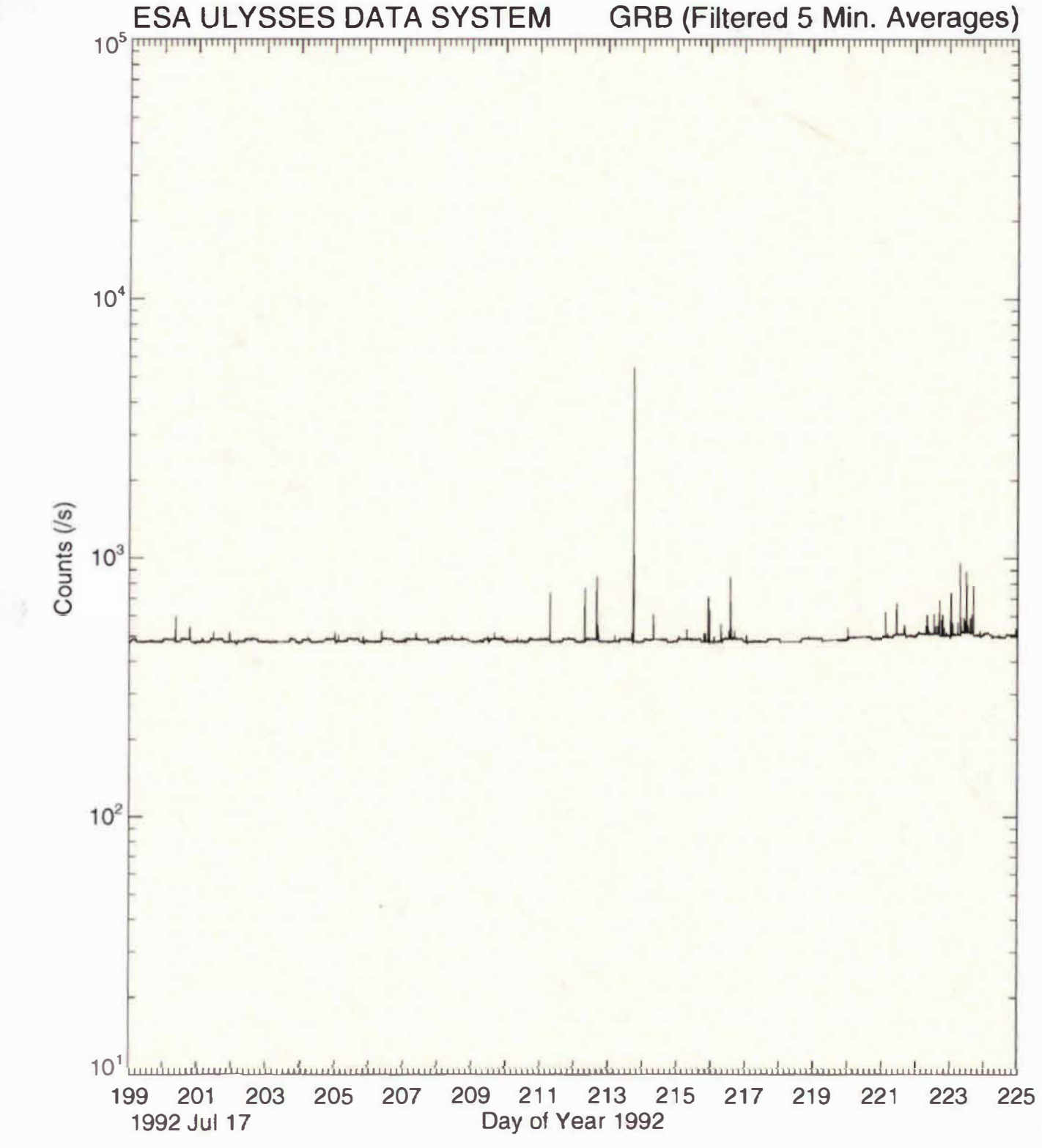


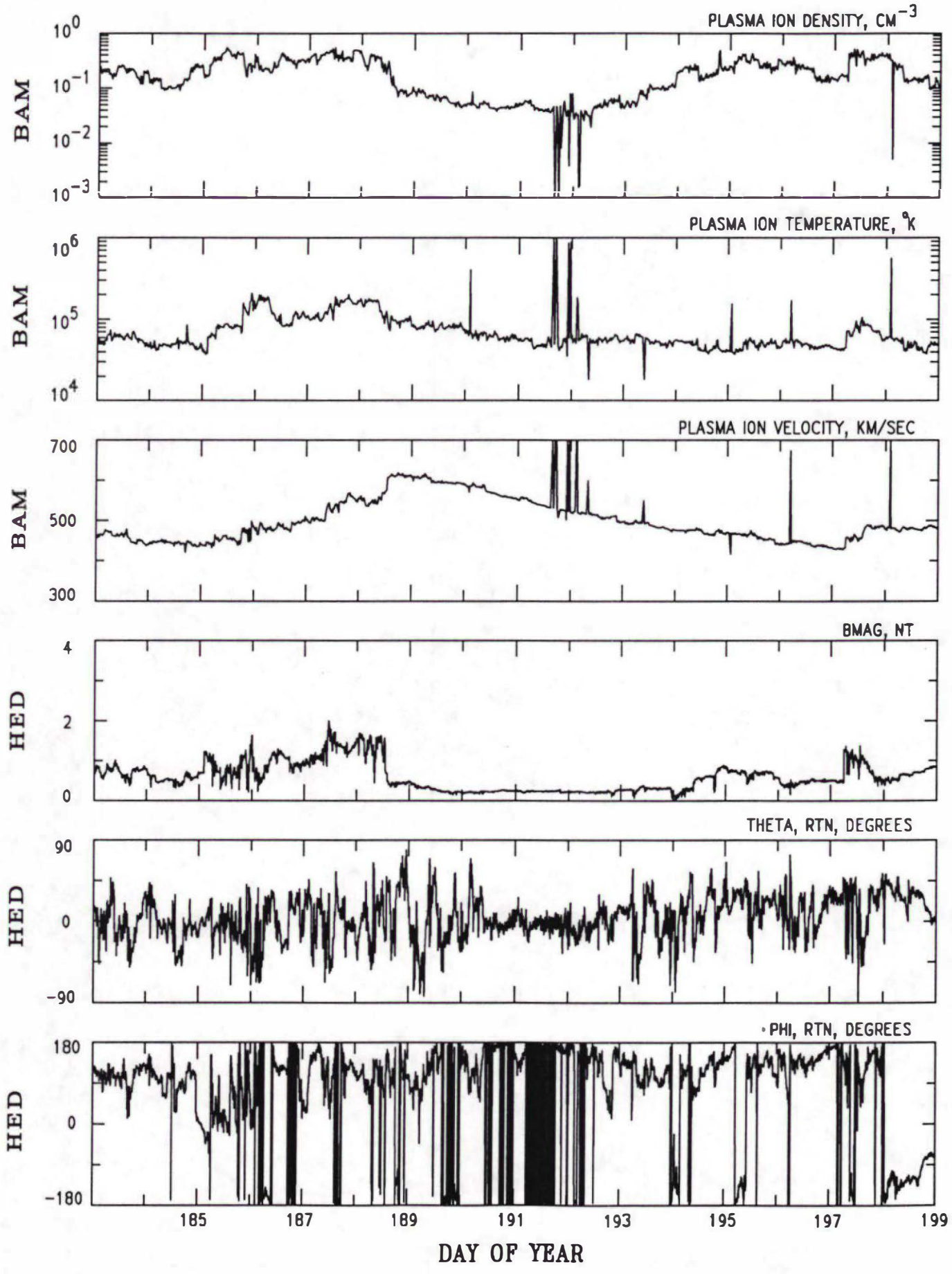
(AU) 5.32 5.32 5.32 5.32 5.32 5.31 5.31 5.31 5.31 5.30 5.30 5.30 5.30 5.30

Latitude (°) -13.94 -14.04 -14.14 -14.24 -14.34 -14.44 -14.54 -14.64 -14.75 -14.85 -14.95 -15.05 -15.15 -15.25

Generated from IDL by Ulysses Data System on Thu Oct 16 13:35:17 1997

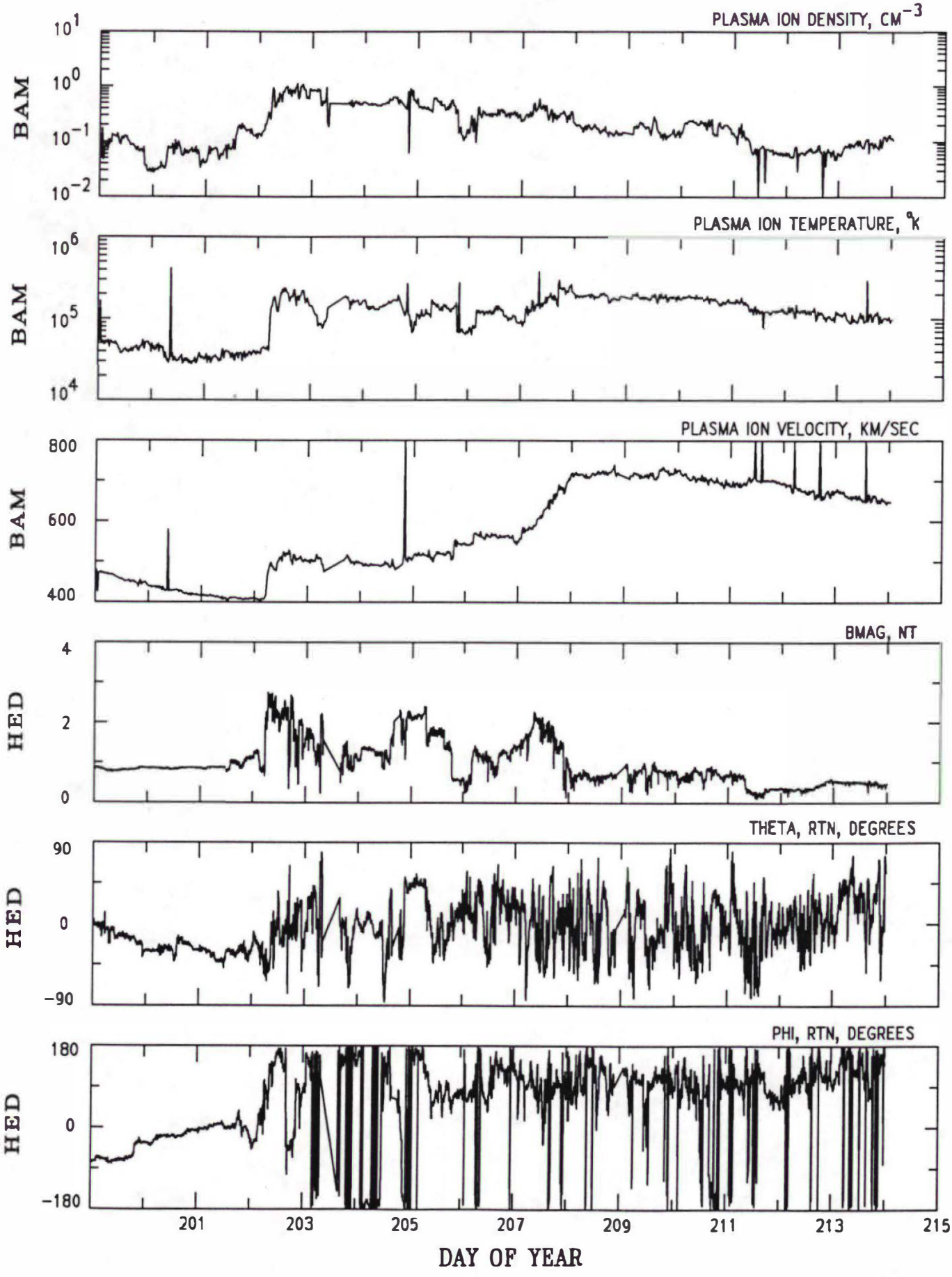
ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

92 183 JUL 1 00:00:00.000 - 92 199 JUL 17 00:00:00.000



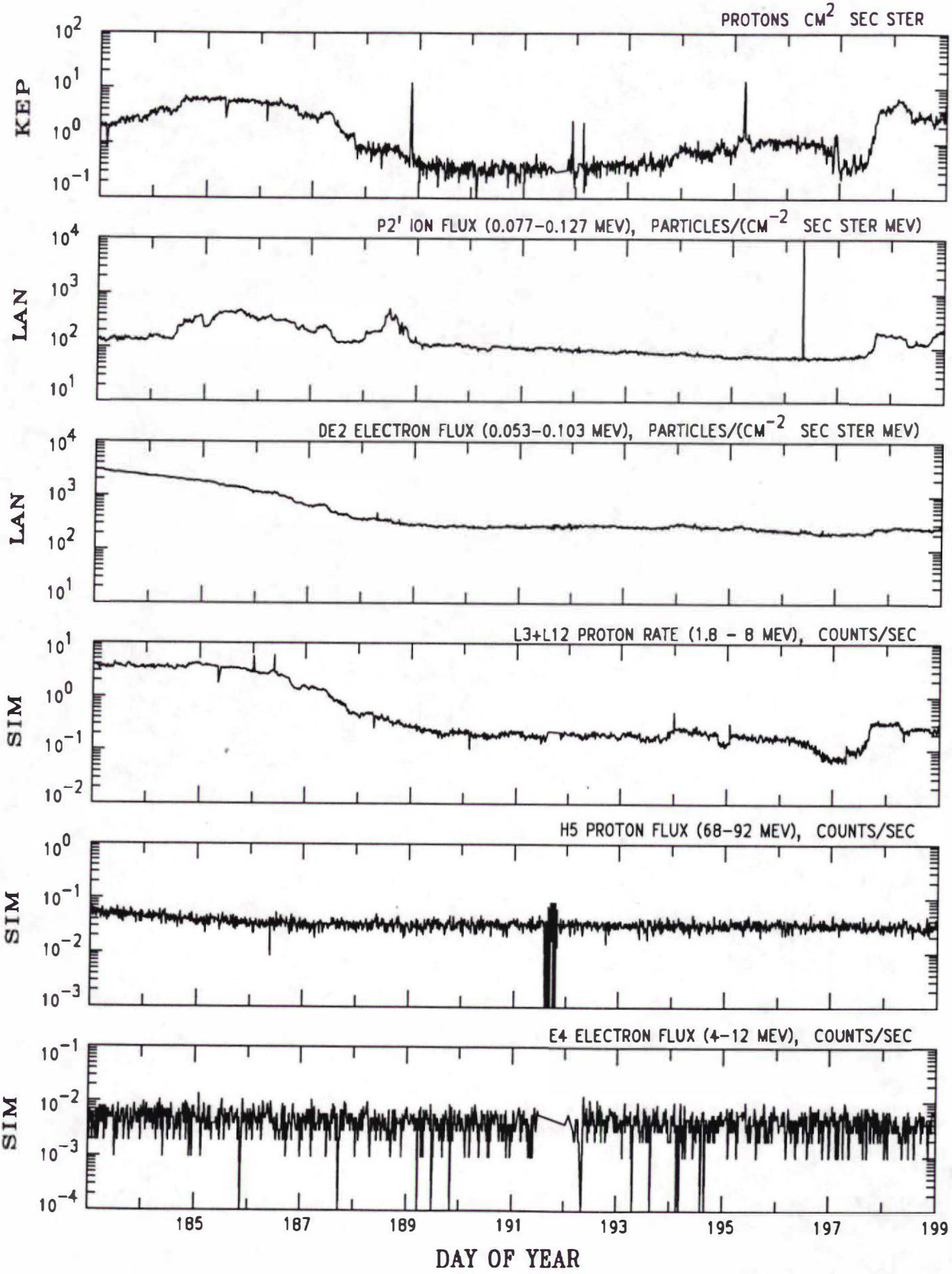
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

92 199 JUL 17 00:00:00.000 – 92 215 AUG 2 00:00:00.000



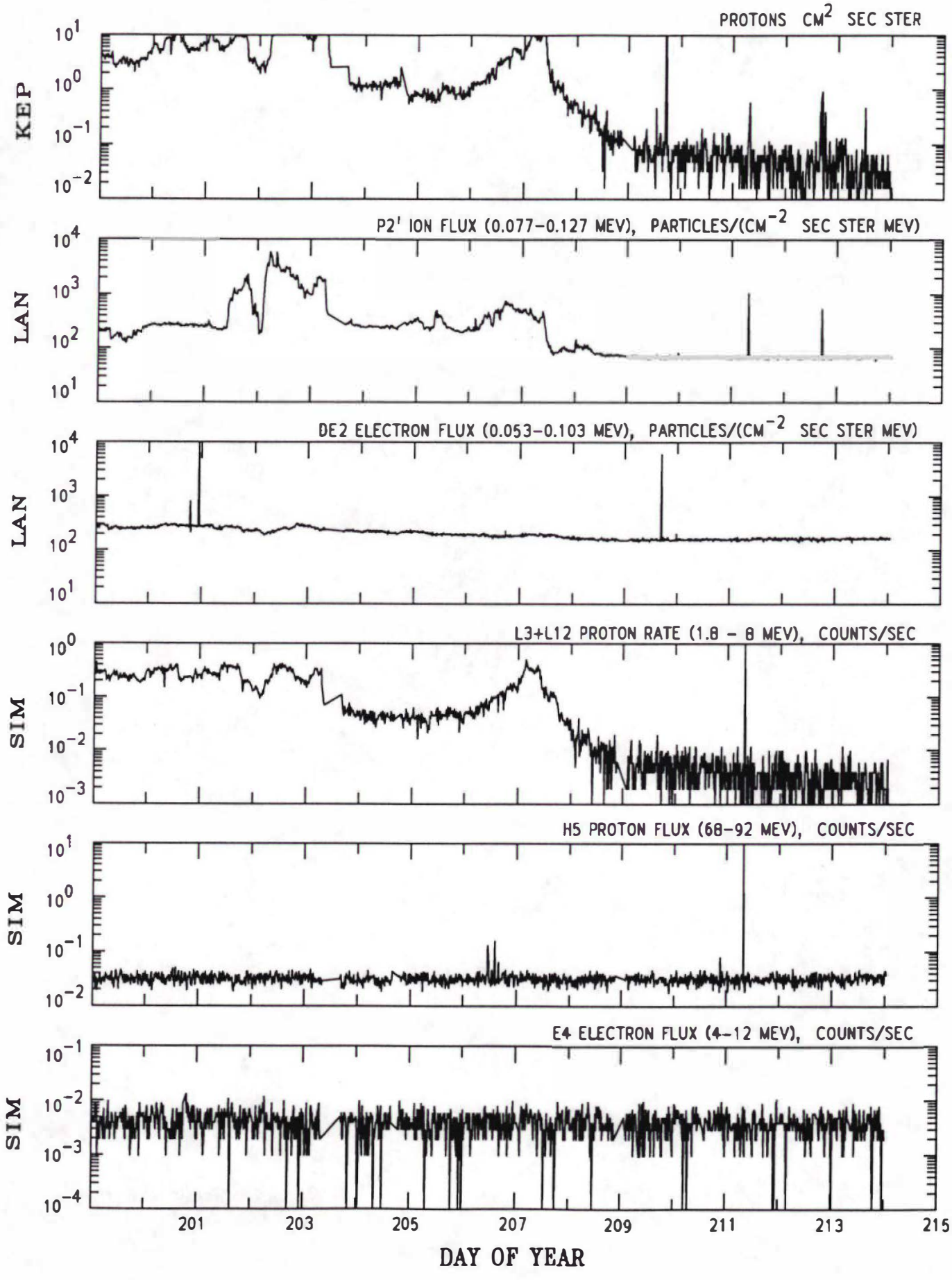
ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

92 183 JUL 1 00:00:00.000 - 92 199 JUL 17 00:00:00.000



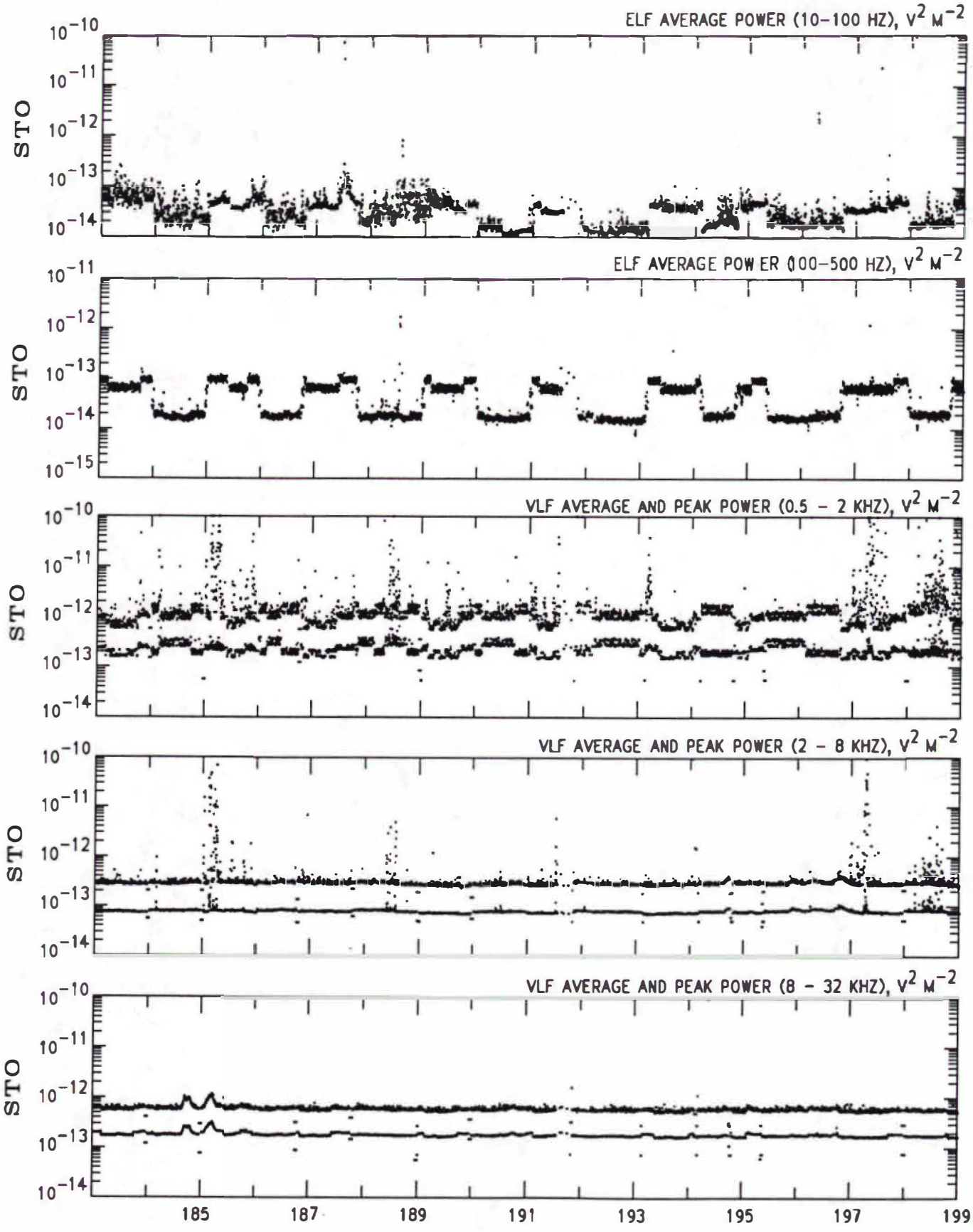
ULYSSES CDR – ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

92 199 JUL 17 00:00:00.000 – 92 215 AUG 2 00:00:00.000



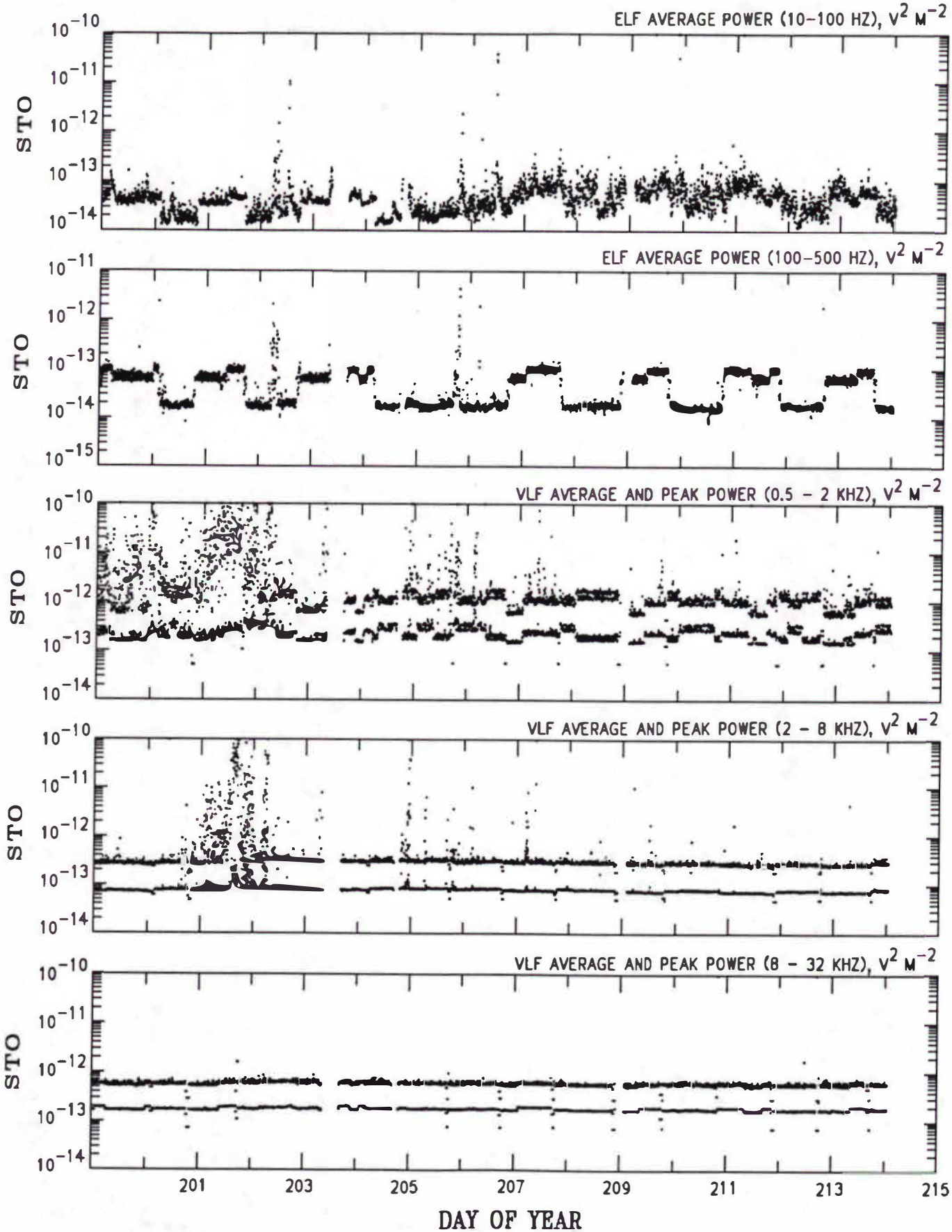
ULYSSES CDR - PLASMA WAVE

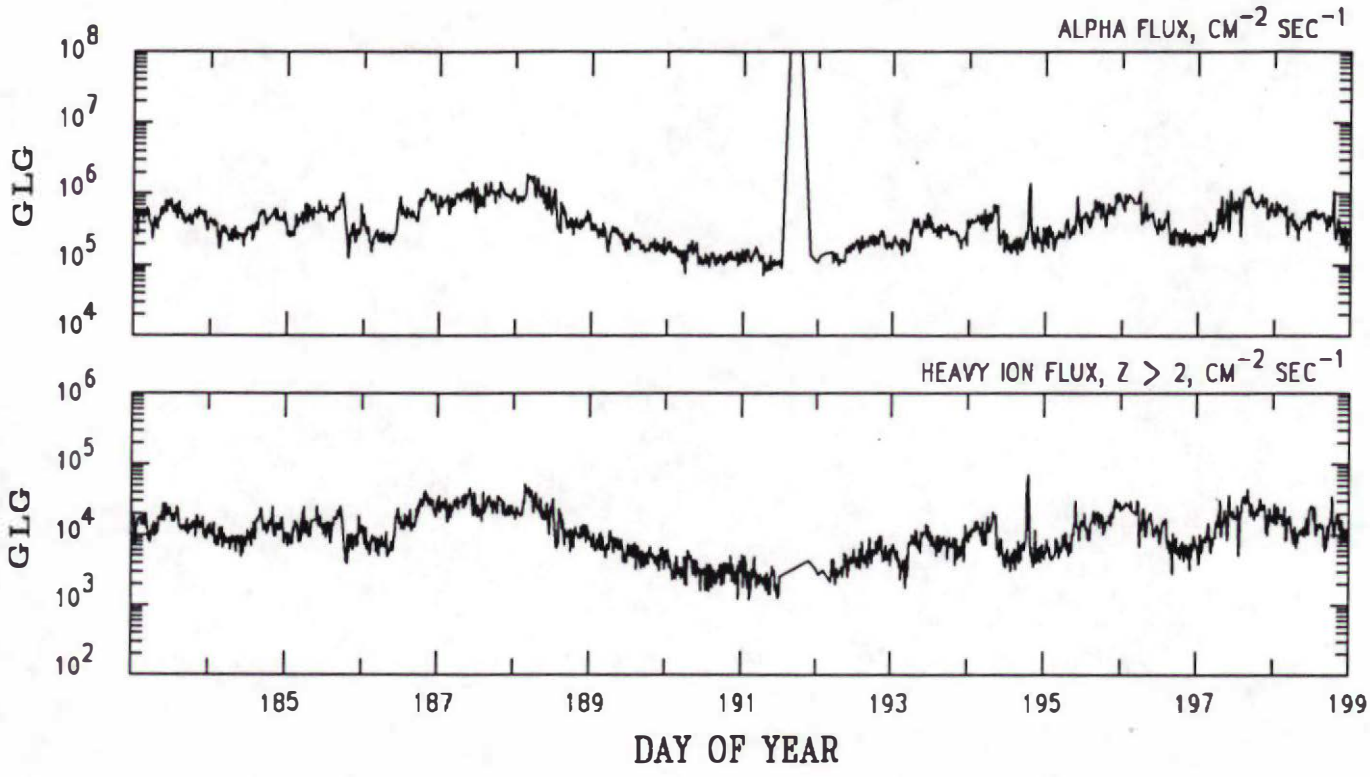
92 183 JUL 1 00:00:00.000 - 92 199 JUL 17 00:00:00.000

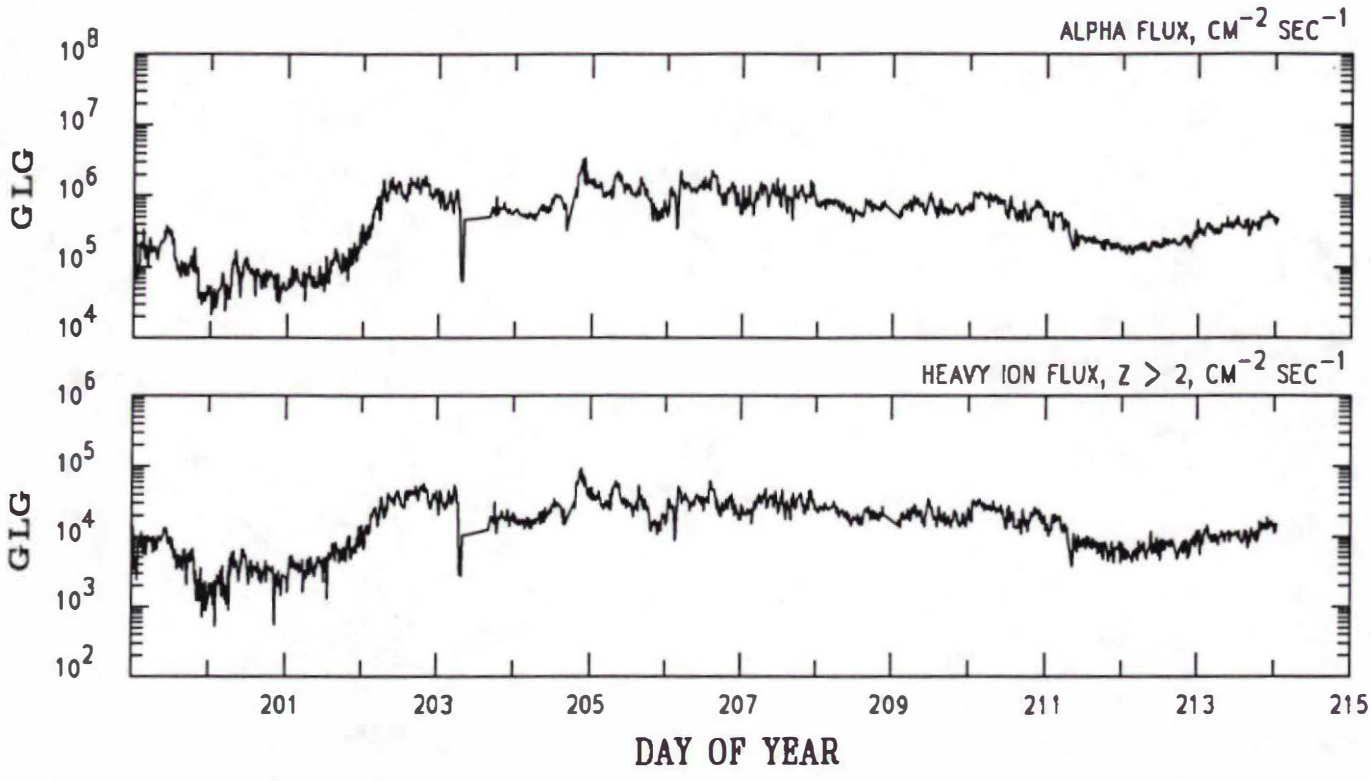


ULYSSES CDR – PLASMA WAVE

92 199 JUL 17 00:00:00.000 – 92 215 AUG 2 00:00:00.000

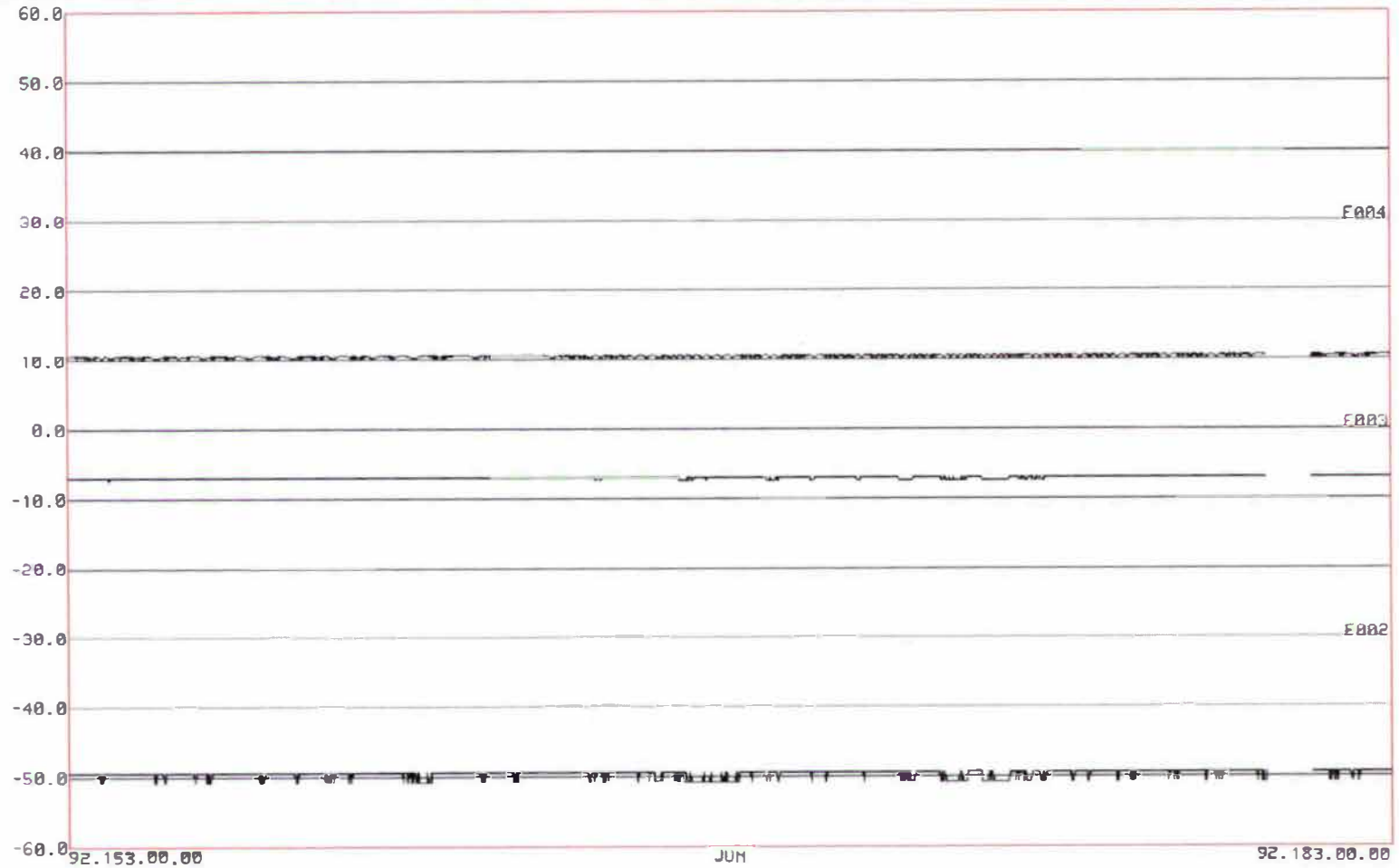



ULYSSES CDR - SOLAR WIND ION COMPOSITION
92 183 JUL 1 00:00:00.000 - 92 199 JUL 17 00:00:00.000
ALPHA FLUX, CM^{-2} SEC^{-1}
GLG
10^8
10^7
10^6
10^5
10^4
HEAVY ION FLUX, Z > 2, CM^{-2} SEC^{-1}
GLG
10^6
10^5
10^4
10^3
10^2
185
187
189
191
193
195
197
199
DAY OF YEAR


ULYSSES CDR – SOLAR WIND ION COMPOSITION
92 199 JUL 17 00:00:00.000 – 92 215 AUG 2 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
201
203
205
207
209
211
213
215
DAY OF YEAR

.92.183.00.11.17.425 HUS monthly long term thermal data 818 RET

E002 2ARADTMP S/C	-7.1	E003 2BSENTMP S/C	-49.3	E004 2ASENSTMP EX	10.73



From khurley@omni:.dna_node.jplgp.span Thu Nov 26 00:26:30 1992
Date: Thu, 26 Nov 92 00:16:21 -0800
From: khurley@omni:.dna_node.jplgp.span
To: "khurley@sunspot.ssl.berkeley.edu"%jpldig.span@JPLDIG.jpl.nasa.gov
Content-Length: 2407

1st July	HED Calibration.
185:08.33-09.24 SCET	DSS 43 antenna stopped tracking. (Film height alarm in high pressure oil bearing.) Real-time data lost.
2nd July	Routine operations.
3rd July	Routine operations.
4th July	Routine operations.
5th July	Earth pointing manoeuvre. Routine operations.
6th July	KEP EPAC IFC.
7th July	Routine operations.
8th July	KEP EPAC RAM dump.
9th July	Earth pointing manoeuvre. KEP GAS health check.
10th July	Routine operations.
11th July	Routine operations.
12th July	Routine operations.
13th July	KEP EPAC IFC. Earth pointing manoeuvre not performed because of an incorrect command load.
14th July	Earth pointing manoeuvre.
15th July	HED Calibration.
16th July	Routine operations.
17th July	Earth pointing manoeuvre. Routine operations.
18th July	Routine operations.
19th July	Routine operations.
20th July	KEP EPAC IFC. Earth pointing manoeuvre.
21st July	Routine operations.
	DSS 12 Maser problem : no downlink available. Switched to DSS 15 for downlink. No uplink available - STO commands not transmitted.
	Erroneous playback of data at 1024 bps Sci instead of 2048 bps interleaved caused loss of playback data.
203:08.05 - 15.48 SCET	Lost playback data.

22nd July	SIM HET calibration postponed.
	Still Maser problem at DSS 12. Some of pass covered by use of DSS 15.
204:16.02 - 18.44 SCET	Data lost because of inability to use DSS 12.
23rd July	Routine operations.
24th July	Earth pointing manoeuvre. SIM HET calibration.
25th July	Routine operations.
26th July	Routine operations.
	DSS 12 power failure. No tracking between 208:22.19 - 209:03.15.
208:21.27 - 209.01.32 SCET	Real-time data loss.
27th July	KEP EPAC IFC. Earth pointing manoeuvre.
209.19:40-20:00	real time data lost. Delay in bit rate change - had to restart TPA at DSS-12.
28th July	19m12s playback data loss due to 3m12s data loss at 4K
210.13:27-13:46	interleaved on DOY 211.
29th July	HED Calibration.
211.03:48-03:51	3m12s real time loss due to ARA problem at DSS-43. Bit rate was 4K3 so caused loss of playback data on DOY 210.
30th July	Routine operations.
31st July	Earth pointing manoeuvre. Routine operations.

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

BATSE BURST # 1683
EVENT OF 1992 JUL  1 DAY OF YEAR=183
EVENT CROSSING TIME AT BATSE      : 70700. S. OR 19:38:19.6
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 313.600   34.100
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON  1/ 7/  92 IS:
RA=  150.244 DEC=    6.331 DIST=    5.913 AU
BATSE-ULYSSES DISTANCE =  884541416. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 43.39 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2144.16 SECS.
CROSSING TIME AT ULYSSES    IS 72844. S. OR 20:14:03.7 +/-  434.45 SECONDS
```

RI

```
From HORACK@ssl.msfc.nasa.gov Thu Jul  2 09:40:46 1992
Date:    Thu, 2 Jul 1992 11:41:20 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
       khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

                BATSE BURST TRIGGER
NO.: 1683
TIME: TJD=8804 SECONDS=70699

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=145.   AZIMUTH=200.   ERROR=      DEGREES

COMMENTS:
BURST OF MODERATE INTENSITY, LASTING APPROXIMATELY 4 SECONDS.  TIME PROFILE
RESEMBLES A HAYSTACK IN A STRONG WIND-STORM.  RISE OF EVENT IS SLOW, TAKING
2-3 SECONDS TO REACH MAXIMUM.  ROUNDED TOP, FAST DROPOFF.  HIGHER ENERGIES
SHOW SIGNIFICANT TIME STRUCTURE.
```

July 1

From @space6.ssl.berkeley.edu,@cmsa.berkeley.edu:X024862@JPNRKY00.BITNET Thu Nov 26 03:41:24 1
Date: 26 NOV 1992 18:19:41 JST
From: <X024862%JPNRKY00.BITNET@cmsa.berkeley.edu>
Subject: YOHKOH GRB Event List
To: <khurley@space6.ssl.berkeley.edu>
Content-Length: 1674

To: Dr. K. Hurley (SSL/UCB)
Fr. Masato Yoshimori (Rikkyo Univ.)
Date: Thu. 26 Nov. 1992

Dear Dr. Hurley:
I am sending the YOHKOH GRB event list. YOHKOH has two GRB detectors, hard X-ray spectrometer (HXS) and radiation belt monitor (RBM). HXS is a NaI detector (3 in. dia x 1 in. thick) which provides a 32 channel energy spectrum (20 - 600 keV) every 2 sec and a time profile every 31 ms. RBM is a NaI detector (2 in. dia x 1 cm thick) which provides a 32 channel energy spectrum (10 - 300 keV) every 2 sec and a time profile every 31 ms.

YOHKOH GRB Event List (1991 Oct. 1 - 1992 Sept.3)

Date (Day/Month/Year)	UT (hh:mm)	Comment
27/11/91*	04:22	HXS
09/12/91	18:36	HXS/RBM
21/12/91*	06:17	HXS/RBM
18/02/92*	18:44	HXS
06/04/92	02:45	HXS/RBM
19/04/92*	01:22	HXS/RBM
19/05/92*	16:30	HXS/RBM
17/06/92*	05:29	HXS
22/06/92	07:05	HXS/RBM
01/07/92*	19:39	HXS
11/07/92	16:09	HXS/RBM
31/07/92	17:07	HXS/RBM
16/08/92	12:36	HXS
24/08/92	10:56	HXS/RBM
03/09/92	23:29	HXS

* Recorded with time resolution of 0.25 or 2 sec.
Accurate burst times (hh:mm:ss) are available shortly.

We hope the YOHKOH GRB event list is helpful to you.

With best regards,

Masato Yoshimori
Acknowledge-To: <X024862@JPNRKY00>

From khurley@space6.ssl.berkeley.edu Mon Dec 7 17:31:51 1992
Date: Mon, 7 Dec 92 17:25:42
From: khurley@space6.ssl.berkeley.edu
Content-Length: 987

Dear Dr. Yoshimori,

Good news! I think I have found the remaining four Yohkoh events in the Ulysses data. For December 21, 1991, and July 1 and August 16, 1992, we have fairly strong count rate increases (but no trigger) at 0.25 second resolution, and there is no doubt that they are bursts. For April 19, 1992, we have a weaker event lasting about 2 seconds (our time resolution was 0.5 seconds). Since we had to search about 6000 seconds of data (the Ulysses crossing window) it is possible that this one is just a fluctuation. If you can give me more information about the Yohkoh event, I can decide. Also, it will be helpful if you can give me the coordinates (RA and dec) of the Earth center for Yohkoh for this and any future events, since Earth-blocking can eliminate part of the Ulysses window.

I suggest we now proceed to exchange data. I will e-mail you some Ulysses files with an explanation of how to read them.

Best regards,

Kevin Hurley

cc: Chryssa Kouveliotou

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

Helio. corr. removed

Date: Dec 4 '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

☑ .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?

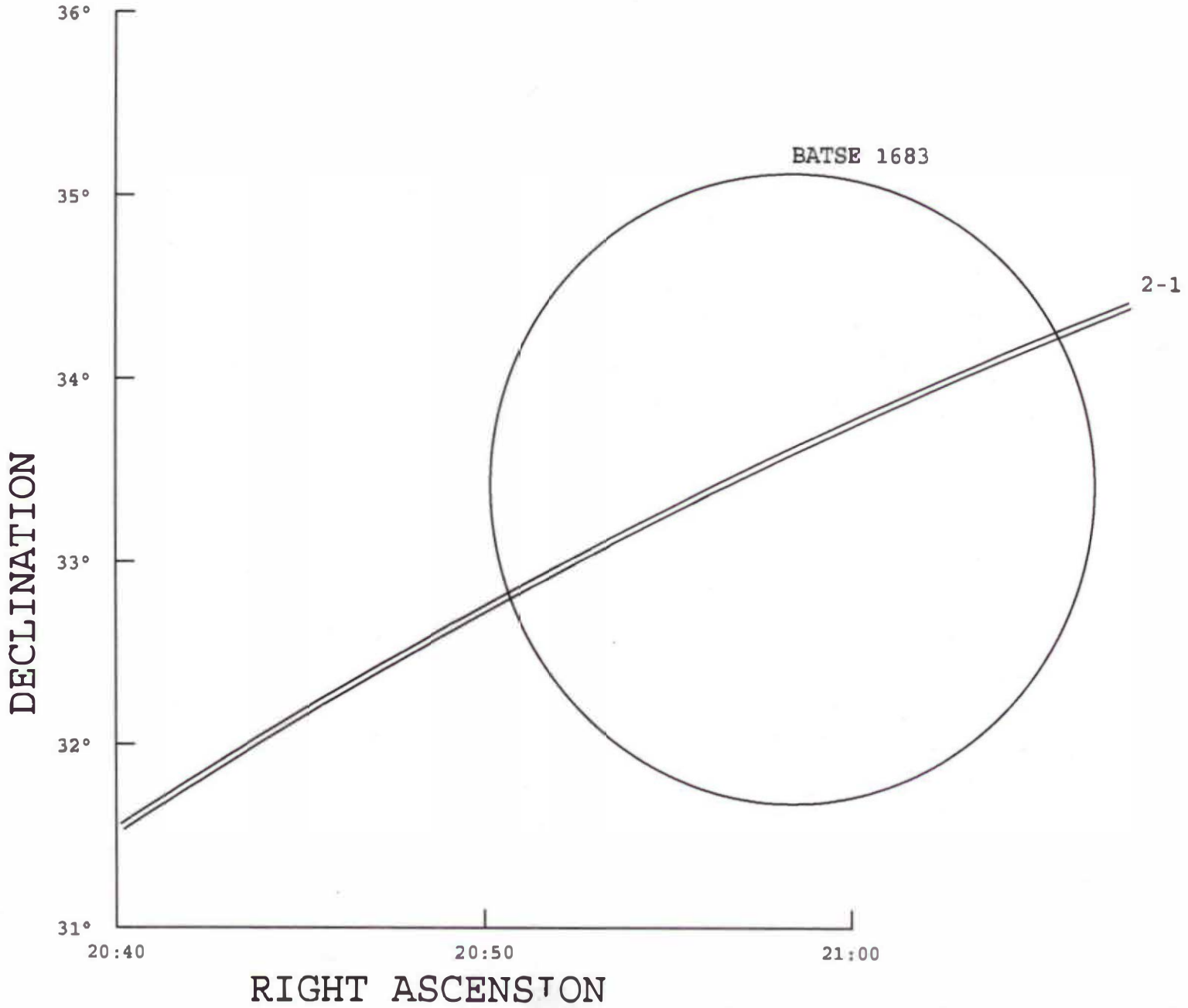
☐ Geocentric time used?

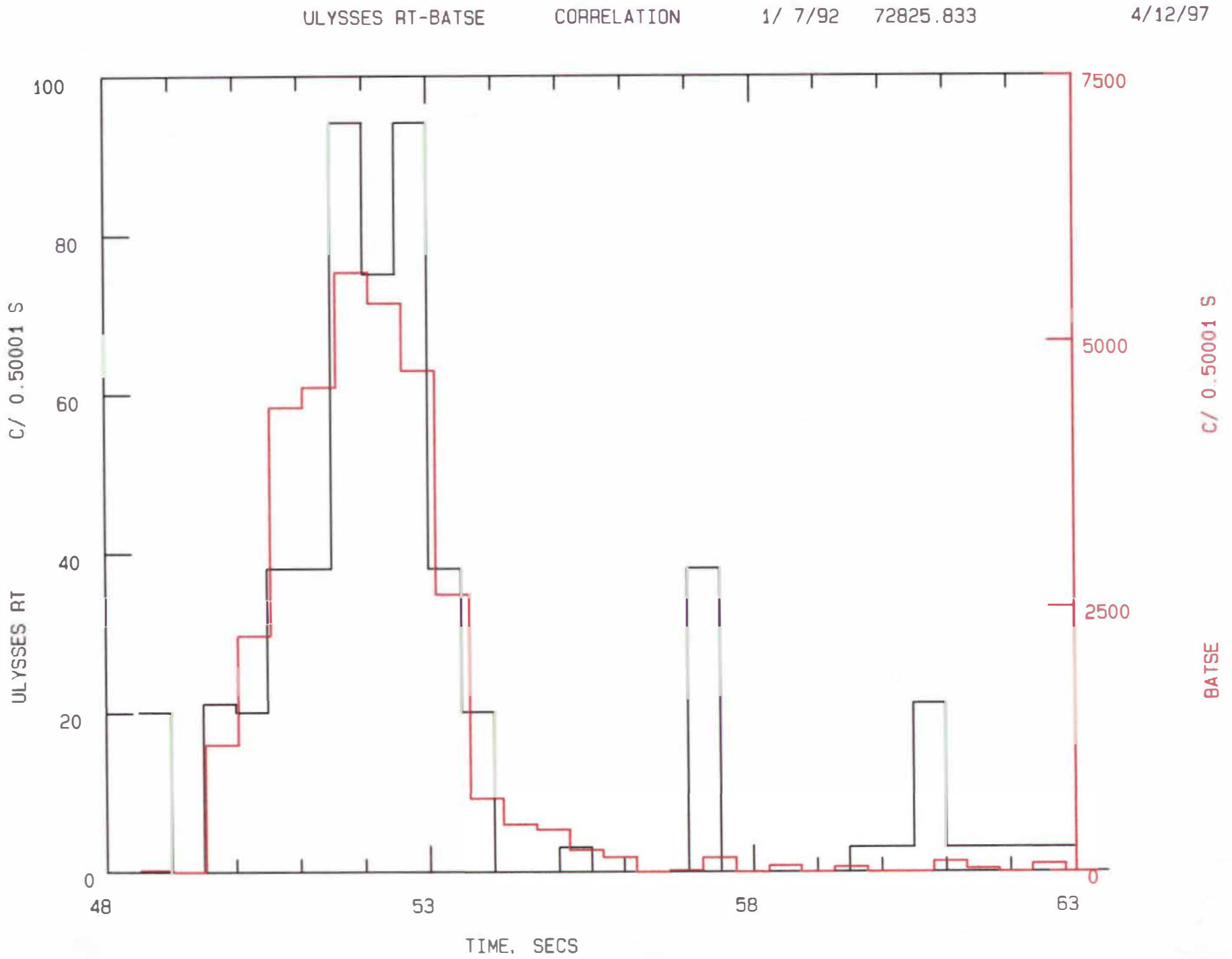
☑ ACCESS database updated?

EVENT OF JUL 1, 1992 20:13

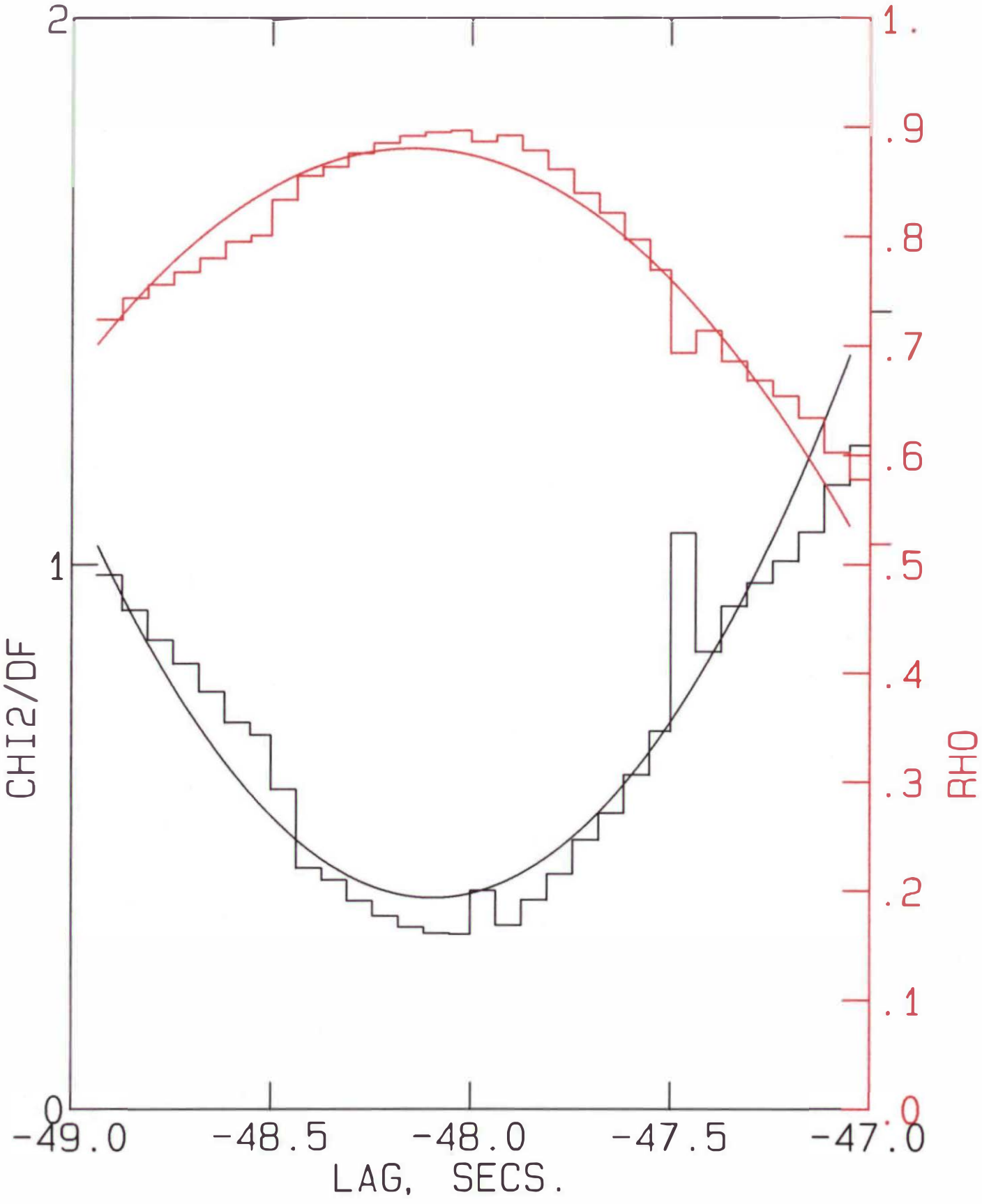
4/12/97

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




ULYSSES RT-BATSE CORRELATION 1/ 7/92 72825.833 4/12/97
100
80
60
40
20
0
C/ 0.50001 S
ULYSSES RT
7500
5000
2500
0
C/ 0.50001 S
BATSE
48
53
58
63
TIME, SECS

ULYSSES RT-BATSE CORRELATION 1/ 7/92 72825.833



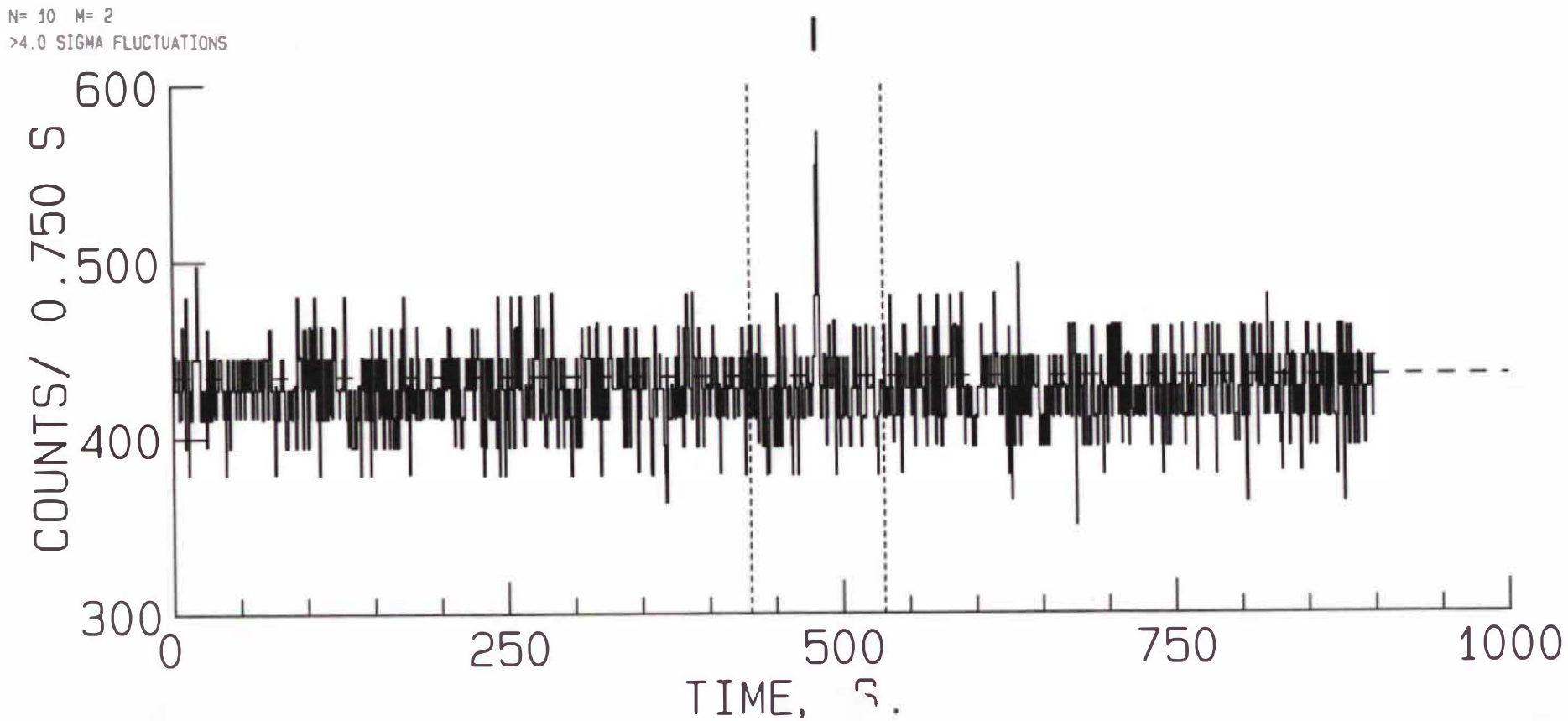
ULYSSES RT

4/12/97

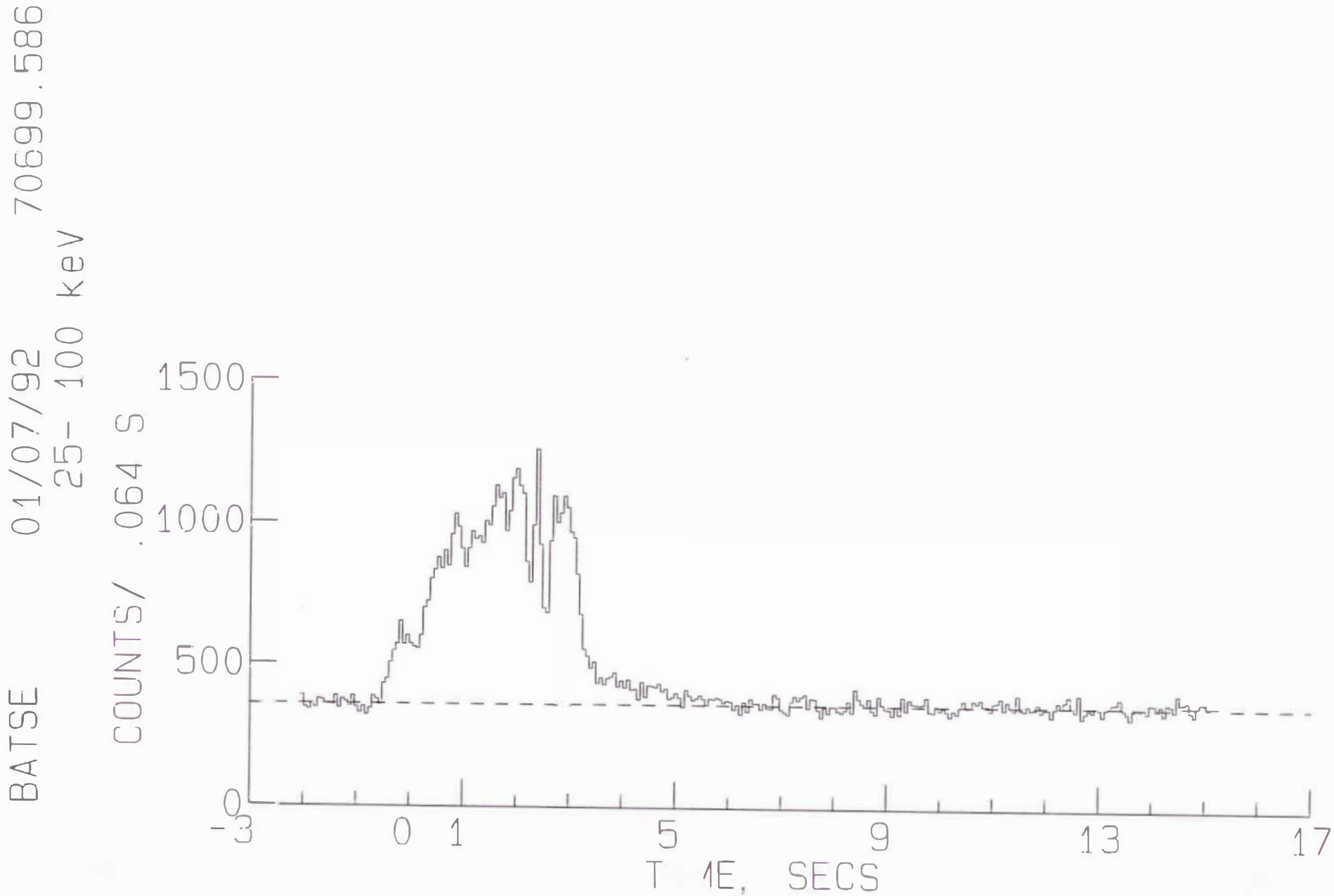
1/ 7/92 72396.084 s

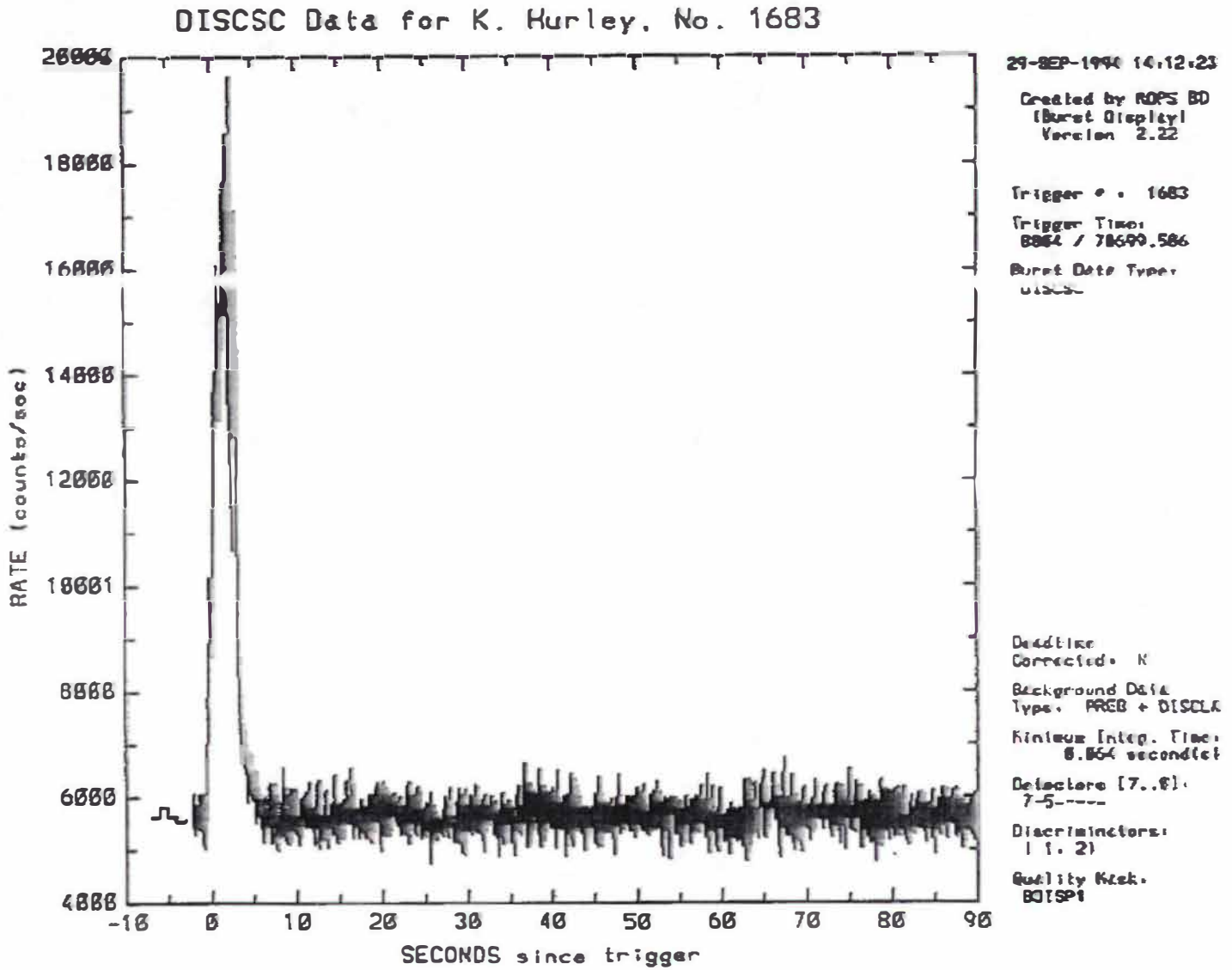
0.250 S INTERVALS REGROUPED BY 3

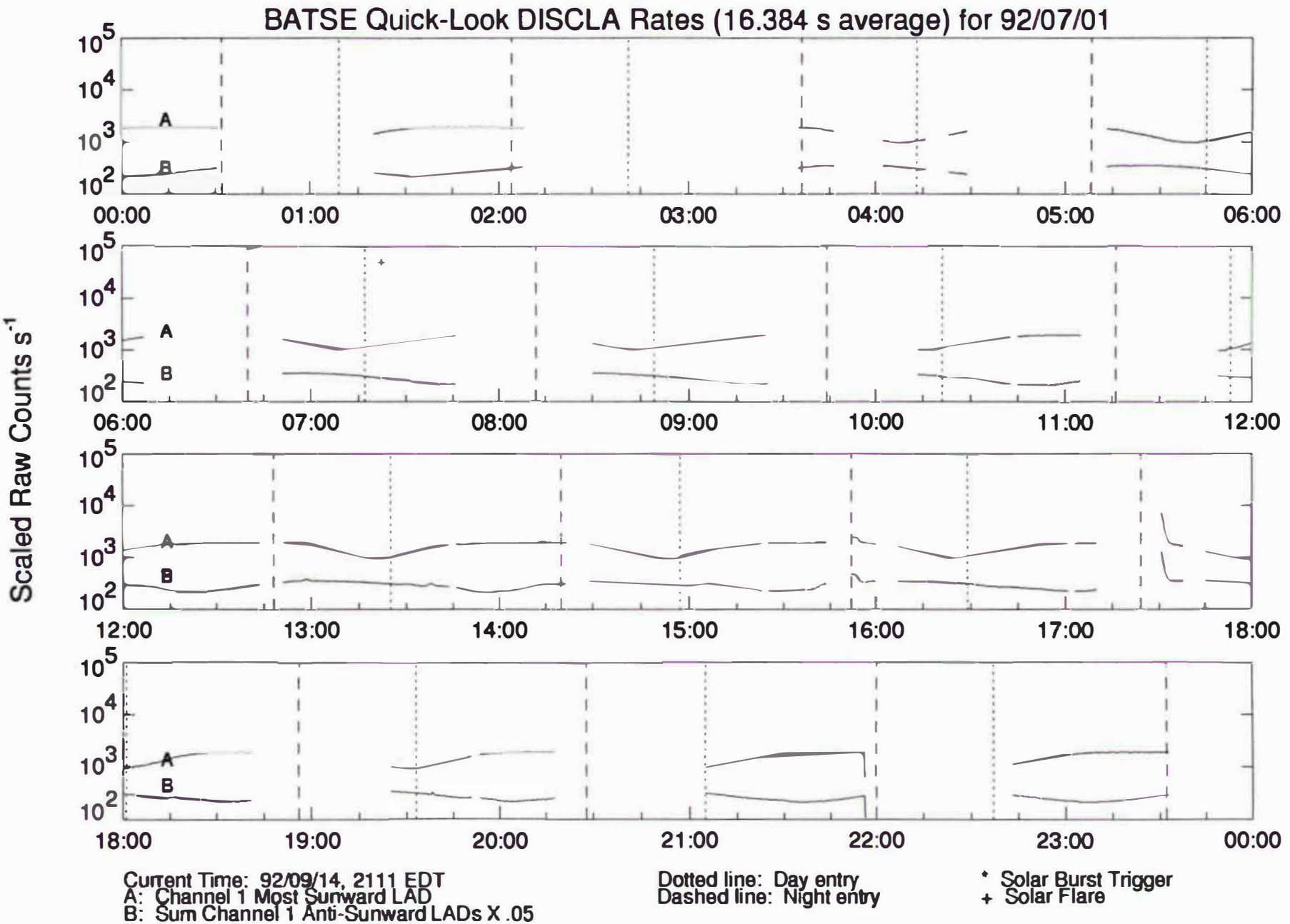
23- 155 keV

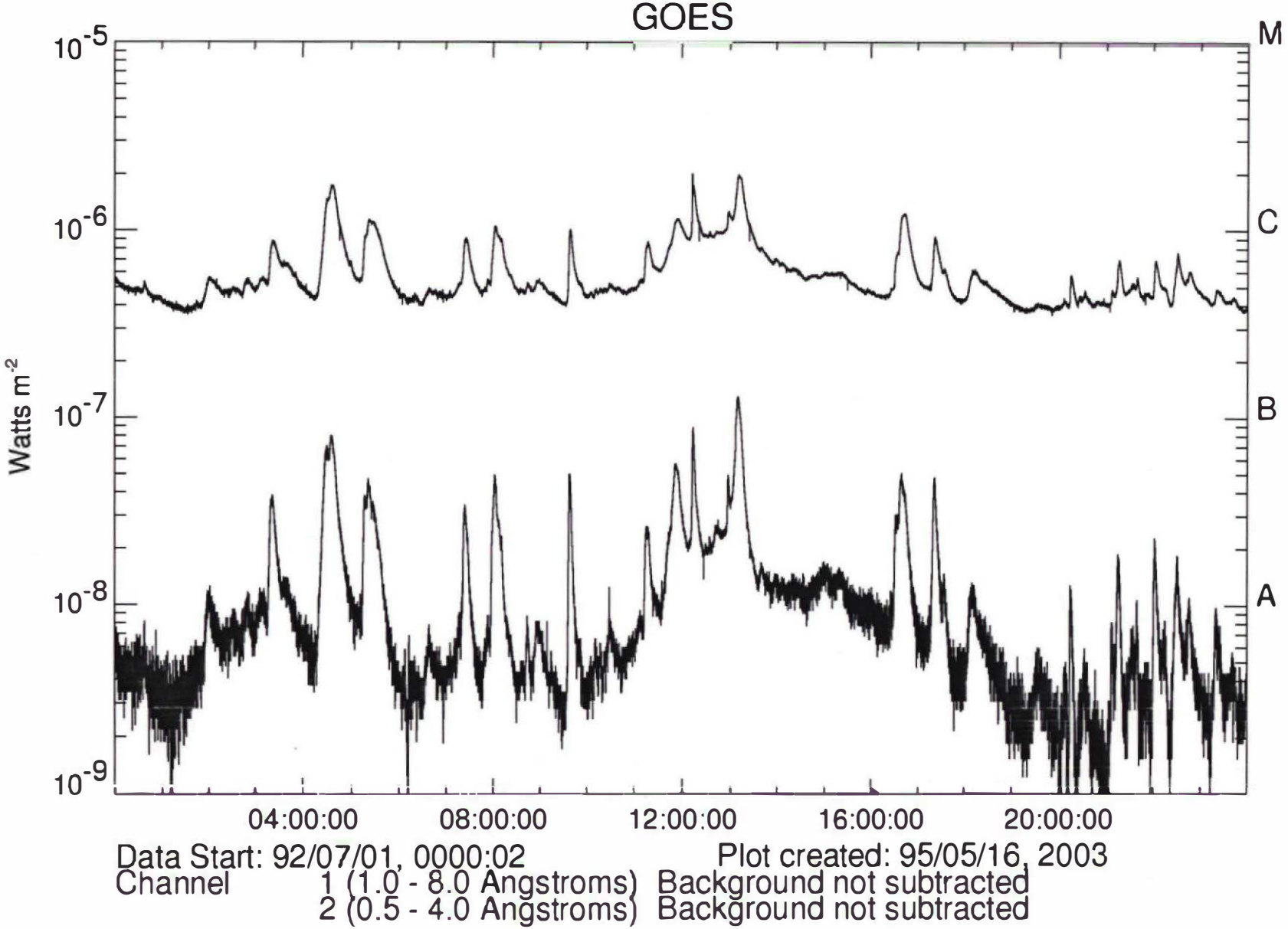


17/10/94


BATSE 01/07/92 70699.586
25- 100 keV
COUNTS/ .064 S
1500
1000
500
0
-3
0 1
5
9
13
17
T 1E, SECS

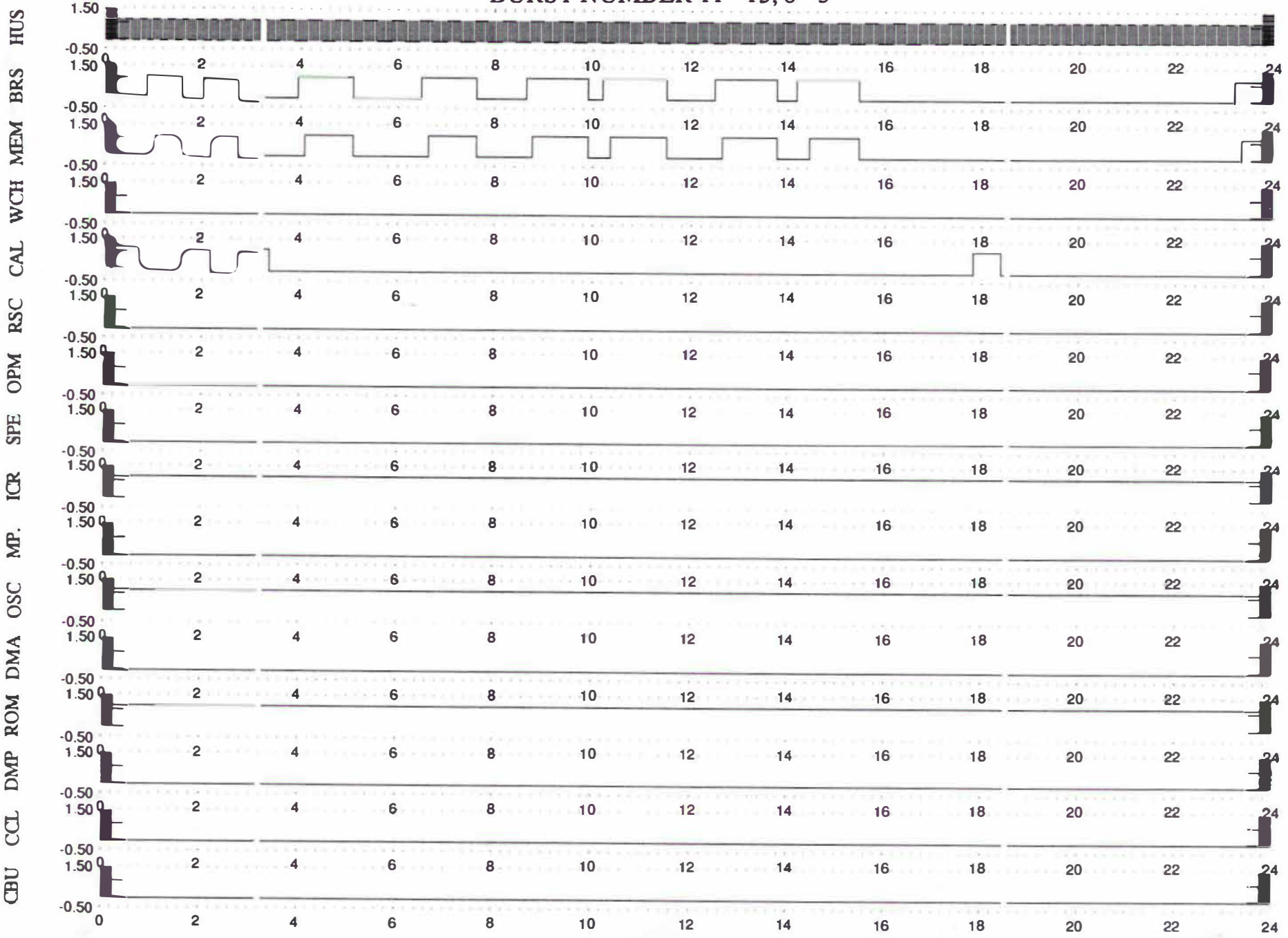

DISCSC Data for K. Hurley, No. 1683
RATE (counts/sec)
SECONDS since trigger
29-SEP-1994 14:12:23
Created by RDPS BD
(Burst Display)
Version 2.22
Trigger # : 1683
Trigger Time:
8064 / 78699.586
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds
Detectors [7..0]:
7-5-----
Discriminators:
(1, 2)
Quality Mask:
BDISP1


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/01
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: 92/09/14, 2111 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^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/01, 0000:02
Plot created: 95/05/16, 2003
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 183, year 1992 to day 183, year 1992 7/17/92

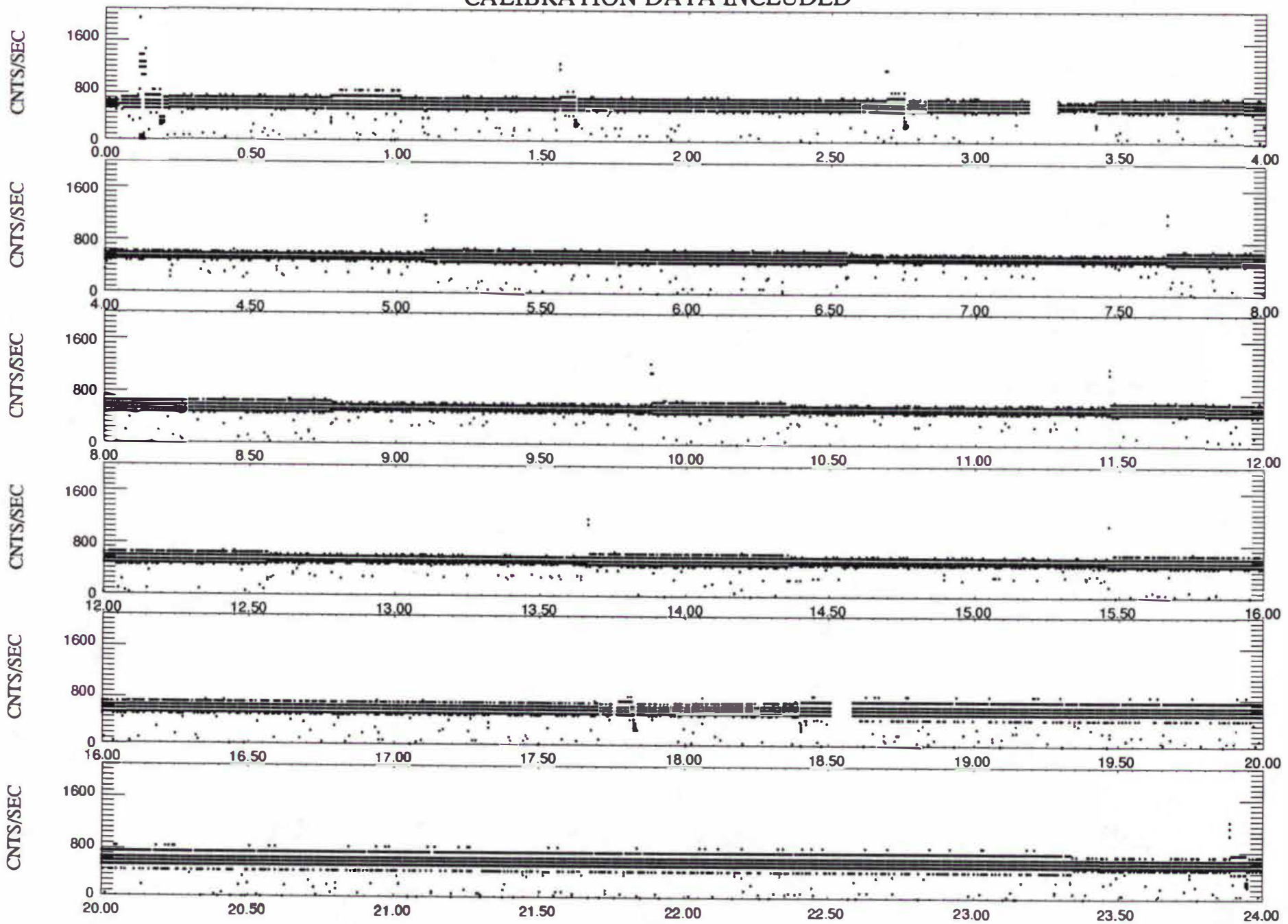
BURST NUMBER 11 - 15, 0 - 3



UNIV SAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 183, year 1992 to day 183, year 1992 7/17/92

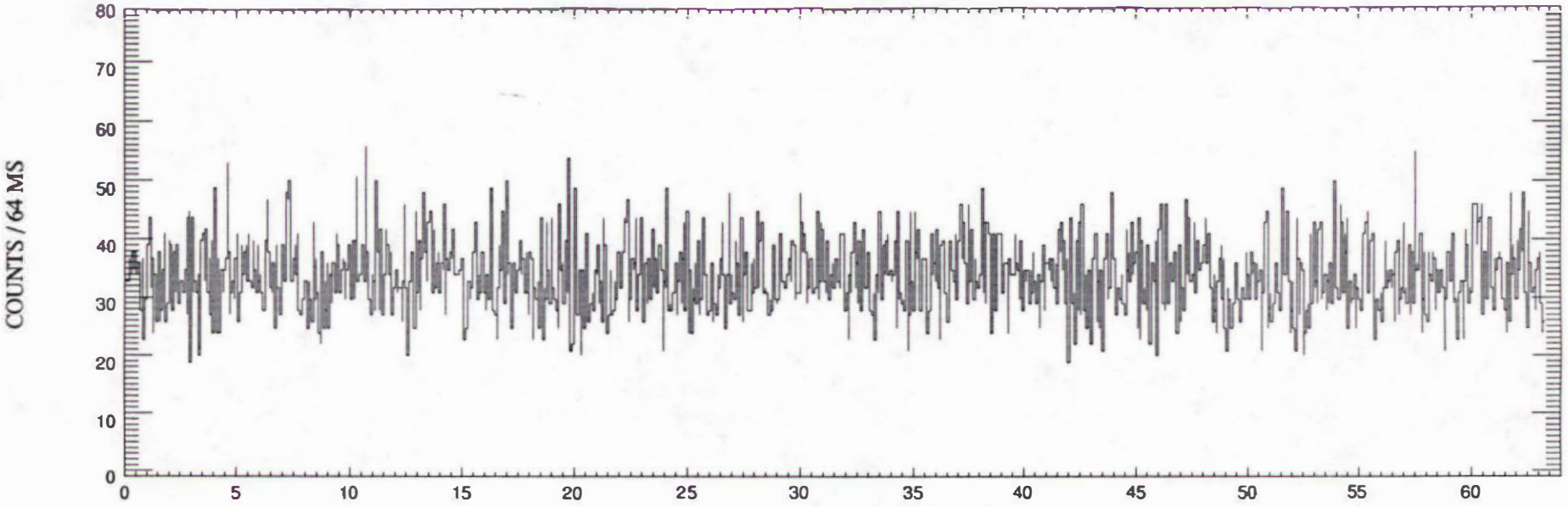
CALIBRATION DATA INCLUDED



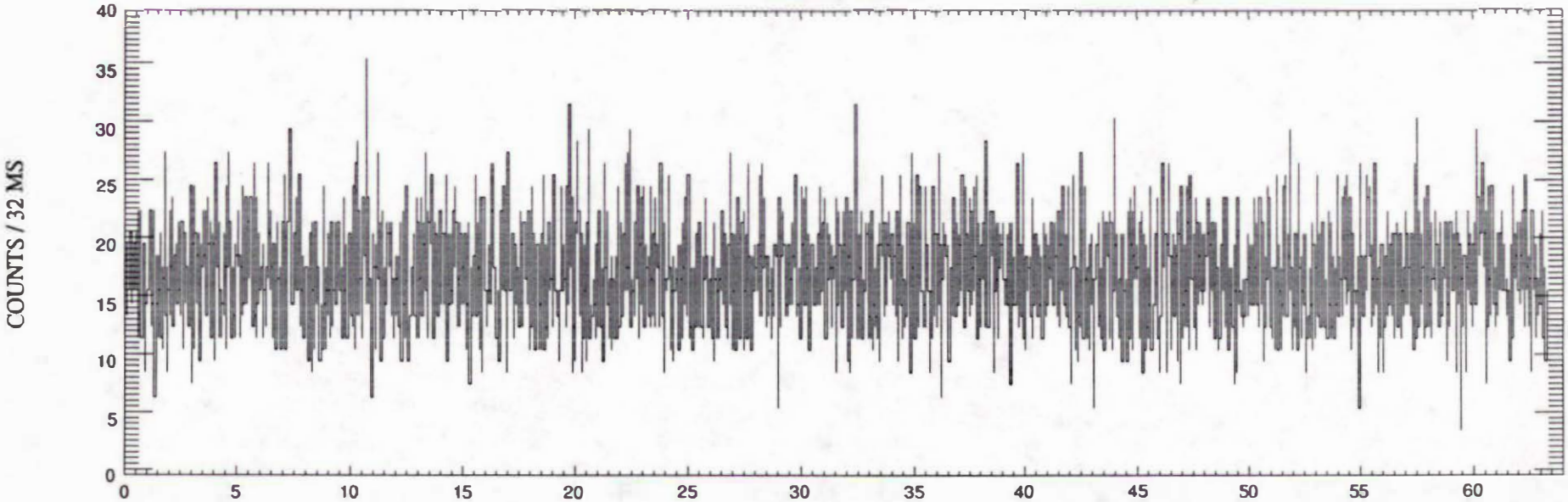
UNIV SAL TIME

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

Burst Counter 11 at UT= 0.852695956760 h= 3069.705 s



TIME, SECS

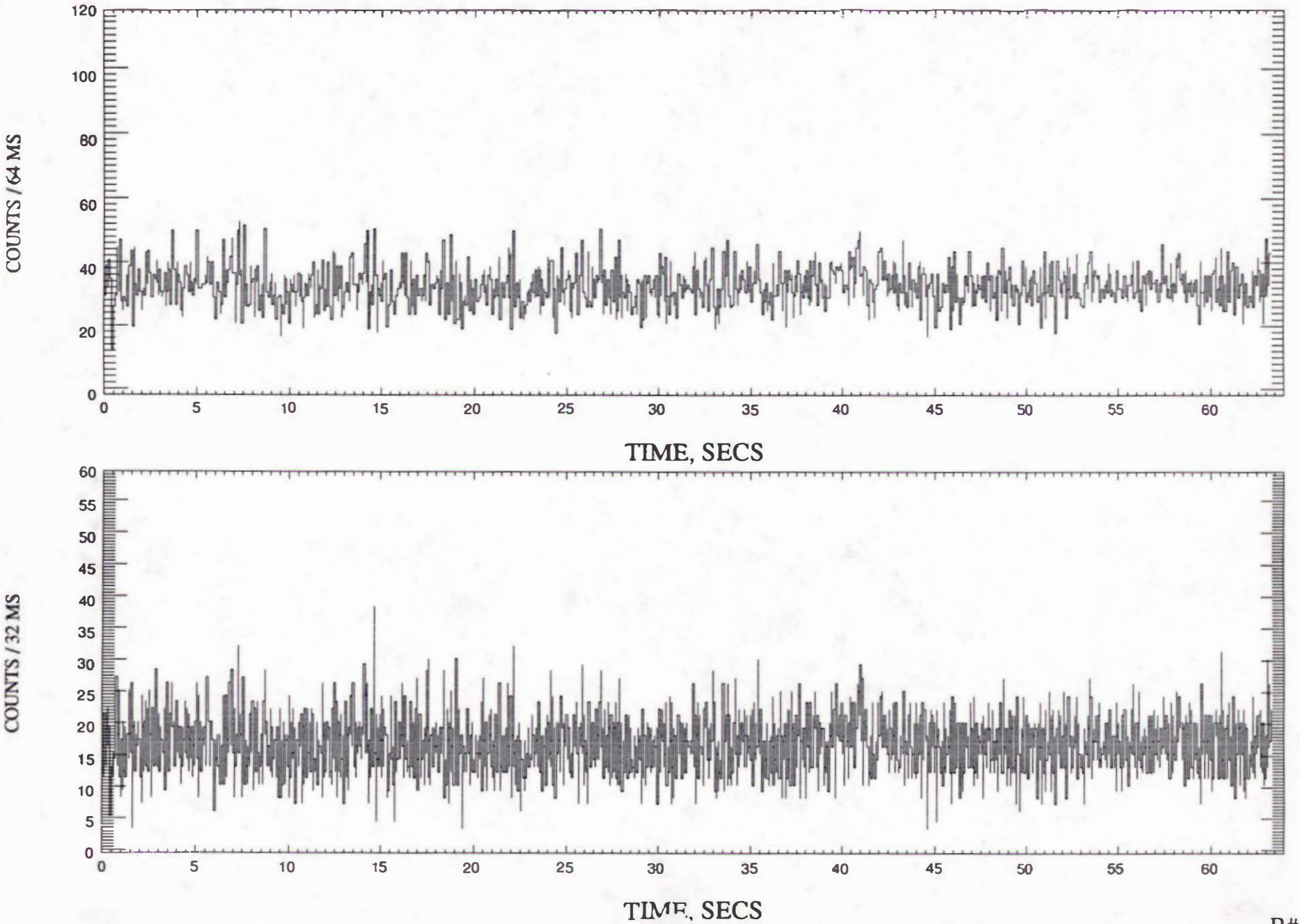


TIME SECS

B# 1

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

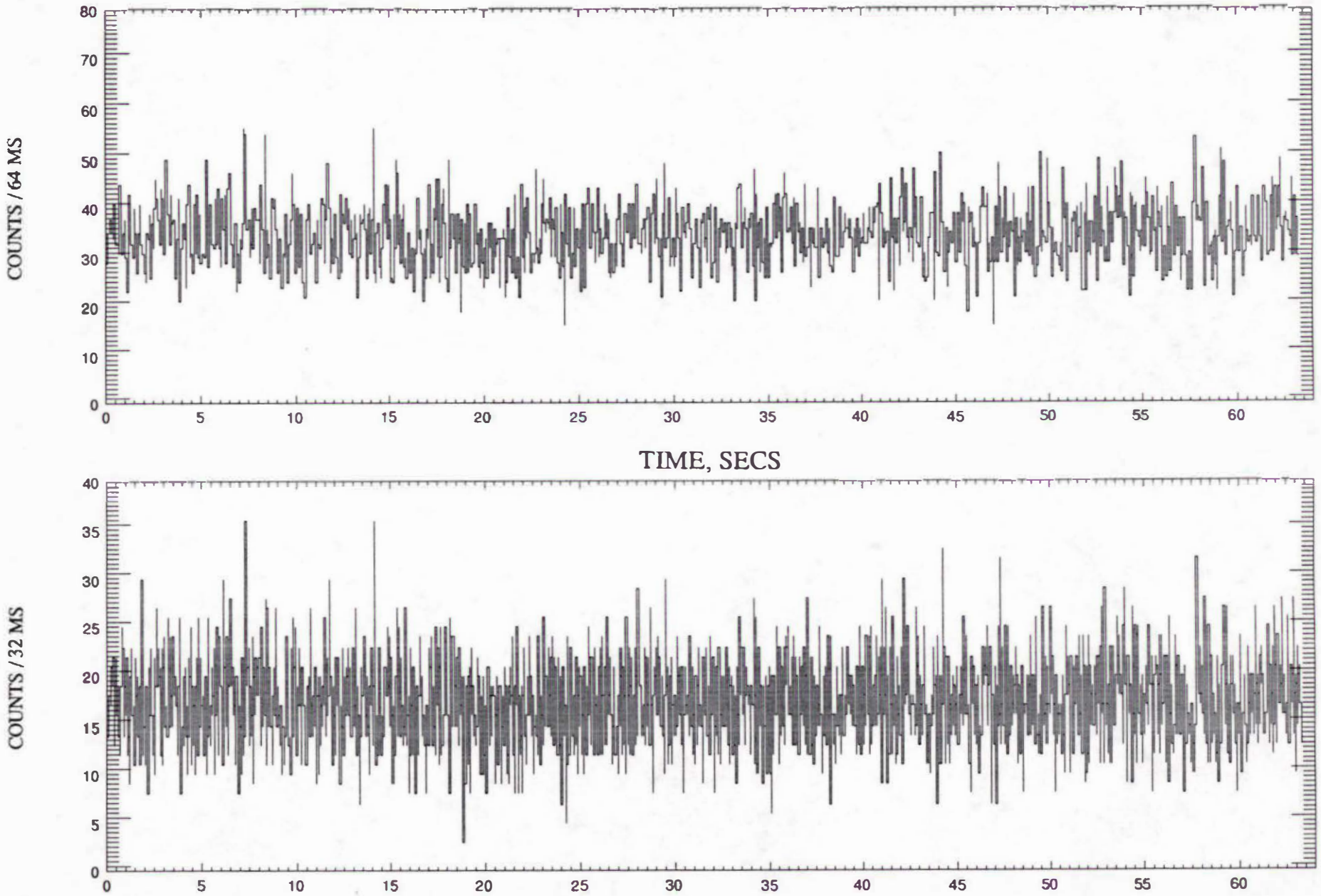
Burst Counter 12 at UT= 1.982749108209 h= 7137.897 s



B# 2

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

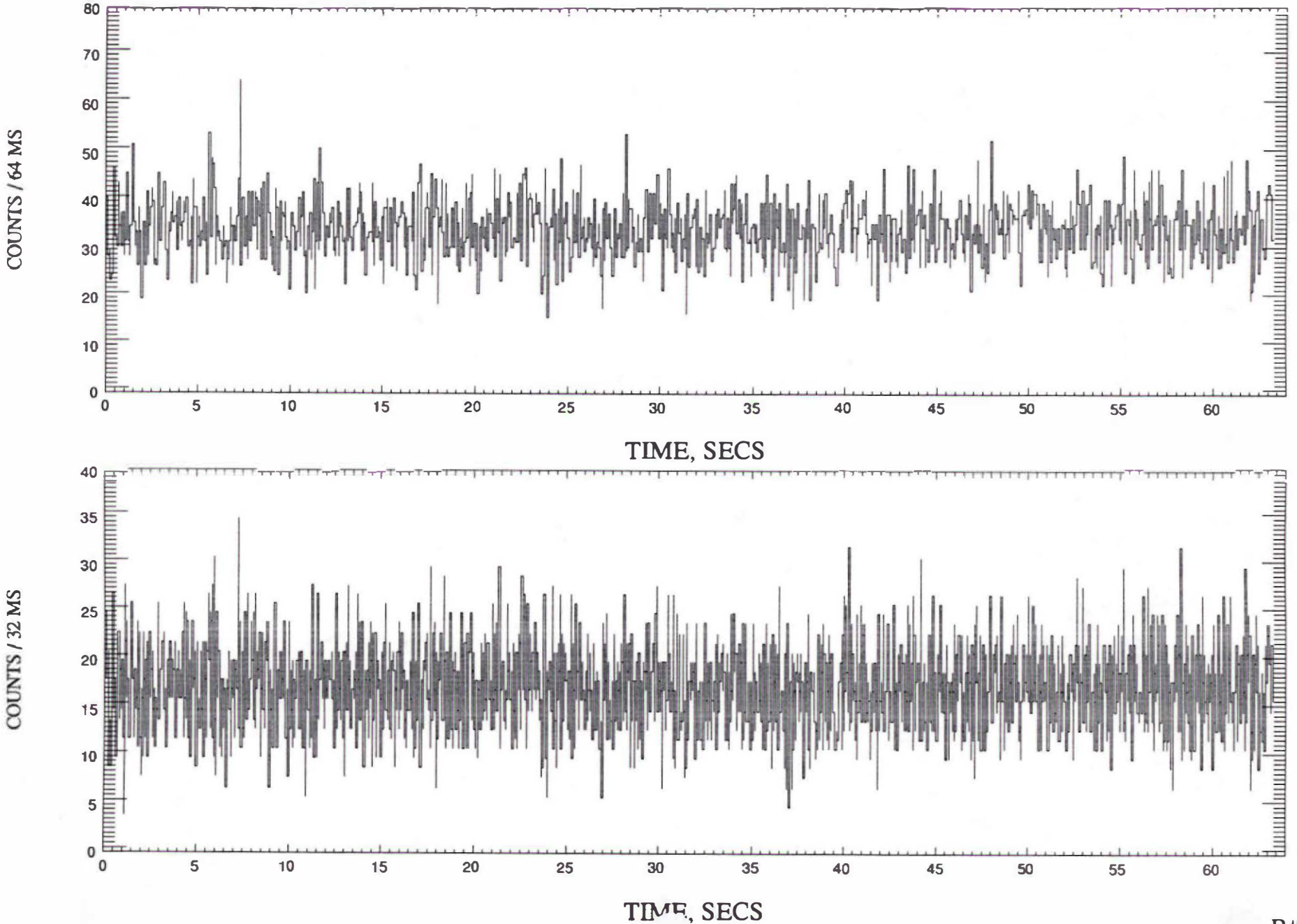
Burst Counter 13 at UT= 3.842222349379 h=13832.000 s



B# 3

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

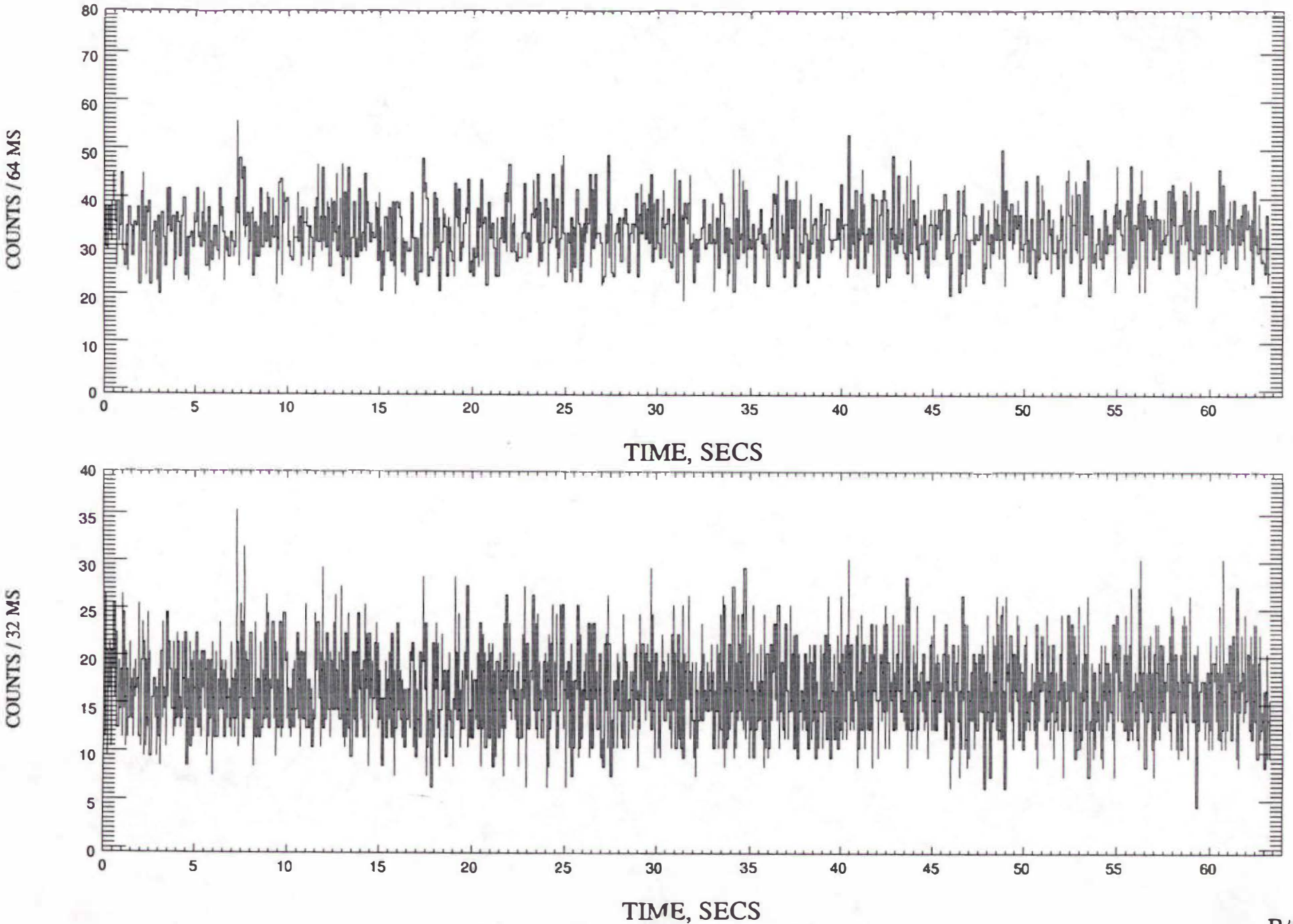
Burst Counter 14 at UT= 6.404972144233 h=23057.900 s



B# 4

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

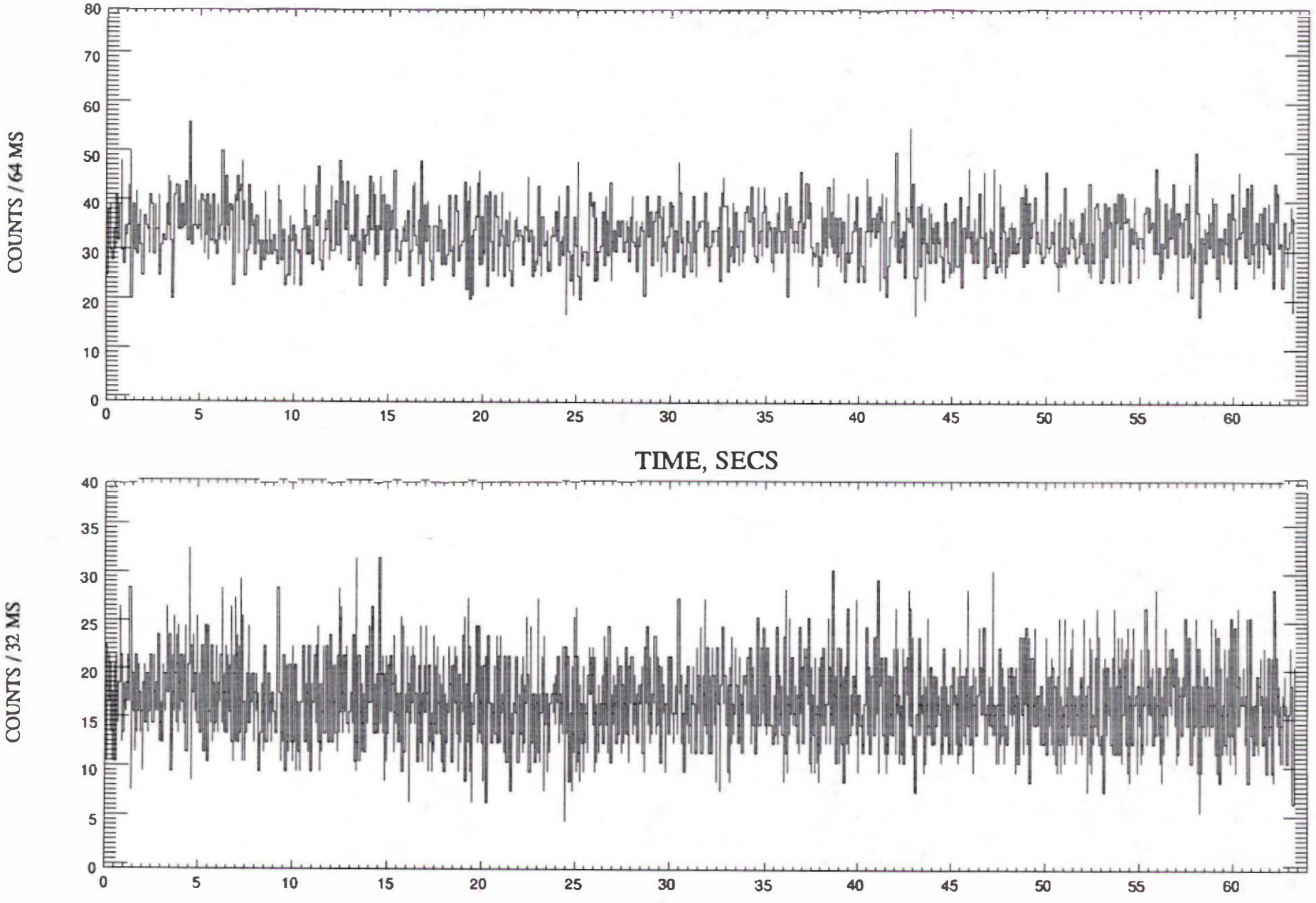
Burst Counter 15 at UT= 8.610840034485 h=30999.024 s



B# 5

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

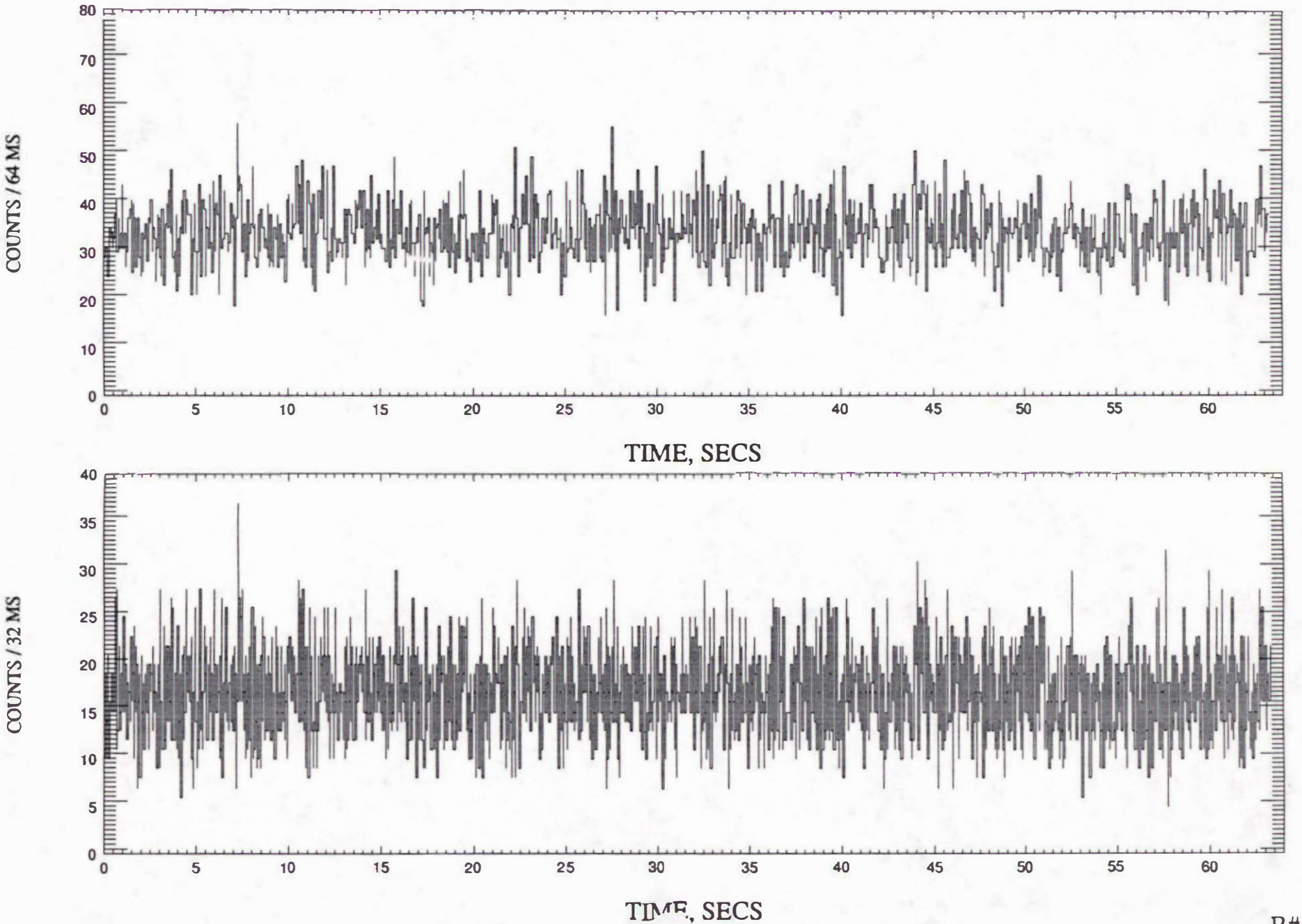
Burst Counter 0 at UT=10.203330650330 h=36731.990 s



B# 6

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

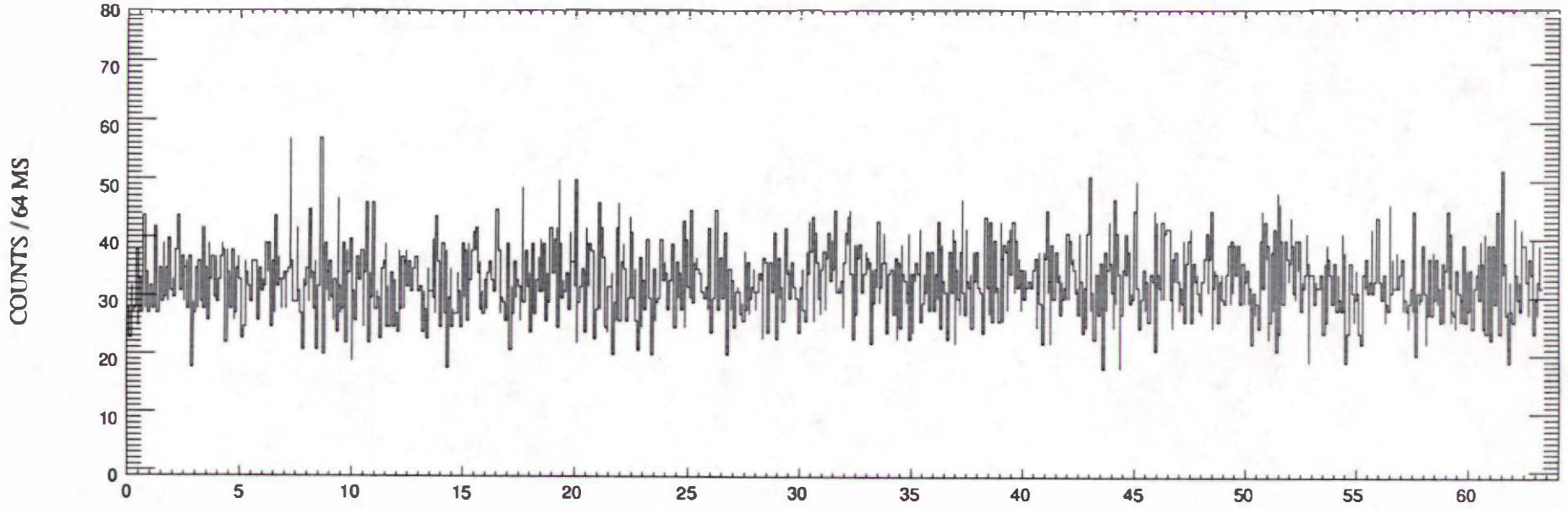
Burst Counter 1 at UT=12.410207786560 h=44676.748 s

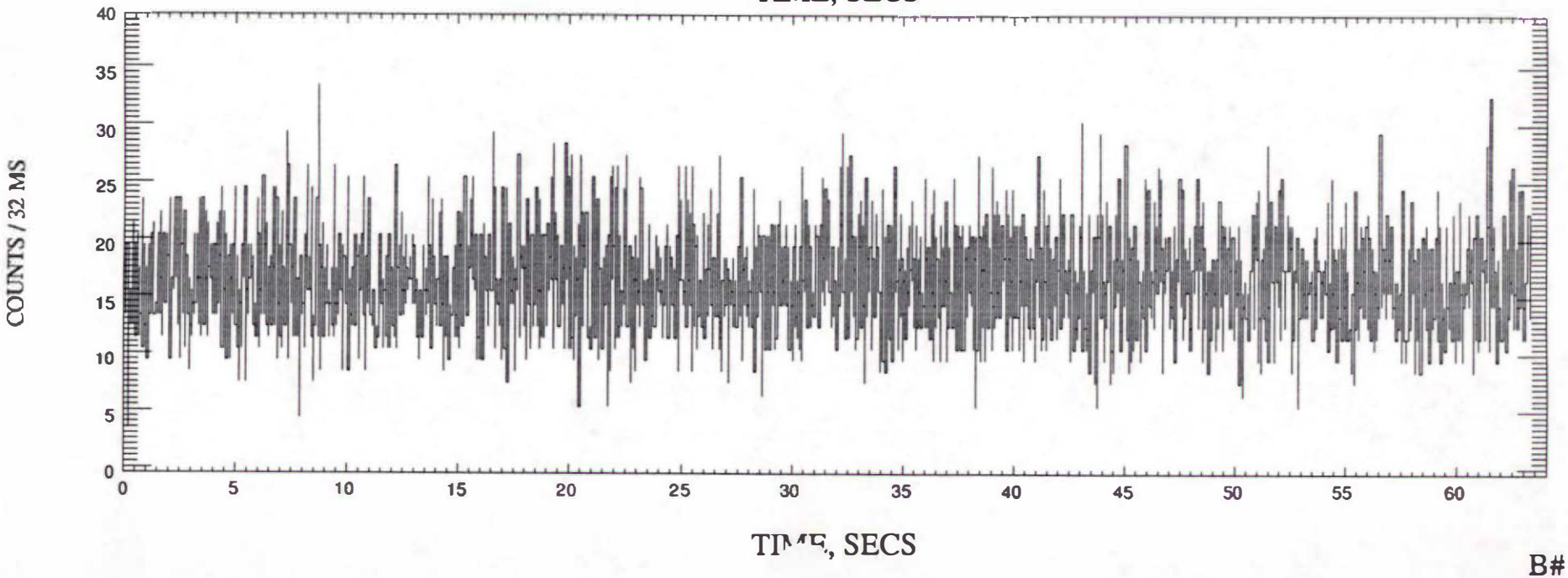


B# 7

HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

Burst Counter 2 at UT=14.194402092828 h=51099.848 s

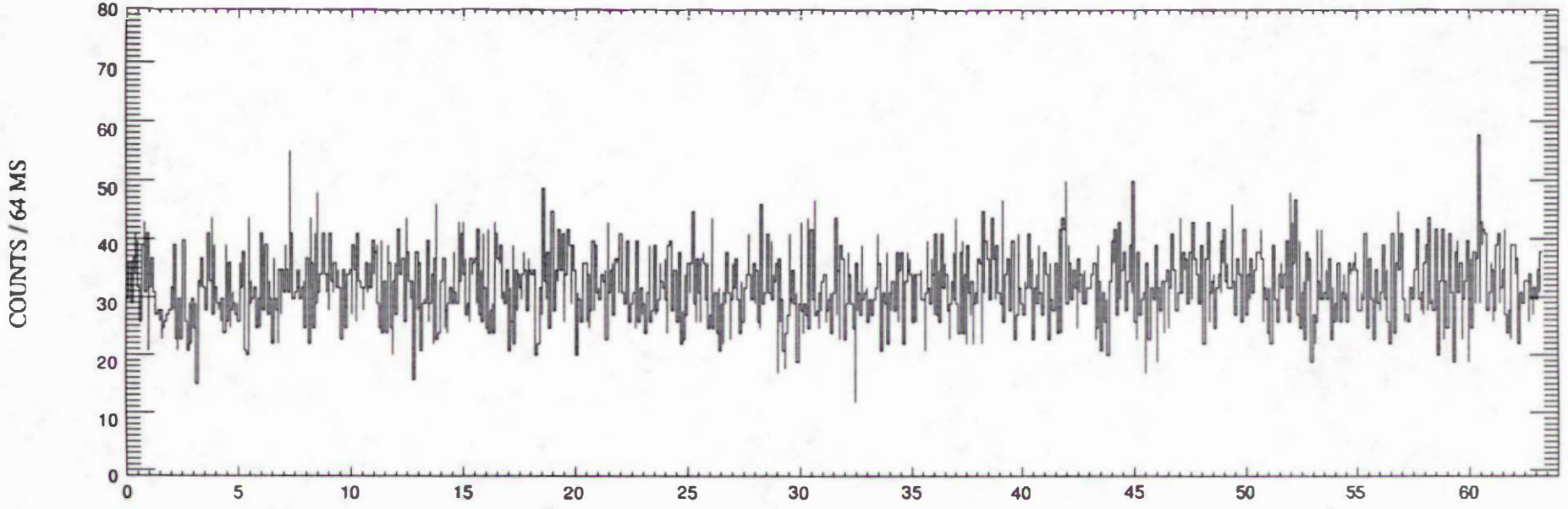


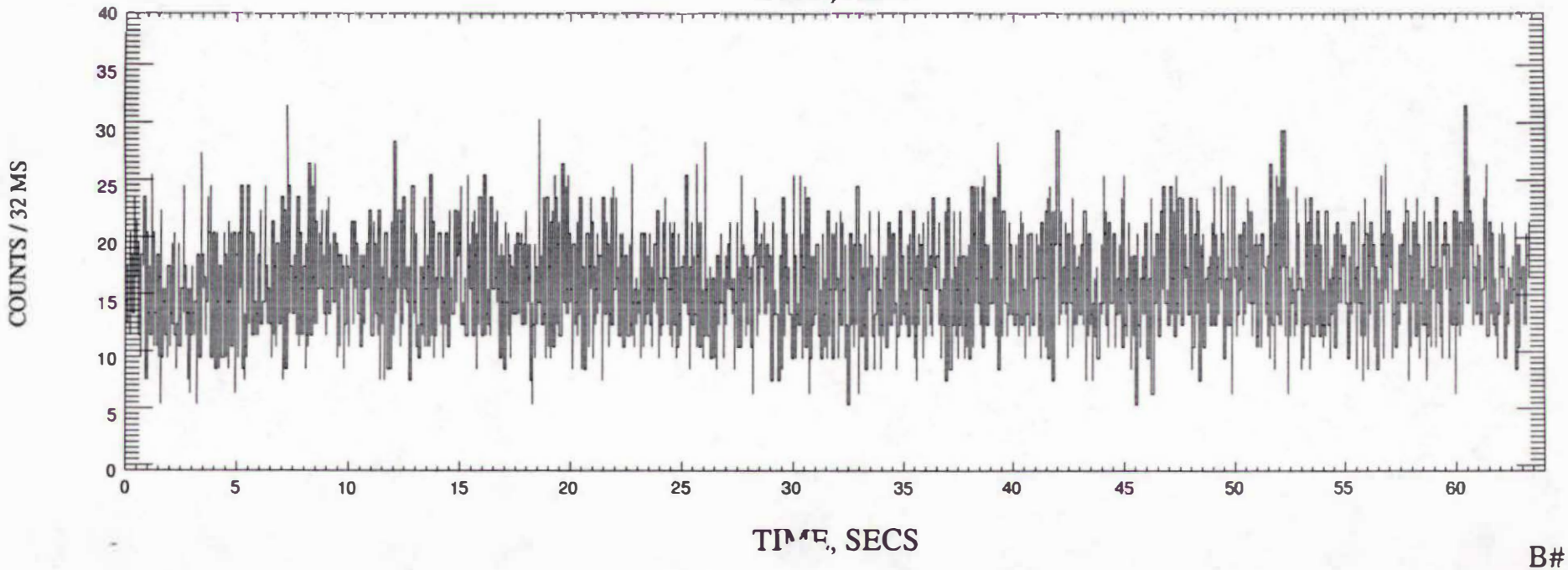


B# 8

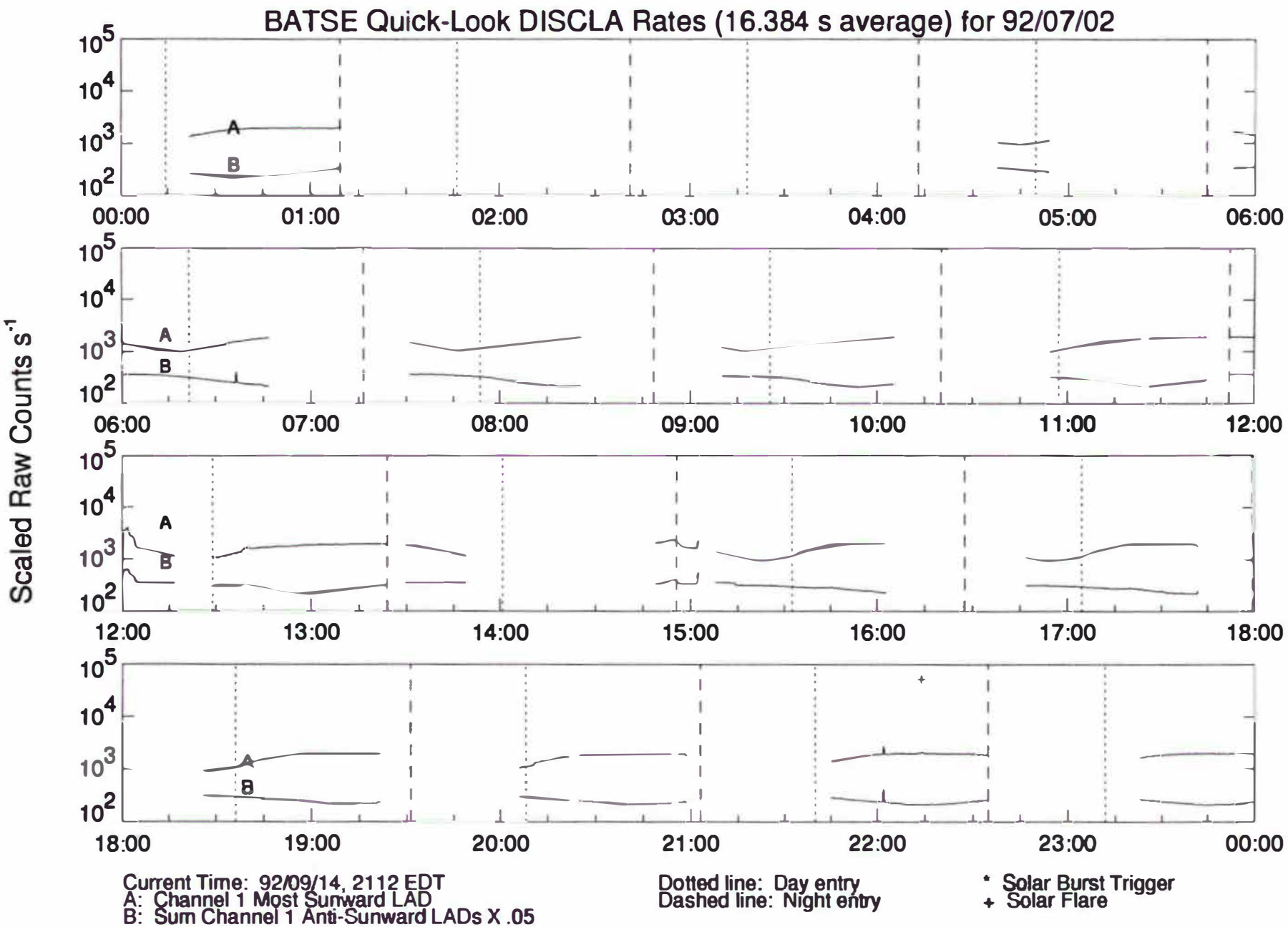
HUS 2A TRIGGERED DATA EDR day 183, year 1992 7/17/92

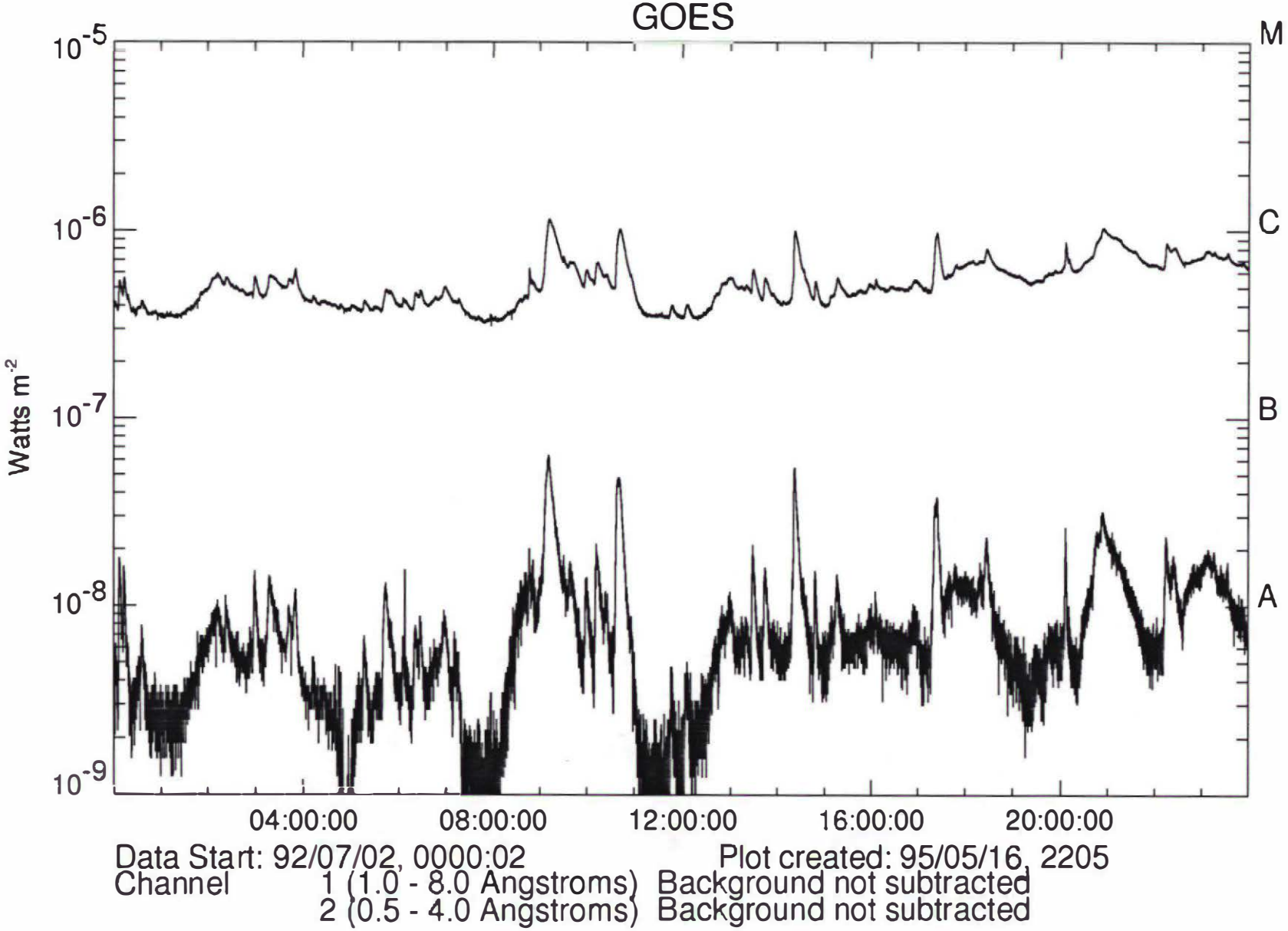
Burst Counter 3 at UT=23.183997001648 h=83462.389 s





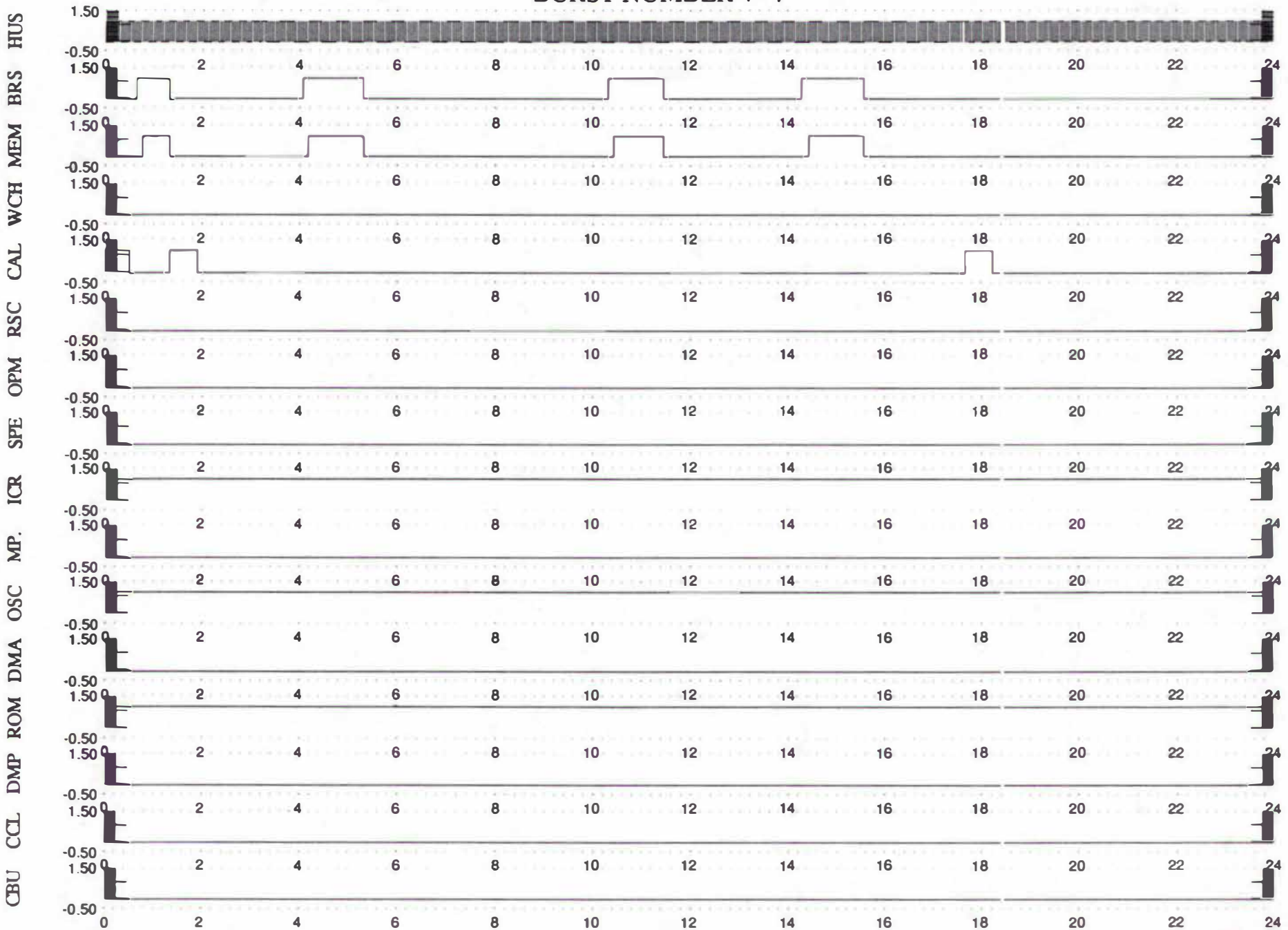
B# 9


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/02
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
Current Time: 92/09/14, 2112 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^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/02, 0000:02
Plot created: 95/05/16, 2205
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 184, year 1992 to day 184, year 1992 7/17/92

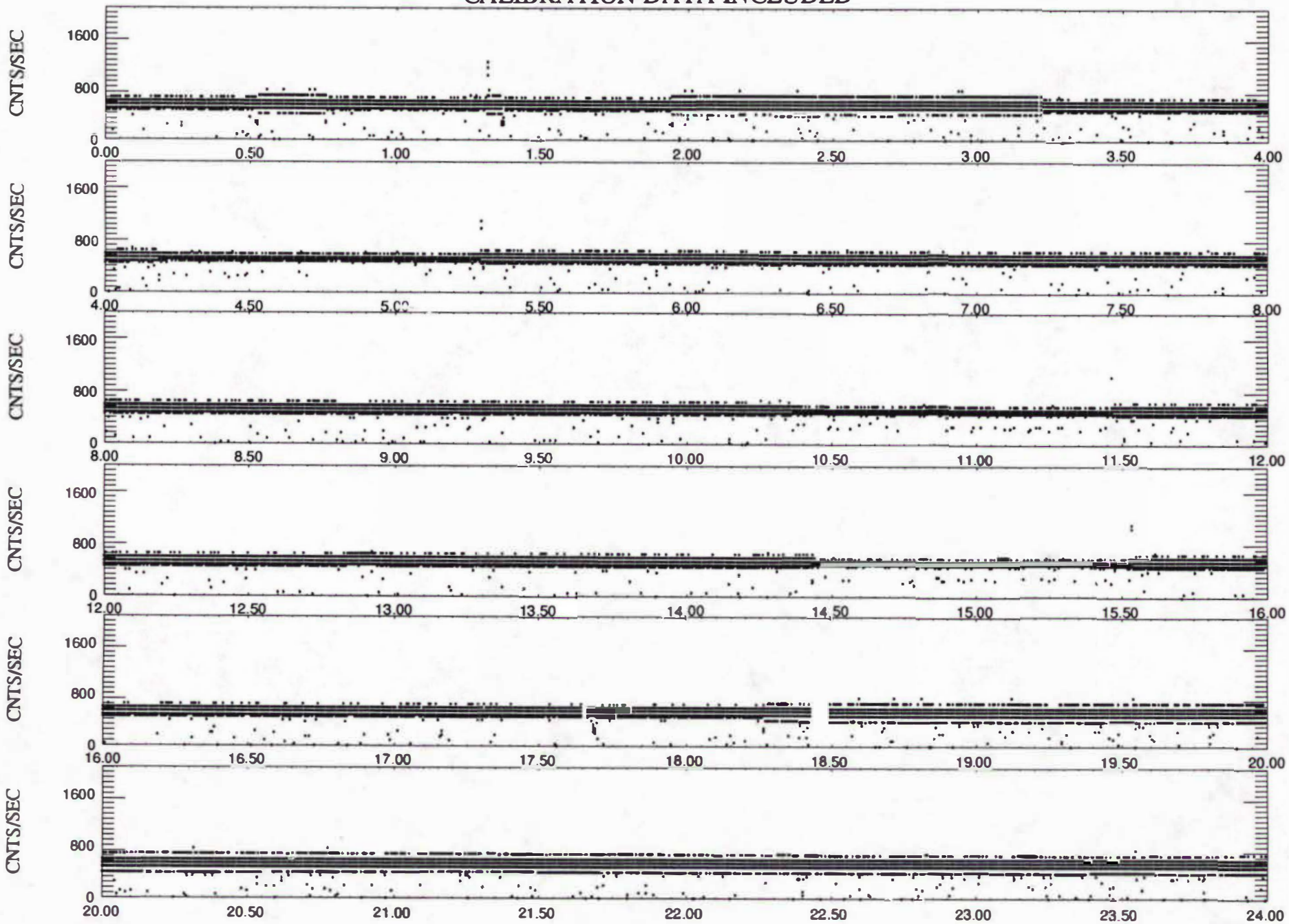
BURST NUMBER 4 - 7



UNIV AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 184, year 1992 to day 184, year 1992 7/17/92

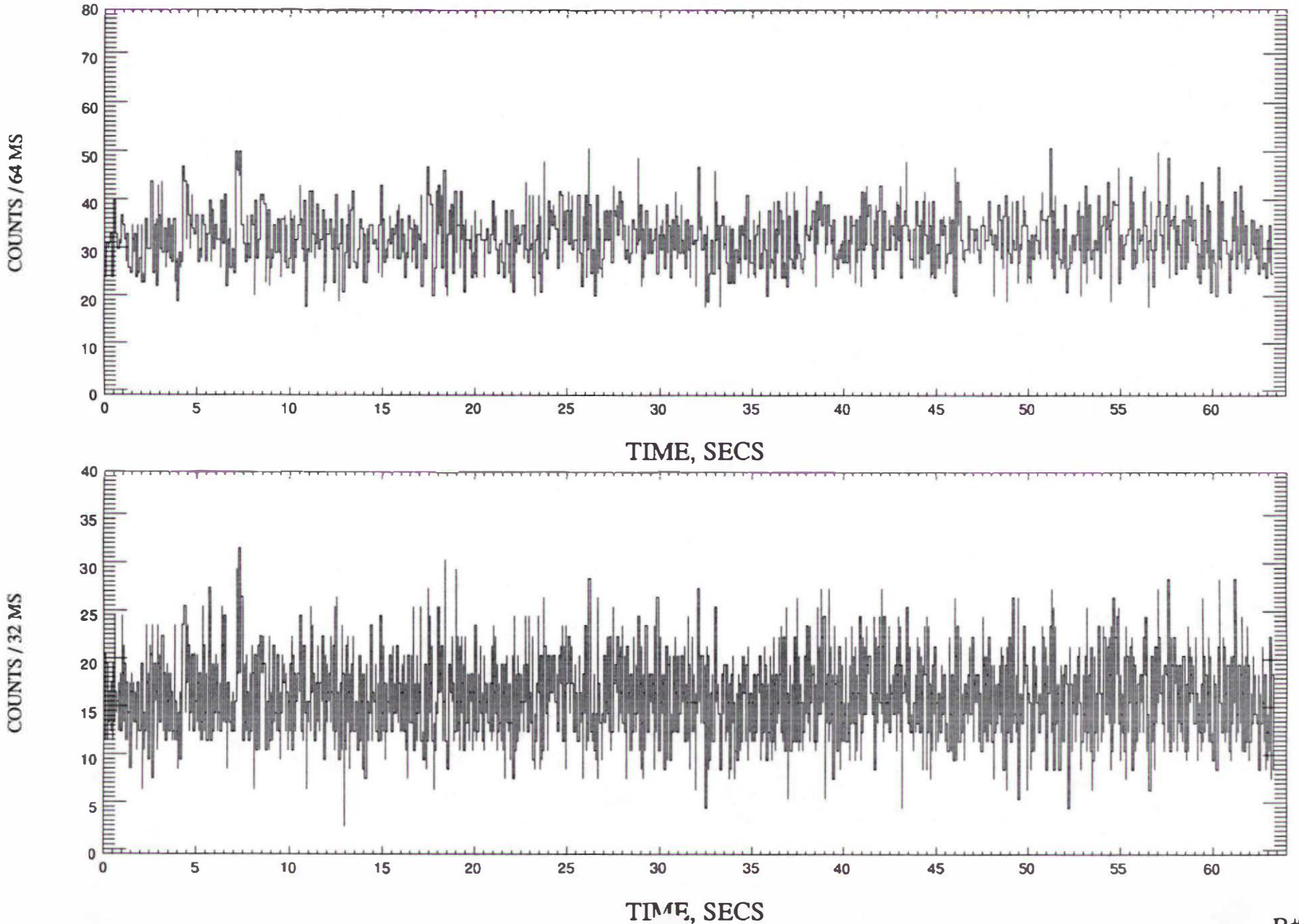
CALIBRATION DATA INCLUDED



UNIV SAL TIME

HUS 2A TRIGGERED DATA EDR day 184, year 1992 7/17/92

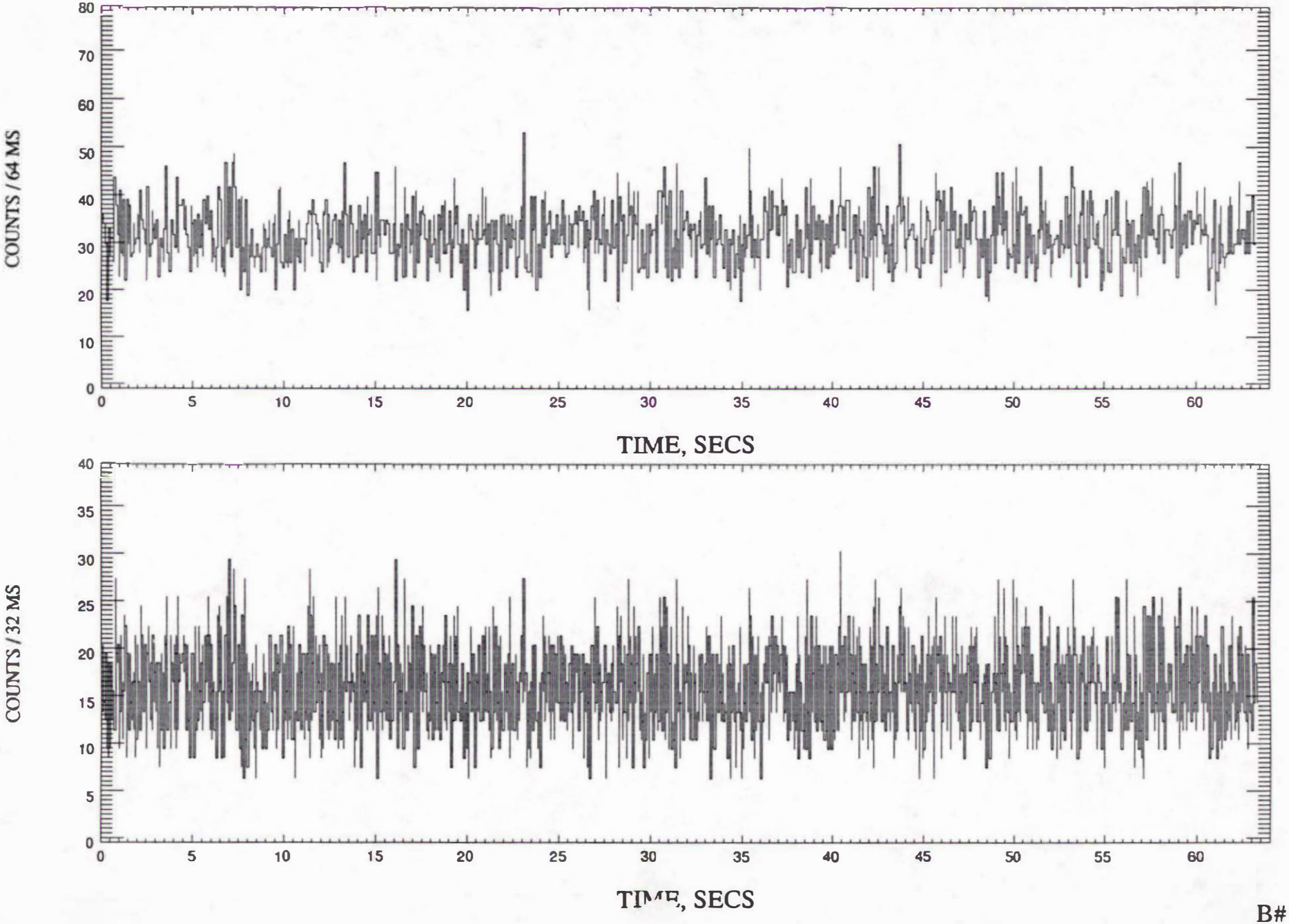
Burst Counter 4 at UT= 0.610406756931 h= 2197.464 s



B# 1

HUS 2A TRIGGERED DATA EDR day 184, year 1992 7/17/92

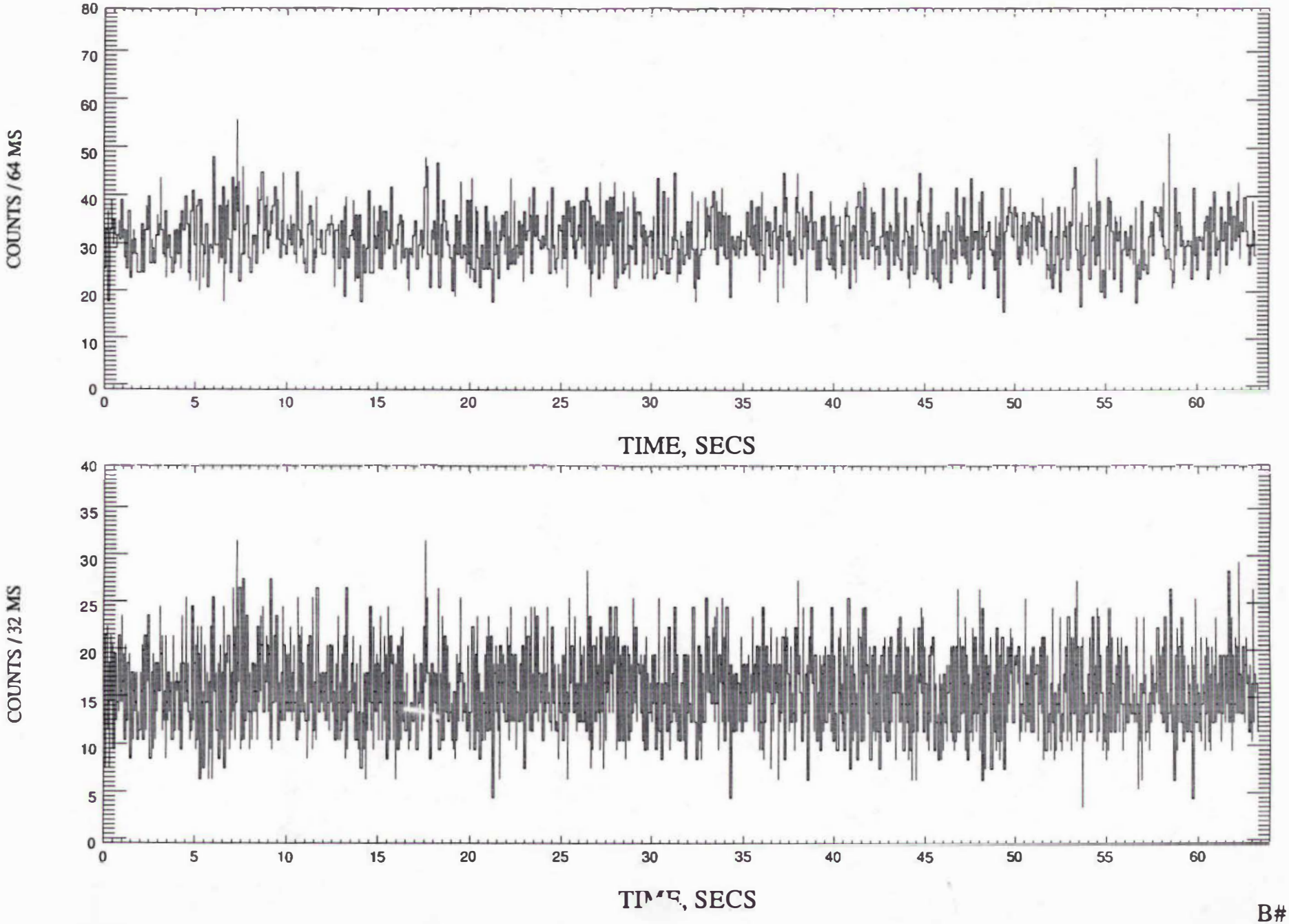
Burst Counter 5 at UT= 4.024281641642 h=14487.414 s



B# 2

HUS 2A TRIGGERED DATA EDR day 184, year 1992 7/17/92

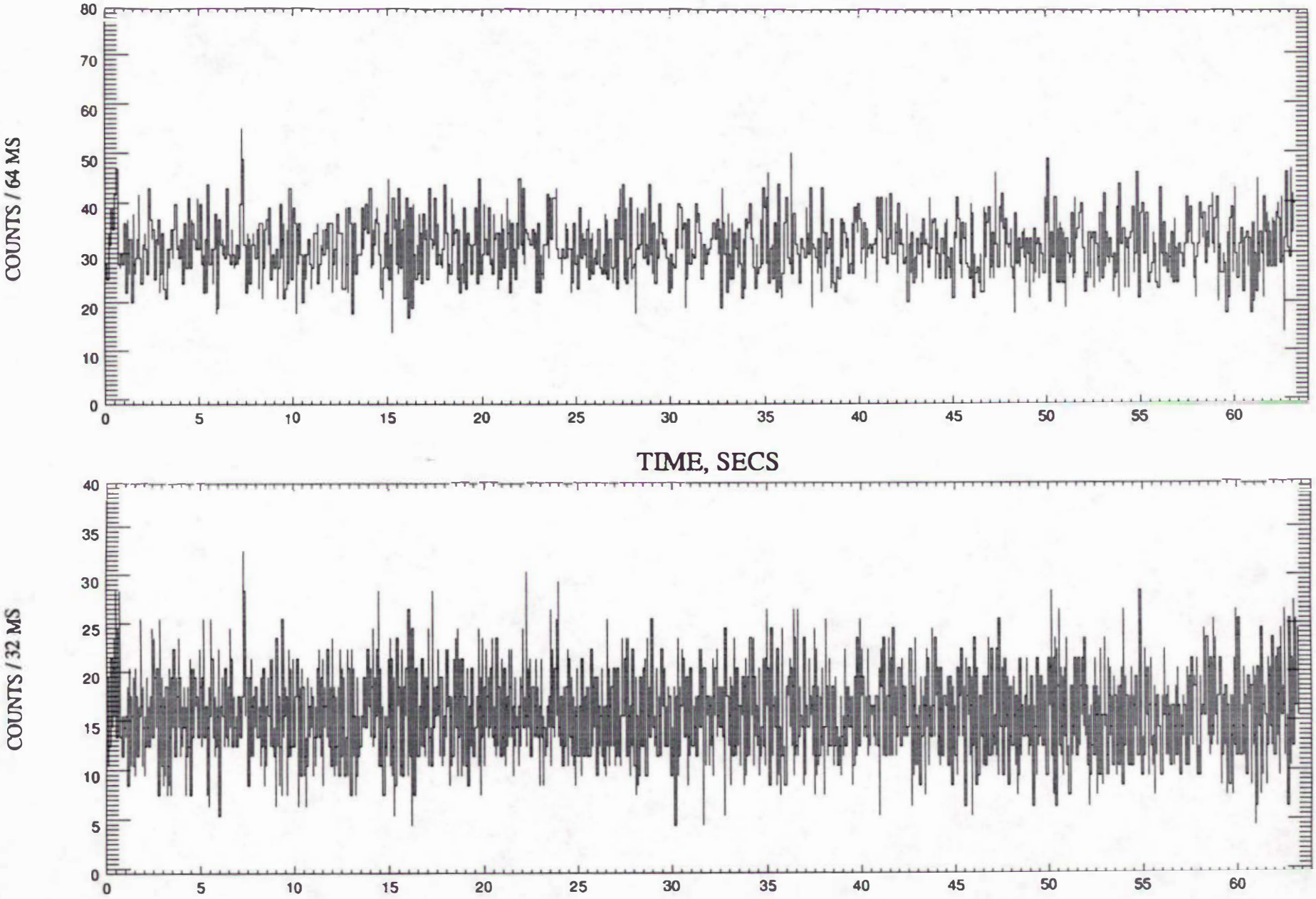
Burst Counter 6 at UT=10.196626862420 h=36707.857 s



B# 3

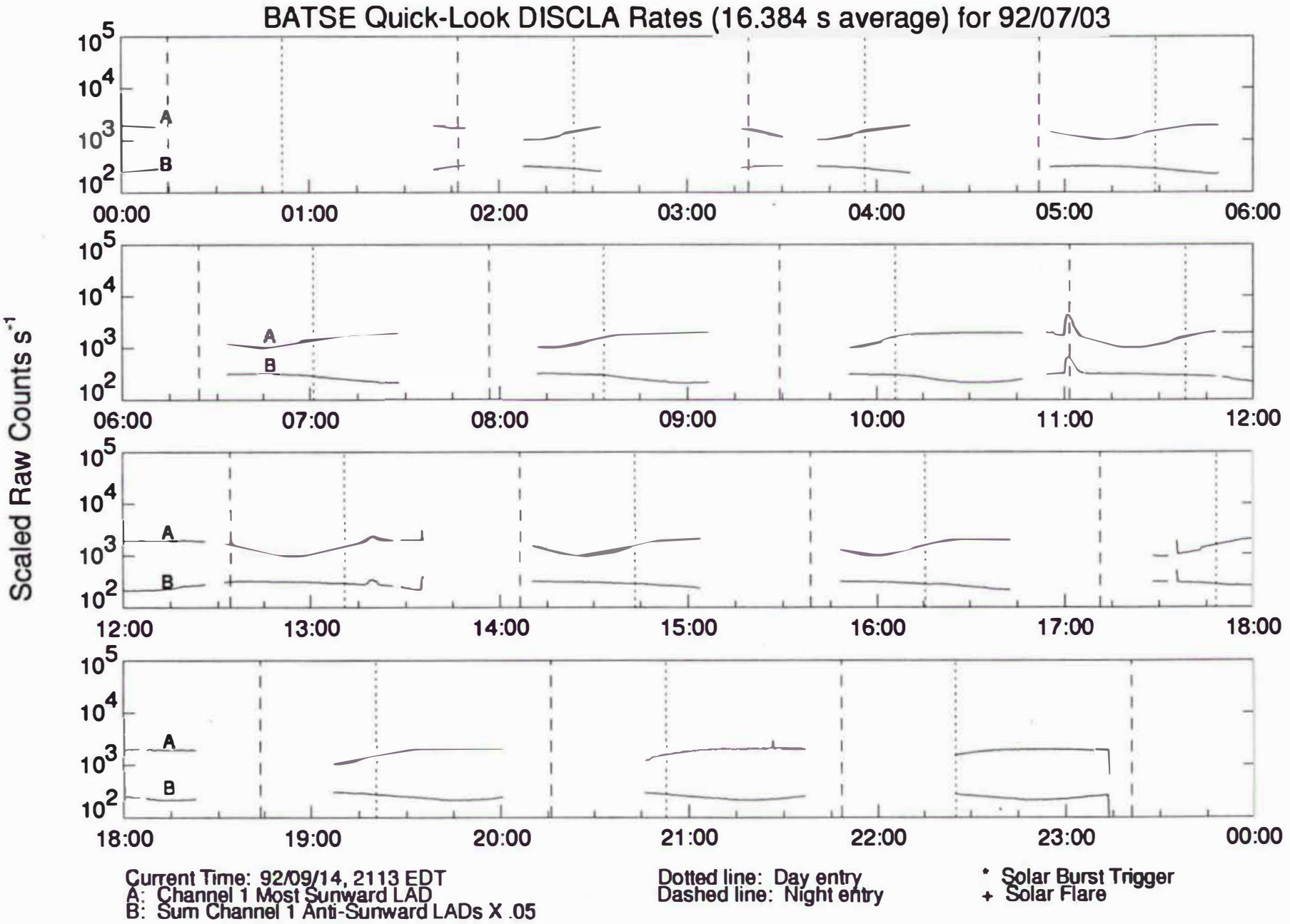
HUS 2A TRIGGERED DATA EDR day 184, year 1992 7/17/92

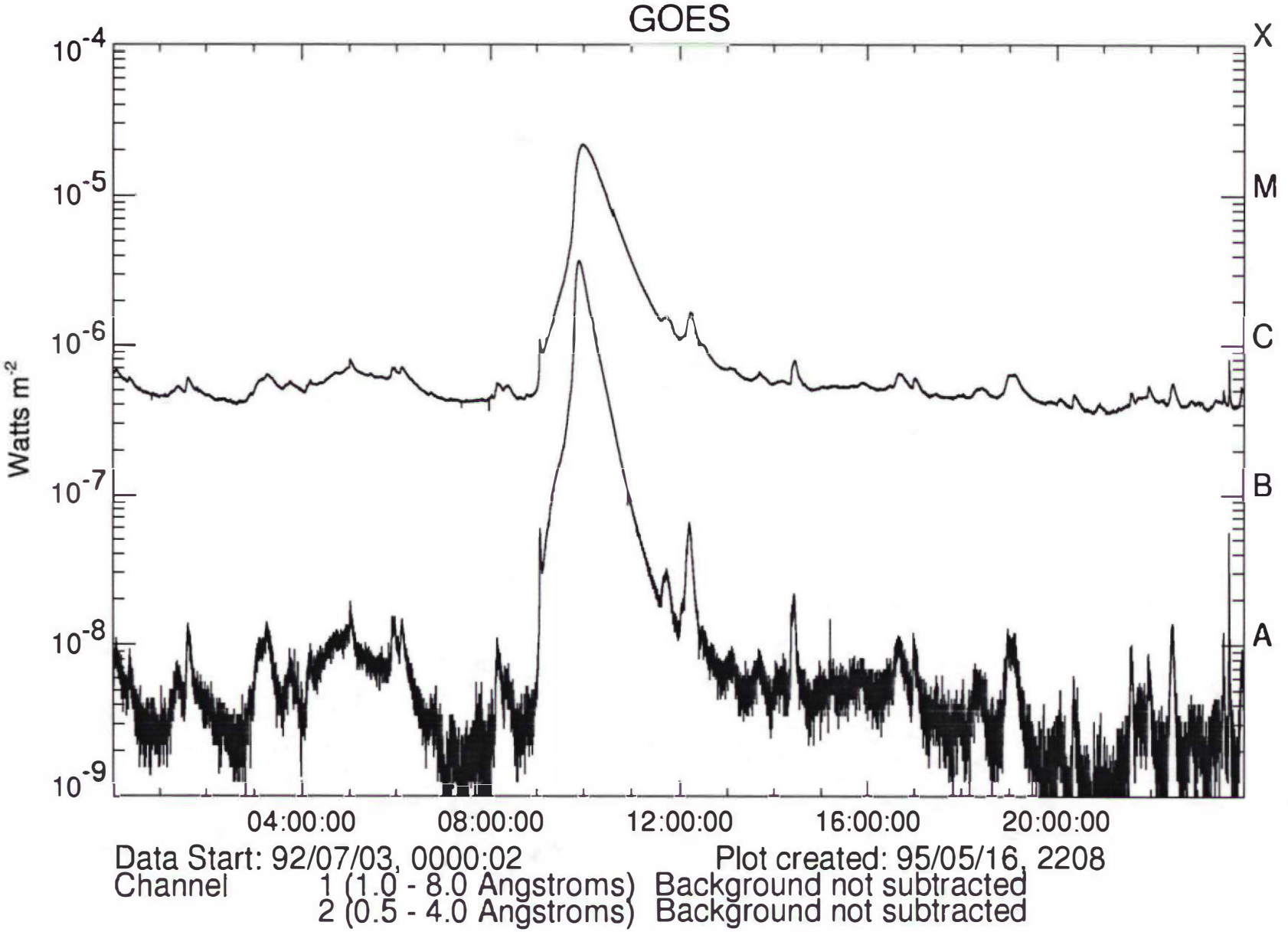
Burst Counter 7 at UT=14.276934102376 h=51396.963 s



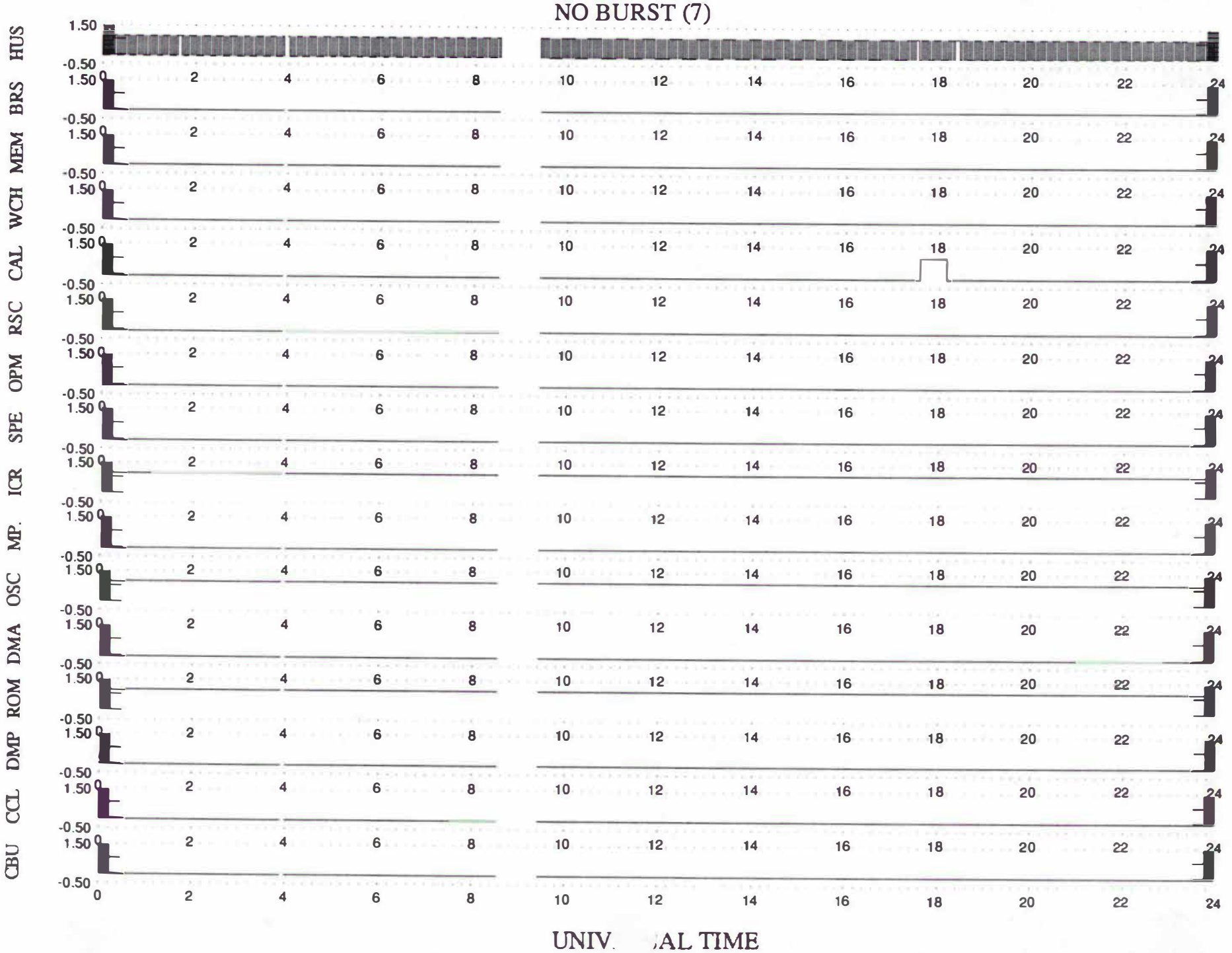
B# 4

GOES NOT AVAILABLE



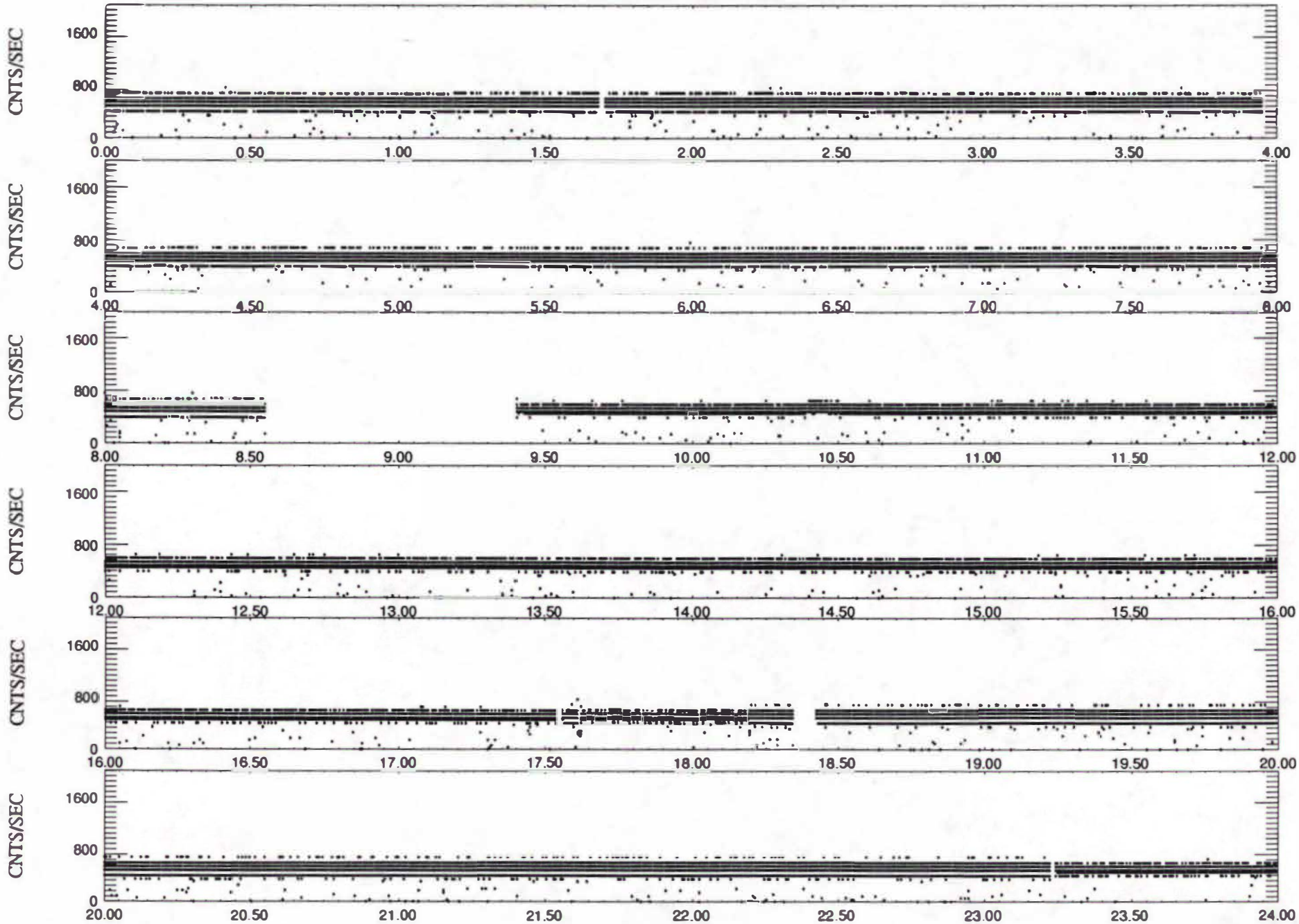

GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/03, 0000:02
Plot created: 95/05/16, 2208
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 185, year 1992 to day 185, year 1992 7/17/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 185, year 1992 to day 185, year 1992 7/17/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From KOUVELIOTOU@ssl.msfc.nasa.gov Tue Jul 7 10:21:02 1992
Date: Tue, 7 Jul 1992 12:21:58 -0500 (CDT)
From: KOUVELIOTOU@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01684

TIME: TJD=8807 SECONDS=71689

TYPE: OTHER SOLAR FLARE TRIGGER SIGNAL:

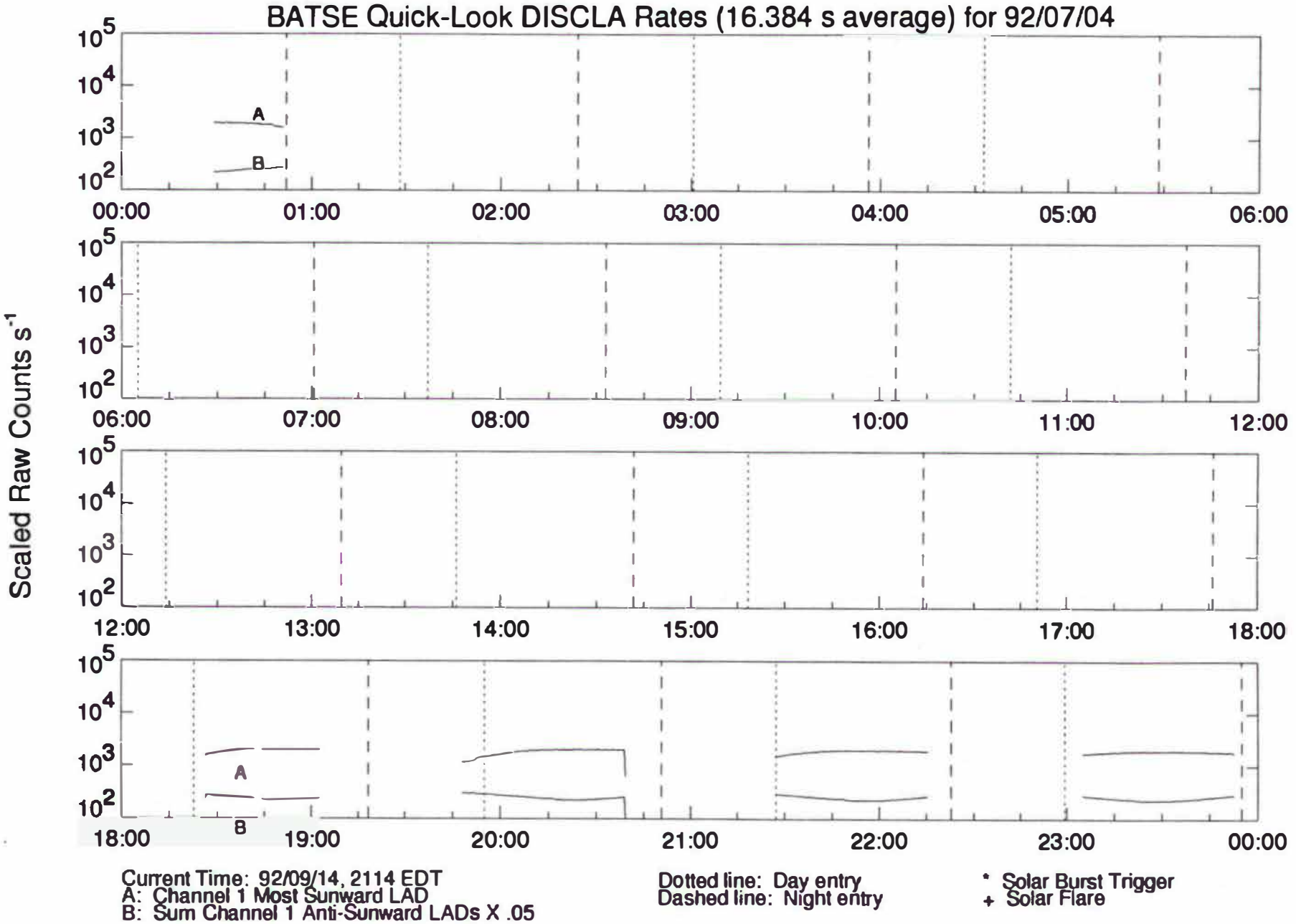
SIGNIFICANCE: SIGMA

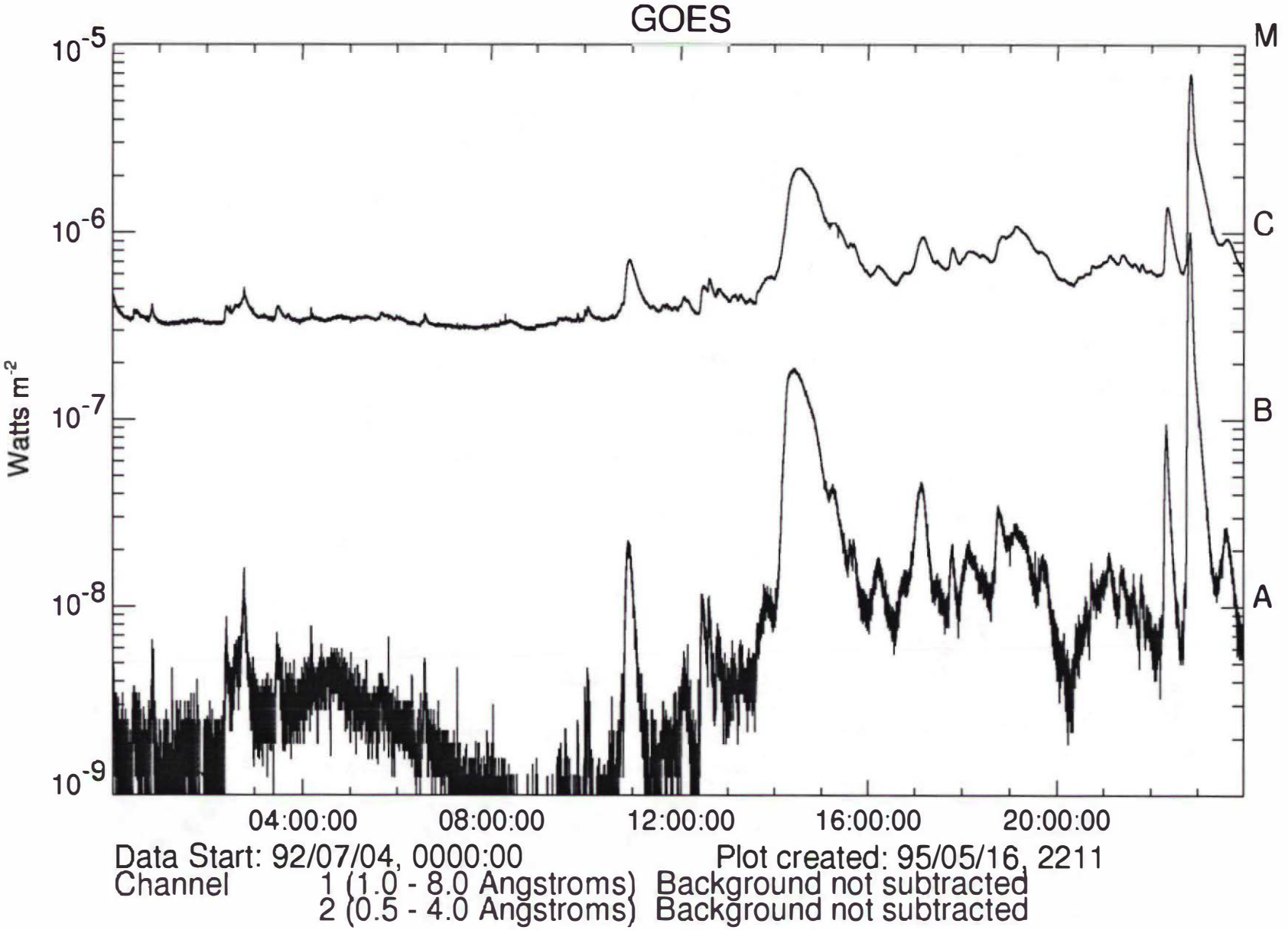
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

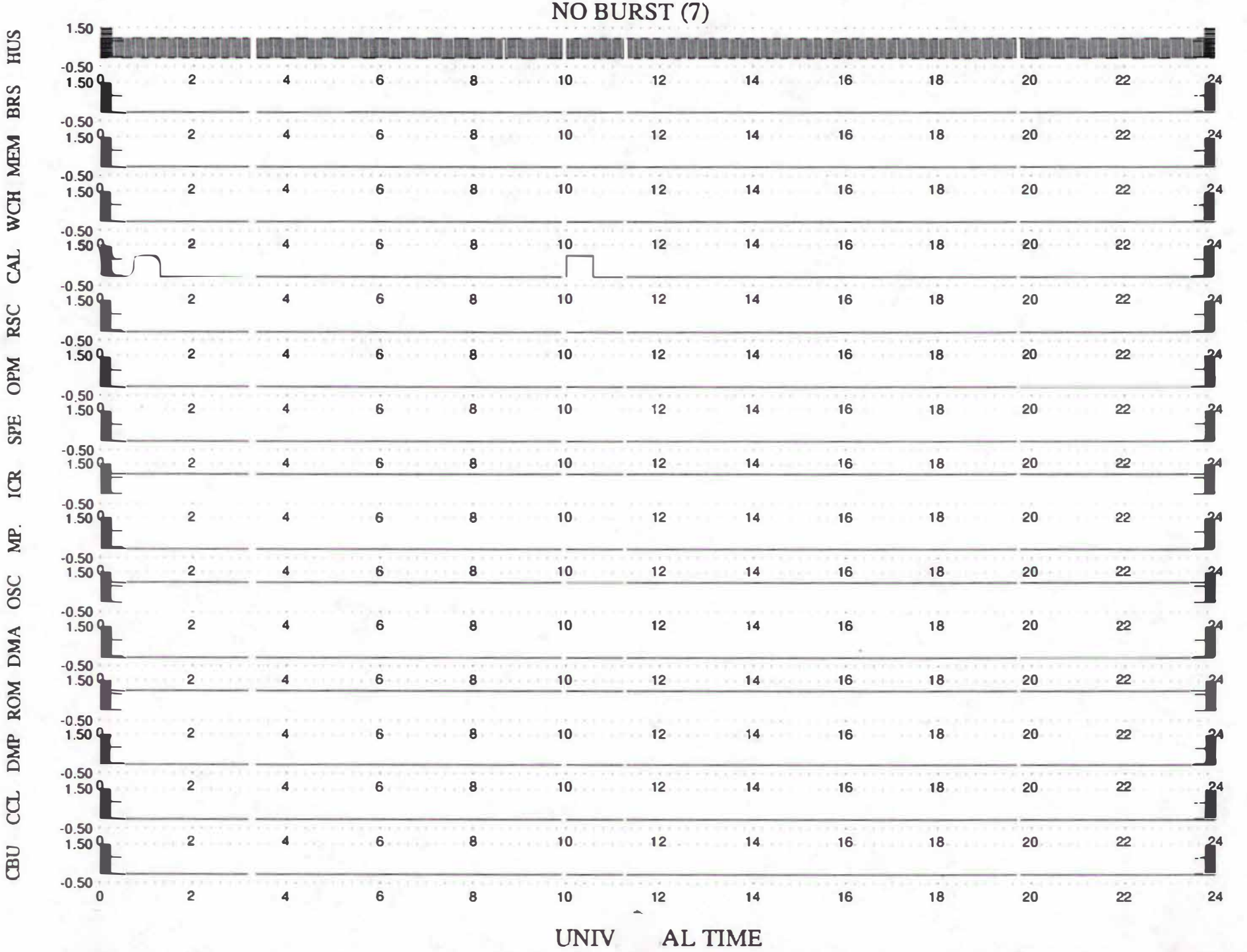
COMMENTS:
MANUALLY INDUCED TRIGGER DURING THE ATTEMPTS TO BRING THE INSTRUMENT UP.

GOES NOT AVAILABLE



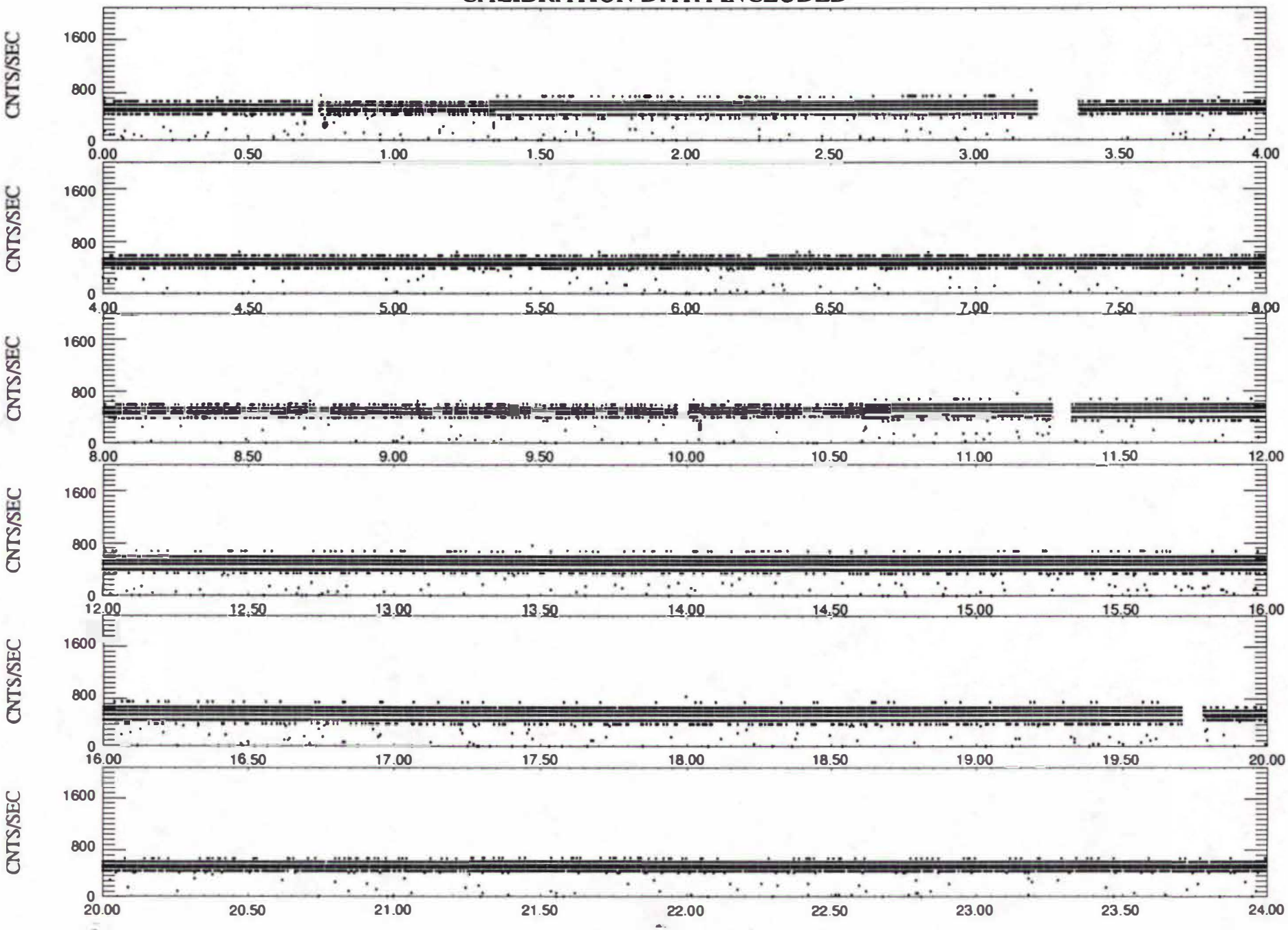

GOES
M
C
B
A
Watts m-2
10-5
10-6
10-7
10-8
10-9
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/04, 0000:00
Plot created: 95/05/16, 2211
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 186, year 1992 to day 186, year 1992 7/17/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 186, year 1992 to day 186, year 1992 7/17/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From BRIGGS@ssl.msfc.nasa.gov Mon Jul 6 20:13:48 1992
Date: Mon, 6 Jul 1992 22:14:39 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01685

TIME: TJD=8808 SECONDS=22646

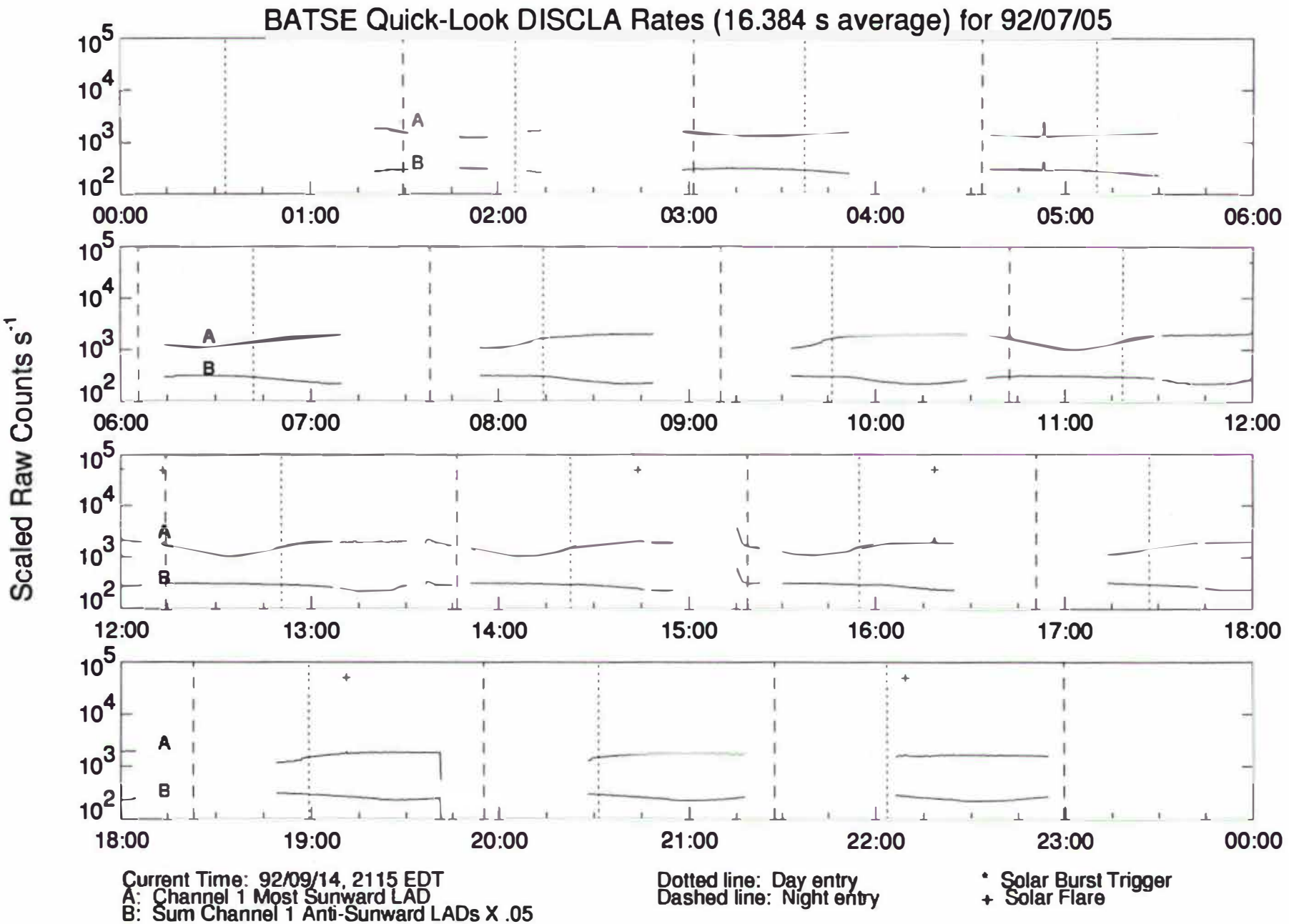
TYPE: ARTIFAC SOLAR FLARE TRIGGER SIGNAL:N

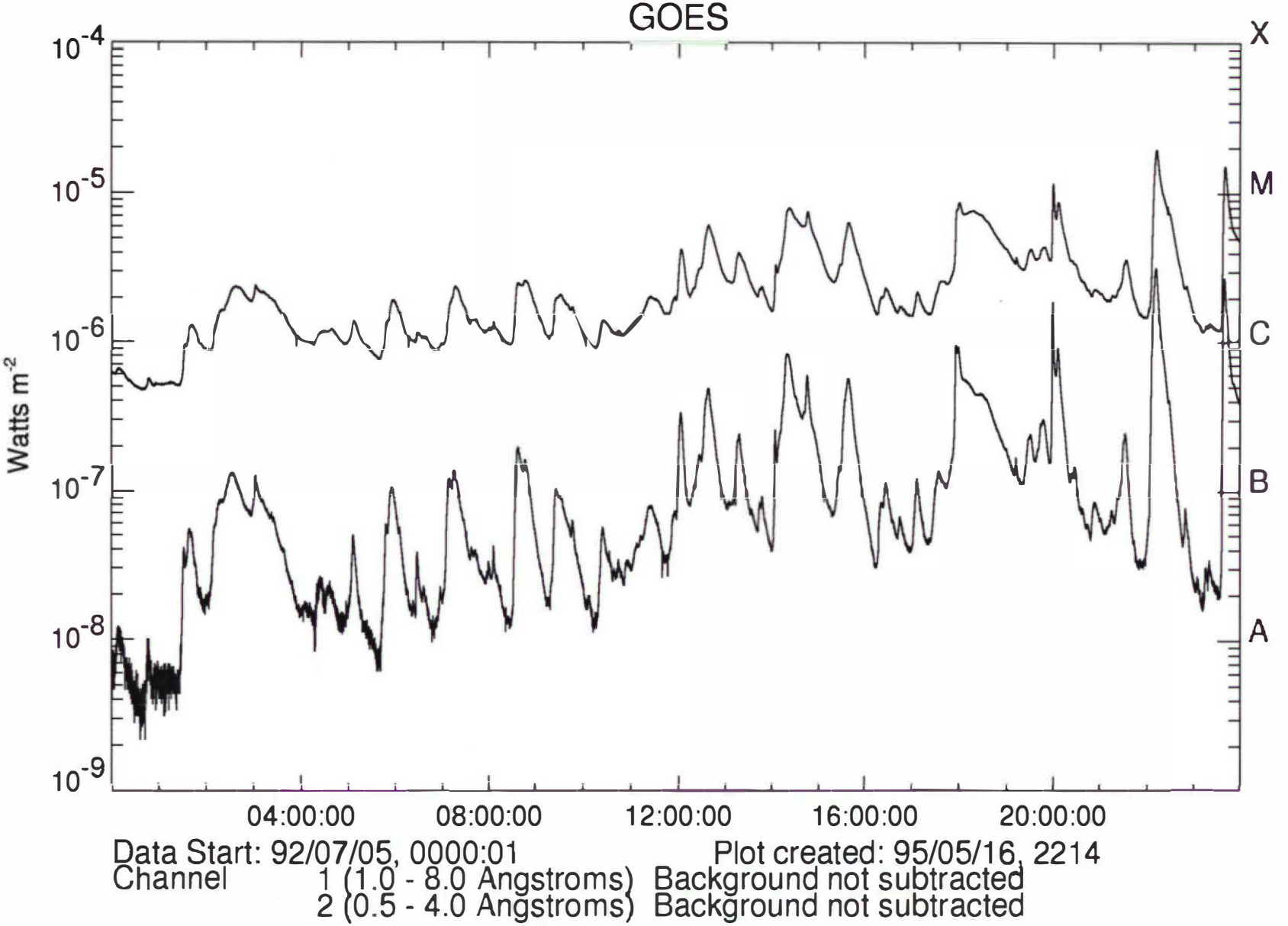
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

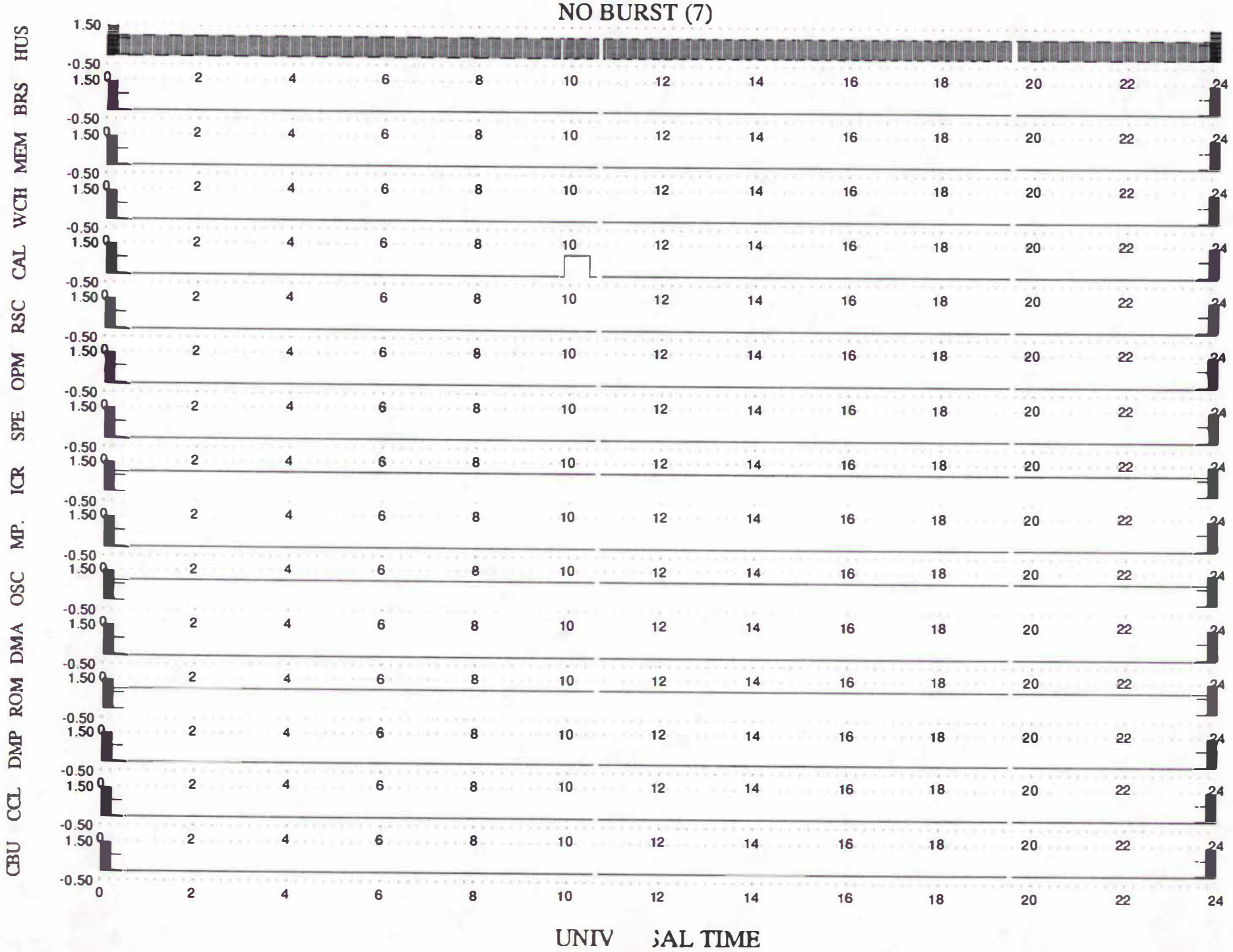
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
THIS TRIGGER IS AN ARTIFACT CAUSED BY A HV CHANGE AS THE BATSE TEAM
RECONFIGURED THE INSTRUMENT FOLLOWING THE INSTRUMENT SHUTDOWN.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/05
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
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: 92/09/14, 2115 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

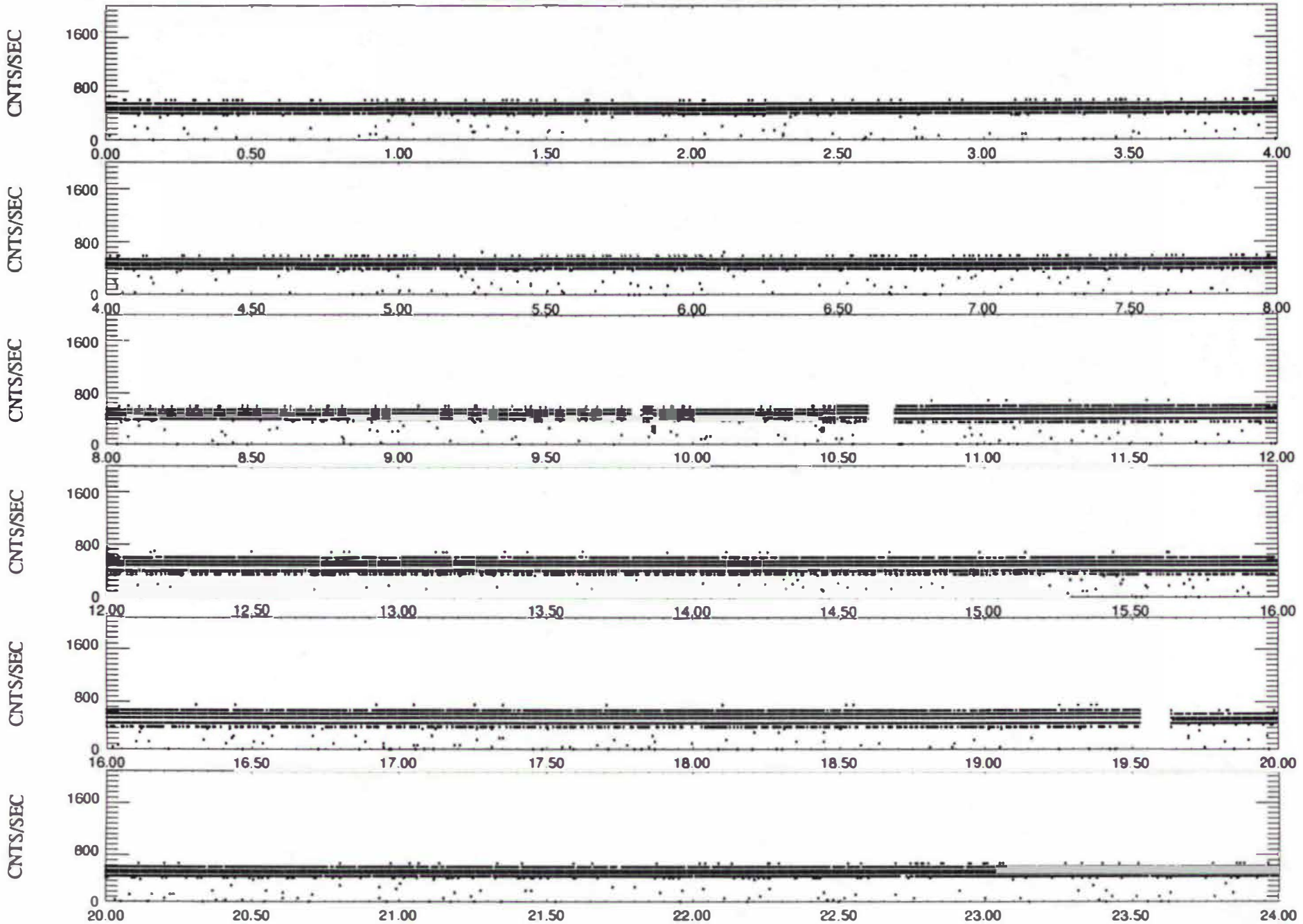

GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/05, 0000:01
Plot created: 95/05/16, 2214
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 187, year 1992 to day 187, year 1992 7/17/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 187, year 1992 to day 187, year 1992 7/17/92

CALIBRATION DATA INCLUDED



UNIV! AL TIME

From MALLOZZI@ssl.msfc.nasa.gov Wed Jul 8 09:17:46 1992
Date: Wed, 8 Jul 1992 11:18:36 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01686

July 6

TIME: TJD=8809 SECONDS=53156

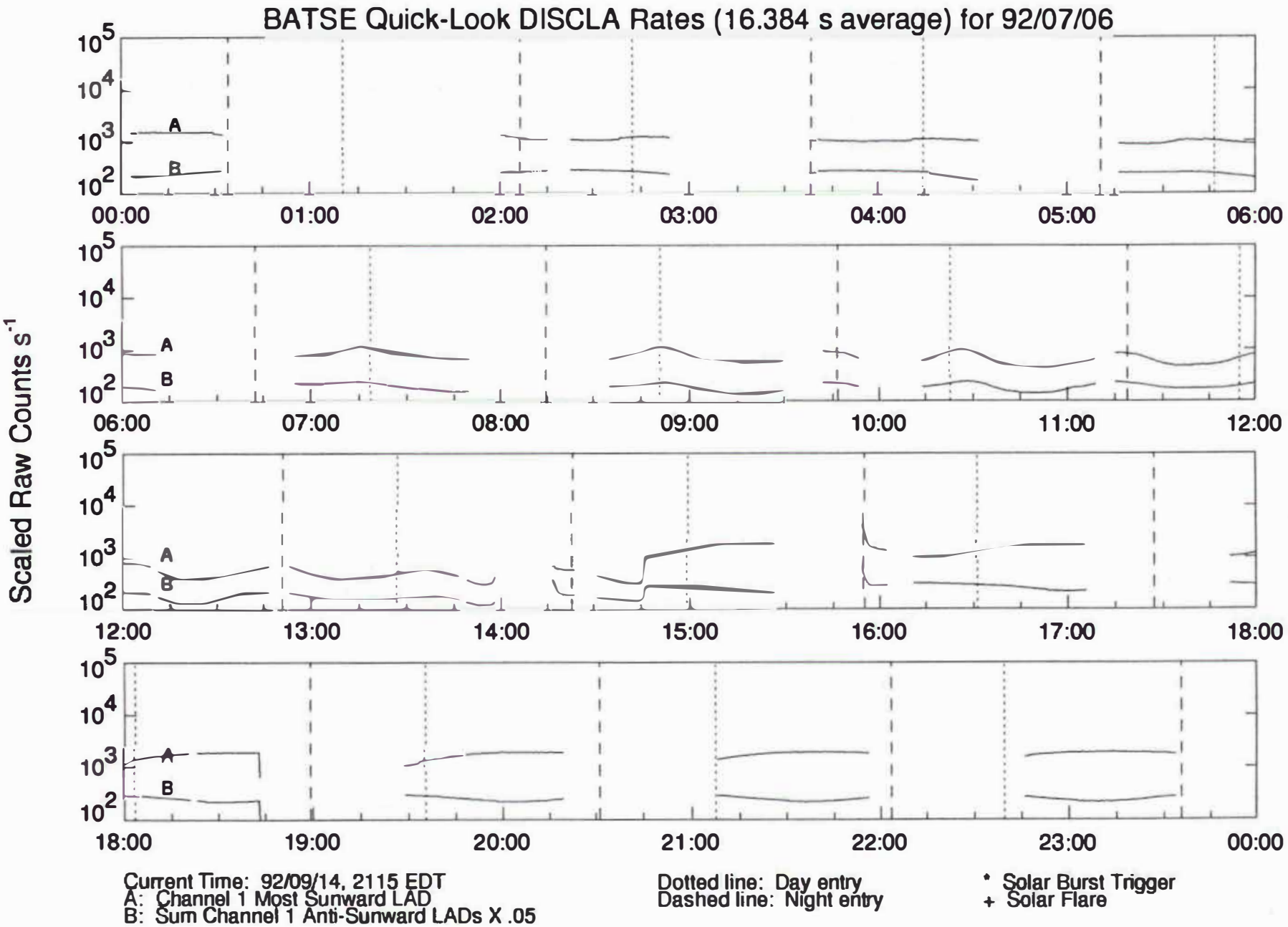
TYPE: VOLTAGE CHANGE SOLAR FLARE TRIGGER SIGNAL:N

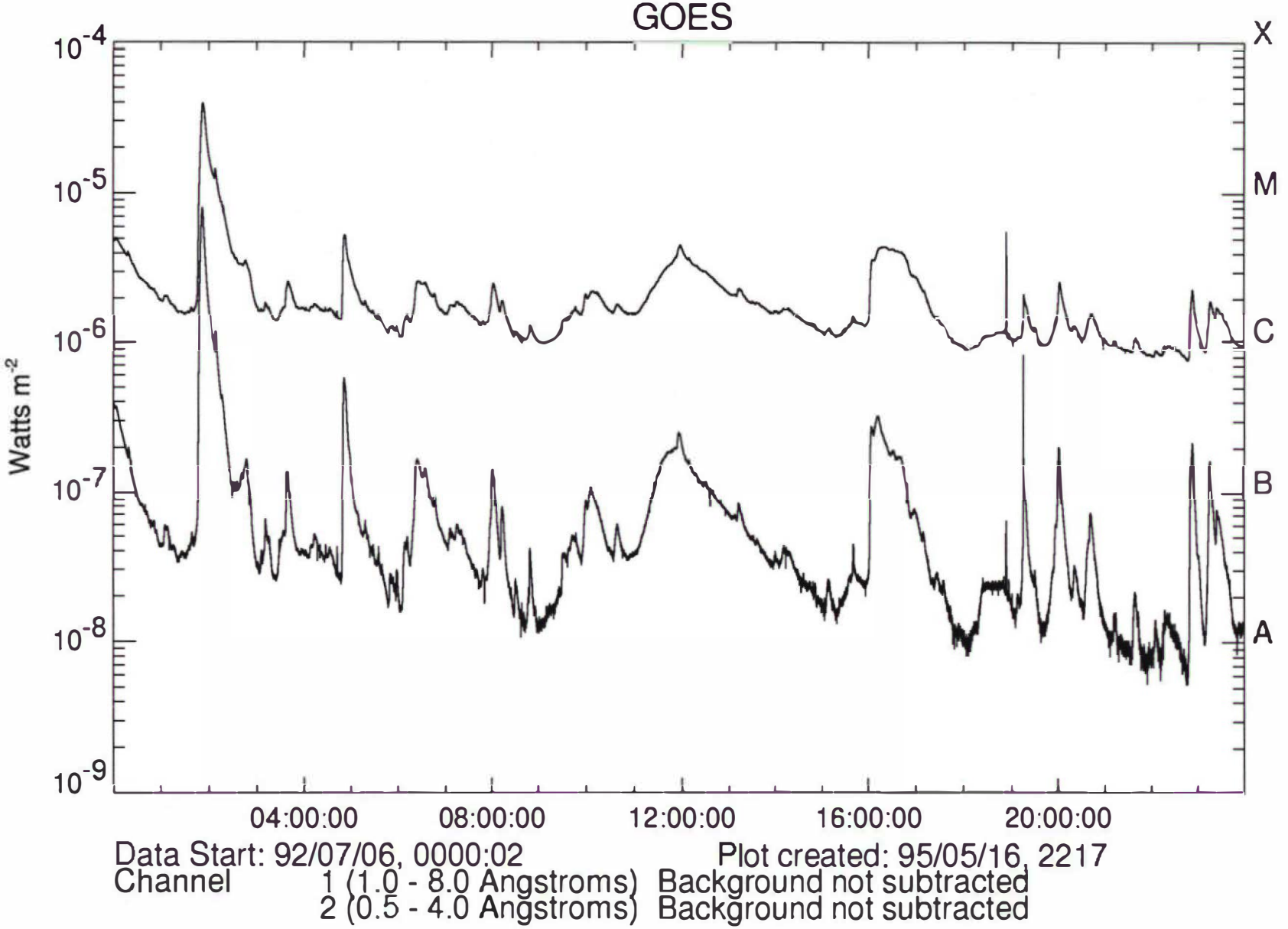
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

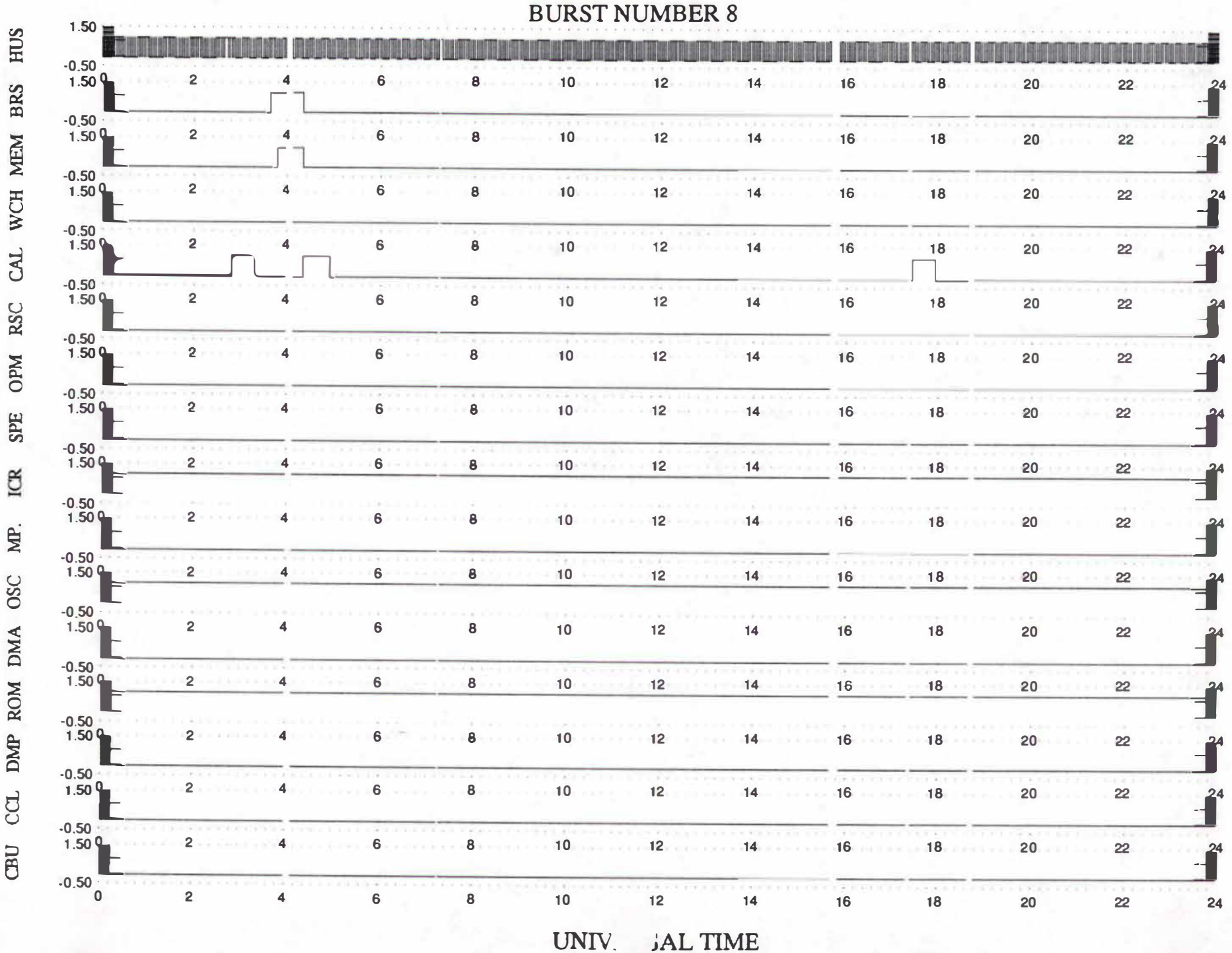
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
VOLTAGE CHANGE INDUCED TRIGGER!


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/06
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
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: 92/09/14, 2115 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

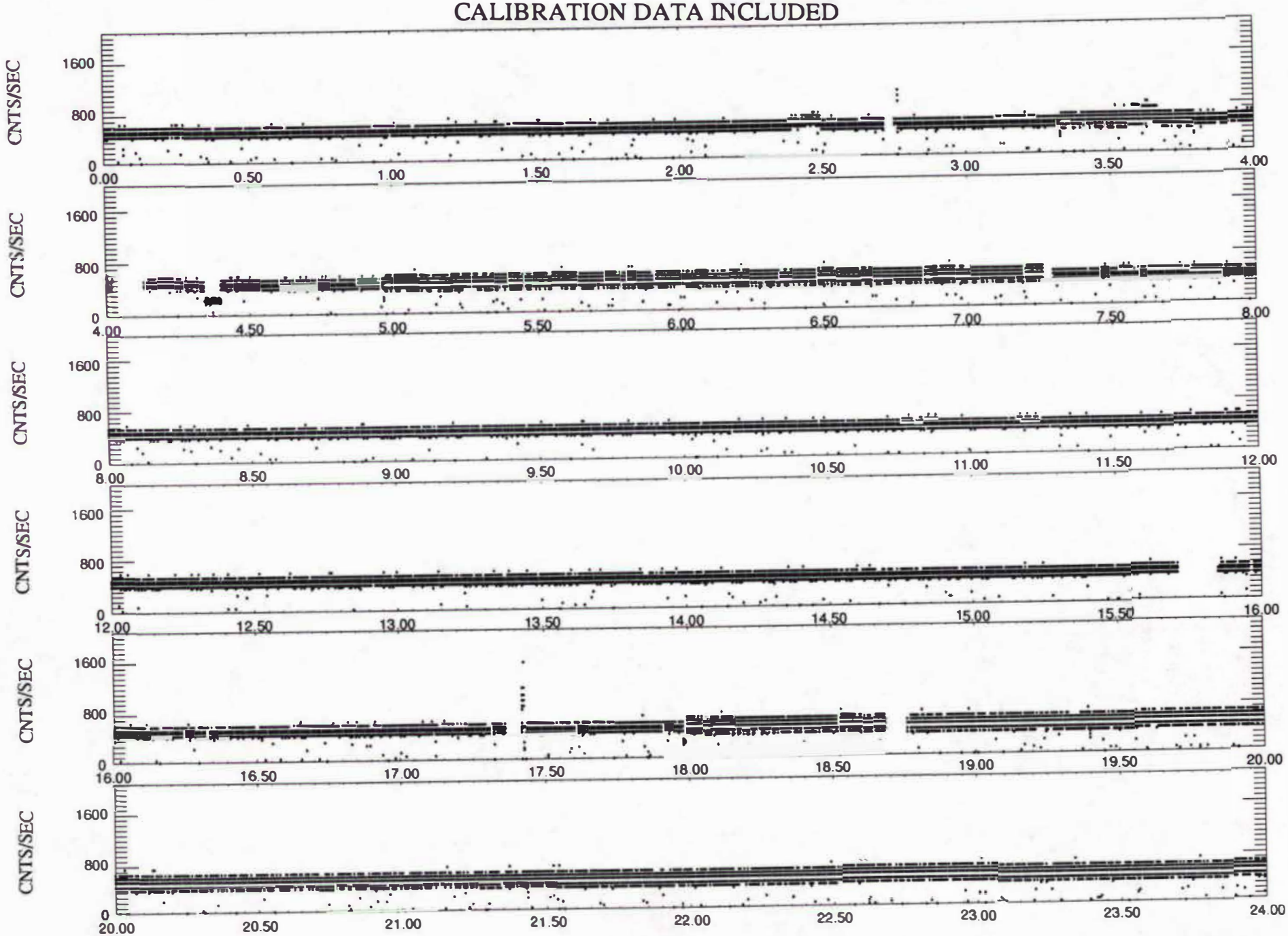

GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/06, 0000:02
Plot created: 95/05/16, 2217
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 188, year 1992 to day 188, year 1992 7/17/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 188, year 1992 to day 188, year 1992 7/17/92

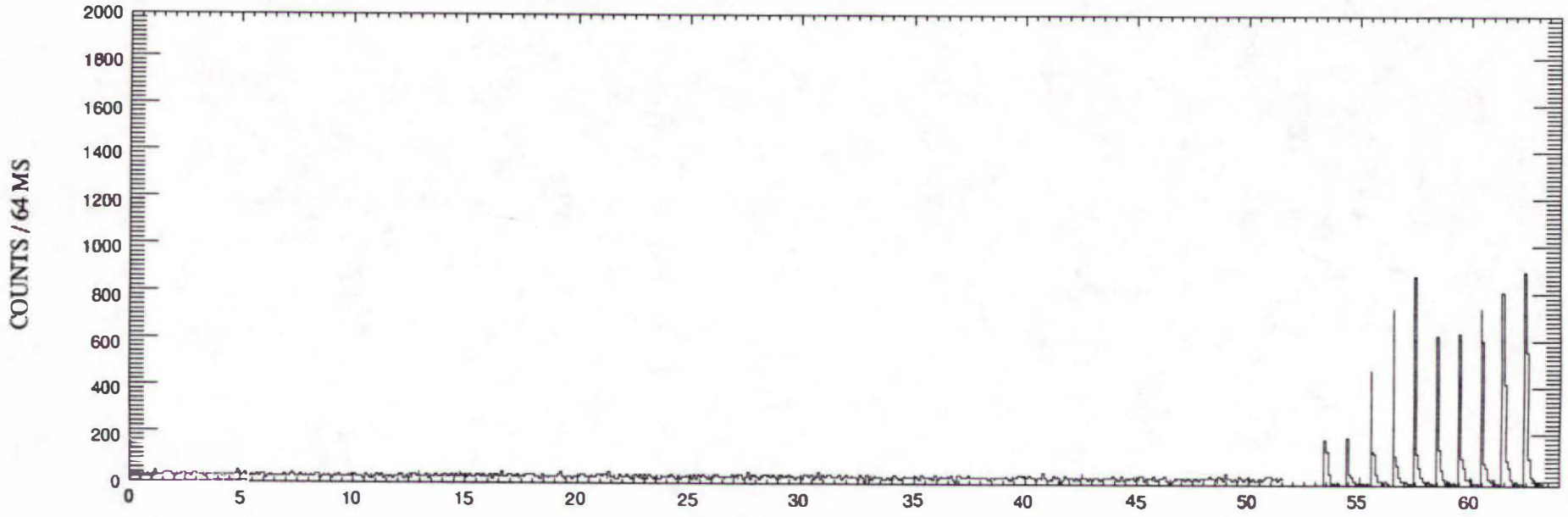
CALIBRATION DATA INCLUDED

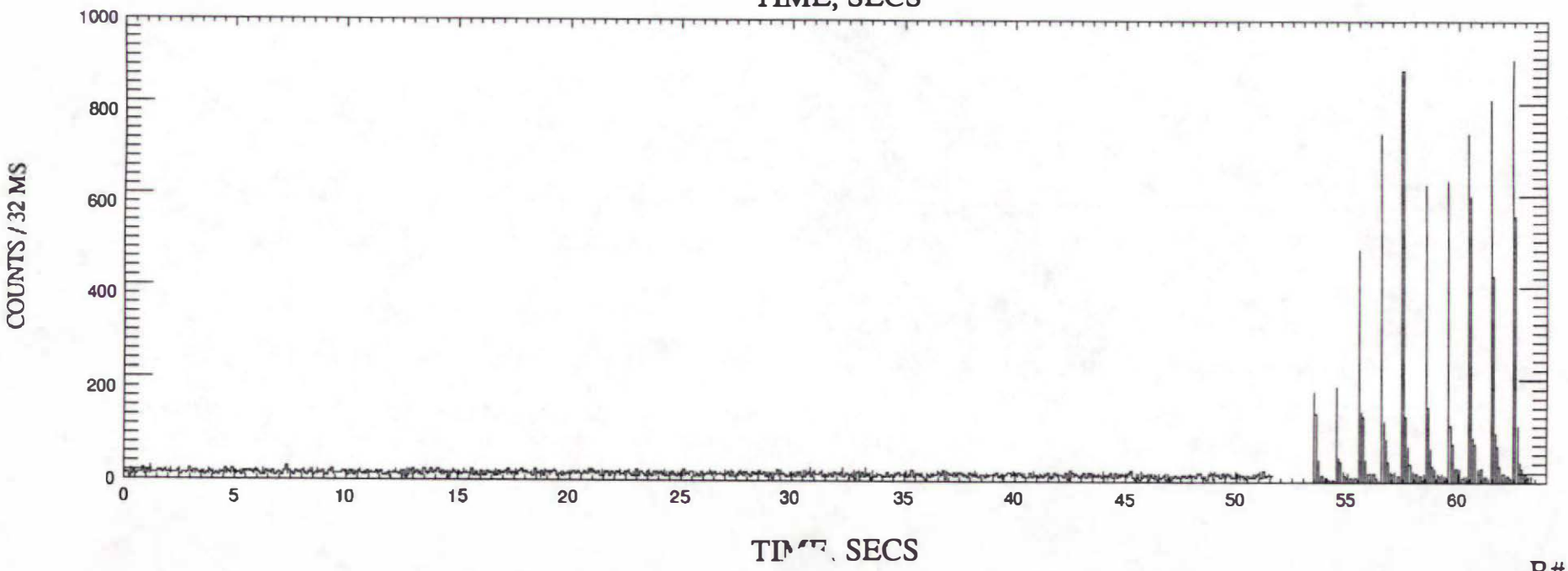


UNIV SAL TIME

HUS 2A TRIGGERED DATA EDR day 188, year 1992 7/17/92

Burst Counter 8 at UT= 3.641020660400 h=13107.674 s





B# 1

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

 BATSE BURST # 1687
 EVENT OF 1992 JUL  7 DAY OF YEAR=189
 EVENT CROSSING TIME AT BATSE     :  4100. S. OR 01:08:19.7
 COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 291.200  -24.900
 BATSE PEAK COUNTING RATE:  0000   C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 POSITION OF ULYSSES ON  7/ 7/  92 IS:
 RA=  150.819 DEC=    5.908 DIST=    5.982 AU
 BATSE-ULYSSES DISTANCE =  894941608. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 42.41 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2204.05 SECS.
 CROSSING TIME AT ULYSSES    IS  6304. S. OR 01:45:03.7 +/-  433.02 SECONDS
```

```
From WILSONB@ssl.msfc.nasa.gov Wed Jul  8 14:33:25 1992
Date:    Wed, 8 Jul 1992 16:34:15 -0500 (CDT)
From: WILSONB@ssl.msfc.nasa.gov (Robert B. Wilson (205)-544-7695)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

                BATSE BURST TRIGGER
NO.: 01687   July 7
TIME: TJD=8810 SECONDS=04099

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=125.5  AZIMUTH=147.0  ERROR=10.0  DEGREES

COMMENTS:
WEAK EVENT (800 C/S ABOVE 25 KEV). SHARP RISE, SLOW DECAY, DURATION
~45S.
```

No fig

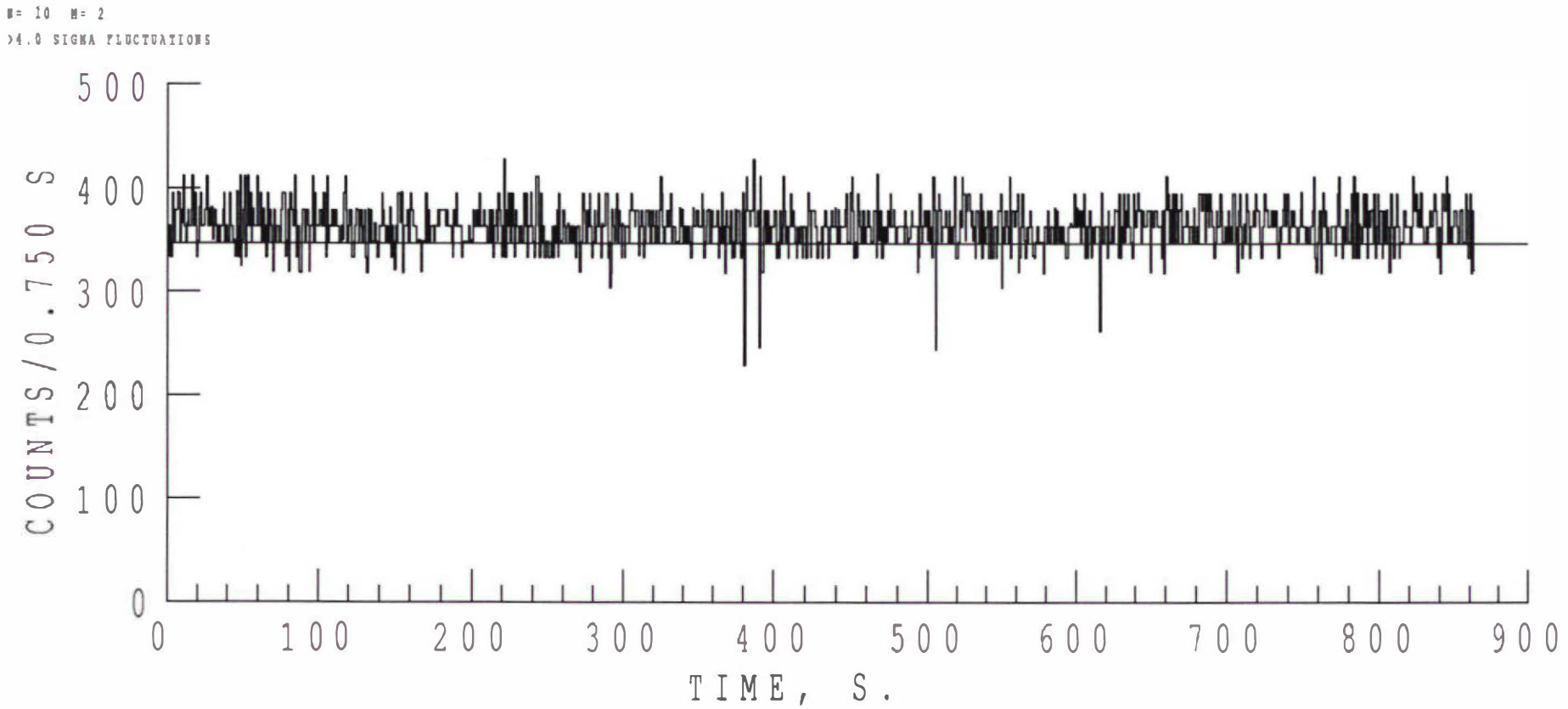
8/ 6/94

ULYSSES RT

7/ 7/92 5868.083 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



****
BATSEARCH PROGRAM
****

GRANAT
~~BATSE BURST~~ #
EVENT OF 1992 JUL 7 DAY OF YEAR=189
EVENT CROSSING TIME AT BATSE : 23615. S. OR 06:33:35.0
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 285.000 14.000
BATSE PEAK COUNTING RATE: 0 C/S
EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 7/ 7/ 92 IS:
RA= 150.819 DEC= 5.908 DIST= 5.982 AU
BATSE-ULYSSES DISTANCE = 894941608. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 49.63 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1933.62 SECS.
CROSSING TIME AT ULYSSES IS 25549. S. OR 07:05:48 +/- 474.22 SECONDS

Burst seen in Σ camera
partially coded FOV. Could
have come from B1900 + 14
with intensity ~ comparable to
a Mazets burst. Soft spectrum

Nothing in Ulysses data consistent with
this position

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

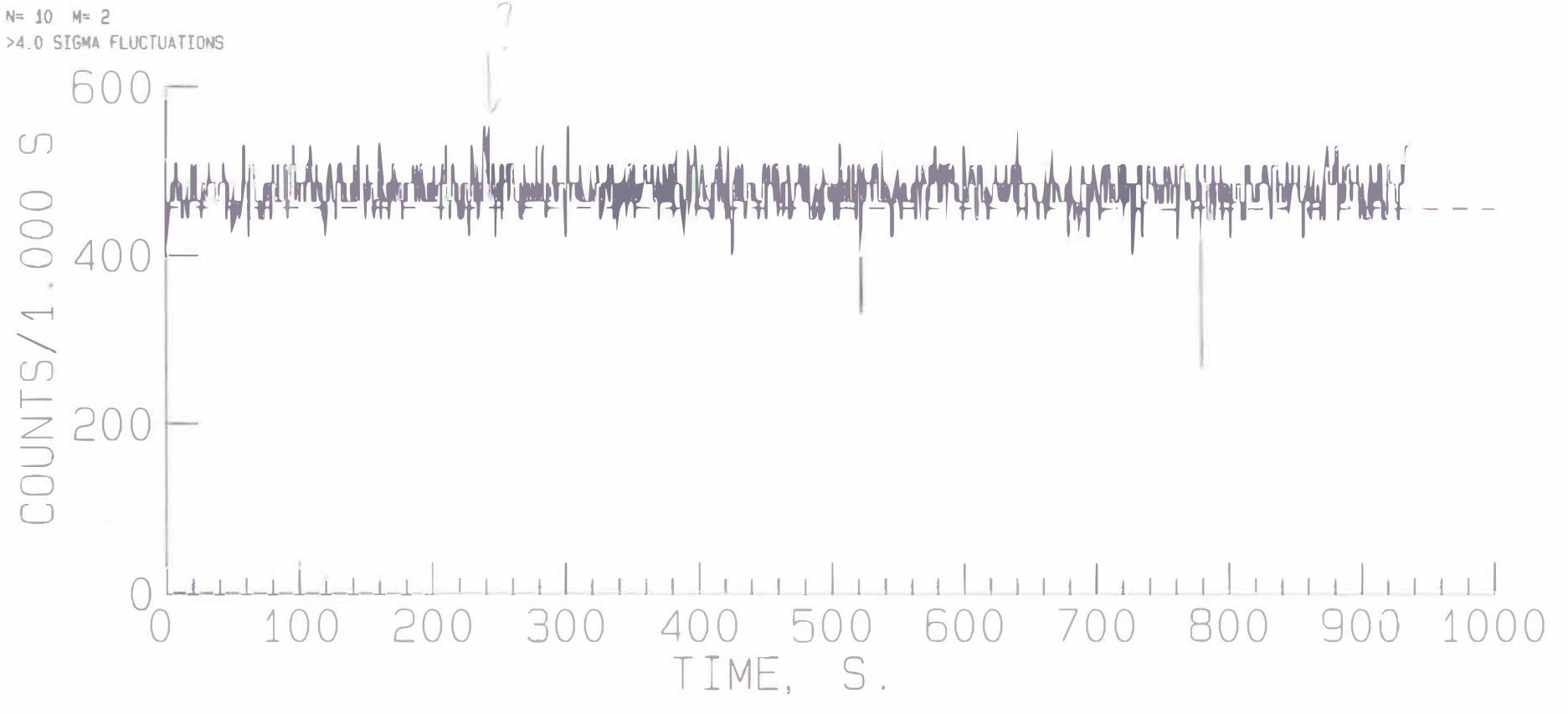
19/ 8/92

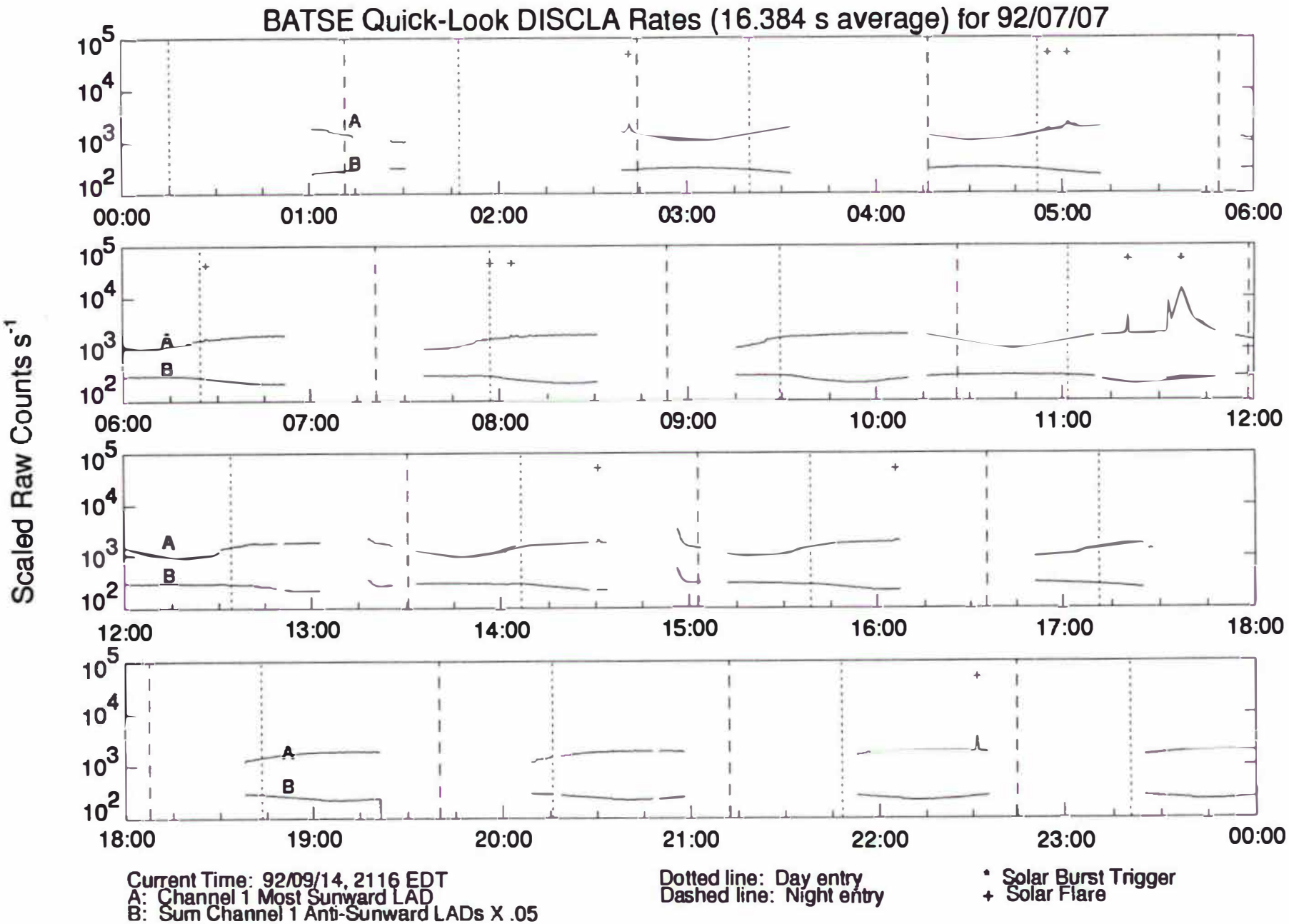
ULYSSES RT

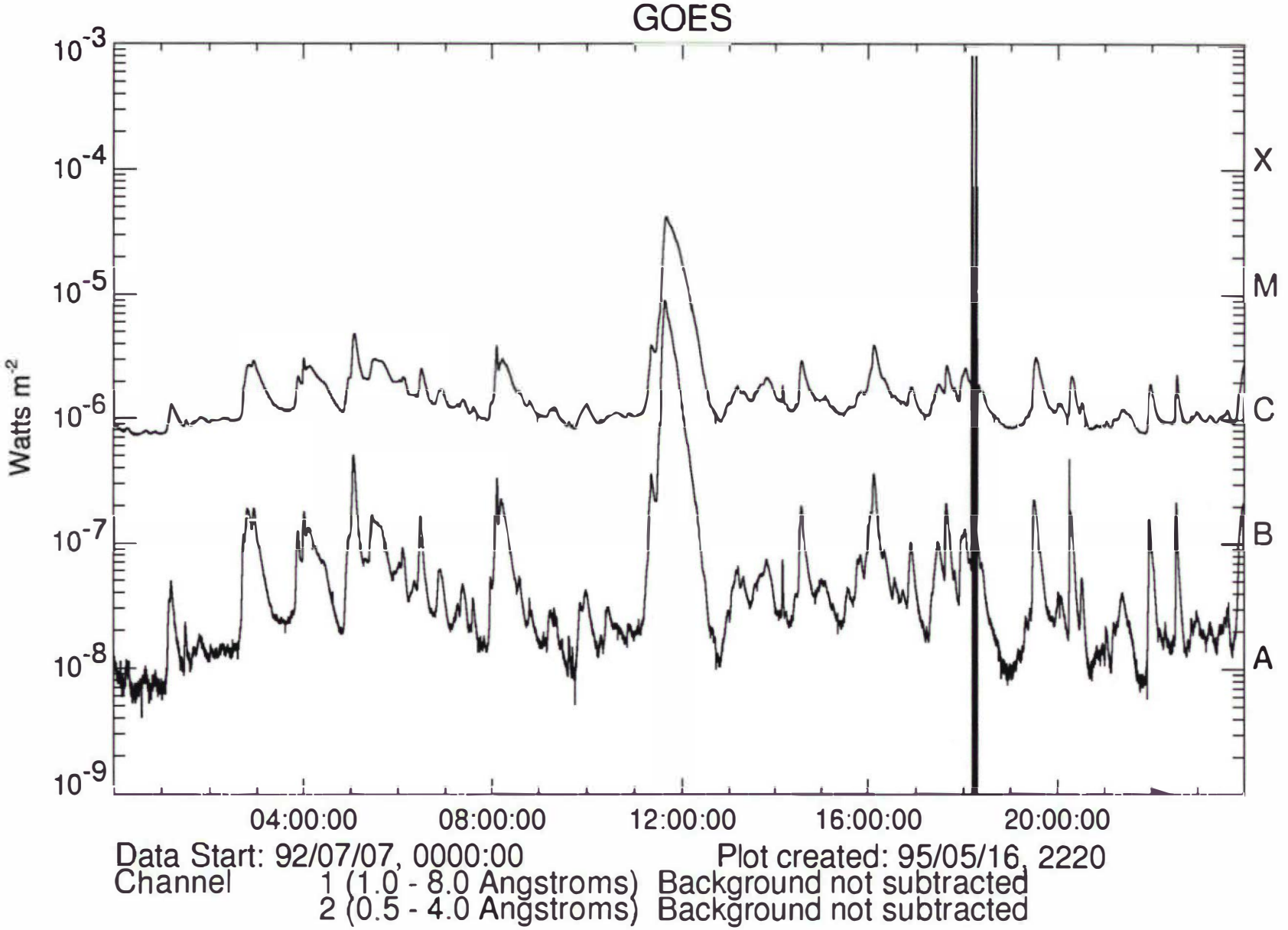
7/ 7/92 25092.393 s

.500 S INTERVALS REGROUPED BY 2

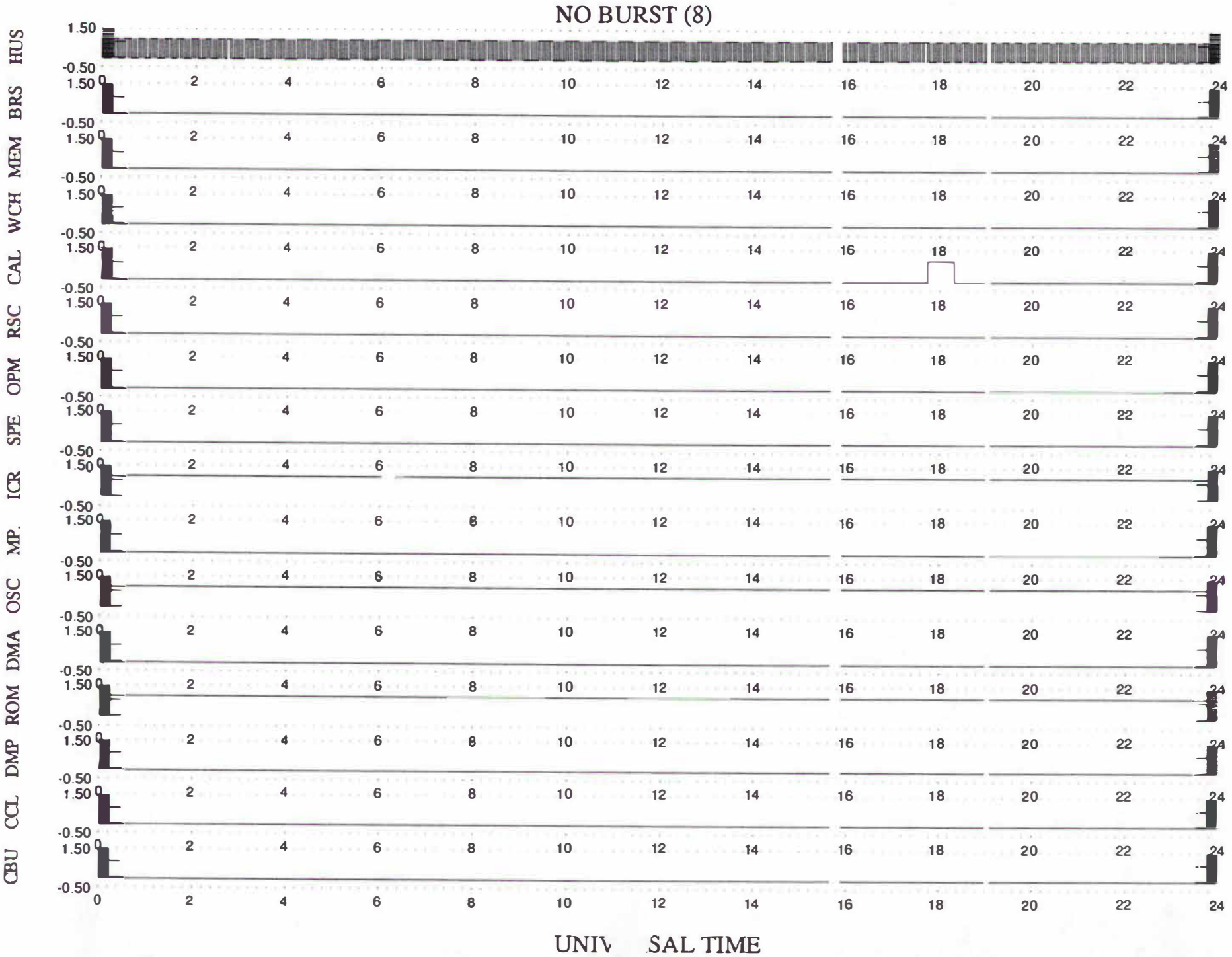
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/07
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
Current Time: 92/09/14, 2116 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

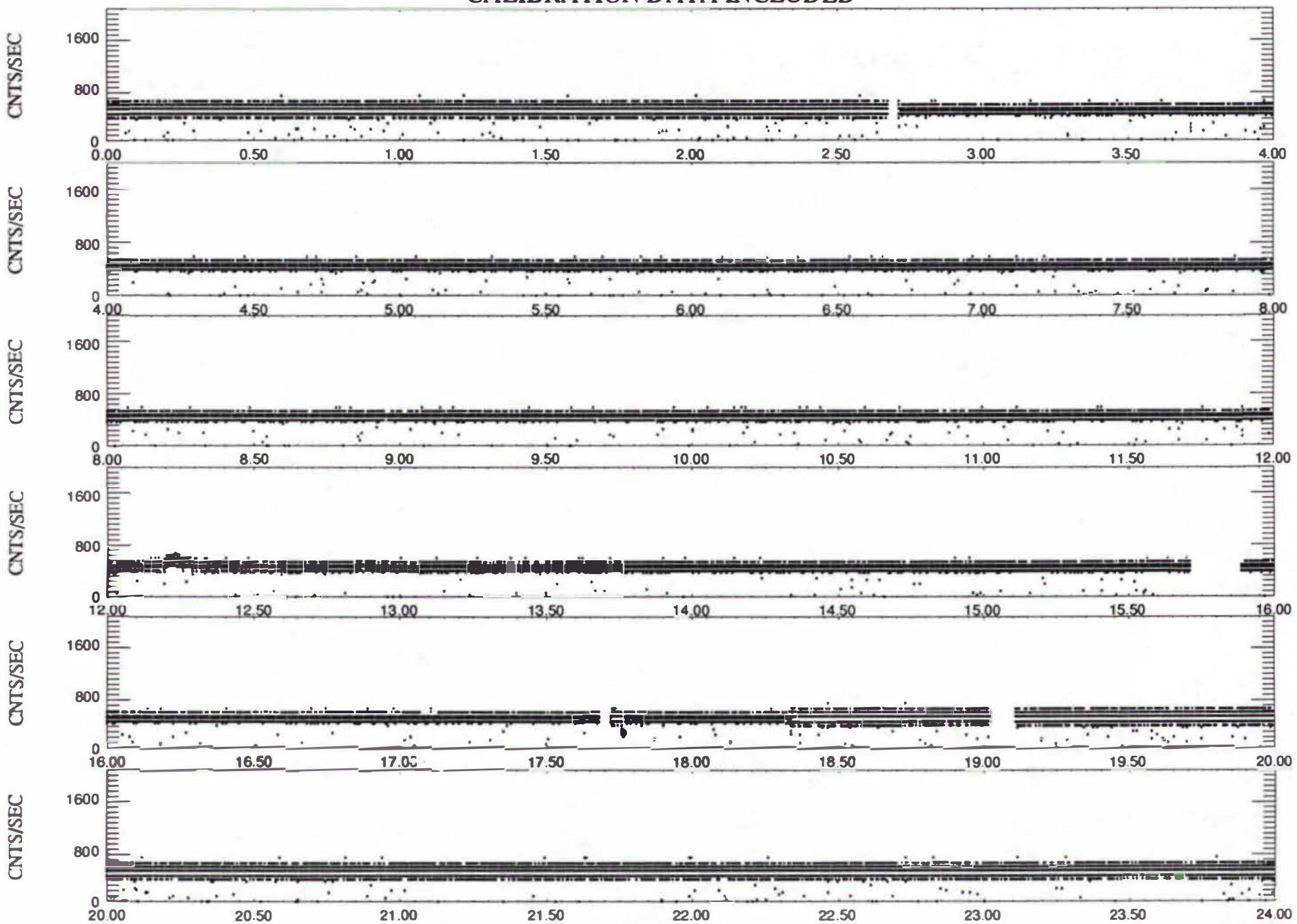

GOES
Watts m-2
10-3
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/07, 0000:00
Plot created: 95/05/16, 2220
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 189, year 1992 to day 189, year 1992 7/17/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 189, year 1992 to day 189, year 1992 7/17/92

CALIBRATION DATA INCLUDED



UNIV :AL TIME

From HORACK@ssl.msfc.nasa.gov Fri Jul 10 12:19:56 1992
Date: Fri, 10 Jul 1992 14:20:39 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01688

TIME: TJD=8811 SECONDS=16266

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
MOST LIKELY A WEAK PARTICLE EVENT. DATA FOR THIS PARTICULAR TRIGGER IS EXTREMELY INCOMPLETE. CIRCUMSTANCES INDICATE THAT IT LIKELY IS CAUSED BY PARTICLES

RT data files which may contain ~ 0.5 s timing error because they follow a trigger

2 hour time range	from beginning of burst that extract falls in:		DATA USED ?	
b02:0126	extract beg time:0244	e91270_2A1_02.73_02.84.ascii.Z	N	
b03:0219	extract beg time:0244	e91270_2A1_02.73_02.84.ascii.Z	N	
b01:0121	extract beg time:0310	e91360_2A1_03.16_03.37.ascii.Z	N	
[redacted]:0932	extract beg time:1025	e92010_2A1_10.42_10.48.ascii.Z	Y	(TRIGGER)
[redacted]:0845	extract beg time:1015	e92058_2A1_10.25_10.75.ascii.Z	N	&
b01:0609	extract beg time:0723	e92111_2A1_07.38_07.54.ascii.Z	N	
b01:0629	extract beg time:0634	e92174_2A1_06.57_06.87.ascii.Z	N	
b01:0541	extract beg time:0549	e92190_2A1_5.76_5.90.ascii.Z	Y	(SGR 1900) OK - The ½ s error occurs where the at changes from 0.5 to 1 s, and only the 0.5 s data were used.
b02:2032	extract beg time:2058	e92205_2A1_20.97_22.66.ascii.Z	Y	(TRIGGER)
b01:1202	extract beg time:1240	e92209_2A1_12.67_12.85.ascii.Z	N	
b01:1717	extract beg time:1831	e92213_2A1_18.51_18.82.ascii.Z	N	
b01:1142	extract beg time:1301	e92303_2A1_13.02_13.28.ascii	Y	
b03:0736	extract beg time:0844	q92313_2A1_8.70_8.96.ascii.Z	N	
b03:0736	extract beg time:0844	e92313_2A1_08.74_09.02.ascii.Z	N	
b14:1730	extract beg time:1905	q92314_2A1_19.08_19.30.ascii.Z	N	
b15:1825	extract beg time:1905	q92314_2A1_19.08_19.30.ascii.Z	N	
b02:0156	extract beg time:0344	e92315_2A1_3.10_3.36.ascii.Z	N	
b03:0322	extract beg time:0344	e92315_2A1_3.10_3.36.ascii.Z	N	
b06:0819	extract beg time:0844	e92315_2A1_8.71_8.85.ascii.Z	N	
b08:1211	extract beg time:1340	e92315_2A1_13.66_13.96.ascii.Z	N	
b08:1211	extract beg time:1344	e92315_2A1_13.74_14.03.ascii.Z	N	
b02:0600	extract beg time:0644	e92316_2A1_6.76_7.04.ascii.Z	N	
b02:0135	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b03:0227	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b04:0315	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b01:1105	extract beg time:1150	q93077_2A1_11.83_12.05.ascii.Z	Y	
b01:0745	extract beg time:0756	q93096_2A1_7.71_7.85.ascii.Z	Y	(TRIGGER)
b01:0745	extract beg time:0856	q93096_2A1_8.40_8.50.ascii.Z	N	
[redacted]:1445	extract beg time:1530	e93126_2A1_15.50_15.65.ascii.Z	N	
[redacted]:1445	extract beg time:1548	e93126_2A1_15.80_15.95.ascii.Z	N	
b01:0334	extract beg time:0434	e93265_2A1_04.56_04.64.ascii.Z	N	
b01:0900	extract beg time:0943	e93272_2A1_09.71_09.98.ascii.Z	Y	(SGR 1806)
b01:1654	extract beg time:1707	e93287_2A1_17.11_17.37.ascii.Z	Y	
b01:2215	extract beg time:2240	e93294_2A1_22.67_22.85.ascii.Z	N	
b01:0824	extract beg time:0840	e93303_2A1_08.66_08.81.ascii.Z	N	
b01:0352	extract beg time:0510	e93318_2A1_05.17_05.42.ascii.Z	N	
b01:0641	extract beg time:0824	e93340_2A1_08.40_08.61.ascii.Z	N	
b02:0602	extract beg time:0733	e94026_2A1_07.55_07.71.ascii.Z	N	
b05:1140	extract beg time:1240	e94044_2A1_12.66_12.76.ascii.Z	Y	
b01:0204	extract beg time:0326	e94047_2A1_03.44_03.62.ascii.Z	N	
b01:0113	extract beg time:0124	e94049_2A1_01.40_02.50.ascii.Z	N	
b03:1943	extract beg time:2123	e94058_2A1_21.38_21.49.ascii.Z	N	
b01:0346	extract beg time:0505	e94061_2A1_05.08_05.25.ascii.Z	Y	(Trigger; but RT data probably used)
b01:0047	extract beg time:0128	e94062_2A1_01.47_01.63.ascii.Z	N	
b01:2113	extract beg time:2142	e94202_2A1_21.70_21.98.ascii.Z	N	
b01:2113	extract beg time:2144	e94202_2A1_21.74_22.14.ascii.Z	N	
b01:1047	extract beg time:1143	e94242_2A1_11.71_11.86.ascii.Z	N	
b01:0647	extract beg time:0728	e94298_2A1_07.47_07.51.ascii.Z	N	
b01:0128	extract beg time:0241	e94299_2A1_02.68_02.80.ascii.Z	Y	
b09:1148	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b10:1238	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b11:1328	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b01:1952	extract beg time:2040	e94326_2A1_20.66_20.78.ascii.Z	N	
b01:0223	extract beg time:0406	e95042_2A1_04.10_04.76.ascii.Z	N	
[redacted]:0640	extract beg time:0740	e95072_2A1_07.67_07.81.ascii.Z	N	
[redacted]:0144	extract beg time:0158	e95216_2A1_01.96_02.09.ascii.Z	Y	(Trigger)
b02:1628	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	N	
b03:1718	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	N	
b01:1124	extract beg time:1205	e95362_2A1_12.09_12.87.ascii.Z	N	

```
b04:1343  extract beg time:1540  e95362_2A1_15.67_15.84.ascii.Z Y
b04:1343  extract beg time:1541  e95362_2A1_15.69_15.85.ascii.Z Y
b05:1516  extract beg time:1540  e95362_2A1_15.67_15.84.ascii.Z Y
b05:1516  extract beg time:1541  e95362_2A1_15.69_15.85.ascii.Z Y
b01:0053  extract beg time:0251  e96002_2A1_02.85_03.62.ascii   N
b02:0216  extract beg time:0251  e96002_2A1_02.85_03.62.ascii   N
b20:1956  extract beg time:2041  e96002_2A1_20.68_20.76.ascii   N
b20:1956  extract beg time:2041  e96002_2A1_20.69_20.76.ascii   N
b02:0128  extract beg time:0305  e96004_2A1_03.09_03.87.ascii.Z N
b03:0235  extract beg time:0305  e96004_2A1_03.09_03.87.ascii.Z N
b05:1621  extract beg time:1656  e96006_2A1_16.93_17.08.ascii.Z N
b01:0116  extract beg time:0150  e96007_2A1_01.84_01.95.ascii    N
b01:0116  extract beg time:0152  e96007_2A1_01.87_01.99.ascii    N
b01:1819  extract beg time:1935  e96028_2A1_19.59_19.87.ascii.Z Y  (GR 1744 ?- MAYBE USED FOR NETSYN?)
b01:0208  extract beg time:0233  e96030_2A1_02.55_02.66.ascii.Z Y      "       "       "
b01:0208  extract beg time:0235  e96030_2A1_02.58_02.73.ascii.Z Y      "       "       "
b01:0208  extract beg time:0235  e96030_2A1_02.59_02.73.ascii.Z Y      "       "       "
b01:0849  extract beg time:0949  qp96032_2A1_09.81_09.94.ascii.Z Y      "       "       "
b02:2011  extract beg time:2144  qp96032_2A1_21.74_21.90.ascii.Z Y
b01:1929  extract beg time:2049  qp96051_2A1_20.82_20.85.ascii.Z N
b01:1929  extract beg time:2049  qp96051_2A1_20.82_20.86.ascii.Z N
b01:1529  extract beg time:1719  qp96094_2A1_17.32_17.48.ascii.Z N
b01:1529  extract beg time:1722  qp96094_2A1_17.36_17.52.ascii.Z N
b01:1652  extract beg time:1752  qp96168_2A1_17.87_17.97.ascii.Z N
b01:1652  extract beg time:1755  qp96168_2A1_17.91_18.05.ascii.Z N
```

From HORACK@ssl.msfc.nasa.gov Fri Jul 10 12:23:13 1992
Date: Fri, 10 Jul 1992 14:24:07 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01689

July 8

TIME: TJD=8811 SECONDS=18957

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=137 AZIMUTH=190 ERROR= DEGREES

COMMENTS:
SOFT AND SHORT BURST LASTING APPROXIMATELY 1/2 SECOND. SINGLE SPIKE LASTING LESS THAN 0.064 SEC, FOLLOWED BY SOME ADDITIONAL EMISSION. HIGH-TIME RESOLN. DATA NOT AVAILABLE.

SGR - No trig

From williams Fri Jul 12 18:37 PDT 1996
Date: Fri, 12 Jul 1996 18:37:40 -0700
From: williams (Roger Williams)
To: khurley@sunspot
Subject: LIST_OF_PROBS

~½ s timing error?

1 hour time range from beginning of burst that extract falls in:

b03:0219	extract beg time:0244	e91270_2A1_02.73_02.84.ascii.Z	BATSE 825; not det.
b09:0932	extract beg time:1025	e92010_2A1_10.42_10.48.ascii.Z	BATSE 1269; not det
b01:0629	extract beg time:0634	e92174_2A1_06.57_06.87.ascii.Z	BATSE 1662; not det.
b01:0541	extract beg time:0549	e92190_2A1_5.76_5.90.ascii.Z	SGR 1900 - could have been used for network syn.
b02:2032	extract beg time:2058	e92205_2A1_20.97_22.66.ascii.Z	
b01:1202	extract beg time:1240	e92209_2A1_12.67_12.85.ascii.Z	
b15:1825	extract beg time:1905	q92314_2A1_19.08_19.30.ascii.Z	
b03:0322	extract beg time:0344	e92315_2A1_3.10_3.36.ascii.Z	
b06:0819	extract beg time:0844	e92315_2A1_8.71_8.85.ascii.Z	
b02:0600	extract beg time:0644	e92316_2A1_6.76_7.04.ascii.Z	
b04:0315	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	
b01:1105	extract beg time:1150	q93077_2A1_11.83_12.05.ascii.Z	
b01:0745	extract beg time:0756	q93096_2A1_7.71_7.85.ascii.Z	
b01:1445	extract beg time:1530	e93126_2A1_15.50_15.65.ascii.Z	
b01:0334	extract beg time:0434	e93265_2A1_04.56_04.64.ascii.Z	
b01:0900	extract beg time:0943	e93272_2A1_09.71_09.98.ascii.Z	
b01:1654	extract beg time:1707	e93287_2A1_17.11_17.37.ascii.Z	
b01:2215	extract beg time:2240	e93294_2A1_22.67_22.85.ascii.Z	
b01:0824	extract beg time:0840	e93303_2A1_08.66_08.81.ascii.Z	
b05:1140	extract beg time:1240	e94044_2A1_12.66_12.76.ascii.Z	
b01:0113	extract beg time:0124	e94049_2A1_01.40_02.50.ascii.Z	
b01:0047	extract beg time:0128	e94062_2A1_01.47_01.63.ascii.Z	
b01:2113	extract beg time:2142	e94202_2A1_21.70_21.98.ascii.Z	
b01:2113	extract beg time:2144	e94202_2A1_21.74_22.14.ascii.Z	
b01:1047	extract beg time:1143	e94242_2A1_11.71_11.86.ascii.Z	
b01:0647	extract beg time:0728	e94298_2A1_07.47_07.51.ascii.Z	
b11:1328	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	
b01:1952	extract beg time:2040	e94326_2A1_20.66_20.78.ascii.Z	
b01:0144	extract beg time:0158	e95216_2A1_01.96_02.09.ascii.Z	
b02:1628	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	
b03:1718	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	
b01:1124	extract beg time:1205	e95362_2A1_12.09_12.87.ascii.Z	
b05:1516	extract beg time:1540	e95362_2A1_15.67_15.84.ascii.Z	
b05:1516	extract beg time:1541	e95362_2A1_15.69_15.85.ascii.Z	
b02:0216	extract beg time:0251	e96002_2A1_02.85_03.62.ascii	
b20:1956	extract beg time:2041	e96002_2A1_20.68_20.76.ascii	
b20:1956	extract beg time:2041	e96002_2A1_20.69_20.76.ascii	
b03:0235	extract beg time:0305	e96004_2A1_03.09_03.87.ascii.Z	
b05:1621	extract beg time:1656	e96006_2A1_16.93_17.08.ascii.Z	
b01:0116	extract beg time:0150	e96007_2A1_01.84_01.95.ascii	
b01:0116	extract beg time:0152	e96007_2A1_01.87_01.99.ascii	
b01:0208	extract beg time:0233	e96030_2A1_02.55_02.66.ascii.Z	
b01:0208	extract beg time:0235	e96030_2A1_02.58_02.73.ascii.Z	
b01:0208	extract beg time:0235	e96030_2A1_02.59_02.73.ascii.Z	
b01:0849	extract beg time:0949	qp96032_2A1_09.81_09.94.ascii.Z	

are well fitted with an optically thin thermal bremsstrahlung (OTTB) function with temperatures between 30 and 40 keV (refs 4, 14) and show no evidence for spectral evolution[4]. The total numbers of events so far observed from SGR0526−66, SGR1900+14 and SGR1806−20 are 16, 3 and over 100, respectively, with intervals between events that vary stochastically from hours to years.

The first SGR event detected with BATSE[7] (Fig. 1*a* and *b*) consists of two pulses separated by ~0.5 s. The first pulse (Fig. 1*a*) lasts 40 ms and has a trapezoidal shape. It initially rises

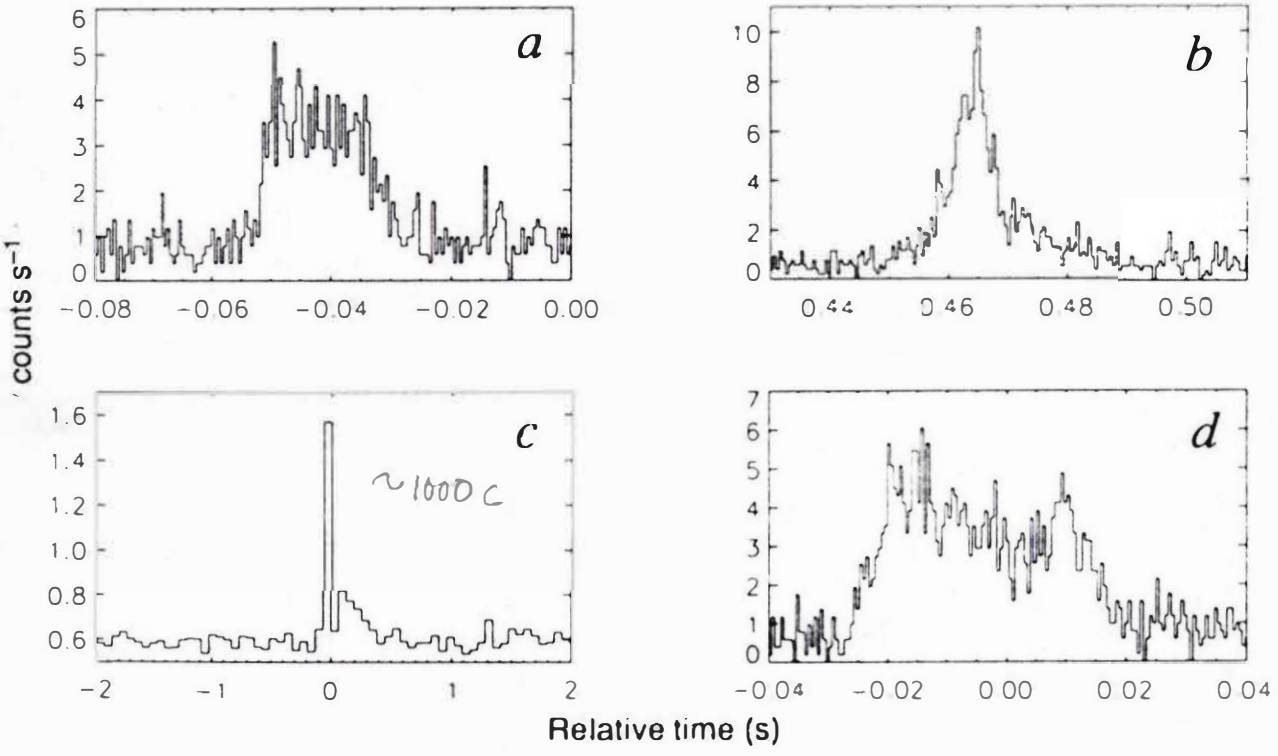


FIG. 1 Light curves of the three SGR bursts detected with the Burst and Transient Source Experiment (BATSE) on the Compton Gamma Ray Observatory. BATSE is unique in combining good sensitivity to weak γ-ray and SGR-like bursts with the capability of determining their locations in a single experiment. *a*, *b*, First and second pulse, respectively, of the 19 June 1992 trigger. The counts are integrated between 20 and 100 keV. Time resolution is 0.512 ms. *c*, Event of 8 July 1992 recorded with 64-ms time resolution (the only resolution available). The initial spike of <64 ms appears only up to 100 keV. *d*, Event of 19 August 1992 recorded with 0.512-ms resolution between 20 and 100 keV. Notice the similarity in structure between *a* and *d*.

```
         9 071  8432 GRB, PEAKS 8431.7,8437.4 @102DEG                      8430-448
        11 071  8429 GRB, VERY WEAK PEAKS 8429.2,8433.2 @38  (10NR@162)  8433-441
920325     085 62258 BATSE GRB, STRONG, SPIKY, RA6.5,DEC-8.5 (BNEWS17)
           085 61525 PVO TRIG 61525.5 @1.57A.U.
         8 085 62228 GRB, PEAKS 62228.2WEAK,256.2,282.2WEAK @107DEG      62230-284
         9 085 62256 GRB, PEAKS 62256.1,62278.1 @100 (10NA@60,11NRAD)    62258-282
920331     091 65750 BATSE GRB, INTENSE,110SEC, RA256,DEC33 (BNEWS18)
        10 091 65848 SOFT PEAKS 65805.9VW,847.9 @108 (GLIT65866)8SR,9SR 65811-859
        11 091 65750 PEAKS 65749.7,755.7,GAP781-831,843.7,849.7 @90DEG  65747-855
920403     094 86400   END OF DMSP-9 DATA
920406     097  9855 BATSE GRB,V.INTENSE,RA293,D-60(BN19) PVOTRIG9756.4
         8 097  9855 NO DET @141DEG (10SR,11NO @137DEG)
920408   8 099~37700 BURST? (10SRAD,11NA) (BATSE OFF)
920423   8 114~78600 HIGH SOFT BURST? (10NR,11NA) (BATSE OFF)
920501     122 76695 BATSE GRB,CMPLX,HARD.ULYS,PVO 123.84,-32.76(2000.0)
           122 76695 BATSE GRB: IAU5547,BN20 (123.35,-32.61(1950))
         8 122 76695 NO BURST@127(10NO@157,NO@147) (PVO TRIG 76840.7)
920517     138 11875 BATSE GRB,EX.INT.,RA201.0,DEC-21.9(2000.0) +PVO,UL
           138 11875 BATSE GRB:IAU5547(200.9,-21.8(1992)) (PVO 12672.8)
         8 138 11882 GRB, PEAK 11882.0(1000C/S) @54.6  JUST BEFORE SRAD 11878-888
        10 138 11885 GRB, PEAK 1184.6 (700C/S) @78.8 (11SRAD)           11886-892
920518   8 139~82100 BURST?, ALSO ~82400 (10NA,11NA) (BATSE OFF)
920519  10 140~59400 GRB (8SR,11NA) (PVO TRIGGER 59211.9) PHOEBUS/GRAN

                                                    TERRELL/DMSP.GAM 930505
920525     146 12427 BATSE GRB,V.INT.,RA302.4,D-43.6(2000.0) +PVO,ULYSS
           146 12427 BATSE GRB:IAU5547(302.2,-43.6(1992)) (PVO 12882.0)
        11 146 12427 GRB, STR PEAKS 12426.9,434.9,440.9UNRES(8SR,10NR)  12432-446
920615  10 167         GLITCHES END ON DMSP10 UNTIL 6/22 (MODE CYCLES)
        11 171~64666 WEAK BURST @96DEG (8NO @75, 10NA @68) (IAU5567)
920619     171 64666 BATSE SOFTREPEATER SGR,RA287,D11(1950?)(8,10,11NO)
920622     174 25506 BATSE HARD GRB, L172,B51 (GRONEWS #73,TRIG 1663)
         8 174~25506 NO DMSP DETECTION (8SAA,10NR,11SAA)
920623     175  3634 BATSE GRB (LAROS) (8NA,10YES?,11NA)
920625   8 177         HIGH POLAR COUNTS (ALSO DMSP10,11)
920628  10 180 76452 GRB PEAK 76452.3(250/S),464.3(350/S) (8ND,11NO)
           180 76453 GRB, PHOEBUS/GRANAT, GRO N/O
920629  10 181         GLITCHES END (MODE CHANGE)
920629  10 181 75897 SOFT BURST, PEAKS 75897.4,907.4 SUN@108(BATSE OFF) 75891-921
        11 181 75896 SOFT BURST, PEAKS 75896.0,906.0 ANGSUN=124 (8NA)   75888-920
920630  11 182 21781   GLITCH, RECURRING TO 920707 (MODE)
920630     182 86400   LEAP SECOND INTERCALATED HERE
920708     190 18957 BATSE SOFT REPEATER AGAIN (SEE 920619)(B1908+11)
         8 190~18957 NO DMSP BURST (8NO@70,10NO@52,11SAA)
920711     193 58157 BATSE GRB+PVO+ULY RA281.9,D73.0(2000.0) (IAU5565)
         8 193 58157 GRB PKS 58157.9(300/S),63.9,221.9,225.9,235.9@56.1 58160-238
        10 193 58157 GRB PKS157.8(550/S),65.8,73.8,81.8,221.8,25.8 @101 58159-249
        11 193 58157 NOT USEFUL (N.RAD)
920714     196 47071 GRANAT GRB(219.8,-29.9(1950))IAU5579(8,11NA,10SAA)
920716  10 198 60933 SOFT BURST PKS 60933.4(200/S),949.4(200),SUN@58.1
        11 198 60933 SOFT(1DET)PKS60933.4(150/S),949.4(200),SUN85.9,8NA
           198 60934 GRB,SIGMA/GRANAT
920720     202 11524 GRB BAT,ULY (PVO 11155)(202.94,36.74,J)(8,10,11NA)
920723     205 72188 GRANAT GRB(285.7,26.8(1950))IAU5579(8ND,10NA,11NR)
           205 72694 PVO TRIGGER, 72694.1
920805     218 ?     BATSE HARD X-RAY TRANSIENT,RA66,D32,VAR.,IAU5580
```

From @UCBSP.SSL.BERKELEY.EDU:046369@ESSDP2.SPAN.NASA.GOV Wed May 5 13:41:17 1993
Date: Tue 5 May 92 13:42:27-PST
From: $C <046369@ESSDP2.SPAN.NASA.GOV>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail] DMSP GRB DATA
Content-Length: 8912

Received: from ESSDP2 by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
DECnet; Tue, 5 May 92 13:40:33-PST
Date: Tue 5 May 92 13:40:33-PST
From: 046369@ESSDP2.SPAN.NASA.GOV
Subject: DMSP GRB DATA
To: "UCBSP::KHURLEY"@ESSDP2.SPAN.NASA.GOV

FROM: ESSDP2::TERRELL 93/05/05
TO: UCBSP::KHURLEY
CC: BATSE::KOUVELIOTOU
SUBJ: DMSP GRB DATA

HERE IS A PARTIAL LIST OF 1992 DMSP GAMMA-RAY-BURST DATA, AS OF TODAY.
OTHER DATA APPEARING TO CONFIRM UNCONFIRMED EVENTS IN YOUR LISTING IS
BEING EXTRACTED, AND I WILL CHECK IT OUT WHEN I RETURN FROM HOUSTON.
THANKS FOR YOUR CONTINUING HELP--JIM TERRELL

DMSP GAMMA PEAKS 90281-92305 CHECKED,2-SEC CTS,TERRELL/DMSP.GAM 930505
ORBITAL PERIODS FOR 8,9,10: 6110,6080,6040SEC. ALT=800KM. INCLIN=99DEG
GRB PEAK TIMES CORRECTED (8,9,10=11) FOR AVG DELAYS: 1.82,1.98,5.50SEC
CHANS: (8)50,100,200,420 (9)50,100 (10,11)20,100,200,430,550(-1000KEV)

DATE	FL	DAY	TIME	NOTES--------(ND=NO DATA,NA=NOT APPARENT)----NOTES	DATATIMES
920101		001	0	JD8622.5	
920110		010	33480	BATSE GRB (16XMIN) (8ND,9NA,10SAA,11NA)	
920122		022		NO DMSP TAPES, DAYS 22-25 (92022-25)	
920126	9	026	55714	BURST? WIDE SOFT PEAK 55714.0 (4KC/S)(8SRAD,11SAA)	55646-768
	10	026	55704	STR SOFT BURST,COMPLEX PEAKS 55704.2,714.2(3KC/S)	55624-748
		026	55667	PVO TRIGGER (BURST?) AT 55666.9	
920210		041	35625	BATSE GRB,MOD STRONG RA154,DEC49 8NO,10SAA,11SAA	
	9	041	35633	VERY WEAK SOFT BURST,PEAKS 35632.6,636.6	35635-639
920211	8	042	15773	STRONG HARD BURST(+CHG),PEAKS 15772.7-4.7(2500C/S)	15765-783
	9	042	15775	STRONG HARD BURST, PEAK 15774.7(7KC/S) (BATSE OFF)	15761-791
	10	042	15776	STRONG HARD BURST,PEAK 15775.6(1700C/S) +SOFT BASE	15775-785
	11	042	15776	STRONG HARD BURST, PEAK 15775.8(12KC/S),ASYMM RESP	15765-799
		042	15631	PVO TRIGGER 15630.7 (0.7 HARDNESS RATIO)	
920214	9	045	83249	SHARP SOFT BURST, PEAK 83249.4 (8ND=NO DATA)	83243-273
	10	045	83250	SHARP SOFT BURST, PEAK 83250.1 (1000C/S),254.1	83244-280
	11	045	83250	SHARP SOFT BURST PEAKS 83249.8 (8KC/S),265.8	83237-295
		045	83066	BATSE SOLAR FLARE#2721, PEAK 83252(70K/S)&~83267	
920216	8	047	45219	STRONG SOFT BURST,PEAKS 45219.3,223.3(1KC/S)(10NO)	45177-239
	9	047	45220	STRONG SOFT BURST, PEAK 45219.7 (2KC/S)	45214-236
	11	047	45220	STRONG SOFT BURST,PEAKS 45184.2,196.2,220.2(8KC/S)	45180-252
		047	45052	PVO TRIGGER (BURST?) 45052.5	
920311		071	8426	BATSE GRB,VERY INTENSE,2PEAKS,RA129,D-40 (BNEWS16)	
	8	071	8431	GRB, PEAKS 8431.4,8437.4 @63DEG (PVO TRIG 8887.3)	8429-443

FAX TO MICHAEL SOMMER, MAX-PLANCK GARCHING

Dear Michael,

Although we both agree that this event is not related to the soft repeater (unfortunately!) there are still some points that we should clarify, I think. One is the low energy responses of Ulysses and BATSE. I thought about this problem when I studied the event. The nominal BATSE energy range is 25 keV and above, for the large area detectors. I calculated the Ulysses lower energy threshold to be 22 keV at the time of this event, which is very close to BATSE's. Our threshold is, of course, not well-defined, due to the discriminator and the energy resolution, which gives us some response down to perhaps 15 keV, but not with very good efficiency. BATSE's threshold is also not well-defined, due to energy resolution, mostly. But I concluded that it would have taken a very large excess of soft X-rays from the source to account for the difference in count ratios.

The second problem is more serious. It concerns the trigger time. I am pretty convinced that it was at 20502.209 seconds. I calculated this several times, and got several wrong answers - normally, I cross-check my calculation by looking at the real-time data, but in this case, the increase was too small to be a reliable indicator. So I finally cross-correlated the triggered time history with the real-time data, to obtain the plot which follows. The maximum correlation coefficient (and the minimum chisquare) are obtained for a time around 20460.2+34.594+235.5(32/1024) secs, consistent with a trigger at 20502.209. In the real-time data, you can in fact see a small increase (two intervals wide - see second plot) which I think corresponds to the spike. (Even without this analysis, you can check to see where the memory readout starts in the real time data, and count back from there to get an approximate trigger time.) Please let me know if you agree with this analysis - if not, then one of us is calculating trigger times wrong!

Finally, I have enclosed a map of the BATSE error box, Mazets' error box, and our annulus, based on my trigger time. The 3 are in fact probably mutually inconsistent, since I used a 7 degree BATSE error circle, and they think their errors are nearer to 3 degrees. But the Mazets error box is only a 1 sigma box, so BATSE and Mazets may be consistent after all. However, Ulysses is not.

Best regards,

Kevin

OK JG

TO: KEVIN HURLEY, SPACE SCIENCES LABORATORY, U OF CALIFORNIA, BERKELEY, FAX 001-510-643 76 29

FROM: MICHAEL SOMMER MAX-PLANCK-INSTITUT FUER EXTRATERRESTRISCHE PHYSIK FAX W.GERMANY 89 - 32 99 35 69

August 25, 1992

Dear Kevin,

Your FAX of August 12, 92

I was not aware that the BATSE energy range is so close to ours. For my thoughts about the BATSE/Ulysses countrate ratio I had in mind 60 keV being the lower energy limit.
Is 60 keV the trigger threshold of BATSE ?

I had to reprogram the timing part of my program. From some reasons one record had been lost. Now this record is included and I agree with your trigger time. I found also the ICR increase in this record.
Two times 23 compressed counts are being consistent with the burts data.

So the burst seems to be real.

Did you get the light curve of BATSE? It has been stated in the IAU circular that most of the emission is concentrated in the initial spike of < 64 msec. This is in coincidence with our light curve.

For me it is somehow hard to believe that the event is a chance coincidence.

How reliable is the BATSE box?

Best regards Michael

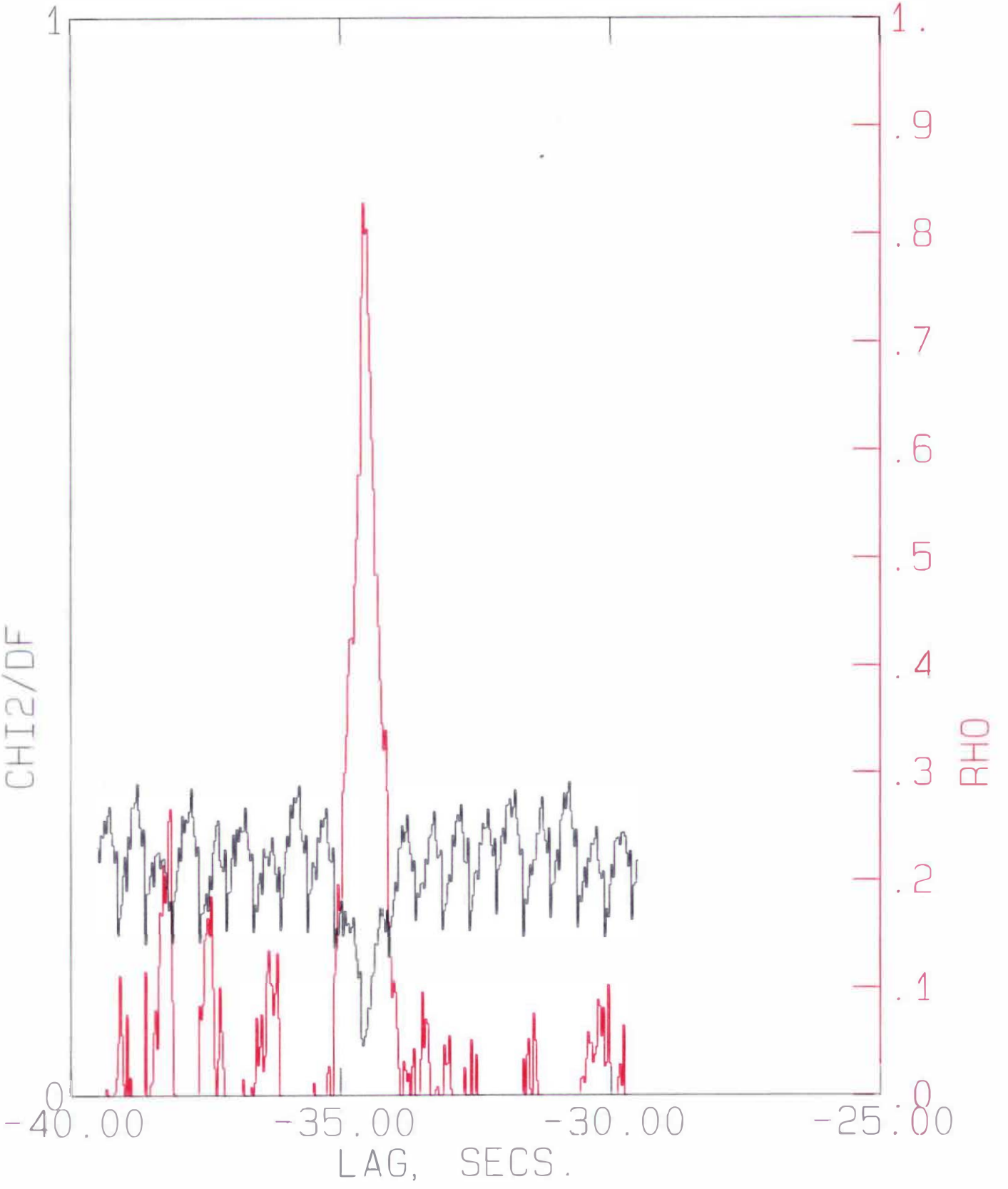
Page 2

```
FILE B:\EDR0192.SE1
DATE 92-190
BURSTHEADER in RECORD      23  GROUP   0
E42 change  in RECORD      21  GROUP   1
BITRATE 512  BPS    TIME BETWEEN FRAMES 2  sec

  E041  =  243  E040  =  192  E4041 = 62399  1/128  sec,    487.492 sec
  E042H =   59  E042L =  246  E042  = 15350  1/2048 sec.     7.495 sec

TRIGGER in RECORD      21
   GROUP0 = FORMAT      0
   BURST IN FORMAT      7
   BURST IN  GROUP      7
   BURST IN  FRAME   19.746
FRACTION OF RECORD    0.952
92-190  20502.197  sec  UT  5:41:42.197
92-190  20502.201  sec  UT  5:41:42.201       (KOEFF = 2  sec/SCL unit)

 UTEST: 4  msec   (< 8msec !)

BURSTTRIGGER 27666419.746

TO CONTINUE PRESS ANY KEY OR ESC
```

```
1992-190 05:33:54   TJD: 8821     GROUP 0 : 20014.706 SEC  1341725614  SEC
WED   1992/ 7/ 8  JD: 2448811.5  GROUP 7 : 20462.706 SEC     2  SEC/FRAME
MODE: OPSM1  SCL:01A627E0 = 27666400   FORMAT 7   GROUP  7   RECORD    21
     FRAME                                  FRAME
        0:  137   22   21   22   22          16:  136   21   21   23   21
        1:  176   21   20   22   20          17:  143   21   21   22   21
        2:  187   21   20   21   21          18:  187   22   22   21   21
        3:  123   20   22   22   21          19:  123   21   21   21   21
        4:  138   21   20   22   22          20:  137   22   23   23   22
        5:  176   21   22   22   20          21:  176   21   22   22   20
        6:  186   22   21   20   22          22:  188   21   23   20   21
        7:   78   20   20   21   21          23:   78   21   20   21   22
        8:  137   20   20   21   22          24:  237   22   21   21   22
        9:  176   20   21   21   21          25:  143   22   22   20   21
       10:  187   22   20   21   22          26:  187   21   21   22   21
       11:  123   22   20   21   21          27:  123   22   22   21   20
       12:  136   21   20   21   21          28:  136   22   22   21   20
       13:  176   21   21   21   21          29:  143   21   21   22   21
       14:  186    9   21   21   22          30:  187   21   21   22   21
       15:   96   21   21   21   21          31:   96   21   22   21   21
      B:\EDR0192.SE1

TO CONTINUE PRESS ANY KEY OR ESC
```

10/ 7/92

ULYSSES RT-ULYSSES CORRELATION 8/ 7/92 20460.200

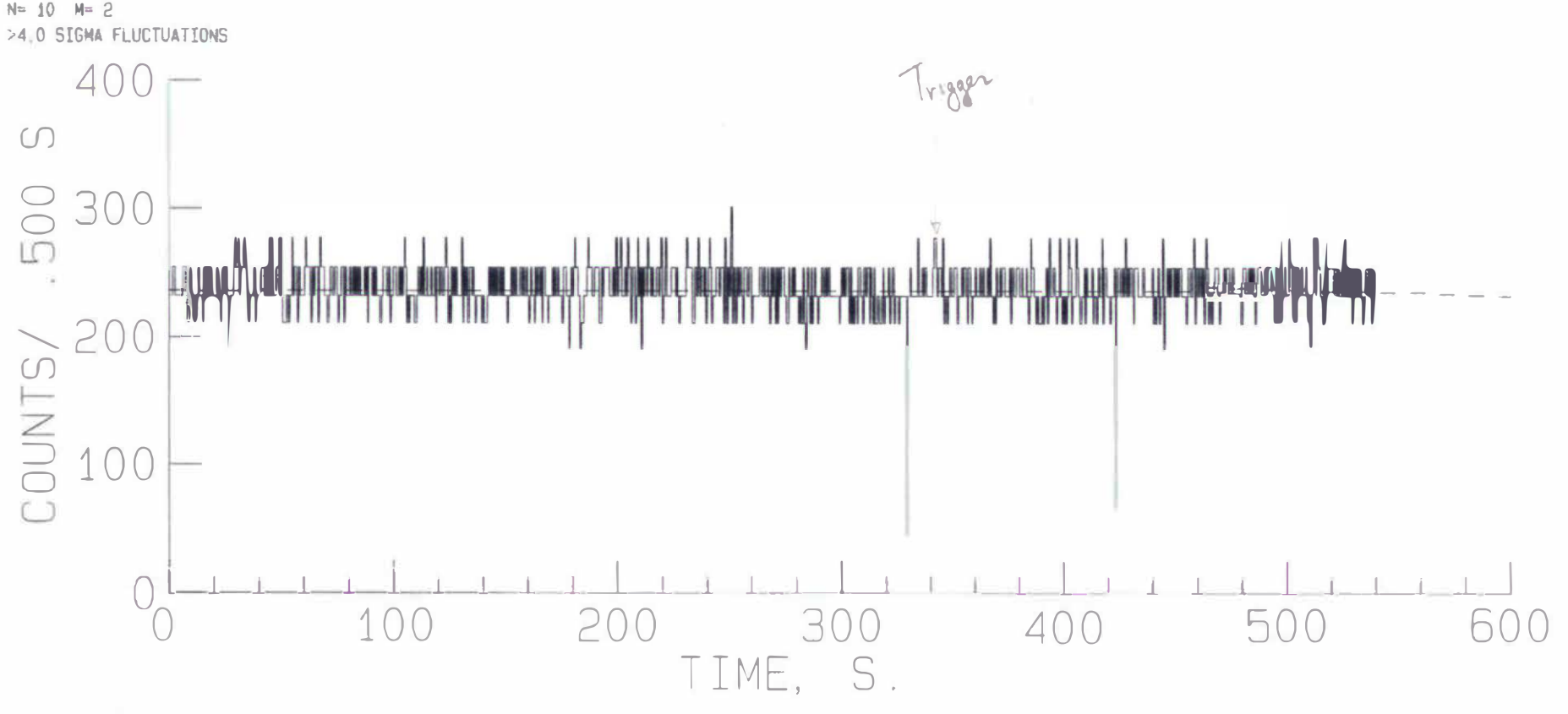


10/ 7/92

ULYSSES RT

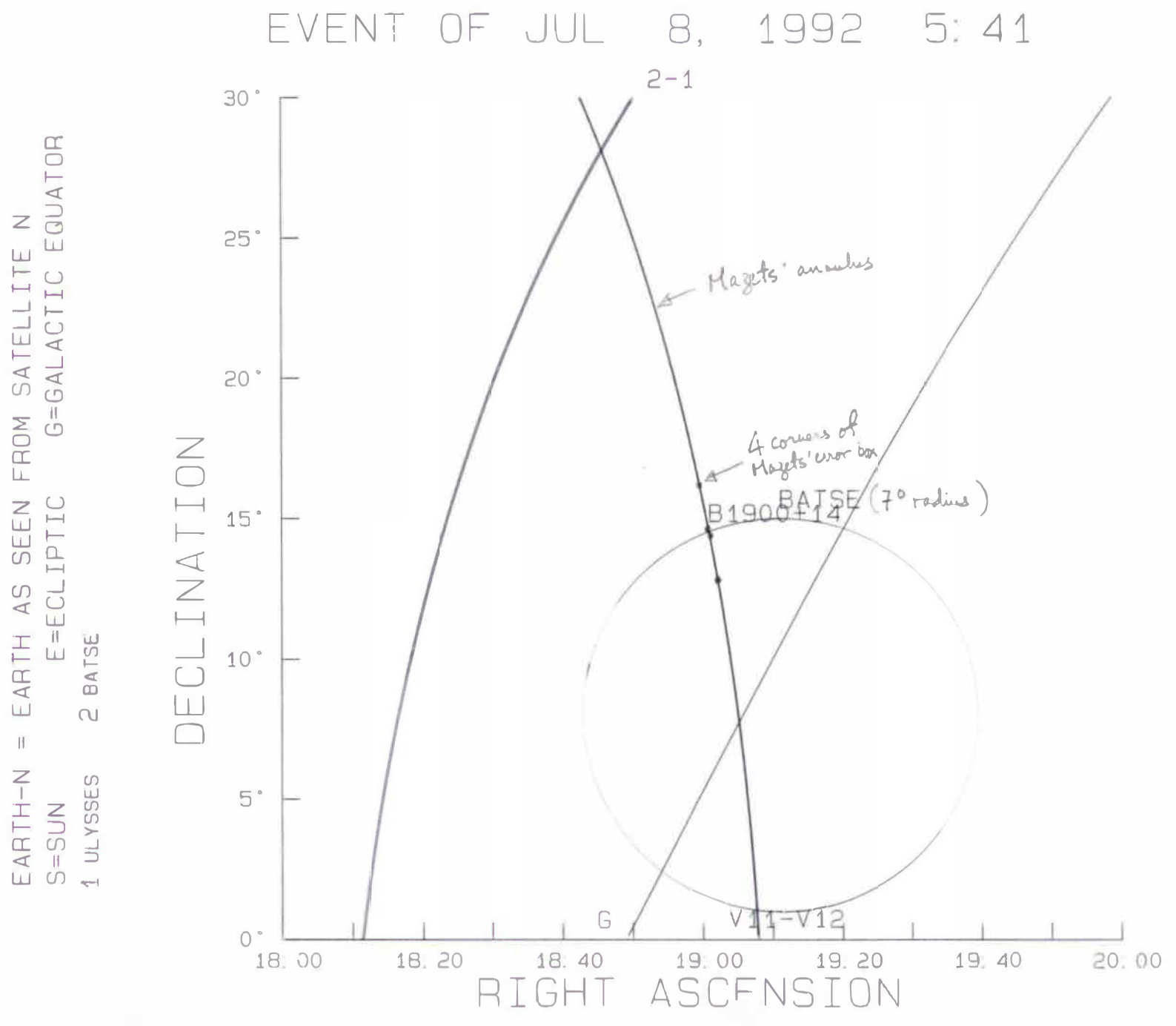
8/ 7/92 20160.203 s

0- 0 keV



LT's trigger time

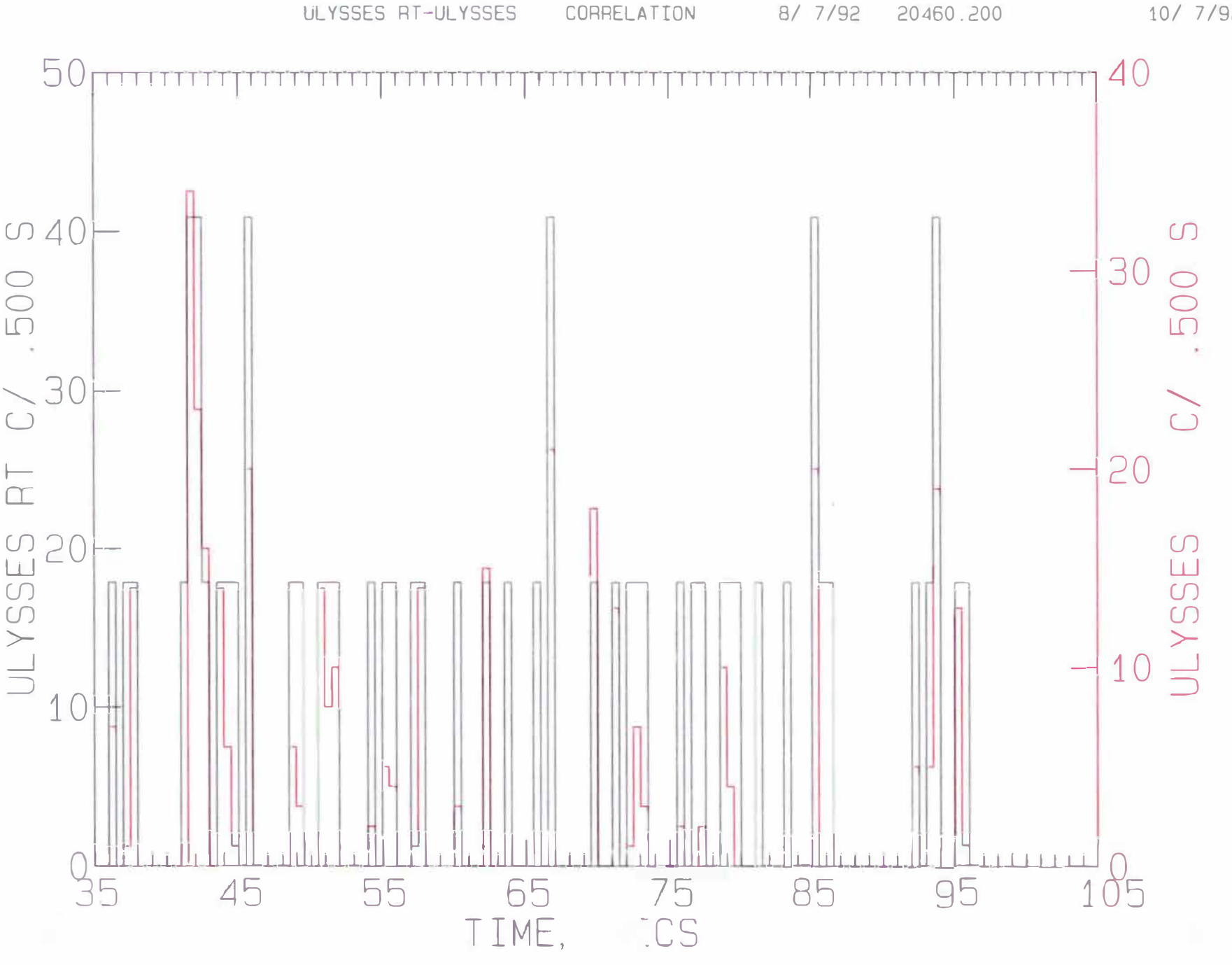
10/ 7/92

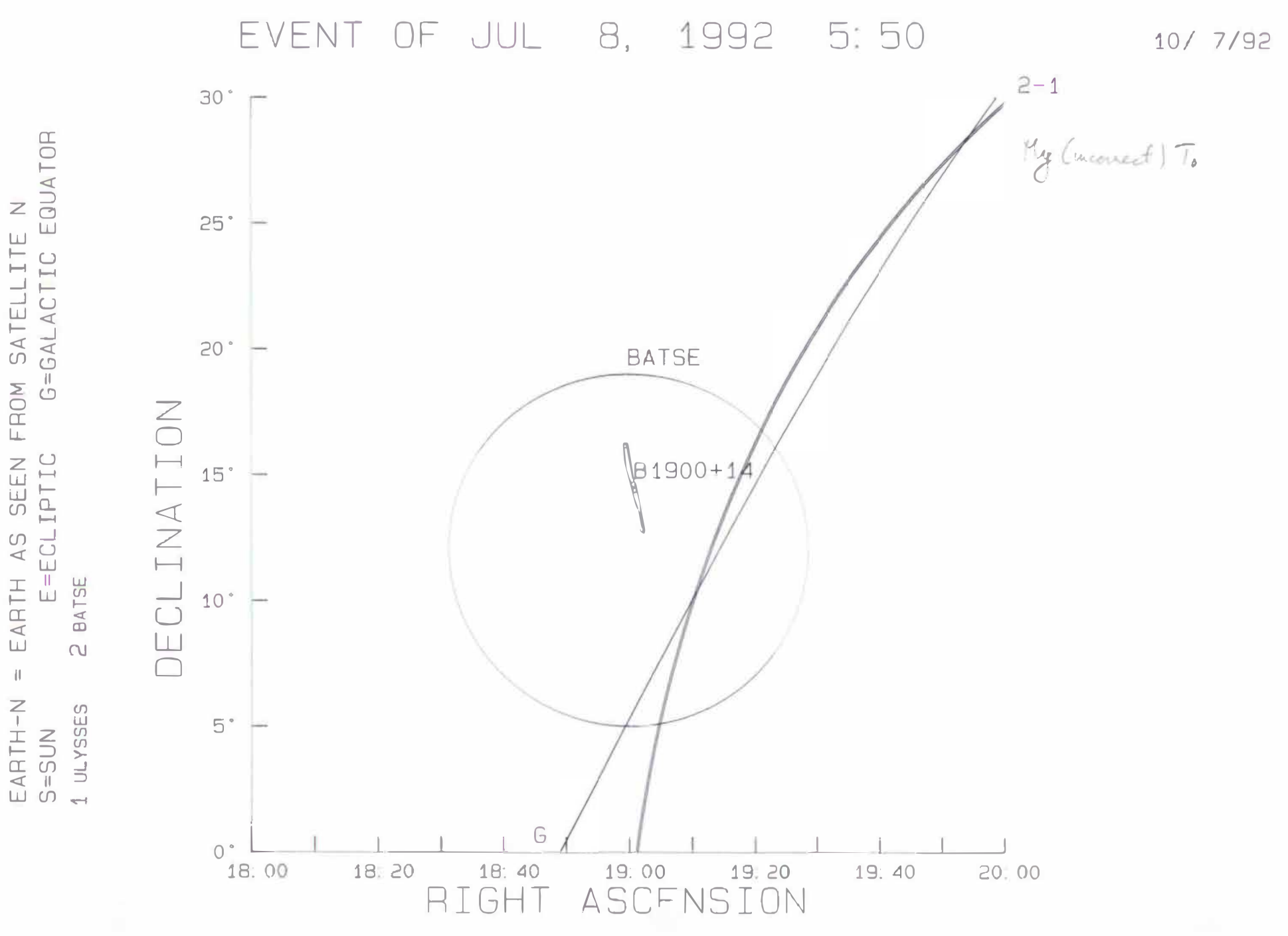


From kouveliotou%8868.span@Sdsc.Edu Fri Jul 10 15:41:41 1992
Date: Fri, 10 Jul 92 22:42:46 GMT
From: kouveliotou%8868.span@Sdsc.Edu (Chryssa Kouveliotou NASA/MSFC (205) 544-7711)
Subject: iauc text
To: khurley@sunspot.ssl.berkeley.edu
X-St-Vmsmail-To: HURLEY
Content-Length: 1393

C. Kouveliotou, G. J. Fishman, C. A. Meegan, R. B. Wilson, W. S. Paciesas, T. M. Koshut, J. M. Horack report for the BATSE Team, and K. Hurley, M. Sommer T. L. Cline, M. Boer report for the Ulysses Team:

"We have detected repeated emission from the region of the Soft Gamma Repeater (SGR) 1900+14 (Mazets et al. 1979, Sov. Astron. Let.,5(6),343). The first BATSE trigger was recorded on June 19, 1992 at UT: 64668 s and it consists of two pulses separated by 0.5 s. The leading pulse had a trapezoidal temporal profile with a rise-time of ~ 0.5 ms. The second pulse had a triangular shape with rise and decay times of ~ 10 ms. Each pulse had a total duration of 40 ms with FWHM of ~ 20 ms. Their spectra are among the softest of all cosmic events detected by BATSE; they are consistent with a typical SGR spectrum with an upper energy cut off of ~ 120 keV. The second trigger occured on July 8, 1992 at UT: 18957 s and was also recorded by Ulysses. The event lasted ~ 300 ms with most of the emission concentrated in an initial spike which lasted < 32 ms. Its spectrum was similar to that of the June 19 event. Preliminary triangulation results from the two spacecraft combined with earlier observations by Mazets et al. indicate a source position centered on R.A. = XXXX. and dec = XXX.. Follow-up observations of the source region at other wavelengths are strongly encouraged. "


ULYSSES RT-ULYSSES CORRELATION 8/ 7/92 20460.200 10/ 7/92
ULYSSES RT C/ .500 S
ULYSSES C/ .500 S
TIME,
50
40
30
20
10
0
35
45
55
65
75
85
95
105

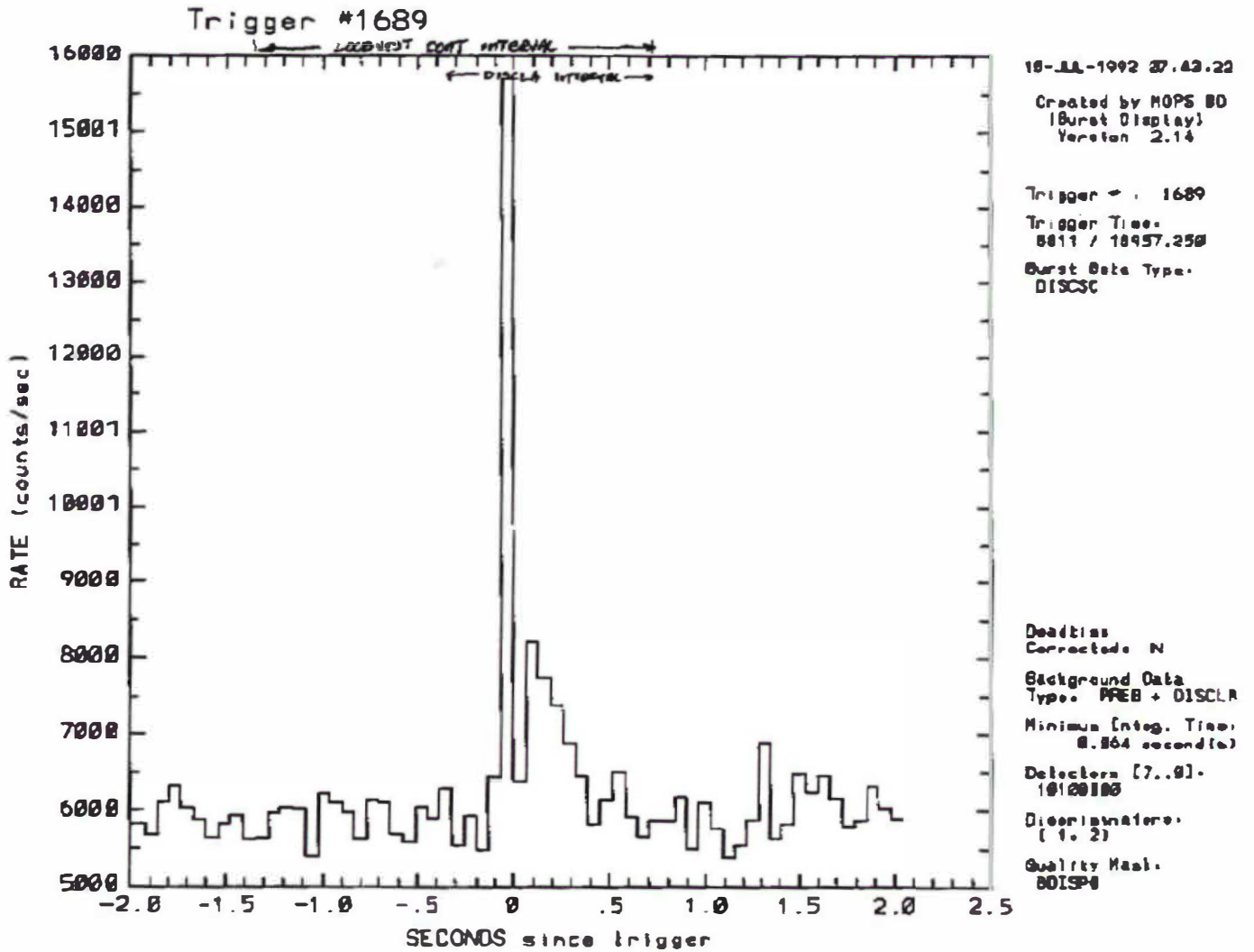

EVENT OF JUL 8, 1992 5:50
10/ 7/92
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE
2-1
Mg (incorrect) T0
BATSE
B1900+14
G
DECLINATION
30°
25°
20°
15°
10°
5°
0°
18:00
18:20
18:40
19:00
19:20
19:40
20:00
RIGHT ASCENSION

$\frac{10000\ c/s}{1700\ cm^2} \times 20 keV \times 1.6 \times 10^{-9} \approx$

$10000\ c/s \times .064\ s = 640\ c$

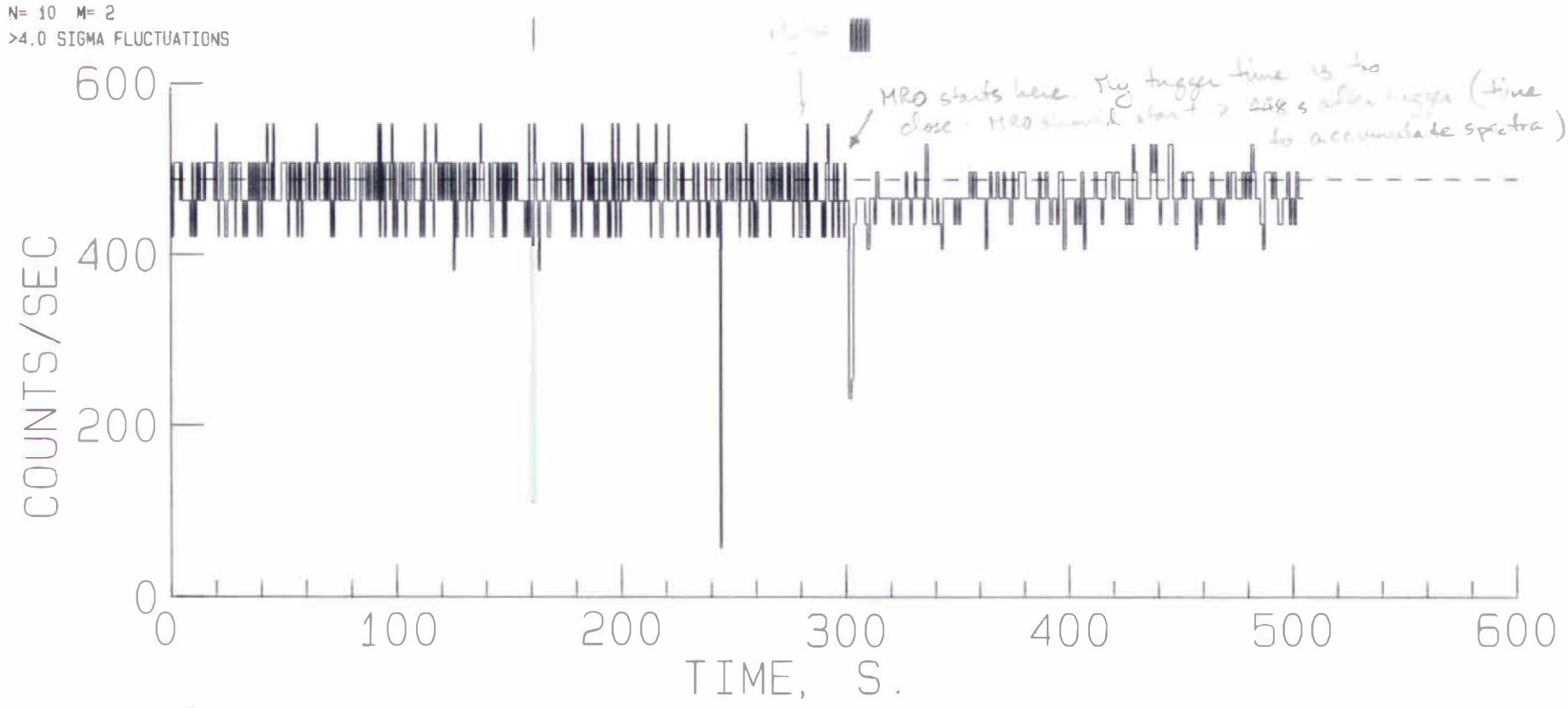
$\alpha = 285 \quad \delta = 12$

$1/50\ 640 - 12$!



10/ 7/92

ULYSSES RT
8/ 7/92 20736.215 s
0- 0 keV



****
CATSEARCH PROGRAM
****

BATSE BURST # 1690
EVENT OF 1992 JUL 8 DAY OF YEAR=190
EVENT CROSSING TIME AT BATSE : 48200. S. OR 13:23:20.3
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 305.800 -48.700
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 8/ 7/ 92 IS:
RA= 150.920 DEC= 5.835 DIST= 5.993 AU
BATSE-ULYSSES DISTANCE = 896585690. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 47.87 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2006.32 SECS.
CROSSING TIME AT ULYSSES IS 50207. S. OR 13:56:46.6 +/- 465.52 SECONDS

No

From HORACK@ssl.msfc.nasa.gov Fri Jul 10 12:27:51 1992
Date: Fri, 10 Jul 1992 14:28:39 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 1690

TIME: TJD=8811 SECONDS=48200

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=111 AZIMUTH=114 ERROR= DEGREES

COMMENTS:
WEAK EVENT LASTING APPROXIMATELY 3-4 SECONDS. CHARACTERIZED BY A FAST RISE, WITH SLOWER DECAY. POSSIBLE DETAILED STRUCTURE, WITH MAIN PEAK APPROXIMATELY 1 SECOND IN LENGTH.

No trig

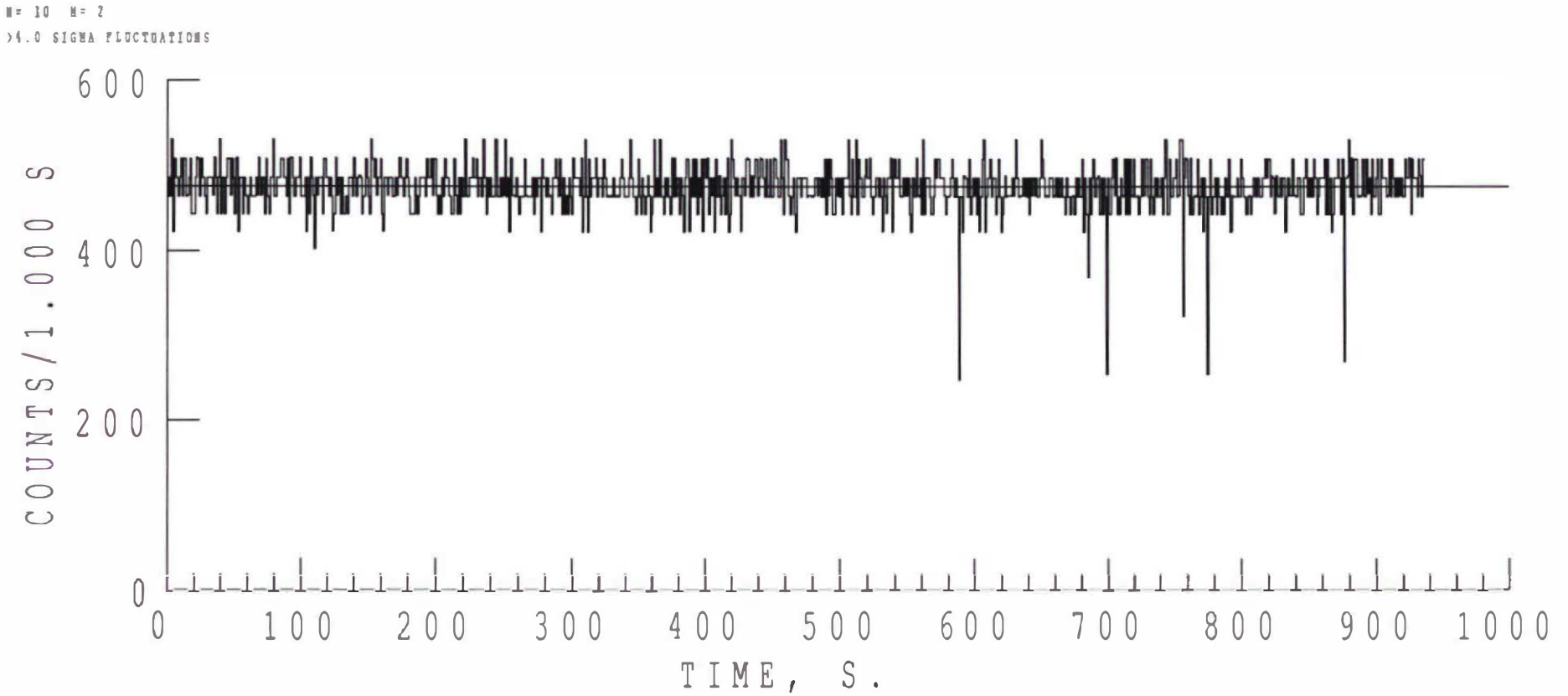
8/ 6/94

ULYSSES RT

8/ 7/92 49752.184 s

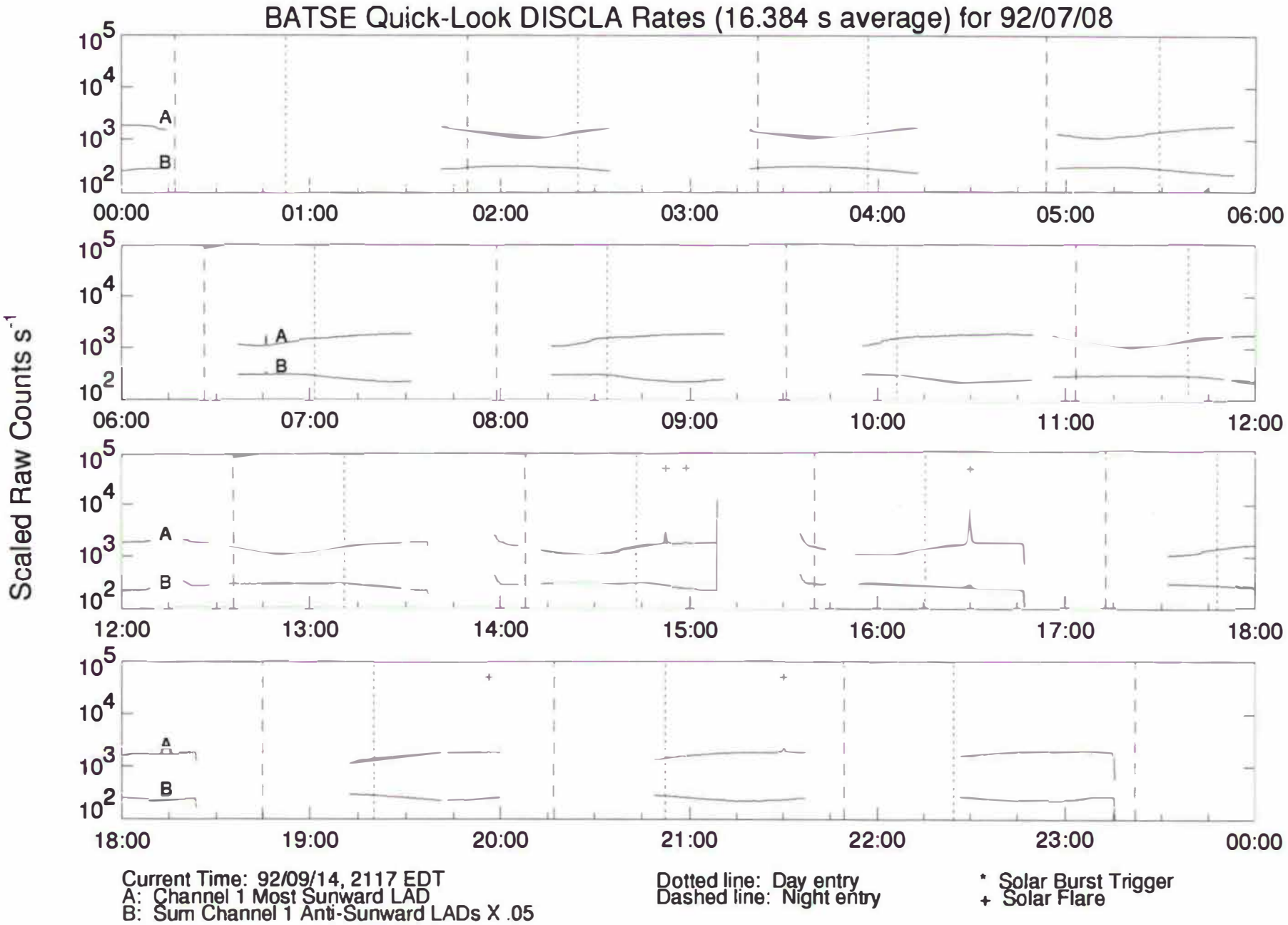
0.500 S INTERVALS REGROUPED BY 2

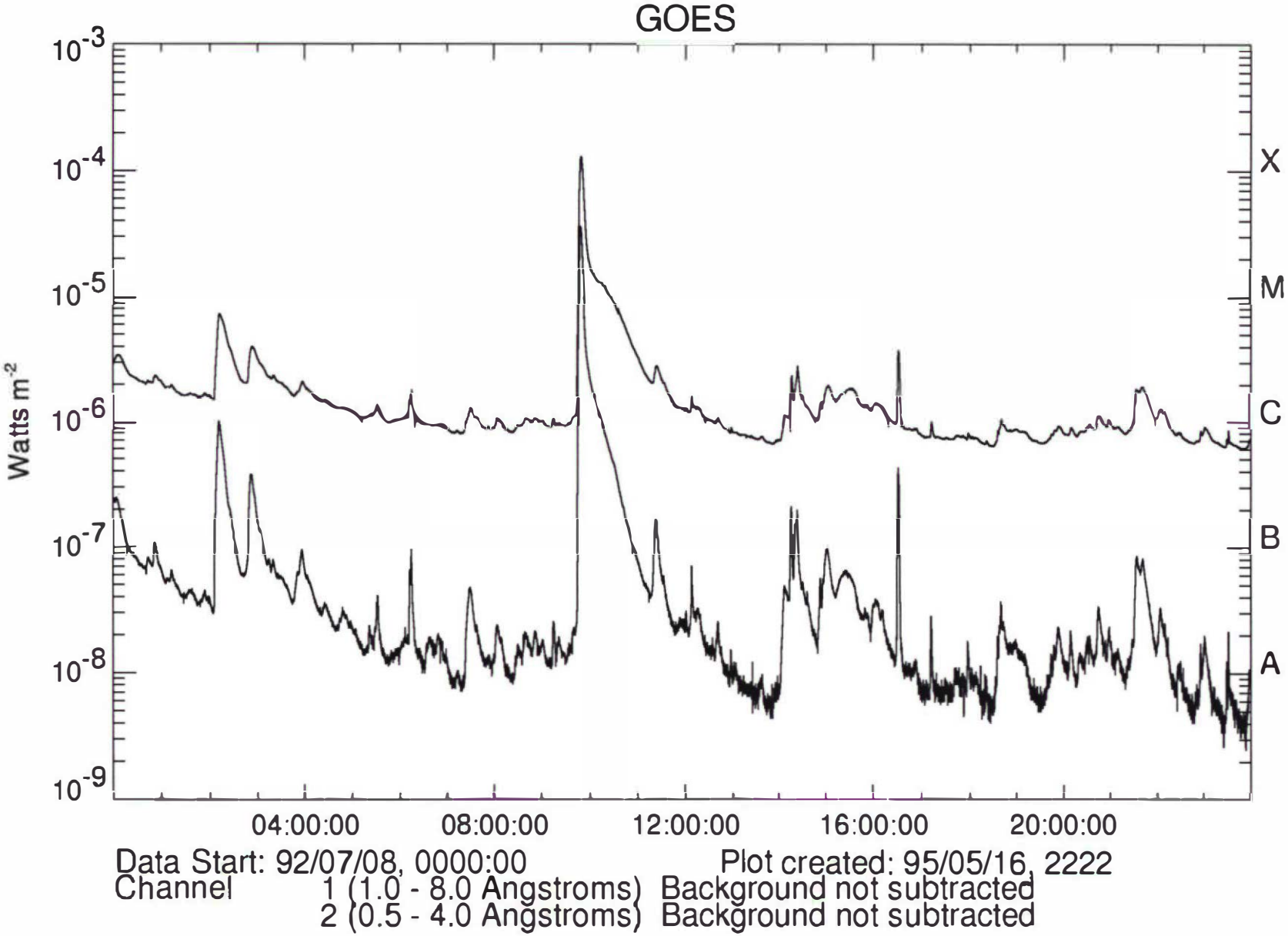
0- 0 keV



Dezalay-> KH 7/93

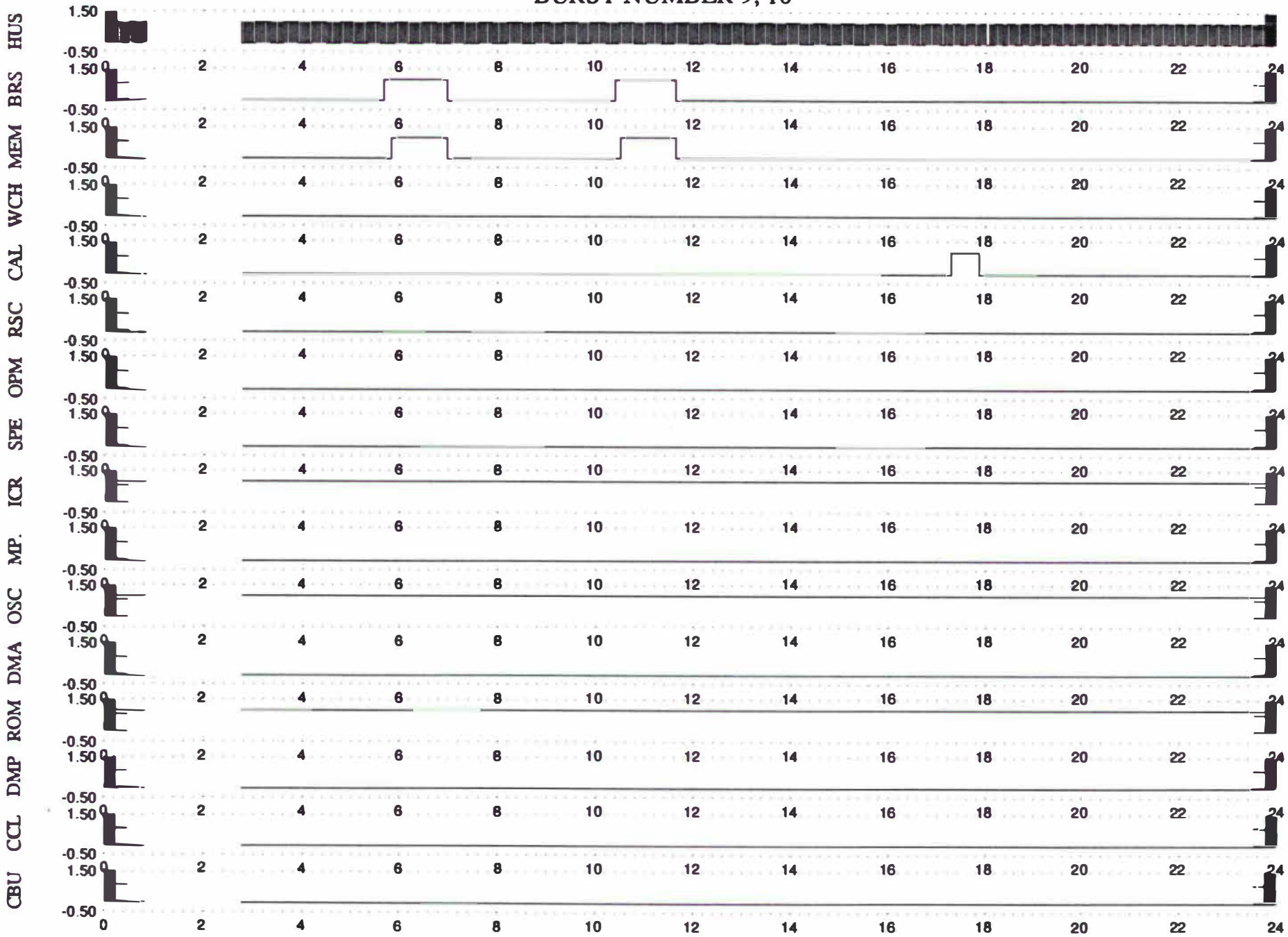
DATE	U.T.	Nr UGB	Event Nature
1992-06-28	21:14:12.932	473-a	GRB
1992-07-08	16:30:01.944	479-a	Solar Flare
1992-07-14	13:04:30.544	482-a	GRB
1992-07-16	16:55:27.526	484-a	Solar Flare
1992-07-18	21.32:44.275	485-a	GRB
1992-07-20	03:12:04.391	486-a	GRB
1992-07-23	00:59:16.612	488-a	GRB
1992-07-23	20:03:08.386	489-a	GRB
1992-07-23	21:48:54.786	489-b	GRB
1992-08-16	12:37:31.102	493-a	GRB
1992-08-26	02:47:07.423	500-a	GRB
1992-08-30	01:45:19.113	503-a	GRB
1992-09-02	00:29:00.916	504-a	GRB
1992-09-03	00:49:18.142	505-a	GRB
1992-09-03	01:37:17.202	505-b	GRB ?
1992-09-03	23:29:01.404	506-a	GRB
1992-09-04	04:41:38.922	506-b	GRB
1992-09-05	15:56:15.844	507-a	Solar Flare
1992-09-06	18:45:29.617	507-b	Solar Flare
1992-09-06	20:56:31.135	507-c	Solar Flare
1992-09-14	07:14:50.878	508-a	Unknown
1992-09-18	09:41:19.340	511-a	GRB
1992-09-25	20:30:41.410	517-a	GRB
1992-09-25	21:40:47.837	517-b	No Available data
1992-09-30	00:47:46.089	518-a	Unknown
1992-10-04	22:19:05.006	522-a	Solar Flare
1992-10-12	13:14:44.786	523-a	Solar Flare
1992-10-13	23:01:01.582	524-a	GRB
1992-10-25	13:53:16.735	527-a	GRB
1992-10-27	06:52:02.336	528-a	Solar Flare
1992-10-29	15:23:10.349	530-a	SF ou Unknown?
1992-10-29	16:11:39.173	530-b	SF ou Unknown?
1992-10-29	16:26:49.045	530-c	SF ou Unknown?
1992-11-23	16:32:04.840	534-a	SF ou Unknown?
1992-11-23	17:11:35.698	534-b	SF ou Unknown?


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/08
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
00:00
Current Time: 92/09/14, 2117 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
10-3
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/08, 0000:00
Plot created: 95/05/16, 2222
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 190, year 1992 to day 190, year 1992 9/11/92

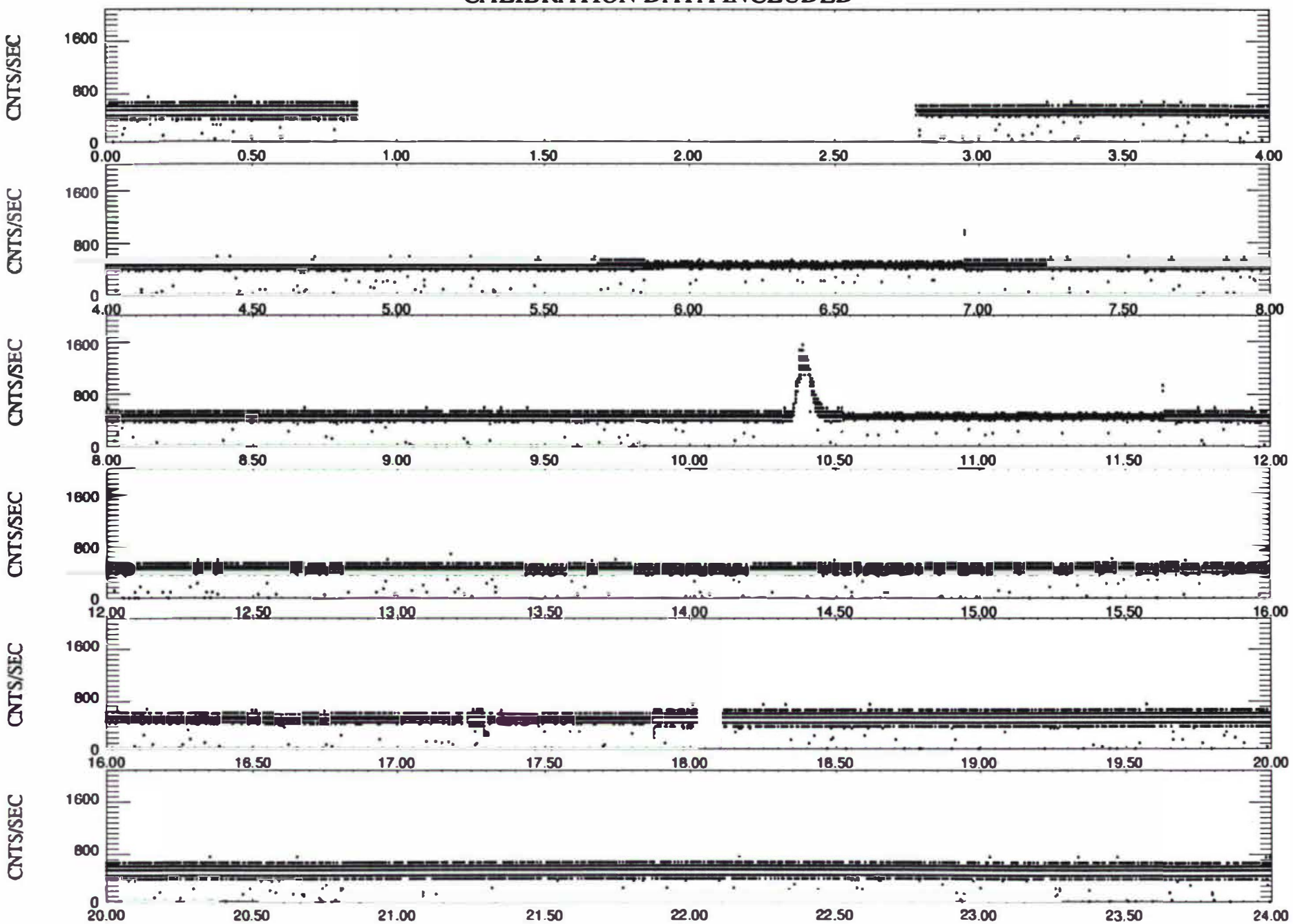
BURST NUMBER 9, 10



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 190, year 1992 to day 190, year 1992 9/11/92

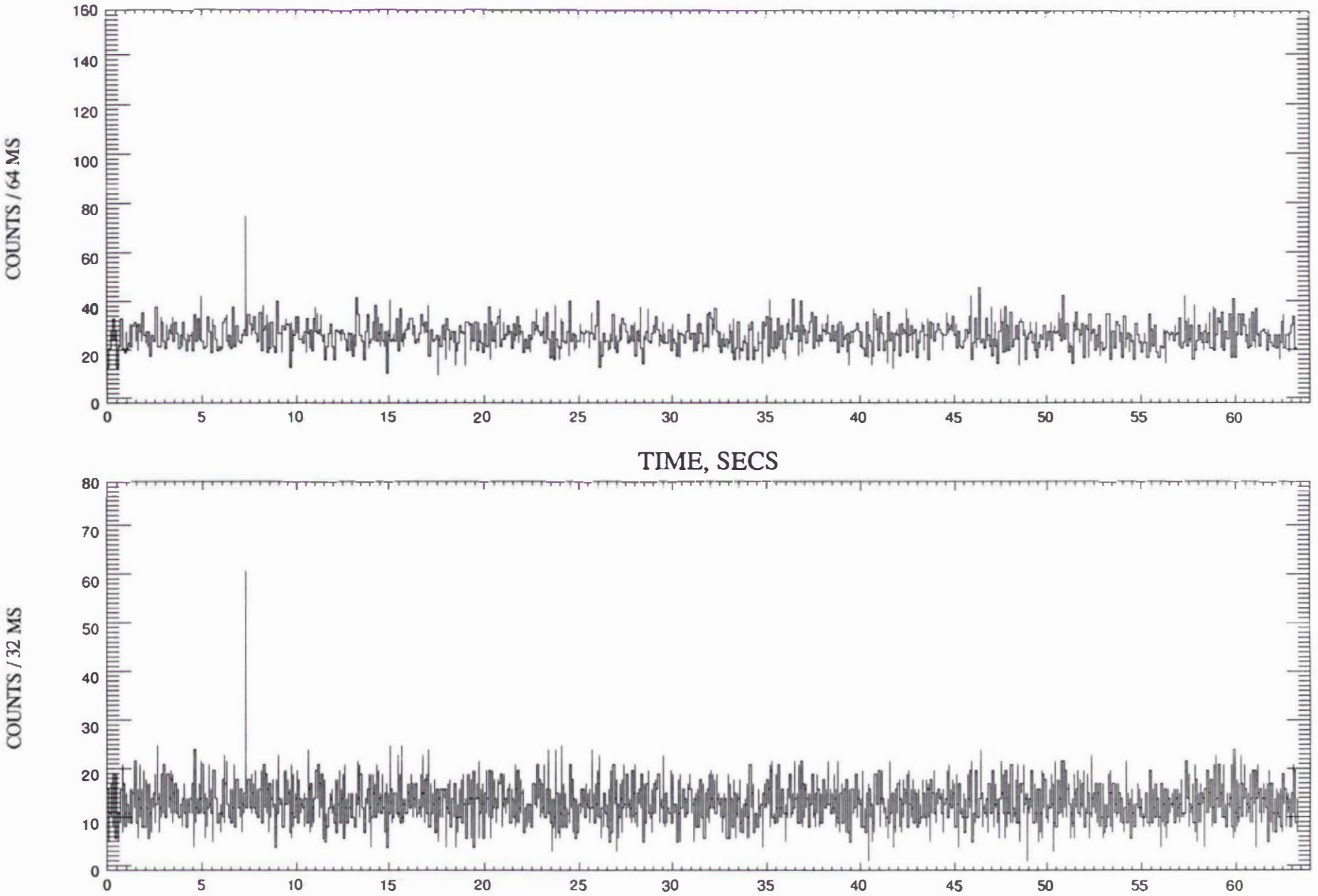
CALIBRATION DATA INCLUDED



UNIVE \L TIME

HUS 2A TRIGGERED DATA EDR day 190, year 1992 9/11/92

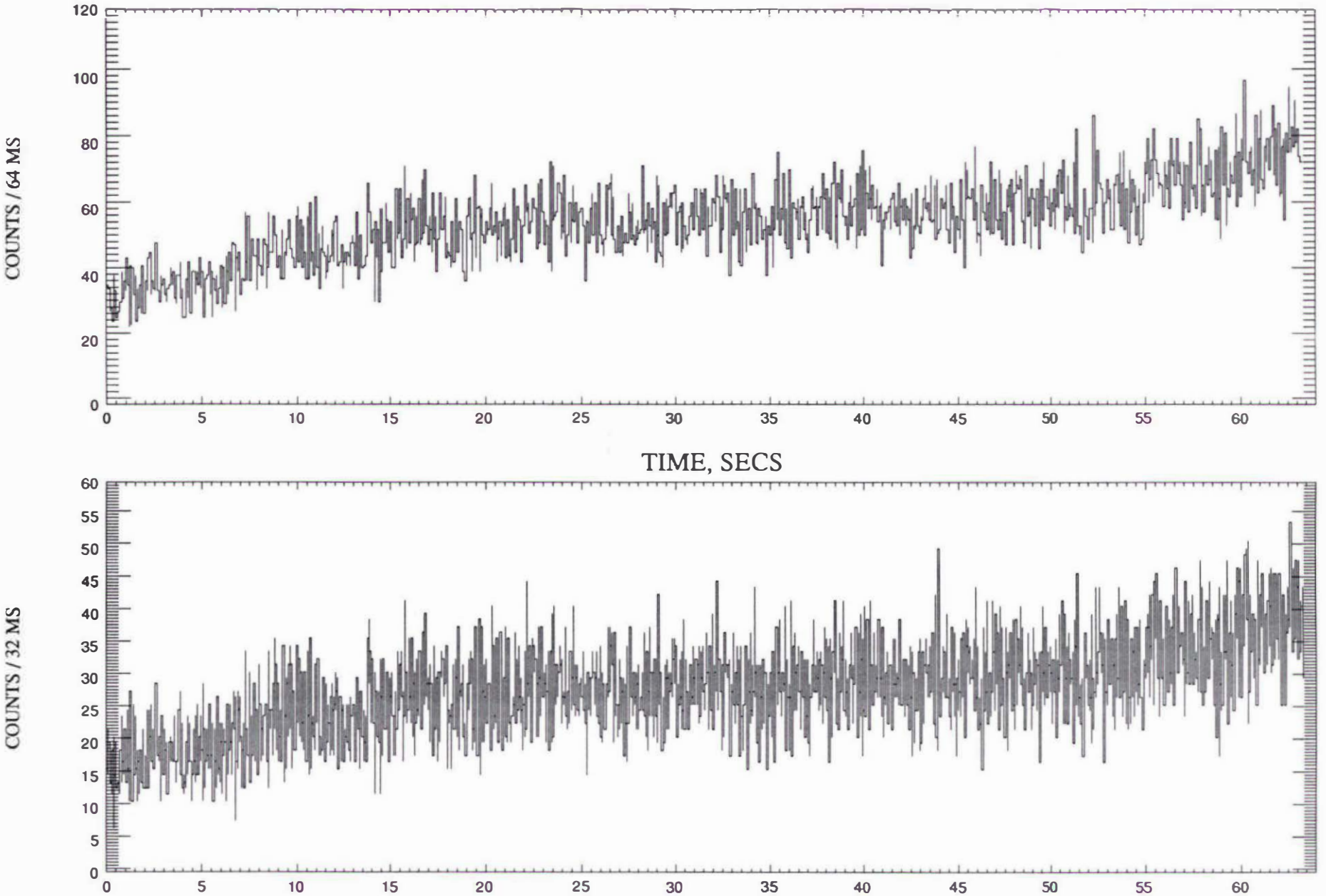
Burst Counter 9 at UT= 5.695054986742 h=20502.198 s



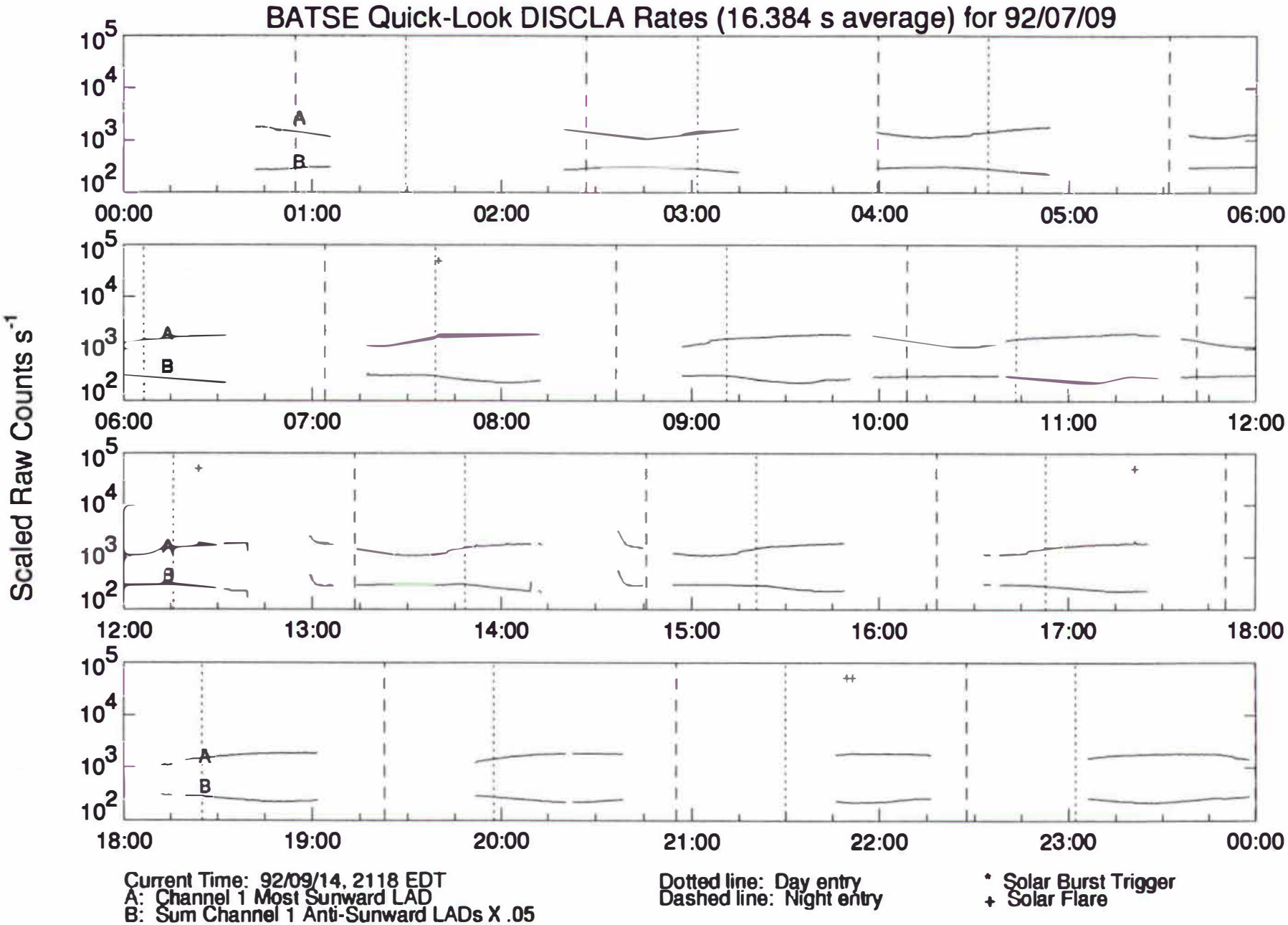
B# 1

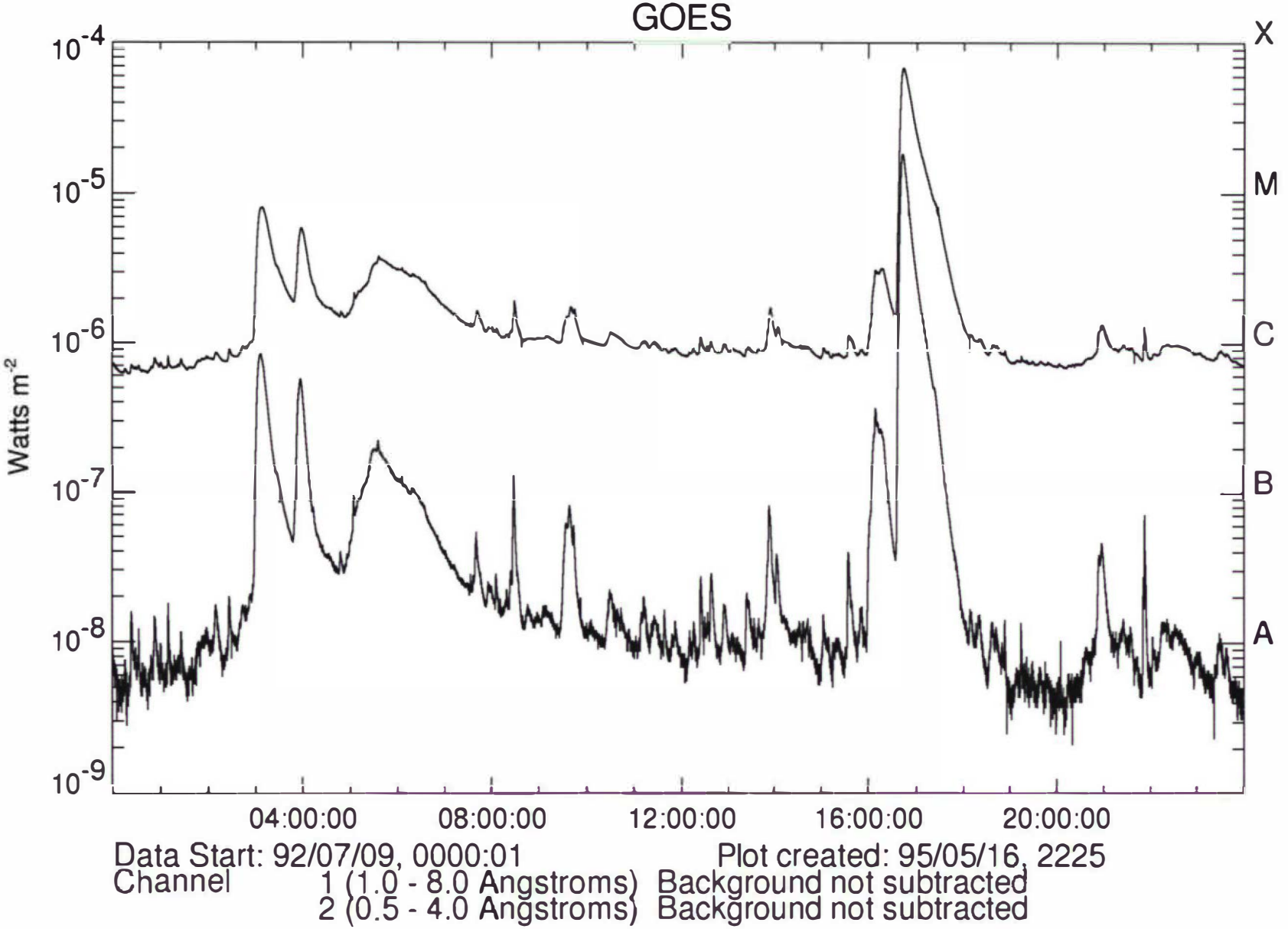
HUS 2A TRIGGERED DATA EDR day 190, year 1992 9/11/92

Burst Counter 10 at UT=10.357283409966 h=37286.220 s



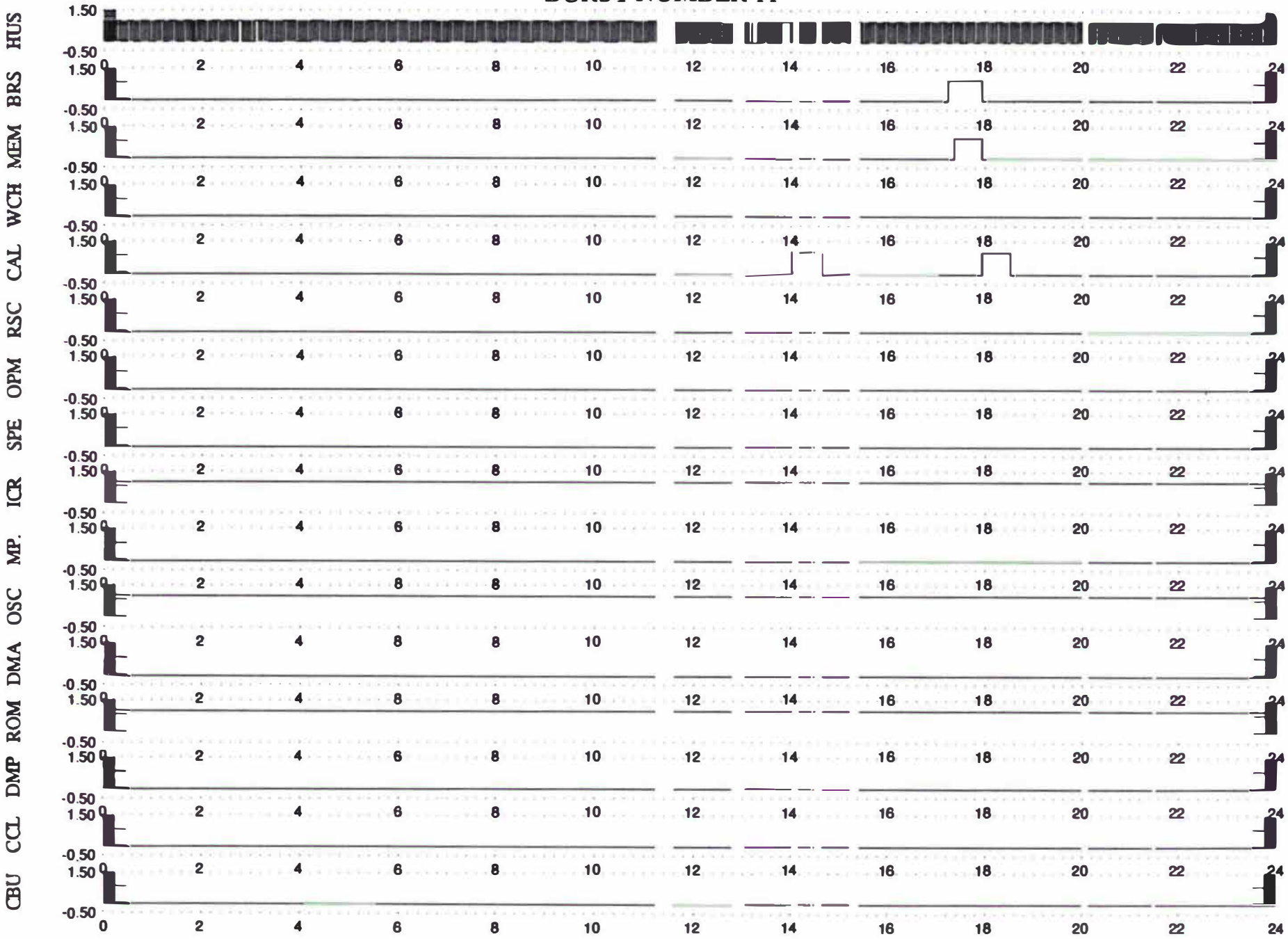
B# 2


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/09
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
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: 92/09/14, 2118 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
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/09, 0000:01
Plot created: 95/05/16, 2225
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 191, year 1992 to day 191, year 1992 9/11/92

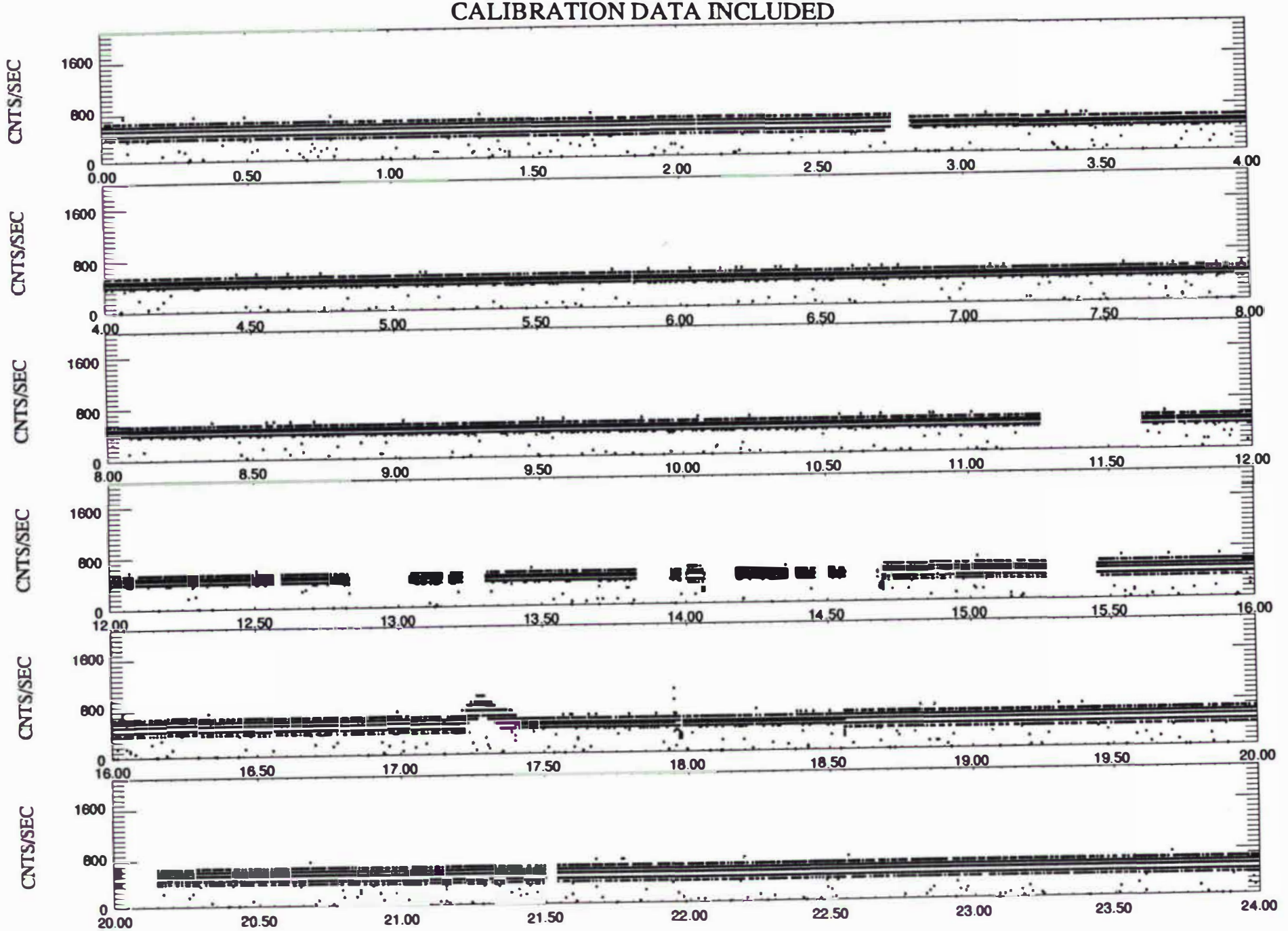
BURST NUMBER 11



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 191, year 1992 to day 191, year 1992 9/11/92

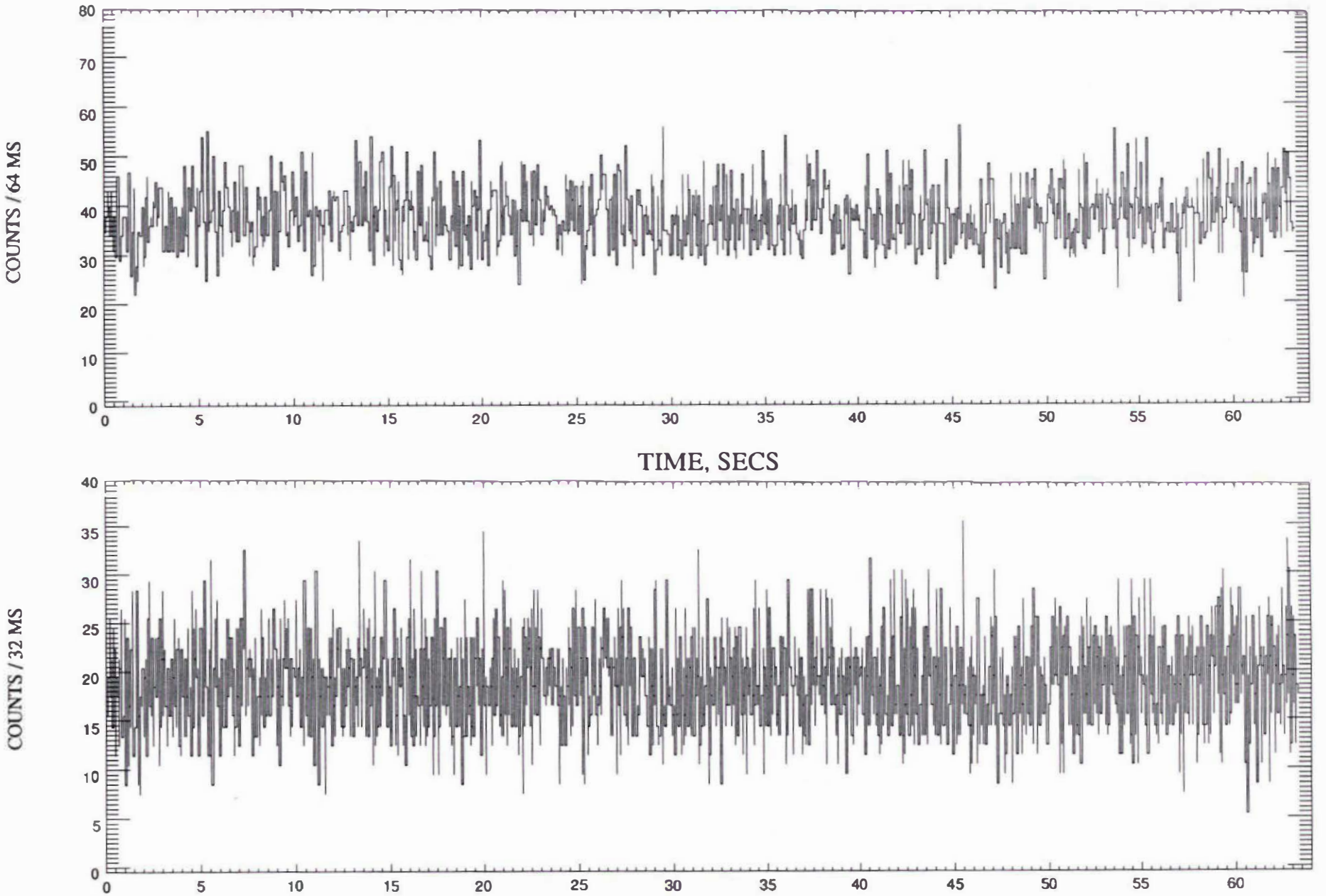
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 191, year 1992 9/11/92

Burst Counter 11 at UT=17.246323356628 h=62086.764 s



B# 1

****
CATSEARCH PROGRAM
****

BATSE BURST # 1692
EVENT OF 1992 JUL 10 DAY OF YEAR=192
EVENT CROSSING TIME AT BATSE : 788. S. OR 00:13:07.6
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 337.500 -10.800
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 10/ 7/ 92 IS:
RA= 151.126 DEC= 5.688 DIST= 6.015 AU
BATSE-ULYSSES DISTANCE = 899779672. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 8.12 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2971.27 SECS.
CROSSING TIME AT ULYSSES IS 3759. S. OR 01:02:38.8 +/- 168.70 SECONDS

No

From KOSHUT@ssl.msfc.nasa.gov Tue Jul 14 14:11:07 1992
Date: Tue, 14 Jul 1992 16:12:15 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01692

July 10

TIME: TJD=8813 SECONDS=00787

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=153.3 AZIMUTH=79.6 ERROR= DEGREES

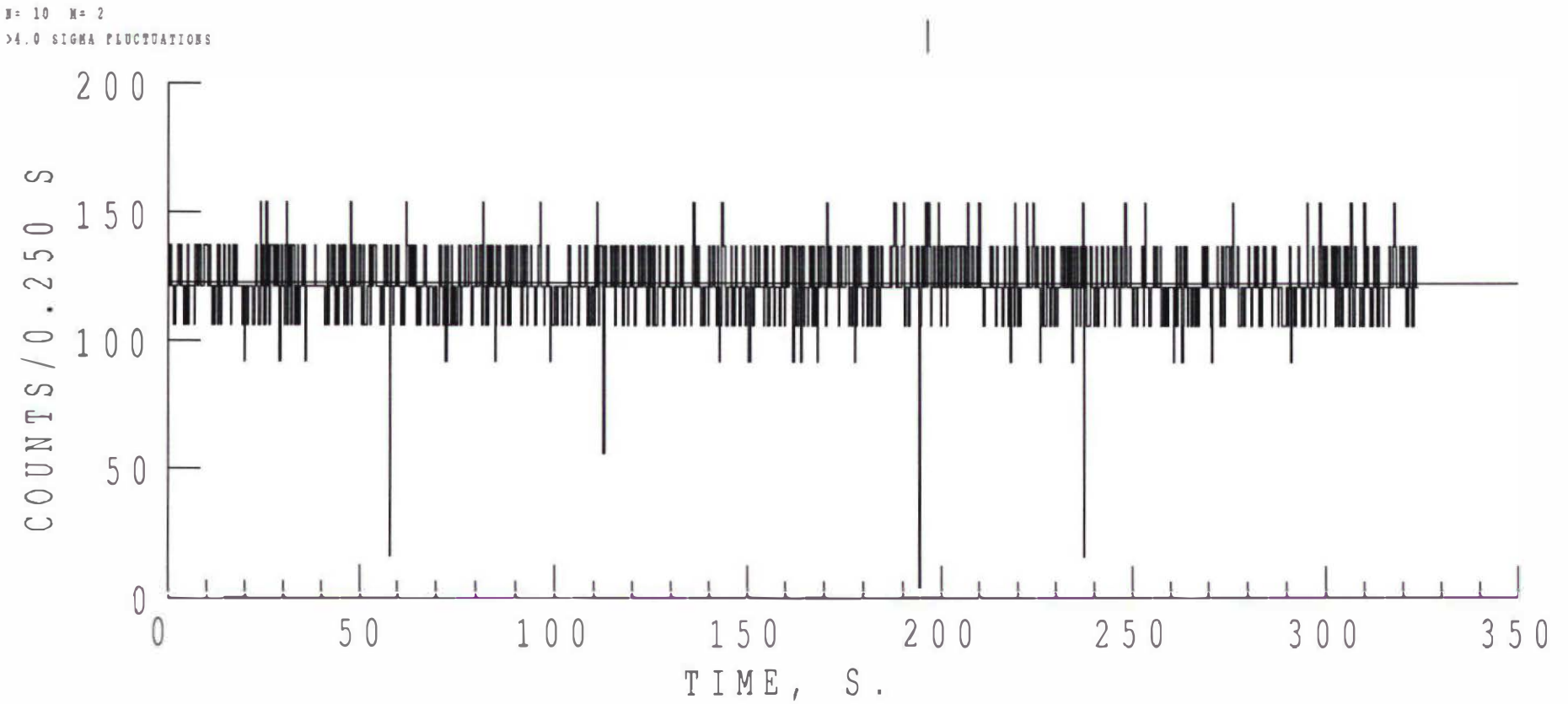
COMMENTS:
THE AMOUNT OF DATA FOR THIS BURST IS VERY LIMITED. THE LOCATION IS
CONSISTENT WITH BEING A COSMIC SOURCE.

8/ 6/94

ULYSSES RT

10/ 7/92 3600.223 s

0- 0 keV



****
CATSEARCH PROGRAM
****

BATSE BURST # 1693
EVENT OF 1992 JUL 10 DAY OF YEAR=192
EVENT CROSSING TIME AT BATSE : 80005. S. OR 22:13:25.2
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 54.000 18.600
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 10/ 7/ 92 IS:
RA= 151.126 DEC= 5.688 DIST= 6.015 AU
BATSE-ULYSSES DISTANCE = 899779672. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 85.10 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 256.26 SECS.
CROSSING TIME AT ULYSSES IS 80262. S. OR 22:17:41.5 +/- 573.07 SECONDS

ND

From KOSHUT@ssl.msfc.nasa.gov Mon Jul 13 13:13:58 1992
Date: Mon, 13 Jul 1992 15:14:52 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER
NO.: 01693

TIME: TJD=8813 SECONDS=80005

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=101.7 AZIMUTH=348.9 ERROR= DEGREES

COMMENTS:
BURST OF ~ 10 SECOND DURATION WITH PEAK RATE AT THE TRIGGER TIME.
NO EMISSION ABOVE 300 KEV IS OBSERVED.

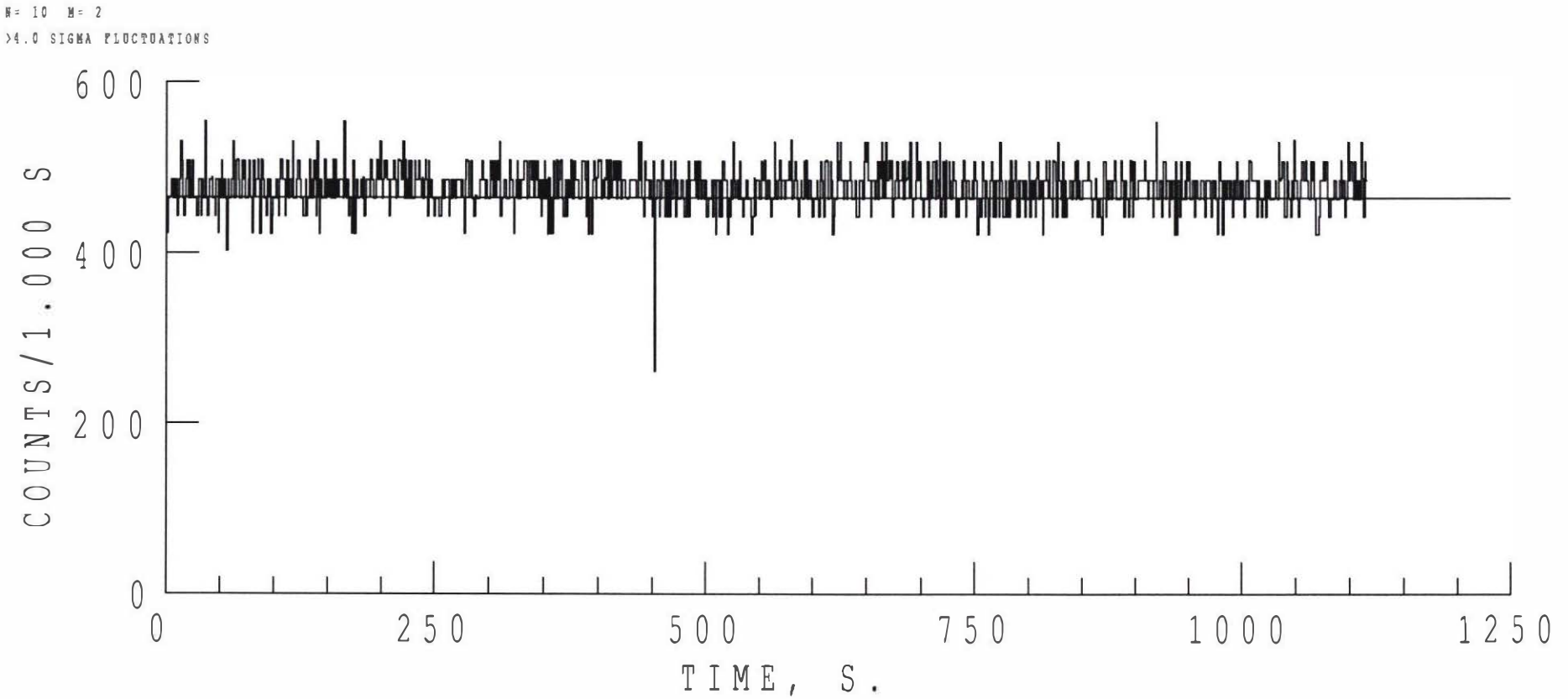
8/ 6/94

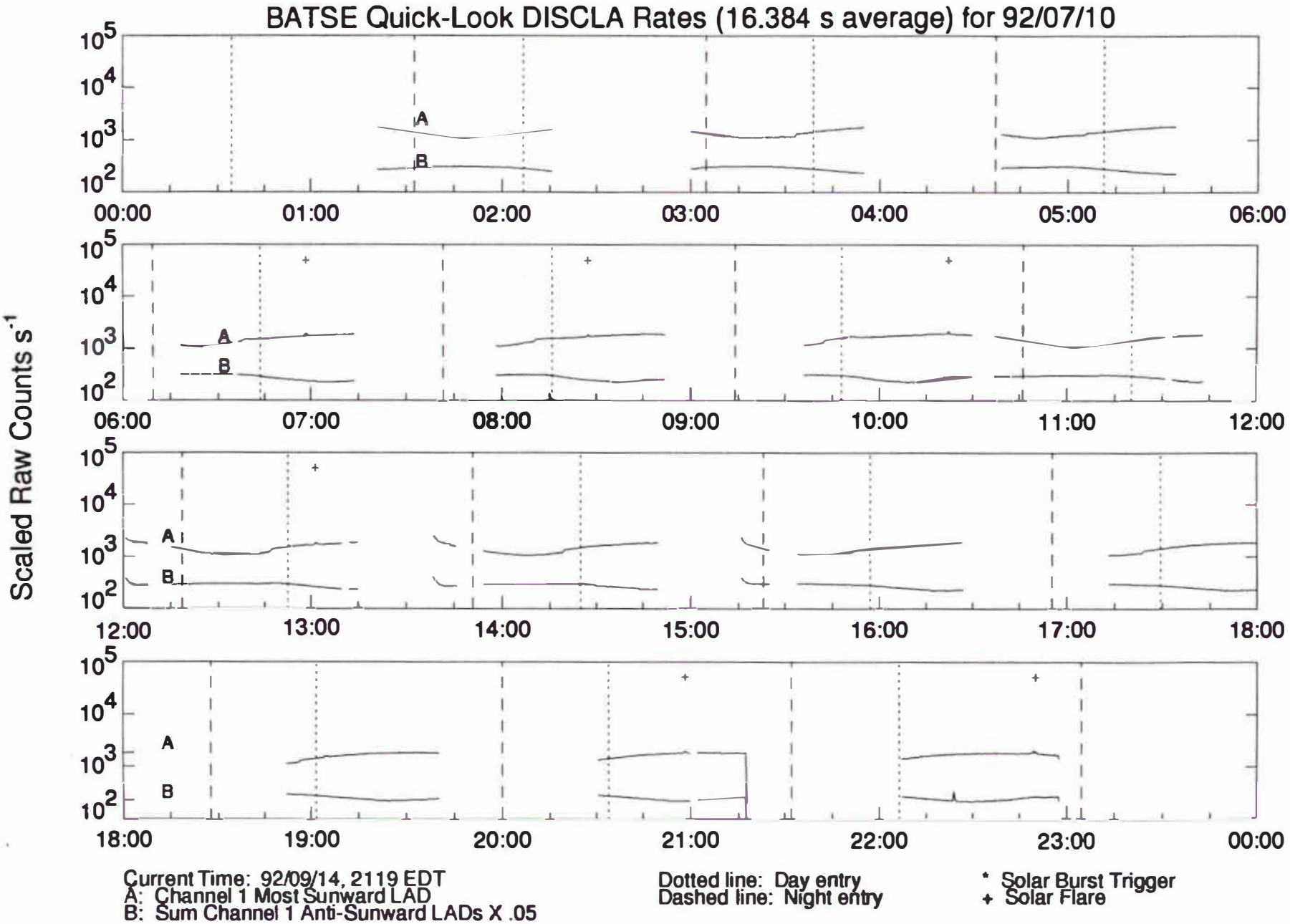
ULYSSES RT

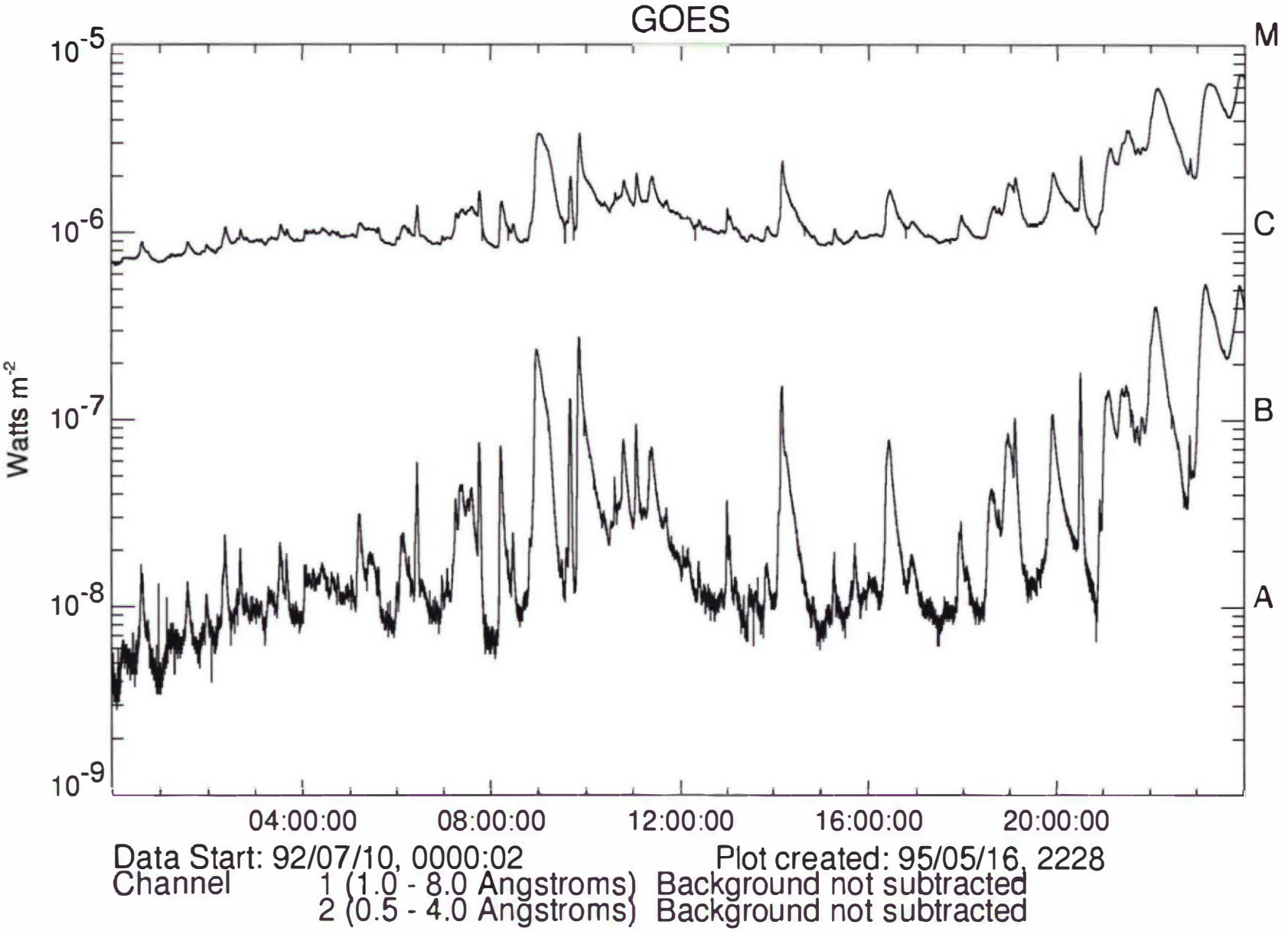
10/ 7/92 79704.445 s

0.500 S INTERVALS REGROUPED BY 2

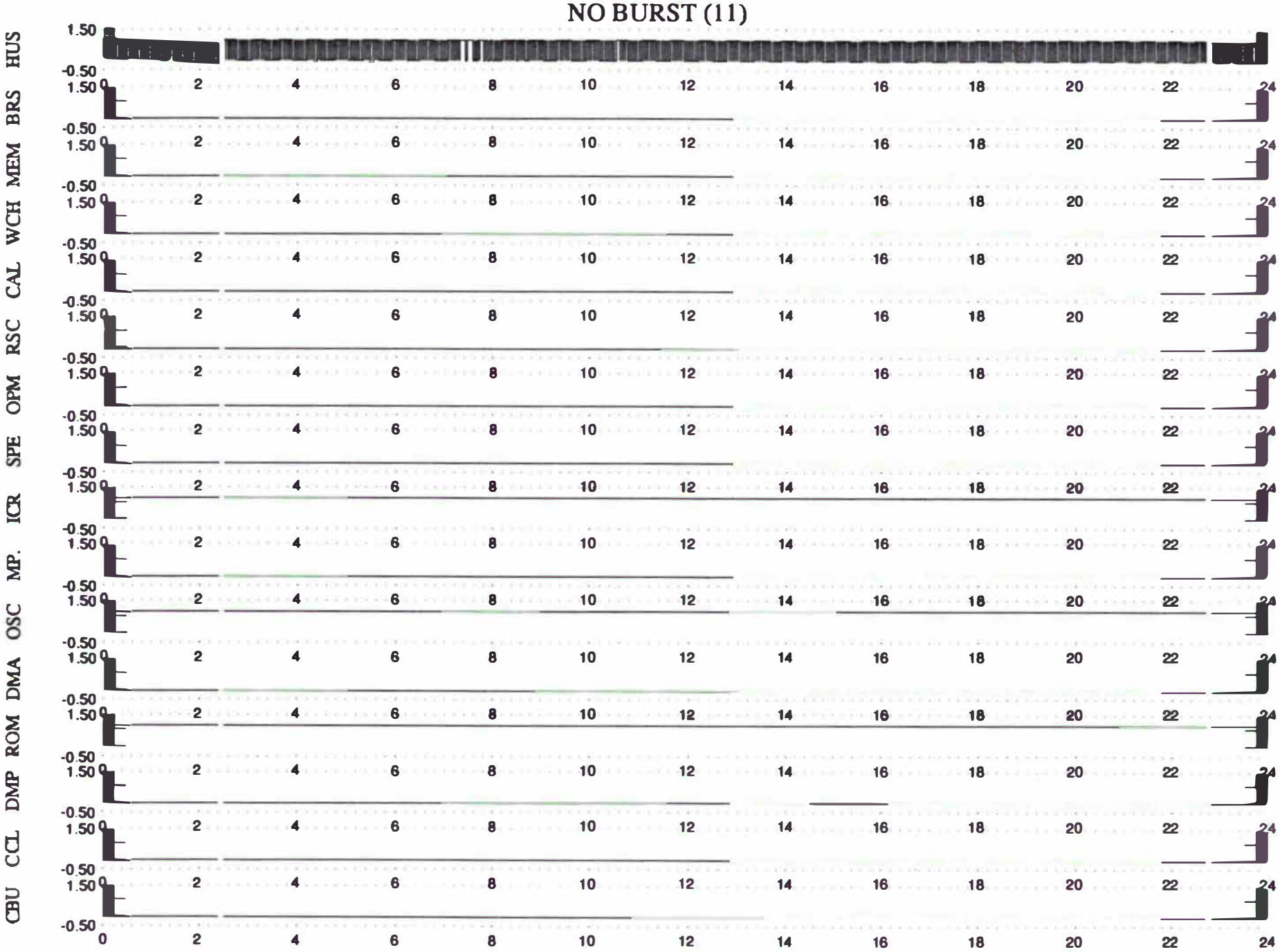
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/10
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
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: 92/09/14, 2119 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

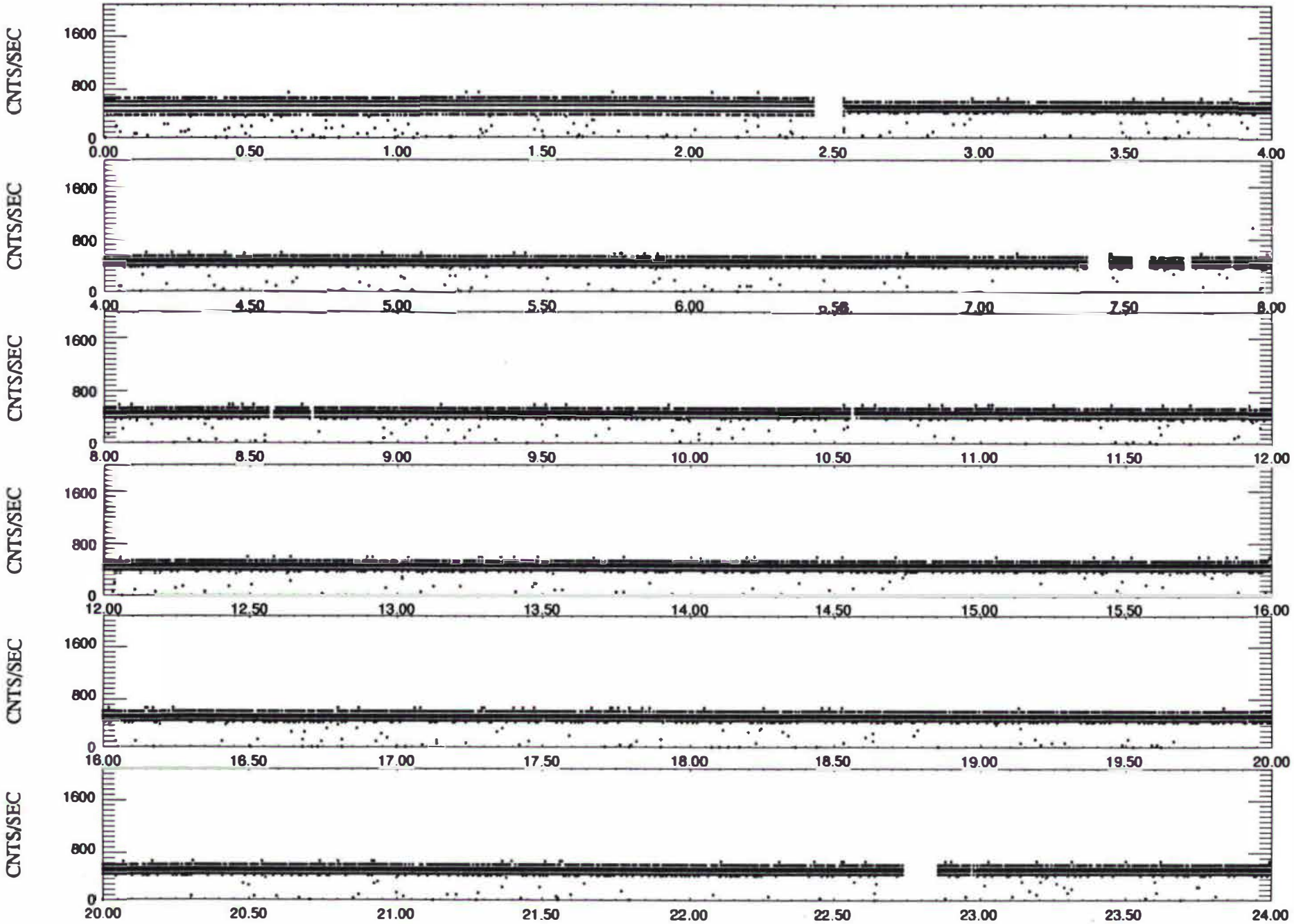

GOES
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/10, 0000:02
Plot created: 95/05/16, 2228
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 192, year 1992 to day 192, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 192, year 1992 to day 192, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIVE AL TIME

****
CATSEARCH PROGRAM
****

BATSE BURST # 1694
EVENT OF 1992 JUL 12 DAY OF YEAR=194
EVENT CROSSING TIME AT BATSE : 37693. S. OR 10:28:12.5
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 99.100 -10.400
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 12/ 7/ 92 IS:
RA= 151.337 DEC= 5.538 DIST= 6.035 AU
BATSE-ULYSSES DISTANCE = 902867416. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=125.60 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1753.08 SECS.
CROSSING TIME AT ULYSSES IS 35939. S. OR 09:58:59.4 +/- 448.53 SECONDS

KD

BATSE BURST TRIGGER

NO.: 01694

July 12

TIME: TJD=8814 SECONDS=37692

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=008.1 AZIMUTH=050.5 ERROR= DEGREES

COMMENTS:
SHORT SPIKE EVENT LASTING ~ 0.36 S WITH A DOUBLE STRUCTURE. HARD EVENT
SEEN ABOVE 320 KEV.

BATSE BURST TRIGGER

NO.: 01694

TIME: TJD=8814 SECONDS=37692

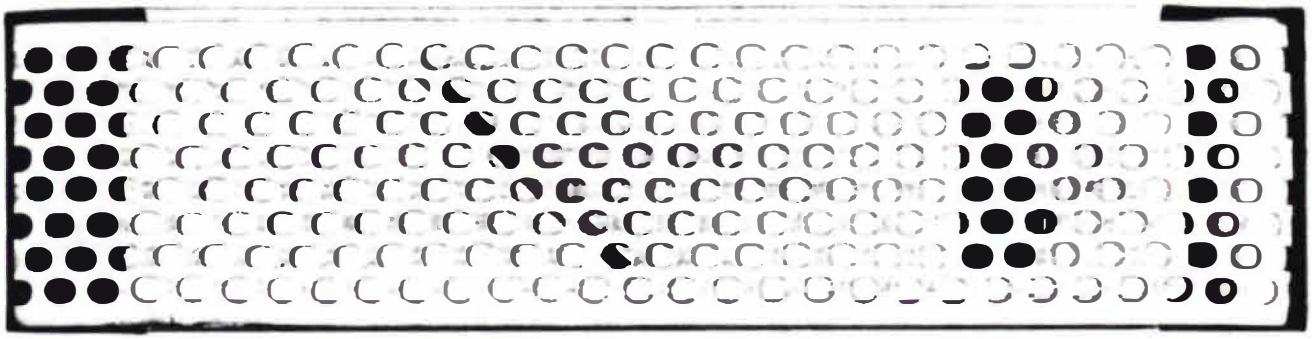
TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

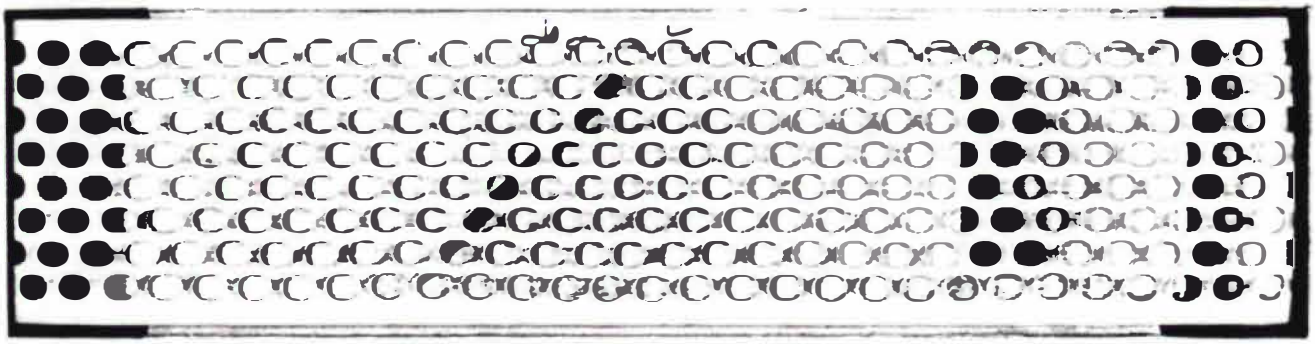
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=050.5 AZIMUTH=008.1 ERROR= DEGREES

COMMENTS:
correction to the previous msg. the gro location was reversed.





BATSE BURST# 1694

ULYSSES RT 4/ 5/98

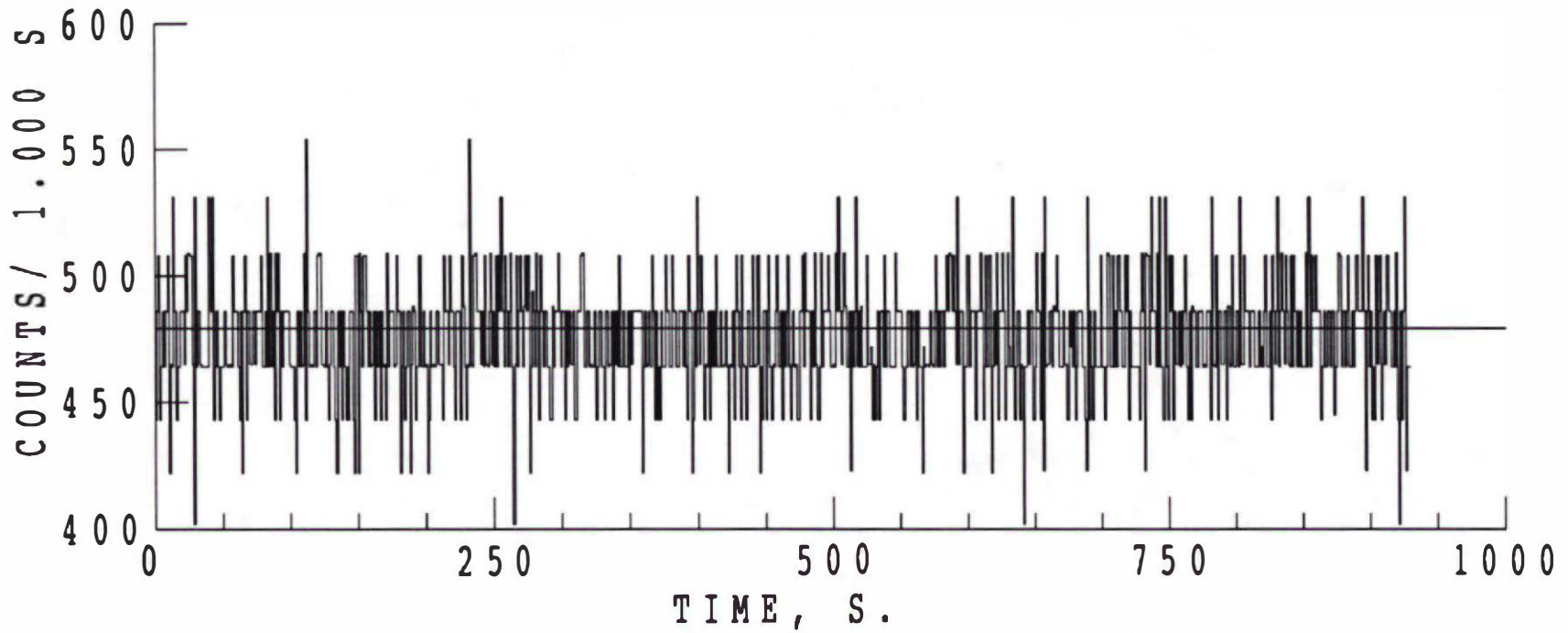
11/ 7/92 35676.137 s

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



1

****
CATSEARCH PROGRAM
****

BATSE BURST # 1695
EVENT OF 1992 JUL 11 DAY OF YEAR=193
EVENT CROSSING TIME AT BATSE : 58141. S. OR 16:09:00.5
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 285.600 73.400
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 11/ 7/ 92 IS:
RA= 151.231 DEC= 5.613 DIST= 6.025 AU
BATSE-ULYSSES DISTANCE = 901337008. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 83.97 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 315.95 SECS.
CROSSING TIME AT ULYSSES IS 58457. S. OR 16:14:16.5 +/- 573.89 SECONDS

Trigg

BATSE BURST TRIGGER
NO.: 01695

TIME: TJD=8814 SECONDS=58140

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=264.7 AZIMUTH=116.3 ERROR= DEGREES

COMMENTS:
INTENSE, COMPLEX EVENT, WITH MULTI-PEAKED STRUSTURE. TOTAL DURATION IS ~ 120 S. TWO MAIN EPISODES WITH SEVERAL PULSES IN PAIRS. VERY HARD EVENT, SEEN WELL ABOVE 320 KEV.

BATSE BURST TRIGGER
NO.: 01695

TIME: TJD=8814 SECONDS=58140

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=116.3 AZIMUTH=264.7 ERROR= DEGREES

COMMENTS:
CORRECTION OF PREVIOUS GRO LOCATION. REVERSED AZIMUTH AND ZENITH.

Helio corr removed

Date:_____

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Ephemeris calculated for start of record of real time data?

☑ Final ephemeris used?

☐ Does ULYTRIG program output contain trigger time, and not SOR? (Ditto for FILE.ult)

☑ Final, CDROM data used?

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

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?

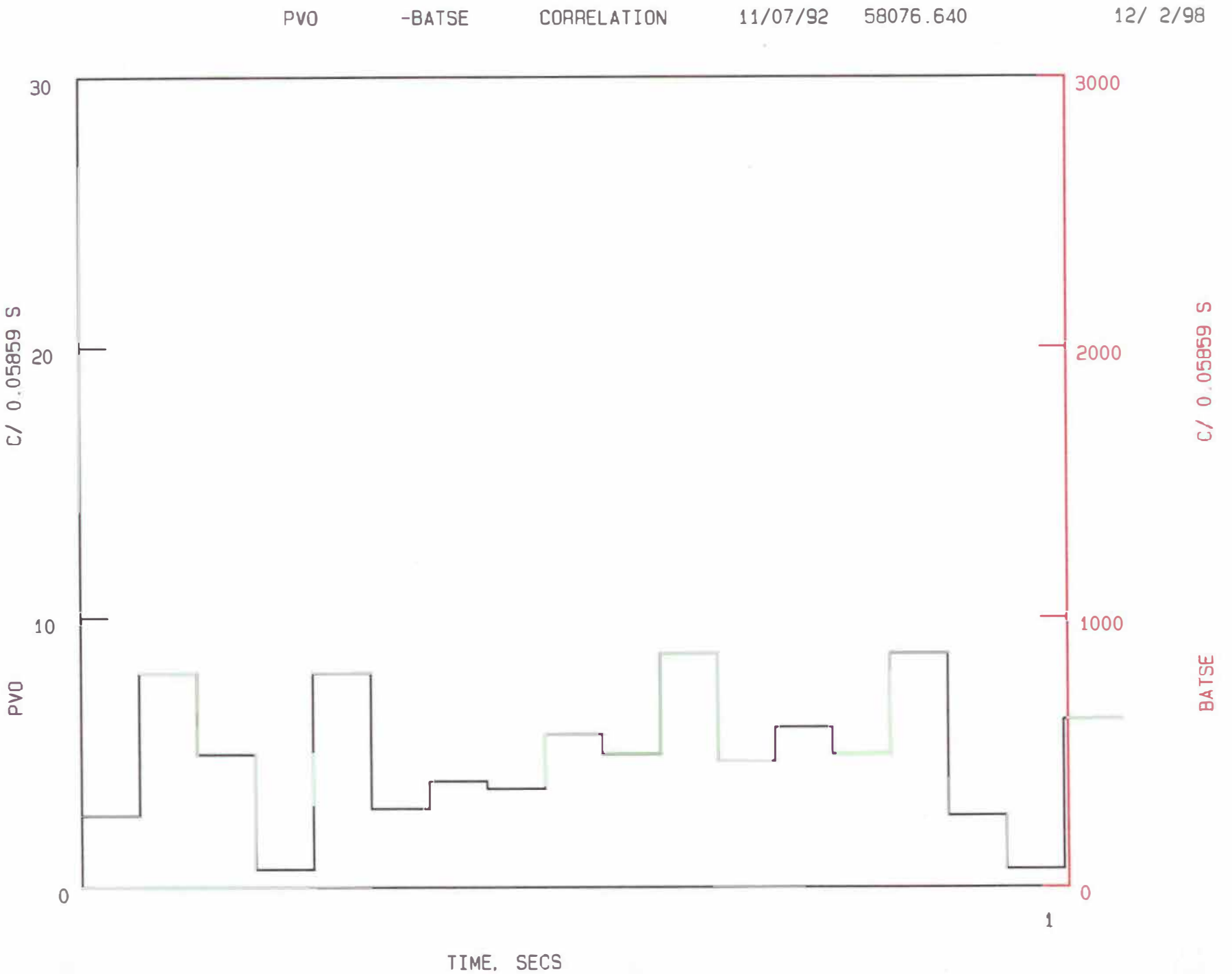
3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

☑ 2000 coordinates used?

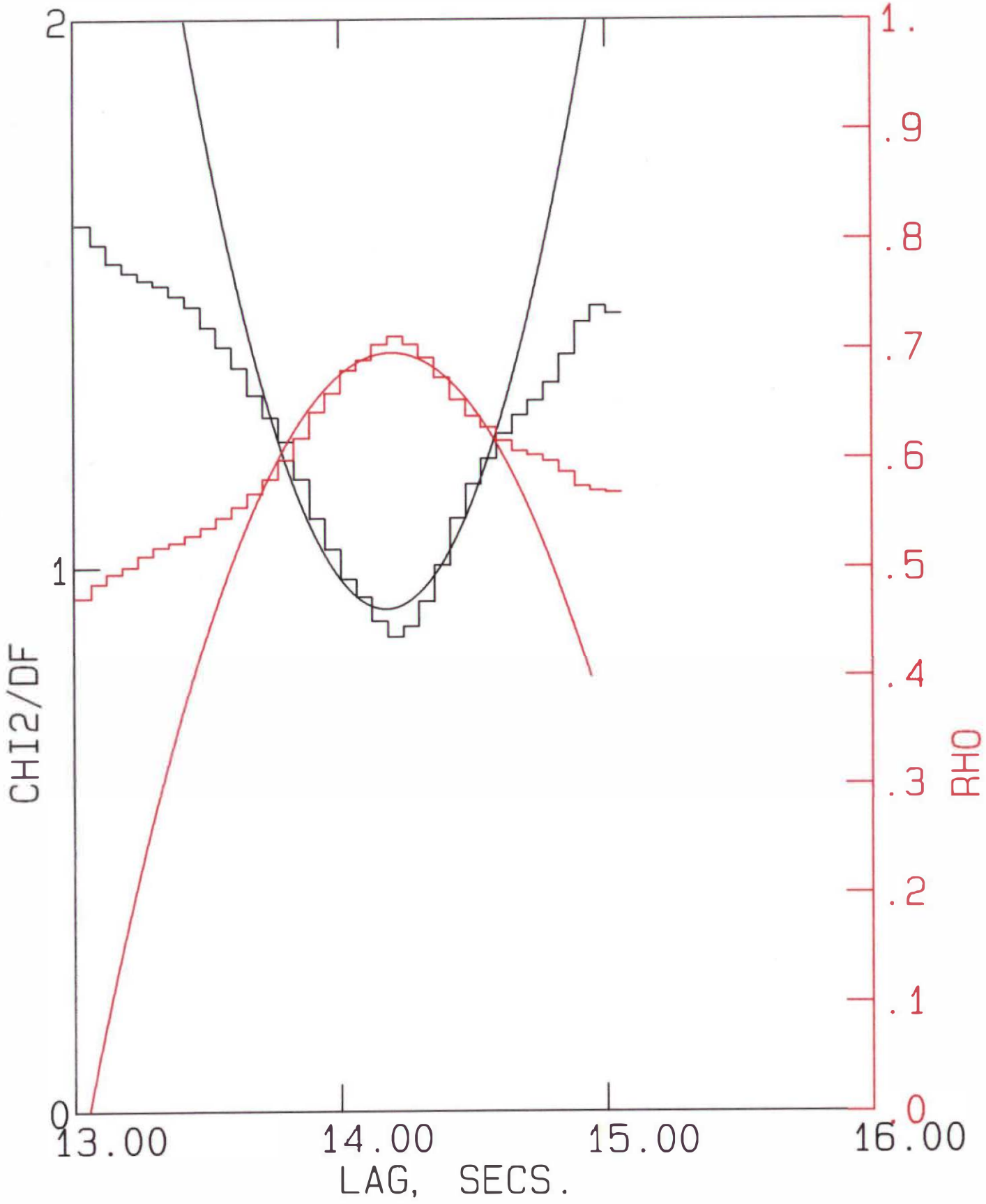
☑ Geocentric time used?

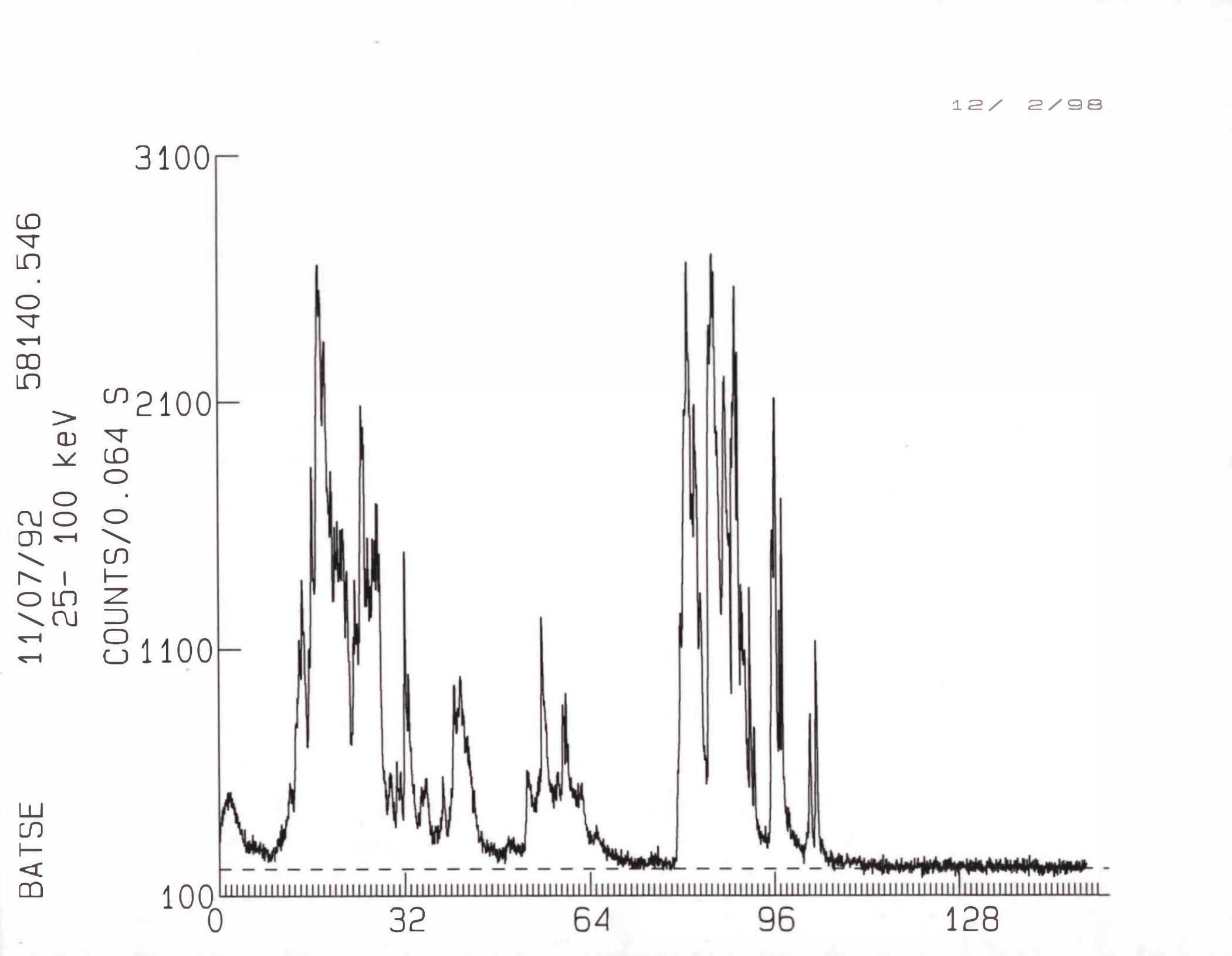
Access database updated


PVO -BATSE CORRELATION 11/07/92 58076.640 12/ 2/98
30
20
10
0
3000
2000
1000
0
C/ 0.05859 S
PVO
C/ 0.05859 S
BATSE
1
TIME, SECS

12/ 2/98

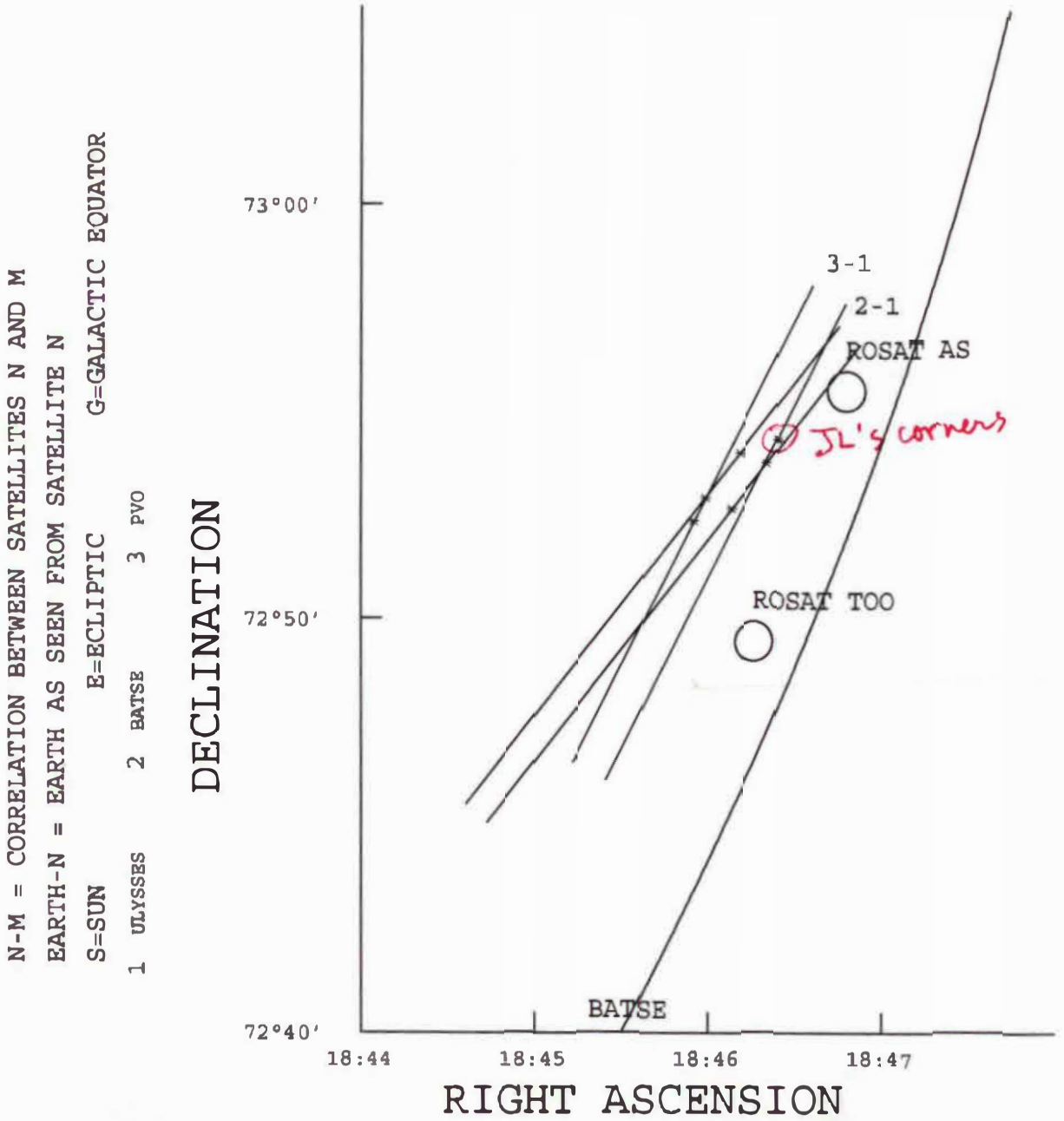
PVO -BATSE CORRELATION 11/07/92 58076.640




12/ 2/98
BATSE 11/07/92 58140.546
25- 100 keV
COUNTS/0.064 S
3100
2100
1100
100
0
32
64
96
128

EVENT OF JUL 11, 1992 16:14

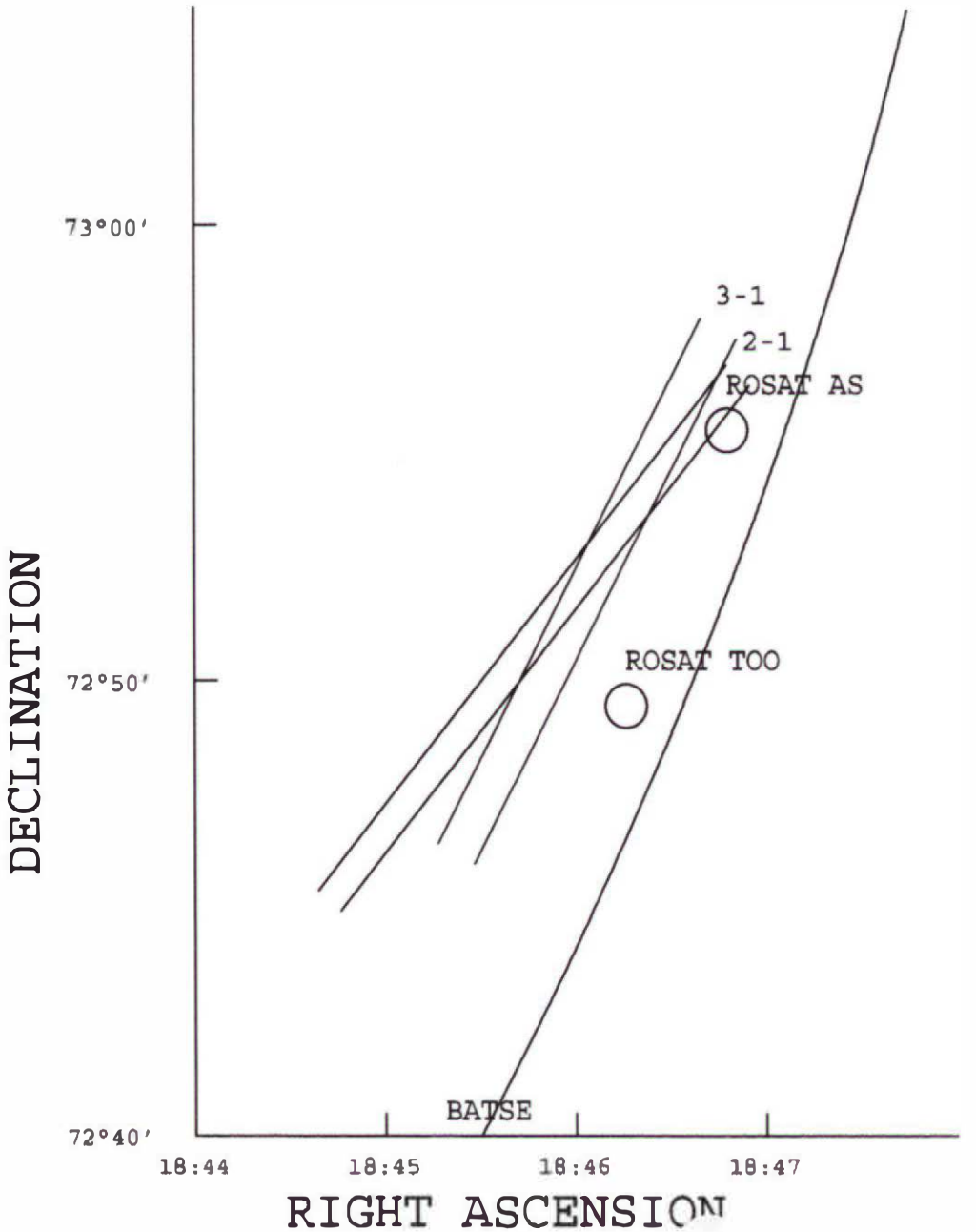
10/10/97



EVENT OF JUL 11, 1992 16:14

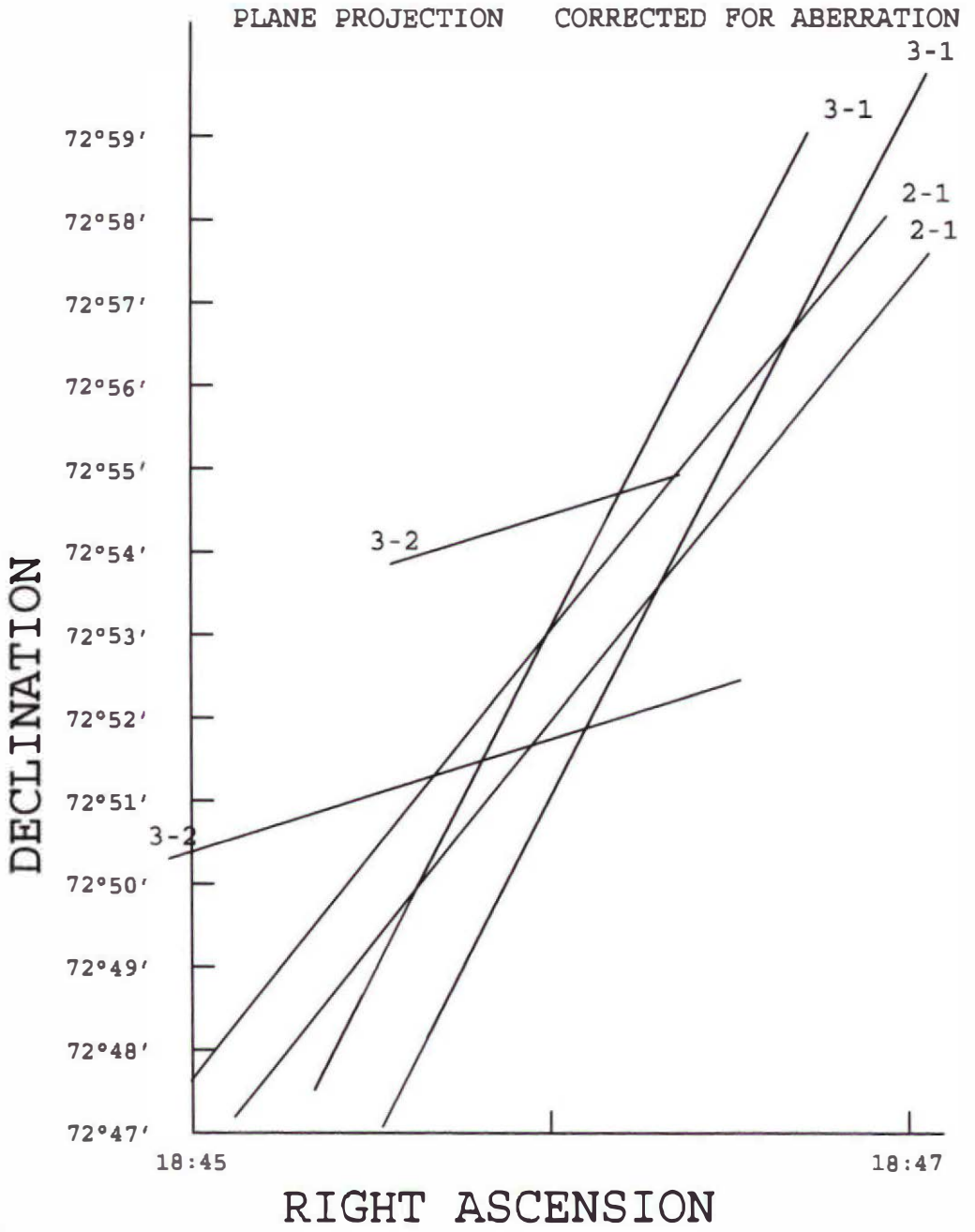
27/12/96

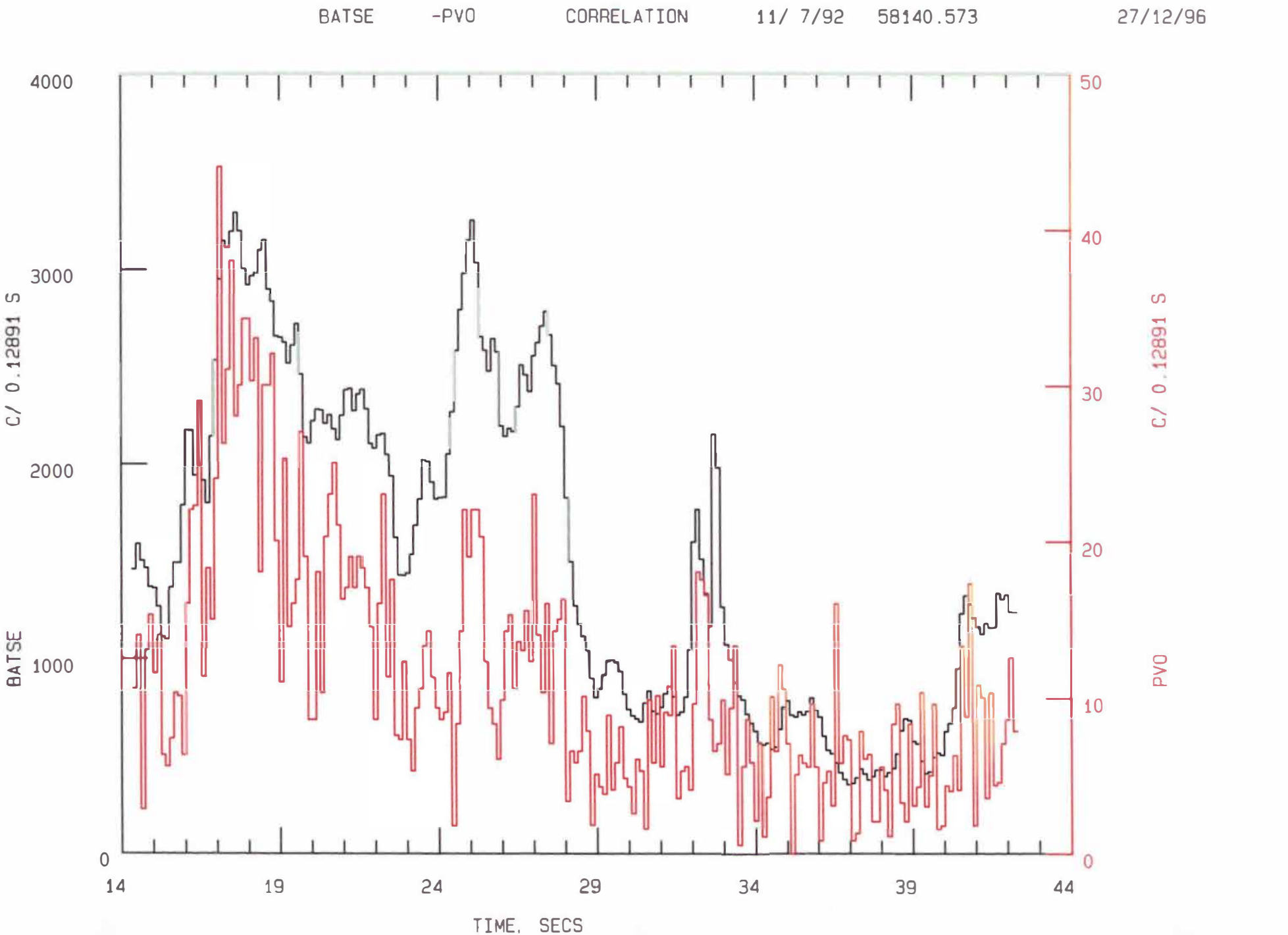
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO



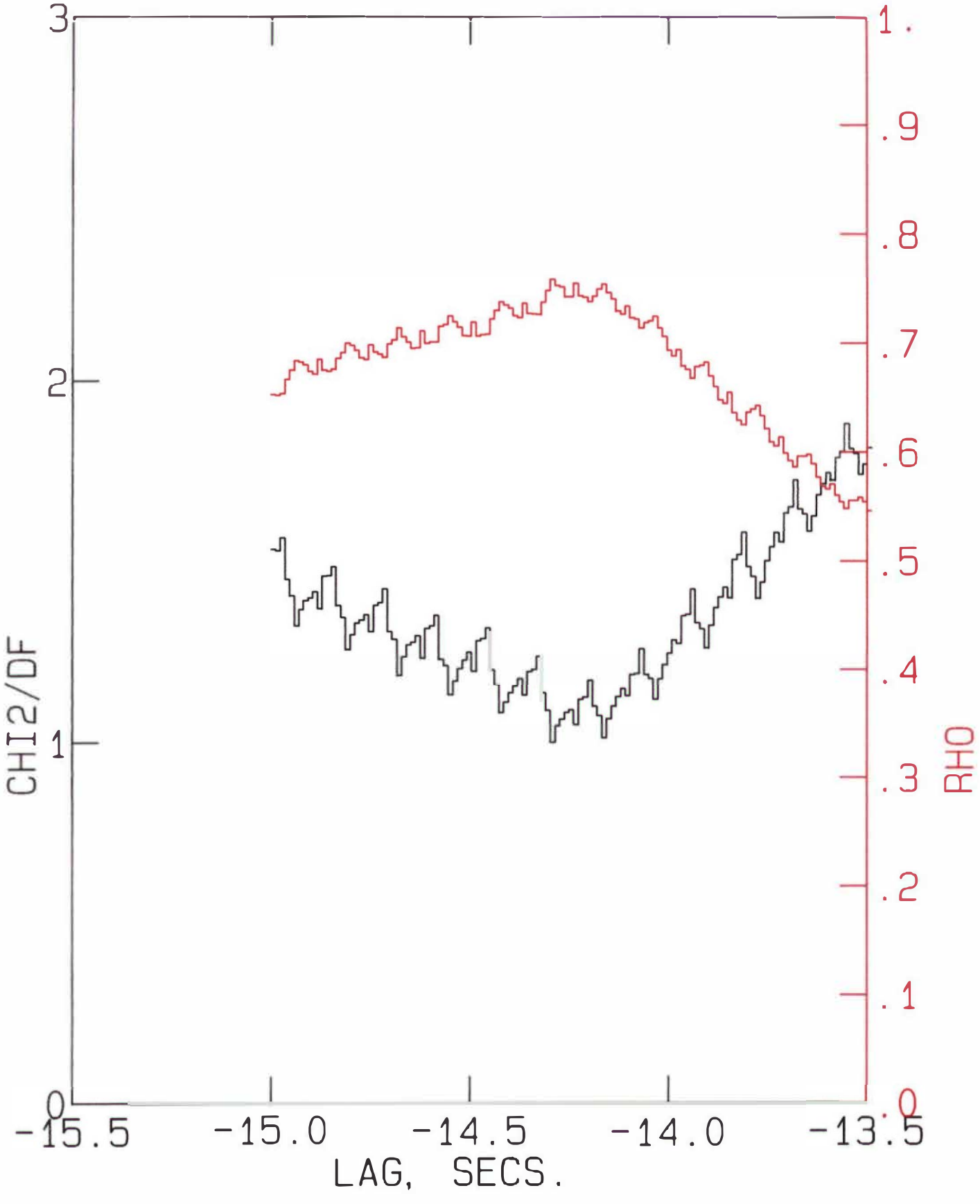
EVENT OF JUL 11, 1992 16:14

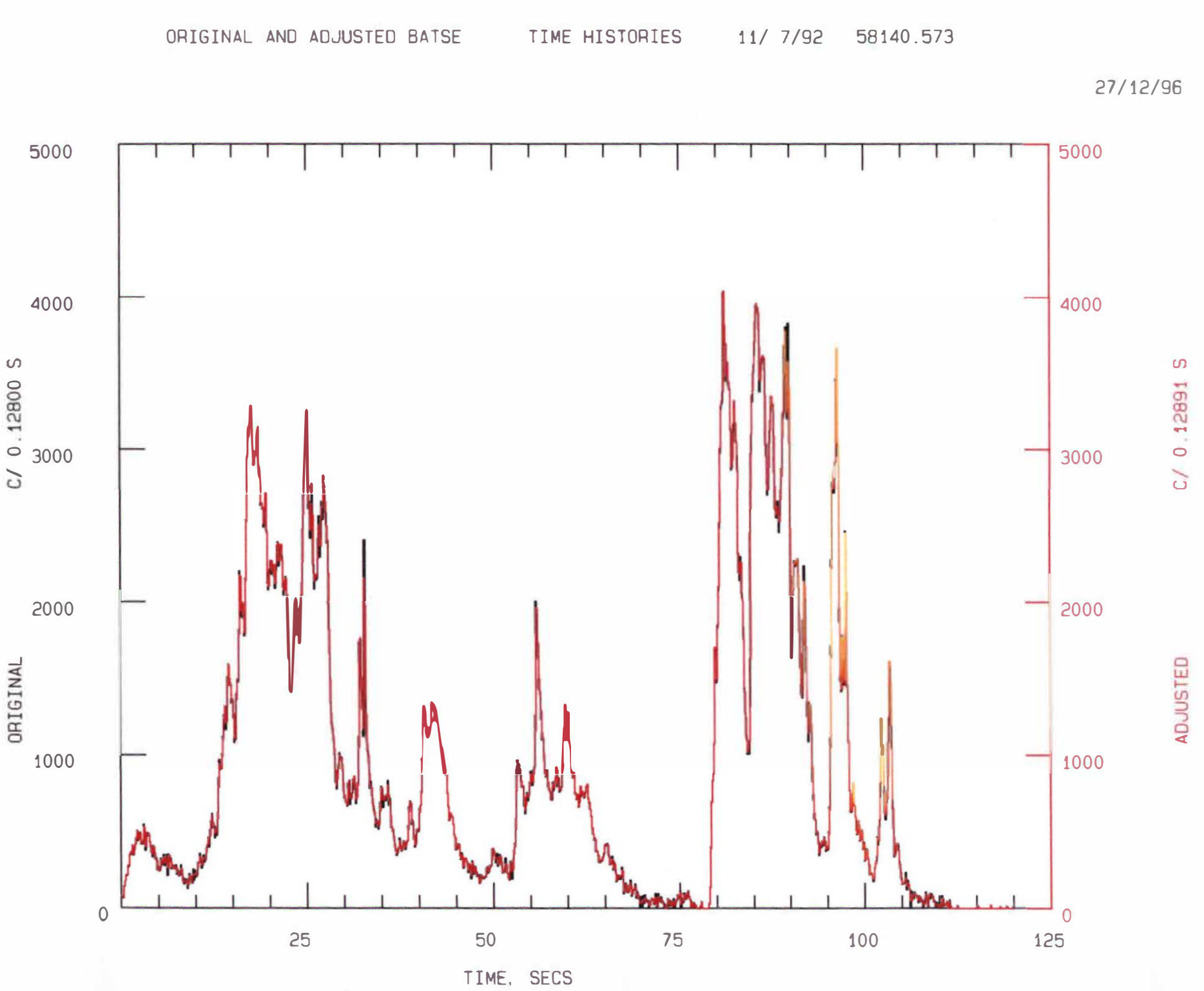
27/12/96

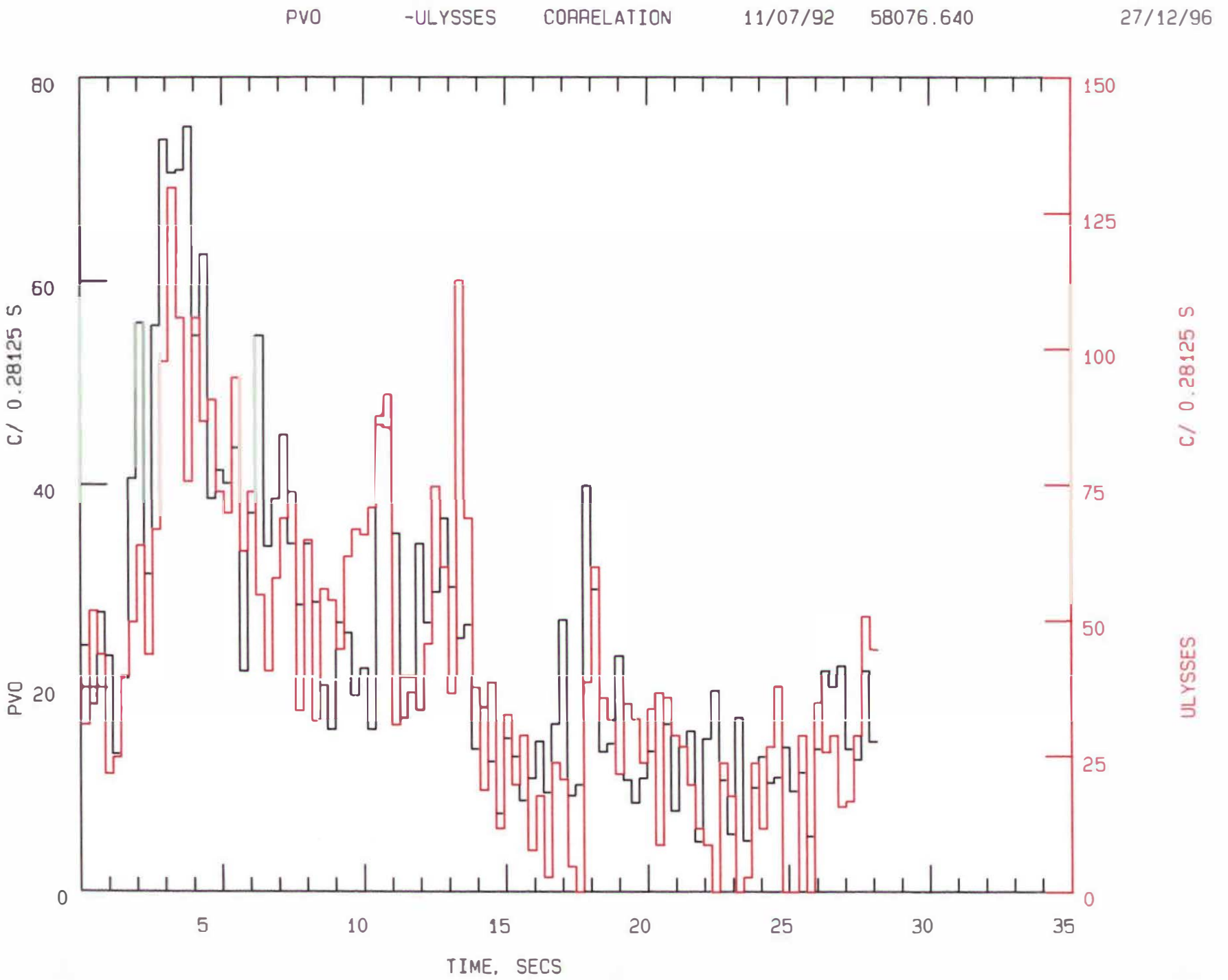



BATSE -PVO CORRELATION 11/ 7/92 58140.573 27/12/96
4000
3000
2000
1000
0
C/ 0.12891 S
BATSE
50
40
30
20
10
0
C/ 0.12891 S
PVO
14
19
24
29
34
39
44
TIME, SECS

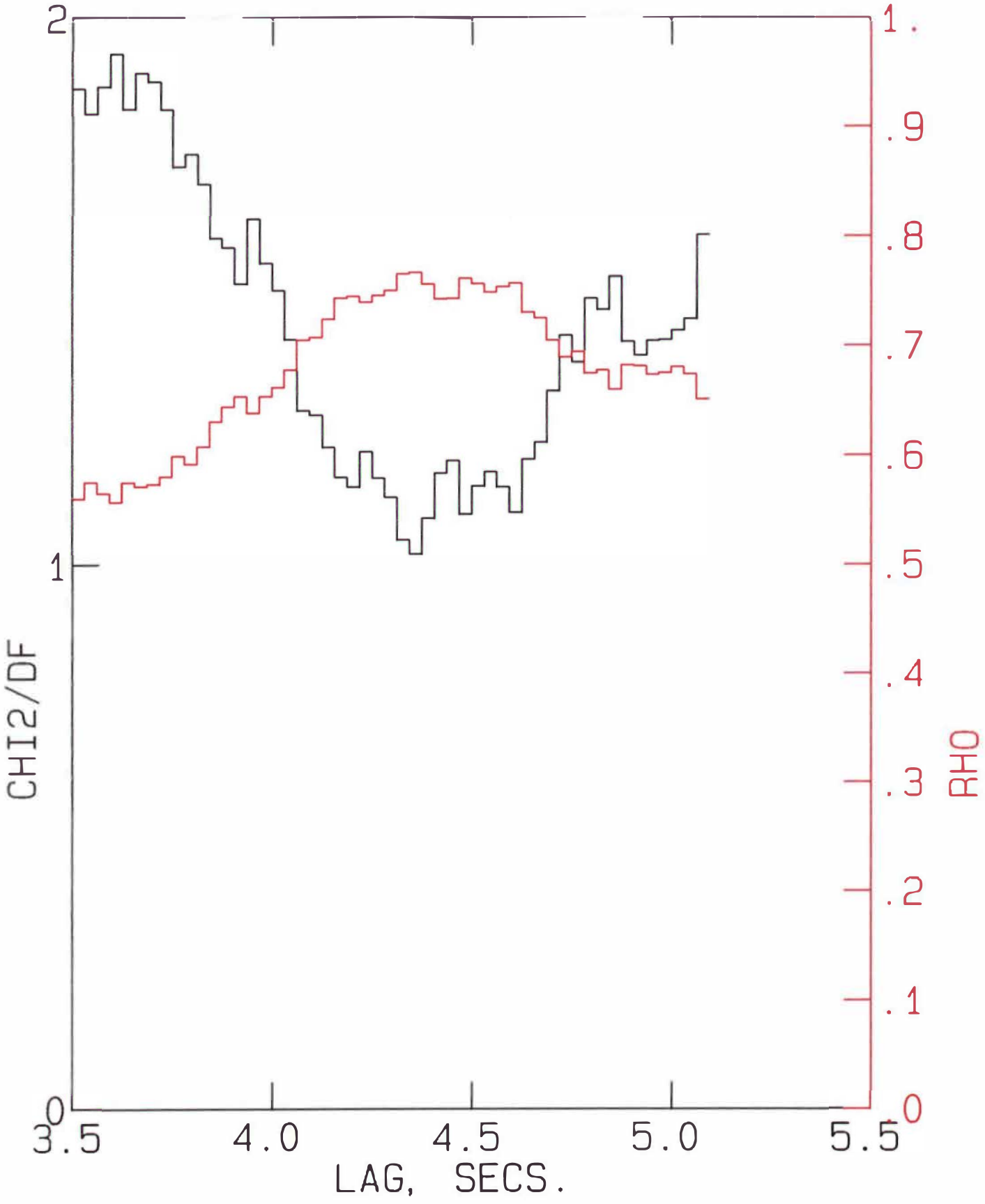
BATSE -PVO CORRELATION 11/ 7/92 58140.573

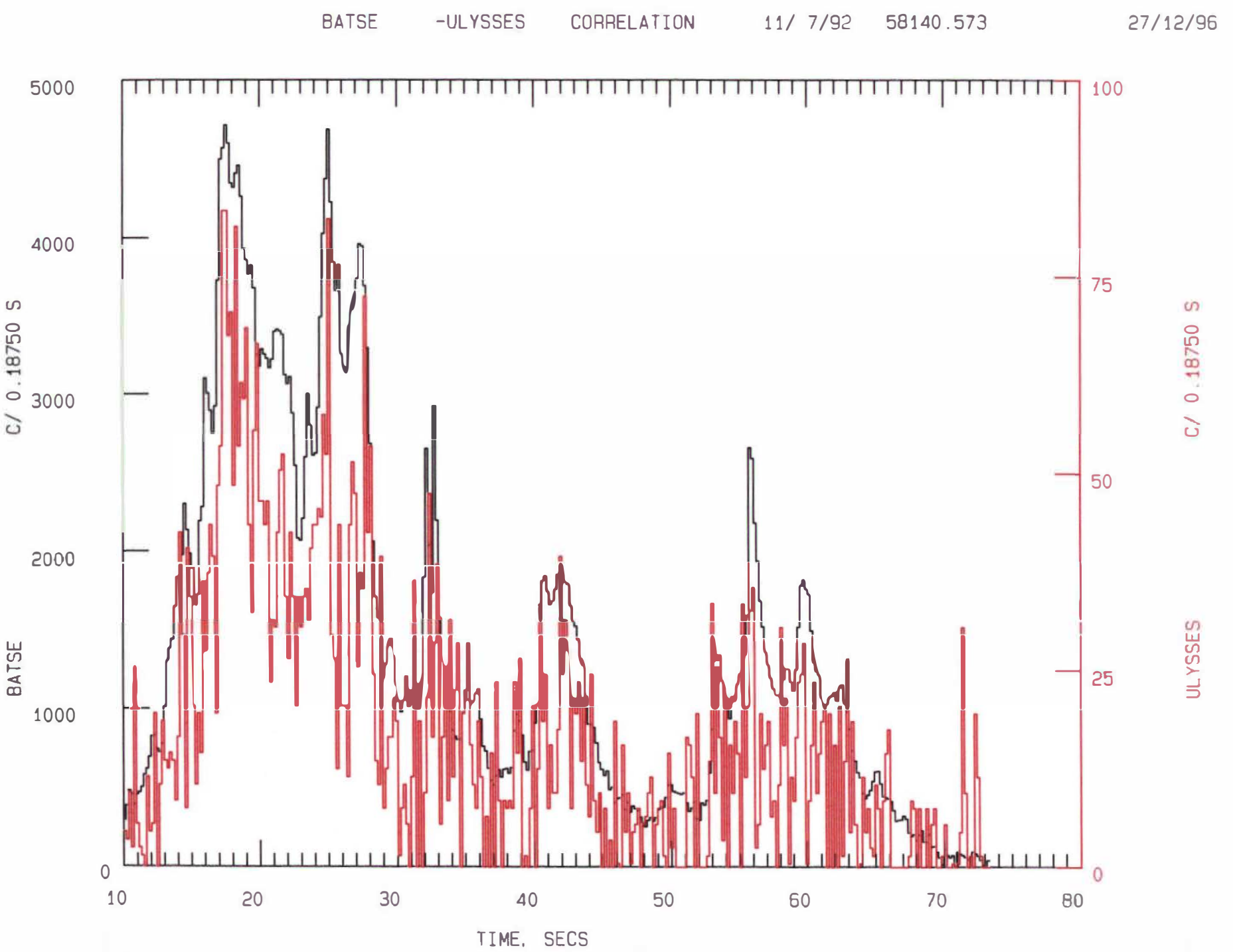



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 7/92 58140.573
27/12/96
5000
4000
3000
2000
1000
0
C/ 0.12800 S
ORIGINAL
C/ 0.12891 S
ADJUSTED
25
50
75
100
125
TIME, SECS

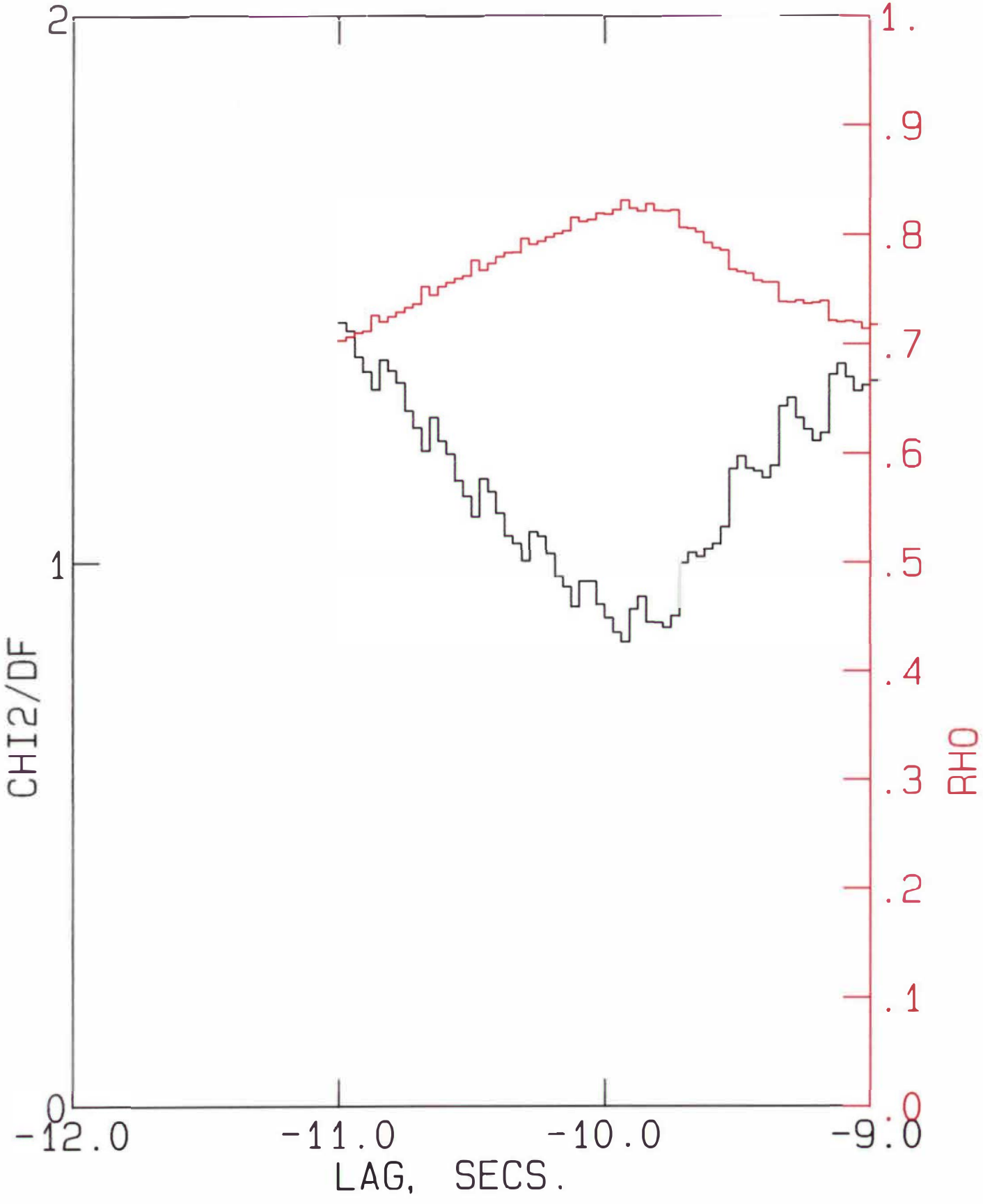

PVO -ULYSSES CORRELATION 11/07/92 58076.640 27/12/96
80
60
40
20
0
C/ 0.28125 S
PVO
150
125
100
75
50
25
0
C/ 0.28125 S
ULYSSES
5
10
15
20
25
30
35
TIME, SECS

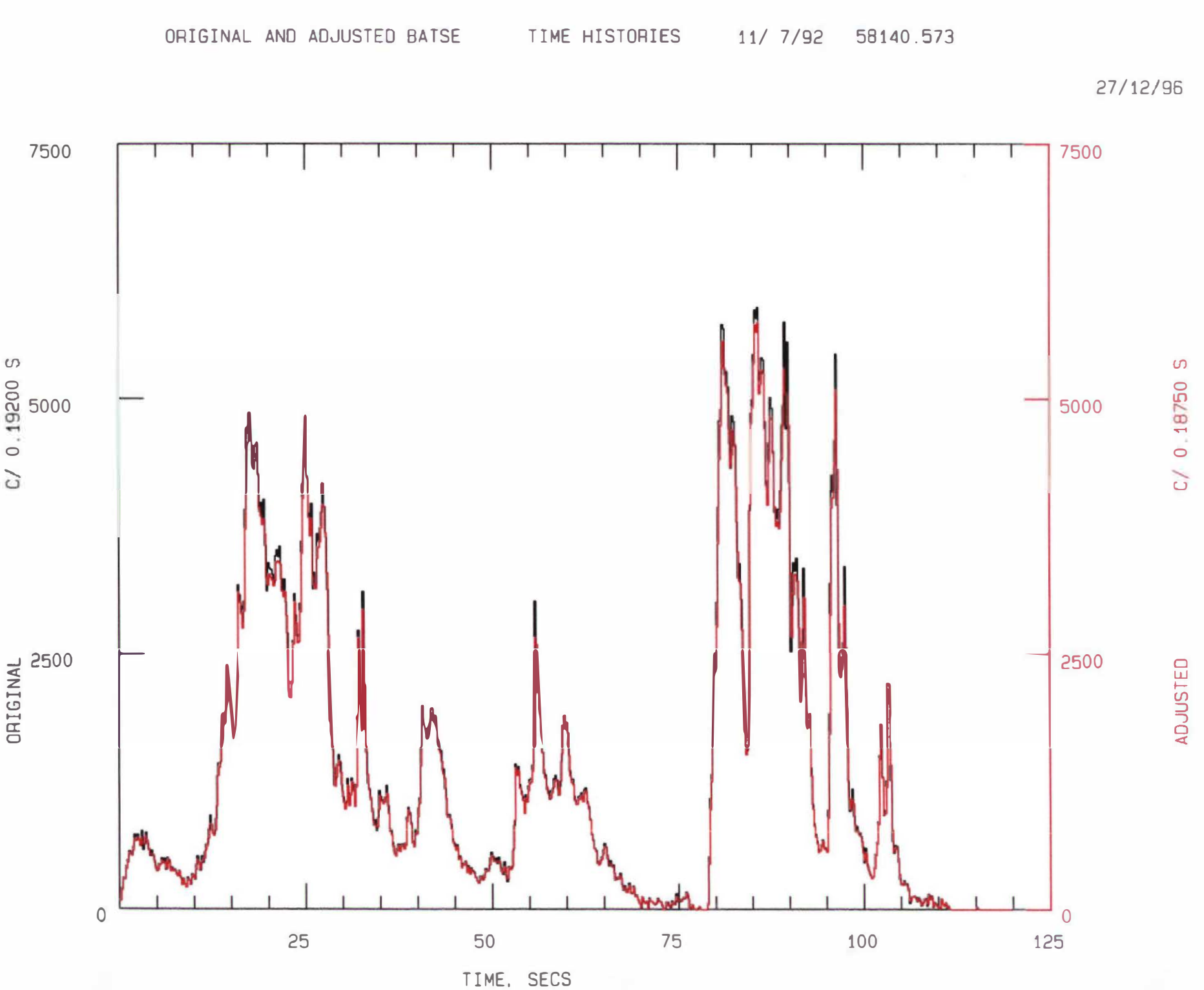
PVO -ULYSSES CORRELATION 11/07/92 58076.640




BATSE -ULYSSES CORRELATION 11/ 7/92 58140.573 27/12/96
5000
4000
3000
2000
1000
0
C/ 0.18750 S
BATSE
100
75
50
25
0
C/ 0.18750 S
ULYSSES
10
20
30
40
50
60
70
80
TIME, SECS

BATSE -ULYSSES CORRELATION 11/ 7/92 58140.573

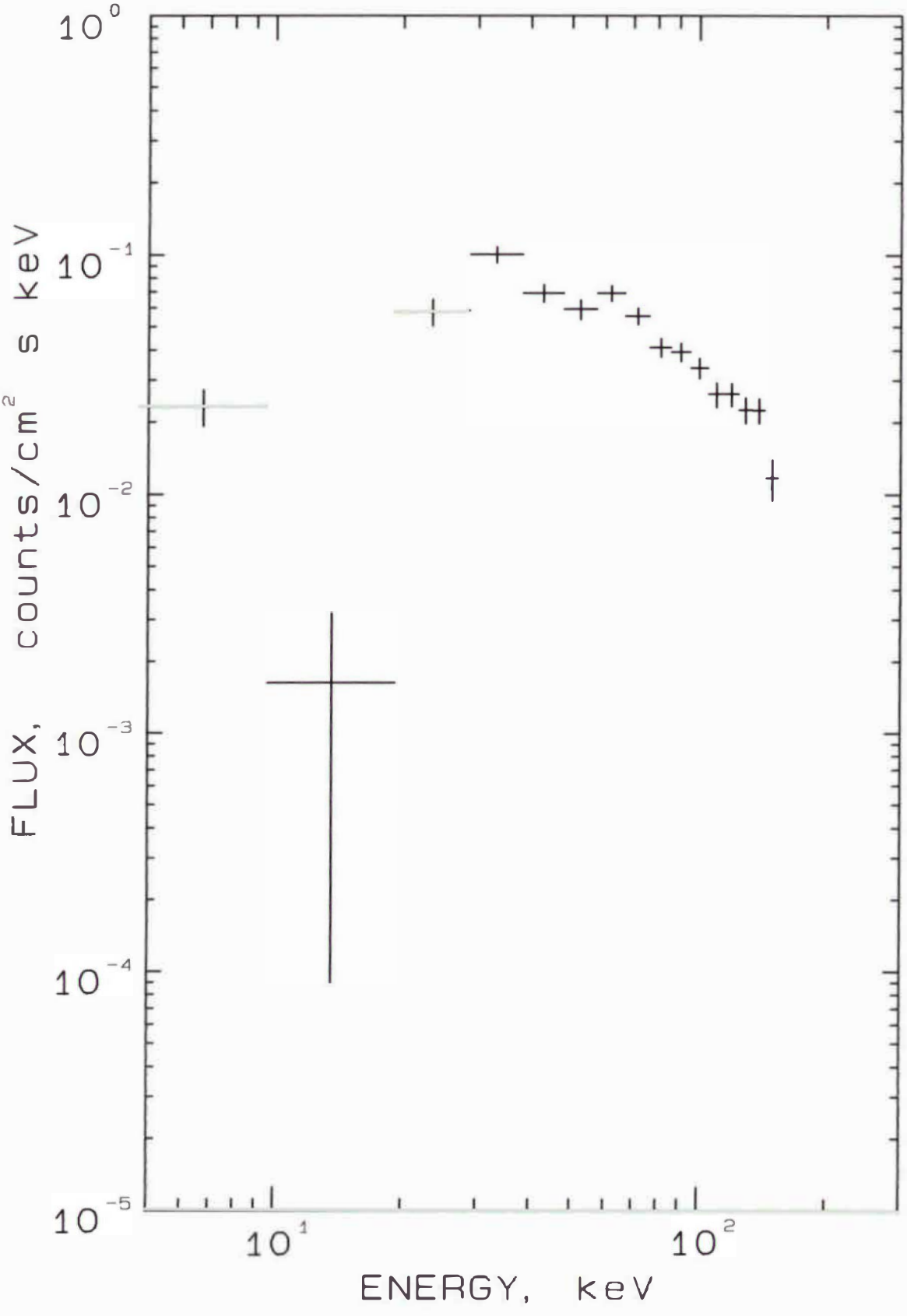


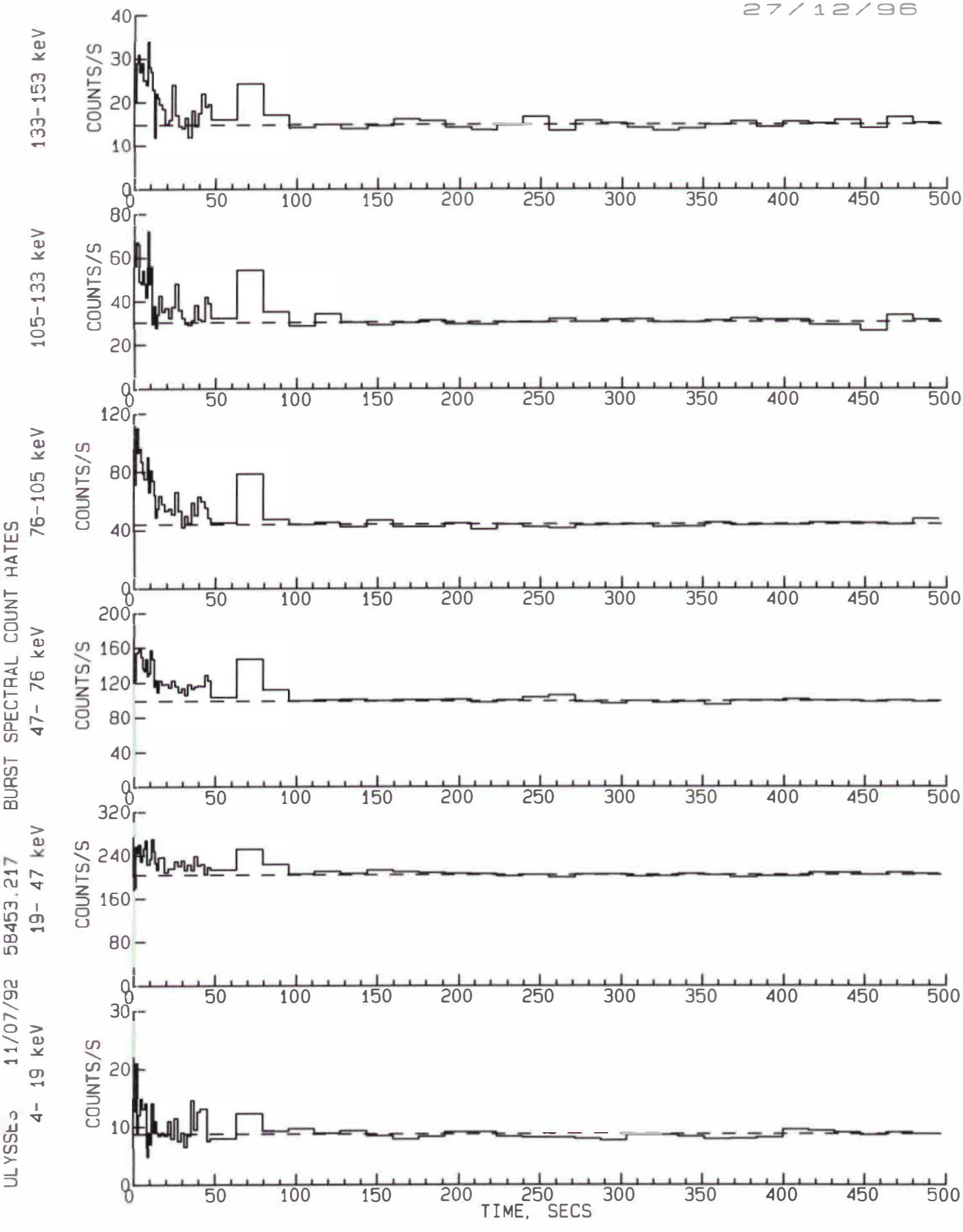

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 11/ 7/92 58140.573
27/12/96
7500
5000
2500
0
C/ 0.19200 S
ORIGINAL
7500
5000
2500
0
C/ 0.18750 S
ADJUSTED
25
50
75
100
125
TIME, SECS

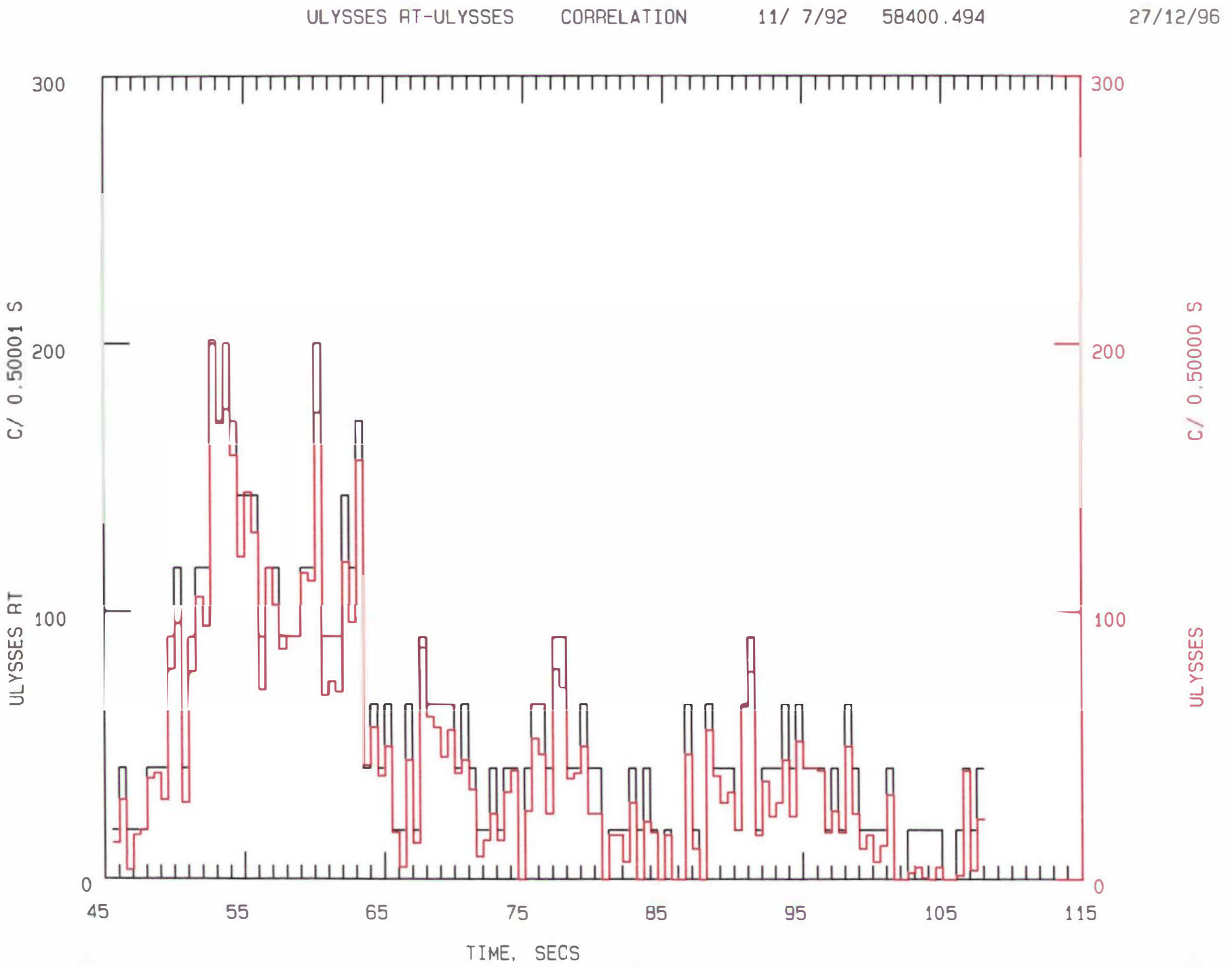
ULYSSES 11/07/92 58453.217

27/12/96

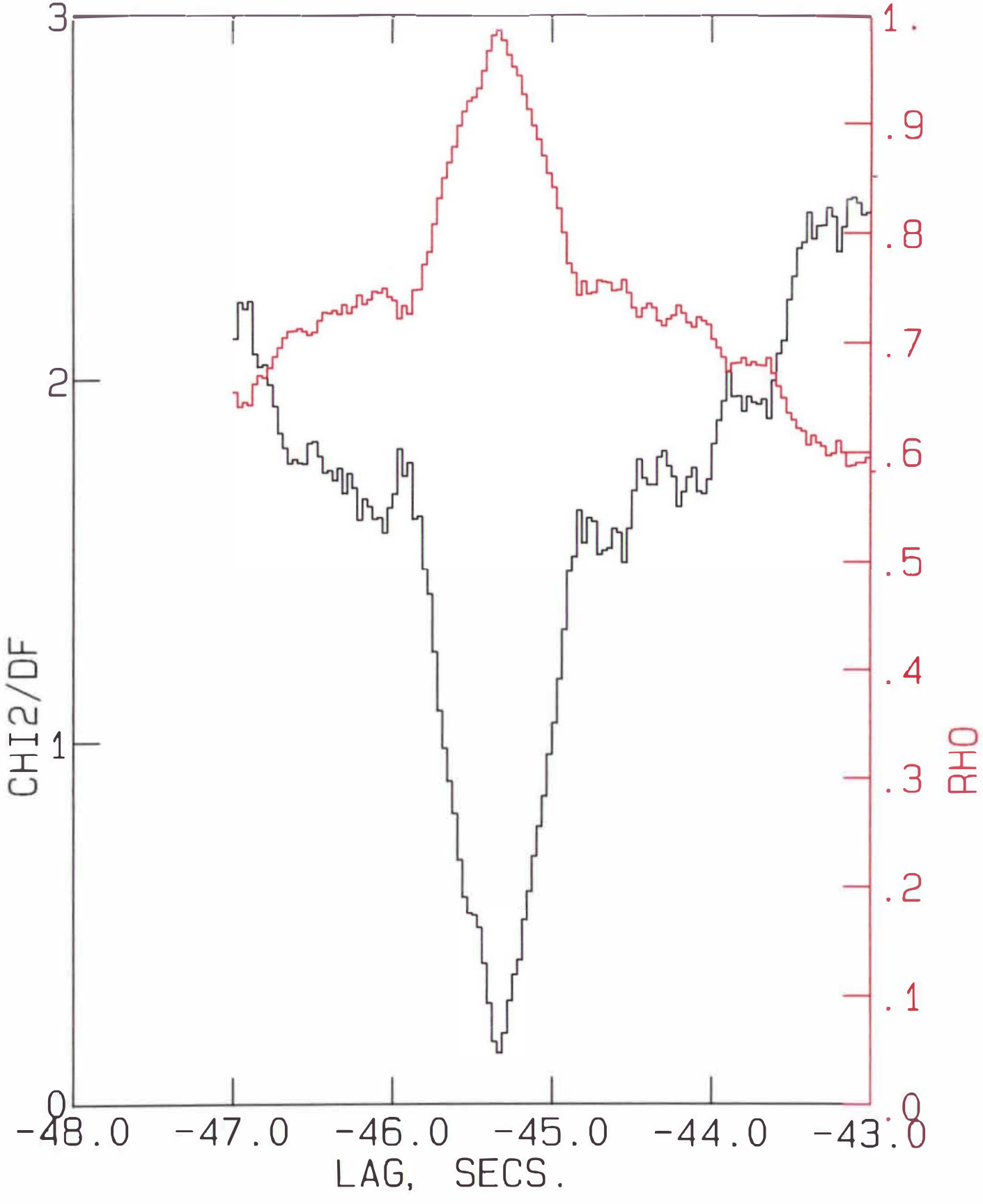
SPECTRUM INTEGRATED OVER 111.3 SECONDS. INTERVALS 2 TO 37

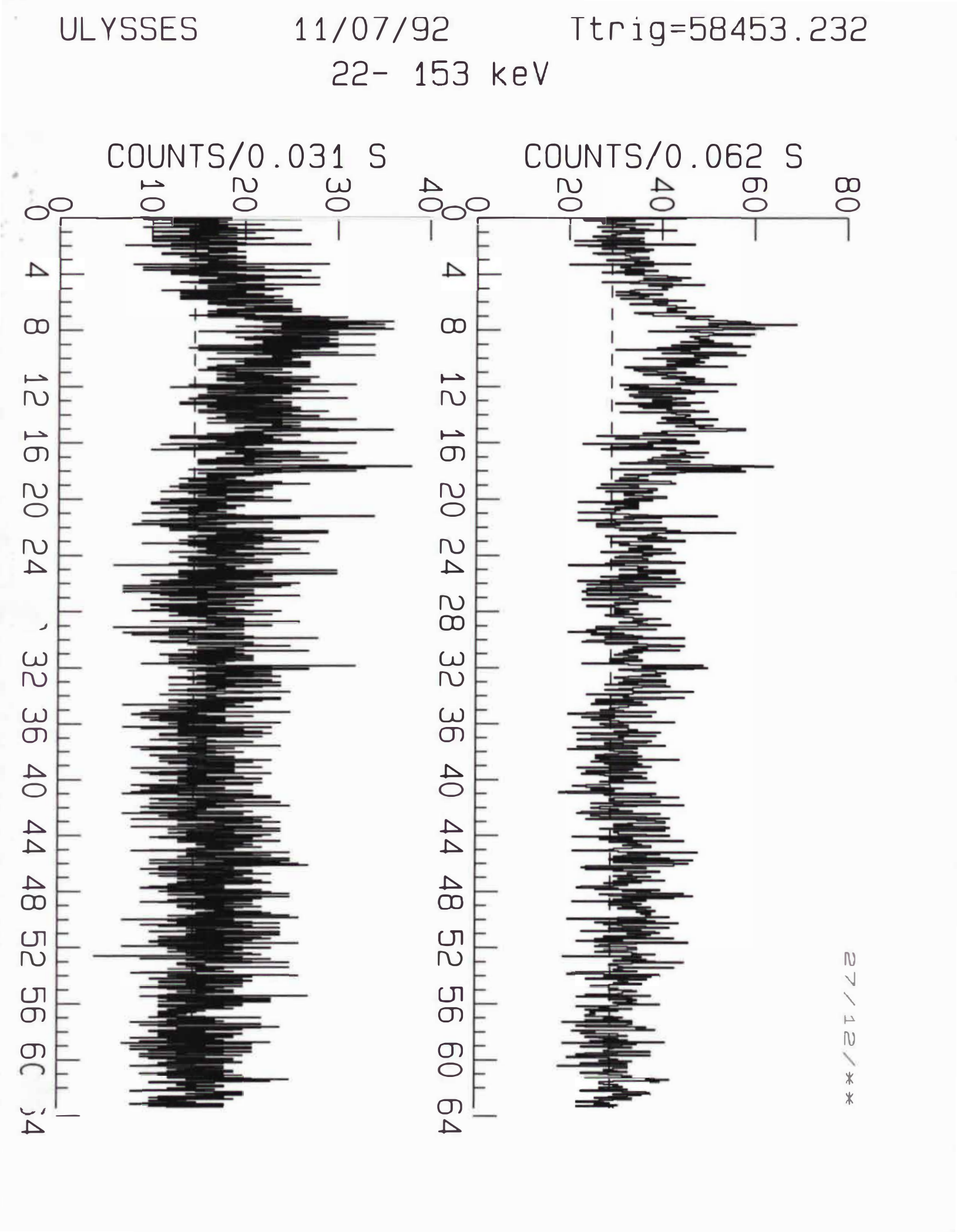



27/12/96
ULYSSES 11/07/92 58453.217 BURST SPECTRAL COUNT RATES
133-153 keV
105-133 keV
76-105 keV
47- 76 keV
19- 47 keV
4- 19 keV
COUNTS/S
TIME, SECS


ULYSSES RT-ULYSSES CORRELATION 11/ 7/92 58400.494 27/12/96
300
200
100
0
C/ 0.50001 S
ULYSSES RT
300
200
100
0
C/ 0.50000 S
ULYSSES
45
55
65
75
85
95
105
115
TIME, SECS

ULYSSES RT-ULYSSES CORRELATION 11/ 7/92 58400.494



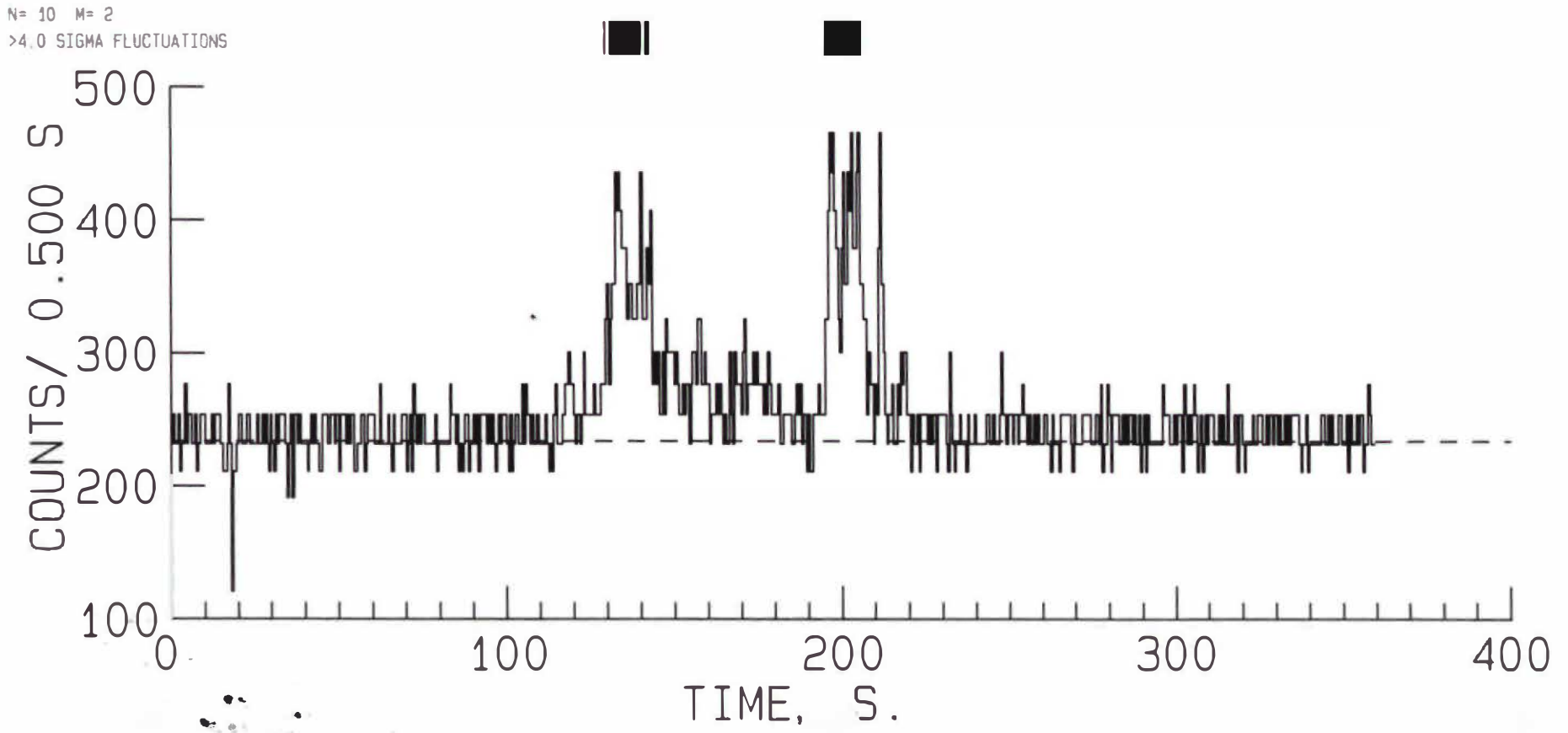

ULYSSES 11/07/92 Ttrig=58453.232
22- 153 keV
COUNTS/0.031 S
COUNTS/0.062 S
27/12/**

ULYSSES RT

27/12/96

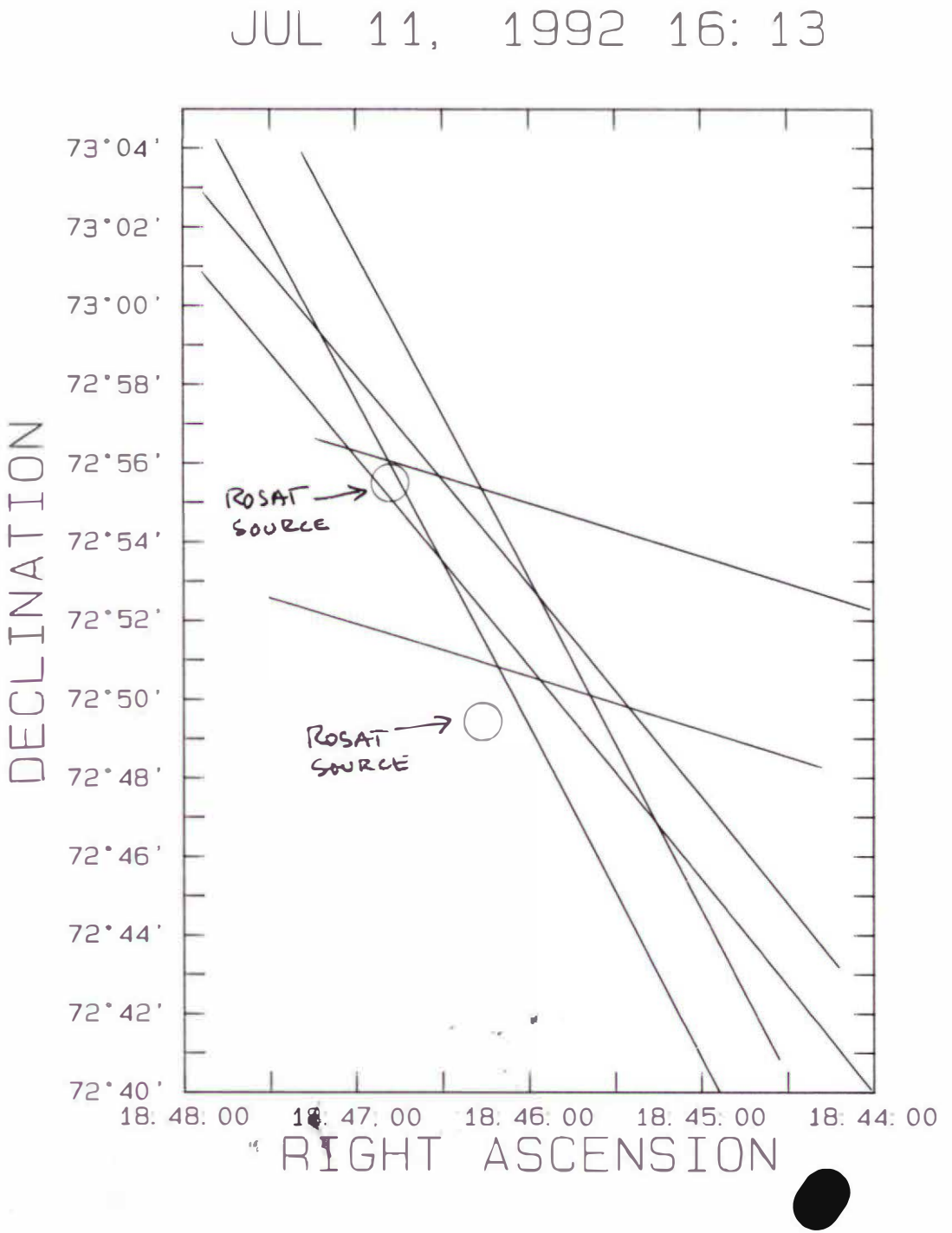
11/ 7/92 58320.497 s

22- 153 keV



15/ 7/93

OLD


JUL 11, 1992 16: 13
DECLINATION
73°04'
73°02'
73°00'
72°58'
72°56'
72°54'
72°52'
72°50'
72°48'
72°46'
72°44'
72°42'
72°40'
ROSAT SOURCE
ROSAT SOURCE
18. 48. 00
18. 47. 00
18. 46. 00
18. 45. 00
18. 44. 00
RIGHT ASCENSION

From sammy@astro.ucla.edu Thu Dec 5 10:39 PST 1996
From: sammy@astro.ucla.edu
To: khurley@sunspot.ssl.berkeley.edu (Kevin Hurley)
Subject: Re: IPN3
Date: Thu, 05 Dec 96 10:39:35 -0800
X-Mts: smtp

Good idea about doing a final check. Here is my target list:

910122✓
910219✓
911118 Re-do - JL's + my PVO times disagree by 1.4s ✓
920325✓
920406✓
920501✓
920525✓
920711✓
920720✓
920723✓

I believe that 920406 was further reduced. You sent me the new, smaller box for that, but I decided to stick with the larger box because I want a consistent sample of boxes and the others weren't further reduced.

I'm glad I asked you about the aberration - I never would have thought of that!

Sammy

From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

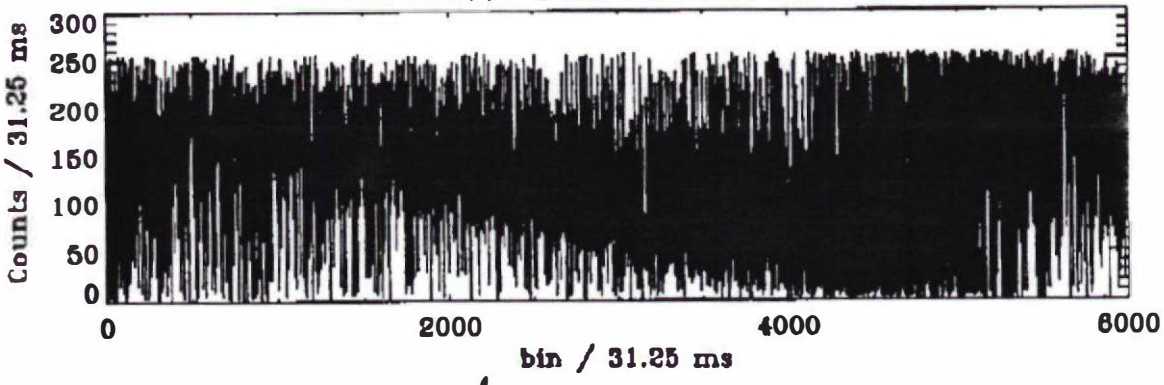
Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

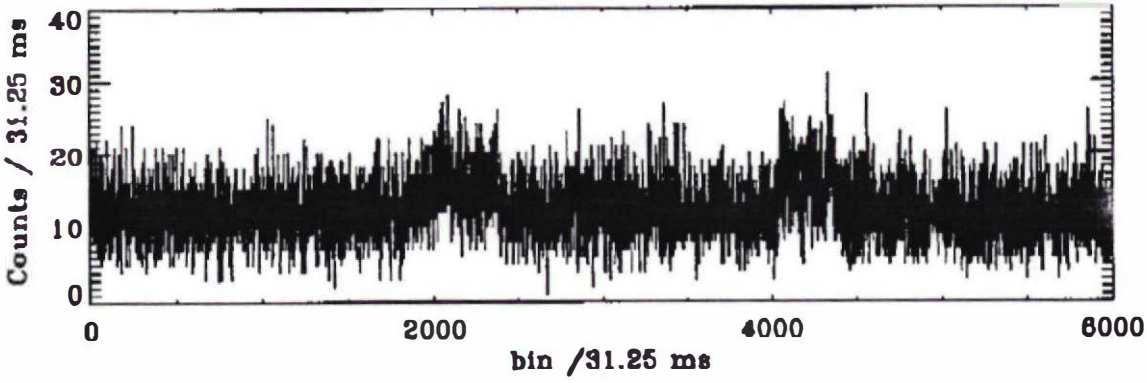
%19

Yohkoh

GB920712 1 RBM PC TIME PROFILE



GB920712 1 HXS PC TIME PROFILE



920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 10NA 11SR
930506	53571	YES--53578
930506	65631	NA

From root Thu Feb 3 13:55 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00852; Thu, 3 Feb 94 13:55:12
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA13978; Thu, 3 Feb 1994 12:59:12 +0800
Date: Thu, 3 Feb 1994 14:00:37 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940203140037.23c05074@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRO GRB
Content-Length: 2739
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/03)
TO: SSL::KOUVELIOTOU AND GIBSON::COLE (CHRYSSA KOUVELIOTOU AND STAYCE COLE)
CC: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
SUBJ: DMSP OBSERVATIONS OF GRO GRB

Chryssa and Stayce:
Thanks very much for the listing of strong Batse bursts sent to me 11/1/93.
I have now managed to check all of them against DMSP data, and find that
many of them were also detected by DMSP8,9,10, or 11. Probably the higher percent
of detections in recent data is due to more extraction of full data. In many
cases such added effort would not be necessary if source direction
(and consequent obscuration of some DMSP satellites) were known to me.
I would appreciate data on more strong events. Here is the present list:

NOTES:
NA: Not apparent in 20-second averaged data (extracting the 2-sec data is
a more time-consuming task, not undertaken in every case).
NA?: Some slight indication of a peak in 20-second averaged data.
SA: South Atlantic Anomaly, obscuring data with high background rates.
SR: South Radiation Belt background.
NR: North Radiation Belt background.
ND: No data for this time.
YES: Burst definitely detected by one or more DMSP satellites (8,9,10,11).
NO: No evidence of a peak in 2-sec data. (NO/OBSC: Obscured by Earth)

DATE	UT	DMSP
910421	33245	8NO 9SR 10NR
910627	16159	8NA 9NR 10ND
910629	71750	8NA 9SR 10NA
910703	18225	8NA 9NA? 10SR
910717	16386	8NA 9SA 10SR
910718	76051	8NA 9SA 10SA
910802	2718	ND
910814	69275	ND
911024	76208	ND
911104	54283	YES--54286 PEAK
911109	12459	8NO 9NR 10NO
911118	68260	ND
911119	23343	YES--23342
911126	46129	8SR 9SR 10NO
911127	15730	YES--15739
911202	73731	YES--73733
911209	66959	8SR 9SR 10NR 11ND
920226	29730	8SA 9NA? 10SA 11SA
920229	69769	8SR 9ND 10NA 11NA
920311	8246	YES--8431
920315	15569	8NA 9NR 10NA 11NA
920325	62258	YES--62256
920404	47506	8NA 10NA? 11NR
920406	9855	8NO/OBSC 10SR 11SR/OBSC
920414	84163	NA
920517	11877	YES--11883
920525	12423	YES--12427

From ajct@dsri.dk Wed Nov 17 05:36:33 1993
Date: Wed, 17 Nov 93 14:37:25 +0100
From: Alberto Castro-Tirado <ajct@dsri.dk>
To: khurley@sunspot.ssl.berkeley.edu
Content-Length: 1222

Added to MBL

Dear Kevin

I have checked (until 25 Sep 1992) all the events in the GRB Master List (ML) you compiled. According to WATCH, the origin of the next events as real GRB is doubtful.

Date	U.T.	in WATCH	comment	
17 Apr 91	20:07:32	particle event	confirmed(?) in the ML	
24 Oct 91	02:38:20	" "	unconfirmed in ML	DMSP
26 Oct 91	15:28:49	" "	"	Σ
11 Feb 92	04:22:53	solar flare	"	
21 Mar 92	12:50:53	event at 13:00:49	"	
11 Jul 92	16:09:00	particle event	confirmed(?) in the ML	

The two confirmed events are seen as particle events in WATCH. It could be a coincidence, but the probability is low. They were seen by Ulysses, so maybe we can compare the light curves.

We also will send you a list of the 70 events of the 1W Catalogue (Lund et al. 1994). 32 of them are localized and the rest (38) were detected by other experiments (not only WATCH).

By the way, did you get my two E-mails concerning GRB 911018 and GRB 920714 (a possible second peak 30 minutes after the first event)?

Kind regards,

Alberto Castro-Tirado
17 Nov 1993

Follow-up observations:

S Larson UCLA IR
F Vrba
R Hudec
ROSAT
B Schaefer
R Rovani
T Marsh

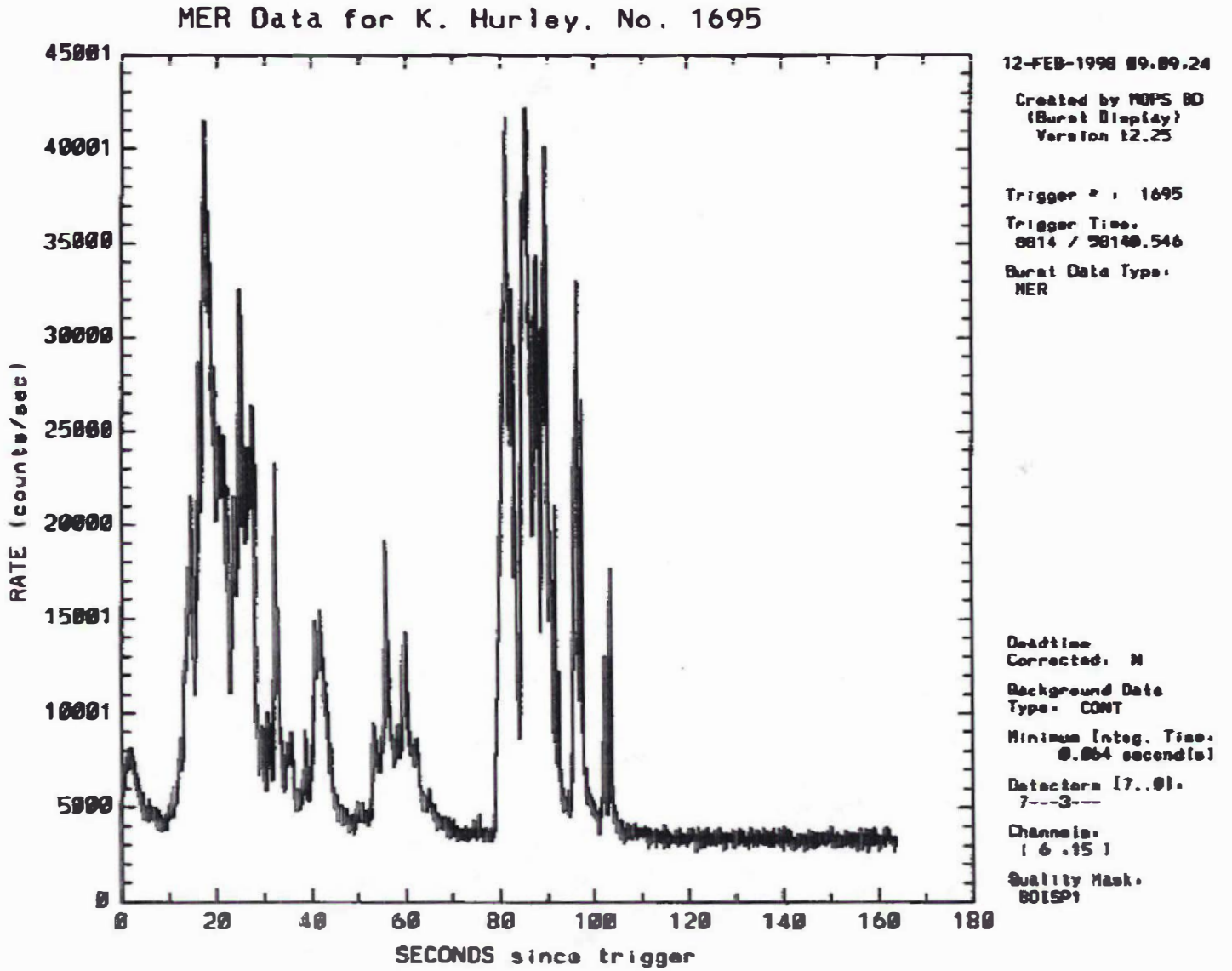
From root Tue Oct 26 14:46 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
        id AA19465; Tue, 26 Oct 93 14:46:11
Received: from NMSU.Edu (dns1.NMSU.Edu) by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA25470; Tue, 26 Oct 93 14:50:44 PDT
From: tharriso@nmsu.edu
Received: from vega (vega.NMSU.Edu) by NMSU.Edu (4.1/NMSU-1.18)
        id AA10503; Tue, 26 Oct 93 15:51:30 MDT
Date: Tue, 26 Oct 93 15:51:30 MDT
Message-Id: <9310262151.AA10503@NMSU.Edu>
Received: by vega (4.1/NMSU)
        id AA00854; Tue, 26 Oct 93 15:48:25 MDT
To: khurley@space6.ssl.berkeley.edu
Subject: IPN info
Status: R

Kevin- Bernie said you could provide us with the corners for your most recent IPN annuli. The two fields we need to have the corner information for are GRB920711 and 920723.

Bernie and I were also wondering if it is possible to shift the IPN track 1 or 2 minutes north for the GRB910601 event. We have a couple of objects in this direction, and are interested in how absolute the IPN track is for this particular event.

Cheers, Tom

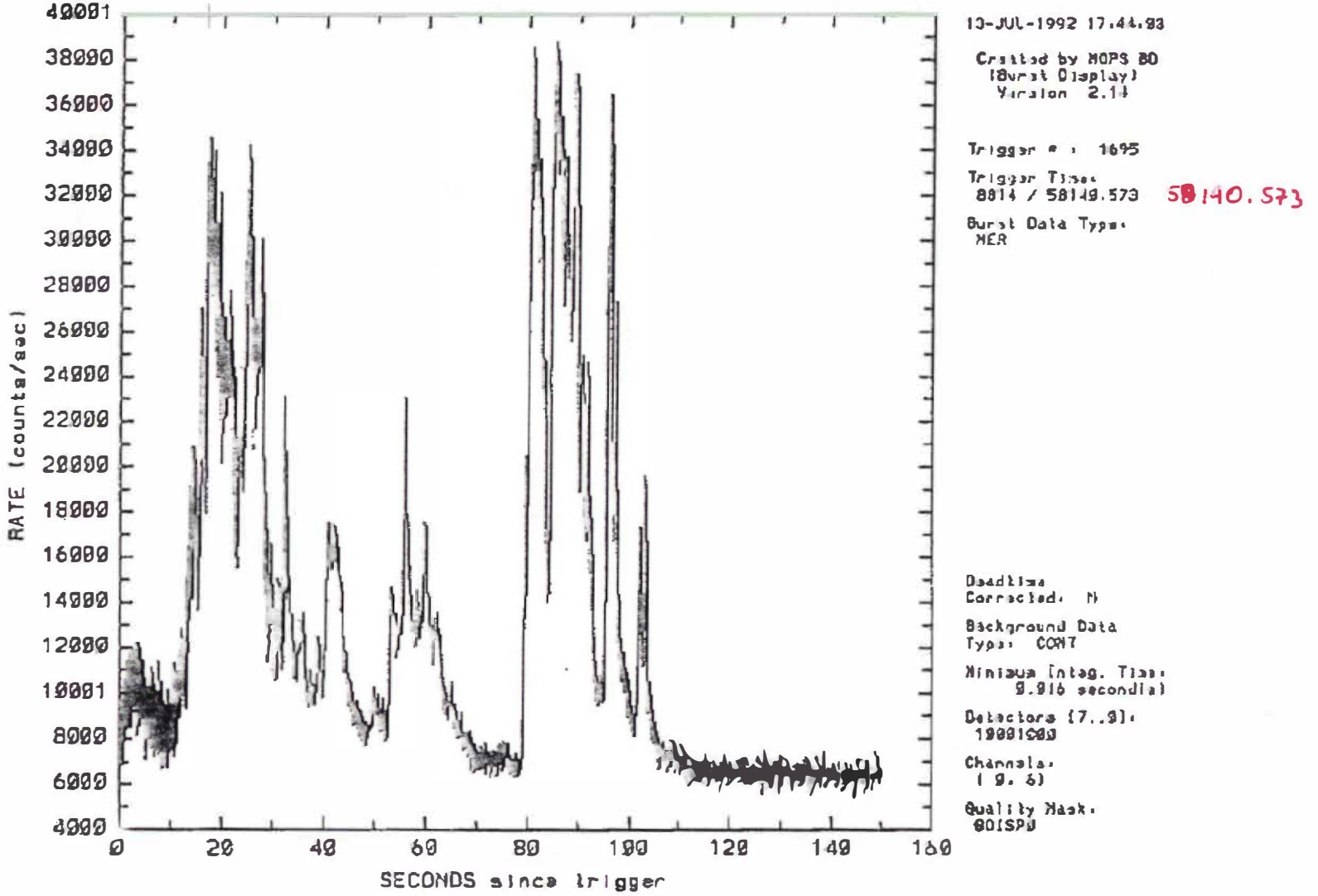
P.03
BATSE
205 544 5800
02-12-1998 15:11
02-12-98 02:21PM P003 #15
205 544 5800
R=95%



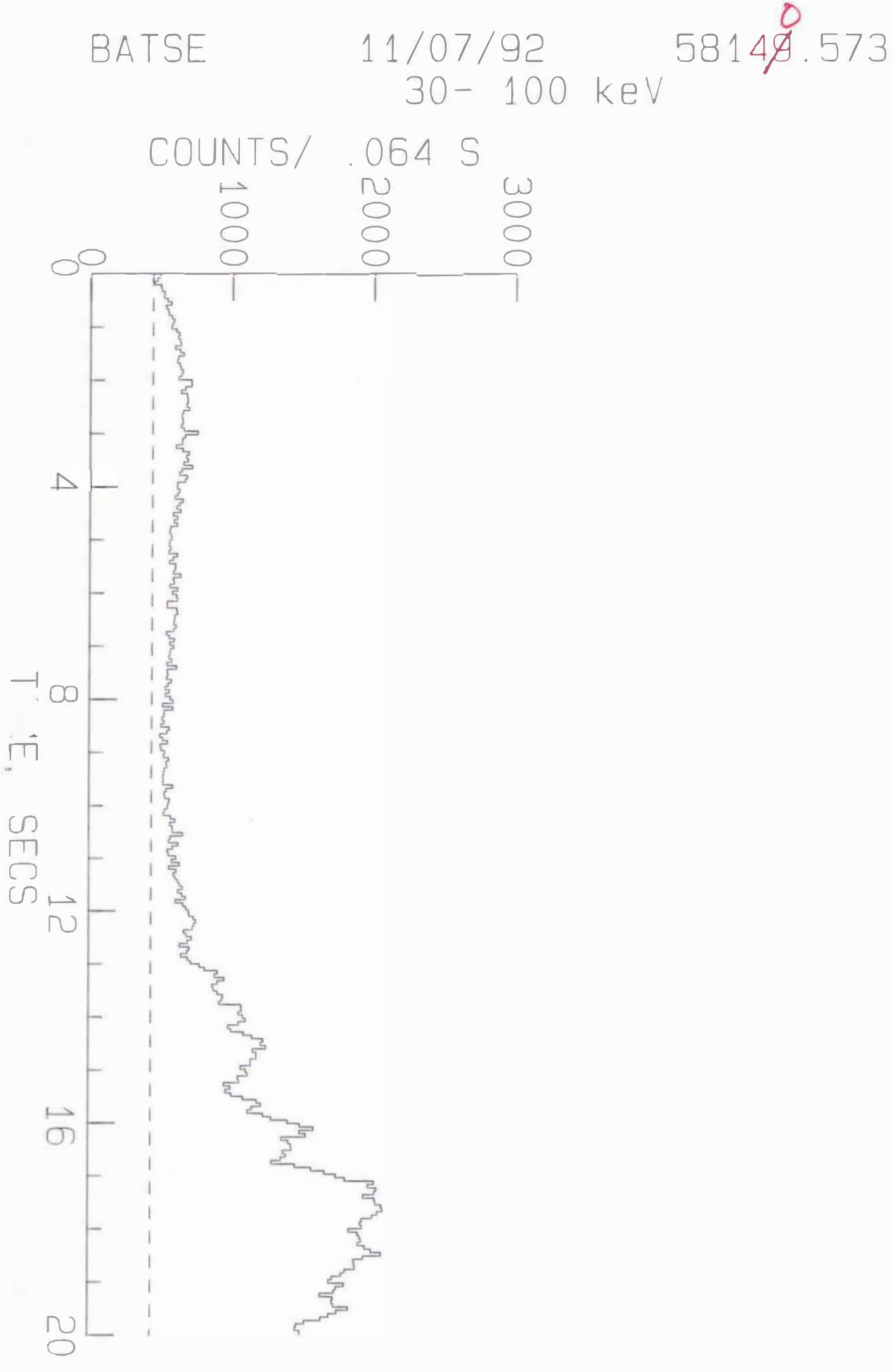
0

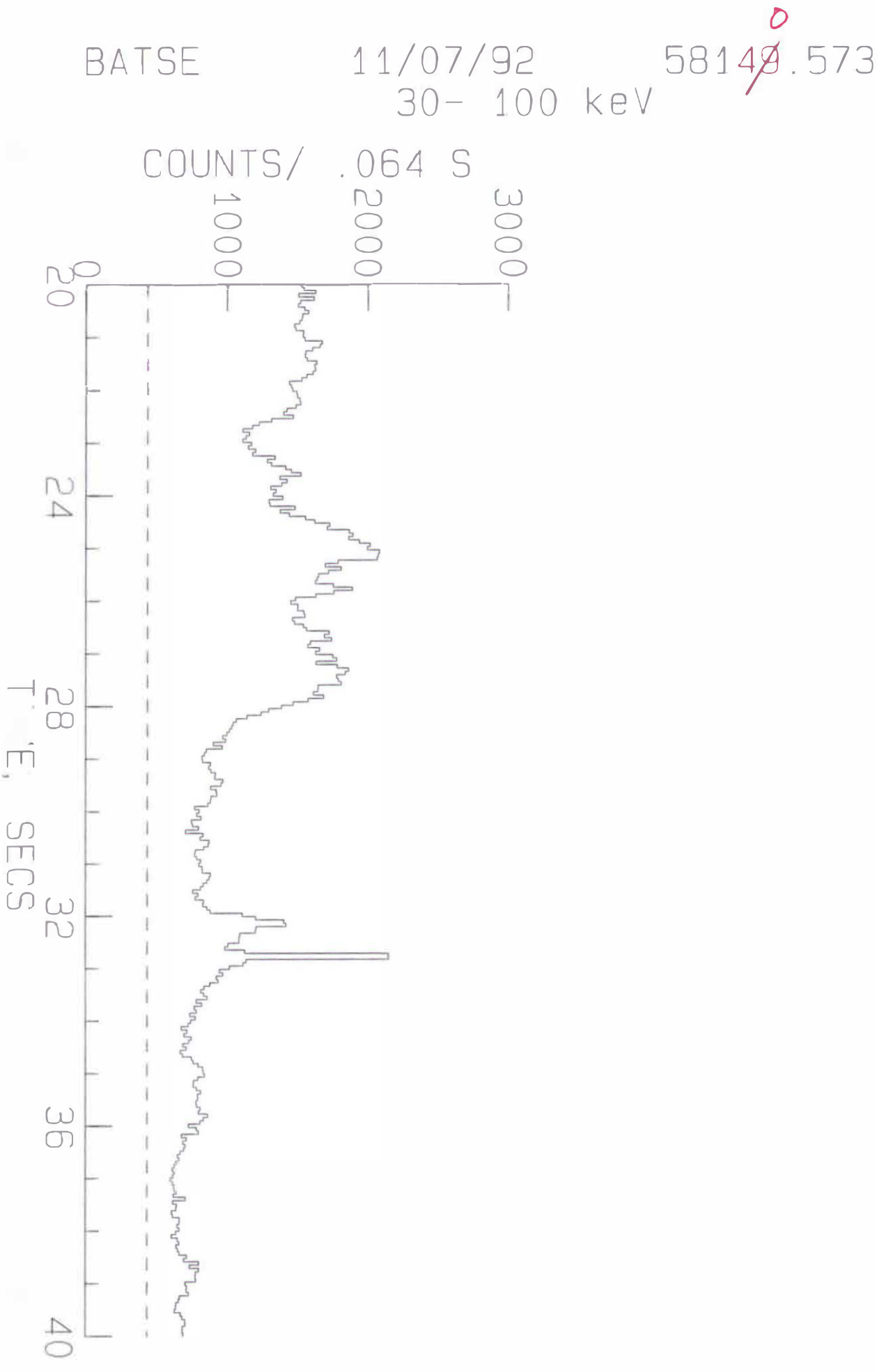
16 s after 58149.573

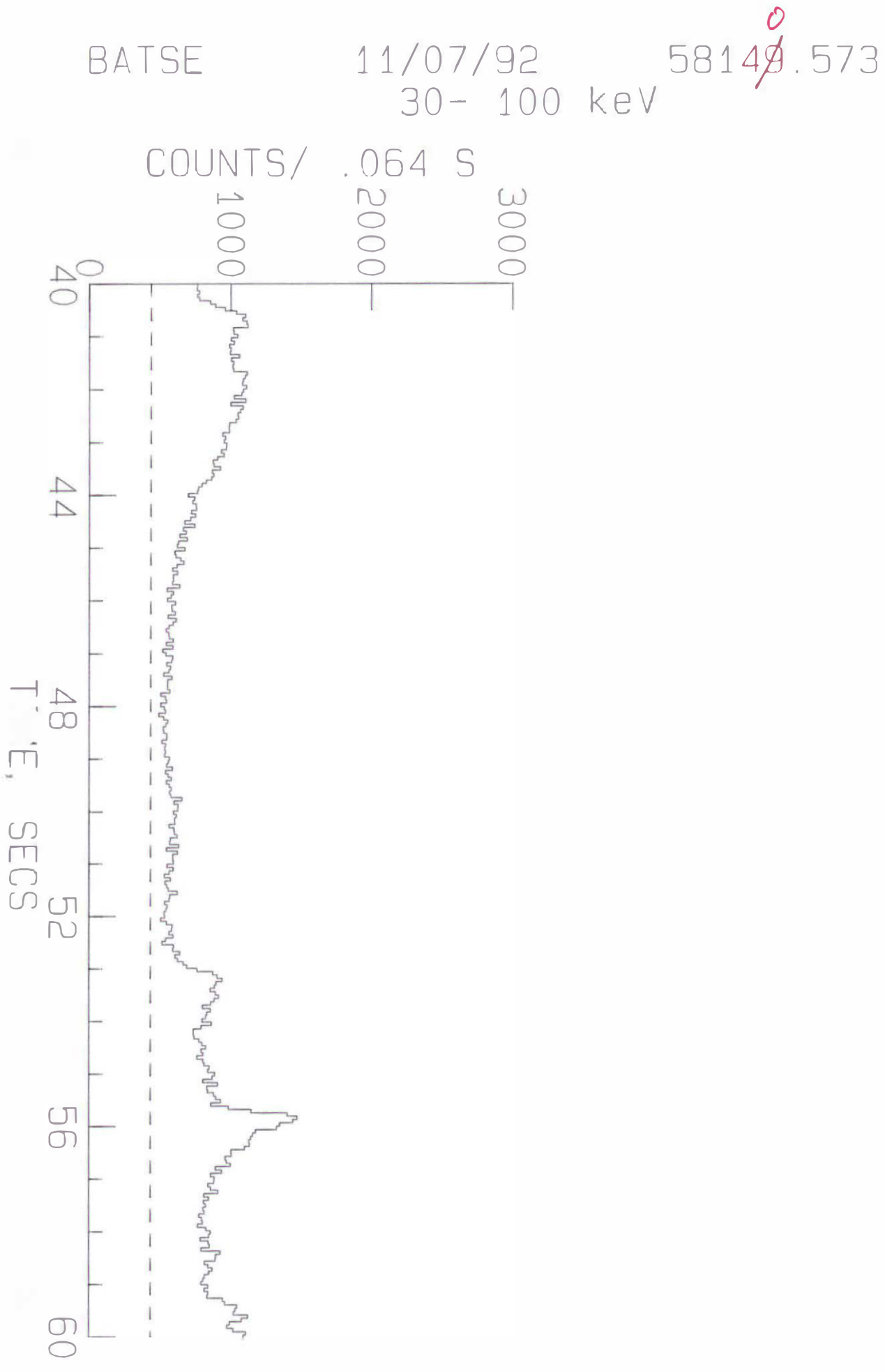
Data for K. Hurley

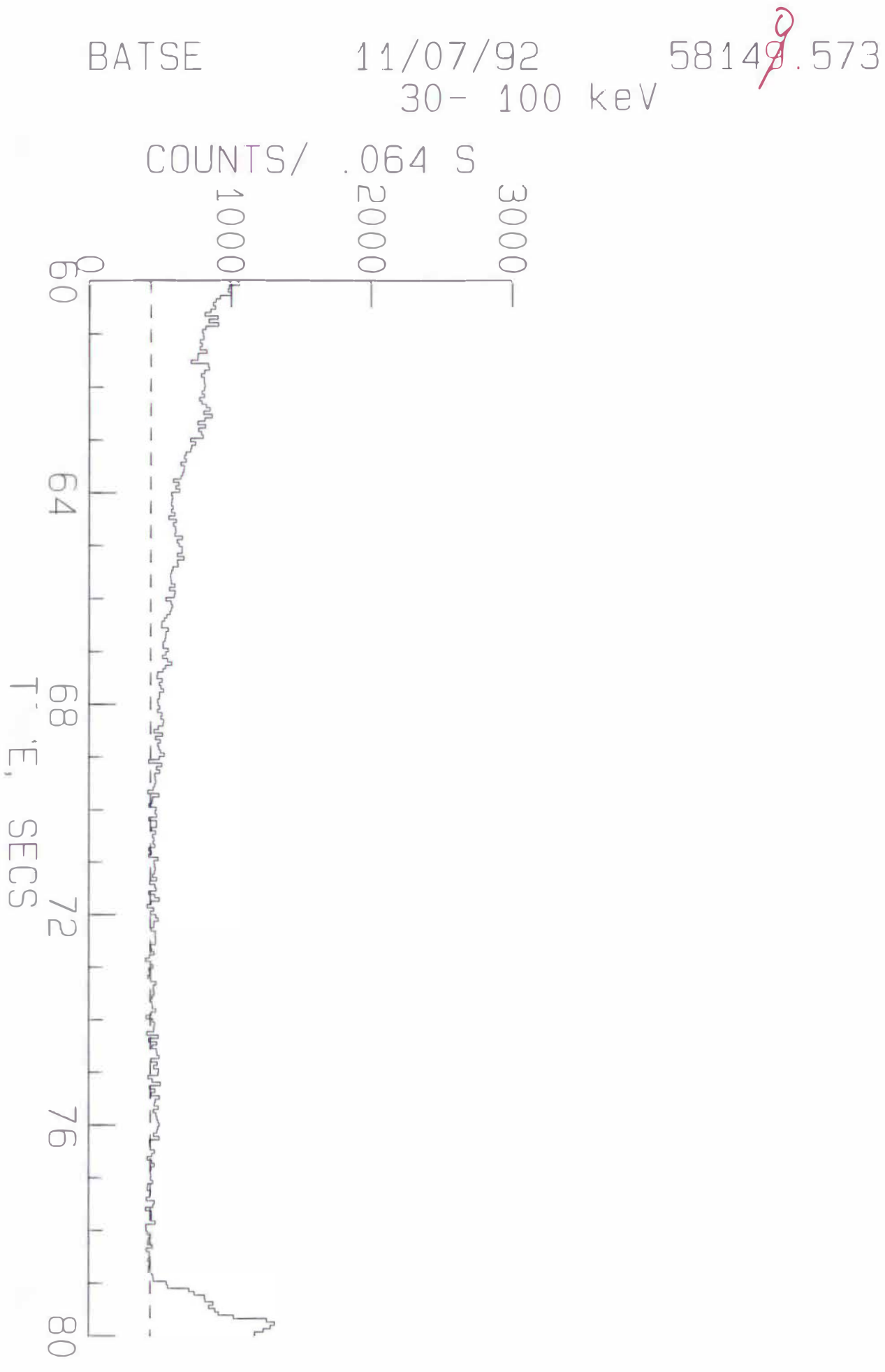


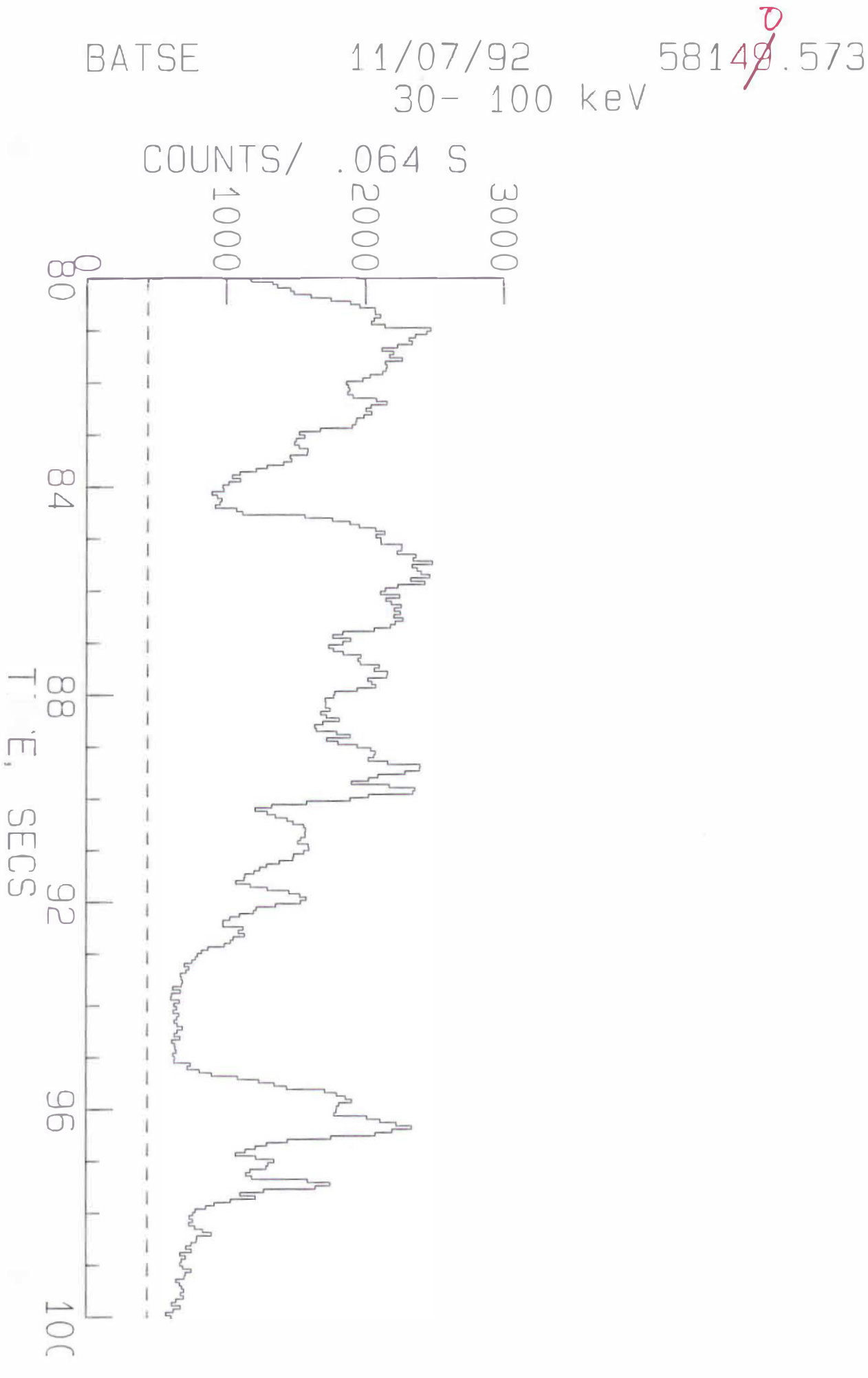
58140.573


BATSE 11/07/92 58149.573
30- 100 keV
COUNTS/ .064 S
0
1000
2000
3000
0
4
8
12
16
20
T. E. SECS

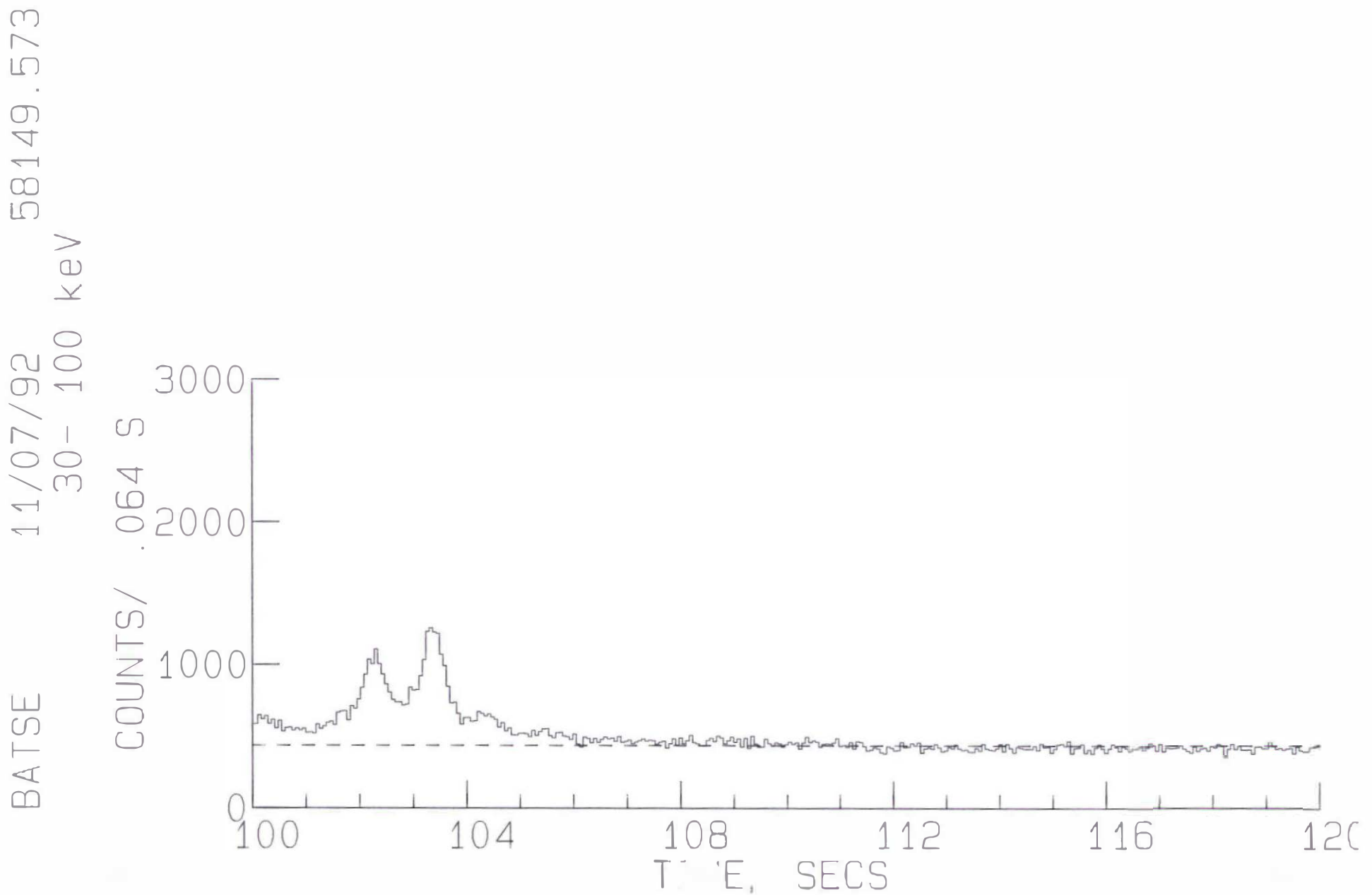

BATSE 11/07/92 58140.573
30- 100 keV
COUNTS/ .064 S
0
1000
2000
3000
20
24
28
32
36
40
T, E, SECS


BATSE 11/07/92 58149.573
30- 100 keV
COUNTS/ .064 S
0
1000
2000
3000
40
44
48
52
56
60
T - E, SECS


BATSE 11/07/92 58149.573
30- 100 keV
COUNTS/ .064 S
0
1000
2000
3000
60
64
68
72
76
80
T.E. SECS


BATSE 11/07/92 58149.573
30- 100 keV
COUNTS/ .064 S
1000
2000
3000
80
84
88
92
96
100
T.E. SECS

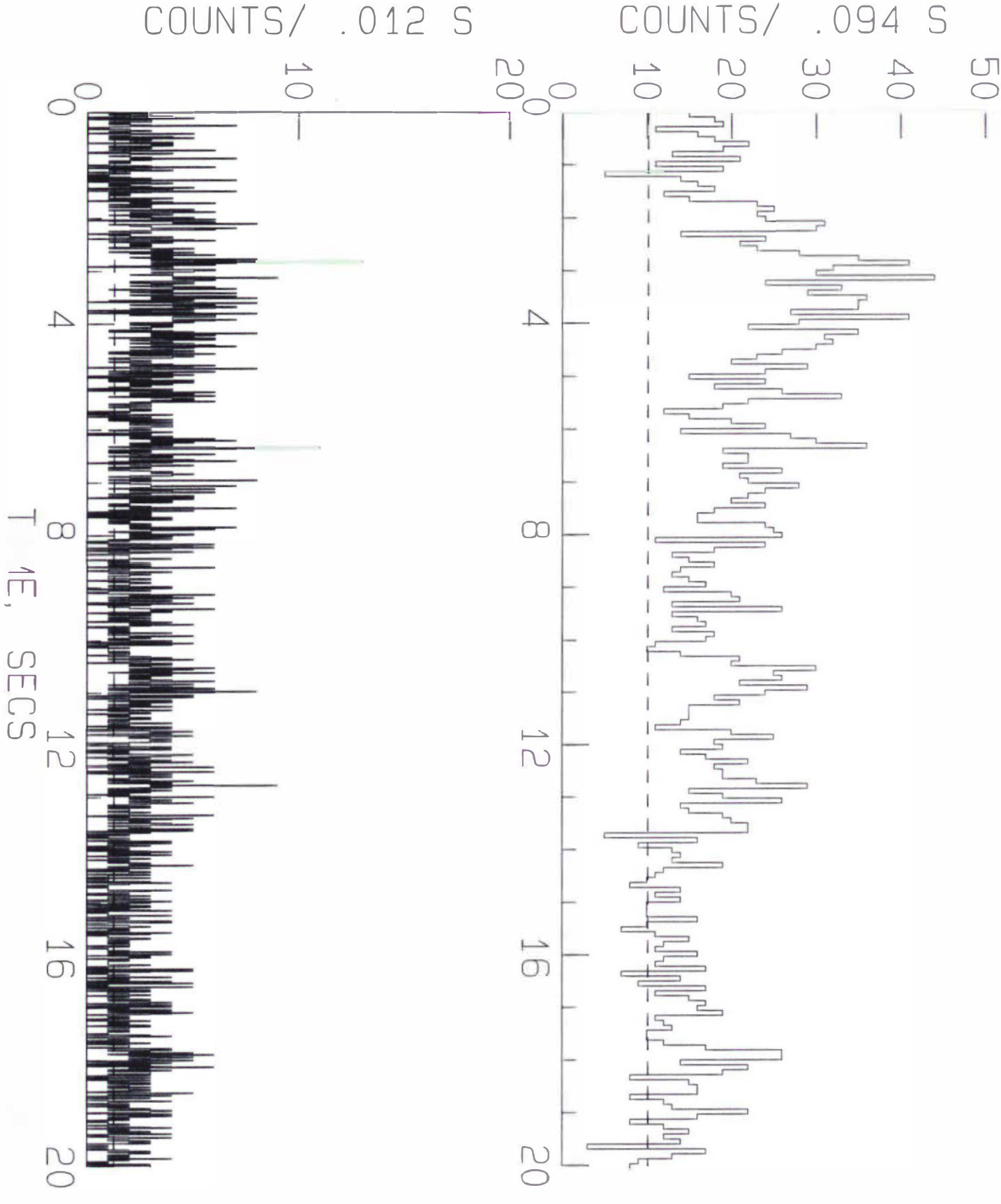
18/11/92

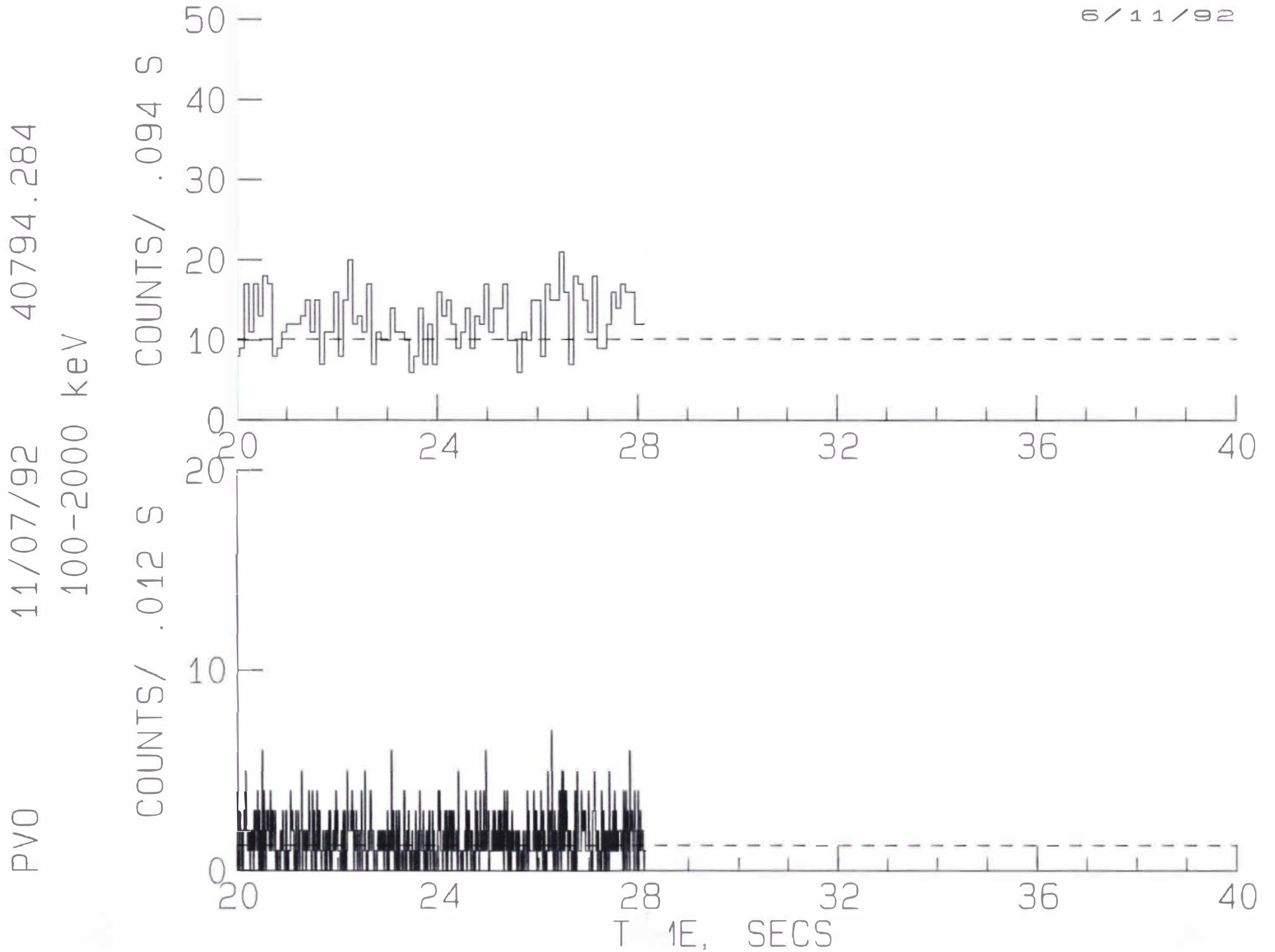

BATSE 11/07/92 58149.573
30- 100 keV
COUNTS/ .064 S
3000
2000
1000
0
100
104
108
112
116
120
TIME, SECS

T_{00} = 58073.64
~~40794.284~~

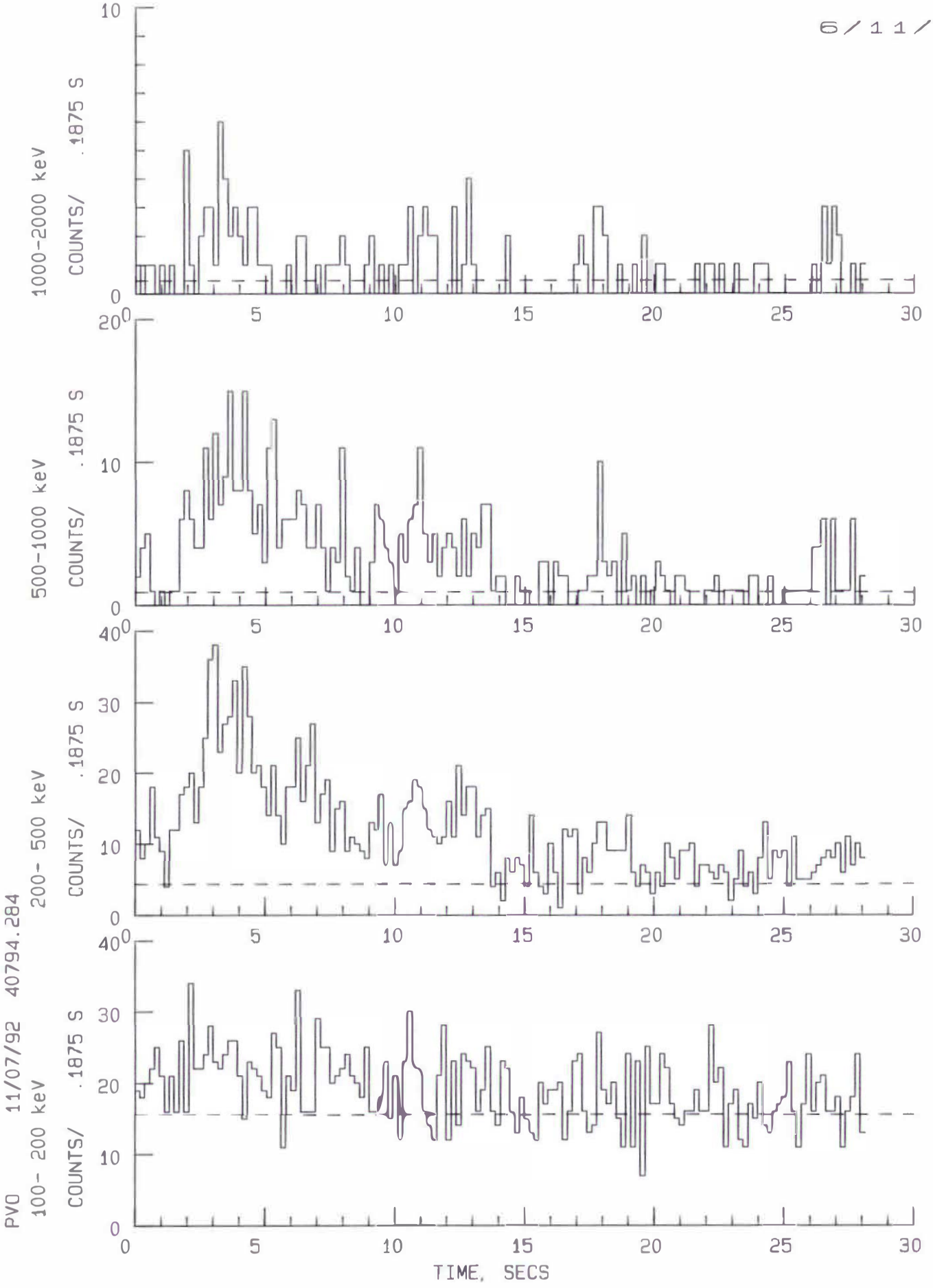
PVO 11/07/92

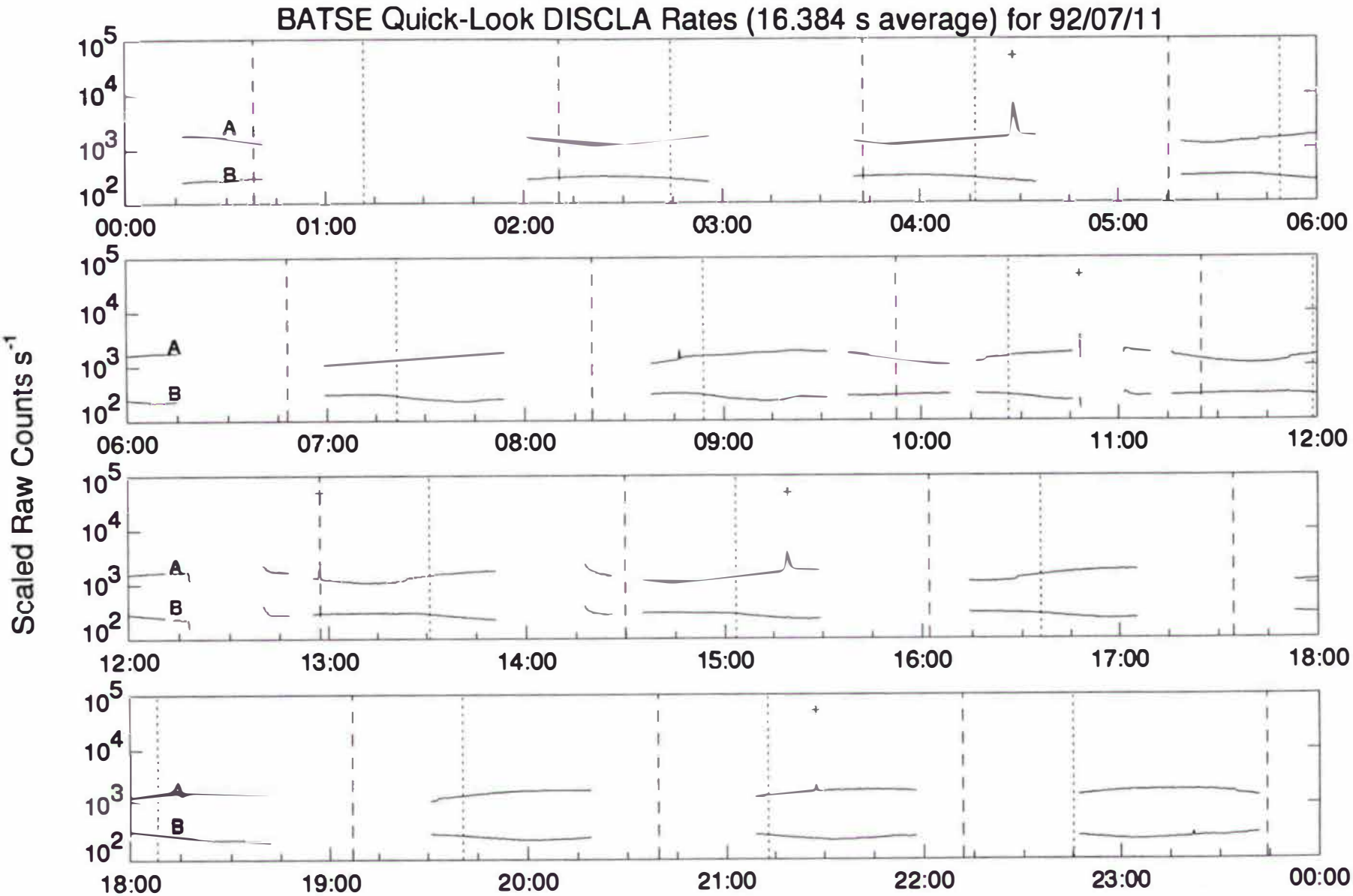
100-2000 keV




6/11/92
PVO
11/07/92
100-2000 keV
40794.284
COUNTS/ .094 S
50
40
30
20
10
0
20
24
28
32
36
40
COUNTS/ .012 S
20
10
0
20
24
28
32
36
40
T IE, SECS

6/11/92

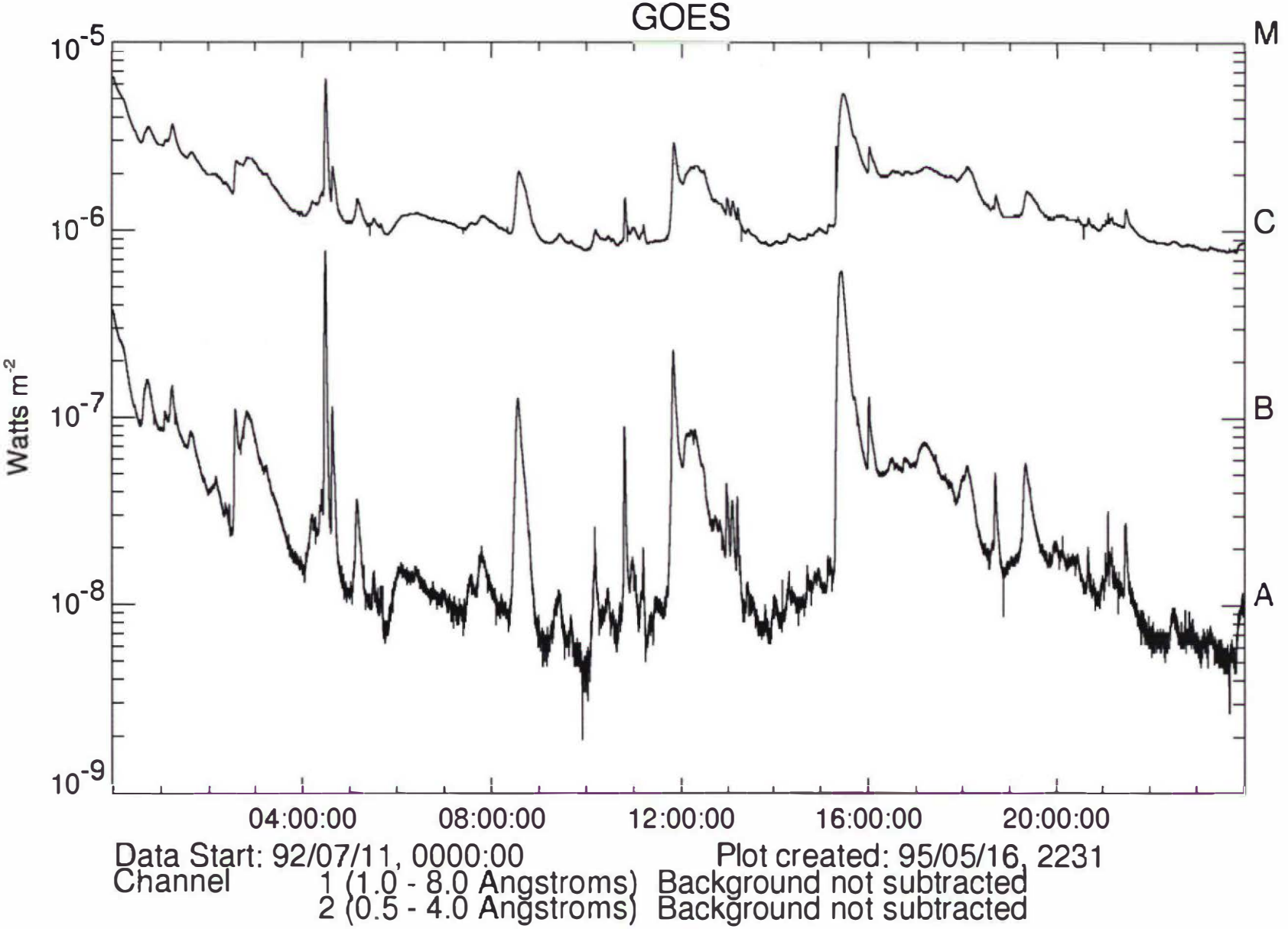

PVO 11/07/92 40794.284
100- 200 keV
200- 500 keV
500-1000 keV
1000-2000 keV
COUNTS/ .1875 S
TIME, SECS



Current Time: 92/09/14, 2120 EDT
A: Channel 1 Most Sunward LAD
B: Sum Channel 1 Anti-Sunward LADs X .05

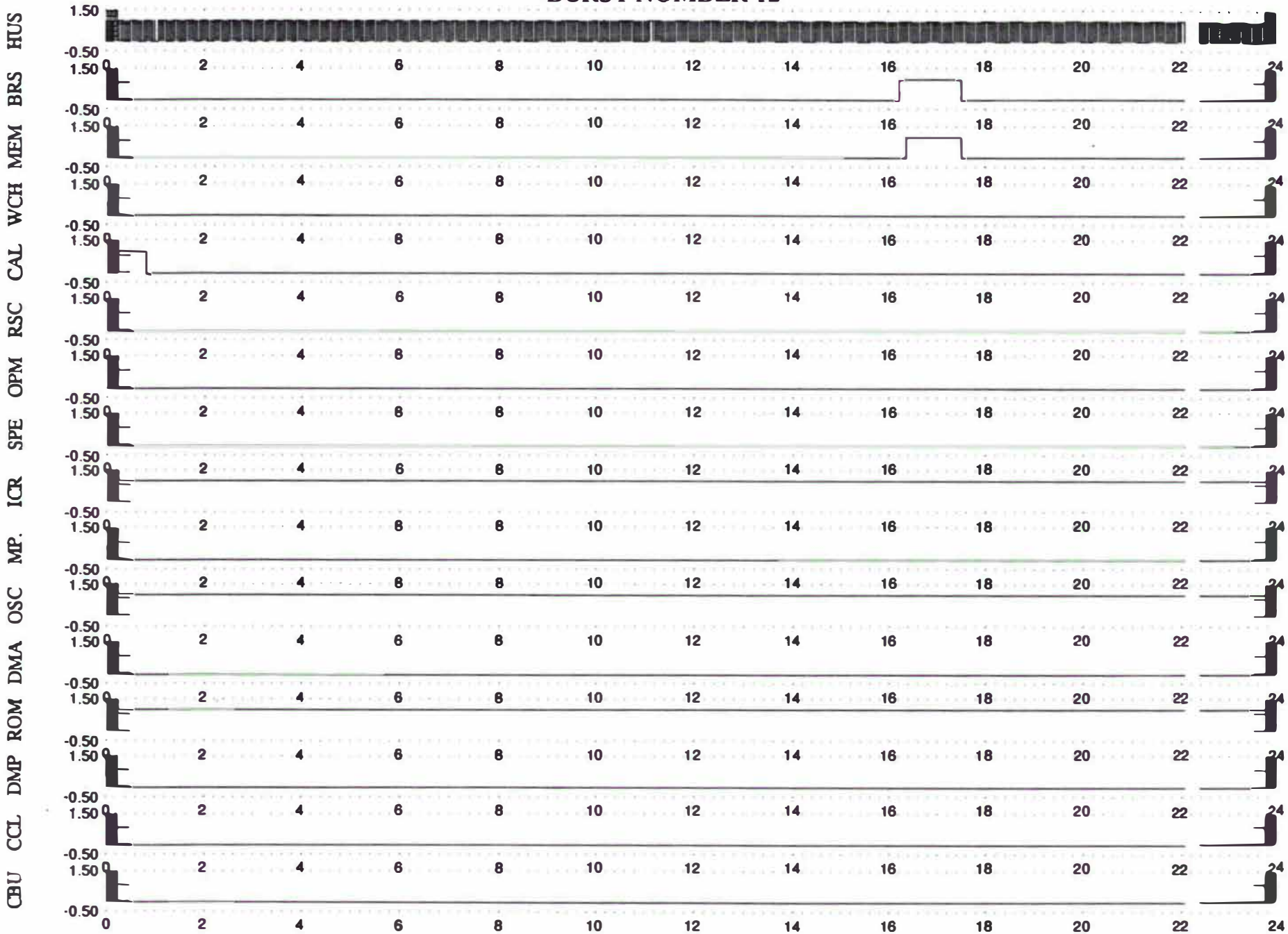
Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare


GOES
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/11, 0000:00
Plot created: 95/05/16, 2231
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 193, year 1992 to day 193, year 1992 9/11/92

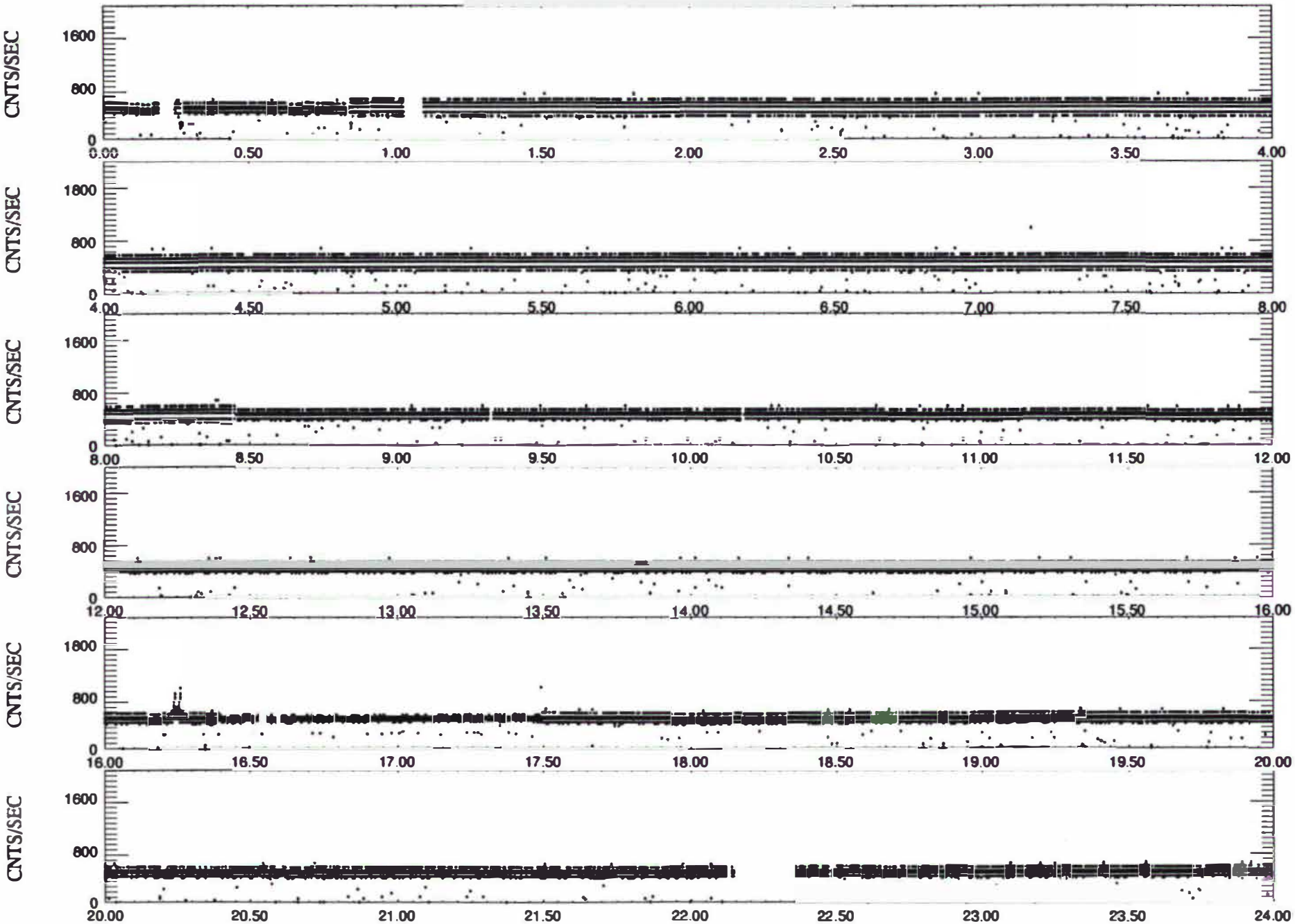
BURST NUMBER 12



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 193, year 1992 to day 193, year 1992 9/11/92

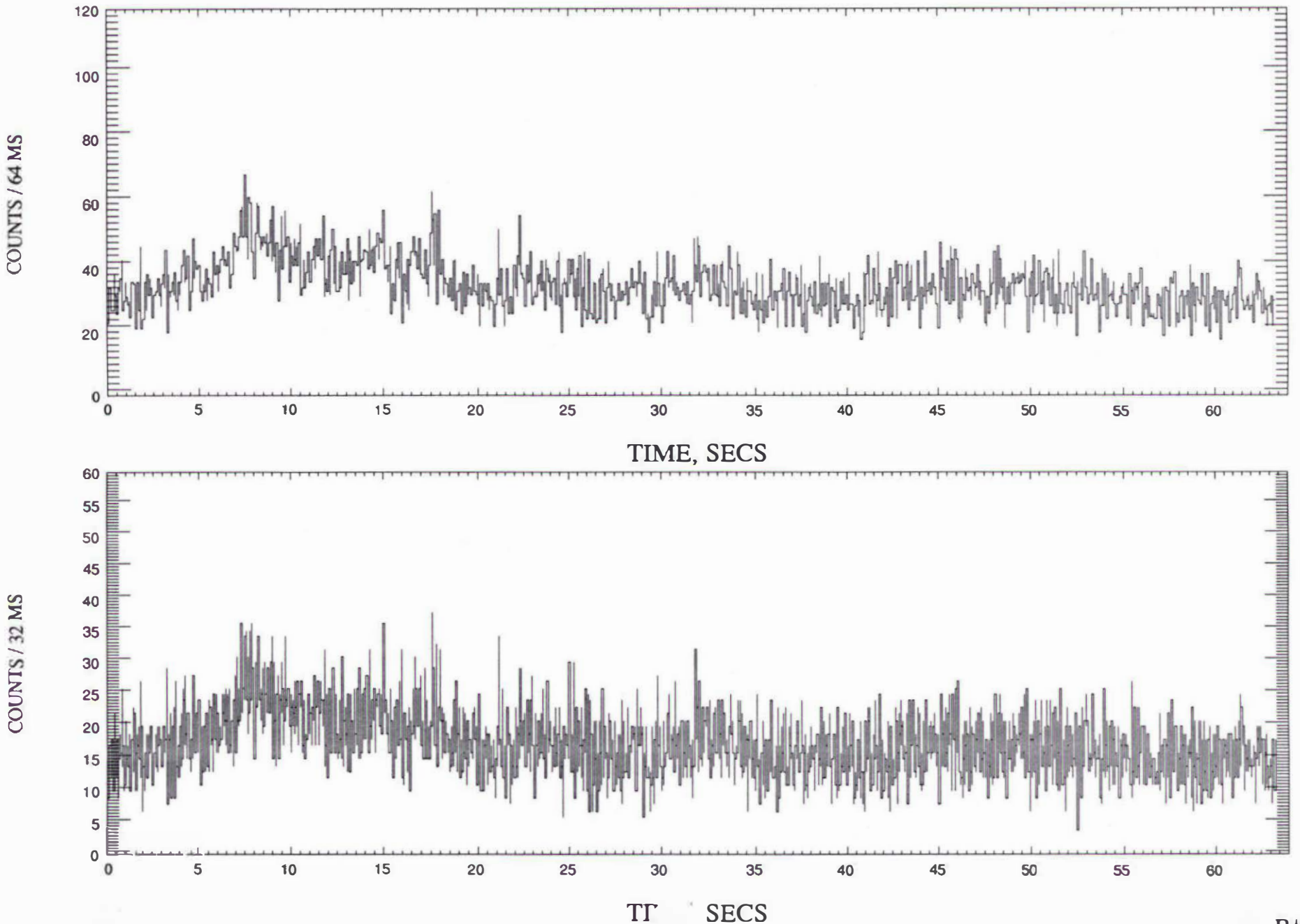
CALIBRATION DATA INCLUDED



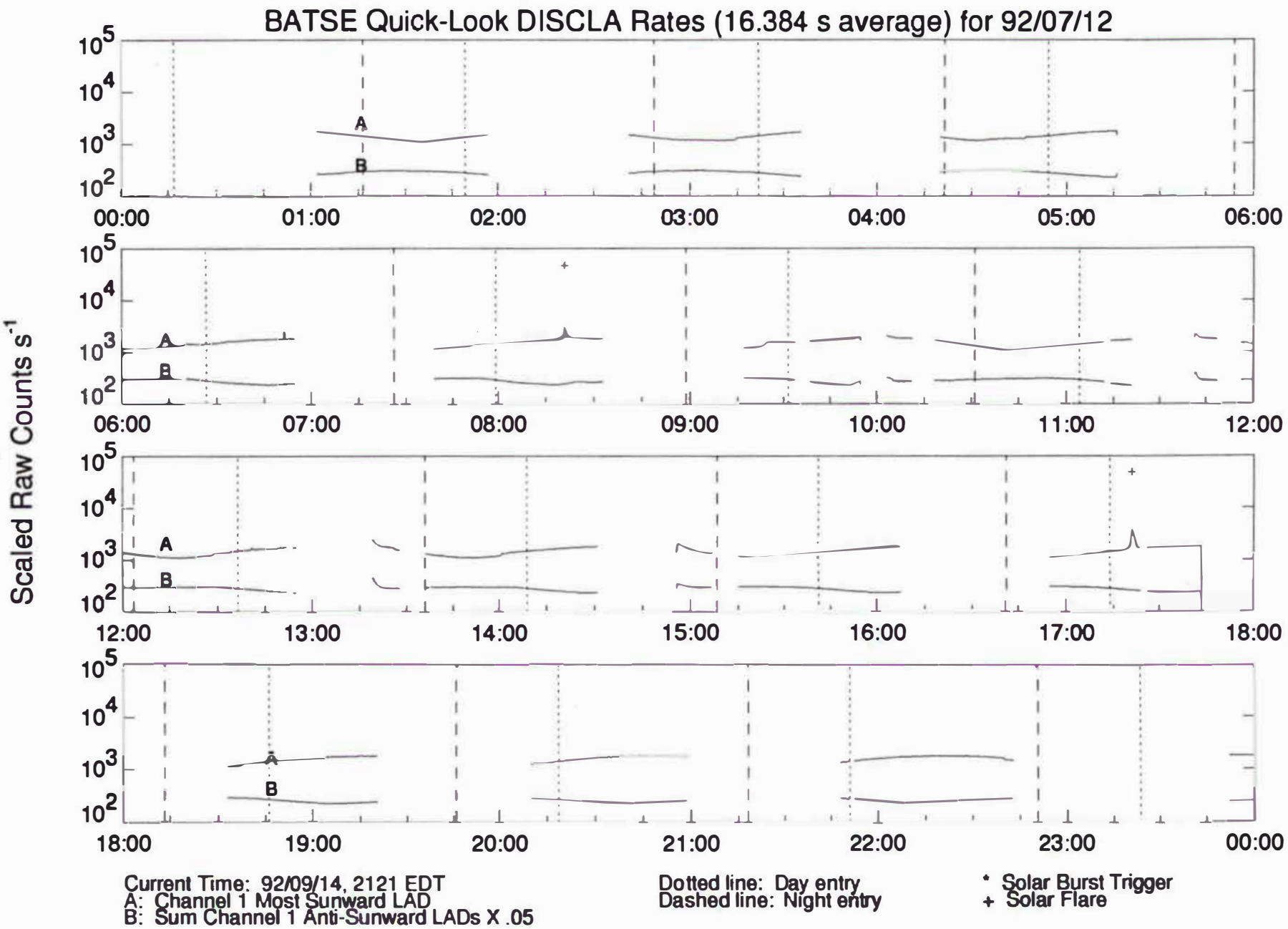
UNIVERSAL TIME

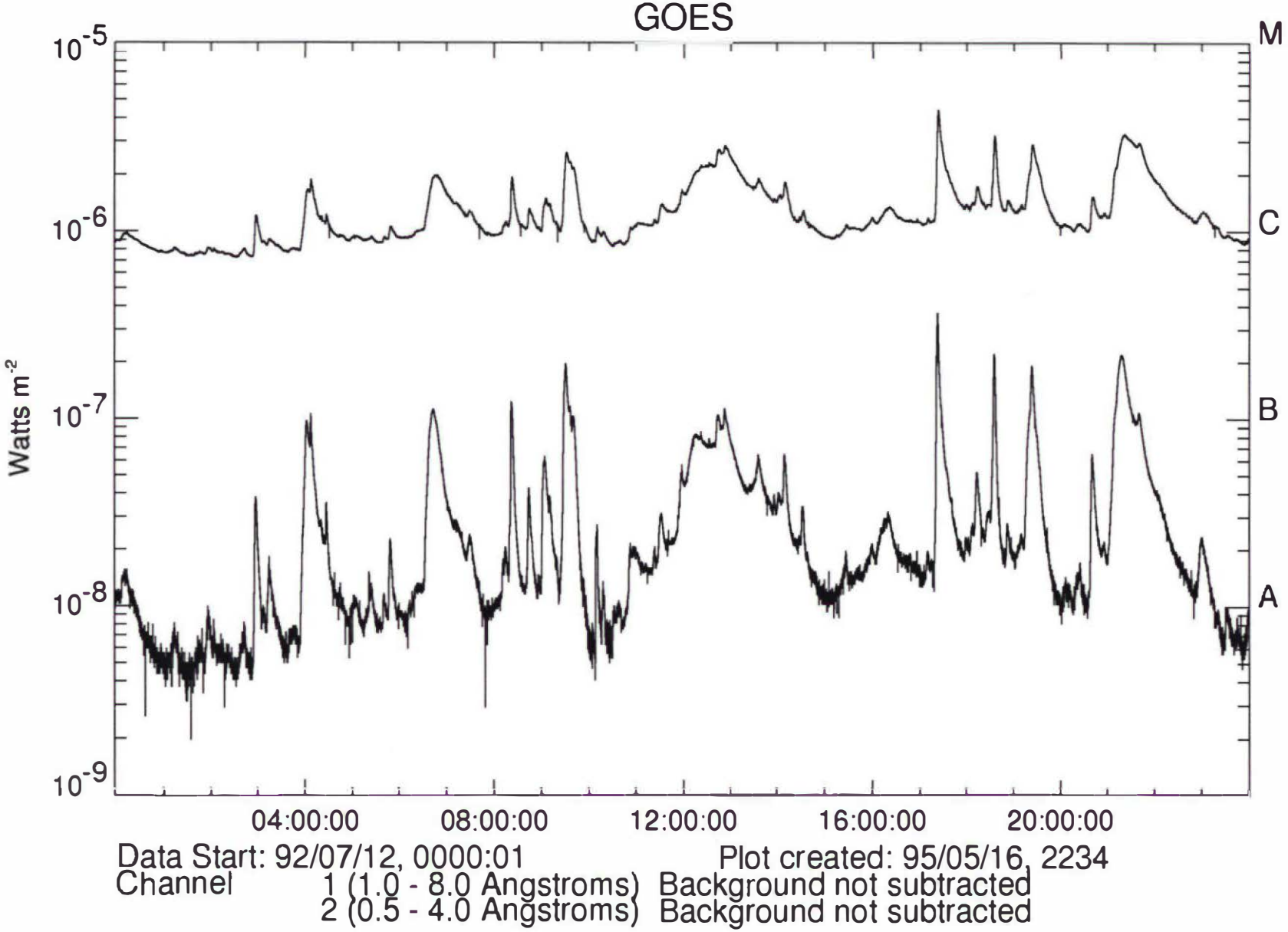
HUS 2A TRIGGERED DATA EDR day 193, year 1992 9/11/92

Burst Counter 12 at UT=16.237004589505 h=58453.217 s

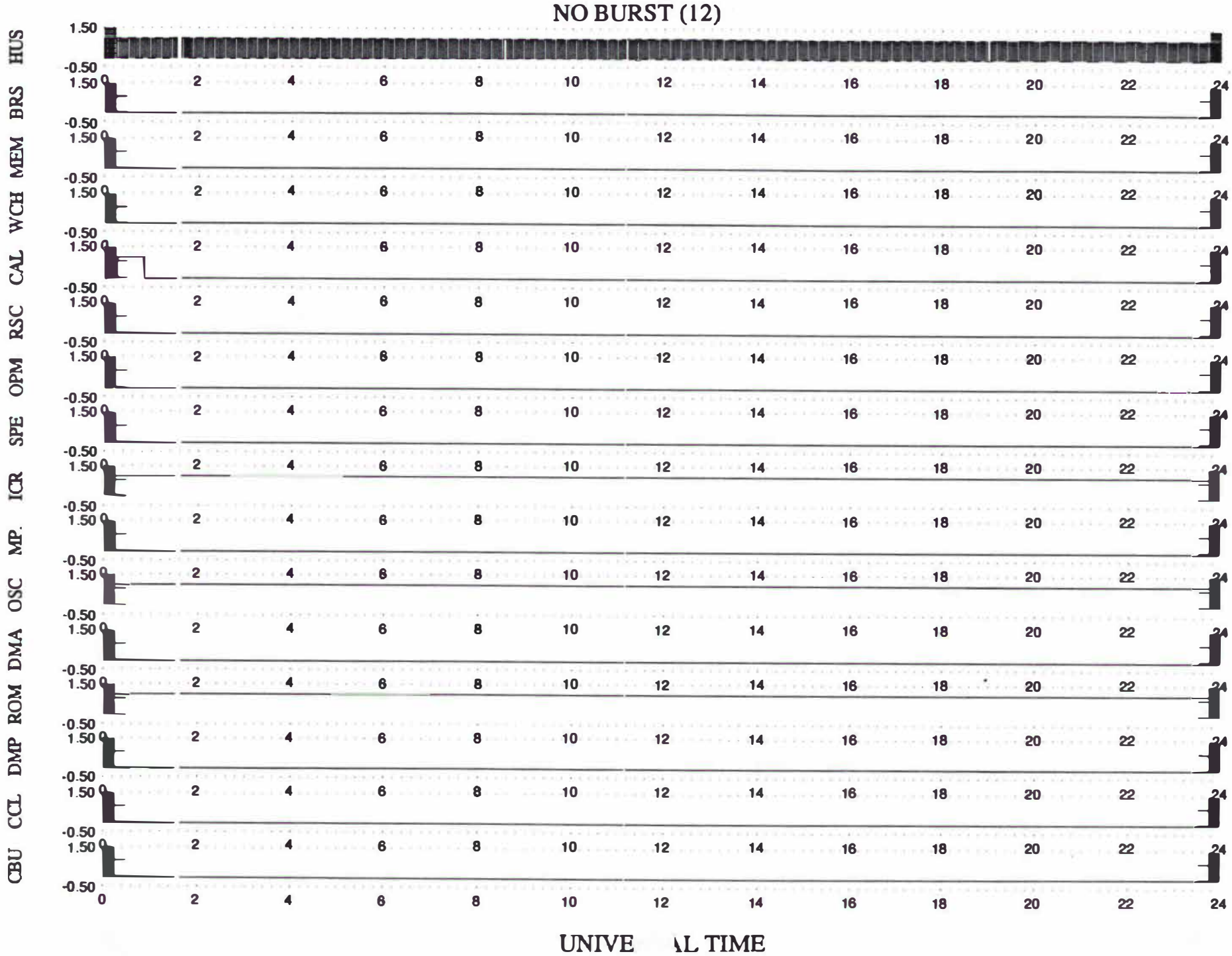


B# 1


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/12
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
00:00
Current Time: 92/09/14, 2121 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

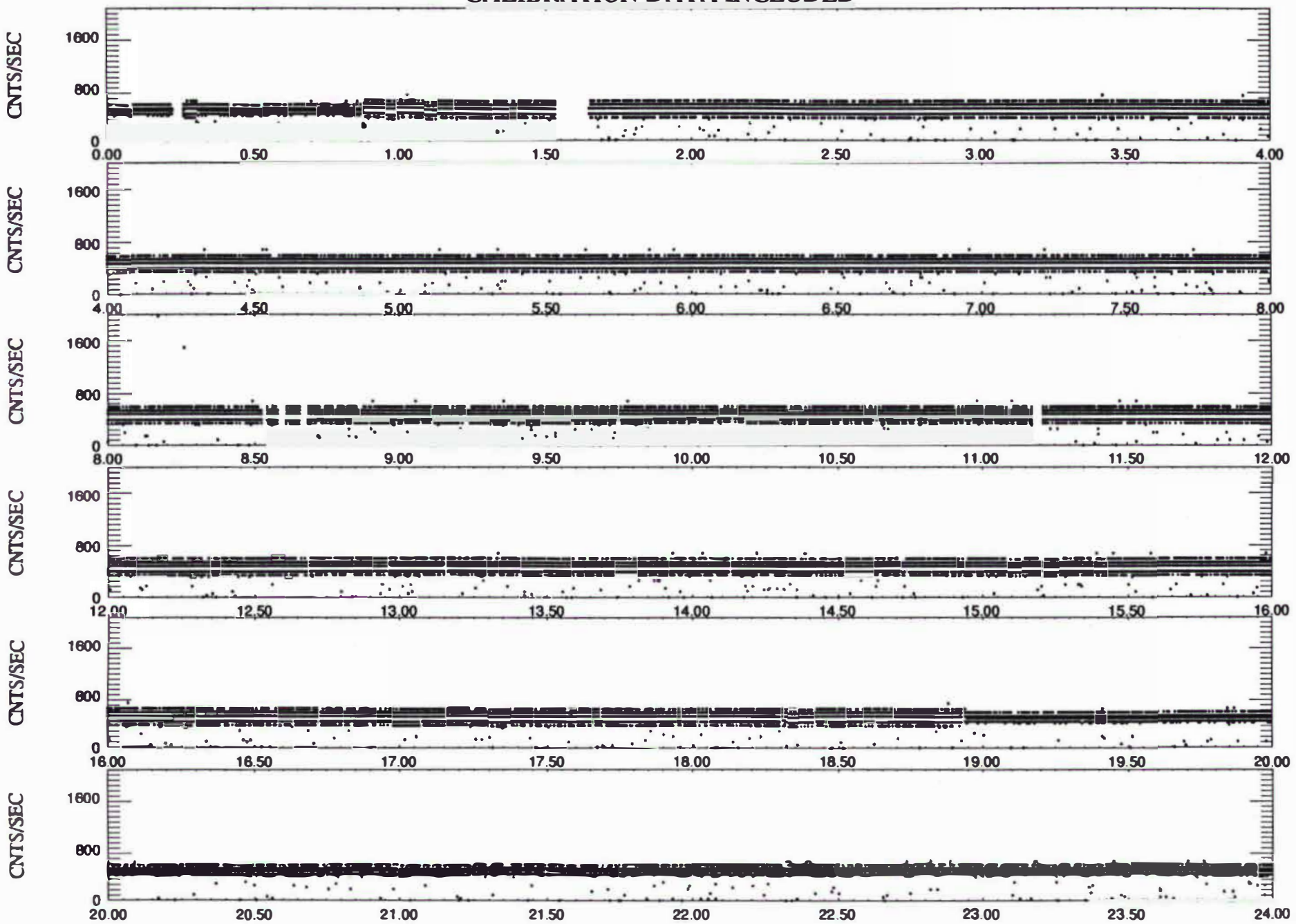

GOES
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/12, 0000:01
Plot created: 95/05/16, 2234
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 194, year 1992 to day 194, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 194, year 1992 to day 194, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIVE AL TIME

From MALLOZZI@ssl.msfc.nasa.gov Tue Jul 14 12:53:29 1992
Date: Tue, 14 Jul 1992 14:53:38 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01696

July 13

TIME: TJD=8816 SECONDS=76778

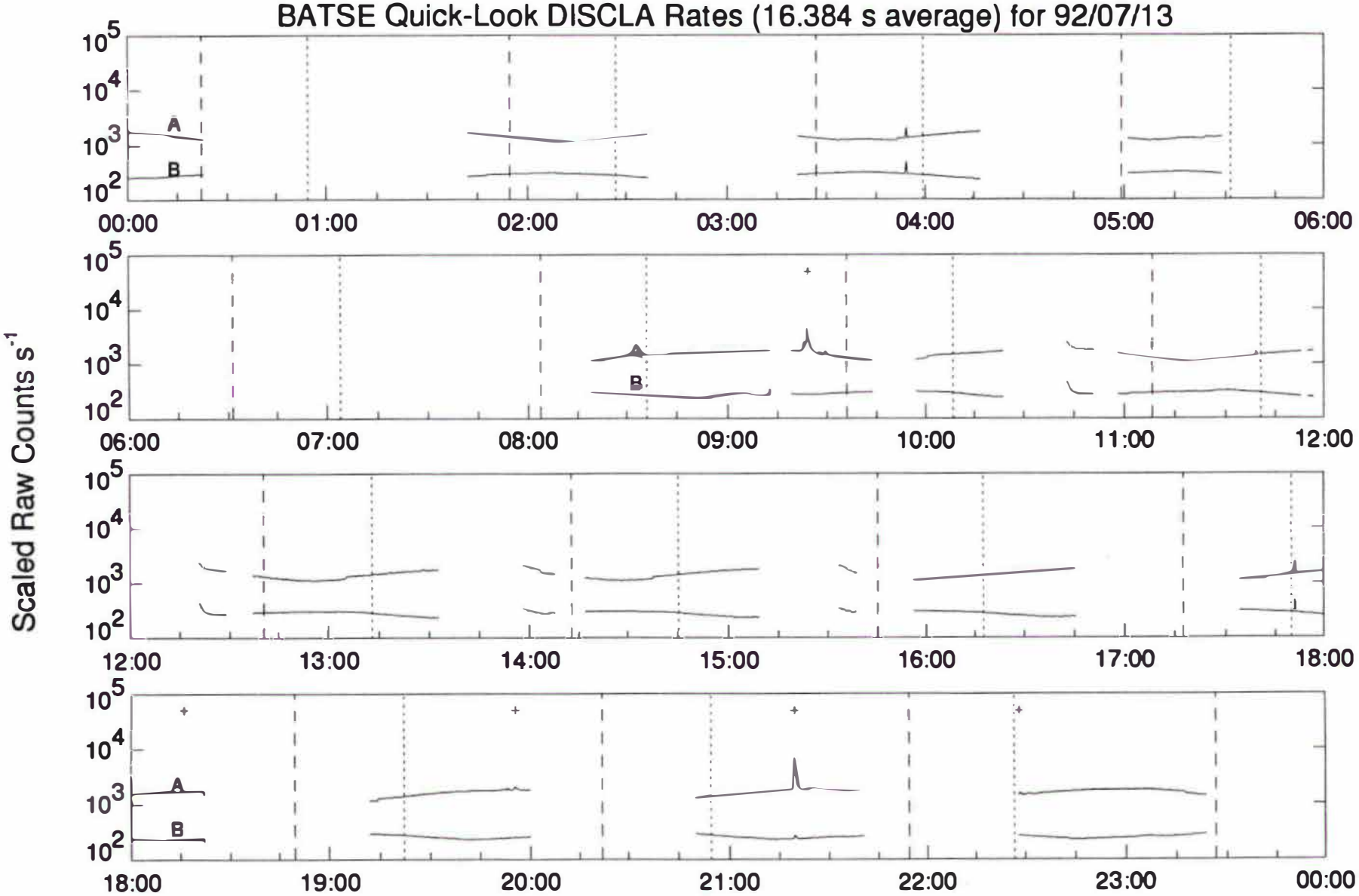
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

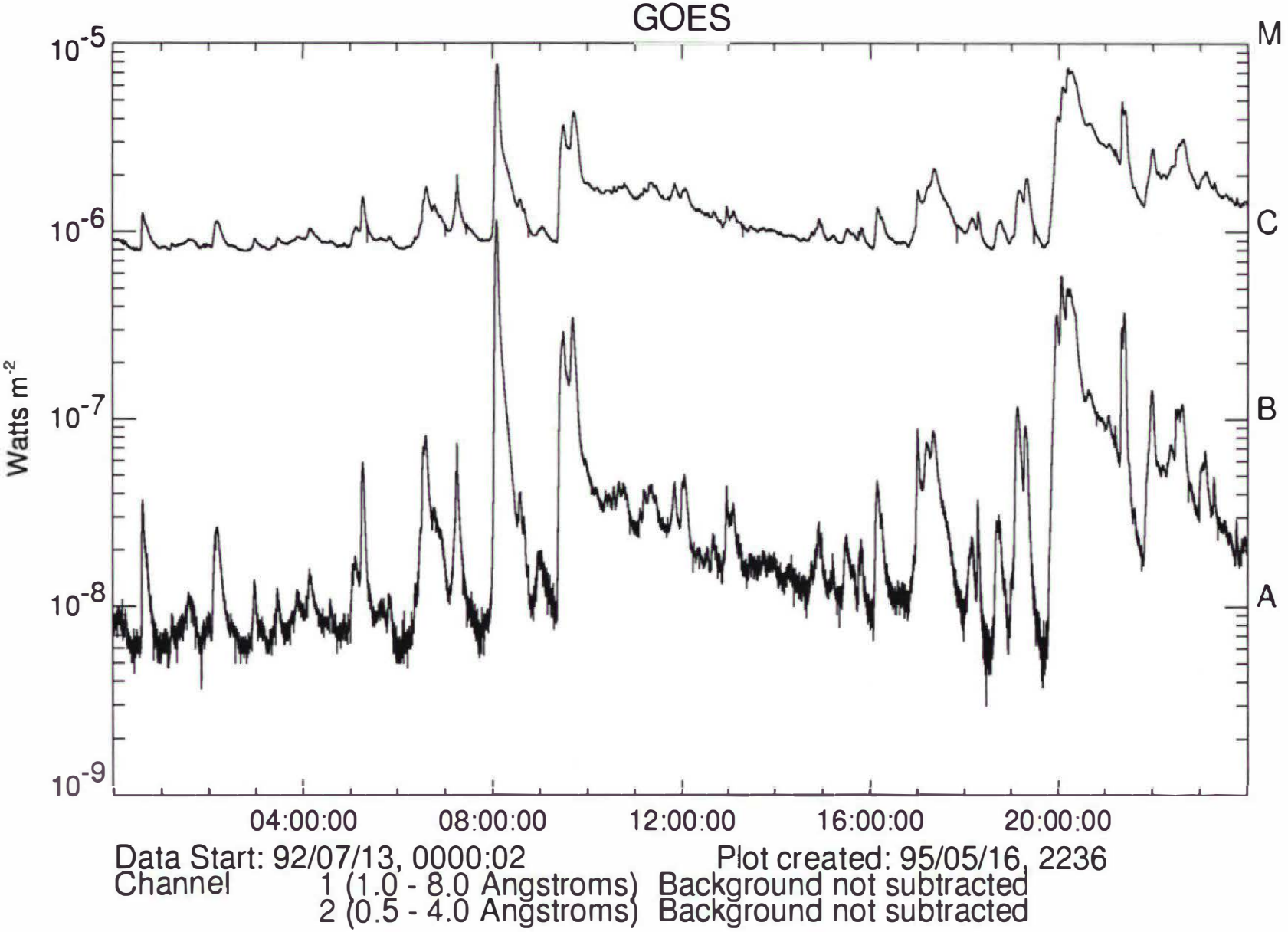
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

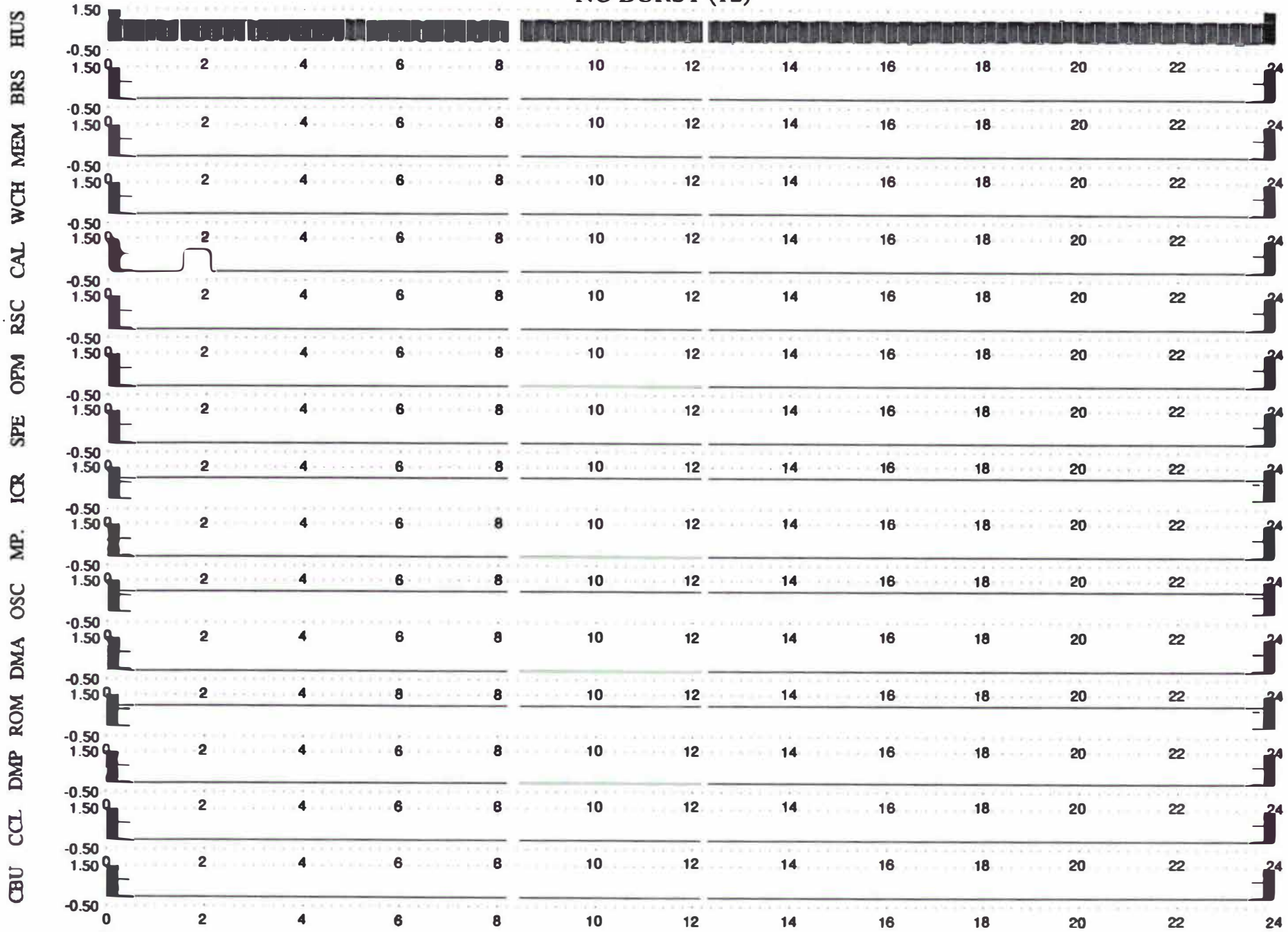
COMMENTS:
GOES C4.7 FLARE. SOFT, SINGLE PEAK EVENT WITH SOME STRUCTURE.
CLEARLY OBSERVED ABOVE 50 KEV, WITH POSSIBLE EMISSION ABOVE 100 KEV.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/13
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: 92/09/14, 2121 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
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/13, 0000:02
Plot created: 95/05/16, 2236
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 195, year 1992 to day 195, year 1992 9/11/92

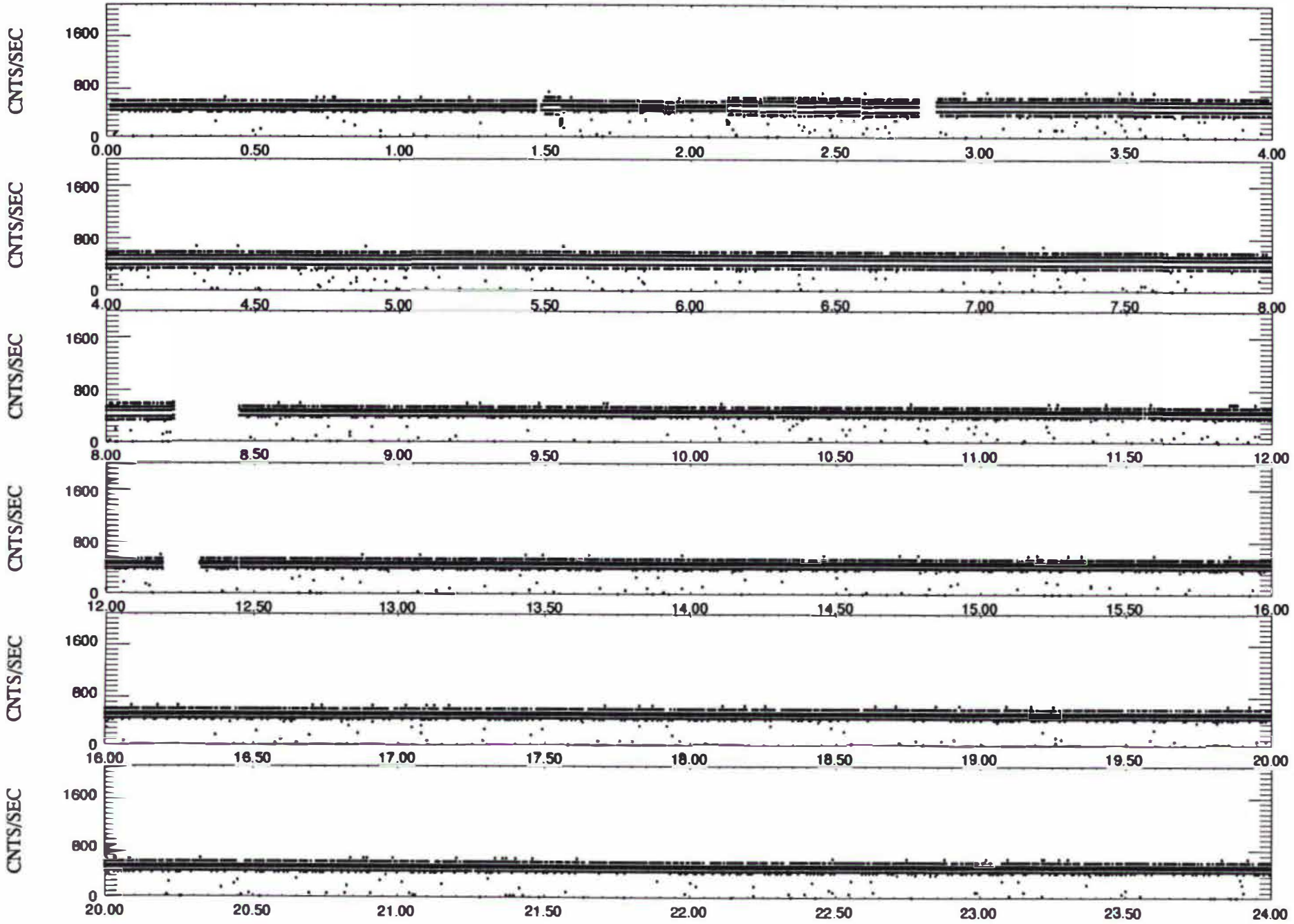
NO BURST (12)



UNIVI AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 195, year 1992 to day 195, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIVI AL TIME

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

 BATSE BURST # 1697
 EVENT OF 1992 JUL 14 DAY OF YEAR=196
 EVENT CROSSING TIME AT BATSE      : 18389. S. OR 05:06:28.6
 COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
 BURST ARRIVAL DIRECTION: 193.400      .500
 BATSE PEAK COUNTING RATE:  0000   C/S

 EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
 POSITION OF ULYSSES ON 14/ 7/  92 IS:
 RA=  151.553 DEC=     5.386 DIST=     6.055 AU
 BATSE-ULYSSES DISTANCE =  905839968. KM.
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=137.94 DEG.
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2243.29 SECS.
 CROSSING TIME AT ULYSSES    IS 16145. S. OR 04:29:05.3 +/-  367.37 SECONDS
```

No

```
From KOSHUT@ssl.msfc.nasa.gov Thu Jul 16 08:17:51 1992
Date:    Thu, 16 Jul 1992 10:19:09 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

                BATSE BURST TRIGGER
NO.: 01697
```

July 14

```
TIME: TJD=8817 SECONDS=18388

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=46     AZIMUTH=203     ERROR=      DEGREES

COMMENTS:
BURST WITH NO EMISSION DETECTED ABOVE 300 KEV.  THE TIME HISTORY HAS A
PEAK AT ~ TRIGGER + 2 SECONDS.  THE DURATION OF THE BURST IS UNKNOWN
DUE TO A LACK OF PRETRIGGER DATA.
```

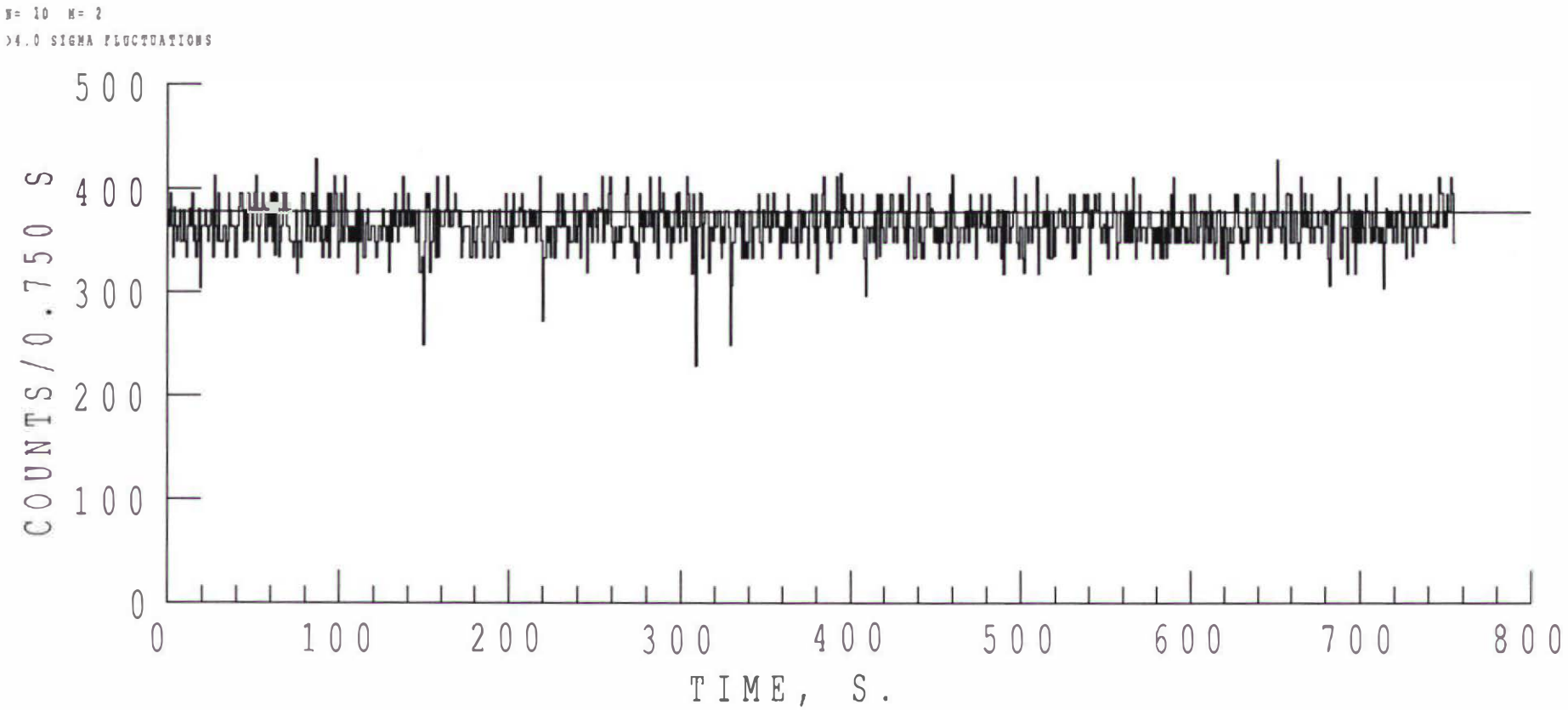
8/ 6/94

ULYSSES RT

14/ 7/92 15768.241 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



Helio corr removed

Date: Mar 14 '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)?

☑ 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

****
CATSEARCH PROGRAM
****

BATSE BURST # 1698
EVENT OF 1992 JUL 14 DAY OF YEAR=196
EVENT CROSSING TIME AT BATSE : 47069. S. OR 13:04:29.3
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 219.300 -34.200
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 14/ 7/ 92 IS:
RA= 151.553 DEC= 5.386 DIST= 6.055 AU
BATSE-ULYSSES DISTANCE = 905839968. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=105.01 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -782.79 SECS.
CROSSING TIME AT ULYSSES IS 46287. S. OR 12:51:26.5 +/- 544.79 SECONDS

RI

From KOSHUT@ssl.msfc.nasa.gov Thu Jul 16 08:35:26 1992
Date: Thu, 16 Jul 1992 10:36:33 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

BATSE BURST TRIGGER
NO.: 01698

TIME: TJD=8817 SECONDS=47069

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=61. AZIMUTH=159. ERROR= DEGREES

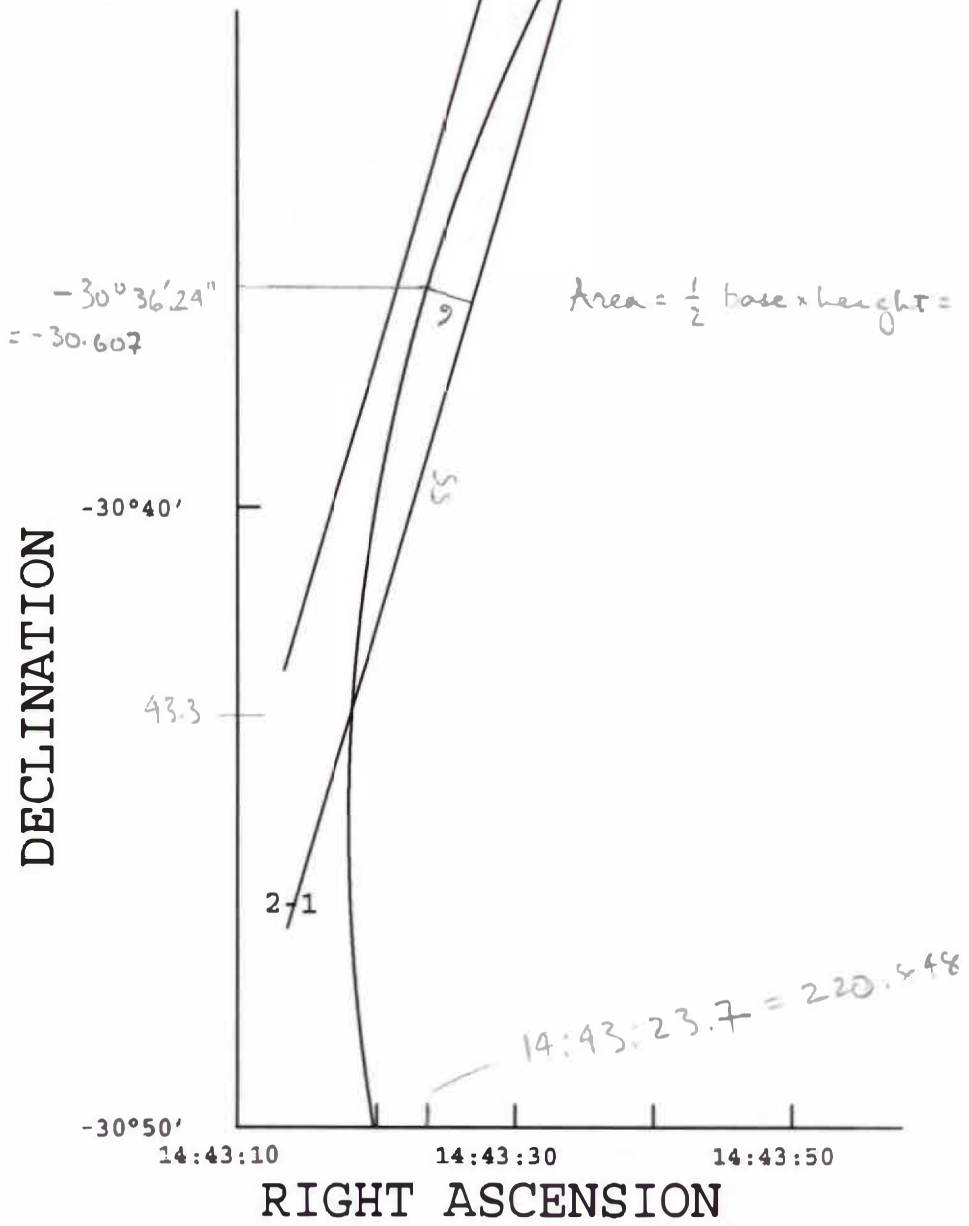
COMMENTS:
BURST OF ~ 40 SECOND DURATION WITH A PEAK RATE OBSERVED AT TRIGGER + 23
SECONDS. EMISSION IS DETECTED ABOVE 300 KEV. A FIRST PULSE (PEAK AT
~ TRIGGER + 1 SECOND) IS HARDER THAN THE PULSE WITH THE PEAK RATE
(AT TRIGGER + 23 SECONDS).

WATCH

EVENT OF JUL 14, 1992 12:50

3/12/98

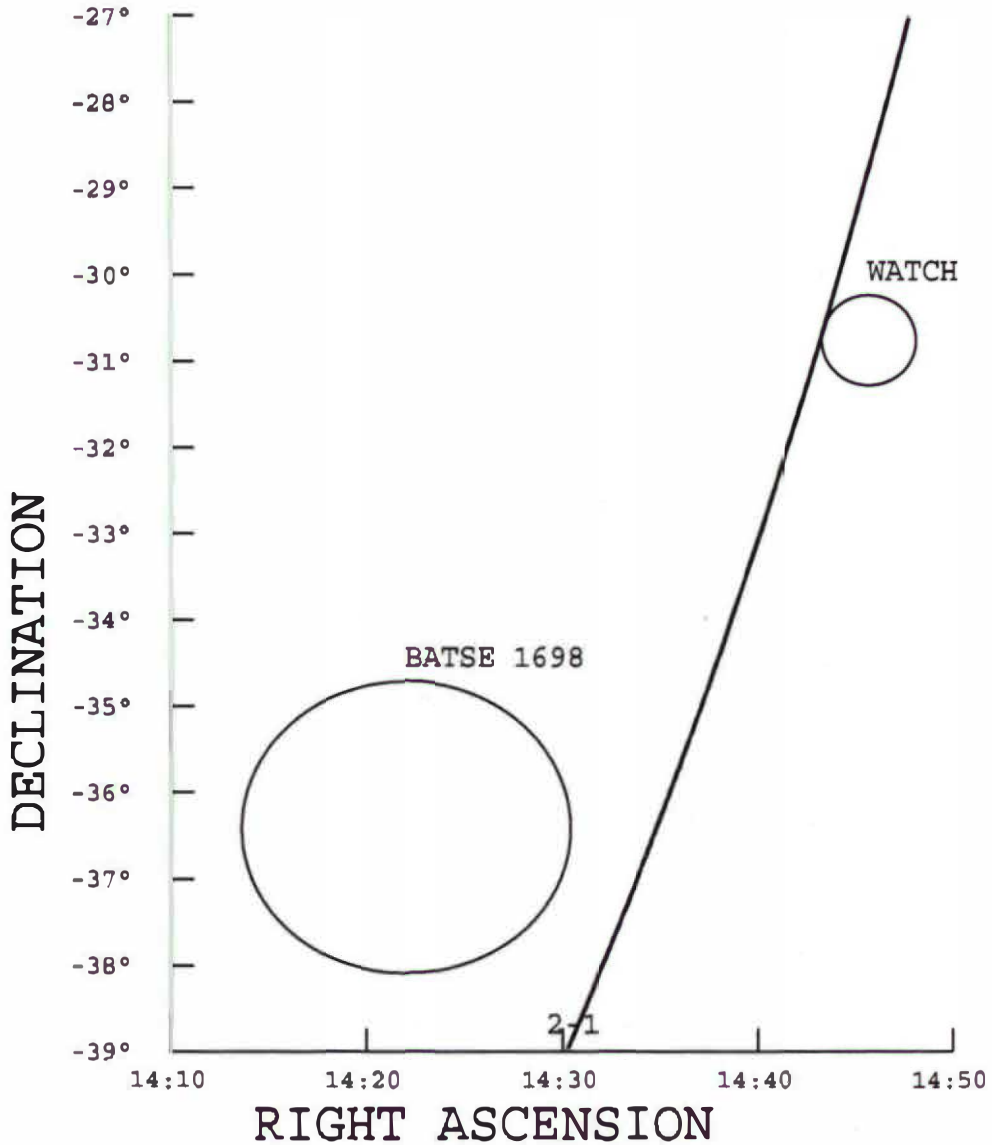
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE



Area = $\frac{1}{2}$ base × height = 55×9 sq mm × $\left(\frac{10'}{82\,mm}\right)^2$

EVENT OF JUL 14, 1992 12:50

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



From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

From root Fri Jul 16 15:29 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA07838; Fri, 16 Jul 93 15:29:21
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21891; Fri, 16 Jul 93 15:30:05 PDT
Message-Id: <9307162230.AA21891@sunspot.ssl.berkeley.edu>
Date: Fri 16 Jul 93 15:31:54-PST
From: $C <046369@essdp2.span.nasa.gov>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail]   DMSP GAMMA-RAY BURST DATA
Status: R

Received: from ESSDP2 by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
          DECnet; Fri, 16 Jul 93 15:31:29-PST
Date: Fri 16 Jul 93 15:31:29-PST
From: 046369@ESSDP2.SPAN.NASA.GOV
Subject: DMSP GAMMA-RAY BURST DATA
To: "UCBSP::HURLEY"@ESSDP2.SPAN.NASA.GOV

FROM: ESSDP2::TERRELL   (JAMES TERRELL, LOS ALAMOS NATL LAB)
TO: UCBSP::HURLEY (KEVIN HURLEY)
CC:
SUBJ: DMSP GAMMA-RAY BURST DATA, AS OF 16 JULY 1993

HERE ARE SOME NOTES CORRECTING DMSP PEAKTIMES FOR YOUR MASTER BURST LIST.
I HAVE MORE GRAPHS AND INFO TO SEND, BUT HAVE RUN OUT OF TIME.
I WILL SEND MORE INFO AFTER RETURNING 28 JULY--JIM.

```
   27SEP91 84415 YES (8SAA,9YES,10SAA)
   16OCT91 36696 YES (8SAA,9YES,10NR)
    4NOV91 54286 YES (8SR,9YES,10YES)
   27NOV91 15739 YES (8NO,9NO,10YES)
    2DEC91 73733 YES (8YES,9NO@144DEG,10NR)
    9DEC91 66959 N/O (8SR,9SR,10NR,11ND)
   21DEC91 22686 YES (8ND,9NO,10NO,11YES)
   10JAN92 33478 NA  (BLANK) (8ND,9NA,10SAA,11NA)
   10FEB92 35633 YES (8NO,9WEAK,10SAA,11SAA)
    6APR92  9855 N/O (OBSCURED) (8NO@141,10SR,11NO@137DEG)
    1MAY92 76696 N/O (OBSCURED) (8NO@127,10NO@157,11NO@147DEG)
   22JUN92 25506 N/O (8SAA,10NR,11SA)
   28JUN92 76452 YES (8ND,10YES,11NO)
   29JUN92 75897 YES (ALL YES, SOFT)
   14JUL92 47069 NA  (BLANK) (8NA,10SAA,11SR)
   16JUL92 60933 YES (9NO.10YES,11YES)
   20JUL92 11524 N/O (OBSCURED) (8NA@130,10NA@145,11SR)
   23JUL92 72188 N/O (OBSCURED) (8ND,10NA@148,11NR)
   10AUG92 79599 YES?(8YES?,10NA,11NA) (LONG SOFT PEAK)
    4OCT92 50421 YES (8YES,10YES,11SR)
   23NOV92 22727 YES (8YES,10YES,1SR) (NOT AT 22712)
   23NOV92 46542 YES (8NR,10SR,11YES) (NOT AT 46584, BATSE GRB)
    7DEC92 57649 YES (8YES,10YES,11YES)
    6JAN93 55260 YES (8SAA,10YES,11SR)
   12JAN93 55082 YES (8YES,10NO@138,11VERYWEAK) (8:BIG PEAK AT 55202)
   20JAN93 84779 YES (8YES,10,YES,11YES) (NO, AT 84700!)
```

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(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)

From @mitvma.mit.edu:green%cfaps2.span@cfa.bitnet Sat Aug 8 17:36:48 1992
X-Delivery-Notice: SMTP MAIL FROM does not correspond to sender.
Date: Sat, 8 Aug 92 20:11:43 EDT
From: green%cfaps2.span%cfa.BITNET@mitvma.mit.edu
Subject: IAUC 5579: gamma-ray bursts; Mars
To: quai%cfa.BITNET@mitvma.mit.edu
X-St-Vmsmail-To: ST%QUAI
Content-Length: 2923

Circular No. 5579

Central Bureau for Astronomical Telegrams
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Telephone 617-495-7244/7440/7444 (for emergency use only)
TWX 710-320-6842 ASTROGRAM CAM EASYLINK 62794505
MARSDEN@CFA or GREEN@CFA (.SPAN, .BITNET or .HARVARD.EDU)

GAMMA-RAY BURSTS

A. Claret, E. Jourdain, E. Churazov, M. Gilfanov, on behalf of the SIGMA/Granat team (Service d'Astrophysique, Centre d'Etudes Nucleaires de Saclay; Centre d'Etude Spatiale des Rayonnements, Toulouse; Space Research Institute, Moscow), report: "The SIGMA telescope onboard the Granat observatory has detected two gamma-ray bursts in the 35- to 400-keV energy range. The 1-sigma error box coordinates of these two bursts is approximatively diamond shaped because the bursts were detected through an interruption in the passive shield acting as a collimator. The first source was observed on July 14.545498 UT (signal-to-noise ratio, S/N, was 24.6), with the following four positions corresponding to the extremities of the diamond (equinox 1950.0): R.A. = 14h39m24s, Decl. = -29 27'.6; 14h32m21s, -28 33'.6; 14h39m52s, -30 25'.8; 14h45m36s, -31 01'.2. The second source was observed on July 23.835513 (S/N = 55), within the following diamond: R.A. = 19h01m46s, Decl. = +26 48'.0; 19h05m19s, +27 57'.0; 19h04m22s, +26 50'.4; 19h00m27s, +25 30'.6."

MARS

S. J. O'Meara, Sky & Telescope; and W. Sheehan, St. Paul, MN, report visual observations of martian dust activity using the 1-m reflector at Pic du Midi Observatory: "On Aug. 1.21 UT, a diffuse yellow haze extended over the southern hemisphere from latitude -40 deg to the remnant south polar cap, and from longitude 0 to 100 deg, where it combined with strong limb brightening. The observations showed the desert regions from Noachis through Argyre brighter than normal, while Mare Oceanidum and Mare Australe were fully yellowed with no visible darkening throughout the region, except for a slight shading just south of Noachis. The remnant south polar cap was visible through the haze at longitude about 60 deg, measuring only about 0".2. On Aug. 2.22, the south polar haze appeared less opaque and the limb brightening had decreased, but a stringy yellow cloud extended west-east along the southern border of Mare Erythraeum. An extension of this dust cloud sliced north through Bosporus and extended into Thaumasia to just west of Solis Lacus at Nectar. Not much is known about martian dust activity during southern-hemisphere summer (as is now the case) when the planet is far from the earth (1992, Sky Tel. 83, 490). Follow-up observations would be useful to determine the longevity of these clouds."

	R.A.(1950)		Decl.(1950)	
GB910122				
	19 h 39 mn 42 s	294.925°	-69° 36' 36"	-69.61
	19 h 47 mn 18 s	296.825	-71° 18' 36"	-71.31
	19 h 46 mn 28 s	296.617	-69° 24' 36"	-69.410
	19 h 36 mn 45 s	294.187	-67° 37' 12"	-67.62

t0 = 15 h 13 mn 48 s 564 ms

Position GRANAT à t0 :

R = 171607.108 km

α_{2000} = 09 h 25 mn 29.14 s

δ_{2000} = 35° 14' 44"

				J 2000
GB920714				
	14 h 39 mn 24 s	219.85	-29° 27' 36"	-29.460 → 220.591$_J$ -29.674
	14 h 32 mn 21 s	218.0875	-28° 33' 36"	-28.56 → 218.821$_J$ -28.779
	14 h 39 mn 52 s	219.9667	-30° 25' 48"	-30.43 → 220.712$_J$ -30.643
	14 h 45 mn 36 s	221.400	-31° 01' 12"	-31.02 → 222.151$_J$ -31.229

t0 = 13 h 04 mn 31 s 014 ms

GB920723		
	19 h 01 mn 46 s	+26° 48' 00"
	19 h 05 mn 19 s	+27° 57' 00"
	19 h 04 mn 22 s	+26° 50' 24"
	19 h 00 mn 27 s	+25° 30' 36"

t0 = 20 h 03 mn 08 s 323 ms

CENTRE D'ETUDE SPATIALE DES RAYONNEMENTS - CNRS - UPS
9, Avenue du Colonel Roche - 31400 TOULOUSE - FRANCE

SIGMA Team

Téléfax n° (33) 61.55.66.51
Télex n° 531729
Boîte postale n° 4346 . 31029 Toulouse Cedex

Message n°	Page : 1/5	Date : 21/09/92

FROM : François Pelaez

TO : Kevin Hurley

Salut Kevin,

parmi les sursauts qui ont déclenché la caméra de SIGMA (notée GCA sur la liste que Elisabeth t'a donnée), trois sont passés par un interstice du blindage et sont visibles sur les images brutes du mode sursaut car ils donnent des arcs. La position de ces arcs sur le détecteur a permis à Arnaud Claret (de l'équipe SIGMA au CEA) de calculer des boîtes d'erreur pour la direction d'arrivée de ces sursauts.

Il s'agit des sursauts : GB910122, GB920714 et GB920723. Serait-il possible d'obtenir la localisation par triangulation de ces trois sursauts, afin de valider la méthode de A. Claret ?

Je t'envoie ci-après les positions en coordonnées équatoriales 1950 des sommets des boîtes d'erreur calculés par A. Claret pour chaque sursaut, ainsi que la position de GRANAT, en coordoonées γ_{2000}, pour GB910122 (au cas où elle te serait utile pour sa localisation). Je t'envoie également les profils temporels des trois sursauts, obtenus par la caméra, dans la gamme 30 keV - 200 keV, en mode Time-To-Spill (126 photons/bin).

Je te remercie d'avance pour ton aide.

A bientôt

F. Pelaez

From pelaez@cnesta.span.cnes.fr Wed Apr 28 06:32:41 1993
X400-Received: by mta mhs-relay.cs.wisc.edu in /PRMD=XNREN/ADMD= /C=US/;
Relayed; Wed, 28 Apr 1993 08:32:06 +0000
X400-Received: by /PRMD=inria/ADMD=atlas/C=fr/; Relayed;
Wed, 28 Apr 1993 08:29:47 +0000
X400-Received: by /PRMD=cnes/ADMD=atlas/C=fr/; Relayed;
Wed, 28 Apr 1993 08:28:35 +0000
Date: Wed, 28 Apr 1993 08:28:35 +0000
X400-Originator: pelaez@cnesta.span.cnes.fr
X400-Recipients: khurley@sunspot.ssl.berkeley.edu
X400-Mts-Identifier: [/PRMD=cnes/ADMD=atlas/C=fr/;736003717@eliot.cnes.fr]
X400-Content-Type: P2-1984 (2)
Content-Identifier: Localisation ...
From: "" <pelaez@cnesta.span.cnes.fr>
To: khurley <khurley@sunspot.ssl.berkeley.edu>
Subject: Localisation de GB910122, GB920714 et GB920723
Content-Length: 618

CESR/SIGMA/F.PELAEZ TOULOUSE, 28/04/1993

Salut Kevin,

voici les positions de GRANAT pour GB910122, GB920714 et GB920723 :

GB910122 : t0 = 15h 13mn 48s 564ms
r = 171607.1077 km
R.A.(2000) = 09h 25mn 29.14s
Decl(2000) = 35d 14' 44"

GB920714 : t0 = 13h 04mn 31s 014ms = 47071.014 s
r = 148755.7067 km
R.A.(2000) = 08h 12mn 54.84s = 123.2285°
Decl(2000) = 71d 20' 52.1" = 71.3478°

GB920723 : t0 = 20h 03mn 08s 323ms
r = 173722.0853 km
R.A.(2000) = 08h 47mn 43.53s
Decl(2000) = 39d 54' 44.9"

Amities

Francois

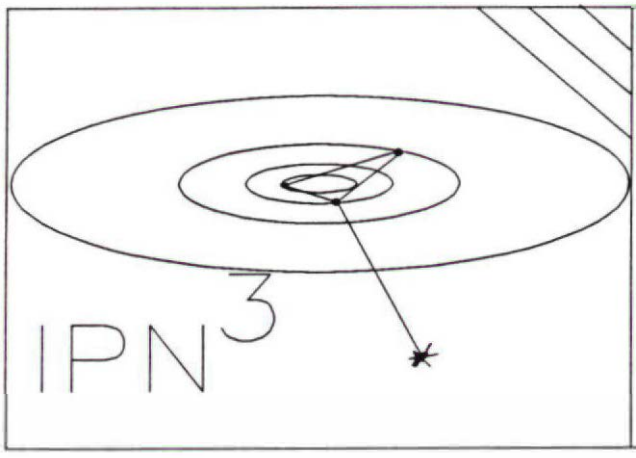
From PELAEZ@cnesta.span.nasa.gov Thu May 13 01:33:44 1993
Date: Thu, 13 May 93 01:34:30 PDT
From: PELAEZ@cnesta.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Content-Length: 82

Les boites d'erreur de la gamma-camera sont donnees a 1 sigma.

Salut

Francois

FAXED



FAX FROM K. HURLEY
UNIVERSITY OF CALIFORNIA
SPACE SCIENCES LABORATORY
BERKELEY, CA. 94720
PHONE: (510) 643-9173
FAX: (510) 643-8640 (OFFICE),-8302 (SECT'Y)
E-MAIL: khurley@sunspot.ssl.berkeley.edu

TO: Arnaud Claret
FAX #: 33 - 1 -69 08 65 77 (Saclay, France)
DATE: August 18, 1993
TOTAL NUMBER OF PAGES: 5

Bonjour Arnaud,

Les localisations des 4 sursauts suivent. Il suffit de dessiner deux anneaux pour chaque sursaut (tu trouveras les coordonnees dans les listings). J'amerais recevoir les mises a jour des localisations SIGMA. Les listings contiennent aussi une liste des satellites utilises pour chaque localisation. Il ne faut pas montrer ni les cercles BATSE ni les cercles WATCH (exception: tu peux montrer le cercle BATSE pour 910122 car il est dans le catalogue). Mais tu peux bien sur montrer les anneaux obtenus avec BATSE, Ulysses, et PVO. Le remerciement doit lire: The 3rd Interplanetary Network Error boxes are courtesy of Kevin Hurley, Michael Sommer, Jerry Fishman, C. Meegan, C. Kouveliotou, J. Laros, and R. Klebesadel.

Je voudrais montrer les localisations SIGMA a Huntsville dans un papier ou on va comparer les localisations WATCH avec le IPN. Serais-tu d'accord? Si oui, quel est le remerciement? En fait, je me demande si ce serait une bonne idee de faire une publication commune dans l'Ap. J. Qu'en penses-tu?

Amities et a bientot

Kevin

PS - as tu une addresse e-mail?

TELEFAX MESSAGE

Commissariat à l'Energie Atomique
Direction des Sciences de la Matière

DAPNIA
SERVICE D'ASTROPHYSIQUE

Date: 18 August 1993 Pages: 1 + 0

From: Arnaud Claret To: Kevin Hurley

Dear Kevin,

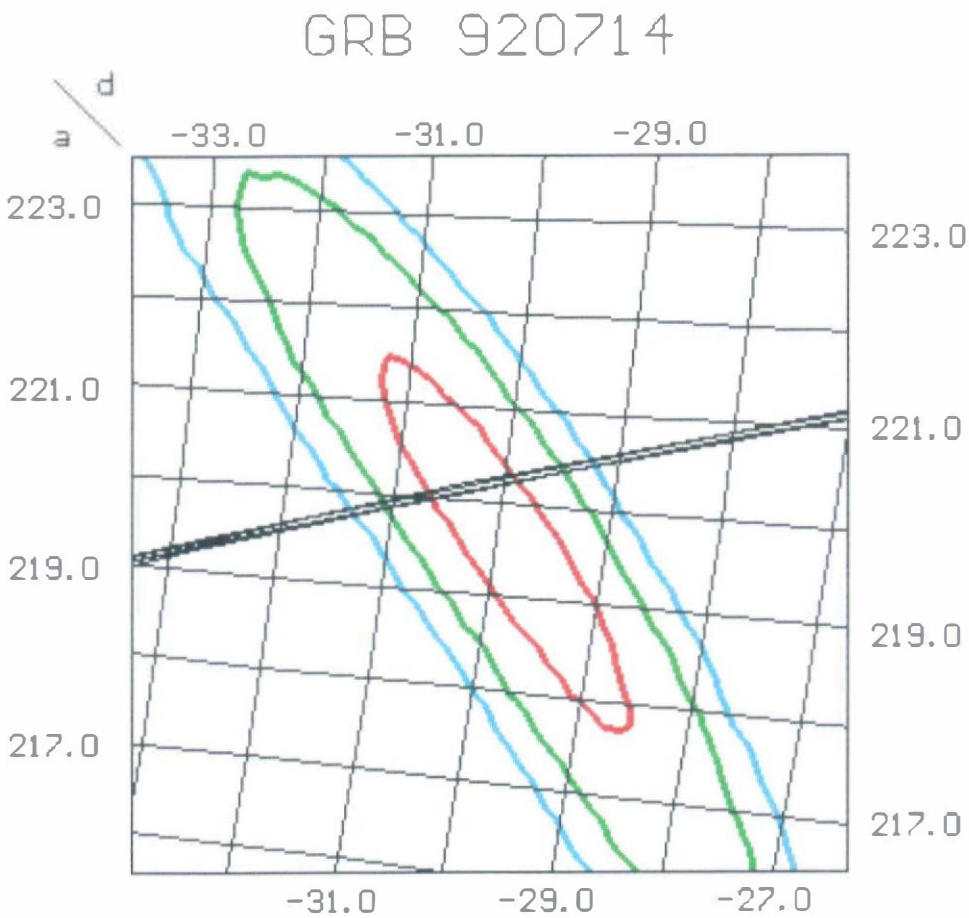
I am working with François Pelacz on the 4 GRBs detected so far through the sidelobes of the SIGMA telescope (GRB_910122, GRB_920714, GRB_920723 and GRB_930310). Using a detailled modelling of the arc-shaped images projected on the detector and taking into account the satellite drifts, I have derived new location error boxes which are fully compatible with your results (obtained by the triangulation method).

I intend to present the SIGMA observations of GRBs at the 2nd Compton meeting. As François has already told you, it would be very interesting to present the SIGMA error boxes together with your precise localizations. François mentionned me that you kindly allow us to publish the drawing of annulus but not the explicit coordinates of your localization. Thus, I would like you to communicate me the way to redraw your annulus properly in our figures (coordinates of annulus and drawing procedure if necessary) .

Please send me some informations about the Network, as well as a list of names, in order to write special aknowledgements in our publication. Thanks a lot for the work that you have already done about these GRBs. I hope to meet you at the 2nd Compton meeting.

A. Claret

Adresse: DAPNIA/SAp, CEN Saclay, 91191 Gif sur Yvette Cedex, France
secretariat: (33-1) 69 08 52 18 FAX: (33-1) 69 08 65 77 TELEX: 604 860 Physpac

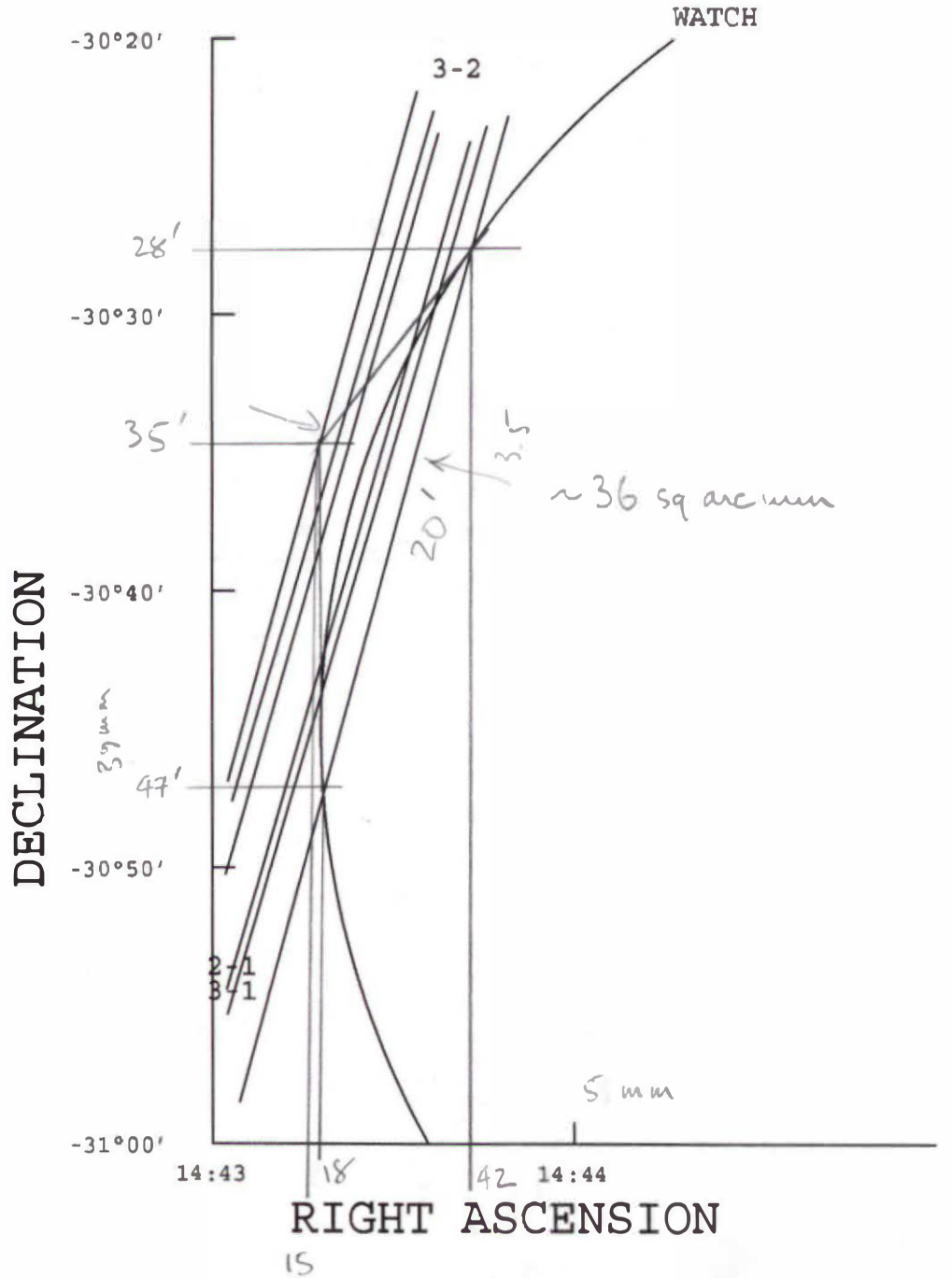

GRB 920714
d
a
-33.0
-31.0
-29.0
223.0
221.0
219.0
217.0
223.0
221.0
219.0
217.0
-31.0
-29.0
-27.0

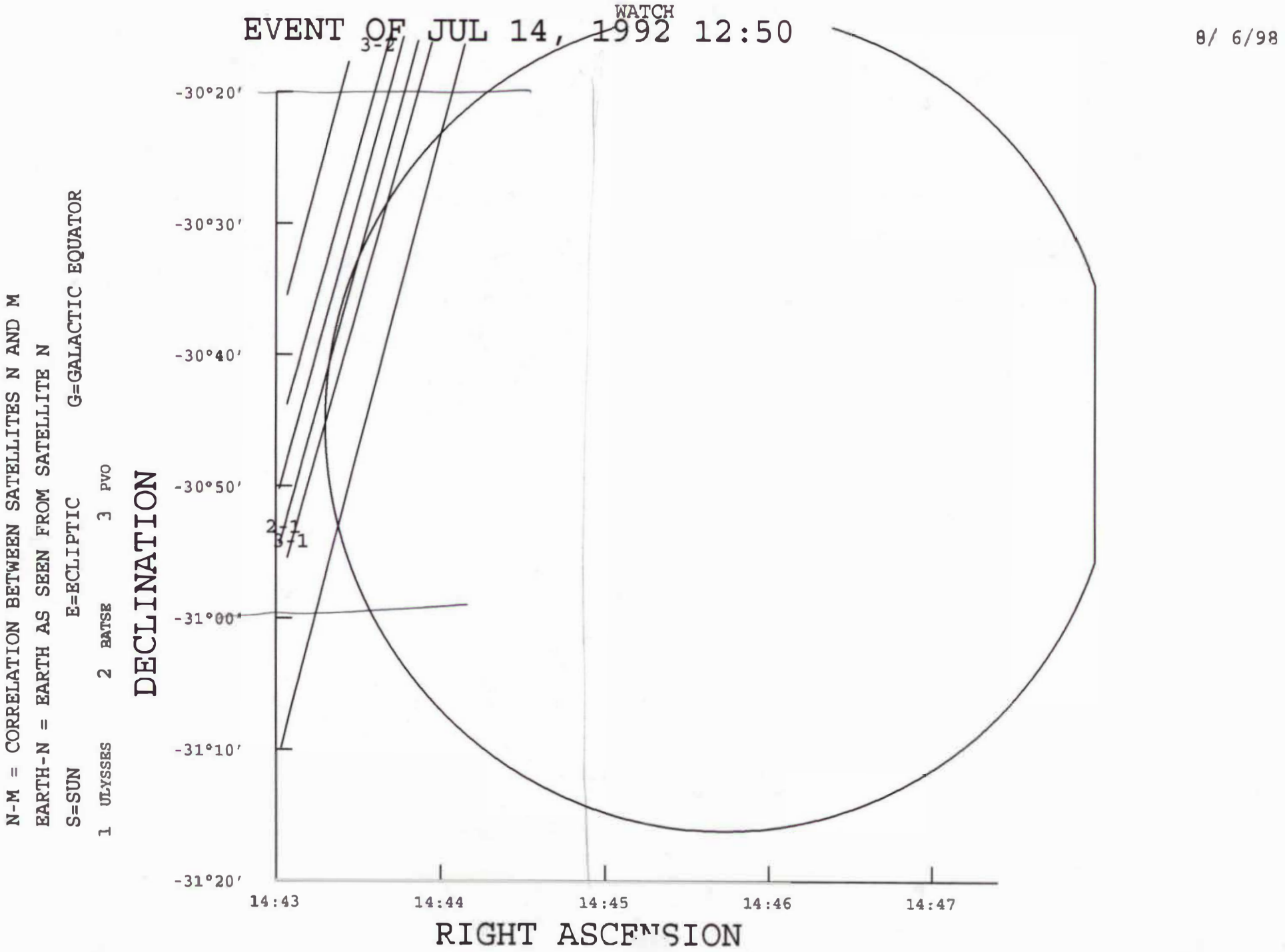
10/93

EVENT OF JUL 14, 1992 12:50

11/ 6/98

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 3 PVO

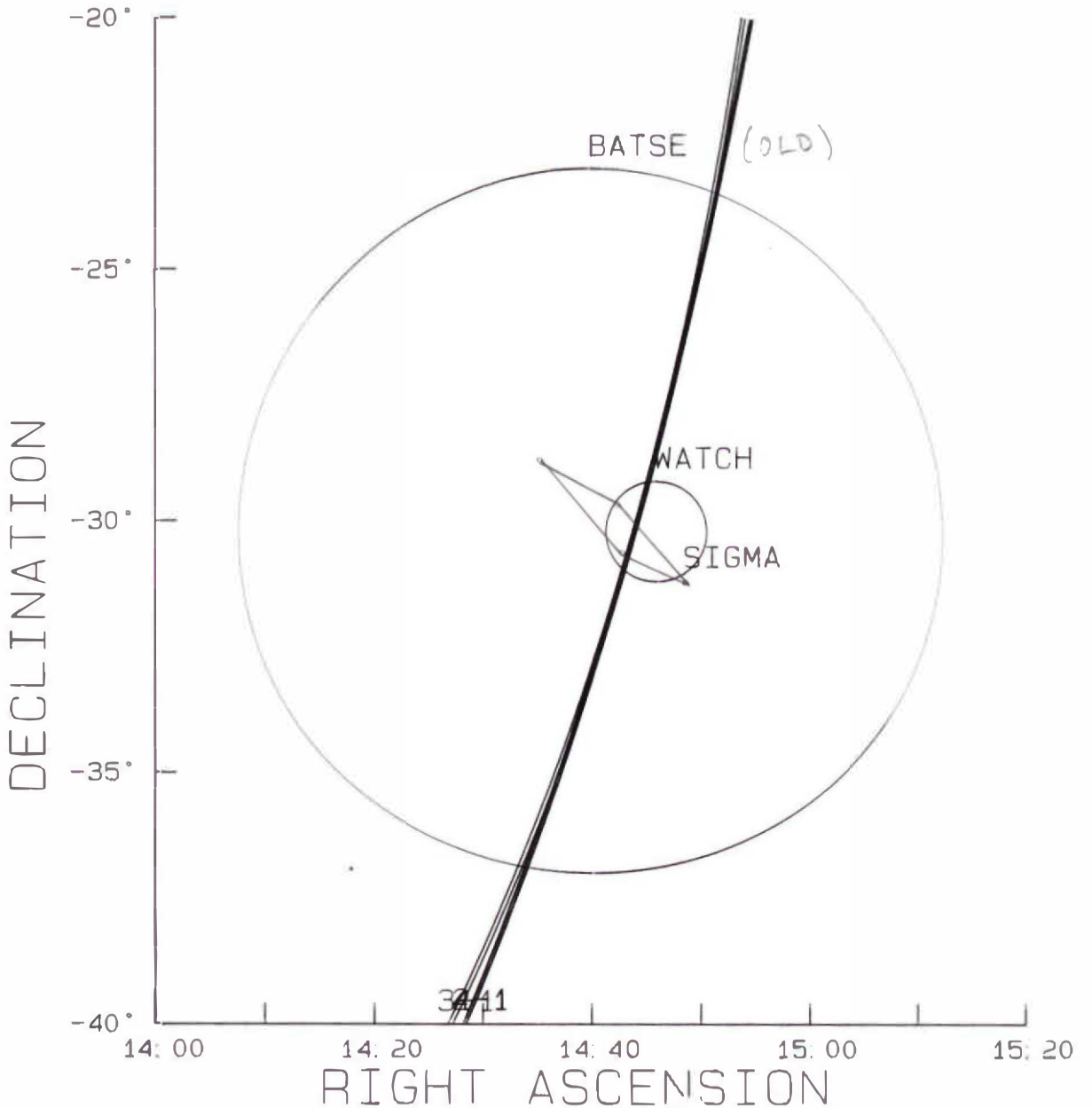


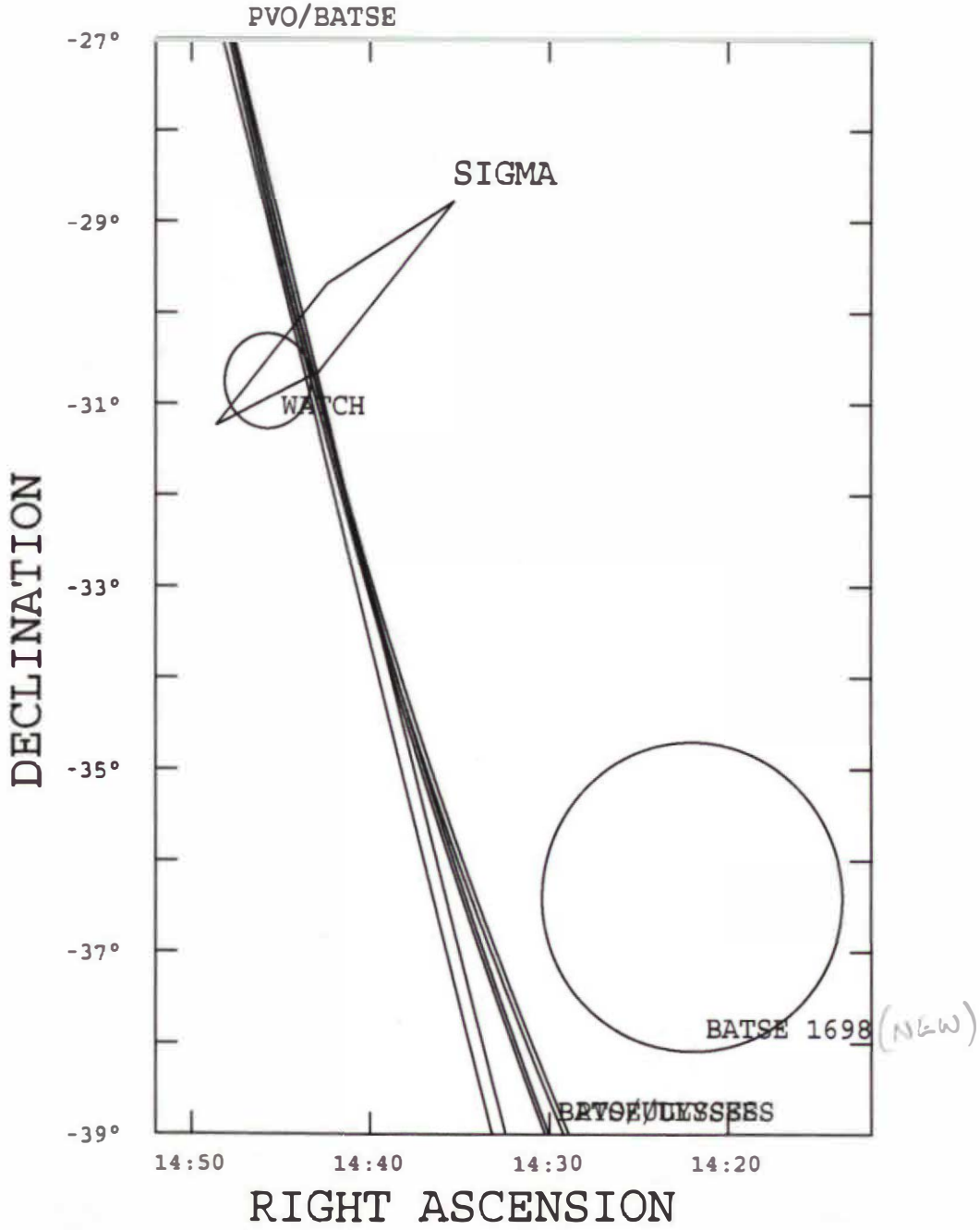

EVENT OF JUL 14, 1992 12:50
WATCH
8/ 6/98
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO
DECLINATION
-30°20'
-30°30'
-30°40'
-30°50'
-31°00'
-31°10'
-31°20'
3-2
2-1
3-1
14:43
14:44
14:45
14:46
14:47
RIGHT ASCENSION

EVENT OF JUL 14, 1992 12:50

24/ 7/93

EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 SIGMA 3 PVO 4 BATSE

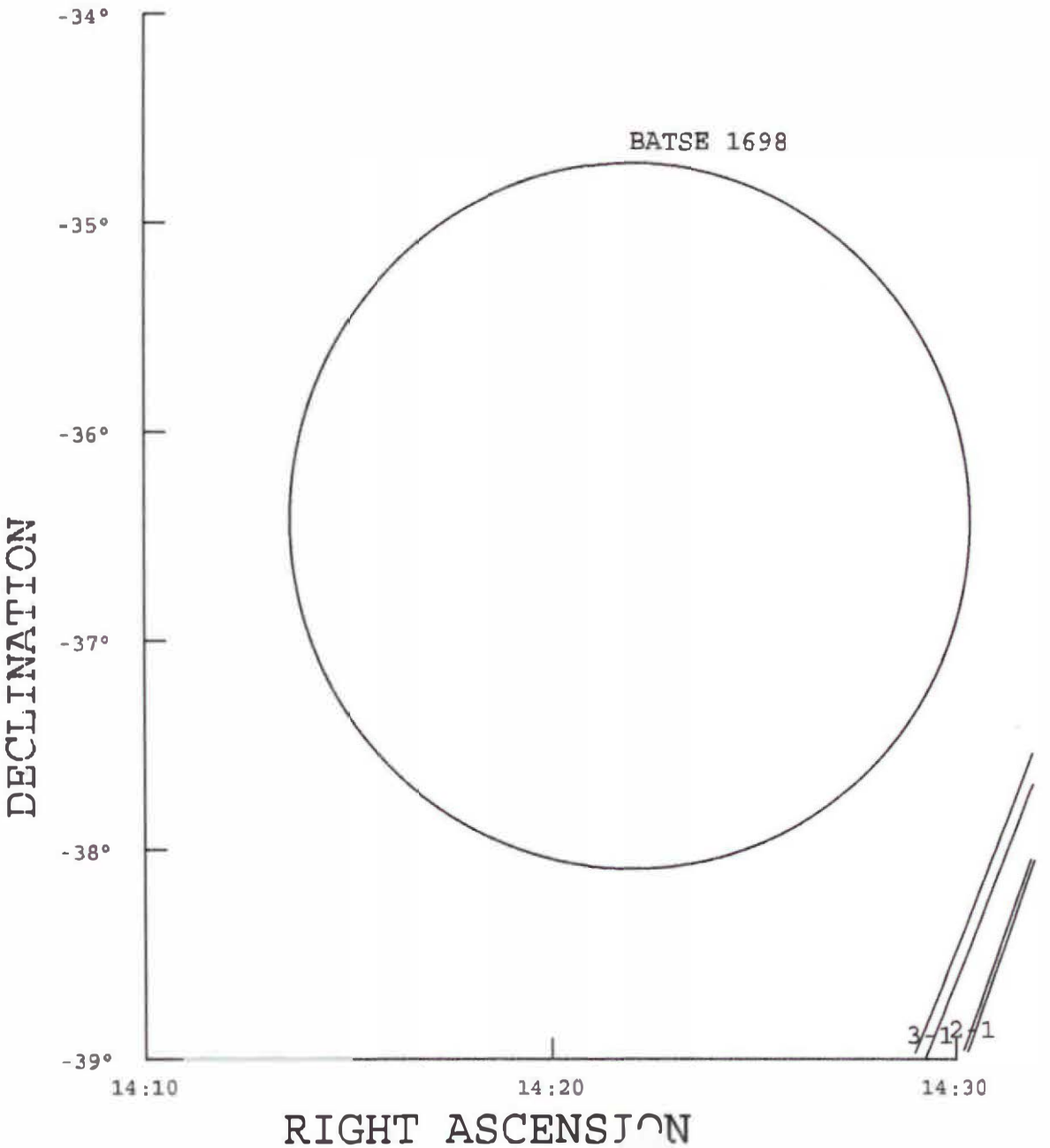


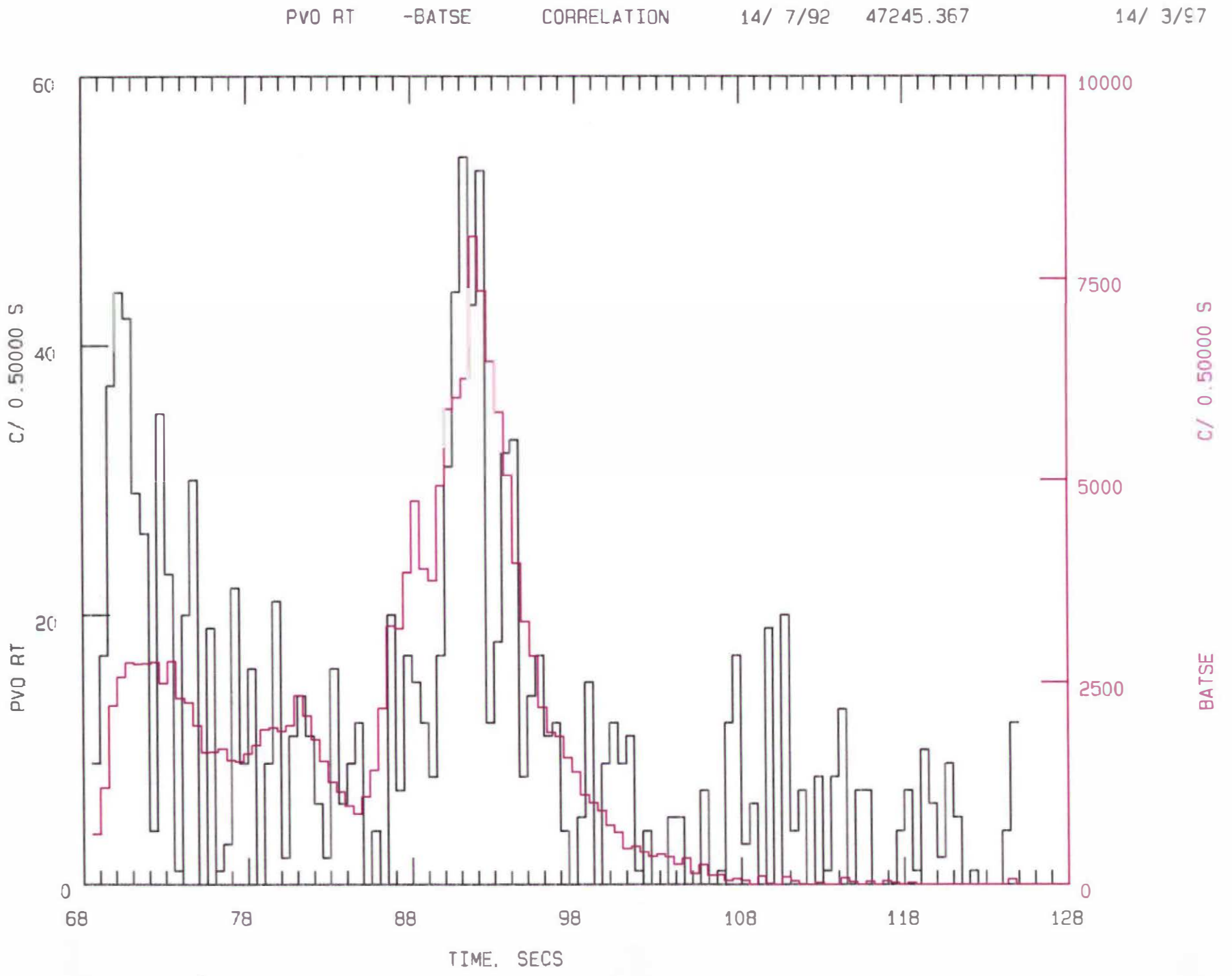

PVO/BATSE
-27°
-29°
-31°
-33°
-35°
-37°
-39°
DECLINATION
SIGMA
WATCH
BATSE 1698 (NEW)
14:50
14:40
14:30
14:20
RIGHT ASCENSION

EVENT OF JUL 14, 1992 12:50

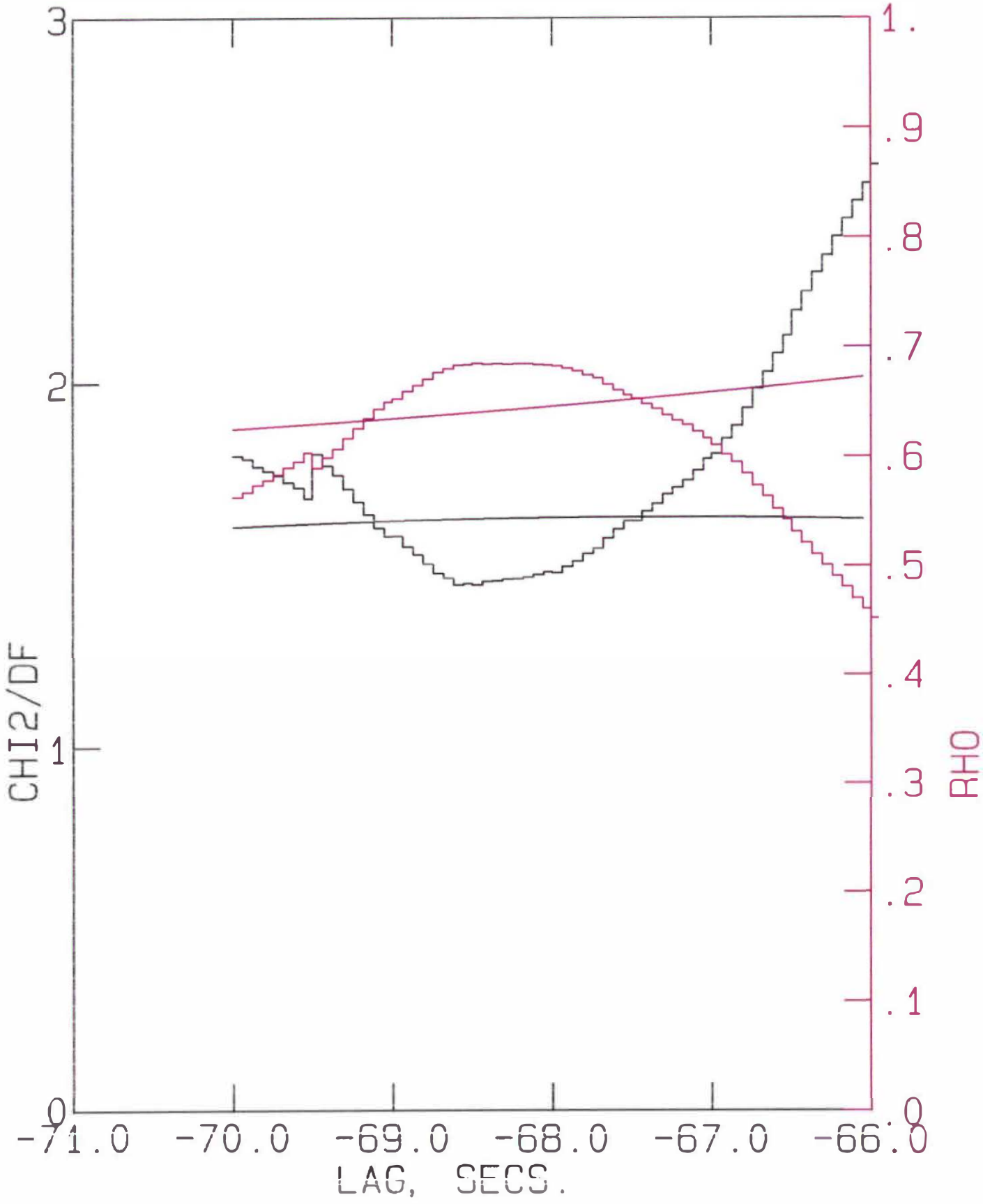
14/ 3/97

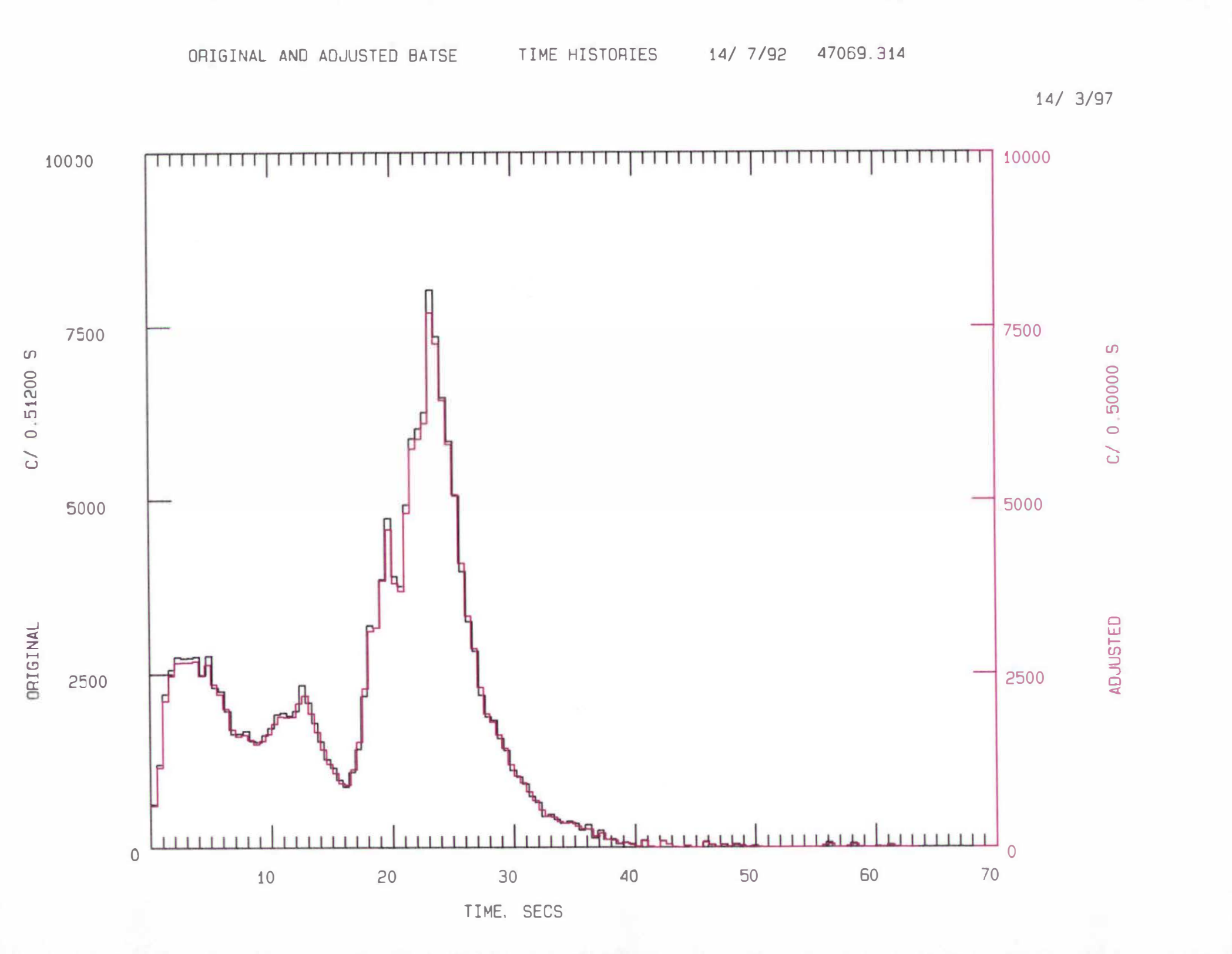
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

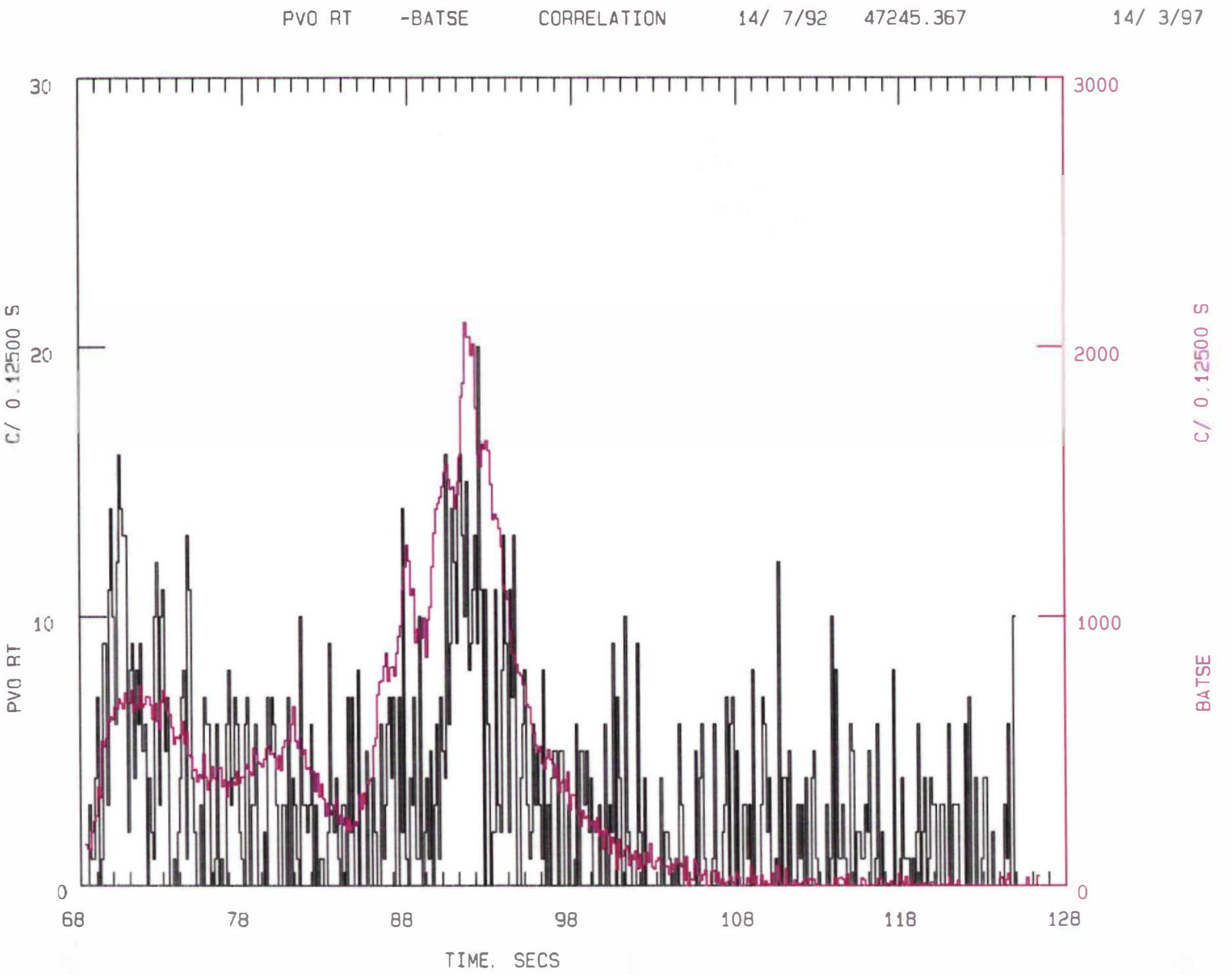



PVO RT -BATSE CORRELATION 14/ 7/92 47245.367 14/ 3/97
60
40
20
0
C/ 0.50000 S
PVO RT
10000
7500
5000
2500
0
C/ 0.50000 S
BATSE
68
78
88
98
108
118
128
TIME. SECS

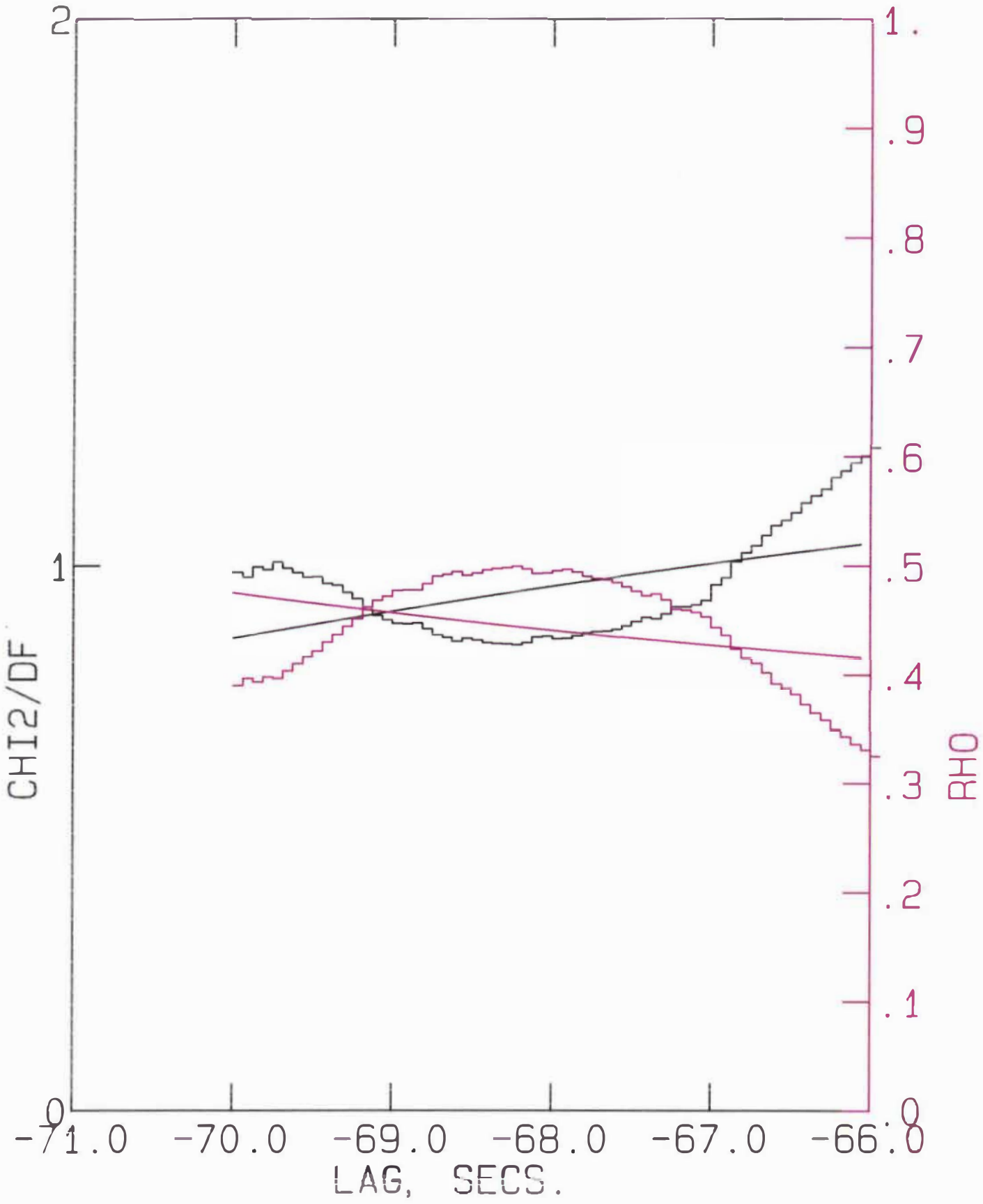
PVO RT -BATSE CORRELATION 14/ 7/92 47245.367

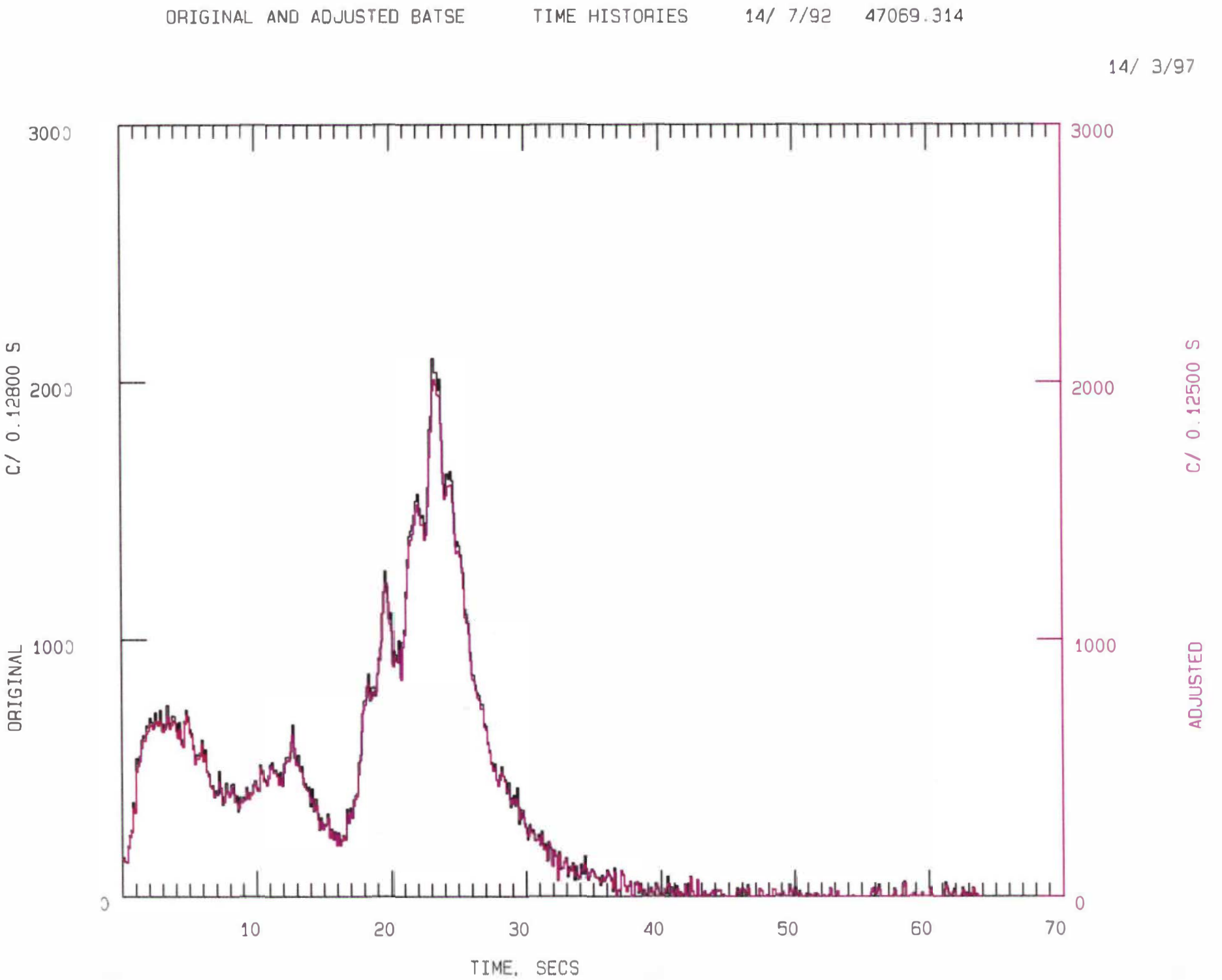


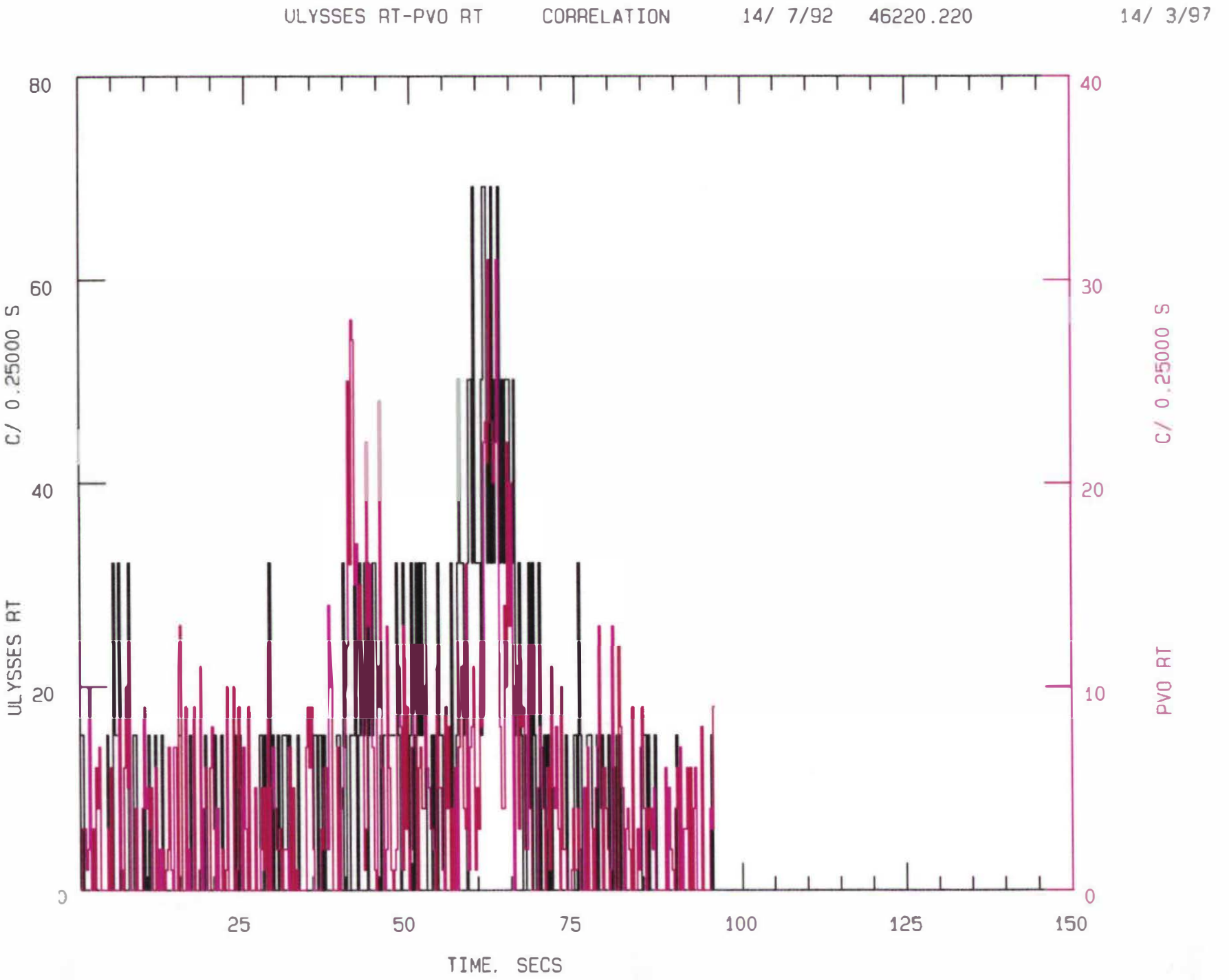

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 14/ 7/92 47069.314
14/ 3/97
10000
7500
5000
2500
0
C/ 0.51200 S
ORIGINAL
10000
7500
5000
2500
0
C/ 0.50000 S
ADJUSTED
10
20
30
40
50
60
70
TIME, SECS


PVO RT -BATSE CORRELATION 14/ 7/92 47245.367 14/ 3/97
30
20
10
0
3000
2000
1000
0
C/ 0.12500 S
PVO RT
C/ 0.12500 S
BATSE
68
78
88
98
108
118
128
TIME. SECS

PVO RT -BATSE CORRELATION 14/ 7/92 47245.367

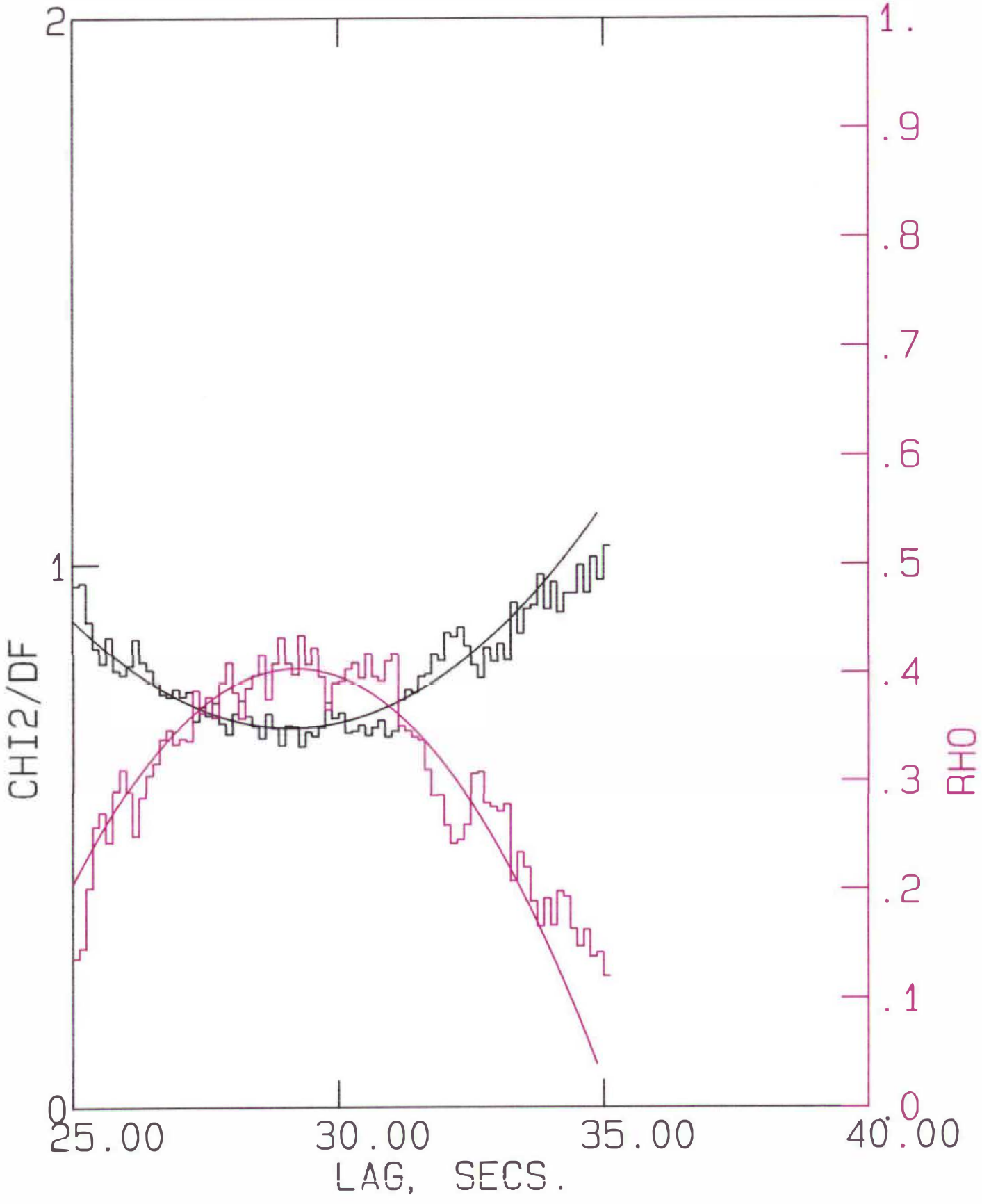


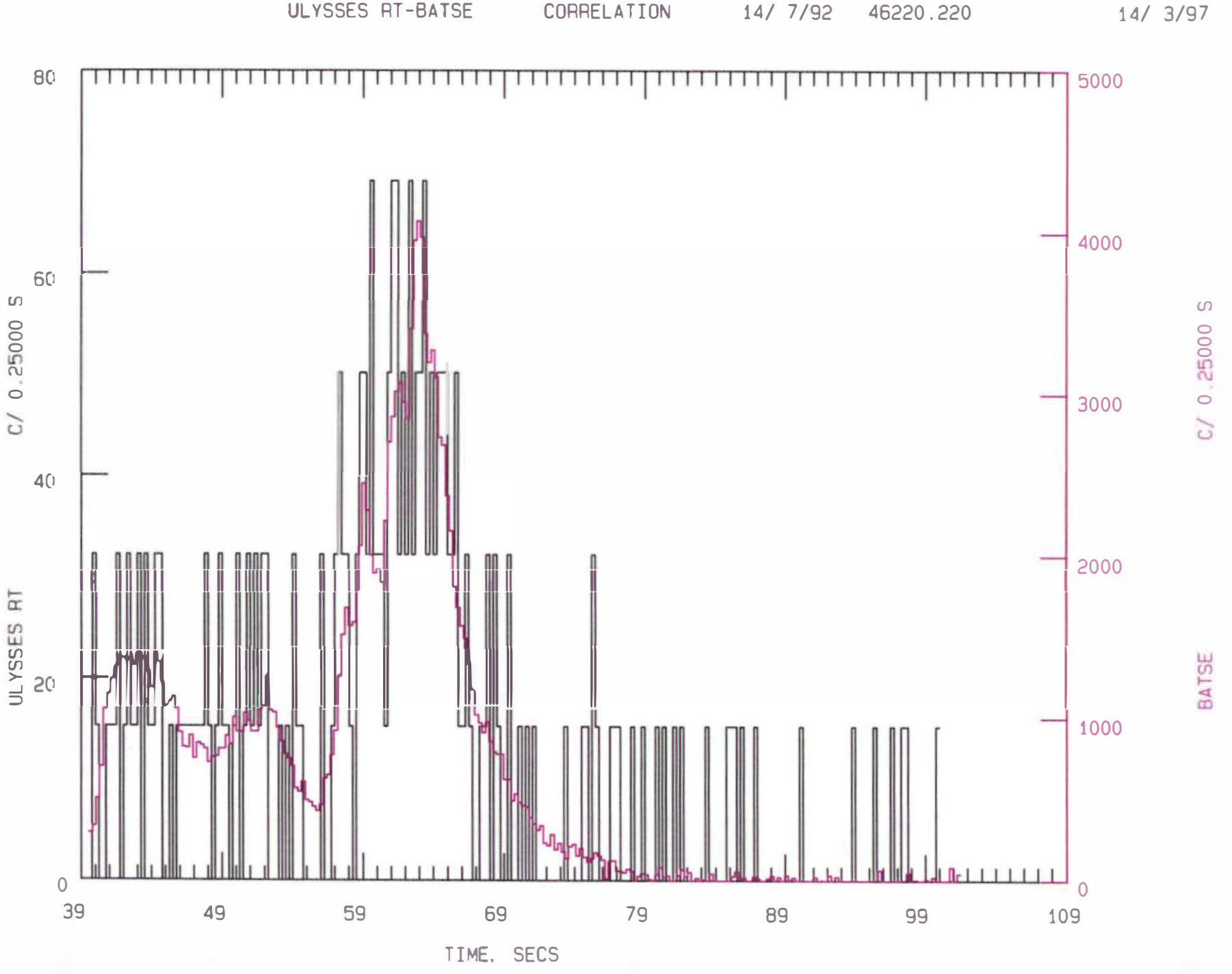

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 14/ 7/92 47069.314
14/ 3/97
3000
2000
1000
0
C/ 0.12800 S
ORIGINAL
3000
2000
1000
0
C/ 0.12500 S
ADJUSTED
10
20
30
40
50
60
70
TIME, SECS


ULYSSES RT-PVO RT CORRELATION 14/ 7/92 46220.220 14/ 3/97
80
60
40
20
0
C/ 0.25000 S
ULYSSES RT
40
30
20
10
0
C/ 0.25000 S
PVO RT
25
50
75
100
125
150
TIME, SECS

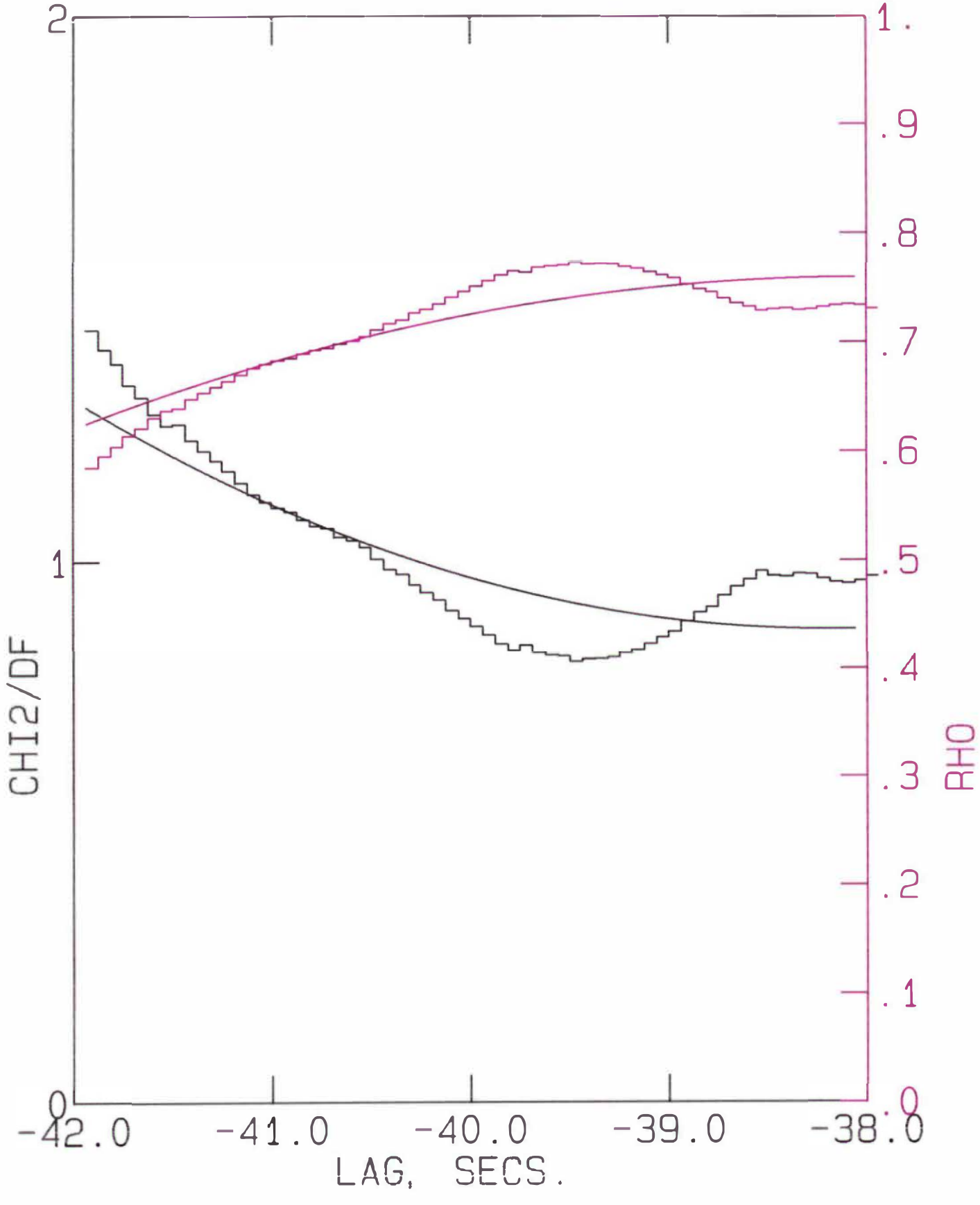
14/ 3/97

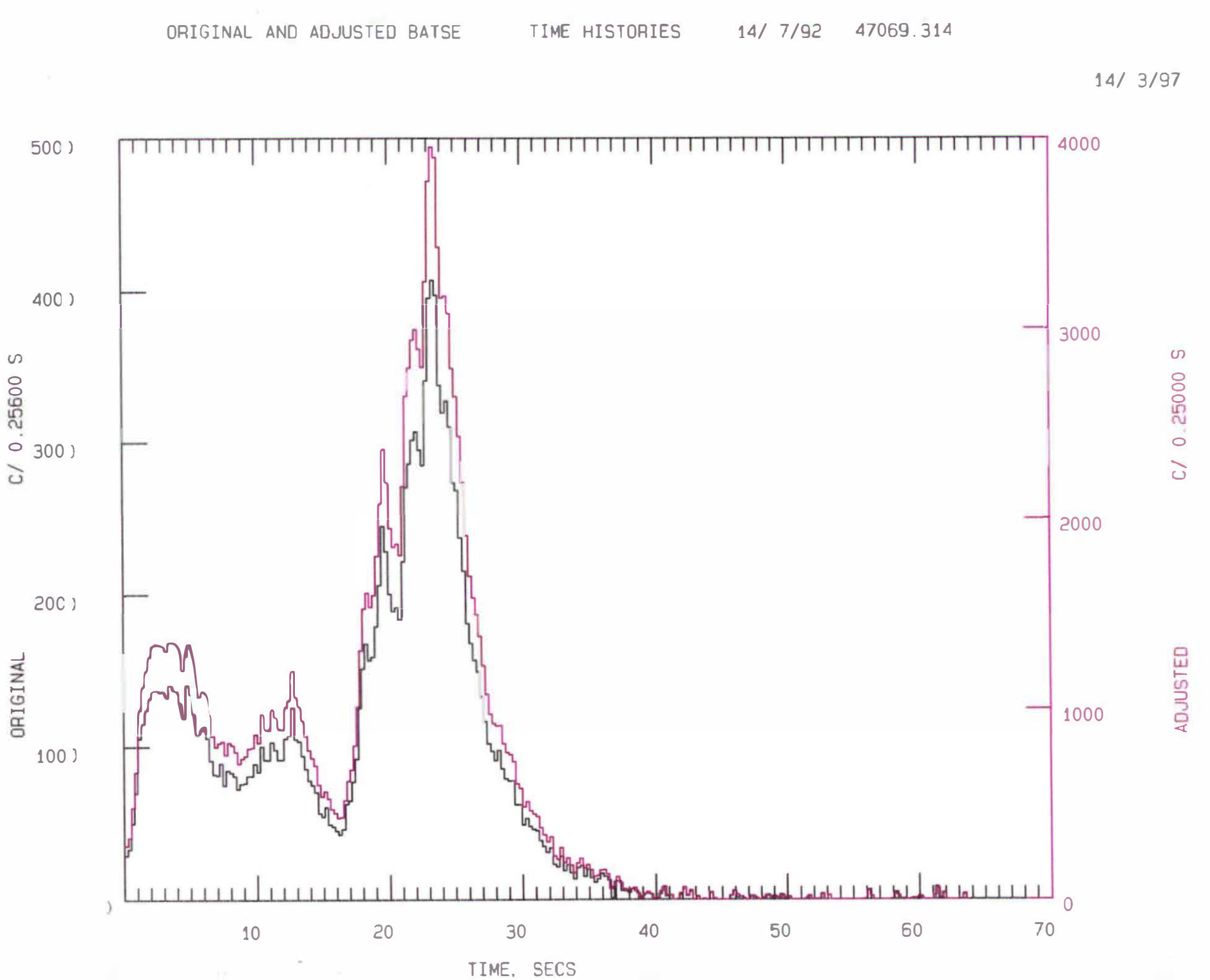
ULYSSES RT-PVO RT CORRELATION 14/ 7/92 46220.220




ULYSSES RT-BATSE CORRELATION 14/ 7/92 46220.220 14/ 3/97
80
60
40
20
0
C/ 0.25000 S
ULYSSES RT
5000
4000
3000
2000
1000
0
C/ 0.25000 S
BATSE
39
49
59
69
79
89
99
109
TIME. SECS

ULYSSES RT-BATSE CORRELATION 14/ 7/92 46220.220




ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 14/ 7/92 47069.314
14/ 3/97
500
400
300
200
100
ORIGINAL
C/ 0.25600 S
4000
3000
2000
1000
0
ADJUSTED
C/ 0.25000 S
10
20
30
40
50
60
70
TIME, SECS

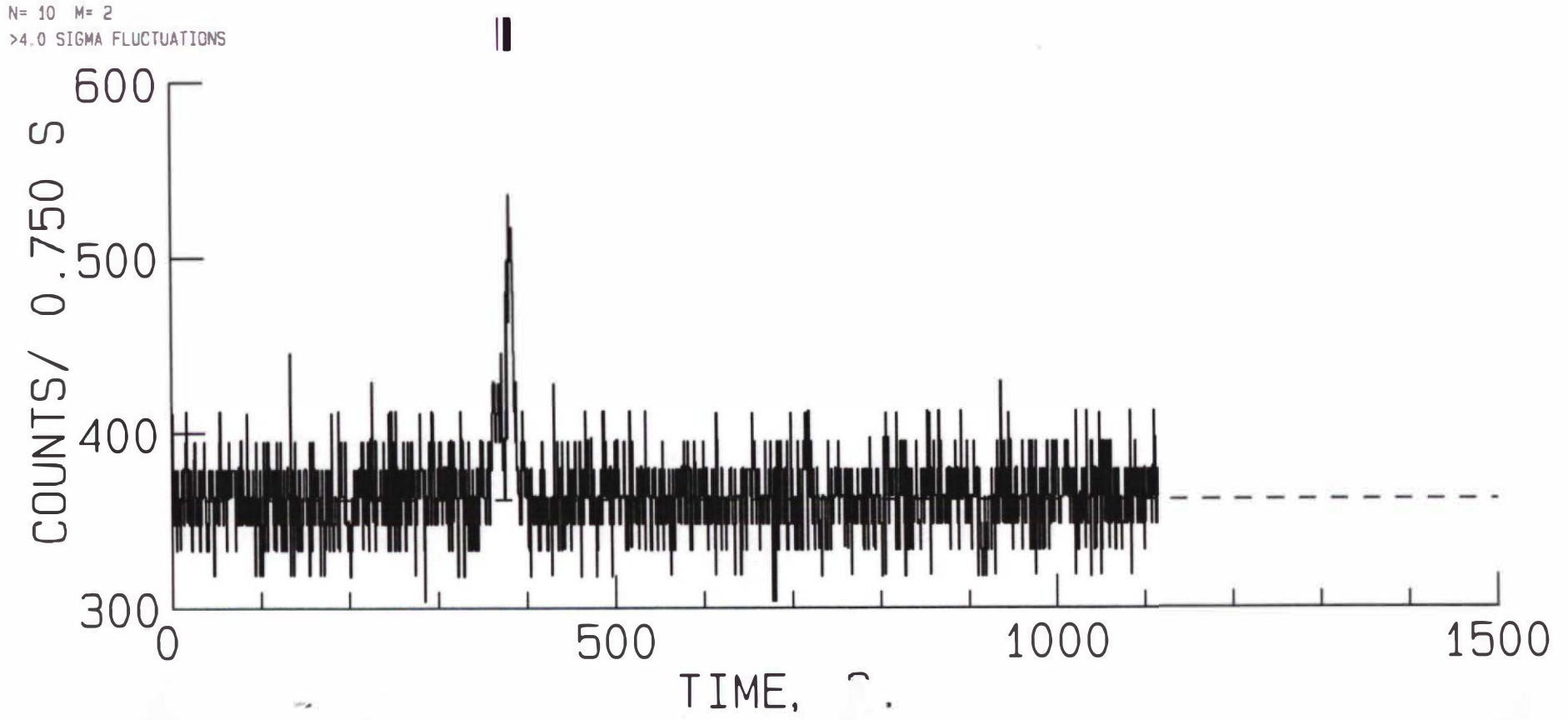
ULYSSES RT

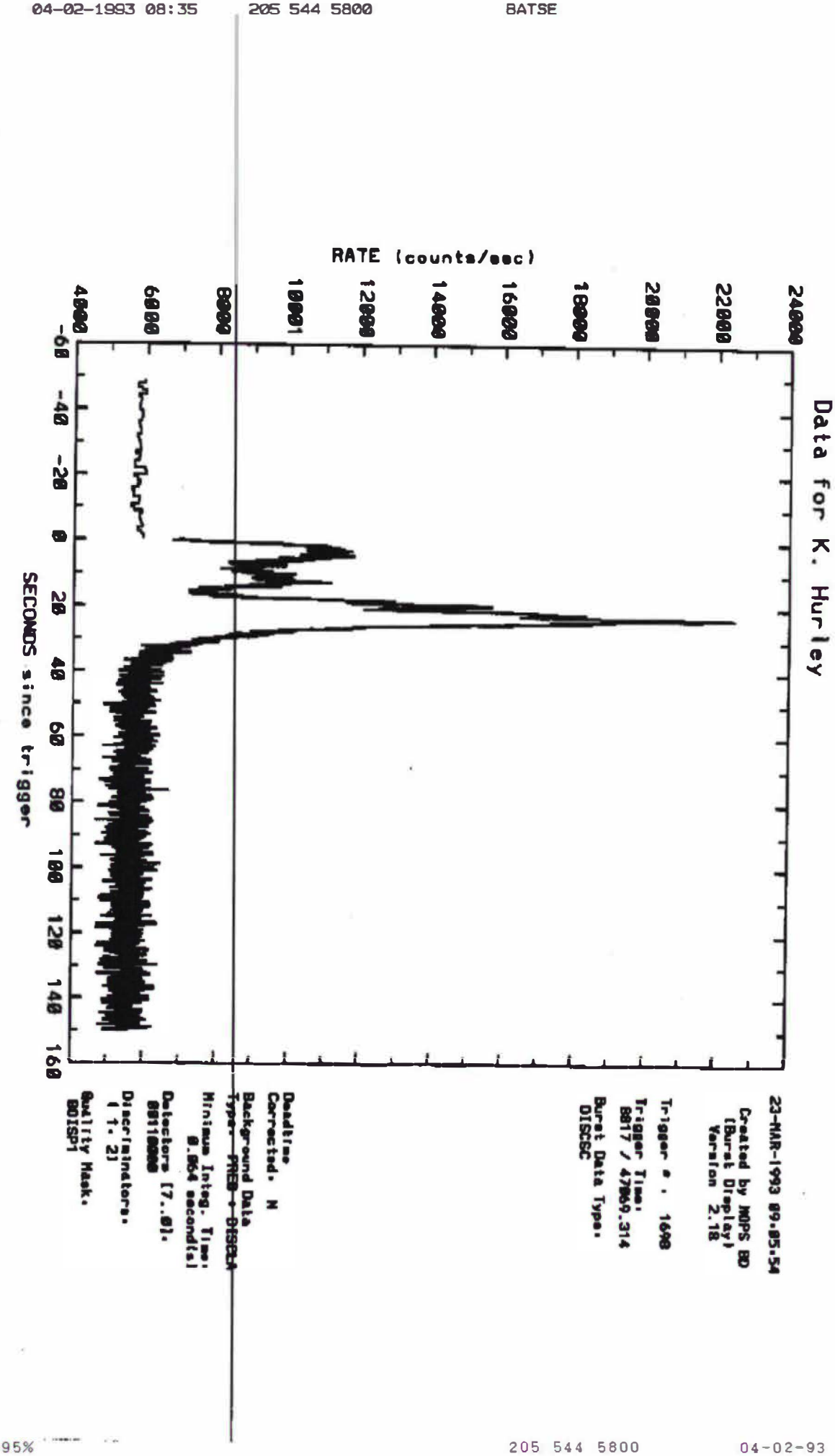
14/ 3/97

14/ 7/92 45900.224 s

0.250 S INTERVALS REGROUPED BY 3

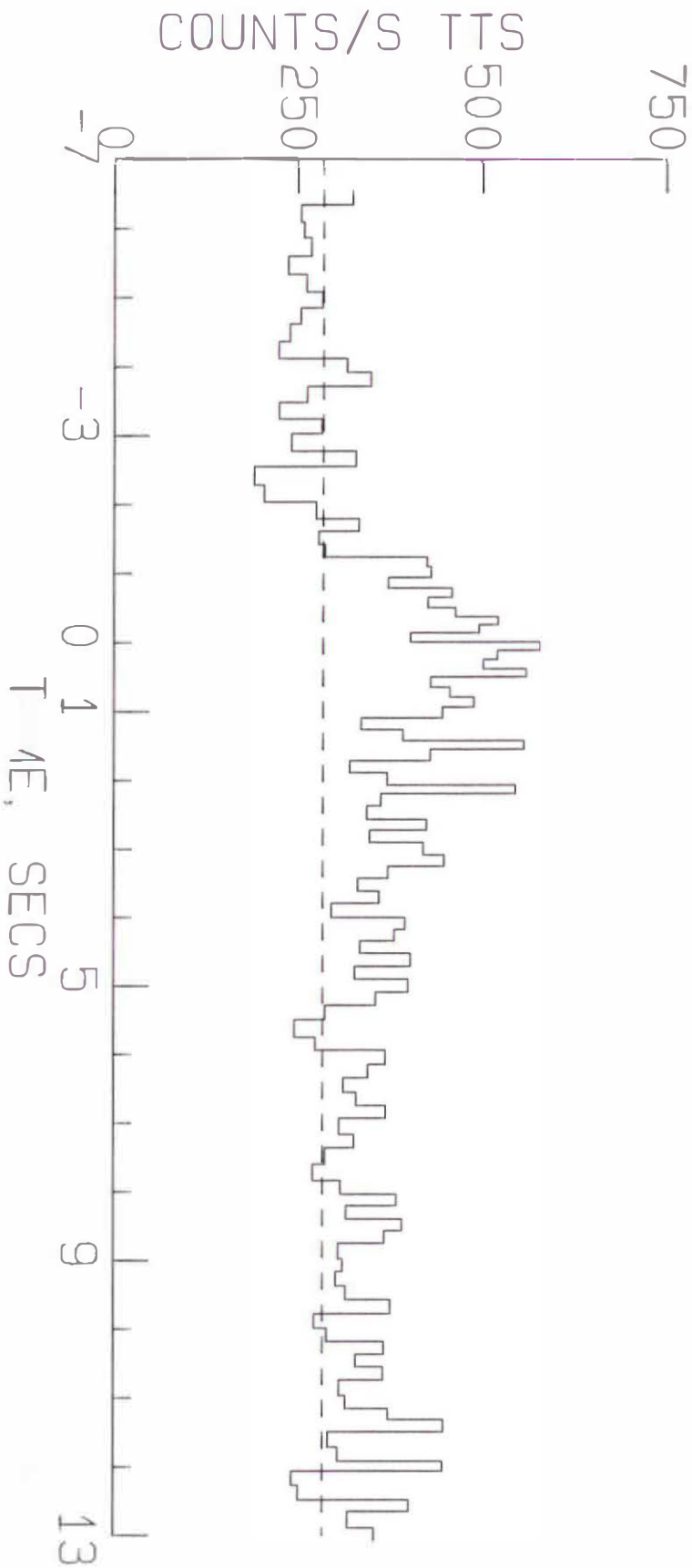
22- 153 keV

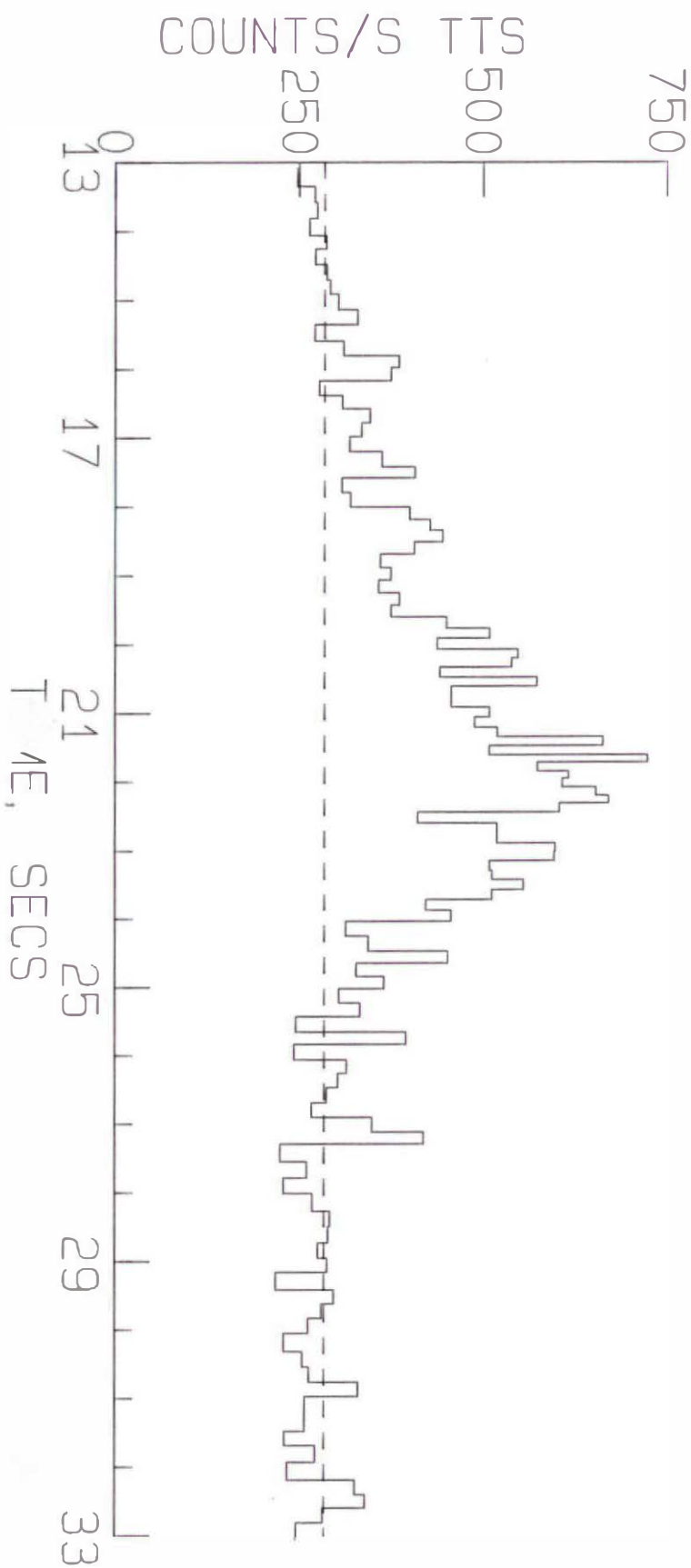



Data for K. Hurley
RATE (counts/sec)
SECONDS since trigger
23-MAR-1993 09:05:54
Created by MDPS BD
(Burst Display)
Version 2.18
Trigger # . 1698
Trigger Time:
8817 / 47869.314
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCSC
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
00110000
Discriminators:
(1, 2)
Quality Mask:
BDISP1

SIGMA 14/07/92 47071.014

20- 300 keV

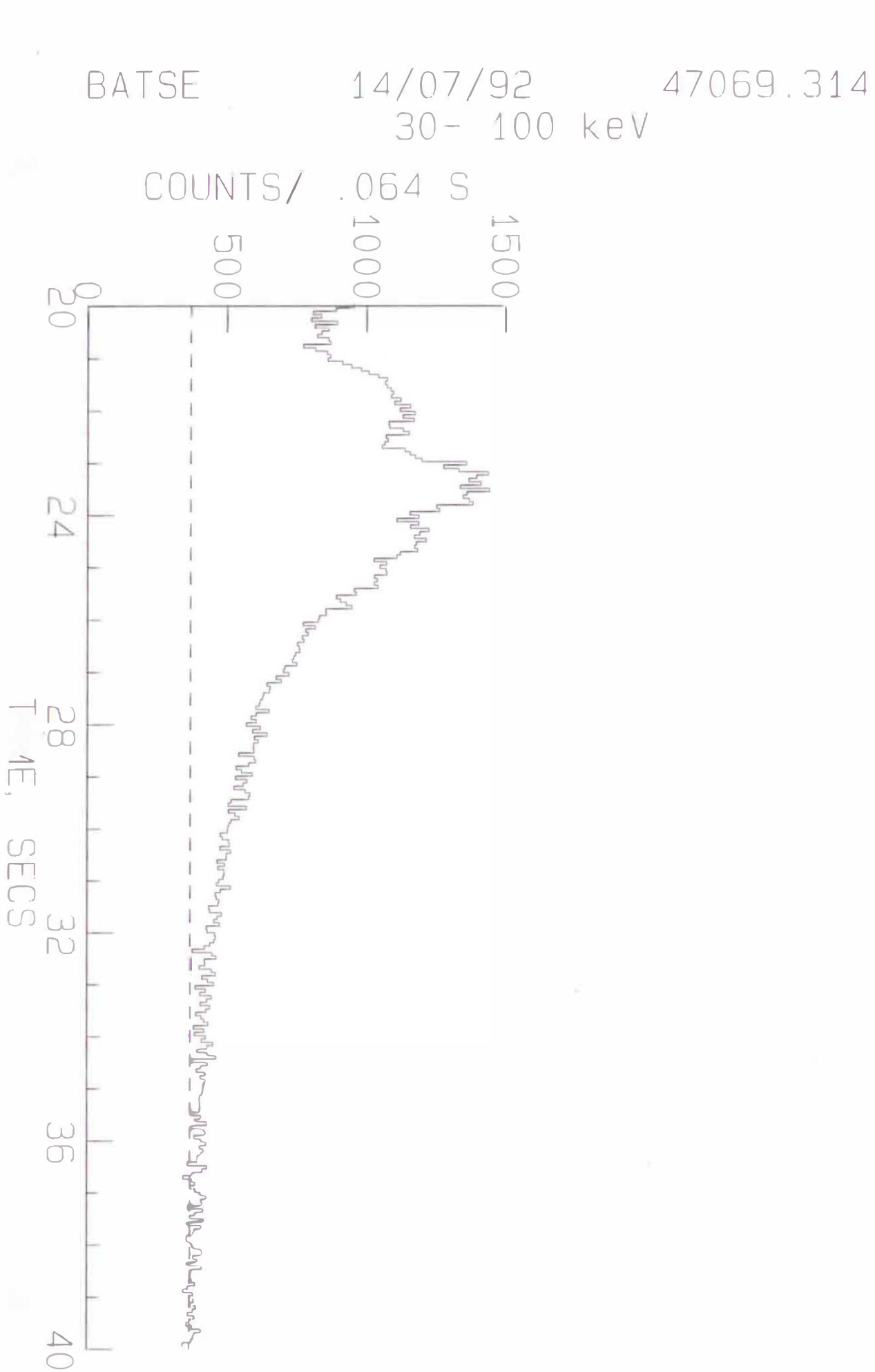



SIGMA 14/07/92 47071.014
20- 300 keV
COUNTS/S TTS
0
250
500
750
13
17
21
25
29
33
T, SECS

SIGMA 14/07/92 47071.014

20- 300 keV

BATSE
14/07/92
47069.314
30- 100 keV
COUNTS/ .064 S
0
500
1000
1500
0
4
8
12
16
20
T 1E, SECS


BATSE 14/07/92 47069.314
30- 100 keV
COUNTS/ .064 S
0
500
1000
1500
20
24
28
32
36
40
T, SECS

From ajct@dsri.dk Mon Nov 1 05:37:40 1993
Date: Mon, 1 Nov 93 14:35:20 +0100
From: Alberto Castro-Tirado <ajct@dsri.dk>
To: khurley@sunspot.ssl.berkeley.edu
Content-Length: 824

Dear Kevin,

There is another GRB that seems rather peculiar. Both BATSE and WATCH observed GRB 920714 at 13:04. At 13:35 there is a weaker (but harder) second peak. However, I can localize the second peak and the position is consistent with that of the main event (!), but the modulation is not very strong, and therefore there are not two independent localizations. Furthermore, in another unit it seems to be a particle event around this time, so I am not quite sure whether the peak is just a particle stream or a real event (but the probability of getting a position for a particle event that matchs the one for the real GRB is rather low). Could you check whether ULYSSES detected this second peak?
I also asked Chryssa to check the BATSE data.

Thank you in advance.
Best wishes,

Alberto
1 Nov 1993

Search for the afterpulse reported by WATCH

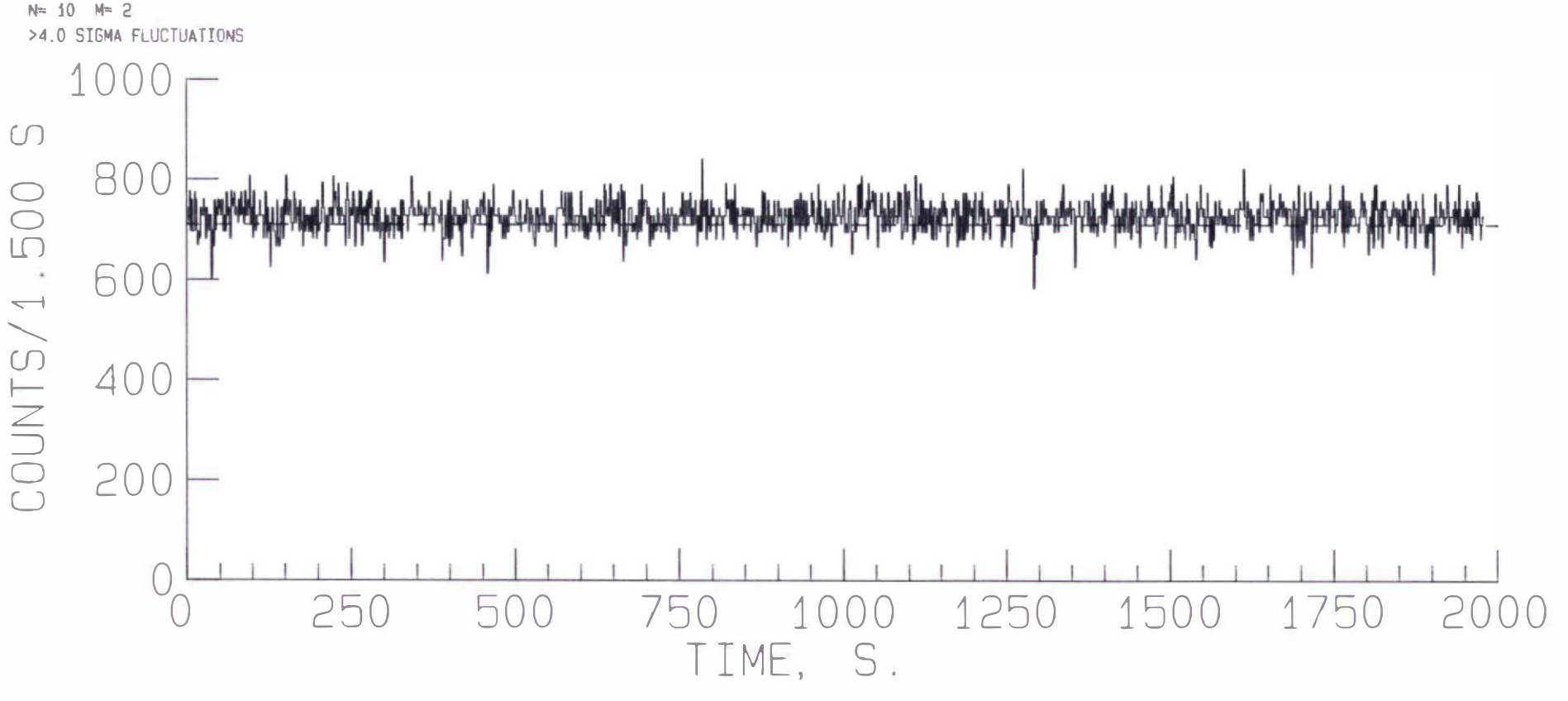
24/ 8/92

ULYSSES RT

14/ 7/92 47052.246 s

.250 S INTERVALS REGROUPED BY 6

0- 0 keV



3/ 3/93

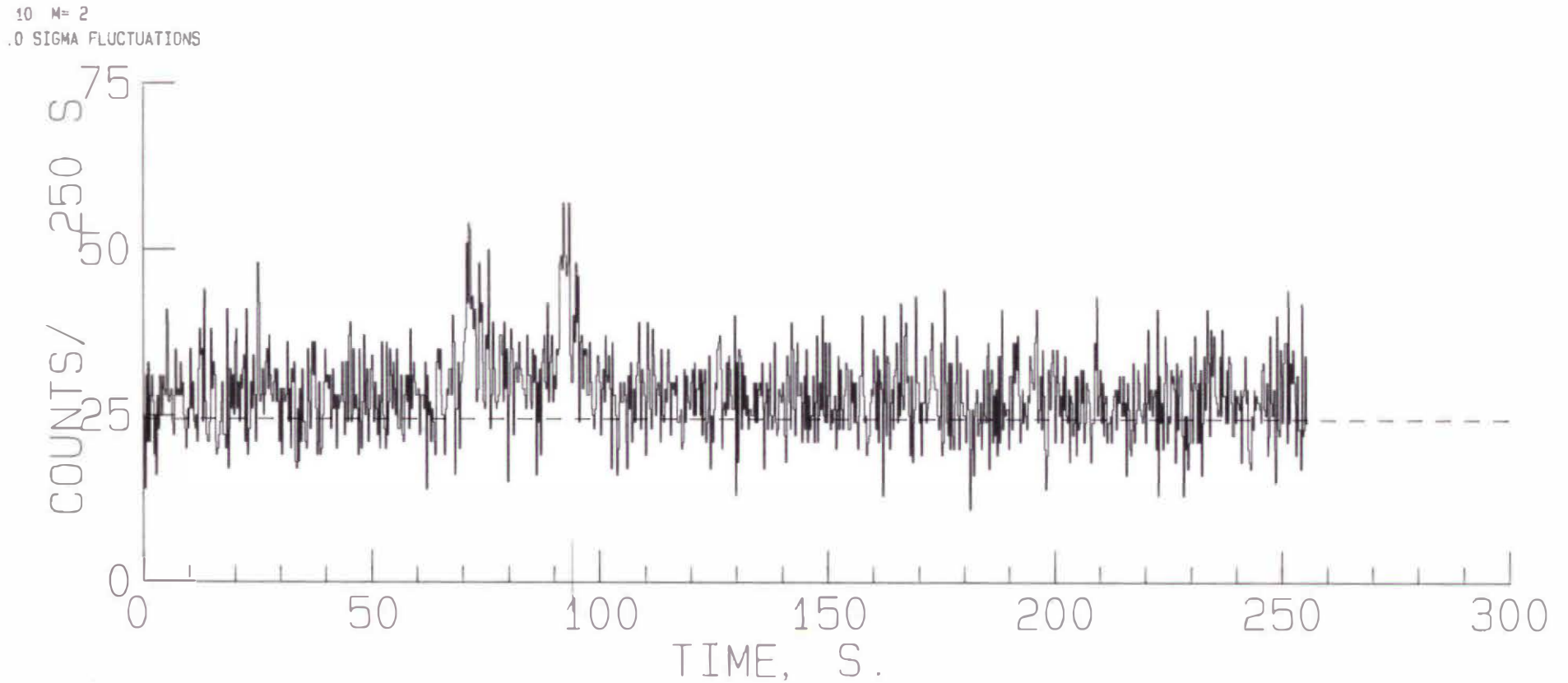
PVO-RT

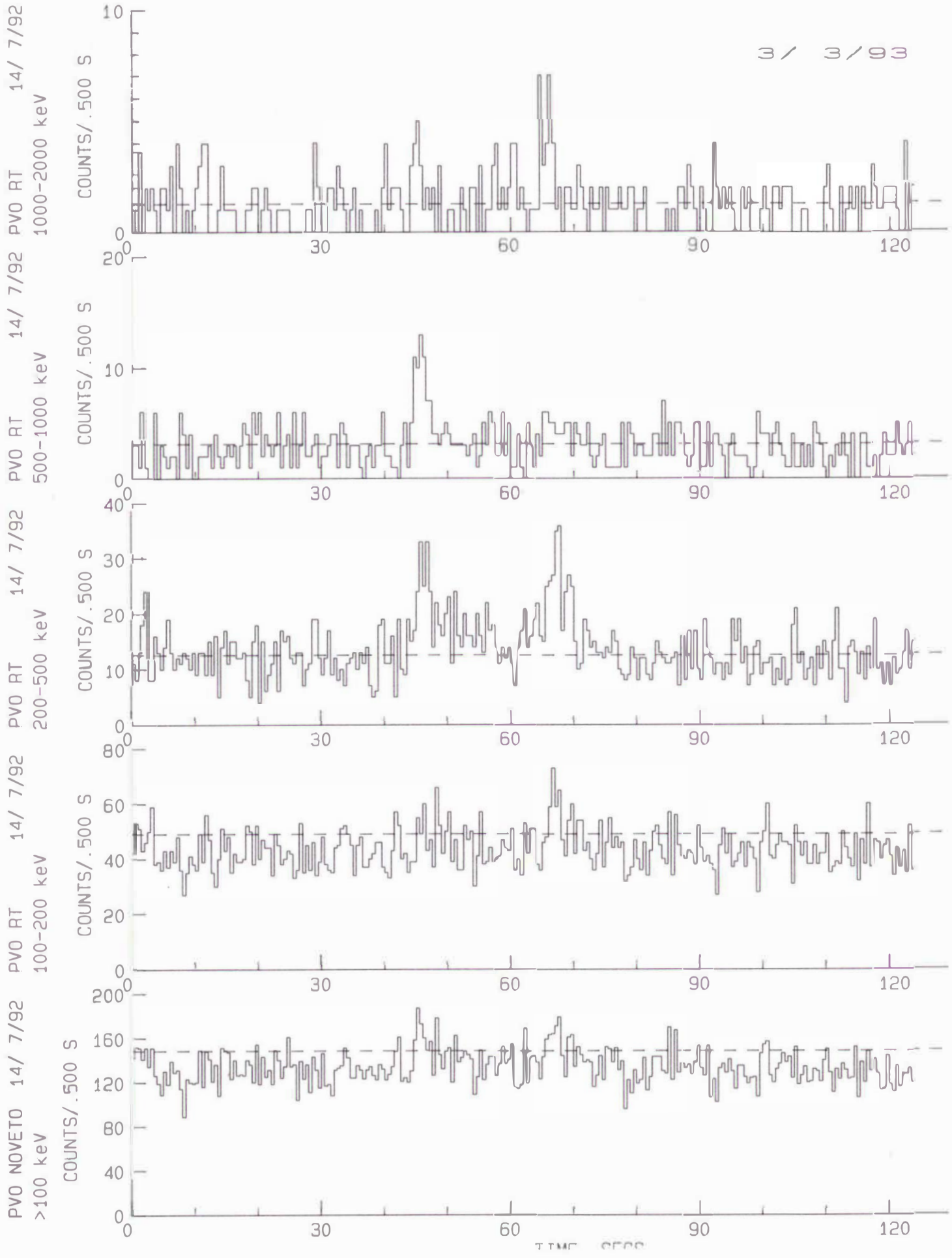
14/ 7/92

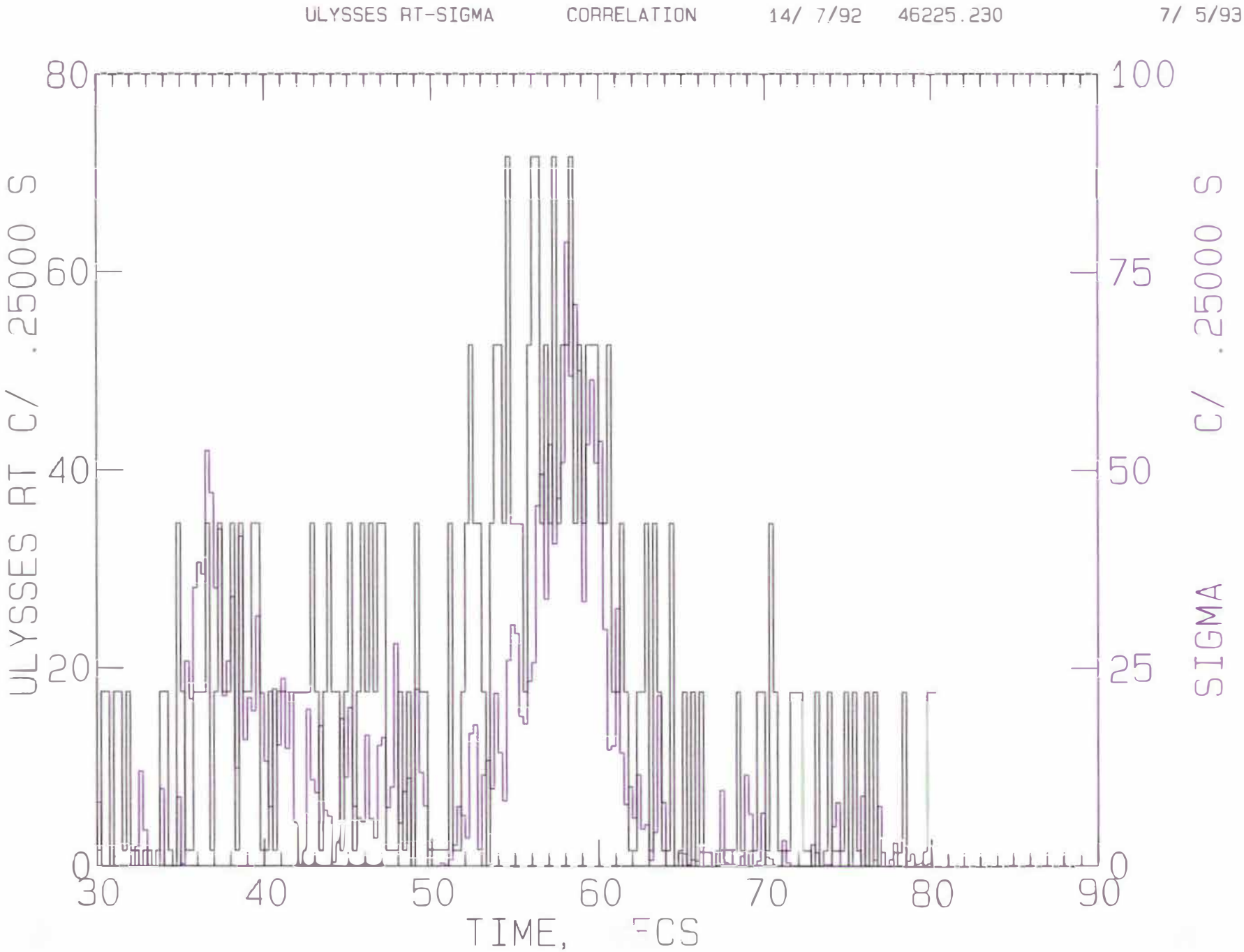
47244.367 s.

.125 S. INTERVALS REGROUPED BY 2

100-2000 keV

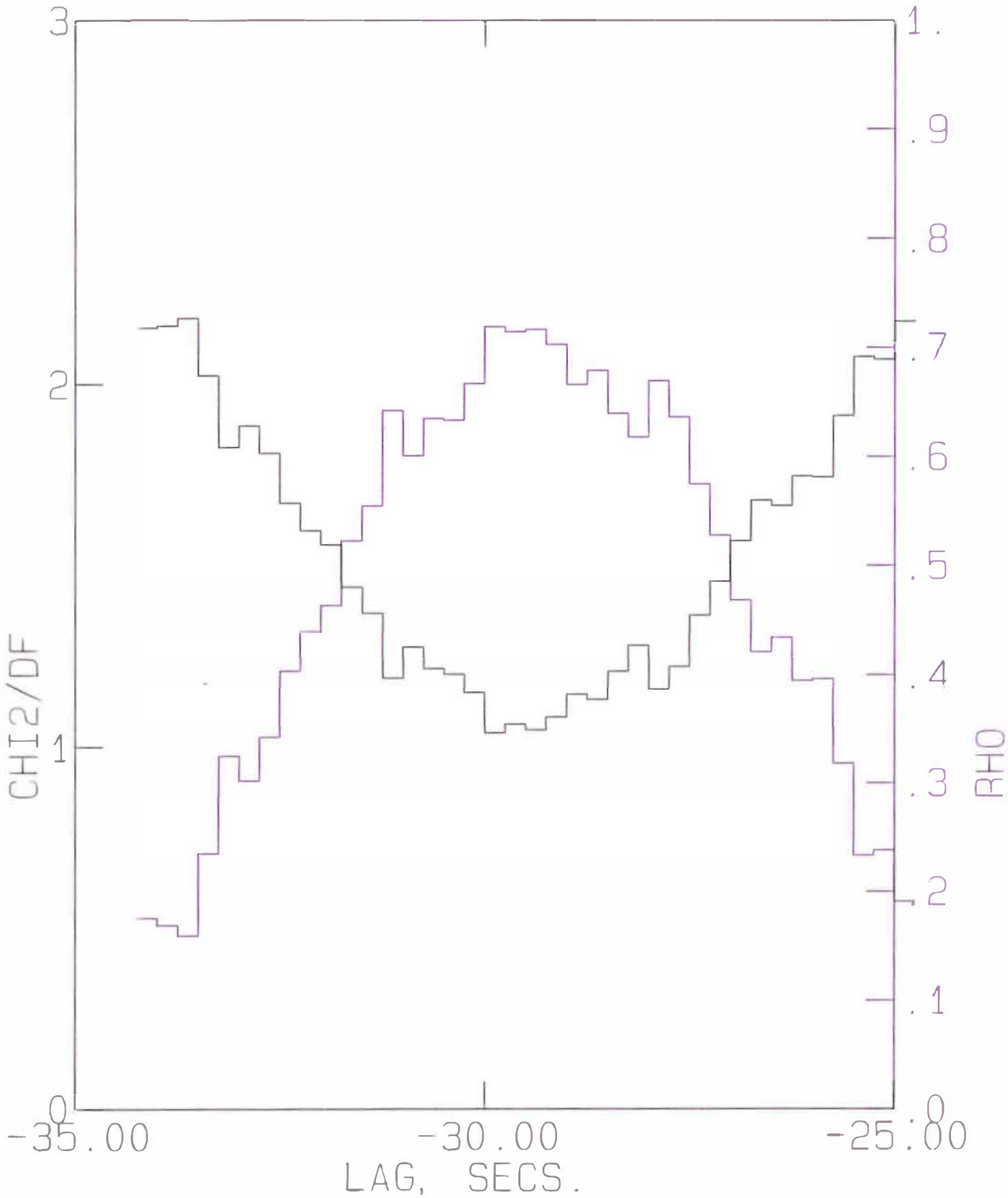


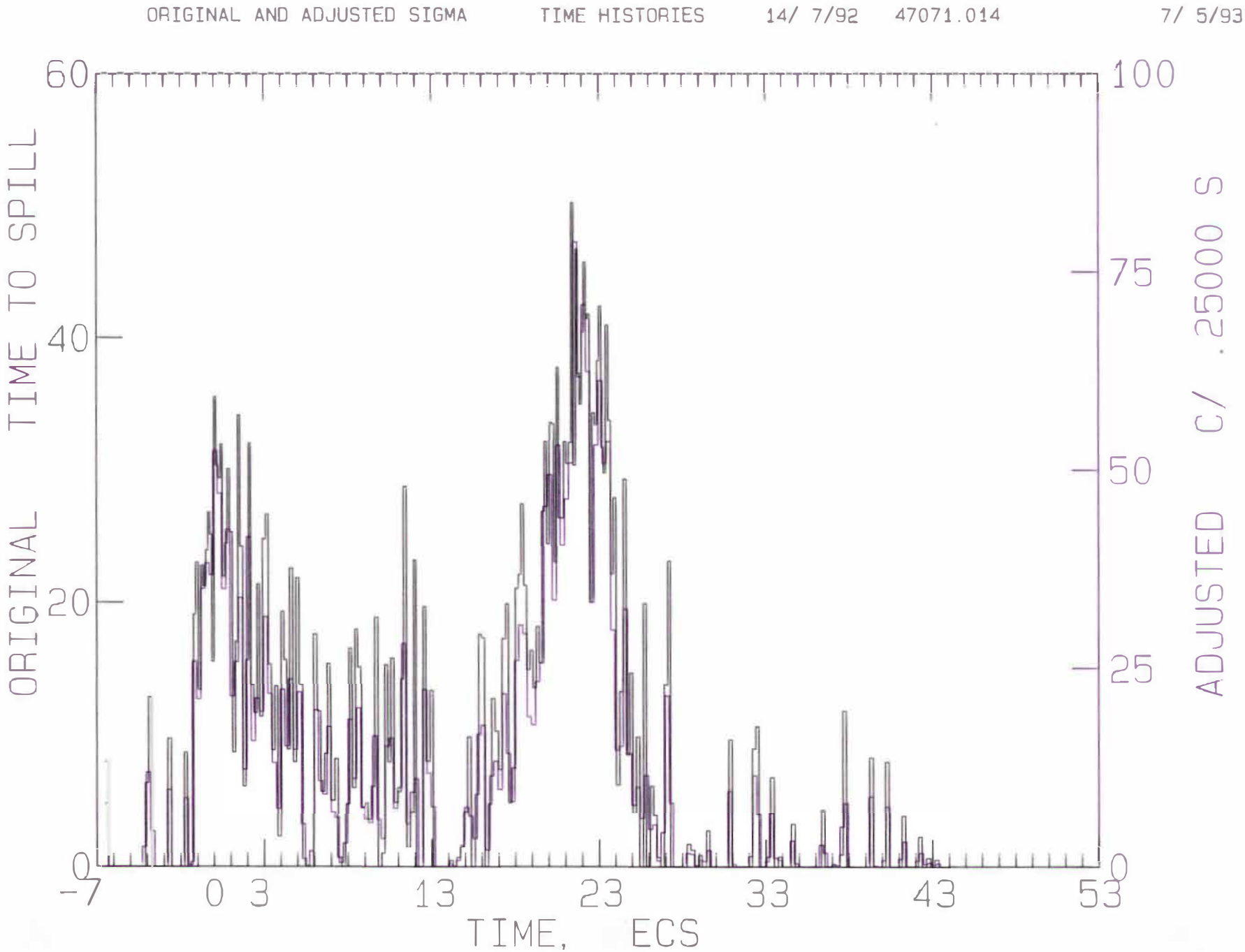

3/ 3/93
PVO NOVETO 14/ 7/92
>100 keV
PVO RT 14/ 7/92
100-200 keV
PVO RT 14/ 7/92
200-500 keV
PVO RT 14/ 7/92
500-1000 keV
PVO RT 14/ 7/92
1000-2000 keV
COUNTS/.500 S
TIME SECS


ULYSSES RT-SIGMA CORRELATION 14/ 7/92 46225.230 7/ 5/93
ULYSSES RT C/ .25000 S
SIGMA C/ .25000 S
TIME, SECS
0
20
40
60
80
0
25
50
75
100
30
40
50
60
70
80
90

7/ 5/93

ULYSSES RT-SIGMA CORRELATION 14/ 7/92 46225.230




ORIGINAL AND ADJUSTED SIGMA TIME HISTORIES 14/ 7/92 47071.014 7/ 5/93
ORIGINAL TIME TO SPILL
ADJUSTED C/ .25000 S
TIME, ECS
60
40
20
0
100
75
50
25
0
-7
0 3
13
23
33
43
53

From KOSHUT@ssl.msfc.nasa.gov Thu Jul 16 08:52:09 1992
Date: Thu, 16 Jul 1992 10:53:13 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

BATSE BURST TRIGGER

NO.: 01699

TIME: TJD=8817 SECONDS=64027

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE MARGINALLY OBSERVED ABOVE 100 KEV. DURATION IS AT LEAST
80 SECONDS, BUT THE TRUE VALUE IS UNCERTAIN DUE TO LACK OF DATA. THE PEAK
RATE OF THE OBSERVED TIME HISTORY IS AT TRIGGER + 18 SECONDS. CLASSIFIED
AS A C6.0 FLARE IN GOES X-RAY DATA.

RI

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

 BATSE BURST # 1700
EVENT OF 1992 JUL 14 DAY OF YEAR=196
EVENT CROSSING TIME AT BATSE      : 73407. S. OR 20:23:26.8
COORDINATES ARE    0.000    0.000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 140.360   -44.640
BATSE PEAK COUNTING RATE:   0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 14/ 7/  92 IS:
RA=   151.553 DEC=     5.386 DIST=     6.055 AU
BATSE-ULYSSES DISTANCE =  905839968. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL     DIRECTION=128.97 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1900.45 SECS.
CROSSING TIME AT ULYSSES     IS 71506. S. OR 19:51:46.4 +/-  428.97 SECONDS
```

Helio corr removed

Date: Dec 5 '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 - 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?

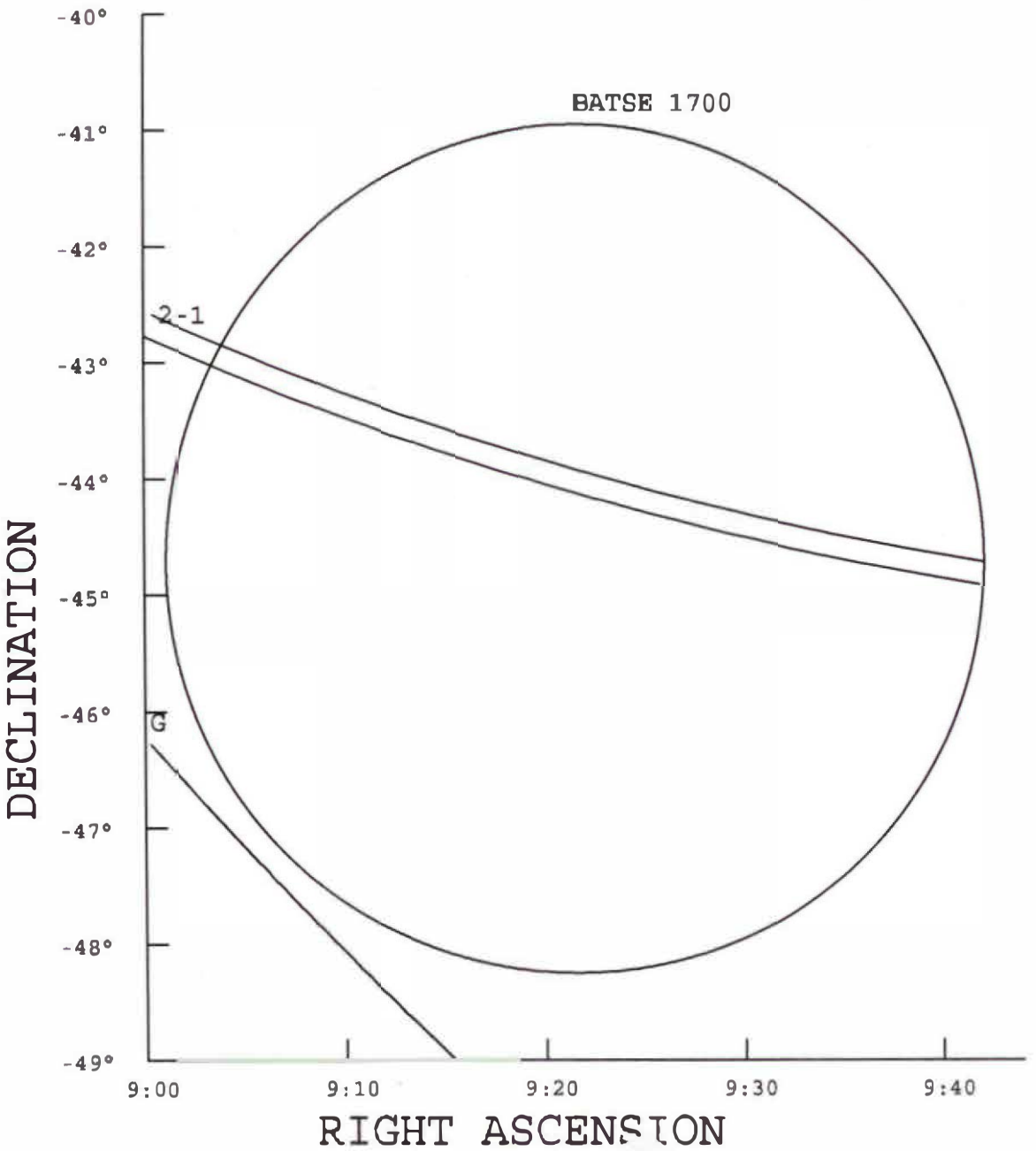
☐ Geocentric time used?

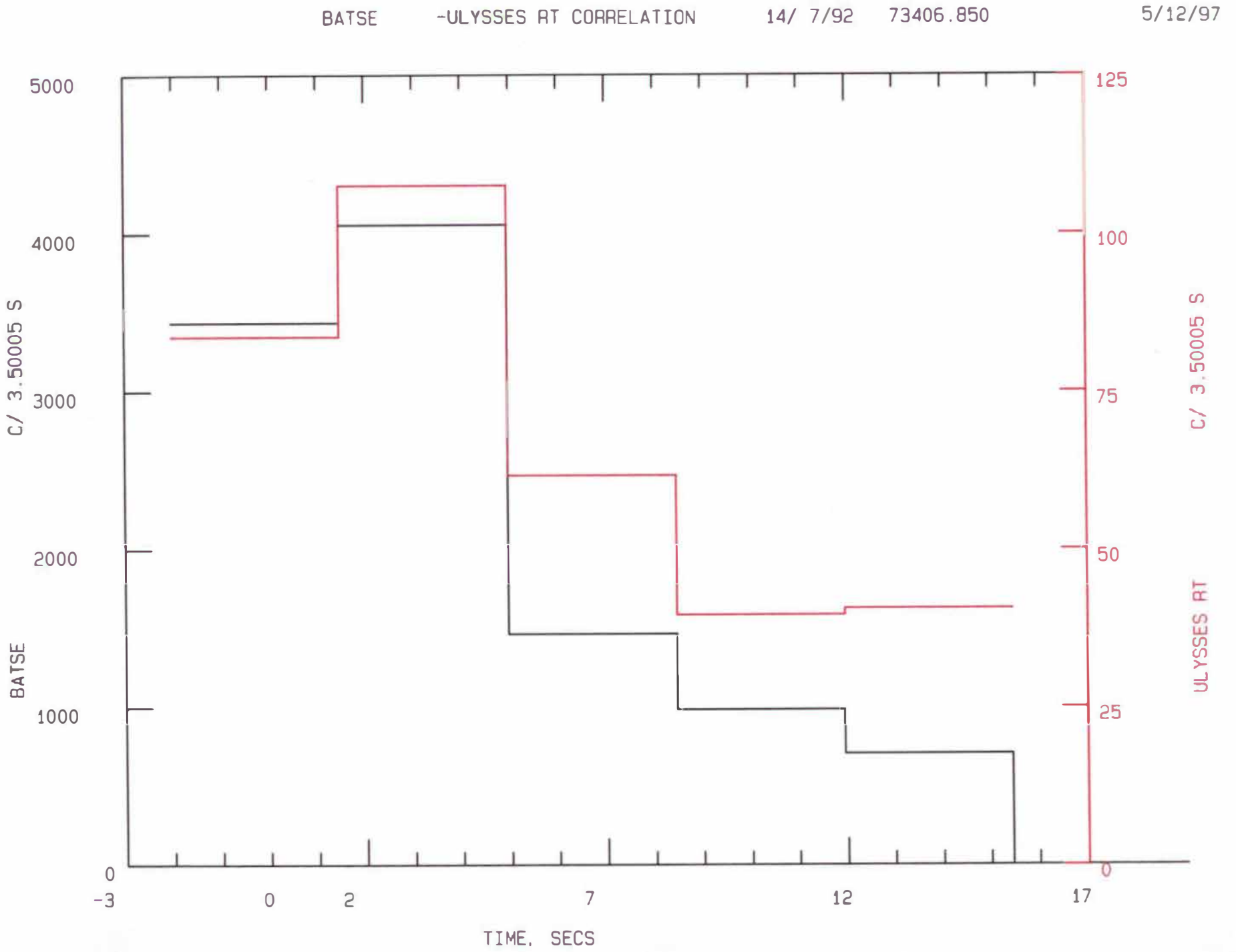
☑ ACCESS database updated?

EVENT OF JUL 14, 1992 19:50

5/12/97

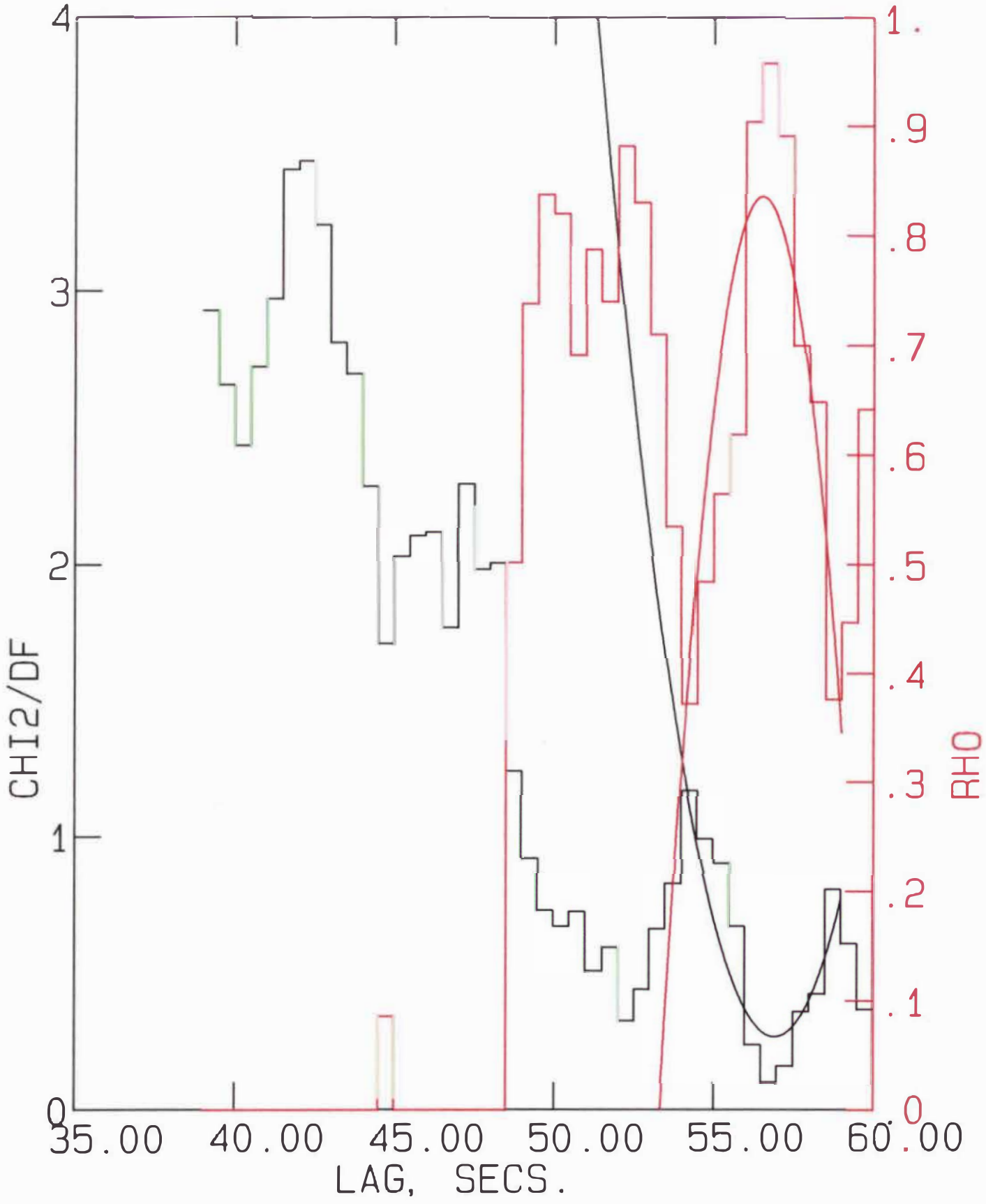
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 14/ 7/92 73406.850 5/12/97
5000
4000
3000
2000
1000
0
C/ 3.50005 S
BATSE
125
100
75
50
25
0
C/ 3.50005 S
ULYSSES RT
-3
0
2
7
12
17
TIME, SECS

5/12/97

BATSE -ULYSSES RT CORRELATION 14/ 7/92 73406.850



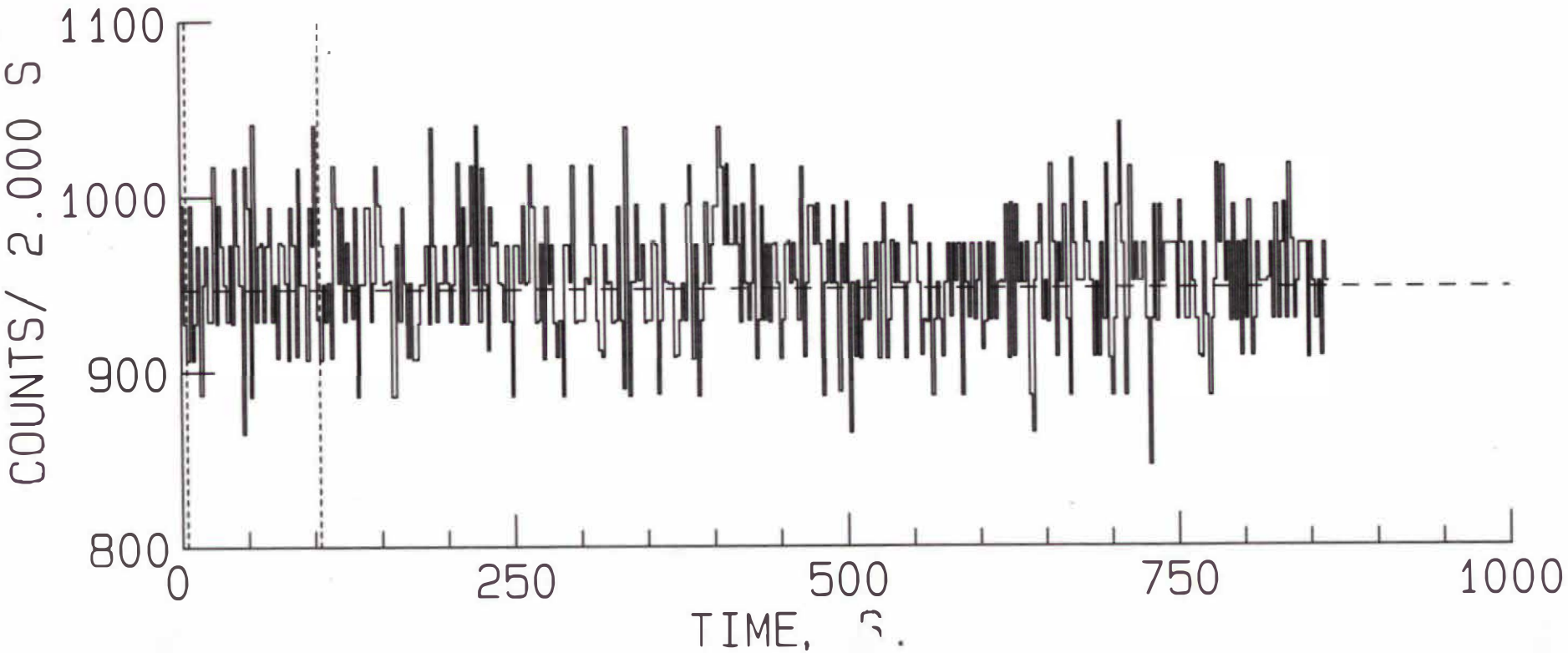
ULYSSES RT

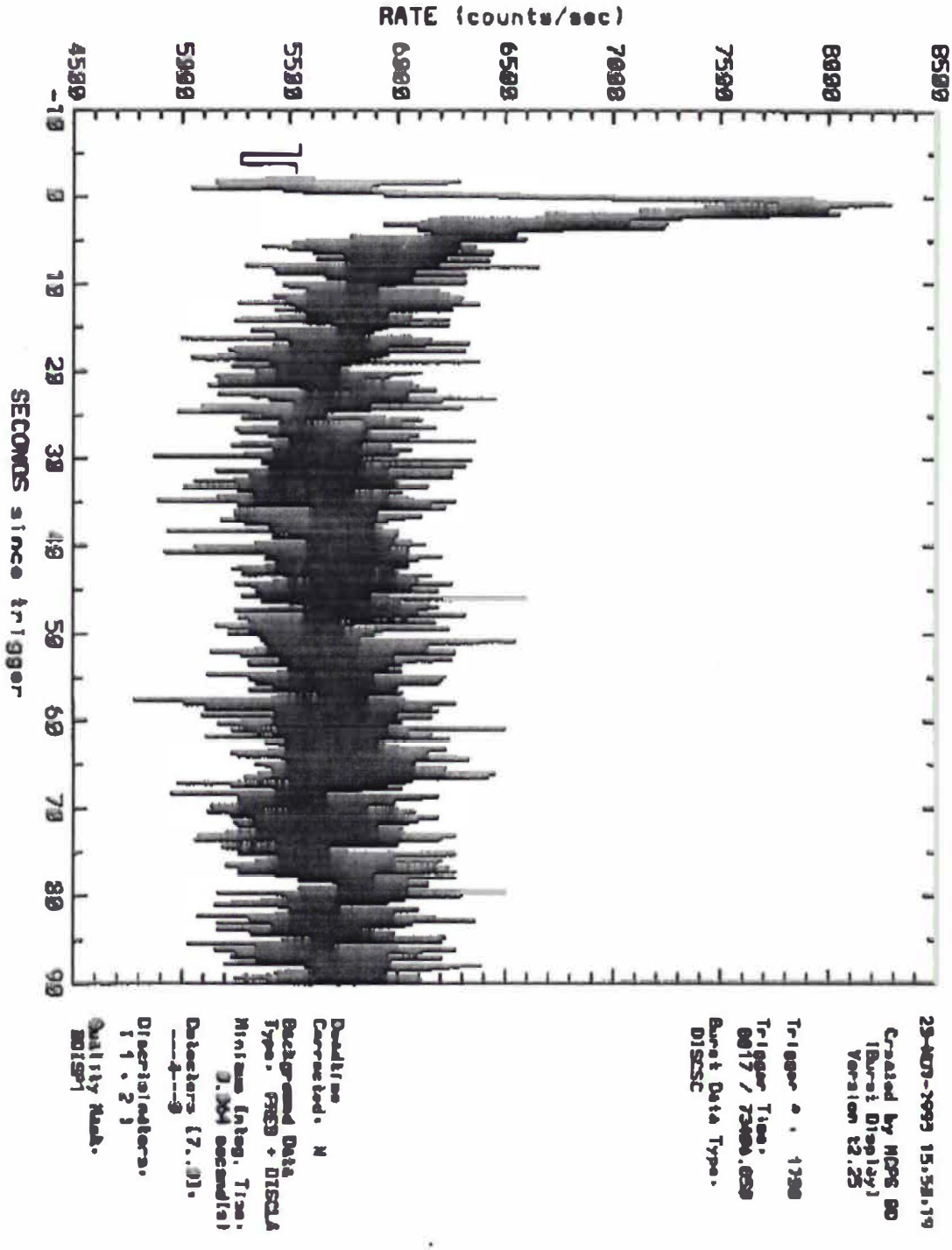
5/12/97

14/ 7/92 71064.377 s

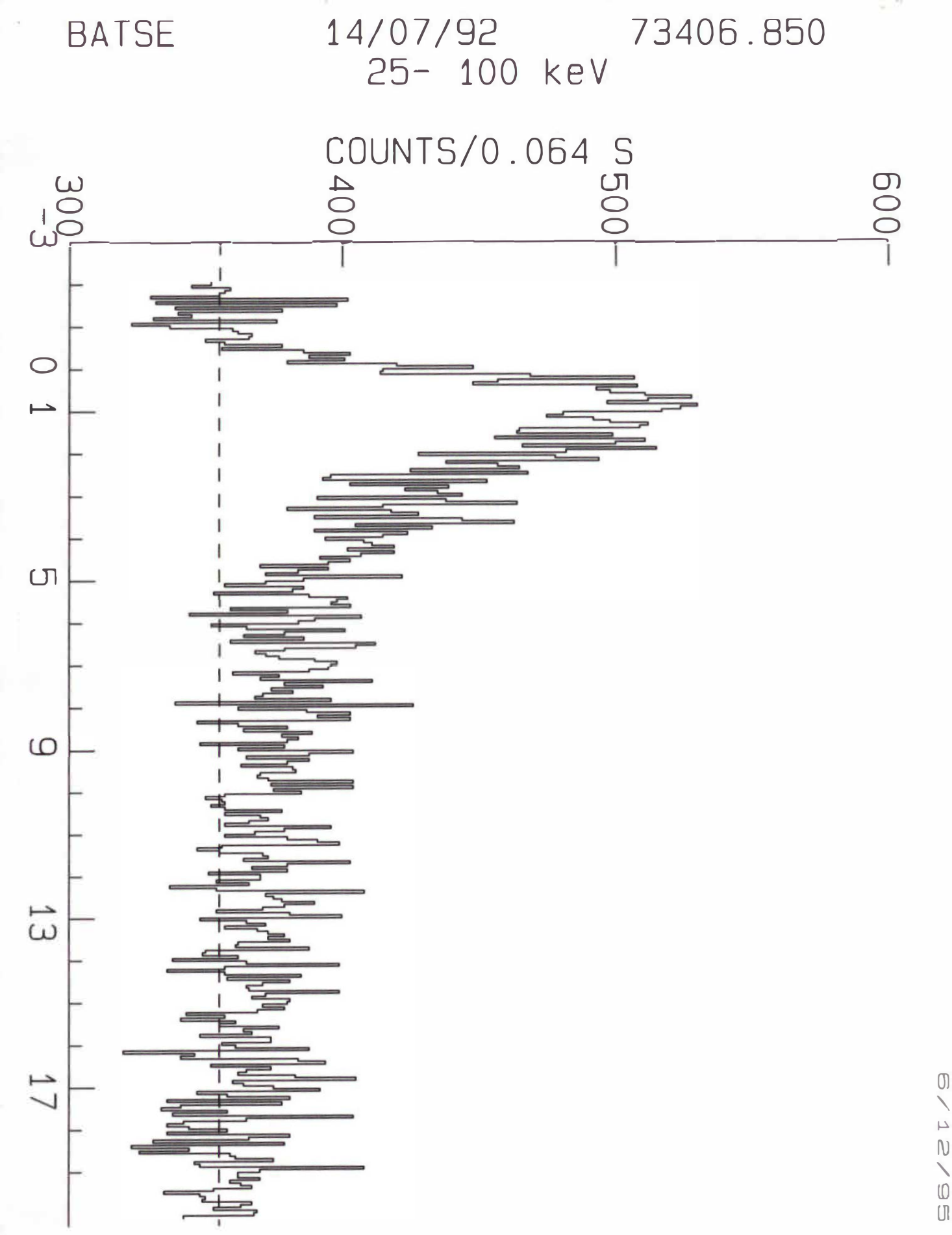
0.500 S INTERVALS REGROUPED BY 4

22- 153 keV

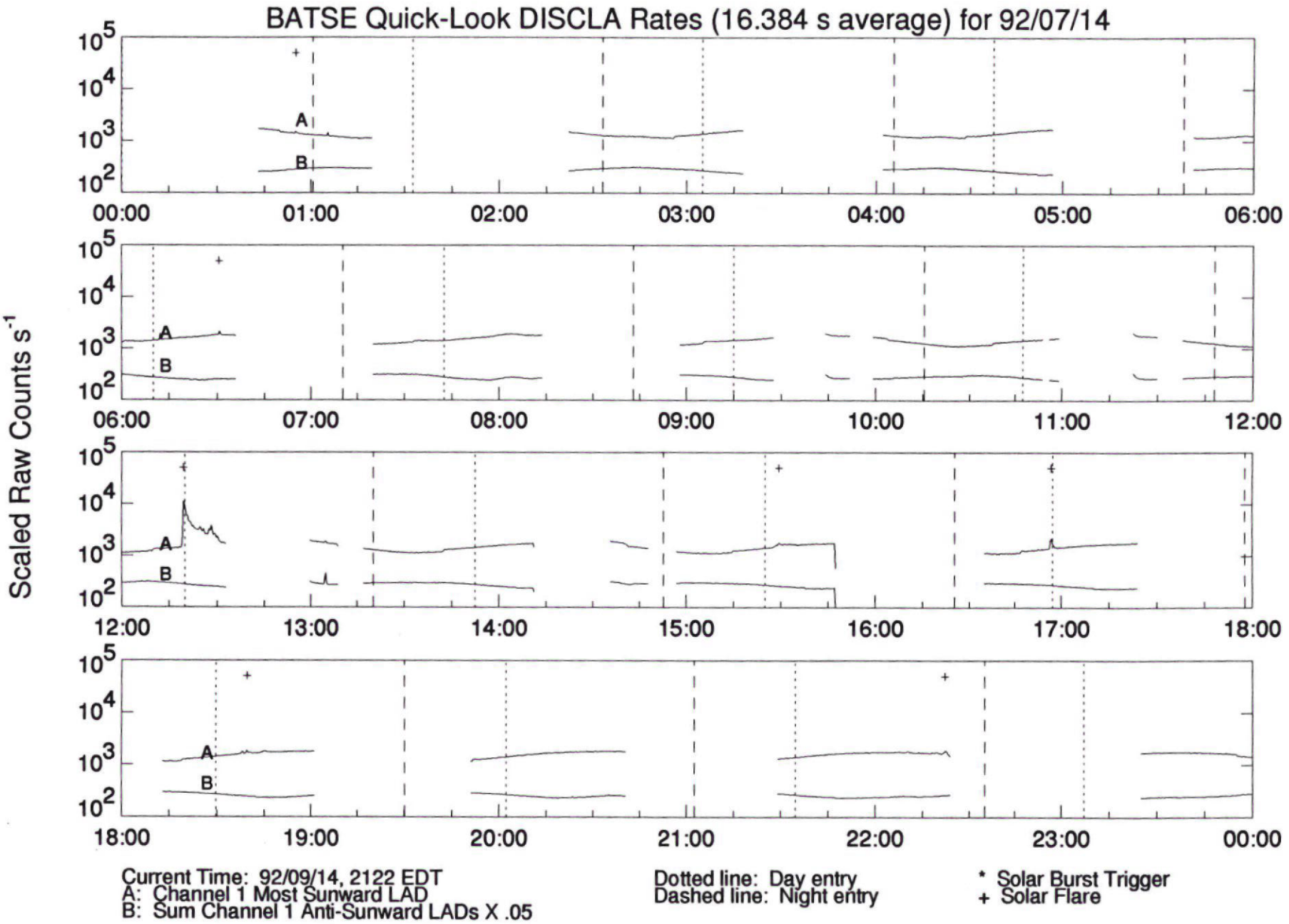


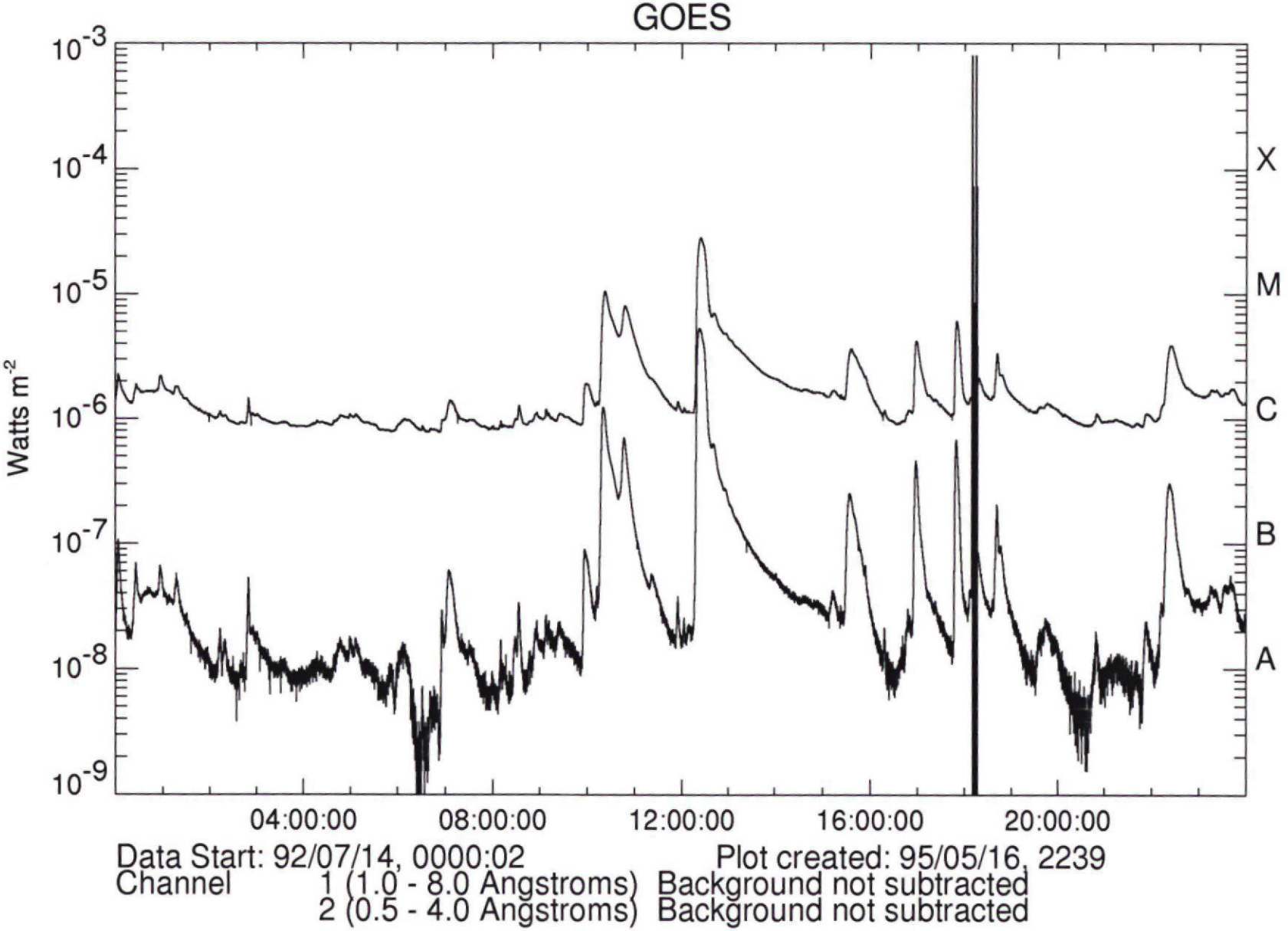

DISCSC Data for K. Hurley, No. 1700
RATE (counts/sec)
SECONDS since trigger

92 07 14


BATSE
14/07/92
73406.850
25- 100 keV
COUNTS/0.064 S
300
400
500
600
-3
0
1
5
9
13
17

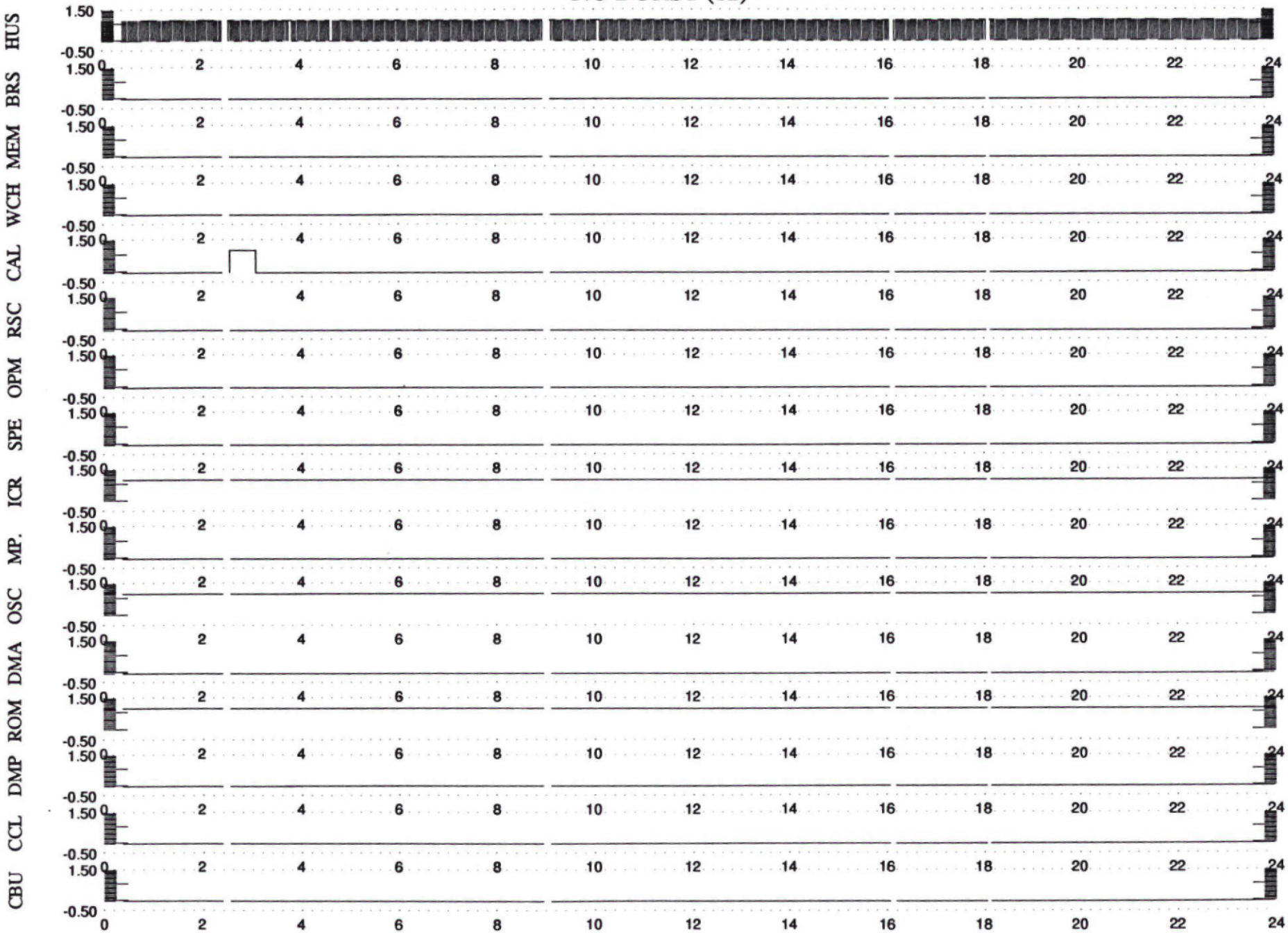
6/12/95


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/14
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
Current Time: 92/09/14, 2122 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
10-3
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/14, 0000:02
Plot created: 95/05/16, 2239
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 196, year 1992 to day 196, year 1992 9/11/92

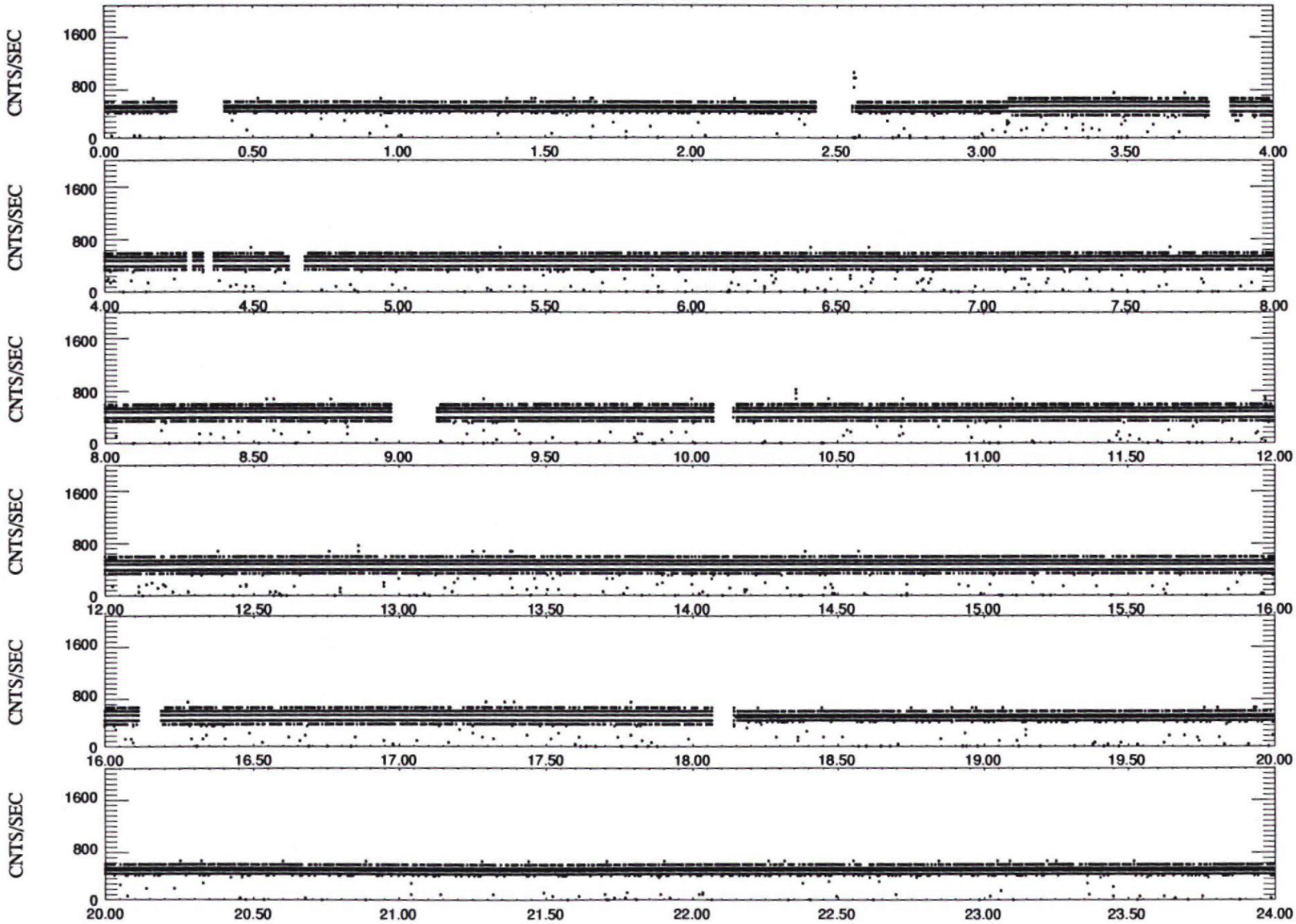
NO BURST (12)



UNIVE AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 196, year 1992 to day 196, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIVE .L TIME

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

BATSE BURST # 1701
EVENT OF 1992 JUL 15 DAY OF YEAR=197
EVENT CROSSING TIME AT BATSE      : 46287. S. OR 12:51:26.8
COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 286.200    46.700
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 15/ 7/  92 IS:
RA=  151.663 DEC=     5.310 DIST=     6.065 AU
BATSE-ULYSSES DISTANCE =  907282112. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 65.69 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1245.65 SECS.
CROSSING TIME AT ULYSSES     IS 47532. S. OR 13:12:12.4 +/-  547.77 SECONDS
```

No

```
From HORACK@ssl.msfc.nasa.gov Thu Jul 16 14:41:50 1992
Date:     Thu, 16 Jul 1992 16:42:48 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

                BATSE BURST TRIGGER

NO.: 01701
```

July 15

```
TIME: TJD=8818 SECONDS=46286

TYPE: BURST                         SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=121.   AZIMUTH=250.   ERROR=       DEGREES

COMMENTS:
A RATHER UNREMARKABLE 2 SECOND BURST DISPLAYING A SHARP RISE, FOLLOWED
BY A SLOWER DECAY.  THIS SINGLE SPIKE EVENT DISPLAYS NO DETAILED TIME
STRUCTURE, AND IS NOT SEEN ABOVE ABOUT 300 KEV.
```

CK says $\alpha = 277$ $\delta = 59$ (6/93)

Updated to $\alpha = 276.73$ $\delta = 59.$ by S. Cole (9/93)

BATSE BURST# 1701

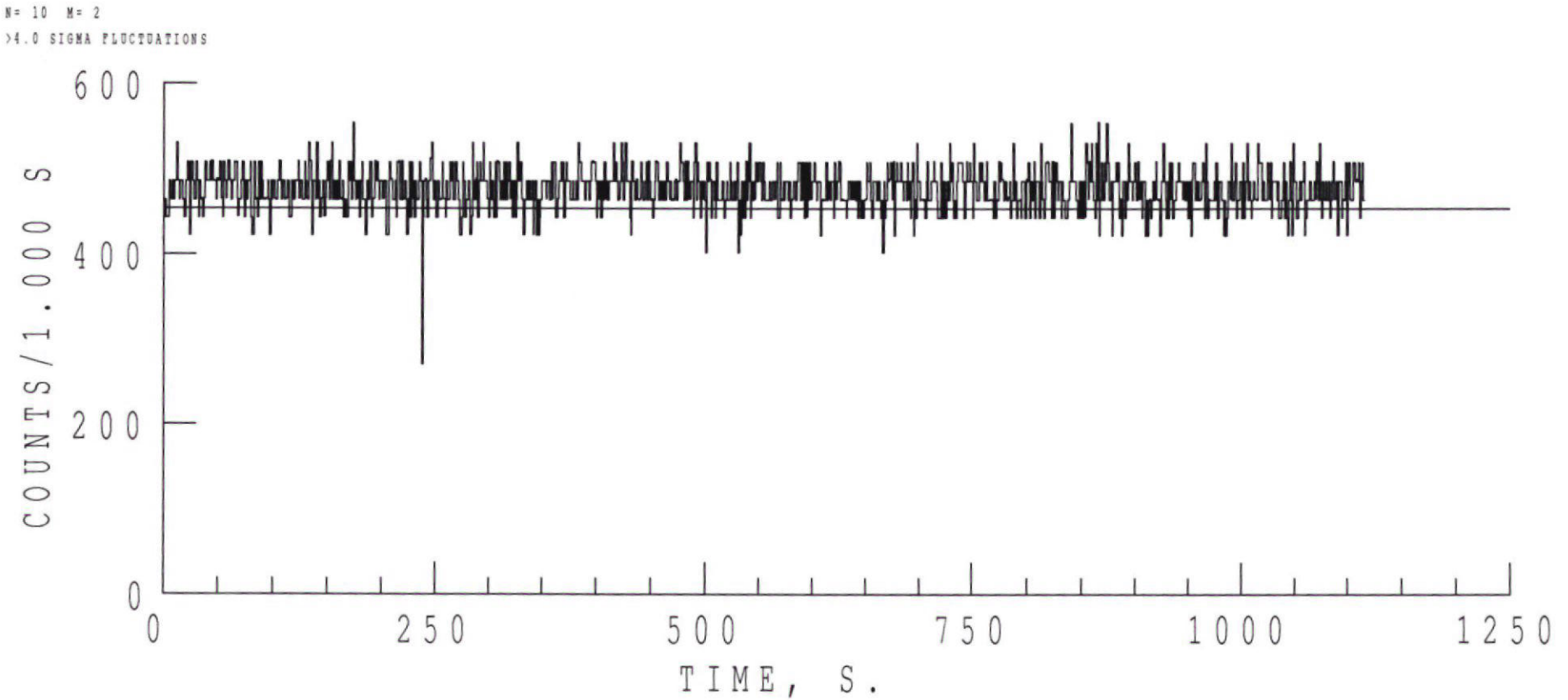
8/ 6/94

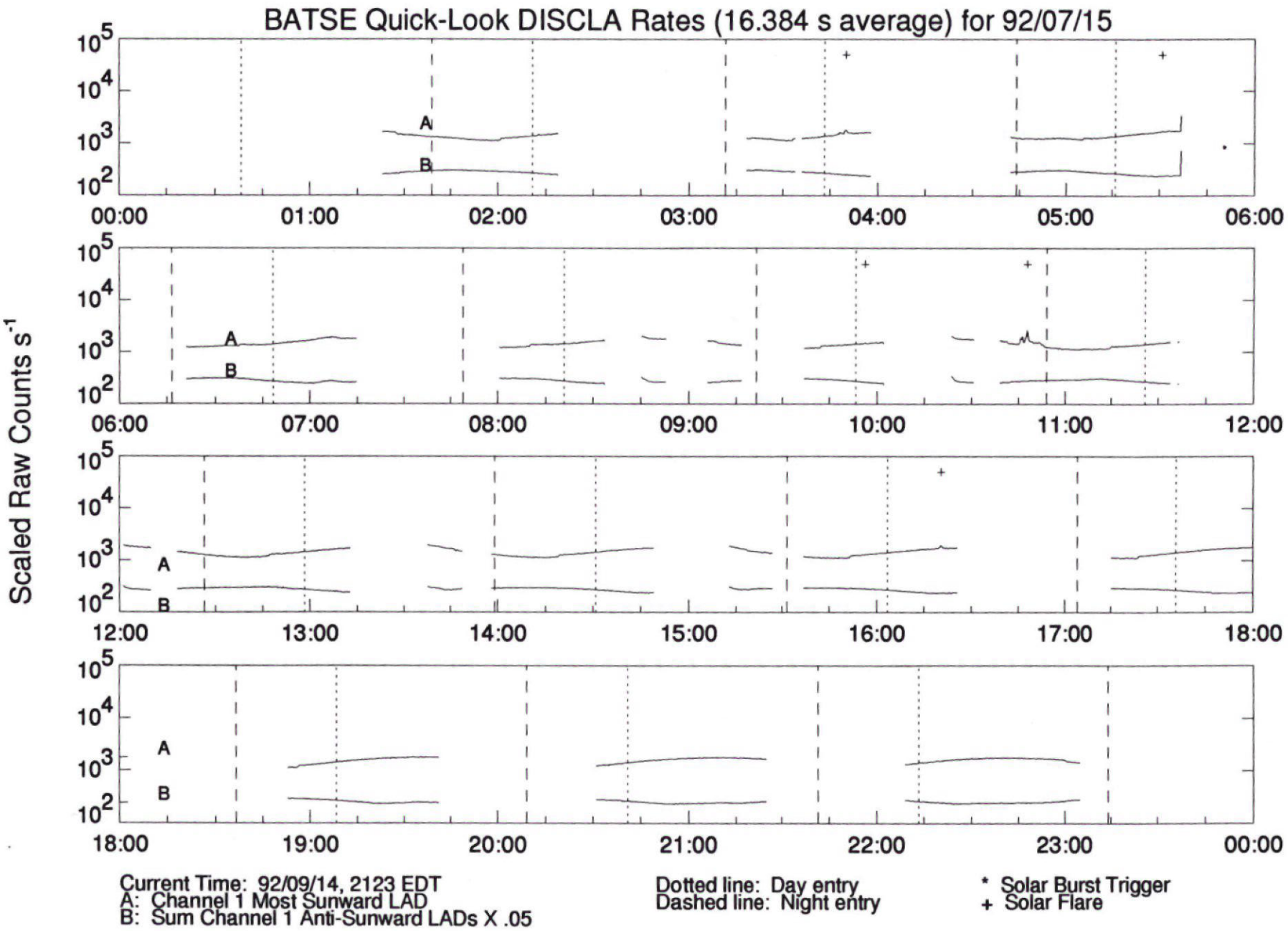
ULYSSES RT

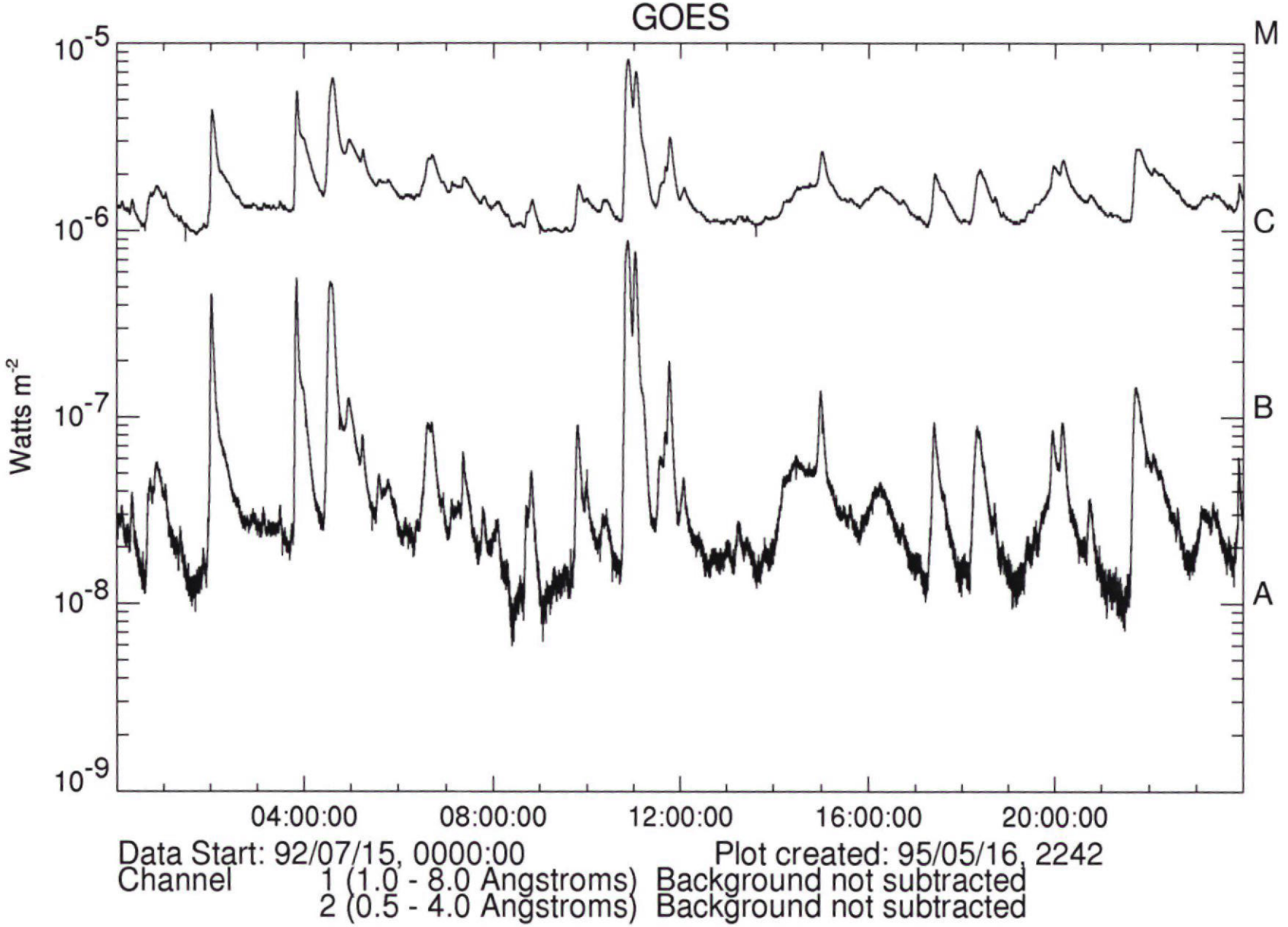
15/ 7/92 46980.383 s

0.500 S INTERVALS REGROUPED BY 2

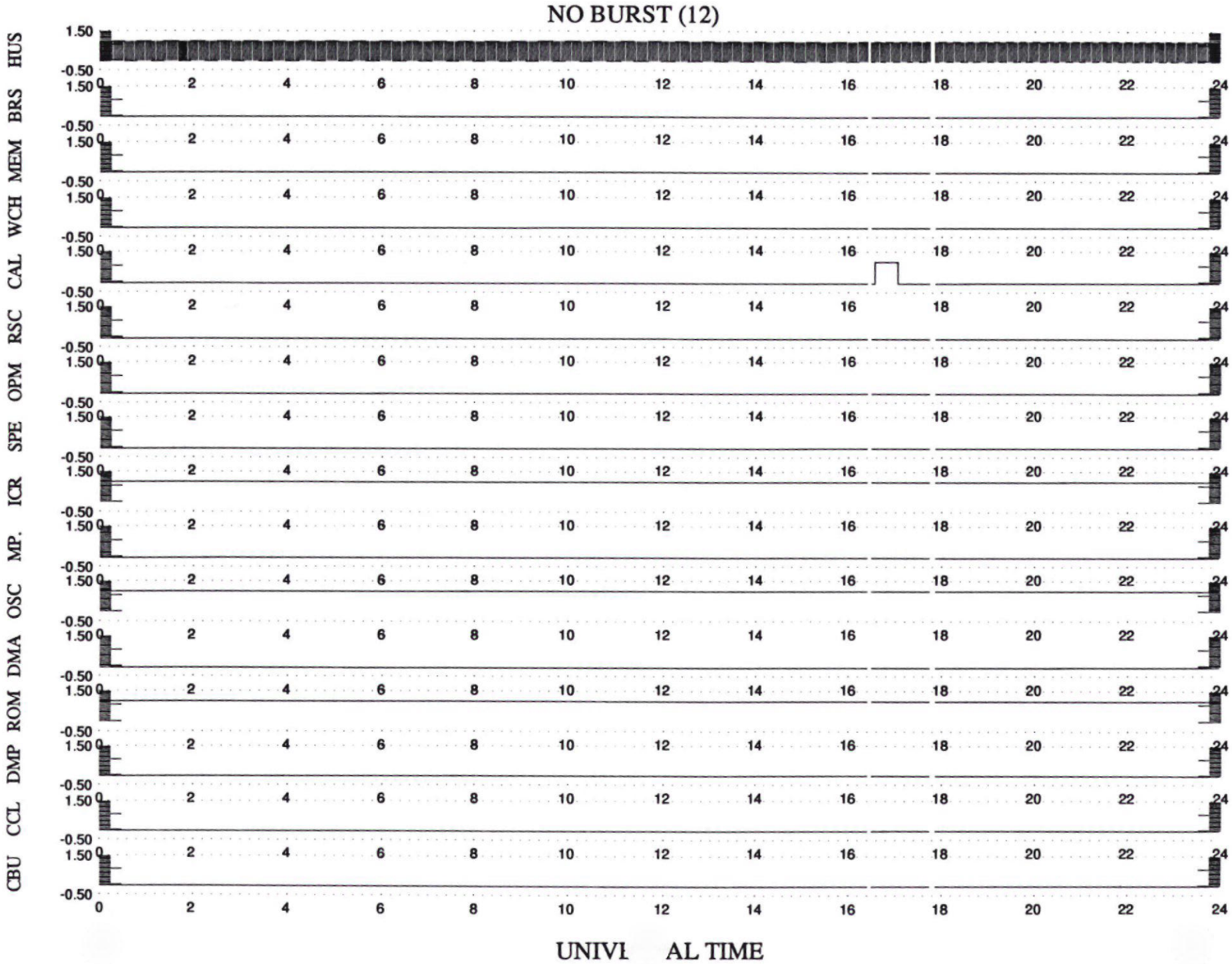
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/15
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
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: 92/09/14, 2123 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

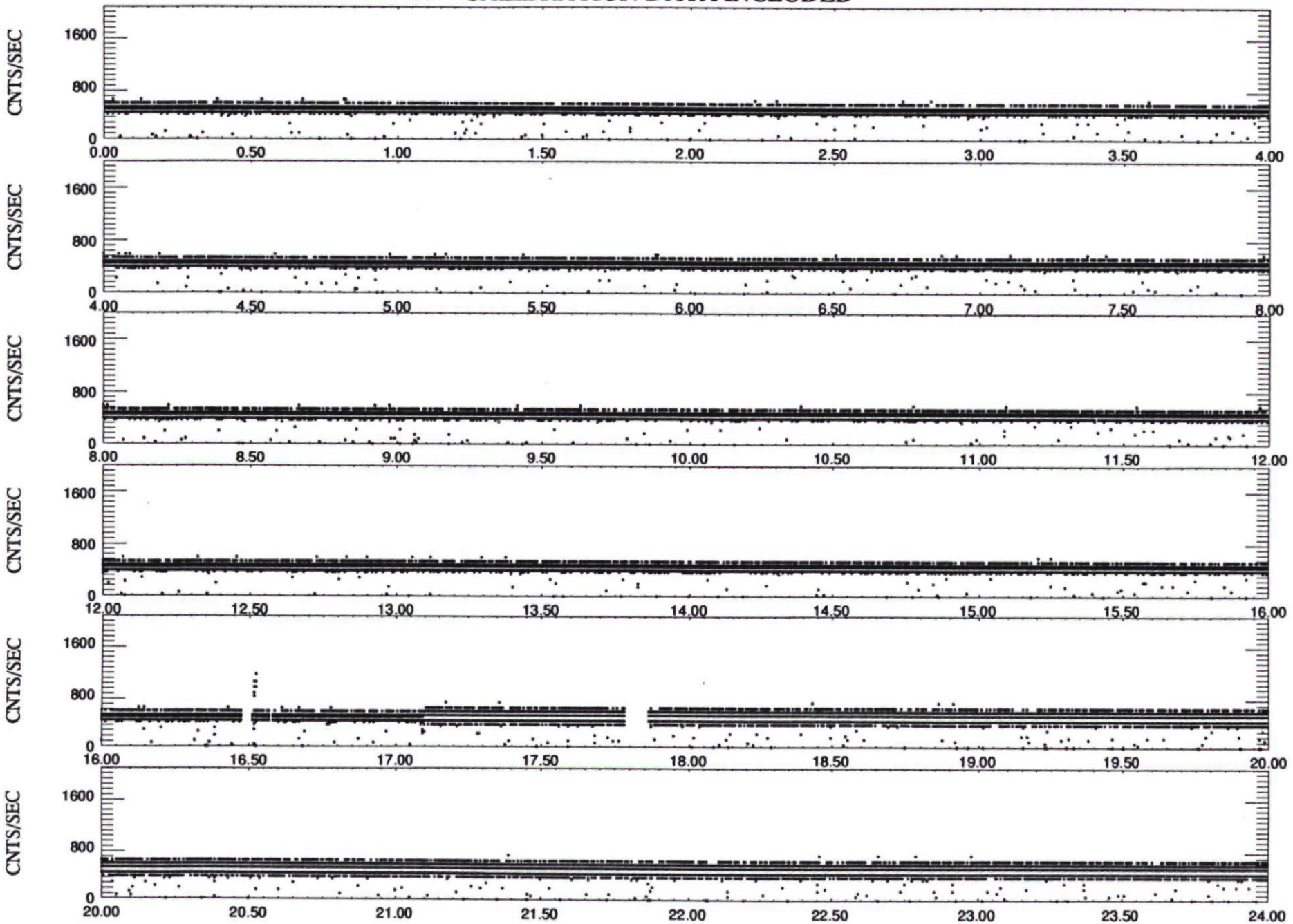

GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/15, 0000:00
Plot created: 95/05/16, 2242
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 197, year 1992 to day 197, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 197, year 1992 to day 197, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIVI AL TIME

From BHAT@ssl.msfc.nasa.gov Fri Jul 17 11:57:23 1992
Date: Fri, 17 Jul 1992 13:58:39 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 1702 July 16

TIME: TJD=8819 SECONDS=60904

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=94.4 AZIMUTH=14.5 ERROR= DEGREES

COMMENTS:
A M6.8 FLARE LASTING ABOUT 160 S HAS A SINGLE LARGE SMOOTH TIME PROFILE WITH SEVERAL SMALLER PULSES SUPERPOSED. THERE IS SIGNIFICANT SIGNAL SEEN ABOVE 300 KEV.

FROM: ESSDP2::TERRELL (TERRELL@ESSDP2.LANL.GOV) 10/1/93
TO: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
cc:

J: DMSP GRB DATA

I WILL BE SENDING YOU BY FAX 13 GRAPHS OF DMSP TIME PLOTS, FOR DATES OF 920519, 920628, 920629, 920731, 920810, 921004, AND 930106.(&920716) IF YOU WANTED TIME PLOTS FOR OTHER DATES, OR NUMERICAL DATA FOR SOME OF THESE, PLEASE LET ME KNOW. I HOPE THEY WILL HELP IN PINNING DOWN SOME GRB LOCATIONS. THERE WAS AN ERROR IN THE LIST I SENT YOU ON 930823, FOR 920716, IN THAT DMSP8 (NOT DMSP9) DID NOT OBSERVE THE EVENT AT 60933 UT. THIS WAS SIGNIFICANT, IN THAT THE SUN WAS EASILY VISIBLE TO DMSP8 AT THAT TIME, SO THAT IT WAS NOT LIKELY TO COME FROM THE SUN.

MAYBE WE CAN ALSO LOCATE THE DIRECTION OF THE EVENT SEEN BY PVO AT 15631 ON 920211, AS ALL 4 DMSP SPACECRAFT SAW A STRONG AND HARD EVENT AT ABOUT 15775 UT. LET ME KNOW ABOUT YOUR INTEREST IN THIS. THE DMSP DIRECTIONAL PLOTS EXCLUDE MOST OF THE SKY.

THANKS FOR YOUR E-MAIL MESSAGE OF 9/29. WE WILL CHECK THESE EVENTS AS SOON AS WE CAN GET THE DATA PROCESSED (STILL RUNNING BEHIND). THANKS FOR YOUR CONTINUING HELP--JIM TERRELL.

From khurley@space6.ssl.berkeley.edu Tue Nov 23 08:45:15 1993
Date: Tue, 23 Nov 93 09:41:35
From: khurley@space6.ssl.berkeley.edu
Content-Length: 4895

Jim,

I've finally managed to get back to the DMSP localizations. I'm e-mailing you files for the following events: July 31 1992 and October 4 1992

I have not sent data for the following events:

May 19, 1992: I think that you have everything already. Let me know if that is not the case.

June 28, 1992: No Ulysses data due to the earthquake, which knocked out the tracking station.

June 29, 1992: There is no trace of this event in the Ulysses data. I would have said that it is solar, but the GOES data show no activity at this time. Also, there is a BATSE data gap around this time. This one is a mystery to me.

July 16, 1992: I'm pretty sure this one is solar; there was a strong GOES event at just this time. There is a BATSE data gap at the time, and Ulysses did not observe it.

Aug 5, 1992: Ulysses did not observe this event. Both BATSE and GOES report a strong solar flare at this time, so I think that is the explanation for this event.

Jan 6 1993: This is a nice-looking candidate in the DMSP data, but I haven't found anything corresponding to it in the Ulysses data. We had coverage at 0.5 s resolution, and I searched a window +/- 2100 seconds long around the DMPS time. No other spacecraft reported an event at this time, either.

And, on another subject, you mentioned a possible burst on Oct 24, 1991. Ulysses did not observe it, but the WATCH experiment aboard GRANAT observed solar particles at the time of this event.

SATELLITE POSITIONAL INFORMATION AND BURST ARRIVAL TIME

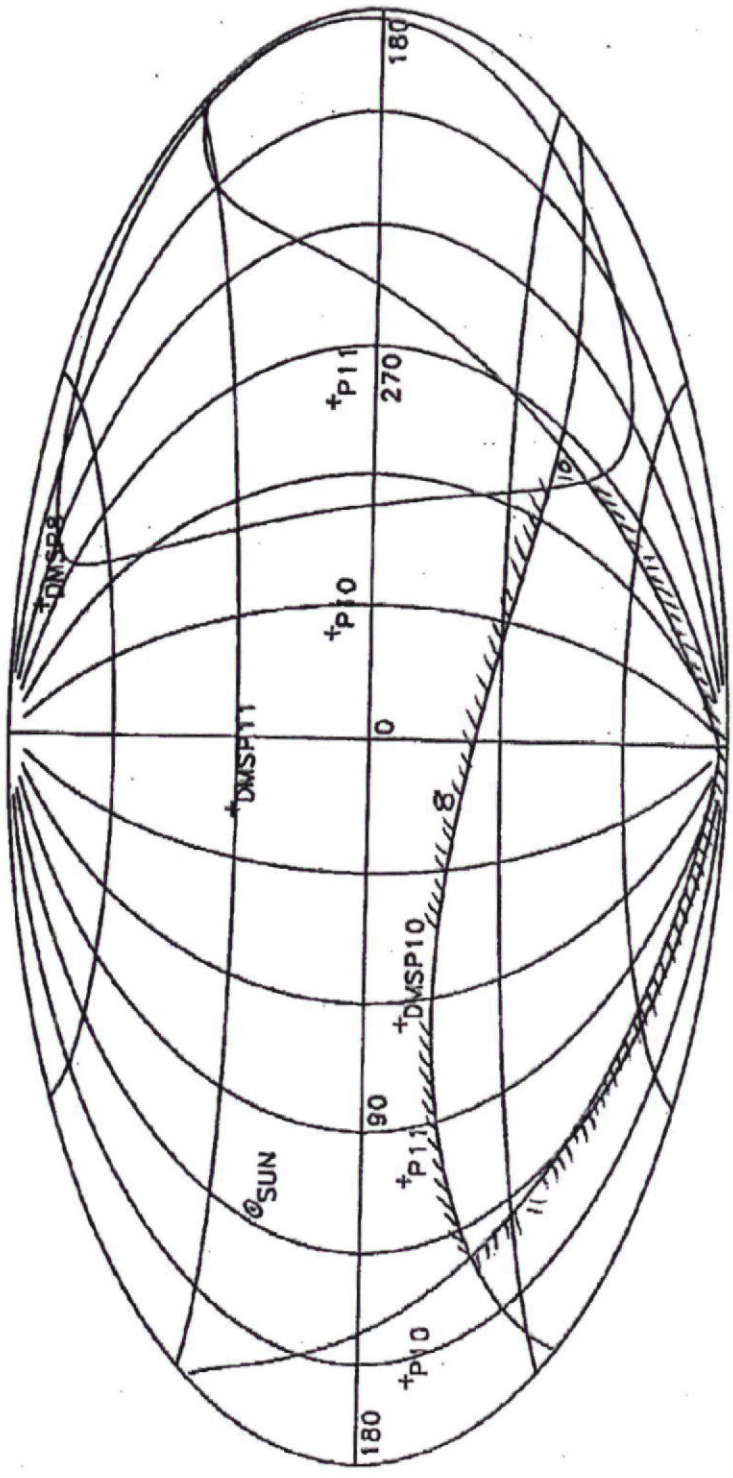
NO	NAME	DIST. FROM EARTH, KM.	ALPHA, DEG.	DELTA, DEG.
1	ULYSSES	926718236.0000+/- 23.8000000	154.29600+/- .00003	3.69480+/-
2	DMSP	6800.0000+/- 50.0000000	.00000+/-180.00000	.00000+/-

JULIAN DAY NUMBER IS 33815.22 DAYS SINCE 1900 JAN 0.5

20.00 BY 15.00 CM MAP FOR RA= .00 TO 360.00, DEC= -70.00 TO 70.00

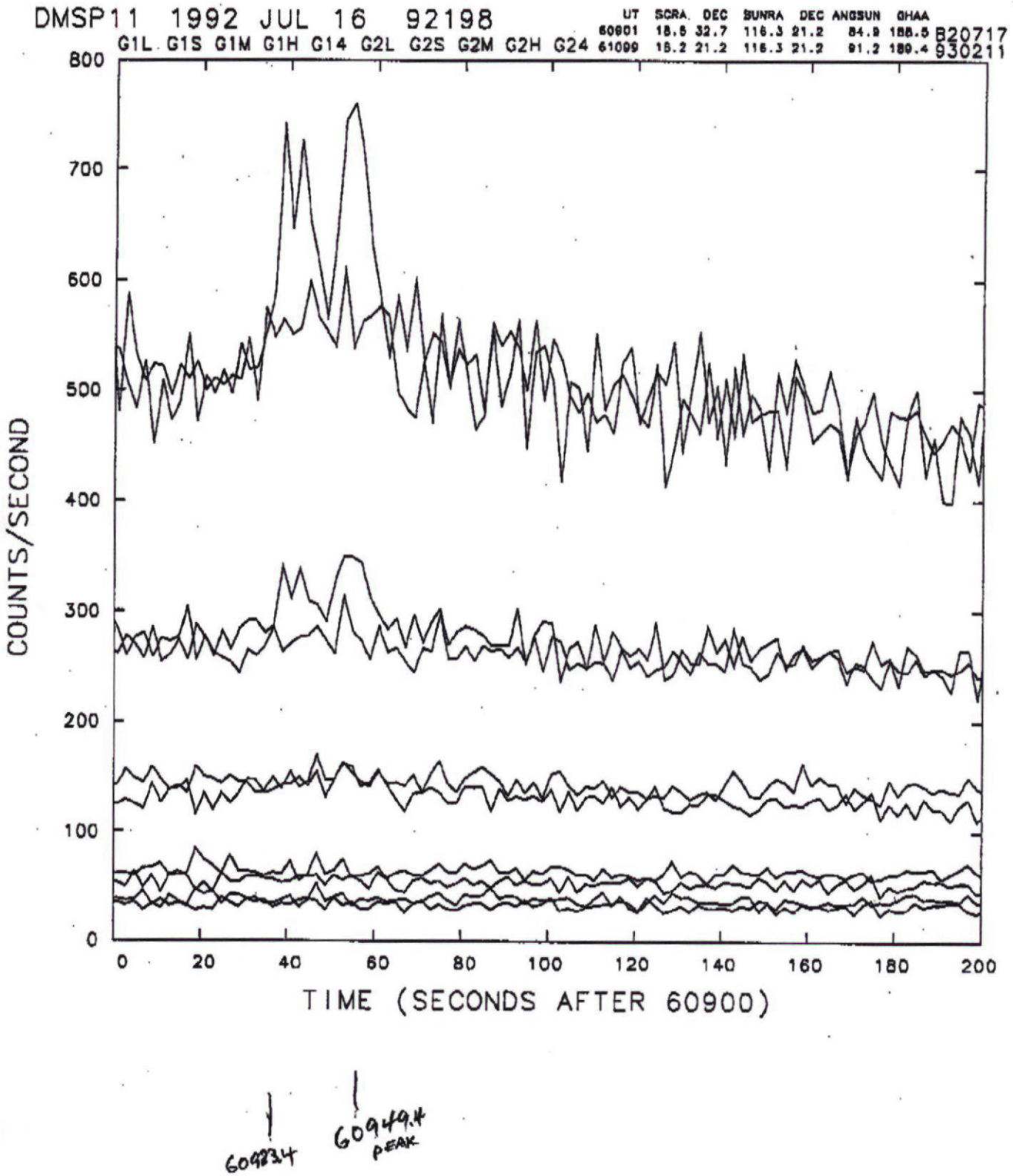
INTERSATELLITE CORRELATIONS

SEPARATION BETWEEN SATELLITES 1 AND 2 IS 3091.21926 LIGHT SECONDS. TIME DELAY IS -
CORRELATION BETWEEN SATELLITE 1(ULYSSES) AND SATELLITE 2(DMSP



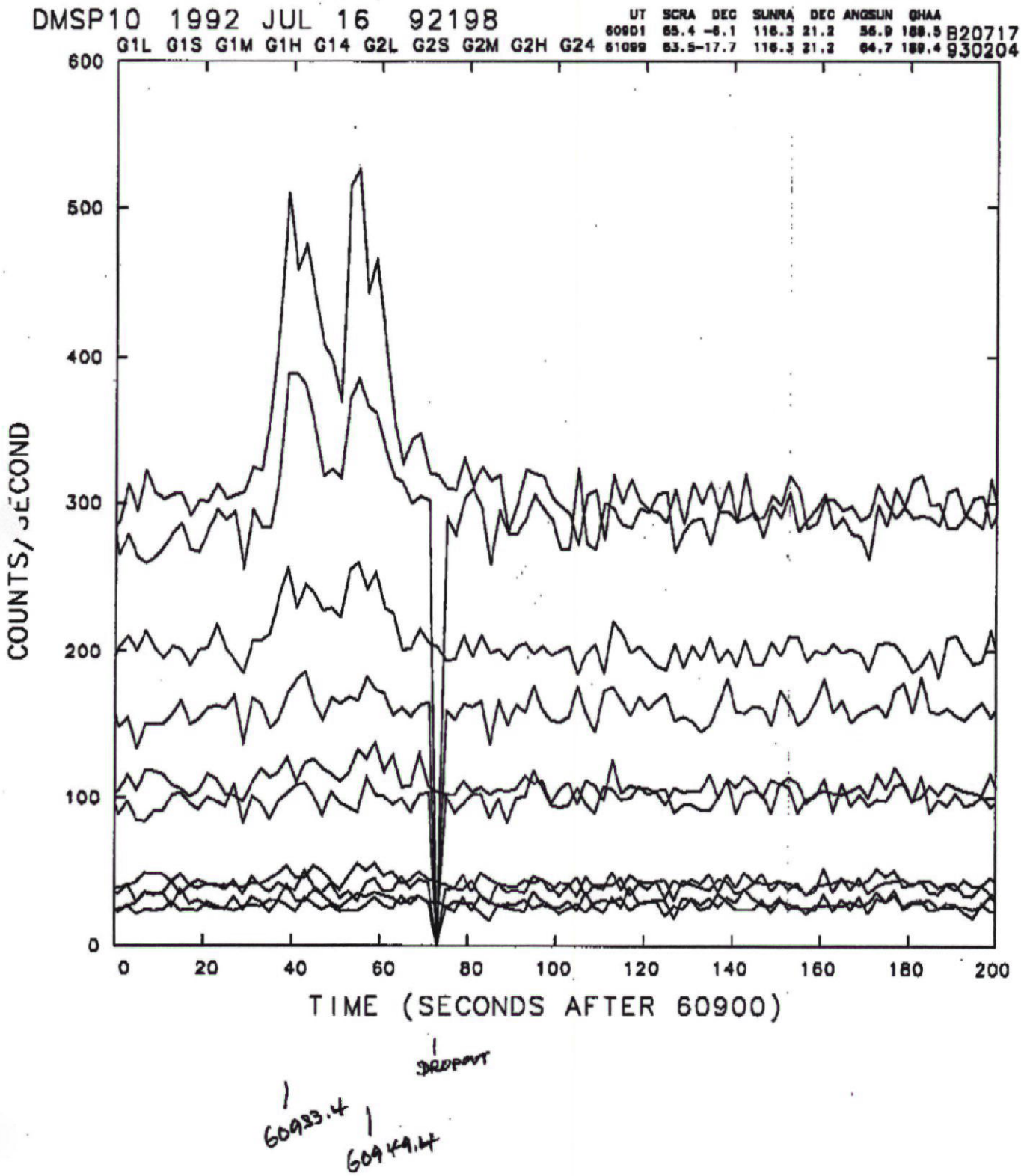
DMSP POSITIONS+VIEW, 92/07/16 60933 UT
EQUATORIAL COORDINATES

930618



60933.4

60949.4 PEAK


DMSP10 1992 JUL 16 92198
G1L G1S G1M G1H G14 G2L G2S G2M G2H G24
UT SCRA DEC SUNRA DEC ANGSUN GHAA
60901 65.4 -8.1 116.3 21.2 56.9 188.5
61099 63.5-17.7 116.3 21.2 64.7 189.4
B20717
930204
COUNTS/SECOND
0
100
200
300
400
500
600
0 20 40 60 80 100 120 140 160 180 200
TIME (SECONDS AFTER 60900)
DROPOUT
60933.4
60949.4

From root Fri Jul 16 15:29 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA07838; Fri, 16 Jul 93 15:29:21
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21891; Fri, 16 Jul 93 15:30:05 PDT
Message-Id: <9307162230.AA21891@sunspot.ssl.berkeley.edu>
Date: Fri 16 Jul 93 15:31:54-PST
From: $C <046369@essdp2.span.nasa.gov>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail]   DMSP GAMMA-RAY BURST DATA
Status: R

Received: from ESSDP2 by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
          DECnet; Fri, 16 Jul 93 15:31:29-PST
Date: Fri 16 Jul 93 15:31:29-PST
From: 046369@ESSDP2.SPAN.NASA.GOV
Subject: DMSP GAMMA-RAY BURST DATA
To: "UCBSP::HURLEY"@ESSDP2.SPAN.NASA.GOV

FROM: ESSDP2::TERRELL   (JAMES TERRELL, LOS ALAMOS NATL LAB)
TO: UCBSP::HURLEY (KEVIN HURLEY)
CC:
SUBJ: DMSP GAMMA-RAY BURST DATA, AS OF 16 JULY 1993

HERE ARE SOME NOTES CORRECTING DMSP PEAKTIMES FOR YOUR MASTER BURST LIST.
I HAVE MORE GRAPHS AND INFO TO SEND, BUT HAVE RUN OUT OF TIME.
I WILL SEND MORE INFO AFTER RETURNING 28 JULY--JIM.

27SEP91	84415	YES	(8SAA,9YES,10SAA)
16OCT91	36696	YES	(8SAA,9YES,10NR)
4NOV91	54286	YES	(8SR,9YES,10YES)
27NOV91	15739	YES	(8NO,9NO,10YES)
2DEC91	73733	YES	(8YES,9NO@144DEG,10NR)
9DEC91	66959	N/O	(8SR,9SR,10NR,11ND)
21DEC91	22686	YES	(8ND,9NO,10NO,11YES)
10JAN92	33478	NA	(BLANK) (8ND,9NA,10SAA,11NA)
10FEB92	35633	YES	(8NO,9WEAK,10SAA,11SAA)
6APR92	9855	N/O	(OBSCURED) (8NO@141,10SR,11NO@137DEG)
1MAY92	76696	N/O	(OBSCURED) (8NO@127,10NO@157,11NO@147DEG)
22JUN92	25506	N/O	(8SAA,10NR,11SA)
28JUN92	76452	YES	(8ND,10YES,11NO)
29JUN92	75897	YES	(ALL YES, SOFT)
14JUL92	47069	NA	(BLANK) (8NA,10SAA,11SR)
16JUL92	60933	YES	(9NO.10YES,11YES)
20JUL92	11524	N/O	(OBSCURED) (8NA@130,10NA@145,11SR)
23JUL92	72188	N/O	(OBSCURED) (8ND,10NA@148,11NR)
10AUG92	79599	YES?	(8YES?,10NA,11NA) (LONG SOFT PEAK)
4OCT92	50421	YES	(8YES,10YES,11SR)
23NOV92	22727	YES	(8YES,10YES,1SR) (NOT AT 22712)
23NOV92	46542	YES	(8NR,10SR,11YES) (NOT AT 46584, BATSE GRB)
7DEC92	57649	YES	(8YES,10YES,11YES)
6JAN93	55260	YES	(8SAA,10YES,11SR)
12JAN93	55082	YES	(8YES,10NO@138,11VERYWEAK) (8:BIG PEAK AT 55202)
20JAN93	84779	YES	(8YES,10,YES,11YES) (NO, AT 84700!)

Dezalay-> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-06-28	21:14:12.932	473-a	GRB
1992-07-08	16:30:01.944	479-a	Solar Flare
1992-07-14	13:04:30.544	482-a	GRB
1992-07-16	16:55:27.526	484-a	Solar Flare
1992-07-18	21.32:44.275	485-a	GRB
1992-07-20	03:12:04.391	486-a	GRB
1992-07-23	00:59:16.612	488-a	GRB
1992-07-23	20:03:08.386	489-a	GRB
1992-07-23	21:48:54.786	489-b	GRB
1992-08-16	12:37:31.102	493-a	GRB
1992-08-26	02:47:07.423	500-a	GRB
1992-08-30	01:45:19.113	503-a	GRB
1992-09-02	00:29:00.916	504-a	GRB
1992-09-03	00:49:18.142	505-a	GRB
1992-09-03	01:37:17.202	505-b	GRB ?
1992-09-03	23:29:01.404	506-a	GRB
1992-09-04	04:41:38.922	506-b	GRB
1992-09-05	15:56:15.844	507-a	Solar Flare
1992-09-06	18:45:29.617	507-b	Solar Flare
1992-09-06	20:56:31.135	507-c	Solar Flare
1992-09-14	07:14:50.878	508-a	Unknown
1992-09-18	09:41:19.340	511-a	GRB
1992-09-25	20:30:41.410	517-a	GRB
1992-09-25	21:40:47.837	517-b	No Available data
1992-09-30	00:47:46.089	518-a	Unknown
1992-10-04	22:19:05.006	522-a	Solar Flare
1992-10-12	13:14:44.786	523-a	Solar Flare
1992-10-13	23:01:01.582	524-a	GRB
1992-10-25	13:53:16.735	527-a	GRB
1992-10-27	06:52:02.336	528-a	Solar Flare
1992-10-29	15:23:10.349	530-a	SF ou Unknown?
1992-10-29	16:11:39.173	530-b	SF ou Unknown?
1992-10-29	16:26:49.045	530-c	SF ou Unknown?
1992-11-23	16:32:04.840	534-a	SF ou Unknown?
1992-11-23	17:11:35.698	534-b	SF ou Unknown?

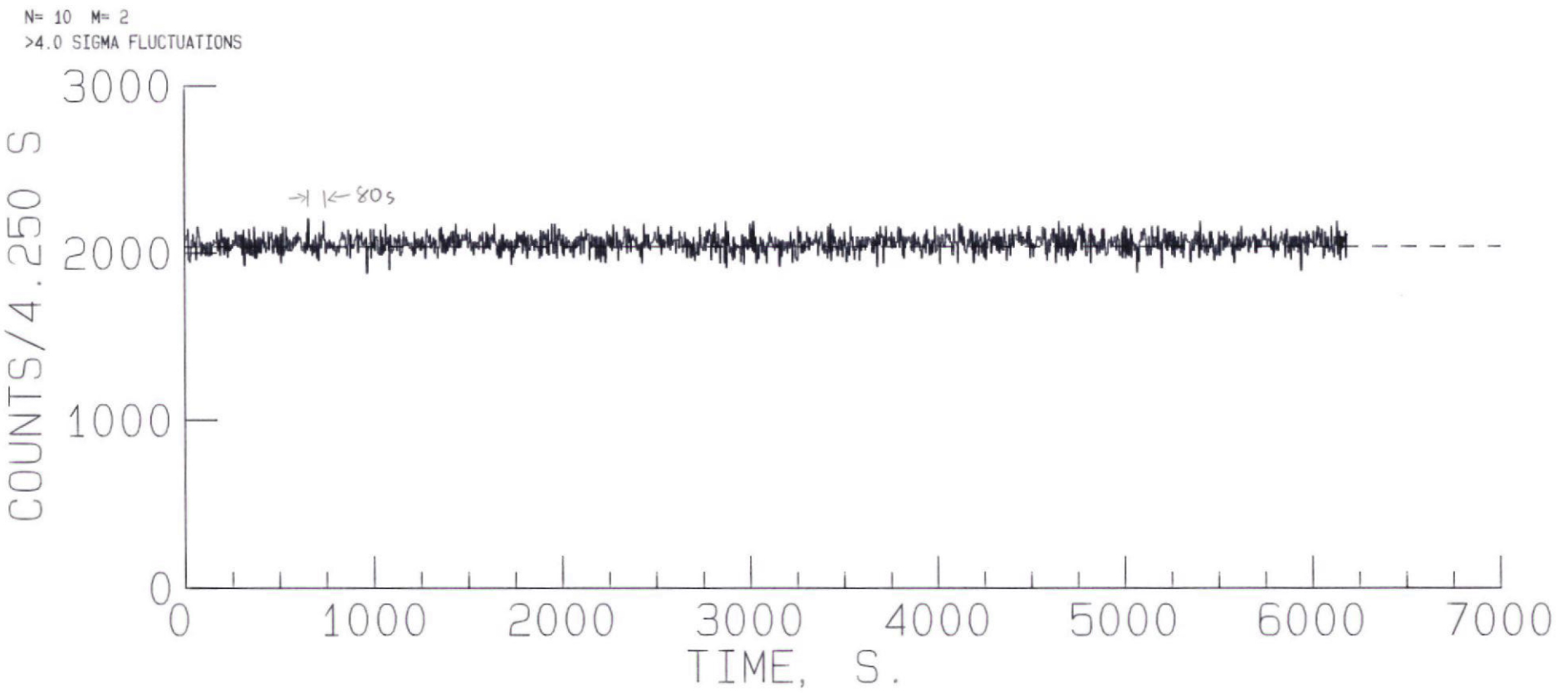
12/ 9/92

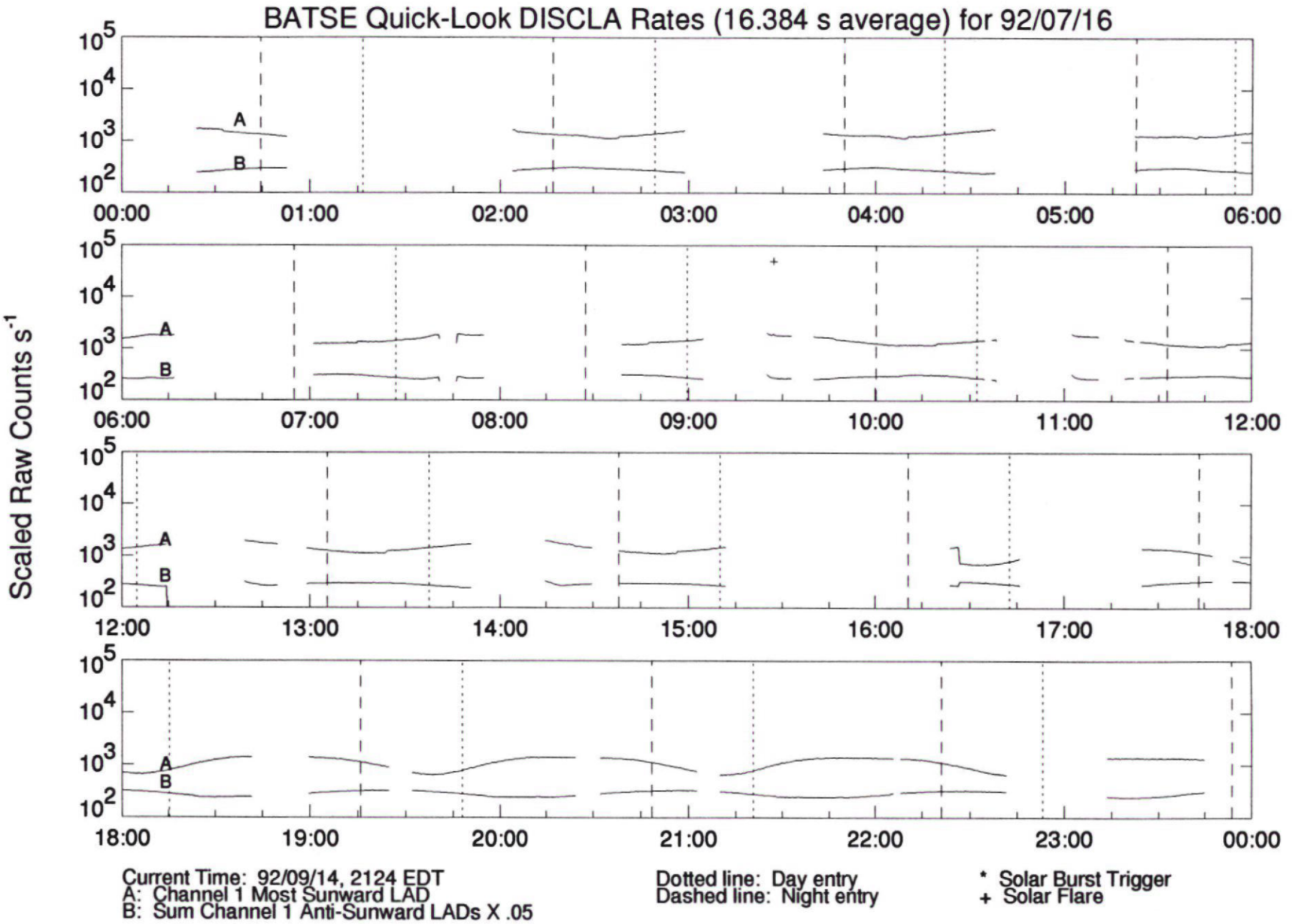
ULYSSES RT

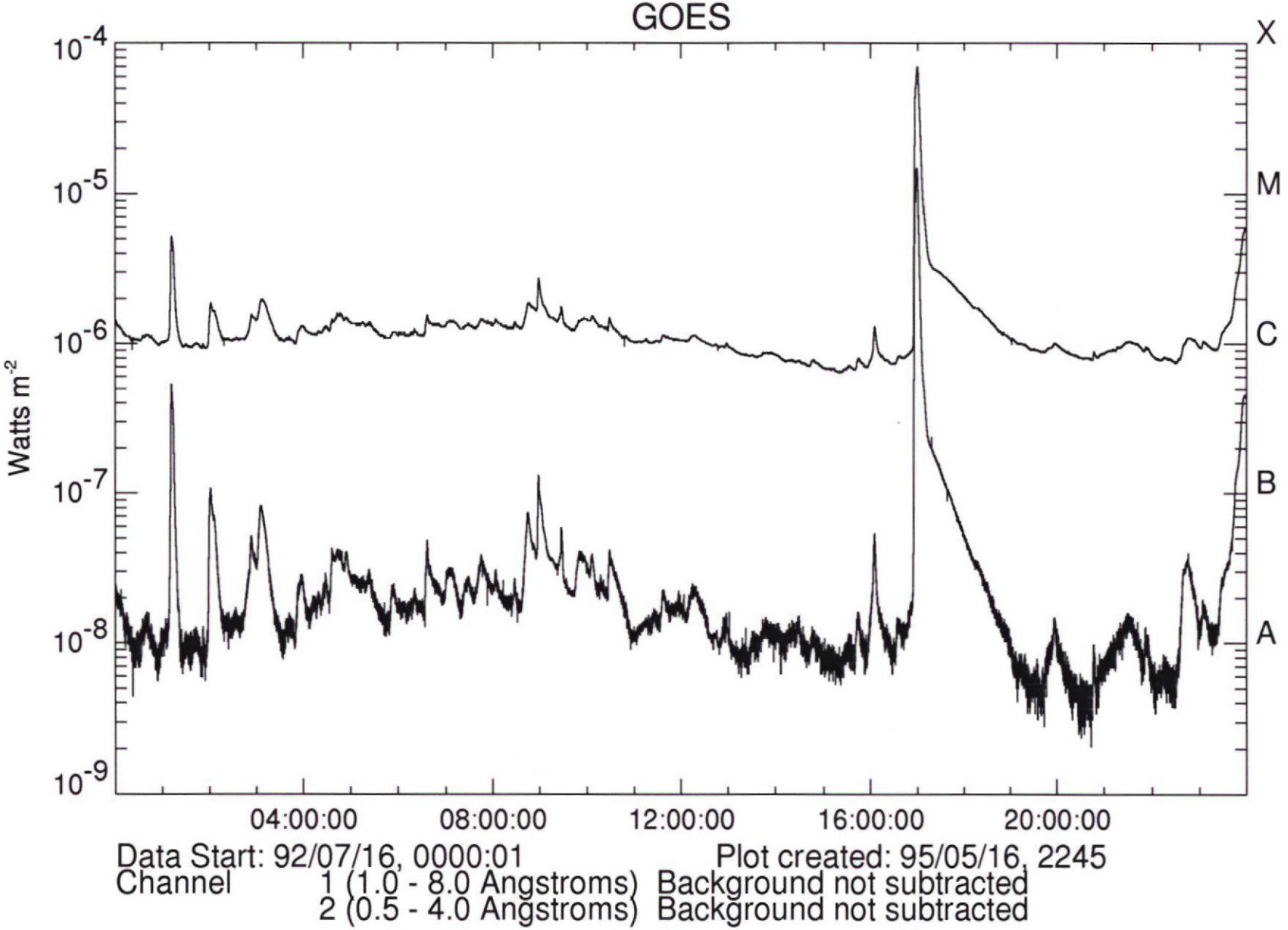
16/ 7/92 57852.203 s

.250 S INTERVALS REGROUPED BY 17

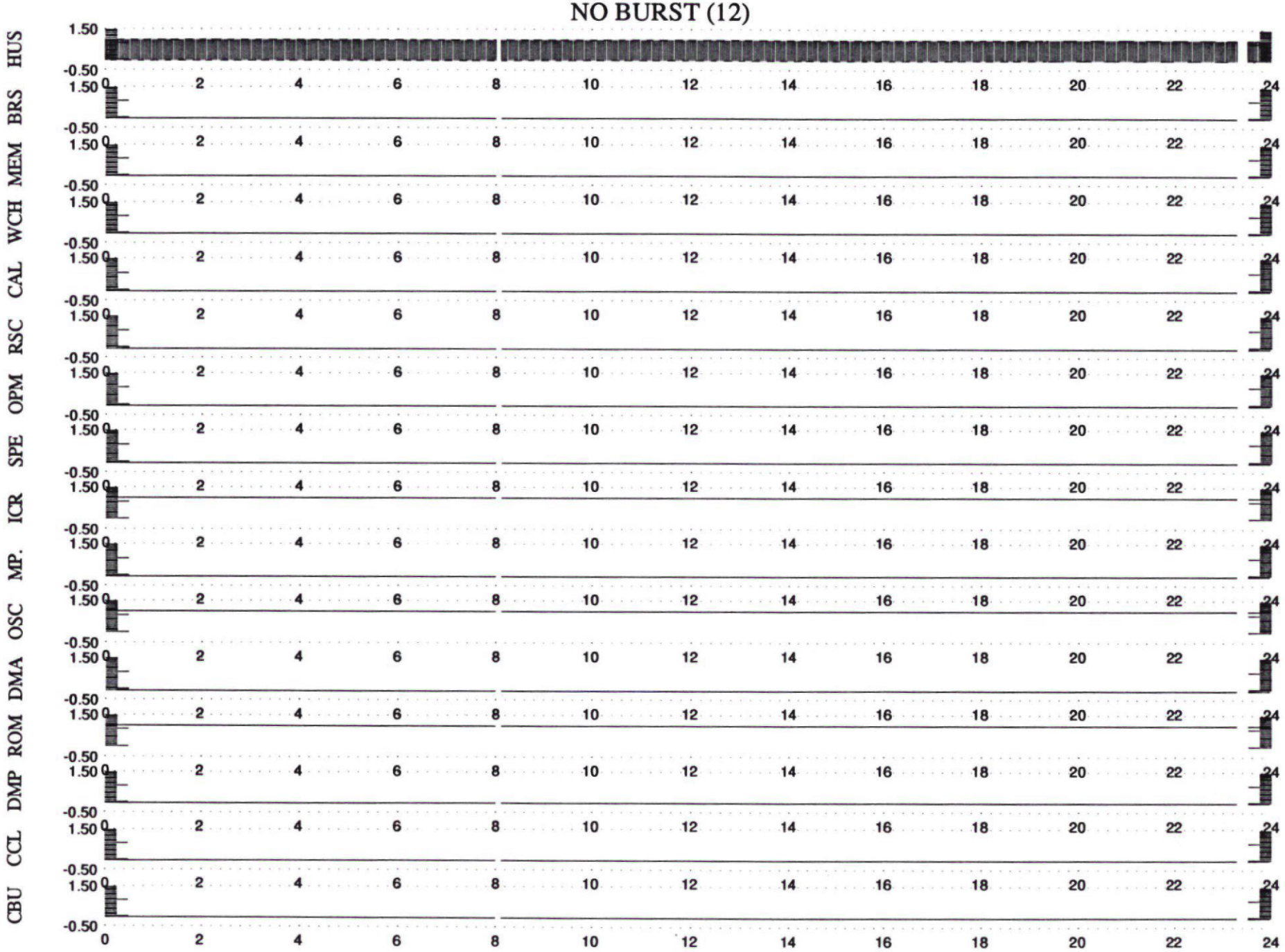
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/16
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
00:00
Current Time: 92/09/14, 2124 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

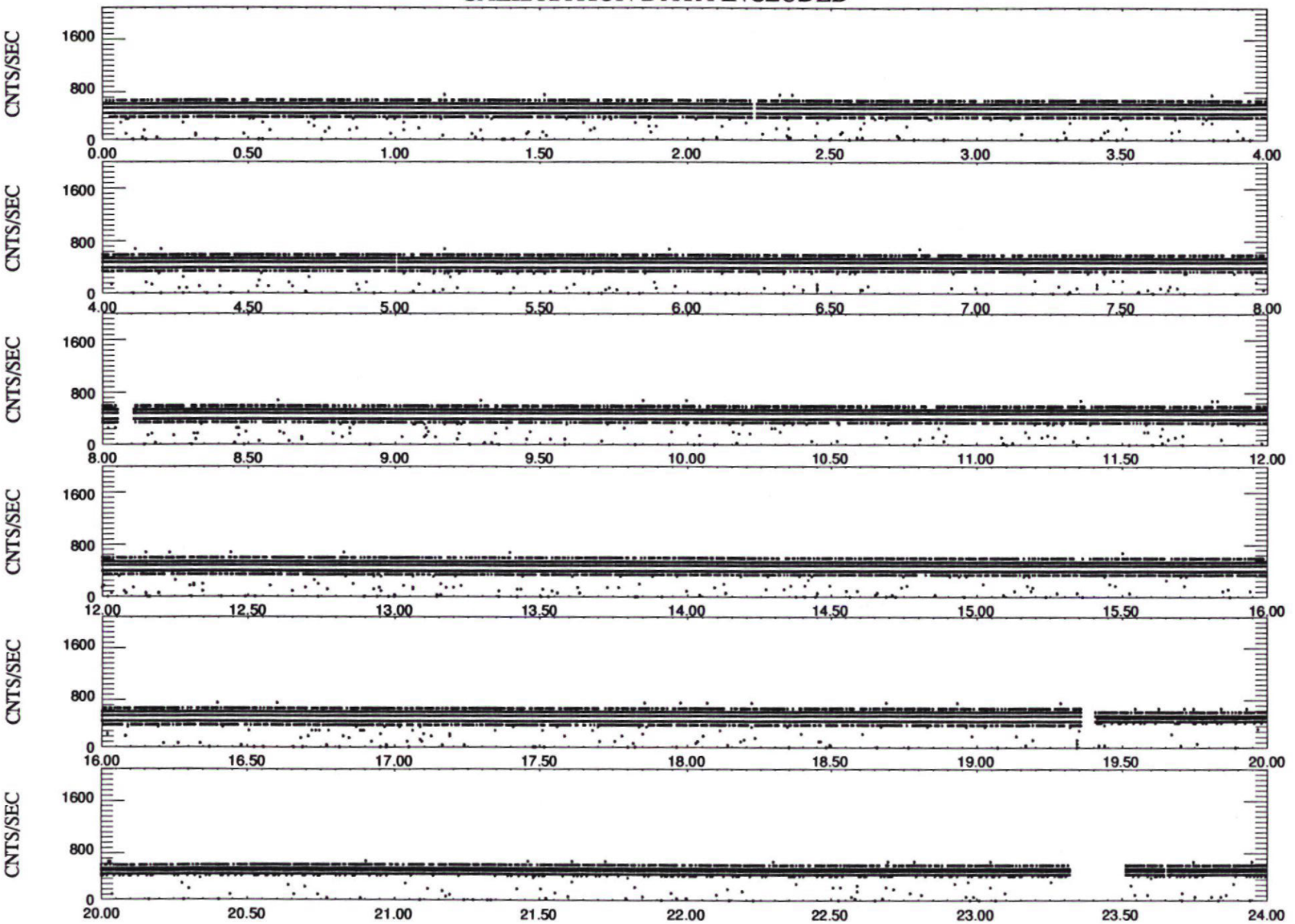

GOES
X
M
C
B
A
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/16, 0000:01
Plot created: 95/05/16, 2245
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 198, year 1992 to day 198, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 198, year 1992 to day 198, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

GRB	RA°	DEC°	DIMENSIONS	SOURCE
17 FEB 94	29	+4	6'x60'	IAUC 5940
25 APR 91	90	-22		A&A Suppl. 97, 75
09 NOV 91	111	-27	1'x6'	CoI calculation
01 MAY 92	124	-33	1'x2'	CoI calculation
11 MAR 92	132	-36	1'x4'	CoI calculation
22 MAY 91	138	-51	2'x2'	CoI calculation
18 NOV 91	167	-23	2'x10'	CoI calculation
31 JAN 93	184	-10	0.3'x96'	Hurley et al. (preprint)
27 JUN 91	199	-4		A&A Suppl. 97, 75
17 MAY 92	203	-17	2'x6'	CoI calculation
17 JUL 91	247	-58	1'x1'	CoI calculation
SGR 1900+14	285	+14		pos. of G42.8+0.6
06 APR 92	289	-58	2'x2'	CoI calculation
22 JAN 91	297	-71	2'x6'	CoI calculation
25 MAY 92	301	-43	2'x3'	CoI calculation
25 MAR 92	351	13	2'x7'	CoI calculation

From this list, approx. half will be selected for study (depending on season). SGR 1900+14 is one of the three *soft-gamma repeaters*. It has been tentatively associated with a supernova-remnant G42.8+0.6 (Hurley et al., preprint).

21. For SEST proposals, indicate:

a) Your preferred LST interval :

b) The period when the targets can be observed, taking into account the Sun constraint (50°) :

22. Justification of requested number of observing nights. Do not include any correction for expected meteorological conditions:

Eight fields are to be imaged in four colours, twice. The exposure time will be 10 min in B, and 5 in V, R, and Z. Hence, in total, 400 min integration.

CoIs are constantly revising the list of targets. Some reduction in the size of error boxes is possible; this may limit the need to image by mosaic.

23. Reasons why the observations cannot be performed in remote mode.

24. **Important notice:**
If the programme described in this application requires excellent seeing or photometric conditions or low water vapour content, **a back-up programme using the same instrumentation** has to be described on a separate page.

From holger@astro.ku.dk Thu Jul 7 00:49 PDT 1994
Date: Thu, 7 Jul 94 09:51:25 +0200
From: holger@astro.ku.dk (Holger Pedersen)
To: boer@cesr.cnes.fr, hpedersen@nbivax.nbi.dk,
khurley@sunspot.ssl.berkeley.edu
Subject: NTT_observing_time
Content-Type: text
Content-Length: 1062

Kevin, Michel:

I am pleased to report verbal information from ESO that we have been granted one night of observing time on the 3.5-m New Technology Telescope, in March 1995, for the execution of the observing program mailed to you earlier. The observations are to be conducted using remote control, from Garching. I hope that you can join me in Garching.

Similar observations will be done at the 1.54-m Danish telescope, La Silla, August 5 - 12, 1994. If there is any update to Kevin's list of positions, please let me know.

Best regards

Holger

July 7, 1994

Holger Pedersen	e-mail	holger@astro.ku.dk
Copenhagen University Observatory	phone	(45) 3532 3966
Oster Voldgade 3	-	(45) 3532 3999 (secretary)
DK 1350 Copenhagen	-	(45) 3888 6779 (private)
Denmark	fax	(45) 3532 3989

****
BATSEARCH PROGRAM
****

WATCH event

BATSE BURST #
EVENT OF 1992 JUL 17 DAY OF YEAR=199
EVENT CROSSING TIME AT BATSE : 4500. S. OR 01:15:00.0
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 195.000 -8.000
BATSE PEAK COUNTING RATE: 0 C/S
EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 17/ 7/ 92 IS:
RA= 151.886 DEC= 5.154 DIST= 6.083 AU
BATSE-ULYSSES DISTANCE = 910081128. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=135.03 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2147.65 SECS.
CROSSING TIME AT ULYSSES IS 2352. S. OR 00:39:12 +/- 389.87 SECONDS

No

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

From nl@dsri.dk Tue Jul 21 05:22:38 1992
Date: Tue, 21 Jul 92 14:23:40 +0200
From: Niels Lund <nl@dsri.dk>
To: 081877@essdp1.span.nasa.gov, ASTMPH@CSEARN.bitnet, MEB@DGAIPP1S.bitnet,
RICHARD@DGAESO51.bitnet, cline@15407.span.nasa.gov,
d33049%simail@jpnac.bitnet, holger@astro.ku.dk,
khurley@ucbssl.berkeley.edu, kouveliotou@batse.span.nasa.gov,
lapshov@ESOC1.bitnet, nl@dsri.dk, sb@dsri.dk
Content-Length: 1202

Fm: Niels Lund, DSRI
To:

Date: July 20, 1992

Dear friends;

WATCH seems to have encountered a gamma-burst stream recently. Within the last week we have detected and localized 3 strong bursts. The raw data are still in Crimea so it will not be before early august that we can provide you with time histories and discuss precise timing. In our ongoing follow up program we have obtained Schmidt plate exposures of the source regions at La Silla for the two bursts recorded on july 17 and 18. The july 14 burst happened at full Moon and no photographic follow up was possible.

The preliminary event data follows:

date	time(UT)	RA(1950)	dec(1950)	duration
yymmdd	hh:mm	hh:mm:ss	dd:mm	sss
920714	13:08	14:39:18	-30:03	30
920717	01:15	13:02:07	-07:50	35
920718	14:41	01:23:17	-02:25	100

The july 14 burst is interesting because we have indications of a second outburst from the same region about 30 minutes after the first trigger.

I am of course very much interested in any coorelated observations you may have of any of these events.

Best regards
Niels

PS: The launch of EURECA-WATCH is now scheduled for july 31.st.

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          ********************
          *CATSEARCH PROGRAM*
          ********************

BATSE BURST # 1703
EVENT OF 1992 JUL 17 DAY OF YEAR=199
EVENT CROSSING TIME AT BATSE      : 24202. S. OR 06:43:21.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 319.100  -26.100
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 17/ 7/  92 IS:
RA=  151.886 DEC=     5.154 DIST=     6.083 AU
BATSE-ULYSSES DISTANCE =  910081128. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 24.25 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2767.77 SECS.
CROSSING TIME AT ULYSSES     IS 26970. S. OR 07:29:29.5 +/-  308.53 SECONDS
```

ND

```
From MEEGAN@ssl.msfc.nasa.gov Sat Jul 18 18:34:34 1992
Date:     Sat, 18 Jul 1992 20:35:58 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

                BATSE BURST TRIGGER
NO.: 01703
                July 17
TIME: TJD=8820 SECONDS=24201

TYPE: BURST                        SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=087.   AZIMUTH=218.   ERROR=       DEGREES

COMMENTS:
INTENSE SPIKE, ABOUT 1/2 SECOND LONG.  SEEN ABOVE 300 KEV.
```

fax to
Dr. Kevin Hurley
Toulouse, FRANCE

fax # 33-61-55-67-01

KEVIN:

CHAOS !

What a mess ! Is it possible that several spacecraft clocks are each off, or why is it that we are getting so many triggers within one week that don't correspond ? ((Are they really UFOs that are communicating with each other, so that returned messages arrive hours later, towards the other side of the Earth? -or, *deja vu:* remember the 'soft gamma repeater' that Ulysses confirmed but it didn't fit ?))

Here is the list of triggers I've been given from N. Lund, G. Fishman, and J. Laros:

01	July 14	BATSE	47069			
		GRANAT	47280	fits	47069	BATSE
02	July 17	GRANAT	04500			
03	''	BATSE	24201.756			
04	''	BATSE	56829			
05	July 18	BATSE	13186			
06	''	BATSE	52836.			
		GRANAT	52860	fits	52836	BATSE
07	''	BATSE	77563.266			
08	''	Ulysses	79135.445		no fit to BATSE	
09	July 20	PVO	05155.347			
10	''	Ulysses	09807.243		no fit to PVO	
	''	BATSE	11524.62	fits	09807	Ulysses
11	''	BATSE	21172.866			

So the ugly question again, since the PVO and Ulysses time histories truly look alike, is whether the clock is still off and the latest IAU telegram for the July 11 event is again wrong.

TLC

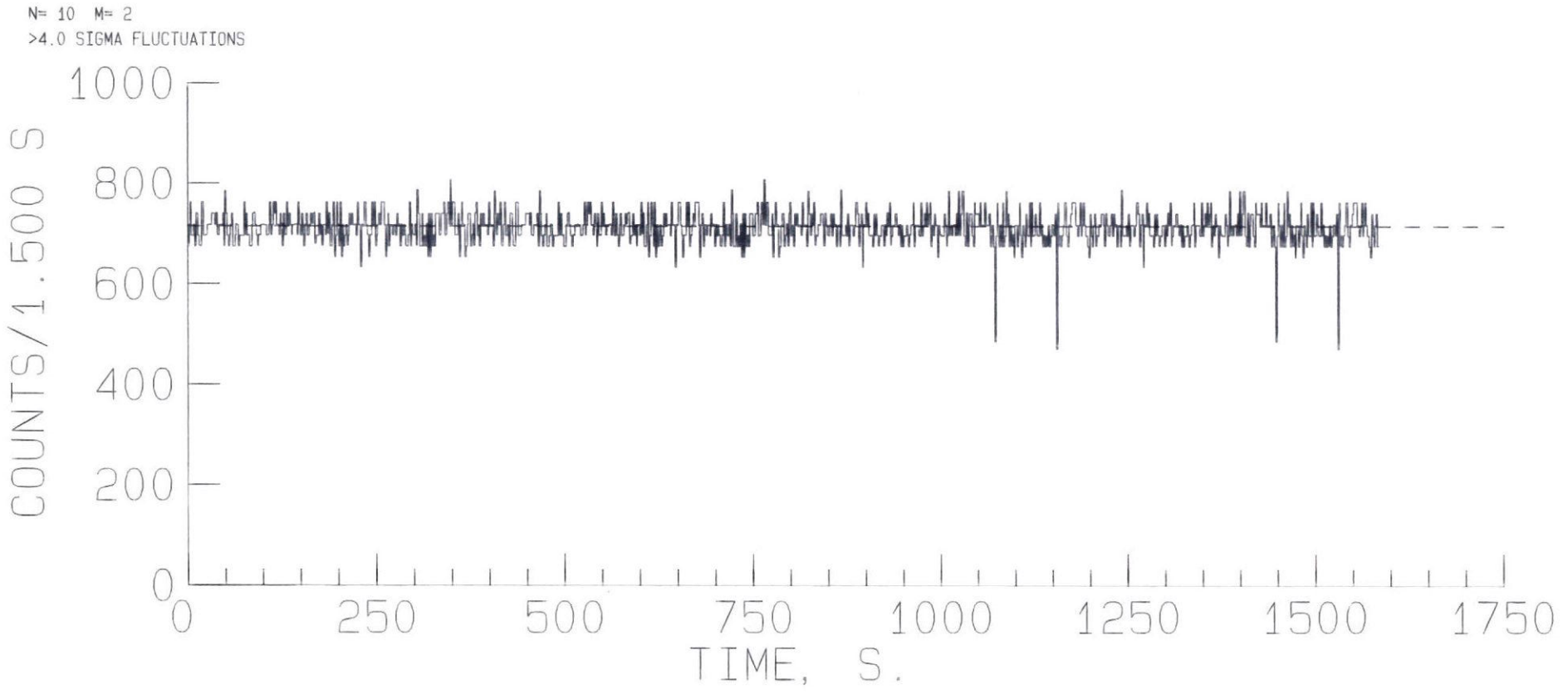
18/ 8/92

ULYSSES RT

17/ 7/92 1944.445 s

.500 S INTERVALS REGROUPED BY 3

0- 0 keV

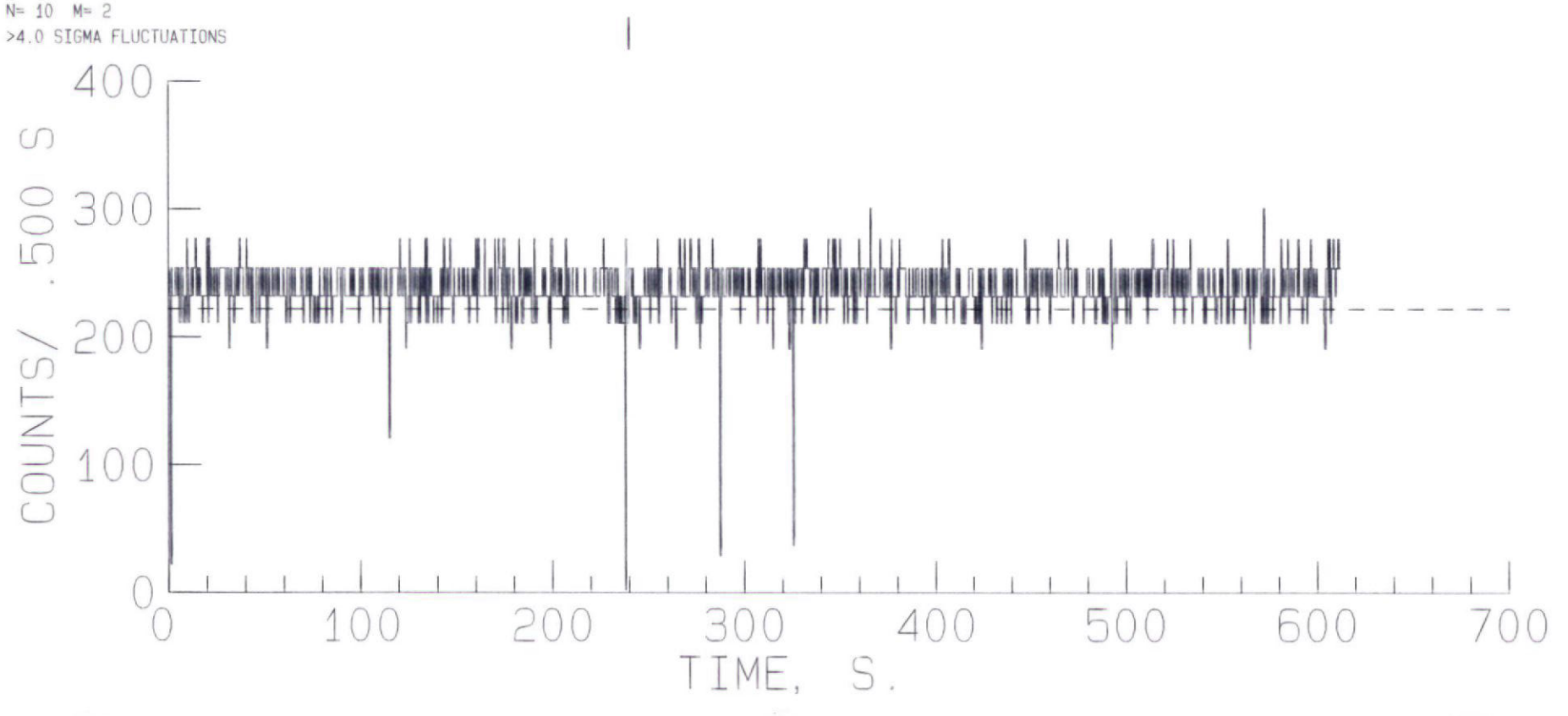


18/ 8/92

ULYSSES RT

17/ 7/92 26676.344 s

0- 0 keV



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

BATSE BURST # 1704
EVENT OF 1992 JUL 17 DAY OF YEAR=199
EVENT CROSSING TIME AT BATSE      : 56830. S. OR 15:47:09.6
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  24.100      .800
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 17/ 7/  92 IS:
RA=  151.886 DEC=     5.154 DIST=     6.083 AU
BATSE-ULYSSES DISTANCE =  910081128. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 52.49 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1848.51 SECS.
CROSSING TIME AT ULYSSES     IS 58678. S. OR 16:17:58.1 +/-  496.14 SECONDS
```

No

```
From MEEGAN@ssl.msfc.nasa.gov Sat Jul 18 18:40:14 1992
Date:    Sat, 18 Jul 1992 20:41:34 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

                BATSE BURST TRIGGER
NO.: 01704

TIME: TJD=8820 SECONDS=56829

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH= 69.   AZIMUTH=285.   ERROR=       DEGREES

COMMENTS:
TWO WEAK PULSES.  TOTAL DURATION ABOUT 10 SECONDS.
```

BATSE BURST# 1704

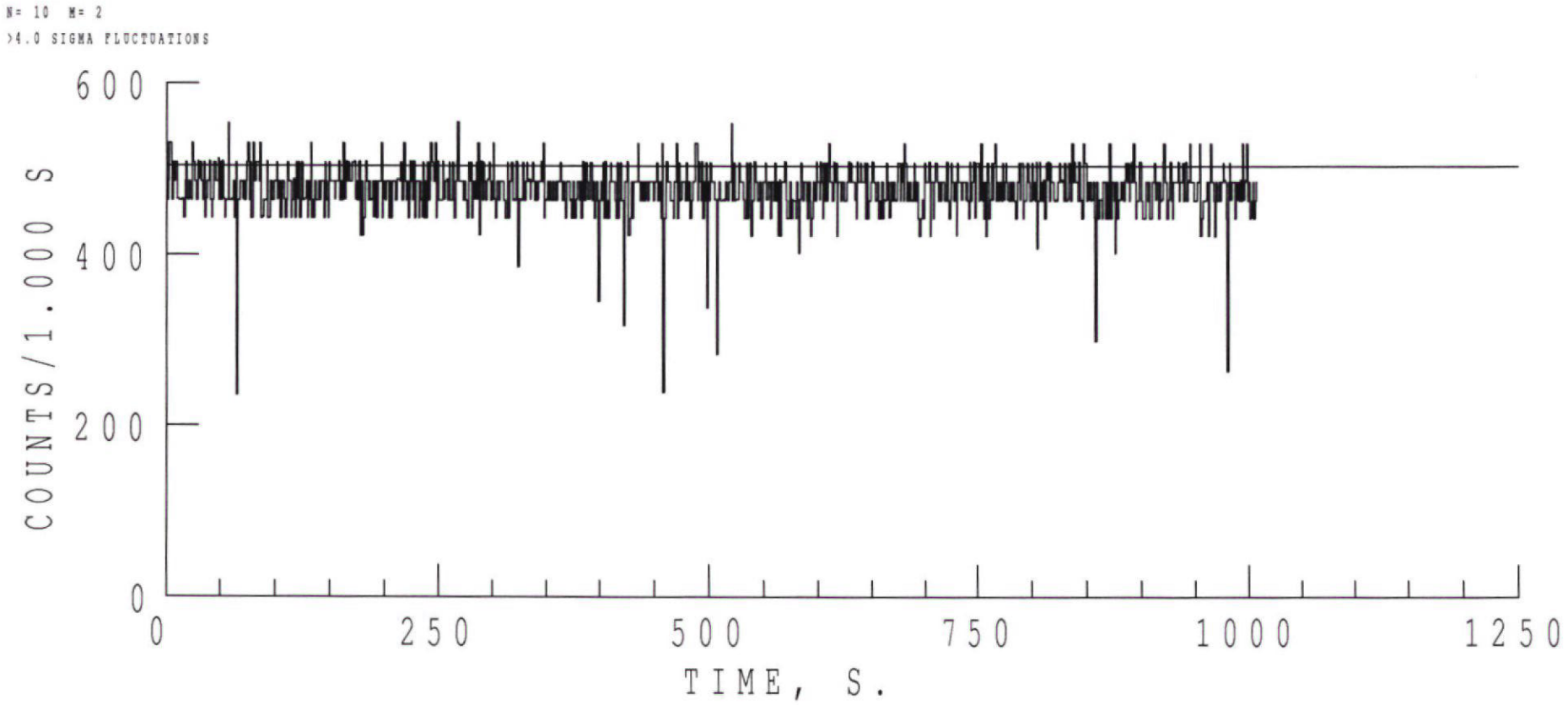
8/ 6/94

ULYSSES RT

17/ 7/92 58176.348 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



BATSE time corrected 9/30

Date: July 2 2002

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Final ephemeris used?

☑ Final, CDROM data used?

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

2. For 3 Spacecraft events

☐ Konus N/S anisotropy used to distinguish between positions?

☐ SAX anisotropy used to distinguish between positions?

☐ SAX Earth-blocking used to distinguish between positions?

☐ Σ $3\Delta t$'s calculated?

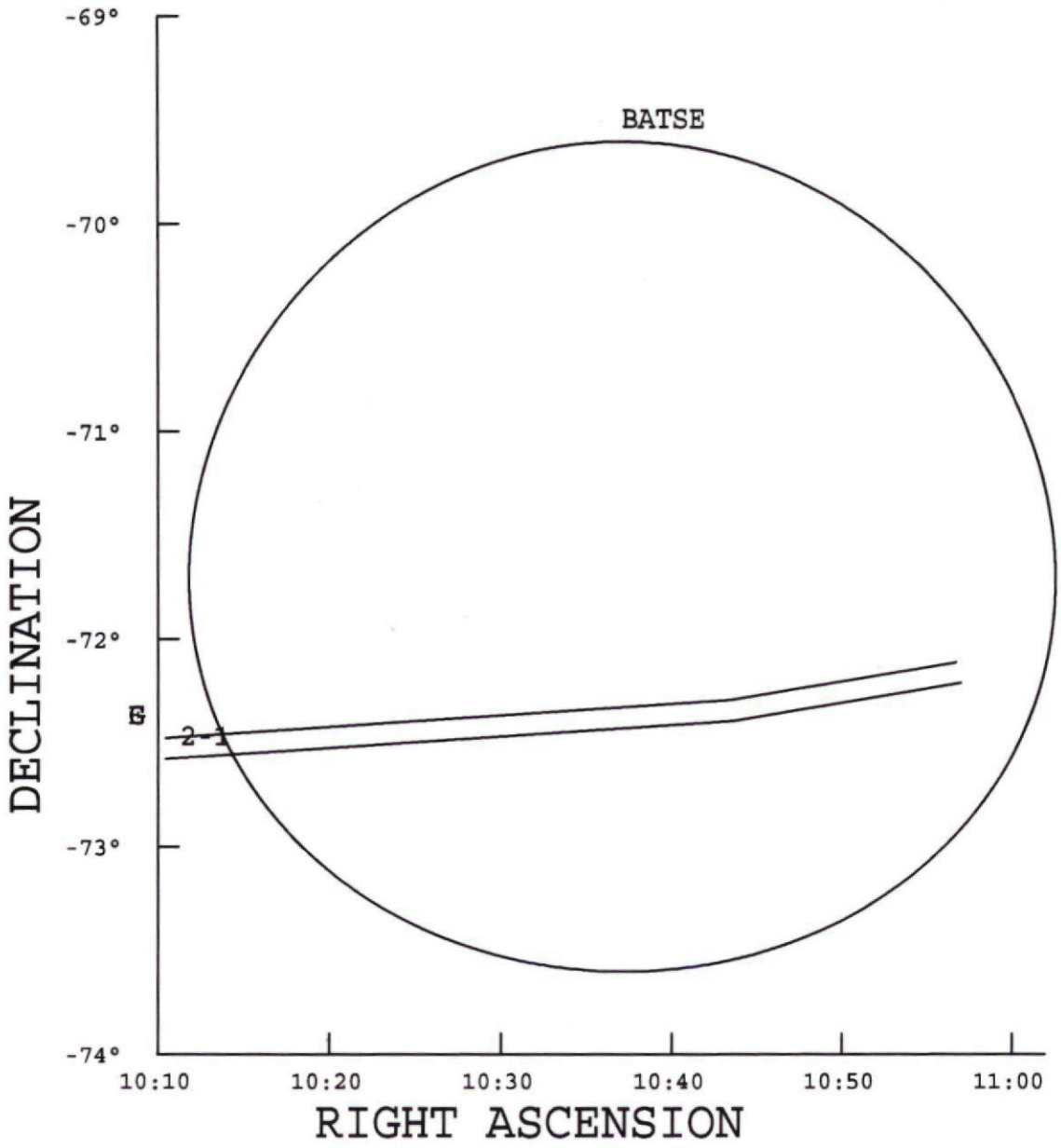
3. For 4 Spacecraft Events

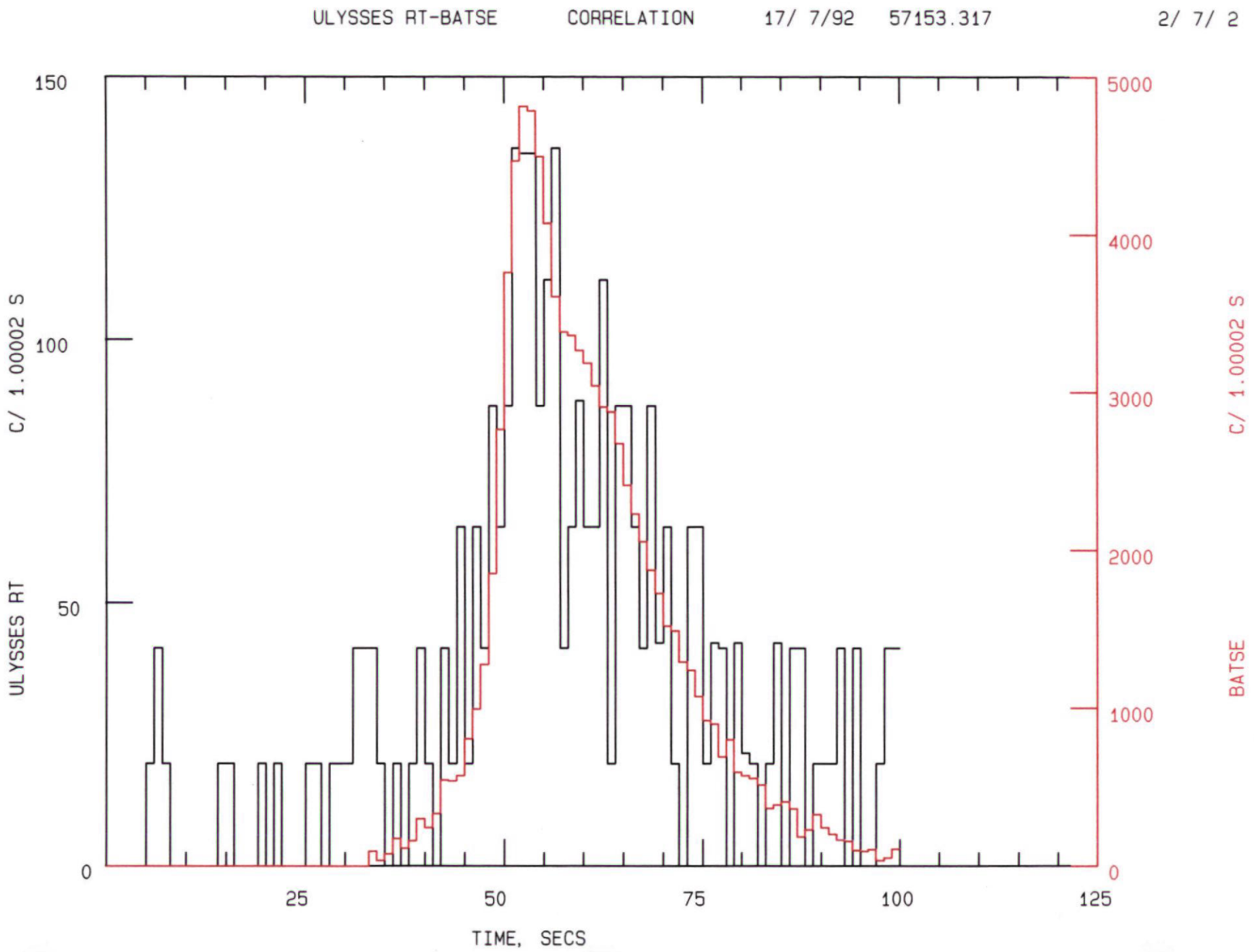
☐ BMAPSUM executed to get chisquare for alternate positions?

☑ ACCESS database updated?

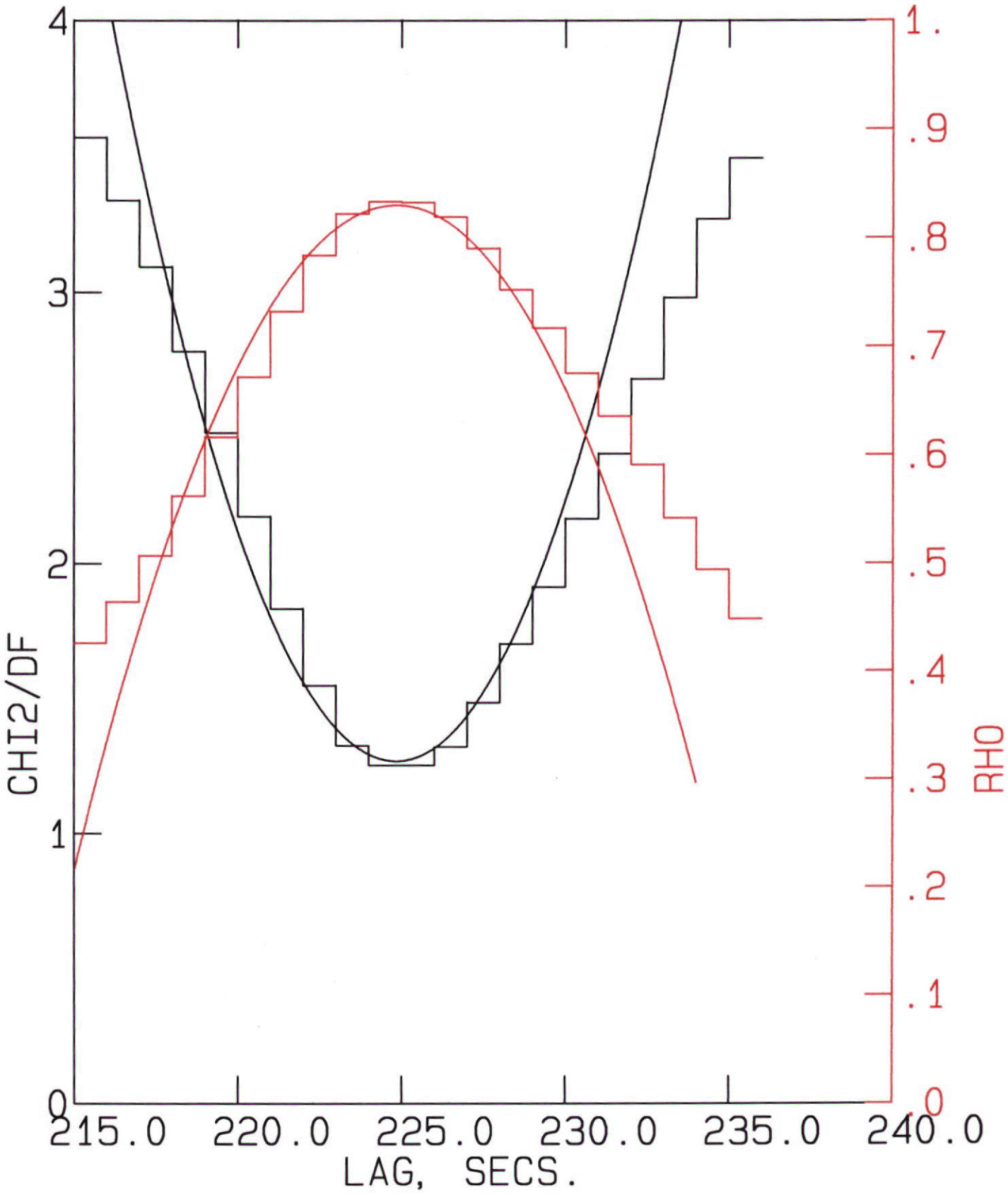
EVENT OF JUL 17, 1992 16:04

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




ULYSSES RT-BATSE CORRELATION 17/ 7/92 57153.317 2/ 7/ 2
150
100
50
0
C/ 1.00002 S
ULYSSES RT
5000
4000
3000
2000
1000
0
C/ 1.00002 S
BATSE
25
50
75
100
125
TIME, SECS

ULYSSES RT-BATSE CORRELATION 17/ 7/92 57153.317

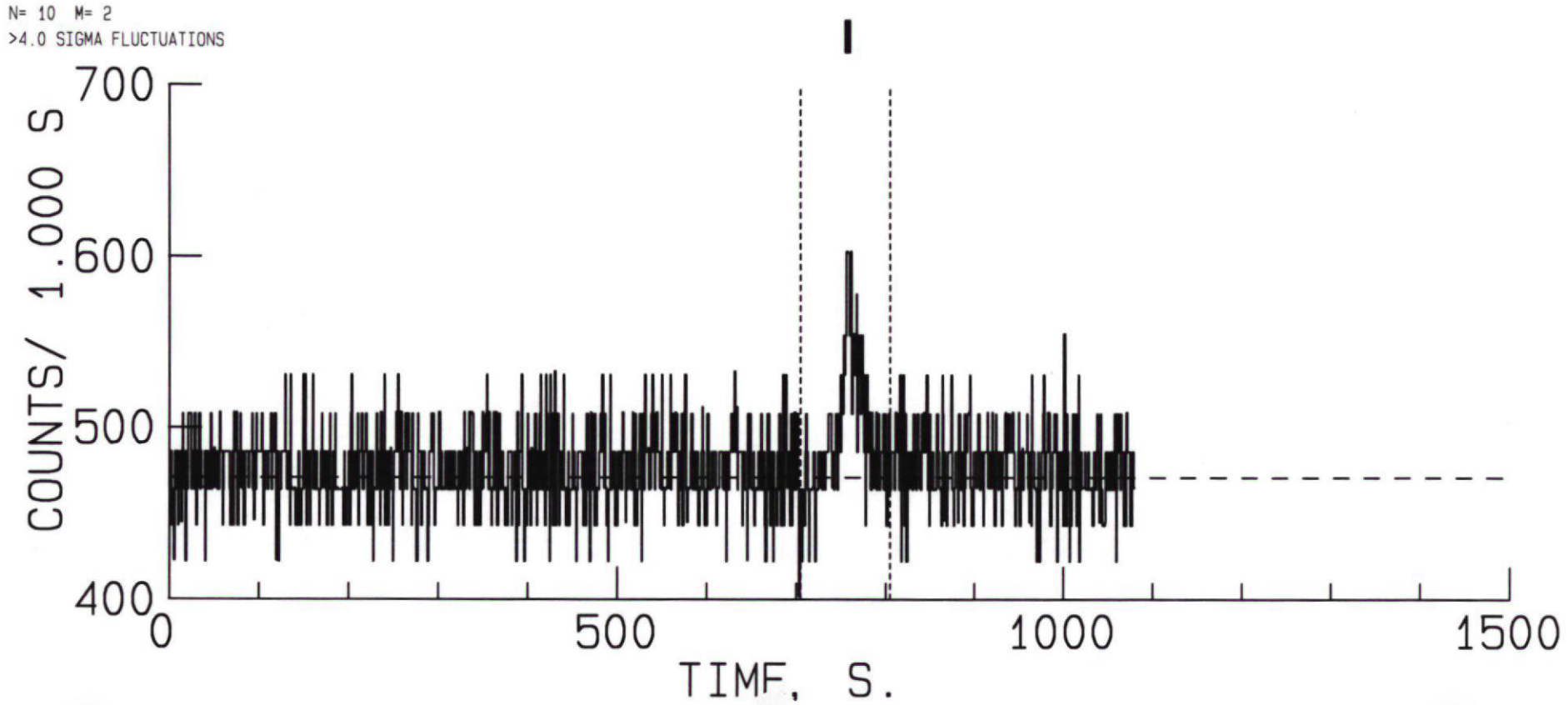


ULYSSES RT 2/ 7/ 2

17/ 7/92 56448.320 s

0.500 S INTERVALS REGROUPED BY 2

22- 152 keV



From MEEGAN@ssl.msfc.nasa.gov Sat Jul 18 18:49:25 1992
Date: Sat, 18 Jul 1992 20:50:58 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01705

TIME: TJD=8820 SECONDS=76159

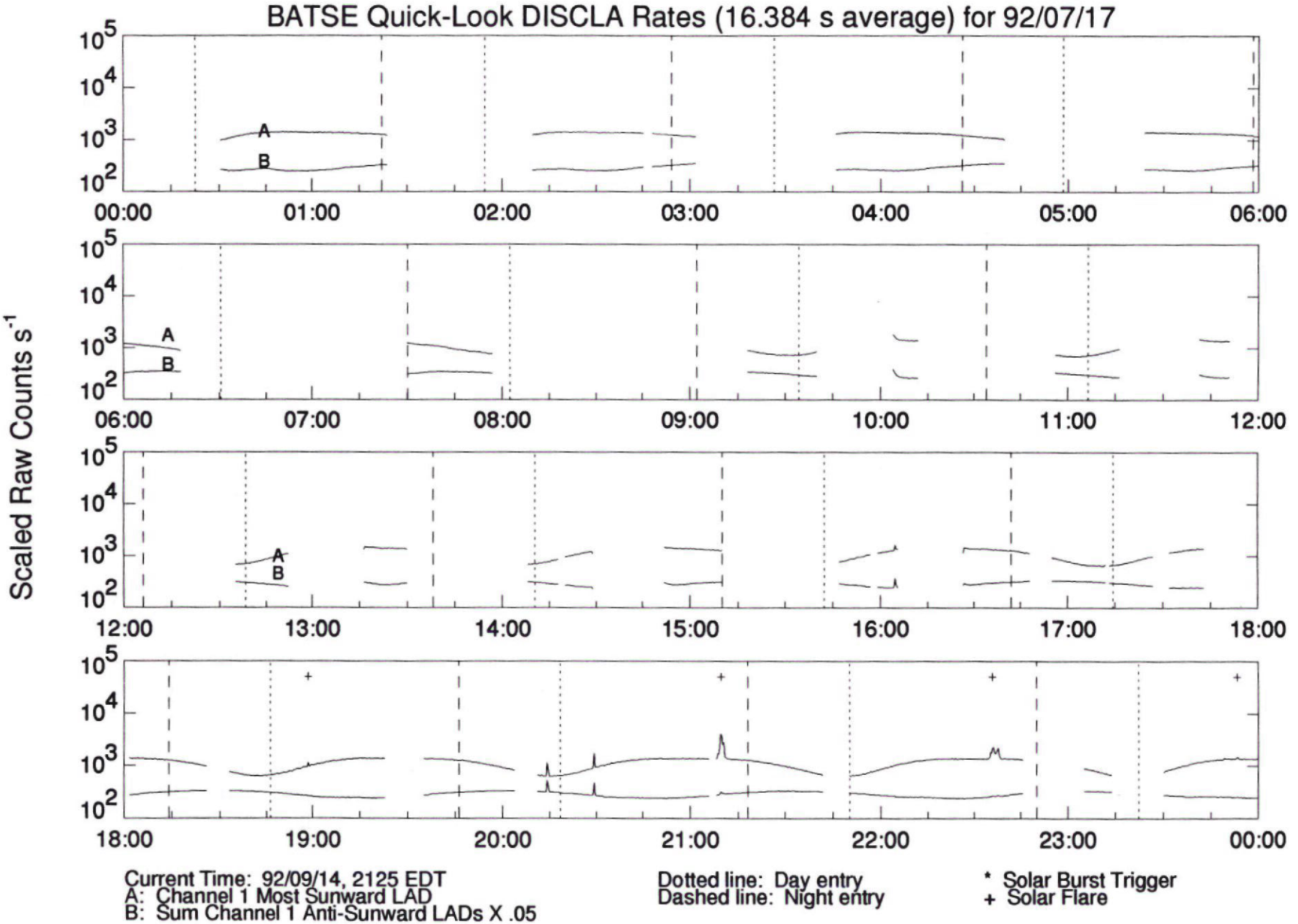
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

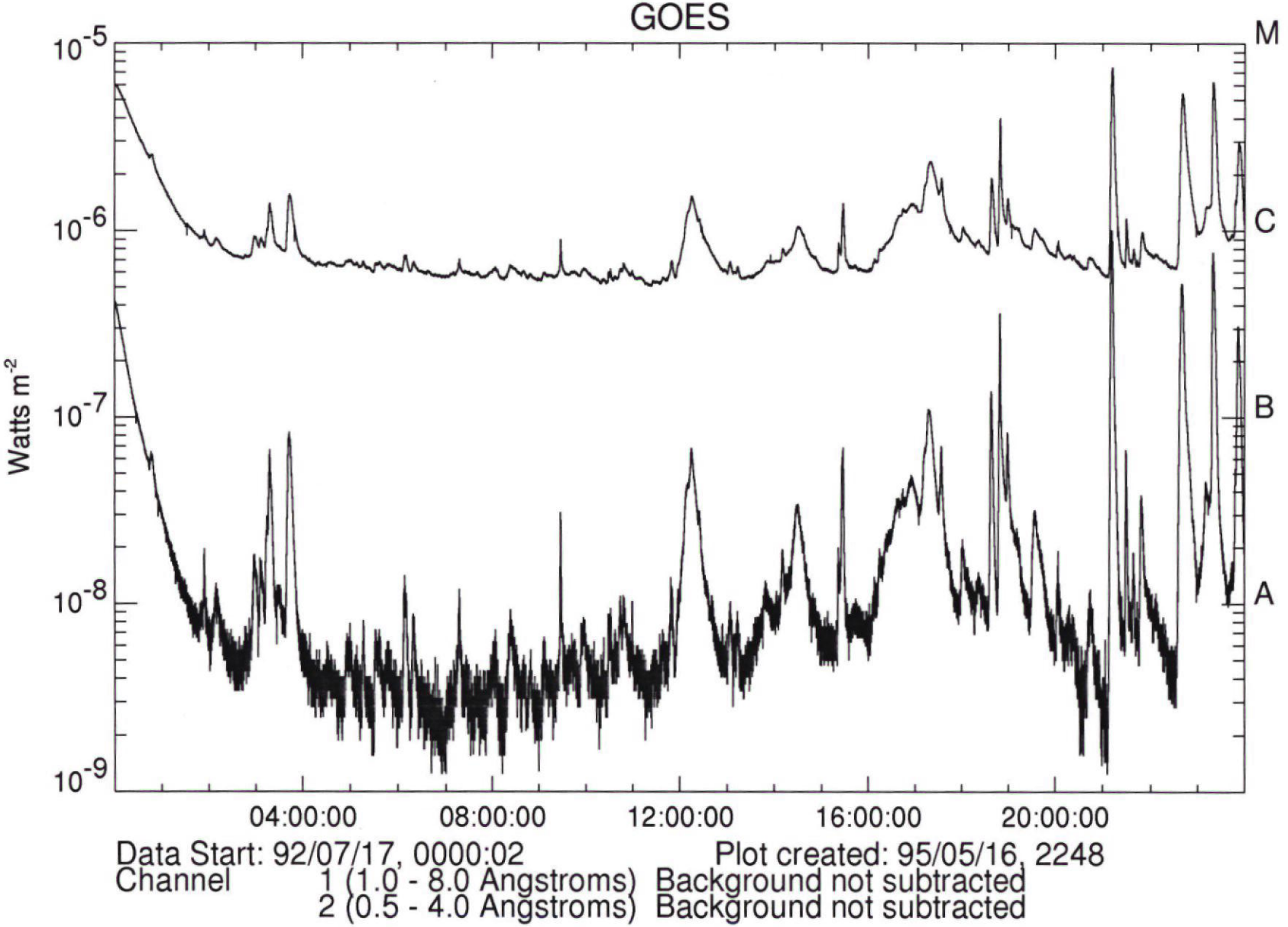
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

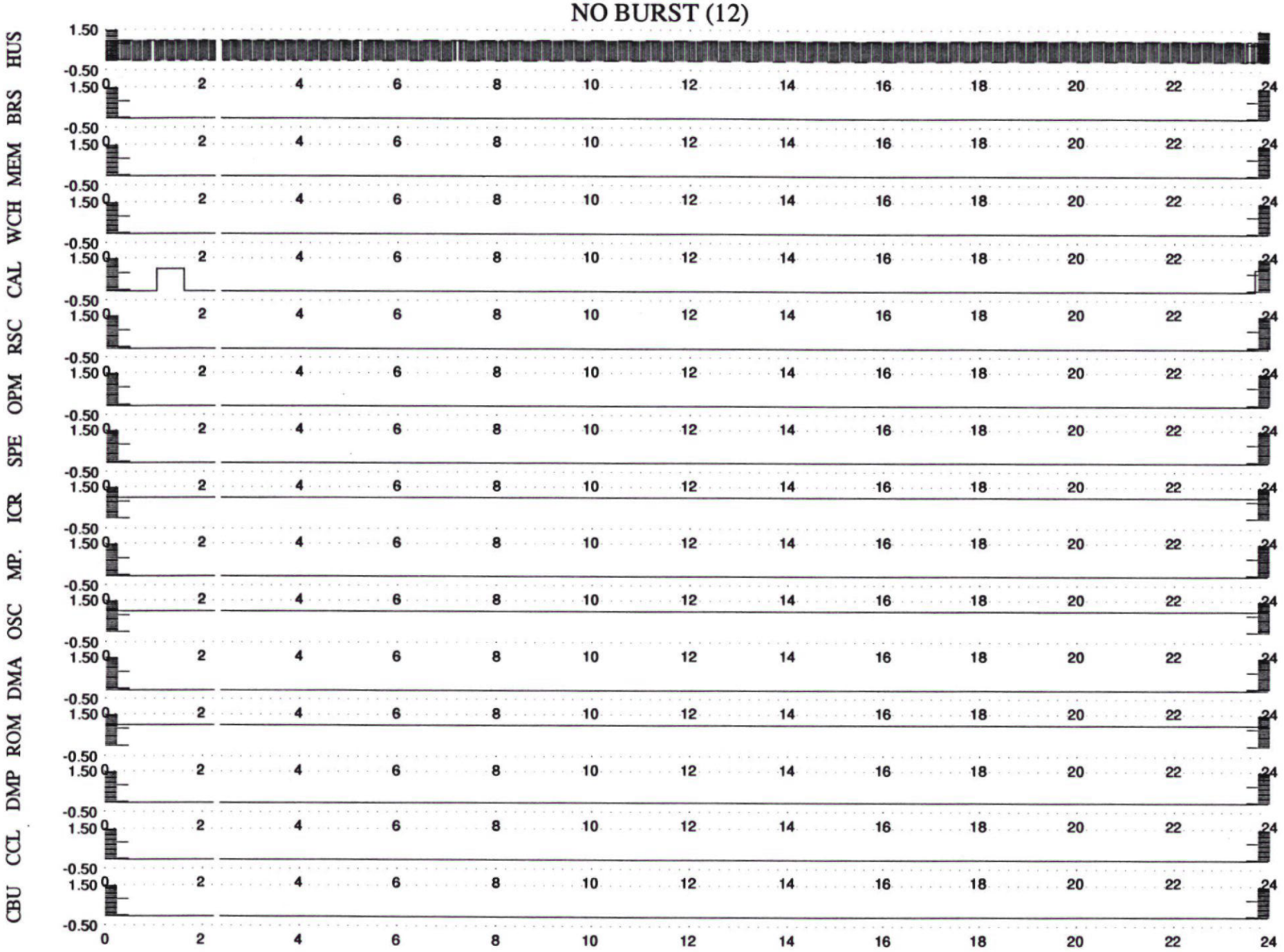
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
GOES C7.1 FLARE. INTENSE; NUMEROUS PEAKS OVER 100 SECOND DURATION.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/17
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
Current Time: 92/09/14, 2125 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

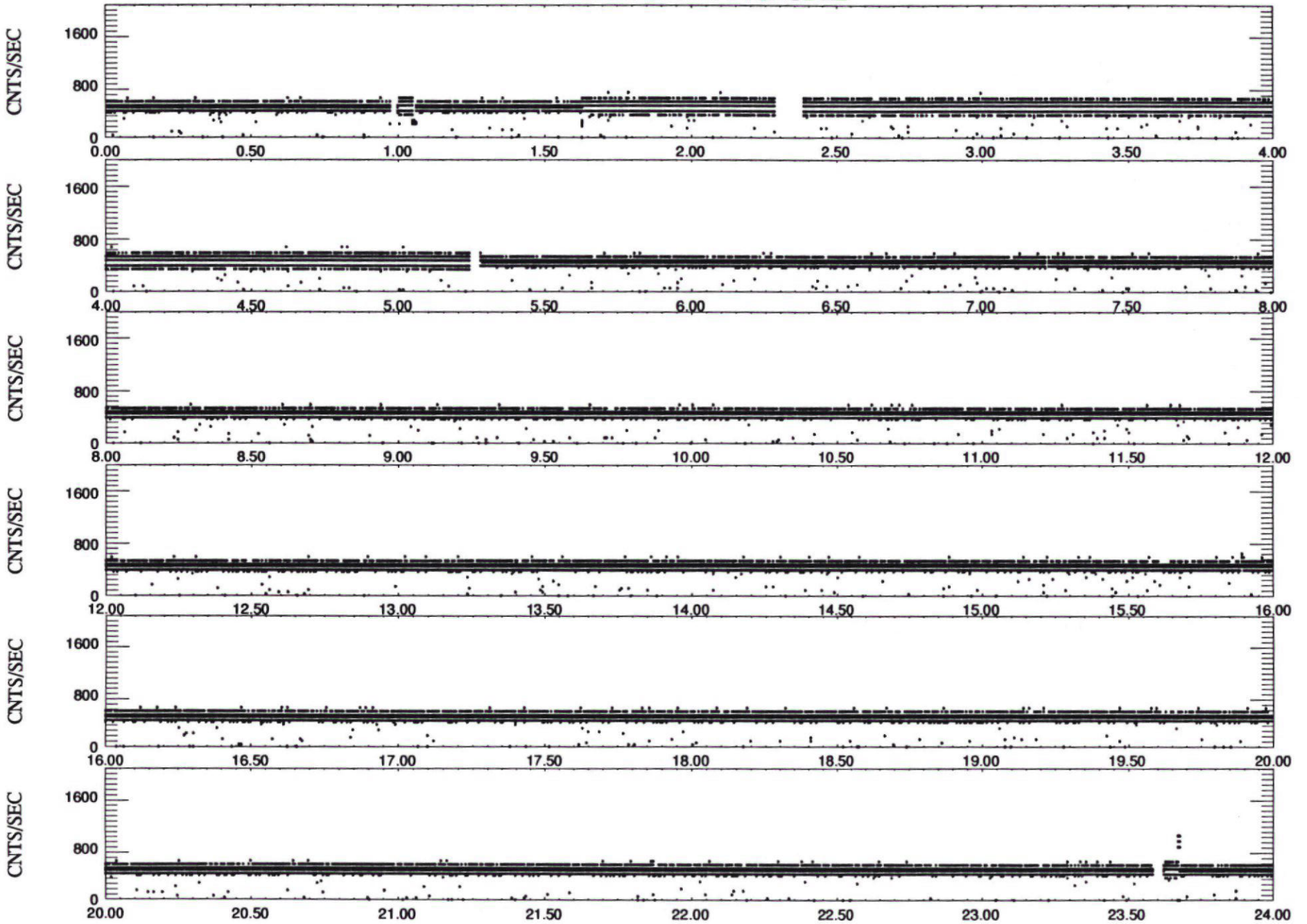

GOES
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/17, 0000:02
Plot created: 95/05/16, 2248
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 199, year 1992 to day 199, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 199, year 1992 to day 199, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From HORACK@ssl.msfc.nasa.gov Mon Jul 20 05:15:54 1992
Date: Mon, 20 Jul 1992 7:17:31 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01706

July 18

TIME: TJD=8821 SECONDS=5560.

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=92. AZIMUTH=18. ERROR= DEGREES

COMMENTS:
MODERATE SOLAR FLARE WITH GOES CLASSIFICATION C-5.1. LASTS APPROXMTLY. 80 SECONDS, WITH 60 SEC BEFORE TRIGGER. MAIN PART IS ~20 SEC IN DURATION WITH SOME TIME STRUCTURE. SEEN UP TO 300 KEV.

From HORACK@ssl.msfc.nasa.gov Mon Jul 20 05:18:25 1992
Date: Mon, 20 Jul 1992 7:20:06 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01707

TIME: TJD=8821 SECONDS=13186

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=175. AZIMUTH=48. ERROR= DEGREES

COMMENTS:
SHORT EVENT LASTING APPROX. 2 SECONDS. CURRENTLY CLASSIFIED AS A BURST.
OCCURRED ~1 MIN PRIOR TO DATA LOSS, SO DATA IS INCOMPLETE. SOME EVIDENCE
OF DETAILED STRUCTURE FROM THIS WEAK EVENT, SEEN UP TO 300 KEV IN ENERGY.

From HORACK@ssl.msfc.nasa.gov Mon Jul 20 10:26:43 1992
Date: Mon, 20 Jul 1992 12:27:56 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

BATSE BURST TRIGGER

NO.: 01707

TIME: TJD=8821 SECONDS=13186

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
THIS IS A CORRECTION TO THE PREVIOUS MESSAGE. #1707 HAS BEEN RECLASSIFIED
AS A PARTICLE EVENT AFTER INSPECTION BY THE BATSE TEAM. THE PREVIOUS CLASSI-
FICATION OF #1707 AS A BURST IS INCORRECT. PLEASE MAKE ANY CHANGES NECESSARY
TO REFLECT THIS. THANKS

****
CATSEARCH PROGRAM
****

BATSE BURST # 1708
EVENT OF 1992 JUL 18 DAY OF YEAR=200
EVENT CROSSING TIME AT BATSE : 52837. S. OR 14:40:37.0
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 21.200 2.200
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 18/ 7/ 92 IS:
RA= 151.999 DEC= 5.076 DIST= 6.093 AU
BATSE-ULYSSES DISTANCE = 911438745. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 49.69 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1966.95 SECS.
CROSSING TIME AT ULYSSES IS 54804. S. OR 15:13:23.9 +/- 482.35 SECONDS

RT

BATSE BURST TRIGGER
NO.: 01708

TIME: TJD=8821 SECONDS=52836 14:40:36

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
A MODERATE, BUT COMPLEX EVENT LASTING ABOUT 80 SECONDS. DATA IS INCOMPLETE, LOCATION NOT AVAILABLE AT THIS TIME, BUT SEEN BEST IN -Y DETECTORS. MAIN PART OF EMISSION AT TRIGGER + 40 SECONDS. NOT SEEN ABOVE 300 KEV.

BATSE BURST TRIGGER
NO.: 01708

TIME: TJD=8821 SECONDS=52836

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=62. AZIMUTH=283. ERROR= DEGREES

COMMENTS:
THIS IS AN ADDITION TO THE PREVIOUS #1708 MESSAGE. THIS BURST NOW HAS A LOCATION. PLEASE MAKE ANY CHANGES NECESSARY TO REFLECT THIS UPDATE

Helio. corr. removed

Date: Oct 6 '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?

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)?

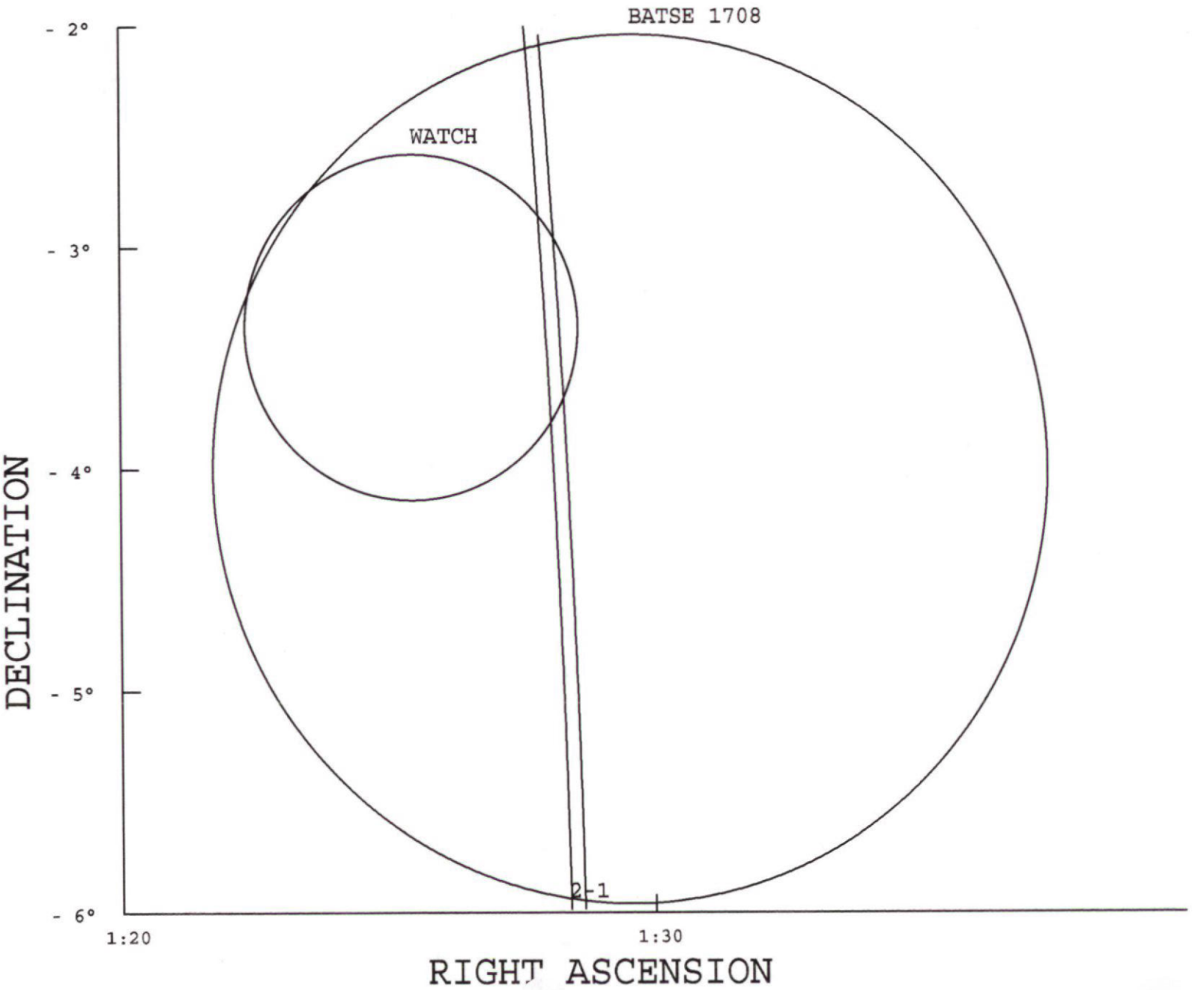
☐ 2000 coordinates used?

☐ Geocentric time used?

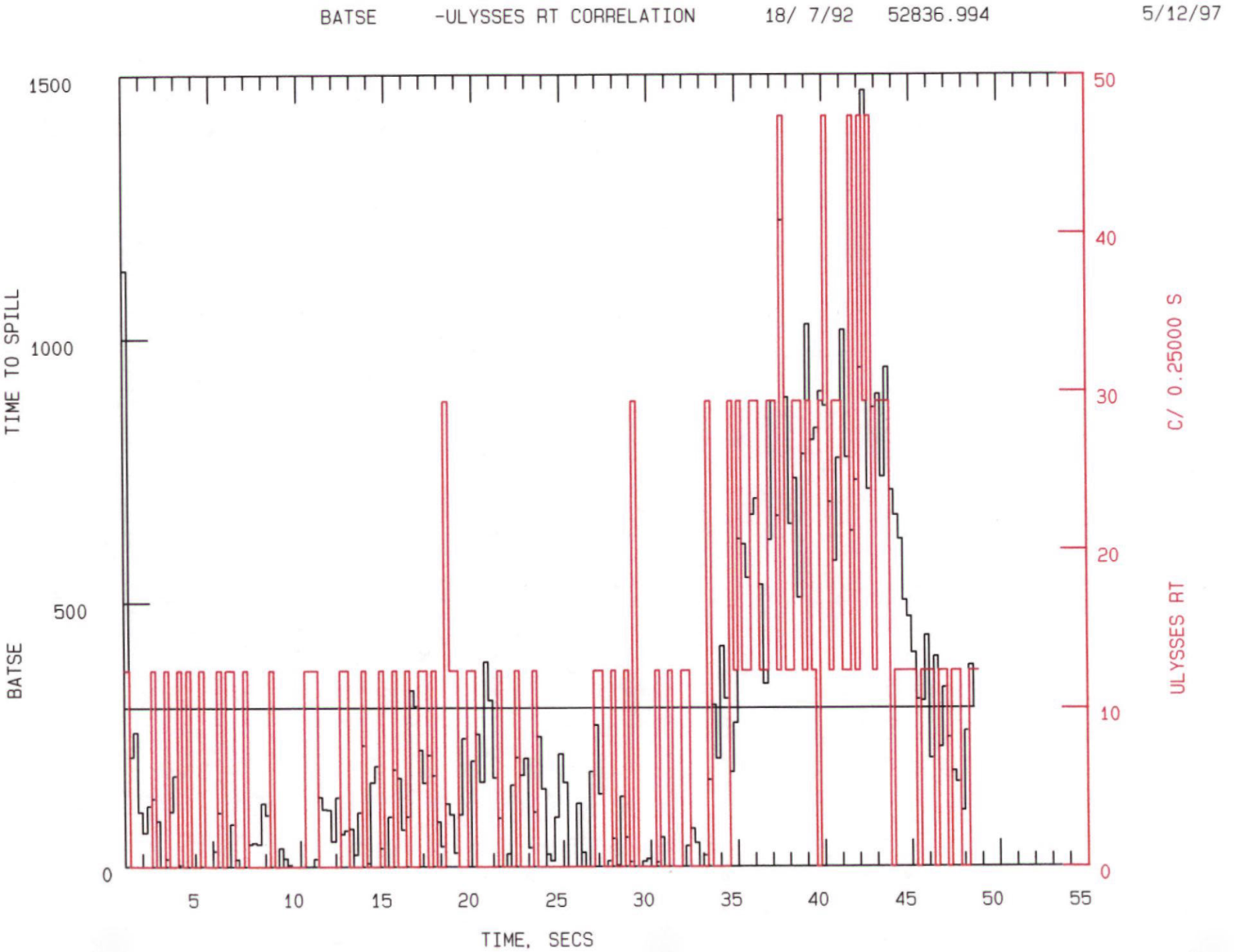
☐ ACCESS database updated?

EVENT OF JUL 18, 1992 15:12

5/12/97

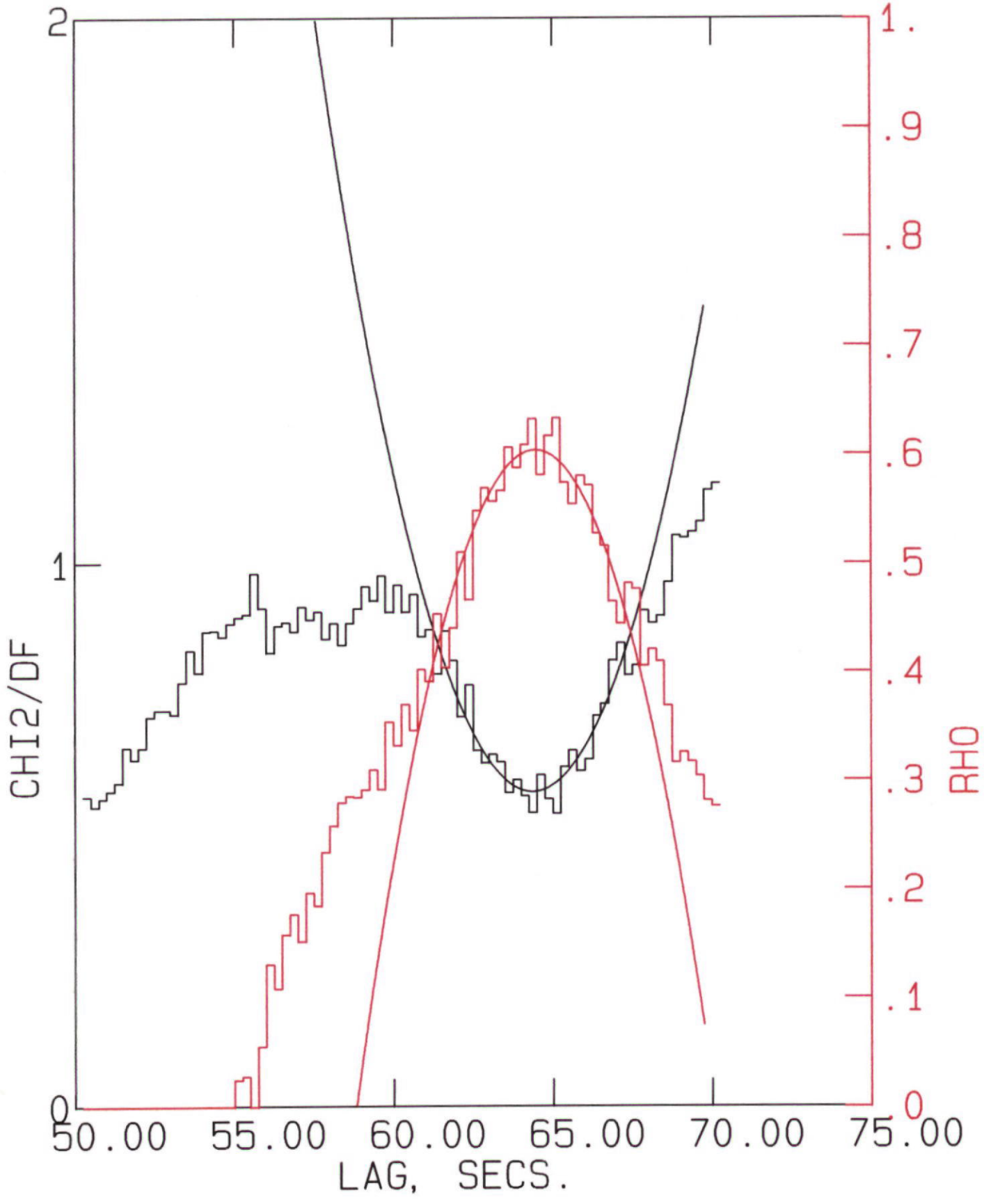


N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE


BATSE -ULYSSES RT CORRELATION 18/ 7/92 52836.994 5/12/97
1500
1000
500
0
TIME TO SPILL
BATSE
50
40
30
20
10
0
C/ 0.25000 S
ULYSSES RT
5
10
15
20
25
30
35
40
45
50
55
TIME, SECS

5/12/97

BATSE -ULYSSES RT CORRELATION 18/ 7/92 52836.994



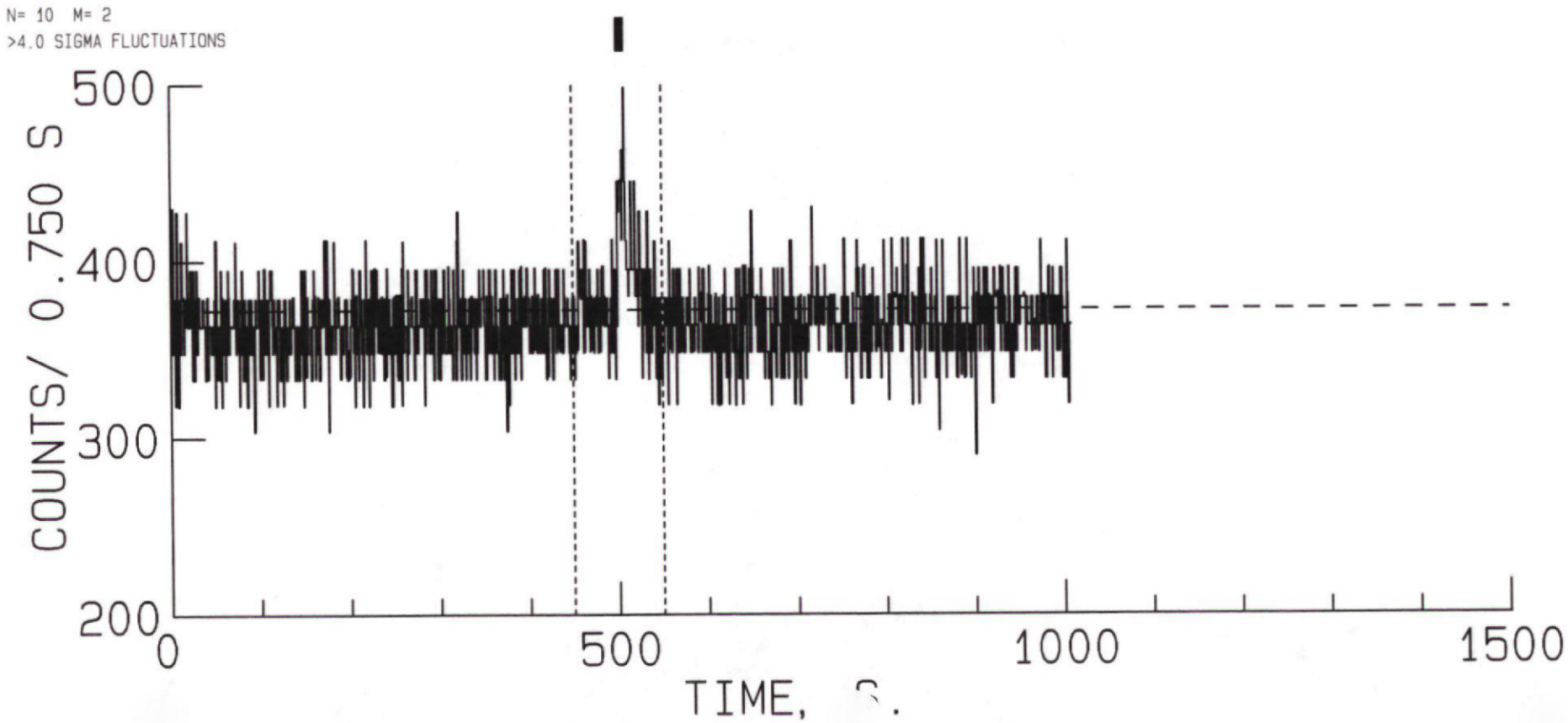
ULYSSES RT

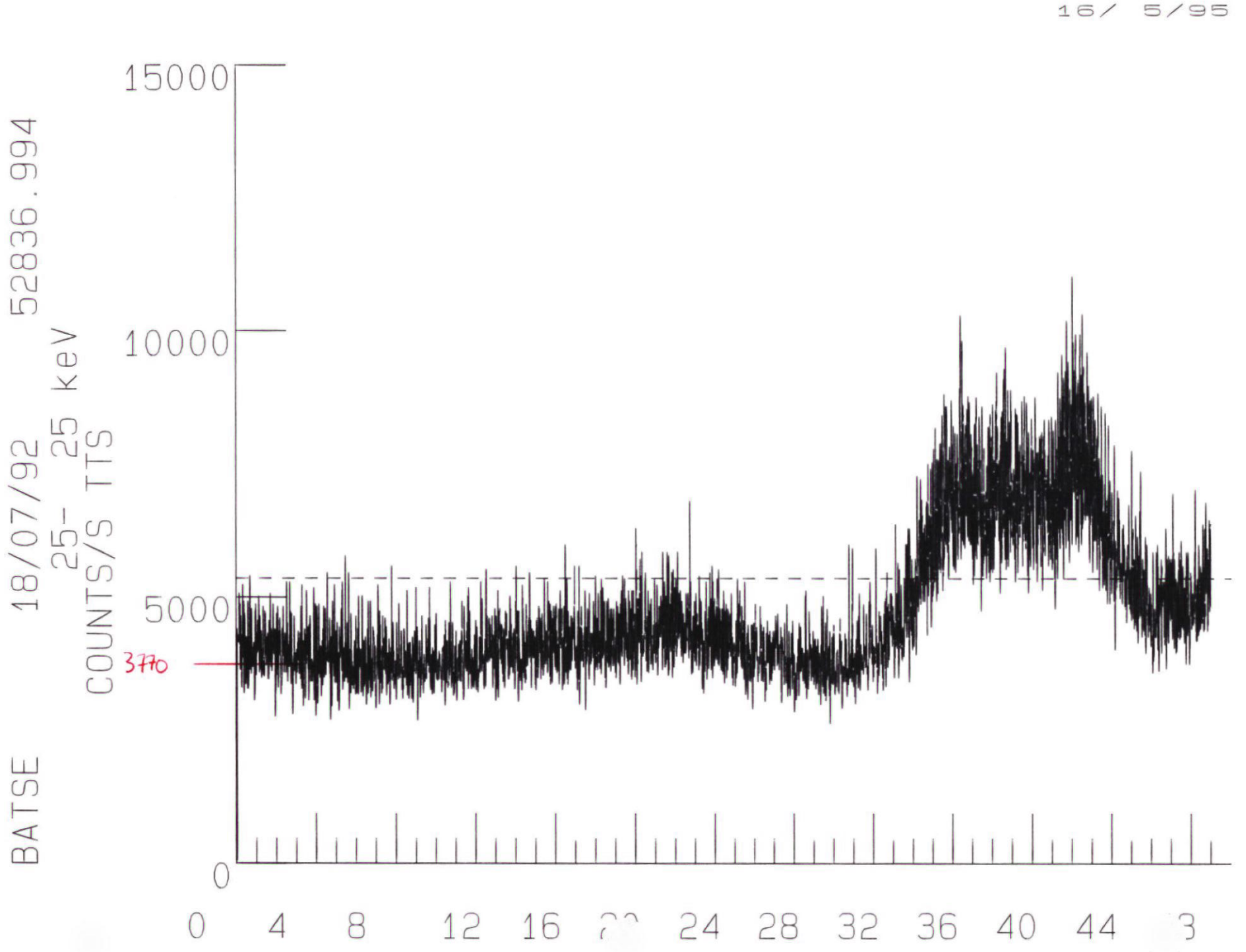
5/12/97

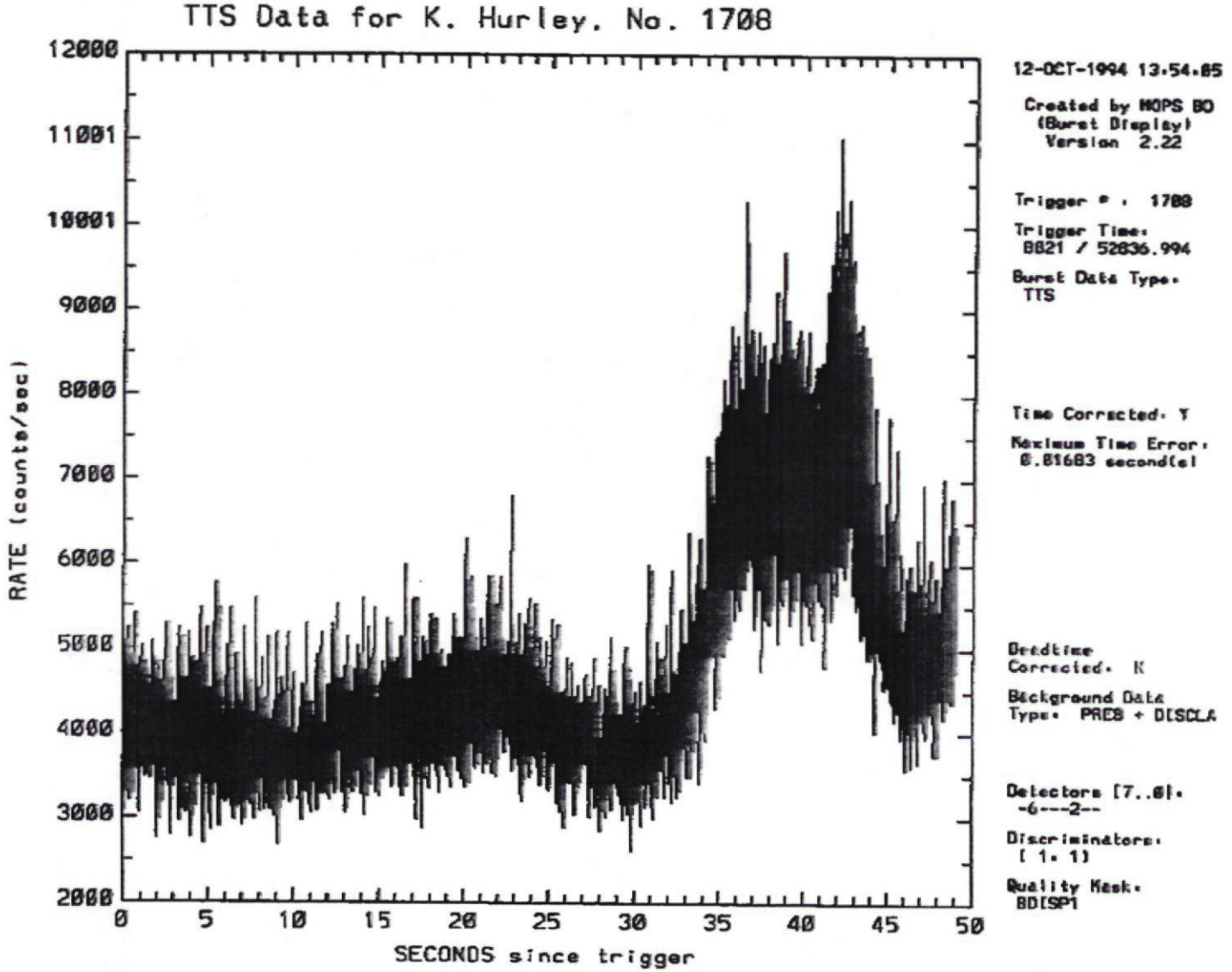
18/ 7/92 54360.181 s

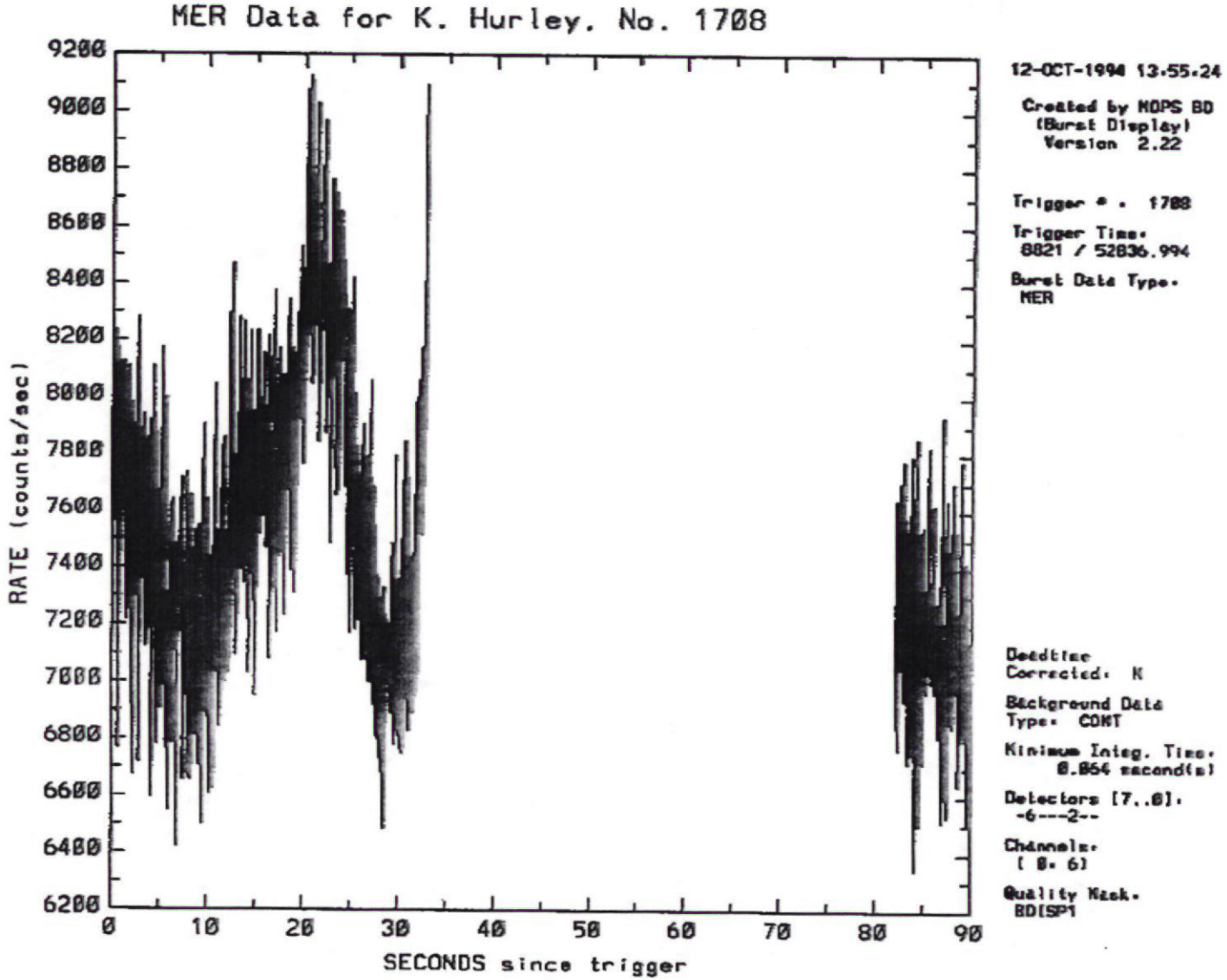
0.250 S INTERVALS REGROUPED BY 3

22- 152 keV




16/ 5/95
BATSE 18/07/92 52836.994
25- 25 keV
COUNTS/S TTS
15000
10000
5000
3770
0
0 4 8 12 16 20 24 28 32 36 40 44


TTS Data for K. Hurley. No. 1708
RATE (counts/sec)
SECONDS since trigger
12000
11001
10001
9000
8000
7000
6000
5000
4000
3000
2000
0
5
10
15
20
25
30
35
40
45
50
12-OCT-1994 13.54.85
Created by MOPS BD
(Burst Display)
Version 2.22
Trigger # : 1708
Trigger Time:
8821 / 52836.994
Burst Data Type:
TTS
Time Corrected: Y
Maximum Time Error:
0.81683 second(s)
Deadtime
Corrected: N
Background Data
Type: PRES + DISCLA
Detectors [7..0]:
-6---2--
Discriminators:
[1. 1]
Quality Mask:
BDISP1


MER Data for K. Hurley. No. 1708
RATE (counts/sec)
9200
9000
8800
8600
8400
8200
8000
7800
7600
7400
7200
7000
6800
6600
6400
6200
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
12-OCT-1994 13:55:24
Created by MOPS BD
(Burst Display)
Version 2.22
Trigger # . 1708
Trigger Time:
8821 / 52836.994
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
-6---2--
Channels:
[0: 6]
Quality Mask:
BDISP1

```
From root Wed Sep  7 07:48  1994
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA06345; Wed, 7 Sep 94 07:48:09
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA24196; Wed, 7 Sep 1994 07:59:00 +0800
Date: Wed, 7 Sep 1994 07:59:00 +0800
Message-Id: <9409071459.AA24196@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 7 Sep 1994 11:04:04 -0400 (EDT)
Mime-Version: 1.0
Content-Type: text/plain; charset="us-ascii"
To: KHURLEY@space6.ssl.berkeley.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: Ulysses 3-spacecraft event input data
Content-Length: 2811
Status: R

KEVIN:
Here is the 2000-equinox and Sun-time conversion table for the data you sent,
with accuracy to one second and/or light second.  I am messing around with a
few events, but still don't have Laros data, as you know, for the last few.
No surprises or major errors have been uncovered.  Question:  Anything new
or of breakthough significance from the conferences?  -  TLC
----------------
 1991  4 21 113.2608  23.4971         34040.305
           114.0119  23.3855 -0.135 34040.170  1378.693
 event
 1991  4 30 116.1729  22.9446         60378.427
           116.9185  22.8202 -0.142 60378.285  1488.041
   ent
   91  5  3 116.9858  22.7835         24143.572
           117.7299  22.6556 -0.144 24143.428  1518.173
 event
 1991  5 22 123.0661  21.4768         43556.351
           123.7977  21.3234 -0.149 43556.202  1737.717
 event
 1991  6 27 134.1165  18.6189         15334.664
           134.8236  18.4239 -0.124 15334.540  2103.168
 event
 1991  7 17 140.0115  16.8382         17265.301
           140.7054  16.6238 -0.089 17265.212  2272.113
 event
 1991  8 14 147.8796  14.2022         70976.031
           148.5569  13.9655 -0.016 70976.015  2454.177
 event
 1991 11  4 164.7180   7.7939         52695.431
           165.3682   7.5249  0.217 52695.648  2527.808
 event
 1991 11  9 165.2888   7.5681         11321.862
           165.9383   7.2984  0.224 11322.086  2514.175
 event
 1991 11 18 166.3305   7.1593         66112.979
           166.9789   6.8884  0.236 66113.215  2480.950
 event
 1991 11 26 166.9834   6.9076         43717.172
           167.6312   6.6360  0.241 43717.413  2450.974
  ent
 1992  3 11 156.4982   9.1383          7038.075
           157.1561   8.8824 -0.055  7038.020  2213.119
 event
```

```
 1992  3 25 153.5174   9.3668         64261.613
           154.1779   9.1169 -0.118 64261.495  2260.354
 event
 1992  4  6 151.5806   9.4338         11128.491
           152.2426   9.1882 -0.162 11128.329  2318.519
 event
 1992  5  1 148.8008   9.1566         75040.670
           149.4640   8.9176 -0.234 75040.436  2497.670
 event
 1992  5 17 148.2303   8.7103         10549.835
           148.8928   8.4728 -0.257 10549.578  2619.504
 event
 1992  5 25 148.2227   8.3959         14411.494
           148.8844   8.1584 -0.261 14411.233  2684.313
 event
 1992  7 11 151.3011   5.5653         58453.215
           151.9542   5.3203 -0.197 58453.018  3009.551
 event
 1992  7 18 152.1018   5.0060         79135.445
           152.7533   4.7592 -0.175 79135.270  3043.801
 event
 1992  7 20 152.2398   4.9105          9807.222
           152.8911   4.6634 -0.171  9807.051  3048.967
 event
 1993  7  6 145.7214 -11.6627         20275.572
           146.3295 -11.8936 -0.171 20275.401  2546.013
-------------------------------------------------------

-- T. L. Cline ----- LHEAVX::CLINE
```

RK- KH Nov 11 93

PVO Replies to the WATCH/Ulysses Huntsville ms

8 Apr 91 N/O - PVO in periapsis mode. No RT data, and definitely no trigger

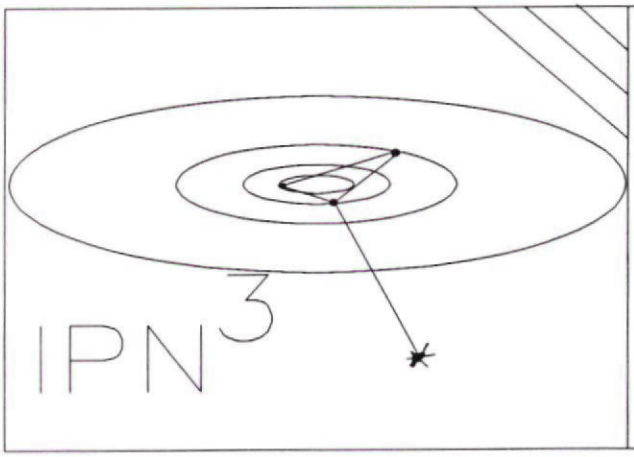
18 July 92 - N/O - Data gap - NO RT data, definitely no trigger

24 Aug 92 N/O - OFF

3 Sep 92 N/O No RT data, no trigger

25 Sep 92 N/O - OFF

Note: 8 Oct was lost data. Instrument returned ~ 90% data for the 1.5 hrs prior to that



FAX FROM K. HURLEY
UNIVERSITY OF CALIFORNIA
SPACE SCIENCES LABORATORY
BERKELEY, CA. 94720
PHONE: (510) 643-9173
FAX: (510) 643-8640 (OFFICE),-8302 (SECT'Y)
E-MAIL: khurley@sunspot.ssl.berkeley.edu

TO: S. Brandt, DSRI
FAX #:
DATE: October 11, 1993
TOTAL NUMBER OF PAGES: 2

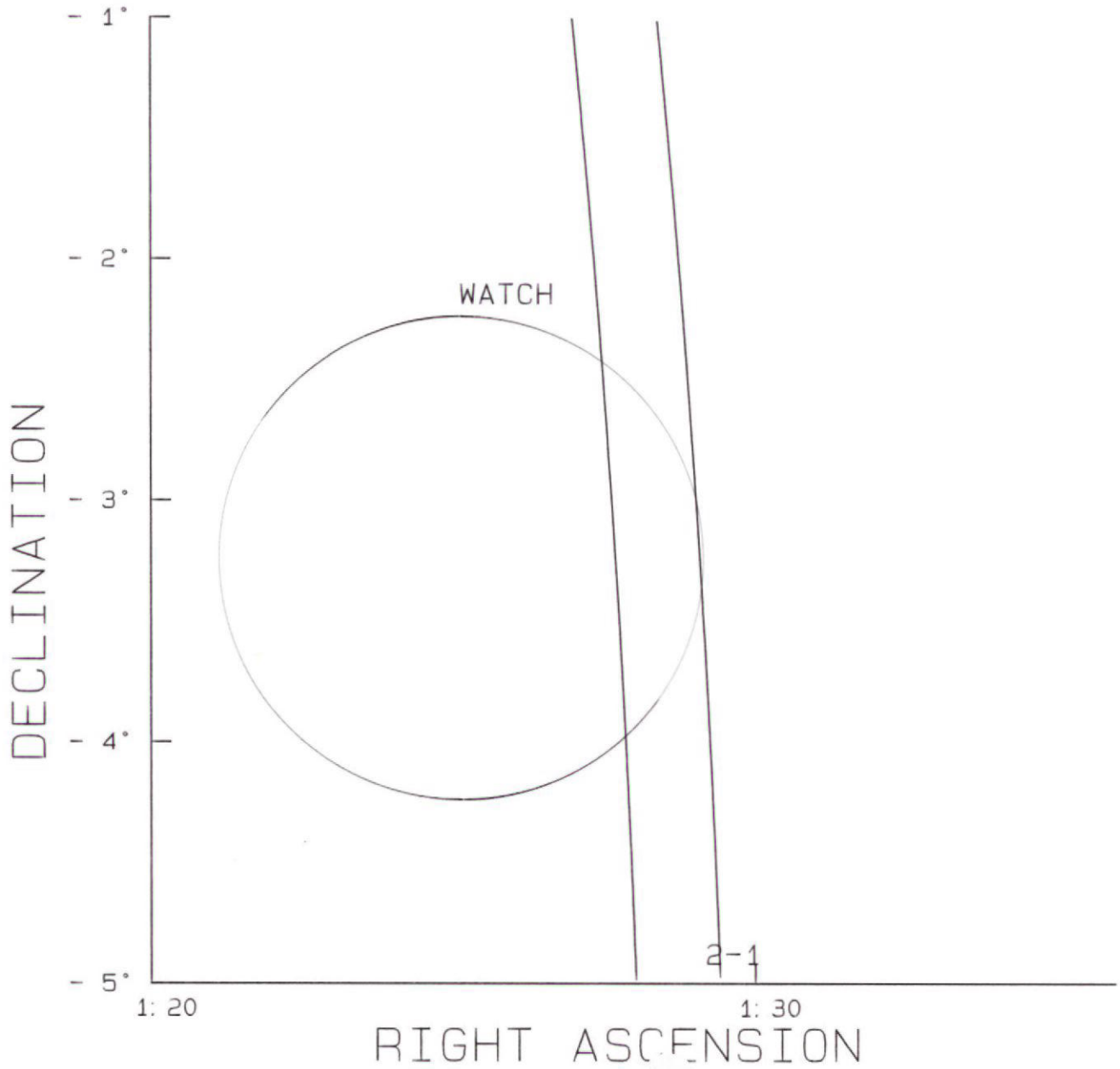
Thanks for the GRANAT coordinates. I'm sending a new plot of the July 18 localization. The change is mostly due to the fact that I used the old WATCH error box in my last fax; adding the GRANAT coordinates didn't have much of an effect.

FAXED 10/11 fc

EVENT OF JUL 18, 1992 15: 13

11/10/93

EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 WATCH



WATCH-GRANAT Gamma Ray Bursts. Niels Lund, Alberto Castro-Tirado & Soren Brandt,
Danish Space Research Institute.

Version 3.0 sep. 12 1993.

The data given below is pre-publication data. The data should not be quoted without prior consultations with the WATCH-GRANAT collaboration. The list is prepared in support of searches for counterparts or multi-spacecraft identifications. The positions given for the localized sources are in most cases based on the fitted mean attitude of GRANAT. The positional uncertainty is 1 degree error circle radius.

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)	Q	t	comments	#Wm	sdp	theta	phi
1	900118	17:40:47	33	280	225	1.1	11h36.3m -44.7	F3	8	4 peaks	0423	28	22.42	26.50
2	900126	18:04:27	146	25	11	0.5	08h44.6m -38.0	F3	r	2 peaks, soft tail	0481	70	21.35	138.49
3	900222	11:56:34	38	33	15	1.5	22h29.9m 35.1	F3	1	1 peak, soft tail	0650	25	20.16	144.39
4	900708	11:30:20	36	160	95	2.0	12h22.3m 31.4	F3	1	3 peaks	1490	29	58.49	90.41
5	900901	01:35:46	36	230	110	4.0	18h19.4m -44.8	F3	4	4 peaks	1811	28	39.58	167.23
6	900925	20:25:22	18	45	42	1.2	8h56.0m -35.3	F3	1	Structured event	1970	13	50.37	264.93
7	900929	01:49:48	40	180	180	1.3	11h12.9m -06.6	F3	r	2 groups of spikes	1990	32	44.31	344.08
8	901009	00:15:50	30	11	9	3.5	23h12.1m +29.6	F3	1	1 peak	2041	17	52.34	319.13
9	901116	01:42:08	19	15	15	2.2	02h36.7m +25.1	F3	8	1 peak	2241	11	53.92	15.72
10	901219	21:52:52	24	50	35	2.2	23h06.9m -53.9	F3	8	1 peak	2490	18	57.94	83.18
11	910122	15:13:35	28	127	-	0.0			1	Soft, structured	2670	25	42.26	142.13
12	910219	11:45:24	43	67	54	0.7	14h12.5m 59.0	F3	r	2 peaks	2813	29	25.97	230.72
13	910310	13:02:05	81	41	40	2.5	12h11.9m 06.4	F3	1	3 peaks	2931	40	51.36	351.15
14	910627	04:29:24	20	11	-	0.4	(13h14m -03.2)	12	1	1 peak. X-burst?	3643	18	20.70	262.04
15	910821	10:33:56	21	66	66	0.5	23h31.8m -72.6	F3	4	Struct. + sharp pk.	3991	14	51.52	116.19
16	911016	11:03:30	22	160	-	0.1	19h47.8m -04.8	F3	8	very soft, 2 peaks	4381	17	32.03	227.19
17	911202	20:28:59	41	20	11	0.7	11h27.1m -23.2	F3	1	Single struct. peak	4623	16	35,87	30.52
18	911209	18:36:11	42	30	12	1.8	17h26.4m -44.4	F3	r	4 peaks	4680	28	34.53	320.77
19	920311	02:20:37	42	40	40	1.3	08h45.4m -36.4	F3	8	1 peak	5201	37	51.39	83.56
20	920714	13:04:51	36	40	36	2.1	14h41.6m -30.0	F3	8	1 peak	5921	28	43.75	202.33
21	920718	14:41:15	30	90	30	0.4	01h22.6m -3.5	F3	8	1 odd peak	5953	20	17.97	302.95
22	920718	21:32:46	40	7	5	1.8	19h43.0m -56.5	F3	1	1 dull peak	5951	29	24.43	93.23
23	920723	20:03:10	186	13	8	3.9	19h04.5m 27.4	F3	1	1 dull peak	5991	79	33.49	208.18
24	920902	00:29:04	49	13	9	4.6	18h36.0m -22.8	F3	1	1 dull peak	6163	30	49.14	320.14
25	920903	01:36:15	23	154	103	2.0	19h43.0m 35.2	F3	4	Main peak + spikes	6173	14	38.94	230.29
26	920903	23:29:05	92	24	15	2.5	20h06.3m 21.7	F3	r	1 peak (low E. str)	6183	49	43.53	249.60
27	920925	20:30:42	25	120	120	2.5	13h27.0m 43.1	F3	1	3 peaks	6313	13	51.98	115.24
28	920925	22:49:14	43	347	340	1.3	22h02.0m 24.0	F3	4	struct, soft tails	6311	32	43.03	65.02

1950
20.650 -3.5 →
2000
21.284 -3.240
295.750 -56.5 →
296.769 -56.379

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)	Q	t	comments	#Wm

comments:
UT-time: Time for peak count rate in Med CsI band. Note time resolution!
Times marked with an asterisk are not yet well calibrated to UT.
sd: Standard deviations above background (in count rates).
l(s): Duration in 6-15 keV band (Low NaI channel)
m(s): Duration in 15-180 keV band (Med CsI channel)
m/l: Hardness: (sd(Med NaI)+sd(Med CsI)) / sd(Low NaI)
posit.: All events in the above list (except 910627) have been localized consistently at least twice based on independent data sets. We are therefore convinced of their true cosmic nature, even without confirming evidence from other spacecraft. GRB 910627 has been included in the list because it is confirmed to be cosmic by many other instruments, and the WATCH position is quite secure due to the good signal to noise ratio.

Q: Type of attitude data: I2: initial pointing at obs. start. 2 axes (poor, syst. error: +-0.8 deg)
A2: actual pointing at burst time. 2 axes (better, syst. error: +-0.5 deg)
F3: fitted mean pointing for TM session. 3 axes (TBD (+- 0.5 deg?))

t: Best time resolution available: 1, 4, 8, 16 motor rotations (approx. 0.9 s)
m: 1 motor rotation in 4 ms steps
r: raw memory (4 ms steps)

#Wm Telemetry session and WATCH unit identifier

sdp: Standard deviations above background in final modulation pattern used for source localization. As a rough guide, the statistical uncertainty in the source position is 240/sdp arcminutes. In most cases the systematic errors dominates the error budget.

theta and phi: Source position in WATCH instrument coordinates.

From nlu@dmi.min.dk Mon Oct 11 04:06:20 1993
From: nlu@dmi.min.dk (Niels Lund)
Subject: J-P Roques told me that you did not receive my message, please ack (fwd)
To: khurley@sunspot.ssl.berkeley.edu
Date: Mon, 11 Oct 1993 11:09:29 +0000 (WET)
X-Mailer: ELM [version 2.4 PL0]
Content-Type: text
Content-Length: 625

> Subject: J-P Roques told me that you did not receive my message, please ack
>   thisone
>
> Dear Niels,
>
> please find enclosed the GRANAT positions you asked for :
>
> Date : 1992/07/18   14h 41m 15.5s
> Position (km) :   X = -23404.1   Y= 36890.1   Z = 139571.7
>
> Date : 1992/09/03   01h 36m 15.5s
> Position (km) :   X = -96043.5   Y= 105000.3   Z = 87163.0
>
> Date : 1992/09/25   22h 49m 14.5s
> Position (km) :   X = 6912.6   Y= 5226.3   Z = 117601.3
>
>
> Note that the position is in the geocentric equatorial system, in equinox J2000.0
>
> Best Regards,
>
> J-L Atteia
>

****
PROGRAM WATEPH
****

X(2000 ~~1950~~)	Y(2000 ~~1950~~)	Z(2000 ~~1950~~)	DISTANCE	RA(2000 ~~1950~~)	DEC(2000 ~~1950~~)	~~RA(2000) DEC(2~~
-23404.100	36890.100	139571.700	146249.413	122.392	72.619	~~123.783 72.4~~

497	517	540	556	501	533	491	531	515	518
544	523	531	515	480	528	528	557	543	554
533	539	541	518	531	534	493	525	475	511
505	506	562	505	501	542	525	532	536	529
518	515	527	542	541	515	491	515	517	547
507	507	488	518	523	488	554	533	523	529
588	507	511	569	486	531	544	540	515	548
513	503	546	512	527	501	531	523	550	508
518	552	499	514	502	501	549	525	510	523
533	510	545	547	503	533	549	502	535	525
516	523	556	522	507	544	521	544	549	476
501	517	520	486	513	545	531	474	534	506
476	538	521	540	482	509	537	531	508	487
530	482	518	545	510	492	552	495	552	507
530	536	563	543	492	547	509	525	500	540
535	541	534	517	514	517	506	528	503	523
536	502	513	525	519	505	463	546	524	500
548	537	506	498	545	509	503	533	476	513
535	499	529	485	514	548	462	531	518	511
523	556	554	494	465	551	507	566	497	492
541	565	552	543	531	549	487	512	518	521
530	537	545	519	538	483	476	520	524	570
476	537	507	510	520	556	516	498	539	524
494	542	512	539	487	491	506	537	510	529
490	523	525	510	496	502	541	493	526	535
532	475								

****

****

GRB 920718A WATCH data. (W5953)

Low energy count rate (6-15 keV)
UT start time: ' 1992 7 18 14 22 12.880
UT end time: ' 1992 7 18 14 52 52.348
Channel width: 7.18542 s

2139	2107	2092	2140	2125	2114	2139	2122
2120	2148	2137	2099	2106	2174	2140	2191
2190	2089	2128	2132	2159	2226	2200	2205
2116	2067	2151	2135	2137	2101	2147	2223
2217	2147	2117	2009	2109	2200	2212	2207
2119	2127	2094	2136	2176	2102	2038	2203
2206	2180	2128	2143	2081	2099	2170	2189
2168	2124	2152	2158	1979	2109	2168	2083
2186	2133	2144	2139	2150	2238	2152	2158
2250	2194	2138	2103	2162	2195	2219	2207
2197	2192	2229	2149	2220	2179	2180	2153
2202	2252	2179	2137	2164	2312	2268	2238
2188	2232	2192	2310	2183	2220	2172	2213
2222	2215	2191	2097	2183	2222	2229	2240
2210	2224	2231	2184	2162	2243	2142	2160
2180	2179	2283	2219	2231	2197	2172	2193
2188	2151	2255	2327	2182	2344	2174	2141
2214	2262	2224	2217	2190	2189	2258	2266
2310	2147	2183	2285	2185	2241	2253	2234
2223	2389	2447	2352	2388	2410	2747	3319
2889	2704	2492	2494	2425	2393	2199	2249
2238	2126	2296	2296	2277	2228	2176	2239
2301	2254	2240	2246	2266	2294	2212	2240
2220	2242	2279	2174	2326	2252	2220	2288
2239	2297	2261	2240	2240	2322	2277	2304
2266	2229	2198	2191	2278	2316	2367	2306
2291	2308	2265	2271	2248	2262	2228	2177
2145	2264	2308	2264	2221	2263	2140	2289
2264	2321	2322	2254	2299	2328	2179	2230
2328	2370	2319	2281	2328	2252	2275	2262

2312 2313 2127 2221 2330 2265 2290 2317
2252 2234 2278 2277 2283 2283 2301 2217

Medium energy count rate (15-180 keV)
UT start time: ' 1992 7 18 14 22 12.880
UT end time: ' 1992 7 18 14 52 52.348
Channel width: 7.18542 s
^

1845	1925	1852	1809	1805	1945	1850	1907	1864	1959
1909	1901	1889	1902	1885	1961	1944	1842	1862	2024
1903	1919	1990	1919	1913	1899	1985	1961	1979	1968
1935	1898	1857	1915	1962	1963	1899	1845	2004	1965
1950	1871	1929	1927	1948	1845	2001	1900	1896	1946
1915	1941	1912	1936	1932	1856	1926	1860	1942	1897
1988	1964	1927	1852	1947	1912	1951	1978	1878	2021
1989	1974	2030	1961	2072	2024	2020	1954	1959	2040
1983	2017	1955	1994	2031	2045	2024	2030	2023	2006
1994	2017	1973	1973	2065	1960	1996	2041	2040	2017
2041	1989	2098	2046	2045	1904	1972	2063	2039	1995
2017	2006	2058	1958	2020	2066	2028	2064	2068	2078
1989	1998	2057	2066	2196	2027	2024	1965	2074	2034
2025	2084	2018	2021	2082	2007	2013	2007	2124	2086
2080	2040	2076	2090	2093	2083	2107	2124	2110	2059
2140	2123	2055	2126	2037	2098	2153	2021	2233	2402
2212	2214	2110	2129	2018	2062	2062	2086	2051	2077
2050	2147	2162	2159	2138	2083	2161	2110	2163	2169
2172	2071	1958	2096	2108	2120	2130	2103	2141	2152
2179	2212	2145	2189	2173	2196	2139	2246	2209	2161
2131	2120	2172	2177	2092	2124	2145	2257	2202	2074
2068	2147	2071	2027	2040	2119	2177	2148	2138	2182
2210	2134	2079	2207	2165	2203	2087	2168	2159	2143
2224	2090	2171	2107	2131	2204	2243	2142	2152	2185
2216	2219	2090	2140	2161	2111	2243	2199	2232	2137
2123	2143	2214	2116	2152	2061				

****
WATCH-EURECA Gamma Ray Bursts. Niels Lund, Soren Brandt & Alberto Castro-Tirado,
Danish Space Research Institute.

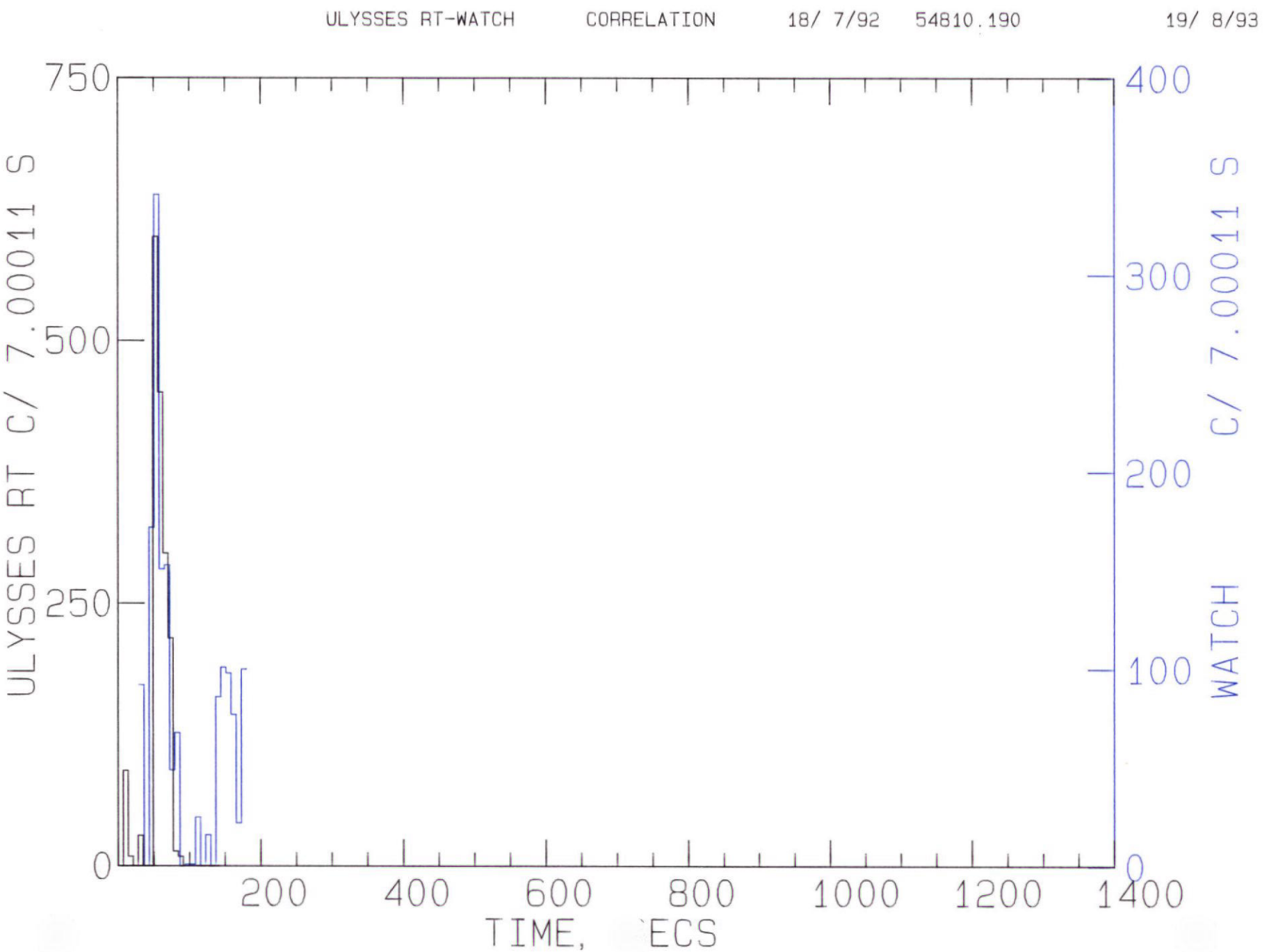
Version 1.0 Aug. 9. 1993.

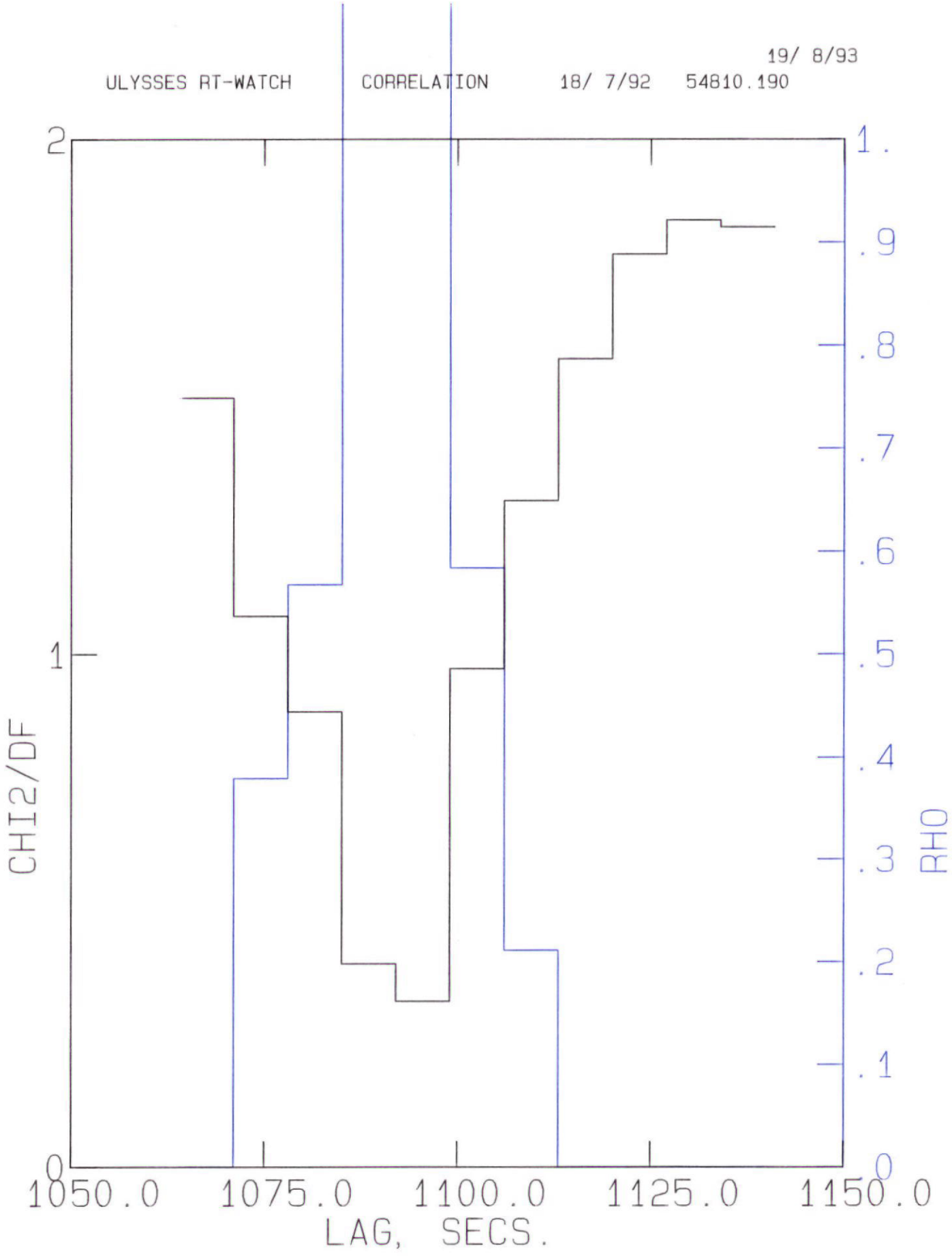
The data given below is pre-publication data. The data should not be quoted without prior consultations with the above authors. The list is prepared in support of searches for counterparts or multi-spacecraft identifications.
The positional uncertainty is 1 degree error circle radius.

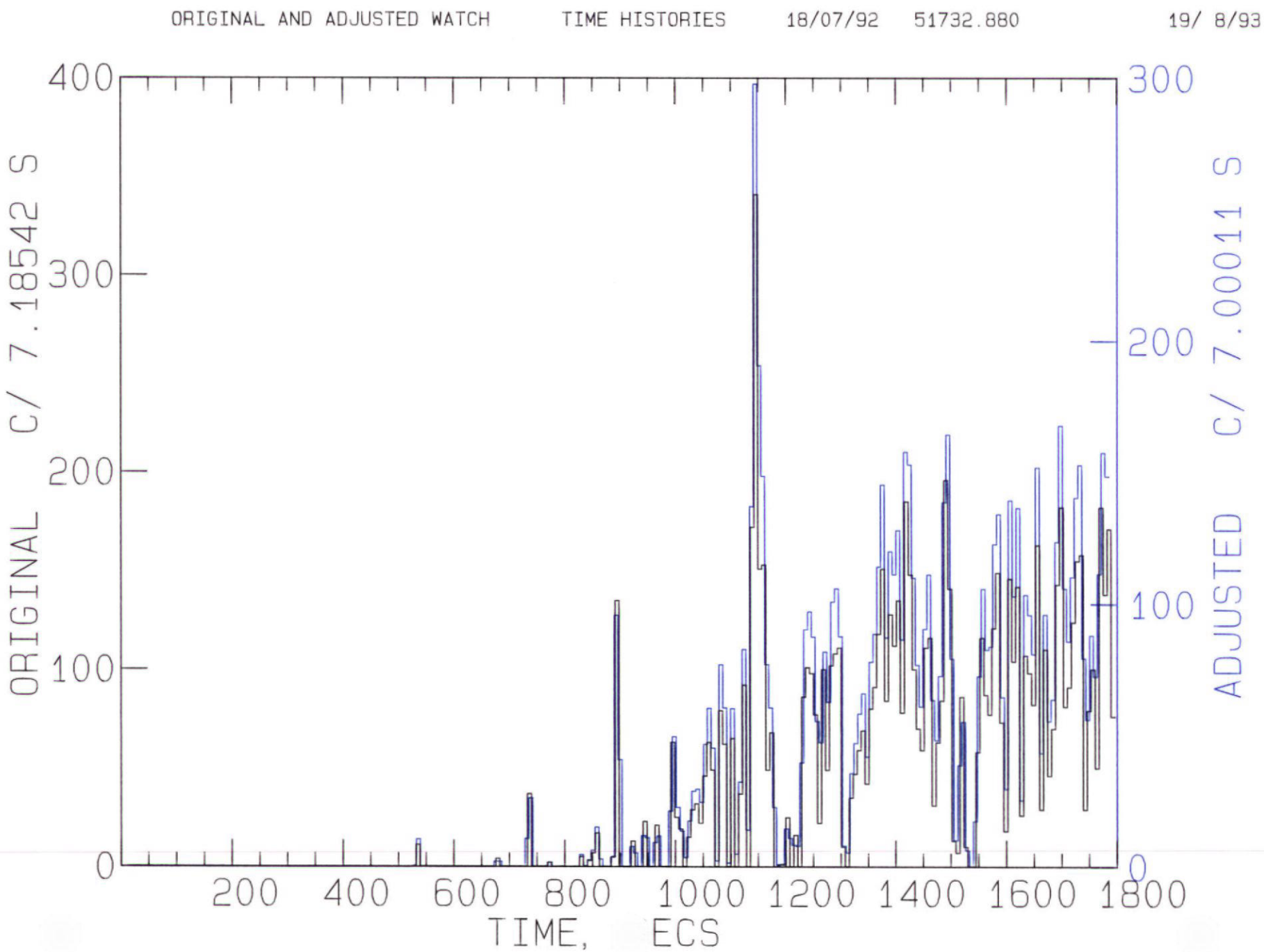
#	date	UT-time	sd	l(s)	m(s)	m/l	position(J2000)		t	comments	#Wm	sc
1	920824	10:53					--------	-------	2	Weak (BATSE)		
2	921004	14:00:21		?	15	>5	14h37.5m	34.1d	1	Two peaks		
3	921022	15:20:57		60	55	>5	16h56.7m	-09.5d	2	Two peaks		
4	921118	22:11					--------	-------	2	Weak (BATSE)		
5	921207	16:00:48		?	16	>5	20h36.1m	-41.8d	1	Two peaks		
6	921218	02:30					--------	-------	2	Weak (BATSE)		
7	930106	15:37					--------	-------	2	Weak (BATSE)		
8	930201	16:42:12					--------	-------	2	Weak (BATSE?)		
7	930217	14:44					--------	-------	2	Weak (BATSE)		
8	930318	12:31:28		?	30	>5	10h03.3m*	-20.0d*	2	BATSE trig 95s early?		
9	930410	14:19							1			
10	930426	12:40:35		?	18	>5			1			
11	930502	13:52					--------	-------	2	Weak (BATSE)		
12	930610								1			
13	930614	03:40:32		11	9	2	11h20.7m	+23.1d	1			

#	date	UT-time	sd	l(s)	m(s)	m/l	position(J2000)	t	comments	#Wm

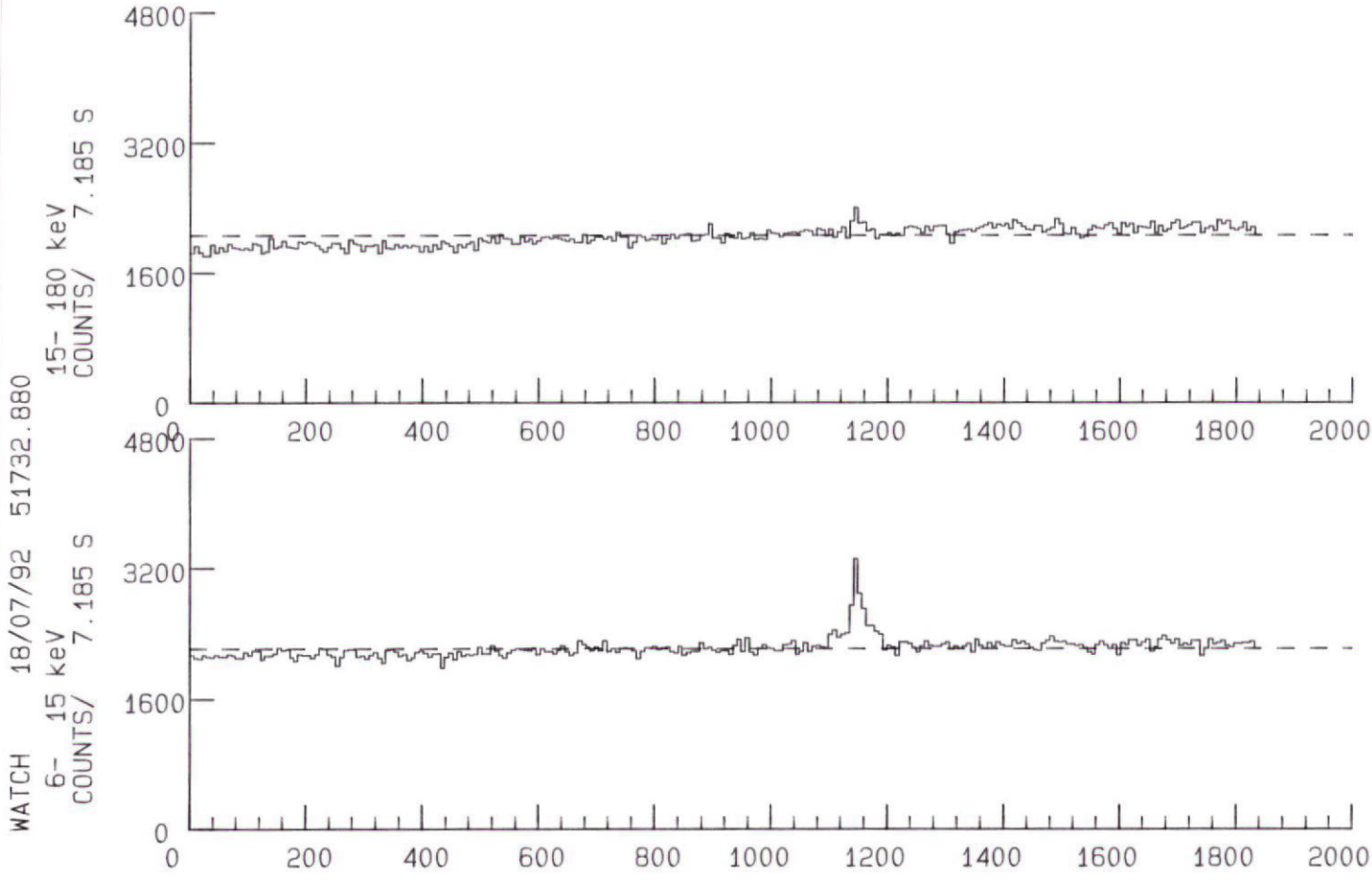
comments:


ULYSSES RT-WATCH CORRELATION 18/ 7/92 54810.190 19/ 8/93
750
500
250
0
ULYSSES RT C/ 7.00011 S
400
300
200
100
0
WATCH C/ 7.00011 S
200
400
600
800
1000
1200
1400
TIME, ECS


19/ 8/93
ULYSSES RT-WATCH
CORRELATION
18/ 7/92
54810.190
2
1
0
CHI2/DF
1.
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
RHO
1050.0
1075.0
1100.0
1125.0
1150.0
LAG, SECS.


ORIGINAL AND ADJUSTED WATCH TIME HISTORIES 18/07/92 51732.880 19/ 8/93
ORIGINAL C/ 7.18542 S
ADJUSTED C/ 7.00011 S
TIME, ECS
0
100
200
300
400
200
400
600
800
1000
1200
1400
1600
1800

18/ 8/93


WATCH 18/07/92 51732.880
6- 15 keV
COUNTS/ 7.185 S
15- 180 keV
COUNTS/ 7.185 S
4800
3200
1600
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000

WATCH 18/07/92 51732.880
15- 180 keV
COUNTS/7.185 S
800
1600
2400
3200
0
0
200
400
600
800
1000
1200
1400
1600
1800
2000
T
1E,
SECS

18/ 8/93

fax to
Dr. Kevin Hurley
Toulouse, FRANCE

fax # 33-61-55-67-01

KEVIN:

CHAOS !

What a mess ! Is it possible that several spacecraft clocks are each off, or why is it that we are getting so many triggers within one week that don't correspond ? ((Are they really UFOs that are communicating with each other, so that returned messages arrive hours later, towards the other side of the Earth? -or, *deja vu:* remember the 'soft gamma repeater' that Ulysses confirmed but it didn't fit ?))

Here is the list of triggers I've been given from N. Lund, G. Fishman, and J. Laros:

01	July 14	BATSE	47069			
		GRANAT	47280	fits	47069	BATSE
02	July 17	GRANAT	04500			
03	''	BATSE	24201.756			
04	''	BATSE	56829			
05	July 18	BATSE	13186			
06	''	BATSE	52836.			
		GRANAT	52860	fits	52836	BATSE
07	''	BATSE	77563.266			
08	''	Ulysses	79135.445		no fit to BATSE	
09	July 20	PVO	05155.347			
10	''	Ulysses	09807.243		no fit to PVO	
	''	BATSE	11524.62	fits	09807	Ulysses
11	''	BATSE	21172.866			

So the ugly question again, since the PVO and Ulysses time histories truly look alike, is whether the clock is still off and the latest IAU telegram for the July 11 event is again wrong.

TLC

fax to
Dr. Kevin Hurley
Toulouse, France

fax no. 33-61-55-67-01

KEVIN:

Misprint!
Yes, the July 18 event timing is indeed Ulysses/BATSE-compatible; sorry to frighten you needlessly. Also, I have gotten John Horack's promise to send me (or have Bill Paciesas send me) the two BATSE events of July 18 at 77563 and July 20 at 11524. Meanwhile, it looks like Ray K's PVO clock correction may still in trouble, since the time histories are a good match for the Ulysses event and PVO on July 20, but the separation in time is over 9 AU worth. We'll let you know of changes and progresses.

TLC

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

BATSE BURST # 1709
EVENT OF 1992 JUL 18 DAY OF YEAR=200
EVENT CROSSING TIME AT BATSE      : 77563. S. OR 21:32:43.2
COORDINATES ARE    .000    .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 295.400  -55.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 18/ 7/  92 IS:
RA=  151.999 DEC=    5.076 DIST=    6.093 AU
BATSE-ULYSSES DISTANCE =  911438745. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 58.35 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1595.49 SECS.
CROSSING TIME AT ULYSSES    IS 79159. S. OR 21:59:18.7 +/-  523.54 SECONDS
```

Trigger

```
From HORACK@ssl.msfc.nasa.gov Mon Jul 20 05:25:12 1992
Date:    Mon, 20 Jul 1992 7:26:44 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

                BATSE BURST TRIGGER
NO.: 01709

TIME: TJD=8821 SECONDS=77563  21:32:43

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=120.   AZIMUTH=210.   ERROR=      DEGREES

COMMENTS:
INTENSE BURST LASTING APPROXIMATELY 6 SECONDS.  MAIN EMISSION REGION IS
DOUBLE PEAKED, WITH SECOND PEAK SLIGHTLY MORE INTENSE THAN FIRST.  SEEN
TO ENERGIES ABOVE 300 KEV.
```

Helio. corr removed

Date: Oct 6 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?

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 database updated?

```
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(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)
```

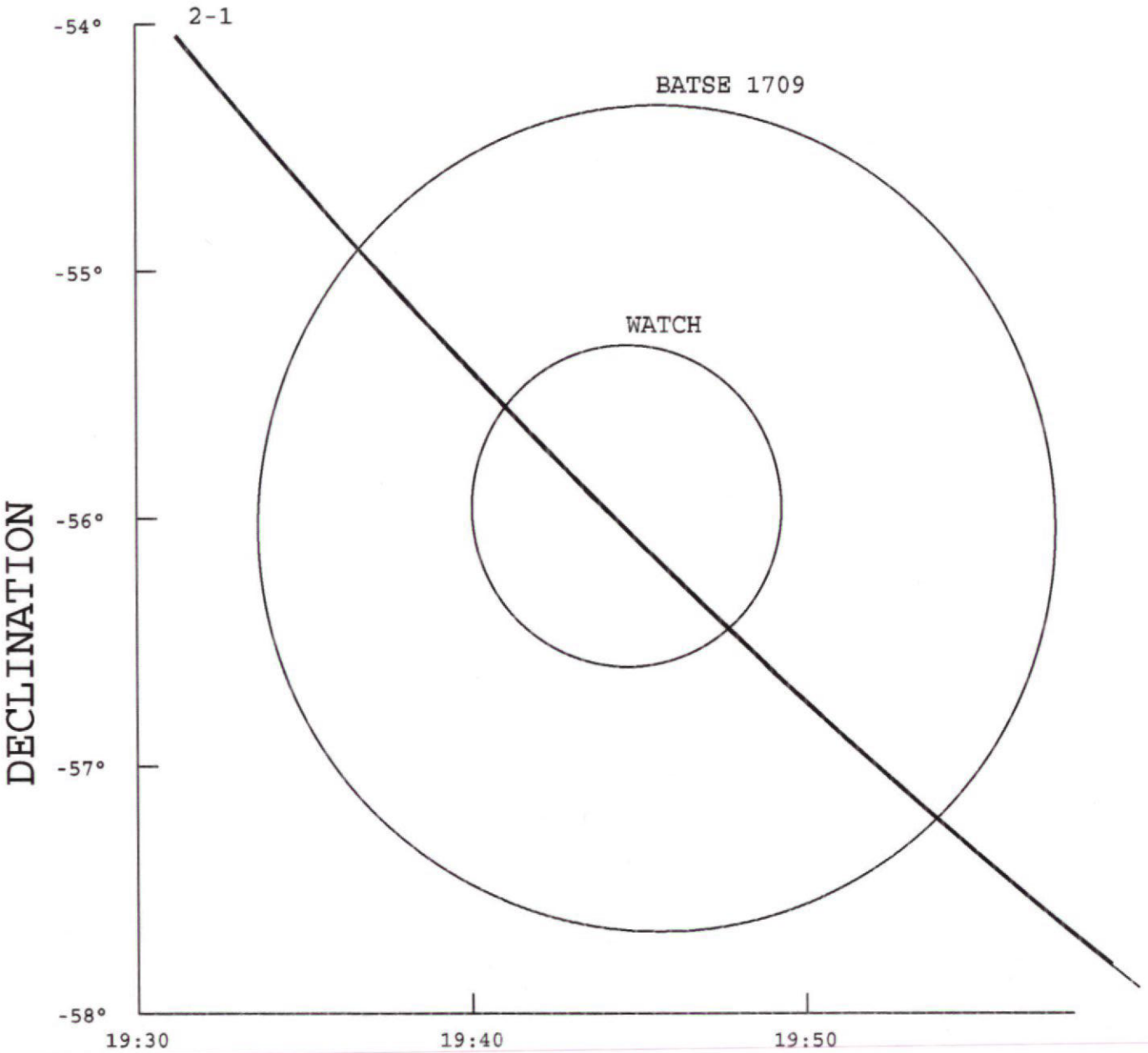
920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 10NA 11SR
930506	53571	YES--53578
930506	65631	NA

Dezalay -> KH 7/93

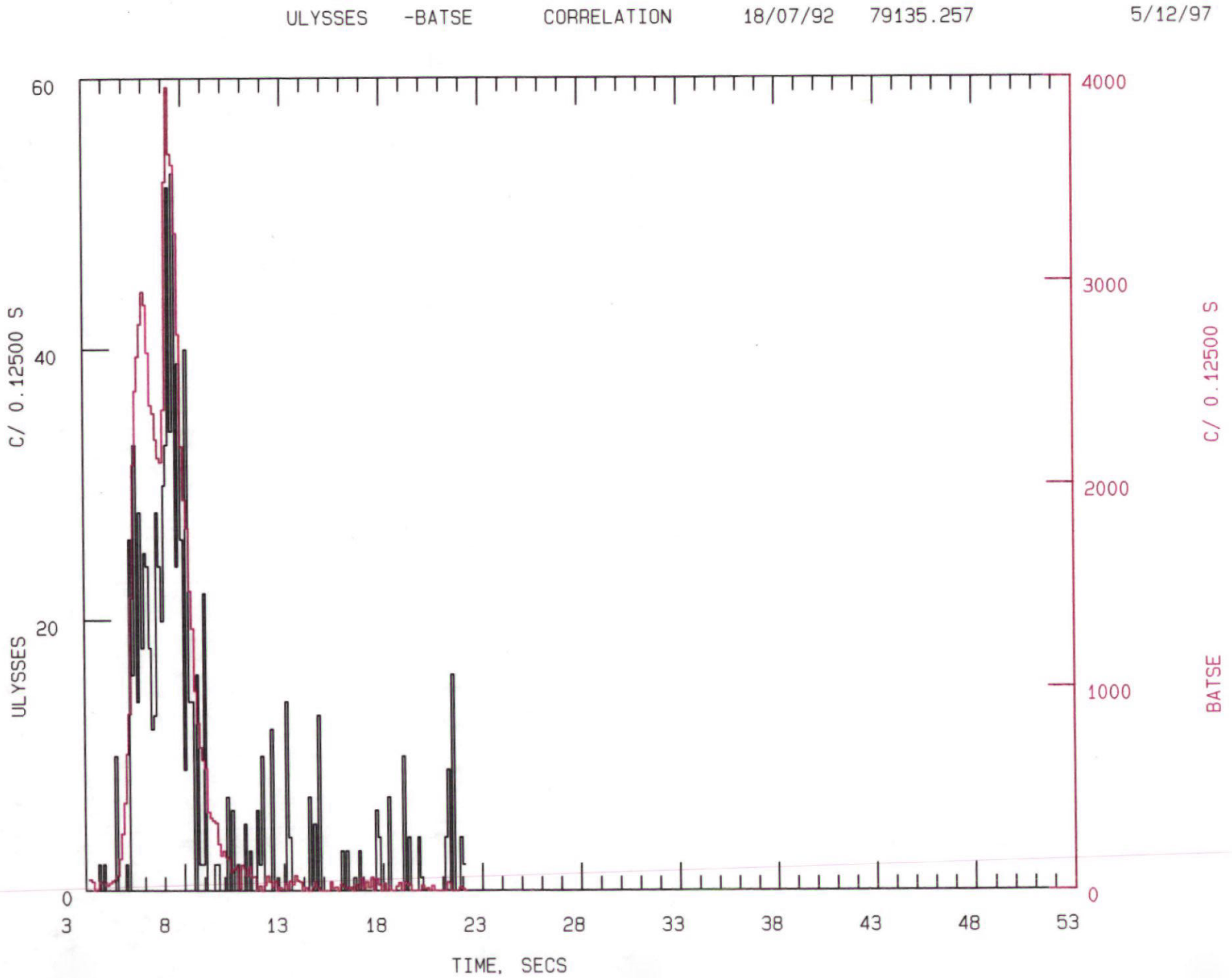
DATE	U.T.	Nr UGB	Event Nature
1992-06-28	21:14:12.932	473-a	GRB
1992-07-08	16:30:01.944	479-a	Solar Flare
1992-07-14	13:04:30.544	482-a	GRB
1992-07-16	16:55:27.526	484-a	Solar Flare
1992-07-18	21.32:44.275	485-a	GRB
1992-07-20	03:12:04.391	486-a	GRB
1992-07-23	00:59:16.612	488-a	GRB
1992-07-23	20:03:08.386	489-a	GRB
1992-07-23	21:48:54.786	489-b	GRB
1992-08-16	12:37:31.102	493-a	GRB
1992-08-26	02:47:07.423	500-a	GRB
1992-08-30	01:45:19.113	503-a	GRB
1992-09-02	00:29:00.916	504-a	GRB
1992-09-03	00:49:18.142	505-a	GRB
1992-09-03	01:37:17.202	505-b	GRB ?
1992-09-03	23:29:01.404	506-a	GRB
1992-09-04	04:41:38.922	506-b	GRB
1992-09-05	15:56:15.844	507-a	Solar Flare
1992-09-06	18:45:29.617	507-b	Solar Flare
1992-09-06	20:56:31.135	507-c	Solar Flare
1992-09-14	07:14:50.878	508-a	Unknown
1992-09-18	09:41:19.340	511-a	GRB
1992-09-25	20:30:41.410	517-a	GRB
1992-09-25	21:40:47.837	517-b	No Available data
1992-09-30	00:47:46.089	518-a	Unknown
1992-10-04	22:19:05.006	522-a	Solar Flare
1992-10-12	13:14:44.786	523-a	Solar Flare
1992-10-13	23:01:01.582	524-a	GRB
1992-10-25	13:53:16.735	527-a	GRB
1992-10-27	06:52:02.336	528-a	Solar Flare
1992-10-29	15:23:10.349	530-a	SF ou Unknown?
1992-10-29	16:11:39.173	530-b	SF ou Unknown?
1992-10-29	16:26:49.045	530-c	SF ou Unknown?
1992-11-23	16:32:04.840	534-a	SF ou Unknown?
1992-11-23	17:11:35.698	534-b	SF ou Unknown?

EVENT OF JUL 18, 1992 21:58

5/12/97

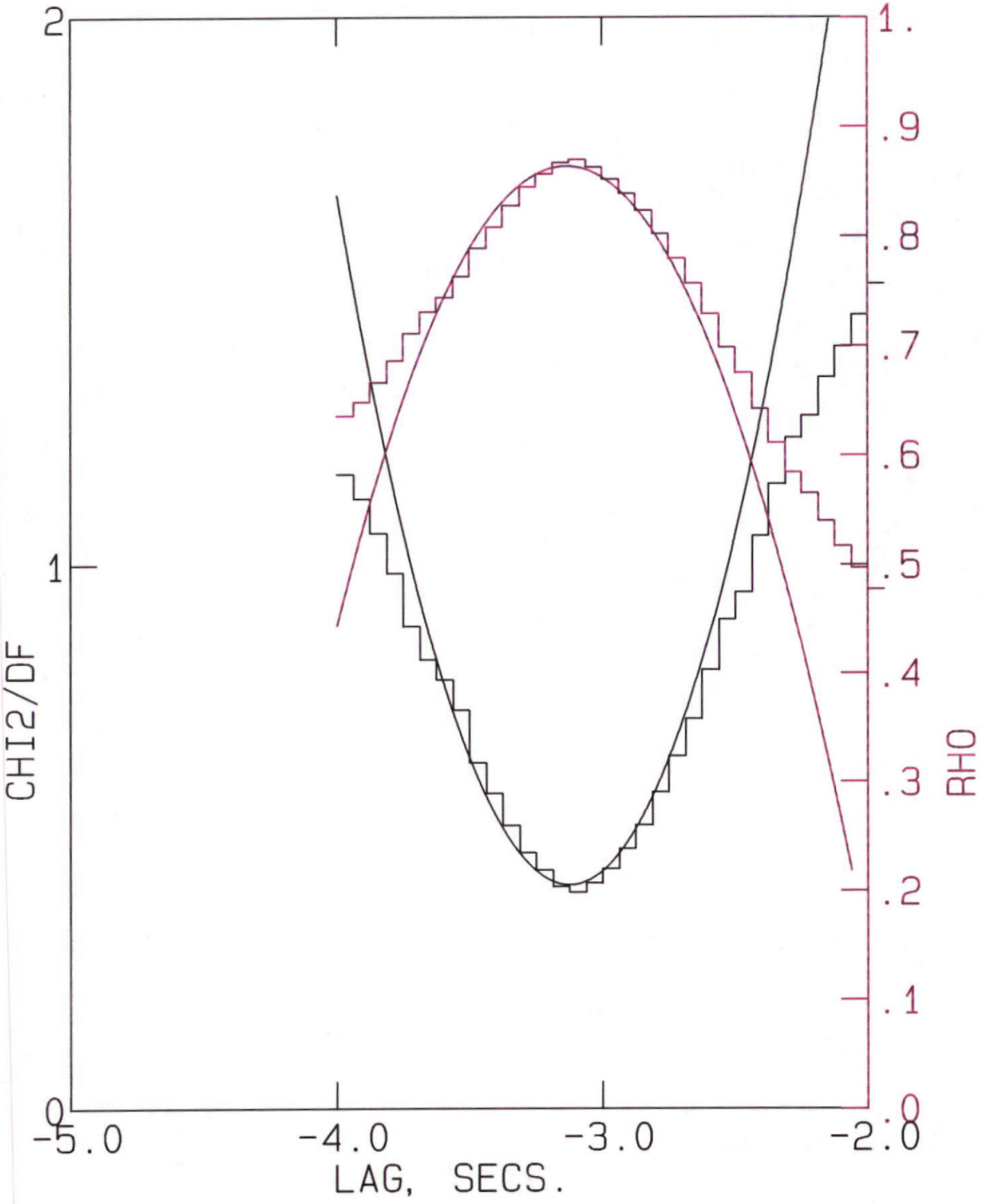


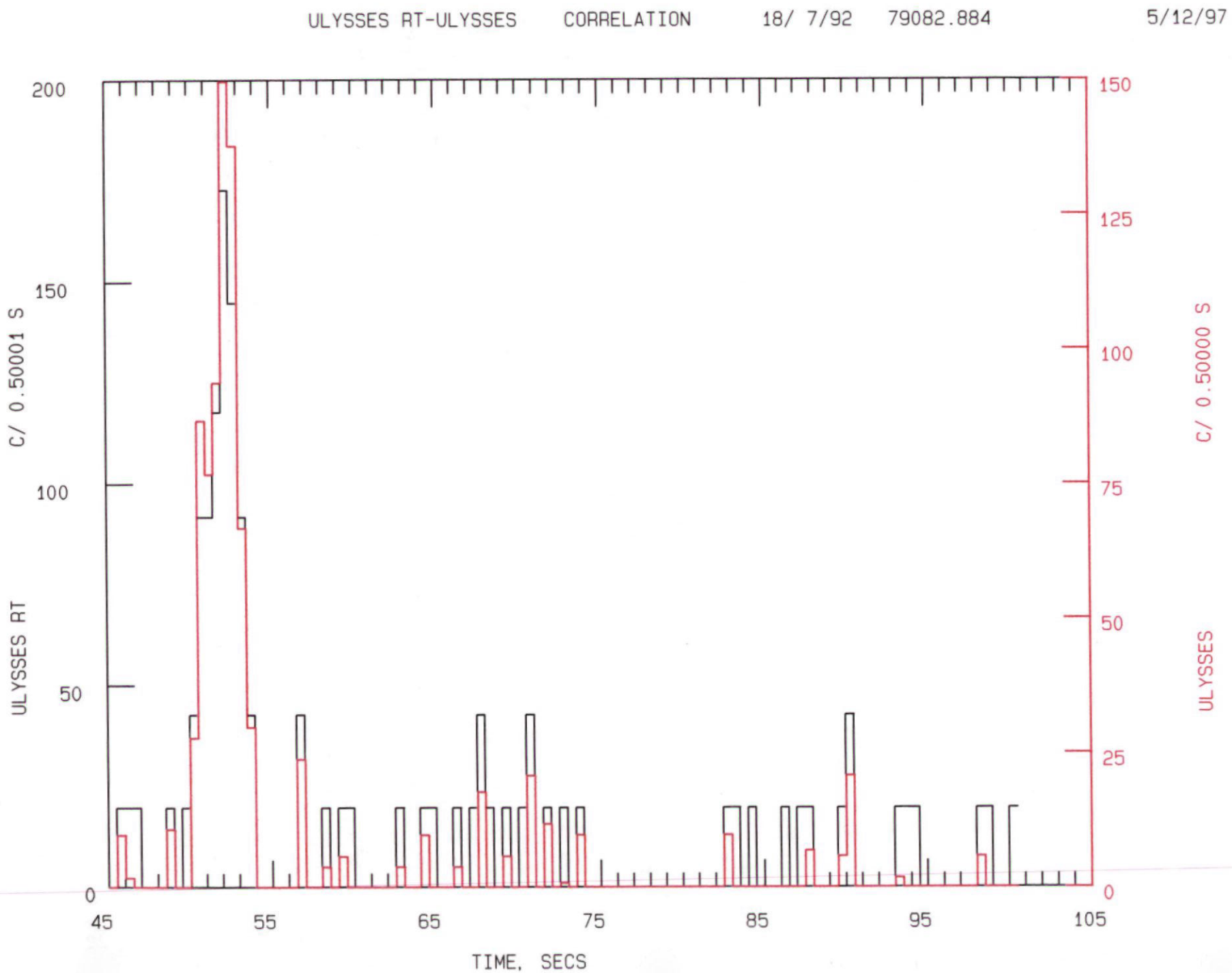
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE


ULYSSES -BATSE CORRELATION 18/07/92 79135.257 5/12/97
60
40
20
0
ULYSSES
C/ 0.12500 S
4000
3000
2000
1000
0
BATSE
C/ 0.12500 S
3
8
13
18
23
28
33
38
43
48
53
TIME, SECS

5/12/97

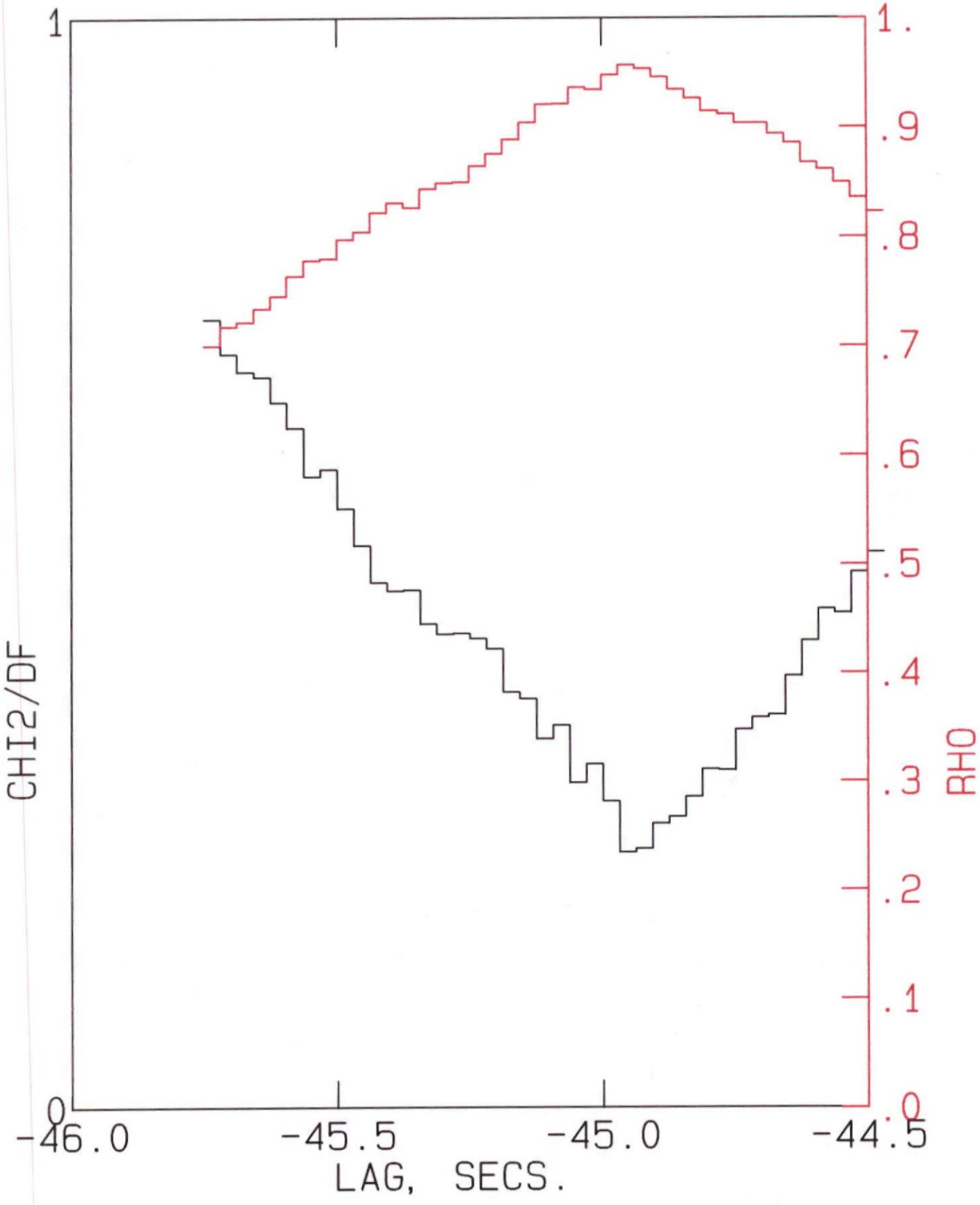
ULYSSES -BATSE CORRELATION 18/07/92 79135.257




ULYSSES RT-ULYSSES CORRELATION 18/ 7/92 79082.884 5/12/97
200
150
100
50
0
C/ 0.50001 S
ULYSSES RT
150
125
100
75
50
25
0
C/ 0.50000 S
ULYSSES
45
55
65
75
85
95
105
TIME, SECS

5/12/97

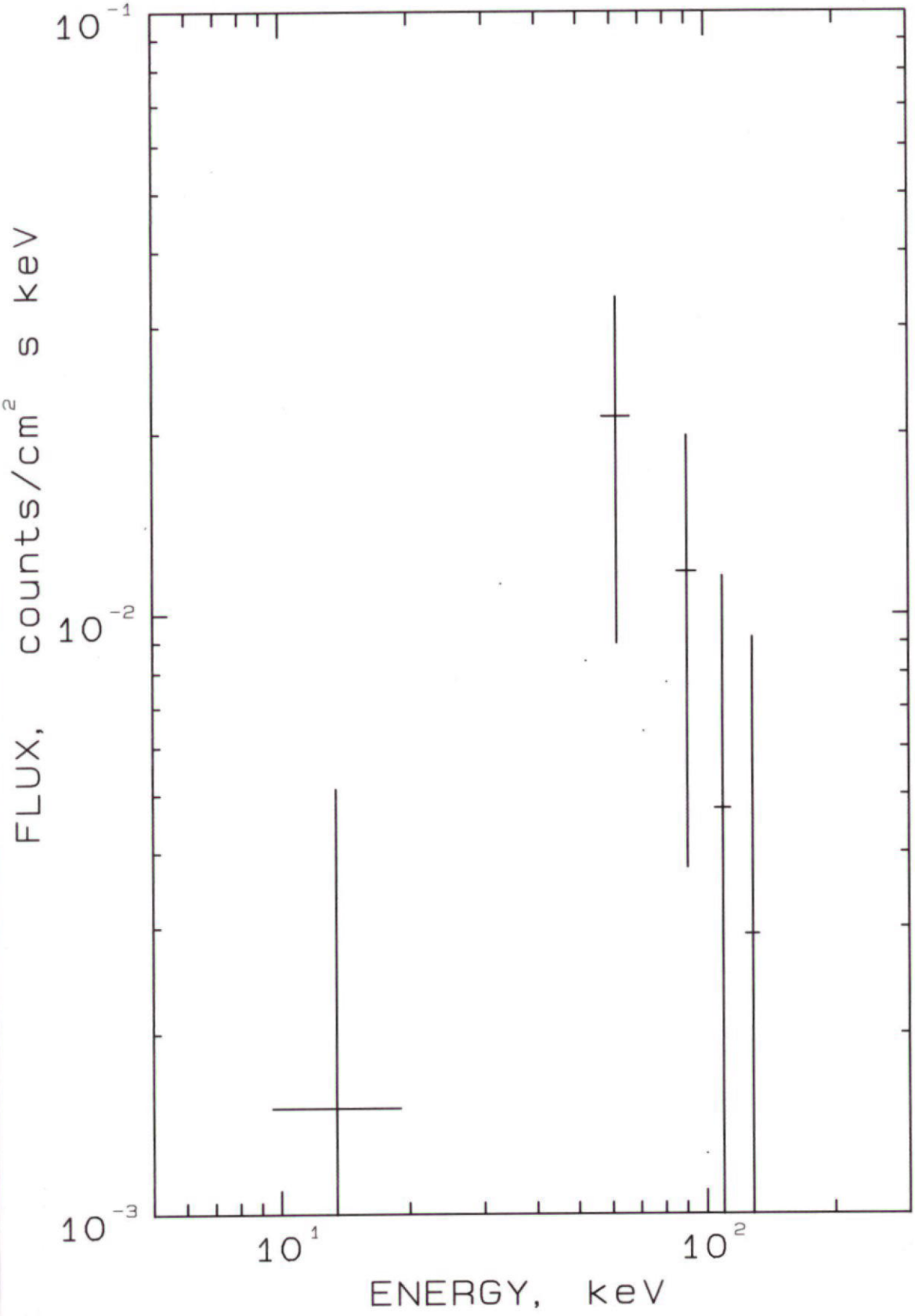
ULYSSES RT-ULYSSES CORRELATION 18/ 7/92 79082.884

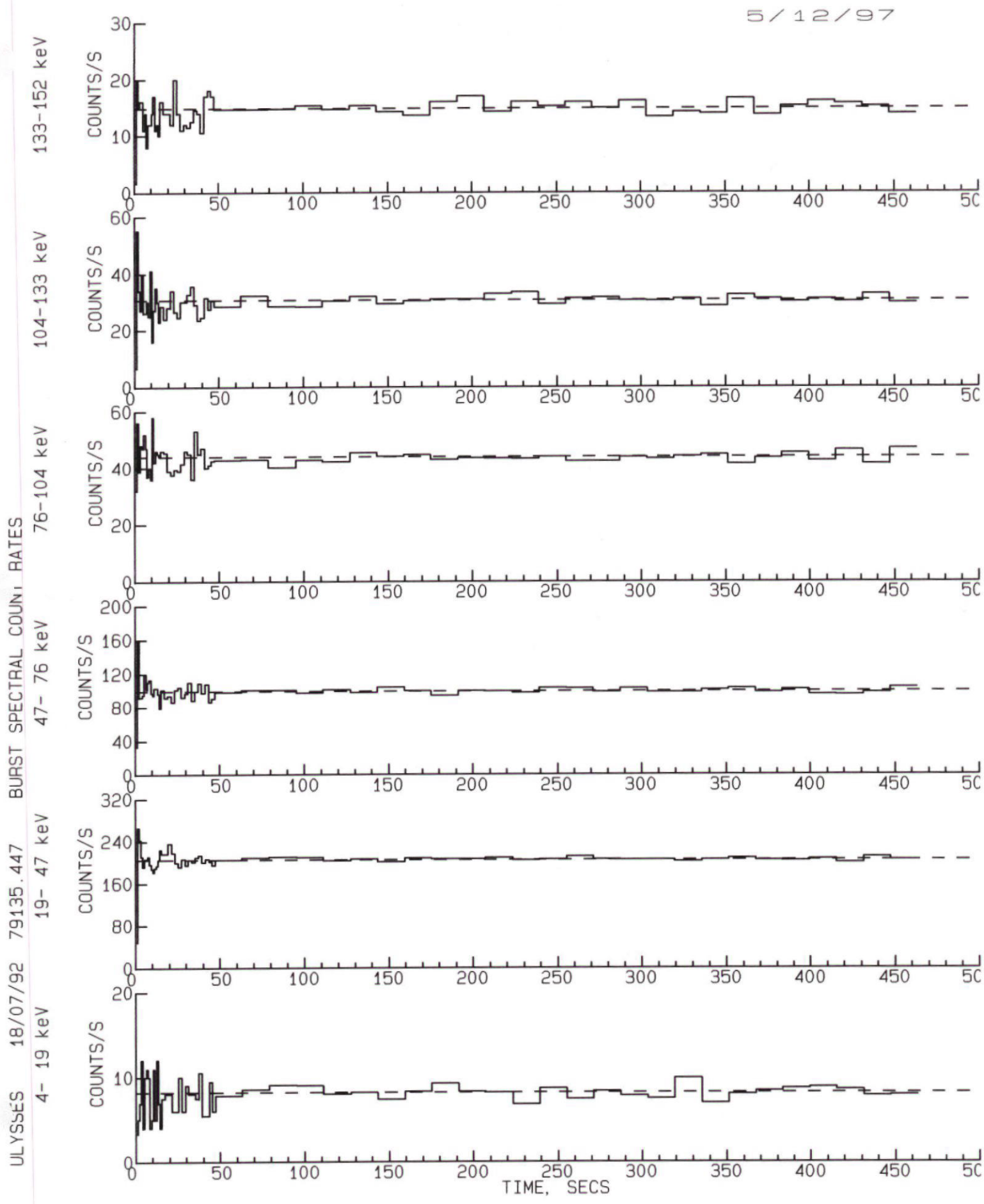


5/12/97

ULYSSES 18/07/92 79135.447

SPECTRUM INTEGRATED OVER 10.2 SECONDS, INTERVALS 2 TO 12




5/12/97
ULYSSES 18/07/92 79135.447 BURST SPECTRAL COUNT RATES
133-152 keV
104-133 keV
76-104 keV
47- 76 keV
19- 47 keV
4- 19 keV
COUNTS/S
TIME, SECS

ULYSSES 18/07/92 Ttrig=79135.257

22- 152 keV

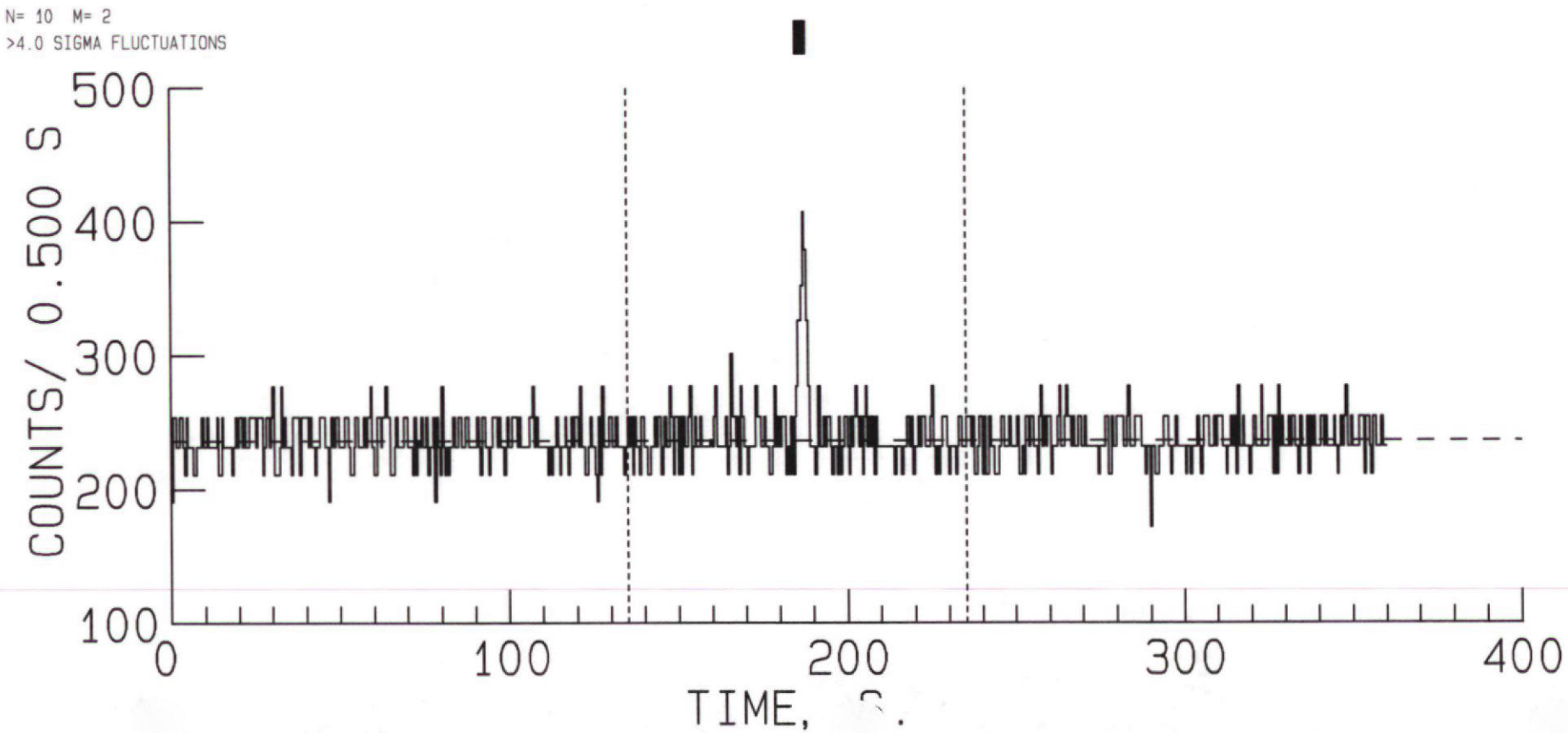
5/12/**

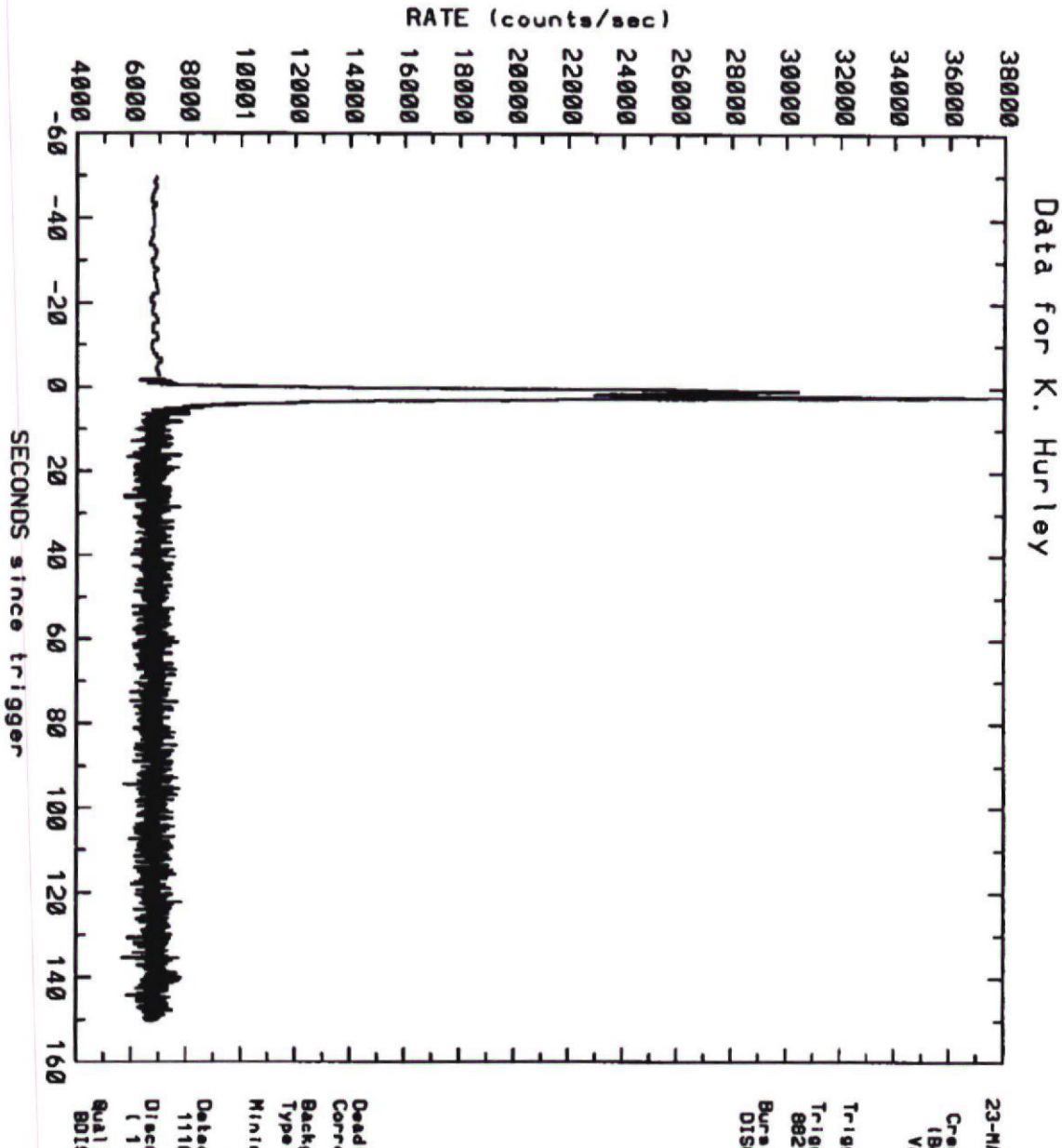
ULYSSES RT

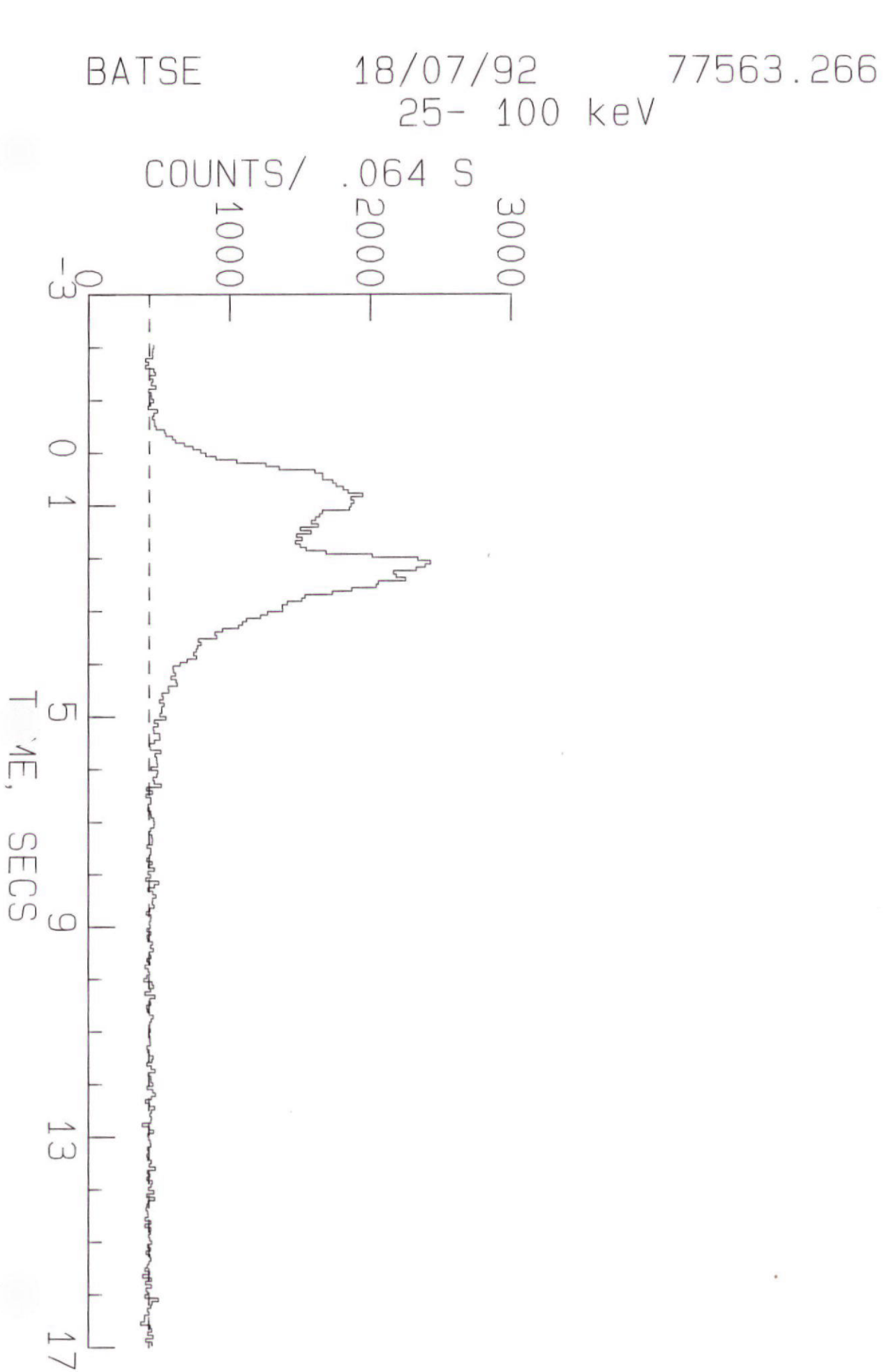
5/12/97

18/ 7/92 78948.079 s

22- 152 keV




Data for K. Hurley
RATE (counts/sec)
38000
36000
34000
32000
30000
28000
26000
24000
22000
20000
18000
16000
14000
12000
10001
8000
6000
4000
-60 -40 -20 0 20 40 60 80 100 120 140 160
SECONDS since trigger
23-MAR-1993 09:56:49
Created by MOPS BD
(Burst Display)
Version 2.18
Trigger # . 1709
Trigger Time:
8821 / 77563.266
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds(s)
Detectors (7..0):
11100000
Discriminators:
(1. 2)
Quality Mask:
BDISP1


BATSE 18/07/92 77563.266
25- 100 keV
COUNTS/ .064 S
1000
2000
3000
-3
0
1
5
9
13
17
TIME, SECS

From root Sun Aug 29 23:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA20420; Sun, 29 Aug 93 23:58:37
Received: from danpost.uni-c.dk by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA12196; Mon, 30 Aug 93 00:01:47 PDT
Received: from uhuru.dsri.dk (uhuru.dsri.dk [129.142.171.2]) by danpost.uni-c.dk (8.6.beta.10/
Received: from oso.dsri.dk.dsri.dk by uhuru.dsri.dk (4.1/SMI-4.1)
        id AA23641; Mon, 30 Aug 93 08:59:00 +0200
Received: by oso.dsri.dk.dsri.dk (4.1/SMI-4.1)
        id AA26902; Mon, 30 Aug 93 09:02:22 +0200
Date: Mon, 30 Aug 93 09:02:22 +0200
From: nl@oso.dsri.dk (Niels Lund)
Message-Id: <9308300702.AA26902@oso.dsri.dk.dsri.dk>
To: khurley@sunspot.ssl.berkeley.edu
Status: R

Dear Kevin:

I did not get around to the EURECA stuff last week, but decided instead
to complete the GRANAT bursts first. Here I send you 11 more time
histories. Most of these are pre-ULYSSES, but I wonder if you have
possibilities for accessing the old PVO-data?

I am working on a program to perform GRANAT attitude fits based on the
combined data from several WATCH units. This could provide us more
reliable mean attitudes, averaged over some hours around the burst times.
This would be a lot better than the current spot measurement of the
attitude in the beginning of each session, not the least because it gives
us all three attitude angles, whereas our present measurement data only
concerns the two angles most important for the SIGMA observations. It
would still not be the final word, though, since there is no way I can,
from the WATCH data, find the instantaneous attitude of GRANAT at the
burst time. For that I need the full SIGMA star camera information, I
am working to get that too, but that will be a longer time project.

For the first few days of this week I will be working on my new
geophysics project (the Oersted satellite).

niels

****

 GRB 920718B   WATCH data. (W5951)

 Low energy count rate (6-15 keV)
 UT start time: ' 1992 07 18 21 31 55.220
 UT end time: ' 1992 07 18 21 35 48.094
 Channel width: 0.90965 s
^

262	289	271	259	255	270	255	283	222	262
286	264	278	259	249	263	239	244	272	253
285	255	287	265	277	276	264	249	272	257
301	261	258	278	278	287	255	257	259	261
291	288	266	244	255	284	257	262	243	263
266	249	254	297	351	503	502	535	392	305
281	264	251	265	294	269	275	244	292	278
252	264	262	257	248	269	250	305	276	277
250	256	261	257	251	272	298	247	268	310
246	286	274	270	261	279	267	266	301	277
242	305	273	254	263	276	264	261	254	269
256	281	303	285	239	250	269	239	267	232
273	269	257	259	258	258	282	259	253	270
268	269	274	260	270	282	267	255	263	237
274	276	255	292	278	274	232	259	300	278
273	275	273	266	298	293	279	271	259	273
286	275	255	299	248	259	280	256	284	282

```
   250    268    258    244    263    292    245    283    256    283
   273    261    278    257    277    285    285    258    266    256
   247    276    258    269    243    303    274    257    243    271
   253    259    282    280    262    259    248    300    261    256
   250    222    253    255    268    292    232    273    245    272
   258    259    261    248    260    285    279    261    272    258
   258    258    284    260    260    267    273    281    258    277
   300    262    269    263    275    292    259    269    258    268
   271    249    249    260    271    261

Medium energy count rate (15-180 keV)
UT start time: ' 1992 07 18  21 31 55.220
UT end time:   ' 1992 07 18  21 35 48.094
Channel width: 0.90965 s
^
   180    203    186    194    197    227    209    193    194    168
   200    203    203    189    217    184    193    189    197    184
   210    200    193    212    178    169    188    207    167    204
   201    181    220    197    202    171    193    169    206    193
   188    215    205    201    197    178    202    196    176    182
   200    213    184    216    302    430    468    395    261    207
   231    192    188    207    207    177    189    201    202    180
   190    187    179    208    194    203    176    209    195    197
   216    203    174    201    202    161    192    184    187    181
   196    192    190    185    184    191    183    179    165    206
   198    179    193    173    190    193    211    194    196    188
   188    202    232    167    204    181    185    187    202    201
   169    198    206    201    214    214    186    177    186    225
   199    201    170    182    184    217    202    164    207    205
   192    185    195    190    175    206    193    172    172    173
   192    177    176    199    213    182    186    182    191    177
   211    215    191    188    202    203    179    156    198    181
   188    193    185    205    181    184    200    210    193    163
   193    200    181    198    206    195    218    173    190    212
   204    203    194    192    202    179    188    178    187    179
   188    182    197    175    181    208    174    194    209    226
   177    184    184    201    222    166    199    187    185    182
   183    189    182    214    198    189    165    195    198    192
   194    175    182    189    199    221    211    208    192    201
   187    177    175    177    193    178    208    177    167    217
   222    192    206    188    187    205

*************************************************************************
*************************************************************************

GRB 901219   WATCH data. (W2490)

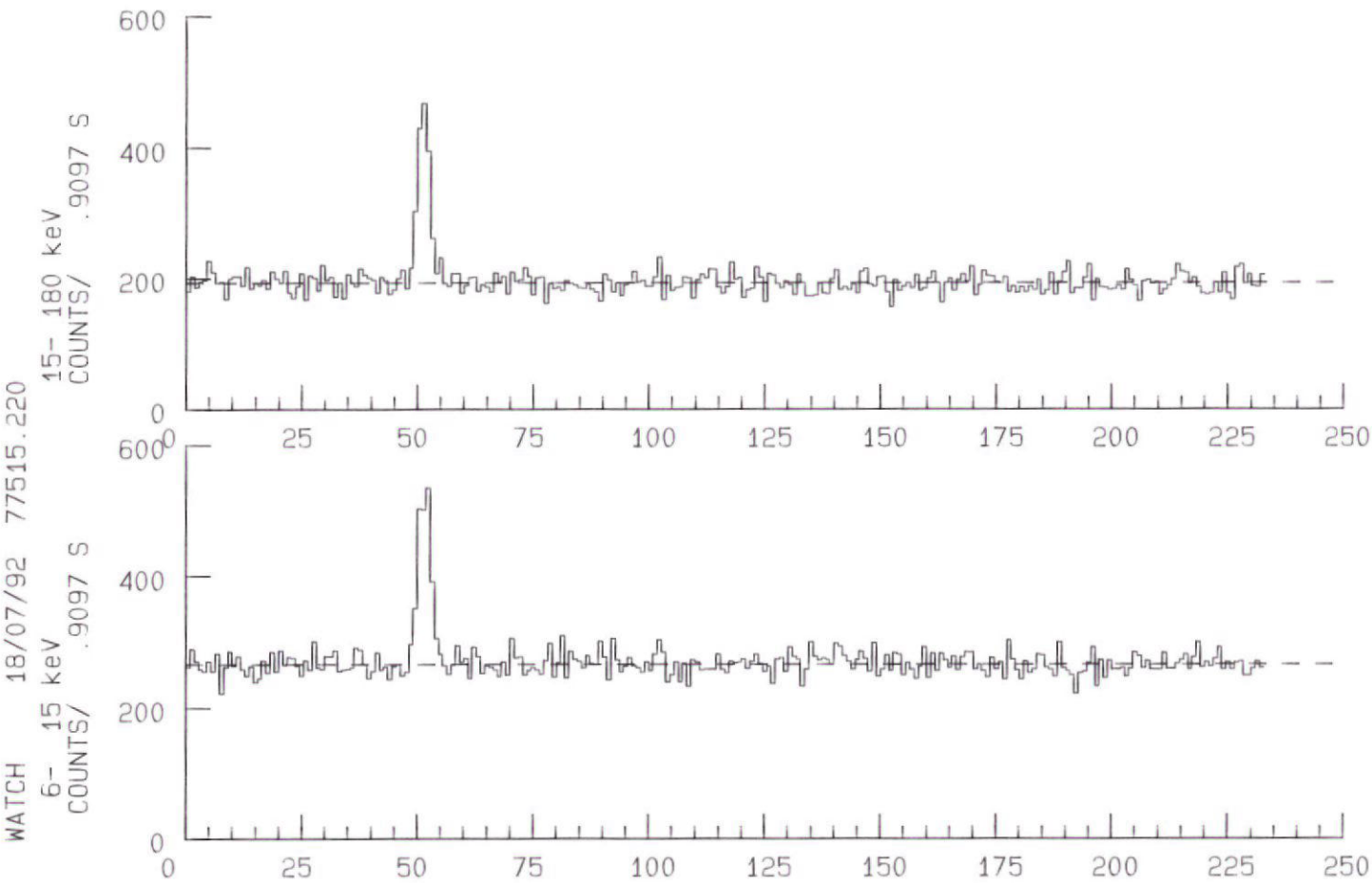
Low energy count rate (6-15 keV)
UT start time: ' 1990 12 19  21 35 48.068
UT end time:   ' 1990 12 19  22 04 01.085
Channel width: 6.61336 s
^
1442  1444  1416  1408  1463  1436  1455  1511
1455  1426  1413  1451  1393  1467  1497  1392
1420  1465  1427  1378  1340  1386  1349  1432
1291  1358  1355  1343  1412  1315  1358  1349
1300  1315  1323  1412  1297  1274  1349  1362
1304  1335  1335  1336  1341  1331  1271  1283
1341  1332  1355  1323  1335  1295  1311  1269
1322  1270  1352  1264  1324  1320  1235  1295
1279  1269  1216  1281  1403  1324  1323  1278
1314  1308  1310  1299  1222  1318  1241  1229
1283  1252  1373  1306  1229  1353  1261  1263
1235  1333  1305  1351  1328  1311  1329  1239
1356  1341  1310  1407  1343  1309  1353  1369
1279  1386  1334  1404  1360  1356  1367  1442
```

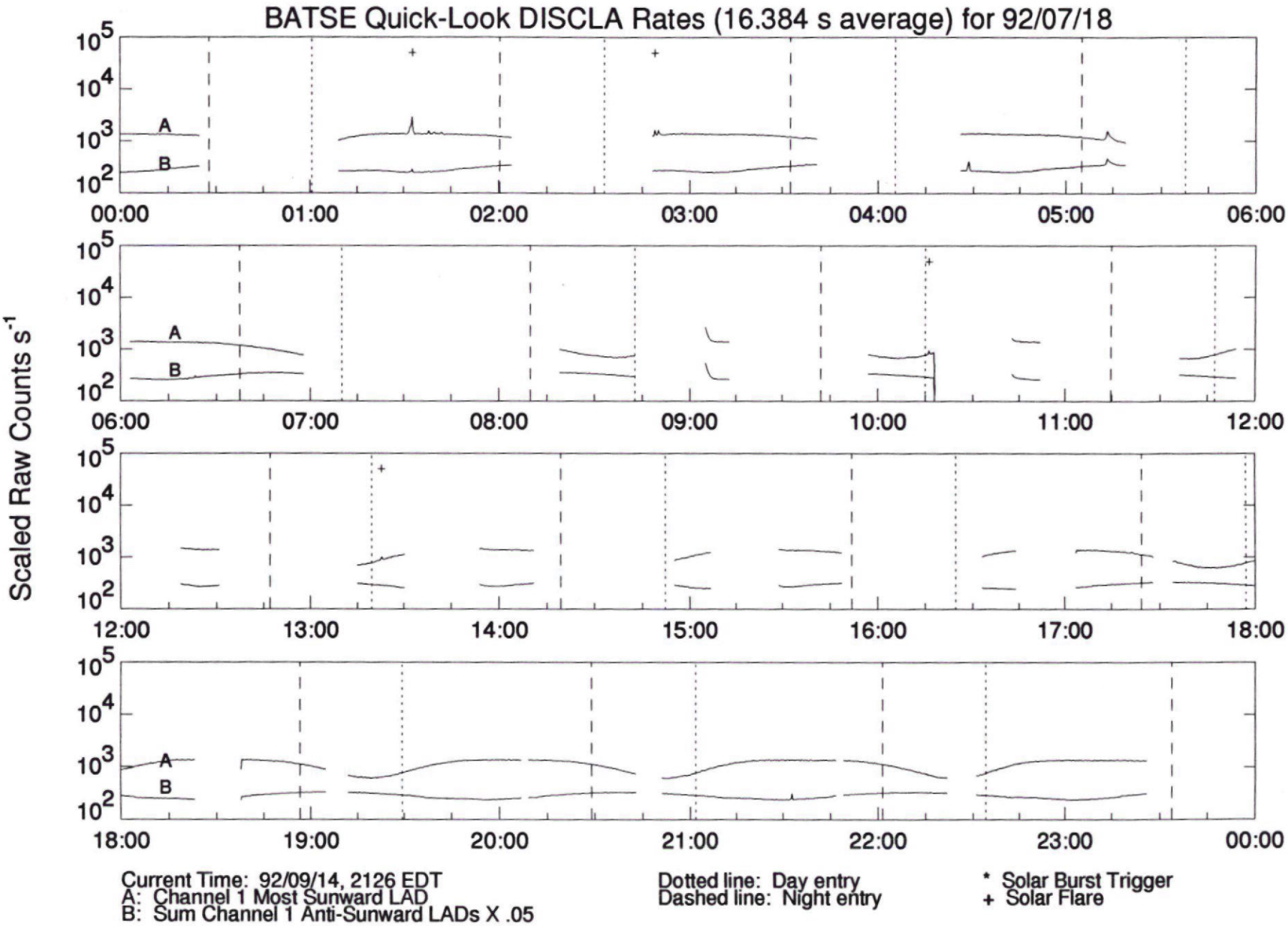
WATCH 18/07/92 77515.220

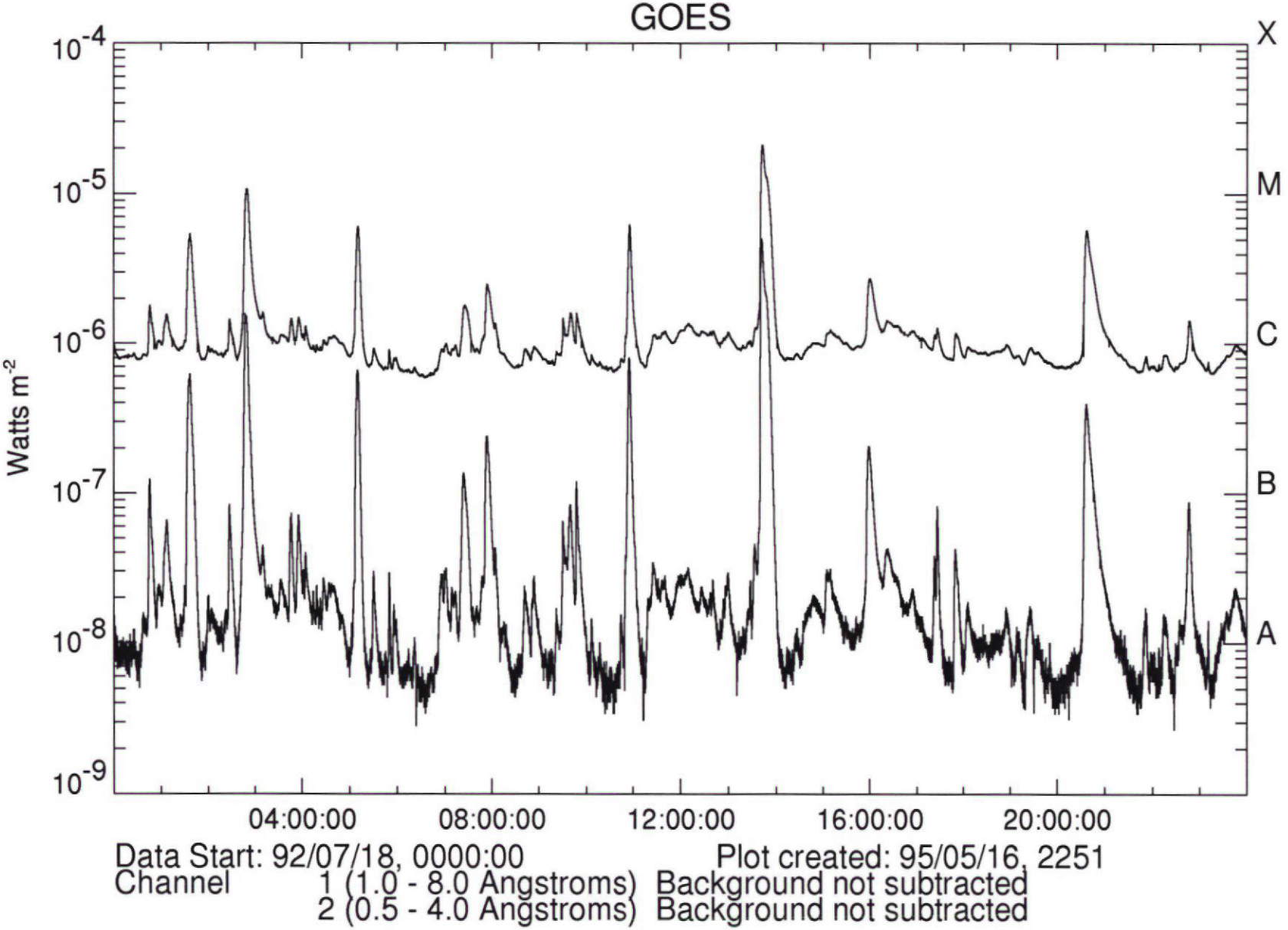
15- 180 keV

COUNTS/ .910 S

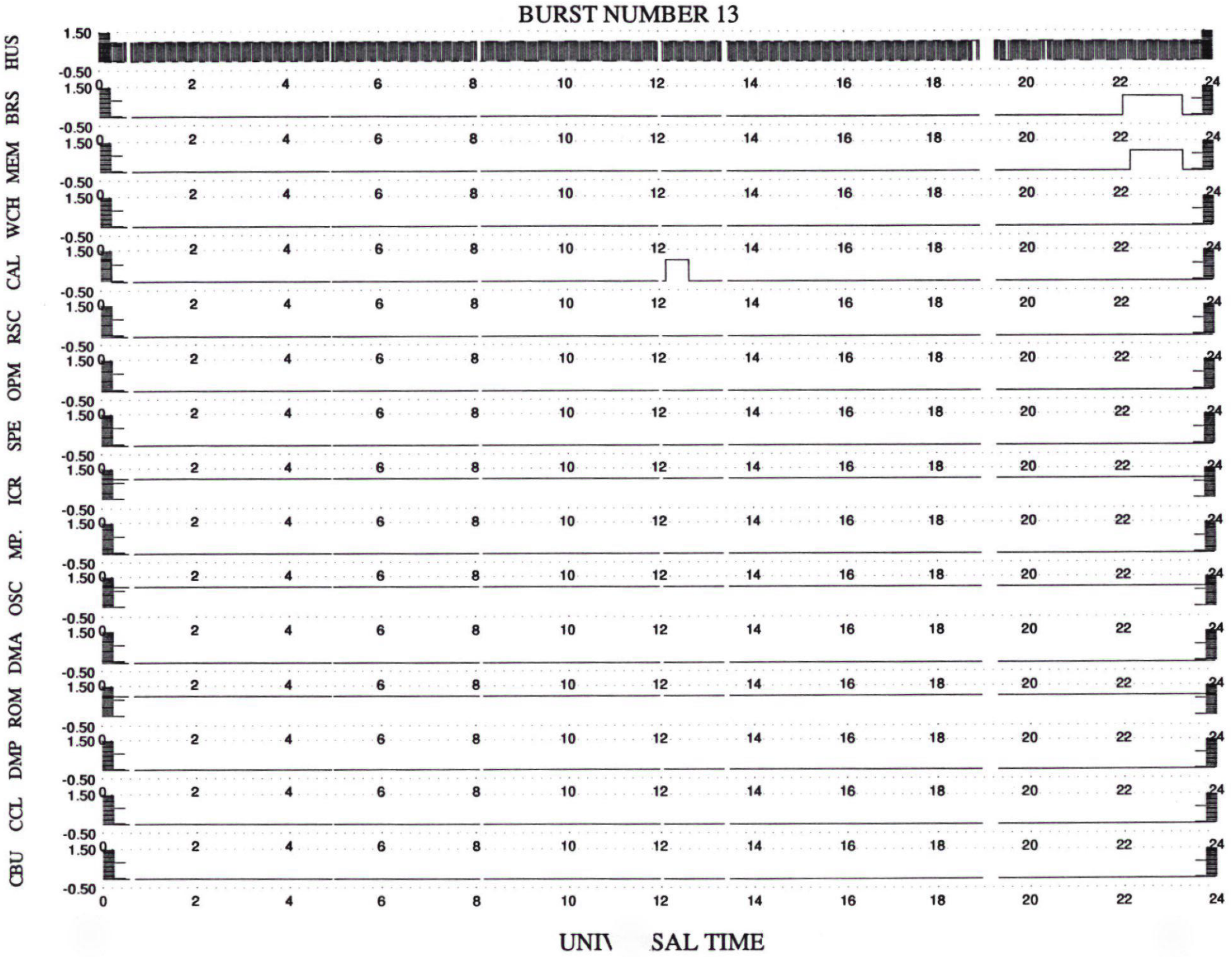
4/10/93


WATCH 18/07/92 77515.220
6- 15 keV
COUNTS/ .9097 S
15- 180 keV
COUNTS/ .9097 S
0
200
400
600
0
25
50
75
100
125
150
175
200
225
250


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/18
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
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: 92/09/14, 2126 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

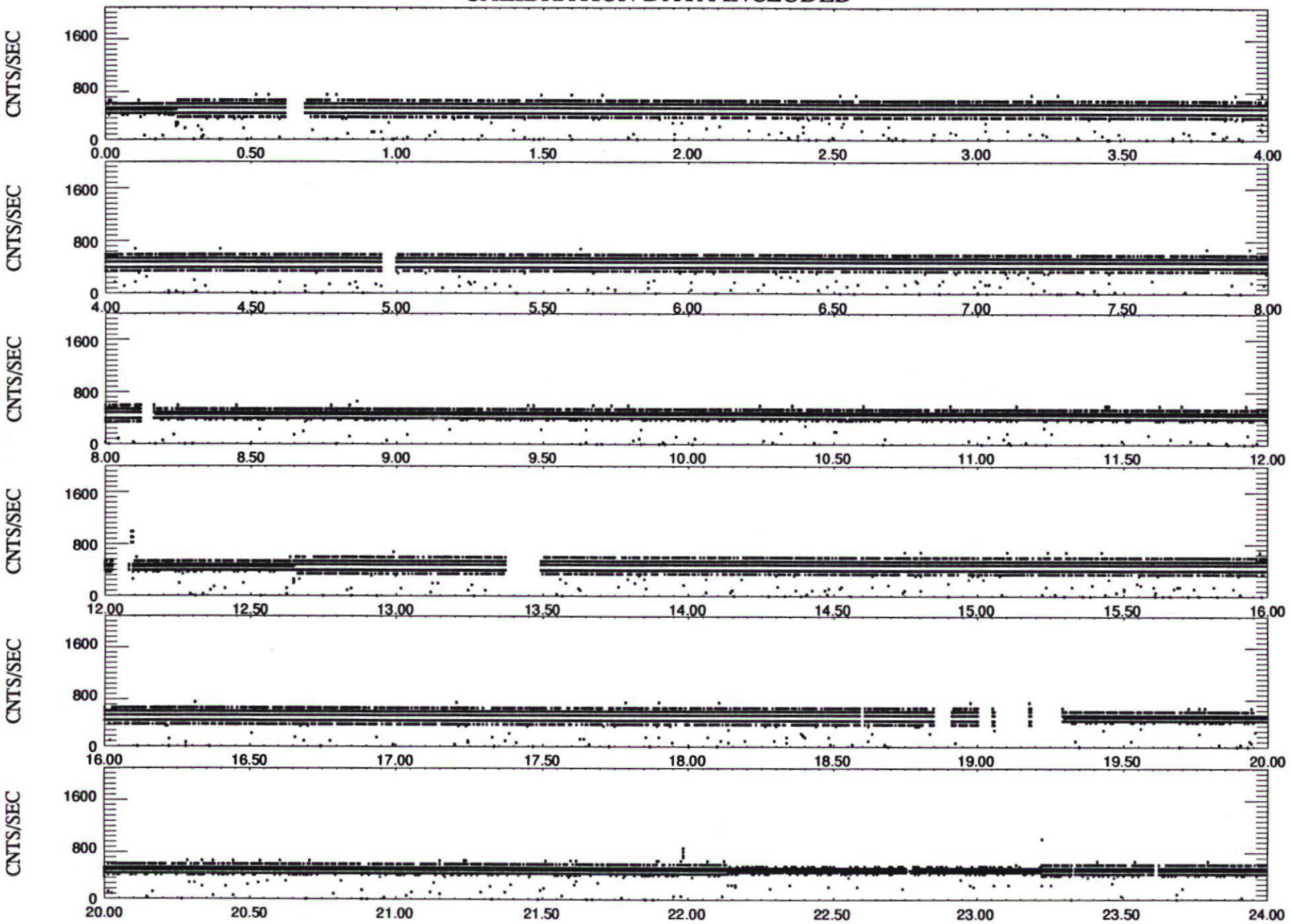

GOES
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/18, 0000:00
Plot created: 95/05/16, 2251
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 200, year 1992 to day 200, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 200, year 1992 to day 200, year 1992 9/11/92

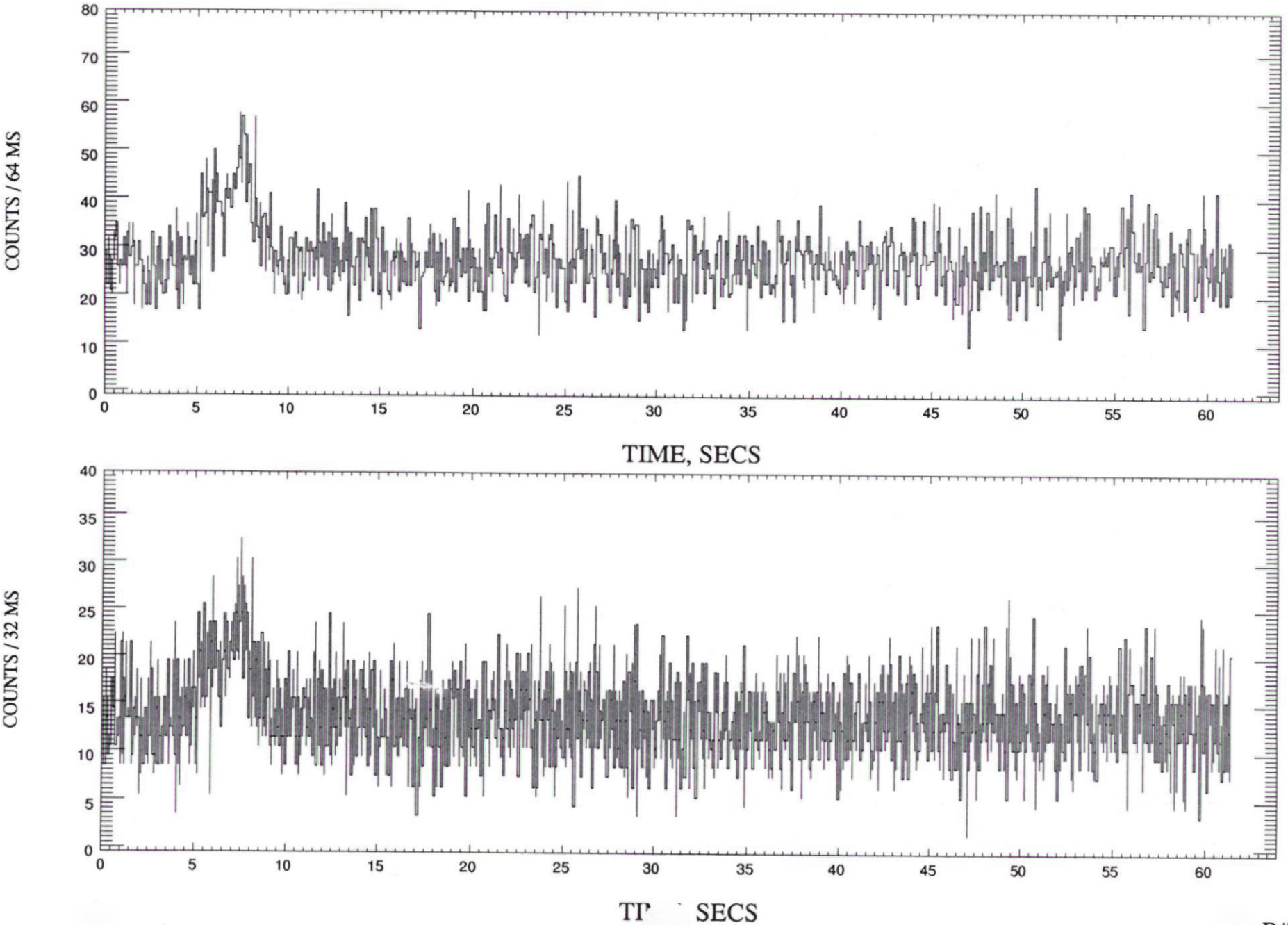
CALIBRATION DATA INCLUDED



UNIV SAL TIME

HUS 2A TRIGGERED DATA EDR day 200, year 1992 9/11/92

Burst Counter 13 at UT=21.982068744236 h=79135.447 s



B# 1

From WILSONB@ssl.msfc.nasa.gov Wed Jul 22 06:47:19 1992
Date: Wed, 22 Jul 1992 8:49:00 -0500 (CDT)
From: WILSONB@ssl.msfc.nasa.gov (Robert B. Wilson (205)-544-7695)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01710 July 19

TIME: TJD=8822 SECONDS=9395

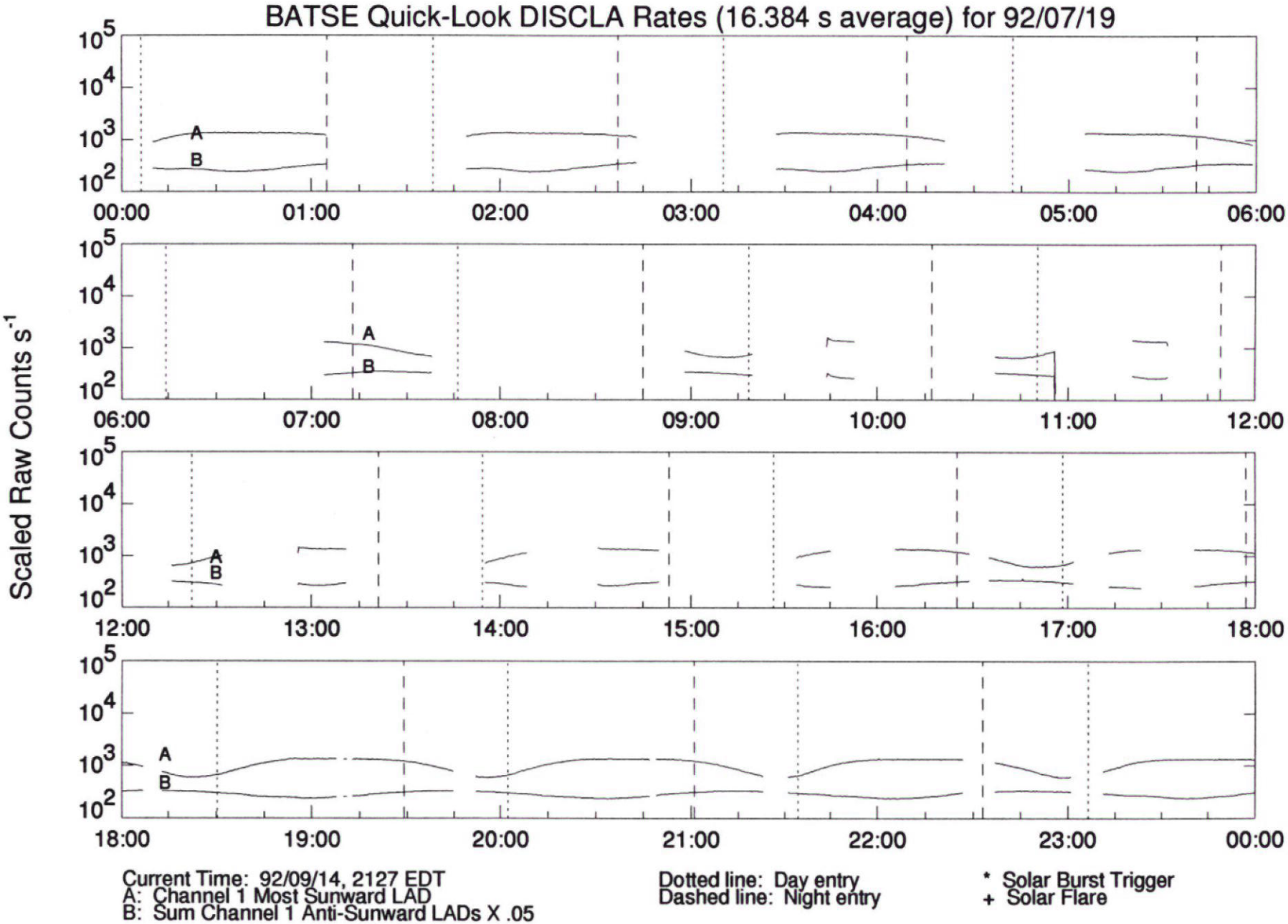
TYPE: CYGNUS SOLAR FLARE TRIGGER SIGNAL:N

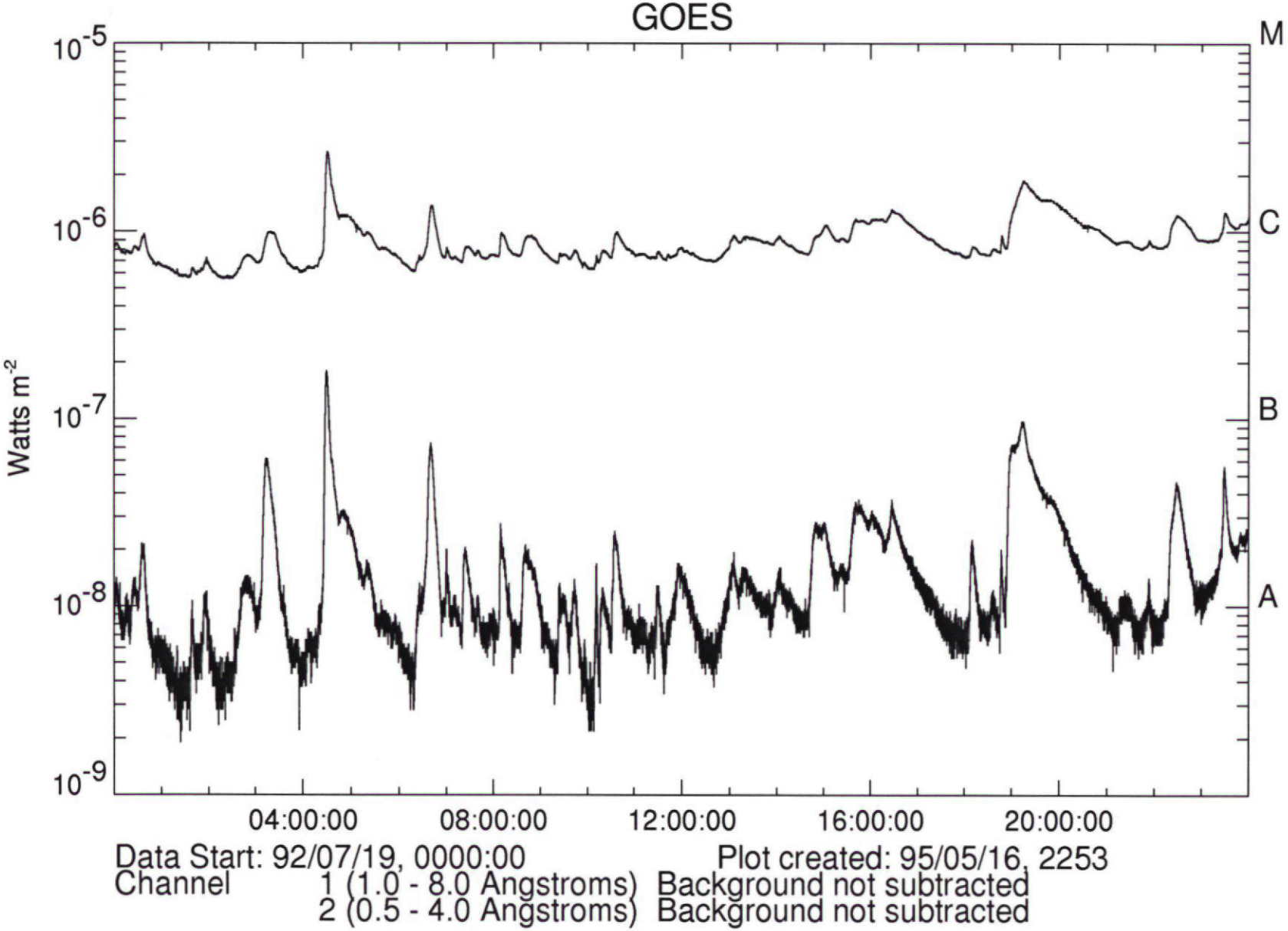
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

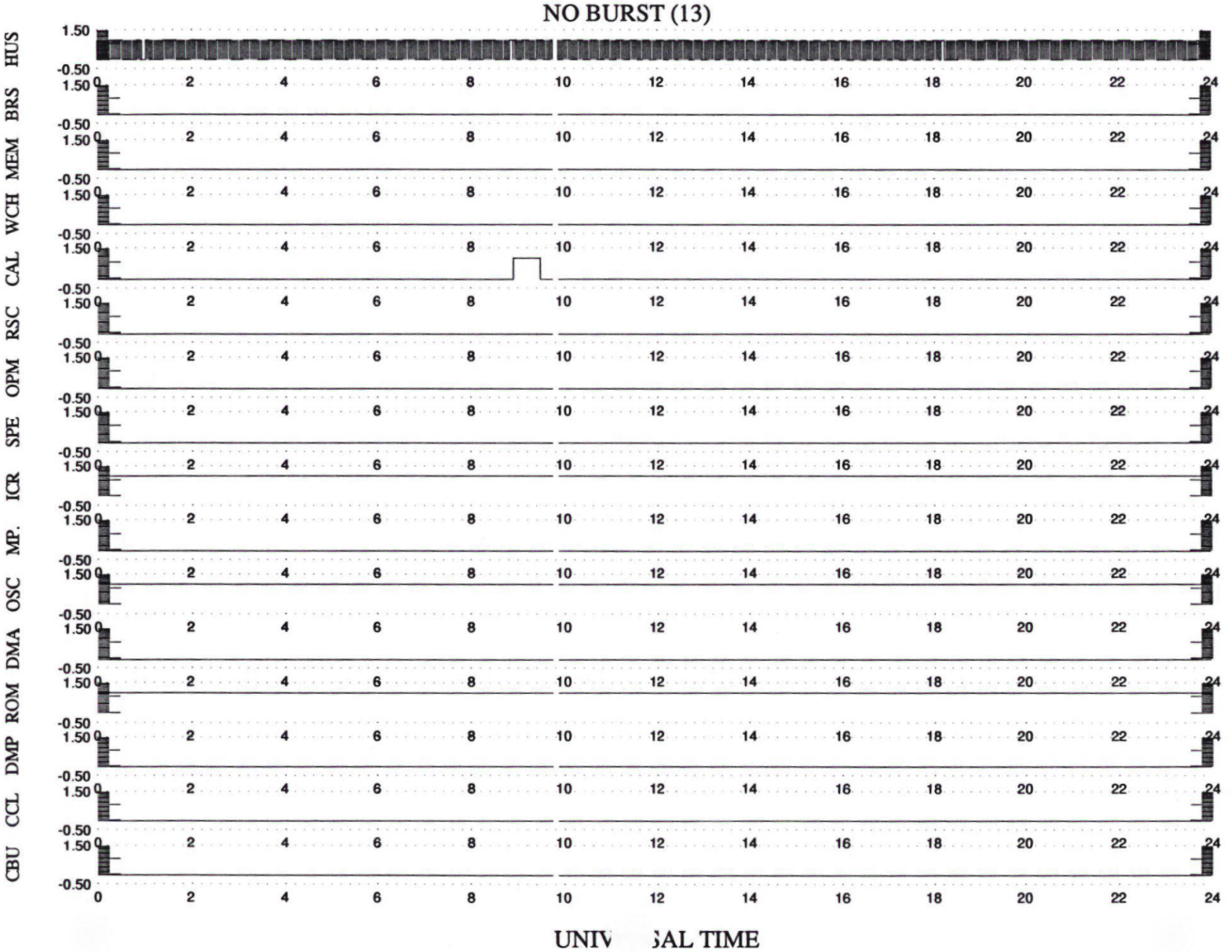
LOCATION: ZENITH=40.1 AZIMUTH=174.4 ERROR=10.0 DEGREES

COMMENTS:
CYGNUS X-1 FLUCTUATION.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/19
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
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: 92/09/14, 2127 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

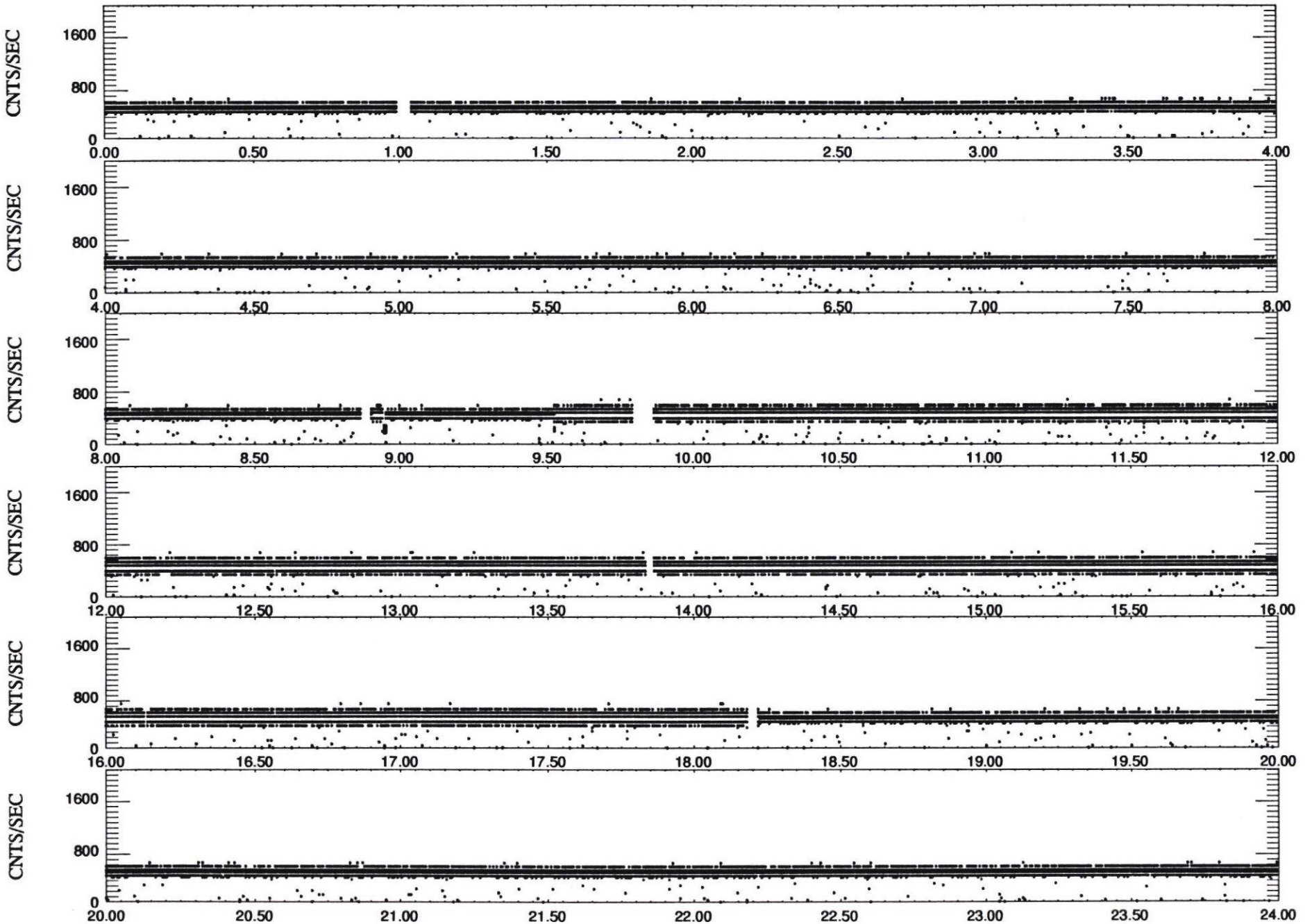

GOES
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/19, 0000:00
Plot created: 95/05/16, 2253
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 201, year 1992 to day 201, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 201, year 1992 to day 201, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

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

BATSE BURST # 1711
EVENT OF 1992 JUL 20 DAY OF YEAR=202
EVENT CROSSING TIME AT BATSE      : 11524. S. OR 03:12:04.1
COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 203.400   37.600
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 20/ 7/  92 IS:
RA=  152.228 DEC=    4.917 DIST=    6.110 AU
BATSE-ULYSSES DISTANCE =  914054504. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=123.18 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1668.45 SECS.
CROSSING TIME AT ULYSSES    IS  9856. S. OR 02:44:15.7 +/-  467.72 SECONDS
```

Trigger

```
From MALLOZZI@ssl.msfc.nasa.gov Tue Jul 21 15:38:13 1992
Date:    Tue, 21 Jul 1992 17:39:42 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

                BATSE BURST TRIGGER
NO.: 01711
```

July 20

```
TIME: TJD=8823 SECONDS=11524

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=78.5   AZIMUTH=92.6   ERROR=      DEGREES

COMMENTS:
INTENSE BURST (~100 000 COUNTS/SEC IN CH1-4) WITH THREE DISTINCT
PEAKS, THE FINAL PEAK BEING THE HARDEST.  THE EVENT IS CLEARLY SEEN
ABOVE 300 KEV.
```

Helio corr removed

Date: 12/27/96

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied?

☑ Ephemeris calculated for start of record of real time data?

☑ Final ephemeris used?

☐ Does ULYTRIG program output contain trigger time, and not SOR? (Ditto for FILE.ult)

☑ Final, CDROM data used?

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

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? N/A

3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

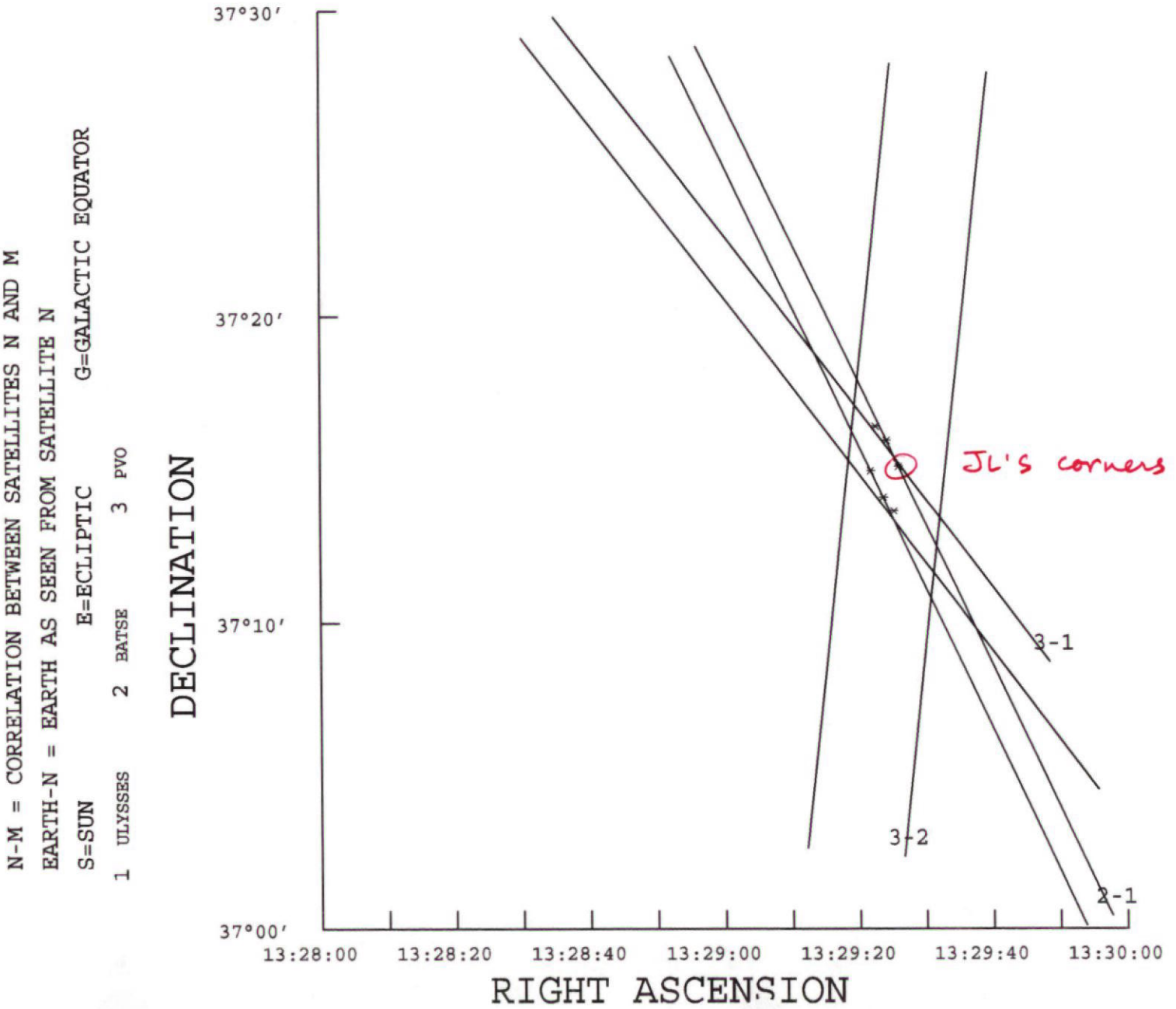
Access database updated

☑ 2000 coordinates used?

☑ Geocentric time used?

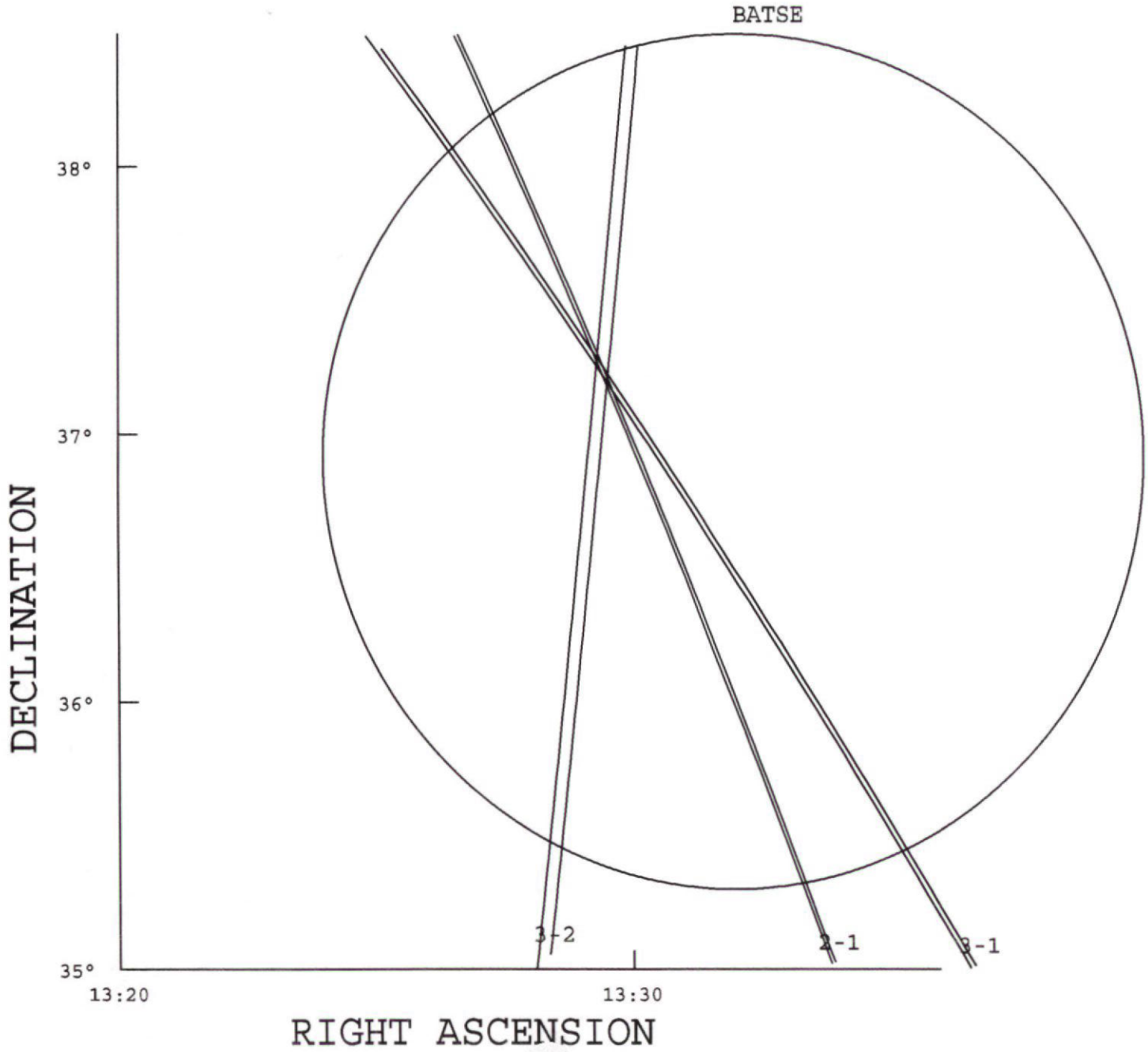
EVENT OF JUL 20, 1992 2:43

10/10/97

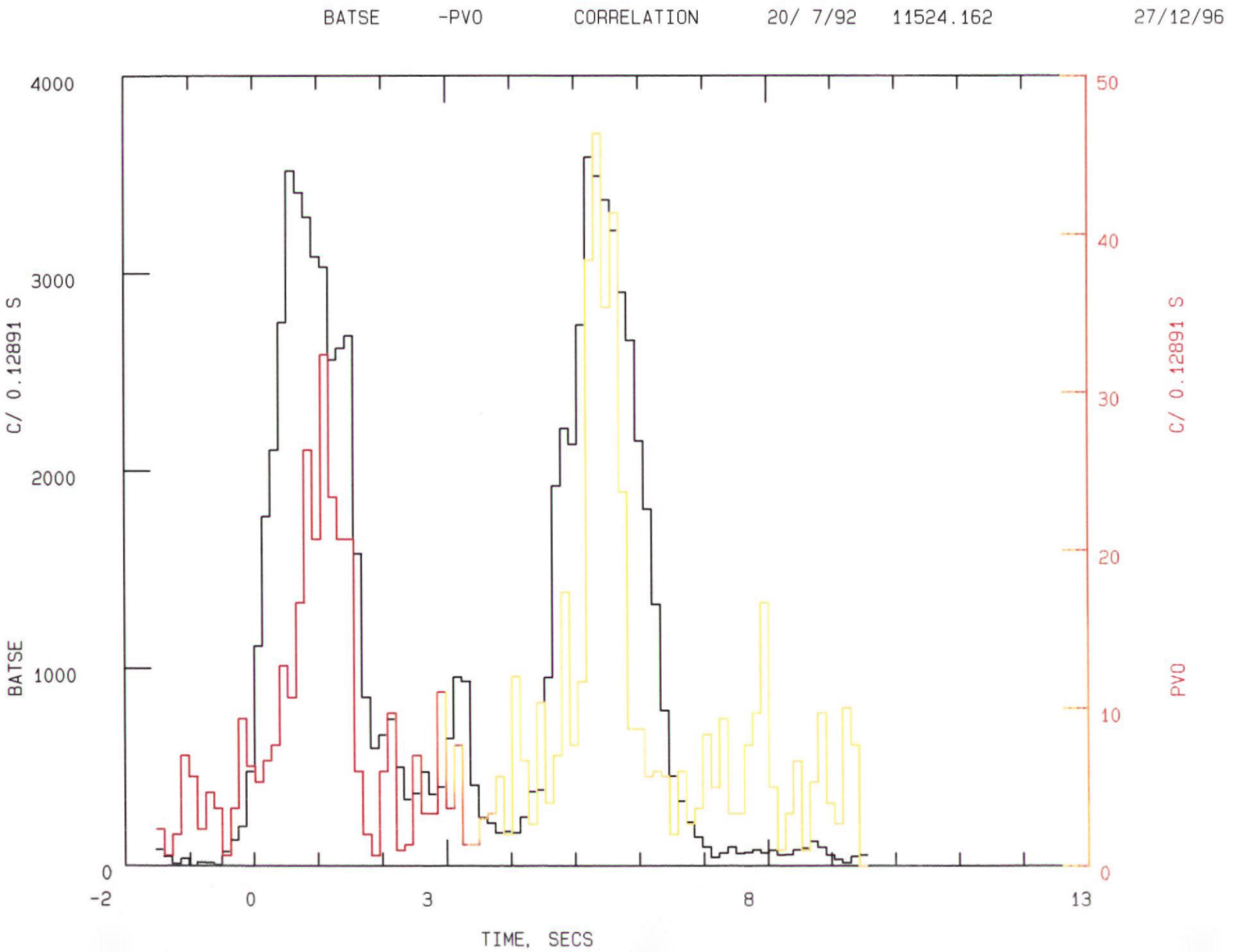


EVENT OF JUL 20, 1992 2:43

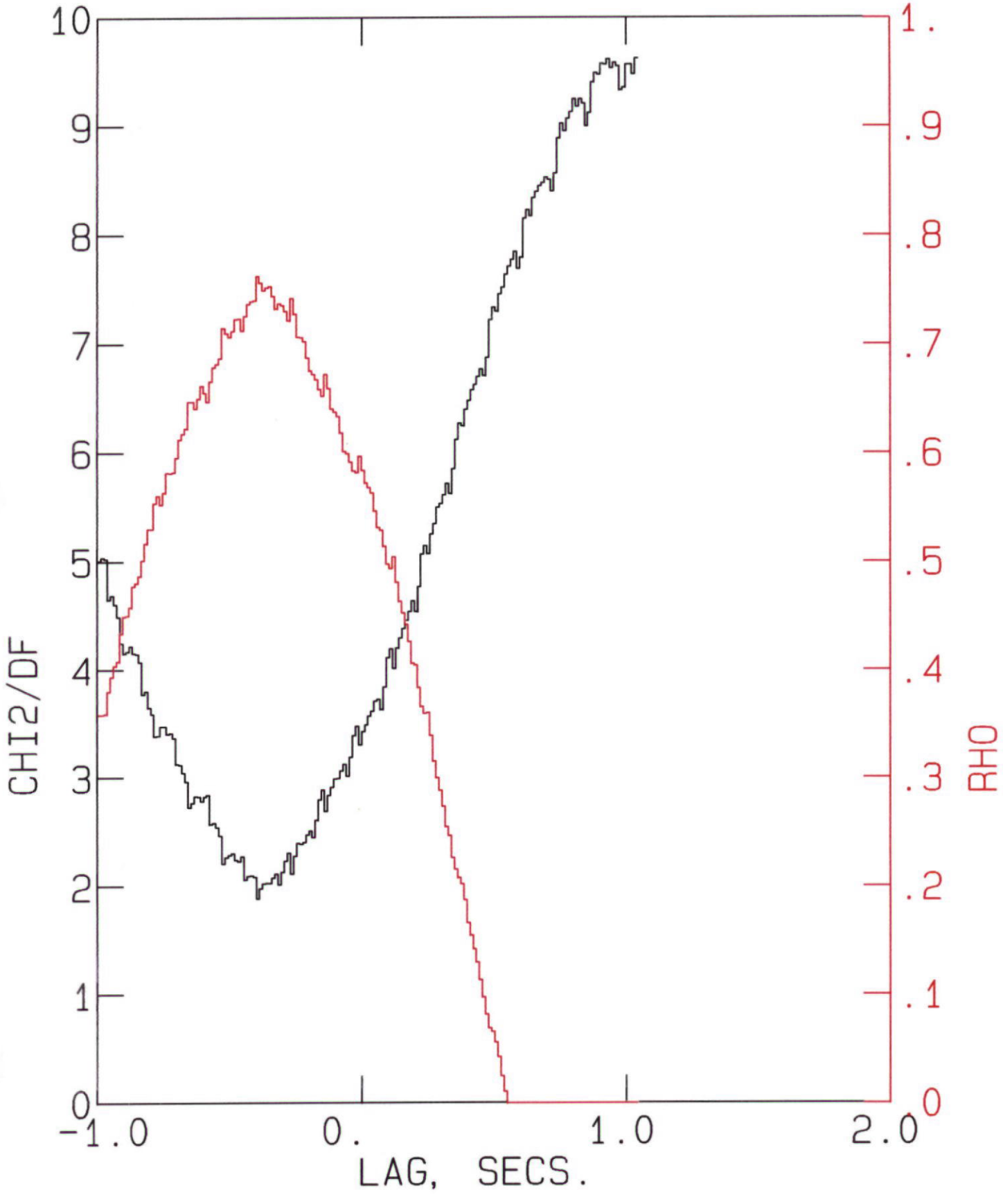
27/12/96



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 3 PVO

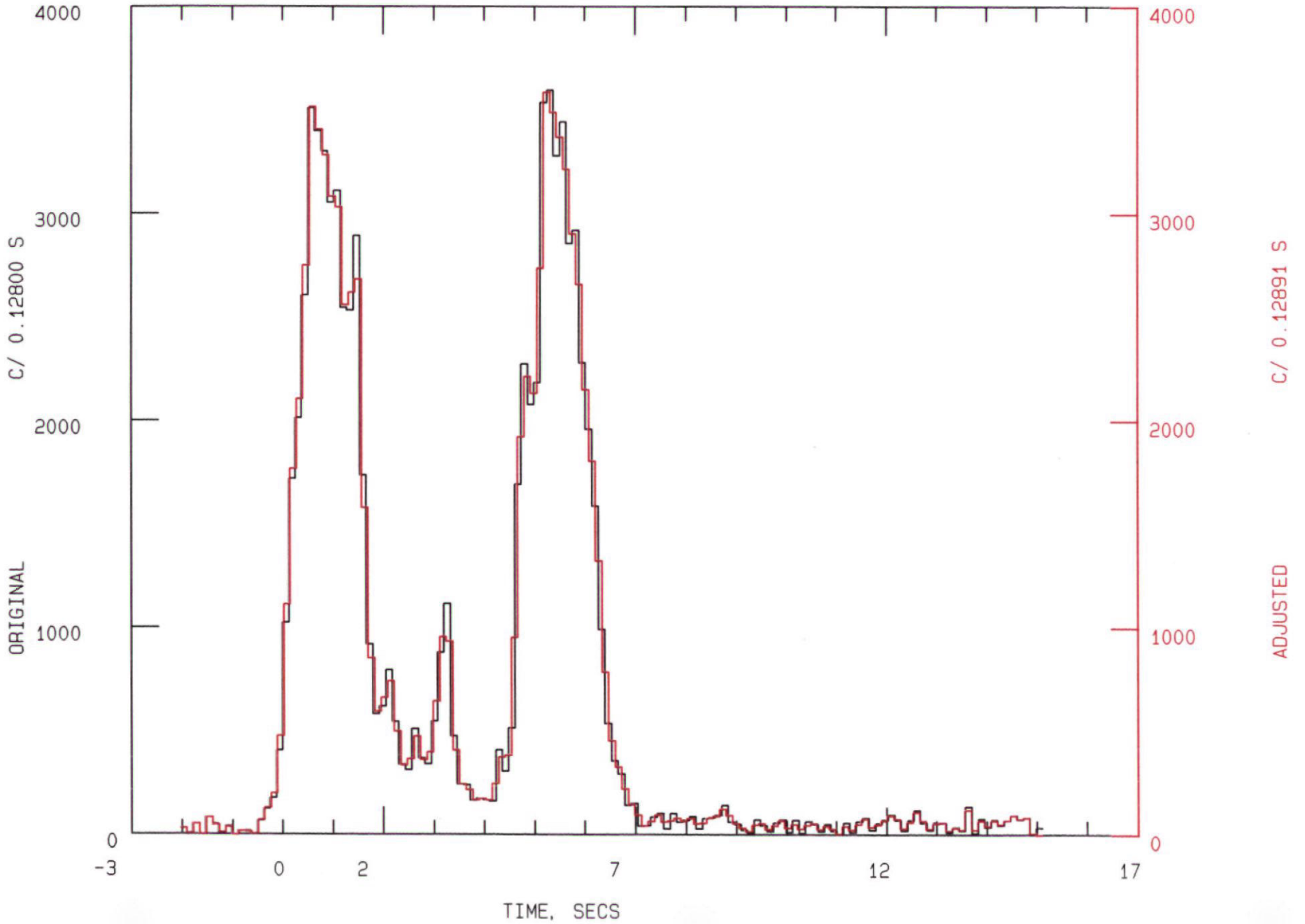

BATSE -PVO CORRELATION 20/ 7/92 11524.162 27/12/96
4000
3000
2000
1000
0
C/ 0.12891 S
BATSE
50
40
30
20
10
0
C/ 0.12891 S
PVO
-2
0
3
8
13
TIME, SECS

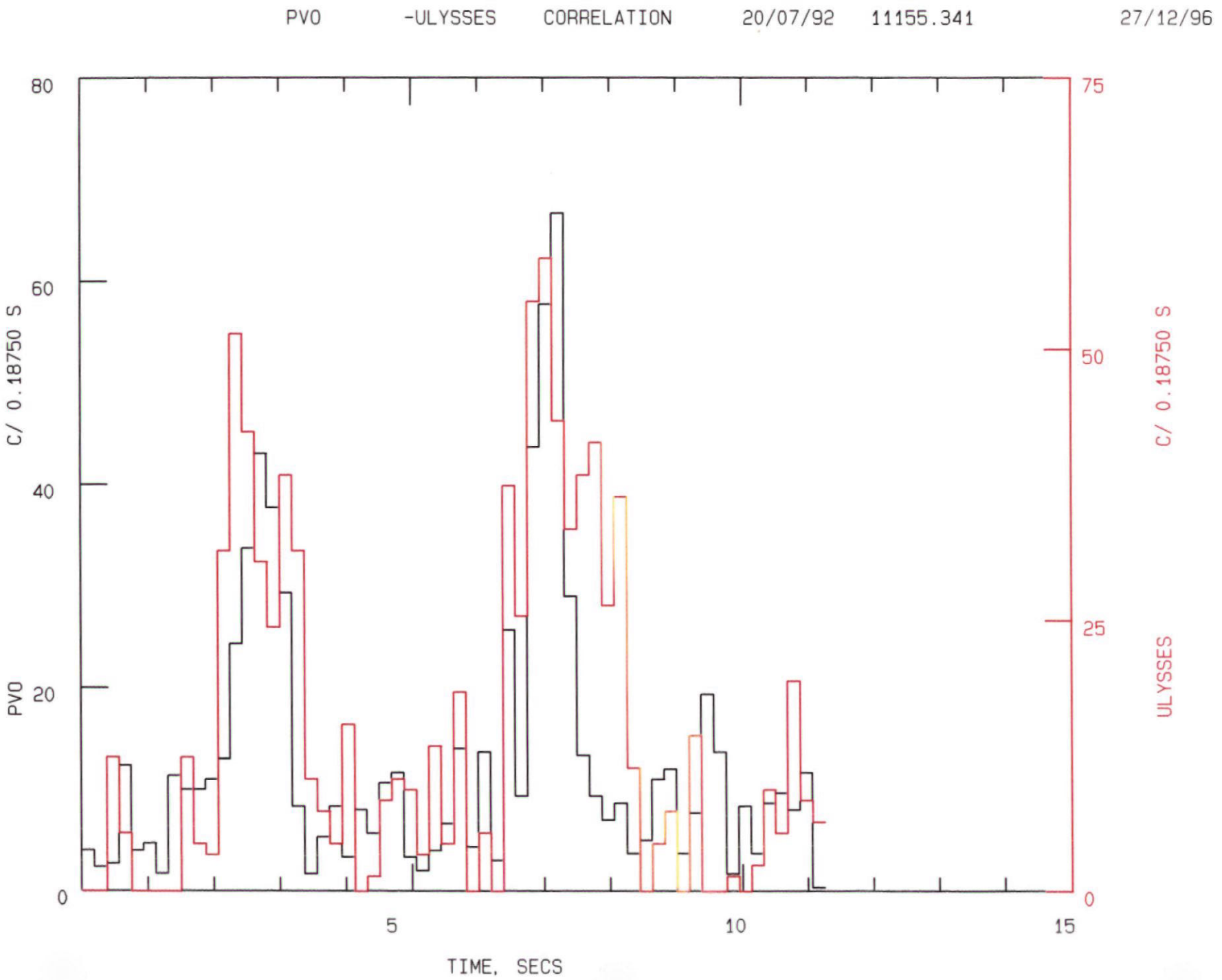
BATSE -PVO CORRELATION 20/ 7/92 11524.162



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 11524.162

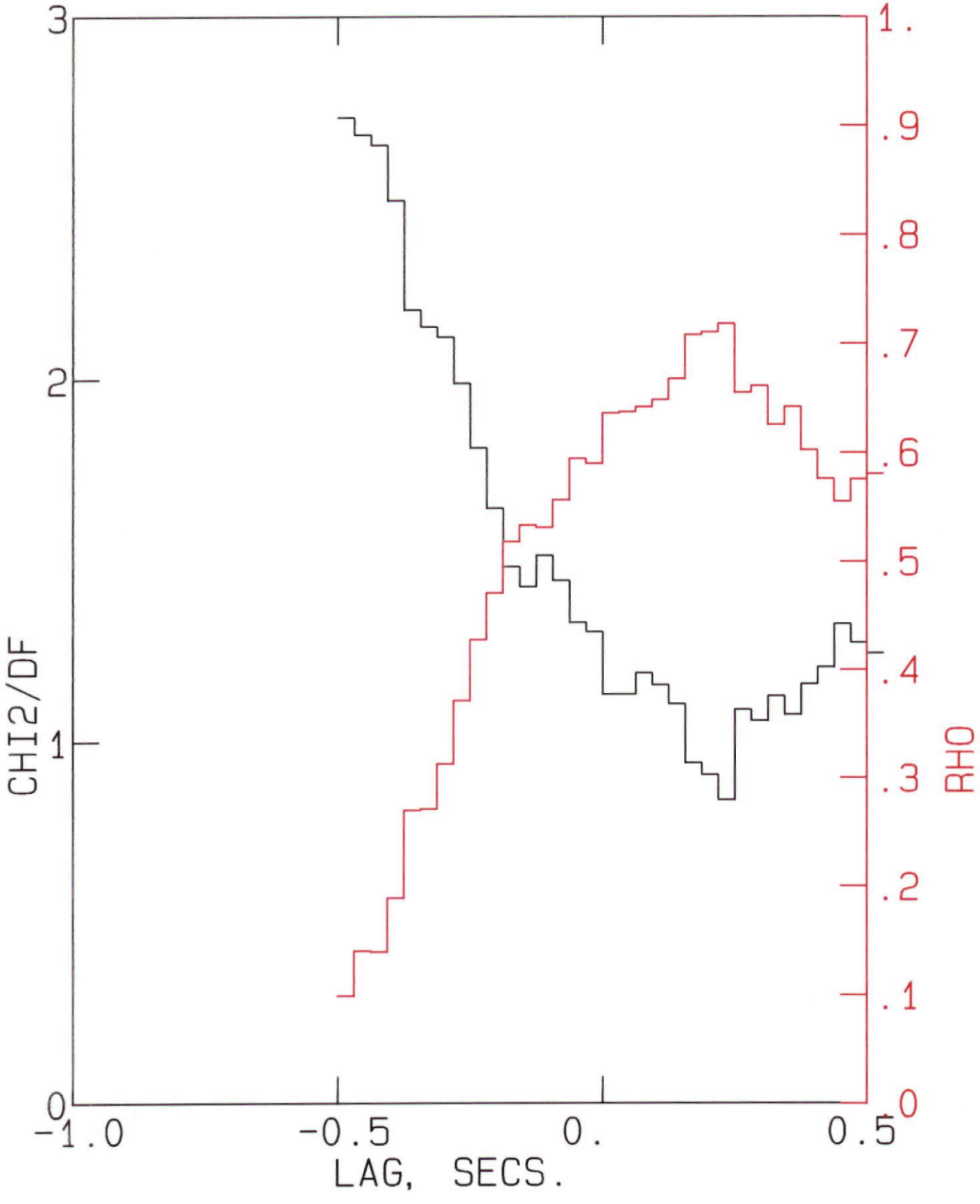
27/12/96

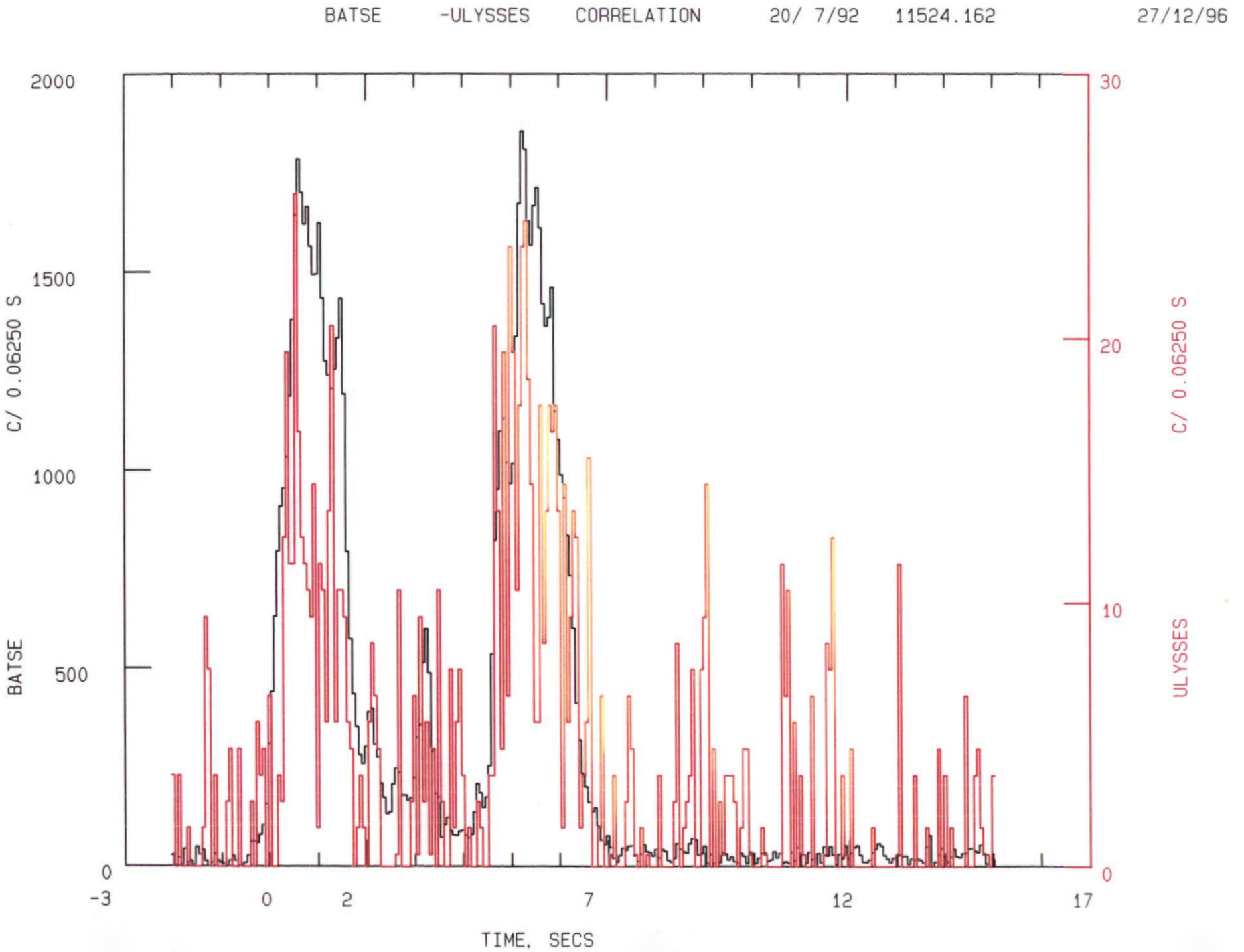



PVO -ULYSSES CORRELATION 20/07/92 11155.341 27/12/96
80
60
40
20
0
C/ 0.18750 S
PVO
75
50
25
0
C/ 0.18750 S
ULYSSES
5
10
15
TIME, SECS

27/12/96

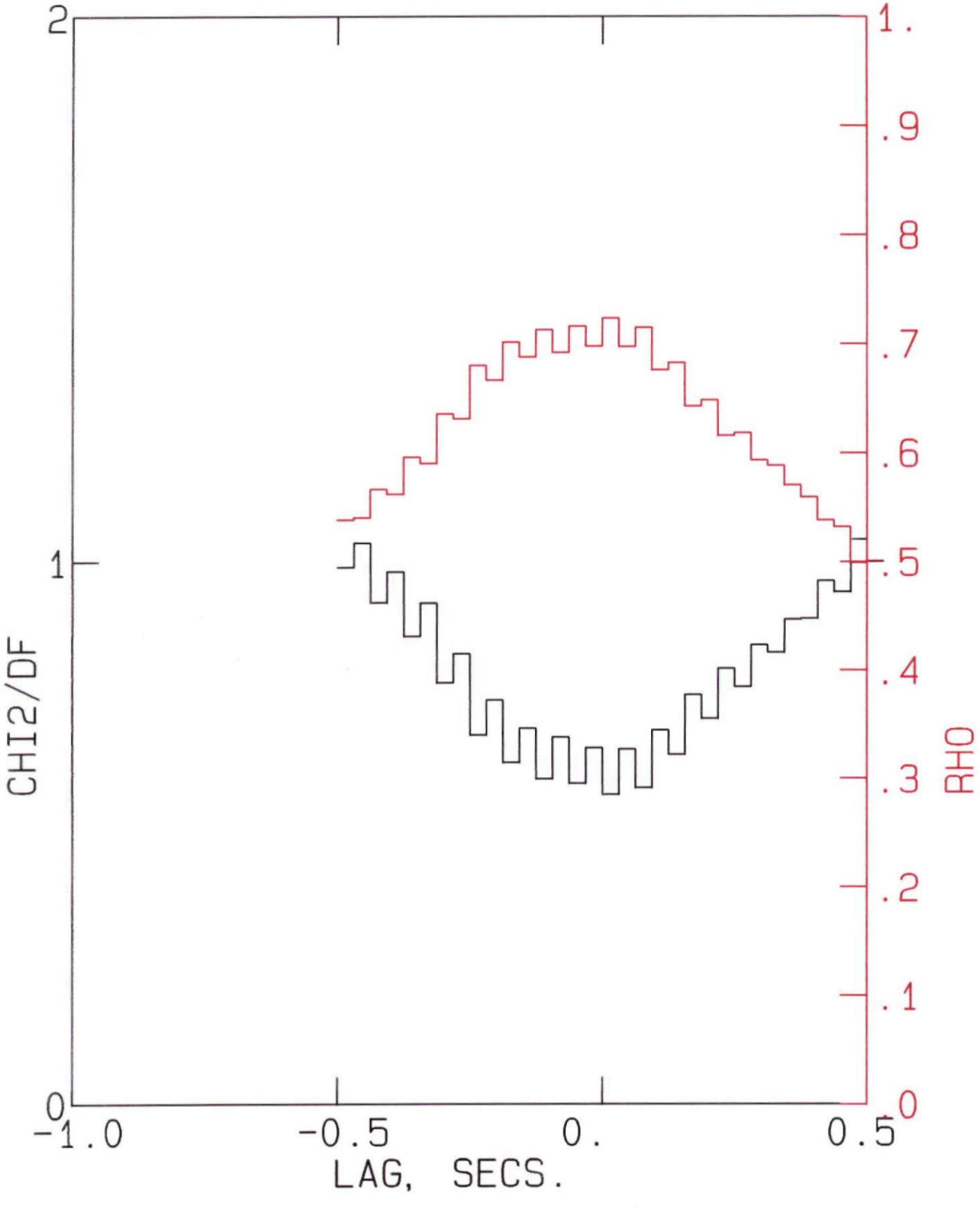
PVO -ULYSSES CORRELATION 20/07/92 11155.341

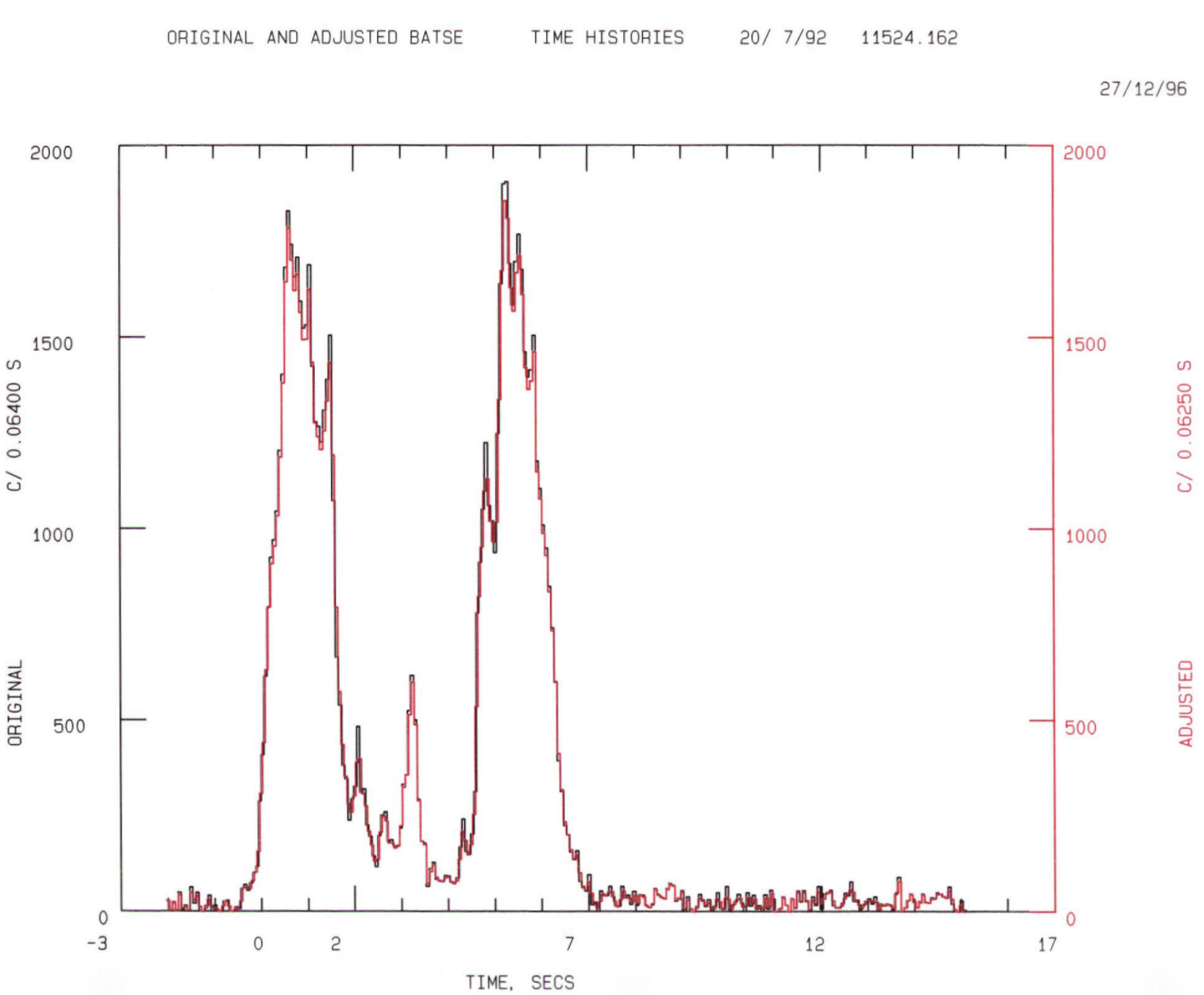



BATSE -ULYSSES CORRELATION 20/ 7/92 11524.162 27/12/96
2000
1500
1000
500
0
C/ 0.06250 S
BATSE
30
20
10
0
C/ 0.06250 S
ULYSSES
-3
0
2
7
12
17
TIME, SECS

27/12/96

BATSE -ULYSSES CORRELATION 20/ 7/92 11524.162

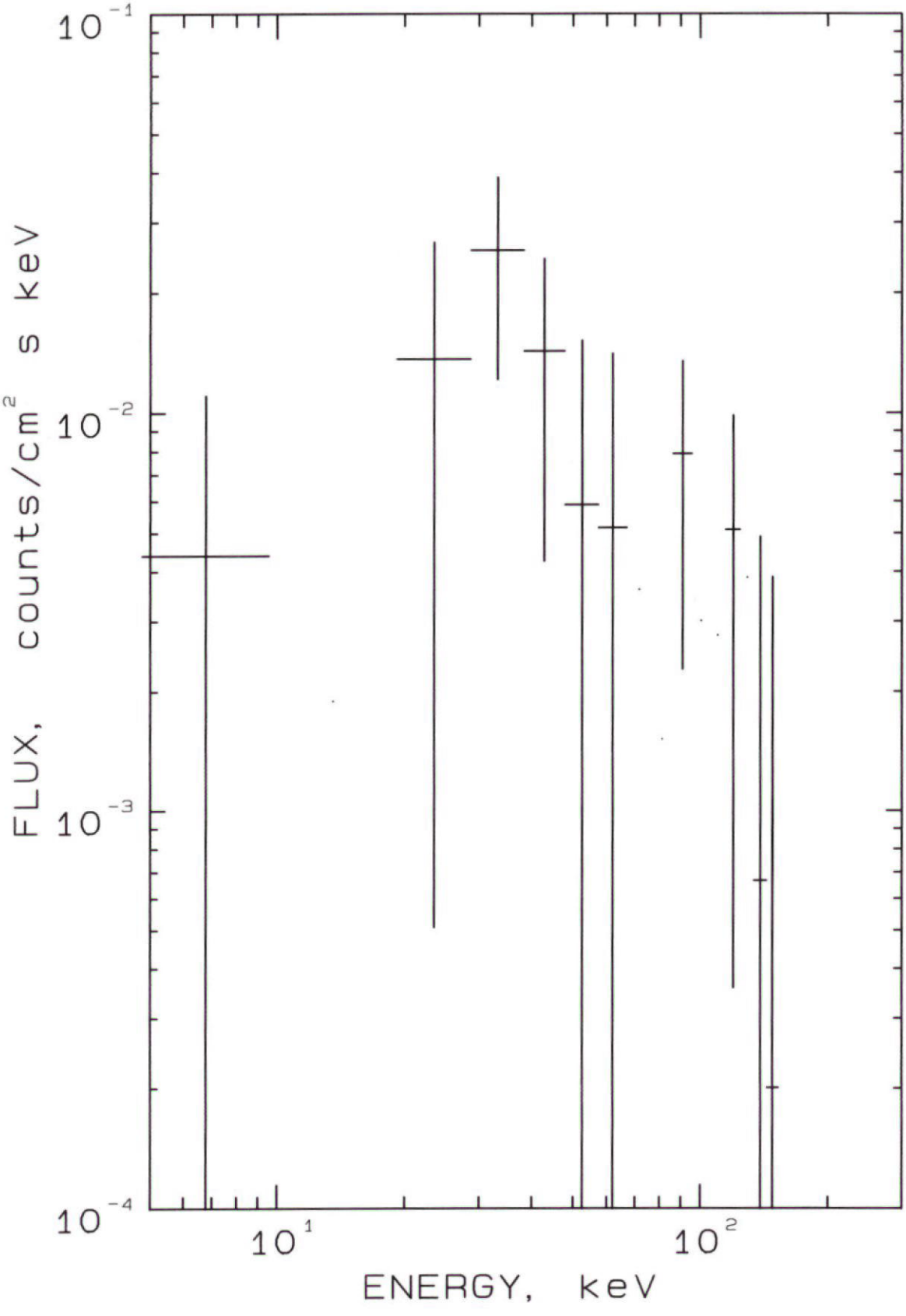


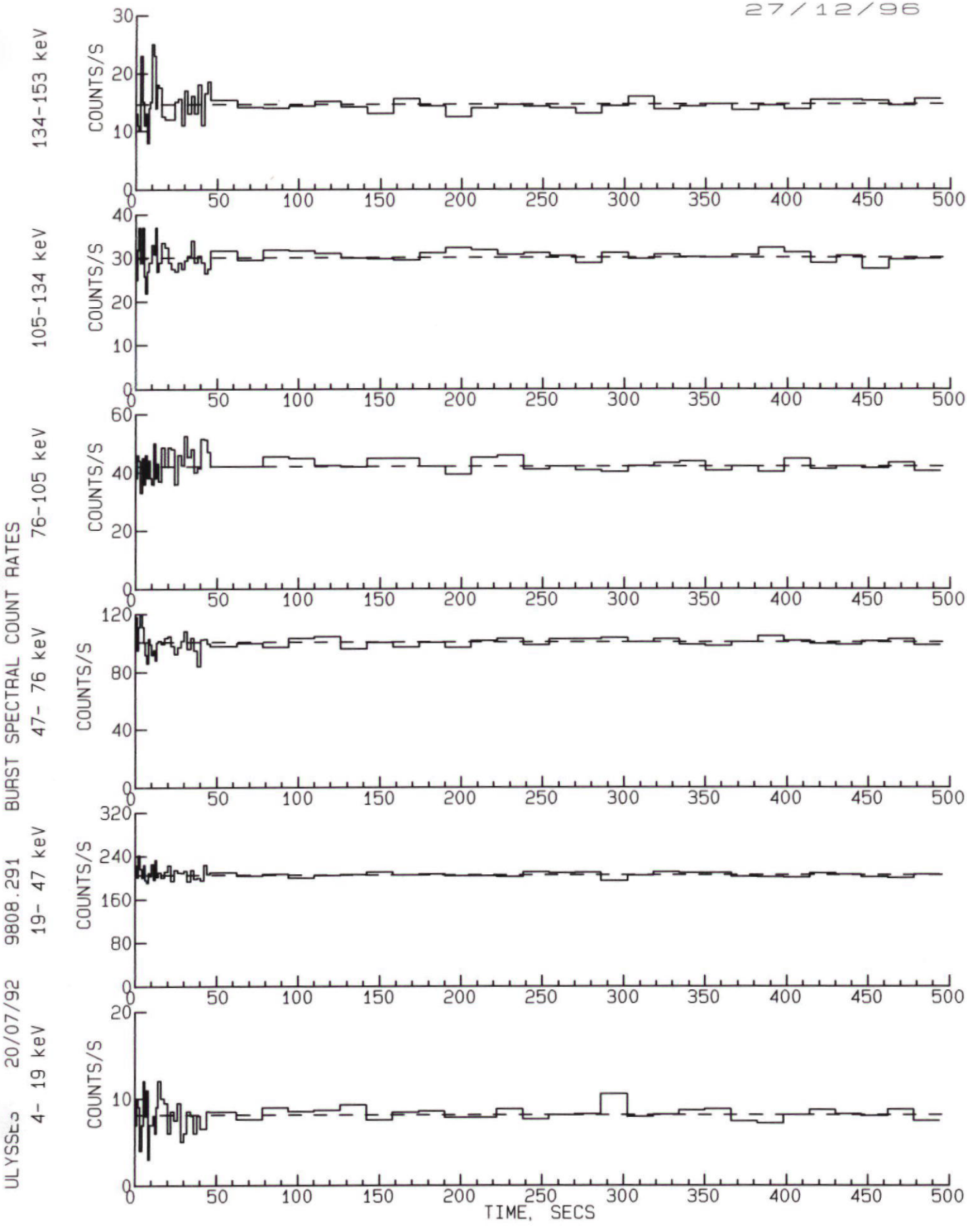

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 11524.162
27/12/96
2000
1500
1000
500
0
C/ 0.06400 S
ORIGINAL
2000
1500
1000
500
0
C/ 0.06250 S
ADJUSTED
-3
0
2
7
12
17
TIME, SECS

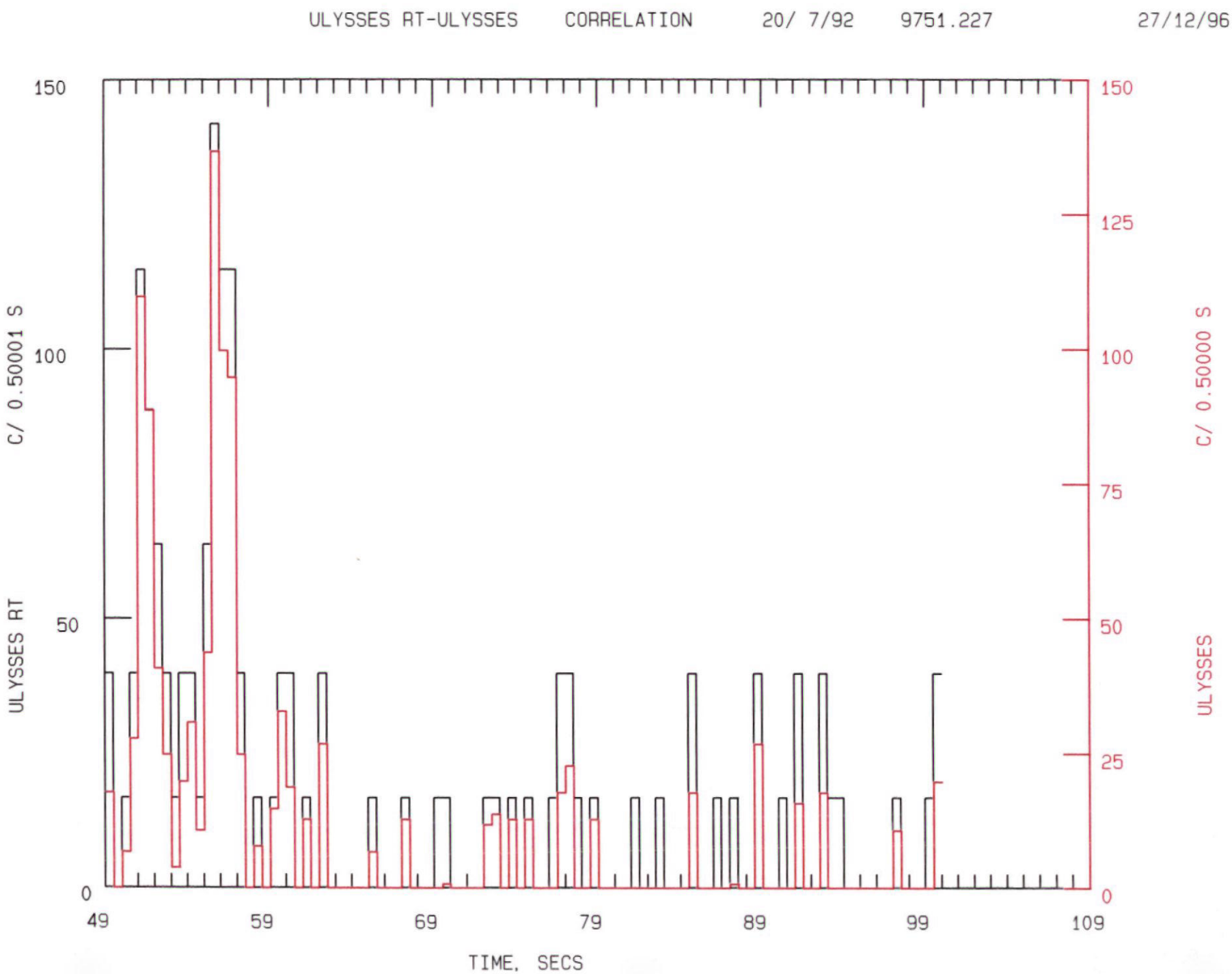
ULYSSES 20/07/92 9808.291

27/12/96

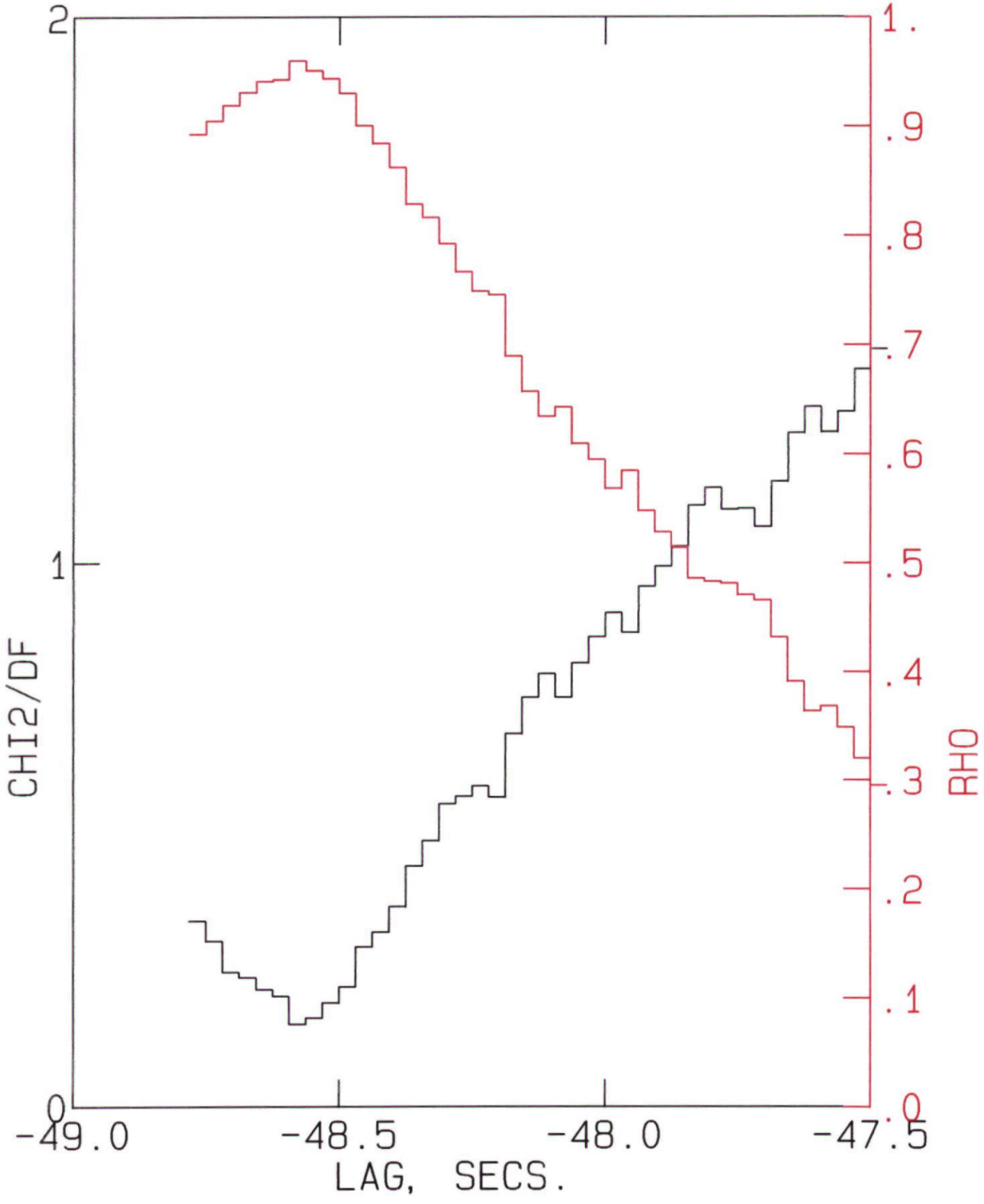
SPECTRUM INTEGRATED OVER 20.0 SECONDS, INTERVALS 2 TO 19

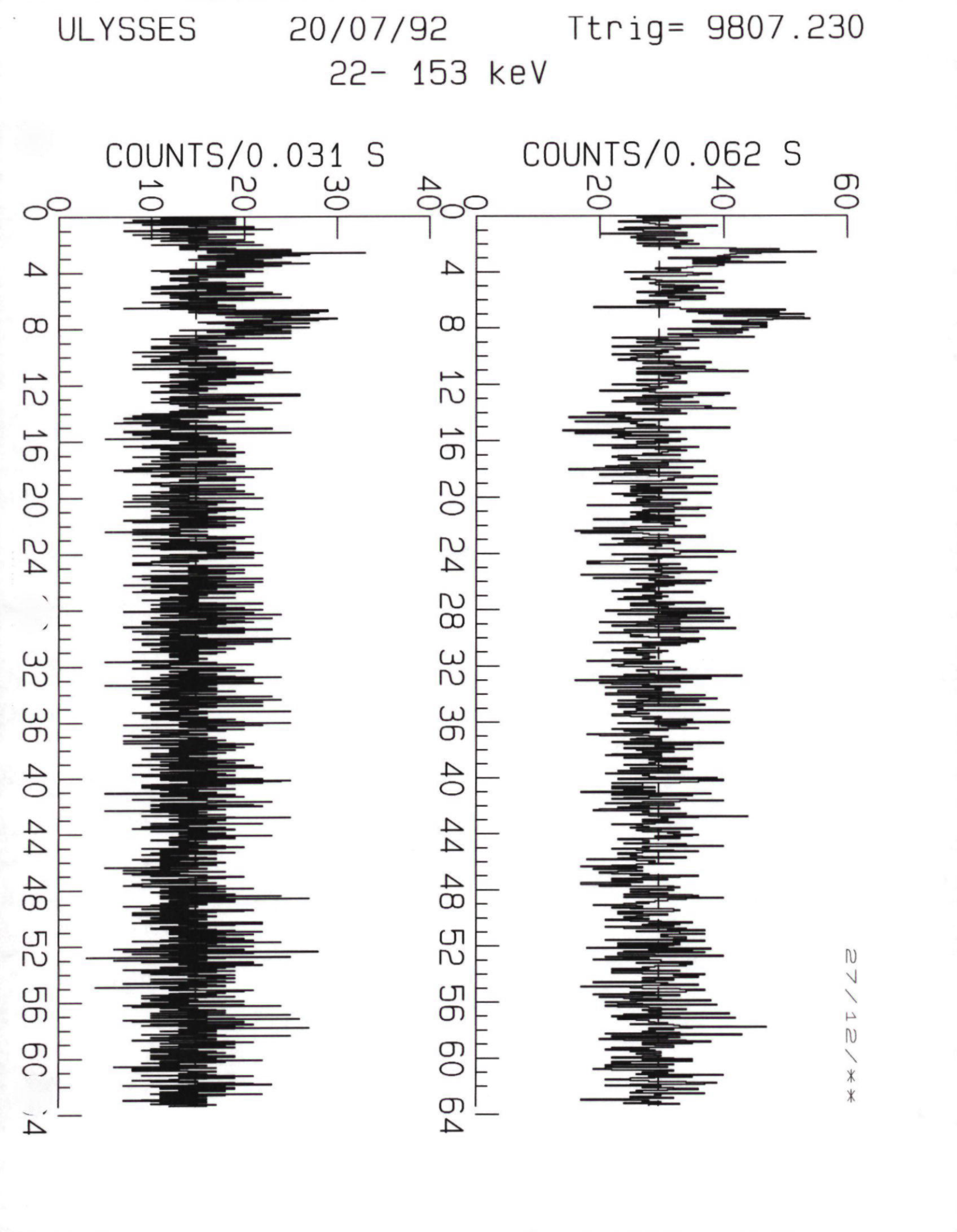



27/12/96
ULYSSES 20/07/92 9808.291 BURST SPECTRAL COUNT RATES
134-153 keV
105-134 keV
76-105 keV
47- 76 keV
19- 47 keV
4- 19 keV
COUNTS/S
TIME, SECS


ULYSSES RT-ULYSSES CORRELATION 20/ 7/92 9751.227 27/12/96
150
100
50
0
C/ 0.50001 S
ULYSSES RT
150
125
100
75
50
25
0
C/ 0.50000 S
ULYSSES
49
59
69
79
89
99
109
TIME, SECS

ULYSSES RT-ULYSSES CORRELATION 20/ 7/92 9751.227



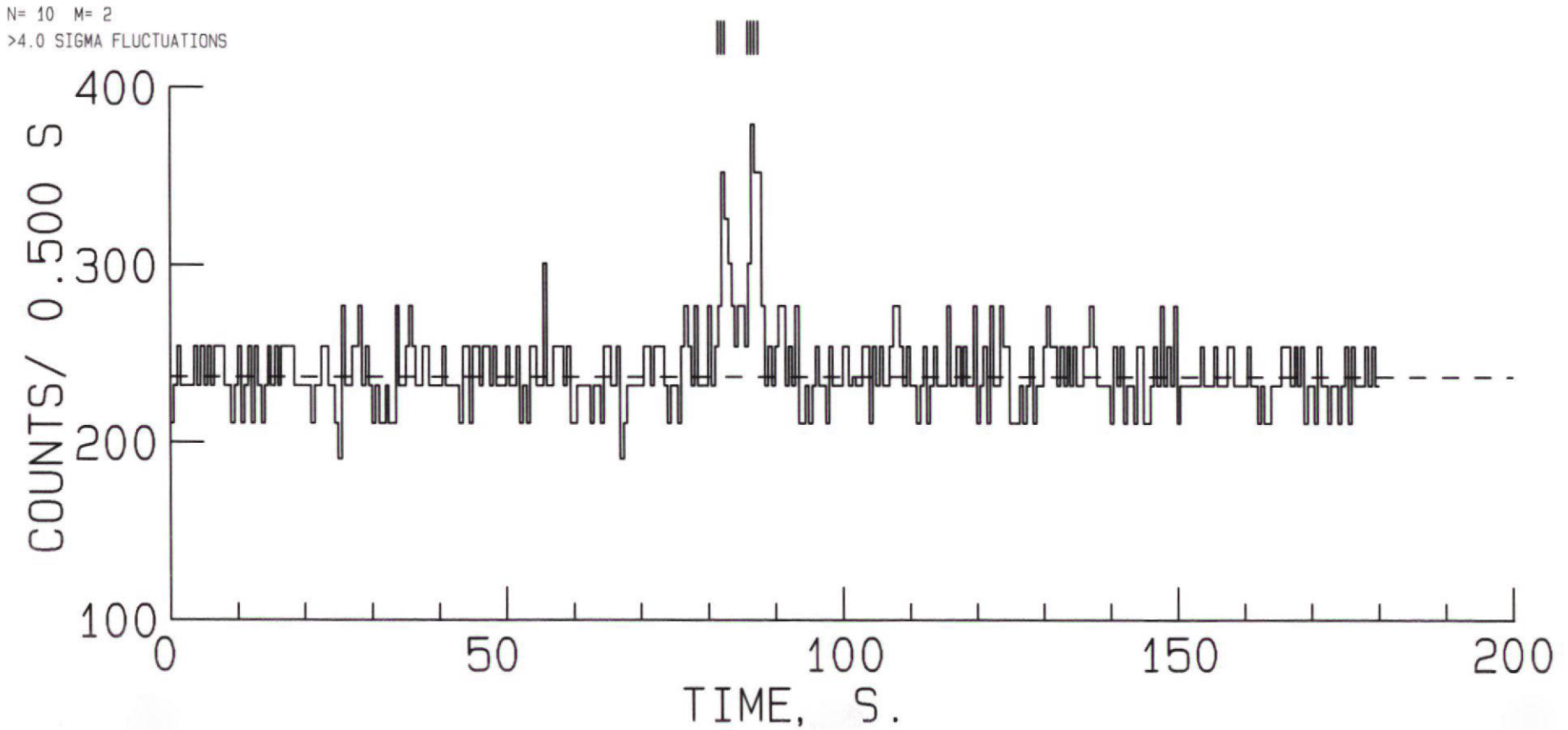

ULYSSES 20/07/92 Ttrig= 9807.230
22- 153 keV
COUNTS/0.031 S
COUNTS/0.062 S
27/12/**

ULYSSES RT

27/12/96

20/ 7/92 9720.248 s

22- 153 keV



From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

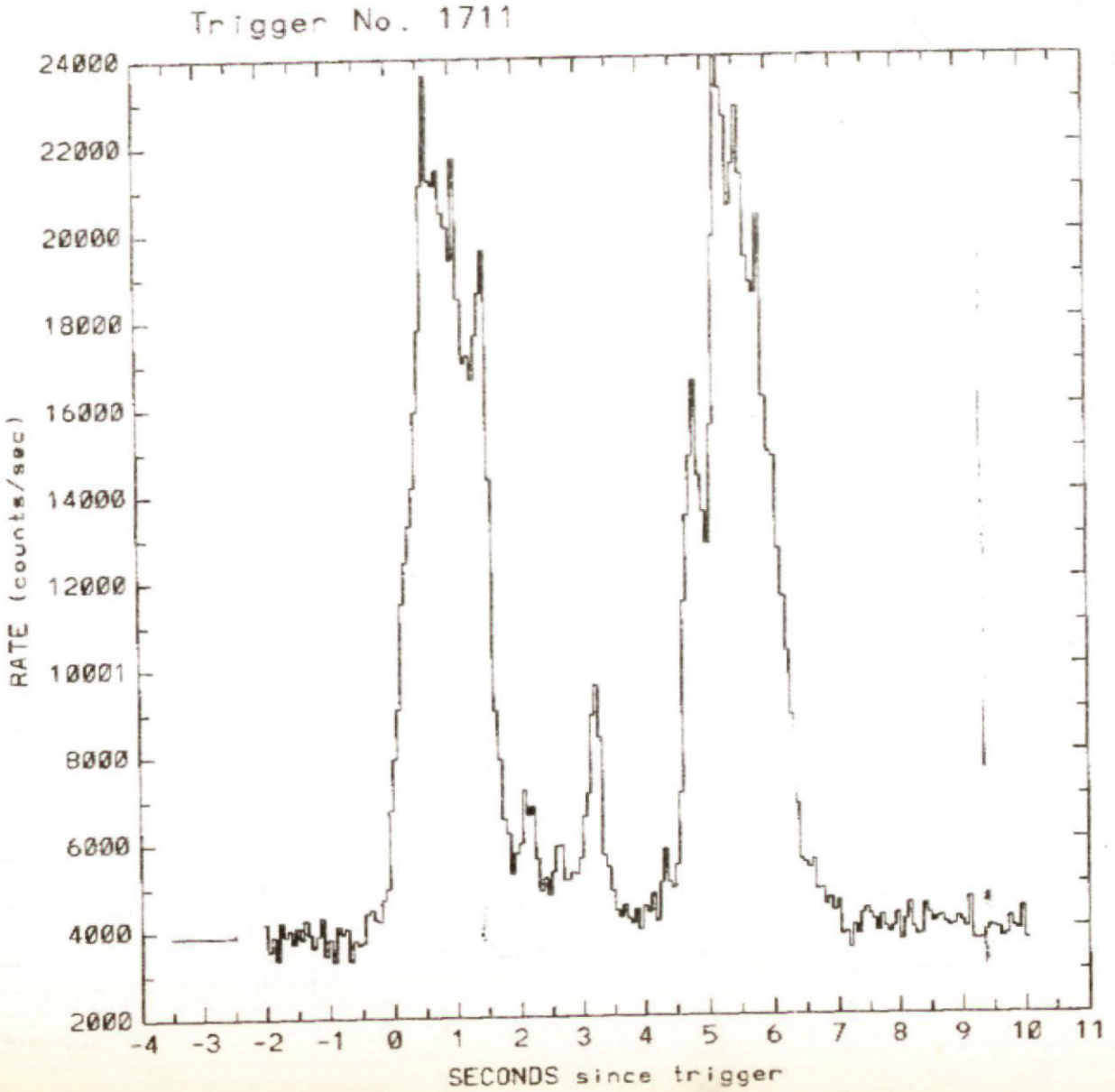
Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

Follow-up observations

S Larson IR
R Hudec
B Schaefer
R Schnee
T Musch



21-JUL-1992 14:58:53

Created by MOPS BD
(Burst Display)
Version 2.14

Trigger # : 1711

Trigger Time:
8823 / 11524.162

Burst Data Type:
DISCSC

Deadtime
Corrected: N

Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 seconds)

Detectors [7..0]:
00010011

Discriminators:
(2. 2)

Quality Mask:
BDISP0

JUL 22 '92 6:38 BATSE 0 - G PAGE.03

920622	25504	8SA 10NR 11SA
920627	46956	NA
920711	53140	YES--58157
920718	77563	8NA 10SA 11NA
920720	11524	8NA/OBSC 10NA/OBSC 11SR
920824	39183	YES--39186
920902	1736	YES--1743
921009	24070	YES--24073
921022	55259	8ND 10NA 11NA
921123	22711	YES--22727
921123	46583	YES--46542
921207	57647	YES--57649
921209	41738	8NR 10NA 11NR
930106	56259	YES--56260
930110	6698	8NA 10NR 11NA
930120	84700	YES--84779
930131	68231	YES--68231
930201	60115	YES--60129
930309	11269	NA
930329	11365	8NA 10SR 11NA
930405	32089	YES--32105
930406	26185	8NA 10NR 11NA
930428	04032	8NA 1ONA 11SR
930506	53571	YES--53578
930506	65631	NA

From root Thu Feb 3 13:55 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA00852; Thu, 3 Feb 94 13:55:12
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA13978; Thu, 3 Feb 1994 12:59:12 +0800
Date: Thu, 3 Feb 1994 14:00:37 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940203140037.23c05074@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRO GRB
Content-Length: 2739
Status: R

FROM: SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/03)
TO: SSL::KOUVELIOTOU AND GIBSON::COLE (CHRYSSA KOUVELIOTOU AND STAYCE COLE)
CC: SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
SUBJ: DMSP OBSERVATIONS OF GRO GRB

Chryssa and Stayce:
Thanks very much for the listing of strong Batse bursts sent to me 11/1/93.
I have now managed to check all of them against DMSP data, and find that
many of them were also detected by DMSP8,9,10, or 11. Probably the higher percent
of detections in recent data is due to more extraction of full data. In many
cases such added effort would not be necessary if source direction
(and consequent obscuration of some DMSP satellites) were known to me.
I would appreciate data on more strong events. Here is the present list:

NOTES:
NA: Not apparent in 20-second averaged data (extracting the 2-sec data is
a more time-consuming task, not undertaken in every case).
NA?: Some slight indication of a peak in 20-second averaged data.
SA: South Atlantic Anomaly, obscuring data with high background rates.
SR: South Radiation Belt background.
NR: North Radiation Belt background.
ND: No data for this time.
YES: Burst definitely detected by one or more DMSP satellites (8,9,10,11).
NO: No evidence of a peak in 2-sec data. (NO/OBSC: Obscured by Earth)

DATE	UT	DMSP
910421	33245	8NO 9SR 10NR
910627	16159	8NA 9NR 10ND
910629	71750	8NA 9SR 10NA
910703	18225	8NA 9NA? 10SR
910717	16386	8NA 9SA 10SR
910718	76051	8NA 9SA 10SA
910802	2718	ND
910814	69275	ND
911024	76208	ND
911104	54283	YES--54286 PEAK
911109	12459	8NO 9NR 10NO
911118	68260	ND
911119	23343	YES--23342
911126	46129	8SR 9SR 10NO
911127	15730	YES--15739
911202	73731	YES--73733
911209	66959	8SR 9SR 10NR 11ND
920226	29730	8SA 9NA? 10SA 11SA
920229	69769	8SR 9ND 10NA 11NA
920311	8246	YES--8431
920315	15569	8NA 9NR 10NA 11NA
920325	62258	YES--62256
920404	47506	8NA 10NA? 11NR
920406	9855	8NO/OBSC 10SR 11SR/OBSC
920414	84163	NA
920517	11877	YES--11883
920525	12423	YES--12427

Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-06-28	21:14:12.932	473-a	GRB
1992-07-08	16:30:01.944	479-a	Solar Flare
1992-07-14	13:04:30.544	482-a	GRB
1992-07-16	16:55:27.526	484-a	Solar Flare
1992-07-18	21.32:44.275	485-a	GRB
1992-07-20	03:12:04.391	486-a	GRB
1992-07-23	00:59:16.612	488-a	GRB
1992-07-23	20:03:08.386	489-a	GRB
1992-07-23	21:48:54.786	489-b	GRB
1992-08-16	12:37:31.102	493-a	GRB
1992-08-26	02:47:07.423	500-a	GRB
1992-08-30	01:45:19.113	503-a	GRB
1992-09-02	00:29:00.916	504-a	GRB
1992-09-03	00:49:18.142	505-a	GRB
1992-09-03	01:37:17.202	505-b	GRB ?
1992-09-03	23:29:01.404	506-a	GRB
1992-09-04	04:41:38.922	506-b	GRB
1992-09-05	15:56:15.844	507-a	Solar Flare
1992-09-06	18:45:29.617	507-b	Solar Flare
1992-09-06	20:56:31.135	507-c	Solar Flare
1992-09-14	07:14:50.878	508-a	Unknown
1992-09-18	09:41:19.340	511-a	GRB
1992-09-25	20:30:41.410	517-a	GRB
1992-09-25	21:40:47.837	517-b	No Available data
1992-09-30	00:47:46.089	518-a	Unknown
1992-10-04	22:19:05.006	522-a	Solar Flare
1992-10-12	13:14:44.786	523-a	Solar Flare
1992-10-13	23:01:01.582	524-a	GRB
1992-10-25	13:53:16.735	527-a	GRB
1992-10-27	06:52:02.336	528-a	Solar Flare
1992-10-29	15:23:10.349	530-a	SF ou Unknown?
1992-10-29	16:11:39.173	530-b	SF ou Unknown?
1992-10-29	16:26:49.045	530-c	SF ou Unknown?
1992-11-23	16:32:04.840	534-a	SF ou Unknown?
1992-11-23	17:11:35.698	534-b	SF ou Unknown?

From root Wed Jun 16 07:46 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA10583; Wed, 16 Jun 93 07:46:51
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA11859; Wed, 16 Jun 93 07:48:43 PDT
Date: Wed, 16 Jun 93 07:48:43 PDT
Message-Id: <9306161448.AA11859@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 16 Jun 1993 10:51:02 -0400 (EDT)
To: Schaefer@tgrs.ssl.berkeley.EDU
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: source fields
Cc: khurley@space6.ssl.berkeley.edu
Status: R

Brad:
I am checking on the events you mentioned, 92-Jul-11 and 92-Jul-20, with the preliminary results that Kevin's intermediate values are OK and should remain to hold to within 1 to 3 arc minutes or so, at least. For example, the check for 92-Jul-11 is RA,dec: 281.5162, +72.8742 for the center intersection (with the shape of the field unchanged from KH's), to be compared with KH's center of his roughly 1 minute x 4 minute field at 281.5360, +72.8838 degrees (2000 eqx). Also, for 92-Jul-20: similarly, RA,dec: 202.3364, +37.2710, vs KH's center at 202.3584, +37.2375 for a 1'x3' field. This is not meant to be a disagreement, but a check to be sure that there are no HORRID errors and that each field will not move significantly. Assuming that you don't treat it too literally, i.e., with edges too sharp, so to speak, -- he and I each would reason that either field could still move but certainly not more than a couple of arc minutes.

#1711

By the way, not to get your hopes up needlessly, but Jake Trombka says that the Mars Observer is being turned on for a month, now. Who knows; it may - repeat, may - be capable of giving us a real-time full-tripod network event. However, I will believe that when it is totally and truly history.
TLC
-- T. L. Cline ----- LHEAVX::CLINE

From root Wed May 26 11:13 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA03824; Wed, 26 May 93 11:13:30
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA26152; Wed, 26 May 93 11:13:36 PDT
Date: Wed, 26 May 93 11:13:36 PDT
Message-Id: <9305261813.AA26152@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Wed, 26 May 1993 14:16:34 -0400 (EDT)
To: SCHNEE@cygnus.ucsc.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: Four event source locations
Cc: KHURLEY@space6.ssl.berkeley.edu
Status: RO

Dear Richard Schnee:
I did, just now, get your note. Regarding the four events of interest,
we can give you directional improvements on three of them at this time,
as listed below. However, I will have to do some work on the event of
91 Apr 21 (this one has timing from three spacecraft to be sure, but
only extremely poor quality data from one detector, so the true source
locus will be a long, narrow box, not like the others). The analyses
of the three events listed are presently in the intermediate stages, and
may yet be improved before we will define the results to be 'final.'
As you see, the 92-Jul-20 IAU source location was in systematic error,
outside the limits quoted in the IAU telegram. This location is correct.
These three source fields are now fairly small.
1992-Jul-20:
RA = 202.34 +/- 0.1 degrees, Dec = +37.24 +/- 0.1 degrees (Equinox 2000). #1711
1992-Mar-25:
RA = 350.58 +/- 0.1 degrees, Dec = +13.05 +/- 0.1 degrees (Equinox 2000).
1991-Nov-04:
RA = 212.20 +/- 0.2 degrees, Dec = +35.35 +/- 0.2 degrees (Equinox 2000).
1991-Apr-21:
(?) - I will try to get this to you tomorrow.
Thomas L. Cline
-- T. L. Cline ----- LHEAVX::CLINE

From root Fri May 28 12:27 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA03869; Fri, 28 May 93 12:27:08
Received: from TGRS.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA03530; Fri, 28 May 93 12:27:14 PDT
Date: Fri, 28 May 93 12:27:14 PDT
Message-Id: <9305281927.AA03530@sunspot.ssl.berkeley.edu>
Received: from [128.183.8.198] ([128.183.8.198]) by TGRS.GSFC.NASA.GOV with SMTP;
          Fri, 28 May 1993 15:30:24 -0400 (EDT)
To: Schnee@cygnus.ucsc.edu
From: cline@tgrs.gsfc.nasa.gov (T L Cline)
Subject: P.S. on source locations
Cc: KHURLEY@space6.ssl.berkeley.edu
Status: RO

Richard Schnee:
I believe that I sent you all the updated (but unfinalized) analyses that you requested, except for 91 Apr 21. I really don't like the looks of this one and would like to work on it some more - if you think that it's worth it. Let me know if it should be abandoned, or if there is any promise in this one. The truly preliminary source locus is unavoidably long, from about RA = 271.0, dec = +26.5, to about RA = 268.5, dec = +25.7, with about a 0.1-degree half width on this annular segment. And I don't guarantee that; it's a question of whether that is close enough to your direction to warrant more work. - Another thing:
Kevin Hurley has put you on his mailing list for preliminary notifications. He will send, or has recently sent, to you a description of what that means.
Thomas L. Cline
-- T. L. Cline ----- LHEAVX::CLINE

JLA 10/19/92

Date	Heure Phebus		Sigma	Heure Ulysse	Seance	Cmax Phebus	Cmax Ulysse	Loc. α, δ	Comment.
1991-09-01	19467				327	145			faible
1991-09-07	3910	I		2066	330	177	90		
1991-10-16	39695				355	213			HUS : lim sup
1991-10-18	19936	I		21720	356	553	375		
1991-10-25	77116				362	107			faible
1991-11-19	61954		gca		367	131			faible
1991-12-22	54010	I		53610	381	277	179		
1992-01-10	33540	I	ac	34298	386		151		bdf Phebus faux
1992-01-25	32247		ac/gca		397				HUS : lim sup
1992-02-10	35633		ac		404				HUS : no data
1992-02-18	67459				411				HUS : manque données
1992-02-29	69678				415				HUS : lim sup
1992-03-11	8427	I	ac/gca	7045	422		505	131.6 -36.1	loc Network
1992-03-25	62257	I	ac/gca	64262	430		154		
1992-04-04	81448	I		79239	434		212		
1992-04-05	27698	I	ac	28498	434		91		
1992-04-14	84162	I	gca	84257	441		171		
1992-04-20	7947	I		7573	444		112		
1992-05-19	59421	I		61011	449		268		
1992-06-22	25505	I	ac/gca	23347	468		408		
1992-06-28	76453				473				HUS : no data
1992-07-14	47072	I	ac/gca	46282	482		221	219.9 +5.4	loc Sigma gca
1992-07-20	11529	I	ac/gca	9808	486		227		
1992-07-23	72189	I	ac/gca	73964	489		1084	285.8 +26.7	loc Sigma gca

Circular No. 5569

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SUPERNOVA 1992al IN ESO 234-G69

R. H. McNaught, Anglo-Australian Observatory, reports his discovery of a supernova (mag $\sim$ 16) in ESO 234-G69 on an *R* plate taken by Q. A. Parker with the U.K. Schmidt Telescope on July 27.6 UT. The supernova is situated at $\alpha = 20^h42^m19^s.37$, $\delta = -51°34'38''.0$ (equinox 1950.0, uncertainty $0''.5$ in α, $0''.3$ in δ) with offsets from the galaxy's center being 18″ east, 12″ south. A star of similar brightness, on the opposite side of the galaxy, has end figures $13^s.98$, $33'35''.0$.

M. Della Valle, European Southern Observatory; and H. Lorens, Astrophysical Institute, Potsdam, report: "A CCD spectrogram (range 400-800 nm, resolution $\sim$ 1.5 nm), obtained on July 29.3 UT with the New Technology Telescope at La Silla, shows this to be a type-Ia supernova. The spectrum shows the typical absorptions of Si II (635.5 nm, measured at 620 nm; and 564 and 545.4 nm) and Mg II (448.1 nm)."

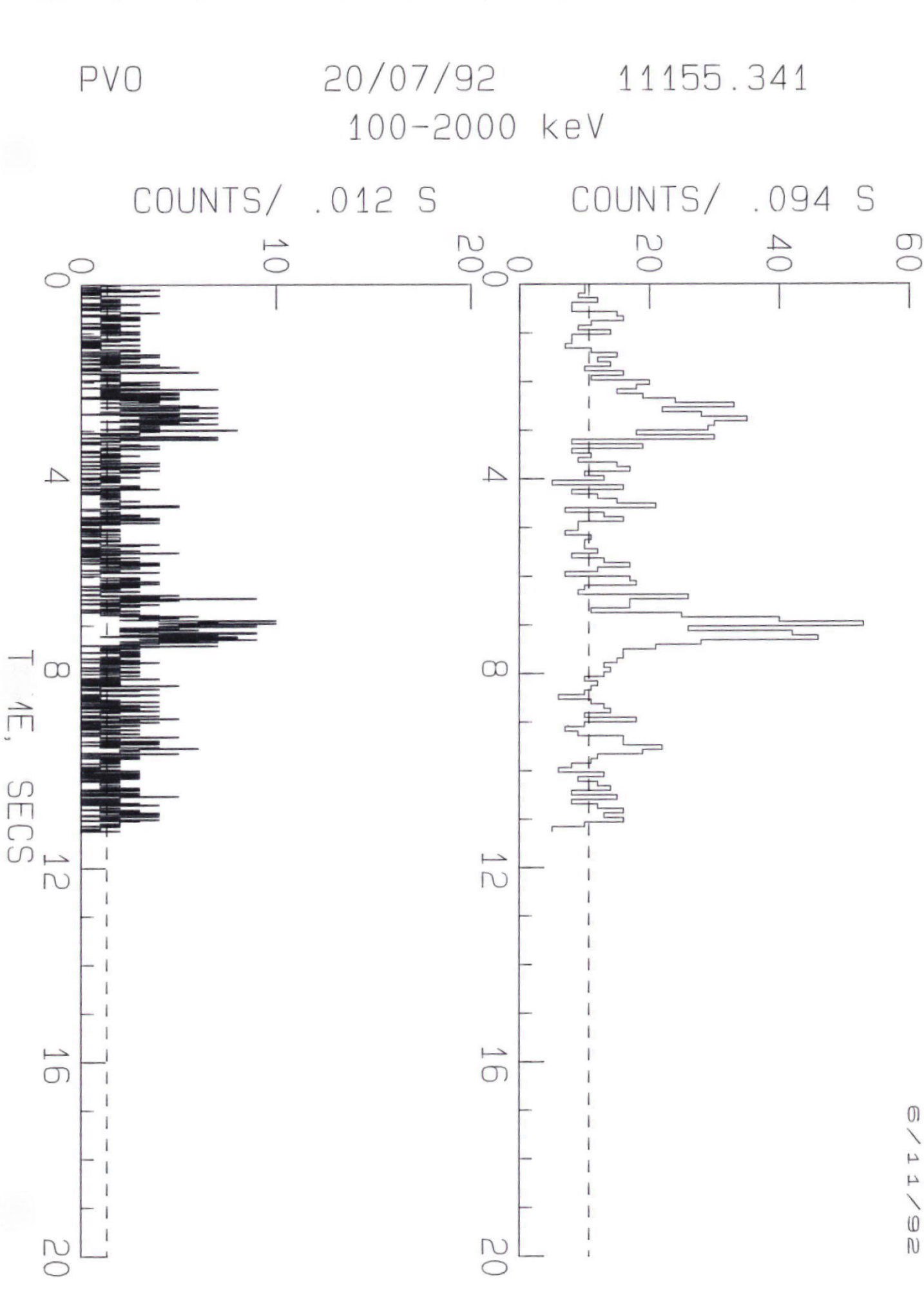
M. M. Phillips, Cerro Tololo Interamerican Observatory; and A. Alonso, Columbia University, communicate: "We obtained a spectrogram (range 320-760 nm) of SN 1992al in ESO 234-G69 with the CTIO 4.0-m telescope on July 29.3 UT. The data show that this object is a type-Ia event near maximum light. A spectrum obtained of the nucleus of ESO 234-G69 shows narrow Hα, [N II], and [S II] emission lines along with Ca II H and K absorption at a redshift of $z \sim 0.0145$."

γ-RAY BURST

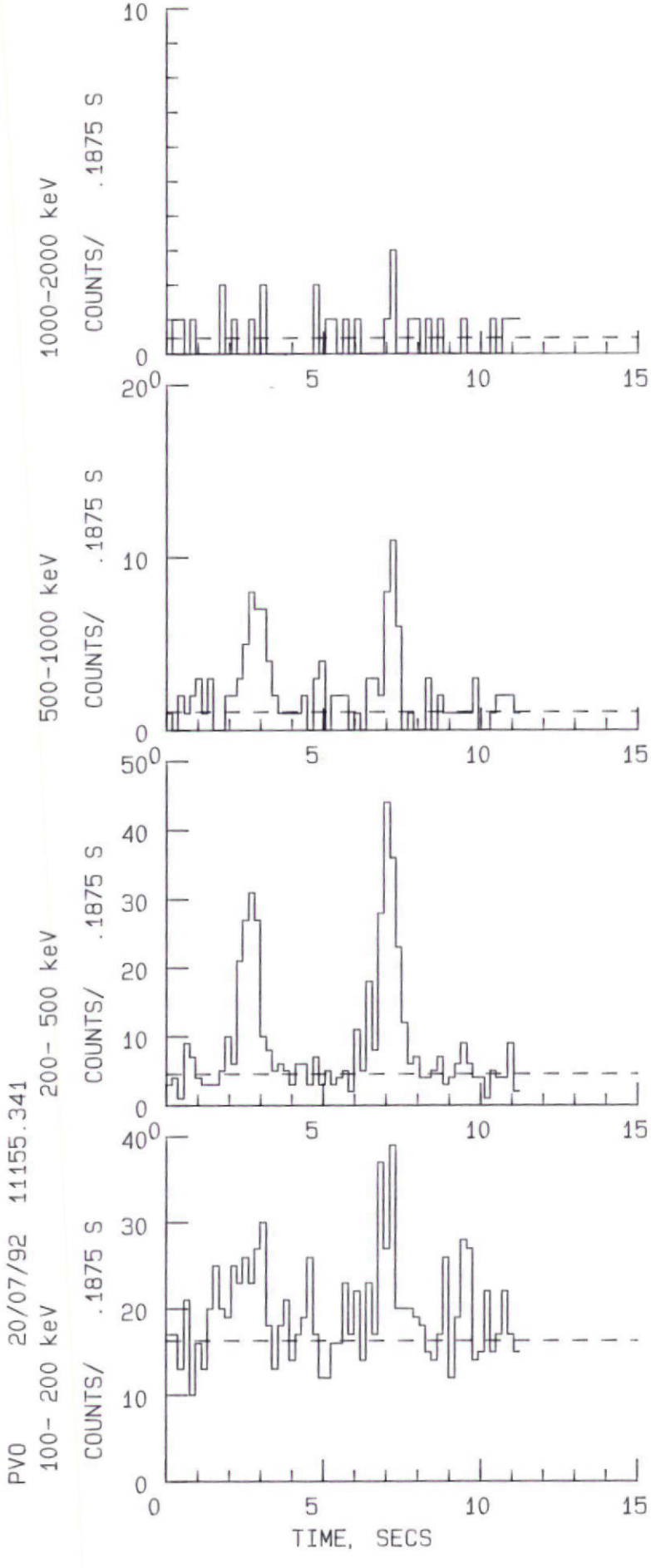
#1711

T. L. Cline, Goddard Space Flight Center, NASA, on behalf of the Ulysses/Compton/PVO Interplanetary Network team for the triangulation of γ-ray bursts (see *IAUC* 5565), communicates: "We report the source location of the γ-ray burst that passed the Earth's center on July 20.133394 UT: $\alpha = 13^h31^m46^s$, $\delta = +36°44'.4$ (equinox J2000.0); the elliptical field of maximum likelihood is nearly vertically slanted, varying in α by up to 3′ and in δ by up to $\sim$ 5′. This source field will be reduced with further analysis; however, it is adequately precise such that we do encourage immediate follow-up observations at other energies. This is the second of at least three γ-ray bursts in July for which we shall be able to obtain accurate source locations with the network."

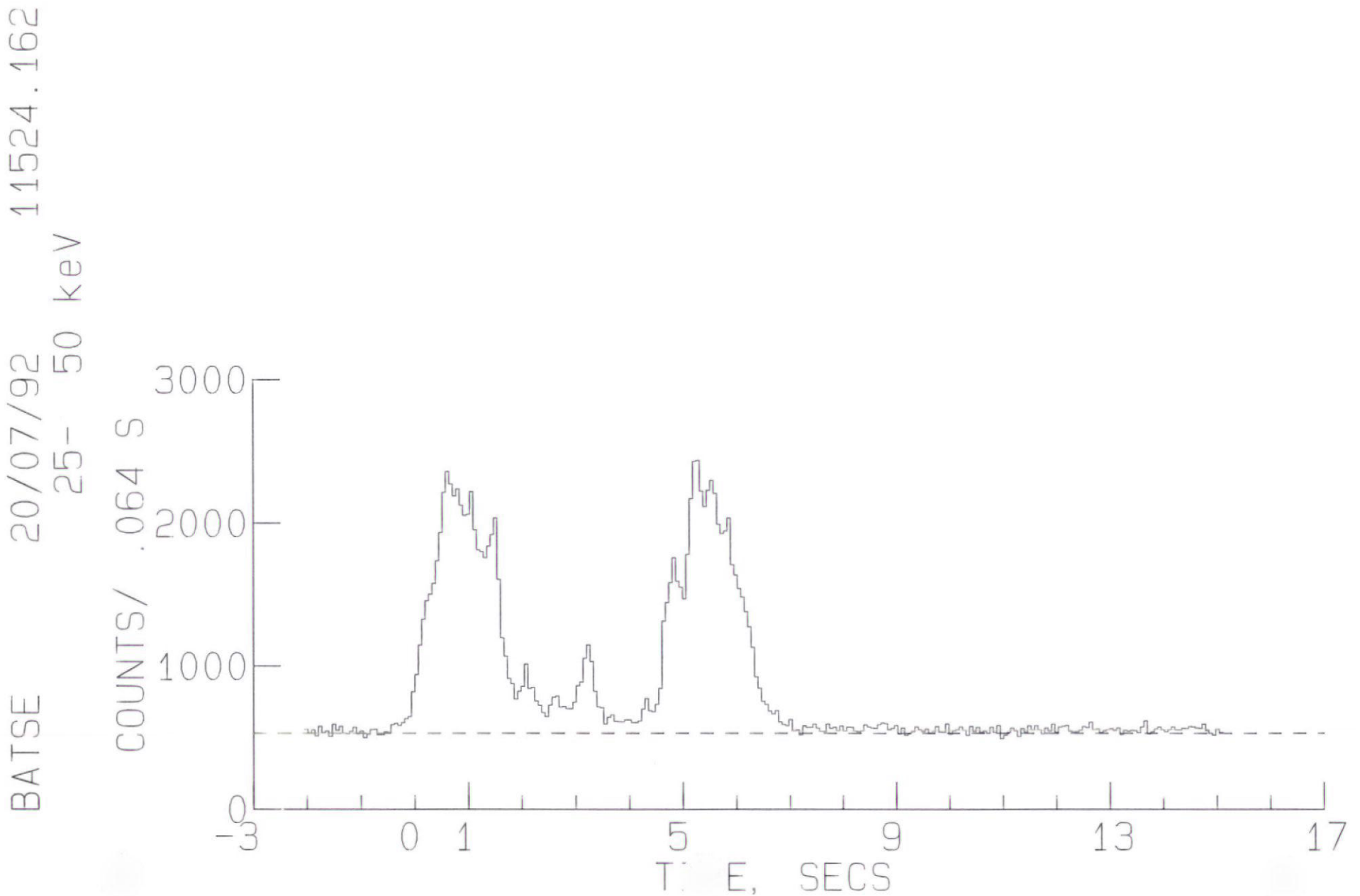
1992 July 29 *Daniel W. E. Green*

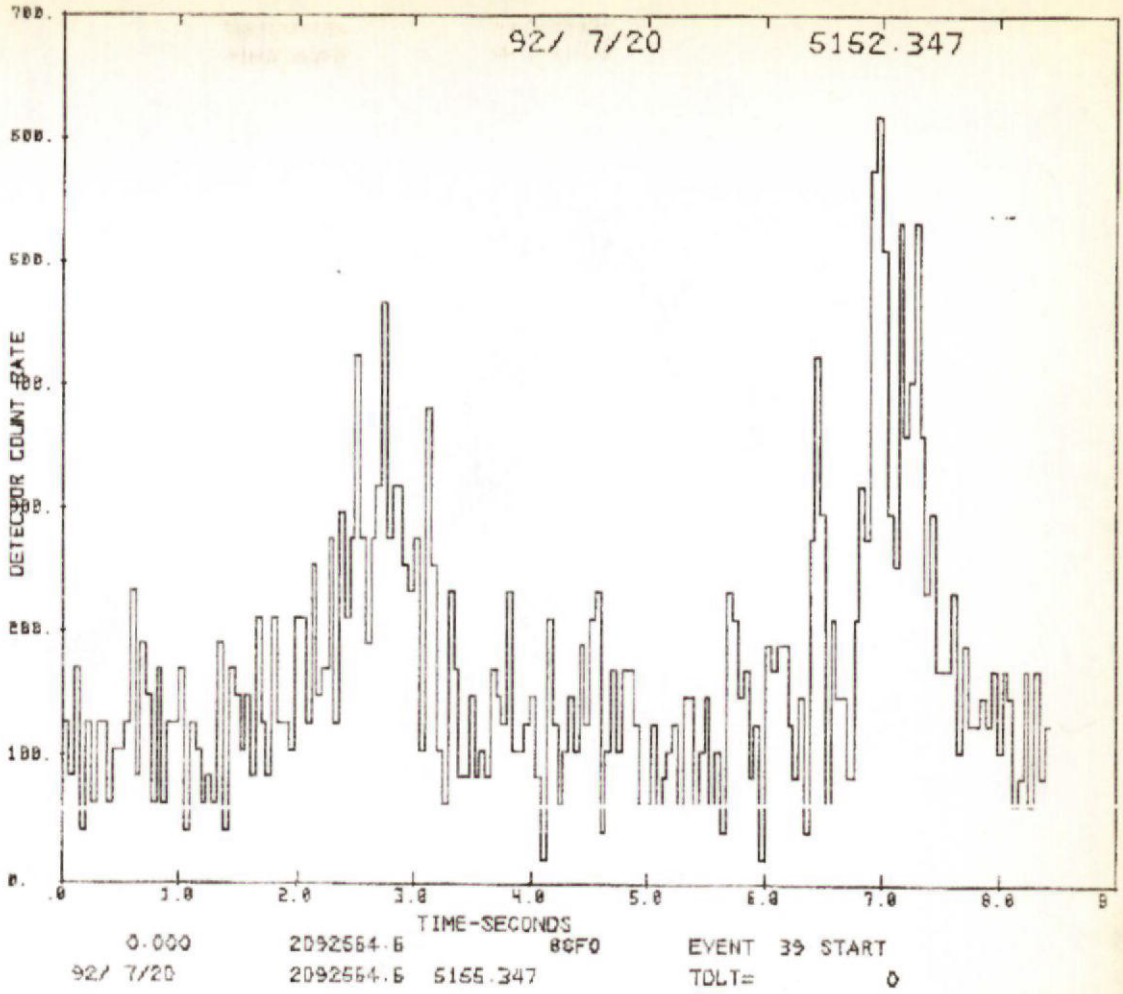

PVO 20/07/92 11155.341
100-2000 keV
COUNTS/ .012 S
COUNTS/ .094 S
0
10
20
0
20
40
60
4
8
12
16
20
TIME, SECS
6/11/92

6/11/92


PVO 20/07/92 11155.341
100- 200 keV
200- 500 keV
500-1000 keV
1000-2000 keV
COUNTS/ .1875 S
TIME, SECS

6/10/92


BATSE 20/07/92 114524.162
25- 50 keV
COUNTS/ .064 S
3000
2000
1000
0
-3
0
1
5
9
13
17
TIME, SECS



Kevin,

Ray thinks the time is good!

John

7/27

Kevin,

a garbled digit caused a 6000 s error in the 920720 PVO time. The correct T_{trig} is 11155.340

(I hope)

John

From sammy@astro.ucla.edu Thu Dec 5 10:39 PST 1996
From: sammy@astro.ucla.edu
To: khurley@sunspot.ssl.berkeley.edu (Kevin Hurley)
Subject: Re: IPN3
Date: Thu, 05 Dec 96 10:39:35 -0800
X-Mts: smtp

Good idea about doing a final check. Here is my target list:

910122✓
910219✓
911118 Re-do - JL's + my PVO times disagree by 1.4s ✓
920325✓
920406✓
920501✓
920525✓
920711✓
920720✓
920723✓

I believe that 920406 was further reduced. You sent me the new, smaller box for that, but I decided to stick with the larger box because I want a consistent sample of boxes and the others weren't further reduced.

I'm glad I asked you about the aberration - I never would have thought of that!

Sammy

****
CATSEARCH PROGRAM
****

BATSE BURST # 1712
EVENT OF 1992 JUL 20 DAY OF YEAR=202
EVENT CROSSING TIME AT BATSE : 21173. S. OR 05:52:52.9
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 147.600 -11.900
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 20/ 7/ 92 IS:
RA= 152.228 DEC= 4.917 DIST= 6.110 AU
BATSE-ULYSSES DISTANCE = 914054504. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=162.56 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2908.87 SECS.
CROSSING TIME AT ULYSSES IS 18264. S. OR 05:04:24.0 +/- 164.43 SECONDS

RI

From MALLOZZI@ssl.msfc.nasa.gov Tue Jul 21 15:45:24 1992
Date: Tue, 21 Jul 1992 17:47:02 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01712

TIME: TJD=8823 SECONDS=21172 (5:52)

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=134.3 AZIMUTH=31.7 ERROR= DEGREES

COMMENTS:
BURST WITH EMISSION OBSERVED UP TO ~6 MIN AFTER TRIGGER. THE EVENT
HAS VERY MUCH STRUCTURE FOR ~120 SEC, CONSISTING OF NUMEROUS SPIKES,
AND IS OBSERVED ABOVE 300 KEV.

Helio corr removed

Date: Mar 28 1997

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 - statistics aren't that good

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)?

☑ 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)?

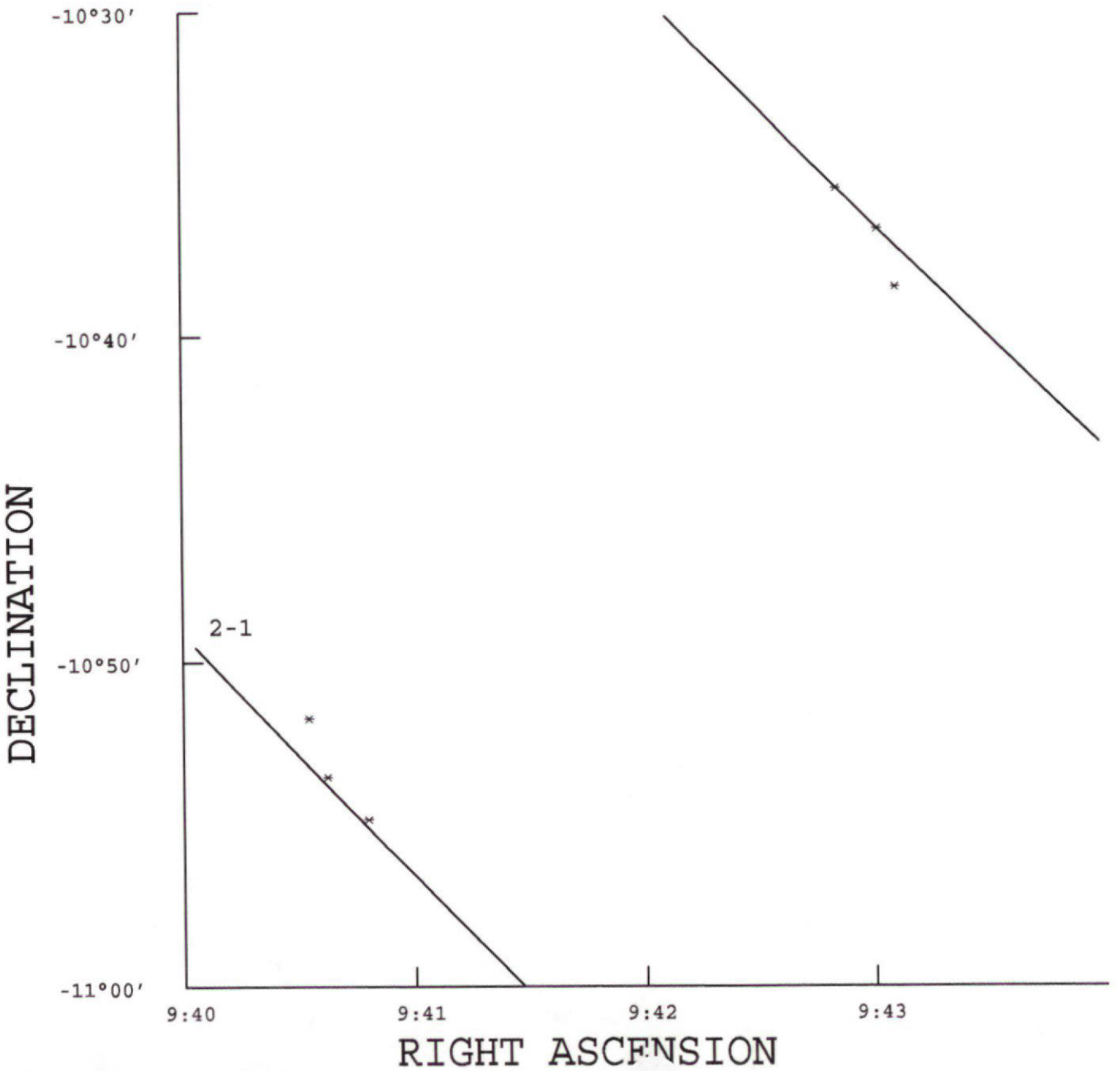
☑ 2000 coordinates used?

☑ Geocentric time used?

EVENT OF JUL 20, 1992 5:03

10/10/97

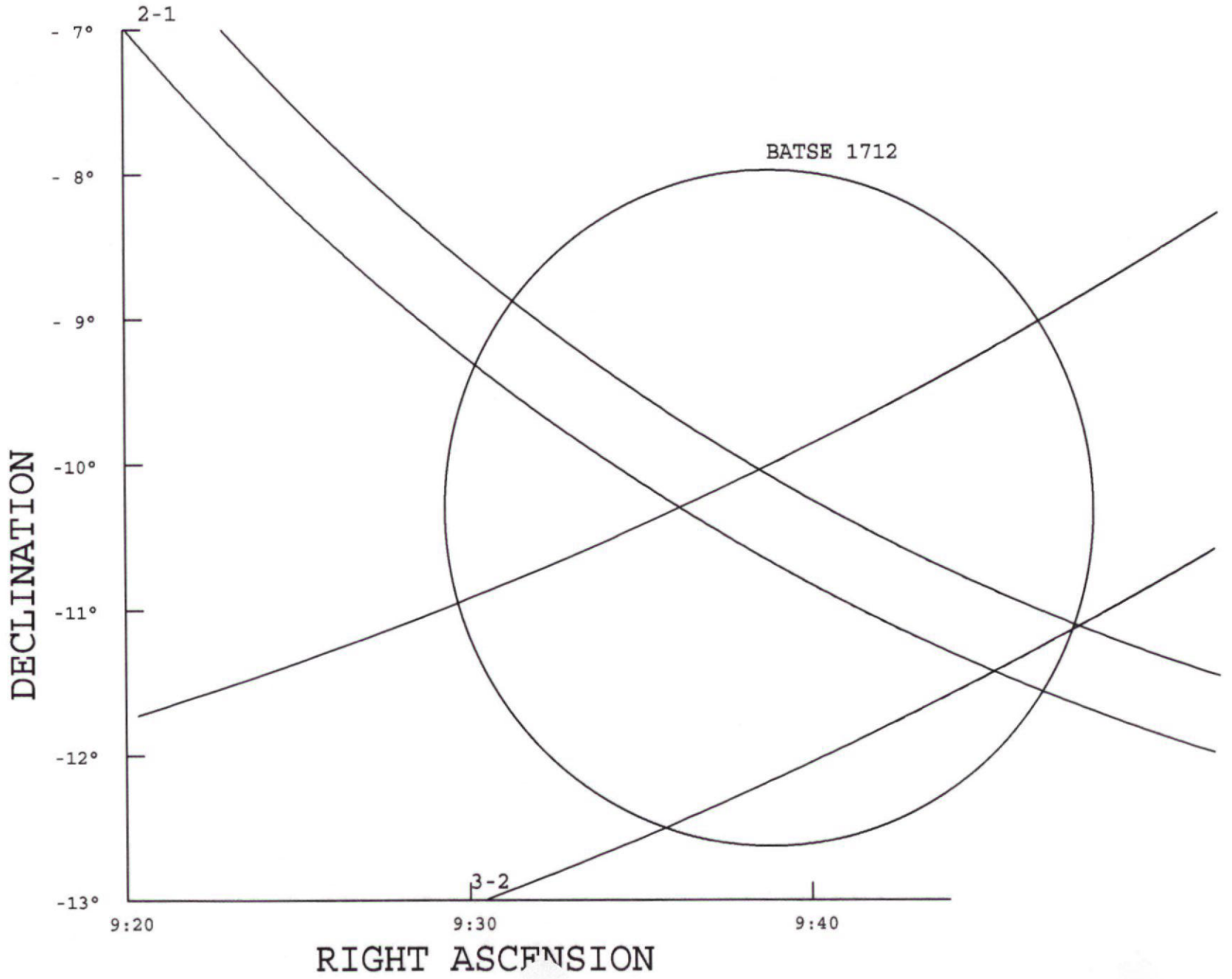
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO



EVENT OF JUL 20, 1992 5:03

29/ 3/97

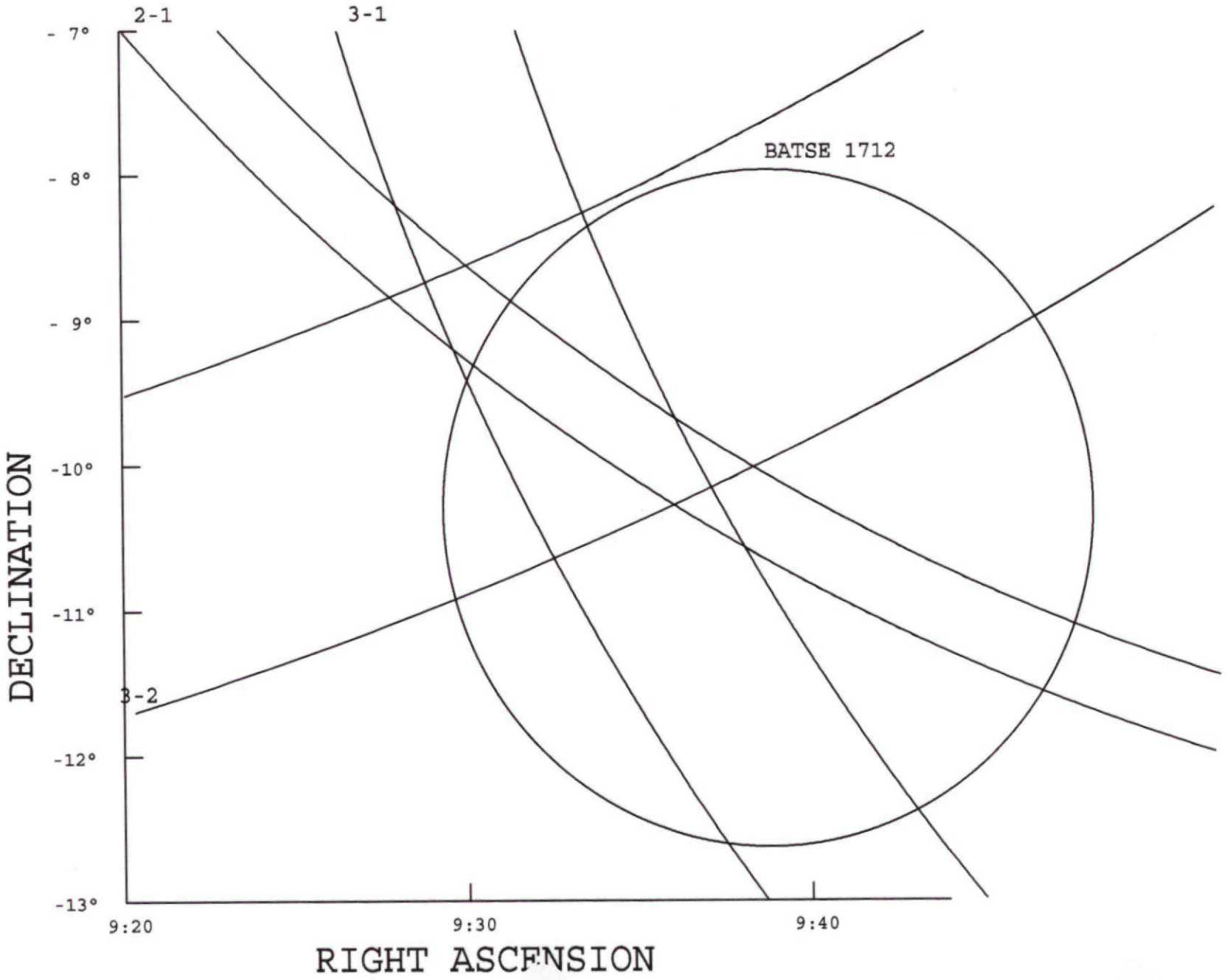
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

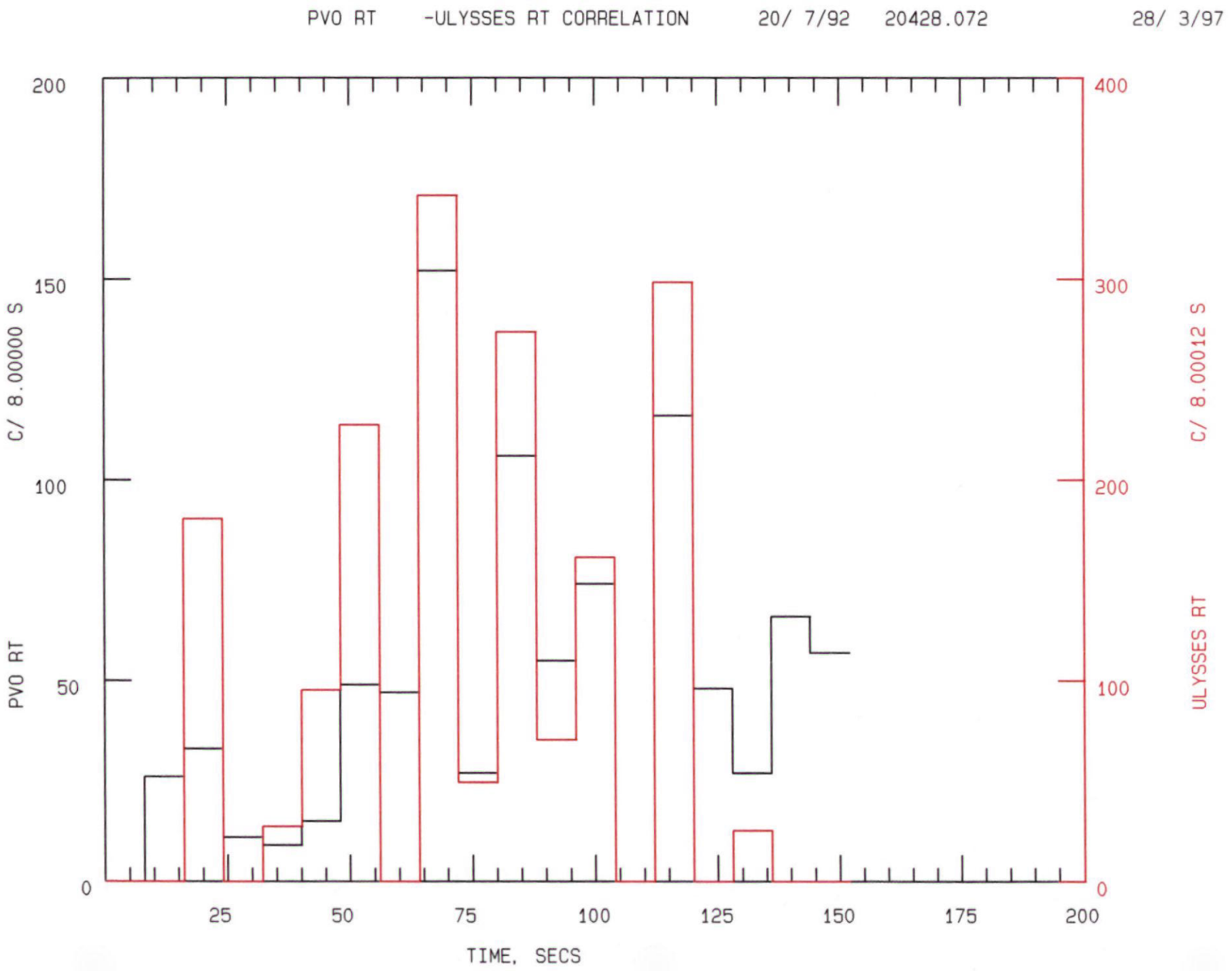


EVENT OF JUL 20, 1992 5:03

28/ 3/97

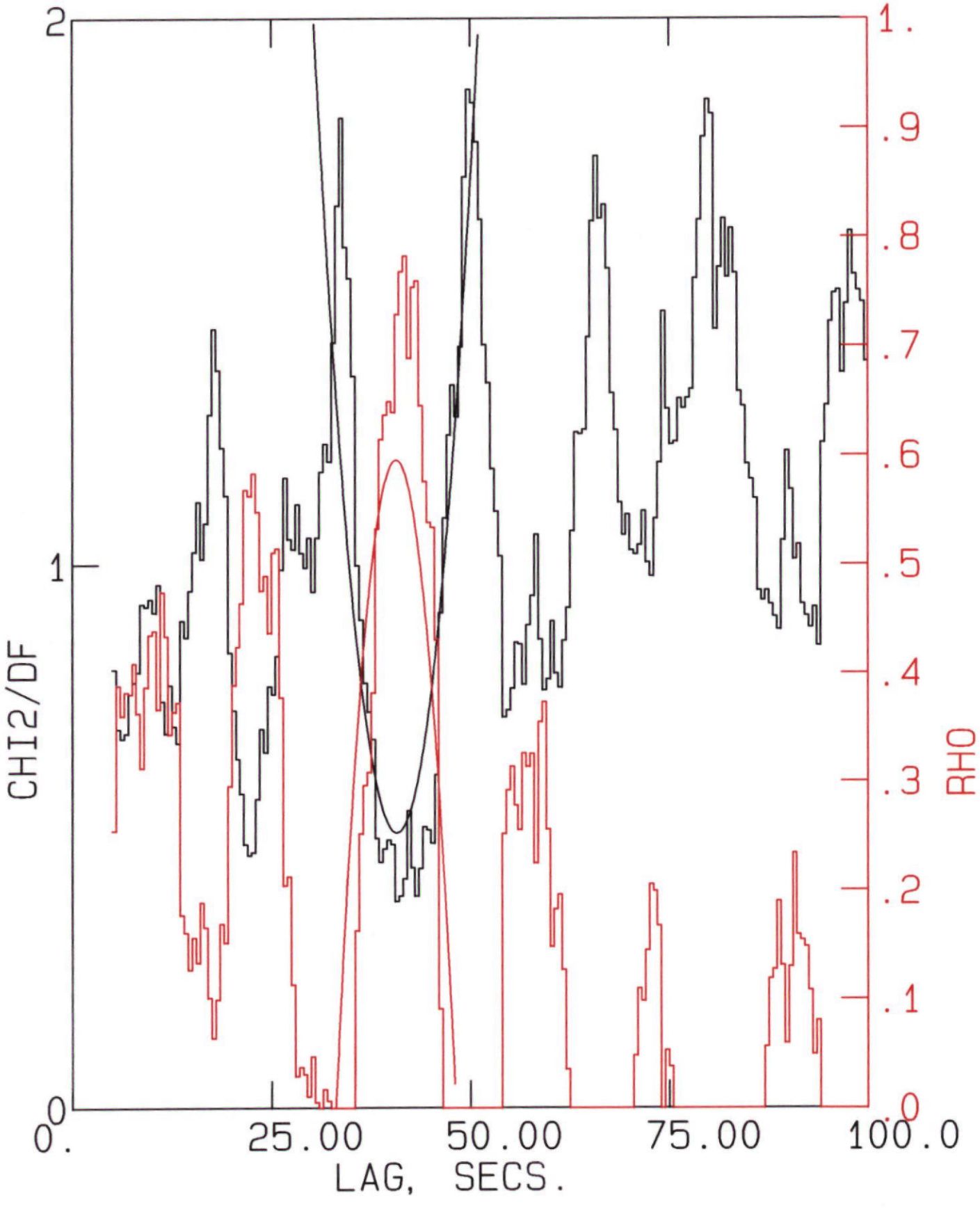
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE 3 PVO

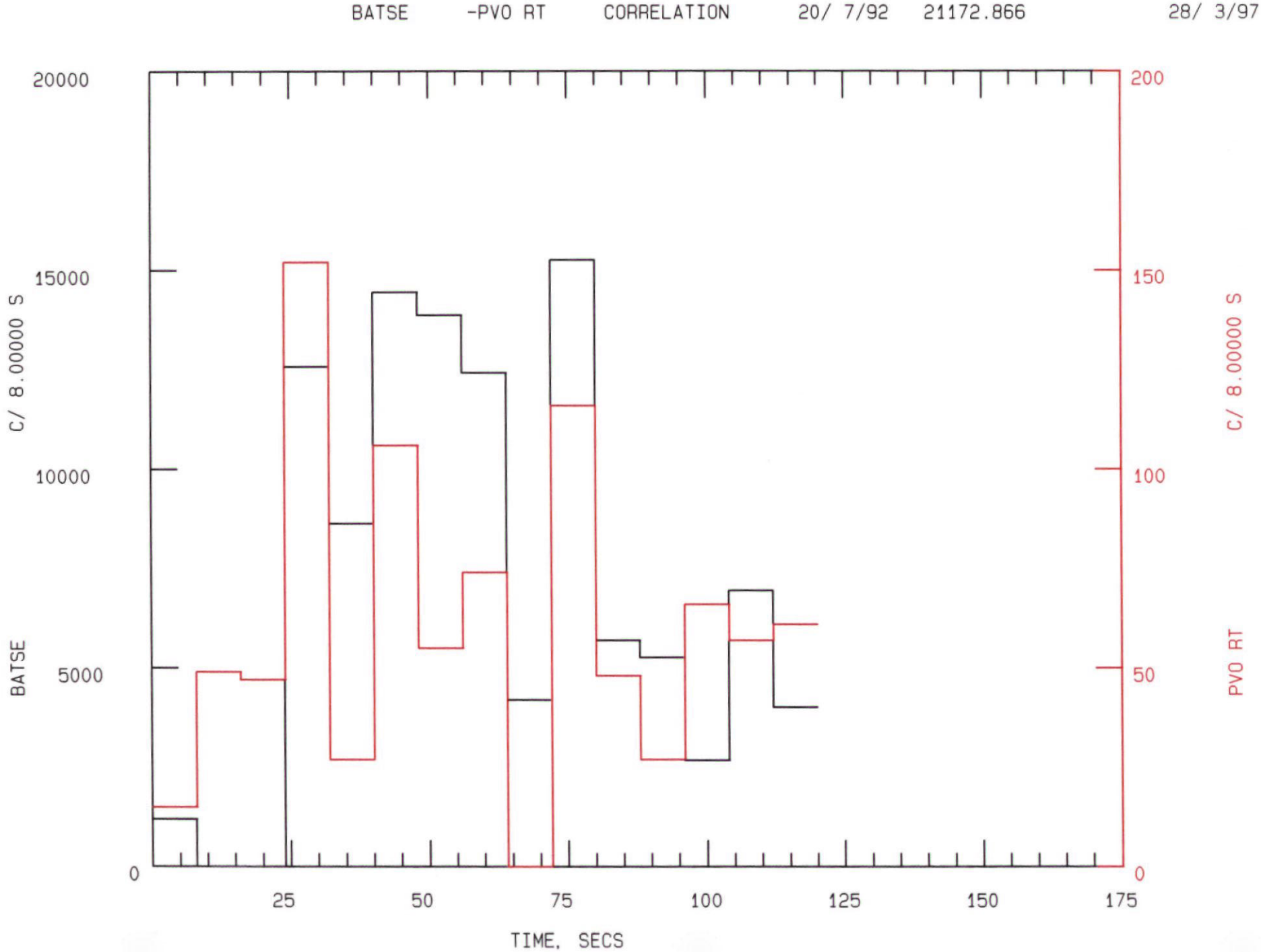



PVO RT -ULYSSES RT CORRELATION 20/ 7/92 20428.072 28/ 3/97
200
150
100
50
0
C/ 8.00000 S
PVO RT
400
300
200
100
0
C/ 8.00012 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

28/ 3/97

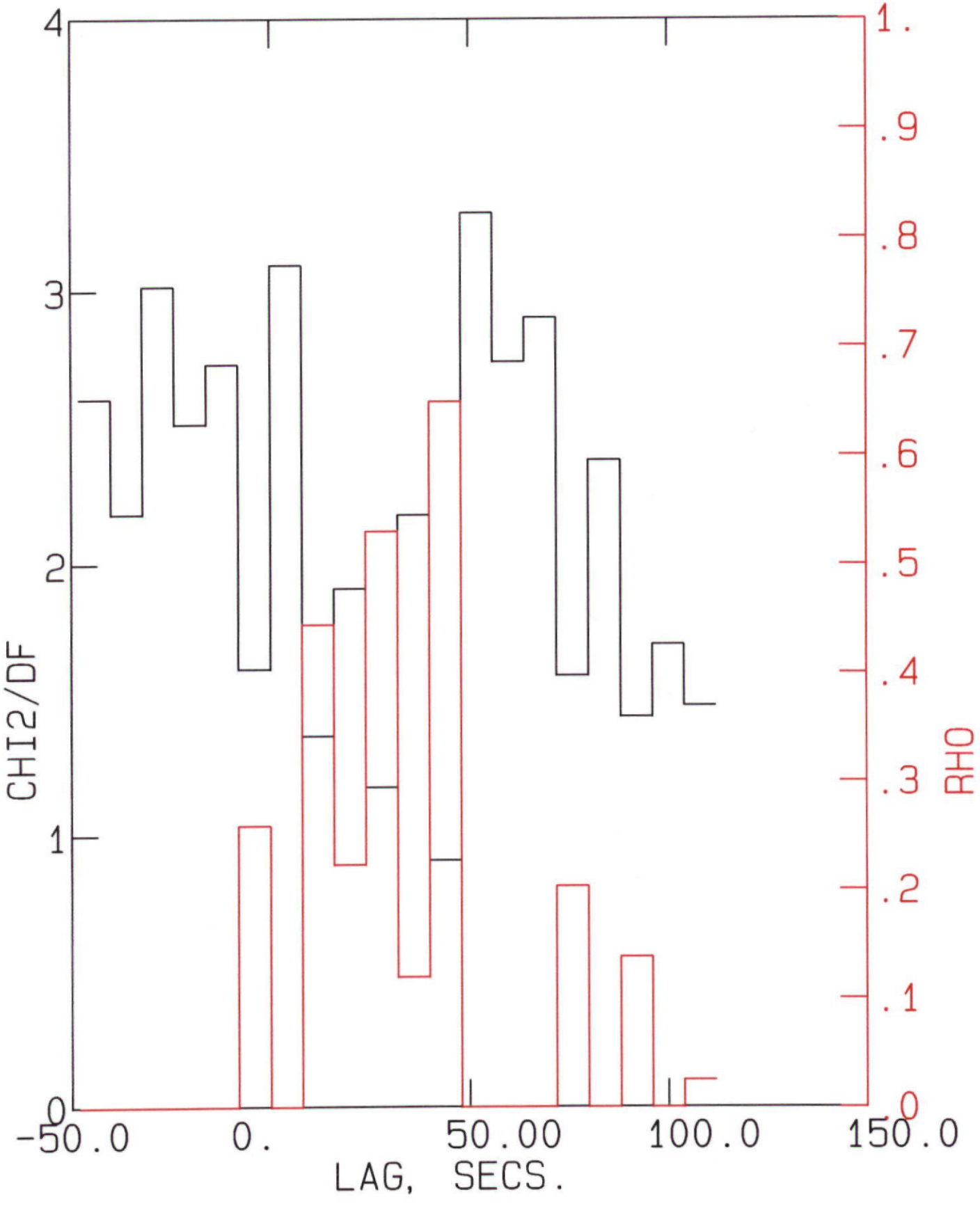
PVO RT -ULYSSES RT CORRELATION 20/ 7/92 20428.072

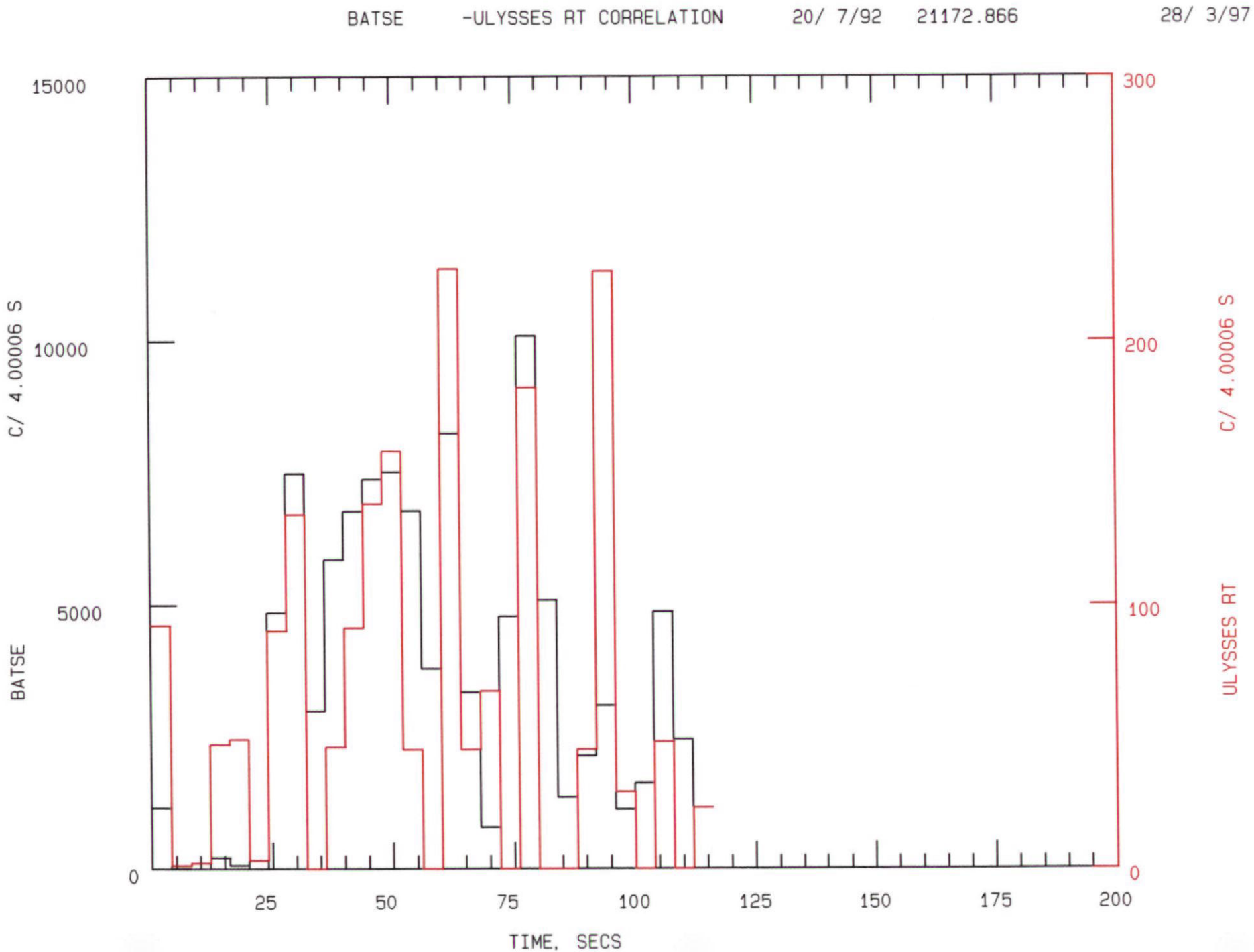



BATSE -PVO RT CORRELATION 20/ 7/92 21172.866 28/ 3/97
20000
15000
10000
5000
0
C/ 8.00000 S
BATSE
200
150
100
50
0
C/ 8.00000 S
PVO RT
25
50
75
100
125
150
175
TIME, SECS

28/ 3/97

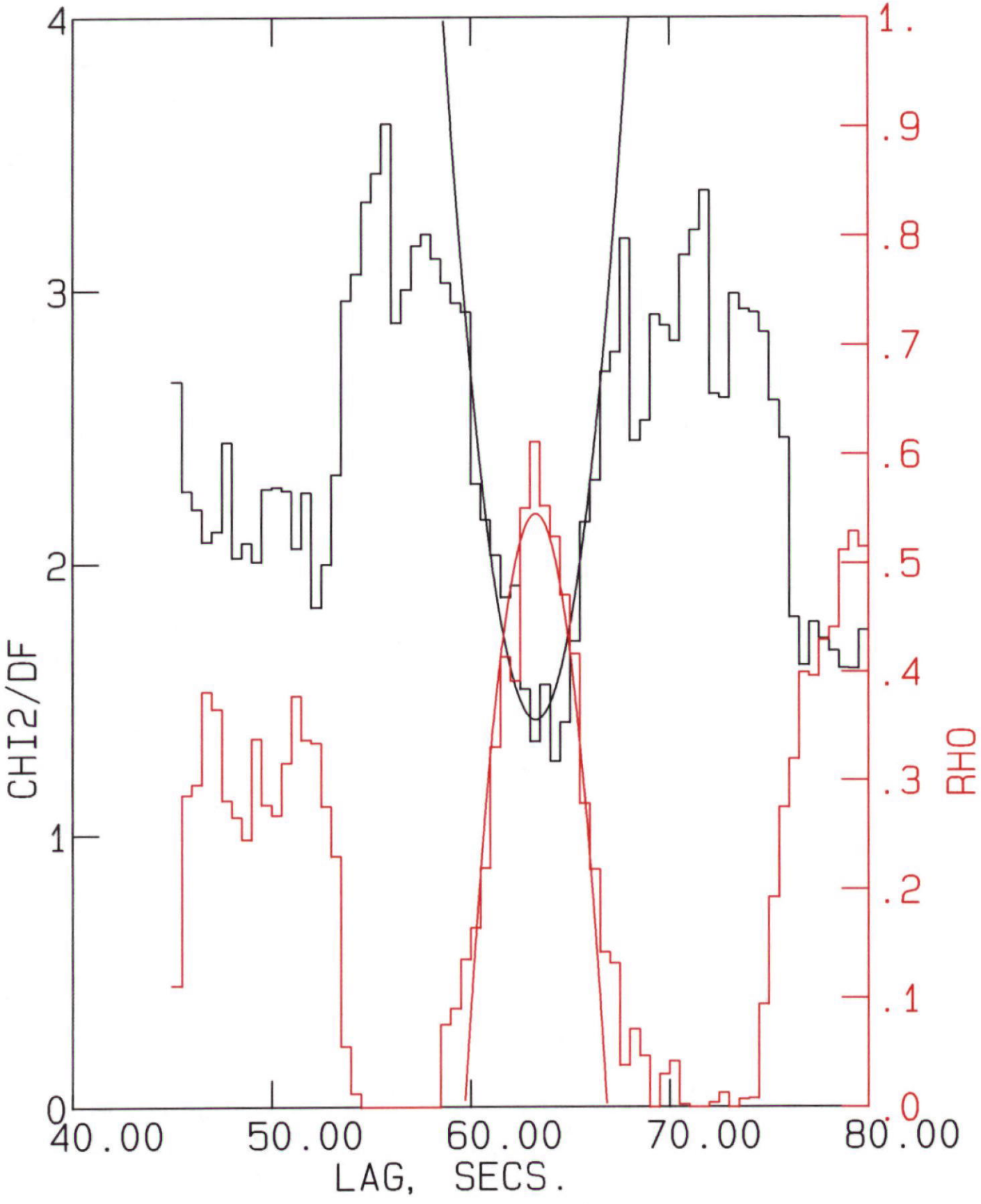
BATSE -PVO RT CORRELATION 20/ 7/92 21172.866

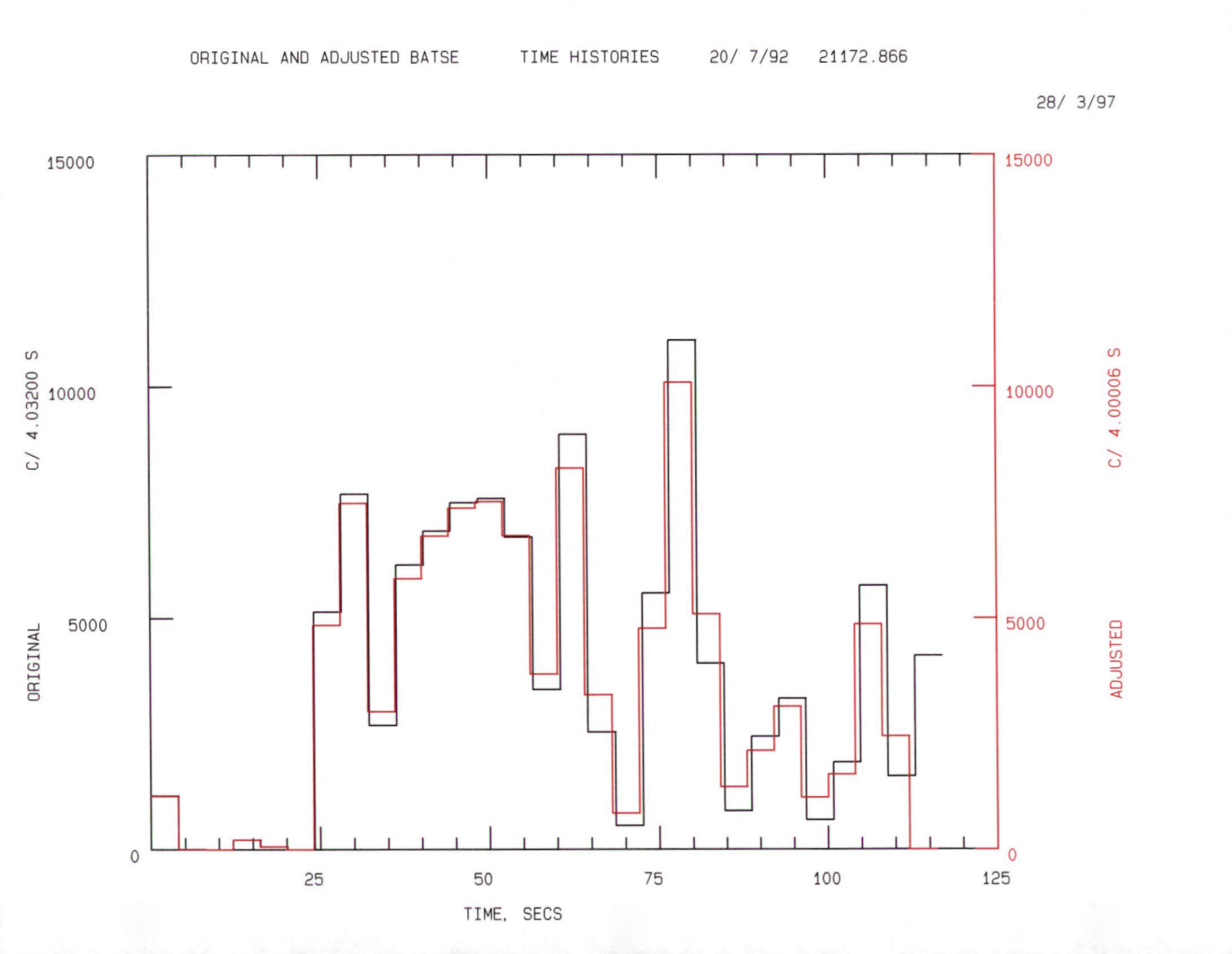


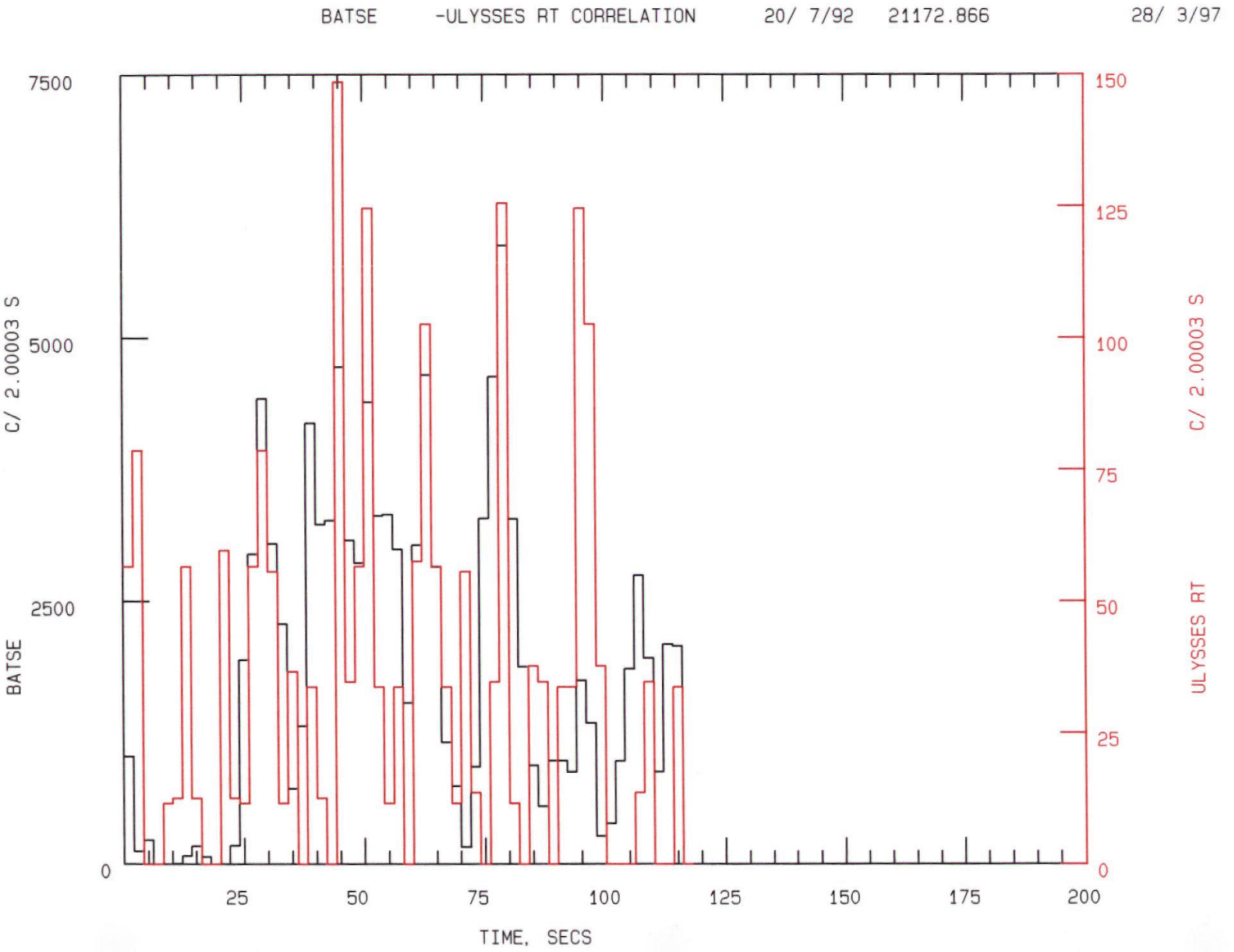

BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866 28/ 3/97
15000
10000
5000
0
C/ 4.00006 S
BATSE
300
200
100
0
C/ 4.00006 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

28/ 3/97

BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866

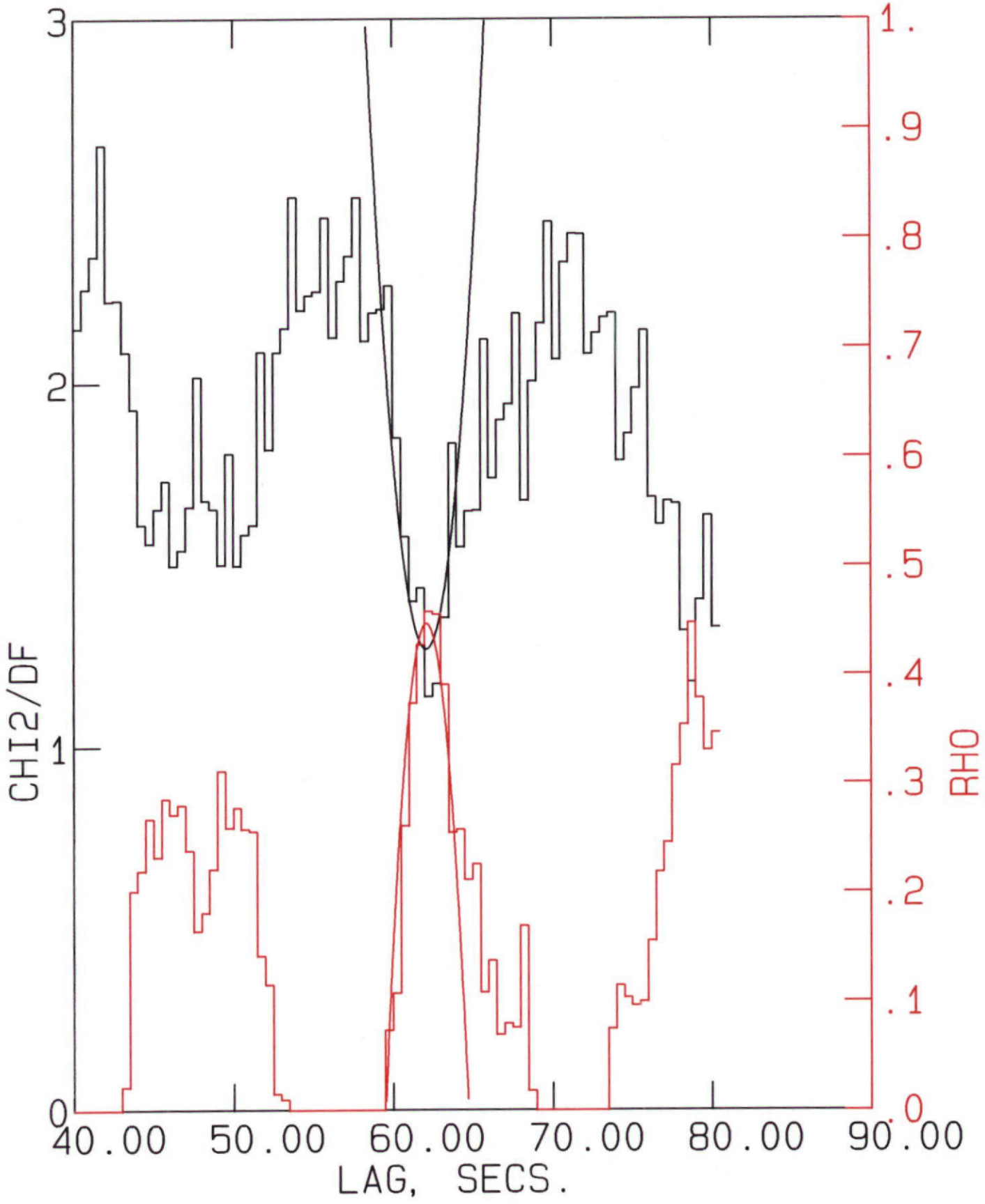



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 21172.866
28/ 3/97
15000
10000
5000
0
C/ 4.03200 S
ORIGINAL
15000
10000
5000
0
C/ 4.00006 S
ADJUSTED
25
50
75
100
125
TIME, SECS


BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866 28/ 3/97
7500
5000
2500
0
C/ 2.00003 S
BATSE
150
125
100
75
50
25
0
C/ 2.00003 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

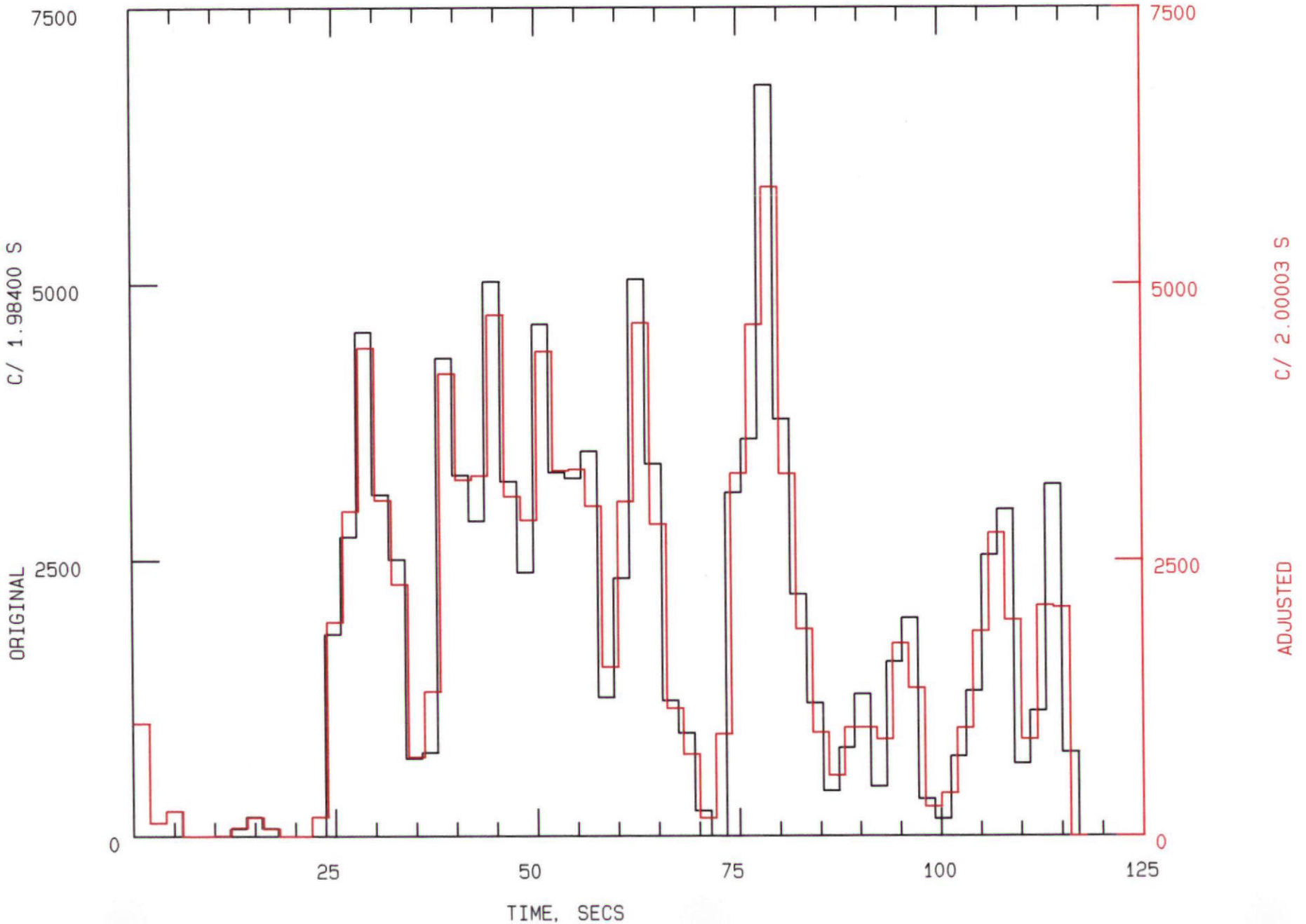
28/ 3/97

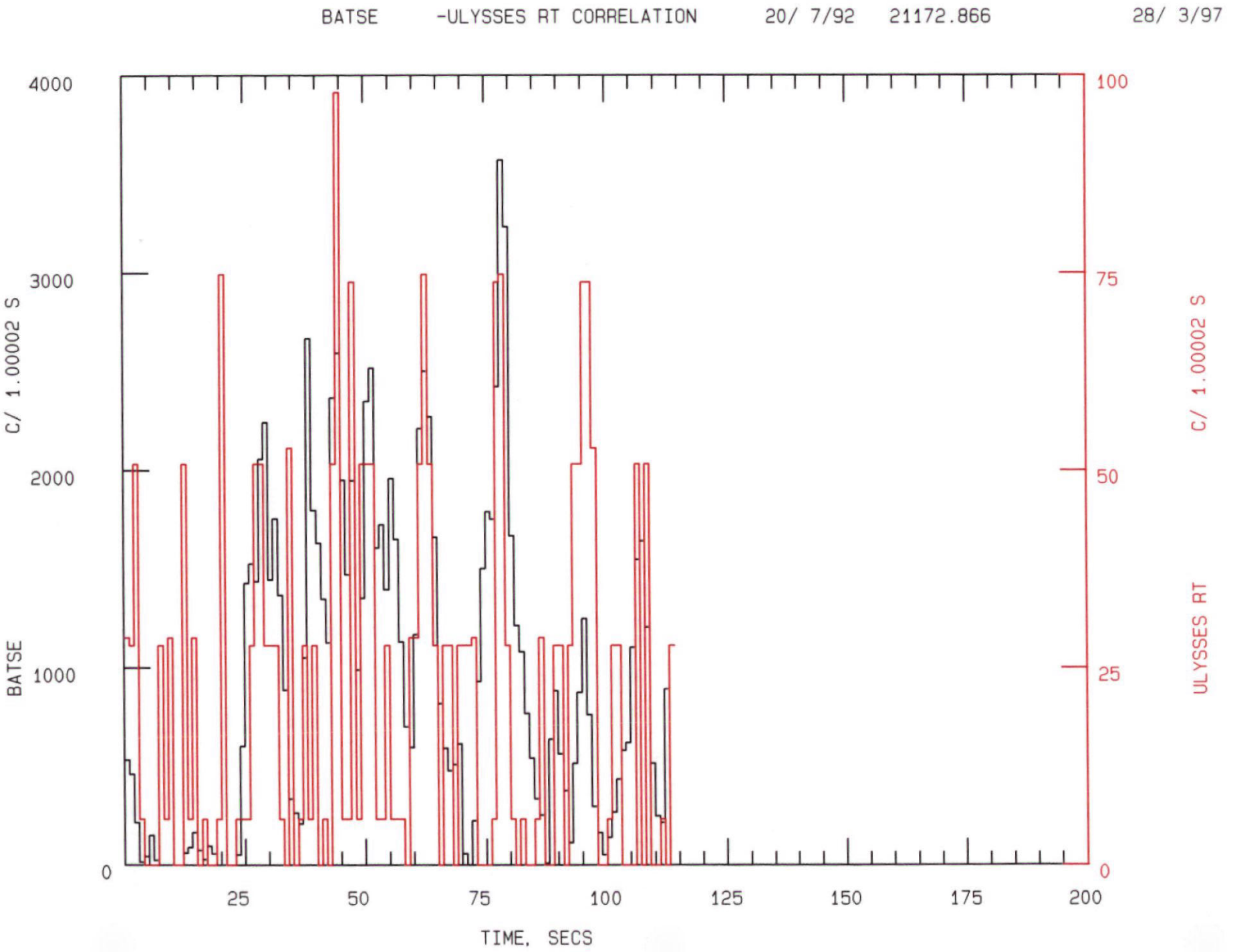
BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866



ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 21172.866

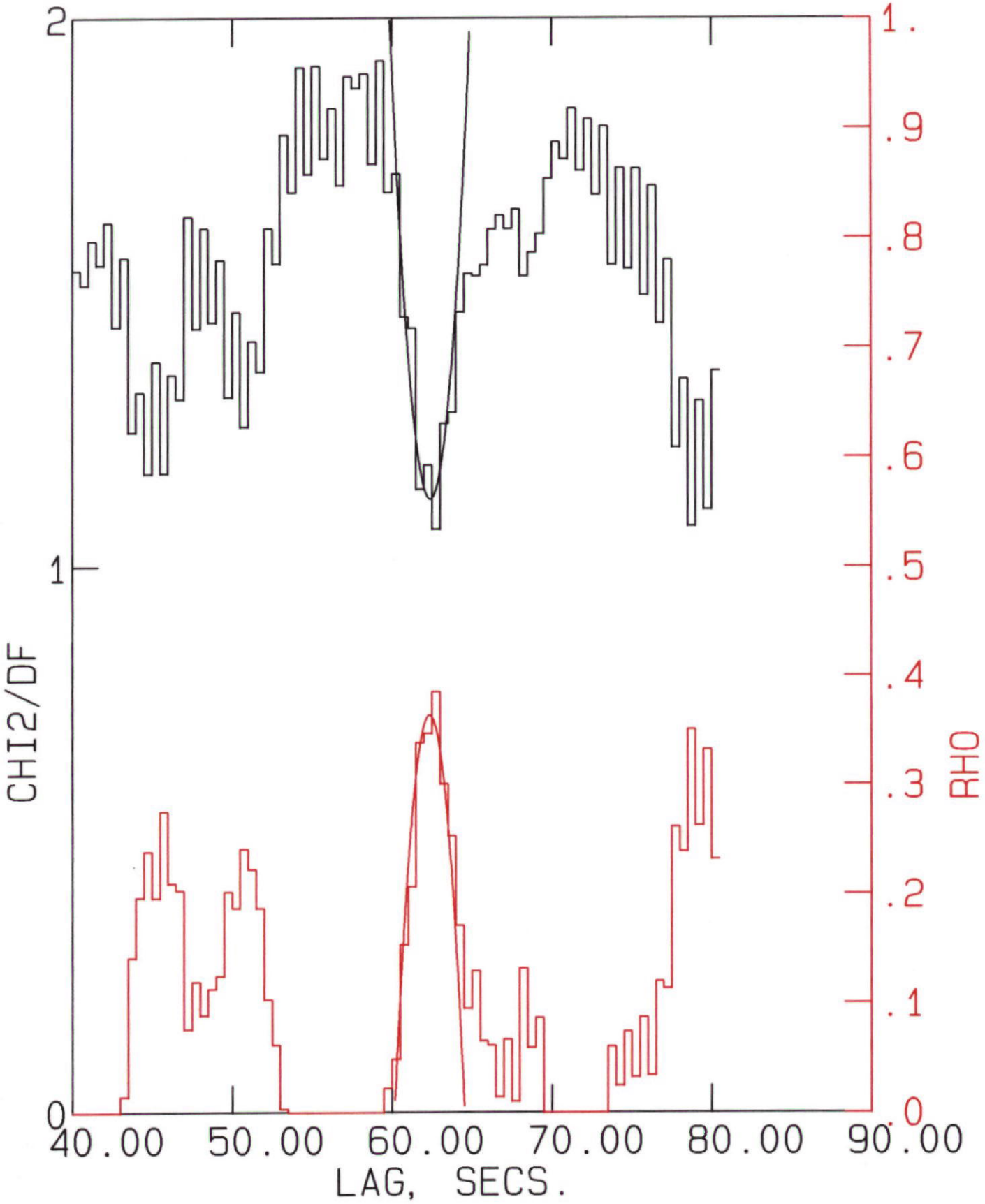
28/ 3/97

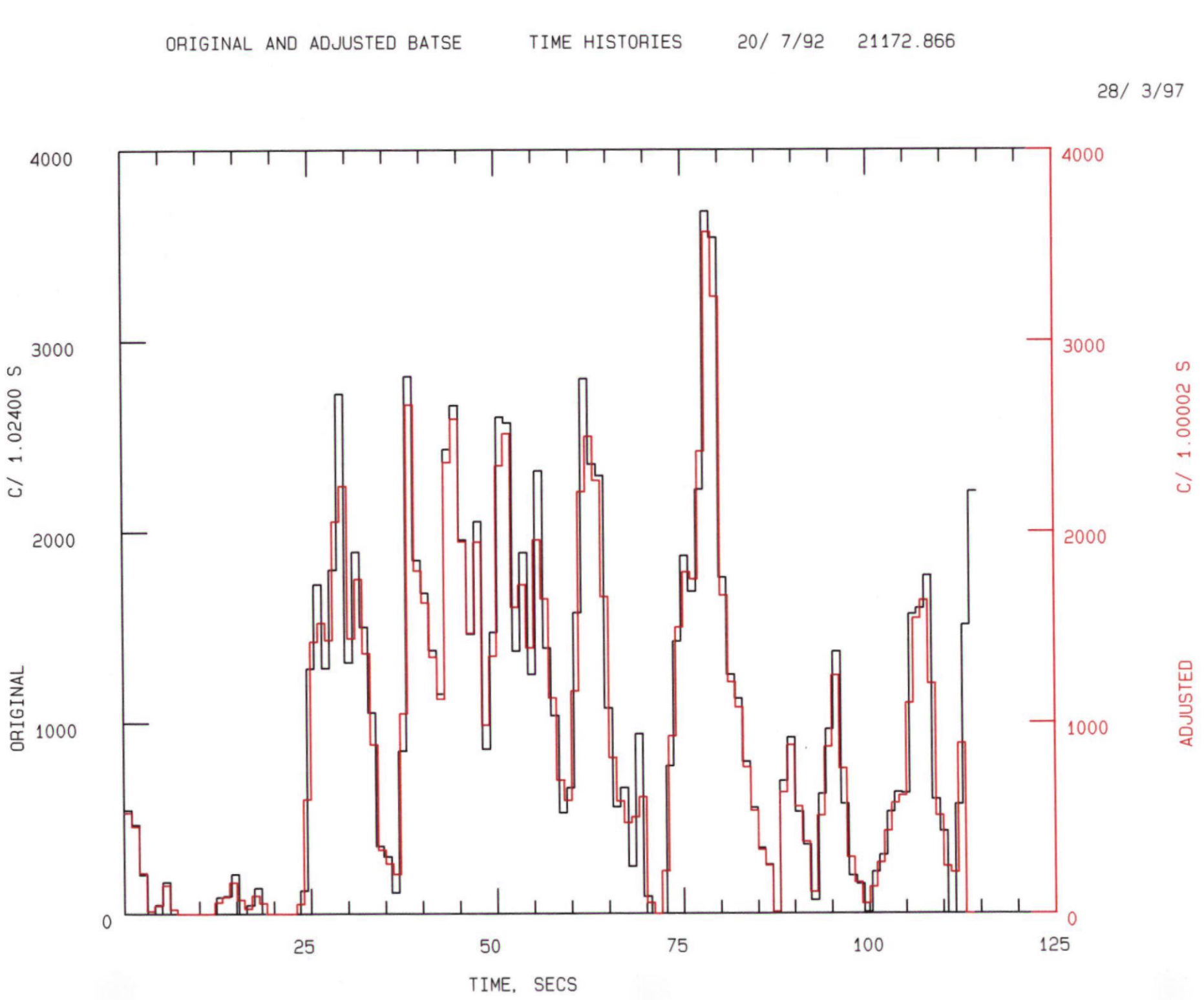


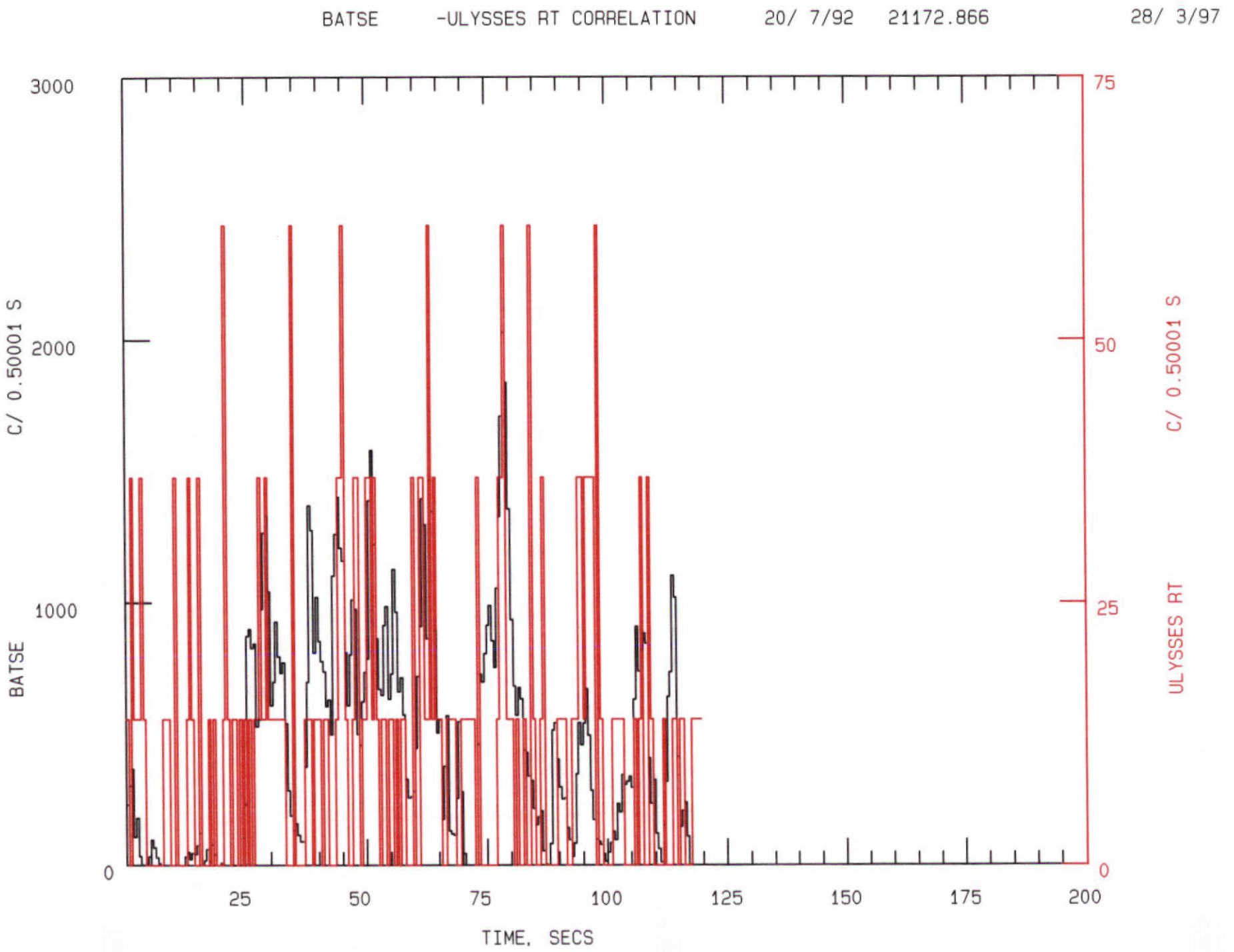

BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866 28/ 3/97
4000
3000
2000
1000
0
C/ 1.00002 S
BATSE
100
75
50
25
0
C/ 1.00002 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

28/ 3/97

BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866

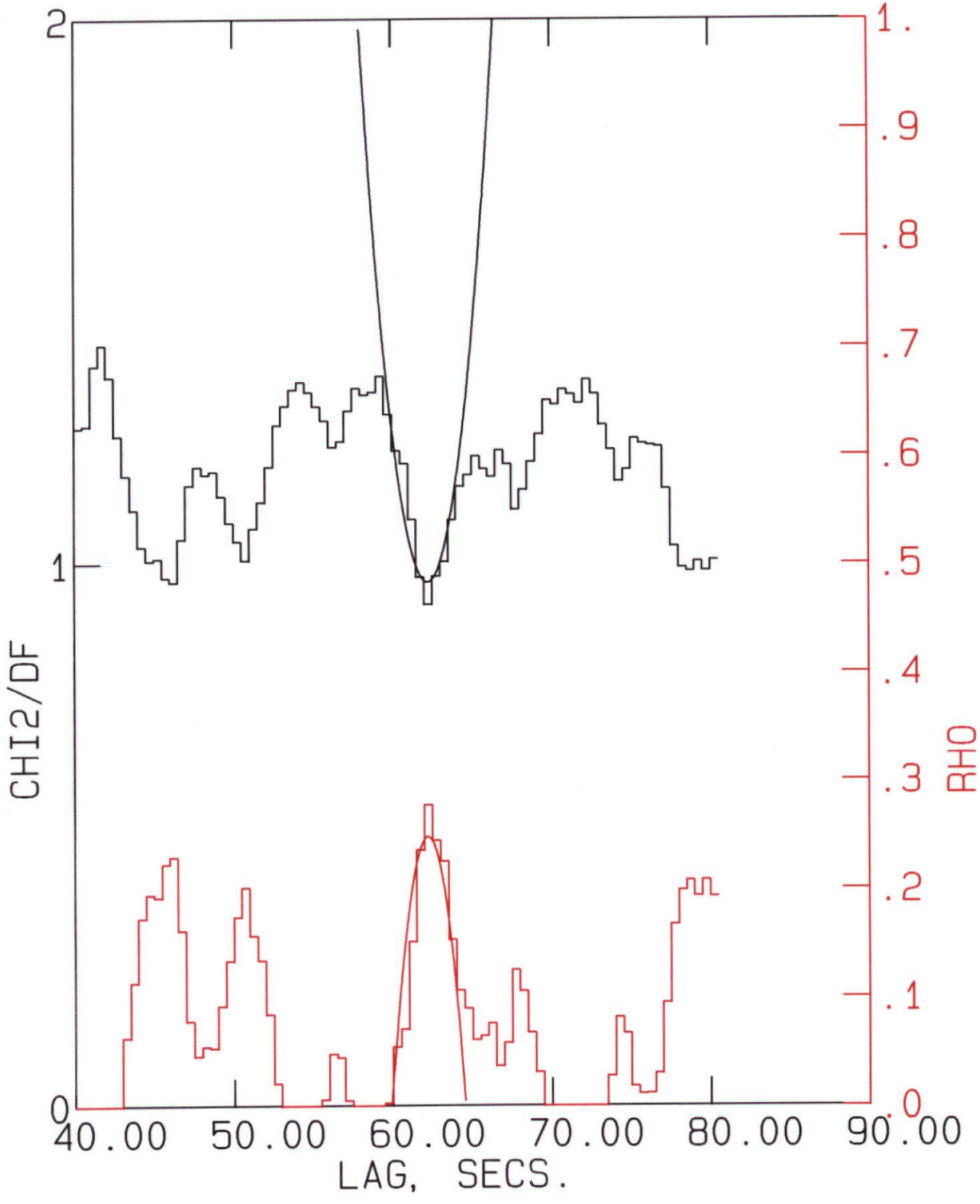


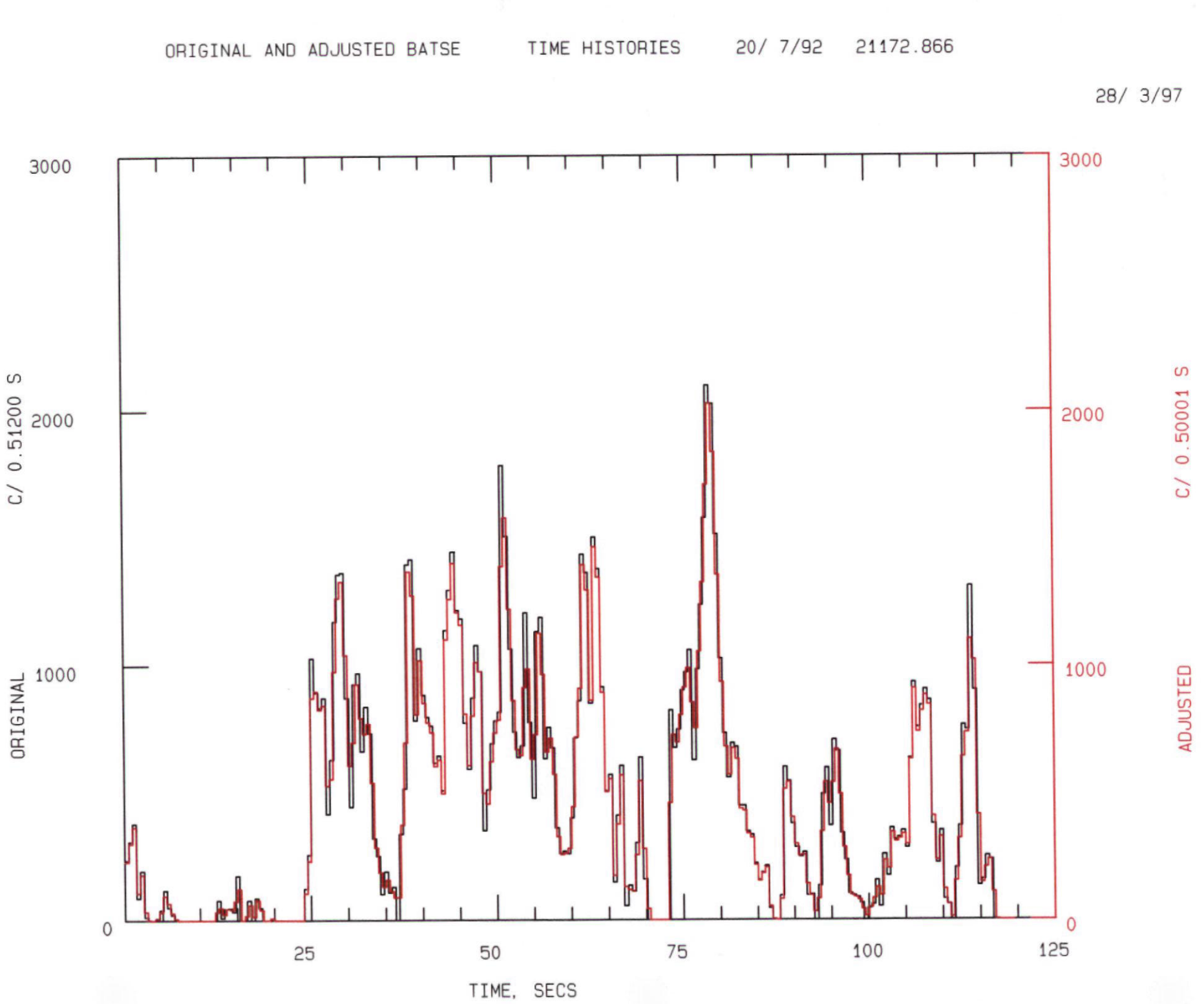

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 21172.866
28/ 3/97
4000
3000
2000
1000
0
C/ 1.02400 S
ORIGINAL
4000
3000
2000
1000
0
C/ 1.00002 S
ADJUSTED
25
50
75
100
125
TIME, SECS


BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866 28/ 3/97
3000
2000
1000
0
C/ 0.50001 S
BATSE
75
50
25
0
C/ 0.50001 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

28/ 3/97

BATSE -ULYSSES RT CORRELATION 20/ 7/92 21172.866



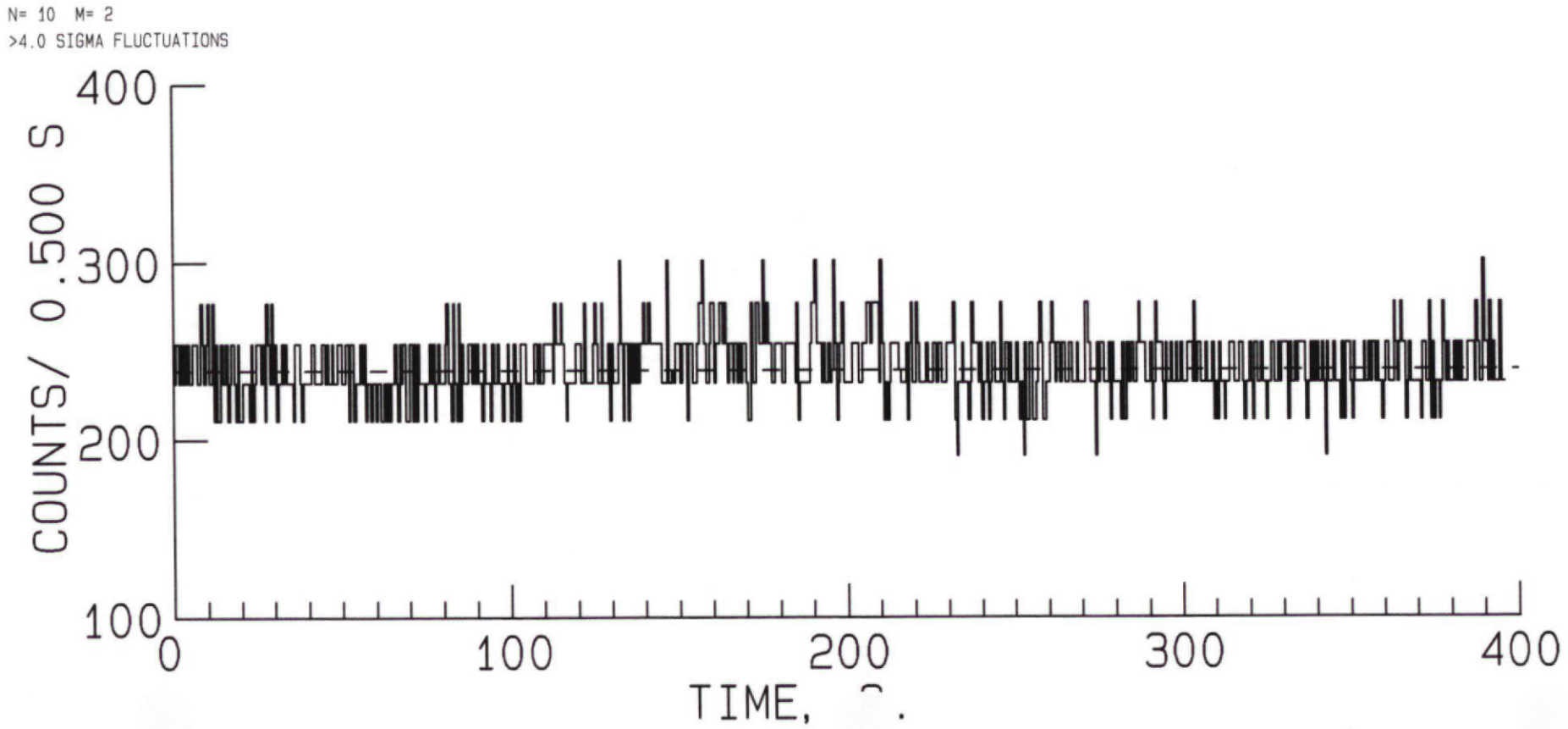

ORIGINAL AND ADJUSTED BATSE TIME HISTORIES 20/ 7/92 21172.866
28/ 3/97
3000
2000
1000
0
C/ 0.51200 S
ORIGINAL
3000
2000
1000
0
C/ 0.50001 S
ADJUSTED
25
50
75
100
125
TIME, SECS

ULYSSES RT

28/ 3/97

20/ 7/92 18144.380 s

22- 153 keV



From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing a paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

From root Thu Dec 9 11:14 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA09450; Thu, 9 Dec 93 11:14:17
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA01091; Thu, 9 Dec 93 10:17:05 PST
Received: Thu, 9 Dec 93 10:20:23 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312091820.AA06809@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-maillld v1.7); Thu, 9 Dec 93 10:20:24 PST
Date: Thu, 9 Dec 93 10:20:24 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,

HERE ARE MORE RESULTS. I WILL BE SENDING YOU THE DATA FILES.

DATE	TIME	PVO RESPONSE
90/12/13	07:06	MAYBE-NEAR 3 SIGMA RESPONSE AT 25847 UT
90/12/16	15:47	MAYBE-3.4 SIGMA RESPONSE AT 57130 UT
90/12/18	13:54	N/O
91/01/06	16:39	RI 6 SIGMA 59443-59459 UT
91/02/02	20:57	RI-4 SIGMA AT 75598 UT C3, 5.8 SIGMA SUMMED 75438-75758 UT IS THIS AN EXTREMELY LONG EVENT?
91/02/06	16:39	RI- 6 SIGMA
91/02/11	03:25	RI
91/03/22	12:41	(NO)
91/04/04	14:19	(NO)
91/05/29	17:36	N/O
91/11/19	17:12	(NO)
91/12/22	15:00	RI WEAK
92/01/16	18:30	RI
92/02/24	09:53	N/O
92/02/29	19:21	(NO)
92/07/14	13:04	RI
92/07/20	05:52	RI
92/07/25	01:41	(NO)

THIS LIST IS STILL NOT COMPLETE. THE REMAINING EVENTS ON MY LIST WERE RECORDED WITH 64 S TIME RESOLUTION. THESE DATA MAY NOT BE USEFUL.

REGARDS,

RAY

FAXCOVER

DANISH SPACE RESEARCH INSTITUTE
GL. LUNDTOFTEVEJ 7
DK-2800 LYNGBY
DENMARK

PHONE: +45 42 88 22 77 TELEFAX: +45 45 93 02 83 TELEX: 37198 danru dk

DATE: Nov 23, 1993

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 69 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are separated by 1°, at $\sim \alpha = 08\ 44$ $\delta = -38$ (1450.0)

Kind regards,

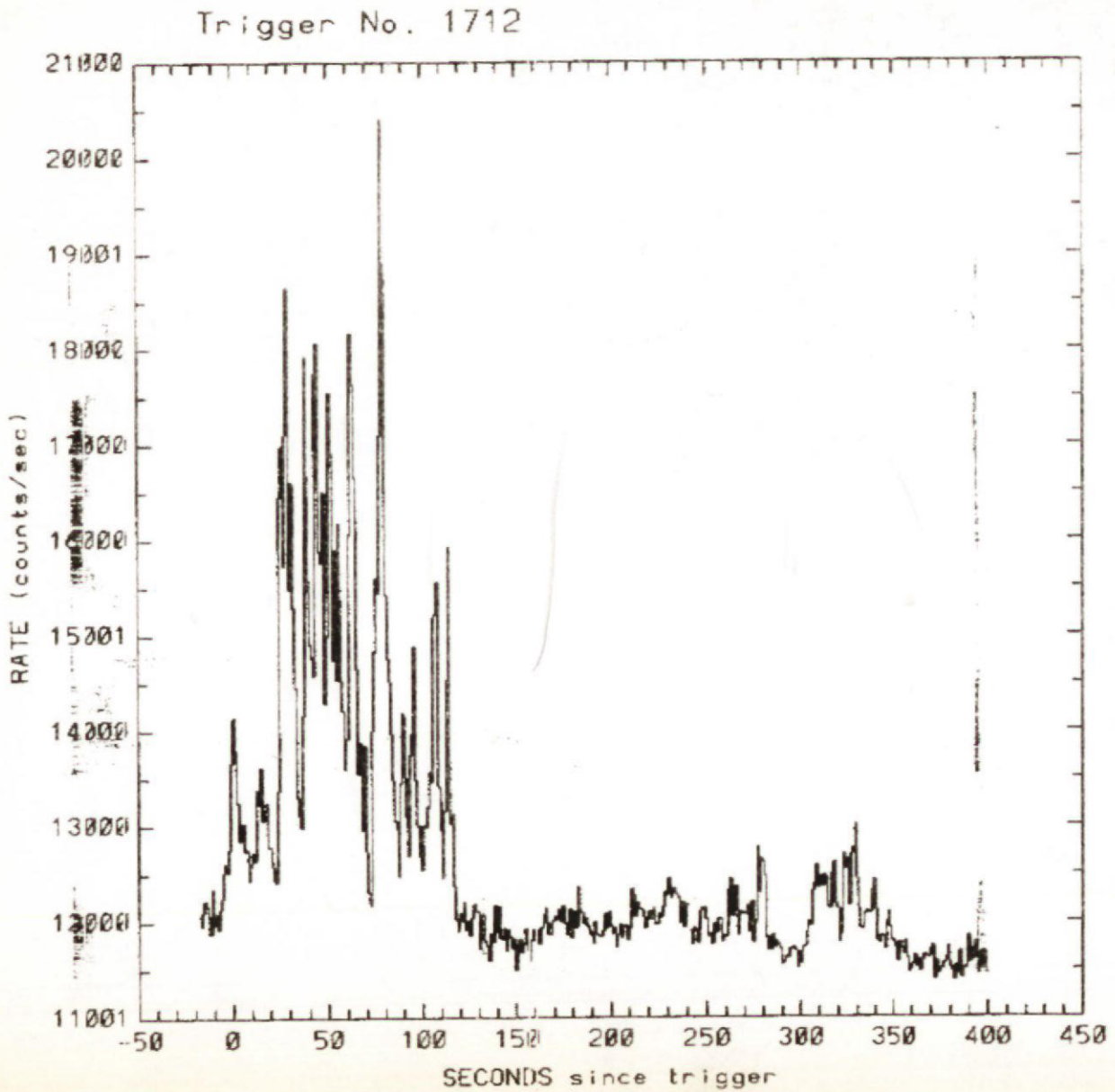
Alberto

First GRANAT/WATCH Gamma-Ray Burst Catalogue

UT date (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:33:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:32:00
911022	04:13:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:07
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:56
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:44
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:30:44
920925b	20:45:14
920925c	23:46:14

CANDIDATES

900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:38:27
910816	01:57:40
920314	05:48:32
920721	13:00:49
920721	06:17:25



21-JUL-1992 15:49:22

Created by MOPS BD
(Burst Display)
Version 2.14

Trigger # : 1712

Trigger Time:
8823 / 21172.86s

Burst Data Type:
DISCSC

Deadtime
Corrected: N

Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
1.024 second(s)

Detectors [7..0]:
00101010

Discriminators:
[1, 4]

Quality Mask:
BDISP0

JUL 22 '92 6:39 BATSE 0 - G
PAGE.04
** TOTAL PAGE.04 **

30/12/93

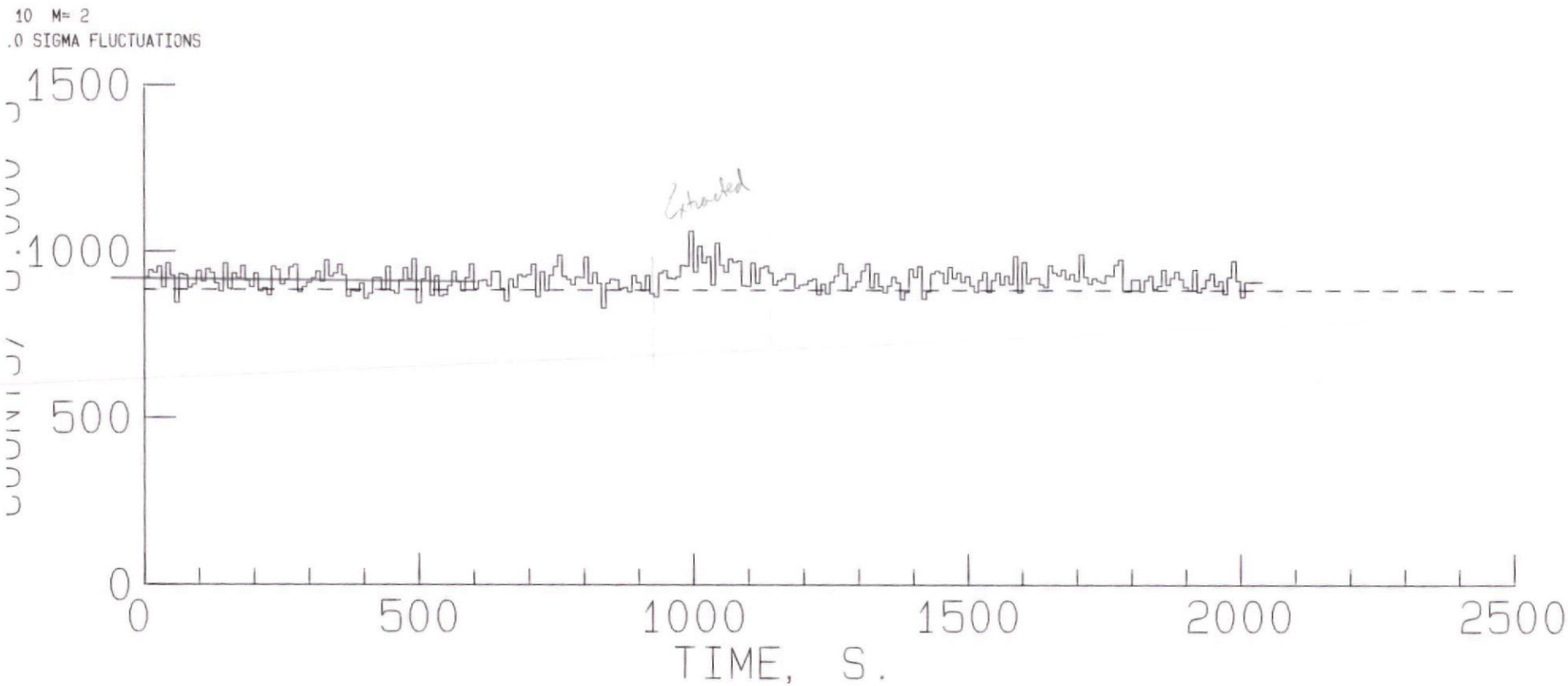
PVO-RT

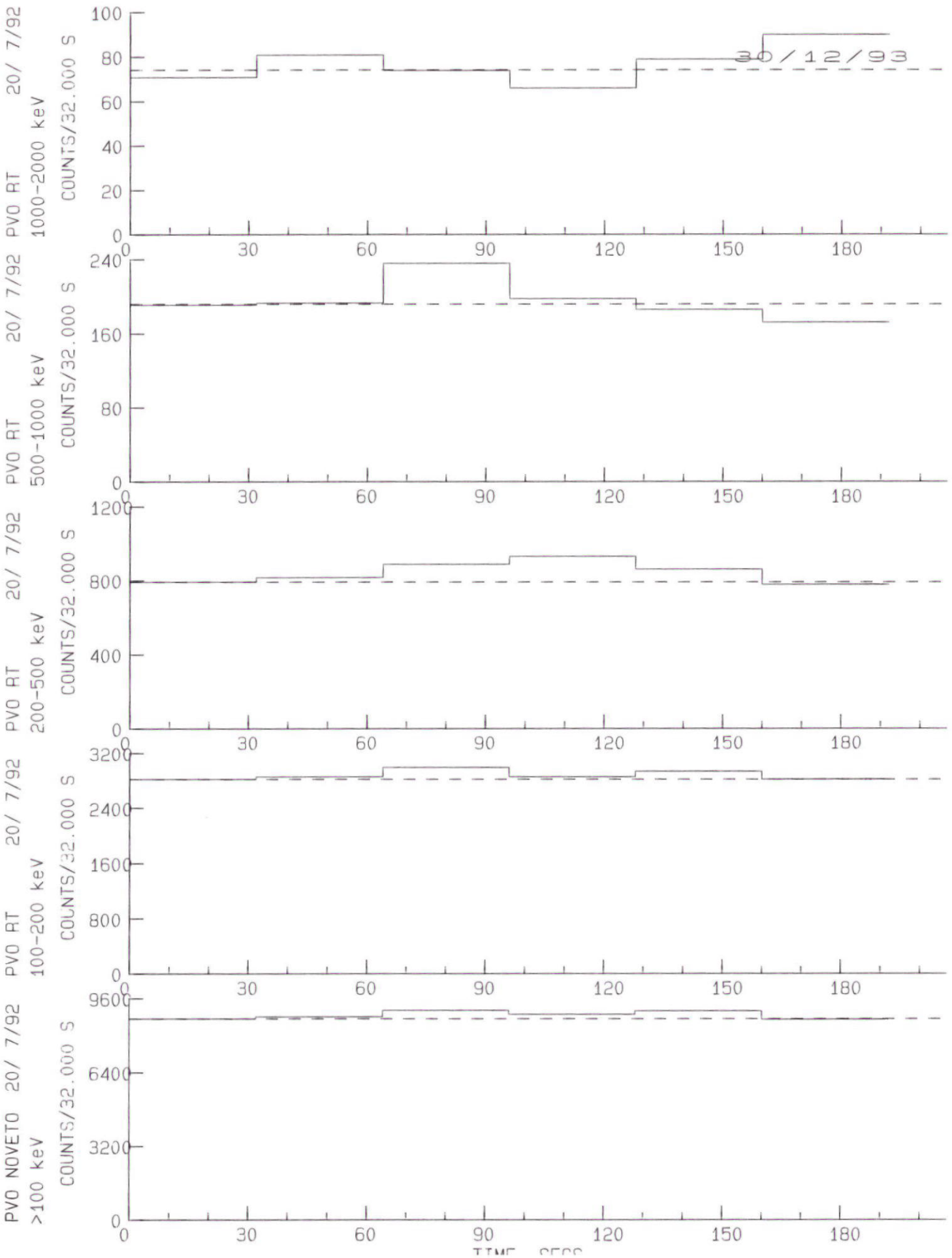
20/ 7/92

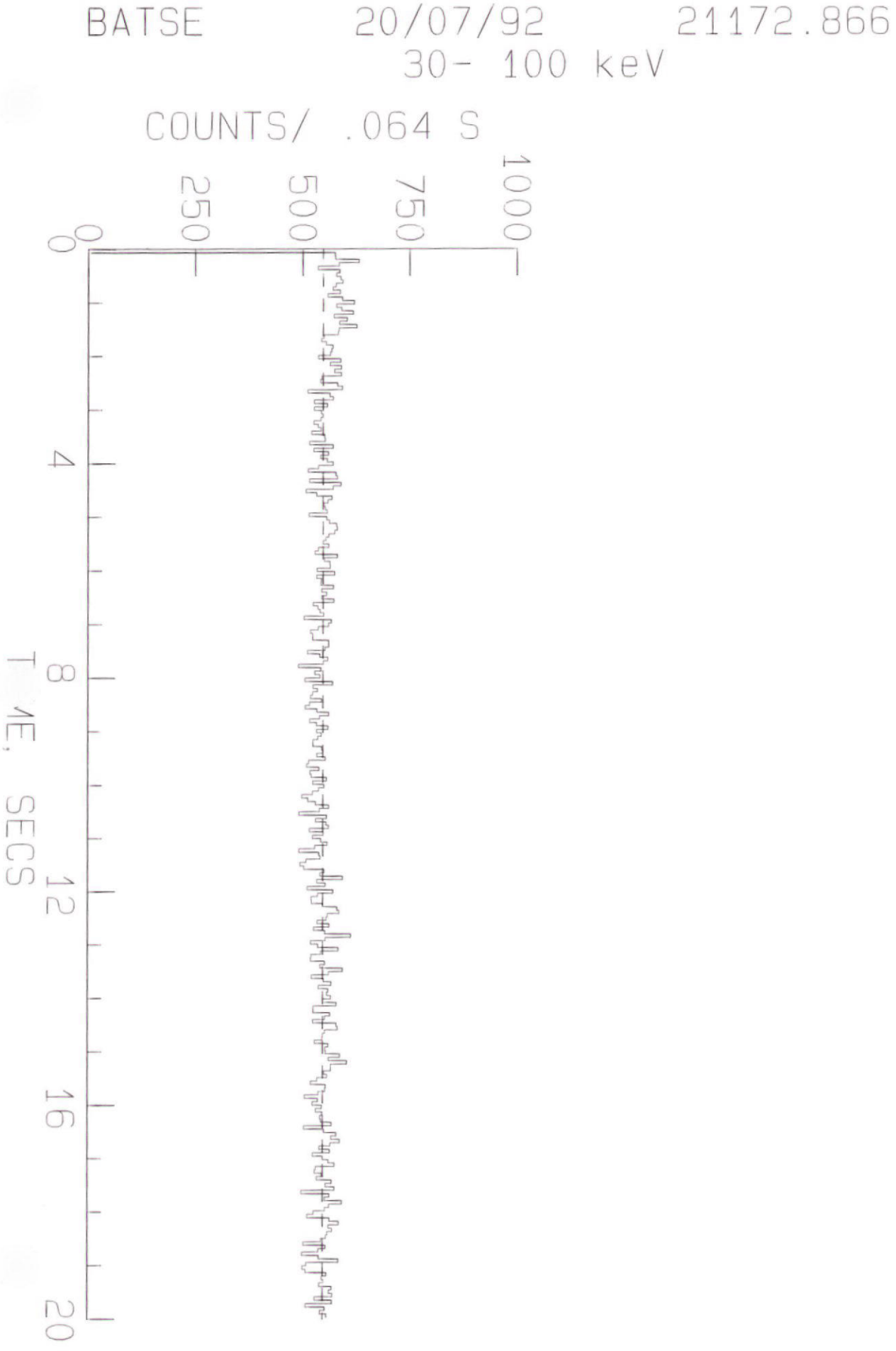
19500.072 s.

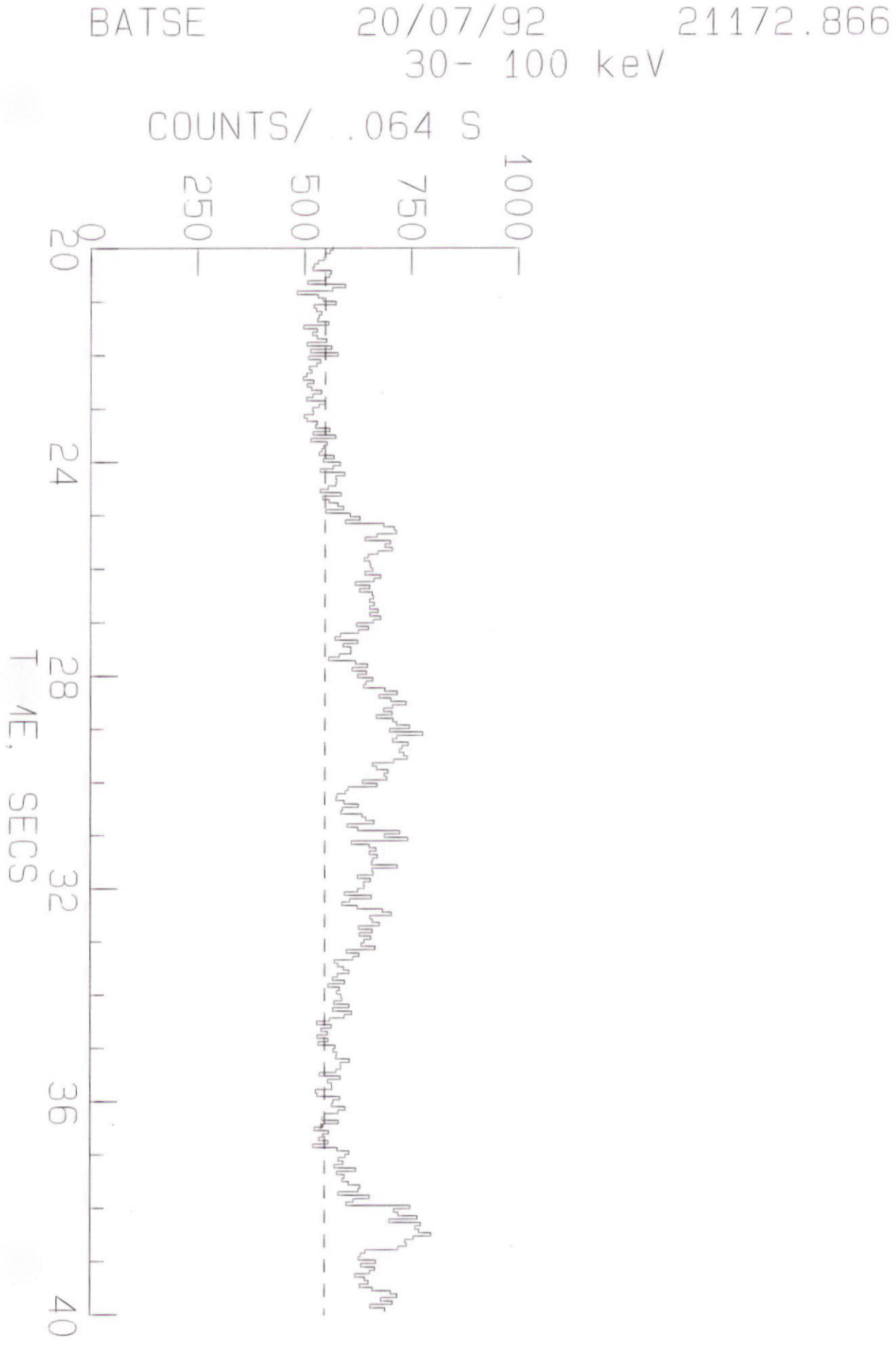
8.000 S. INTERVALS REGROUPED BY 1

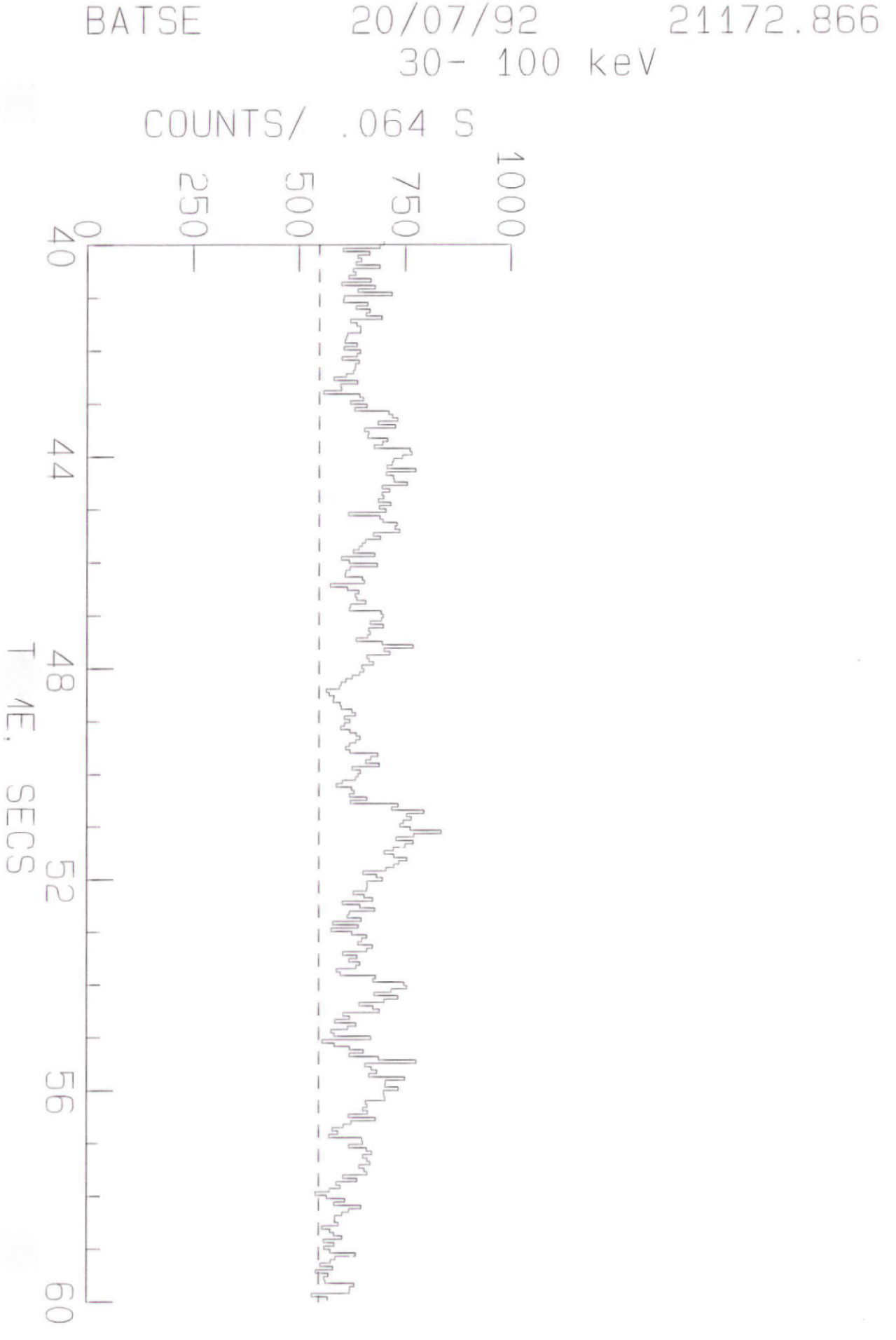
100-2000 keV

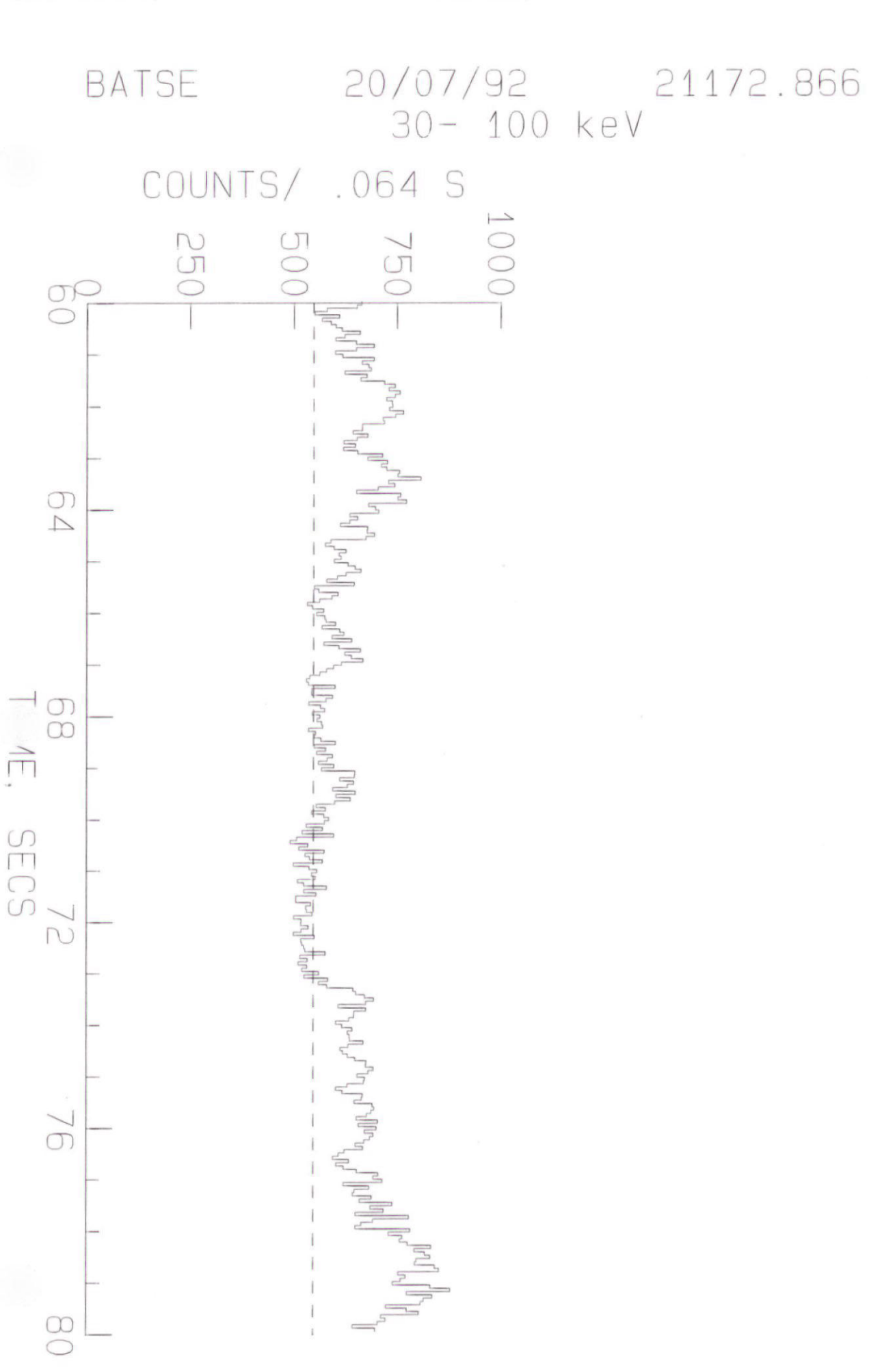



PVO NOVETO 20/ 7/92
>100 keV
COUNTS/32.000 S
PVO RT 20/ 7/92
100-200 keV
COUNTS/32.000 S
PVO RT 20/ 7/92
200-500 keV
COUNTS/32.000 S
PVO RT 20/ 7/92
500-1000 keV
COUNTS/32.000 S
PVO RT 20/ 7/92
1000-2000 keV
COUNTS/32.000 S
30/12/93
TIME SECS

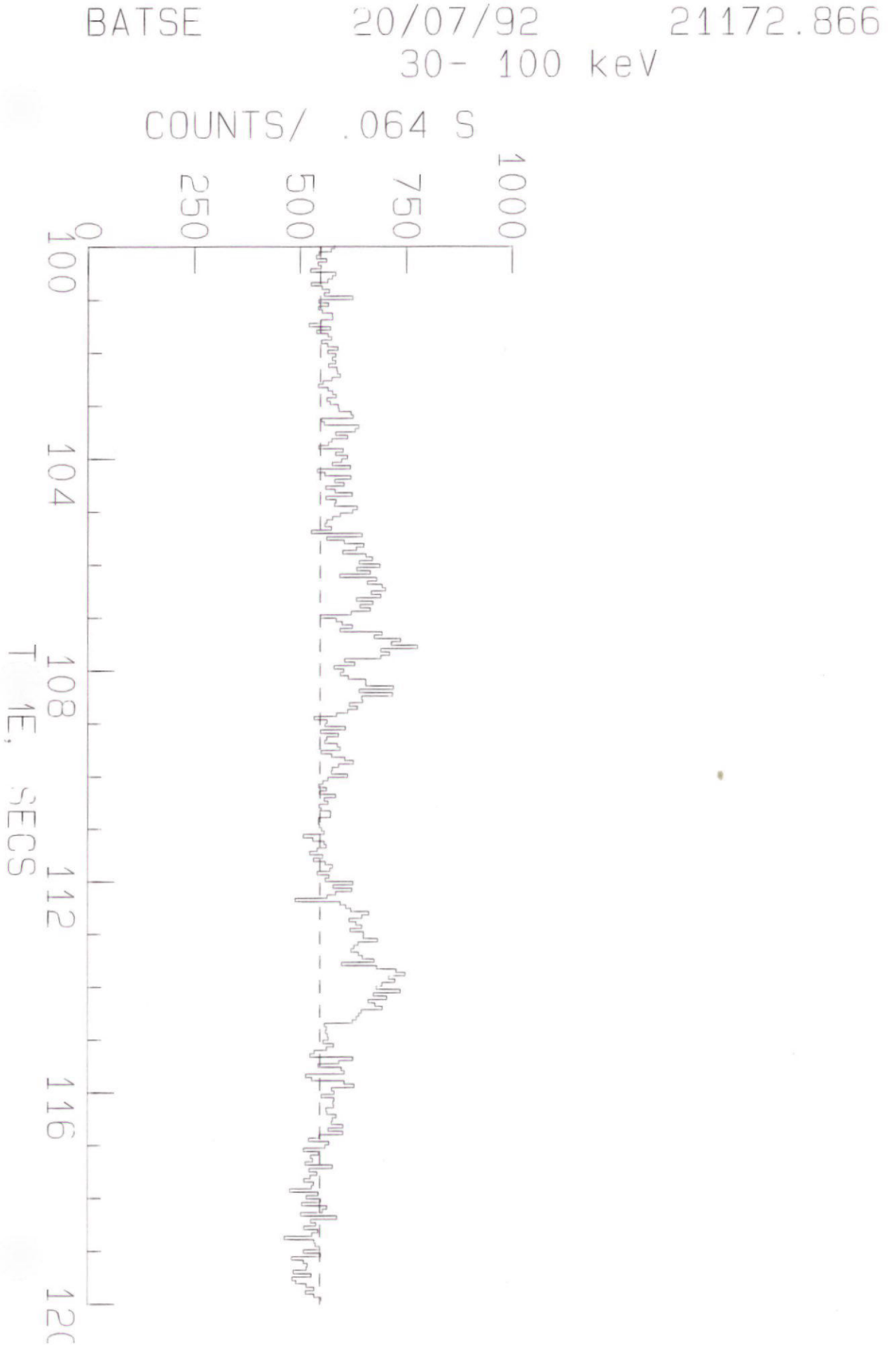

BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
0
4
8
12
16
20
TIME, SECS


BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
20
24
28
32
36
40
TIME SECS


BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
40
44
48
52
56
60
TIME, SECS


BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
60
64
68
72
76
80
TIME, SECS

BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
80
84
88
92
96
100
T, SECS


BATSE 20/07/92 21172.866
30- 100 keV
COUNTS/ .064 S
0
250
500
750
1000
100
104
108
112
116
120
T 1E. SECS

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

BATSE BURST # 1713
EVENT OF 1992 JUL 20 DAY OF YEAR=202
EVENT CROSSING TIME AT BATSE      : 27185. S. OR 07:33:04.8
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 271.200  -60.100
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 20/ 7/  92 IS:
RA=  152.228 DEC=     4.917 DIST=     6.110 AU
BATSE-ULYSSES DISTANCE =  914054504. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 71.65 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  960.04 SECS.
CROSSING TIME AT ULYSSES     IS 28145. S. OR 07:49:04.8 +/-  567.00 SECONDS
```

No

```
From MALLOZZI@ssl.msfc.nasa.gov Wed Jul 22 09:38:00 1992
Date:    Wed, 22 Jul 1992 11:39:36 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

                BATSE BURST TRIGGER
NO.: 01713

TIME: TJD=8823 SECONDS=27184

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=131.3  AZIMUTH=201.9  ERROR=      DEGREES

COMMENTS:
THIRD BURST OF DAY 8823!  WEAK EVENT; APPEARS TO BE A SINGLE PEAK.
OBSERVED ABOVE 100 KEV, BUT NOT ABOVE 300 KEV.
```

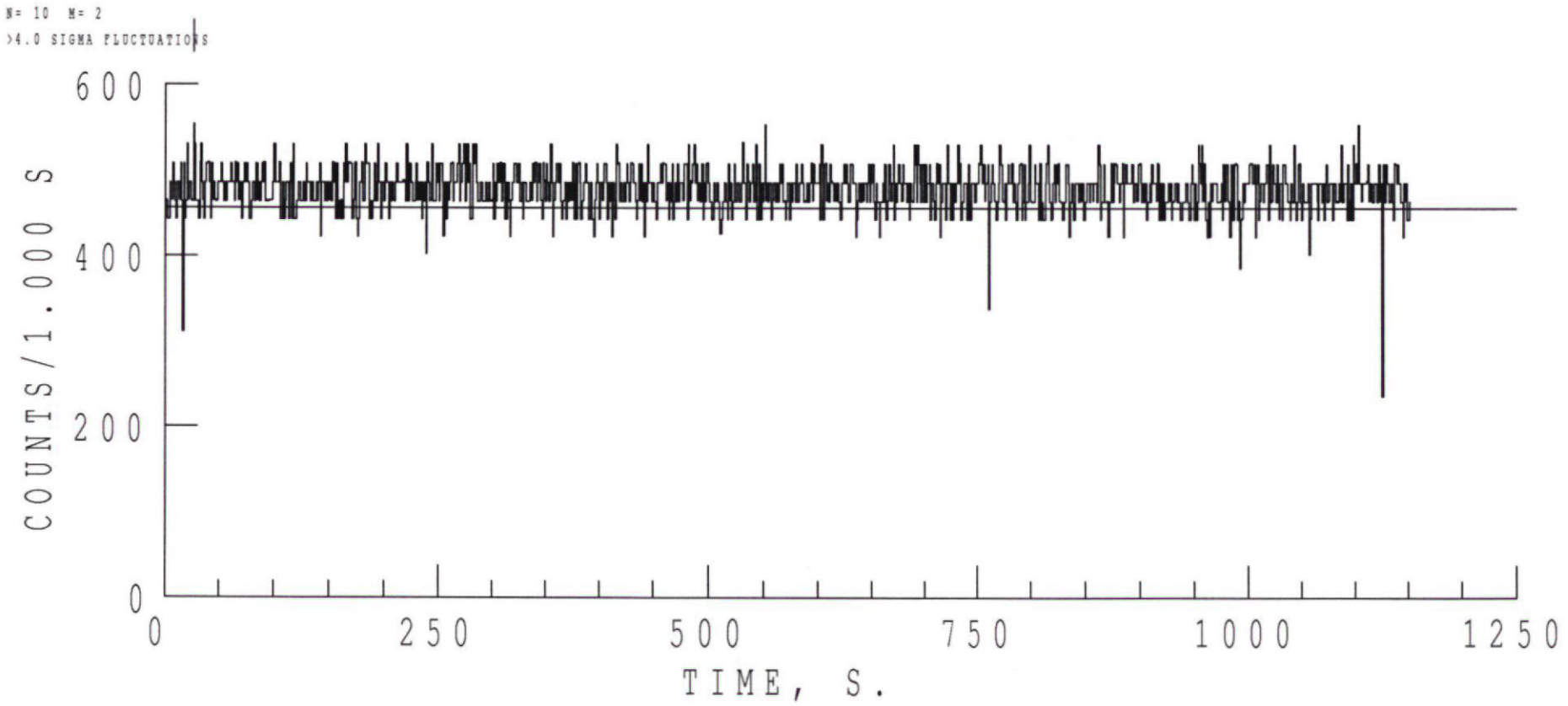
8/ 6/94

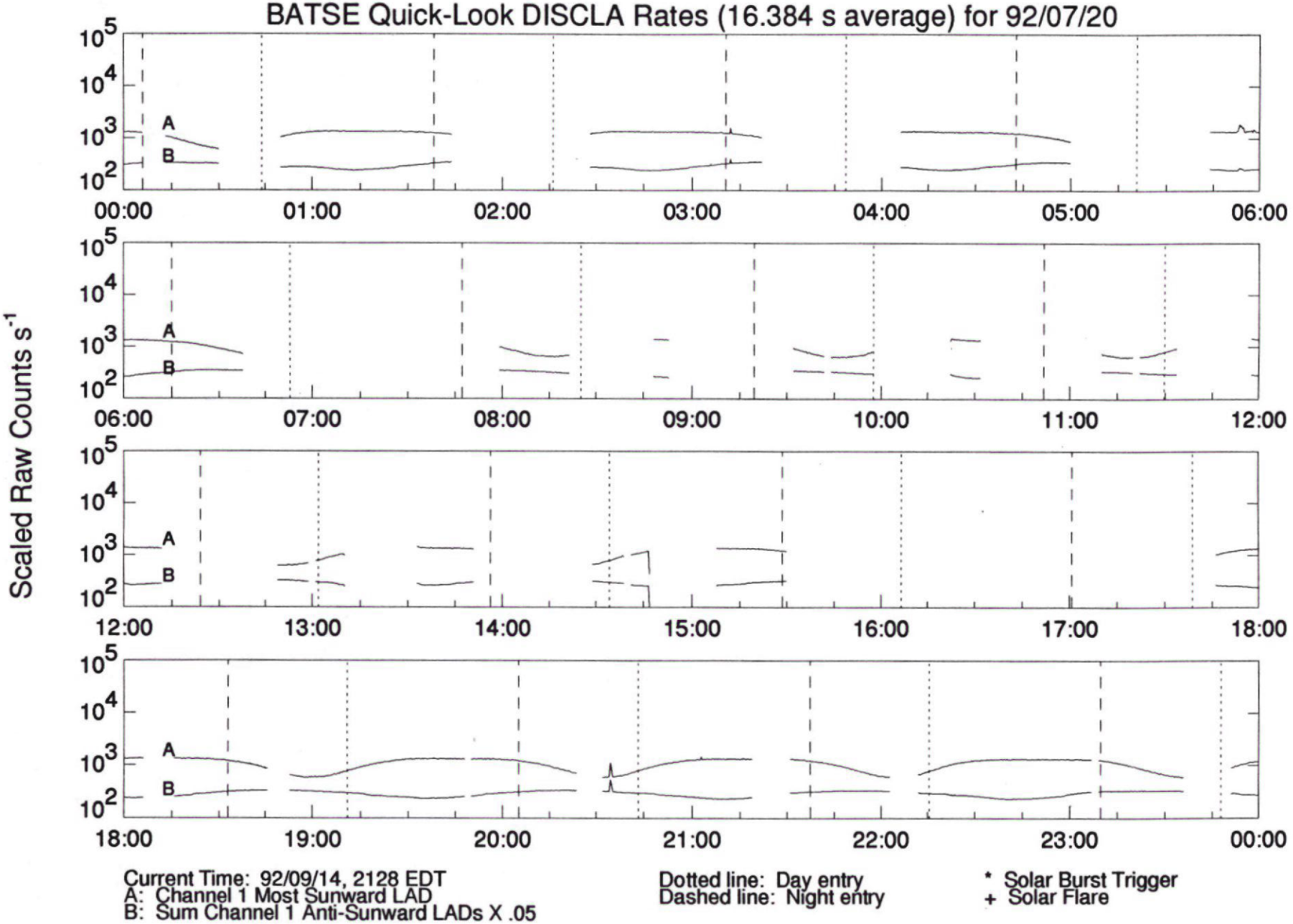
ULYSSES RT

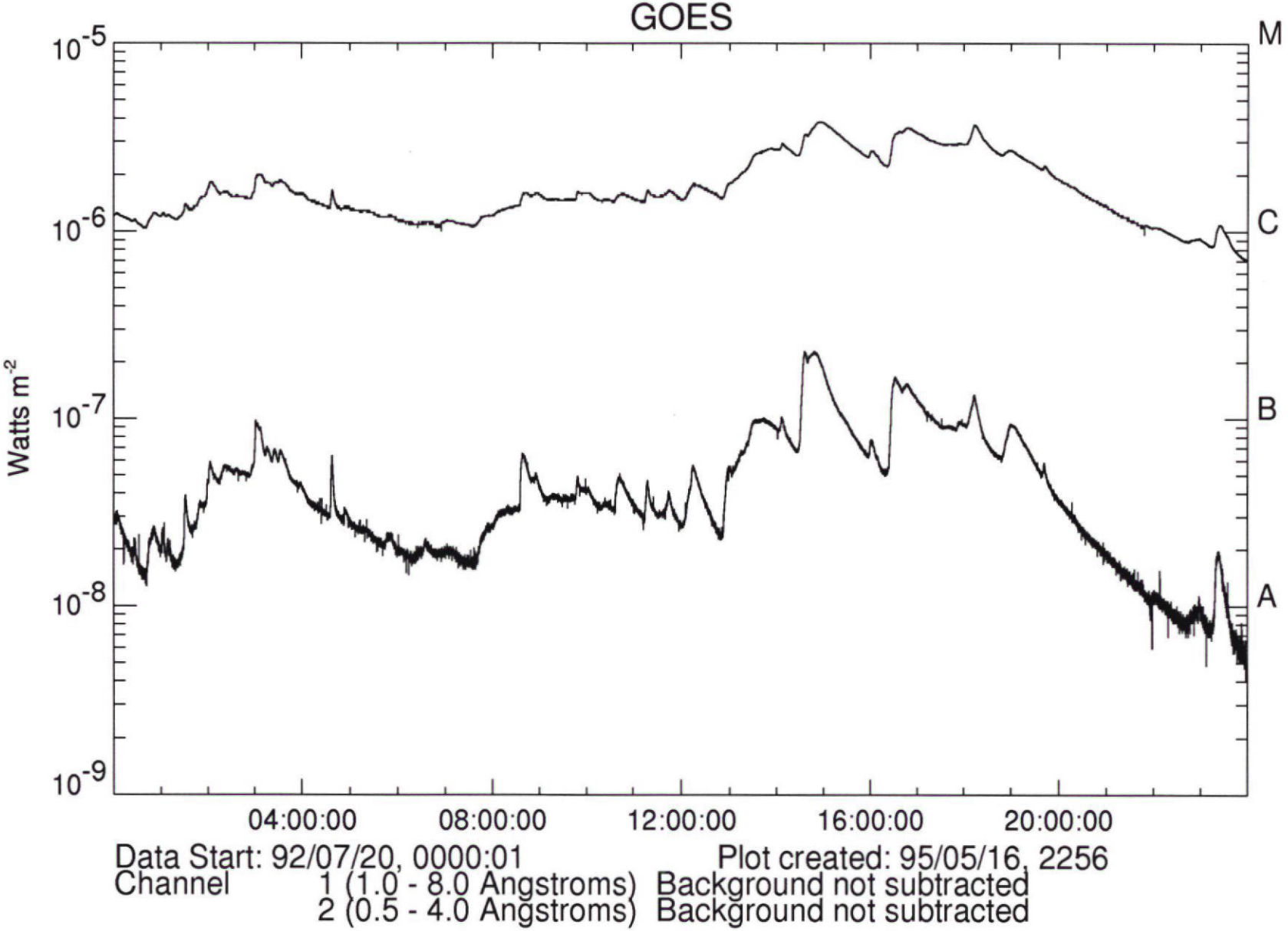
20/ 7/92 27576.027 s

0.500 S INTERVALS REGROUPED BY 2

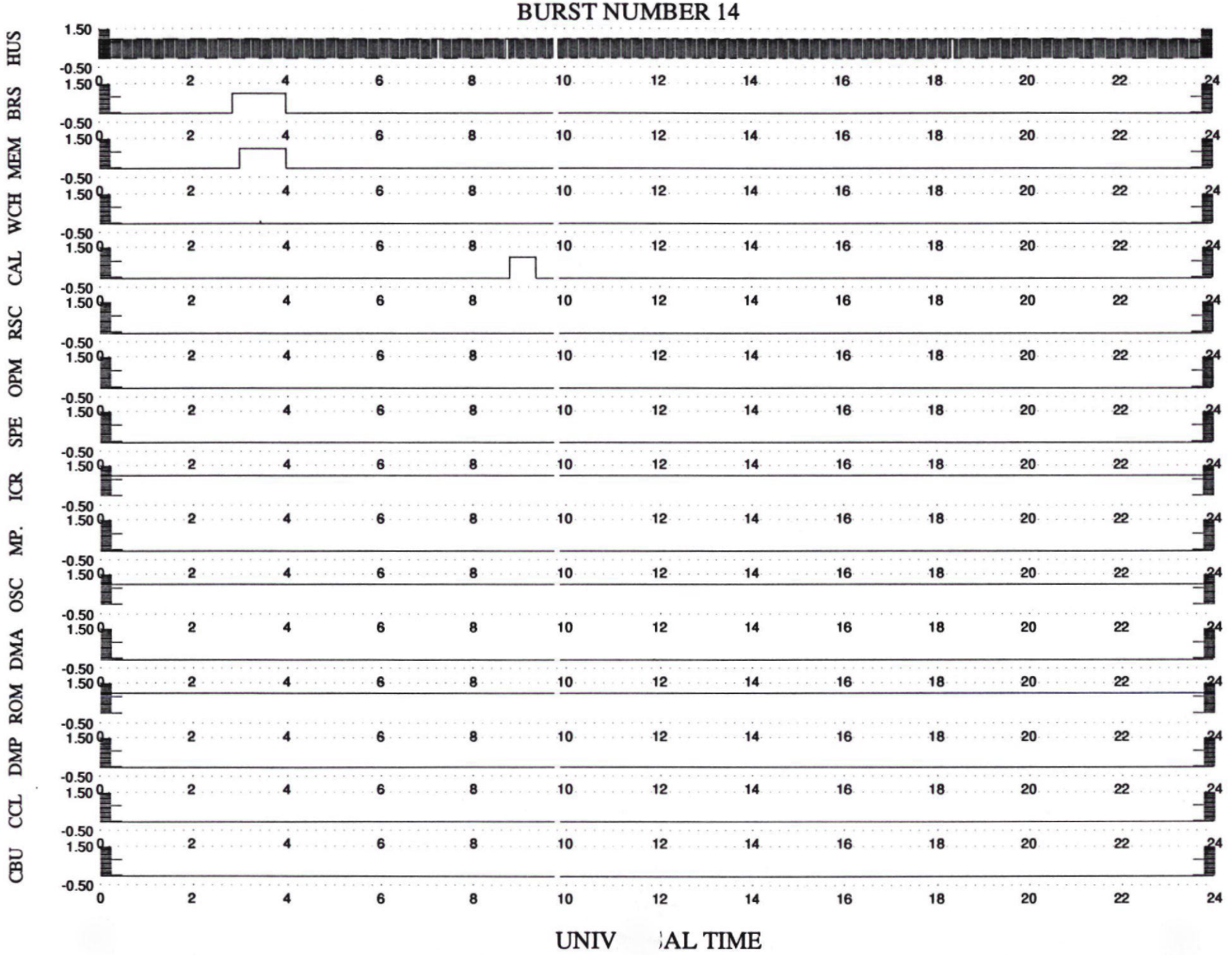
0- 0 keV




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/20
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
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: 92/09/14, 2128 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

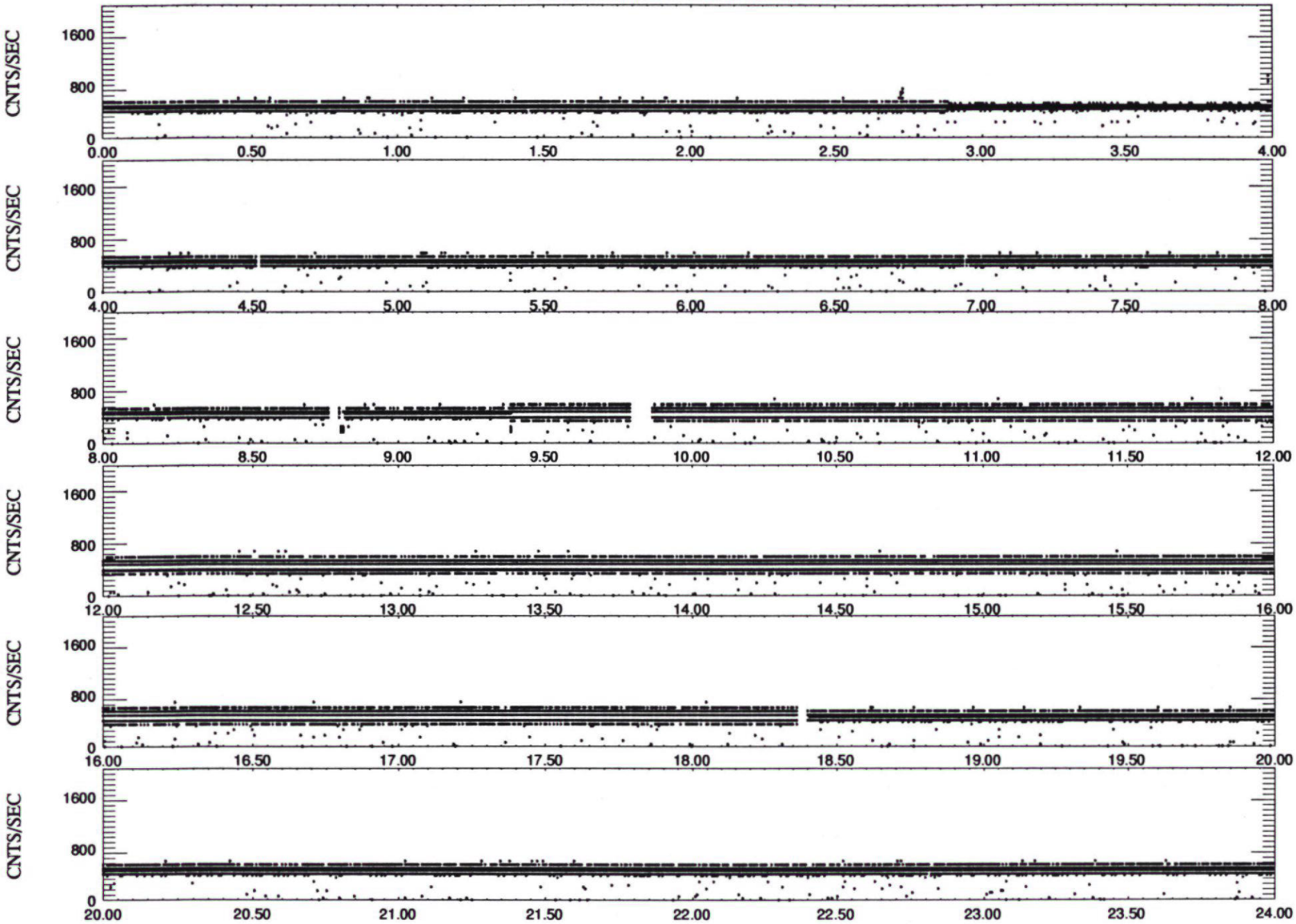

GOES
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/20, 0000:01
Plot created: 95/05/16, 2256
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 202, year 1992 to day 202, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 202, year 1992 to day 202, year 1992 9/11/92

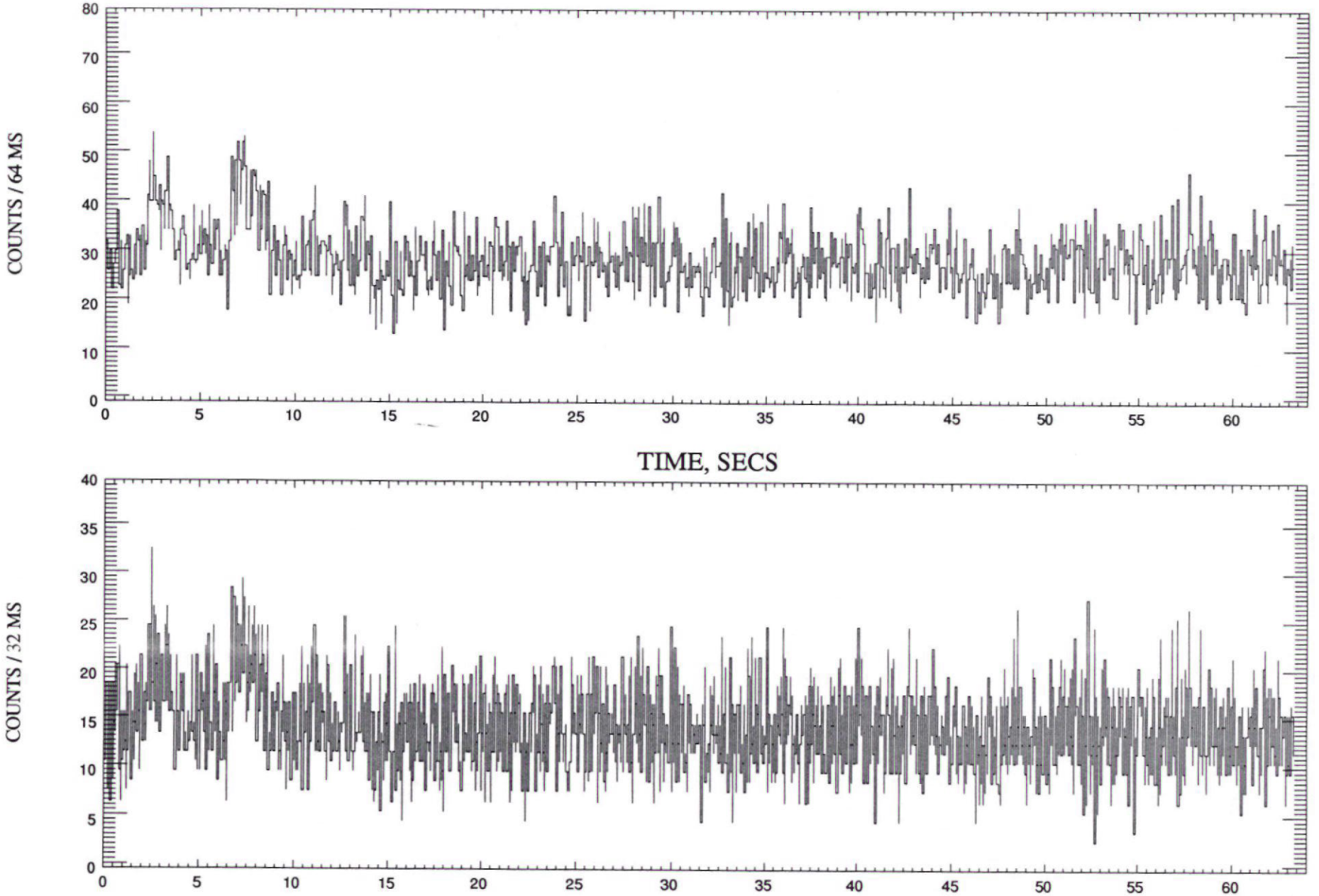
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 202, year 1992 9/11/92

Burst Counter 14 at UT= 2.724233741760 h= 9807.241 s



B# 1

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

BATSE BURST # 1714
EVENT OF 1992 JUL 21 DAY OF YEAR=203
EVENT CROSSING TIME AT BATSE      :  5524. S. OR 01:32:04.1
COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 156.500   29.300
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 21/ 7/  92 IS:
RA=  152.344 DEC=     4.837 DIST=     6.118 AU
BATSE-ULYSSES DISTANCE =  915318624. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=155.22 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2772.11 SECS.
CROSSING TIME AT ULYSSES     IS  2752. S. OR 00:45:52.0 +/-  230.05 SECONDS
```

NO

```
From HORACK@ssl.msfc.nasa.gov Wed Jul 22 13:49:22 1992
Date:    Wed, 22 Jul 1992 15:50:55 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

                BATSE BURST TRIGGER
NO.: 01714
```

July 21

```
TIME: TJD=8824 SECONDS=05524

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=93.    AZIMUTH=52.    ERROR=       DEGREES

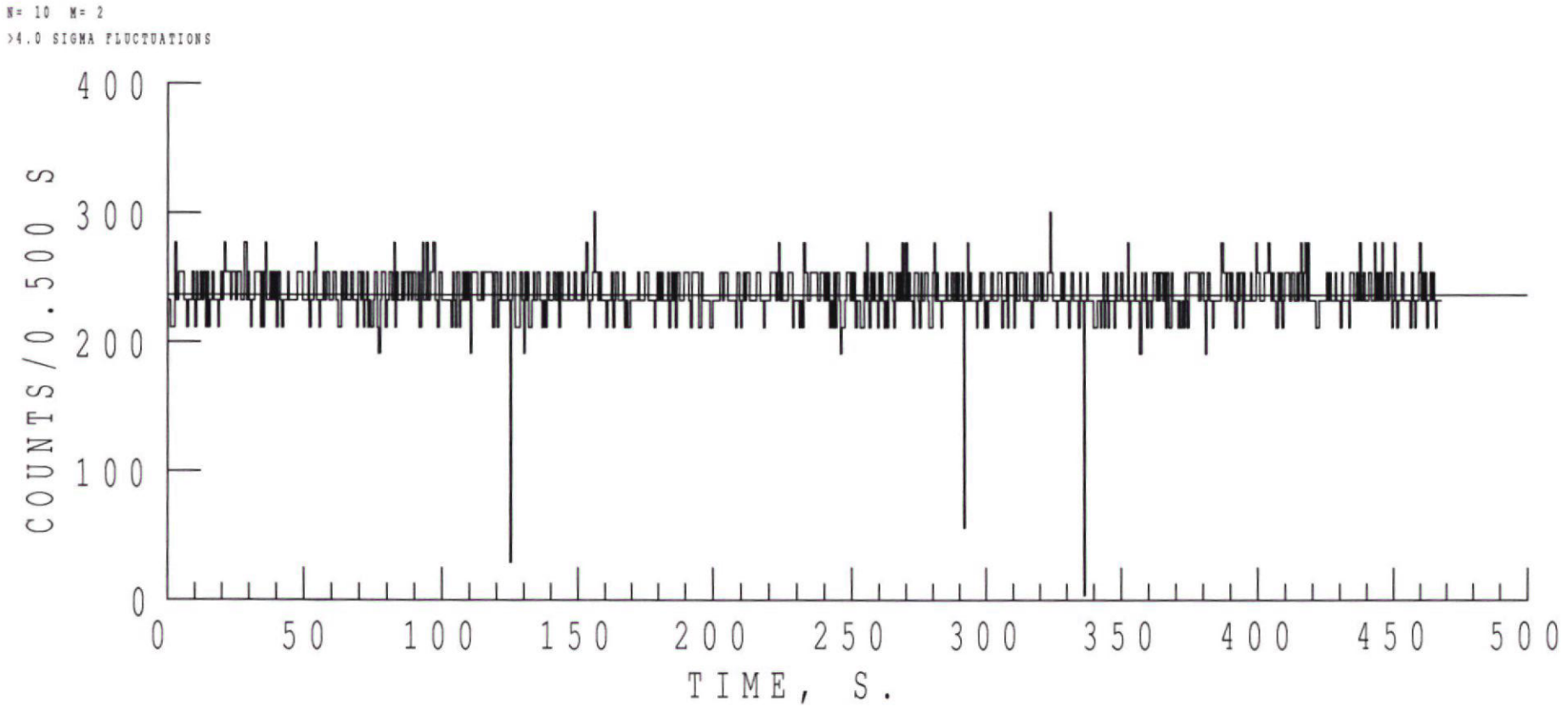
COMMENTS:
WEAK EVENT IN SOLAR DETECTORS.  DURATION OF EVENT IS APPROX 30 SEC.  HAS
SHARP RISE, FOLLOWED BY SLOWER DECAY.  SEEN UP TO 300 KEV.  HIGHER ENERGIES
HAVE SHARPER PROFILE.  LOCATES 30 DEGREES FROM SUN.  NO EMISSION IN GOES,
NO SOFT COUNTERPART IN BATSE SD DETECTORS, SPECTRUM IS NOT LIKE MOST FLARES.
```

8/ 6/94

ULYSSES RT

21/ 7/92 2520.022 s

0- 0 keV



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

BATSE BURST # 1715
EVENT OF 1992 JUL 21 DAY OF YEAR=203
EVENT CROSSING TIME AT BATSE      : 10412. S. OR 02:53:32.4
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  20.600  -10.000
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 21/ 7/  92 IS:
RA=  152.344 DEC=     4.837 DIST=     6.118 AU
BATSE-ULYSSES DISTANCE =  915318624. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 48.09 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2039.51 SECS.
CROSSING TIME AT ULYSSES     IS 12452. S. OR 03:27:31.9 +/-  475.44 SECONDS
```

ND

```
From HORACK@ssl.msfc.nasa.gov Wed Jul 22 13:55:10 1992
Date:    Wed, 22 Jul 1992 15:56:18 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

                BATSE BURST TRIGGER
NO.: 01715

TIME: TJD=8824 SECONDS=10412

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=73.    AZIMUTH=277.   ERROR=      DEGREES

COMMENTS:
MODERATE TO WEAK EVENT LASTING 2 SECONDS. DATA IS INCOMPLETE. SMOOTH
PROFILE ON TRAILING EDGE.  RISE NOT AVAILABLE BECAUSE OF MISSION DATA.
SEEN UP TO 300 KEV.
```

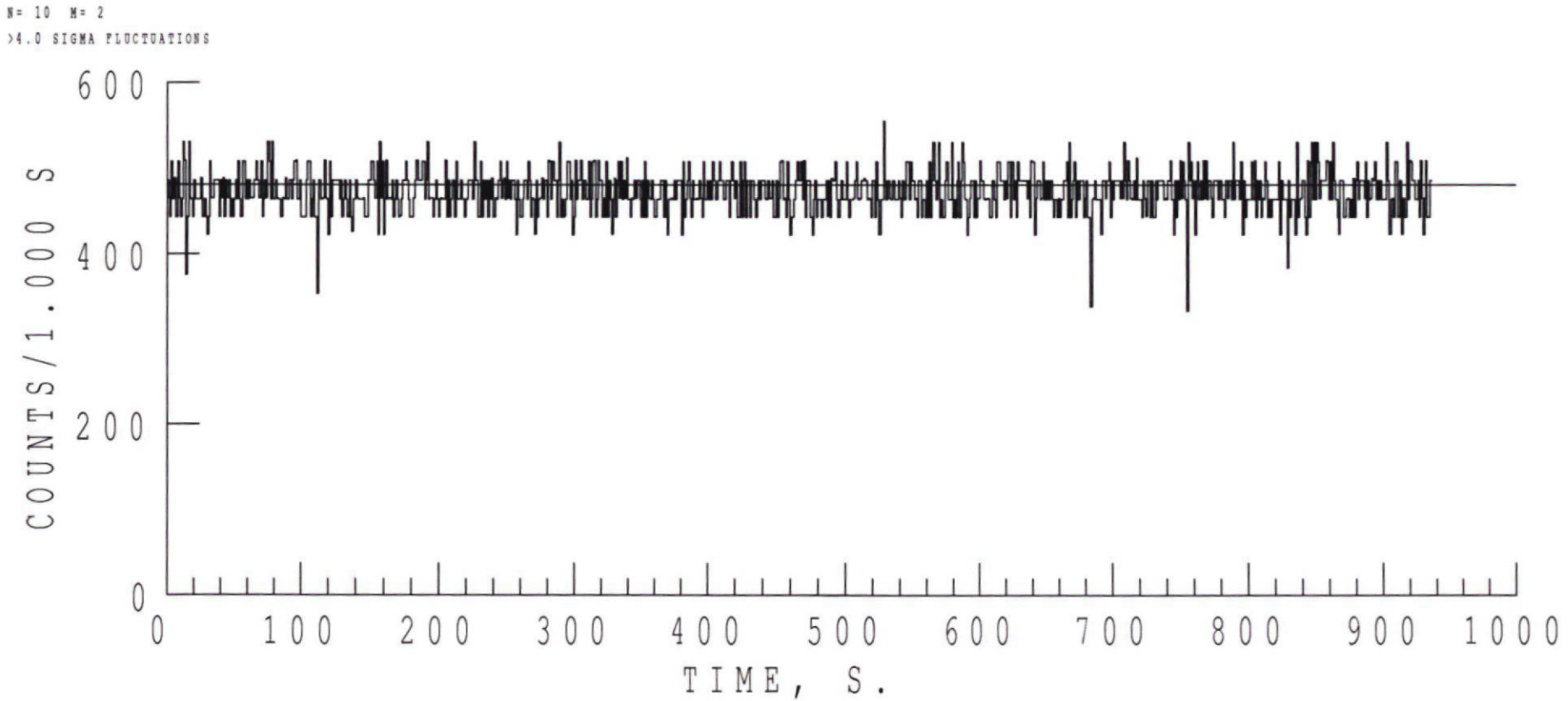
8/ 6/94

ULYSSES RT

21/ 7/92 11988.178 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



****
CATSEARCH PROGRAM
****

BATSE BURST # 1716
EVENT OF 1992 JUL 22 DAY OF YEAR=204
EVENT CROSSING TIME AT BATSE : 22821. S. OR 06:20:21.0
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 357.200 -26.700
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 22/ 7/ 92 IS:
RA= 152.462 DEC= 4.756 DIST= 6.127 AU
BATSE-ULYSSES DISTANCE = 916551328. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 32.24 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2586.01 SECS.
CROSSING TIME AT ULYSSES IS 25407. S. OR 07:03:27.0 +/- 372.41 SECONDS

RI NO

BATSE BURST TRIGGER

NO.: 01716

=21st

TIME: TJD=8824 SECONDS=22820

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH=252. ERROR= DEGREES

COMMENTS:
MODERATE EVENT LASTING ABOUT 7 SECONDS. CONSISTS OF 2 SPIKES, EACH ABOUT 2 SEC LONG, WITH 3 SEC. SEPARATION. LEADING EDGES OF SPIKES ARE SHARPER THAN TRAILING EDGES. SEEN UP TO 300 KEV. SECOND PEAK IS MORE INTENSE

BATSE BURST TRIGGER

NO.: 01716

TIME: TJD=8824 SECONDS=22820

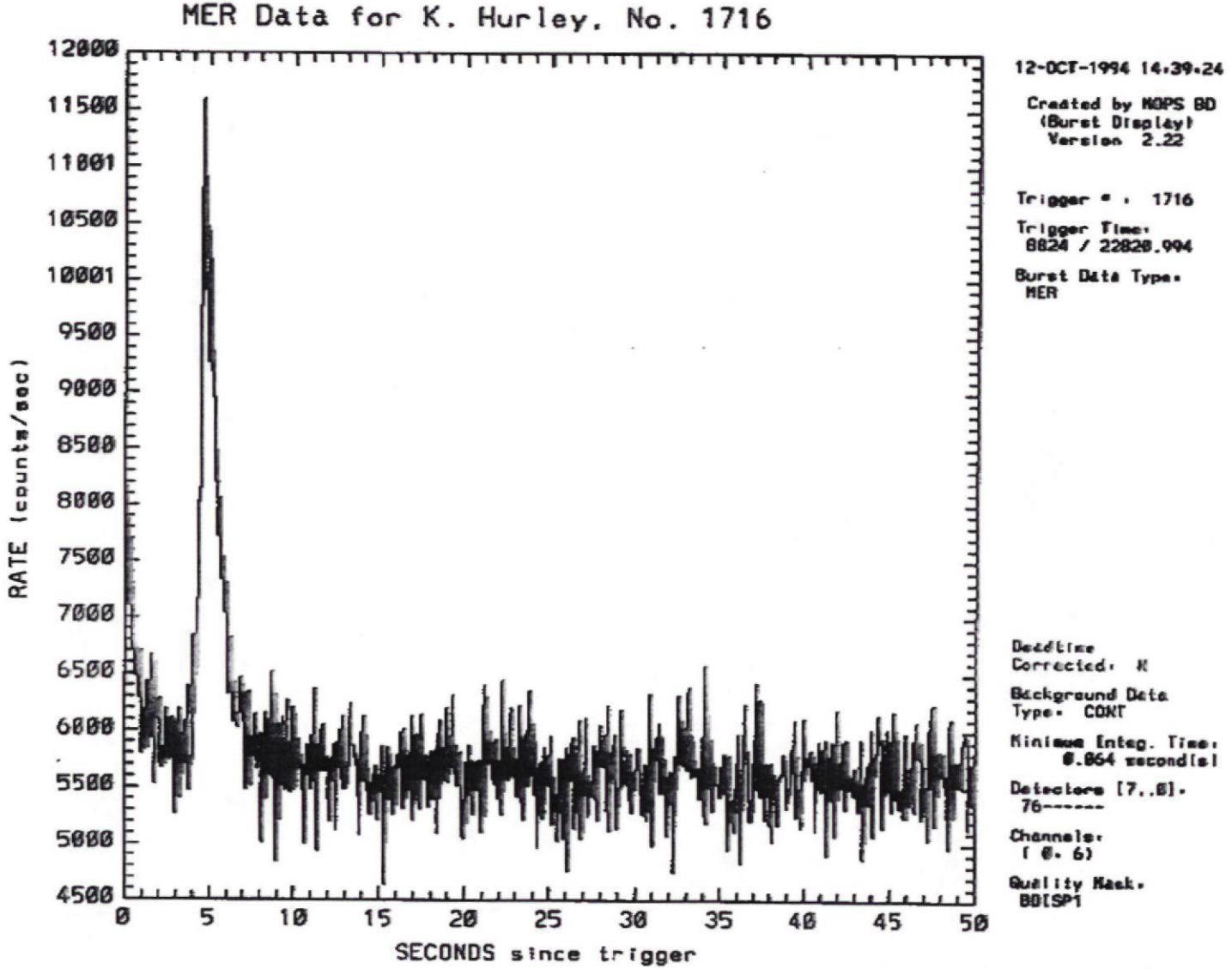
TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=85. AZIMUTH=252. ERROR= DEGREES

COMMENTS:
HIS IS A SECOND MESSAGE FOR THIS TRIGGER. I FAILED TO INCLUDE THE ZENITH ANGLE IN THE PREVIOUS MESSAGE. ALL ELSE IS CORRECT. SORRY.


MER Data for K. Hurley, No. 1716
RATE (counts/sec)
12000
11500
11001
10500
10001
9500
9000
8500
8000
7500
7000
6500
6000
5500
5000
4500
0
5
10
15
20
25
30
35
40
45
50
SECONDS since trigger
12-OCT-1994 14:39.24
Created by MOPS BD
(Burst Display)
Version 2.22
Trigger # : 1716
Trigger Time:
8824 / 22828.994
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
76------
Channels:
(0: 6)
Quality Mask:
BDISP1

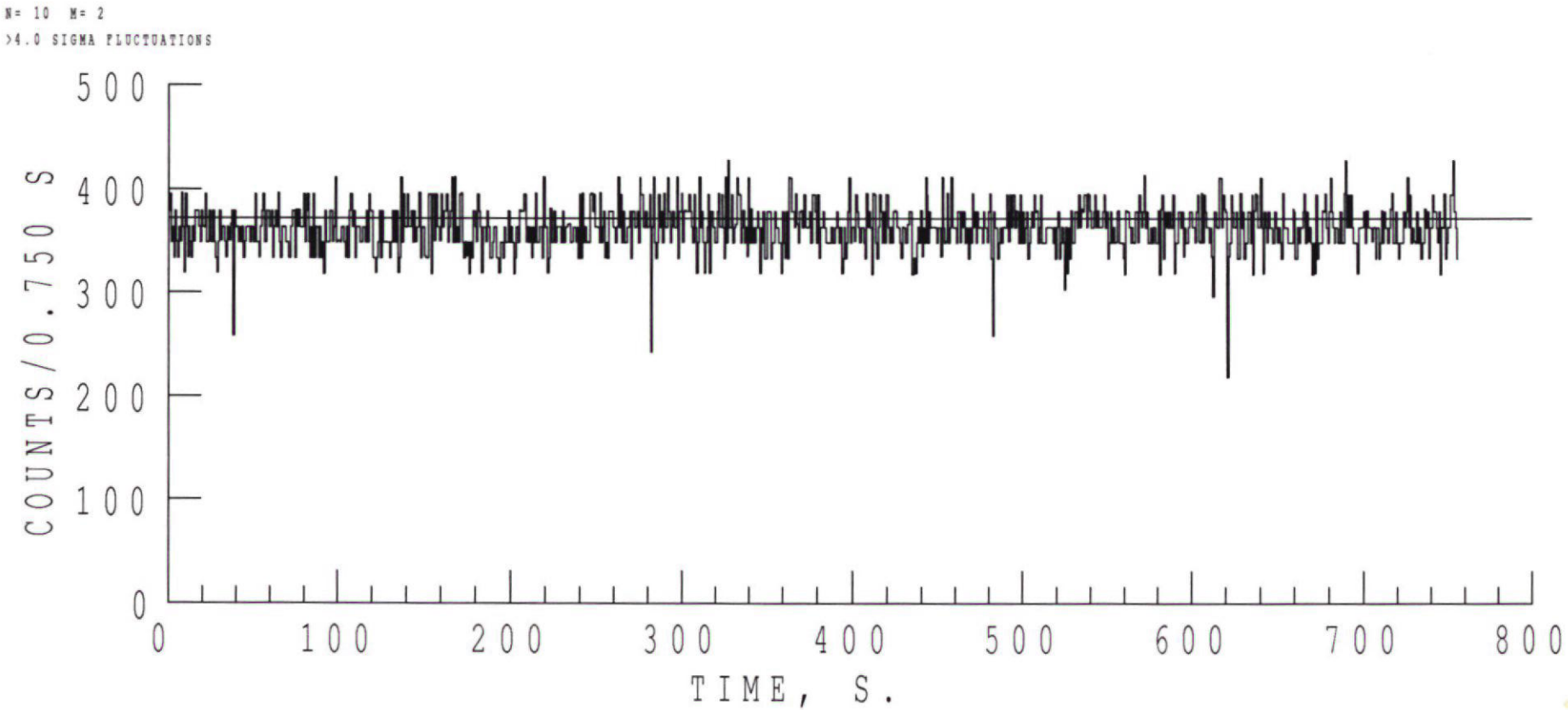
8/ 6/94

ULYSSES RT

22/ 7/92 25020.229 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



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

BATSE BURST # 1717
EVENT OF 1992 JUL 21 DAY OF YEAR=203
EVENT CROSSING TIME AT BATSE      : 65868. S. OR 18:17:48.4
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  37.100    33.200
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 21/ 7/  92 IS:
RA=  152.344 DEC=     4.837 DIST=     6.118 AU
BATSE-ULYSSES DISTANCE =  915318624. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 71.98 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  944.70 SECS.
CROSSING TIME AT ULYSSES     IS 66813. S. OR 18:33:33.1 +/-  568.41 SECONDS
```

~~HO~~ RI

```
From HORACK@ssl.msfc.nasa.gov Wed Jul 22 14:03:50 1992
Date:     Wed, 22 Jul 1992 16:05:22 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

                BATSE BURST TRIGGER
NO.: 01717

TIME: TJD=8824 SECONDS=65868

TYPE: BURST                        SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=42.     AZIMUTH=320.    ERROR=       DEGREES

COMMENTS:
SMOOTH ADN SYMMETRICAL EVENT LASTING APPROXIMATELY 10 SECONDS.  NOT
TERRIBLY INTENSE.  LOOKS ALMOST GAUSSIAN IN PROFILE.  SEEN ABOVE 300 KEV.
```

Helio. corr. removed

Date: Dec 5 '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 - 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?

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

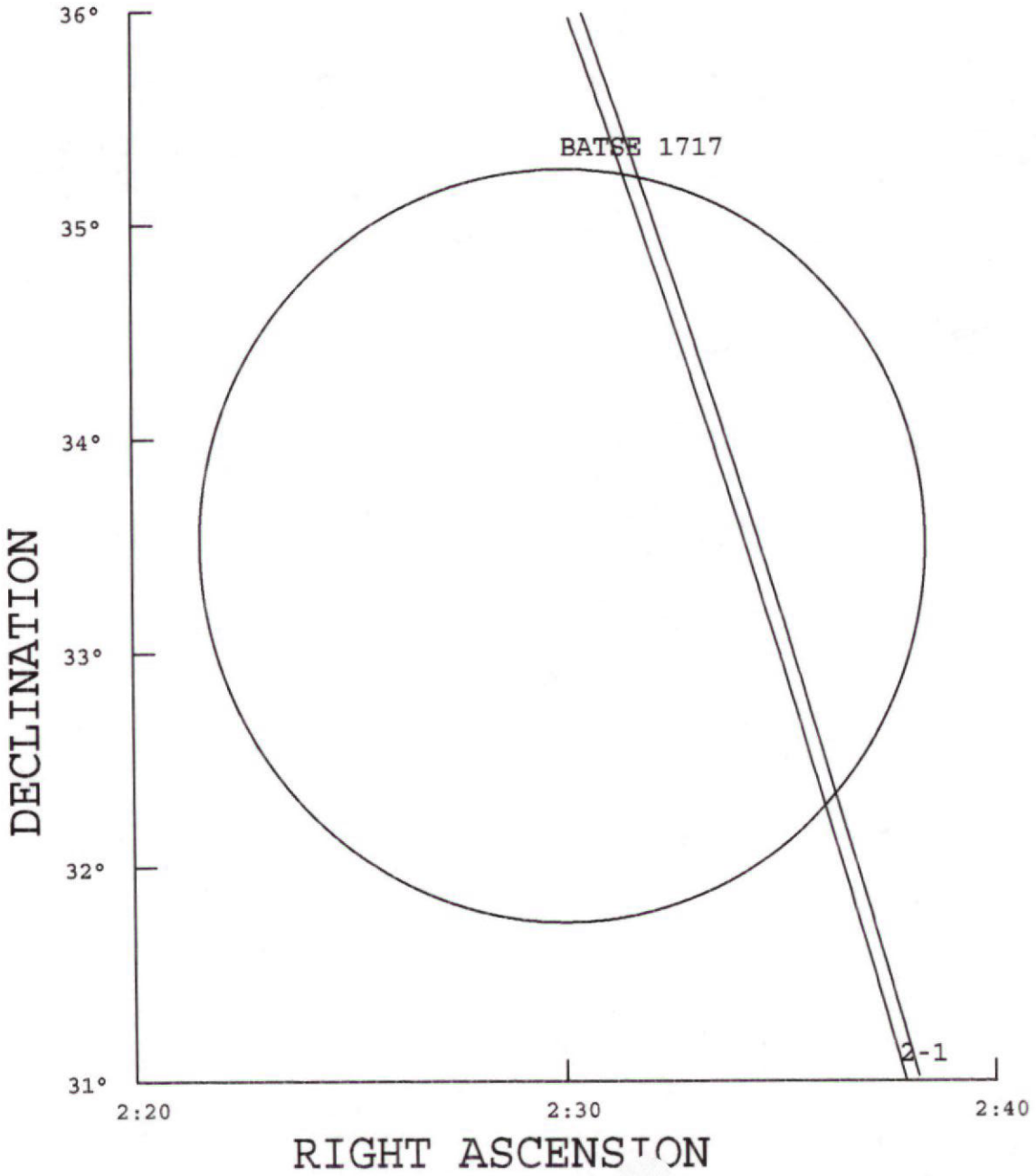
☐ Geocentric time used?

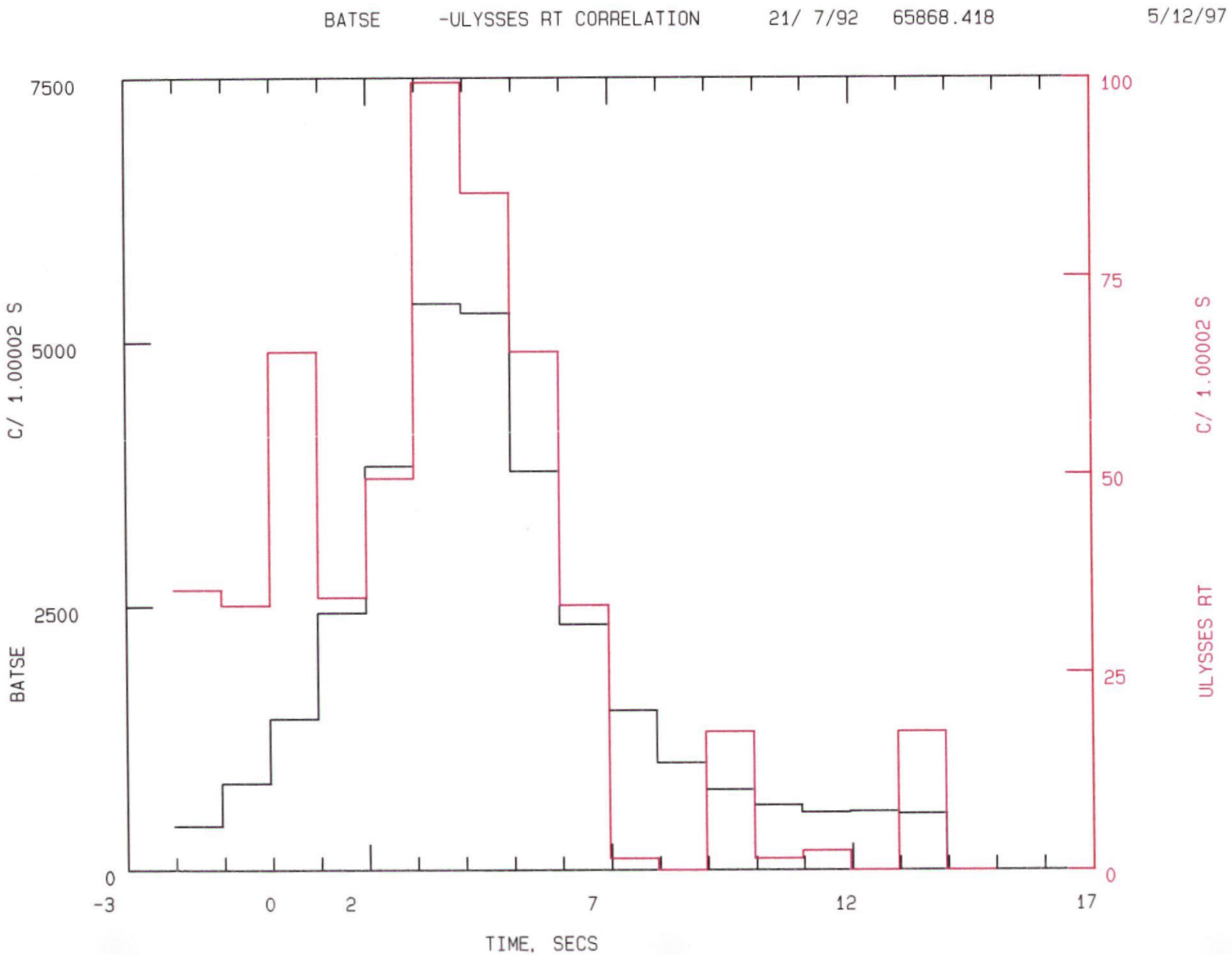
☑ ACCESS database updated?

EVENT OF JUL 21, 1992 18:32

5/12/97

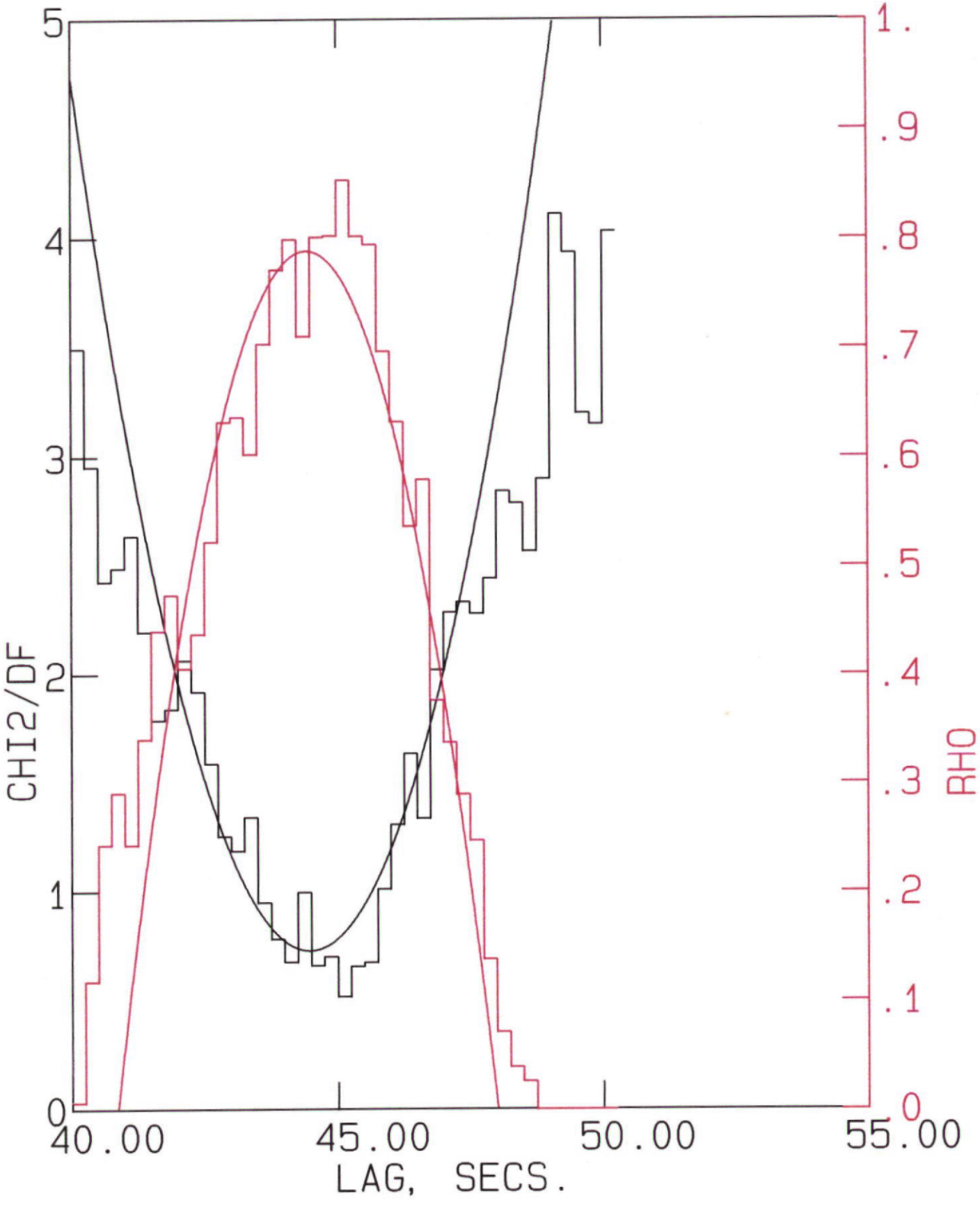
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE




BATSE -ULYSSES RT CORRELATION 21/ 7/92 65868.418 5/12/97
7500
5000
2500
0
C/ 1.00002 S
BATSE
100
75
50
25
0
C/ 1.00002 S
ULYSSES RT
-3
0
2
7
12
17
TIME, SECS

5/12/97

BATSE -ULYSSES RT CORRELATION 21/ 7/92 65868.418



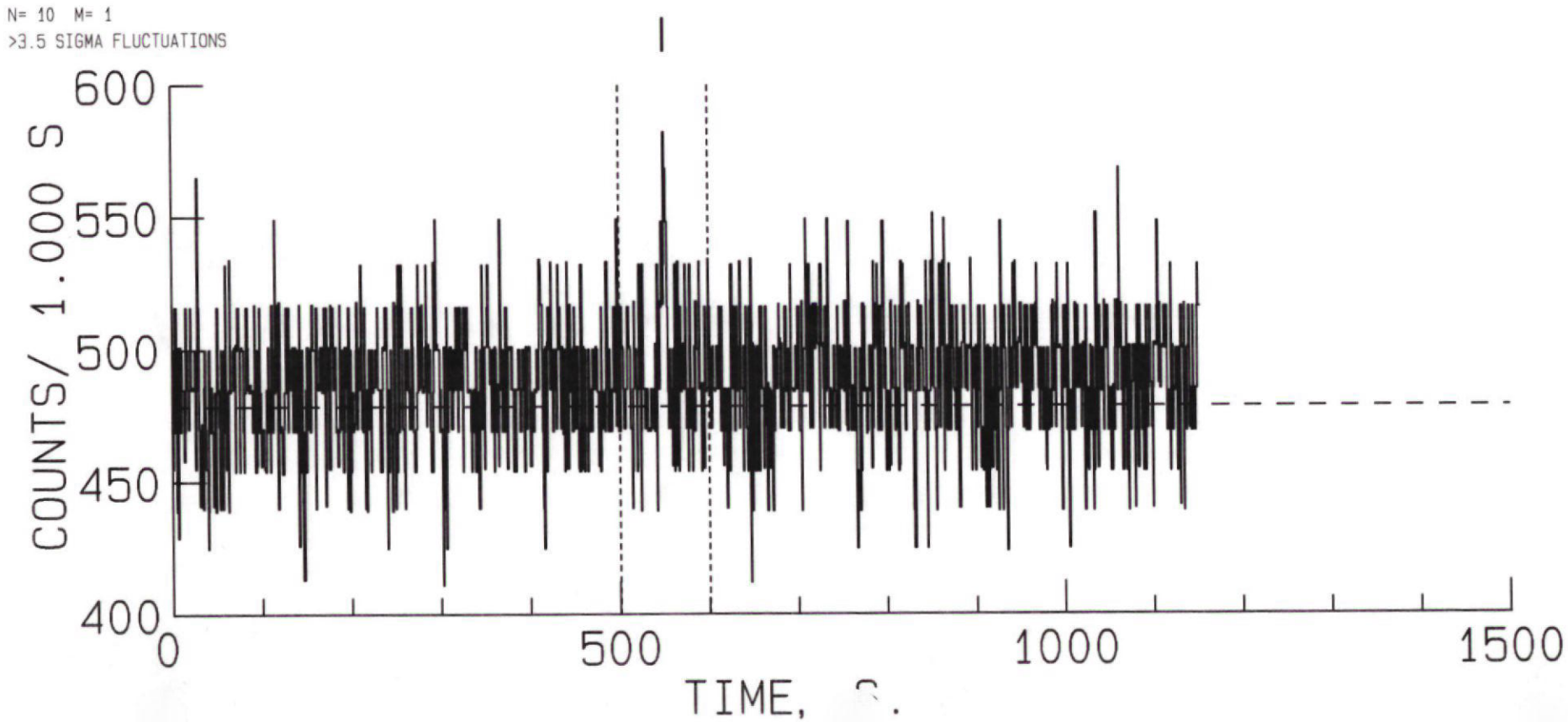
ULYSSES RT

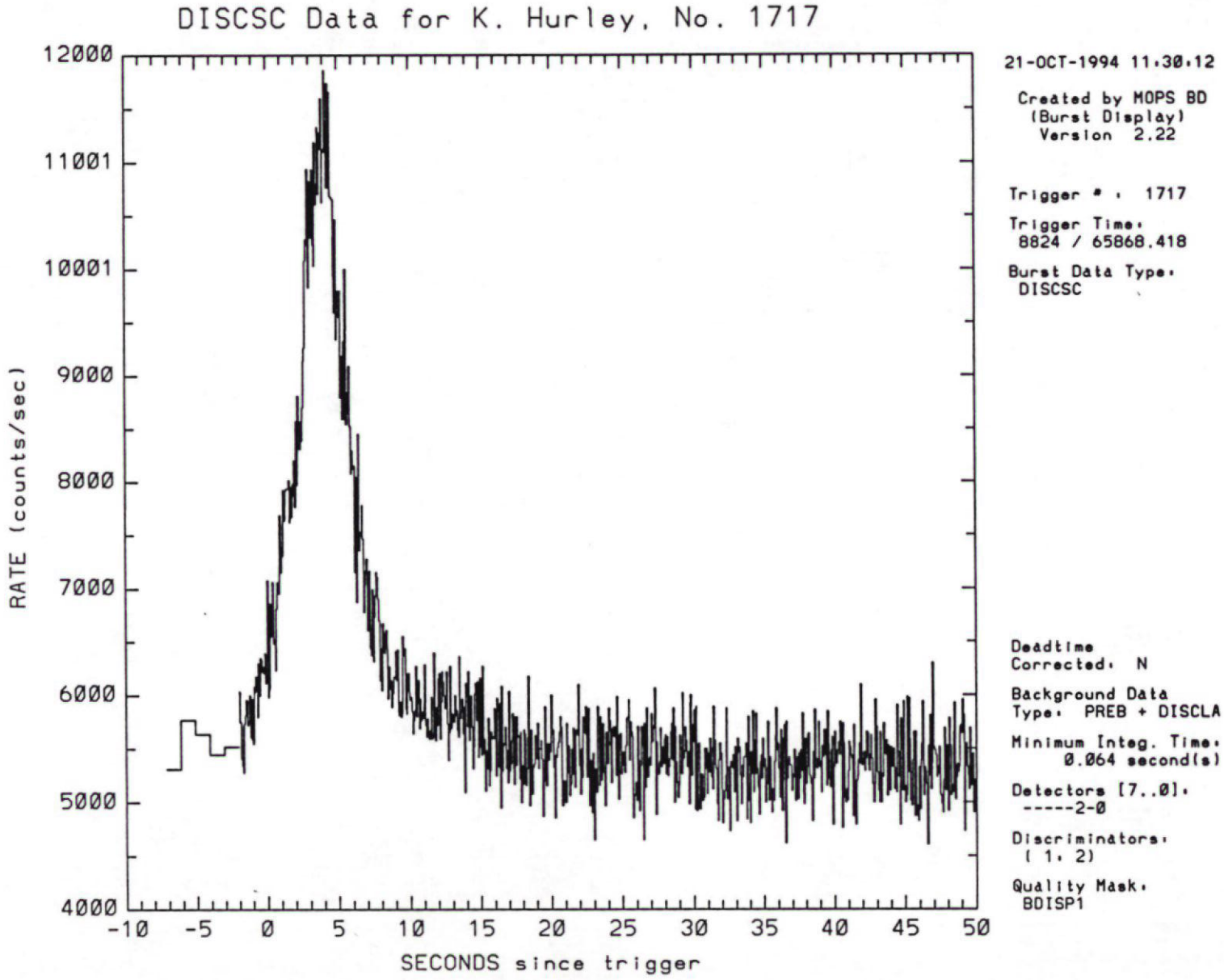
5/12/97

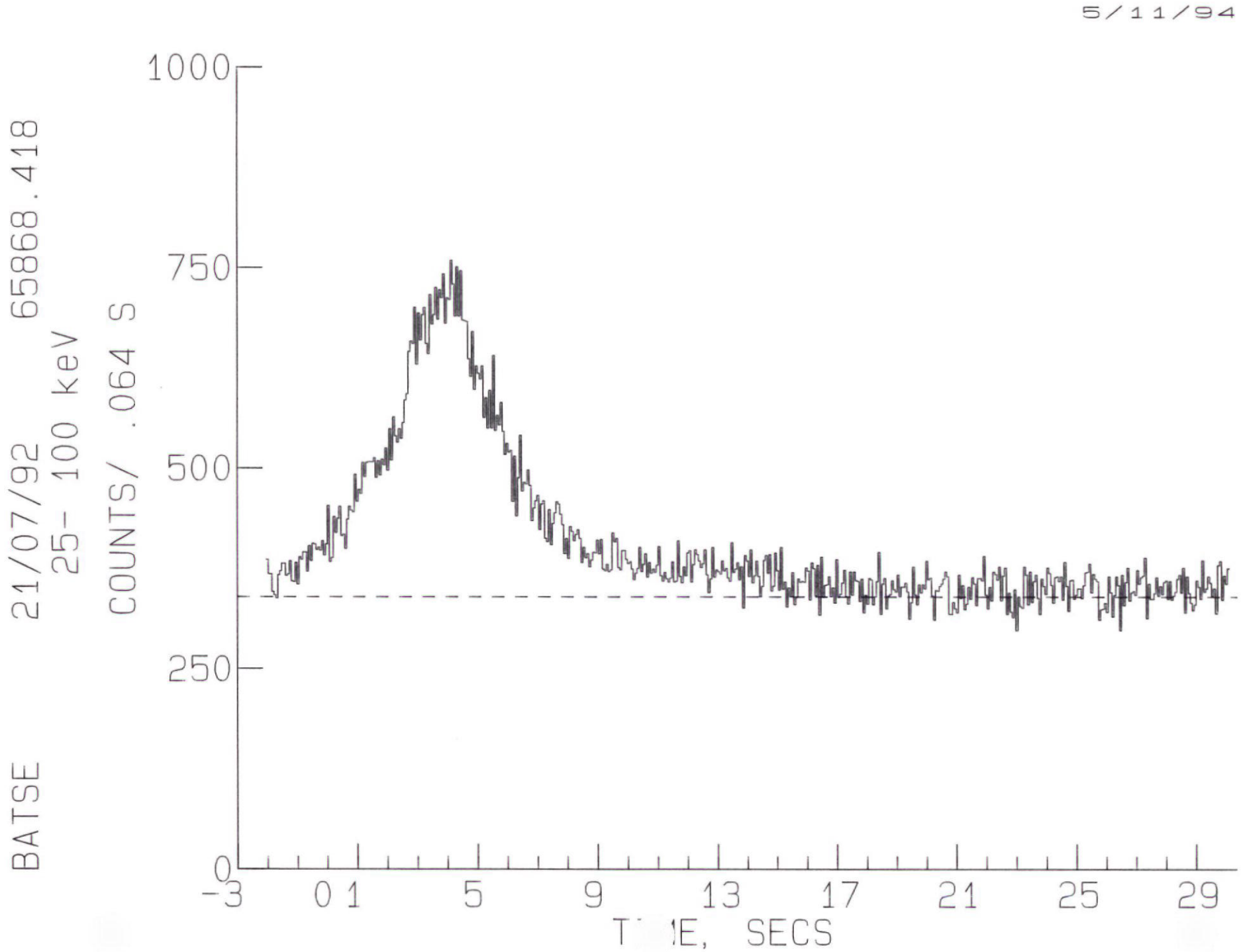
21/ 7/92 66240.050 s

0.250 S INTERVALS REGROUPED BY 4

22- 153 keV




DISCSC Data for K. Hurley, No. 1717
RATE (counts/sec)
12000
11001
10001
9000
8000
7000
6000
5000
4000
-10
-5
0
5
10
15
20
25
30
35
40
45
50
SECONDS since trigger
21-OCT-1994 11:30:12
Created by MOPS BD
(Burst Display)
Version 2.22
Trigger # : 1717
Trigger Time:
8824 / 65868.418
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
-----2-0
Discriminators:
(1, 2)
Quality Mask:
BDISP1


5/11/94
BATSE 21/07/92 65868.418
25- 100 keV
COUNTS/ .064 S
1000
750
500
250
0
-3
0 1
5
9
13
17
21
25
29
TIME, SECS

From HORACK@ssl.msfc.nasa.gov Wed Jul 22 14:08:58 1992
Date: Wed, 22 Jul 1992 16:10:23 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER

NO.: 01718

TIME: TJD=8824 SECONDS=85390

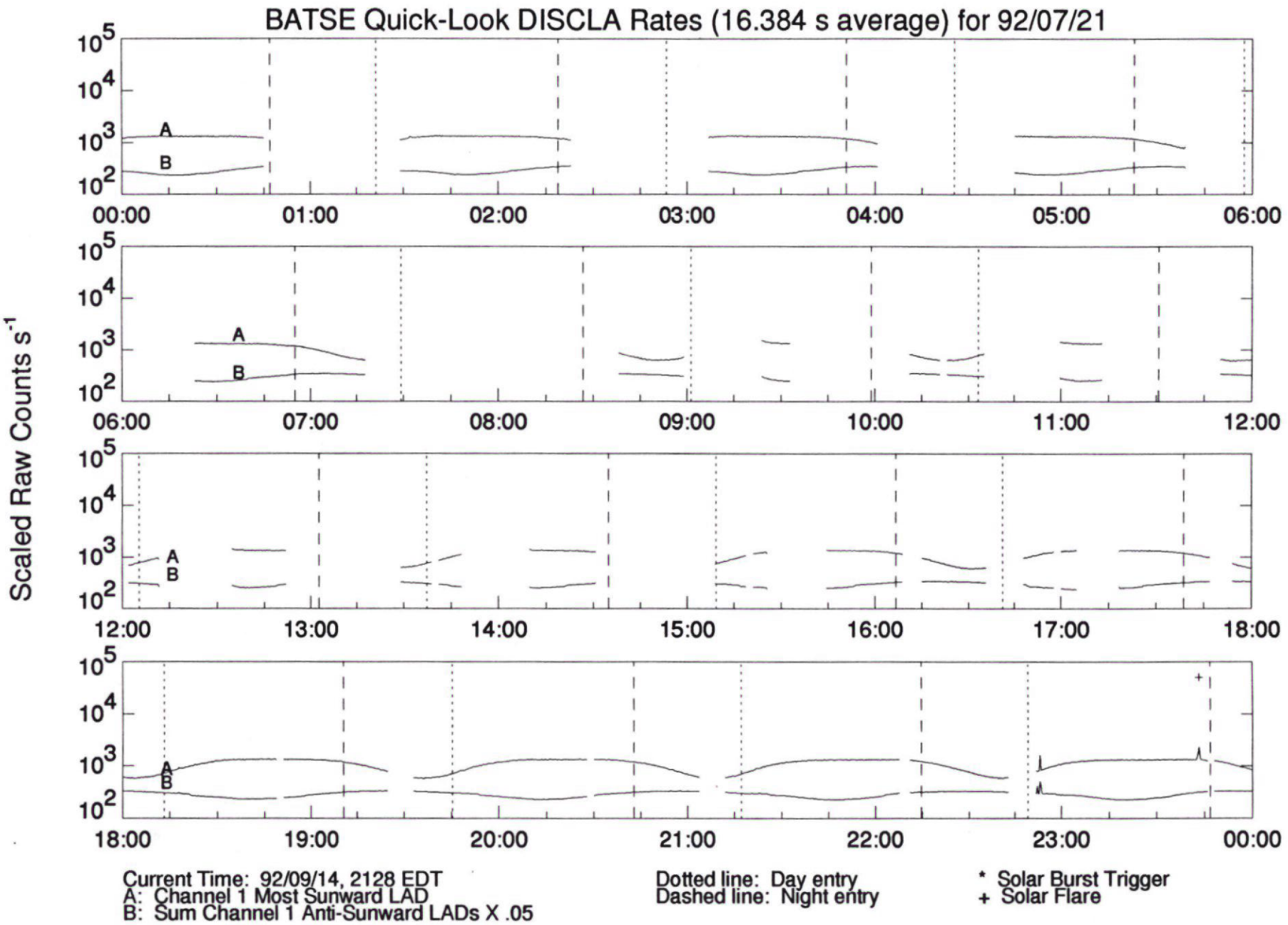
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

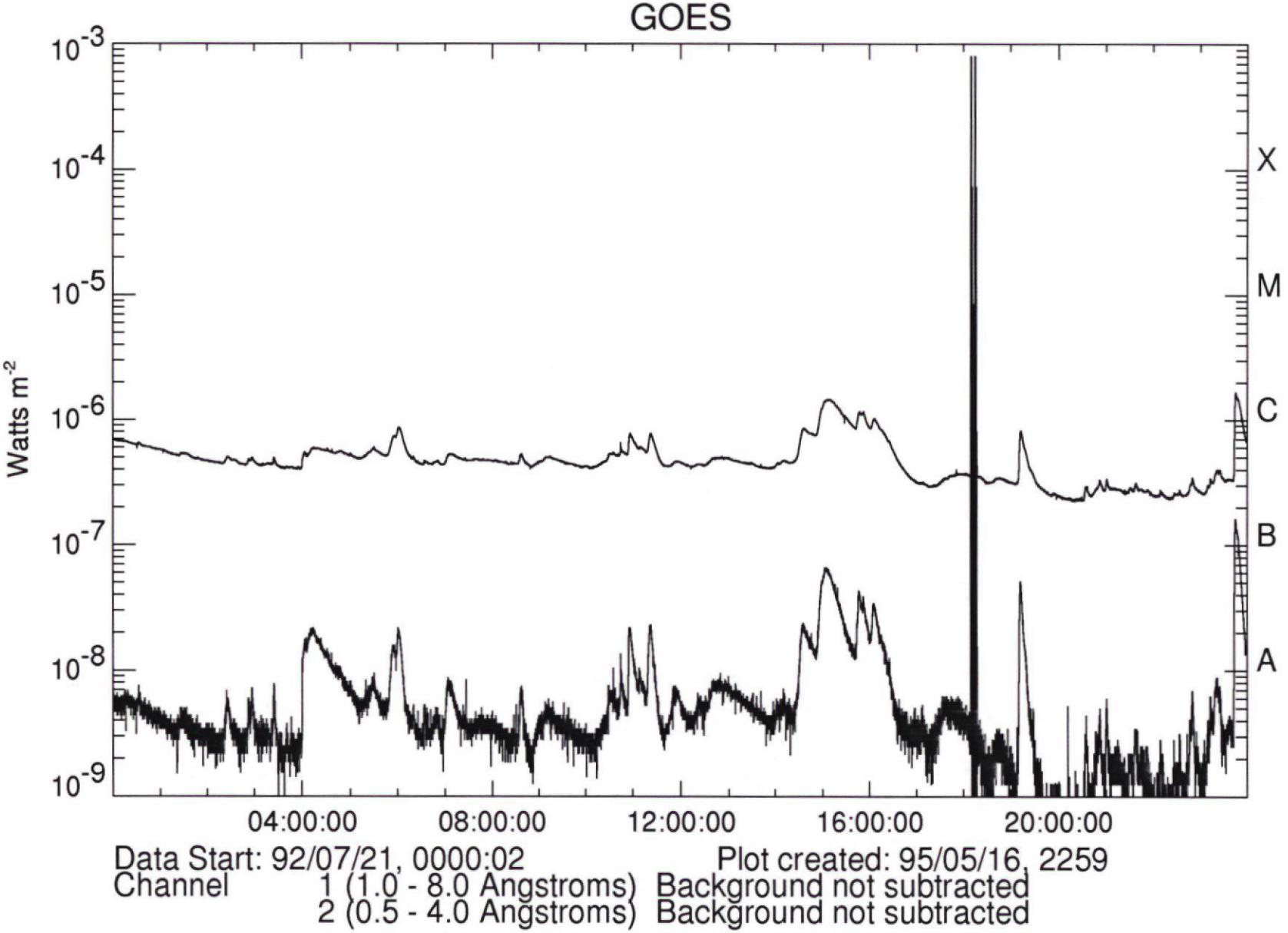
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

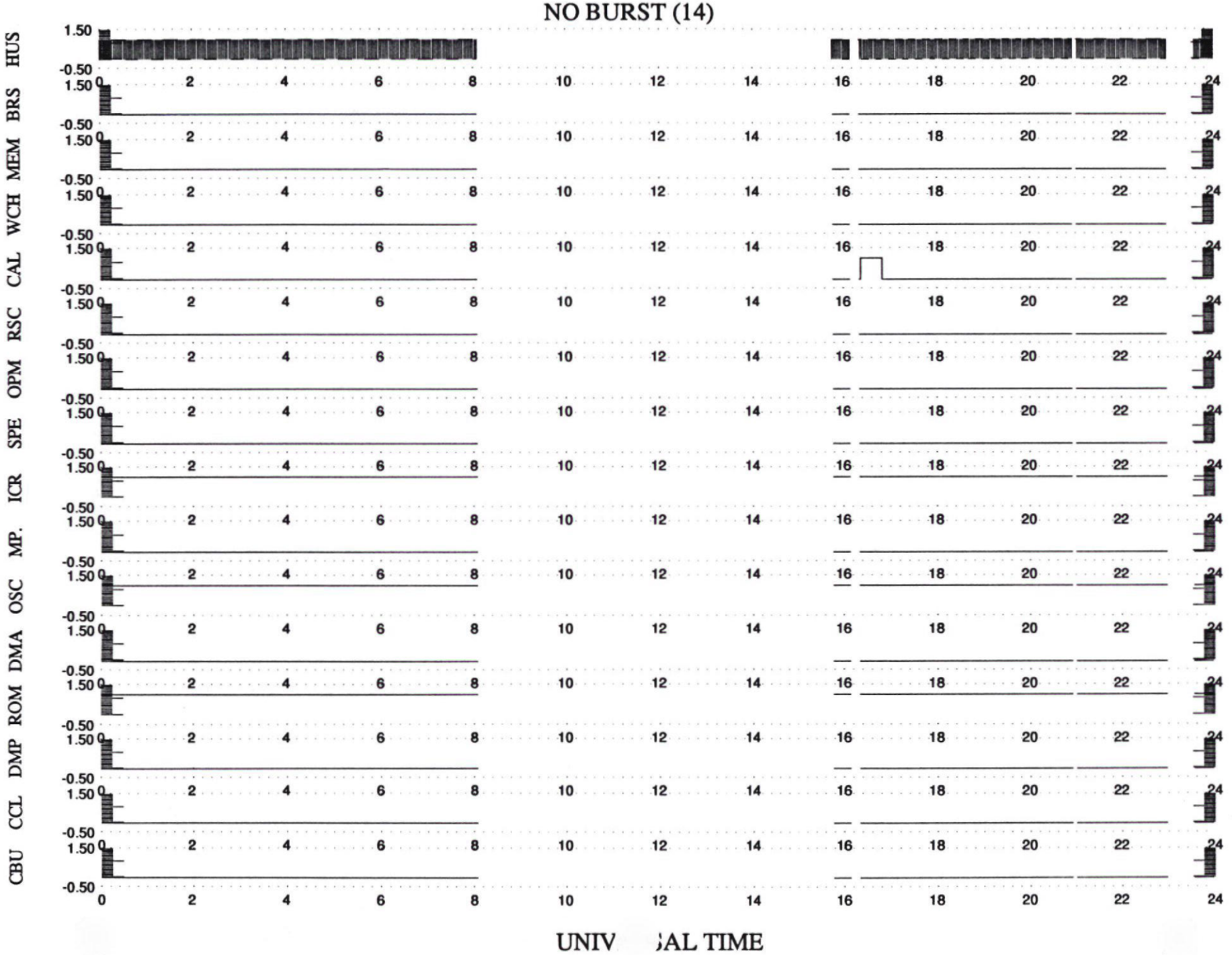
LOCATION: ZENITH=92. AZIMUTH=21. ERROR= DEGREES

COMMENTS:
GOES C-1.6 FLARE LASTING APPROXIMATELY 100 SECONDS. SLOW RISE BEGINS AT LOW ENERGIES ~60 SECONDS BEFORE TRIGGER. EMISSION FOLLOWING TRIGGER HAS SOME COMPLEX STRUCTURE. NOT SEEN ABOVE 100 KEV.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/21
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
Current Time: 92/09/14, 2128 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

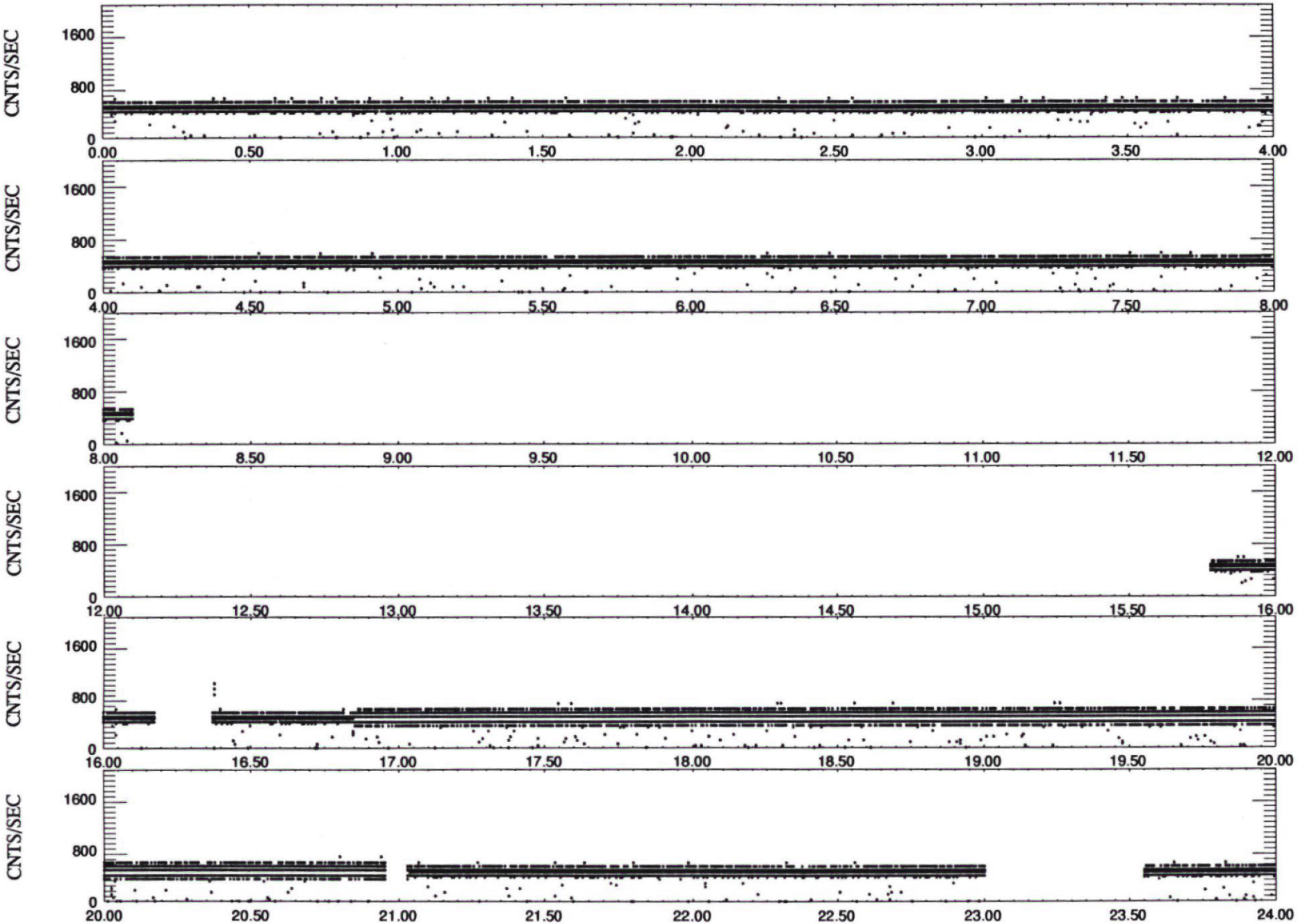

GOES
Watts m-2
10-3
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/21, 0000:02
Plot created: 95/05/16, 2259
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 203, year 1992 to day 203, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 203, year 1992 to day 203, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

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

BATSE BURST # 1719
EVENT OF 1992 JUL 22 DAY OF YEAR=204
EVENT CROSSING TIME AT BATSE      : 76887. S. OR 21:21:27.2
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 329.100    36.200
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 22/ 7/  92 IS:
RA=  152.462 DEC=     4.756 DIST=     6.127 AU
BATSE-ULYSSES DISTANCE =  916551328. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 41.08 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2304.68 SECS.
CROSSING TIME AT ULYSSES     IS 79192. S. OR 21:59:51.9 +/-  433.77 SECONDS
```

NO

```
From HORACK@ssl.msfc.nasa.gov Thu Jul 23 12:37:21 1992
Date:     Thu, 23 Jul 1992 14:38:51 -0500 (CDT)
From: HORACK@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1539

                BATSE BURST TRIGGER
NO.: 01719

TIME: TJD=8825 SECONDS=76887

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=23.    AZIMUTH=195.    ERROR=      DEGREES

COMMENTS:
SHORT AND MODERATE EVENT, LASTING 1.25 SEC.  CONSISTS OF 2 SPIKES, FIRST DID
NOT TRIGGER.  1ST -- 1/2 SEC LONG. NOT SEEN ABOVE 300KEV.  2ND -- 3/4 SEC IN
DURATION, TRIGGERED, AND IS SEEN ABOVE 300 KEV QUITE WELL.  EVENT IS LOCATED
~20-25 DEG FROM Z-AXIS OF GRO.  SECOND SPIKE IS MUCH HARDER THAN FIRST.
VIRTUALLY NO DETECTION OF THIS EVENT BELOW 100 KEV.
```

8/ 6/94

ULYSSES RT

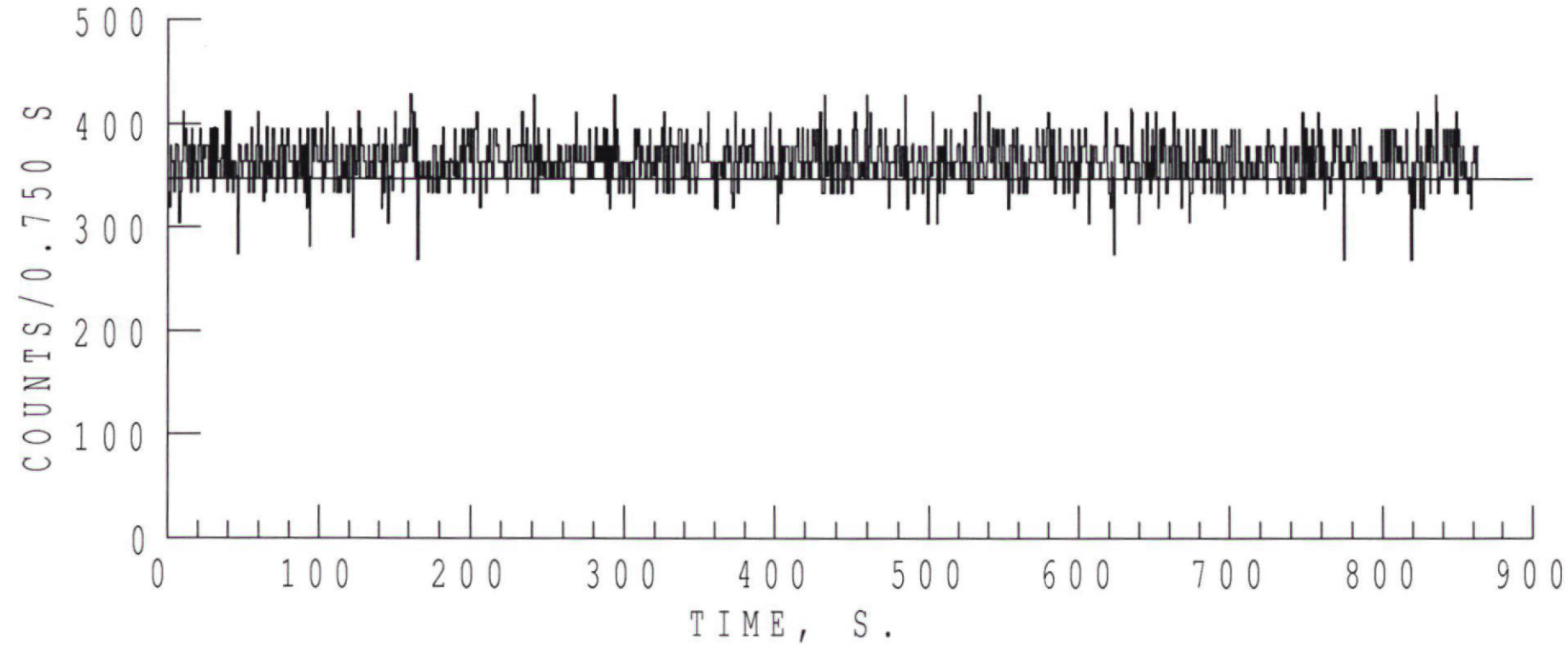
22/ 7/92 78768.078 s

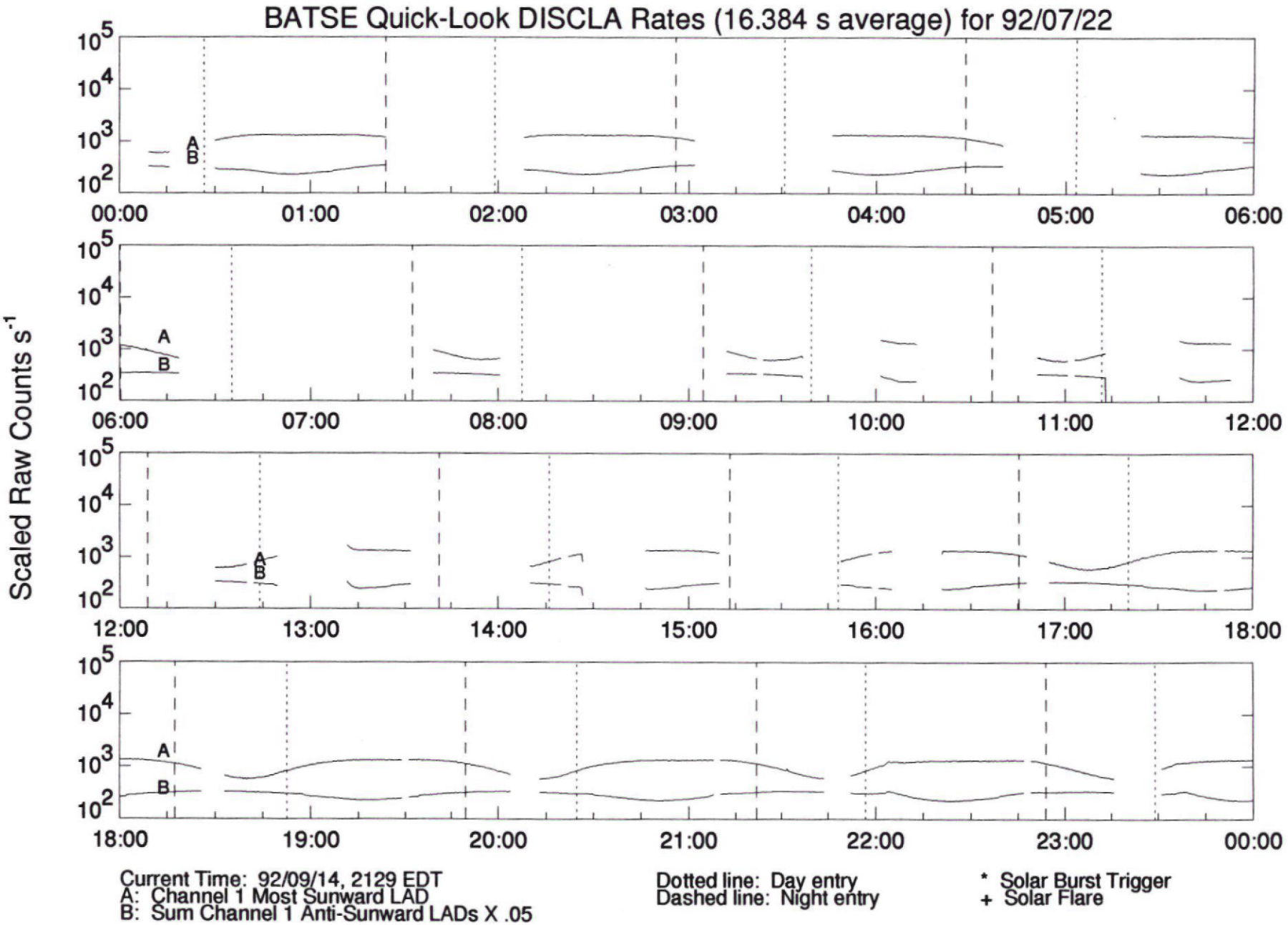
0.250 S INTERVALS REGROUPED BY 3

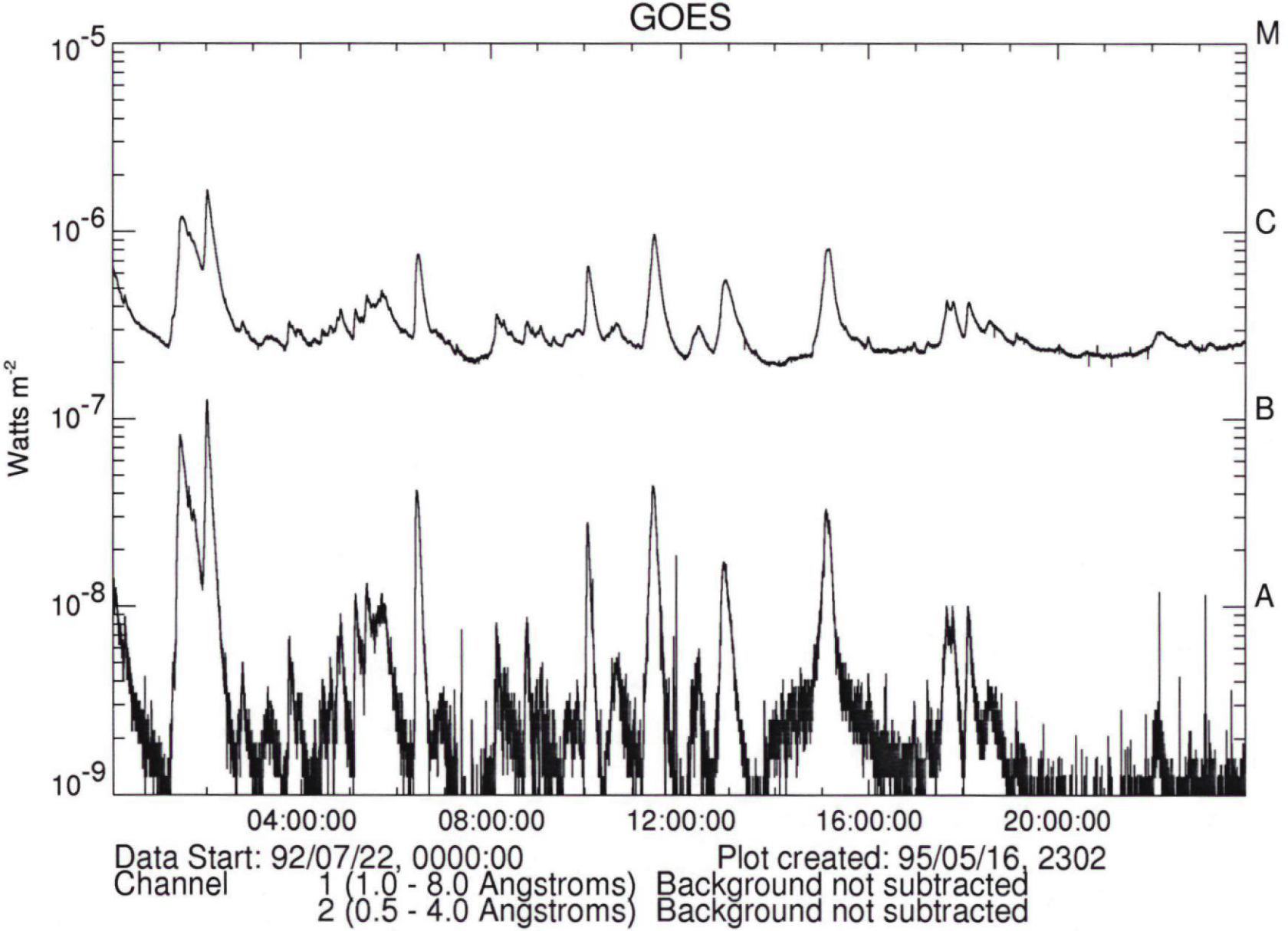
0- 0 keV

N= 10 M= 2

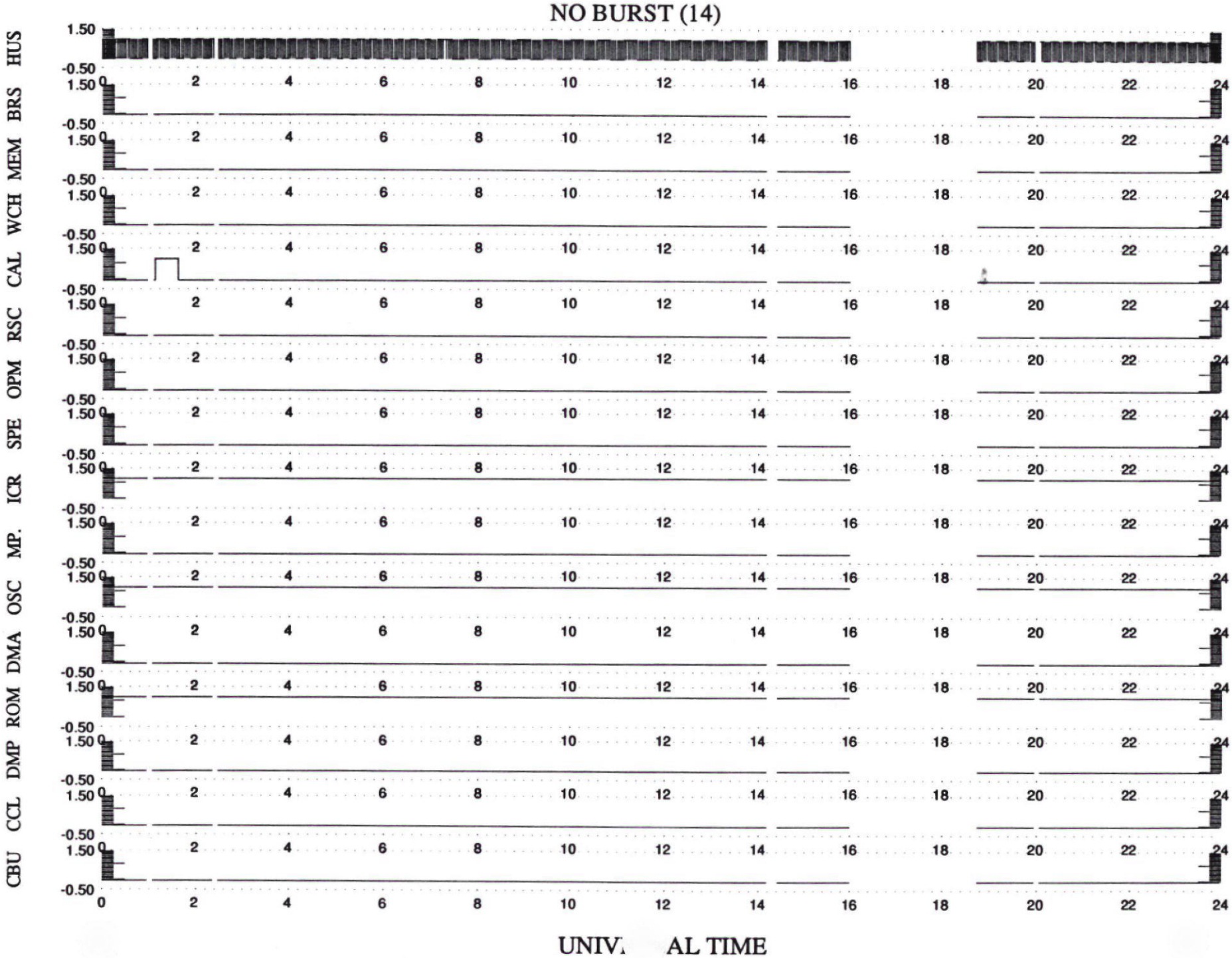
>4.0 SIGMA FLUCTUATIONS




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/22
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: 92/09/14, 2129 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

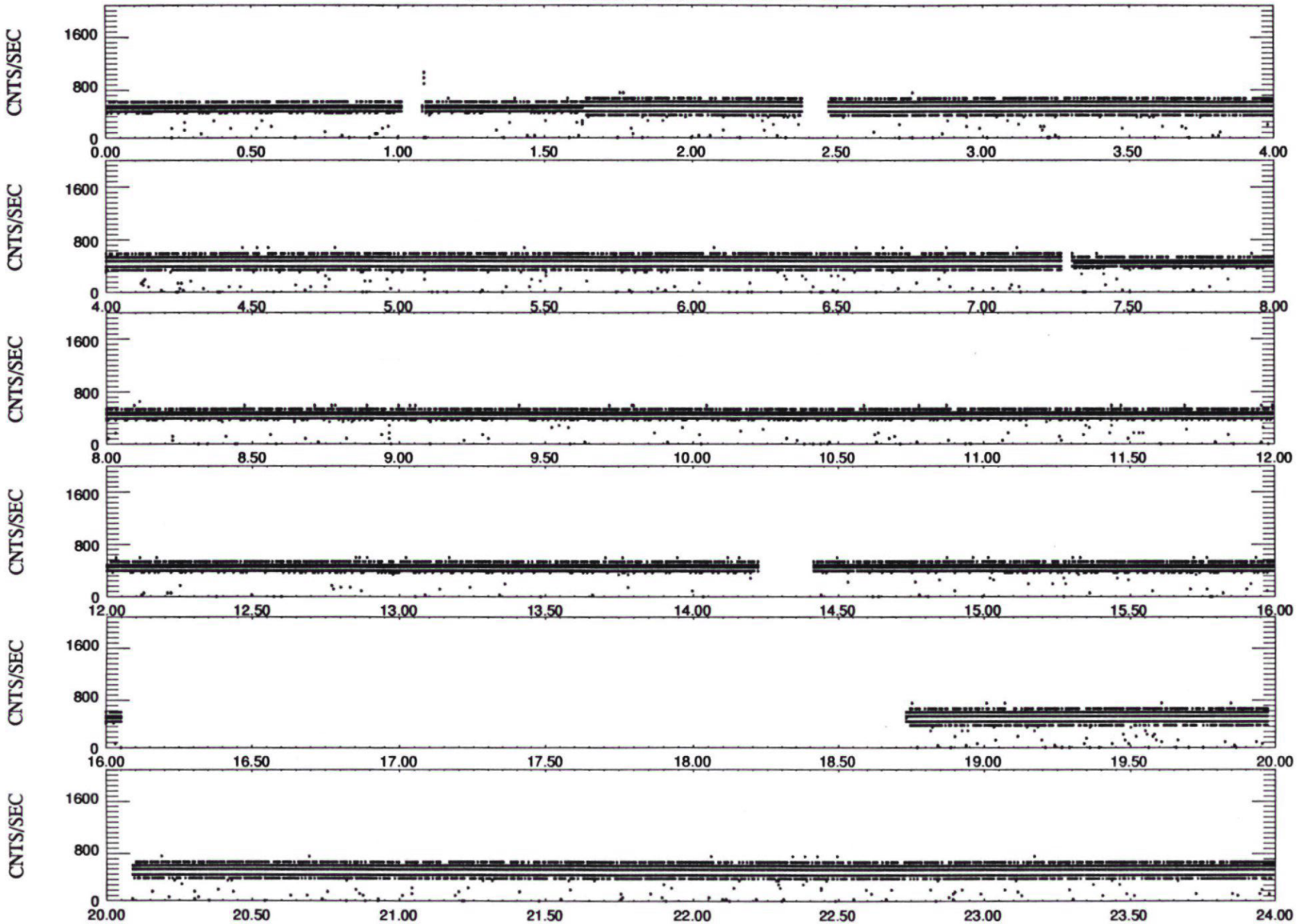

GOES
Watts m-2
10-5
10-6
10-7
10-8
10-9
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/22, 0000:00
Plot created: 95/05/16, 2302
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 204, year 1992 to day 204, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 204, year 1992 to day 204, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

Date: Jul 28 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?

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?

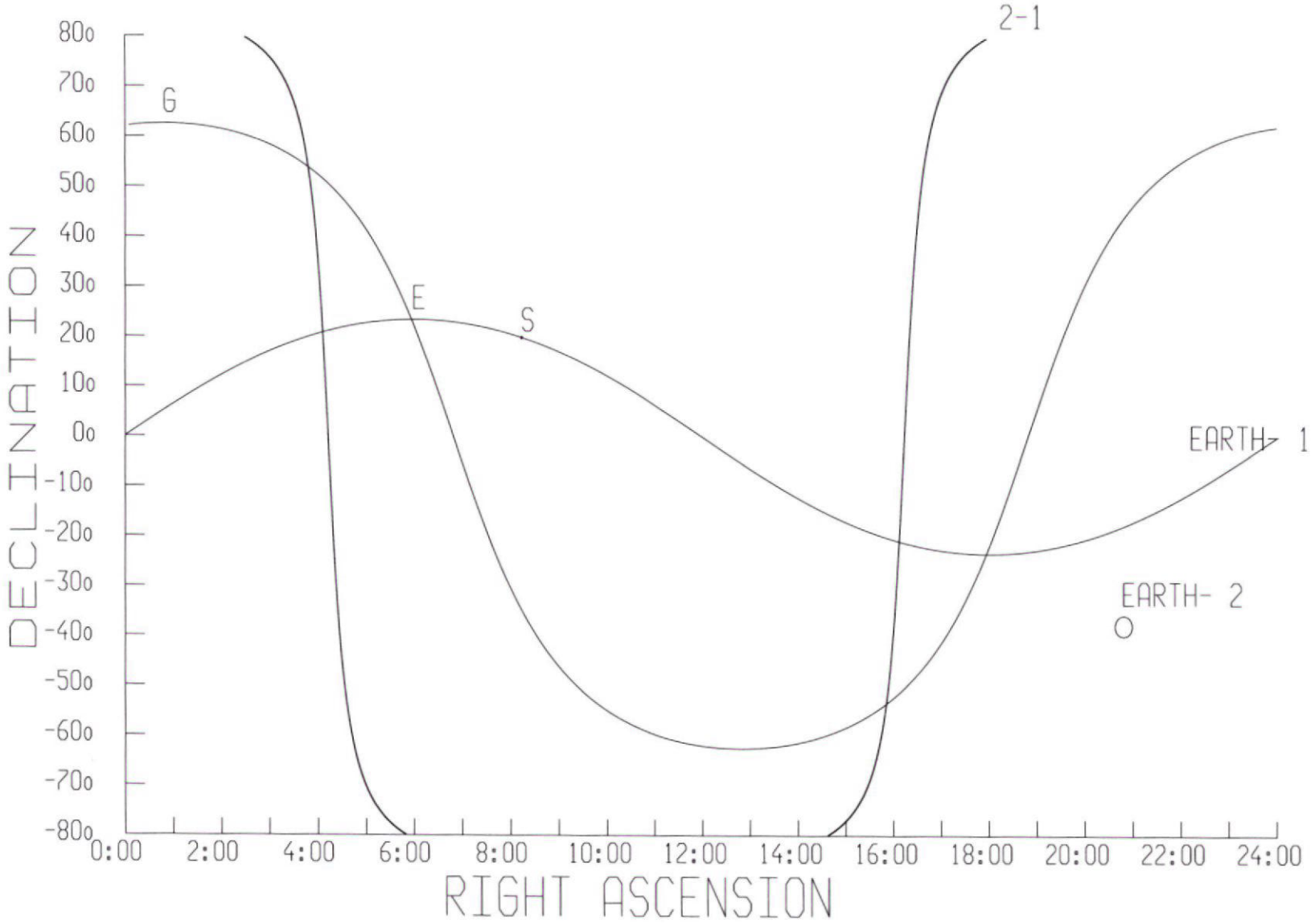
☐ Geocentric time used?

☑ ACCESS and MBL databases updated with identical times?

EVENT OF JUL 23, 1992 21:48

28/07/2011

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 PHEBUS



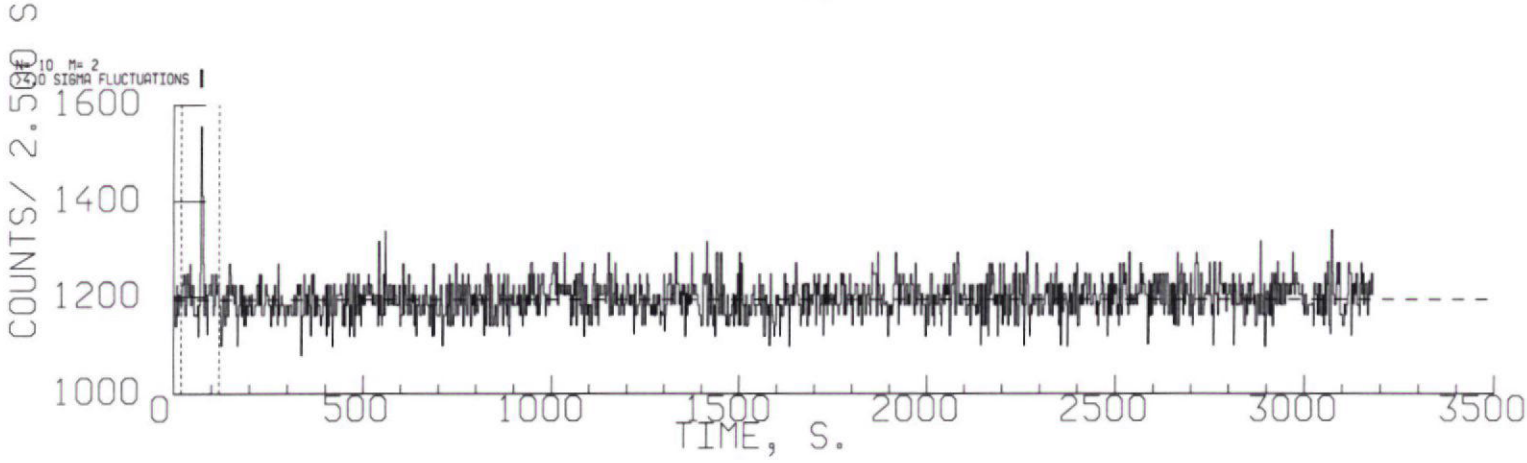
ULYSSES RT

28/ 7/11

23/ 7/92 78468.438 s

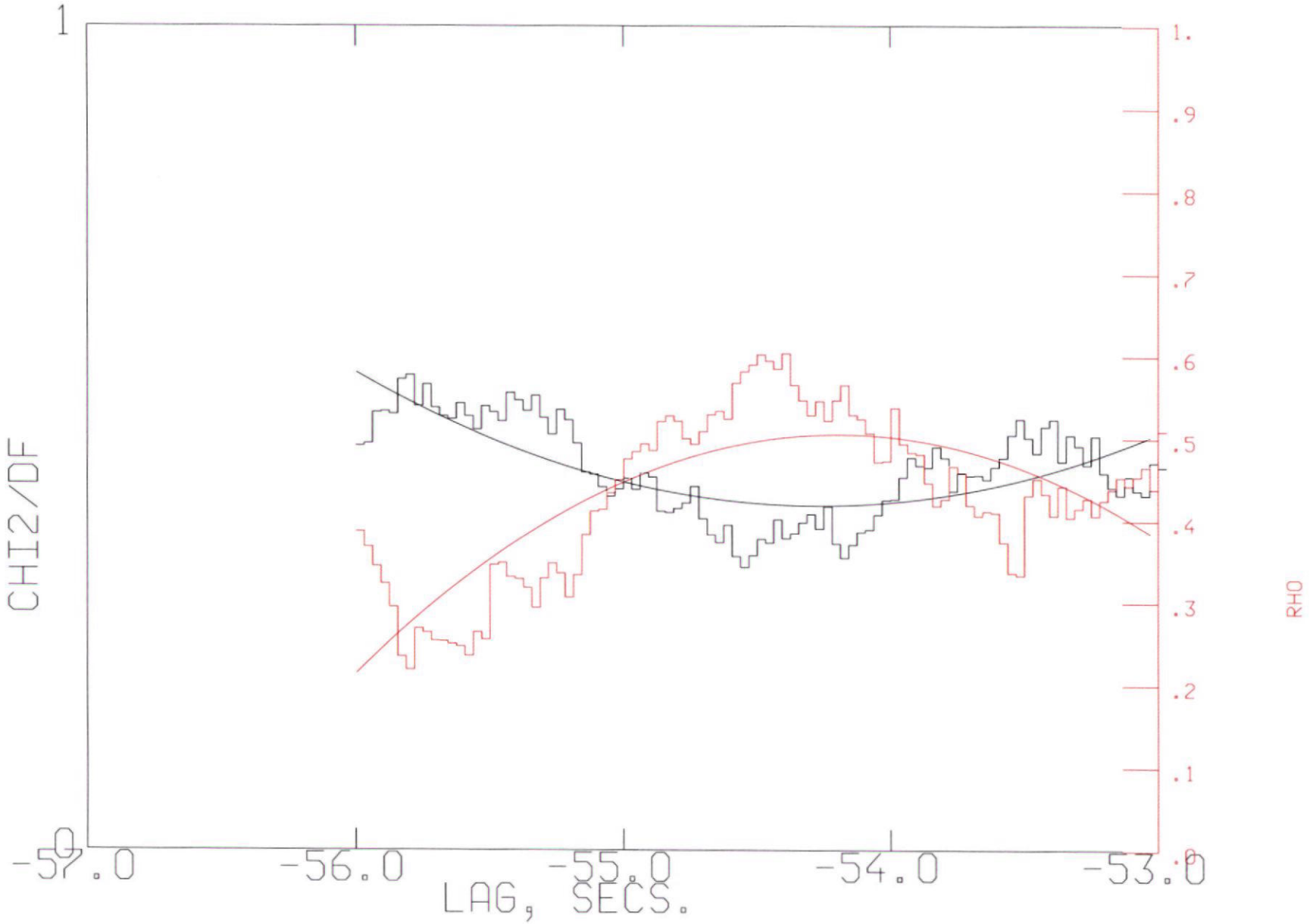
0.500 S INTERVALS REGROUPED BY 5

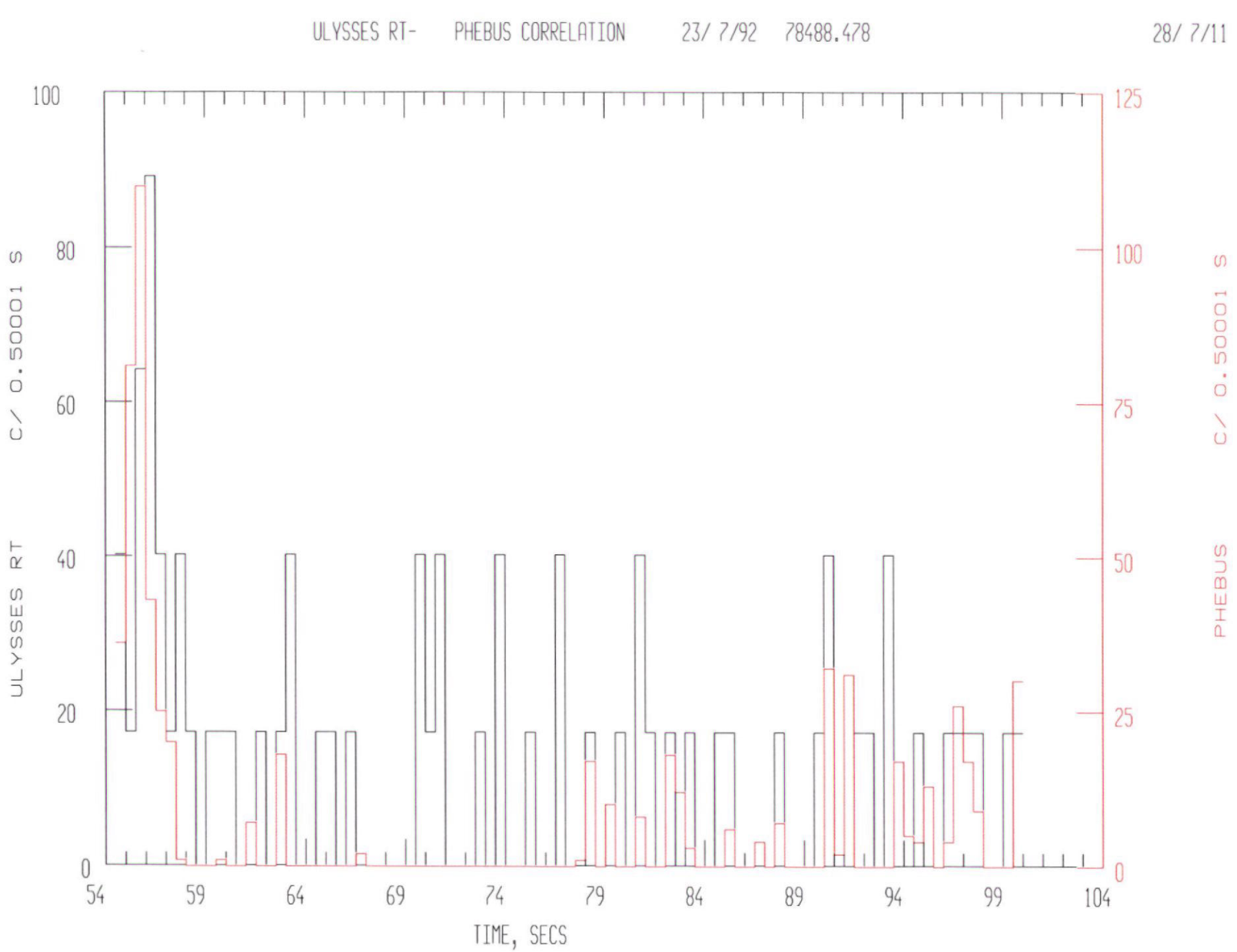
22- 152 keV

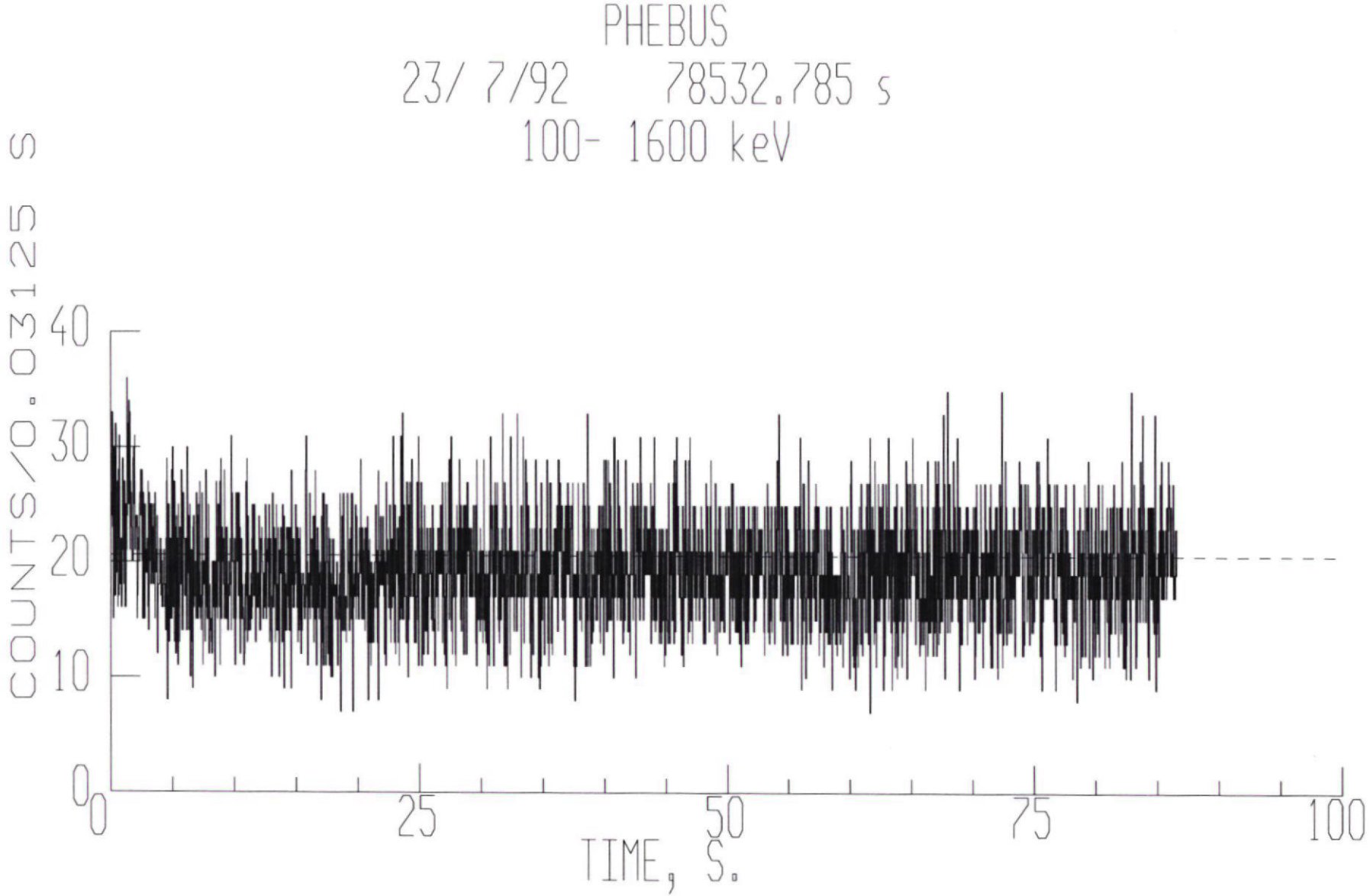


ULYSSES RT- PHEBUS CORRELATION 23/ 7/92 78488.478

28/ 7/11




ULYSSES RT- PHEBUS CORRELATION 23/ 7/92 78488.478 28/ 7/11
ULYSSES RT
C/ 0.50001 S
PHEBUS
C/ 0.50001 S
TIME, SECS
0
20
40
60
80
100
0
25
50
75
100
125
54
59
64
69
74
79
84
89
94
99
104


PHEBUS
23/ 7/92 78532.785 s
100- 1600 keV
COUNTS/0.03125 S
40
30
20
10
0
0
25
50
75
100
TIME, S.

From MEEGAN@ssl.msfc.nasa.gov Tue Jul 28 11:17:49 1992
Date: Tue, 28 Jul 1992 13:19:53 -0500 (CDT)
From: MEEGAN@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01720

July 23

TIME: TJD=8826 SECONDS=

TYPE: UNKNOWN SOLAR FLARE TRIGGER SIGNAL:

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
THIS TRIGGER OCCURRED AND WAS OVERWRITTEN DURING A TELEMETRY GAP.
NO INFORMATION AT ALL IS AVAILABLE.

****
CATSEARCH PROGRAM
****

BATSE BURST # 1721
EVENT OF 1992 JUL 23 DAY OF YEAR=205
EVENT CROSSING TIME AT BATSE : 3635. S. OR 01:00:34.9
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 84.100 6.800
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 23/ 7/ 92 IS:
RA= 152.580 DEC= 4.675 DIST= 6.135 AU
BATSE-ULYSSES DISTANCE = 917752616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=111.88 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1140.89 SECS.
CROSSING TIME AT ULYSSES IS 2494. S. OR 00:41:34.0 +/- 525.87 SECONDS

Trigger

From BRIGGS@ssl.msfc.nasa.gov Sun Jul 26 15:33:23 1992
Date: Sun, 26 Jul 1992 17:35:23 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1377

BATSE BURST TRIGGER
NO.: 01721

TIME: TJD=8826 SECONDS=03634

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=088.7 AZIMUTH=342.3 ERROR= DEGREES

COMMENTS:
MODERATELY STRONG EVENT WITH SPIKES RIDING ON A SMOOTH "HUMP" OF LONGER
DURATION. THE SMOOTH "HUMP" IS POSSIBLY A PARTICLE EVENT. THE SPIKES
ARE DEFINITELY COSMIC.

Heliocorr removed

Date: Nov 5 '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 - 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)?

☑ 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?

The best alignment is: 2nd U peak → B peak

The χ^2 is high, but BATSE has a high particle background

RT data files which may contain ~0.5 s timing error because they follow a trigger

2 hour time range from beginning of burst that extract falls in:			DATA USED ?	
b02:0126	extract beg time:0244	e91270_2A1_02.73_02.84.ascii.Z	N	
b03:0219	extract beg time:0244	e91270_2A1_02.73_02.84.ascii.Z	N	
b01:0121	extract beg time:0310	e91360_2A1_03.16_03.37.ascii.Z	N	
[illegible]:0932	extract beg time:1025	e92010_2A1_10.42_10.48.ascii.Z	Y	(TRIGGER)
[illegible]:0845	extract beg time:1015	e92058_2A1_10.25_10.75.ascii.Z	N	&
b01:0609	extract beg time:0723	e92111_2A1_07.38_07.54.ascii.Z	N	
b01:0629	extract beg time:0634	e92174_2A1_06.57_06.87.ascii.Z	N	
b01:0541	extract beg time:0549	e92190_2A1_5.76_5.90.ascii.Z	Y	(SGR 1900)
b02:2032	extract beg time:2058	e92205_2A1_20.97_22.66.ascii.Z	Y	(TRIGGER) - OK - this was the one apparently not used for triangulation (see plot)
b01:1202	extract beg time:1240	e92209_2A1_12.67_12.85.ascii.Z	N	
b01:1717	extract beg time:1831	e92213_2A1_18.51_18.82.ascii.Z	N	
b01:1142	extract beg time:1301	e92303_2A1_13.02_13.28.ascii	Y	
b03:0736	extract beg time:0844	q92313_2A1_8.70_8.96.ascii.Z	N	
b03:0736	extract beg time:0844	e92313_2A1_08.74_09.02.ascii.Z	N	
b14:1730	extract beg time:1905	q92314_2A1_19.08_19.30.ascii.Z	N	
b15:1825	extract beg time:1905	q92314_2A1_19.08_19.30.ascii.Z	N	
b02:0156	extract beg time:0344	e92315_2A1_3.10_3.36.ascii.Z	N	
b03:0322	extract beg time:0344	e92315_2A1_3.10_3.36.ascii.Z	N	
b06:0819	extract beg time:0844	e92315_2A1_8.71_8.85.ascii.Z	N	
b08:1211	extract beg time:1340	e92315_2A1_13.66_13.96.ascii.Z	N	
b08:1211	extract beg time:1344	e92315_2A1_13.74_14.03.ascii.Z	N	
b02:0600	extract beg time:0644	e92316_2A1_6.76_7.04.ascii.Z	N	
b02:0135	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b03:0227	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b04:0315	extract beg time:0329	e93012_2A1_3.50_3.72.ascii.Z	Y	
b01:1105	extract beg time:1150	q93077_2A1_11.83_12.05.ascii.Z	Y	
b01:0745	extract beg time:0756	q93096_2A1_7.71_7.85.ascii.Z	Y	(TRIGGER)
b01:0745	extract beg time:0856	q93096_2A1_8.40_8.50.ascii.Z	N	
[illegible]1:1445	extract beg time:1530	e93126_2A1_15.50_15.65.ascii.Z	N	
[illegible]1:1445	extract beg time:1548	e93126_2A1_15.80_15.95.ascii.Z	N	
b01:0334	extract beg time:0434	e93265_2A1_04.56_04.64.ascii.Z	N	
b01:0900	extract beg time:0943	e93272_2A1_09.71_09.98.ascii.Z	Y	(SGR 1806)
b01:1654	extract beg time:1707	e93287_2A1_17.11_17.37.ascii.Z	Y	
b01:2215	extract beg time:2240	e93294_2A1_22.67_22.85.ascii.Z	N	
b01:0824	extract beg time:0840	e93303_2A1_08.66_08.81.ascii.Z	N	
b01:0352	extract beg time:0510	e93318_2A1_05.17_05.42.ascii.Z	N	
b01:0641	extract beg time:0824	e93340_2A1_08.40_08.61.ascii.Z	N	
b02:0602	extract beg time:0733	e94026_2A1_07.55_07.71.ascii.Z	N	
b05:1140	extract beg time:1240	e94044_2A1_12.66_12.76.ascii.Z	Y	
b01:0204	extract beg time:0326	e94047_2A1_03.44_03.62.ascii.Z	N	
b01:0113	extract beg time:0124	e94049_2A1_01.40_02.50.ascii.Z	N	
b03:1943	extract beg time:2123	e94058_2A1_21.38_21.49.ascii.Z	N	
b01:0346	extract beg time:0505	e94061_2A1_05.08_05.25.ascii.Z	Y	(Trigger; but RT data probably used)
b01:0047	extract beg time:0128	e94062_2A1_01.47_01.63.ascii.Z	N	
b01:2113	extract beg time:2142	e94202_2A1_21.70_21.98.ascii.Z	N	
b01:2113	extract beg time:2144	e94202_2A1_21.74_22.14.ascii.Z	N	
b01:1047	extract beg time:1143	e94242_2A1_11.71_11.86.ascii.Z	N	
b01:0647	extract beg time:0728	e94298_2A1_07.47_07.51.ascii.Z	N	
b01:0128	extract beg time:0241	e94299_2A1_02.68_02.80.ascii.Z	Y	
b09:1148	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b10:1238	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b11:1328	extract beg time:1348	e94321_2A1_13.80_14.47.ascii.Z	N	
b01:1952	extract beg time:2040	e94326_2A1_20.66_20.78.ascii.Z	N	
b01:0223	extract beg time:0406	e95042_2A1_04.10_04.76.ascii.Z	N	
[illegible]1:0640	extract beg time:0740	e95072_2A1_07.67_07.81.ascii.Z	N	
[illegible]01:0144	extract beg time:0158	e95216_2A1_01.96_02.09.ascii.Z	Y	(Trigger)
b02:1628	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	N	
b03:1718	extract beg time:1718	e95339_2A1_17.30_17.45.ascii.Z	N	
b01:1124	extract beg time:1205	e95362_2A1_12.09_12.87.ascii.Z	N	

```
b04:1343  extract beg time:1540  e95362_2A1_15.67_15.84.ascii.Z Y
b04:1343  extract beg time:1541  e95362_2A1_15.69_15.85.ascii.Z Y
b05:1516  extract beg time:1540  e95362_2A1_15.67_15.84.ascii.Z Y
b05:1516  extract beg time:1541  e95362_2A1_15.69_15.85.ascii.Z Y
b01:0053  extract beg time:0251  e96002_2A1_02.85_03.62.ascii   N
b02:0216  extract beg time:0251  e96002_2A1_02.85_03.62.ascii   N
b20:1956  extract beg time:2041  e96002_2A1_20.68_20.76.ascii   N
b20:1956  extract beg time:2041  e96002_2A1_20.69_20.76.ascii   N
b02:0128  extract beg time:0305  e96004_2A1_03.09_03.87.ascii.Z N
b03:0235  extract beg time:0305  e96004_2A1_03.09_03.87.ascii.Z N
b05:1621  extract beg time:1656  e96006_2A1_16.93_17.08.ascii.Z N
b01:0116  extract beg time:0150  e96007_2A1_01.84_01.95.ascii   N
b01:0116  extract beg time:0152  e96007_2A1_01.87_01.99.ascii   N
b01:1819  extract beg time:1935  e96028_2A1_19.59_19.87.ascii.Z Y  (GR: 1744 ) - MAYBE USED FOR NETSYN?
b01:0208  extract beg time:0233  e96030_2A1_02.55_02.66.ascii.Z Y     "        "        "
b01:0208  extract beg time:0235  e96030_2A1_02.58_02.73.ascii.Z Y     "        "        "
b01:0208  extract beg time:0235  e96030_2A1_02.59_02.73.ascii.Z Y     "        "        "
b01:0849  extract beg time:0949  qp96032_2A1_09.81_09.94.ascii.Z Y    "        "        "
b02:2011  extract beg time:2144  qp96032_2A1_21.74_21.90.ascii.Z Y
b01:1929  extract beg time:2049  qp96051_2A1_20.82_20.85.ascii.Z N
b01:1929  extract beg time:2049  qp96051_2A1_20.82_20.86.ascii.Z N
b01:1529  extract beg time:1719  qp96094_2A1_17.32_17.48.ascii.Z N
b01:1529  extract beg time:1722  qp96094_2A1_17.36_17.52.ascii.Z N
b01:1652  extract beg time:1752  qp96168_2A1_17.87_17.97.ascii.Z N
b01:1652  extract beg time:1755  qp96168_2A1_17.91_18.05.ascii.Z N
```

From springer@pop.jpl.nasa.gov Mon Dec 9 06:37 PST 1996
From: Joe Springer <springer@pop.jpl.nasa.gov>
To: "'Kevin Hurley'" <khurley@sunspot.ssl.berkeley.edu>
Subject: RE: More times to check
Date: Mon, 9 Dec 1996 06:37:26 -0800
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

Kevin,

I checked a range ten minutes before to ten minutes after each of these points and found no timing errors.

How big is the 'big list'? You have previously provided one with 575 events. I shudder.

Joe

From: Kevin Hurley
Sent: Friday, December 06, 1996 5:53 PM
To: Joe.B.Springer@jpl.nasa.gov; khurley@sunspot.ssl.berkeley.edu
Cc: khurley@sunspot.ssl.berkeley.edu
Subject: More times to check

Dear Joe,

Before I hit you with the big list of events to check, I wanted to ask if you could check the following times. We are again writing paper on these, and need to get this straightened out quickly (i.e. within a couple of weeks).

Thanks

Kevin

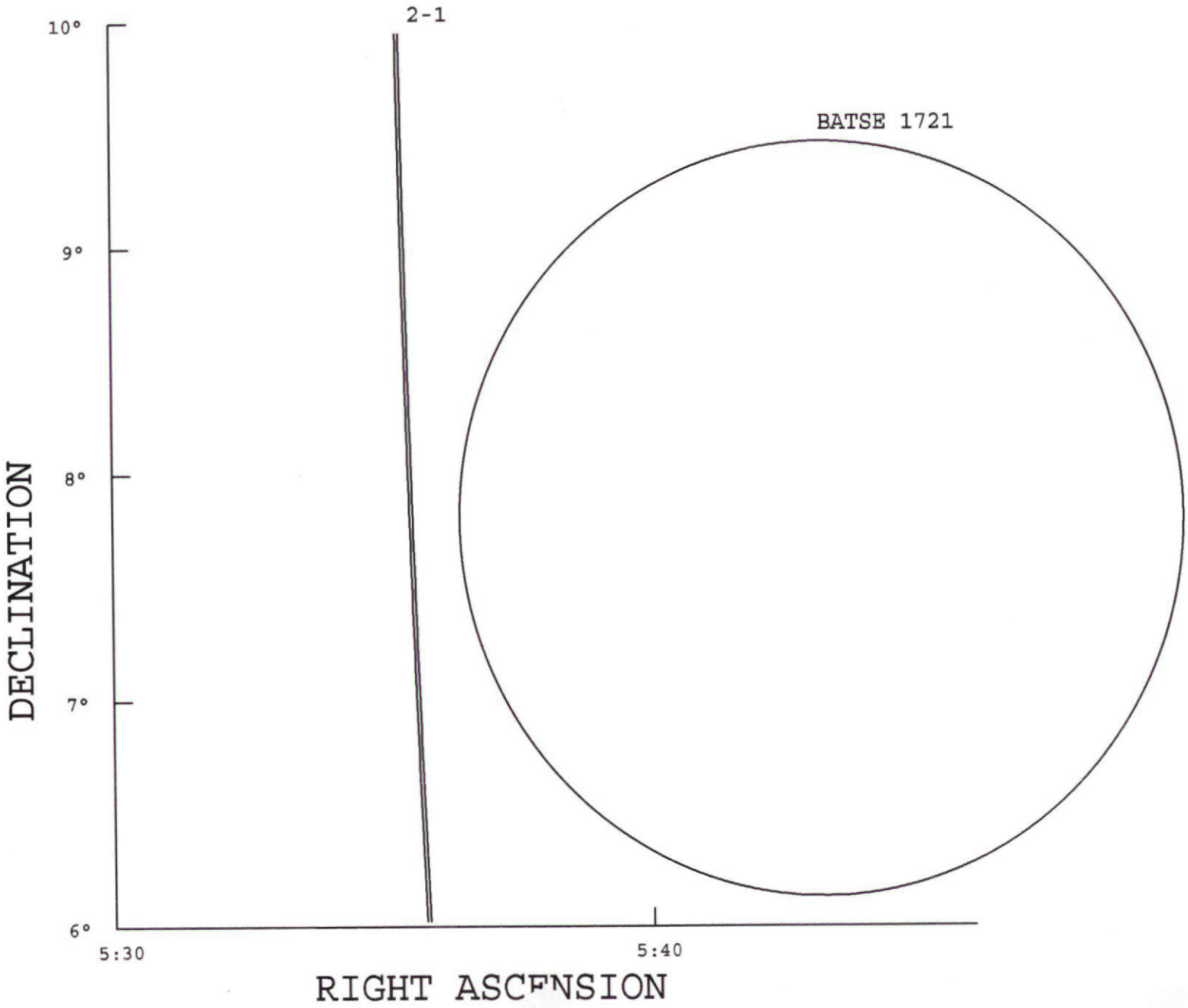
Date	UT (secs)
January 22 1991	55142
February 19 1991	42204
April 21 1991	34040
April 30 1991	60428
May 07 1991	53768
May 11 1991	08090
May 22 1991	43556
June 19 1991	55254
June 27 1991	15335
July 17 1991	17265
July 18 1991	09076
August 14 1991	70996
October 05 1991	26852
October 16 1991	41542
October 31 1991	35550
November 04 1991	52695
November 09 1991	11321
November 18 1991	66112
November 26 1991	43717
December 02 1991	71640
February 18 1992	68388
February 20 1992	49020

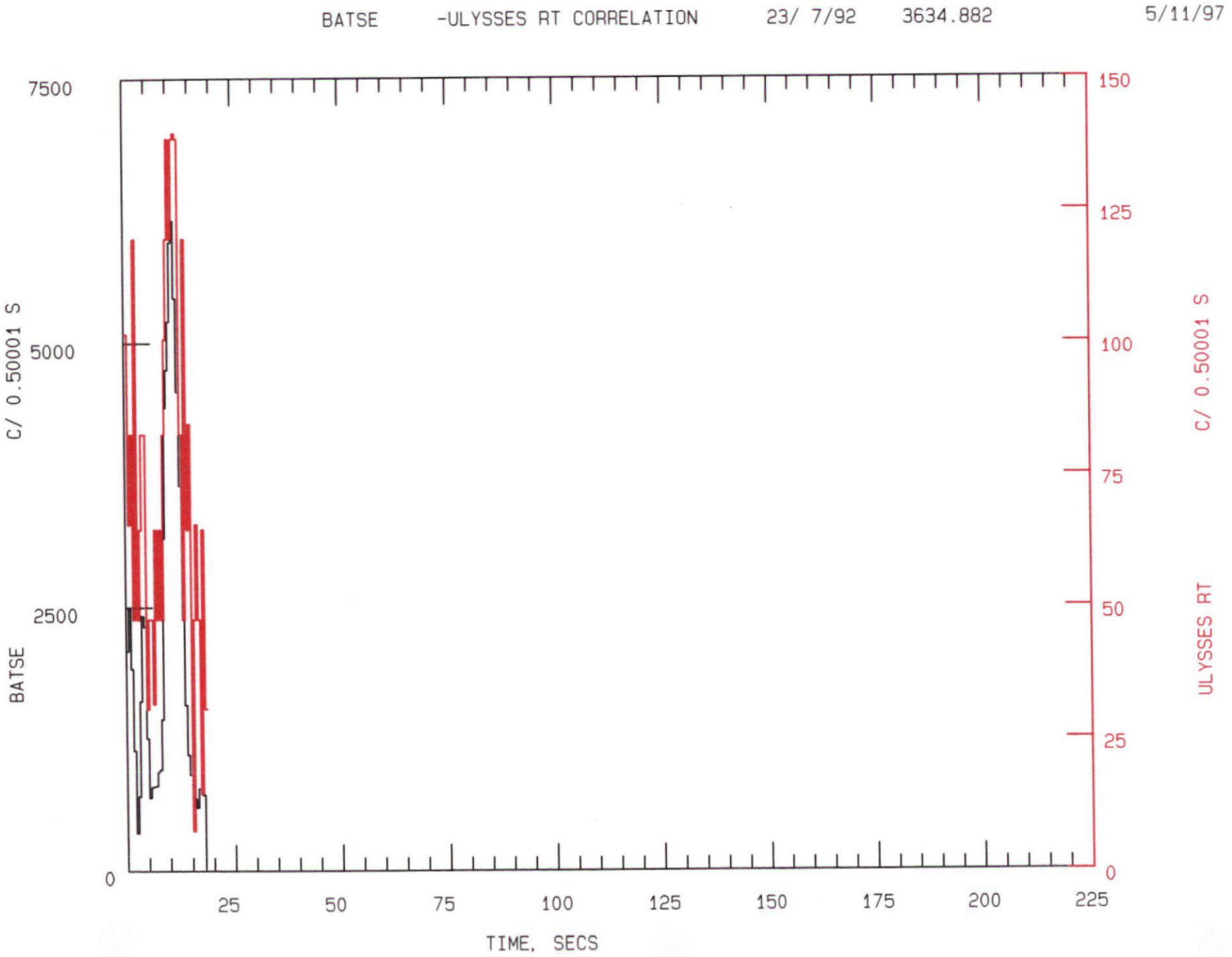
February 26 1992 30348
March 08 1992 17470
March 11 1992 07038
March 20 1992 45256
March 25 1992 64261
March 31 1992 66408
April 04 1992 49443
April 06 1992 11150
April 14 1992 84300
May 01 1992 75040
May 17 1992 10549
May 17 1992 50706
May 19 1991 60996
May 25 1992 14411
July 11 1992 58470
July 14 1992 46275
July 20 1992 09807
July 20 1992 18344
July 23 1992 73955

EVENT OF JUL 23, 1992 0:38

5/11/97

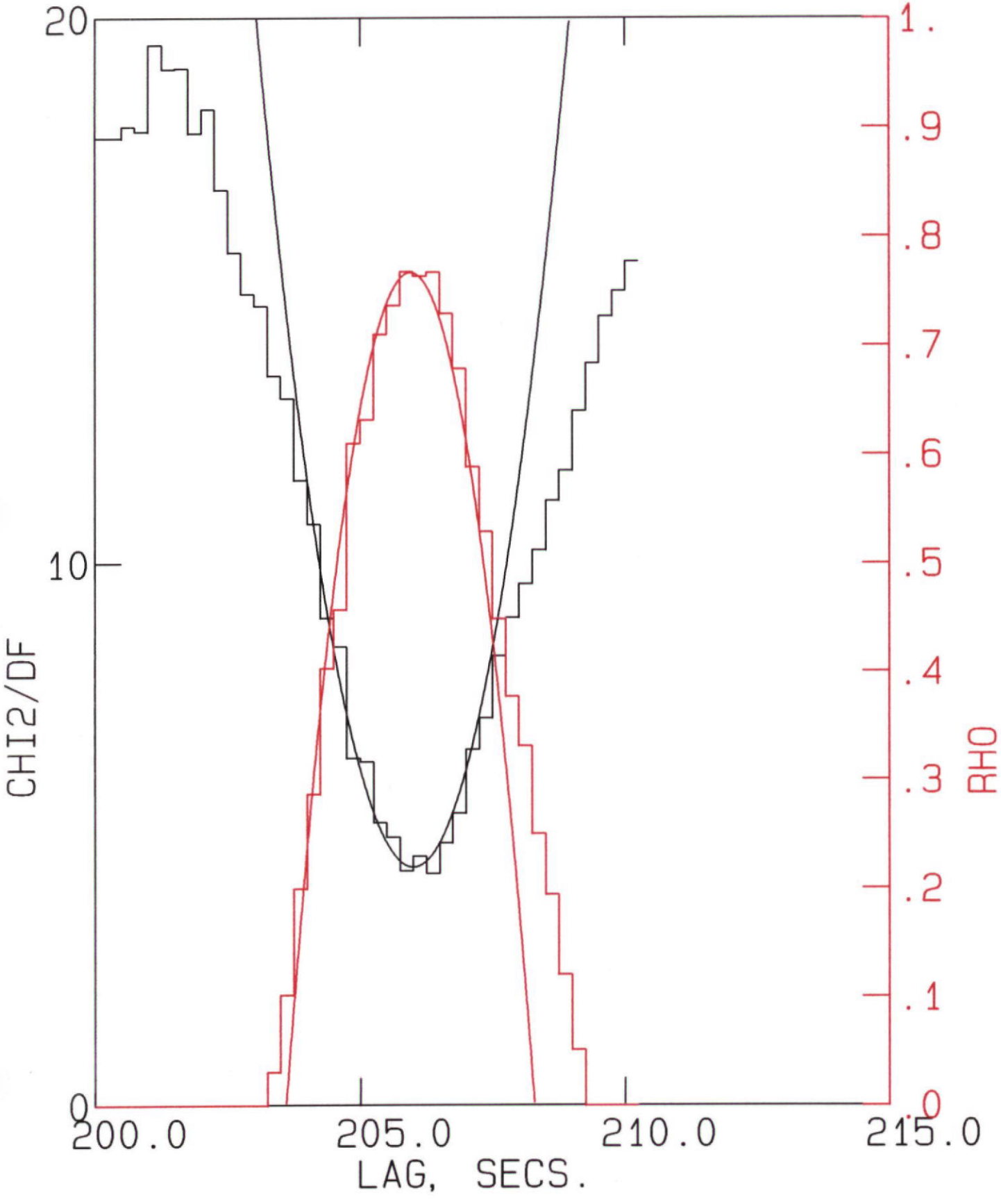
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 BATSE

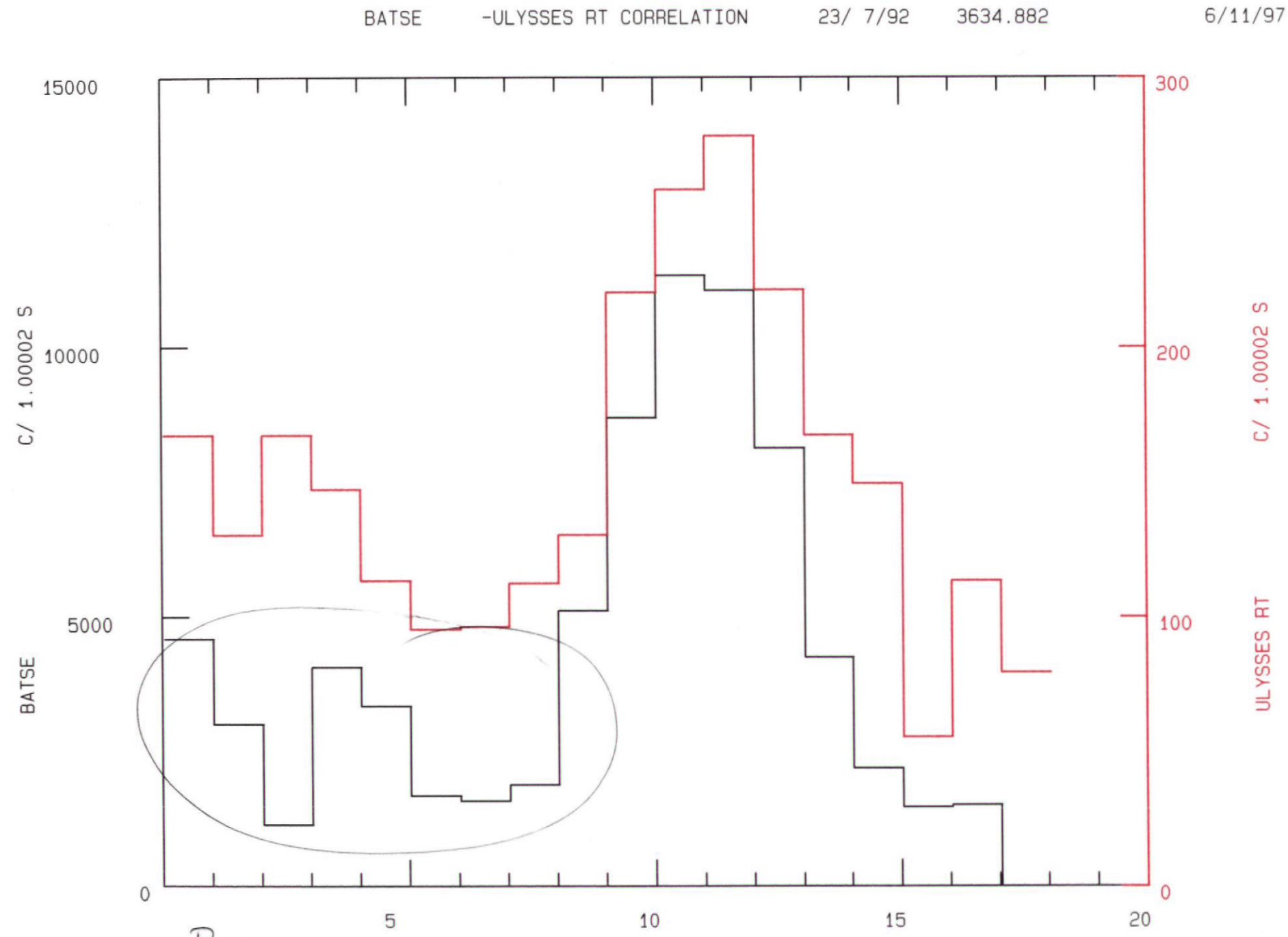



BATSE -ULYSSES RT CORRELATION 23/ 7/92 3634.882 5/11/97
7500
5000
2500
0
C/ 0.50001 S
BATSE
150
125
100
75
50
25
0
C/ 0.50001 S
ULYSSES RT
25
50
75
100
125
150
175
200
225
TIME, SECS

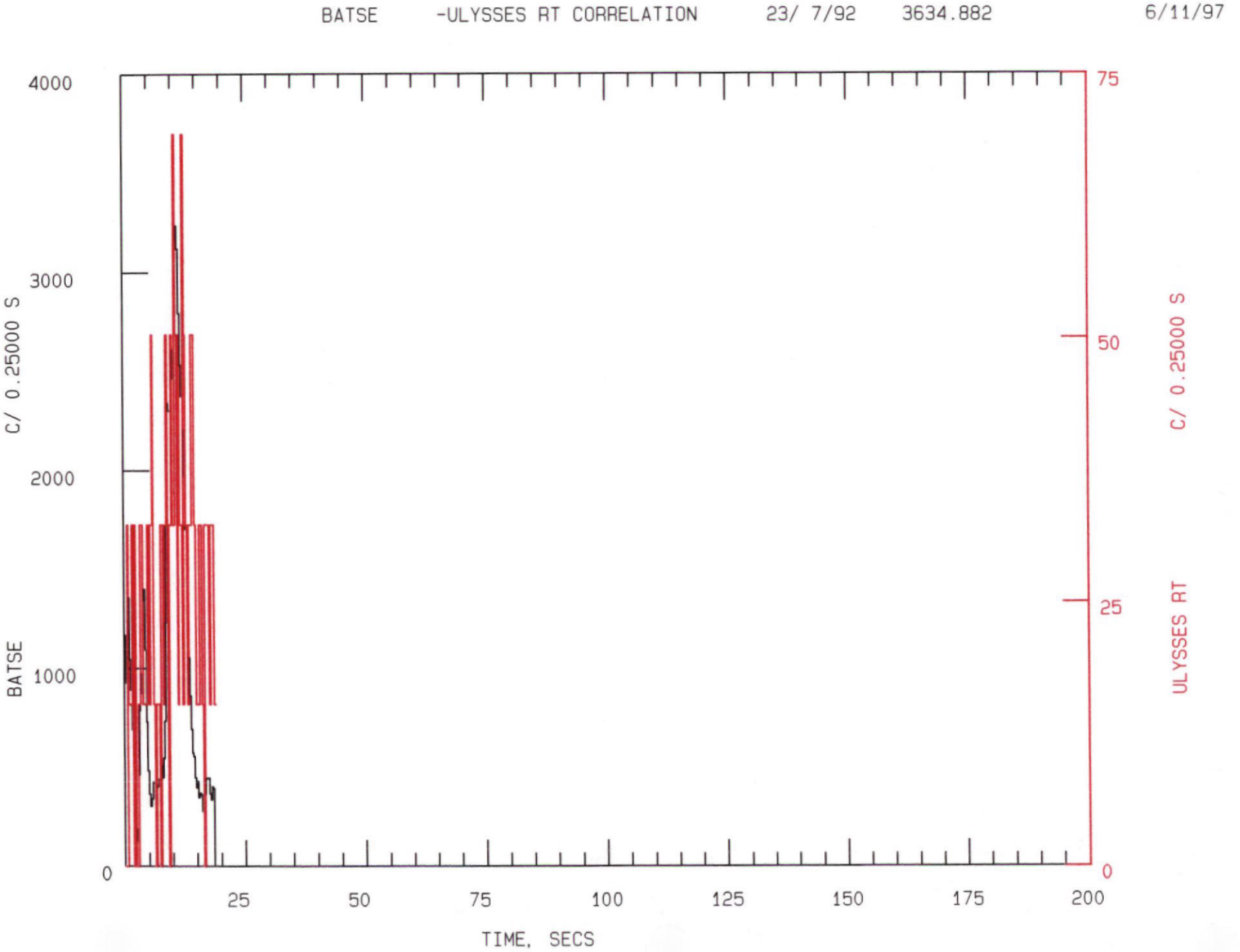
5/11/97

BATSE -ULYSSES RT CORRELATION 23/ 7/92 3634.882



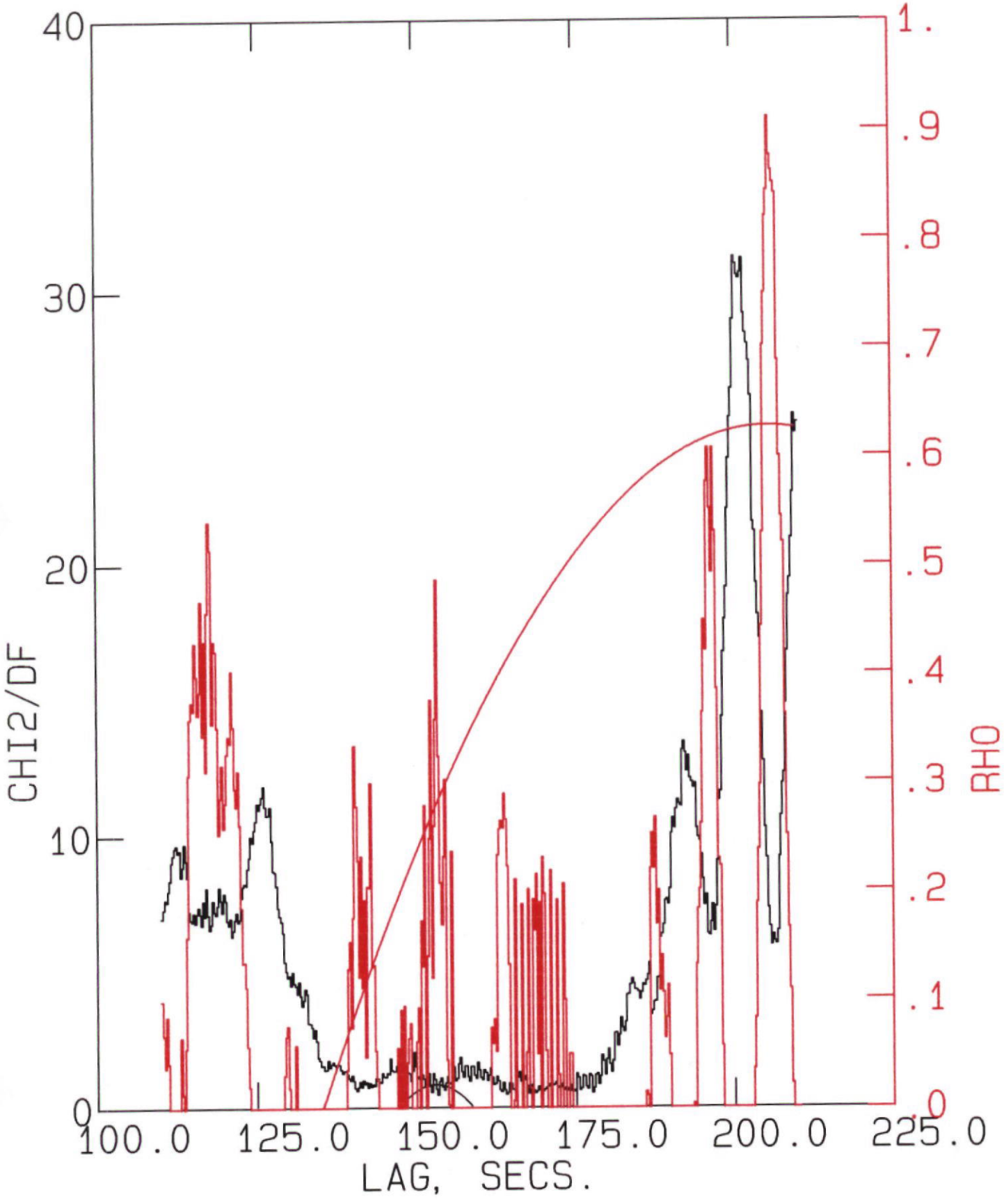


Particle bkgd was lower here than for the 3rd peak; subtracting const. bkgd lowered Three peaks artificially, resulting in bad χ^2


BATSE -ULYSSES RT CORRELATION 23/ 7/92 3634.882 6/11/97
4000
3000
2000
1000
0
C/ 0.25000 S
BATSE
75
50
25
0
C/ 0.25000 S
ULYSSES RT
25
50
75
100
125
150
175
200
TIME, SECS

6/11/97

BATSE -ULYSSES RT CORRELATION 23/ 7/92 3634.882



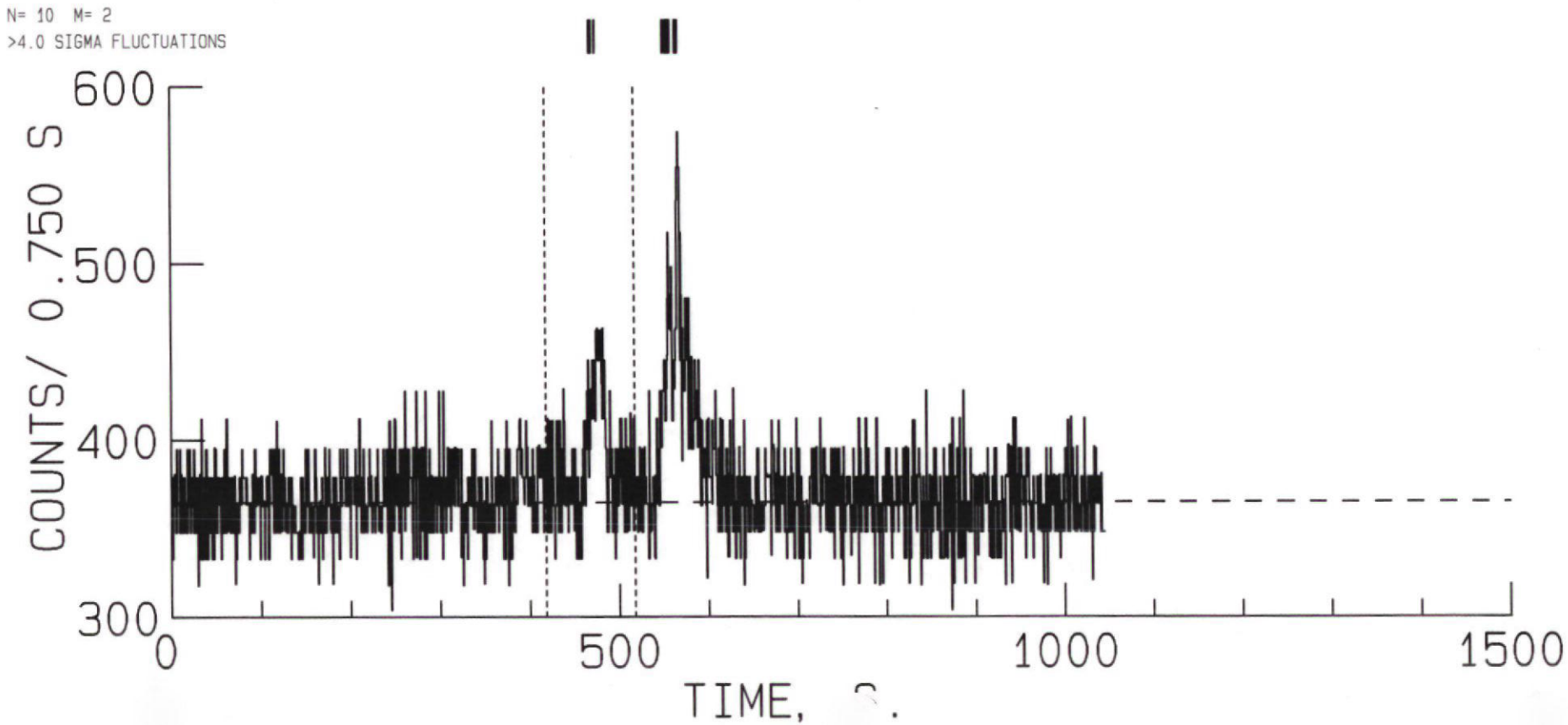
ULYSSES RT

5/11/97

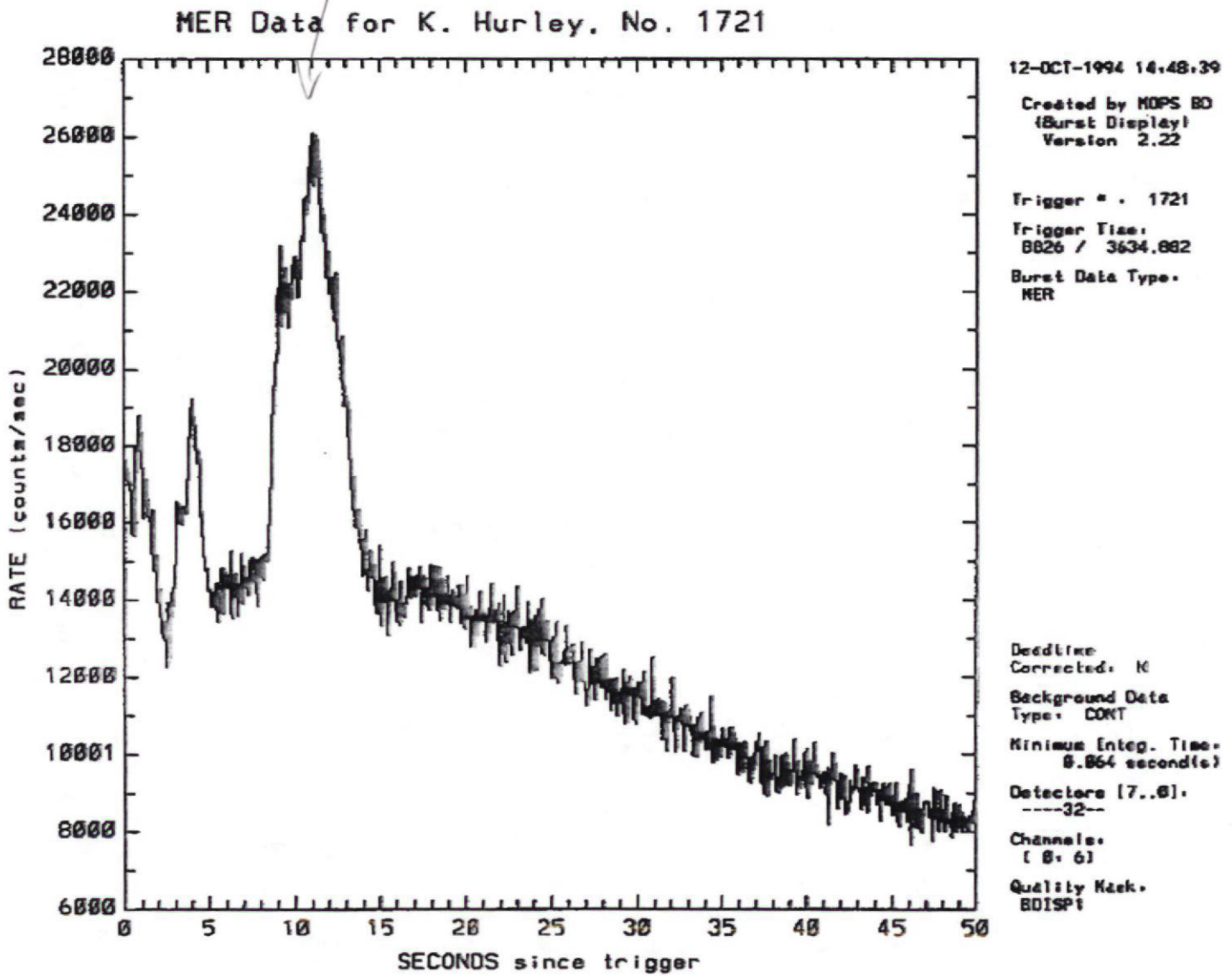
23/ 7/92 1980.231 s

0.250 S INTERVALS REGROUPED BY 3

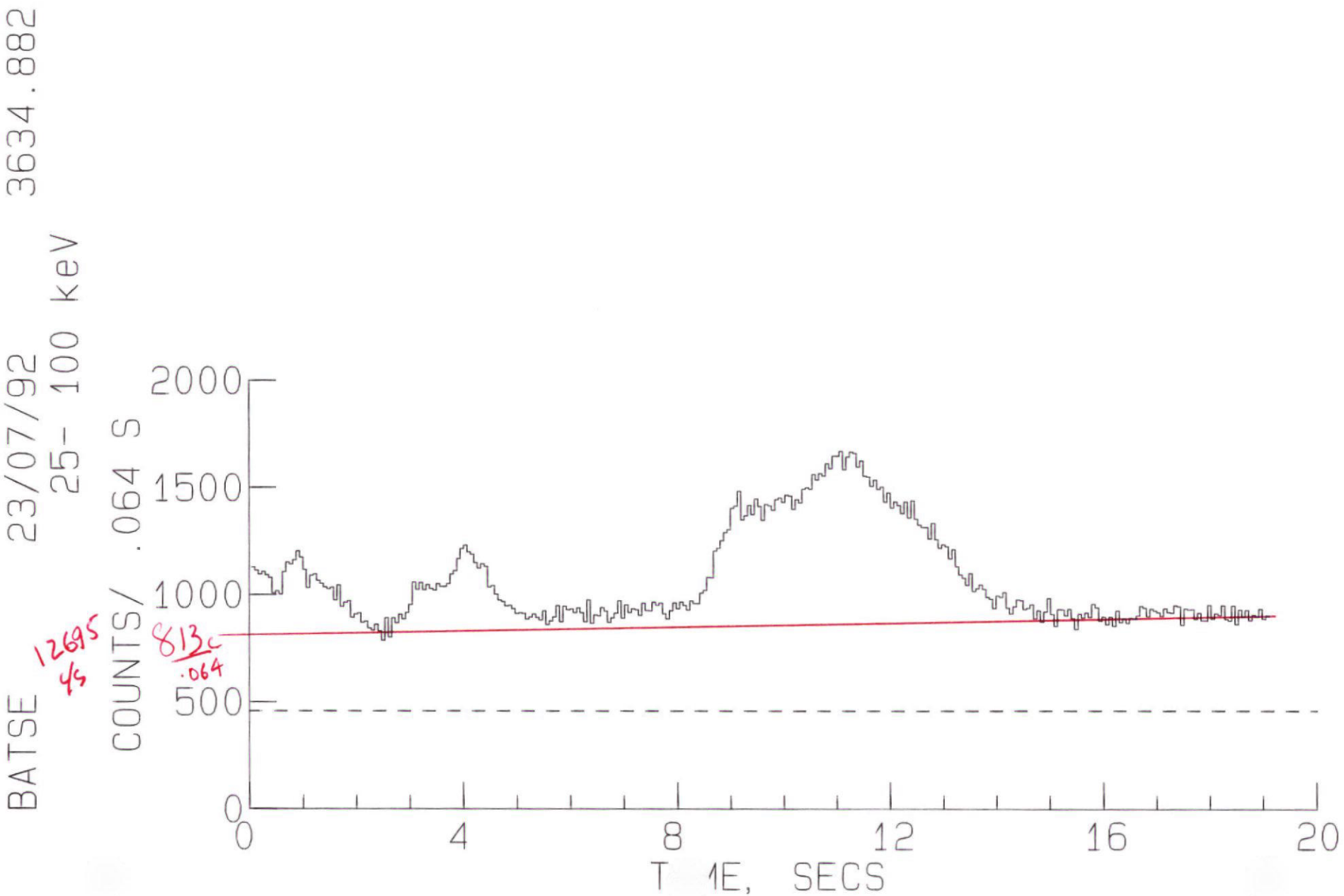
22- 152 keV



This is the 2nd peak in the Ulysses data



18/10/94

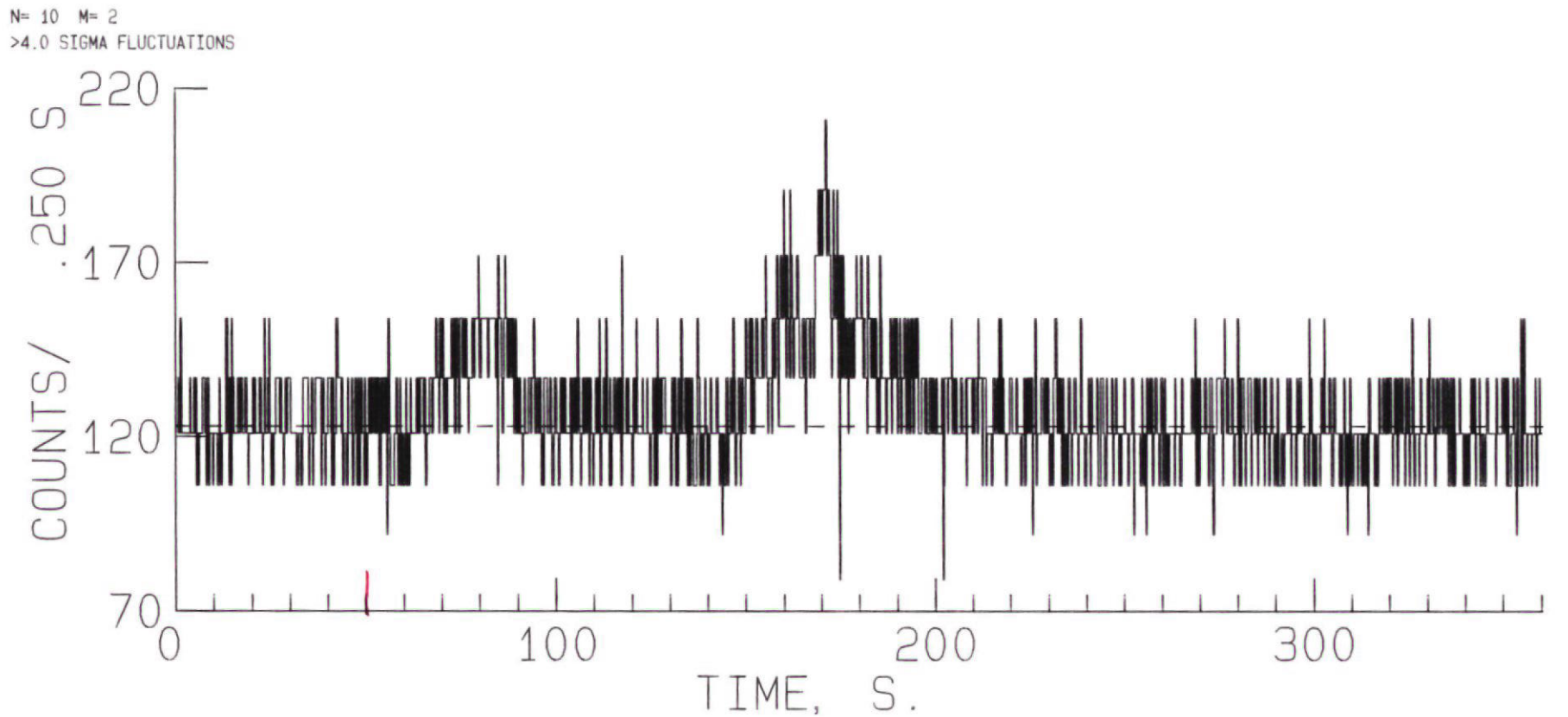

BATSE 23/07/92 3634.882
25- 100 keV
COUNTS/ .064 S
2000
1500
1000
500
0
0
4
8
12
16
20
T IE, SECS
12695
4s
813c
.064

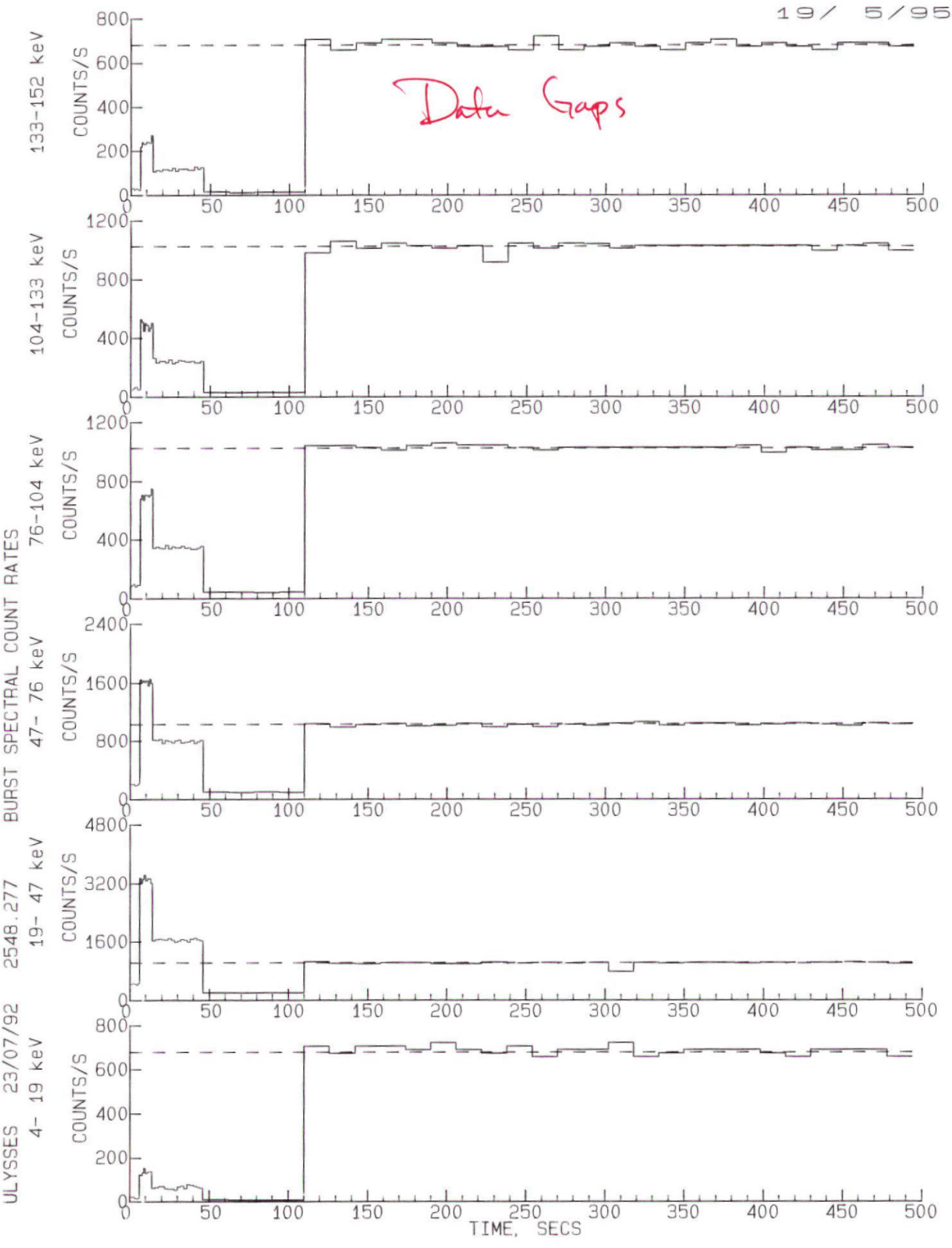
ULYSSES RT

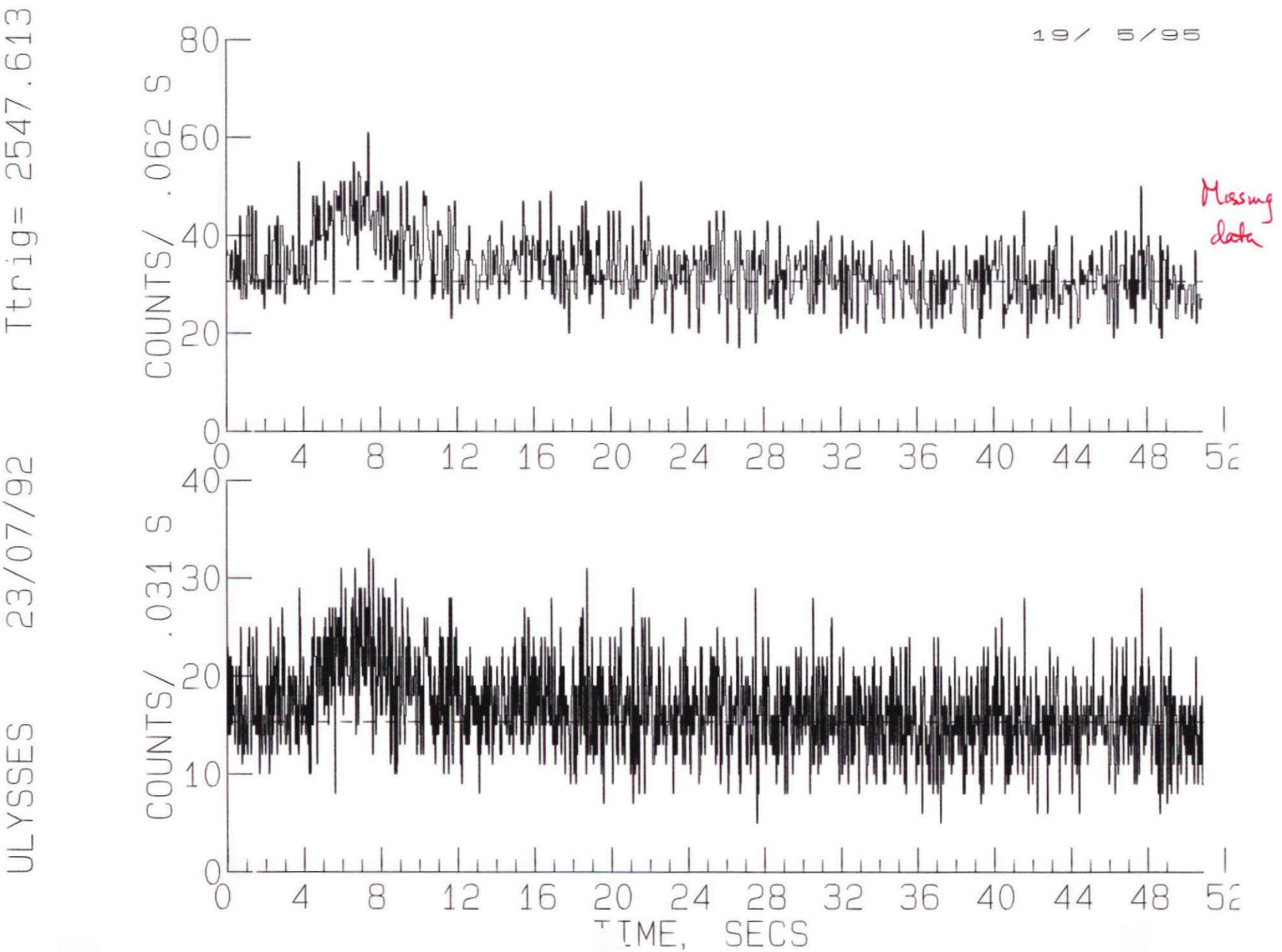
19/ 5/95

23/ 7/92 2376.239 s

22- 152 keV




19/ 5/95
Data Gaps
ULYSSES 23/07/92 2548.277 BURST SPECTRAL COUNT RATES
4- 19 keV
19- 47 keV
47- 76 keV
76-104 keV
104-133 keV
133-152 keV
COUNTS/S
TIME, SECS


ULYSSES 23/07/92 Ttrig= 2547.613
19/ 5/95
COUNTS/ .062 S
COUNTS/ .031 S
TIME, SECS
Missing data

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

BATSE BURST # 1722
EVENT OF 1992 JUL 23 DAY OF YEAR=205
EVENT CROSSING TIME AT BATSE      : 47053. S. OR 13:04:12.6
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 265.800     1.400
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 23/ 7/  92 IS:
RA=  152.580 DEC=     4.675 DIST=     6.135 AU
BATSE-ULYSSES DISTANCE =  917752616. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 66.99 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1196.49 SECS.
CROSSING TIME AT ULYSSES     IS 48249. S. OR 13:24:09.1 +/-  557.38 SECONDS
```

No

```
From BRIGGS@ssl.msfc.nasa.gov Sun Jul 26 15:37:20 1992
Date:     Sun, 26 Jul 1992 17:39:21 -0500 (CDT)
From: BRIGGS@ssl.msfc.nasa.gov (Michael S. Briggs, 205-544-7716, Code ES-62, MSFC)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

                BATSE BURST TRIGGER
NO.: 01722

TIME: TJD=8826 SECONDS=47052

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=083.4  AZIMUTH=159.3  ERROR=       DEGREES

COMMENTS:
WEAK, SINGLE PEAK EVENT OF ABOUT 1 SEC DURATION.   NOT SEEN ABOVE 310 KEV.
```

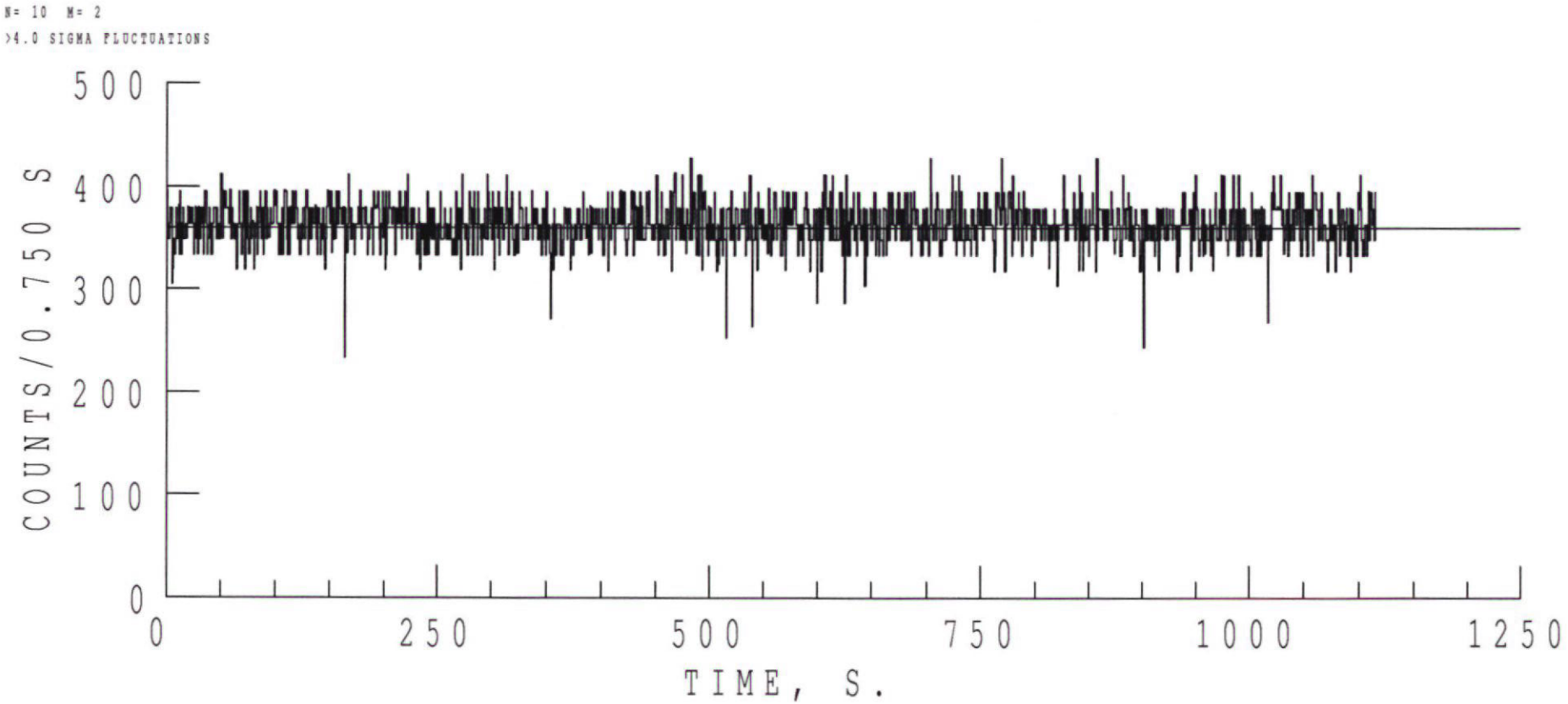
8/ 6/94

ULYSSES RT

23/ 7/92 47700.207 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



WATCH-GRANAT Gamma Ray Bursts. Niels Lund, Alberto Castro-Tirado & Soren Brandt,
Danish Space Research Institute.

Version 3.0 sep. 12 1993.

The data given below is pre-publication data. The data should not be quoted without prior consultations with the WATCH-GRANAT collaboration. The list is prepared in support of searches for counterparts or multi-spacecraft identifications. The positions given for the localized sources are in most cases based on the fitted mean attitude of GRANAT. The positional uncertainty is 1 degree error circle radius.

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)		Q	t	comments	#Wm	sdp	theta	phi
1	900118	17:40:47	33	280	225	1.1	11h36.3m	-44.7	F3	8	4 peaks	0423	28	22.42	26.50
2	900126	18:04:27	146	25	11	0.5	08h44.6m	-38.0	F3	r	2 peaks, soft tail	0481	70	21.35	138.49
3	900222	11:56:34	38	33	15	1.5	22h29.9m	35.1	F3	1	1 peak, soft tail	0650	25	20.16	144.39
4	900708	11:30:20	36	160	95	2.0	12h22.3m	31.4	F3	1	3 peaks	1490	29	58.49	90.41
5	900901	01:35:46	36	230	110	4.0	18h19.4m	-44.8	F3	4	4 peaks	1811	28	39.58	167.23
6	900925	20:25:22	18	45	42	1.2	8h56.0m	-35.3	F3	1	Structured event	1970	13	50.27	264.93
7	900929	01:49:48	40	180	180	1.3	11h12.9m	-06.6	F3	r	2 groups of spikes	1990	32	44 31	344.08
8	901009	00:15:50	30	11	9	3.5	23h12.1m	+29.6	F3	1	1 peak	2041	17	52.34	319.13
9	901116	01:42:08	19	15	15	2.2	02h36.7m	+25.1	F3	8	1 peak	2241	11	53.92	15.72
10	901219	21:52:52	24	50	35	2.2	23h06.9m	-53.9	F3	8	1 peak	2490	18	57.94	83.18
11	910122	15:13:35	28	127	-	0.0				1	Soft, structured	2670	25	42.26	142.13
12	910219	11:45:24	43	67	54	0.7	14h12.5m	59.0	F3	r	2 peaks	2813	29	25.97	230.72
13	910310	13:02:05	81	41	40	2.5	12h11.9m	06.4	F3	1	3 peaks	2931	40	51.36	351.15
14	910627	04:29:24	20	11	-	0.4	(13h14m	-03.2)	I2	1	1 peak. X-burst?	3643	18	20.70	262.04
15	910821	10:33:56	21	66	66	0.5	23h31.8m	-72.6	F3	4	Struct. + sharp pk.	3991	14	51.52	116.19
16	911016	11:03:30	22	160	-	0.1	19h47.8m	-04.8	F3	8	very soft, 2 peaks	4381	17	32.03	227.19
17	911202	20:28:59	41	20	11	0.7	11h27.1m	-23.2	F3	1	Single struct. peak	4623	16	35,87	30.52
18	911209	18:36:11	42	30	12	1.8	17h26.4m	-44.4	F3	r	4 peaks	4680	28	34.53	320.77
19	920311	02:20:37	42	40	40	1.3	08h45.4m	-36.4	F3	8	1 peak	5201	37	51.39	83.56
20	920714	13:04:51	36	40	36	2.1	14h41.6m	-30.0	F3	8	1 peak	5921	28	43.75	202.33
21	920718	14:41:15	30	90	30	0.4	01h22.6m	-3.5	F3	8	1 odd peak	5953	20	17.97	302.95
22	920718	21:32:46	40	7	5	1.8	19h43.0m	-56.5	F3	1	1 dull peak	5951	29	24.43	93.23
23	920723	20:03:10	186	13	8	3.9	19h04.5m	27.4	F3	1	1 dull peak	5991	79	33.49	208.18
24	920902	00:29:04	49	13	9	4.6	18h36.0m	-22.8	F3	1	1 dull peak	6163	30	49.14	320.14
25	920903	01:36:15	23	154	103	2.0	19h43.0m	35.2	F3	4	Main peak + spikes	6173	14	38.94	230.29
26	920903	23:29:05	92	24	15	2.5	20h06.3m	21.7	F3	r	1 peak (low E. str)	6183	49	43.53	249.60
27	920925	20:30:42	25	120	120	2.5	13h27.0m	43.1	F3	1	3 peaks	6313	13	51.98	115.24
28	920925	22:49:14	43	347	340	1.3	22h02.0m	24.0	F3	4	struct, soft tails	6311	32	43.03	65.02

1950 286.125 29.4 →
2000 286.626 27.477

#	date	UT-time	sd	l(s)	m(s)	m/l	position(1950)	Q	t	comments	#Wm

comments:

UT-time: Time for peak count rate in Med CsI band. Note time resolution!
Times marked with an asterisk are not yet well calibrated to UT.

sd: Standard deviations above background (in count rates).

l(s): Duration in 6-15 keV band (Low NaI channel)

m(s): Duration in 15-180 keV band (Med CsI channel)

m/l: Hardness: (sd(Med NaI)+sd(Med CsI)) / sd(Low NaI)

posit.: All events in the above list (except 910627) have been localized consistently at least twice based on independent data sets. We are therefore convinced of their true cosmic nature, even without confirming evidence from other spacecraft. GRB 910627 has been included in the list because it is confirmed to be cosmic by many other instruments, and the WATCH position is quite secure due to the good signal to noise ratio.

Q: Type of attitude data: I2: initial pointing at obs. start. 2 axes (poor, syst. error: +-0.8 deg)
A2: actual pointing at burst time. 2 axes (better, syst. error: +-0.5 deg)
F3: fitted mean pointing for TM session. 3 axes (TBD (+- 0.5 deg?))

t: Best time resolution available: 1, 4, 8, 16 motor rotations (approx. 0.9 s)
m: 1 motor rotation in 4 ms steps
r: raw memory (4 ms steps)

#Wm Telemetry session and WATCH unit identifier

sdp: Standard deviations above background in final modulation pattern used for source localization. As a rough guide, the statistical uncertainty in the source position is 240/sdp arcminutes. In most cases the systematic errors dominates the error budget.

theta and phi: Source position in WATCH instrument coordinates.

Helio corr removed 12/2/98

Date: 12/31/96

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied? + 34 ms

☐ Ephemeris calculated for start of record of real time data? N/A

☑ Final ephemeris used?

☑ Does ULYTRIG program output contain trigger time, and not SOR? (Ditto for FILE.ult)

☑ Final, CDROM data used?

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

2. BATSE Data N/A

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

☐ 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?

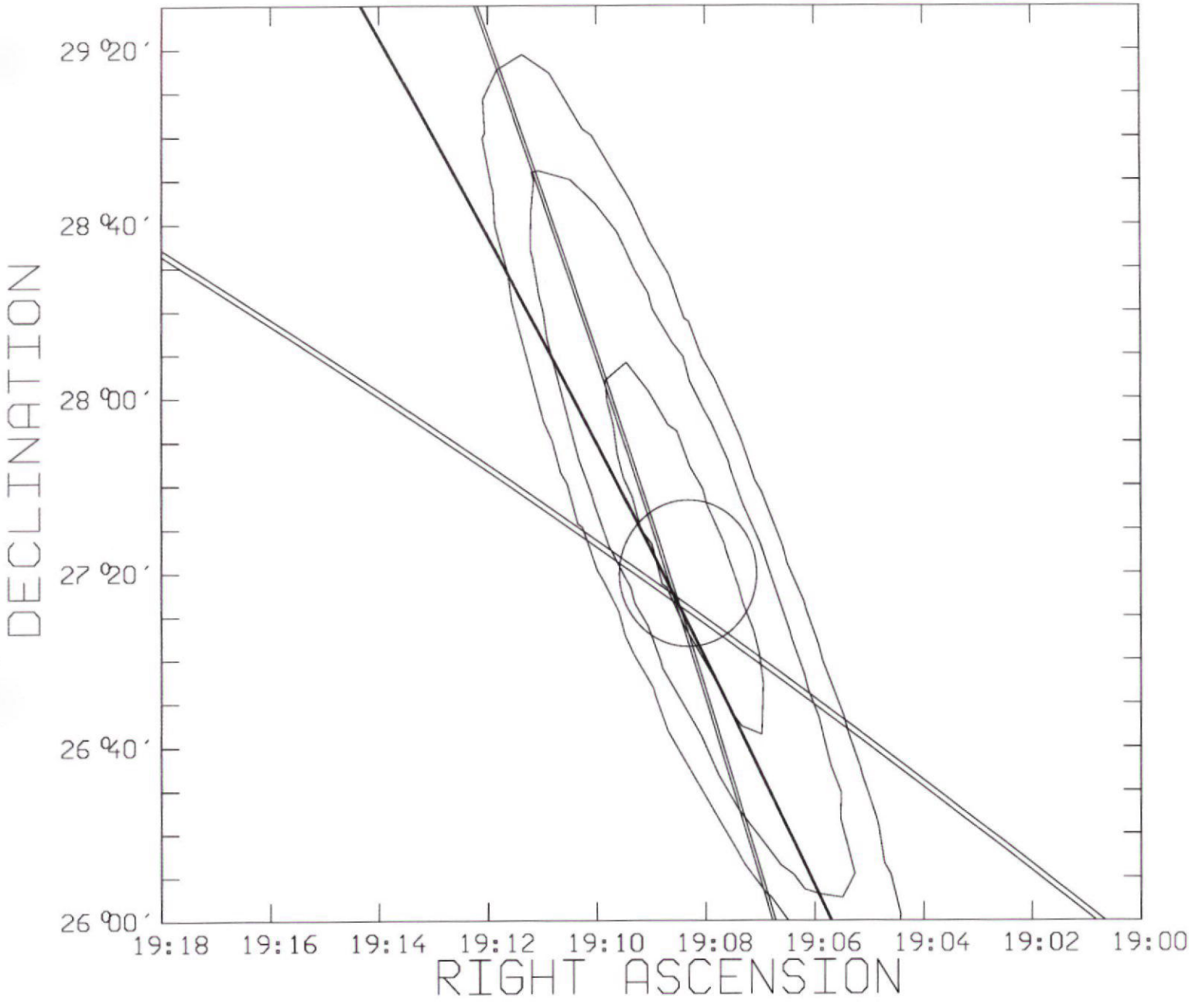
☐ If MER data were used, is a 30 ms systematic error included?

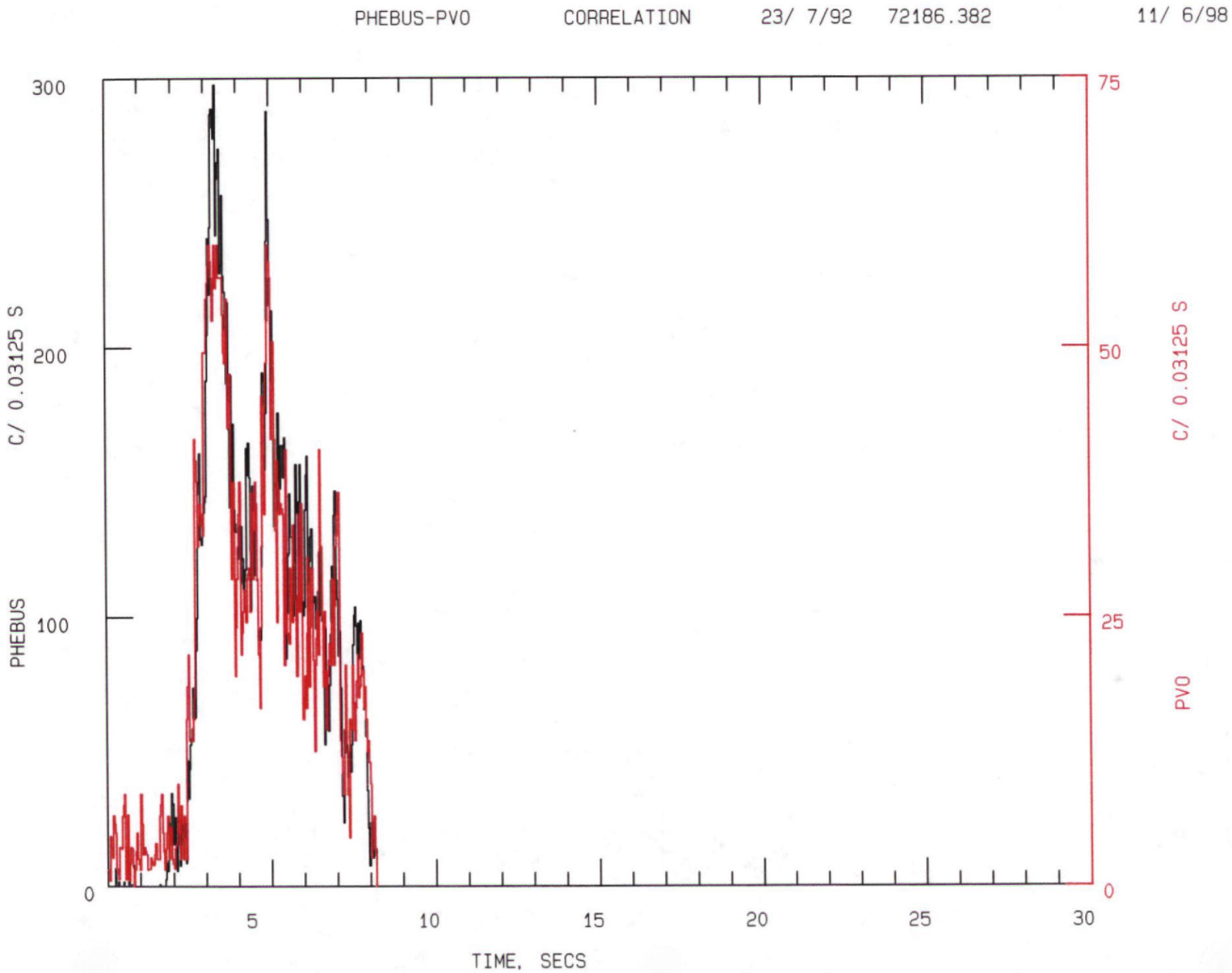
3. PVO Data

☑ Ephemeris of PVO used (not Venus)?

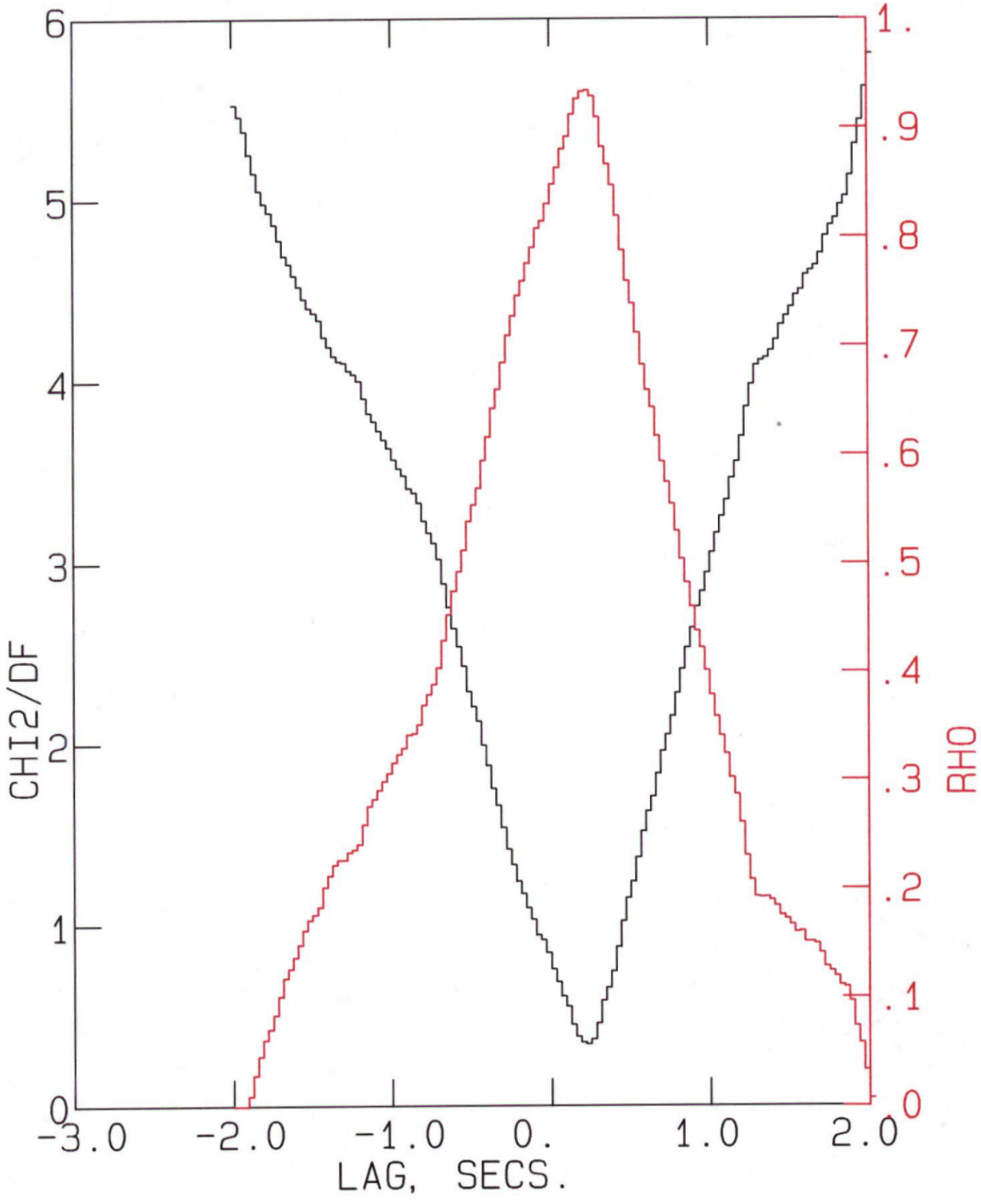
☑ 2000 coordinates used?

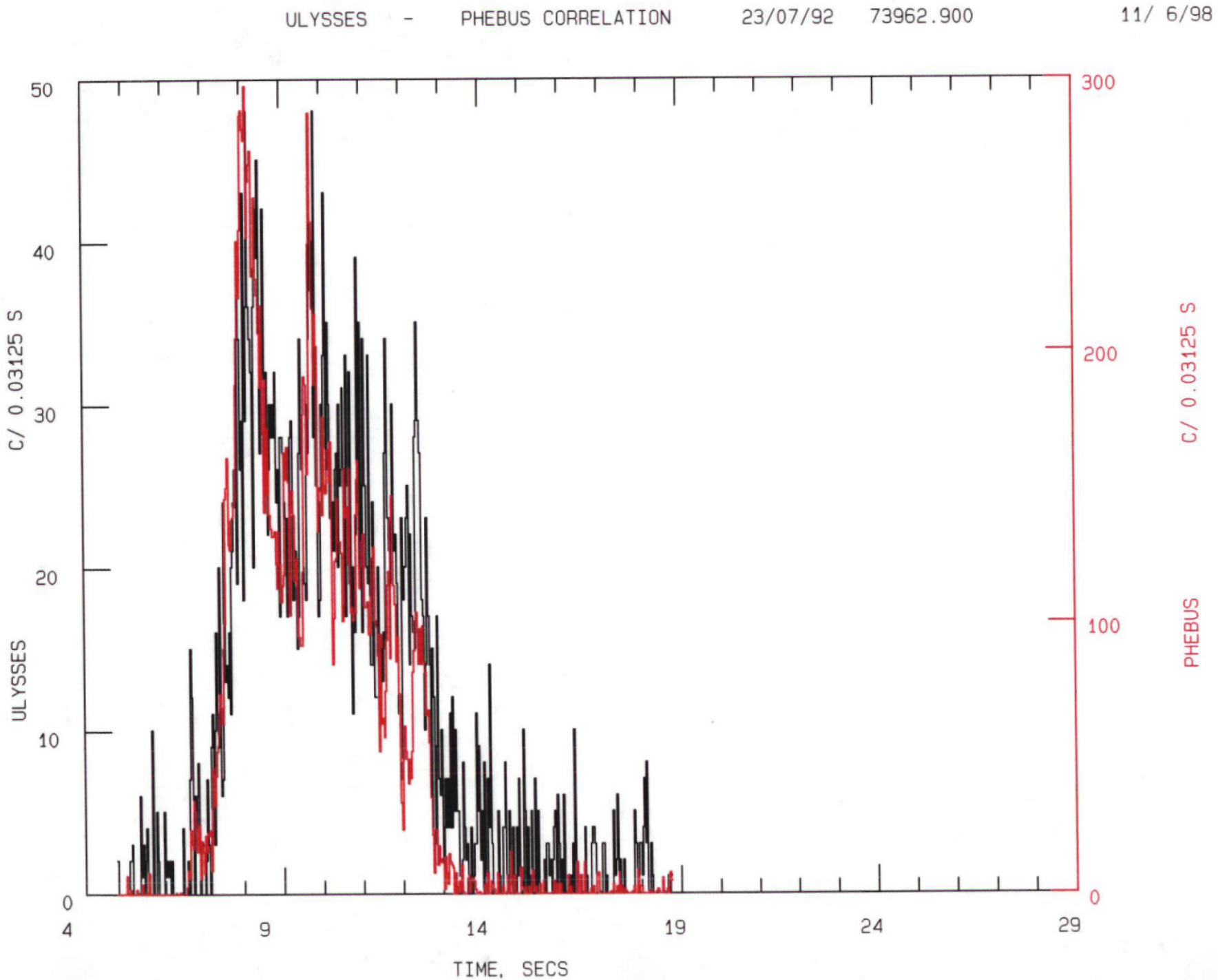
☑ Geocentric time used?


29 °20′
28 °40′
28 °00′
27 °20′
26 °40′
26 °00′
DECLINATION
19:18
19:16
19:14
19:12
19:10
19:08
19:06
19:04
19:02
19:00
RIGHT ASCENSION


PHEBUS-PVO CORRELATION 23/ 7/92 72186.382 11/ 6/98
300
200
100
0
C/ 0.03125 S
PHEBUS
75
50
25
0
C/ 0.03125 S
PVO
5
10
15
20
25
30
TIME, SECS

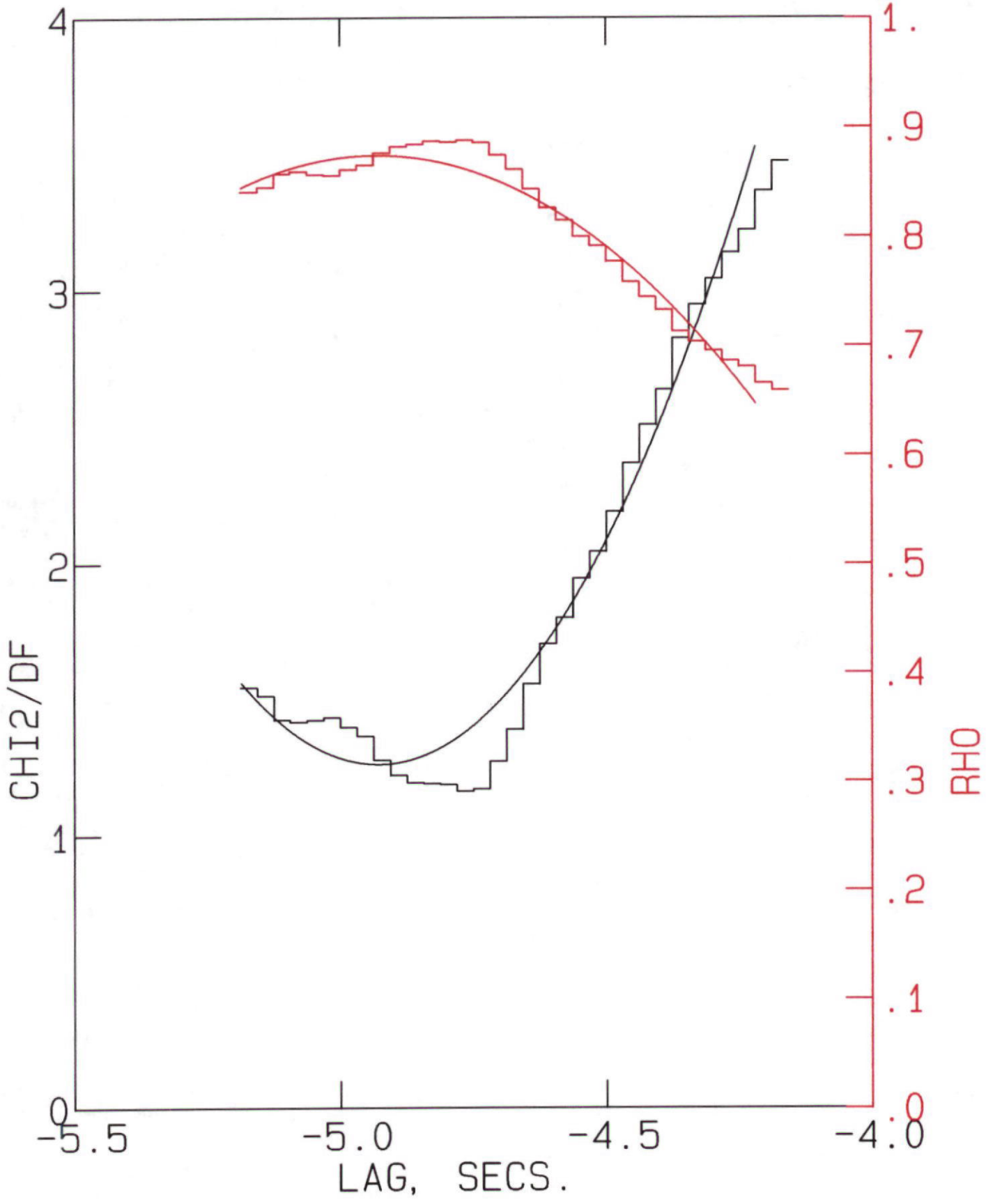
PHEBUS-PVO CORRELATION 23/ 7/92 72186.382

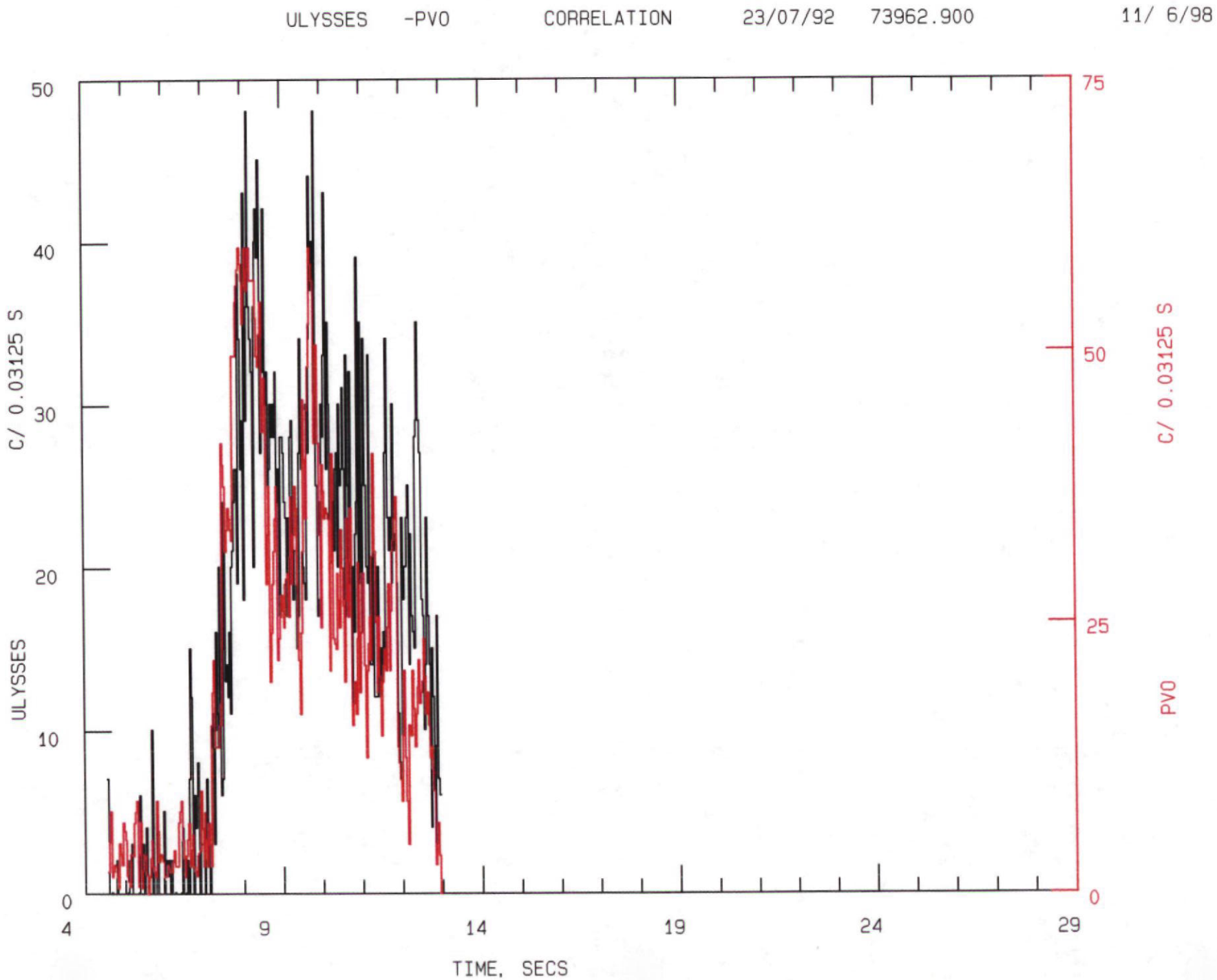



ULYSSES - PHEBUS CORRELATION 23/07/92 73962.900 11/ 6/98
50
40
30
20
10
0
C/ 0.03125 S
ULYSSES
300
200
100
0
C/ 0.03125 S
PHEBUS
4
9
14
19
24
29
TIME, SECS

11/ 6/98

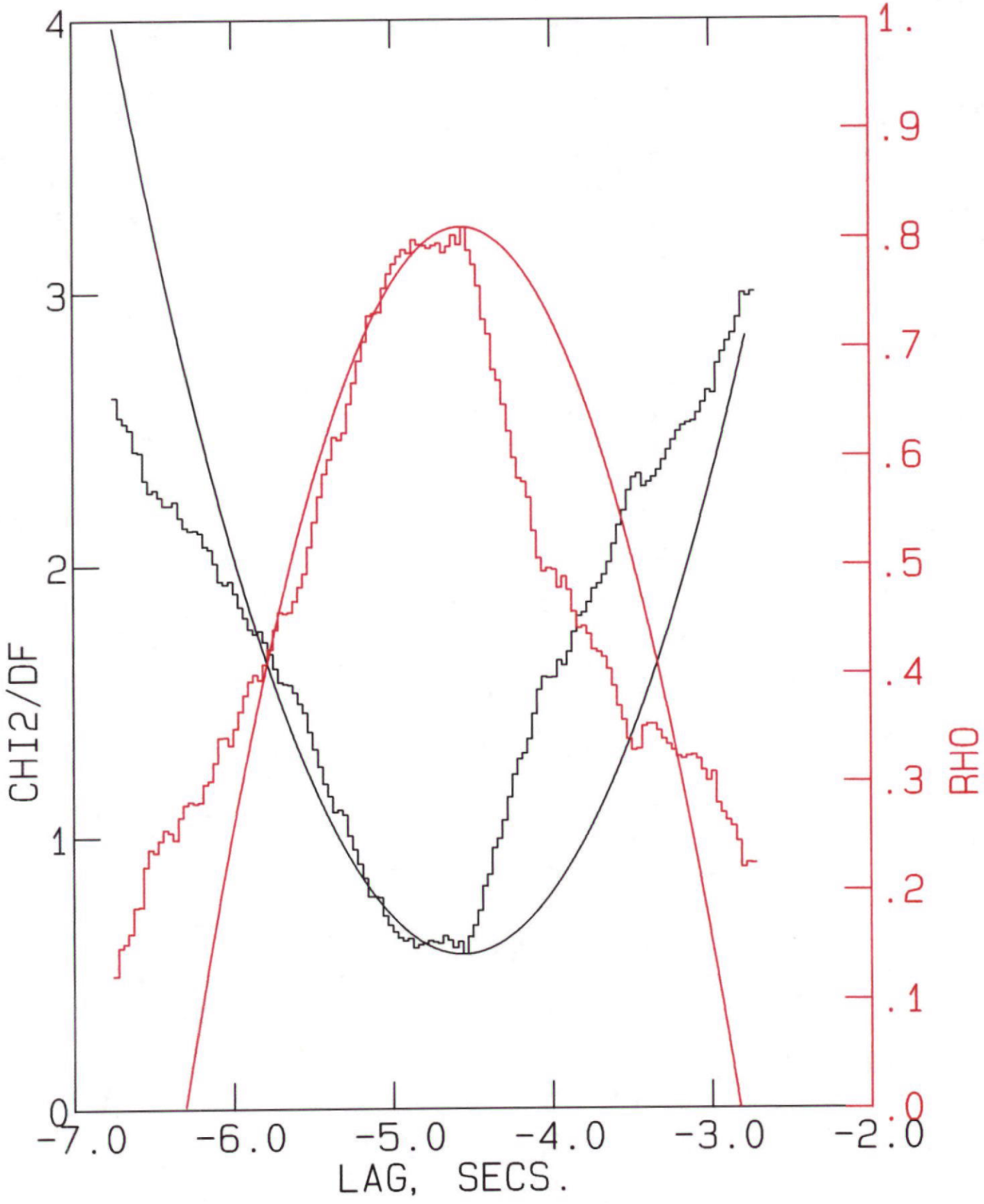
ULYSSES - PHEBUS CORRELATION 23/07/92 73962.900




ULYSSES -PVO CORRELATION 23/07/92 73962.900 11/ 6/98
50
40
30
20
10
0
C/ 0.03125 S
ULYSSES
75
50
25
0
C/ 0.03125 S
PVO
4
9
14
19
24
29
TIME, SECS

11/ 6/98

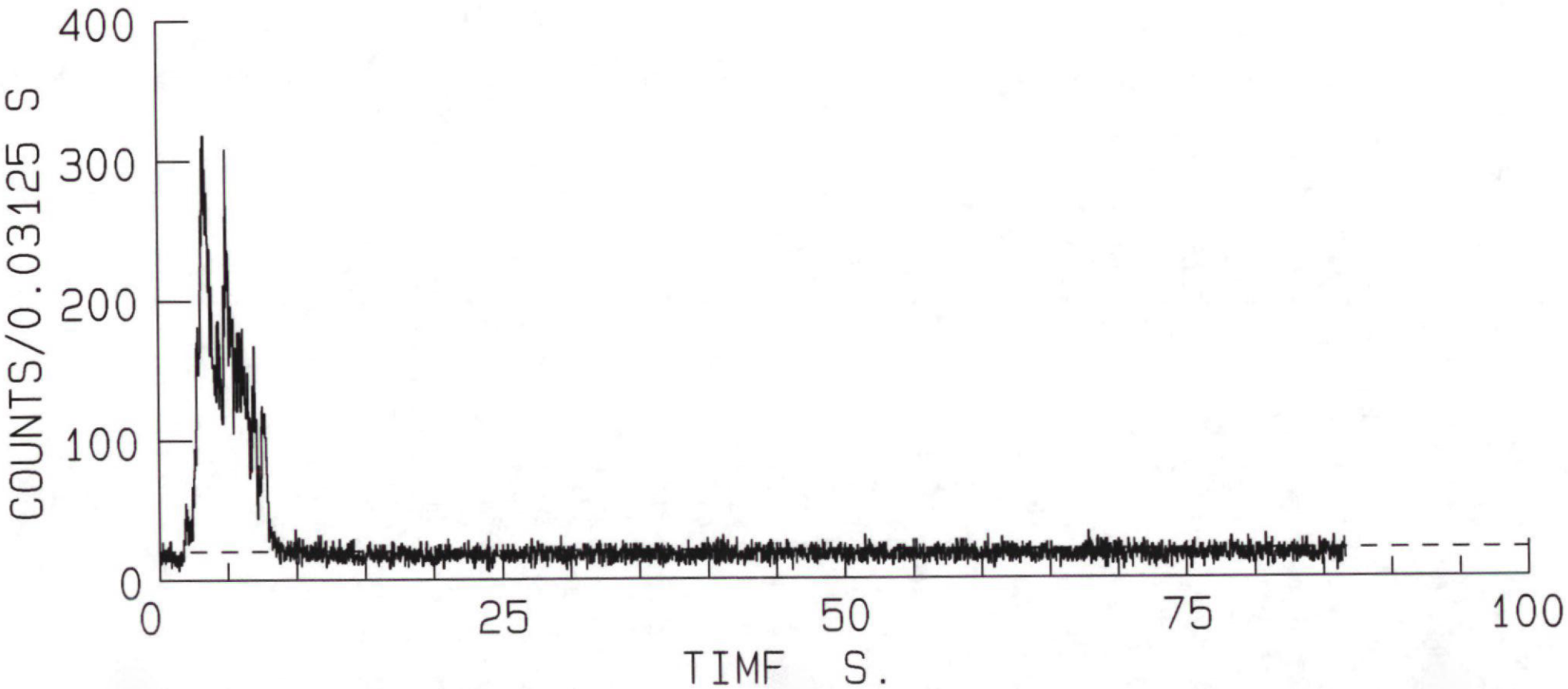
ULYSSES -PVO CORRELATION 23/07/92 73962.900

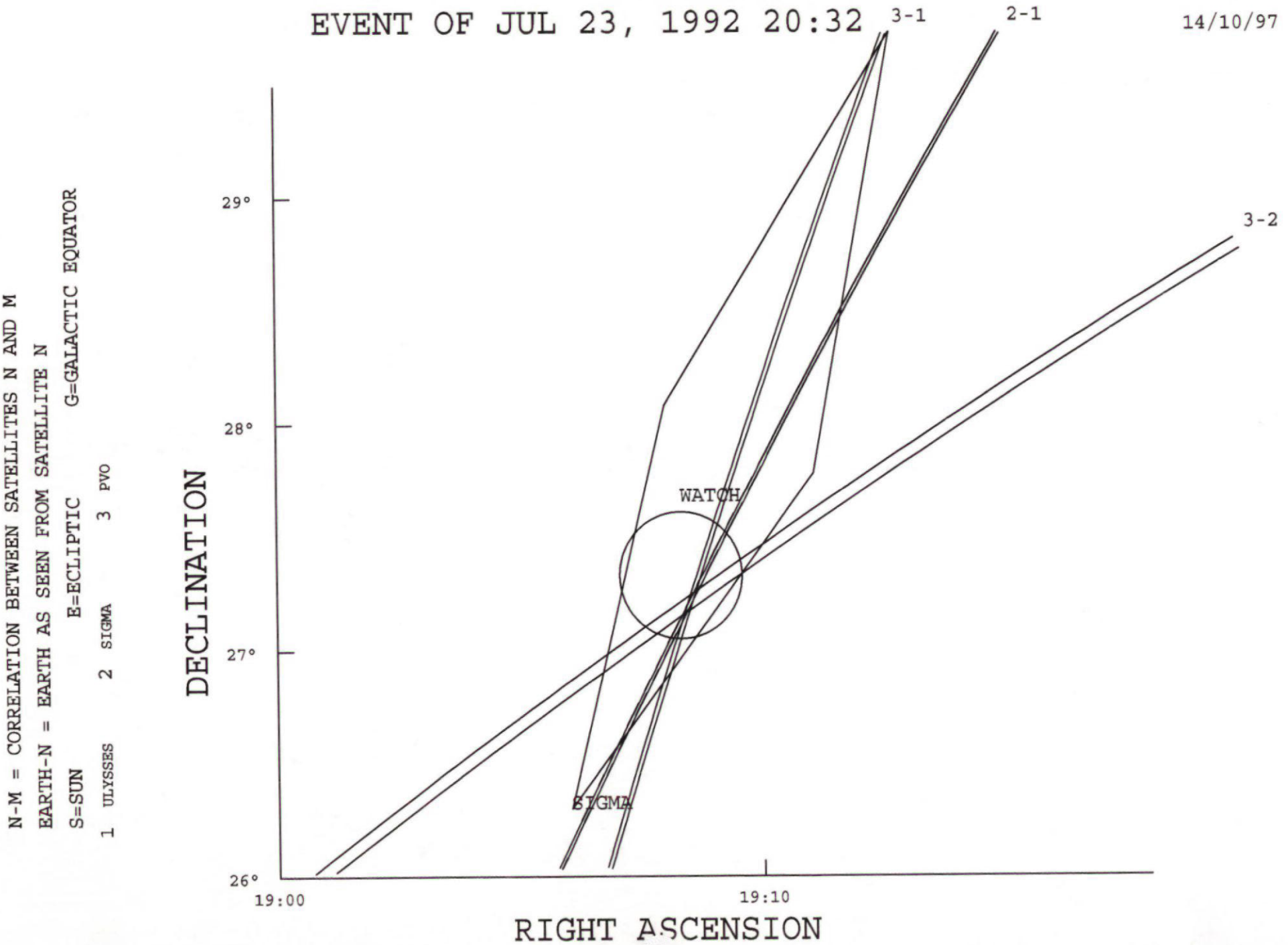


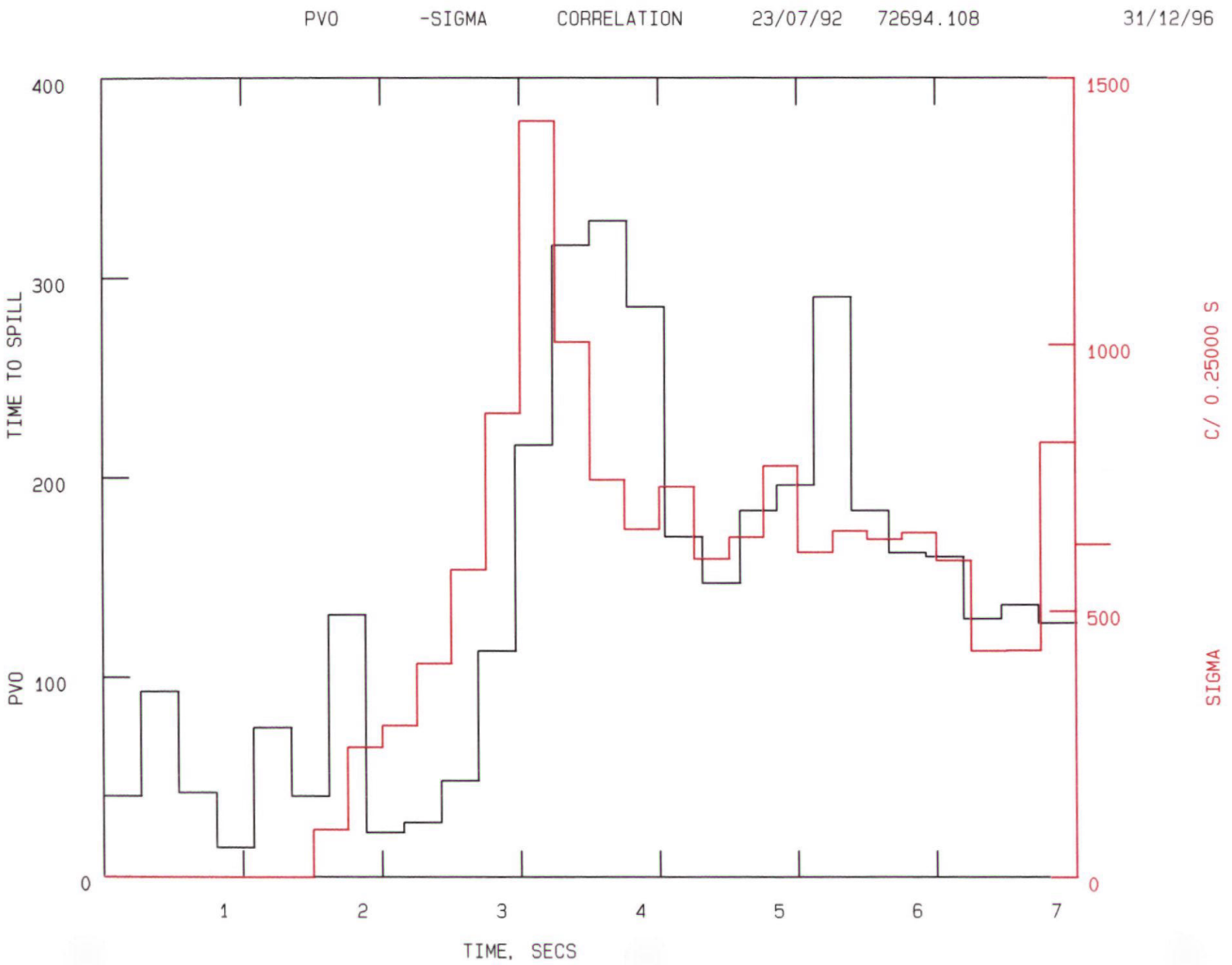
PHEBUS

23/ 7/92 72186.382 s

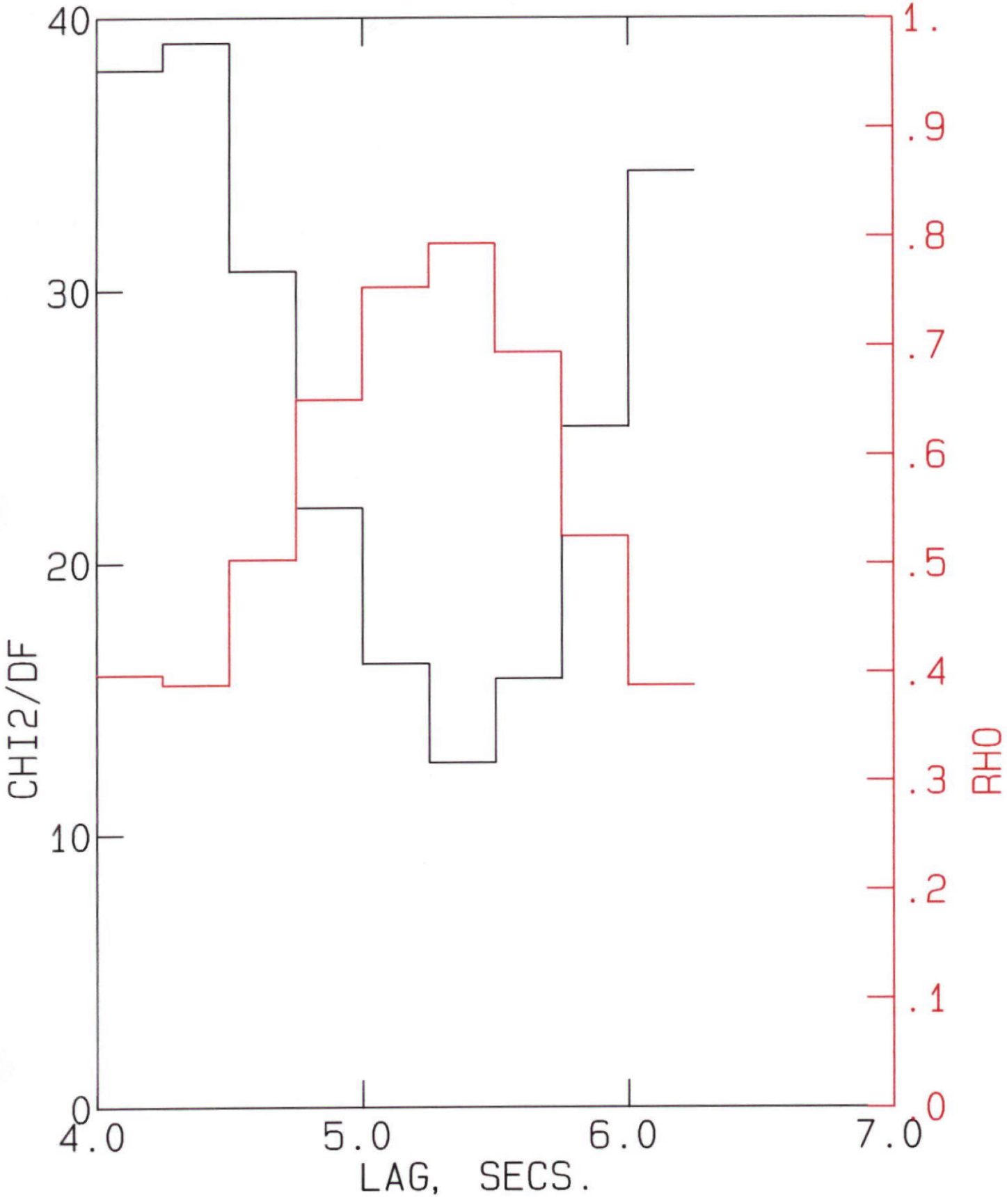
100- 1600 keV




EVENT OF JUL 23, 1992 20:32
14/10/97
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 SIGMA 3 PVO
3-1
2-1
3-2
WATCH
SIGMA
DECLINATION
29°
28°
27°
26°
19:00
19:10
RIGHT ASCENSION

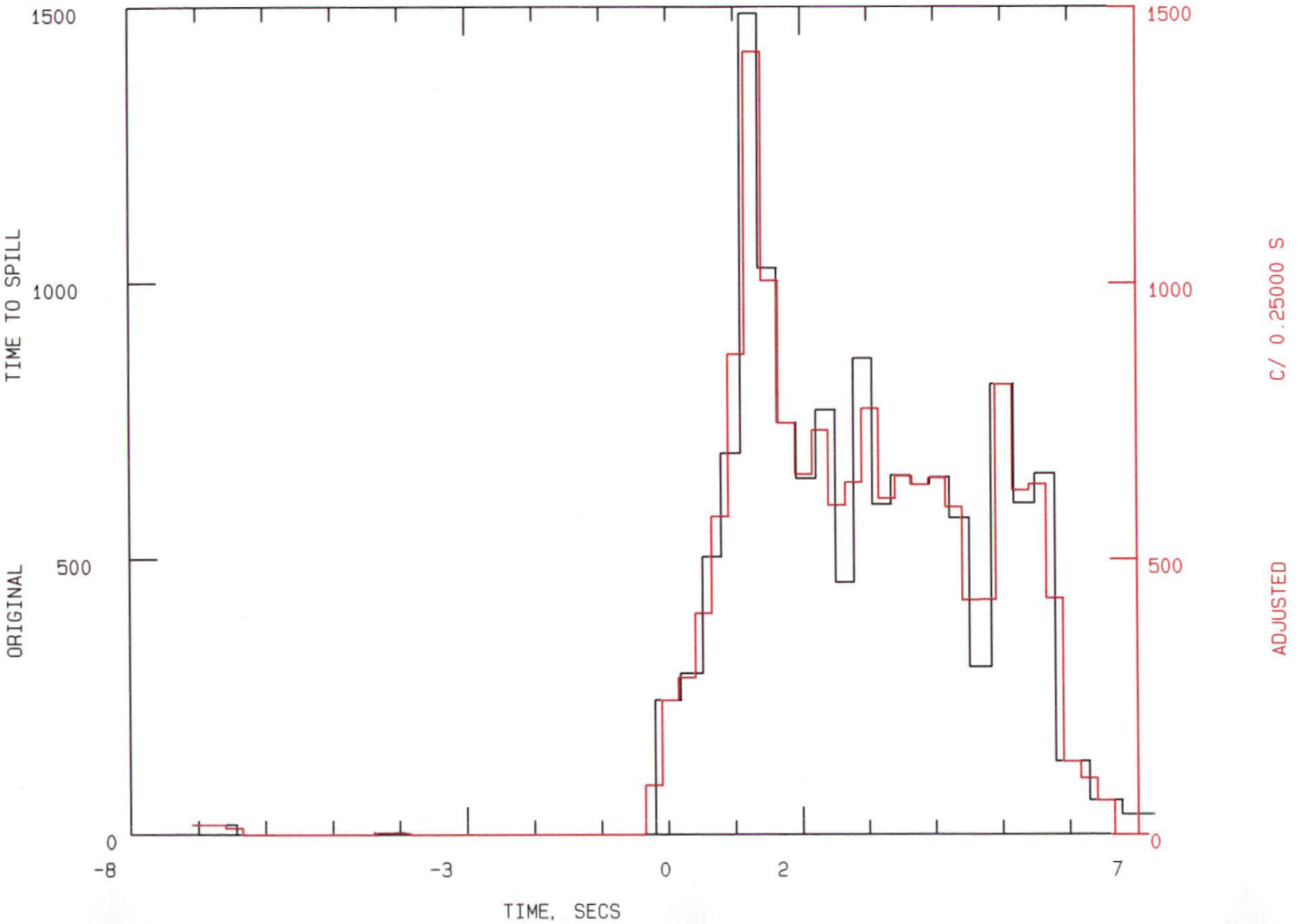

PVO -SIGMA CORRELATION 23/07/92 72694.108 31/12/96
400
300
200
100
0
TIME TO SPILL
PVO
1500
1000
500
0
C/ 0.25000 S
SIGMA
1
2
3
4
5
6
7
TIME, SECS

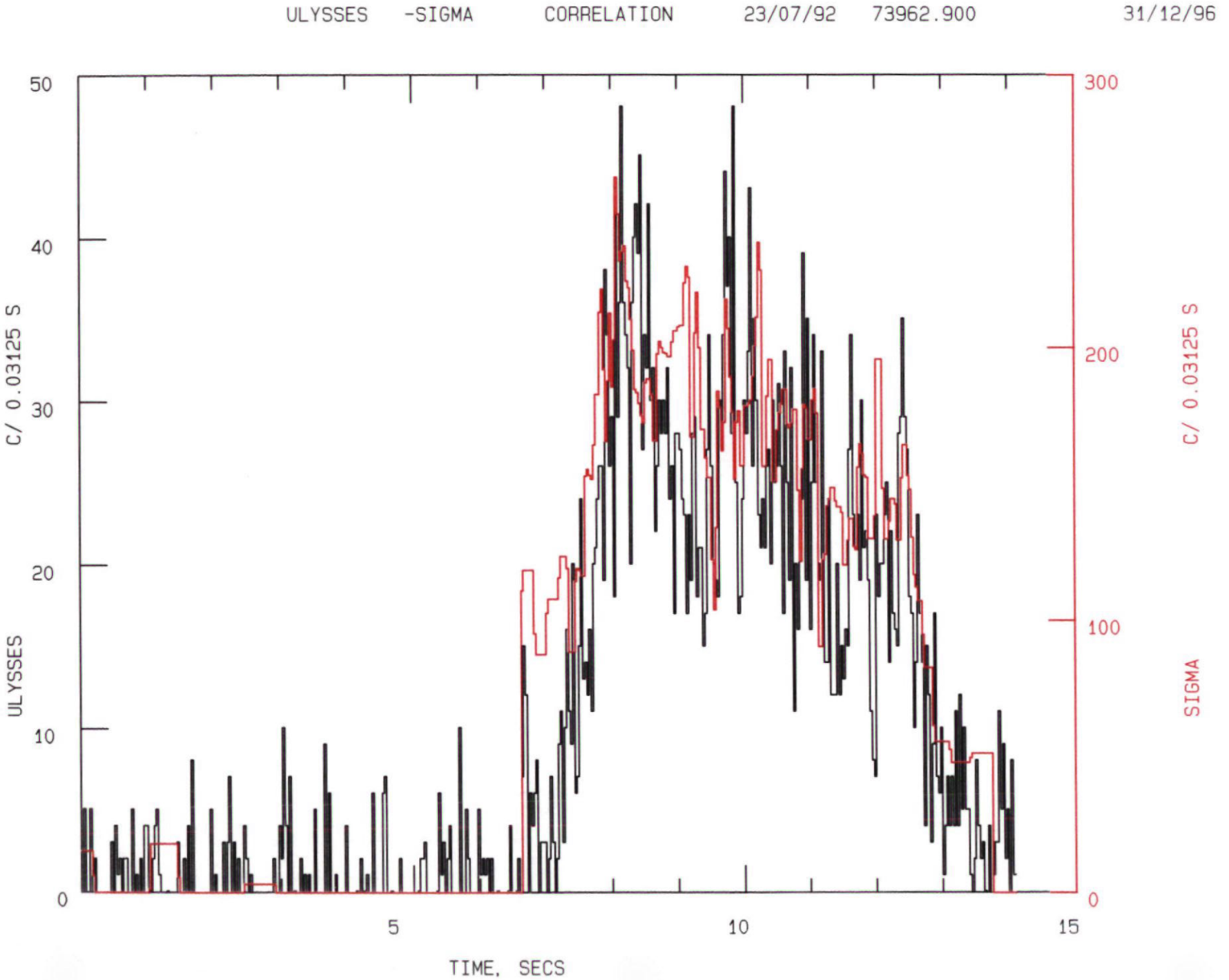
PVO -SIGMA CORRELATION 23/07/92 72694.108



ORIGINAL AND ADJUSTED SIGMA TIME HISTORIES 23/ 7/92 72188.323

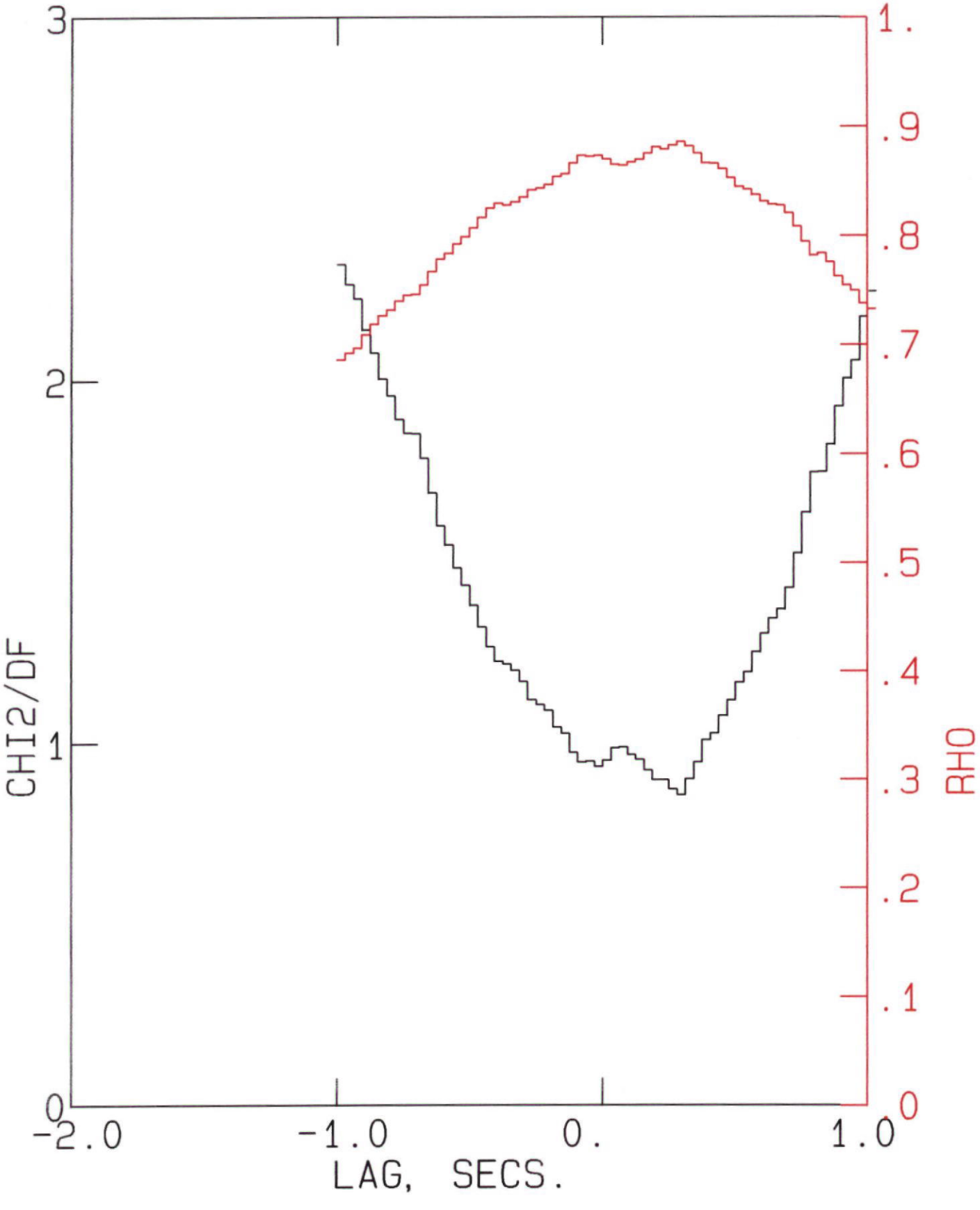
31/12/96




ULYSSES -SIGMA CORRELATION 23/07/92 73962.900 31/12/96
50
40
30
20
10
0
C/ 0.03125 S
ULYSSES
300
200
100
0
C/ 0.03125 S
SIGMA
5
10
15
TIME, SECS

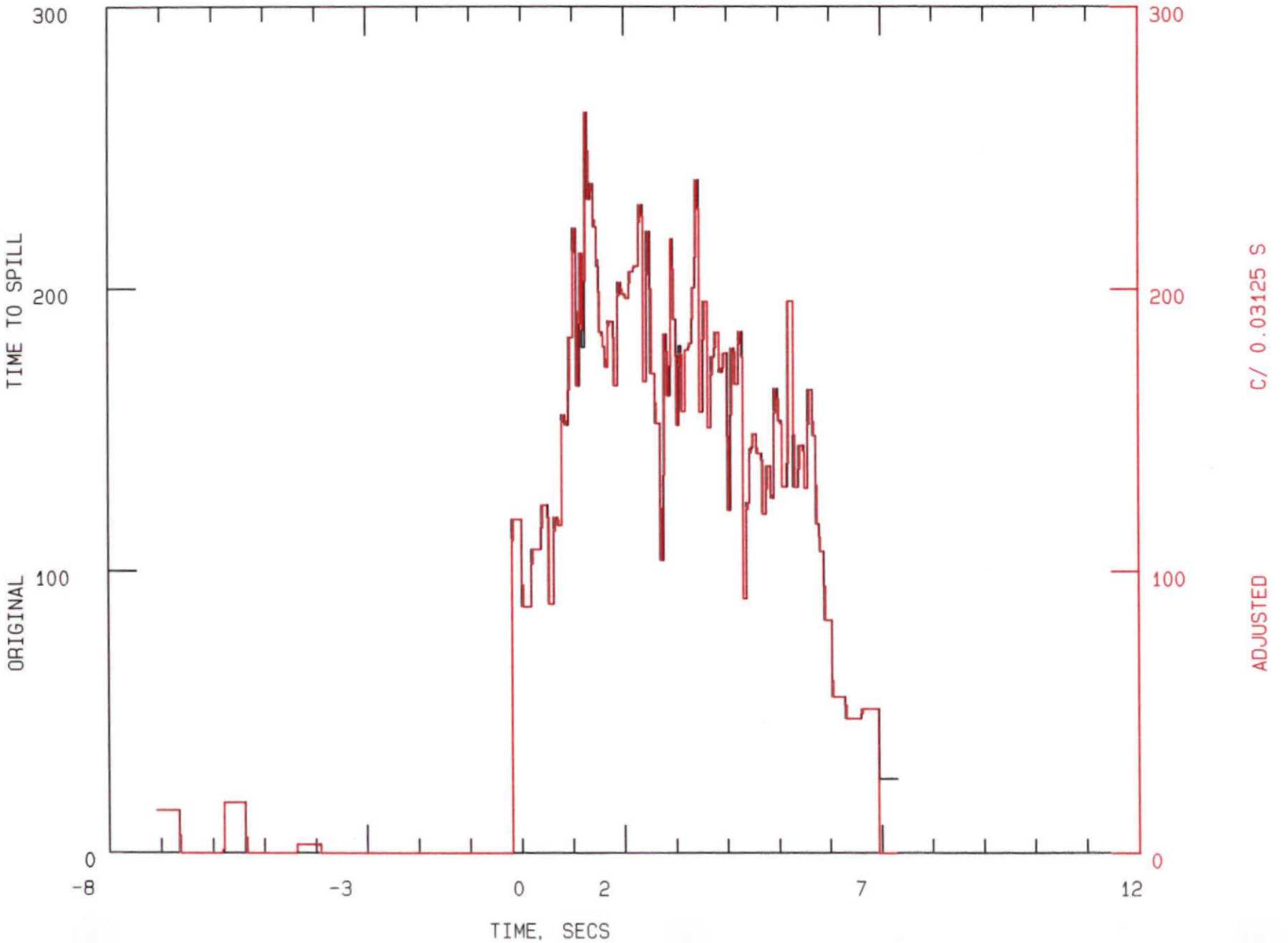
31/12/96

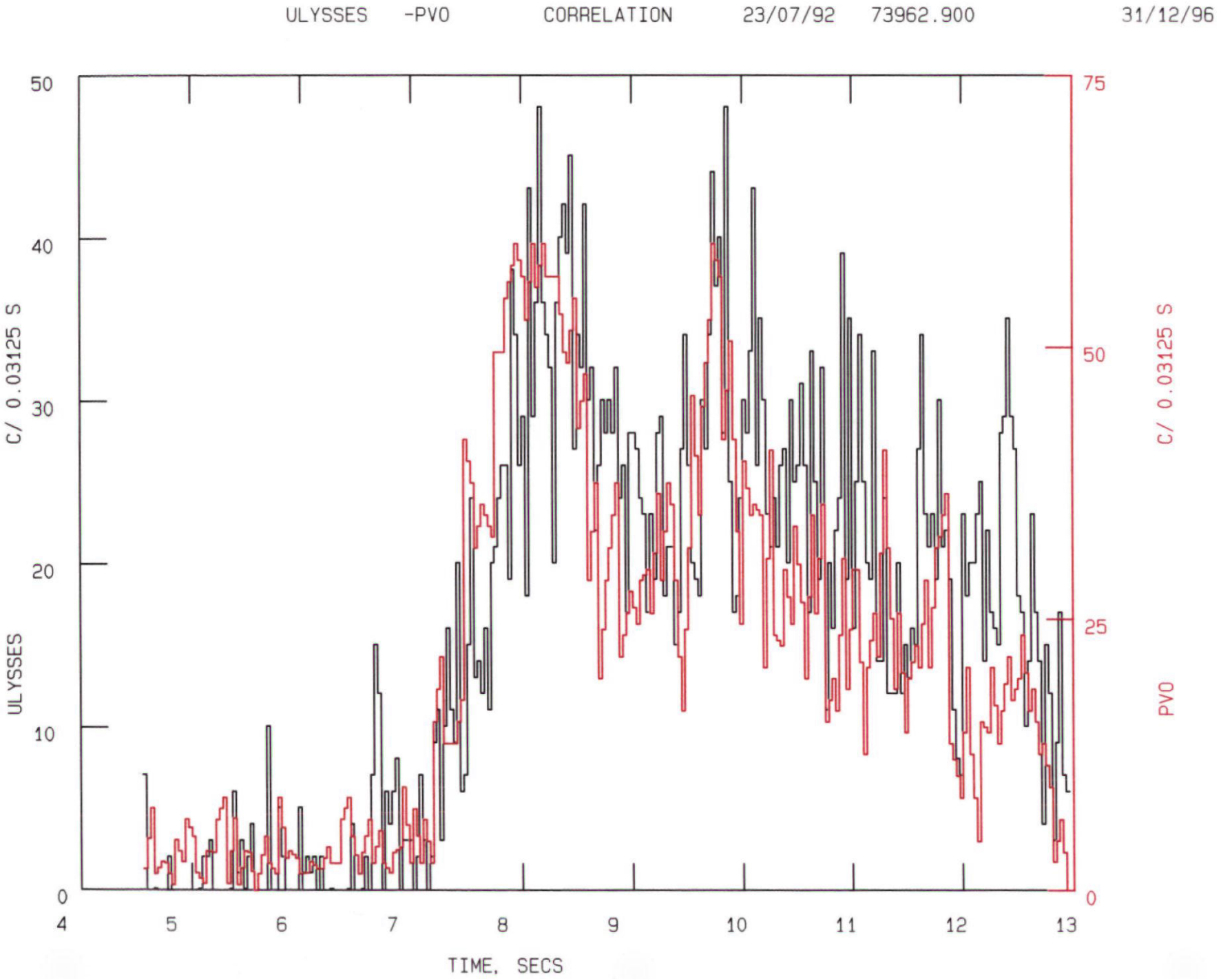
ULYSSES -SIGMA CORRELATION 23/07/92 73962.900



ORIGINAL AND ADJUSTED SIGMA TIME HISTORIES 23/ 7/92 72188.323

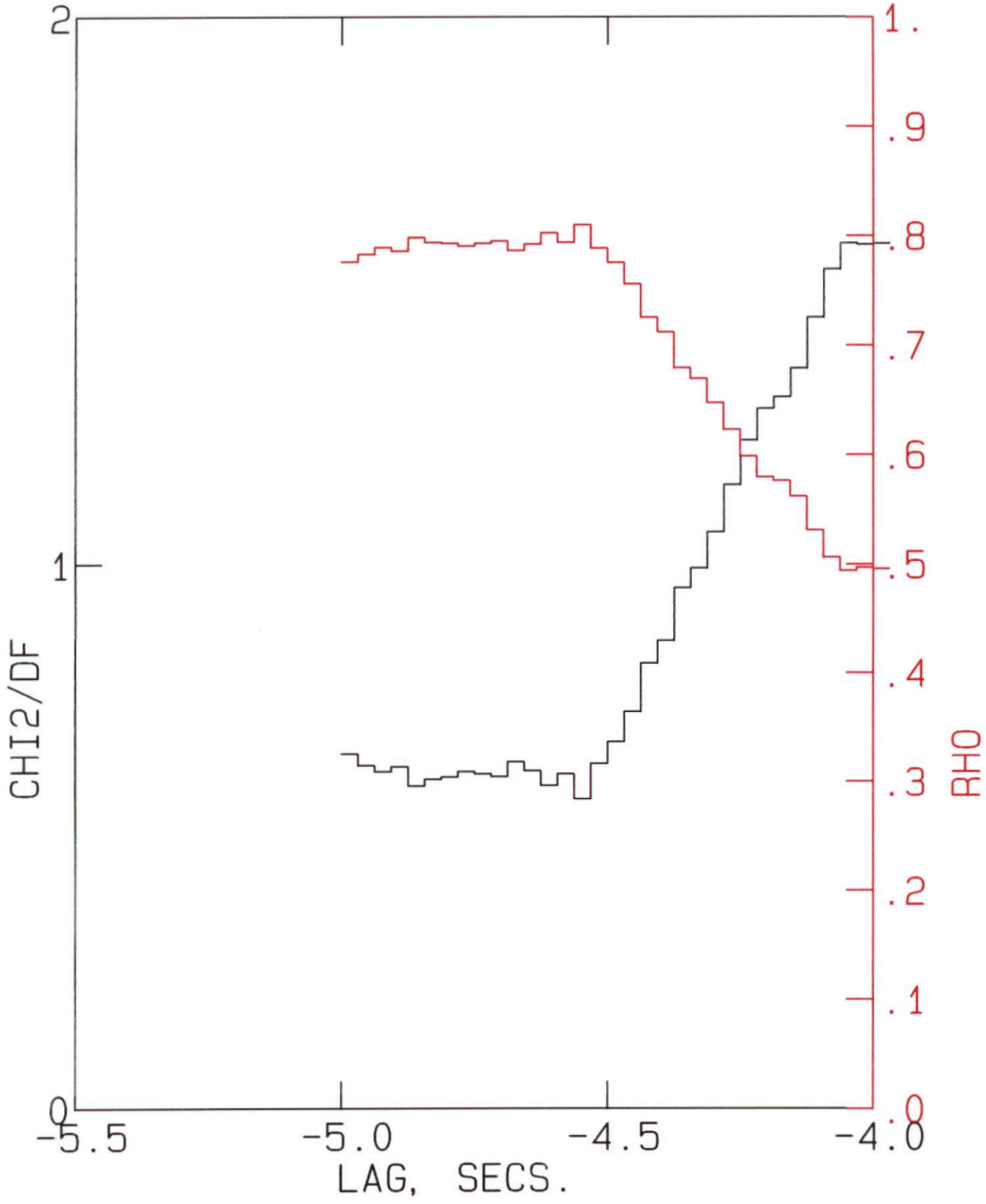
31/12/96




ULYSSES -PVO CORRELATION 23/07/92 73962.900 31/12/96
50
40
30
20
10
0
C/ 0.03125 S
ULYSSES
75
50
25
0
C/ 0.03125 S
PVO
4
5
6
7
8
9
10
11
12
13
TIME, SECS

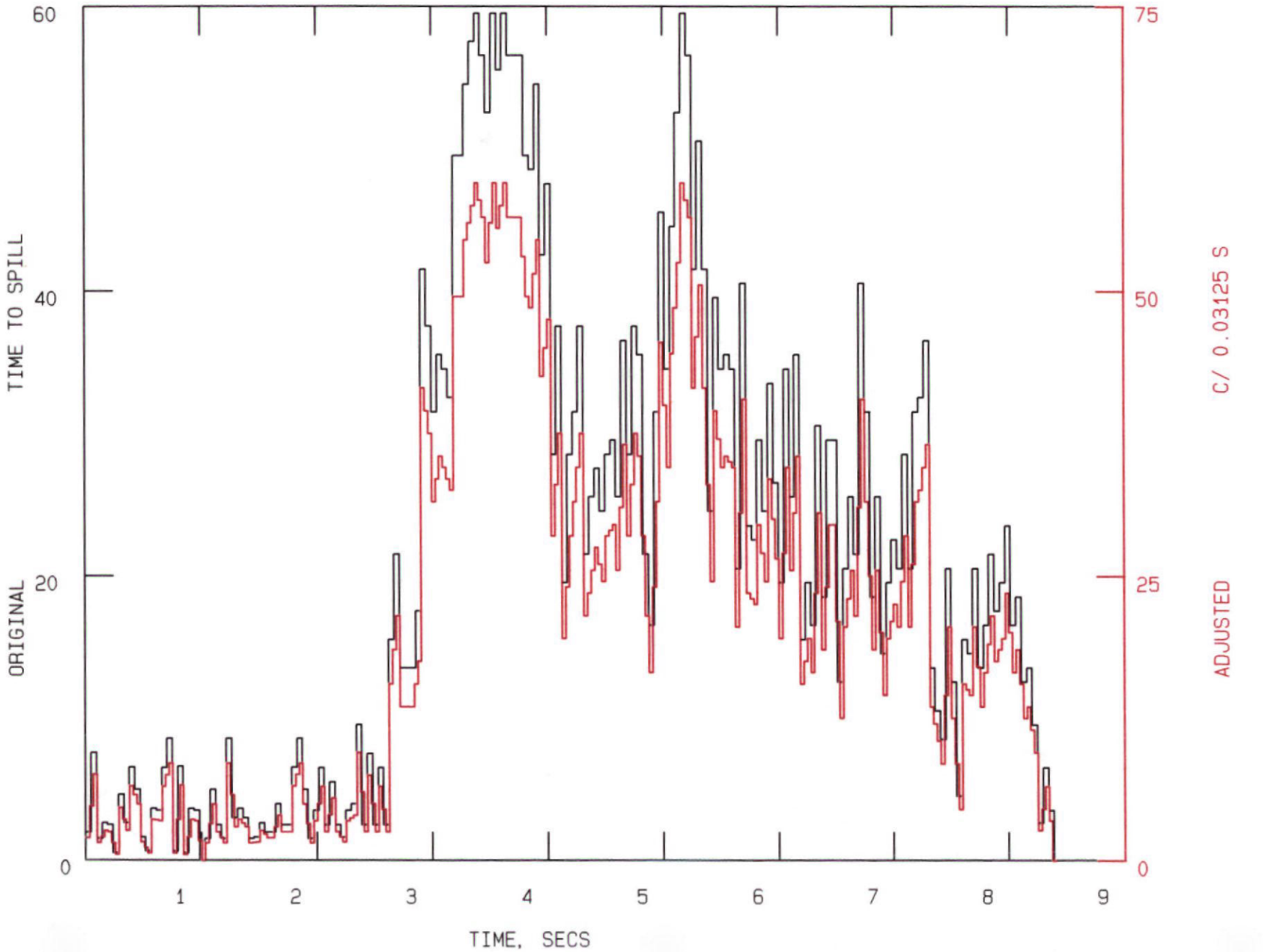
31/12/96

ULYSSES -PVO CORRELATION 23/07/92 73962.900



ORIGINAL AND ADJUSTED PVO TIME HISTORIES 23/07/92 72694.108

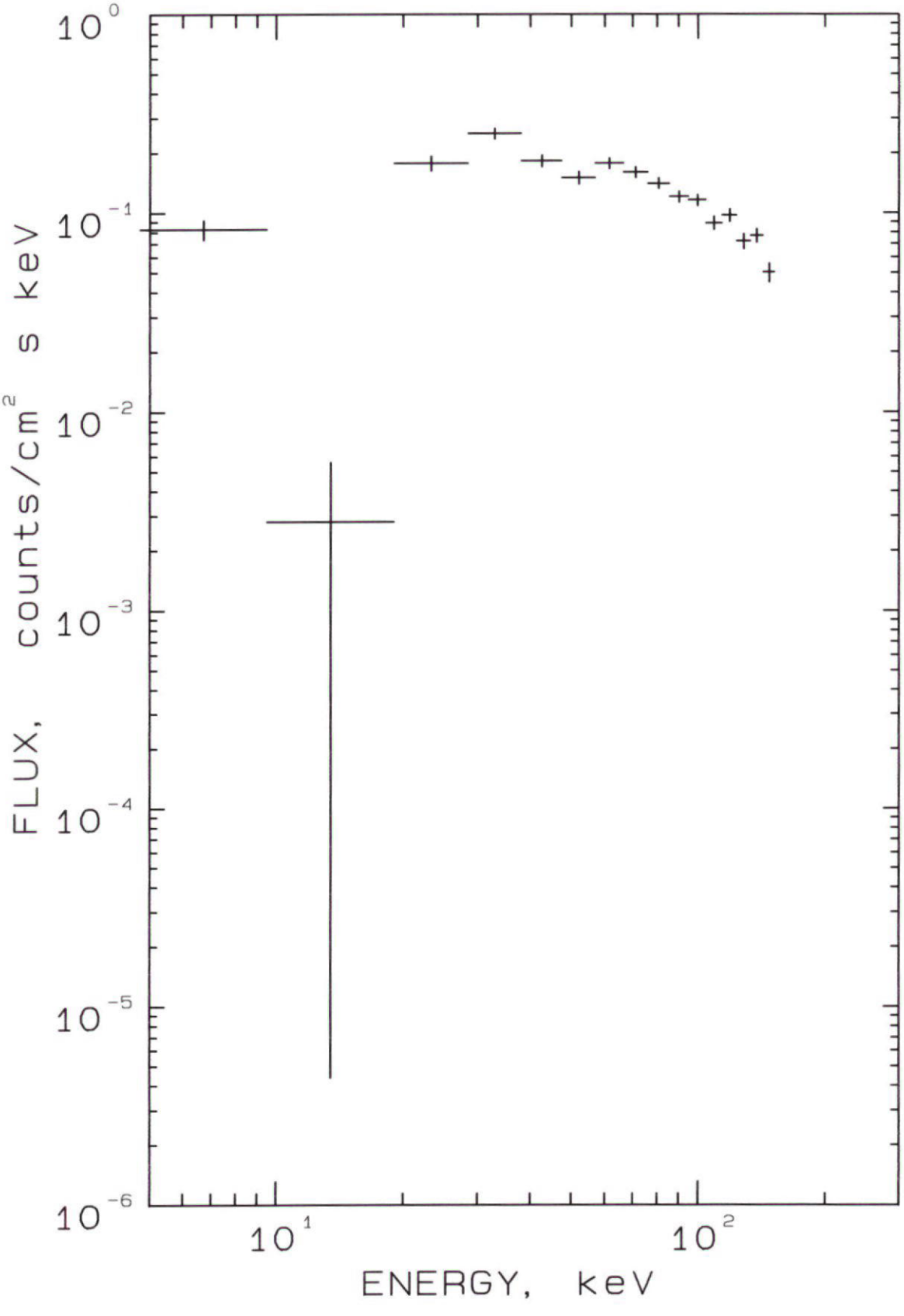
31/12/96

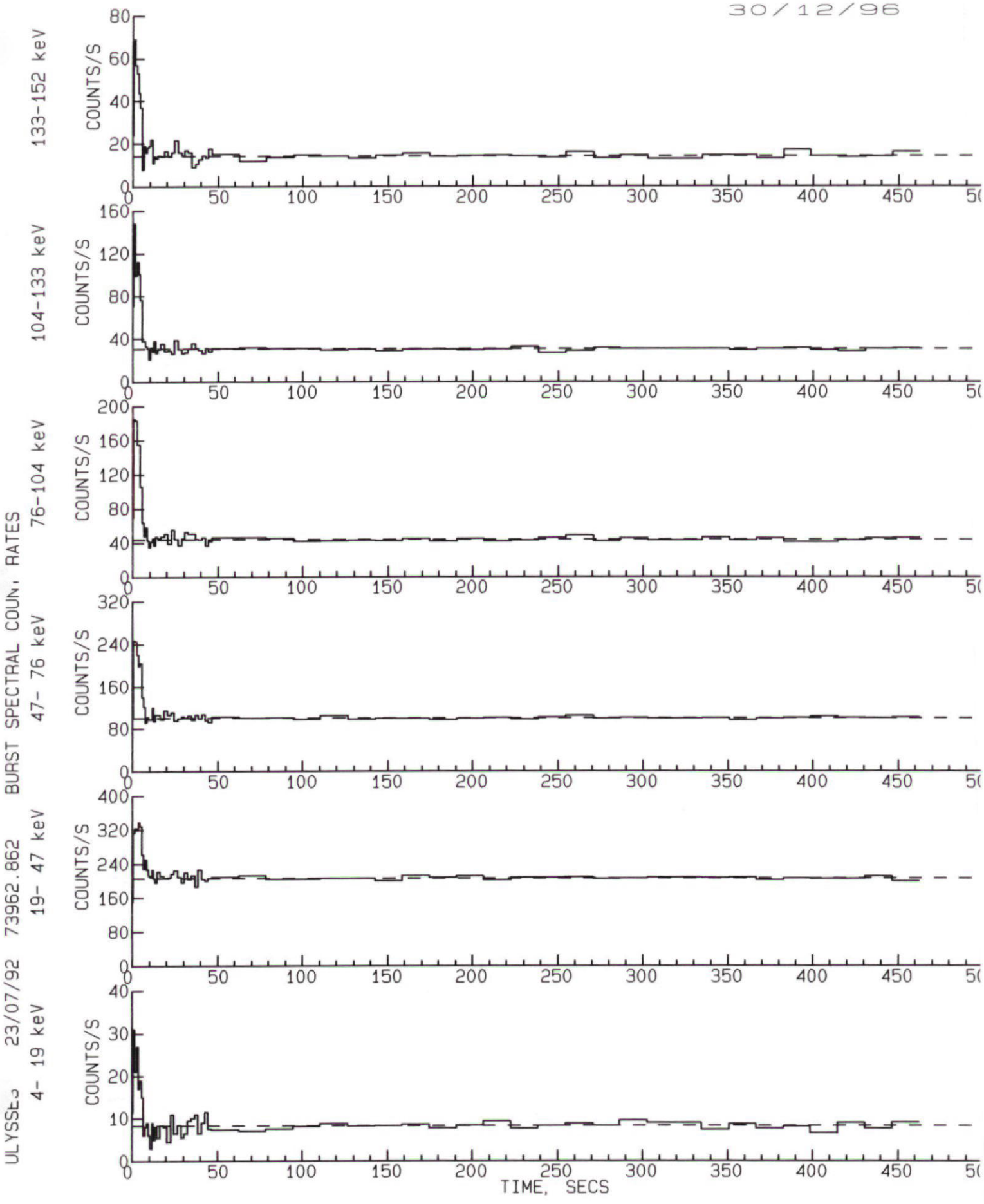


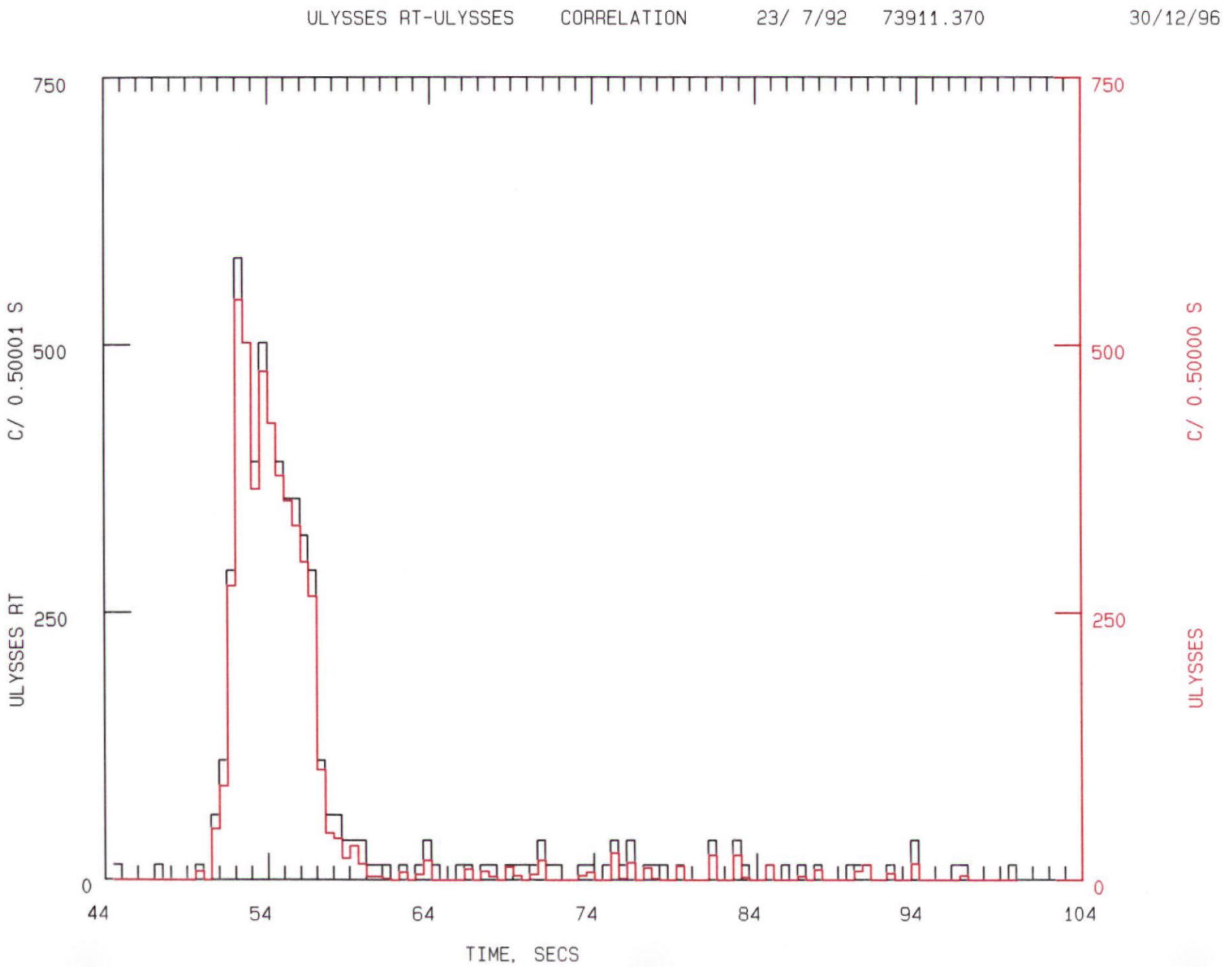
30/12/96

ULYSSES 23/07/92 73962.862

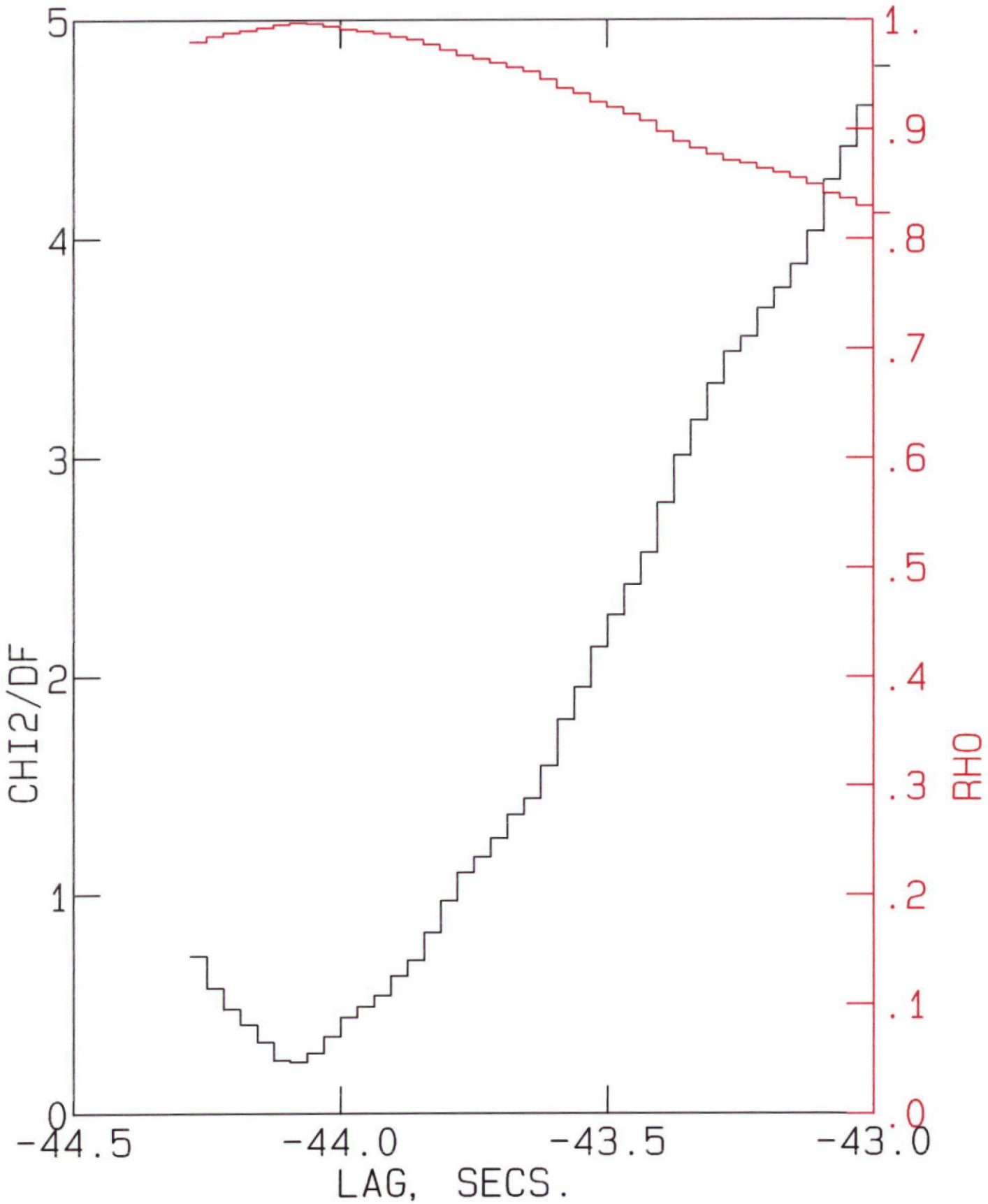
SPECTRUM INTEGRATED OVER 20.6 SECONDS, INTERVALS 2 TO 20

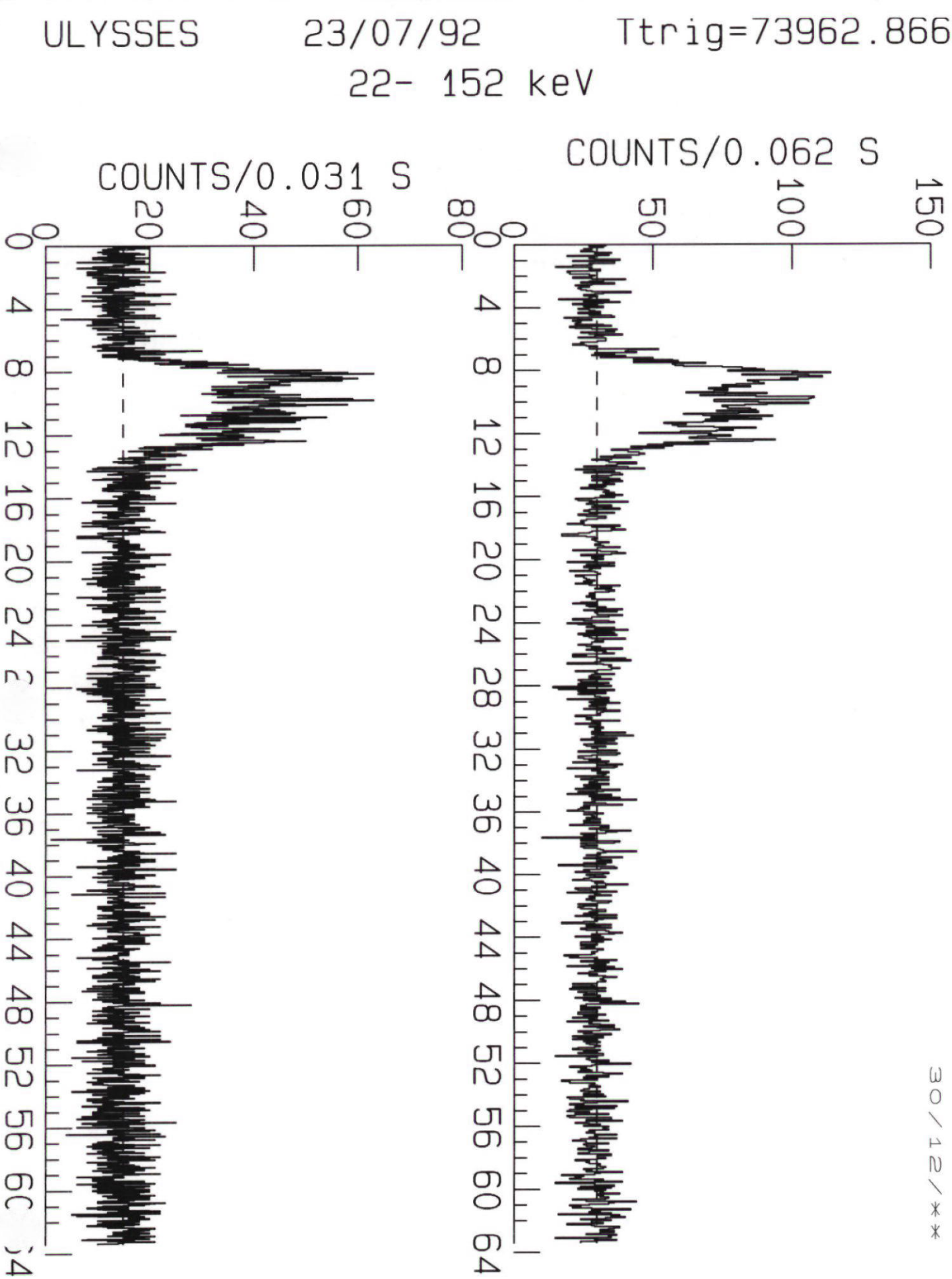



30/12/96
ULYSSES 23/07/92 73962.862 BURST SPECTRAL COUNT RATES
4- 19 keV
19- 47 keV
47- 76 keV
76-104 keV
104-133 keV
133-152 keV
COUNTS/S
TIME, SECS


ULYSSES RT-ULYSSES CORRELATION 23/ 7/92 73911.370 30/12/96
750
500
250
0
C/ 0.50001 S
ULYSSES RT
750
500
250
0
C/ 0.50000 S
ULYSSES
44
54
64
74
84
94
104
TIME, SECS

ULYSSES RT-ULYSSES CORRELATION 23/ 7/92 73911.370



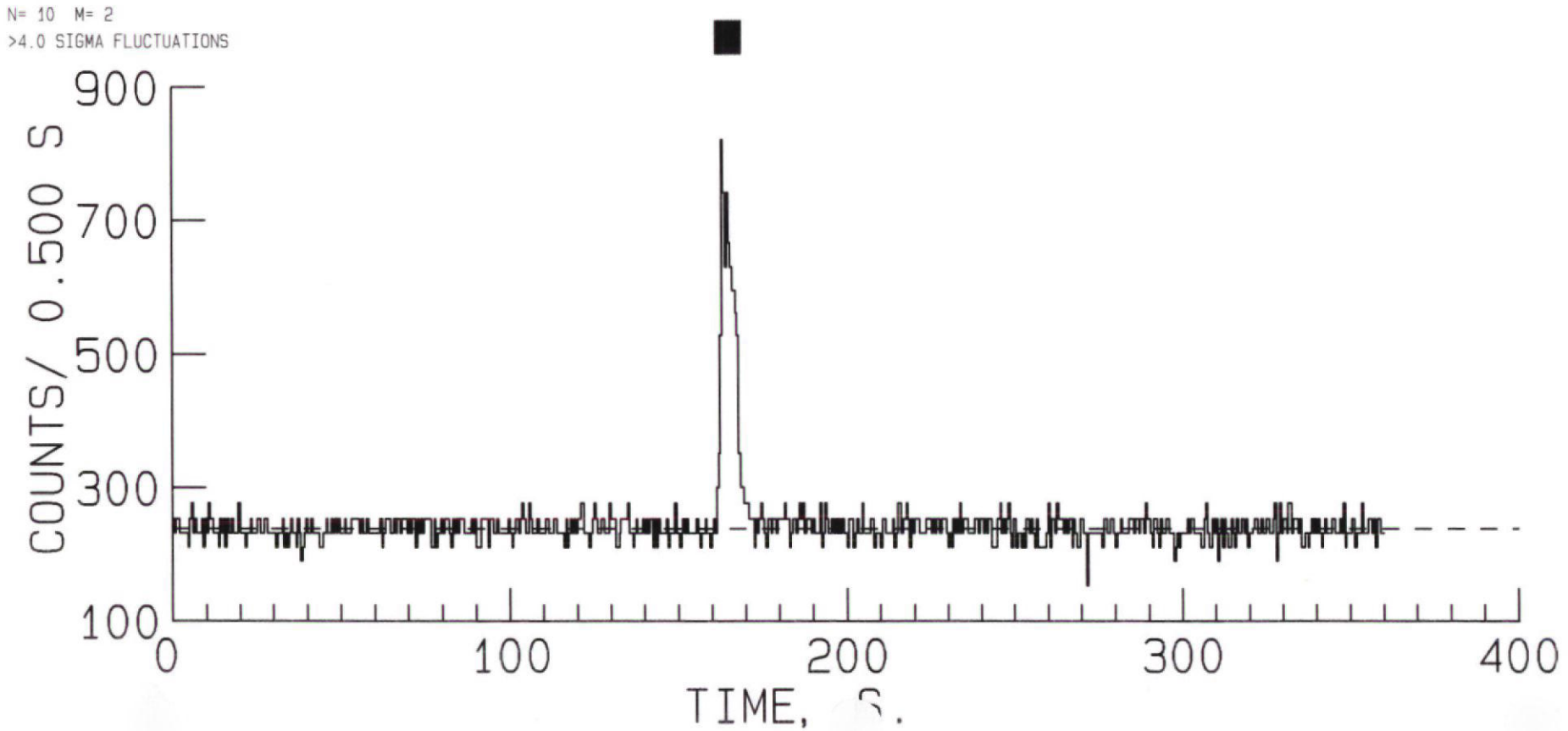

ULYSSES 23/07/92 Ttrig=73962.866
22- 152 keV
COUNTS/0.031 S
0 20 40 60 80
0 4 8 12 16 20 24 28 32 36 40 44 48 52 56 60 64
COUNTS/0.062 S
0 50 100 150
30/12/**

ULYSSES RT

30/12/96

23/ 7/92 73800.369 s

22- 152 keV



From sammy@astro.ucla.edu Thu Dec 5 10:39 PST 1996
From: sammy@astro.ucla.edu
To: khurley@sunspot.ssl.berkeley.edu (Kevin Hurley)
Subject: Re: IPN3
Date: Thu, 05 Dec 96 10:39:35 -0800
X-Mts: smtp

Good idea about doing a final check. Here is my target list:

910122 ✓
910219 ✓
911118 Re-do - JL's + my PVO times disagree by 1.4 s ✓
920325 ✓
920406 ✓
920501 ✓
920525 ✓
920711 ✓
920720 ✓
920723 ✓

I believe that 920406 was further reduced. You sent me the new, smaller box for that, but I decided to stick with the larger box because I want a consistent sample of boxes and the others weren't further reduced.

I'm glad I asked you about the aberration - I never would have thought of that!

Sammy

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SPACE PHYSICS RESEARCH GROUP
SPACE SCIENCES LABORATORY
BERKELEY, CALIFORNIA 94720

April 25, 1994

Dr. R. Hudec
Ondrejov Observatory
Ondrejov 25165
Czech Republic

Dear Rene,

Enclosed are print-outs and plots of the small error boxes above declination -20°. These are 19 Feb 91, 30 Apr 91, 04 Nov 91, 26 Nov 91, 25 Mar 92, 11 Jul 92, 20 Jul 92, and 23 Jul 92. They are still preliminary, but I do not expect them to change substantially. For each burst, there are two plots. Usually one of them covers a relatively large area, while the other zooms in on the error box. Please note that in these plots, right ascension does not go in the usual direction, but rather, increases from left to right. In the print-outs, you will find the coordinates of all the intersections in the plots, which define the error box. There are two intersections printed out, so just reject the one which is not appropriate.

Yours truly,

Kevin

Kevin Hurley

From root Wed Apr 20 00:44 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA18144; Wed, 20 Apr 94 00:43:48
Received: from asu.cas.cz ([147.231.24.1]) by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
id AA25627; Wed, 20 Apr 1994 00:49:34 +0800
Received: by asu.cas.cz (4.1/SMI-4.2)
id AA14008; Wed, 20 Apr 94 09:51:40 +0200
Date: Wed, 20 Apr 94 09:51:40 +0200
From: rhudec@asu.cas.cz (Rene HUDEC)
Message-Id: <9404200751.AA14008@asu.cas.cz>
To: khurley@space6.ssl.berkeley.edu
Subject: IPN3 positions
Content-Length: 789
Status: R

Dear Kevin,
we have started the CCD imaging of northern (above -20 deg declination) IPN3 positions from your e-mail list from 1993. We use our 65 cm CCD telescope with FOV of 10 x 13 It would be helpful to known the exact position of your IPN error boxes i.e the corresponding corners for the evaluation of obtained frames. Could you perhaps help us in this direction? The most convenient for us would be to receive the corresponding plots if possible. Thank you.
Best regards
Rene Hudec
NB With the above mentuioned telescope, we achieve typically lim mag 21 in unfiltered 2 min exposure and correspondingly deeper in longer exposures. One of our ideas is to get the UBVRI photometry on longer-term basis and to look for possible variability.

19 Feb 91 ✓
30 Apr 91 ✓
04 Nov 91 ✓
26 Nov 91 ✓
25 Mar 92 ✓
11 Jul 92 ✓
20 Jul 92 ✓
23 Jul 92

From bld@abeach.gsfc.nasa.gov Thu Apr 6 12:03 PDT 1995
From: bld@abeach.gsfc.nasa.gov (Brenda Dingus)
Subject: 23 July 1992 burst
To: khurley@sunspot.ssl.berkeley.edu
Date: Thu, 6 Apr 1995 15:03:25 -0400 (EDT)
Mime-Version: 1.0
Content-Transfer-Encoding: 7bit

Hi Kevin,

We've been looking for delayed emission from a Ulysses burst and usually don't see much. However, there is a nearly 4 sigma excess in the orbit after the burst of 23 July 1992. SIGMA apparently saw this burst, so do you have an annulus? Our location is about l=115, b=-12, but we only have a few gammas of low energy, so the position isn't great.

Also, what does SROSS-C mean in the listing that you sent? Are these earth crossing times?

Brenda

From root Fri Mar 11 15:16 1994
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
        id AA05898; Fri, 11 Mar 94 15:16:33
Received: from sun.nofs.navy.mil (SUN-GW.NOFS.NAVY.MIL) by sunspot.ssl.berkeley.edu (5.0/SMI-S
        id AA21943; Fri, 11 Mar 1994 14:24:00 +0800
Received: by sun.nofs.navy.mil (4.1/SMI-4.1)
        id AA05916; Fri, 11 Mar 94 15:22:55-070
Date: Fri, 11 Mar 94 15:22:55-070
From: cbl@nofs.navy.mil (Chris Luginbuhl)
Message-Id: <9403112222.AA05916@sun.nofs.navy.mil>
To: khurley@space6.ssl.berkeley.edu
Subject: IPN3 Localizations
Cc: cbl@nofs.navy.mil, fjv@nofs.navy.mil
Content-Length: 1417
Status: RO

Hi Kevin,

Fred Vrba and I are continuing in our efforts to get UBVI photometry of your the IPN3 localizations. In the coming month we hope to observe the following six fields: per your recommendation in the June '93 emailing with preliminary positions, we're checking with you for any updates on the positions (# from June 93 list):

#	DATE
2	19 FEB 1991
6	04 NOV 1991
7	09 NOV 1991
13	01 MAY 1992
14	17 MAY 1992
17	20 JUL 1992

Also, we have already obtained UBVI frames of the following fields:

#	DATE
11	25 MAR 1992
16	11 JUL 1992
18	23 JUL 1992

Updates for these would also be helpful, though it might have been smarter to check on this *before* observations!

In addition to any improvements in RA/DEC of the box centers, we could also use the error boxes for these at some time, to compare more carefully with any interesting objects we may find. We already have an error box for the 11 July 1992 event (FAXed by you on 7 Sept '93).

For your information, our observations to date have turned up one or two interesting objects (one very faint blue stellar object just outside the 11 July 92 error box, another not too faint galaxy/galaxy cluster), but we'll wait on further proclamations until we know if the boxes have moved!

Thanks!

Chris Luginbuhl
Fred Vrba

91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/0
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

From root Wed Dec 8 07:58 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

DATE	TIME	PVO RESPONSE
90/11/11	21:49	N/O
90/11/12	14:57	N/O
90/11/16	01:42	N/O
90/11/19	18:08	N/O
90/11/21	00:04	N/O
90/11/21	18:09	N/O
90/12/02	13:45	N/O
90/12/21	00:30	N/O
90/12/25	05:50	N/O
91/01/17	00:57	N/O
91/01/24	11:50	N/O
91/02/04	08:58	N/O
91/02/04	14:19	N/O
91/02/04	14:58	N/O
91/02/17	02:59	N/O
91/03/14	22:56	N/O
91/03/15	22:55	N/O
91/04/04	17:17	(NO)
91/05/18	17:10	N/O
91/05/23	19:03	N/O
91/05/27	23:44	N/O
91/05/28	21:26	N/O
91/06/02	22:55	N/O
91/06/09	00:48	N/O
91/06/29	19:55	N/O
91/07/09	20:22	N/O
91/07/17	13:07	N/O
91/08/03	08:24	N/O
91/08/15	12:34	N/O
91/08/15	14:24	N/O
91/08/16	01:57	(NO)
91/09/05	23:48	N/O
91/09/16	21:58	N/O
91/09/25	03:35	N/O
91/09/26	18:25	N/O
91/09/30	11:55	N/O
91/10/03	00:39	N/O
91/10/04	01:27	N/O
91/10/06	09:01	(NO)
91/10/22	04:13	N/O
91/10/25	21:25	N/O
91/11/06	03:42	N/O
91/11/14	01:40	N/O
91/11/17	01:58	N/O
91/12/05	23:04	N/O

FAXCOVER

DANISH SPACE RESEARCH INSTITUTE
GL. LUNDTOFTEVEJ 7
DK-2800 LYNGBY
DENMARK

PHONE: +45 42 88 22 77 TELEFAX: +45 45 93 02 83 TELEX: 37198 danru dk

DATE: Nov 23, 1993

From: Alberto J. CASTRO-TIRADO

TO : Kevin HURLEY

FAX no
Name : 510 643 8640

Dear Kevin.

Thank you for you answer. Enclosed I send you the list of CONFIRMED 69 GRBs plus 14 CANDIDATES. Now you may fill the WATCH response in the Master GRB list for WATCH-GRANAT in the period 1/1/90 – 25/9/92.

GRB 920321 (at 13:00:44) is a ≤ 1 s burst in WATCH data, so I think it could be the same event seen by Ulysses. We do not have better time resolution.

The other repeater is 900126/920311. The two error boxes are reported by 1°, at $\sim \alpha = 08\ 46$ $\delta = -38$ (1450.0)

Kind regards,

Alberto

First GRANAT/WATCH
Gamma-Ray Burst
Catalogue

UT date (yymmdd)	U.T. (hh:mm:ss)
900118	17:40:48
900120	20:37:33
900123a	01:42:13
900123b	18:44:17
900126	18:04:27
900222	11:56:35
900308	09:32:02
900327	10:24:28
900404	17:54:36
900413	10:11:21
900708a	11:30:21
900708b	18:44:53
900901	01:35:47
900925	20:25:22
900929	01:49:18
901009	00:15:46
901015b	08:44:48
901027	04:21:07
901112	14:57:37
901116	01:42:10
901119	18:08:32
901219	21:52:43
910117	00:57:51
910122	15:13:40
910202	20:57:35
910219	11:45:25
910310	13:02:06
910312	12:43:09
910425	00:37:52
910517	05:02:20
910627	04:29:24
910717a	04:44:07
910717b	13:07:25
910721	19:30:12
910723	14:06:20
910814	19:14:31
910815	14:24:32
910817	17:09:26
910818	13:44:46
910821	10:33:36
910901	05:24:14
910925	03:35:36
910927	23:26:53
911016	11:03:31
911018	05:32:00
911022	04:13:58
911202	20:28:51
911205	23:04:41
911209	18:36:00
920105	17:41:17
920116	18:30:35
920130	00:29:47
920302	06:16:54
920307	00:18:06
920311	02:20:20
920325	17:17:37
920615	14:24:56
920714	13:04:52
920718a	14:41:16
920718b	21:32:47
920720	05:53:04
920723a	01:00:44
920723b	20:03:11
920814	06:10:25
920902	00:29:04
920903a	01:36:15
920903b	23:28:52
920925a	19:30:43
920925b	20:45:14
920925c	22:46:14

CANDIDATES

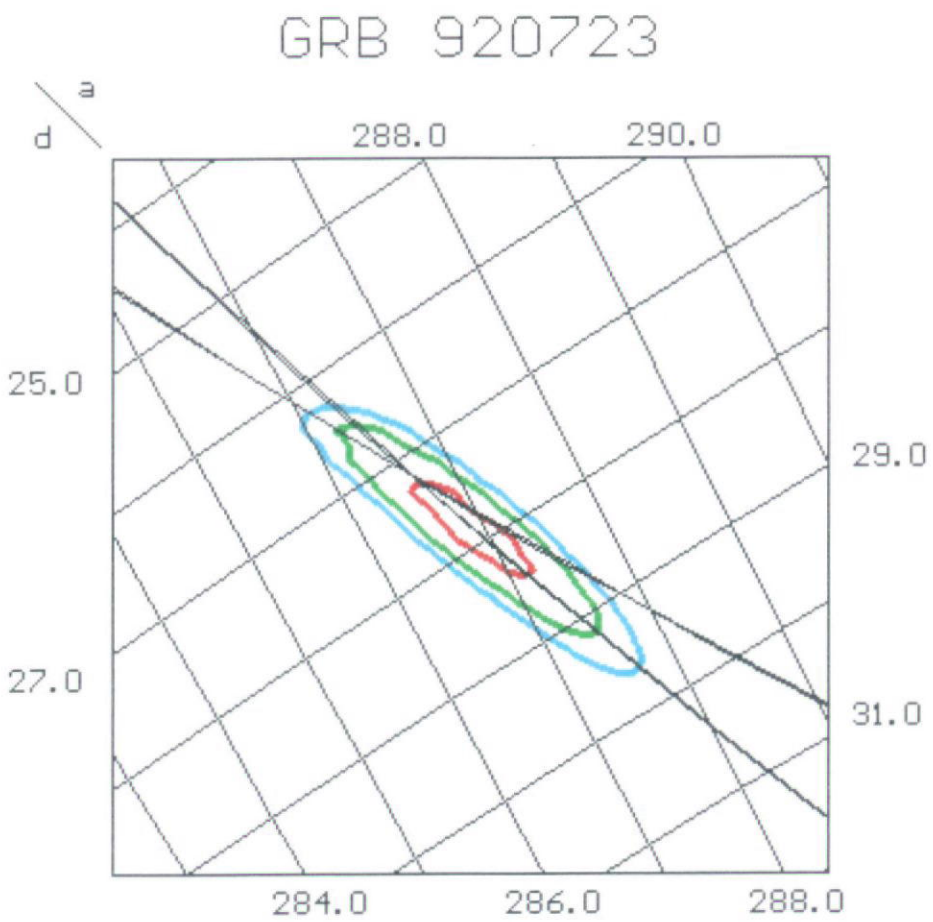
UT date (yymmdd)	U.T. (hh:mm:ss)
900415	06:20:58
900603	06:20:50
900616	03:56:50
900618	23:12:22
900625	22:04:16
900628	11:17:53
900815	11:35:12
900914	04:46:40
901015a	02:42:16
910408	22:24:18
910414	07:28:27
910816	01:57:40
920314	05:48:32
920321	13:00:49
920721	06:17:25

From root Tue Oct 26 14:46 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA19465; Tue, 26 Oct 93 14:46:11
Received: from NMSU.Edu (dns1.NMSU.Edu) by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA25470; Tue, 26 Oct 93 14:50:44 PDT
From: tharriso@nmsu.edu
Received: from vega (vega.NMSU.Edu) by NMSU.Edu (4.1/NMSU-1.18)
        id AA10503; Tue, 26 Oct 93 15:51:30 MDT
Date: Tue, 26 Oct 93 15:51:30 MDT
Message-Id: <9310262151.AA10503@NMSU.Edu>
Received: by vega (4.1/NMSU)
        id AA00854; Tue, 26 Oct 93 15:48:25 MDT
To: khurley@space6.ssl.berkeley.edu
Subject: IPN info
Status: R

Kevin- Bernie said you could provide us with the corners for your most recent IPN annuli. The two fields we need to have the corner information for are GRB920711 and 920723.

Bernie and I were also wondering if it is possible to shift the IPN track 1 or 2 minutes north for the GRB910601 event. We have a couple of objects in this direction, and are interested in how absolute the IPN track is for this particular event.

Cheers, Tom


GRB 920723
a
d
288.0
290.0
25.0
27.0
29.0
31.0
284.0
286.0
288.0

From fjv@nofs.navy.mil Thu Oct 7 16:59:42 1993
Date: Thu, 7 Oct 1993 16:57:44 -0700
From: fjv@nofs.navy.mil
To: khurley@sunspot.ssl.berkeley.edu
Content-Length: 1939

Hi Kevin:

Several things to tell/ask you:

First, our OT/QSO paper was finally accepted by ApJ. It will appear in the 20 March, 1994 issue.

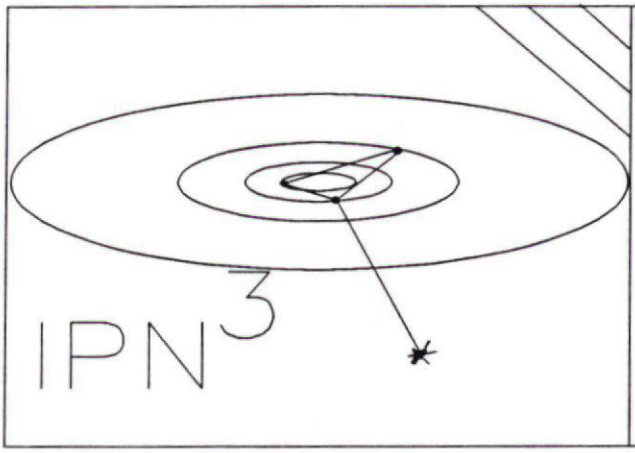
Second, we thank you for the localization box for GBS920711. We indeed have a very blue object at V = 21.8 sitting on the very edge of the error box more or less dead-centered on the long axis. We will try to get an MMT spectrum of it before it disappears for the season in another month or so.

Third, we now have obtained deep CCD photometry for the locaization positions you gave us for GRB920723 and GRB920325. Reductions of the data are in progress. Would you be kind enough to send us the localization error boxes for those as you did for the earlier one?

Finally, I would like to ask you to make a brief presentation, along the lines you suggested, at the OT discussion session Dieter and I are organizing in Huntsville. It will now be held on Wednesday evening between 8-9 PM. While this is a more convenient time for most people, we won't have much time for extended discussions. I really want to keep scientific results out of the discussion, unless they dramatically affect strategies. I am more interested in policies, prospects, and strategies. Gerry Fishman has volunteered to make a short presentation on official policy for the distribution of BATSE positions. I would like for you to talk about small error boxes. My thought is to start the session with 2 (or at most 3) short 5-7 minute talks (you and Gerry for sure). These topics are of broad interest and will be a good way to get discussion started. Can I count on you for a 5-7 min talk? If so, can you give me a working title since I would like to send out a final e-mailing this weekend describing what the form of the discussion will be. Thanks very much in advance and I'm looking forward to seeing you in Huntsville.

Best Wishes, Fred Vrba

FAXED ve



FAX FROM K. HURLEY
UNIVERSITY OF CALIFORNIA
SPACE SCIENCES LABORATORY
BERKELEY, CA. 94720
PHONE: (510) 643-9173
FAX: (510) 643-8640 (OFFICE),-8302 (SECT'Y)
E-MAIL: khurley@sunspot.ssl.berkeley.edu

TO: Arnaud Claret
FAX #: 33 - 1 -69 08 65 77 (Saclay, France)
DATE: August 18, 1993
TOTAL NUMBER OF PAGES: 5

Bonjour Arnaud,

Les localisations des 4 sursauts suivent. Il suffit de dessiner deux anneaux pour chaque sursaut (tu trouveras les coordonnees dans les listings). J'amerais recevoir les mises a jour des localisations SIGMA. Les listings contiennent aussi une liste des satellites utilises pour chaque localisation. Il ne faut pas montrer ni les cercles BATSE ni les cercles WATCH (exception: tu peux montrer le cercle BATSE pour 910122 car il est dans le catalogue). Mais tu peux bien sur montrer les anneaux obtenus avec BATSE, Ulysses, et PVO. Le remerciement doit lire: The 3rd Interplanetary Network Error boxes are courtesy of Kevin Hurley, Michael Sommer, Jerry Fishman, C. Meegan, C. Kouveliotou, J. Laros, and R. Klebesadel.

Je voudrais montrer les localisations SIGMA a Huntsville dans un papier ou on va comparer les localisations WATCH avec le IPN. Serais-tu d'accord? Si oui, quel est le remerciement? En fait, je me demande si ce serait une bonne idee de faire une publication commune dans l'Ap. J. Qu'en penses-tu?

Amities et a bientot

Kevin

PS - as tu une addresse e-mail?

TELEFAX MESSAGE

Commissariat à l'Energie Atomique
Direction des Sciences de la Matière

DAPNIA
SERVICE D'ASTROPHYSIQUE

Date: 18 August 1993

Pages: 1 + 0

From: Arnaud Claret

To: Kevin Burley

Dear Kevin,

I am working with François Pelacz on the 4 GRBs detected so far through the sidelobes of the SIGMA telescope (GRB_910122, GRB_920714, GRB_920723 and GRB_930310). Using a detailled modelling of the arc-shaped images projected on the detector and taking into account the satellite drifts, I have derived new location error boxes which are fully compatible with your results (obtained by the triangulation method).

I intend to present the SIGMA observations of GRBs at the 2nd Compton meeting. As François has already told you, it would be very interesting to present the SIGMA error boxes together with your precise localizations. François mentionned me that you kindly allow us to publish the drawing of annulus but not the explicit coordinates of your localization. Thus, I would like you to communicate me the way to redraw your annulus properly in our figures (coordinates of annulus and drawing procedure if necessary) .

Please send me some informations about the Network, as well as a list of names, in order to write special aknowledgements in our publication. Thanks a lot for the work that you have already done about these GRBs. I hope to meet you at the 2nd Compton meeting.

A. Claret

Adresse: DAPNIA/SAp, CEN Saclay, 91191 Gif sur Yvette Cedex, France
secretariat: (33-1) 69 08 52 18 FAX: (33-1) 69 08 65 77 TELEX: 604 860 Physpac

From root Fri Jul 16 15:29 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
          id AA07838; Fri, 16 Jul 93 15:29:21
Received: from UCBSP.SSL.BERKELEY.EDU by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA21891; Fri, 16 Jul 93 15:30:05 PDT
Message-Id: <9307162230.AA21891@sunspot.ssl.berkeley.edu>
Date: Fri 16 Jul 93 15:31:54-PST
From: $C <046369@essdp2.span.nasa.gov>
To: KHURLEY@sunspot.ssl.berkeley.edu
Subject: [Resent-MM Mail]   DMSP GAMMA-RAY BURST DATA
Status: R

Received: from ESSDP2 by UCBSP.SSL.BERKELEY.EDU via MAIL-11 with
          DECnet; Fri, 16 Jul 93 15:31:29-PST
Date: Fri 16 Jul 93 15:31:29-PST
From: 046369@ESSDP2.SPAN.NASA.GOV
Subject: DMSP GAMMA-RAY BURST DATA
To: "UCBSP::HURLEY"@ESSDP2.SPAN.NASA.GOV

FROM: ESSDP2::TERRELL   (JAMES TERRELL, LOS ALAMOS NATL LAB)
TO: UCBSP::HURLEY (KEVIN HURLEY)
CC:
SUBJ: DMSP GAMMA-RAY BURST DATA, AS OF 16 JULY 1993

HERE ARE SOME NOTES CORRECTING DMSP PEAKTIMES FOR YOUR MASTER BURST LIST.
I HAVE MORE GRAPHS AND INFO TO SEND, BUT HAVE RUN OUT OF TIME.
I WILL SEND MORE INFO AFTER RETURNING 28 JULY--JIM.

```
  27SEP91 84415 YES (8SAA,9YES,10SAA)
  16OCT91 36696 YES (8SAA,9YES,10NR)
   4NOV91 54286 YES (8SR,9YES,10YES)
  27NOV91 15739 YES (8NO,9NO,10YES)
   2DEC91 73733 YES (8YES,9NO@144DEG,10NR)
   9DEC91 66959 N/O (8SR,9SR,10NR,11ND)
  21DEC91 22686 YES (8ND,9NO,10NO,11YES)
  10JAN92 33478 NA  (BLANK) (8ND,9NA,10SAA,11NA)
  10FEB92 35633 YES (8NO,9WEAK,10SAA,11SAA)
   6APR92  9855 N/O (OBSCURED) (8NO@141,10SR,11NO@137DEG)
   1MAY92 76696 N/O (OBSCURED) (8NO@127,10NO@157,11NO@147DEG)
  22JUN92 25506 N/O (8SAA,10NR,11SA)
  28JUN92 76452 YES (8ND,10YES,11NO)
  29JUN92 75897 YES (ALL YES, SOFT)
  14JUL92 47069 NA  (BLANK) (8NA,10SAA,11SR)
  16JUL92 60933 YES (9NO.10YES,11YES)
  20JUL92 11524 N/O (OBSCURED) (8NA@130,10NA@145,11SR)
  23JUL92 72188 N/O (OBSCURED) (8ND,10NA@148,11NR)
  10AUG92 79599 YES?(8YES?,10NA,11NA) (LONG SOFT PEAK)
   4OCT92 50421 YES (8YES,10YES,11SR)
  23NOV92 22727 YES (8YES,10YES,1SR) (NOT AT 22712)
  23NOV92 46542 YES (8NR,10SR,11YES) (NOT AT 46584, BATSE GRB)
   7DEC92 57649 YES (8YES,10YES,11YES)
   6JAN93 55260 YES (8SAA,10YES,11SR)
  12JAN93 55082 YES (8YES,10NO@138,11VERYWEAK) (8:BIG PEAK AT 55202)
  20JAN93 84779 YES (8YES,10,YES,11YES) (NO, AT 84700!)
```

Dezalay -> KH 7/93

DATE	U.T.	Nr UGB	Event Nature
1992-06-28	21:14:12.932	473-a	GRB
1992-07-08	16:30:01.944	479-a	Solar Flare
1992-07-14	13:04:30.544	482-a	GRB
1992-07-16	16:55:27.526	484-a	Solar Flare
1992-07-18	21.32:44.275	485-a	GRB
1992-07-20	03:12:04.391	486-a	GRB
1992-07-23	00:59:16.612	488-a	GRB
1992-07-23	20:03:08.386	489-a	GRB
1992-07-23	21:48:54.786	489-b	GRB
1992-08-16	12:37:31.102	493-a	GRB
1992-08-26	02:47:07.423	500-a	GRB
1992-08-30	01:45:19.113	503-a	GRB
1992-09-02	00:29:00.916	504-a	GRB
1992-09-03	00:49:18.142	505-a	GRB
1992-09-03	01:37:17.202	505-b	GRB ?
1992-09-03	23:29:01.404	506-a	GRB
1992-09-04	04:41:38.922	506-b	GRB
1992-09-05	15:56:15.844	507-a	Solar Flare
1992-09-06	18:45:29.617	507-b	Solar Flare
1992-09-06	20:56:31.135	507-c	Solar Flare
1992-09-14	07:14:50.878	508-a	Unknown
1992-09-18	09:41:19.340	511-a	GRB
1992-09-25	20:30:41.410	517-a	GRB
1992-09-25	21:40:47.837	517-b	No Available data
1992-09-30	00:47:46.089	518-a	Unknown
1992-10-04	22:19:05.006	522-a	Solar Flare
1992-10-12	13:14:44.786	523-a	Solar Flare
1992-10-13	23:01:01.582	524-a	GRB
1992-10-25	13:53:16.735	527-a	GRB
1992-10-27	06:52:02.336	528-a	Solar Flare
1992-10-29	15:23:10.349	530-a	SF ou Unknown?
1992-10-29	16:11:39.173	530-b	SF ou Unknown?
1992-10-29	16:26:49.045	530-c	SF ou Unknown?
1992-11-23	16:32:04.840	534-a	SF ou Unknown?
1992-11-23	17:11:35.698	534-b	SF ou Unknown?

From nl@dsri.dk Sun May 16 05:45:26 1993
Date: Sun, 16 May 93 14:42:56 +0200
From: Niels Lund <nl@dsri.dk>
To: khurley@ucbssl.berkeley.edu
Content-Length: 3167

Dear Kevin:

Thanks for your mail and fax. I will prepare a table of the relevant missions.
(By the way, is CORONAS a russian mission?)

Location Accuracy.
You are right that 3 sigma 15" is not 1000 times better than 60". But
for how many bursts do you really reach 60" and feel confident about
it? And what I gave you was the localization at the detection threshold (6
detected photons). Look at the description of HETE. There it is claimed
that you can reach 6" with the UV cameras which must have pixels about an
arcminute square on the sky. To do that you must have assumed quite a few
photons? So I dont feel so bad about claiming a 3 sigma localization
accuracy about equal to the pixel size in the BALLERINA telescopes.
In BALLERINA we may have to settle for CCD pixels corresponding to 4"
on the sky, this corresponds to about 1000 pixels per degree (linear).
With a telescope point spread function of 5" rms we can in principle
do centroiding to 0.5" (1 sigma) with only 100 photons - that is not
many photons in a gamma burst. So our real problem will be to keep
the telescopes steady or at least to know where they point. And that is
a problem to which I honestly dont know the answer today. That, I feel,
is what should be clarified in the assessment study.

On comparisons of WATCH positions and IPN positions. That we should
definitely do. When I have finished this proposal business I will send
you the data for our 18 localized bursts (16 from GRANAT, 2 from EURECA).

On the July 23 1992 burst. (your fax) I do not have the data at hand here
(I am doing this from home) so I cannot comment on the timing. But on the
localization I say that I am unhappy seing the 10' radius floating
around without comment. The russians (Terekhov, Denisenko) are preparing
a paper on this event and initially they came up with a 3 sigma error
radius of 2 degrees or something like that. So I analyzed the event using
their own methods, and found that the statistical error radius (3 sigma!)
was in fact 10' - in good agreement with an analytical expression Soren
have developed here. I have sent this information to IKI and warned them
that for events as strong as this one the error will be determined by the
systematic rather than by the statistical errors - and now I see that they
happily spread the revised value, apparently without the nescessary words
of caution. I think that as of today we cannot claim anything better than
30' 3 sigma on any event we have.

The orbit question.
I agree we should look carefully at this. But also remember that this
mission if successfull is likely to be launched between 2000 and 2003.
And that is the next solar maximum according to my cook book. I tell
you, it is no fun to have all-sky monitors in interplanetary space when
the Sun is active!

best regards

niels

PS: thanks for your burst lists, I will come back to this after BALLERINA.
On gb910219: I still have not gotten the last axis fixed for GRANAT.
But I think that there is not at present any large disagreement between
the IPN position and the WATCH position. I think that the 3 sigma WATCH
limit is now consistent with both IPN and Hudecs transient.

niels

From khurley@space6.ssl.berkeley.edu Wed May 12 18:07:16 1993
Date: Wed, 12 May 93 18:06:22
From: khurley@space6.ssl.berkeley.edu
Content-Length: 2064

Here are the replies to your MO list.

Oct 19 1992 (293): No BATSE or Ulysses triggers
Oct 21 1992 (295): No Ulysses triggers, but BATSE solar flare at 76002
Oct 22 1992 (296): BATSE and Ulysses trigger for one event which may be your
55471 s burst
BATSE event at 80903 which may correspond to your 79754
event, but no Ulysses trigger
Oct 24 1992 (298): No BATSE or Ulysses triggers

If you can give me the MO coordinates for any day during this period, I can define a Ulysses crossing window and look in the real time data for your events.

Here are a couple of things that have come up.

1. The COMPTEL team is publishing a paper showing their locations of the bursts detected in their first year of operation. They asked whether they could show the Ulysses/BATSE annuli for these events (but not publish the numbers), and we agreed that they could (none of us are co-authors, but they will reference and acknowledge us). Some of these bursts were observed by PVO, others weren't, and for still others, I don't know.

In the "don't know category":
April 25 1991, Venus crossing time 01895 s
July 9 1991, Venus crossing time 41481 s

In the "observed" category:
June 27 1991 - but PVO/Earth/Ulysses form a straight line
Aug 14 1991 - ditto
Nov 18 1991 - IPN error box inside the COMPTEL error box

Can you confirm the April or July event? Do you want me to give the COMPTEL team the triangulation results, using PVO, for the others? As it stands now, they have just the BATSE/Ulysses annuli, and they cross the COMPTEL error box. If we gave them the June and August triangulation with PVO, there wouldn't be much difference, since the annuli cross at grazing incidence. The November 18 event is better, since the IPN location gives a fairly small error box inside the COMPTEL error circle. If you agree, let me know what sort of acknowledgment you would like to see.

2. Can you confirm the PVO Tzero for July 23 1992, and give me the PVO coordinates? The IPN location is slightly inconsistent with the SIGMA and WATCH error boxes.

From PELAEZ@cnesta.span.nasa.gov Thu May 13 01:33:44 1993
Date: Thu, 13 May 93 01:34:30 PDT
From: PELAEZ@cnesta.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Content-Length: 82

Les boites d'erreur de la gamma-camera sont donnees a 1 sigma.

Salut

Francois

JLA 10/19/92

Date	Heure Phebus		Sigma	Heure Ulysse	Seance	Cmax Phebus	Cmax Ulysse	Loc. α, δ	Comment.
1991-09-01	19467				327	145			faible
1991-09-07	3910	I		2066	330	177	90		
1991-10-16	39695				355	213			HUS : lim sup
1991-10-18	19936	I		21720	356	553	375		
1991-10-25	77116				362	107			faible
1991-11-19	61954		gca		367	131			faible
1991-12-22	54010	I		53610	381	277	179		
1992-01-10	33540	I	ac	34298	386		151		bdf Phebus faux
1992-01-25	32247		ac/gca		397				HUS : lim sup
1992-02-10	35633		ac		404				HUS : no data
1992-02-18	67459				411				HUS : manque données
1992-02-29	69678				415				HUS : lim sup
1992-03-11	8427	I	ac/gca	7045	422		505	131.6 -36.1	loc Network
1992-03-25	62257	I	ac/gca	64262	430		154		
1992-04-04	81448	I		79239	434		212		
1992-04-05	27698	I	ac	28498	434		91		
1992-04-14	84162	I	gca	84257	441		171		
1992-04-20	7947	I		7573	444		112		
1992-05-19	59421	I		61011	449		268		
1992-06-22	25505	I	ac/gca	23347	468		408		
1992-06-28	76453				473				HUS : no data
1992-07-14	47072	I	ac/gca	46282	482		221	219.9 +5.4	loc Sigma gca
1992-07-20	11529	I	ac/gca	9808	486		227		
1992-07-23	72189	I	ac/gca	73964	489		1084	285.8 +26.7	loc Sigma gca

From pelaez@cnesta.span.cnes.fr Wed Apr 28 06:32:41 1993
X400-Received: by mta mhs-relay.cs.wisc.edu in /PRMD=XNREN/ADMD= /C=US/;
Relayed; Wed, 28 Apr 1993 08:32:06 +0000
X400-Received: by /PRMD=inria/ADMD=atlas/C=fr/; Relayed;
Wed, 28 Apr 1993 08:29:47 +0000
X400-Received: by /PRMD=cnes/ADMD=atlas/C=fr/; Relayed;
Wed, 28 Apr 1993 08:28:35 +0000
Date: Wed, 28 Apr 1993 08:28:35 +0000
X400-Originator: pelaez@cnesta.span.cnes.fr
X400-Recipients: khurley@sunspot.ssl.berkeley.edu
X400-Mts-Identifier: [/PRMD=cnes/ADMD=atlas/C=fr/;736003717@eliot.cnes.fr]
X400-Content-Type: P2-1984 (2)
Content-Identifier: Localisation ...
From: "" <pelaez@cnesta.span.cnes.fr>
To: khurley <khurley@sunspot.ssl.berkeley.edu>
Subject: Localisation de GB910122, GB920714 et GB920723
Content-Length: 618

CESR/SIGMA/F.PELAEZ TOULOUSE, 28/04/1993

Salut Kevin,

voici les positions de GRANAT pour GB910122, GB920714 et GB920723 :

GB910122 : t0 = 15h 13mn 48s 564ms
r = 171607.1077 km
R.A.(2000) = 09h 25mn 29.14s
Decl(2000) = 35d 14' 44"

GB920714 : t0 = 13h 04mn 31s 014ms
r = 148755.7067 km
R.A.(2000) = 08h 12mn 54.84s
Decl(2000) = 71d 20' 52.1"

GB920723 : t0 = 20h 03mn 08s 323ms = 72188.323
r = 173722.0853 km
R.A.(2000) = 08h 47mn 43.53s = 131.932
Decl(2000) = 39d 54' 44.9" = 39.9125

Amities

Francois

	R.A.(1950)		Decl.(1950)	
GB910122				
	19 h 39 mn 42 s	294.925°	-69° 36' 36"	-69.61
	19 h 47 mn 18 s	296.825	-71° 18' 36"	-71.31
	19 h 46 mn 28 s	296.617	-69° 24' 36"	-69.410
	19 h 36 mn 45	294.187	-67° 37' 12"	-67.62

t0 = 15 h 13 mn 48 s 564 ms

Position GRANAT à t0 :

R = 171607.108 km

α_{2000} = 09 h 25 mn 29.14 s

δ_{2000} = 35° 14' 44"

GB920714				
	14 h 39 mn 24 s		-29° 27' 36"	
	14 h 32 mn 21		-28° 33' 36"	
	14 h 39 mn 52 s		-30° 25' 48"	
	14 h 45 mn 36 s		-31° 01' 12	

t0 = 13 h 04 mn 31 s 014 ms

				J2000
GB920723				
	19 h 01 mn 46 s	285.442	+26° 48' 00"	26.800 → 285.947, 26.8
	19 h 05 mn 19 s	286.329	+27° 57' 00"	27.950 → 286.828, 28.0
	19 h 04 mn 22 s	286.092	+26 [illegible] 24"	26.840 → 286.597, 26.9
	[illegible] 00 mn 27 s	285.112	+25 [illegible] 36"	25.510 → 285.624, 25.5

t0 = 20 h 03 mn 08 s 323 ms

COUPS/SEC

0000 0500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

GB920723

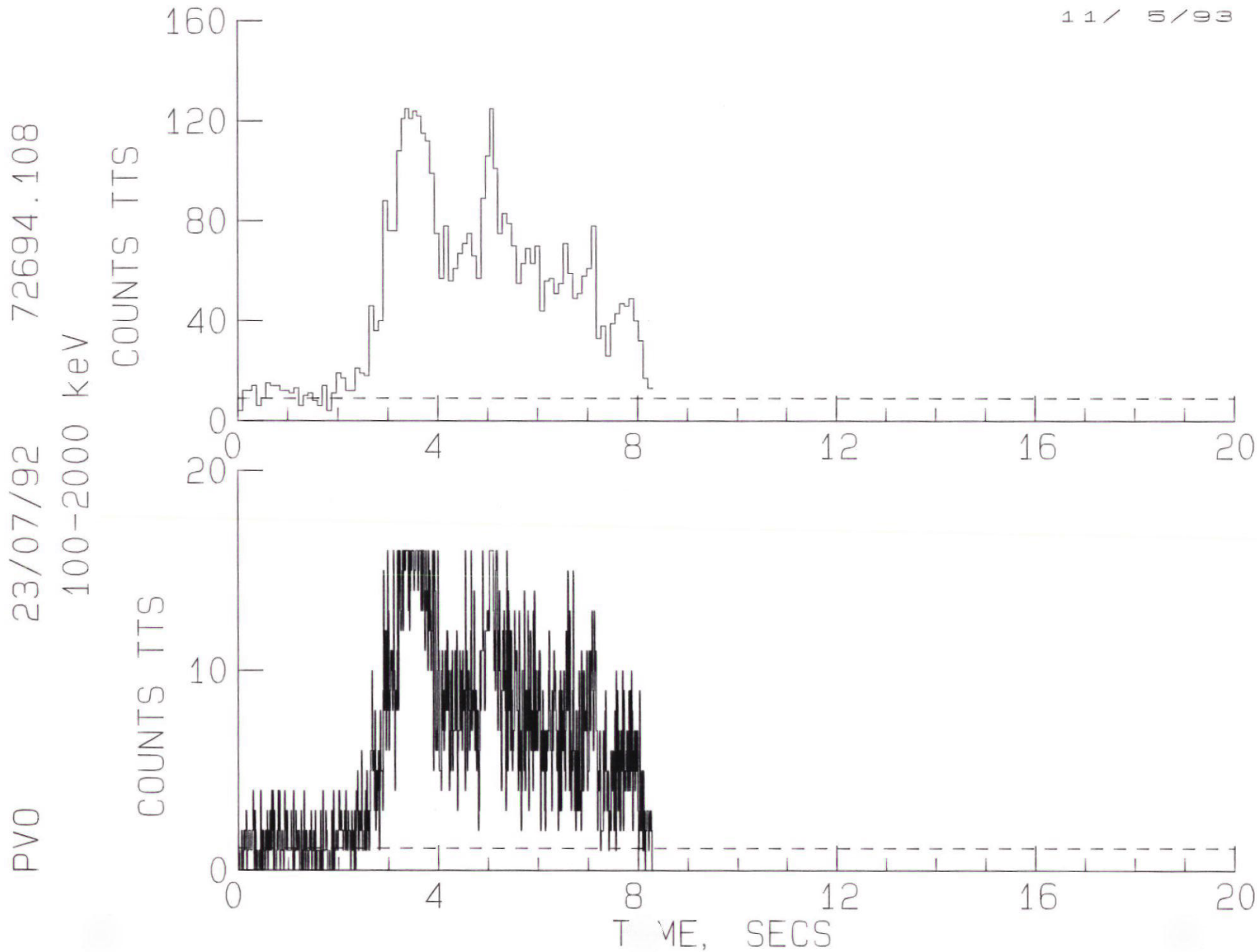
SIGMA - GCA

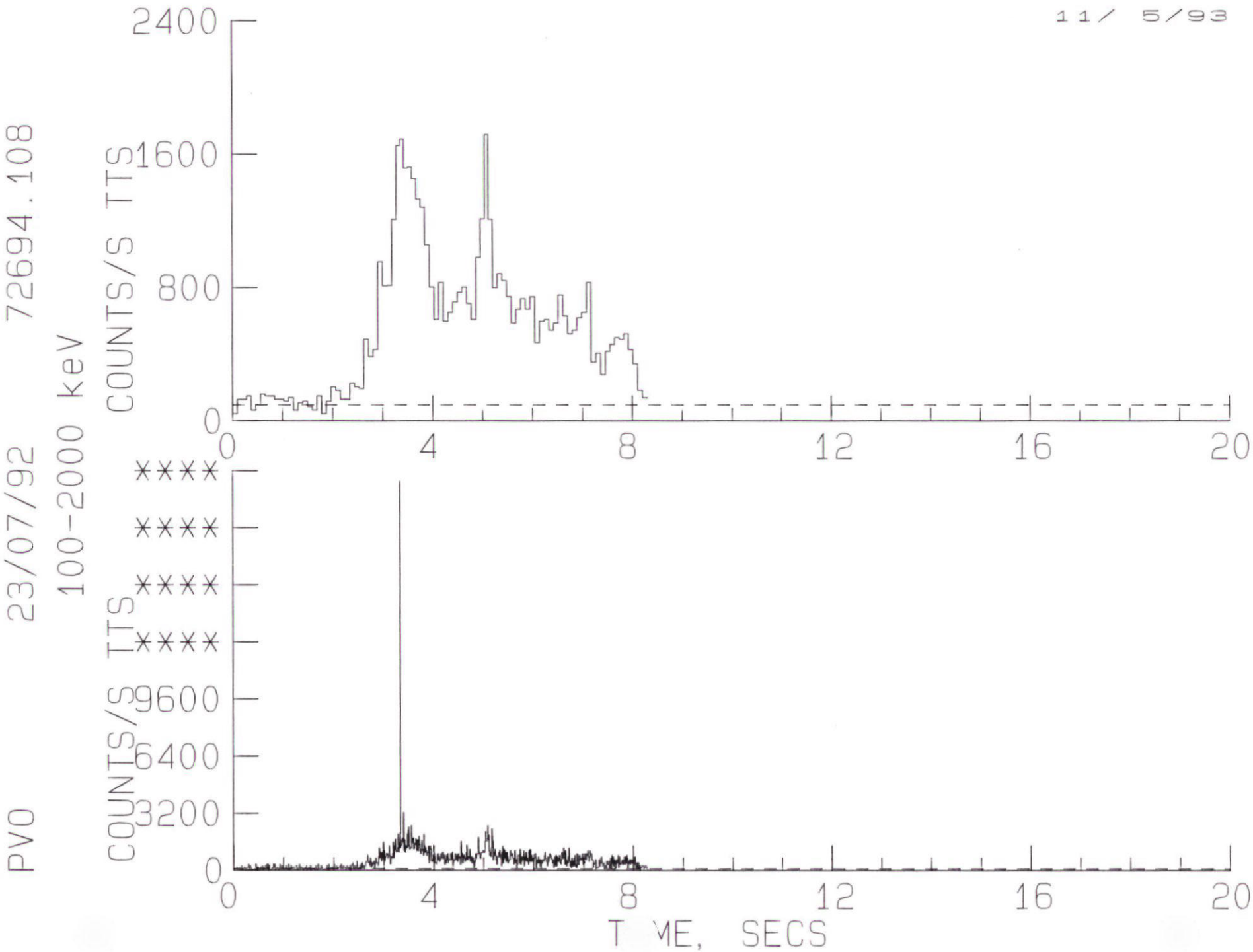
-2 -1 0 1 2 3 4 5 6 7

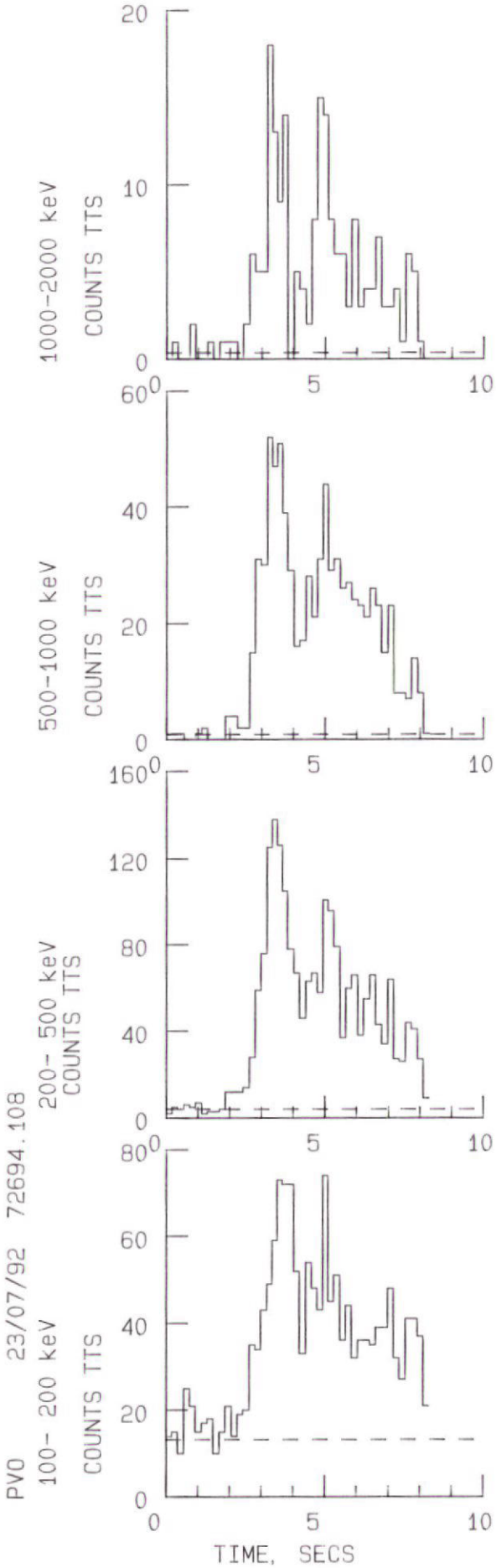
SECONDES

to : 20h03m08s.323 UT

5/5


11/ 5/93
PVO
23/07/92
100-2000 keV
72694.108
COUNTS TTS
160
120
80
40
0
0
4
8
12
16
20
COUNTS TTS
20
10
0
0
4
8
12
16
20
T ME, SECS


11/ 5/93
PVO
23/07/92
72694.108
100-2000 keV
COUNTS/S TTS
2400
1600
800
0
0
4
8
12
16
20
COUNTS/S TTS
****
****
****
****
9600
6400
3200
0
0
4
8
12
16
20
T ME, SECS


PVO 23/07/92 72694.108
100- 200 keV
COUNTS TTS
200- 500 keV
COUNTS TTS
500-1000 keV
COUNTS TTS
1000-2000 keV
COUNTS TTS
TIME, SECS
0
5
10
20
40
60
80
120
160

From @mitvma.mit.edu:green%cfaps2.span@cfa.bitnet Sat Aug 8 17:36:48 1992
X-Delivery-Notice: SMTP MAIL FROM does not correspond to sender.
Date: Sat, 8 Aug 92 20:11:43 EDT
From: green%cfaps2.span%cfa.BITNET@mitvma.mit.edu
Subject: IAUC 5579: gamma-ray bursts; Mars
To: quai%cfa.BITNET@mitvma.mit.edu
X-St-Vmsmail-To: ST%QUAI
Content-Length: 2923

Circular No. 5579

Central Bureau for Astronomical Telegrams
INTERNATIONAL ASTRONOMICAL UNION
Postal Address: Central Bureau for Astronomical Telegrams
Smithsonian Astrophysical Observatory, Cambridge, MA 02138, U.S.A.
Telephone 617-495-7244/7440/7444 (for emergency use only)
TWX 710-320-6842 ASTROGRAM CAM EASYLINK 62794505
MARSDEN@CFA or GREEN@CFA (.SPAN, .BITNET or .HARVARD.EDU)

GAMMA-RAY BURSTS

A. Claret, E. Jourdain, E. Churazov, M. Gilfanov, on behalf of the SIGMA/Granat team (Service d'Astrophysique, Centre d'Etudes Nucleaires de Saclay; Centre d'Etude Spatiale des Rayonnements, Toulouse; Space Research Institute, Moscow), report: "The SIGMA telescope onboard the Granat observatory has detected two gamma-ray bursts in the 35- to 400-keV energy range. The 1-sigma error box coordinates of these two bursts is approximatively diamond shaped because the bursts were detected through an interruption in the passive shield acting as a collimator. The first source was observed on July 14.545498 UT (signal-to-noise ratio, S/N, was 24.6), with the following four positions corresponding to the extremities of the diamond (equinox 1950.0): R.A. = 14h39m24s, Decl. = -29 27'.6; 14h32m21s, -28 33'.6; 14h39m52s, -30 25'.8; 14h45m36s, -31 01'.2. The second source was observed on July 23.835513 (S/N = 55), within the following diamond: R.A. = 19h01m46s, Decl. = +26 48'.0; 19h05m19s, +27 57'.0; 19h04m22s, +26 50'.4; 19h00m27s, +25 30'.6."

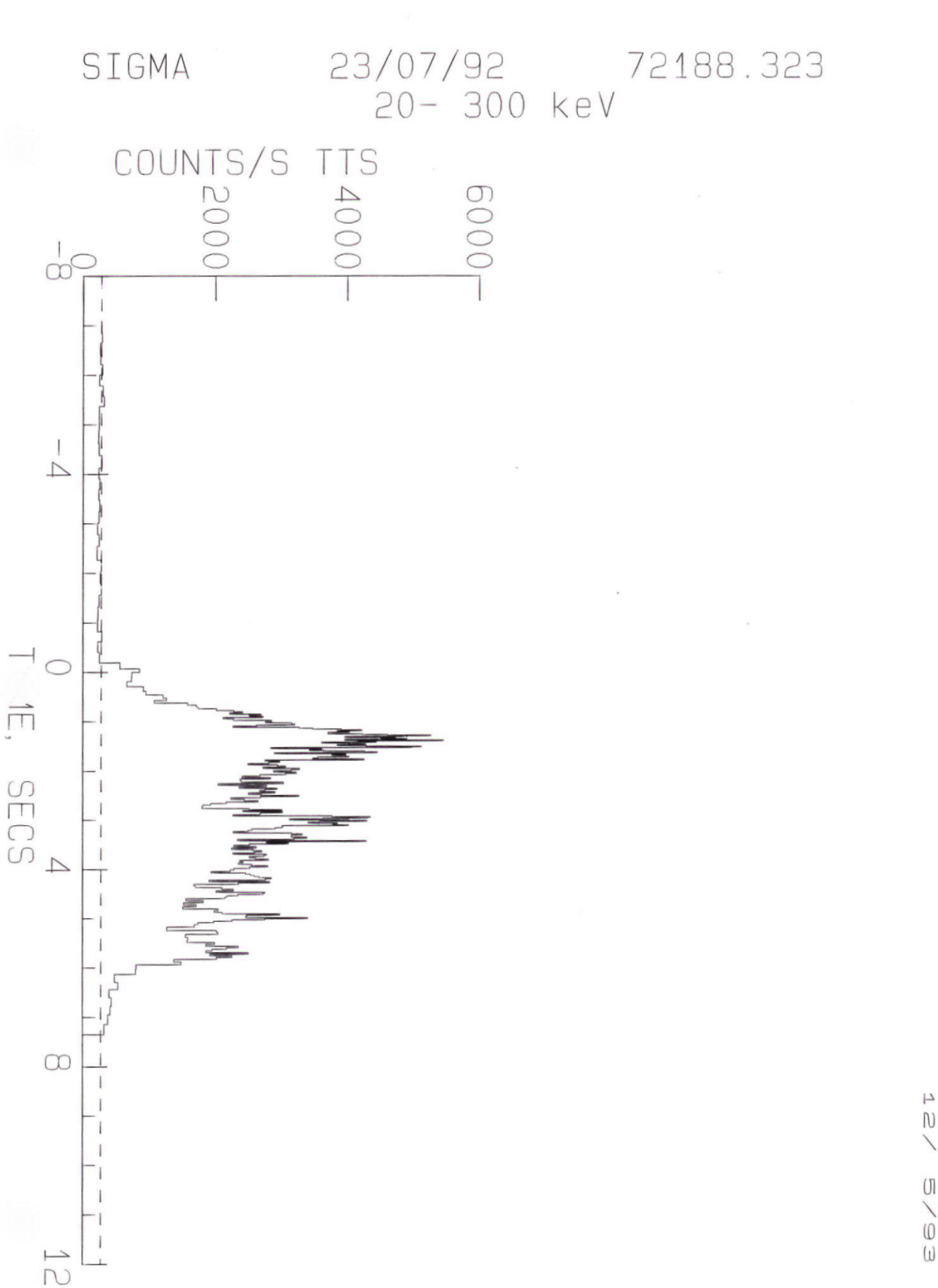
MARS

S. J. O'Meara, Sky & Telescope; and W. Sheehan, St. Paul, MN, report visual observations of martian dust activity using the 1-m reflector at Pic du Midi Observatory: "On Aug. 1.21 UT, a diffuse yellow haze extended over the southern hemisphere from latitude -40 deg to the remnant south polar cap, and from longitude 0 to 100 deg, where it combined with strong limb brightening. The observations showed the desert regions from Noachis through Argyre brighter than normal, while Mare Oceanidum and Mare Australe were fully yellowed with no visible darkening throughout the region, except for a slight shading just south of Noachis. The remnant south polar cap was visible through the haze at longitude about 60 deg, measuring only about 0".2. On Aug. 2.22, the south polar haze appeared less opaque and the limb brightening had decreased, but a stringy yellow cloud extended west-east along the southern border of Mare Erythraeum. An extension of this dust cloud sliced north through Bosporus and extended into Thaumasia to just west of Solis Lacus at Nectar. Not much is known about martian dust activity during southern-hemisphere summer (as is now the case) when the planet is far from the earth (1992, Sky Tel. 83, 490). Follow-up observations would be useful to determine the longevity of these clouds."

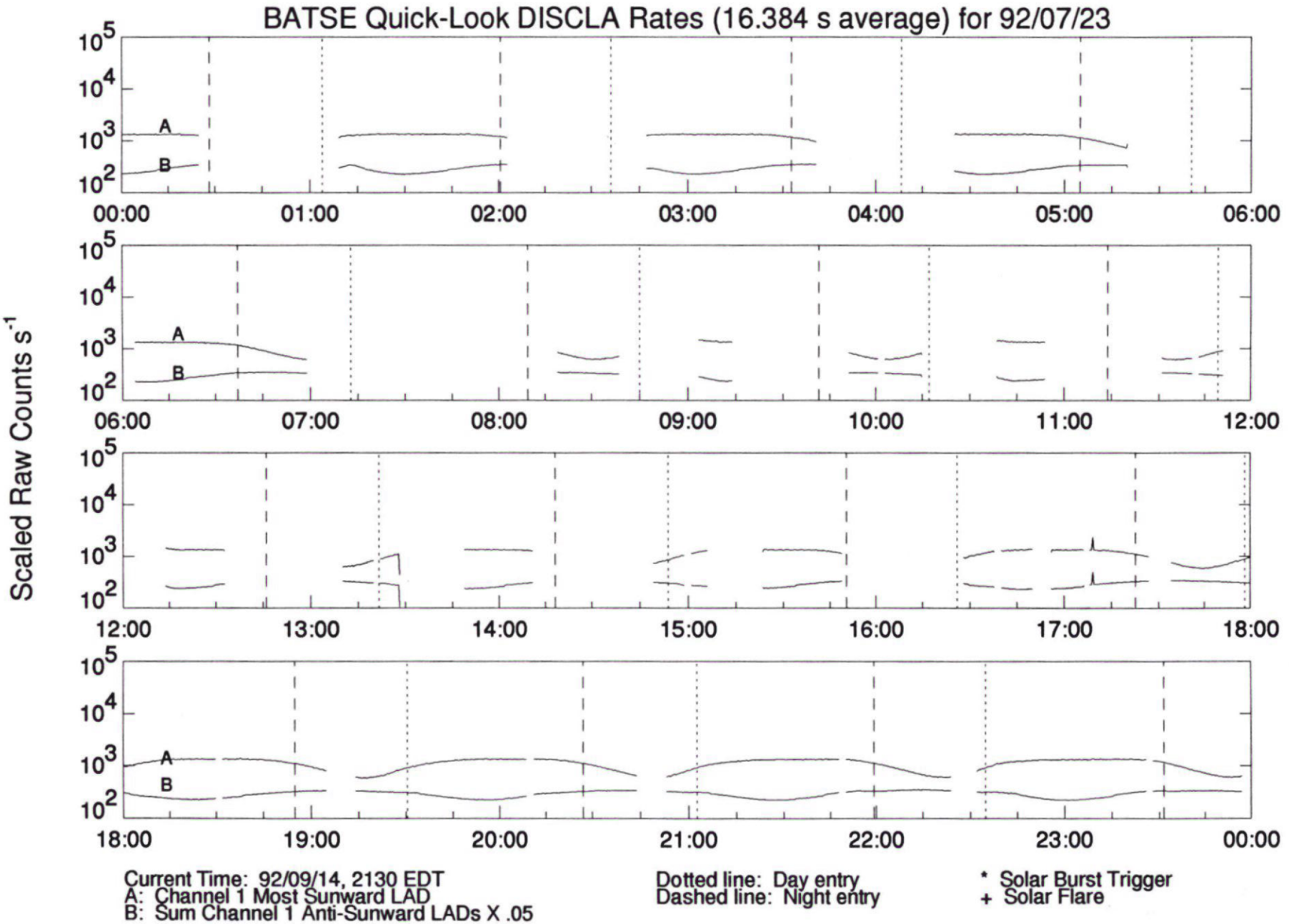
From @space6.ssl.berkeley.edu,@star.stanford.edu:068486@ESSDP1.SPAN Mon Jul 27 05:19:51 1992
Date: Mon 27 Jul 92 05:21:14-PST
From: 068486%ESSDP1.SPAN@star.stanford.edu
Subject: EVENT 920723
To: khurley@space6.ssl.berkeley.edu
Content-Length: 89

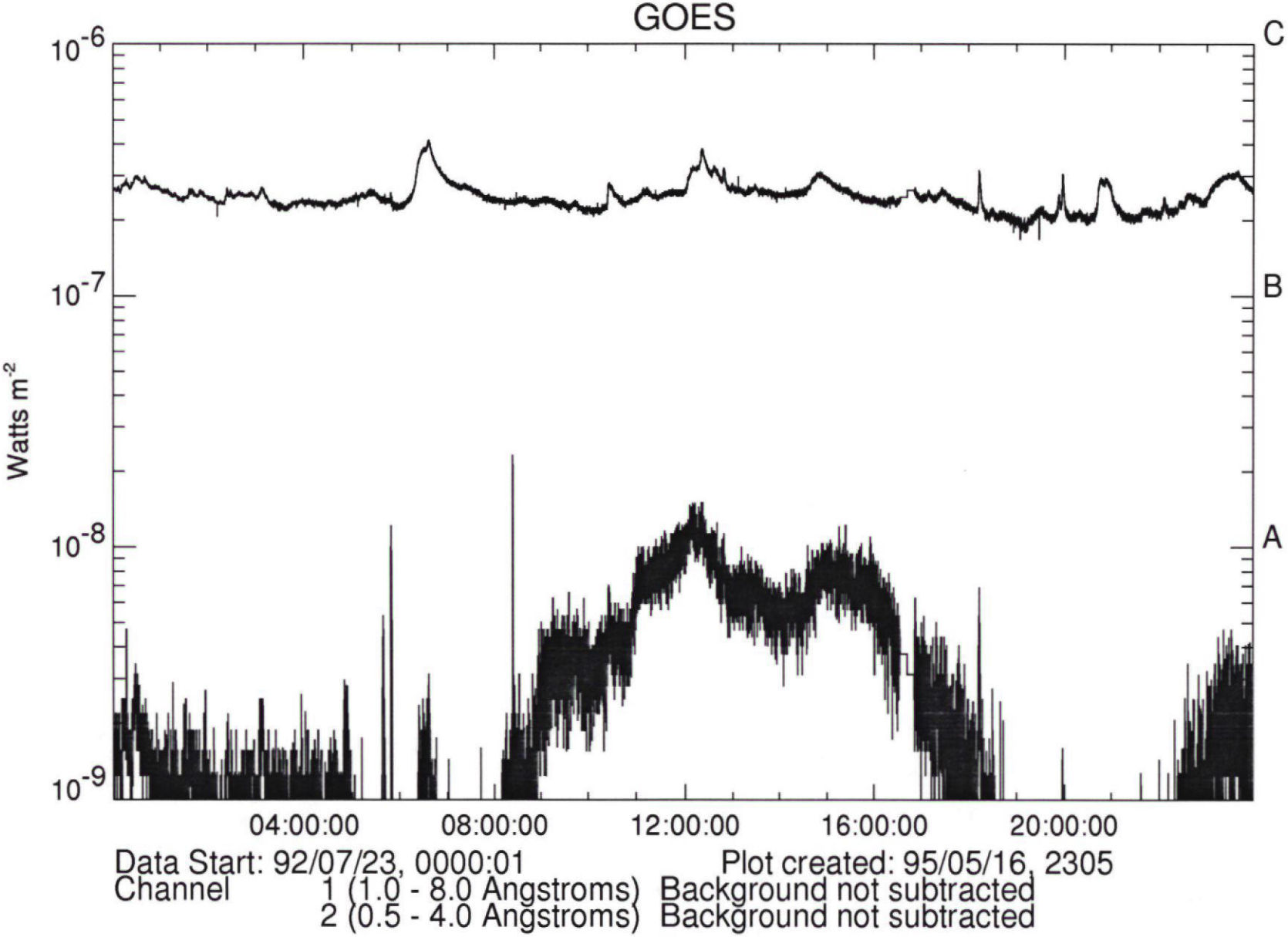
KEVIN,
EVENT 920723 HAS PEAK TIME OF 72694.65 UTS. I AM SENDING PART OF THE RECORD.
RAY

Never got it

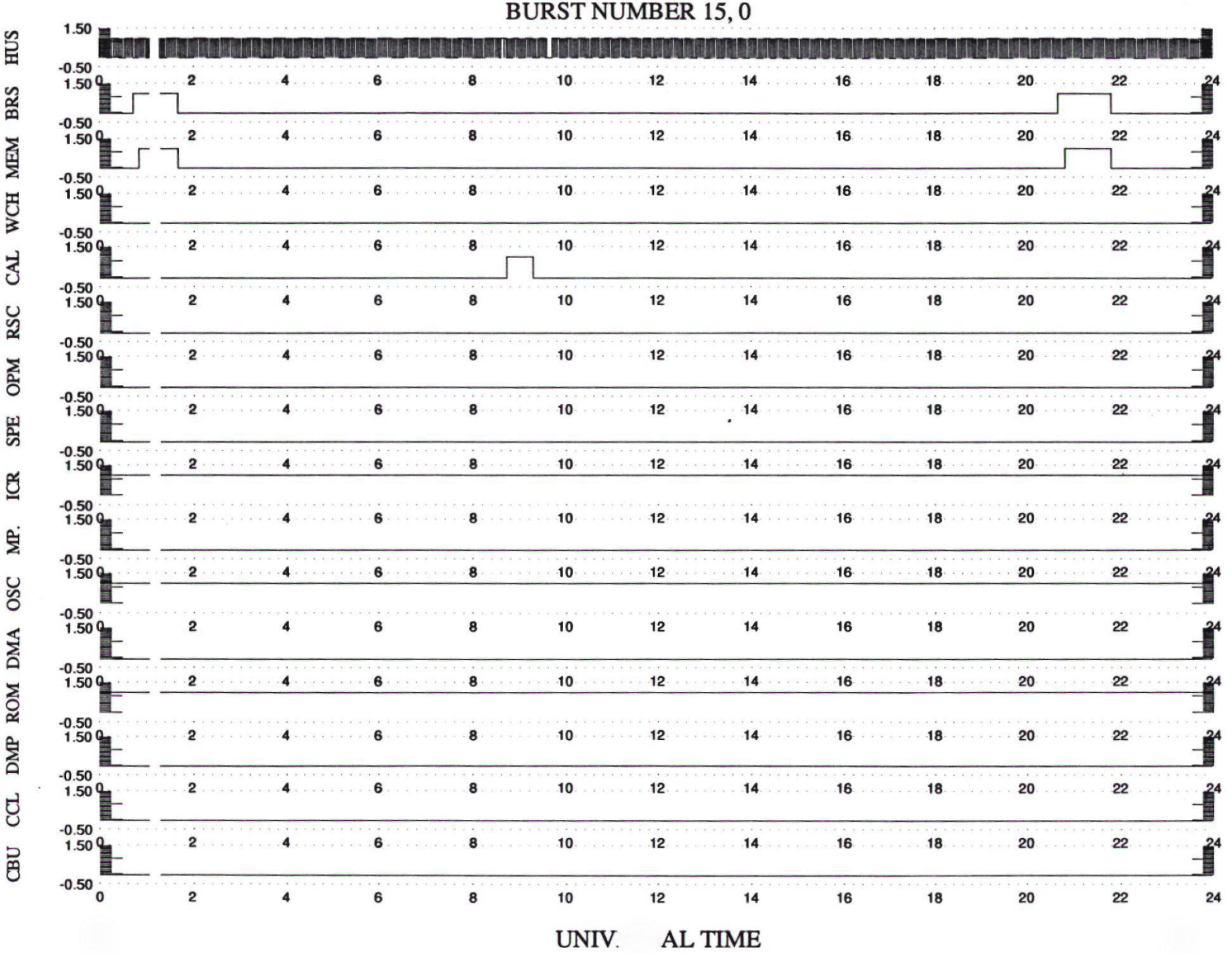

SIGMA 23/07/92 72188.323
20- 300 keV
COUNTS/S TTS
0
2000
4000
6000
-8
-4
0
4
8
12
T, 1E, SECS

12/ 5/93


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/23
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
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: 92/09/14, 2130 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

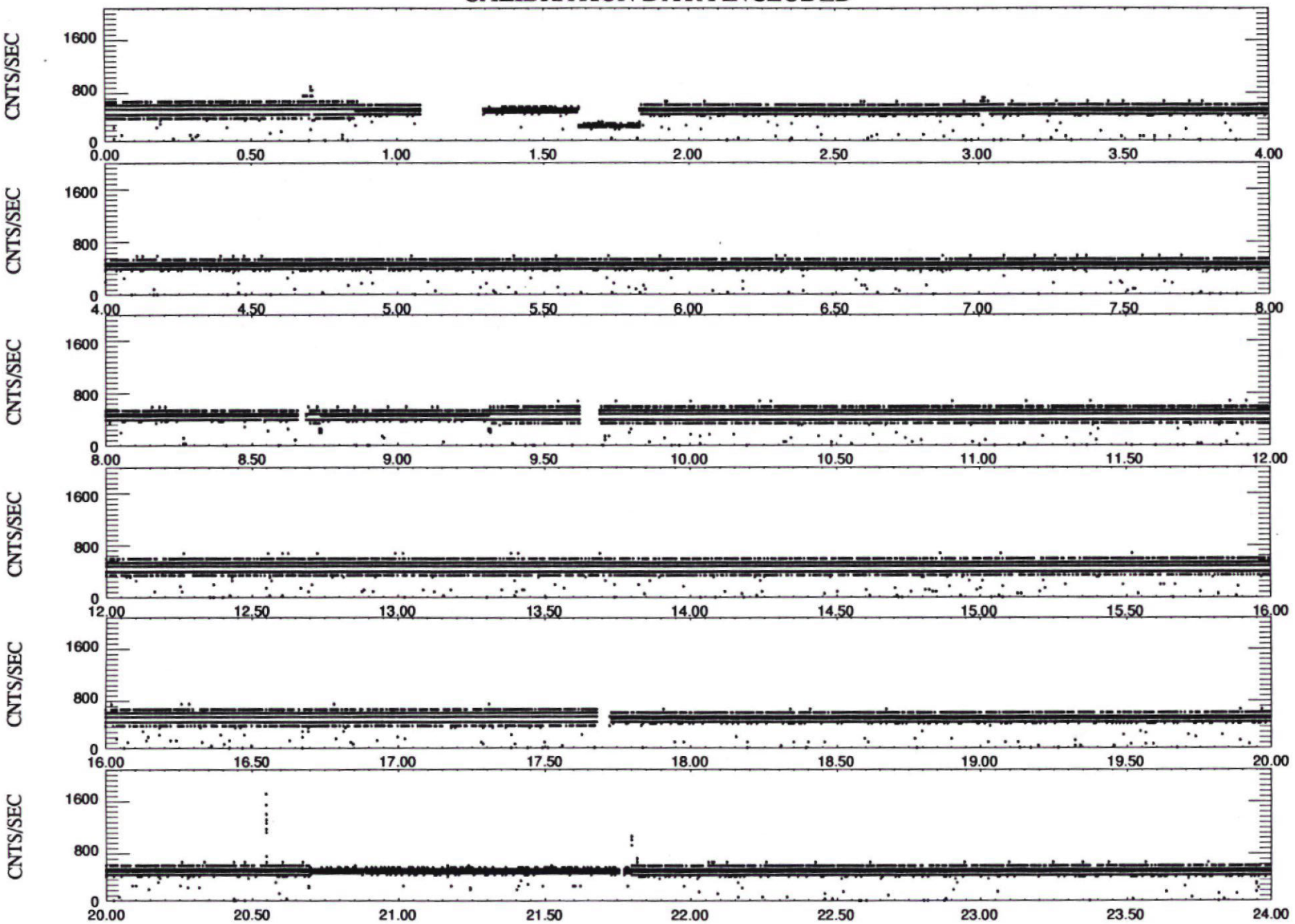

GOES
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/23, 0000:01
Plot created: 95/05/16, 2305
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 205, year 1992 to day 205, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 205, year 1992 to day 205, year 1992 9/11/92

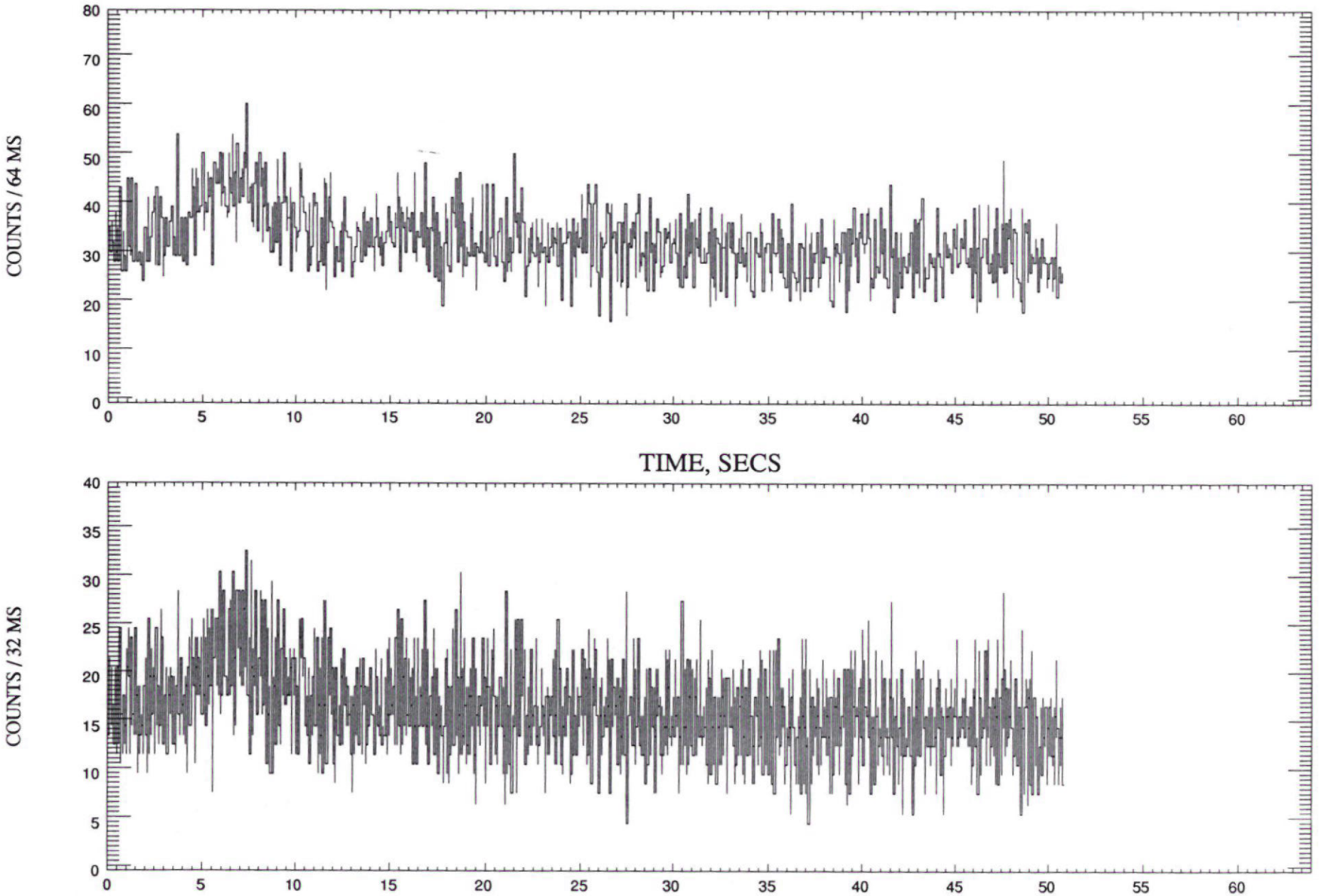
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 205, year 1992 9/11/92

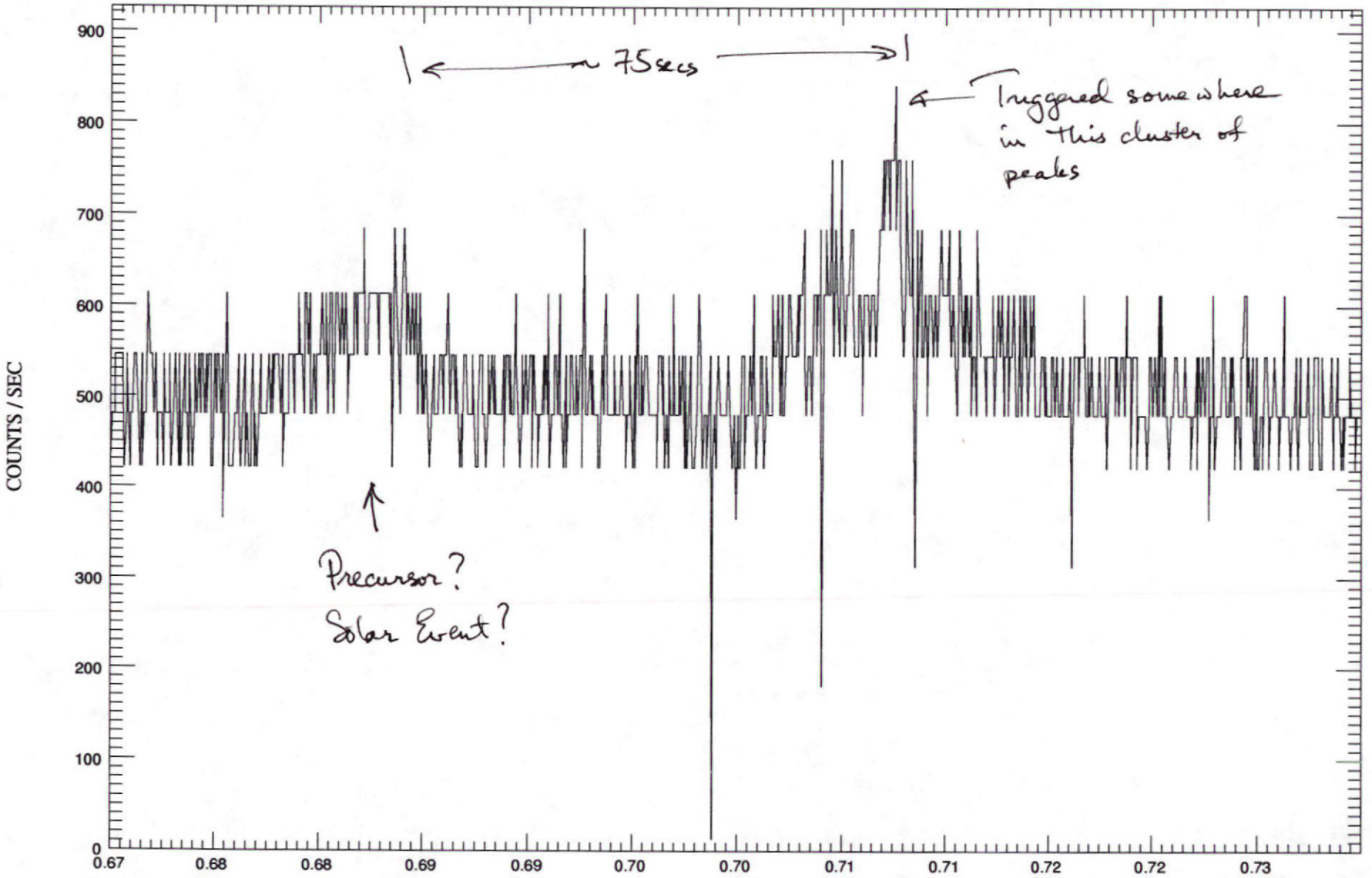
Burst Counter 15 at UT= 0.707668541802 h= 2547.607 s



B# 1

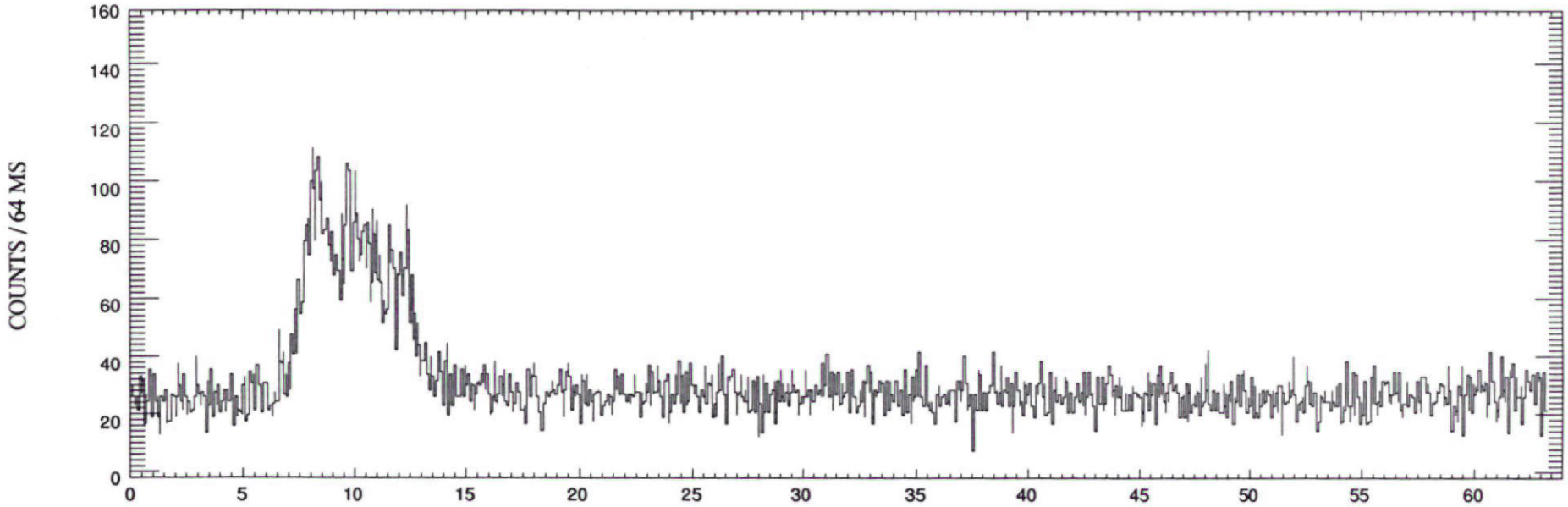
HUS 2A, MODE 1, NOT AVERAGED QEDR day 205, year 1992 to day 205, year 1992 7/24/92

CALIBRATION DATA INCLUDED

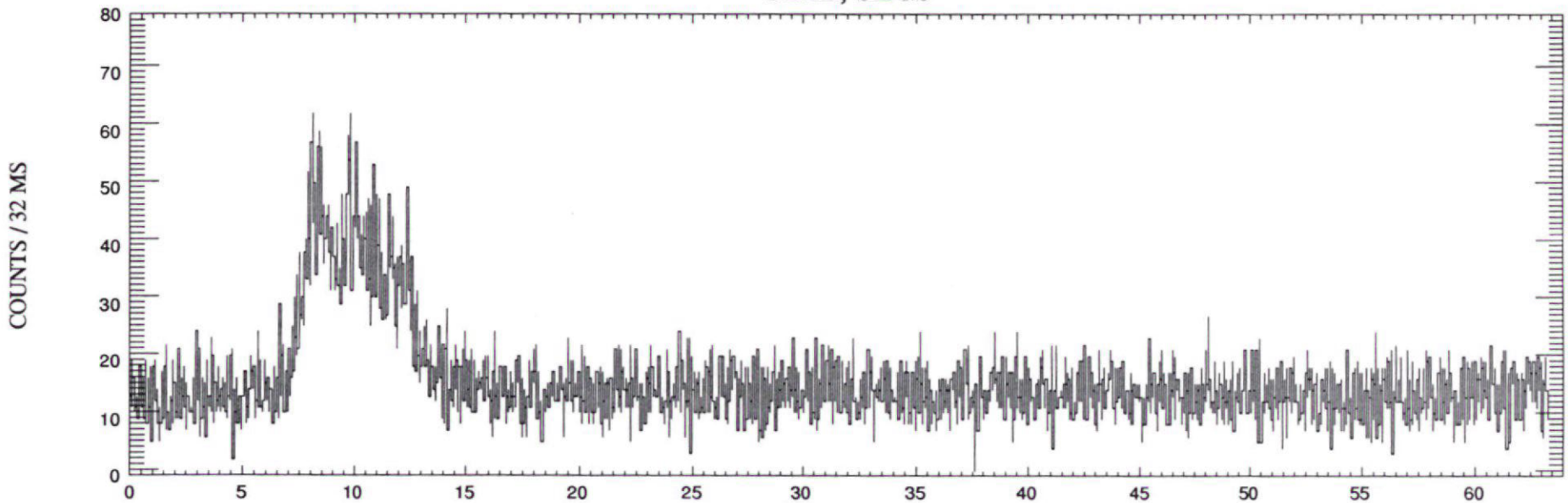


HUS 2A TRIGGERED DATA EDR day 205, year 1992 9/11/92

Burst Counter 0 at UT=20.545239554511 h=73962.862 s



TIME, SECS



TI , SECS

B# 2

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

BATSE BURST # 1723
EVENT OF 1992 JUL 24 DAY OF YEAR=206
EVENT CROSSING TIME AT BATSE      : 61751. S. OR 17:09:10.9
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 116.800    15.300
BATSE PEAK COUNTING RATE:  0000   C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 24/ 7/  92 IS:
RA=  152.699 DEC=     4.593 DIST=     6.143 AU
BATSE-ULYSSES DISTANCE =  918923984. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=143.13 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2452.04 SECS.
CROSSING TIME AT ULYSSES     IS 59299. S. OR 16:28:18.9 +/-  332.09 SECONDS
```

No

```
From MALLOZZI@ssl.msfc.nasa.gov Sat Jul 25 13:06:51 1992
Date:    Sat, 25 Jul 1992 15:08:47 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

                  BATSE BURST TRIGGER
NO.: 01723
```

July 24

```
TIME: TJD=8827 SECONDS=61750

TYPE: BURST                       SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:        SIGMA

INTENSITY:           COUNTS/CM2

LOCATION: ZENITH=98.7    AZIMUTH=18.0    ERROR=       DEGREES

COMMENTS:
SINGLE PEAK EVENT.  OBSERVED ABOVE 100 KEV; NOT ABOVE 300 KEV.
DURATION ~25 SEC.
```

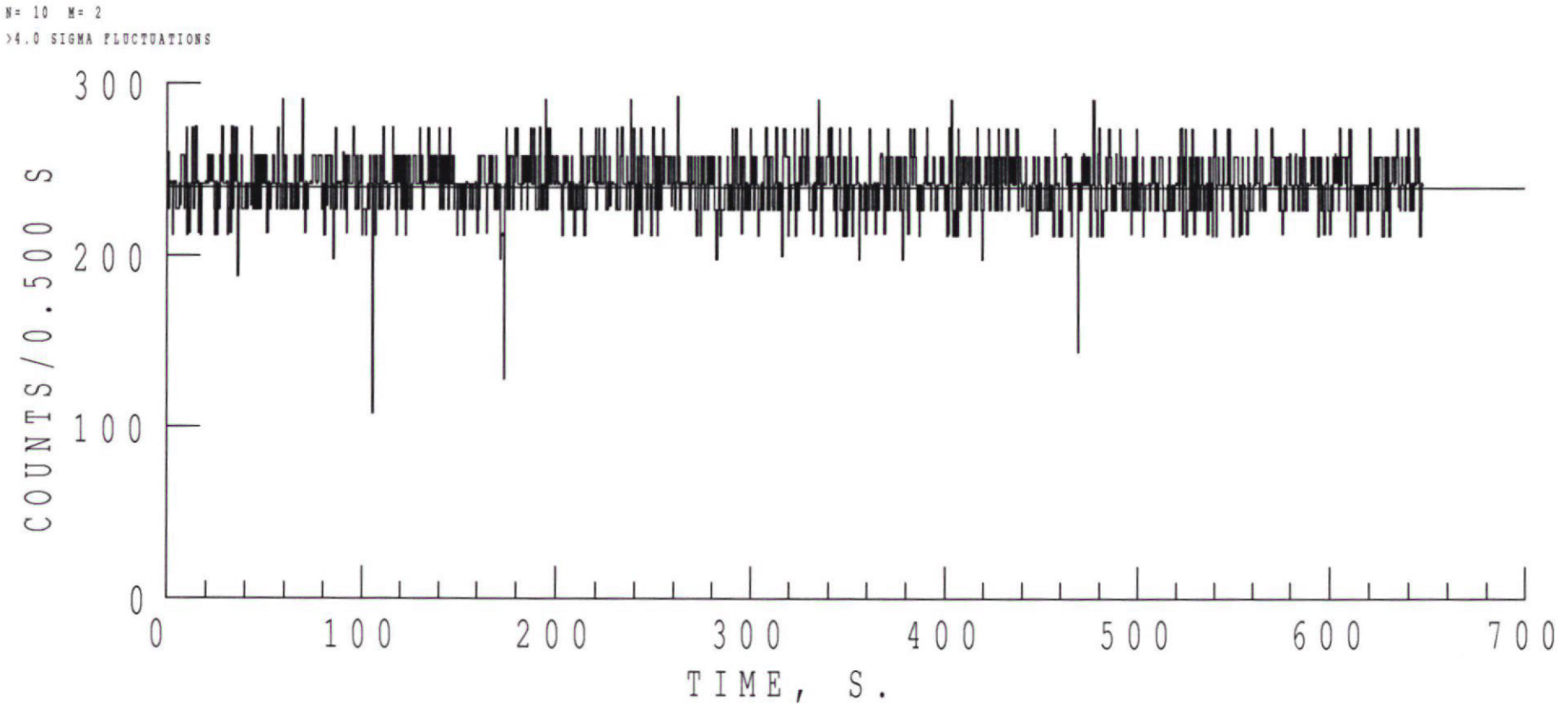
8/ 6/94

ULYSSES RT

24/ 7/92 58968.000 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV



From MALLOZZI@ssl.msfc.nasa.gov Sat Jul 25 12:25:06 1992
Date: Sat, 25 Jul 1992 14:26:59 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01724

TIME: TJD=8827 SECONDS=86151

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=91.3 AZIMUTH=178.4 ERROR= DEGREES

COMMENTS:
WEAK, SINGLE PEAK BURST; OBSERVED ABOVE 100 KEV, NOT ABOVE 300 KEV.
DURATION ~35 SEC WITH POSSIBLE EMISSION AT ~T+40.

From MALLOZZI@ssl.msfc.nasa.gov Tue Jul 28 09:20:34 1992
Date: Tue, 28 Jul 1992 11:22:29 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01724

TIME: TJD=8827 SECONDS=86151

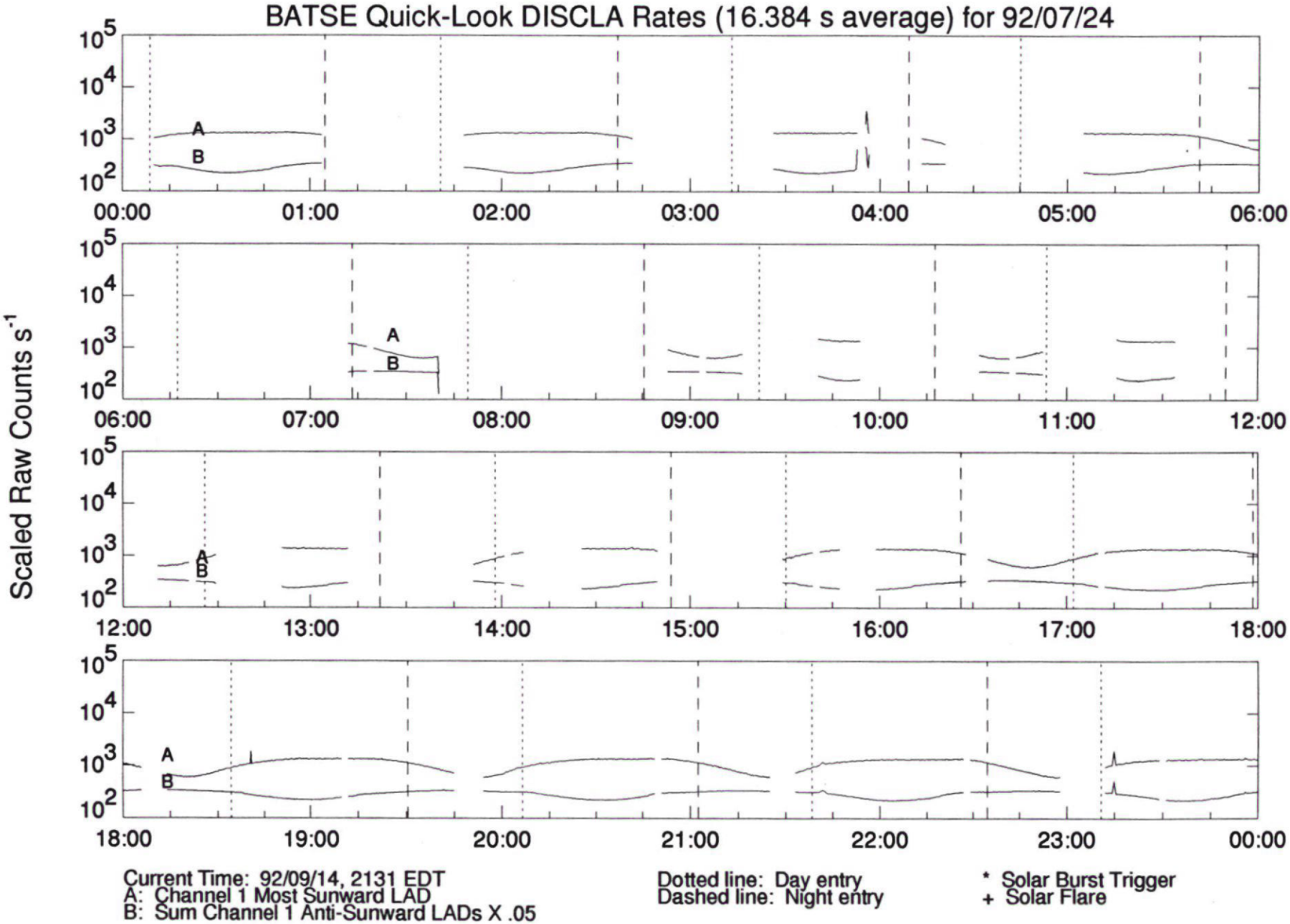
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

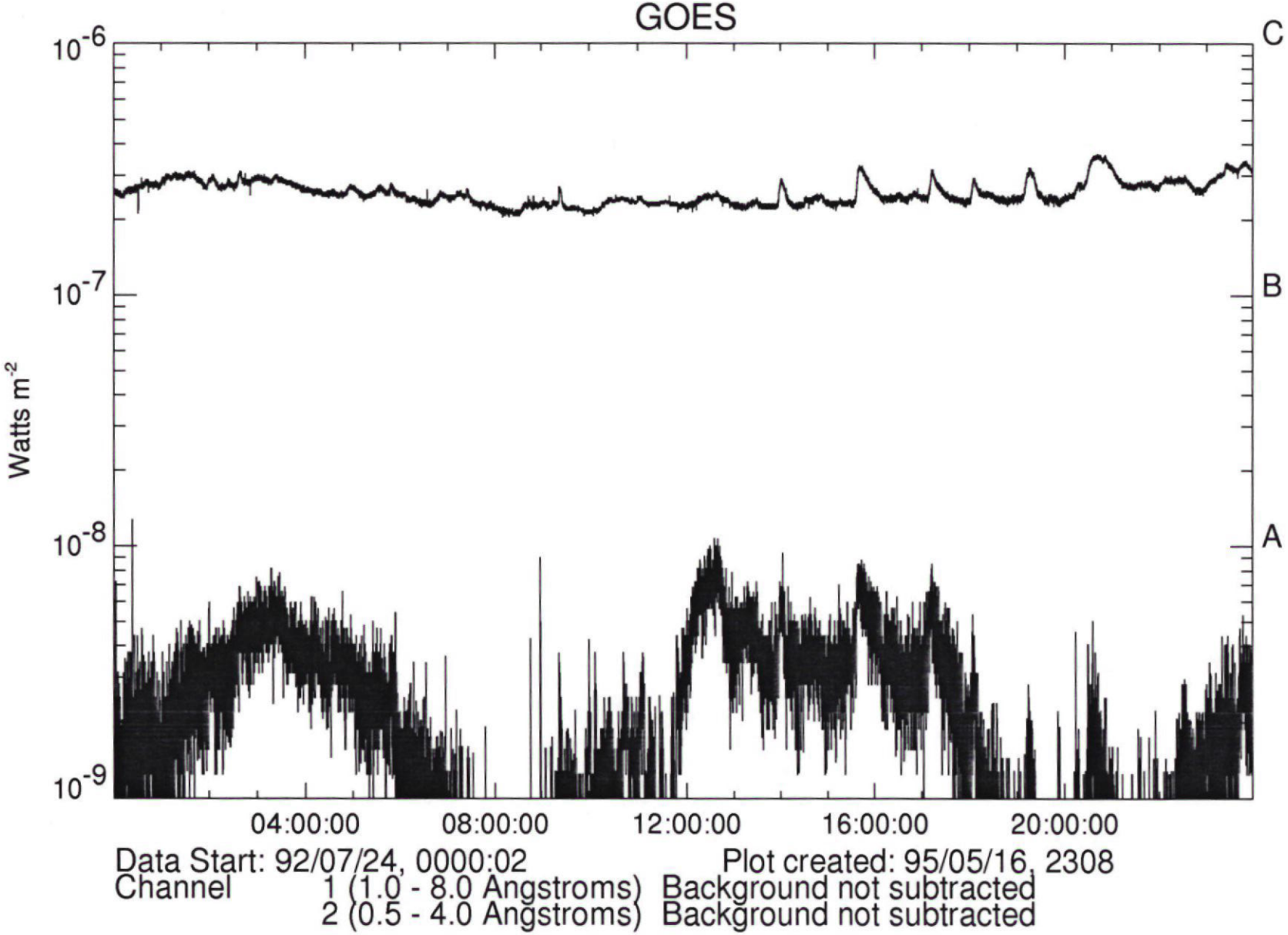
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

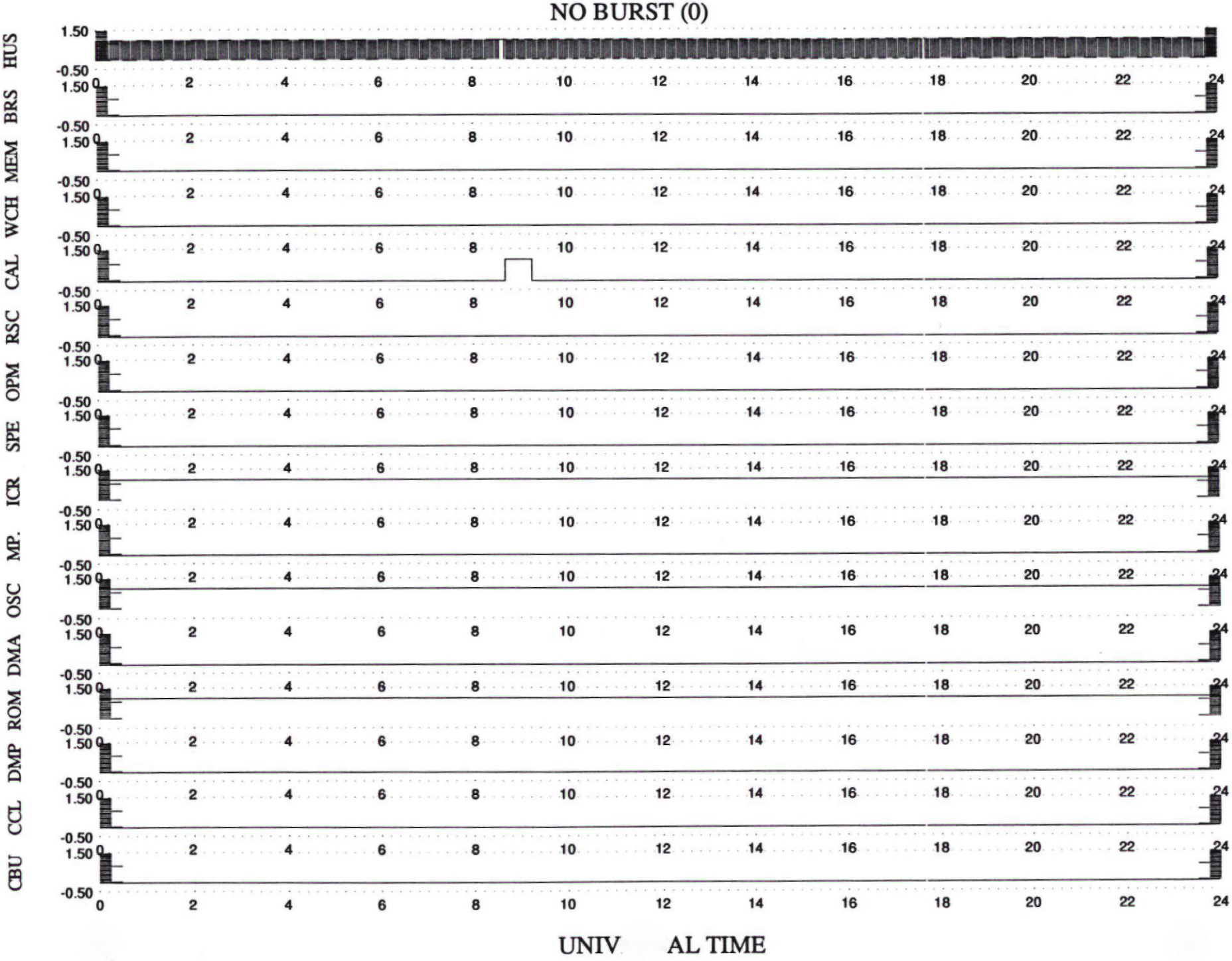
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
CORRECTION-- TRIGGER NUMBER 1724 RECLASSIFIED AS PARTICLE EVENT.


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/24
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: 92/09/14, 2131 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

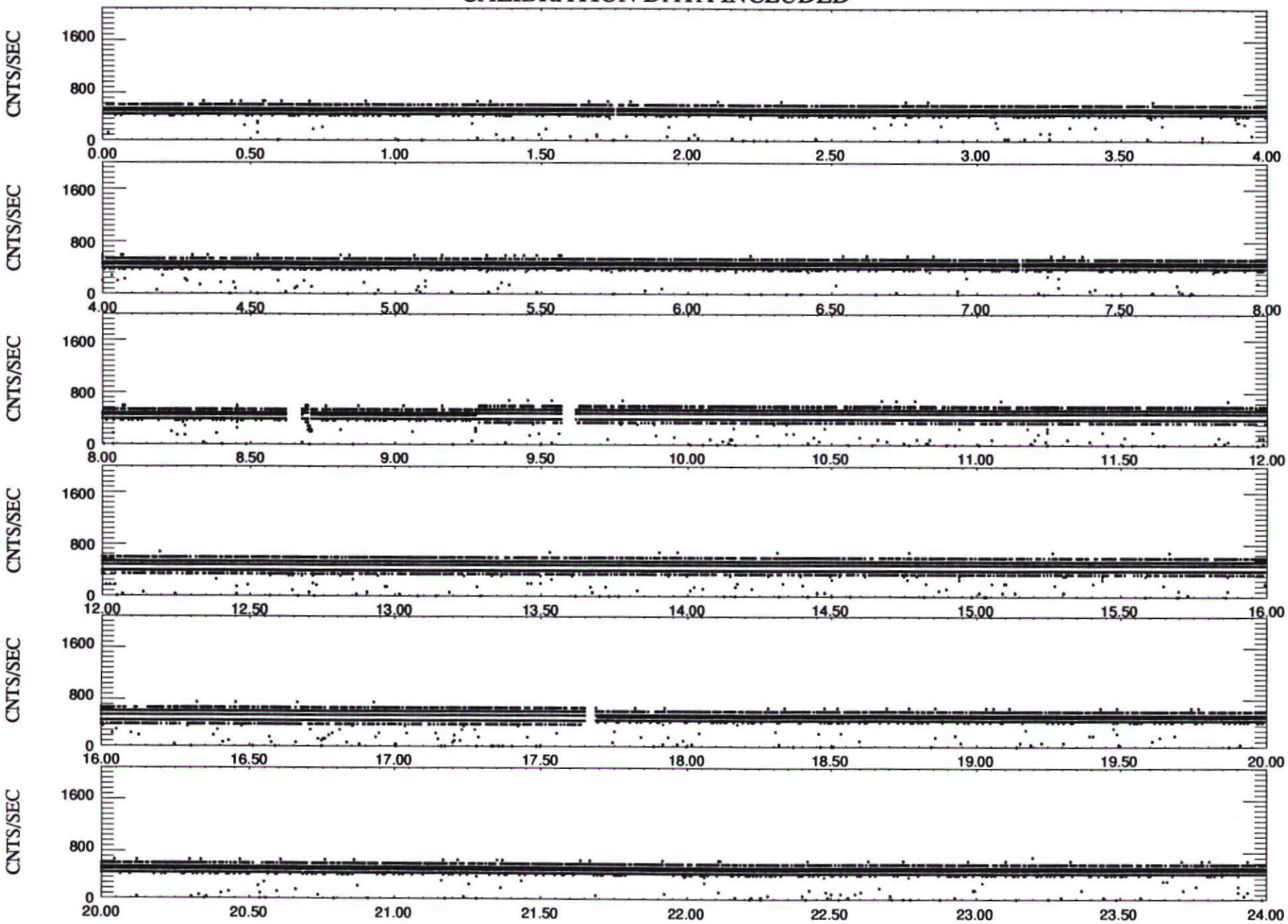

GOES
10^{-6}
10^{-7}
10^{-8}
10^{-9}
C
B
A
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/24, 0000:02
Plot created: 95/05/16, 2308
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 206, year 1992 to day 206, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 206, year 1992 to day 206, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From root Thu Dec 9 11:14 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA09450; Thu, 9 Dec 93 11:14:17
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA01091; Thu, 9 Dec 93 10:17:05 PST
Received: Thu, 9 Dec 93 10:20:23 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312091820.AA06809@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
(utk-mail11d v1.7); Thu, 9 Dec 93 10:20:24 PST
Date: Thu, 9 Dec 93 10:20:24 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,

HERE ARE MORE RESULTS. I WILL BE SENDING YOU THE DATA FILES.

DATE	TIME	PVO RESPONSE
90/12/13	07:06	MAYBE-NEAR 3 SIGMA RESPONSE AT 25847 UT
90/12/16	15:47	MAYBE-3.4 SIGMA RESPONSE AT 57130 UT
90/12/18	13:54	N/O
91/01/06	16:39	RI 6 SIGMA 59443-59459 UT
91/02/02	20:57	RI-4 SIGMA AT 75598 UT C3, 5.8 SIGMA SUMMED 75438-75758 UT IS THIS AN EXTREMELY LONG EVENT?
91/02/06	16:39	RI- 6 SIGMA
91/02/11	03:25	RI
91/03/22	12:41	(NO)
91/04/04	14:19	(NO)
91/05/29	17:36	N/O
91/11/19	17:12	(NO)
91/12/22	15:00	RI WEAK
92/01/16	18:30	RI
92/02/24	09:53	N/O
92/02/29	19:21	(NO)
92/07/14	13:04	RI
92/07/20	05:52	RI
92/07/25	01:41	(NO)

THIS LIST IS STILL NOT COMPLETE. THE REMAINING EVENTS ON MY LIST WERE RECORDED WITH 64 S TIME RESOLUTION. THESE DATA MAY NOT BE USEFUL.

REGARDS,

RAY

NASA TELEFAX

BATSE

MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA 35812
SPACE SCIENCE LABORATORY

From:

Name: JOHN HORACK Mail Code: ES-62

Phone: 205/544/1872 FAX No.: 205-544-5800

DATE 7/28/92 This is page 1 of 1 pages

TO: Kevin Hurley

Name: FAX No.: 61 55 67 01

Address:

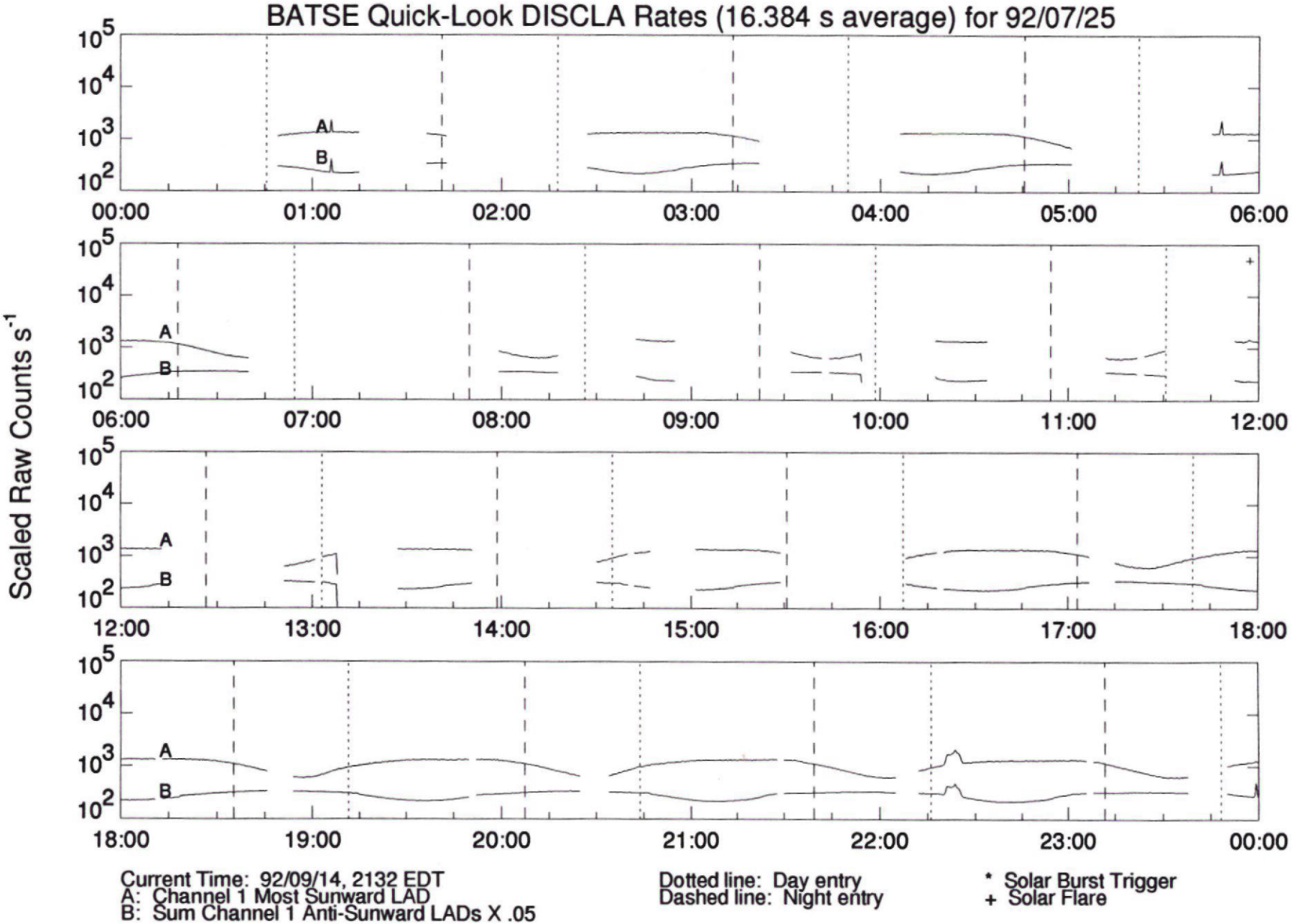
Kevin: We have no events either triggered or untriggered corresponding to your three plots of 7/24, 7/25, and 7/23. Sorry!

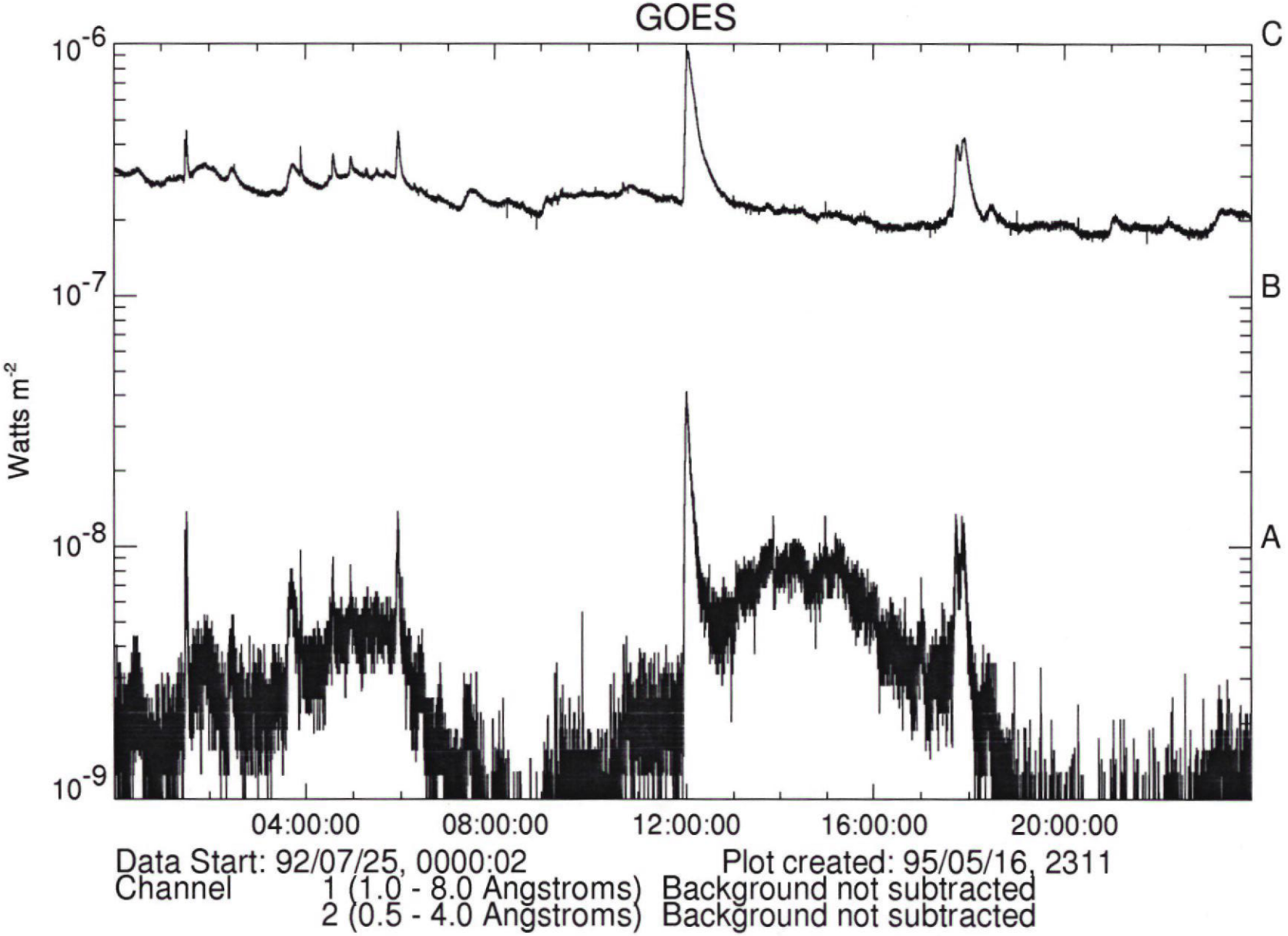
Our last trigger number received is #1725, A solar flare.

You are up to DATE.

More to come (hopefully)

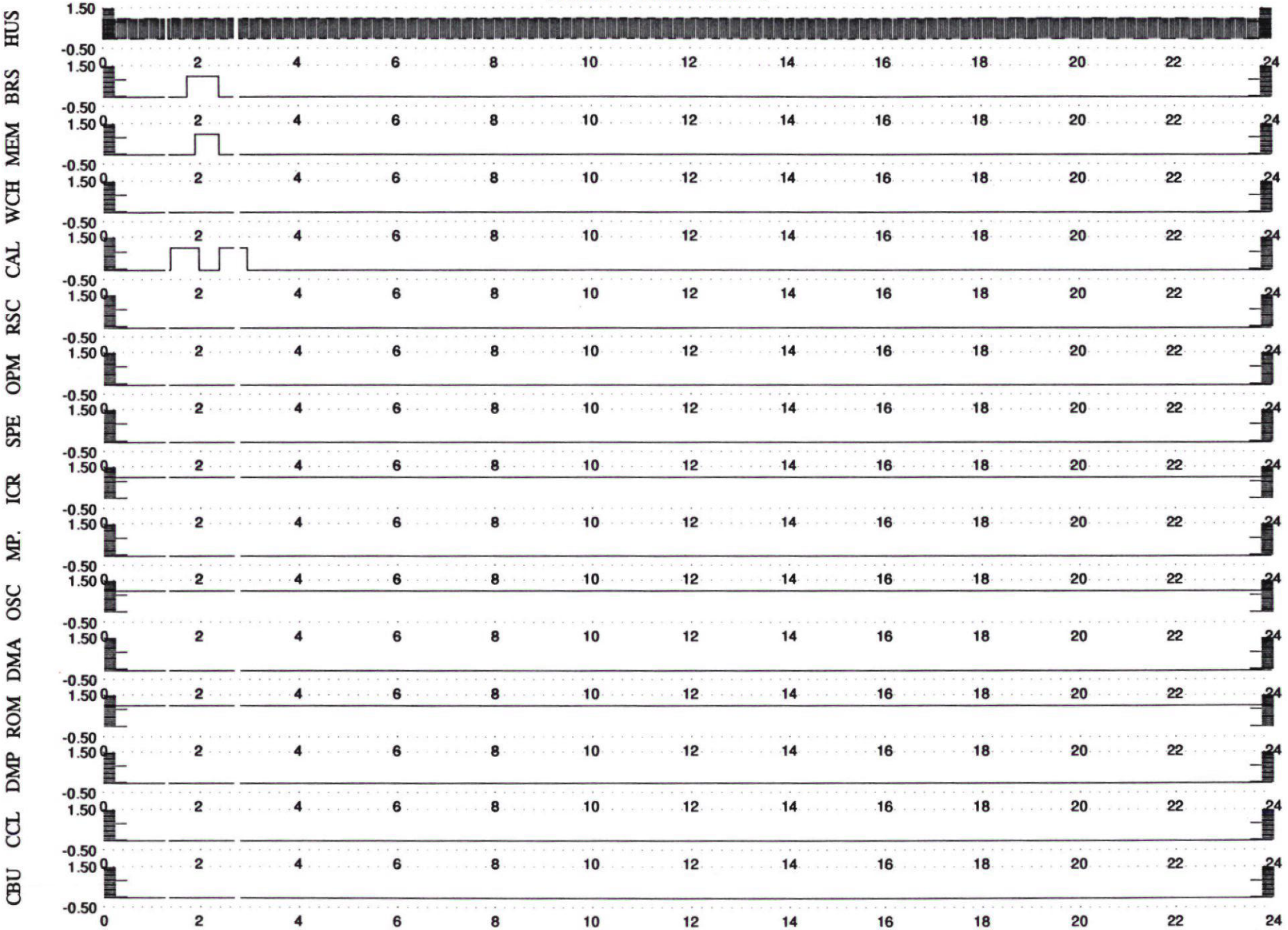
John Horack


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/25
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
Current Time: 92/09/14, 2132 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^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/25, 0000:02
Plot created: 95/05/16, 2311
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 207, year 1992 to day 207, year 1992 9/11/92

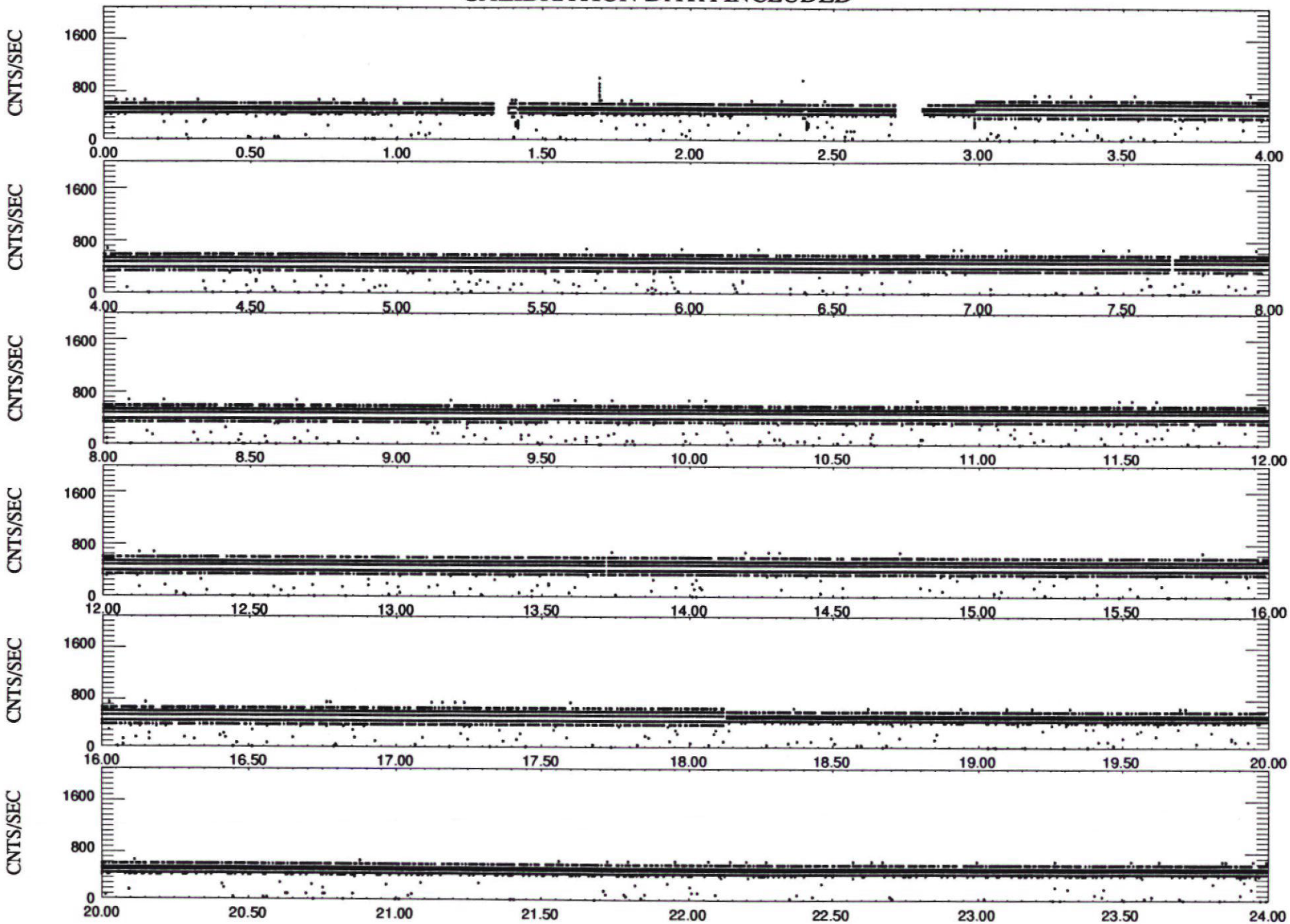
BURST NUMBER 1



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 207, year 1992 to day 207, year 1992 9/11/92

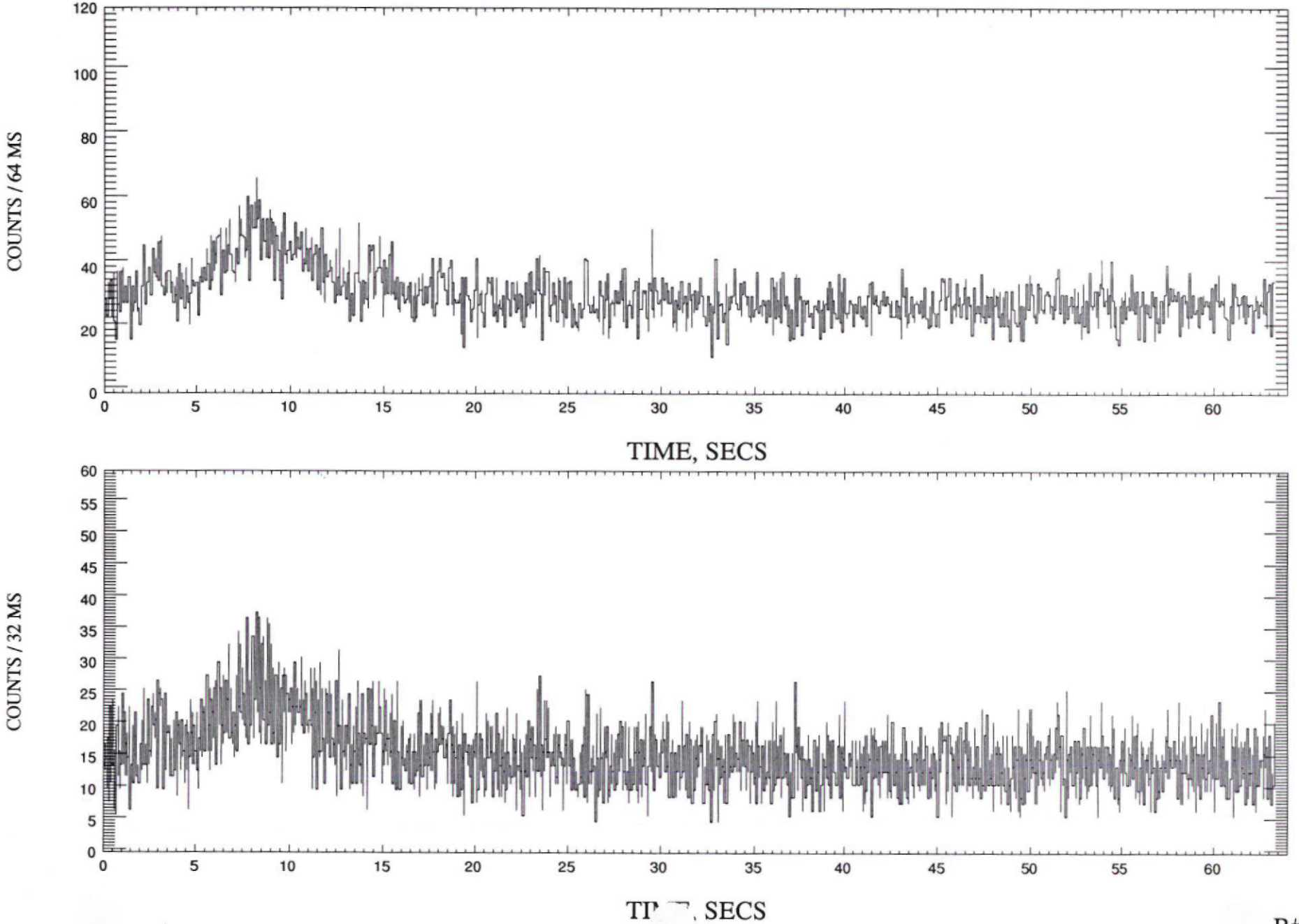
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 207, year 1992 9/11/92

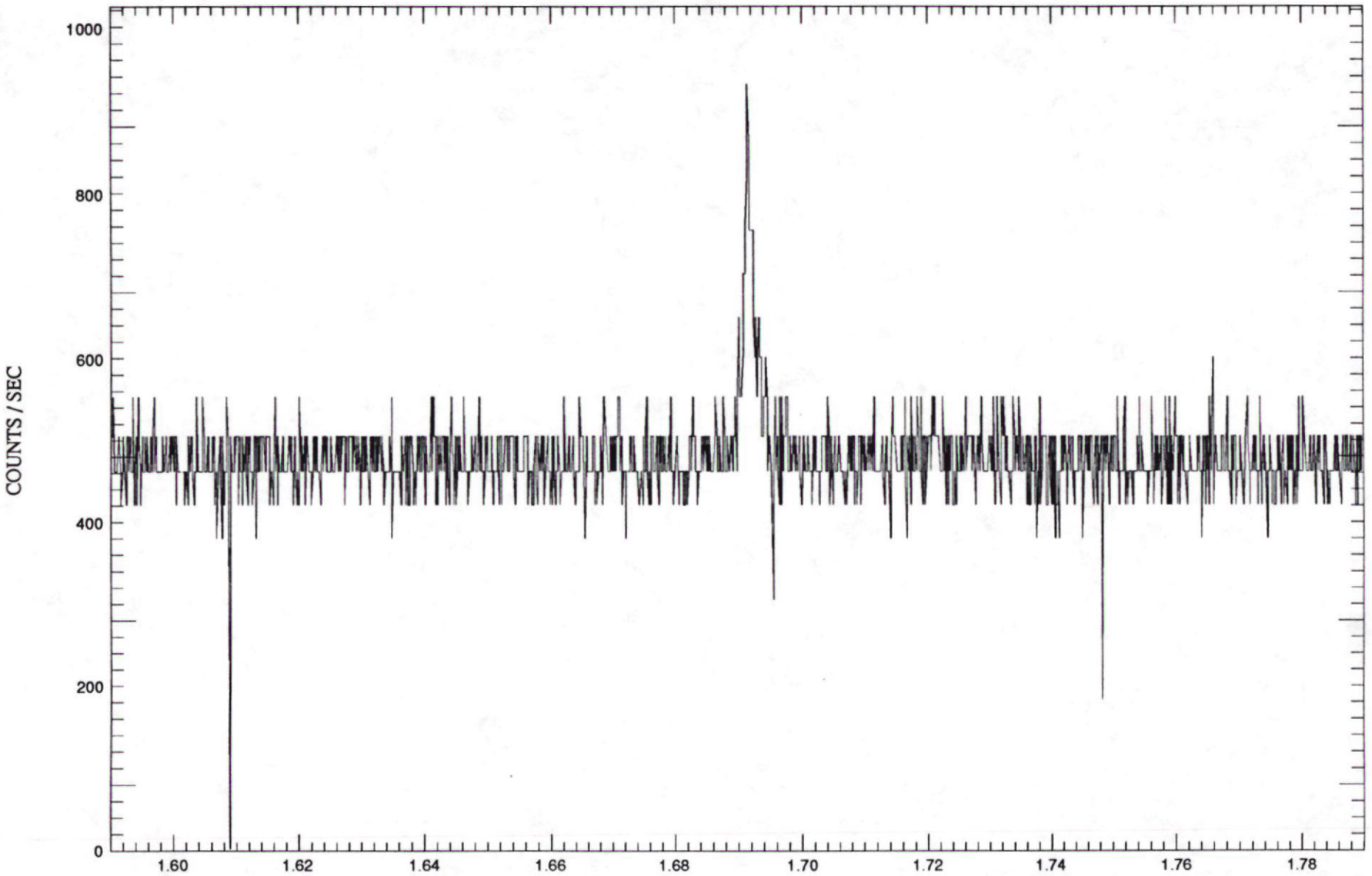
Burst Counter 1 at UT= 1.691514320374 h= 6089.452 s



B# 1

HUS 2A, MODE 1, NOT AVERAGED QEDR day 207, year 1992 to day 207, year 1992 7/27/92

CALIBRATION DATA INCLUDED



91/12/21 06:17 N/O
91/12/21 22:03 N/O
91/12/27 15:56 N/O
92/01/05 17:41 N/O
92/01/13 20:52 N/O
92/01/25 08:57 N/O
92/01/30 00:29 N/O
92/01/30 22:50 N/O
92/02/18 18:42 N/O
92/02/21 06:14 N/O
92/02/26 18:15 YES TRIGGER AT 29336 S UT
92/02/27 06:00 N/O
92/02/27 08:45 N/O
92/03/02 06:16 N/O
92/03/04 14:34 N/O
92/03/07 00:18 N/O
92/03/21 12:50 (NO)
92/03/26 02:01 N/O
92/03/27 09:38 N/O
92/03/29 16:38 (NO)
92/04/04 22:37 N/O
92/04/08 12:05 N/O
92/04/20 02:12 N/O
92/04/29 18:59 N/O
92/05/02 19:05 N/O
92/06/01 THRU 92/06/29 TURNED OFF--N/O
92/07/01 19:39 N/O
92/07/07 06:33 N/O
92/07/17 01:15 N/O
92/07/23 00:59 N/O
92/07/23 01:00 N/O
92/07/23 21:48 N/O
92/07/25 19:30 N/O
92/07/25 22:49 N/O
92/07/26 00:34 N/O
92/07/31 17:07 N/O
92/08/10 21:35 N/O
92/08/14 06:10 N/O
92/08/16 12:36 N/O
92/08/22 22:39 N/O
92/08/30 01:45 N/O
92/09/04 04:41 N/O

THIS LIST IS NOT COMPLETE. IT INCLUDES EVENTS FOR WHICH NO REAL-TIME DATA ARE AVALIABLE BECAUSE OF INAPPROPRIATE MODE, NO TRACKING, OR THE EXPERIMENT WAS TURNED OFF. WHERE DATA HAVE BEEN CHECKED, SENSITIVITY DEPENDS UPON THE TIME RESOLUTION AVAILABLE IN THE DATA. I'LL BE SENDING ADDITIONAL RESULTS AS THEY BECOME AVAILABLE.

REGARDS,

RAY

```
From root Wed Dec  8 07:58  1993
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA08899; Wed, 8 Dec 93 07:57:44
Received: from mx.nsi.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA22497; Wed, 8 Dec 93 07:00:41 PST
Received: Wed, 8 Dec 93 07:03:53 PST from ESSDP2.dnet by mx.nsi.nasa.gov (4.1/1.2)
Message-Id: <9312081503.AA10272@mx.nsi.nasa.gov>
Received: from ESSDP2.dnet by AMES.dnet with MAIL-11
          (utk-maillld v1.7); Wed, 8 Dec 93 07:03:57 PST
Date: Wed, 8 Dec 93 07:03:57 PST
From: 068486@essdp2.span.nasa.gov
X-To: AMES::"khurley@space6.ssl.berkeley.edu"
Subject: RE:
To: khurley@space6.ssl.berkeley.edu
Status: R

KEVIN,
HERE ARE THE RESULTS OF OUR SURVEY OF THE PVO REAL-TIME DATA FOR EVIDENCE OF
RESPONSE TO EVENTS LISTED IN YOUR CATALOG.

  DATE      TIME    PVO RESPONSE
 90/11/11  21:49  N/O
 90/11/12  14:57  N/O
 90/11/16  01:42  N/O
 90/11/19  18:08  N/O
 90/11/21  00:04  N/O
 90/11/21  18:09  N/O
 90/12/02  13:45  N/O
 90/12/21  00:30  N/O
 90/12/25  05:50  N/O
 91/01/17  00:57  N/O
 91/01/24  11:50  N/O
 91/02/04  08:58  N/O
 91/02/04  14:19  N/O
 91/02/04  14:58  N/O
 91/02/17  02:59  N/O
 91/03/14  22:56  N/O
 91/03/15  22:55  N/O
 91/04/04  17:17   (NO)
 91/05/18  17:10  N/O
 91/05/23  19:03  N/O
 91/05/27  23:44  N/O
 91/05/28  21:26  N/O
 91/06/02  22:55  N/O
 91/06/09  00:48  N/O
 91/06/29  19:55  N/O
 91/07/09  20:22  N/O
 91/07/17  13:07  N/O
 91/08/03  08:24  N/O
 91/08/15  12:34  N/O
 91/08/15  14:24  N/O
 91/08/16  01:57   (NO)
 91/09/05  23:48  N/O
 91/09/16  21:58  N/O
 91/09/25  03:35  N/O
 91/09/26  18:25  N/O
 91/09/30  11:55  N/O
 91/10/03  00:39  N/O
 91/10/04  01:27  N/O
 91/10/06  09:01   (NO)
 91/10/22  04:13  N/O
 91/10/25  21:25  N/O
 91/11/06  03:42  N/O
 91/11/14  01:40  N/O
 91/11/17  01:58  N/O
 91/12/05  23:04  N/O
```

From root Mon Aug 23 10:30 1993
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)
id AA19302; Mon, 23 Aug 93 10:29:49
Received: from east.gsfc.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
id AA23093; Mon, 23 Aug 93 10:33:20 PDT
Received: from ESSDP2.DECnet MAIL11D_V3 by east.gsfc.nasa.gov (5.57/Ultrix3.0-C)
id AA16832; Mon, 23 Aug 93 13:33:34 -0400
Date: Mon, 23 Aug 93 13:33:34 -0400
Message-Id: <9308231733.AA16832@east.gsfc.nasa.gov>
From: 046369@essdp2.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: DMSP GAMMA-RAY BURST DATA
Status: R

FROM: ESSDP2::TERRELL (JAMES TERRELL, LOS ALAMOS NATL LAB) MAILOUT.0823
TO: UCBSP::KHURLEY (KEVIN HURLEY) (EAST::"KHURLEY@SPACE6.SSL.BERKELEY.EDU"}
CC: BATSE::KOUVELIOTOU
SUBJ: DMSP GAMMA-RAY BURST DATA, AS OF 16 JULY 1993 (EXTENDED, 8/23/93)

HERE ARE SOME NOTES RE DMSP PEAKTIMES FOR YOUR MASTER BURST LIST:

```
 +  8FEB91 32416 YES (8YES,9YES,10SAA)
 + 19FEB91 42325 YES (8YES,9YES,10SAA)
 + 10MAR91 46923 YES (8YES,9YES,10YES)
 +  1JUN91 69757 YES (8SR,9YES,10YES) NO AT 69736!
 + 14AUG91 40232 YES (8NR,9YES,10YES) NO AT 40182!
   27SEP91 84415 YES (8SAA,9YES,10SAA)
   16OCT91 36696 YES (8SAA,9YES,10NR)
    4NOV91 54286 YES (8SR,9YES,10YES)
   27NOV91 15739 YES (8NO,9NO,10YES)
    2DEC91 73733 YES (8YES,9NO@144DEG,10NR)
    9DEC91 66959 N/O (8SR,9SR,10NR,11ND)
   21DEC91 22686 YES (8ND,9NO,10NO,11YES)
   10JAN92 33478 NA  (BLANK) (8ND,9NA,10SAA,11NA)
   10FEB92 35633 YES (8NO,9WEAK,10SAA,11SAA)
    6APR92  9855 N/O (OBSCURED) (8NO@141,10SR,11NO@137DEG)
    1MAY92 76696 N/O (OBSCURED) (8NO@127,10NO@157,11NO@147DEG)
*+ 19MAY92 59406 YES (8SR,10YES,11NO)
   22JUN92 25506 N/O (8SAA,10NR,11SA)
*  28JUN92 76452 YES (8ND,10YES,11NO)
   29JUN92 75897 YES (ALL YES, SOFT)
   14JUL92 47069 NA  (BLANK) (8NA,10SAA,11SR)
*  16JUL92 60933 YES (9NO.10YES,11YES)
   20JUL92 11524 N/O (OBSCURED) (8NA@130,10NA@145,11SR)
   23JUL92 72188 N/O (OBSCURED) (8ND,10NA@148,11NR)
 + 26JUL92   165 YES (8NO,10YES,11YES,BOTH SOFT AND WEAK)
*+ 31JUL92 61660 YES (8SA,10YES,11NO) NO AT 61620!
   10AUG92 79599 YES?(8YES?,10NA,11NA) (LONG SOFT PEAK)        (SEE NOTE BELOW)
*+ 22AUG92 81542 YES (8YES,10YES,11YES)
*   4OCT92 50421 YES (8YES,10YES,11SR)
   23NOV92 22727 YES (8YES,10YES,1SR) (NOT AT 22712)
   23NOV92 46542 YES (8NR,10SR,11YES) (NOT AT 46584, BATSE GRB)
    7DEC92 57649 YES (8YES,10YES,11YES)
    6JAN93 55260 YES (8SAA,10YES,11SR)
   12JAN93 55082 YES (8YES,10NO@138,11VERYWEAK) (8:BIG PEAK AT 55202)
   20JAN93 84779 YES (8YES,10,YES,11YES) (NO, AT 84700!)
```

* I WILL BE SENDING YOU BY FAX DMSP LOCATION PLOTS FOR THE EVENTS MARKED ABOVE WITH AN ASTERISK, PLUS A DATA PLOT FOR DMSP8, 10AUG92.
I WOULD APPRECIATE KNOWING WHETHER THESE HELP IN LOCATING EVENTS.
IF YOU WANT MORE COMPLETE INFORMATION PLEASE TELL ME. I HAVE RECEIVED NO SOURCE LIST FROM YOU SINCE 920626. DID YOU RECEIVE MY LIST SENT 920716?

\+ LISTINGS ADDED 930823 TO 930716 LIST. --JIM TERRELL

```
From root Fri Feb 11 11:04  1994
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA04796; Fri, 11 Feb 94 11:04:56
Received: from SSTDP2.LANL.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)
        id AA08305; Fri, 11 Feb 1994 10:08:42 +0800
Date: Fri, 11 Feb 1994 11:10:15 -0700 (MST)
From: 046369@SSTDP2.LANL.GOV
To: KHURLEY@space6.ssl.berkeley.edu
Message-Id: <940211111015.23c0a354@SSTDP2.LANL.GOV>
Subject: DMSP OBSERVATIONS OF GRB
Content-Length: 2047
Status: R

FROM:   SMTP%"TERRELL@ESSDP2.LANL.GOV" (ESSDP2::TERRELL) (JAMES TERRELL 94/02/11)
TO:     SMTP%"KHURLEY@SPACE6.SSL.BERKELEY.EDU" (KEVIN HURLEY)
CC:
SUBJ:   DMSP OBSERVATIONS OF GRB

Kevin:
Here are some corrections, additions, or questions re your list of GRB  as
sent to me on 940106:

  DATE     UT   COMMENTS---
920110  33478  DMSP SHOULD BE NA (NOT APPARENT), NOT NO (I.E., OMIT "NO")
920125  33247  DMSP ND (NO DATA, N/O IN YOUR NOTATION)
920315  17694  ULYSSES TIME, BUT GRO DETECTED A GRB AT 15569!?
920414  84166  (PVO TIME)  GRO DETECTED A GRB AT 84163!?
920714  47069  DMSP SHOULD BE NA, NOT NO (I.E., OMIT "NO")
920726   2066  ULYSSES TIME, BUT ULYSSES IS "NO"!? DMSP10,11 @0165 (SOFT)
920727  43347  ULYSSES TIME, BUT BATSE SAW IT!? (WHEN?)
921004  49107  ULYSSES TIME, BUT EURECA SAW IT!? (WHEN?)
930106  56259  DMSP YES (NOT AT 55260)
930201  60115  DMSP8 YES (PEAKS AT 60129.0,60211.0,60281.0 UT)
930318  44993  ULYSSES TIME, BUT BATSE AND EURECA SAW IT! (WHEN?)
930405  32089  DMSP YES (8,10,11 AT 32105 AND 32110)
930410  51547  DMSP NO
930506  53571  DMSP8 YES AT 53577,10ND,11YES AT 53580
930506  57060  (ULYSSES TIME) DMSP8 YES AT 57669,10NO,11YES AT 57670,57688,57704
930510  41935  (ULYSSES TIME)  NOT APPARENT IN FULL DMSP DATA
930511    892  (ULYSSES TIME)  NOT APPARENT IN FULL DMSP DATA
930612   2657  DMSP10 YES AT 2662 (8SAA, 11NA)
930825  31643  (ULYSSES TIME) 8NA,10NA,11? (SOFT PEAK ~33500)
930922  12830  (ULYSSES TIME) NOT APPARENT IN DMSP DATA (DMSP11 GLITCH?)
930922  23086  ULYSSES TIME, BUT BATSE SAW IT! (WHEN?) (DMSP8NA,11NA,10~23000?)
930925  73995  (ULYSSES TIME) DMSP NA (NOT APPARENT)
931006  18653  (ULYSSES TIME, 18062?CORR) DMSP NA
931006  69587  (ULYSSES TIME, 68961?CORR) DMSP NA
931006  77510  ULYSSES TIME, BUT BATSE YES! (WHEN?) (DMSP NA)
931007  72864  (ULYSSES TIME, 72239?CORR) DMSP NA
921011  45034  (ULYSSES TIME, 45200?CORR) DMSP NA

I would appreciate any clarifications or comments, and especially more
event times to check against DMSP data.  We now have data processed
thru 931118.  --Jim
```

From KOSHUT@ssl.msfc.nasa.gov Mon Jul 27 13:08:20 1992
Date: Mon, 27 Jul 1992 15:09:11 -0500 (CDT)
From: KOSHUT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1458

BATSE BURST TRIGGER

NO.: 01725

July 26

TIME: TJD=8829 SECONDS=29855

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE WITH EMISSION OBSERVED ABOVE 100 KEV. EXACT DURATION UNKNOWN DUE TO MISSING DATA, BUT THE DURATION IS AT LEAST 90 SECONDS. THE PEAK RATE IS OBSERVED AT ~ TRIGGER + 10 SECONDS. CLASSIFIED AS A C1.3 FLARE IN GOES X-RAY DATA.

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

E  SE BURST #
E  NT OF 1992 JUL 25 DAY OF YEAR=207
EVENT CROSSING TIME AT BATSE      : 86335. S. OR 23:58:55.0
COORDINATES ARE     .000     .000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 338.000  -53.000
BATSE PEAK COUNTING RATE: 0          C/S
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
POSITION OF ULYSSES ON 25/ 7/  92 IS:
RA=  152.819 DEC=    4.510 DIST=    6.150 AU
BATSE-ULYSSES DISTANCE =  920062440. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 48.68 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2026.47 SECS.
CROSSING TIME AT ULYSSES    IS 88361. S. OR   24:32:41 +/-  480.93 SECONDS
```

1e July 26

NASA TELEFAX

BATSE

MARSHALL SPACE FLIGHT CENTER
HUNTSVILLE, ALABAMA 35812
SPACE SCIENCE LABORATORY

From:

Name: JOHN HORACK Mail Code: ES-62

Phone: 205/544/1872 FAX No.: 205-544-5800

DATE 7/28/92 This is page 1 of 1 pages

To:

Name: Kevin Hurley FAX No.: 61 55 67 01

Address: _____

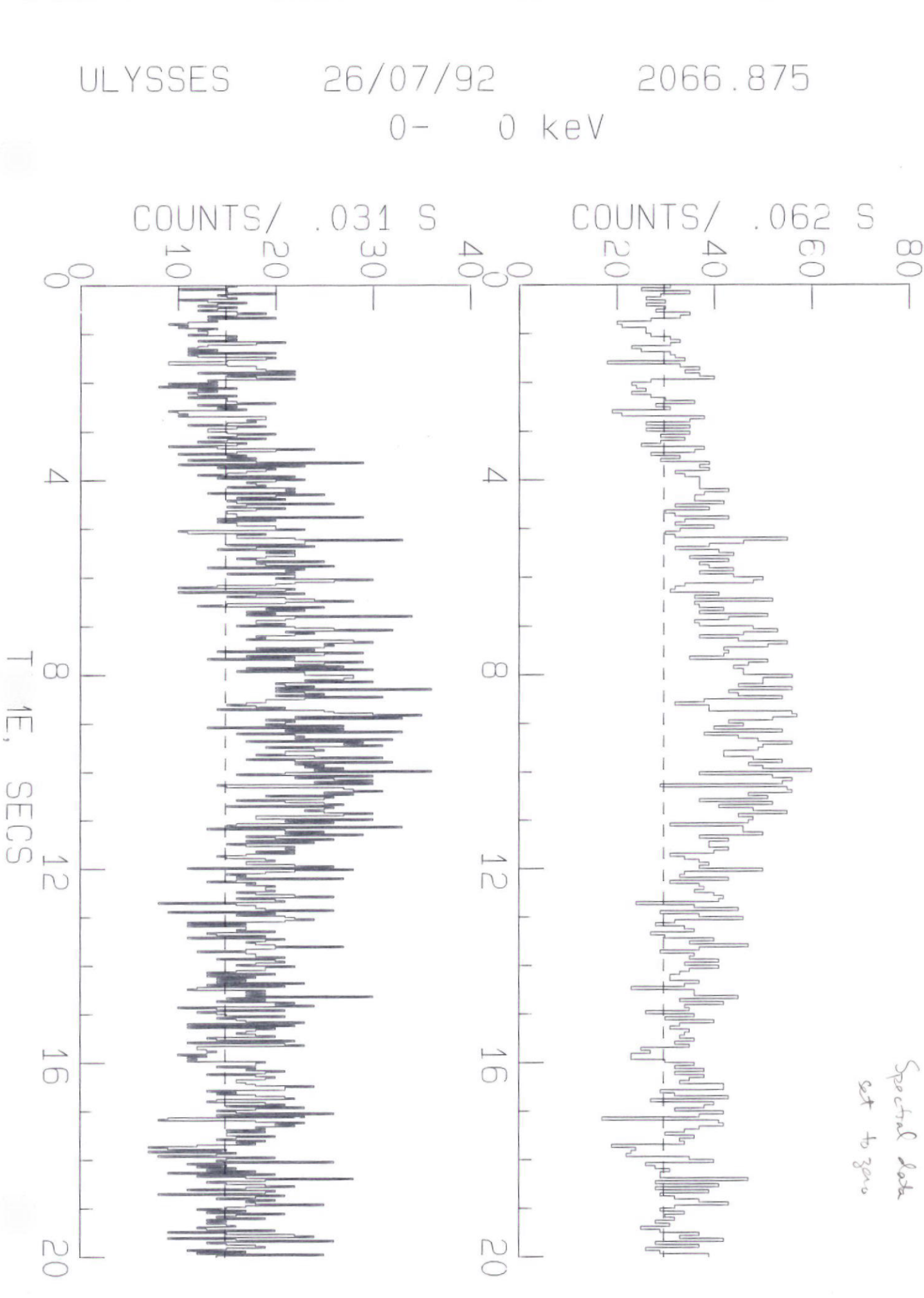
Kevin:

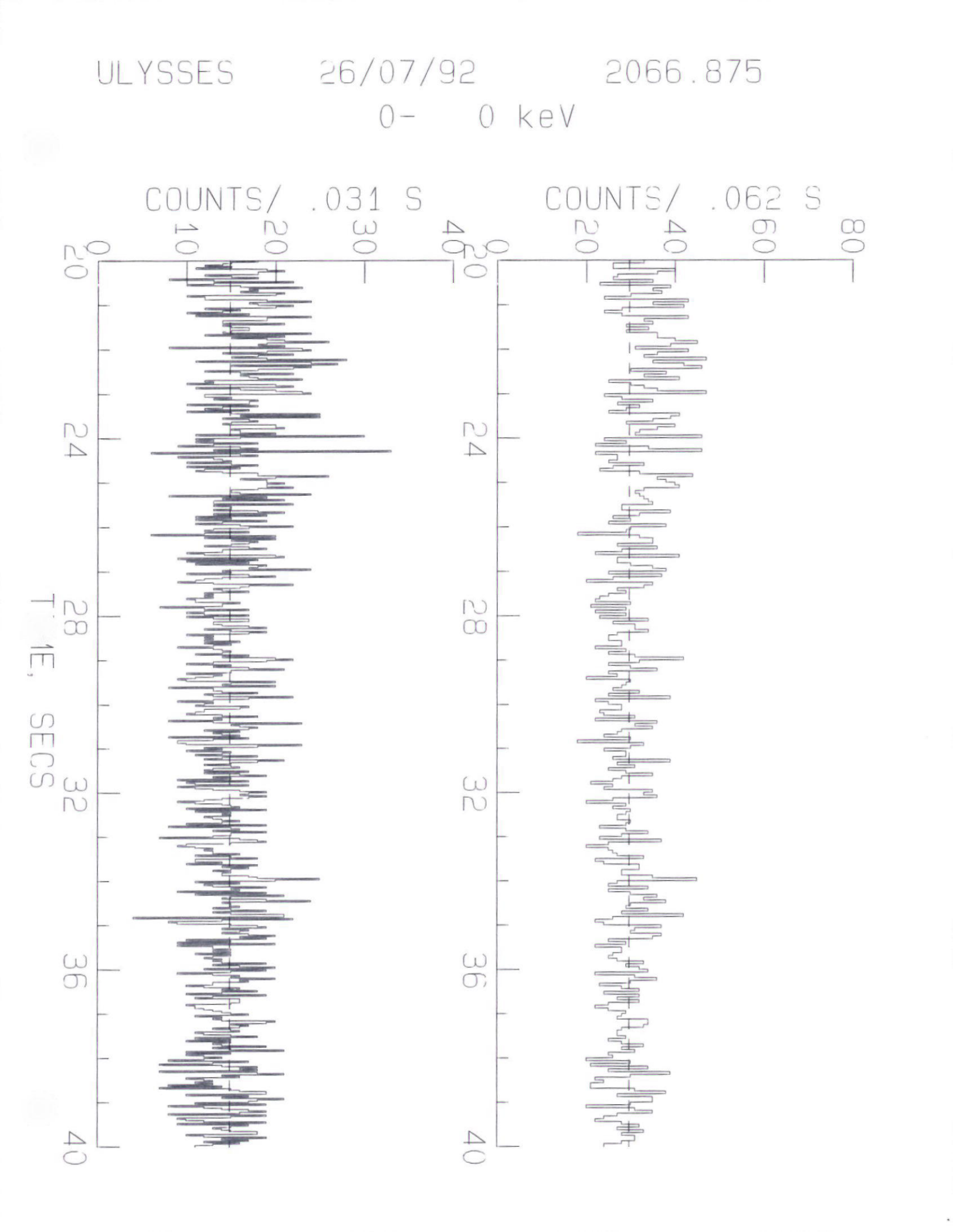
We have no events either triggered or untriggered corresponding to your three plots of 7/24, 7/25, and 7/27. Sorry! Our last trigger number received is # 1725, A solar flare.

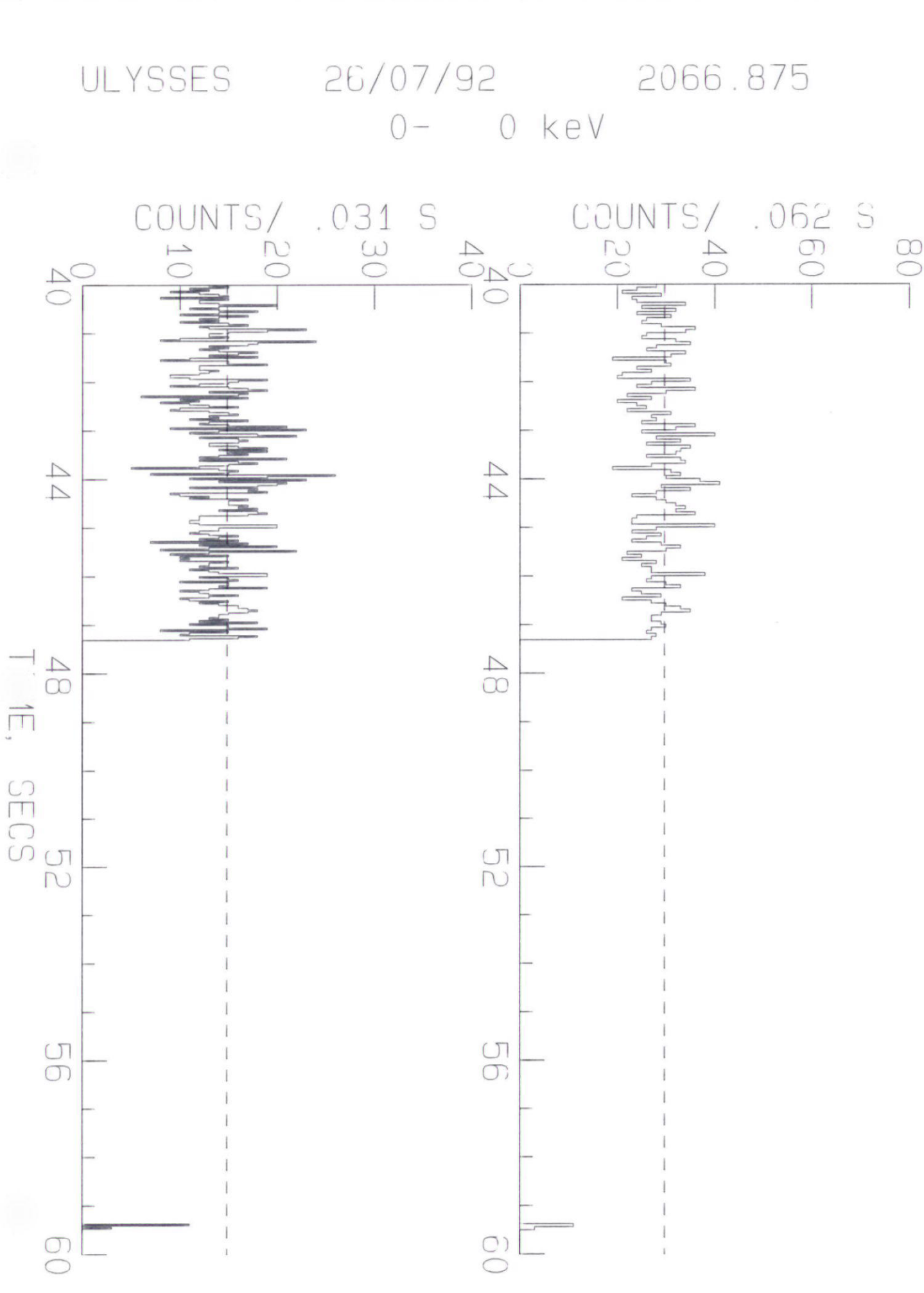
You are up to DATE.

More to come (hopefully)

John Horack


ULYSSES 26/07/92 2066.875
0- 0 keV
COUNTS/ .031 S
COUNTS/ .062 S
0
10
20
30
40
0
20
40
60
80
0
4
8
12
16
20
T - 1E, SECS
Spectral data
set to zero


ULYSSES 26/07/92 2066.875
0- 0 keV
COUNTS/ .031 S
0 10 20 30
COUNTS/ .062 S
0 20 40 60 80
20 24 28 32 36 40
T, 1E, SECS


ULYSSES 26/07/92 2066.875
0- 0 keV
COUNTS/ .031 S
0 10 20 30 40
COUNTS/ .062 S
0 20 40 60 80
40 44 48 52 56 60
T-1E, SECS

ULYSSES 26/07/92 2066.875

0- 0 keV

COUNTS/ .031 S

0 200 400 600

COUNTS/ .062 S

0 200 400 600

0 4 8 12 16 20

TIME, SECS

ULYSSES 26/07/92 2066.875

0- 0 keV

COUNTS/ .031 S

0 200 400 600

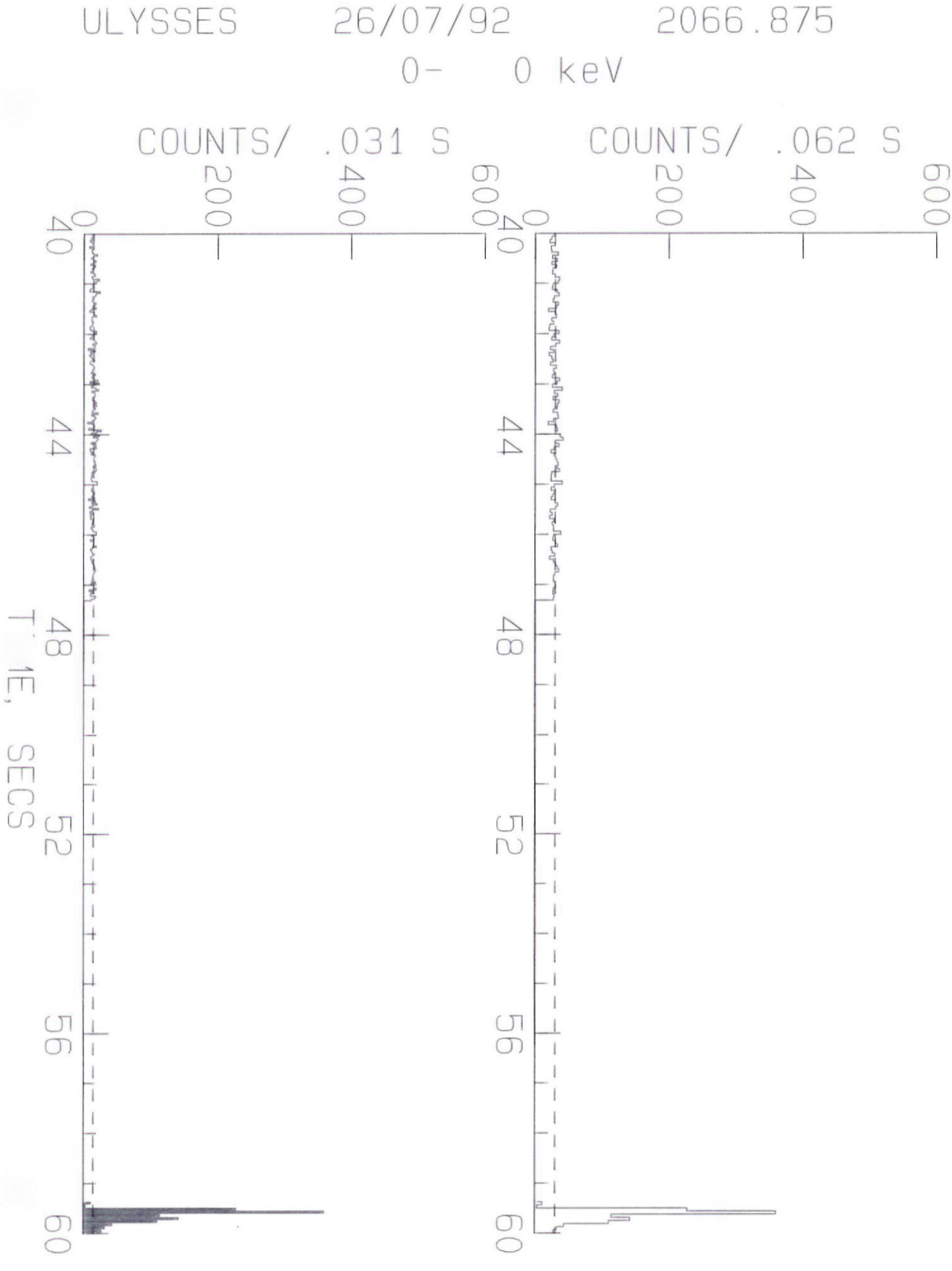
20 24 28 32 36 40

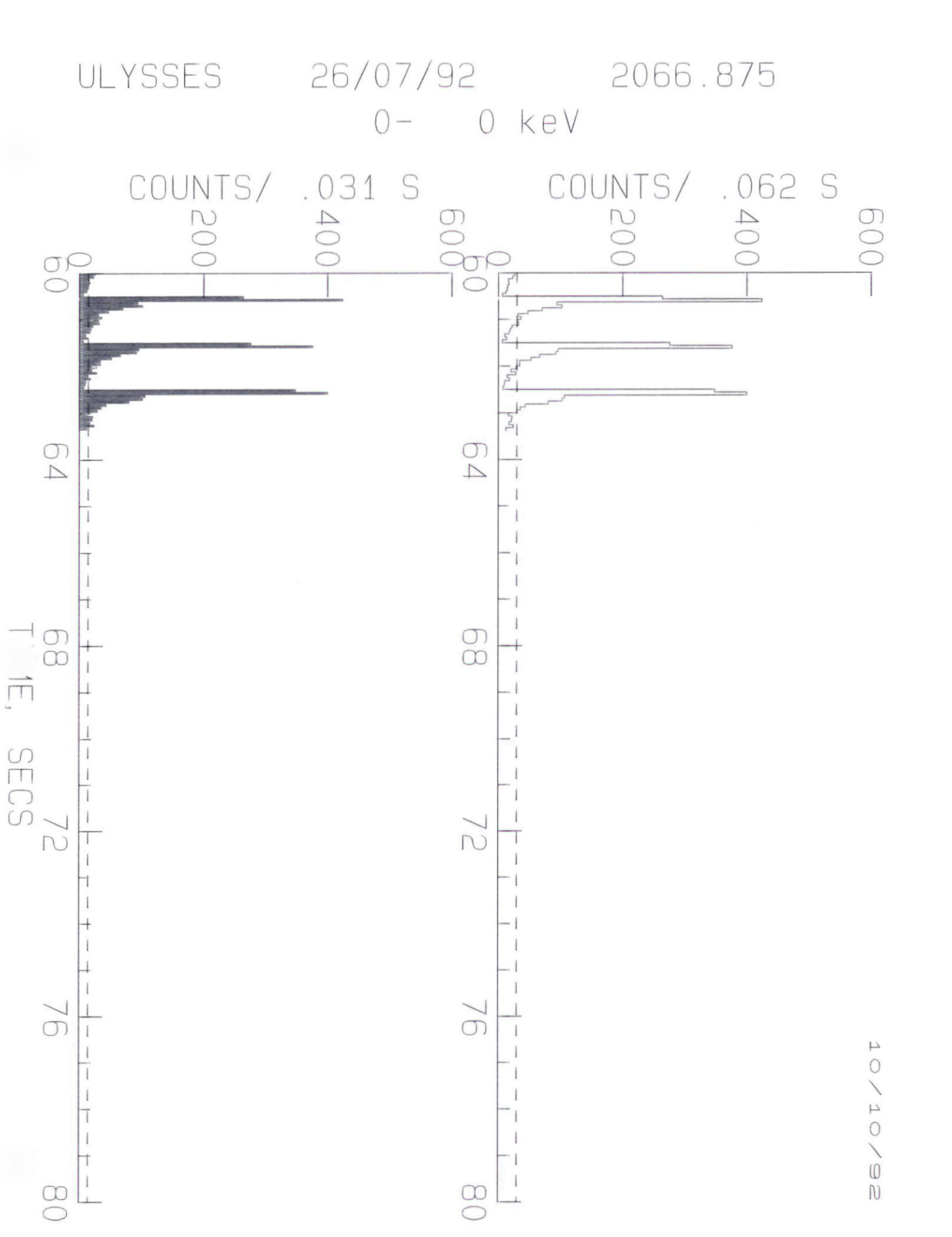
COUNTS/ .062 S

0 200 400 600

20 24 28 32 36 40

T 1E, SECS


ULYSSES 26/07/92 2066.875
0- 0 keV
COUNTS/ .031 S
COUNTS/ .062 S
0
200
400
600
40
44
48
52
56
60
T, 1E, SECS

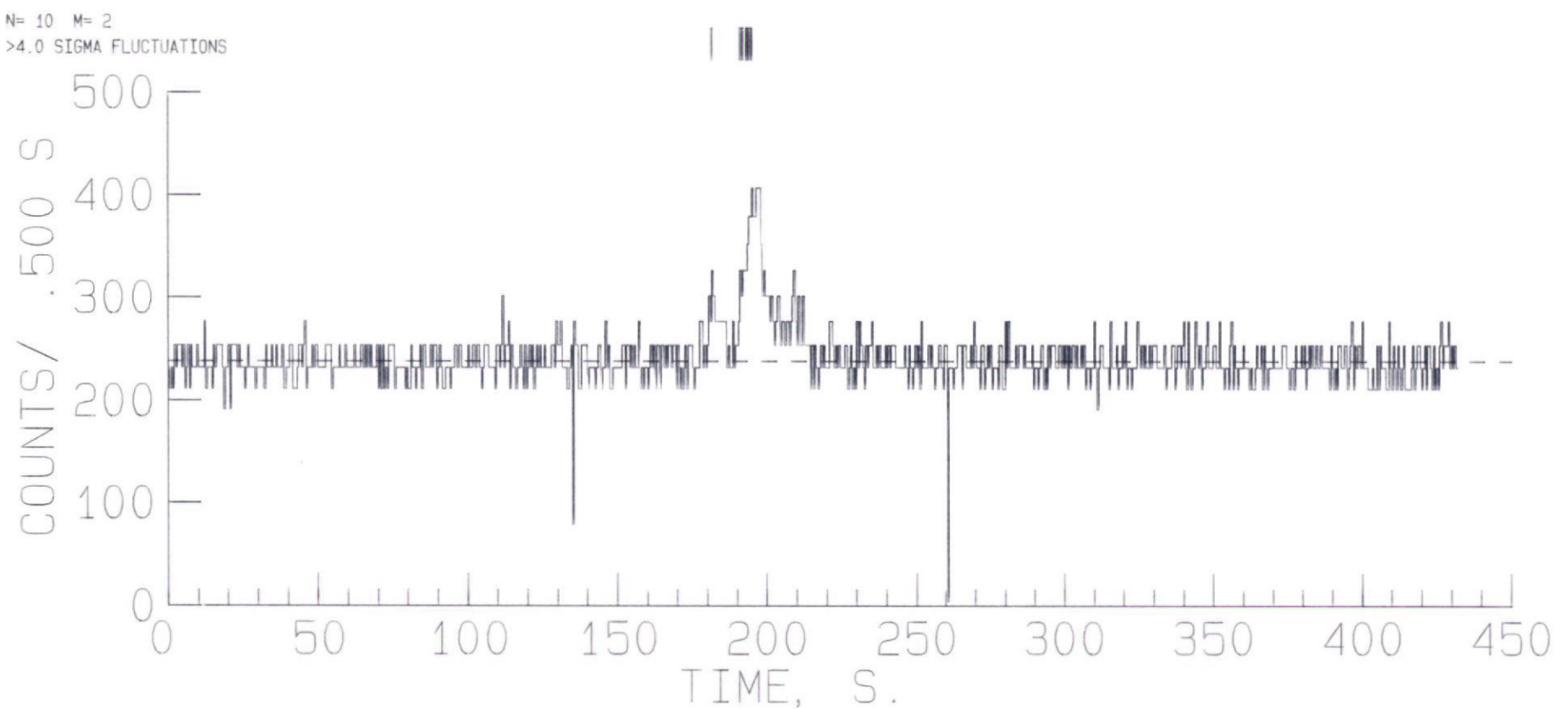

ULYSSES 26/07/92 2066.875
0- 0 keV
COUNTS/ .031 S
COUNTS/ .062 S
0
200
400
600
60
64
68
72
76
80
TIME, SECS
10/10/92

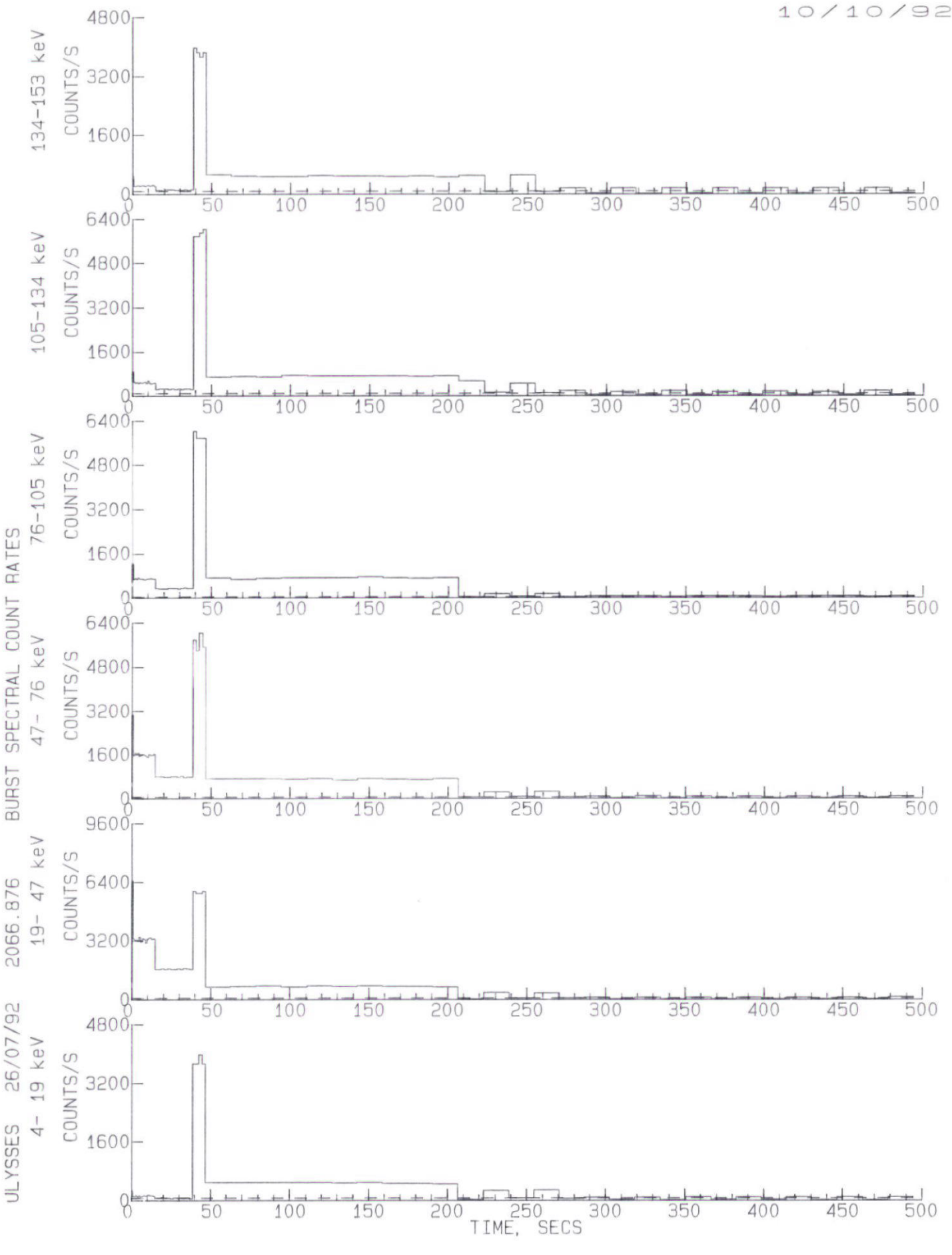
10/10/92

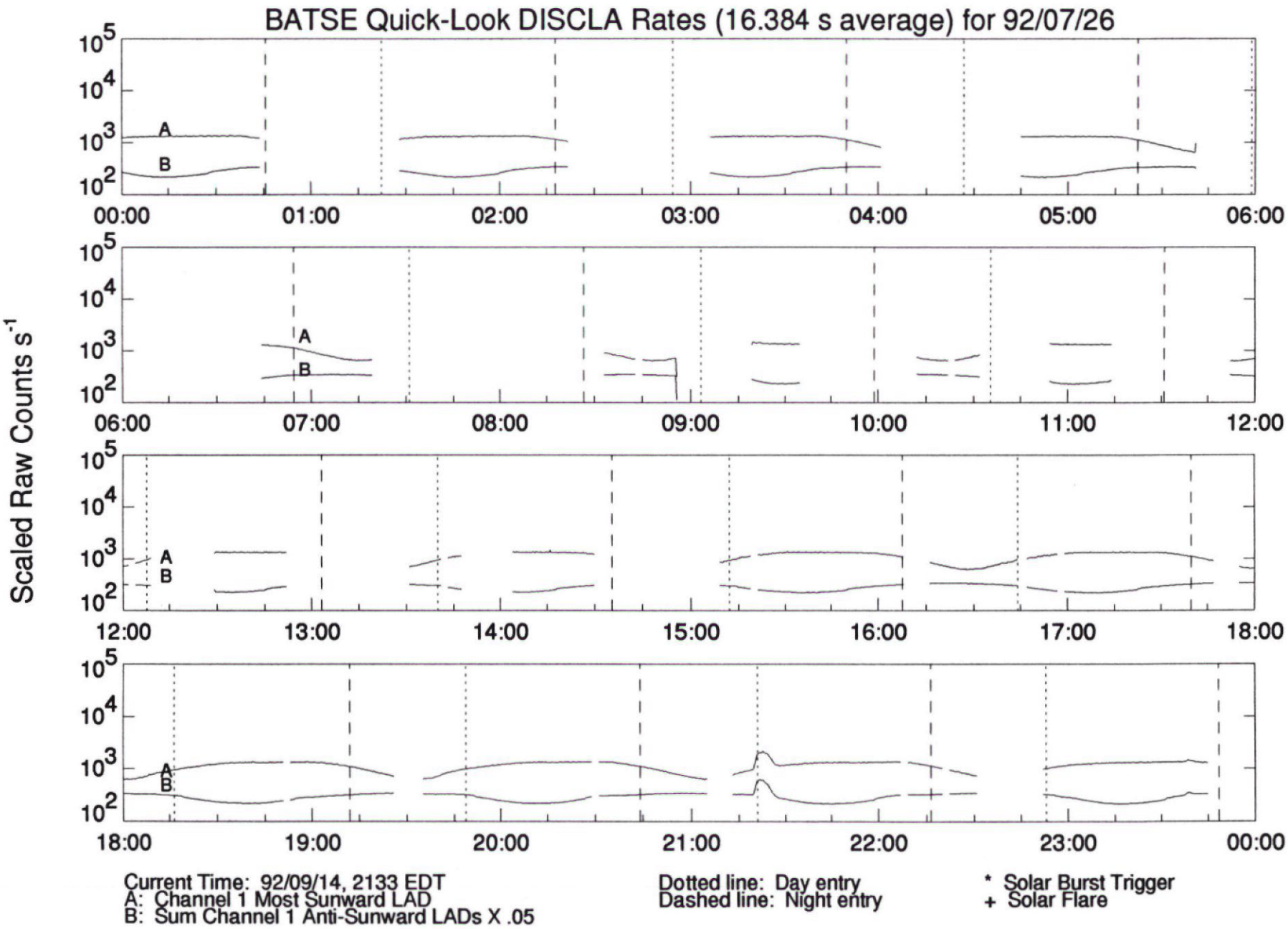
ULYSSES RT

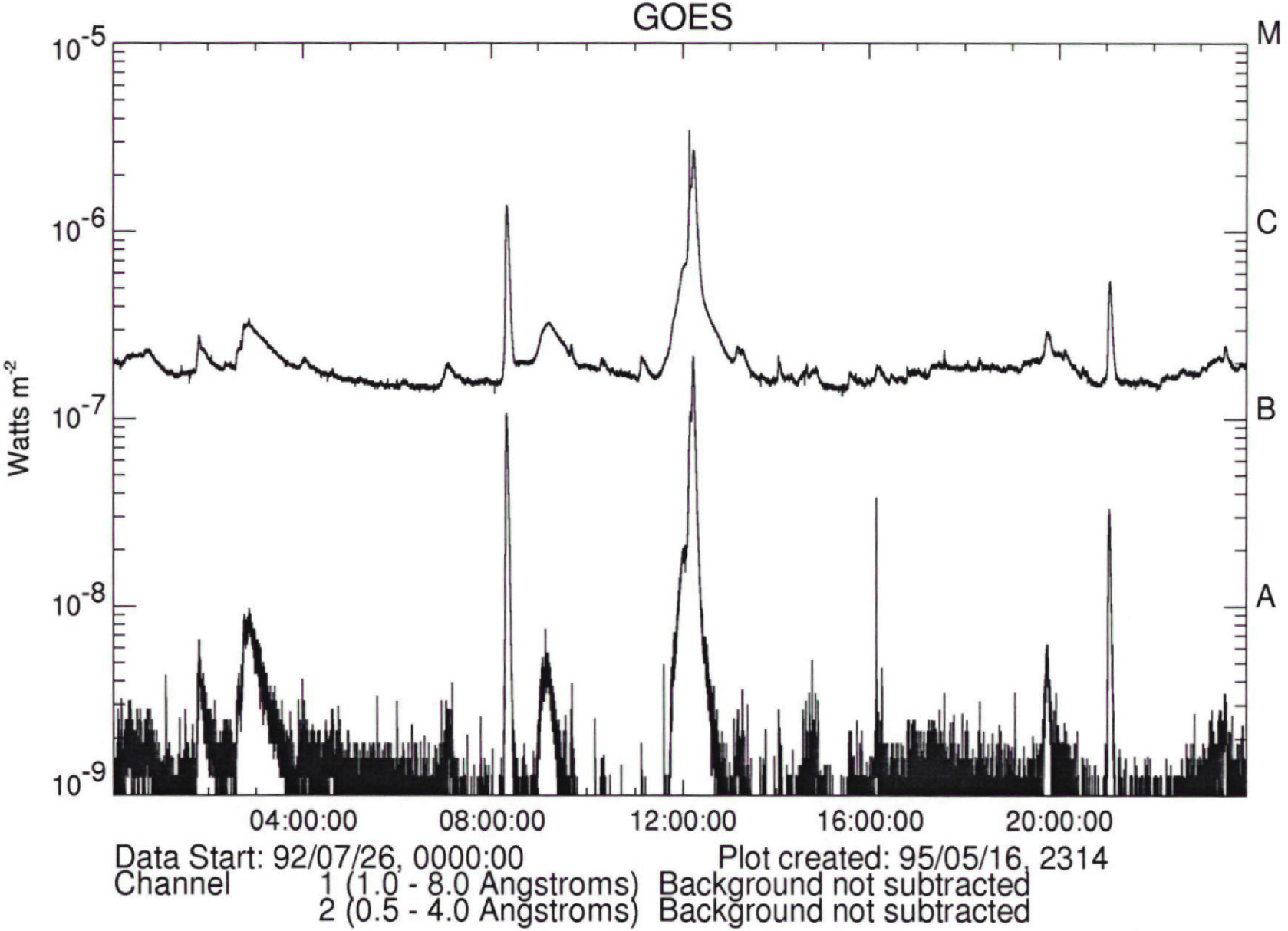
26/ 7/92 1872.391 s

0- 0 keV



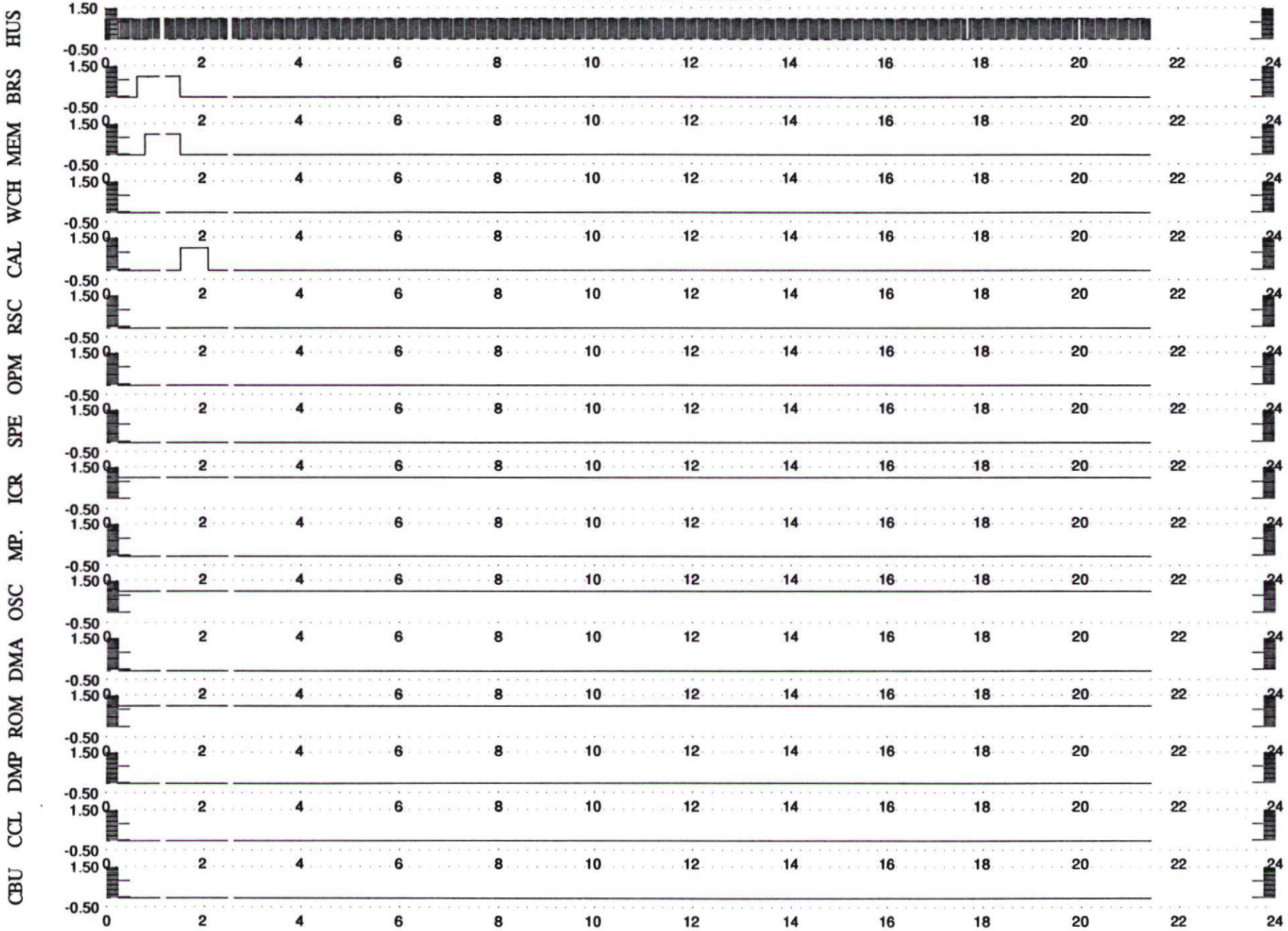

10/10/92
ULYSSES 26/07/92 2066.876 BURST SPECTRAL COUNT RATES
4- 19 keV
19- 47 keV
47- 76 keV
76-105 keV
105-134 keV
134-153 keV
COUNTS/S
TIME, SECS


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/26
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
Current Time: 92/09/14, 2133 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^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/26, 0000:00
Plot created: 95/05/16, 2314
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 208, year 1992 to day 208, year 1992 9/11/92

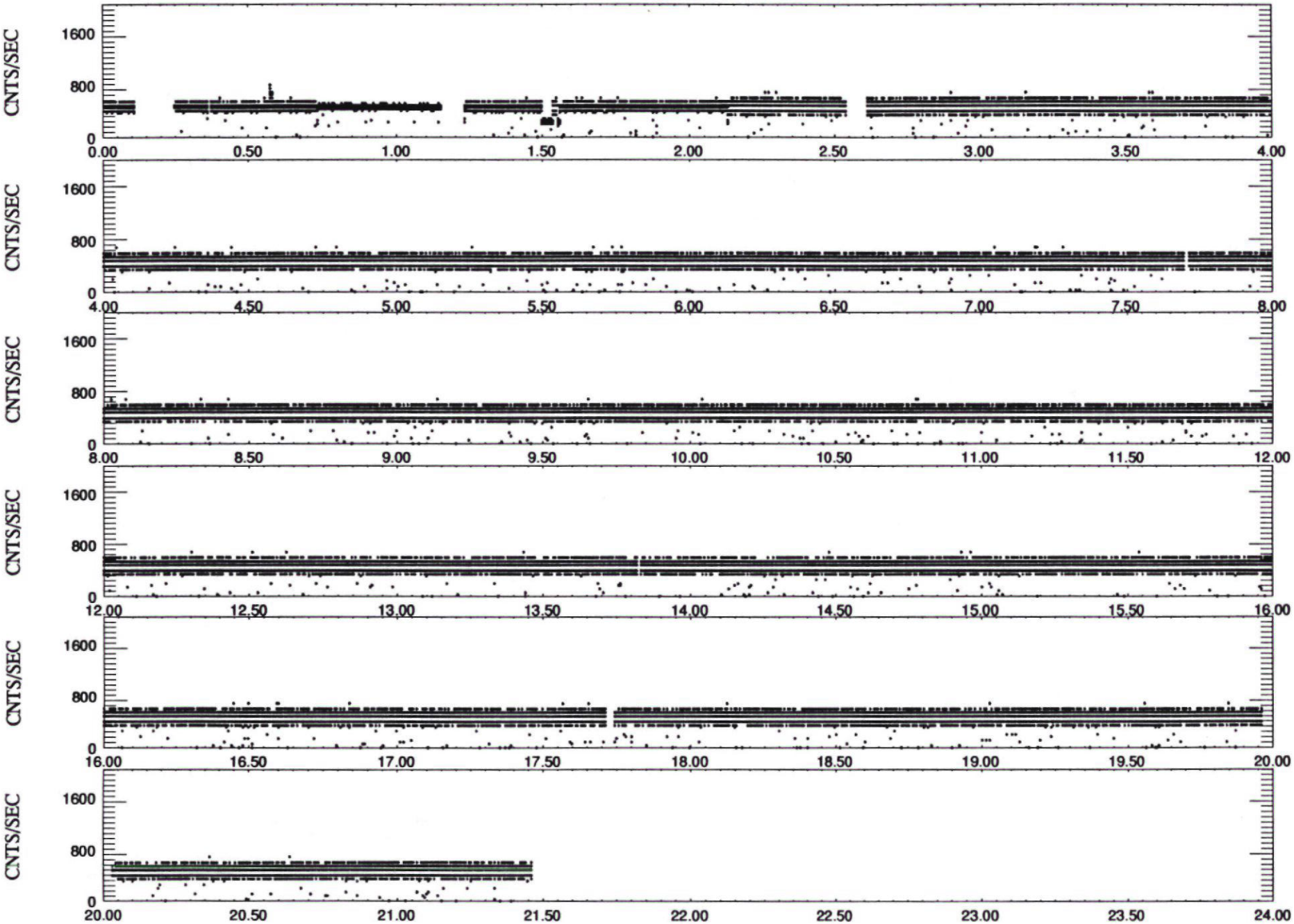
BURST NUMBER 2



UNIVERSAL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 208, year 1992 to day 208, year 1992 9/11/92

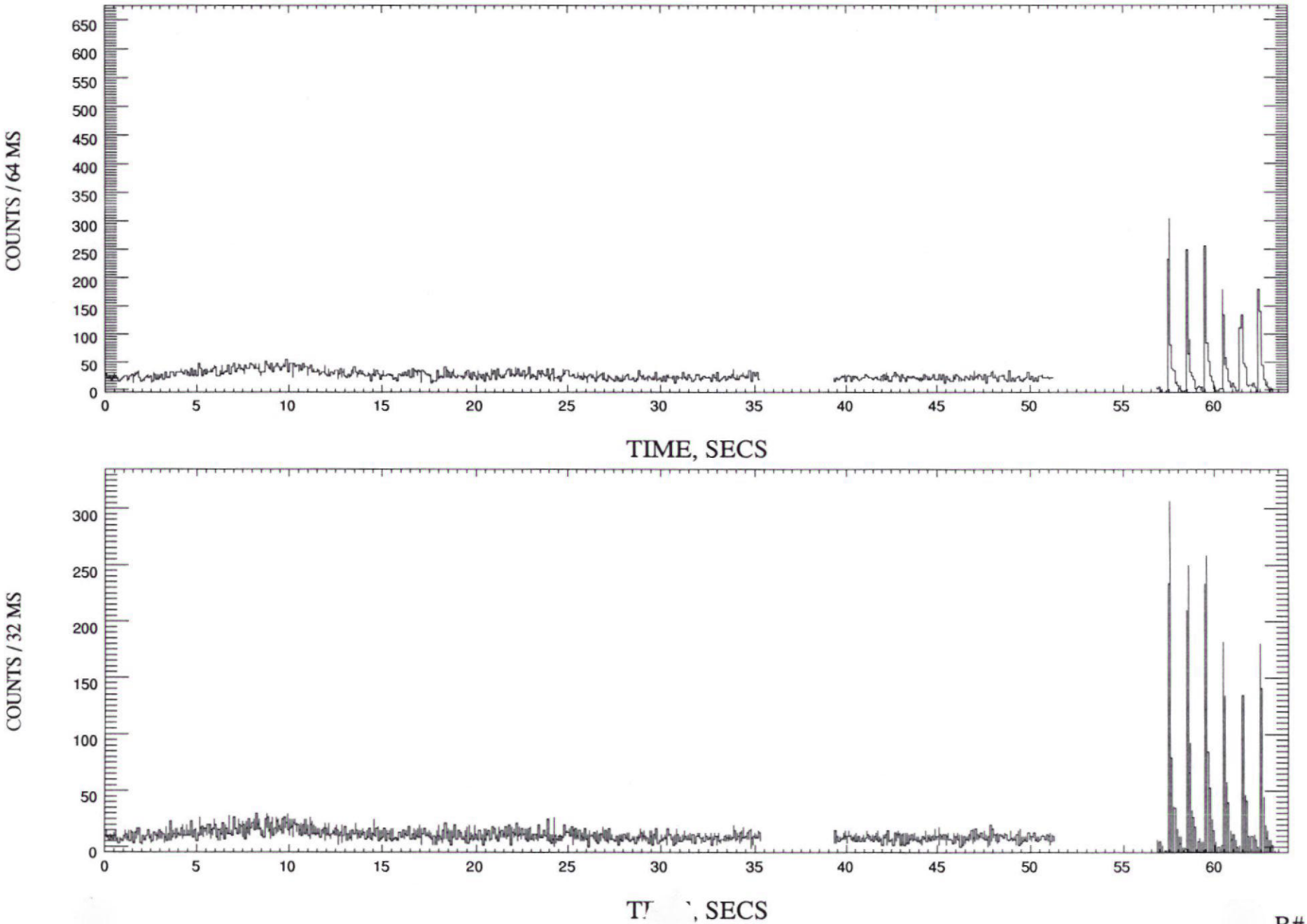
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 208, year 1992 9/11/92

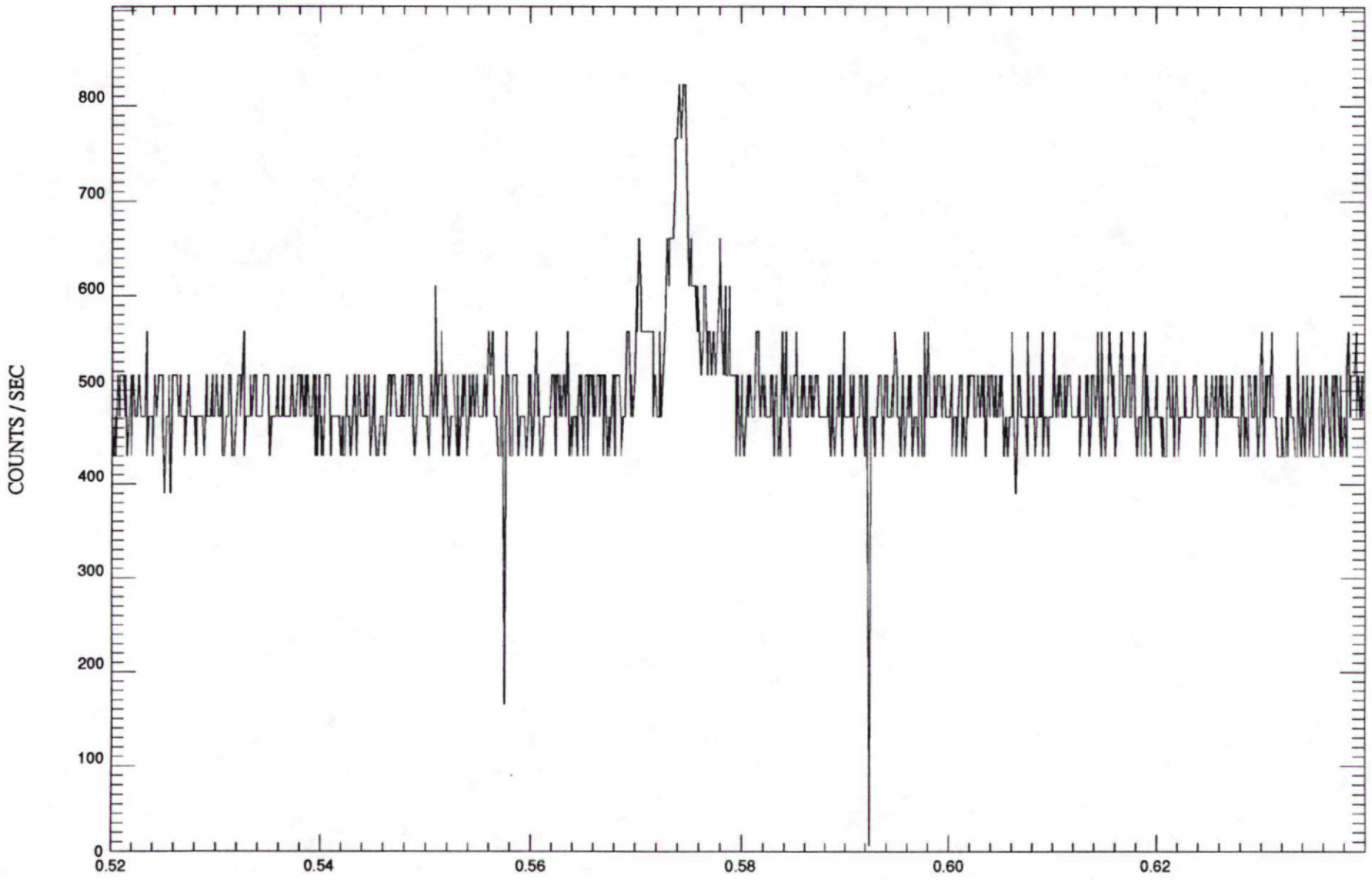
Burst Counter 2 at UT= 0.574133817885 h= 2066.882 s



B# 1

HUS 2A, MODE 1, NOT AVERAGED QEDR day 208, year 1992 to day 208, year 1992 7/27/92

CALIBRATION DATA INCLUDED



****
CATSEARCH PROGRAM
****

BATSE BURST # 1726
EVENT OF 1992 JUL 27 DAY OF YEAR=209
EVENT CROSSING TIME AT BATSE : 43146. S. OR 11:59:05.8
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 322.500 18.400
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 27/ 7/ 92 IS:
RA= 153.062 DEC= 4.344 DIST= 6.165 AU
BATSE-ULYSSES DISTANCE = 922243608. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 25.01 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2787.75 SECS.
CROSSING TIME AT ULYSSES IS 45934. S. OR 12:45:33.6 +/- 318.16 SECONDS

ND

From MALLOZZI@ssl.msfc.nasa.gov Wed Jul 29 13:07:07 1992
Date: Wed, 29 Jul 1992 15:09:02 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01726

July 27

TIME: TJD=8830 SECONDS=43145 11:59:05

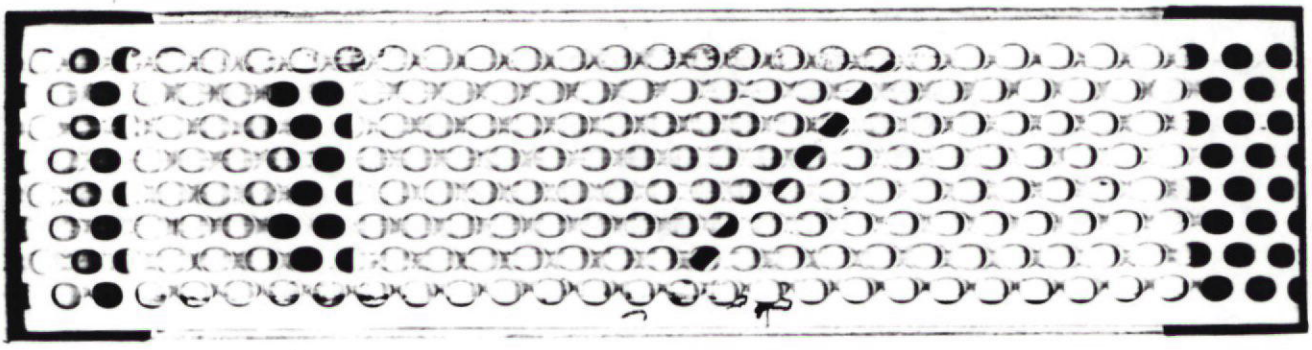
TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

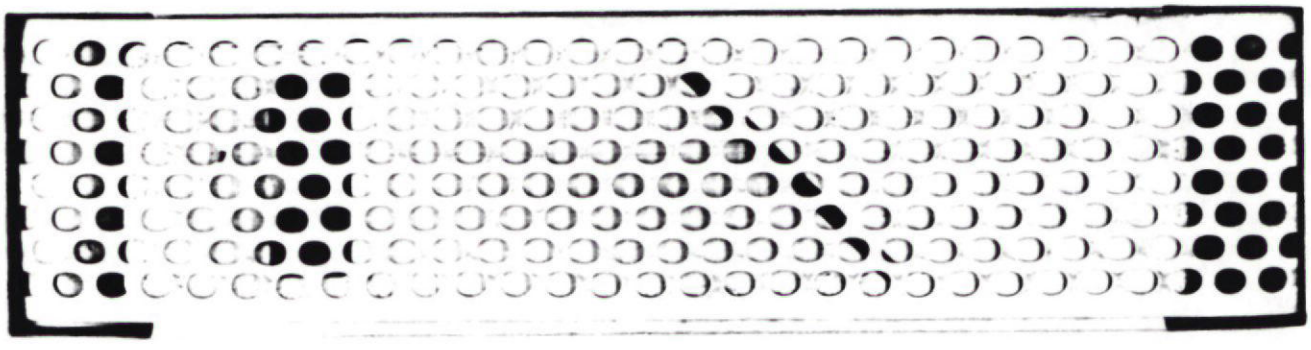
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=42.7 AZIMUTH=208.1 ERROR= DEGREES

COMMENTS:
SINGLE PEAK BURST OBSERVED ABOVE 300 KEV. DURATION ~5 SEC WITH A
FAST RETURN TO BACKGROUND LEVEL.





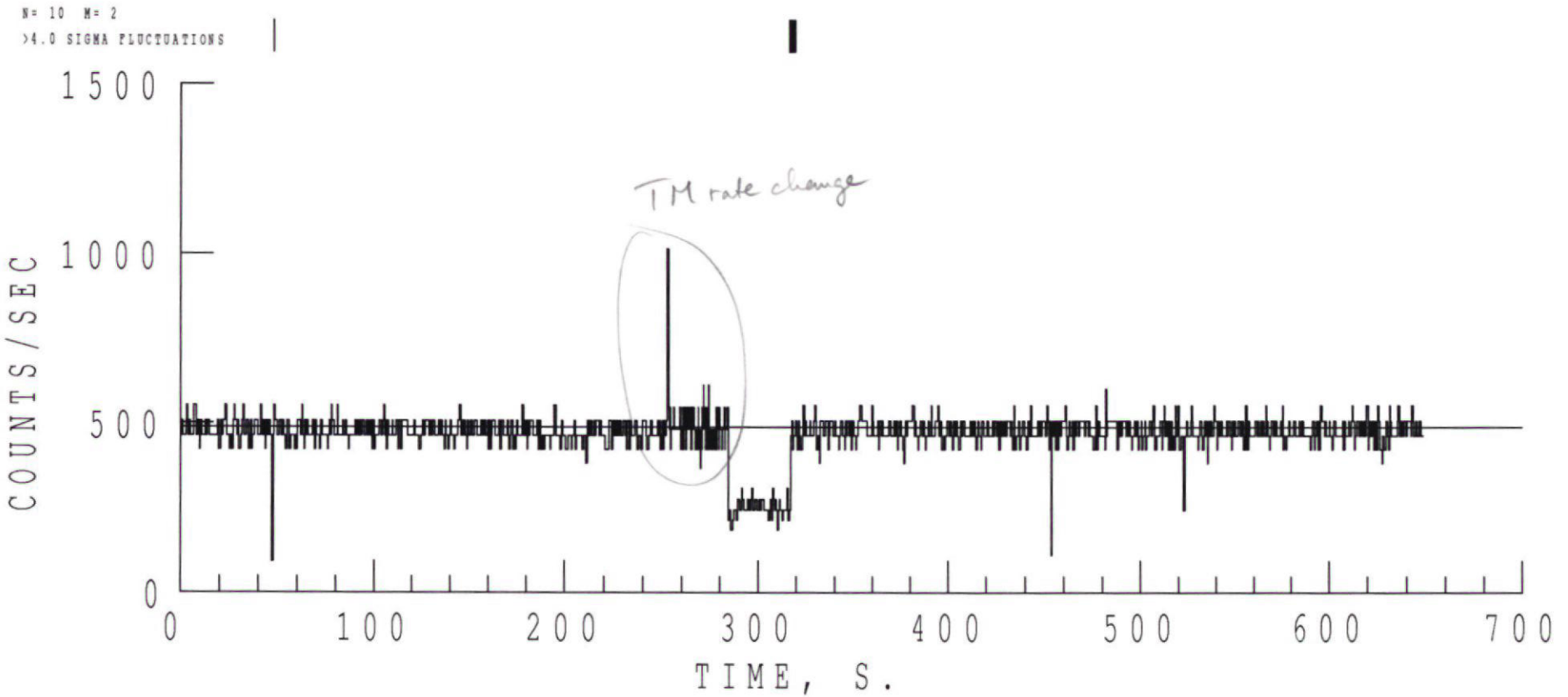
BATSE BURST# 1726

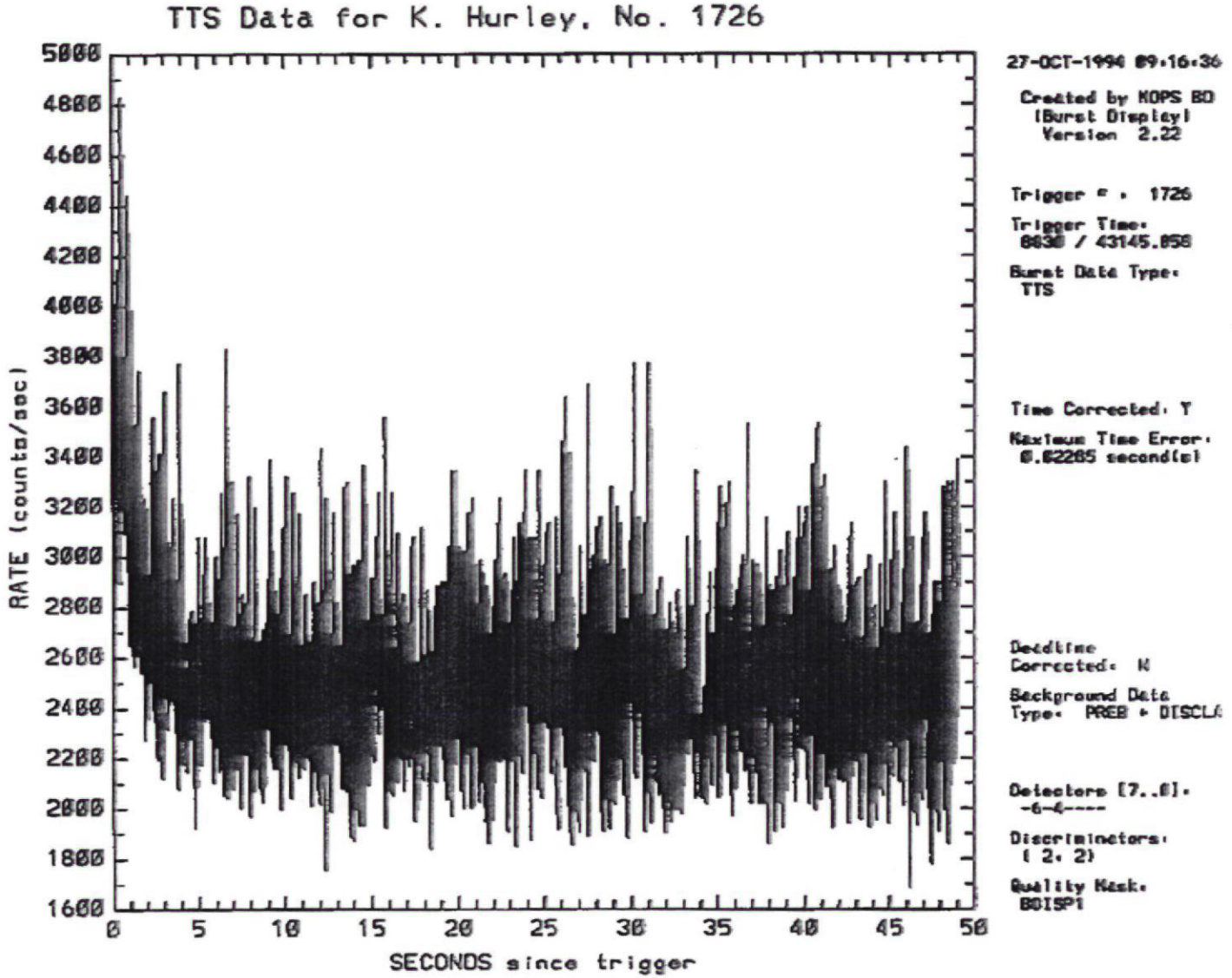
8/ 6/94

ULYSSES RT

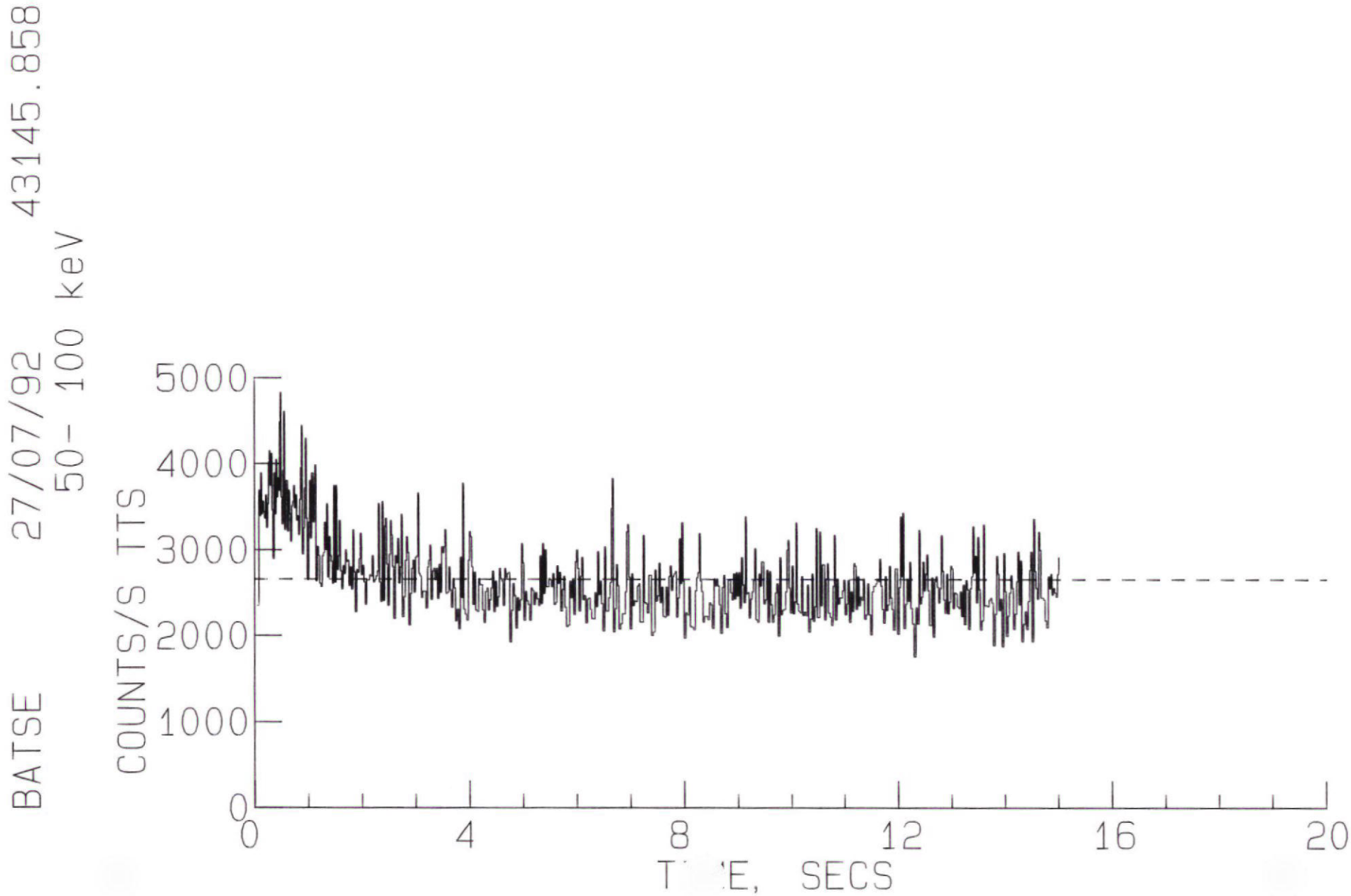
27/ 7/92 45612.219 s

0- 0 keV




TTS Data for K. Hurley, No. 1726
RATE (counts/sec)
SECONDS since trigger
27-OCT-1994 09:16:36
Created by MOPS BD
(Burst Display)
Version 2.22
Trigger # : 1726
Trigger Time:
8630 / 43145.858
Burst Data Type:
TTS
Time Corrected: T
Maximum Time Error:
0.62285 second(s)
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Detectors [7..0]:
-6-4----
Discriminators:
(2, 2)
Quality Mask:
BDISP1

5/11/94


BATSE 27/07/92 43145.858
50- 100 keV
COUNTS/S TTS
5000
4000
3000
2000
1000
0
0
4
8
12
16
20
TIME, SECS

From TERRELL@nisdp0.lanl.gov Wed Dec 4 10:49 PST 1996
From: TERRELL@nisdp0.lanl.gov
Date: Wed, 4 Dec 1996 11:49:45 -0700
khurley@sunspot.ssl.berkeley.edu
ject: dmsp data (920727)

From: jterrell@lanl.gov (James Terrell, NIS-2) 961204
To: jlaros@lpl.arizona.edu (John Laros)
CC: khurley@sunspot.ssl.berkeley.edu (Kevin Hurley) (data truncated)
Subj: DMSP data (920727)

John:
Here are 2 more data sets, for GRB920727, which was evidently detected by both DMSP 8 and DMSP10 (11 was in the south radiation belt). This may be the GRB detected by ULYSSES at 43347 UT. What was the ULYSSES time history like?
Preceding the data are some lines extracted from my files, regarding bursts you have asked about. In cases where there was no DMSP detection, I do not plan to send any data. PUB91 means published in proceedings of a 1991 meeting. --Jim

---

DMSP GAMMA PEAKS, 2-SEC COUNTS. 99DEG ORBITS FOR 8--13: TERRELL DMSP.GAM 961127MOD 1204
6108,6077,6035,6114,6120,6119 SEC. ALT=800KM, VIEW TO 117 DEG. GRB PEAKTIMES
(8,9,10--12,13) CORRECTED FOR AVG DELAYS: 1.82,1.98,5.50,-0.13 SEC. CHANNELS:
(8)--50,100,200,420 (9)--50,100 (10--12)--50,100,200,430,550(-1000 KEV)
(13)--60,150,375--6000,>6000 KEV (8,9:SSBXM; 10--12:SSBX2; 13:SSBX). BATSE: 3B

DATE	FL	DAY	TIME	NOTES---(ND=NO DATA,NA=NOT APPARENT & NOT ANALYZED)-------- (NO=DATA CHECKED--SHOWS NO DETECTION)(SR=S. RADIATION BELT) (NR=NORTH RADIATION BELT)(SAA=SOUTH ATLANTIC ANOMALY)	
901204		338	P34691	PVO TRIGGER 34690.57, UL TRIGGER 35044@181LS	
	8	338	34973	PEAKS 34973.0 (400/S,<10S), 34991.0 (80/S,<2S)	11/96 L
	9	338	34973	PEAKS 34973.0 (200/S,<10S), 34991.0 (WEAK,50?/S,<2S)	11/96 L
901225		359	P03516	PV0 GRB (3515.8) @823LS (8NO,9ND,10ND)	11/96
910123		023	U45631	UL TRIGGER @456LS (8NO,9NO,10NO)	11/96
910208		039	U32238	ULYSSES TRIG @593LS (PVO COSMIC TRIG 32379.9@760LS)	
	8	039	32414	SHARP PEAK (32414.5,1200/S,<2S) (10SAA)	PUB91 L
	9	039	32416	HARD,SHARP PEAK(1500/S,<4S), 32415.5+TAIL TO 32431	PUB91 L
910219		050	42324	WATCH GRB,PVO 42658.3@732LS,ULYS (1406+59.8)(10SAA)	
	8	050	42324	GRB PEAKS 42323.6(250/S,<4S),42373.6(100/S,<4S,WEAK)	
	9	338	34973	PEAKS 34973.0 (200/S,<10S), 34991.0 (WEAK,50?/S,<2S)	11/96 L
910310		069~	46930	IAU 5207 GRS1217+06.6(1950)(184.8+6.4)PVO,WATCH(46925)	DIRPLOT
		068U	46767	ULYSSES RISE @888LIGHT-SEC	
	8	069	46923	GRB PEAKS AT 46923.2(500/S),941.2(800),959.2(350) (@108.6)	PUB9193
	9	069	46925	GRB PKS 46924.9(1050),930.9(550),940.9(400),958.9(400) @87D	PUB9193
	10	069	46926	GRB PEAKS AT 46925.7(650/S),941.7(300),959.9(250) @80DEG	PUB9193
910402		092	52095	GRB,GINGA,PHEBUS,SIGMA,PVO(51575@621,5PKS),1989-046(52105)	
	8	092	52065	PKS 52064.6(200S,<14S),094.6(3800),104.6(5000),112.6(7100),	
	8	092	52065	(CONTINUED) 52122.6(5700),130.6(5700) (9SAA,10NO)	
910417		107	72452	GRB, WATCH,SIGMA,ULYSSES (PVO TRIG 72130.1@573LS)	
	9	107	72453	PKS 72453.1(130/S),457.1(170),467.1(90) (ALL<2S)(8NO,10SR)	
910428	9	118	20551	BROAD PKS 20550.9(900),554.9(900),604.9(1500,<16S) (8SAA)	7/95
	10	118	20552	BROAD PKS 20551.8(950/S),555.8(800),605.8(900,<8S)	10/96
		118P	20866	PVO TRIG 20865.8@540LS (ULYSSES 21802@1467LS)	
529	8	149	46062	PKS 46062.0(120/S),68.0(120),80.0(1070),<28S (9SAA,10NO:L)	10/96 L
		149P	45873	PVO TRIGGER 45872.6@416 LIGHT-SEC	
911010		283P	23049	PVO TRIG 23049.3@260LS (8NO,9NO,10NO)	11/96
920426		117P	03957	PVO TRIG 3956.7@840LS (8NO,10NO,11NO)	11/96
920519		140	59514	BATSE GRB#1613 (319.94,44.17J) (NOT EVIDENT--PEAK MISSED)	
		140P	59212	(59211.9)PVO TRIG@856 +PHEB,GRAN,ULYS (DMSP8SR,11NO@156DEG)	

```
      10 140 59406 PKS 59406.3(330/S,<16S)@100DEG,422.3(350,<6),516.3(70,<8)          L
920723    205 72188 GRANAT GRB(285.7,26.8(1950))IAU5579(8ND,10NA@148D)
          205P72694 PVO TRIGGER@842LS, 72694.1 (11NR)
 ?727     209 43146 BATSE GRB#1726(324.53,16.43J),TRIG43145.859(8SAA,10NO,11NO)
 ,727     209U43347 ULYS @3077LS,UNLIKE BATSE TIME HISTORY AT 43146
       8  209 41925 PEAK 41924.6 (150/S,<8S,SOFT,ONE SIDE ONLY)                  12/96 L
      10  209 41922 PEAK 41921.9 (150/S,<6S,SOFT) (11SR)                         12/96 L
920731    213 61620 YOHKO GRB,ULYSSES 62196(BATSE NO)(PVO 61857.4@832LS)
      10  213 61660 PKS 61662.2(200),682.2(200),700.2(100)(8SAA,11NO)            ANNULUS
921004   8  278 50421 GRB,NARROW PKS 50421.0(1100),429.0(500)(10NO,11SR)         ANNULUS
          278U49107 GRB, ULYSSES@3038LSEC(BATSE NO)+YOH+EUR(PVO 49963.7@697LS)
-------------------------------------------------------------------------------
```

From MALLOZZI@ssl.msfc.nasa.gov Wed Jul 29 13:13:31 1992
Date: Wed, 29 Jul 1992 15:15:32 -0500 (CDT)
From: MALLOZZI@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 01727

TIME: TJD=8830 SECONDS=83861

TYPE: UNKNOWN SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

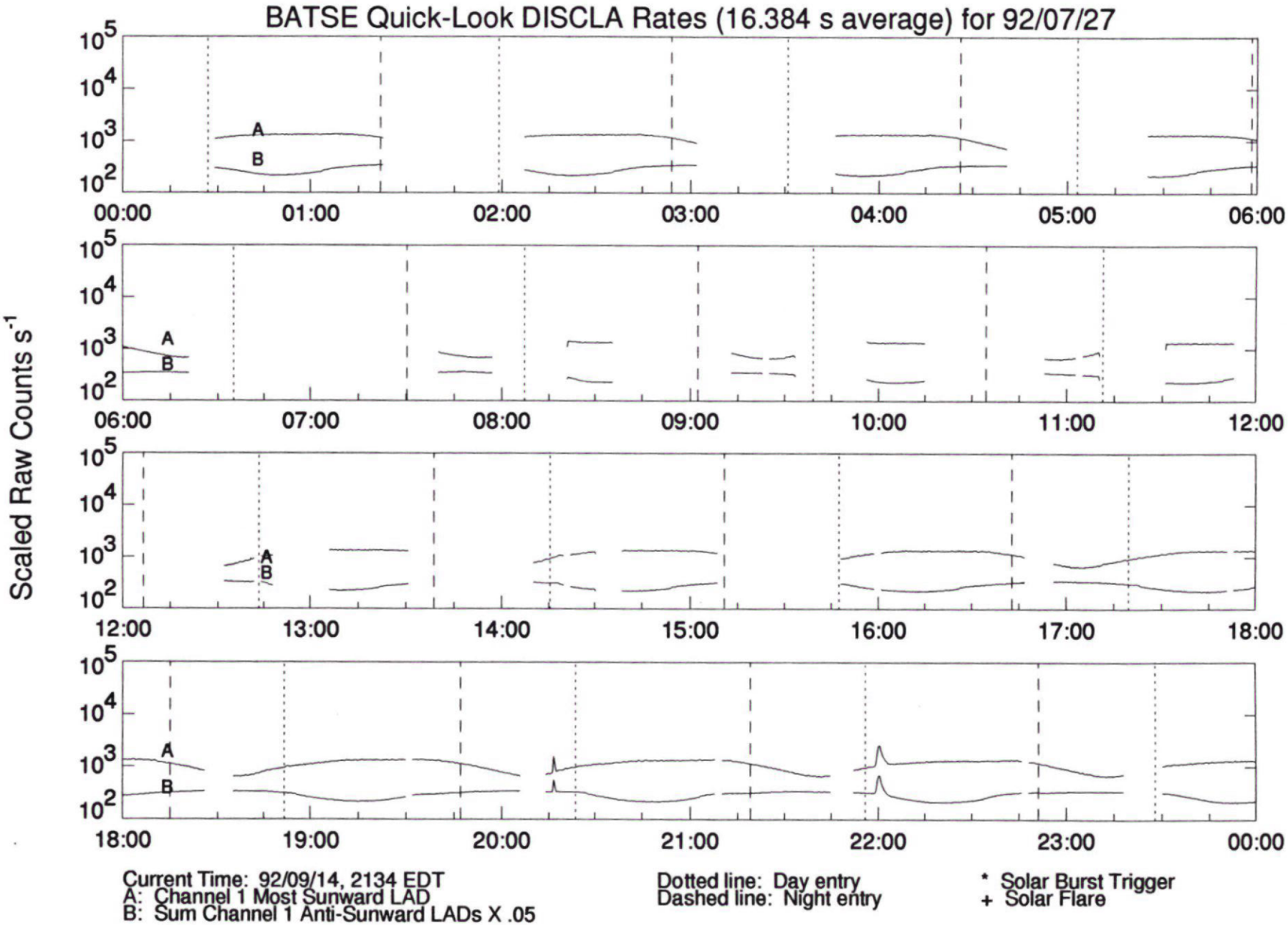
INTENSITY: COUNTS/CM2

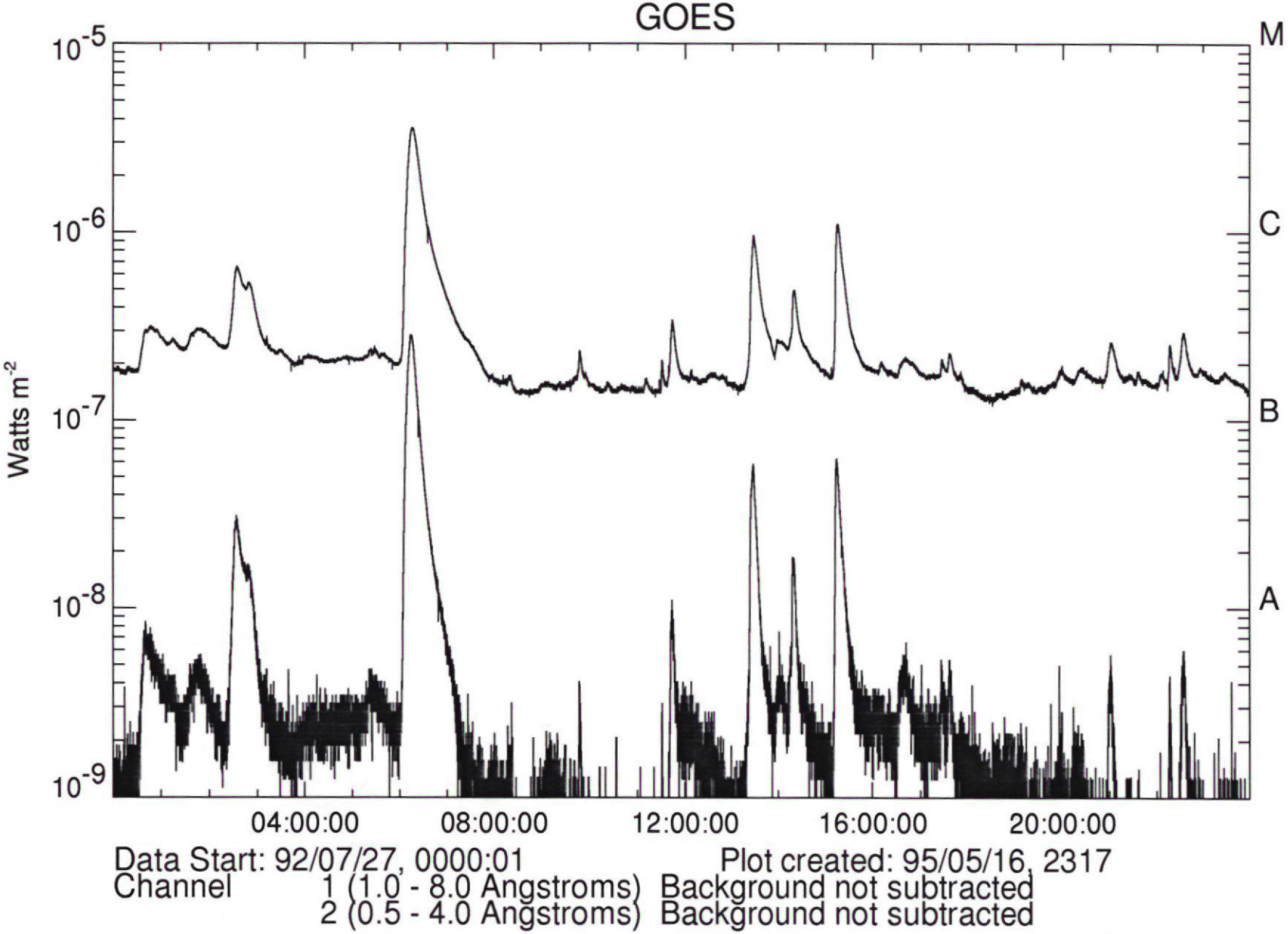
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
UNKNOWN SPIKE EVENT. NO CONSISTENT LOCATION OBTAINED.
NOT OBSERVED ABOVE 100 KEV.

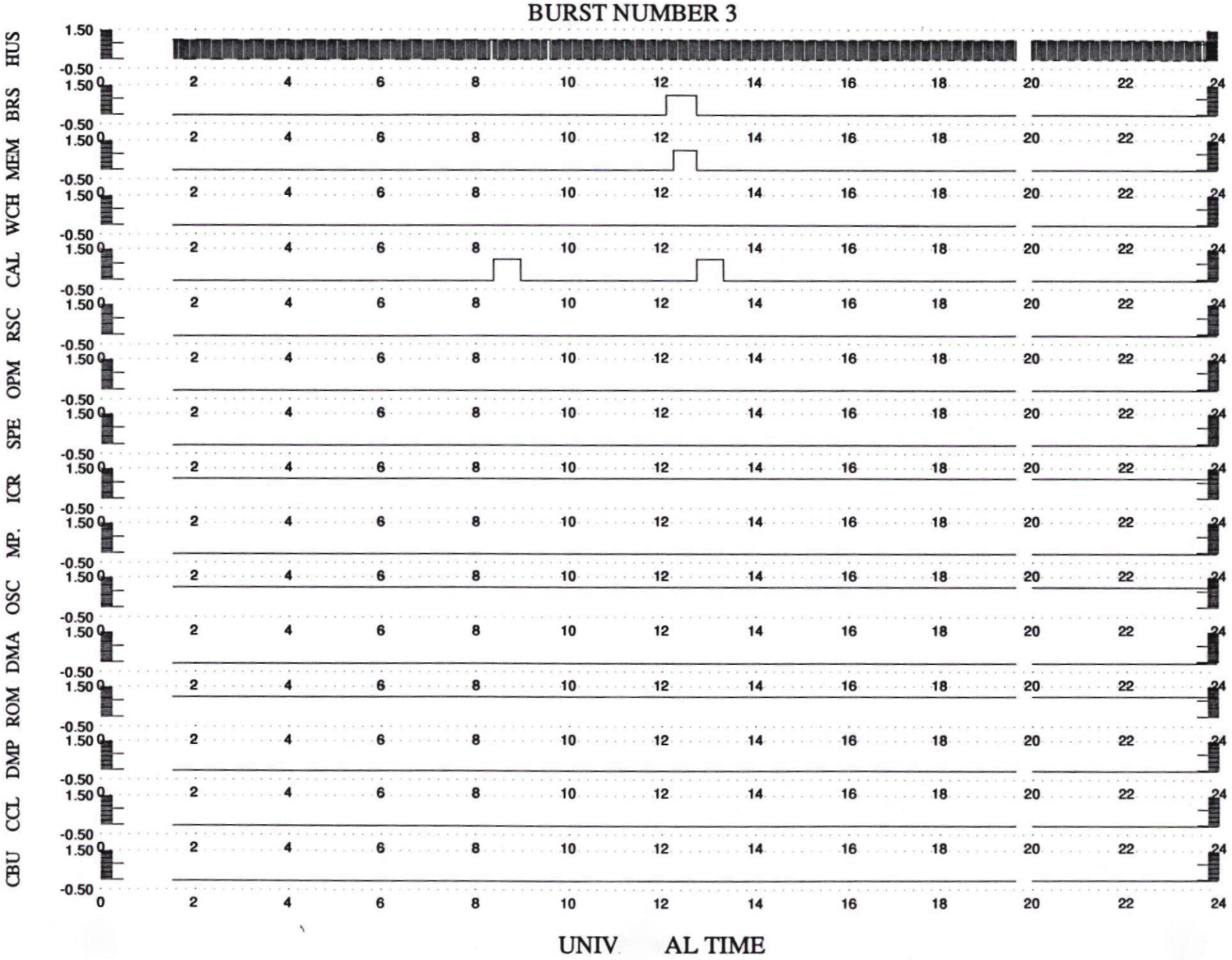
From @space6.ssl.berkeley.edu,@star.stanford.edu:068486@ESSDP1.SPAN Fri Jul 31 09:26:49 1992
Date: Fri 31 Jul 92 09:11:04-PST
From: 068486%ESSDP1.SPAN@star.stanford.edu
Subject: event of 27 July 1992
To: khurley@space6.ssl.berkeley.edu
Content-Length: 137

Kevin,
All science was turned off aboard PVO at the time of the event of July 27.
There was a battery problem, i don't know details.
Ray


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/27
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
Current Time: 92/09/14, 2134 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

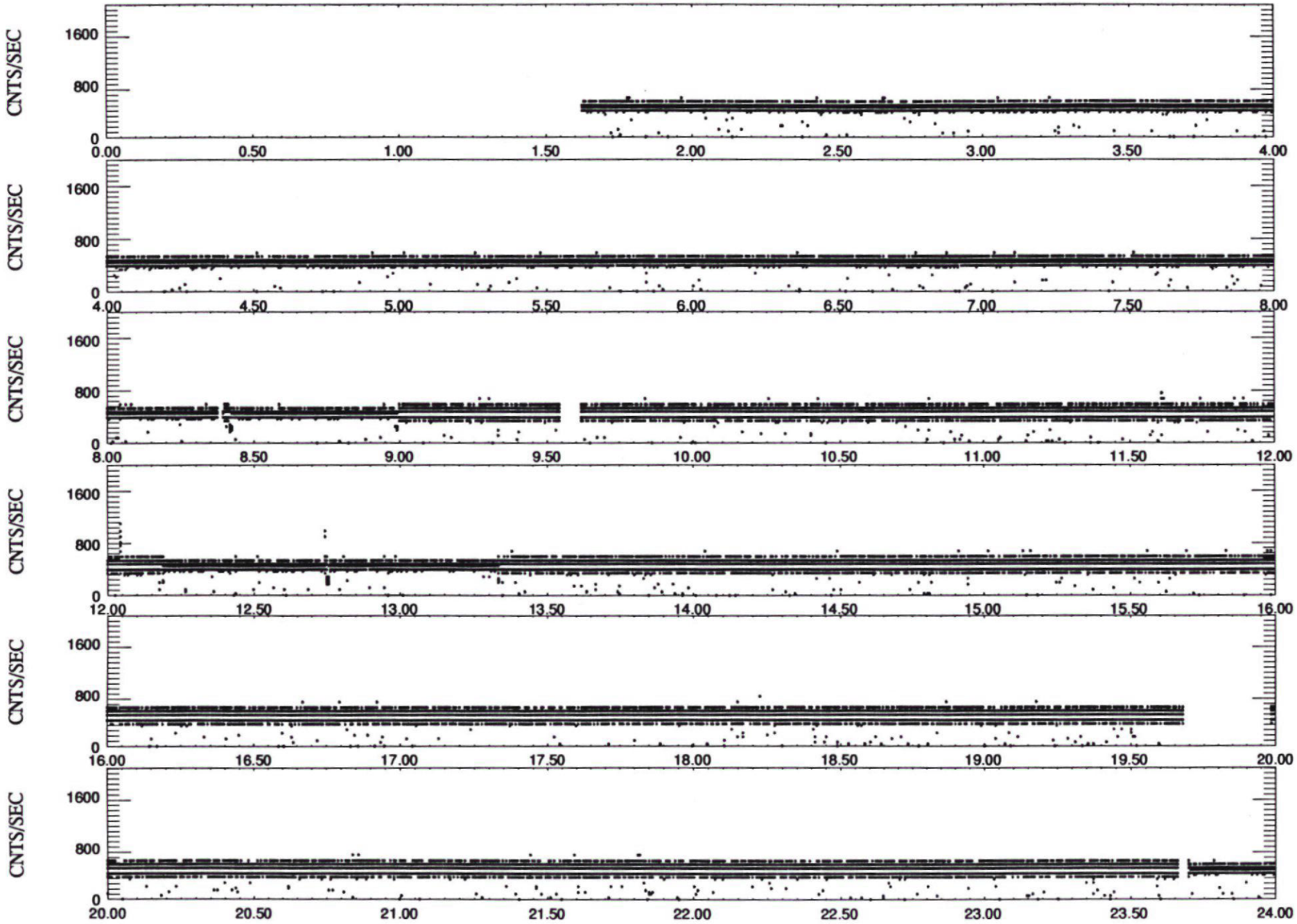

GOES
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/27, 0000:01
Plot created: 95/05/16, 2317
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 209, year 1992 to day 209, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 209, year 1992 to day 209, year 1992 9/11/92

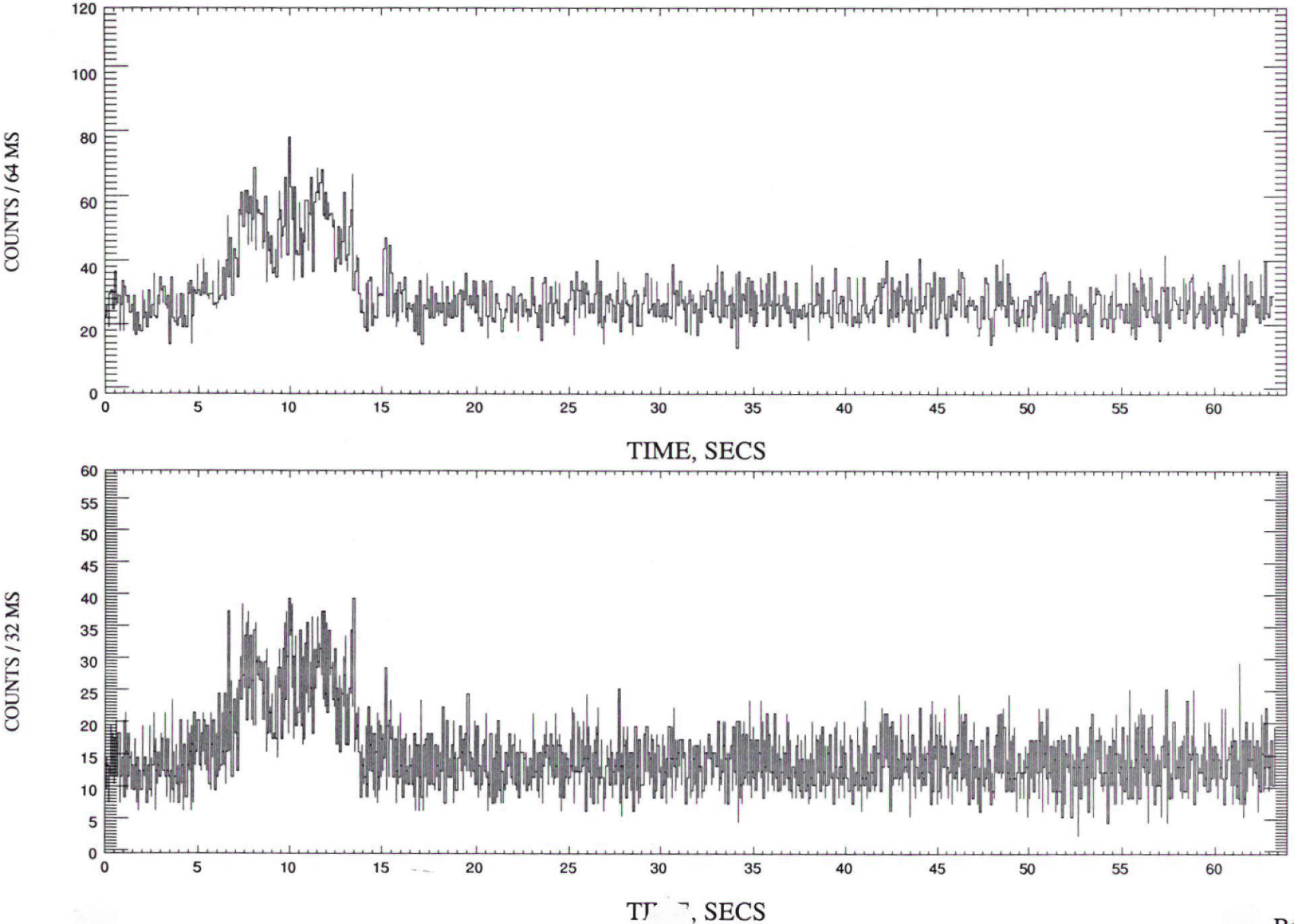
CALIBRATION DATA INCLUDED



UNIVI AL TIME

HUS 2A TRIGGERED DATA EDR day 209, year 1992 9/11/92

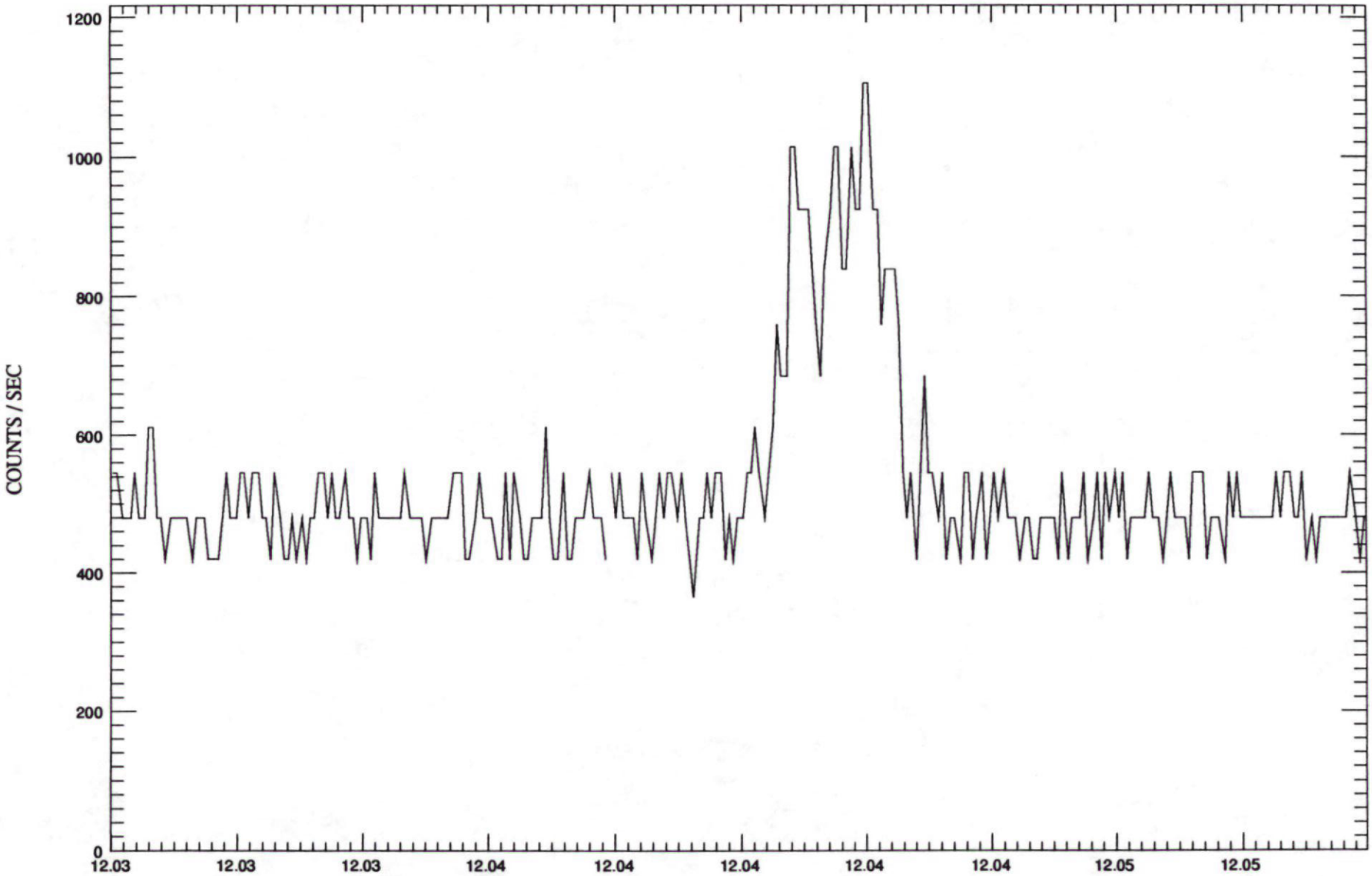
Burst Counter 3 at UT=12.040846744113 h=43347.048 s



B# 1

HUS 2A, MODE 1, NOT AVERAGED QEDR day 209, year 1992 to day 209, year 1992 7/28/92

CALIBRATION DATA INCLUDED



From WILSONB@ssl.msfc.nasa.gov Wed Jul 29 15:52:35 1992
Date: Wed, 29 Jul 1992 17:54:47 -0500 (CDT)
From: WILSONB@ssl.msfc.nasa.gov (Robert B. Wilson (205)-544-7695)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 01728

TIME: TJD=8831 July 28 SECONDS=30804

TYPE: SAA SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
TRIGGERED ON RISE TO SAA, BEFORE HV TURNOFF

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

BATSE BURST # 1729
EVENT OF 1992 JUL 28 DAY OF YEAR=210
EVENT CROSSING TIME AT BATSE      : 41715. S. OR 11:35:14.7
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 319.000    31.500
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 28/ 7/  92 IS:
RA=  153.185 DEC=     4.260 DIST=     6.172 AU
BATSE-ULYSSES DISTANCE =  923284824. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 38.23 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2419.29 SECS.
CROSSING TIME AT ULYSSES     IS 44134. S. OR 12:15:33.9 +/-  417.61 SECONDS
```

NO

```
From WILSONB@ssl.msfc.nasa.gov Wed Jul 29 16:32:11 1992
Date:     Wed, 29 Jul 1992 18:34:21 -0500 (CDT)
From: WILSONB@ssl.msfc.nasa.gov (Robert B. Wilson (205)-544-7695)
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
        khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

                BATSE BURST TRIGGER
NO.: 01729

TIME: TJD=8831 SECONDS=41714

TYPE: BURST                     SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=031.8  AZIMUTH=194.8  ERROR=10.0  DEGREES

COMMENTS:
FAST RISE, EXP DECAY, LASTING ABOUT 1S. ABOUT 12500 C/S ABOVE 25 KEV. NO
APPARENT FINE TIME STRUCTURE.
```

8/ 6/94

ULYSSES RT

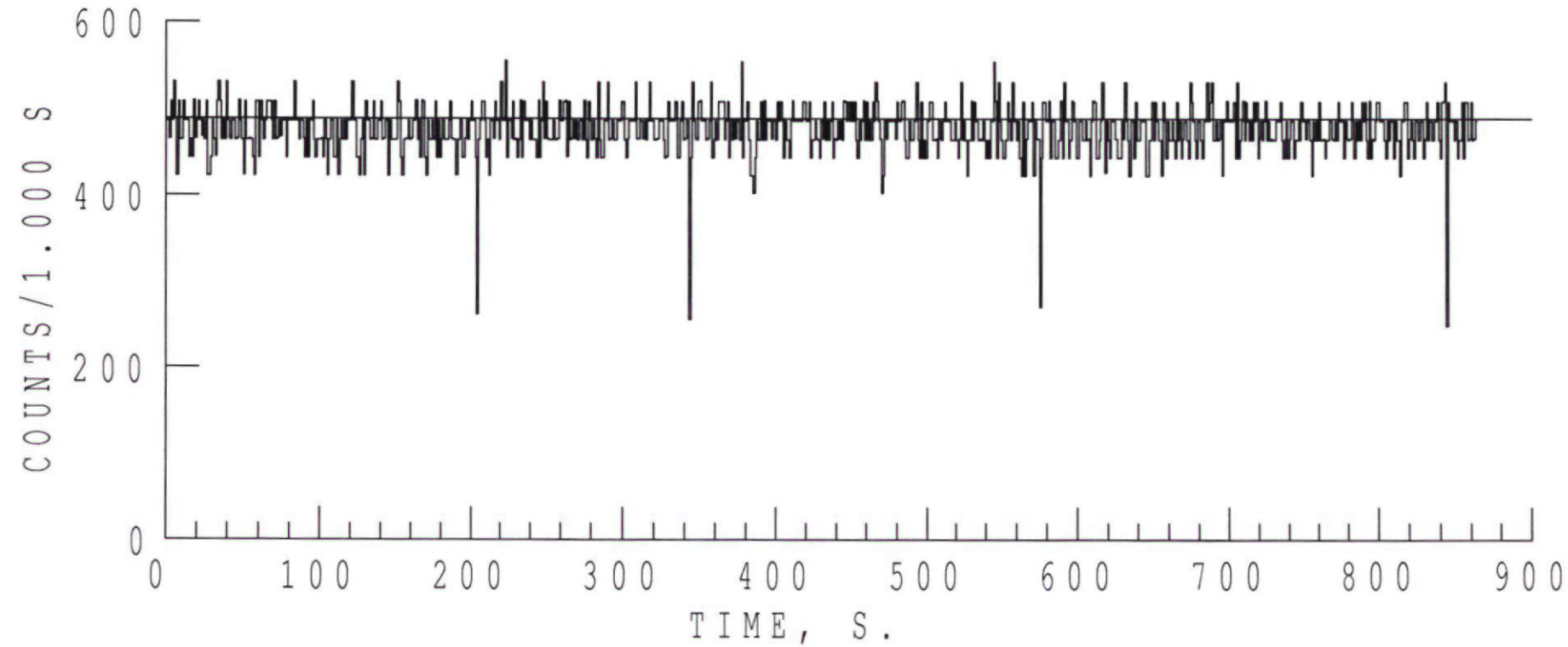
28/ 7/92 43704.367 s

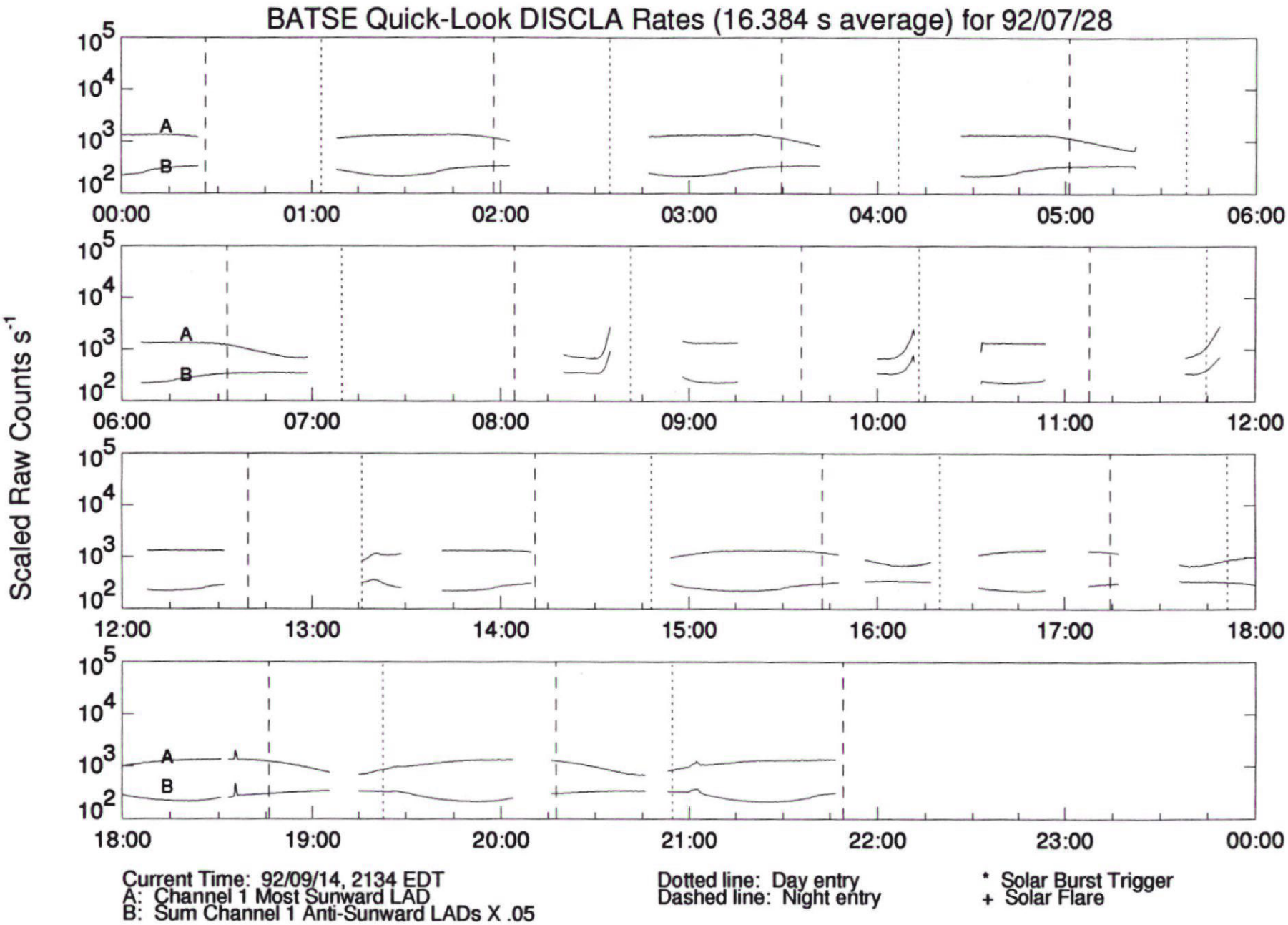
0.500 S INTERVALS REGROUPED BY 2

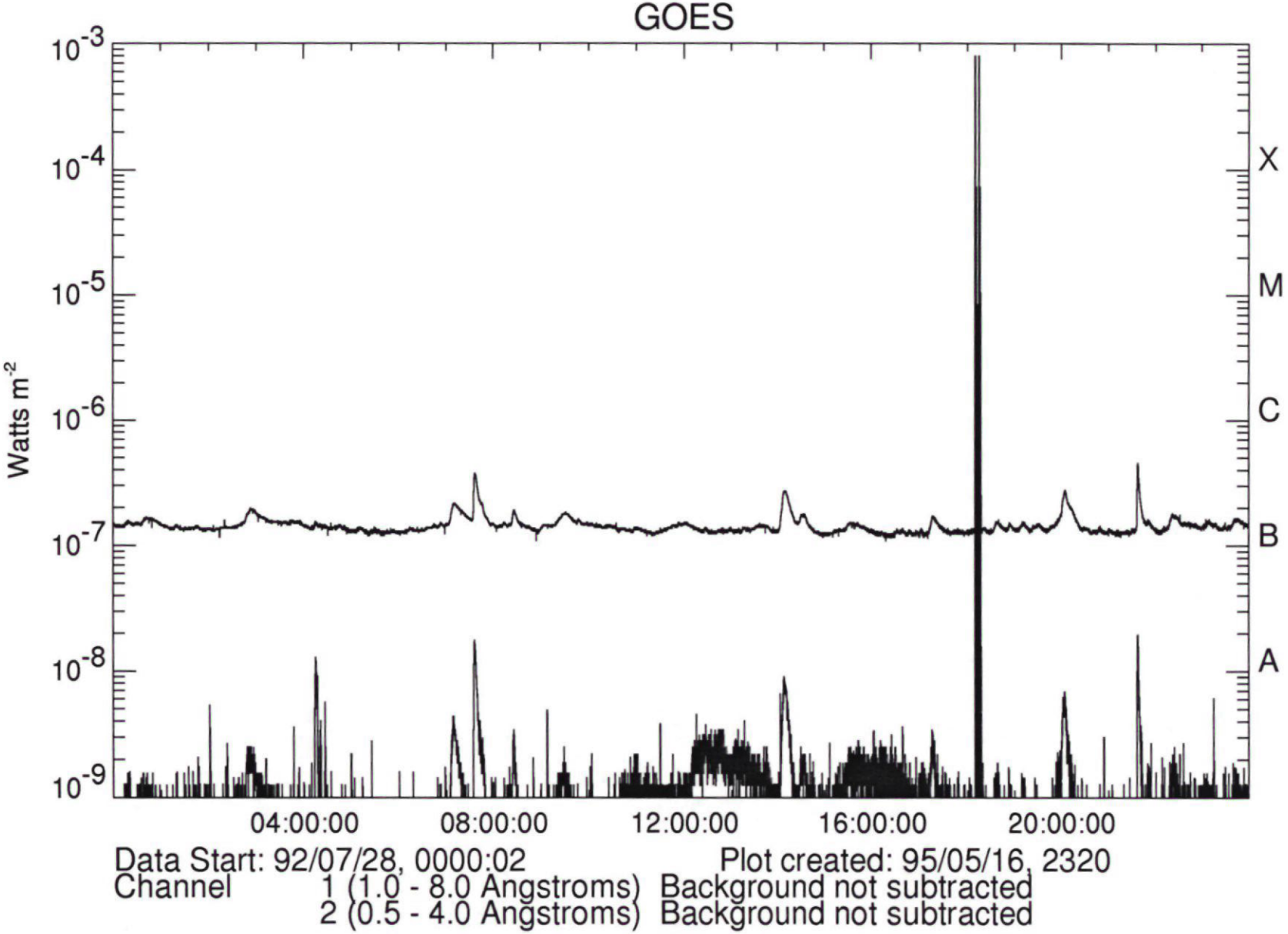
0- 0 keV

N= 10 M= 2

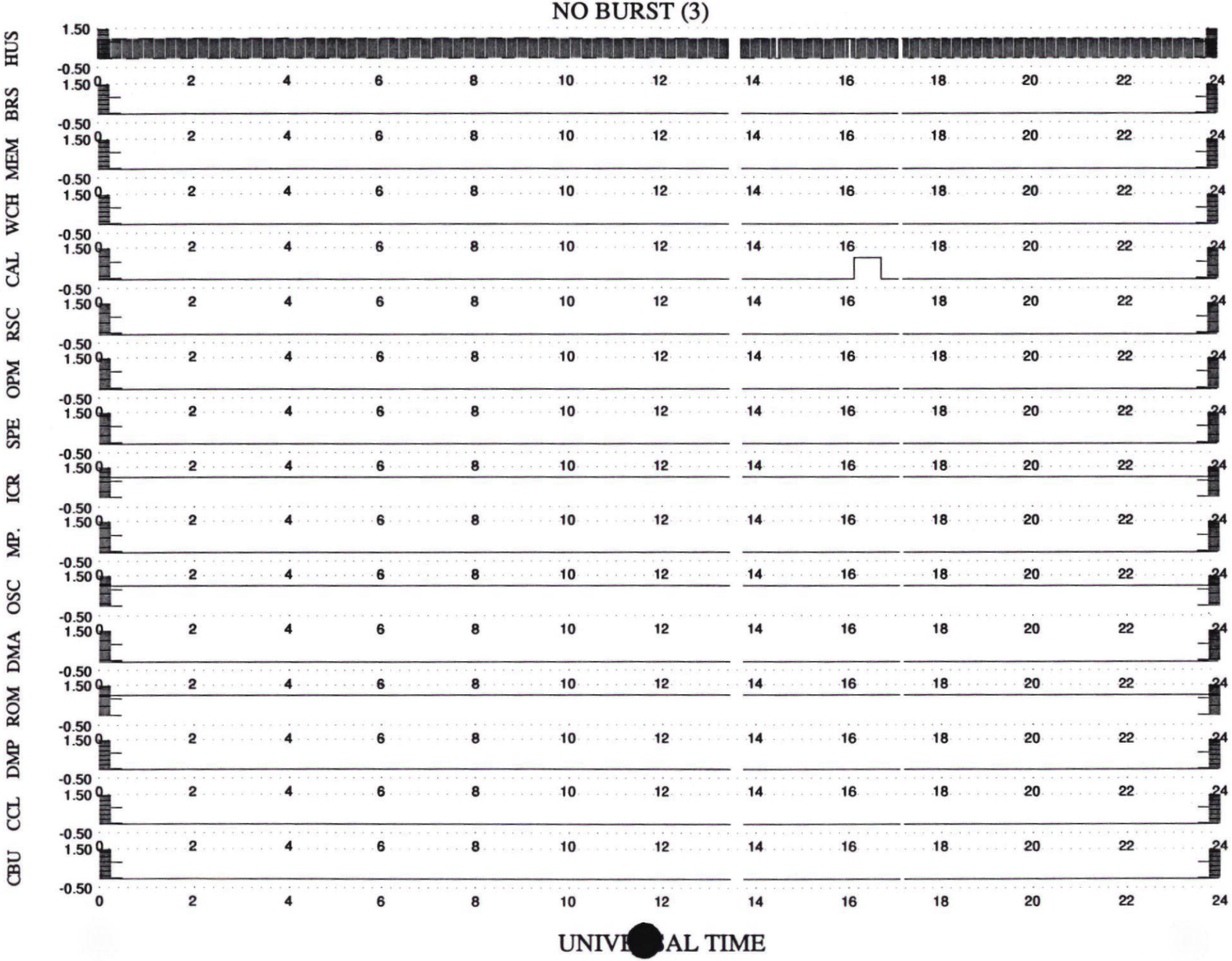
>4.0 SIGMA FLUCTUATIONS




BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/28
Scaled Raw Counts s-1
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: 92/09/14, 2134 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

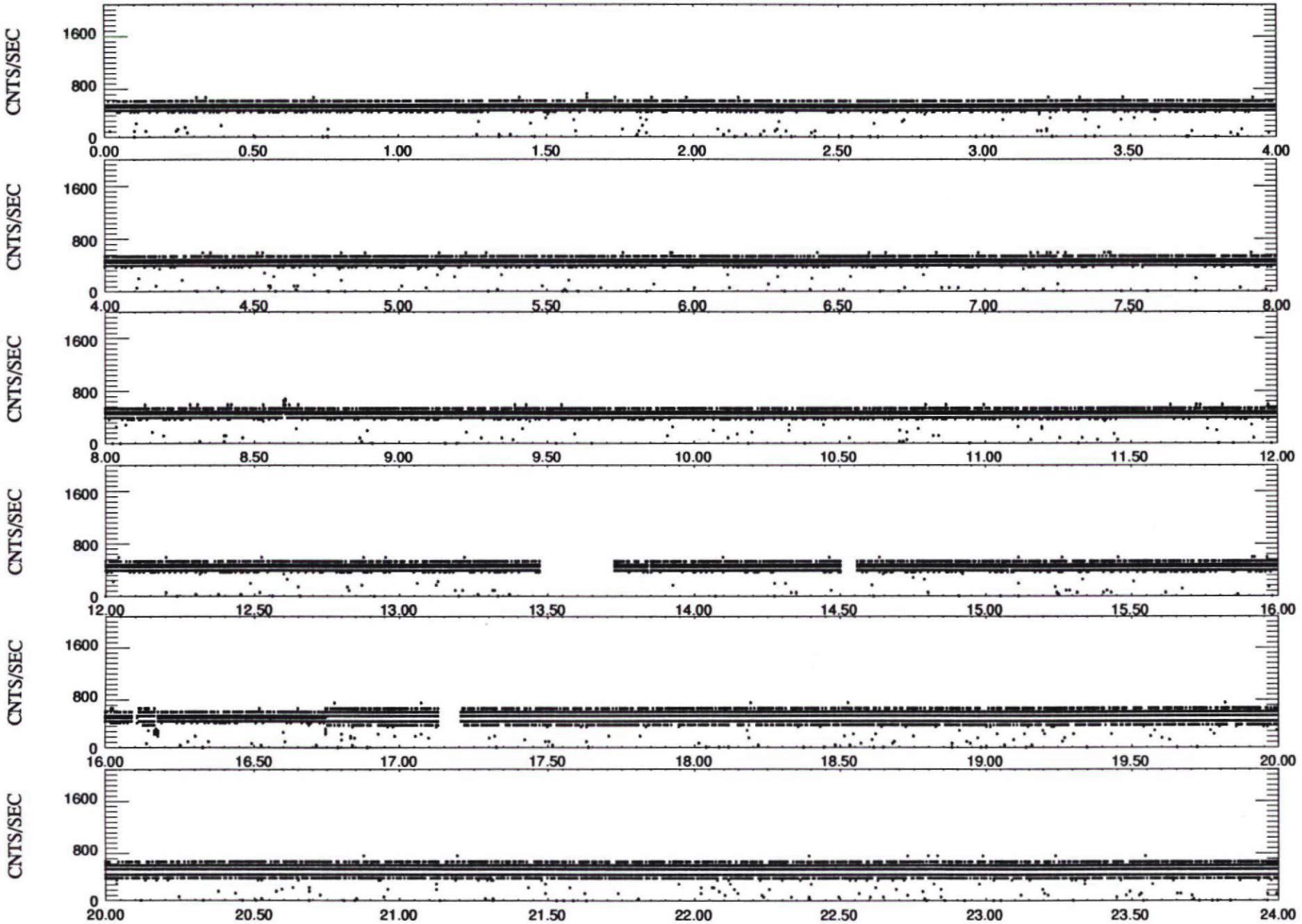

GOES
Watts m-2
10-3
10-4
10-5
10-6
10-7
10-8
10-9
X
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/28, 0000:02
Plot created: 95/05/16, 2320
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 210, year 1992 to day 210, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 210, year 1992 to day 210, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

From root@ucbvax.Berkeley.EDU Thu Mar 4 10:54:01 1993
Date: Thu, 4 Mar 93 10:55:33 -0800
From: root@ucbvax.Berkeley.EDU (Mr. UcbVax)
To: anderson@sunspot.ssl.berkeley.edu
Subject: FORWARDED MAIL.
Content-Length: 1761

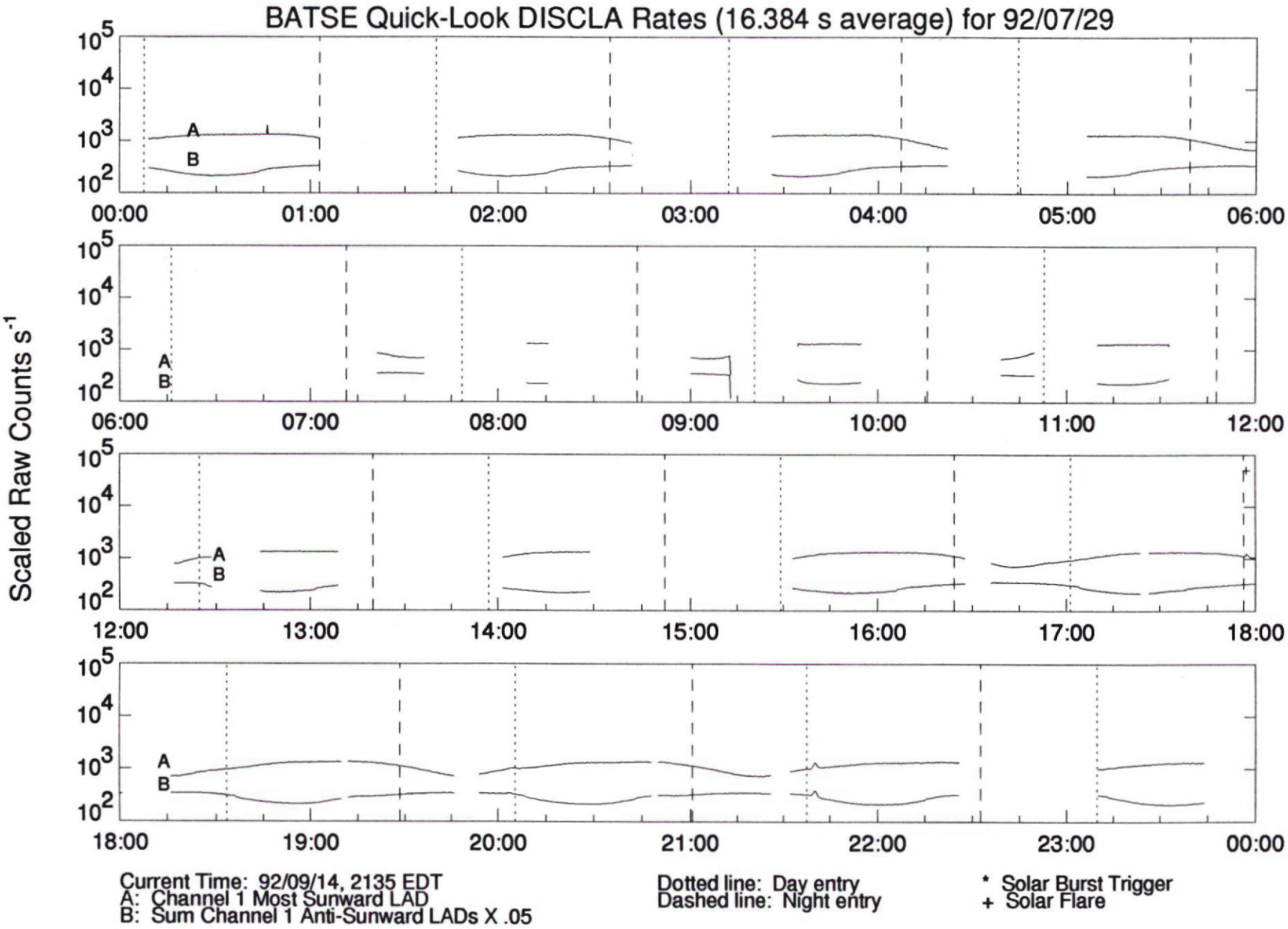
From root@prl.ernet.in Wed Mar 3 15:40:48 1993
Received: from relay1.UU.NET by ucbvax.Berkeley.EDU (5.63/1.43)
id AA03406; Wed, 3 Mar 93 15:40:43 -0800
Received: from uunet.uu.net (via LOCALHOST.UU.NET) by relay1.UU.NET with SMTP
(5.61/UUNET-internet-primary) id AA15567; Wed, 3 Mar 93 18:39:26 -0500
Received: from sangam.UUCP by uunet.uu.net with UUCP/RMAIL
(queueing-rmail) id 183846.14402; Wed, 3 Mar 1993 18:38:46 EST
Received: by sangam.ncst.ernet.in (4.1/SMI-4.1-MHS-7.0)
id AA03430; Thu, 4 Mar 93 05:03:47+0530
From: root@prl.ernet.in
Received: from shakti.ncst.ernet.in by saathi.ncst.ernet.in (5.61/Ultrix3.0-C)
id AA25148; Thu, 4 Mar 93 05:03:35 +0530
Received: by shakti.ncst.ernet.in
(16.6/16.2) id AA17784; Wed, 3 Mar 93 18:33:26 -0500
Date: Wed, 3 Mar 93 18:33:26 -0500
Message-Id: <9303032333.AA17784@shakti.ncst.ernet.in>
Received: from prl with uucp; Wed, 3 Mar 93 12:12 IST
To: root@ucbvax.Berkeley.EDU
Subject: For Dr. Kane
Status: R

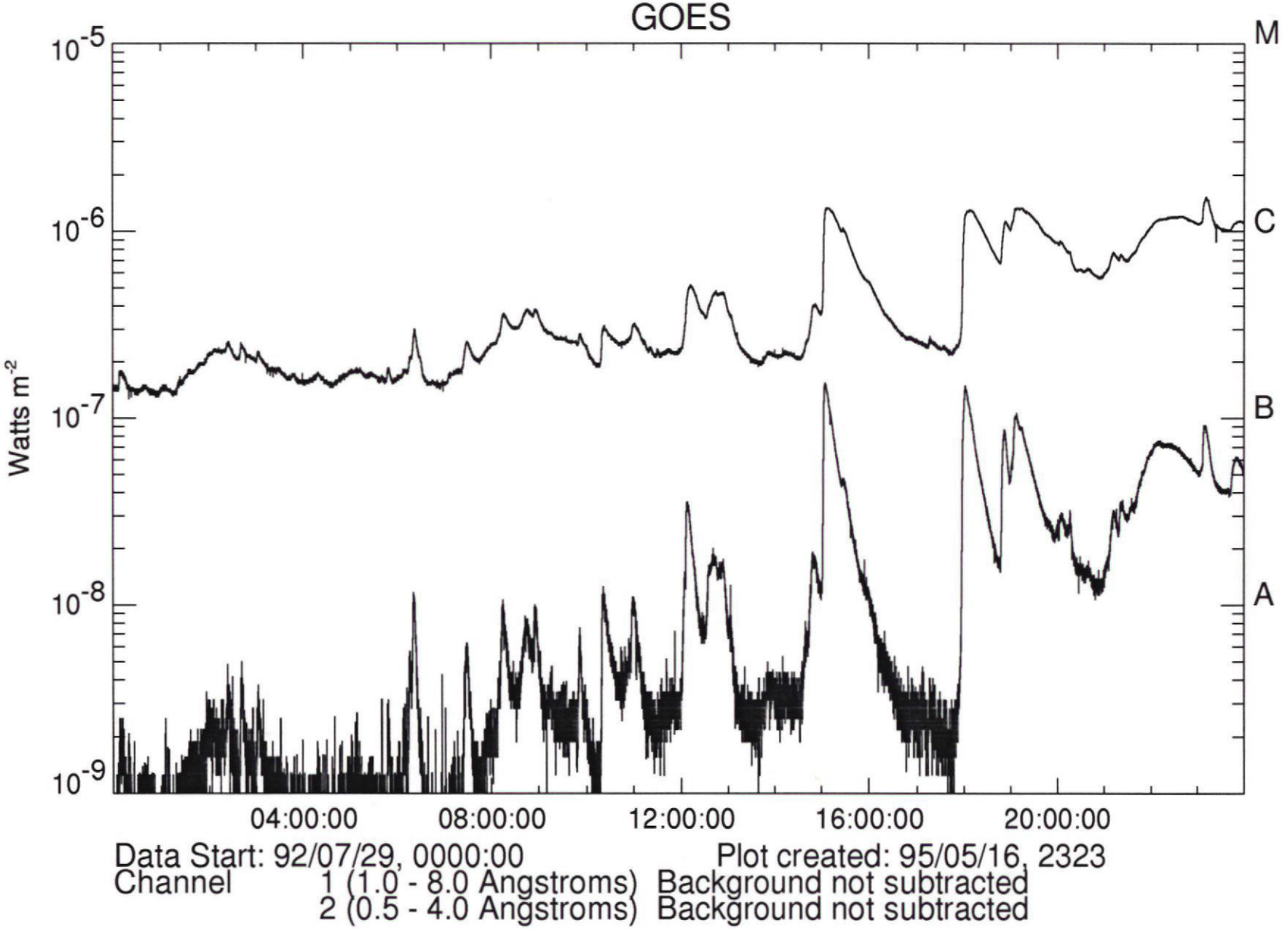
Dear Dr Kane,

On July 29,1992 at 0830 UT we observed an enhanced radio emission from a pulsar,RA(0950) and Dec(+08).At the same time there is an strong evidence that ionization in the "D" region of ionosphere also increased by a large factor.We looked at the GOES satellite data which indicate no enhancement in x-ray emission from sun.Last week Dr H.S.Swant,INPE,Brazil visited our institute,we had discussion on this with him.He suggested that we could request you to look at other X-rays and Gamma rays observations for the observational event.We will appreciate to hear from you soon.

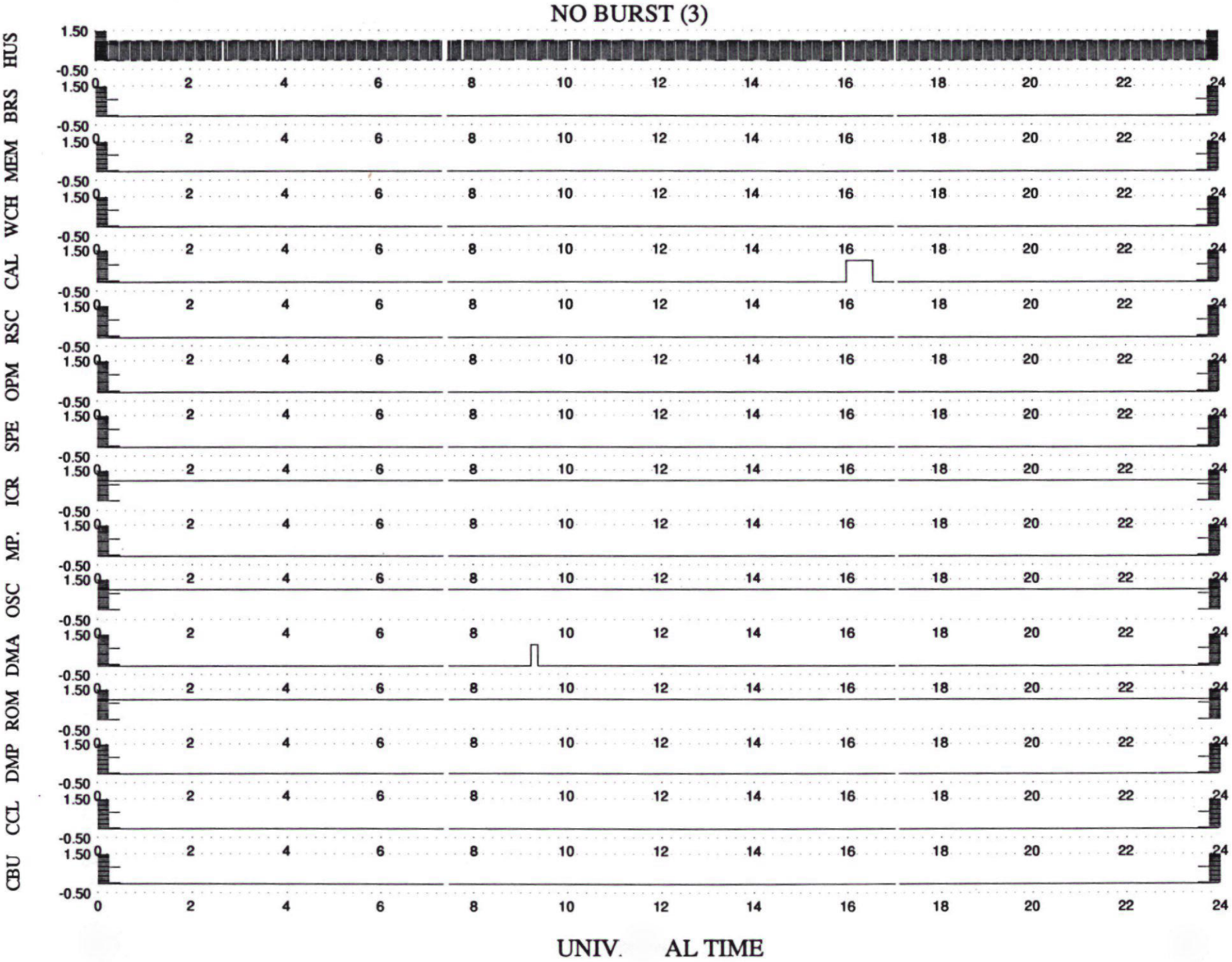
Regards.

from:
Hari Om Vats


BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/29
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
Current Time: 92/09/14, 2135 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

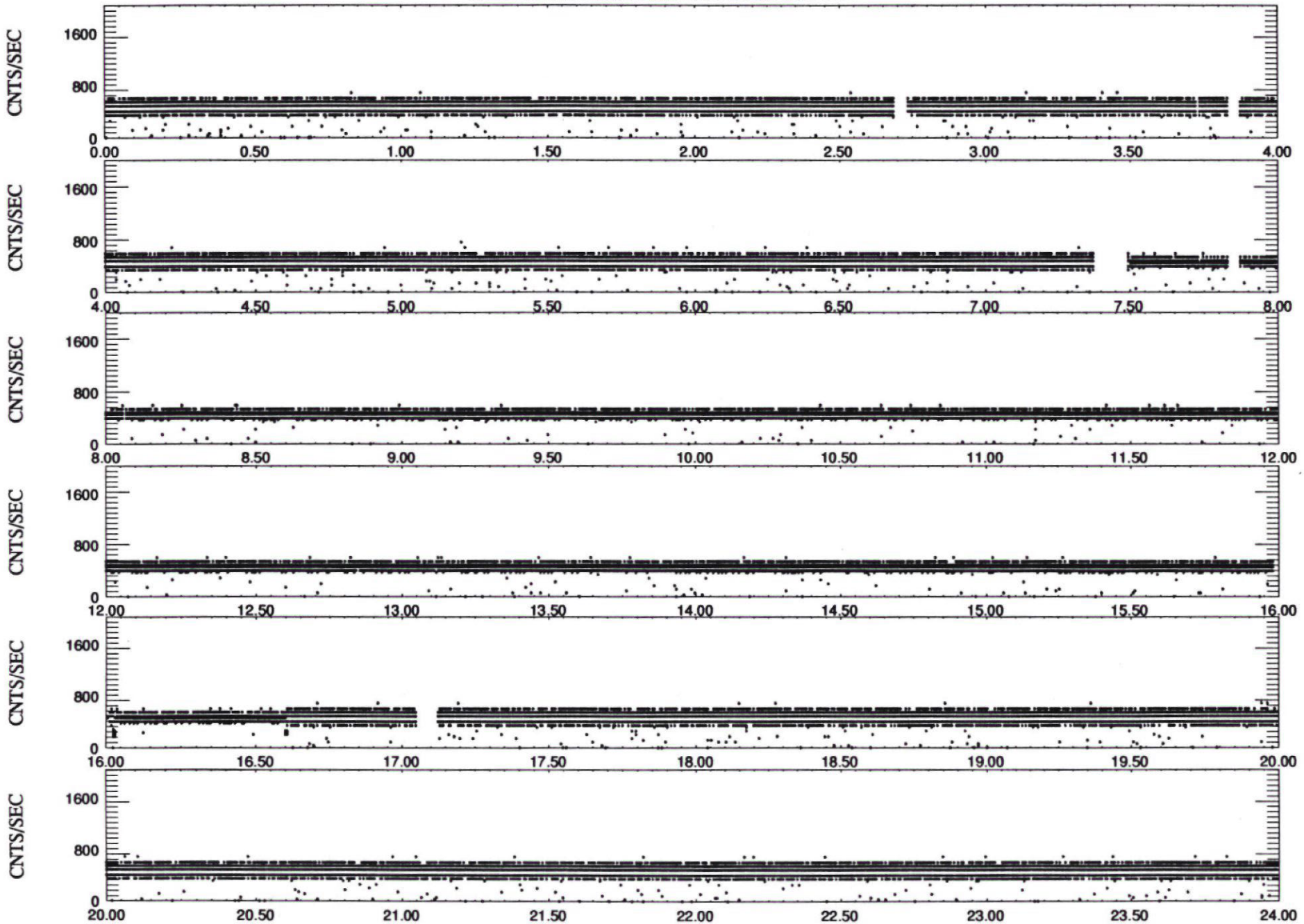

GOES
M
C
B
A
10^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/29, 0000:00
Plot created: 95/05/16, 2323
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 211, year 1992 to day 211, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 211, year 1992 to day 211, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV SAL TIME

****
CATSEARCH PROGRAM
****

BATSE BURST # 1730
EVENT OF 1992 JUL 30 DAY OF YEAR=212
EVENT CROSSING TIME AT BATSE : 46885. S. OR 13:01:24.5
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 27.300 31.100
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 30/ 7/ 92 IS:
RA= 153.433 DEC= 4.090 DIST= 6.185 AU
BATSE-ULYSSES DISTANCE = 925270016. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 62.17 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1440.66 SECS.
CROSSING TIME AT ULYSSES IS 48325. S. OR 13:25:25.1 +/- 545.76 SECONDS

No

From BHAT@ssl.msfc.nasa.gov Fri Jul 31 13:06:39 1992
Date: Fri, 31 Jul 1992 15:08:36 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 1730

July 30

TIME: TJD=8833 SECONDS=46884

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=31.8 AZIMUTH=297.7 ERROR= DEGREES

COMMENTS:
A WEAK BURST LASTING ABOUT 40 S SHOWS TWO DISTINCT PEAKS IN THE LIGHT CURVE
FOLLOWED BY A SLOW DECAY. NO SIGNAL IS SEEN ABOVE 300 KEV.

BATSE BURST# 1730

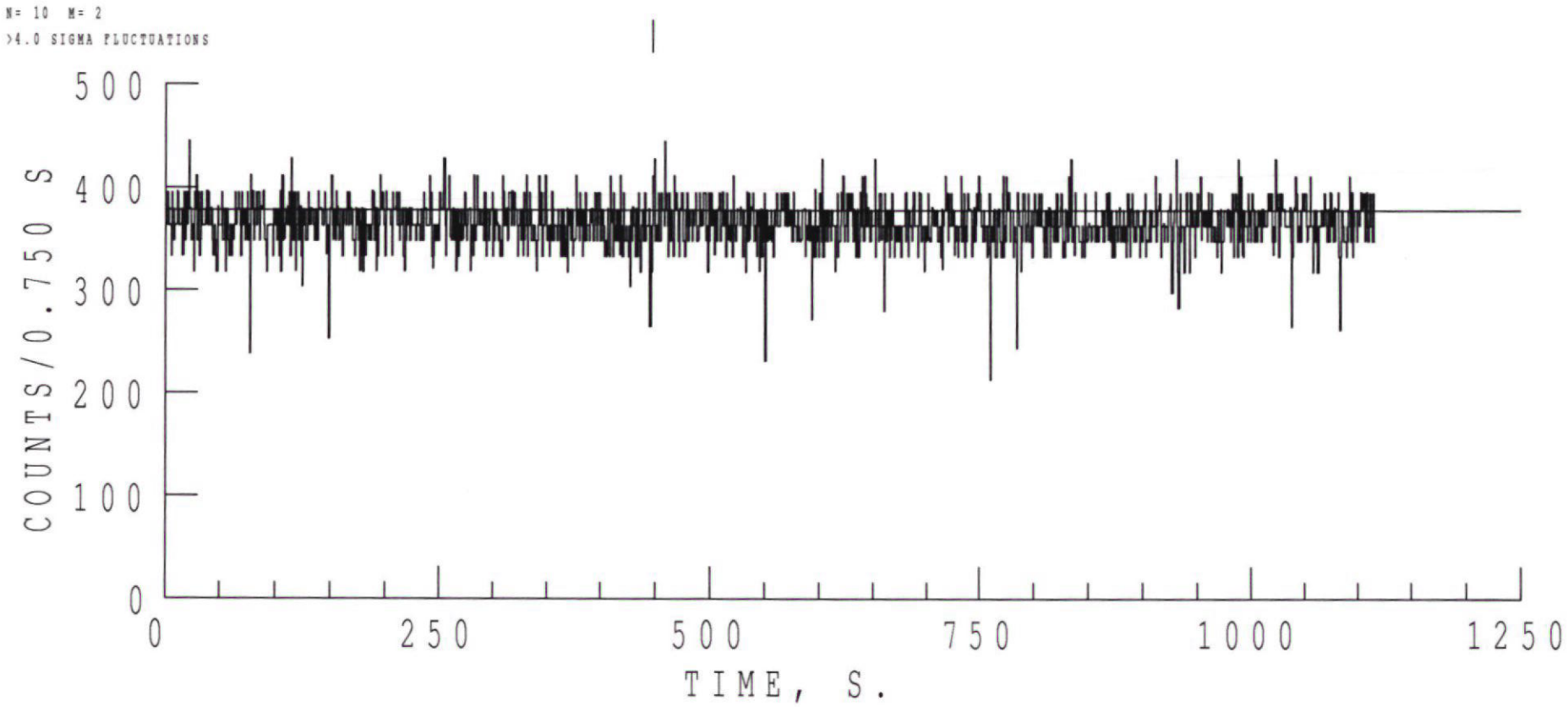
8/ 6/94

ULYSSES RT

30/ 7/92 47772.215 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



****
CATSEARCH PROGRAM
****

BATSE BURST # 1731
EVENT OF 1992 JUL 30 DAY OF YEAR=212
EVENT CROSSING TIME AT BATSE : 77494. S. OR 21:31:33.9
COORDINATES ARE .000 .000 6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 242.600 -10.500
BATSE PEAK COUNTING RATE: 0000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND
POSITION OF ULYSSES ON 30/ 7/ 92 IS:
RA= 153.433 DEC= 4.090 DIST= 6.185 AU
BATSE-ULYSSES DISTANCE = 925270016. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 90.07 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -3.89 SECS.
CROSSING TIME AT ULYSSES IS 77490. S. OR 21:31:30.0 +/- 585.78 SECONDS

No

From BHAT@ssl.msfc.nasa.gov Fri Jul 31 13:19:37 1992
Date: Fri, 31 Jul 1992 15:21:48 -0500 (CDT)
From: BHAT@ssl.msfc.nasa.gov
Subject: Burst Trigger Message
To: igse@unhrcc.unh.edu, jryan@unhrcc.unh.edu, GROBAD@ESTEC.BITNET,
khurley@space6.ssl.berkeley.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Content-Length: 1455

BATSE BURST TRIGGER
NO.: 1731

TIME: TJD=8833 SECONDS=77493

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=102.8 AZIMUTH=143.9 ERROR= DEGREES

COMMENTS:
AN INTERESTING BURST WITH A PRE-BURST ACTIVITY ABOUT 32 S BEFORE THE TRIGGER.
THE BURST LASTS FOR ABOUT 14 S AND CONSISTS OF TWO SEPARATED AND SYMMETRIC
PEAKS WITH ALMOST NO EMISSION IN BETWEEN. BOTH THE BURST AS WELL AS PREBURST
SHOW SIGNAL ABOVE 300 KEV.

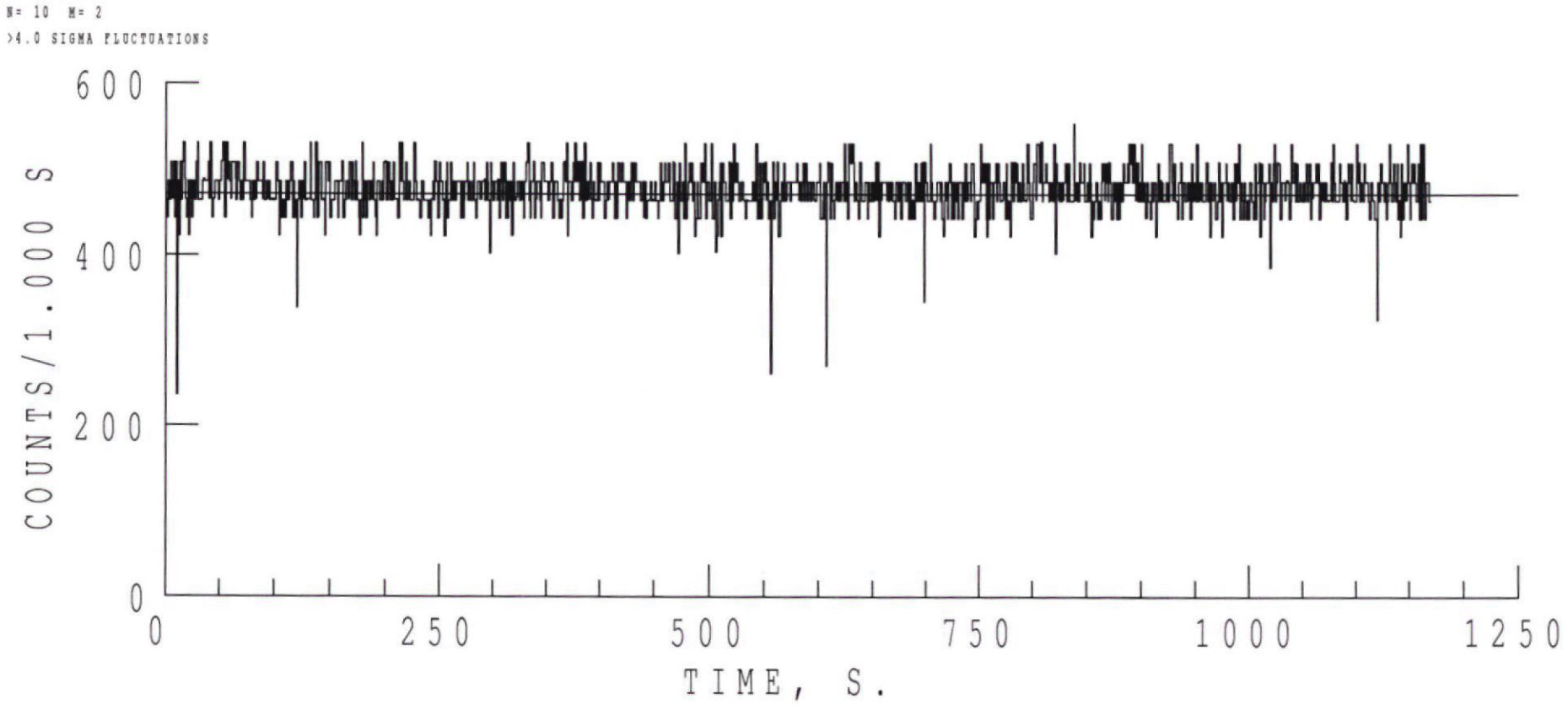
8/ 6/94

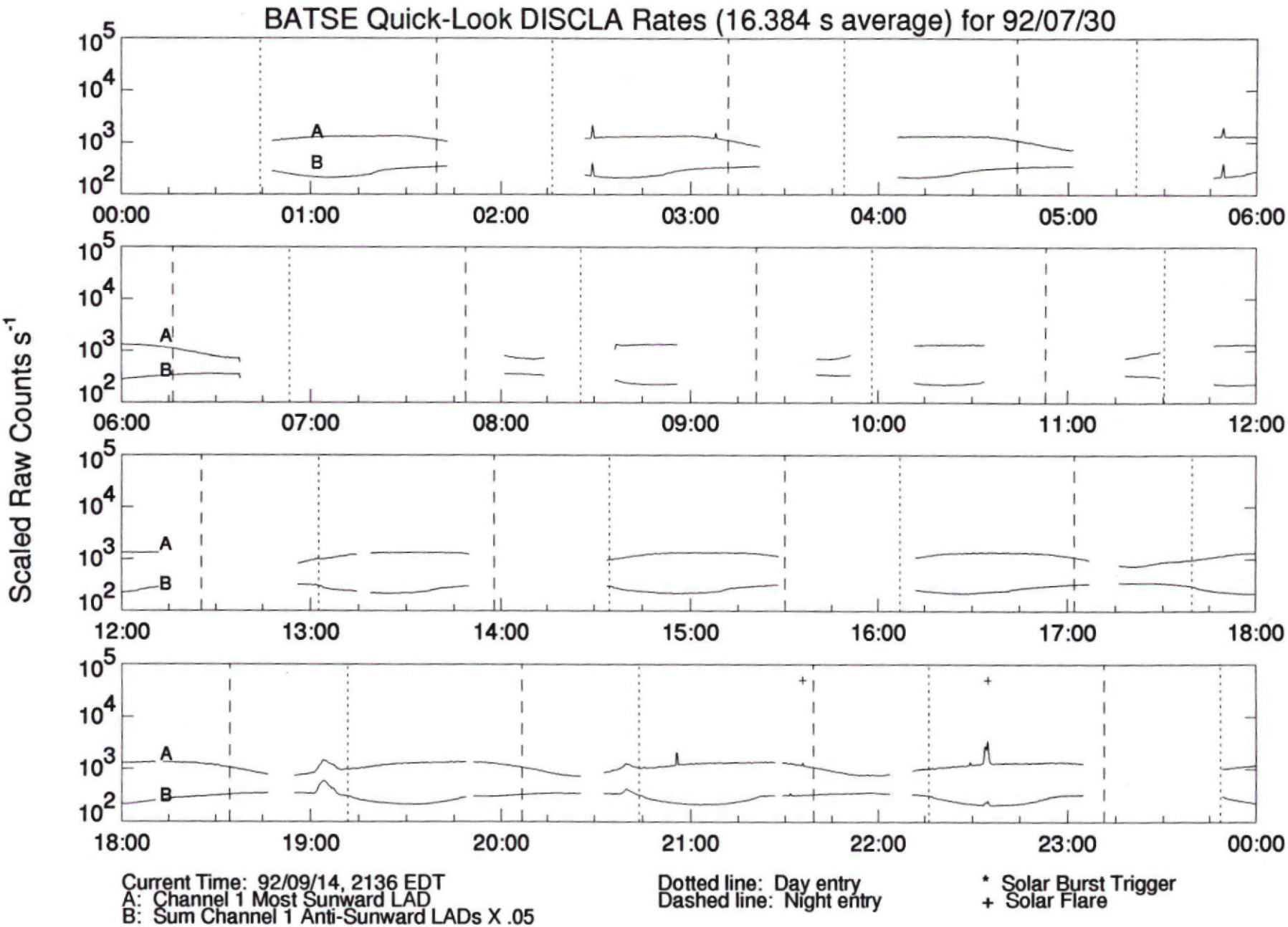
ULYSSES RT

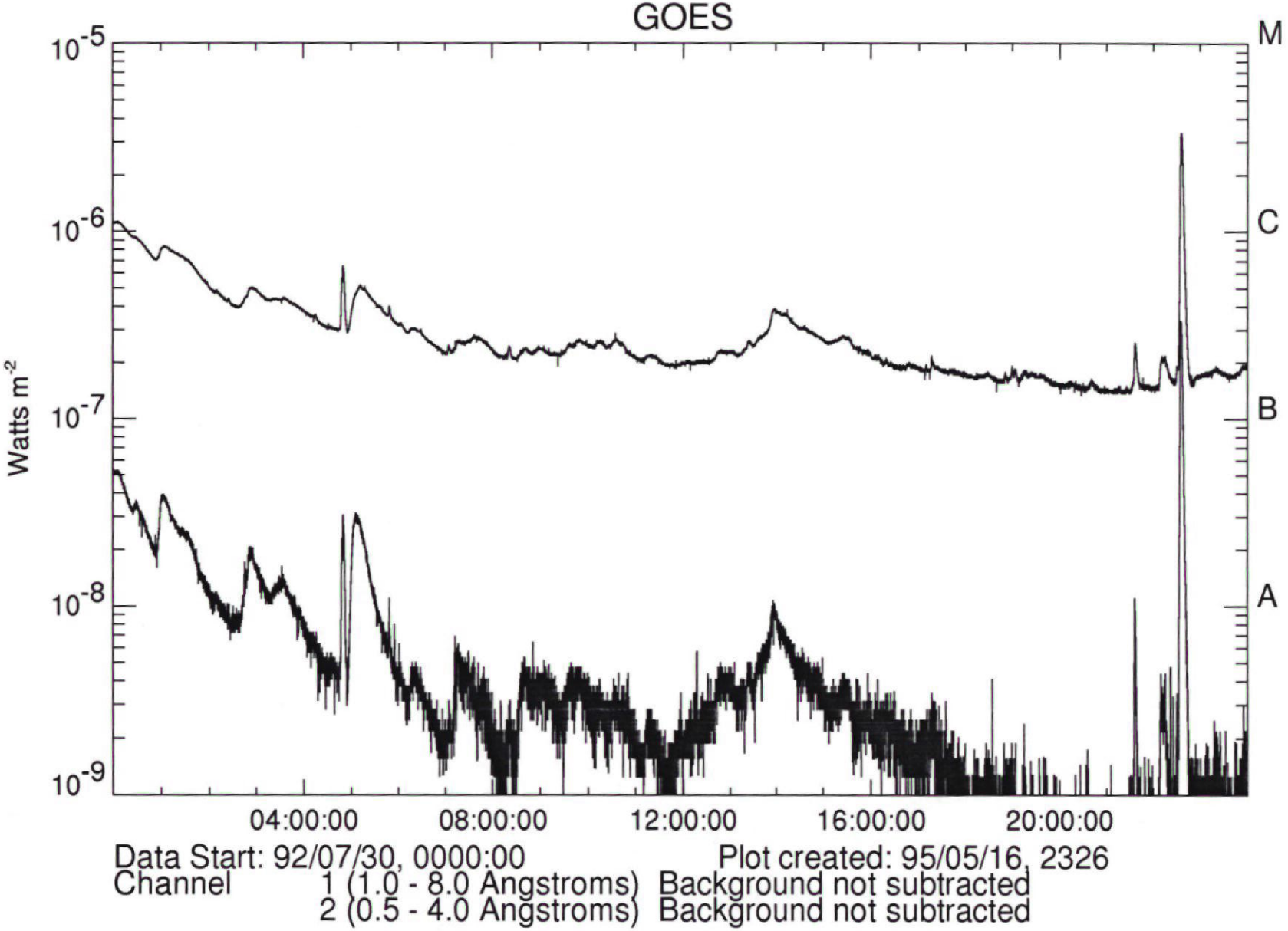
30/ 7/92 76896.188 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

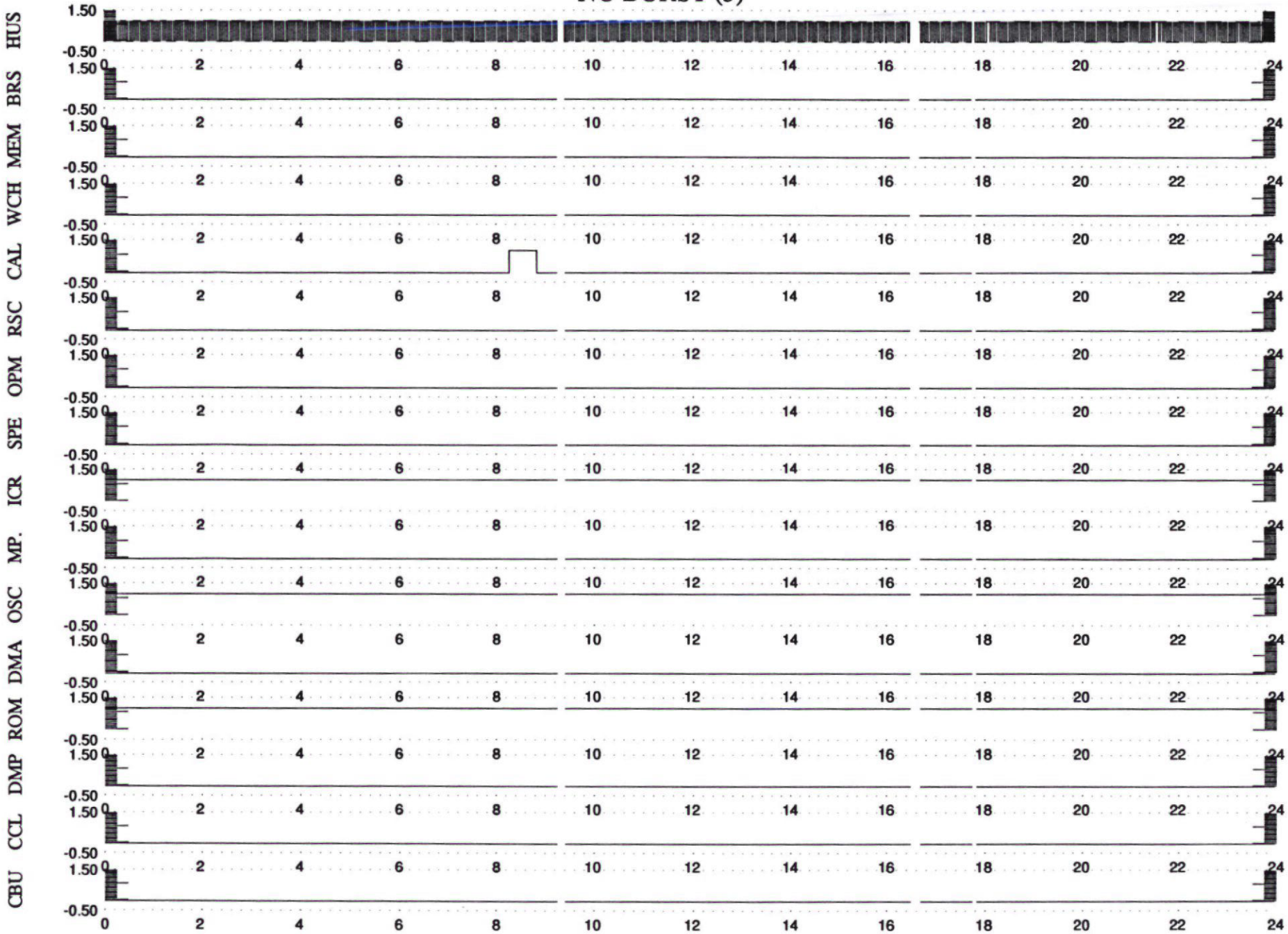



BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/30
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 92/09/14, 2136 EDT
A: Channel 1 Most 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
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/30, 0000:00
Plot created: 95/05/16, 2326
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

HUS MODES EDR day 212, year 1992 to day 212, year 1992 9/11/92

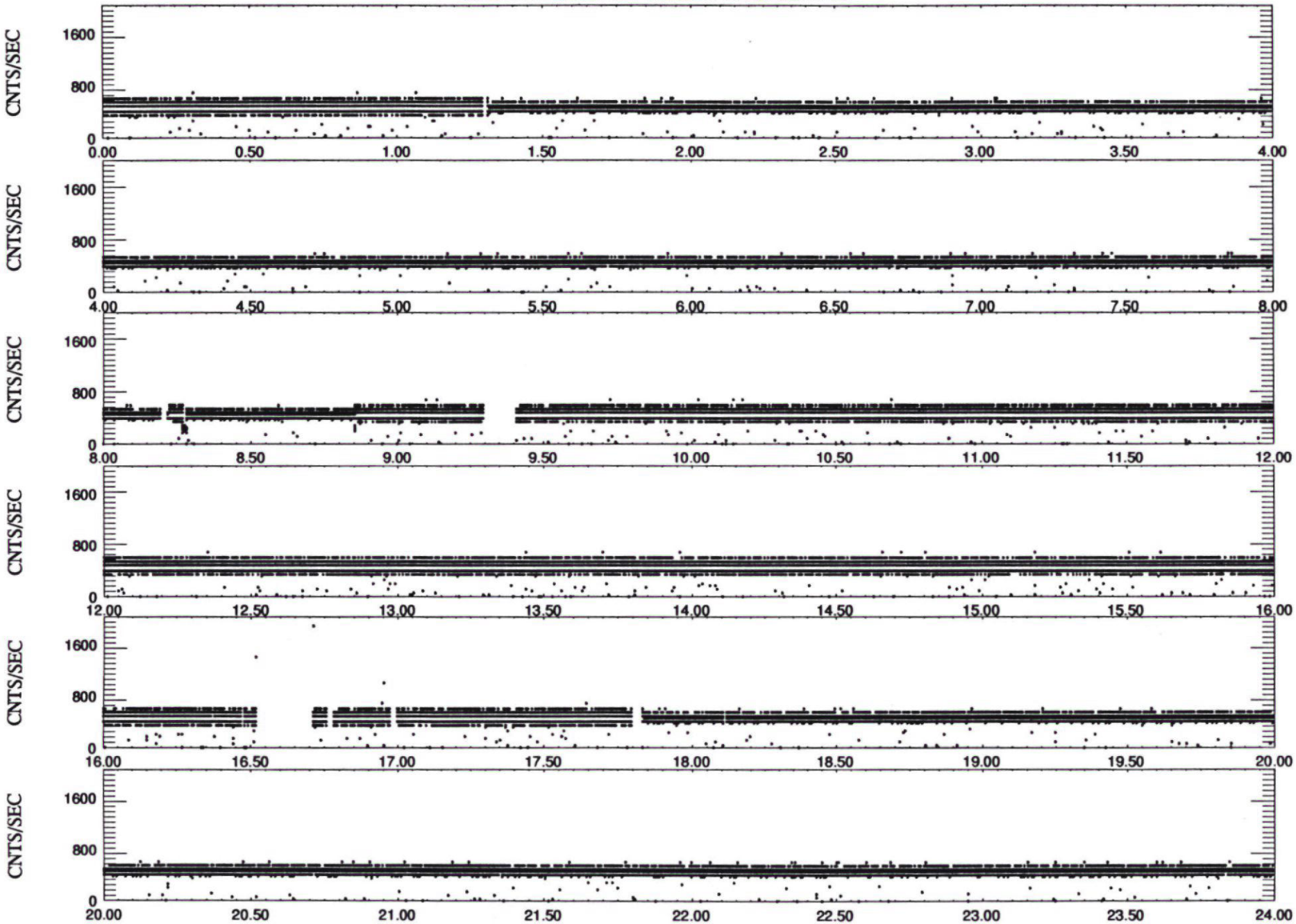
NO BURST (3)



UNIV. AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 212, year 1992 to day 212, year 1992 9/11/92

CALIBRATION DATA INCLUDED



UNIV AL TIME

No helio. or clock corrections ever done, but Δt is 4s so they're irrelevant

Date: Dec 2 '98

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

☑ Jim Schmidling's stat file correction applied? No

☑ 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

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 database updated?

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**********
*ESEARCH PROGRAM*
**********

EVENT OF 1992 JUL 31 DAY OF YEAR=213
EVENT CROSSING TIME AT NEAR-EARTH S/C : 61662. S. OR 17:07:42.0
EARTH COORDINATES ARE 101.300 -28.600       7107. (RA, DEC, DIST.)
EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
EARTH SUBTENDS CONE OF HALF ANGLE 63.827 DEGREES AT NEAR EARTH SPACECRAFT
POSITION OF ULYSSES ON 31/ 7/  92 IS:
RA=  153.558 DEC=    4.004 DIST=    6.191 AU
ULYSSES/EARTH/SC ANGLE=  59.82     SC/ULYSSES DISTANCE= 926210400.0
COMPLEMENT OF ULYSSES/SC/EARTH ANGLE= 120.18
MAXIMUM LIGHT TRAVEL TIME = 3089.51 SECS.
EARTH BLOCKS THE ULYSSES-NEAR EARTH SPACECRAFT LINE
ULYSSES CROSSING WINDOW IS 59940.103 TO 64761.505 SECS., OR
                           16:39:00.103 TO 17:59:21.505
```
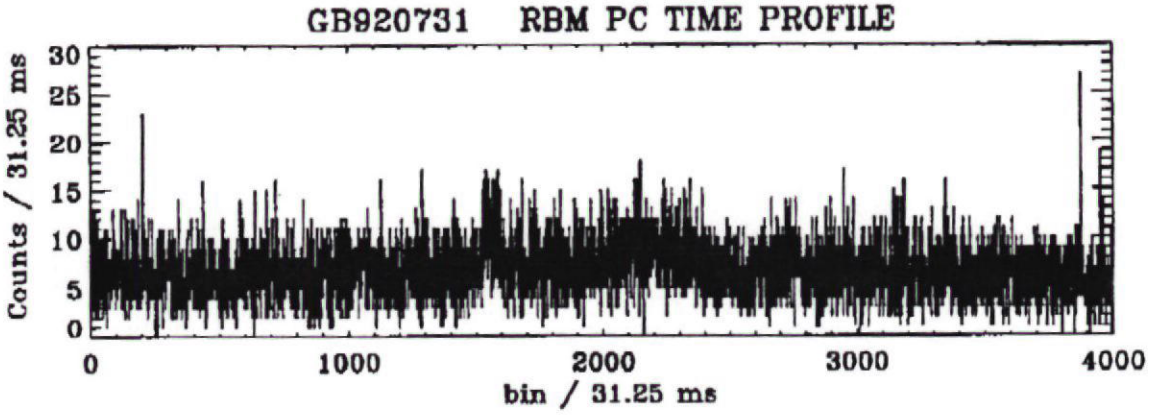
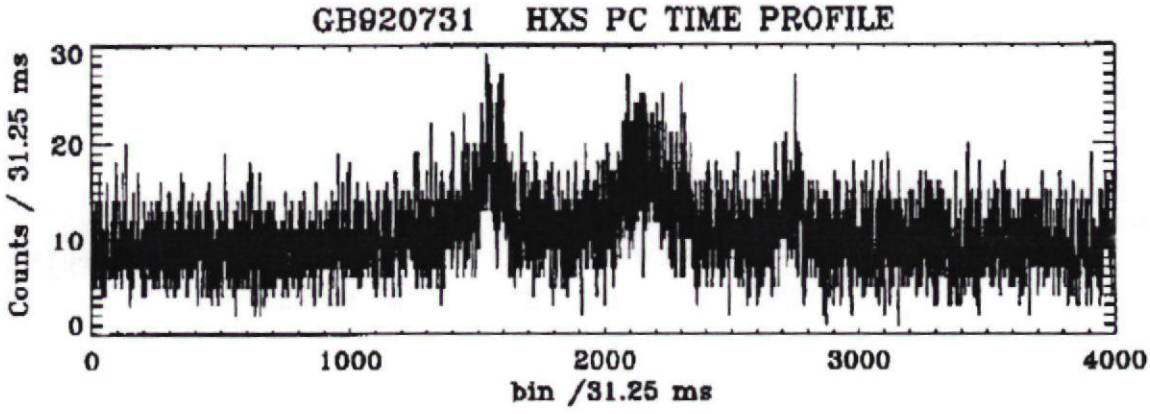

7/19

Yohkoh


GB920731 RBM PC TIME PROFILE
Counts / 31.25 ms
0
5
10
15
20
25
30
0
1000
2000
3000
4000
bin / 31.25 ms


GB920731 HXS PC TIME PROFILE
Counts / 31.25 ms
0
10
20
30
0
1000
2000
3000
4000
bin /31.25 ms

From jlaros@LPL.Arizona.EDU Thu Jun 15 09:53 PDT 1995
Date: Thu, 15 Jun 1995 09:55:54 -0700
From: jlaros@LPL.Arizona.EDU (John Laros)
To: khurley@sunspot.ssl.berkeley.edu
Subject: Re: 921004

Kevin,

I found a PVO plot. Trigger was at 49960.747, with a sharp dip in the center of the main peak coming about 2.5 s later.

There are two other unrecorded "12th hour" PVO triggers:

920908 43405.494 Almost surely solar
920731 61854.429 CCE. Sharp spike 2.0 s after trigger.

I guess we should recheck the "N/O" entries after 7/25.

John

From khurley@space6.ssl.berkeley.edu Tue Nov 23 08:45:15 1993
Date: Tue, 23 Nov 93 09:41:35
From: khurley@space6.ssl.berkeley.edu
Content-Length: 4895

Jim,

I've finally managed to get back to the DMSP localizations. I'm e-mailing you files for the following events: July 31 1992 and October 4 1992

I have not sent data for the following events:

May 19, 1992: I think that you have everything already. Let me know if that is not the case.

June 28, 1992: No Ulysses data due to the earthquake, which knocked out the tracking station.

June 29, 1992: There is no trace of this event in the Ulysses data. I would have said that it is solar, but the GOES data show no activity at this time. Also, there is a BATSE data gap around this time. This one is a mystery to me.

July 16, 1992: I'm pretty sure this one is solar; there was a strong GOES event at just this time. There is a BATSE data gap at the time, and Ulysses did not observe it.

Aug 5, 1992: Ulysses did not observe this event. Both BATSE and GOES report a strong solar flare at this time, so I think that is the explanation for this event.

Jan 6 1993: This is a nice-looking candidate in the DMSP data, but I haven't found anything corresponding to it in the Ulysses data. We had coverage at 0.5 s resolution, and I searched a window +/- 2100 seconds long around the DMPS time. No other spacecraft reported an event at this time, either.

And, on another subject, you mentioned a possible burst on Oct 24, 1991. Ulysses did not observe it, but the WATCH experiment aboard GRANAT observed solar particles at the time of this event.

SATELLITE POSITIONAL INFORMATION AND BURST ARRIVAL TIME

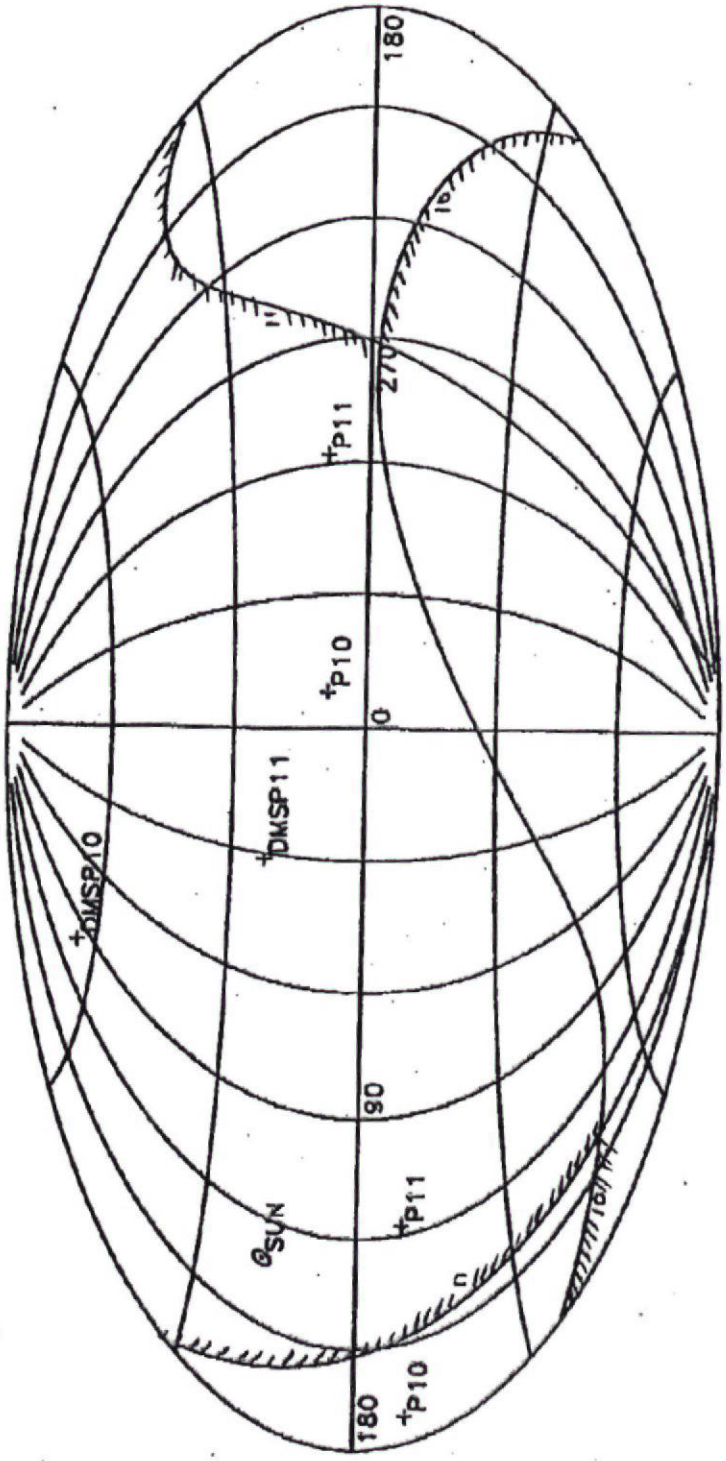
NO	NAME	DIST. FROM EARTH, KM.		ALPHA, DEG.		DELTA, DEG.	
1	ULYSSES	926718236.0000	+/- 23.8000000	154.29600	+/- .00003	3.69480	+/-
2	DMSP	6800.0000	+/- 50.0000000	.00000	+/-180.00000	.00000	+/-

JULIAN DAY NUMBER IS 33815.22 DAYS SINCE 1900 JAN 0.5

20.00 BY 15.00 CM MAP FOR RA= .00 TO 360.00, DEC= -70.00 TO 70.00

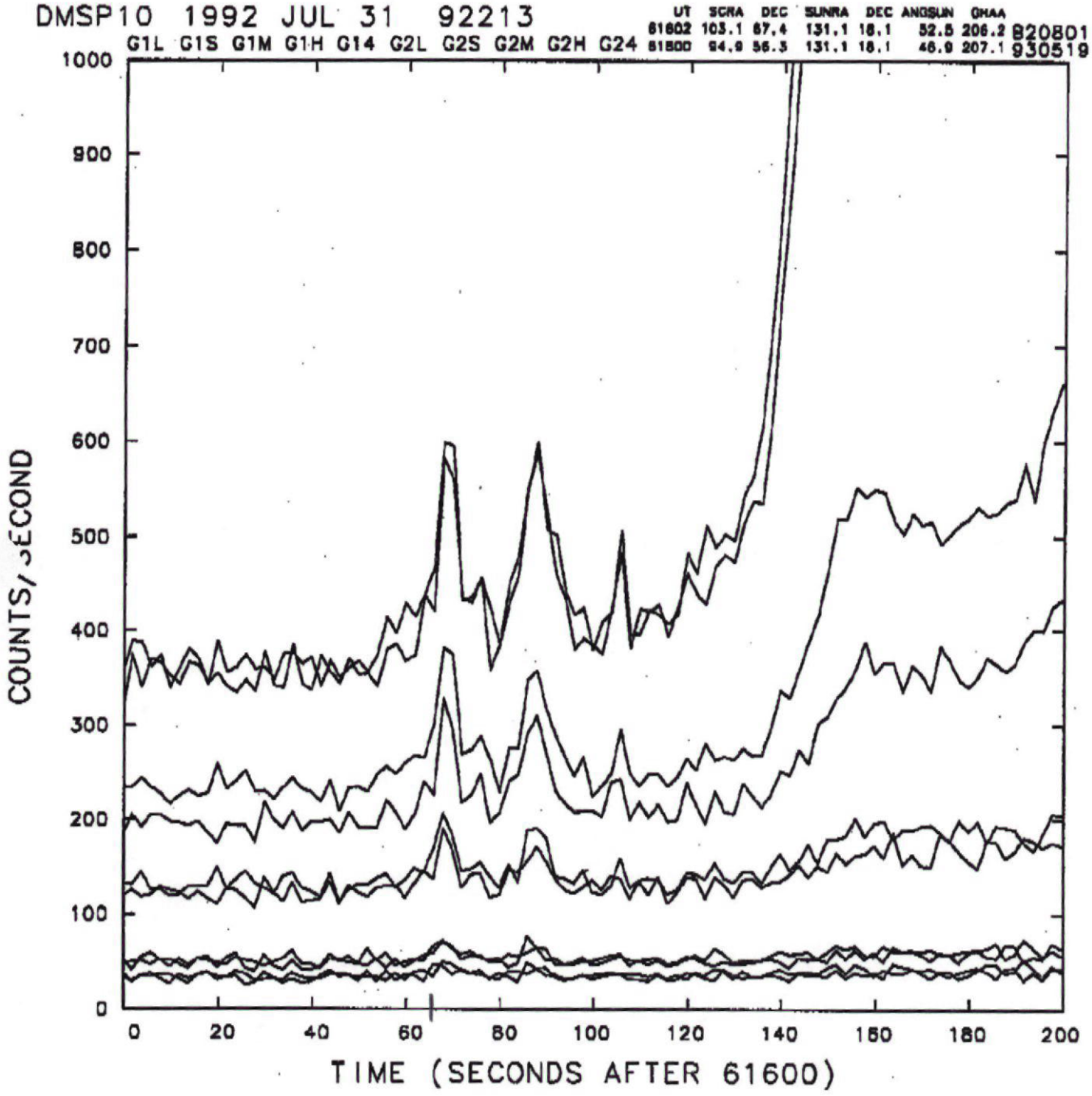
INTERSATELLITE CORRELATIONS

SEPARATION BETWEEN SATELLITES 1 AND 2 IS 3091.21926 LIGHT SECONDS. TIME DELAY IS -
CORRELATION BETWEEN SATELLITE 1(ULYSSES) AND SATELLITE 2(DMSP



DMSP POSITIONS+VIEW, 92/07/31 61660 UT
EQUATORIAL COORDINATES

```
From root Mon Aug 23 10:30  1993
Received: by space6.ssl.berkeley.edu (AIX  2.1 2/4.03)
          id AA19302; Mon, 23 Aug 93 10:29:49
Received: from east.gsfc.nasa.gov by sunspot.ssl.berkeley.edu (4.1/1.30.1)
        id AA23093; Mon, 23 Aug 93 10:33:20 PDT
Received: from ESSDP2.DECnet MAIL11D_V3 by east.gsfc.nasa.gov (5.57/Ultrix3.0-C)
        id AA16832; Mon, 23 Aug 93 13:33:34 -0400
Date: Mon, 23 Aug 93 13:33:34 -0400
Message-Id: <9308231733.AA16832@east.gsfc.nasa.gov>
From: 046369@essdp2.dnet.nasa.gov
To: "khurley@space6.ssl.berkeley.edu"@east.dnet.nasa.gov
Subject: DMSP GAMMA-RAY BURST DATA
Status: R

FROM:  ESSDP2::TERRELL   (JAMES TERRELL, LOS ALAMOS NATL LAB)      MAILOUT.0823
TO:    UCBSP::KHURLEY  (KEVIN HURLEY) (EAST::"KHURLEY@SPACE6.SSL.BERKELEY.EDU"}
CC:    BATSE::KOUVELIOTOU
SUBJ:  DMSP GAMMA-RAY BURST DATA, AS OF 16 JULY 1993 (EXTENDED, 8/23/93)

HERE ARE SOME NOTES RE DMSP PEAKTIMES FOR YOUR MASTER BURST LIST:
 +  8FEB91 32416 YES (8YES,9YES,10SAA)
 + 19FEB91 42525 YES (8YES,9YES,10SAA)
 + 10MAR91 46923 YES (8YES,9YES,10YES)
 +  1JUN91 69757 YES (8SR,9YES,10YES) NO AT 69736!
 + 14AUG91 40232 YES (8NR,9YES,10YES) NO AT 40182!
   27SEP91 84415 YES (8SAA,9YES,10SAA)
   16OCT91 36696 YES (8SAA,9YES,10NR)
    4NOV91 54286 YES (8SR,9YES,10YES)
   27NOV91 15739 YES (8NO,9NO,10YES)
    2DEC91 73733 YES (8YES,9NO@144DEG,10NR)
    9DEC91 66959 N/O (8SR,9SR,10NR,11ND)
   21DEC91 22686 YES (8ND,9NO,10NO,11YES)
   10JAN92 33478 NA  (BLANK) (8ND,9NA,10SAA,11NA)
   10FEB92 35633 YES (8NO,9WEAK,10SAA,11SAA)
    6APR92  9855 N/O (OBSCURED) (8NO@141,10SR,11NO@137DEG)
    1MAY92 76696 N/O (OBSCURED) (8NO@127,10NO@157,11NO@147DEG)
*+ 19MAY92 59406 YES (8SR,10YES,11NO)
   22JUN92 25506 N/O (8SAA,10NR,11SA)
*  28JUN92 76452 YES (8ND,10YES,11NO)
   29JUN92 75897 YES (ALL YES, SOFT)
   14JUL92 47069 NA  (BLANK) (8NA,10SAA,11SR)
*  16JUL92 60933 YES (9NO.10YES,11YES)
   20JUL92 11524 N/O (OBSCURED) (8NA@130,10NA@145,11SR)
   23JUL92 72188 N/O (OBSCURED) (8ND,10NA@148,11NR)
 + 26JUL92   165 YES (8NO,10YES,11YES,BOTH SOFT AND WEAK)
*+ 31JUL92 61660 YES (8SA,10YES,11NO) NO AT 61620!
   10AUG92 79599 YES?(8YES?,10NA,11NA) (LONG SOFT PEAK)        (SEE NOTE BELOW)
*+ 22AUG92 81542 YES (8YES,10YES,11YES)
*   4OCT92 50421 YES (8YES,10YES,11SR)
   23NOV92 22727 YES (8YES,10YES,1SR) (NOT AT 22712)
   23NOV92 46542 YES (8NR,10SR,11YES) (NOT AT 46584, BATSE GRB)
    7DEC92 57649 YES (8YES,10YES,11YES)
    6JAN93 55260 YES (8SAA,10YES,11SR)
   12JAN93 55082 YES (8YES,10NO@138,11VERYWEAK) (8:BIG PEAK AT 55202)
   20JAN93 84779 YES (8YES,10,YES,11YES) (NO, AT 84700!)

*  I WILL BE SENDING YOU BY FAX DMSP LOCATION PLOTS FOR THE EVENTS MARKED
ABOVE WITH AN ASTERISK, PLUS A DATA PLOT FOR DMSP8, 10AUG92.
I WOULD APPRECIATE KNOWING WHETHER THESE HELP IN LOCATING EVENTS.
IF YOU WANT MORE COMPLETE INFORMATION PLEASE TELL ME.  I HAVE RECEIVED
NO SOURCE LIST FROM YOU SINCE 920626. DID YOU RECEIVE MY LIST SENT 920716?

+  LISTINGS ADDED 930823 TO 930716 LIST.              --JIM TERRELL
```



61660.2 61682.2 61700.2

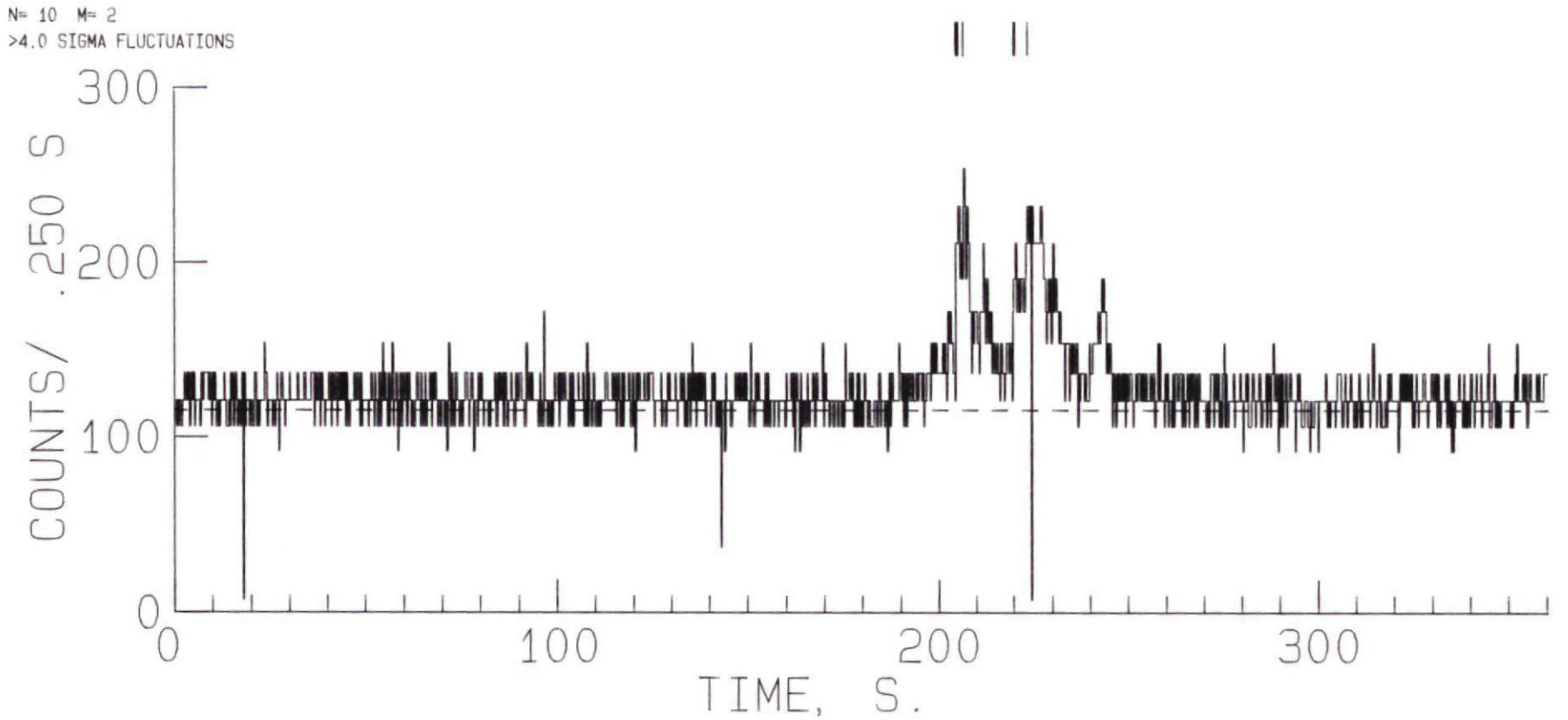
ORIGINAL

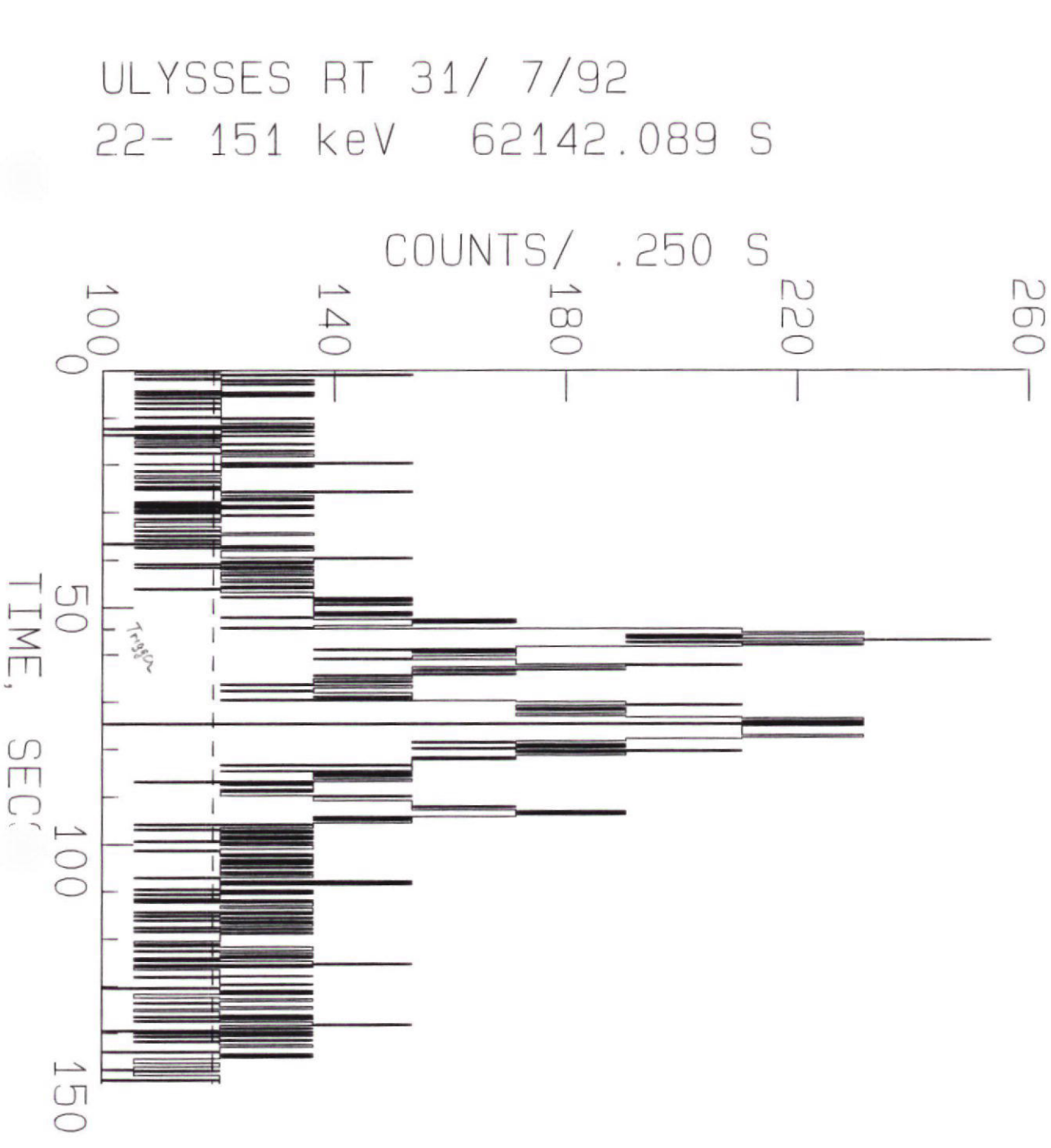
ULYSSES RT

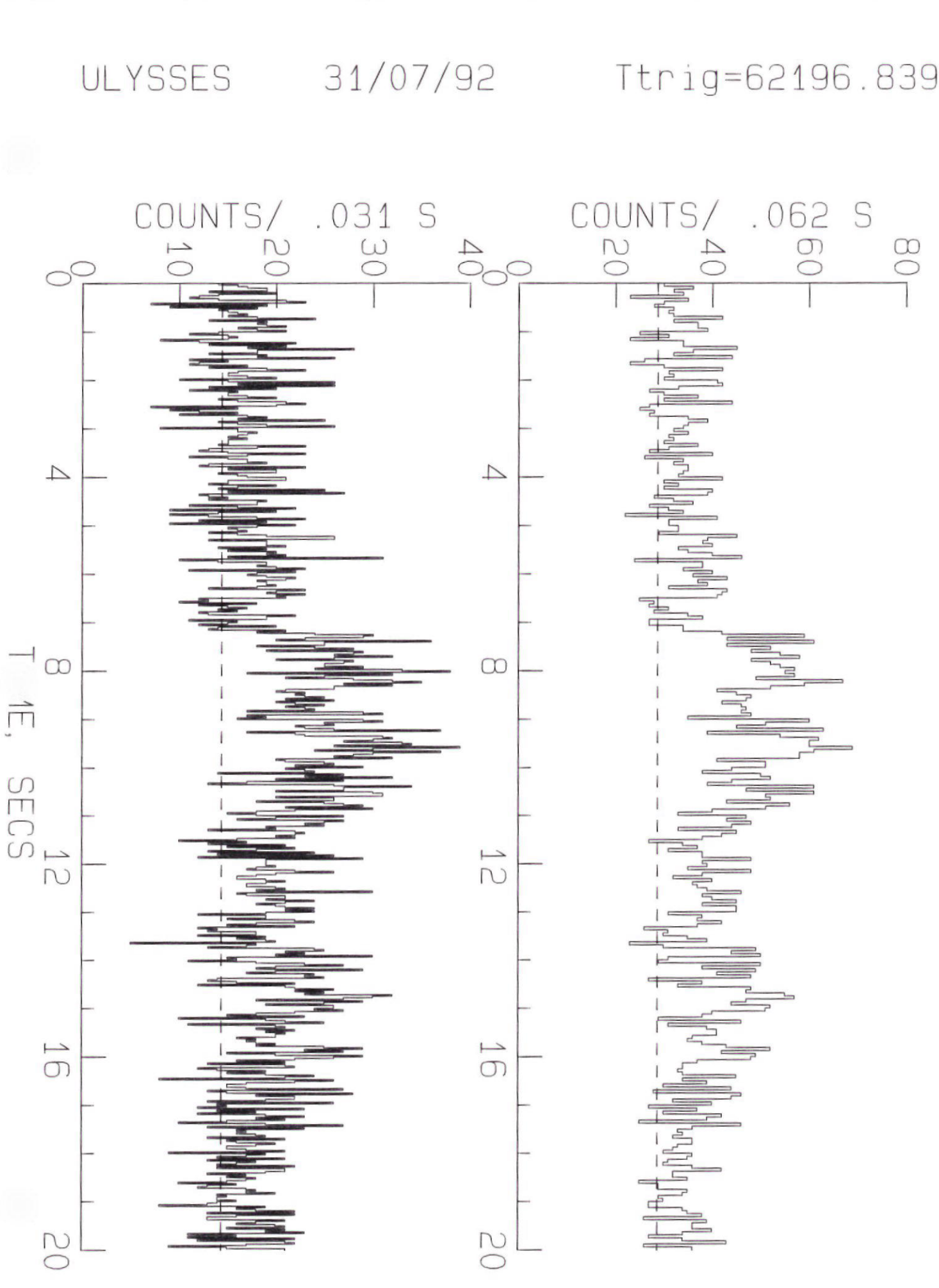
13/11/93

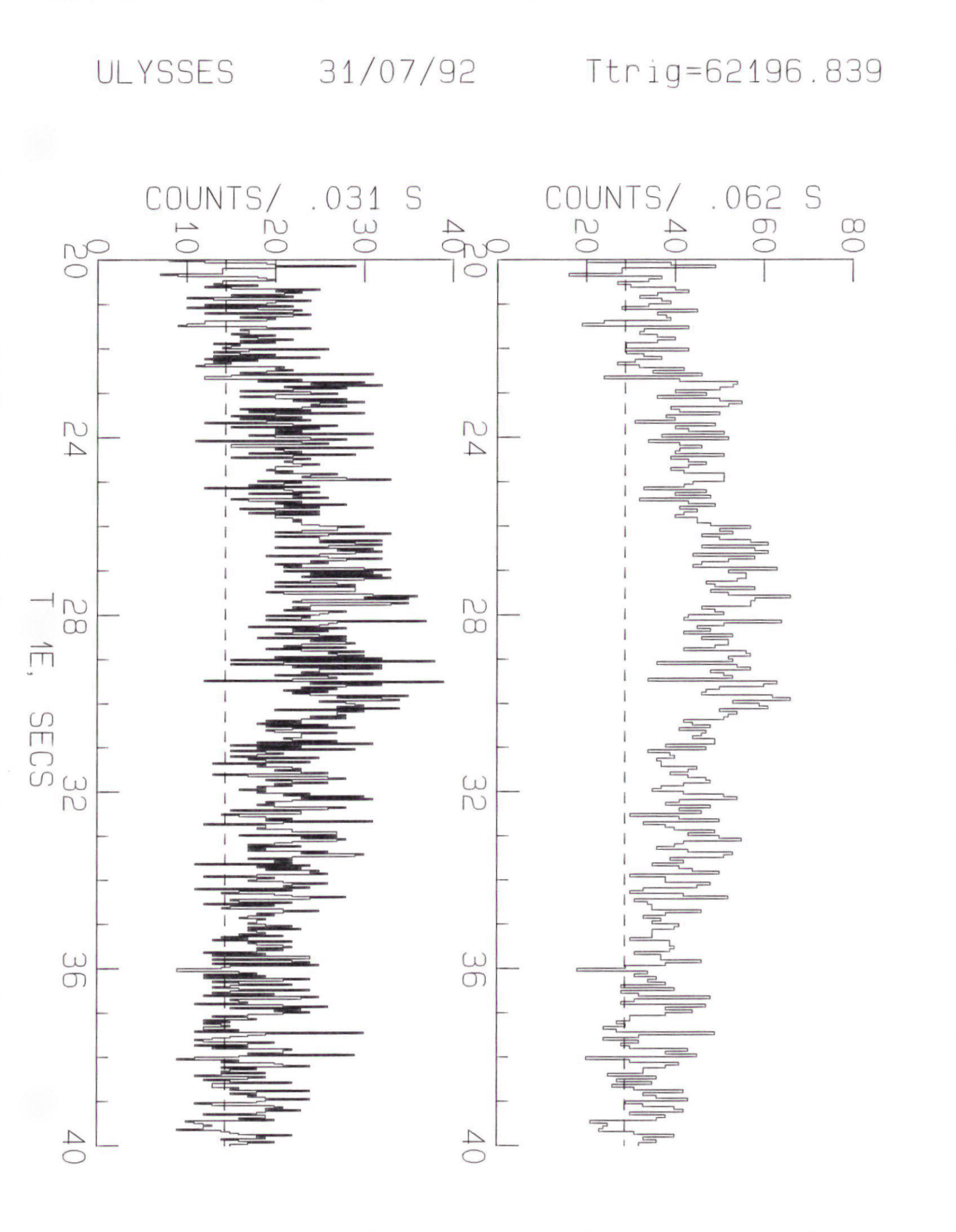
31/ 7/92 61992.090 s

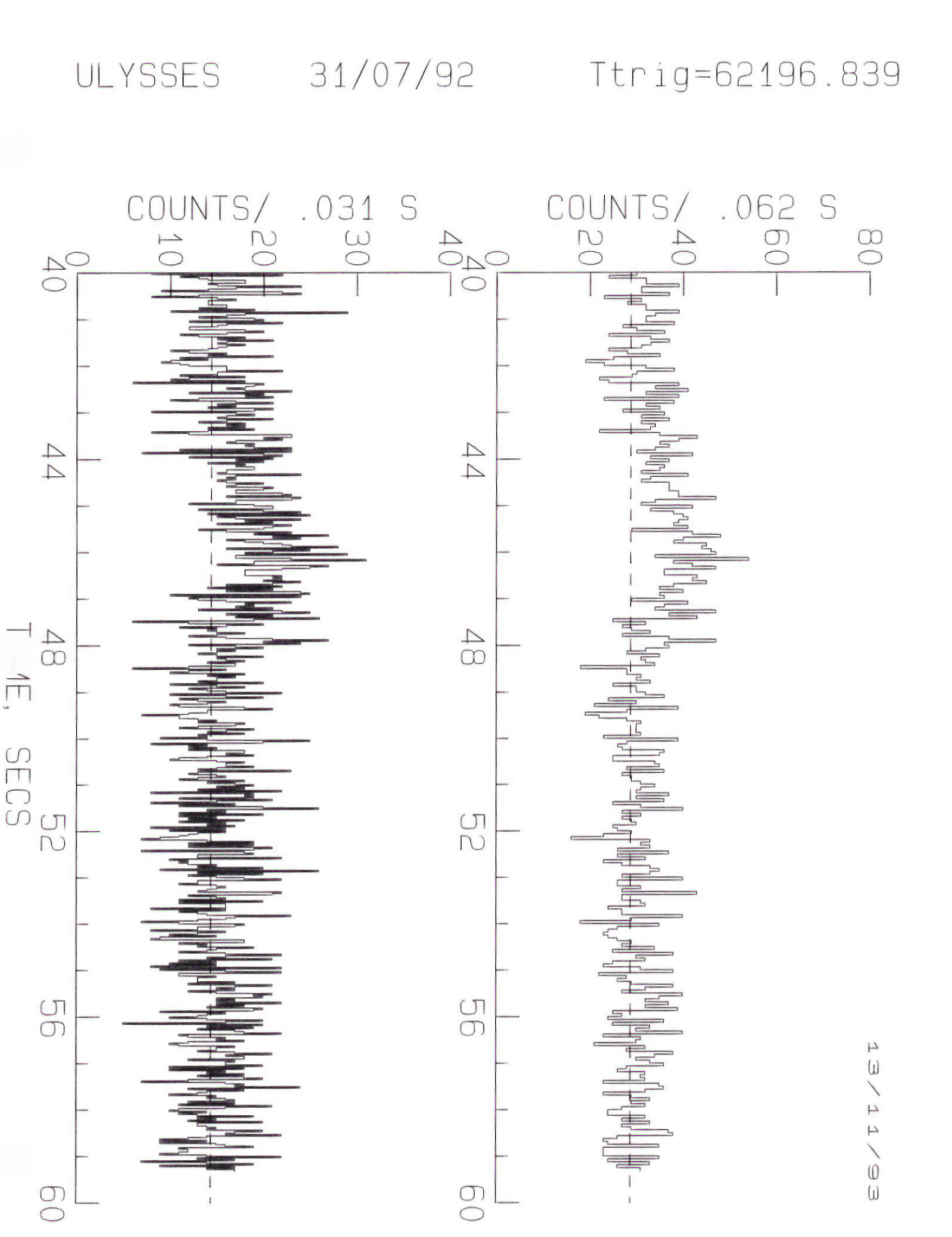
22- 151 keV




ULYSSES RT 31/ 7/92
22- 151 keV 62142.089 S
COUNTS/ .250 S
100
140
180
220
260
0
50
100
150
TIME, SEC
Trigger


ULYSSES 31/07/92 Ttrig=62196.839
COUNTS/ .031 S
0 10 20 30 40
COUNTS/ .062 S
0 20 40 60 80
0 4 8 12 16 20
TIME, SECS


ULYSSES 31/07/92 Ttrig=62196.839
COUNTS/ .031 S
0 10 20 30 40
COUNTS/ .062 S
0 20 40 60 80
20 24 28 32 36 40
T-1E, SECS

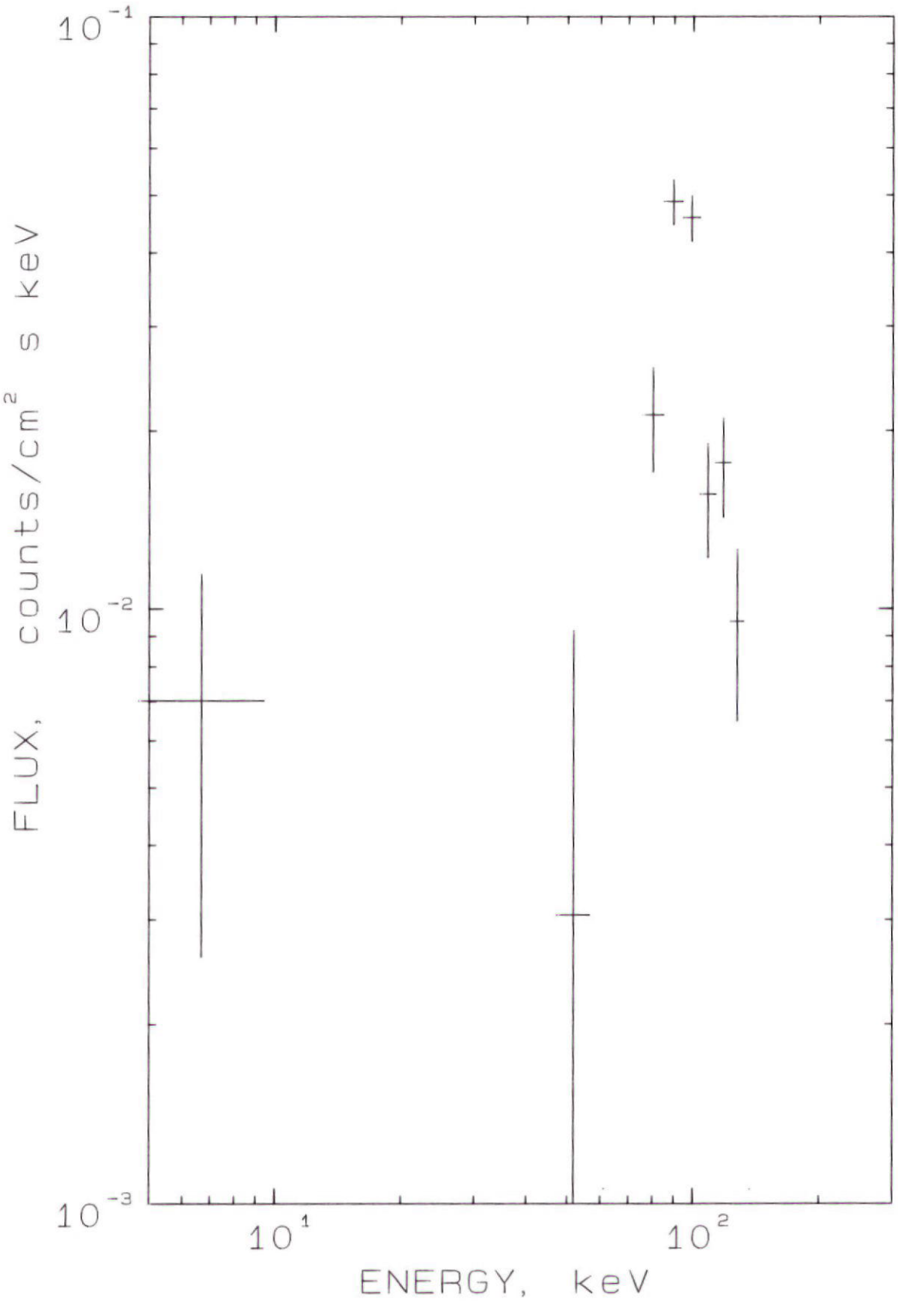

ULYSSES 31/07/92 Ttrig=62196.839
COUNTS/ .031 S
0 10 20 30 40
COUNTS/ .062 S
0 20 40 60 80
40 44 48 52 56 60
T - 1E, SECS
13/11/93

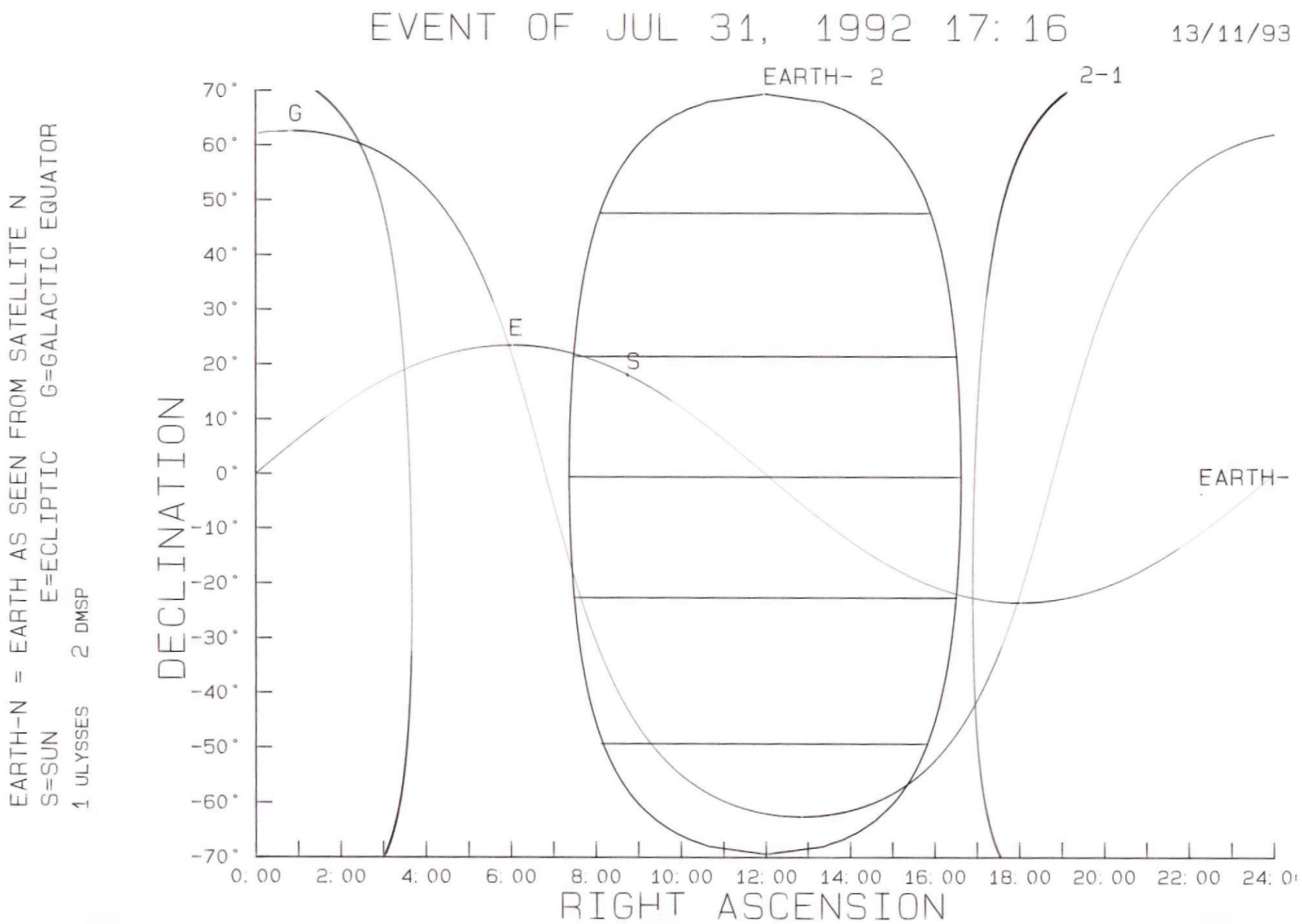
ULYSSES 31/07/92 62196.831 BURST SPECTRAL COUNT RATES
4- 18 keV
18- 47 keV
47- 75 keV
75-103 keV
103-132 keV
132-151 keV
COUNTS/S
TIME, SECS
13/11/93

ULYSSES 31/07/92 62196.831

13/11/93

SPECTRUM INTEGRATED OVER 54.6 SECONDS, INTERVALS 2 TO 26




EVENT OF JUL 31, 1992 17: 16
13/11/93
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 DMSP
EARTH- 2
2-1
EARTH-
G
E
S
DECLINATION
RIGHT ASCENSION
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°
-30°
-40°
-50°
-60°
-70°
0: 00
2: 00
4: 00
6: 00
8: 00
10: 00
12: 00
14: 00
16: 00
18: 00
20: 00
22: 00
24: 0

From @space6.ssl.berkeley.edu,@cmsa.berkeley.edu:X024862@JPNRKY00.BITNET Wed Dec 16 04:28:08 1
Date: 16 DEC 1992 21:06:34 JST
From: <X024862%JPNRKY00.BITNET@cmsa.berkeley.edu>
Subject: Yohkoh GBD data
To: <khurley@space6.ssl.berkeley.edu>
Content-Length: 789

To: Dr. K. Hurley (SSL/UCB)
Fr: Masato Yoshimori (Rikkyo Univ.)
Date: Wed. 16 Dec. 1992.

Dear Dr. Hurley:
I am sending the Yohkoh GBD data of following five events.

1. GRB date (yy/mm/dd)
2. Start time (hh/mm/ss) UT
3. Equatorial Coordinates of the Earth Center for the YOHKOH
4. Altitude of the YOHKOH (km)

Date	Time (UT)	alpha	delta	Altitude (km)
1992/02/18	1844:21	308.7	-22.9	780.1
1992/07/11	1609:17	56.5	25.1	764.0
1992/07/31	1707:42	101.3	-28.6	728.7
1992/08/16	1236:38	327.9	-31.1	559.7
1992/09/03	2329:05	224.7	-31.2	746.7

That's all.
I hope our data are helpful to you.

With best regards,

Masato Yoshimori
Acknowledge-To: <X024862@JPNRKY00>

From @space6.ssl.berkeley.edu,@cmsa.berkeley.edu:X024862@JPNRKY00.BITNET Thu Nov 26 03:41:24 1
Date: 26 NOV 1992 18:19:41 JST
From: <X024862%JPNRKY00.BITNET@cmsa.berkeley.edu>
Subject: YOHKOH GRB Event List
To: <khurley@space6.ssl.berkeley.edu>
Content-Length: 1674

To: Dr. K. Hurley (SSL/UCB)
Fr. Masato Yoshimori (Rikkyo Univ.)
Date: Thu. 26 Nov. 1992

Dear Dr. Hurley:
I am sending the YOHKOH GRB event list. YOHKOH has two GRB detectors, hard X-ray spectrometer (HXS) and radiation belt monitor (RBM). HXS is a NaI detector (3 in. dia x 1 in. thick) which provides a 32 channel energy spectrum (20 - 600 keV) every 2 sec and a time profile every 31 ms. RBM is a NaI detector (2 in. dia x 1 cm thick) which provides a 32 channel energy spectrum (10 - 300 keV) every 2 sec and a time profile every 31 ms.

YOHKOH GRB Event List (1991 Oct. 1 - 1992 Sept.3)

Date (Day/Month/Year)	UT (hh:mm)	Comment
27/11/91*	04:22	HXS
09/12/91	18:36	HXS/RBM
21/12/91*	06:17	HXS/RBM
18/02/92*	18:44	HXS
06/04/92	02:45	HXS/RBM
19/04/92*	01:22	HXS/RBM
19/05/92*	16:30	HXS/RBM
17/06/92*	05:29	HXS
22/06/92	07:05	HXS/RBM
01/07/92*	19:39	HXS
11/07/92	16:09	HXS/RBM
31/07/92	17:07	HXS/RBM
16/08/92	12:36	HXS
24/08/92	10:56	HXS/RBM
03/09/92	23:29	HXS

* Recorded with time resolution of 0.25 or 2 sec.
Accurate burst times (hh:mm:ss) are available shortly.

We hope the YOHKOH GRB event list is helpful to you.

With best regards,

Masato Yoshimori
Acknowledge-To: <X024862@JPNRKY00>

From khurley@space6.ssl.berkeley.edu Tue Nov 24 08:06:08 1992
Date: Tue, 24 Nov 92 07:59:26
From: khurley@space6.ssl.berkeley.edu
Content-Length: 1629

Dear Dr. Yoshimori

Thank you for your recent fax inquiring about the locations of Yohkoh gamma ray bursts. Here are the replies.

1991 Dec 9 18:36: Observed by Ulysses, BATSE, and WATCH. Triangulated position combined with independent BATSE and WATCH positions consistent with source location around RA 17:30, Dec -45.

1992 Apr 6 02:45: Observed by Ulysses, PVO, and BATSE. Triangulated position indicates location around RA 19:15, Dec -57

1992 Jun 22 07:05: Observed by Ulysses, SIGMA/GRANAT, COMPTEL, and BATSE. Preliminary triangulated position combined with COMPTEL location consistent with source location around RA 10:00 Dec +48.

1992 July 31 17:07: Observed by Ulysses. Apparently no other observations.

1992 Aug 24 10:56: Observed by Ulysses and BATSE. Triangulated position and independent BATSE location consistent with source position around RA 15:00, Dec -50.

1992 Sep 3 23:29: Observed by Ulysses on September 4. Apparently no other observations.

As you are aware, I sent a letter to Professor Uchida on January 31 of this year, proposing to collaborate with Yohkoh scientists on burst locations. I am particularly interested in events which were detected by Ulysses, but not by GRO or any other near-earth spacecraft (there seem to be two of these in your list). I never received a reply to this letter, so I am not sure what the status of this suggestion is. If there is agreement that a collaboration is possible, then we should establish formats for data exchange by e-mail and proceed to exchange lists of candidate events. Please let me know whether you agree.

Best regards,

Kevin Hurley

M. Yoshimori

Department of Physics
Rikkyo University
3-34-1 Nishi-Ikebukuro, Toshima-ku, Tokyo 171, Japan
Phone. 011-81-3-3985-2391
Fax. 011-81-3-5992-3434
E-Mail: X024862@JPNRKY00.BITNET

To: Dr. K. Hurley (Space Sciences Lab. UCB)
Fax. 001-1-510-643-7629
Date: Fri. 20 Nov. 1992

Dear Dr. Hurley:

Yohkoh has observed the following six gamma-ray bursts since its launch (Aug. 30, 1991):

Date	Start Time (UT)
1991 Dec.09	18 h 36 m
1992 Apr.06	02 h 45 m
1992 June 22	07 h 05 m
1992 July 31	17 h 07 m
1992 Aug.24	10 h 56 m
1992 Sept.03	23 h 29 m

If you have the data of their locations obtained from GRO/ BATSE and Ulysses, please let me know them. I am sending the time profiles of four Yohkoh bursts.
Thank you in advance for it.

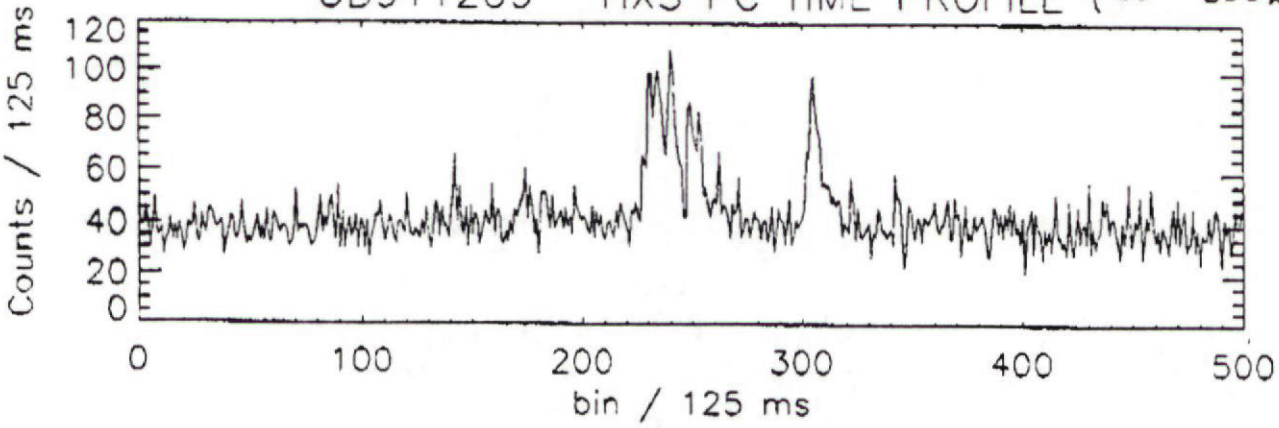
With best regards,

Masato Yoshimori

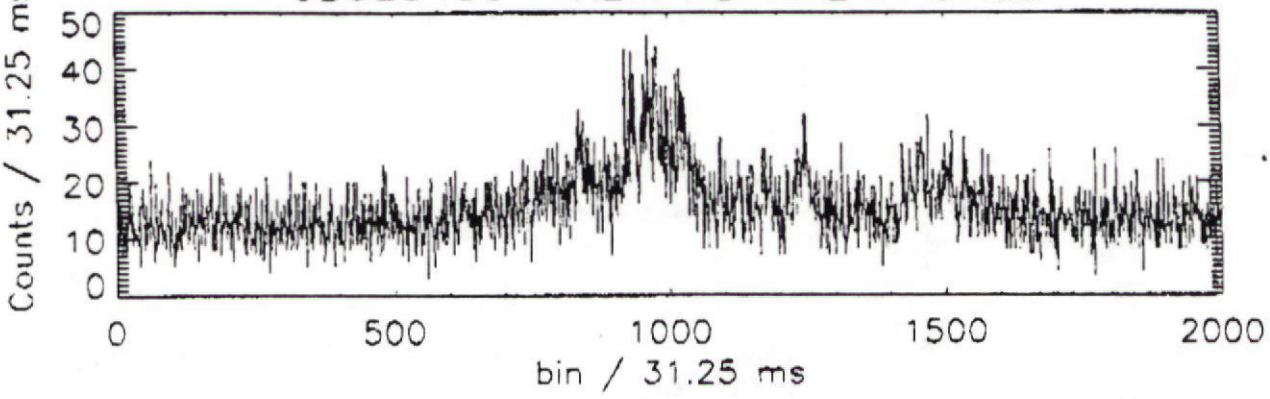
M. Yoshimori

1/2

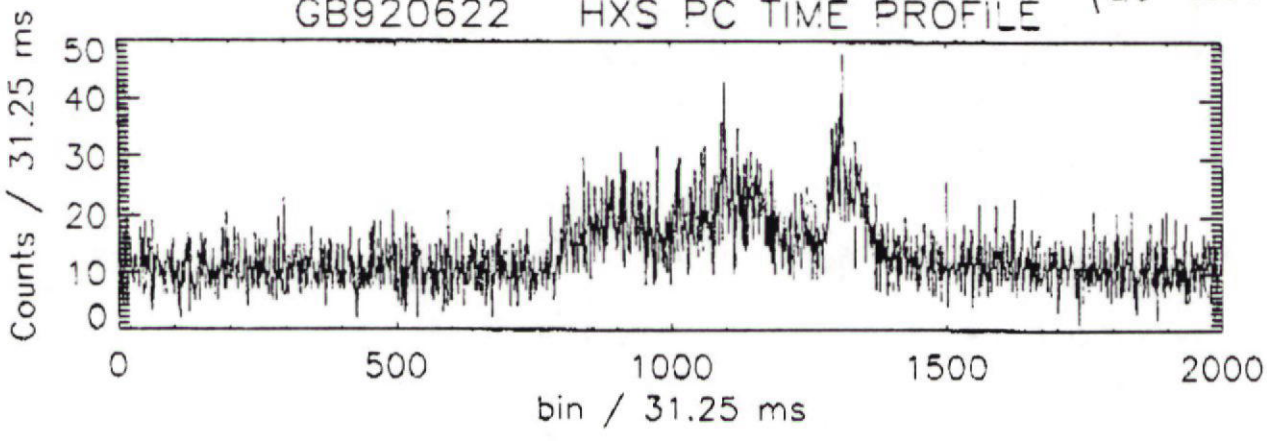
GB911209 HXS PC TIME PROFILE (20--600keV)



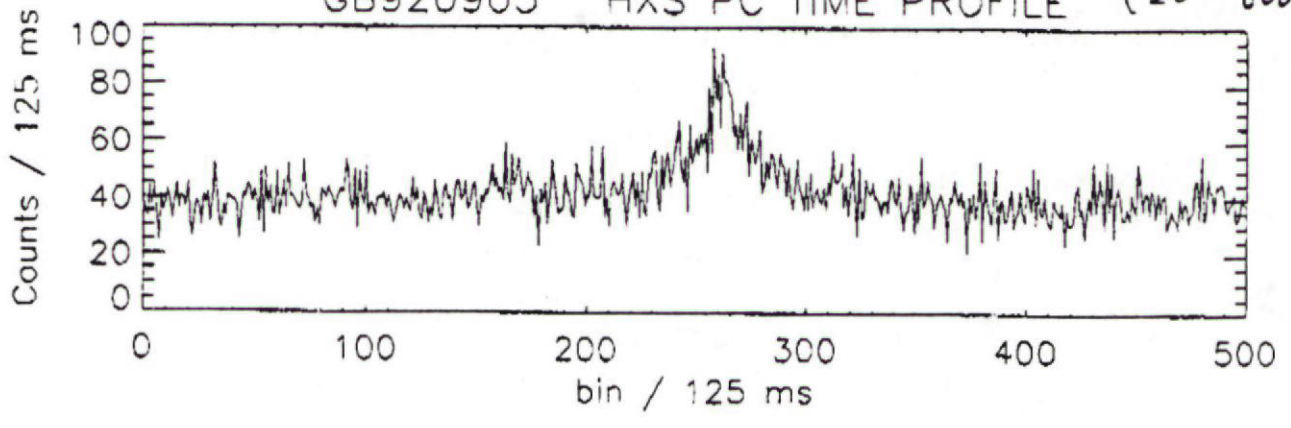
GB920406 RBM PC TIME PROFILE (10 — 300keV)



GB920622 HXS PC TIME PROFILE (20-600Ke



GB920903 HXS PC TIME PROFILE (20 — 600keV)



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

BATSE BURST # 1732
EVENT OF 1992 JUL 31 DAY OF YEAR=213
EVENT CROSSING TIME AT BATSE      : 67875. S. OR 18:51:15.4
COORDINATES ARE     .000     .000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 203.300    76.000
BATSE PEAK COUNTING RATE:  0000    C/S

EVENT CROSSING TIME AT ULYSSES     WILL BE FOUND
POSITION OF ULYSSES ON 31/ 7/  92 IS:
RA=  153.558 DEC=     4.004 DIST=     6.191 AU
BATSE-ULYSSES DISTANCE =  926213992. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=102.93 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -691.14 SECS.
CROSSING TIME AT ULYSSES     IS 67184. S. OR 18:39:44.3 +/-  562.30 SECONDS
```

No

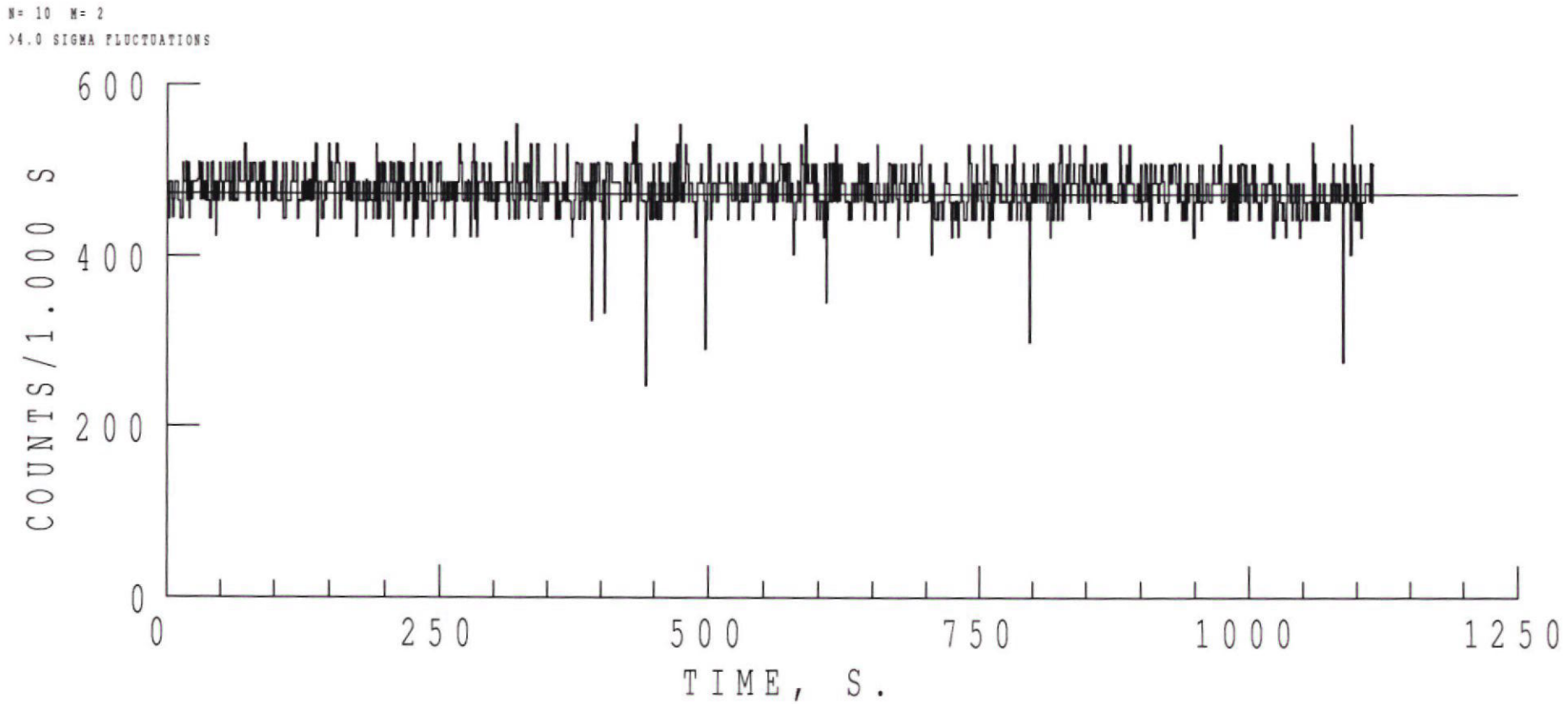
8/ 6/94

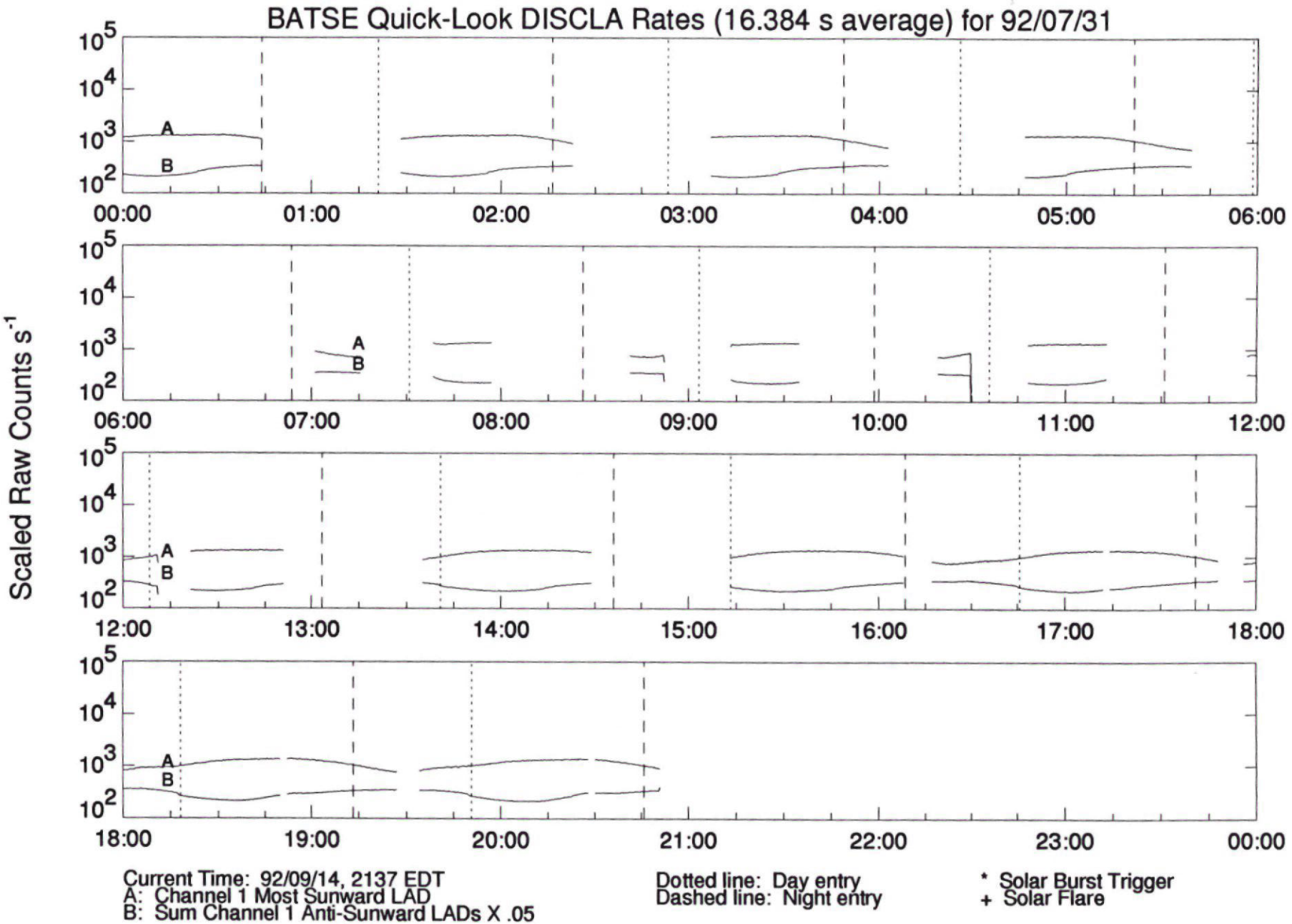
ULYSSES RT

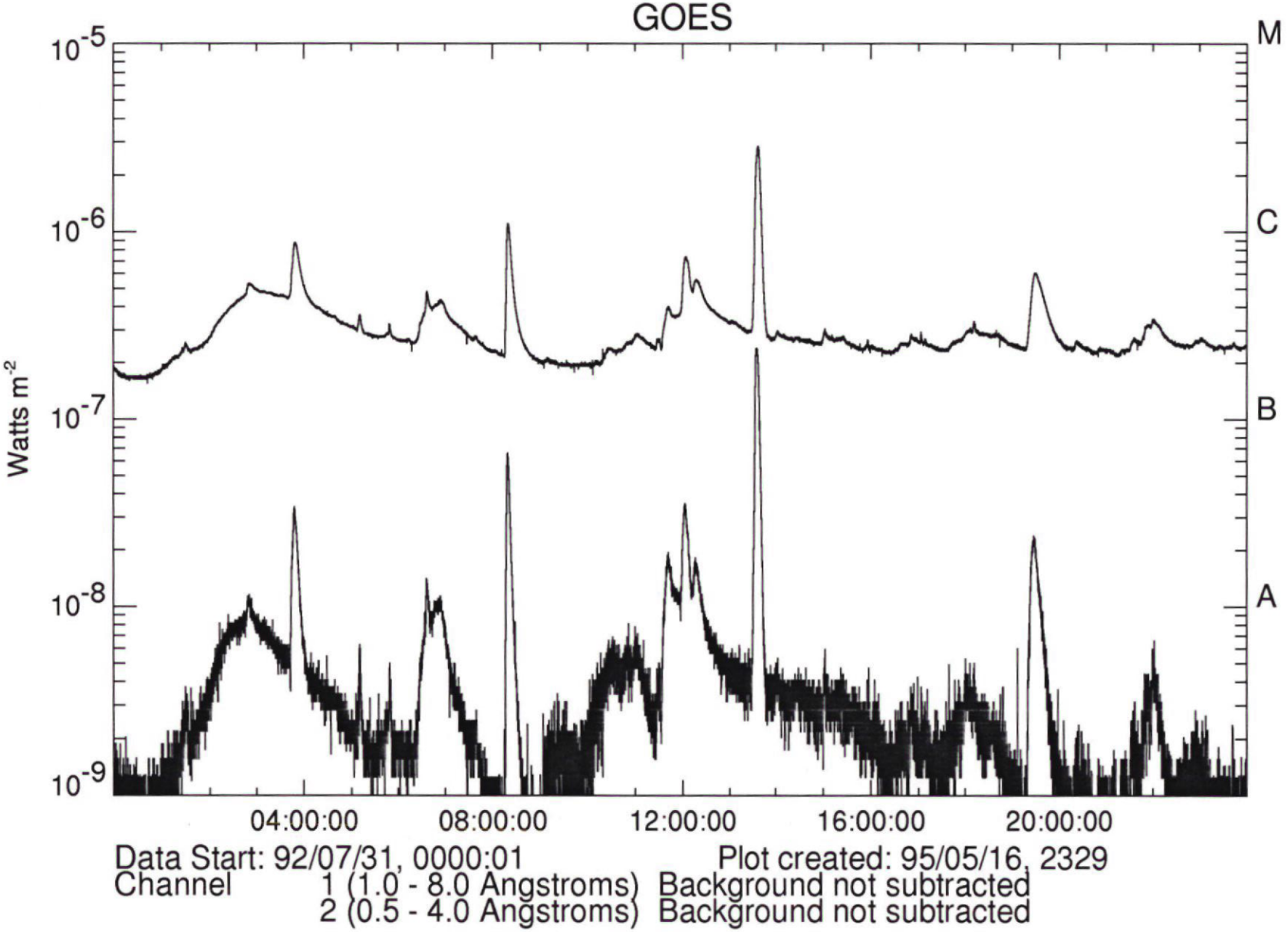
31/ 7/92 66636.406 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

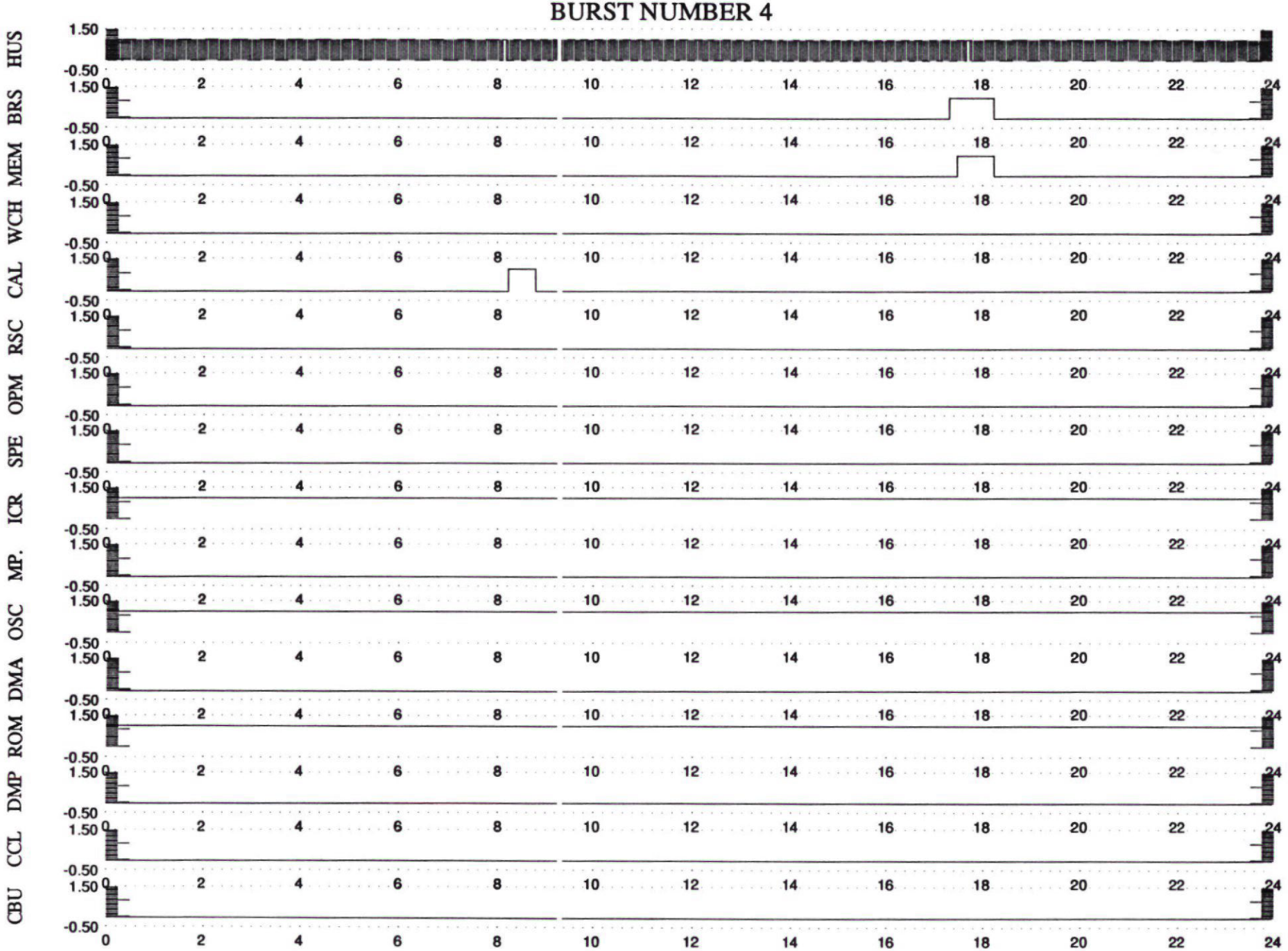



BATSE Quick-Look DISCLA Rates (16.384 s average) for 92/07/31
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 92/09/14, 2137 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^{-5}
10^{-6}
10^{-7}
10^{-8}
10^{-9}
Watts m^{-2}
M
C
B
A
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 92/07/31, 0000:01
Plot created: 95/05/16, 2329
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted

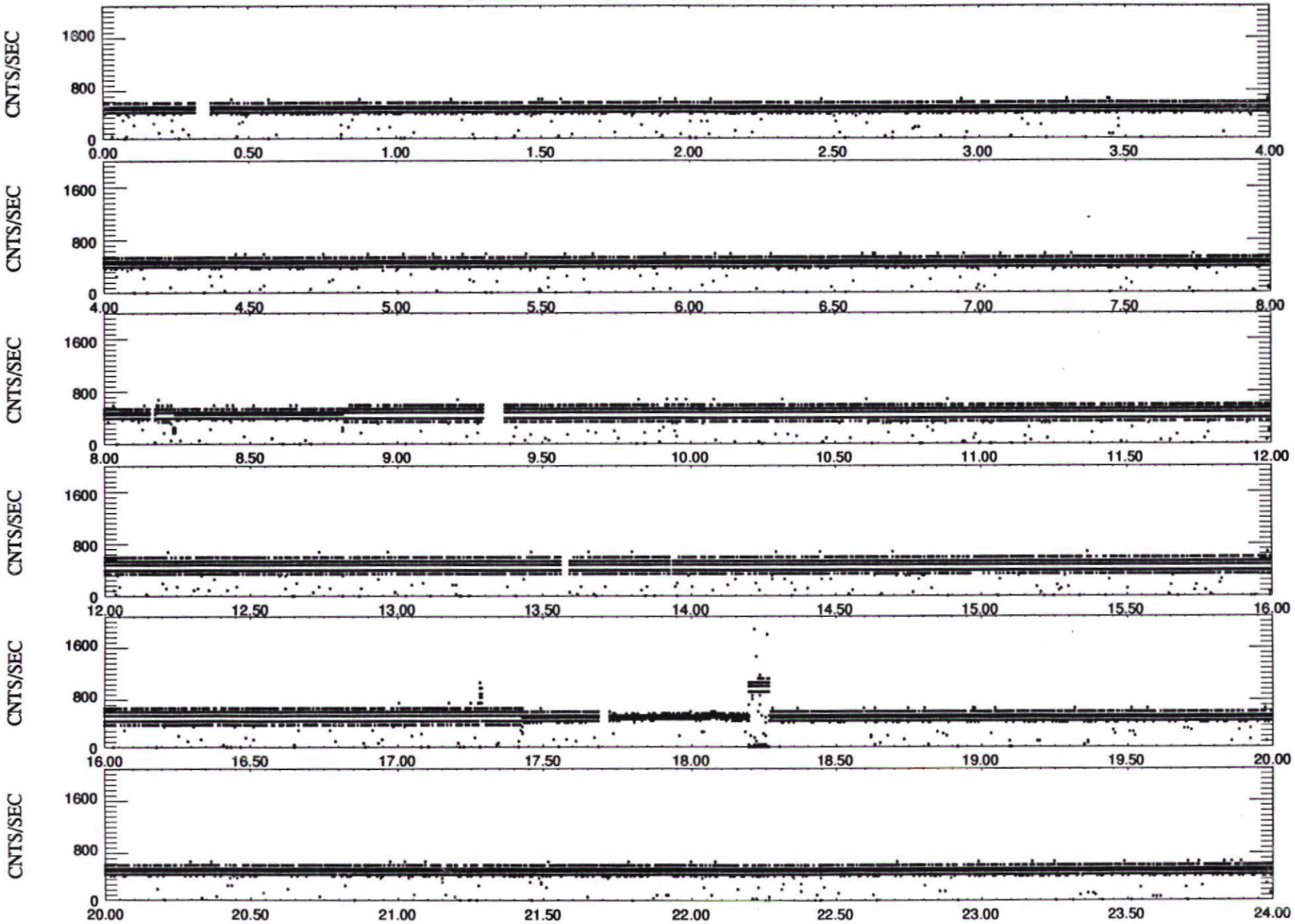
SAMPLE

HUS MODES EDR day 213, year 1992 to day 213, year 1992 9/11/92



HUS 2A, MODE 1, NOT AVERAGED EDR day 213, year 1992 to day 213, year 1992 9/11/92

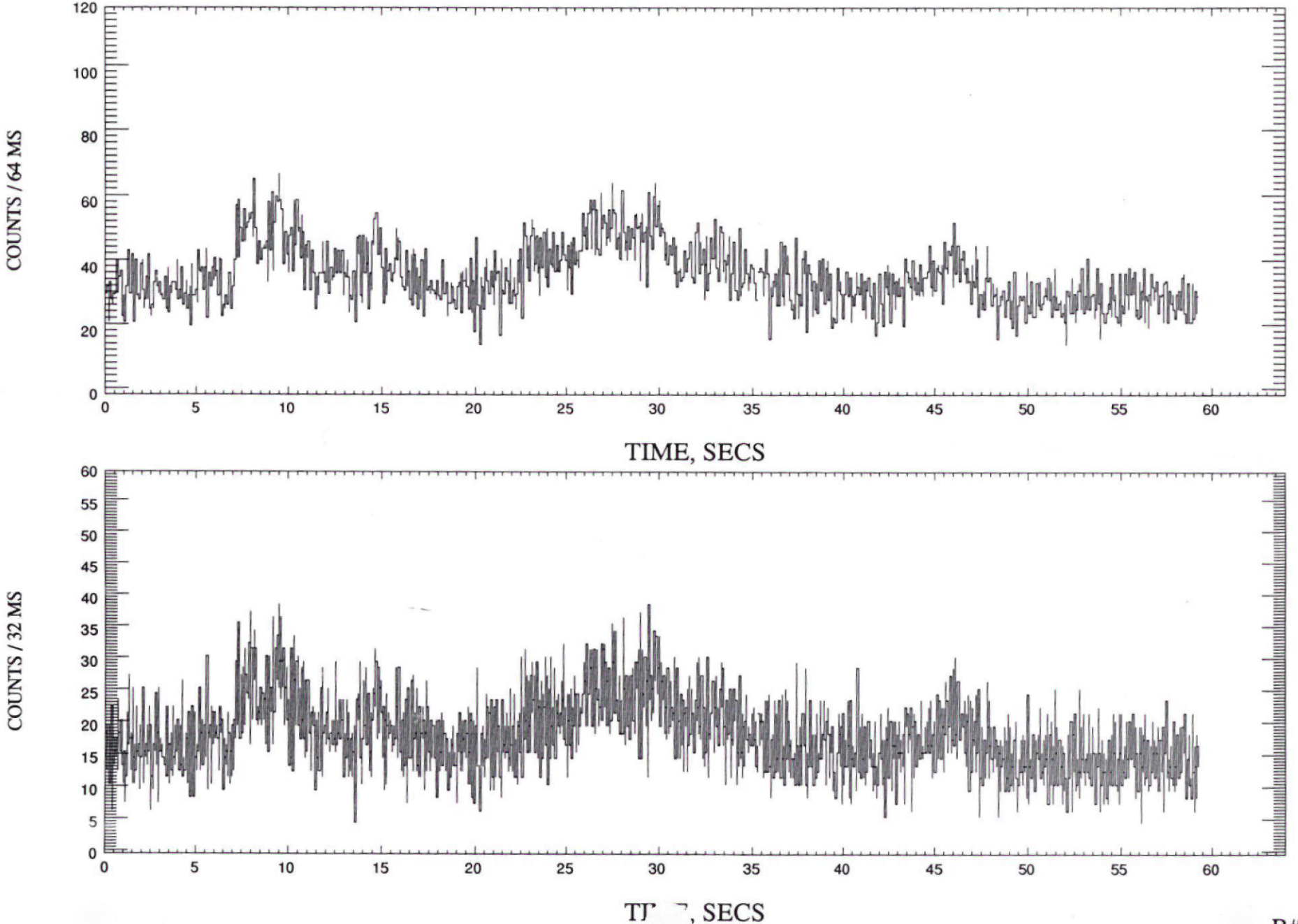
CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 213, year 1992 9/11/92

Burst Counter 4 at UT=17.276897489760 h=62196.831 s



B# 1

HUS 2A, MODE 1, NOT AVERAGED QEDR day 213, year 1992 to day 213, year 1992 8/3/92

CALIBRATION DATA INCLUDED