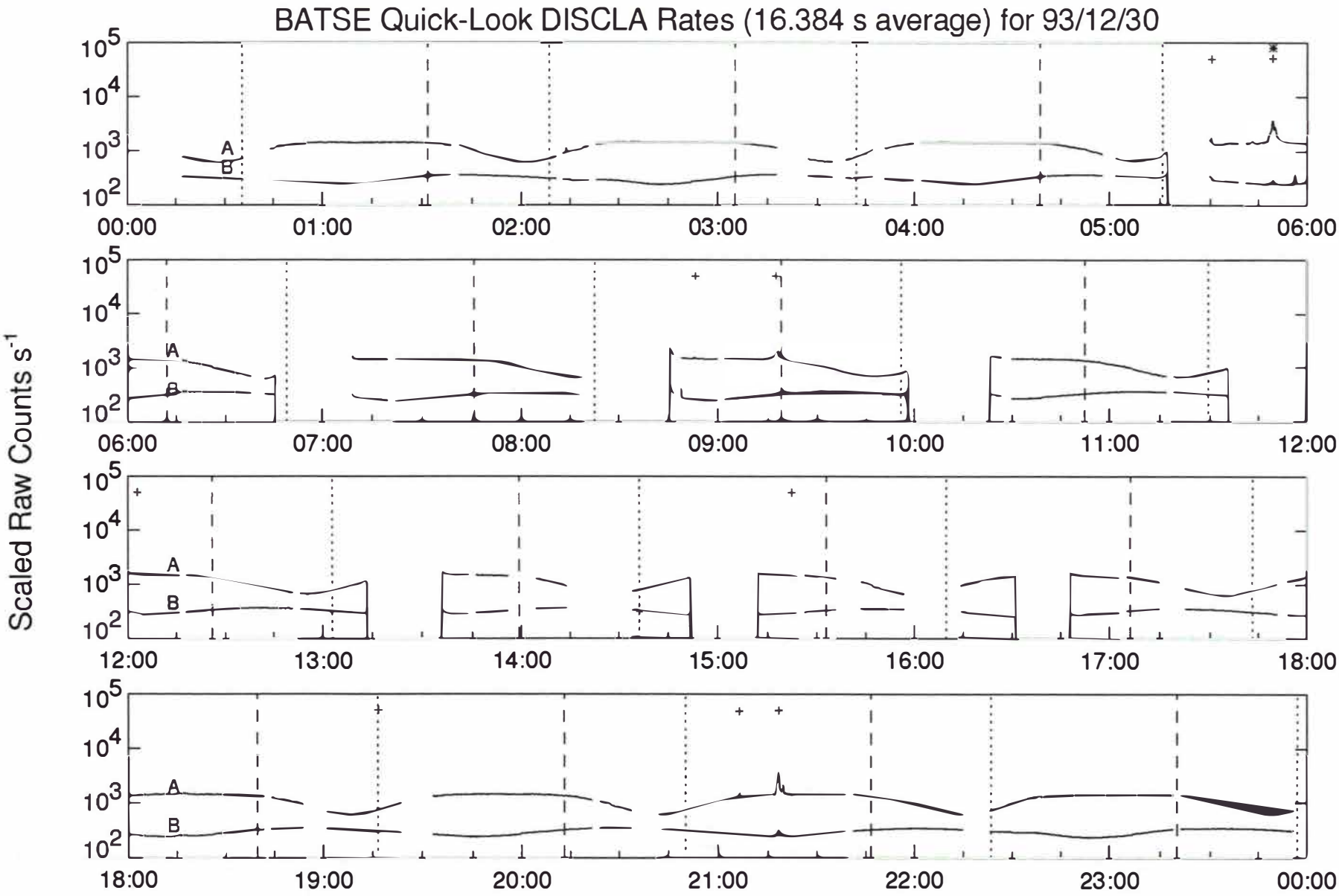
0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

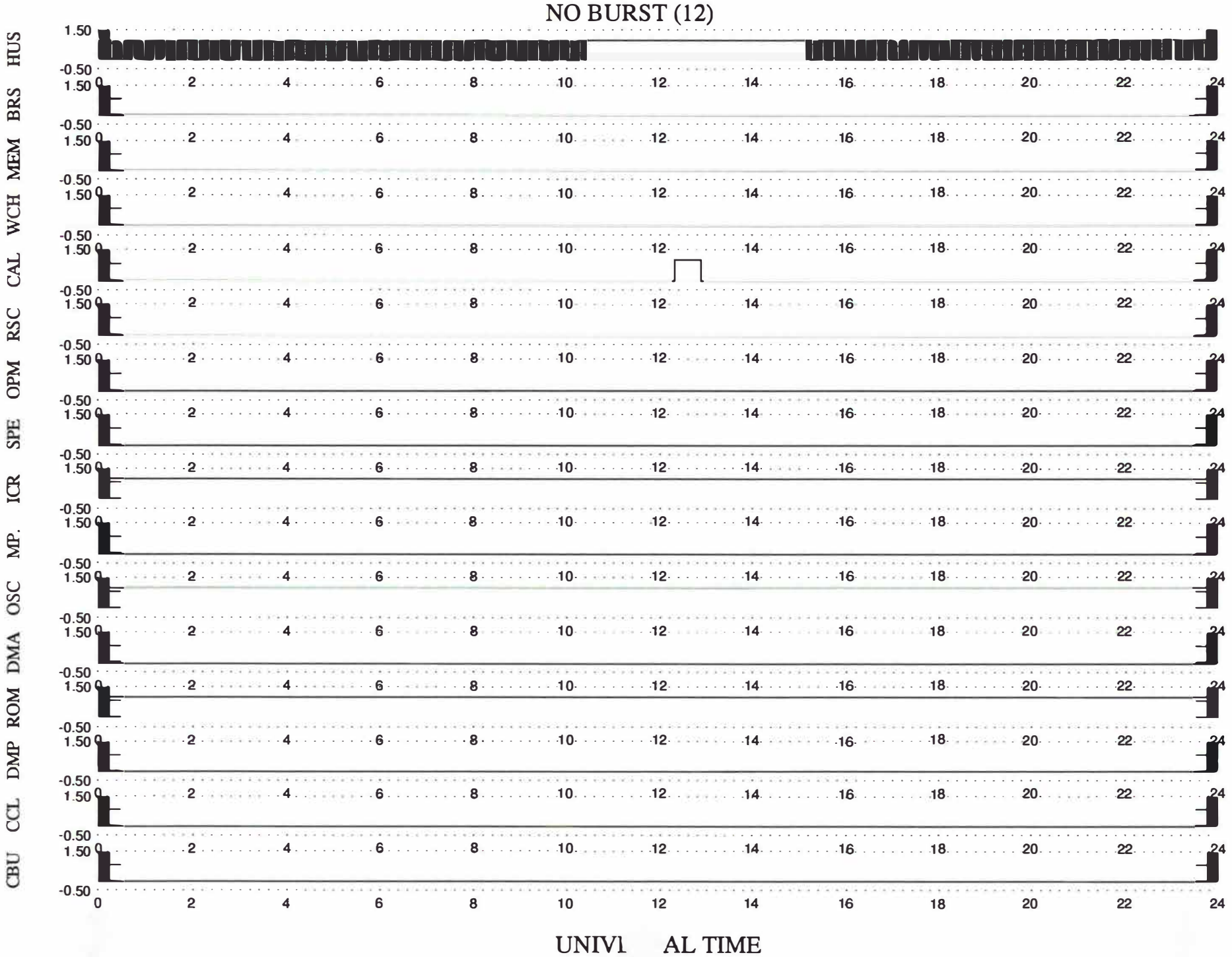
N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS




GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
10-11
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/30, 0000:00
Plot created: 94/01/04, 1713
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

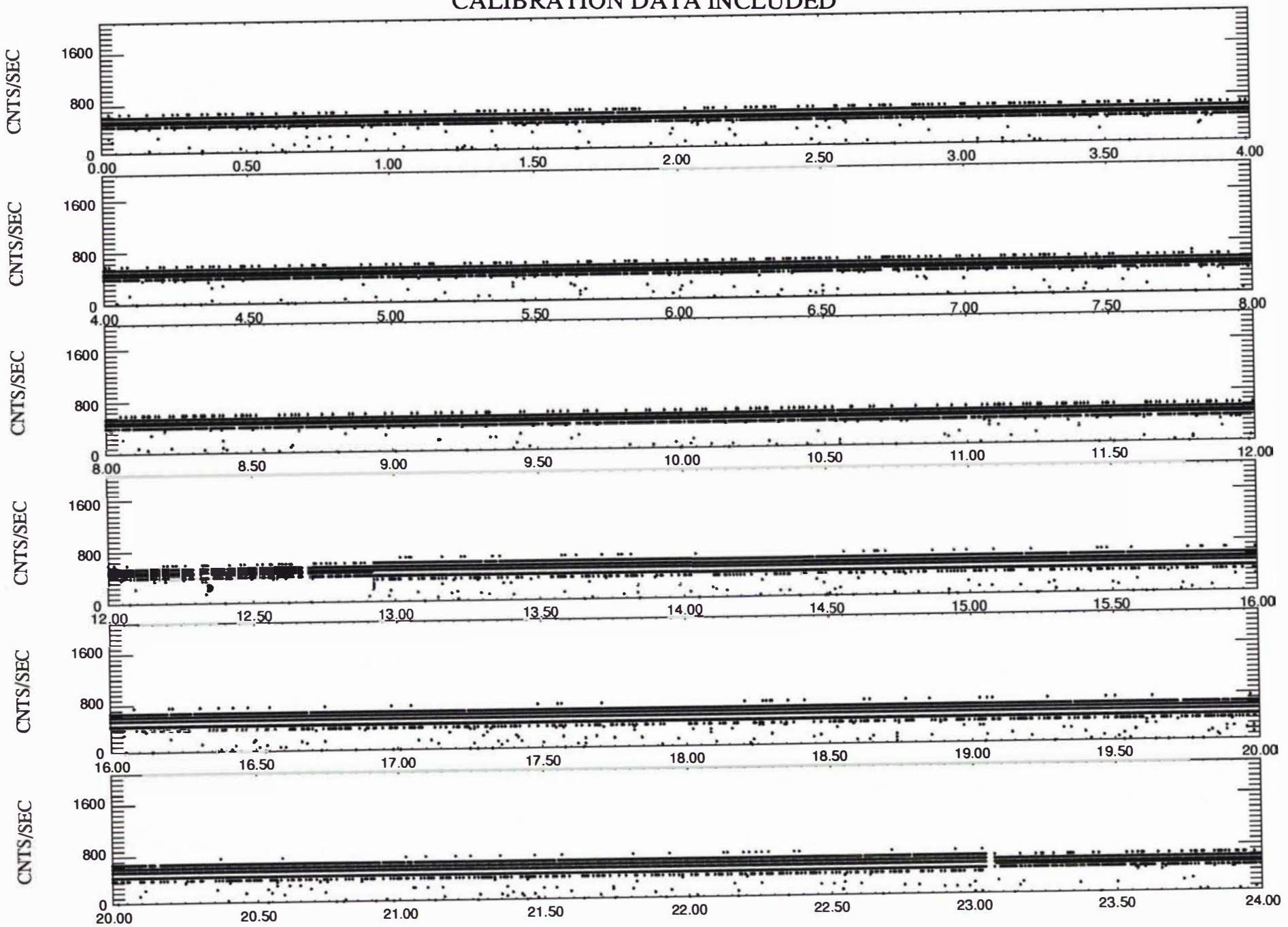

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/30
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 364, year 1993 to day 364, year 1993 2/9/94



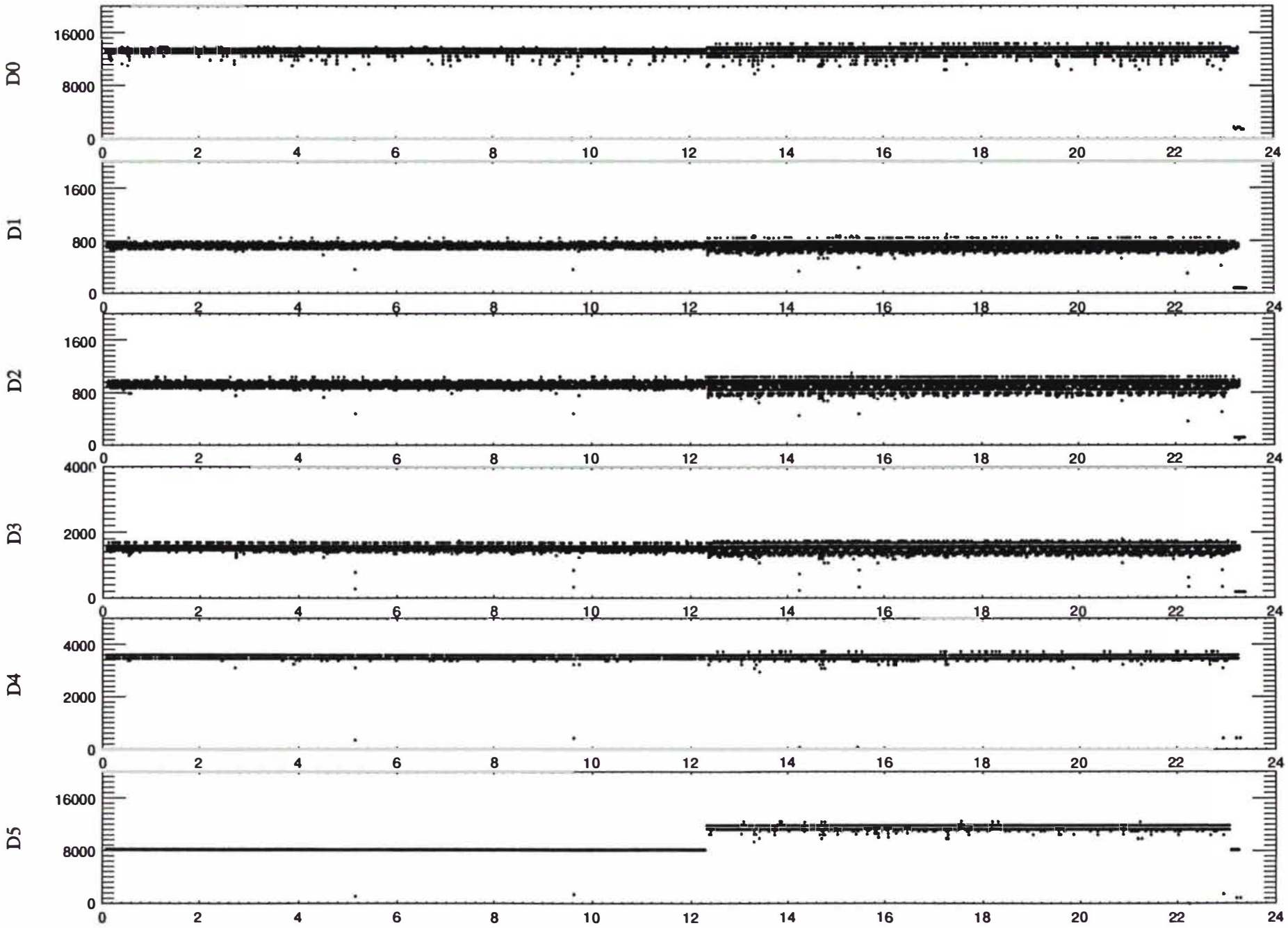
HUS 2A, MODE 1, NOT AVERAGED EDR day 364, year 1993 to day 364, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 364, year 1993 to day 364, year 1993 1/5/94



NO.: 02720

TIME: TJD=9352 SECONDS=02981

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, GOES C2.5, LASTING ~10S. NOT VISIBLE ABOVE 100KEV.

BATSE BURST TRIGGER

NO.: 02721

TIME: TJD=09352 SECONDS=29922

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, UNCLASSIFIED GOES, LASTING ~35S. NOT VISIBLE ABOVE 300KEV.

BATSE BURST TRIGGER

NO.: 02722

TIME: TJD=9352 SECONDS=79653

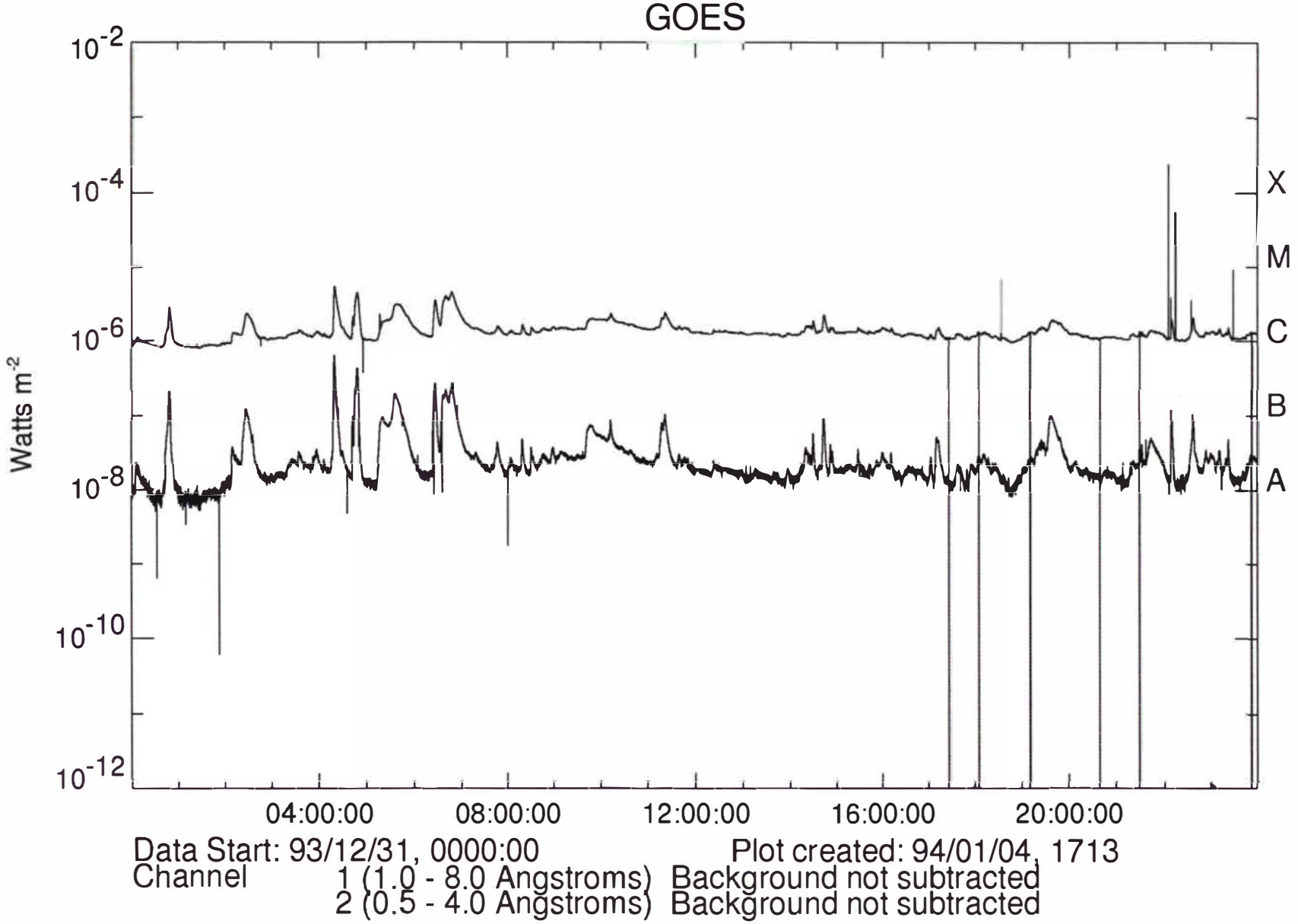
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

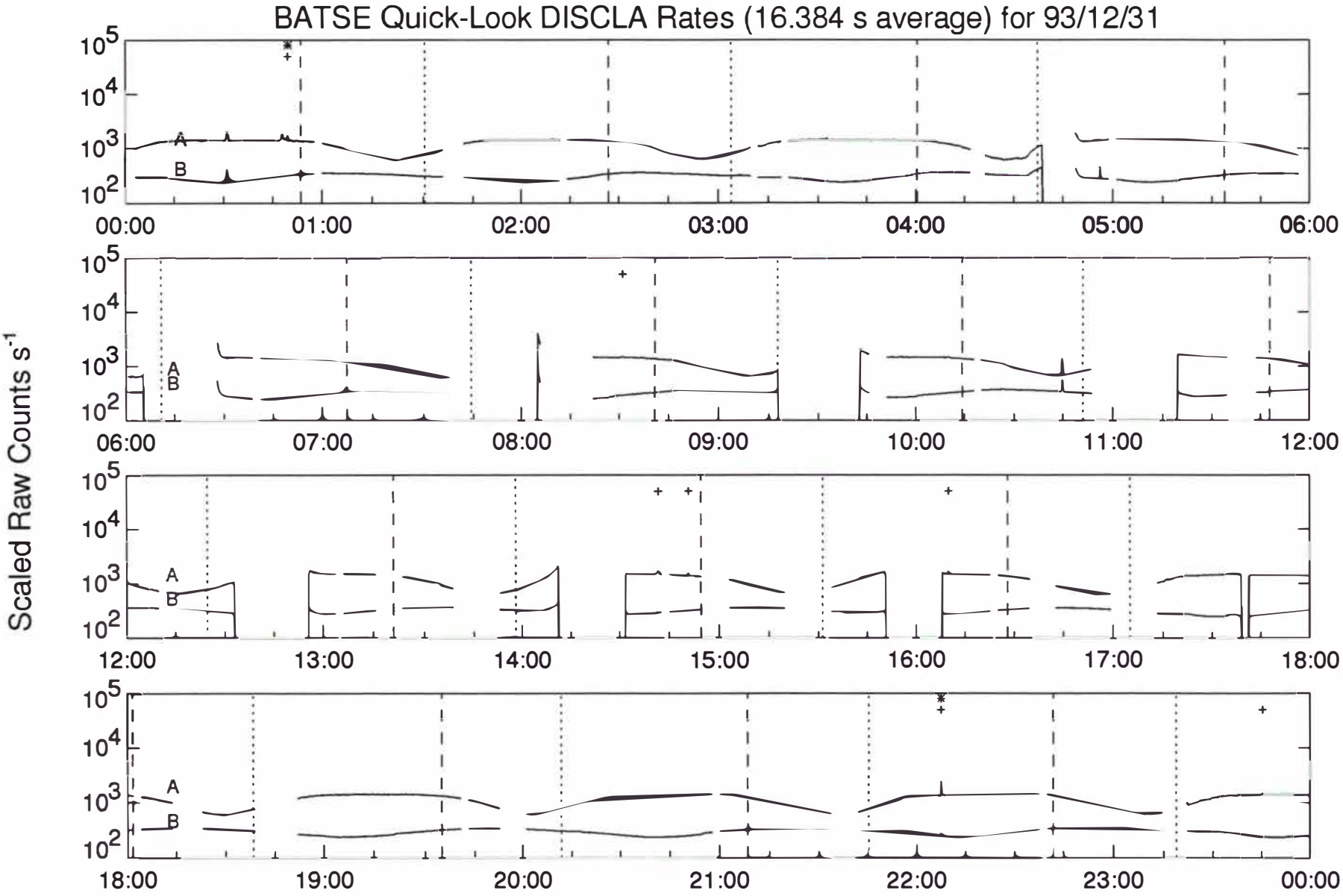
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

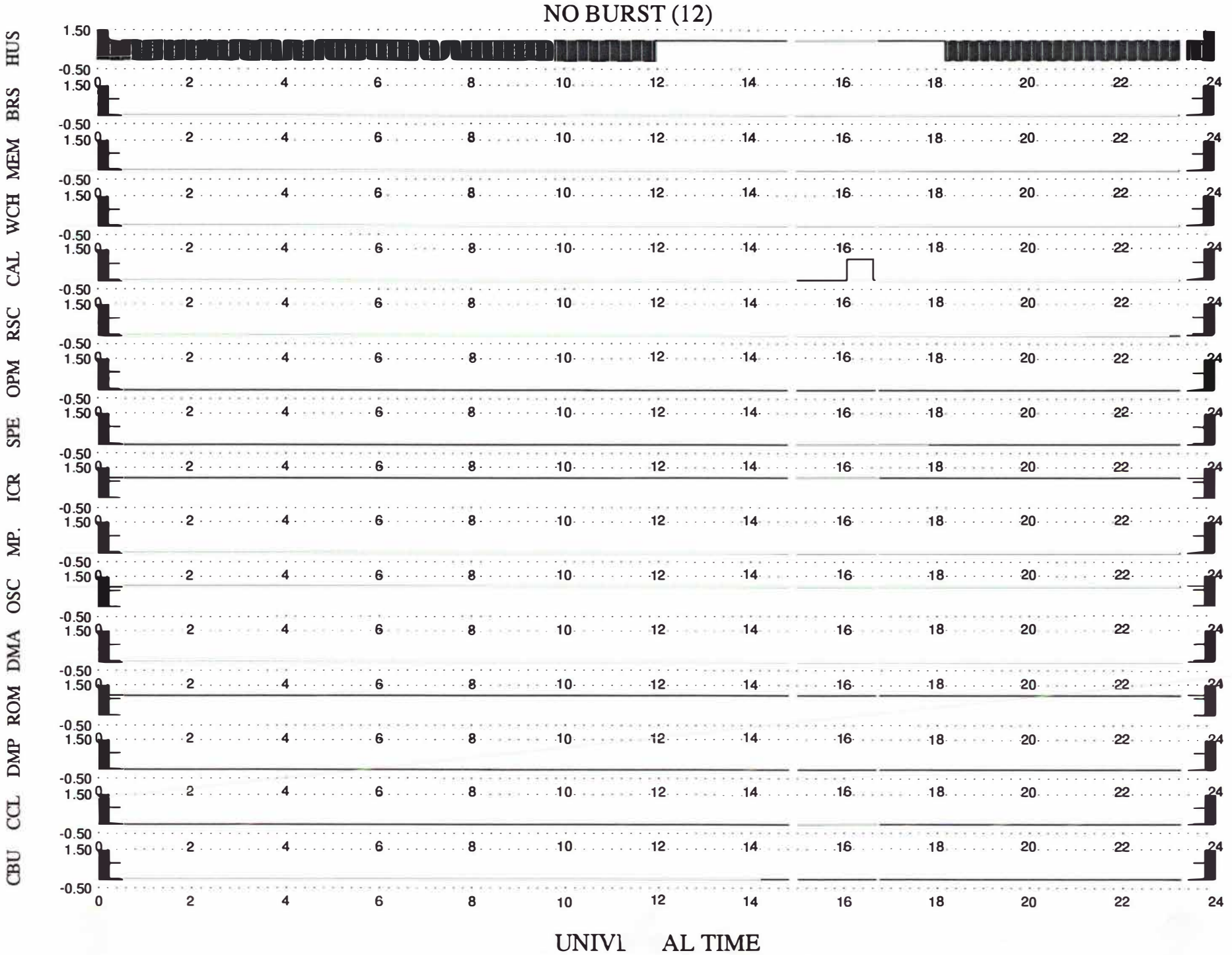
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE, UNCLASSIFIED GOES, LASTING ~13S. NOT VISIBLE ABOVE 300KEV.


GOES
10^{-2}
10^{-4}
10^{-6}
10^{-8}
10^{-10}
10^{-12}
Watts m^{-2}
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 93/12/31, 0000:00
Plot created: 94/01/04, 1713
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

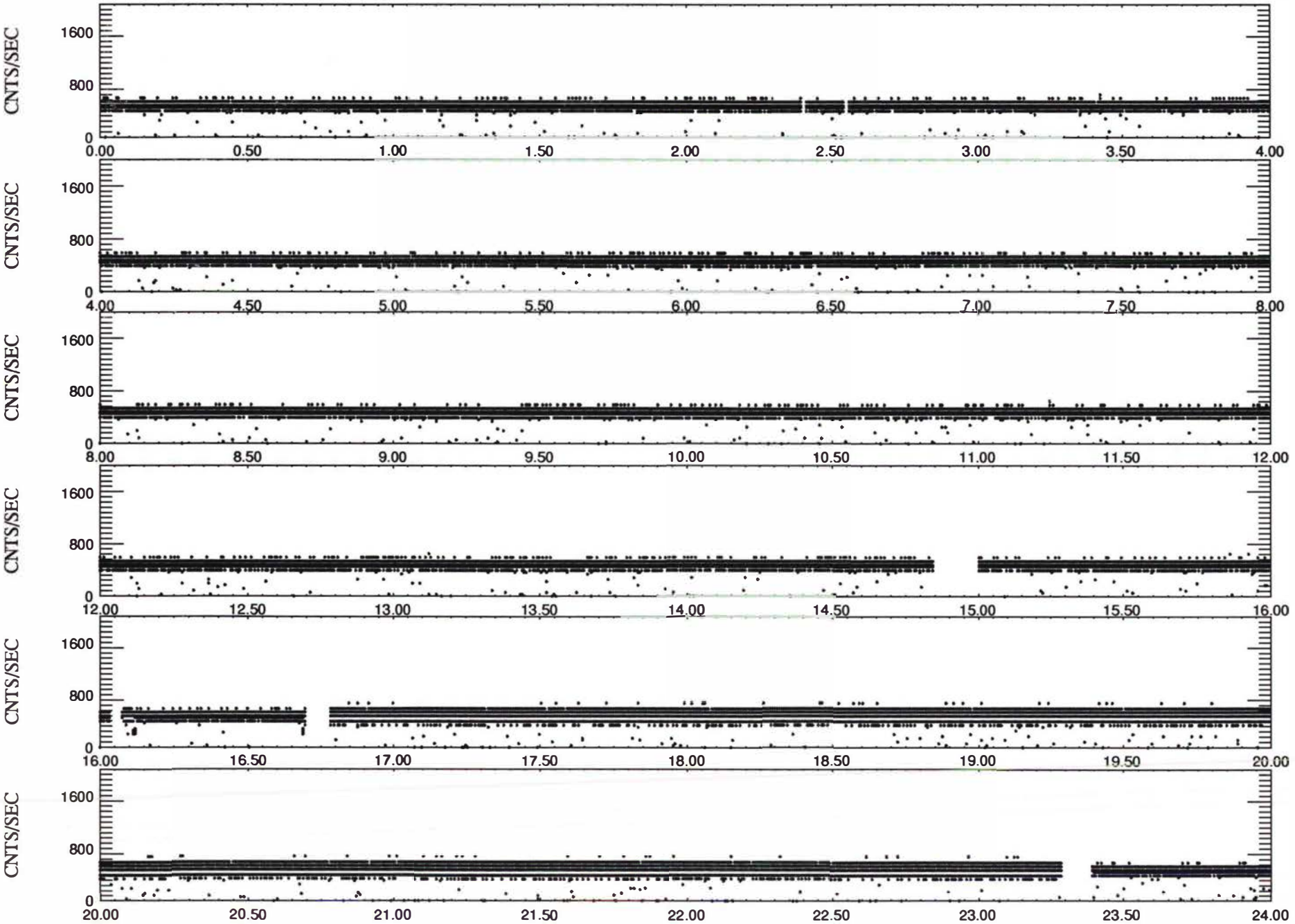

BATSE Quick-Look DISCLA Rates (16.384 s average) for 93/12/31
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 94/01/04, 1706 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

HUS MODES EDR day 365, year 1993 to day 365, year 1993 2/9/94



HUS 2A, MODE 1, NOT AVERAGED EDR day 365, year 1993 to day 365, year 1993 2/9/94

CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2B COUNTS / SEC QEDR day 365, year 1993 to day 365, year 1993 1/5/94

