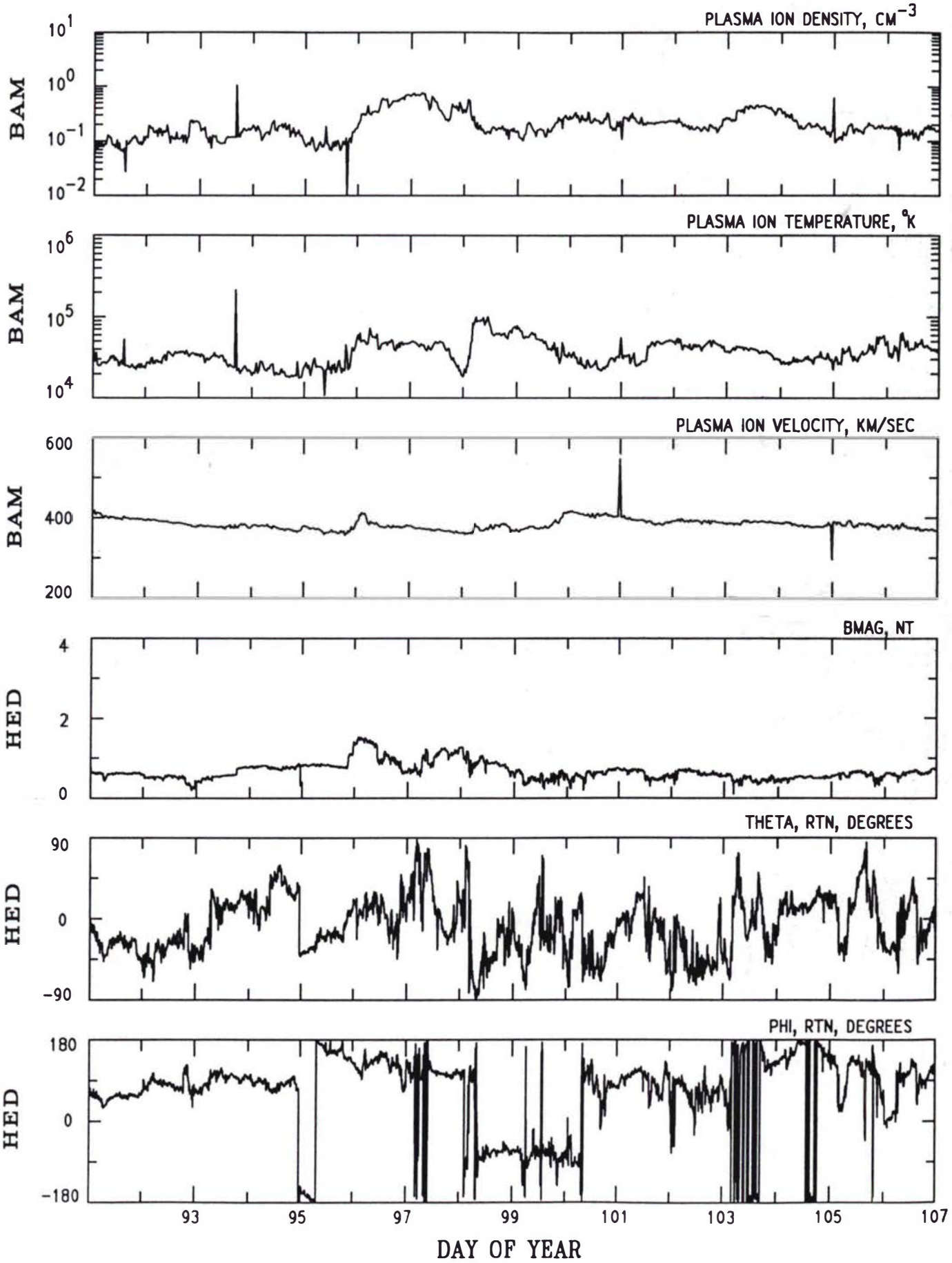
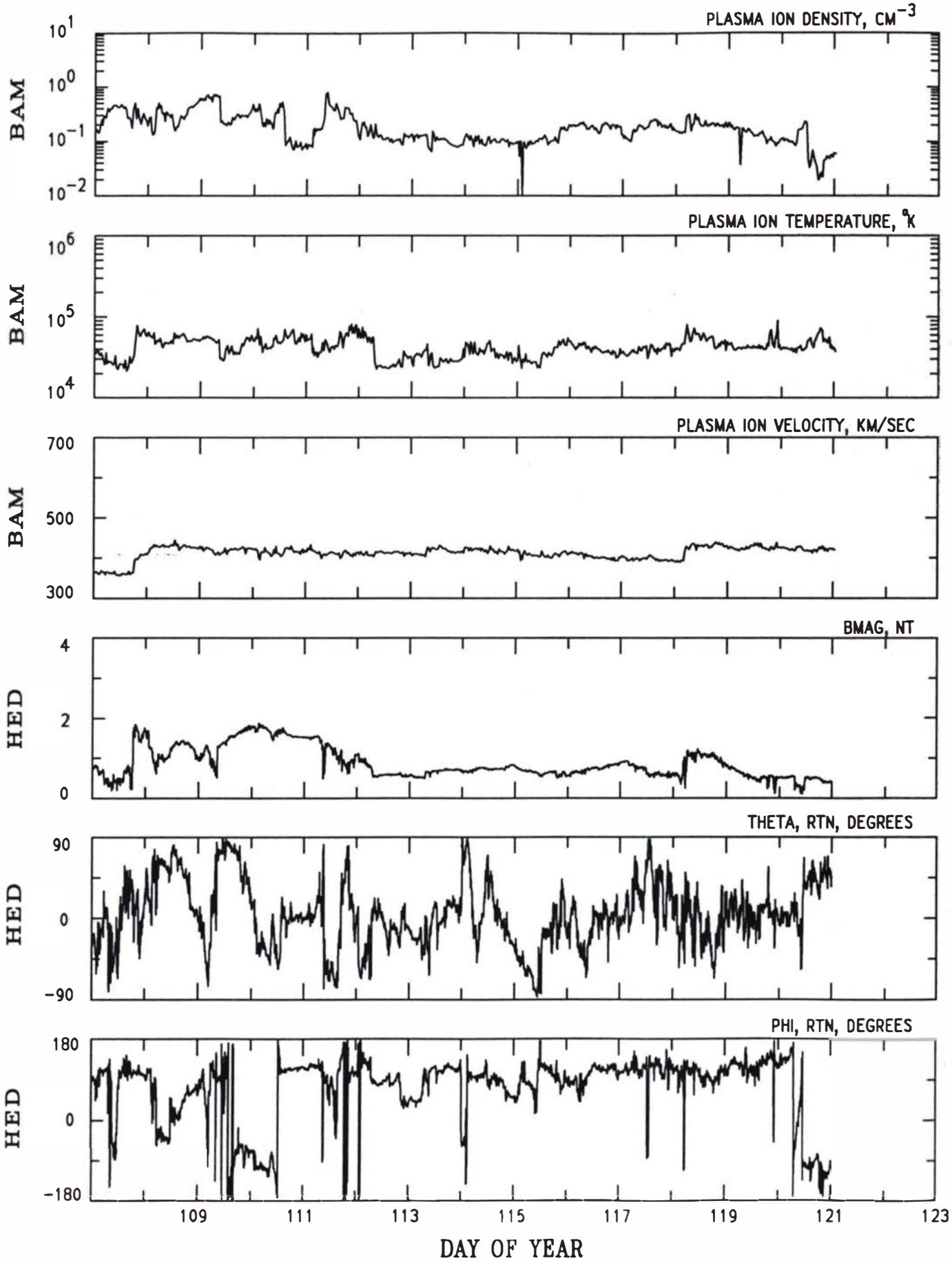
ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

98 091 APR 1 00:00:00.000 - 98 107 APR 17 00:00:00.000



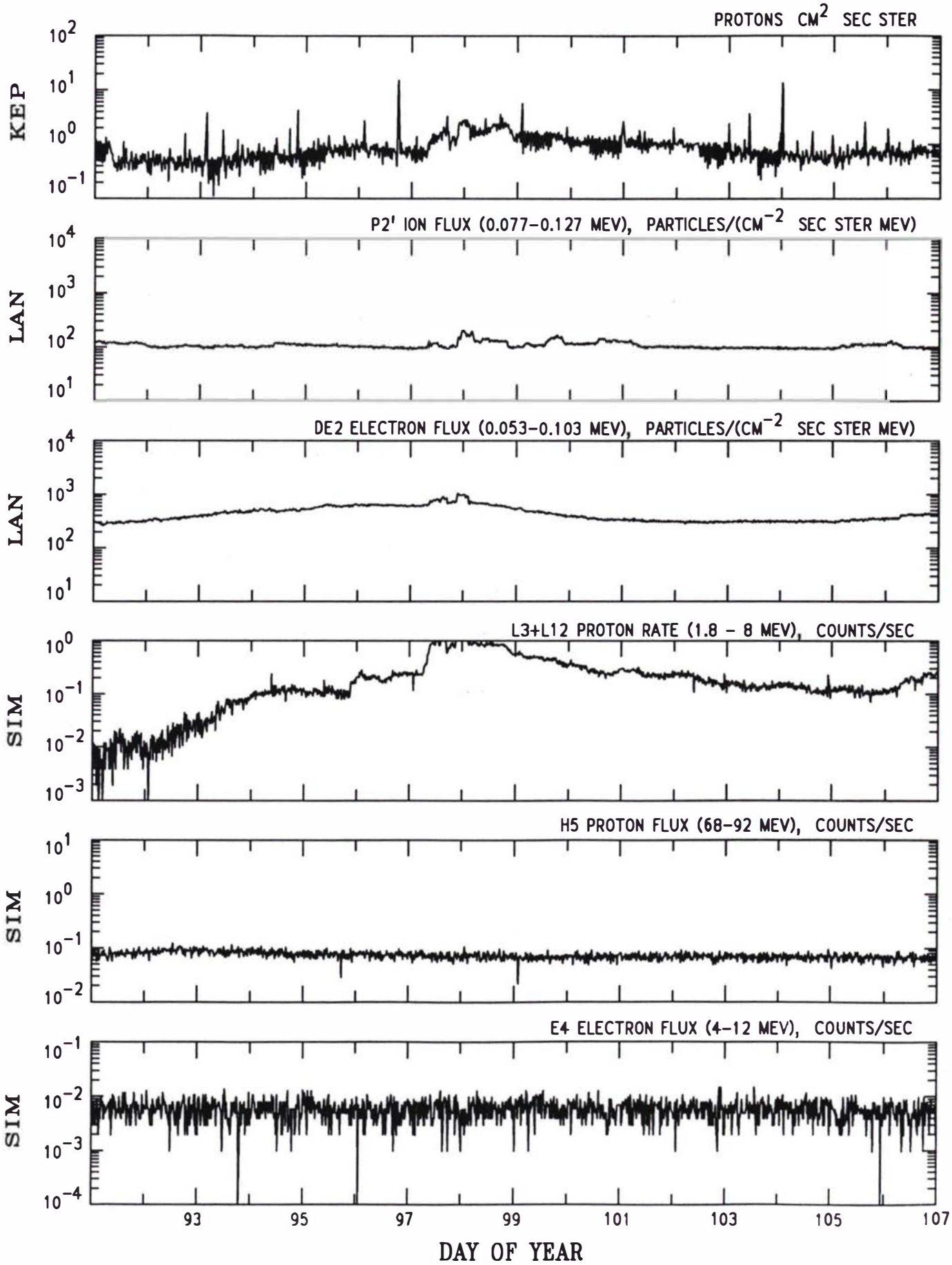
ULYSSES CDR – SOLAR WIND PLASMA AND MAGNETIC FIELD

98 107 APR 17 00:00:00.000 – 98 123 MAY 3 00:00:00.000



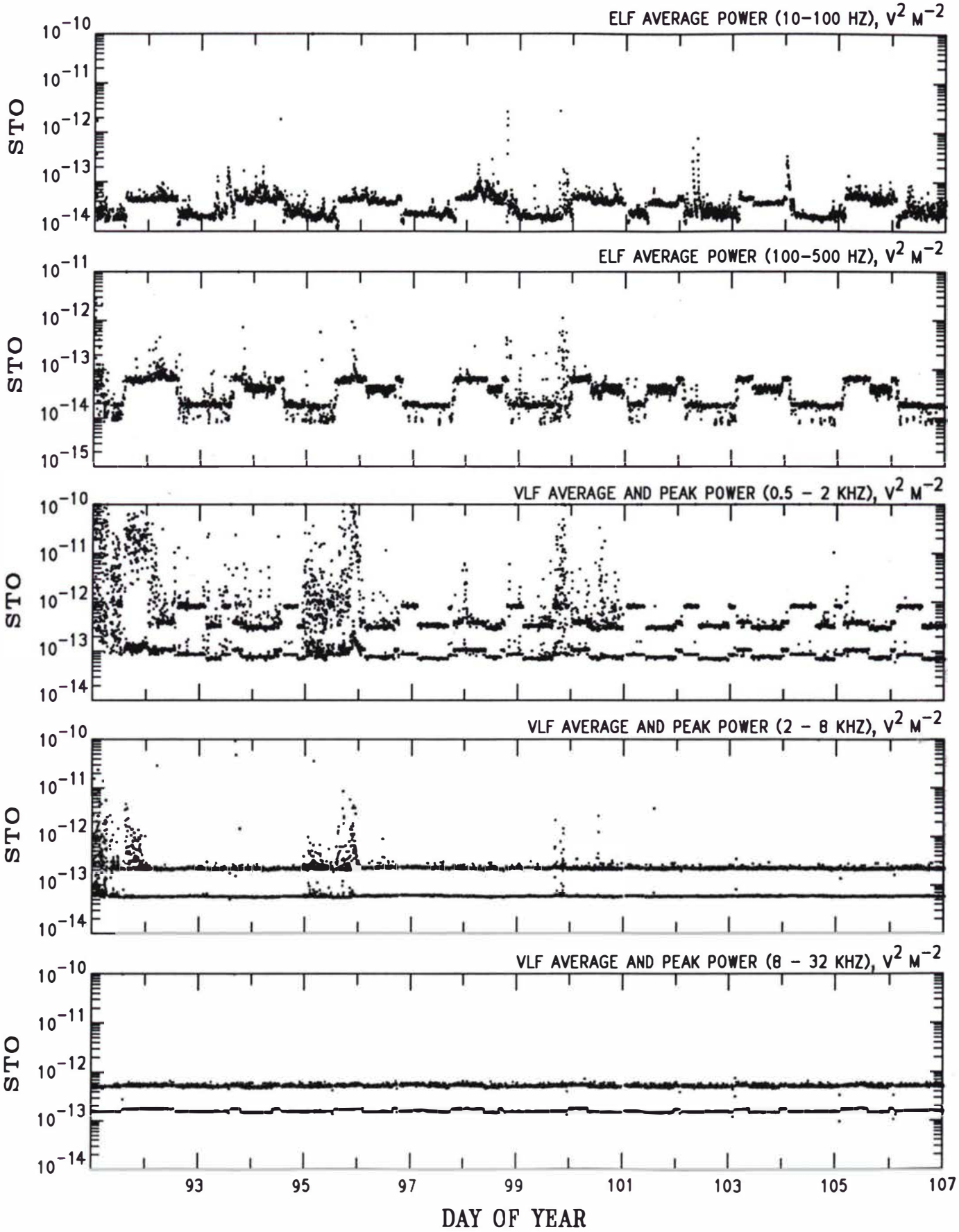
ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

98 091 APR 1 00:00:00.000 - 98 107 APR 17 00:00:00.000



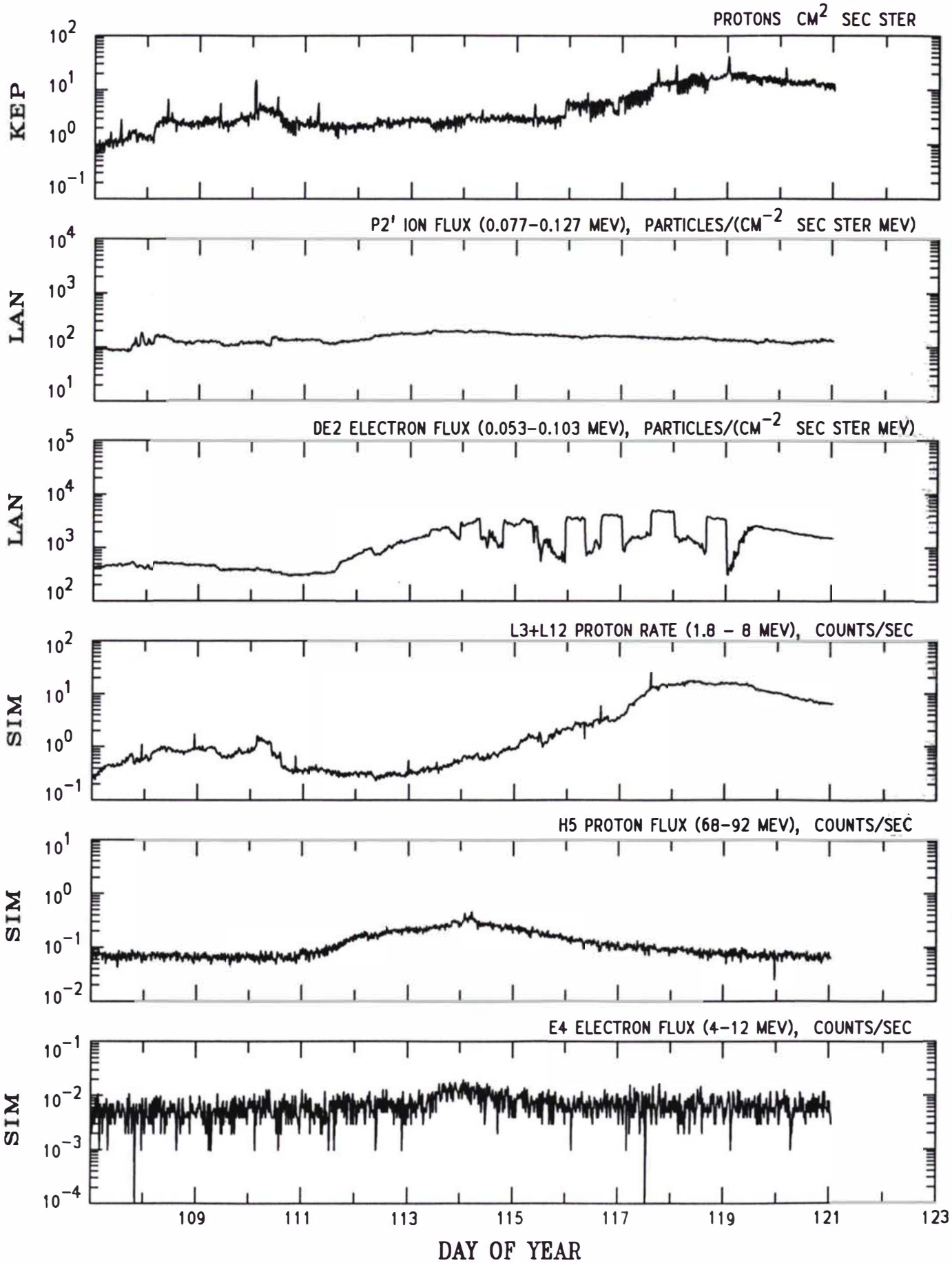
ULYSSES CDR - PLASMA WAVE

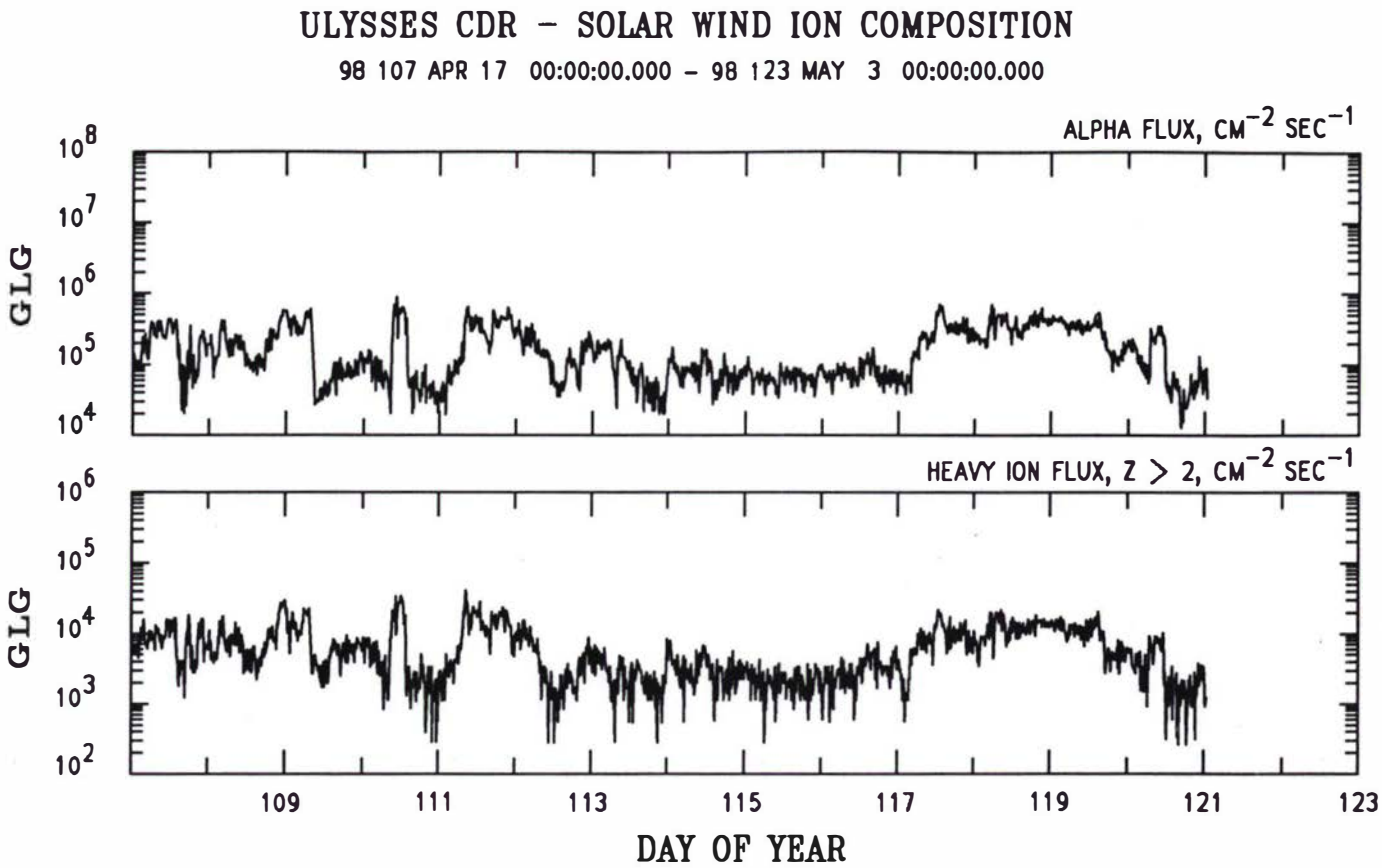
98 091 APR 1 00:00:00.000 - 98 107 APR 17 00:00:00.000

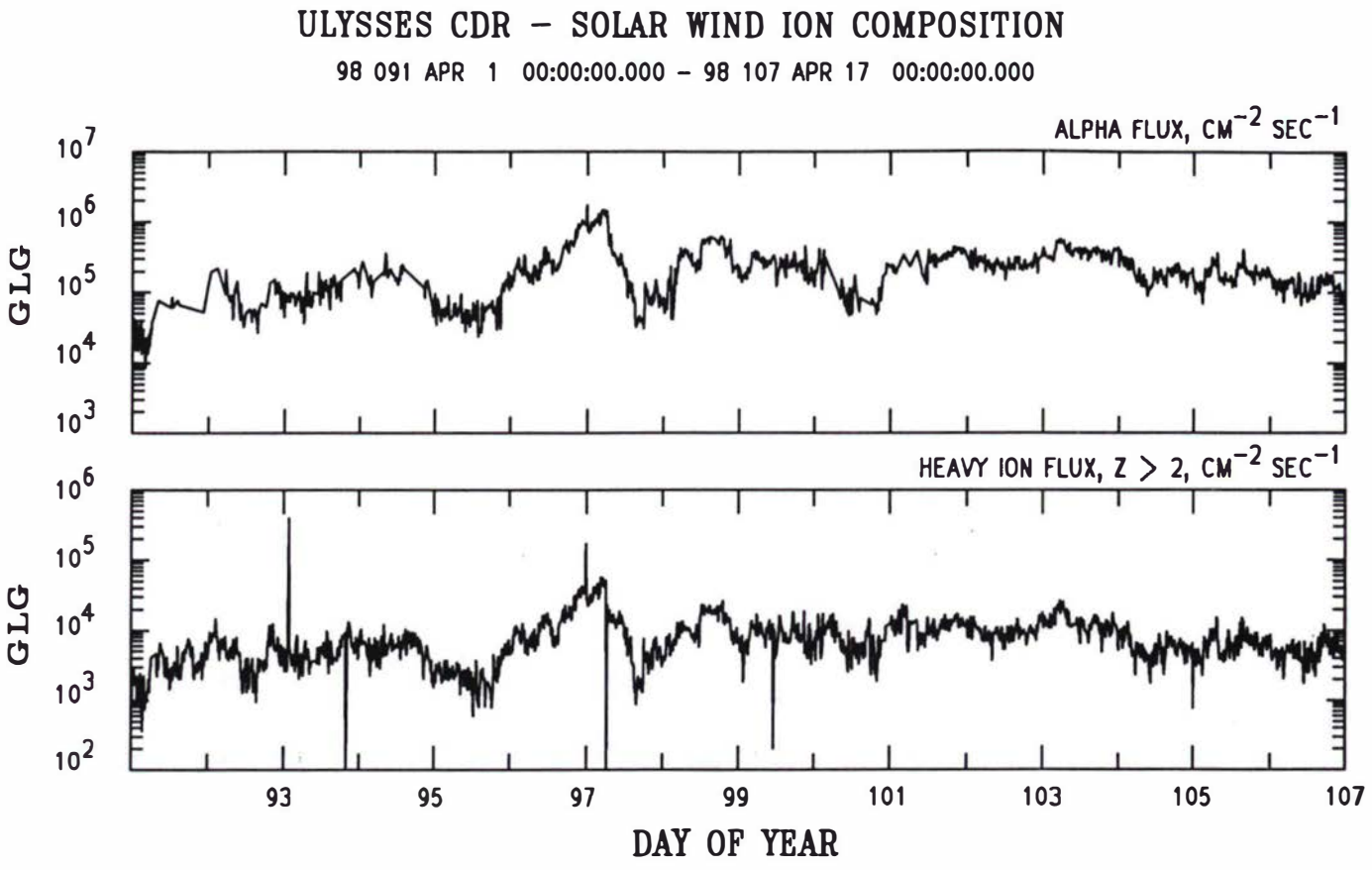


ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

98 107 APR 17 00:00:00.000 - 98 123 MAY 3 00:00:00.000

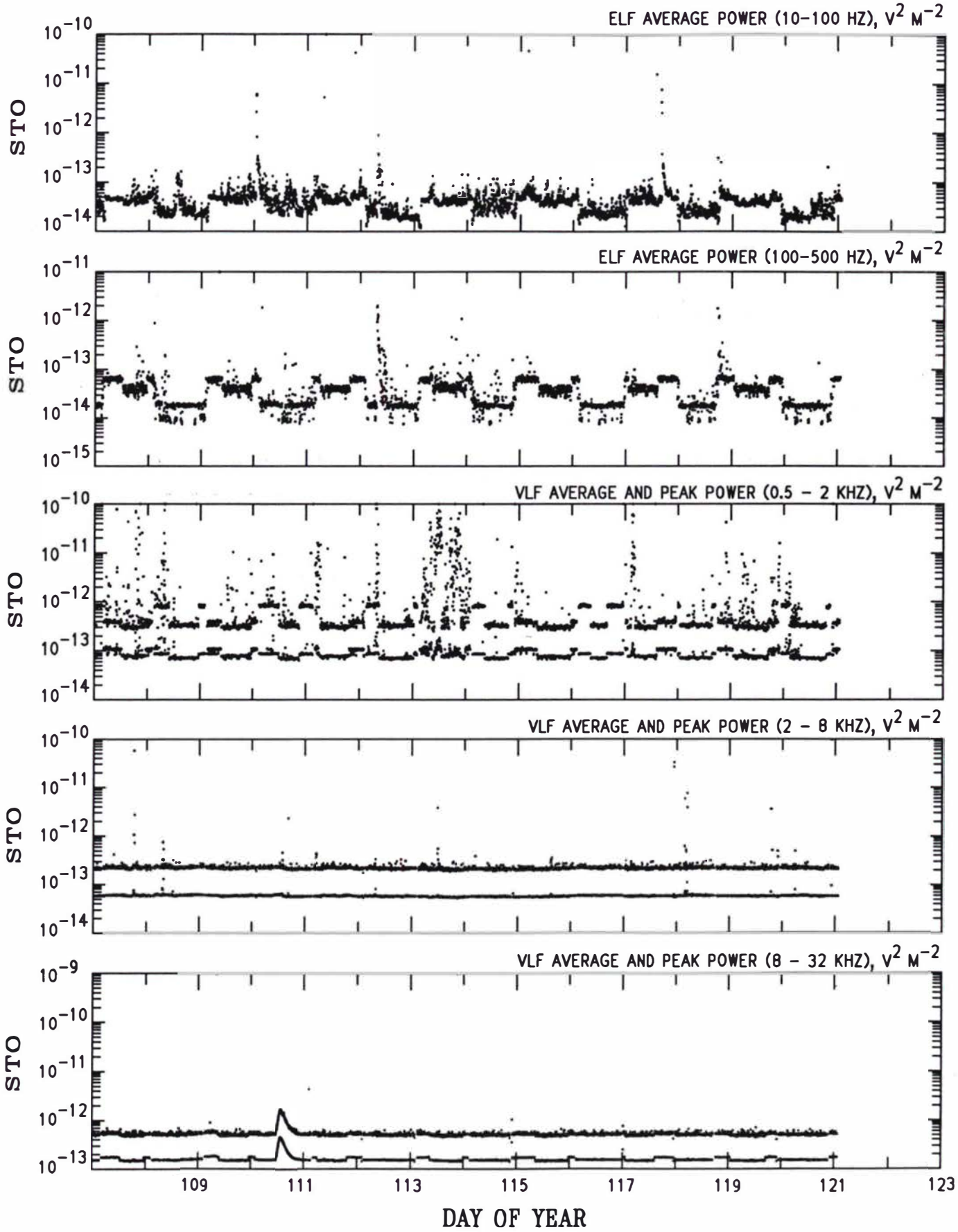



ULYSSES CDR - SOLAR WIND ION COMPOSITION
98 107 APR 17 00:00:00.000 - 98 123 MAY 3 00:00:00.000
ALPHA FLUX, CM^{-2} SEC^{-1}
HEAVY ION FLUX, Z > 2, CM^{-2} SEC^{-1}
GLG
10^8
10^7
10^6
10^5
10^4
10^3
10^2
109
111
113
115
117
119
121
123
DAY OF YEAR


ULYSSES CDR - SOLAR WIND ION COMPOSITION
98 091 APR 1 00:00:00.000 - 98 107 APR 17 00:00:00.000
ALPHA FLUX, CM^{-2} SEC^{-1}
GLG
10^7
10^6
10^5
10^4
10^3
HEAVY ION FLUX, Z > 2, CM^{-2} SEC^{-1}
GLG
10^6
10^5
10^4
10^3
10^2
93
95
97
99
101
103
105
107
DAY OF YEAR

ULYSSES CDR - PLASMA WAVE

98 107 APR 17 00:00:00.000 - 98 123 MAY 3 00:00:00.000



From SURASAK@SSLMOR.msfc.nasa.gov Mon Apr 6 11:30:23 1998
Return-Path: <SURASAK@SSLLES.MSFC.NASA.GOV>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA21870; Mon, 6 Apr 1998 11:30:23 -0700
Received: from SSLLES.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA09077; Mon, 6 Apr 1998 11:30:21 -0700
Date: Mon, 6 Apr 1998 13:30:12 -0500 (CDT)
From: SURASAK@SSLMOR.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980406133012.20402e4c@ssl.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6672
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6672
EVENT OF 1998 APR  1 DAY OF YEAR= 91
EVENT CROSSING TIME AT BATSE      : 16313. S. OR 04:31:53.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 126.000   18.000
BATSE PEAK COUNTING RATE:  21100    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  1/ 4/  98 IS:
RA=  152.927 DEC=   13.409 DIST=    4.618 AU
BATSE-ULYSSES DISTANCE =  690897246. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=153.70 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2066.04 SECS.
CROSSING TIME AT ULYSSES    IS 14247. S. OR   03:57:26 +/-  195.90 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  1/ 4/  98 IS:
RA=   19.507 DEC=    7.799 DIST=    2.402 AU
MARS-BATSE DISTANCE =  359328384. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 76.96 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  270.37 SECS.
CROSSING TIME AT MARS       IS 16583. S. OR   04:36:23 +/-  206.84 SECONDS


                 BATSE BURST TRIGGER
NO.: 6672

TIME: TJD=0904 SECONDS=16313

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=38.9   AZIMUTH=68.5   ERROR=0.77  DEGREES

COMMENTS:
GRB. SINGLE PULSE WITH SUBSTRUCRURE. DUR ABOUT 37 S. VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6672	980401	10904	16313	21100	126	+18	40

Date: Nov 4 '99

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? N/A

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

☑ 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? N/A

3. PVO Data

☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

☐ Geocentric time used?

Sent to R. Kehoe (ROTSE)

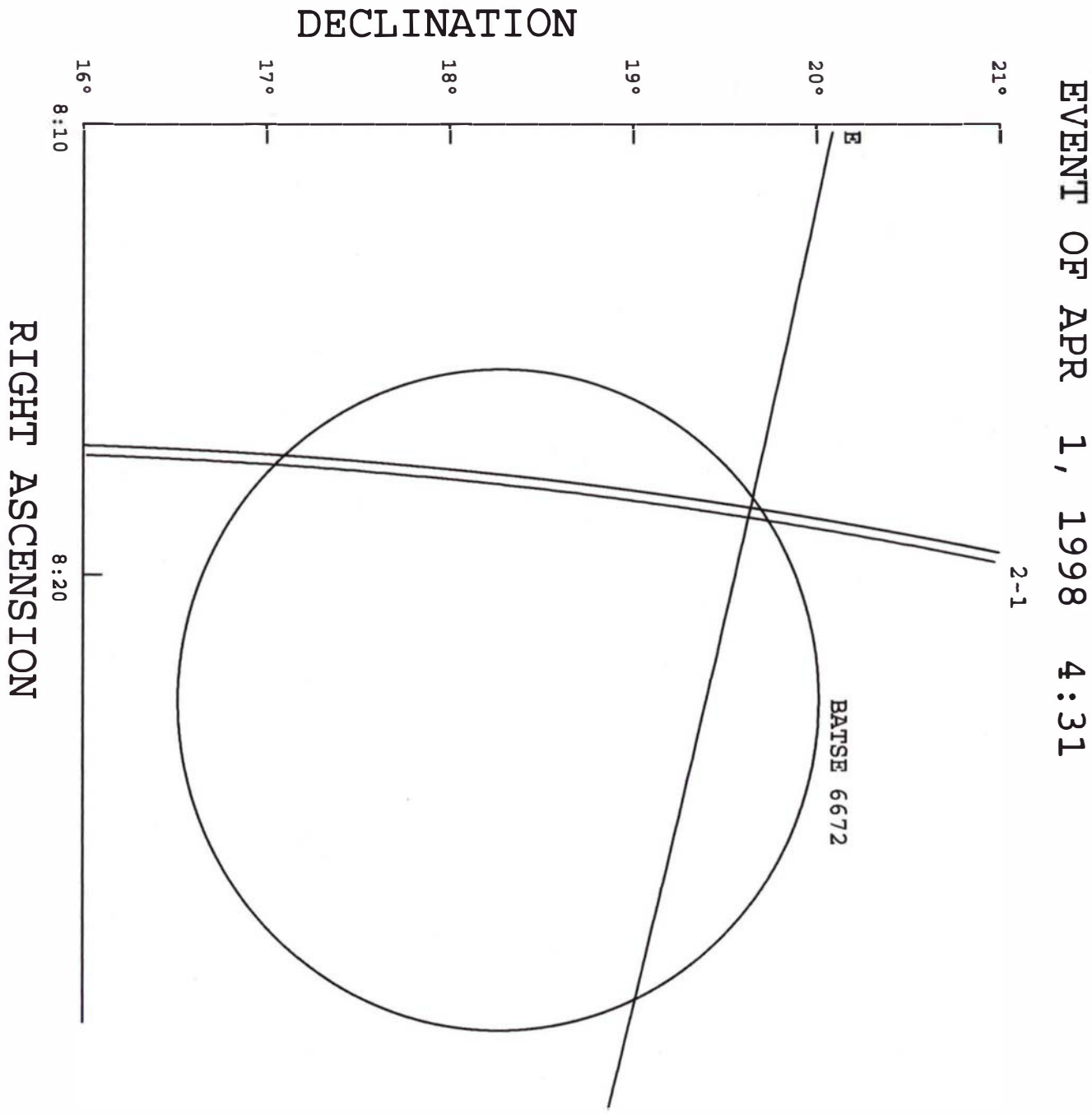
☑ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

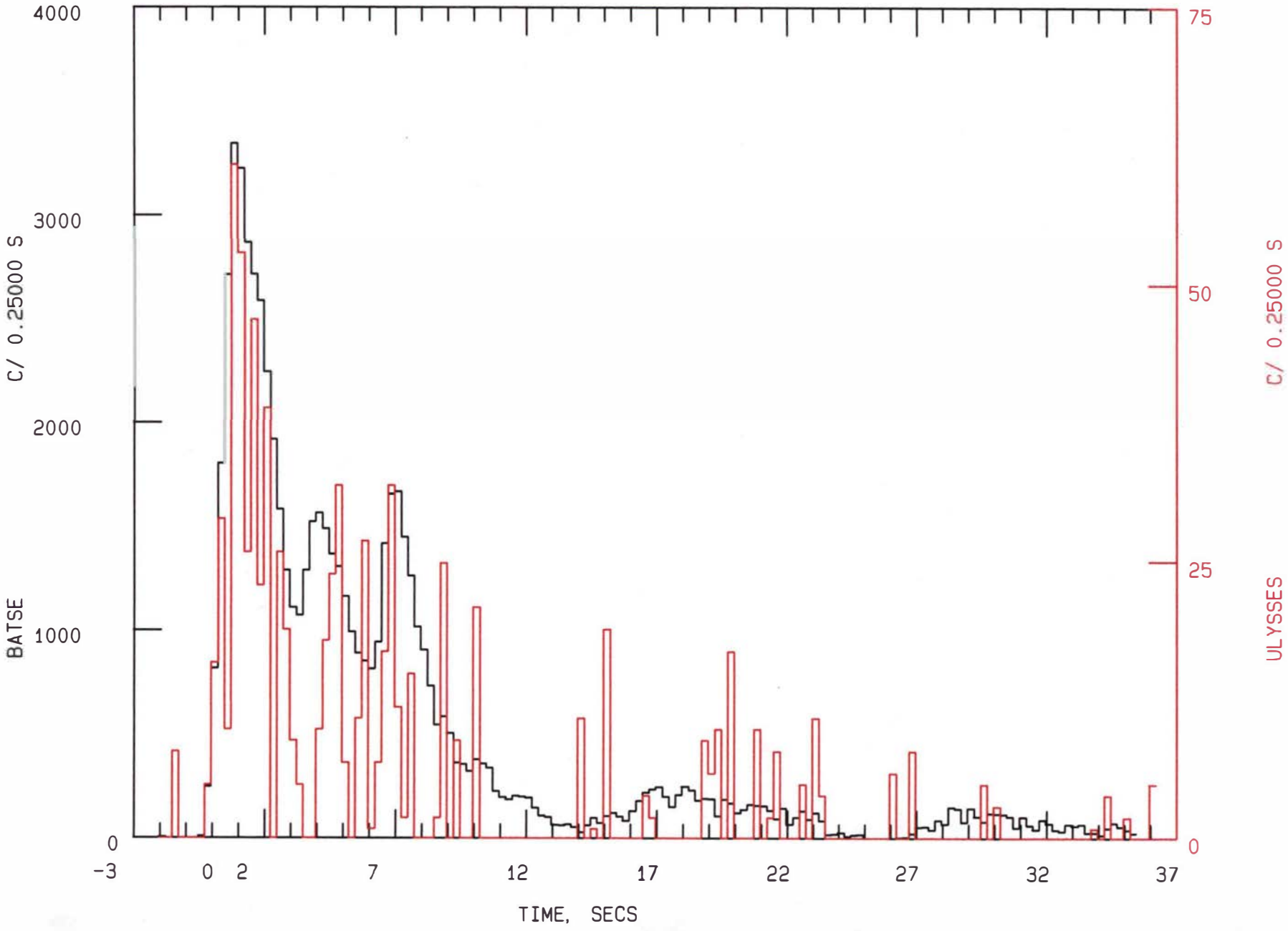
EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 BATSE 2 ULYSSES

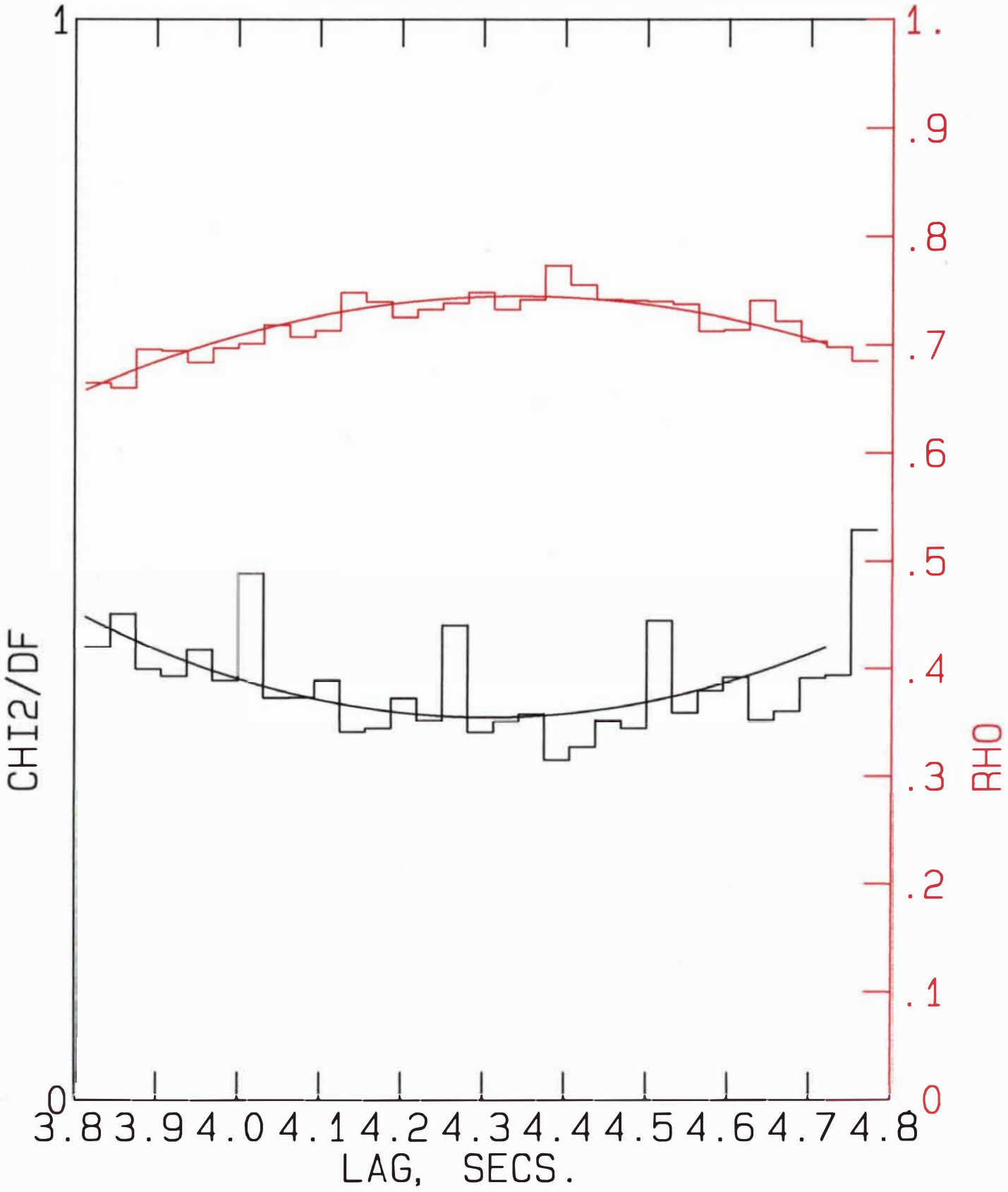


BATSE -ULYSSES CORRELATION 1/ 4/98 16313.953 4/11/99

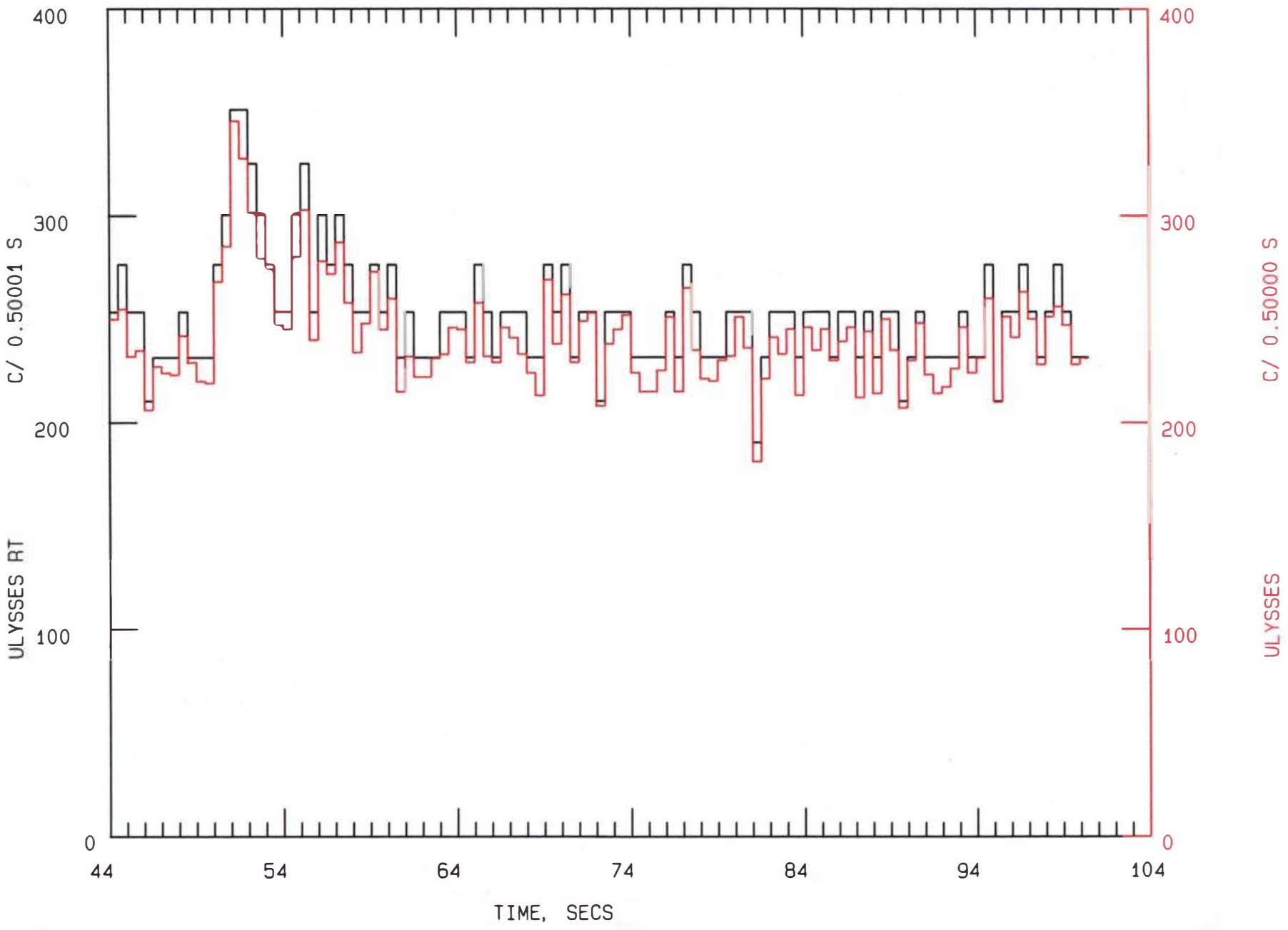


4/11/99

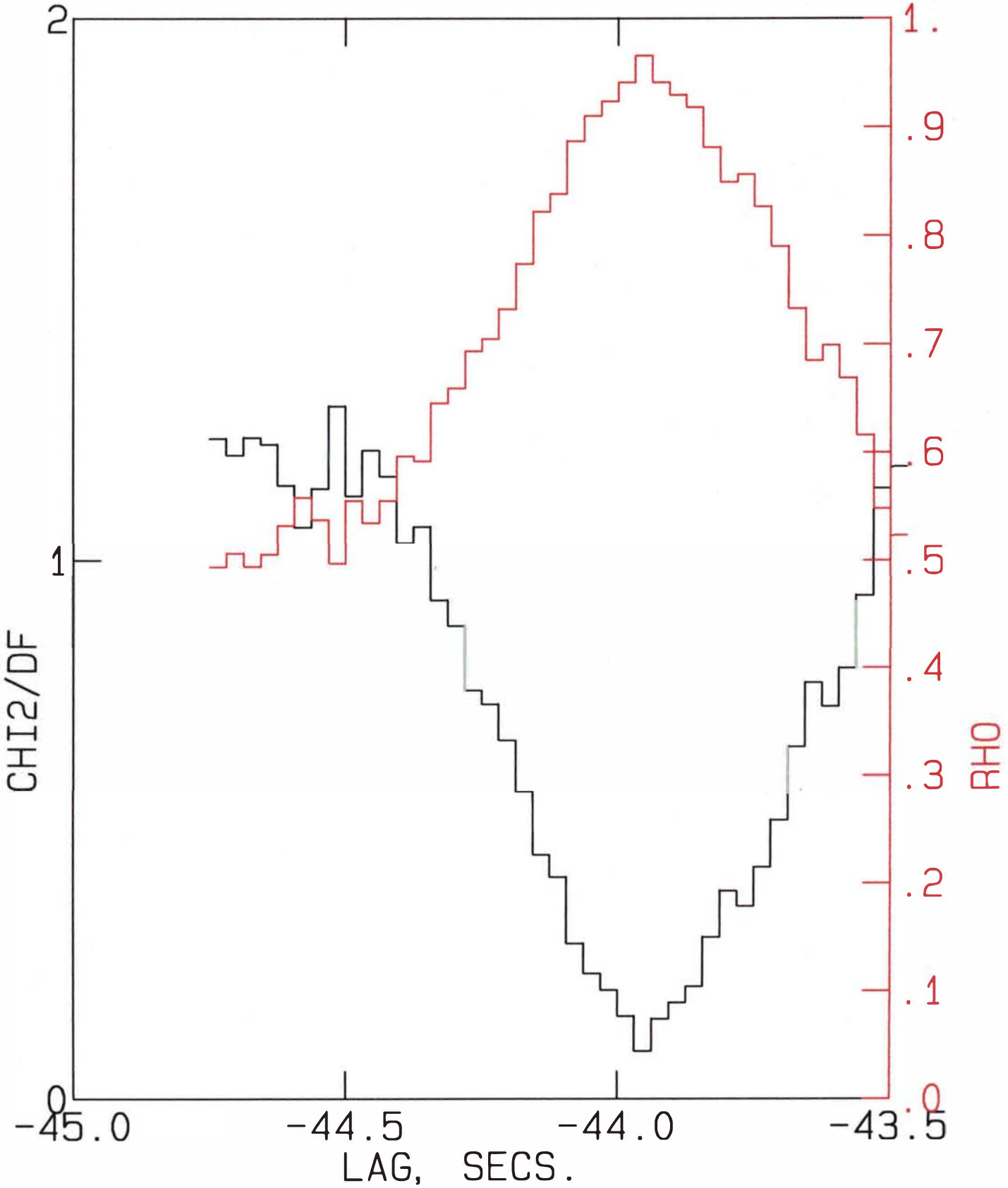
BATSE -ULYSSES CORRELATION 1/ 4/98 16313.953



ULYSSES RT-ULYSSES CORRELATION 1/ 4/98 14245.487 4/11/99



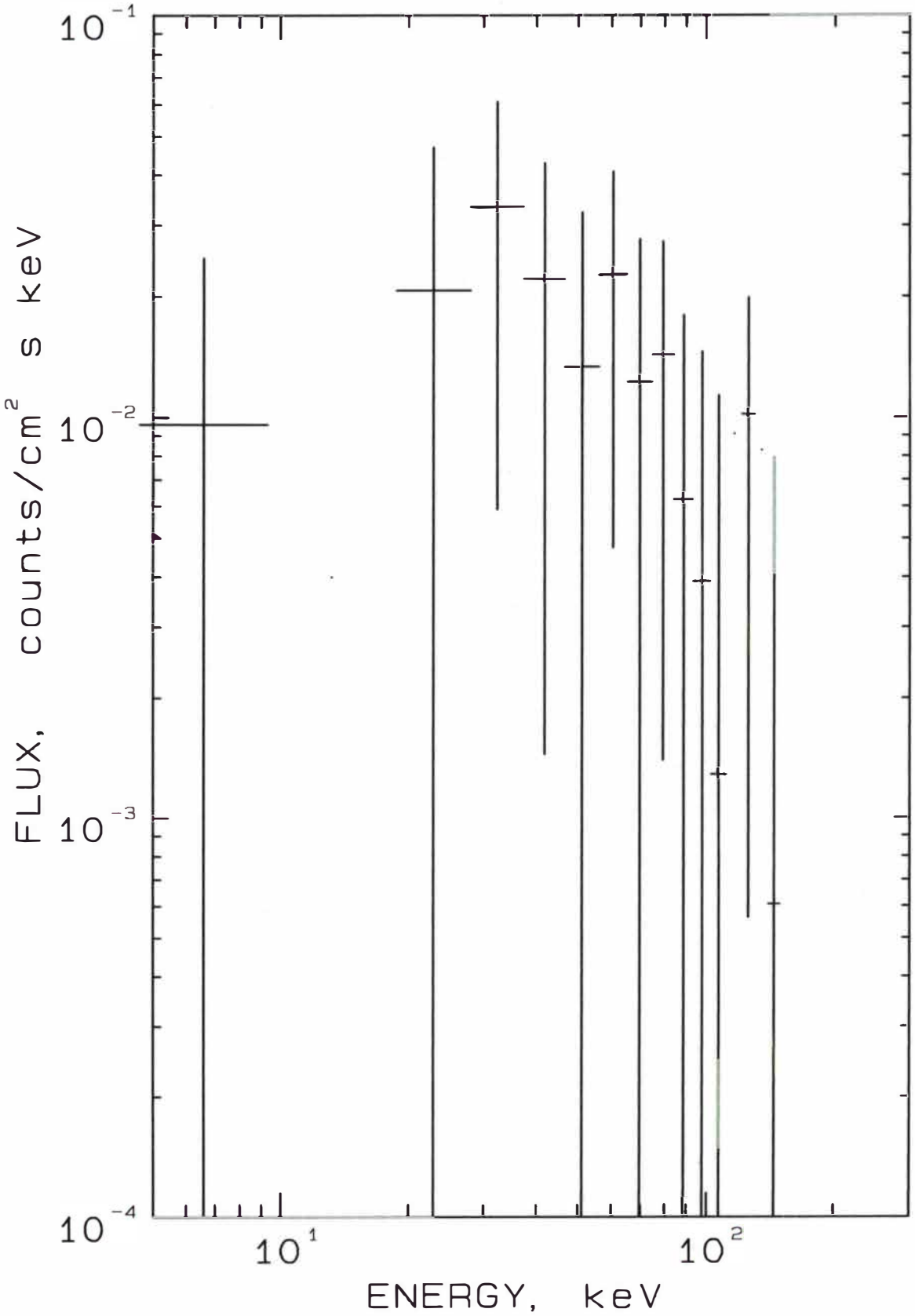
ULYSSES RT-ULYSSES CORRELATION 1/ 4/98 14245.487

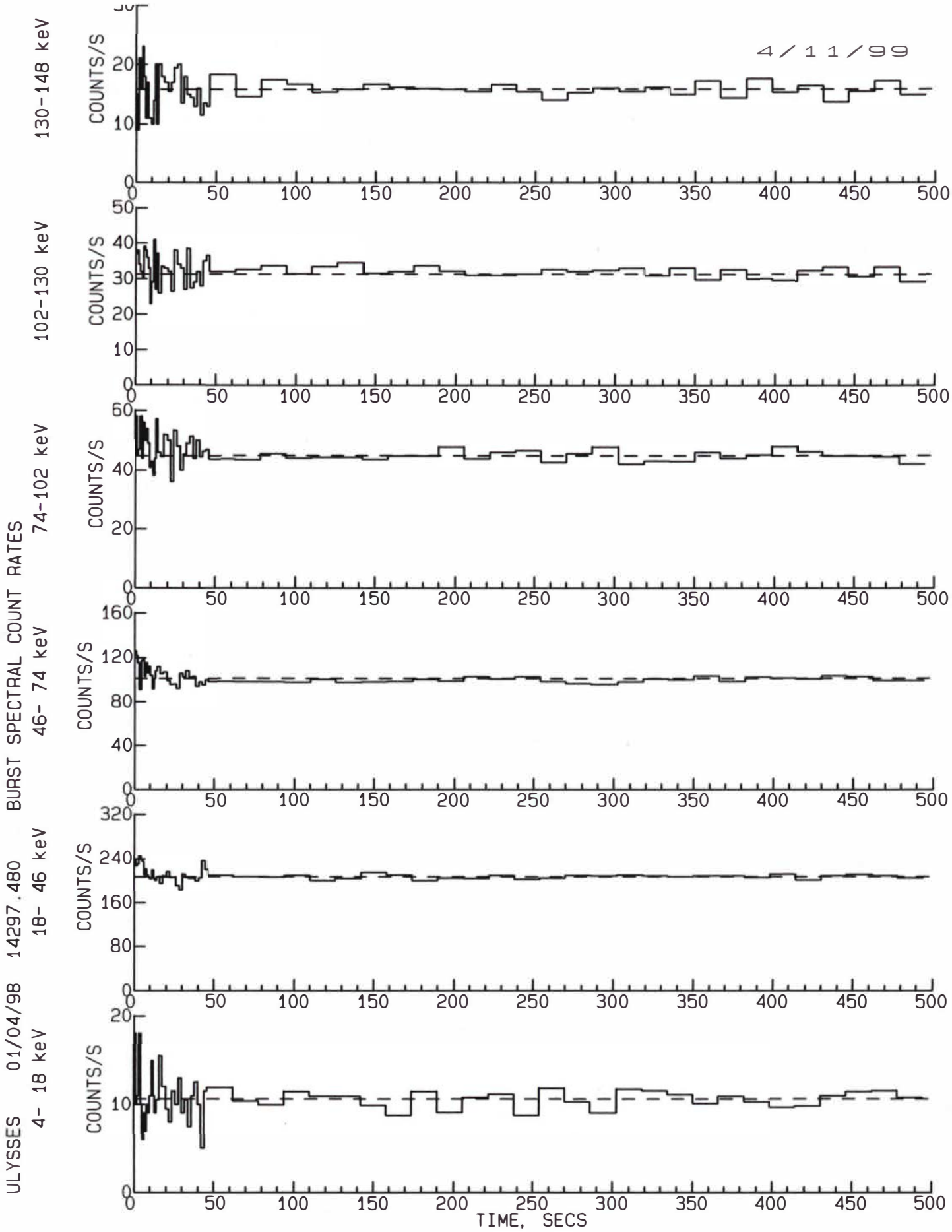


4/11/99

ULYSSES 01/04/98 14297.480

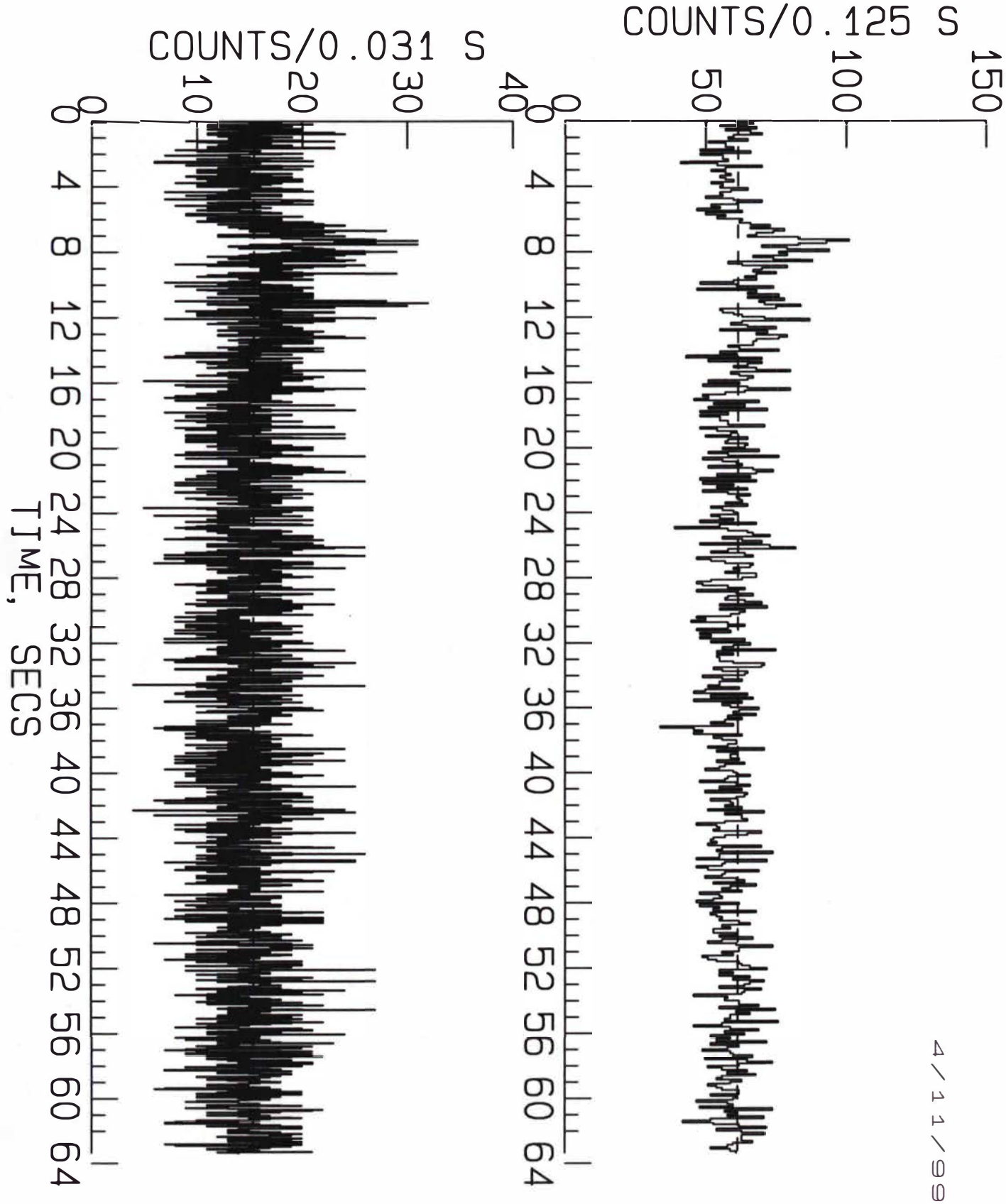
SPECTRUM INTEGRATED OVER 24.6 SECONDS, INTERVALS 1 TO 20




ULYSSES 01/04/98 14297.480 BURST SPECTRAL COUNT RATES
4/11/99
130-148 keV
102-130 keV
74-102 keV
46- 74 keV
18- 46 keV
4- 18 keV
COUNTS/S
TIME, SECS

ULYSSES 01/04/98 Ttrig=14296.856

22- 149 keV



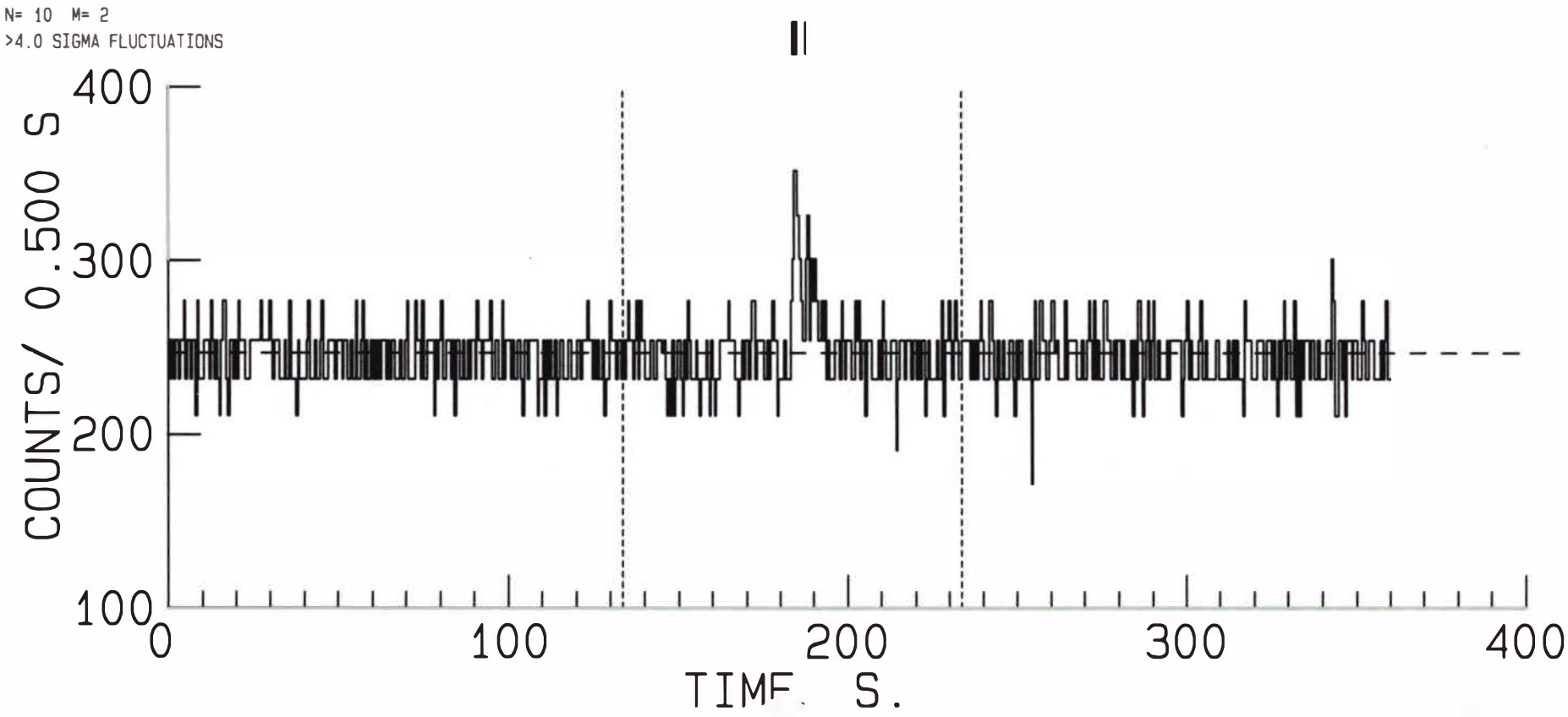
4/11/99

ULYSSES RT

4/11/99

1/ 4/98 14112.480 s

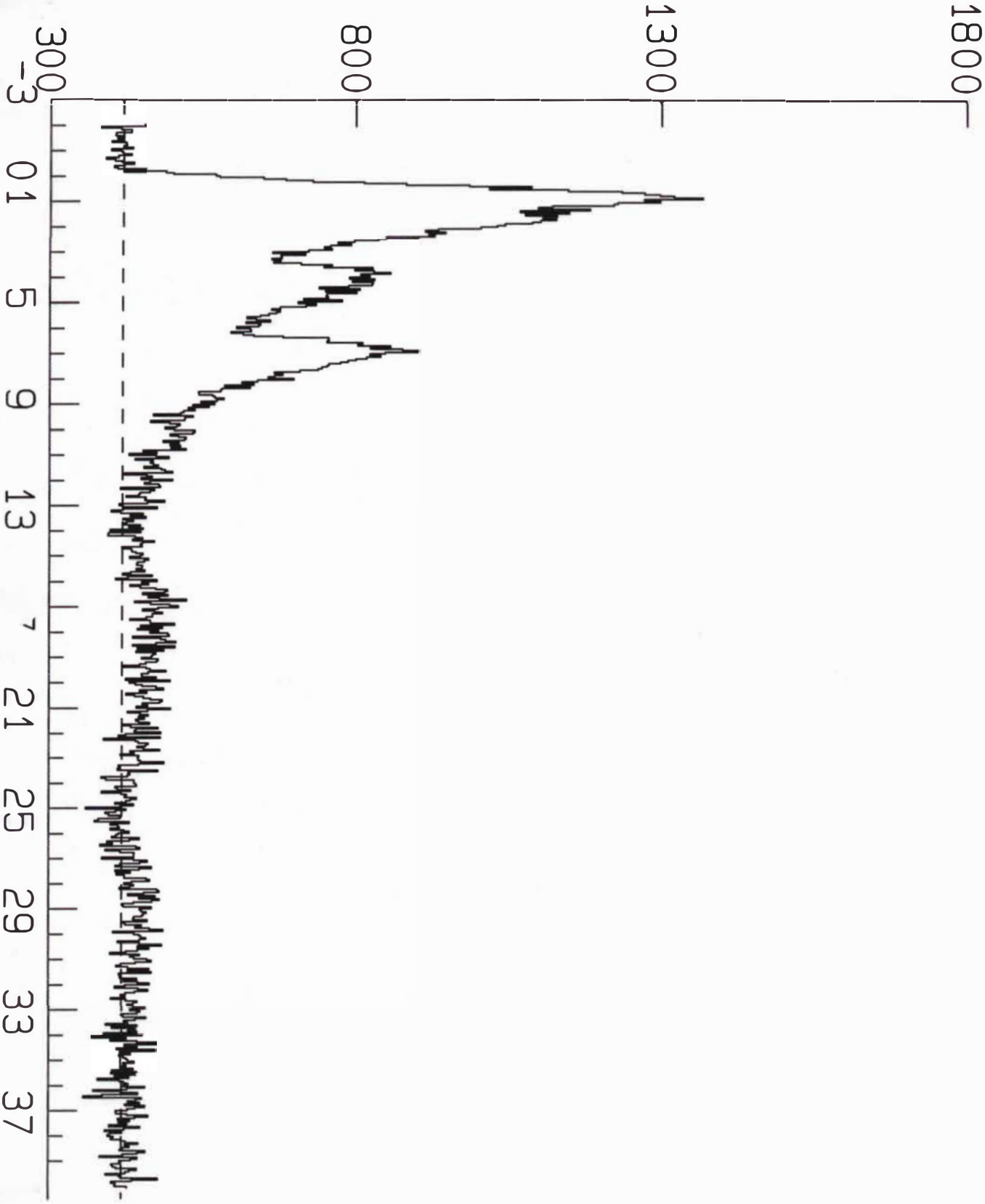
22- 149 keV



BATSE 01/04/98 16313.953

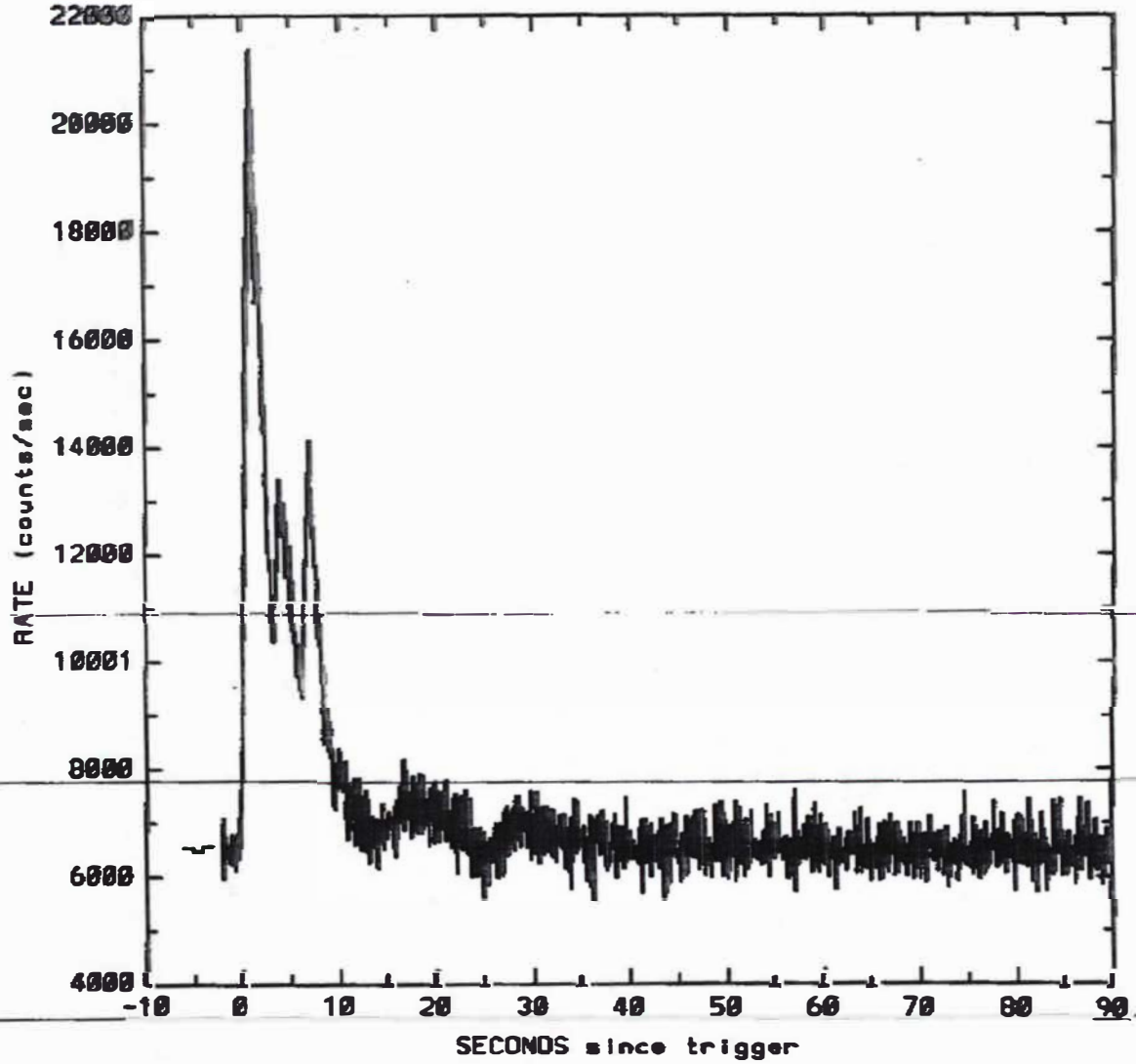
25- 100 keV

COUNTS/0.064 S



10/ 4/98

DISCSC Data for K. Hurley. No. 6672



9-APR-1998 11.16.40

Created by MDPS 80
[Burst Display]
Version t2.25

Trigger # : 6672

Trigger Time:
10984 / 16313.953

Burst Data Type:
DISCSC

Deadtime
Corrected: N

Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 second(s)

Detectors [7..8]:
---4---8

Discriminators:
[1 , 2]

Quality Mask:
BDISP1

From SURASAK@SSLMOR.msfc.nasa.gov Mon Apr 6 11:31:36 1998
Return-Path: <SURASAK@SSLMOR.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA21889; Mon, 6 Apr 1998 11:31:35 -0700
From: SURASAK@SSLMOR.msfc.nasa.gov
Received: from SSLMOR.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA09114; Mon, 6 Apr 1998 11:31:28 -0700
Date: Mon, 6 Apr 1998 13:31:15 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980406133115.20402e4c@ssl.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6673
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6673
EVENT OF 1998 APR  1 DAY OF YEAR= 91
EVENT CROSSING TIME AT BATSE      : 33062. S. OR 09:11:02.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  35.000   -3.000
BATSE PEAK COUNTING RATE:   2990    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  1/ 4/  98 IS:
RA=  152.895 DEC=   13.408 DIST=    4.620 AU
BATSE-ULYSSES DISTANCE =  691220108. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 62.19 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1075.86 SECS.
CROSSING TIME AT ULYSSES    IS 34138. S. OR   09:28:57 +/-  420.39 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  1/ 4/  98 IS:
RA=   19.507 DEC=    7.799 DIST=    2.402 AU
MARS-BATSE DISTANCE =  359328384. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=161.14 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1134.27 SECS.
CROSSING TIME AT MARS       IS 31928. S. OR   08:52:07 +/-   50.03 SECONDS


                 BATSE BURST TRIGGER
NO.: 6673

TIME: TJD=0904 SECONDS=33062

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=120.0  AZIMUTH=20.9   ERROR=2.964 DEGREES

COMMENTS:
GRB. SINGLE PULSE. FRED. DUR ABOUT 30 S. NOT VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6673   980401   10904   33062     2990   035   -03     30
```

BATSE BURST# 6673

ULYSSES RT 6/ 4/98

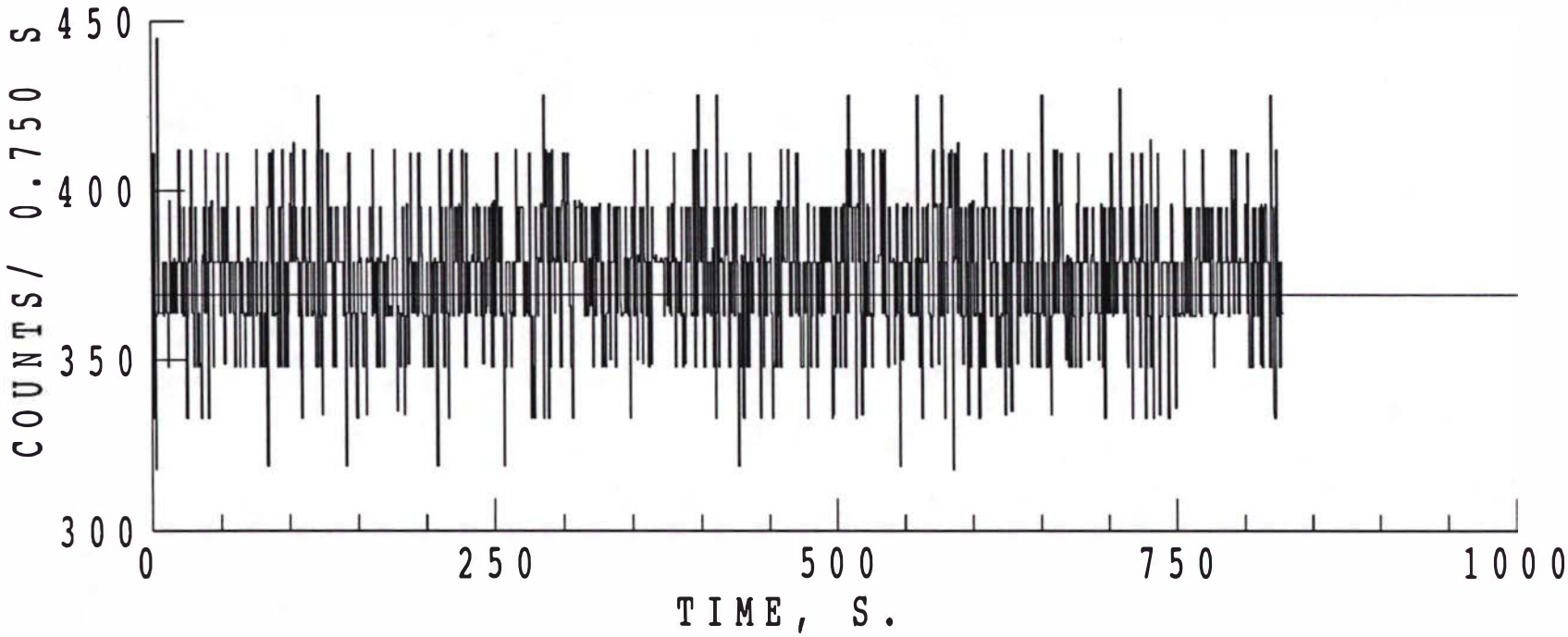
1/ 4/98 33732.195 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV

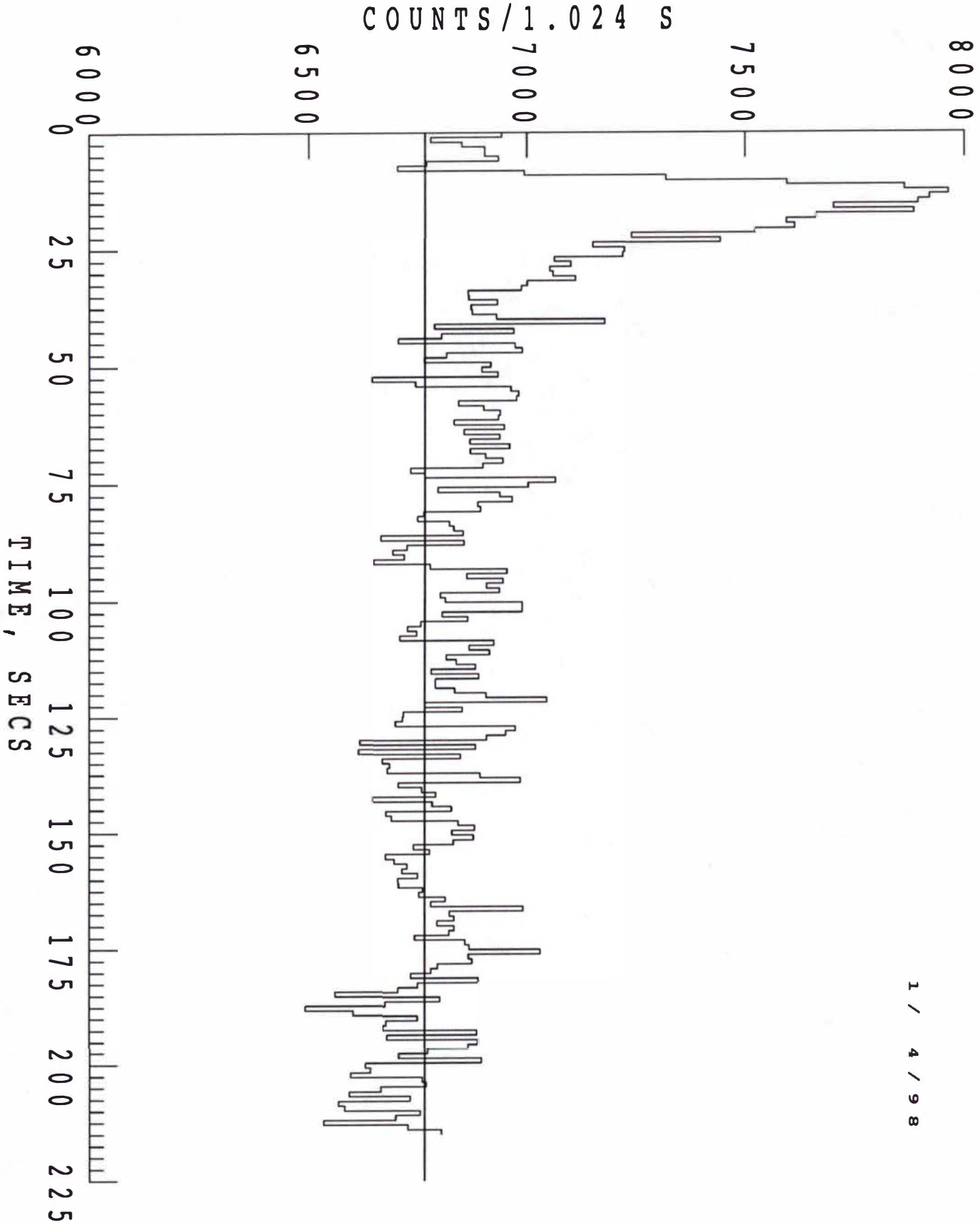
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



BACODINE 6673 01/04/98 33051.361

25- 100 keV



1/ 4/98

From SURASAK@SSLMOR.msfc.nasa.gov Mon Apr 6 11:32:59 1998
Return-Path: <SURASAK@SSLLES.MSFC.NASA.GOV>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA21906; Mon, 6 Apr 1998 11:32:59 -0700
Received: from SSLLES.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA09145; Mon, 6 Apr 1998 11:32:57 -0700
Date: Mon, 6 Apr 1998 13:32:41 -0500 (CDT)
From: SURASAK@SSLMOR.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980406133241.20402e4c@ssl.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6674
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6674
EVENT OF 1998 APR  1 DAY OF YEAR= 91
EVENT CROSSING TIME AT BATSE      : 45984. S. OR 12:46:24.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 199.000  -62.000
BATSE PEAK COUNTING RATE:   2850    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  1/ 4/  98 IS:
RA=  152.870 DEC=   13.407 DIST=    4.622 AU
BATSE-ULYSSES DISTANCE =  691472847. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 96.42 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -257.77 SECS.
CROSSING TIME AT ULYSSES    IS 45726. S. OR   12:42:06 +/-  444.02 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  1/ 4/  98 IS:
RA=   19.507 DEC=    7.799 DIST=    2.402 AU
MARS-BATSE DISTANCE =  359328384. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 54.20 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  701.09 SECS.
CROSSING TIME AT MARS       IS 46685. S. OR   12:58:05 +/-  179.43 SECONDS


                 BATSE BURST TRIGGER
NO.: 6674

TIME: TJD=0904 SECONDS=45984

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=107.0  AZIMUTH=150.9  ERROR=2.417 DEGREES

COMMENTS:
GRB. SINGLE PULSE. FRED. DUR ABOUT 70 S. START AT ABOUT T-5 S. NOT VISIBLE
ABOVE 300 KEV. CYG X-1 RISES AT ABOUT T+50 S.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6674   980401   10904   45984     2850   199   -62     70
```

BATSE BURST# 6674

ULYSSES RT 6/ 4/98

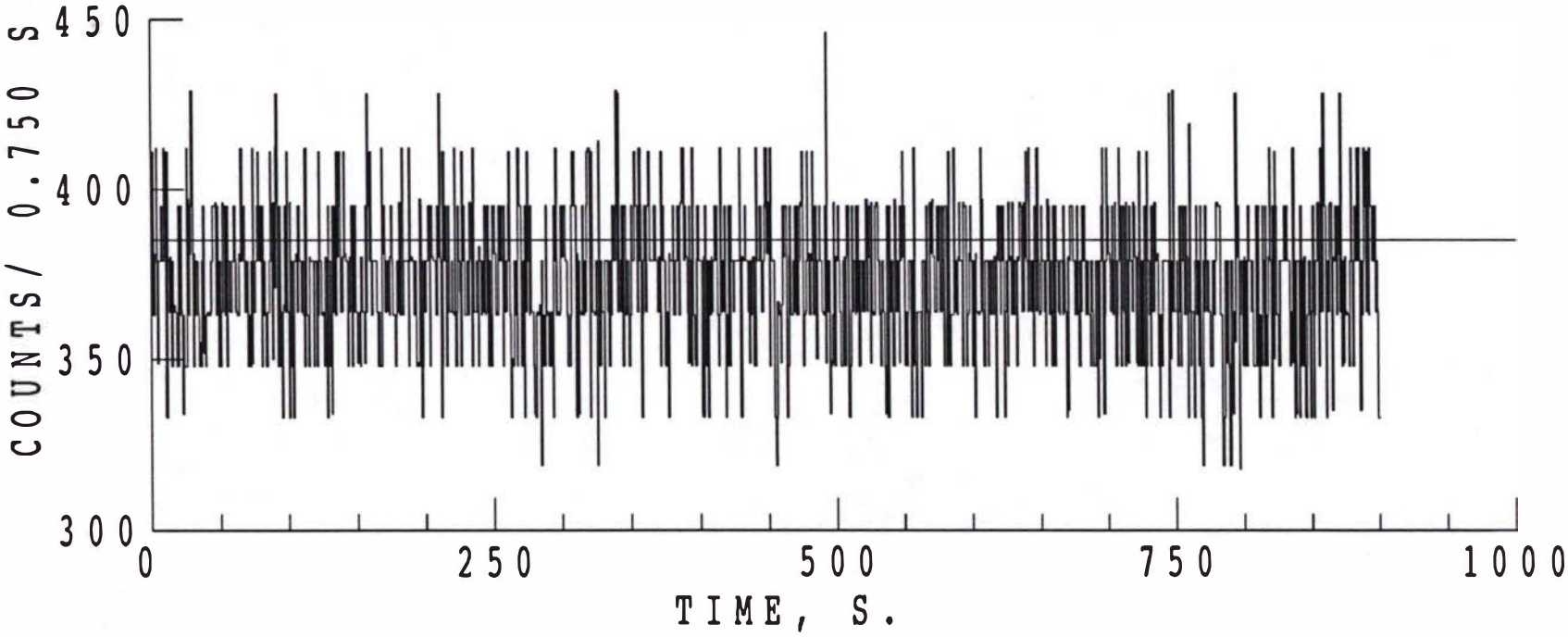
1/ 4/98 45288.066 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From SURASAK@SSLMOR.msfc.nasa.gov Mon Apr 6 10:43:22 1998
From: SURASAK@SSLMOR.msfc.nasa.gov
Date: Mon, 6 Apr 1998 12:42:59 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, band@cass09.ucsd.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6675

TIME: TJD=0904 SECONDS=50183

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

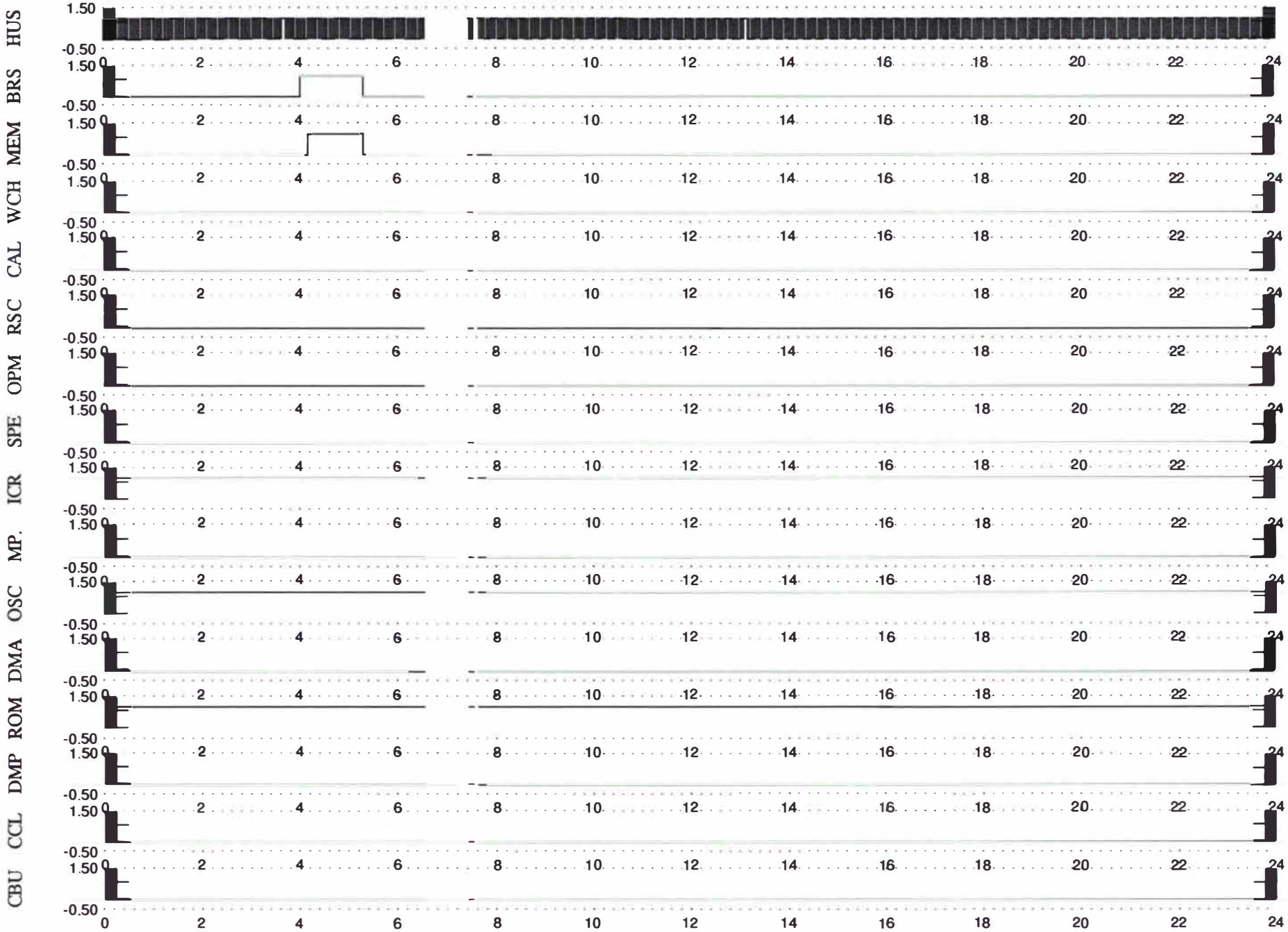
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=127.6 AZIMUTH=343.5 ERROR=0.789 DEGREES

COMMENTS:
SOLAR FLARE. GOES C1.4, OPTICAL SF FLARE. SINGLE PULSE. DUR~52S. NOT VISIBLE ABOVE 100 KEV.

HUS MODES EDR day 91, year 1998 to day 91, year 1998 8/18/98

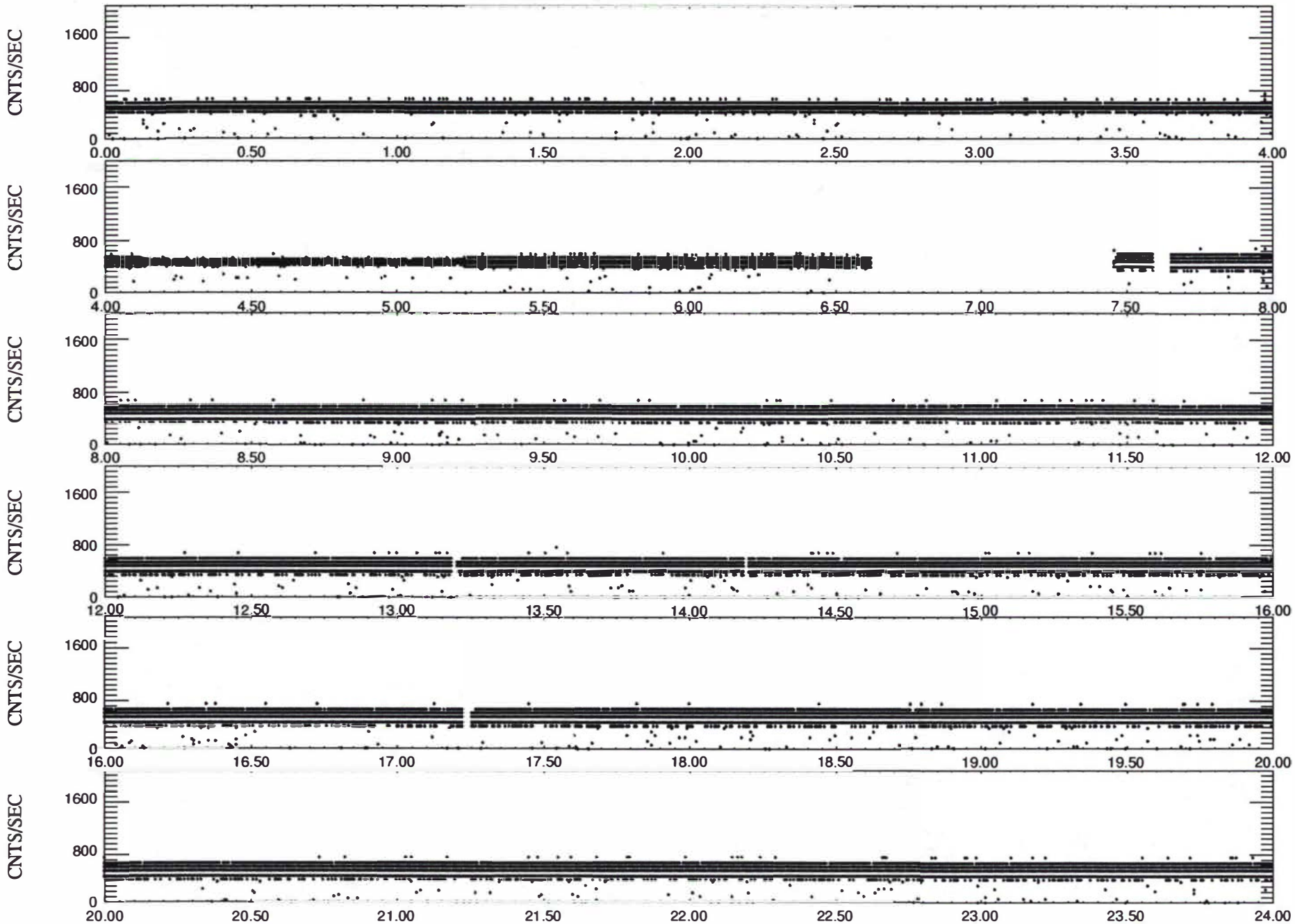
BURST NUMBER 8



UNIV! AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 91, year 1998 to day 91, year 1998 8/18/98

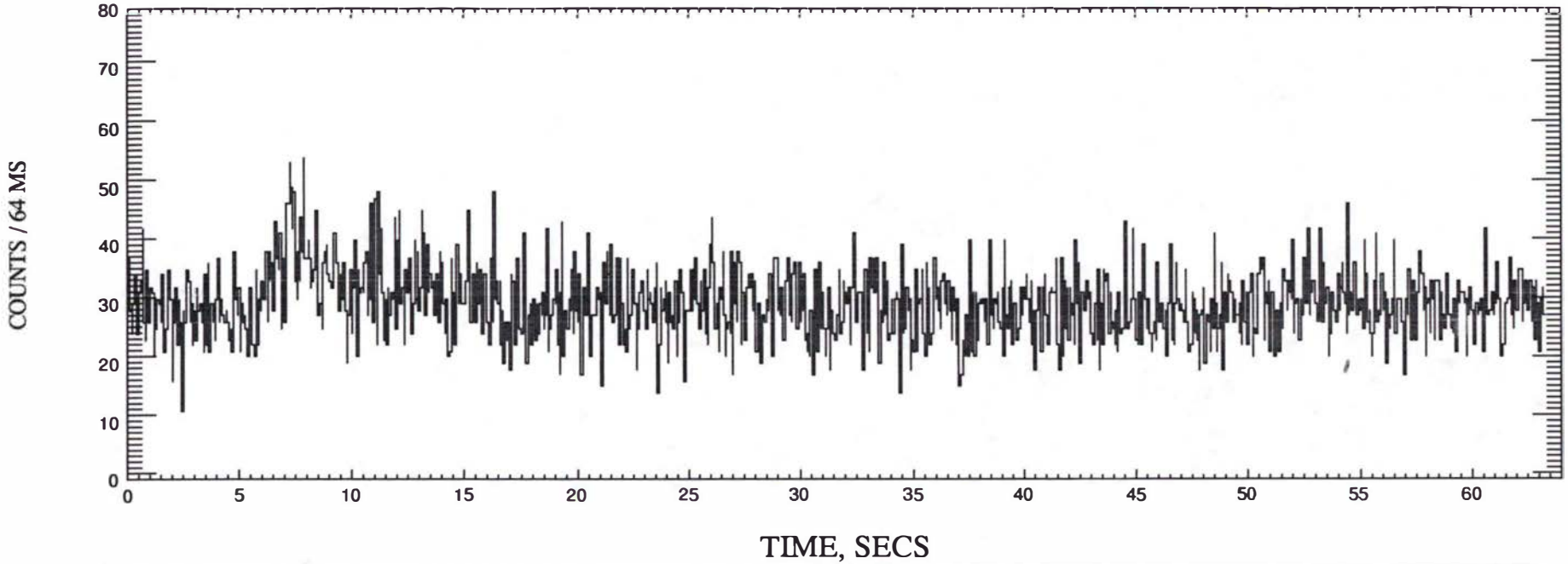
CALIBRATION DATA INCLUDED

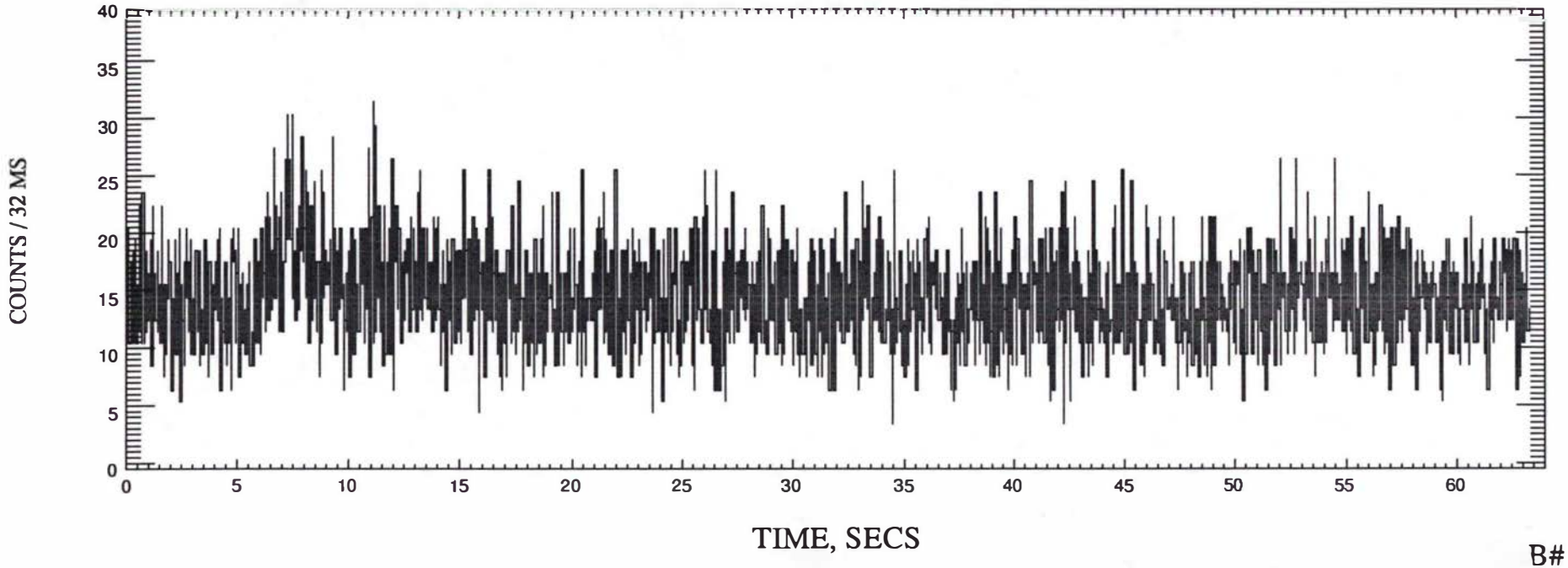


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 91, year 1998 8/19/98

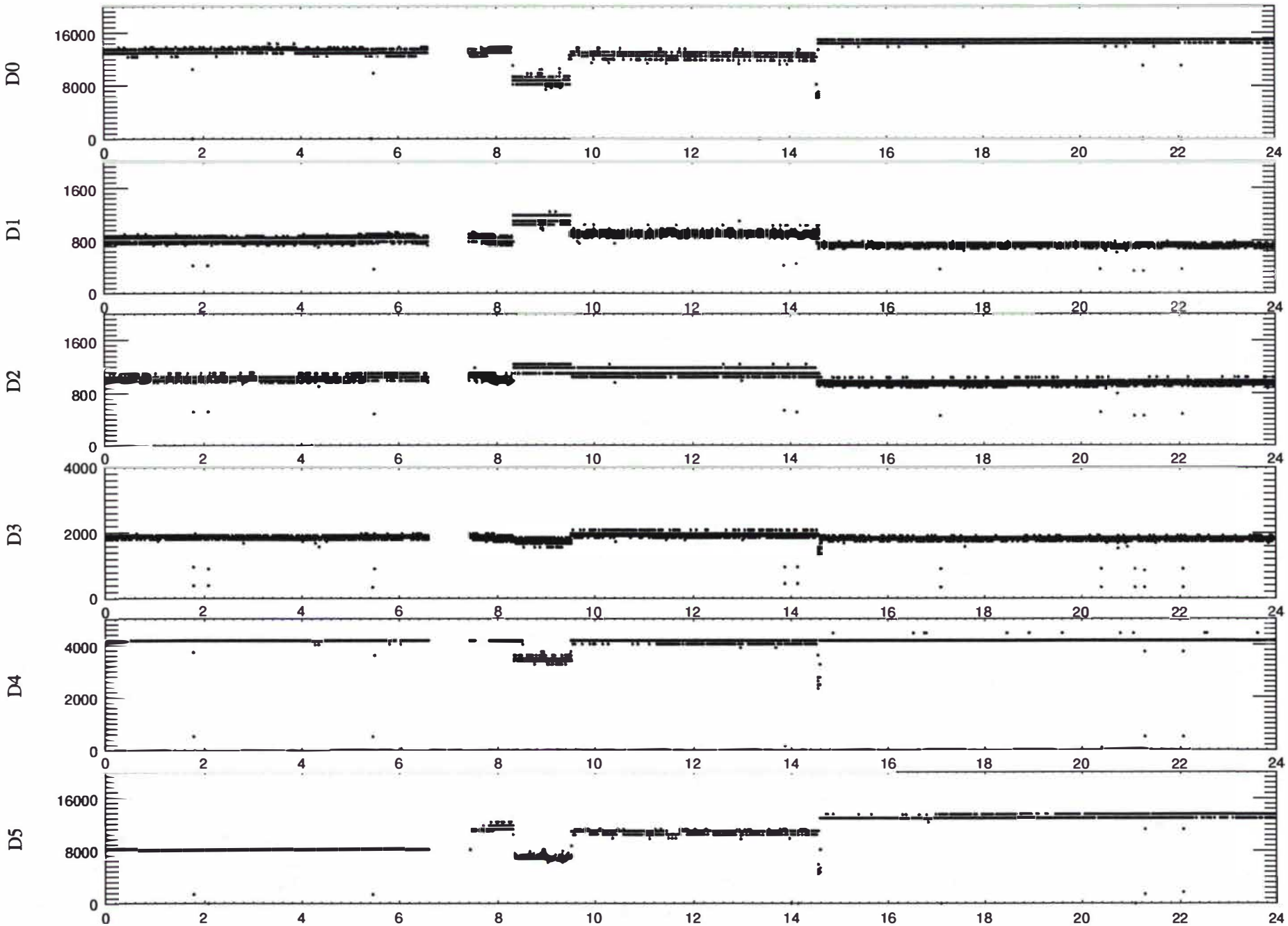
Burst Counter 8 at UT= 3.971346503364 h=14296.847 s 03:58:16.847





B# 1

HUS 2B COUNTS / SEC EDR day 91, year 1998 to day 91, year 1998 8/18/98



UNIV' 'AL TIME

SAX New X-ray burster
IAUC 6867
8/ 4/98

ULYSSES RT

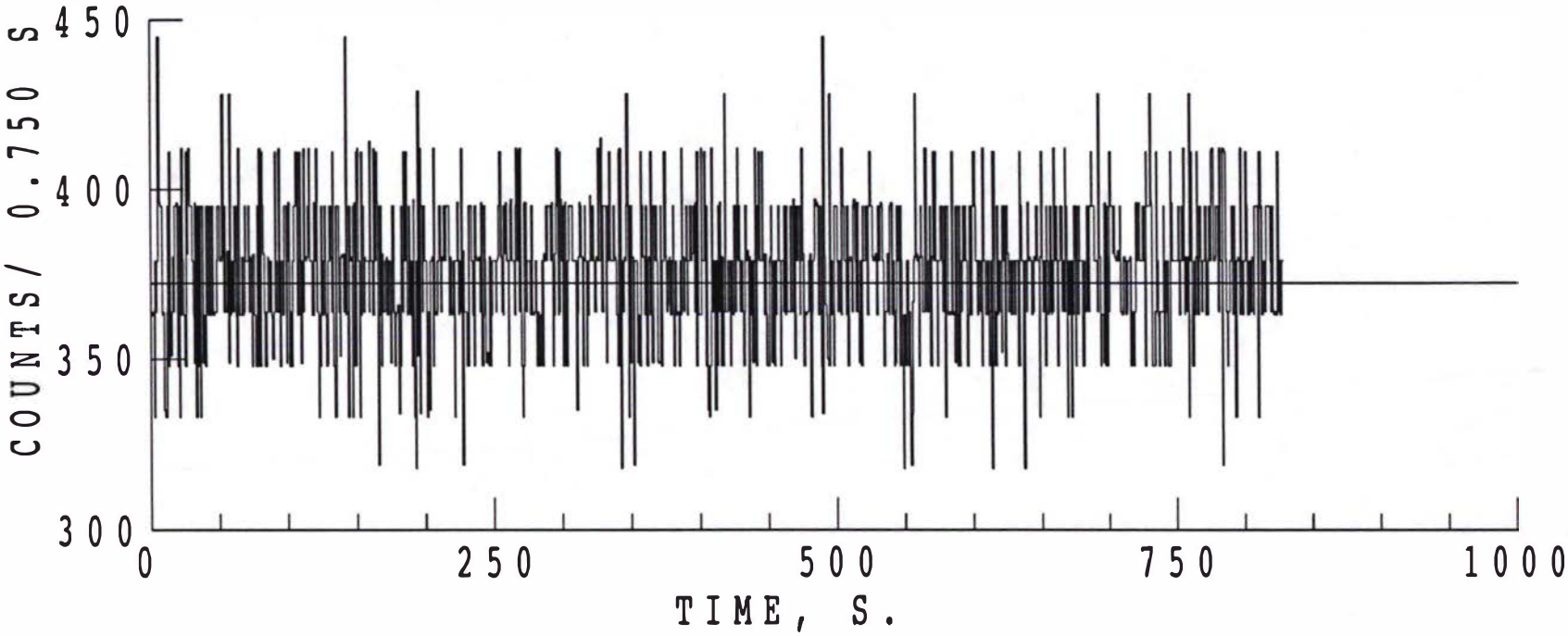
2/ 4/98 24228.020 s

0.250 S INTERVALS REGROUPED BY 3

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



1

Date: ~~Sep 20 2011~~ Mar 9 2012

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

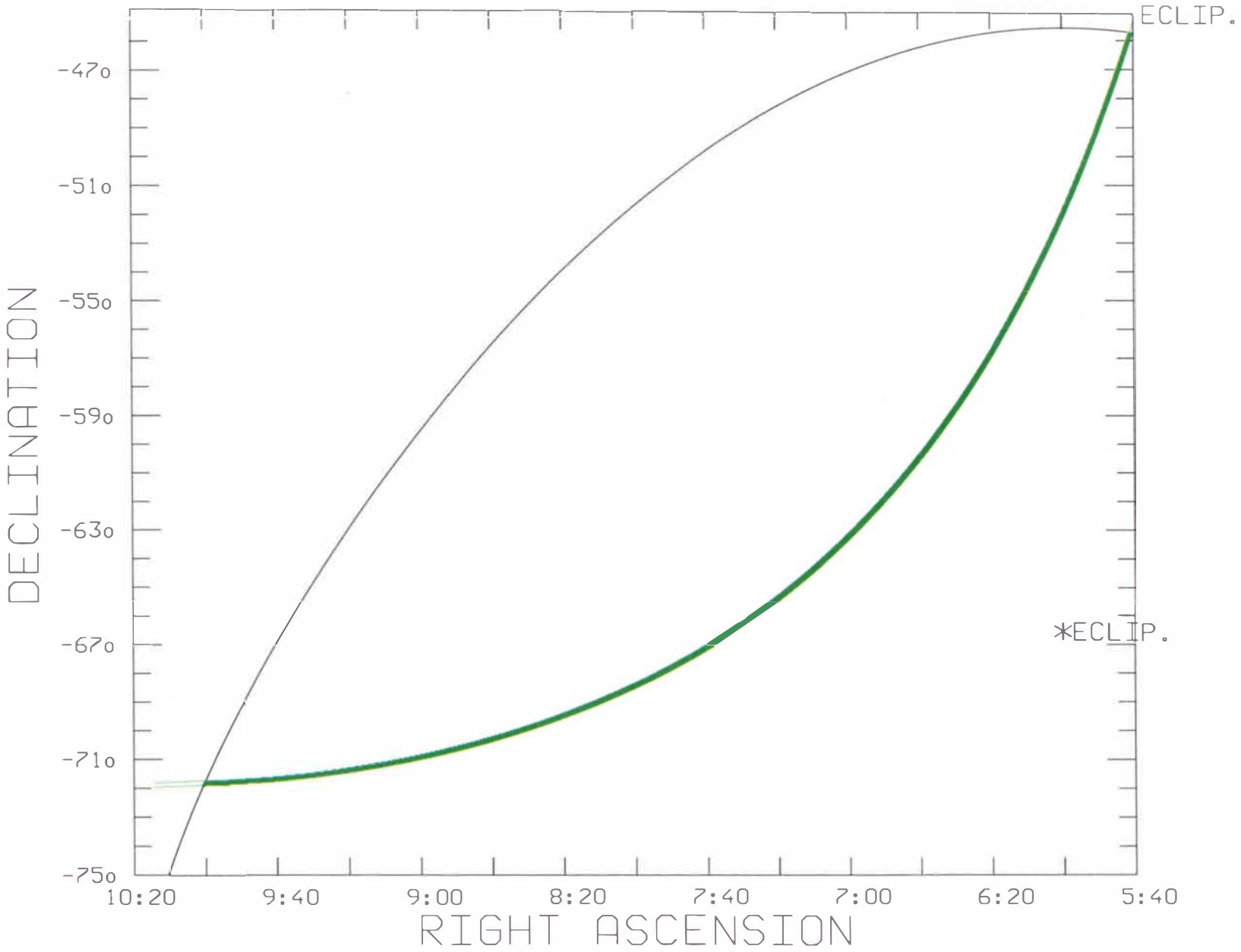
☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

☐ Geocentric time used?

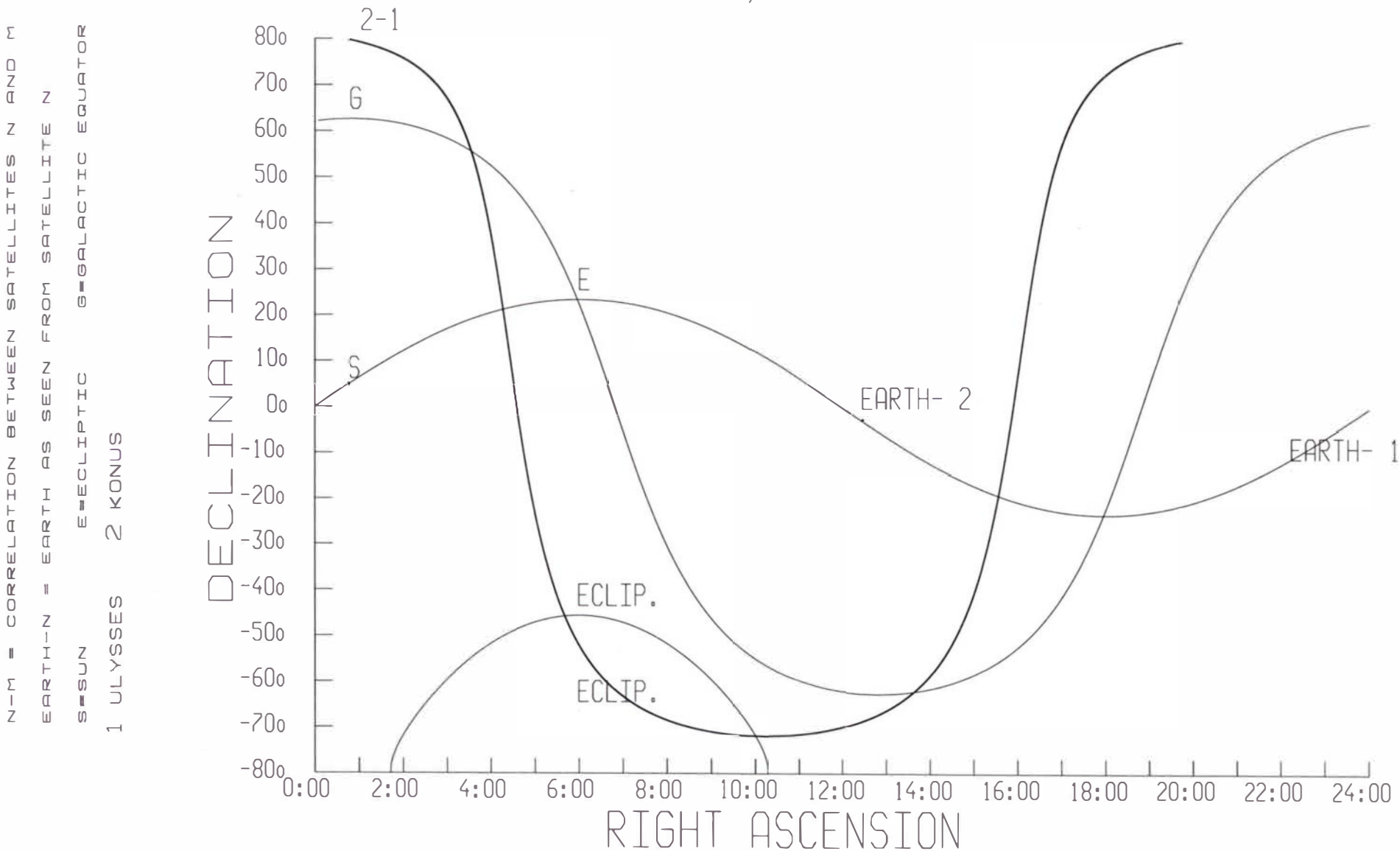
☑ ACCESS and MBL databases updated with identical times?

GRB980402 ~35581 S 09/03/2012

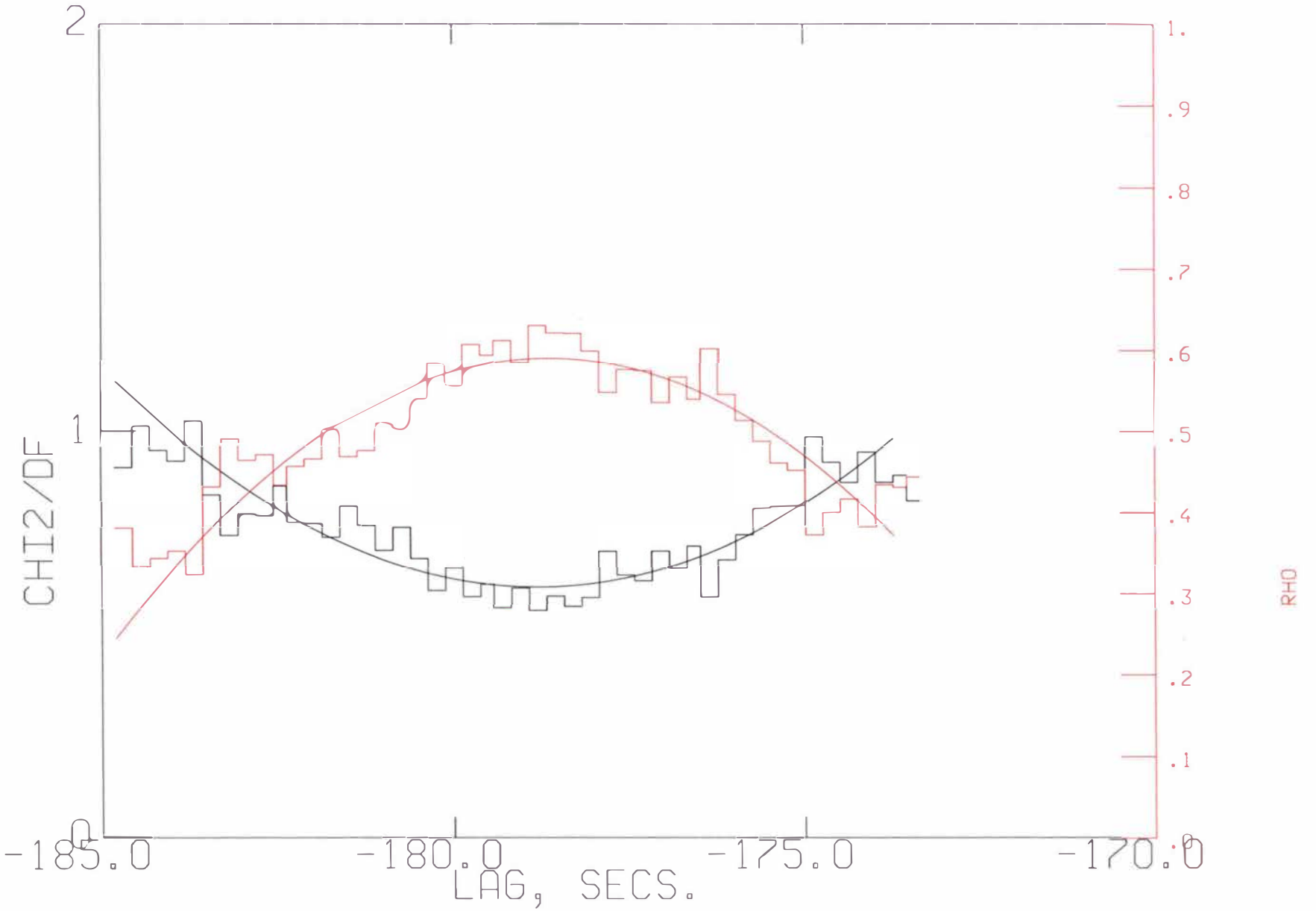


EVENT OF APR 2, 1998 9:49

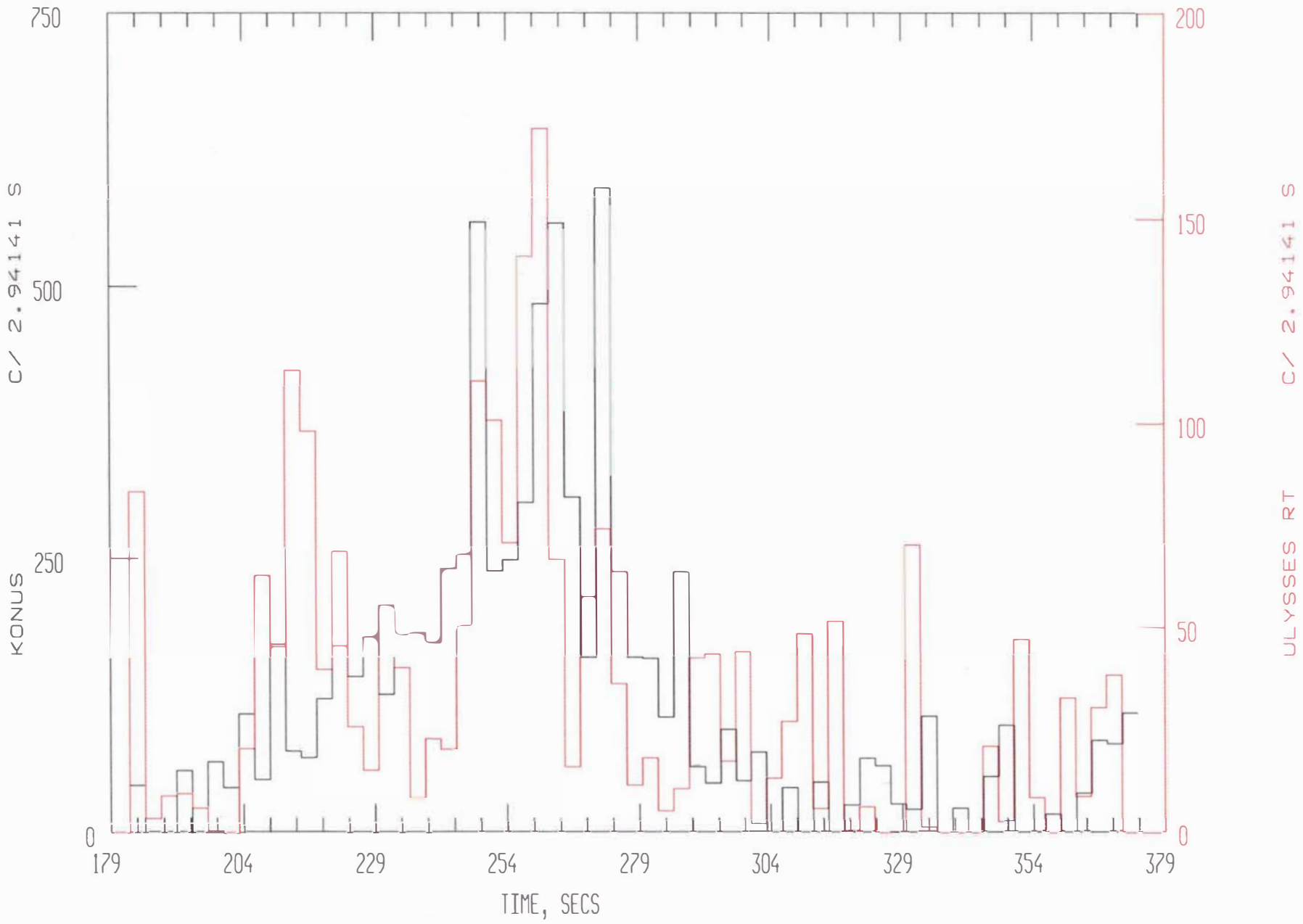
09/03/2012



KONUS -ULYSSES RT CORRELATION 02/04/98 35402.070



KONUS -ULYSSES RT CORRELATION 02/04/98 35402.070 9/ 3/12



konus 19980402 35464

ULYSSES RT 07/03/12

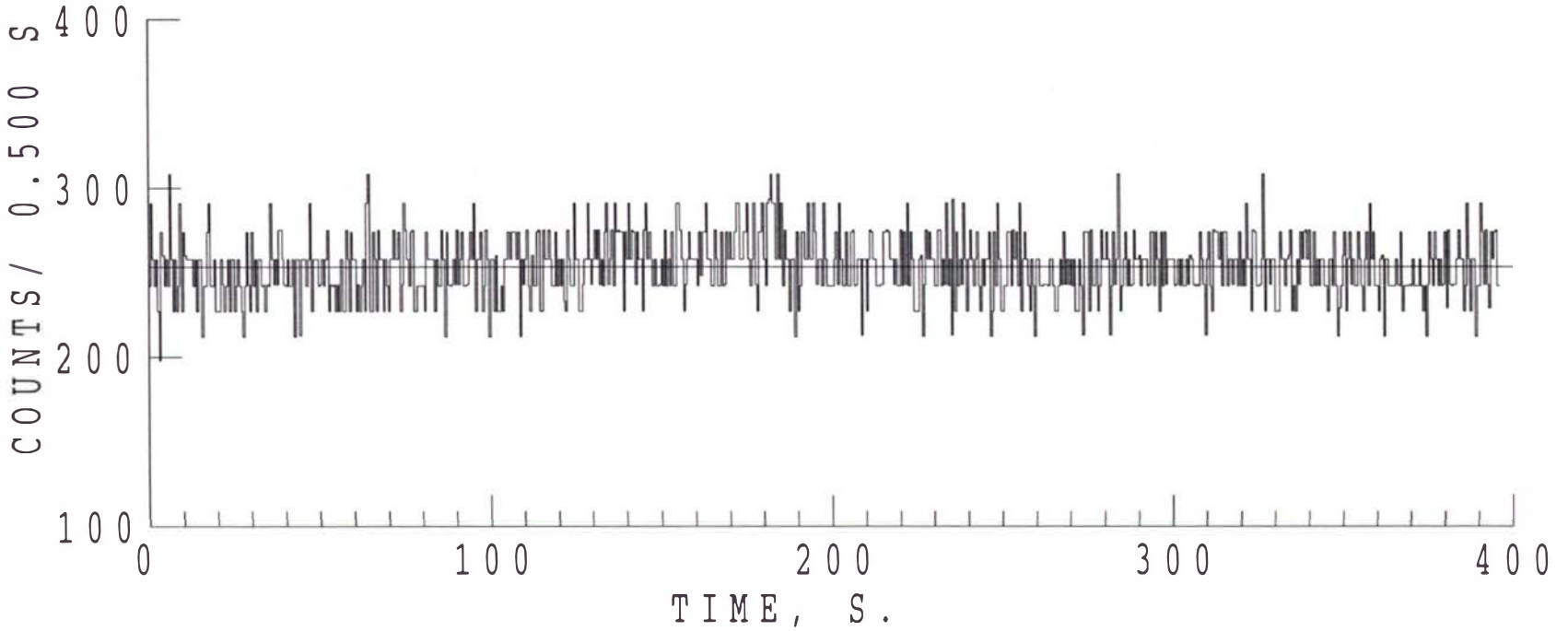
02/04/98 35280.141 s

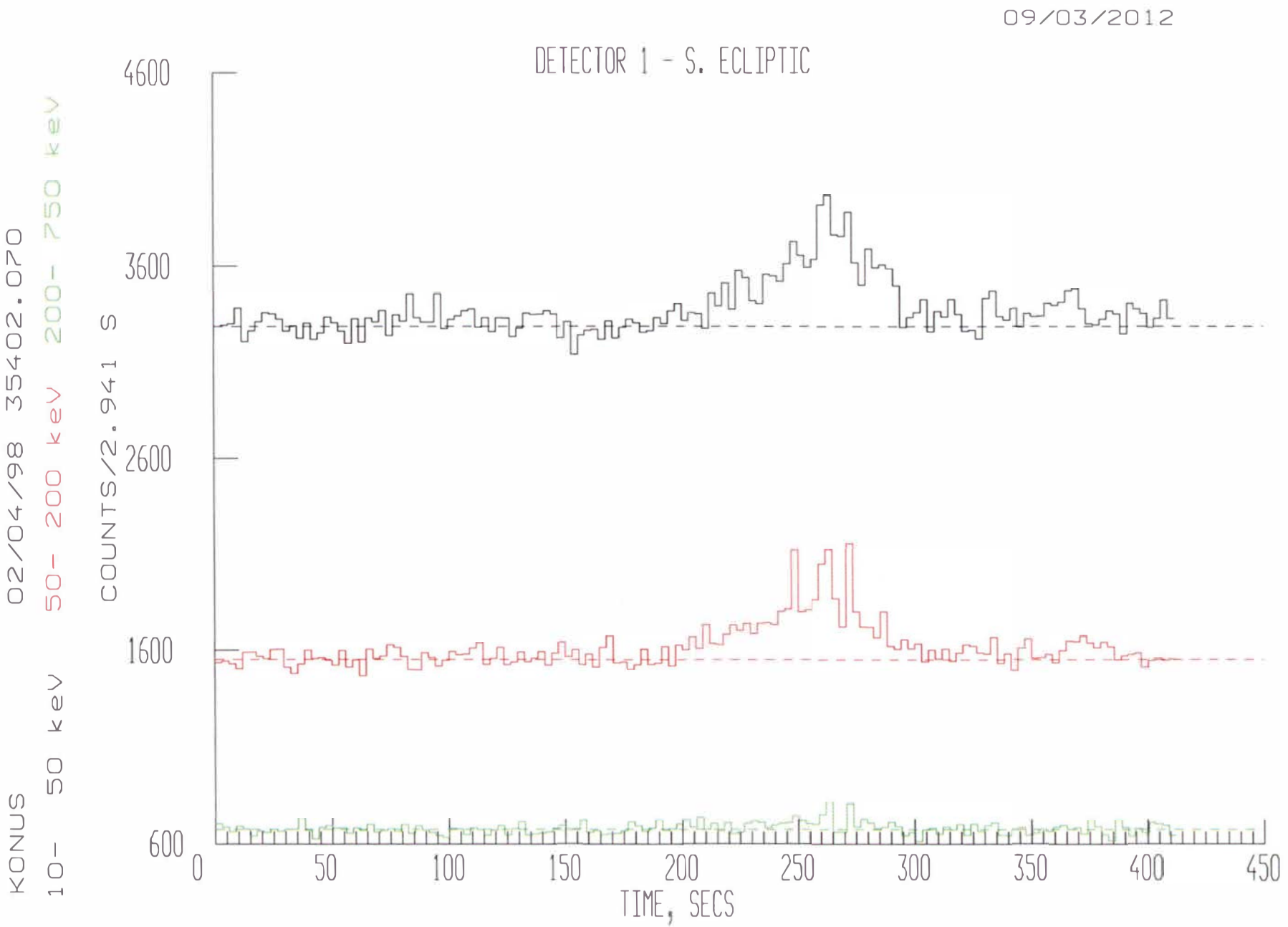
0.250 S INTERVALS REGROUPED BY 2

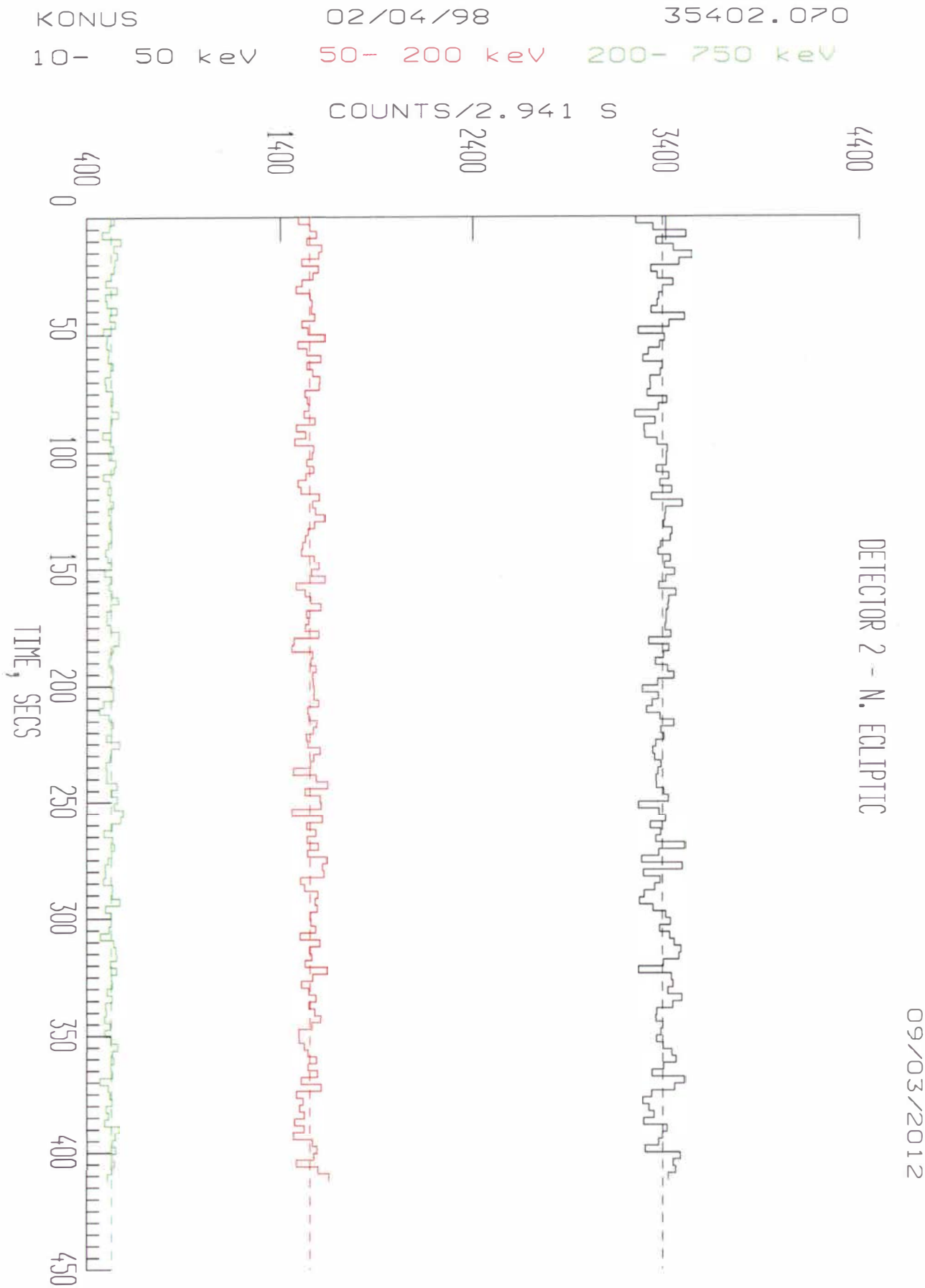
0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS




09/03/2012
DETECTOR 1 - S. ECLIPTIC
KONUS 02/04/98 35402.070
10- 50 keV 50- 200 keV 200- 750 keV
COUNTS/2.941 S
4600
3600
2600
1600
600
0
50
100
150
200
250
300
350
400
450
TIME, SECS


KONUS
02/04/98
35402.070
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.941 S
400
1400
2400
3400
4400
0
50
100
150
200
250
300
350
400
450
TIME, SECS
DETECTOR 2 - N. ECLIPTIC
09/03/2012

From SAHI@fender.msfc.nasa.gov Fri Apr 10 12:51:56 1998
Return-Path: <SAHI@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA00040; Fri, 10 Apr 1998 12:51:56 -0700
From: SAHI@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA14305; Fri, 10 Apr 1998 12:51:54 -0700
Date: Fri, 10 Apr 1998 14:50:40 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980410145040.20e1dd45@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6676
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6676
EVENT OF 1998 APR  2 DAY OF YEAR= 92
EVENT CROSSING TIME AT BATSE      : 78548. S. OR 21:49:08.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 198.000   62.000
BATSE PEAK COUNTING RATE:   4500    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  2/ 4/  98 IS:
RA=  152.643 DEC=   13.400 DIST=    4.638 AU
BATSE-ULYSSES DISTANCE =  693815911. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=121.70 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1216.26 SECS.
CROSSING TIME AT ULYSSES    IS 77332. S. OR   21:28:51 +/-  373.37 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  2/ 4/  98 IS:
RA=   20.211 DEC=    8.092 DIST=    2.404 AU
MARS-BATSE DISTANCE =  359697824. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 70.11 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  408.14 SECS.
CROSSING TIME AT MARS       IS 78956. S. OR   21:55:56 +/-  202.08 SECONDS


                BATSE BURST TRIGGER
NO.: 6676

TIME: TJD=0905 SECONDS=78548

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=30.3   AZIMUTH=291.4  ERROR=3.29  DEGREES

COMMENTS:
BURST. SINGLE PULSE WITH SUBSTRUCTURE, DUR. APPROX. 10 SECS, MAX. AT T+4 SECS.
NOT VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6676	980402	10905	78548	4500	198	+62	10

BATSE BURST# 6676

ULYSSES RT 10/ 4/98

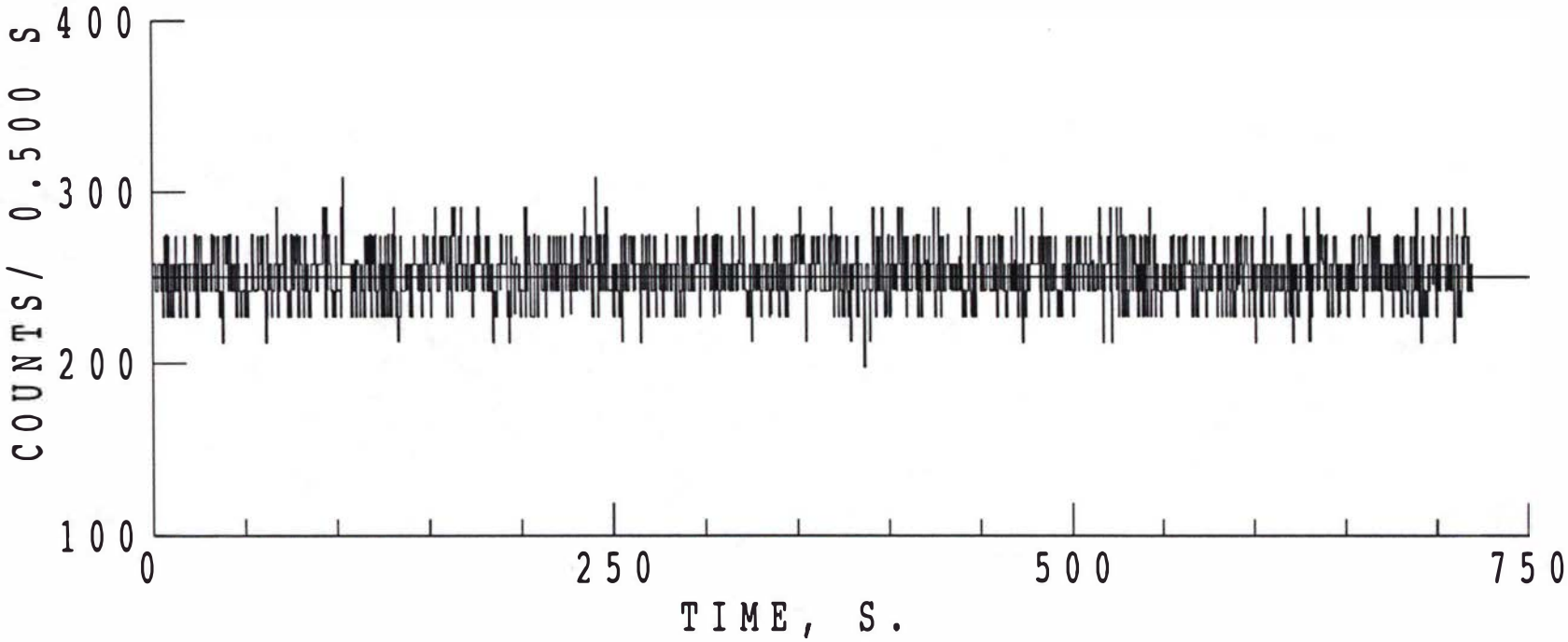
2/ 4/98 76968.086 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

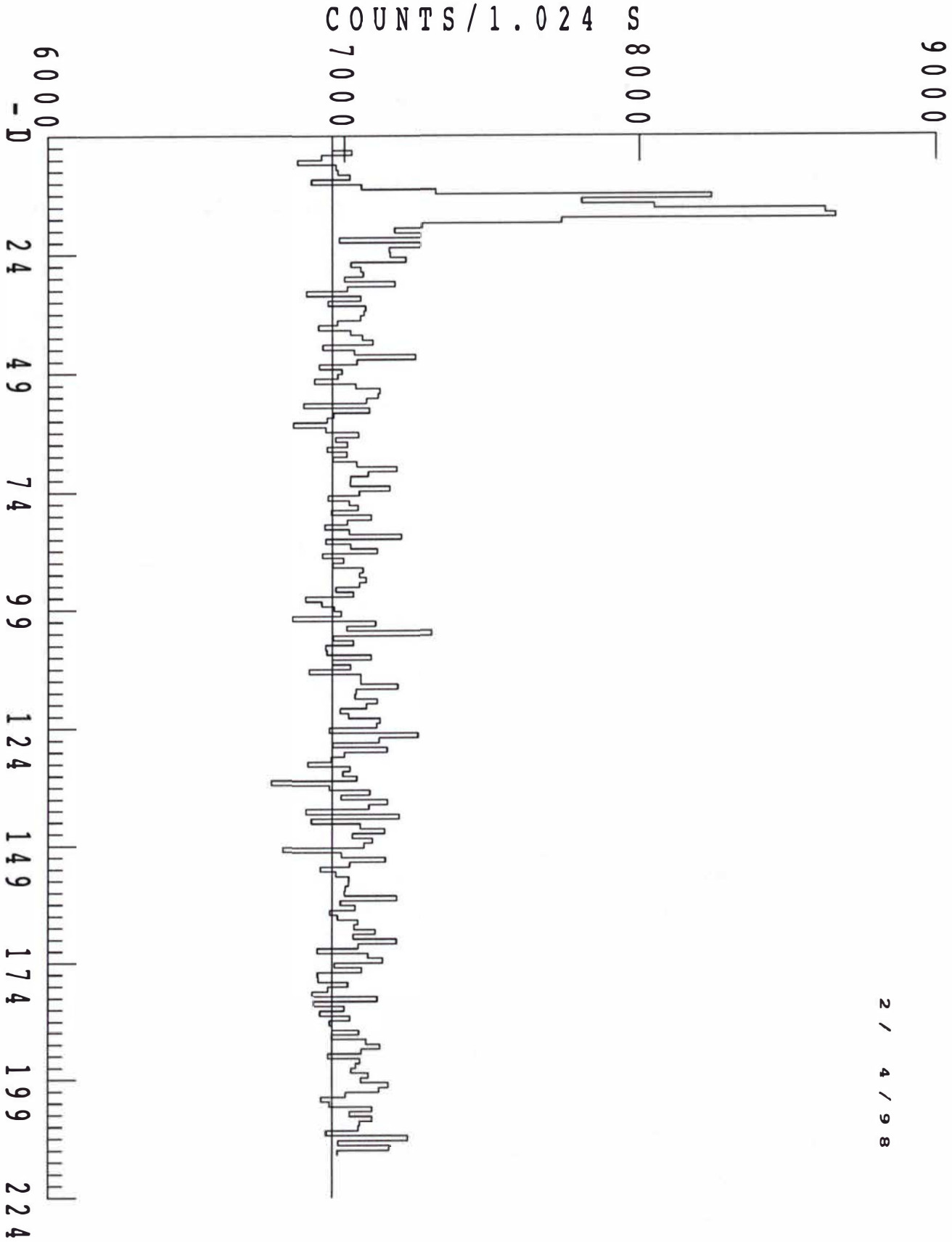
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS

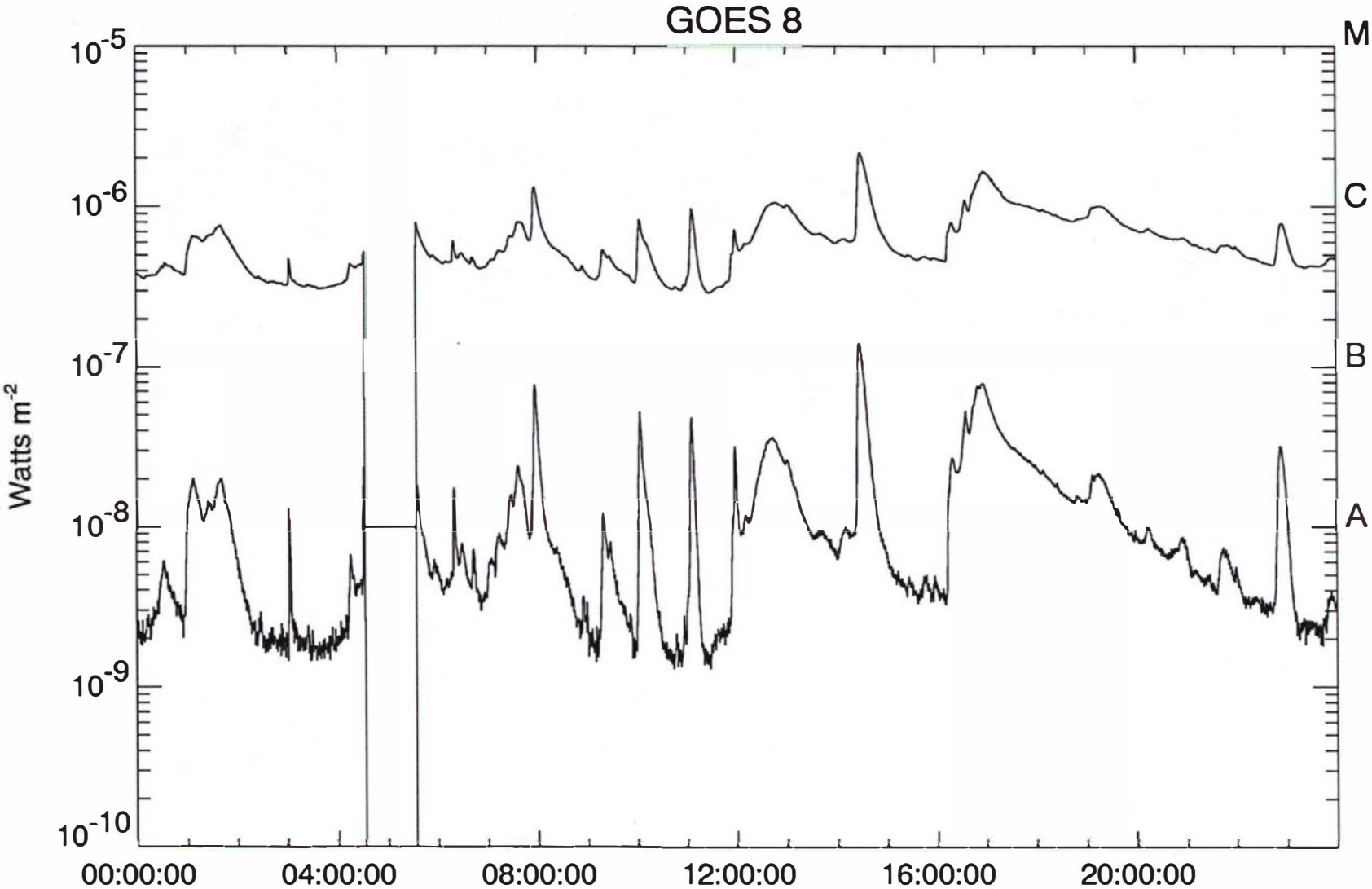


BACODINE 6676 02/04/98 78536.417

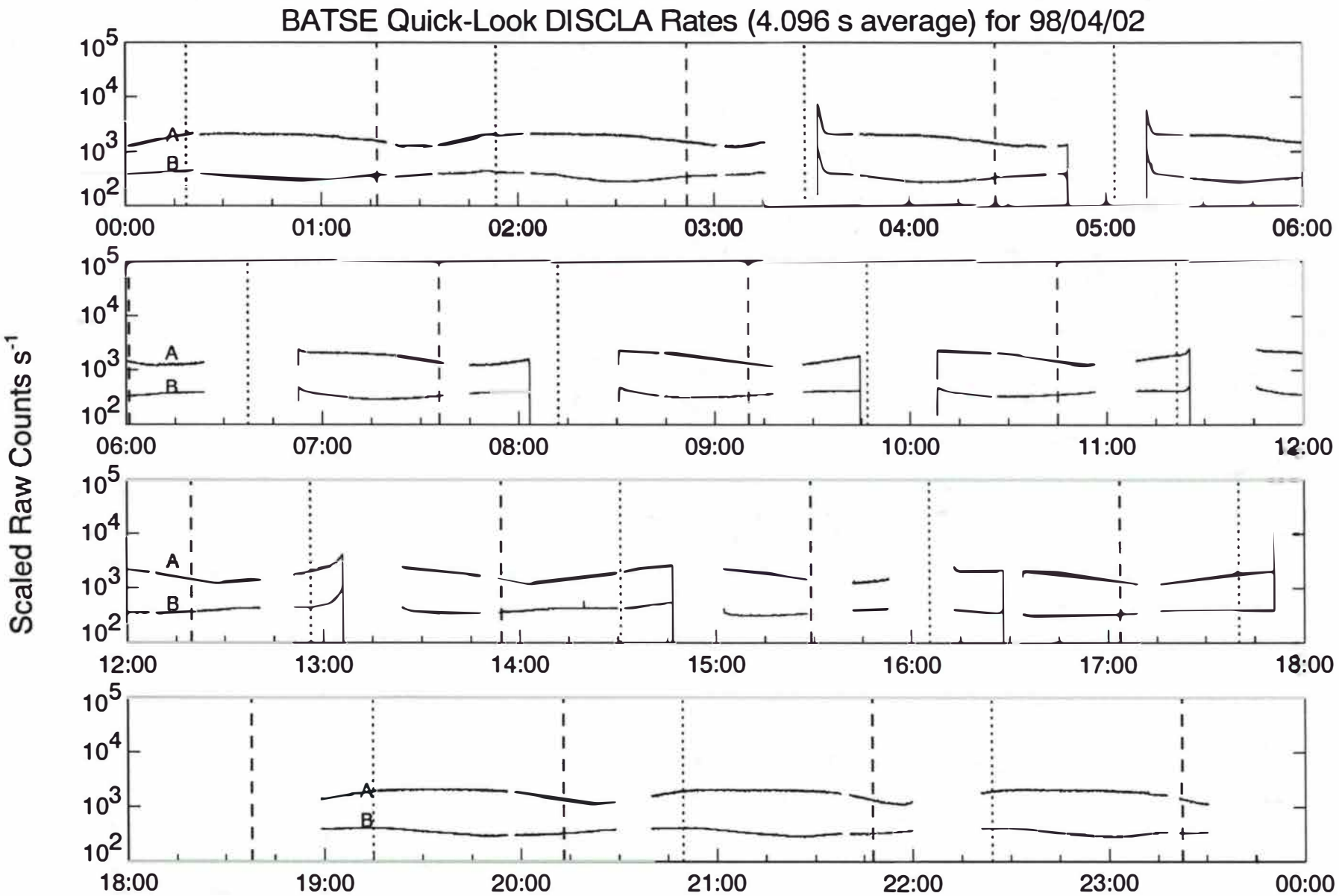
25- 100 keV



2/ 4/98



Data Start: 98/04/02, 0000:00 Plot created: 98/04/06, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



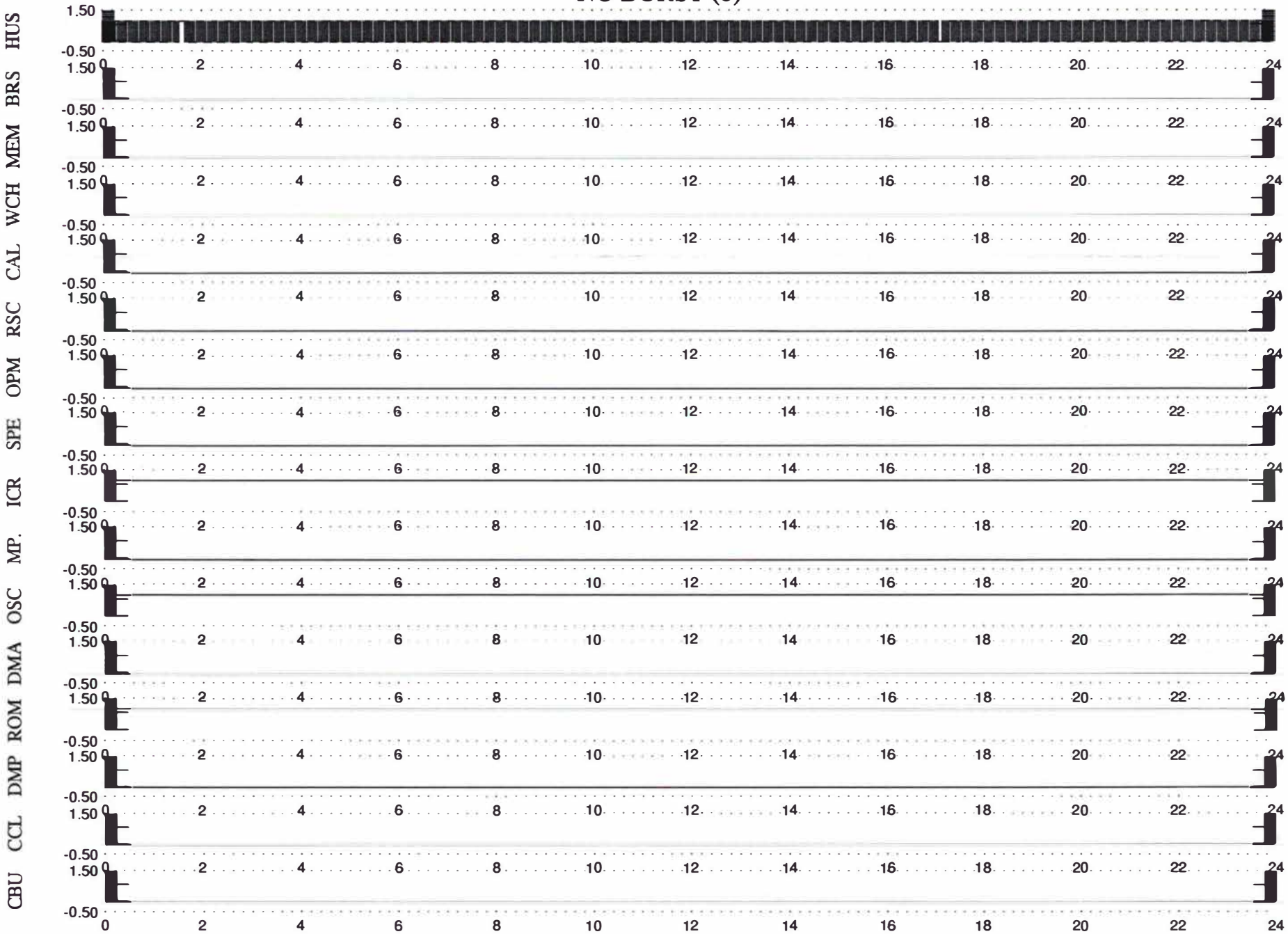
Current Time: 98/04/06, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

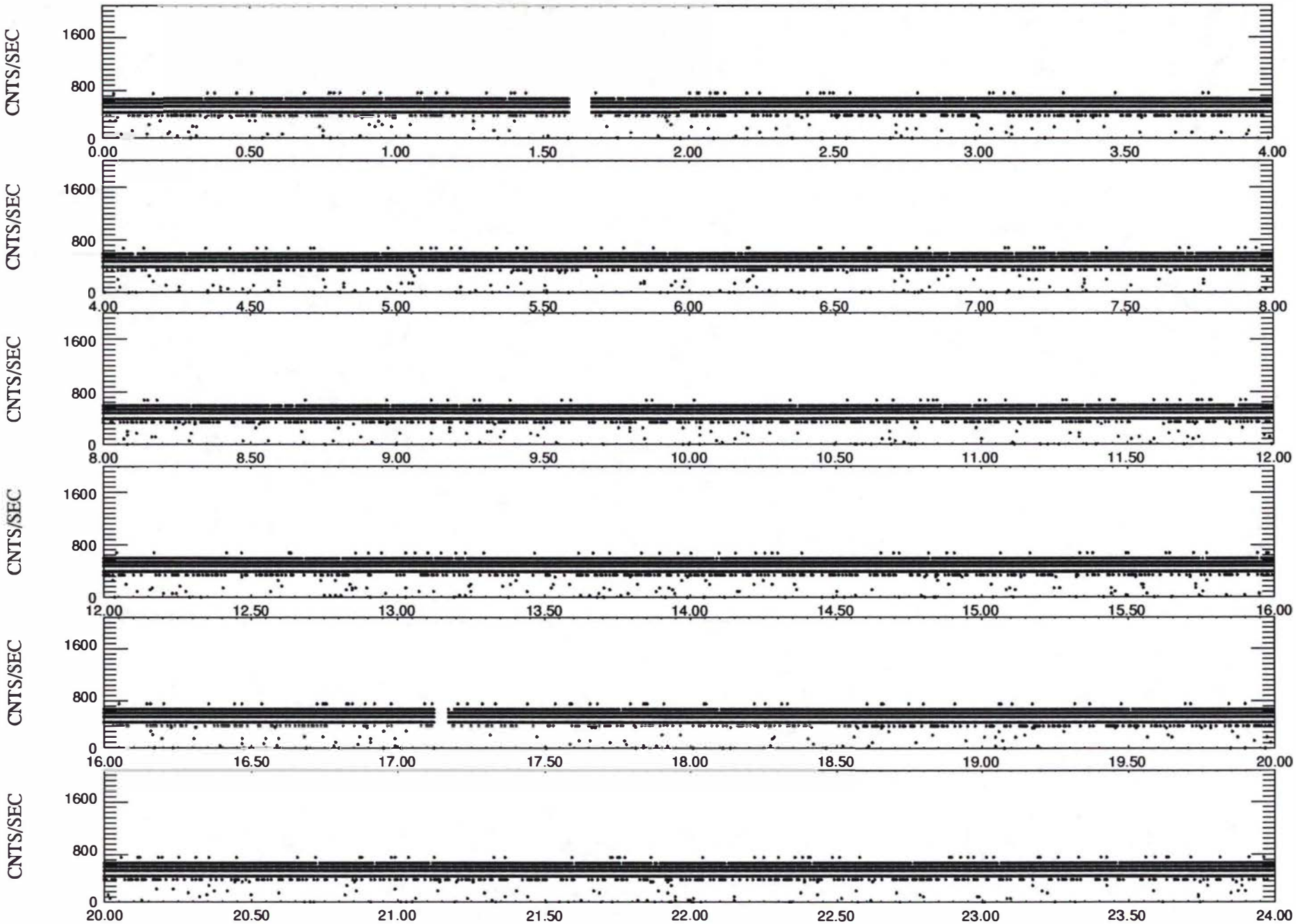
HUS MODES EDR day 92, year 1998 to day 92, year 1998 8/18/98

NO BURST (8)



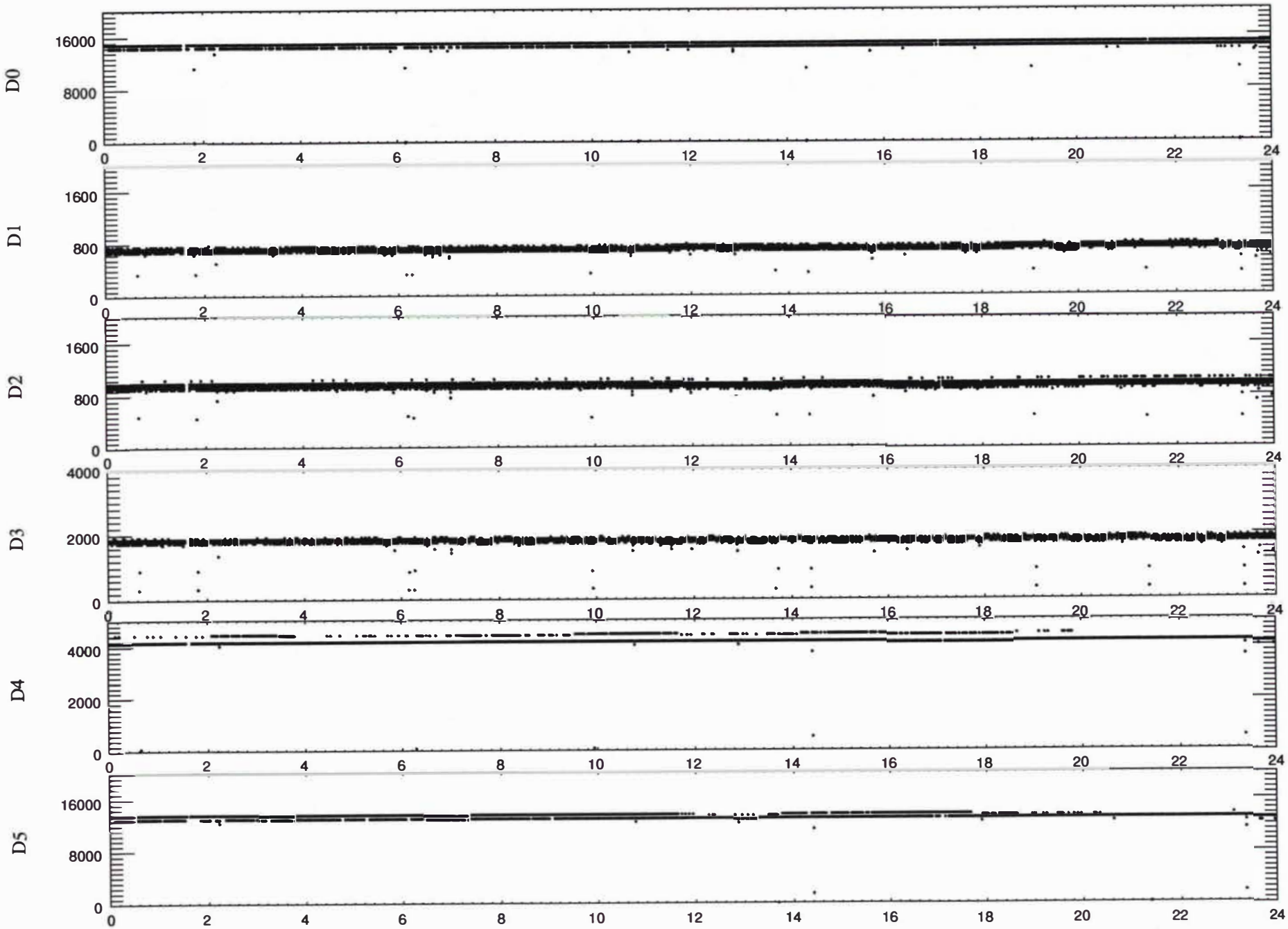
HUS 2A, MODE 1, NOT AVERAGED EDR day 92, year 1998 to day 92, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV' 'AL TIME

HUS 2B COUNTS / SEC EDR day 92, year 1998 to day 92, year 1998 8/18/98



Date: Jan 8 '10

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?

2. For Konus events

☑ Konus ecliptic latitude used with latest calibration?

2. For Odyssey events

□ Was CHECKMO run to eliminate data gaps?

□ Did the Odyssey ephemeris correspond to the event time? (When there is data in the database, the ephemeris is for the start of record, usually ~1320 s prior to the request time; when there is no data in the database, the ephemeris is for the request time in the e-mail, so the request time in mosearch should be equal to the GRB time. Note that the time in the return e-mail will be ~1320 s prior to the time requested, in the line "no HEND data…")

□ Was Mars-blocking used?

□ For cruise phase data (April – October 2001), was the updated data used? (Old data has timing errors)

□ GRS database searched for triggered data? Database data between August 2005 and January 2006 should be re-extracted, due to timing errors. (E-mailed data should be OK).

□ GRS and HEND data cross-correlated to check timing?

2. For 3 or More Spacecraft events

□ Σ 3Δt's calculated, and/or BMAPSUM executed?

3. For INTEGRAL events

□ INTEGRAL SPI-ACS website checked for bursts that weren't transmitted automatically?

□ 125 ms added to INTEGRAL SPI-ACS time for bursts prior to April 2 2004 11:00 UT?

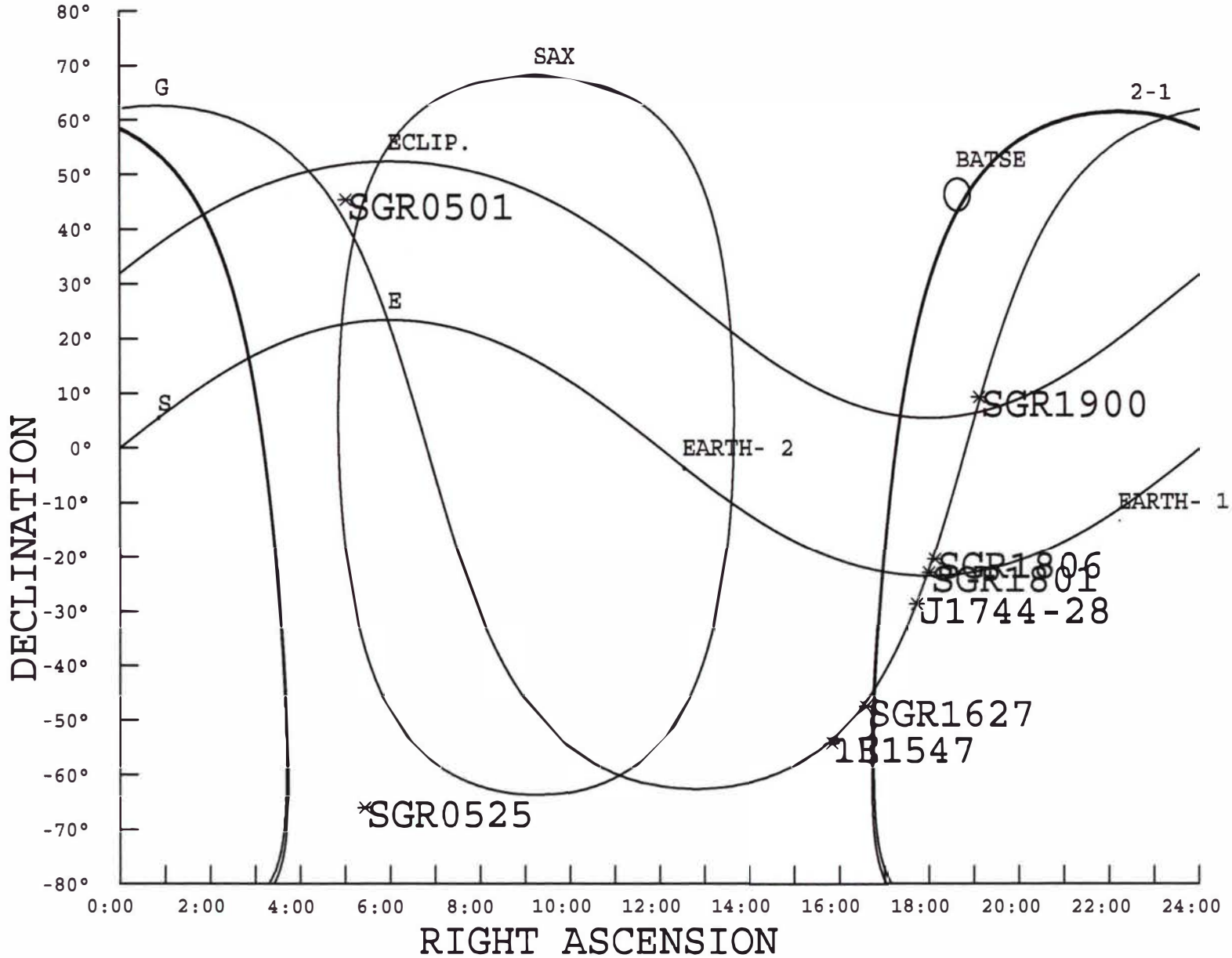
□ Updated ephemeris used for bursts prior to September 30, 2003?

☑ ACCESS and MBL4 databases updated?

EVENT OF APR 3, 1998 23:24

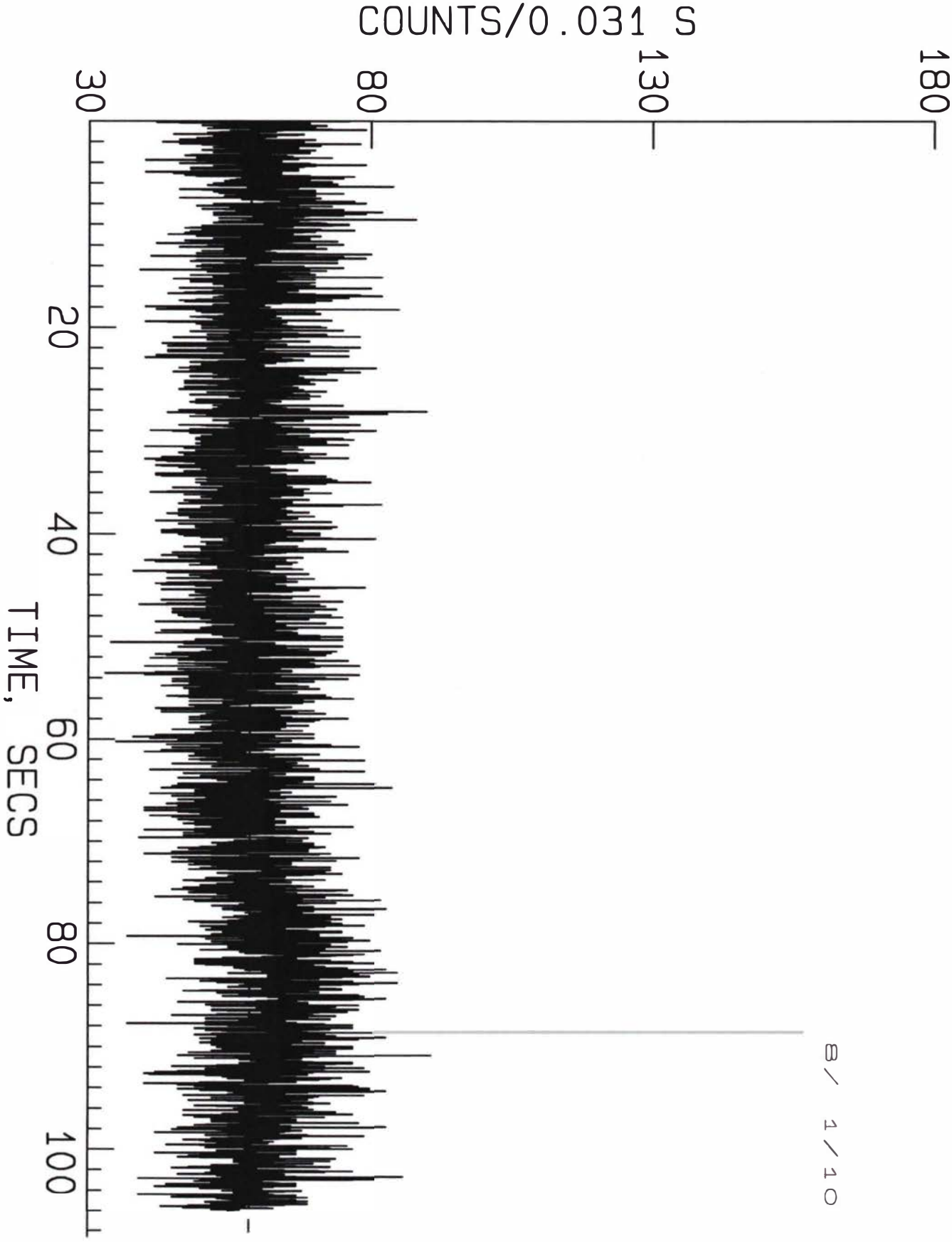
8/ 1/10

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 KONUS



SAX GRBM 03/04/98 83745.341

40- 700 keV



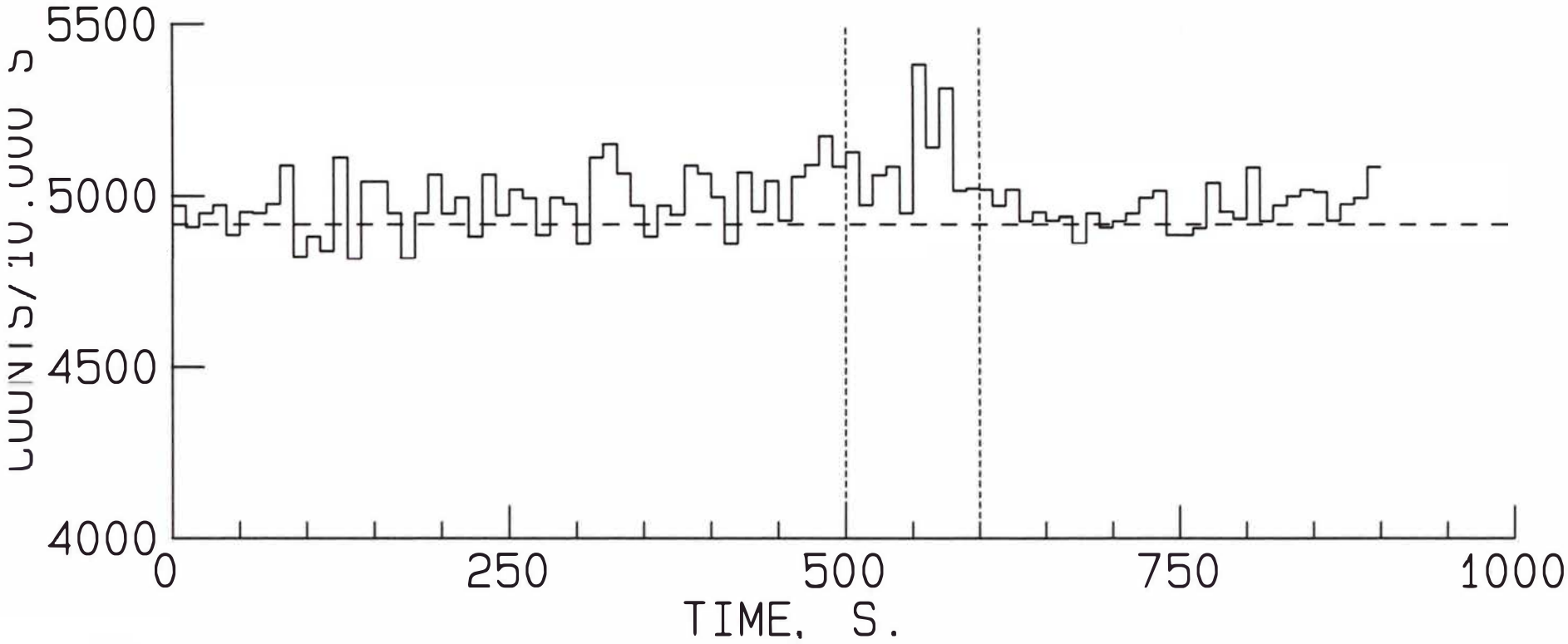
ULYSSES RT

8/ 1/10

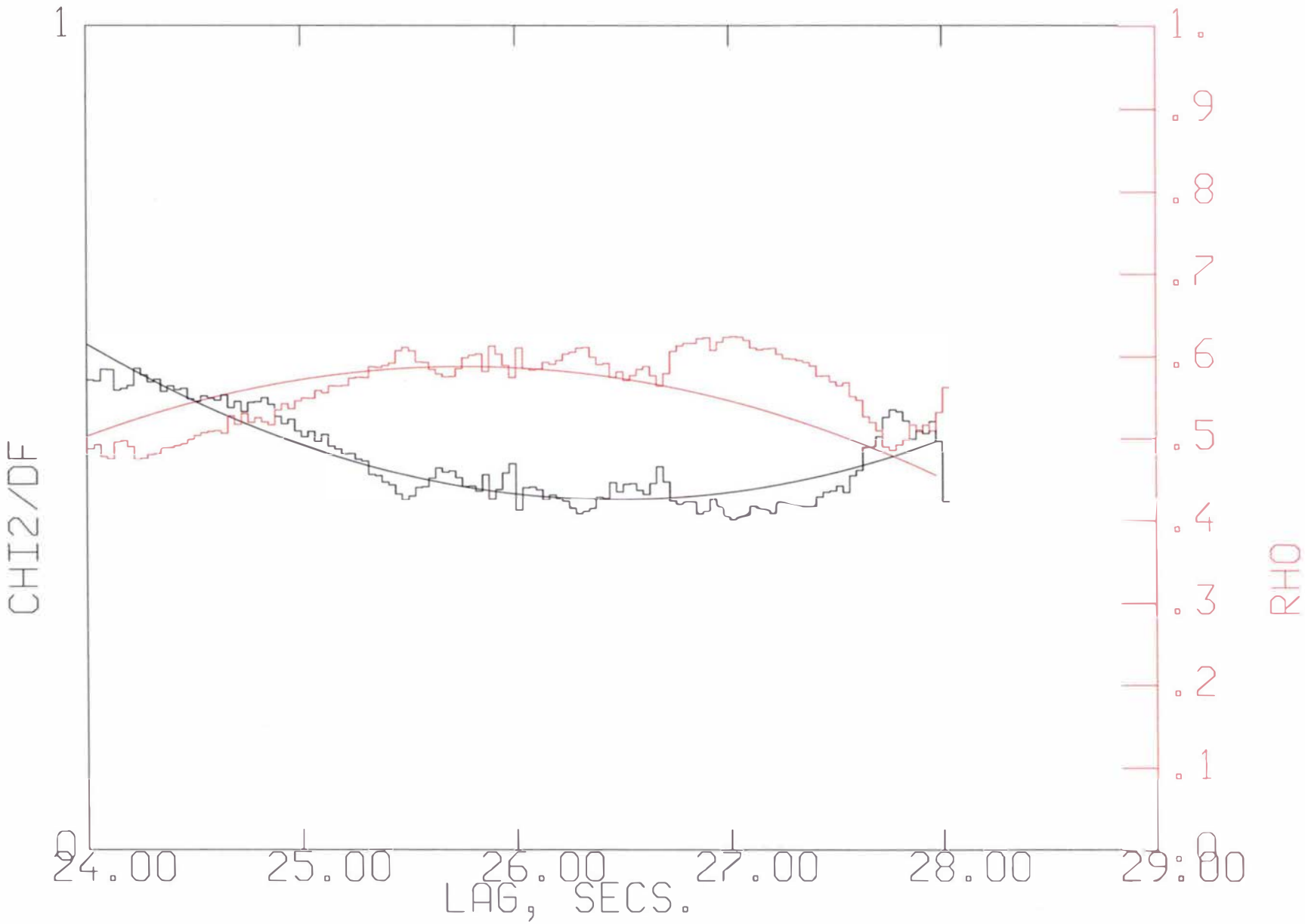
3/ 4/98 83880.086 s

0.500 S INTERVALS REGROUPED BY 20

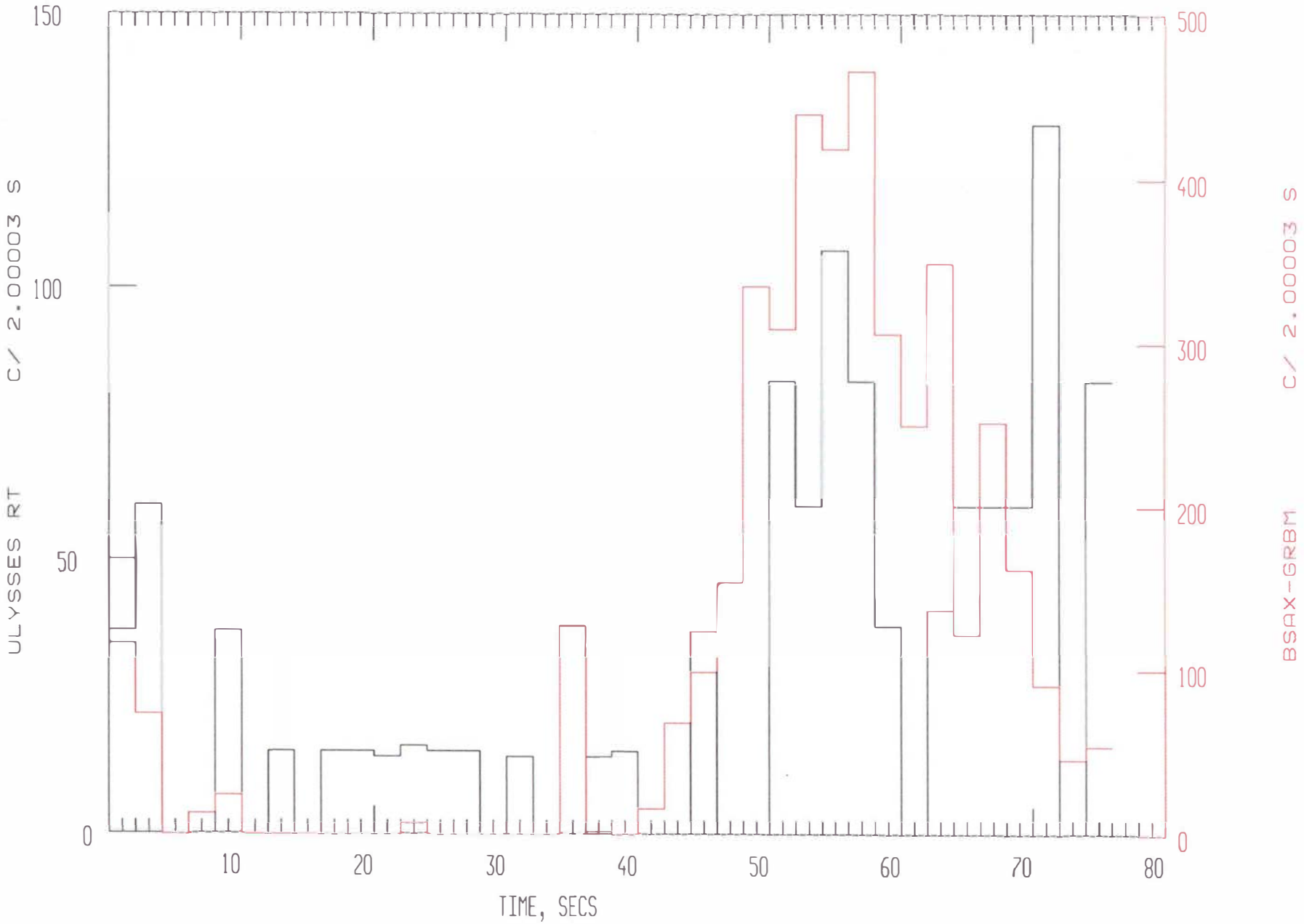
22- 149 keV



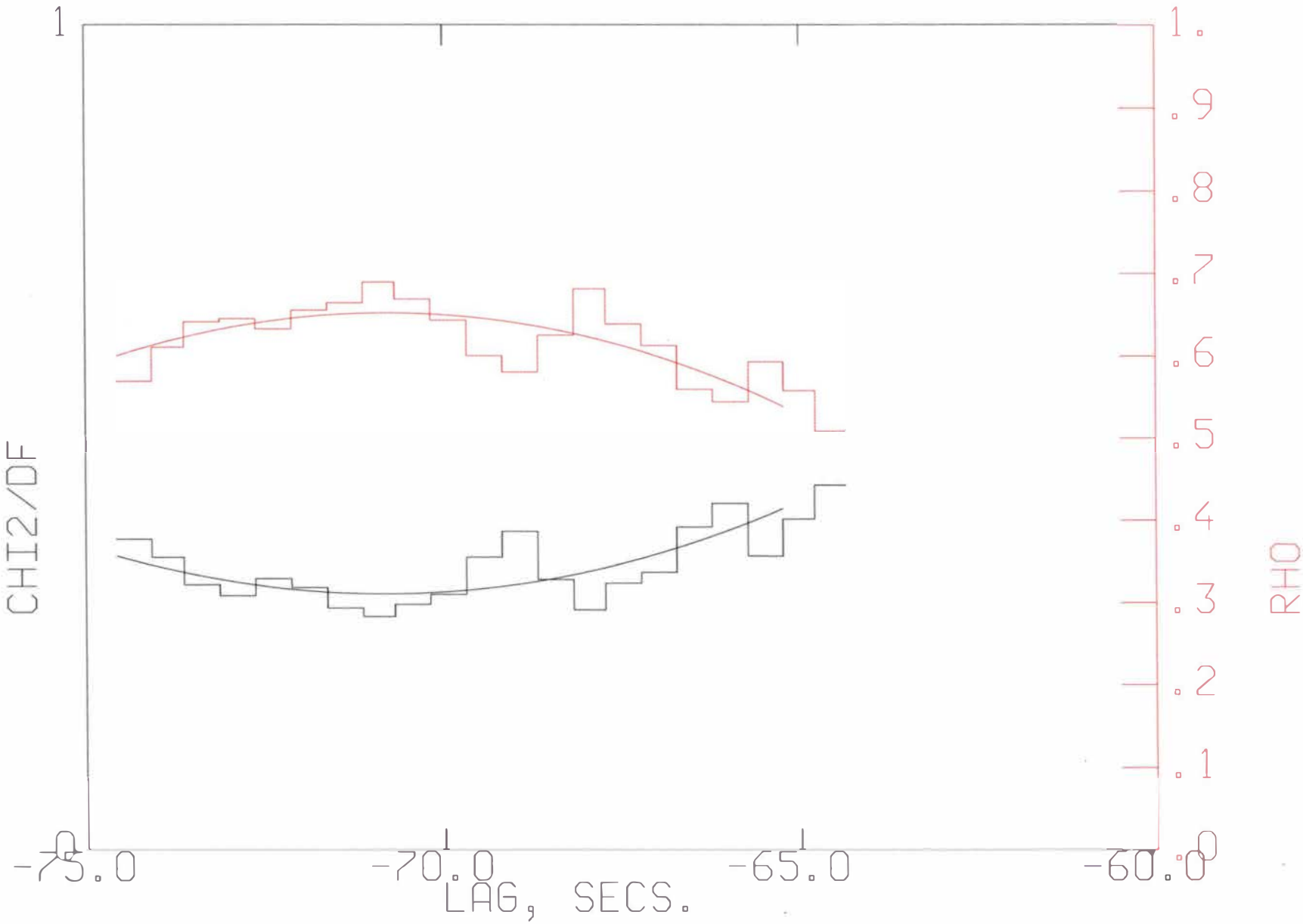
ULYSSES RT-BSAX-GRBM CORRELATION 3/ 4/98 84380.099



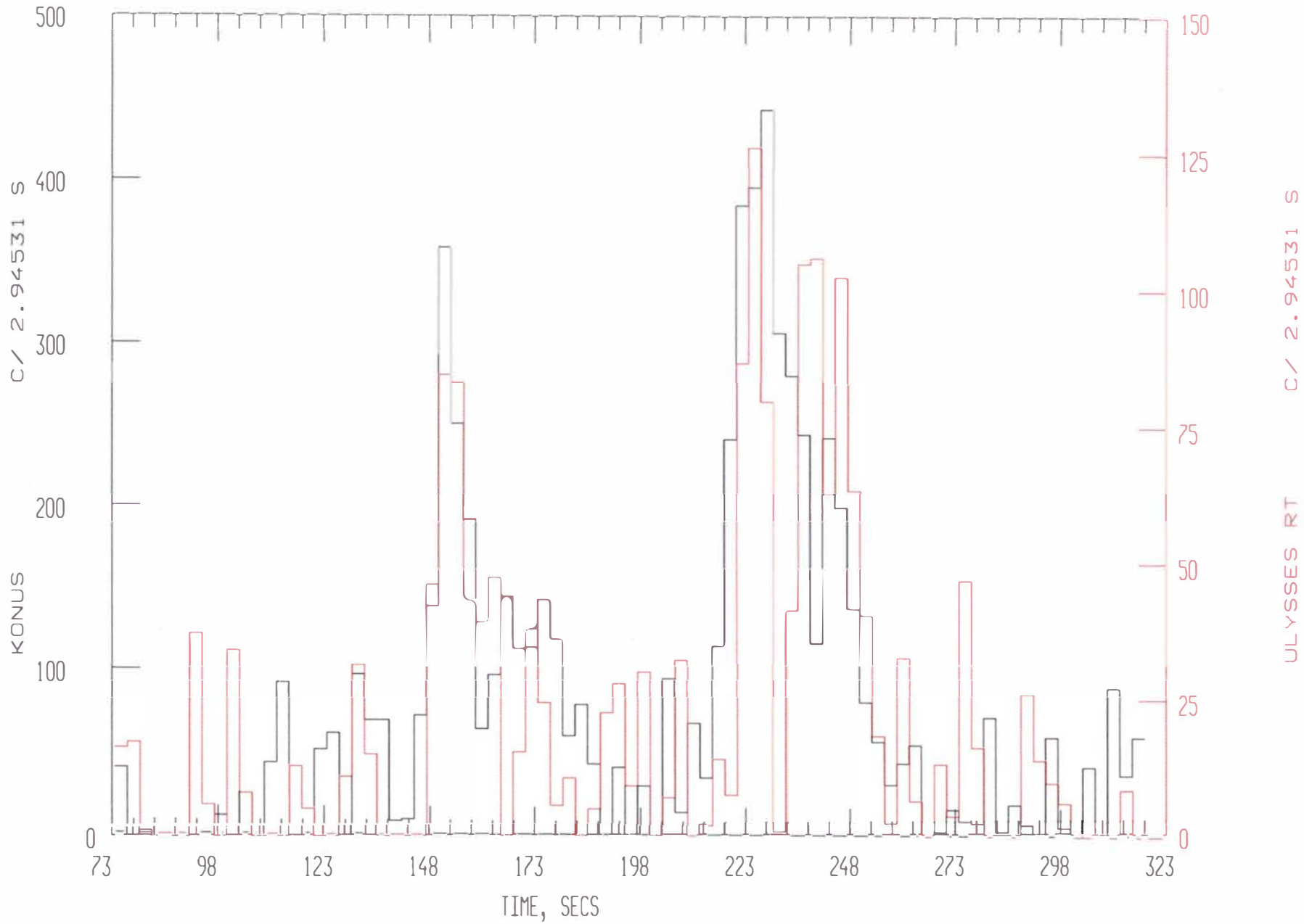
ULYSSES RT-BSAX-GRBM CORRELATION 3/ 4/98 84380.099 8/ 1/10

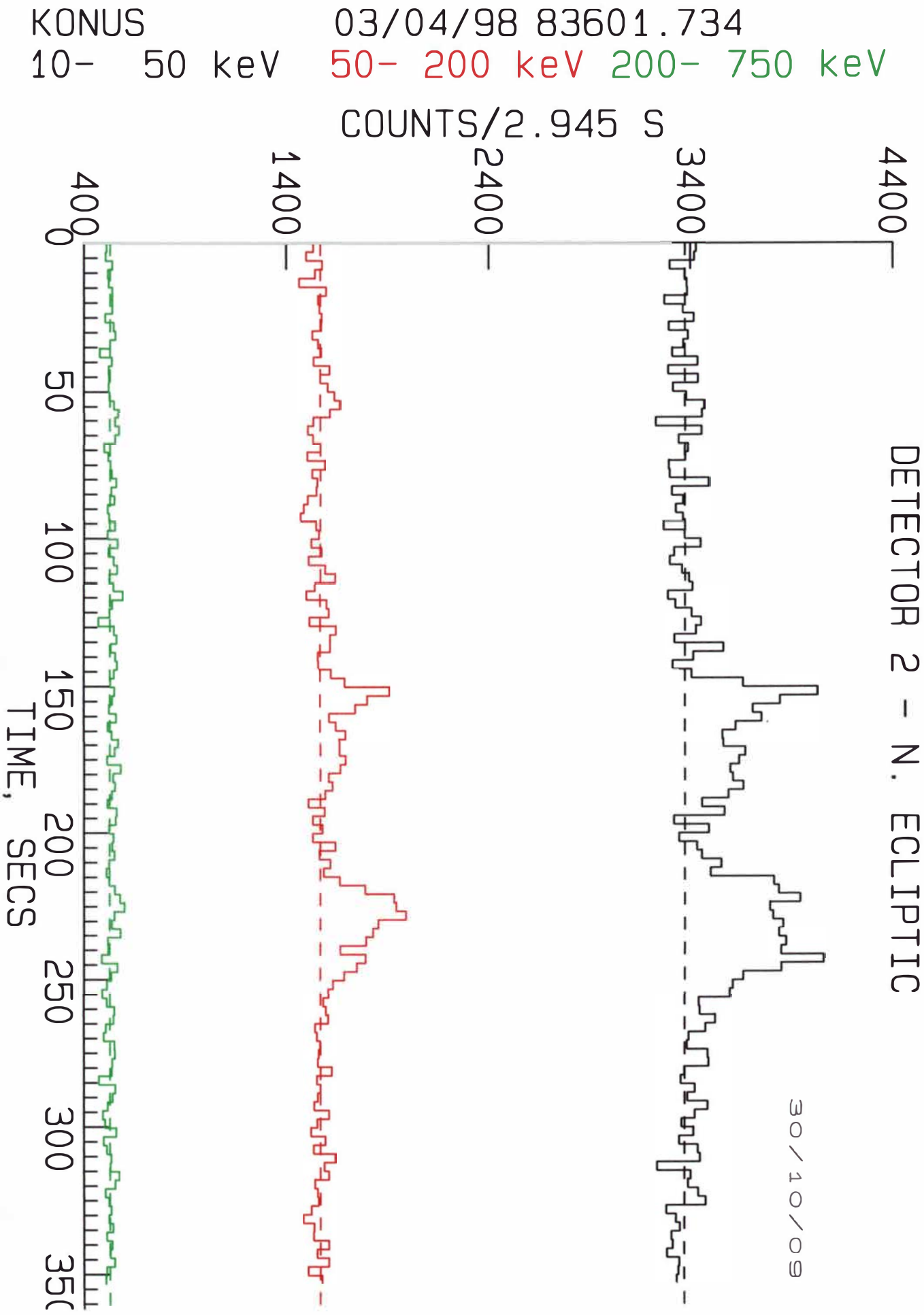


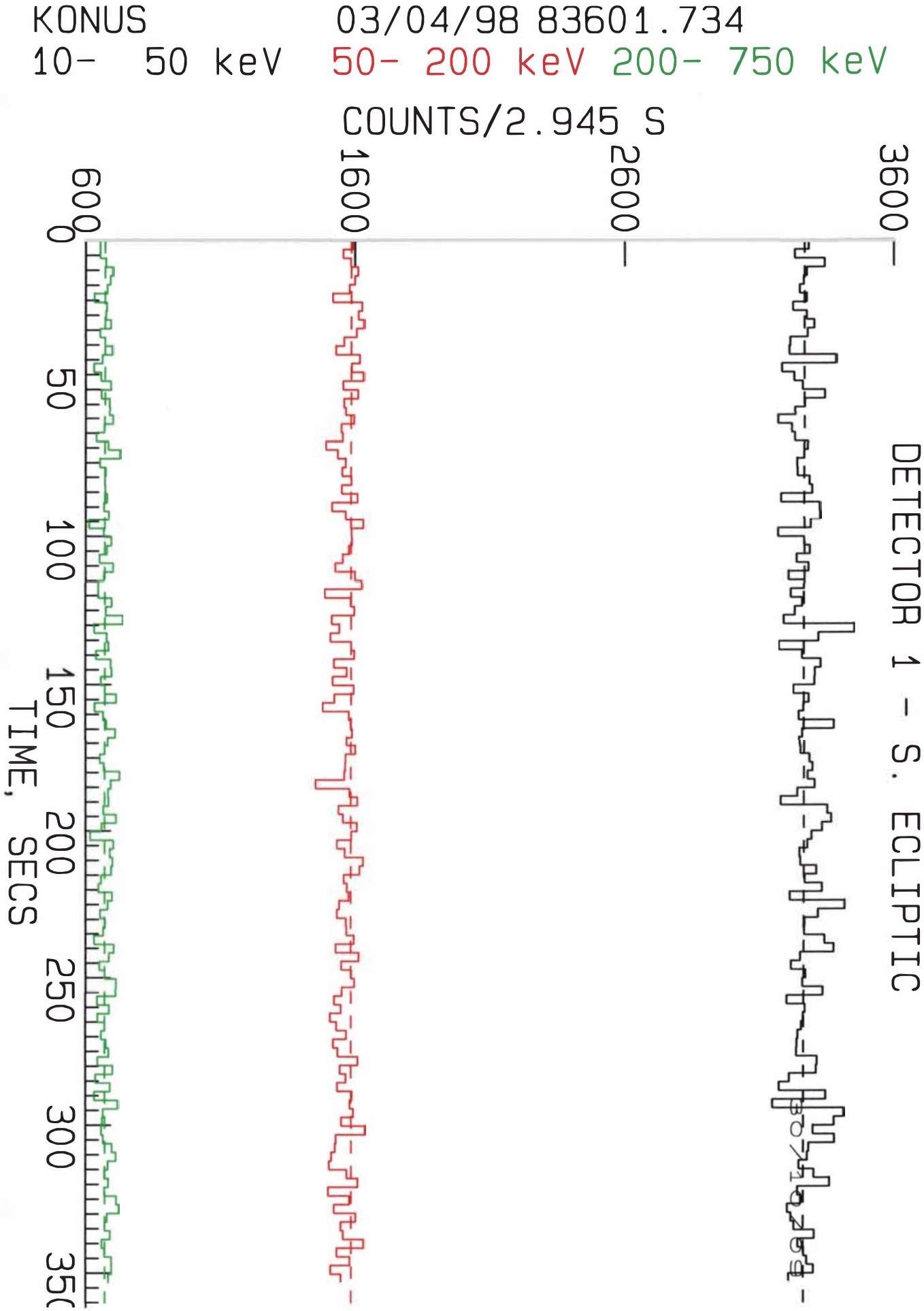
KONUS -ULYSSES RT CORRELATION 03/04/98 83601.734



KONUS -ULYSSES RT CORRELATION 03/04/98 83601.734




KONUS
03/04/98 83601.734
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.945 S
4400
3400
2400
1400
400
0
50
100
150
200
250
300
350
TIME, SECS
DETECTOR 2 - N. ECLIPTIC
30/10/09


KONUS
03/04/98 83601.734
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.945 S
3600
2600
1600
600
0
50
100
150
200
250
300
350
TIME, SECS
DETECTOR 1 - S. ECLIPTIC

From HENZE@SSLMOR.msfc.nasa.gov Tue Apr 14 08:12:50 1998
Return-Path: <HENZE@SSLLES.MSFC.NASA.GOV>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id IAA01835; Tue, 14 Apr 1998 08:12:49 -0700
Received: from SSLLES.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id IAA01514; Tue, 14 Apr 1998 08:12:49 -0700
Date: Tue, 14 Apr 1998 10:12:48 -0500 (CDT)
From: HENZE@SSLMOR.msfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980414101248.20403eac@ssl.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6677
Content-Length: 1135
X-Lines: 26
Status: RO

Yes - but only HERB data available - can't triangulate

279.55, 46.41, 2.5

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

BATSE BURST #     6677
EVENT OF 1998 APR  3 DAY OF YEAR= 93
EVENT CROSSING TIME AT BATSE      : 83751. S. OR 23:15:51.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 280.000   46.000
BATSE PEAK COUNTING RATE:   2000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  3/ 4/  98 IS:
RA=  152.473 DEC=   13.393 DIST=    4.650 AU
BATSE-ULYSSES DISTANCE =  695670118. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.82 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  568.55 SECS.
CROSSING TIME AT ULYSSES    IS 84320. S. OR   23:25:19 +/-  449.23 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  3/ 4/  98 IS:
RA=   20.916 DEC=    8.383 DIST=    2.407 AU
MARS-BATSE DISTANCE =  360064576. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 88.55 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=   30.35 SECS.
CROSSING TIME AT MARS       IS 83781. S. OR   23:16:21 +/-  208.91 SECONDS

                BATSE BURST TRIGGER
NO.:  6677

TIME: TJD=0906 SECONDS=83751

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH= 76.3  AZIMUTH=281.7  ERROR=  2.5 DEGREES

COMMENTS:
AT LEAST TWO PULSES, MAXES AT APPROX. T AND T+73 S, TOTAL DUR. GREATER
THAN 100 S.  PROBABLY VISIBLE ABOVE 300 KEV.
OCCURRED IN DATA GAP. VERY SPARSE DATA.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6677	980403	10906	83751	2000	280	+46	110

BATSE BURST# 6677

ULYSSES RT 14/ 4/98

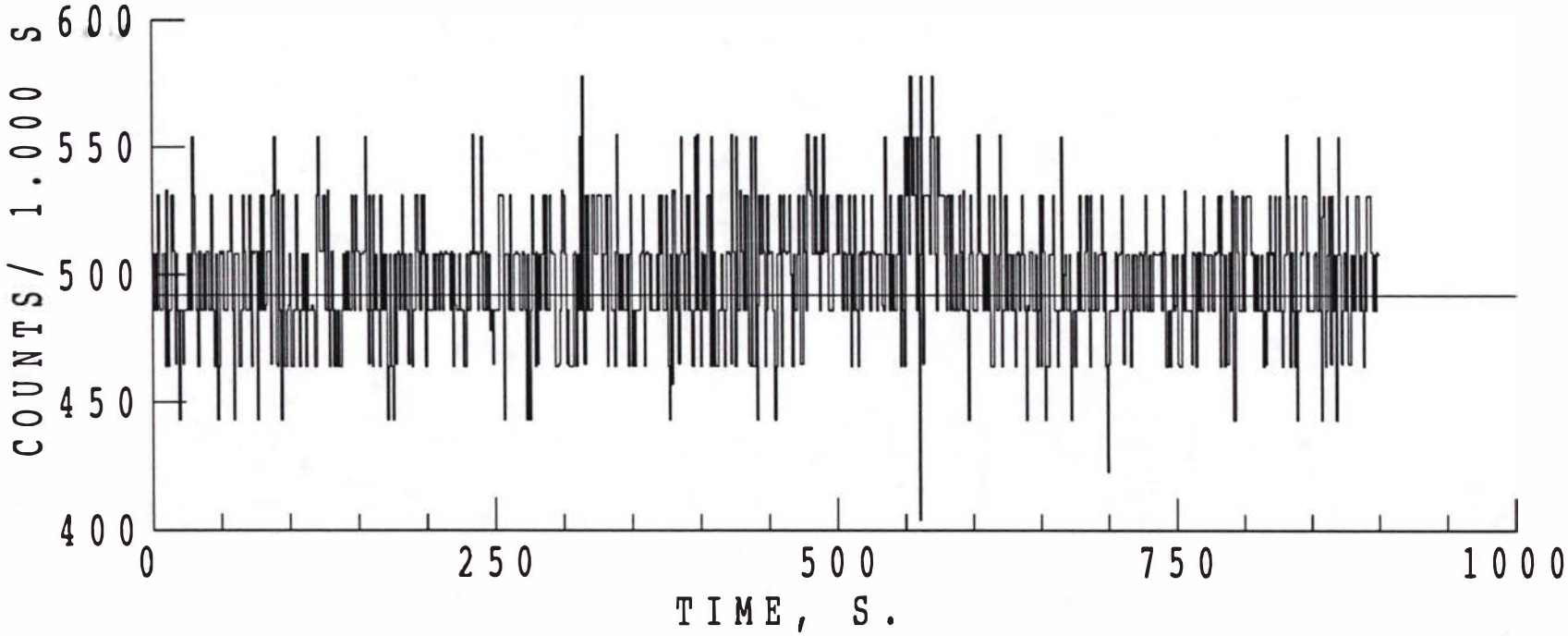
3/ 4/98 83880.086 s

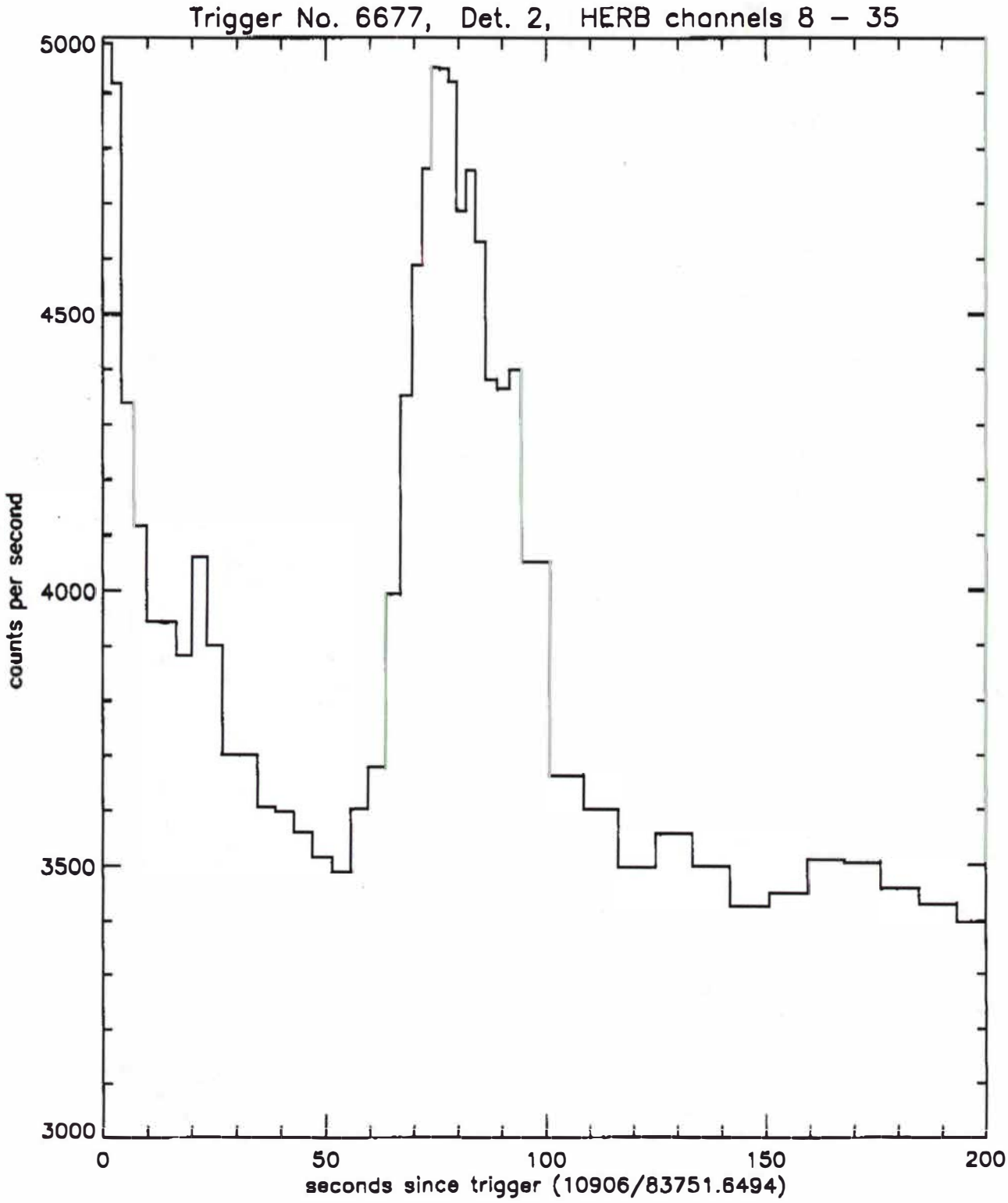
0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

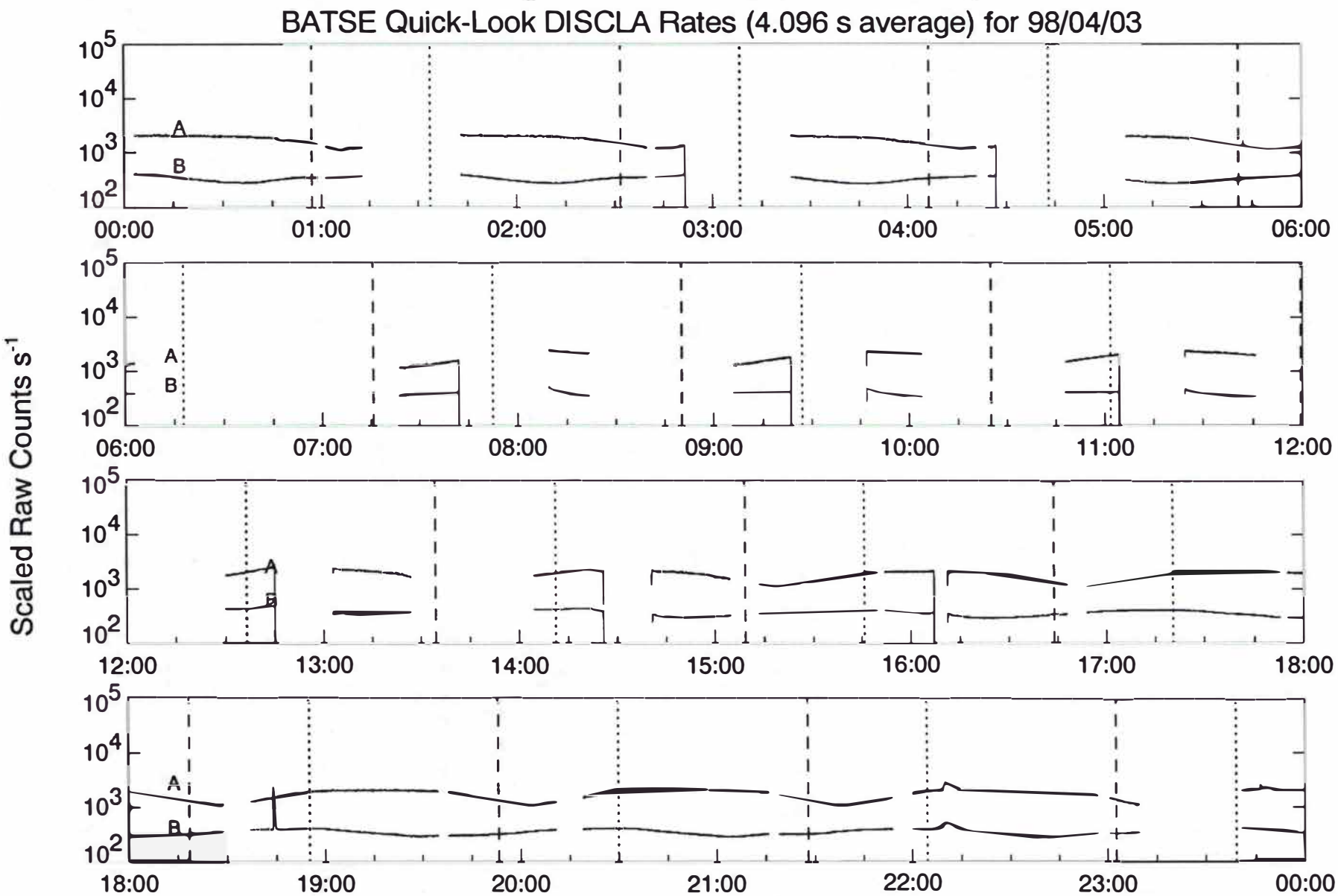
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS





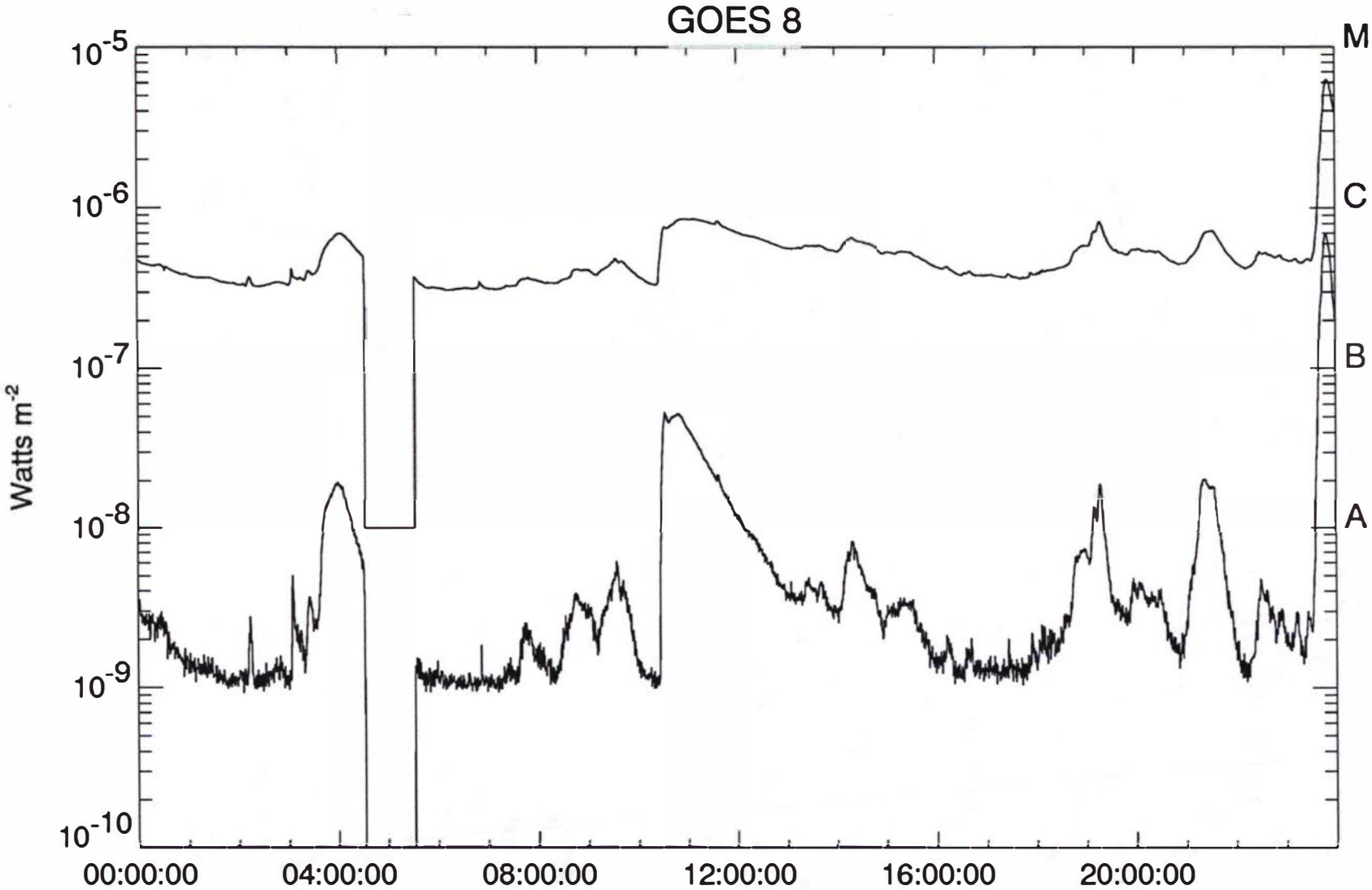
5-May-1998 15:53:57



Current Time: 98/04/07, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

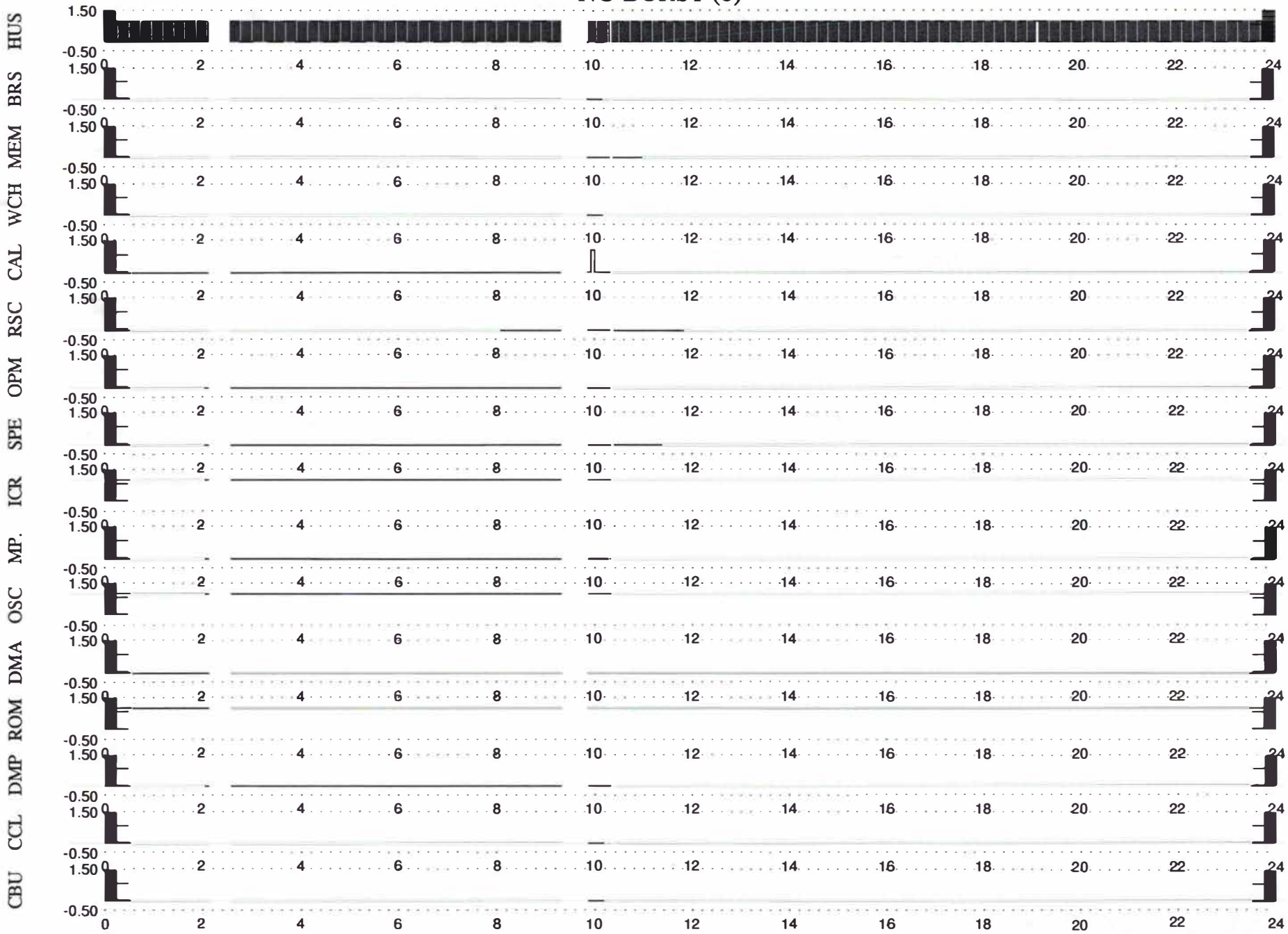
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/03, 0000:00 Plot created: 98/04/07, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

HUS MODES EDR day 93, year 1998 to day 93, year 1998 8/18/98

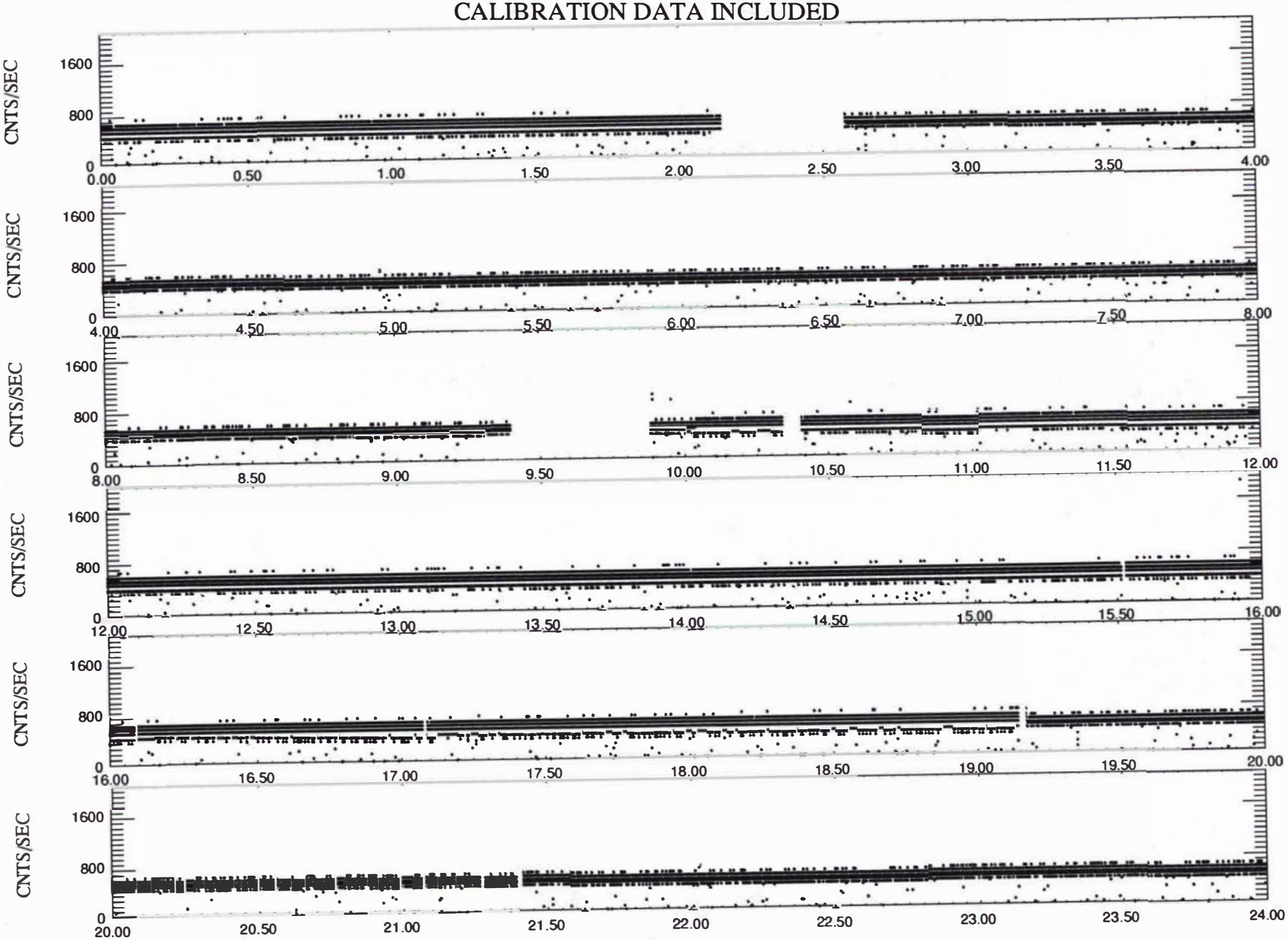
NO BURST (8)



UNIV AL TIME

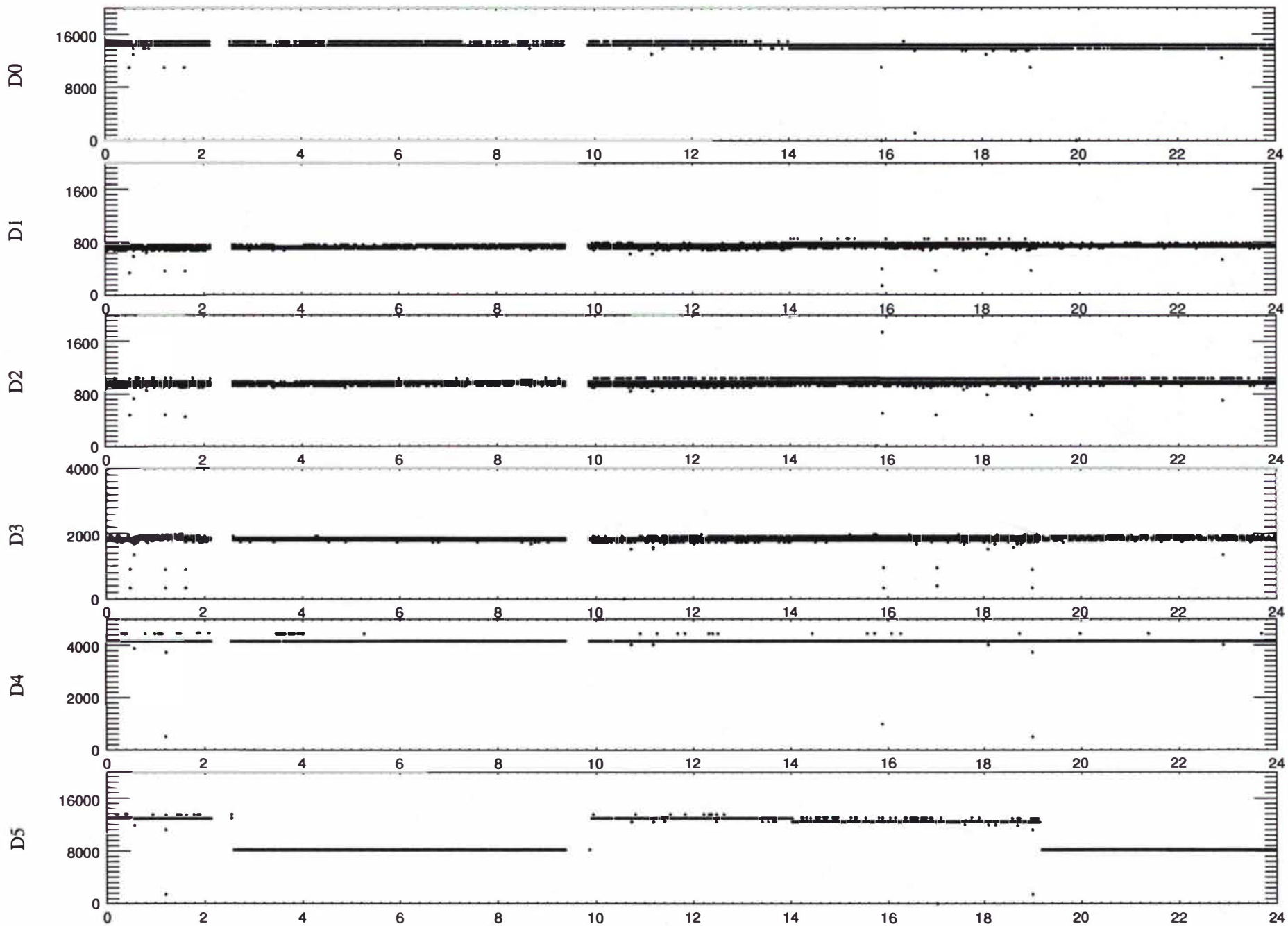
HUS 2A, MODE 1, NOT AVERAGED EDR day 93, year 1998 to day 93, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV' 'AL TIME

HUS 2B COUNTS / SEC EDR day 93, year 1998 to day 93, year 1998 8/18/98



From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

Hi Everyone,

Here is the Konus report for those events recently seen by Ulysses, but not reported by BATSE.

Paul.

Ulysses event - March 14 1998 06:30 Ulysses time; weak burst, 64 ms long

Ulysses event - March 14 1998 23:32 Ulysses time; weak burst, 32 ms long

Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

Ulysses event - April 4 1998 09:06 Ulysses time; weak burst, 64 ms long

Ulysses event - April 5 1998 14:48 Ulysses time; weak burst, 64 ms long

Ulysses event - April 6 1998 07:45 Ulysses time; weak burst, 64 ms long

Ulysses event - April 7 1998 15:44 Ulysses time; weak burst, 64 ms long

Ulysses event - April 8 1998 02:51 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 07:03 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 19:19 Ulysses time; weak burst, 32 ms long

Ulysses event - April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

From kraken@rosserv.gsfc.nasa.gov Wed Apr 8 13:48 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov
Mime-Version: 1.0
Date: Wed, 8 Apr 1998 16:54:29 -0500
khurley@sunspot.ssl.berkeley.edu (Kevin Hurley)
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: Ulysses bursts not seen by TGRS
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

Hi Kevin,

The following Ulysses bursts were not seen by TGRS:

April 4 1998 09:06 Ulysses time; weak burst, 64 ms long
March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

TGRS data from April 5 is not yet available. I'll let you know...

Pete

From SAHI@fender.msfc.nasa.gov Fri Apr 10 12:55:49 1998
Return-Path: <SAHI@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA00076; Fri, 10 Apr 1998 12:55:49 -0700
From: SAHI@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA14350; Fri, 10 Apr 1998 12:55:47 -0700
Date: Fri, 10 Apr 1998 14:54:36 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980410145436.20e1dd45@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6678
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6678
EVENT OF 1998 APR  4 DAY OF YEAR= 94
EVENT CROSSING TIME AT BATSE     : 60700. S. OR 16:51:40.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  69.000  -50.000
BATSE PEAK COUNTING RATE:   2200    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  4/ 4/  98 IS:
RA=  152.358 DEC=   13.387 DIST=    4.659 AU
BATSE-ULYSSES DISTANCE =  696977614. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 83.97 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  244.20 SECS.
CROSSING TIME AT ULYSSES    IS 60944. S. OR   16:55:44 +/-  455.11 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  4/ 4/  98 IS:
RA=   21.621 DEC=    8.673 DIST=    2.409 AU
MARS-BATSE DISTANCE =  360428608. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=108.35 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -378.43 SECS.
CROSSING TIME AT MARS       IS 60322. S. OR   16:45:21 +/-  192.37 SECONDS

                BATSE BURST TRIGGER
NO.: 6678

TIME: TJD=0907 SECONDS=60700

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=122.4  AZIMUTH=92.6   ERROR=9.42  DEGREES

COMMENTS:
BURST. SINGLE PULSE DUR. APPROX. 6 SECS. MARGINALLY VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6678   980404   10907   60700     2200   069   -50      6
```

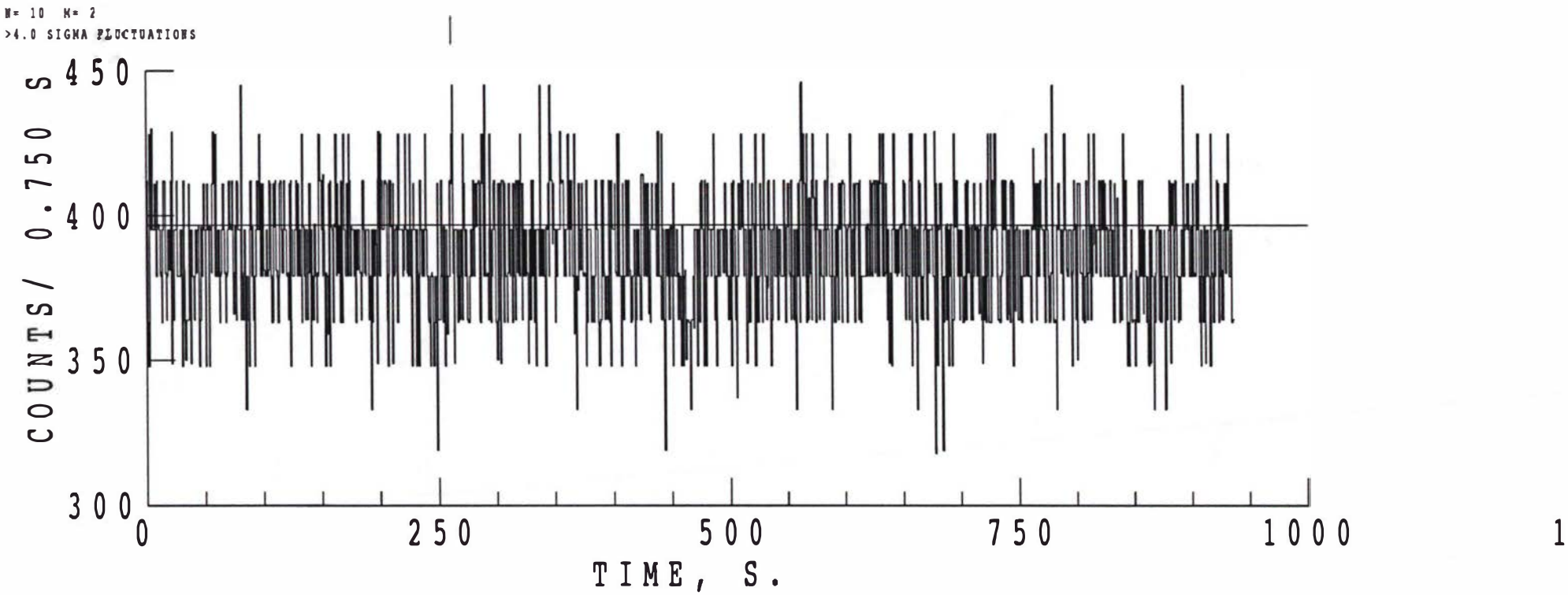
BATSE BURST# 6678

ULYSSES RT 10/ 4/98

4/ 4/98 60480.016 s

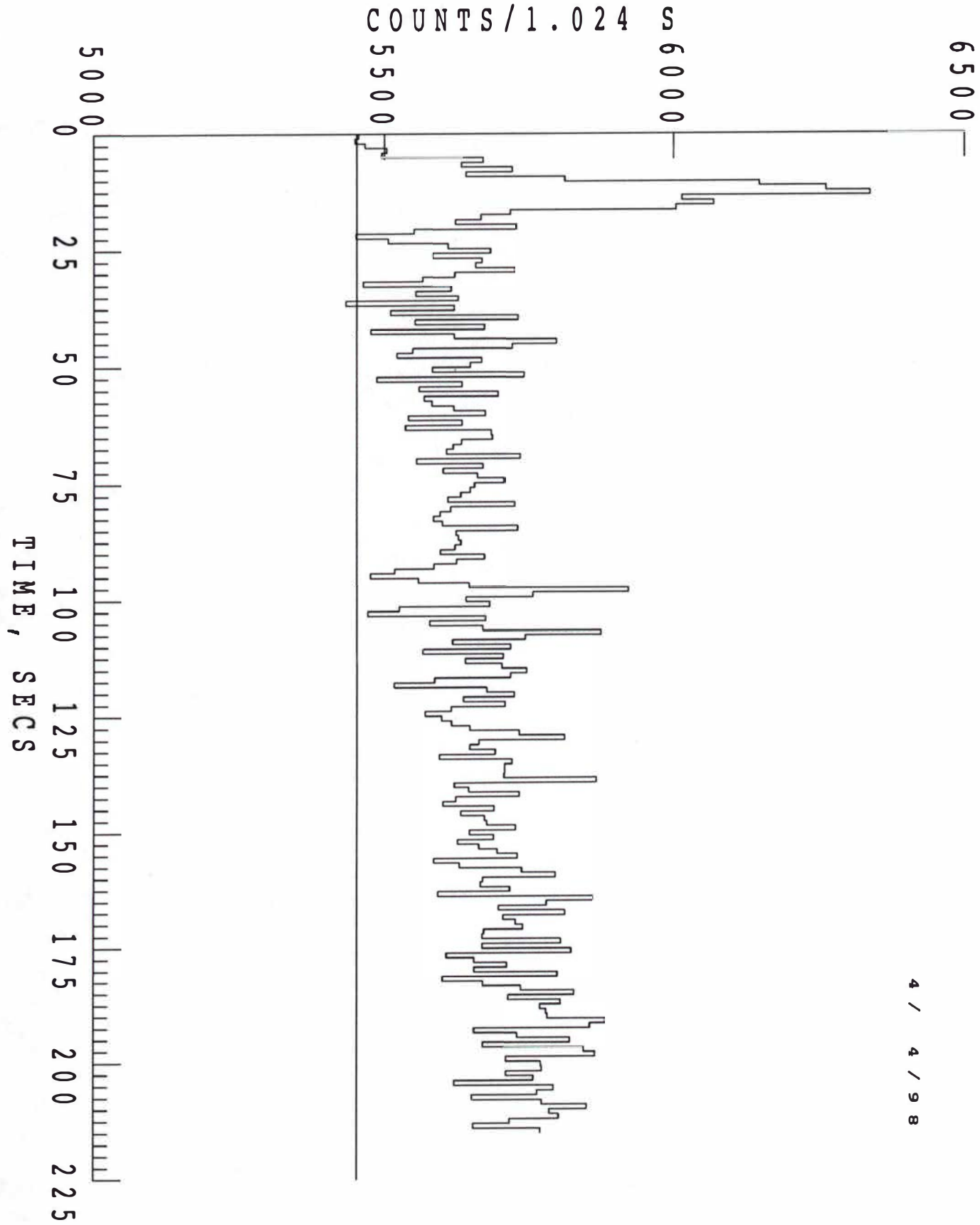
0.250 S INTERVALS REGROUPED BY 3

0- 0 keV



BACODINE 6678 04/04/98 60688.097

25- 100 keV



4/ 4/98

From SAHI@fender.msfc.nasa.gov Fri Apr 10 13:02:15 1998
Return-Path: <SAHI@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id NAA00178; Fri, 10 Apr 1998 13:02:15 -0700
From: SAHI@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id NAA14435; Fri, 10 Apr 1998 13:02:13 -0700
Date: Fri, 10 Apr 1998 15:01:20 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980410150120.20e1dd45@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6679
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6679
EVENT OF 1998 APR  4 DAY OF YEAR= 94
EVENT CROSSING TIME AT BATSE      : 68090. S. OR 18:54:50.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:   0.000   12.000
BATSE PEAK COUNTING RATE:  38000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  4/ 4/  98 IS:
RA=  152.344 DEC=   13.387 DIST=    4.660 AU
BATSE-ULYSSES DISTANCE =  697131840. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 37.37 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1848.03 SECS.
CROSSING TIME AT ULYSSES    IS 69938. S. OR   19:25:38 +/-  323.11 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  4/ 4/  98 IS:
RA=   21.621 DEC=    8.673 DIST=    2.409 AU
MARS-BATSE DISTANCE =  360428608. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=158.48 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1118.44 SECS.
CROSSING TIME AT MARS       IS 66972. S. OR   18:36:11 +/-   59.59 SECONDS

                 BATSE BURST TRIGGER
NO.: 6679

TIME: TJD=0907 SECONDS=68090

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

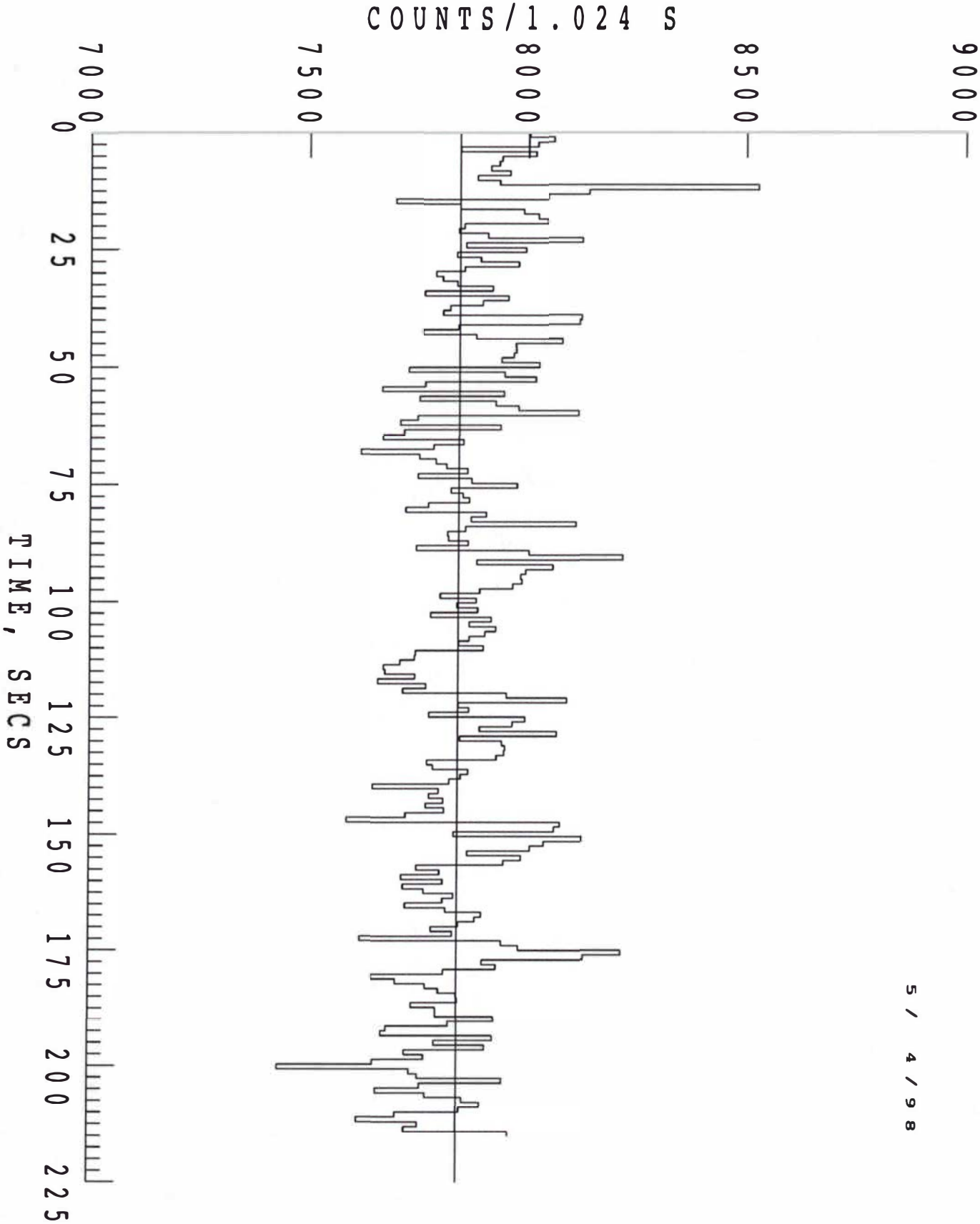
LOCATION: ZENITH=126.7  AZIMUTH=341.2  ERROR=2.64  DEGREES

COMMENTS:
BURST. TRIPLE SPIKE, DUR.~1.8 SECS. VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6679   980404   10907   68090    38000   000   +12   1.8
```

BACODINE 6680 05/04/98 39504.609

25- 100 keV



5/ 4/98

BATSE BURST# 6679

ULYSSES RT 10/ 4/98

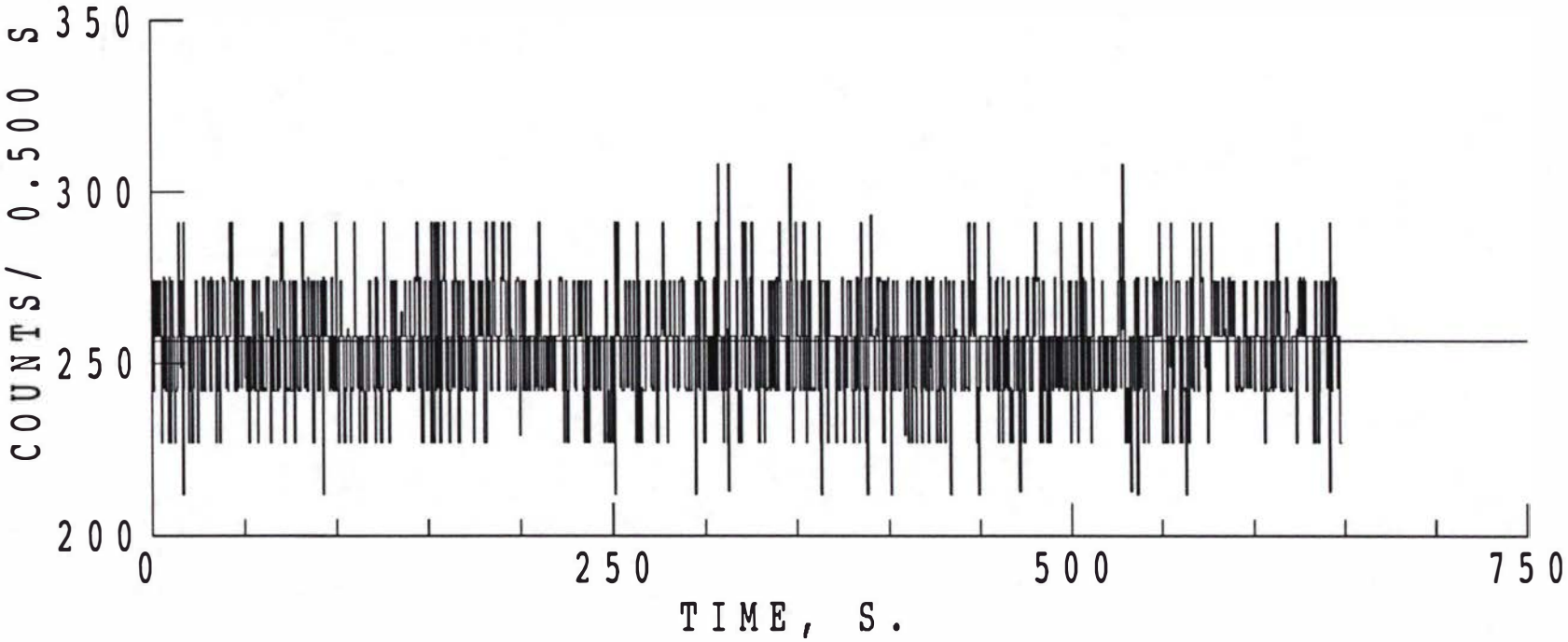
4/ 4/98 69624.109 s

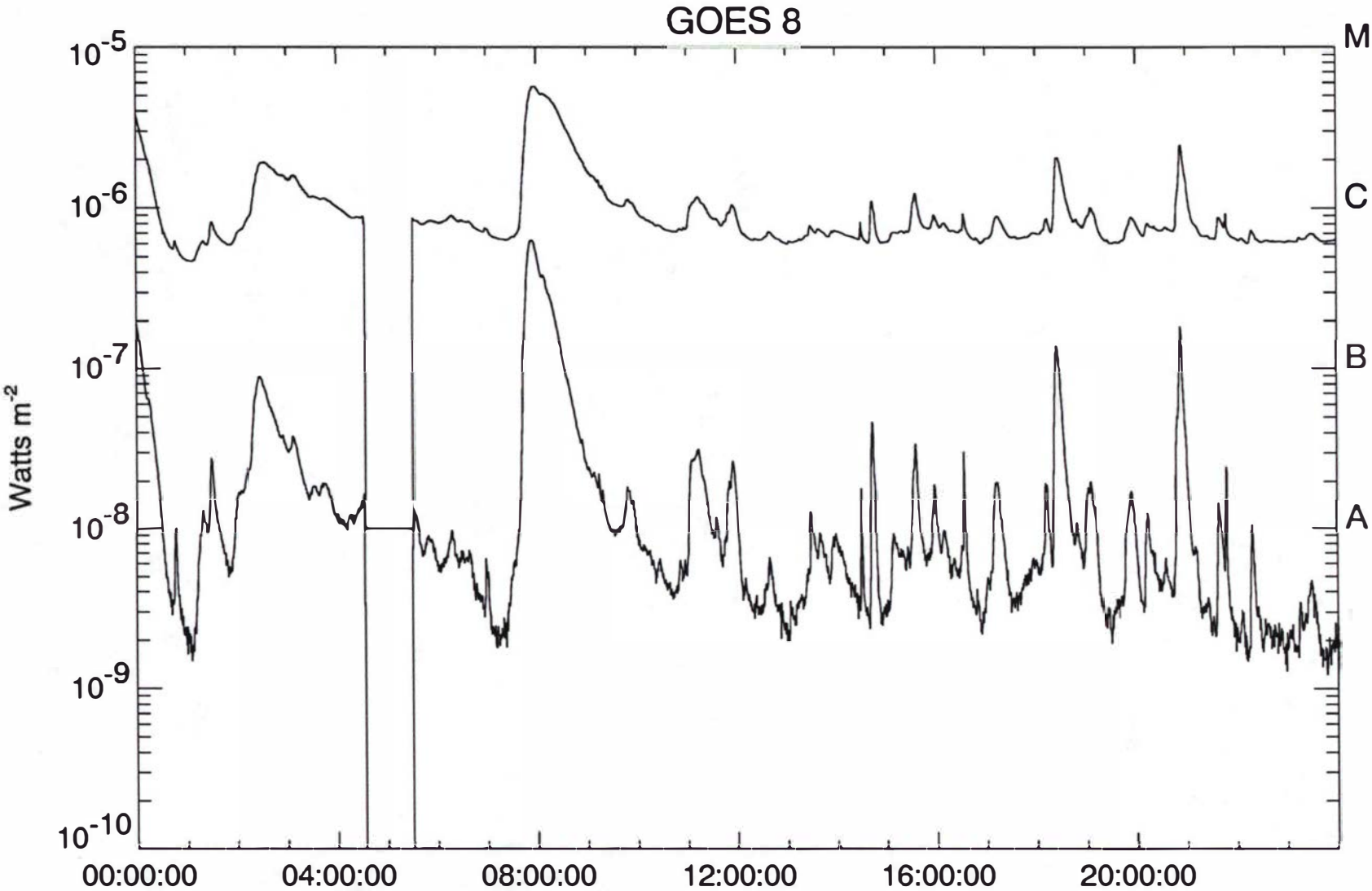
0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

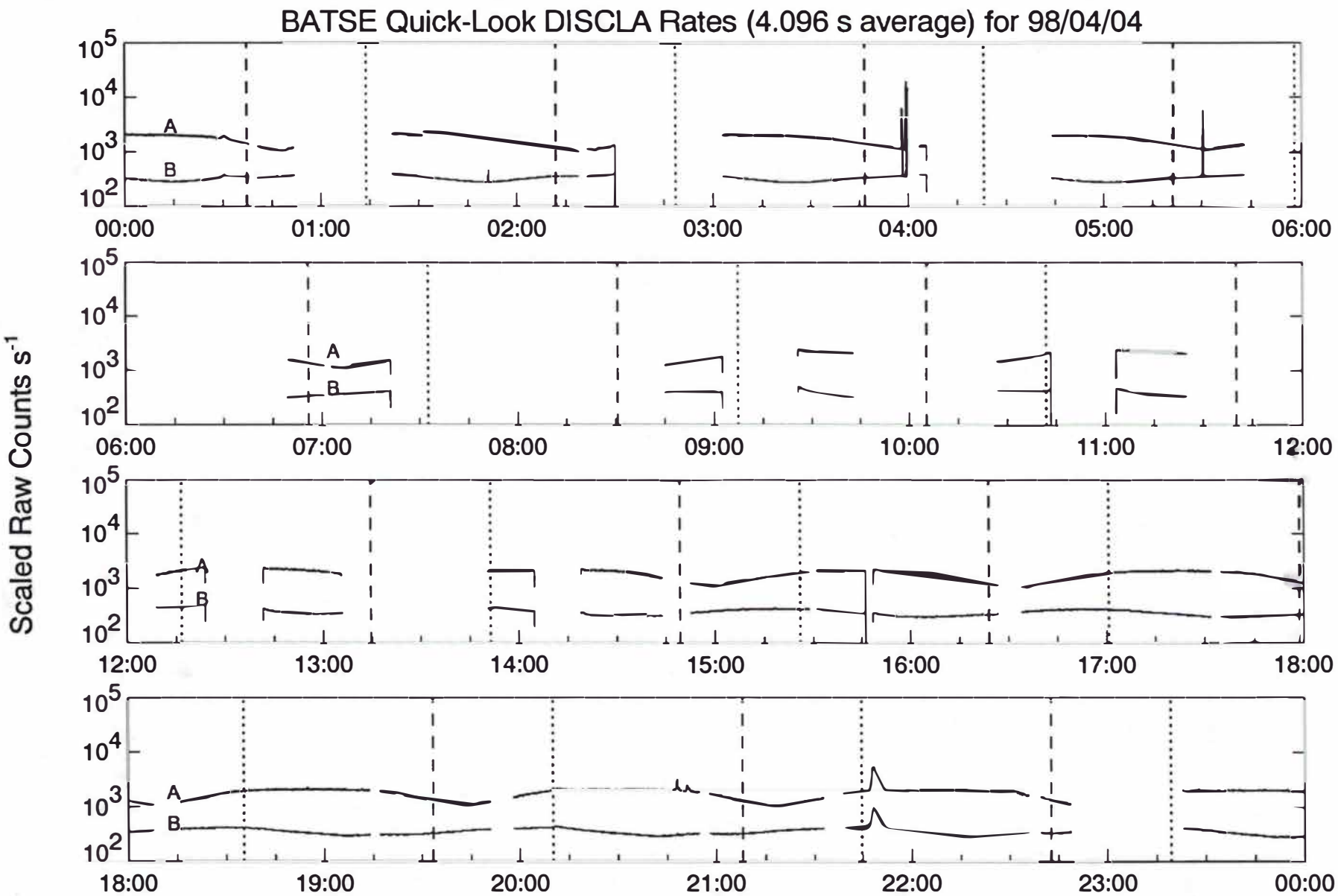
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS





Data Start: 98/04/04, 0000:00 Plot created: 98/04/08, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



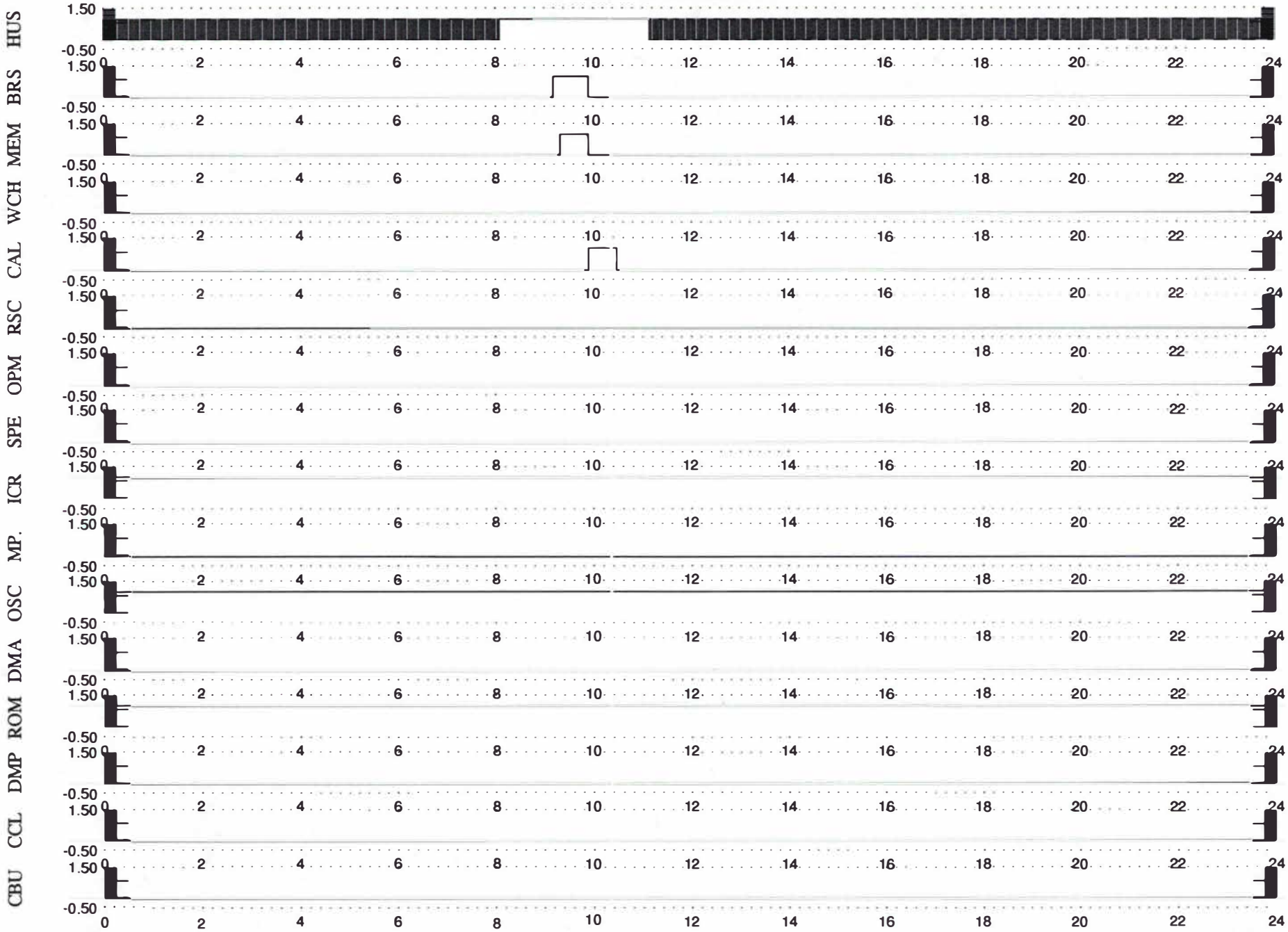
Current Time: 98/04/08, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MODES EDR day 94, year 1998 to day 94, year 1998 8/18/98

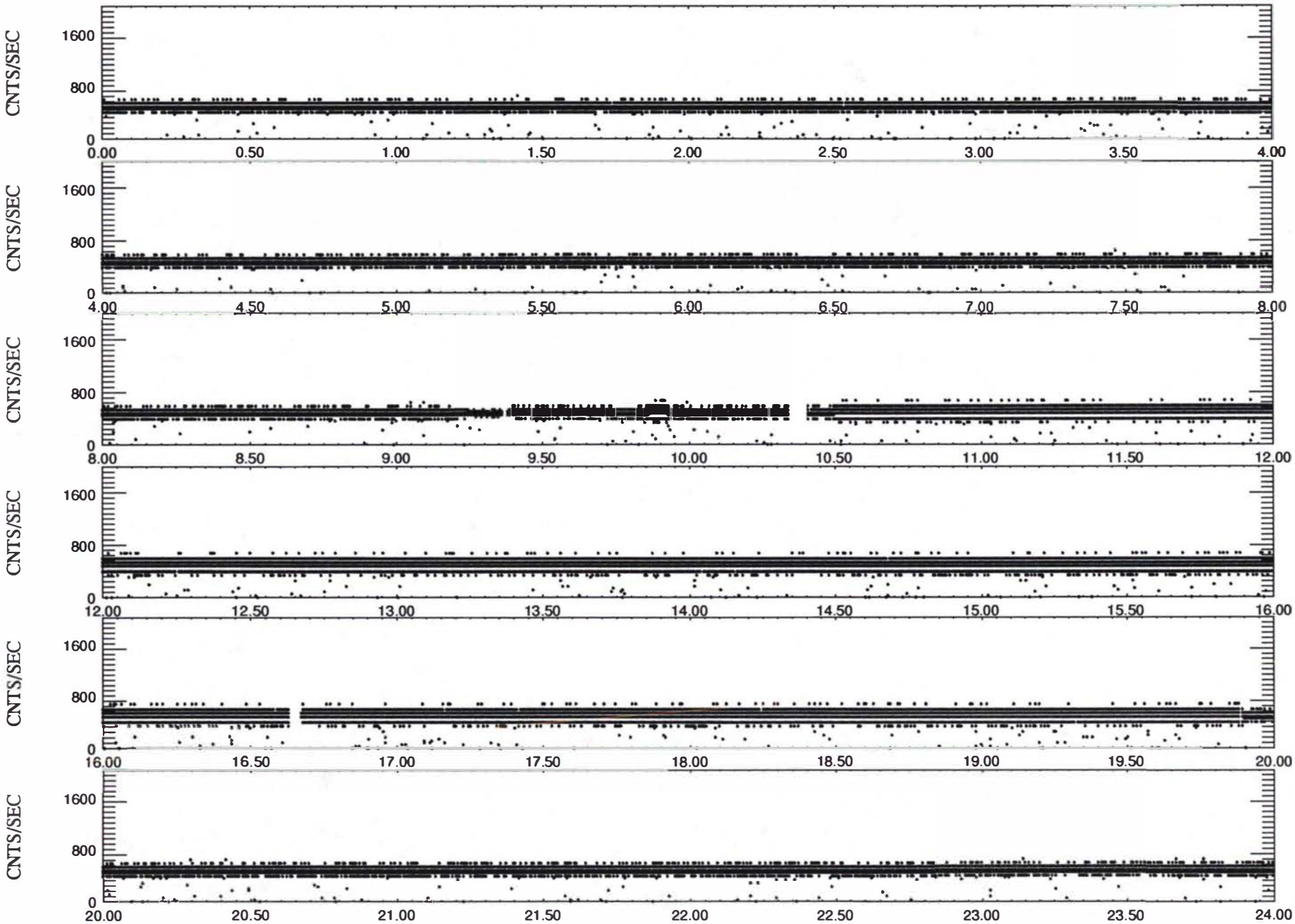
BURST NUMBER 9



UNIV AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 94, year 1998 to day 94, year 1998 8/18/98

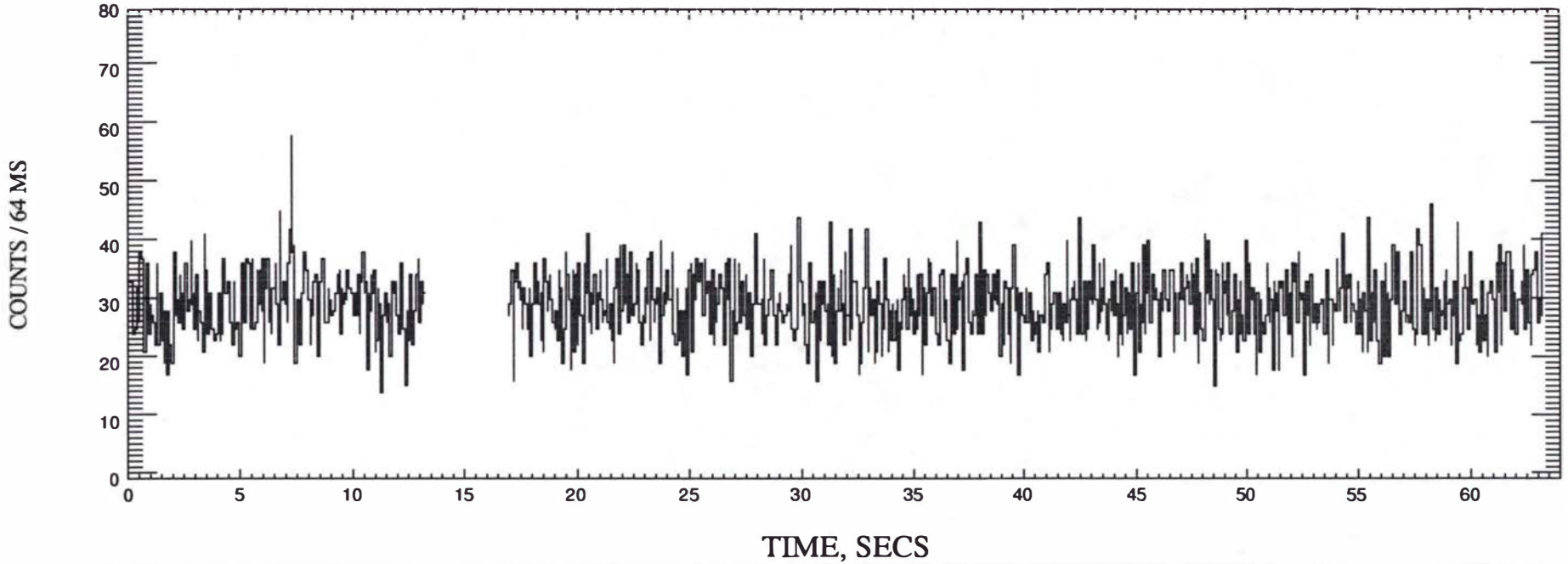
CALIBRATION DATA INCLUDED

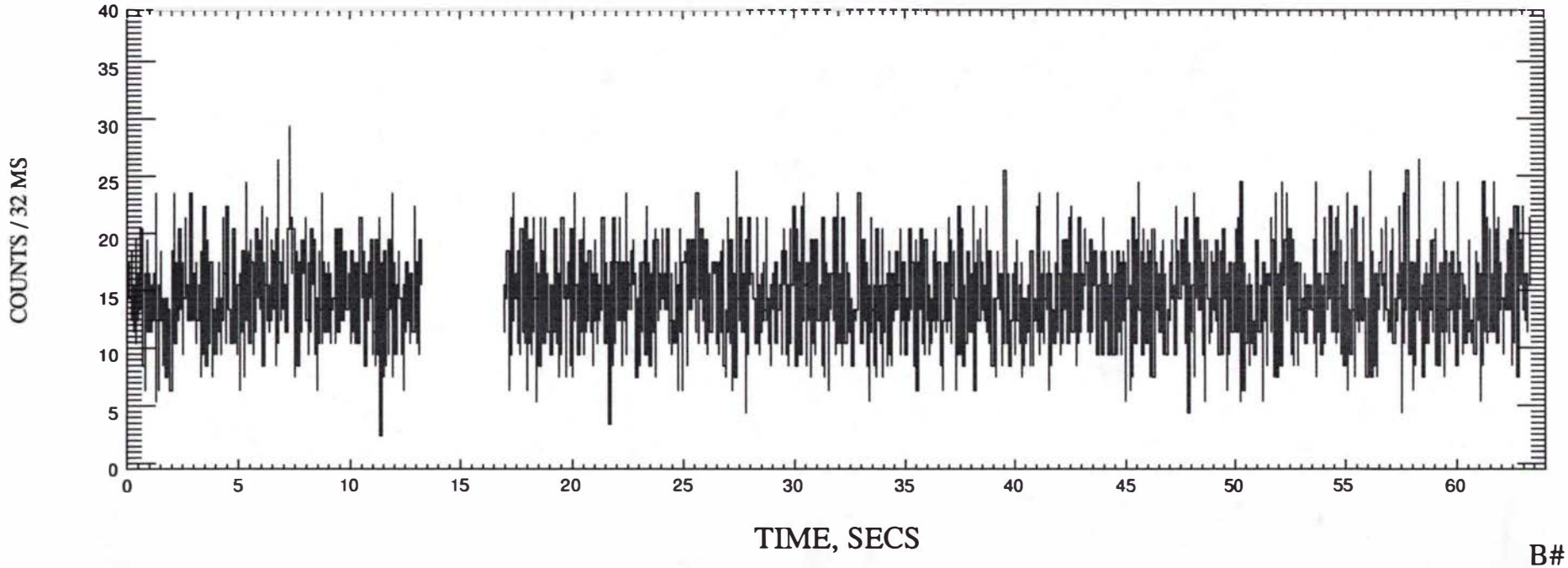


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 94, year 1998 8/19/98

Burst Counter 9 at UT= 9.092592048645 h=32733.331 s 09:05:33.331

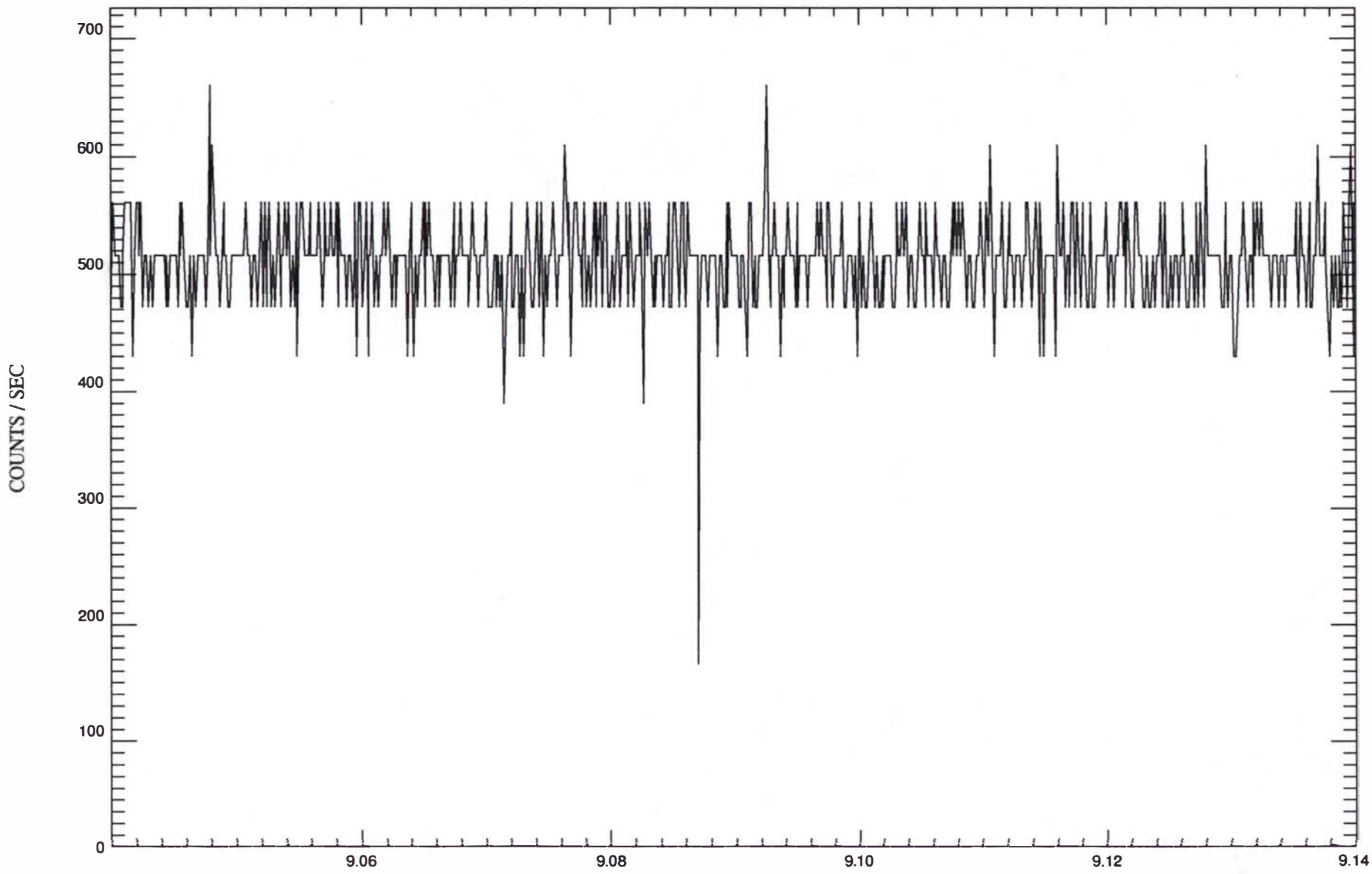




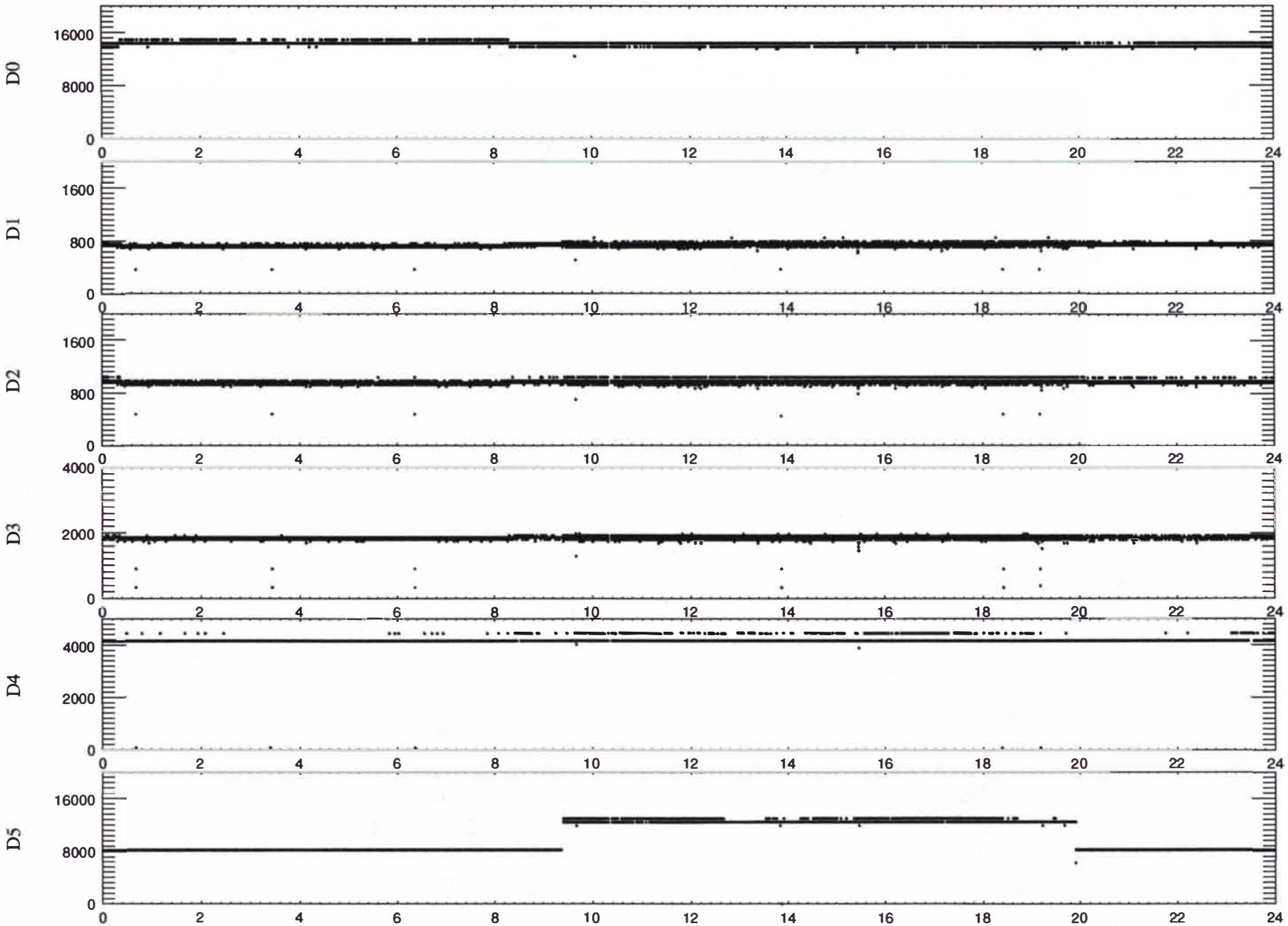
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 94, year 1998 to day 94, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 94, year 1998 to day 94, year 1998 8/18/98



From HENZE@fender.msfc.nasa.gov Sat Apr 11 11:14:02 1998
Return-Path: <HENZE@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA07671; Sat, 11 Apr 1998 11:14:01 -0700
From: HENZE@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA18816; Sat, 11 Apr 1998 11:14:00 -0700
Date: Sat, 11 Apr 1998 13:12:50 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980411131250.20e21477@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6680
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6680
EVENT OF 1998 APR  5 DAY OF YEAR= 95
EVENT CROSSING TIME AT BATSE      : 39516. S. OR 10:58:36.0
COORDINATES ARE   0.000   0.000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 339.000   20.000
BATSE PEAK COUNTING RATE:   2000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  5/ 4/  98 IS:
RA=  152.241 DEC=   13.381 DIST=    4.668 AU
BATSE-ULYSSES DISTANCE =  698341037. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 34.04 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1930.33 SECS.
CROSSING TIME AT ULYSSES    IS 41446. S. OR   11:30:46 +/-  305.68 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  5/ 4/  98 IS:
RA=   22.326 DEC=    8.961 DIST=    2.412 AU
MARS-BATSE DISTANCE =  360789920. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=136.76 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -876.74 SECS.
CROSSING TIME AT MARS       IS 38639. S. OR   10:43:59 +/-  129.82 SECONDS

                BATSE BURST TRIGGER
NO.:  6680

TIME: TJD=0908 SECONDS=39516

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=120.3  AZIMUTH=315.7  ERROR=  7.0 DEGREES

COMMENTS:
SPARSE DATA. PROBABLY SINGLE PULSE; DUR. UNKNOWN, PROBABLY LESS THAN 0.7 S.
NOT VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6680	980405	10908	39516	2000	339	+20	.7

BATSE BURST# 6680

ULYSSES RT 11/ 4/98

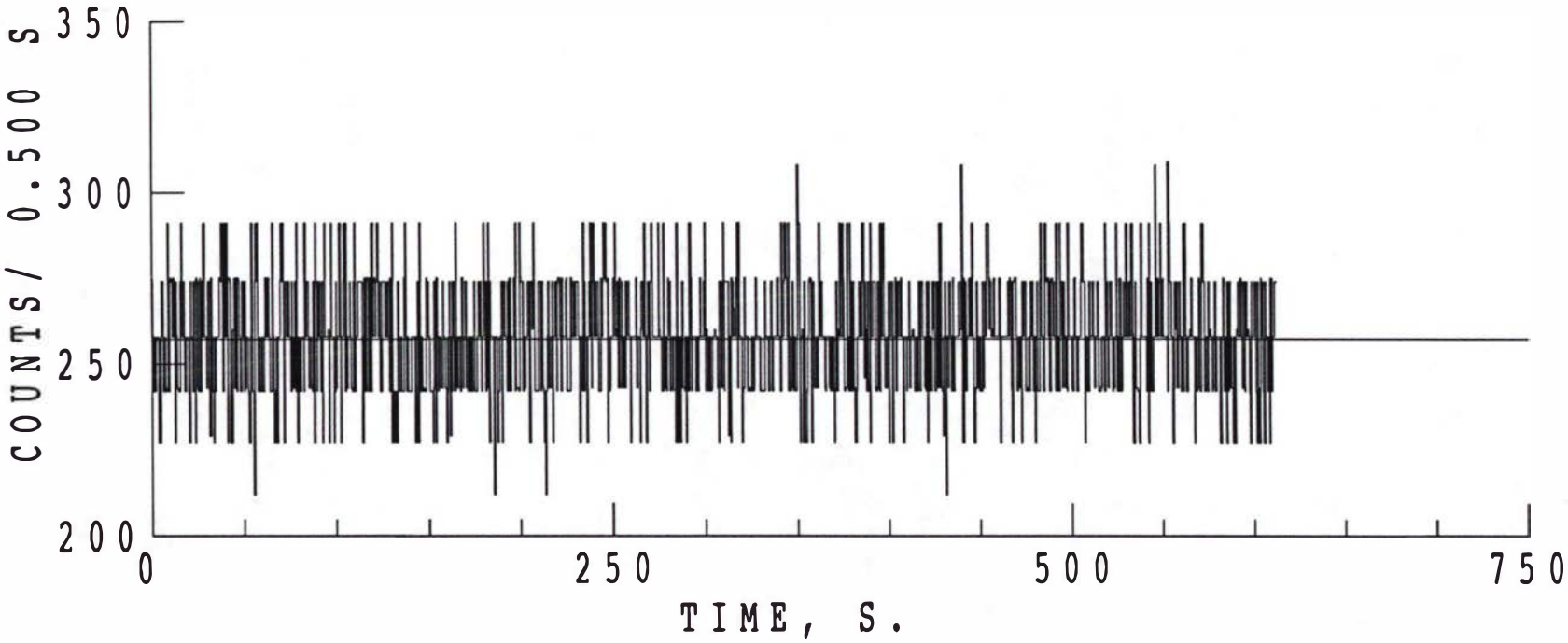
5/ 4/98 41148.234 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

Hi Everyone,

Here is the Konus report for those events recently seen by Ulysses, but not reported by BATSE.

Paul.

Ulysses event - March 14 1998 06:30 Ulysses time; weak burst, 64 ms long

Ulysses event - March 14 1998 23:32 Ulysses time; weak burst, 32 ms long

Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

Ulysses event - April 4 1998 09:06 Ulysses time; weak burst, 64 ms long

Ulysses event - April 5 1998 14:48 Ulysses time; weak burst, 64 ms long

Ulysses event - April 6 1998 07:45 Ulysses time; weak burst, 64 ms long

Ulysses event - April 7 1998 15:44 Ulysses time; weak burst, 64 ms long

Ulysses event - April 8 1998 02:51 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 07:03 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 19:19 Ulysses time; weak burst, 32 ms long

Ulysses event - April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
To: khurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

Hi Kevin,

Here's the results of a search through TGRS data for recent Ulysses bursts not seen by BATSE.

December 23 1997 10:59 Ulysses time; moderate burst, 15 s long

corresponds to TGRS 661
occurred at 38209s on December 23, 1997
100-300 keV range:
Peak Flux 131 cts/s
T90: 62 s
T50: 12 s

THESE BURSTS WERE NOT SEEN BY TGRS

December 24 1997 19:29 Ulysses time; weak burst, 64 ms long
April 5 1998 14:48 Ulysses time; weak burst, 64 ms long
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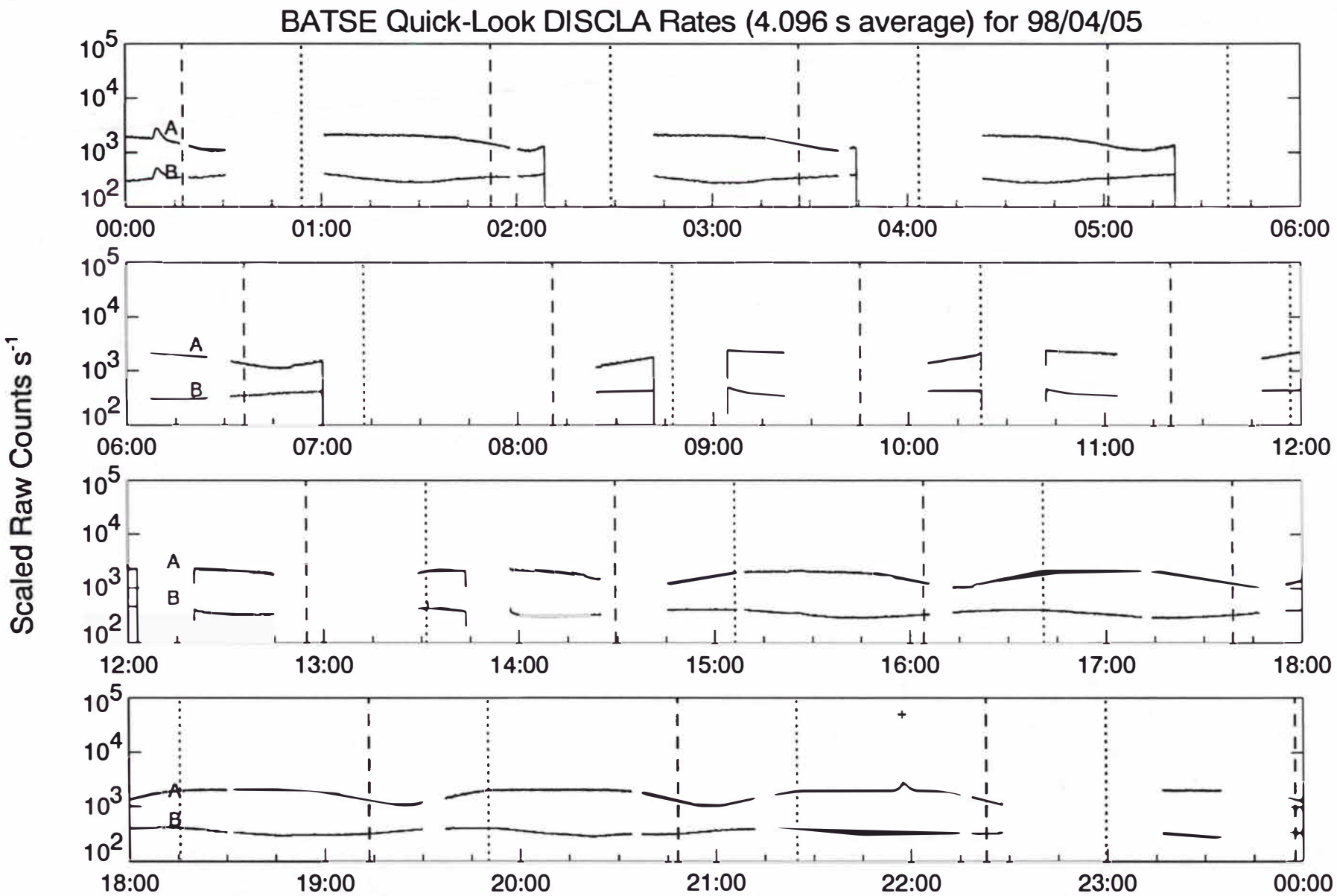
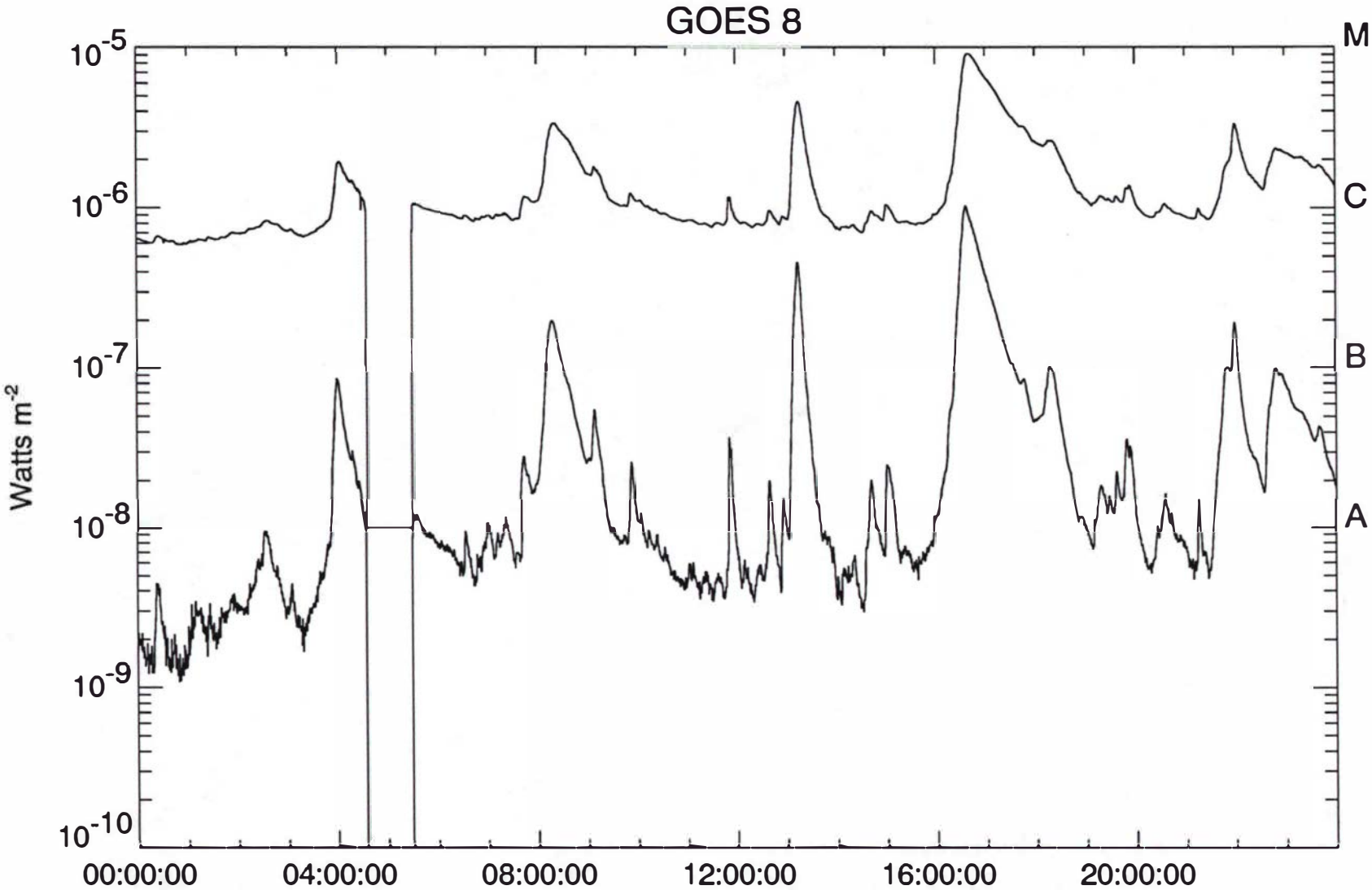
April 7 1998 15:44 Ulysses time; weak burst, 64 ms long
April 8 1998 02:51 Ulysses time; weak burst, 64 ms long
April 09 1998 07:03 Ulysses time; weak burst, 64 ms long
April 09 1998 19:19 Ulysses time; weak burst, 32 ms long
April 15 1998 12:23 Ulysses time; weak burst, 32 ms long



Current Time: 98/04/09, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

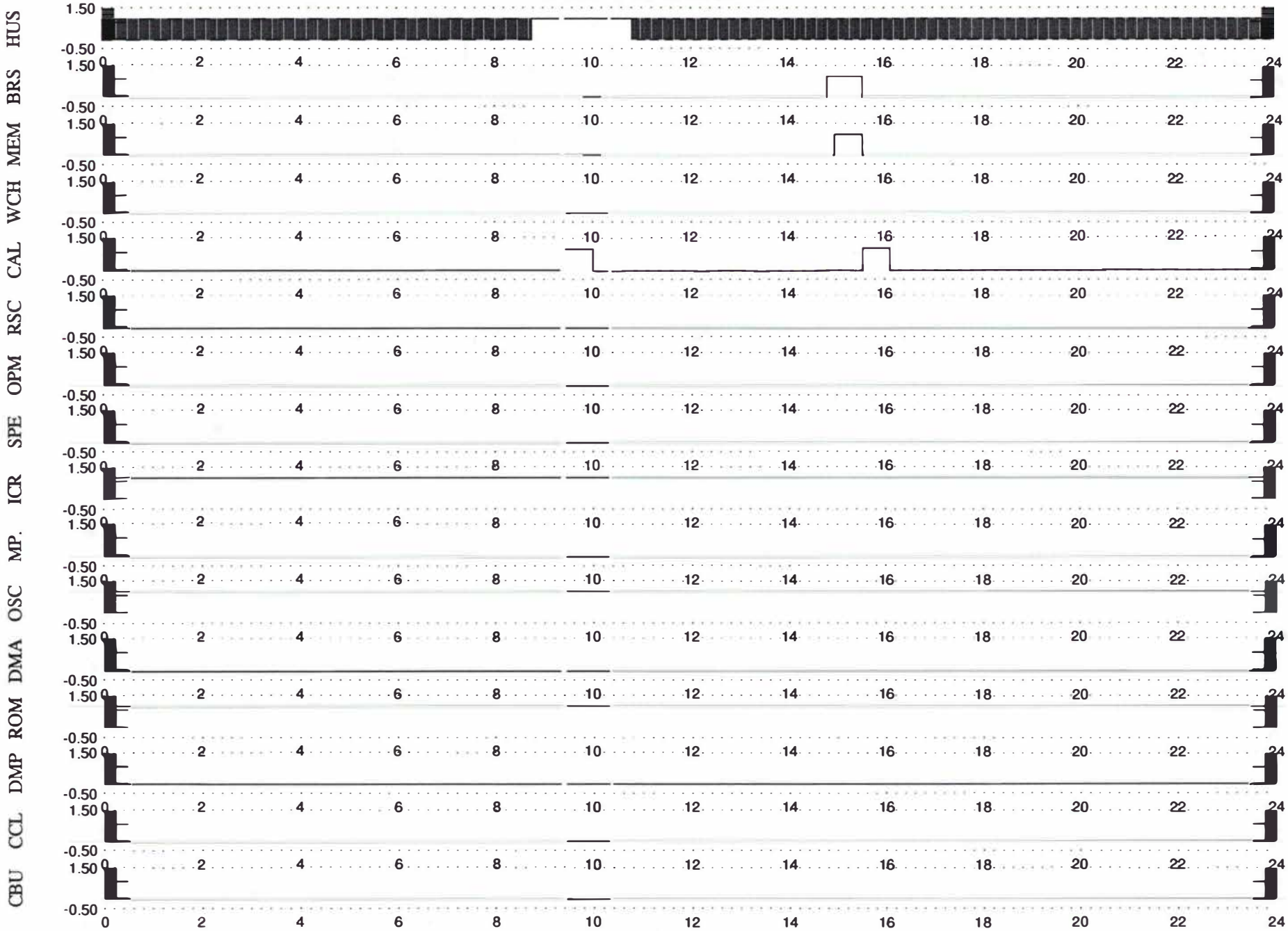
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/05, 0000:00 Plot created: 98/04/09, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

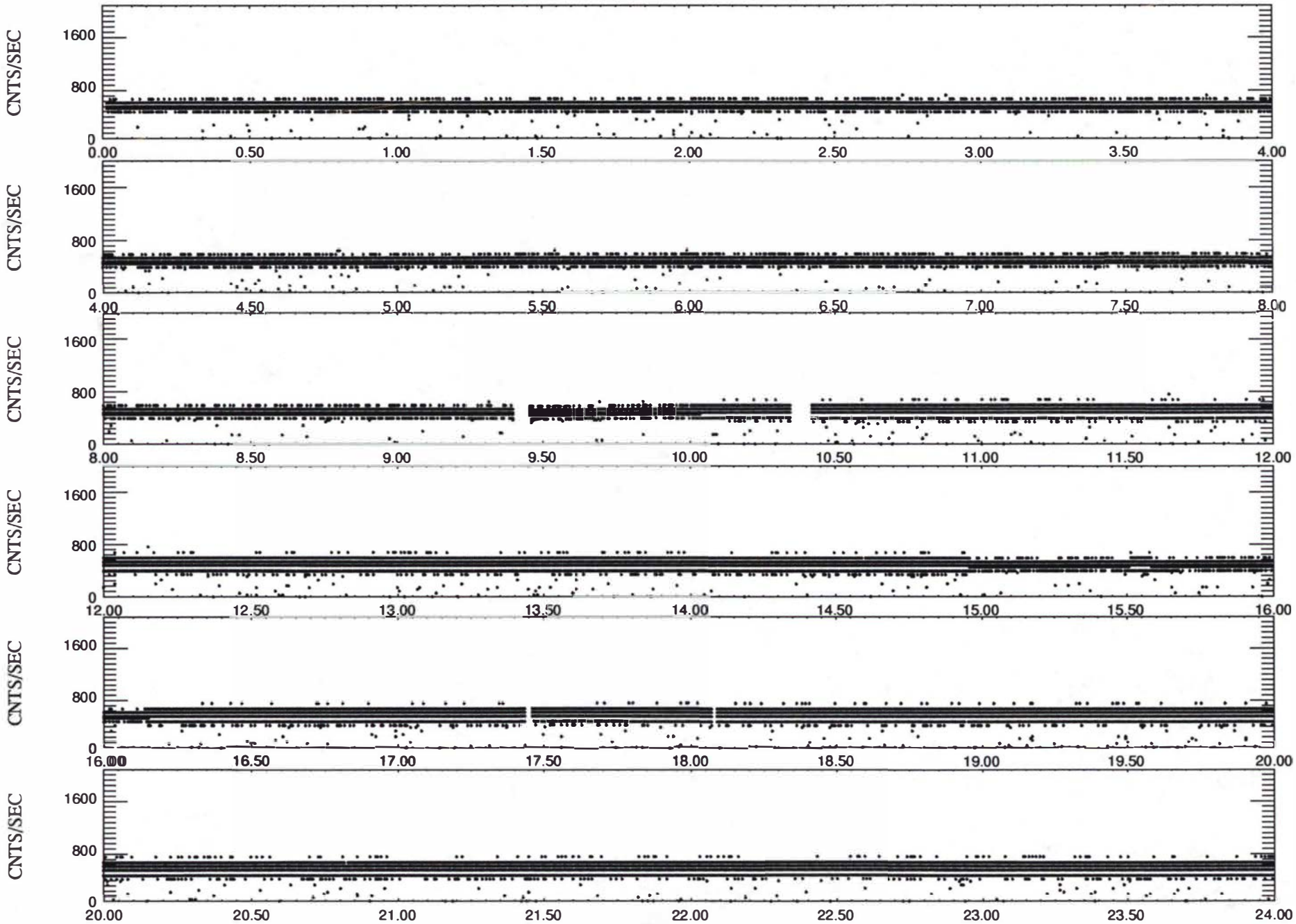
HUS MODES EDR day 95, year 1998 to day 95, year 1998 8/18/98

BURST NUMBER 10



HUS 2A, MODE 1, NOT AVERAGED EDR day 95, year 1998 to day 95, year 1998 8/18/98

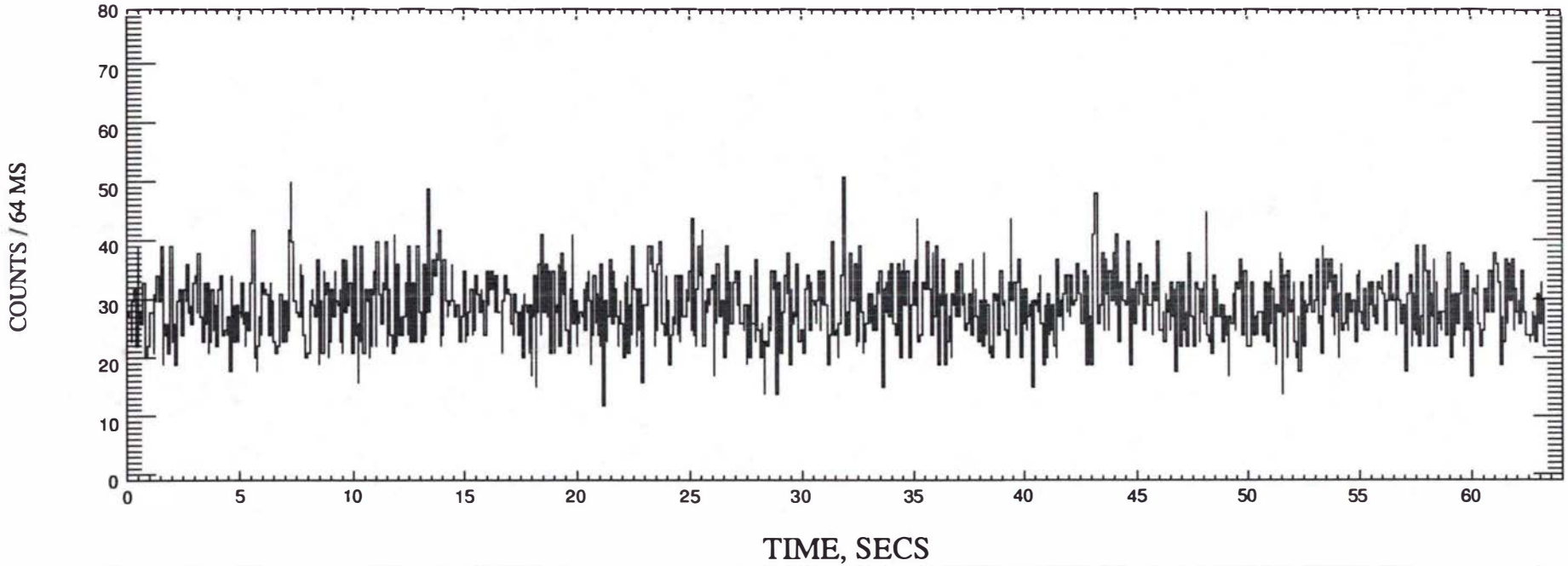
CALIBRATION DATA INCLUDED

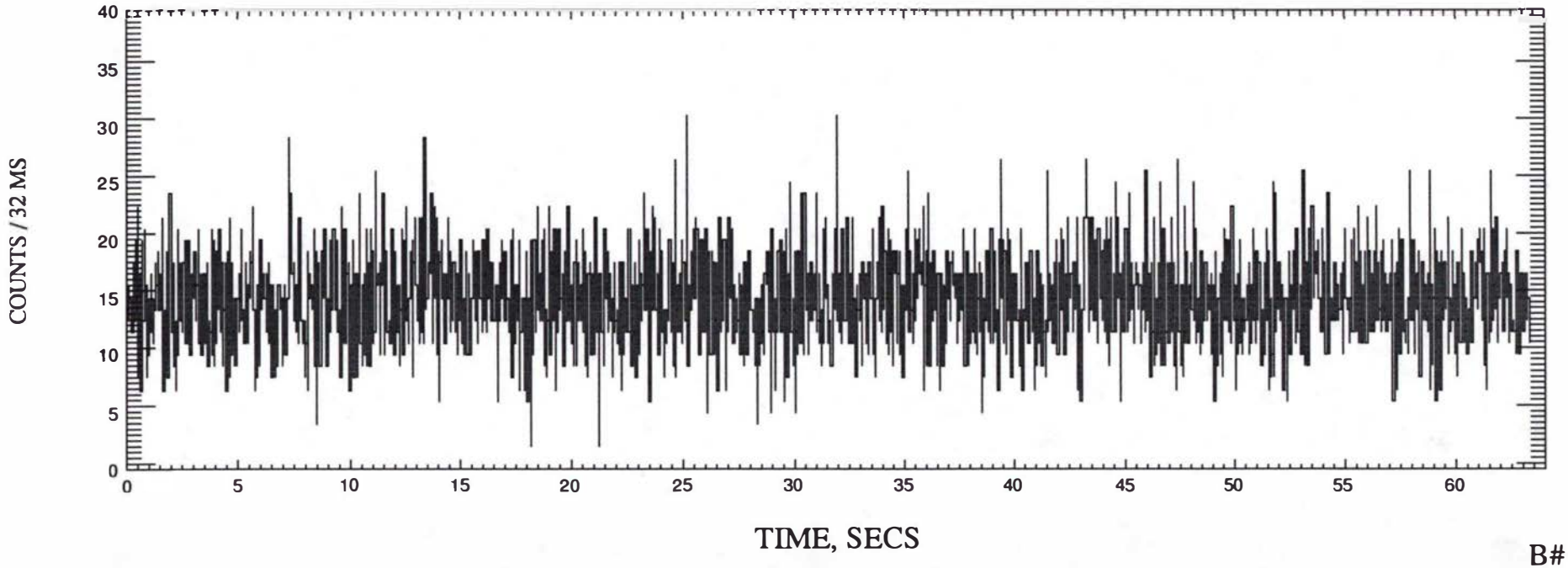


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 95, year 1998 8/19/98

Burst Counter 10 at UT=14.803708775838 h=53293.352 s 14:48:13.352

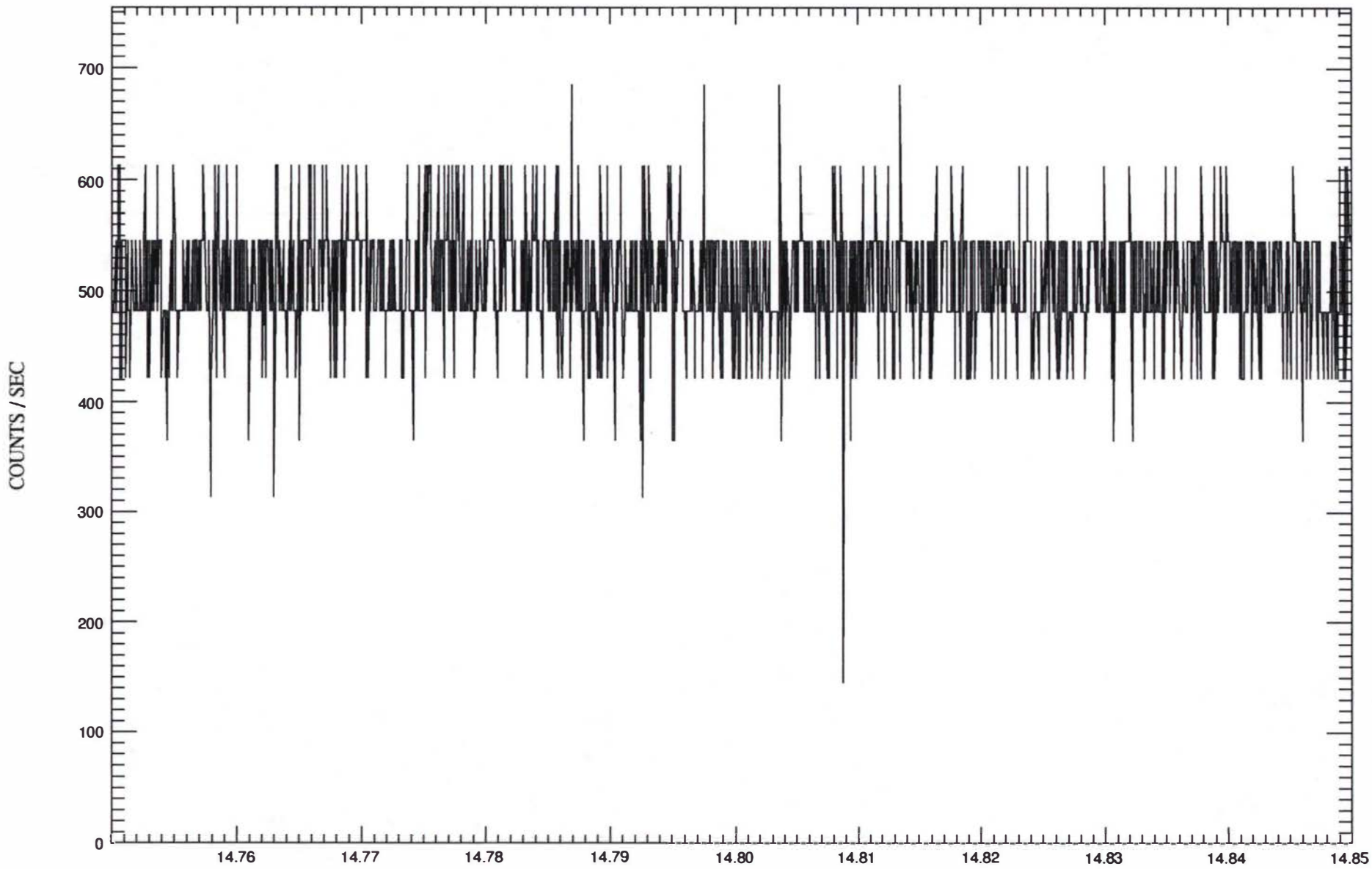




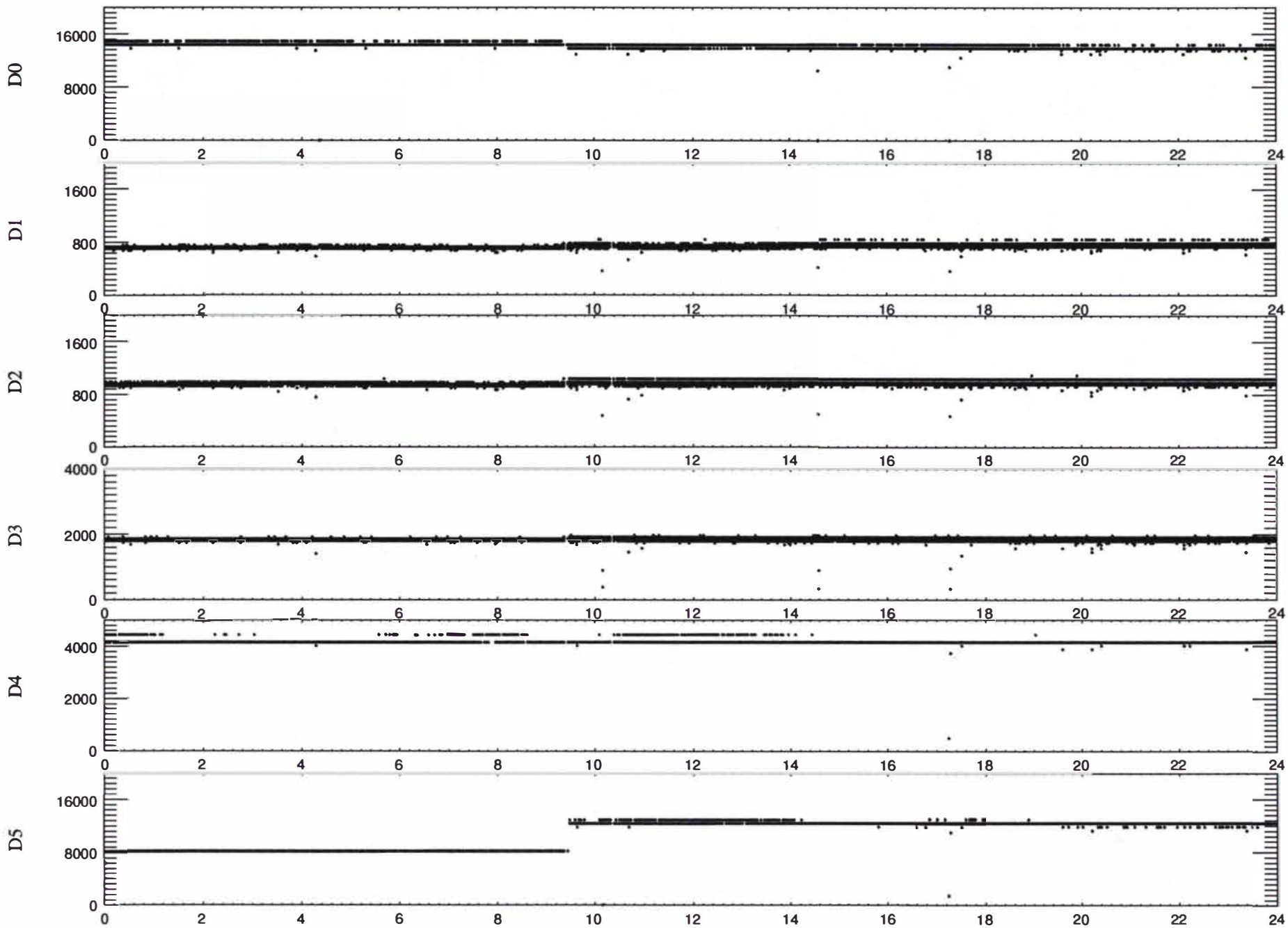
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 95, year 1998 to day 95, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 95, year 1998 to day 95, year 1998 8/18/98



From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
To: khurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

Hi Kevin,

Here's the results of a search through TGRS data for recent Ulysses bursts not seen by BATSE.

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corresponds to TGRS 661
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April 09 1998 07:03 Ulysses time; weak burst, 64 ms long
April 09 1998 19:19 Ulysses time; weak burst, 32 ms long
April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

Hi Everyone,

Here is the Konus report for those events recently seen by Ulysses, but not reported by BATSE.

Paul.

Ulysses event - March 14 1998 06:30 Ulysses time; weak burst, 64 ms long

Ulysses event - March 14 1998 23:32 Ulysses time; weak burst, 32 ms long

Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

Ulysses event - April 4 1998 09:06 Ulysses time; weak burst, 64 ms long

Ulysses event - April 5 1998 14:48 Ulysses time; weak burst, 64 ms long

Ulysses event - April 6 1998 07:45 Ulysses time; weak burst, 64 ms long

Ulysses event - April 7 1998 15:44 Ulysses time; weak burst, 64 ms long

Ulysses event - April 8 1998 02:51 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 07:03 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 19:19 Ulysses time; weak burst, 32 ms long

Ulysses event - April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

From HENZE@fender.msfc.nasa.gov Sat Apr 11 11:17:11 1998
Return-Path: <HENZE@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA07728; Sat, 11 Apr 1998 11:17:10 -0700
From: HENZE@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA18841; Sat, 11 Apr 1998 11:17:08 -0700
Date: Sat, 11 Apr 1998 13:16:03 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980411131603.20e21477@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6681
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6681
EVENT OF 1998 APR  6 DAY OF YEAR= 96
EVENT CROSSING TIME AT BATSE      : 39464. S. OR 10:57:44.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 176.000   63.000
BATSE PEAK COUNTING RATE:   1000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  6/ 4/  98 IS:
RA=  152.088 DEC=   13.372 DIST=    4.680 AU
BATSE-ULYSSES DISTANCE =  700175911. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=127.58 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1424.31 SECS.
CROSSING TIME AT ULYSSES    IS 38040. S. OR   10:33:59 +/-  349.73 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  6/ 4/  98 IS:
RA=   23.032 DEC=    9.248 DIST=    2.414 AU
MARS-BATSE DISTANCE =  361148512. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.17 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  308.34 SECS.
CROSSING TIME AT MARS       IS 39772. S. OR   11:02:52 +/-  206.86 SECONDS

                BATSE BURST TRIGGER
NO.:  6681

TIME: TJD=0909 SECONDS=39464

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH= 24.9  AZIMUTH=309.5  ERROR=  7.7 DEGREES

COMMENTS:
SPARSE DATA. PROBABLY GRB. PROBABLY SINGLE PULSE; DUR. UNKNOWN, PROBABLY
LESS THAN 3 S. PROBABLY WEAKLY VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6681   980406   10909   39464     1000   176   +63      2
```

BATSE BURST# 6681

ULYSSES RT

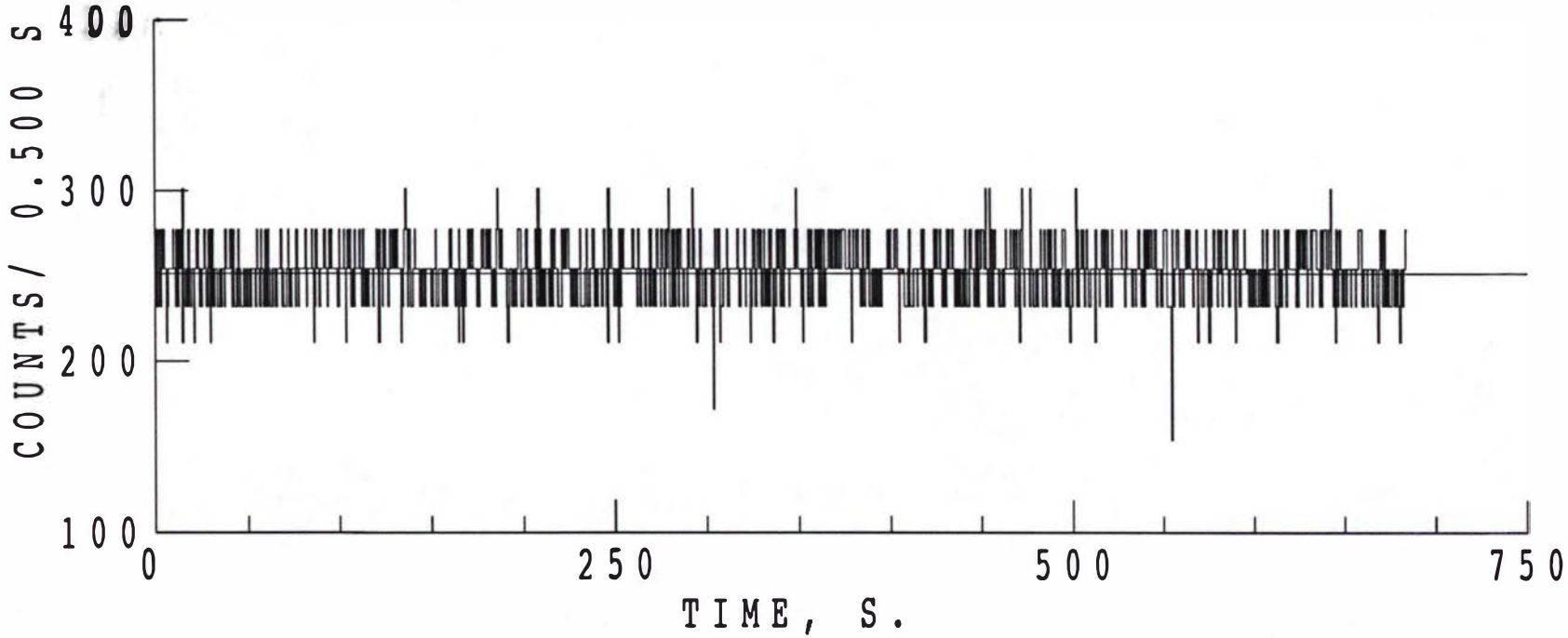
11/ 4/98

6/ 4/98 37692.375 s

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



KONUS

ULYSSES RT

15/02/00

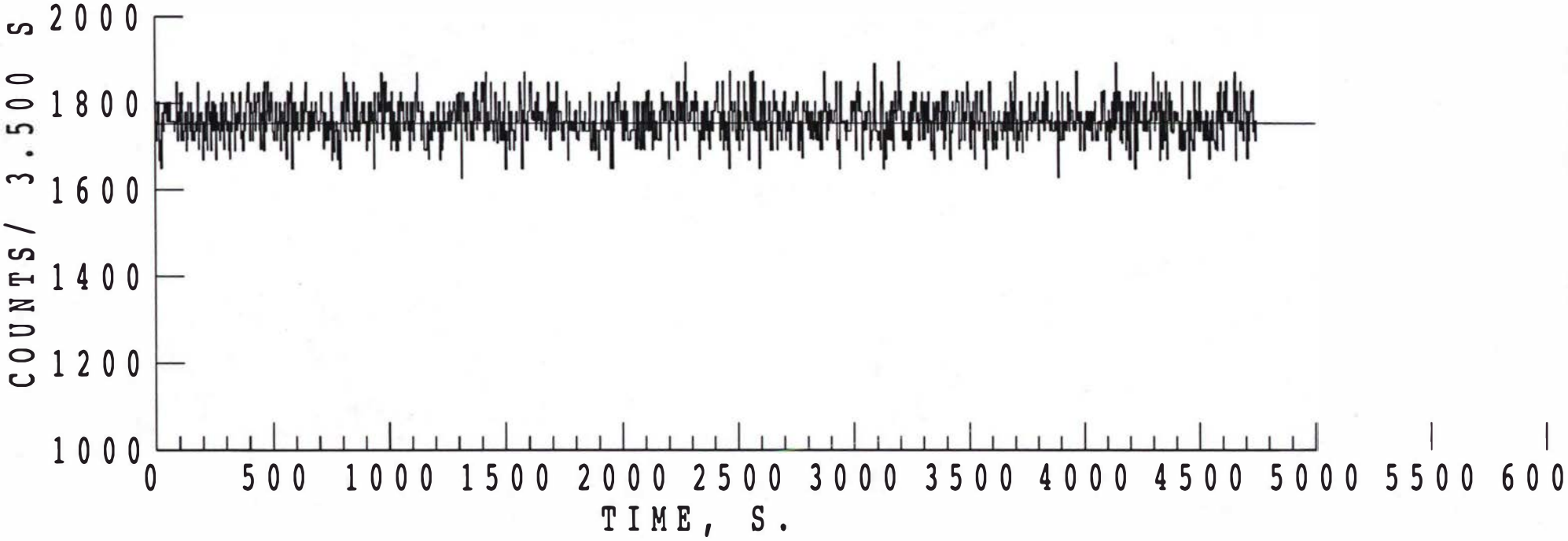
06/04/98 43668.441 s

0.500 S INTERVALS REGROUPED BY 7

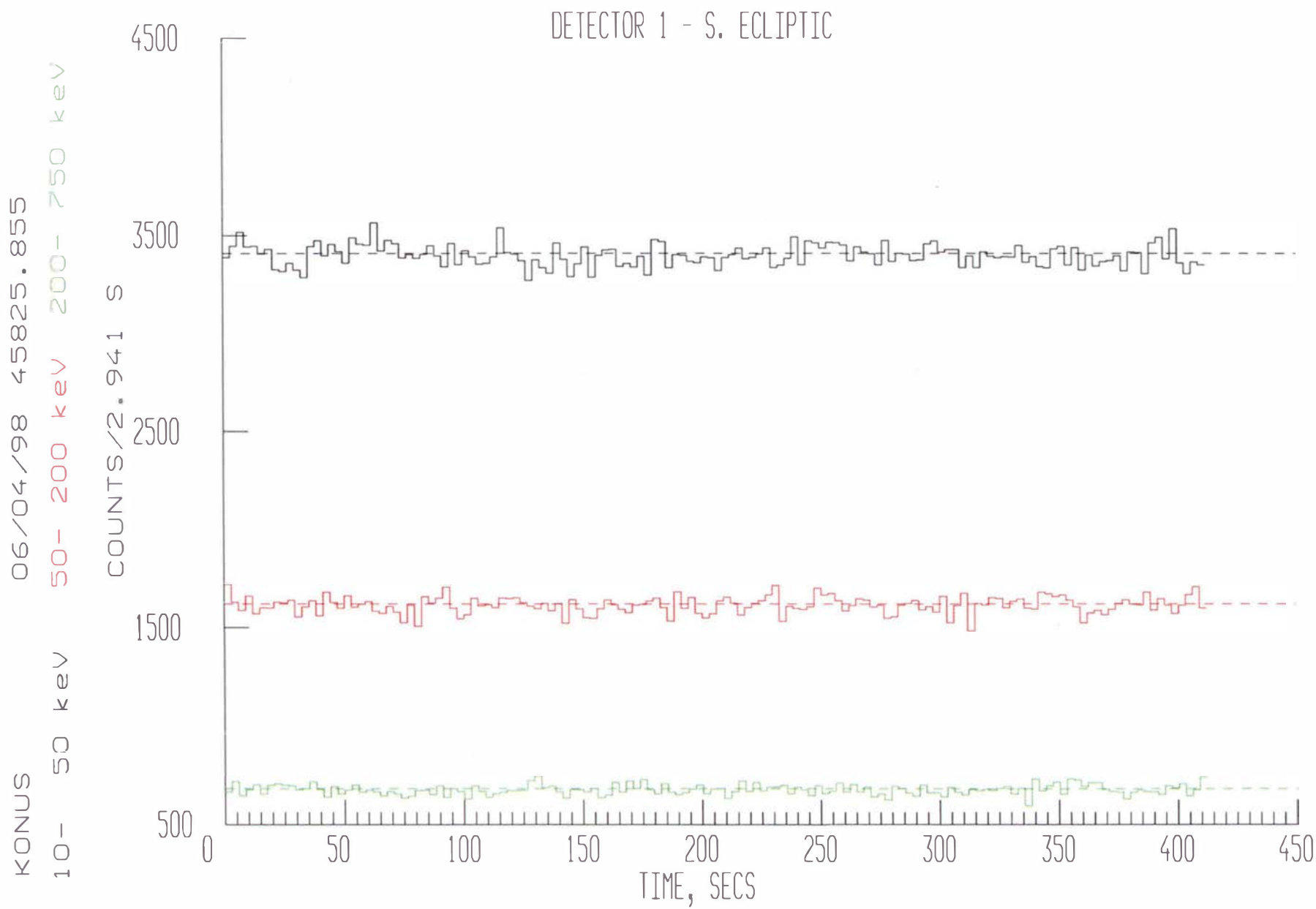
0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

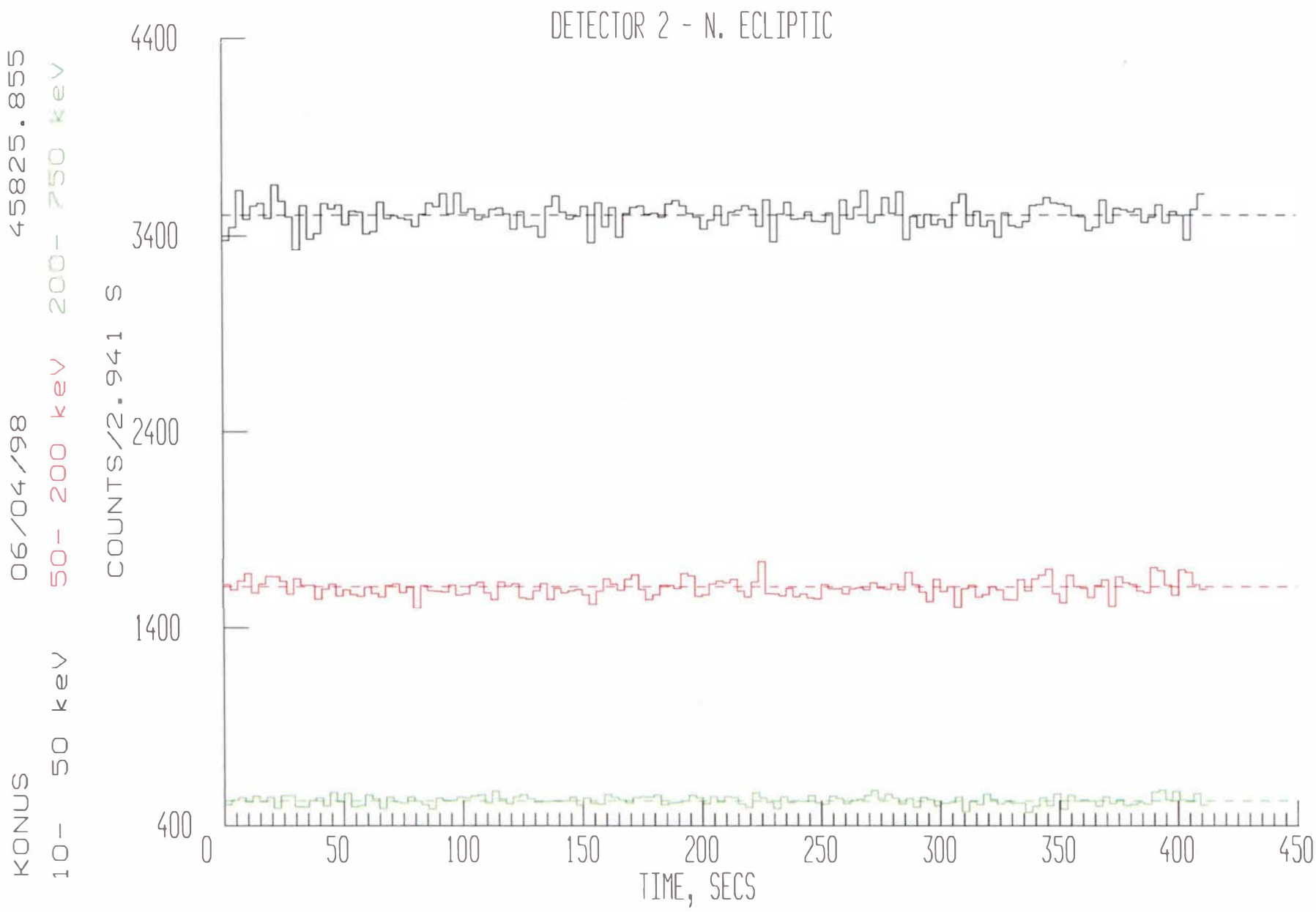
N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS

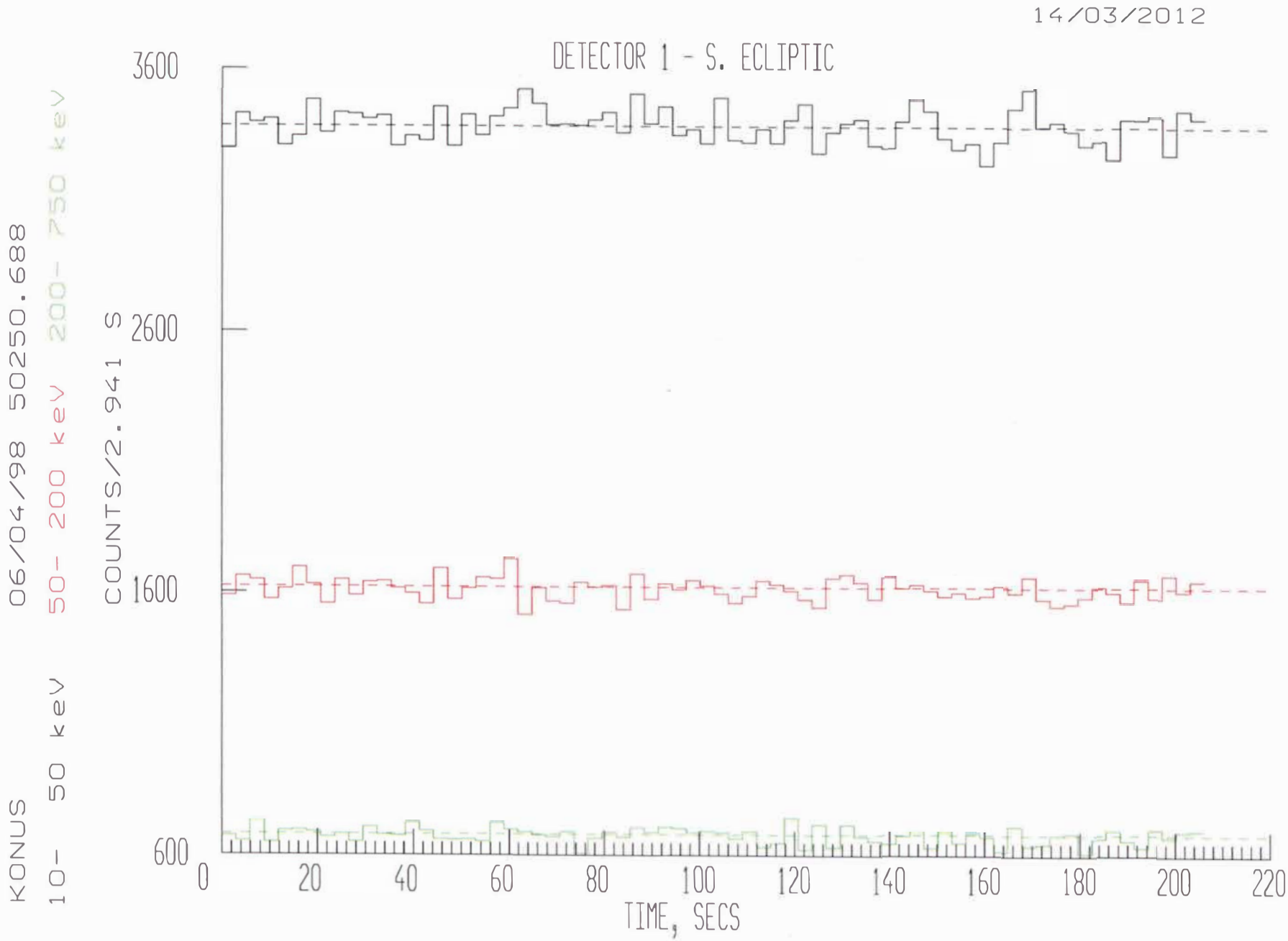


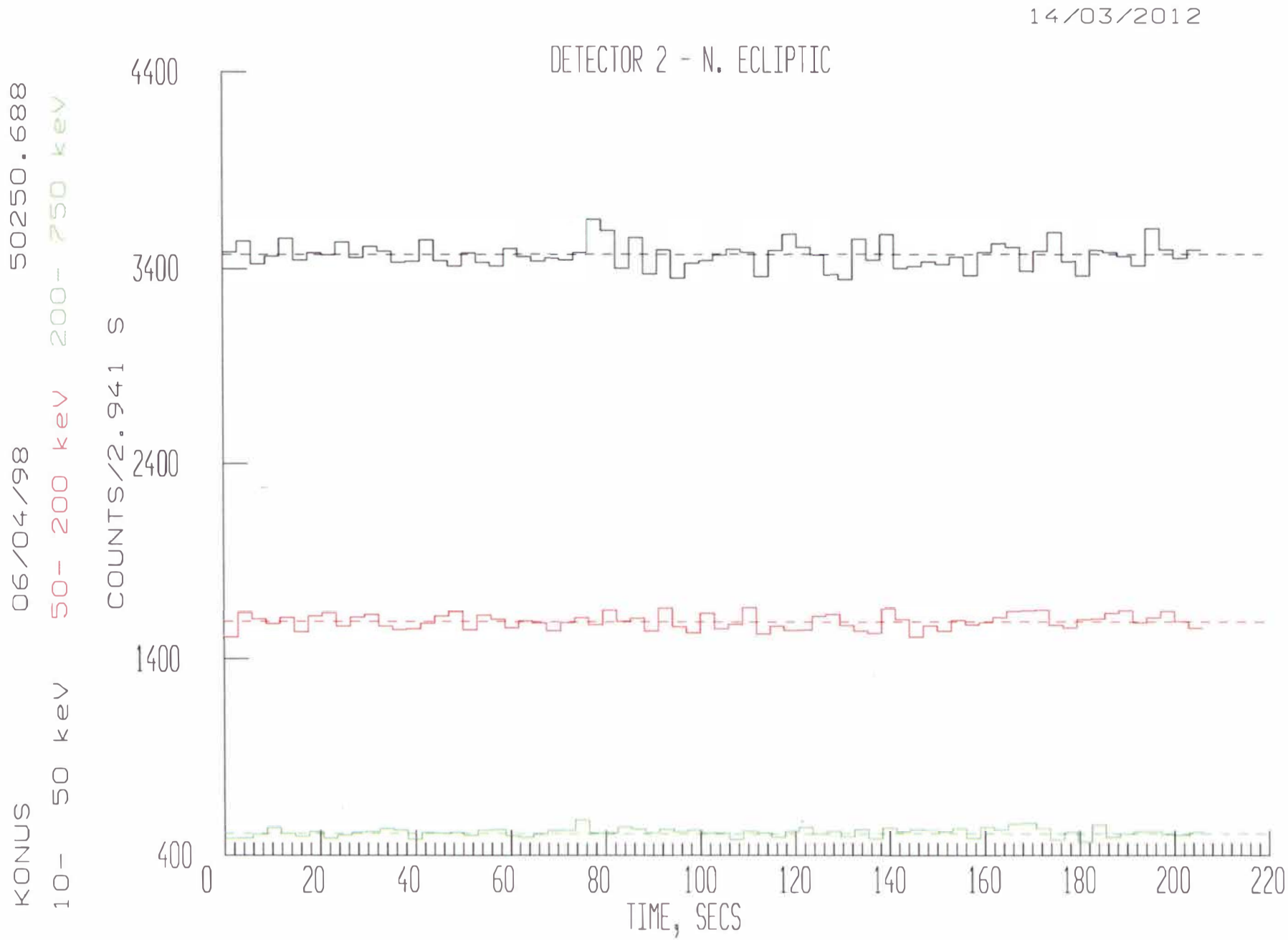
09/03/2012


DETECTOR 1 - S. ECLIPTIC
KONUS
06/04/98 45825.855
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.941 S
4500
3500
2500
1500
500
0
50
100
150
200
250
300
350
400
450
TIME, SECS

09/03/2012


DETECTOR 2 - N. ECLIPTIC
KONUS
06/04/98
45825.855
10- 50 keV
50- 200 keV
200- 250 keV
COUNTS/2.941 S
4400
3400
2400
1400
400
0
50
100
150
200
250
300
350
400
450
TIME, SECS


14/03/2012
DETECTOR 1 - S. ECLIPTIC
KONUS
06/04/98 50250.688
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.941 S
3600
2600
1600
600
0
20
40
60
80
100
120
140
160
180
200
220
TIME, SECS


14/03/2012
DETECTOR 2 - N. ECLIPTIC
KONUS
06/04/98
50250.688
10- 50 keV
50- 200 keV
200- 750 keV
COUNTS/2.941 S
4400
3400
2400
1400
400
0
20
40
60
80
100
120
140
160
180
200
220
TIME, SECS

KONUS 19980406 50357

ULYSSES RT 07/03/12

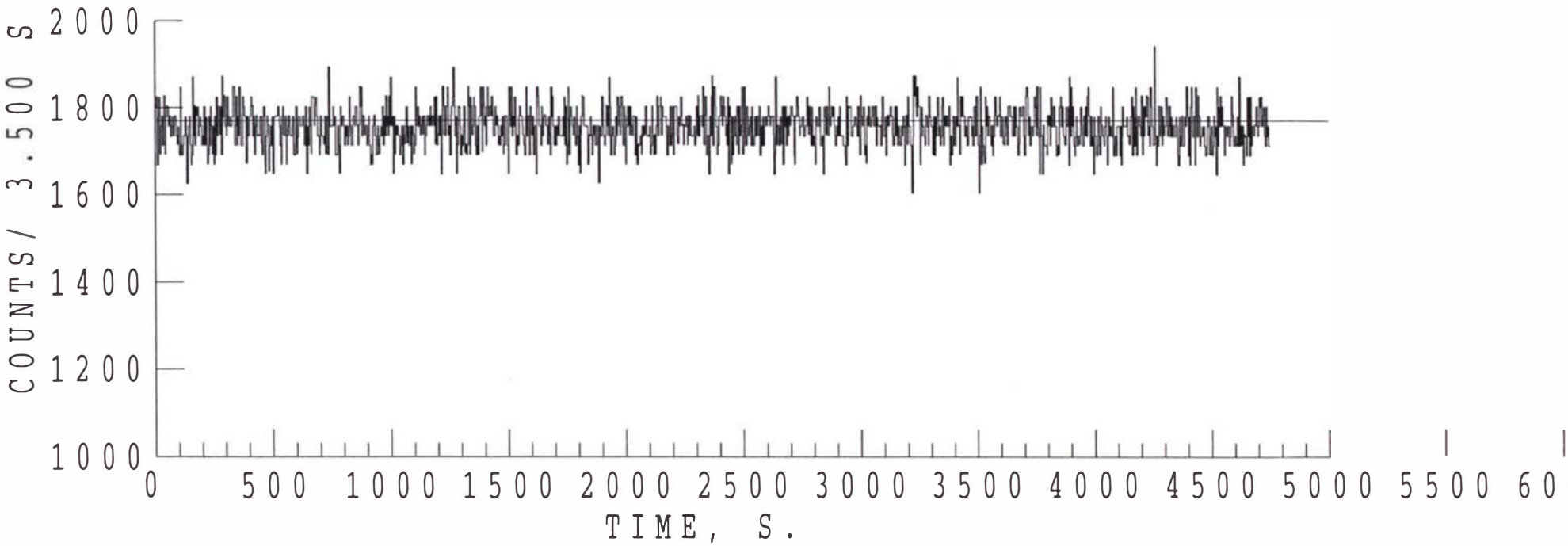
06/04/98 47988.488 s

0.500 S INTERVALS REGROUPED BY 7

0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



KONUS +GRBM

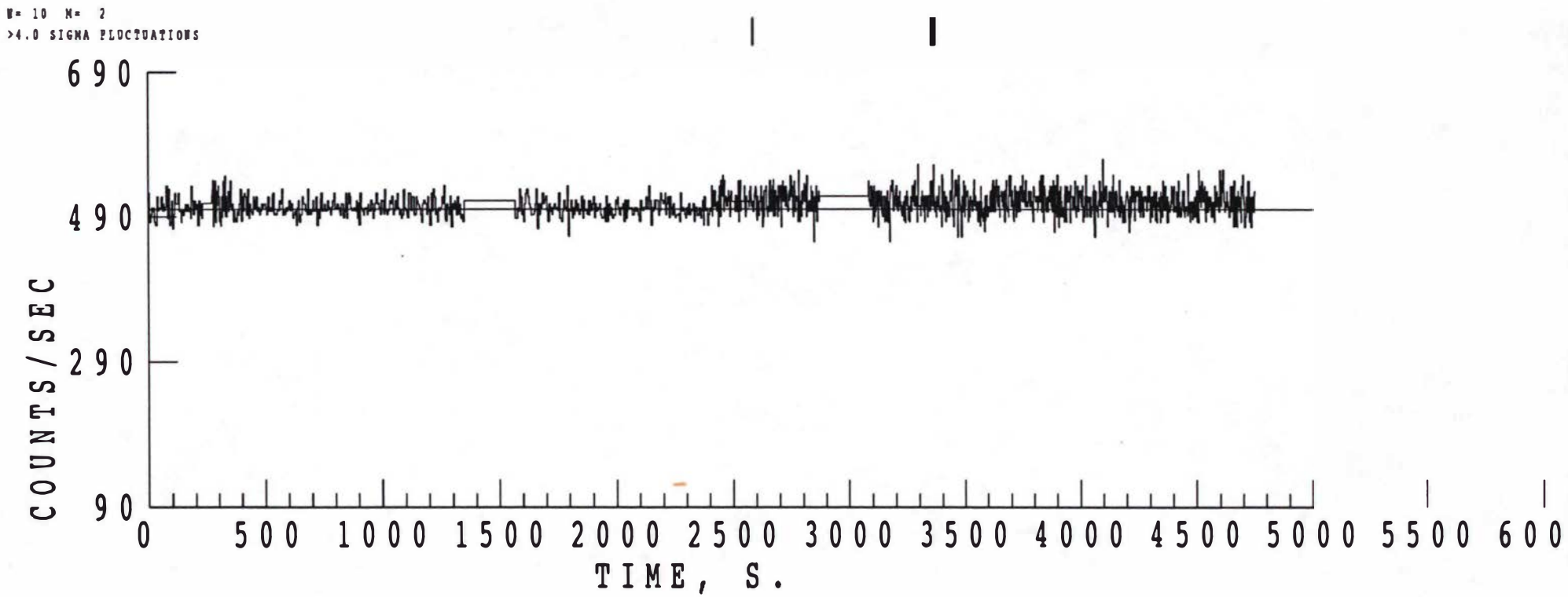
08/02/00

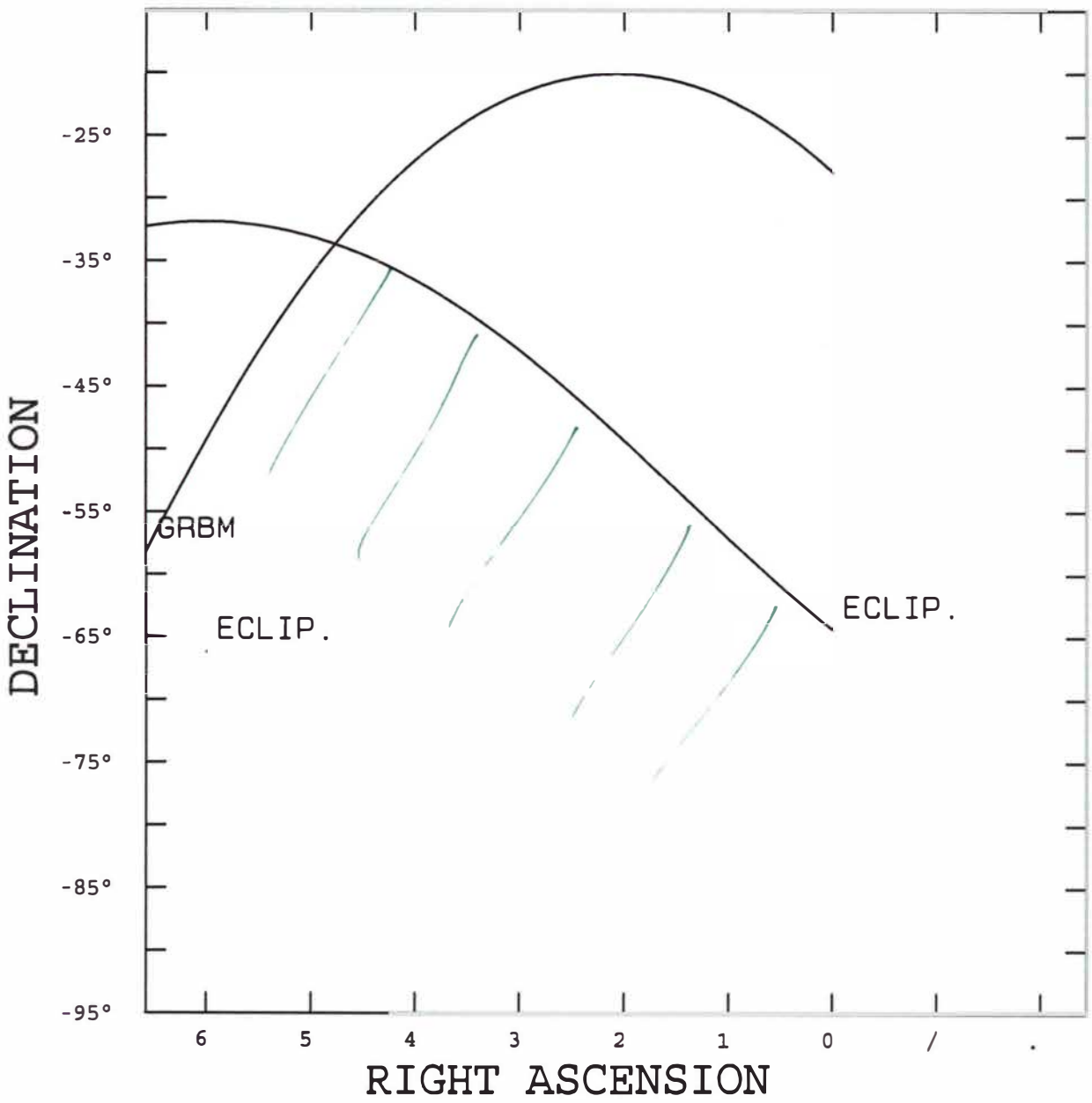
ULYSSES RT

06/04/98 55980.070 s

INTERVALS REGROUPED BY 9

0- 0 keV




DECLINATION
-25°
-35°
-45°
-55°
-65°
-75°
-85°
-95°
GRBM
ECLIP.
ECLIP.
6
5
4
3
2
1
0
/
.
RIGHT ASCENSION

KONUS +GRBM

08/02/00

ULYSSES RT

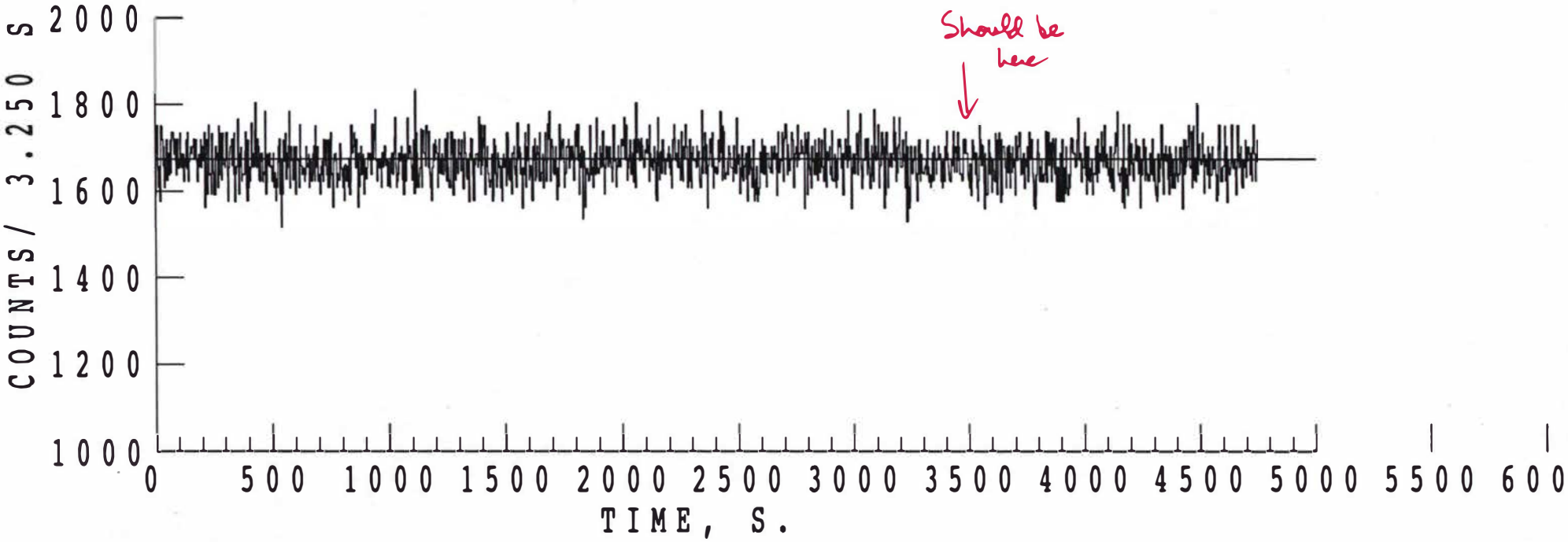
06/04/98 59652.113 s

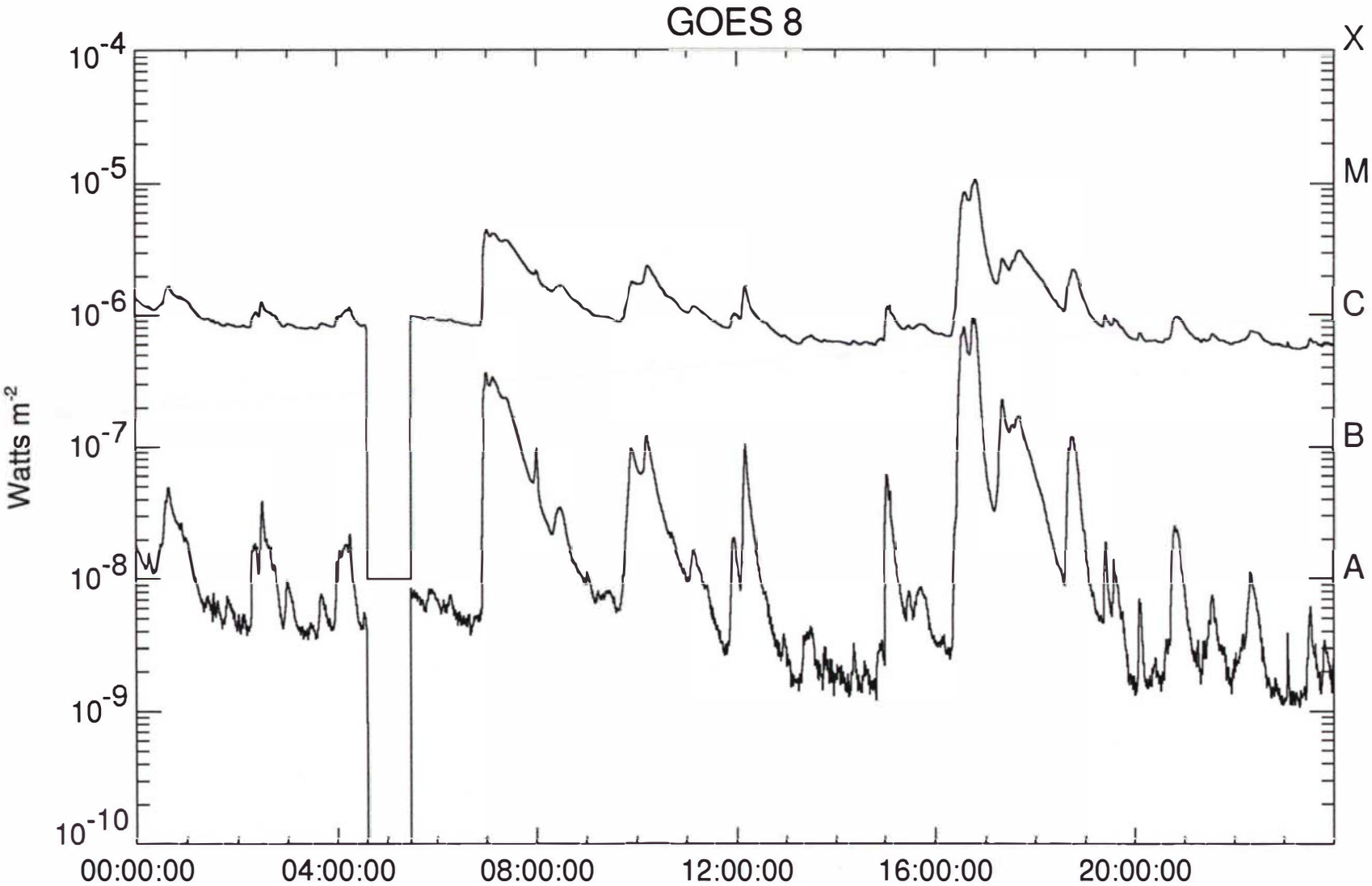
0.250 S INTERVALS REGROUPED BY 13

0- 0 keV

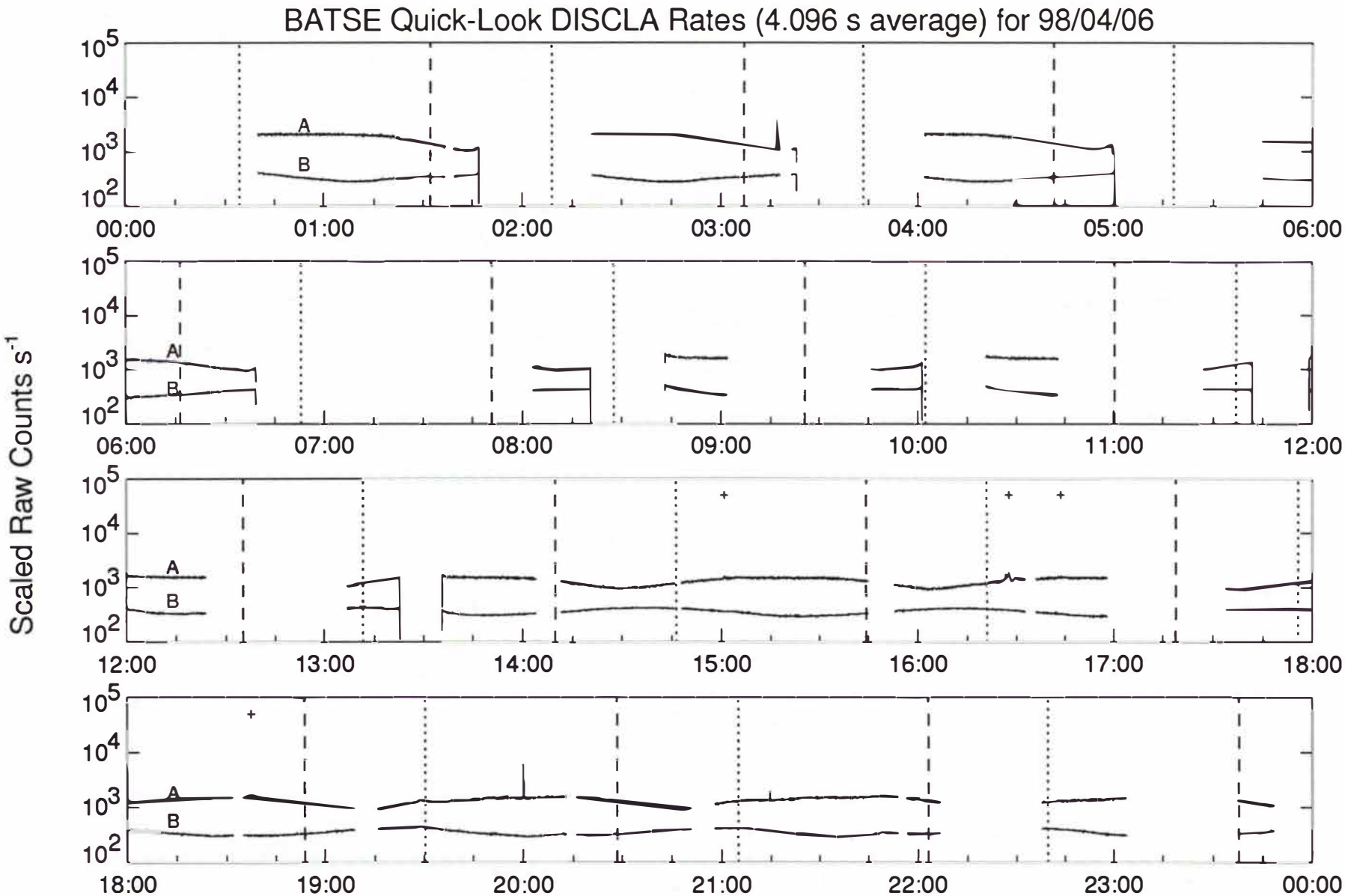
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS





Data Start: 98/04/06, 0000:00 Plot created: 98/04/22, 1909
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



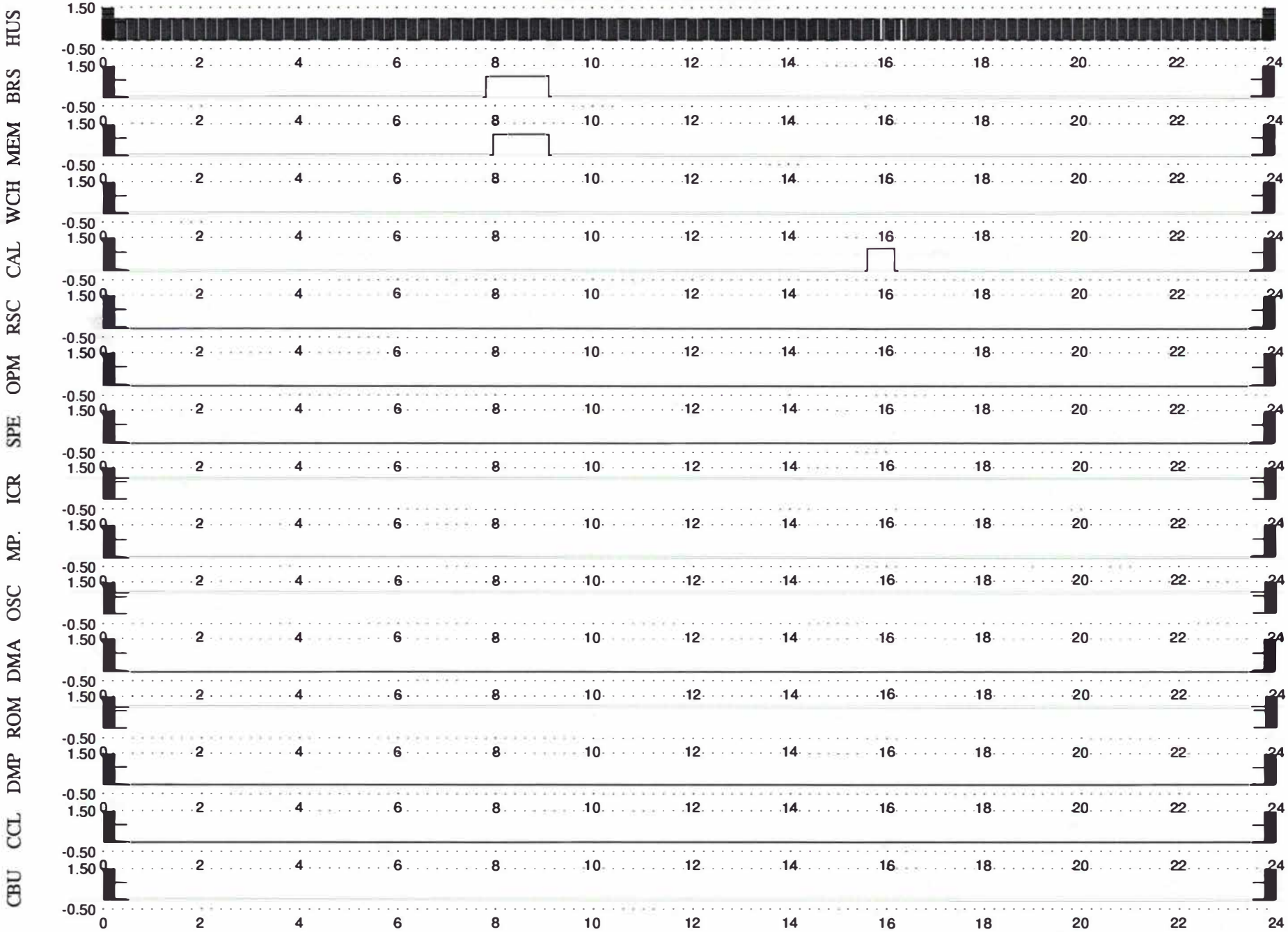
Current Time: 98/04/22, 1910 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

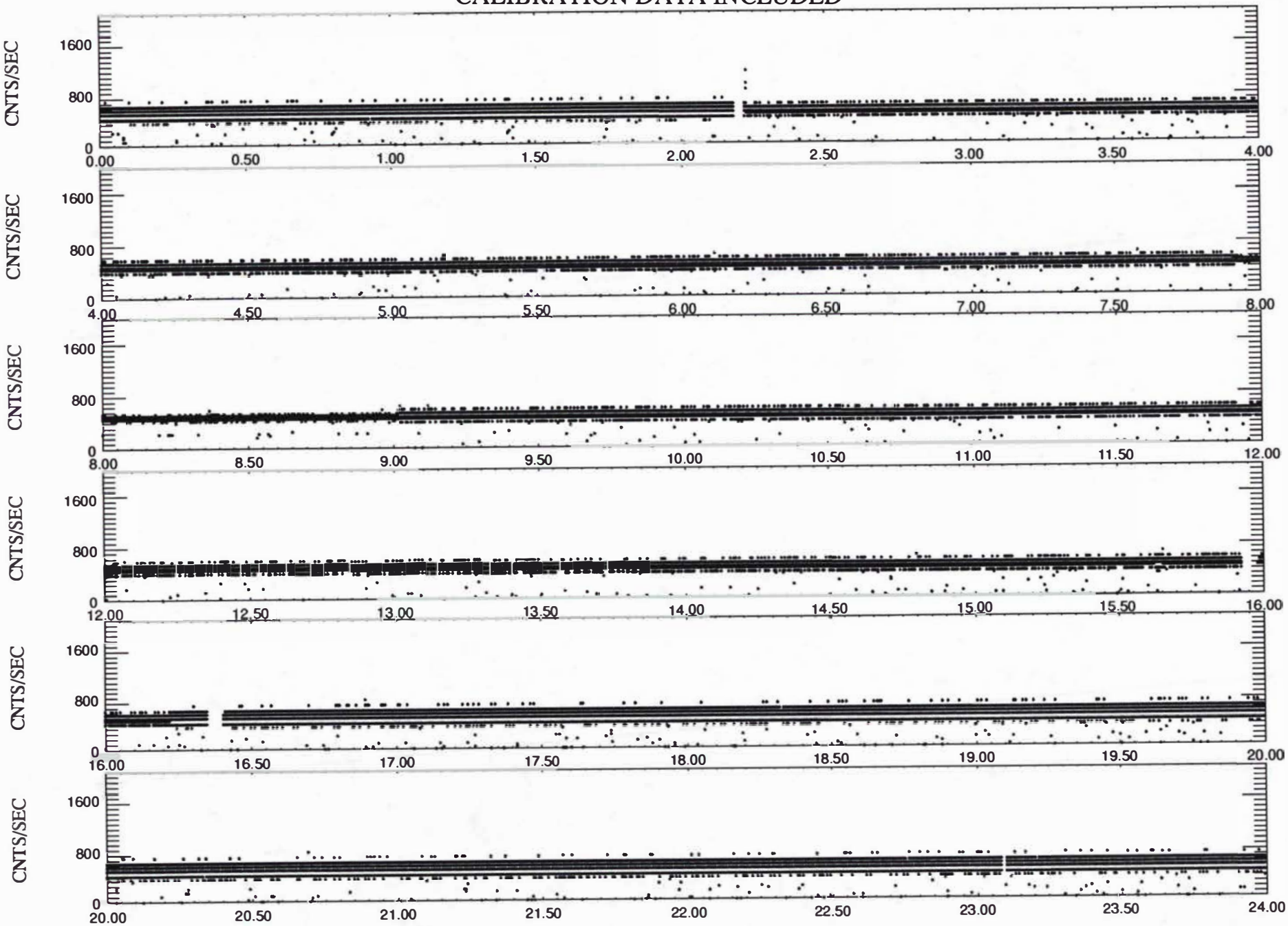
HUS MODES EDR day 96, year 1998 to day 96, year 1998 8/18/98

BURST NUMBER 11



HUS 2A, MODE 1, NOT AVERAGED EDR day 96, year 1998 to day 96, year 1998 8/18/98

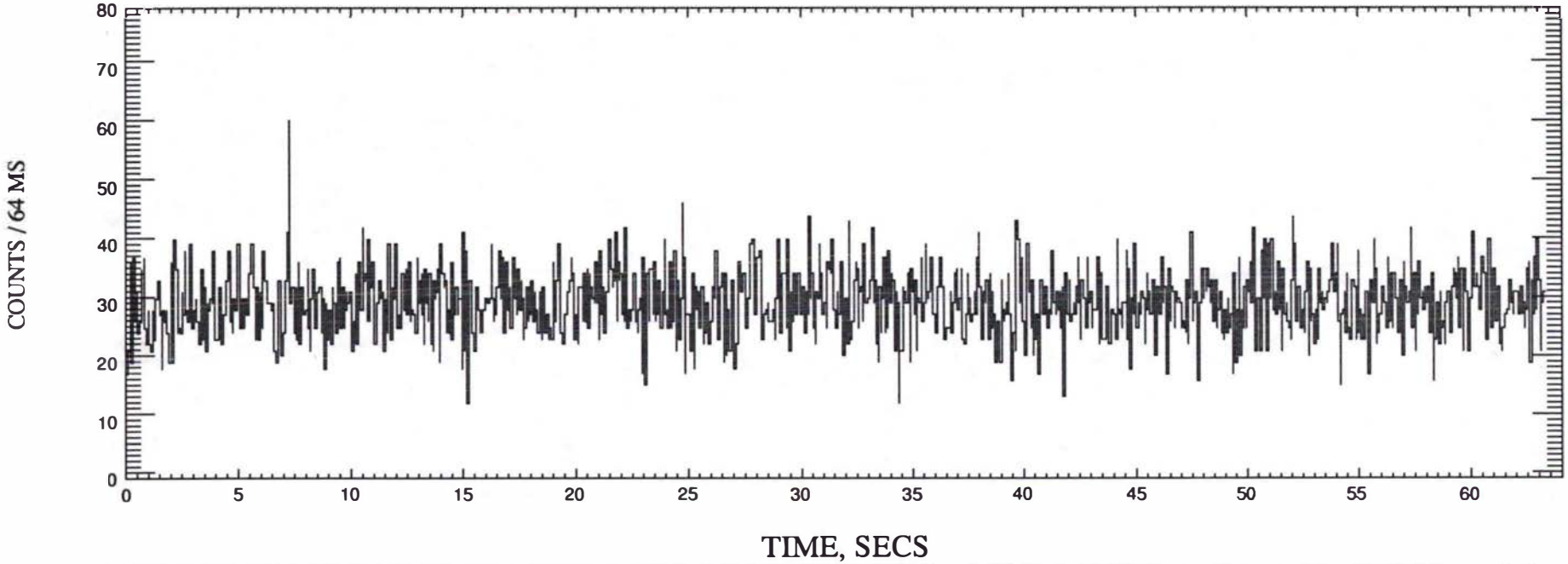
CALIBRATION DATA INCLUDED

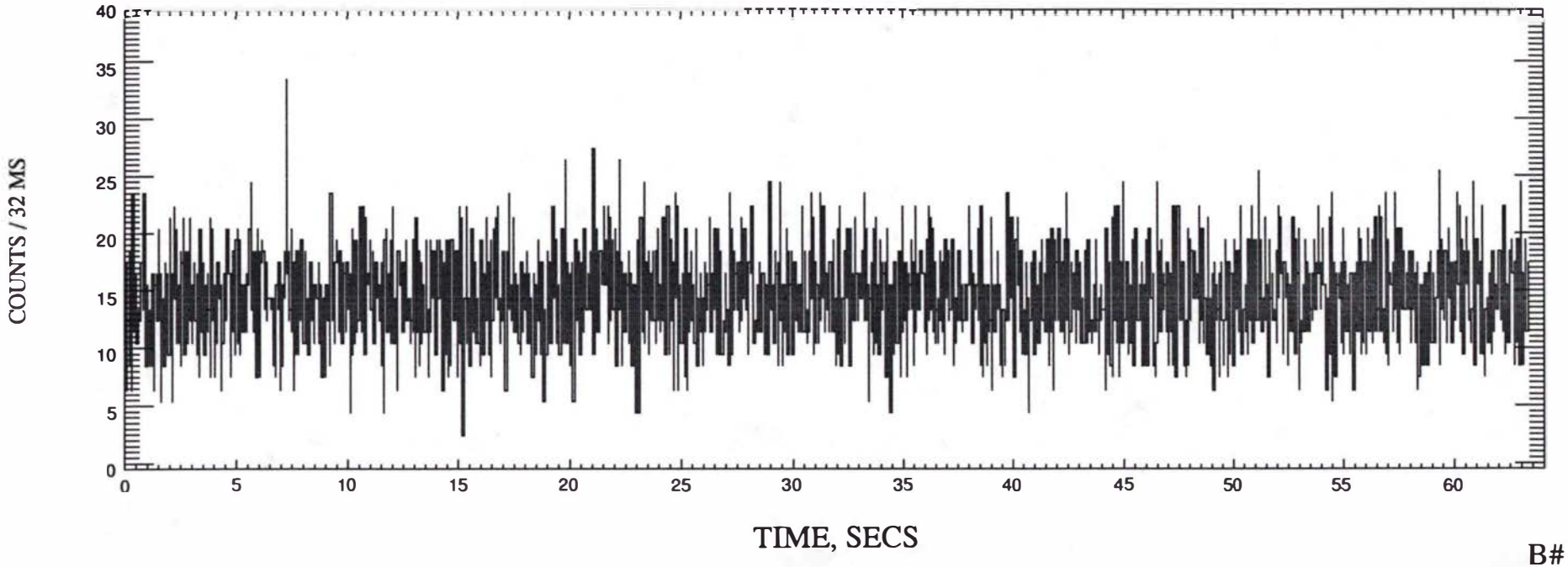


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 96, year 1998 8/19/98

Burst Counter 11 at UT= 7.745246357388 h=27882.887 s 07:44:42.887

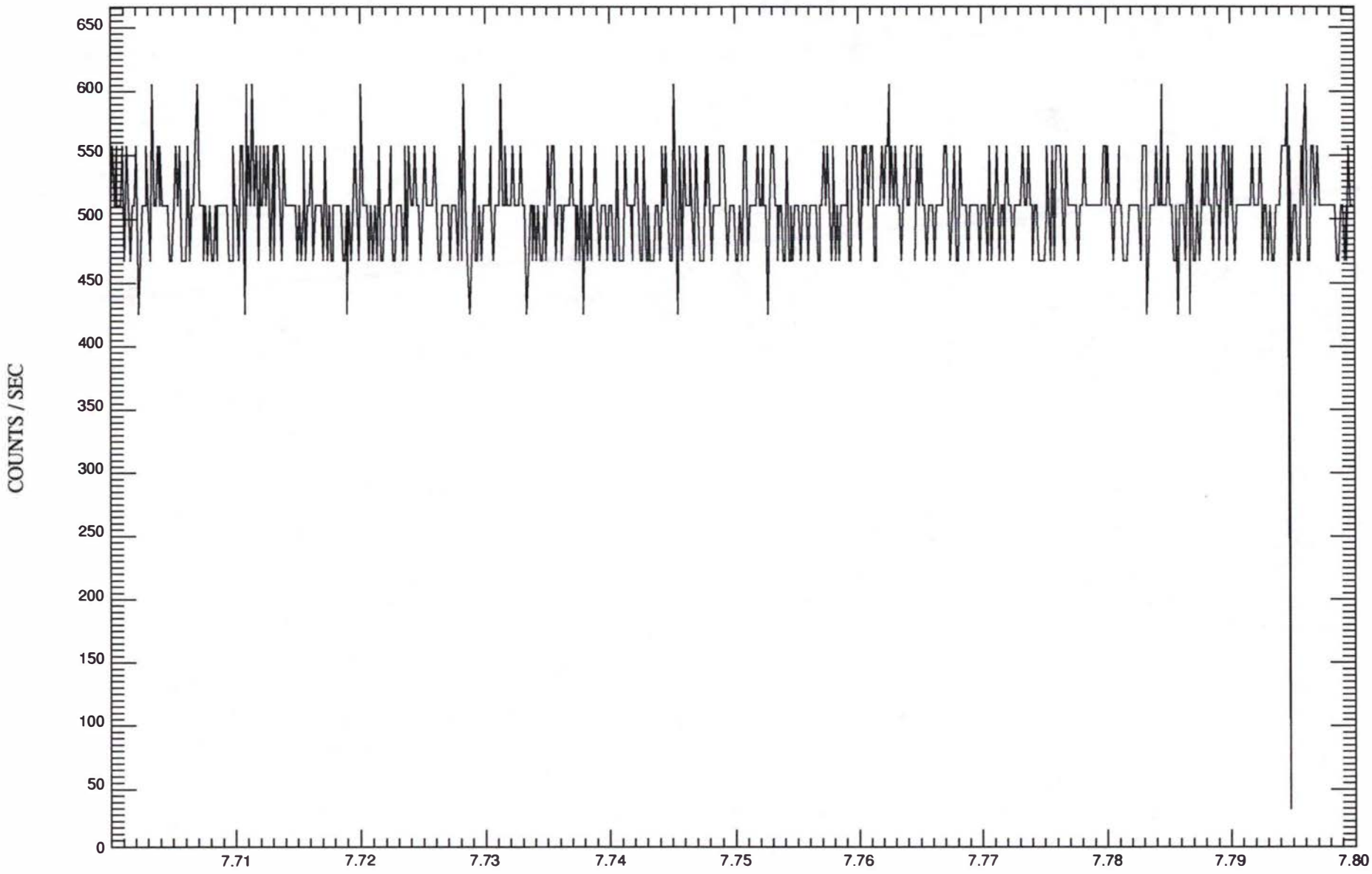




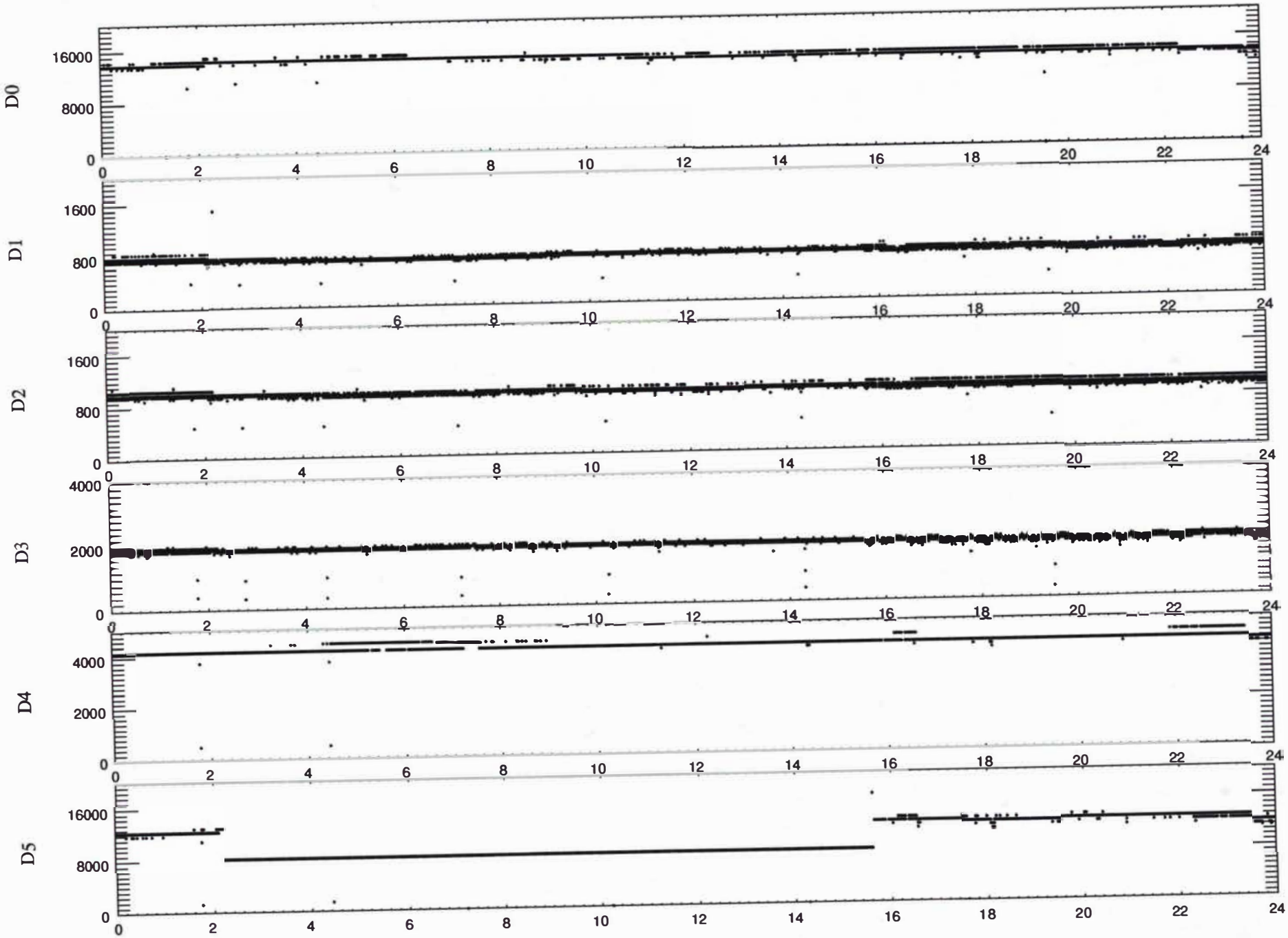
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 96, year 1998 to day 96, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 96, year 1998 to day 96, year 1998 8/18/98



From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
To: khurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

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corresponds to TGRS 661
occurred at 38209s on December 23, 1997
100-300 keV range:
Peak Flux 131 cts/s
T90: 62 s
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THESE BURSTS WERE NOT SEEN BY TGRS

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April 6 1998 07:45 Ulysses time; weak burst, 64 ms long
April 7 1998 15:44 Ulysses time; weak burst, 64 ms long
April 8 1998 02:51 Ulysses time; weak burst, 64 ms long
April 09 1998 07:03 Ulysses time; weak burst, 64 ms long
April 09 1998 19:19 Ulysses time; weak burst, 32 ms long
April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

Hi Everyone,

Here is the Konus report for those events recently seen by Ulysses, but not reported by BATSE.

Paul.

Ulysses event - March 14 1998 06:30 Ulysses time; weak burst, 64 ms long

Ulysses event - March 14 1998 23:32 Ulysses time; weak burst, 32 ms long

Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

Ulysses event - April 4 1998 09:06 Ulysses time; weak burst, 64 ms long

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Ulysses event - April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

SAX 19990407 50115

ULYSSES RT 19/08/09

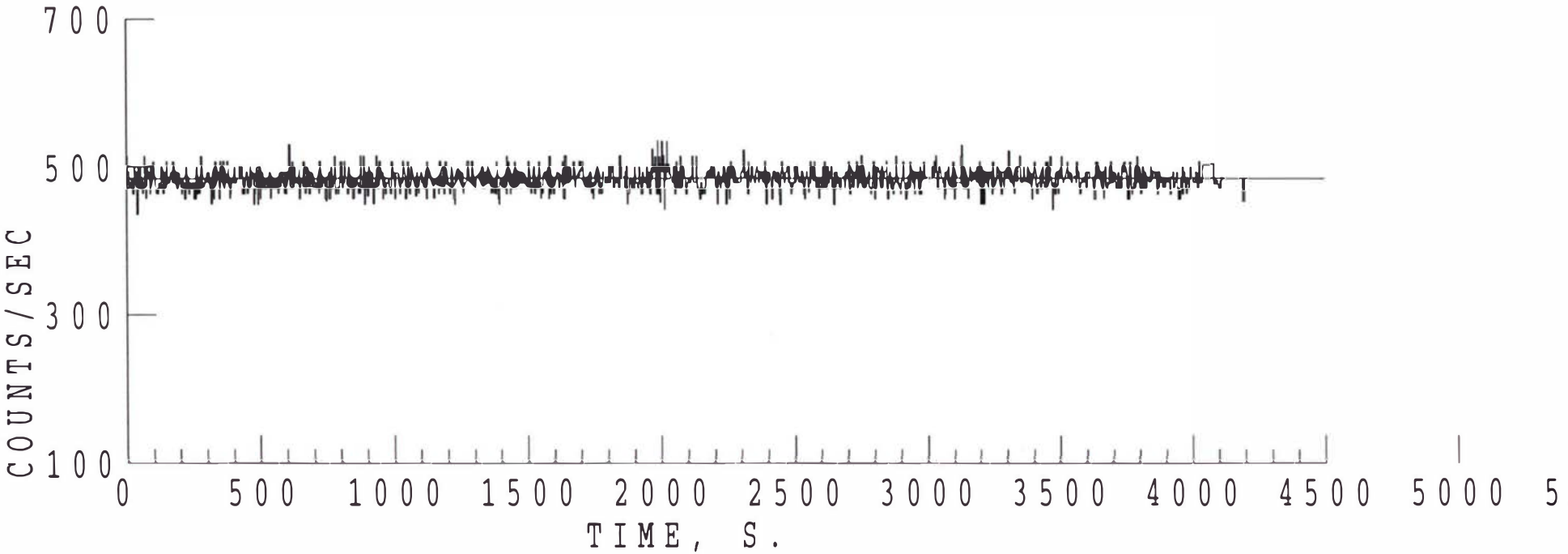
07/04/99 47916.000 s

INTERVALS REGROUPED BY 6

0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From HENZE@fender.msfc.nasa.gov Sat Apr 11 11:19:51 1998
Return-Path: <HENZE@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA07770; Sat, 11 Apr 1998 11:19:50 -0700
From: HENZE@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA18867; Sat, 11 Apr 1998 11:19:48 -0700
Date: Sat, 11 Apr 1998 13:18:35 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980411131835.20e21477@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6682
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6682
EVENT OF 1998 APR  7 DAY OF YEAR= 97
EVENT CROSSING TIME AT BATSE      : 65817. S. OR 18:16:57.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 105.000    1.000
BATSE PEAK COUNTING RATE:   4900    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  7/ 4/  98 IS:
RA=  151.894 DEC=   13.359 DIST=    4.697 AU
BATSE-ULYSSES DISTANCE =  702621341. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=131.97 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1567.45 SECS.
CROSSING TIME AT ULYSSES    IS 64250. S. OR   17:50:49 +/-  328.71 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  7/ 4/  98 IS:
RA=   23.738 DEC=    9.533 DIST=    2.416 AU
MARS-BATSE DISTANCE =  361504384. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 98.78 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -184.11 SECS.
CROSSING TIME AT MARS       IS 65633. S. OR   18:13:52 +/-  204.10 SECONDS

                BATSE BURST TRIGGER
NO.:  6682

TIME: TJD=0910 SECONDS=65817

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH= 66.4  AZIMUTH= 71.1  ERROR=  7.9 DEGREES

COMMENTS:
SINGLE SPIKE, DUR. APPROX. 0.05 S.  NOT VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6682	980407	10910	65817	4900	105	+01	.05

BATSE BURST# 6682

ULYSSES RT 11/ 4/98

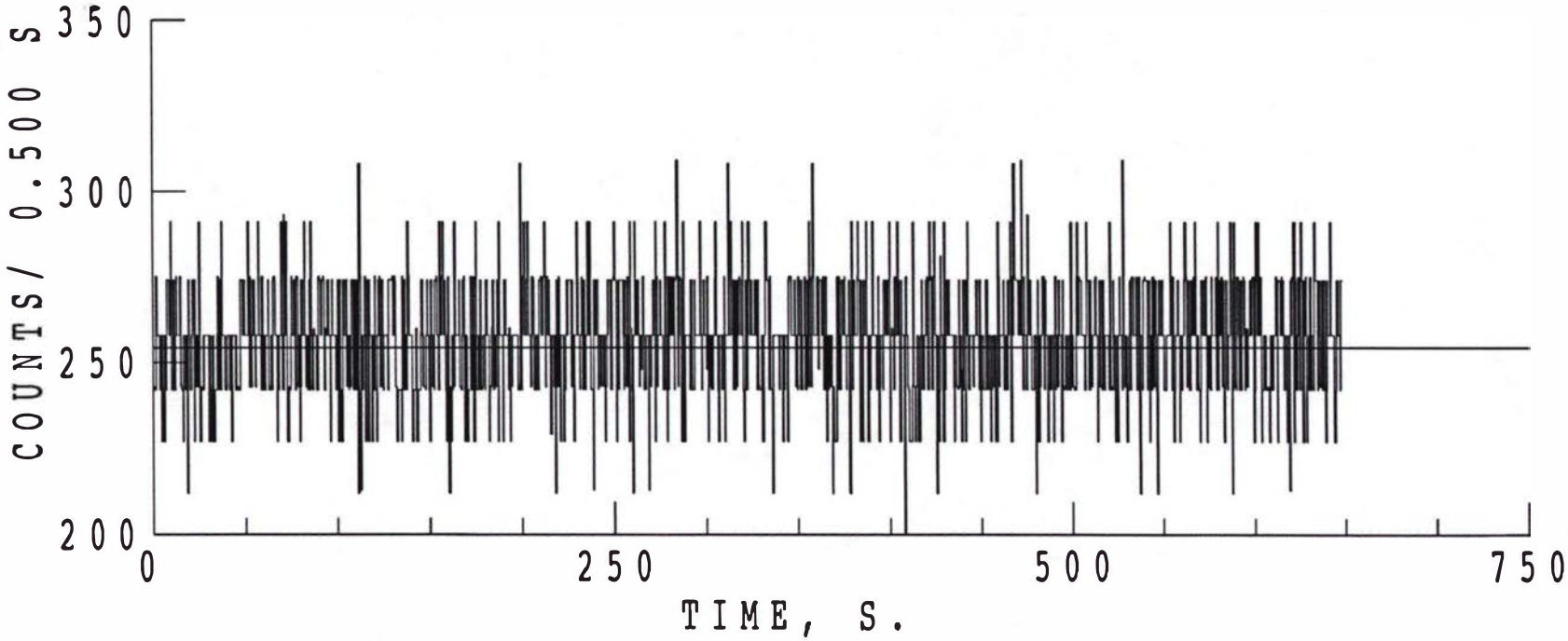
7/ 4/98 63936.090 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



SAX GRBM

HUS DATA

19/07/05

ULYSSES RT

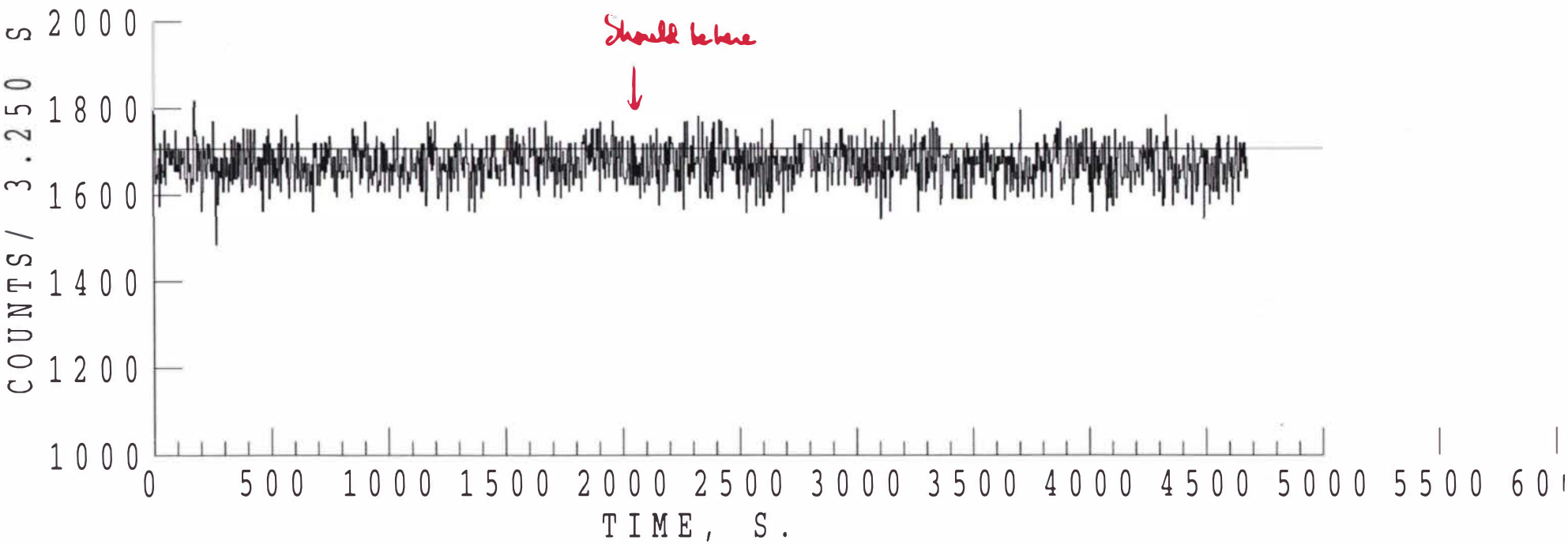
07/04/98 65556.102 s

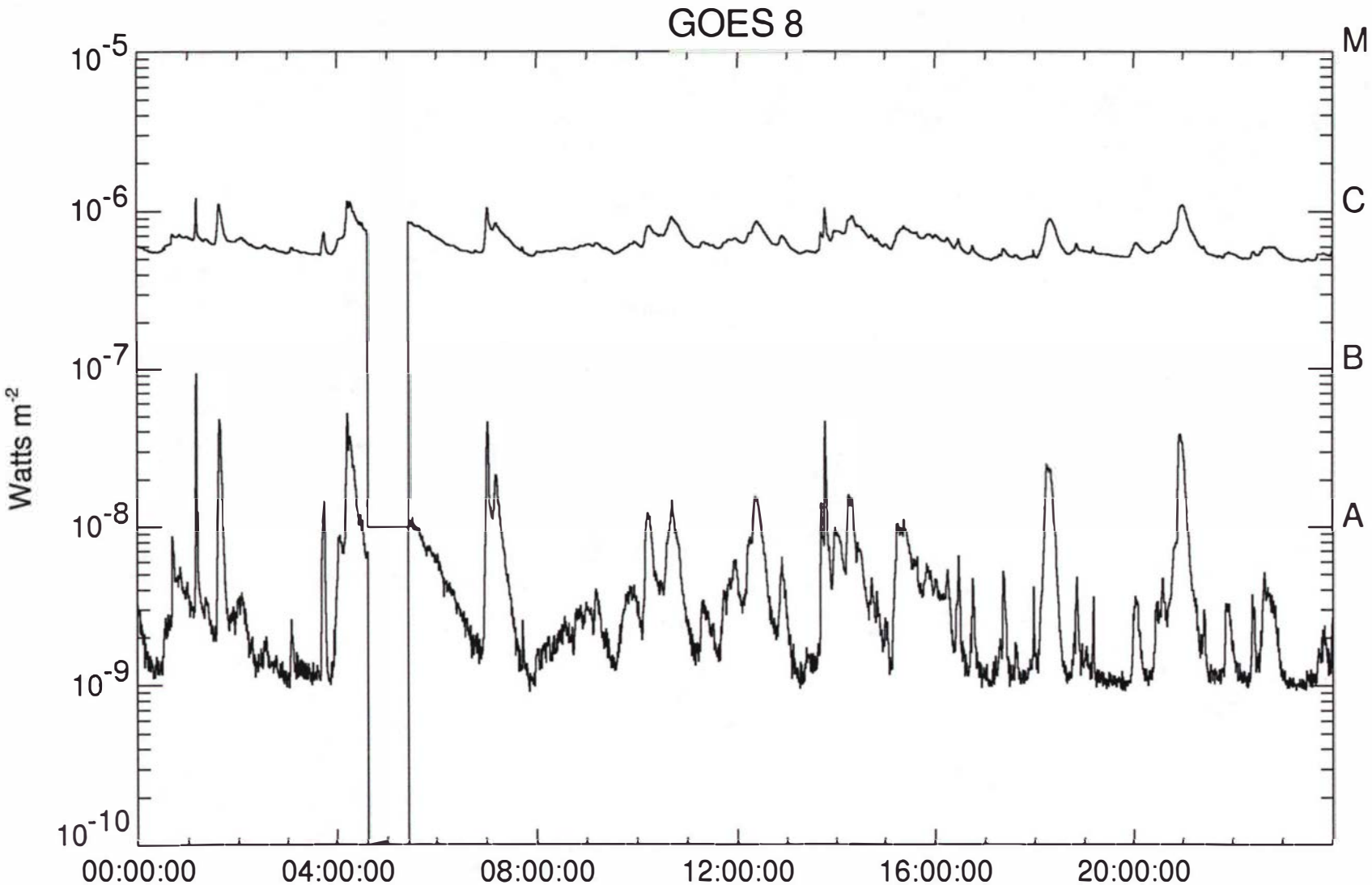
0.250 S INTERVALS REGROUPED BY 13

0- 0 keV

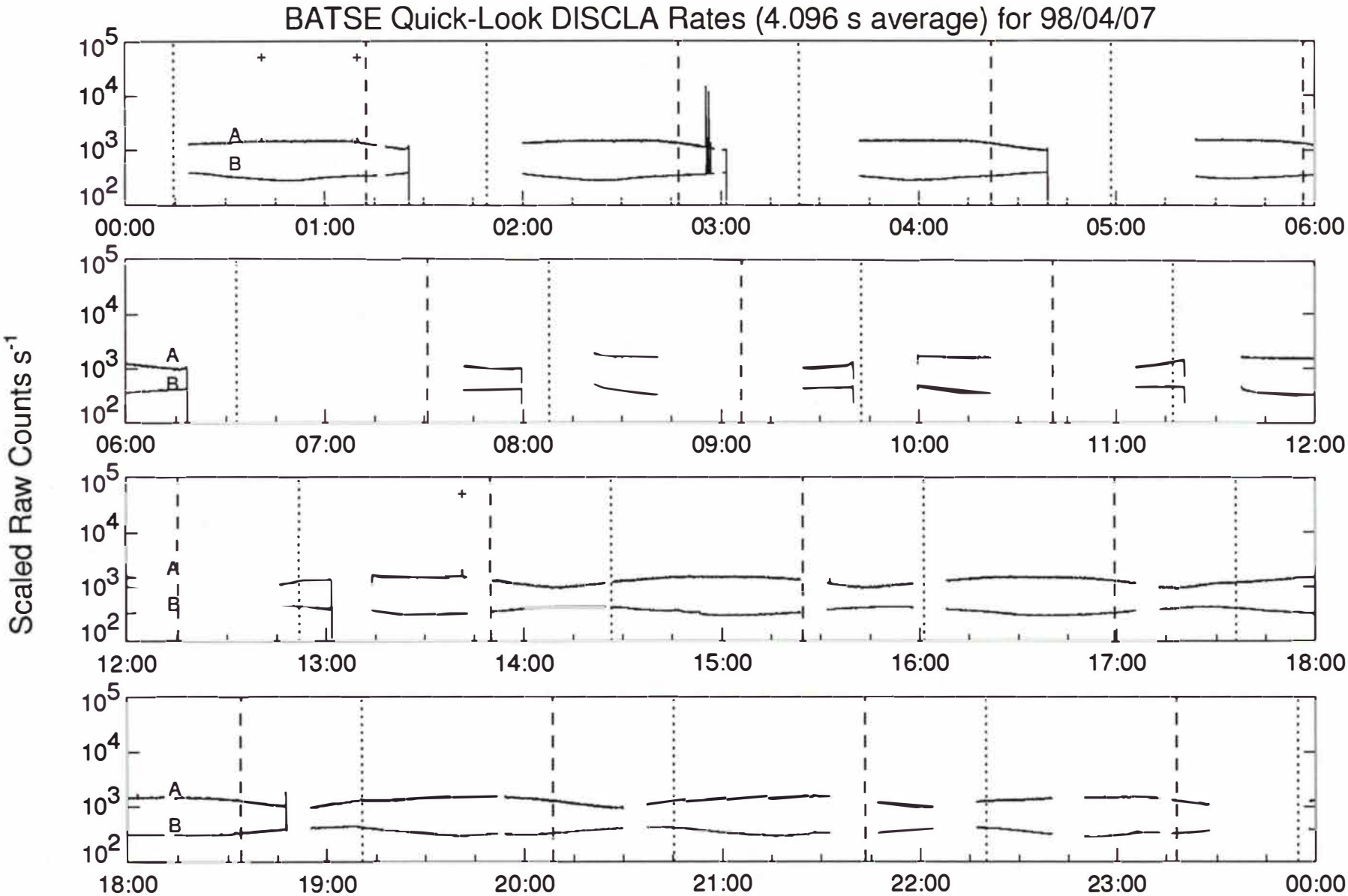
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



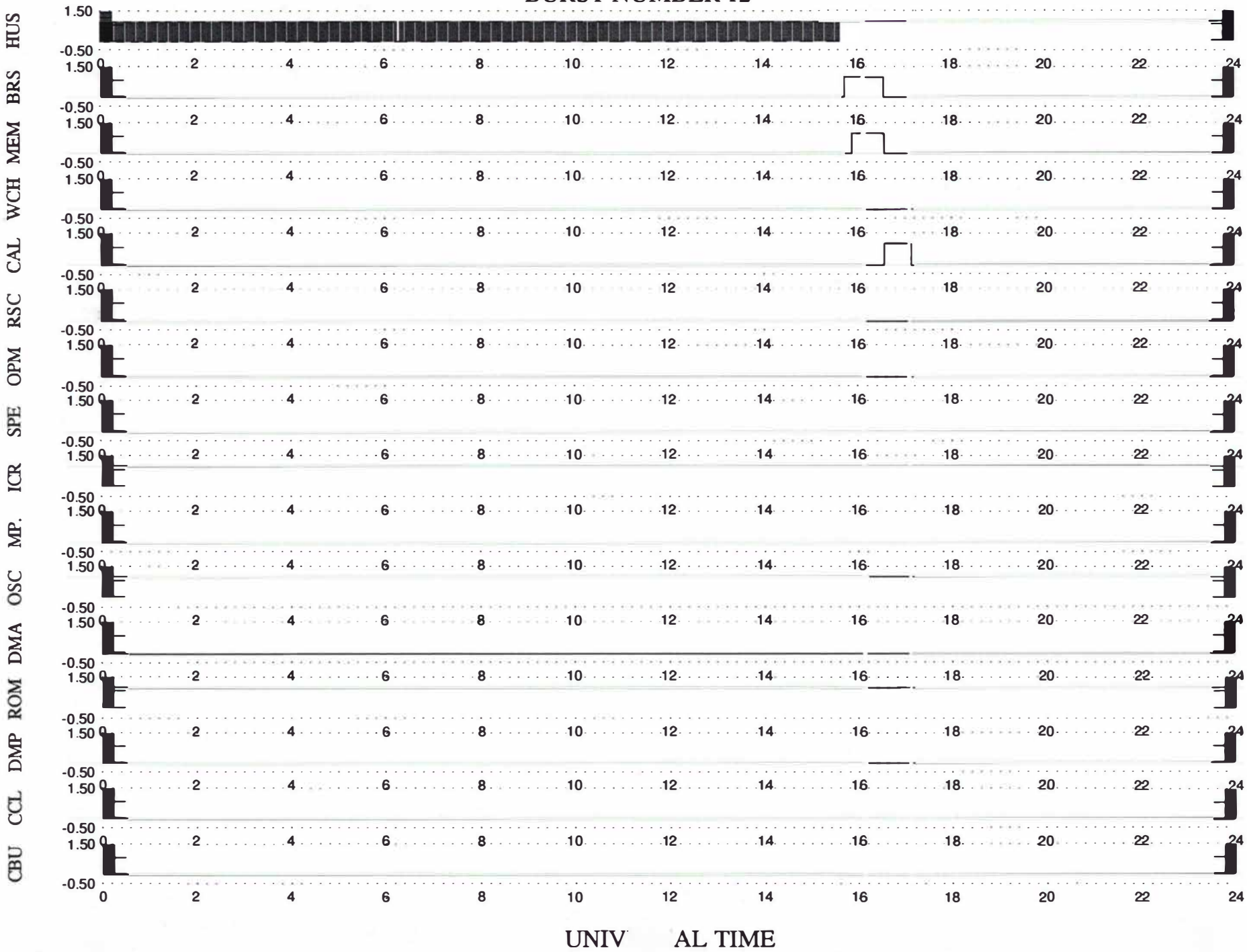


Data Start: 98/04/07, 0000:00 Plot created: 98/04/22, 1927
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/07
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 98/04/22, 1928 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

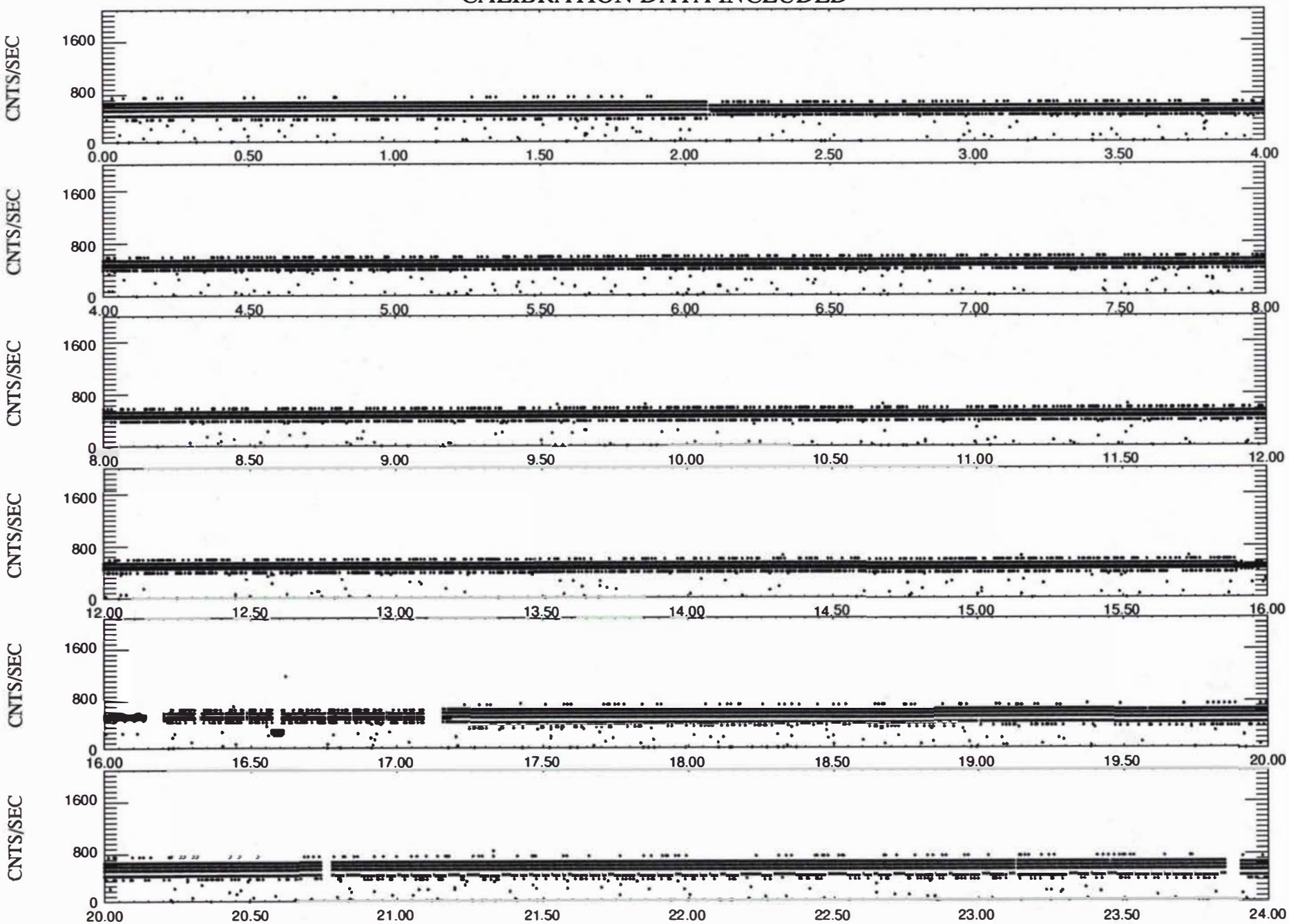
HUS MODES EDR day 97, year 1998 to day 97, year 1998 8/18/98

BURST NUMBER 12



HUS 2A, MODE 1, NOT AVERAGED EDR day 97, year 1998 to day 97, year 1998 8/18/98

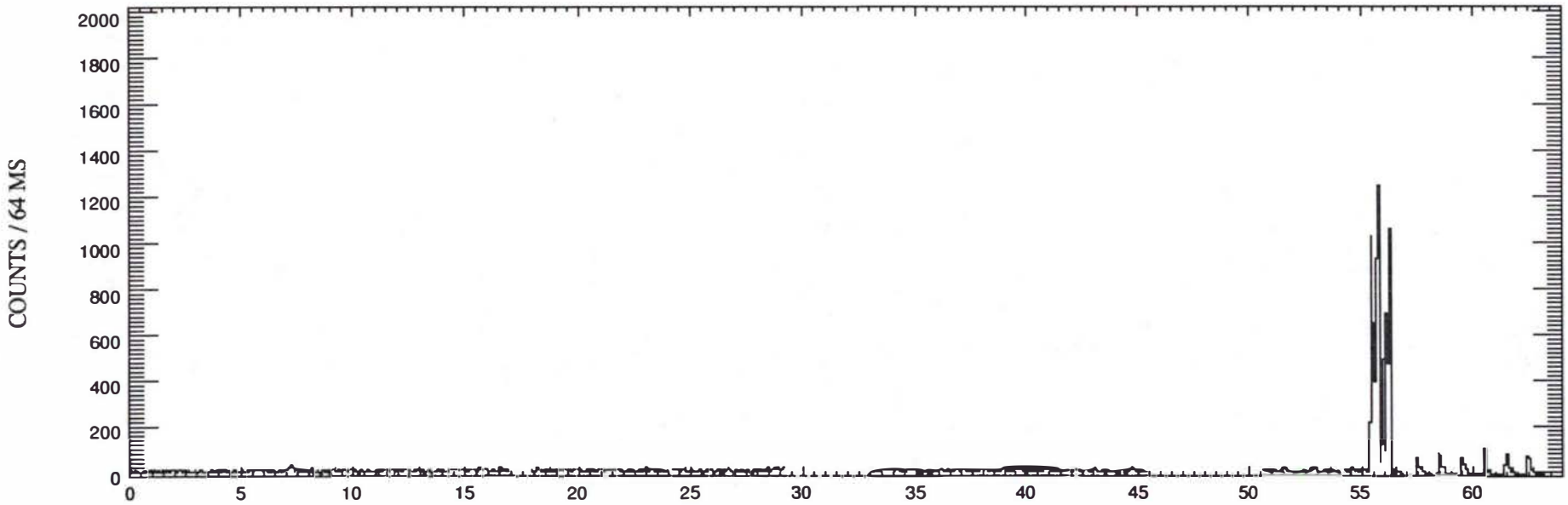
CALIBRATION DATA INCLUDED

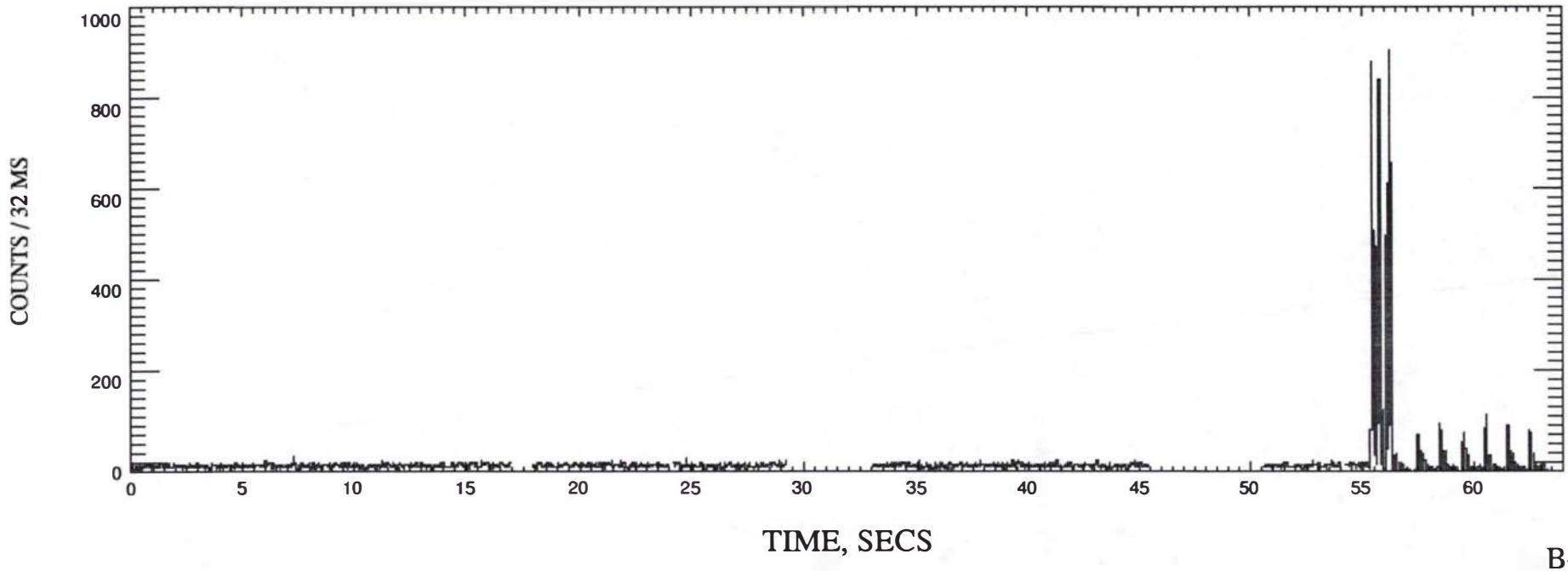


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 97, year 1998 8/19/98

Burst Counter 12 at UT=15.726388363308 h=56614.998 s 15:43:34.998

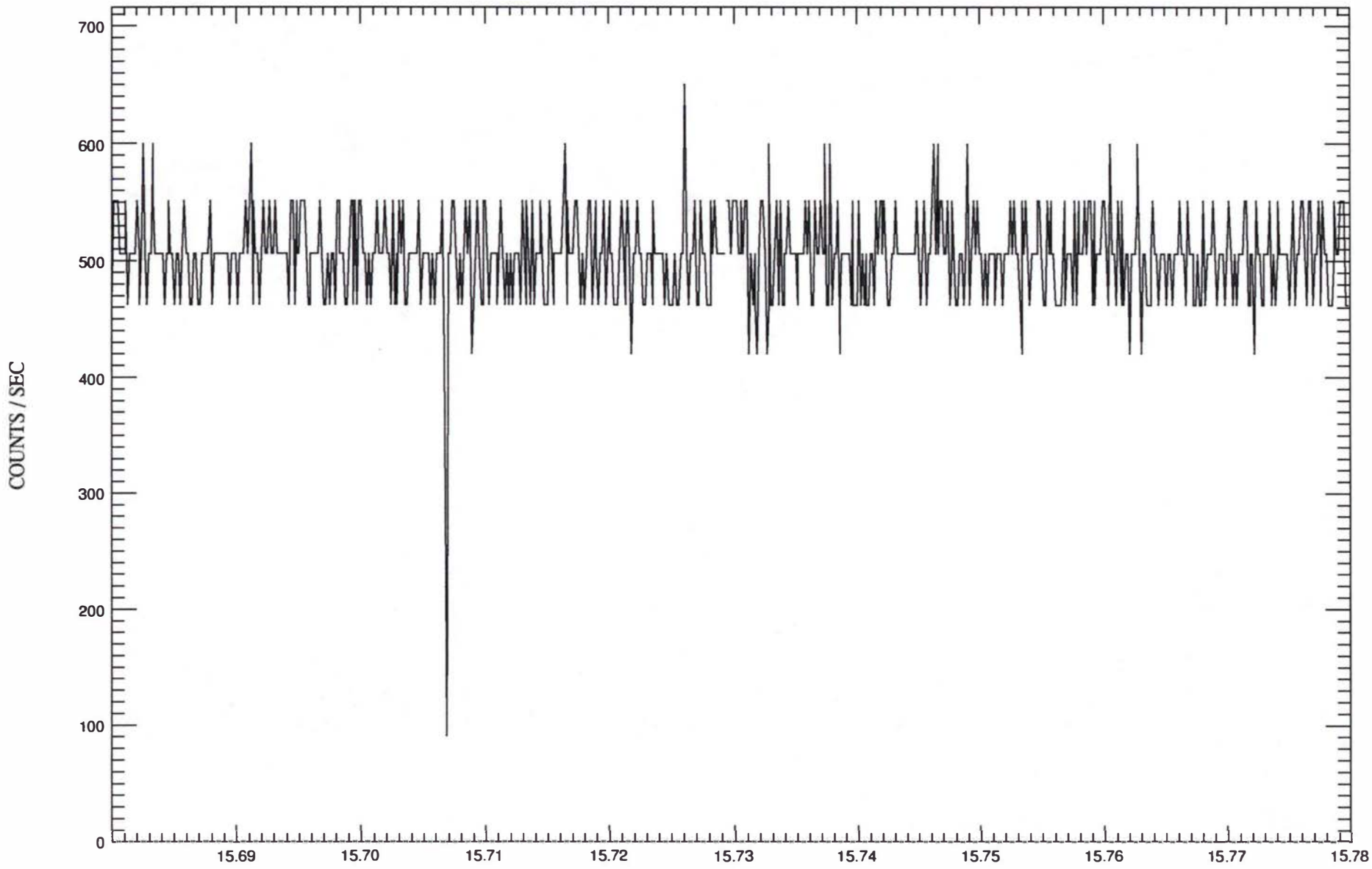




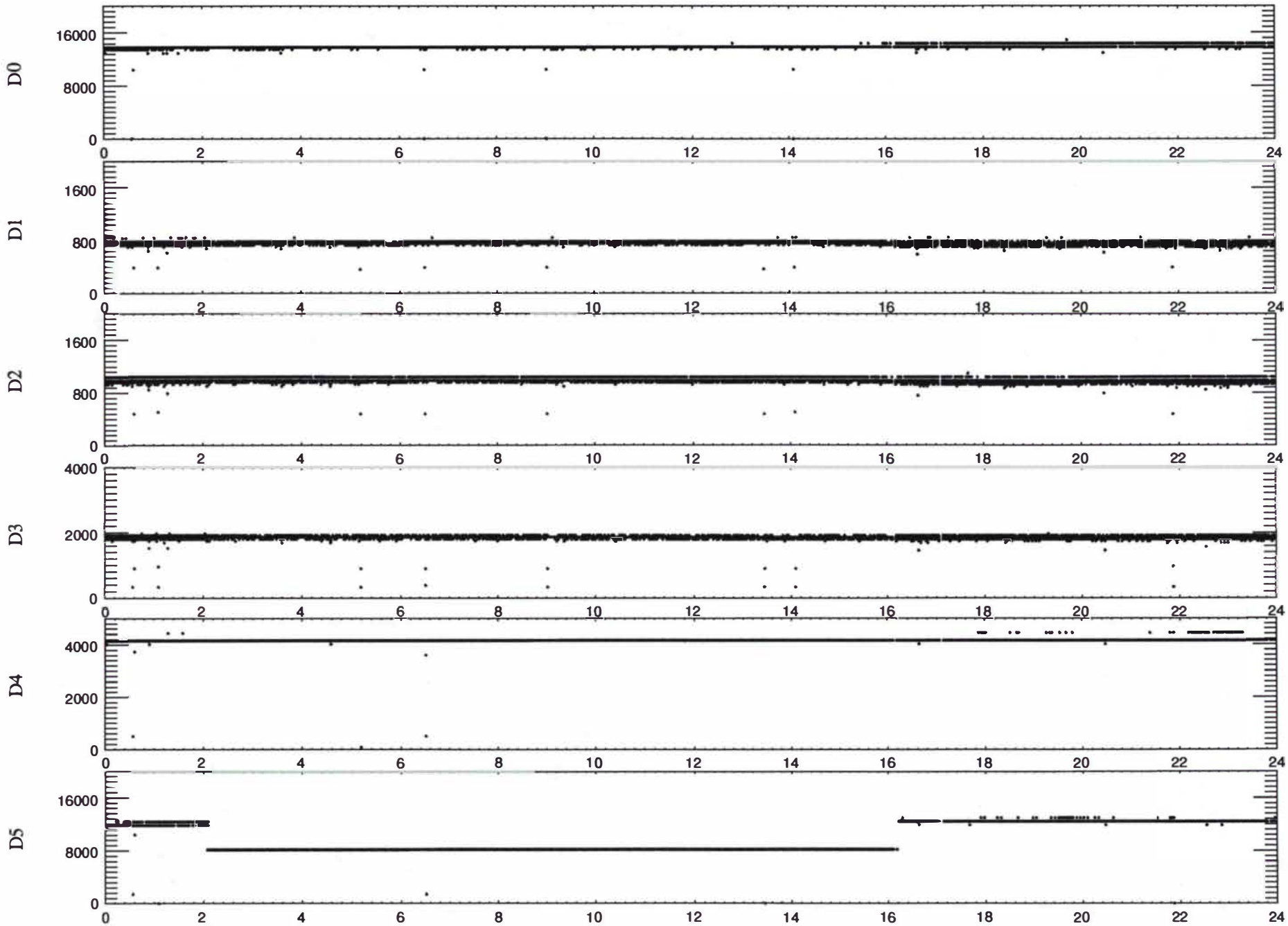
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 97, year 1998 to day 97, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 97, year 1998 to day 97, year 1998 8/18/98



From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
To: <hurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

Hi Kevin,

Here's the results of a search through TGRS data for recent Ulysses bursts not seen by BATSE.

December 23 1997 10:59 Ulysses time; moderate burst, 15 s long

corresponds to TGRS 661
occurred at 38209s on December 23, 1997
100-300 keV range:
Peak Flux 131 cts/s
T90: 62 s
T50: 12 s

THESE BURSTS WERE NOT SEEN BY TGRS

December 24 1997 19:29 Ulysses time; weak burst, 64 ms long
April 5 1998 14:48 Ulysses time; weak burst, 64 ms long
April 6 1998 07:45 Ulysses time; weak burst, 64 ms long
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April 8 1998 02:51 Ulysses time; weak burst, 64 ms long
April 09 1998 07:03 Ulysses time; weak burst, 64 ms long
April 09 1998 19:19 Ulysses time; weak burst, 32 ms long
April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

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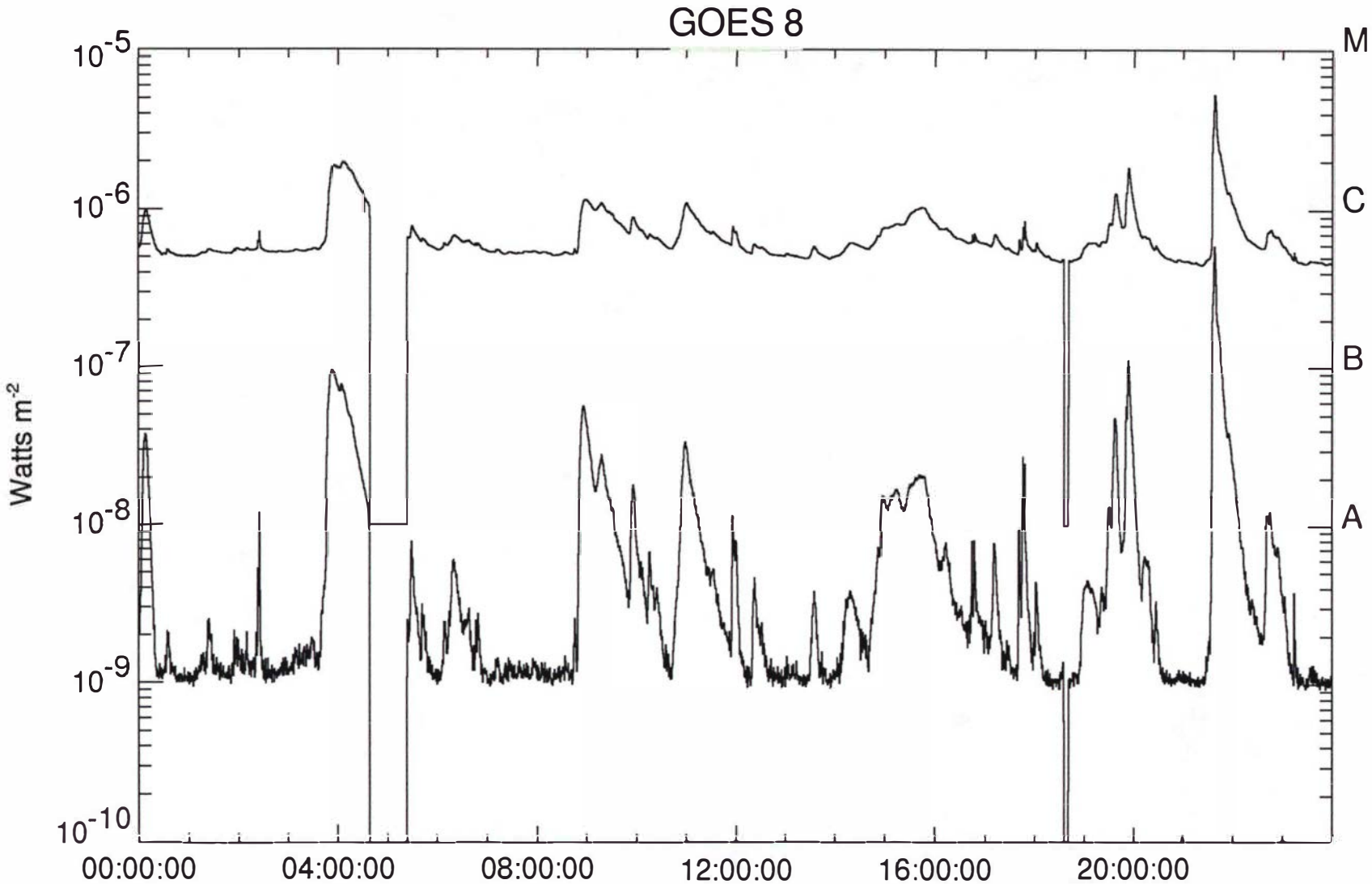
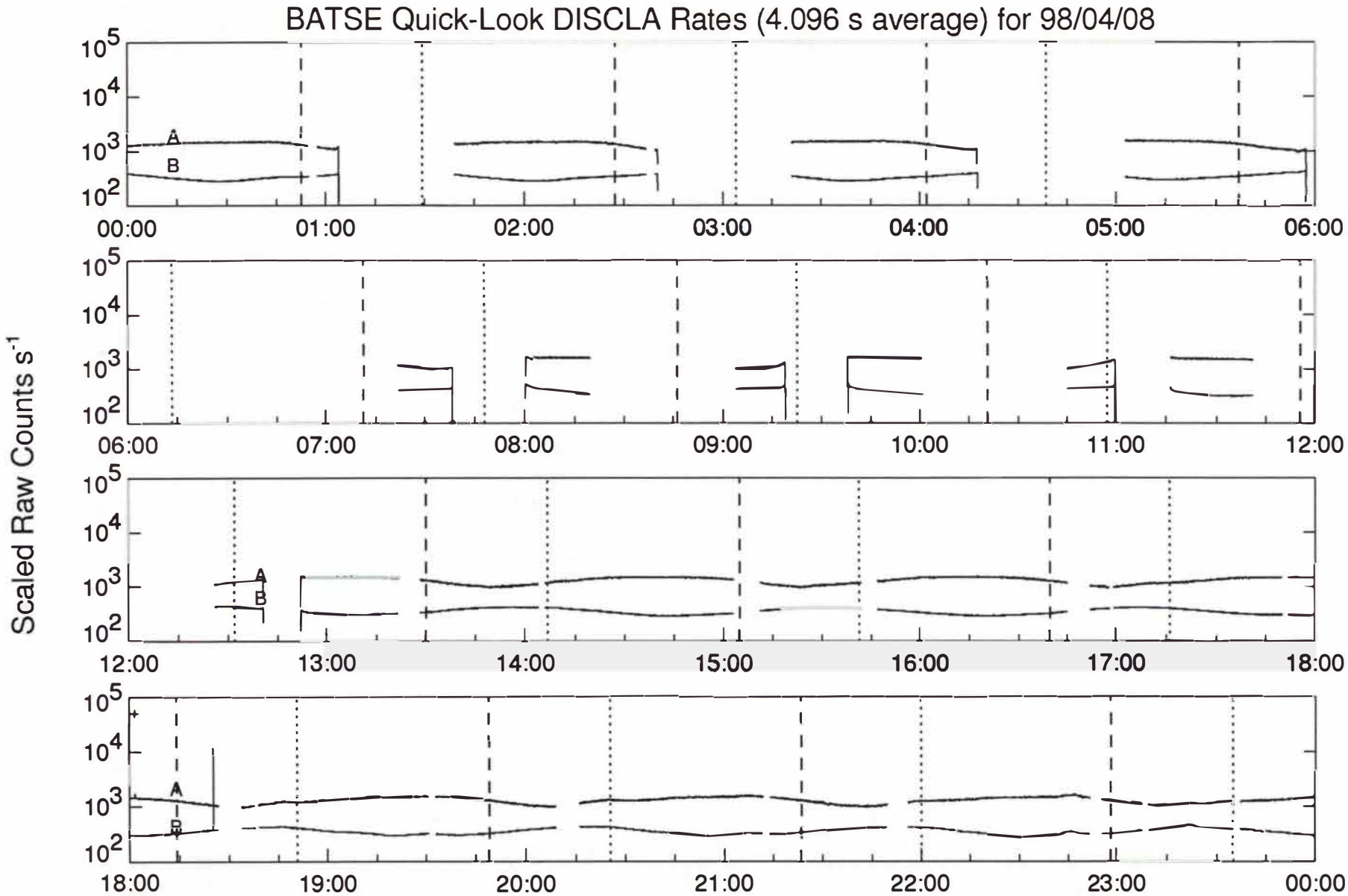
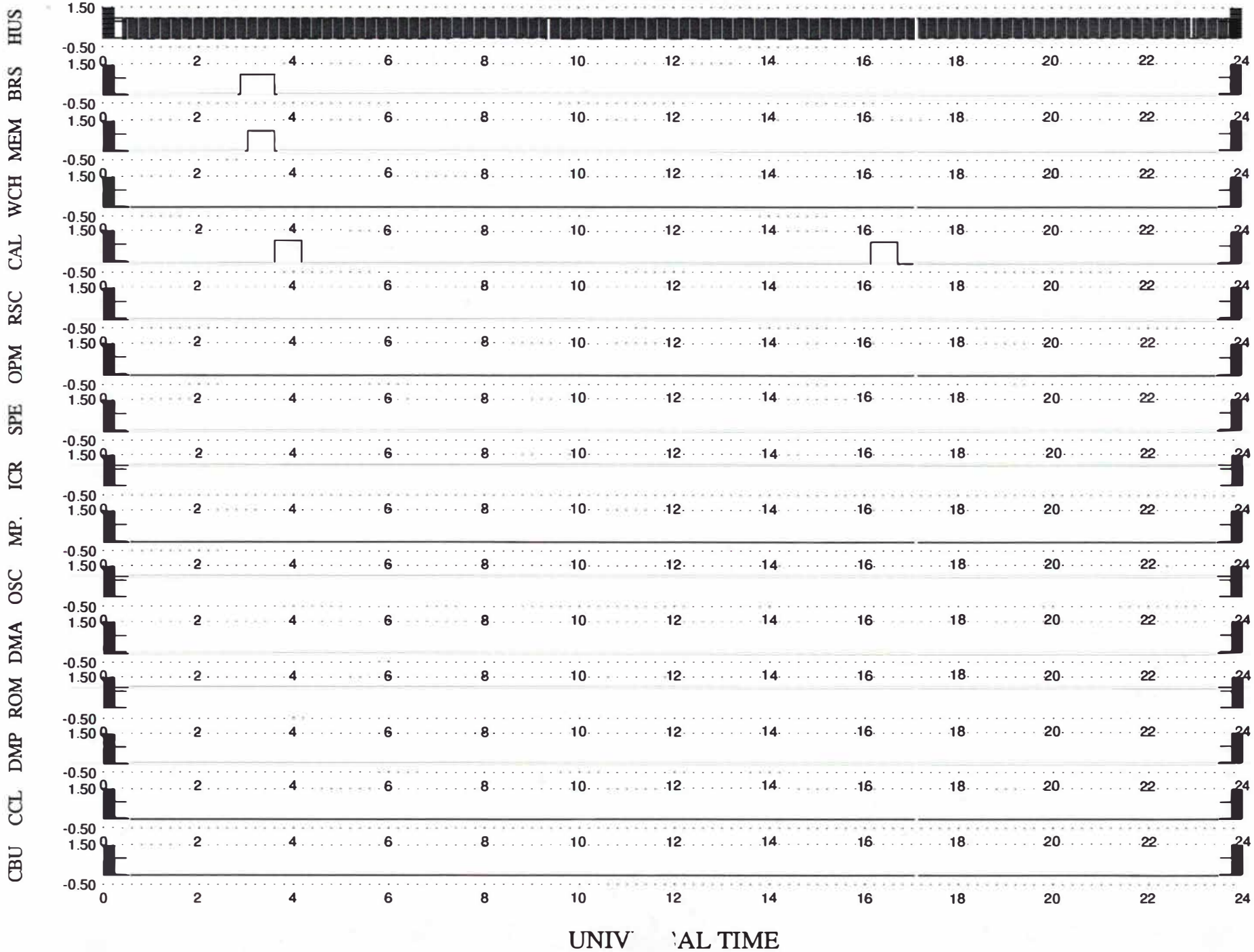


Data Start: 98/04/08, 0000:00 Plot created: 98/04/22, 1932
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/08
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: 98/04/22, 1933 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

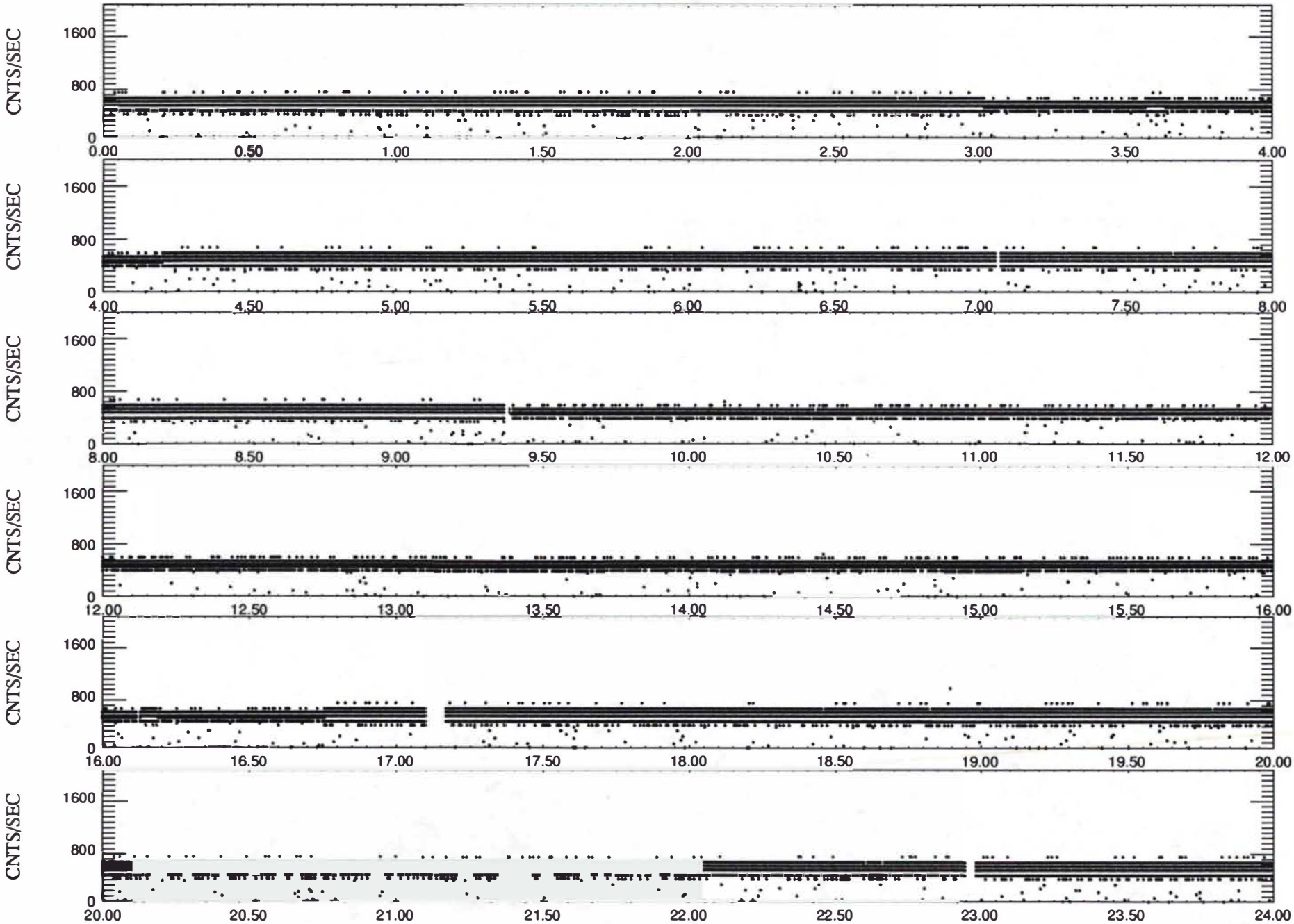
HUS MODES EDR day 98, year 1998 to day 98, year 1998 8/18/98

BURST NUMBER 13



HUS 2A, MODE 1, NOT AVERAGED EDR day 98, year 1998 to day 98, year 1998 8/18/98

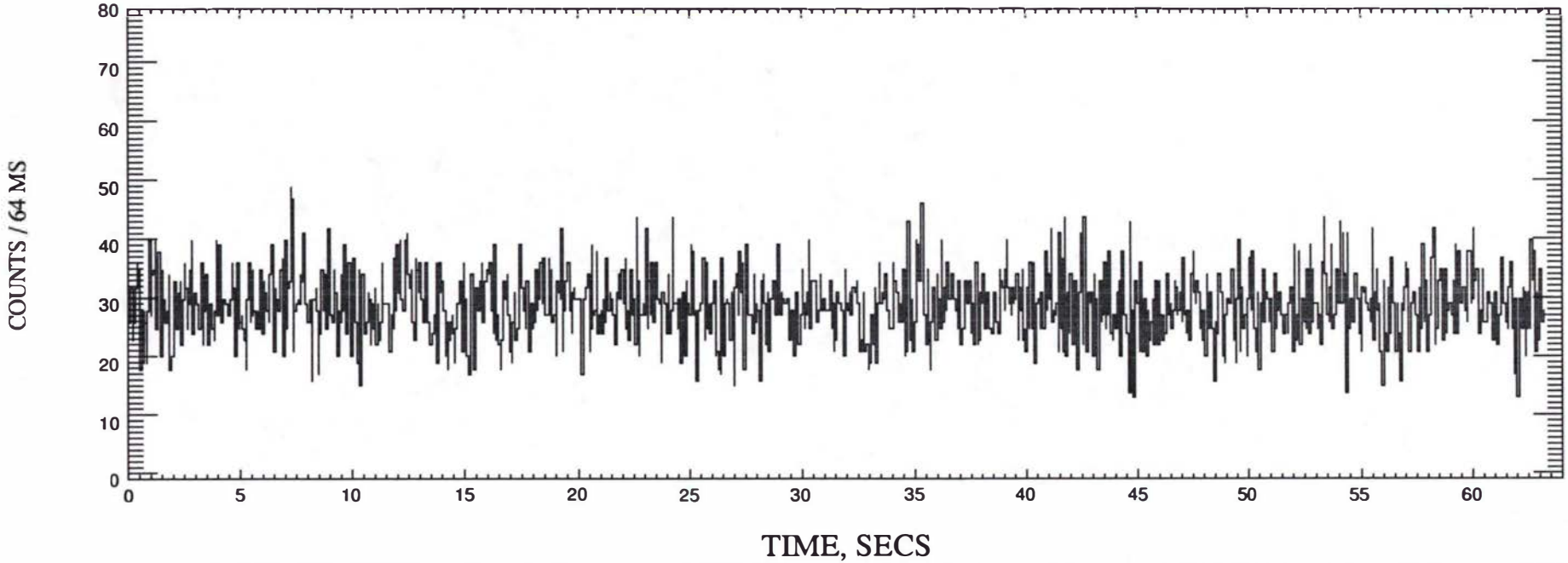
CALIBRATION DATA INCLUDED

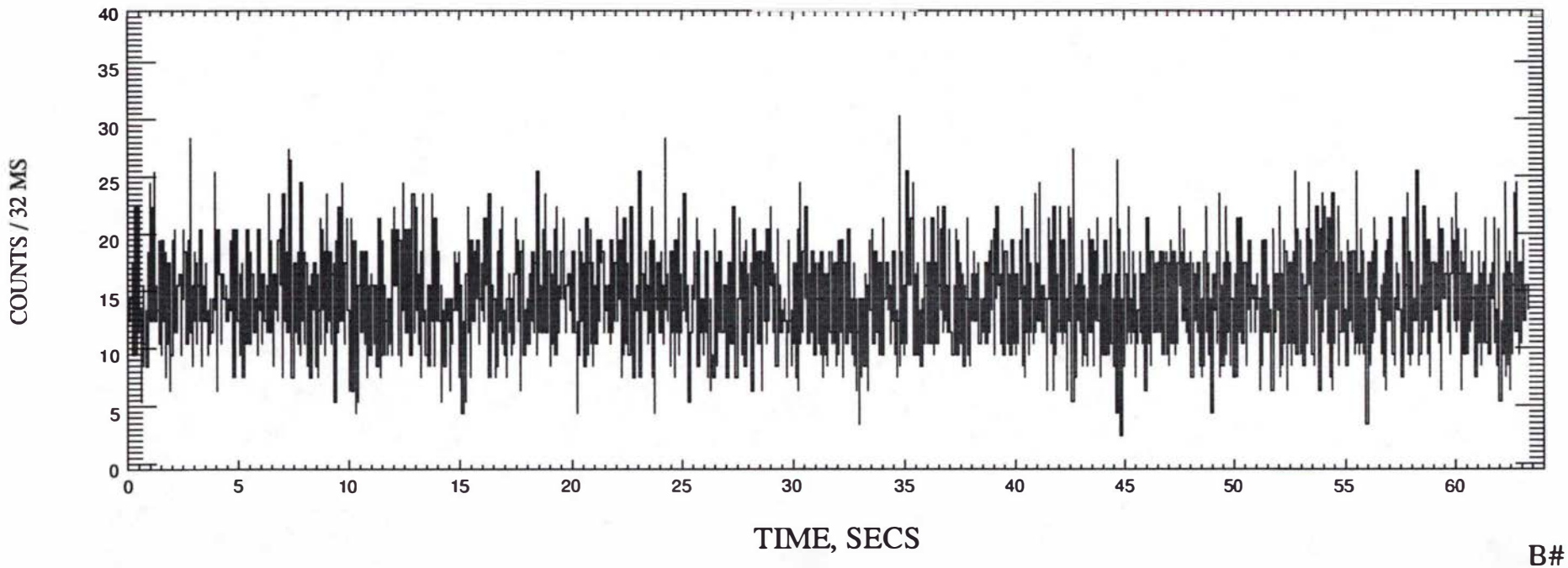


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 98, year 1998 8/19/98

Burst Counter 13 at UT= 2.857863044739 h=10288.307 s 02:51:28.307

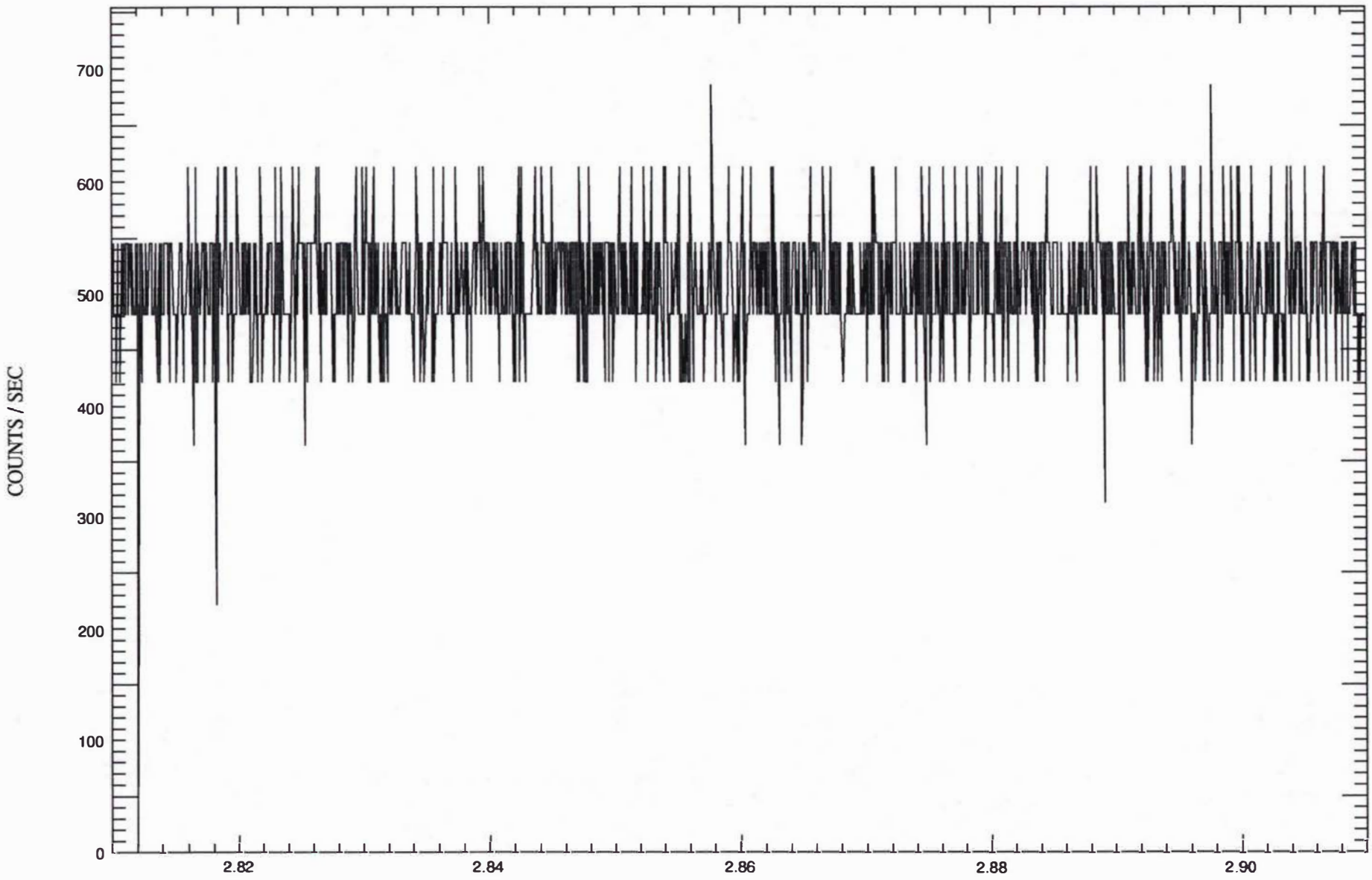




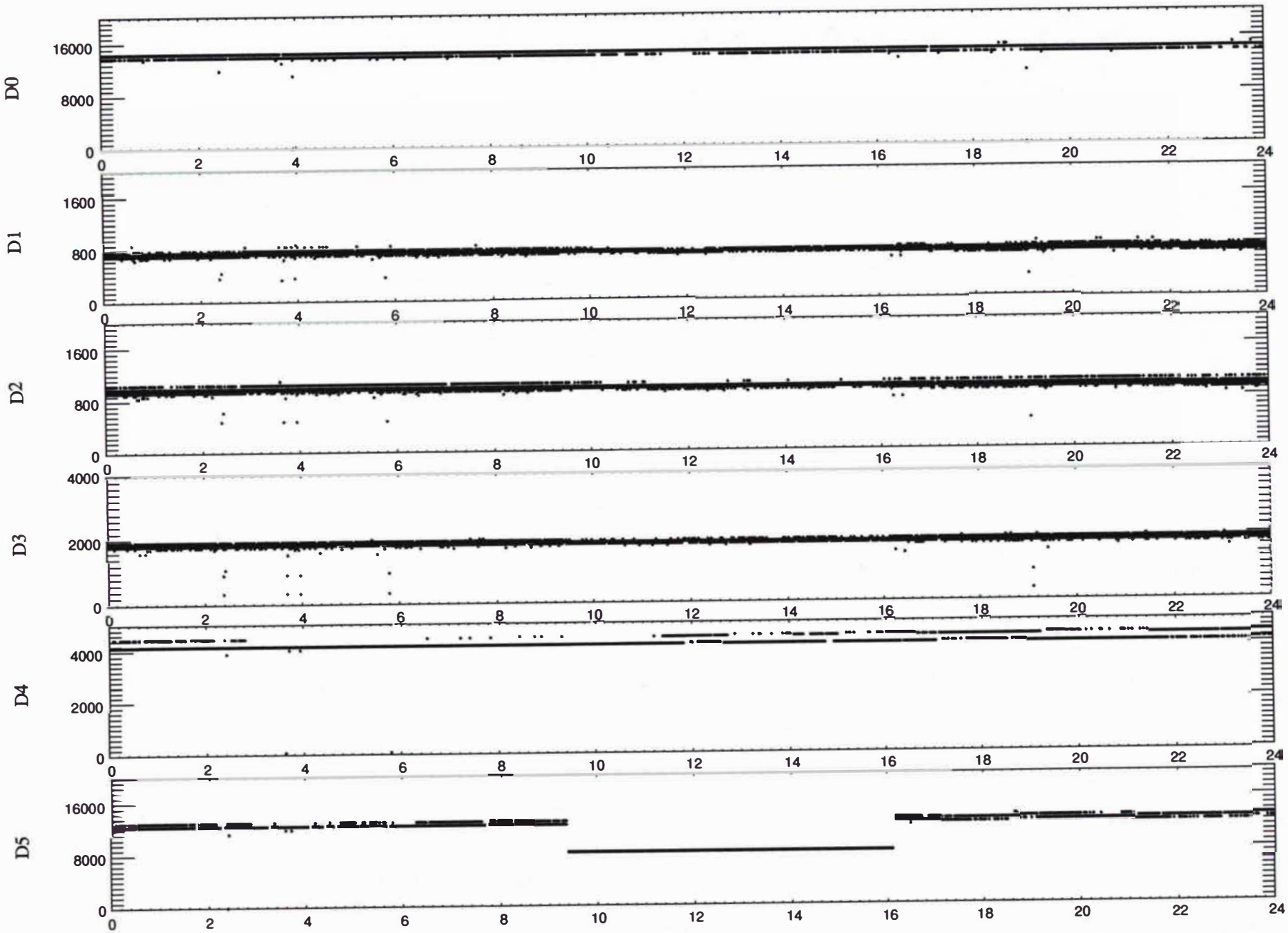
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 98, year 1998 to day 98, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 98, year 1998 to day 98, year 1998 8/18/98



From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
khurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
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April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

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Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

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None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

From RICHARDSON@fender.msfc.nasa.gov Fri Apr 10 14:41:26 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id OAA01364; Fri, 10 Apr 1998 14:41:25 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id OAA15143; Fri, 10 Apr 1998 14:41:23 -0700
Date: Fri, 10 Apr 1998 16:39:38 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980410163938.20e1fc27@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6683
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6683
EVENT OF 1998 APR  9 DAY OF YEAR= 99
EVENT CROSSING TIME AT BATSE      :  7712. S. OR 02:08:32.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 206.000   10.000
BATSE PEAK COUNTING RATE:  15000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON  9/ 4/  98 IS:
RA=  151.702 DEC=   13.343 DIST=    4.714 AU
BATSE-ULYSSES DISTANCE =  705157508. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=126.82 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1409.57 SECS.
CROSSING TIME AT ULYSSES    IS  6302. S. OR   01:45:02 +/-  355.51 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON  9/ 4/  98 IS:
RA=   25.151 DEC=   10.097 DIST=    2.421 AU
MARS-BATSE DISTANCE =  362207968. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 20.11 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1134.51 SECS.
CROSSING TIME AT MARS       IS  8847. S. OR   02:27:26 +/-   89.37 SECONDS

                BATSE BURST TRIGGER
NO.: 6683

TIME: TJD=0912 SECONDS=7712

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=47.2   AZIMUTH=204.5  ERROR=1.2   DEGREES

COMMENTS:
GRB VERY SPIKEY. DURATION APPROX. = 11 SEC. VISIBLE ABOVE 300KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6683	980409	10912	07712	15000	206	+10	11

Date: 1/18/00

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? N/A

☑ 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. NEAR Data N/A

☐ Final, correct time used? (Files on website have the correct time)

☐ BATSE >100 keV data used for NEAR correlation?

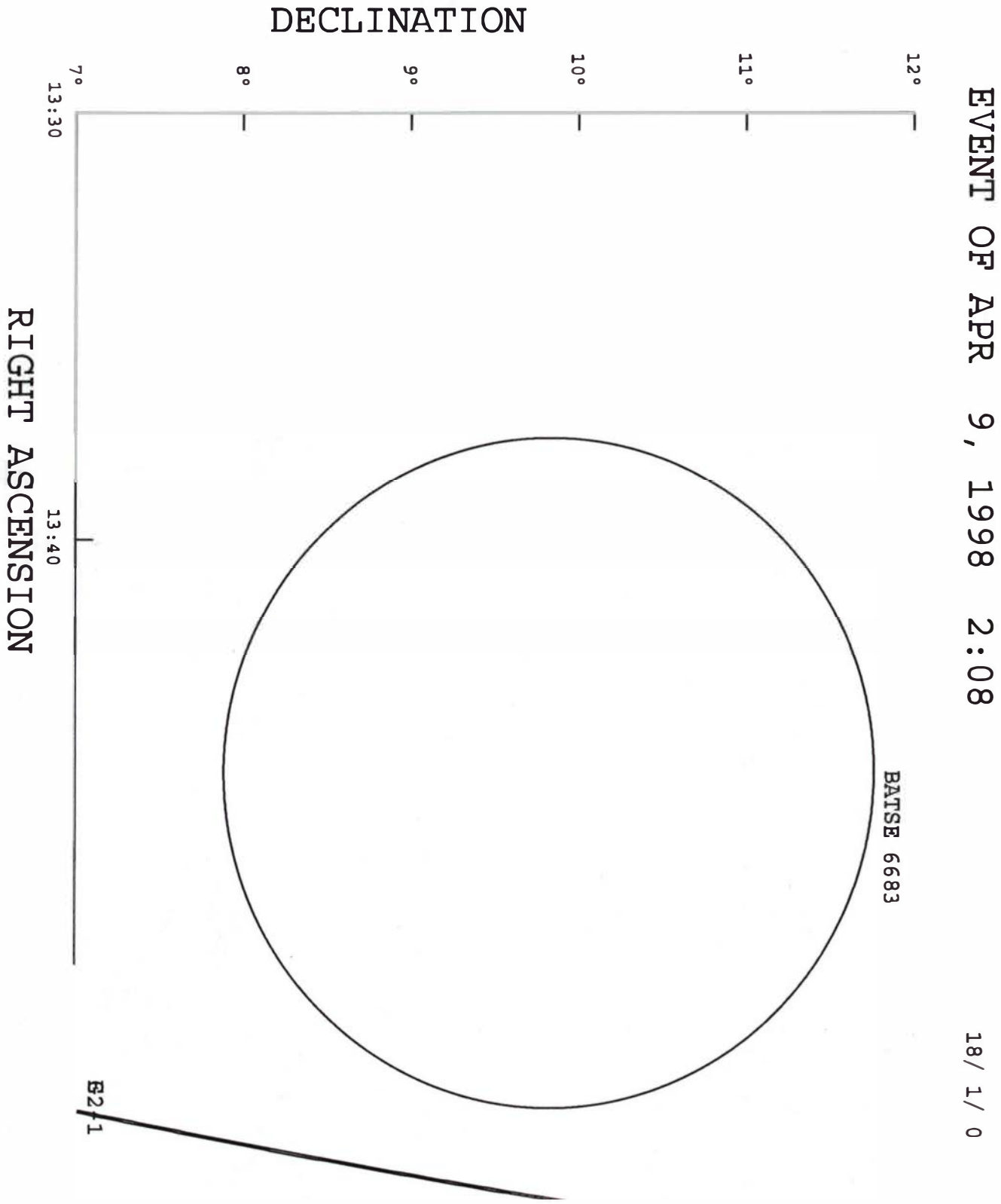
☑ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

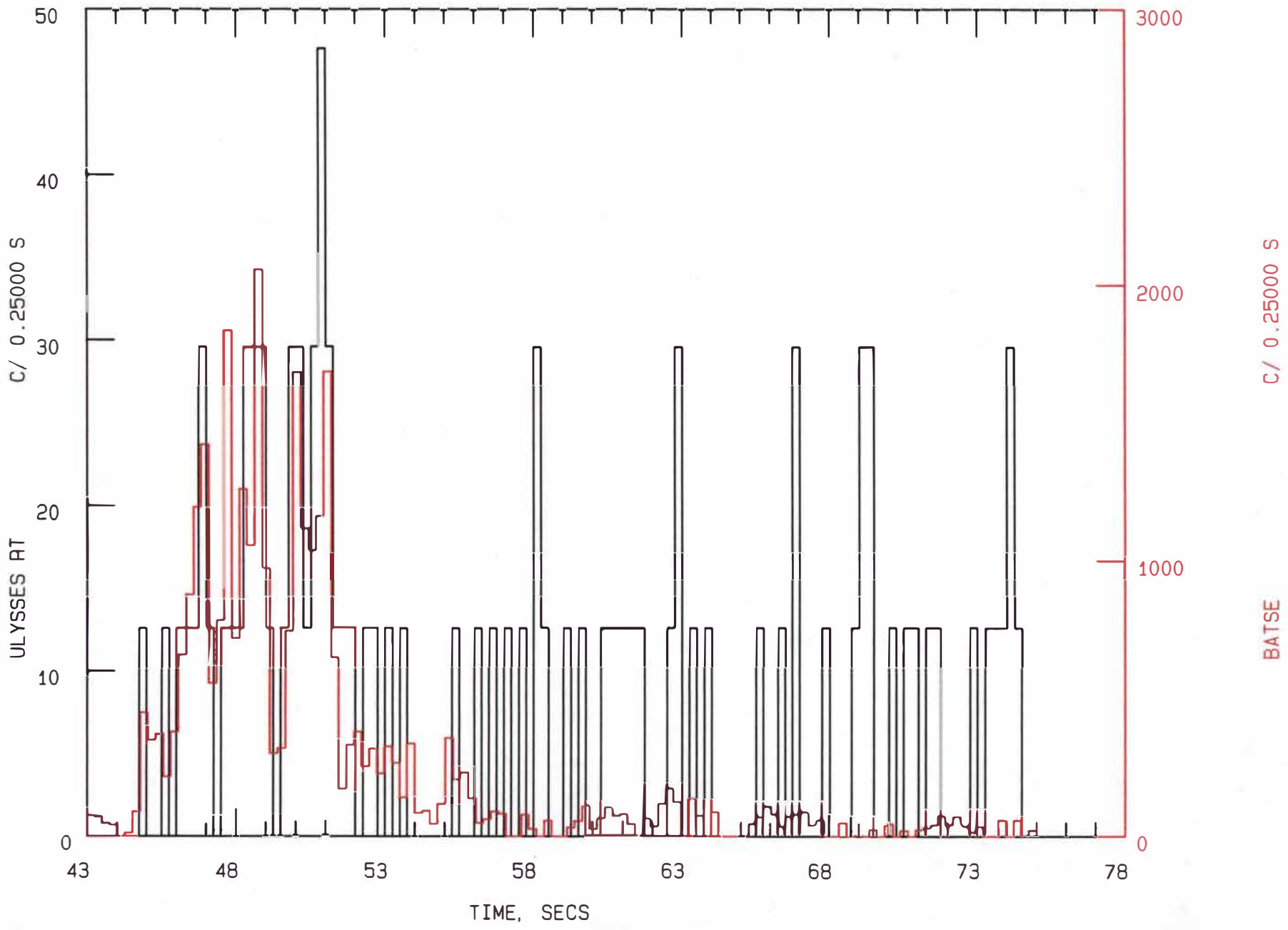
EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 BATSE 2 ULYSSES

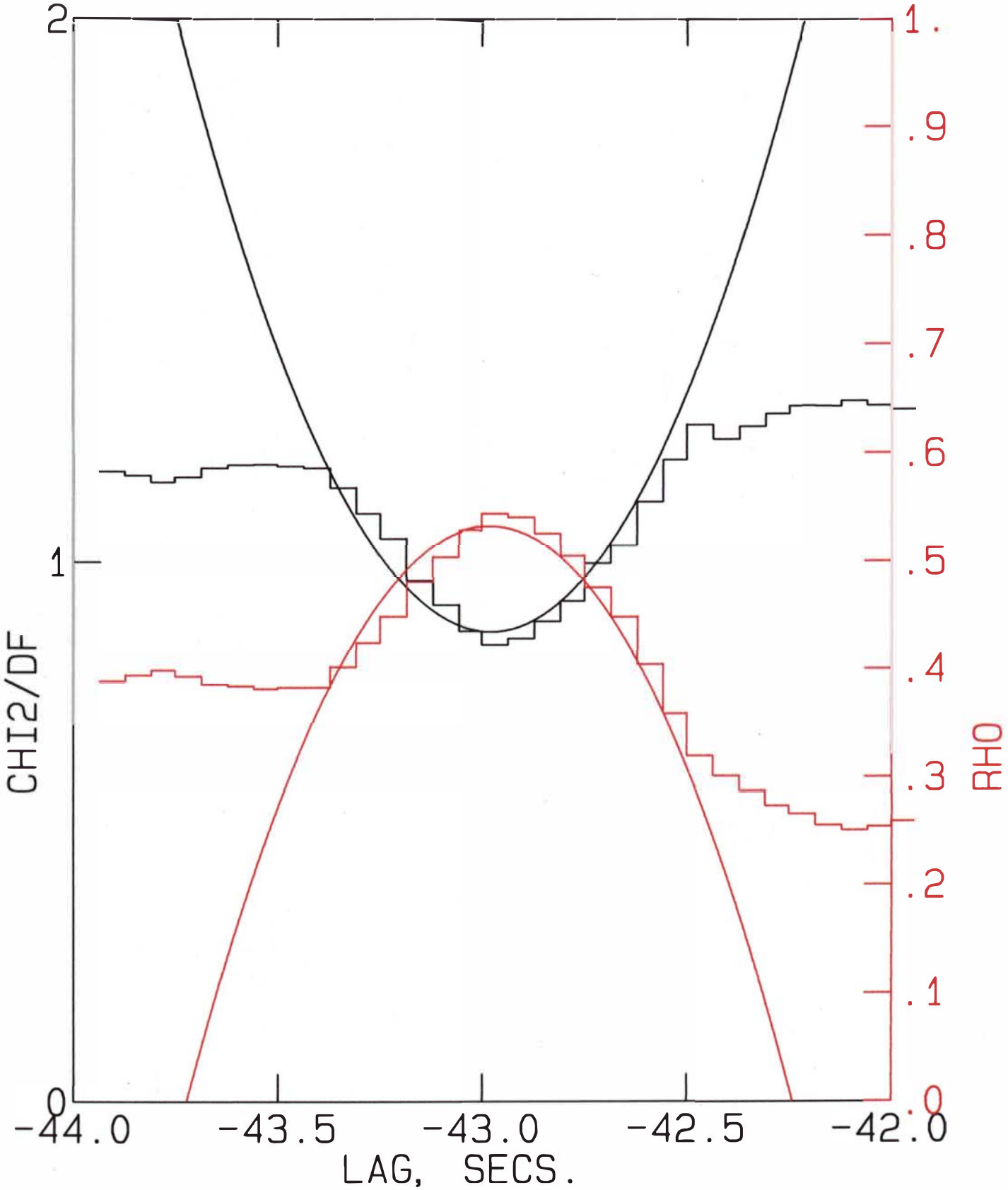


ULYSSES RT-BATSE CORRELATION 9/ 4/98 6329.068 18/ 1/ 0



18/ 1/ 0

ULYSSES RT-BATSE CORRELATION 9/ 4/98 6329.068



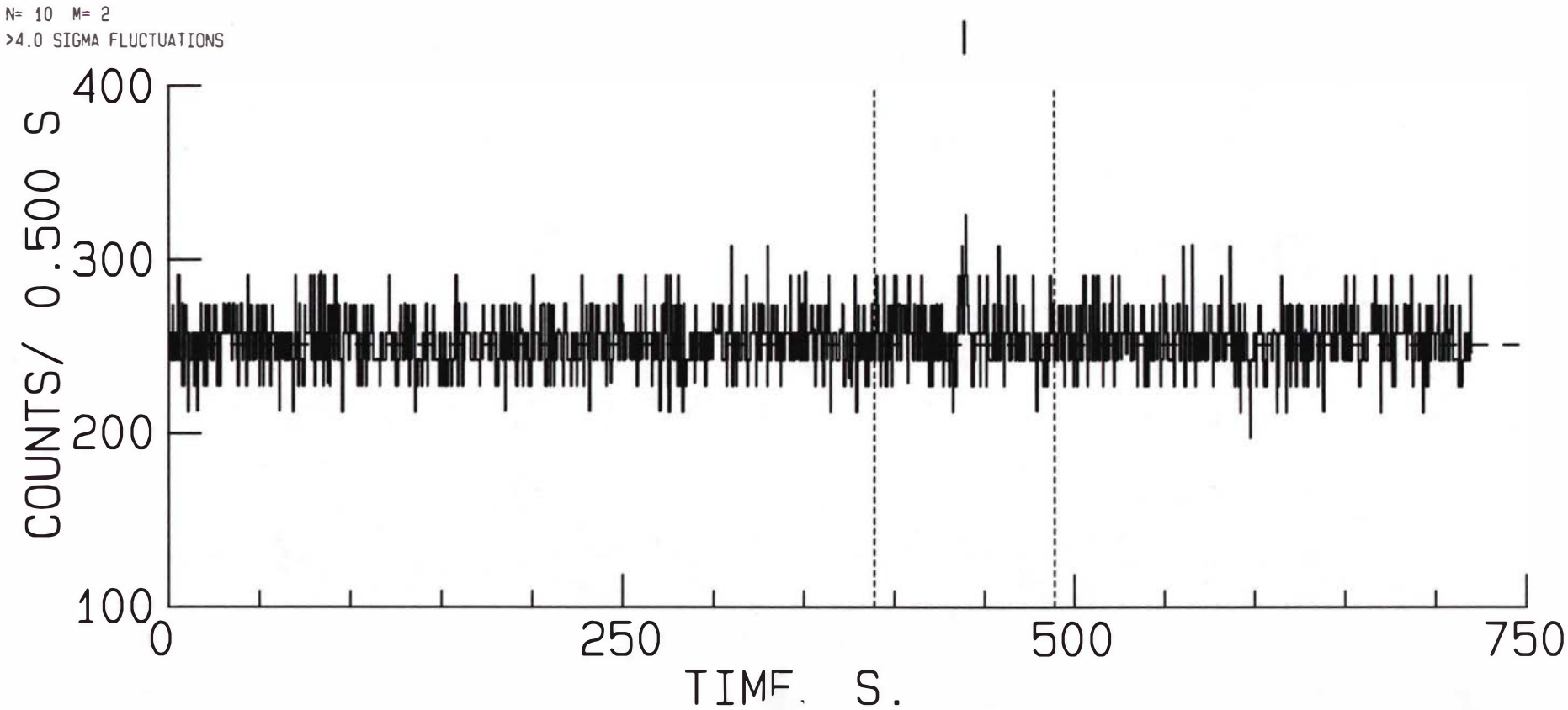
ULYSSES RT

18/ 1/ 0

9/ 4/98 5940.071 s

0.250 S INTERVALS REGROUPED BY 2

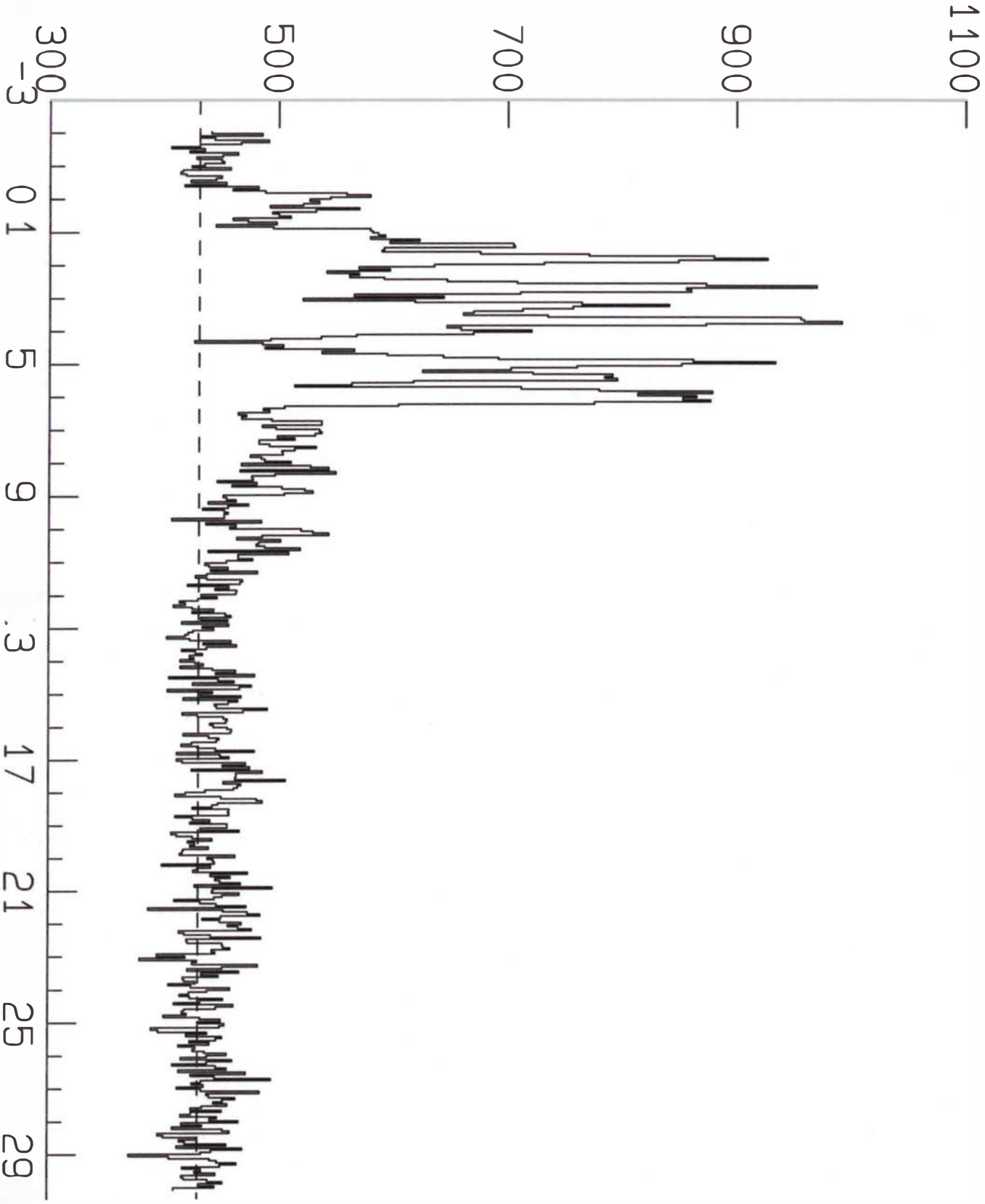
22- 150 keV



BATSE 09/04/98 7712.225

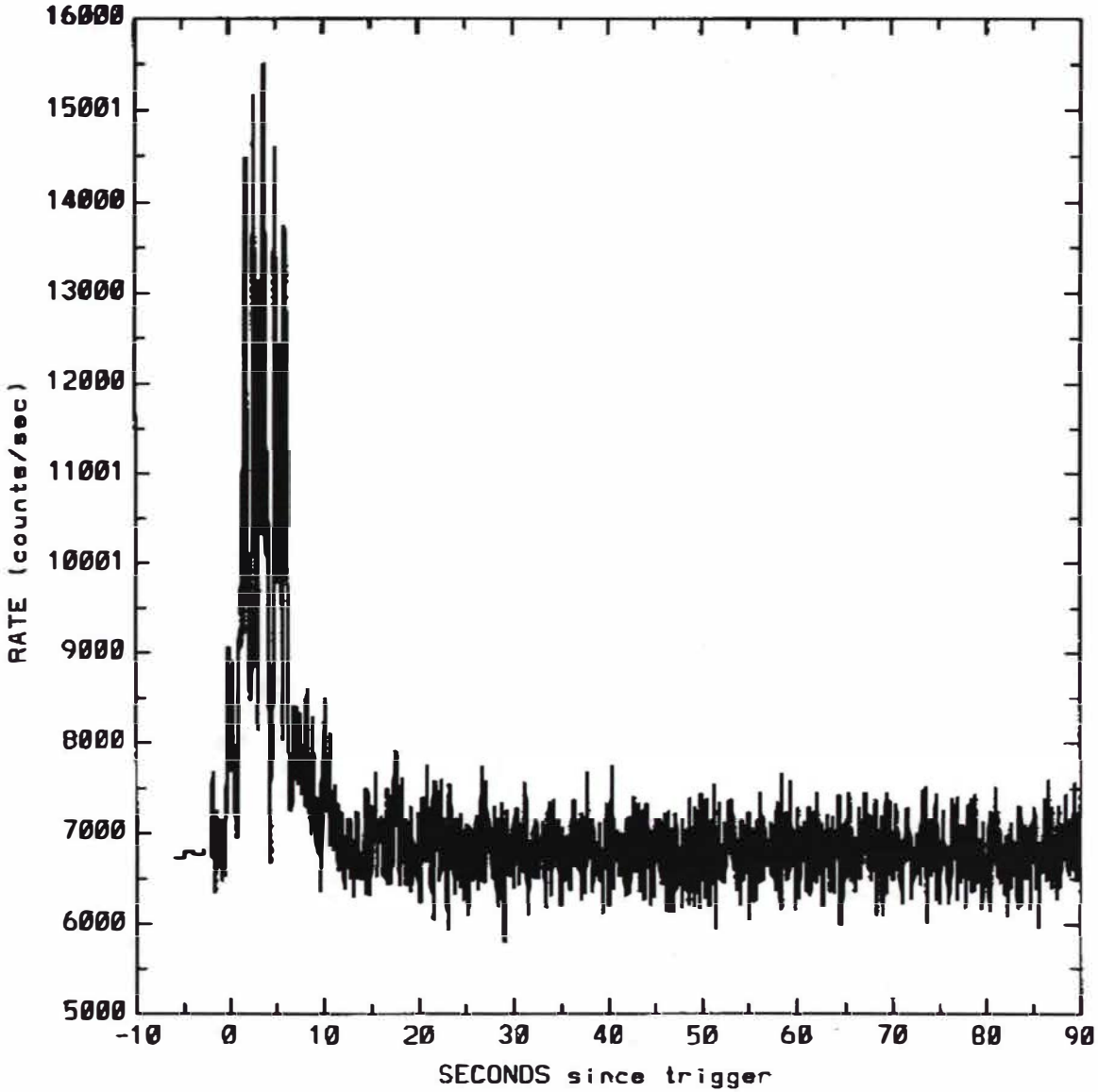
25- 100 keV

COUNTS/0.064 S



24/ 6/98

DISCSC Data for K. Hurley. No. 6683



2-JUN-1998 13.39.37

Created by MOPS 80
(Burst Display)
Version t2.25

Trigger # : 6683

Trigger Time:
10912 / 7712.225

Burst Data Type:
DISCSC

Deadtime
Corrected: N

Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 second(s)

Detectors [7..0]:
-6-4----

Discriminators:
(1 . 2)

Quality Mask:
BDISP1

From RICHARDSON@fender.msfc.nasa.gov Mon Apr 13 10:01:55 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Mon, 13 Apr 1998 12:01:31 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu,
gruber@cass01.ucsd.edu, matteson@cass01.ucsd.edu,
PACIESAS@fender.msfc.nasa.gov, HORACK@fender.msfc.nasa.gov,
khurley@sunspot.ssl.berkeley.edu, park@kabul.llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6684

TIME: TJD=0912 SECONDS=84381

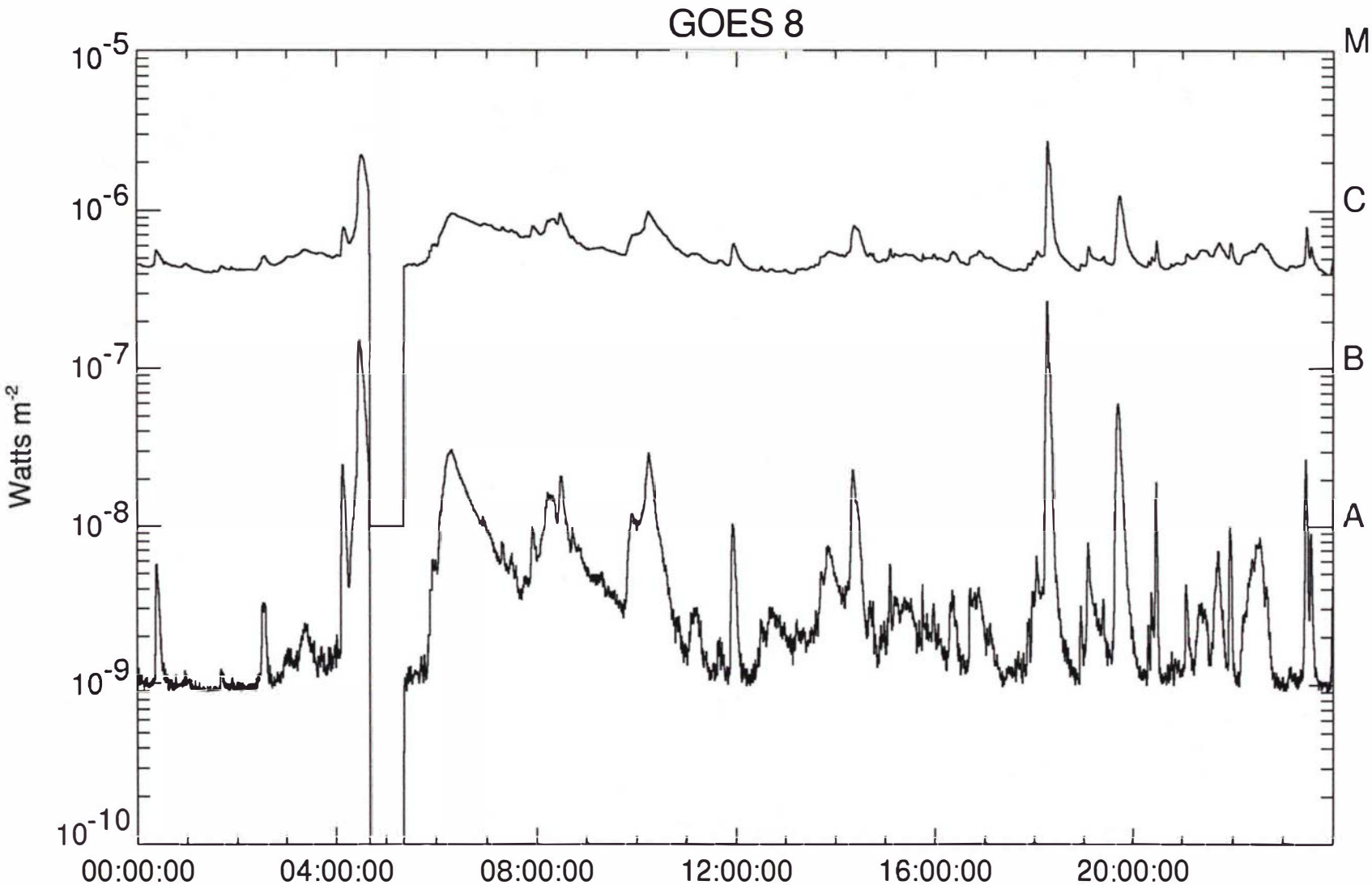
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

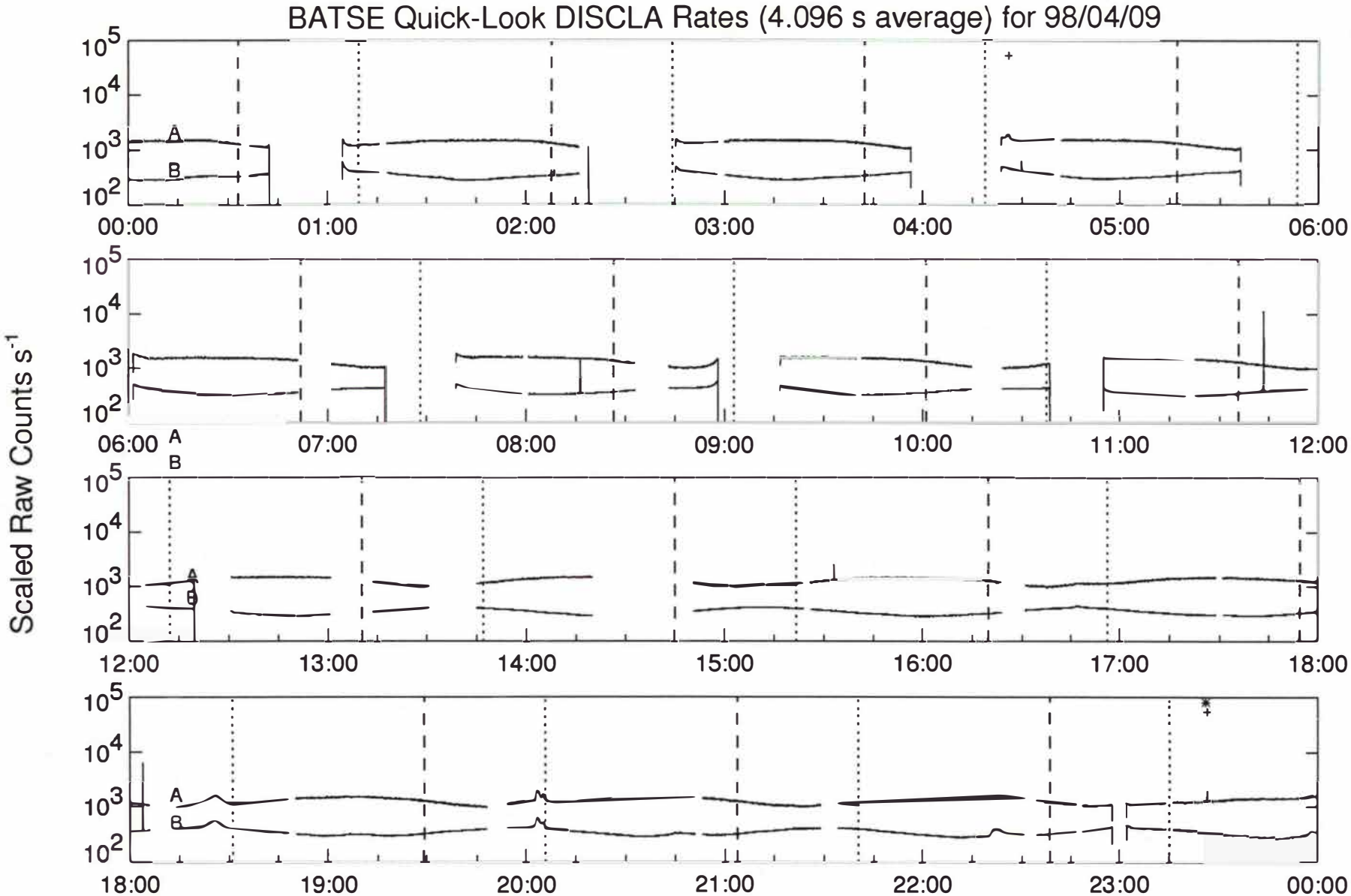
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=123.1 AZIMUTH=355.9 ERROR=1.9 DEGREES

COMMENTS:
SOLAR FLARE, GOES B8.5, LOTS OF STRUCTURE, DURATION APPROX. = 3.5 SEC
NOT VISIBLE ABOVE 100KEV.



Data Start: 98/04/09, 0000:00 Plot created: 98/04/22, 1937
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



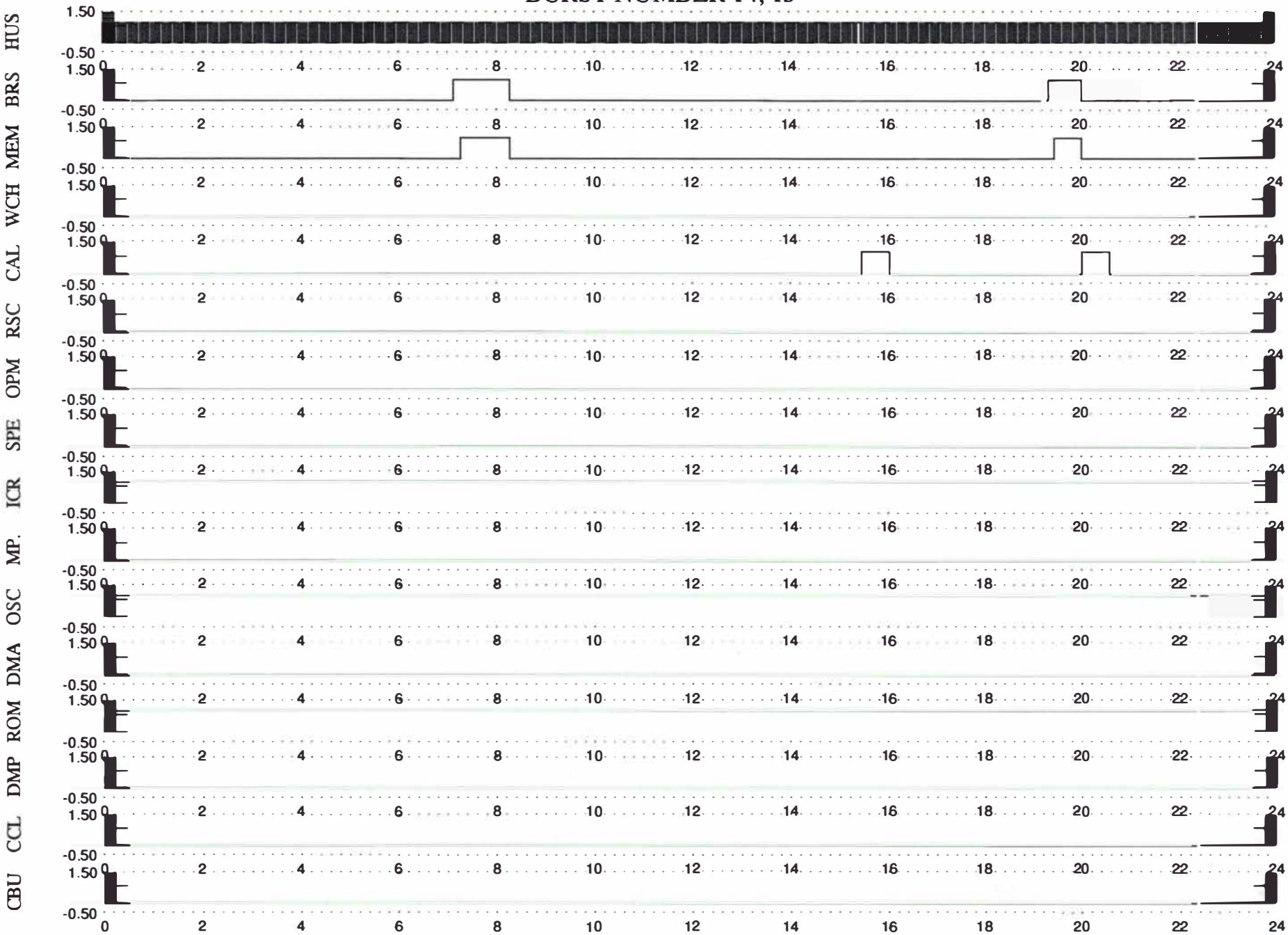
Current Time: 98/04/22, 1938 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

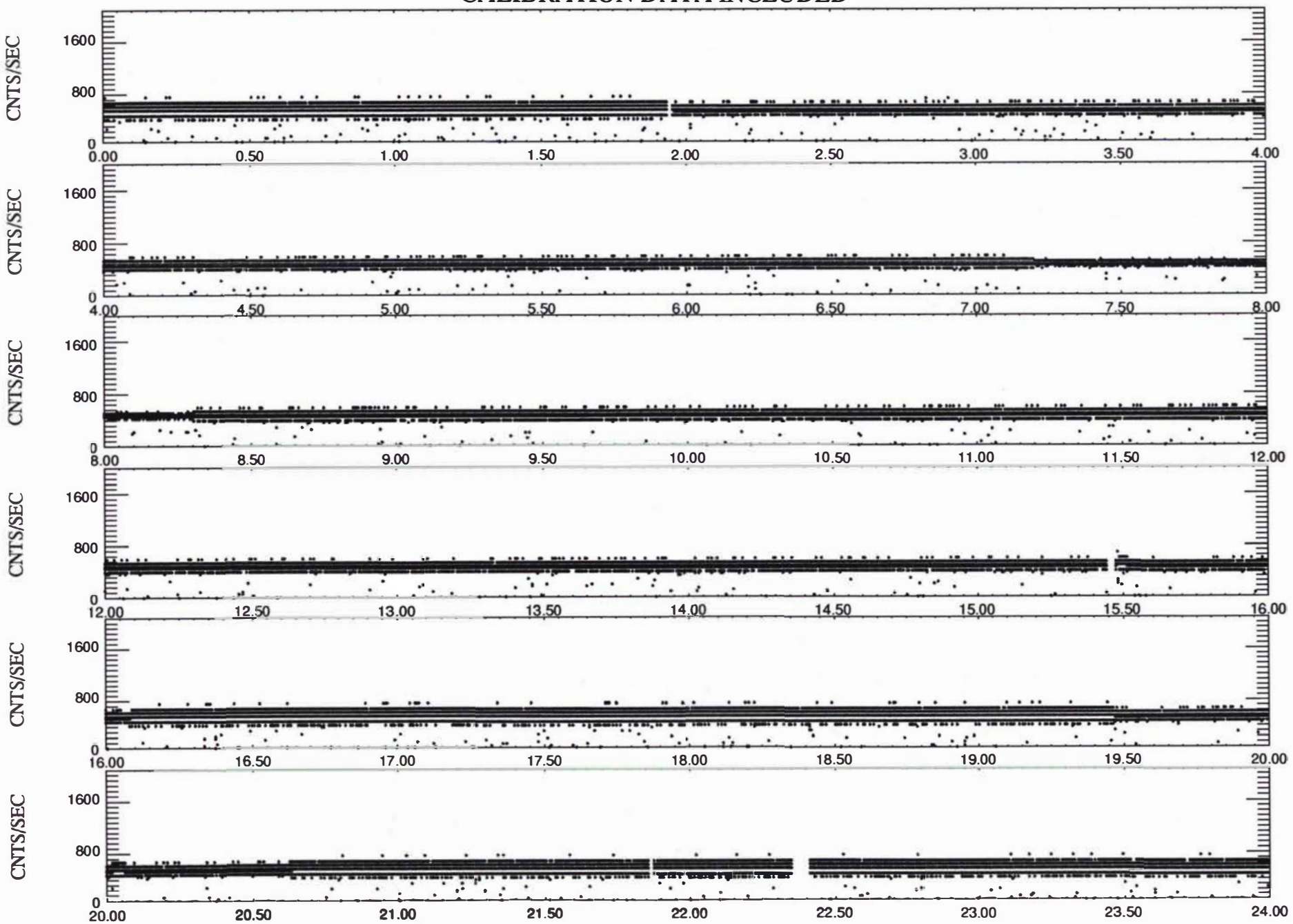
HUS MODES EDR day 99, year 1998 to day 99, year 1998 8/18/98

BURST NUMBER 14, 15



HUS 2A, MODE 1, NOT AVERAGED EDR day 99, year 1998 to day 99, year 1998 8/18/98

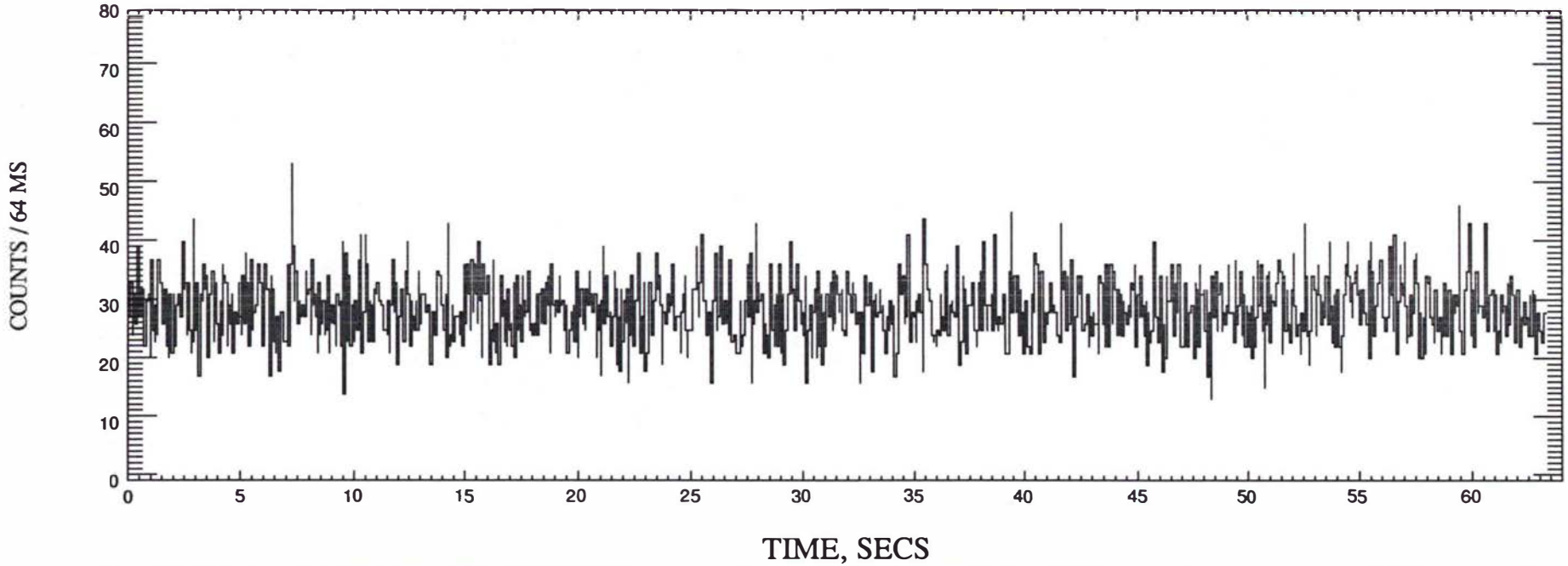
CALIBRATION DATA INCLUDED

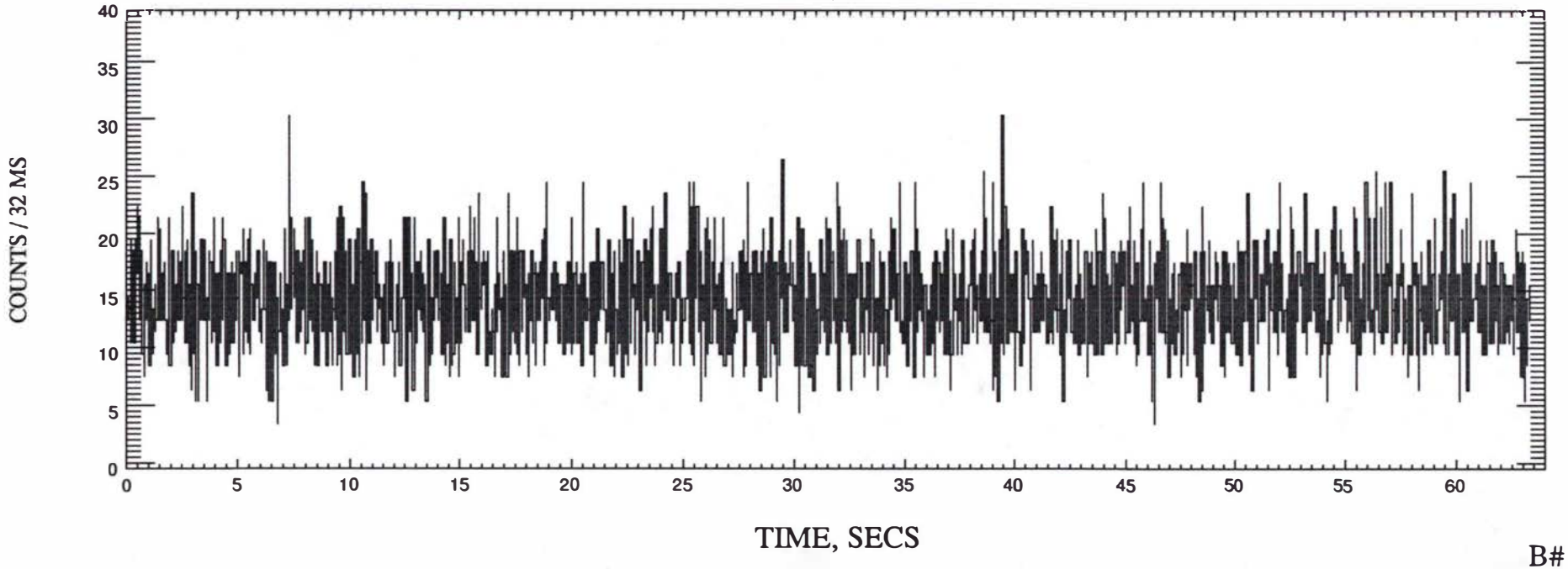


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA EDR day 99, year 1998 8/19/98

Burst Counter 14 at UT= 7.049866383870 h=25379.519 s 07:02:59.519

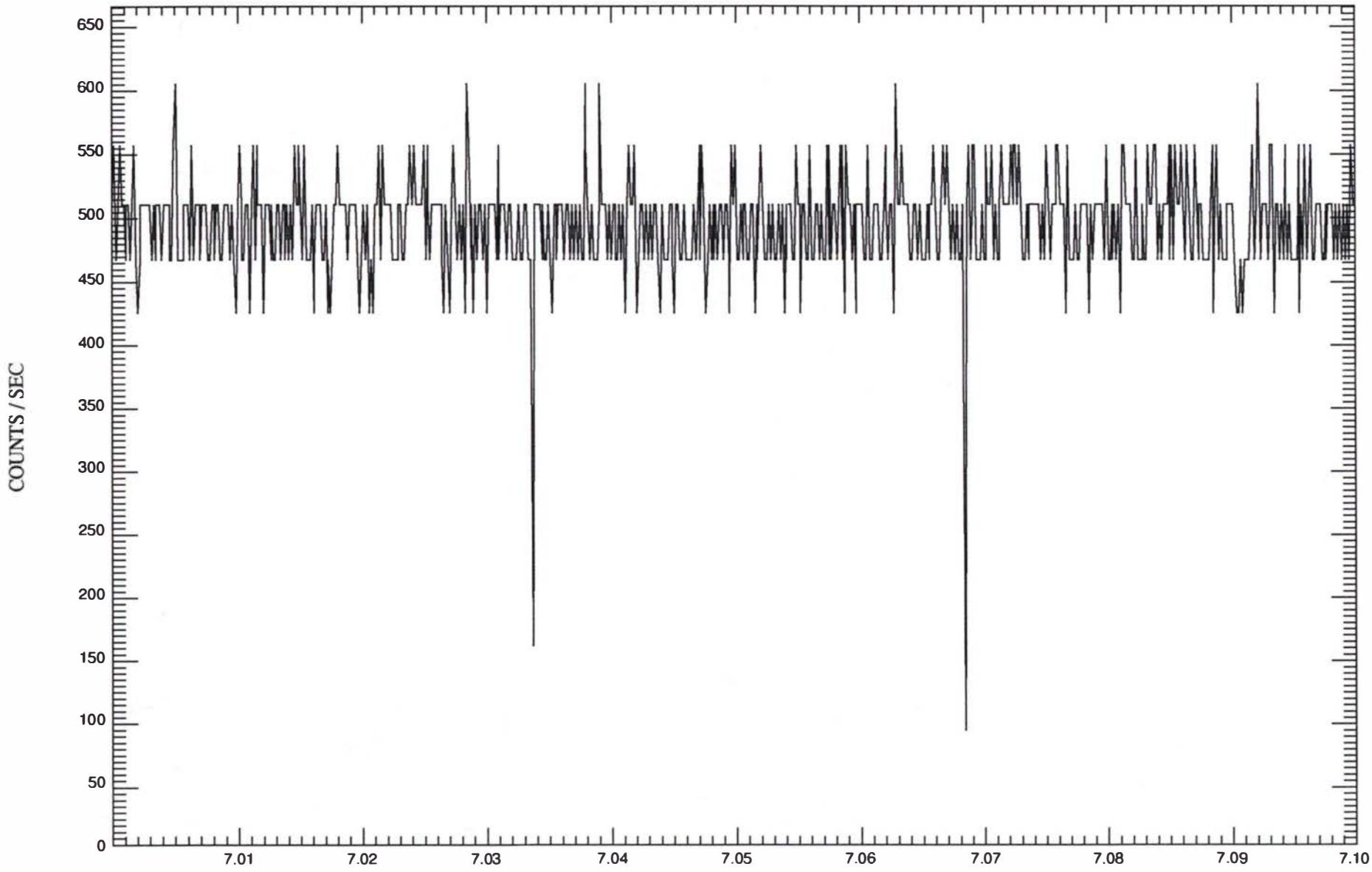




B# 1

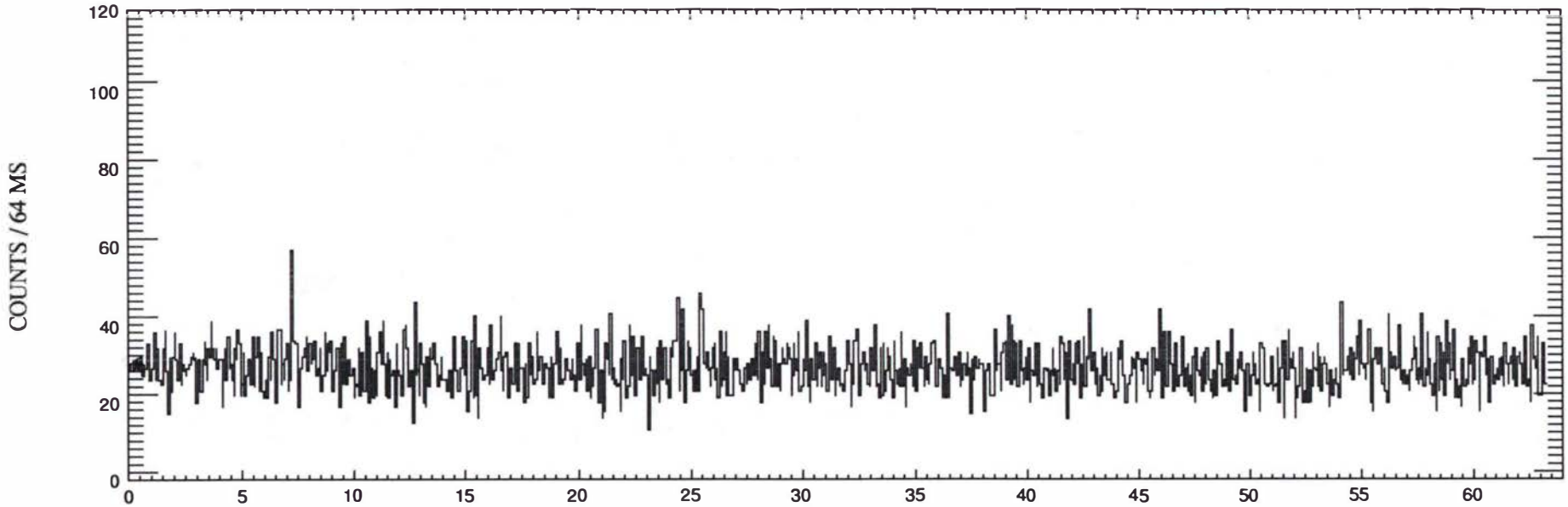
HUS 2A, MODE 1, NOT AVERAGED EDR day 99, year 1998 to day 99, year 1998 8/19/98

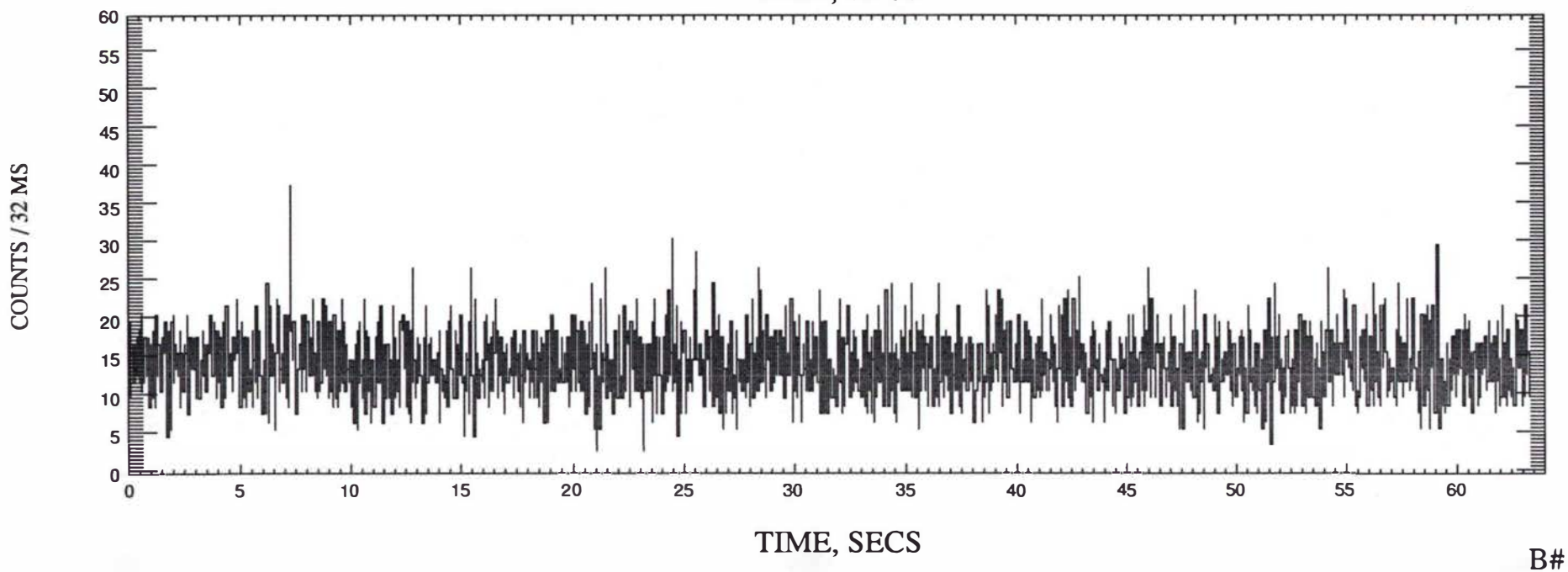
CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA EDR day 99, year 1998 8/19/98

Burst Counter 15 at UT=19.314130872091 h=69530.871 s 19:18:50.871

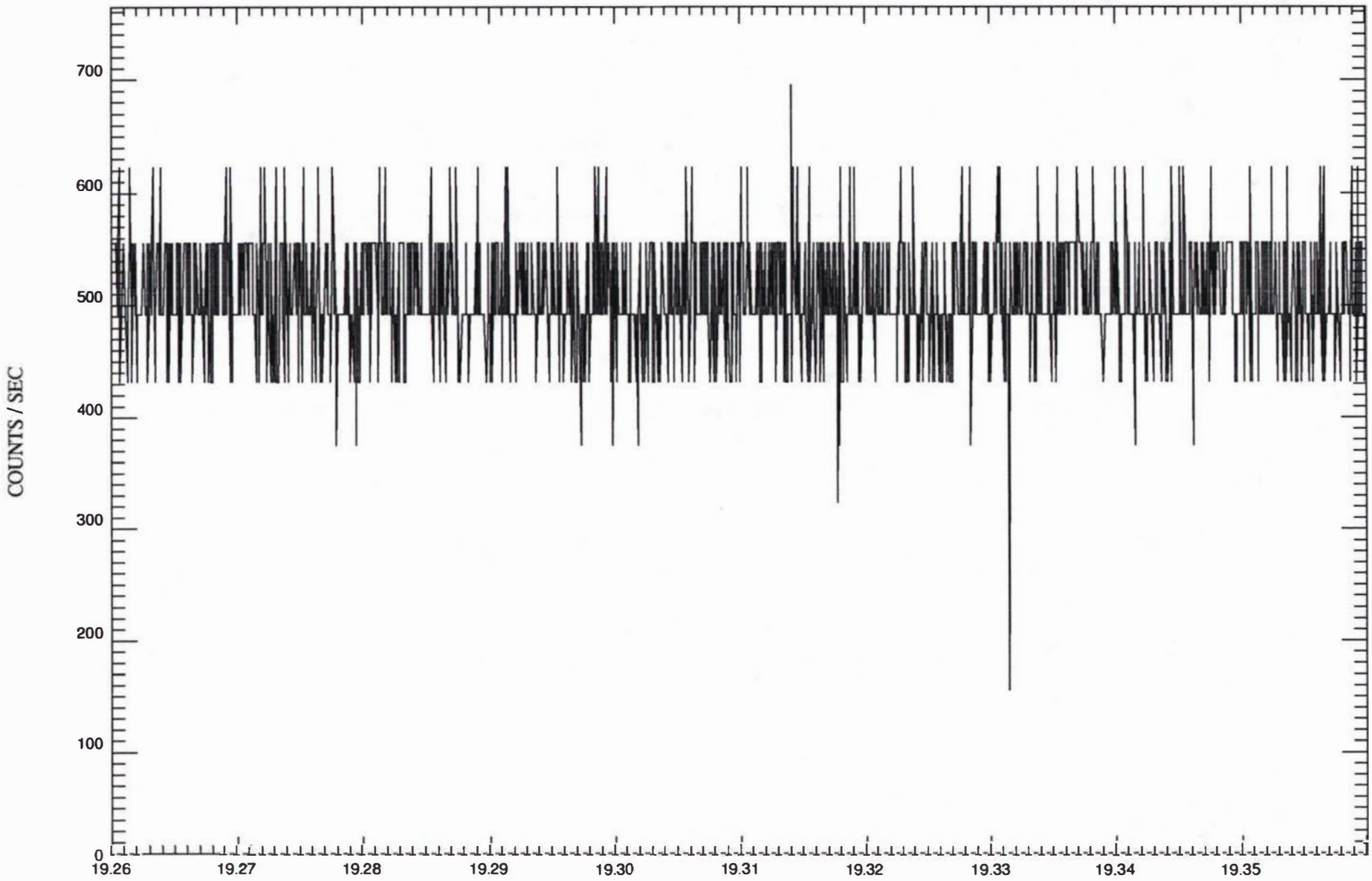




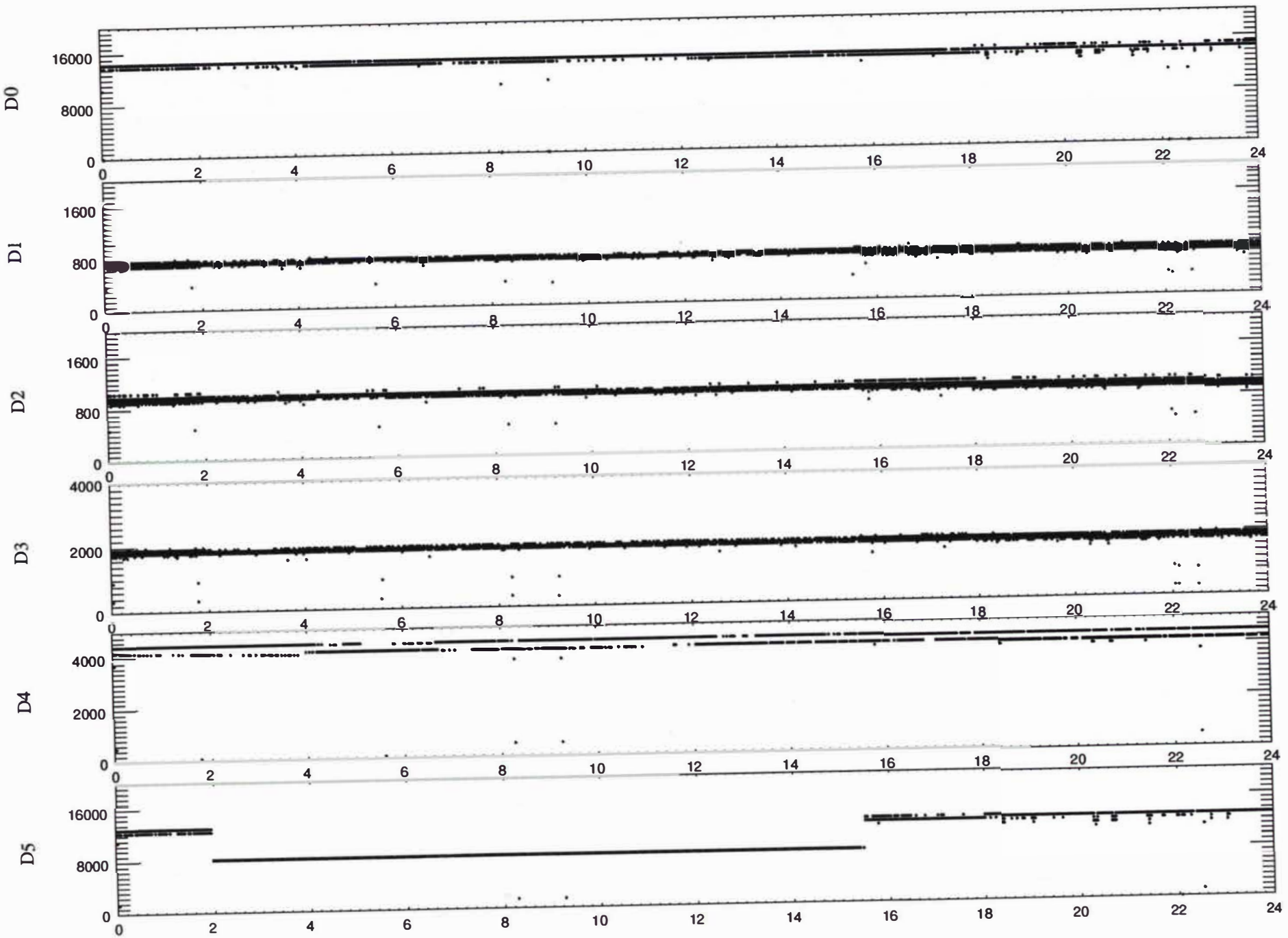
B# 2

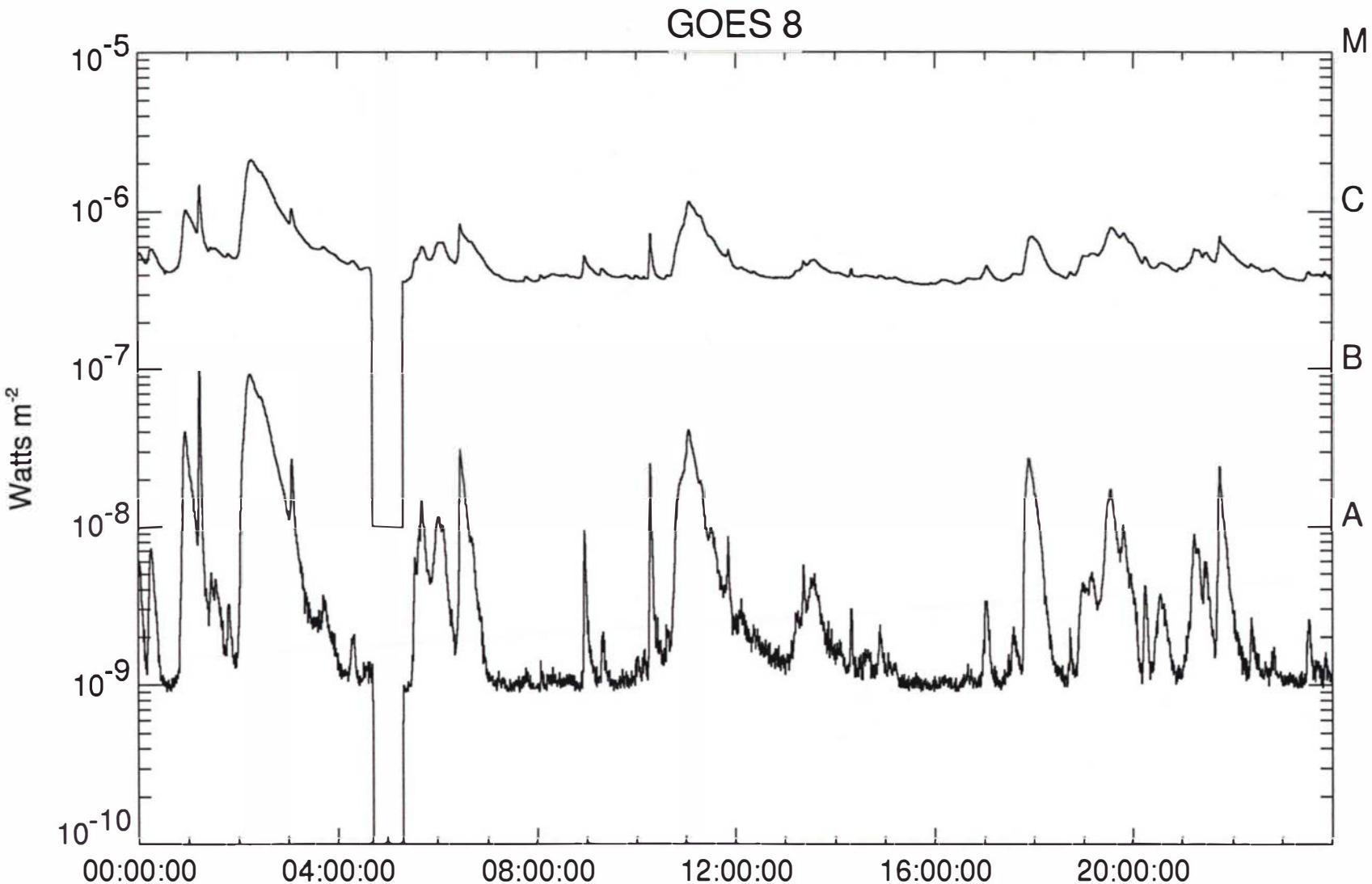
HUS 2A, MODE 1, NOT AVERAGED EDR day 99, year 1998 to day 99, year 1998 8/19/98

CALIBRATION DATA INCLUDED

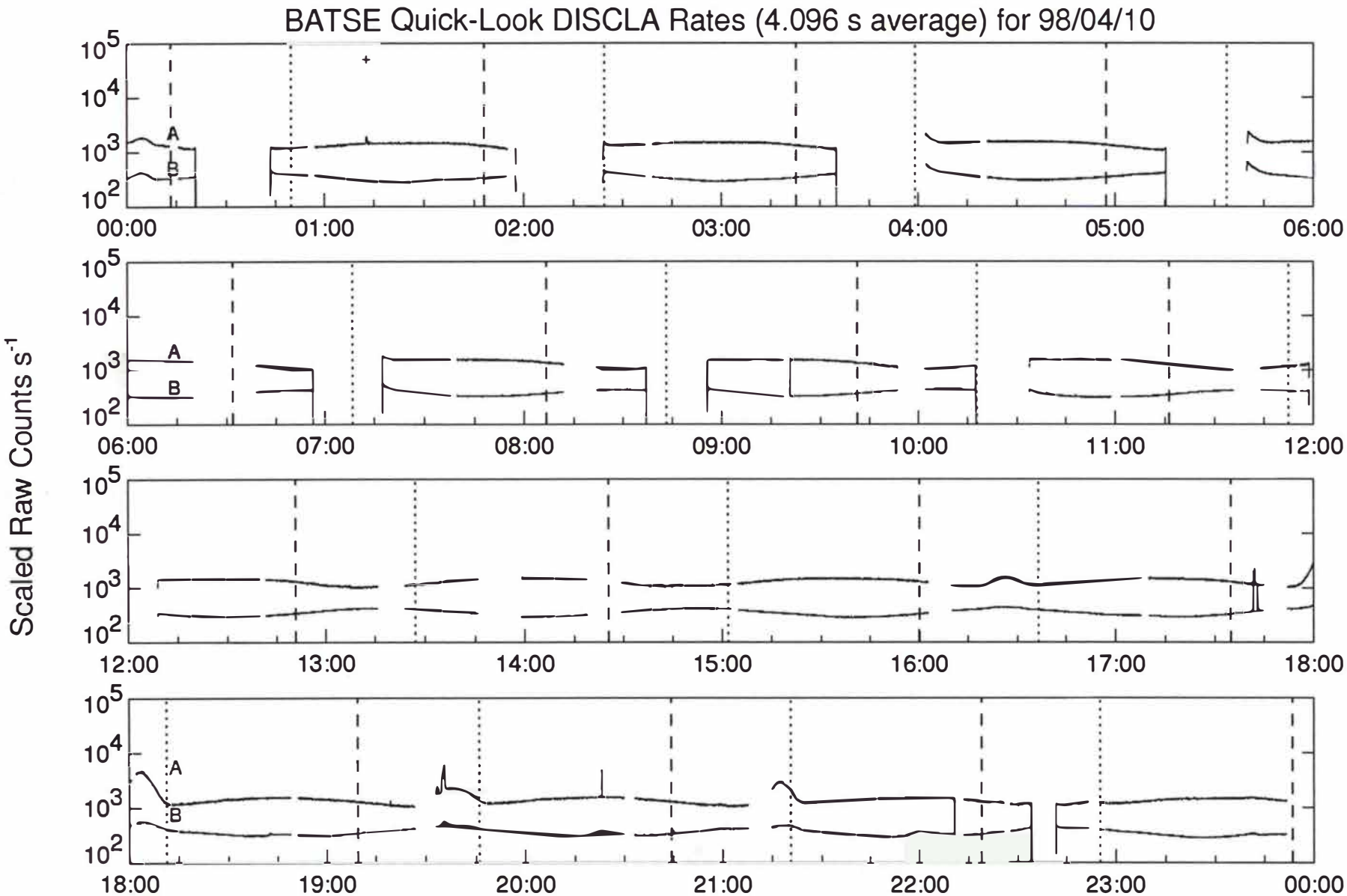


HUS 2B COUNTS / SEC EDR day 99, year 1998 to day 99, year 1998 8/18/98





Data Start: 98/04/10, 0000:00 Plot created: 98/04/22, 1942
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



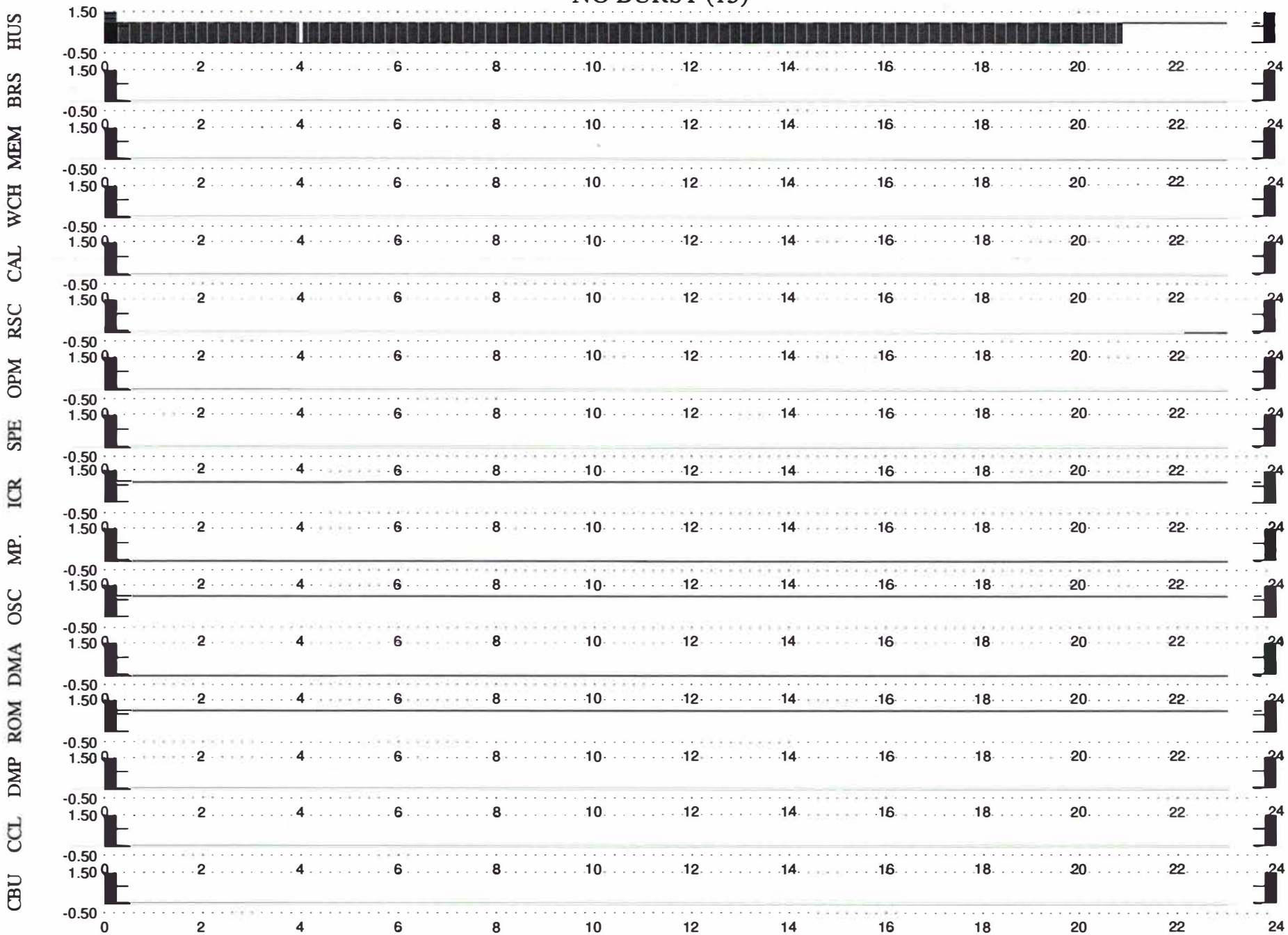
Current Time: 98/04/22, 1943 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MODES EDR day 100, year 1998 to day 100, year 1998 8/18/98

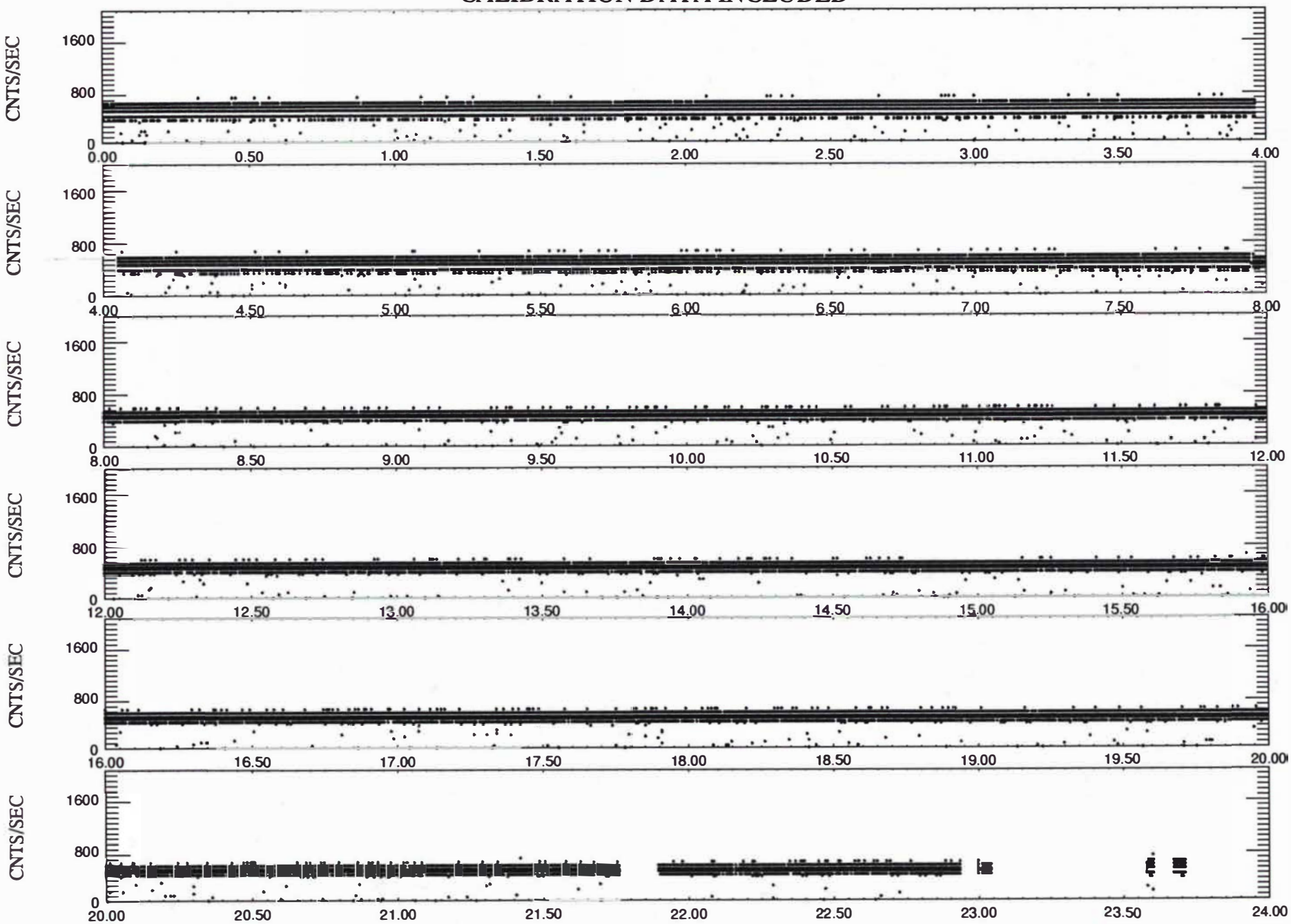
NO BURST (15)



UNIV 'AL TIME

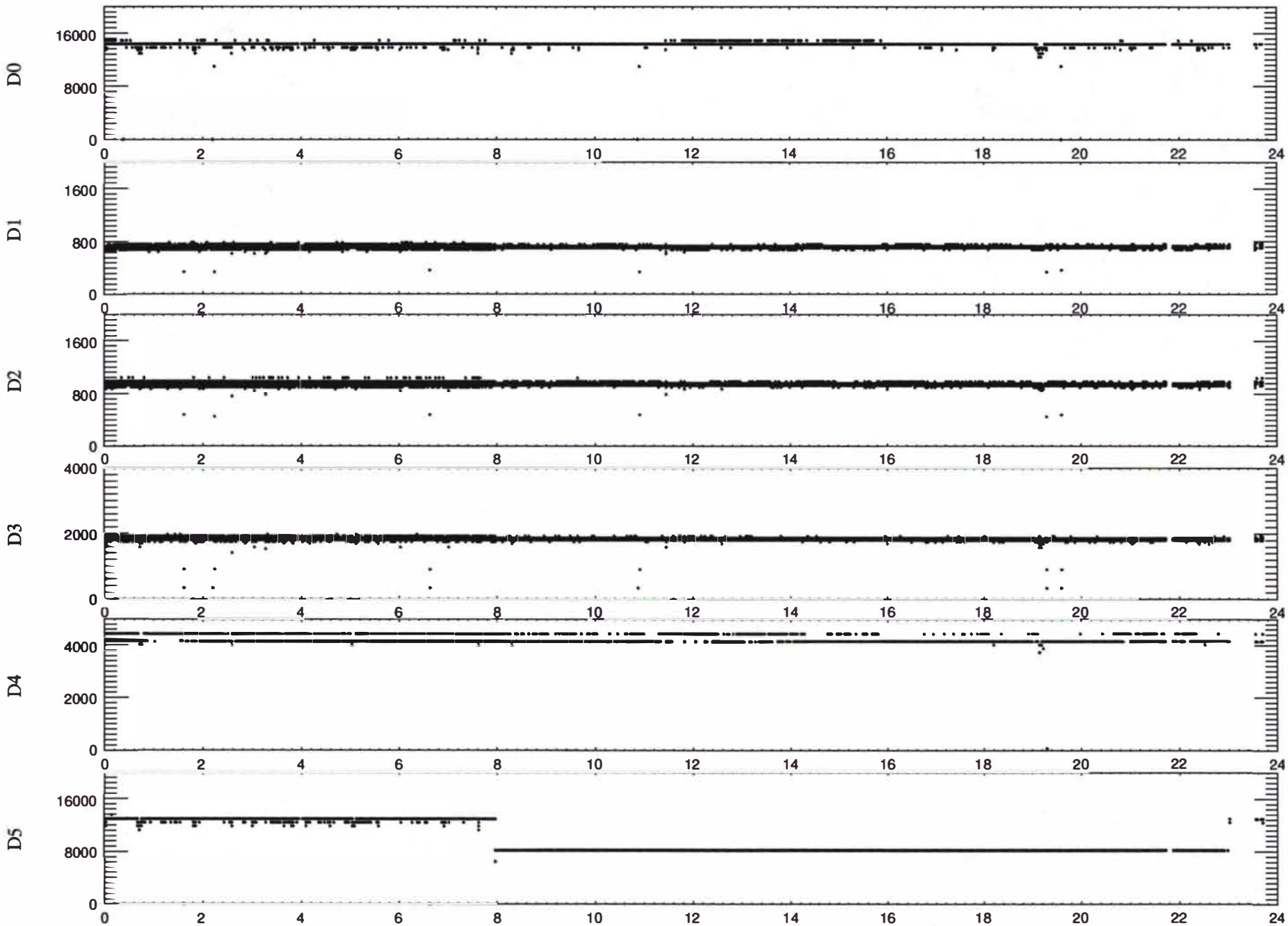
HUS 2A, MODE 1, NOT AVERAGED EDR day 100, year 1998 to day 100, year 1998 8/18/98

CALIBRATION DATA INCLUDED

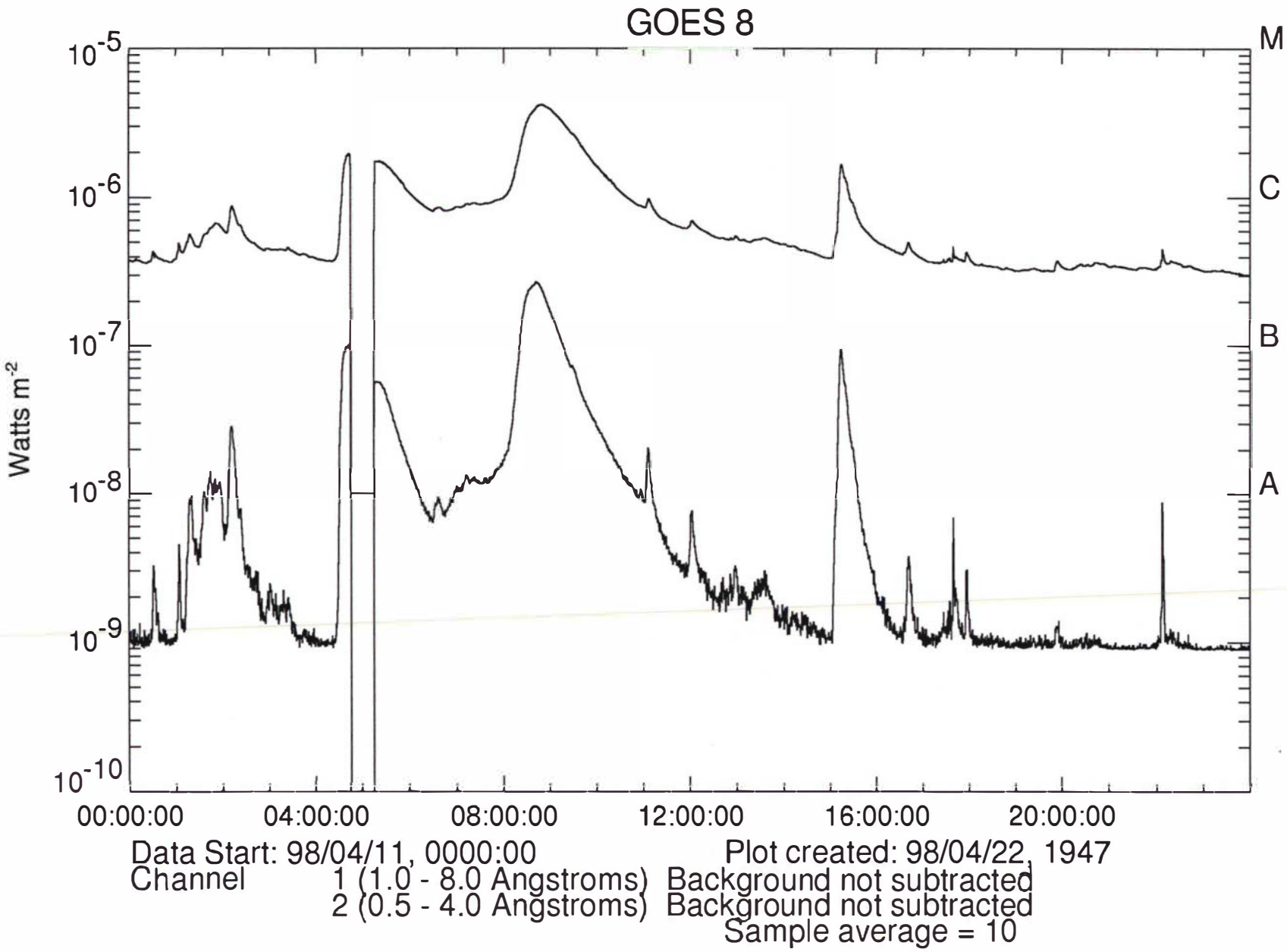


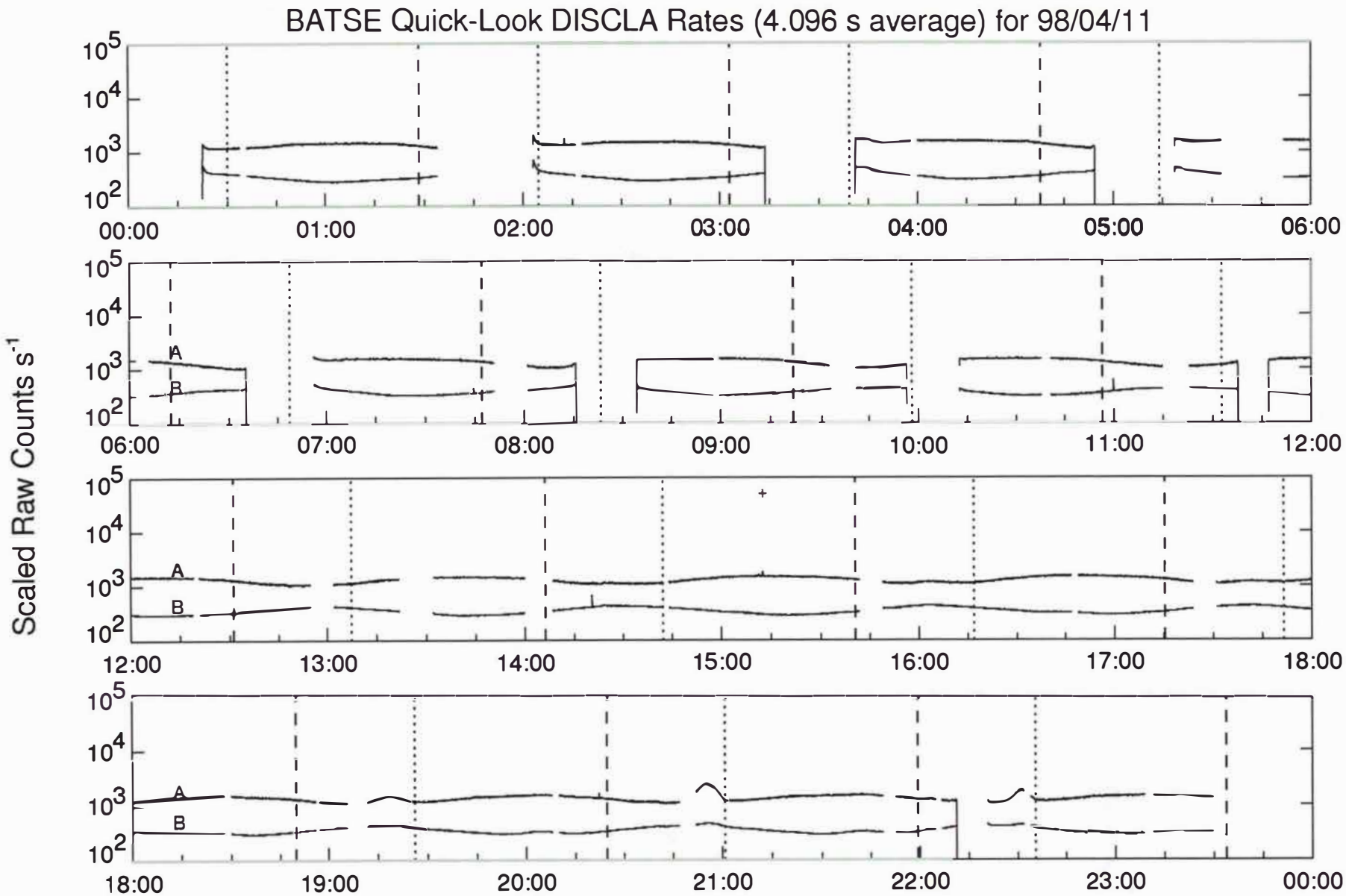
UNIV `AL TIME

HUS 2B COUNTS / SEC EDR day 100, year 1998 to day 100, year 1998 8/18/98



UNIV `AL TIME


GOES 8
Watts m-2
10-5
10-6
10-7
10-8
10-9
10-10
M
C
B
A
00:00:00
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 98/04/11, 0000:00
Plot created: 98/04/22, 1947
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



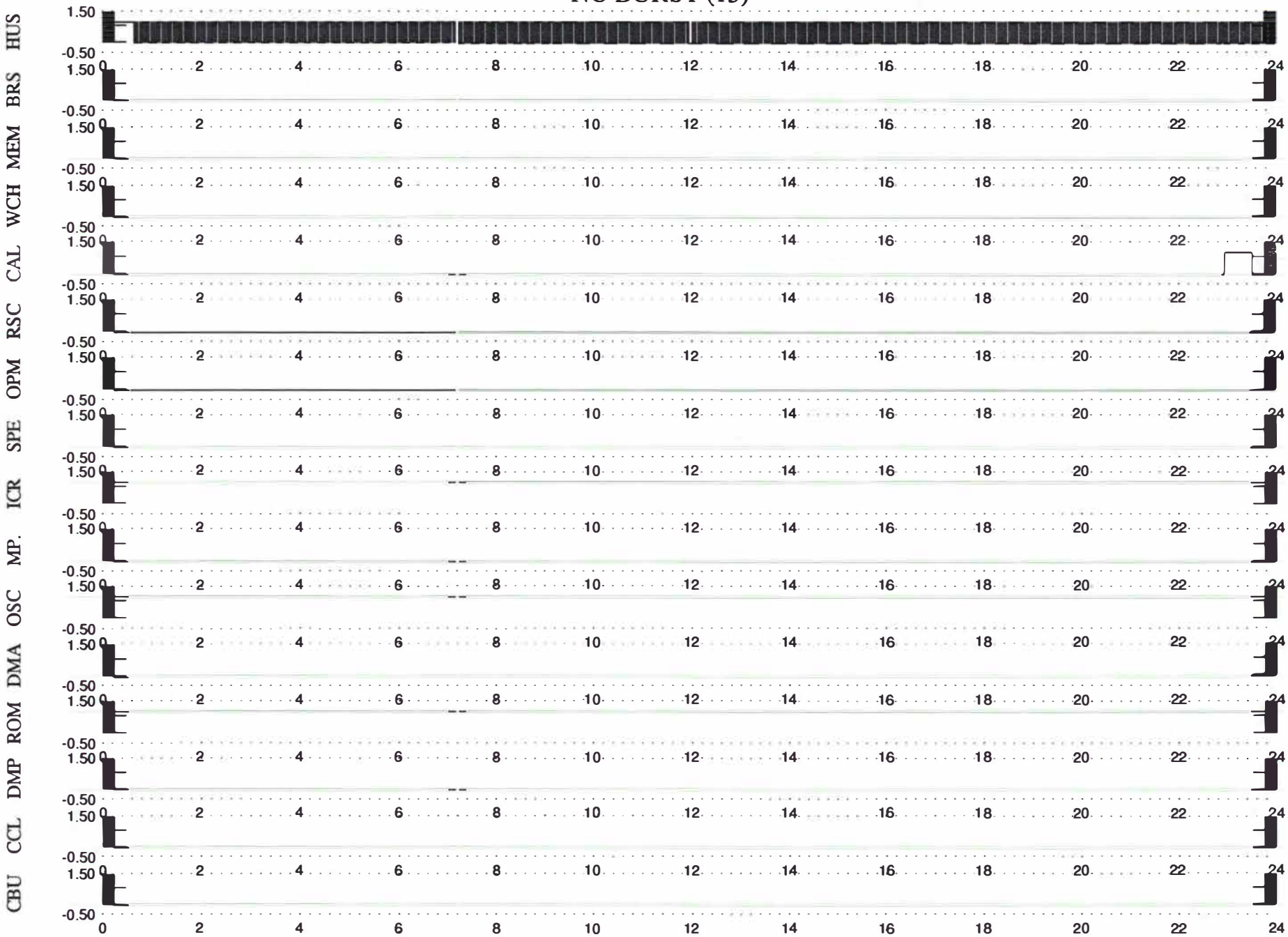
Current Time: 98/04/22, 1948 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MODES EDR day 101, year 1998 to day 101, year 1998 8/18/98

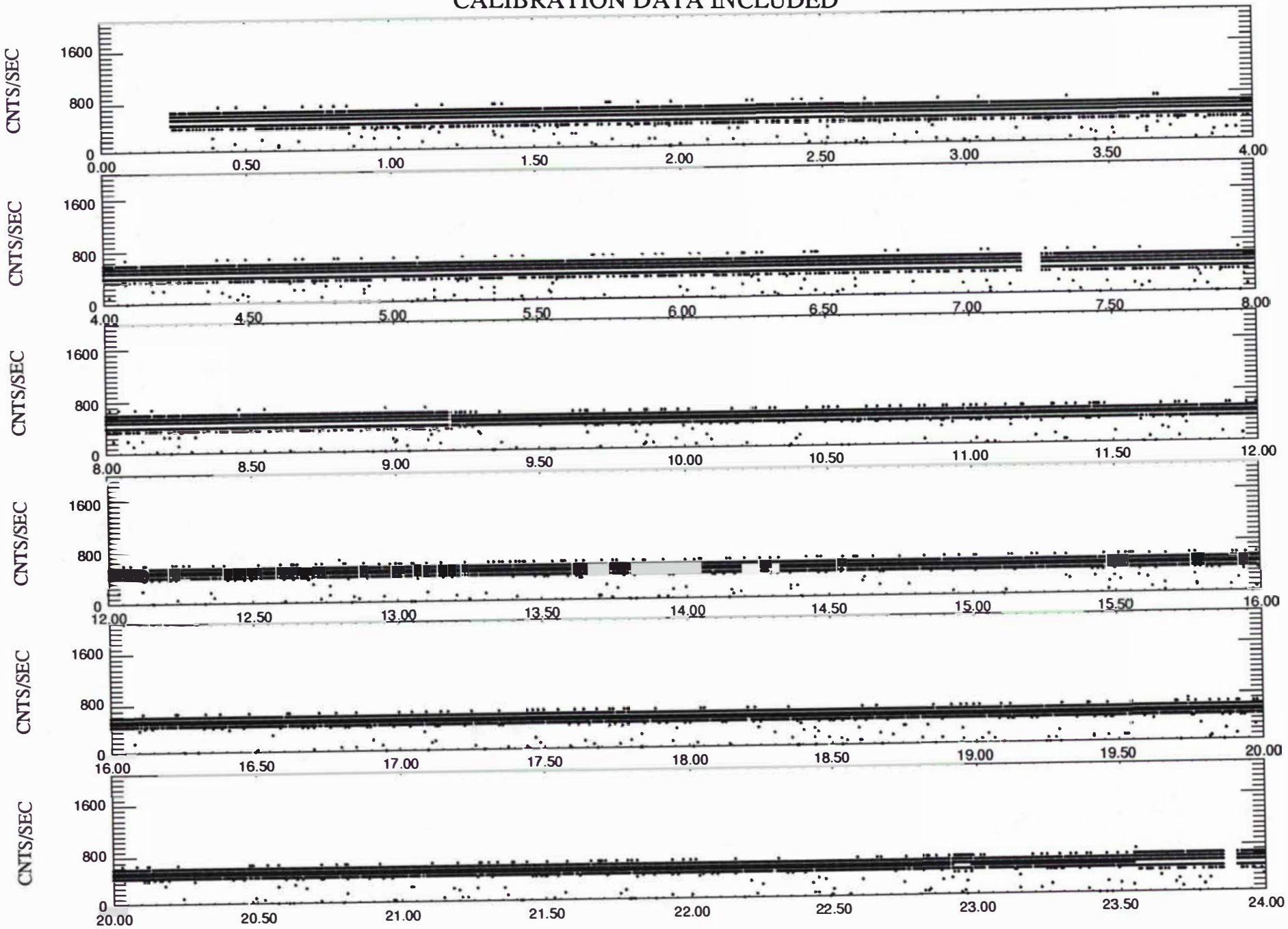
NO BURST (15)



UNIV SAL TIME

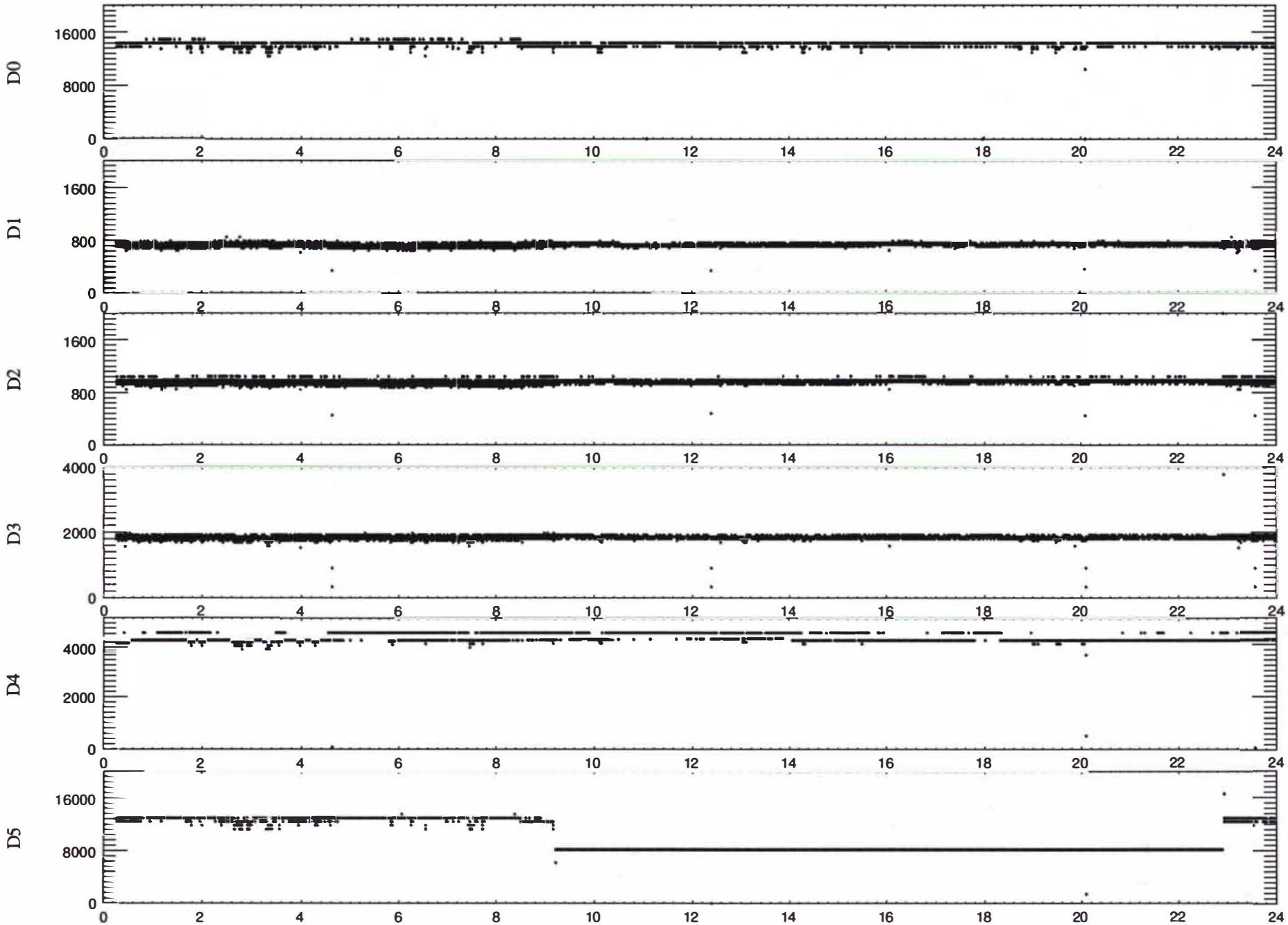
HUS 2A, MODE 1, NOT AVERAGED EDR day 101, year 1998 to day 101, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2B COUNTS / SEC EDR day 101, year 1998 to day 101, year 1998 8/18/98



From HENZE@fender.msfc.nasa.gov Tue Apr 14 11:42:00 1998
Date: Tue, 14 Apr 1998 13:40:02 -0500 (CDT)
From: Bill Henze (205-544-7616) <HENZE@fender.msfc.nasa.gov>
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
park@kabul.llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6685

TIME: TJD=0915 SECONDS=33708

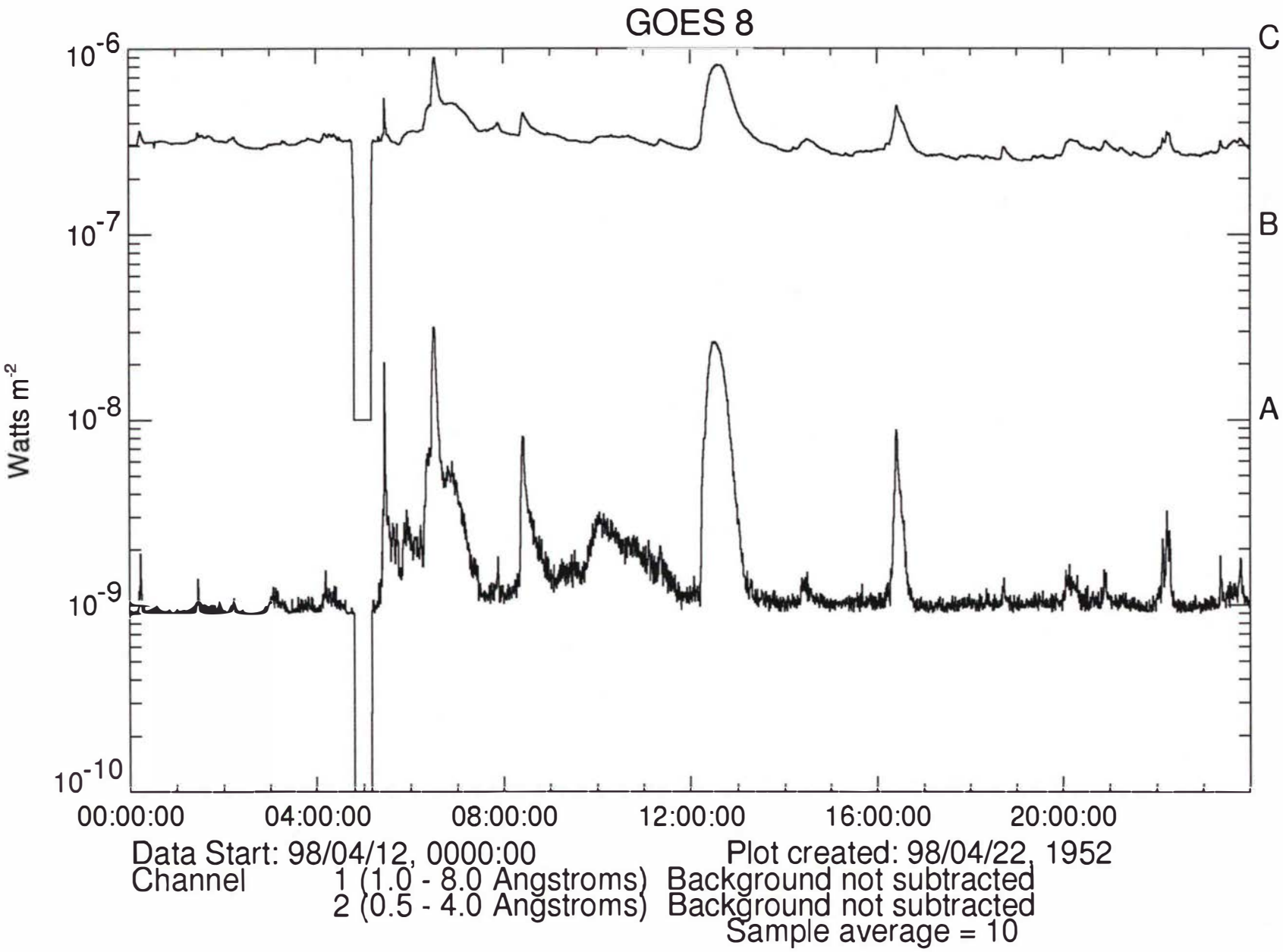
TYPE: CYG X-1 SOLAR FLARE TRIGGER SIGNAL:N

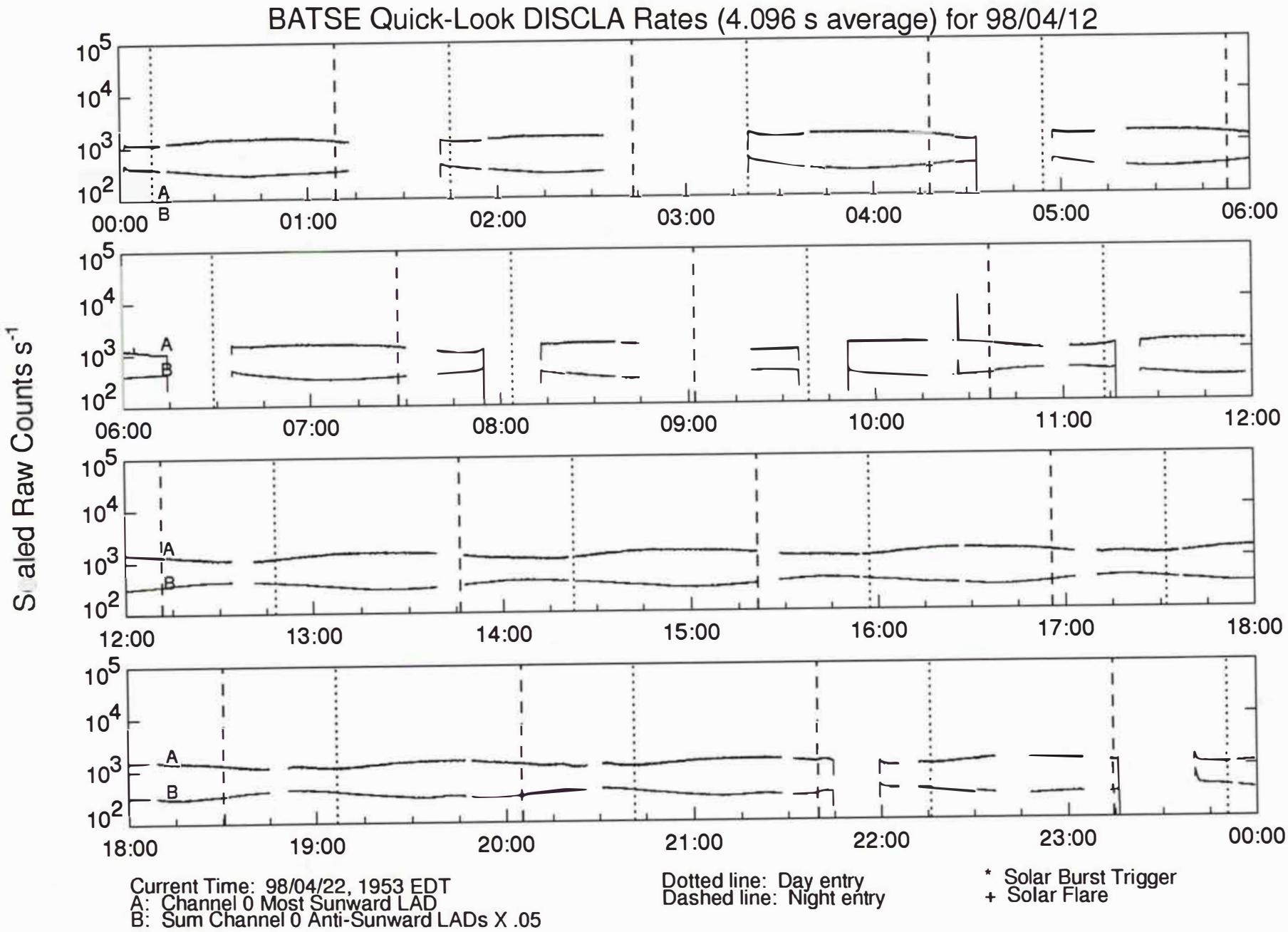
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

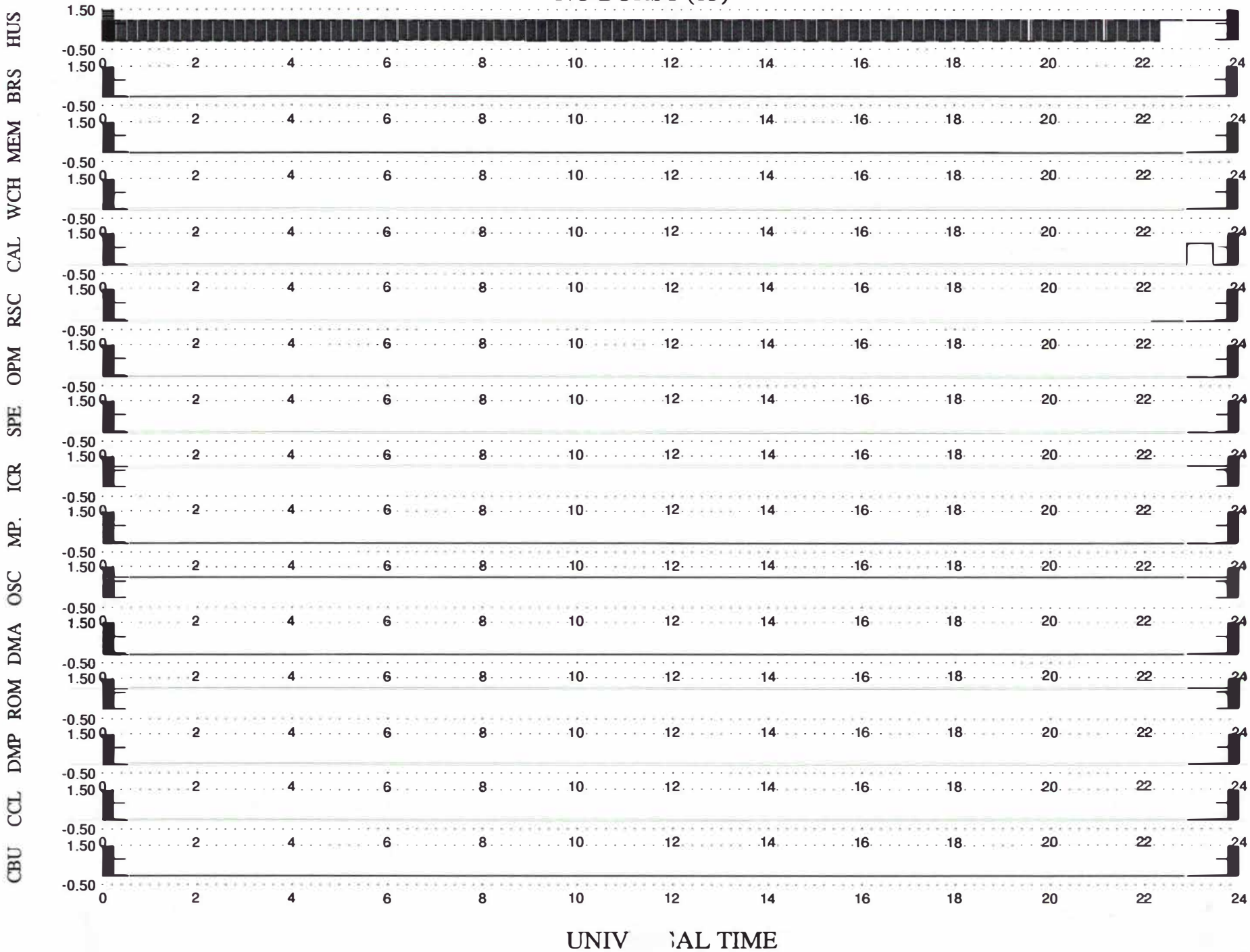
COMMENTS:
CYG X-1 FLUCTUATION AFTER CYG X-1 RISE PREDICTED AT APPROXIMATELY T-9 S.


GOES 8
C
B
A
Watts m-2
10-6
10-7
10-8
10-9
10-10
00:00:00
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 98/04/12, 0000:00
Plot created: 98/04/22, 1952
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/12
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
Current Time: 98/04/22, 1953 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

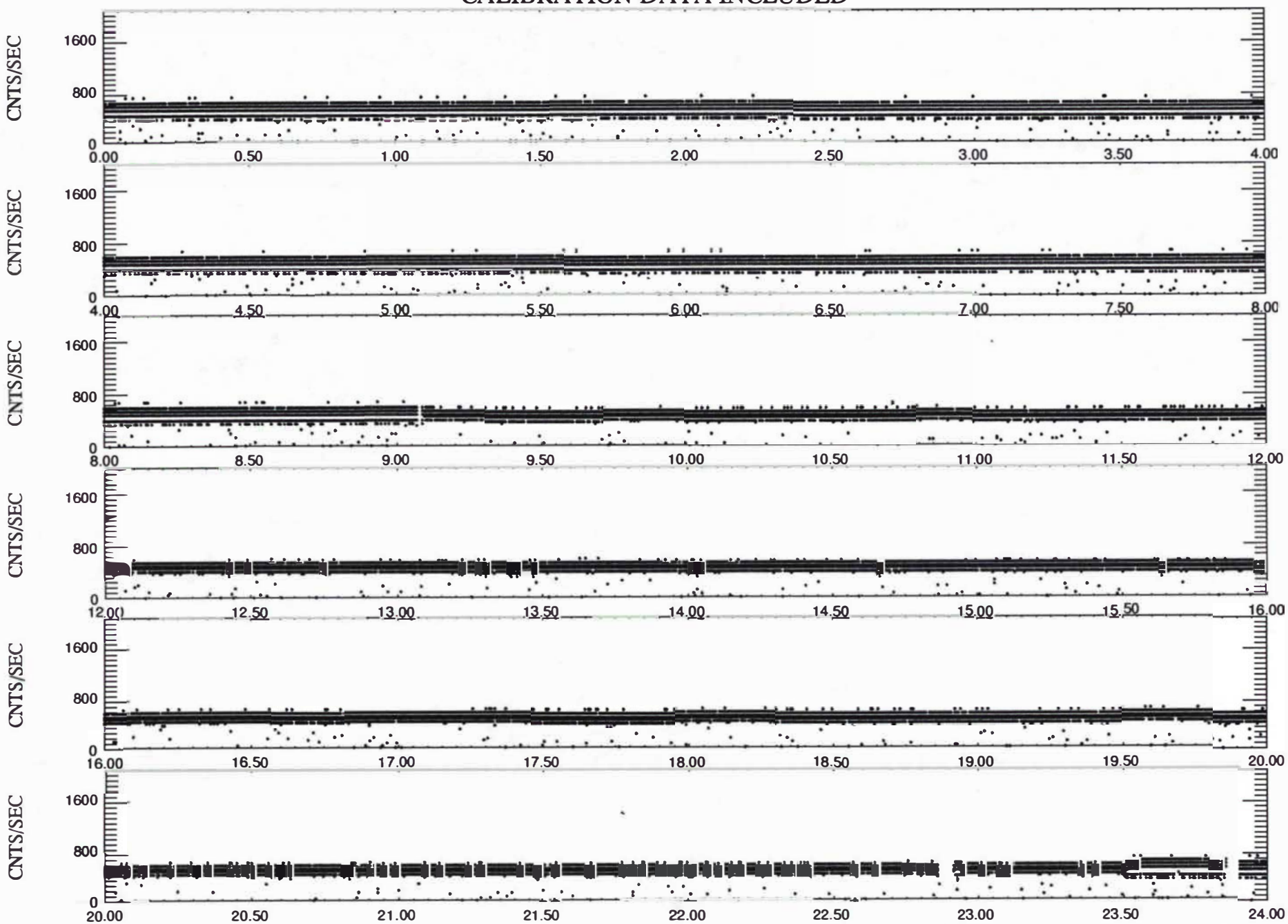
HUS MODES EDR day 102, year 1998 to day 102, year 1998 8/18/98

NO BURST (15)



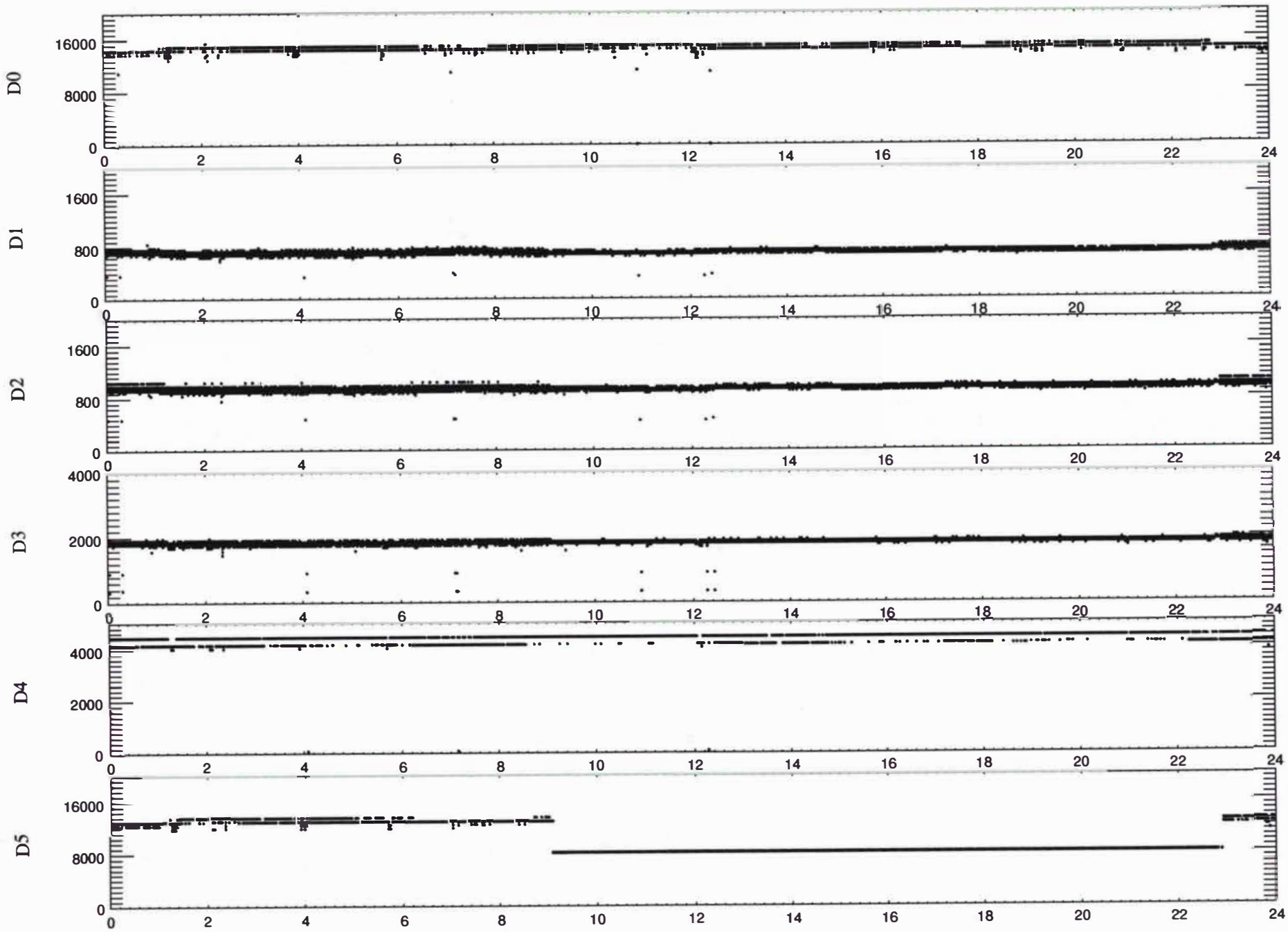
HUS 2A, MODE 1, NOT AVERAGED EDR day 102, year 1998 to day 102, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV AL TIME

HUS 2B COUNTS / SEC EDR day 102, year 1998 to day 102, year 1998 8/18/98



SAX GRBM

HUS DATA

19/07/05

ULYSSES RT

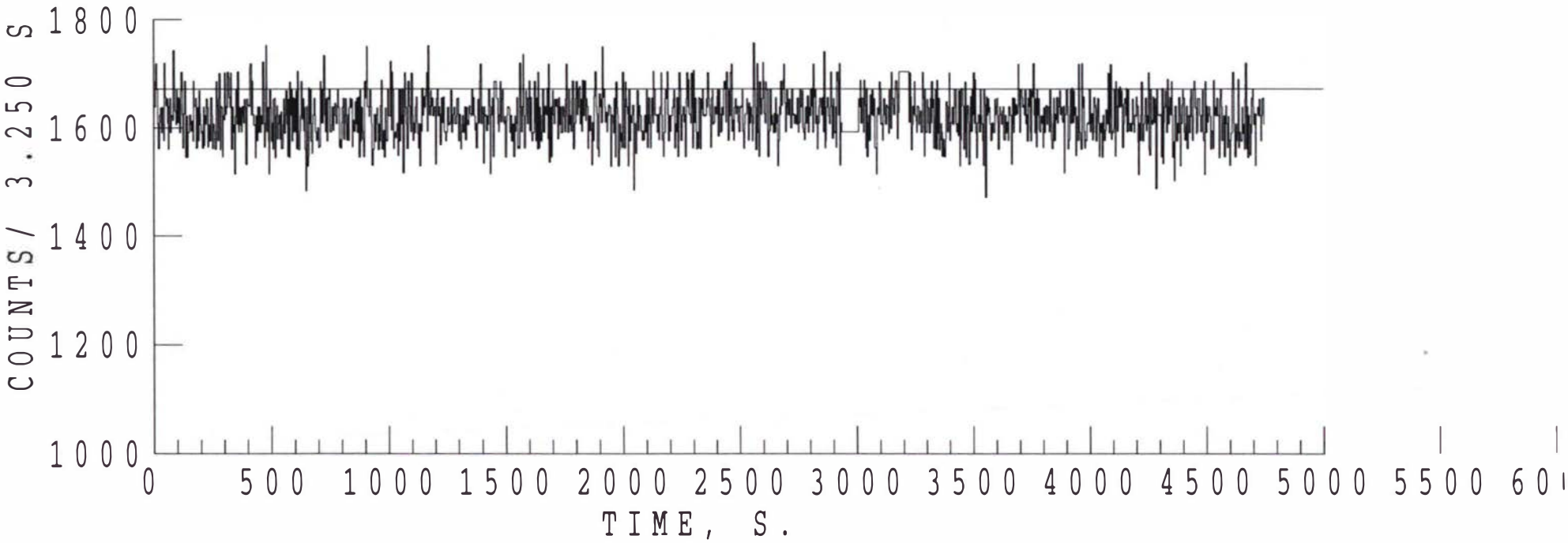
13/04/98 22176.207 s

0.250 S INTERVALS REGROUPED BY 13

0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From SURASAK@SSLMOR.msfc.nasa.gov Wed Apr 15 11:20:31 1998
Return-Path: <SURASAK@SSLMOR.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA27657; Wed, 15 Apr 1998 11:20:30 -0700
From: SURASAK@SSLMOR.msfc.nasa.gov
Received: from SSLMOR.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA09908; Wed, 15 Apr 1998 11:20:28 -0700
Date: Wed, 15 Apr 1998 13:20:24 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980415132024.20404216@ssl.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6686
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6686
EVENT OF 1998 APR 13 DAY OF YEAR=103
EVENT CROSSING TIME AT BATSE      : 75158. S. OR 20:52:38.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  94.000    9.000
BATSE PEAK COUNTING RATE:   2000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 13/ 4/  98 IS:
RA=  151.064 DEC=   13.271 DIST=    4.778 AU
BATSE-ULYSSES DISTANCE =  714740345. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=123.96 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1331.72 SECS.
CROSSING TIME AT ULYSSES    IS 73826. S. OR   20:30:26 +/-  373.10 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 13/ 4/  98 IS:
RA=   27.984 DEC=   11.203 DIST=    2.430 AU
MARS-BATSE DISTANCE =  363582016. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=115.10 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -514.48 SECS.
CROSSING TIME AT MARS       IS 74644. S. OR   20:44:03 +/-  182.86 SECONDS


                 BATSE BURST TRIGGER
NO.: 6686

TIME: TJD=0916 SECONDS=75158

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=70.3   AZIMUTH=57.1   ERROR=4.863 DEGREES

COMMENTS:
GRB. DOUBLE PULSE. FIRST PULSE STARTS AT ABOUT T-55 S. DURATION ABOUT 40 SEC.
SECOND STRONGER PULSE STARTS AT ABOUT T TIME WITH TWO PEAKS AND SUBSTRUCTURE.
DURATION ABOUT 30 SEC. TOTAL DURATION ABOUT 88 SEC. BOTH PULSES ARE NOT VISIBLE
ABOVE 300 KEV.

 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6686   980413   10916   75158     2000   094   +09     88
```

BATSE BURST# 6686

ULYSSES RT 15/ 4/98

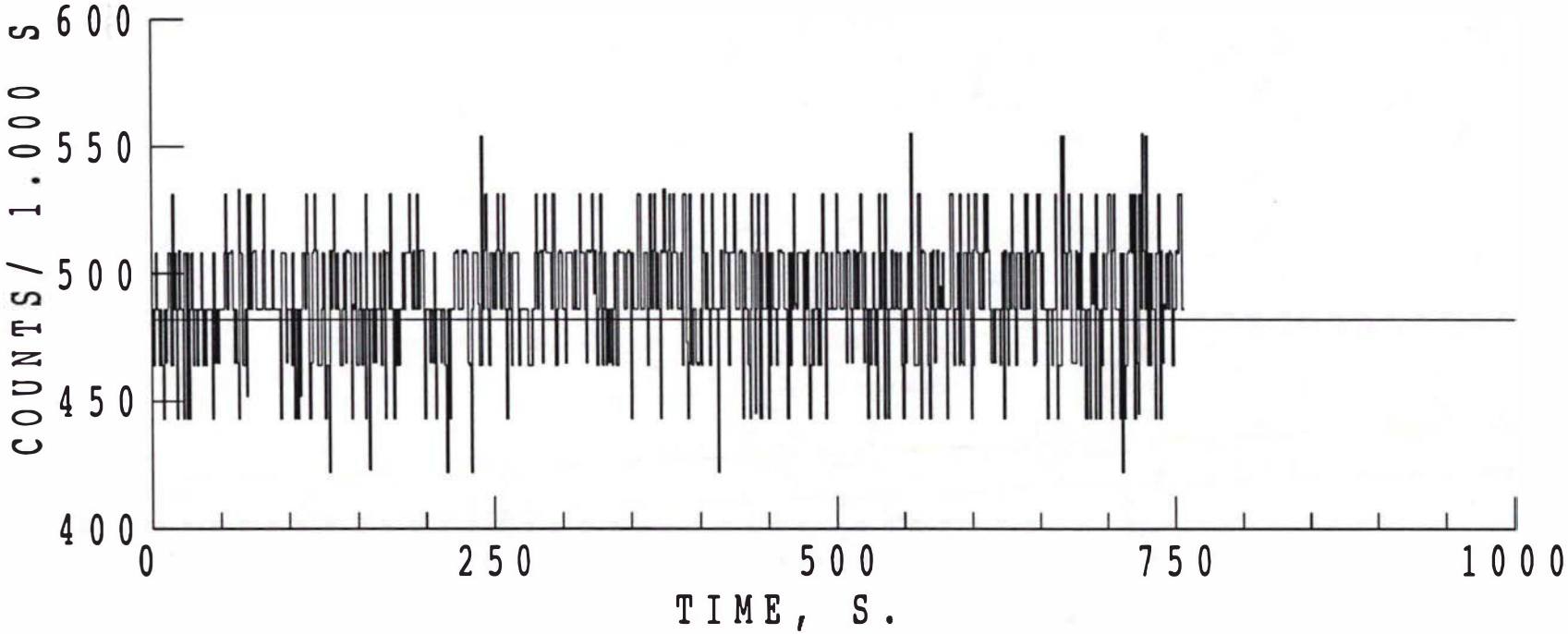
13/ 4/98 73440.258 s

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

KONUS

09/02/00

ULYSSES RT

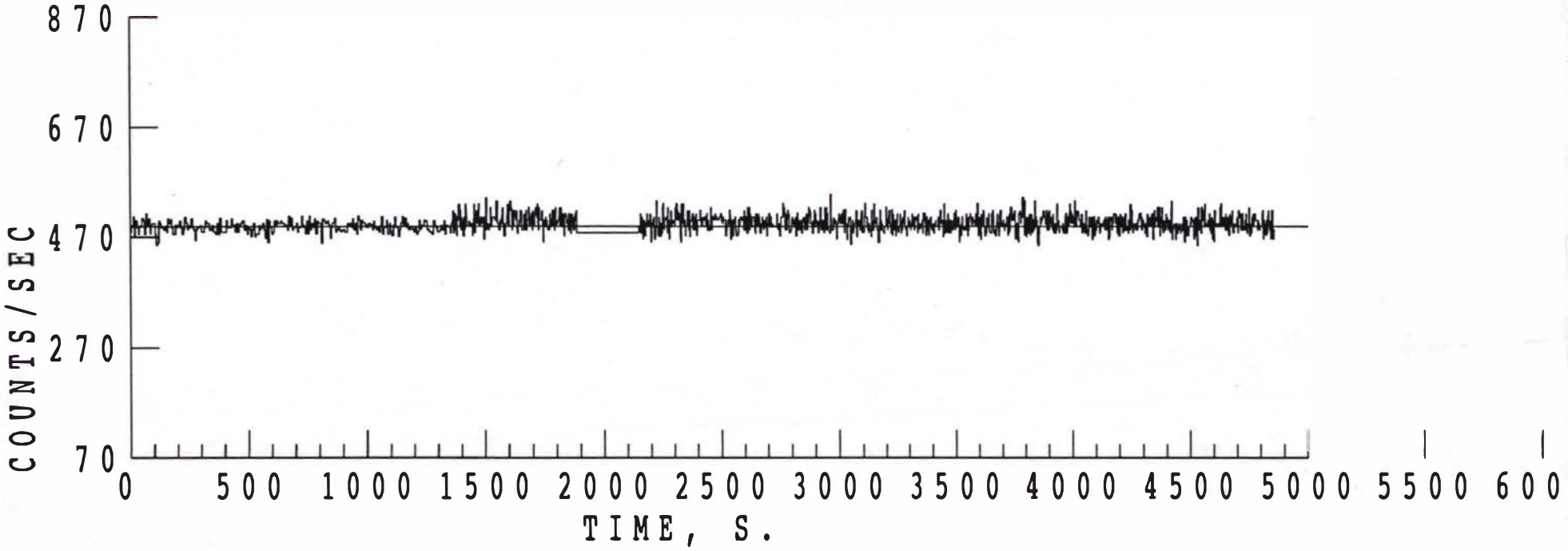
13/04/98 82512.359 s

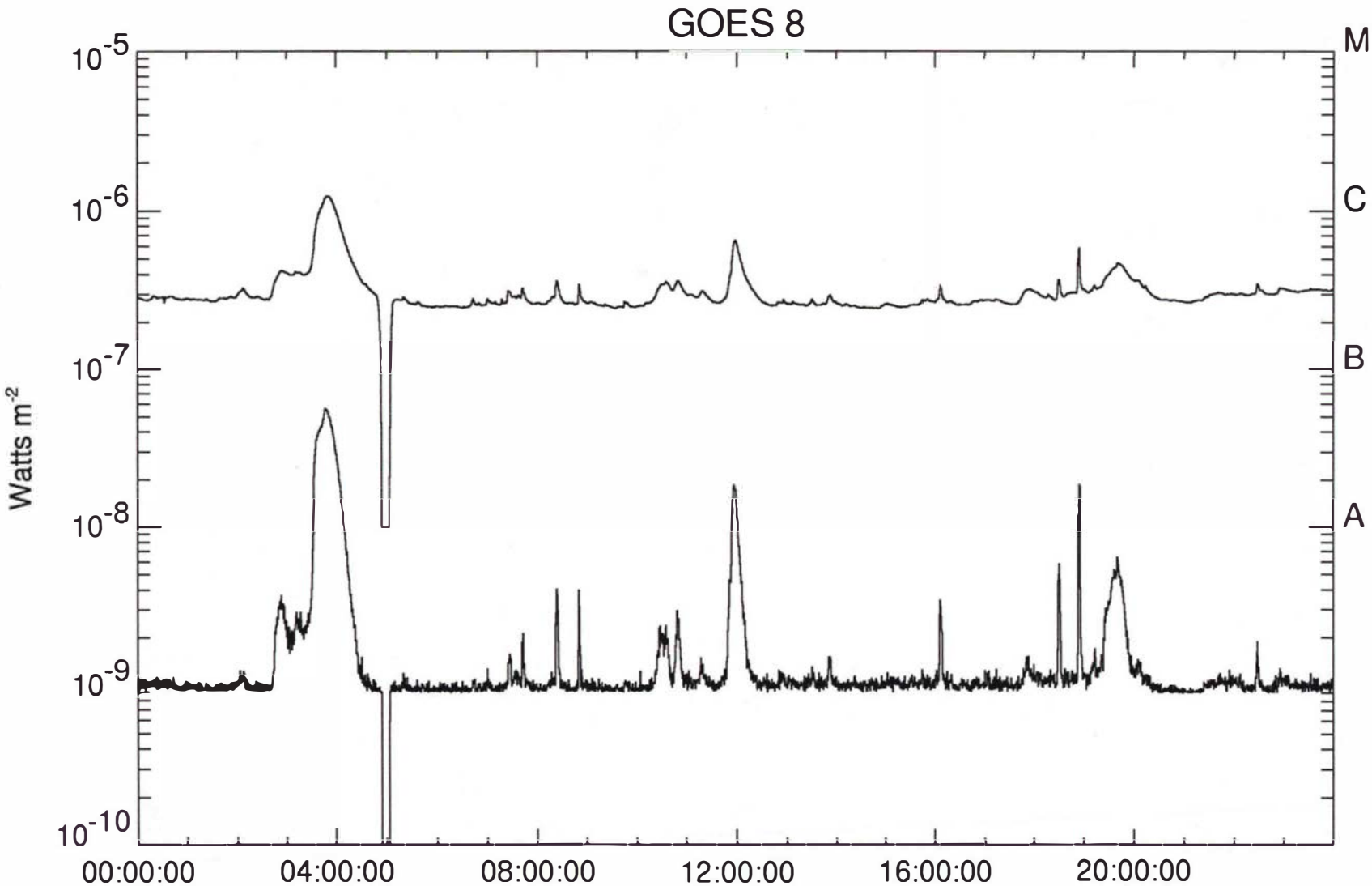
INTERVALS REGROUPED BY 11

0- 0 keV

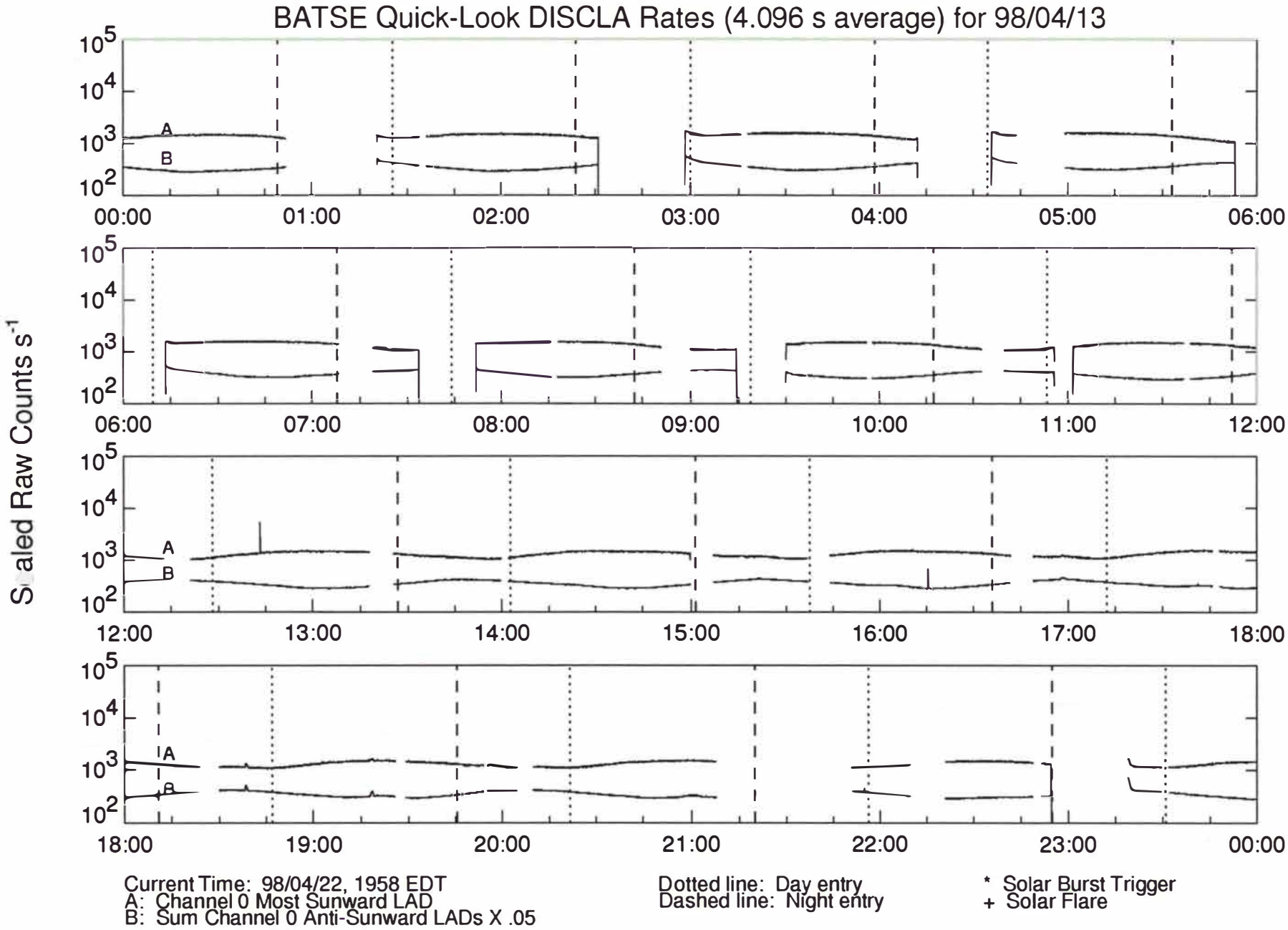
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



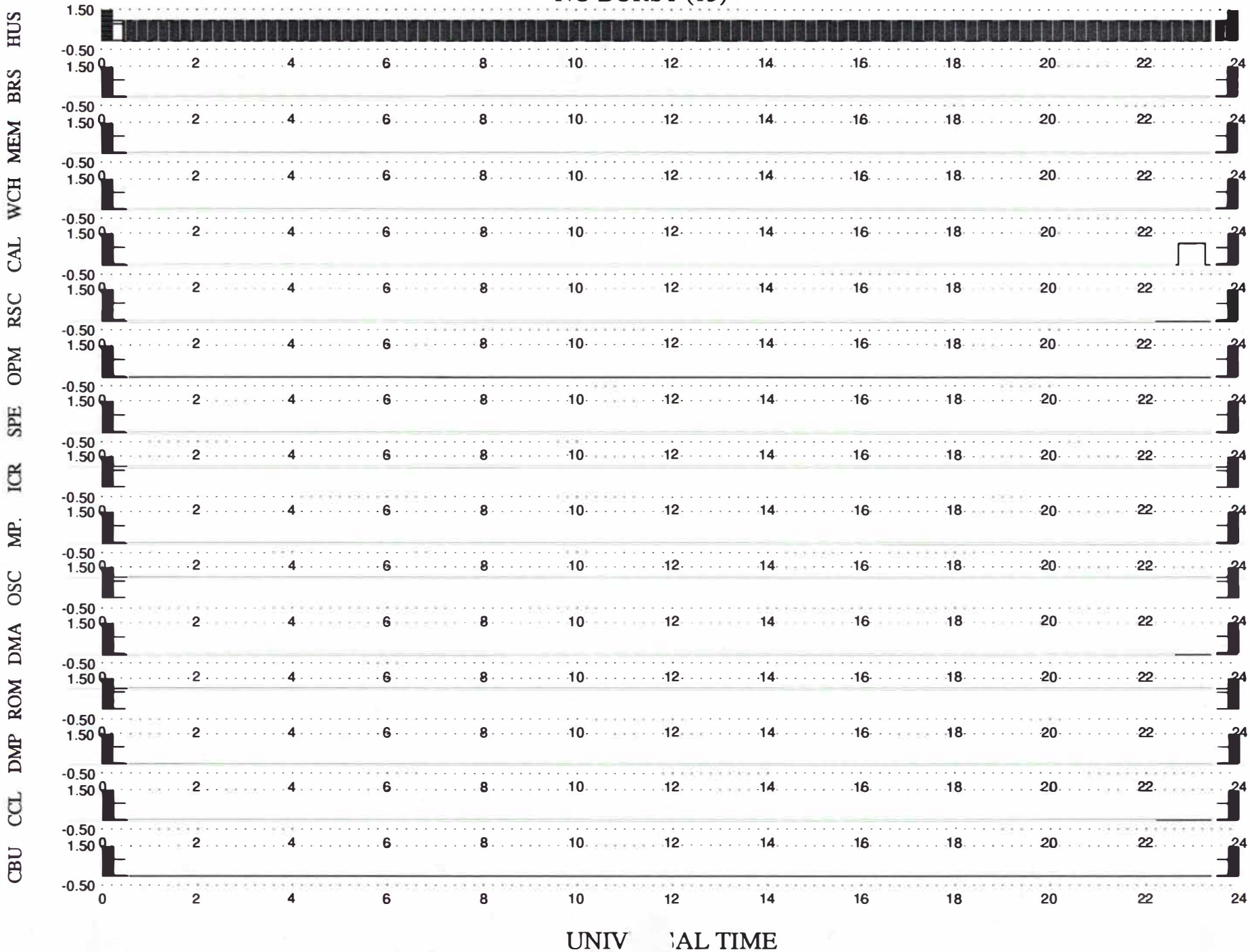


Data Start: 98/04/13, 0000:00 Plot created: 98/04/22, 1957
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/13
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: 98/04/22, 1958 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

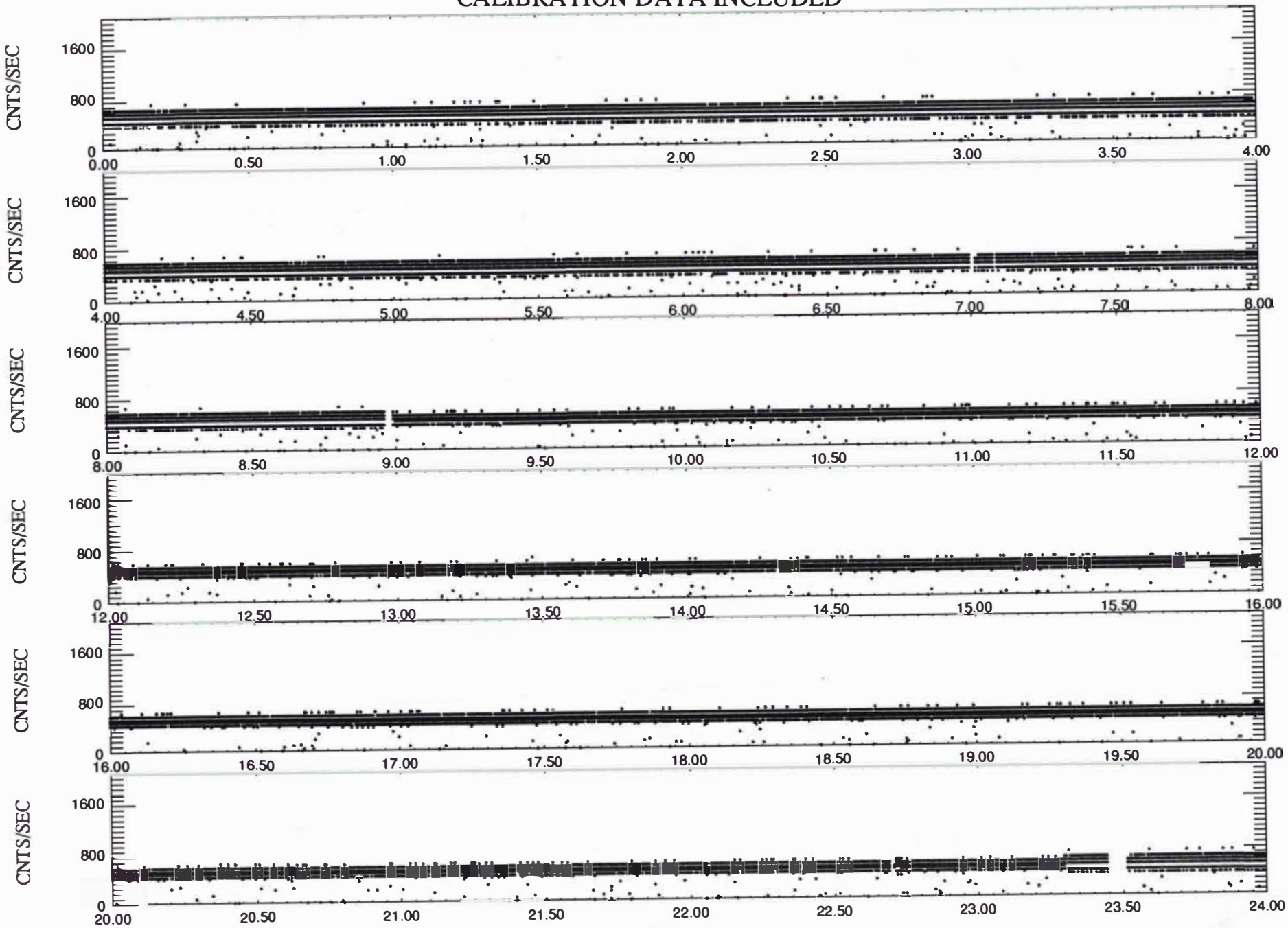
HUS MODES EDR day 103, year 1998 to day 103, year 1998 8/18/98

NO BURST (15)



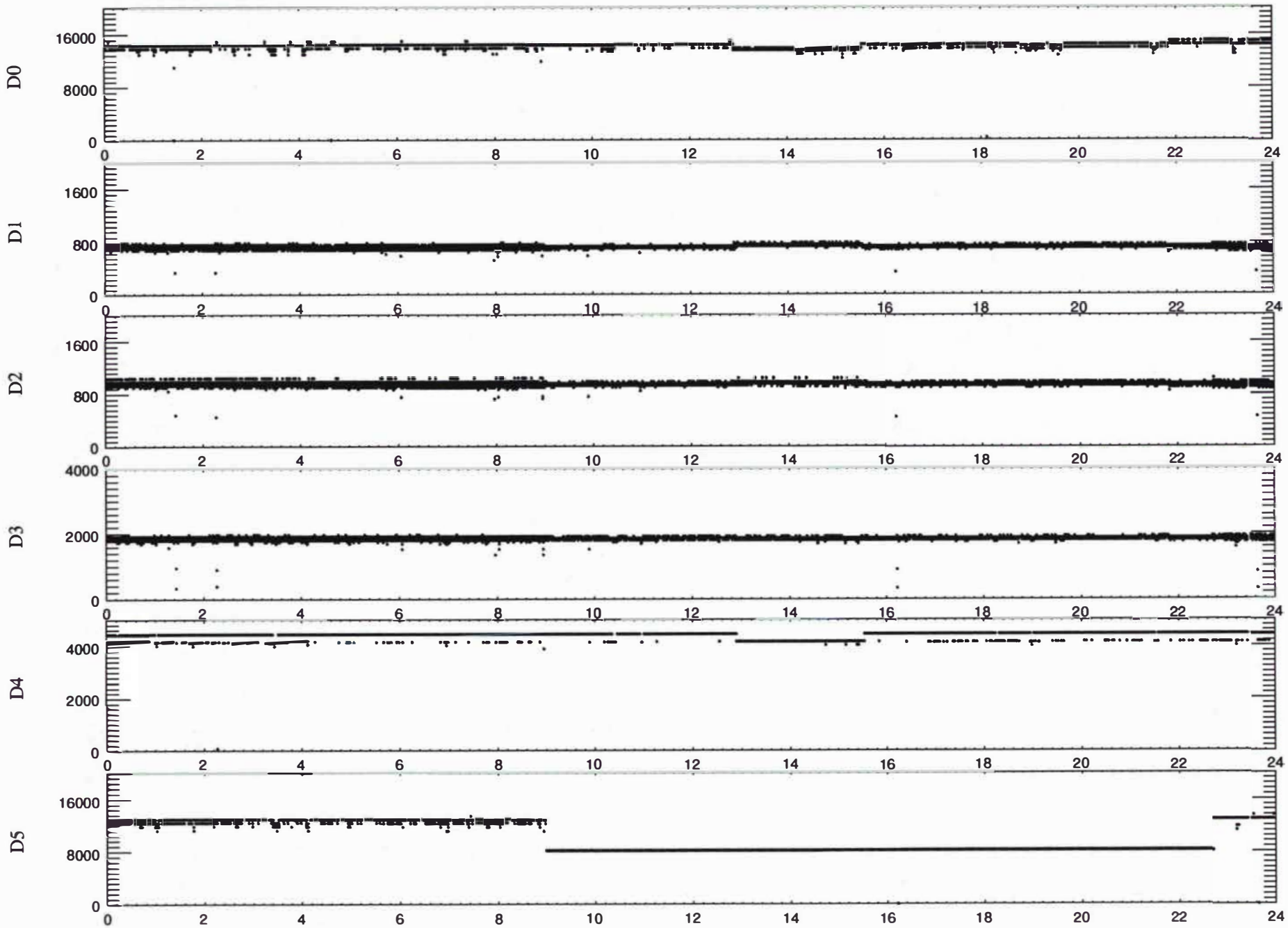
HUS 2A, MODE 1, NOT AVERAGED EDR day 103, year 1998 to day 103, year 1998 8/18/98

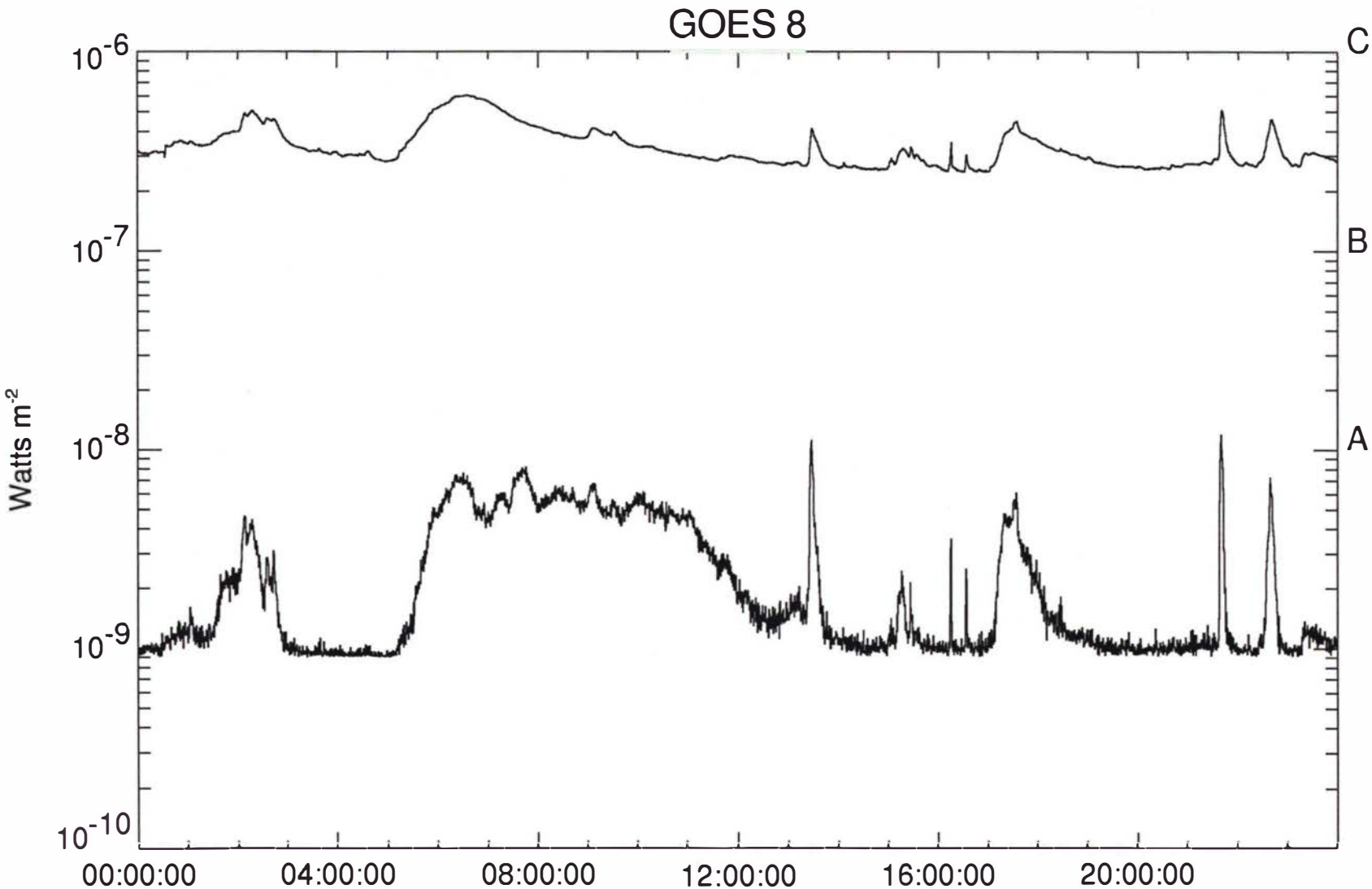
CALIBRATION DATA INCLUDED



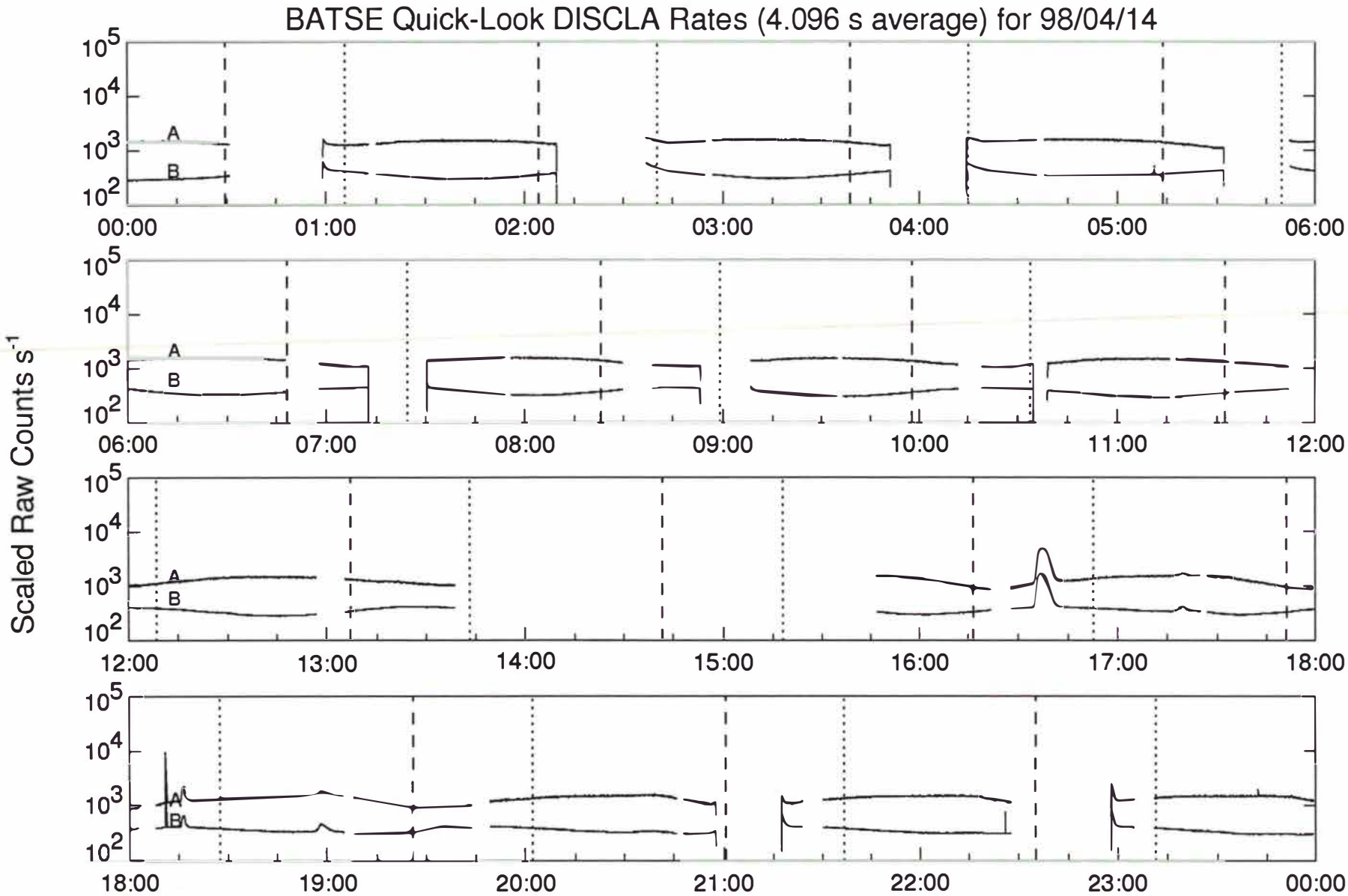
UNIV AL TIME

HUS 2B COUNTS / SEC EDR day 103, year 1998 to day 103, year 1998 8/18/98



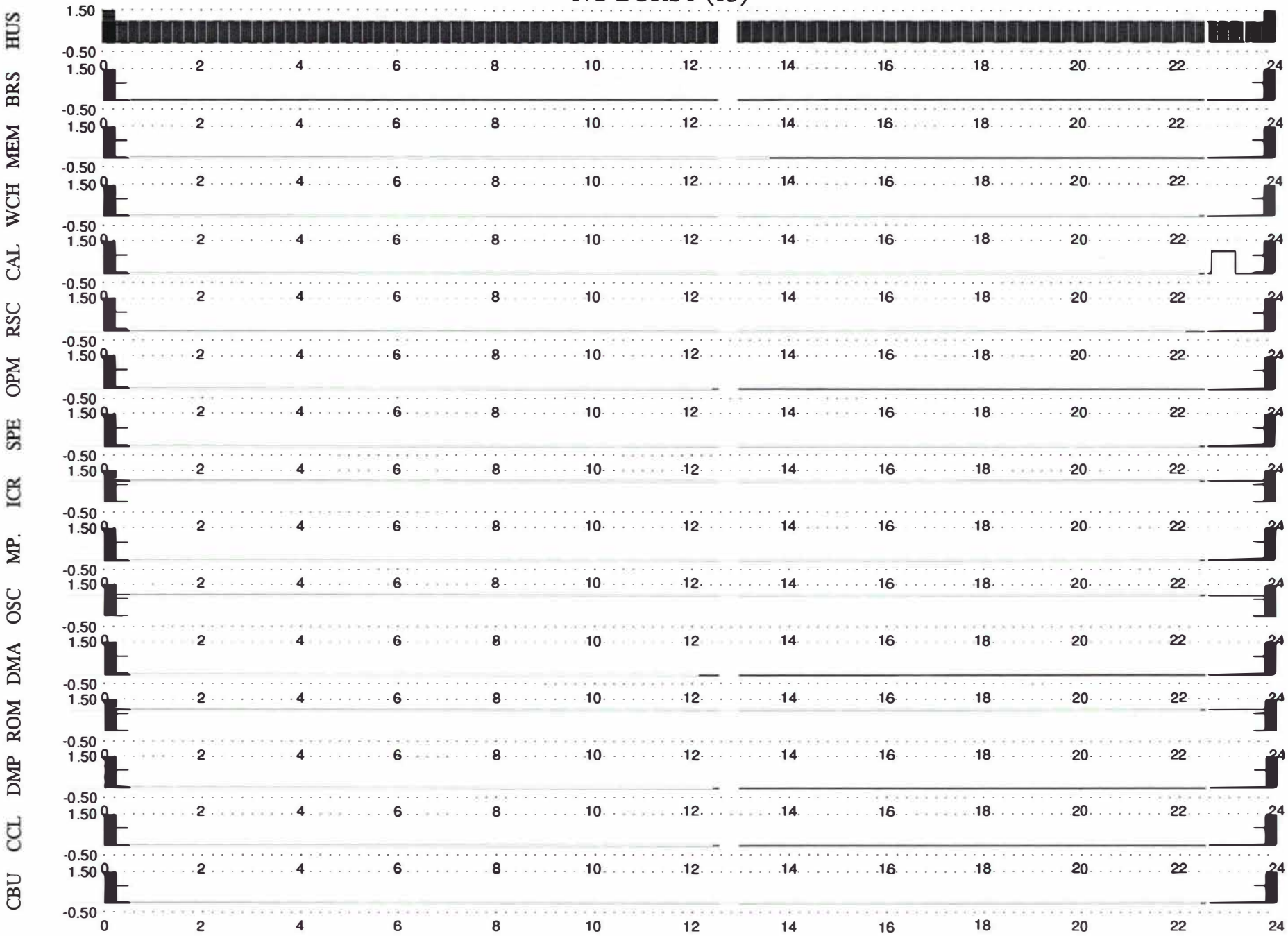


Data Start: 98/04/14, 0000:00 Plot created: 98/04/22, 2002
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/14
Scaled Raw Counts s-1
10^5
10^4
10^3
10^2
A
B
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
Current Time: 98/04/22, 2003 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare

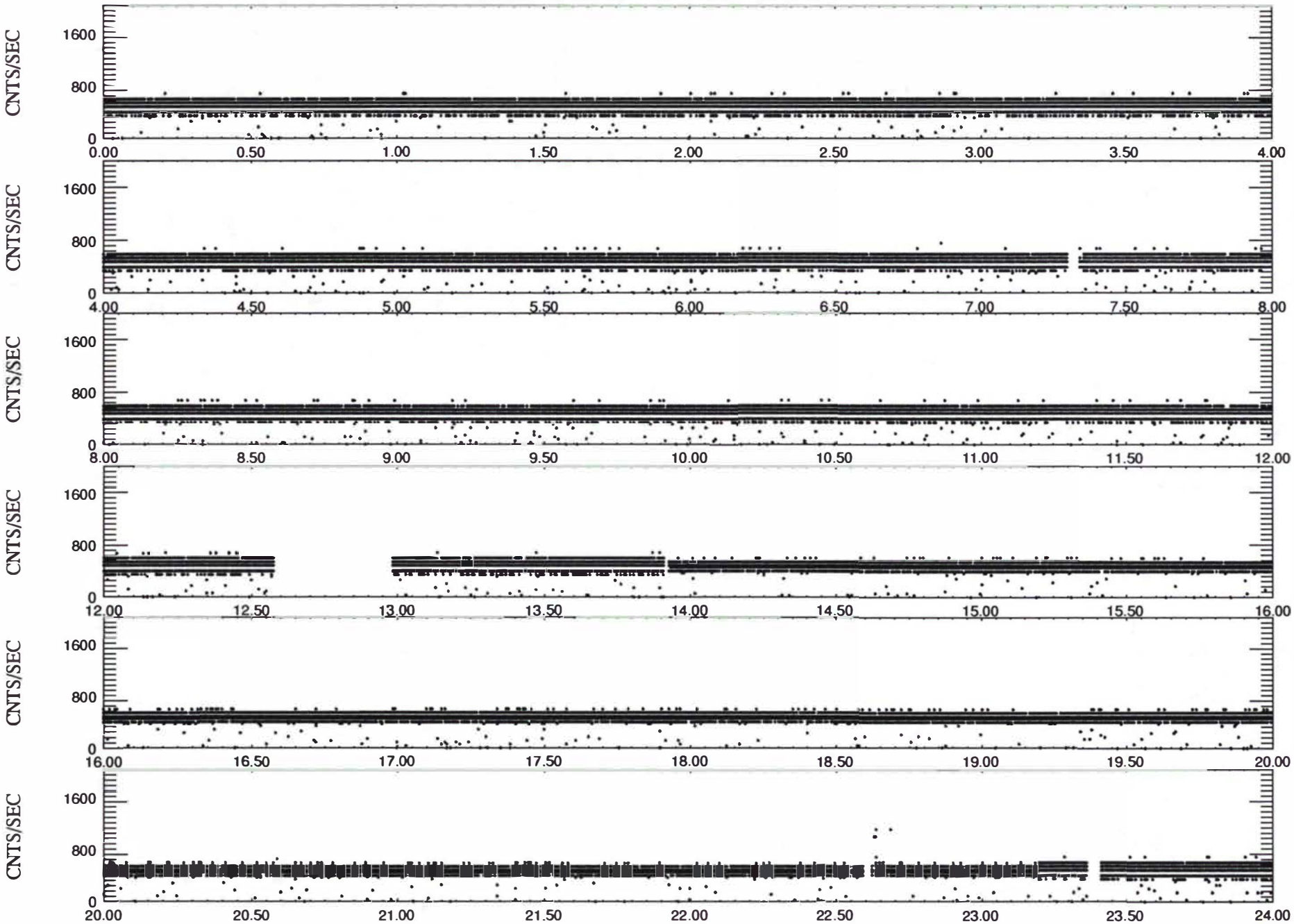
HUS MODES EDR day 104, year 1998 to day 104, year 1998 8/18/98

NO BURST (15)



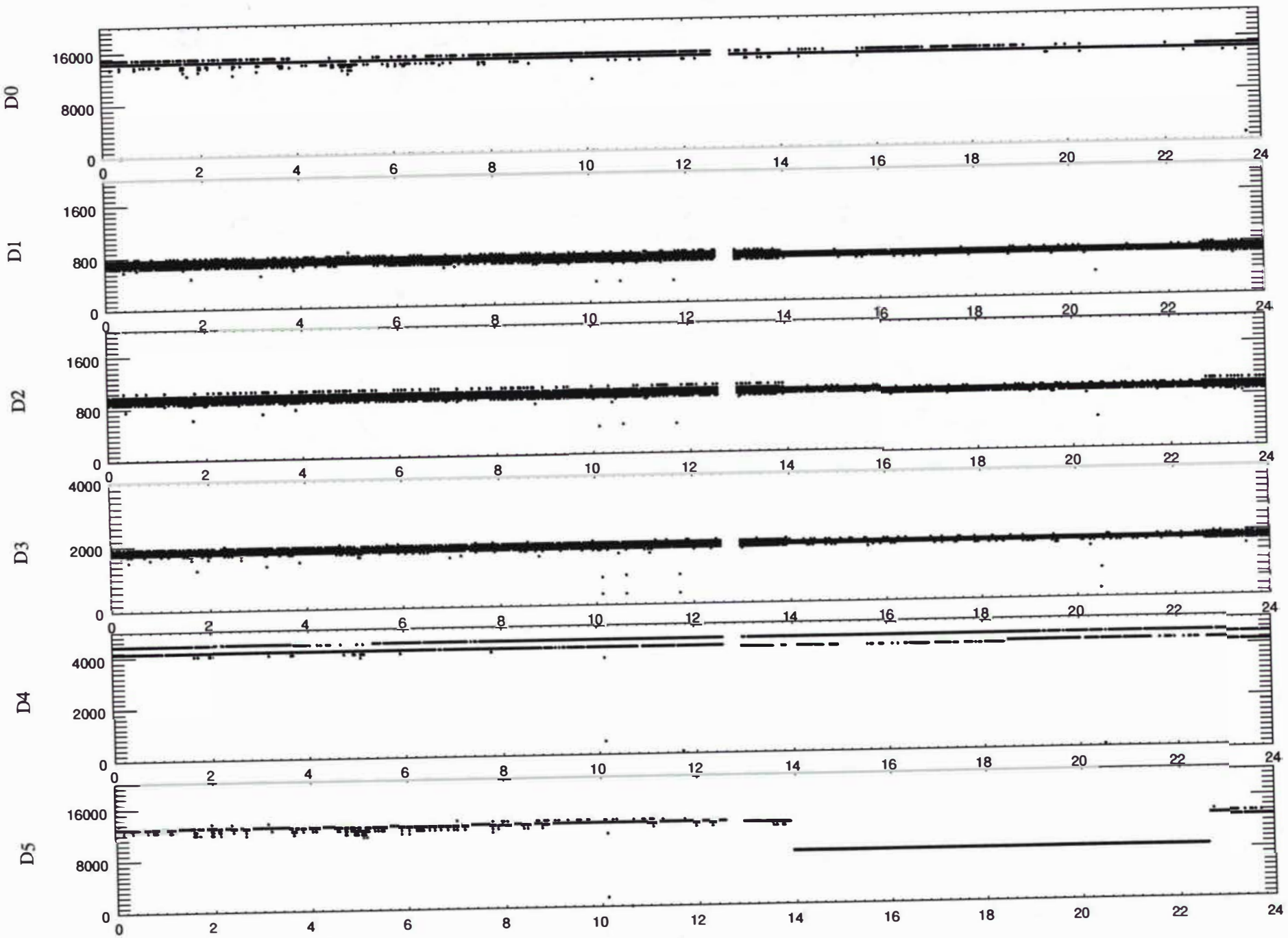
HUS 2A, MODE 1, NOT AVERAGED EDR day 104, year 1998 to day 104, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV' 'AL TIME

HUS 2B COUNTS / SEC EDR day 104, year 1998 to day 104, year 1998 8/18/98



From kraken@rosserv.gsfc.nasa.gov Fri May 8 09:08 PDT 1998
X-Sender: kraken@kangaroo.gsfc.nasa.gov (Unverified)
Mime-Version: 1.0
Date: Fri, 8 May 1998 12:08:43 -0500
<hurley@sunspot.ssl.berkeley.edu
From: Peter Kurczynski <kraken@rosserv.gsfc.nasa.gov>
Subject: TGRS/Ulysses bursts
Cc: TEEGARDEN@tgrs2.gsfc.nasa.gov

Hi Kevin,

Here's the results of a search through TGRS data for recent Ulysses bursts not seen by BATSE.

December 23 1997 10:59 Ulysses time; moderate burst, 15 s long

corresponds to TGRS 661
occurred at 38209s on December 23, 1997
100-300 keV range:
Peak Flux 131 cts/s
T90: 62 s
T50: 12 s

THESE BURSTS WERE NOT SEEN BY TGRS

December 24 1997 19:29 Ulysses time; weak burst, 64 ms long
April 5 1998 14:48 Ulysses time; weak burst, 64 ms long
April 6 1998 07:45 Ulysses time; weak burst, 64 ms long
April 7 1998 15:44 Ulysses time; weak burst, 64 ms long
April 8 1998 02:51 Ulysses time; weak burst, 64 ms long
April 09 1998 07:03 Ulysses time; weak burst, 64 ms long
April 09 1998 19:19 Ulysses time; weak burst, 32 ms long
April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

From BUTTERWORTH@tgrs2.gsfc.nasa.gov Thu Apr 23 11:14 PDT 1998
Date: Thu, 23 Apr 1998 14:13:42 -0400 (EDT)
From: BUTTERWORTH@tgrs3.gsfc.nasa.gov
To: khurley@sunspot.ssl.berkeley.edu, kmarar@isac.ernet.in, vnp@isac.ernet.in,
jterrell@lanl.gov, yosimori@rikkyo.ac.jp,
filippo@botes1.tesre.bo.cnr.it, henze@fender.msfc.nasa.gov,
kraken@rosserv.gsfc.nasa.gov, cline@apache.gsfc.nasa.gov
CC: BUTTERWORTH@tgrs3.gsfc.nasa.gov
X-Vmsmail-To: @ULYSSES
X-Vmsmail-Cc: BUTTERWORTH
Subject: KONUS REPORT FOR RECENT ULYSSES GAMMA-RAY EVENTS NOT REPORTED BY BATSE

Hi Everyone,

Here is the Konus report for those events recently seen by Ulysses, but not reported by BATSE.

Paul.

Ulysses event - March 14 1998 06:30 Ulysses time; weak burst, 64 ms long

Ulysses event - March 14 1998 23:32 Ulysses time; weak burst, 32 ms long

Ulysses event - March 24 1998 15:35 Ulysses time; weak burst, 64 ms long

Ulysses event - April 4 1998 09:06 Ulysses time; weak burst, 64 ms long

Ulysses event - April 5 1998 14:48 Ulysses time; weak burst, 64 ms long

Ulysses event - April 6 1998 07:45 Ulysses time; weak burst, 64 ms long

Ulysses event - April 7 1998 15:44 Ulysses time; weak burst, 64 ms long

Ulysses event - April 8 1998 02:51 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 07:03 Ulysses time; weak burst, 64 ms long

Ulysses event - April 9 1998 19:19 Ulysses time; weak burst, 32 ms long

Ulysses event - April 15 1998 12:23 Ulysses time; weak burst, 32 ms long

None of these events were detected by Konus. We have no data between 18:20 and 19:18 on April 9 because we were reading out the data from a trigger.

From WOODSP@SSLMOR.msfc.nasa.gov Fri Apr 17 13:11:37 1998
Date: Fri, 17 Apr 1998 15:11:12 -0500 (CDT)
From: WOODSP@SSLMOR.msfc.nasa.gov
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6688

TIME: TJD=0918 SECONDS=52603

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From WOODSP@SSLMOR.msfc.nasa.gov Fri Apr 17 13:11:30 1998
From: WOODSP@SSLMOR.msfc.nasa.gov
Date: Fri, 17 Apr 1998 15:09:54 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu
X-Vmsmail-To: @mops$send_msg:BURST_SPAN.DIS
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6687

TIME: TJD=0918 SECONDS=27841

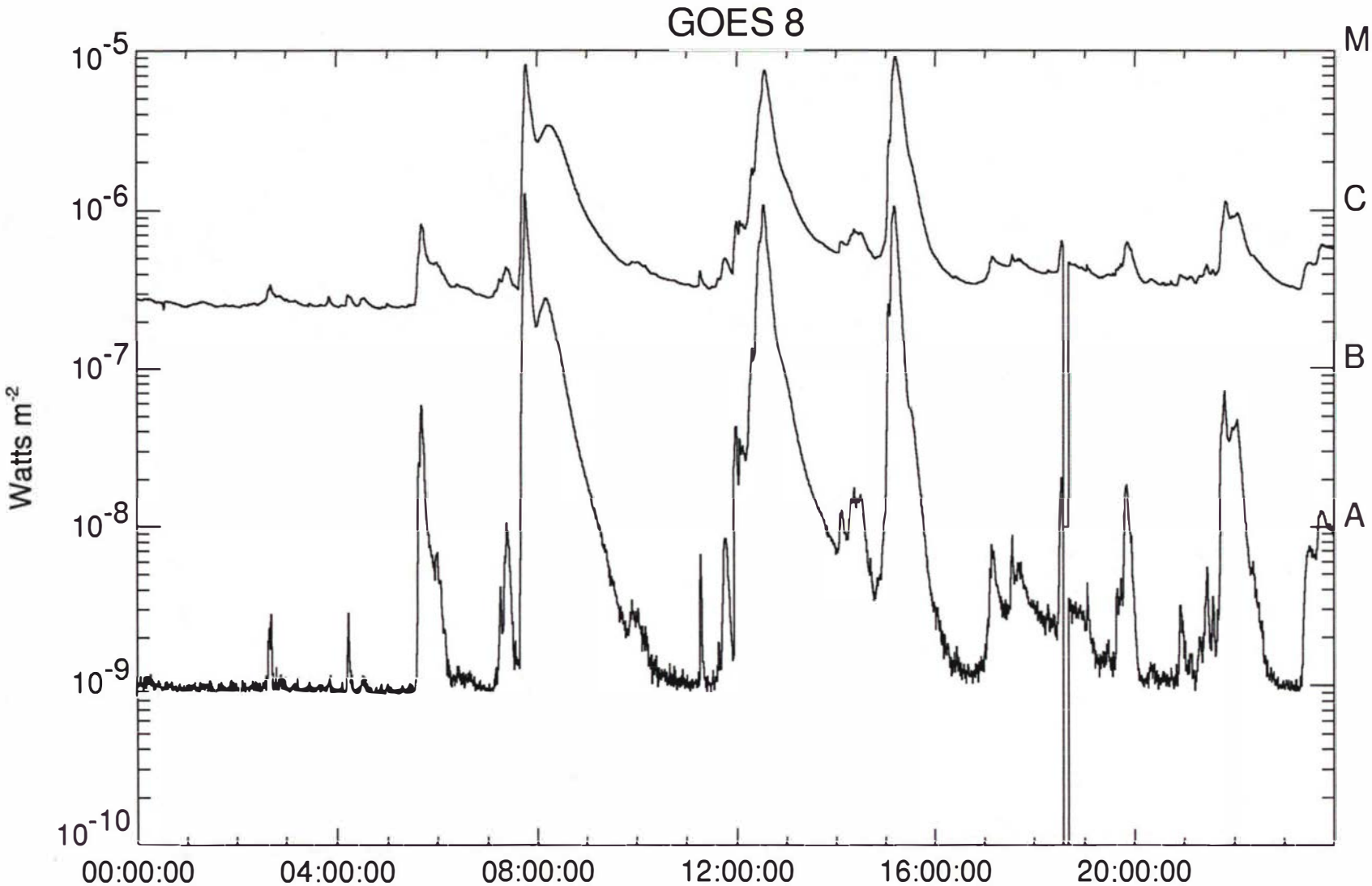
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

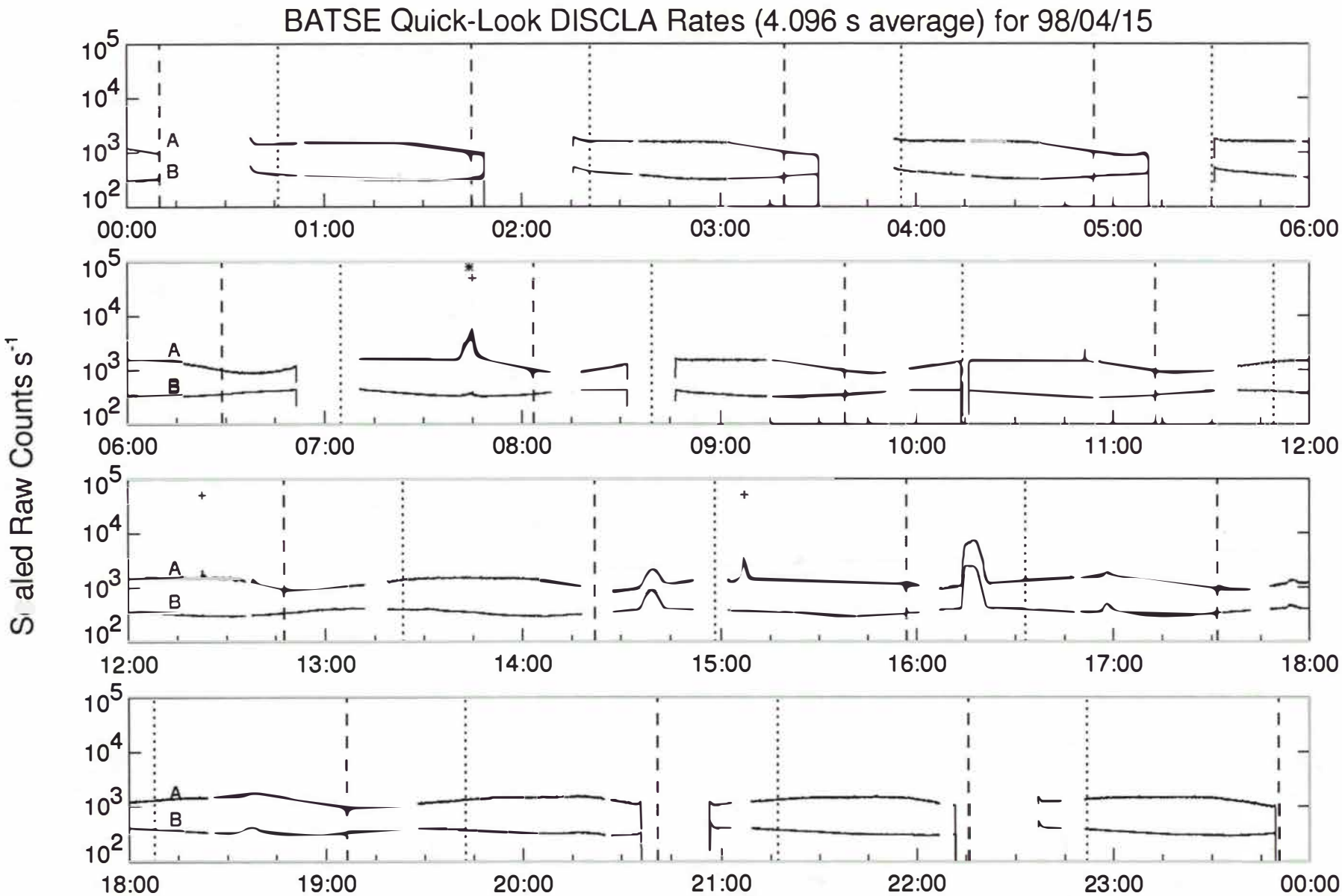
INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE. C8.8 CLASS.



Data Start: 98/04/15, 0000:00 Plot created: 98/04/22, 2007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



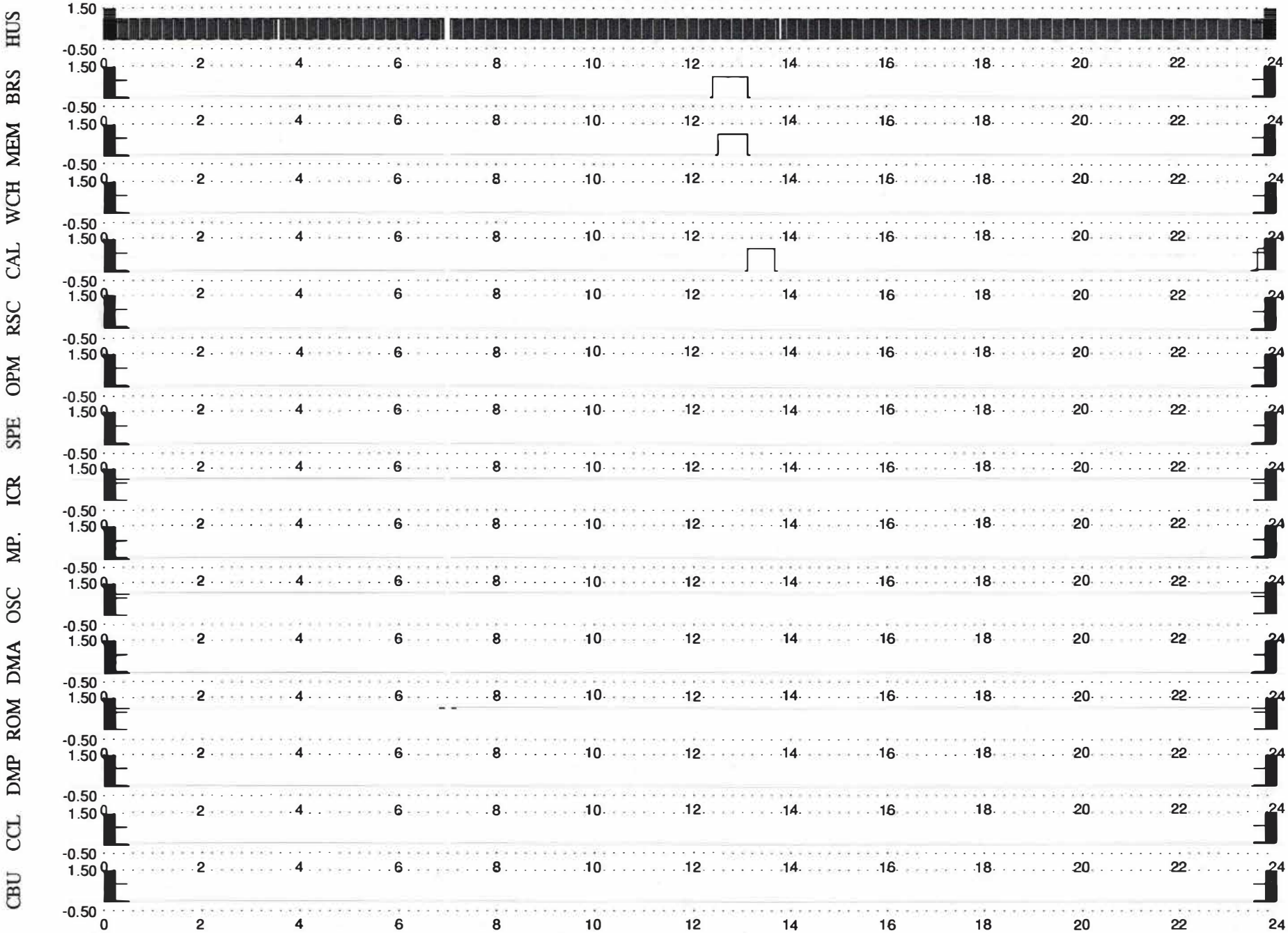
Current Time: 98/04/22, 2008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

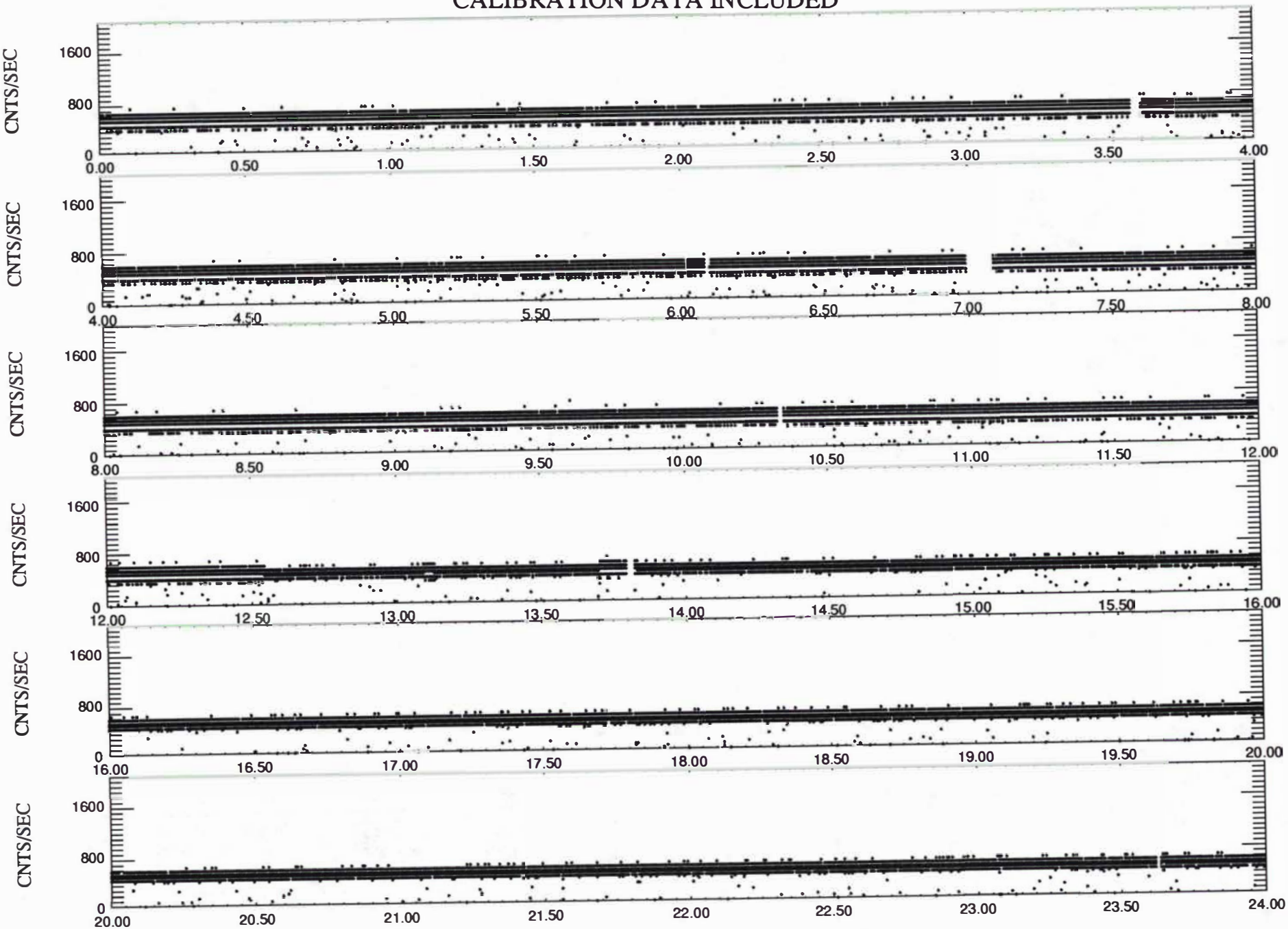
HUS MODES EDR day 105, year 1998 to day 105, year 1998 8/18/98

BURST NUMBER 0



HUS 2A, MODE 1, NOT AVERAGED EDR day 105, year 1998 to day 105, year 1998 8/18/98

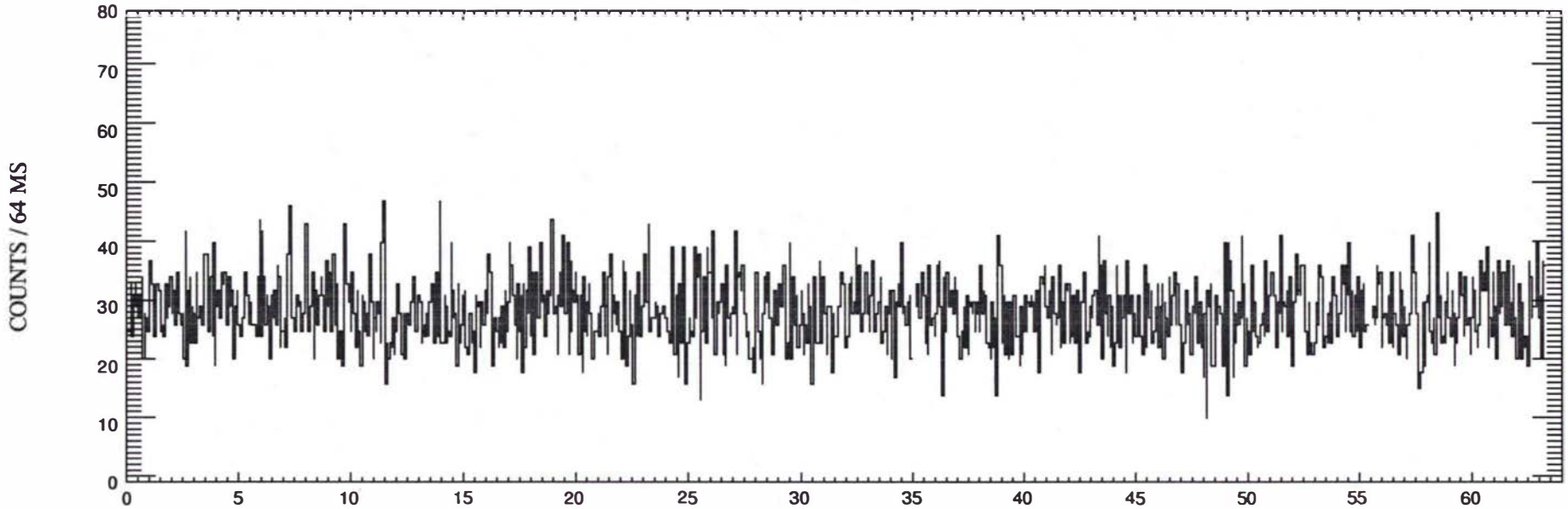
CALIBRATION DATA INCLUDED

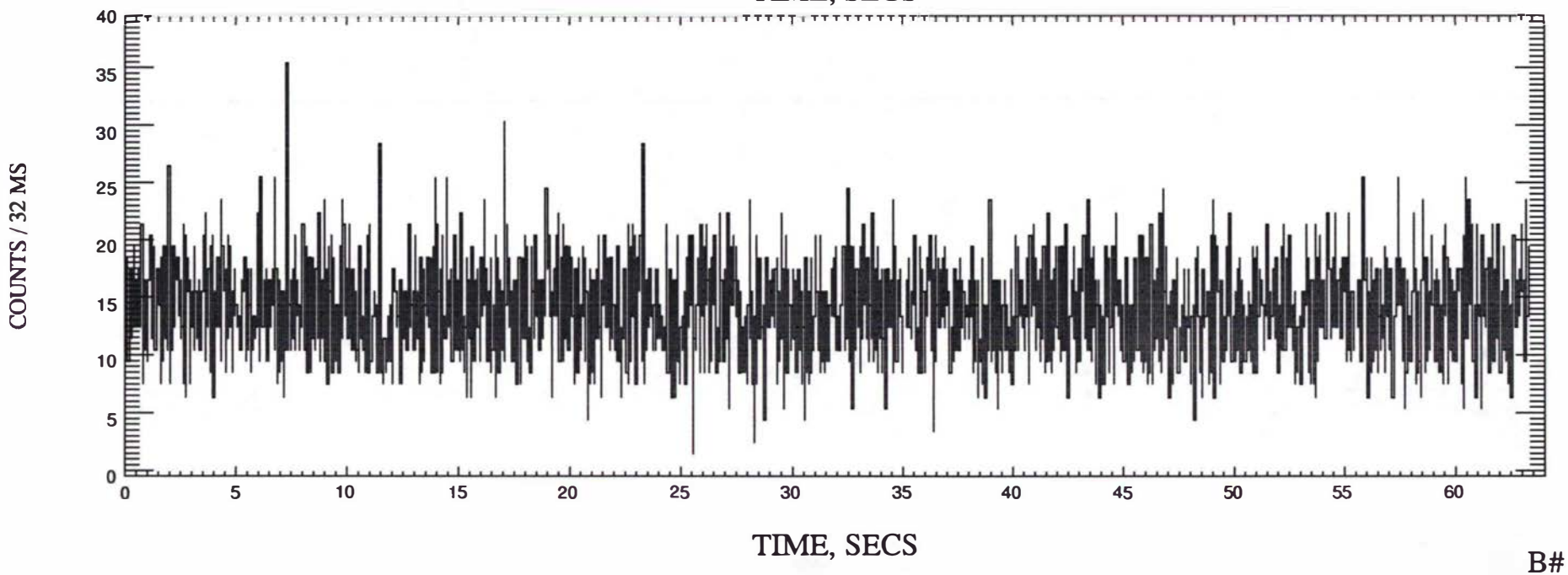


UNIV AL TIME

HUS 2A TRIGGERED DATA EDR day 105, year 1998 8/19/98

Burst Counter 0 at UT=12.388971625434 h=44600.298 s 12:23:20.298

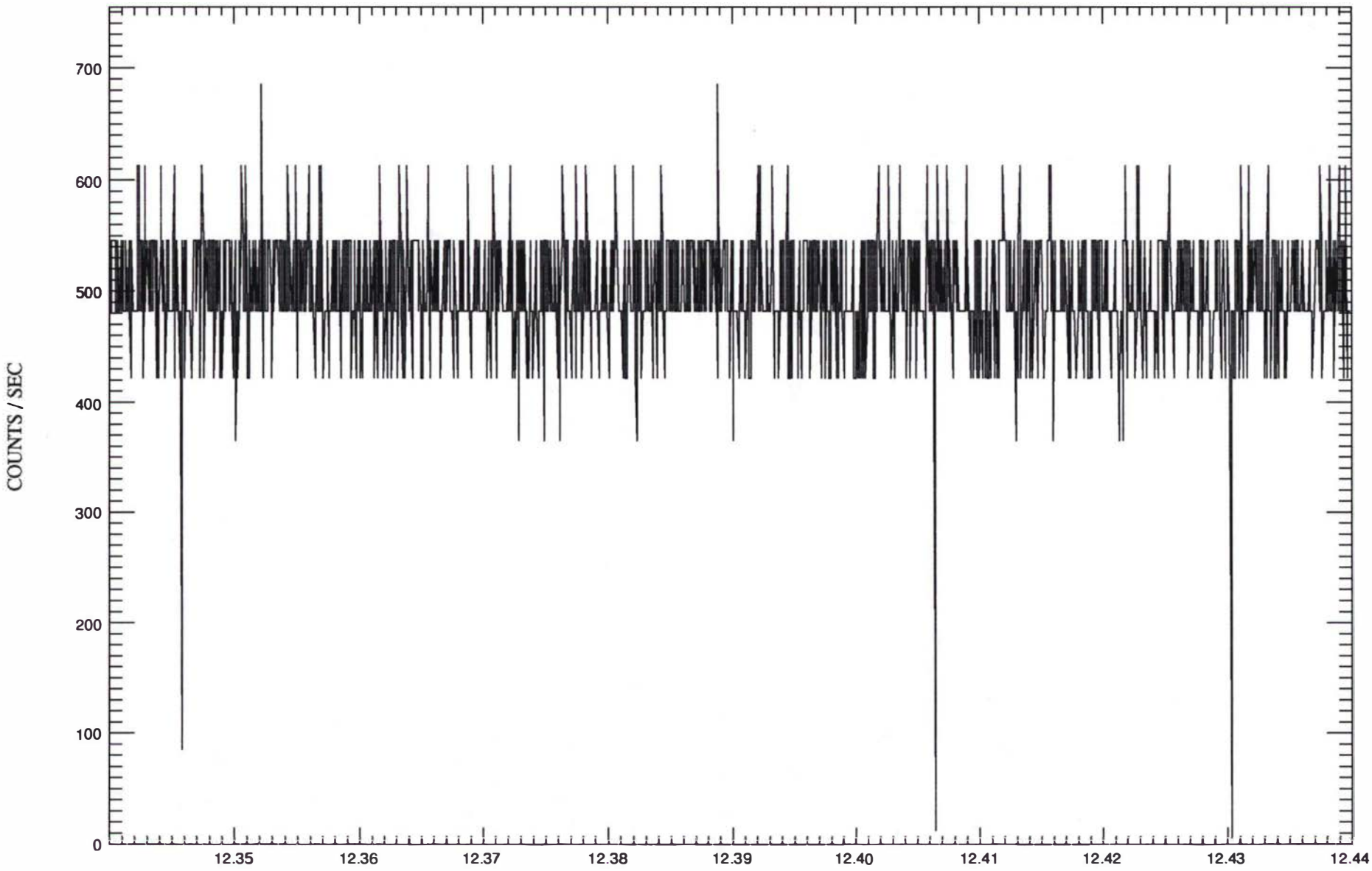




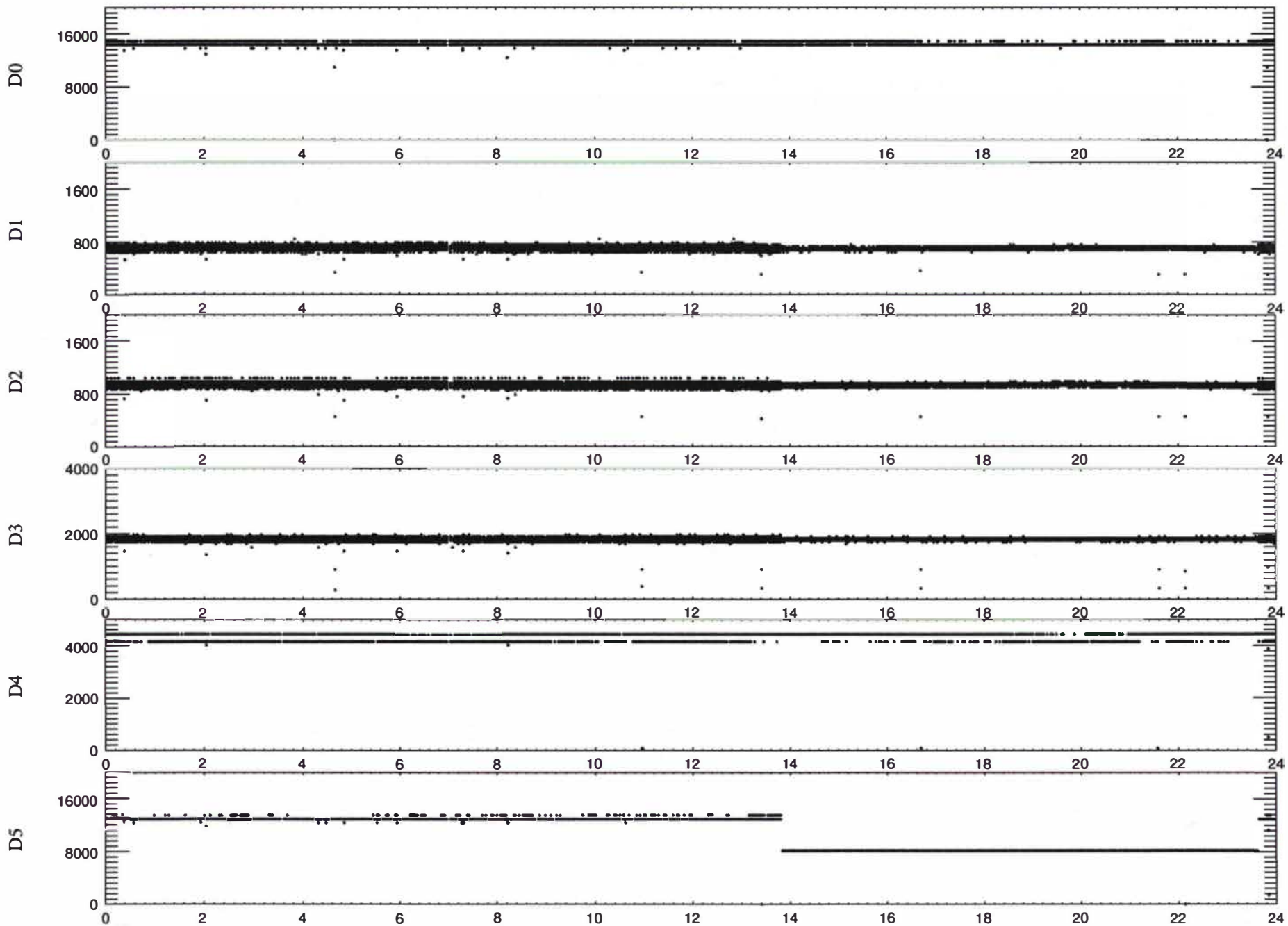
B# 1

HUS 2A, MODE 1, NOT AVERAGED EDR day 105, year 1998 to day 105, year 1998 8/19/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 105, year 1998 to day 105, year 1998 8/18/98



From RICHARDSON@fender.msfc.nasa.gov Tue Apr 21 10:10:08 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA22555; Tue, 21 Apr 1998 10:10:07 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA23826; Tue, 21 Apr 1998 10:10:03 -0700
Date: Tue, 21 Apr 1998 12:07:02 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980421120702.20e291df@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6689
Content-Length: 1135
X-Lines: 26
Status: RO

No

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

BATSE BURST #     6689
EVENT OF 1998 APR 16 DAY OF YEAR=106
EVENT CROSSING TIME AT BATSE      : 22095. S. OR 06:08:15.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  96.000    0.000
BATSE PEAK COUNTING RATE:   9000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 16/ 4/  98 IS:
RA=  150.774 DEC=   13.227 DIST=    4.811 AU
BATSE-ULYSSES DISTANCE =  719759179. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=124.16 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1348.07 SECS.
CROSSING TIME AT ULYSSES    IS 20747. S. OR   05:45:46 +/-  374.44 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 16/ 4/  98 IS:
RA=   30.114 DEC=   12.011 DIST=    2.437 AU
MARS-BATSE DISTANCE =  364582400. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.55 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -485.97 SECS.
CROSSING TIME AT MARS       IS 21609. S. OR   06:00:09 +/-  186.17 SECONDS

                 BATSE BURST TRIGGER
NO.: 6689

TIME: TJD=0919 SECONDS=22095

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

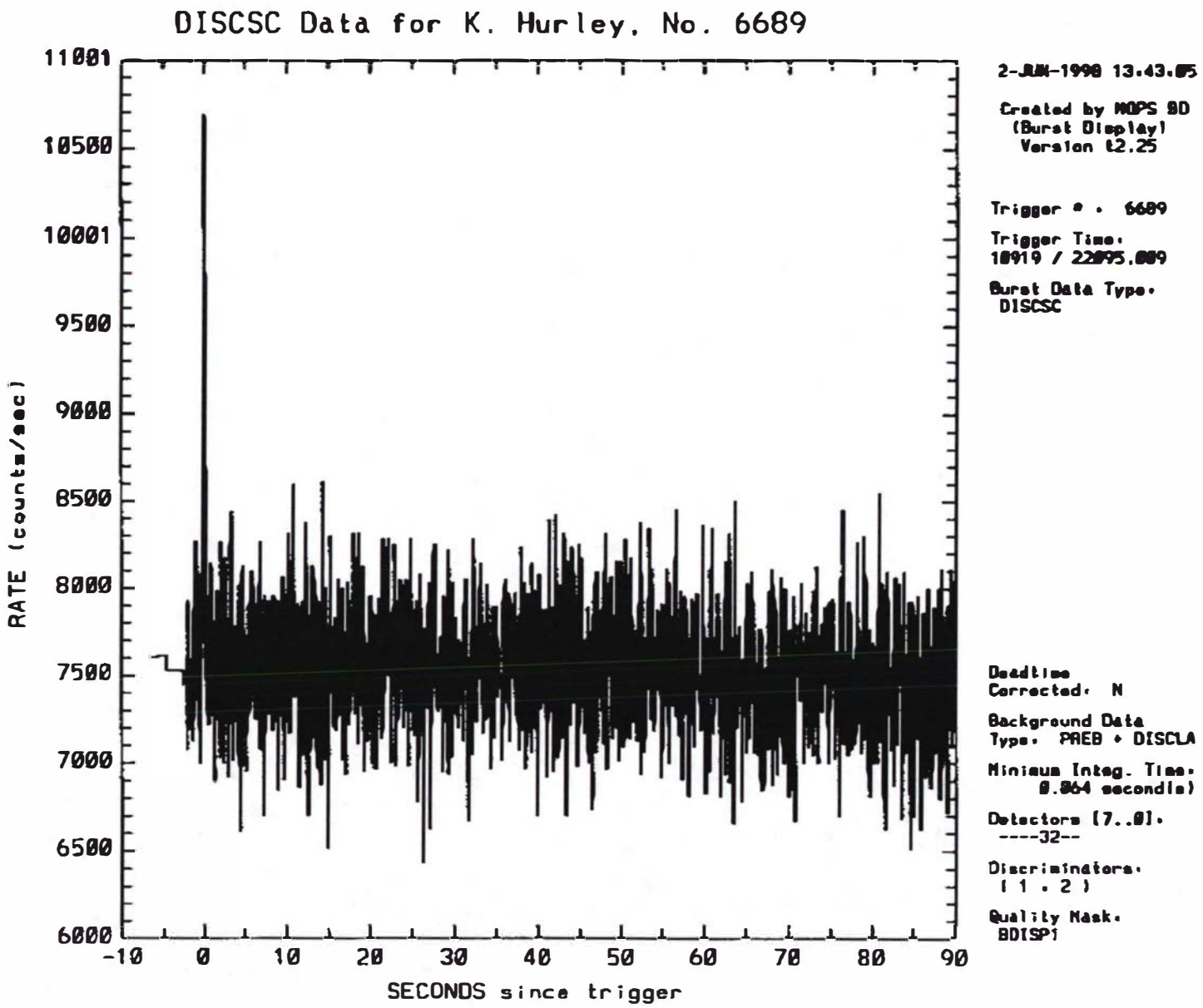
SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=79.2   AZIMUTH=312.6  ERROR=7.7   DEGREES

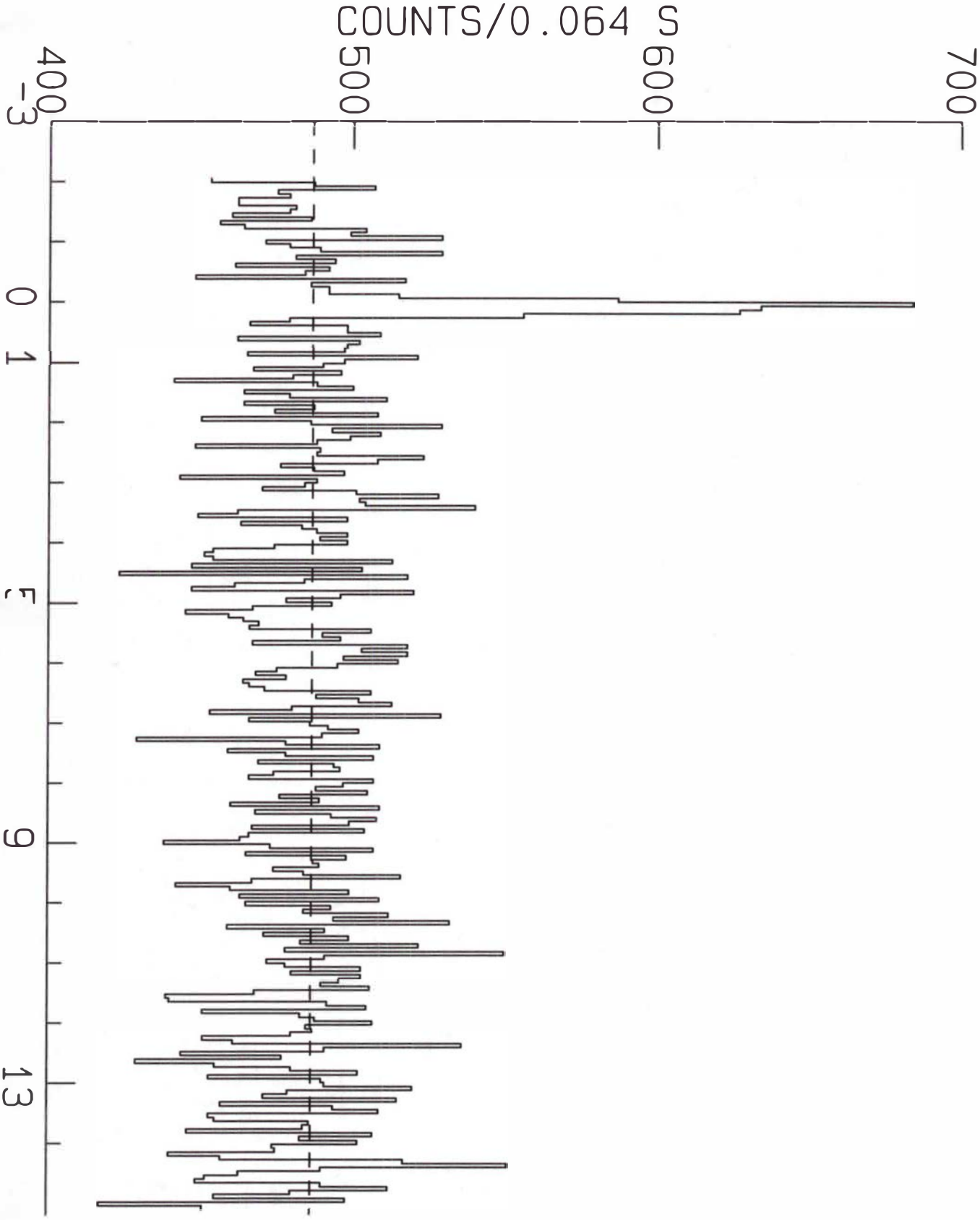
COMMENTS:
GRB. SHORT SPIKE WITH A LITTLE STRUCTURE. DURATION APPROX. = 0.3 SEC
VISIBLE ABOVE 300KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6689   980416   10919   22095     9000   096     0    .3
```


DISCSC Data for K. Hurley, No. 6689
RATE (counts/sec)
11001
10500
10001
9500
9000
8500
8000
7500
7000
6500
6000
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
2-JUN-1998 13.43.05
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 6689
Trigger Time:
10919 / 22095.009
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds)
Detectors (7..0):
----32--
Discriminators:
(1 , 2)
Quality Mask:
BDISP1

BATSE 16/04/98 22095.009

25- 100 keV



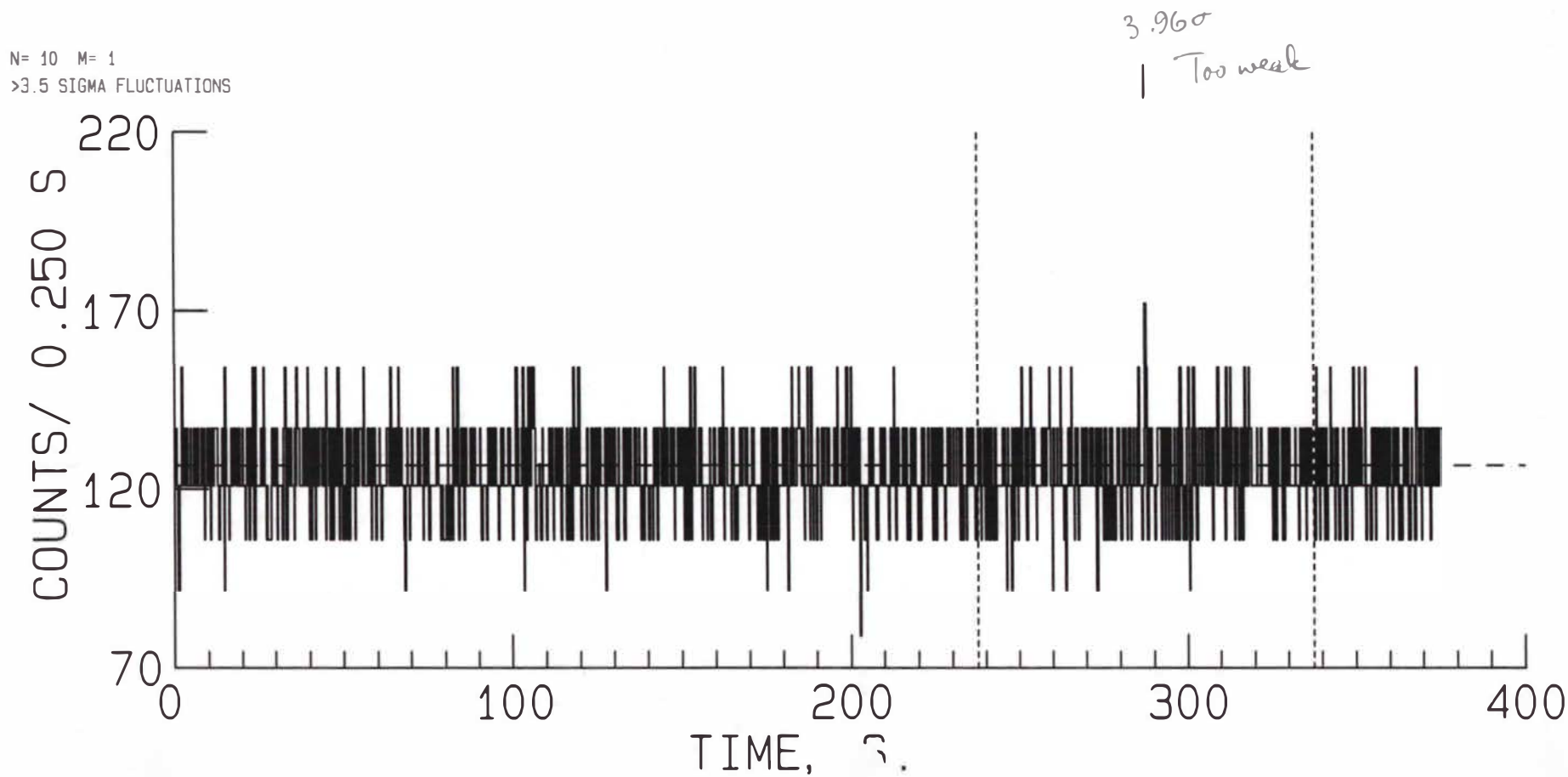
24/ 6/98

ULYSSES RT

16/ 4/98 20376.224 s

22- 148 keV

24/ 6/98

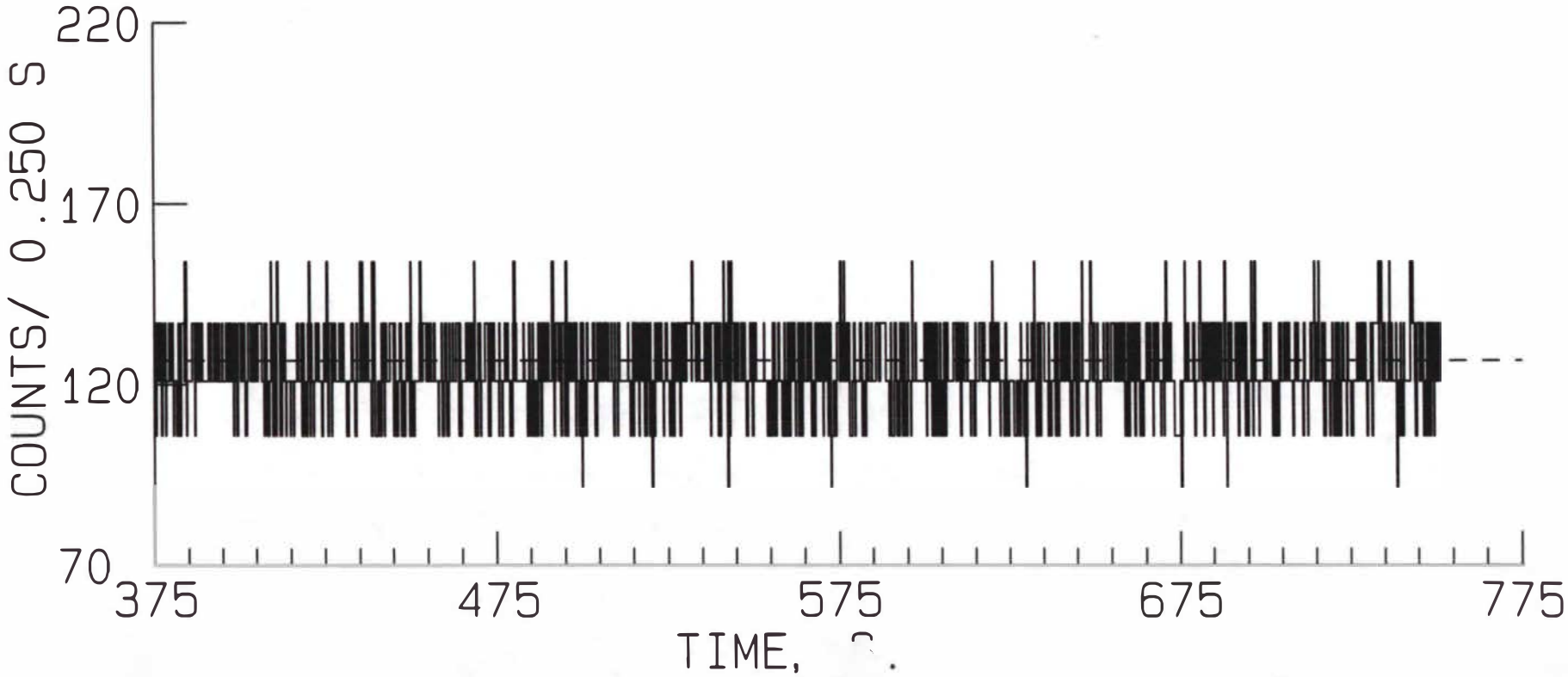


ULYSSES RT

24/ 6/98

16/ 4/98 20376.224 s

22- 148 keV



SAX GRBM

HUS DATA

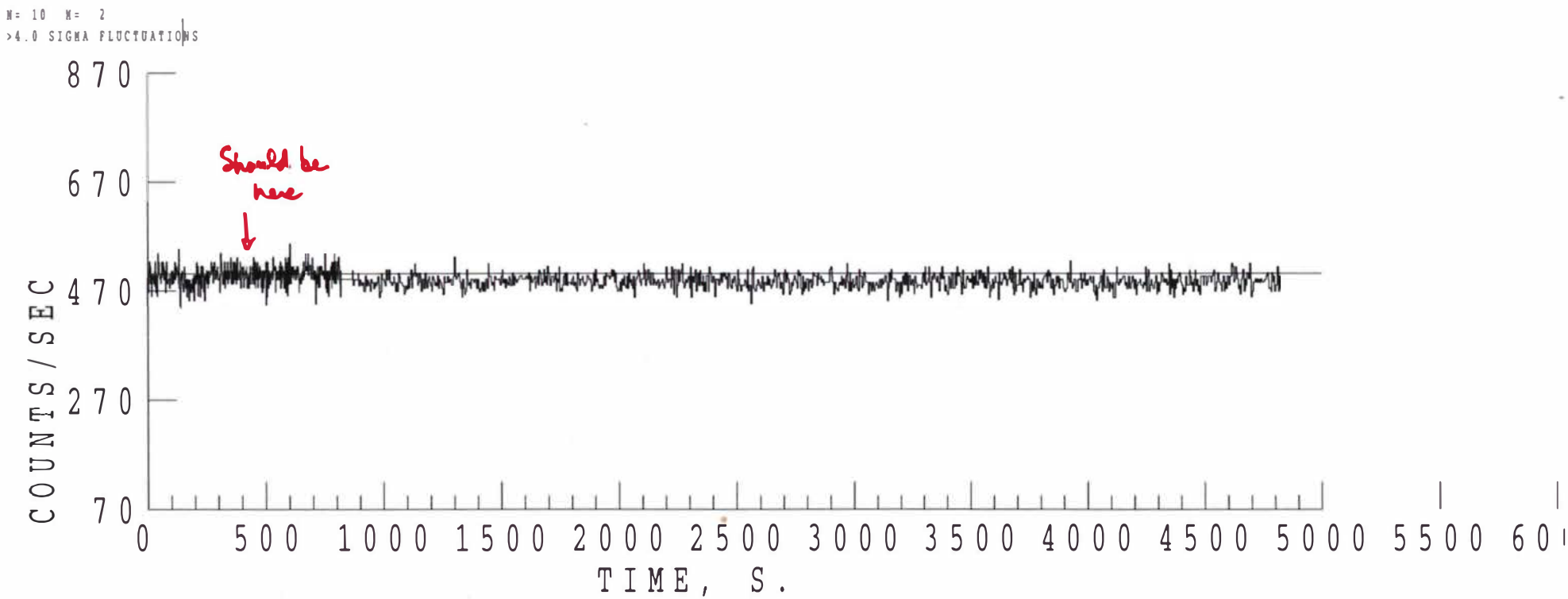
19/07/05

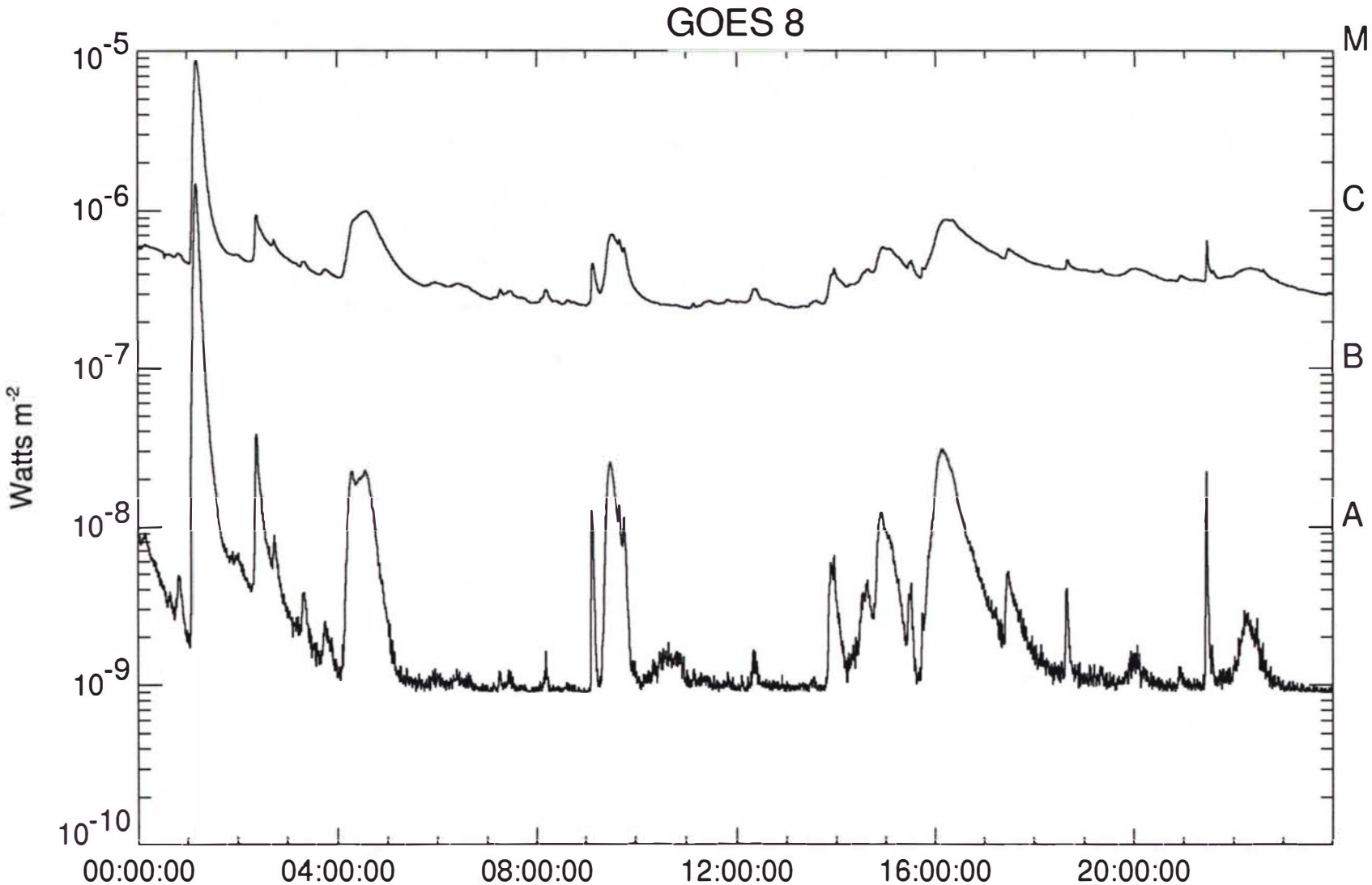
ULYSSES RT

16/04/98 48744.027 s

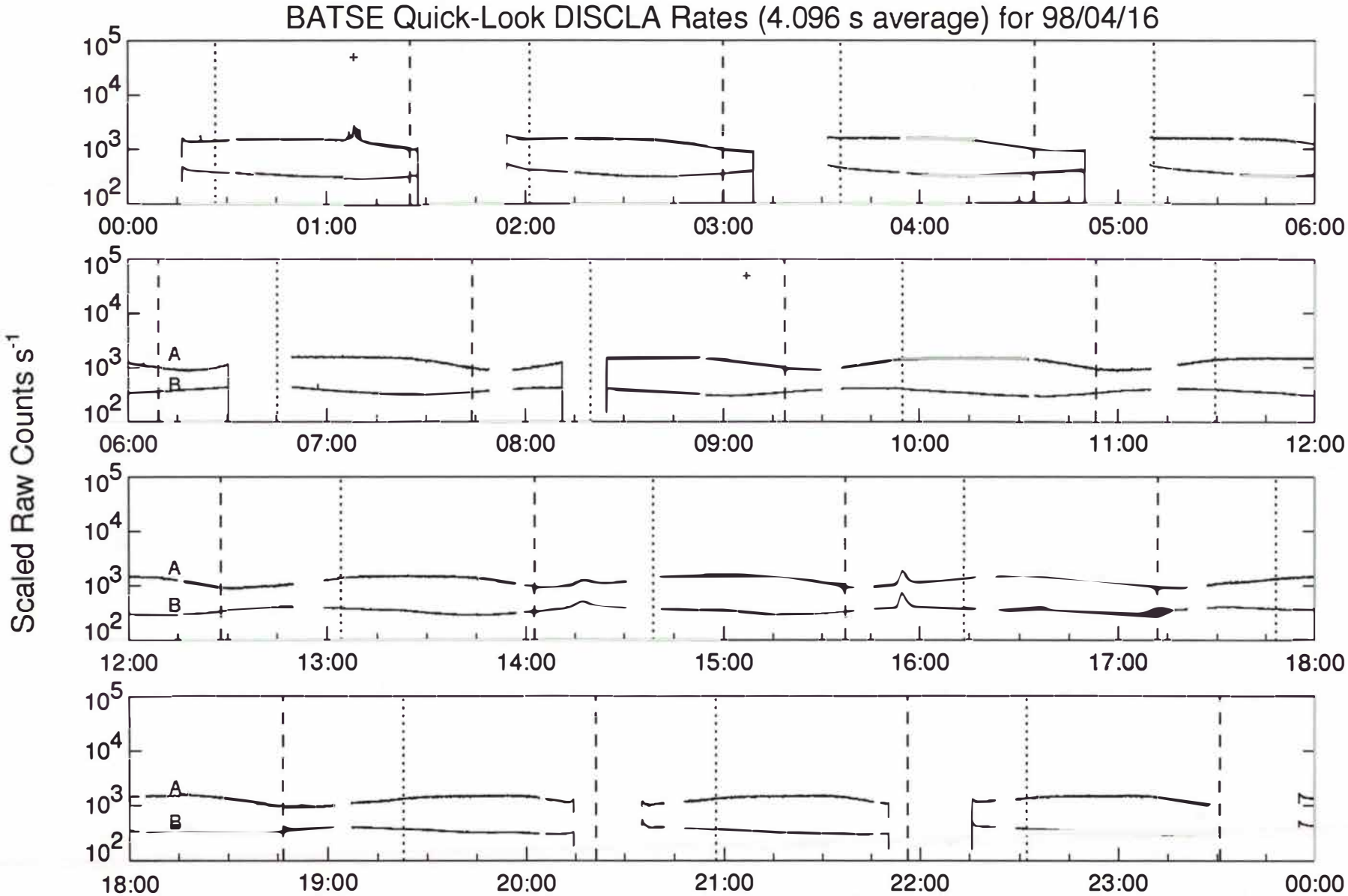
INTERVALS REGROUPED BY 8

0- 0 keV





Data Start: 98/04/16, 0000:00 Plot created: 98/04/22, 2012
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



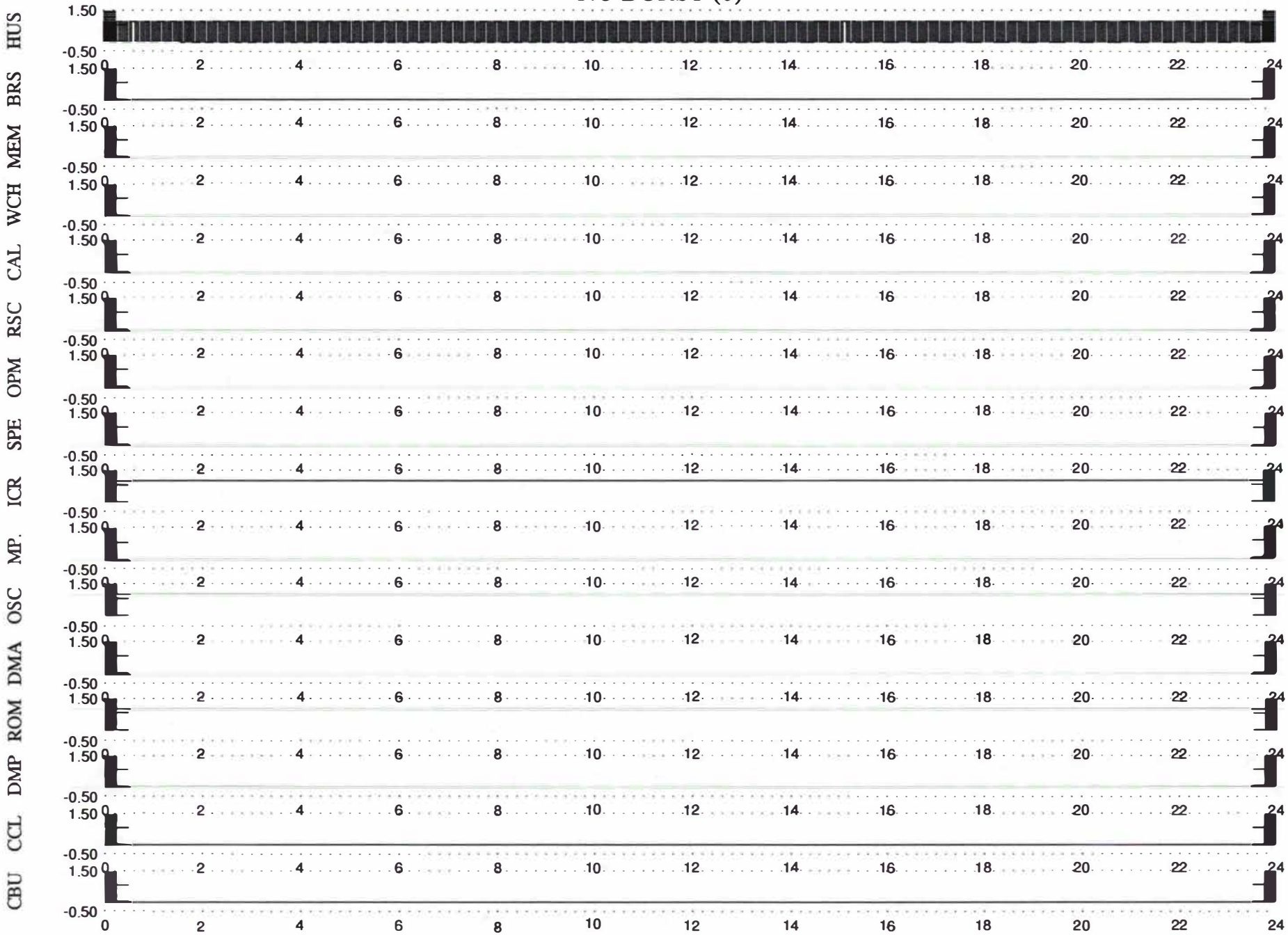
Current Time: 98/04/22, 2013 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MODES EDR day 106, year 1998 to day 106, year 1998 8/18/98

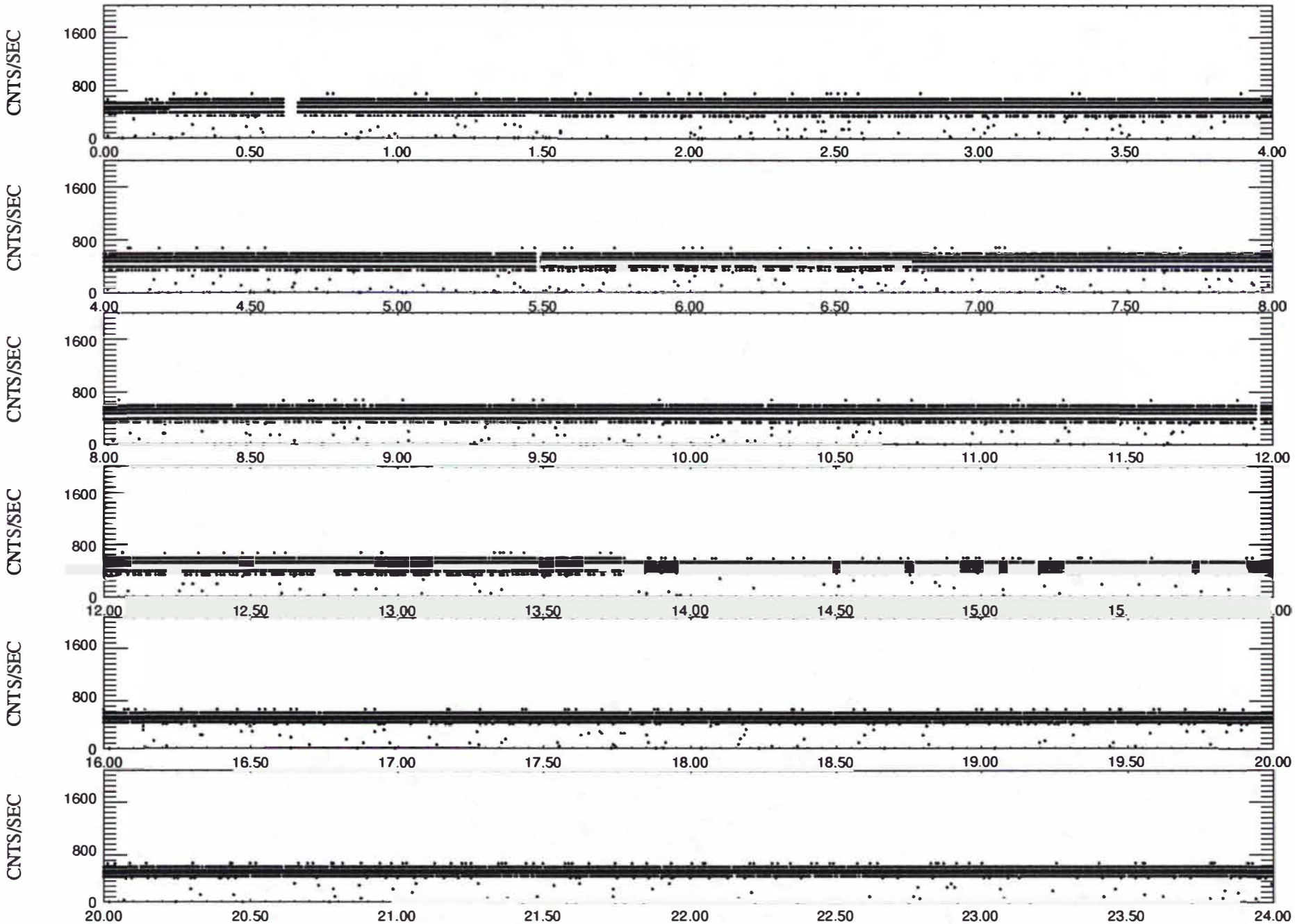
NO BURST (0)



UNIV :AL TIME

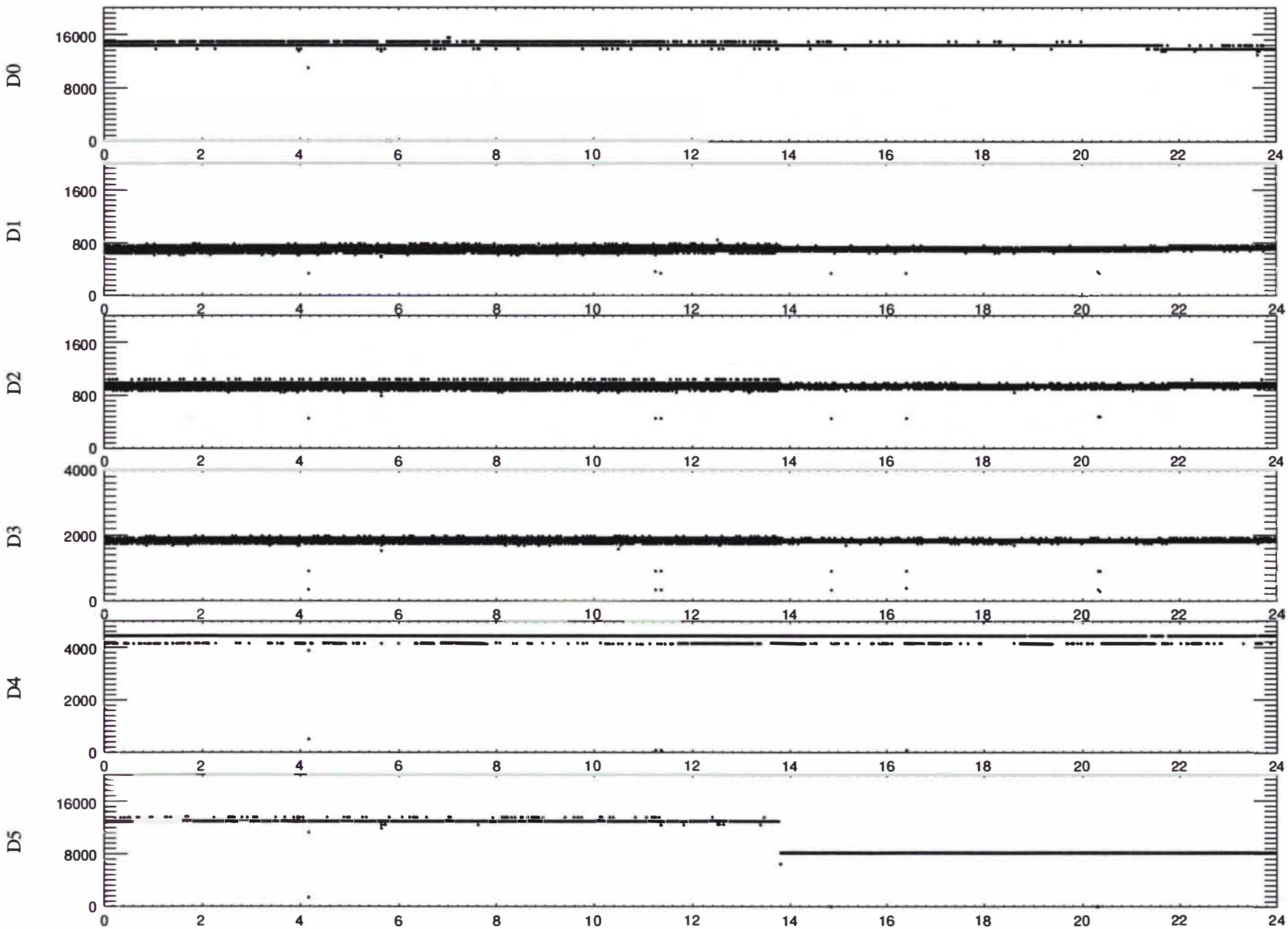
HUS 2A, MODE 1, NOT AVERAGED EDR day 106, year 1998 to day 106, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV `AL TIME

HUS 2B COUNTS / SEC EDR day 106, year 1998 to day 106, year 1998 8/18/98



From RICHARDSON@fender.msfc.nasa.gov Mon Apr 20 14:27:17 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id OAA07593; Mon, 20 Apr 1998 14:27:17 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id OAA18653; Mon, 20 Apr 1998 14:27:15 -0700
Date: Mon, 20 Apr 1998 16:26:17 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980420162617.20e291df@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6690
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6690
EVENT OF 1998 APR 17 DAY OF YEAR=107
EVENT CROSSING TIME AT BATSE      : 23439. S. OR 06:30:39.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 301.000   18.000
BATSE PEAK COUNTING RATE:   8000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 17/ 4/  98 IS:
RA=  150.657 DEC=   13.206 DIST=    4.826 AU
BATSE-ULYSSES DISTANCE =  721940741. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 42.78 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1767.61 SECS.
CROSSING TIME AT ULYSSES    IS 25207. S. OR   07:00:06 +/-  360.78 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 17/ 4/  98 IS:
RA=   30.825 DEC=   12.277 DIST=    2.439 AU
MARS-BATSE DISTANCE =  364909792. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 93.93 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  -83.42 SECS.
CROSSING TIME AT MARS       IS 23356. S. OR   06:29:15 +/-  209.56 SECONDS

                BATSE BURST TRIGGER
NO.: 6690

TIME: TJD=0920 SECONDS=23439

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=126.9  AZIMUTH=115.6  ERROR=5.1   DEGREES

COMMENTS:
GRB TWO SHORT PULSES. TOTAL DURATION APPROX. = 1.1 SEC. VISIBLE ABOVE 300KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6690   980417   10920   23439     8000   301   +18   1.1
```

BATSE BURST# 6690

ULYSSES RT 20/ 4/98

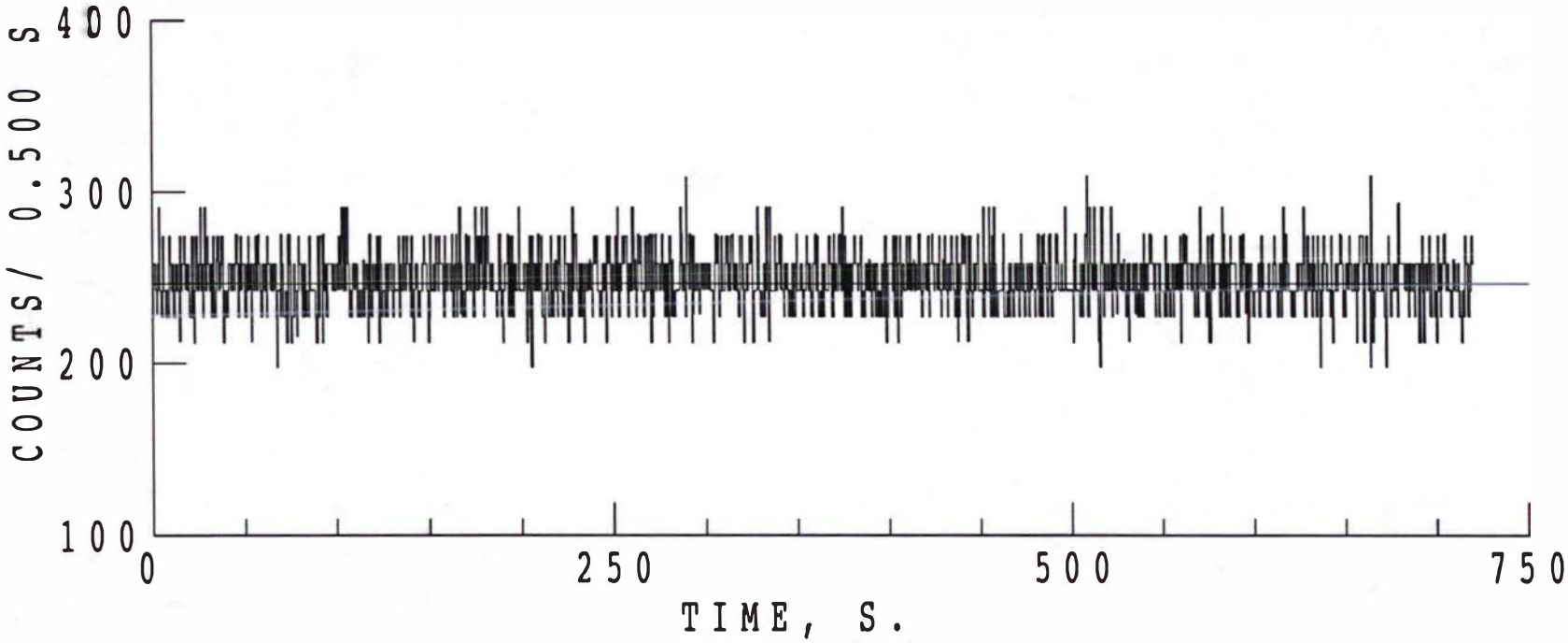
17/ 4/98 24840.199 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

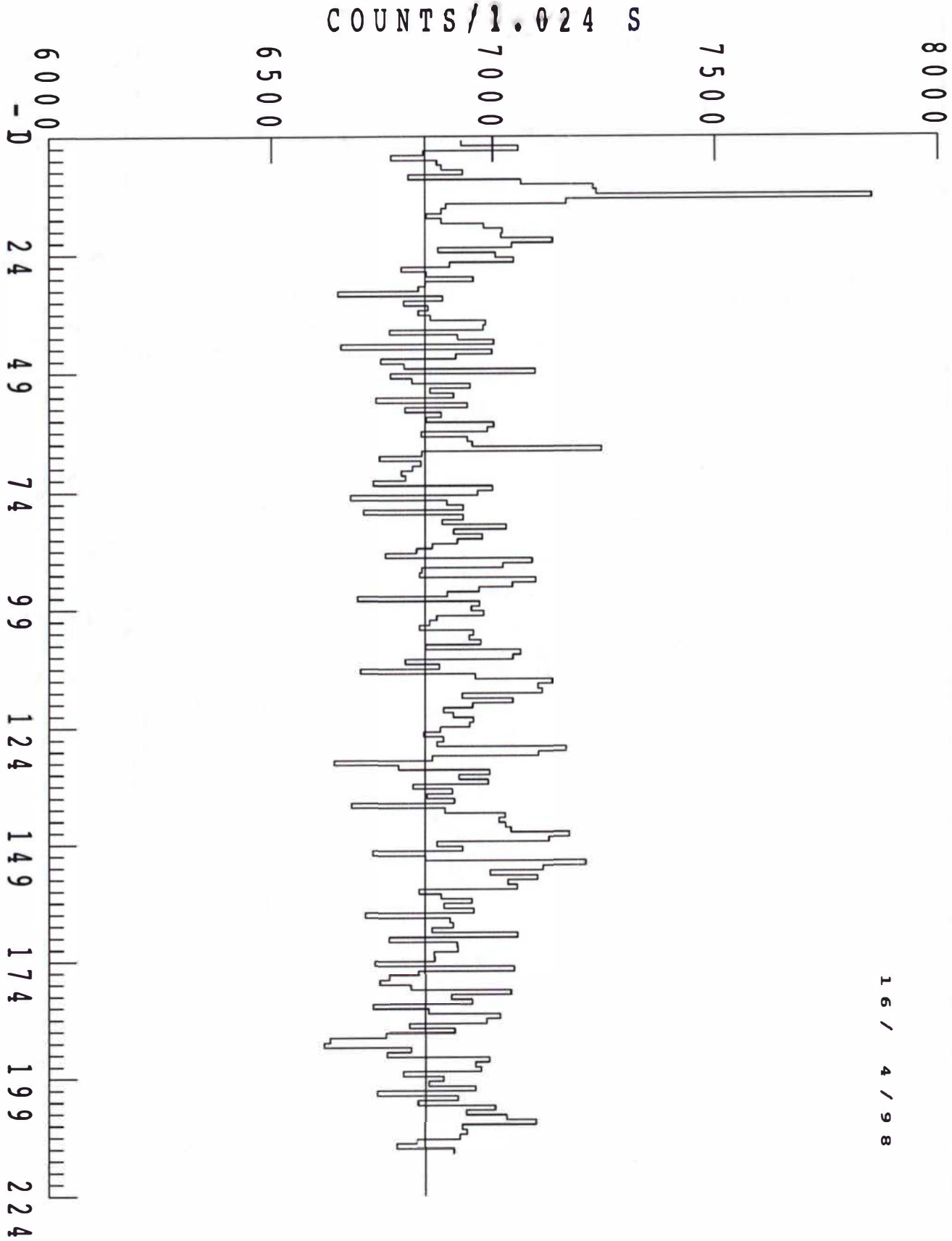
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



BACODINE 6690 17/04/98 23427.809

25- 100 keV



16/ 4/98

Date: Mar 9 2012

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

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

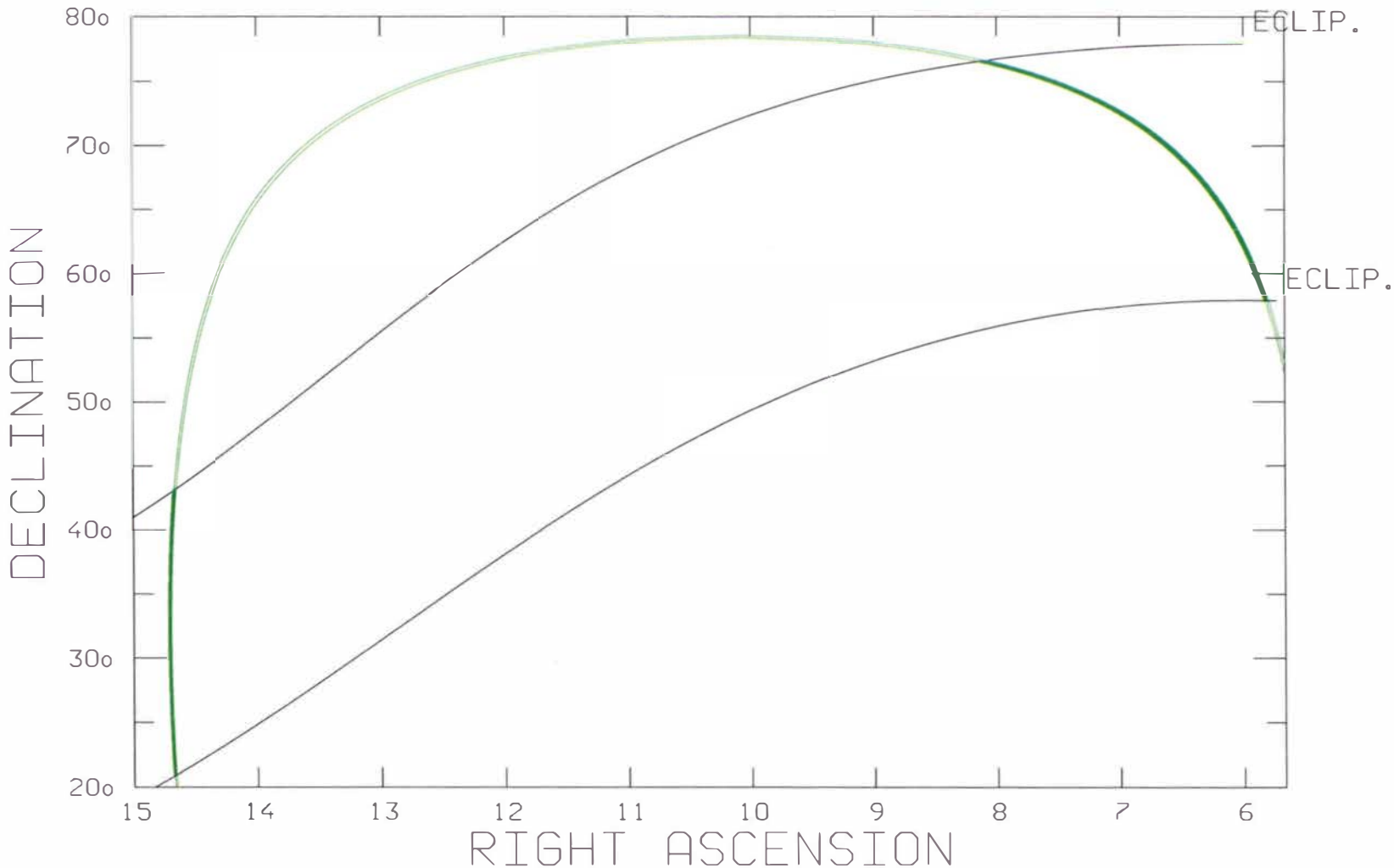
☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

☐ Geocentric time used?

☑ ACCESS and MBL databases updated with identical times?

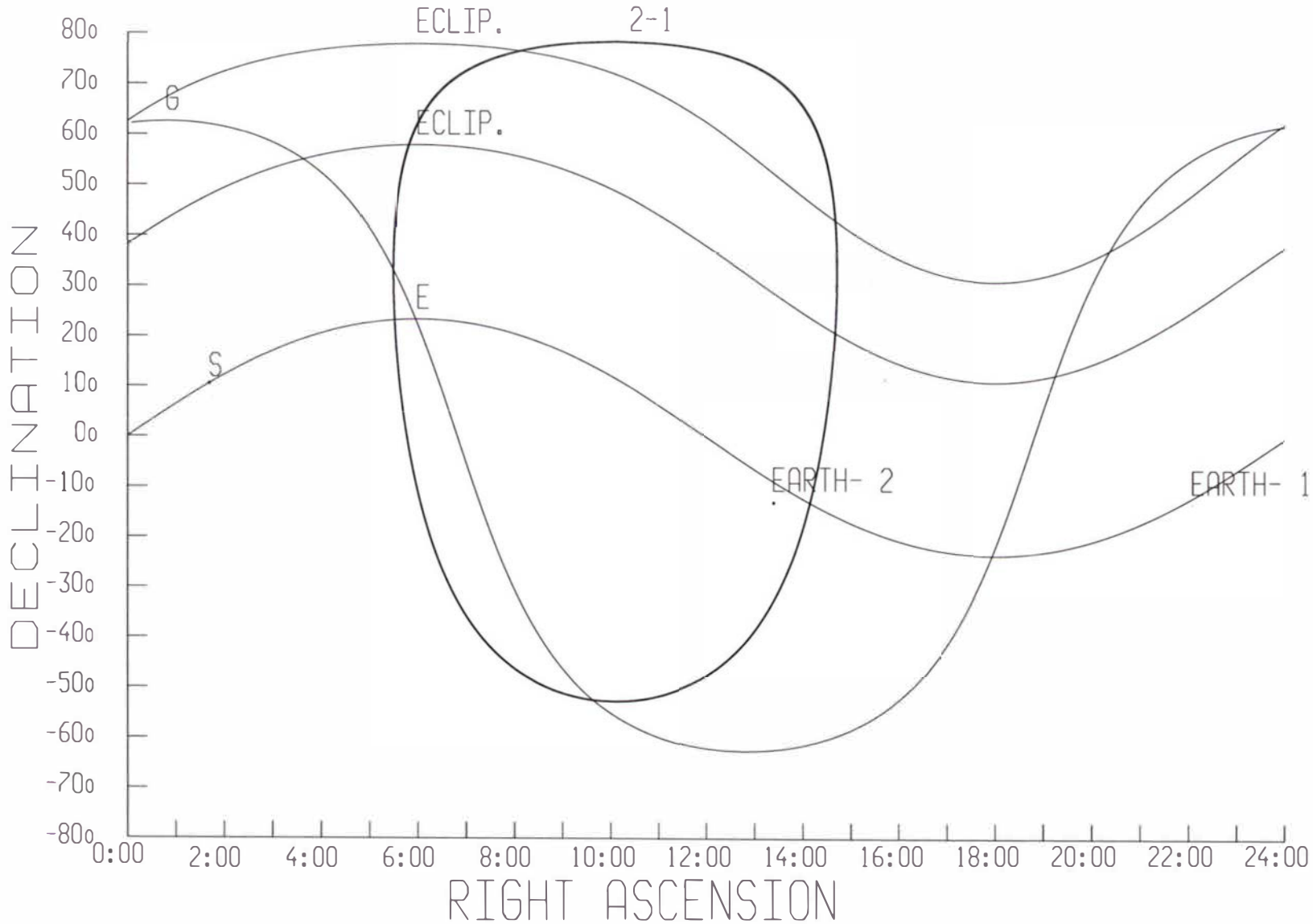
GRB980417 ~48709 S 09/03/2012



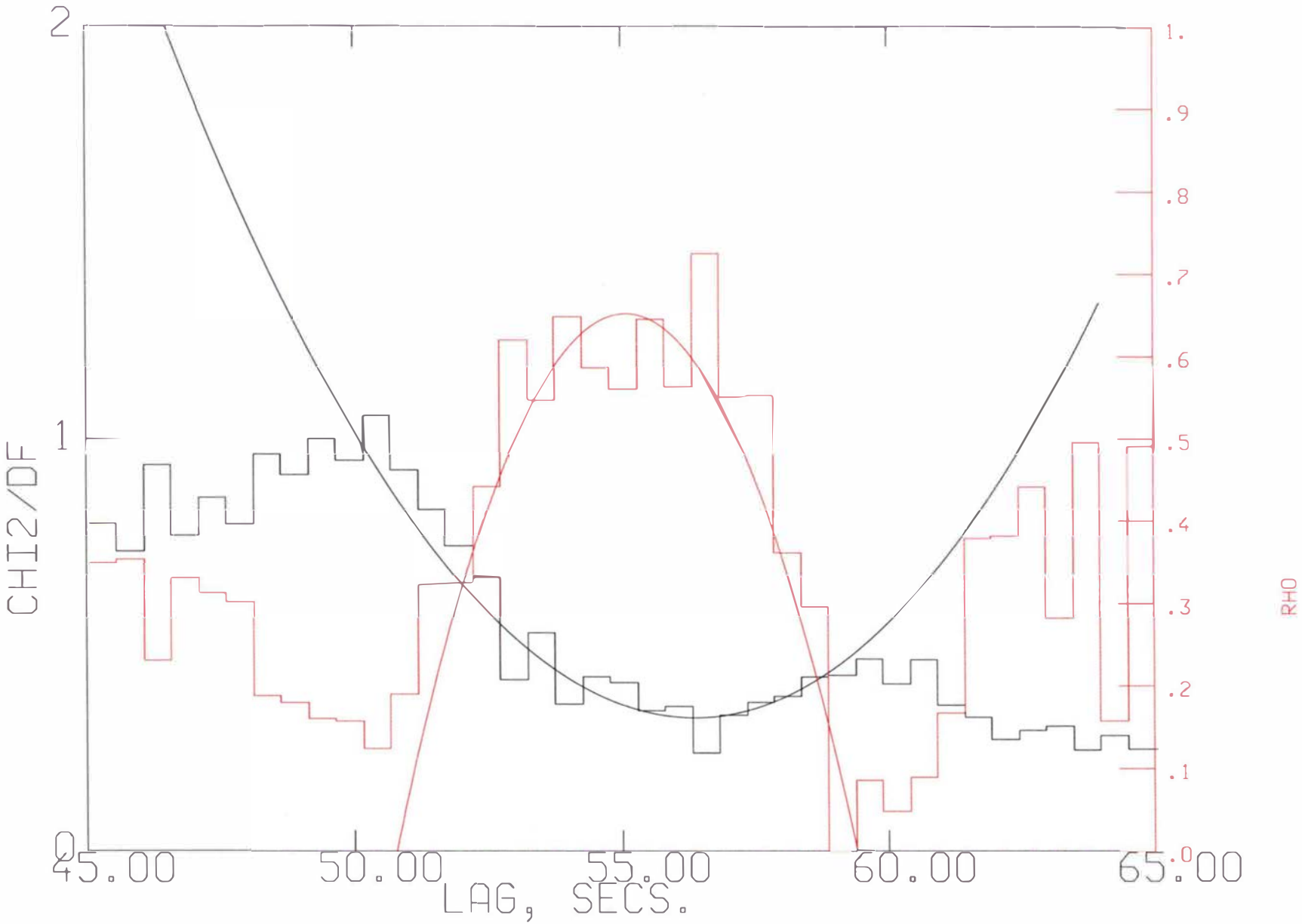
EVENT OF APR 17, 1998 13:15

09/03/2012

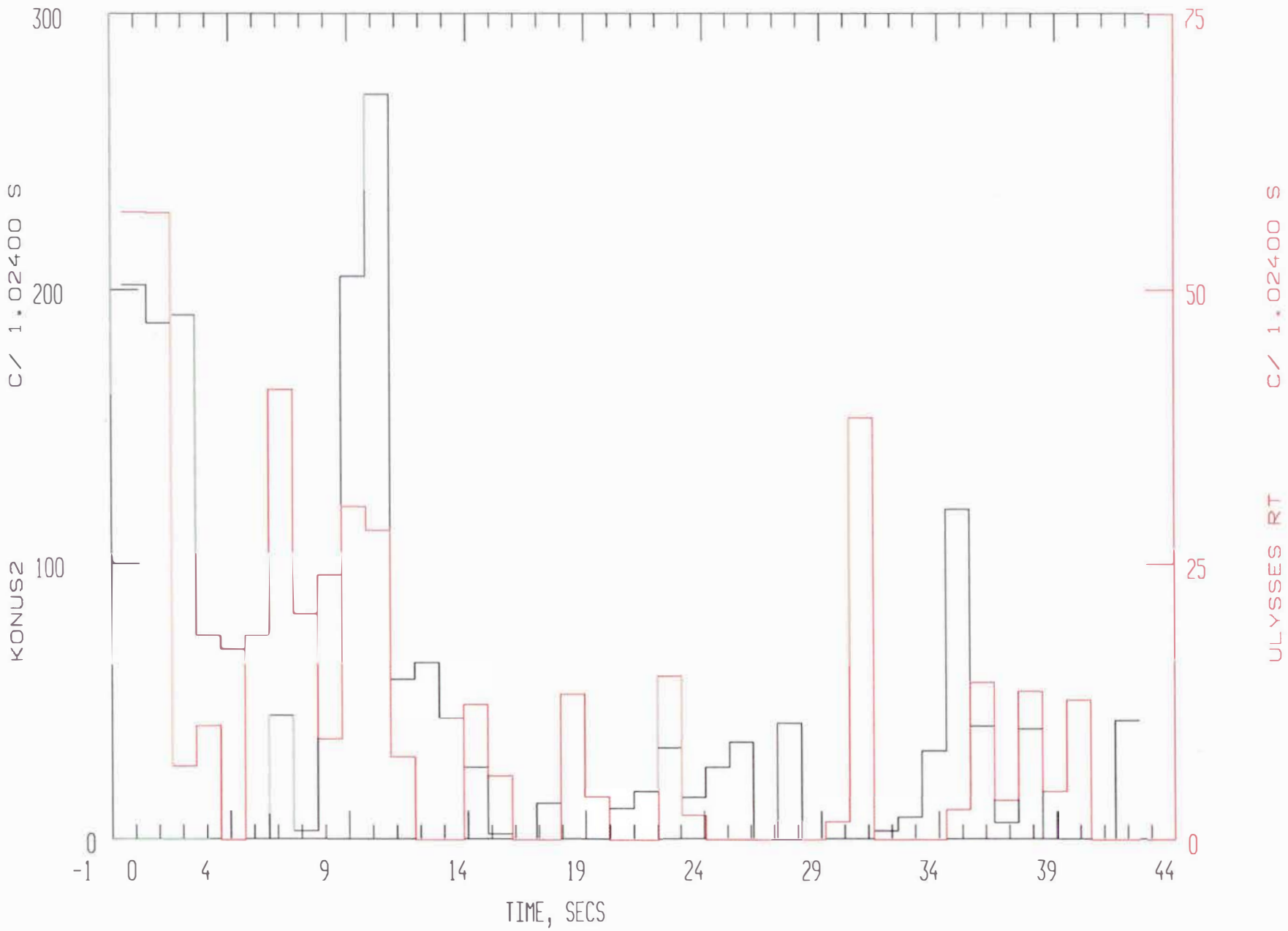
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 KONUS2



KONUS2 -ULYSSES RT CORRELATION 17/04/98 48764.325



KONUS2 -ULYSSES RT CORRELATION 17/04/98 48764.325 9/ 3/12



konus 19980417 47796

ULYSSES RT

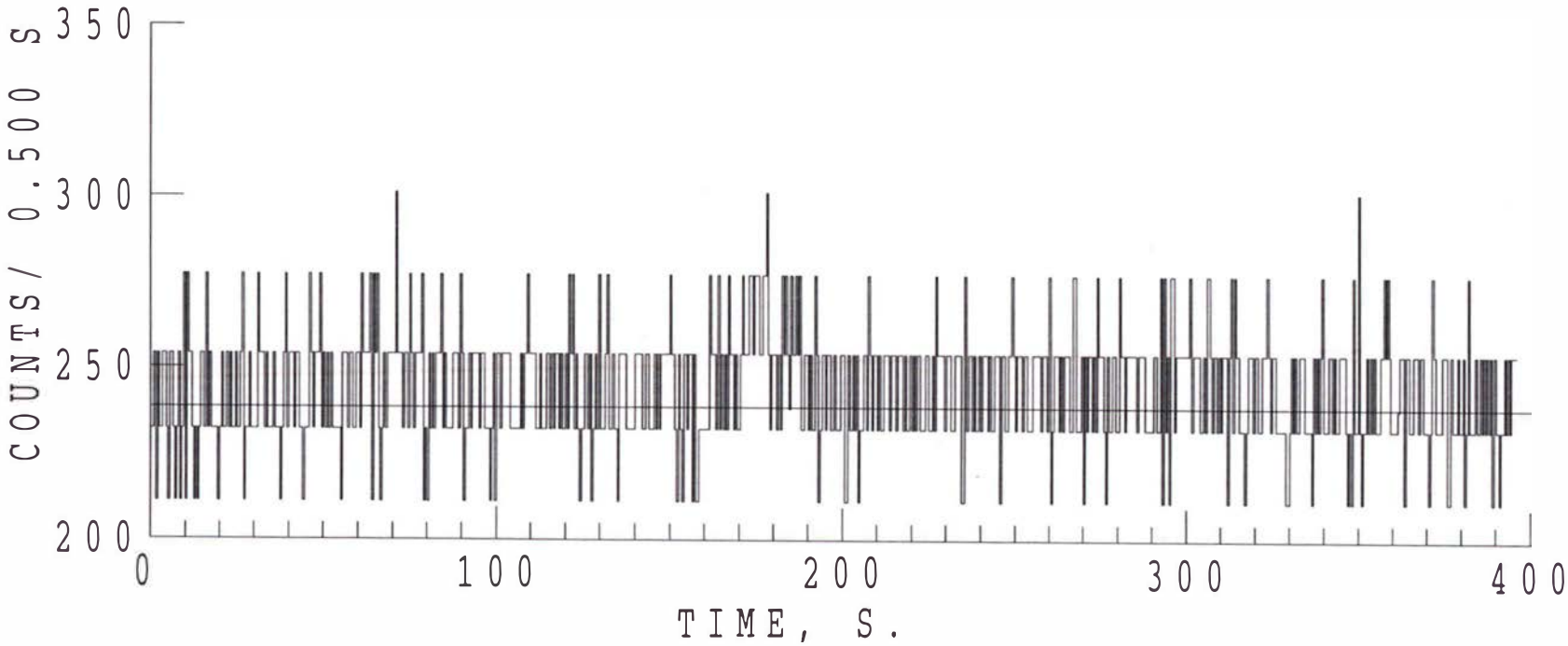
07/03/12

17/04/98 47592.191 s

0- 0 keV

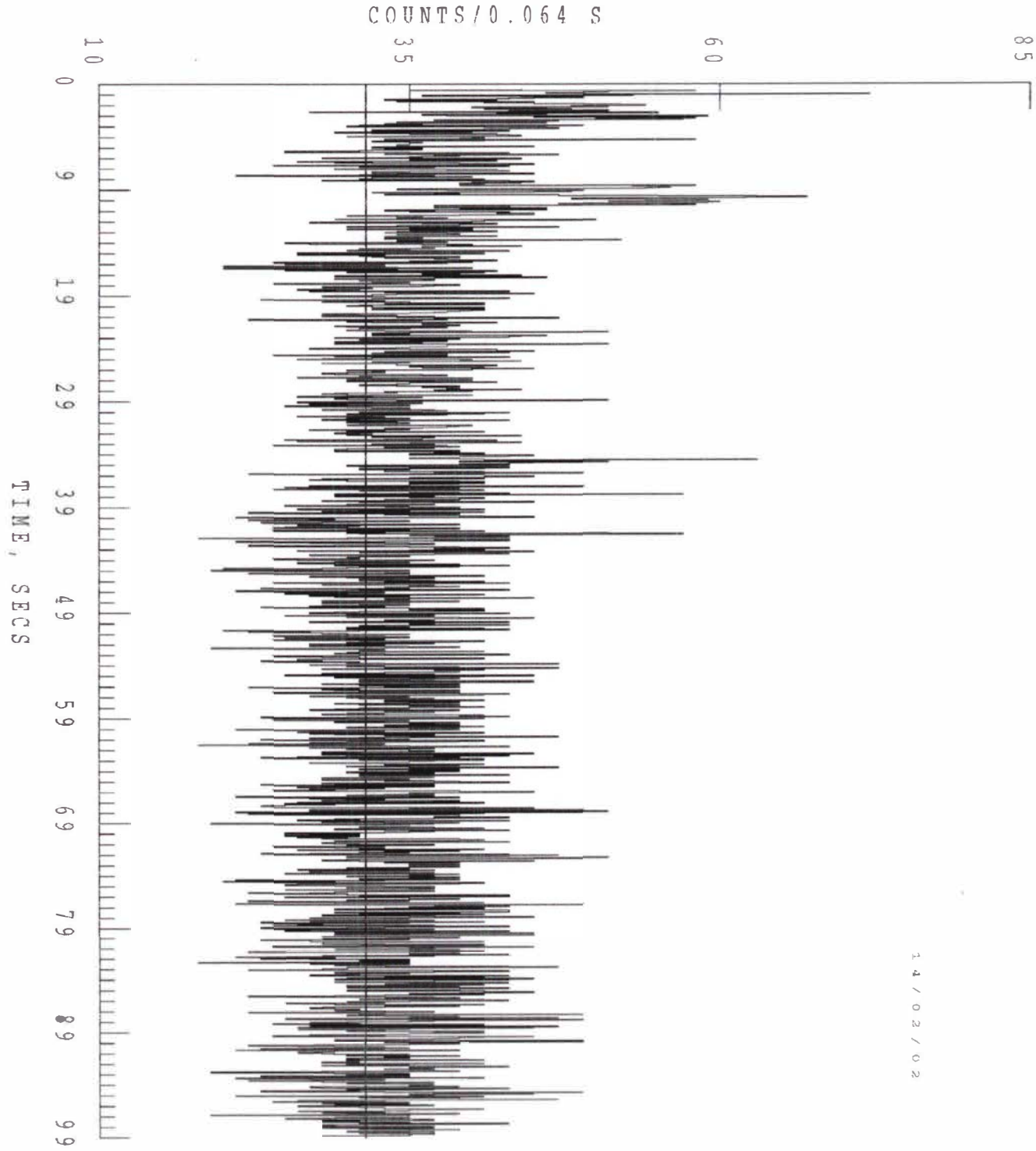
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



KONUS2 17/04/98 48764.325

50- 200 keV



14/02/02

From RICHARDSON@fender.msfc.nasa.gov Tue Apr 21 10:10:22 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA22559; Tue, 21 Apr 1998 10:10:21 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA23861; Tue, 21 Apr 1998 10:10:20 -0700
Date: Tue, 21 Apr 1998 12:08:16 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980421120816.20e291df@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6691
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6691
EVENT OF 1998 APR 17 DAY OF YEAR=107
EVENT CROSSING TIME AT BATSE      : 61196. S. OR 16:59:56.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  68.000   -8.000
BATSE PEAK COUNTING RATE:   1700    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 17/ 4/  98 IS:
RA=  150.608 DEC=   13.197 DIST=    4.832 AU
BATSE-ULYSSES DISTANCE =  722886784. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 95.29 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -222.49 SECS.
CROSSING TIME AT ULYSSES    IS 60974. S. OR   16:56:13 +/-  463.47 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 17/ 4/  98 IS:
RA=   30.825 DEC=   12.277 DIST=    2.439 AU
MARS-BATSE DISTANCE =  364909792. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=137.85 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -902.44 SECS.
CROSSING TIME AT MARS       IS 60294. S. OR   16:44:53 +/-  128.11 SECONDS

                BATSE BURST TRIGGER
NO.: 6691

TIME: TJD=0920 SECONDS=61196

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=83.9   AZIMUTH=341.7  ERROR=7.6   DEGREES

COMMENTS:
GRB PULSE WITH STRUCTURE. DURATION APPROX = 35 SEC. NOT VISIBLE ABOVE 300KEV.
PRECURSOR AT APPROX. T-155 SEC. WITH DURATION APPROX. = 5 SEC.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6691	980417	10920	61196	1700	068	-08	35

BATSE BURST# 6691

ULYSSES RT 21/ 4/98

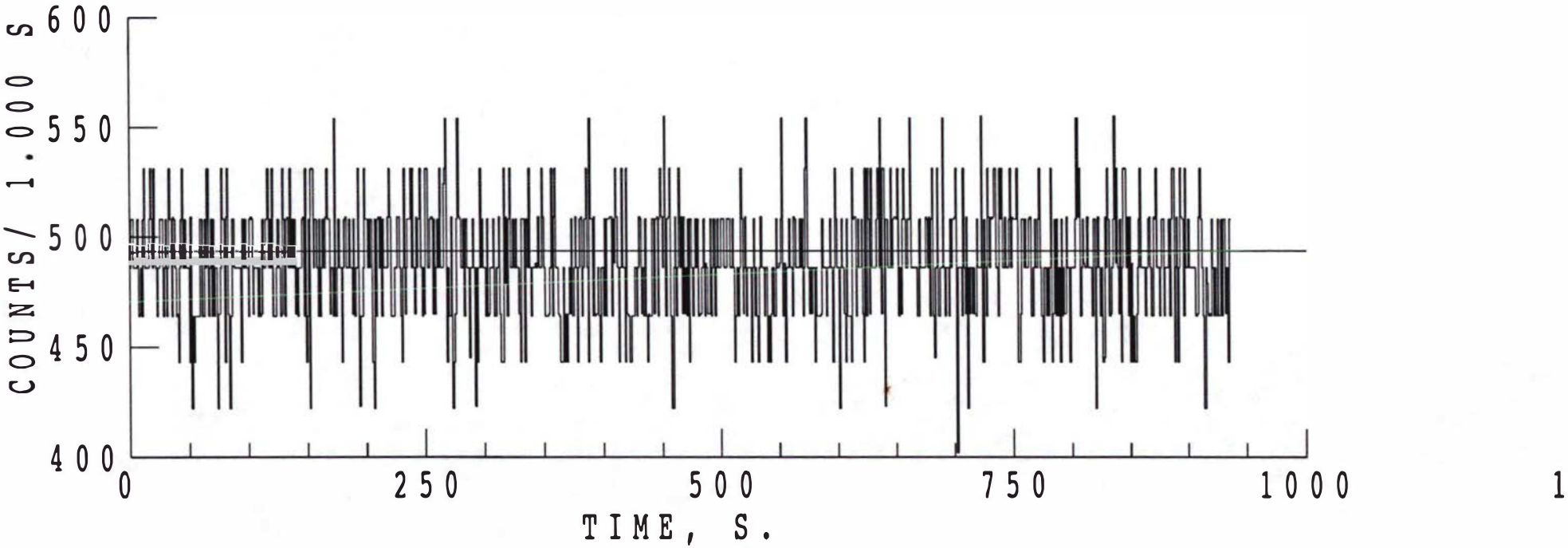
17/ 4/98 60516.336 s

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



Date: Mar 12 2012

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

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

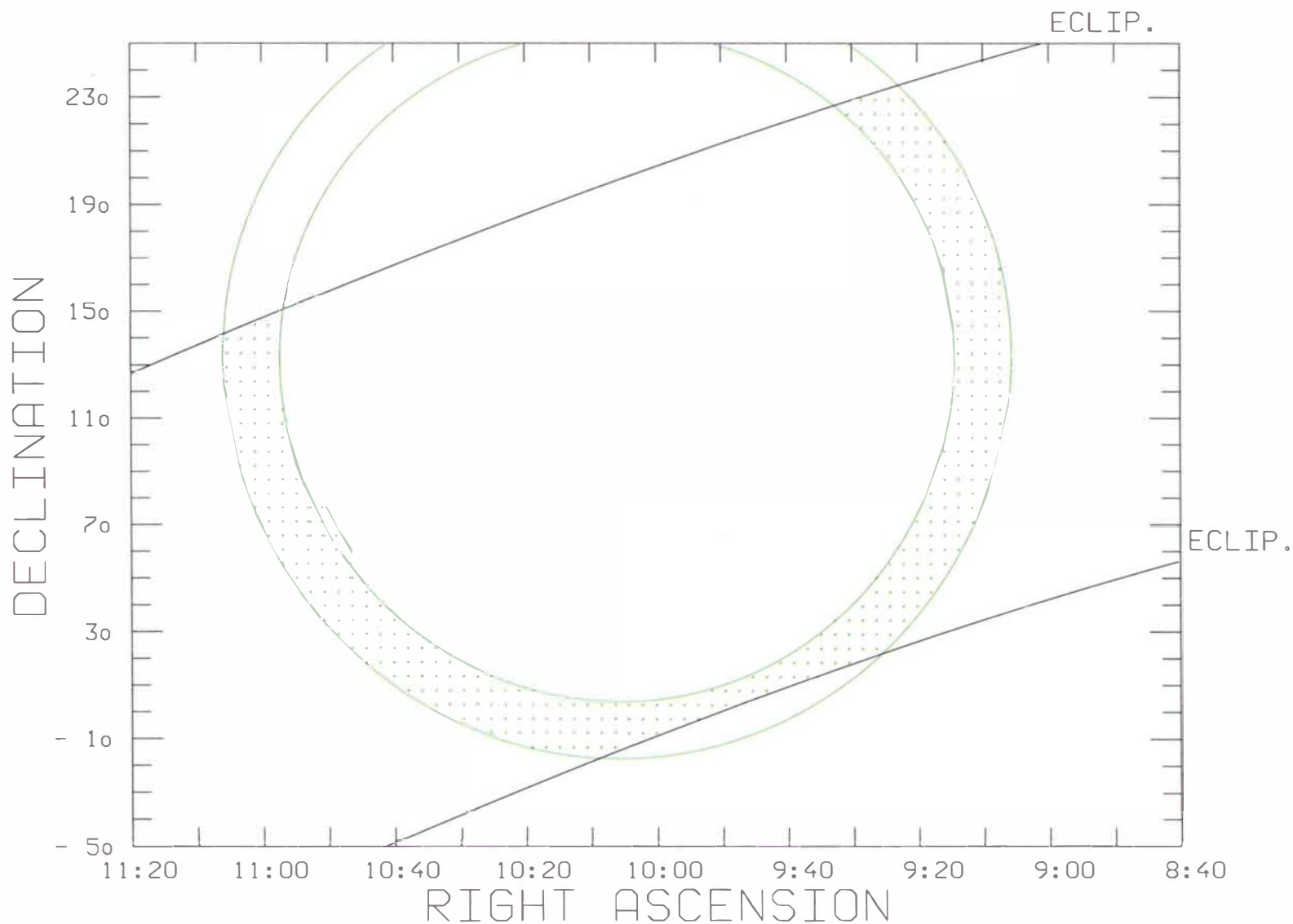
☐ Ephemeris of PVO used (not Venus)?

☐ 2000 coordinates used?

☐ Geocentric time used?

☑ ACCESS and MBL databases updated with identical times?

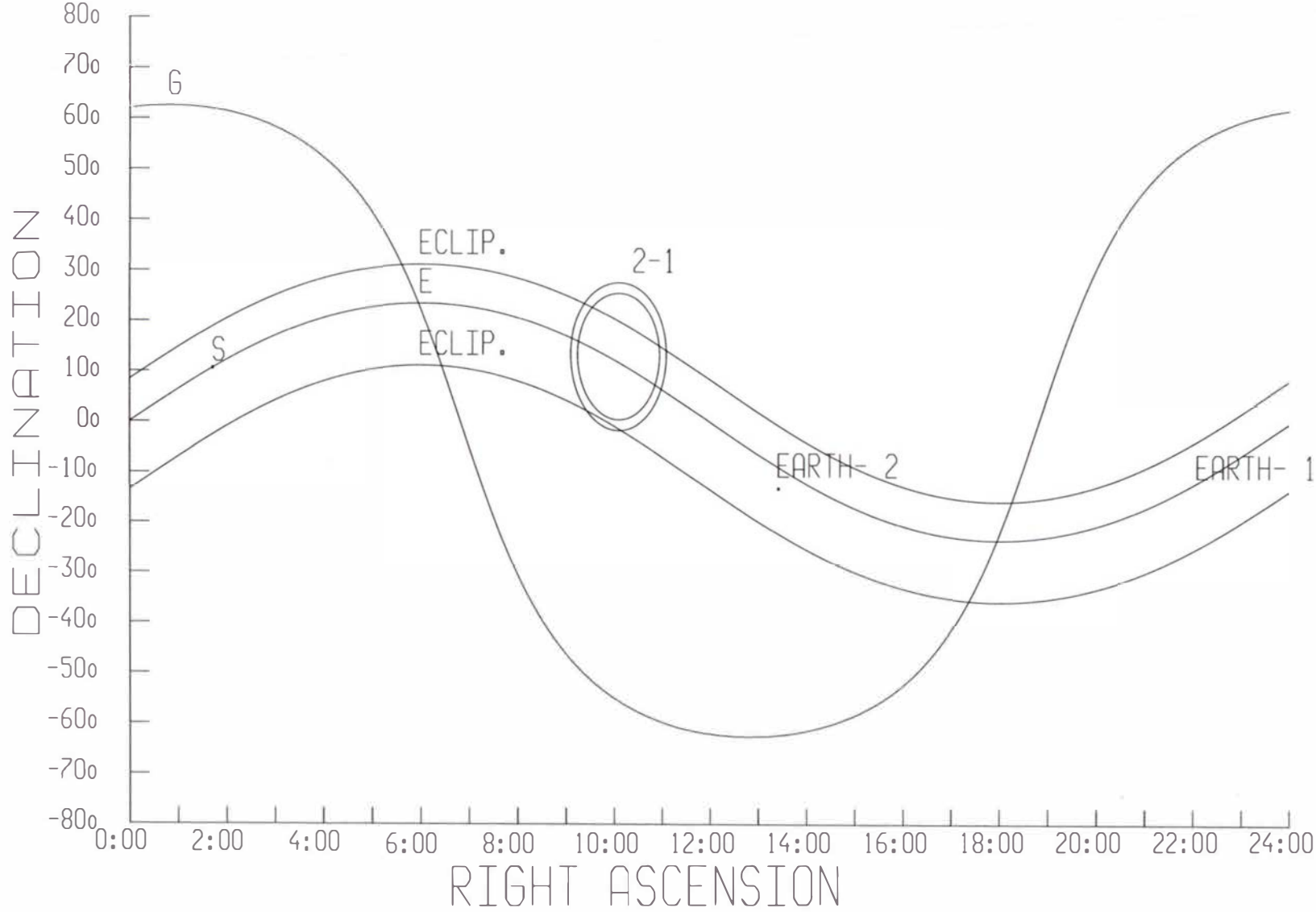
GRB980417 ~72104 S 12/03/2012



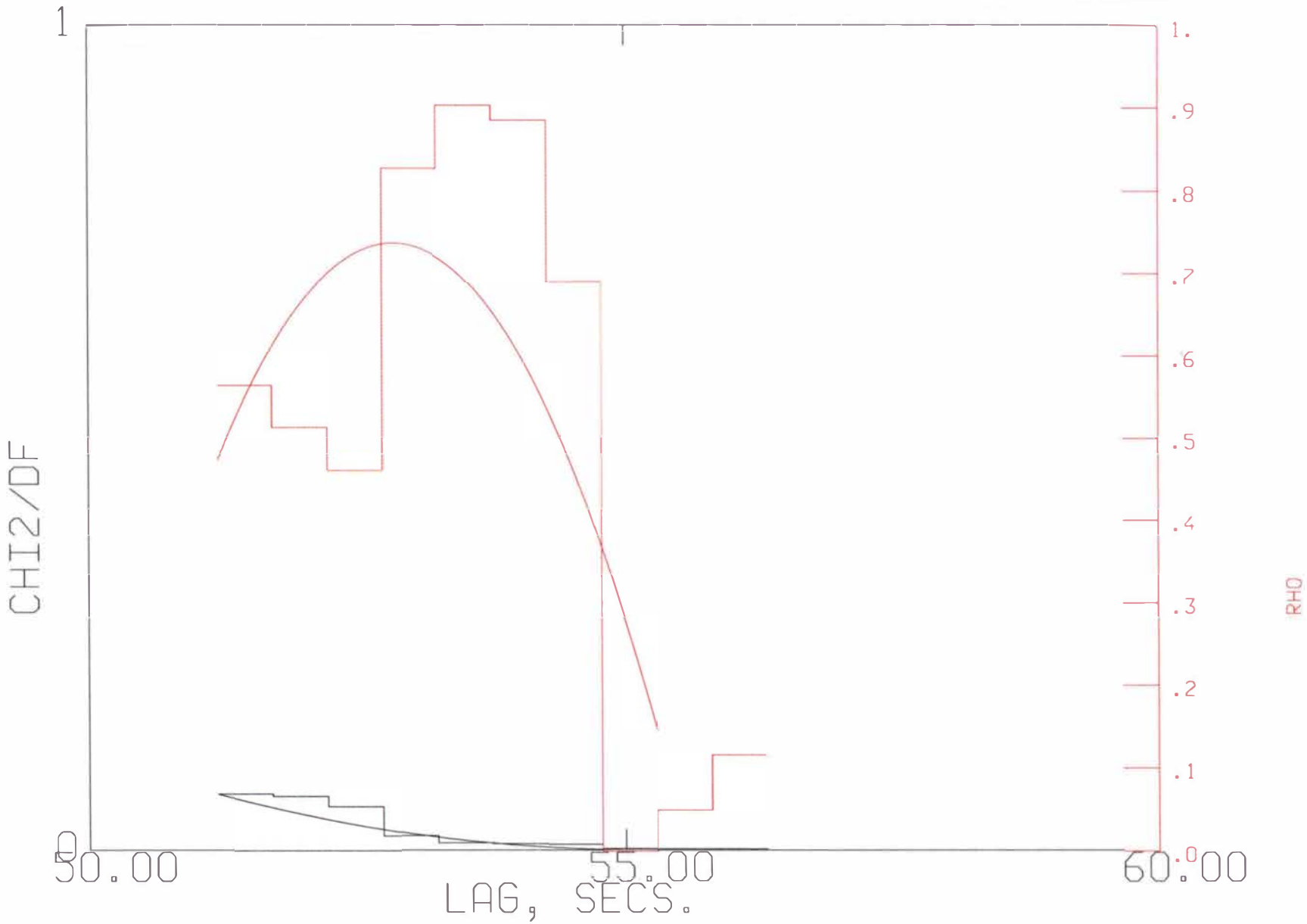
EVENT OF APR 17, 1998 19:22

12/03/2012

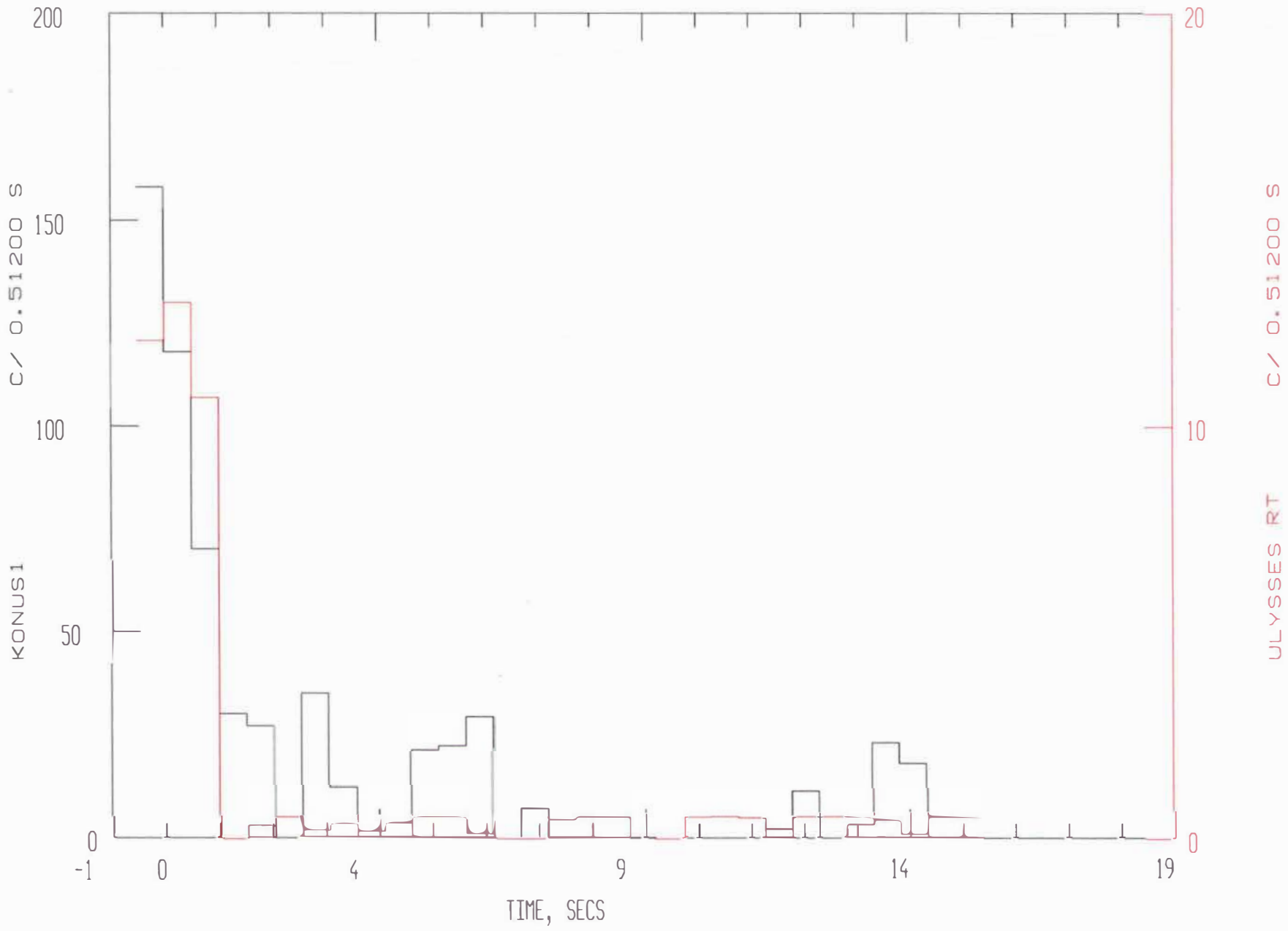
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 KONUS1



KONUS1 -ULYSSES RT CORRELATION 17/04/98 72156.952

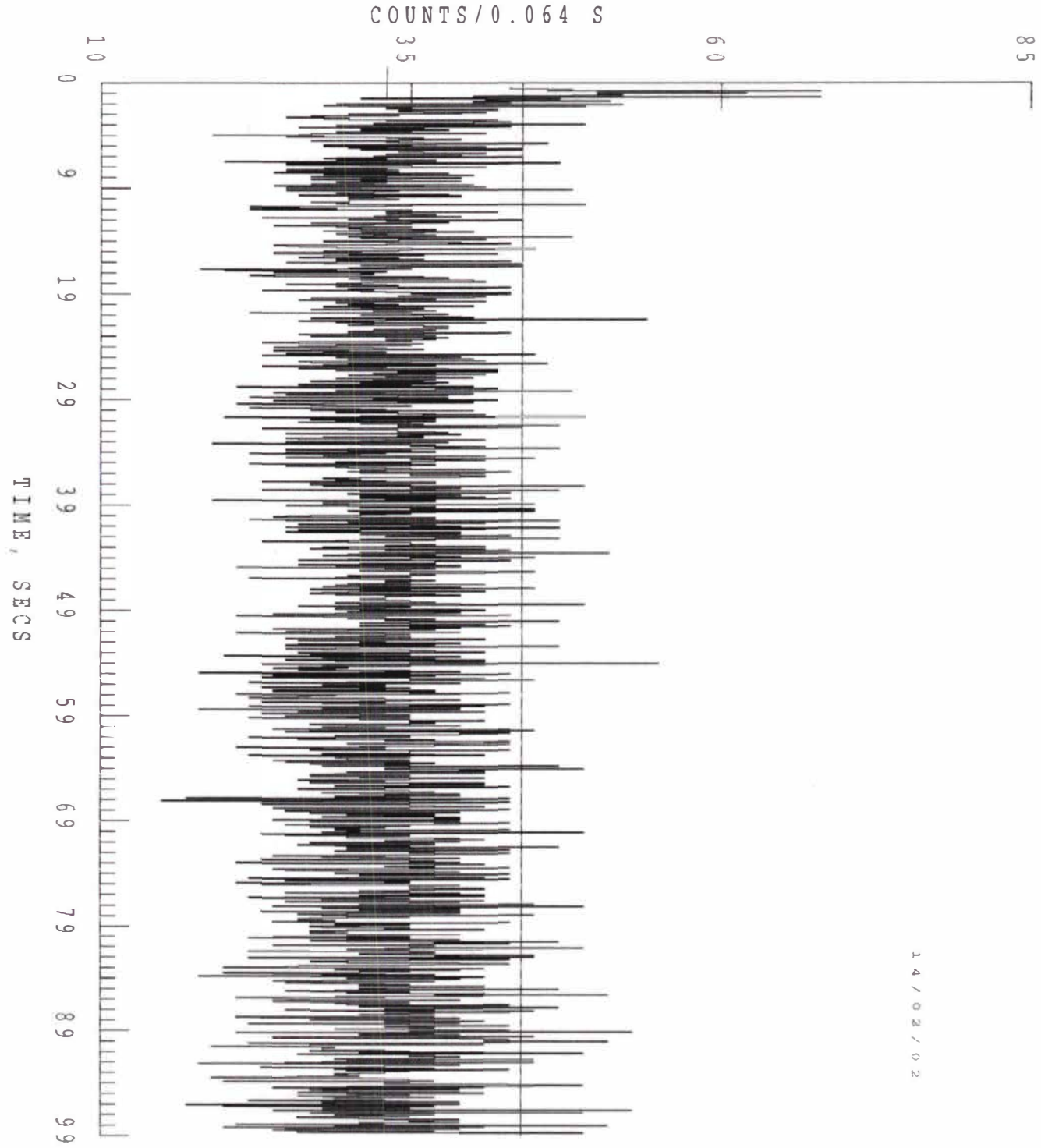


KONUS1 -ULYSSES RT CORRELATION 17/04/98 72156.952 12/ 3/12



KONUS1 17/04/98 72156.952

50- 200 keV



14/02/02

KONUS 19980417 69846

ULYSSES RT

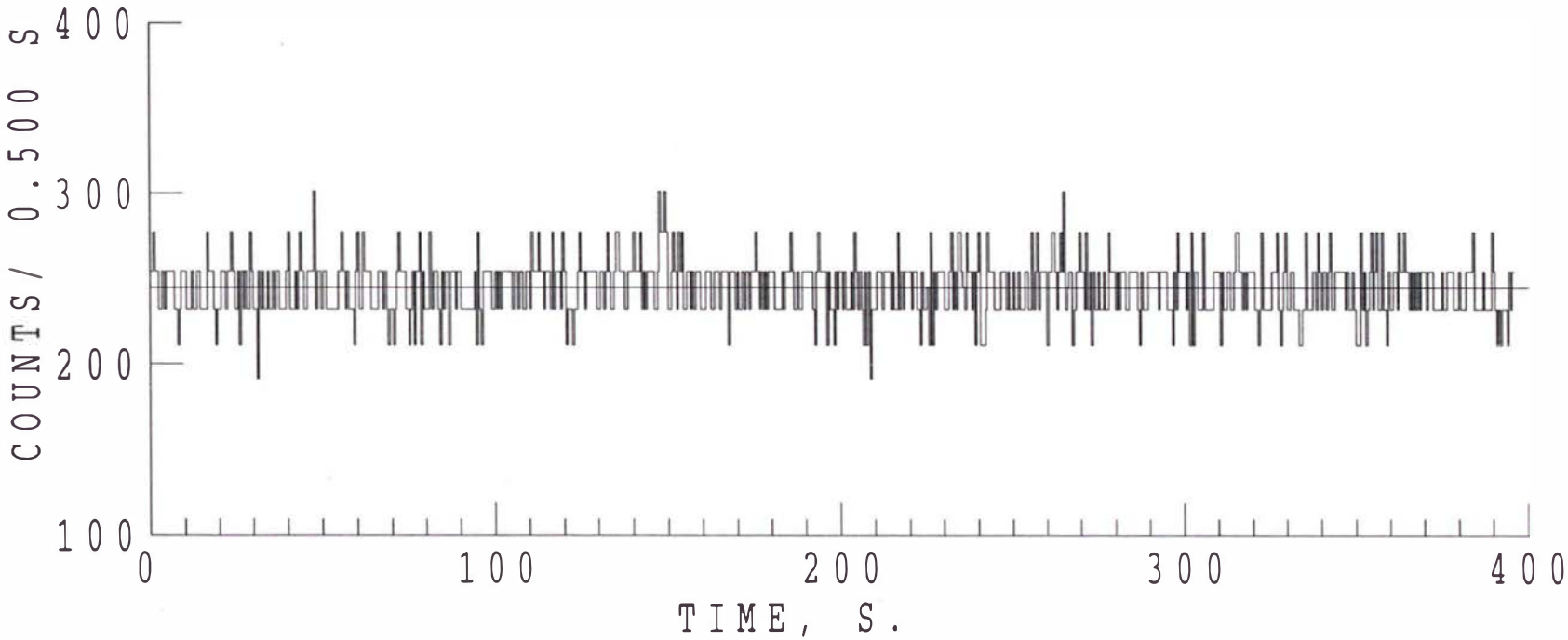
07/03/12

17/04/98 69660.430 s

0- 0 keV

N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



KONUS1 19980417 72156

ULYSSES RT 14/02/02

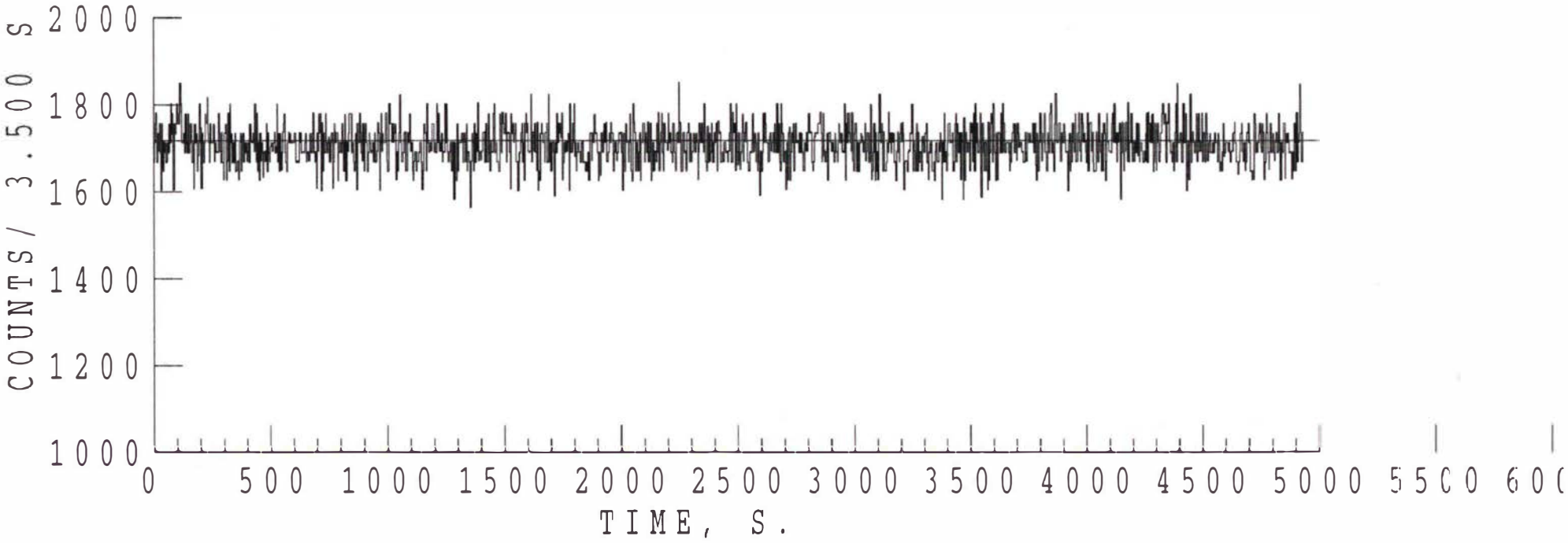
17/04/98 69696.430 s

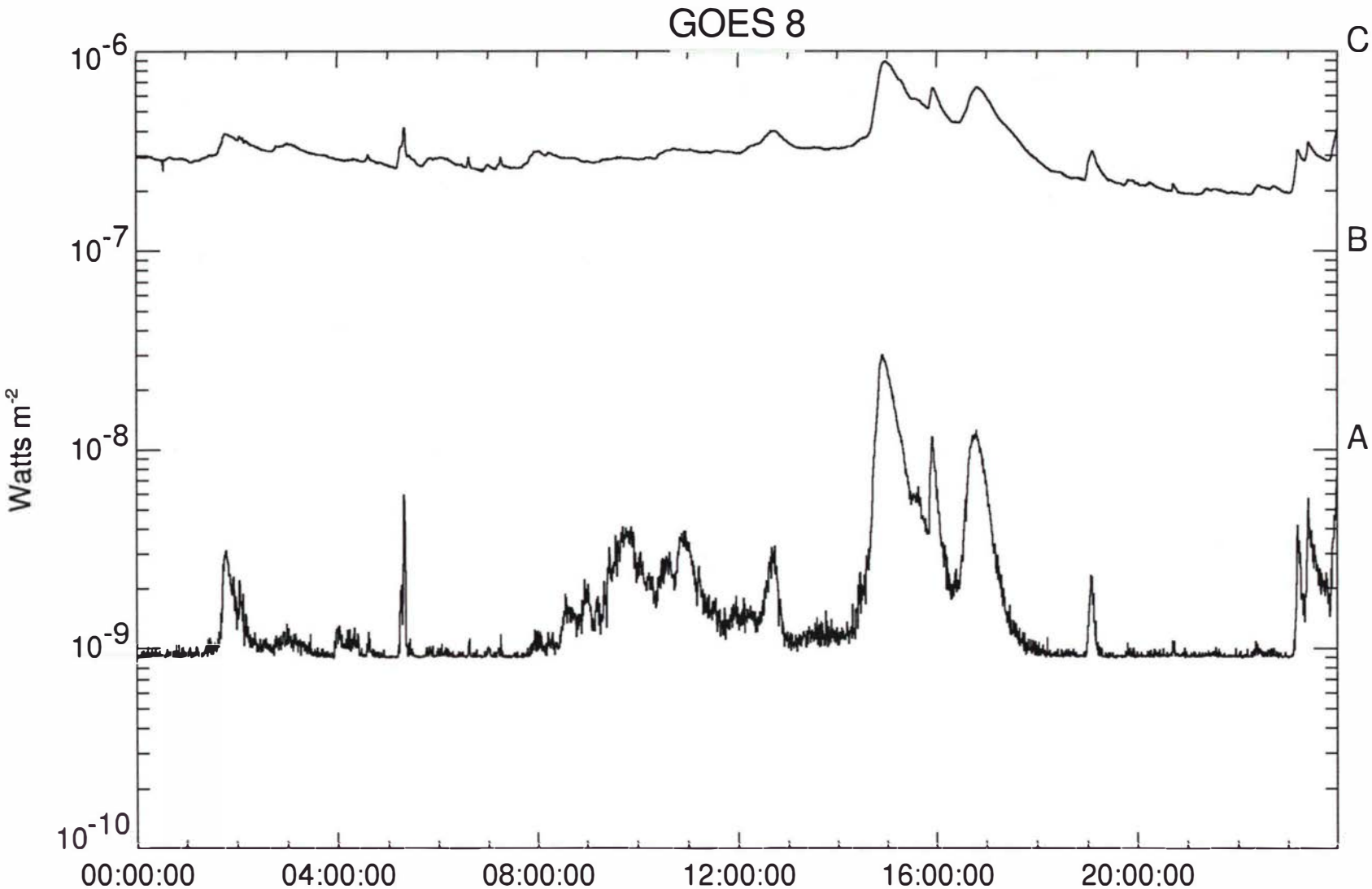
0.500 S INTERVALS REGROUPED BY 7

0- 0 keV

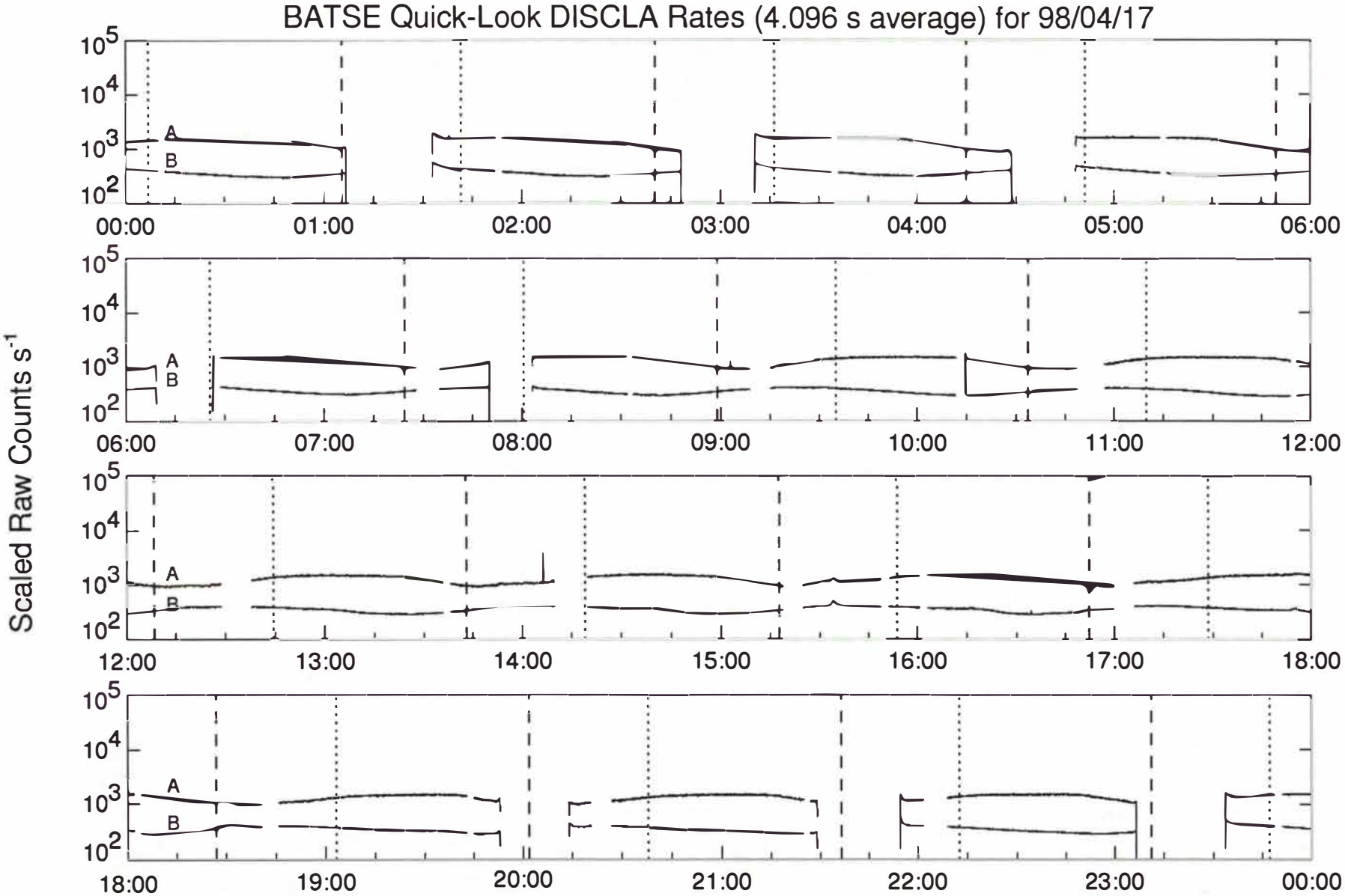
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS





Data Start: 98/04/17, 0000:00 Plot created: 98/04/22, 2017
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



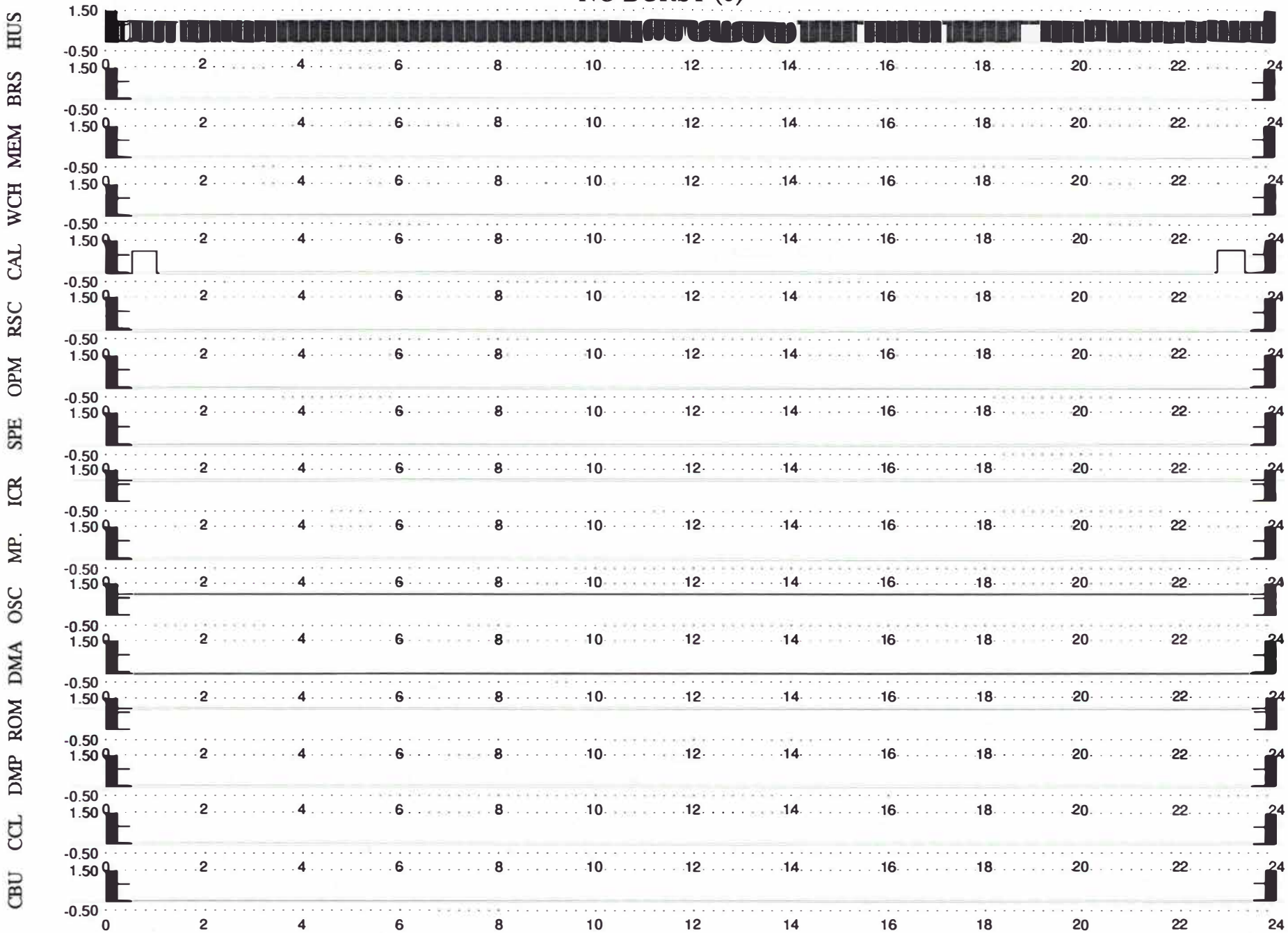
Current Time: 98/04/22, 2018 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

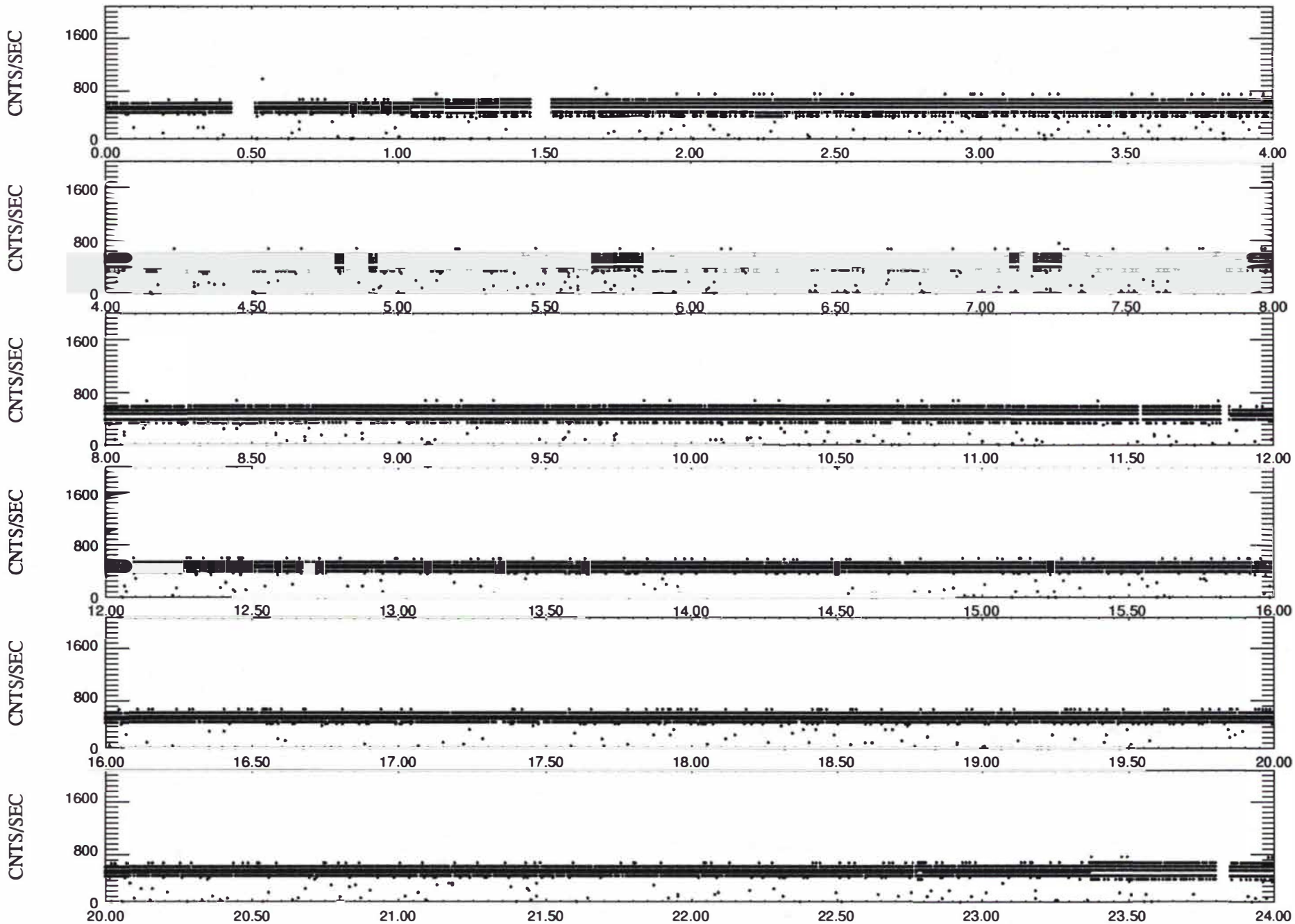
HUS MODES EDR day 107, year 1998 to day 107, year 1998 8/18/98

NO BURST (0)



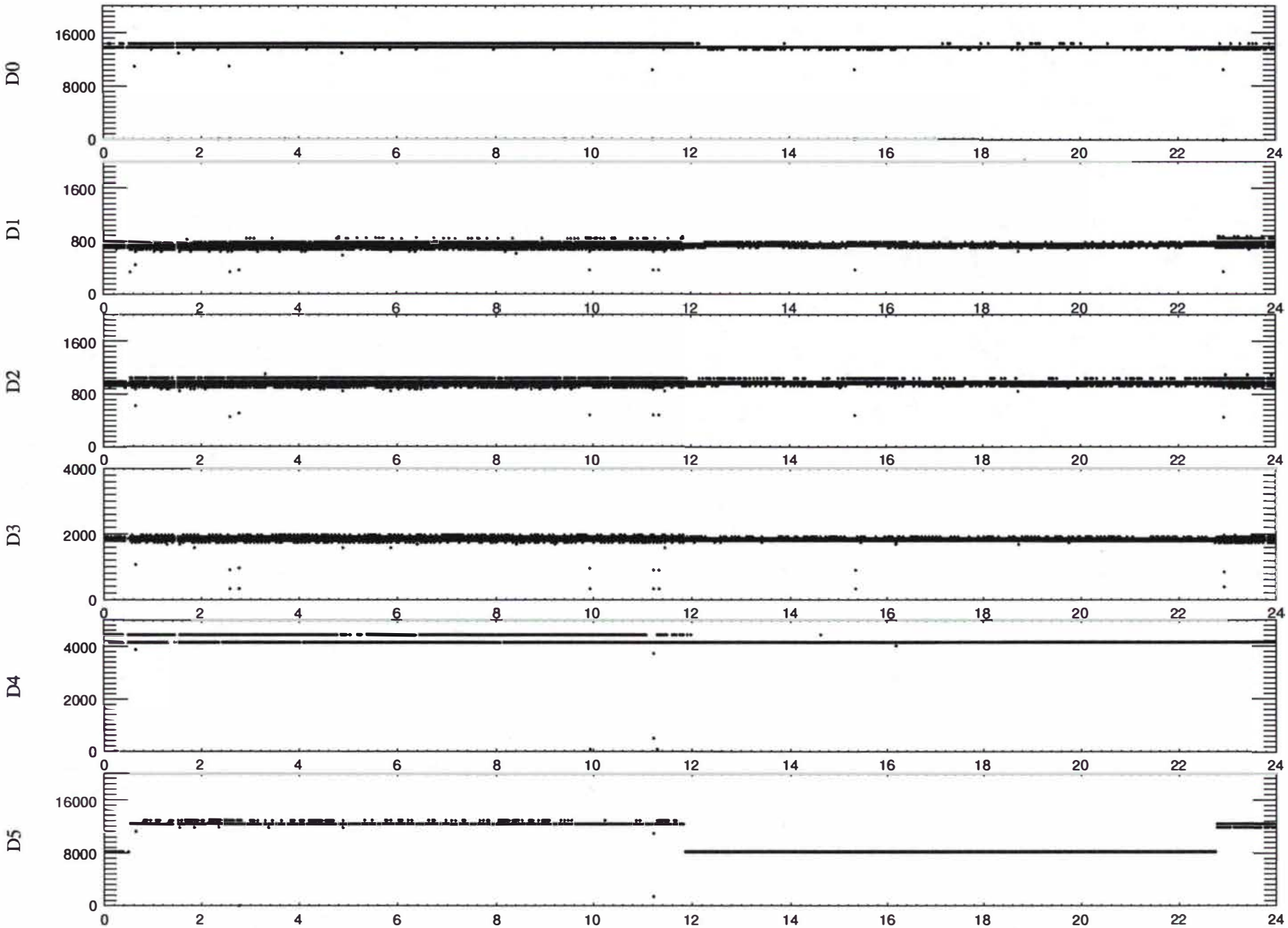
HUS 2A, MODE 1, NOT AVERAGED EDR day 107, year 1998 to day 107, year 1998 8/18/98

CALIBRATION DATA INCLUDED

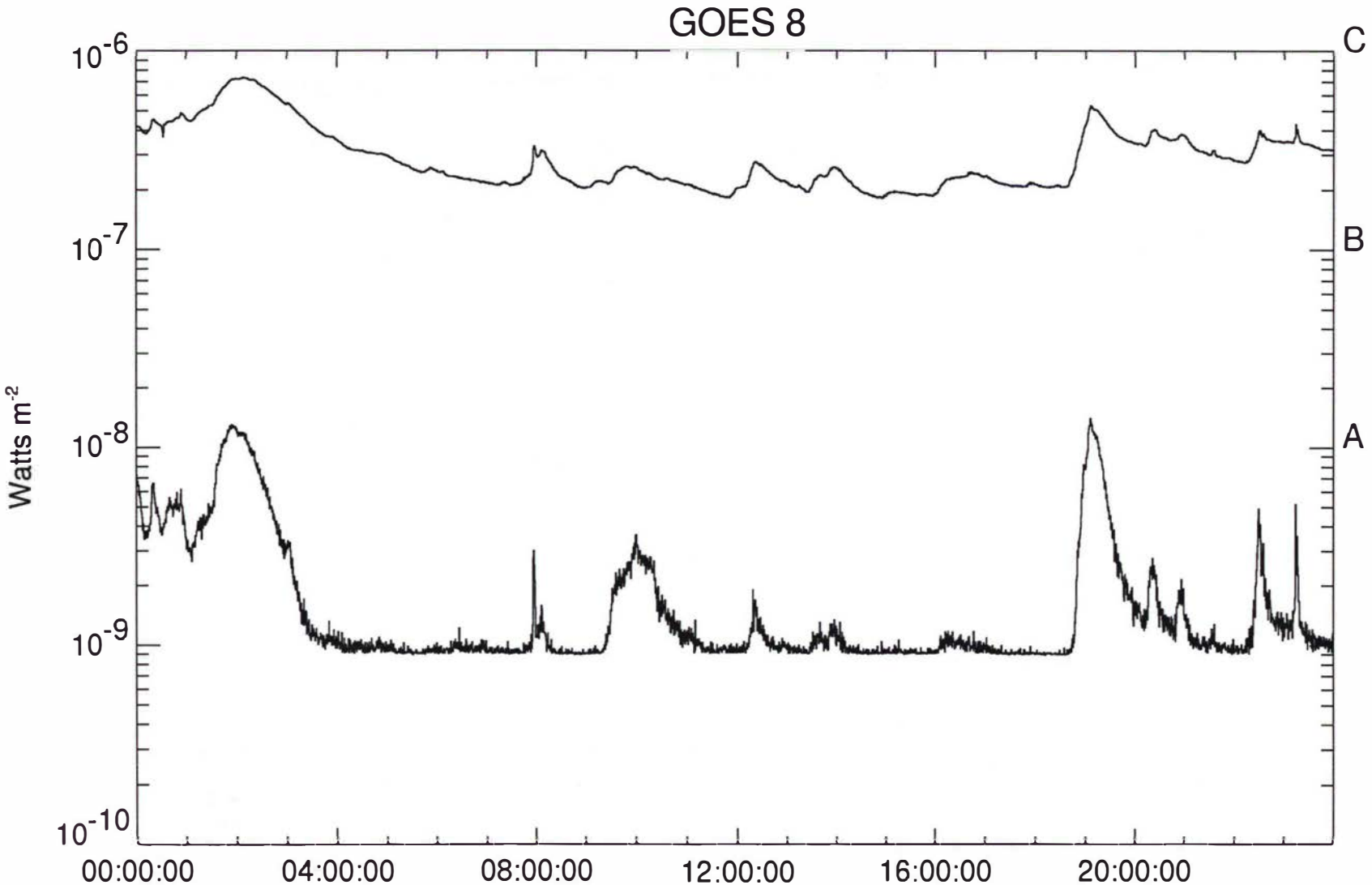


UNIV AL TIME

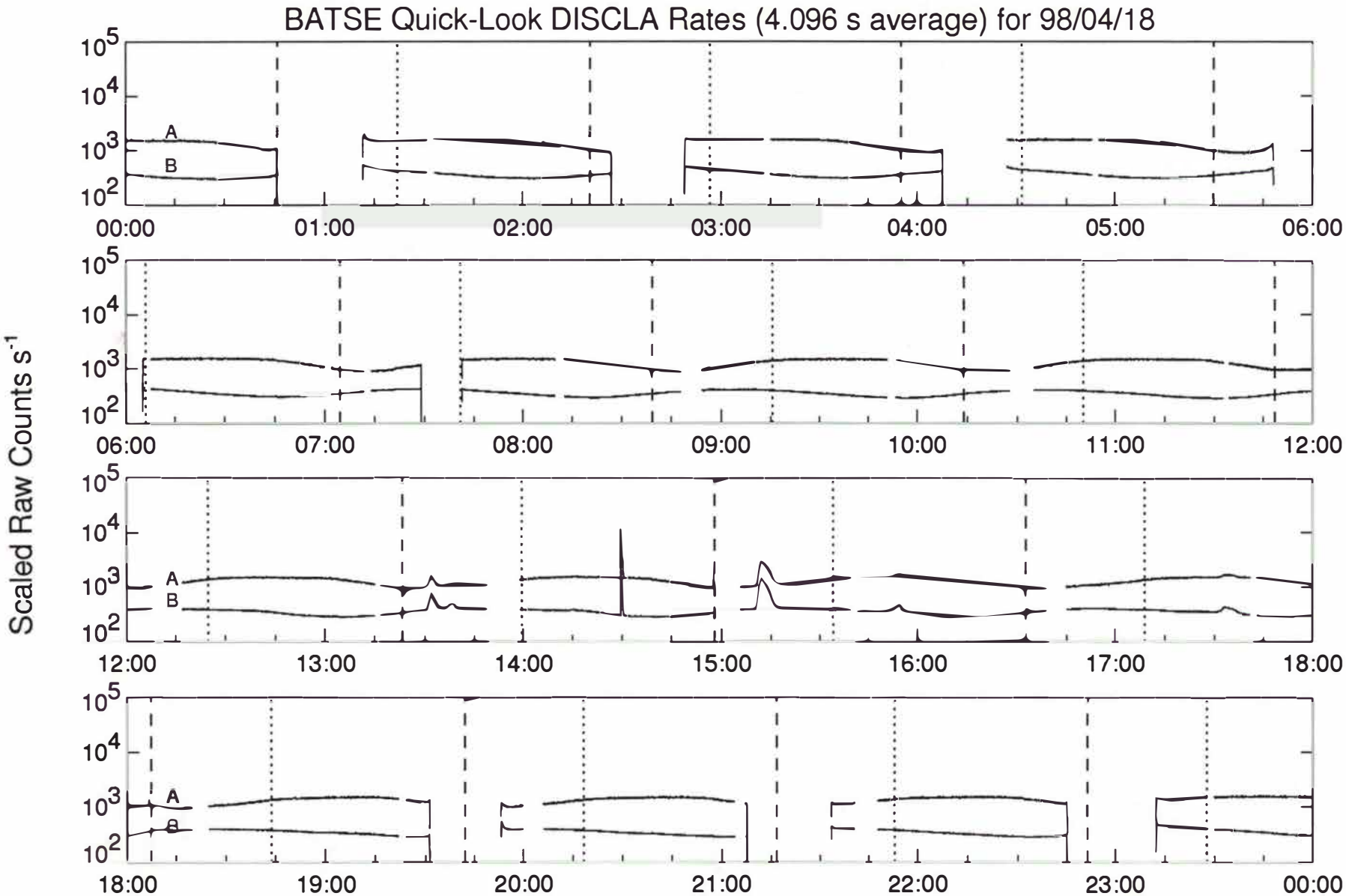
HUS 2B COUNTS / SEC EDR day 107, year 1998 to day 107, year 1998 8/18/98



UNIV SAL TIME



Data Start: 98/04/18, 0000:00 Plot created: 98/04/22, 2022
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



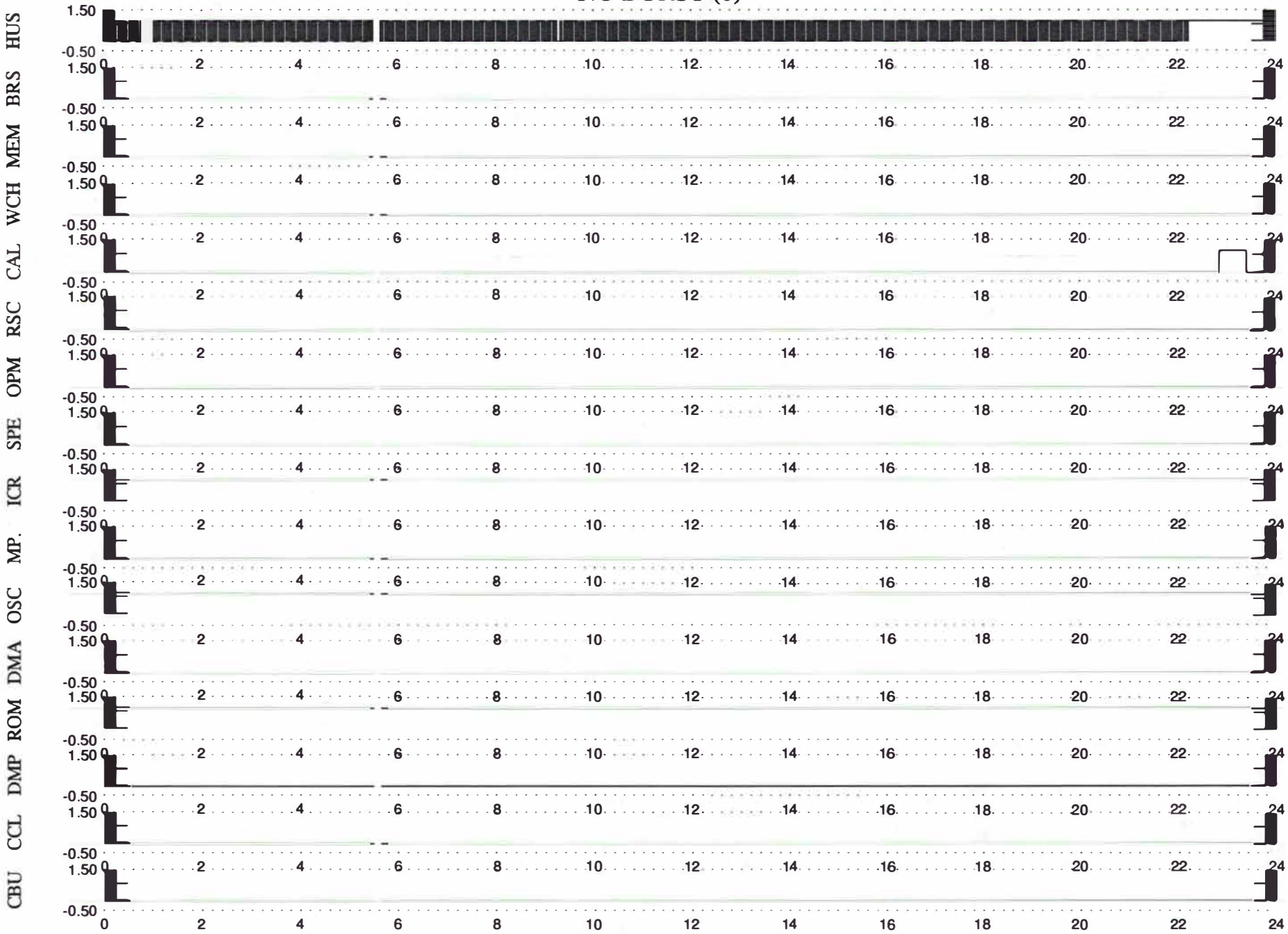
Current Time: 98/04/22, 2023 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

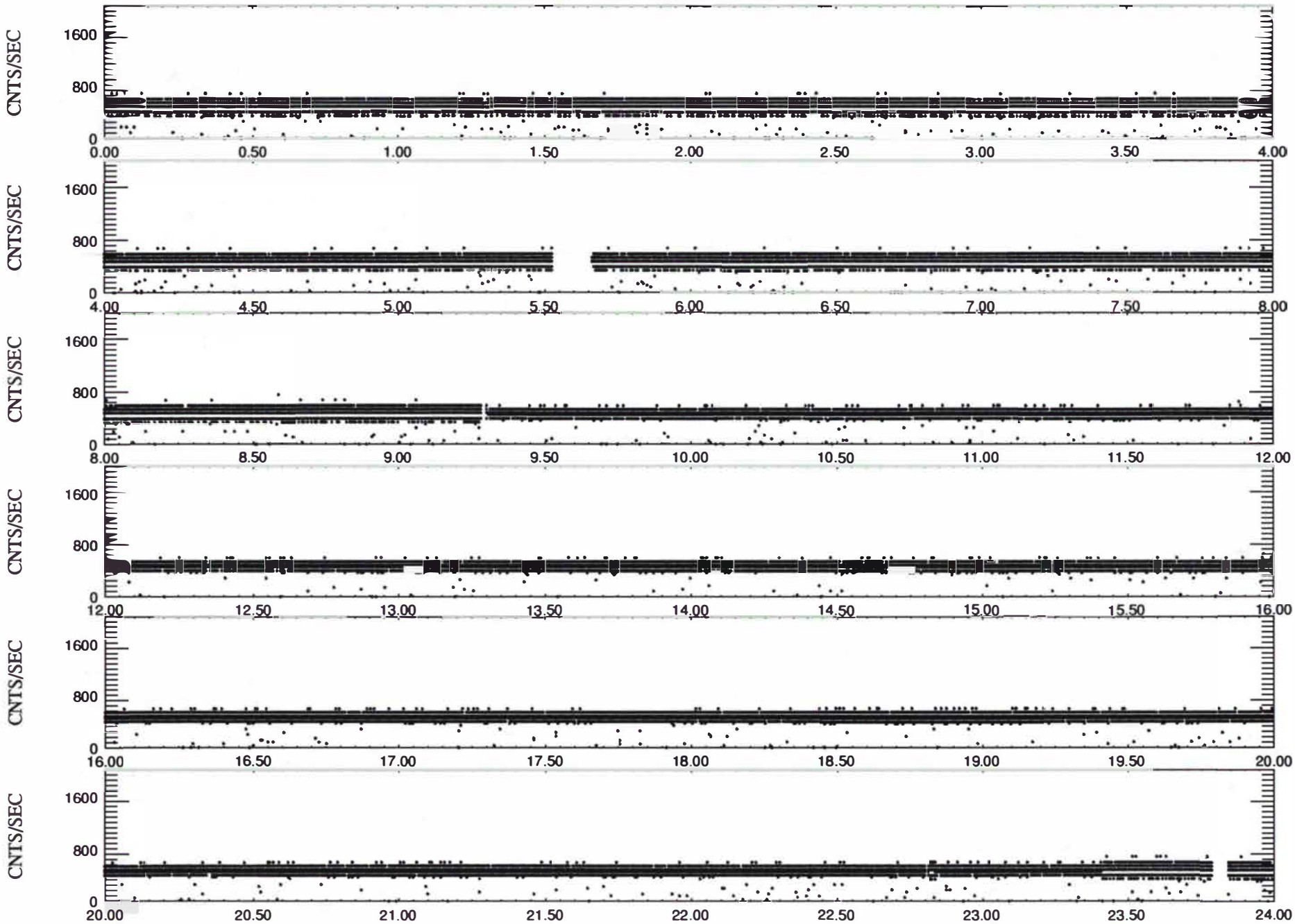
HUS MODES EDR day 108, year 1998 to day 108, year 1998 8/18/98

NO BURST (0)



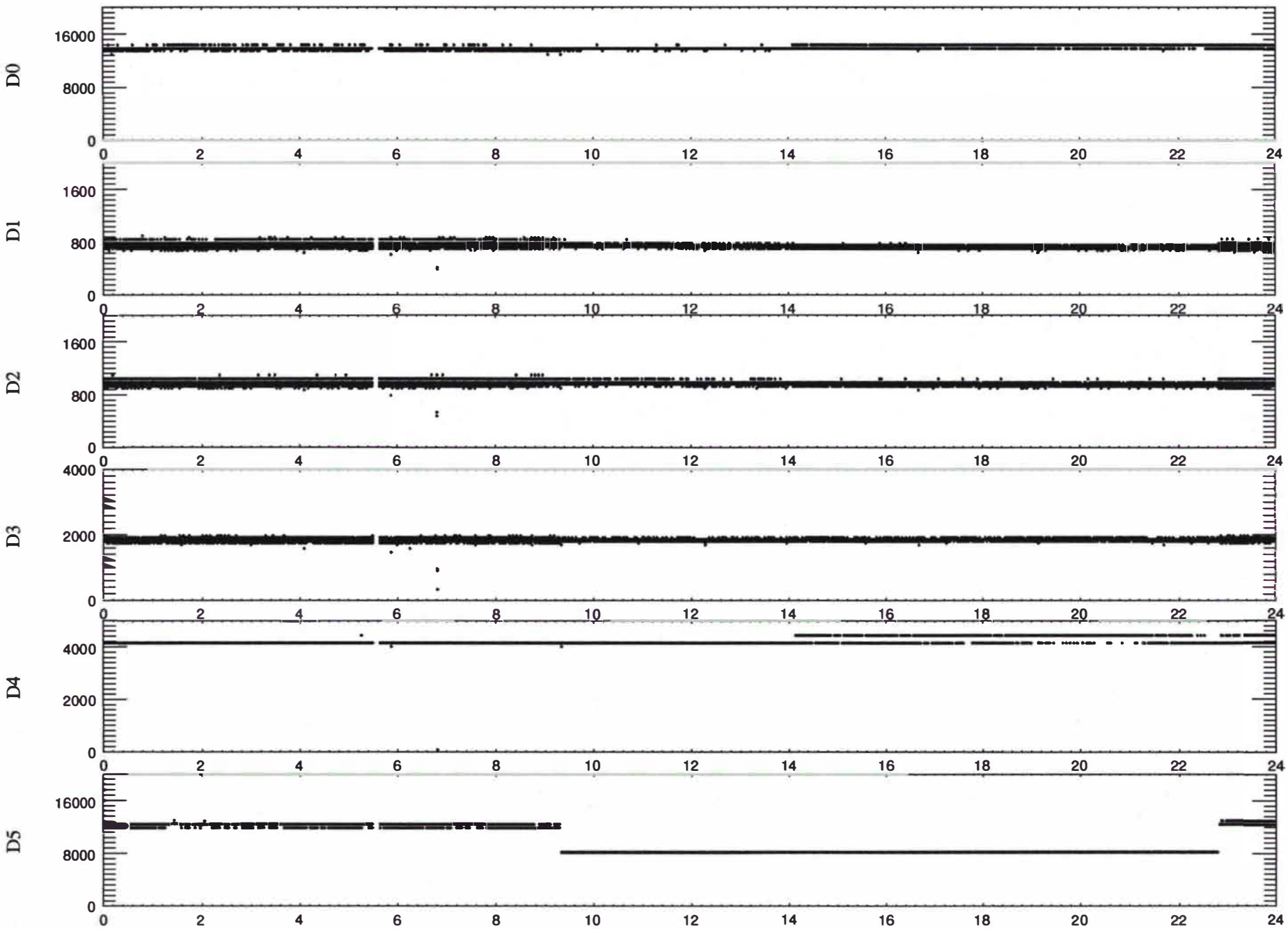
HUS 2A, MODE 1, NOT AVERAGED EDR day 108, year 1998 to day 108, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV `AL TIME

HUS 2B COUNTS / SEC EDR day 108, year 1998 to day 108, year 1998 8/18/98



From SURASAK@fender.msfc.nasa.gov Mon Apr 20 11:57:38 1998
Return-Path: <SURASAK@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA05523; Mon, 20 Apr 1998 11:57:37 -0700
From: SURASAK@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA17315; Mon, 20 Apr 1998 11:57:35 -0700
Date: Mon, 20 Apr 1998 13:56:34 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980420135634.20e2b06c@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6693
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6693
EVENT OF 1998 APR 19 DAY OF YEAR=109
EVENT CROSSING TIME AT BATSE      : 51970. S. OR 14:26:10.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 134.000    9.000
BATSE PEAK COUNTING RATE:  12100    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 19/ 4/  98 IS:
RA=  150.403 DEC=   13.155 DIST=    4.860 AU
BATSE-ULYSSES DISTANCE =  727027700. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=163.38 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-2323.80 SECS.
CROSSING TIME AT ULYSSES    IS 49646. S. OR   13:47:26 +/-  135.13 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 19/ 4/  98 IS:
RA=   32.250 DEC=   12.801 DIST=    2.444 AU
MARS-BATSE DISTANCE =  365554976. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 80.71 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  196.89 SECS.
CROSSING TIME AT MARS       IS 52167. S. OR   14:29:26 +/-  211.91 SECONDS

                BATSE BURST TRIGGER
NO.: 6693

TIME: TJD=0922 SECONDS=51970

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=75.2   AZIMUTH=272.4  ERROR=4.05  DEGREES

COMMENTS:
GRB. SINGLE PULSE WITH SUBSTRUCTURE. DUR ABOUT 0.4 S. STARTS AT ABOUT 0.05 S.
VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6693   980419   10922   51970    12100   134   +09    .4
```

BATSE BURST# 6693

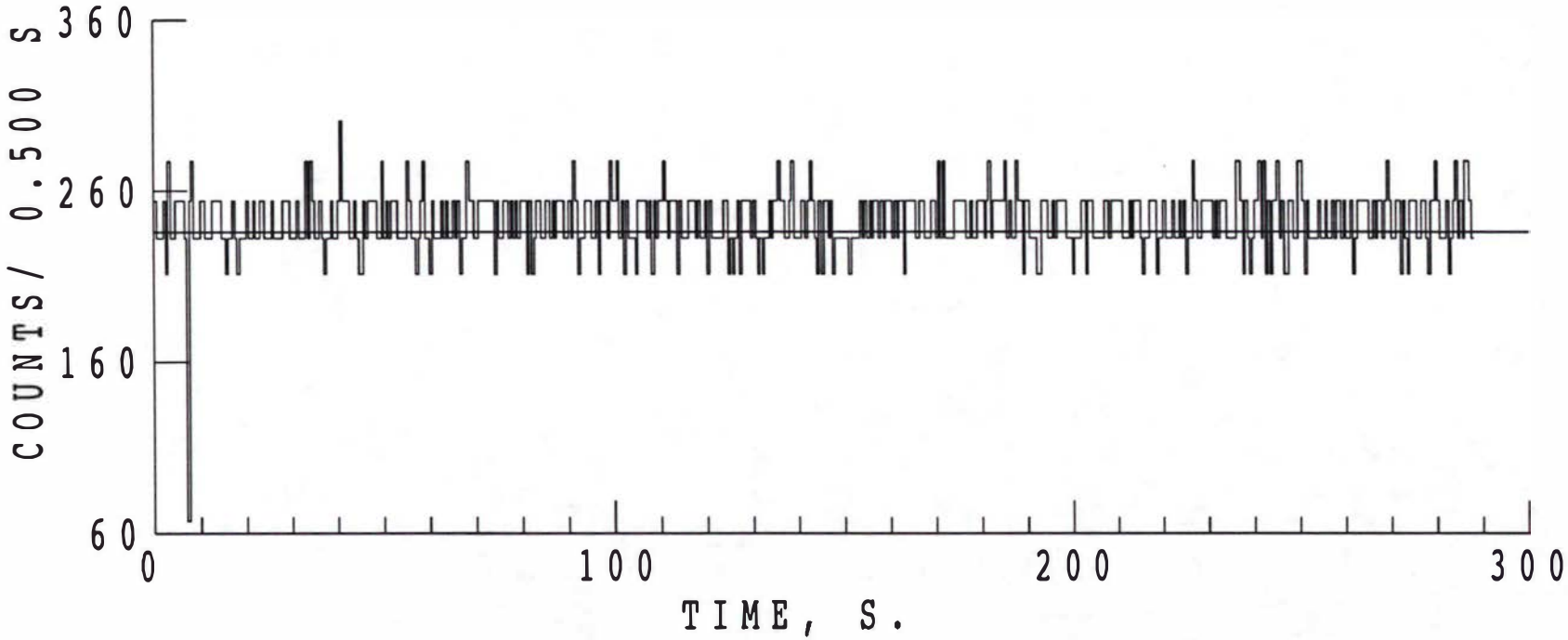
ULYSSES RT 20/ 4/98

19/ 4/98 49500.070 s

0- 0 keV

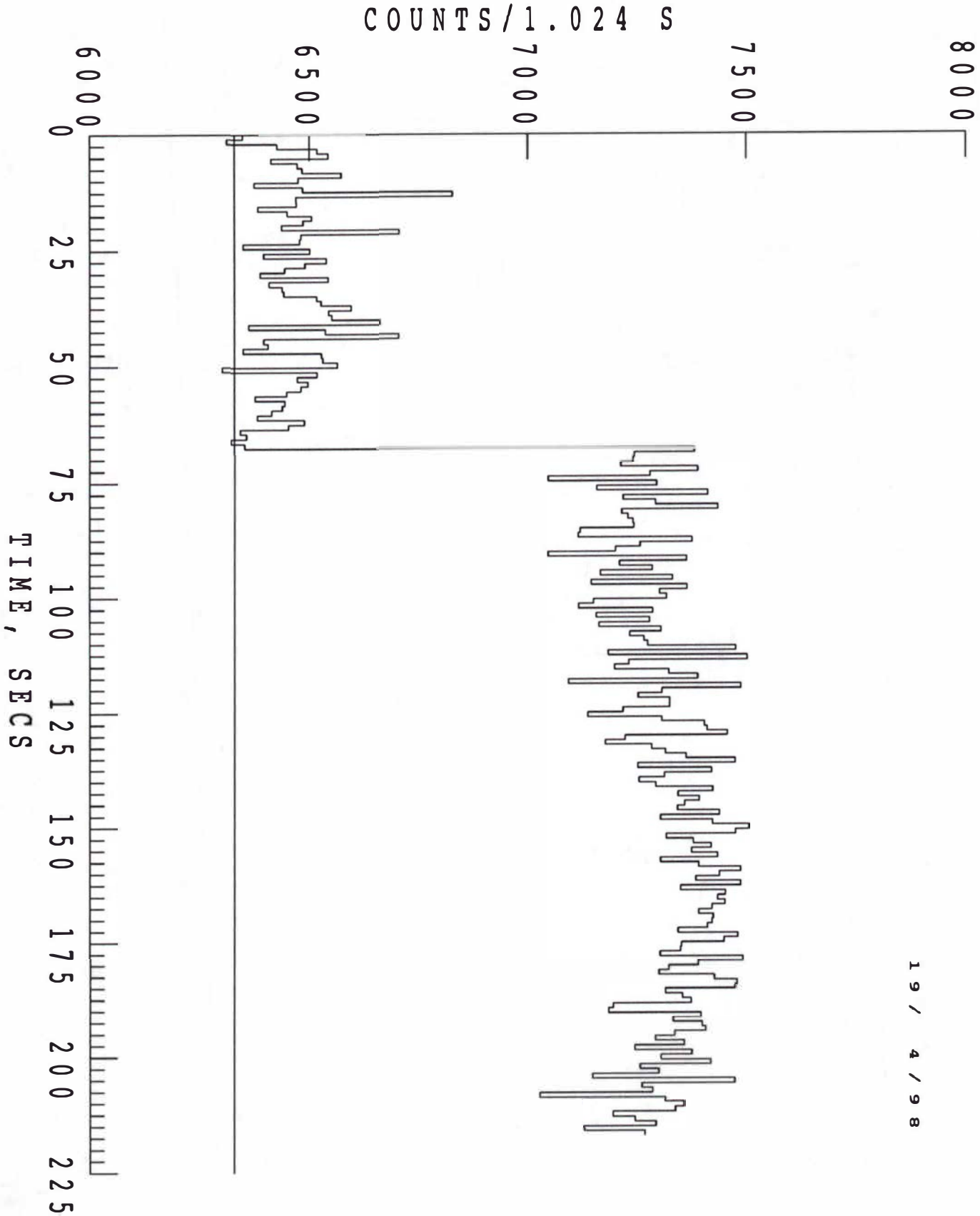
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



BACODINE 6693 19/04/98 51958.497

25- 100 keV



19/ 4/98

SAX GRBM

HUS DATA

19/07/05

ULYSSES RT

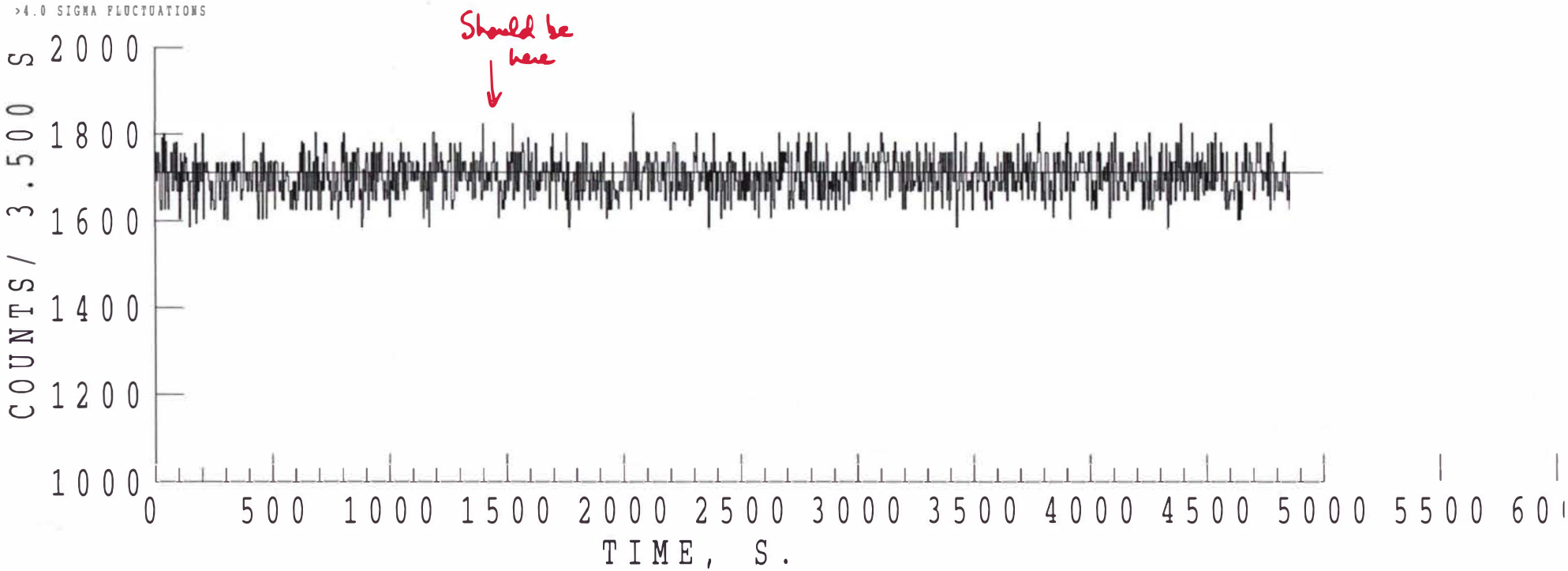
19/04/98 73692.328 s

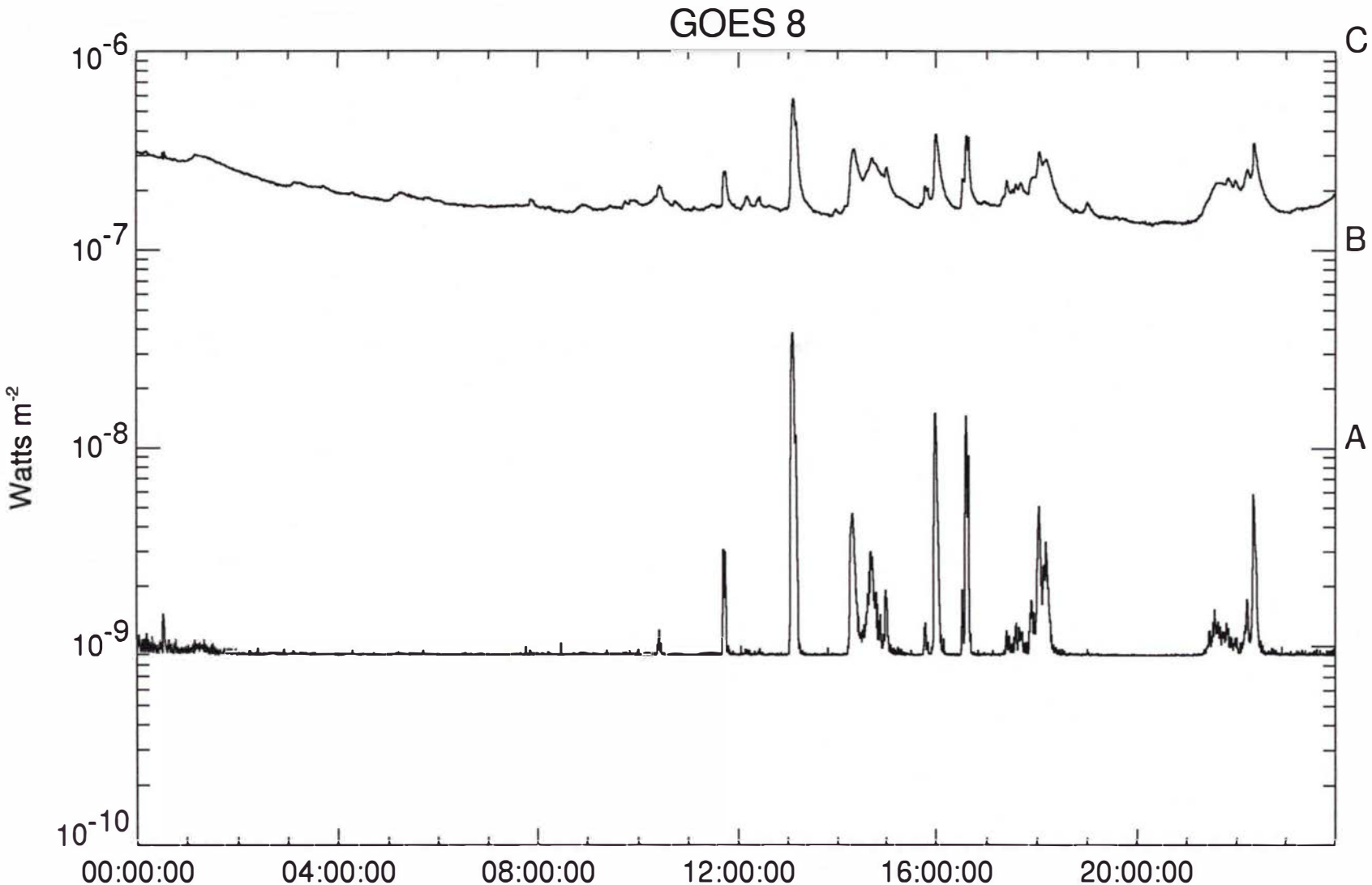
0.500 S INTERVALS REGROUPED BY 7

0- 0 keV

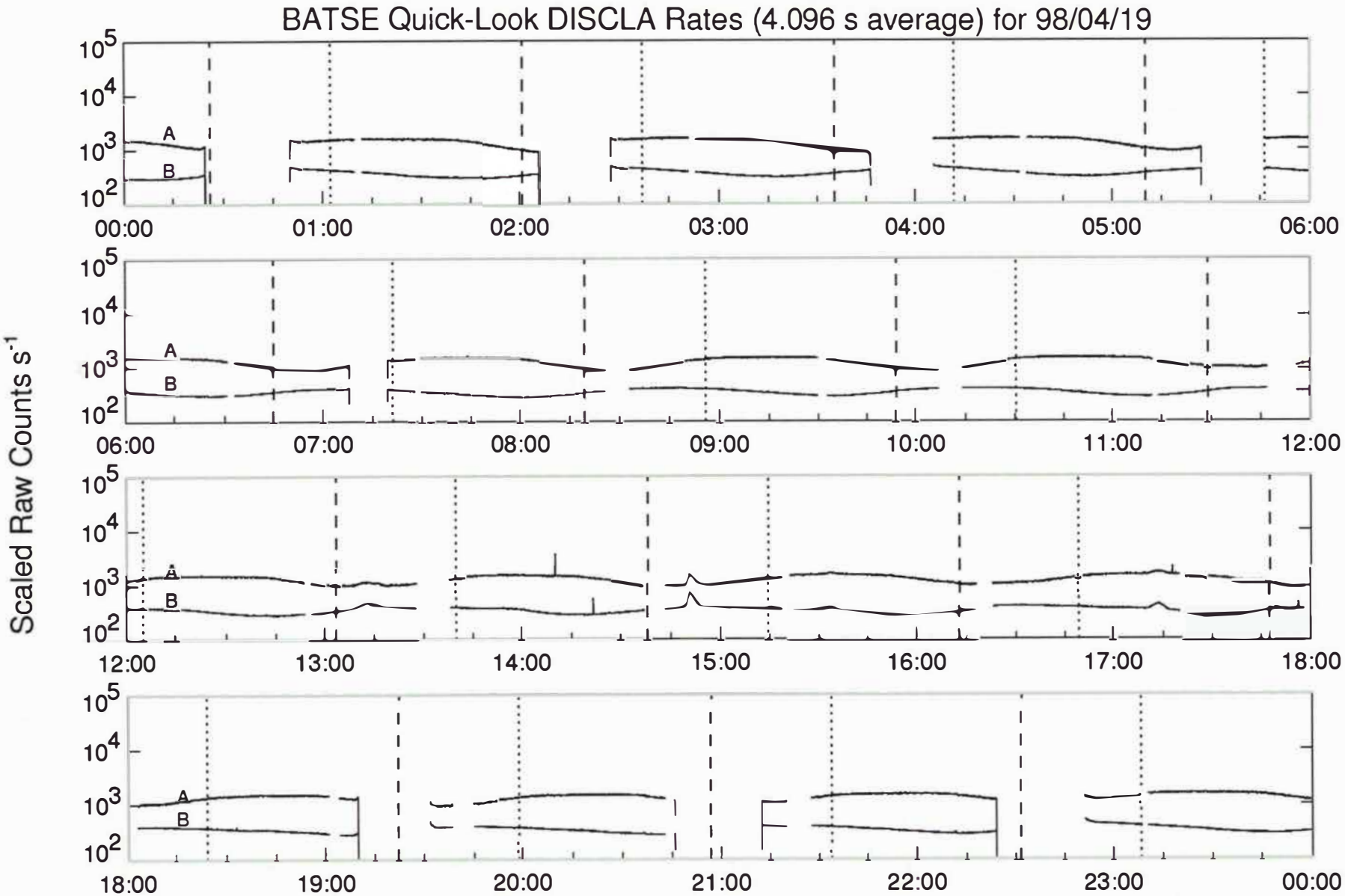
N= 10 M= 10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS





Data Start: 98/04/19, 0000:00 Plot created: 98/04/23, 1620
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10



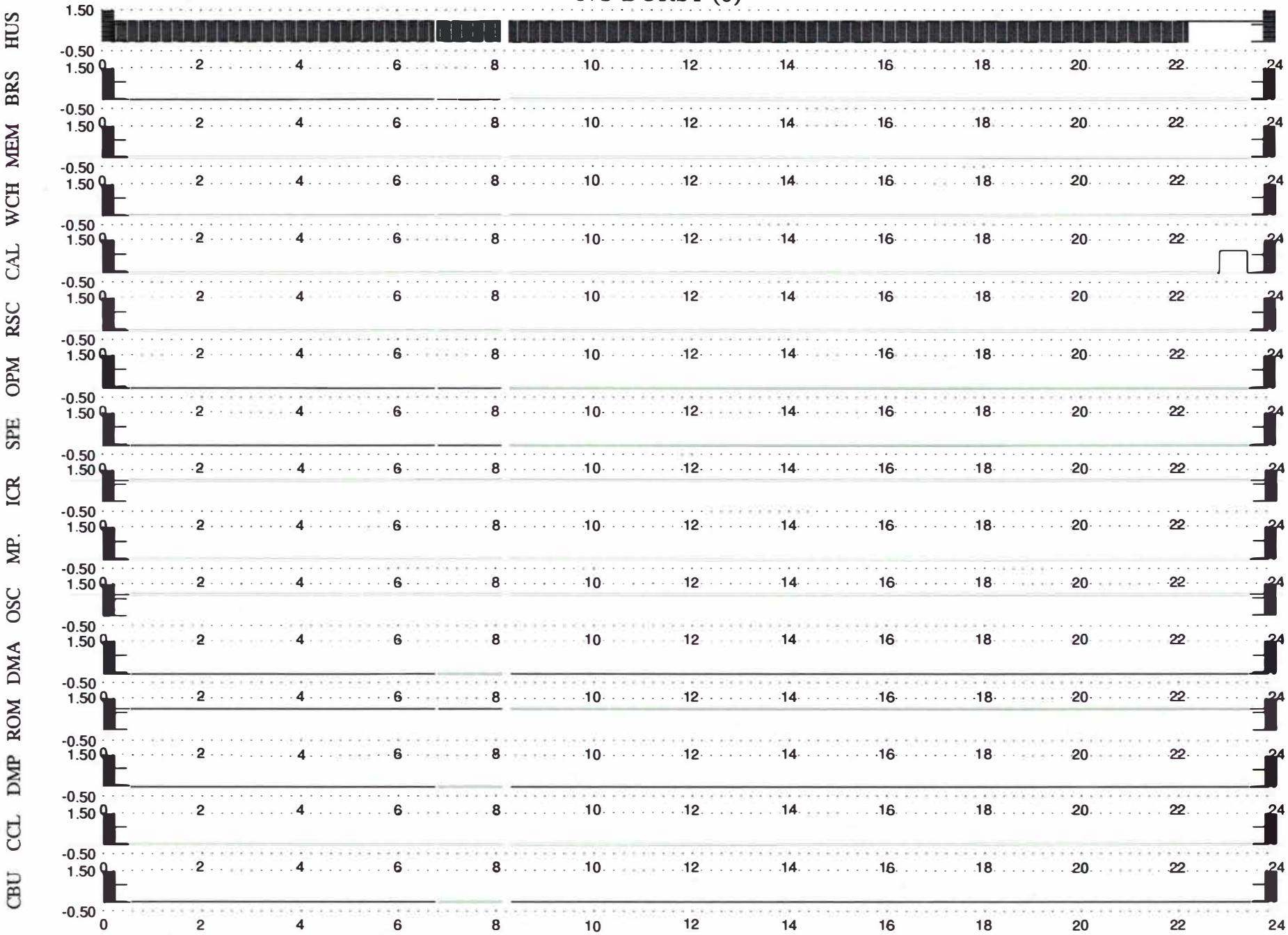
Current Time: 98/04/23, 1621 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare

HUS MODES EDR day 109, year 1998 to day 109, year 1998 8/18/98

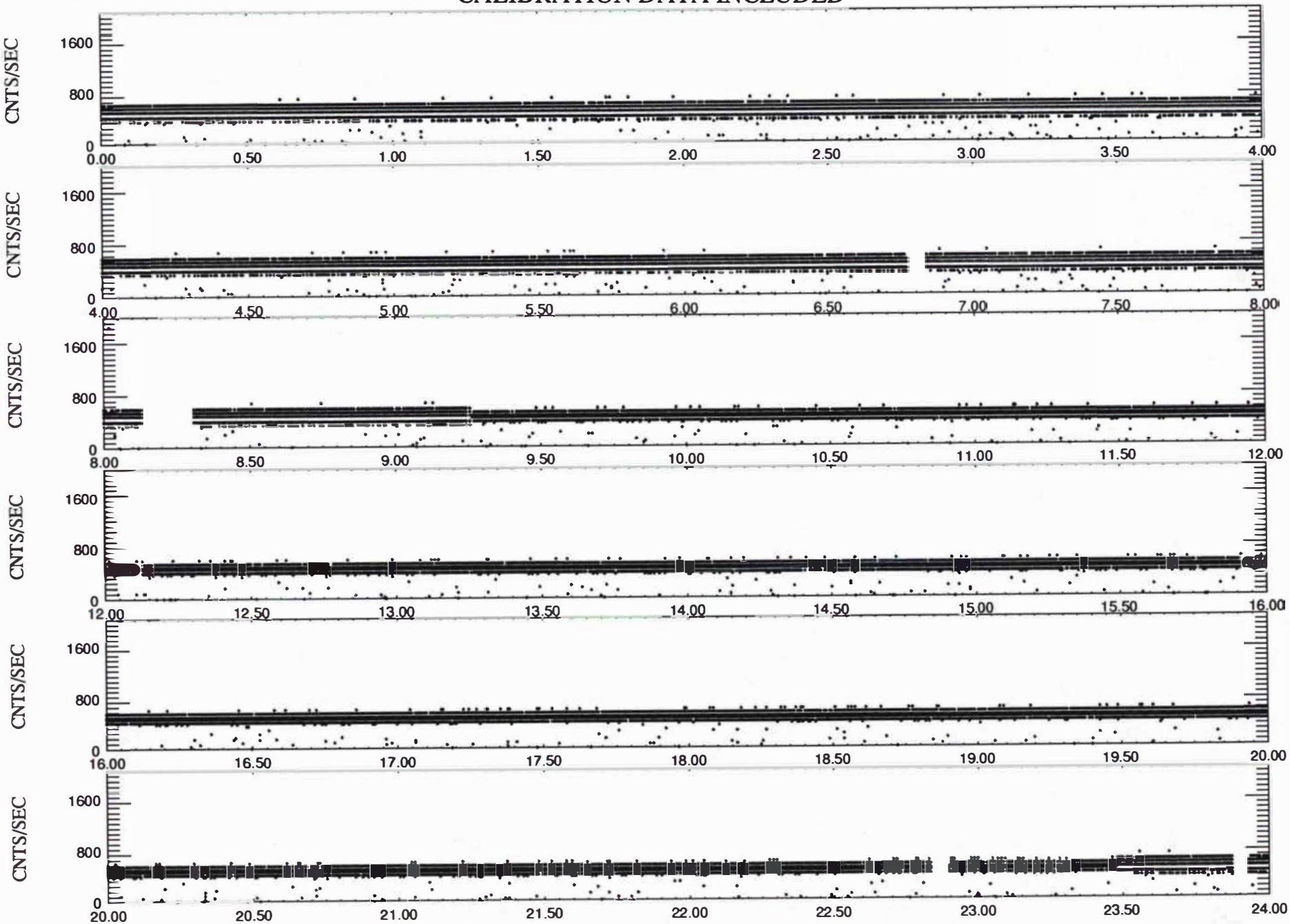
NO BURST (0)



UNIV AL TIME

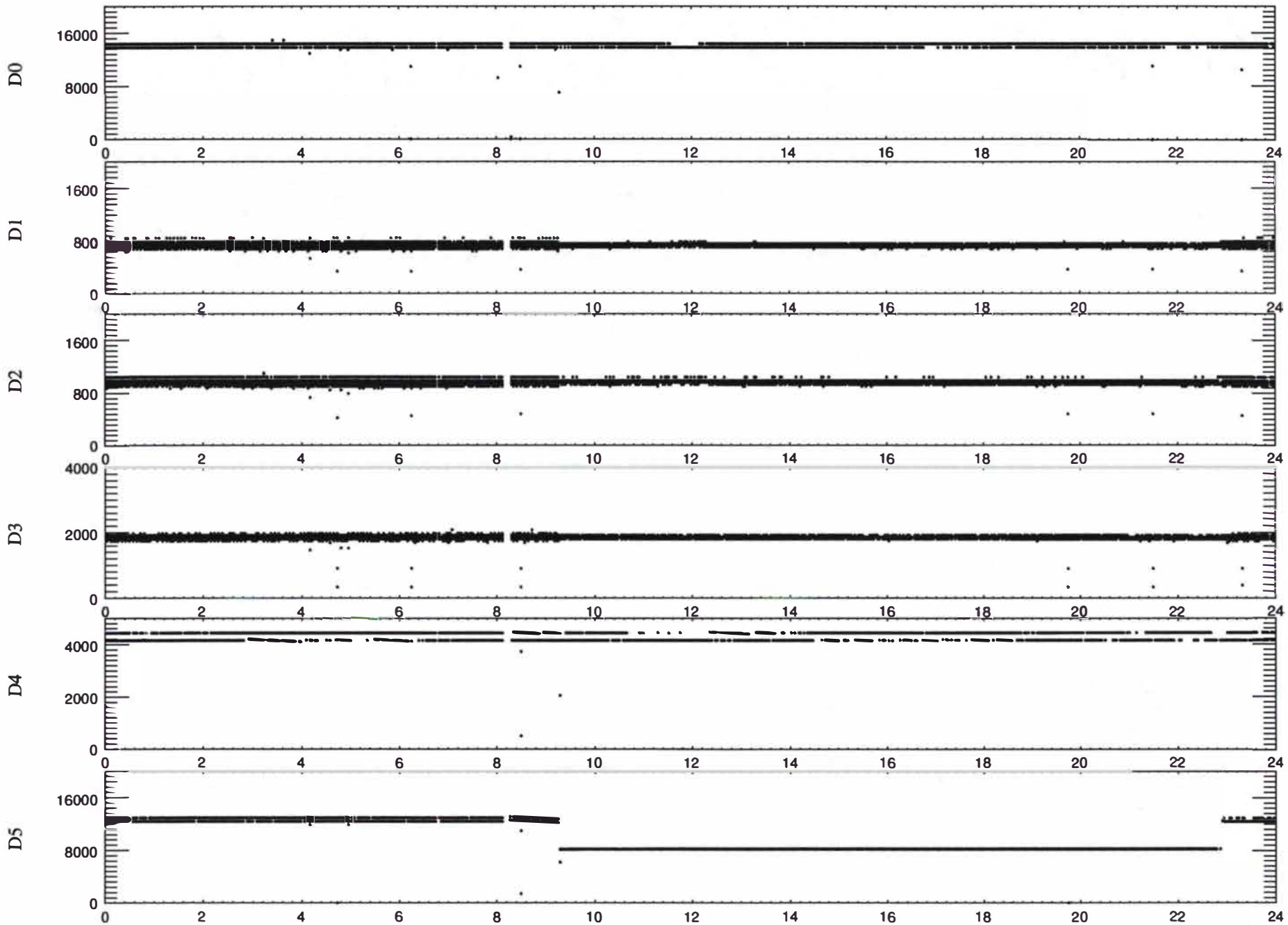
HUS 2A, MODE 1, NOT AVERAGED EDR day 109, year 1998 to day 109, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV `AL TIME

HUS 2B COUNTS / SEC EDR day 109, year 1998 to day 109, year 1998 8/18/98



UNIV SAL TIME

From SURASAK@fender.msfc.nasa.gov Wed Apr 22 15:48:04 1998
Return-Path: <SURASAK@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id PAA16632; Wed, 22 Apr 1998 15:48:03 -0700
From: SURASAK@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id PAA06270; Wed, 22 Apr 1998 15:48:03 -0700
Date: Wed, 22 Apr 1998 17:45:17 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980422174517.20e26c30@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6694
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6694
EVENT OF 1998 APR 20 DAY OF YEAR=110
EVENT CROSSING TIME AT BATSE      : 36412. S. OR 10:06:52.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 293.000   27.000
BATSE PEAK COUNTING RATE:  15900    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 20/ 4/  98 IS:
RA=  150.318 DEC=   13.136 DIST=    4.872 AU
BATSE-ULYSSES DISTANCE =  728845454. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 54.06 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1426.82 SECS.
CROSSING TIME AT ULYSSES    IS 37839. S. OR   10:30:38 +/-  413.42 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 20/ 4/  98 IS:
RA=   32.964 DEC=   13.060 DIST=    2.446 AU
MARS-BATSE DISTANCE =  365872576. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 87.27 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=   58.09 SECS.
CROSSING TIME AT MARS       IS 36470. S. OR   10:07:50 +/-  212.53 SECONDS

                BATSE BURST TRIGGER
NO.: 6694

TIME: TJD=0923 SECONDS=36412

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=131.9  AZIMUTH=128.8  ERROR=0.609 DEGREES

COMMENTS:
GRB. SINGLE PULSE. FRED. DURATION ABOUT 40S. VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6694   980420   10923   36412    15900   293   +27     40
```

Date:_____

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

- [x] Jim Schmidling's stat file correction applied?
- [x] Final ephemeris used?
- [x] Final, CDROM data used?
- [ ] Were data checked by Joe Springer for 0.5 s errors? N/A
- [x] If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?
- [ ] Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution?

2. BATSE Data

- [ ] 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? N/A
- [ ] BATSE ephemeris for T_0?
- [ ] Error circle position and radius from public catalog used?
- [ ] If MER data were used, is a 30 ms systematic error included?

3. PVO Data

- [ ] Ephemeris of PVO used (not Venus)?
- [ ] 2000 coordinates used?
- [ ] Geocentric time used?

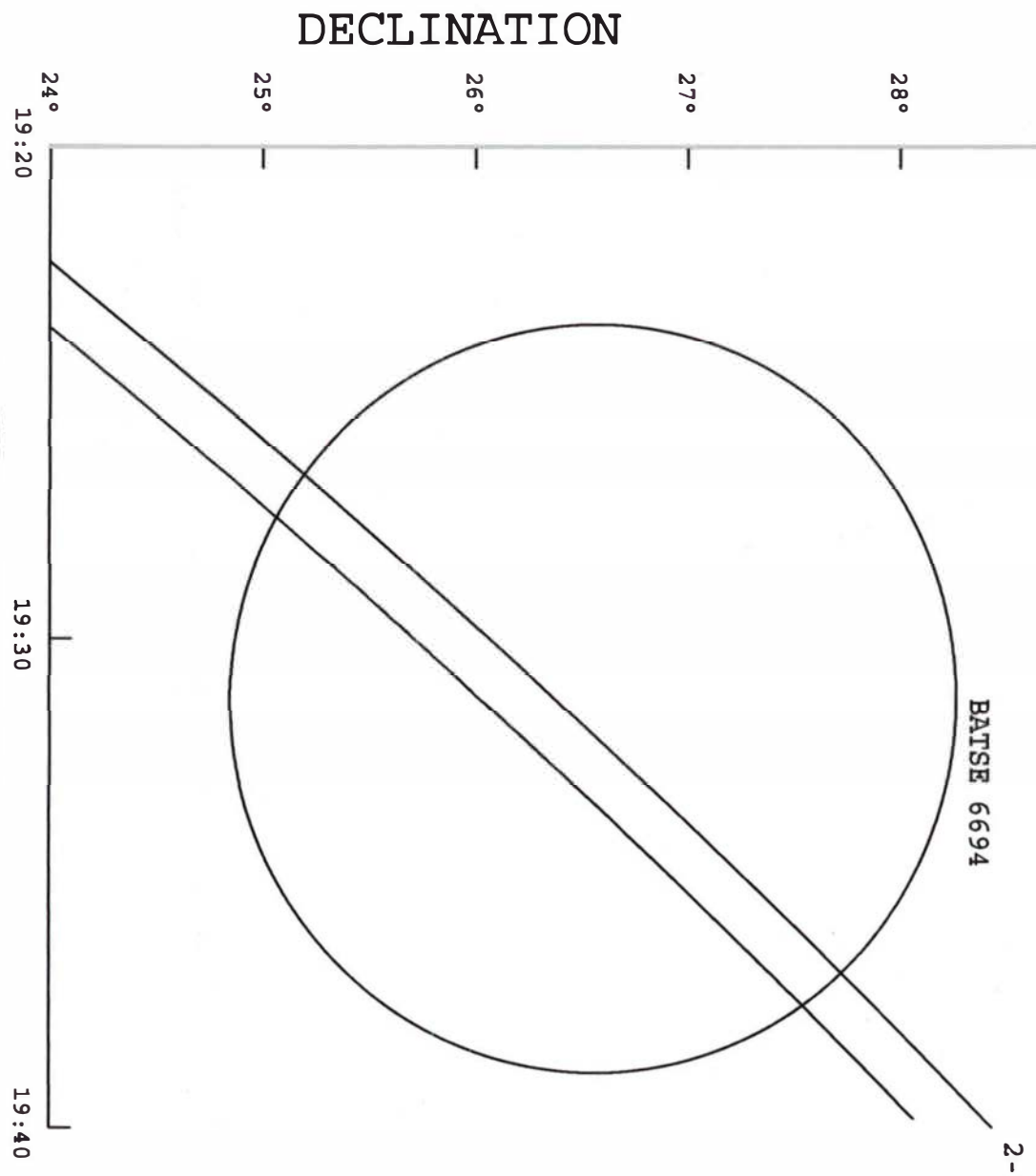
- [x] ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

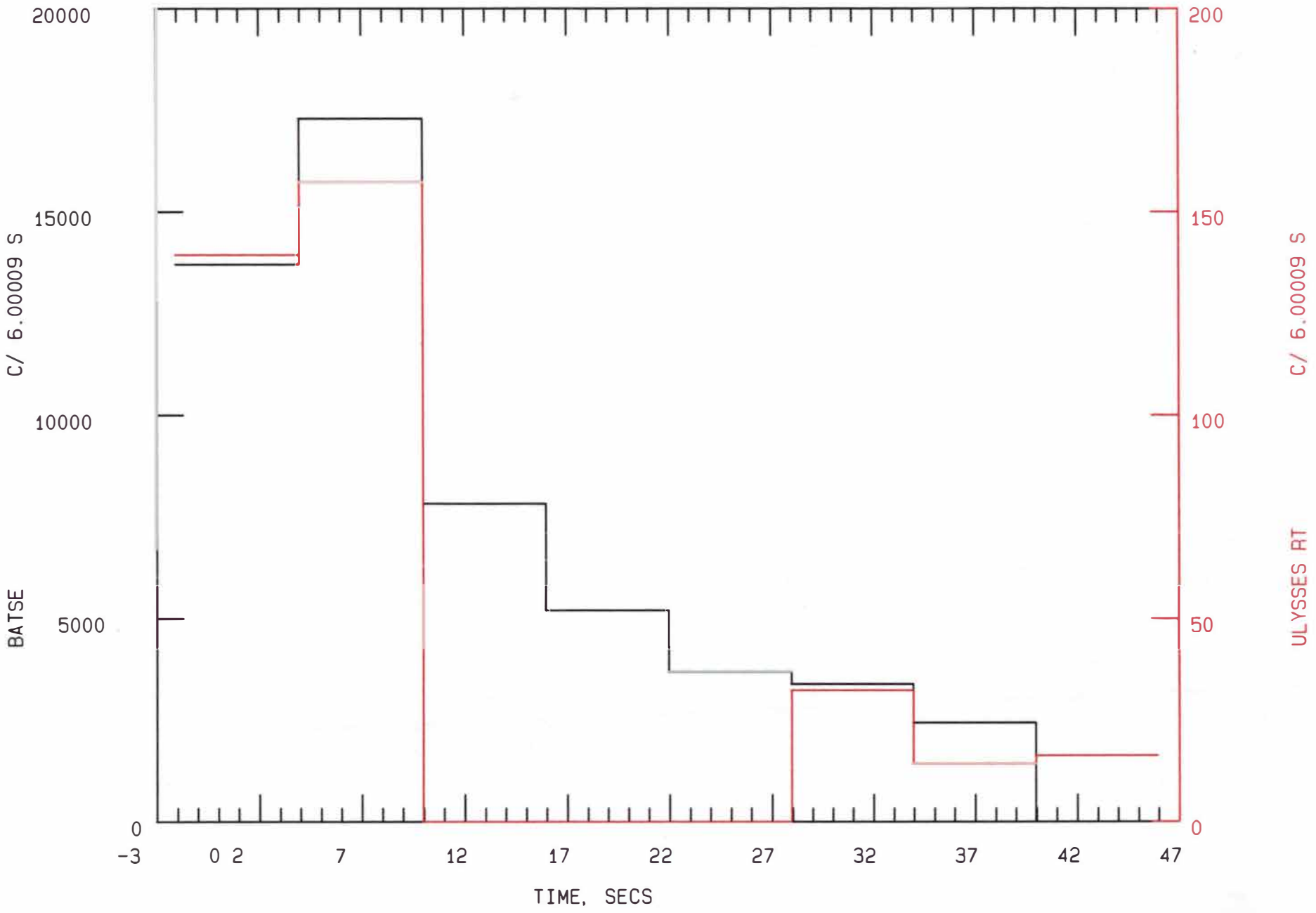
1 BATSE 2 ULYSSES



EVENT OF APR 20, 1998 10:06

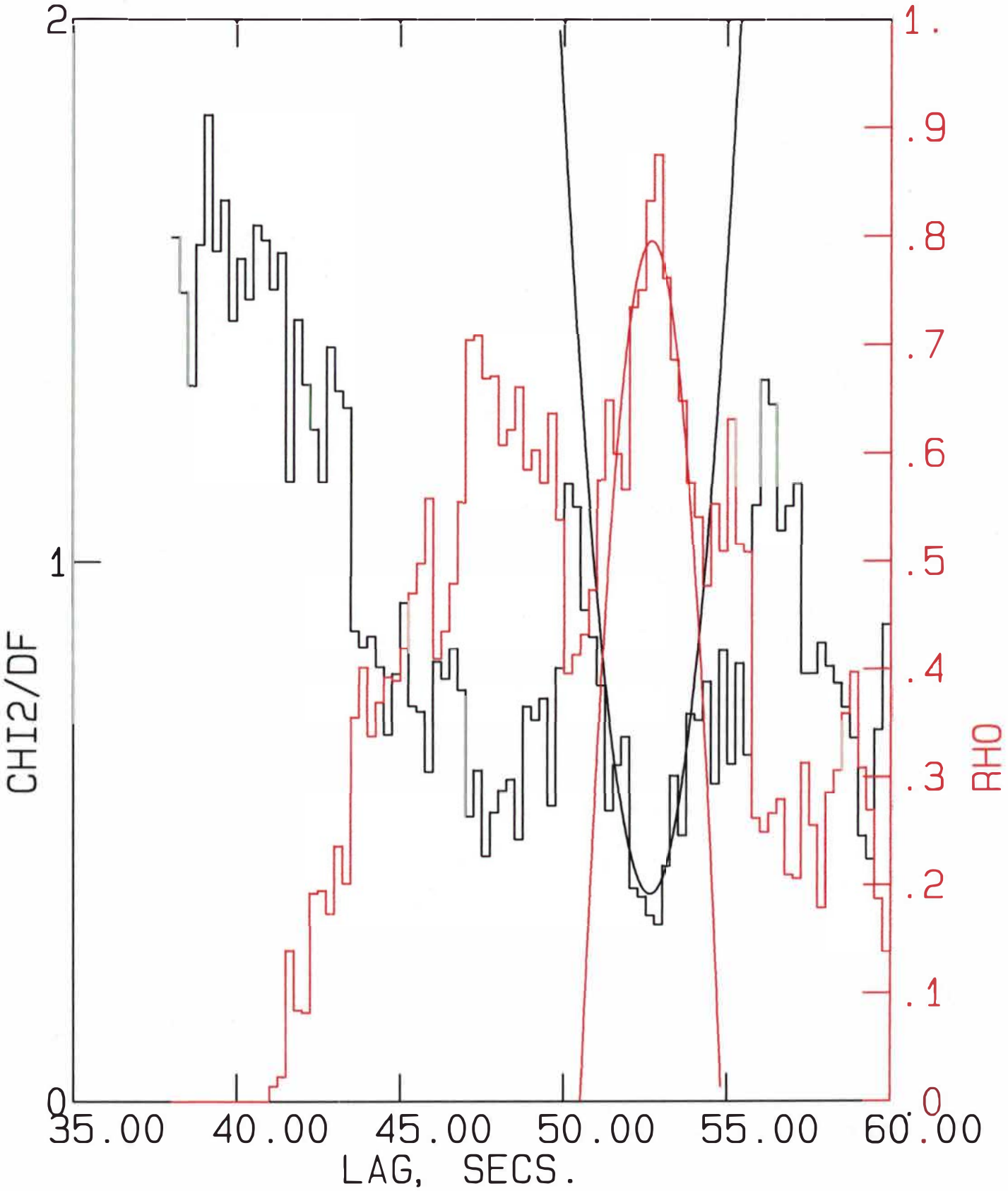
4/11/99

BATSE -ULYSSES RT CORRELATION 20/ 4/98 36412.385 4/11/99



4/11/99

BATSE -ULYSSES RT CORRELATION 20/ 4/98 36412.385



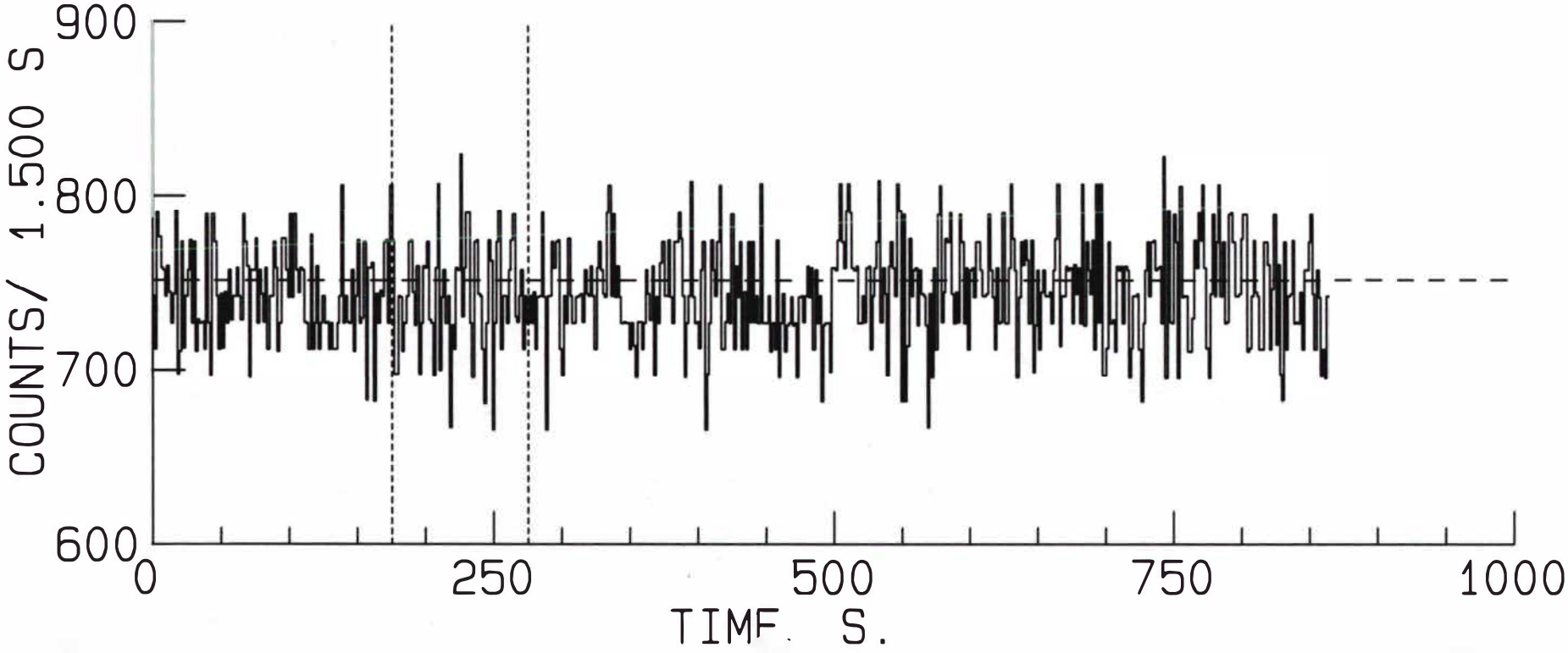
ULYSSES RT

4/11/99

20/ 4/98 37332.118 s

0.250 S INTERVALS REGROUPED BY 6

22- 149 keV



Date: Nov 4 '99

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? N/A

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

☐ 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?

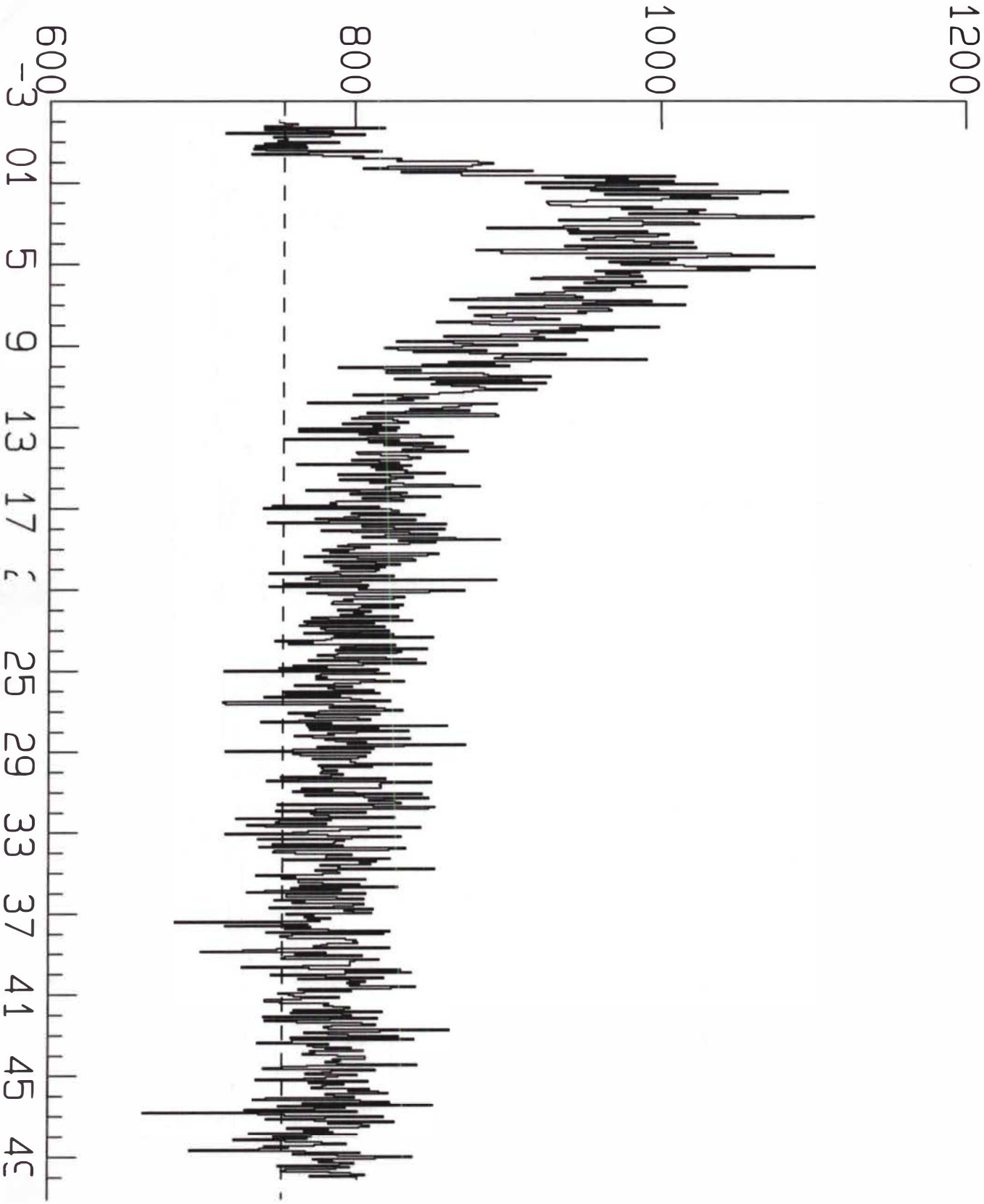
☐ Geocentric time used?

☐ ACCESS database updated?

BATSE 20/04/98 36412.385

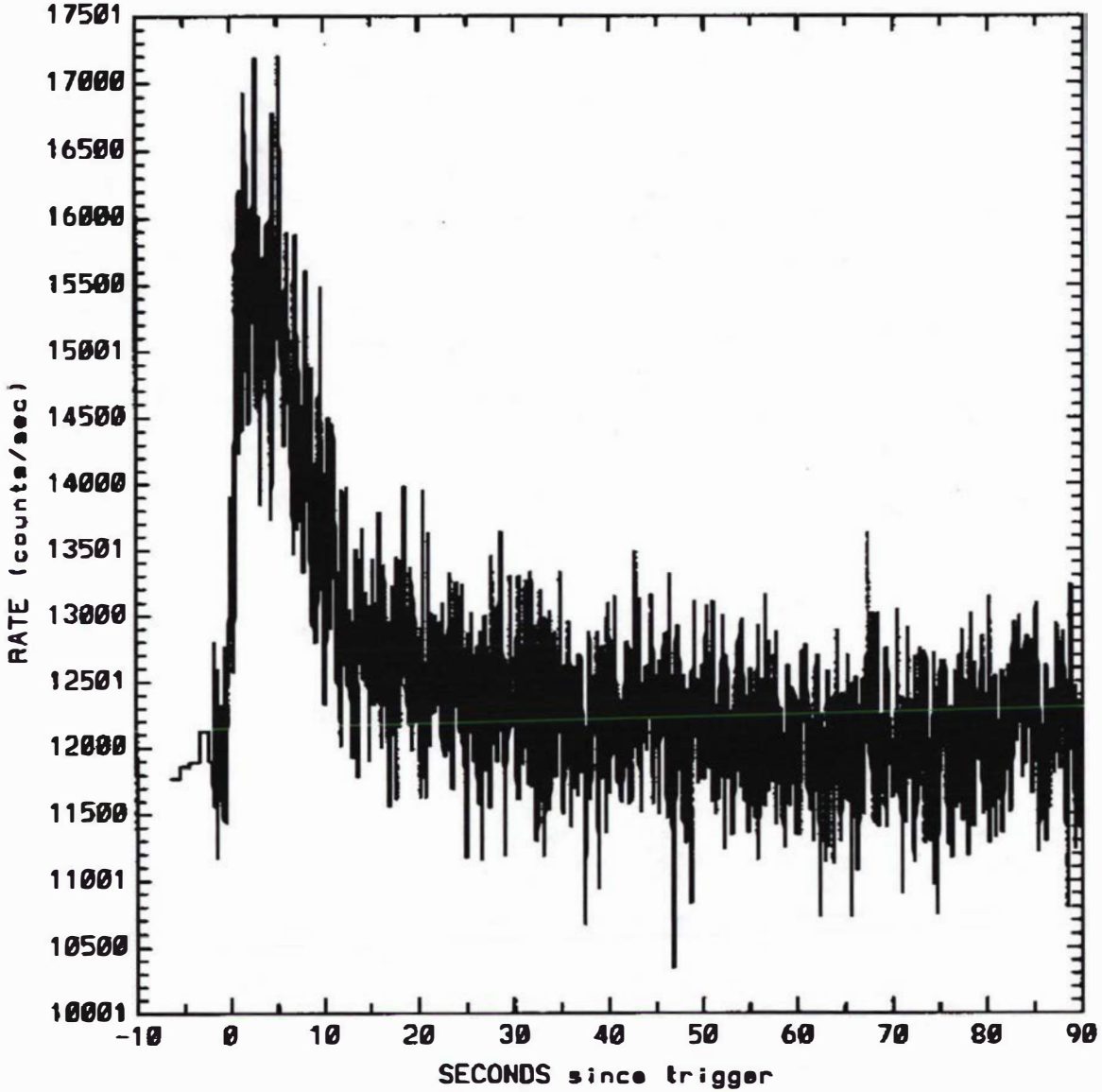
25- 100 keV

COUNTS/0.064 S



24/ 6/98

DISCSC Data for K. Hurley, No. 6694



22-MAY-1998 14:53:02

Created by MDPS BD
(Burst Display)
Version t2.25

Trigger # : 6694

Trigger Time:
10923 / 36412.385

Burst Data Type:
DISCSC

Deadtime
Corrected: N

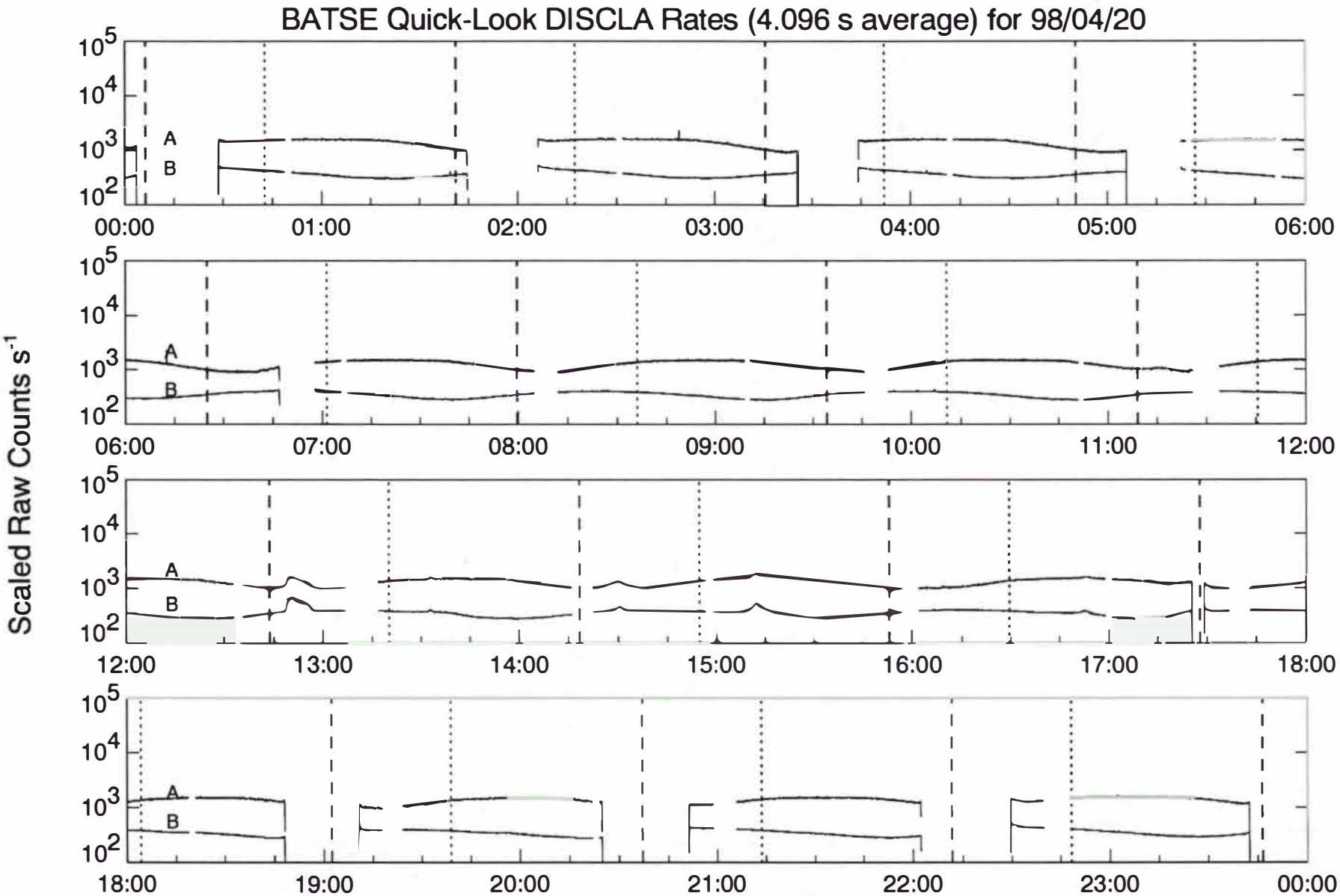
Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 second(s)

Detectors [7..0]:
7-5-3-1-

Discriminators:
(1 , 2)

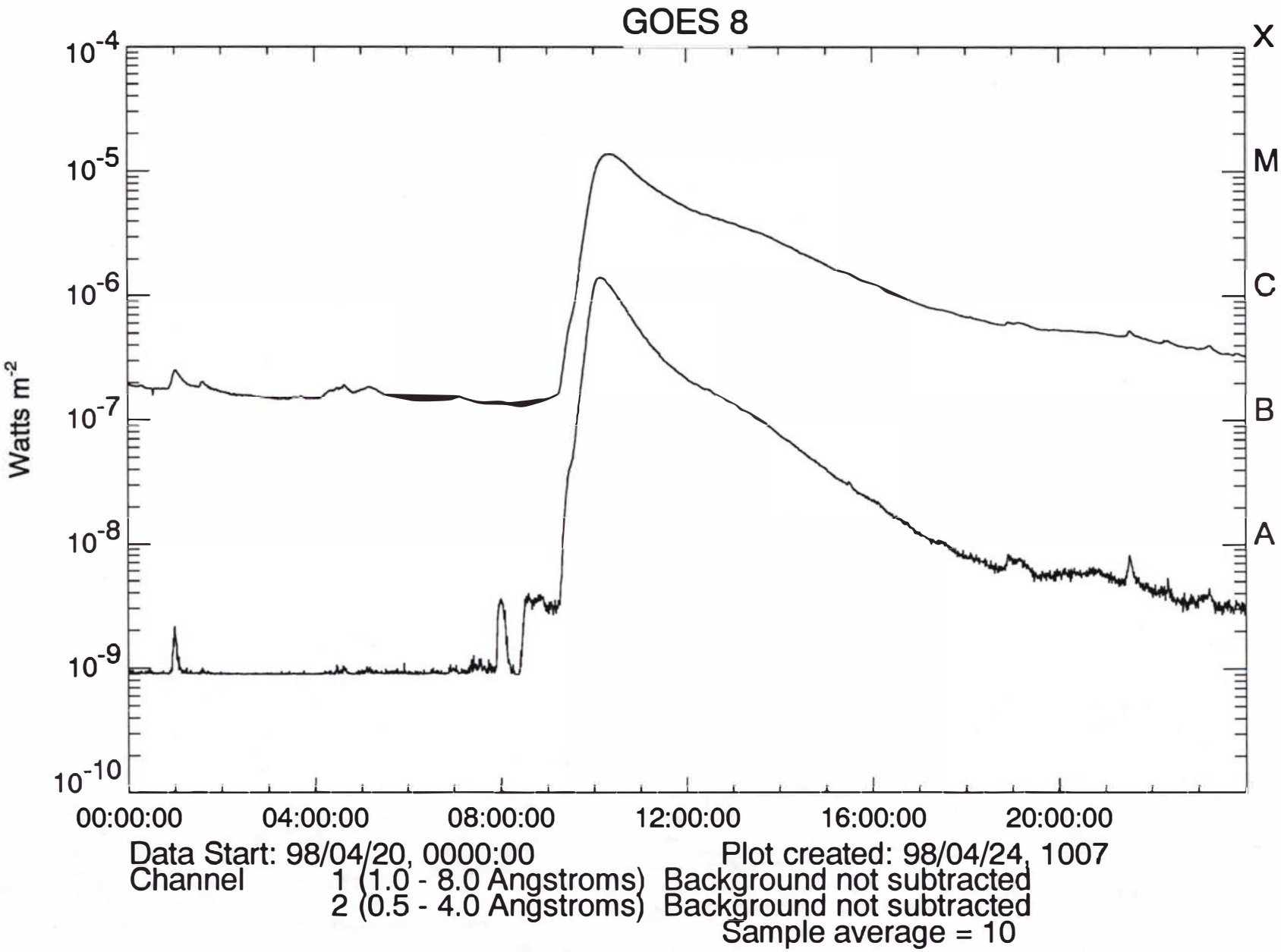
Quality Mask:
BDISP1



Current Time: 98/04/24, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

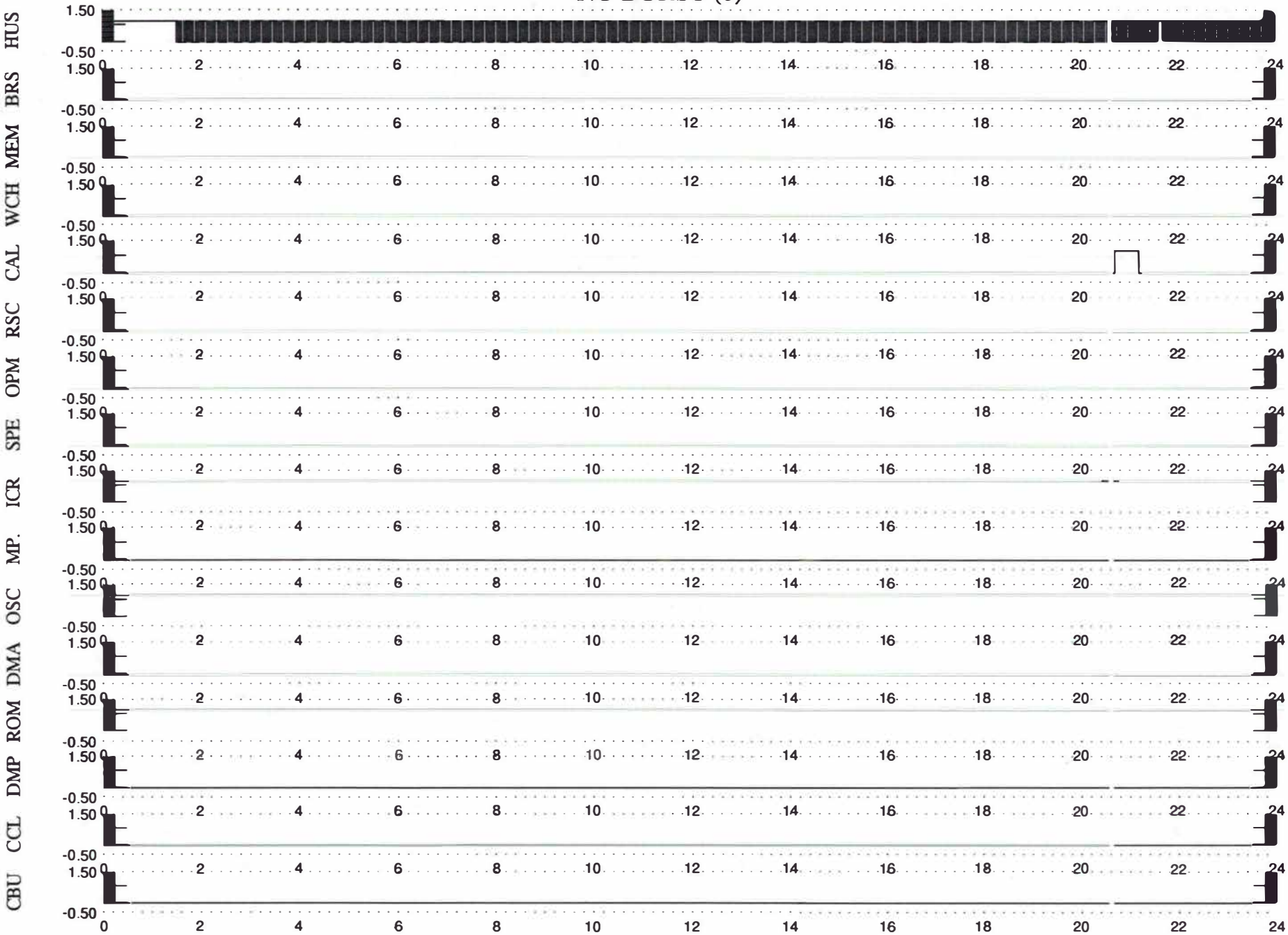
Dotted line: Day entry
Dashed line: Night entry

* Solar Burst Trigger
\+ Solar Flare


GOES 8
Watts m-2
10-4
10-5
10-6
10-7
10-8
10-9
10-10
X
M
C
B
A
00:00:00
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 98/04/20, 0000:00
Plot created: 98/04/24, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

HUS MODES EDR day 110, year 1998 to day 110, year 1998 8/18/98

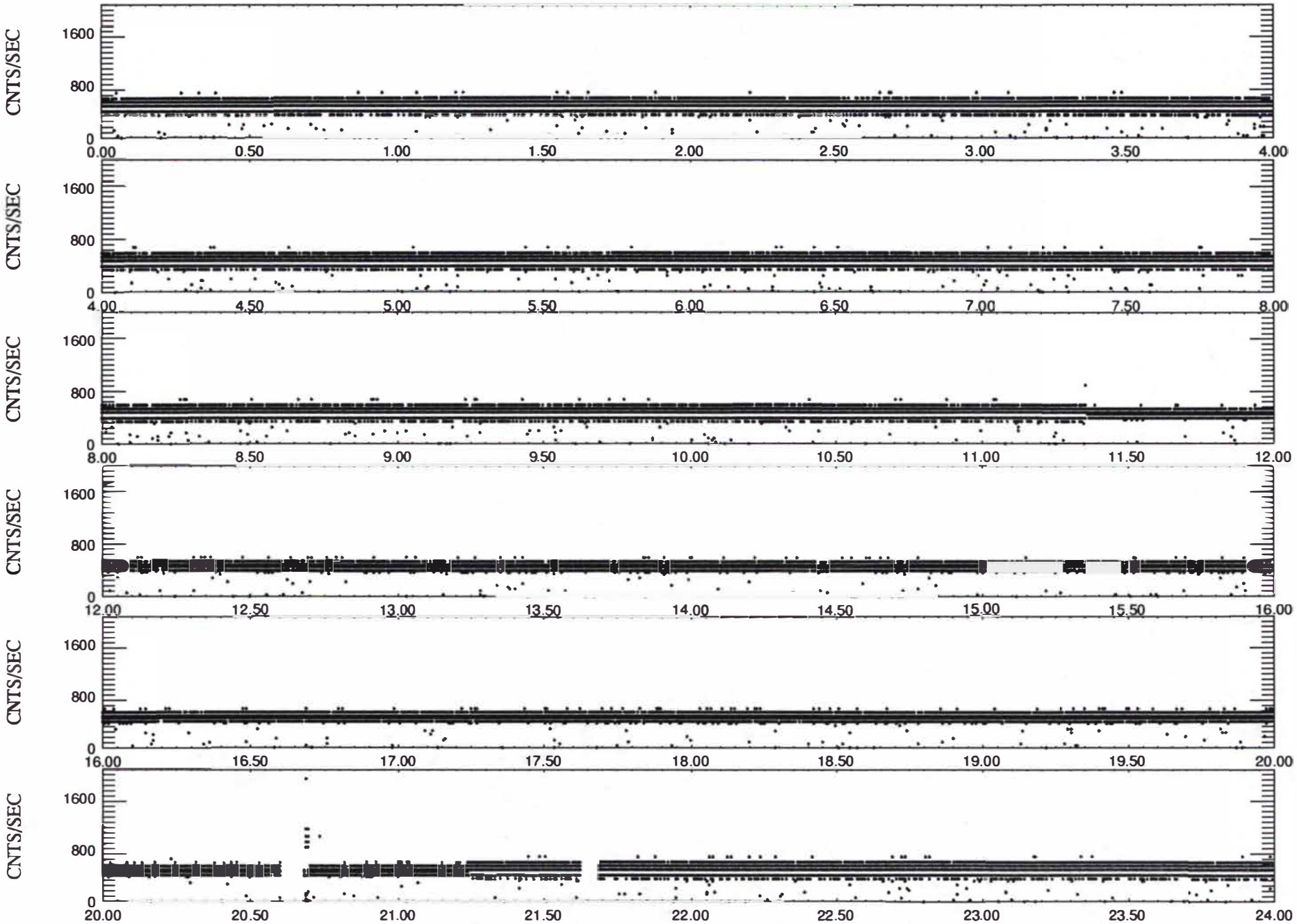
NO BURST (0)



UNIV 'AL TIME

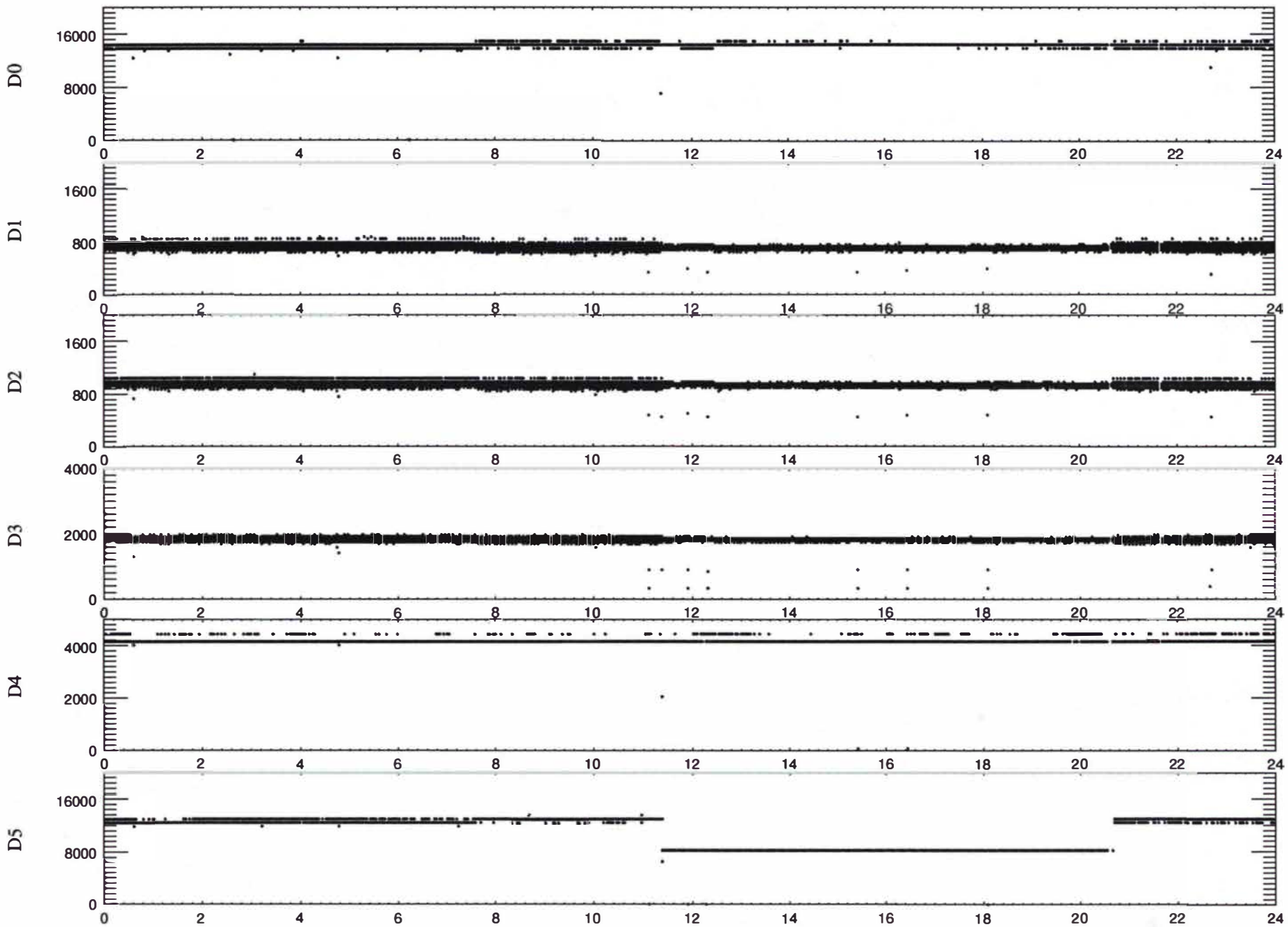
HUS 2A, MODE 1, NOT AVERAGED EDR day 110, year 1998 to day 110, year 1998 8/18/98

CALIBRATION DATA INCLUDED



UNIV' 'AL TIME

HUS 2B COUNTS / SEC EDR day 110, year 1998 to day 110, year 1998 8/18/98



From SURASAK@fender.msfc.nasa.gov Wed Apr 22 15:48:12 1998
Return-Path: <SURASAK@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id PAA16636; Wed, 22 Apr 1998 15:48:11 -0700
From: SURASAK@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id PAA06282; Wed, 22 Apr 1998 15:48:11 -0700
Date: Wed, 22 Apr 1998 17:46:08 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980422174608.20e26c30@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6695
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6695
EVENT OF 1998 APR 21 DAY OF YEAR=111
EVENT CROSSING TIME AT BATSE      :  4805. S. OR 01:20:05.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 171.000  -30.000
BATSE PEAK COUNTING RATE:   2100    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 21/ 4/  98 IS:
RA=  150.253 DEC=   13.121 DIST=    4.881 AU
BATSE-ULYSSES DISTANCE =  730263092. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=132.47 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1644.78 SECS.
CROSSING TIME AT ULYSSES    IS  3160. S. OR   00:52:40 +/-  336.96 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 21/ 4/  98 IS:
RA=   33.678 DEC=   13.316 DIST=    2.448 AU
MARS-BATSE DISTANCE =  366186688. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 42.72 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  897.45 SECS.
CROSSING TIME AT MARS       IS  5702. S. OR   01:35:02 +/-  157.49 SECONDS

                 BATSE BURST TRIGGER
NO.: 6695

TIME: TJD=0924 SECONDS=4805

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=33.3   AZIMUTH=229.4  ERROR=4.644 DEGREES

COMMENTS:
GRB. SINGLE PULSE WITH SUBSTRUCTURE. START AT ABOUT T-13 S.
DURATION ABOUT 33 S. NOT VISIBLE ABOVE 300 KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6695   980421   10924   04805     2100   171   -30     33
```

BATSE BURST# 6695

ULYSSES RT 23/ 4/98

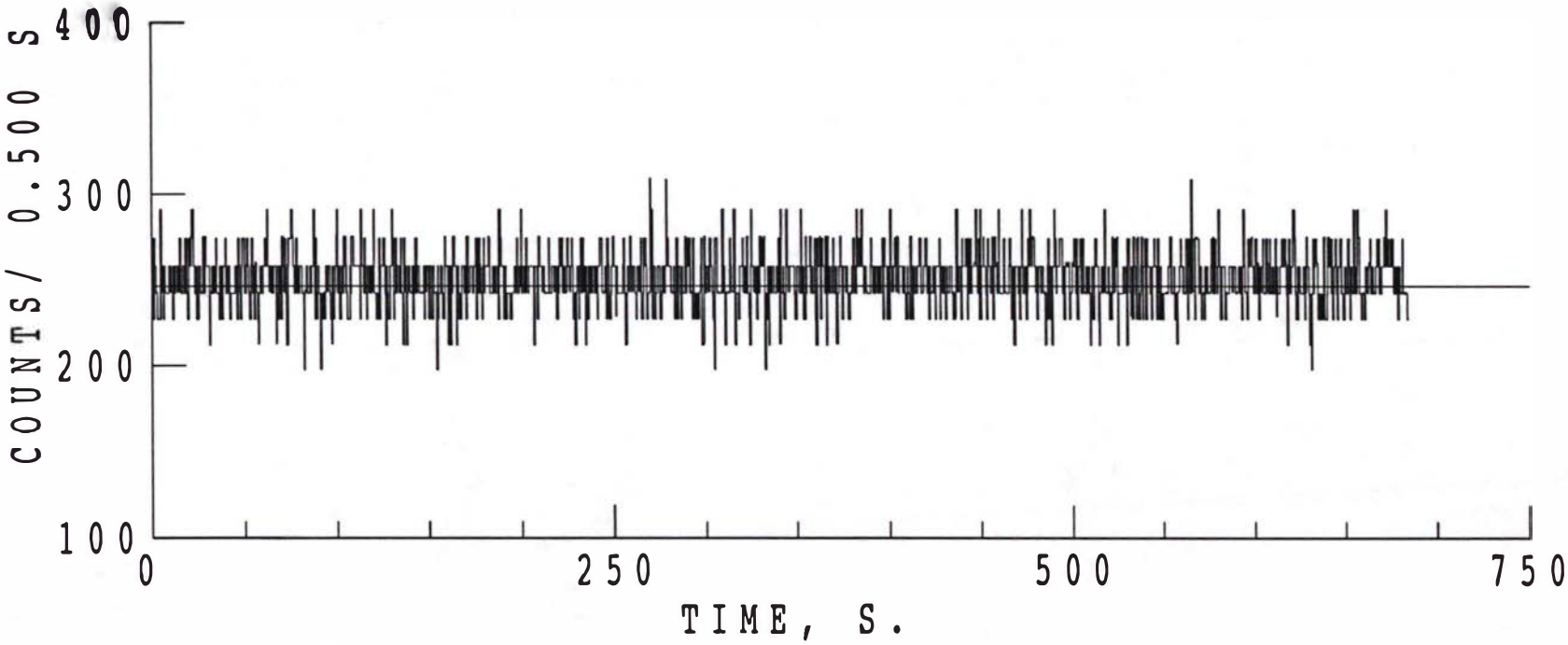
21/ 4/98 2808.127 s

0.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



From SURASAK@fender.msfc.nasa.gov Fri Apr 24 11:41:35 1998
From: SURASAK@fender.msfc.nasa.gov
Date: Fri, 24 Apr 1998 13:41:12 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6696

TIME: TJD=0924 SECONDS=35484

TYPE: CYG X-1 SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=149.0 AZIMUTH=152.7 ERROR=7.593 DEGREES

COMMENTS:
CYG X-1 FLUCUTATION. WEAK SPIKY SINGLE PULSE. DURATION ABOUT 11 S.
NOT VISIBLE ABOVE 300 KEV.

From SURASAK@fender.msfc.nasa.gov Thu Apr 23 12:11:21 1998
Return-Path: <SURASAK@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA27790; Thu, 23 Apr 1998 12:11:20 -0700
From: SURASAK@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA12042; Thu, 23 Apr 1998 12:11:19 -0700
Date: Thu, 23 Apr 1998 14:11:15 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980423141115.20e30f73@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6697
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6697
EVENT OF 1998 APR 21 DAY OF YEAR=111
EVENT CROSSING TIME AT BATSE     : 70518. S. OR 19:35:18.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 355.000  -39.000
BATSE PEAK COUNTING RATE:   7500    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 21/ 4/  98 IS:
RA=  150.178 DEC=   13.102 DIST=    4.893 AU
BATSE-ULYSSES DISTANCE =  731974058. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 33.94 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 2025.68 SECS.
CROSSING TIME AT ULYSSES    IS 72544. S. OR   20:09:03 +/-  317.42 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 21/ 4/  98 IS:
RA=   33.678 DEC=   13.316 DIST=    2.448 AU
MARS-BATSE DISTANCE =  366186688. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=116.45 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -544.08 SECS.
CROSSING TIME AT MARS       IS 69974. S. OR   19:26:13 +/-  181.60 SECONDS

                 BATSE BURST TRIGGER
NO.: 6697

TIME: TJD=0924 SECONDS=70518

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=77.6   AZIMUTH=53.8   ERROR=3.851 DEGREES

COMMENTS:
GRB. SINGLE PULSE WITH 3 PEAKS. START AT ABOUT T-3 S. DURATION ABOUT 1.5 S. NOT
VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6697	980421	10924	70518	7500	355	-39	1.5

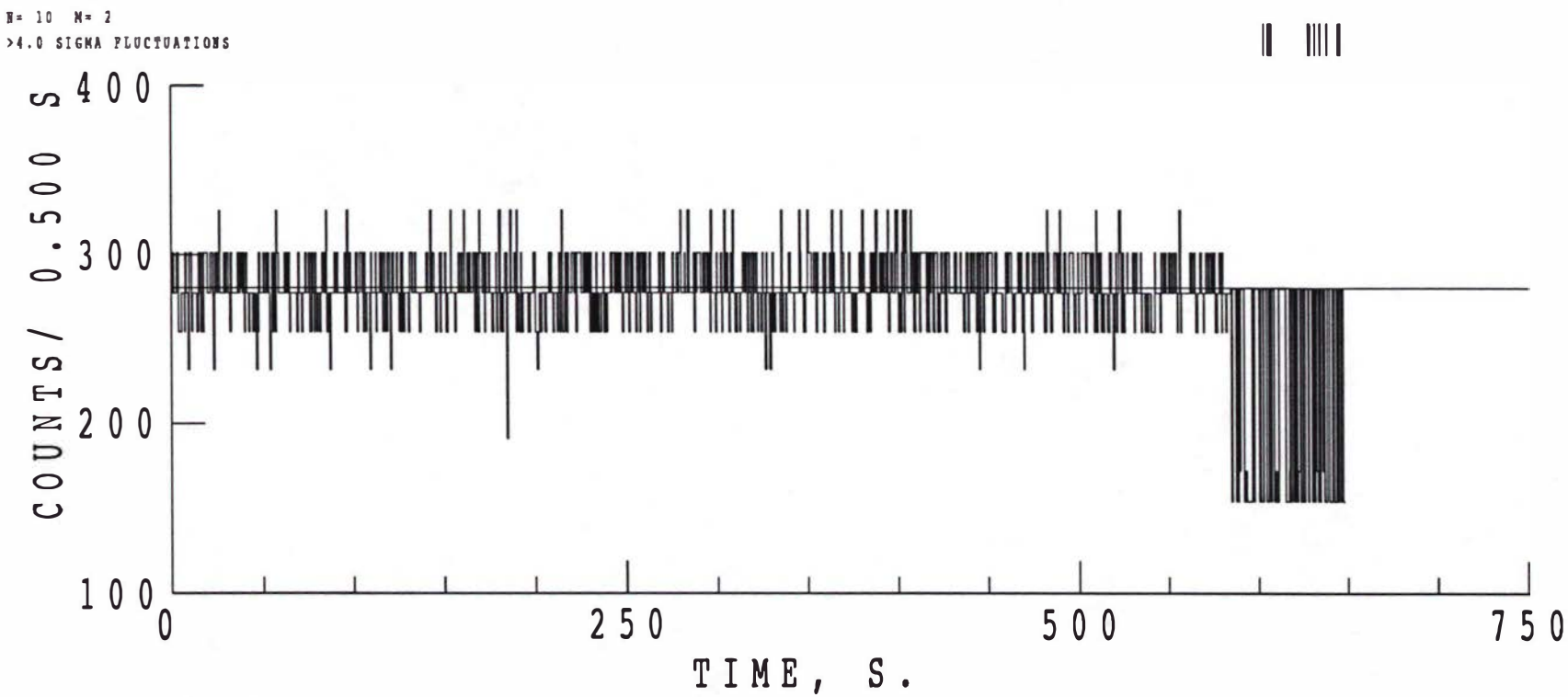
BATSE BURST# 6697

ULYSSES RT

23/ 4/98

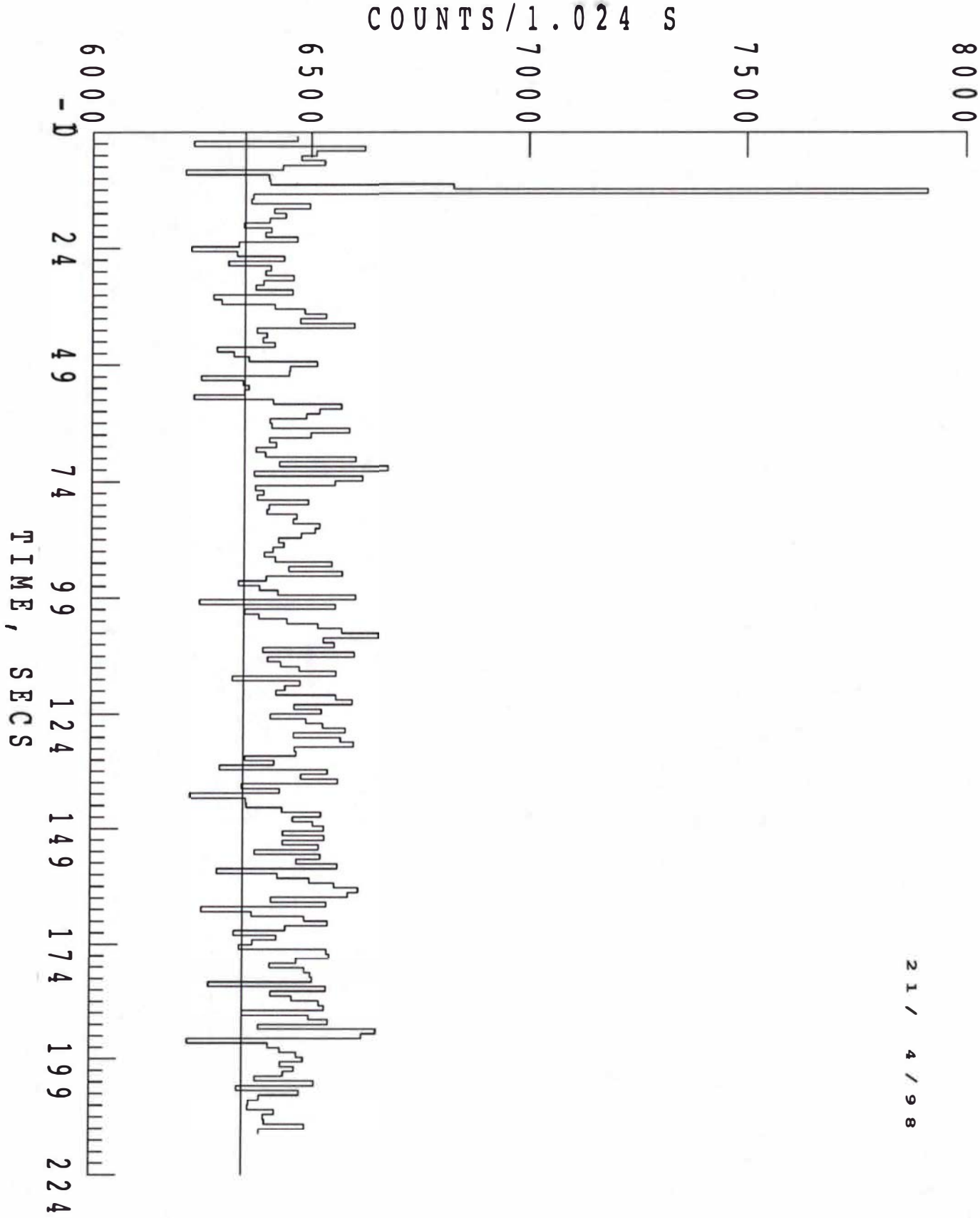
21/ 4/98 72216.117 s

0- 0 keV



BACODINE 6697 21/04/98 70507.233

25- 100 keV



From SURASAK@fender.msfc.nasa.gov Thu Apr 23 12:15:53 1998
Return-Path: <SURASAK@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA27852; Thu, 23 Apr 1998 12:15:52 -0700
From: SURASAK@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA12095; Thu, 23 Apr 1998 12:15:51 -0700
Date: Thu, 23 Apr 1998 14:15:00 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980423141500.20e30f73@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6698
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6698
EVENT OF 1998 APR 21 DAY OF YEAR=111
EVENT CROSSING TIME AT BATSE      : 81841. S. OR 22:44:01.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 220.000   35.000
BATSE PEAK COUNTING RATE:   2780    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 21/ 4/  98 IS:
RA=  150.165 DEC=   13.099 DIST=    4.895 AU
BATSE-ULYSSES DISTANCE =  732268671. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.89 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -989.32 SECS.
CROSSING TIME AT ULYSSES    IS 80852. S. OR   22:27:31 +/-  422.71 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 21/ 4/  98 IS:
RA=   33.678 DEC=   13.316 DIST=    2.448 AU
MARS-BATSE DISTANCE =  366186688. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 48.69 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  806.38 SECS.
CROSSING TIME AT MARS       IS 82647. S. OR   22:57:27 +/-  171.53 SECONDS

                 BATSE BURST TRIGGER
NO.: 6698

TIME: TJD=0924 SECONDS=81841

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=108.7  AZIMUTH=197.1  ERROR=3.111 DEGREES

COMMENTS:
GRB. SINGLE SPIKY FRED. DURATION ABOUT 100 S. VISIBLE ABOVE 300 KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6698	980421	10924	81841	2780	220	+35	100

BATSE BURST# 6698

ULYSSES RT 23/ 4/98

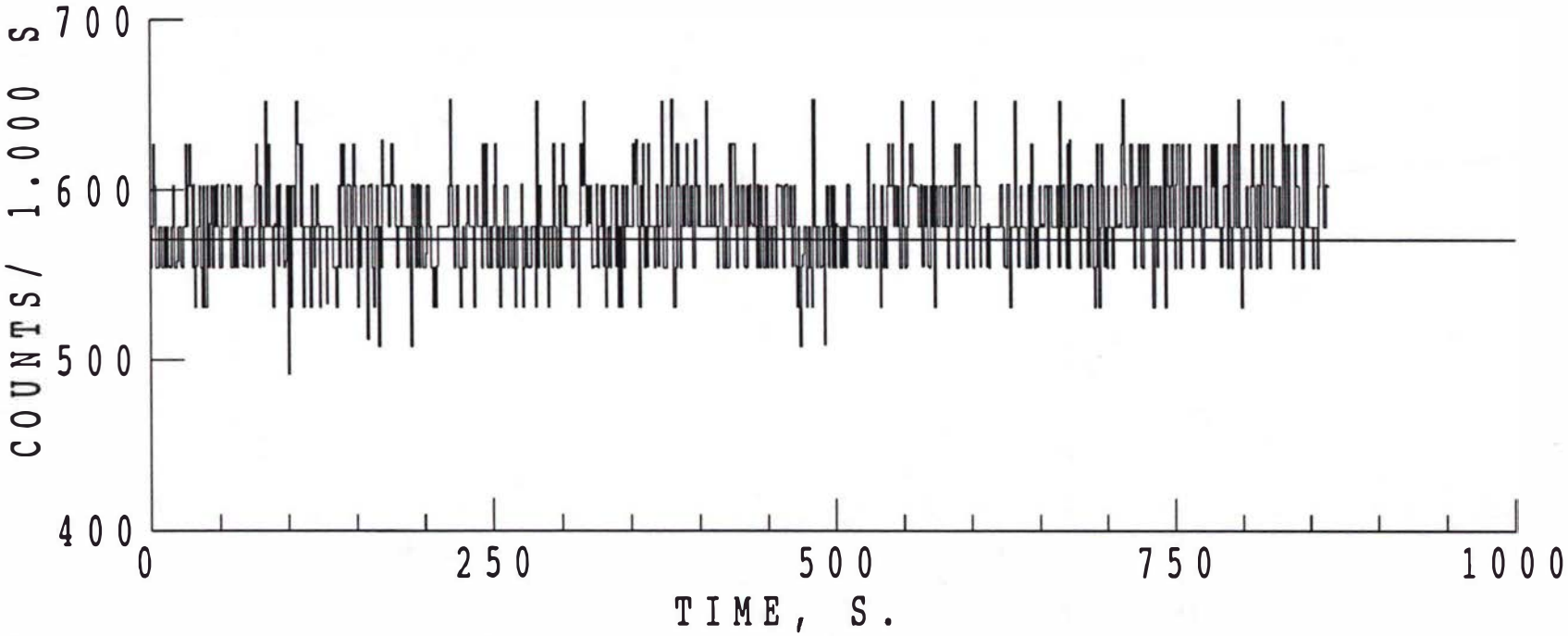
21/ 4/98 80424.211 s

0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

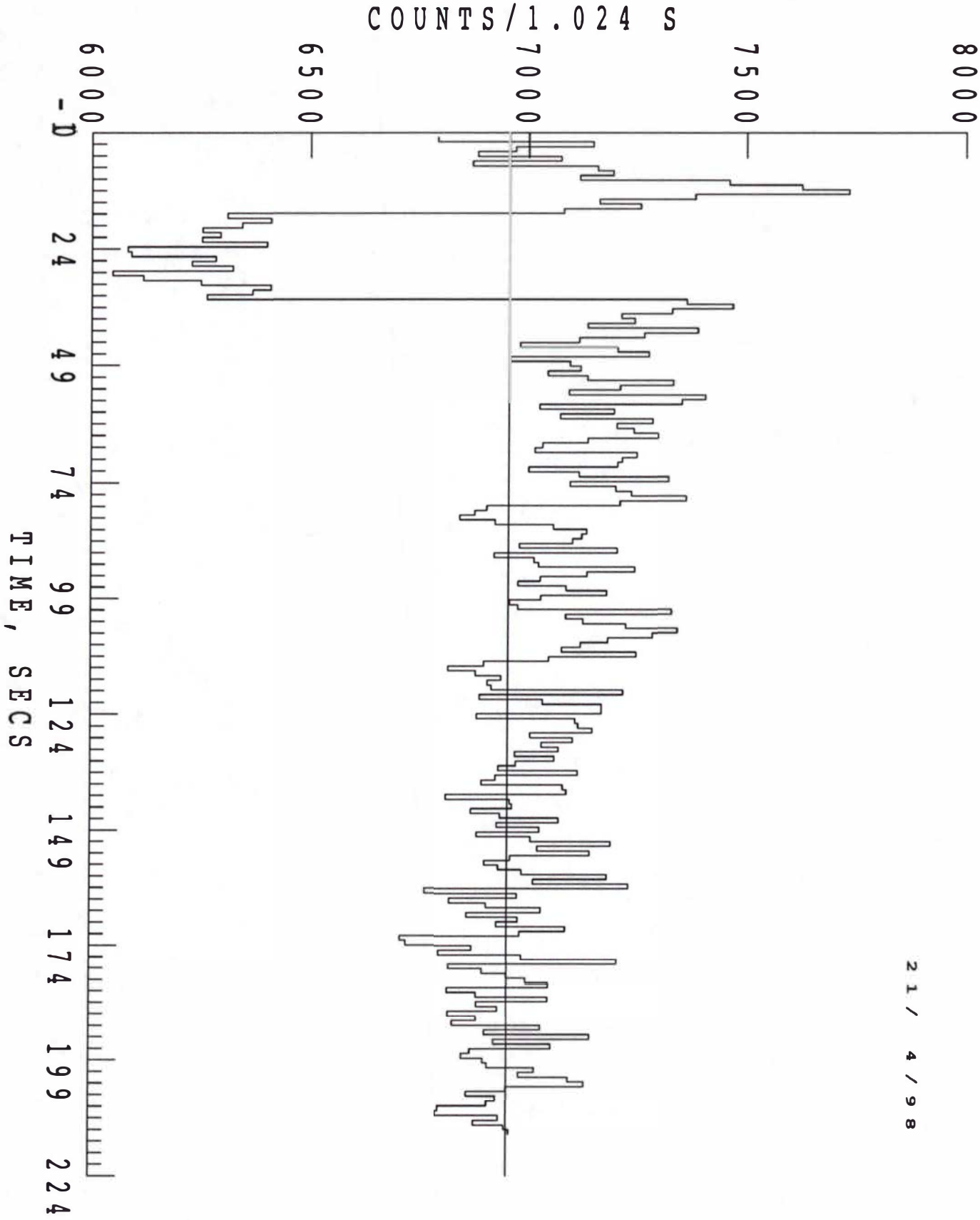
N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

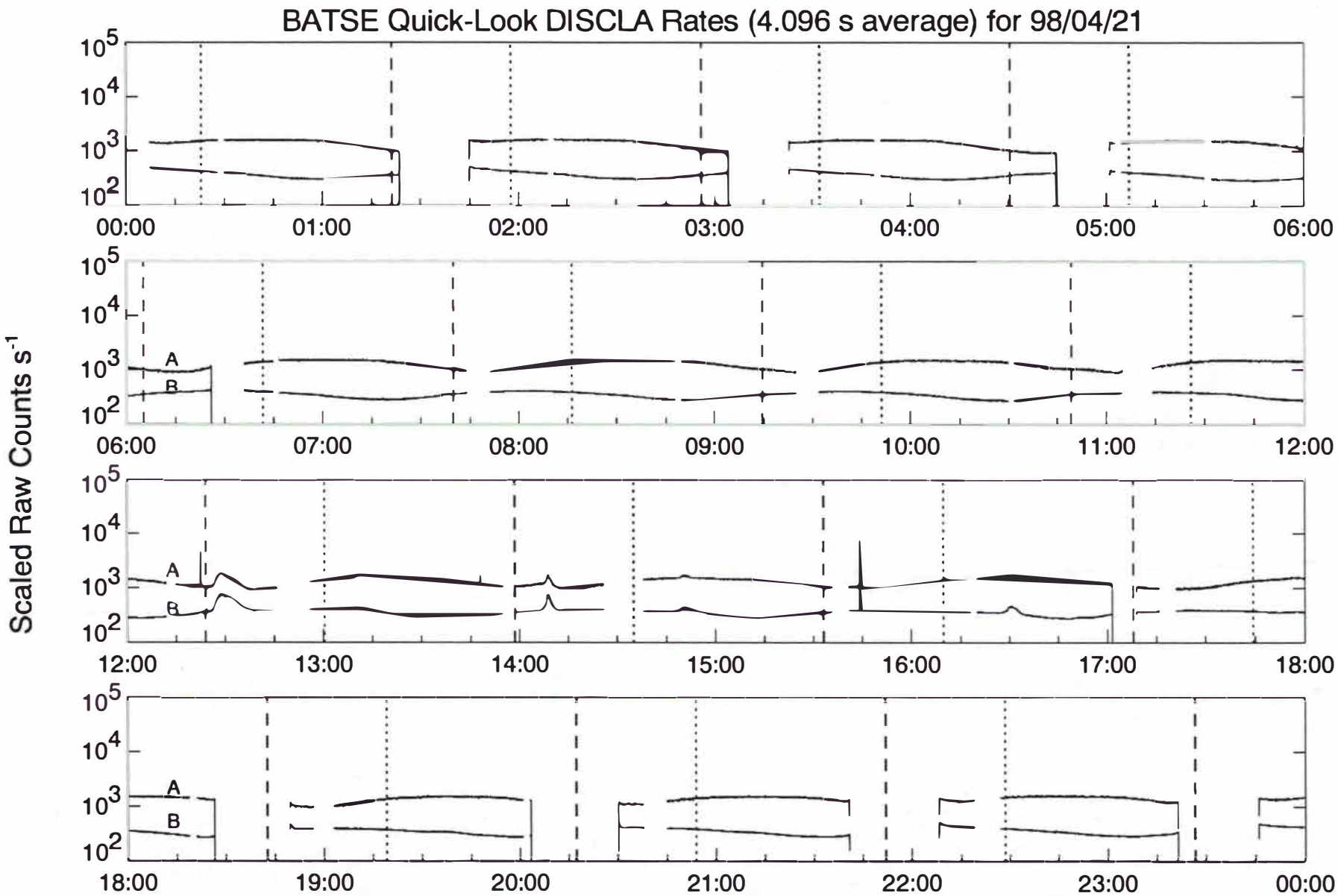
N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



BACODINE 6698 21/04/98 81830.625

25- 100 keV

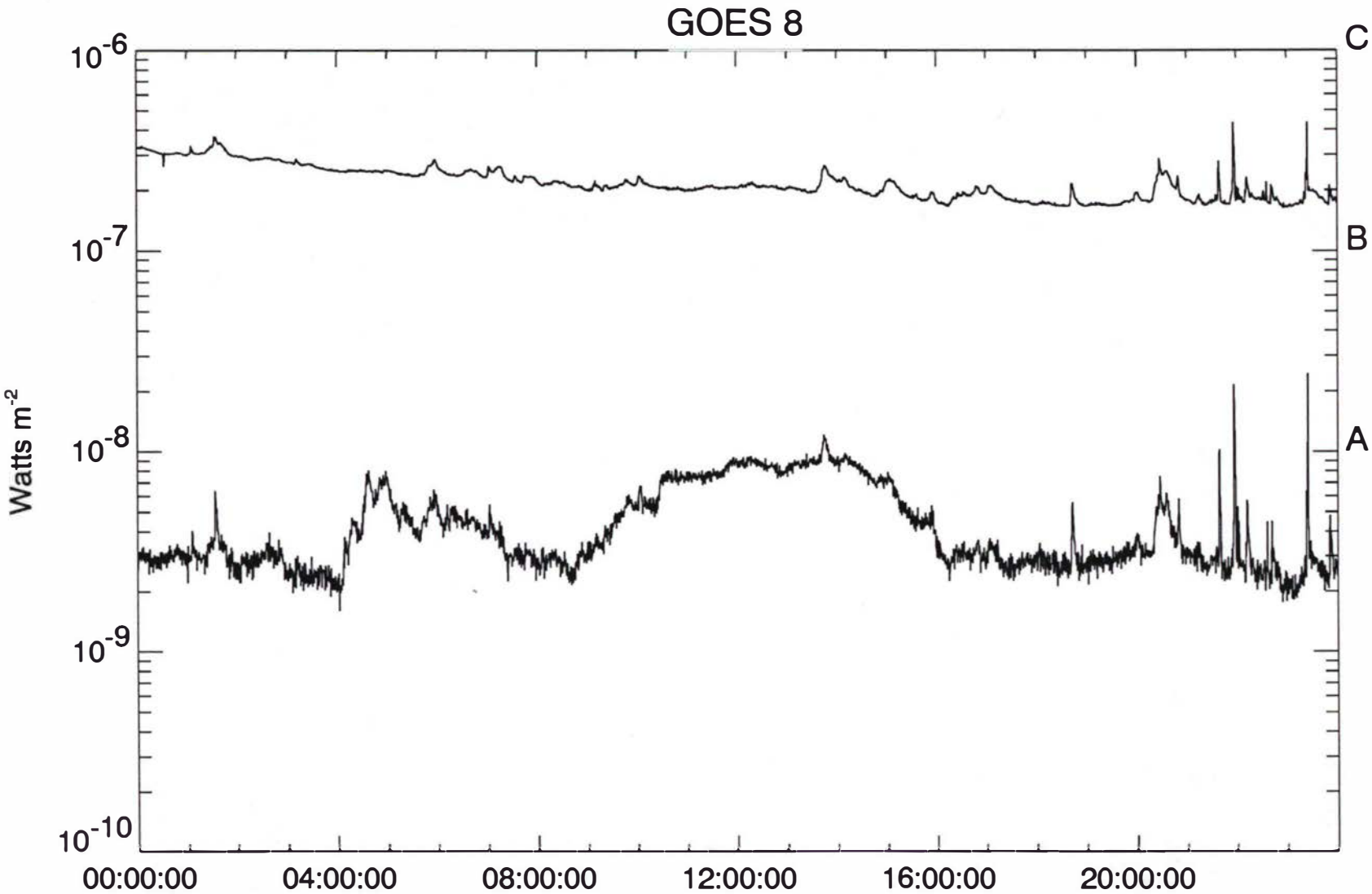




Current Time: 98/04/25, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

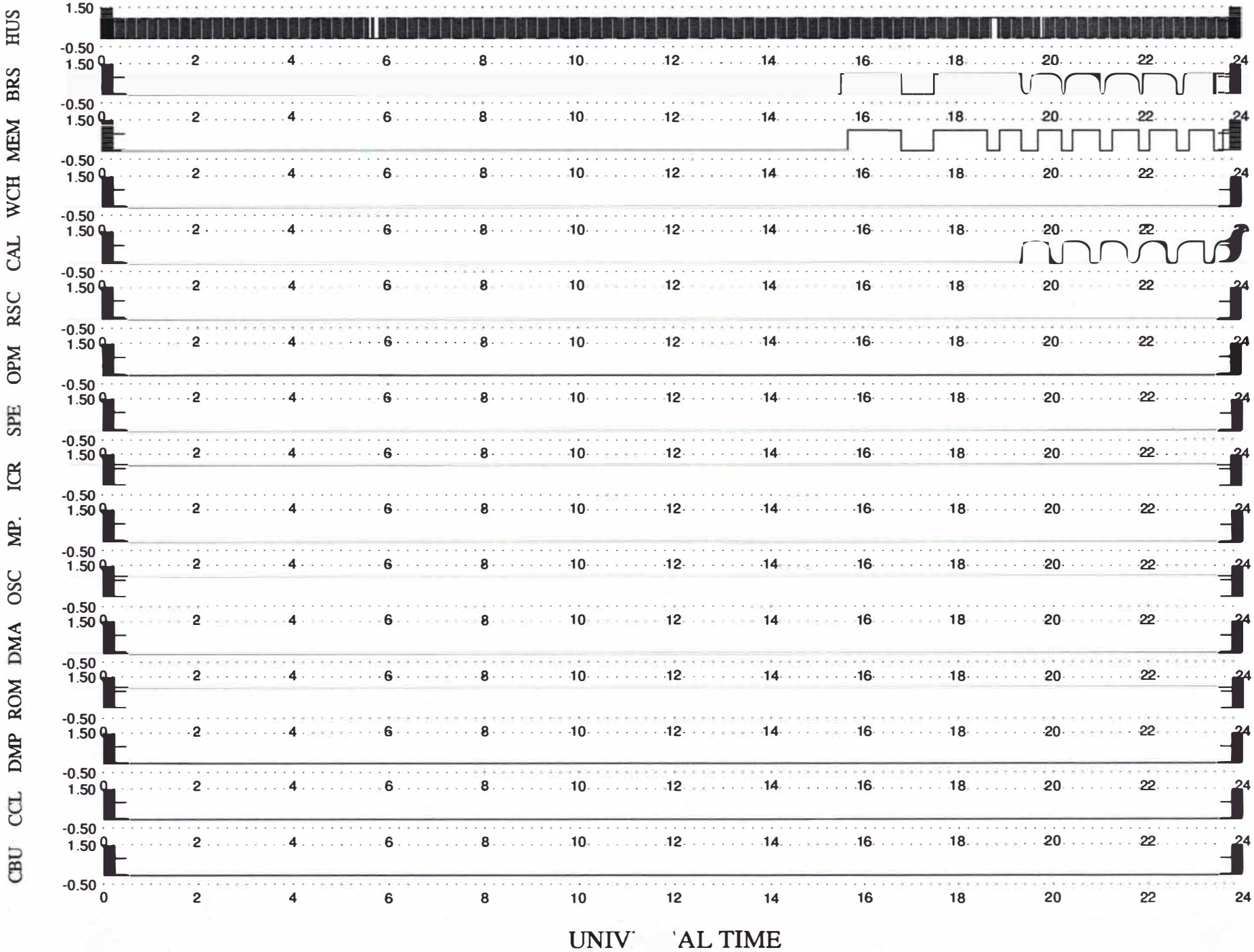
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/21, 0000:00 Plot created: 98/04/25, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

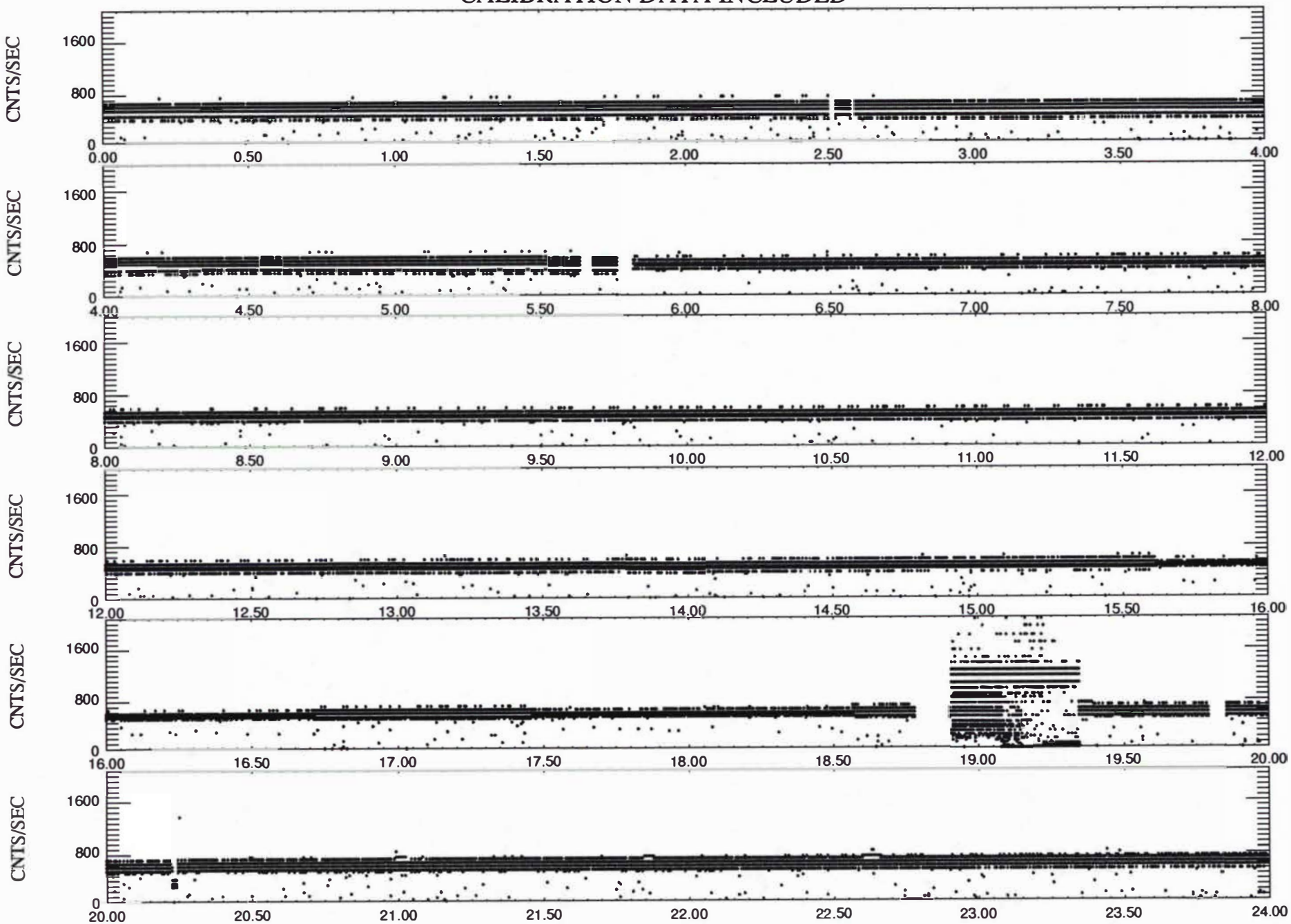
HUS MODES EDR day 111, year 1998 to day 111, year 1998 8/18/98

BURST NUMBER 1 - 9



HUS 2A, MODE 1, NOT AVERAGED EDR day 111, year 1998 to day 111, year 1998 8/18/98

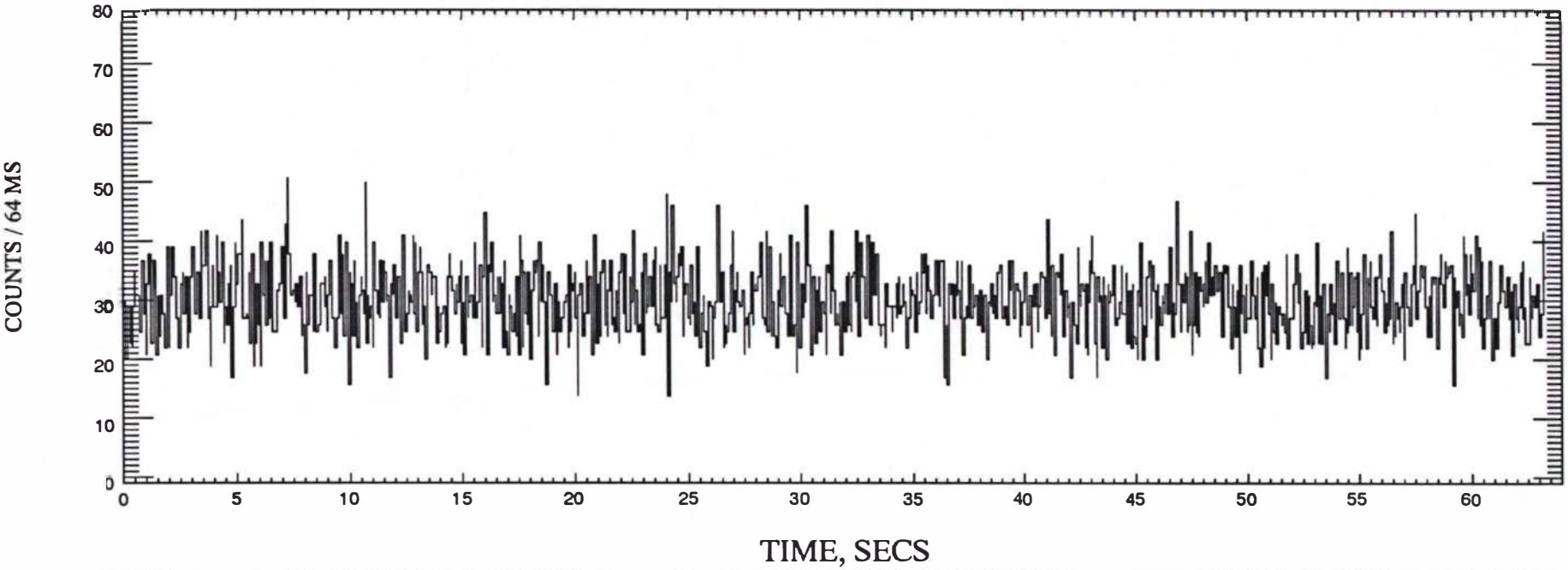
CALIBRATION DATA INCLUDED

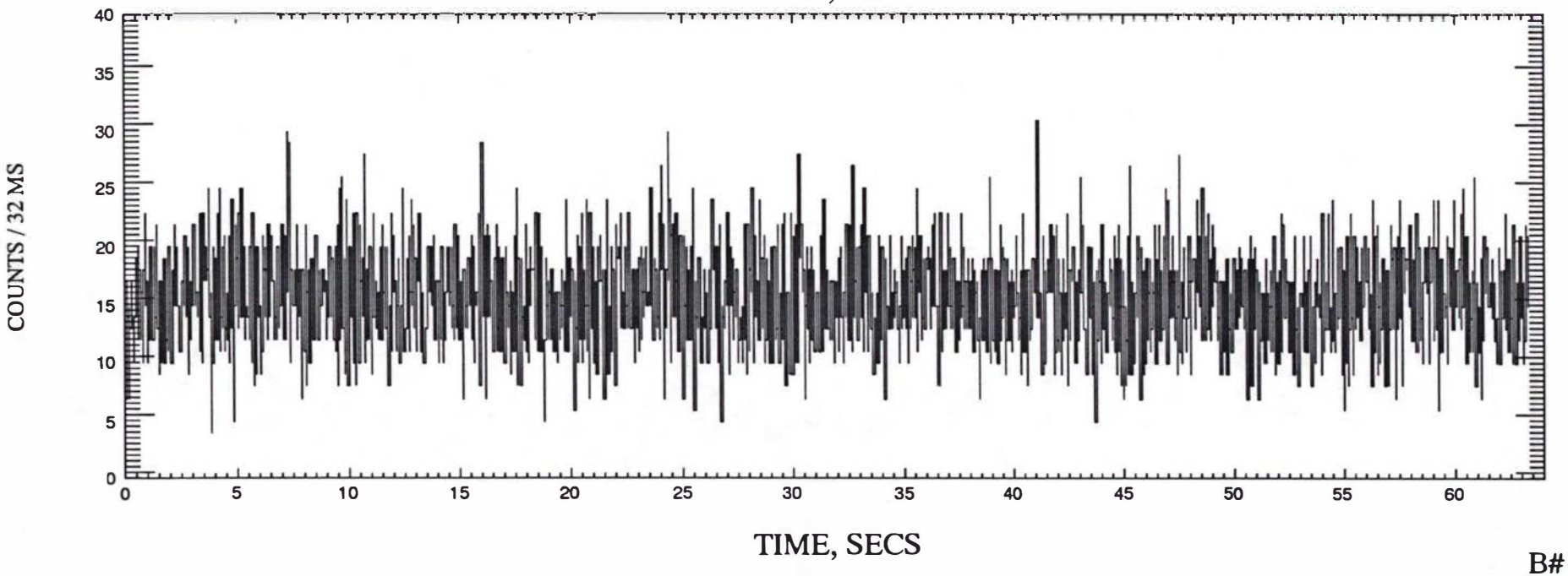


UNIV `AL TIME

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 1 at UT=15.457653168572 h=55647.551 s 15:27:27.551

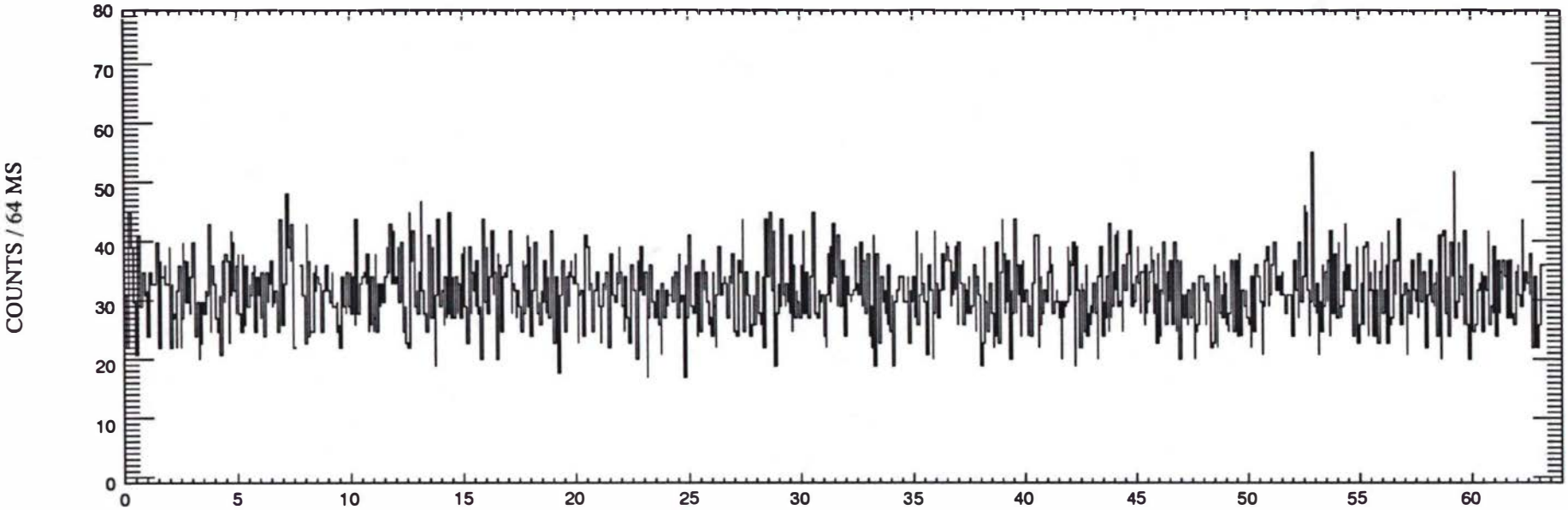


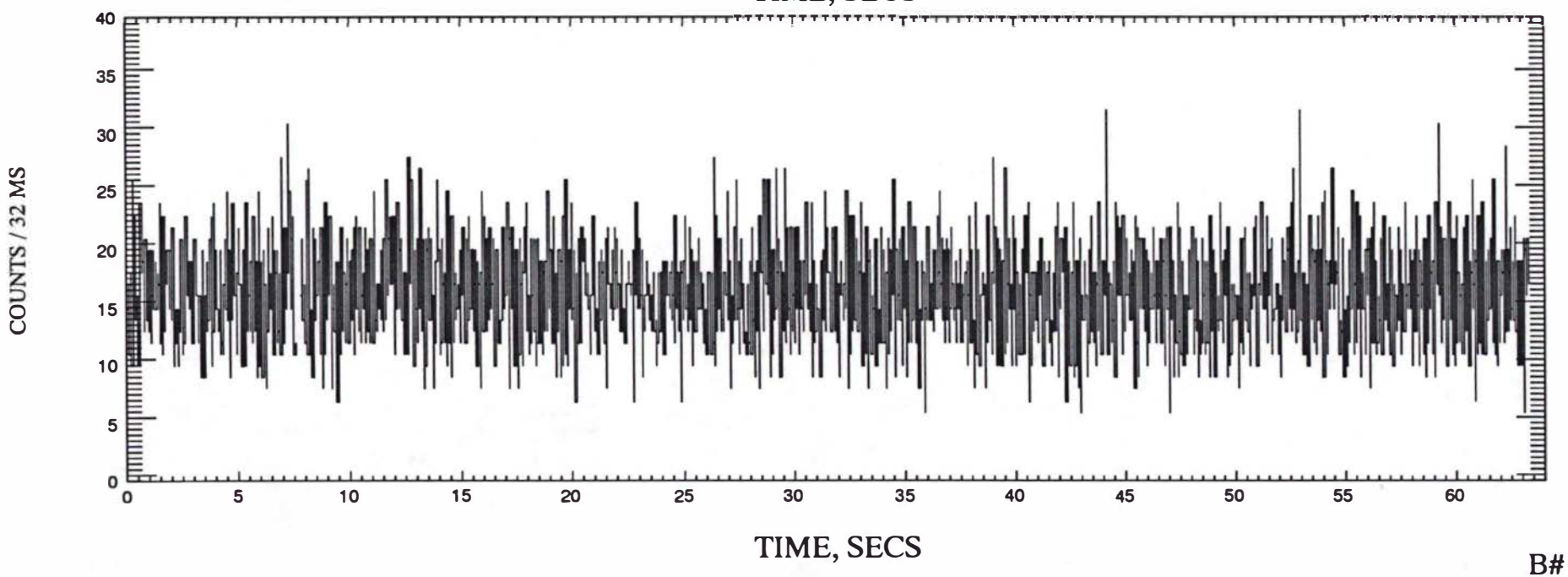


B# 1

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 2 at UT=16.741696794298 h=60270.108 s 16:44:30.108

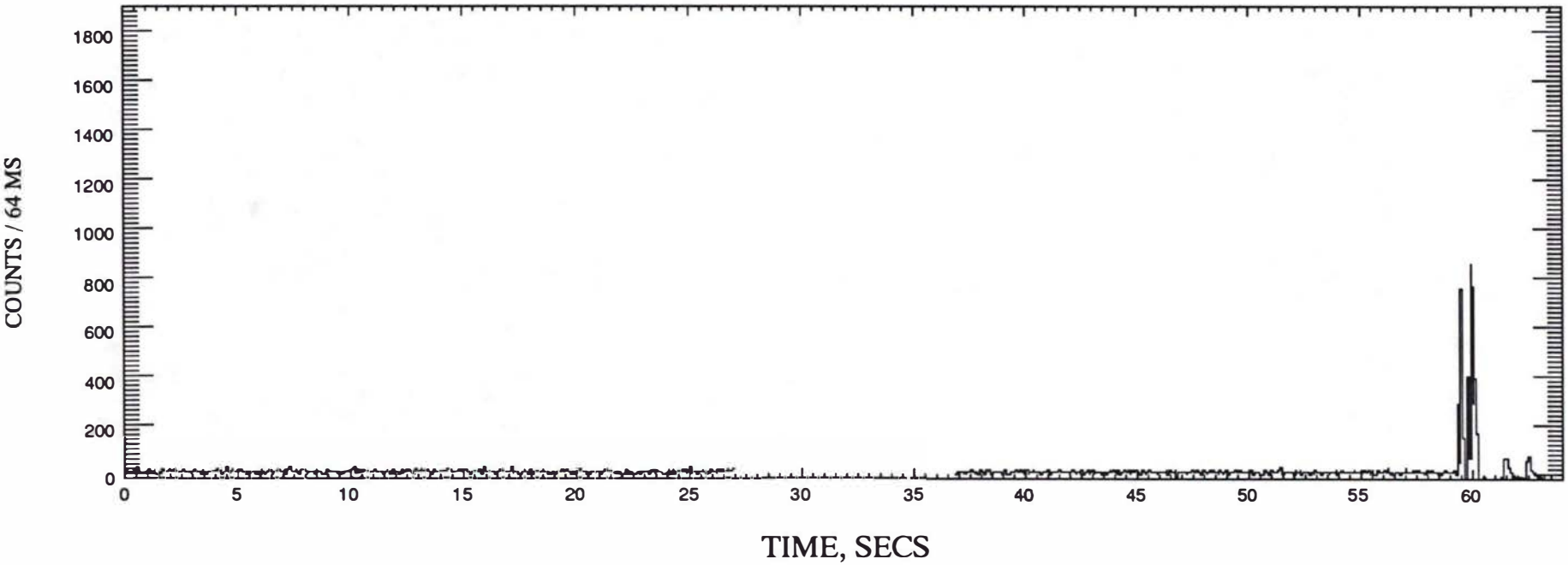


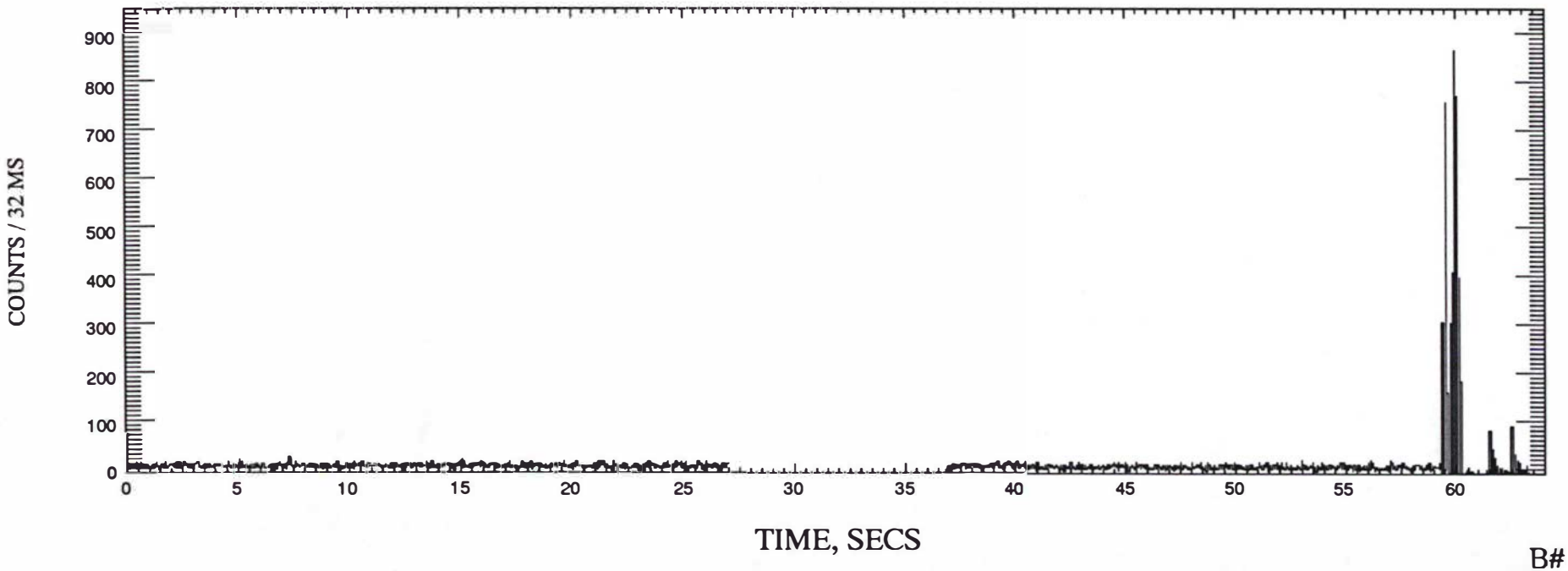


B# 2

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 4 at UT=19.522351421780 h=70280.465 s 19:31:20.465

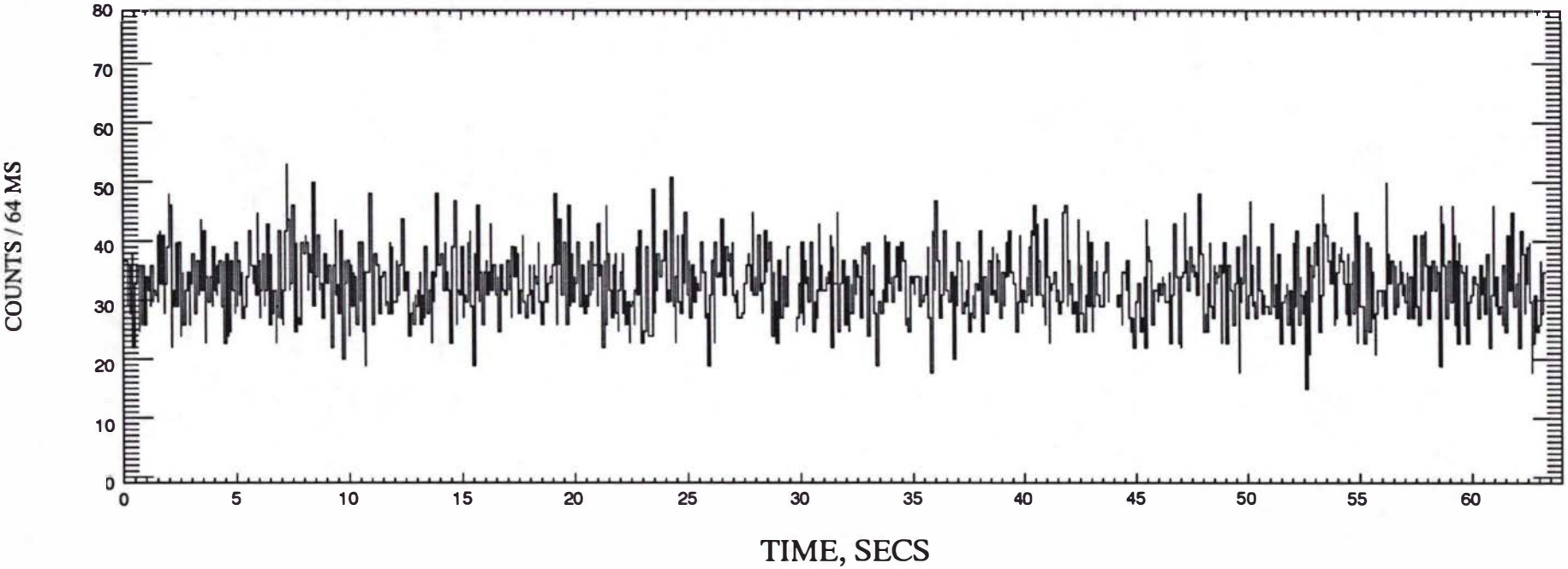


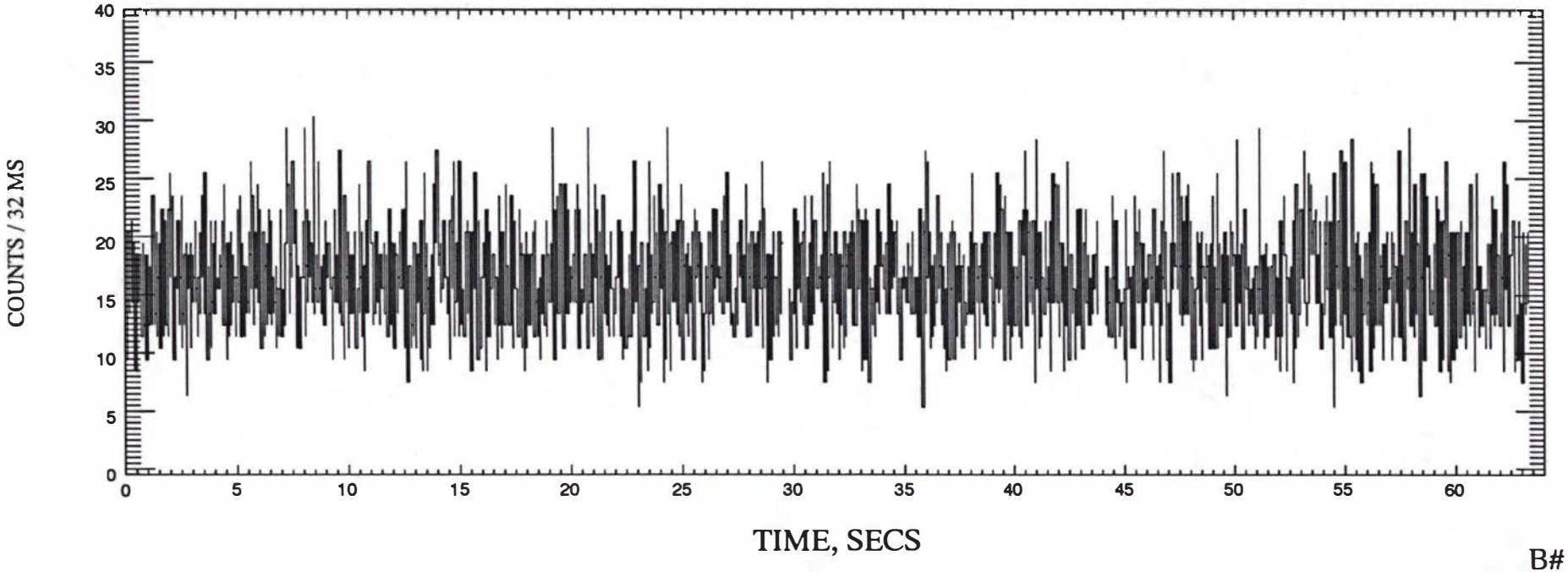


B# 3

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 5 at UT=20.286803652445 h=73032.493 s 20:17:12.493

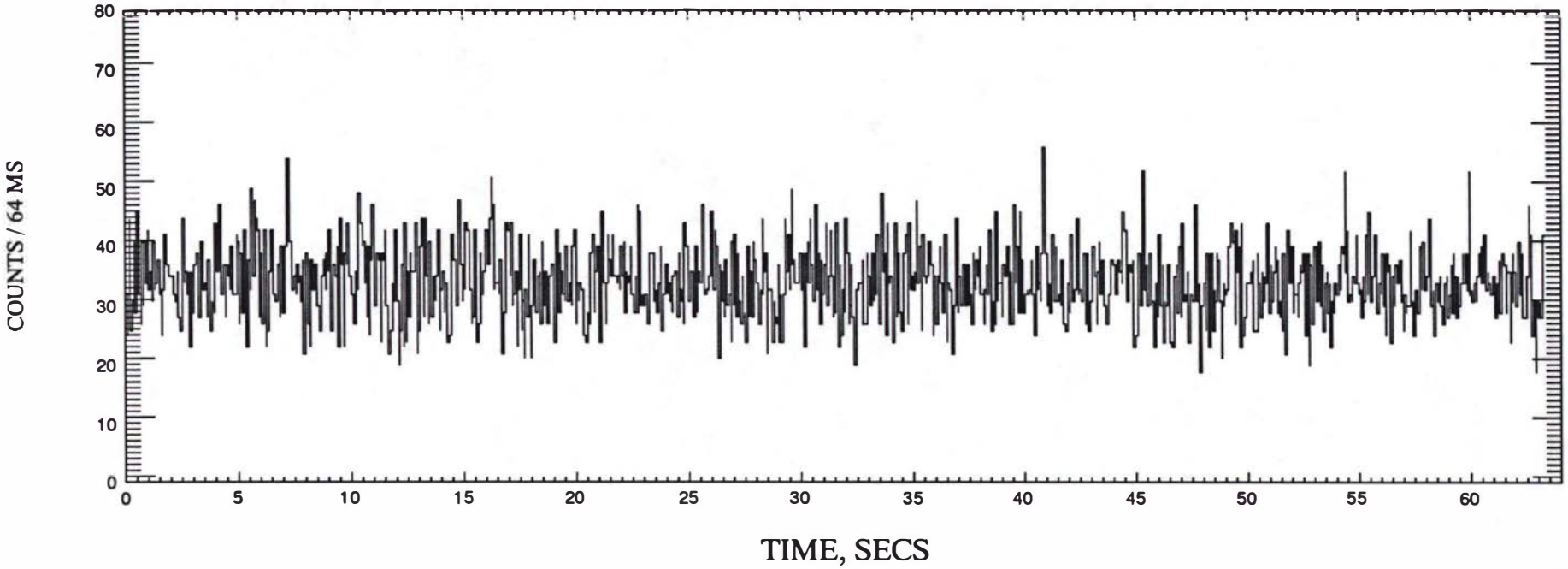


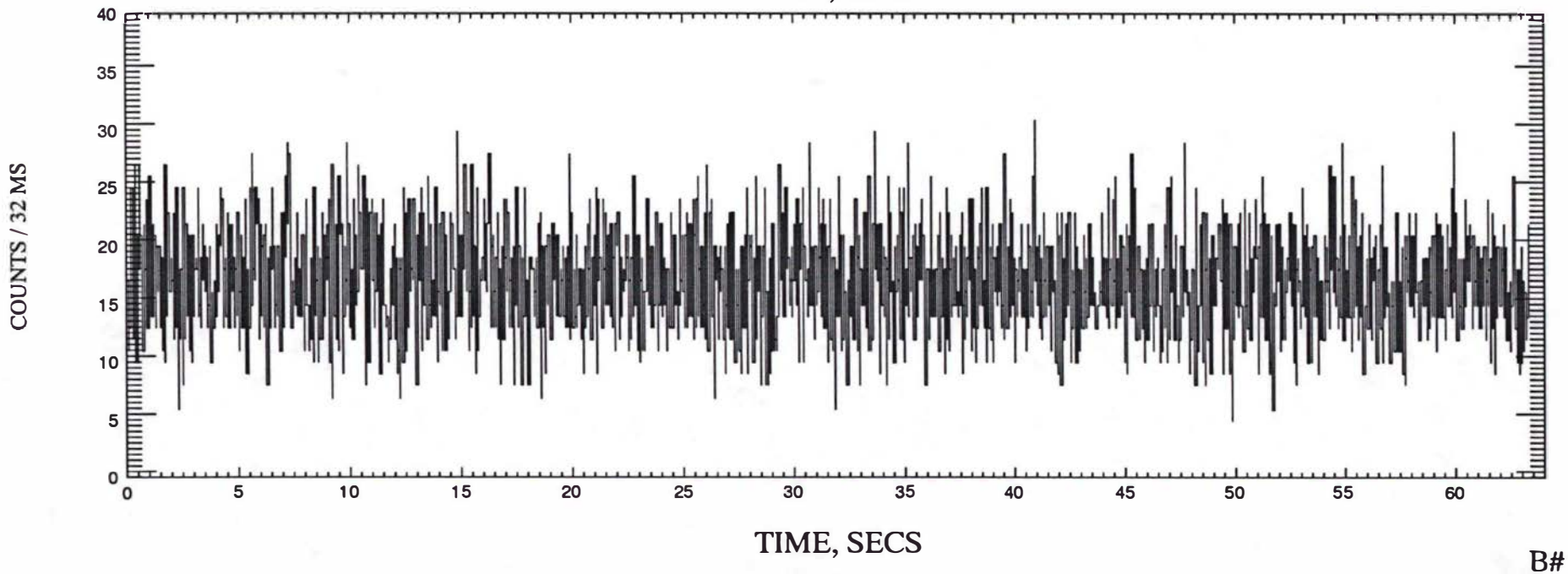


B# 4

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 6 at UT=21.135528047350 h=76087.901 s 21:08:07.901

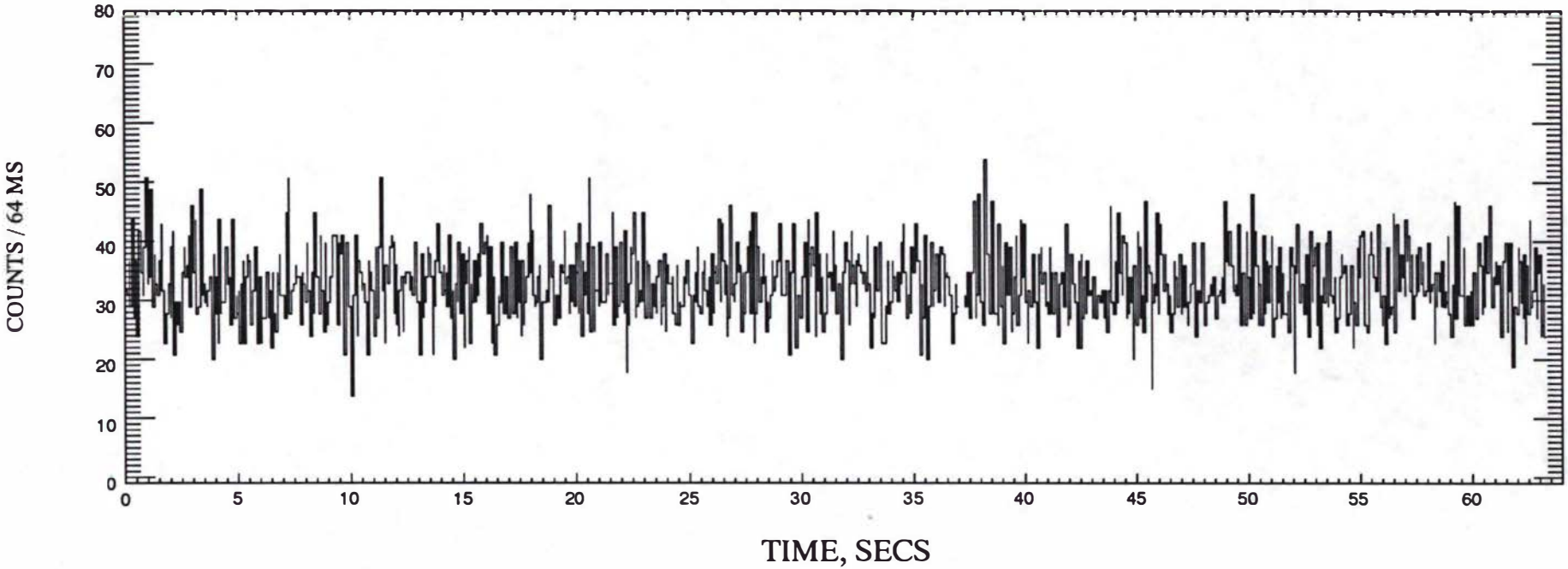


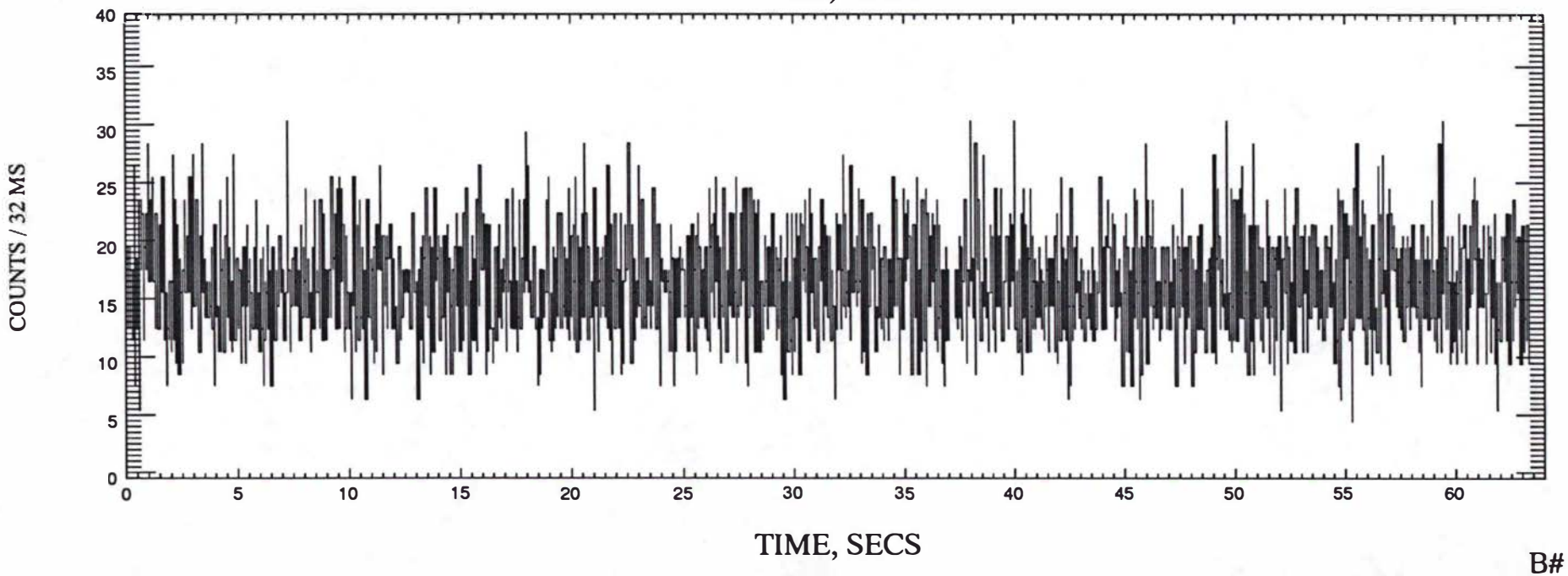


B# 5

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 7 at UT=21.894008627998 h=78818.431 s 21:53:38.431

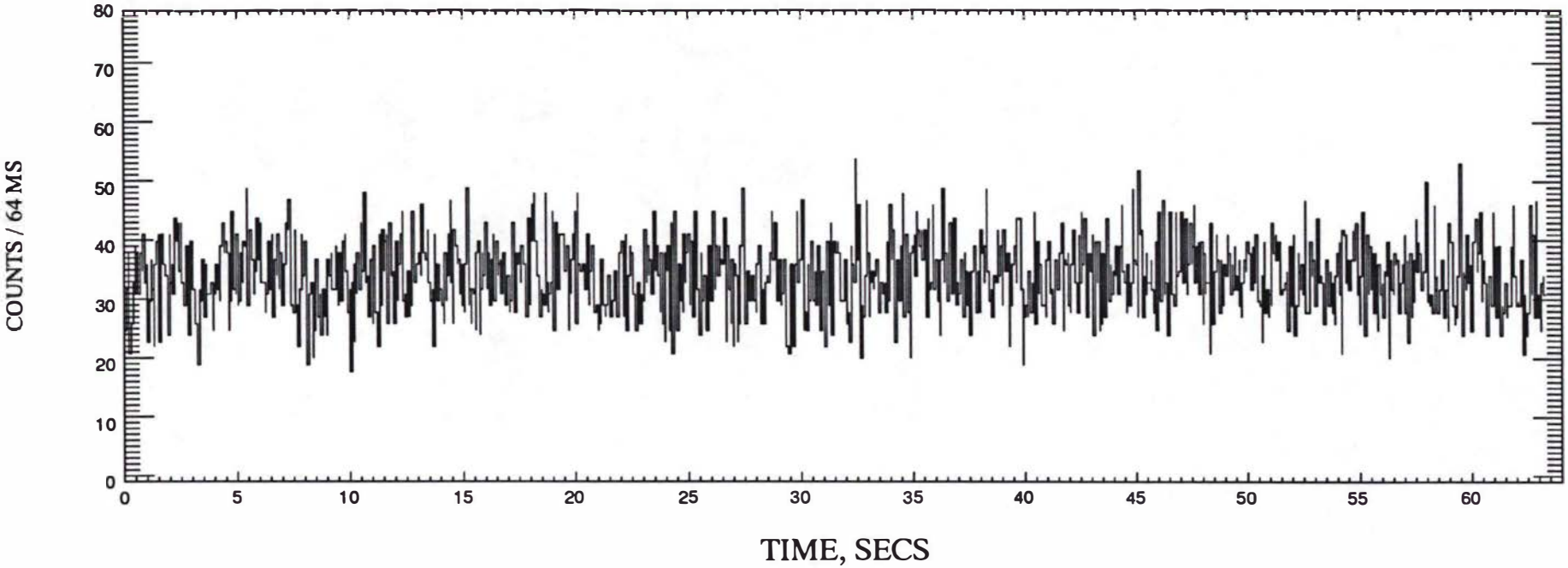


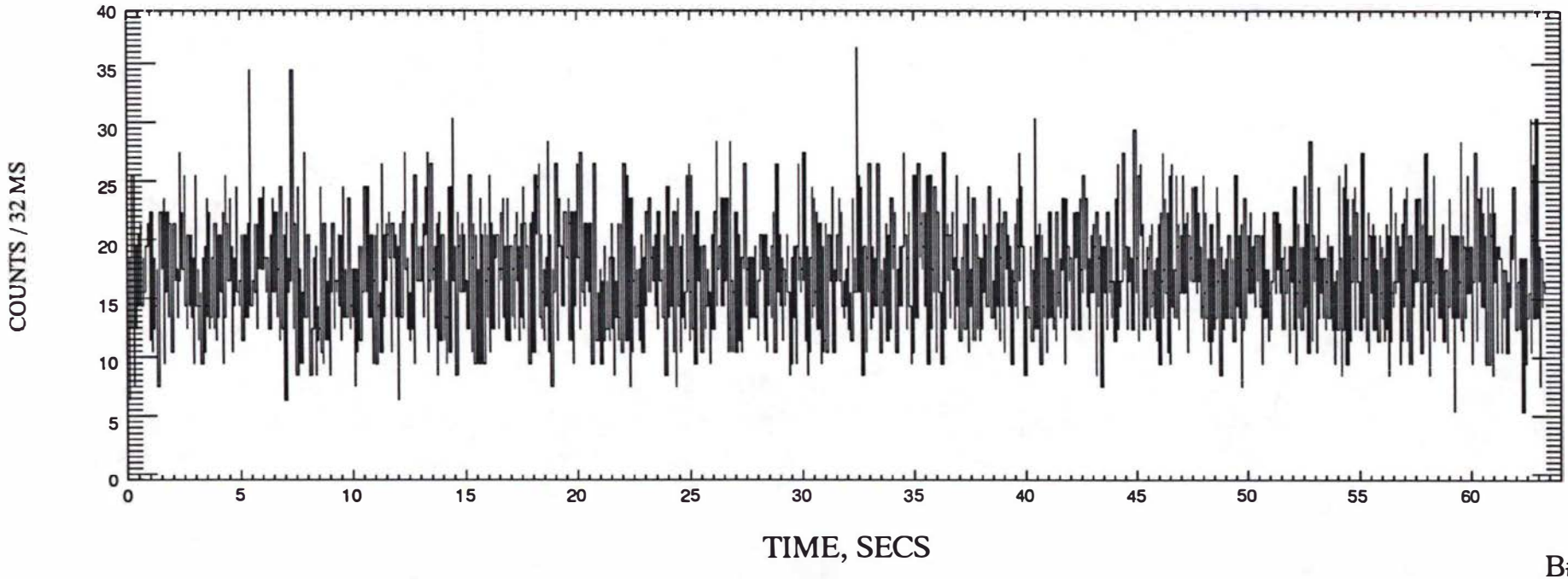


B# 6

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

Burst Counter 8 at UT=22.725473904080 h=81811.706 s 22:43:31.706

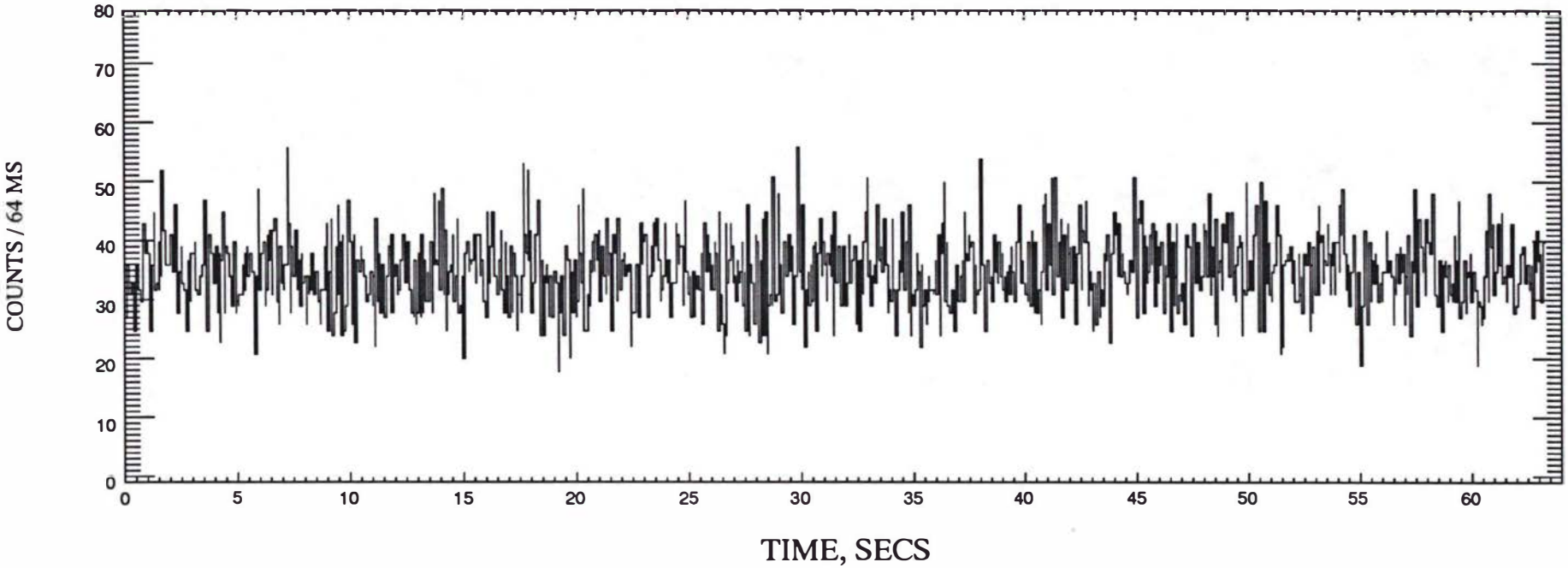


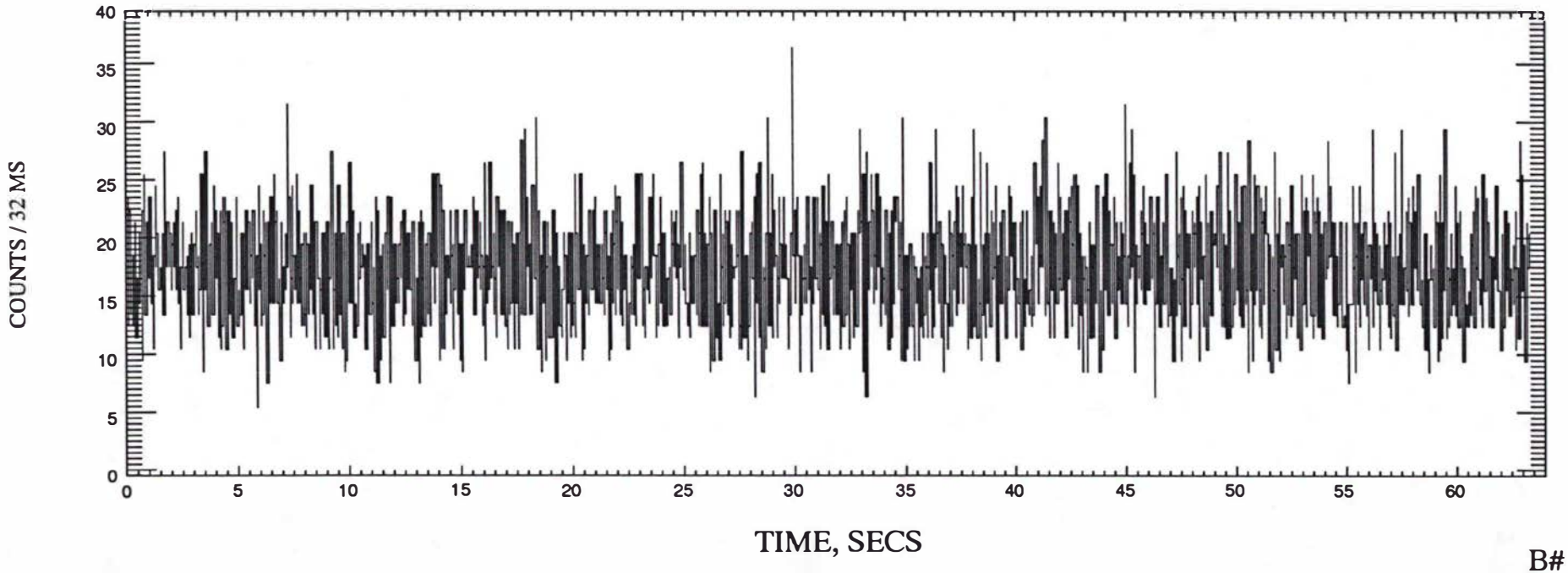


B# 7

HUS 2A TRIGGERED DATA QEDR day 111, year 1998 4/22/98

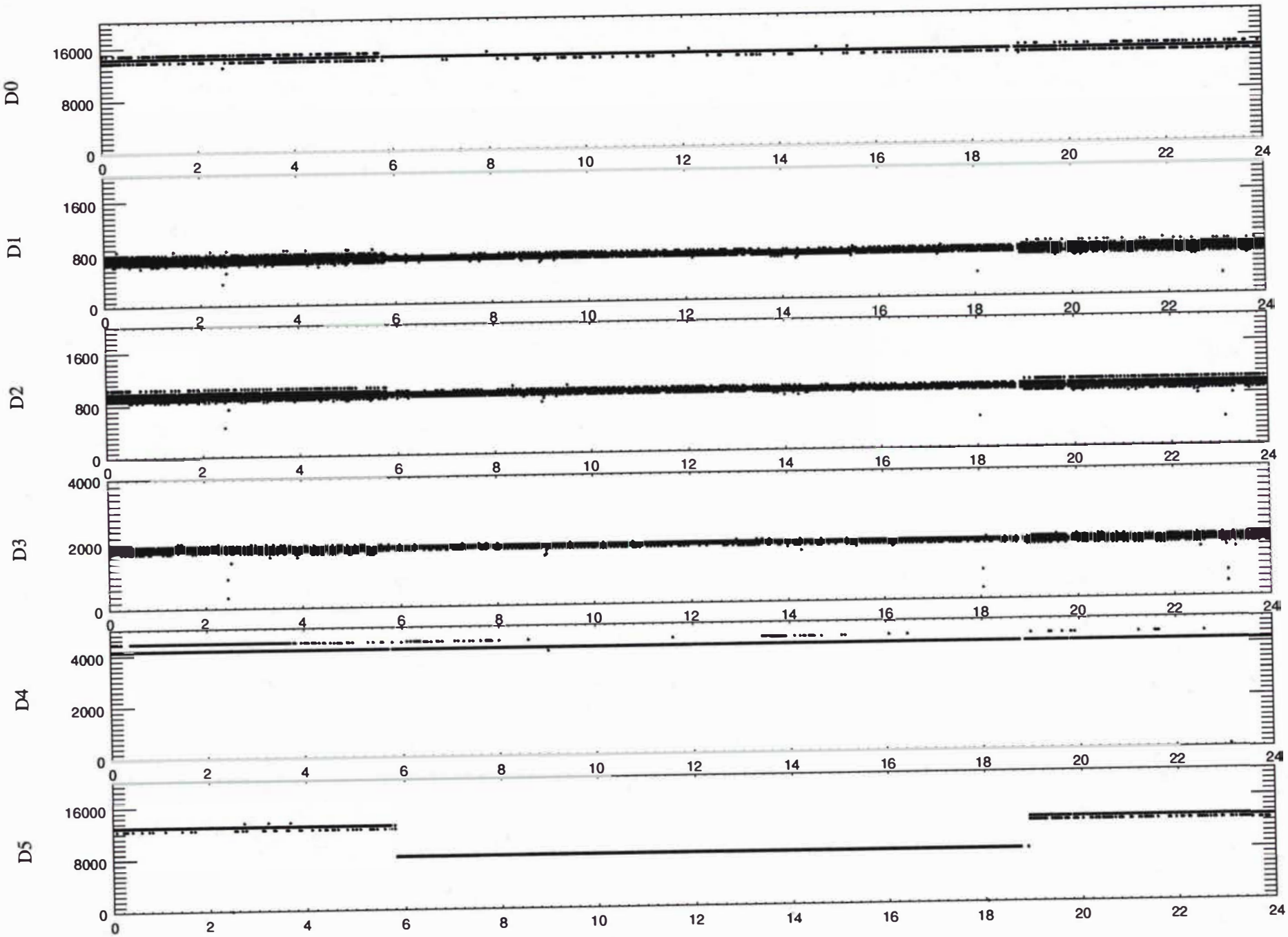
Burst Counter 9 at UT=23.432948951721 h=84358.616 s 23:25:58.616





B# 8

HUS 2B COUNTS / SEC EDR day 111, year 1998 to day 111, year 1998 8/18/98



From SAHI@fender.msfc.nasa.gov Fri Apr 24 12:30:10 1998
Return-Path: <SAHI@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA08680; Fri, 24 Apr 1998 12:30:09 -0700
From: SAHI@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id MAA19490; Fri, 24 Apr 1998 12:30:08 -0700
Date: Fri, 24 Apr 1998 14:29:07 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980424142907.20e29970@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6699
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6699
EVENT OF 1998 APR 22 DAY OF YEAR=112
EVENT CROSSING TIME AT BATSE      : 56412. S. OR 15:40:12.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 266.000    1.000
BATSE PEAK COUNTING RATE:   1100    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 22/ 4/  98 IS:
RA=  150.099 DEC=   13.081 DIST=    4.906 AU
BATSE-ULYSSES DISTANCE =  733867926. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 65.07 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1031.73 SECS.
CROSSING TIME AT ULYSSES    IS 57444. S. OR   15:57:23 +/-  451.07 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 22/ 4/  98 IS:
RA=   34.393 DEC=   13.571 DIST=    2.450 AU
MARS-BATSE DISTANCE =  366497280. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 53.16 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  732.92 SECS.
CROSSING TIME AT MARS       IS 57145. S. OR   15:52:24 +/-  181.00 SECONDS

                BATSE BURST TRIGGER
NO.: 6699

TIME: TJD=0925 SECONDS=56412

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=96.4   AZIMUTH=144.2  ERROR=7.5   DEGREES

COMMENTS:
BURST, SINGLE PULSE DUR. APPROX. 10 SECS, STARTS AT T-2 SECS, POSSIBLY EXTENDED
EMISSION THROUGH T+25 SECS. NOT VISIBLE ABOVE 300 KEV.

 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6699   980422   10925   56412     1100   266   +01     10
```

BATSE BURST# 6699

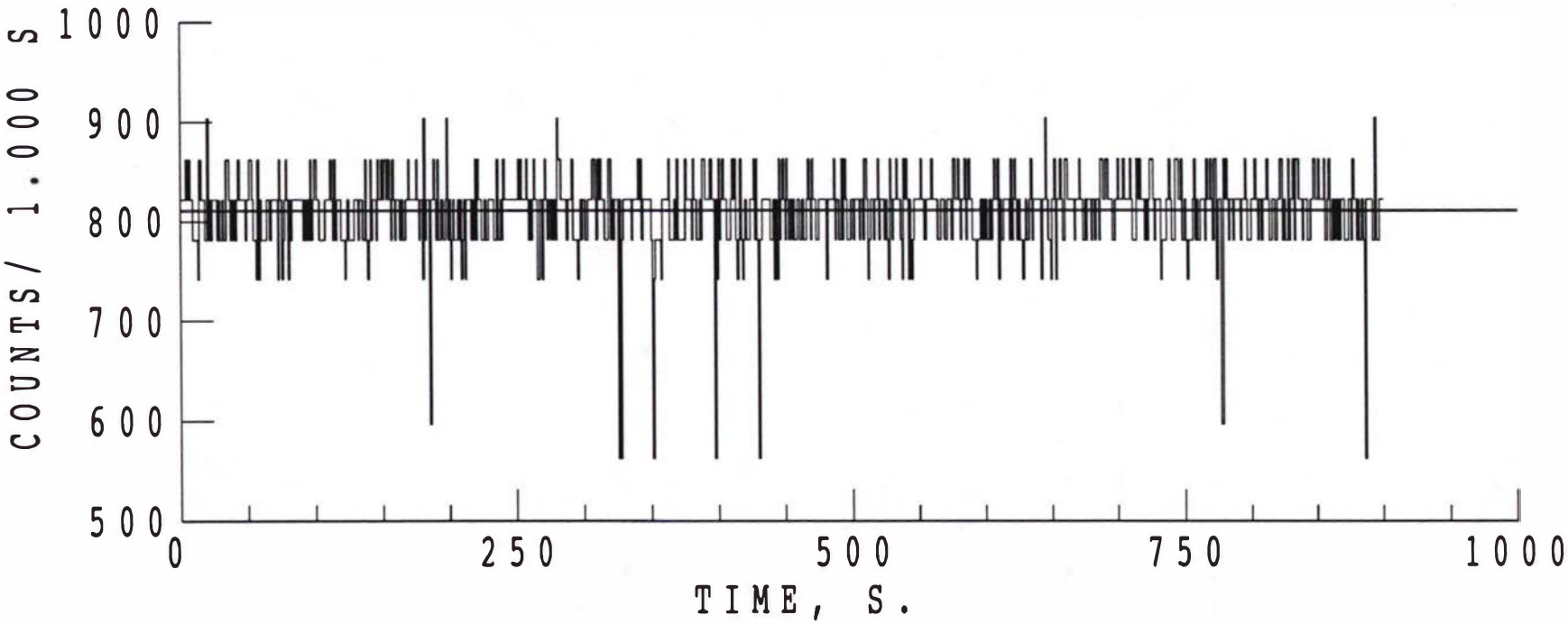
ULYSSES RT 24/ 4/98

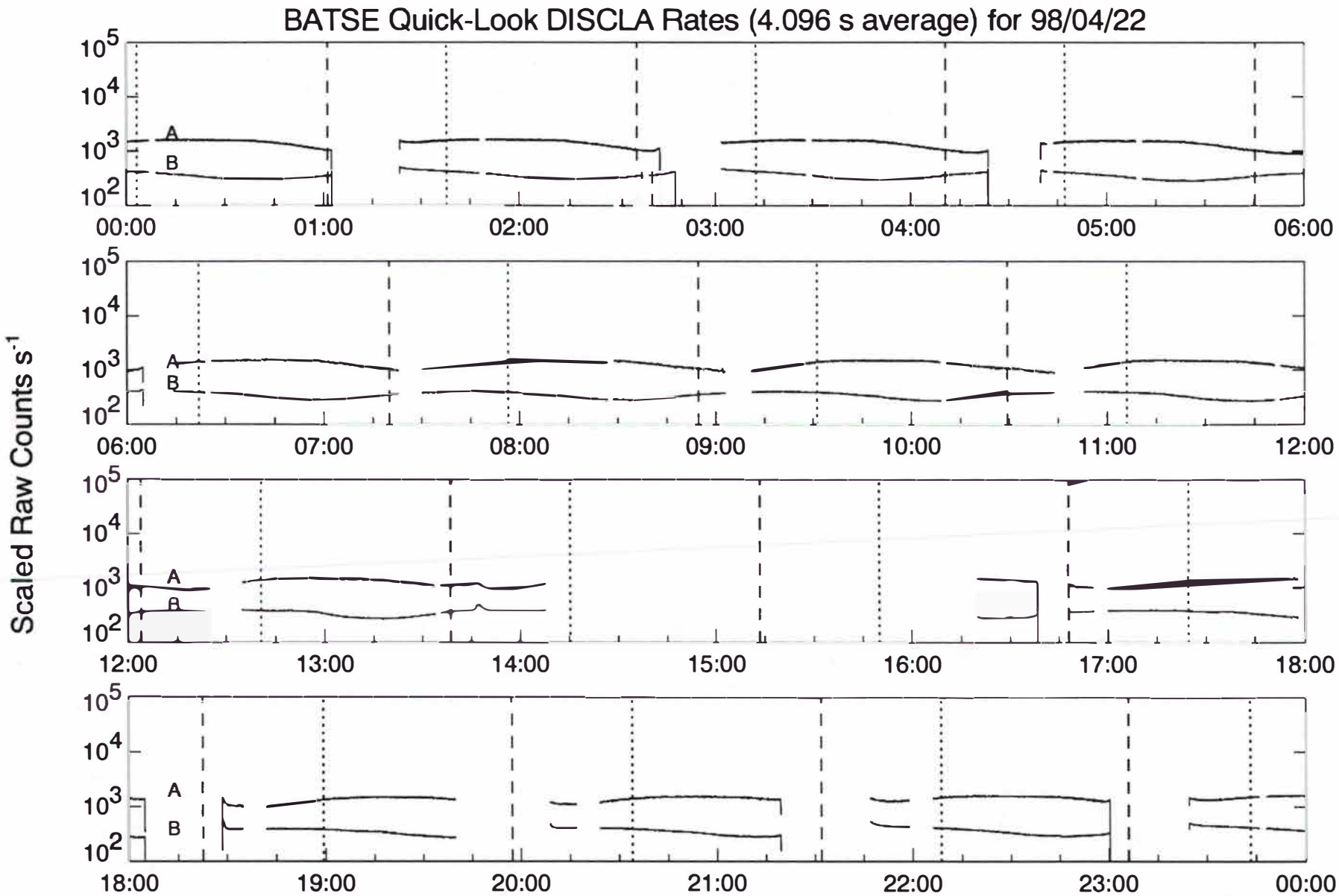
22/ 4/98 56988.375 s

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS

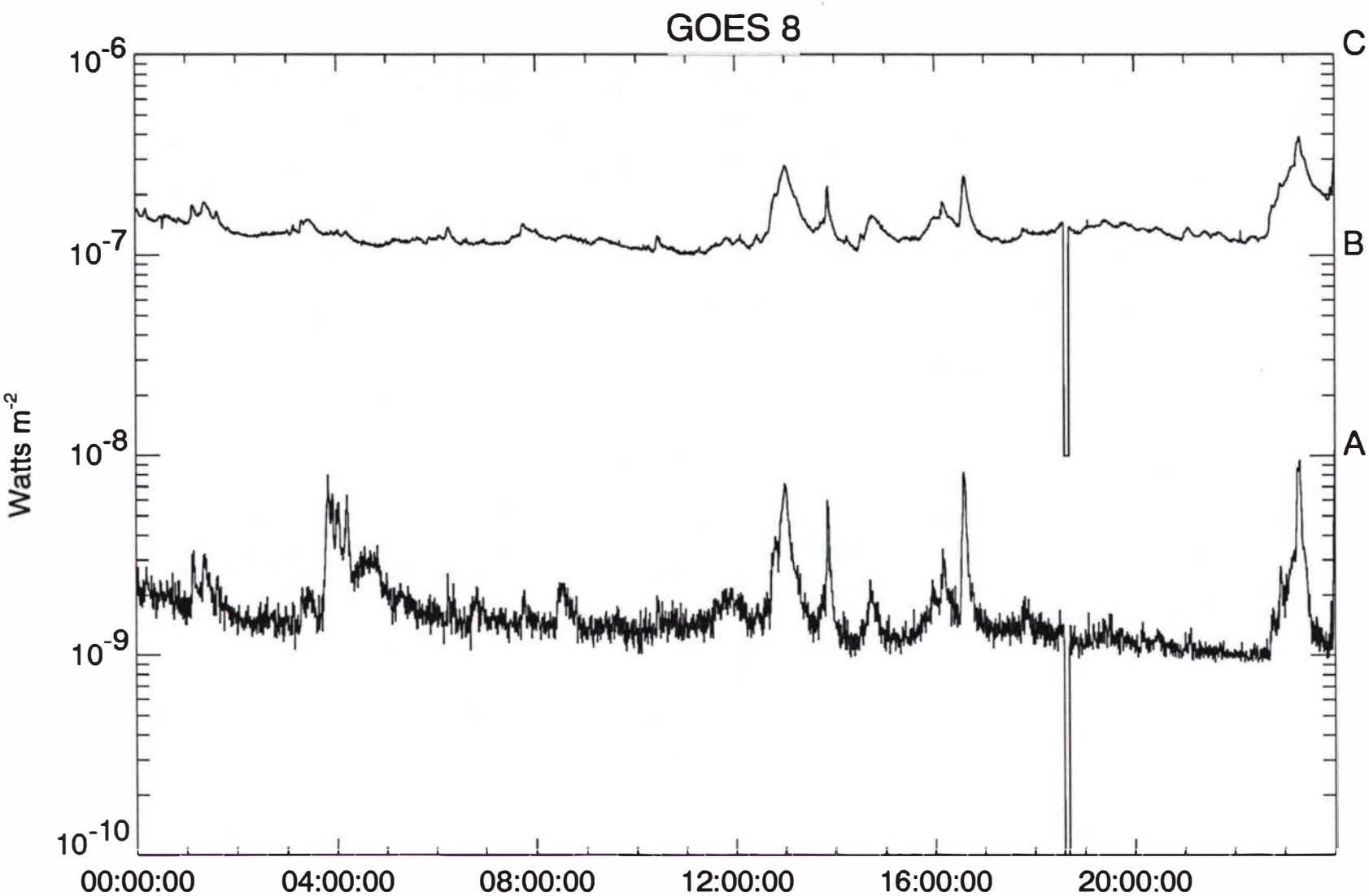




Current Time: 98/04/26, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

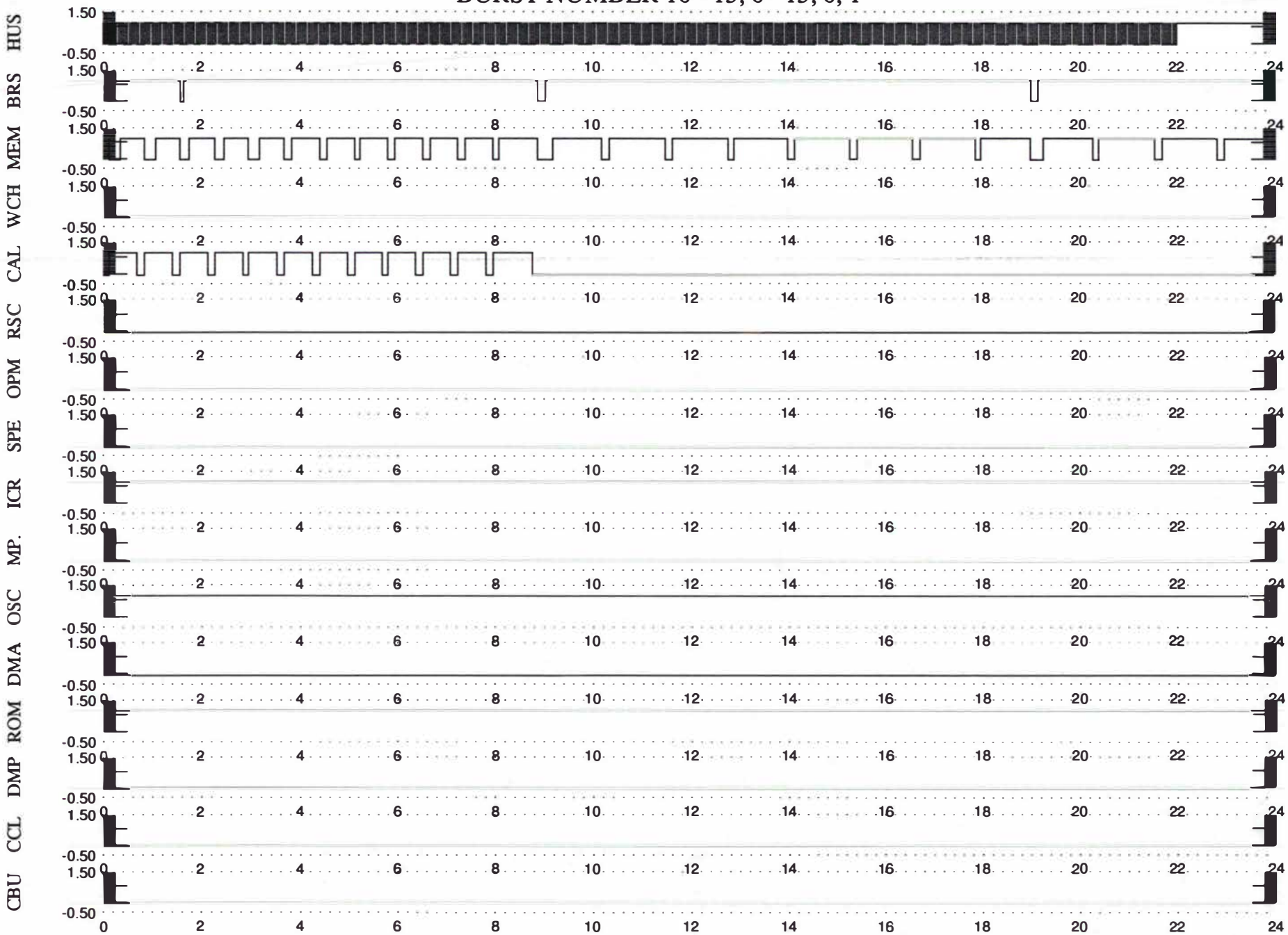
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/22, 0000:00 Plot created: 98/04/26, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

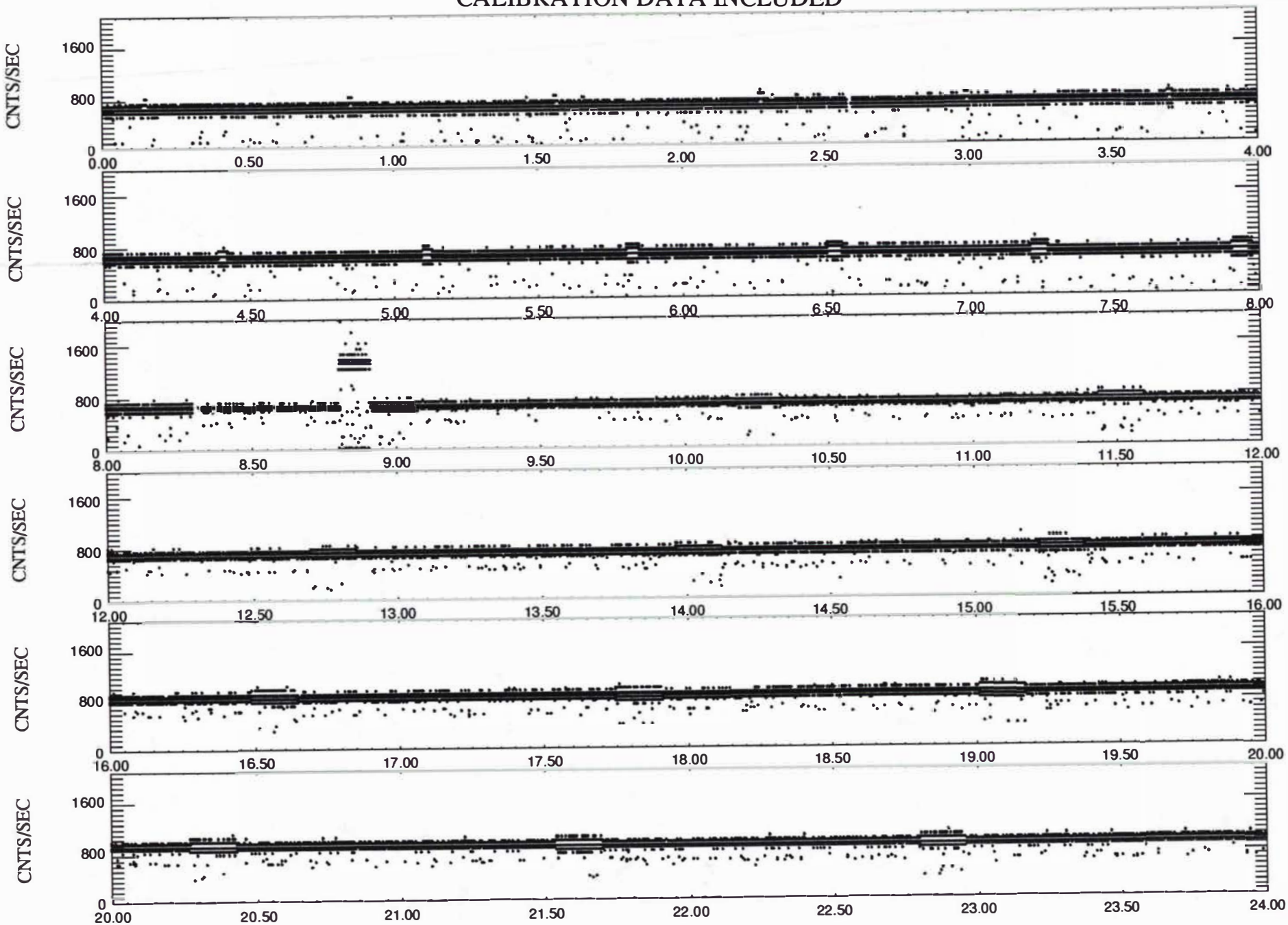
HUS MODES EDR day 112, year 1998 to day 112, year 1998 8/18/98

BURST NUMBER 10 - 15, 0 - 15, 0, 1



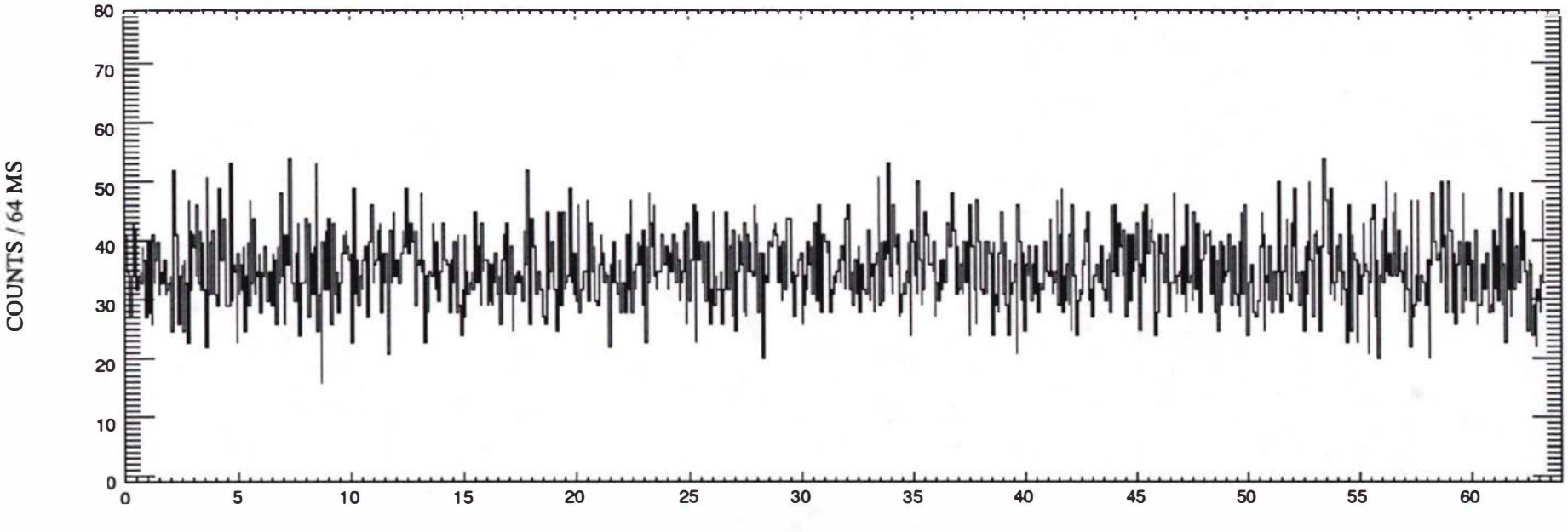
HUS 2A, MODE 1, NOT AVERAGED EDR day 112, year 1998 to day 112, year 1998 8/18/98

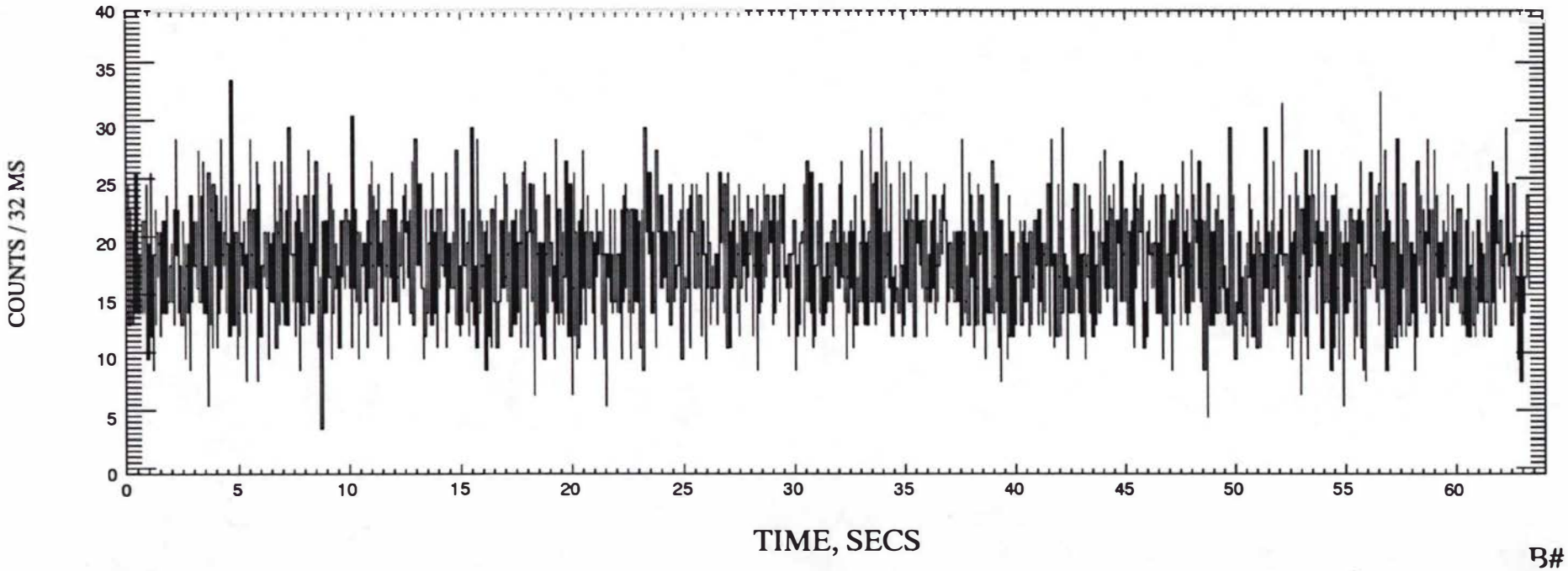
CALIBRATION DATA INCLUDED



HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 10 at UT= 0.140457958645 h= 505.649 s 00:08:25.649

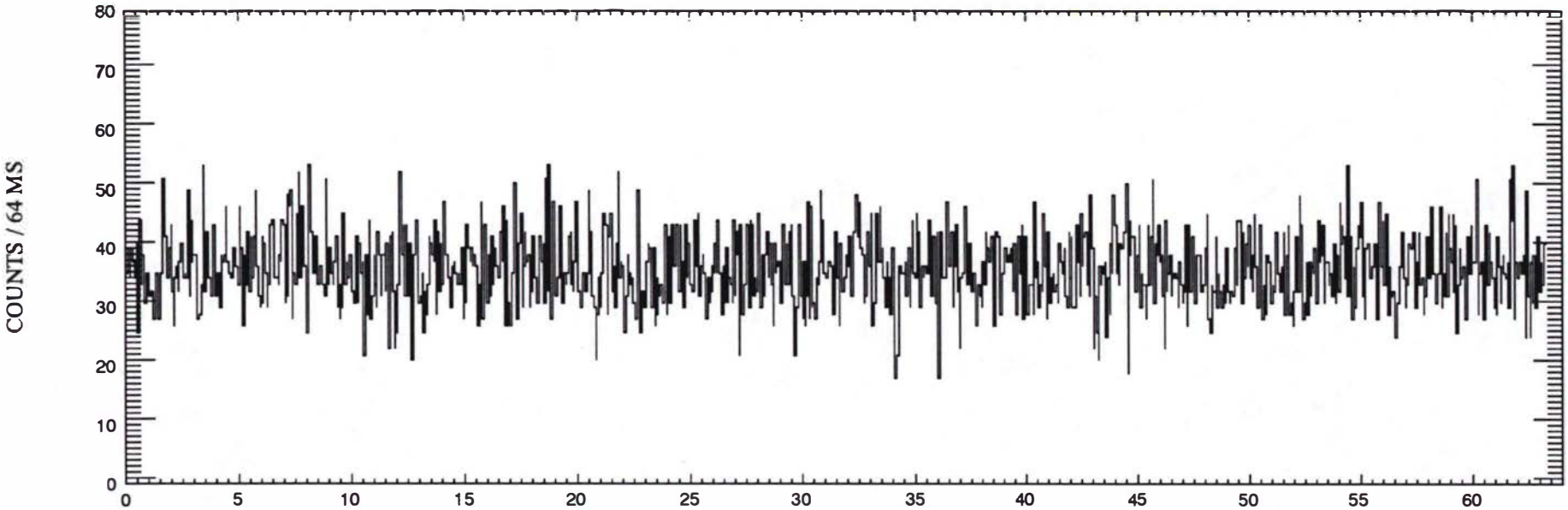




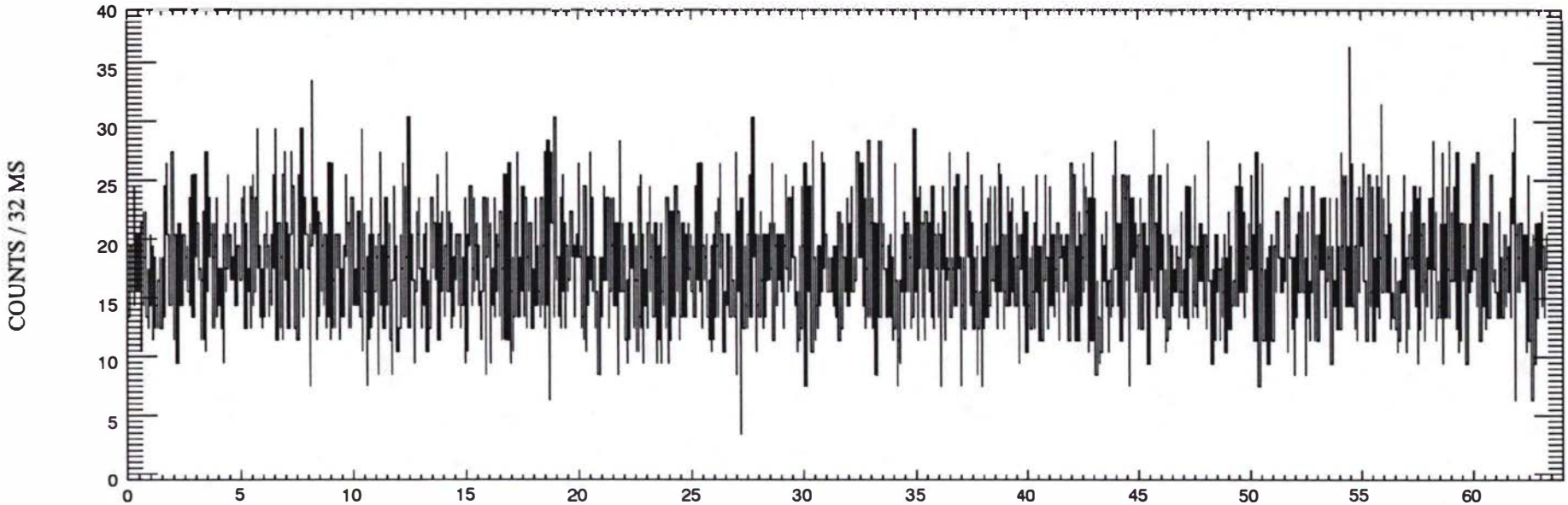
B# 1

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 11 at UT= 0.852199495104 h= 3067.918 s 00:51:07.918



TIME, SECS

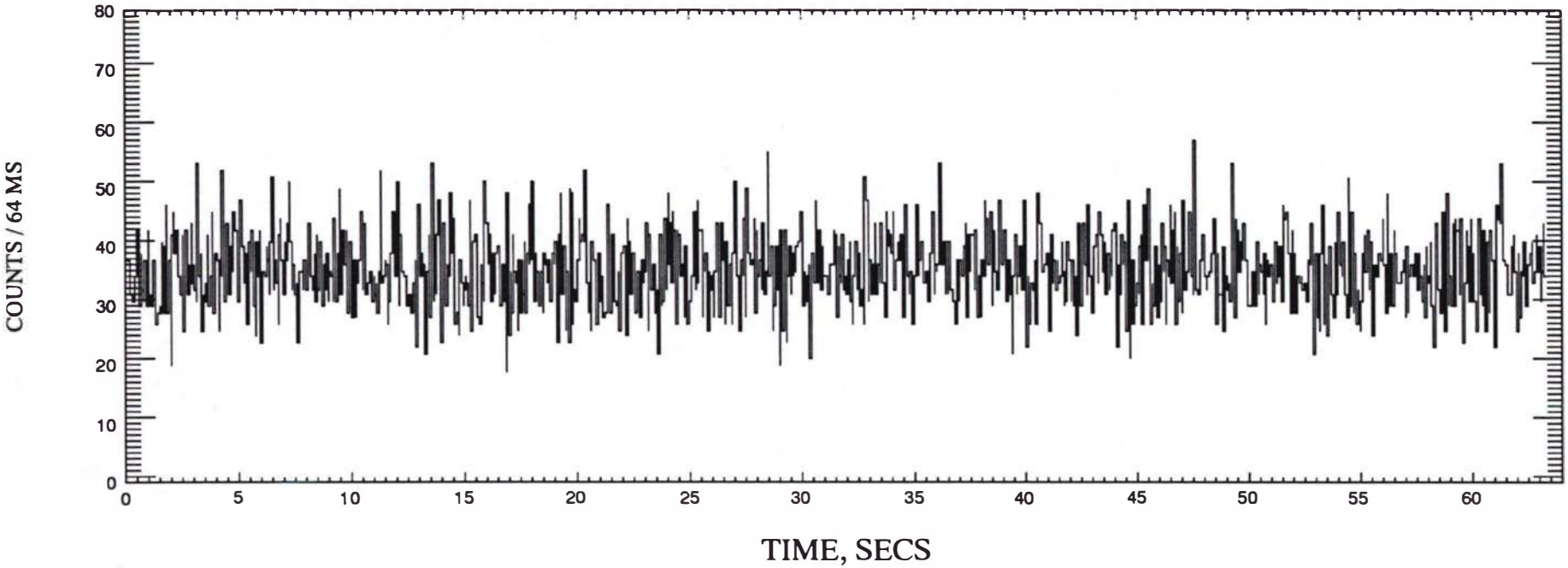


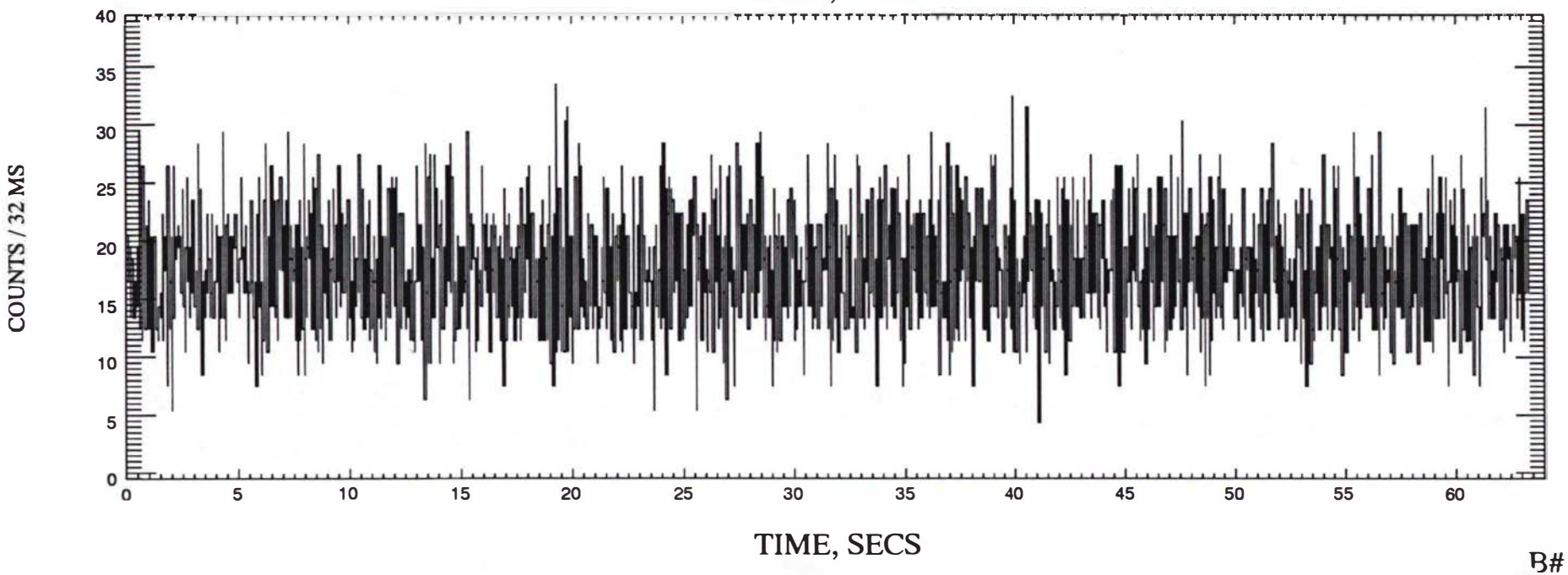
TIME, SECS

B# 2

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 12 at UT= 1.569189190335 h= 5649.081 s 01:34:09.081

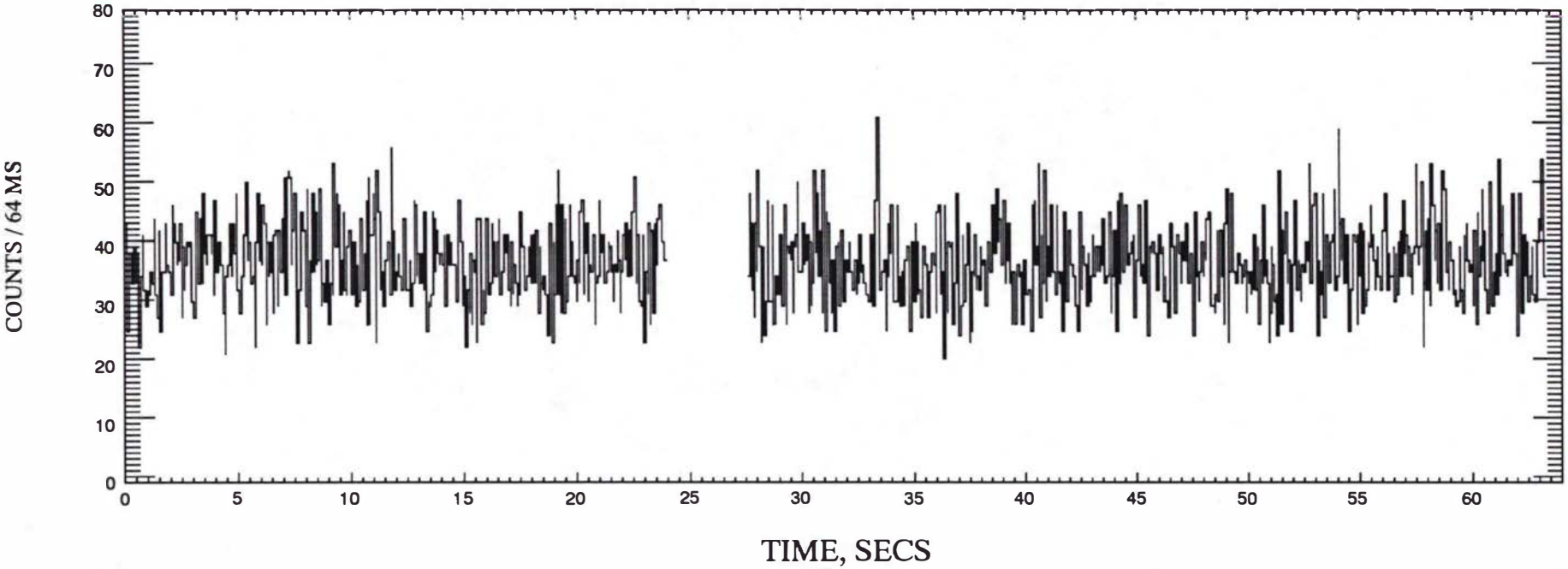


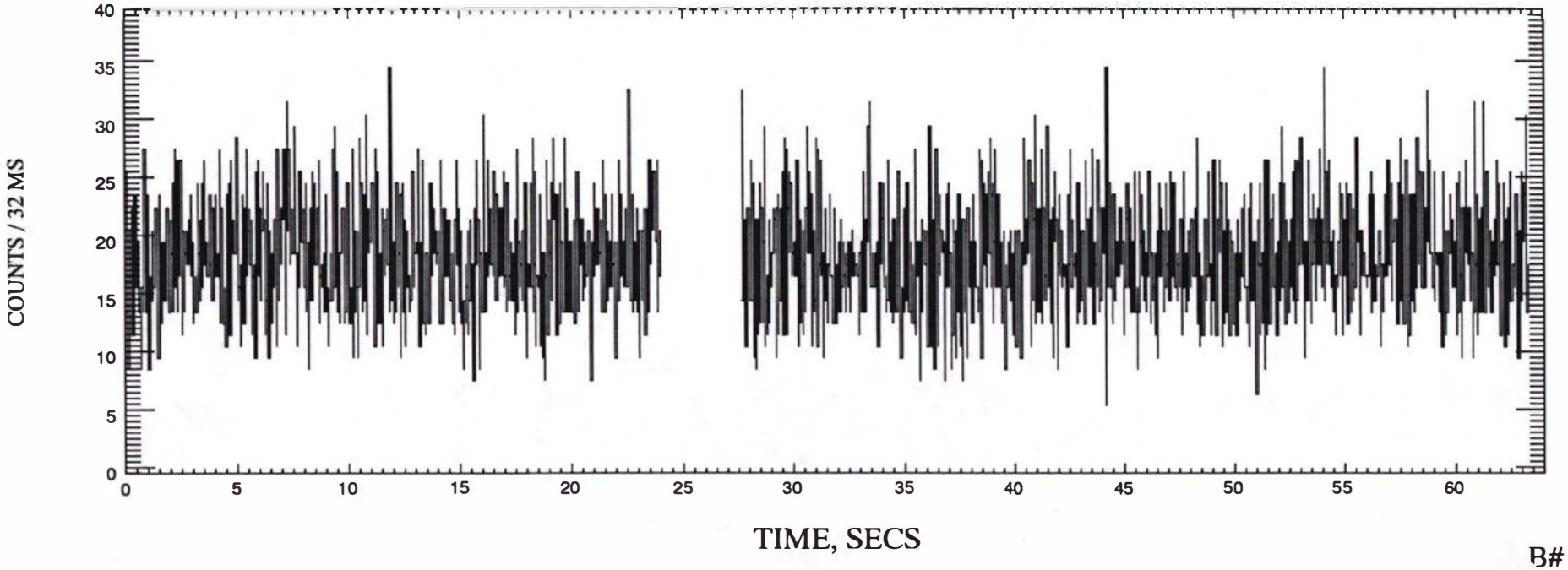


B# 3

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 13 at UT= 2.273985523648 h= 8186.348 s 02:16:26.348

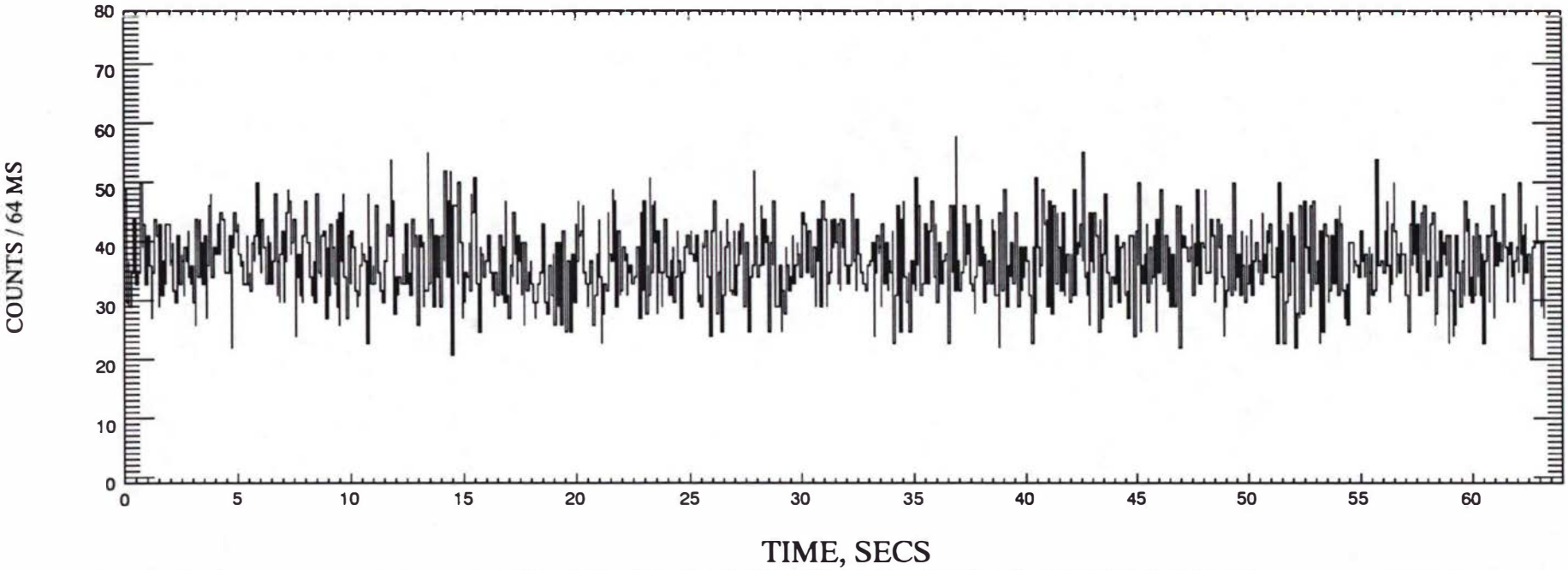


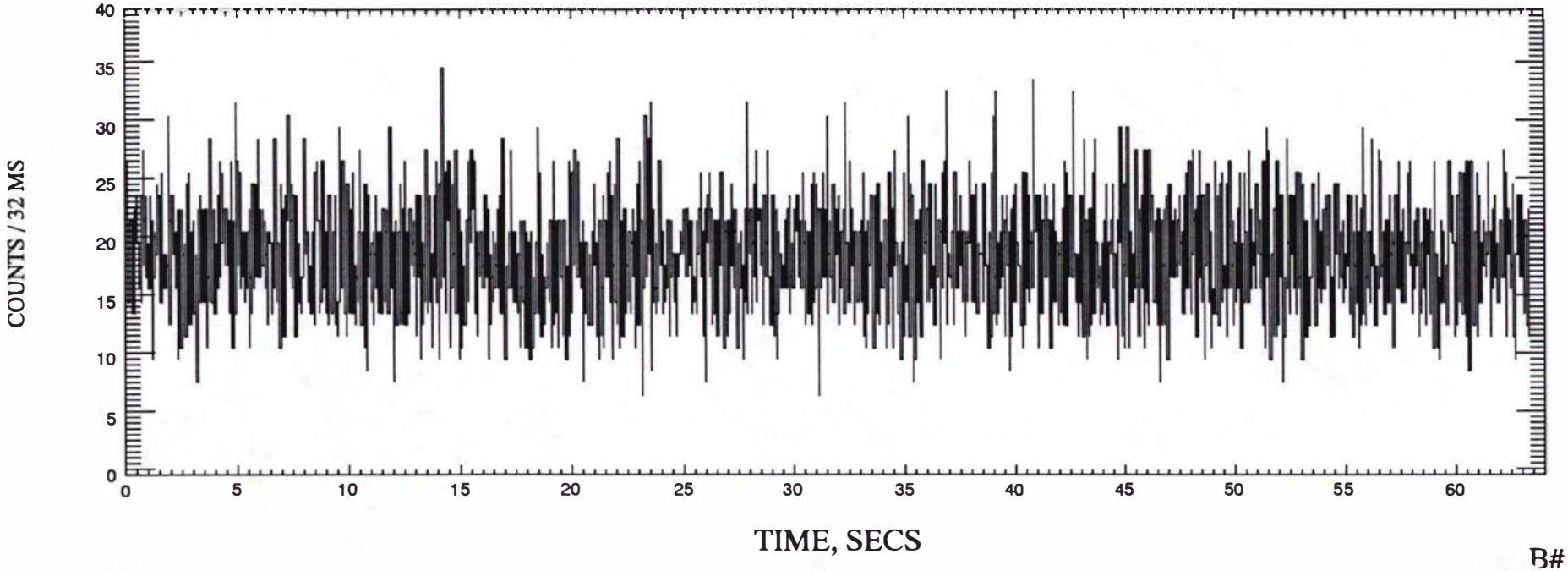


B# 4

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 14 at UT= 2.983263956706 h=10739.750 s 02:58:59.750

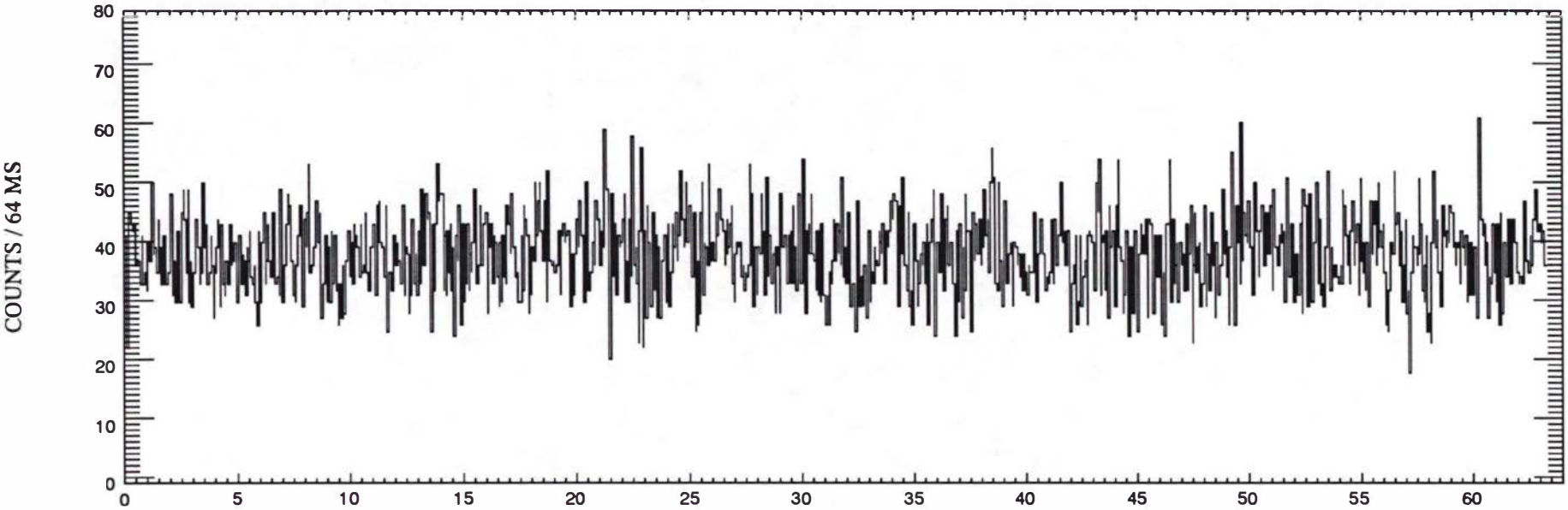




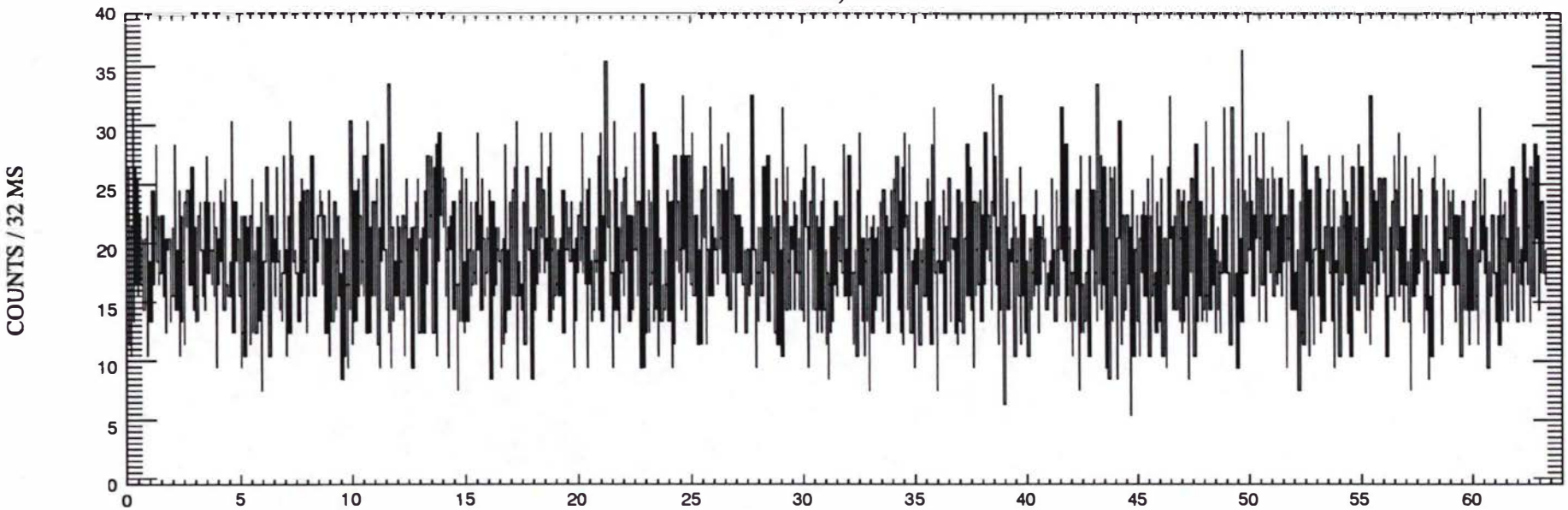
B# 5

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 15 at UT= 3.689519382053 h=13282.270 s 03:41:22.270



TIME, SECS

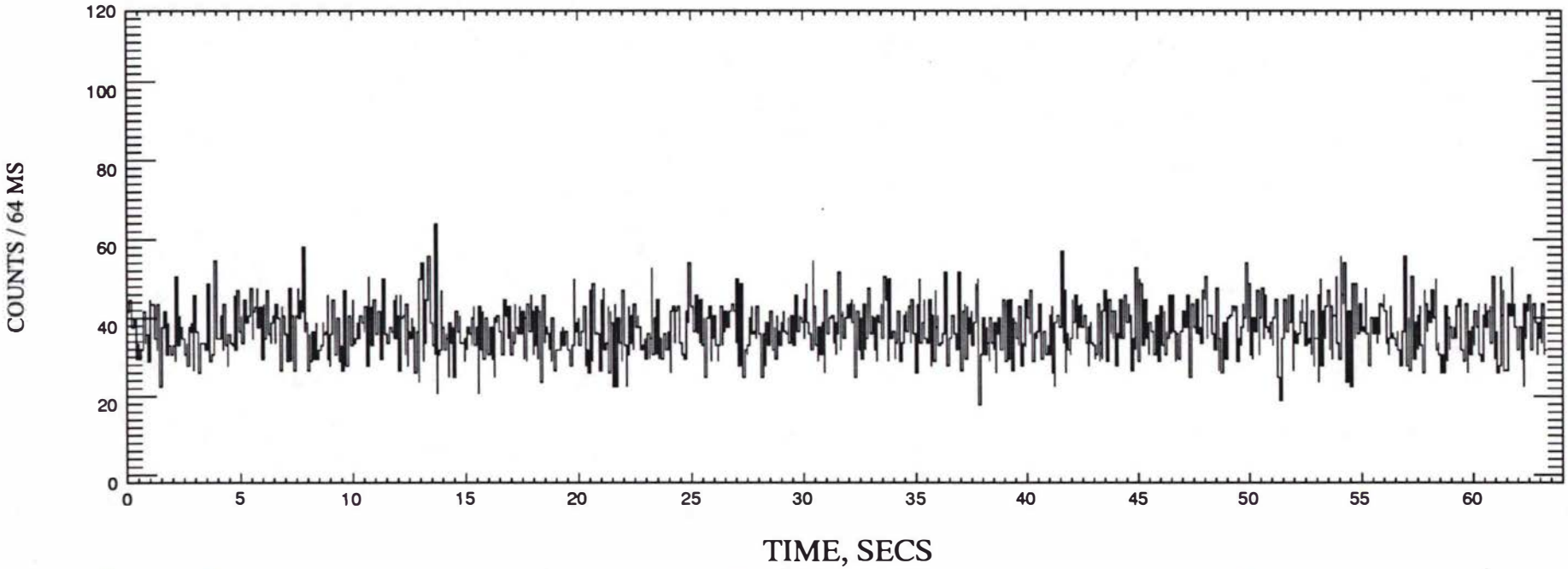


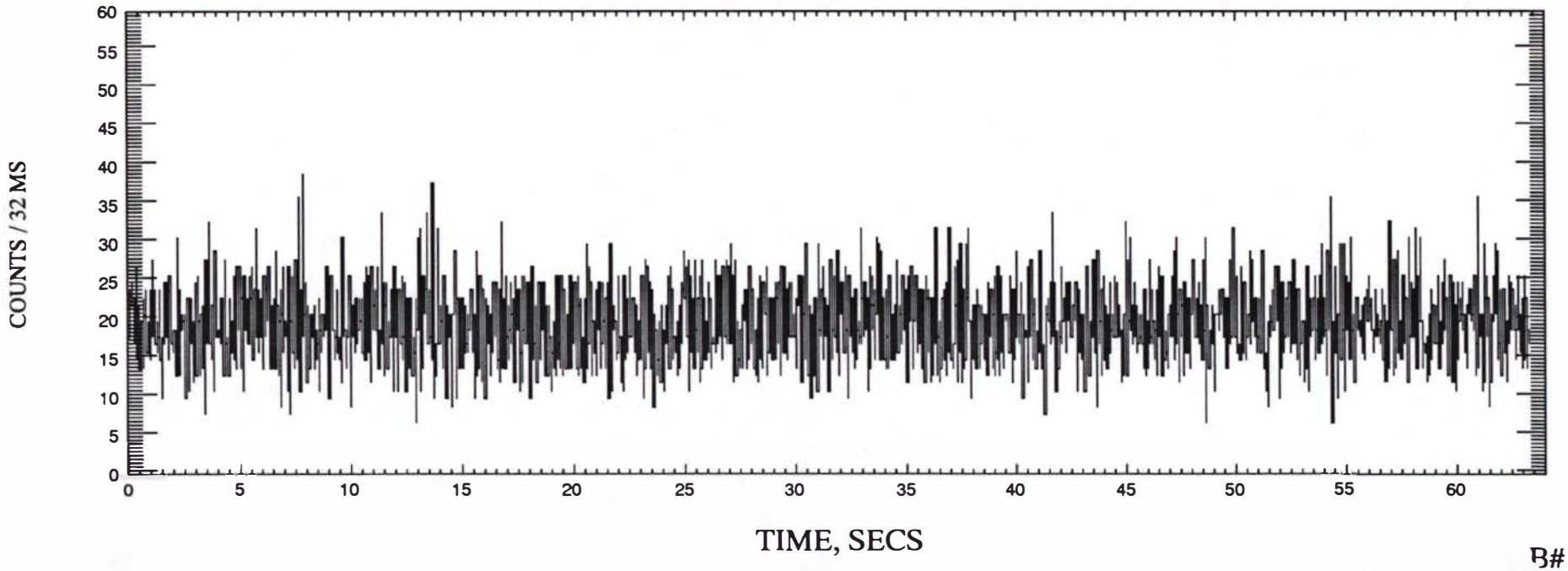
TIME, SECS

B# 6

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 0 at UT= 4.392430623372 h=15812.750 s 04:23:32.750

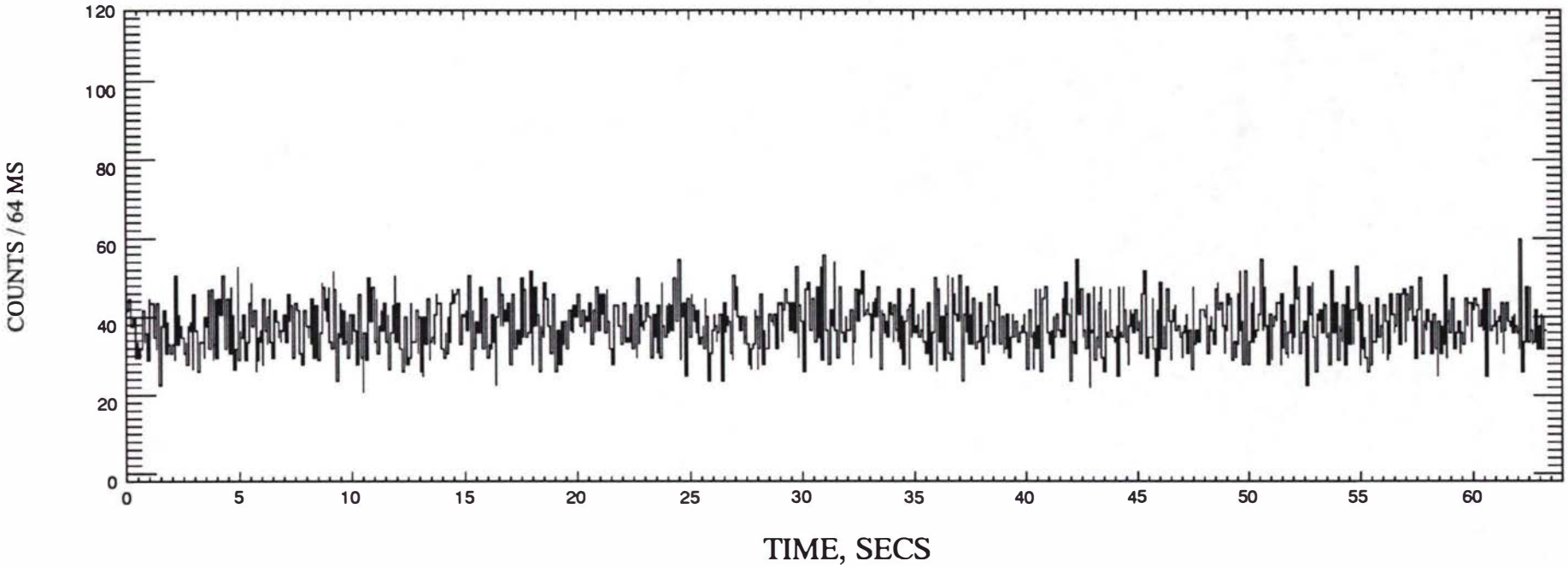


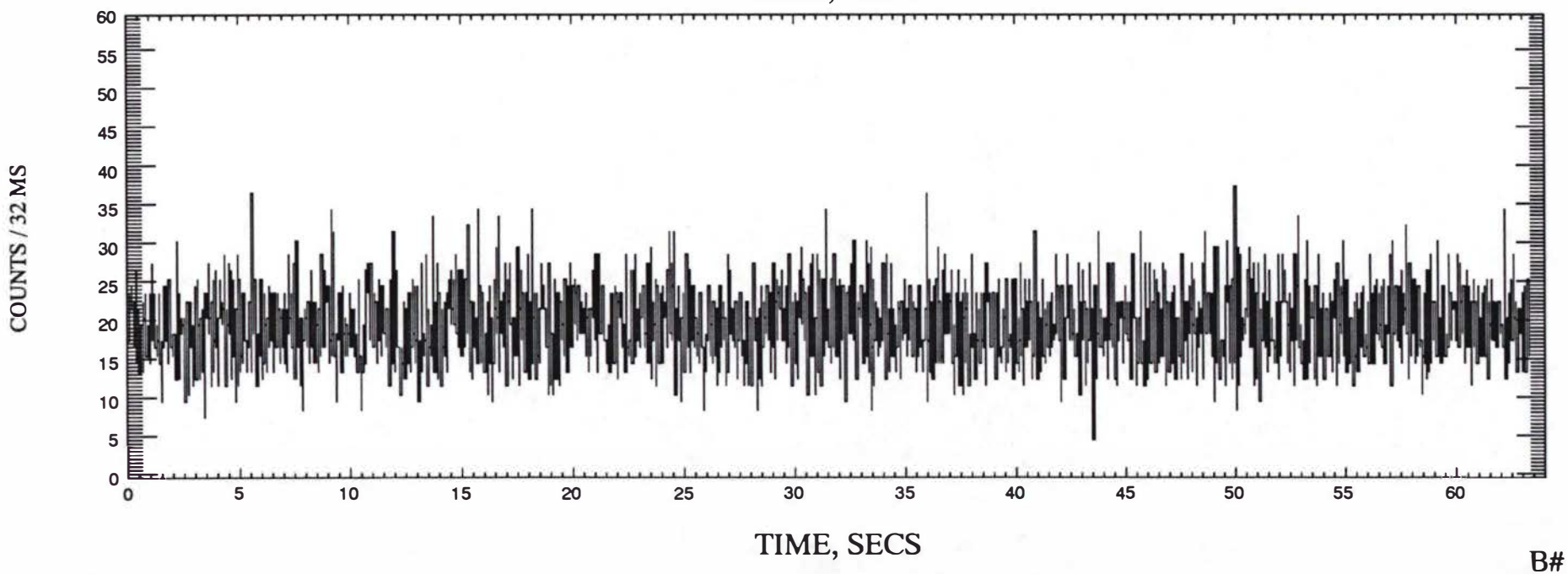


B# 7

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 1 at UT= 5.094660445319 h=18340.778 s 05:05:40.778

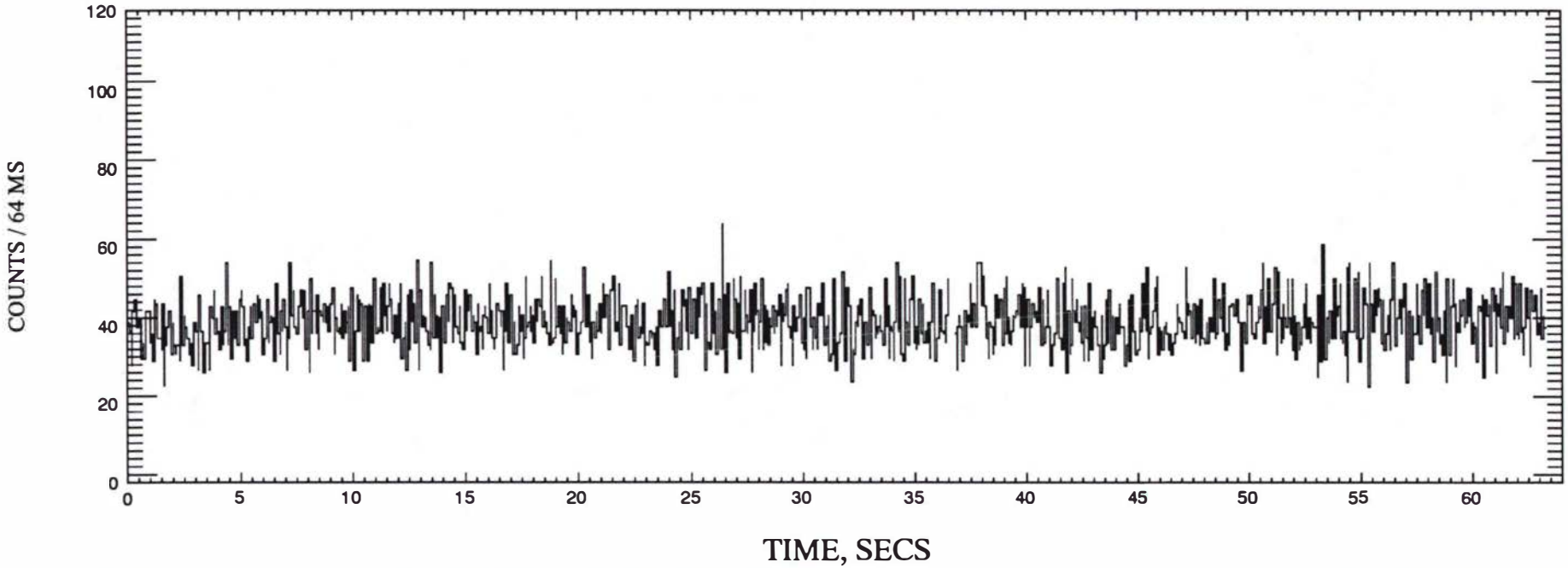


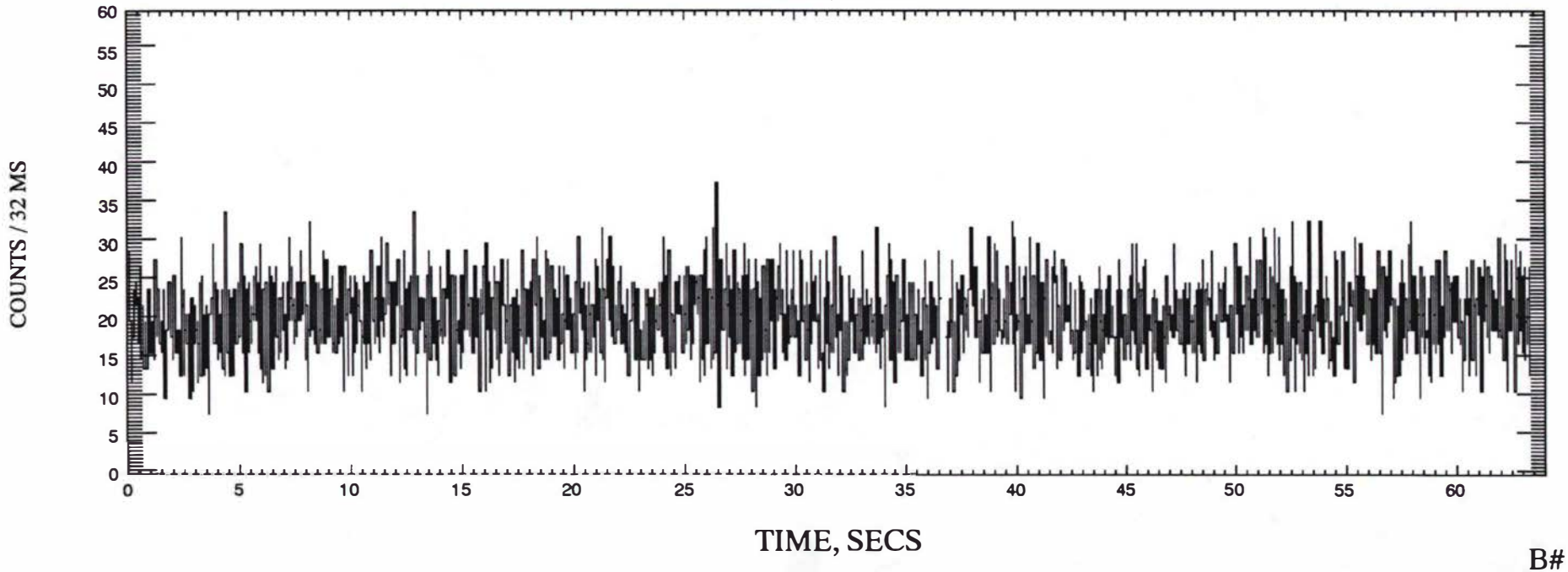


B# 8

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 2 at UT= 5.796844690111 h=20868.641 s 05:47:48.641

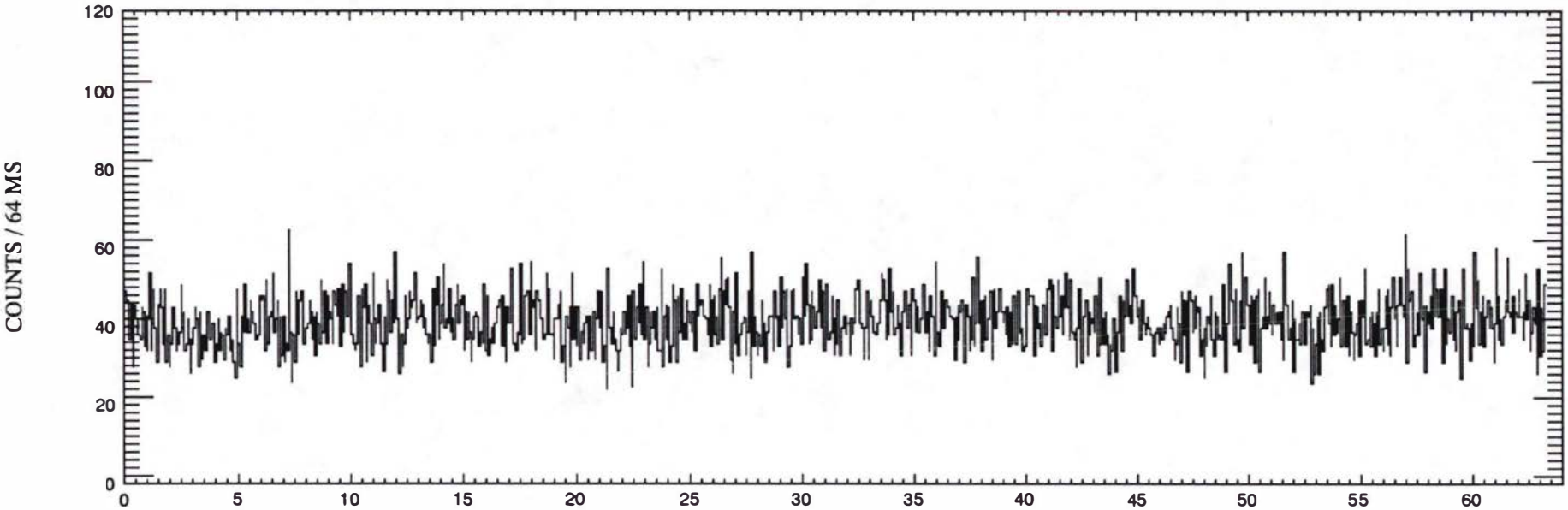




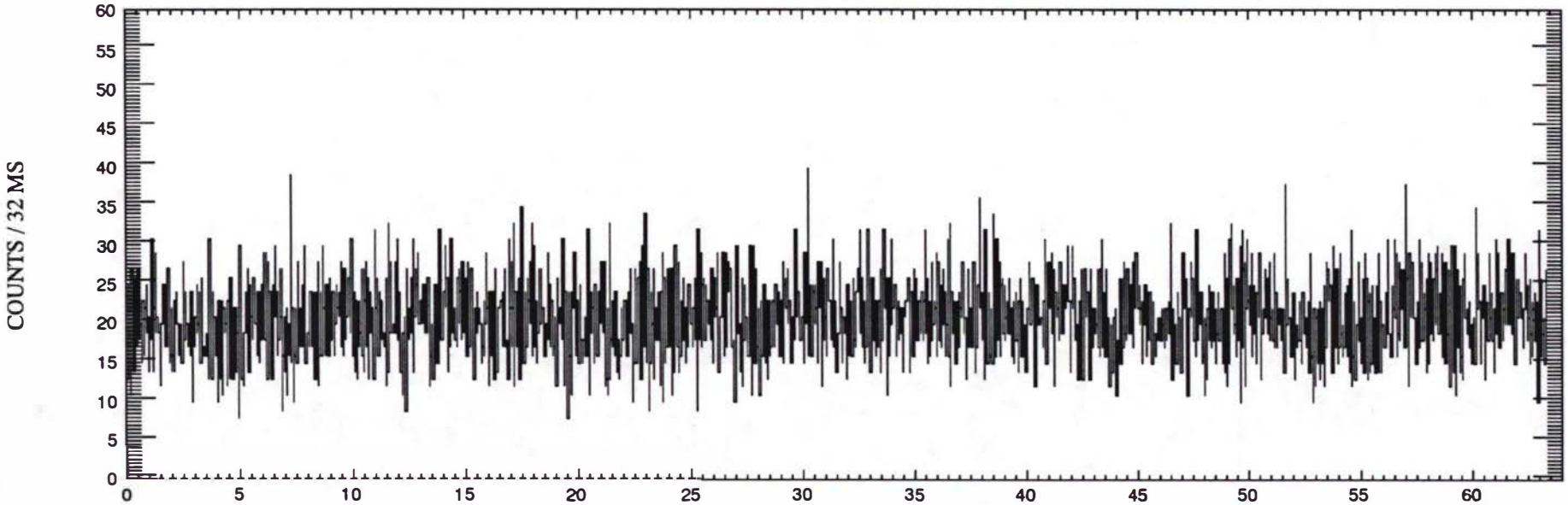
B# 9

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 3 at UT= 6.498716439141 h=23395.379 s 06:29:55.379



TIME, SECS

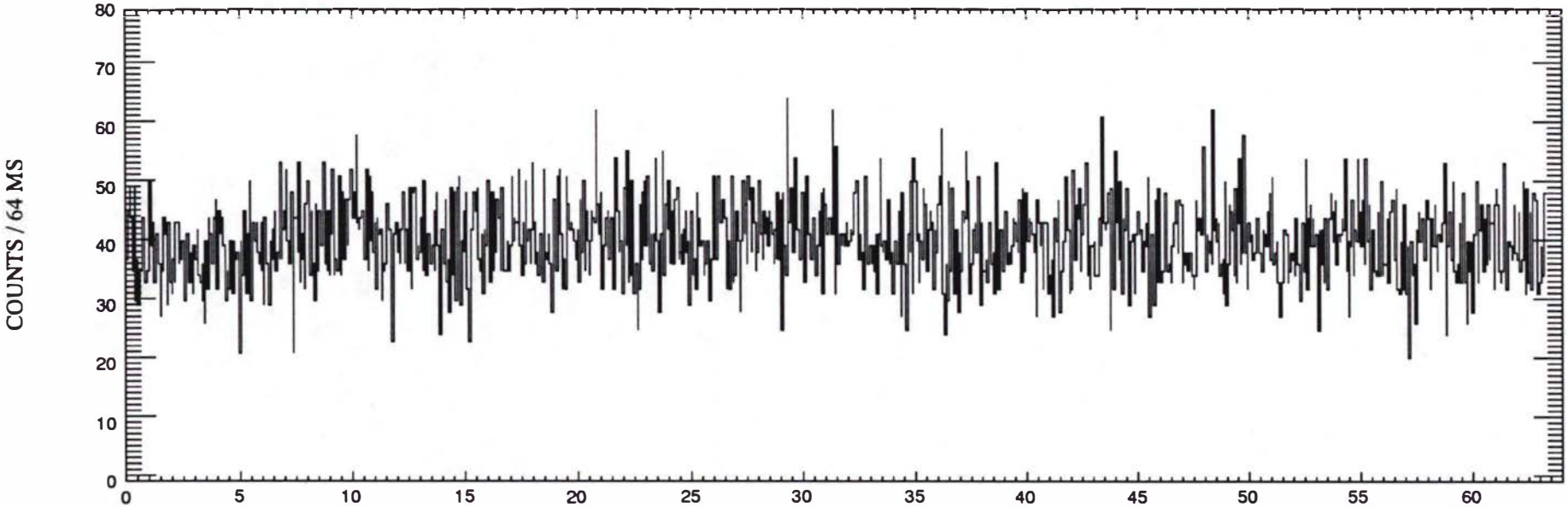


TIME, SECS

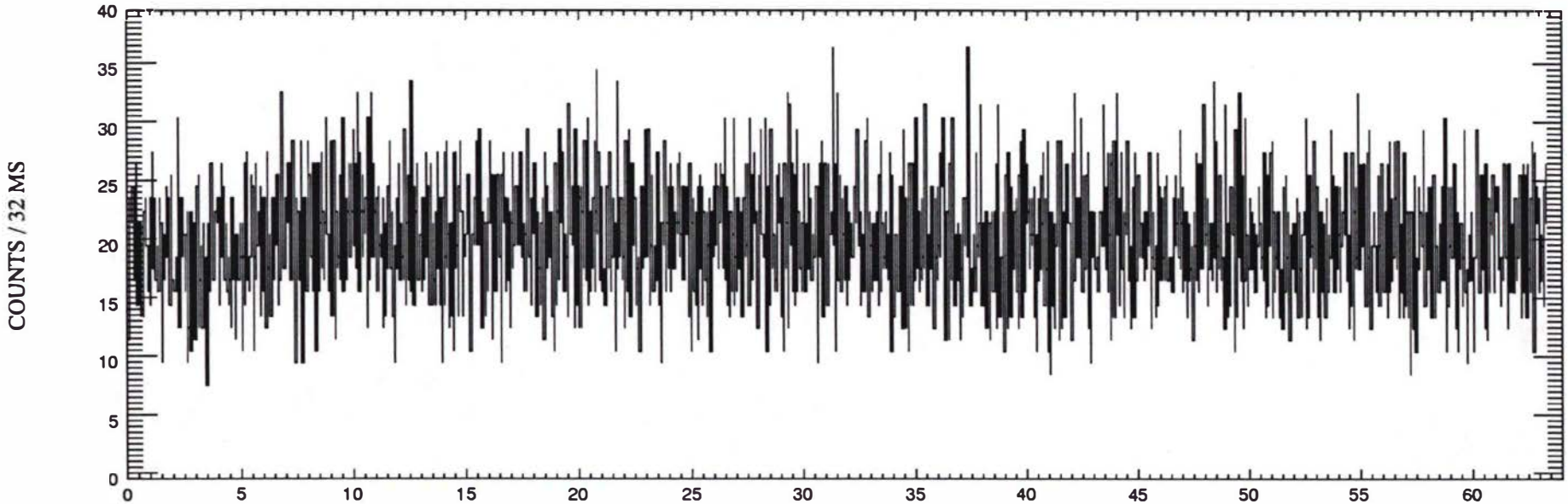
B# 10

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 4 at UT= 7.201345562405 h=25924.844 s 07:12:04.844



TIME, SECS

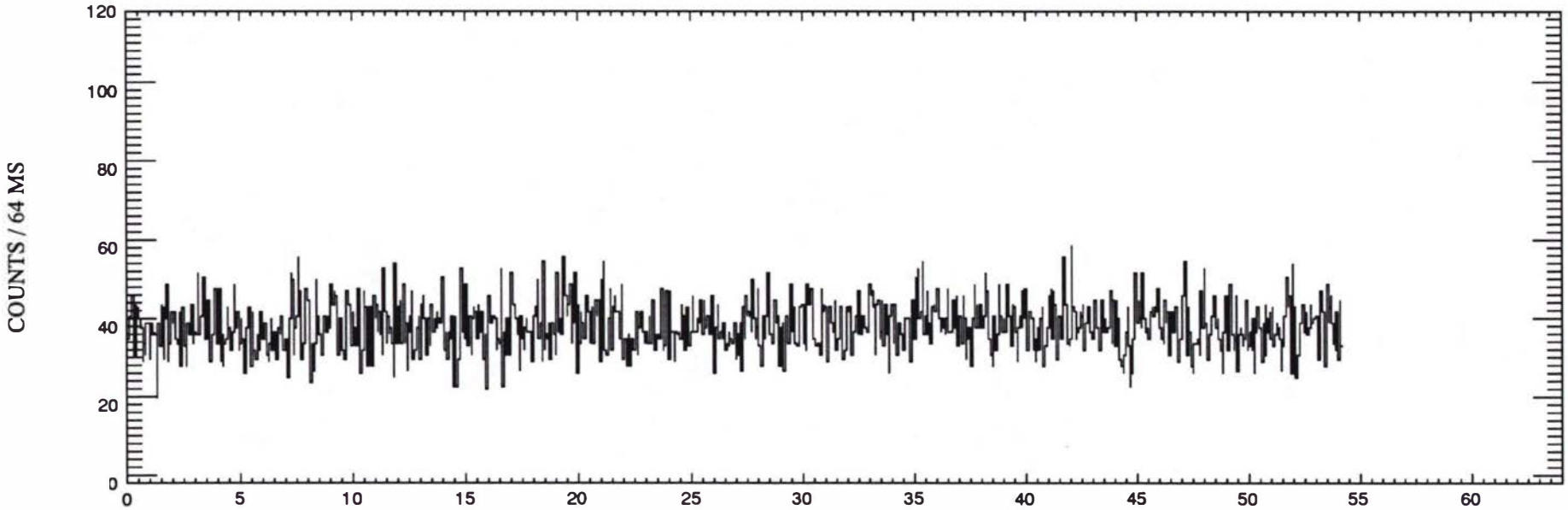


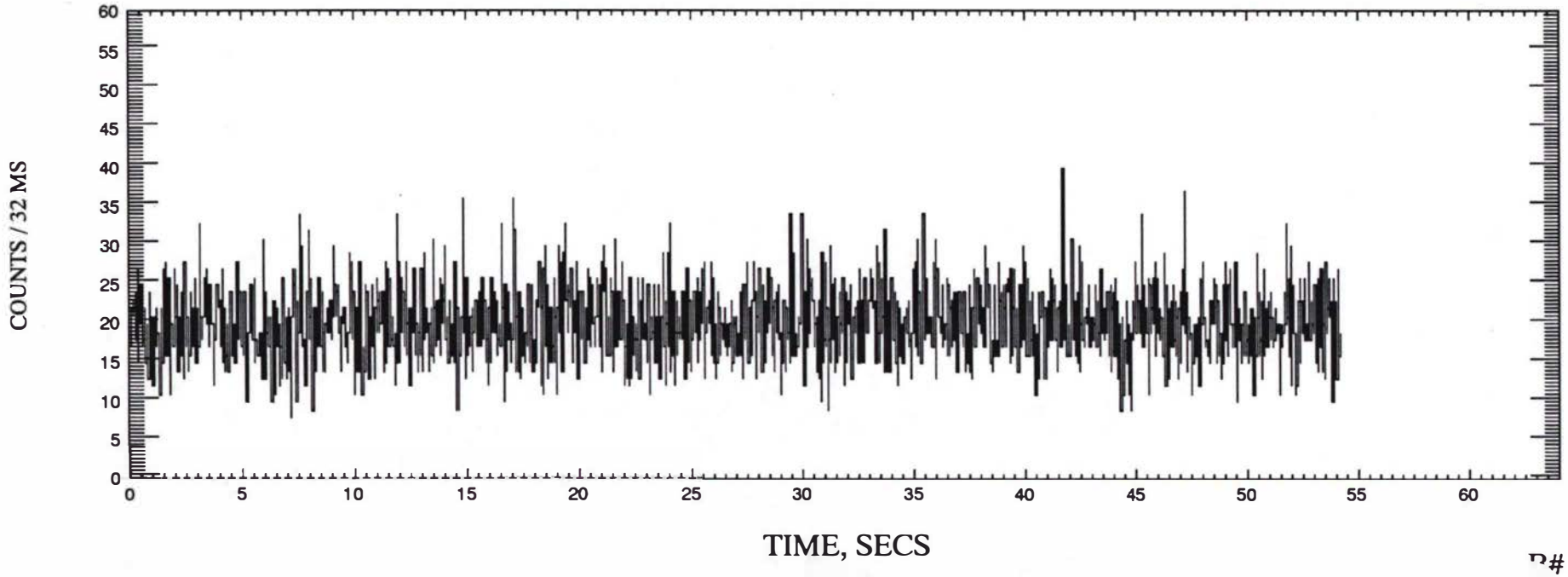
TIME, SECS

B# 11

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 5 at UT= 7.902555414836 h=28449.199 s 07:54:09.199

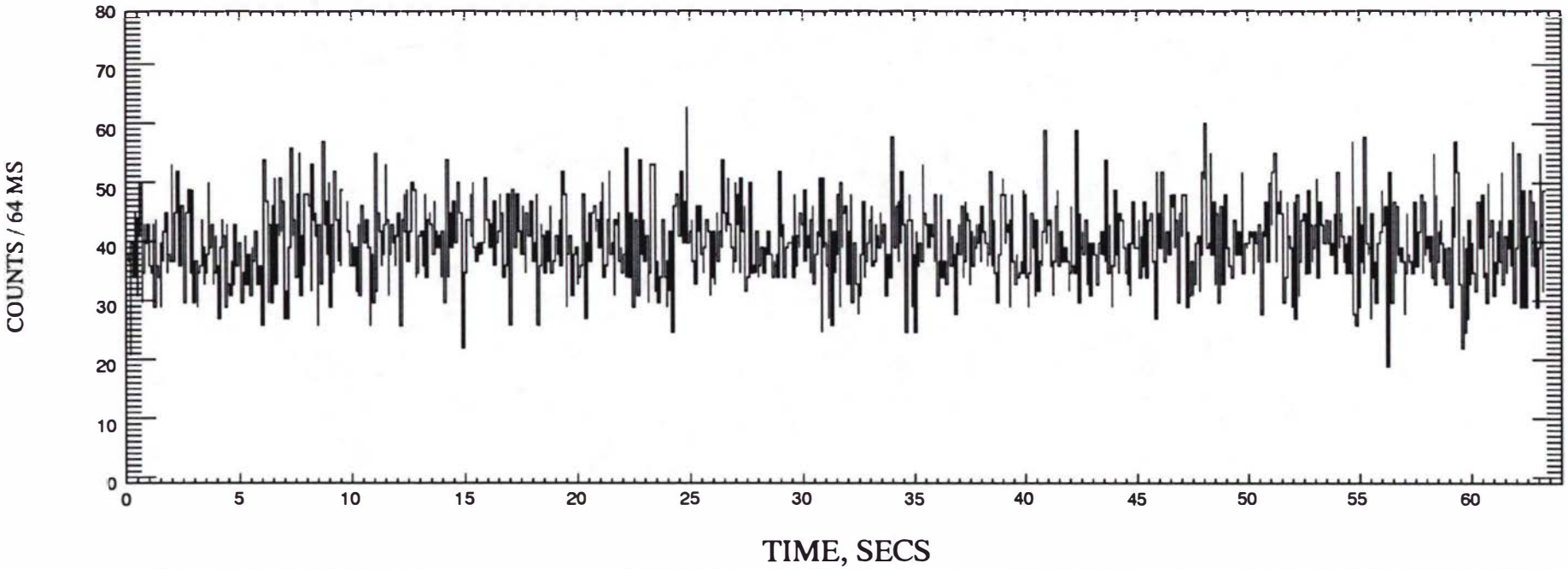


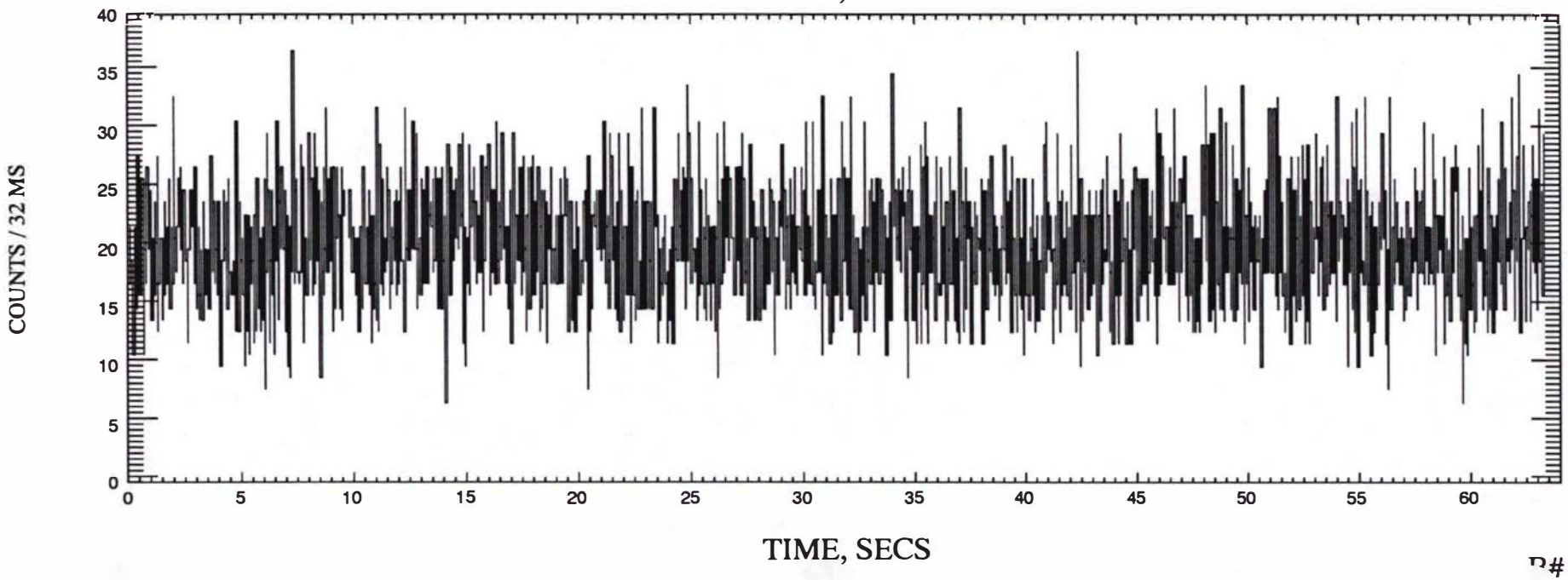


B# 12

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 6 at UT= 8.907321014404 h=32066.356 s 08:54:26.356

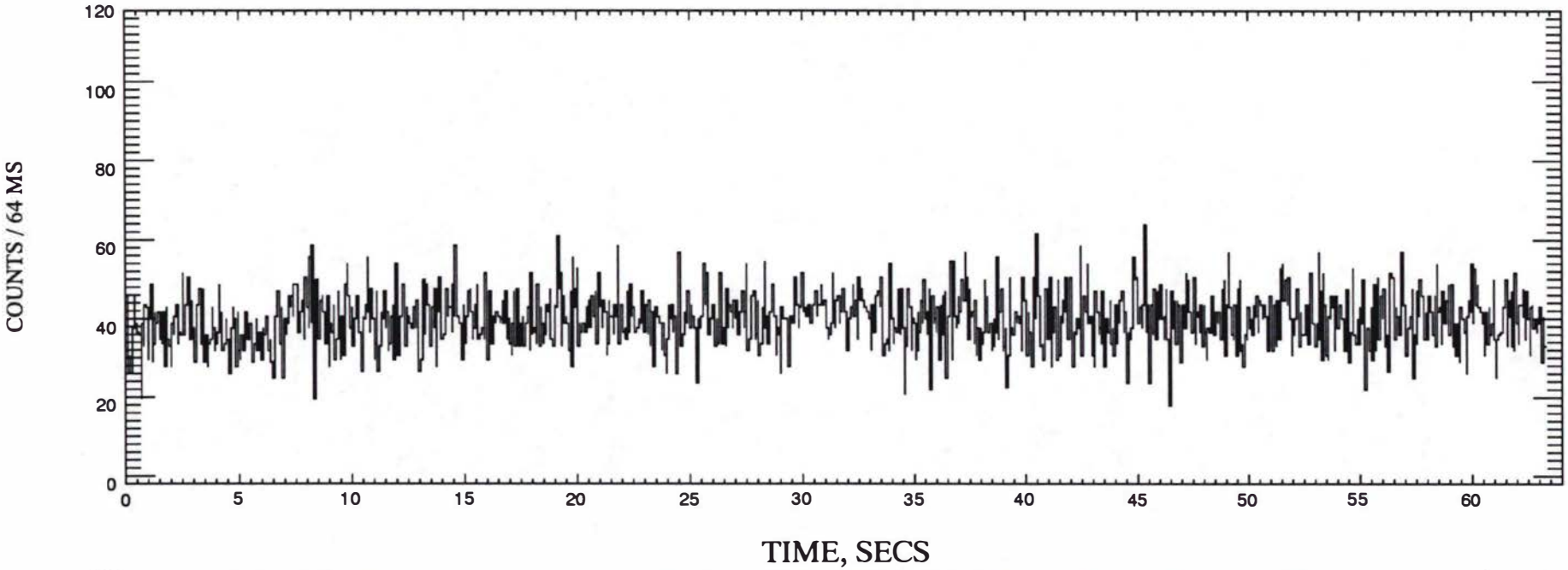


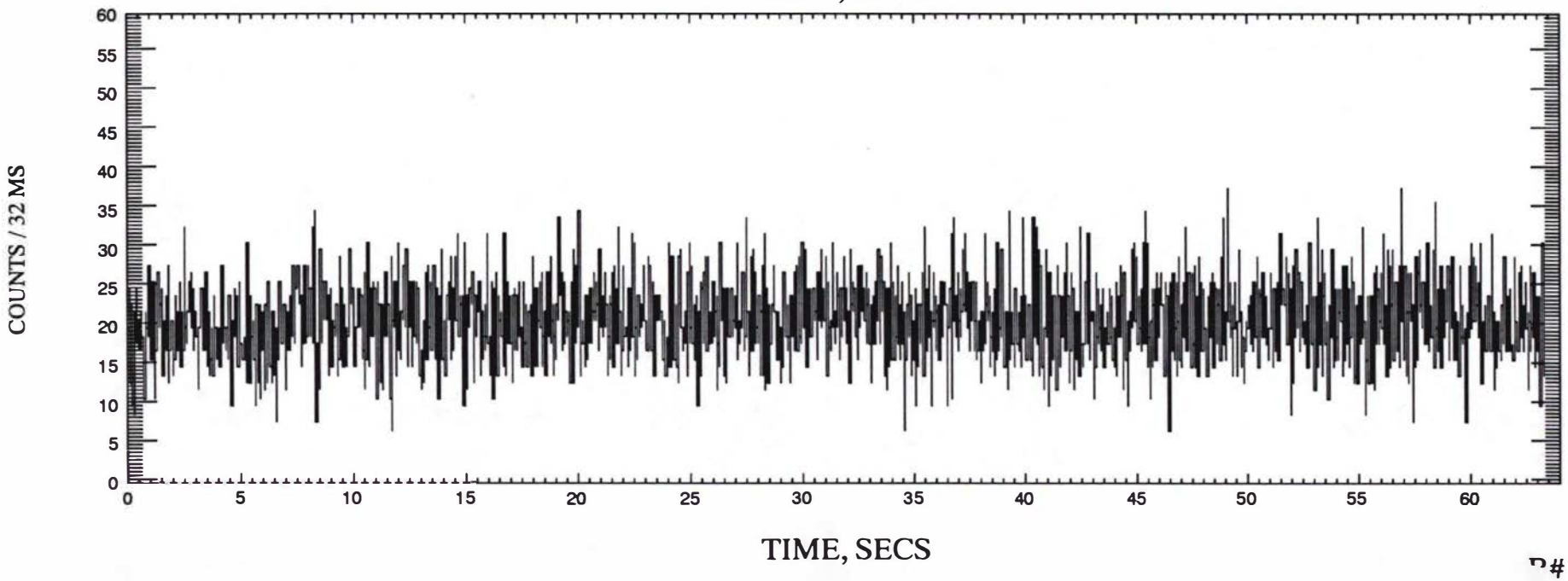


P# 13

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 7 at UT=10.169416503906 h=36609.899 s 10:10:09.899

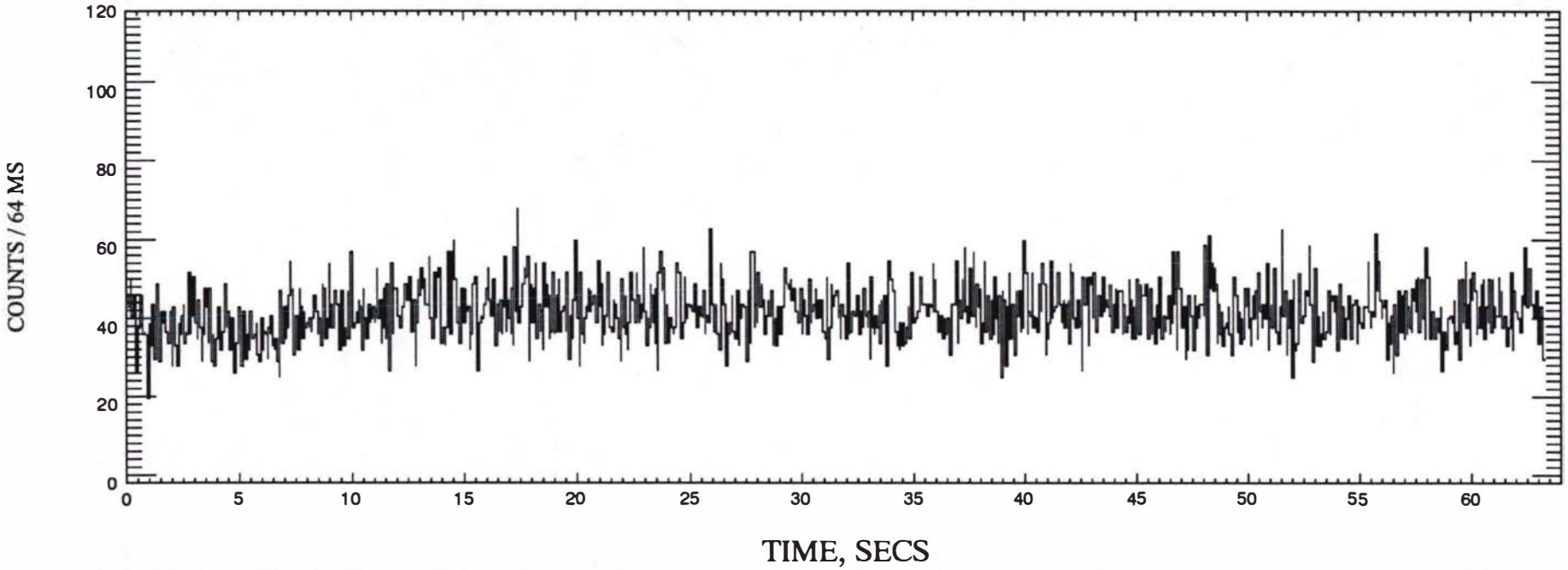


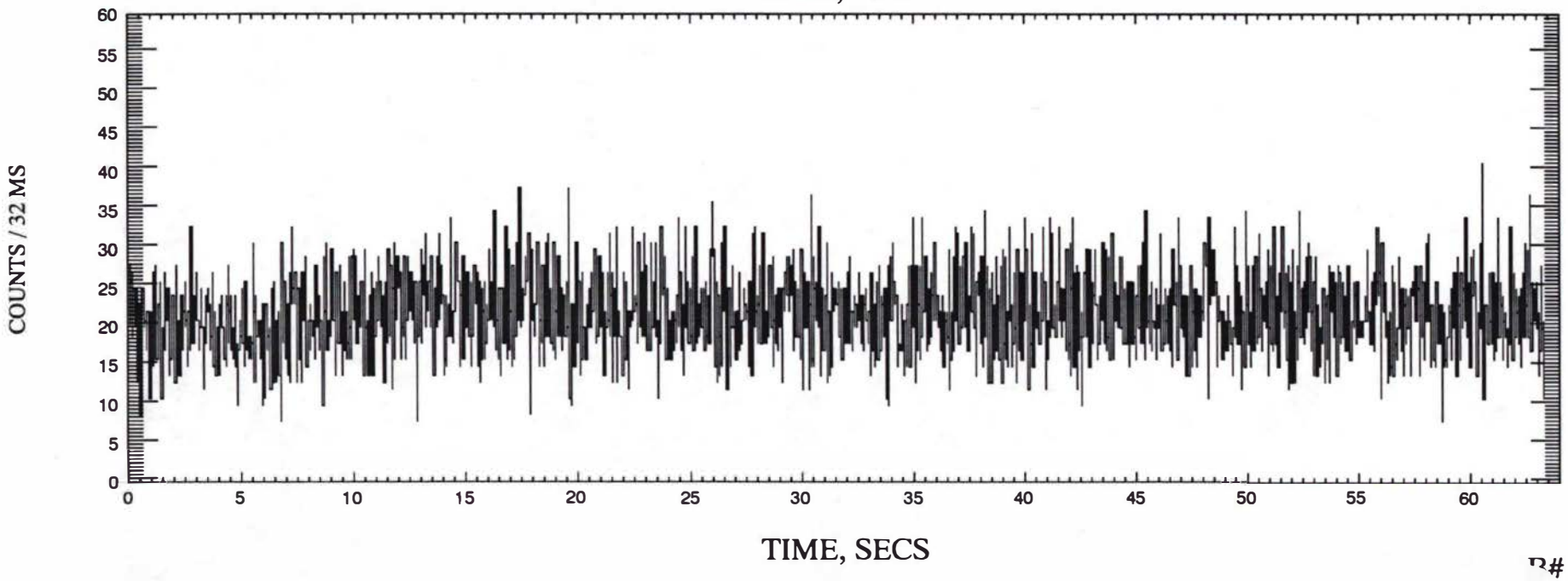


P# 14

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 8 at UT=11.431582959493 h=41153.699 s 11:25:53.699

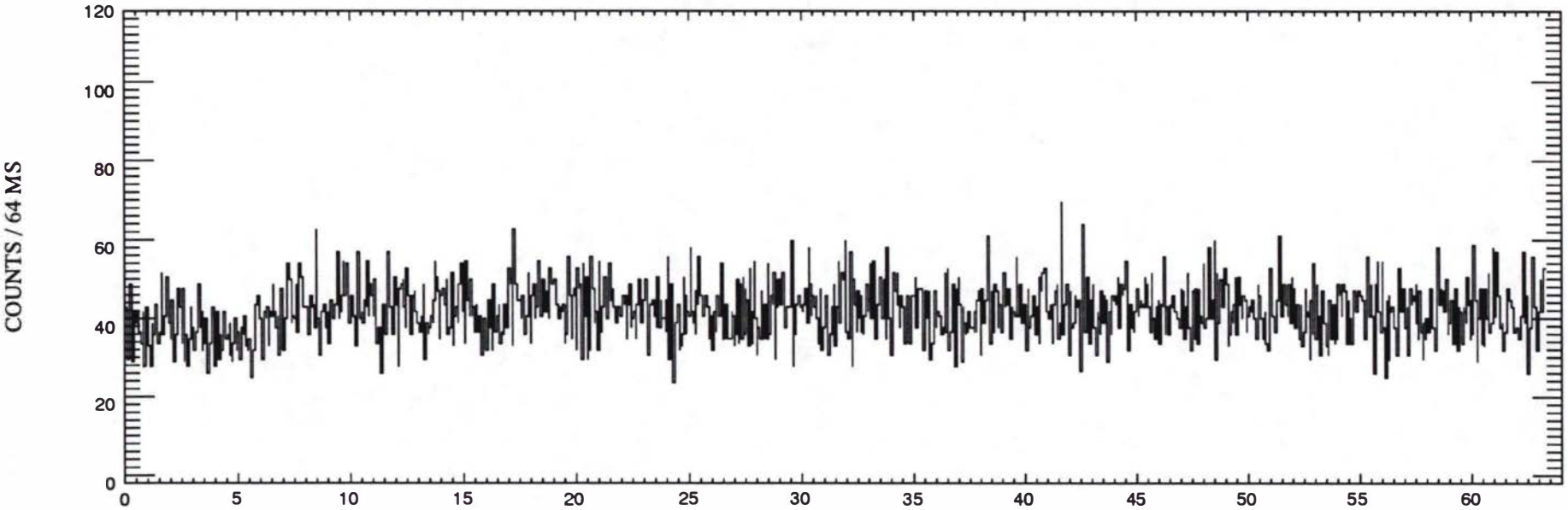


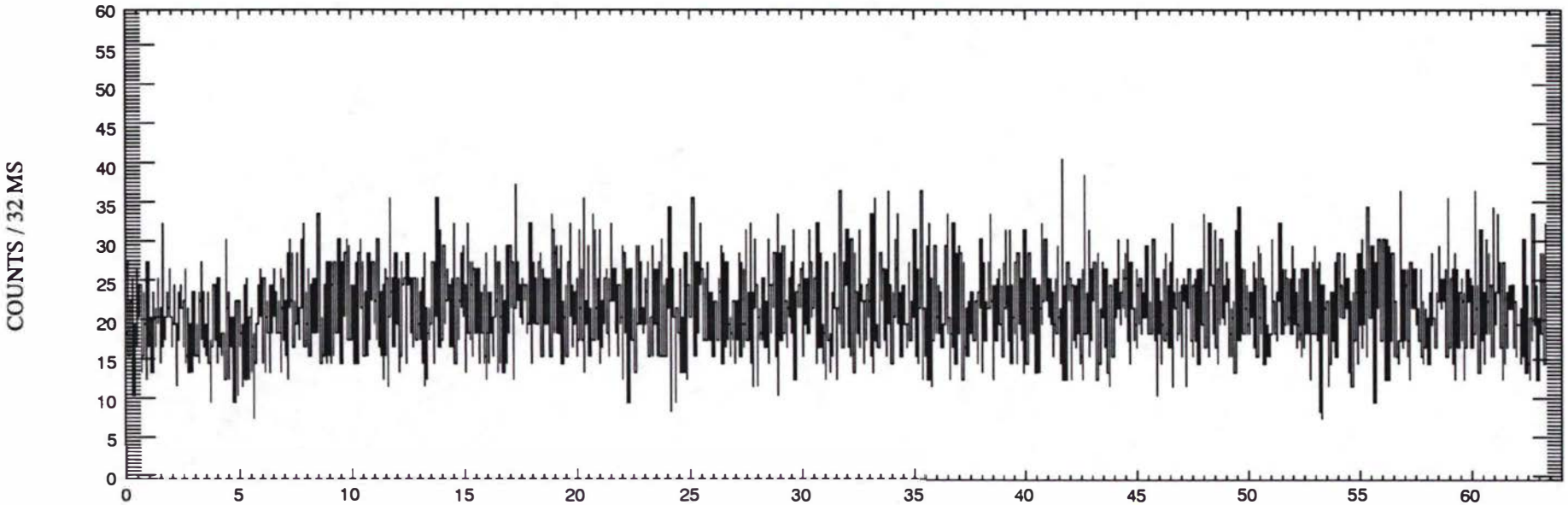


B# 15

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 9 at UT=12.694129185147 h=45698.865 s 12:41:38.865

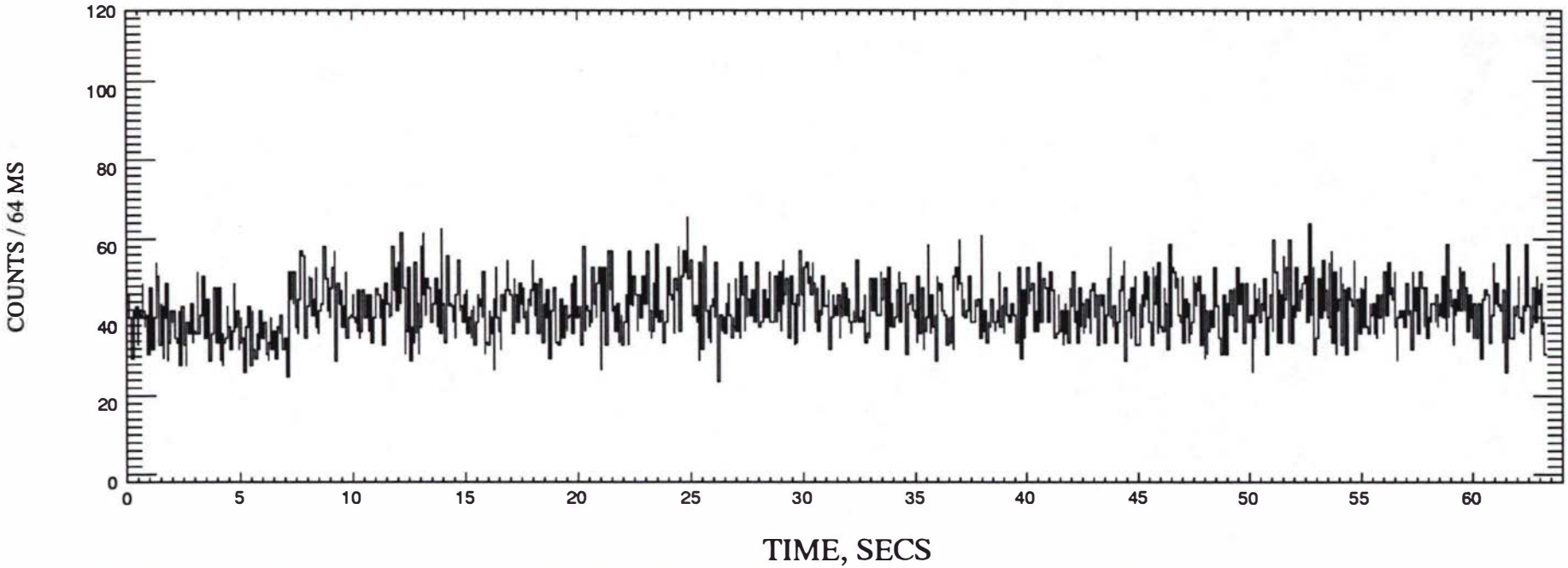


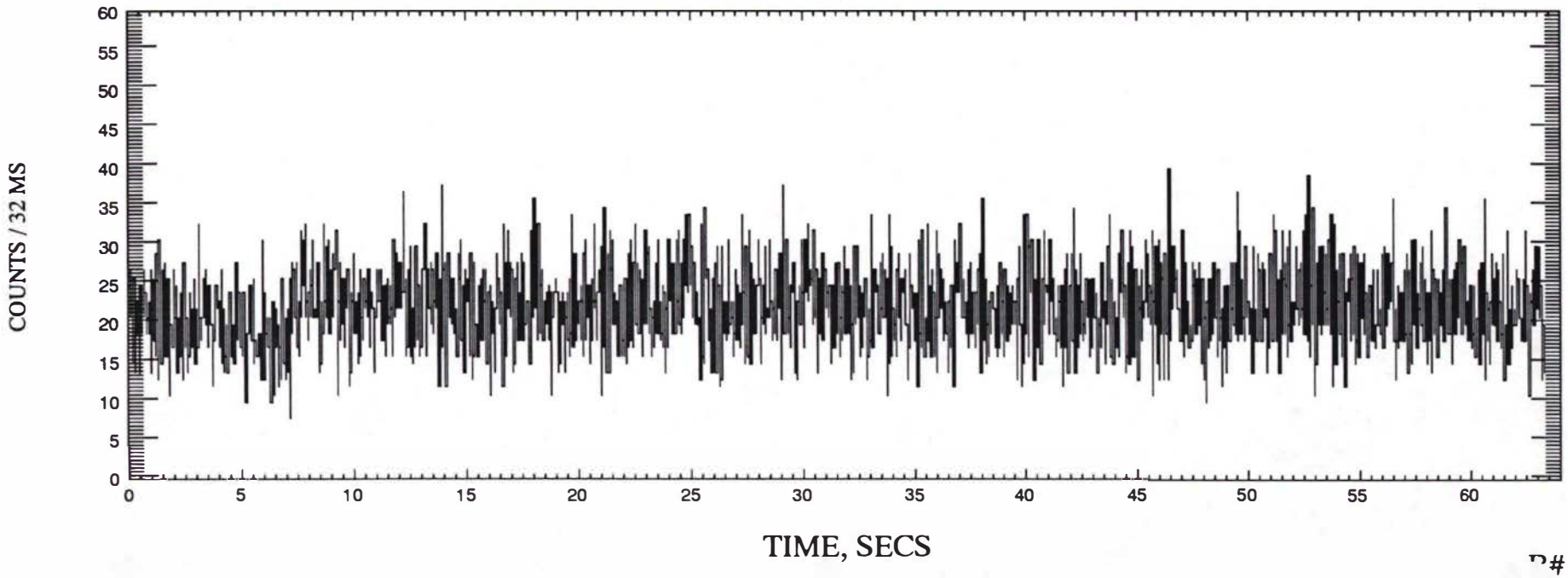


B# 16

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 10 at UT=13.955950584412 h=50241.422 s 13:57:21.422

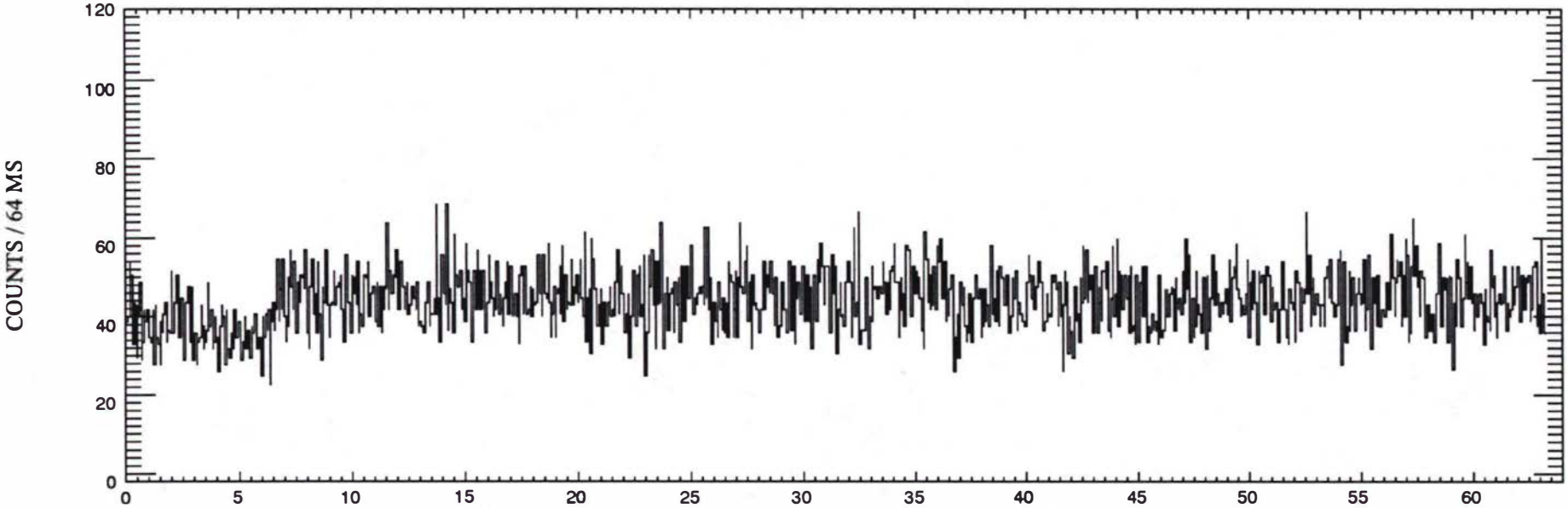




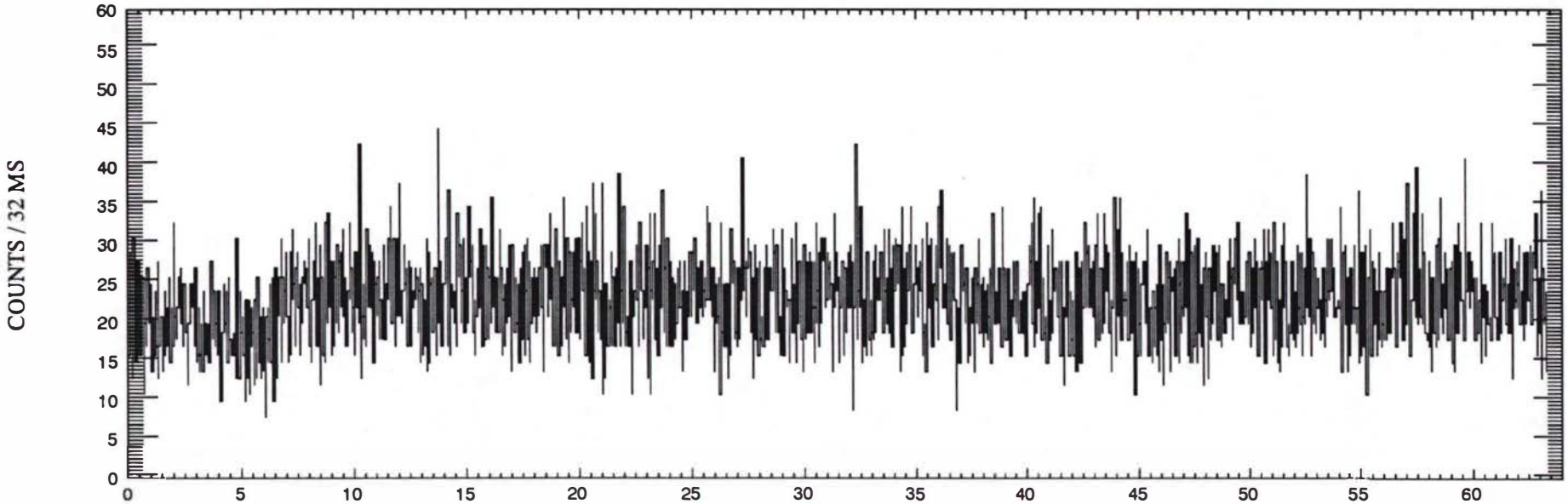
P# 17

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 11 at UT=15.218496814304 h=54786.589 s 15:13:06.589



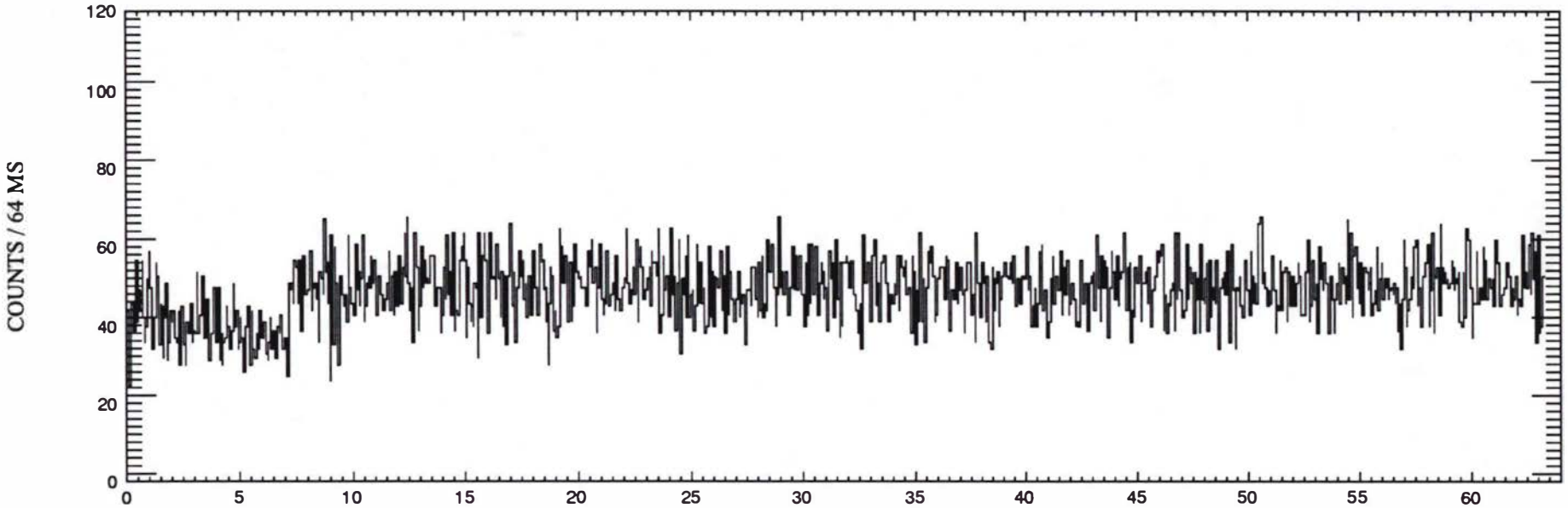
TIME, SECS



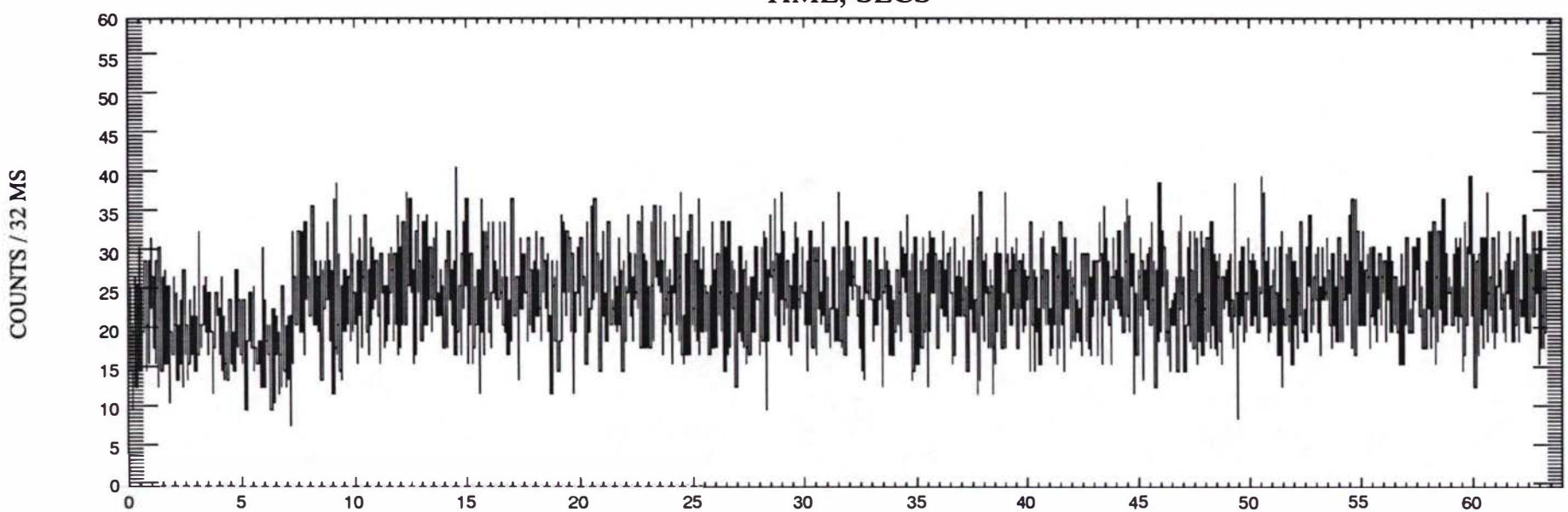
TIME, SECS

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 12 at UT=16.480422380235 h=59329.521 s 16:28:49.521



TIME, SECS

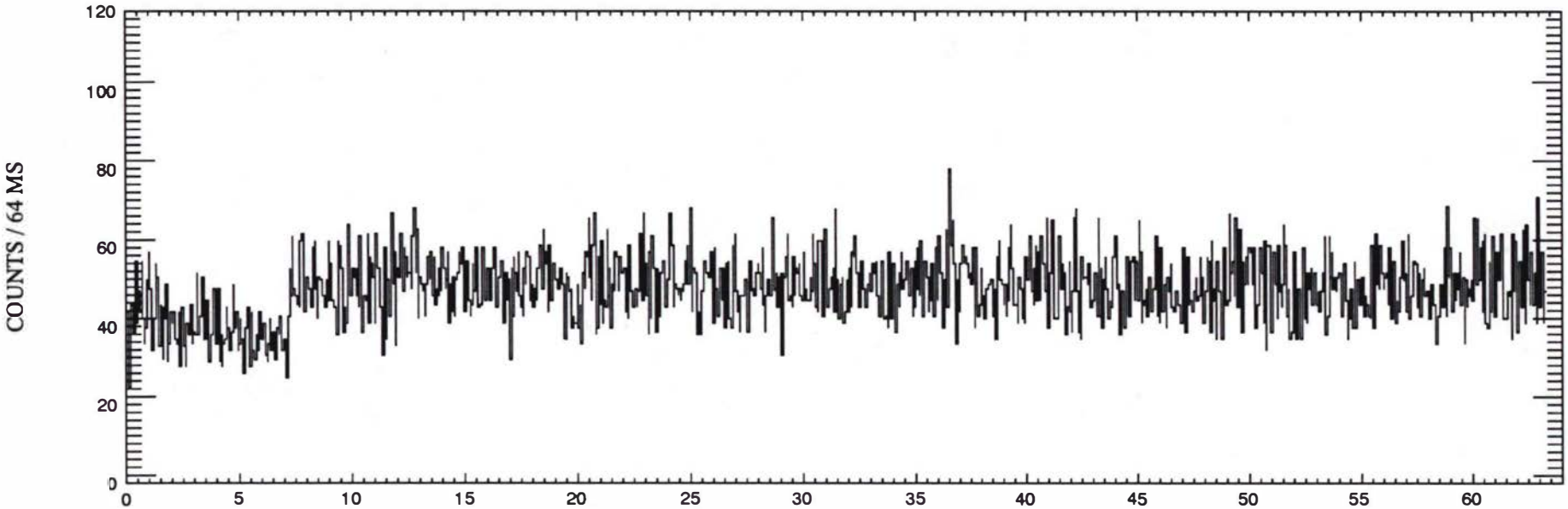


TIME, SECS

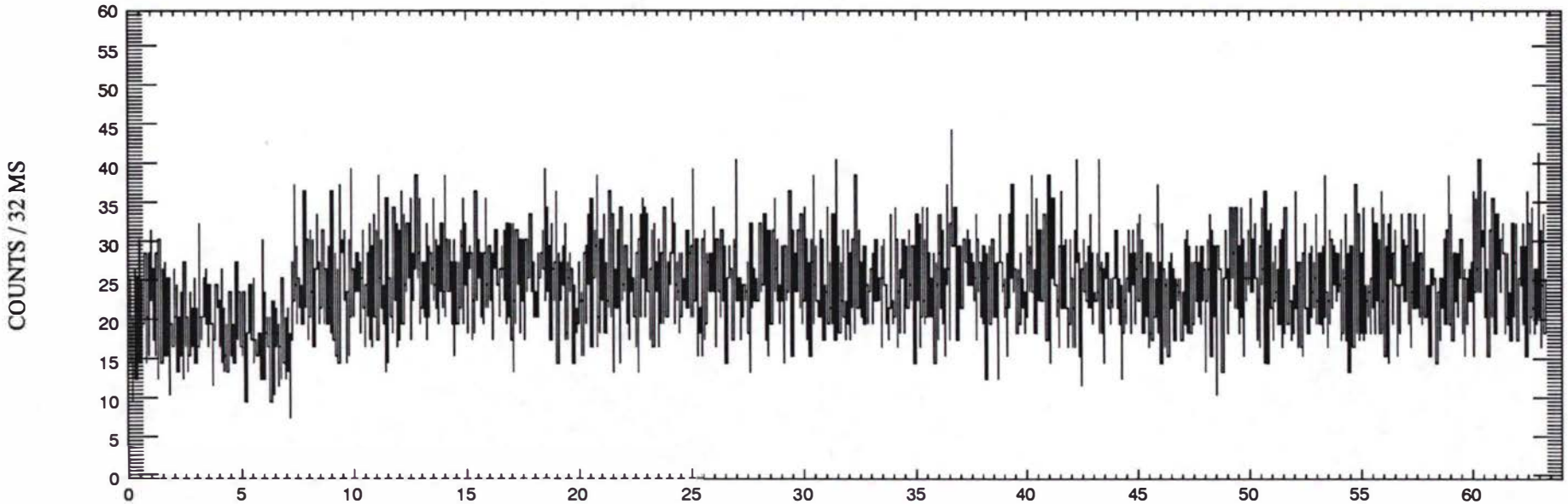
P# 19

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 13 at UT=17.742658276028 h=63873.570 s 17:44:33.570



TIME, SECS

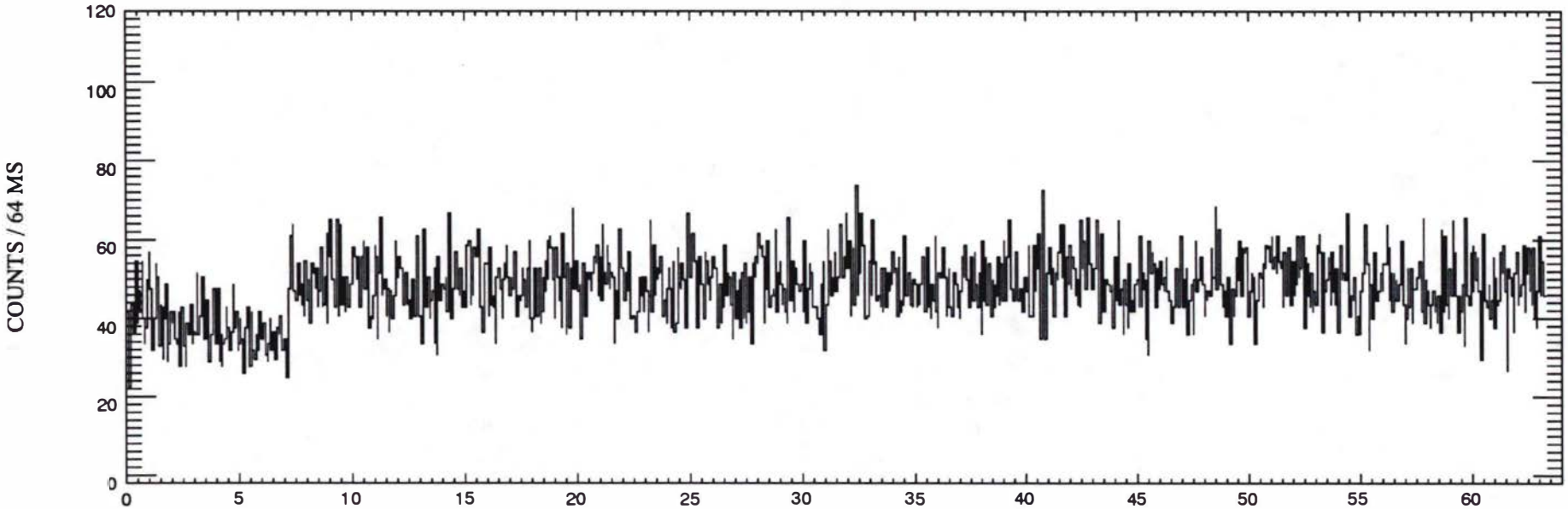


TIME, SECS

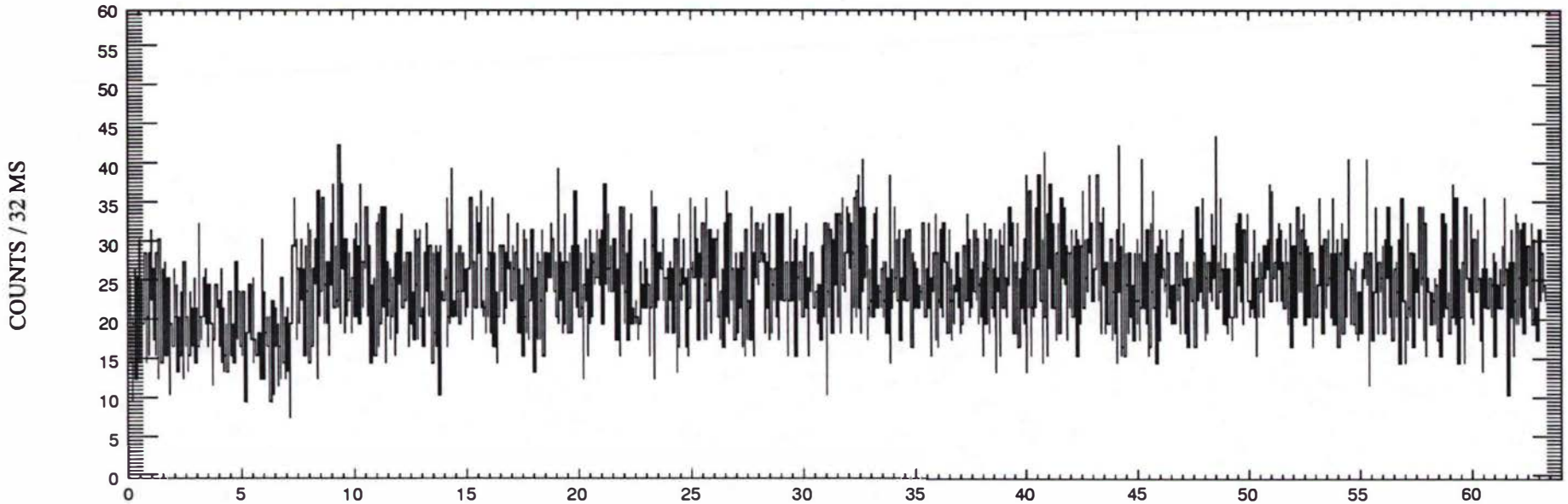
P# 20

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 14 at UT=19.004892001682 h=68417.611 s 19:00:17.611



TIME, SECS

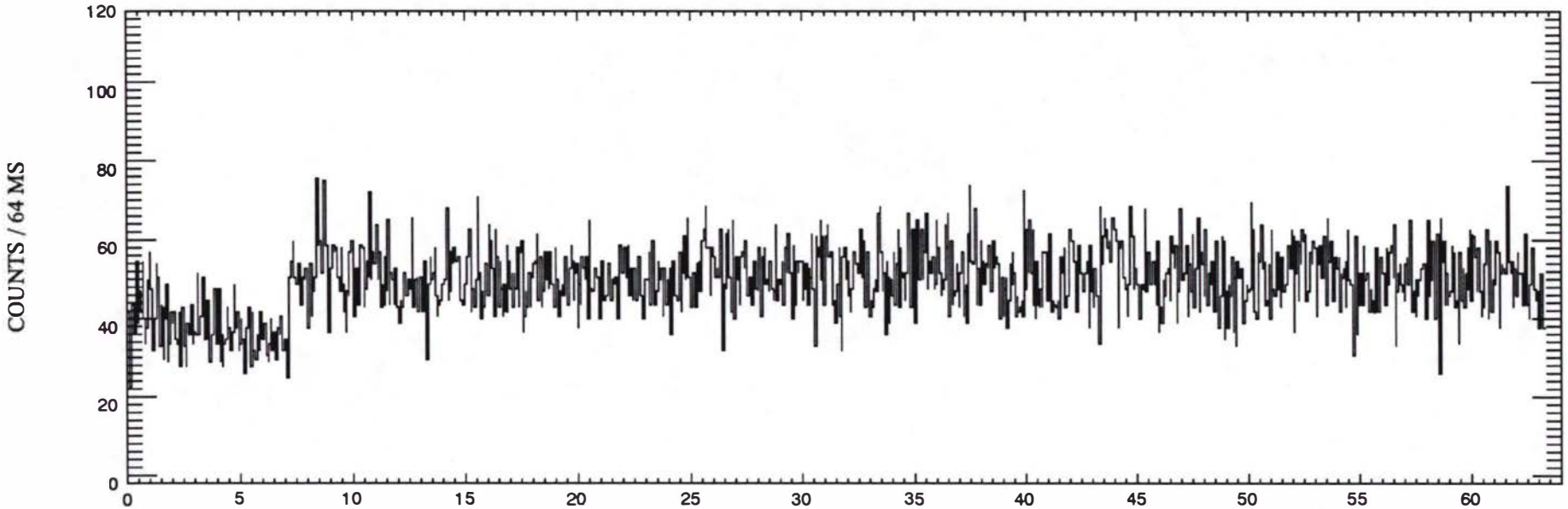


TIME, SECS

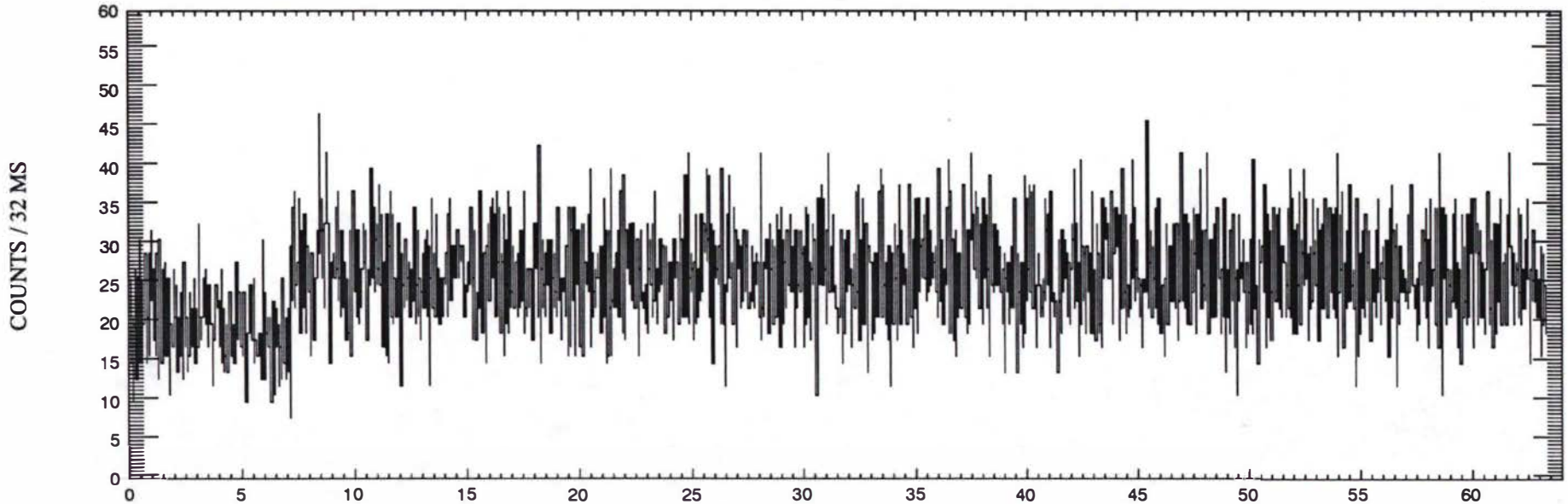
P# 21

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 15 at UT=20.267128550212 h=72961.663 s 20:16:01.663



TIME, SECS

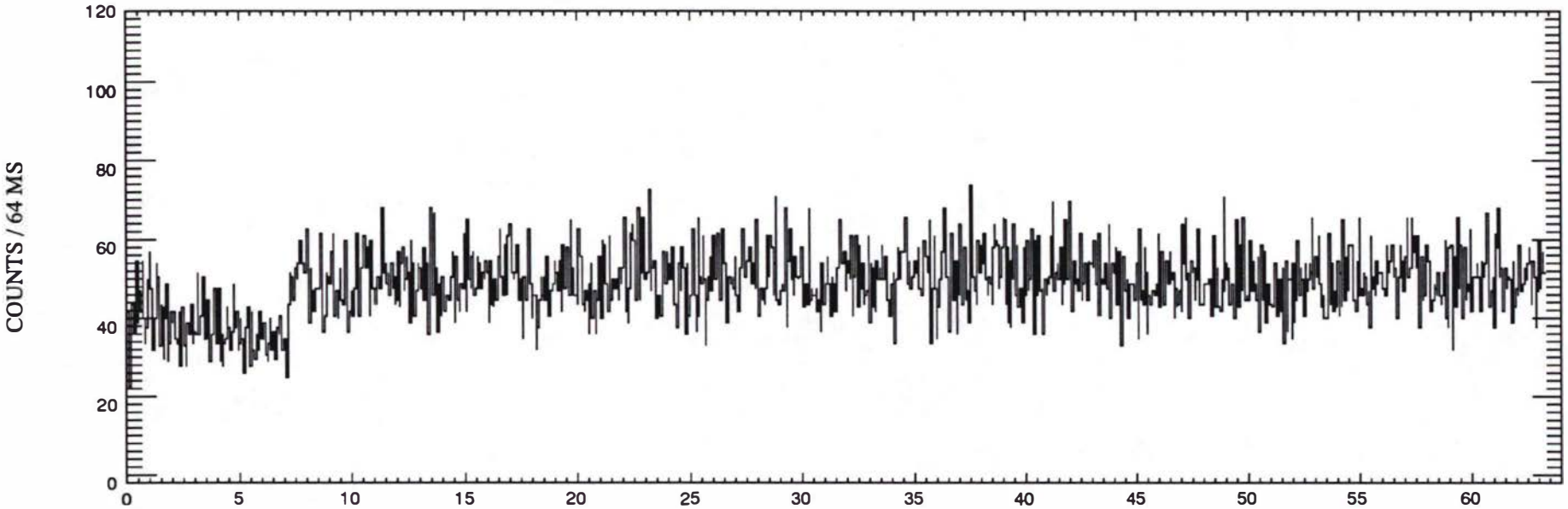


TIME, SECS

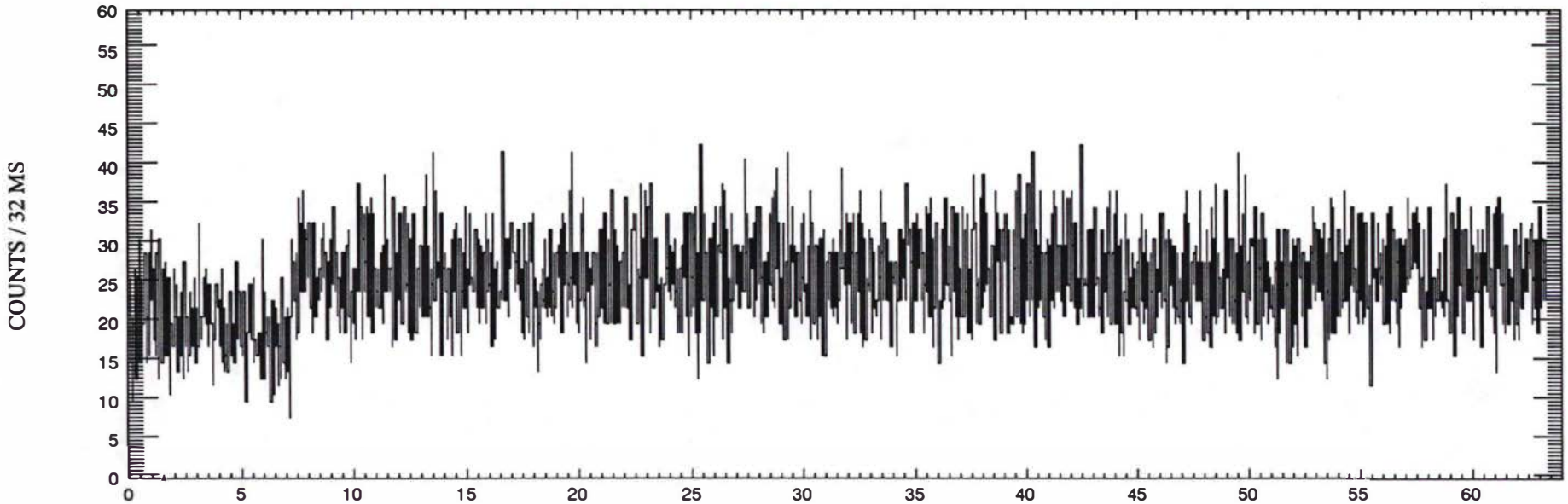
B# 22

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 0 at UT=21.529362280104 h=77505.704 s 21:31:45.704



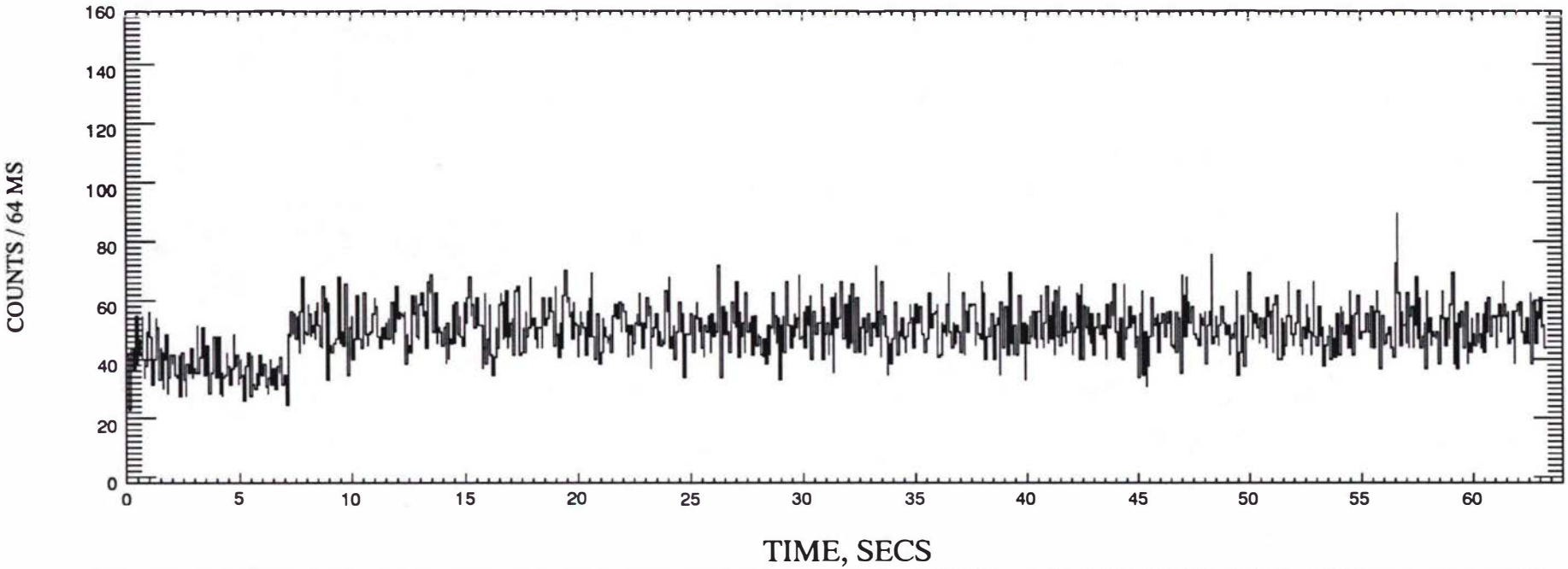
TIME, SECS

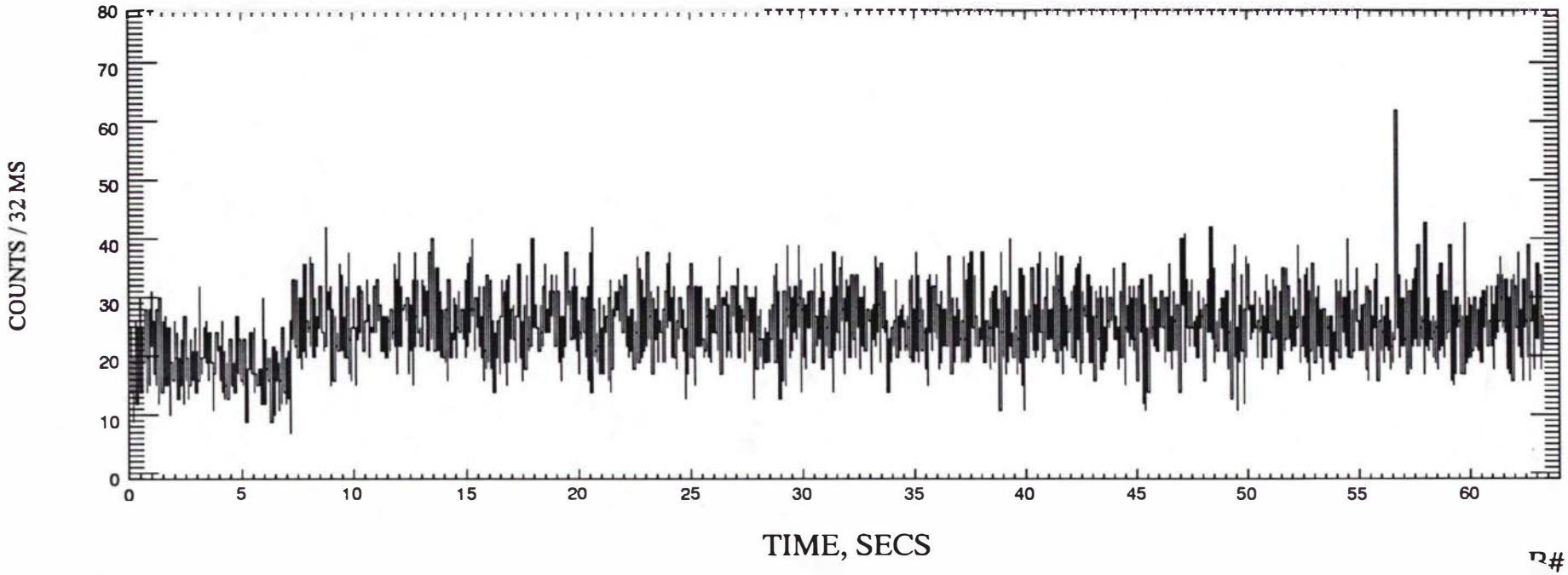


TIME, SECS

HUS 2A TRIGGERED DATA QEDR day 112, year 1998 4/23/98

Burst Counter 1 at UT=22.791600346035 h=82049.761 s 22:47:29.761

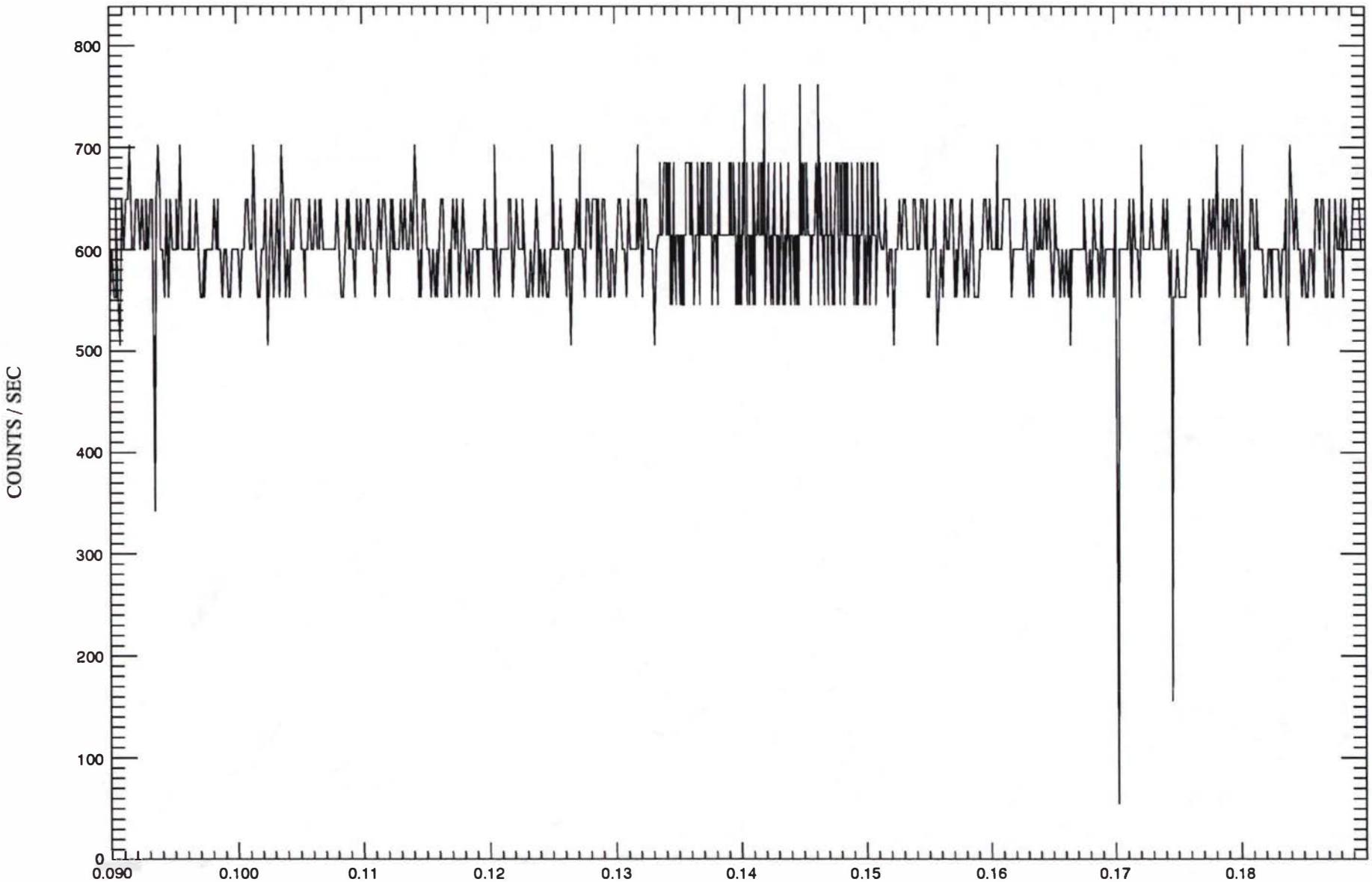




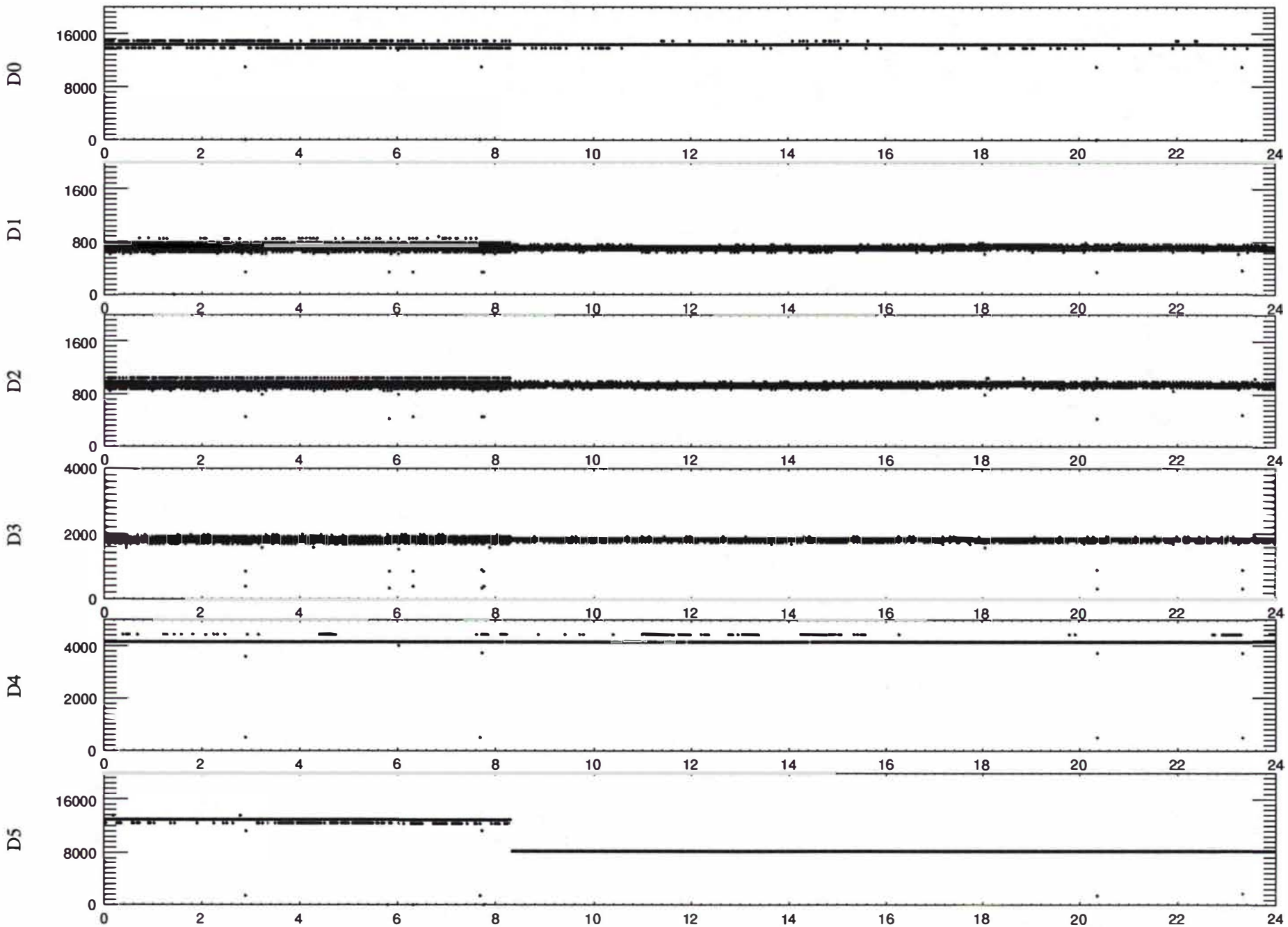
B# 24

HUS 2A, MODE 1, NOT AVERAGED QEDR day 112, year 1998 to day 112, year 1998 4/23/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 112, year 1998 to day 112, year 1998 8/18/98



UNIV' 'AL TIME

From RICHARDSON@fender.msfc.nasa.gov Fri Apr 24 10:36:24 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA06976; Fri, 24 Apr 1998 10:36:23 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA18533; Fri, 24 Apr 1998 10:36:23 -0700
Date: Fri, 24 Apr 1998 12:35:18 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980424123518.20e321b5@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6700
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6700
EVENT OF 1998 APR 23 DAY OF YEAR=113
EVENT CROSSING TIME AT BATSE      :  9941. S. OR 02:45:41.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 161.000  -58.000
BATSE PEAK COUNTING RATE:  18000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 23/ 4/  98 IS:
RA=  150.055 DEC=   13.069 DIST=    4.913 AU
BATSE-ULYSSES DISTANCE =  734920258. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=108.36 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -772.30 SECS.
CROSSING TIME AT ULYSSES    IS  9169. S. OR   02:32:48 +/-  442.21 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 23/ 4/  98 IS:
RA=   35.108 DEC=   13.823 DIST=    2.452 AU
MARS-BATSE DISTANCE =  366804224. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 59.72 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  617.01 SECS.
CROSSING TIME AT MARS       IS 10558. S. OR   02:55:58 +/-  192.81 SECONDS

                BATSE BURST TRIGGER
NO.: 6700

TIME: TJD=0926 SECONDS=9941

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=2.0    AZIMUTH=8.9    ERROR=3.9   DEGREES

COMMENTS:
GRB. SHORT SPIKE. DURATION APPROX = 0.3 SEC. VISIBLE ABOVE 300KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6700   980423   10926   09941    18000   161   -58    .3
```

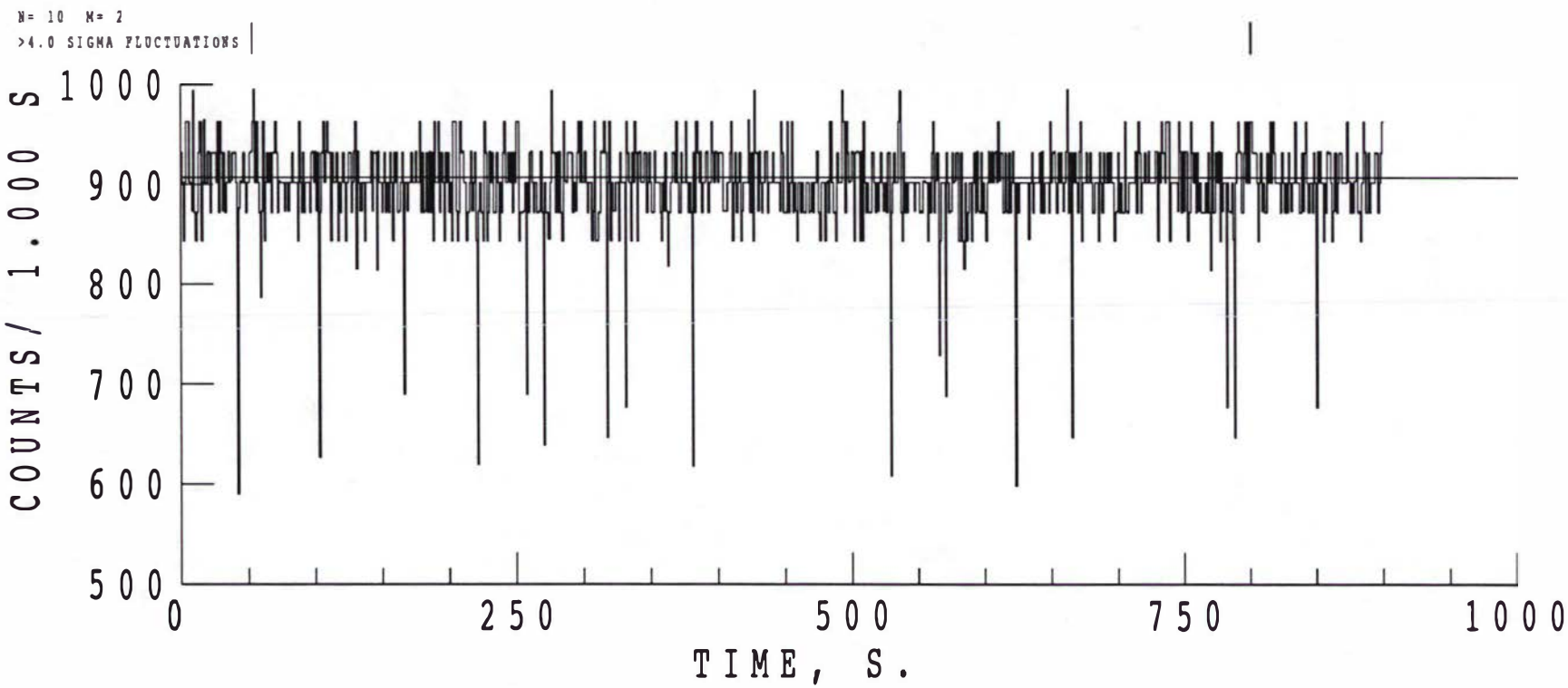
BATSE BURST# 6700

ULYSSES RT 24/ 4/98

23/ 4/98 8712.286 s

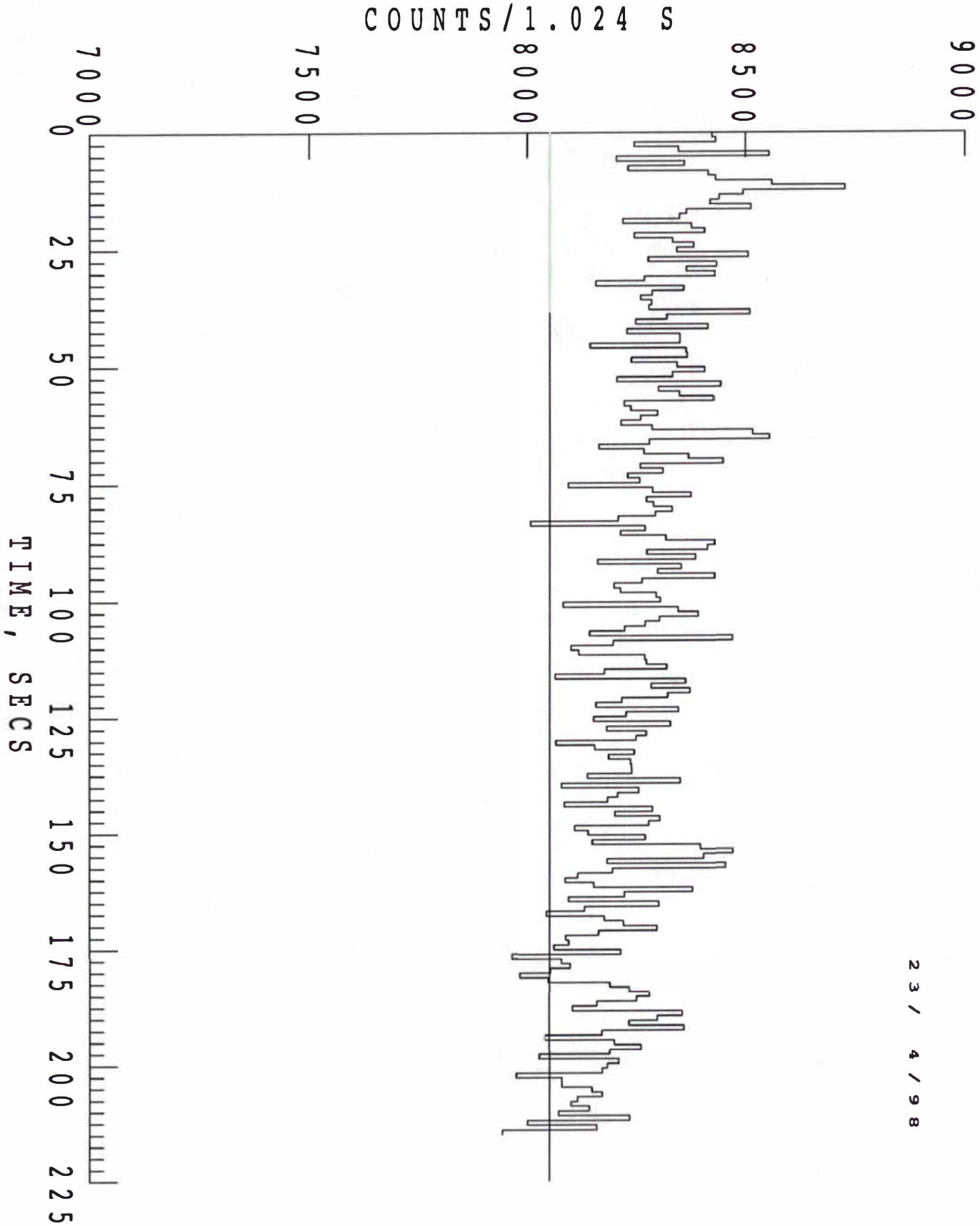
0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



BACODINE 6700 23/04/98 9929.441

25- 100 keV



23/ 4/98

From RICHARDSON@fender.msfc.nasa.gov Fri Apr 24 10:59:11 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Fri, 24 Apr 1998 12:58:49 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6701

TIME: TJD=0926 SECONDS=21723

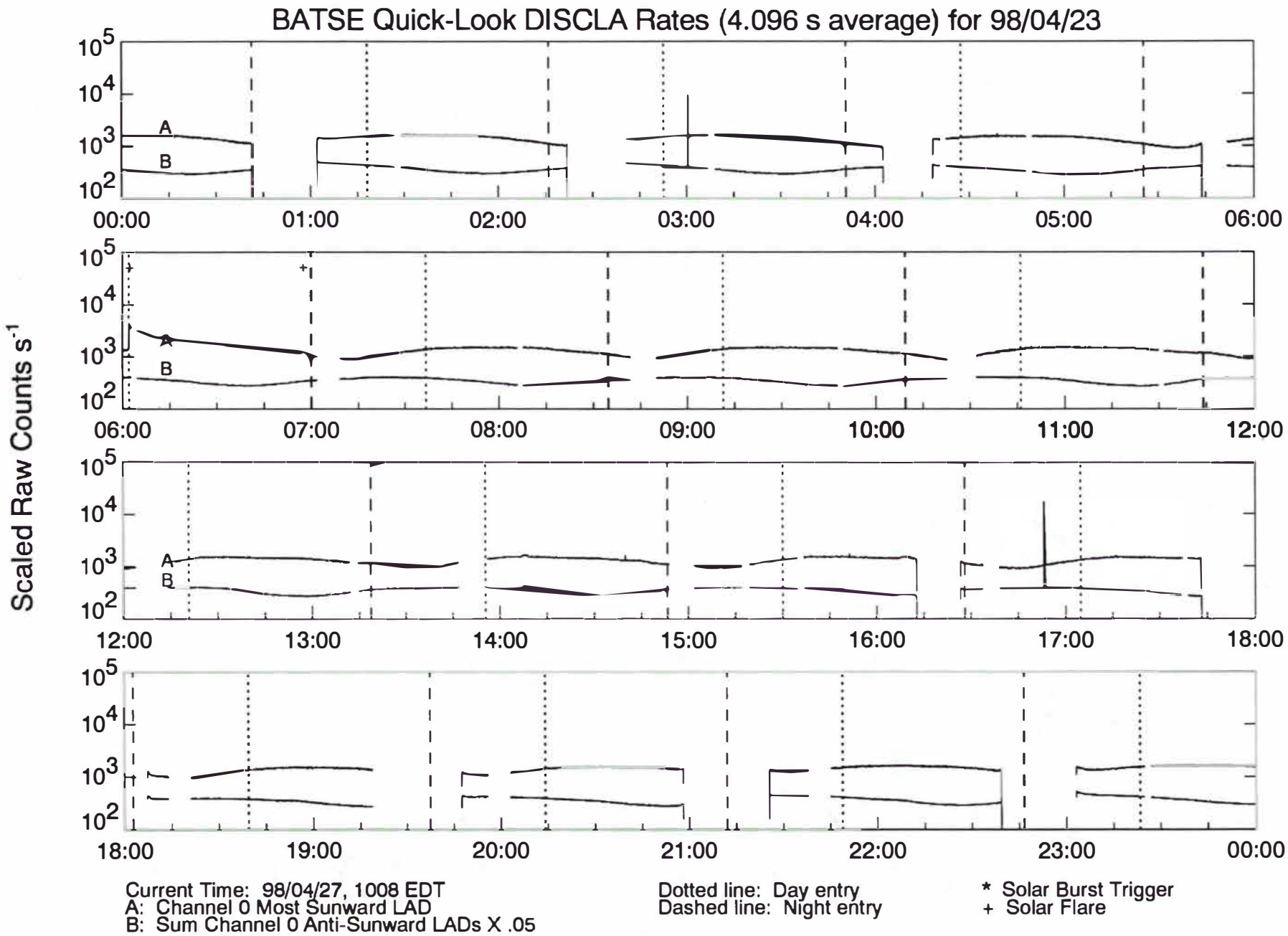
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

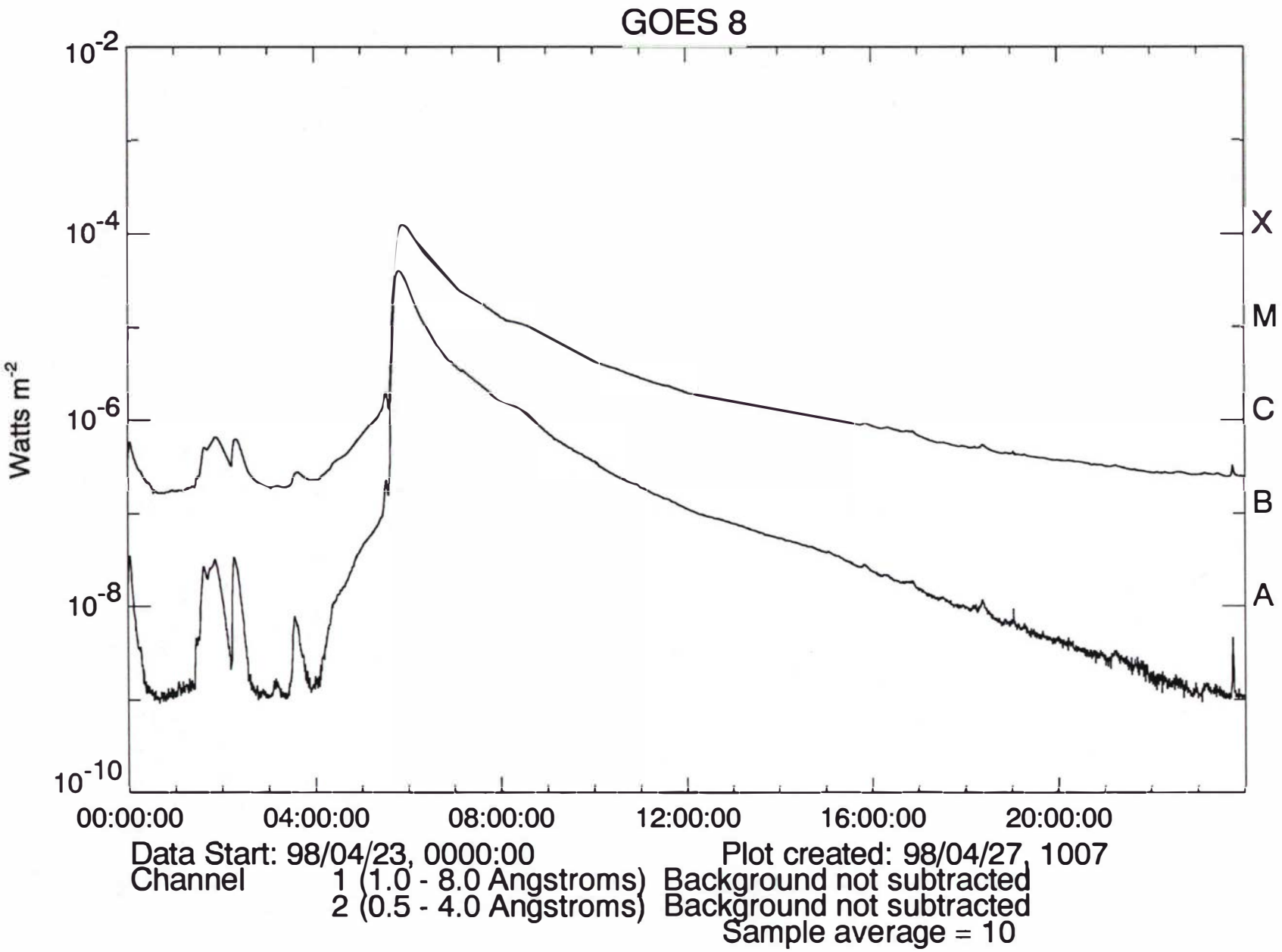
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

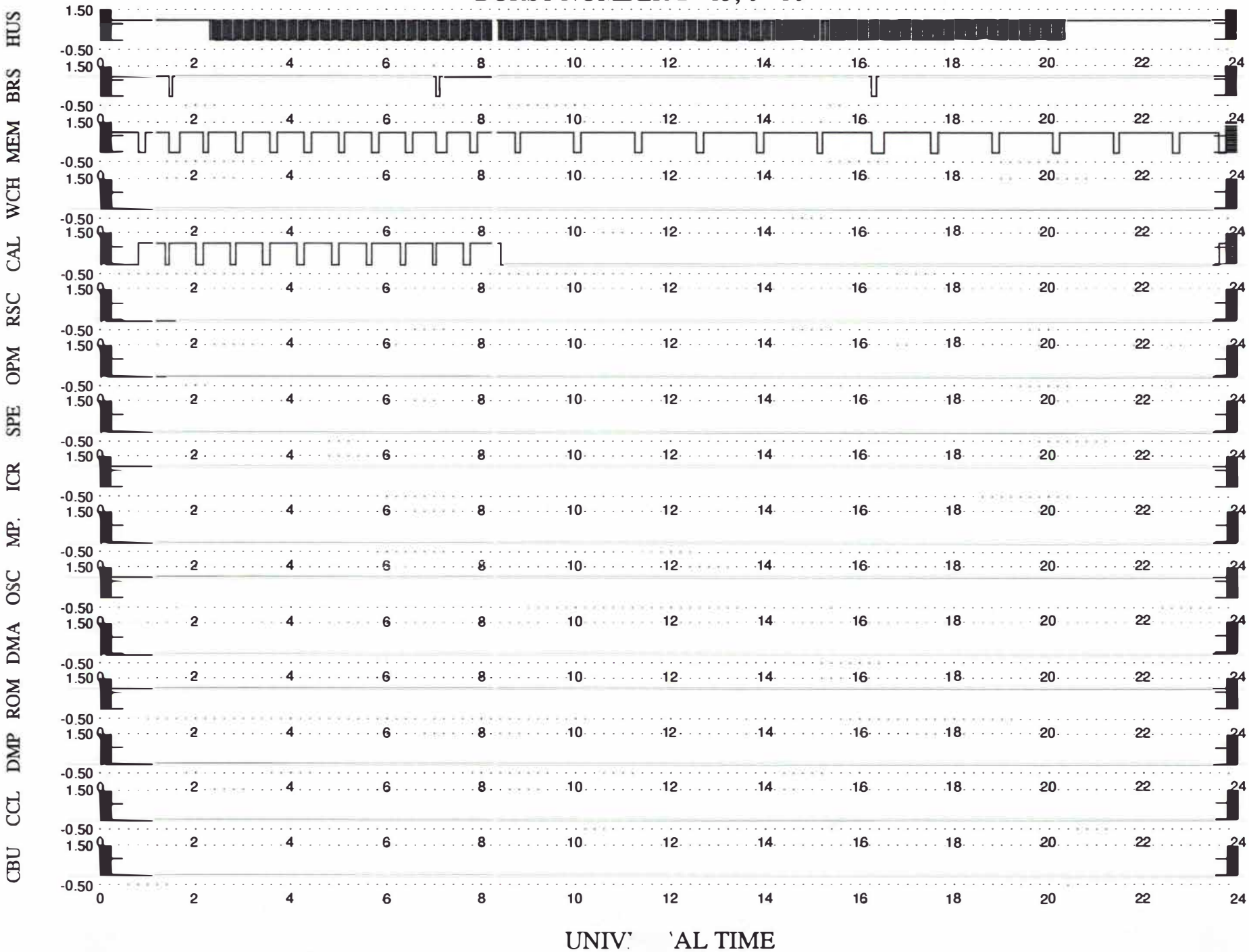
COMMENTS:
SOLAR FLARE. GOES X1.2. TRIGGERED ON EARTH SUNRISE. DURATION UNKNOWN SINCE PART OF THE EVENT WAS OCCULTED.


BATSE Quick-Look DISCLA Rates (4.096 s average) for 98/04/23
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: 98/04/27, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05
Dotted line: Day entry
Dashed line: Night entry
* Solar Burst Trigger
+ Solar Flare


GOES 8
Watts m-2
10-2
10-4
10-6
10-8
10-10
X
M
C
B
A
00:00:00
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 98/04/23, 0000:00
Plot created: 98/04/27, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

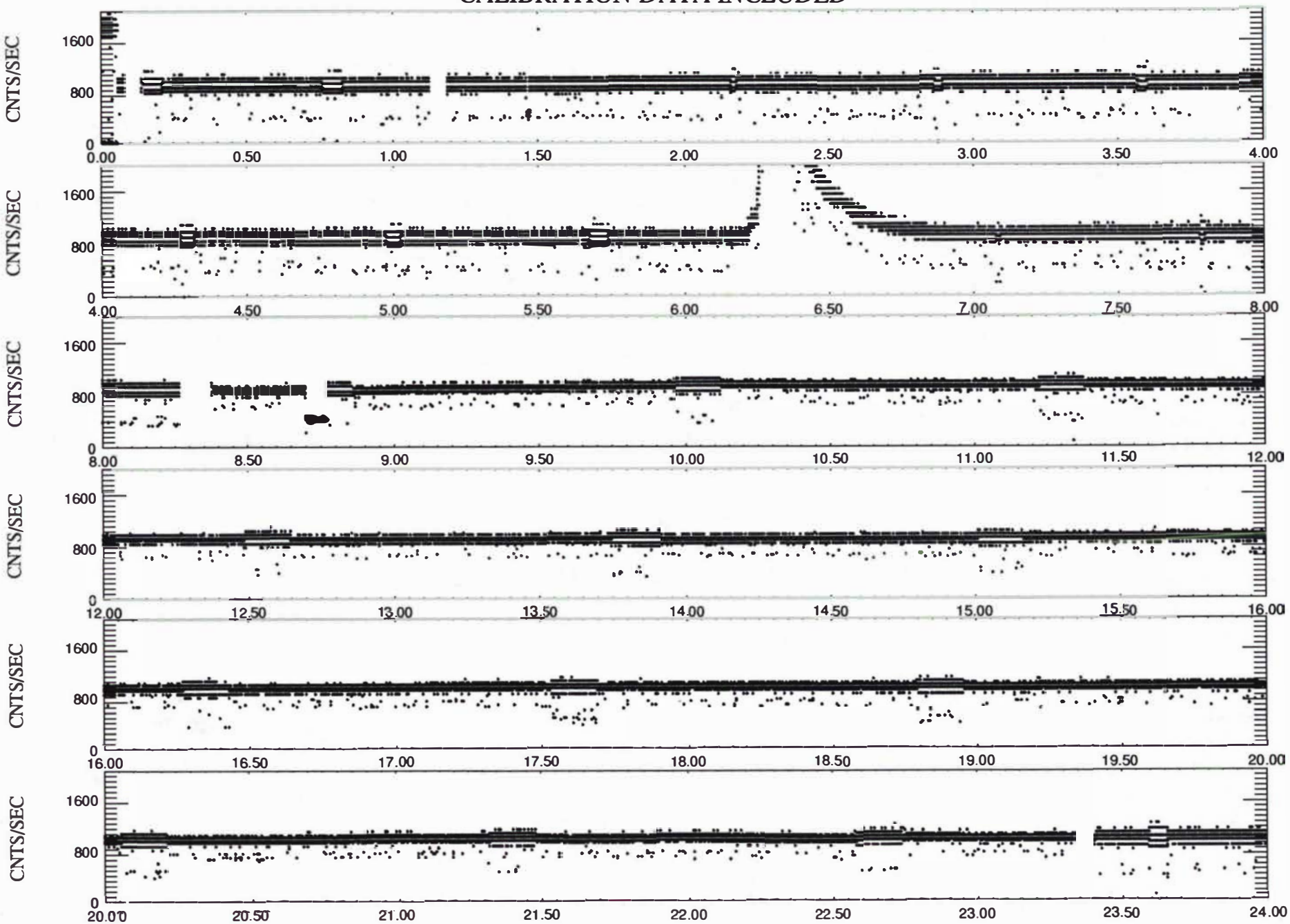
HUS MODES EDR day 113, year 1998 to day 113, year 1998 8/18/98

BURST NUMBER 2 - 15, 0 - 10



HUS 2A, MODE 1, NOT AVERAGED EDR day 113, year 1998 to day 113, year 1998 8/18/98

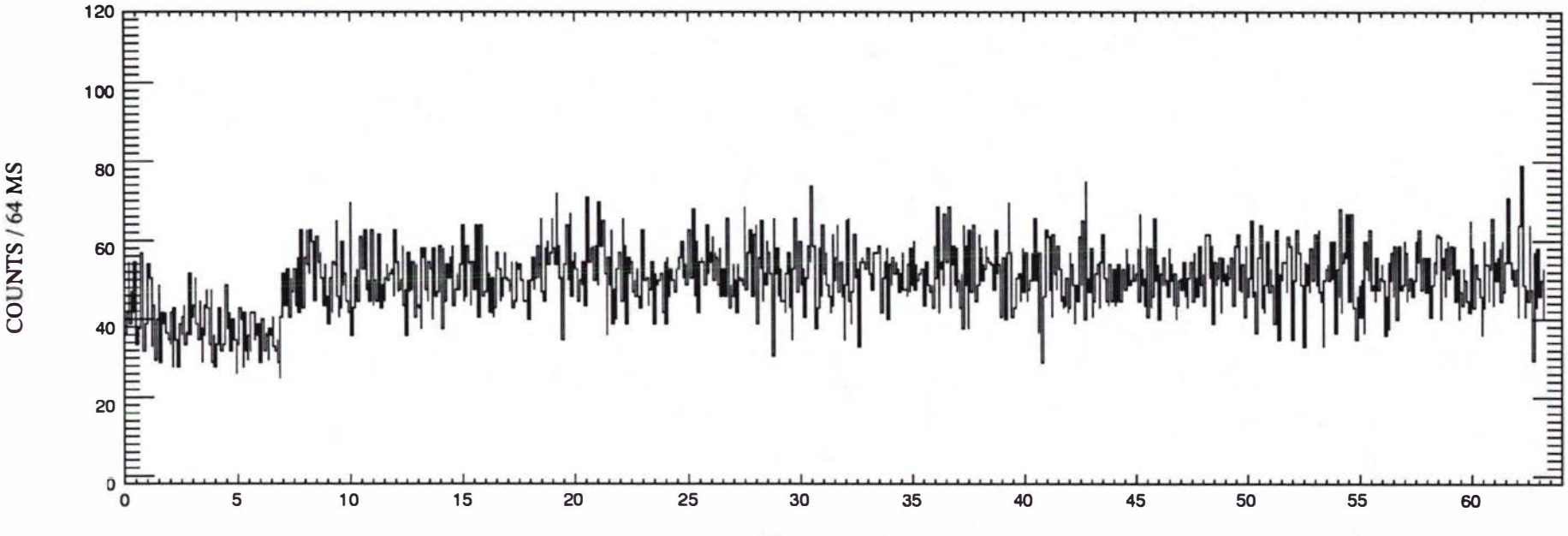
CALIBRATION DATA INCLUDED

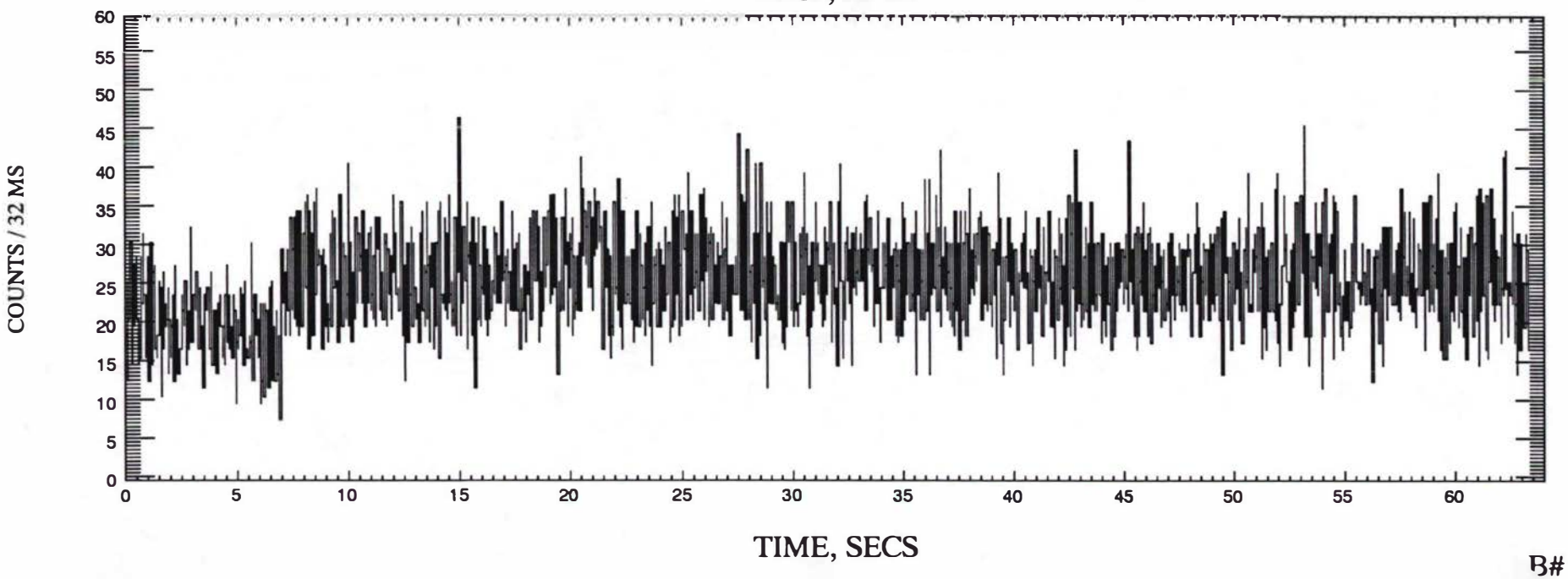


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 2 at UT= 0.053903516134 h= 194.053 s 00:03:14.053

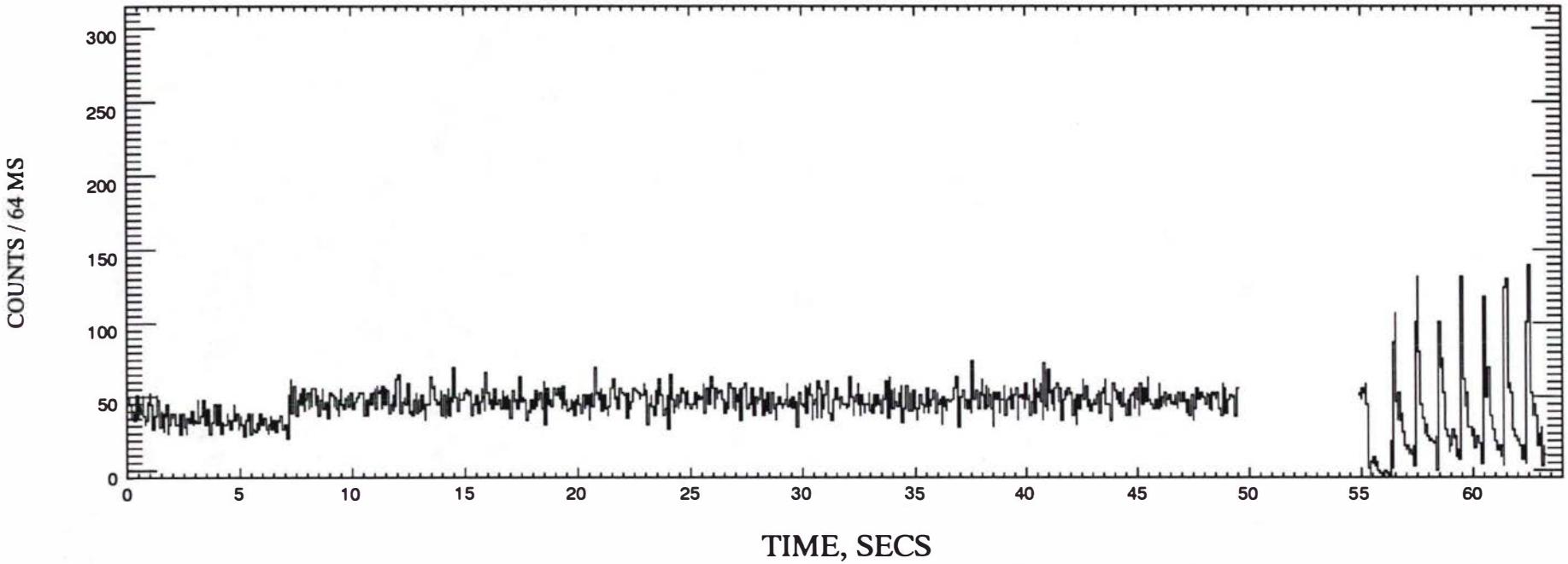


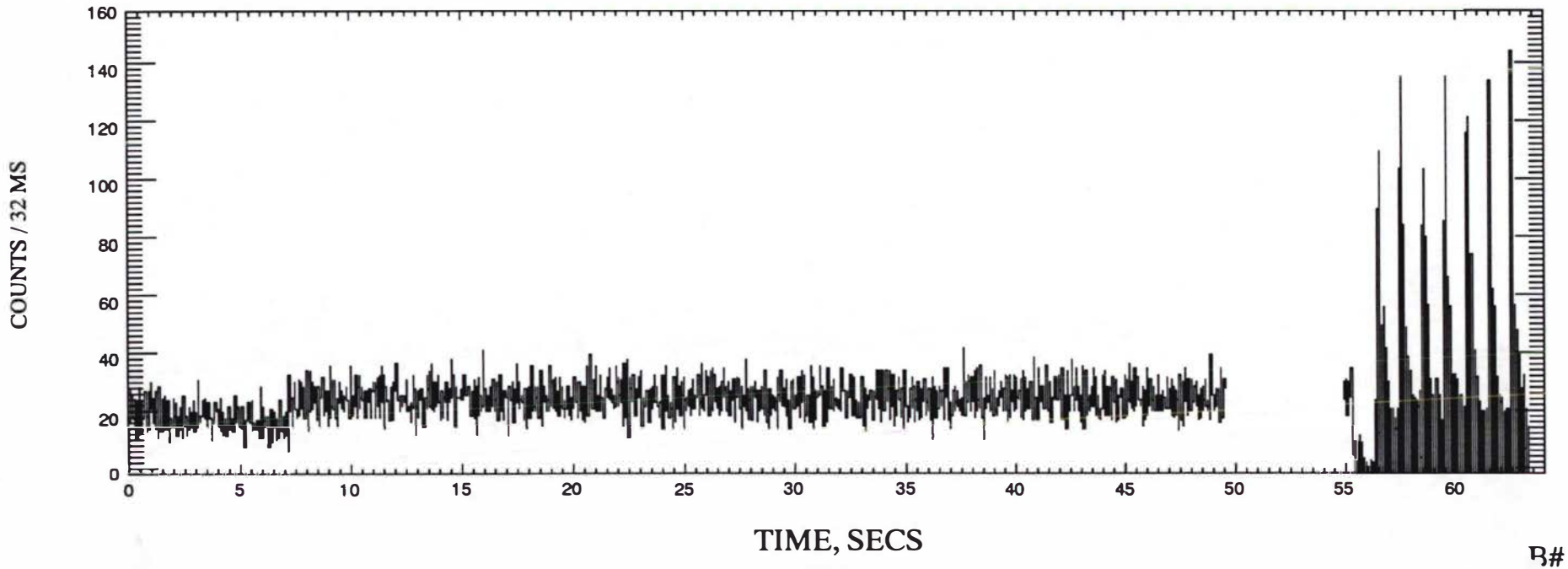


B# 1

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 3 at UT= 0.756062291463 h= 2721.824 s 00:45:21.824

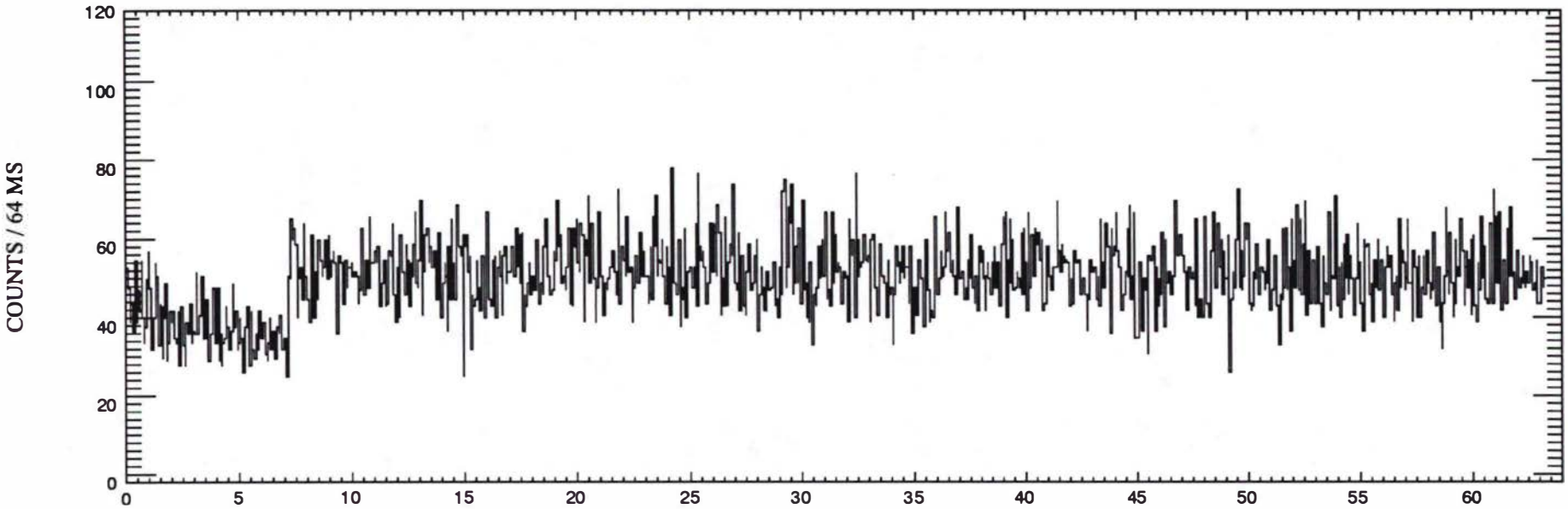




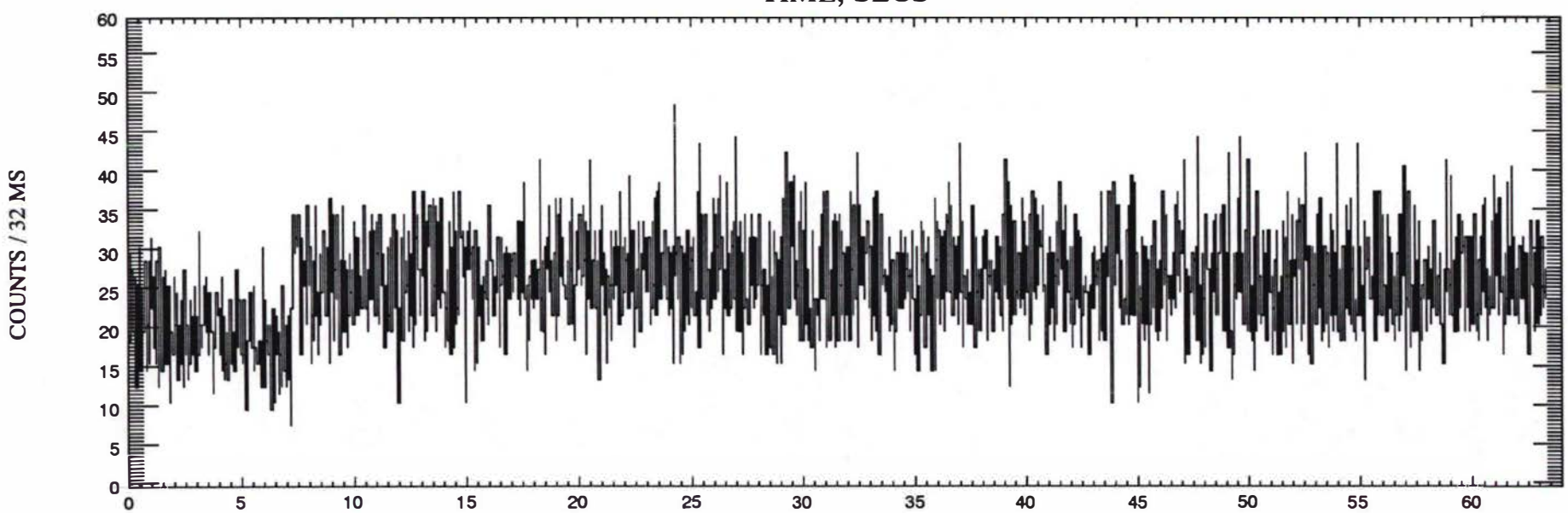
B# 2

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 4 at UT= 1.458294660780 h= 5249.861 s 01:27:29.861



TIME, SECS

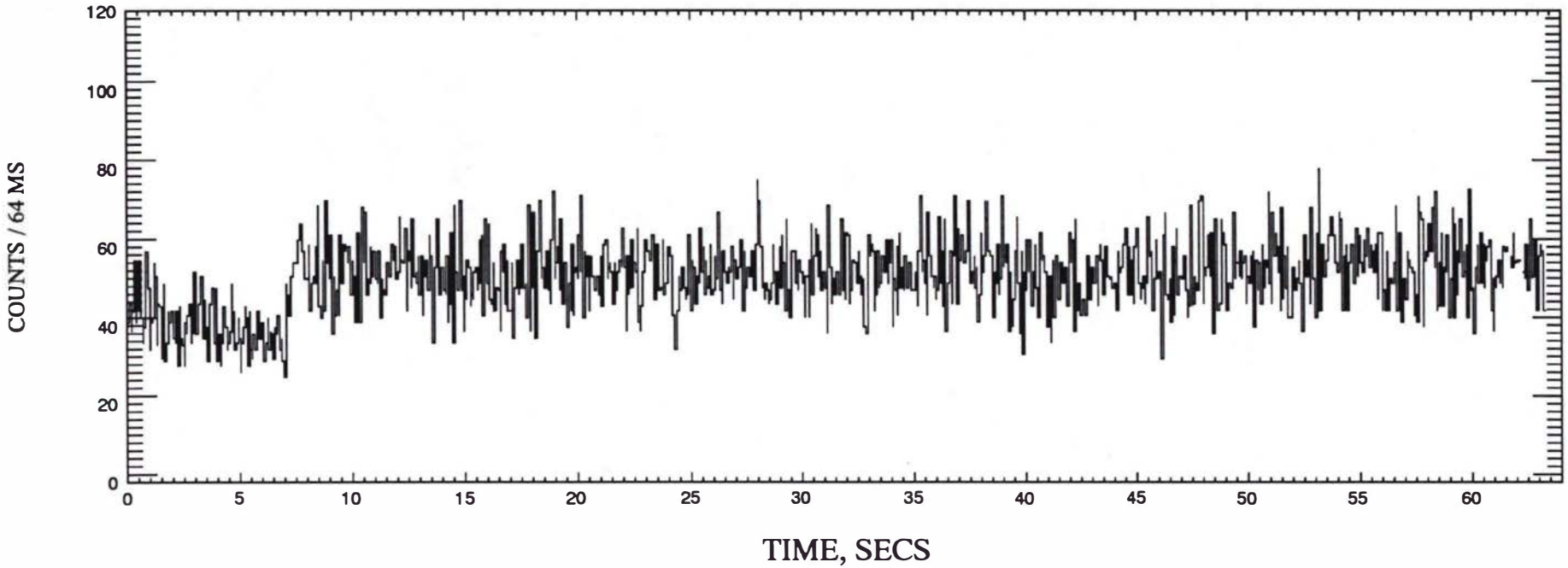


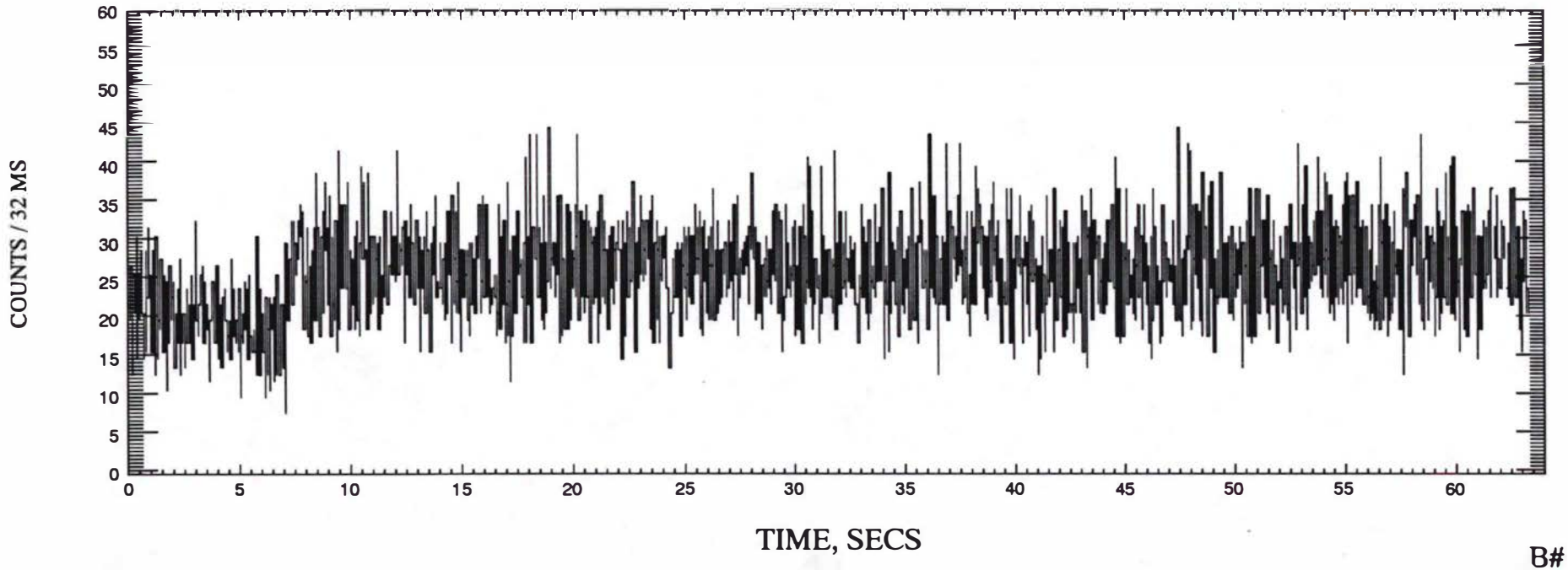
TIME, SECS

B# 3

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 5 at UT= 2.160562782288 h= 7778.026 s 02:09:38.026

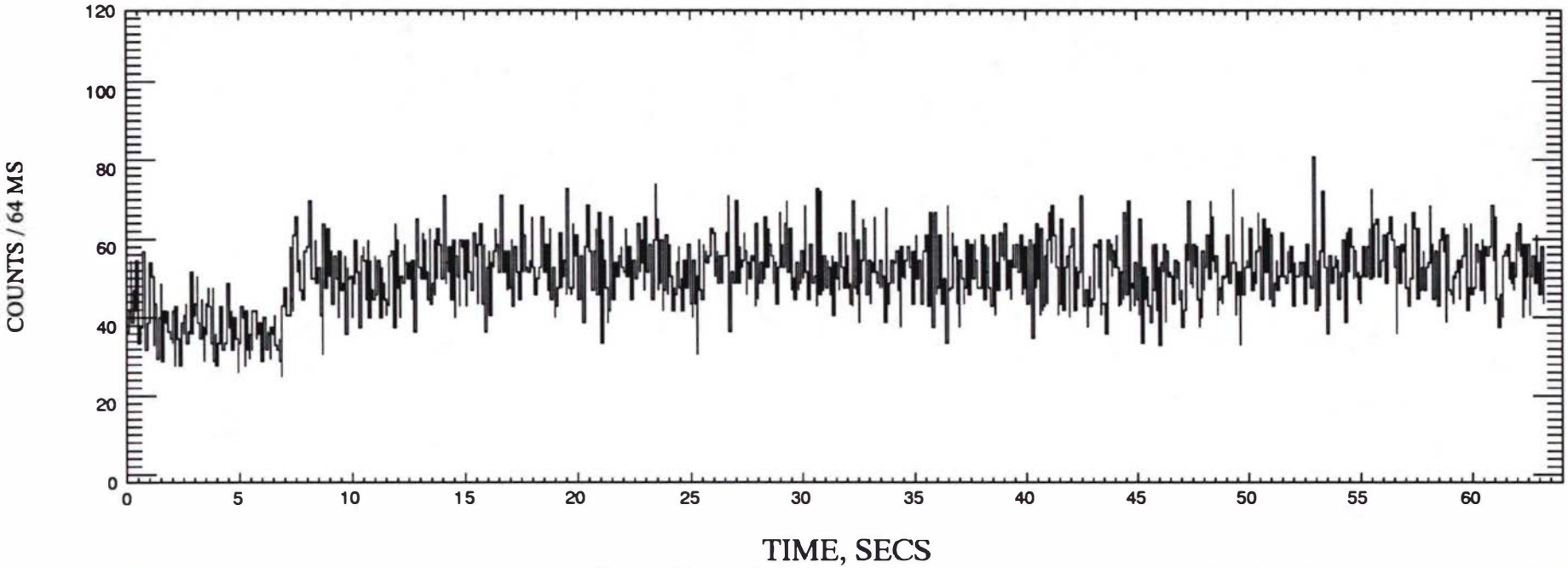


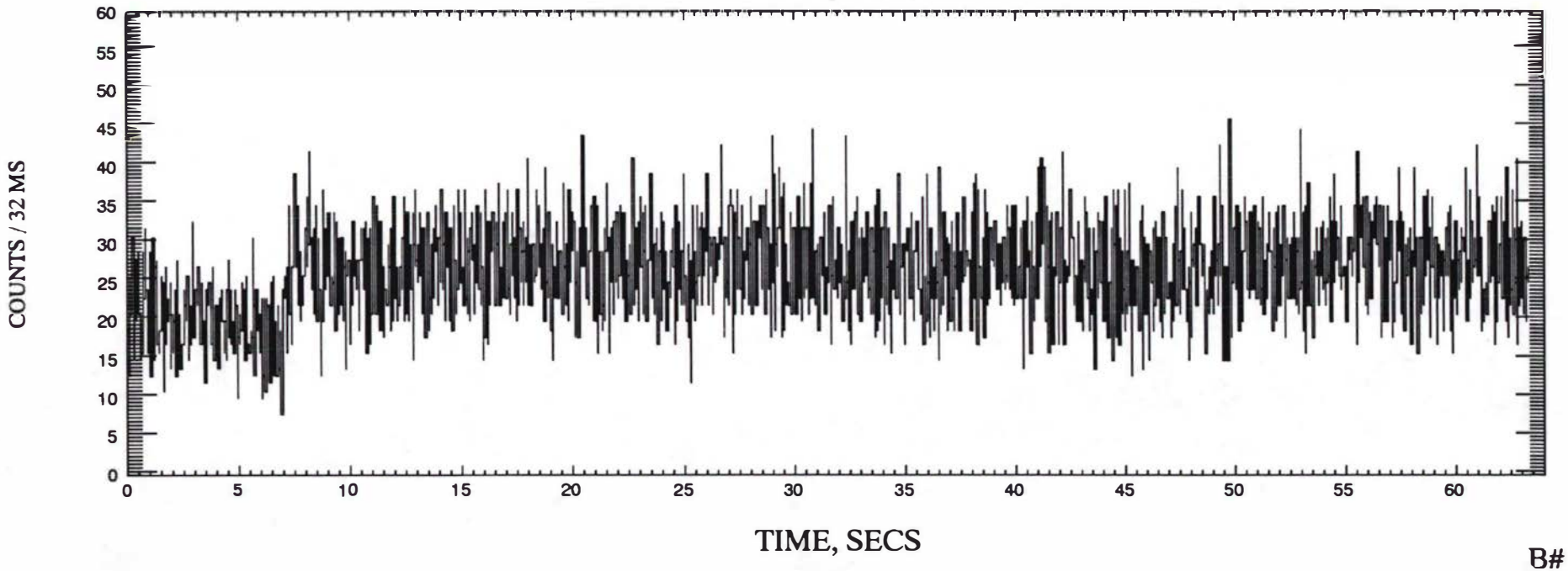


B# 4

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 6 at UT= 2.862822986179 h=10306.163 s 02:51:46.163

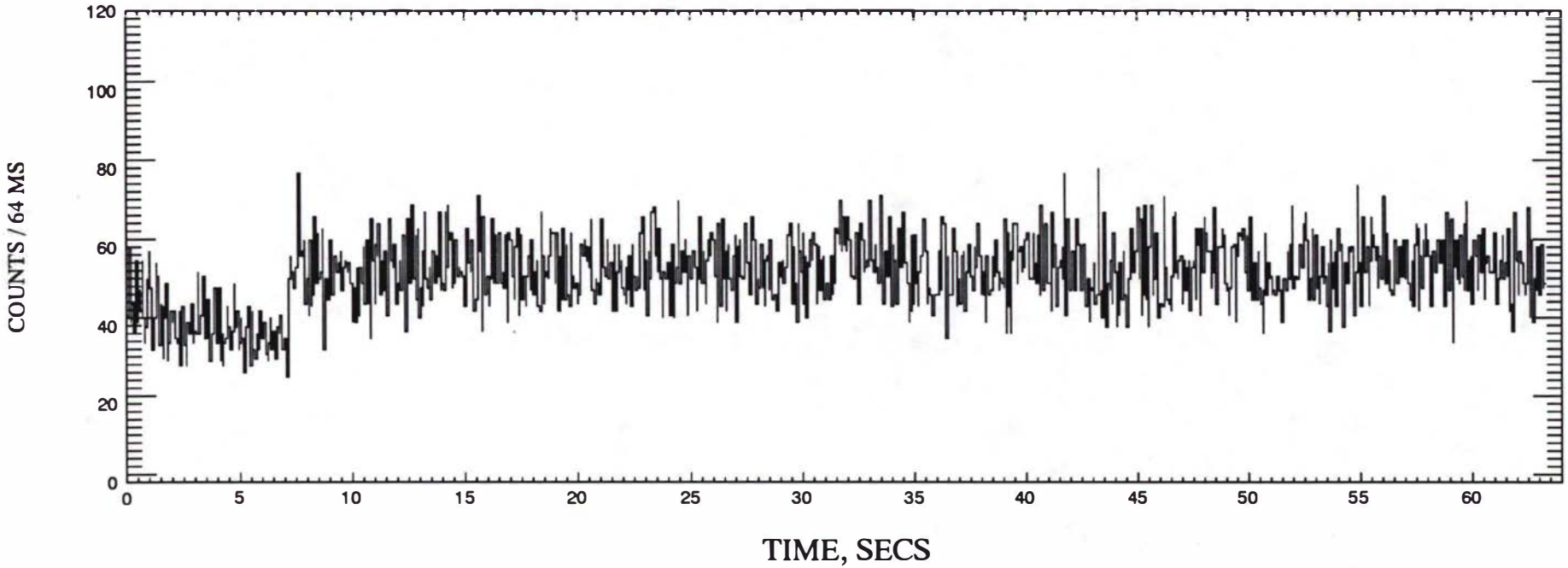


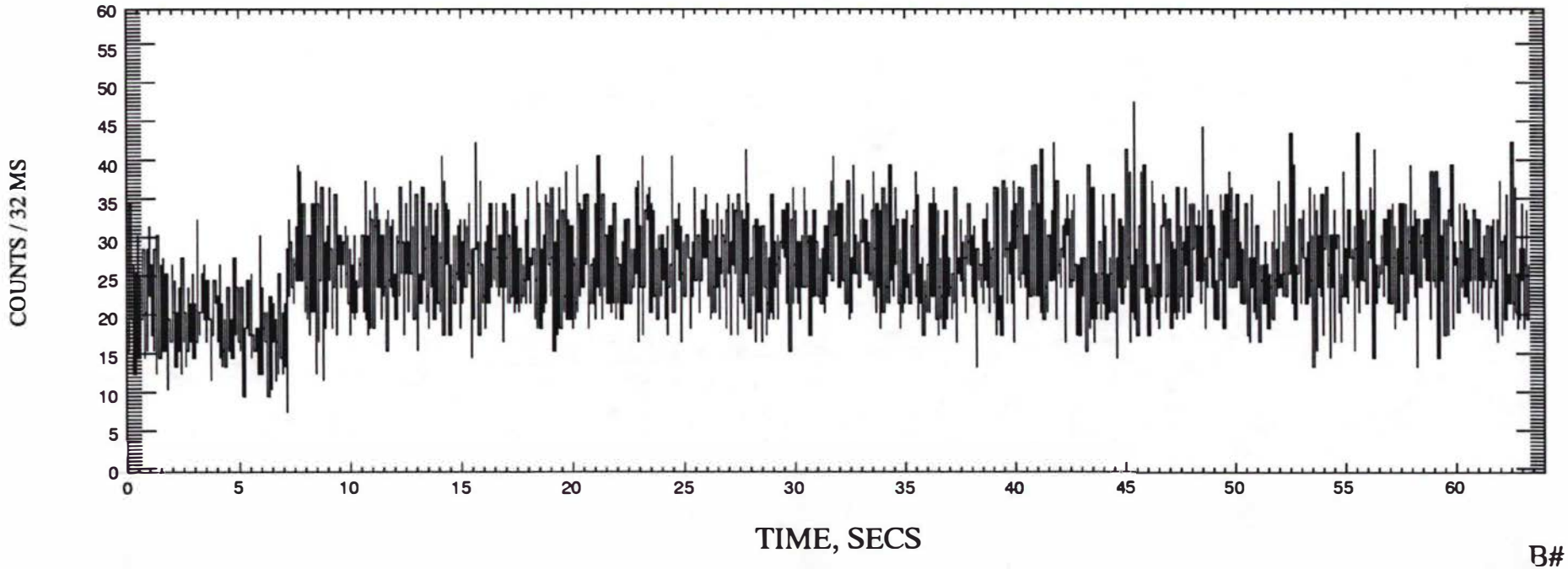


B# 5

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 7 at UT= 3.564983359443 h=12833.940 s 03:33:53.940

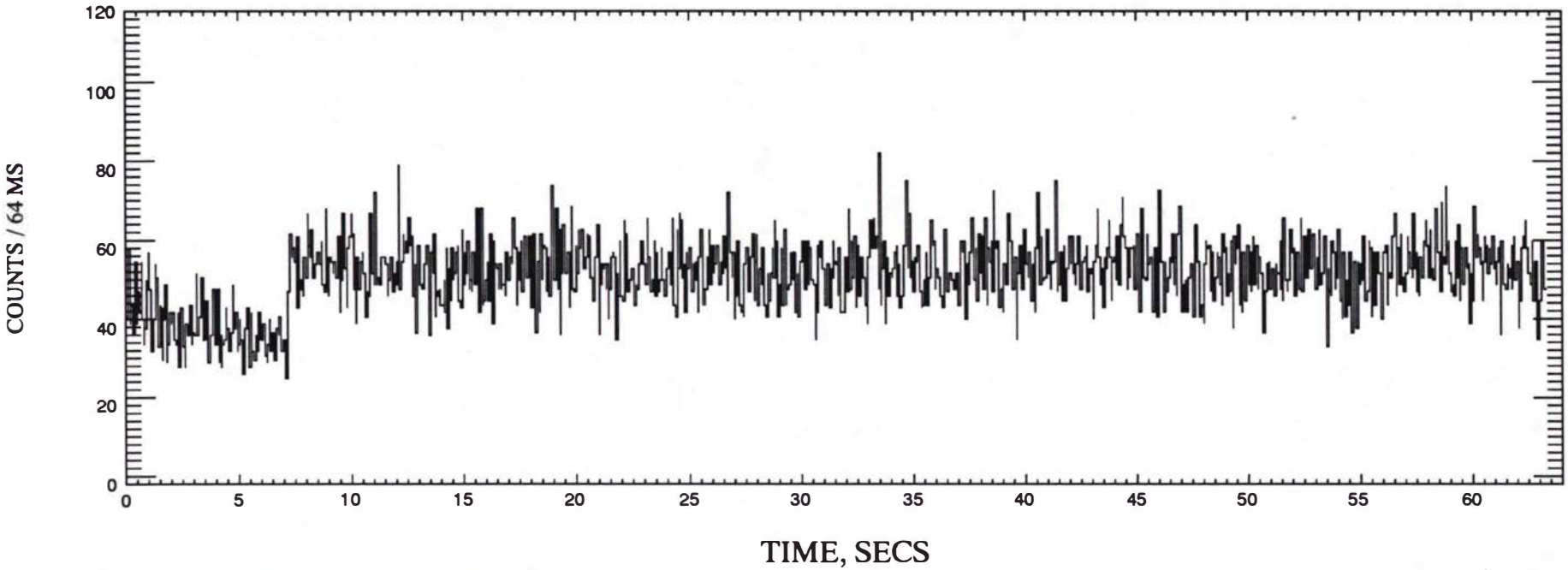


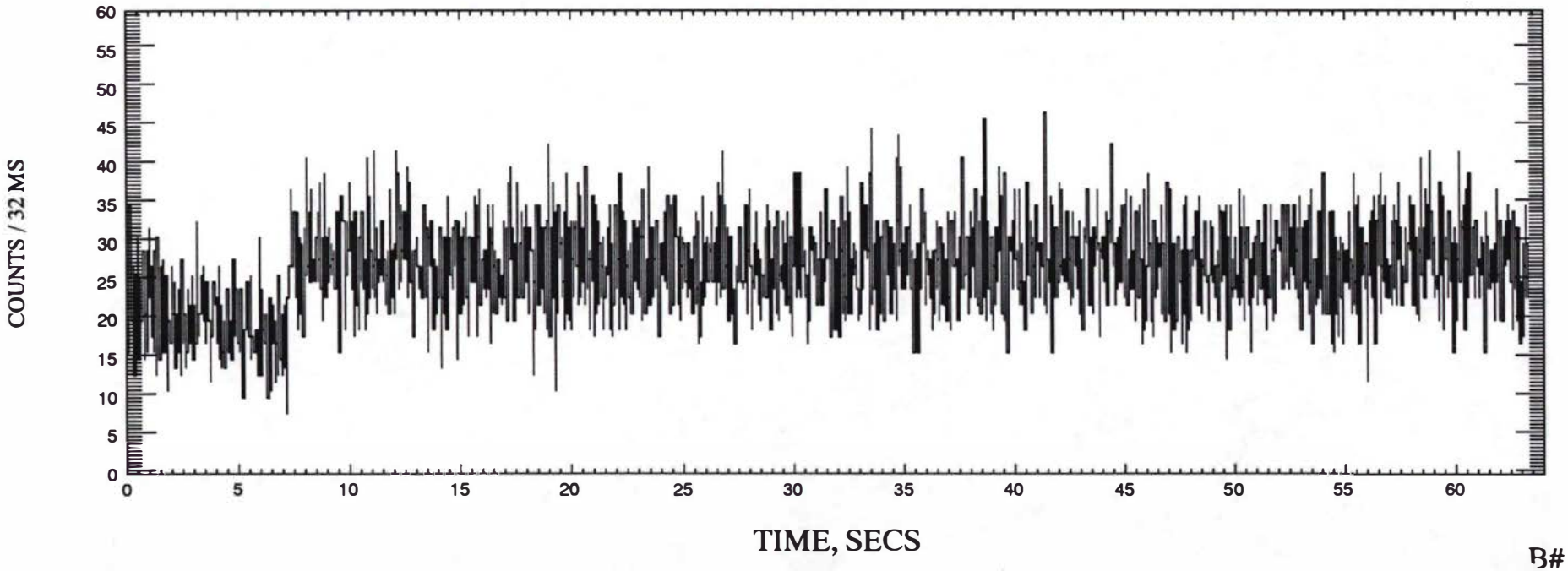


B# 6

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 8 at UT= 4.267213177151 h=15361.967 s 04:16:01.967

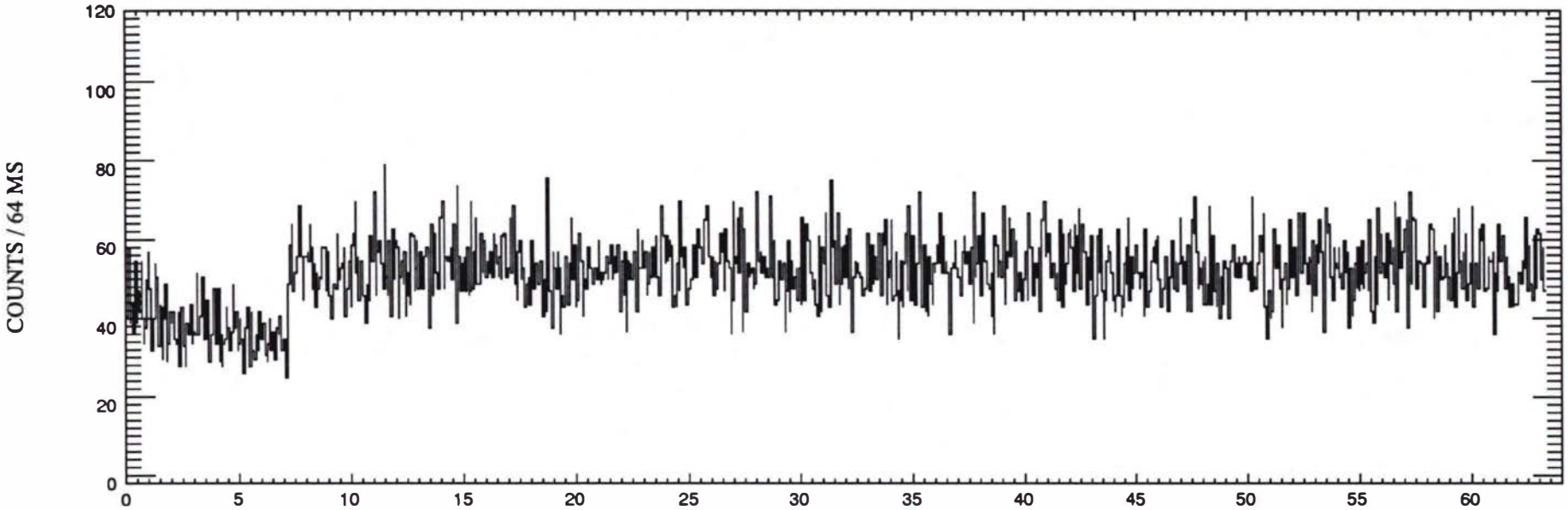




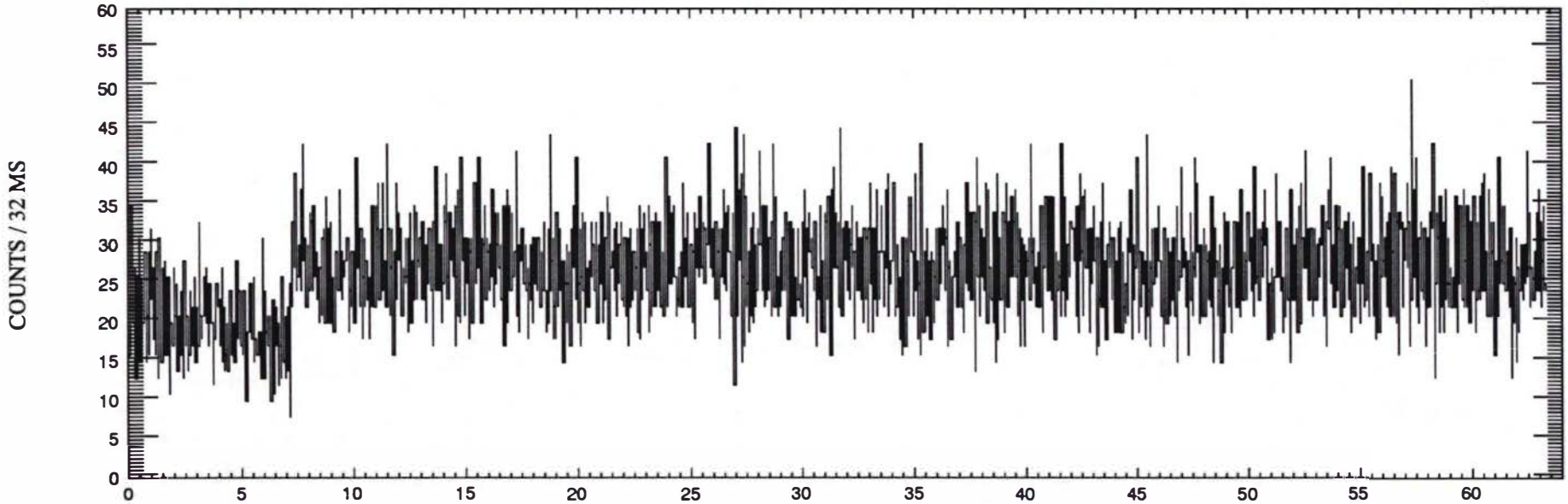
B# 7

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 9 at UT= 4.969442999098 h=17889.995 s 04:58:09.995



TIME, SECS

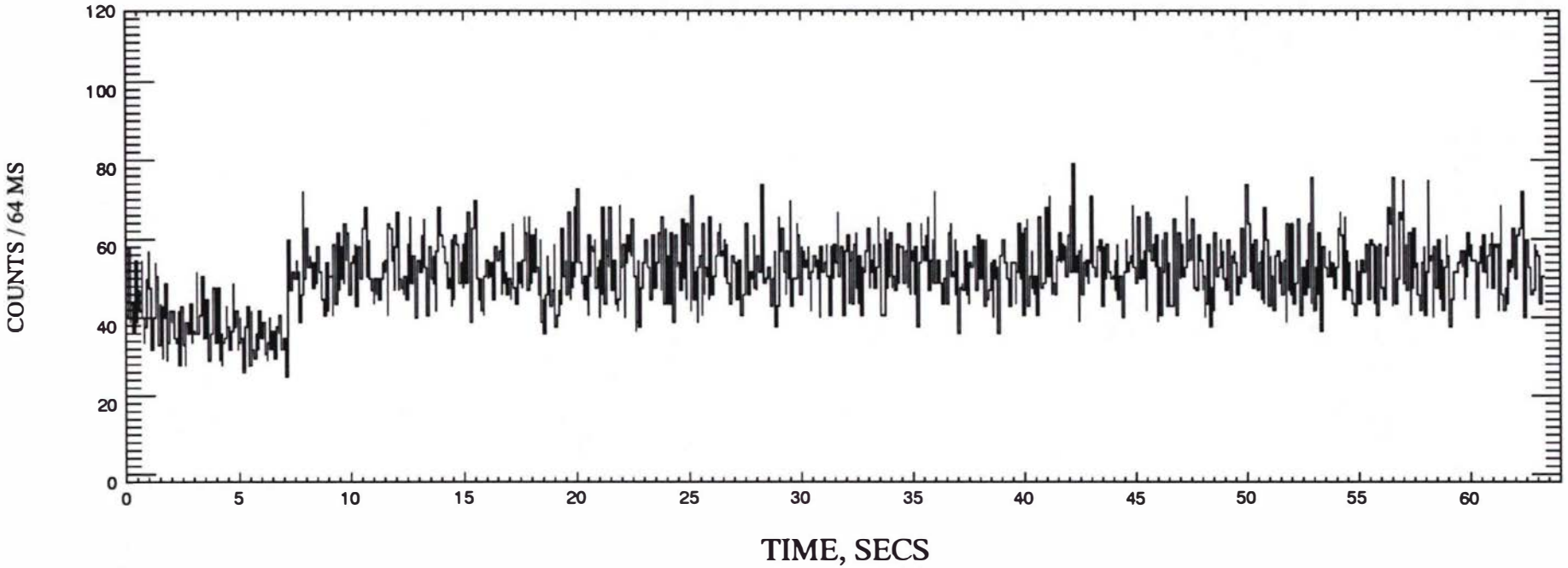


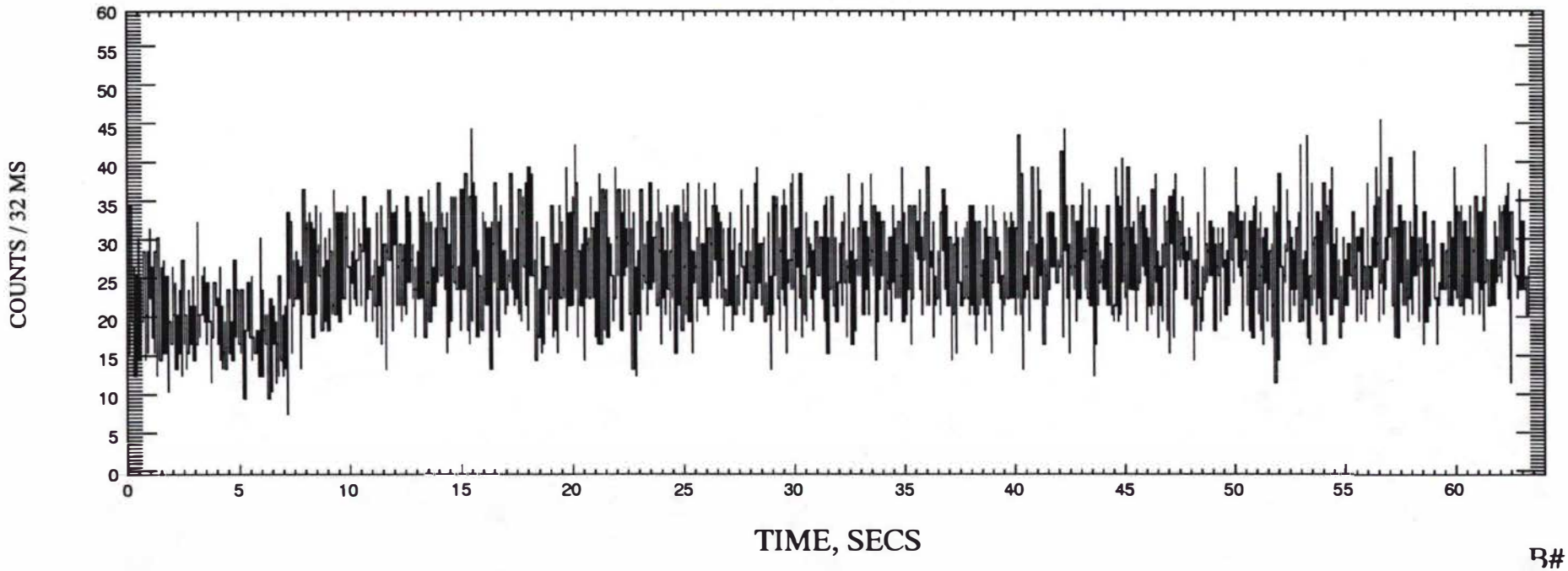
TIME, SECS

B# 8

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 10 at UT= 5.671672816806 h=20418.022 s 05:40:18.022

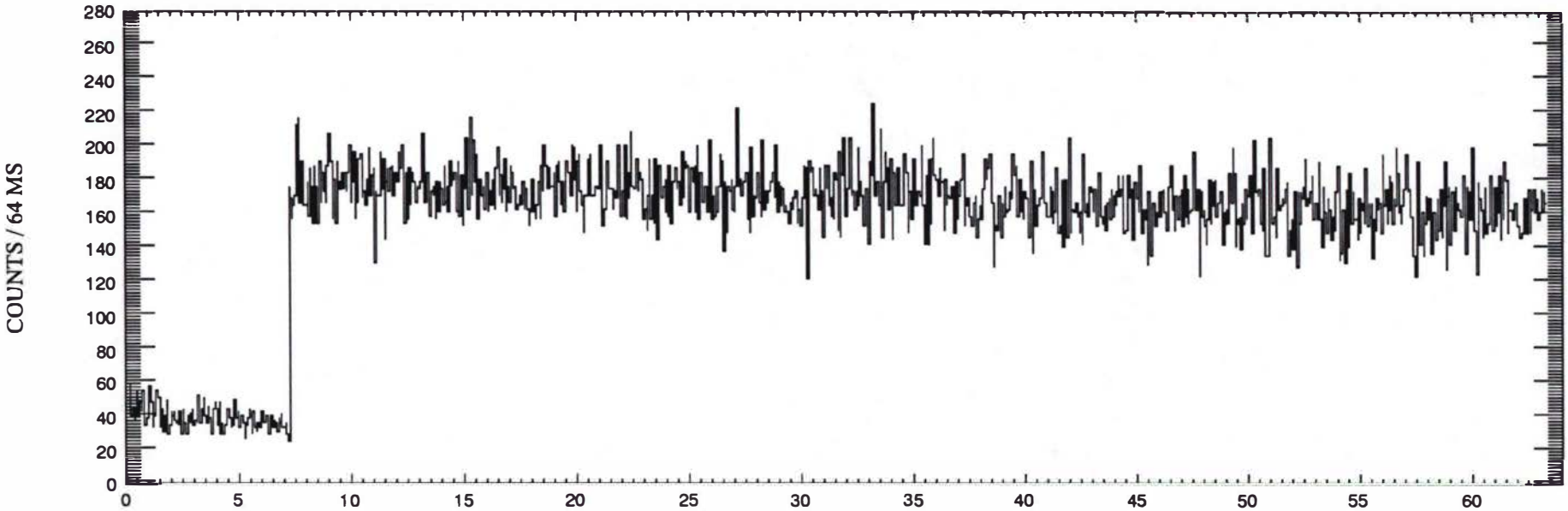




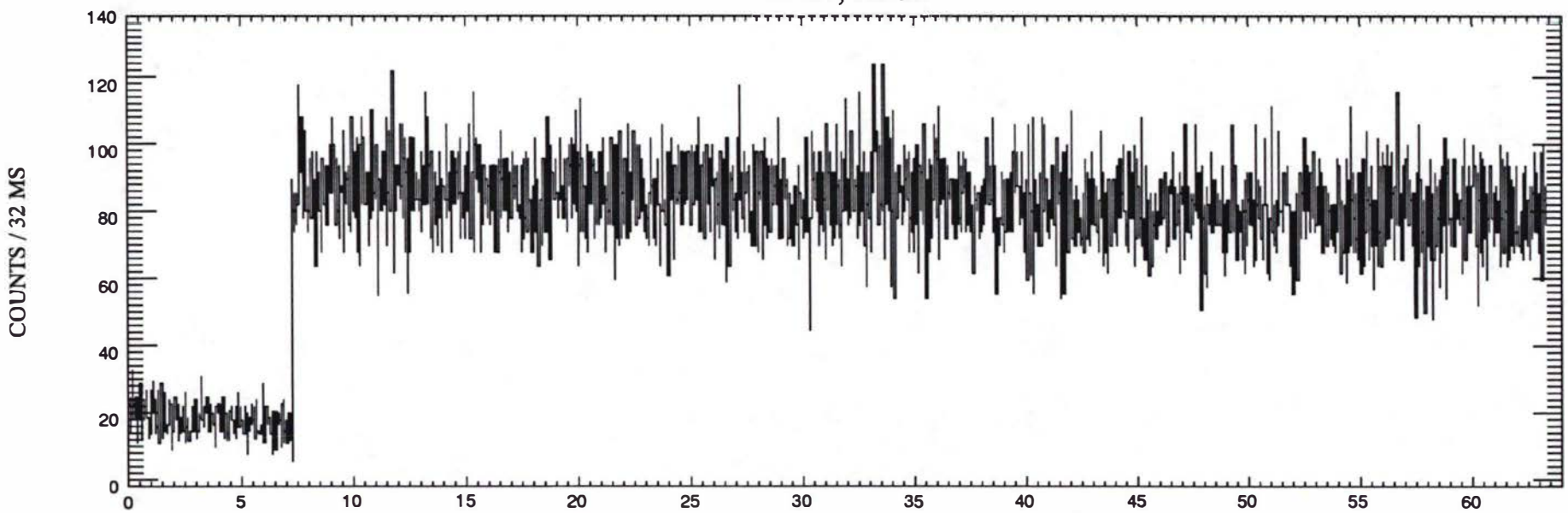
B# 9

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 11 at UT= 6.373880937364 h=22945.971 s 06:22:25.971



TIME, SECS

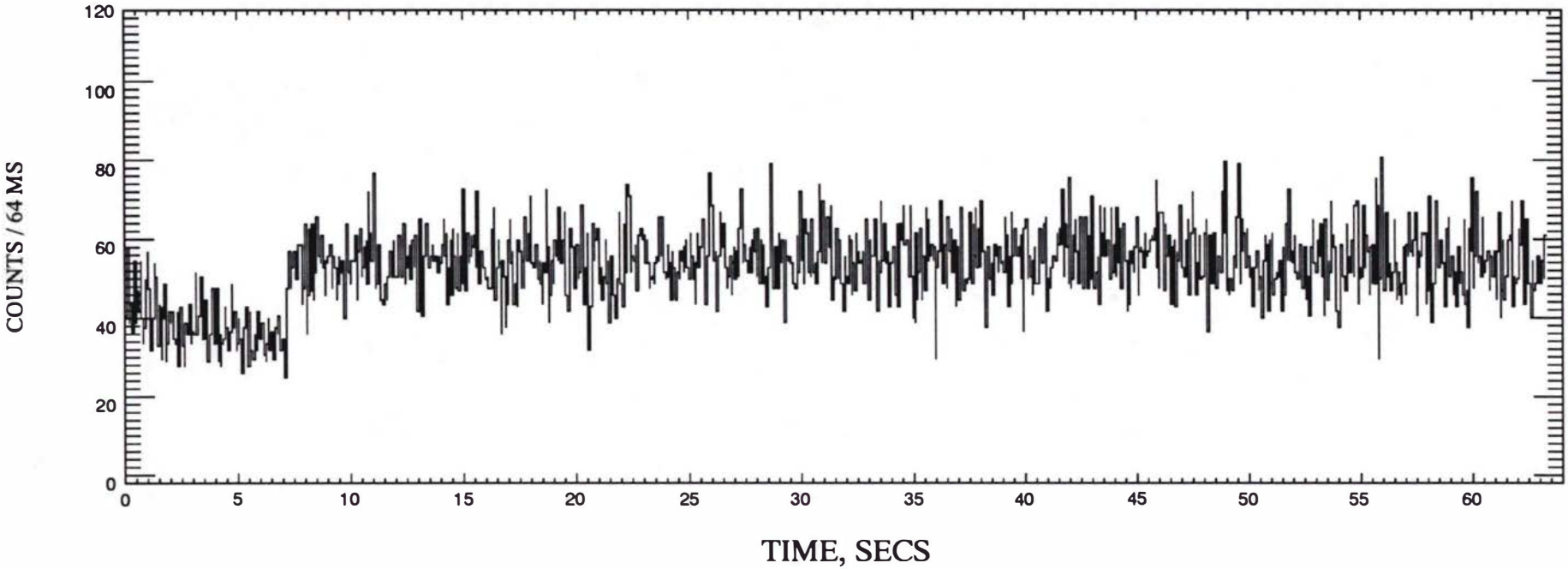


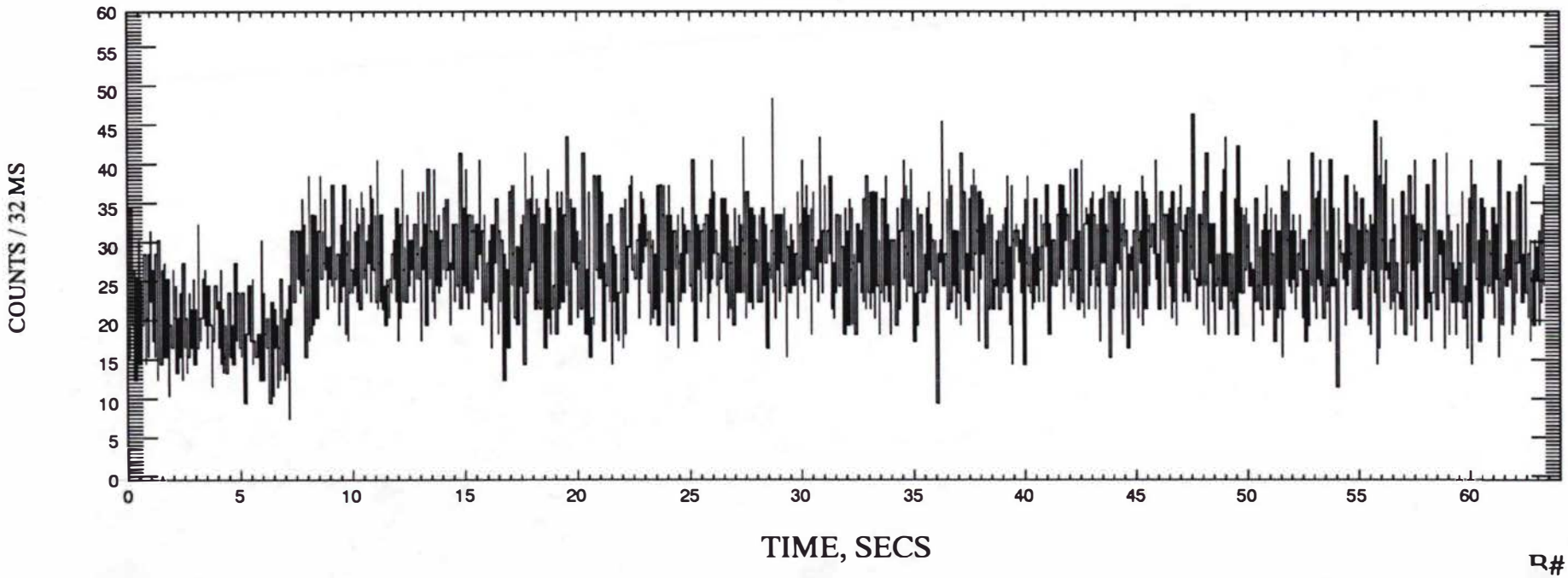
TIME, SECS

R# 10

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 12 at UT= 7.076132456462 h=25474.077 s 07:04:34.077

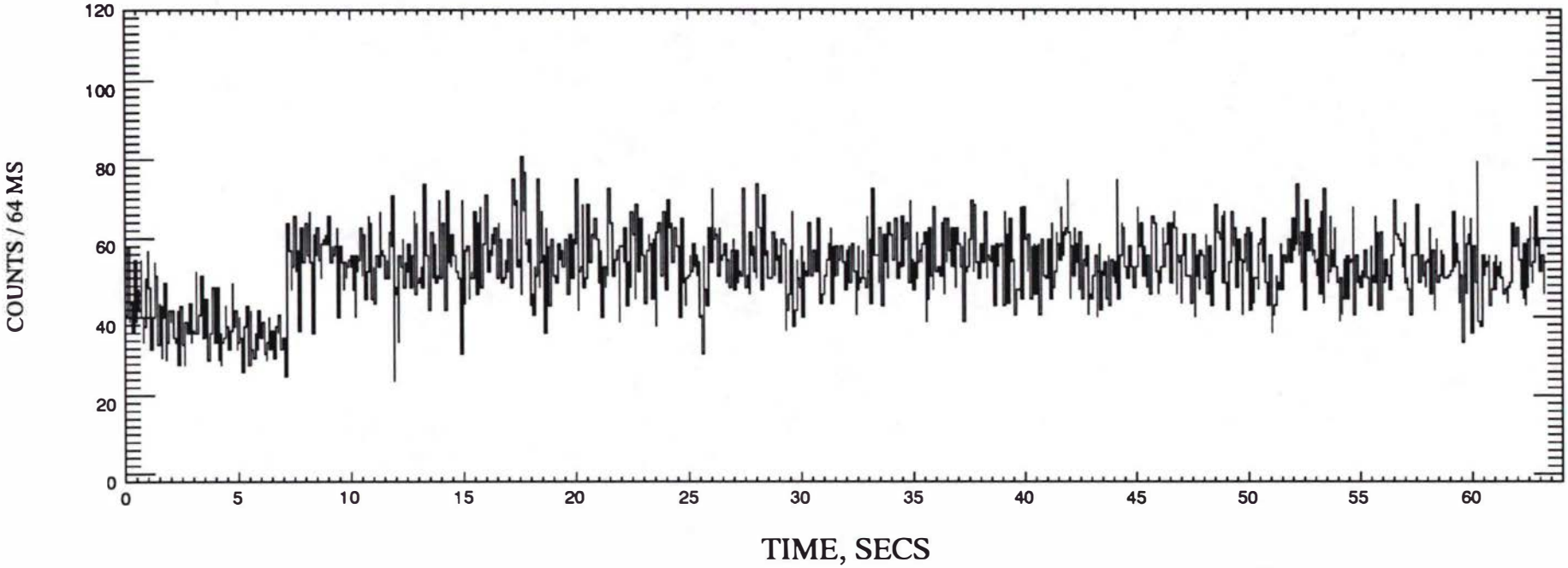


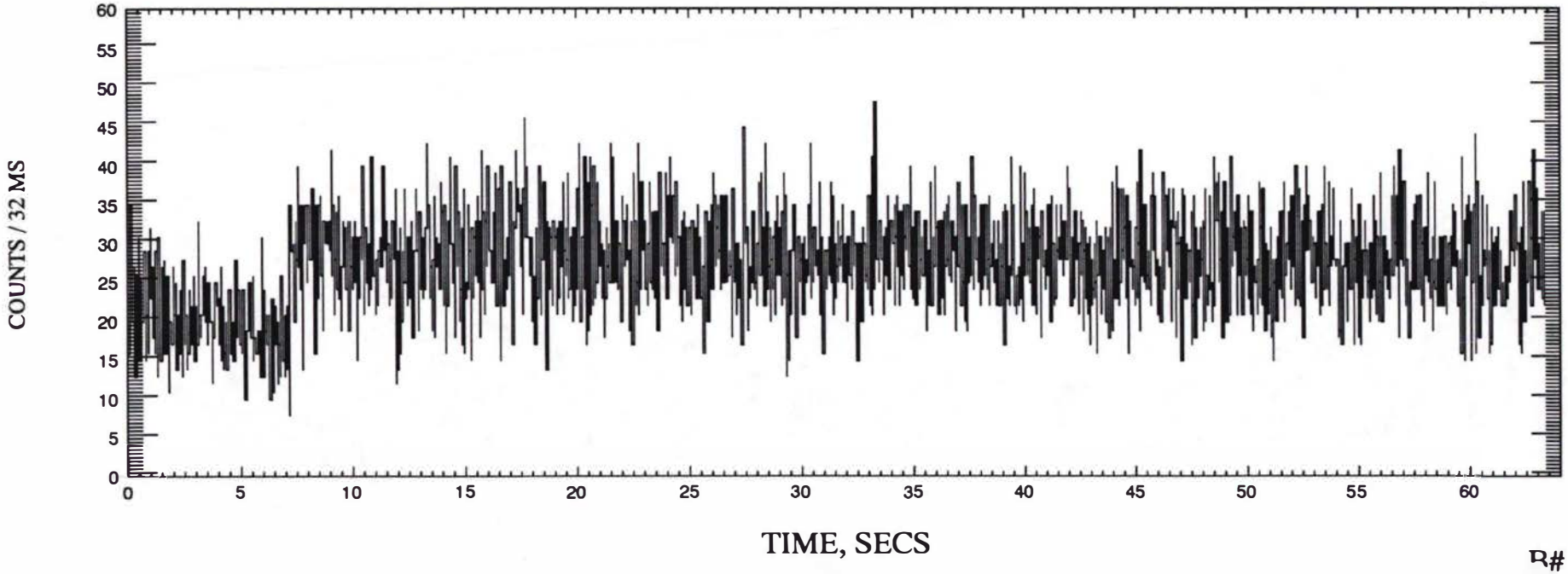


R# 11

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 13 at UT= 7.778357175191 h=28002.086 s 07:46:42.086

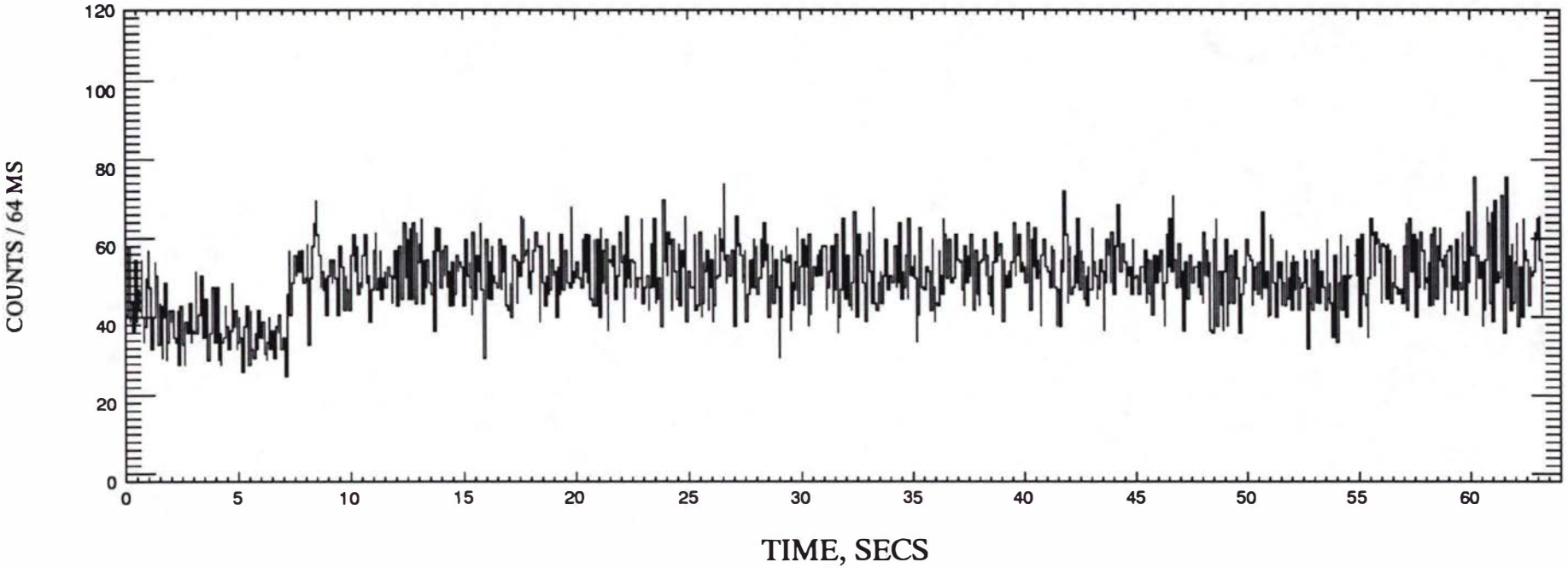


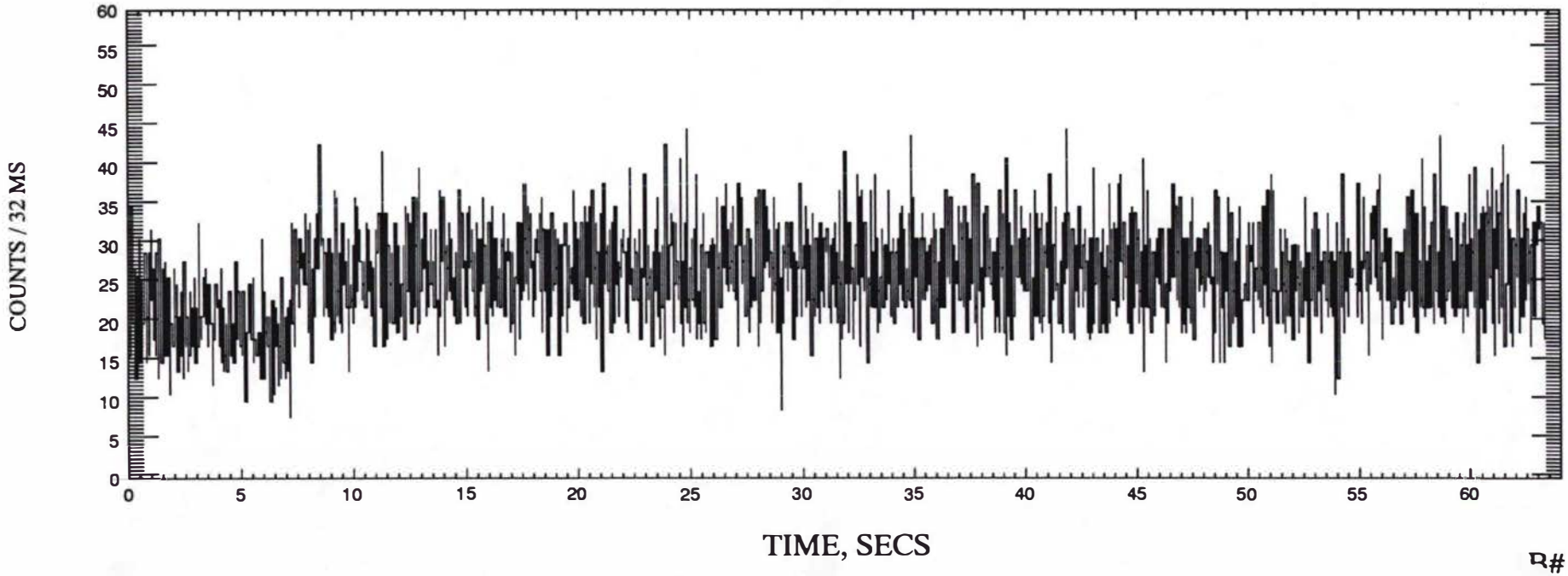


B# 12

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 14 at UT= 8.693927790324 h=31298.140 s 08:41:38.140

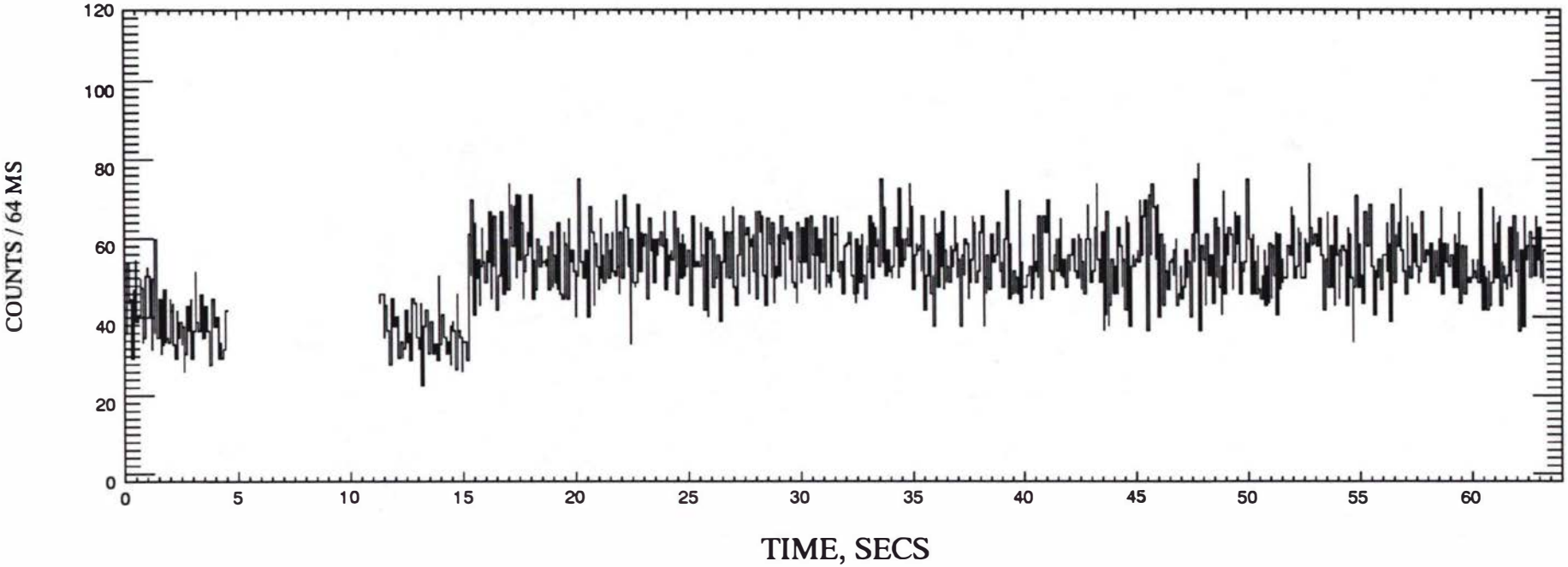


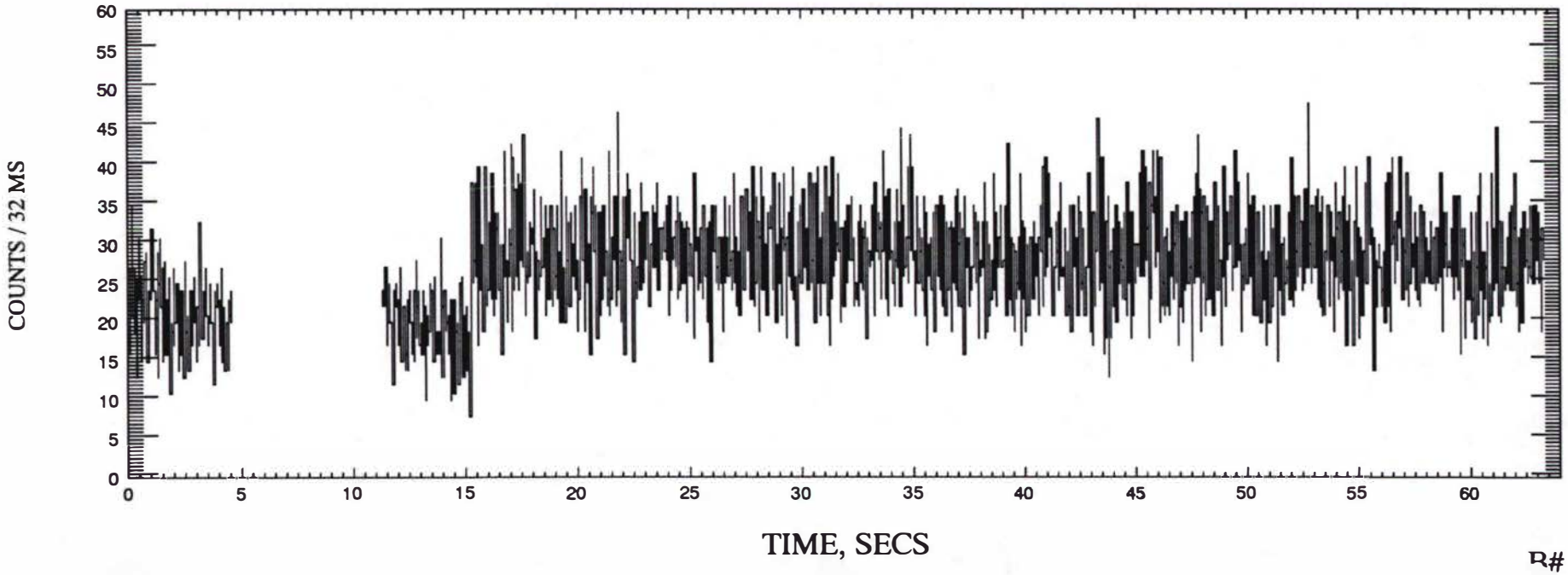


B# 13

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 15 at UT= 9.956155005561 h=35842.158 s 09:57:22.158

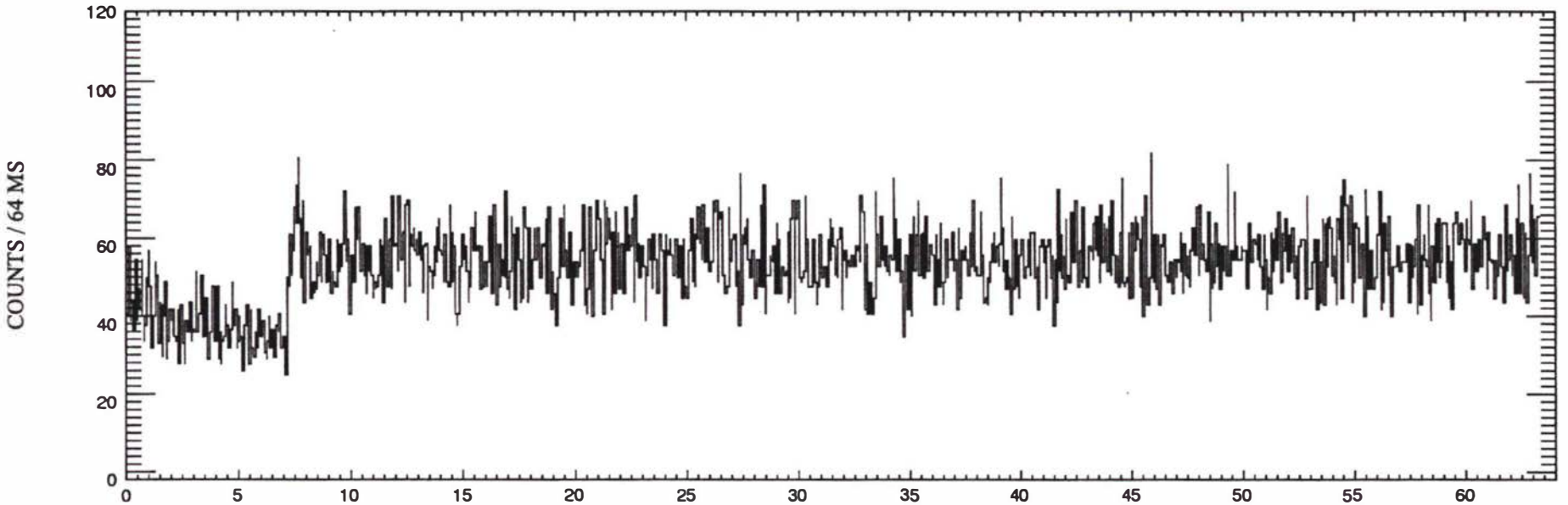




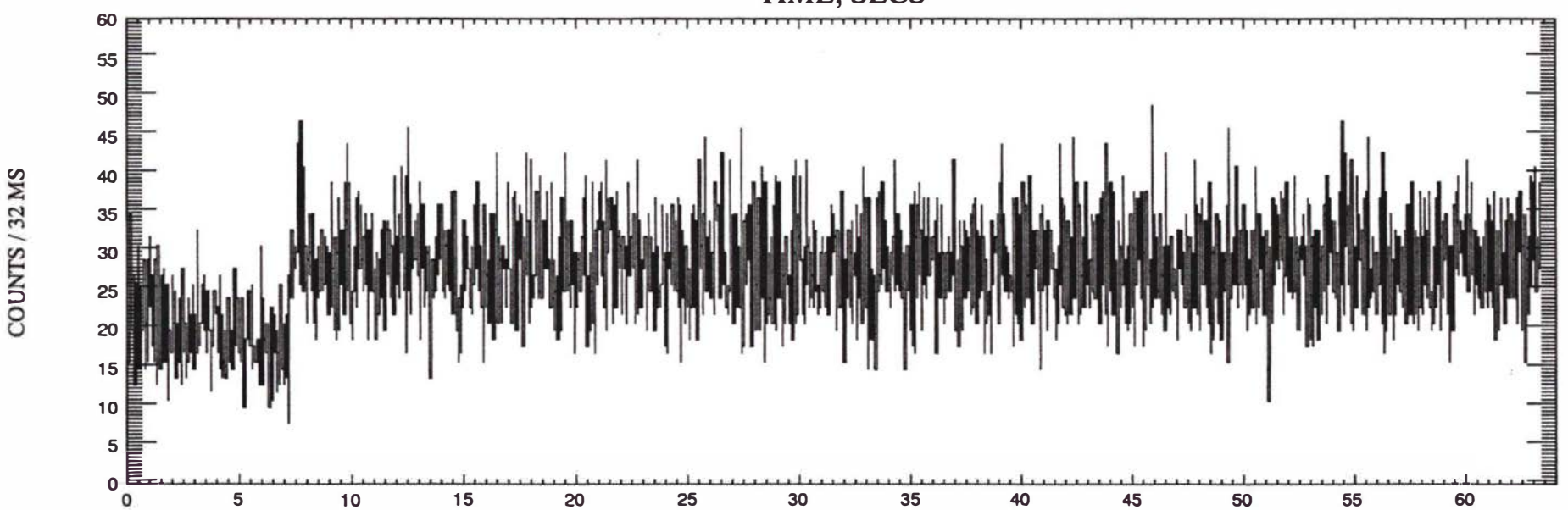
R# 14

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 0 at UT=11.218398170471 h=40386.233 s 11:13:06.233



TIME, SECS

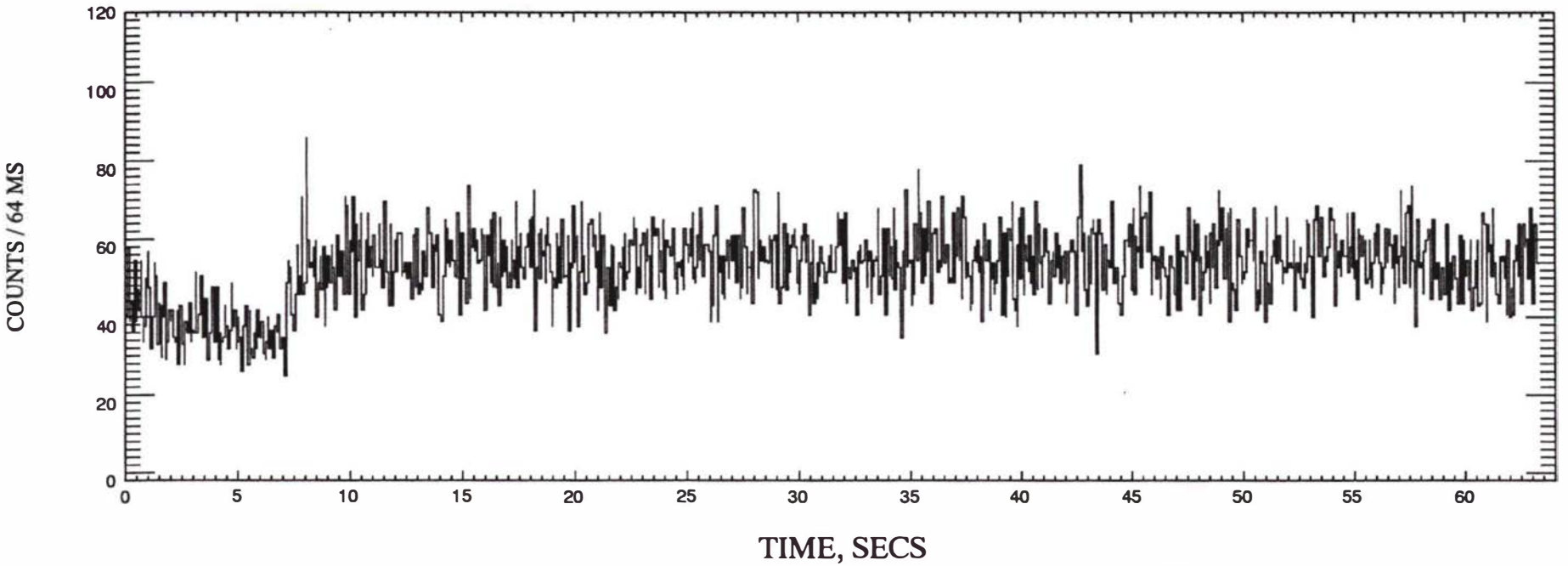


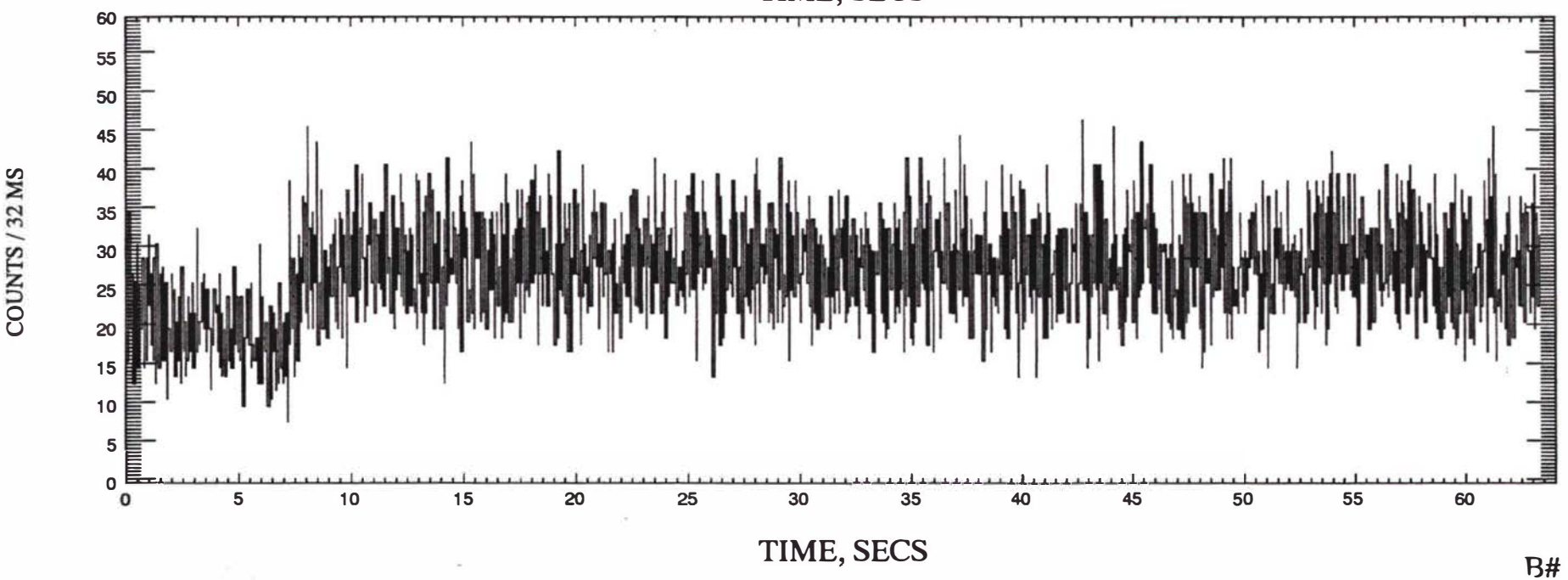
TIME, SECS

B# 15

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 1 at UT=12.480629730225 h=44930.267 s 12:28:50.267

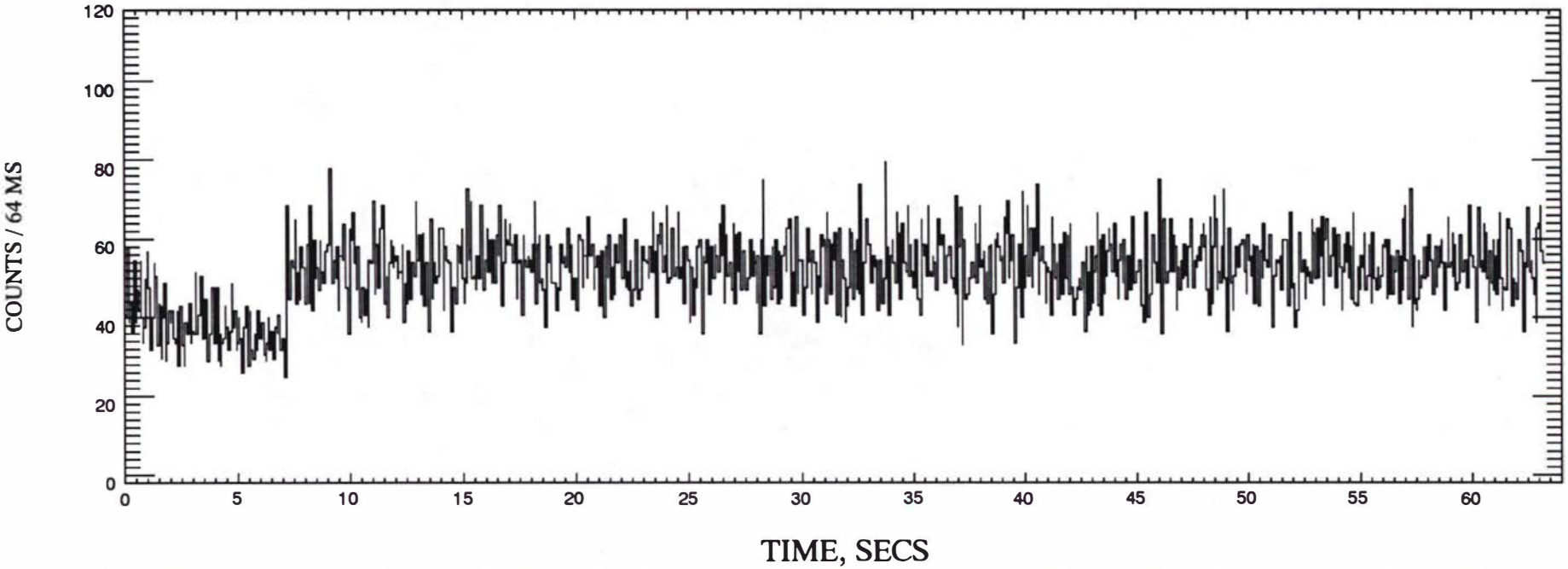


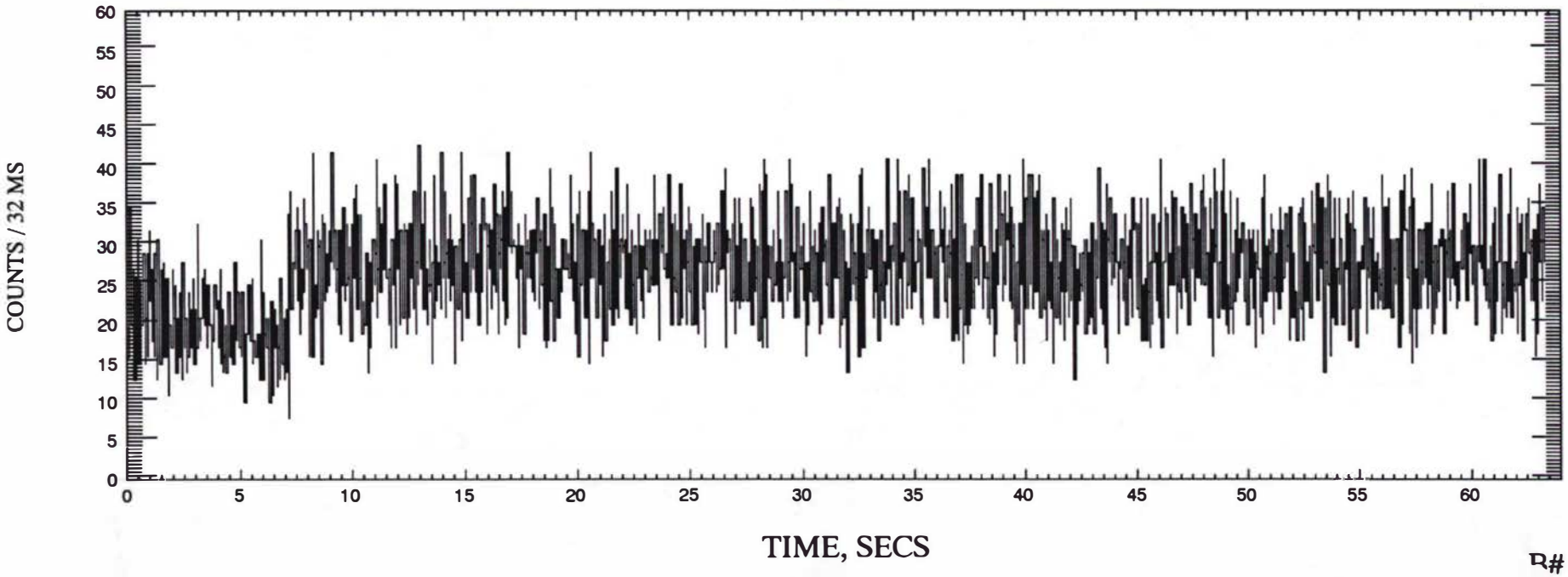


B# 16

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 2 at UT=13.742865626017 h=49474.316 s 13:44:34.316

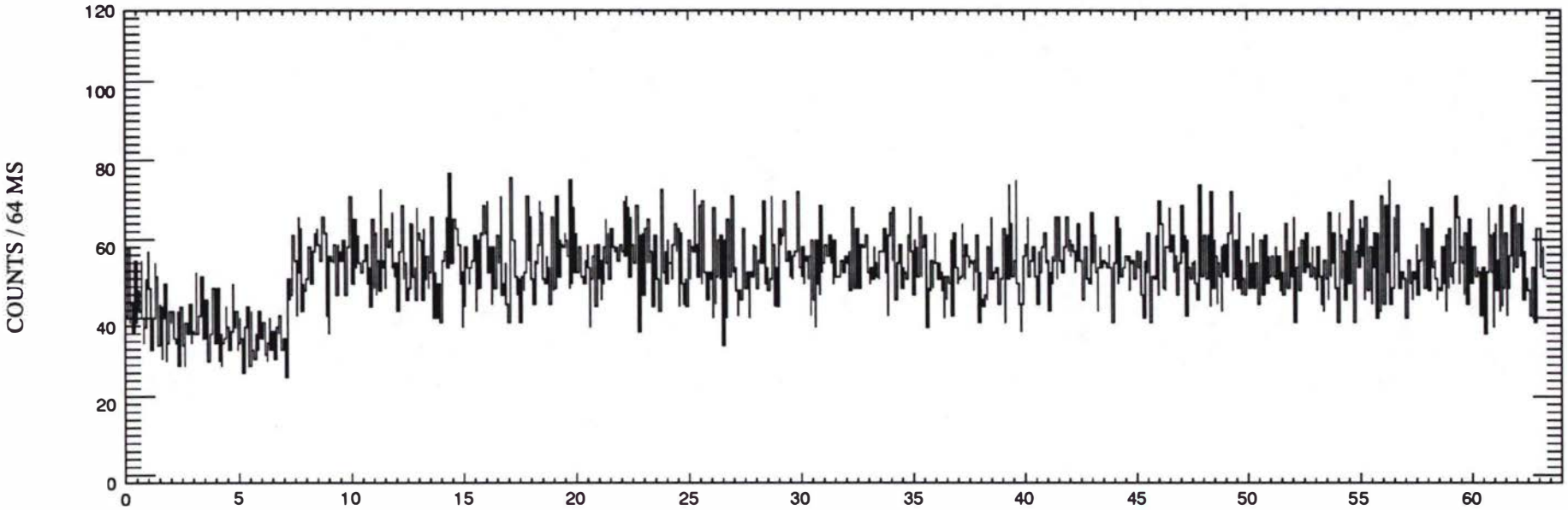




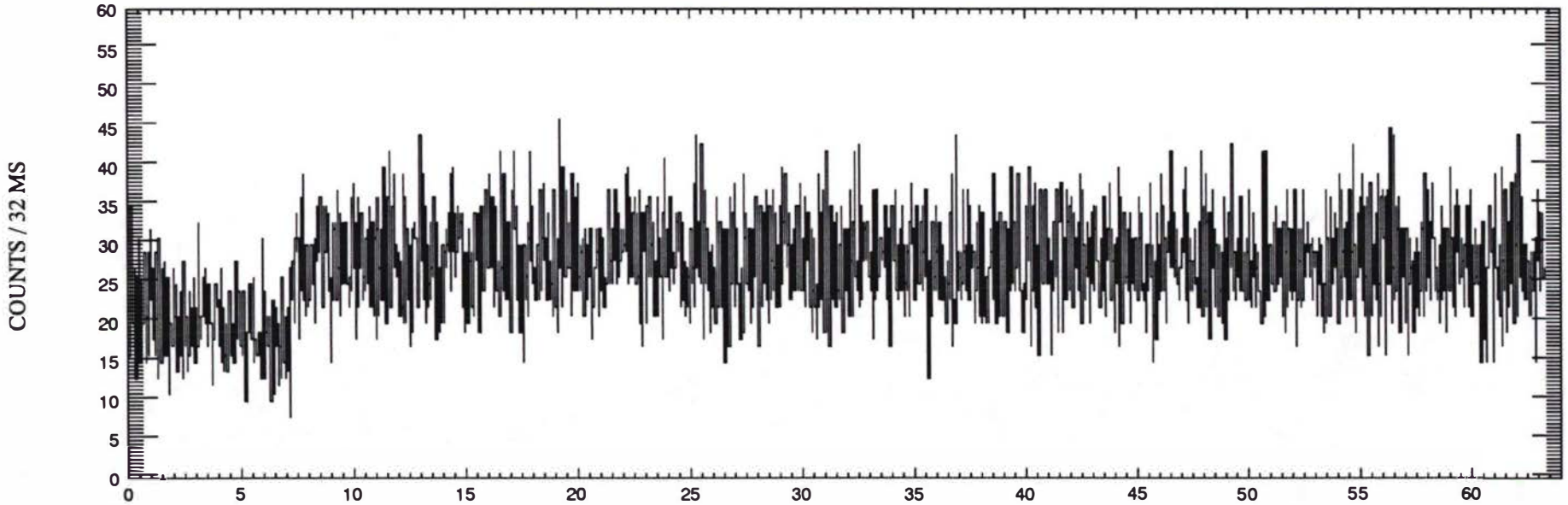
R# 17

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 3 at UT=15.005110202365 h=54018.397 s 15:00:18.397



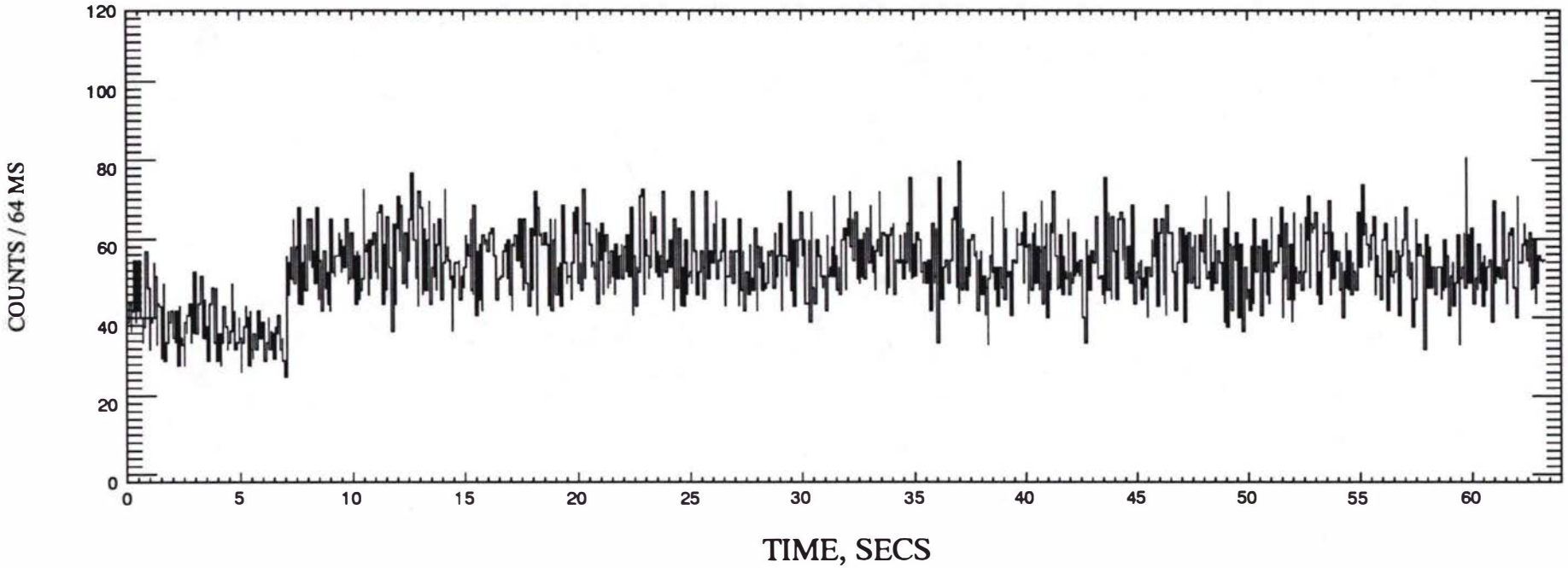
TIME, SECS

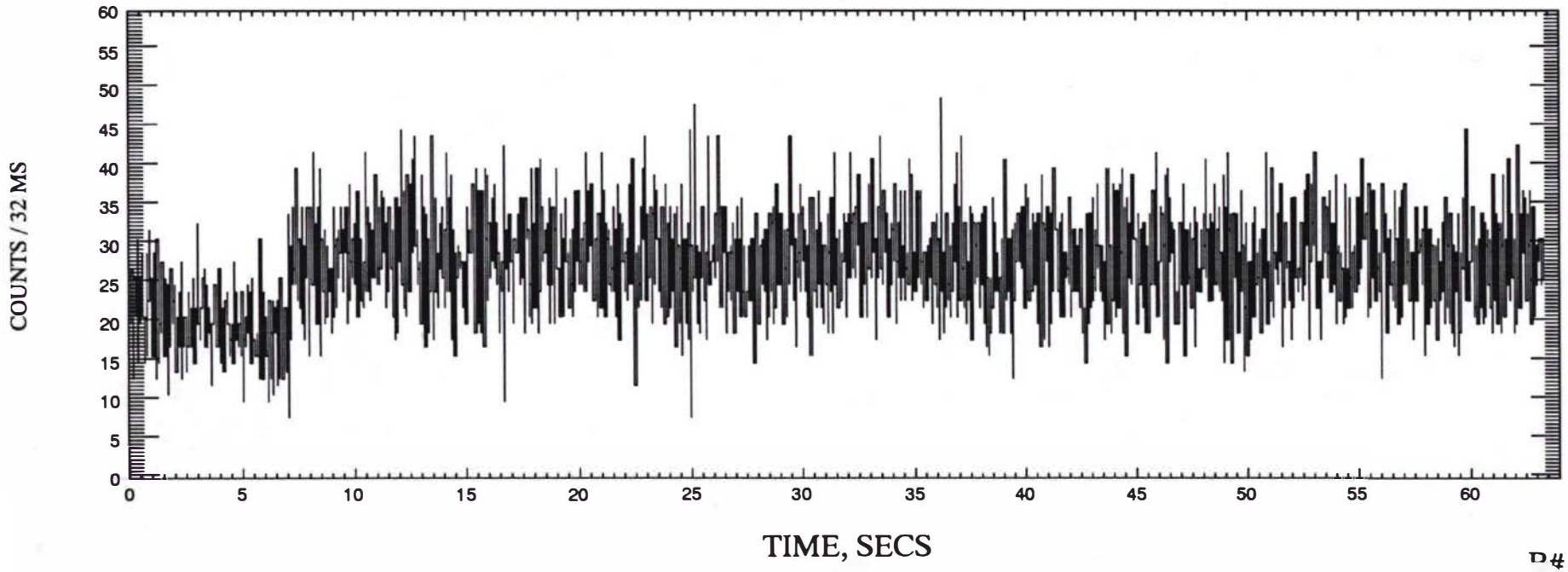


TIME, SECS

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

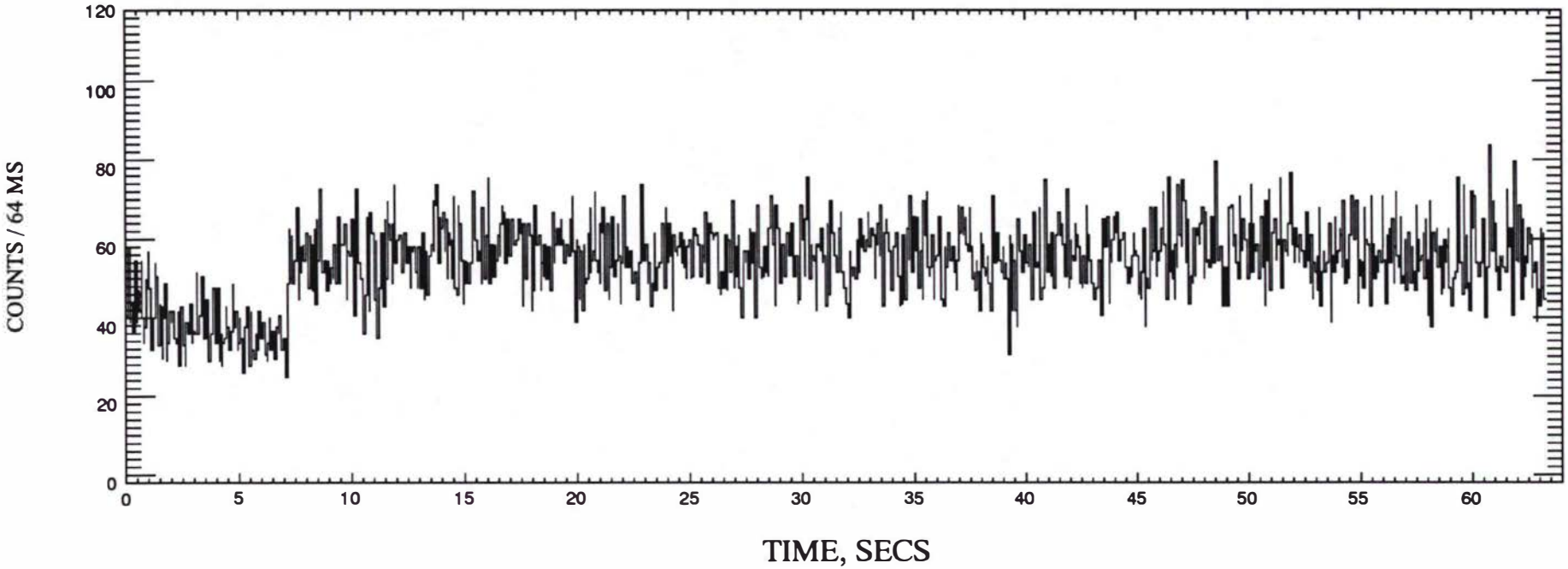
Burst Counter 4 at UT=16.267376484341 h=58562.555 s 16:16:02.555

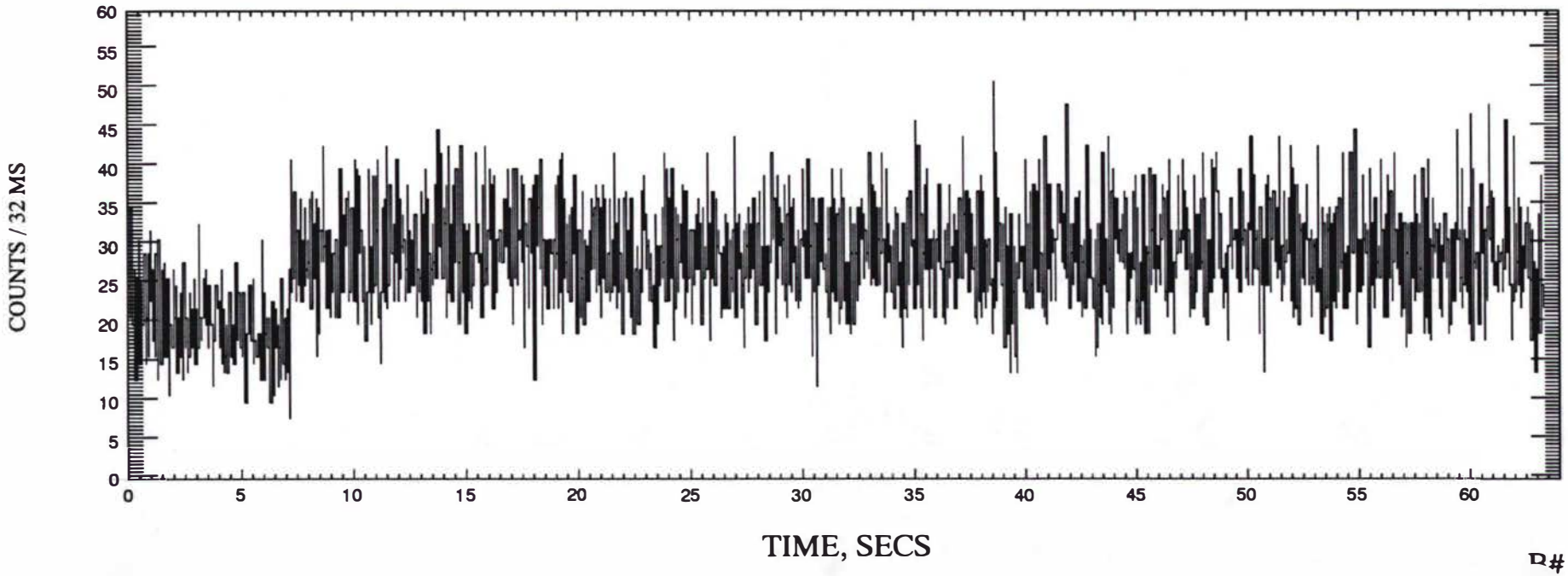




HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 5 at UT=17.529576136271 h=63106.474 s 17:31:46.474

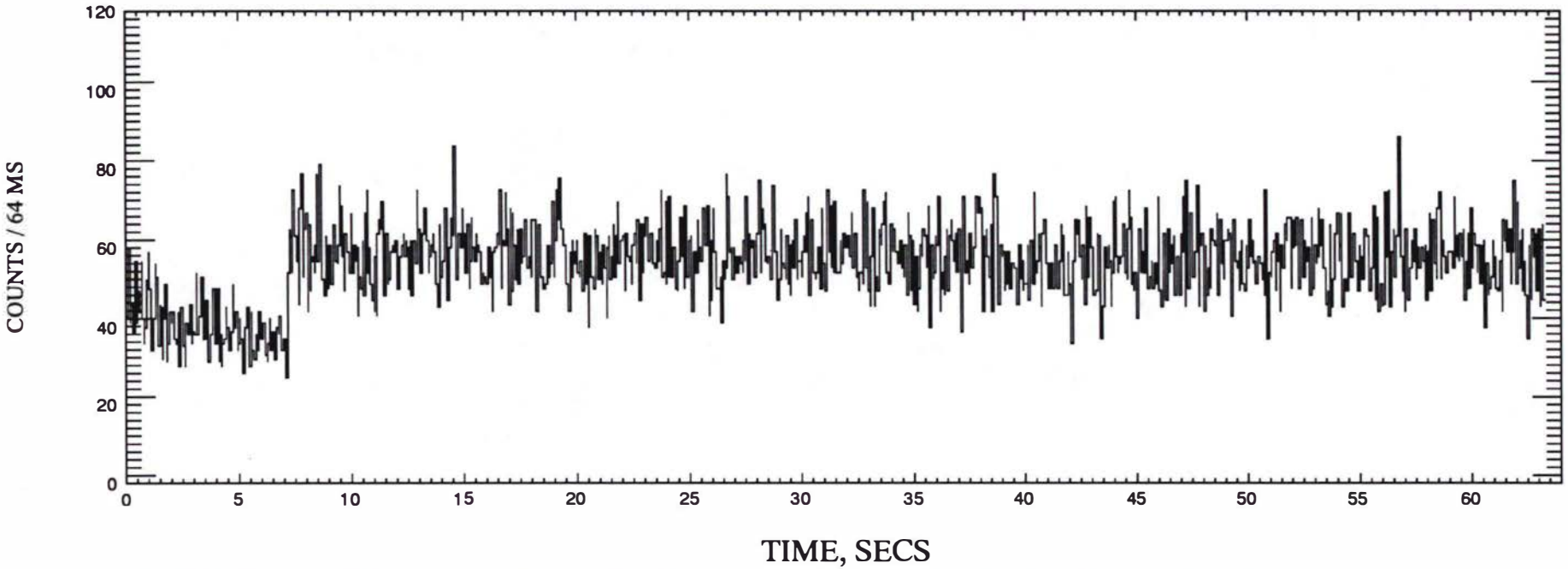


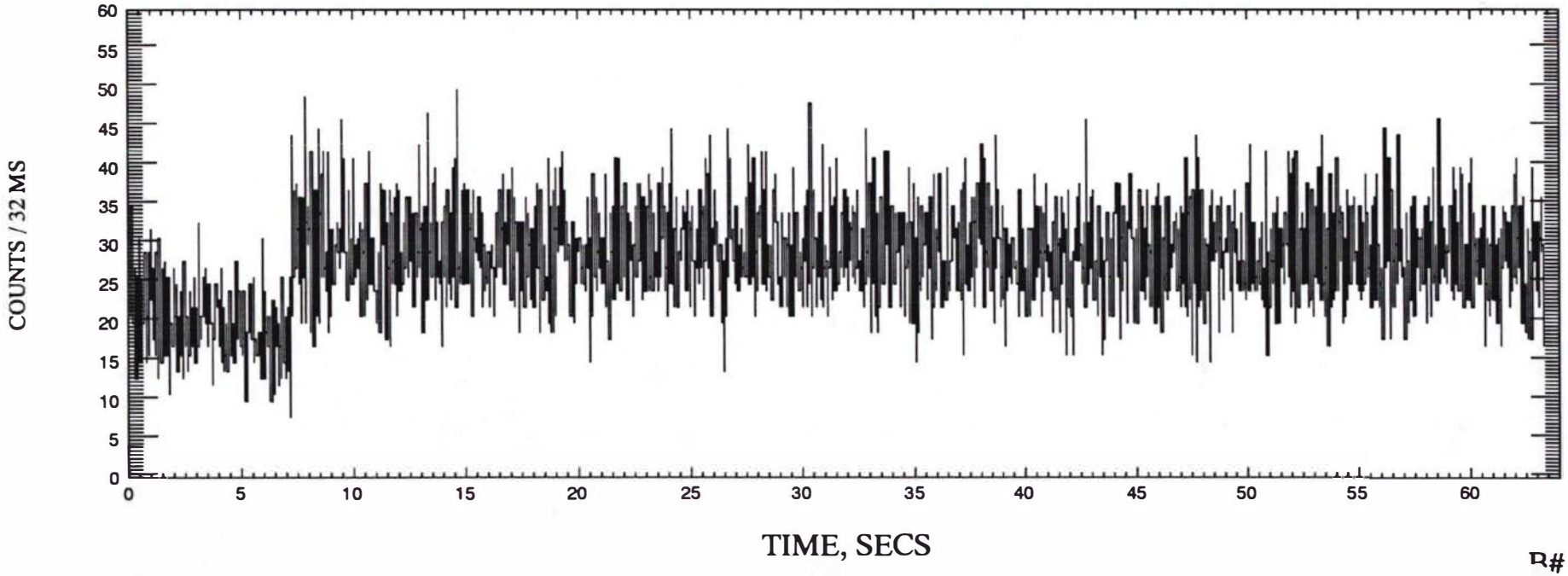


B# 20

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 6 at UT=18.791809866163 h=67650.516 s 18:47:30.516

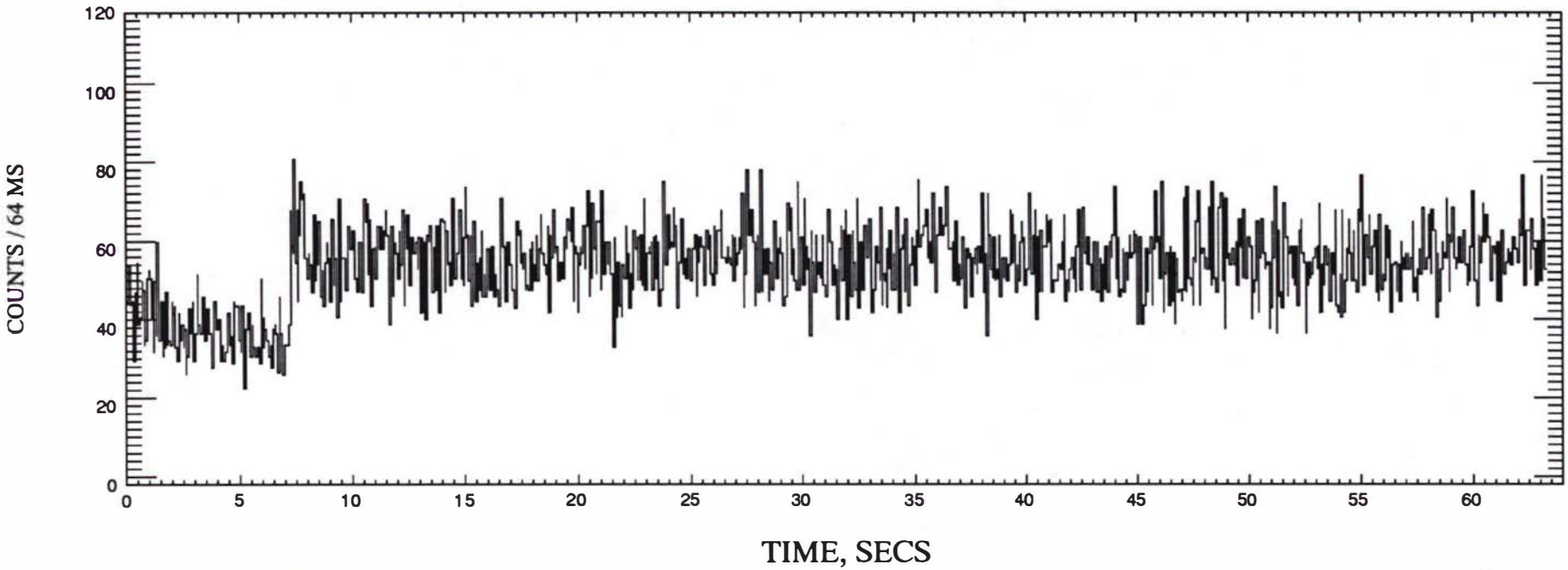


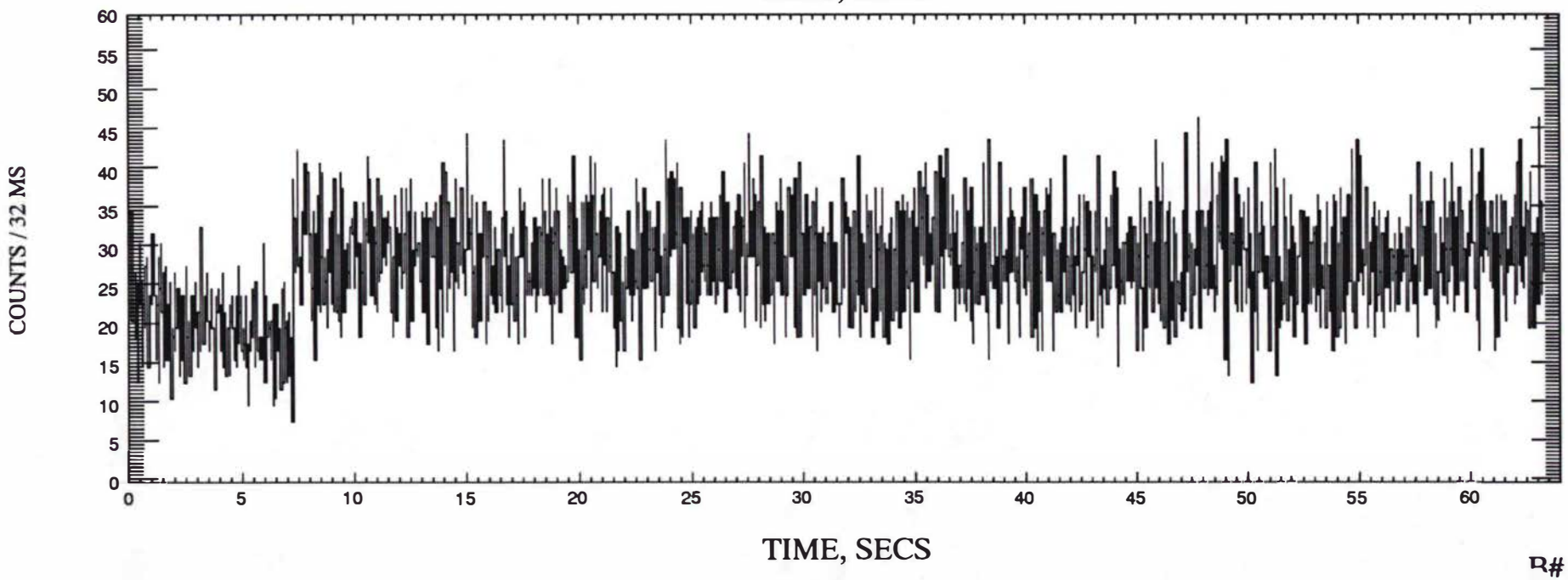


R# 21

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 7 at UT=20.054041421678 h=72194.549 s 20:03:14.549

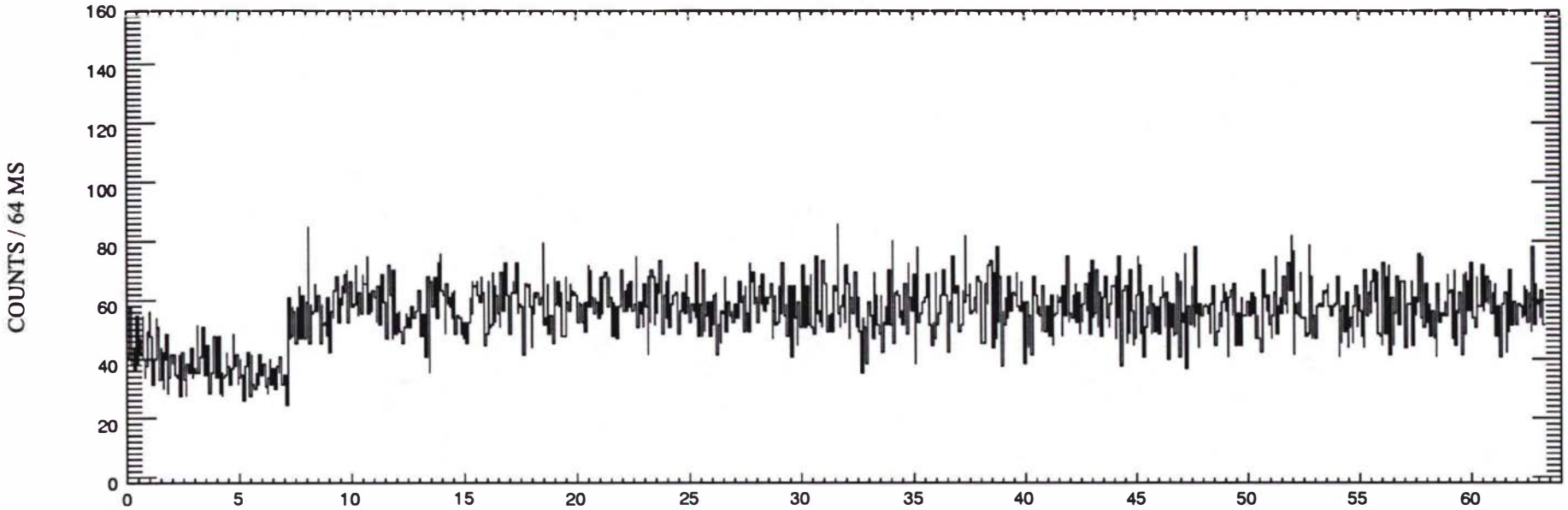




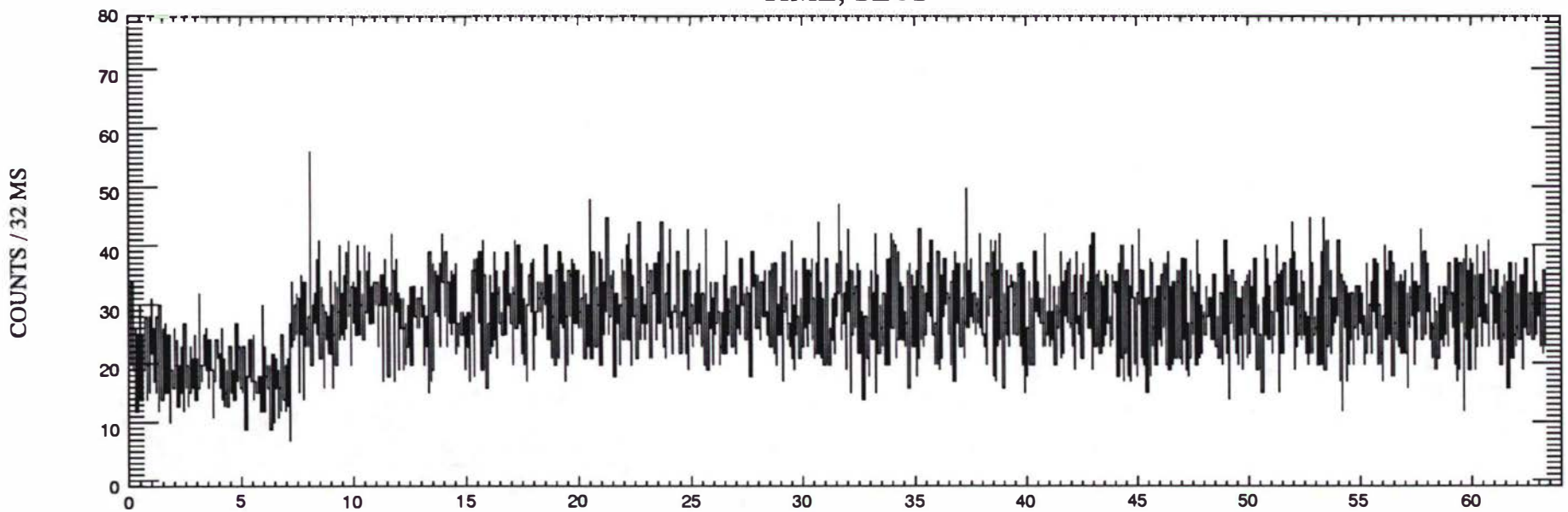
R# 22

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 8 at UT=21.316283827888 h=76738.622 s 21:18:58.622



TIME, SECS

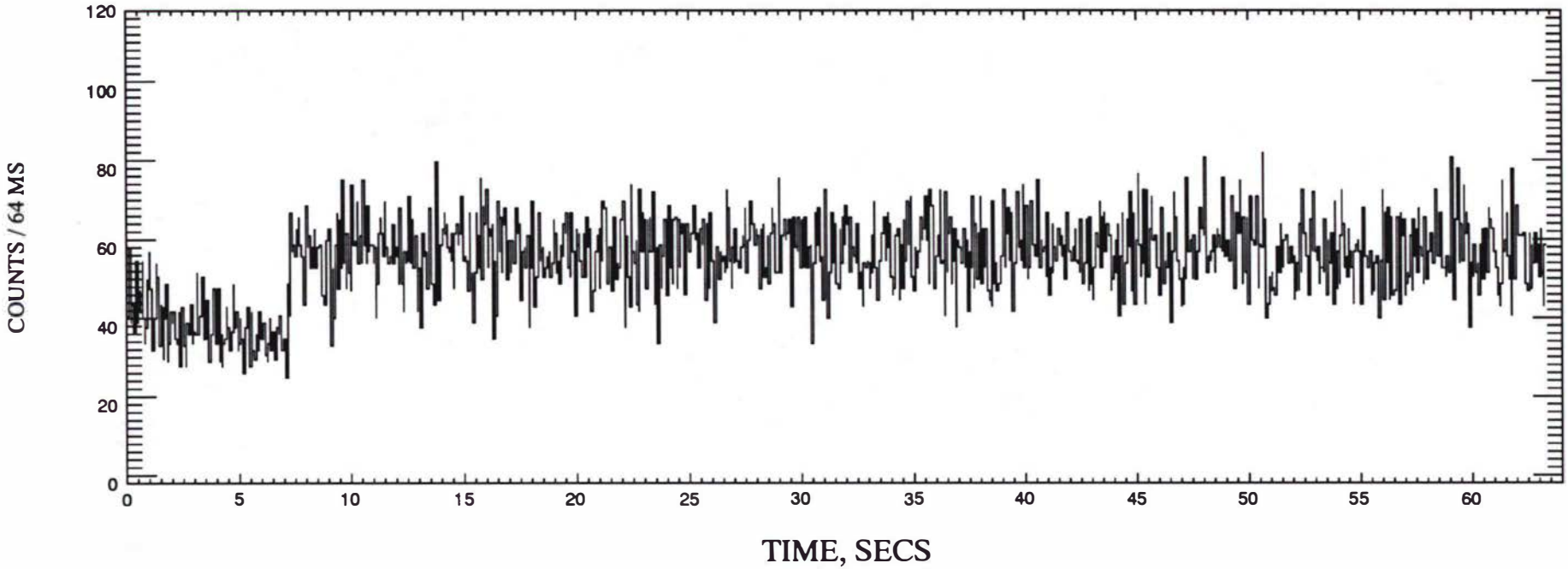


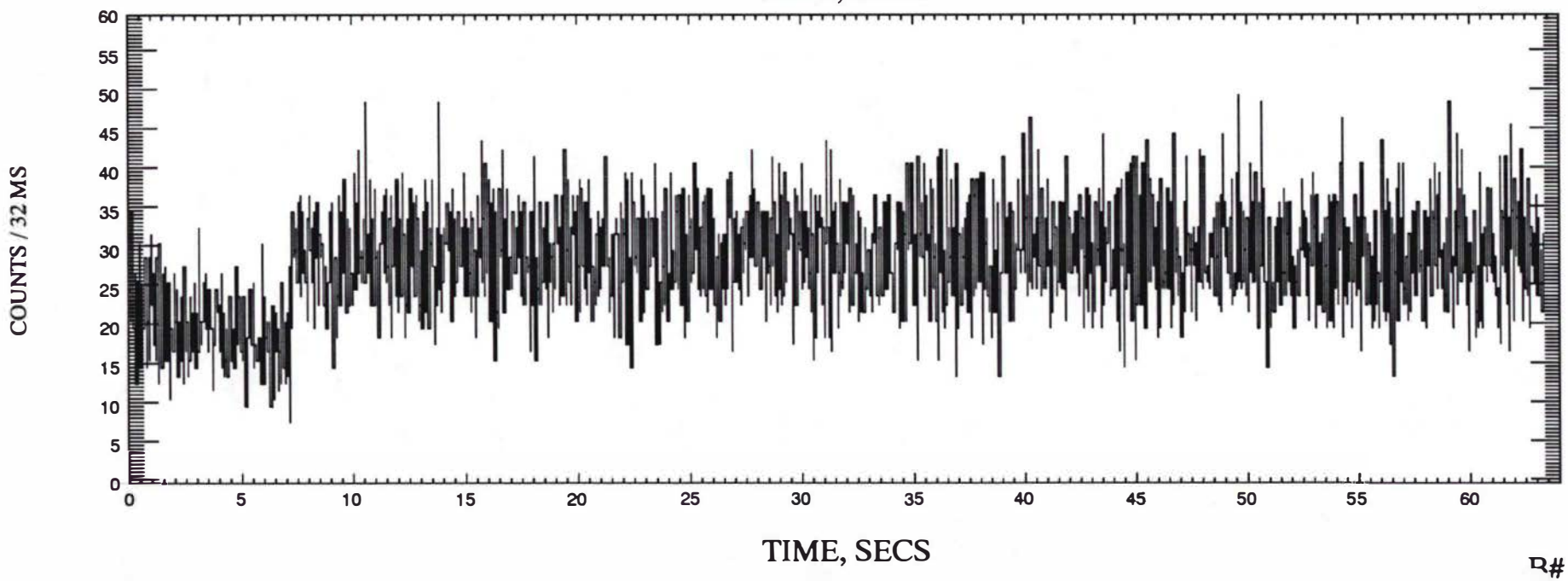
TIME, SECS

B# 23

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 9 at UT=22.578521898058 h=81282.679 s 22:34:42.679

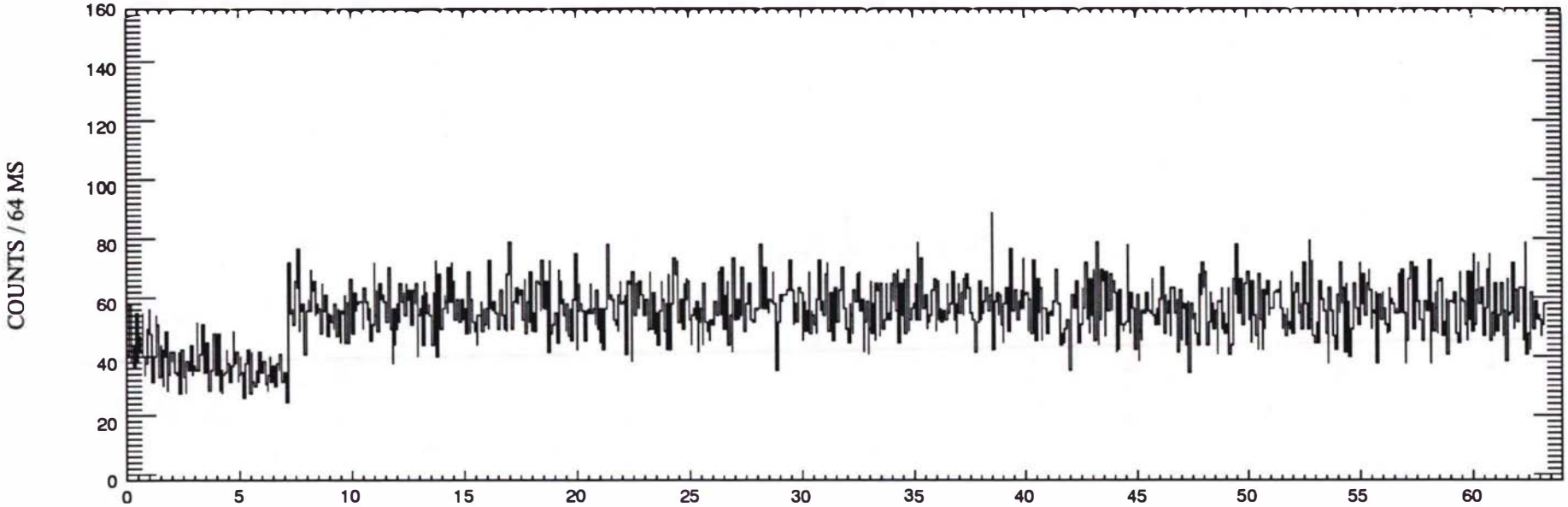


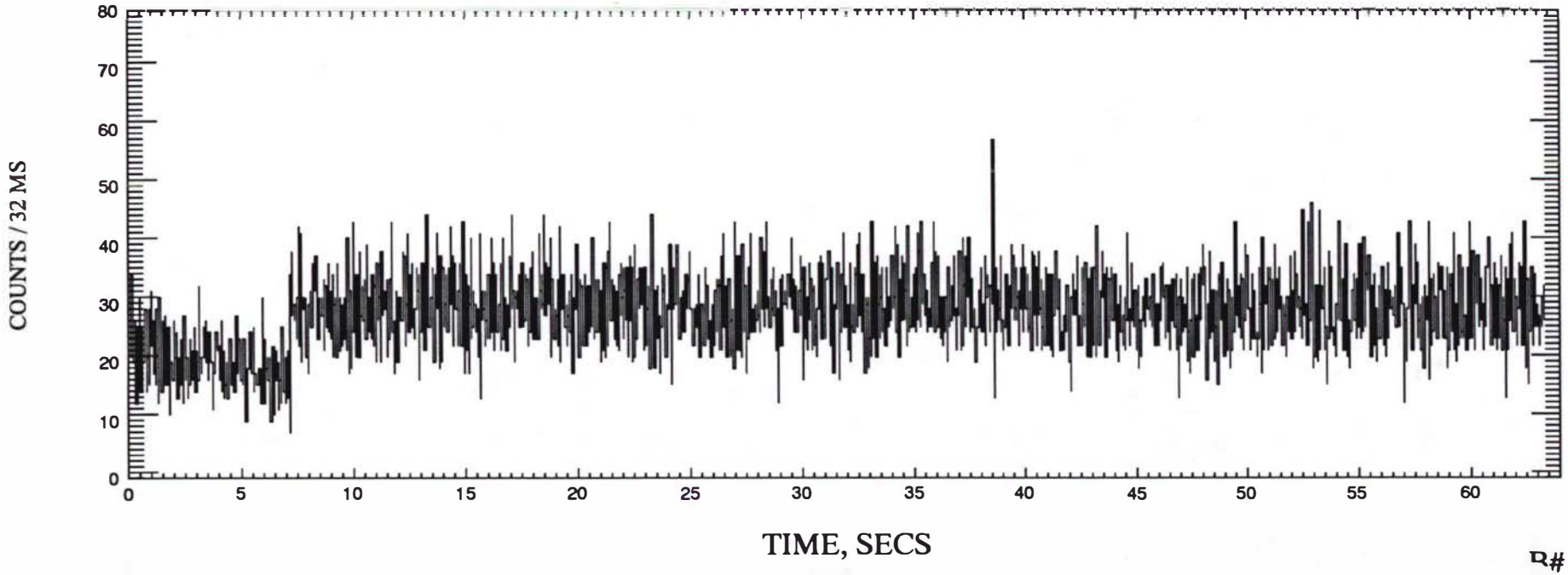


R# 24

HUS 2A TRIGGERED DATA QEDR day 113, year 1998 4/24/98

Burst Counter 10 at UT=23.591859546238 h=84930.694 s 23:35:30.694

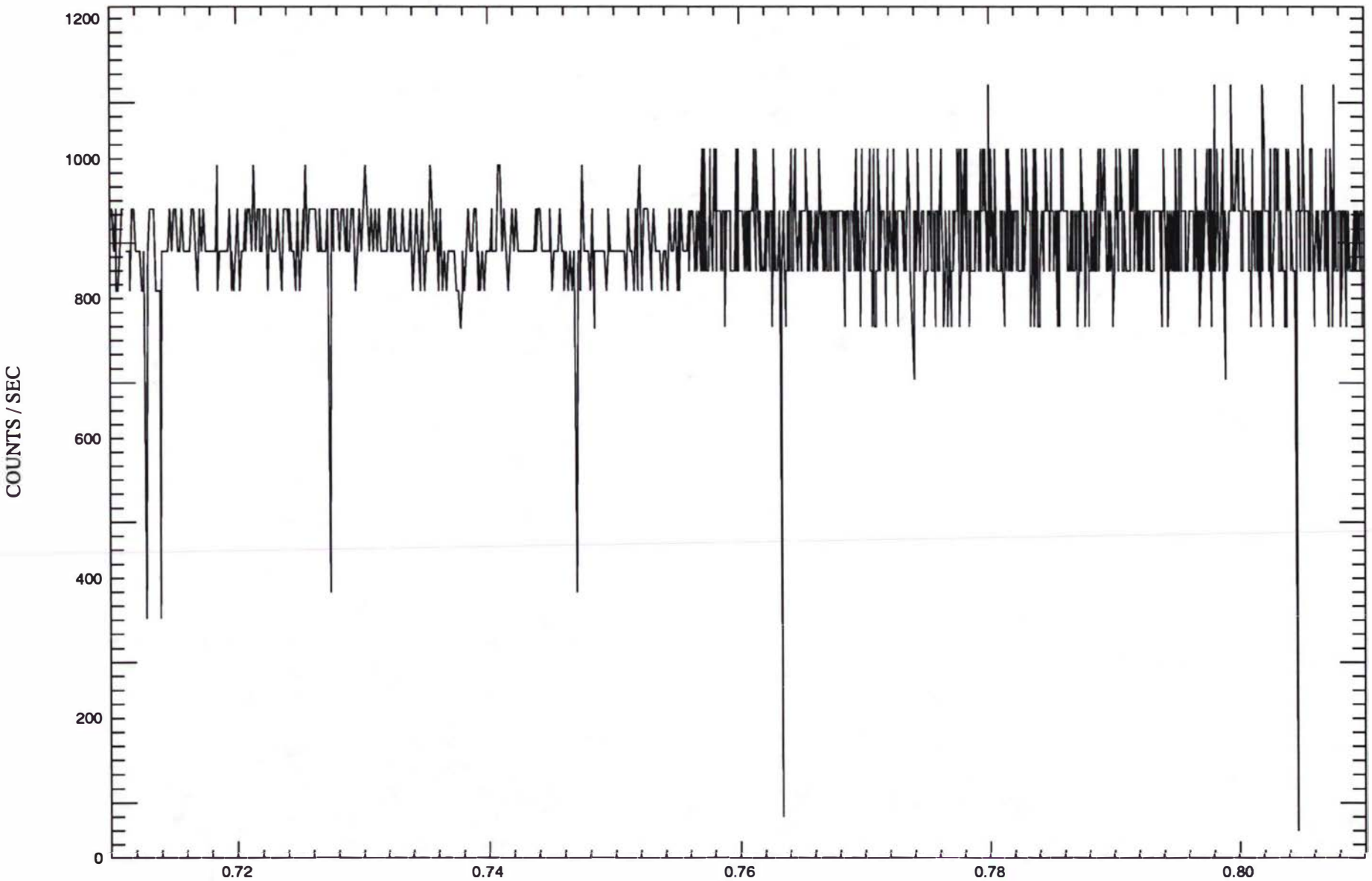




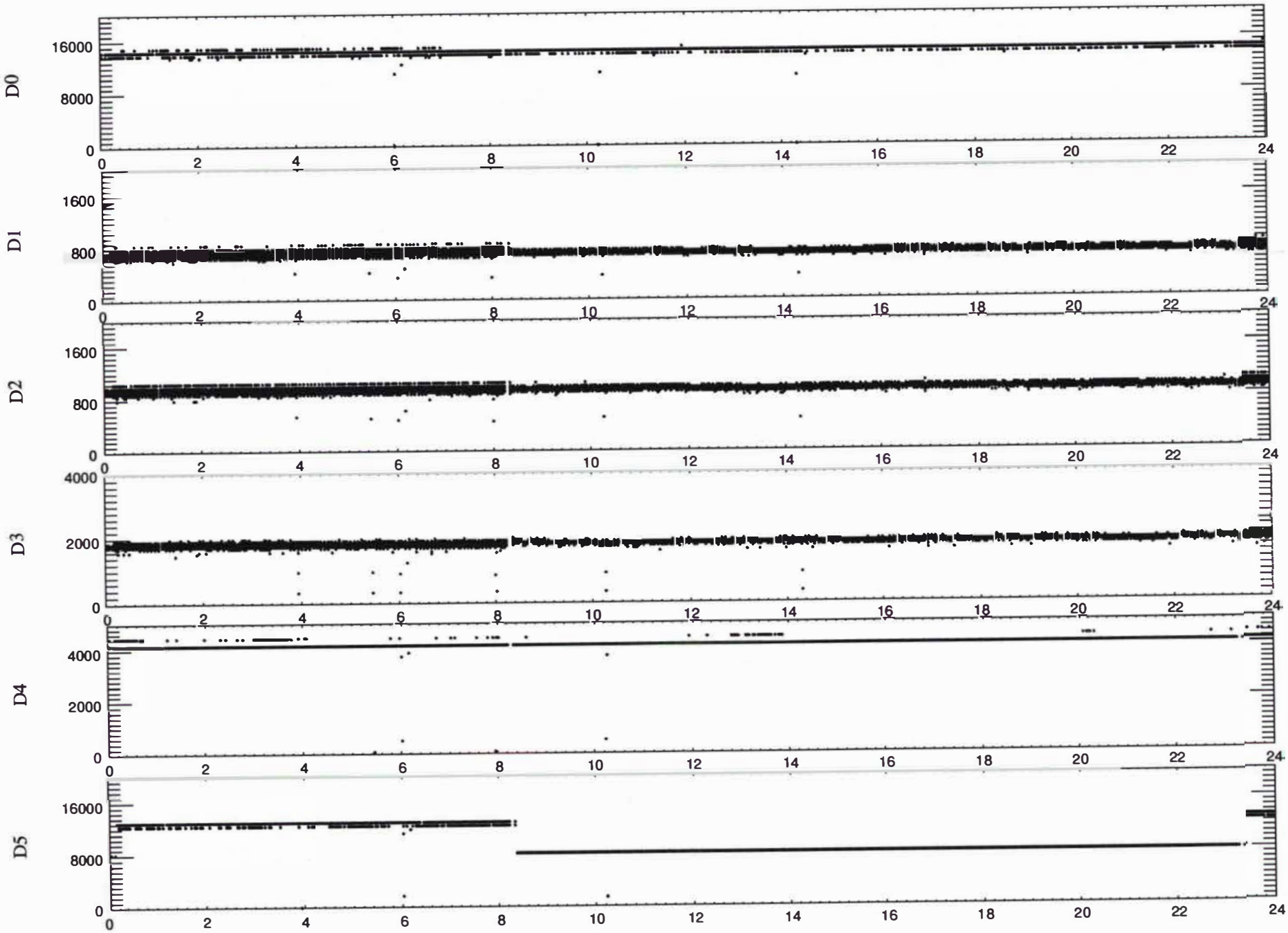
R# 25

HUS 2A, MODE 1, NOT AVERAGED QEDR day 113, year 1998 to day 113, year 1998 4/24/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 113, year 1998 to day 113, year 1998 8/18/98



UNIV' 'AL TIME

From RICHARDSON@fender.msfc.nasa.gov Wed May 6 10:12:17 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA19324; Wed, 6 May 1998 10:12:17 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA01563; Wed, 6 May 1998 10:12:17 -0700
Date: Wed, 6 May 1998 12:11:48 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980506121148.22207ba5@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6702
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6702
EVENT OF 1998 APR 24 DAY OF YEAR=114
EVENT CROSSING TIME AT BATSE      :  5523. S. OR 01:32:03.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  93.000    5.000
BATSE PEAK COUNTING RATE:   9000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 24/ 4/  98 IS:
RA=  149.968 DEC=   13.043 DIST=    4.927 AU
BATSE-ULYSSES DISTANCE =  737096898. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=123.28 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1349.05 SECS.
CROSSING TIME AT ULYSSES    IS  4174. S. OR   01:09:33 +/-  386.39 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 24/ 4/  98 IS:
RA=   35.825 DEC=   14.072 DIST=    2.454 AU
MARS-BATSE DISTANCE =  367107424. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=123.02 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -667.36 SECS.
CROSSING TIME AT MARS       IS  4856. S. OR   01:20:55 +/-  168.12 SECONDS


                 BATSE BURST TRIGGER
NO.: 6702

TIME: TJD=0927 SECONDS=5523

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=84.2   AZIMUTH=314.9  ERROR=3.2   DEGREES

COMMENTS:
GRB LOTS OF STRUCTURE. DURATION APPROX. = 60SEC. MAX. AT APPROX. T+6 SEC.
VISIBLE ABOVE 300KEV.

 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6702   980424   10927   05523     9000   093   +05     60
```

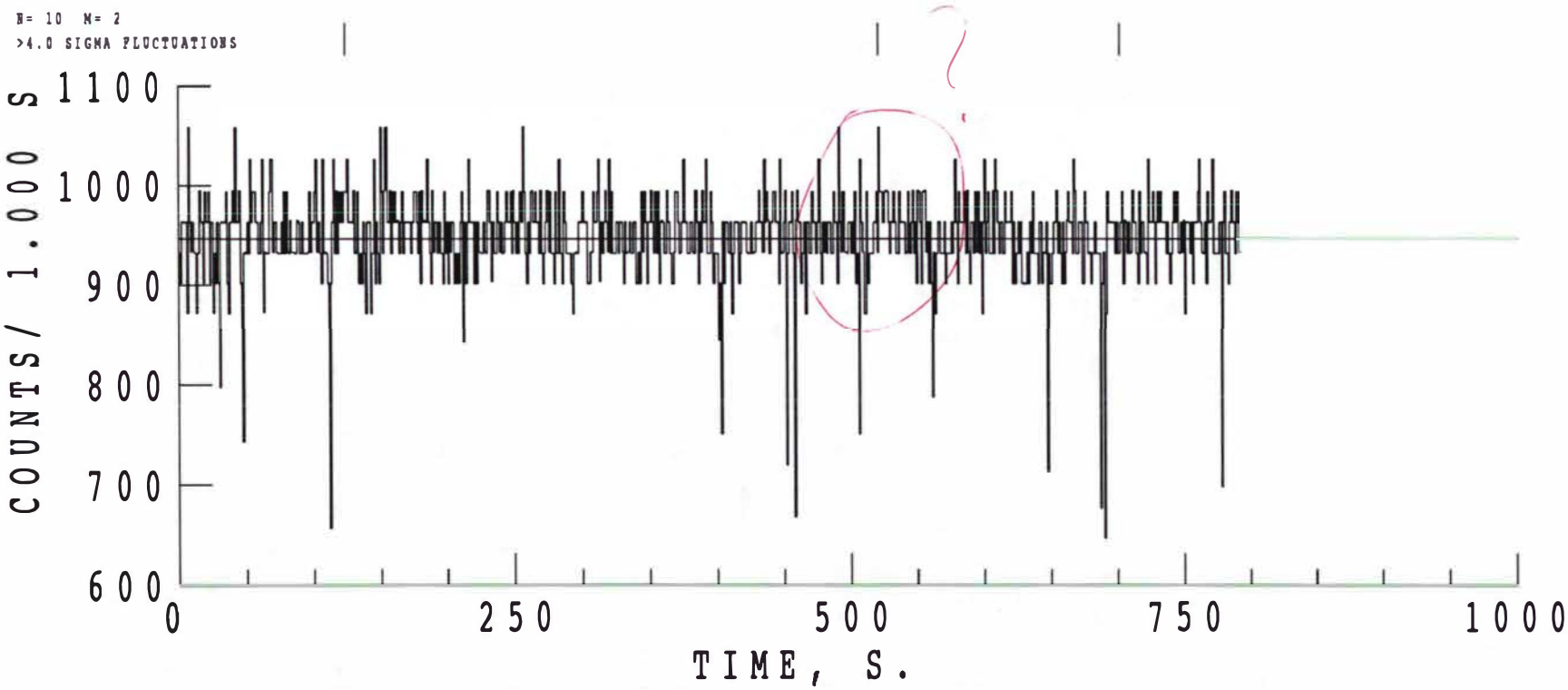
BATSE BURST# 6702

ULYSSES RT 6/ 5/98

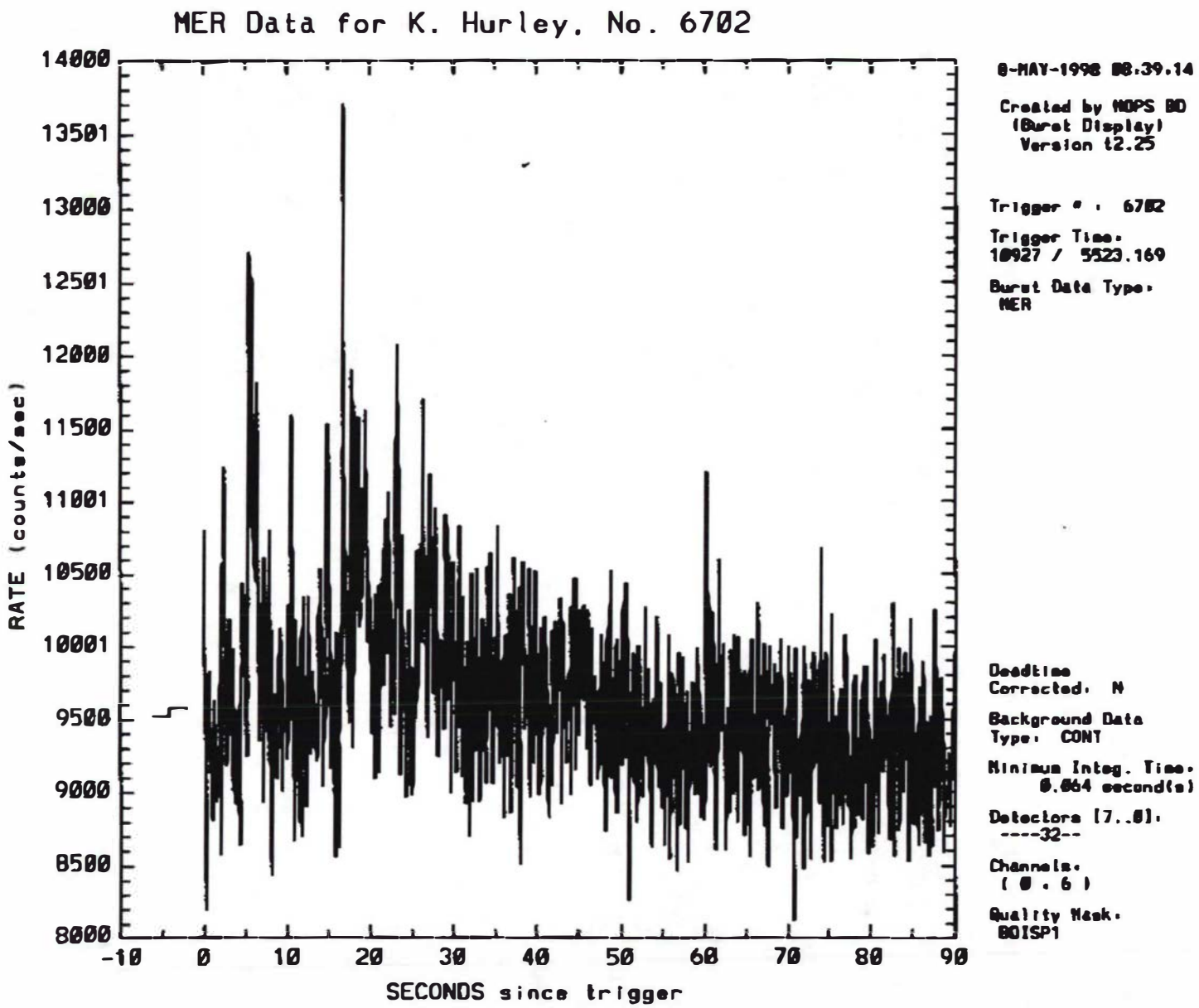
24/ 4/98 3780.156 s

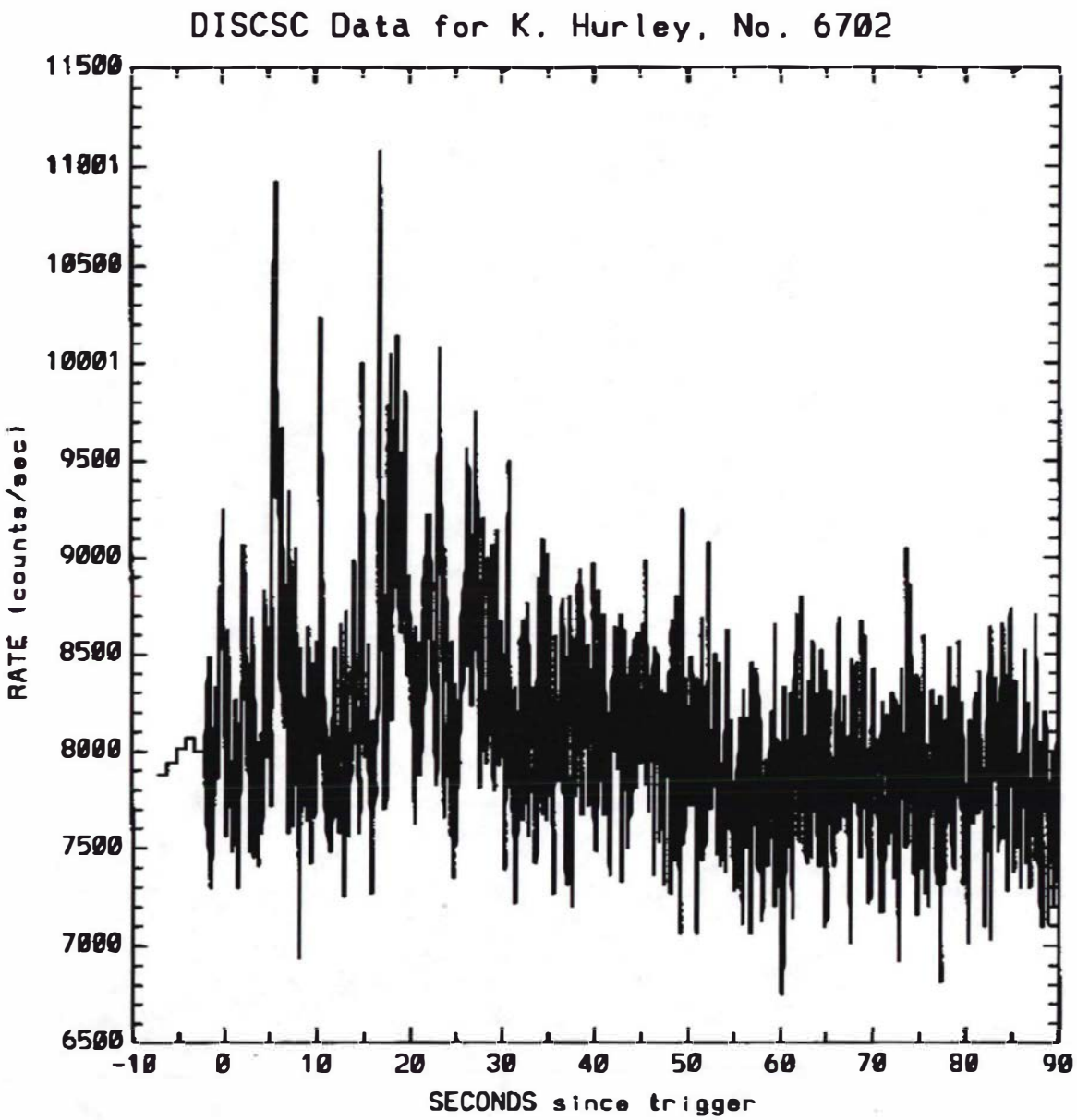
0.500 S INTERVALS REGROUPED BY 2

0- 0 keV



1


MER Data for K. Hurley, No. 6702
RATE (counts/sec)
14000
13501
13000
12501
12000
11500
11001
10500
10001
9500
9000
8500
8000
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
8-MAY-1998 08:39.14
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 6702
Trigger Time:
10927 / 5523.169
Burst Data Type:
MER
Deadtime
Corrected: N
Background Data
Type: CONT
Minimum Integ. Time:
0.064 second(s)
Detectors [7..0]:
----32--
Channels:
(0 . 6)
Quality Mask:
BOISP1



8-MAY-1998 08:37:16

Created by MOPS BD
(Burst Display)
Version t2.25

Trigger # : 6702

Trigger Time:
10927 / 5523.169

Burst Data Type:
DISCSC

Deadtime
Corrected: N

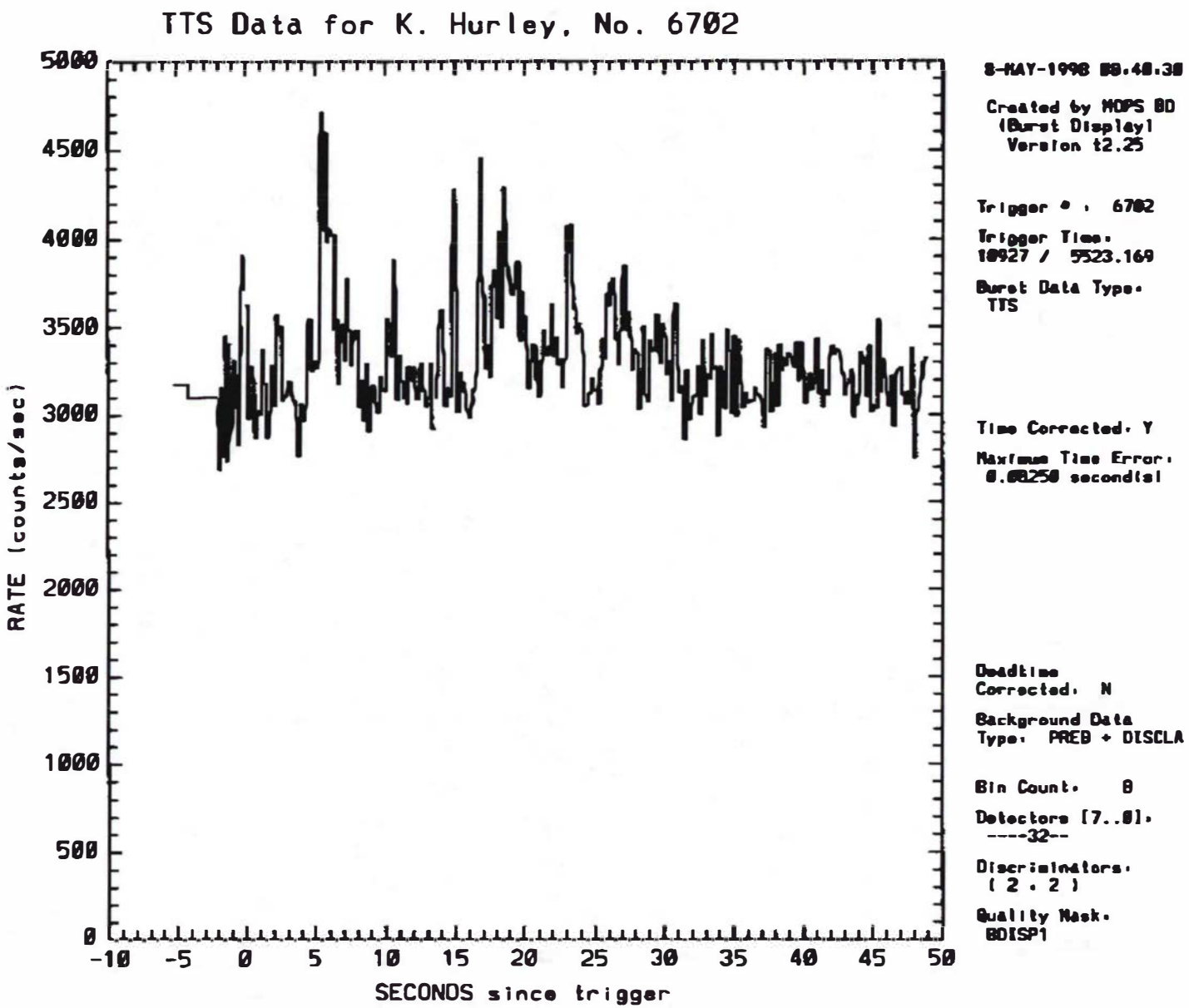
Background Data
Type: PREB + DISCLA

Minimum Integ. Time:
0.064 second(s)

Detectors (7..0):
----32--

Discriminators:
(1 , 2)

Quality Mask:
BDISP1


TTS Data for K. Hurley, No. 6702
RATE (counts/sec)
SECONDS since trigger
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
-10
-5
0
5
10
15
20
25
30
35
40
45
50
8-MAY-1998 09:48:38
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 6702
Trigger Time:
10927 / 5523.169
Burst Data Type:
TTS
Time Corrected: Y
Maximum Time Error:
0.00250 seconds
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Bin Count: 8
Detectors [7..0]:
----32--
Discriminators:
(2 , 2)
Quality Mask:
BDISP1

From RICHARDSON@fender.msfc.nasa.gov Wed May 6 10:11:02 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Wed, 6 May 1998 12:10:19 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6703

TIME: TJD=0927 SECONDS=41489

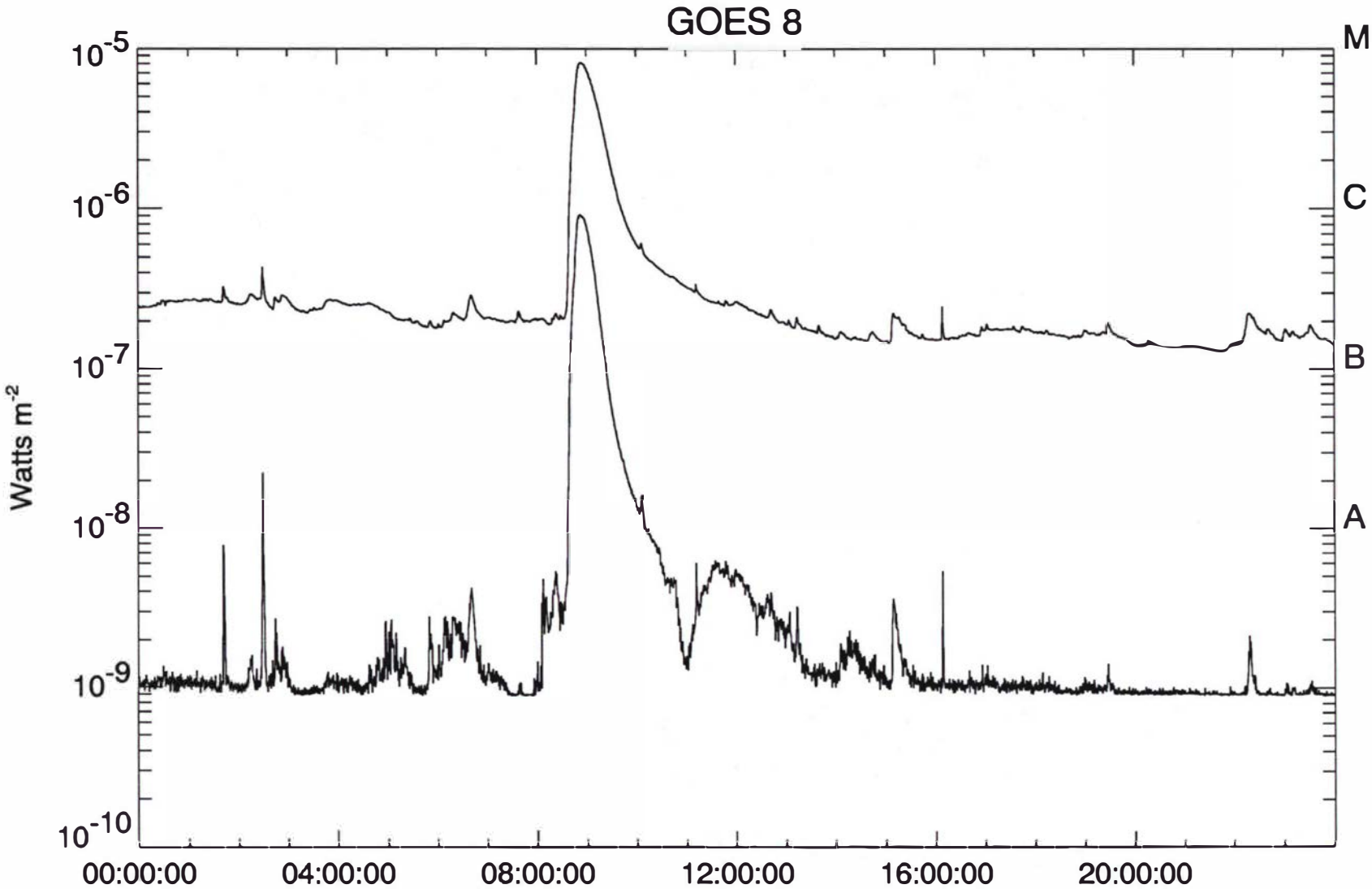
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

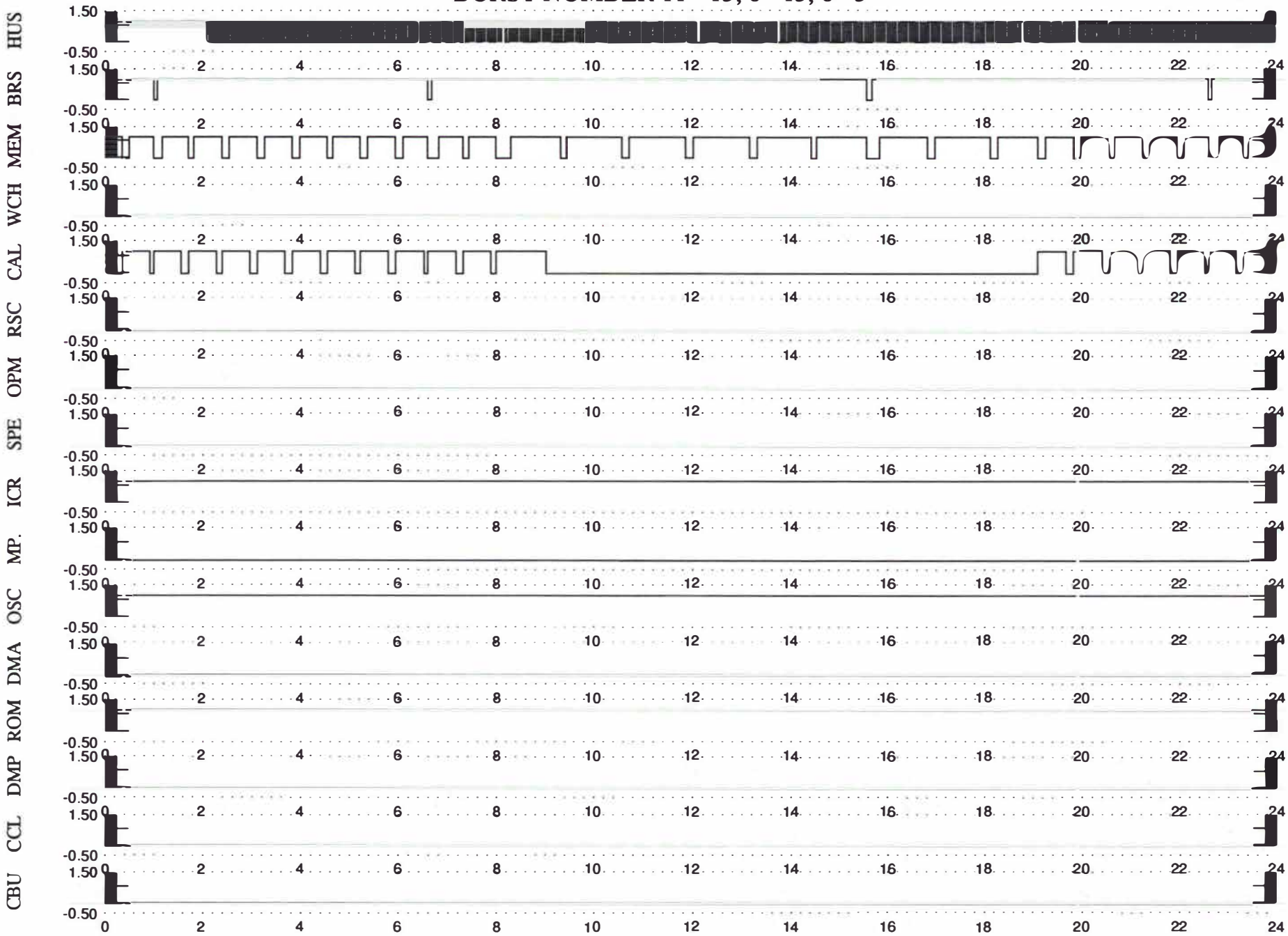
COMMENTS:
PARTICLE EVENT



Data Start: 98/04/24, 0000:00 Plot created: 98/04/28, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

HUS MODES EDR day 114, year 1998 to day 114, year 1998 8/18/98

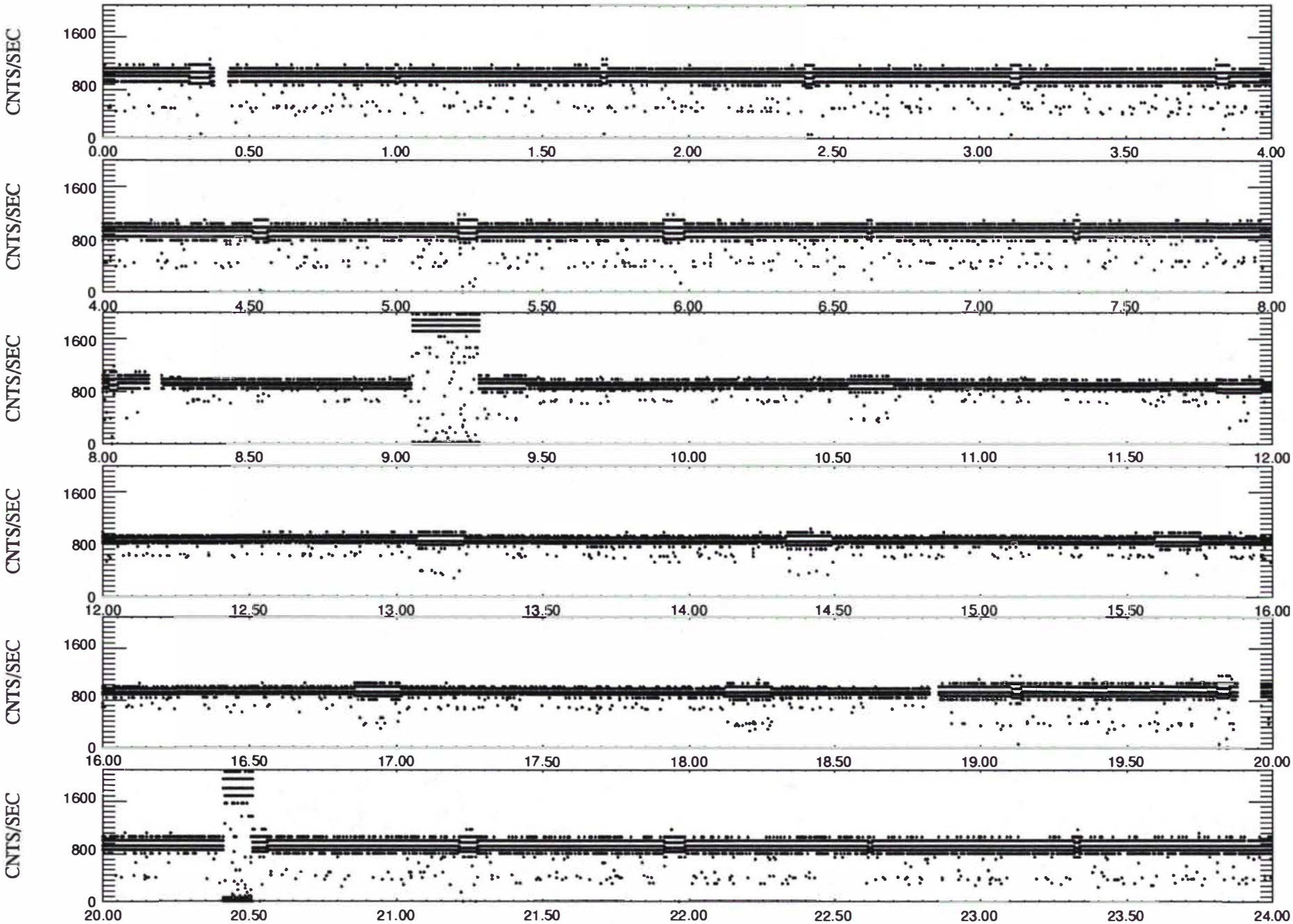
BURST NUMBER 11 - 15, 0 - 15, 0 - 5



UNIV' AL TIME

HUS 2A, MODE 1, NOT AVERAGED EDR day 114, year 1998 to day 114, year 1998 8/18/98

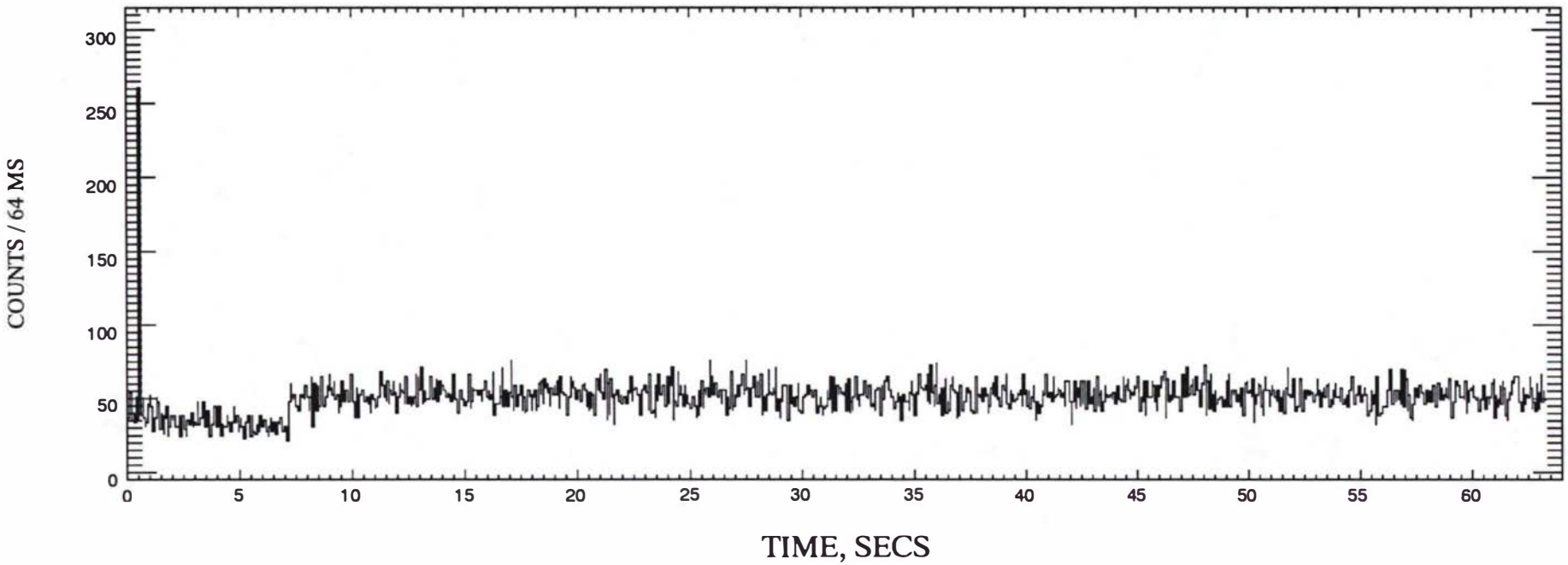
CALIBRATION DATA INCLUDED

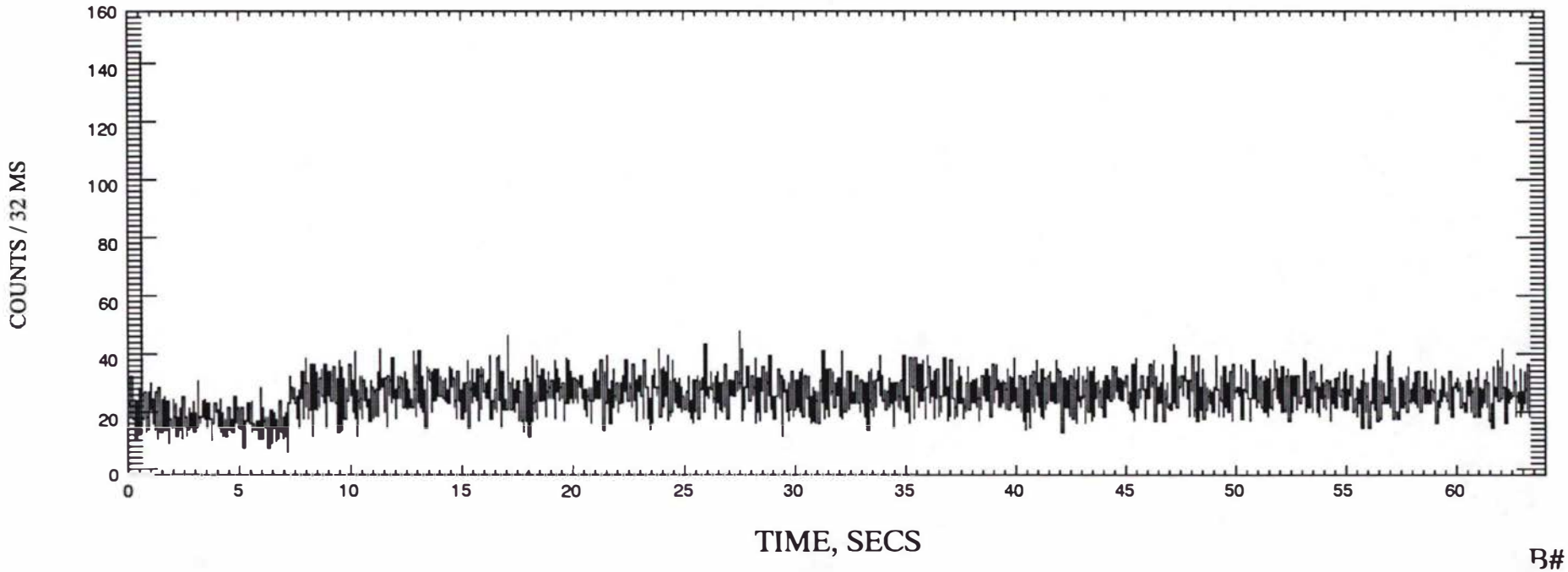


UNIV' AL TIME

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 11 at UT= 0.294089363946 h= 1058.722 s 00:17:38.722

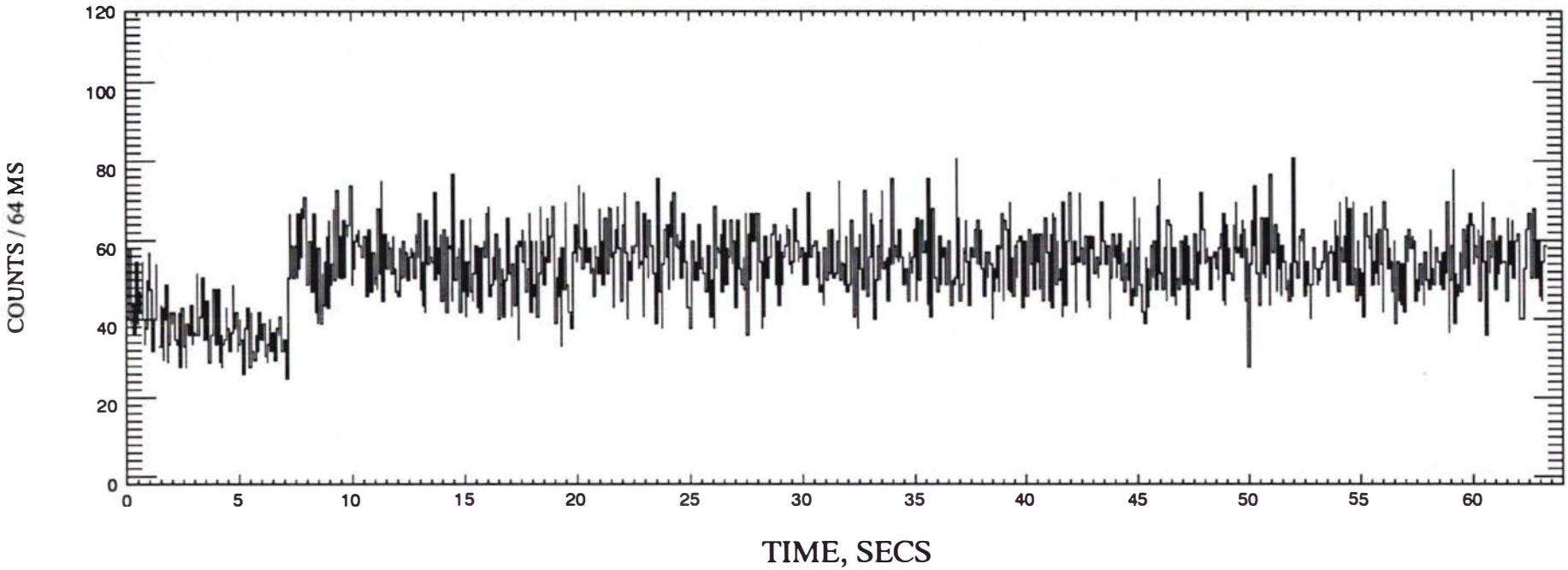


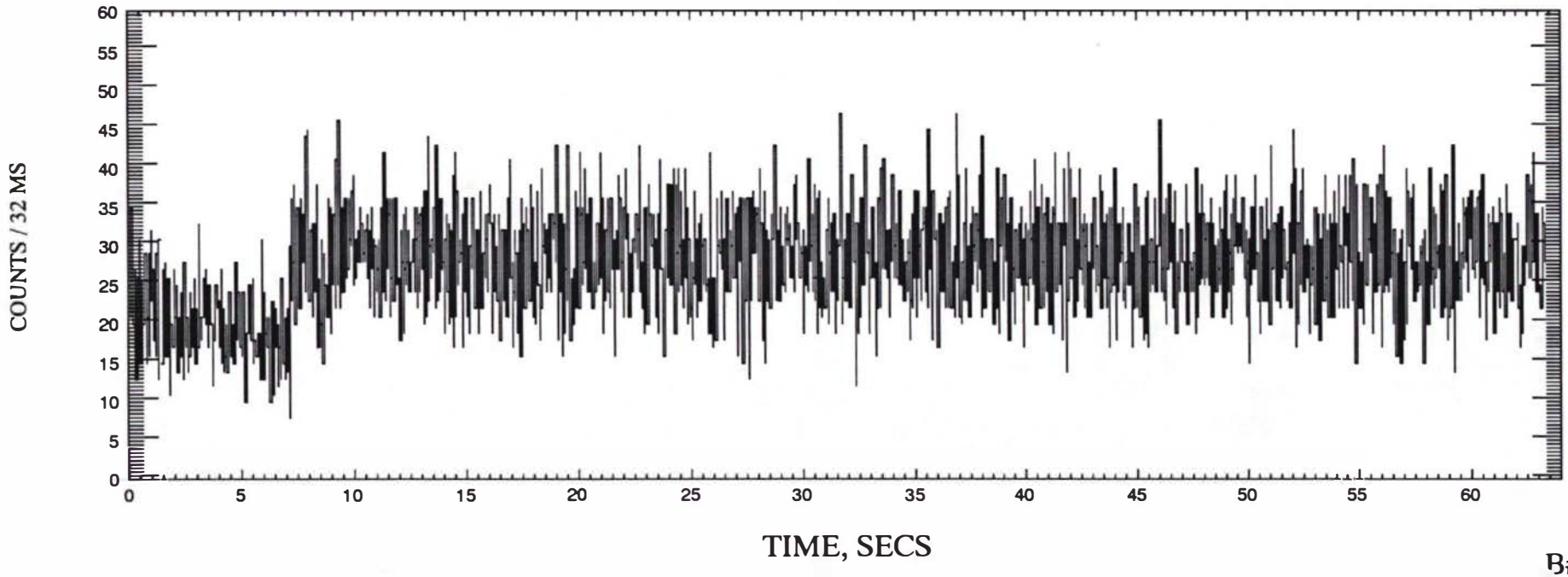


B# 1

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 12 at UT= 0.996321733263 h= 3586.758 s 00:59:46.758

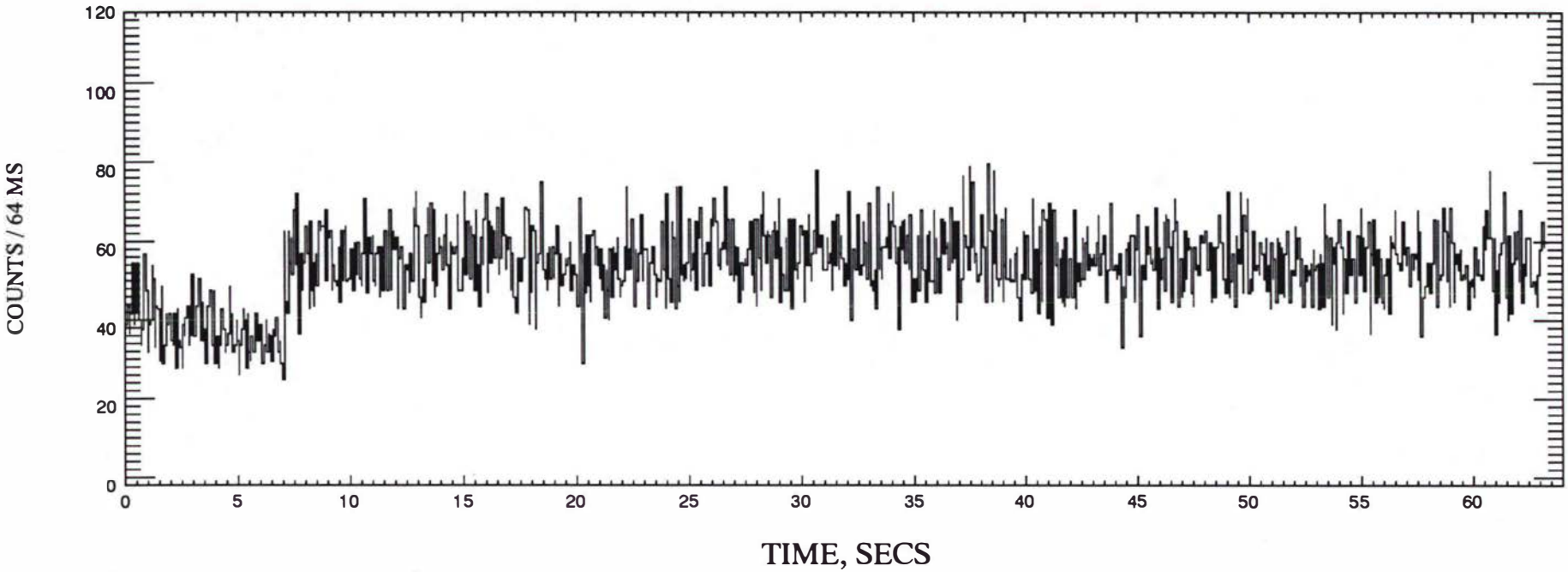


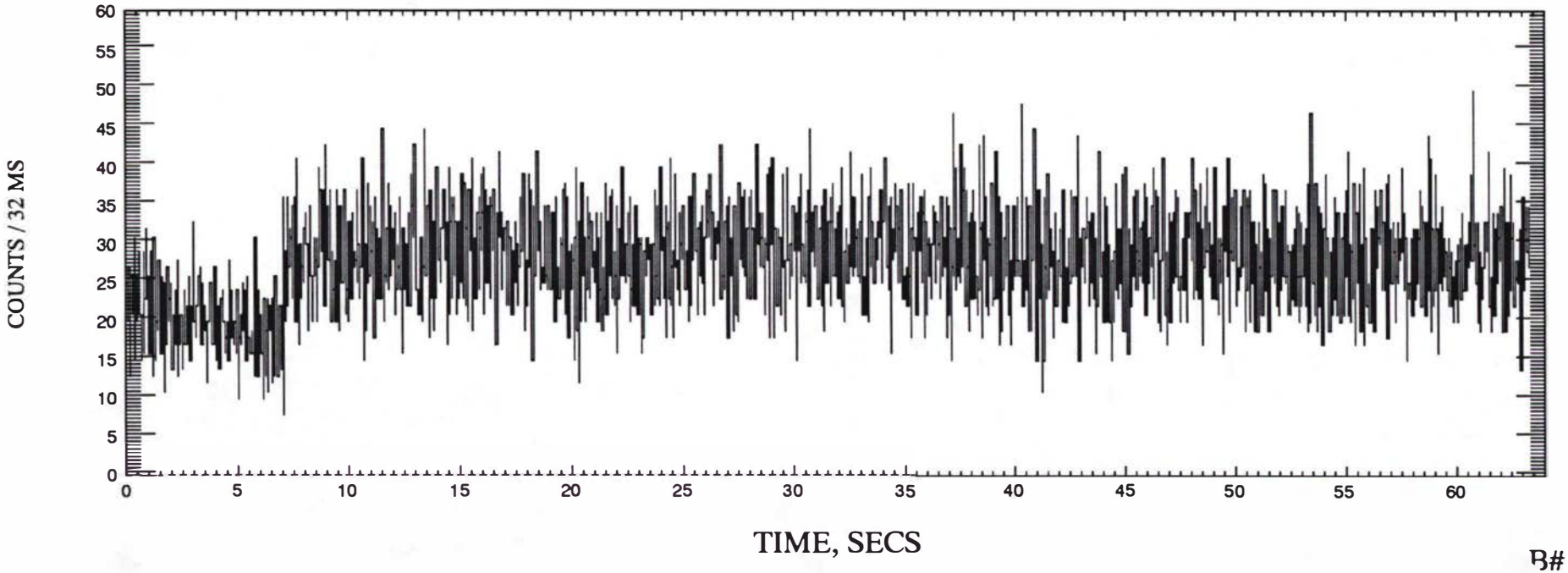


B# 2

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 13 at UT= 1.698587684631 h= 6114.916 s 01:41:54.916

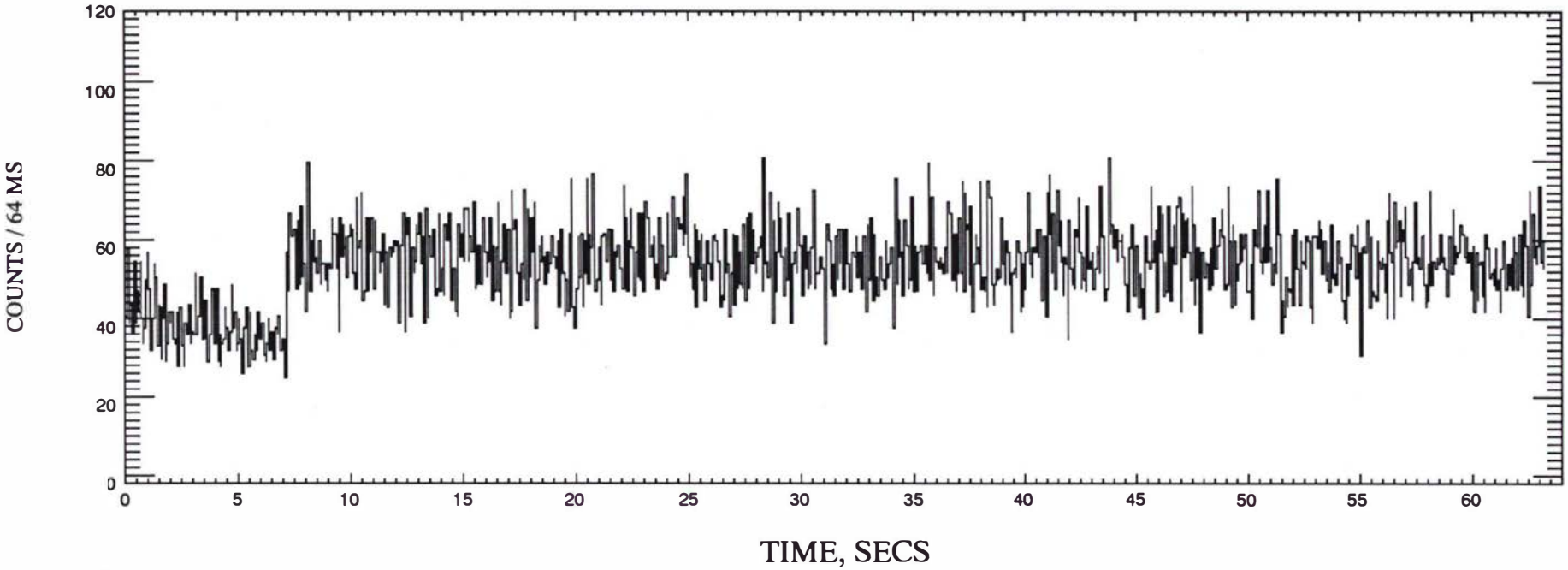


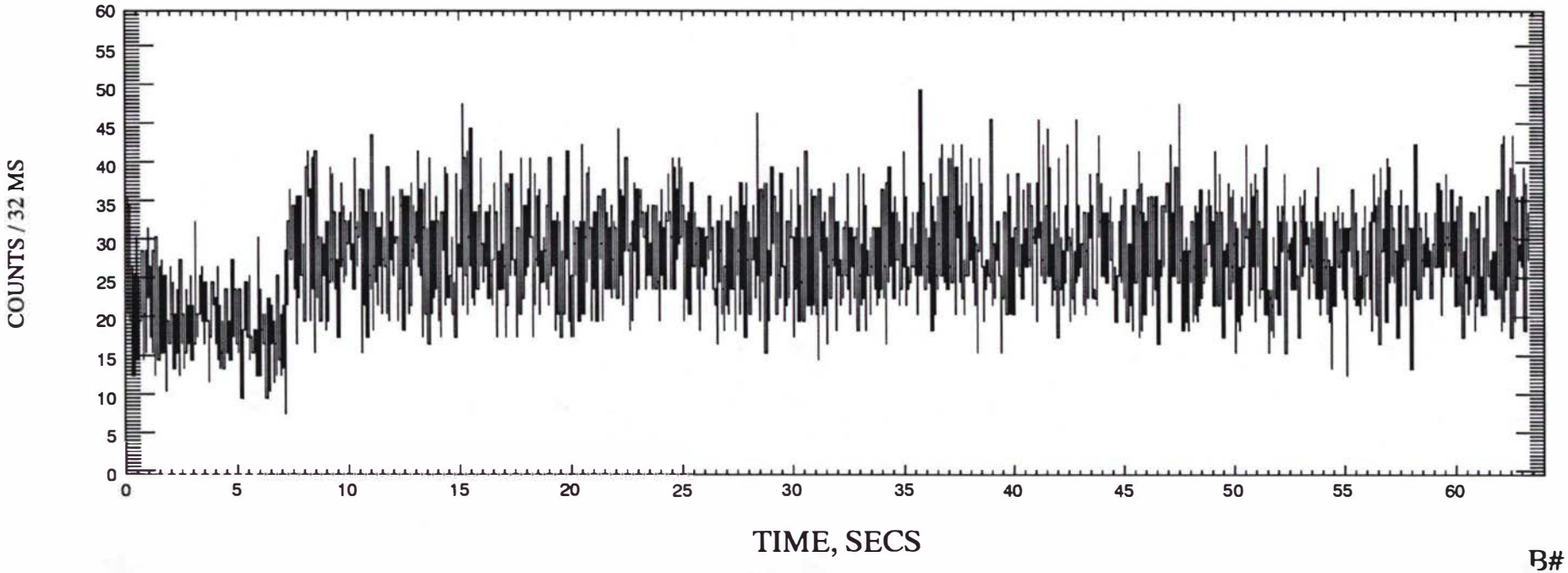


B# 3

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 14 at UT= 2.400782784356 h= 8642.818 s 02:24:02.818

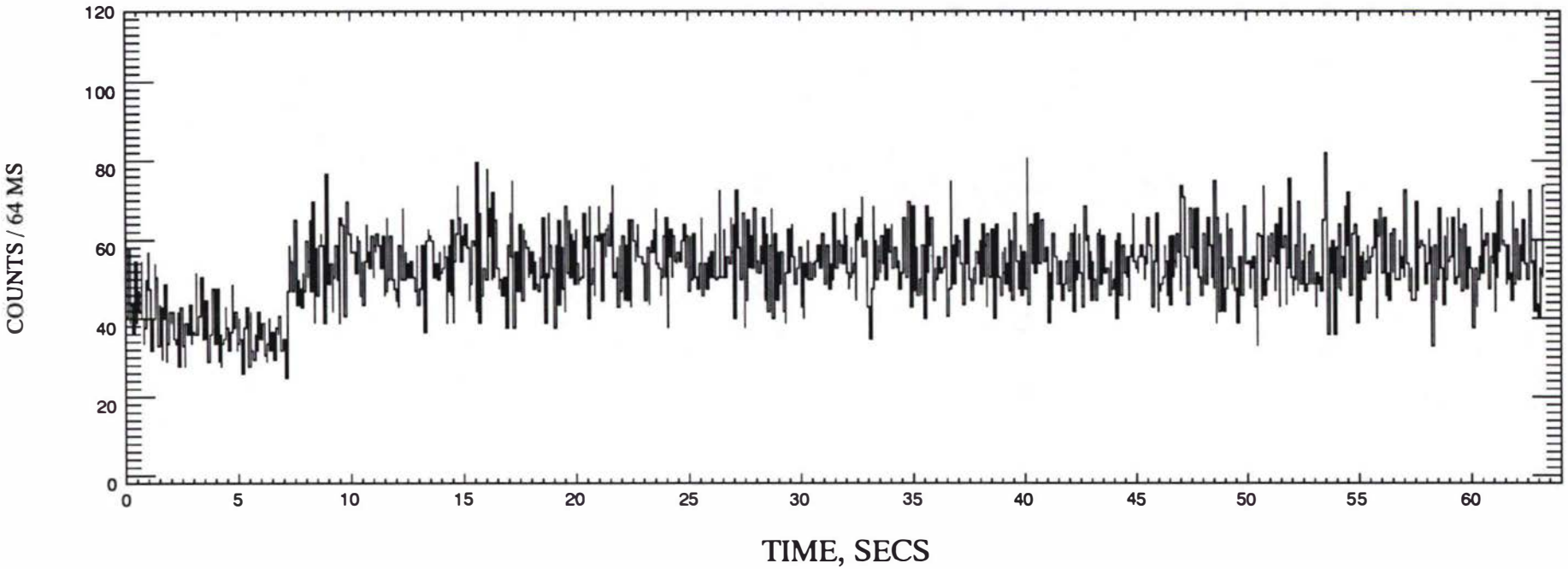


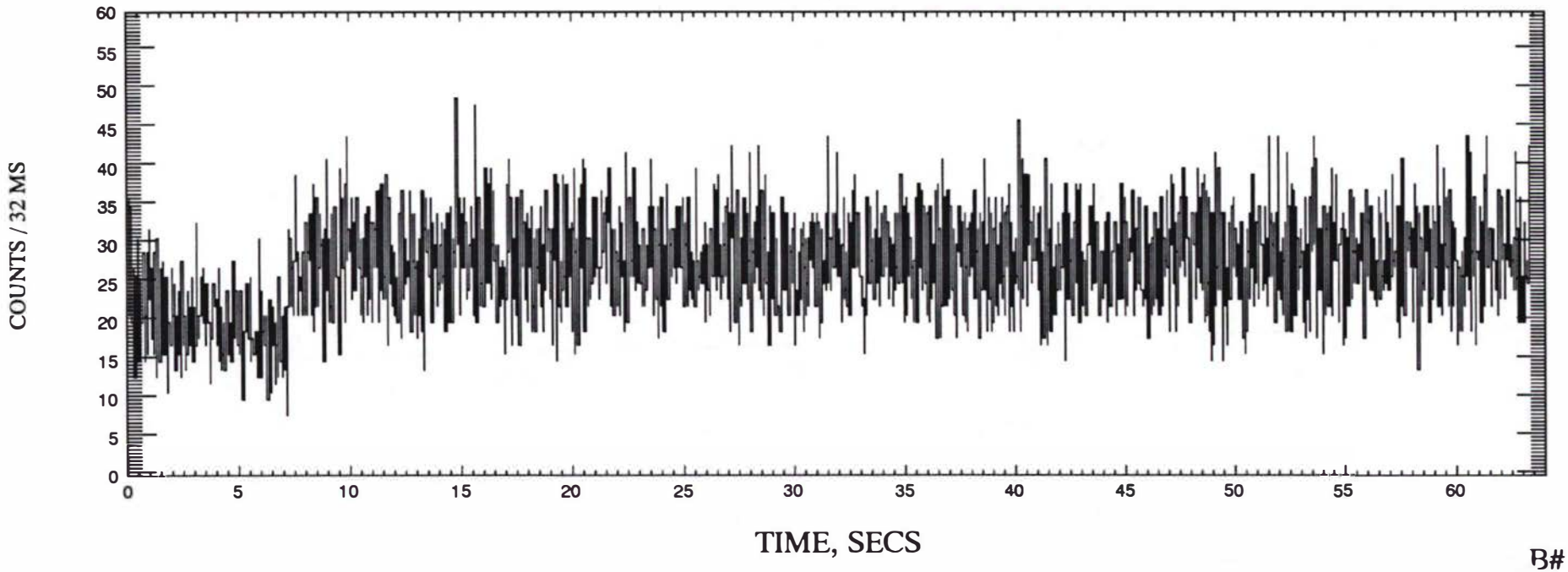


B# 4

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 15 at UT= 3.103010431925 h=11170.838 s 03:06:10.838

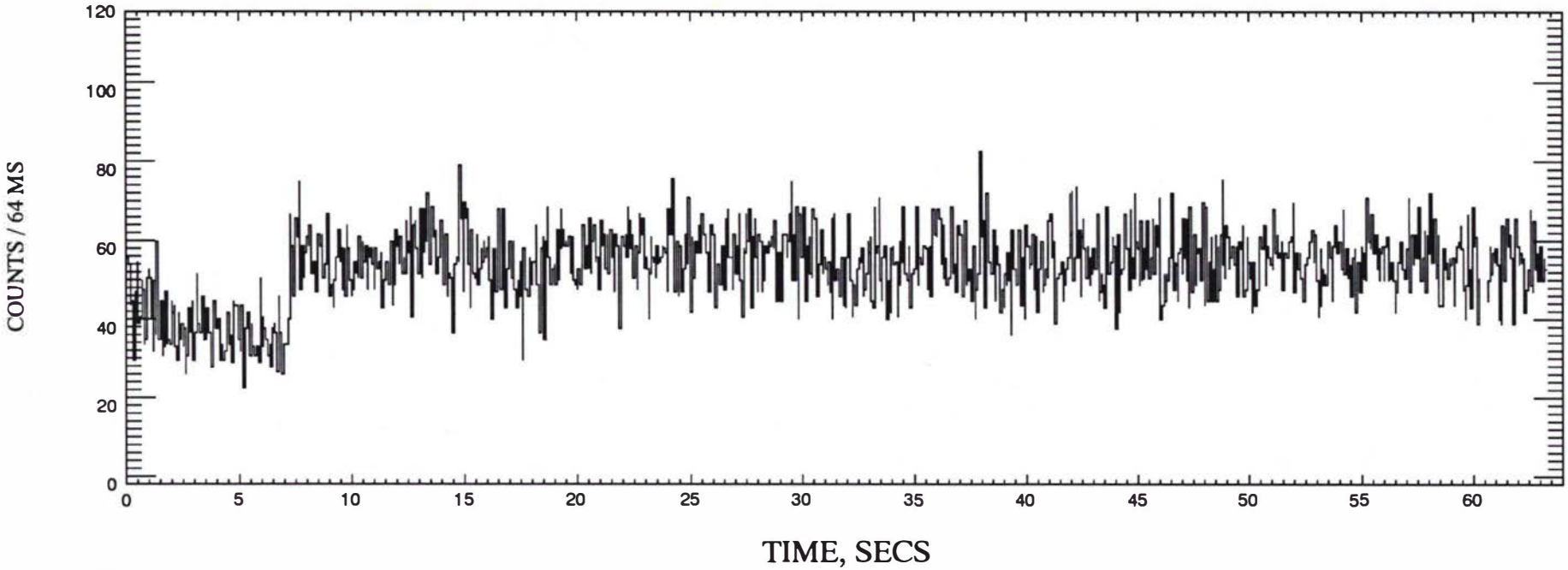


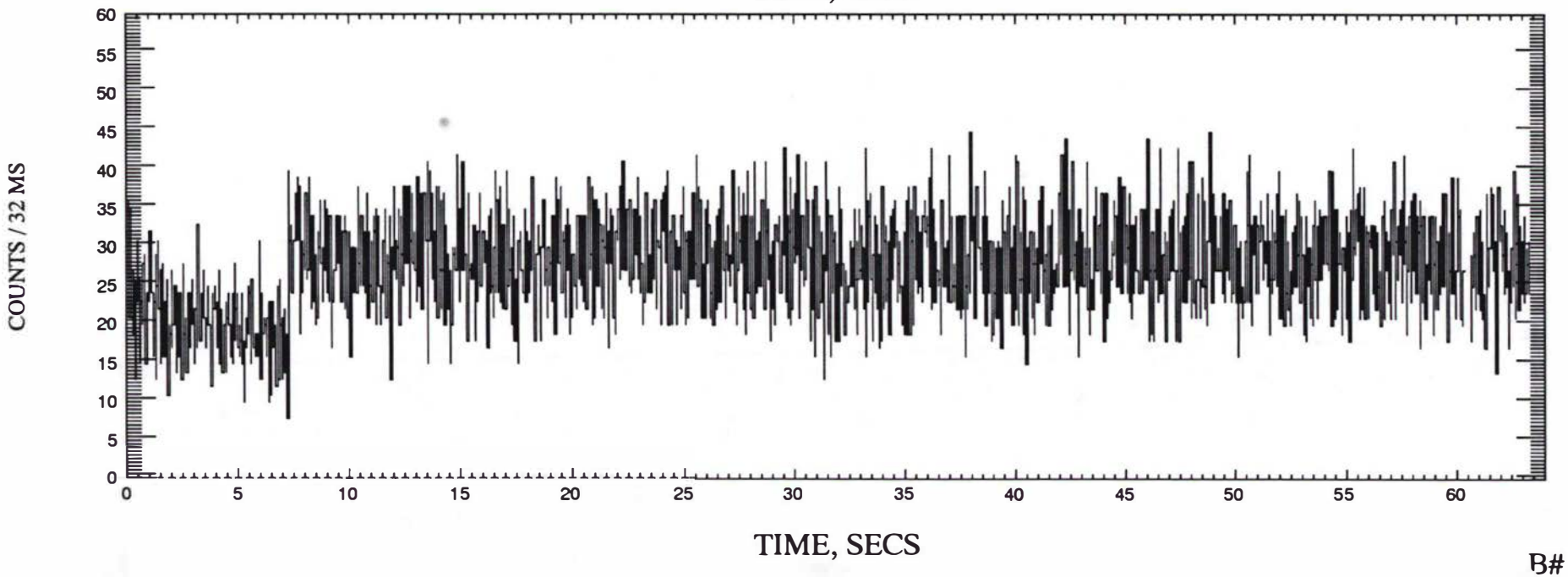


B# 5

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 0 at UT= 3.805235913595 h=13698.849 s 03:48:18.849

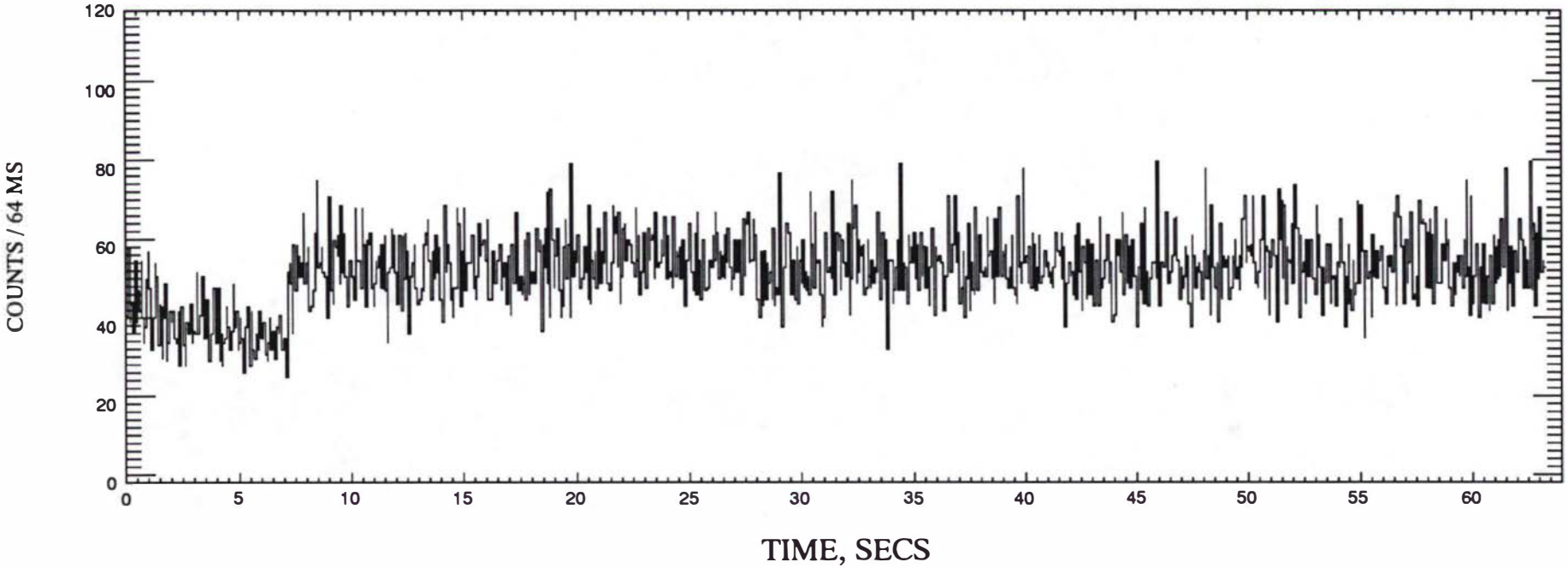


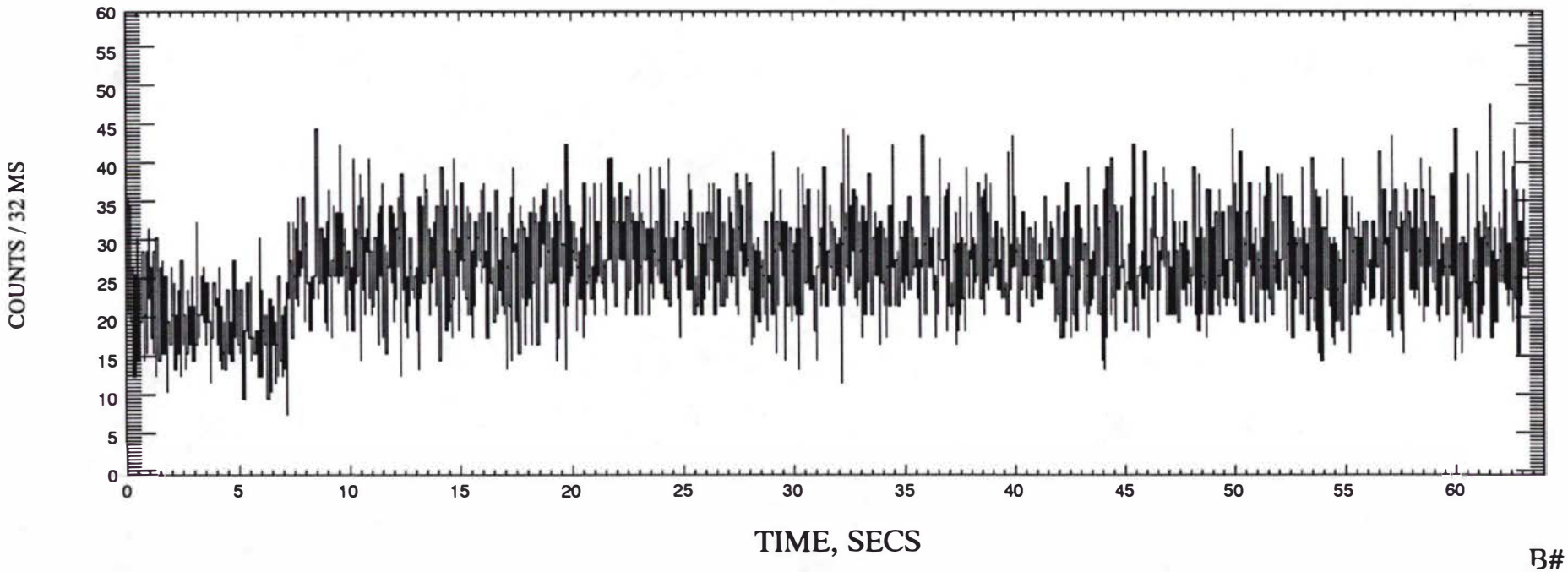


B# 6

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 1 at UT= 4.507472241720 h=16226.900 s 04:30:26.900

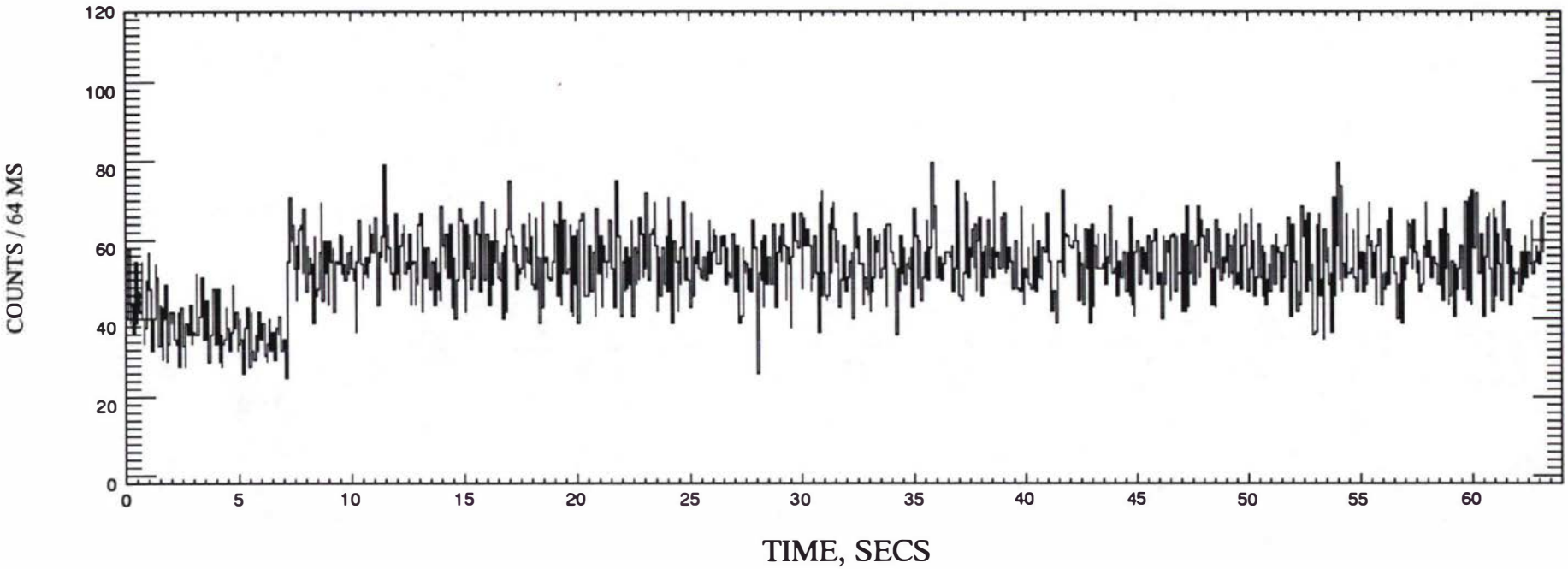


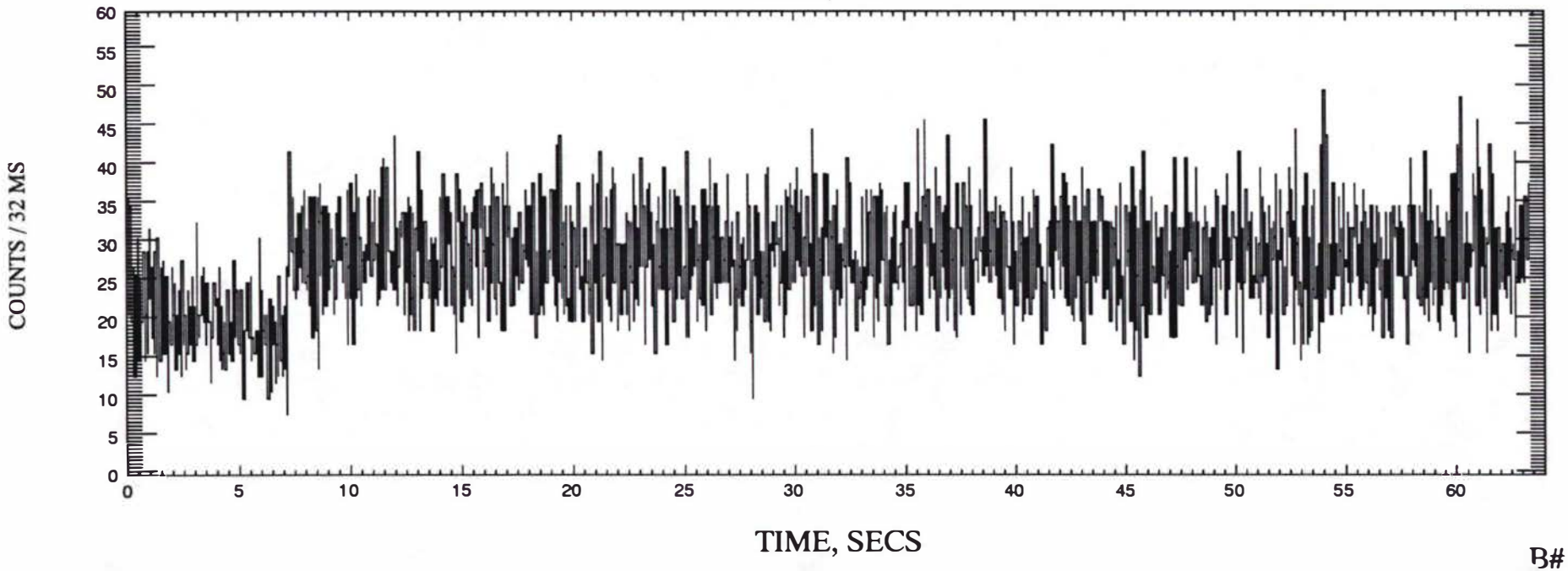


B# 7

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 2 at UT= 5.209697719150 h=18754.912 s 05:12:34.912

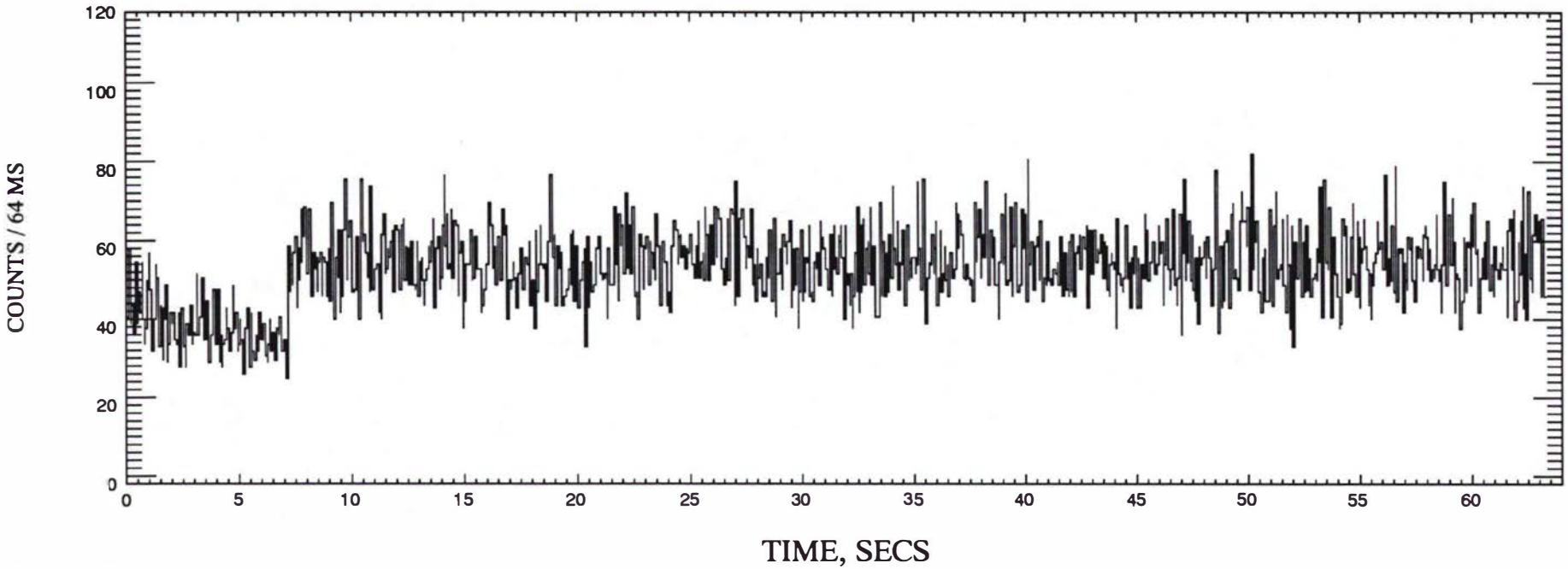


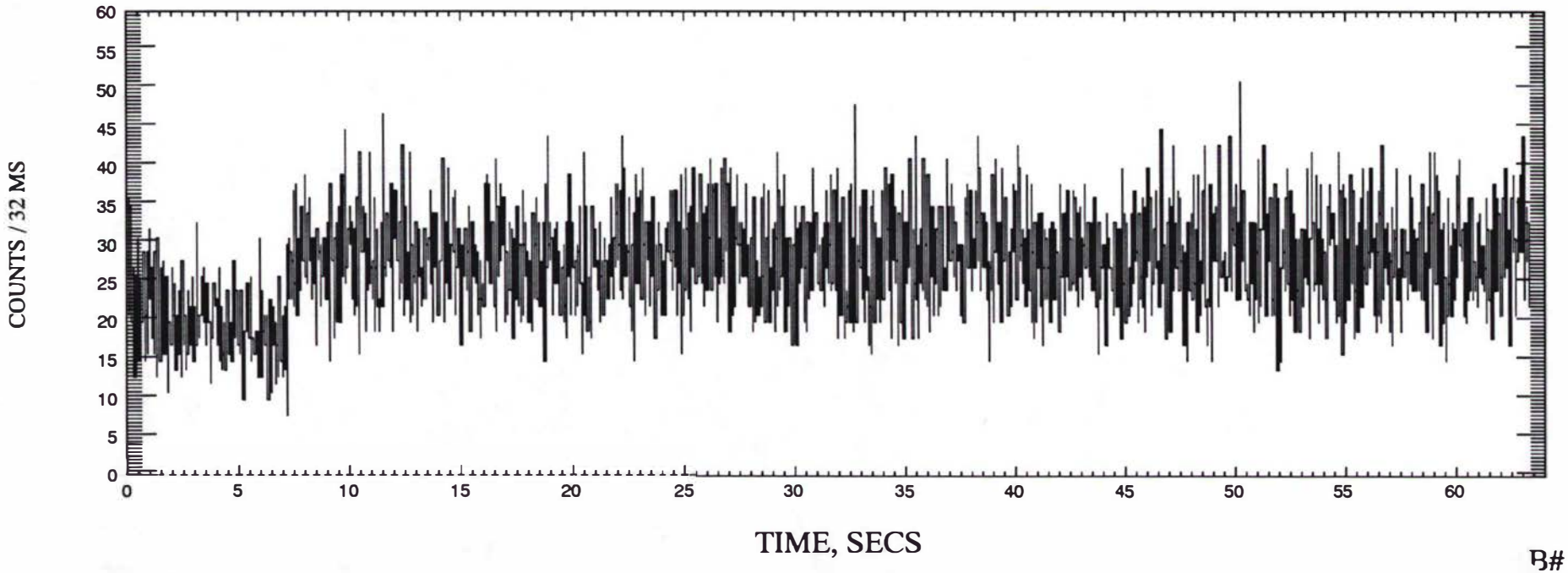


B# 8

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 3 at UT= 5.911931881375 h=21282.955 s 05:54:42.955

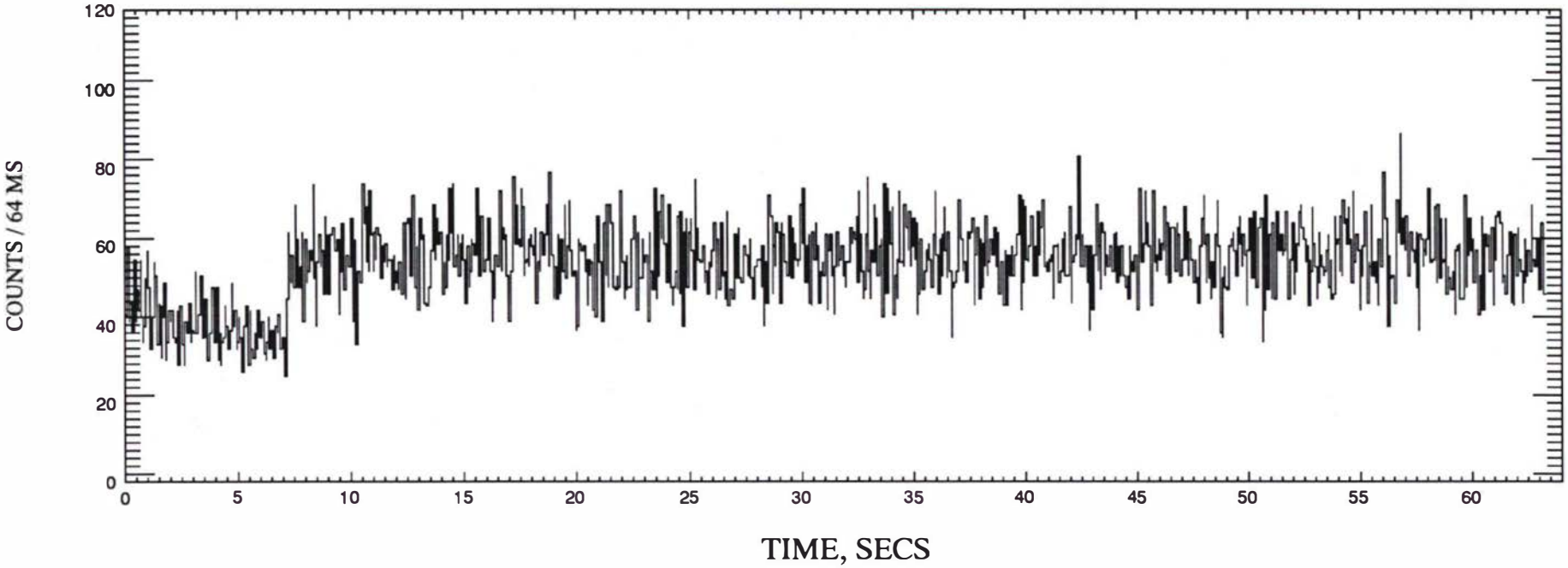


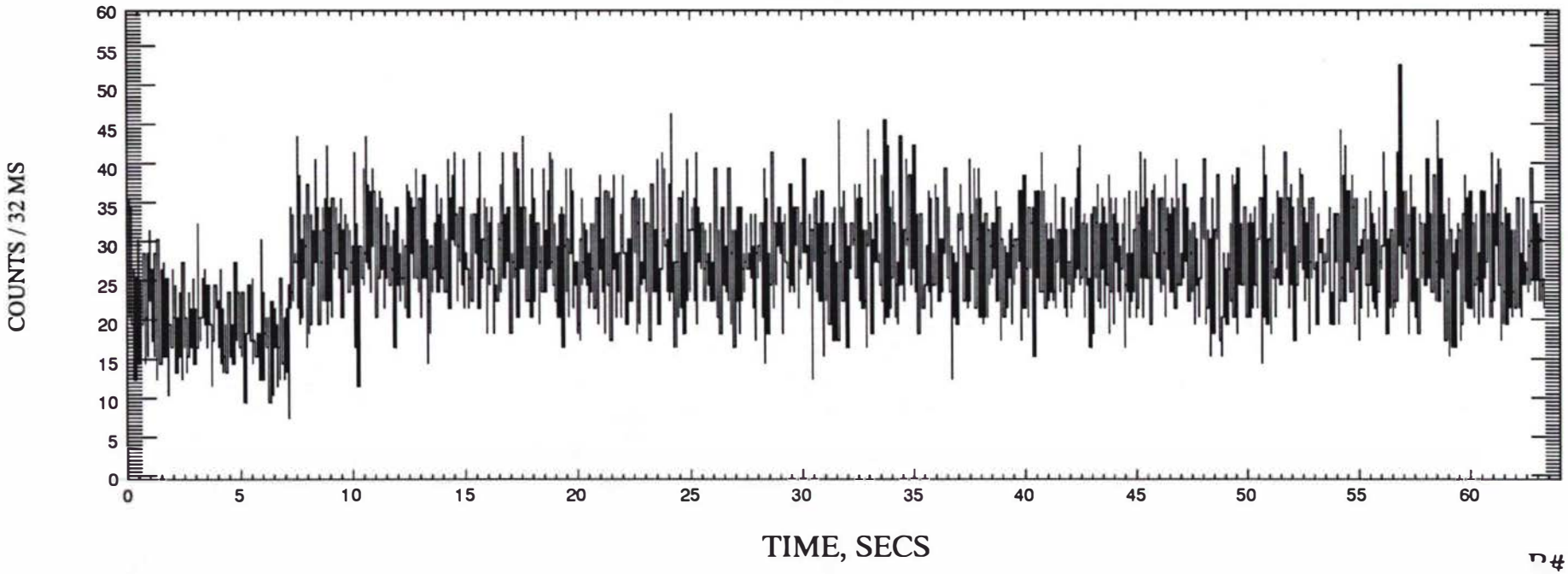


B# 9

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 4 at UT= 6.614161699083 h=23810.982 s 06:36:50.982

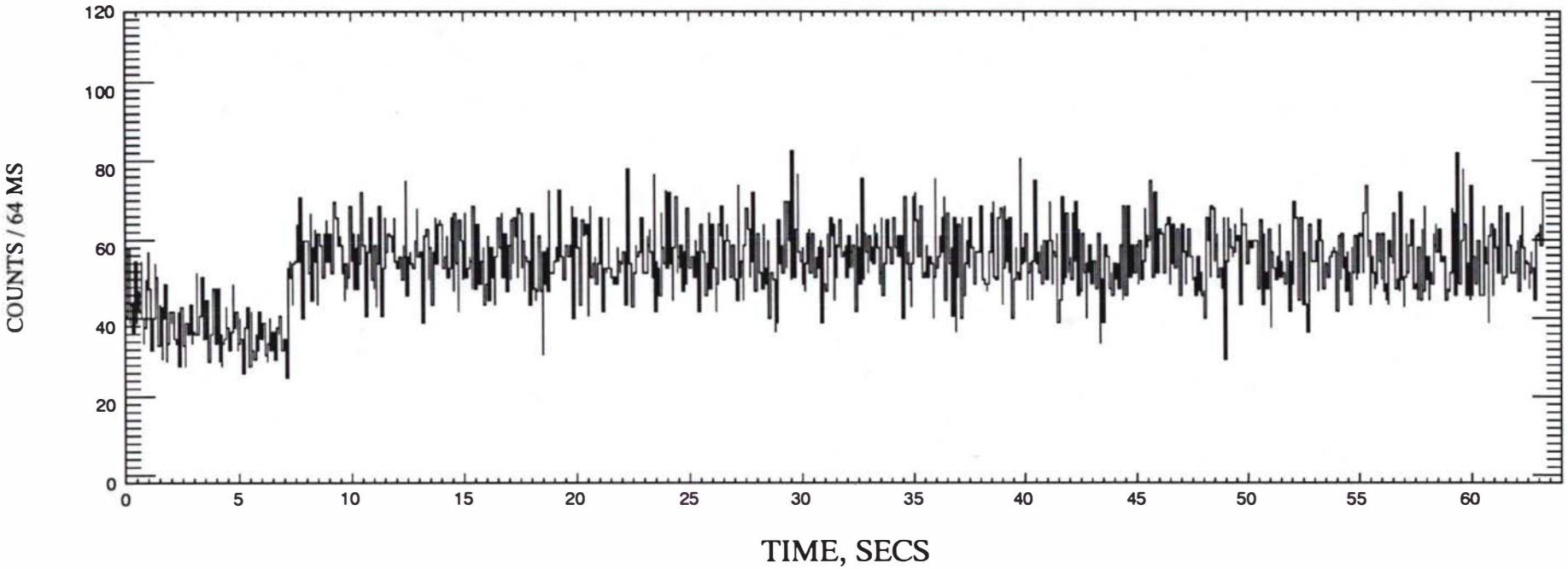


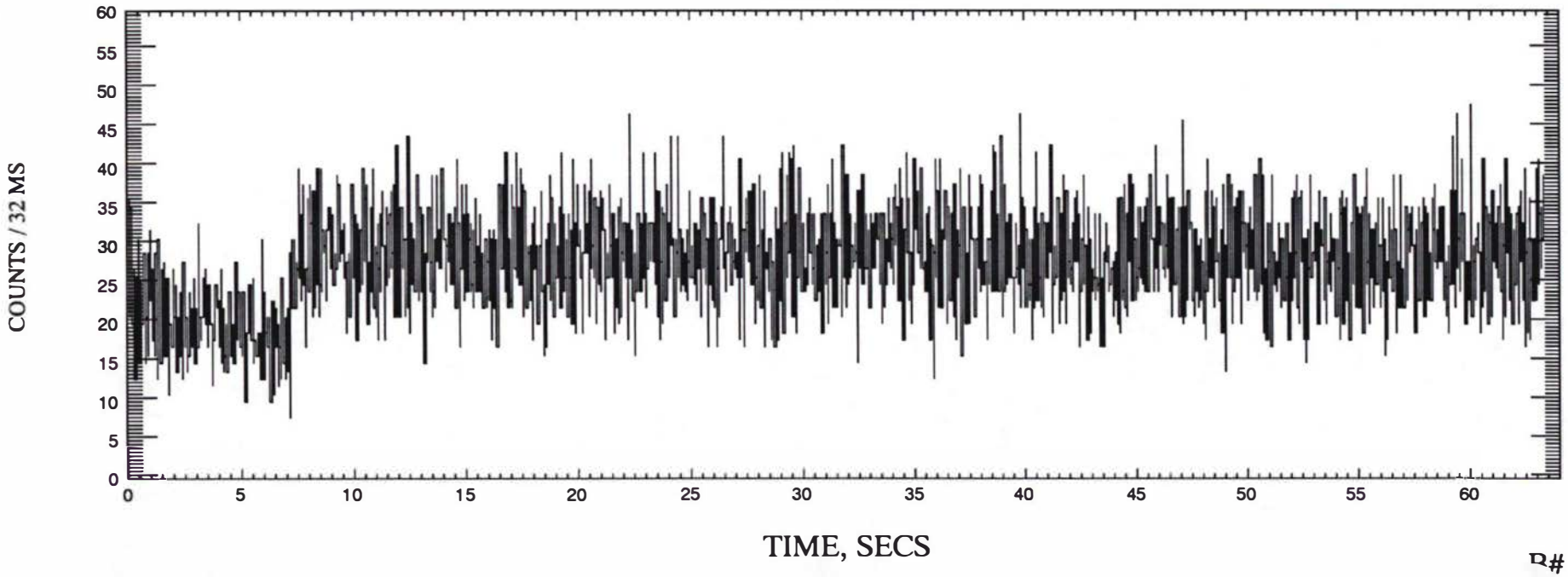


P# 10

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 5 at UT= 7.316390758091 h=26339.007 s 07:18:59.007

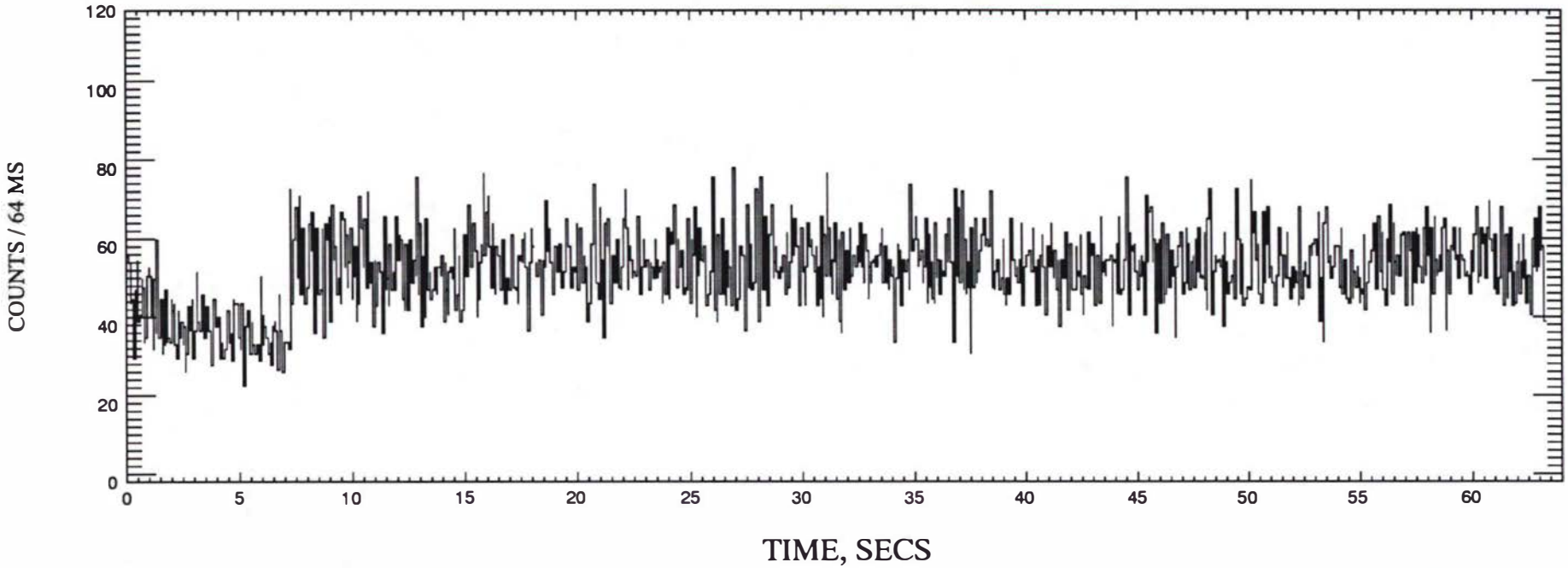


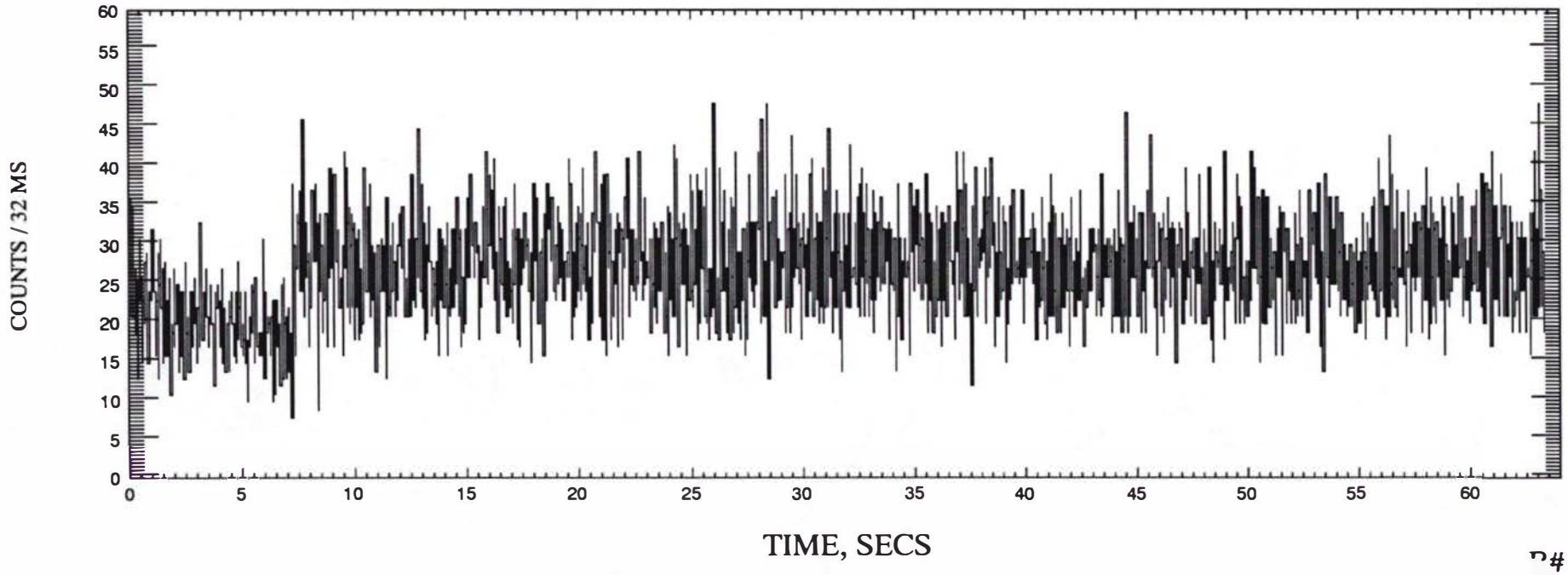


B# 11

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 7 at UT= 9.280849397447 h=33411.058 s 09:16:51.058

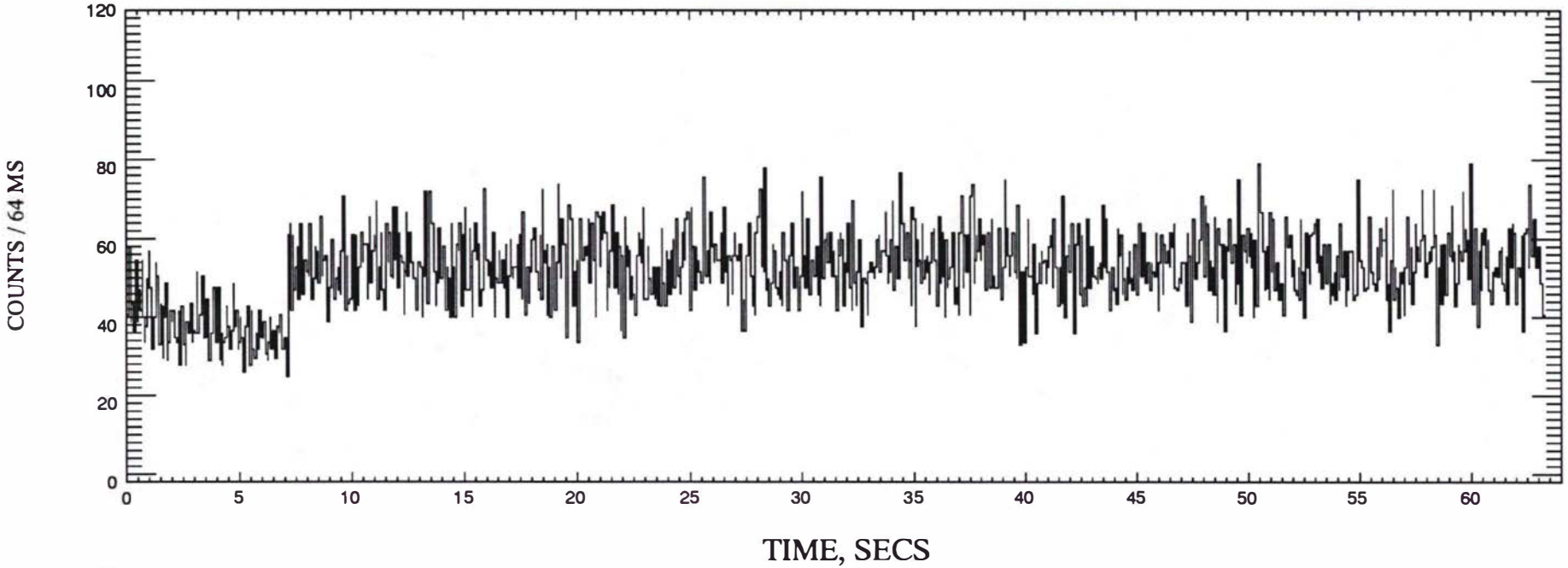


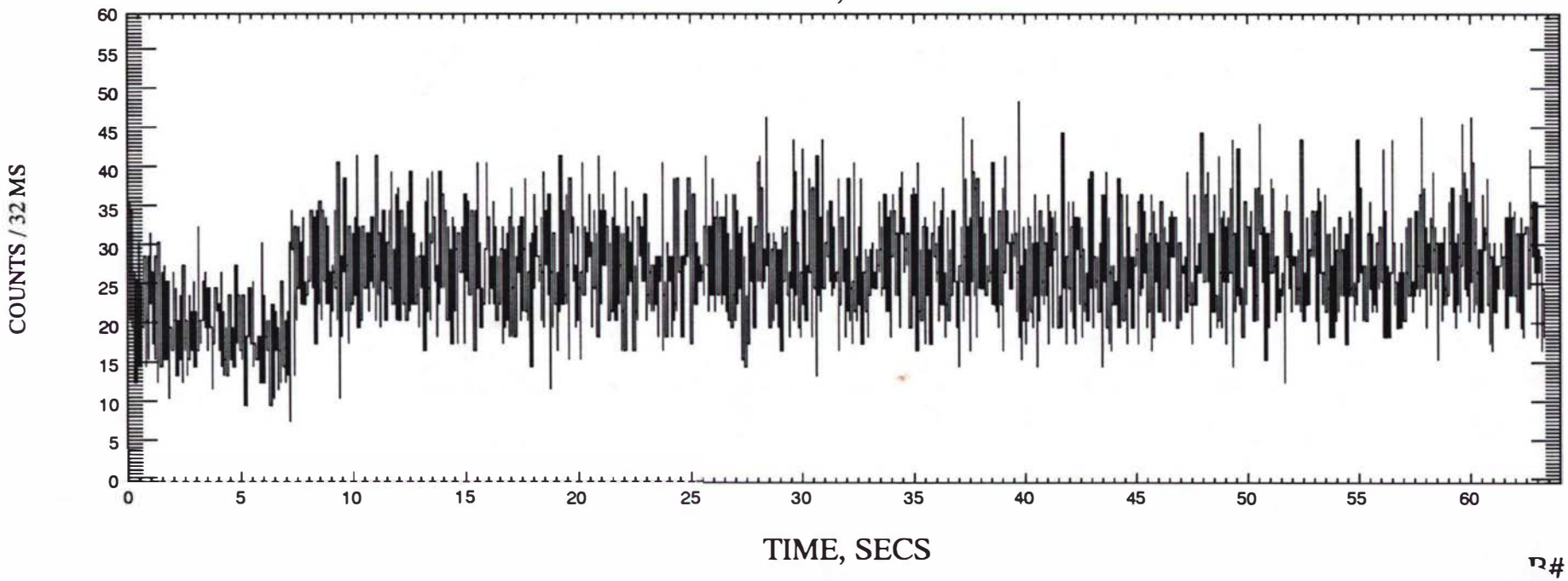


P# 12

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 8 at UT=10.543087463379 h=37955.115 s 10:32:35.115

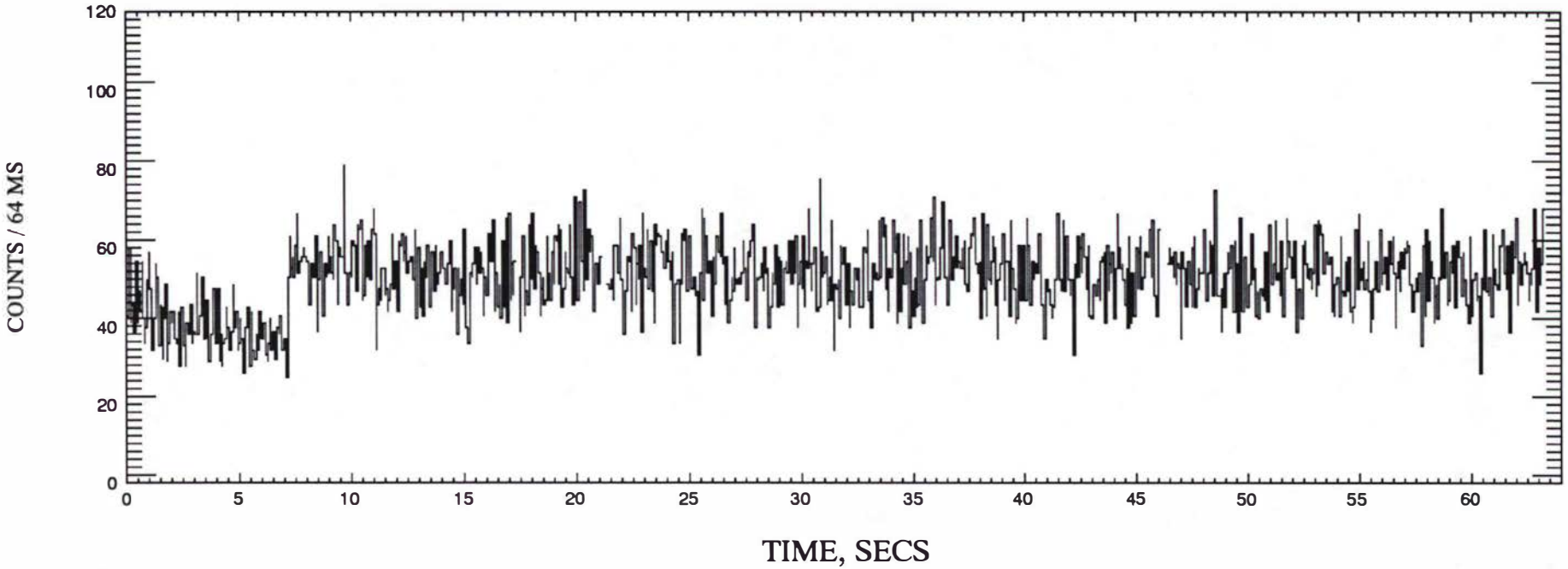


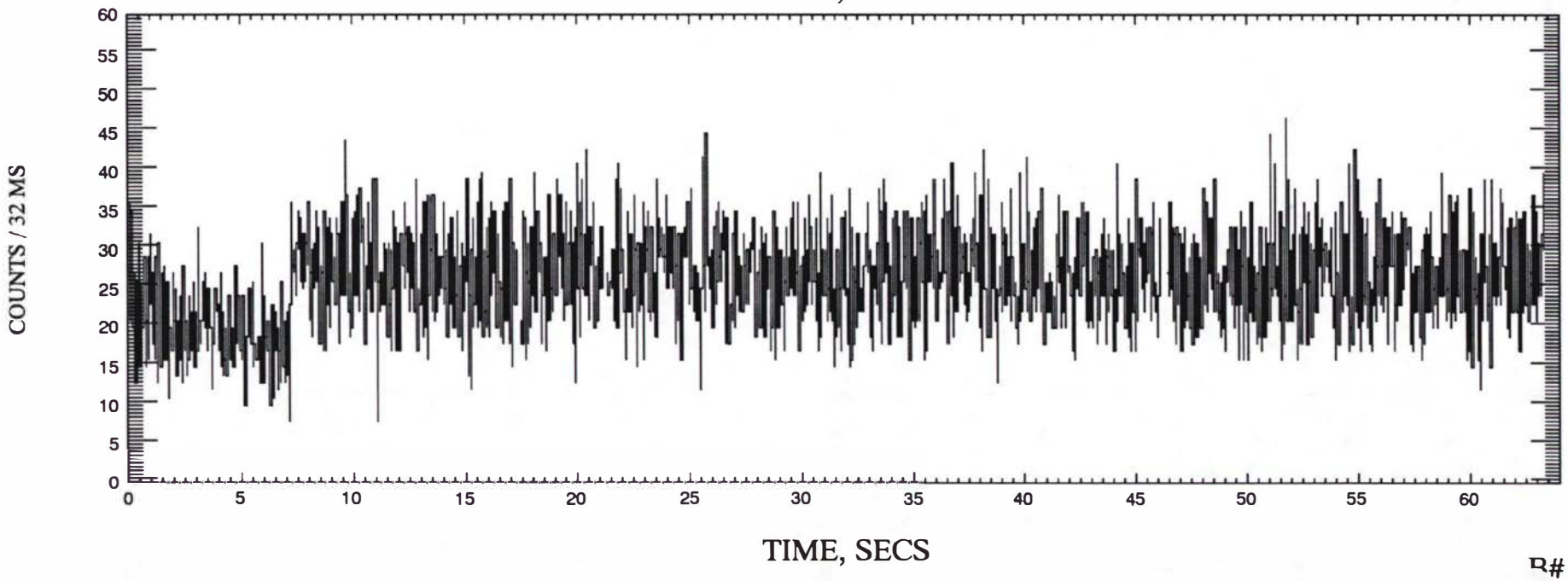


B# 13

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 9 at UT=11.805325529310 h=42499.172 s 11:48:19.172

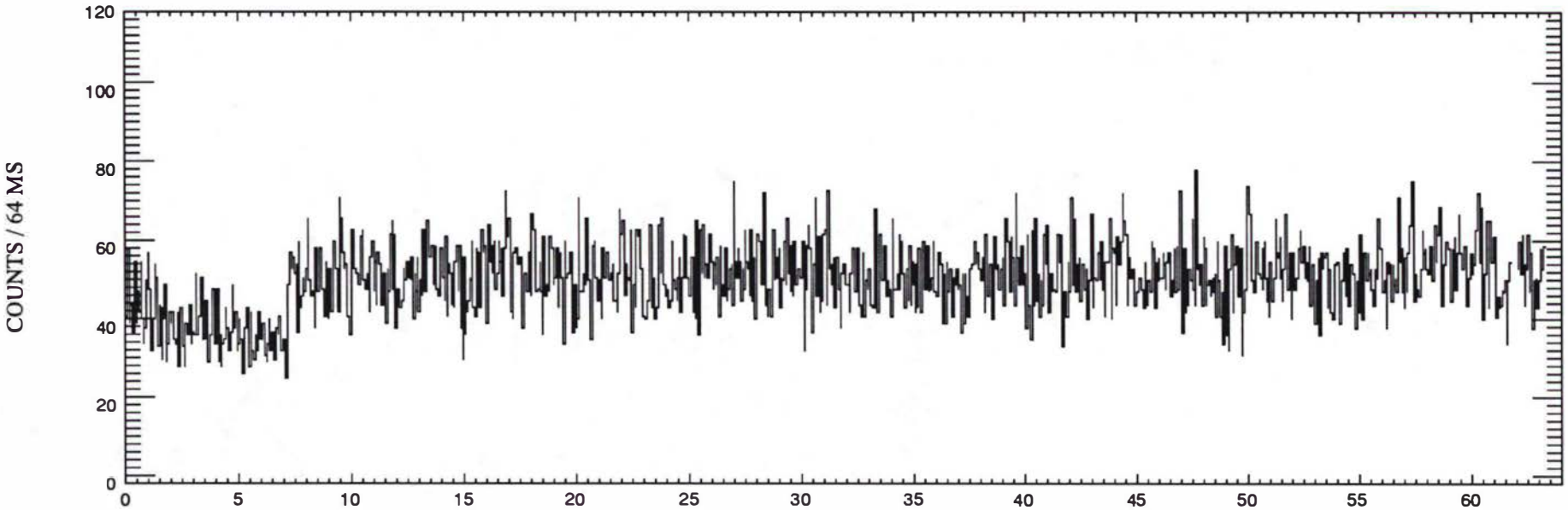




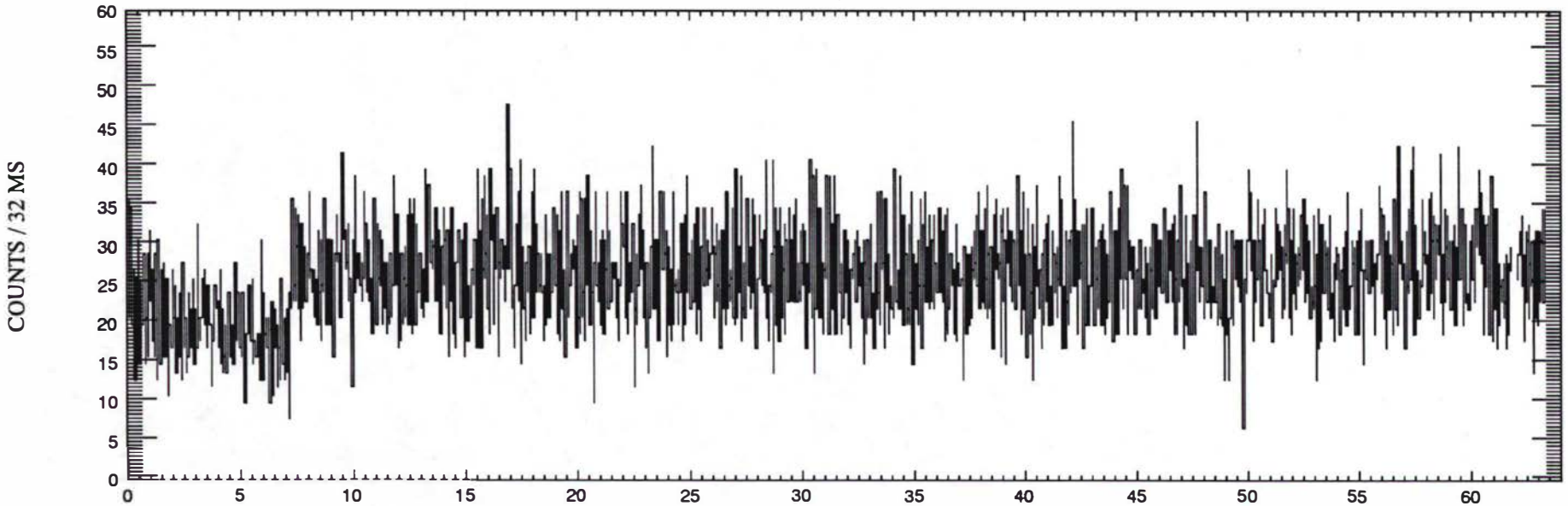
R# 14

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 10 at UT=13.067563599481 h=47043.229 s 13:04:03.229



TIME, SECS

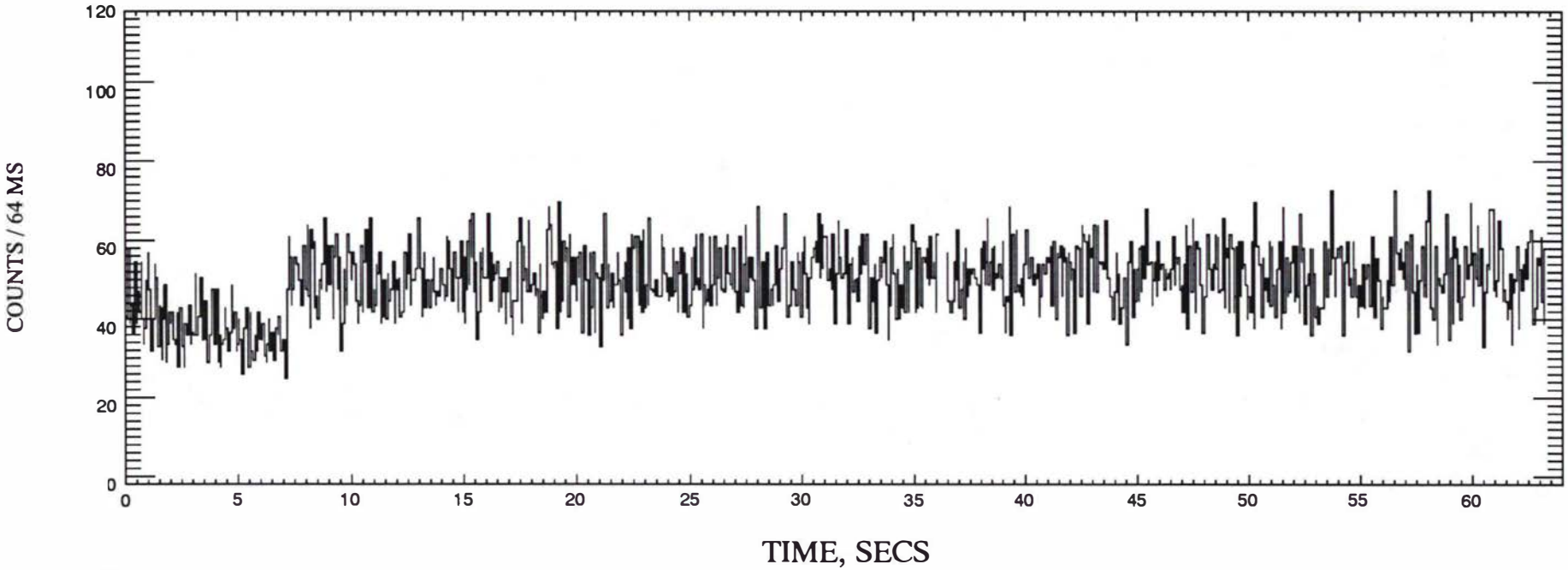


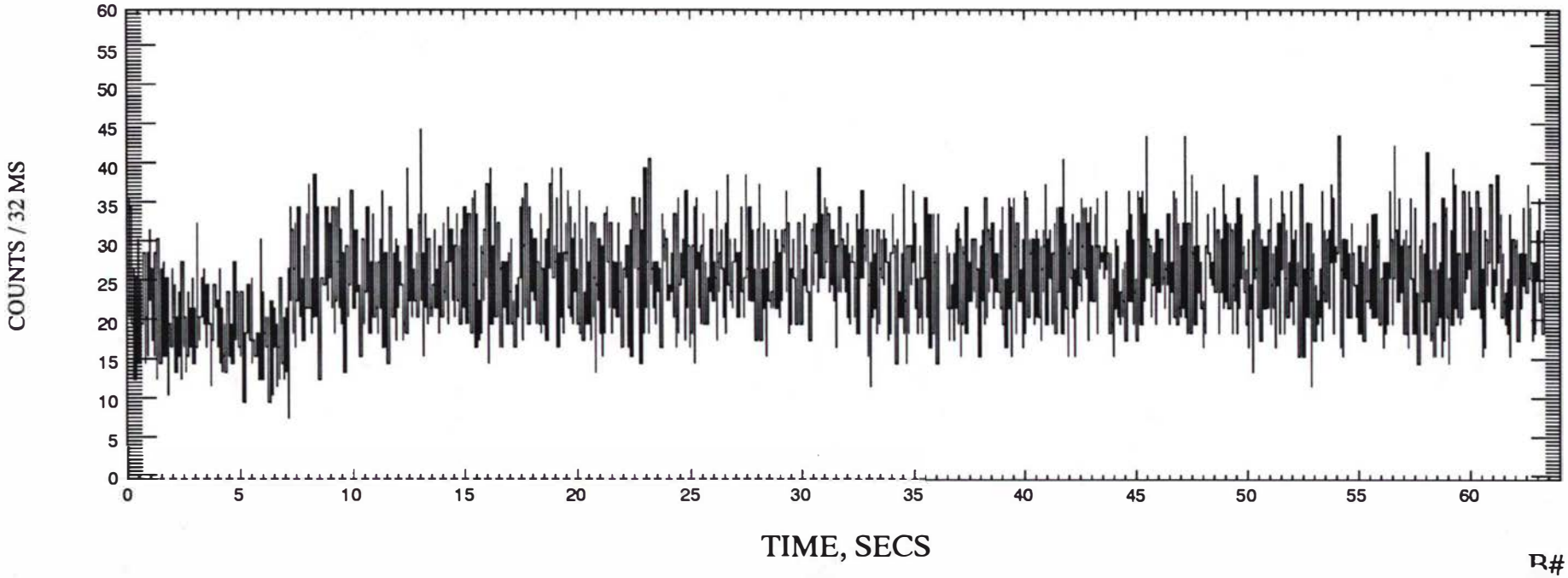
TIME, SECS

P# 15

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 11 at UT=14.329797325134 h=51587.270 s 14:19:47.270

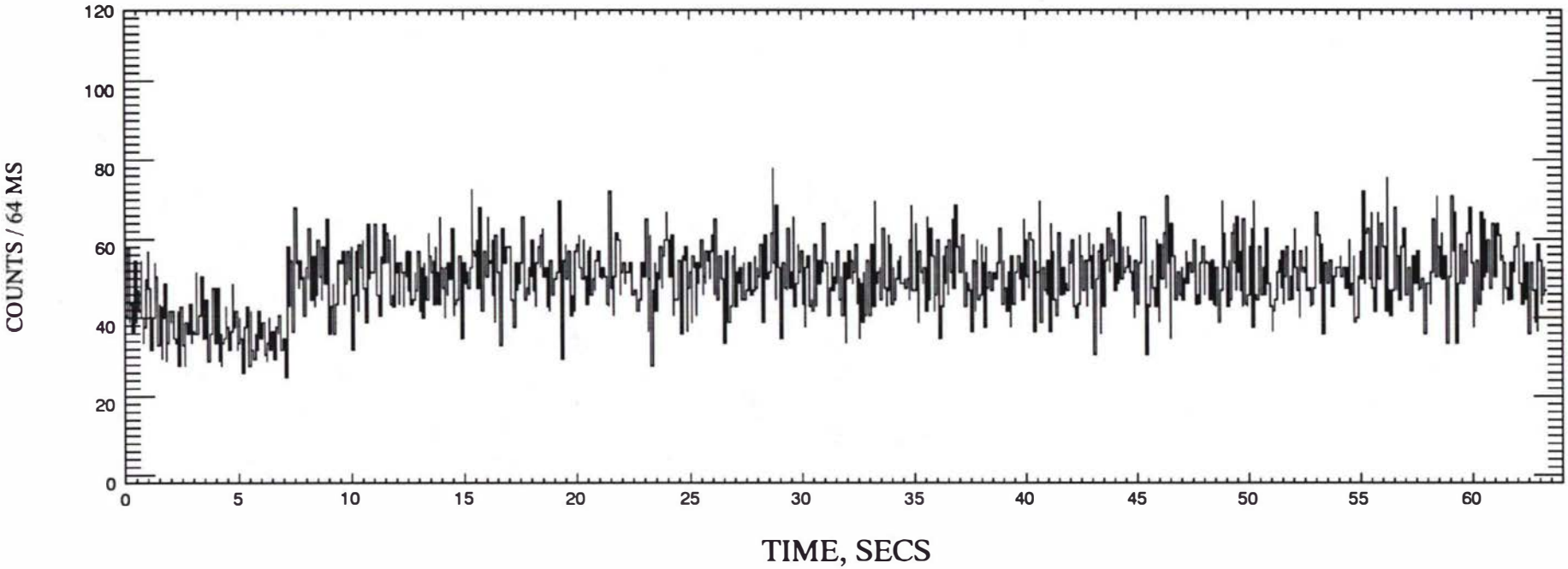


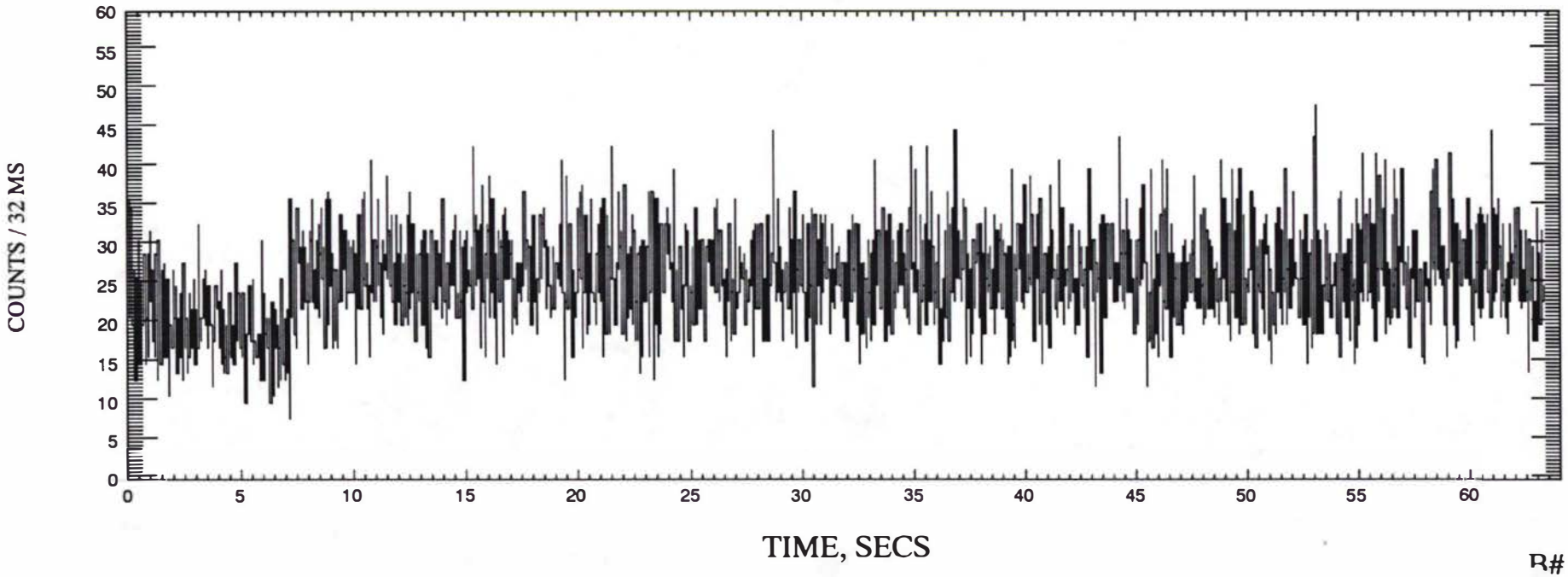


B# 16

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 12 at UT=15.592037561205 h=56131.335 s 15:35:31.335

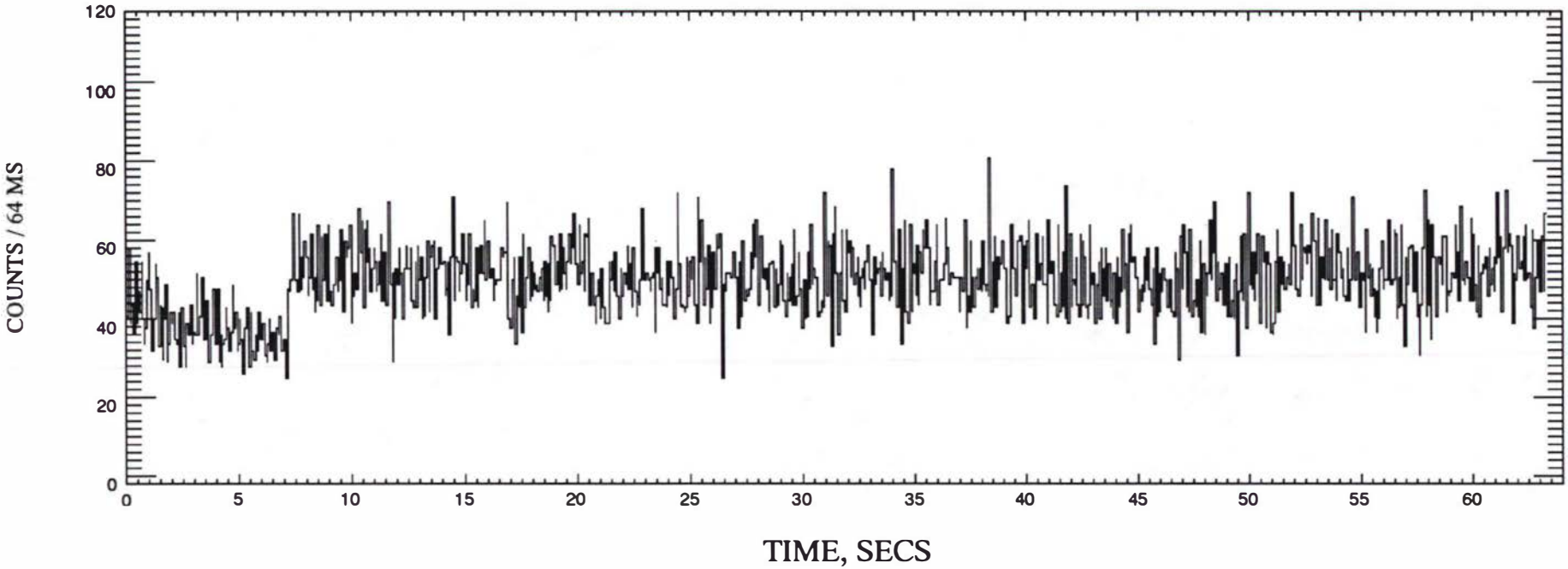


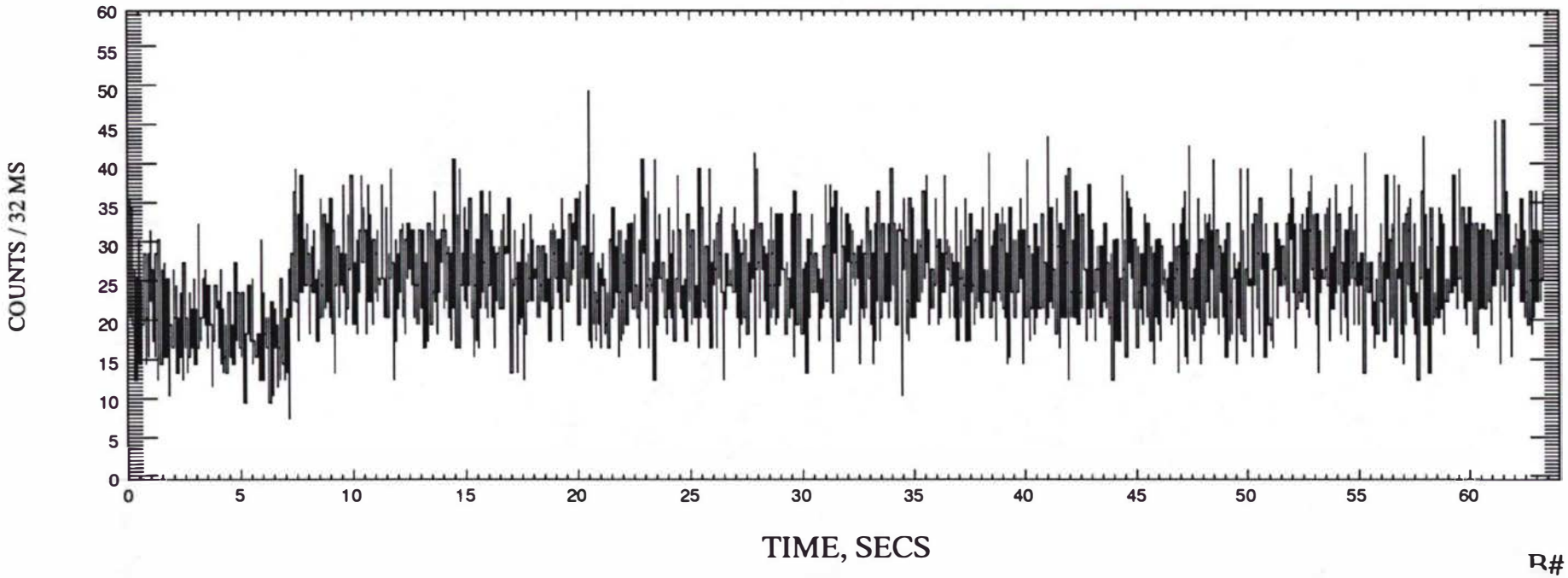


B# 17

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 13 at UT=16.854271939596 h=60675.379 s 16:51:15.379

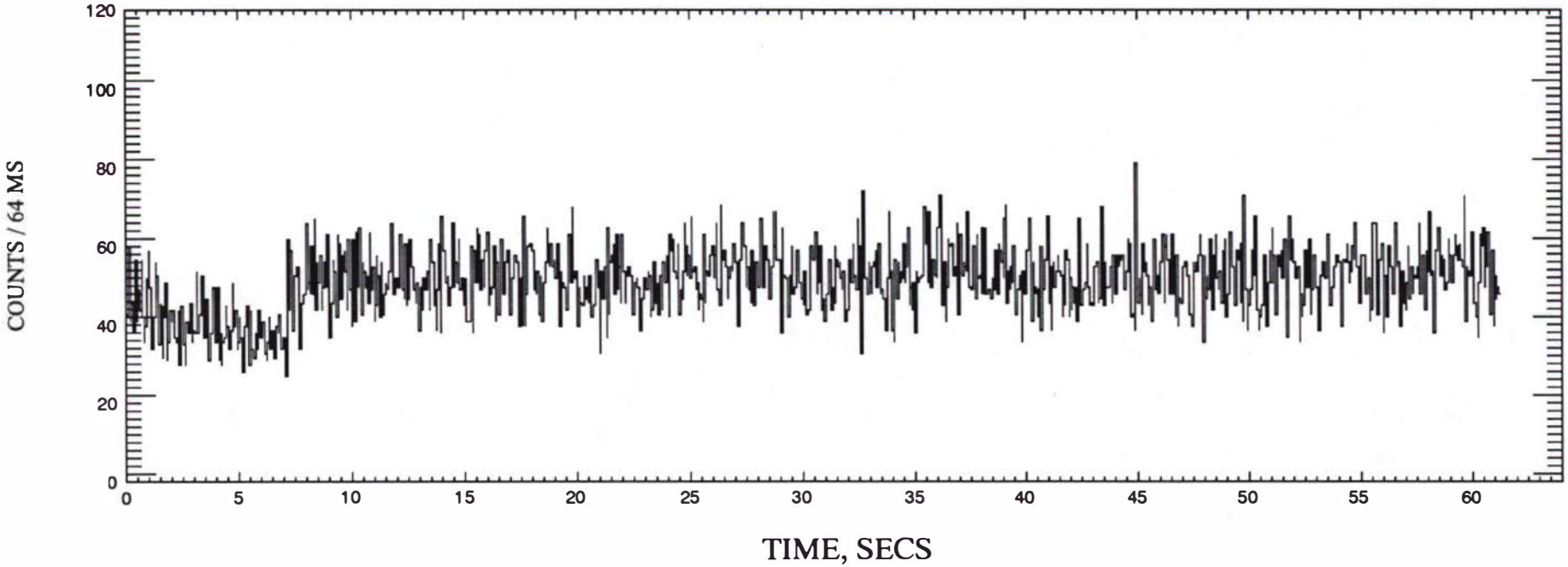


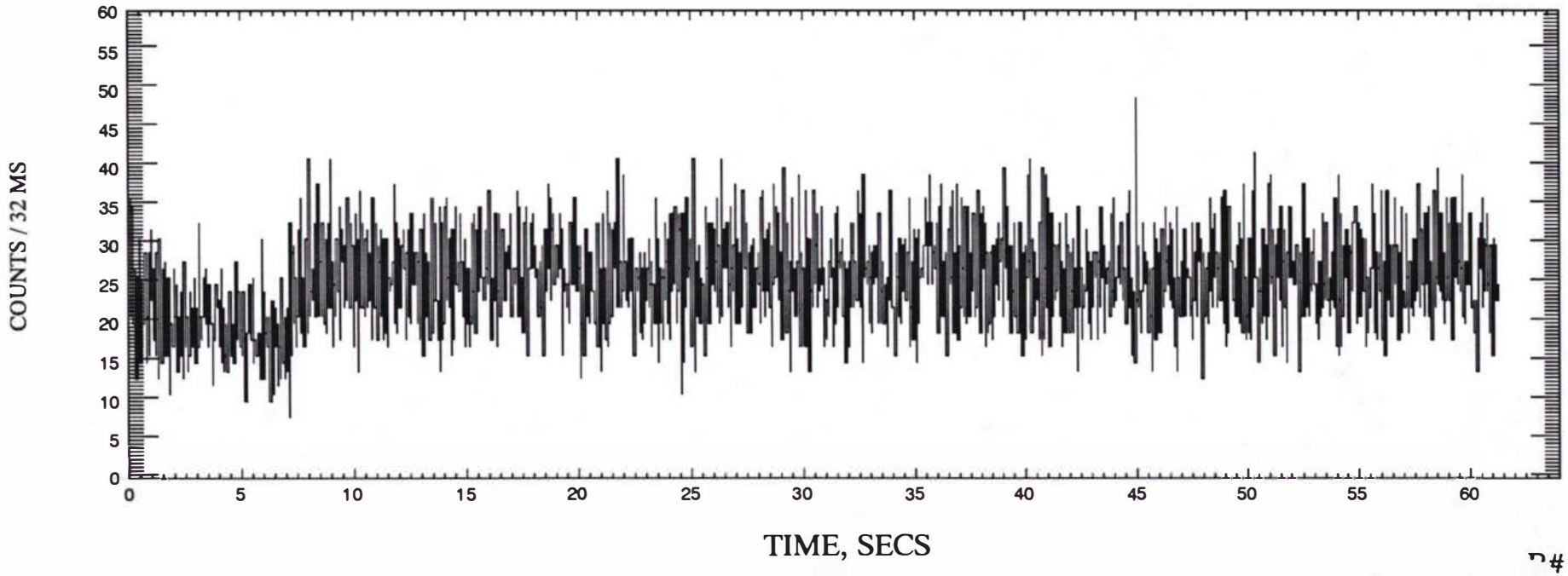


R# 18

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 14 at UT=18.116507835388 h=65219.428 s 18:06:59.428

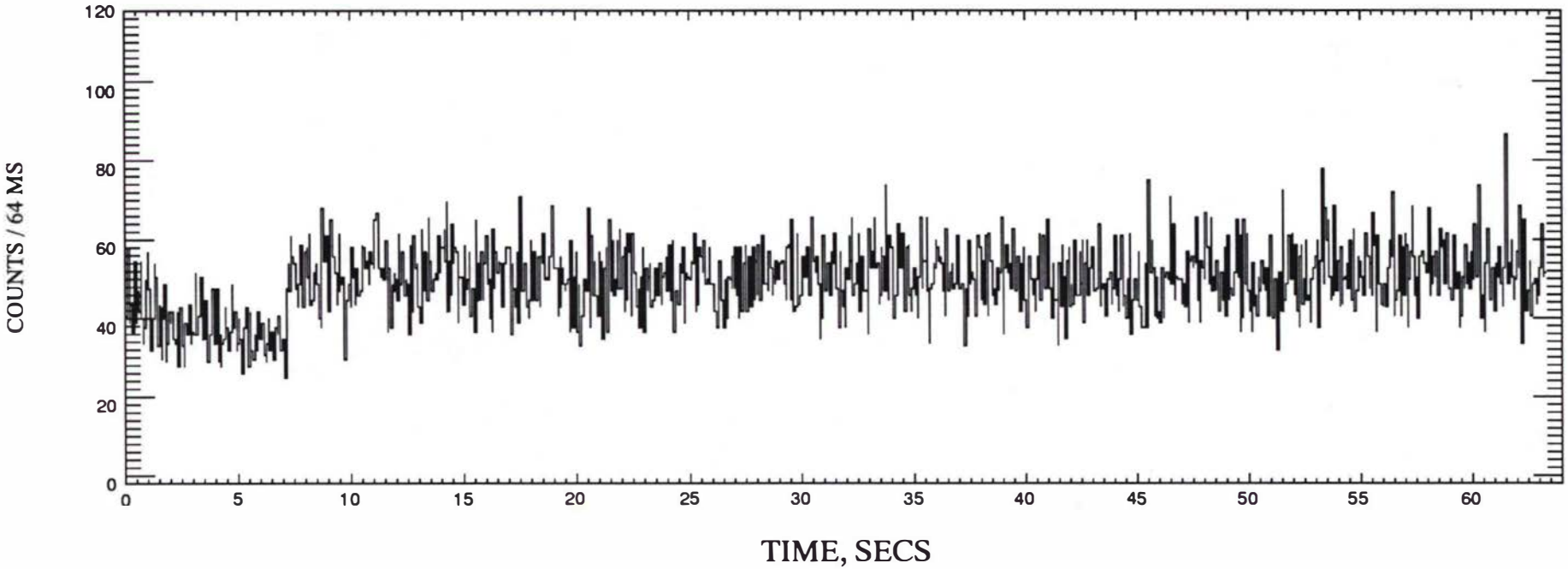


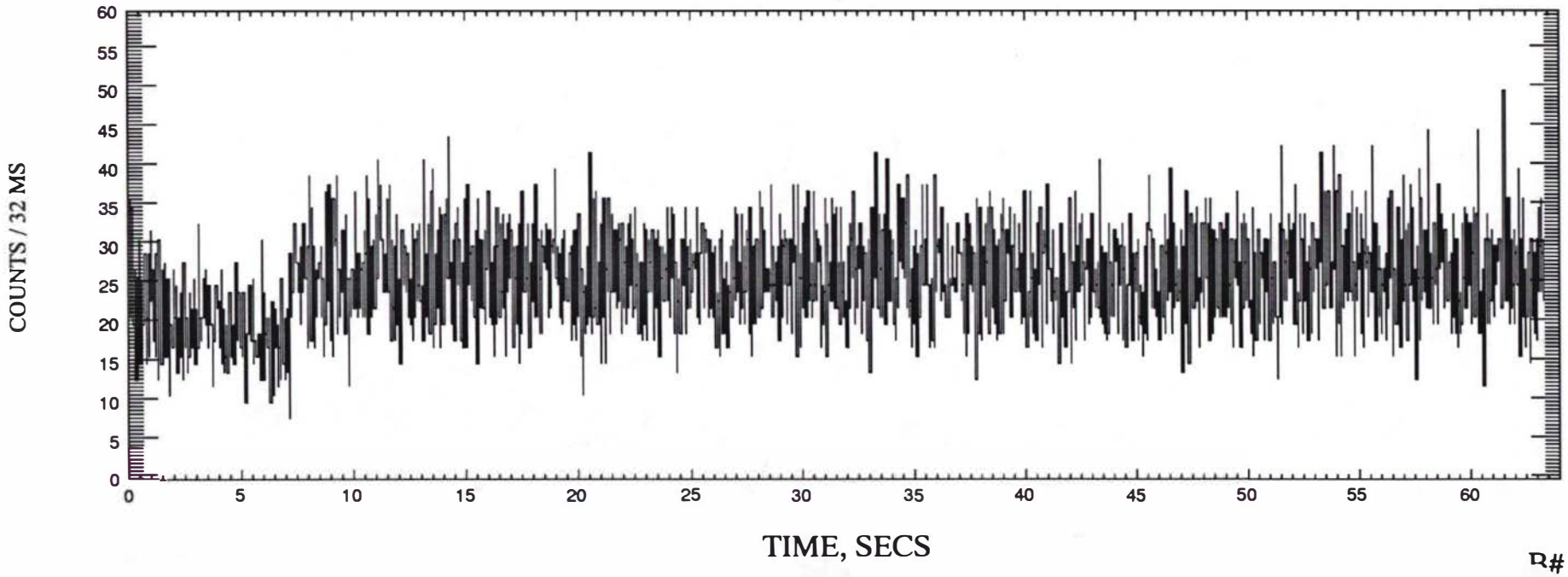


P# 19

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 15 at UT=19.103185708788 h=68771.469 s 19:06:11.469

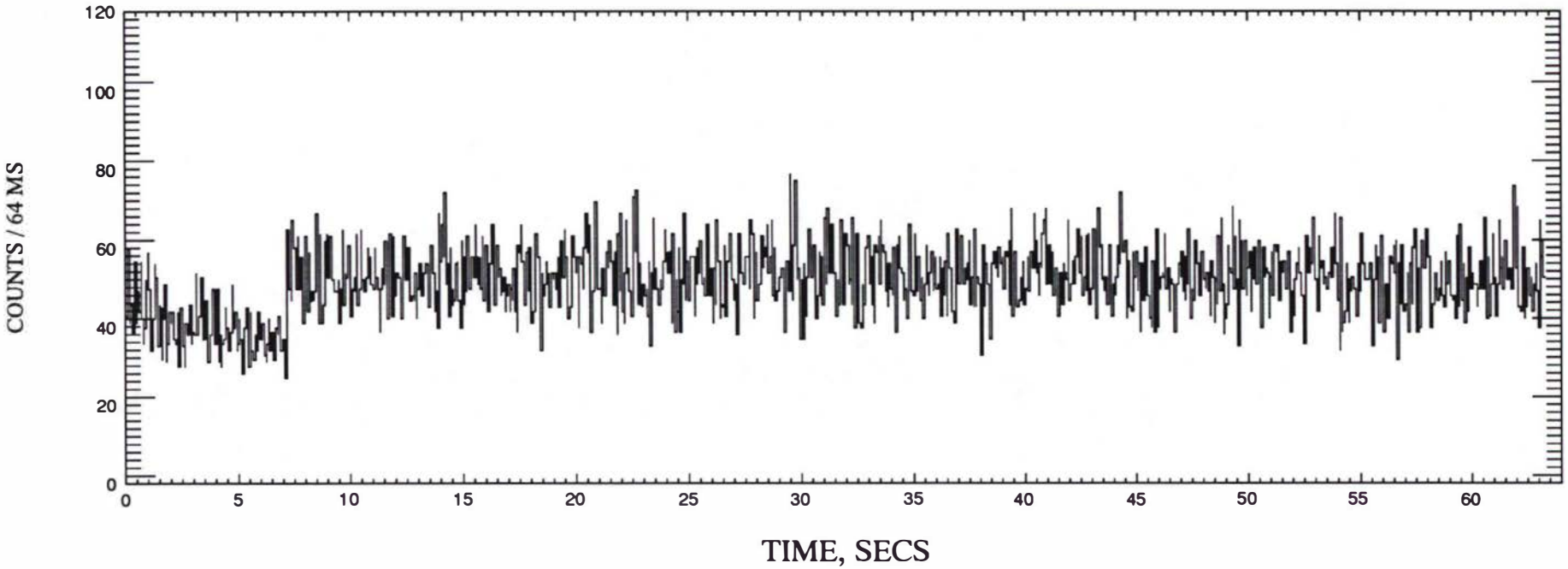


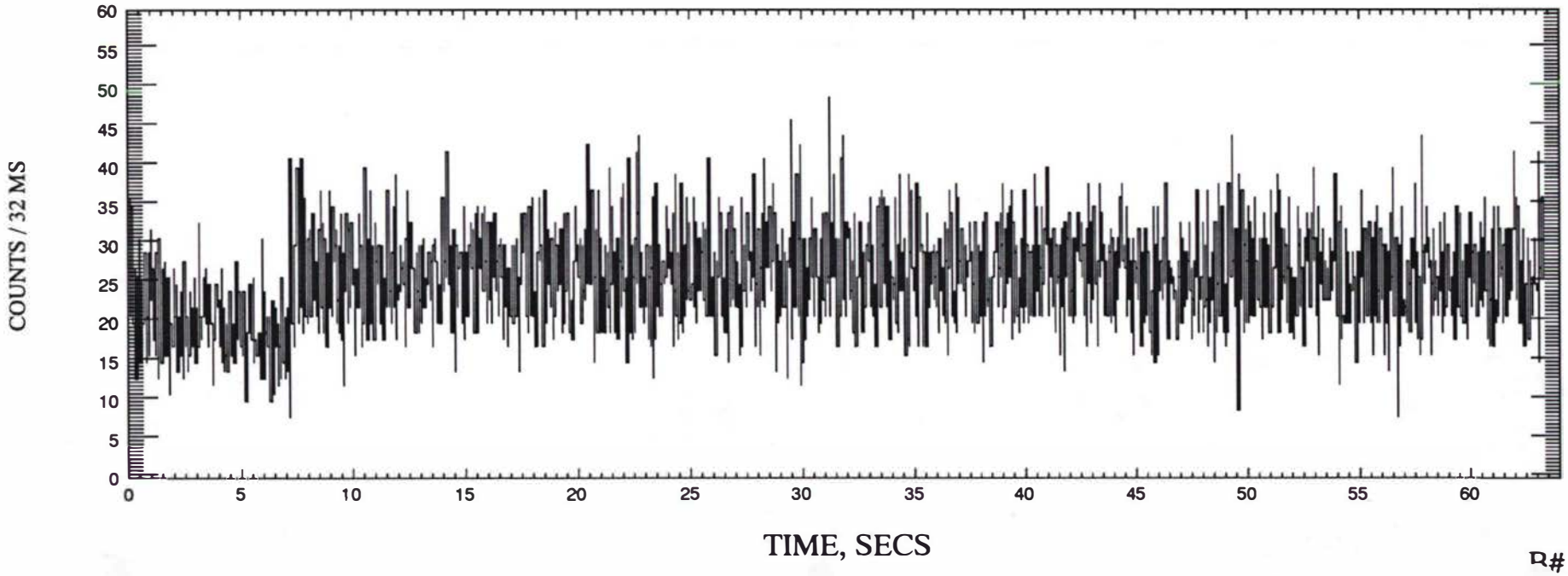


R# 20

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 1 at UT=20.507644966973 h=73827.522 s 20:30:27.522

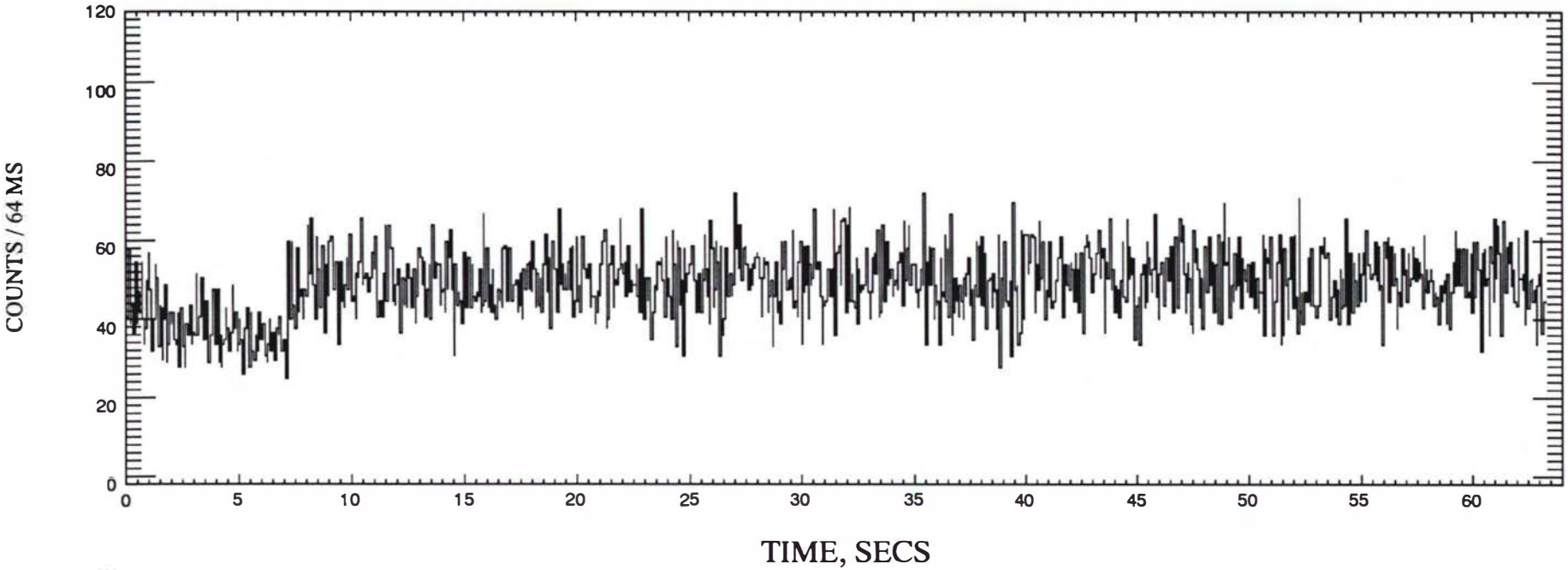


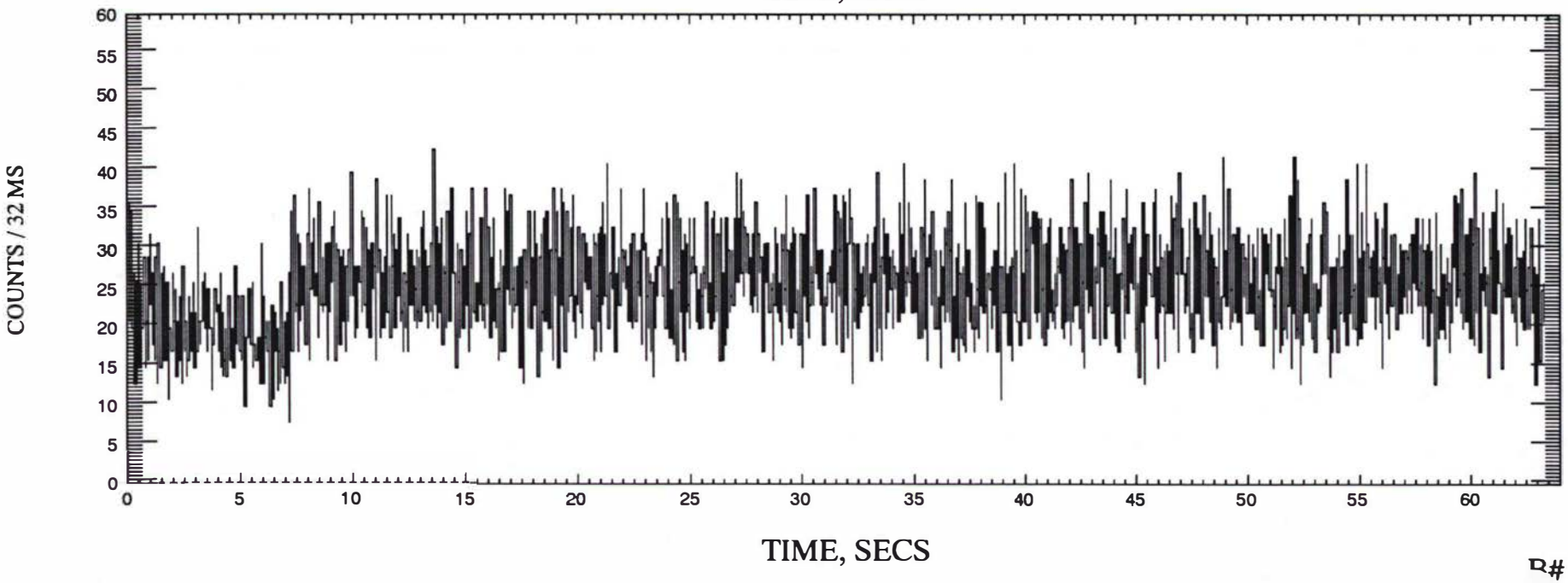


R# 21

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 2 at UT=21.209874788920 h=76355.549 s 21:12:35.549

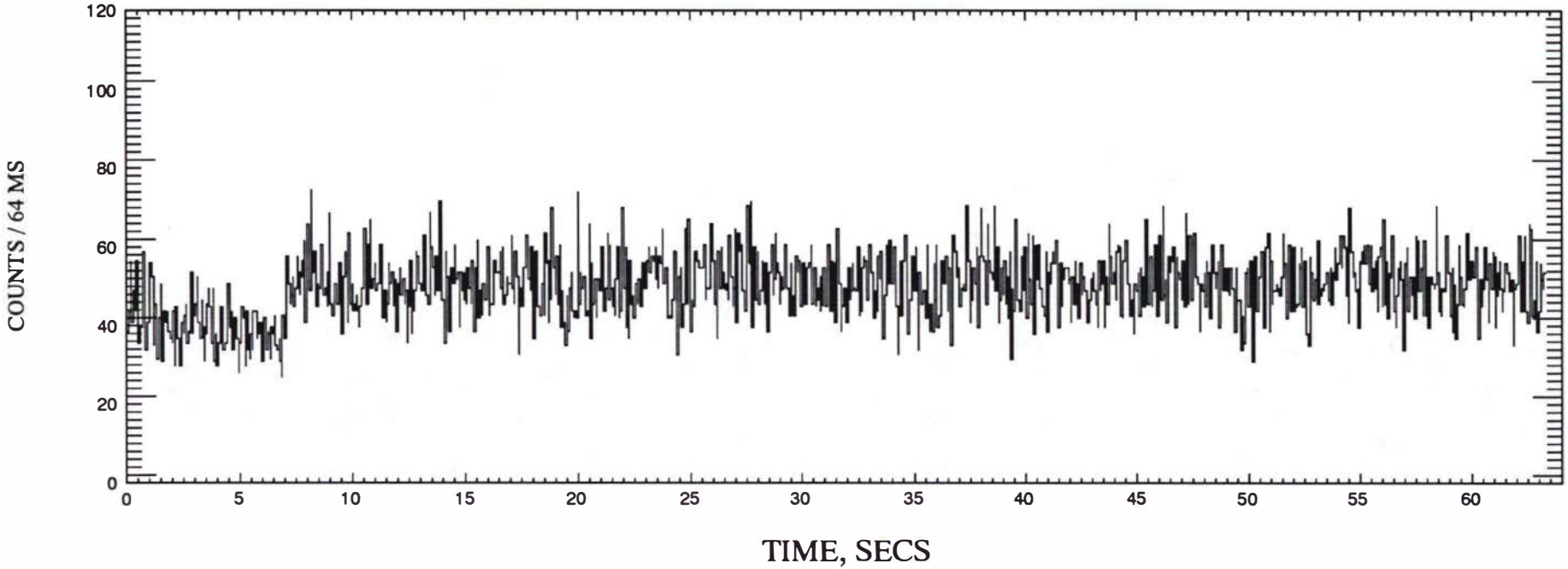


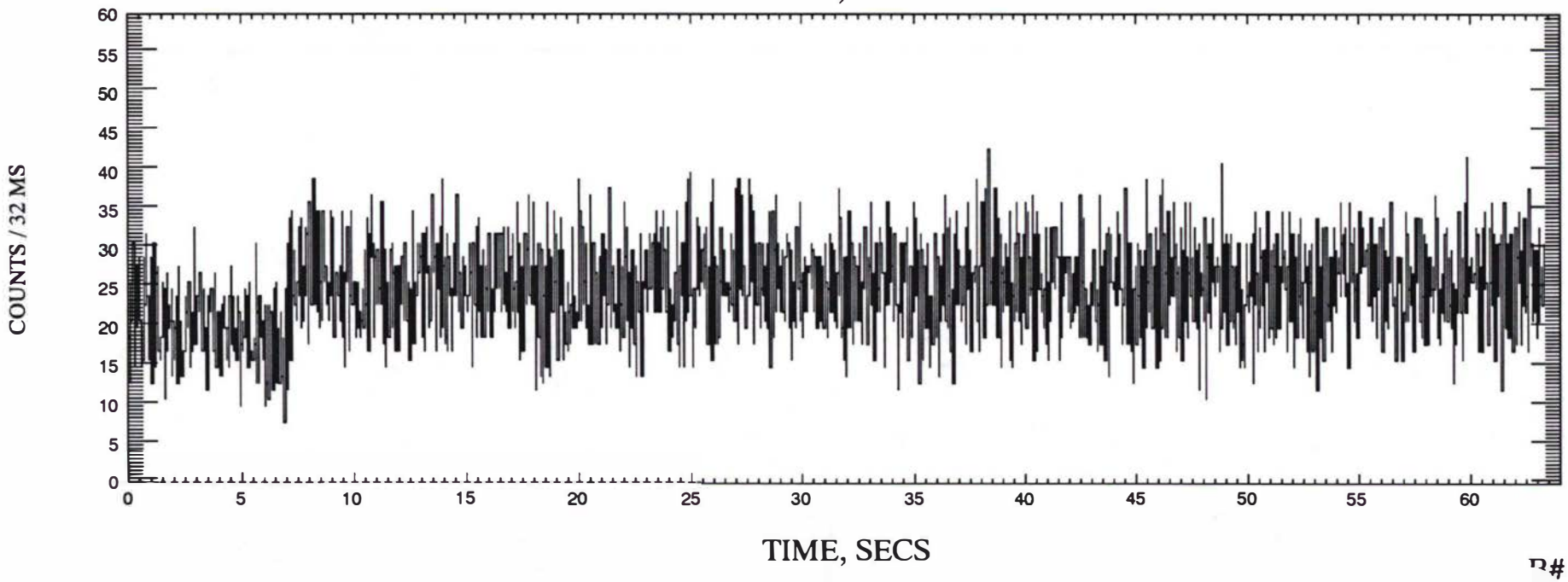


R# 22

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 3 at UT=21.912174051073 h=78883.827 s 21:54:43.827

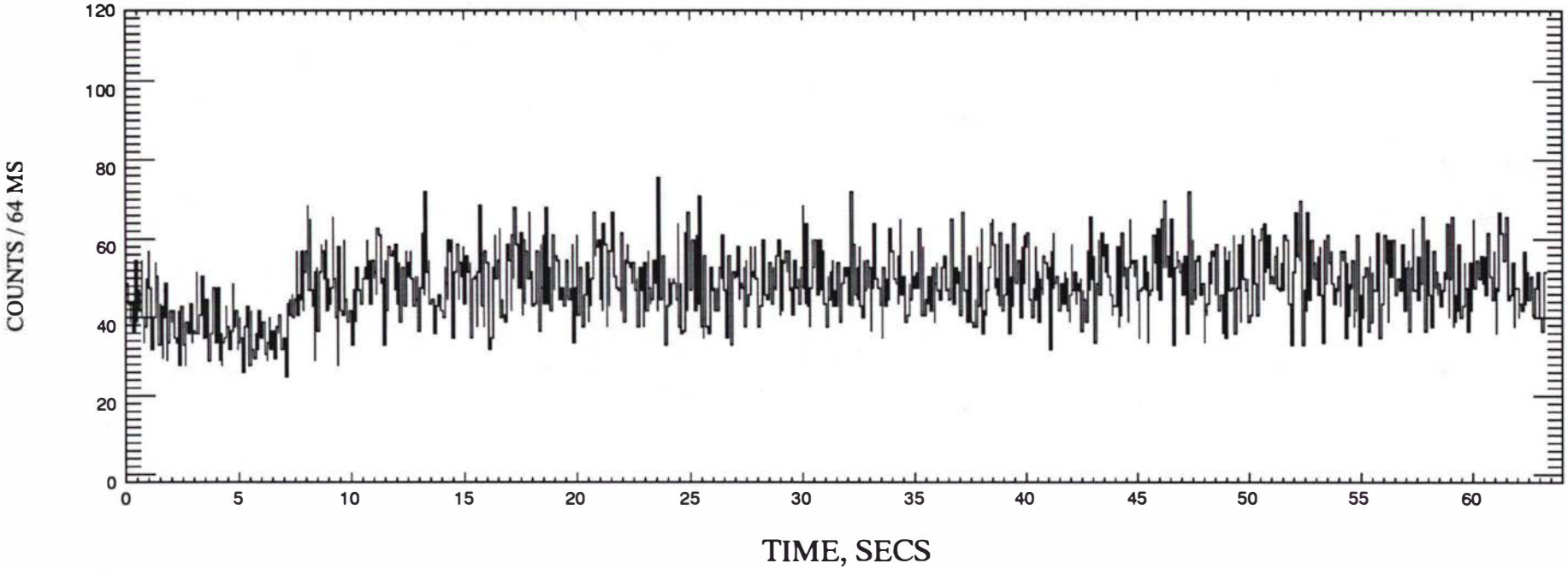


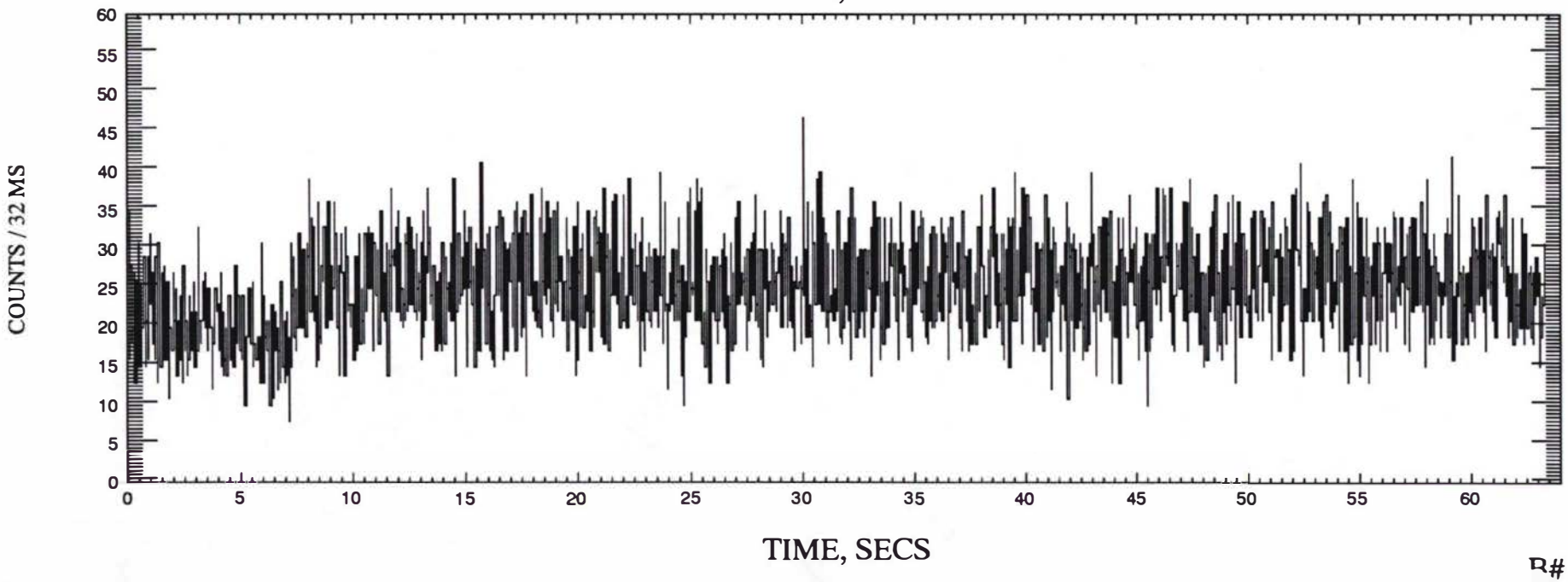


B# 23

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 4 at UT=22.614334424337 h=81411.604 s 22:36:51.604

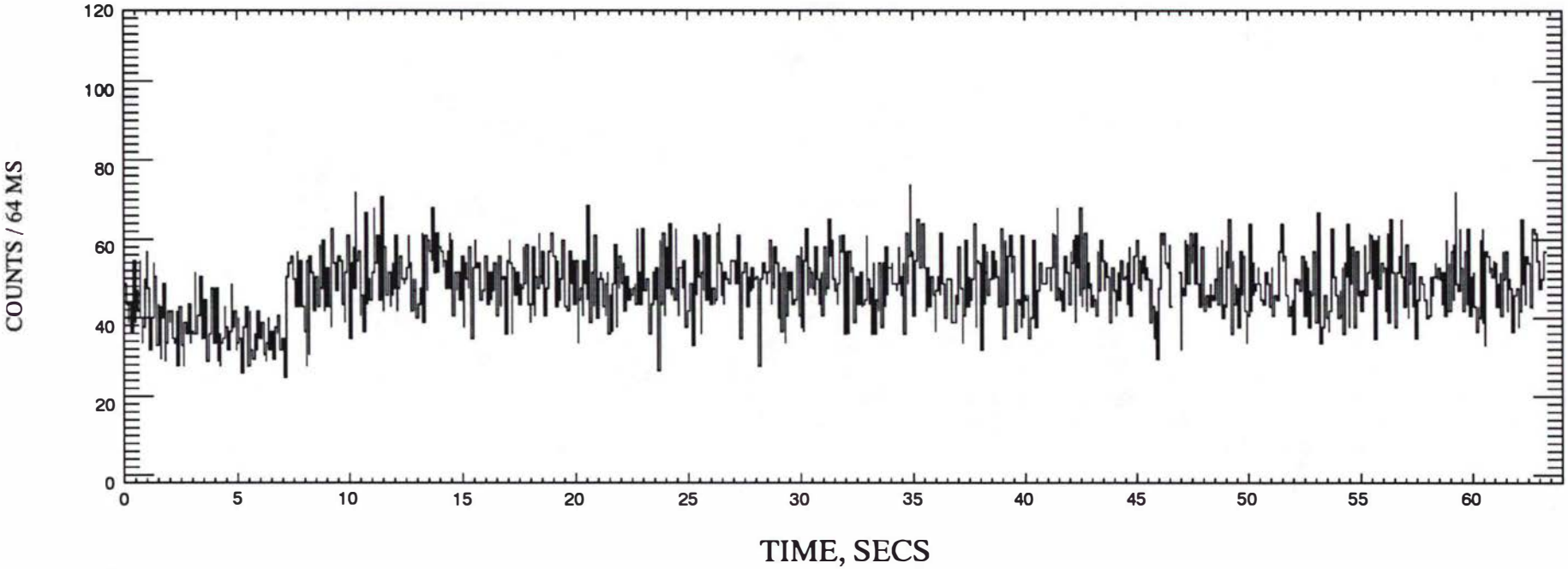


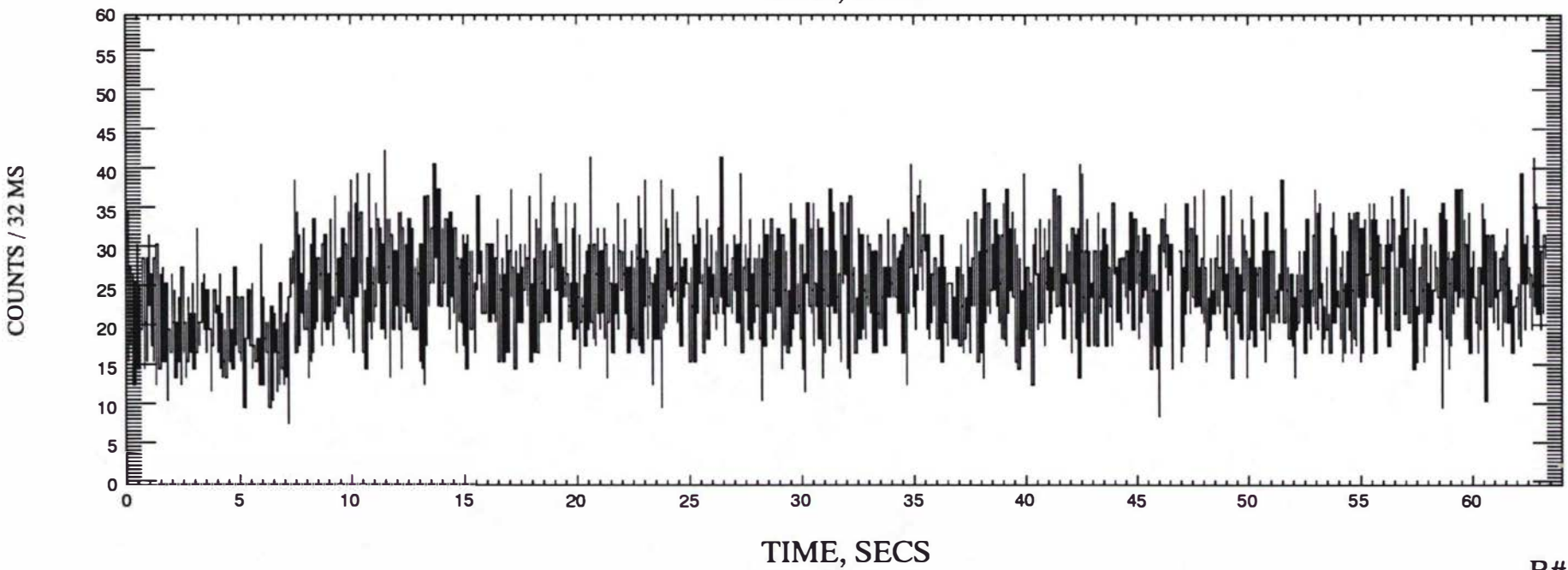


B# 24

HUS 2A TRIGGERED DATA QEDR day 114, year 1998 4/27/98

Burst Counter 5 at UT=23.316561317444 h=83939.621 s 23:18:59.621

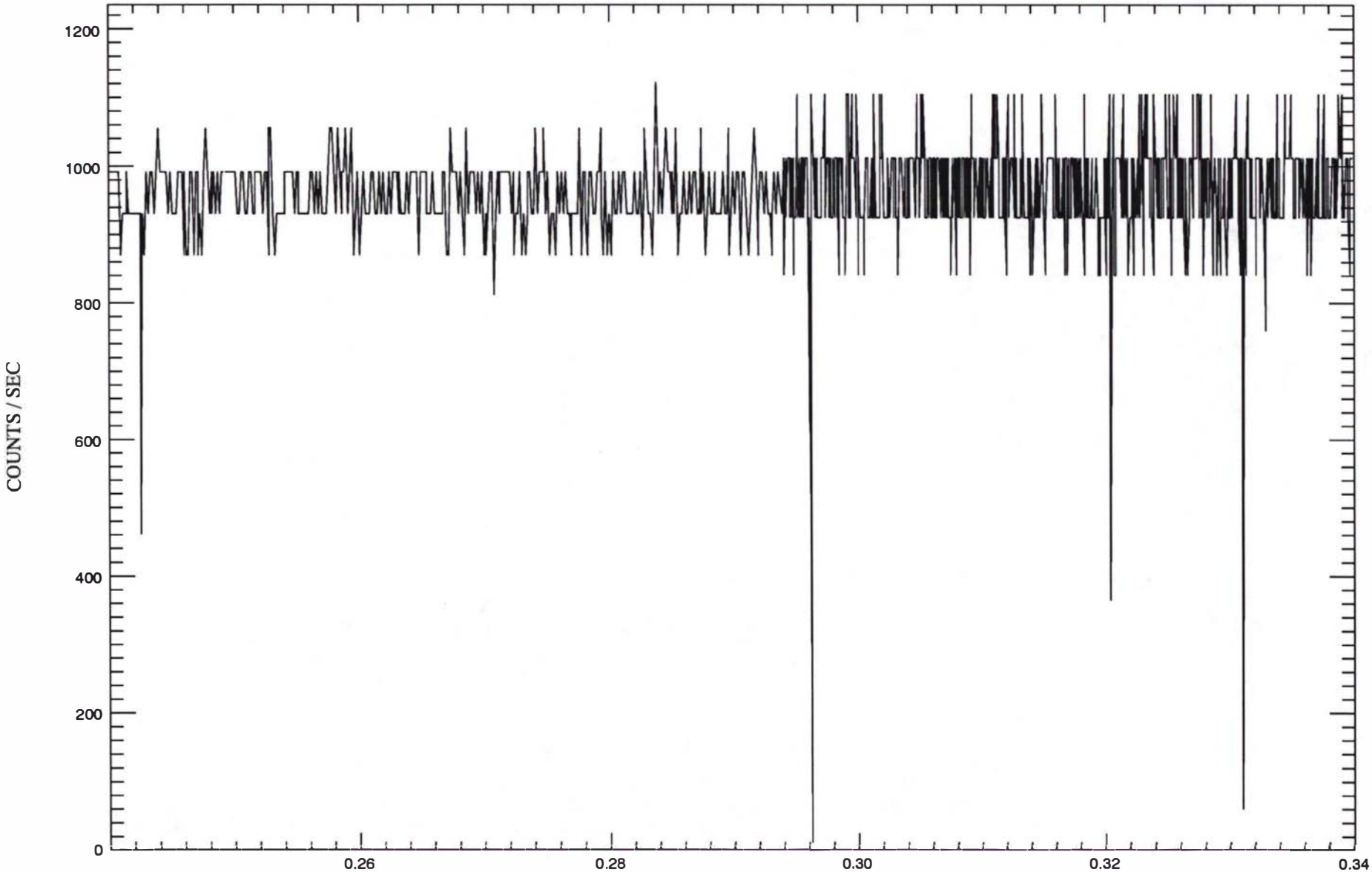




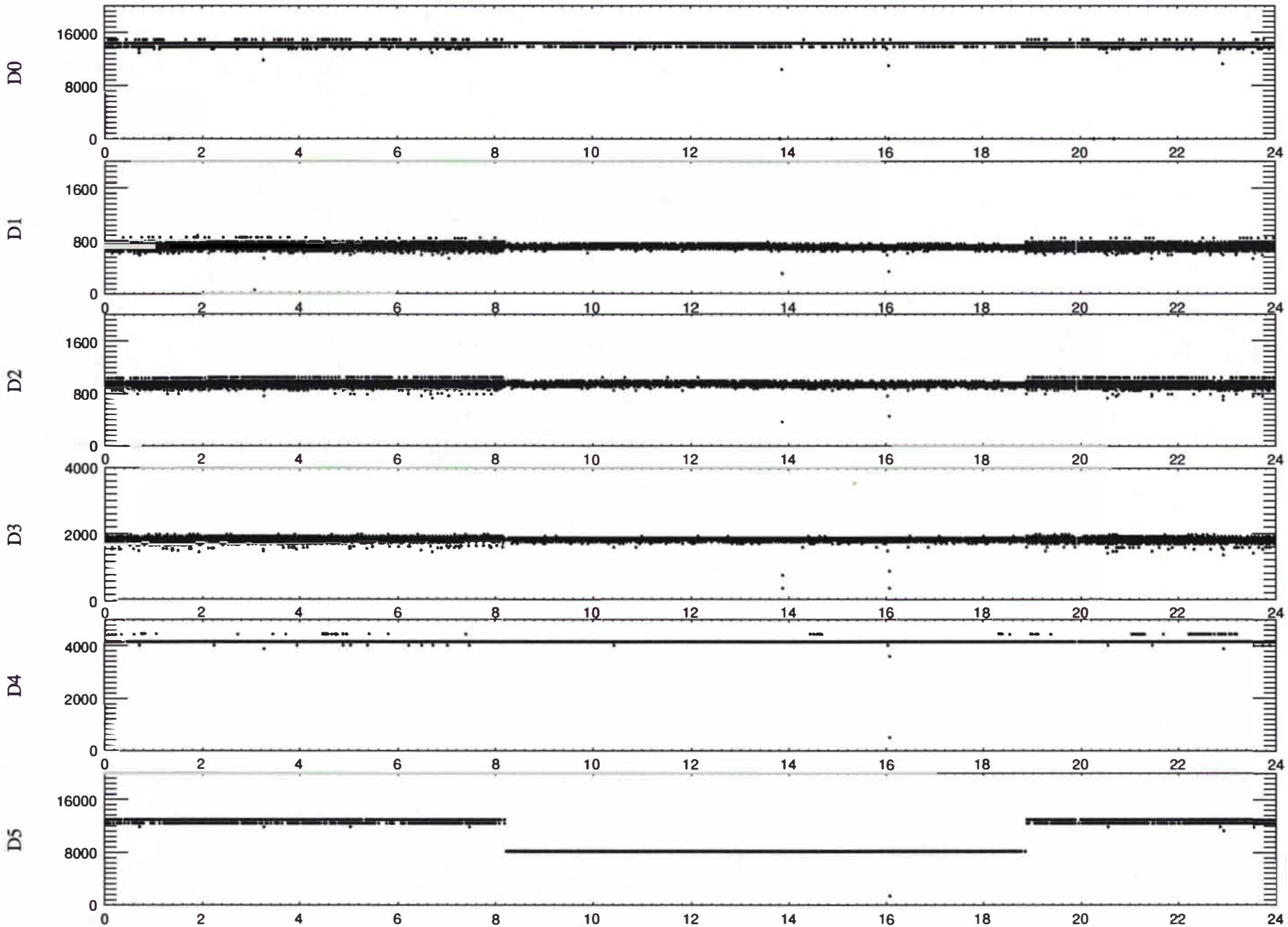
B# 25

HUS 2A, MODE 1, NOT AVERAGED QEDR day 114, year 1998 to day 114, year 1998 4/27/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 114, year 1998 to day 114, year 1998 8/18/98



UNIV' 'AL TIME

SAX GRBM

HUS DATA

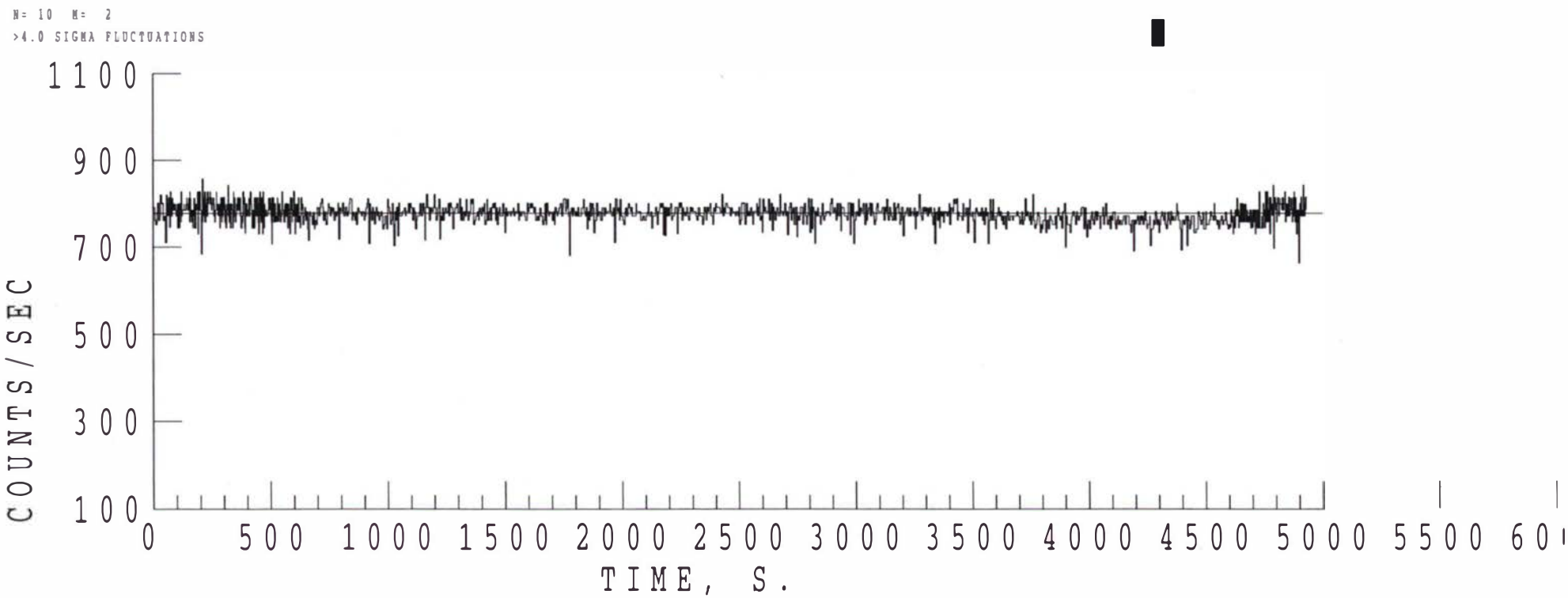
19/07/05

ULYSSES RT

25/04/98 36036.926 s

INTERVALS REGROUPED BY 4

0- 0 keV



From SAHI@fender.msfc.nasa.gov Tue May 12 03:45:12 1998
From: SAHI@fender.msfc.nasa.gov
Date: Tue, 12 May 1998 5:45:00 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6704

TIME: TJD=0928 SECONDS=39499

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=123.5 AZIMUTH=359.2 ERROR=1.3 DEGREES

COMMENTS:
CORRECTION: GOES B5.1, NO OPTICAL ID. SINGLE EPISODE WITH SUBSTRUCTURE, DUR. APPROX. 60 SECS, MAX. AT T+5 SECS, STARTS AT T-7 SECS. MARGINALLY VISIBLE ABOVE 100 KEV.

From RICHARDSON@fender.msfc.nasa.gov Fri May 8 10:35:26 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Fri, 8 May 1998 12:34:58 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6705

TIME: TJD=0928 SECONDS=53598

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
SOLAR FLARE. PROBABLY GOES C3.6, OPTICAL SF. NOT VISIBLE ABOVE 300KEV.

From SAHI@fender.msfc.nasa.gov Tue May 12 03:19:23 1998
From: SAHI@fender.msfc.nasa.gov
Date: Tue, 12 May 1998 5:18:52 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6706

TIME: TJD=0928 SECONDS=65023

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=134.9 AZIMUTH=359.8 ERROR=12.3 DEGREES

COMMENTS:
GOES C1.5, OPTICAL 1F. DOUBLE PEAKED WITH SUBSTRUCTURE, DUR. APPROX. 70 SECS, STARTS AT T-60 SECS. NOT VISIBLE ABOVE 100 KEV.

From SAHI@fender.msfc.nasa.gov Tue May 12 03:44:35 1998
Return-Path: <SAHI@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id DAA26201; Tue, 12 May 1998 03:44:34 -0700
From: SAHI@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id DAA03730; Tue, 12 May 1998 03:44:34 -0700
Date: Tue, 12 May 1998 5:35:45 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980512053545.20200105@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6707
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6707
EVENT OF 1998 APR 25 DAY OF YEAR=115
EVENT CROSSING TIME AT BATSE      : 78548. S. OR 21:49:08.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 292.000  -53.000
BATSE PEAK COUNTING RATE:   4000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 25/ 4/  98 IS:
RA=  149.810 DEC=   12.991 DIST=    4.956 AU
BATSE-ULYSSES DISTANCE =  741374920. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 50.00 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1589.67 SECS.
CROSSING TIME AT ULYSSES    IS 80138. S. OR   22:15:37 +/-  403.03 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 25/ 4/  98 IS:
RA=   36.542 DEC=   14.319 DIST=    2.456 AU
MARS-BATSE DISTANCE =  367406816. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 69.88 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  421.51 SECS.
CROSSING TIME AT MARS       IS 78970. S. OR   21:56:09 +/-  206.19 SECONDS

                BATSE BURST TRIGGER
NO.: 6707

TIME: TJD=0928 SECONDS=78548

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=61.9   AZIMUTH=96.4   ERROR=1.6   DEGREES

COMMENTS:
GRB. SINGLE PULSE, DUR. APPROX. 40 SECS, MAX. AT T+7 SECS, RISE IS FASTER THAN
FALL. NOT VISIBLE ABOVE 300 KEV. CYGX-1 SET AT T-260 SECS.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6707	980425	10928	78548	4000	292	-53	40

Date: 18/1/00

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? N/A

☑ 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?

3. NEAR Data N/A

☐ Final, correct time used? (Files on website have the correct time)

☐ BATSE >100 keV data used for NEAR correlation?

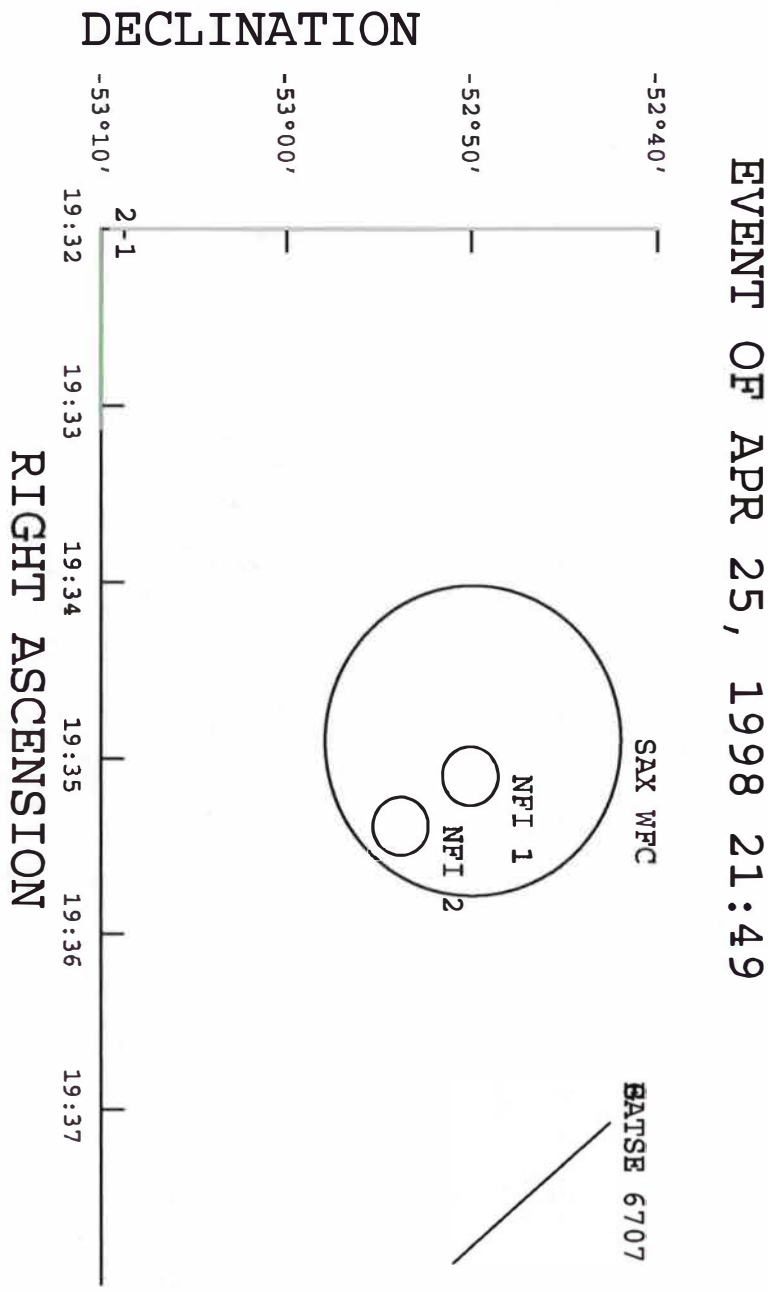
☑ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

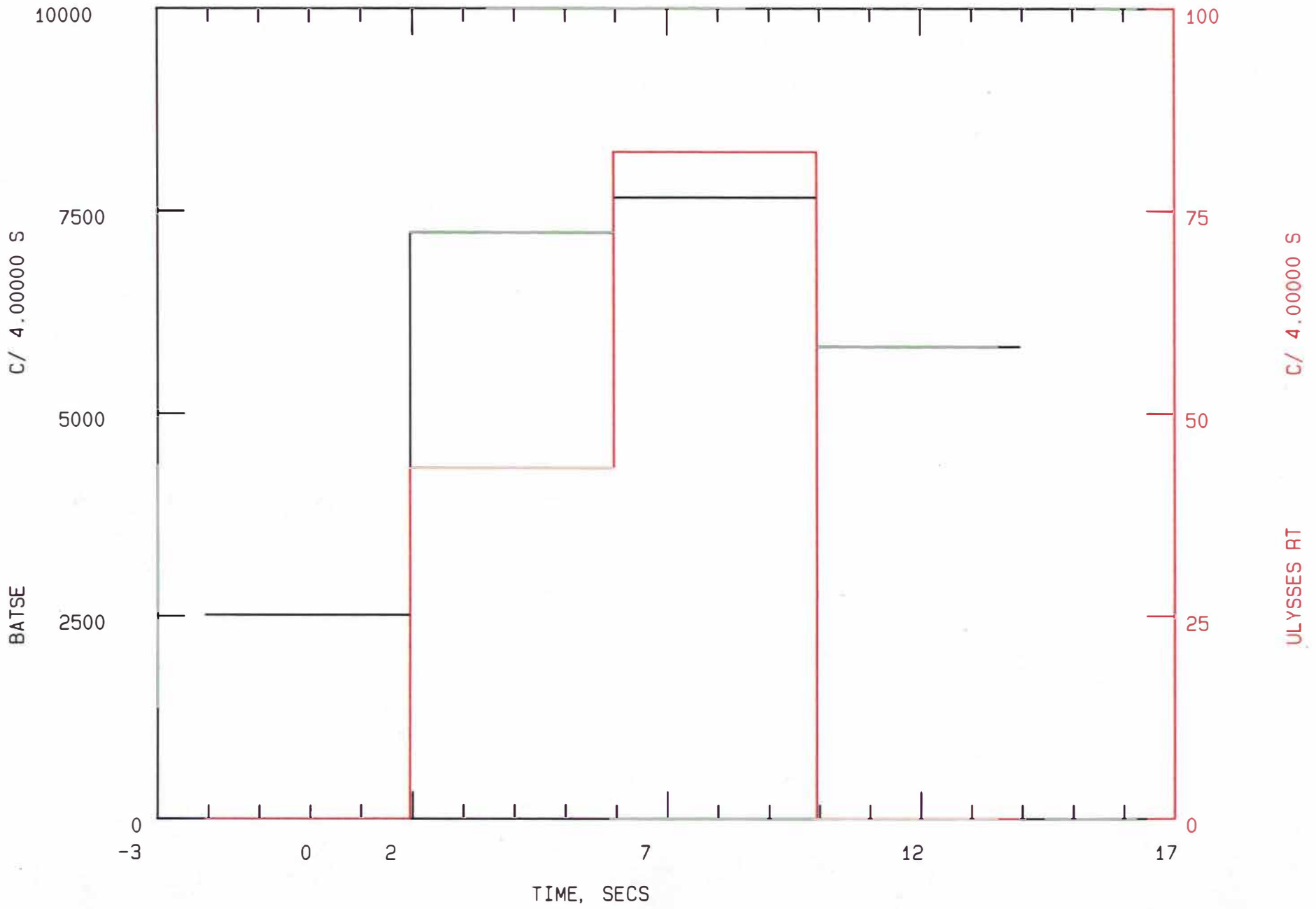
EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

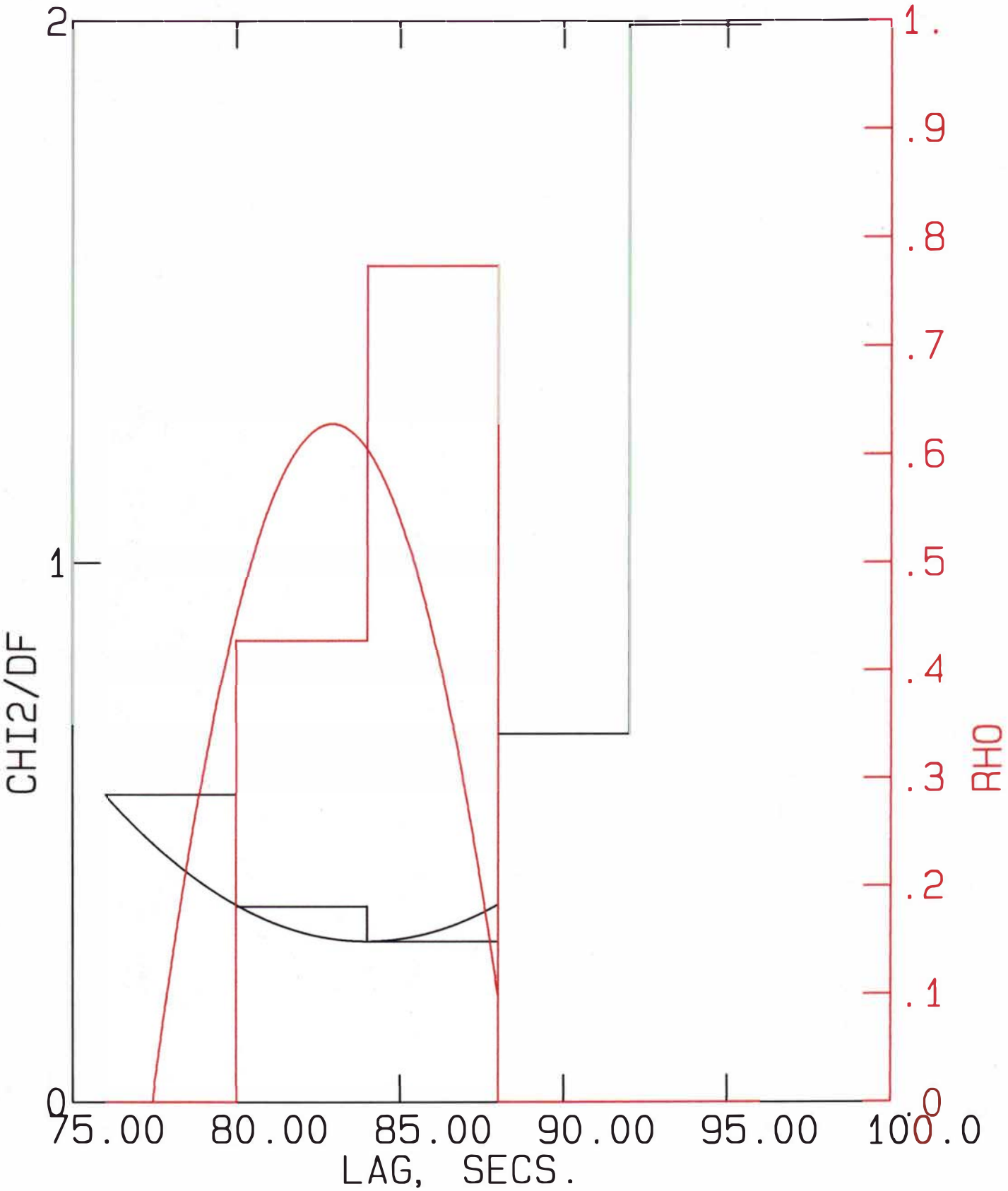
1 BATSE 2 ULYSSES



BATSE -ULYSSES RT CORRELATION 25/ 4/98 78548.705 18/ 1/ 0



BATSE -ULYSSES RT CORRELATION 25/ 4/98 78548.705



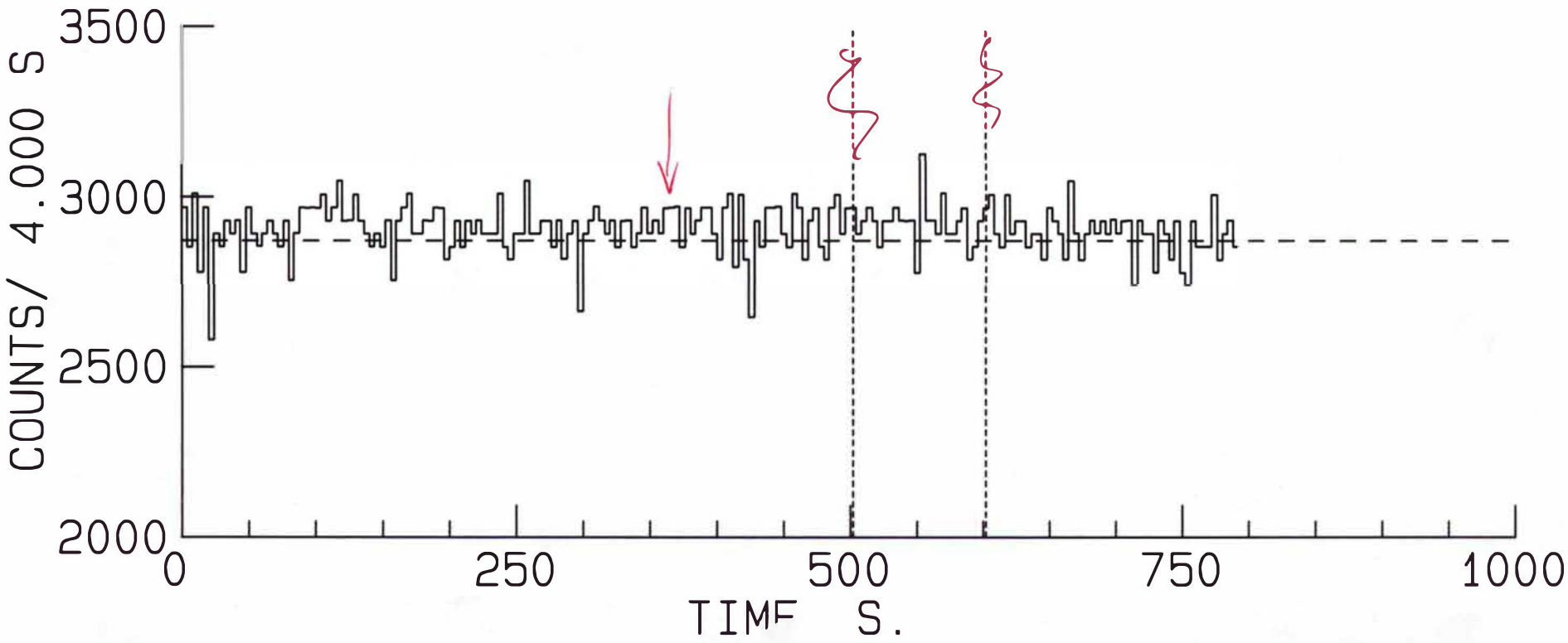
ULYSSES RT

18/ 1/ 0

25/ 4/98 79740.389 s

1.000 S INTERVALS REGROUPED BY 4

22- 149 keV



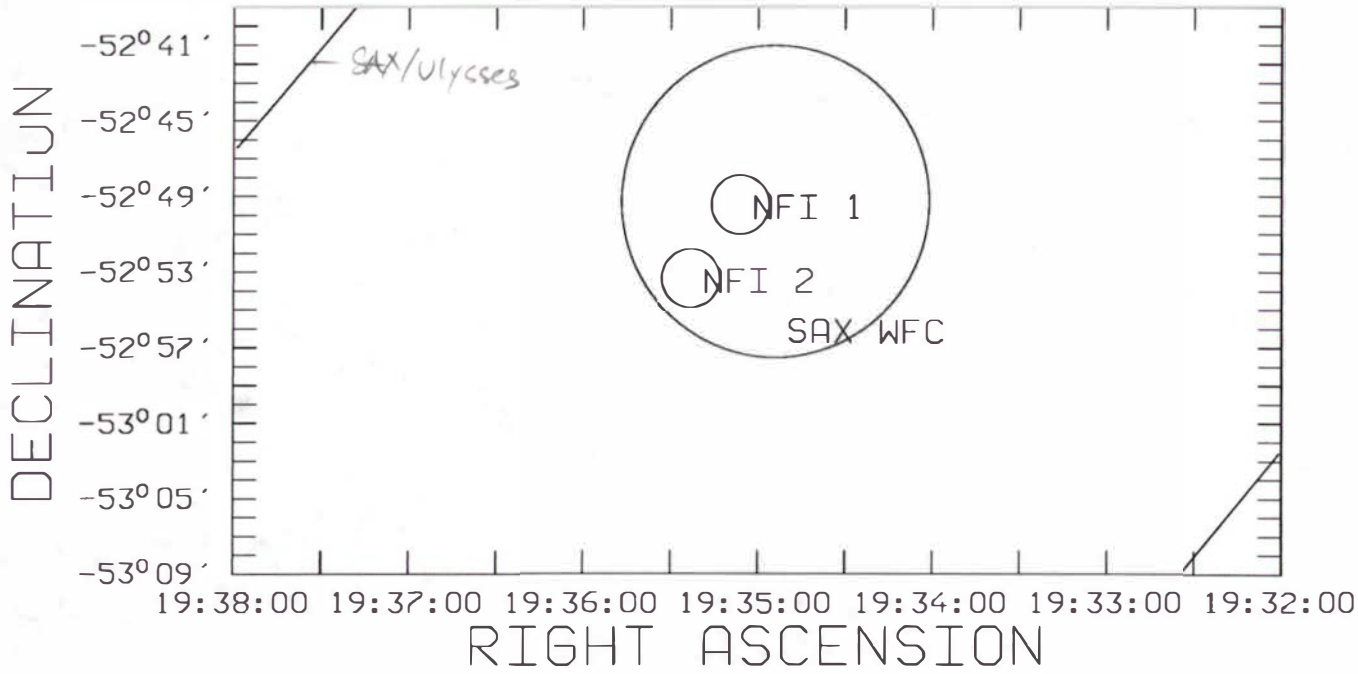
From gcncirc@lheawww.gsfc.nasa.gov Tue Oct 20 14:28 PDT 1998
From: GCN Circulars <gcncirc@lheawww.gsfc.nasa.gov>
Subject: GRB980425: X-ray revised positions
To: khurley@sunspot.ssl.berkeley.edu
Date: Tue, 20 Oct 1998 17:28:12 -0400 (EDT)
Affiliation: NASA-GSFC LHEA
Project: GCN (GRB Coordinates Network), Circular Service
Phone: 301-286-3106 (S.Barthelmy's office, -1684 fax)
MIME-Version: 1.0
Content-Transfer-Encoding: 7bit

TITLE: GCN GRB OBSERVATION REPORT
NUMBER: 155
SUBJECT: GRB980425: X-ray revised positions
DATE: 98/10/20 21:26:03 GMT
FROM: SAX Science Operations at IAS/CNR Frascati <saxsci@ias.rm.cnr.it>

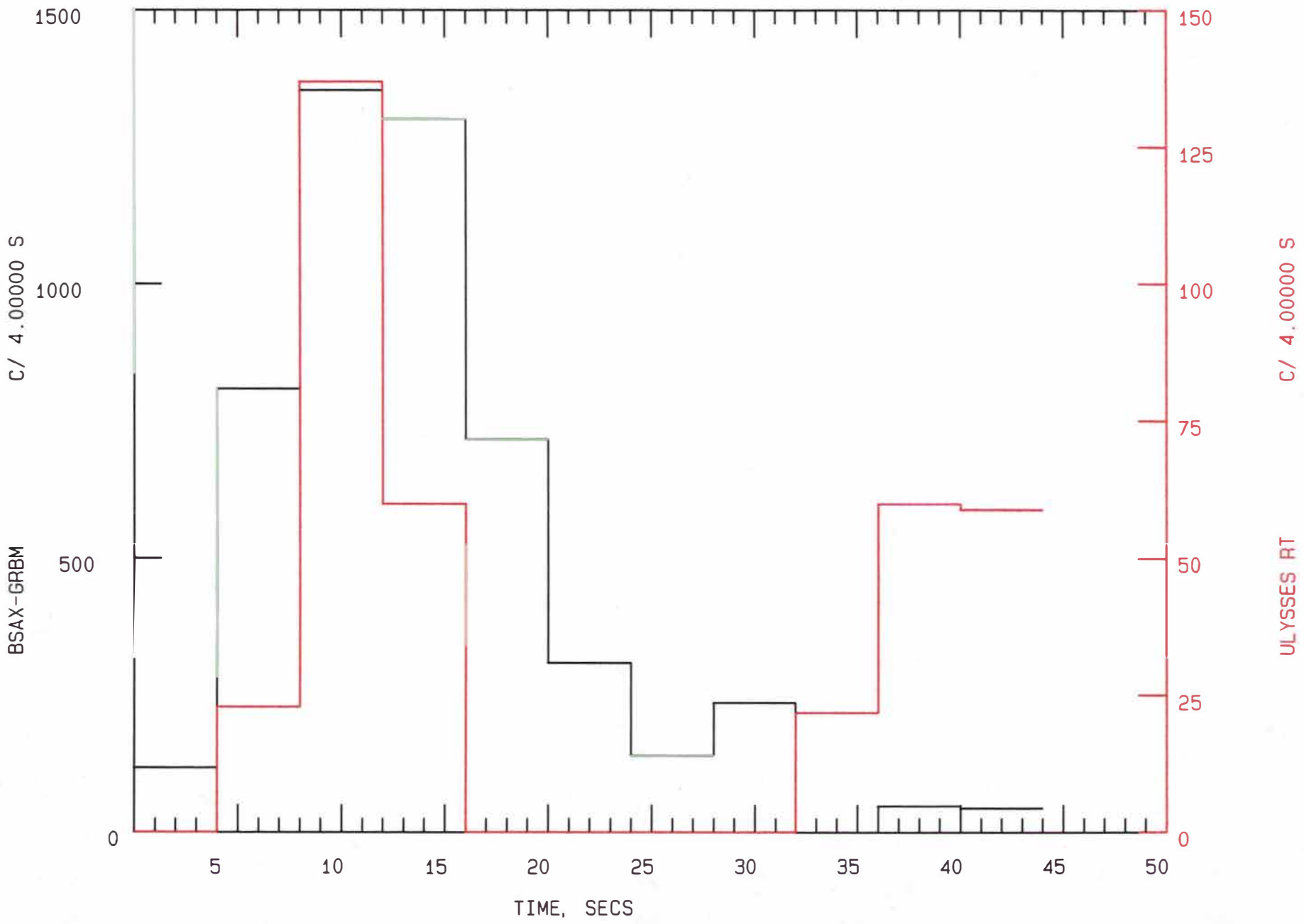
GRB980425: revised SAX-NFI positions

L. Piro, IAS/CNR, Rome, Italy, R.C. Butler, ASI, Rome, Italy, F. Fiore, A. Antonelli, BeppoSAX SDC, Roma, E. Pian, ITesre, Bologna, Italy, report:

The majority of BeppoSAX observations were performed with the star tracker Z (i.e., the one co-aligned with the NFI) in the attitude control loop. However, a few observations could not be performed in this configuration, but had to be carried out with the X and Y star trackers only. We have found out that, in these very infrequent cases, the attitude reconstruction could have an error of up to 3'. This problem does not affect observations accomplished after May 5, 1998. Prior to this date, the only GRB which was observed by the NFI in this configuration is 980425. The revised coordinates (equinox 2000.0) of the two sources found in the WFC error box (Pian et al., GCN 61) are:
1SAXJ1935.0-5248, RA = 19h35m05.9s, Dec =-52o50'03";
1SAXJ1935.3-5252, RA = 19h35m22.9s, Dec =-52o53'49",
with a conservative error radius of 1.5'. Both updated positions are still within the WFC error box (Soffitta et al., IAU Circ. No. 6884). However, 1SAXJ1935.0-5248 is at 50" from SN1998bw (Galama et al. 1998, Nature, in press, astro-ph/9806175; Kulkarni et al., Nature, in press, astro-ph/9807001) and therefore consistent with it, while the variable source 1SAXJ1935.3-5252 is 3' away, i.e., inconsistent.

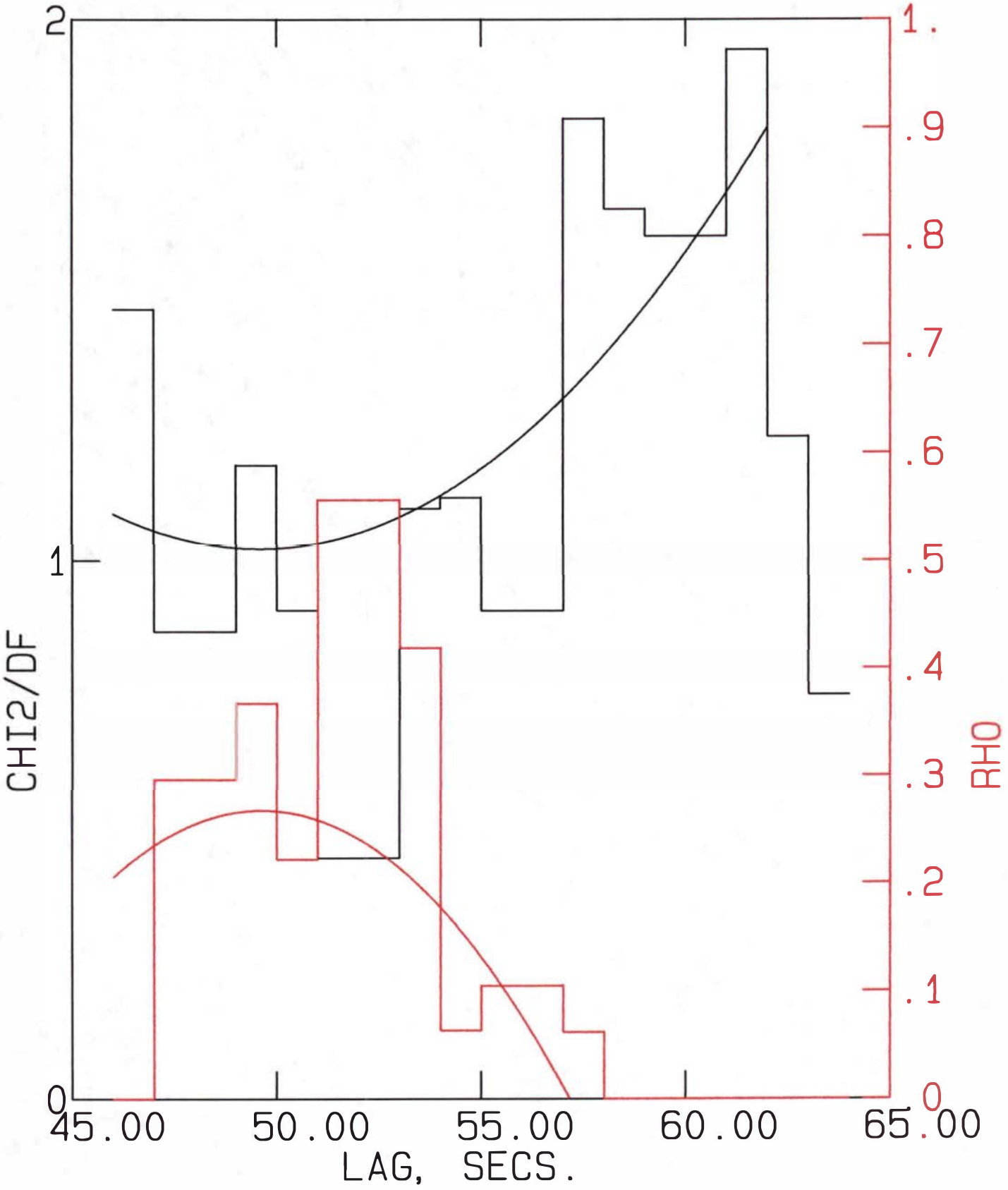

-52°41′
-52°45′
-52°49′
-52°53′
-52°57′
-53°01′
-53°05′
-53°09′
DECLINATIUN
SAX/Ulysses
NFI 1
NFI 2
SAX WFC
19:38:00
19:37:00
19:36:00
19:35:00
19:34:00
19:33:00
19:32:00
RIGHT ASCENSION

BSAX-GRBM -ULYSSES RT CORRELATION 25/04/98 78542.908 17/ 5/99

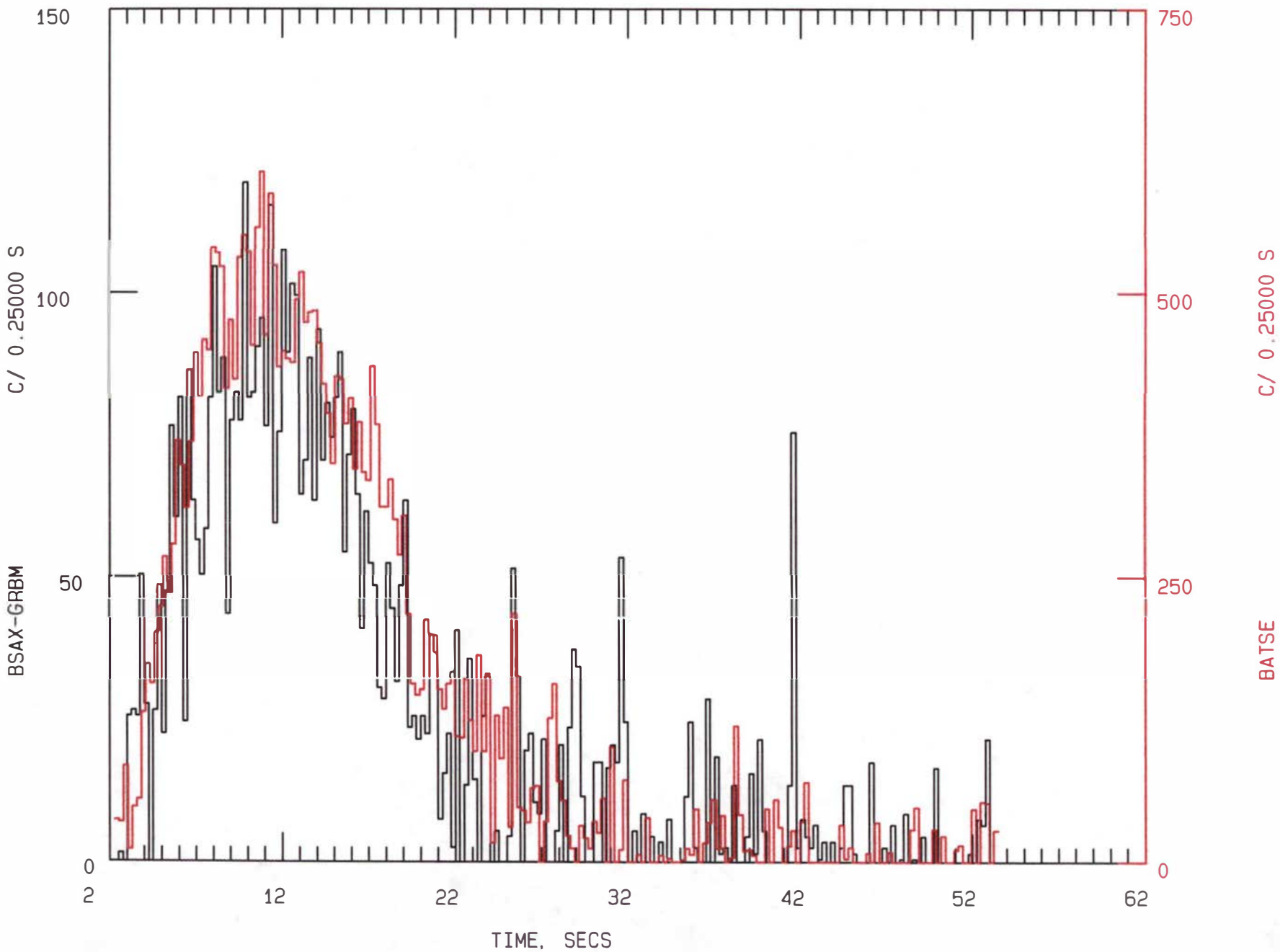


17/ 5/99

BSAX-GRBM -ULYSSES RT CORRELATION 25/04/98 78542.908

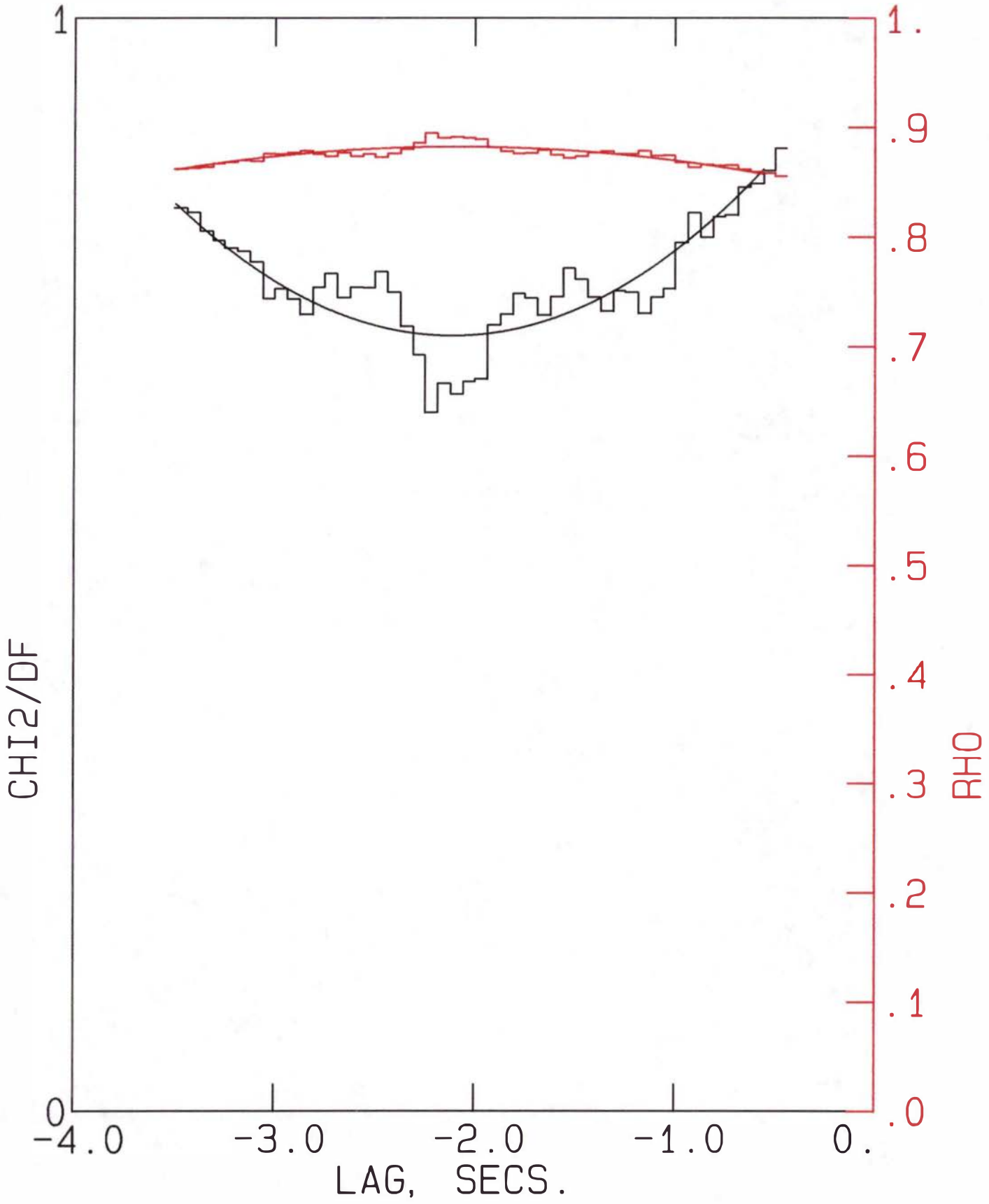


BSAX-GRBM -BATSE CORRELATION 25/04/98 78542.908 12/ 5/98



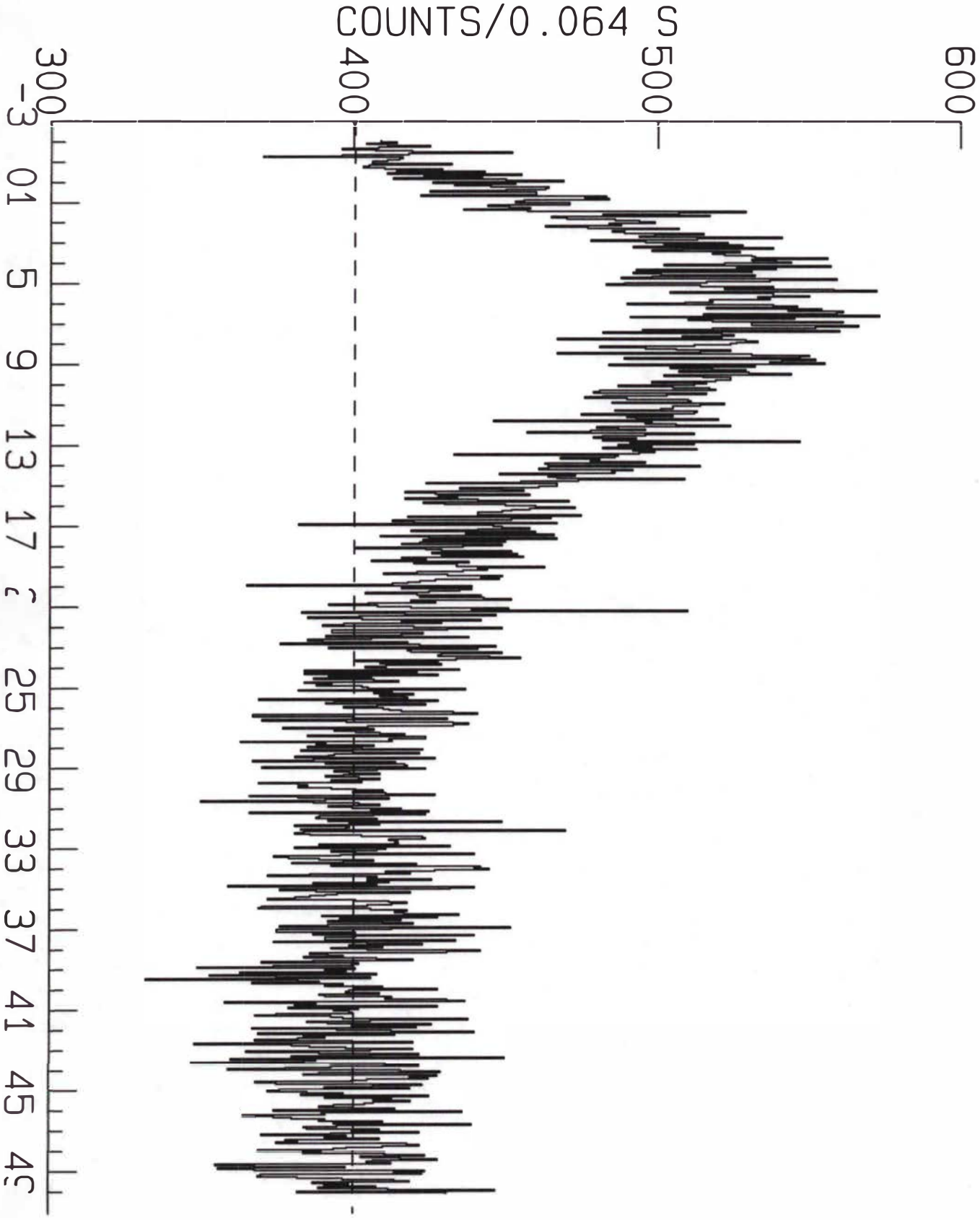
12/ 5/98

BSAX-GRBM -BATSE CORRELATION 25/04/98 78542.908

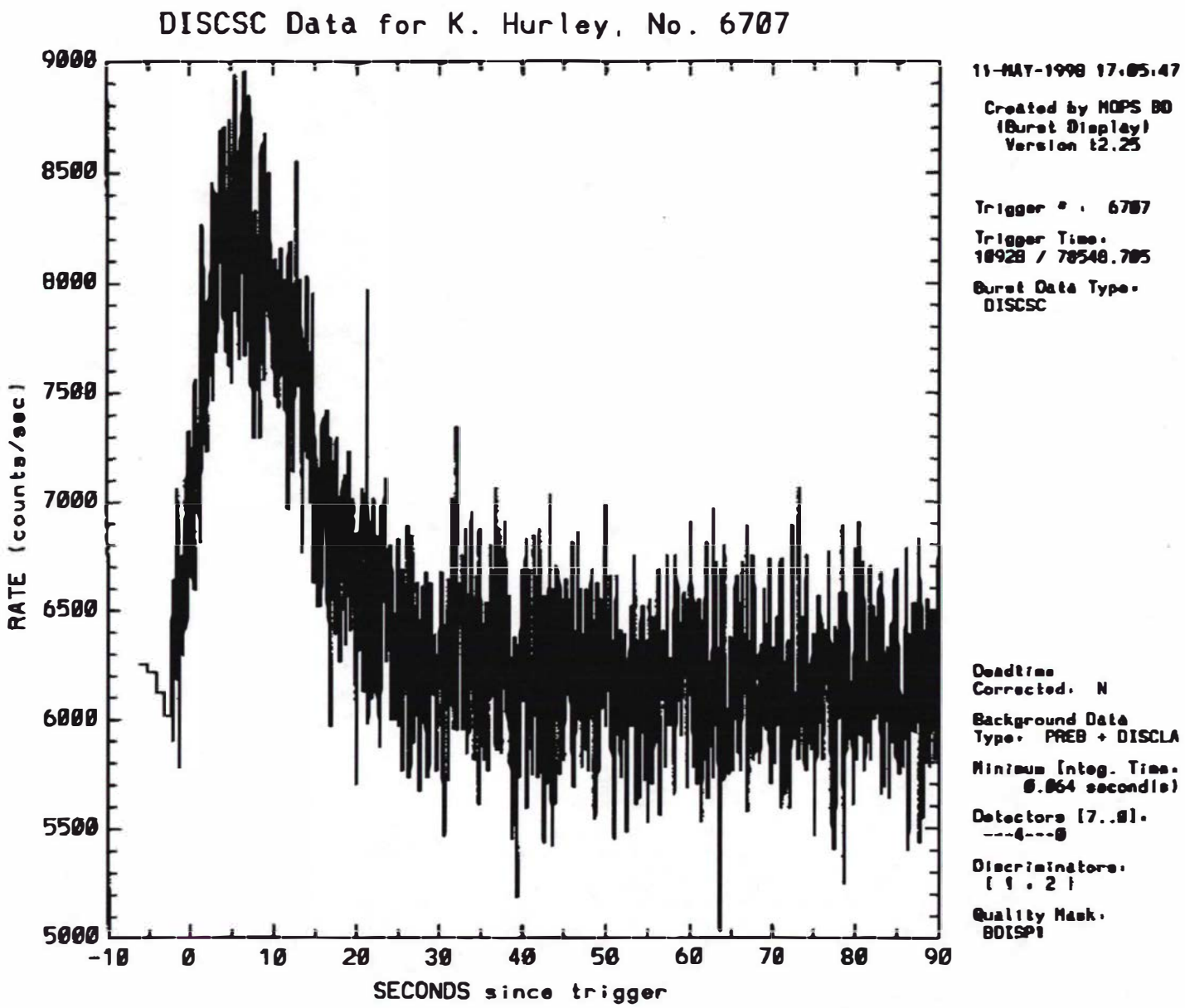


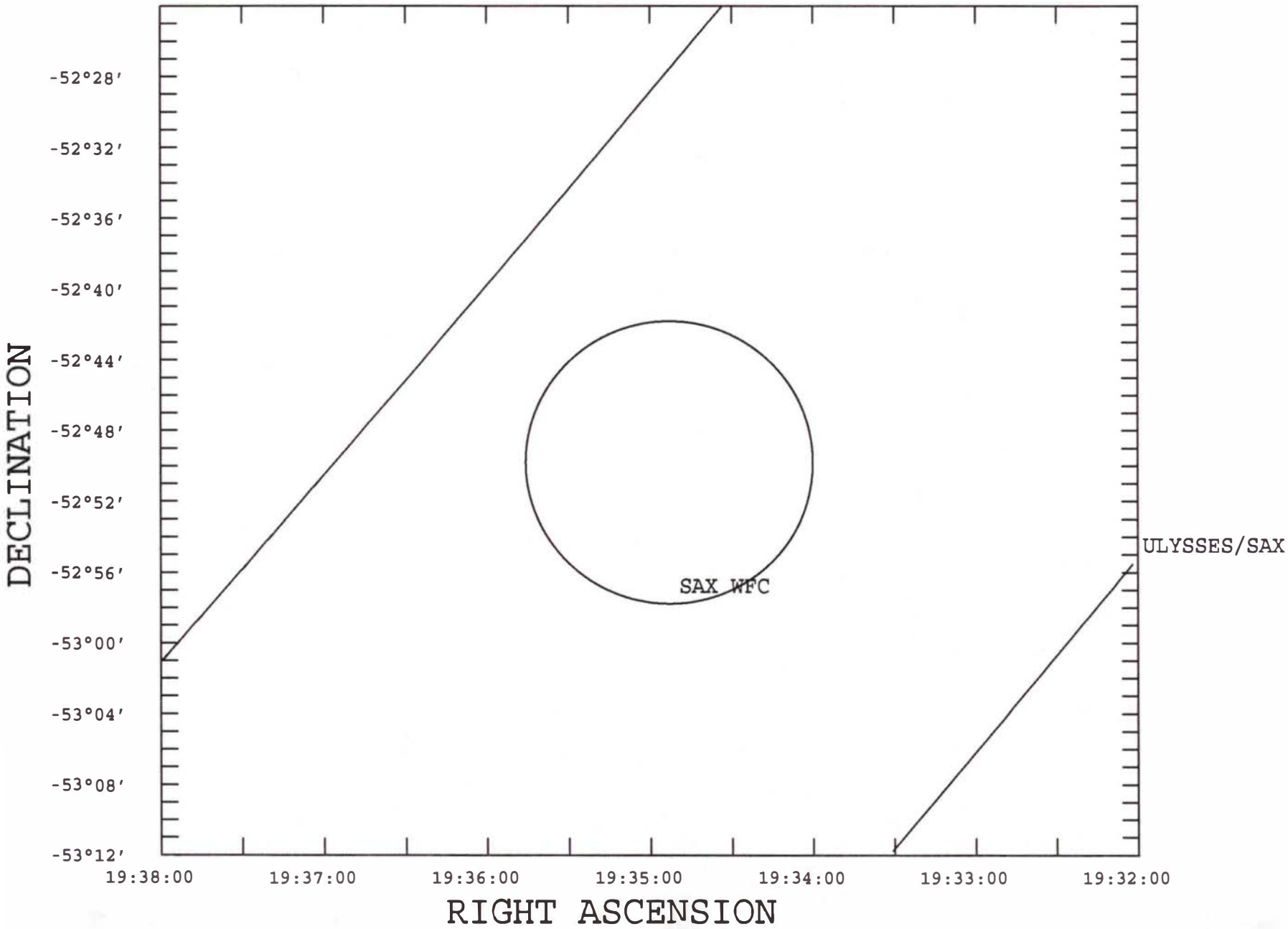
BATSE 25/04/98 78548.705

25- 100 keV

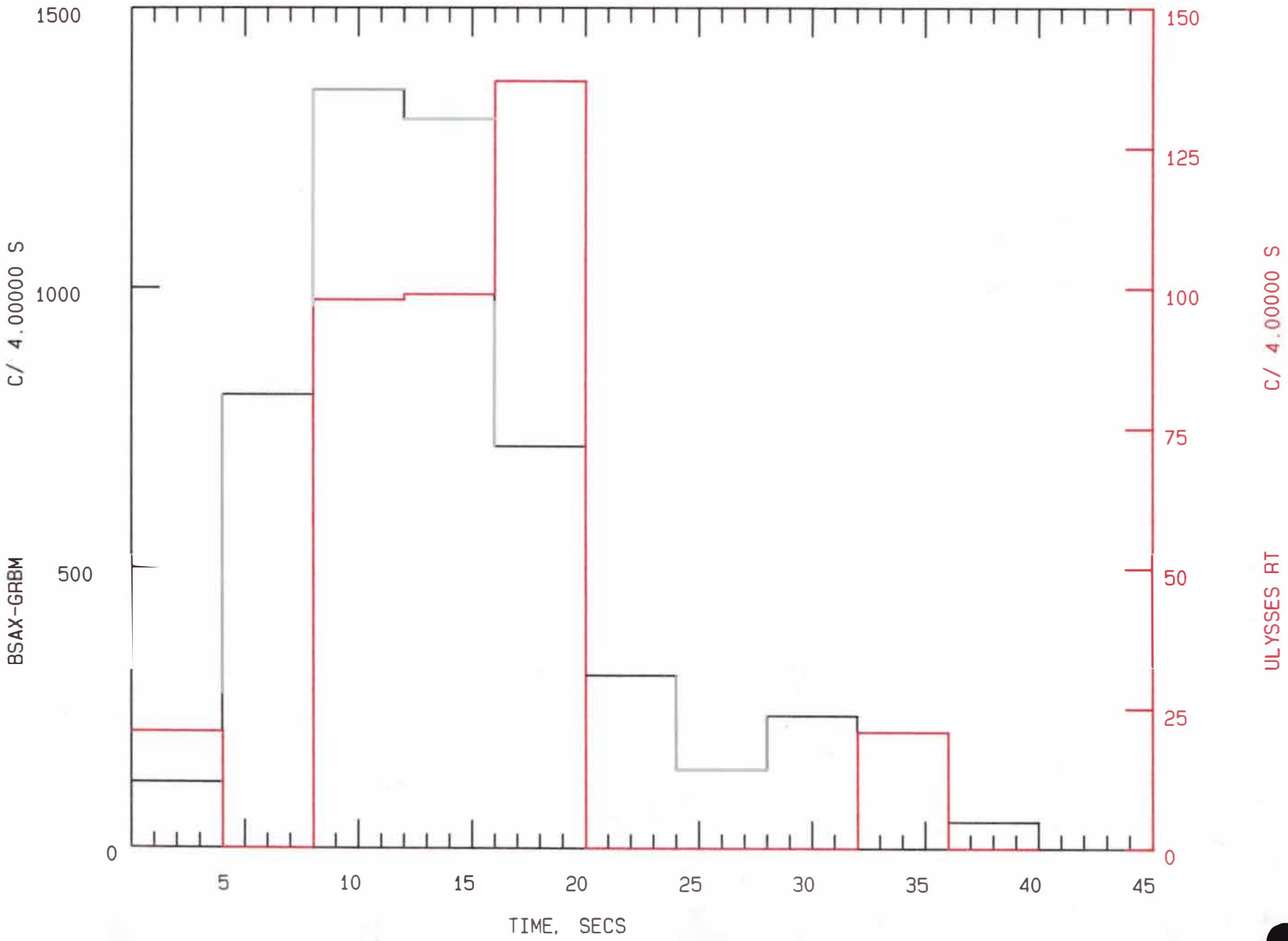


12/ 5/98


DISCSC Data for K. Hurley, No. 6707
RATE (counts/sec)
9000
8500
8000
7500
7000
6500
6000
5500
5000
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
11-MAY-1998 17:05:47
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 6707
Trigger Time:
10928 / 70548.705
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds)
Detectors [7..0]:
---4---0
Discriminators:
[1 , 2]
Quality Mask:
BDISP1

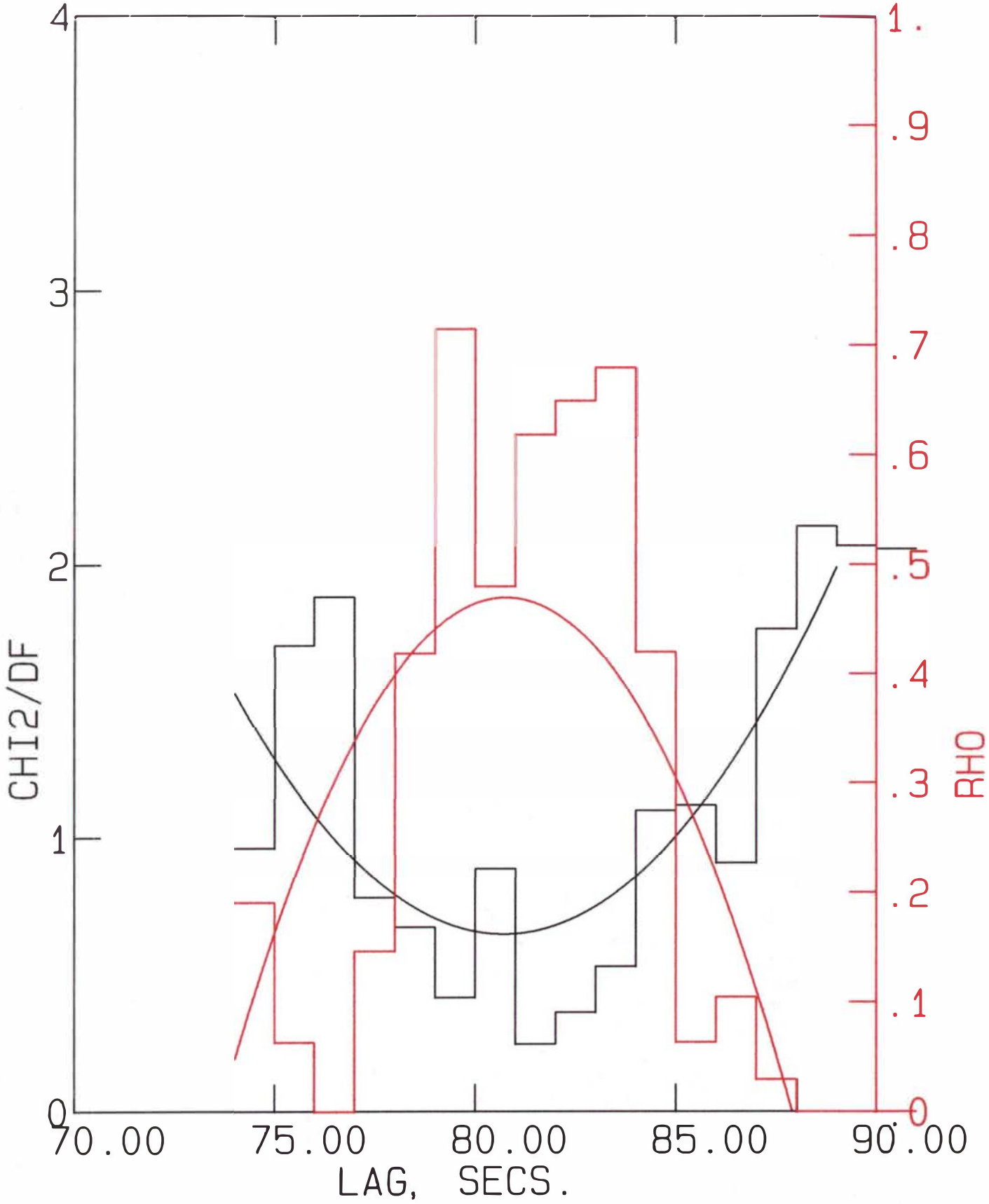

DECLINATION
-52°28′
-52°32′
-52°36′
-52°40′
-52°44′
-52°48′
-52°52′
-52°56′
-53°00′
-53°04′
-53°08′
-53°12′
19:38:00
19:37:00
19:36:00
19:35:00
19:34:00
19:33:00
19:32:00
RIGHT ASCENSION
SAX WFC
ULYSSES/SAX

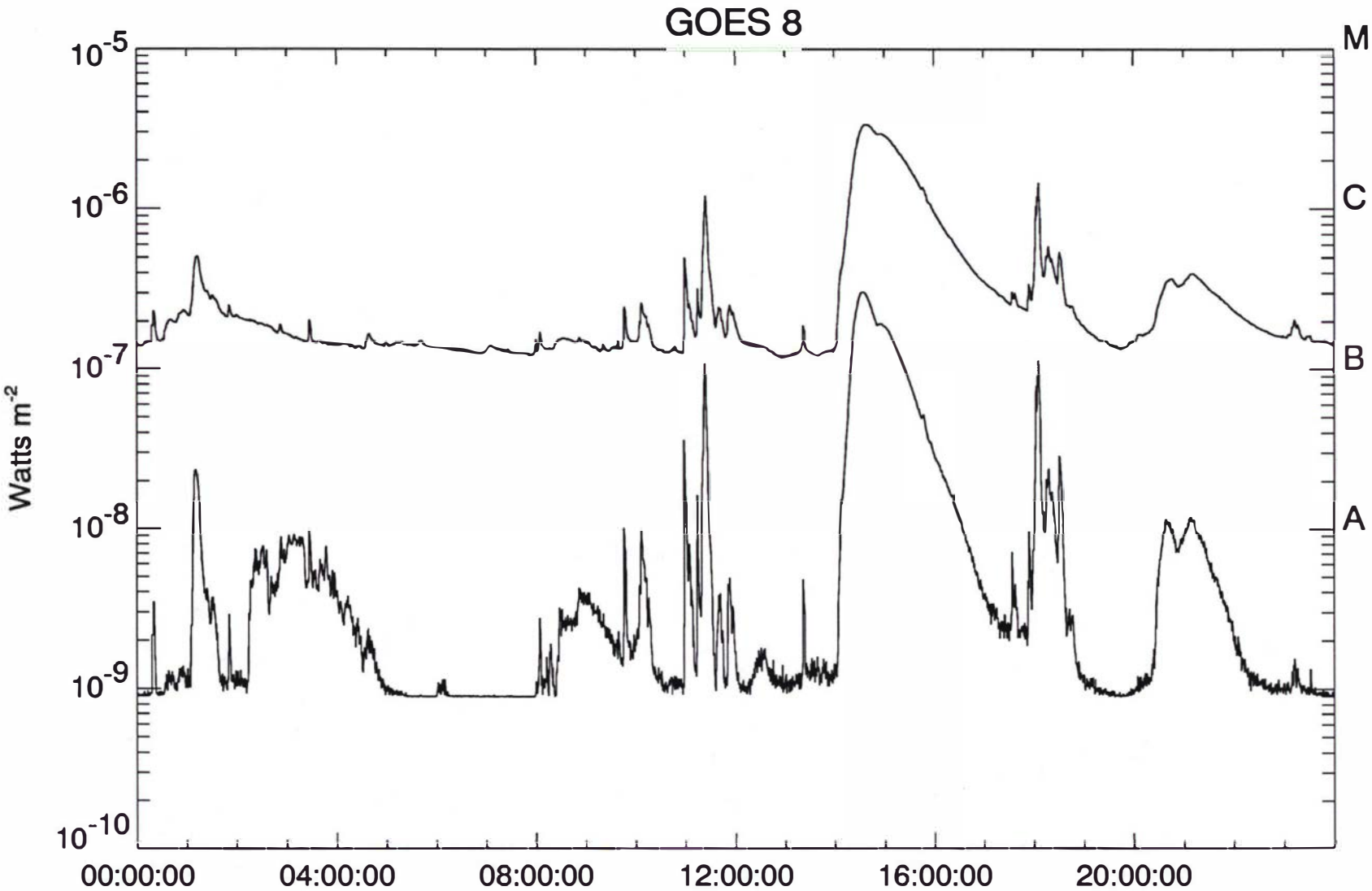
BSAX-GRBM -ULYSSES RT CORRELATION 25/04/98 78542.908 27/ 4/98



27/ 4/98

BSAX-GRBM -ULYSSES RT CORRELATION 25/04/98 78542.908

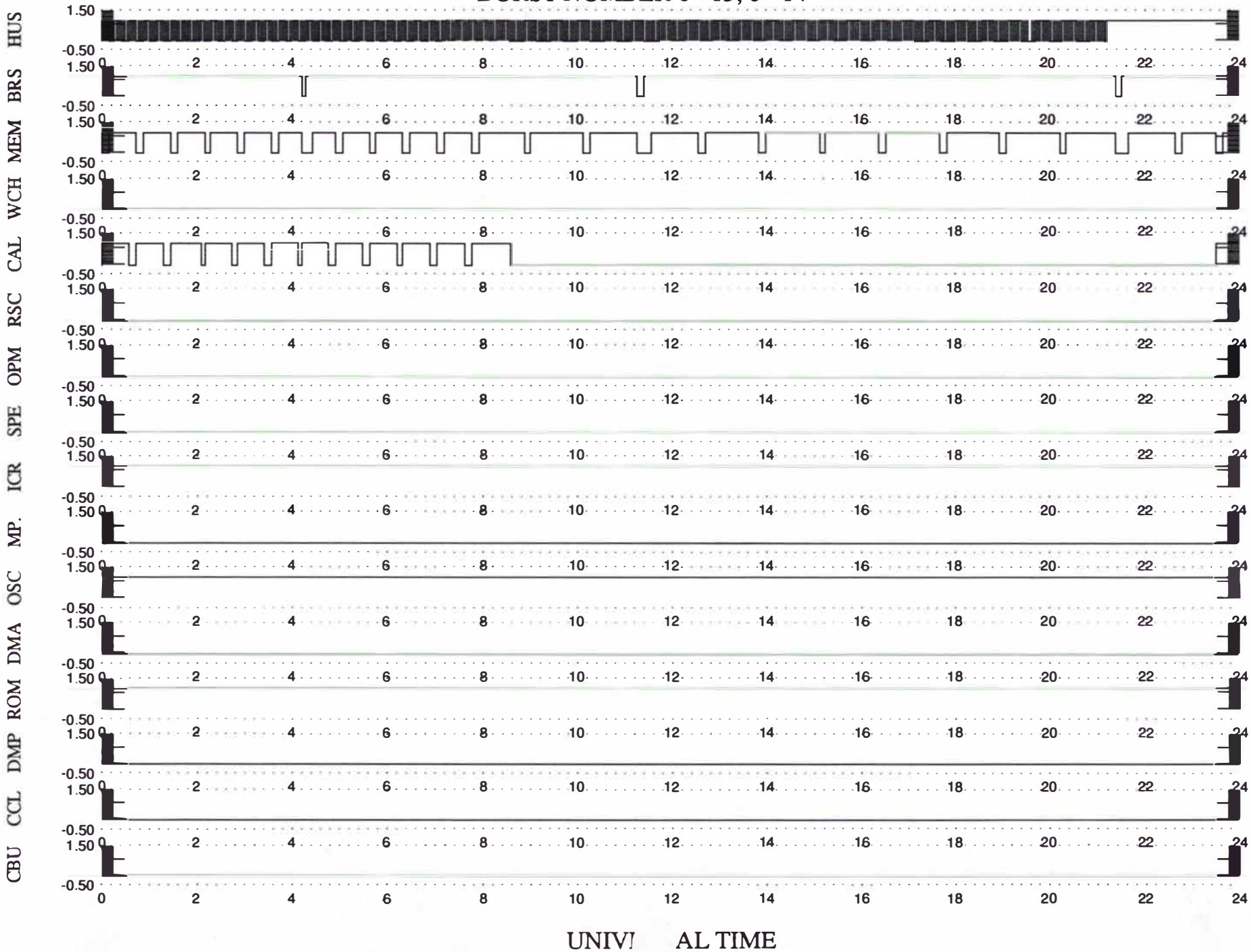




Data Start: 98/04/25, 0000:00 Plot created: 98/04/29, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

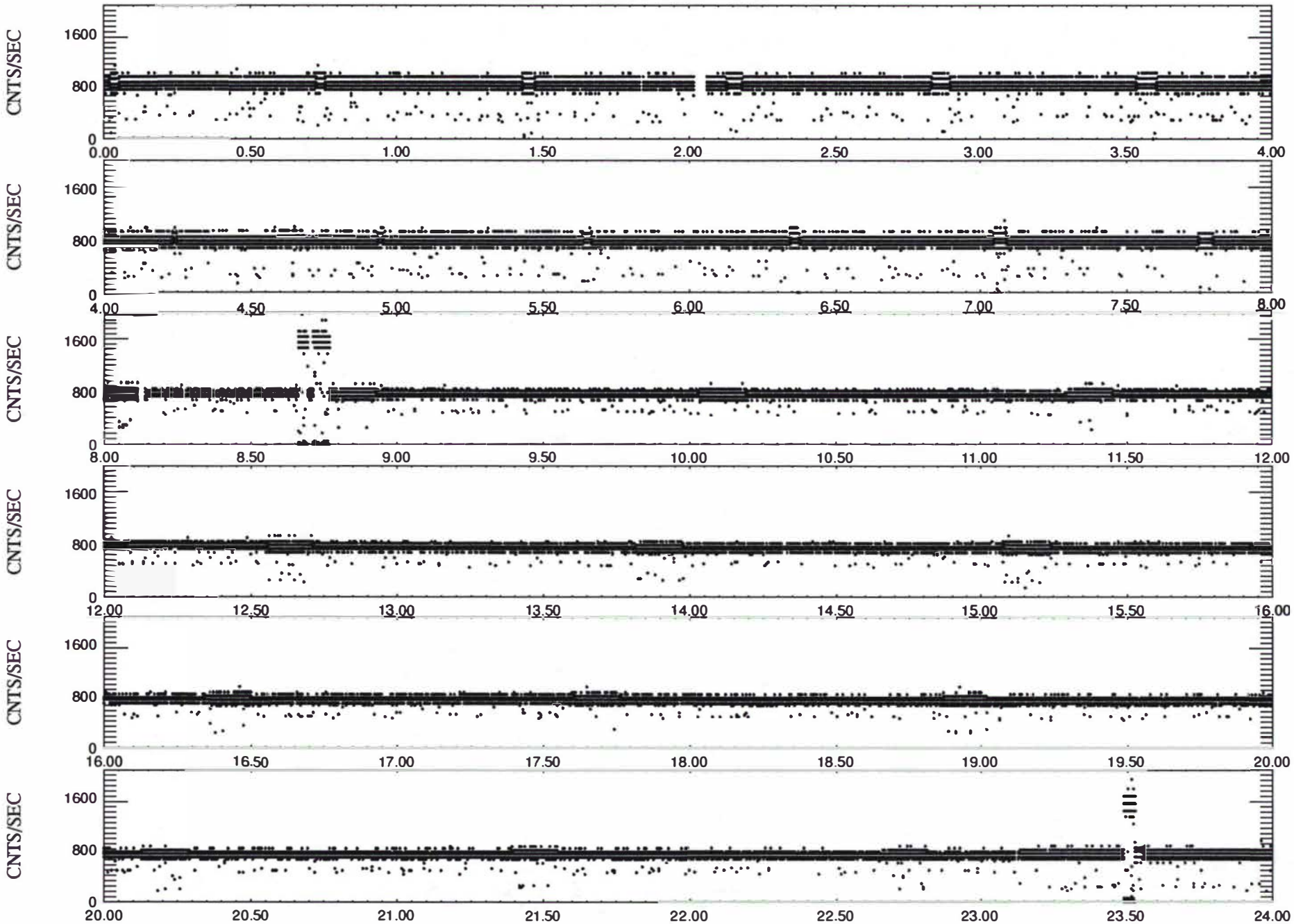
HUS MODES EDR day 115, year 1998 to day 115, year 1998 8/18/98

BURST NUMBER 6 - 15, 0 - 14



HUS 2A, MODE 1, NOT AVERAGED EDR day 115, year 1998 to day 115, year 1998 8/18/98

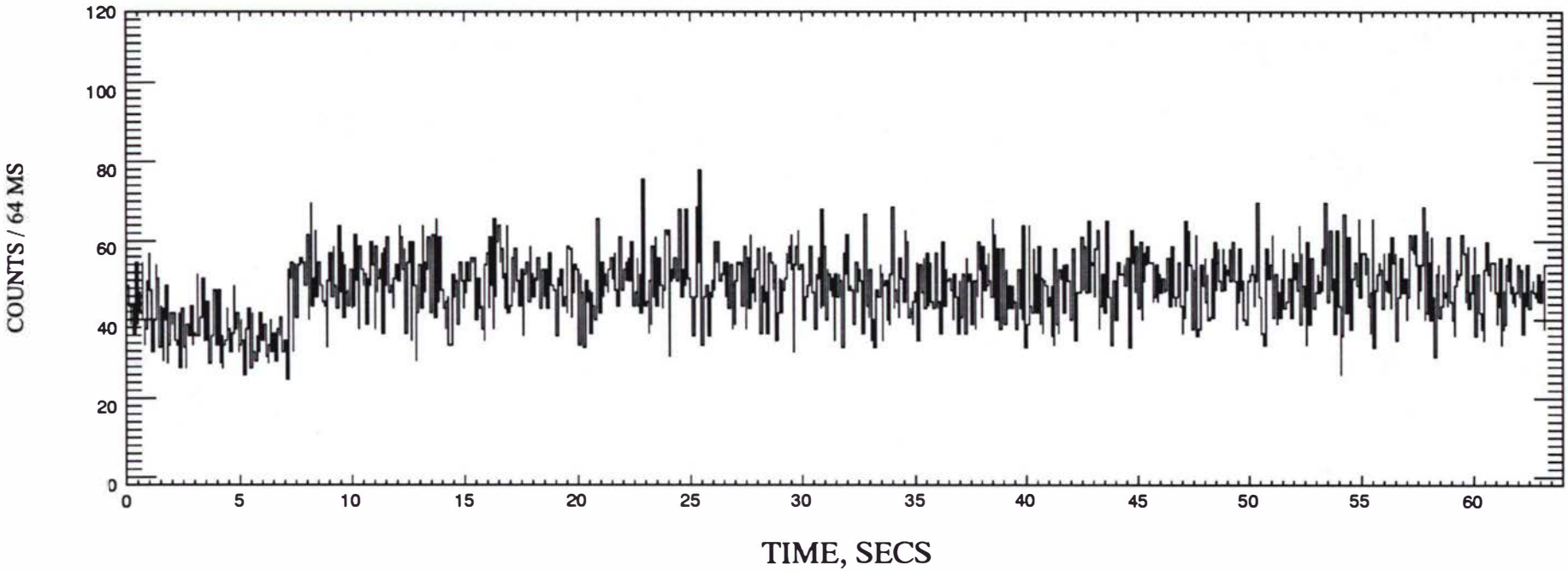
CALIBRATION DATA INCLUDED

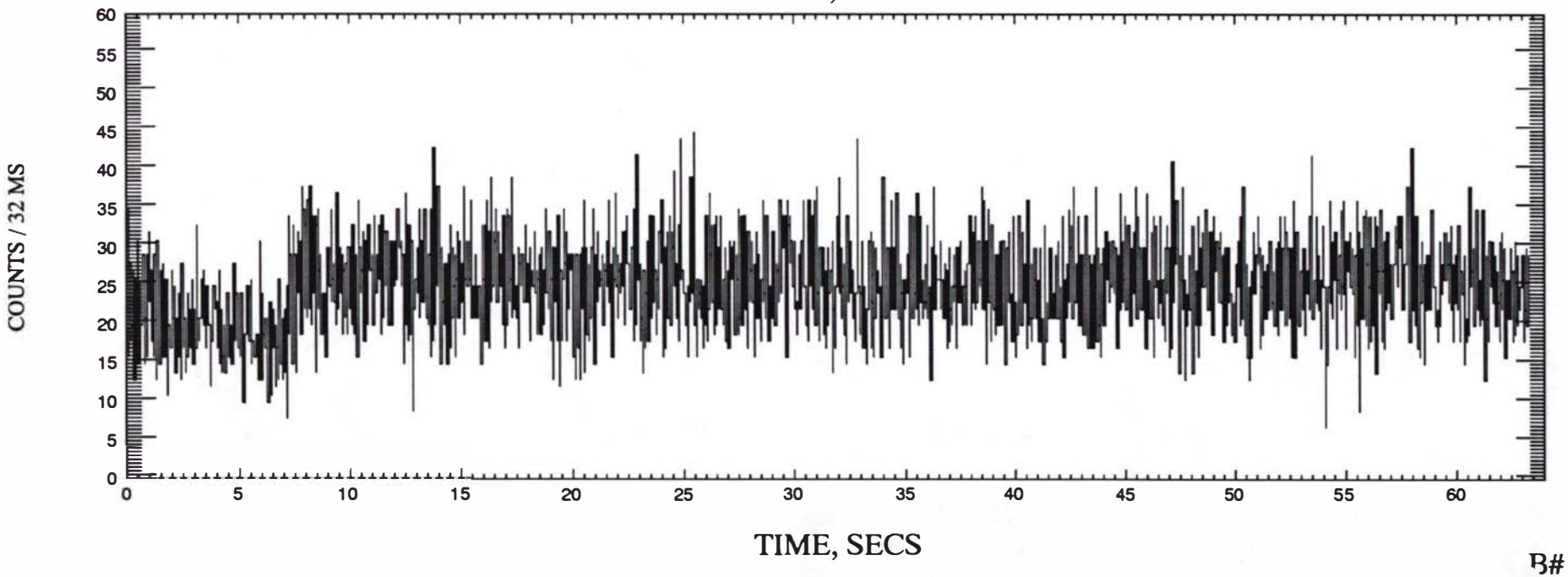


UNIV! 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 6 at UT= 0.018791135152 h= 67.648 s 00:01:07.648

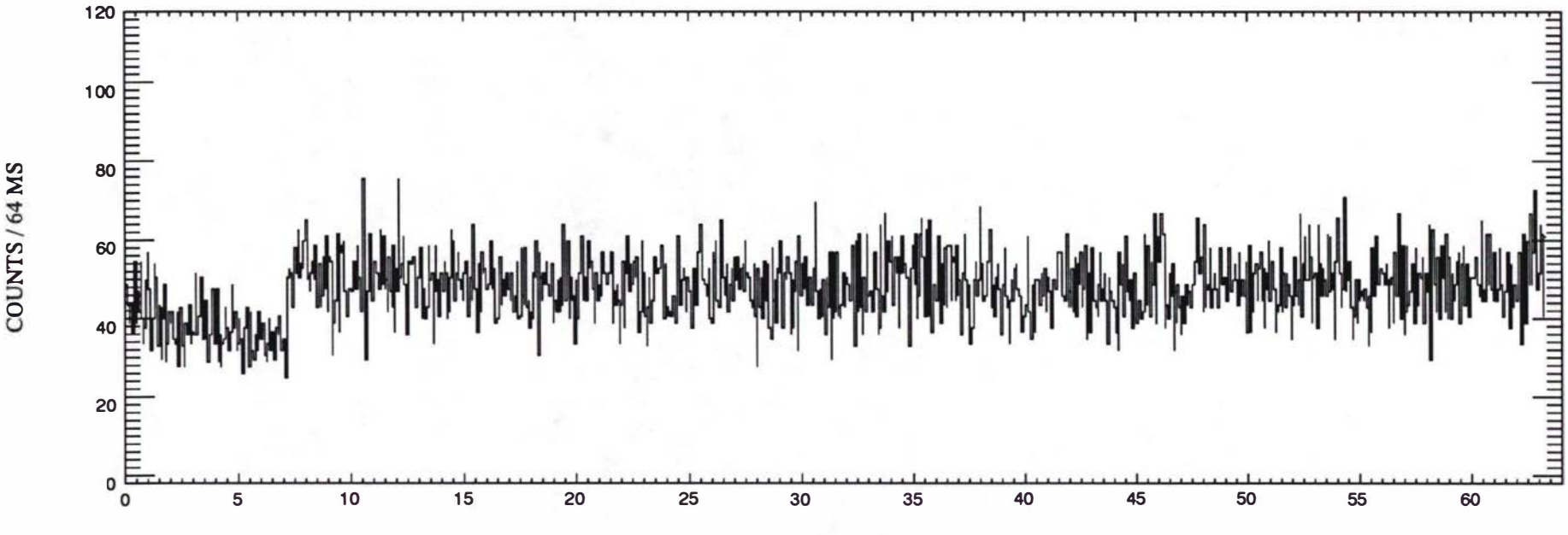


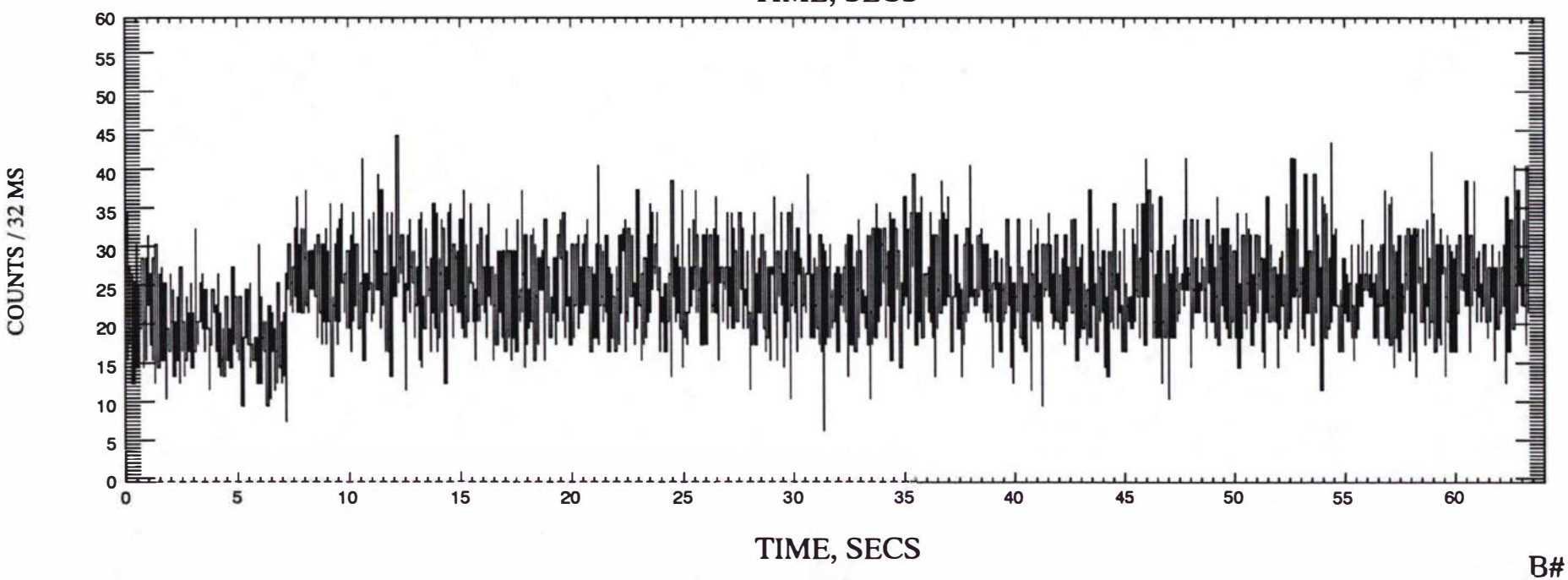


B# 1

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 7 at UT= 0.720465397305 h= 2593.675 s 00:43:13.675

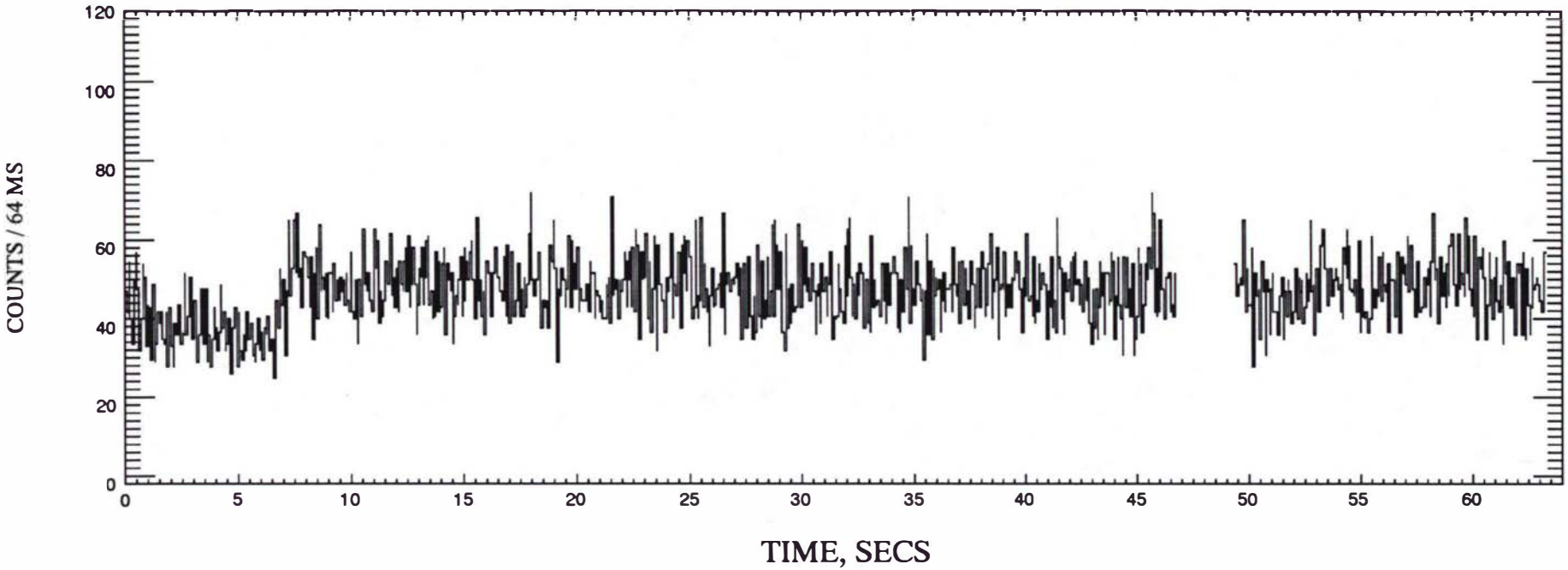


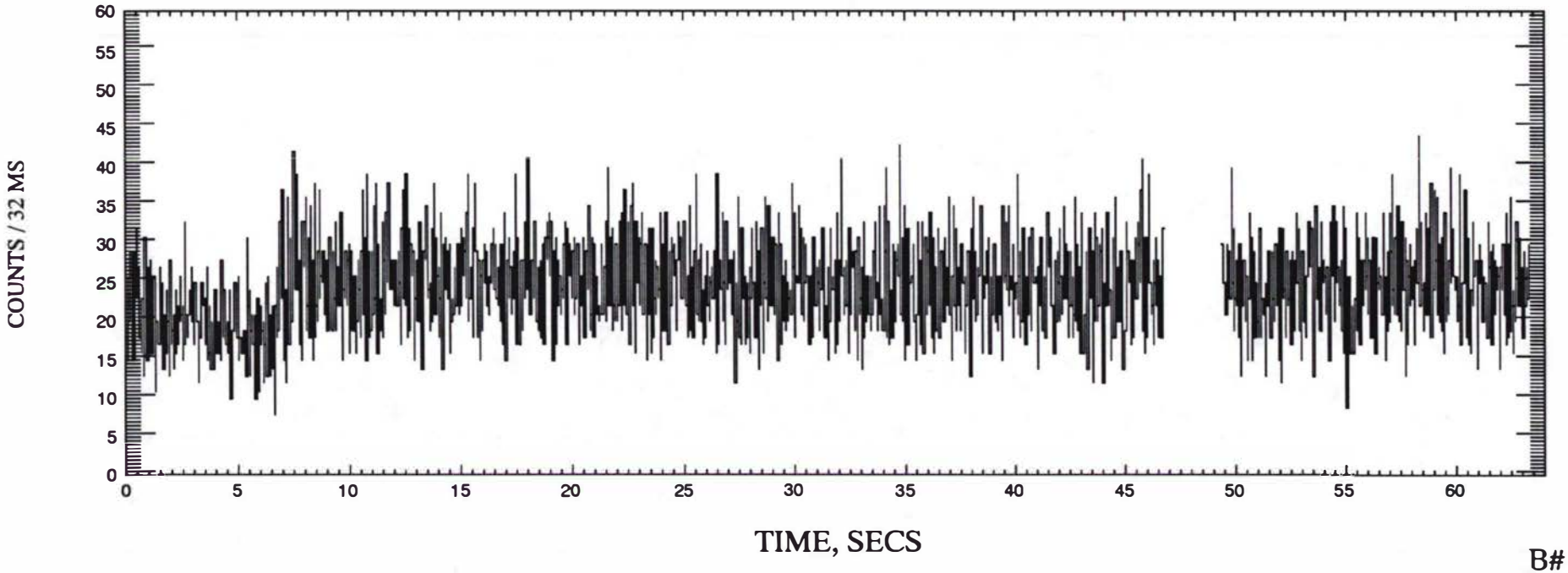


B# 2

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 8 at UT= 1.423387493557 h= 5124.195 s 01:25:24.195

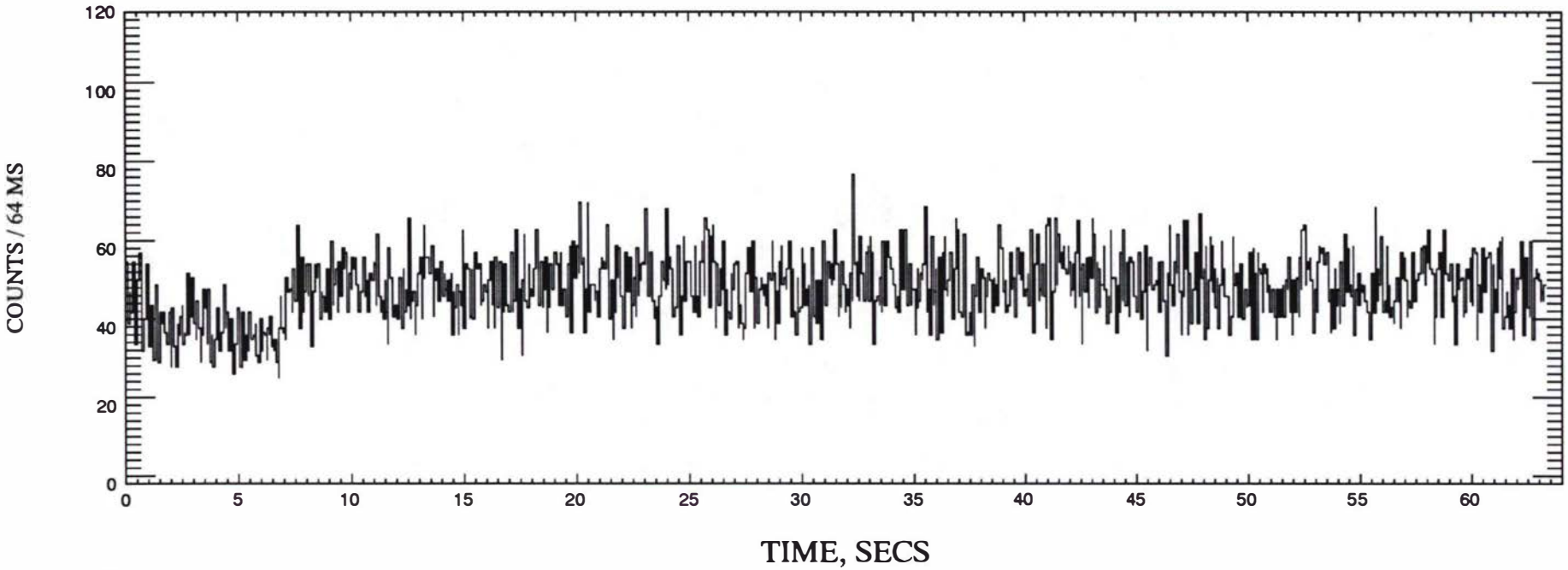


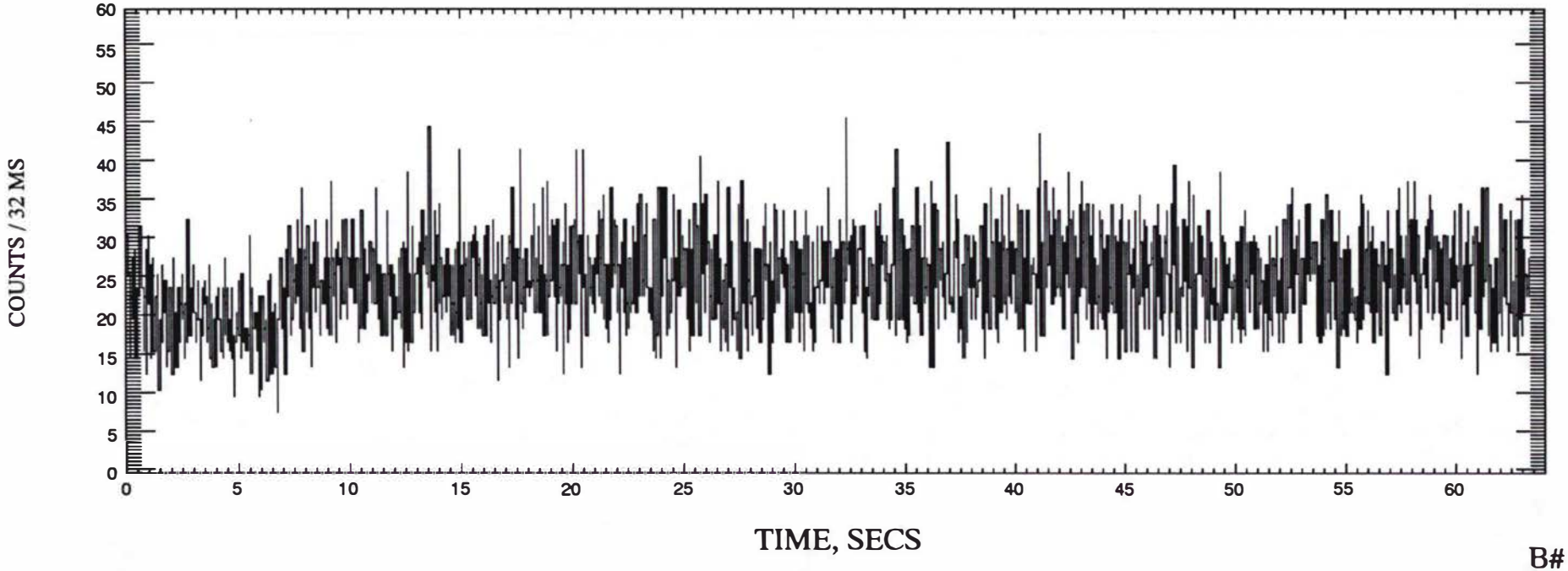


B# 3

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 9 at UT= 2.125584759182 h= 7652.105 s 02:07:32.105

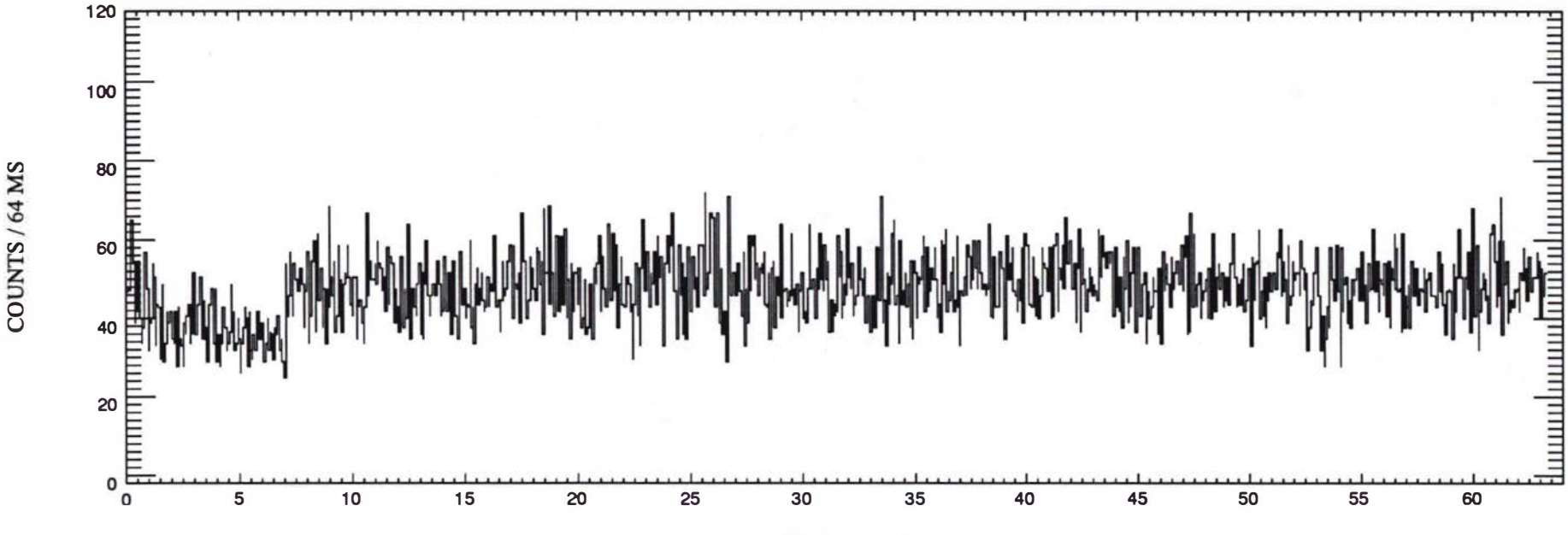


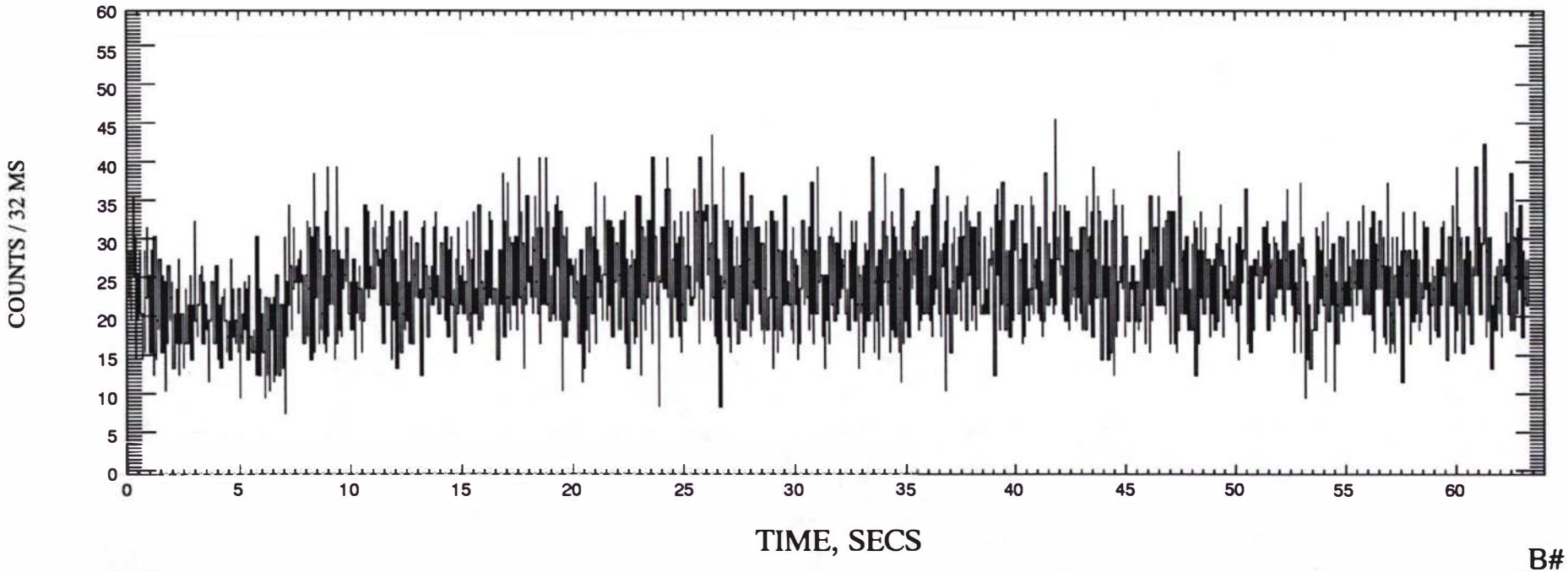


B# 4

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 10 at UT= 2.827745136685 h=10179.882 s 02:49:39.882

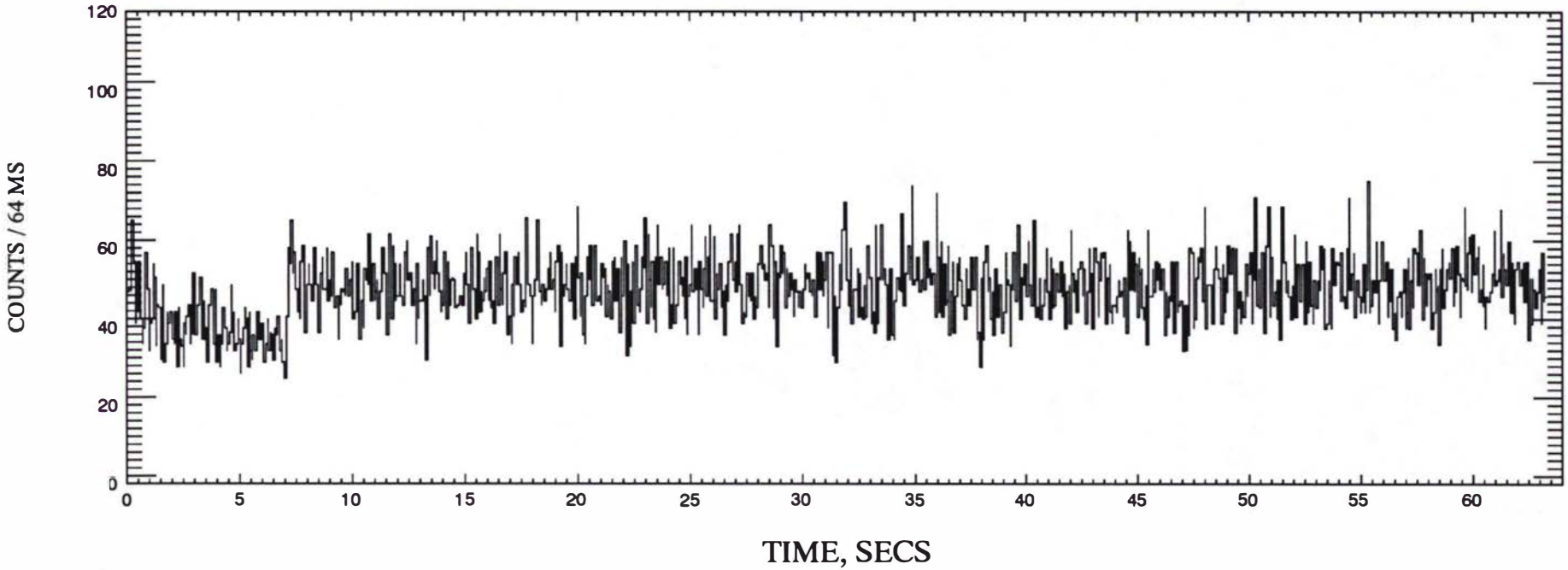


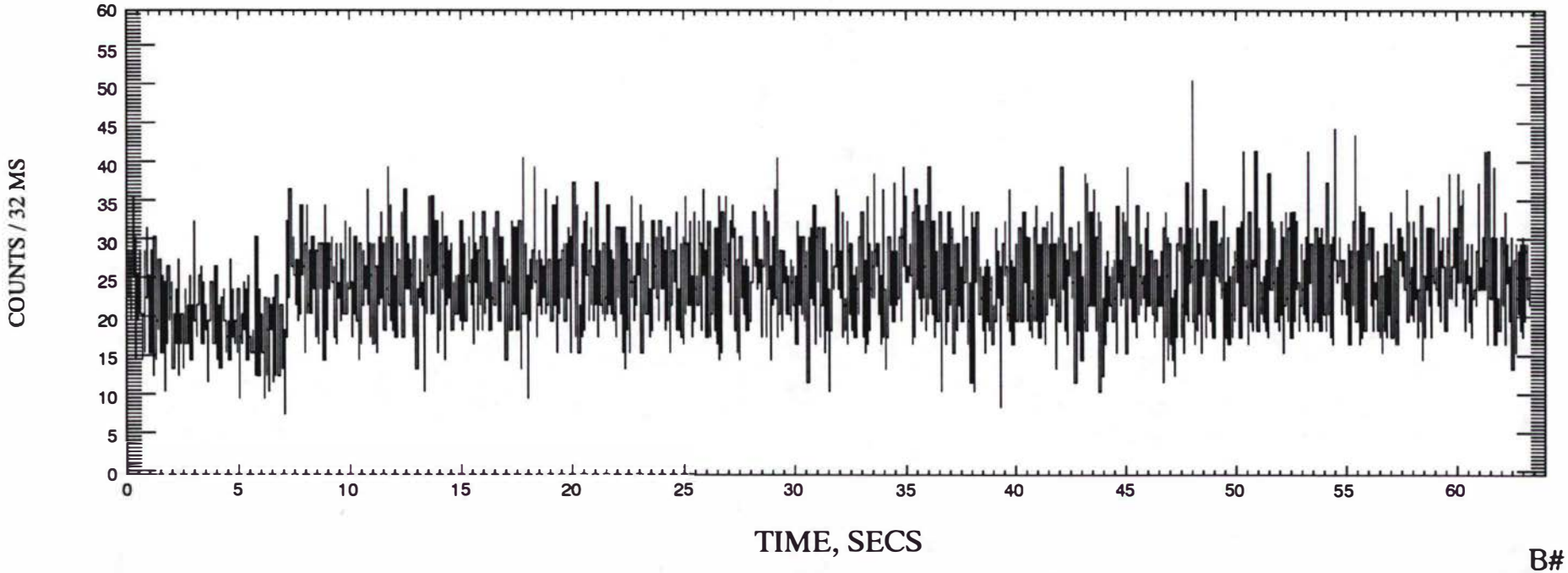


B# 5

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 11 at UT= 3.529972784254 h=12707.902 s 03:31:47.902

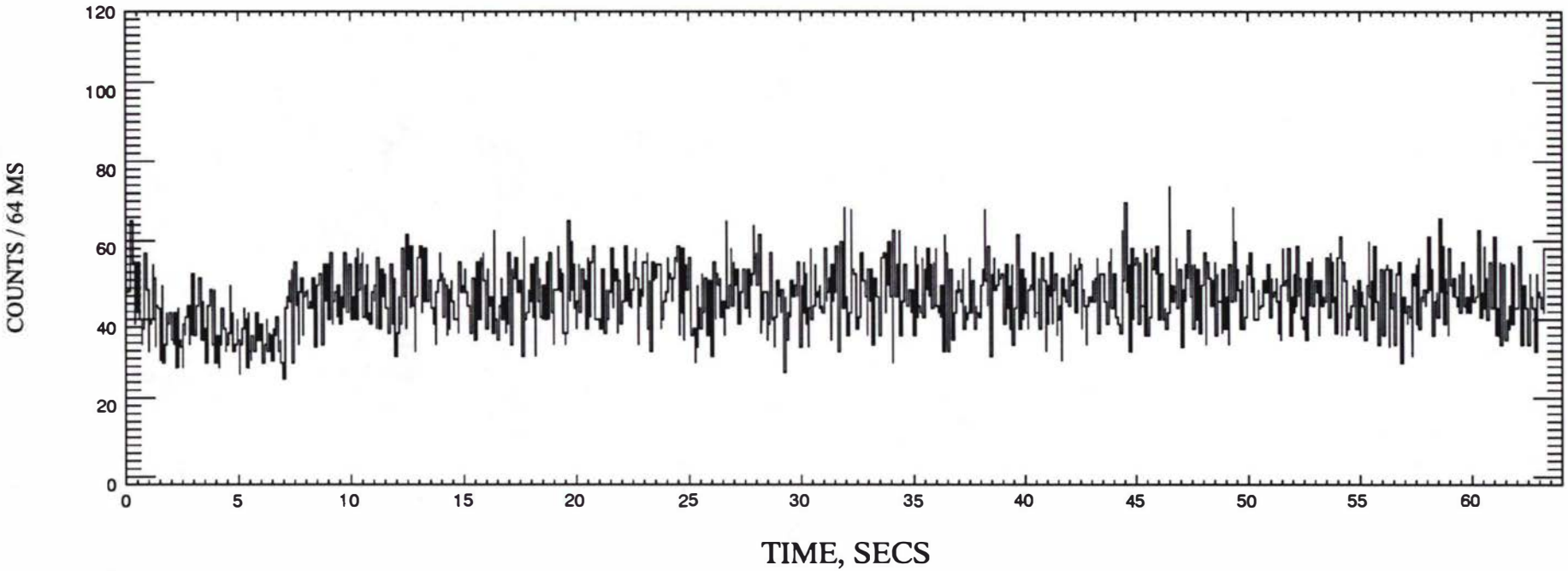


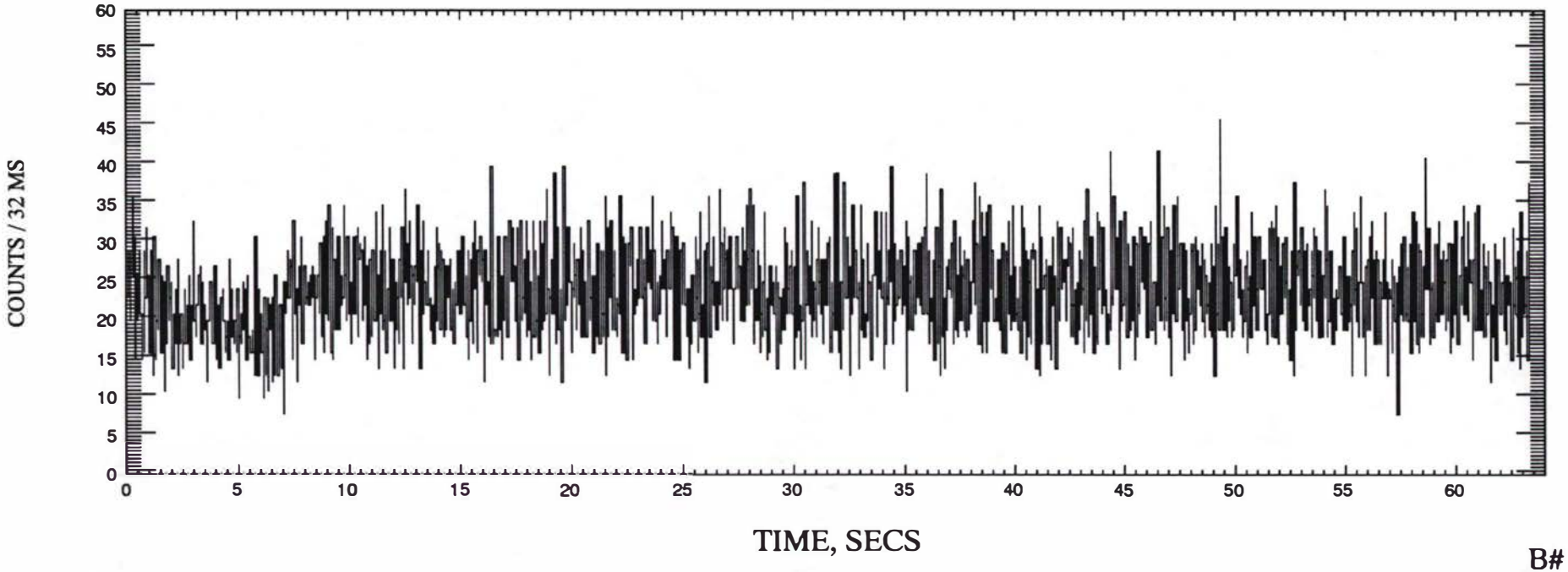


B# 6

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 12 at UT= 4.232206942240 h=15235.945 s 04:13:55.945

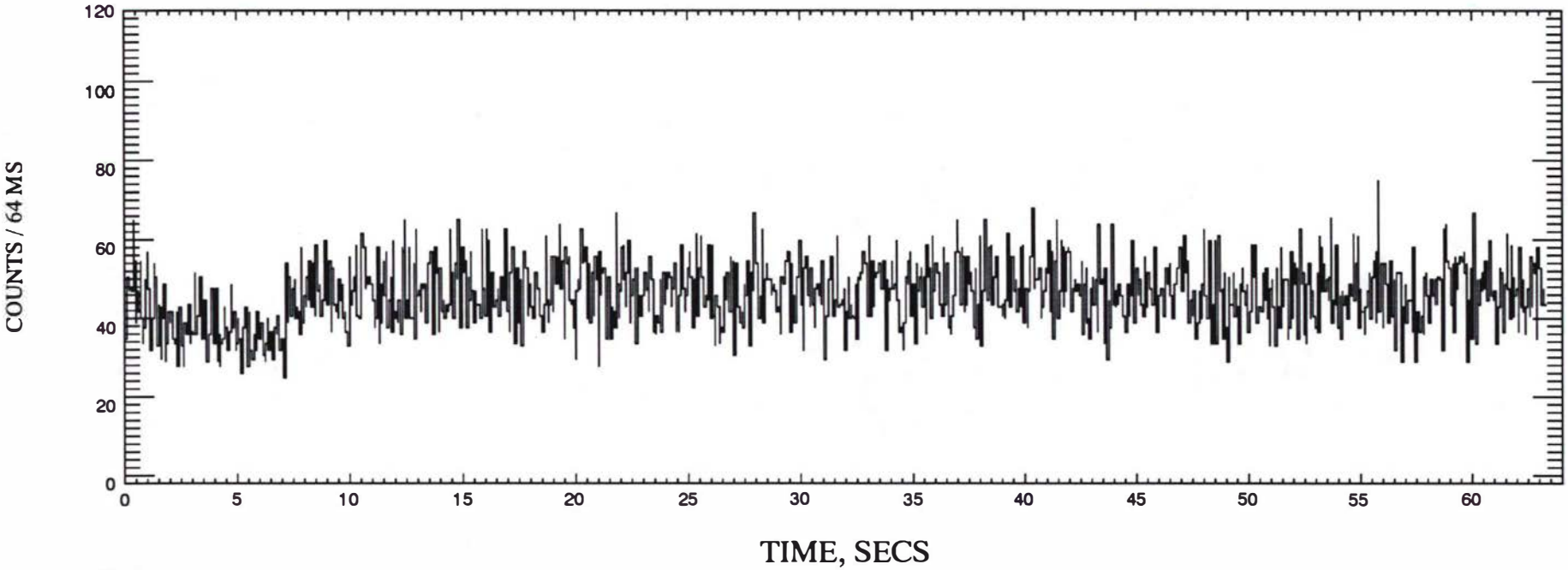


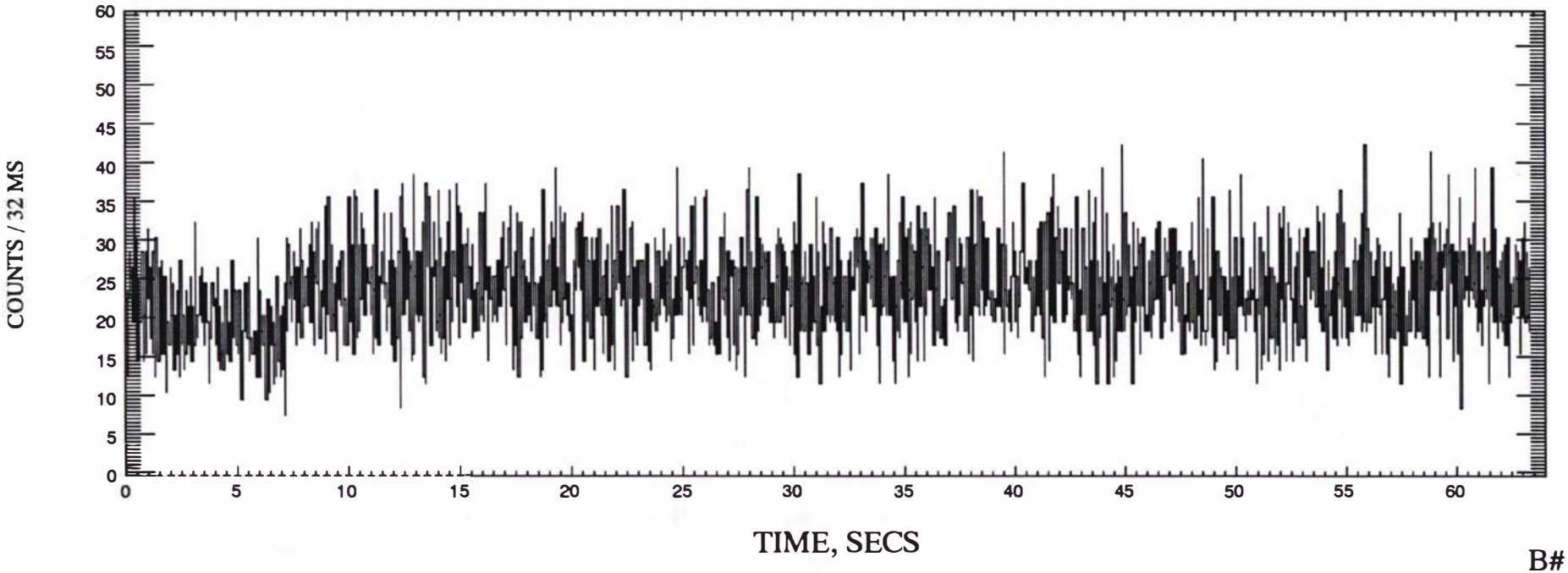


B# 7

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 13 at UT= 4.934401283264 h=17763.845 s 04:56:03.845

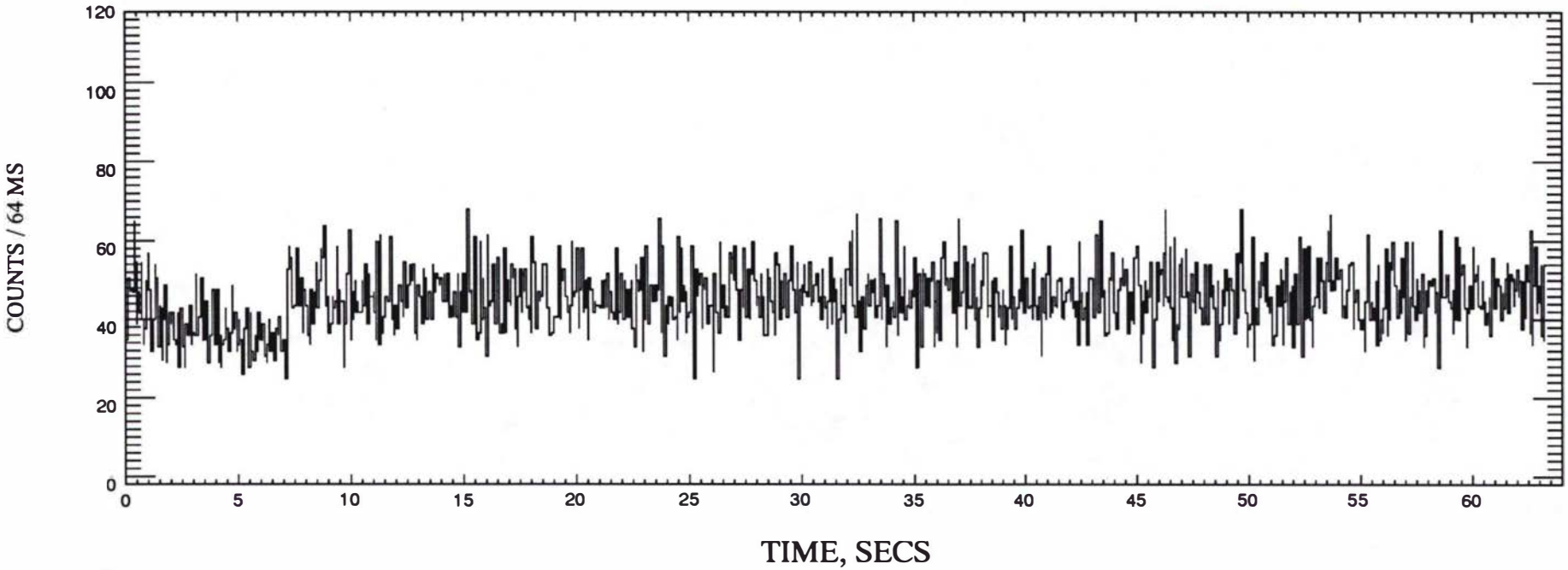


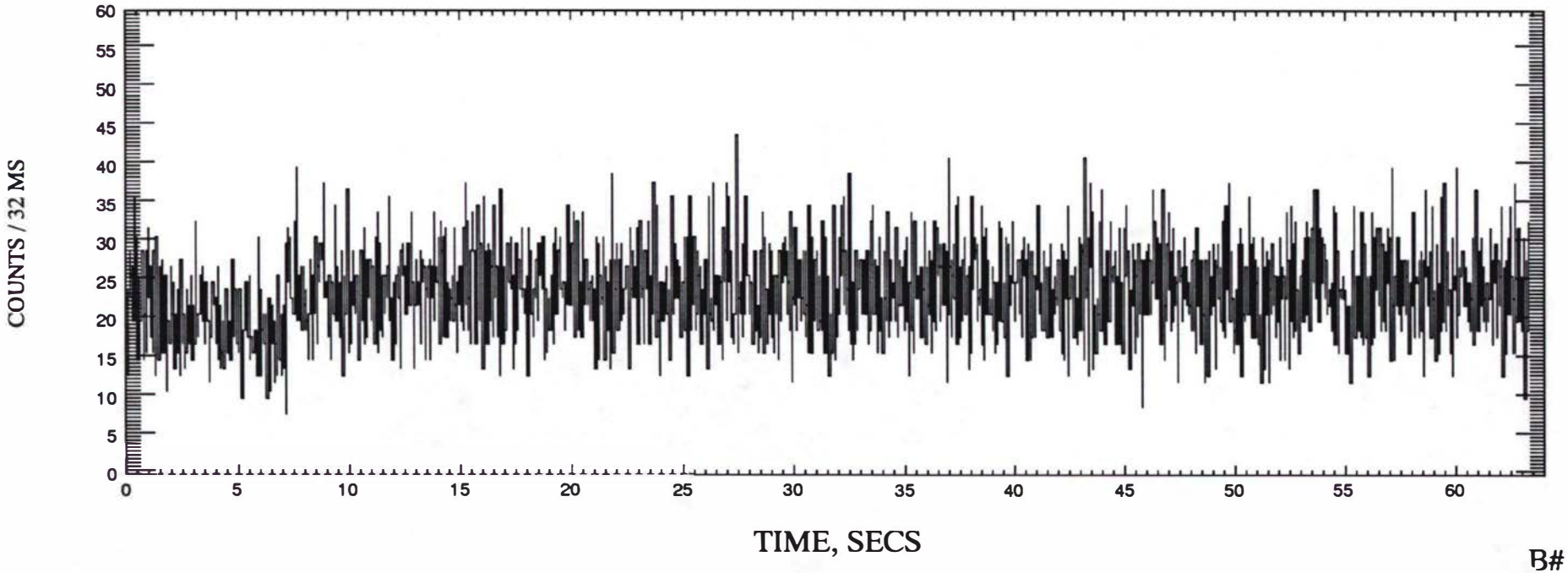


B# 8

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 14 at UT= 5.636626760695 h=20291.856 s 05:38:11.856

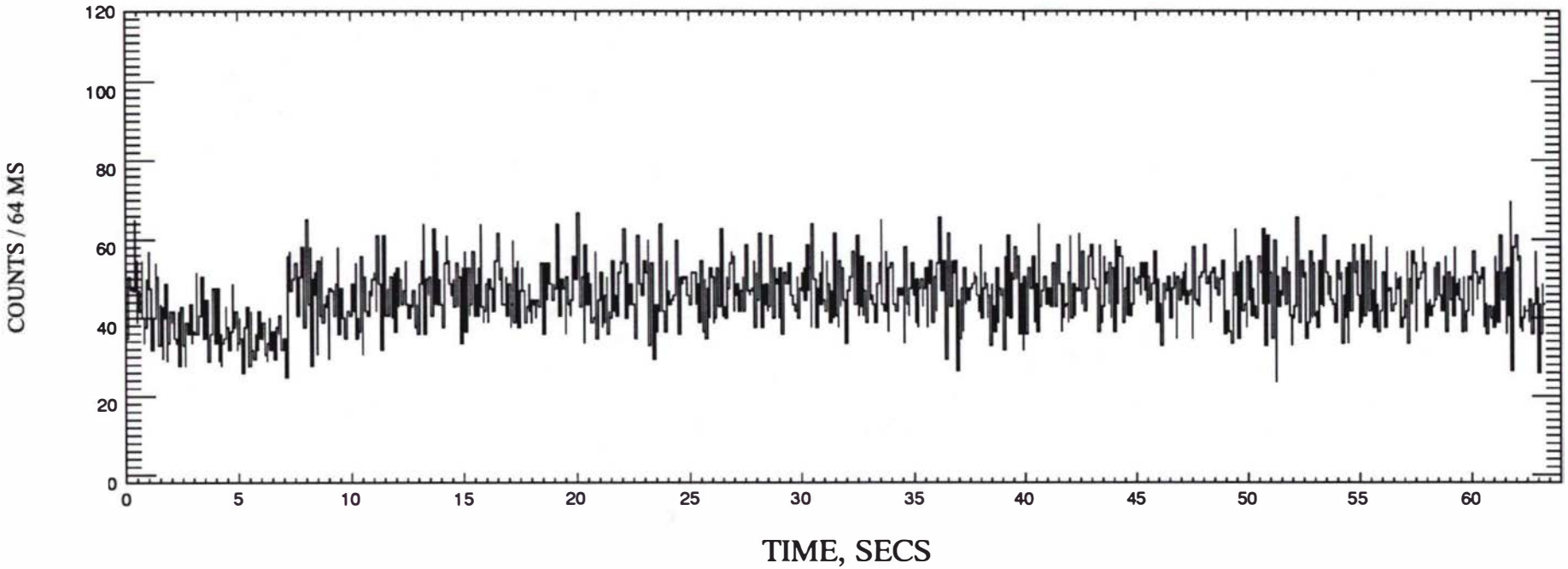


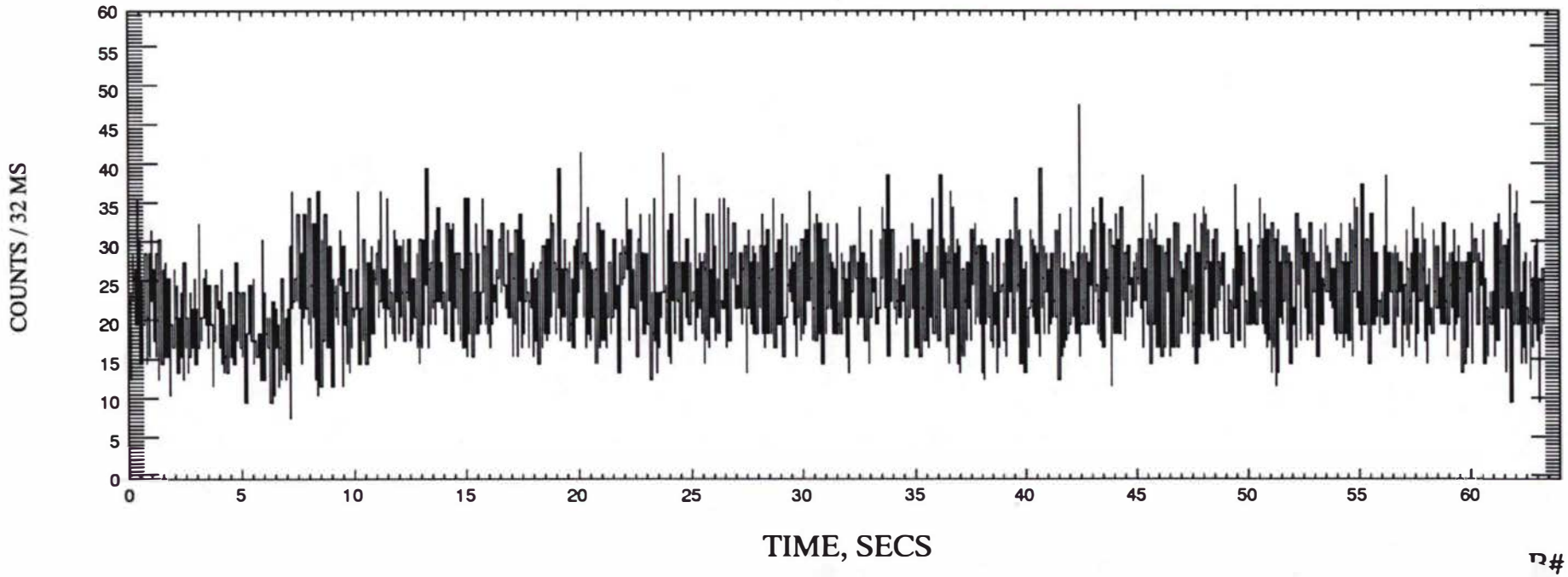


B# 9

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 15 at UT= 6.338856578403 h=22819.884 s 06:20:19.884

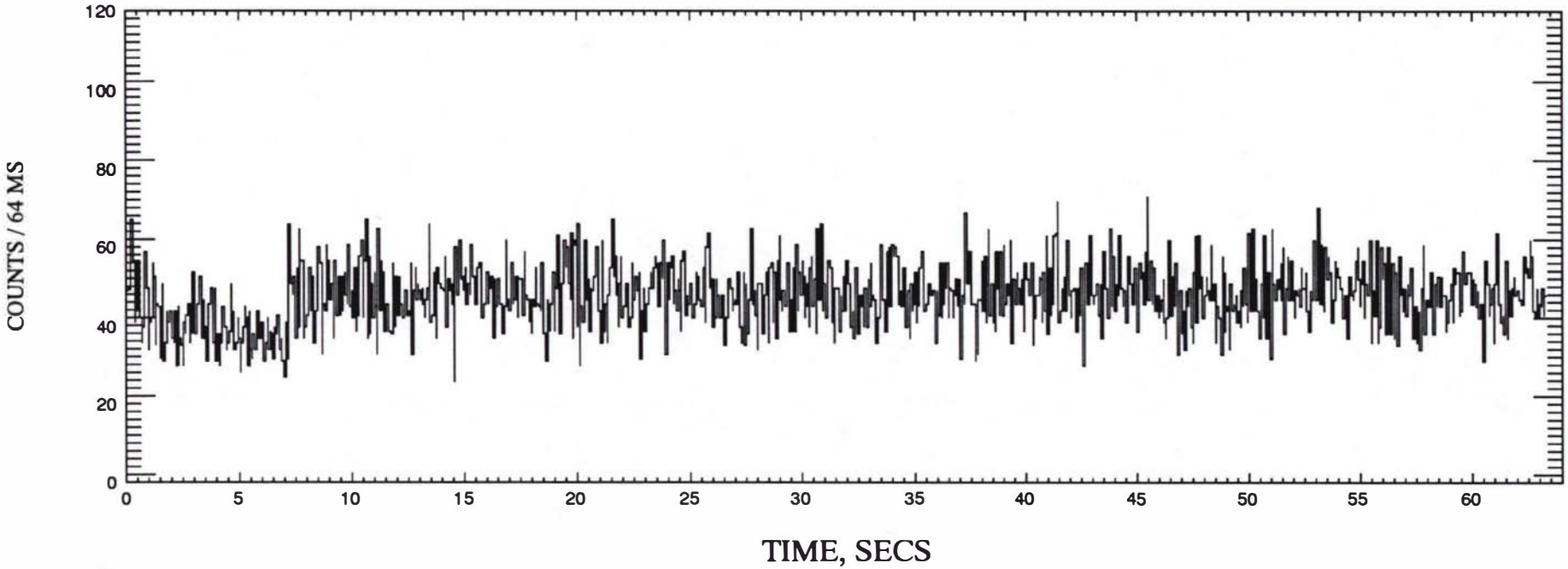


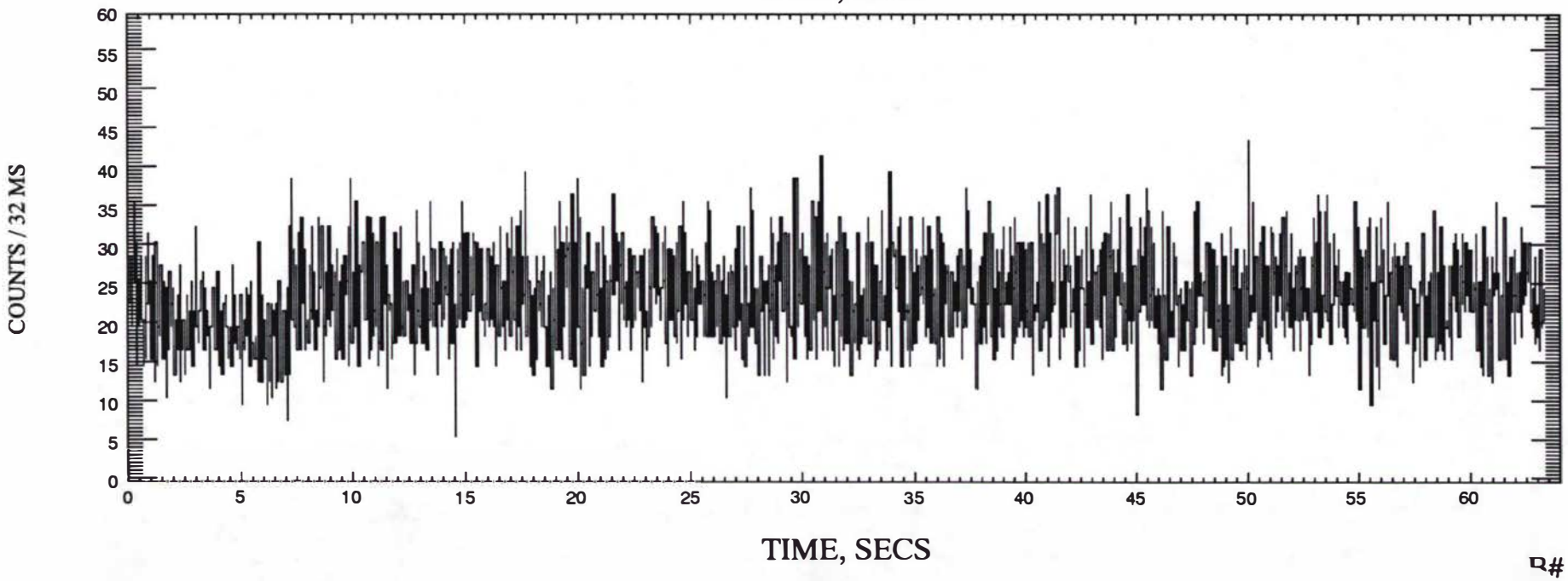


B# 10

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 0 at UT= 7.041118952433 h=25348.028 s 07:02:28.028

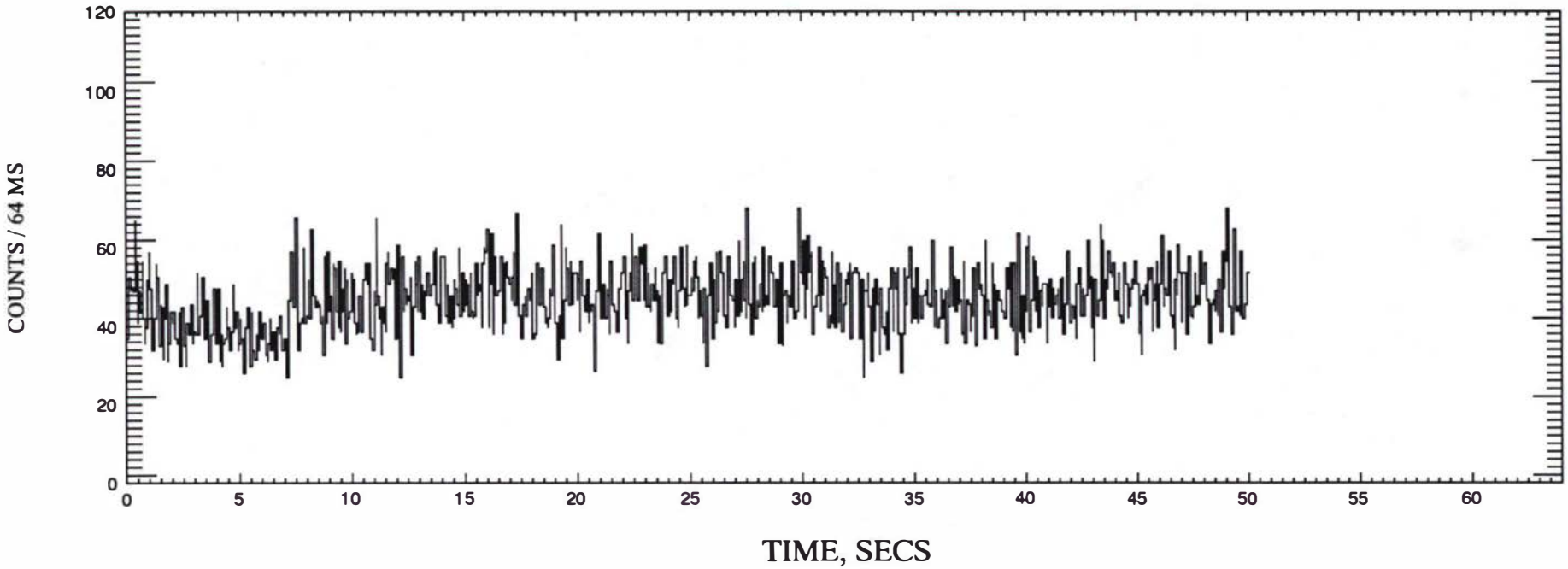


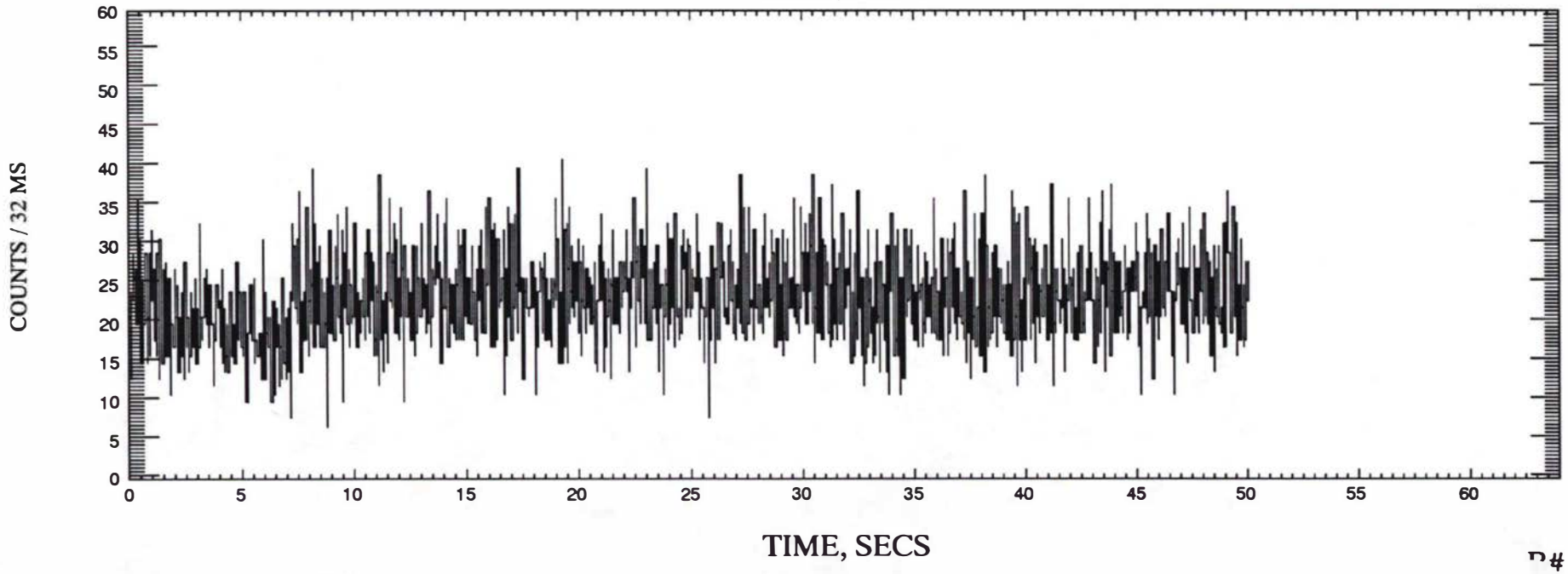


B# 11

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 1 at UT= 7.743318388197 h=27875.946 s 07:44:35.946

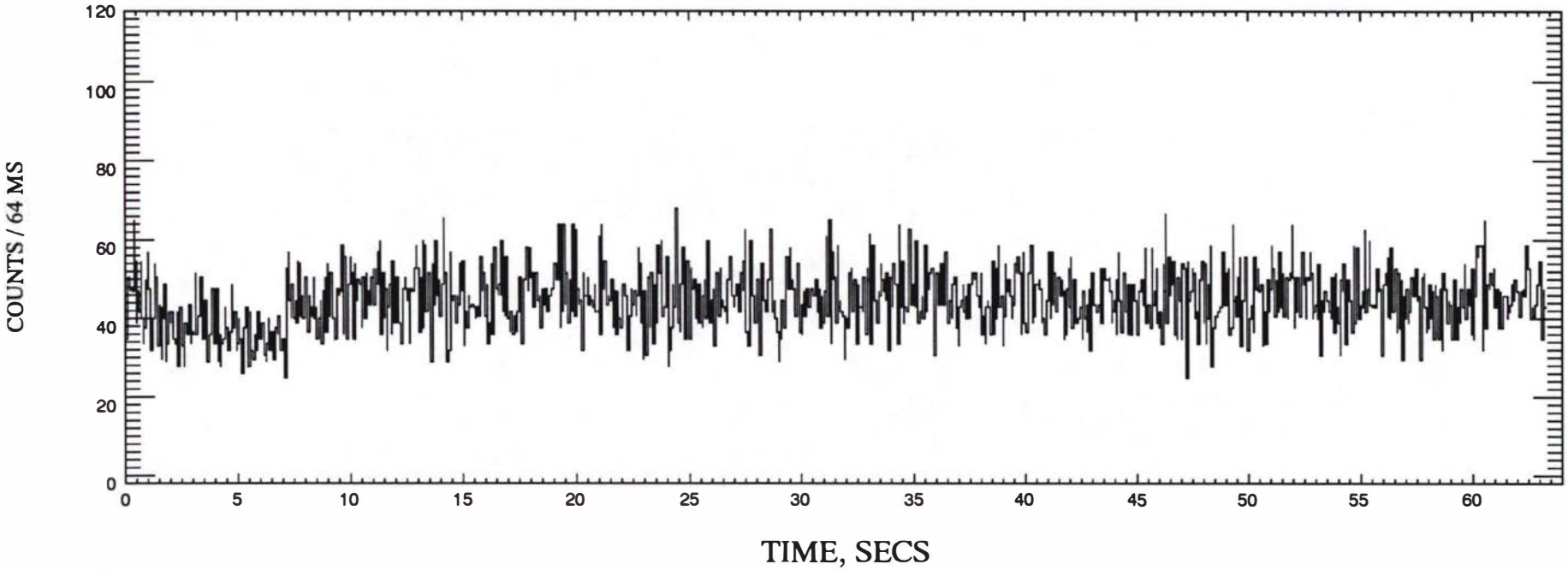


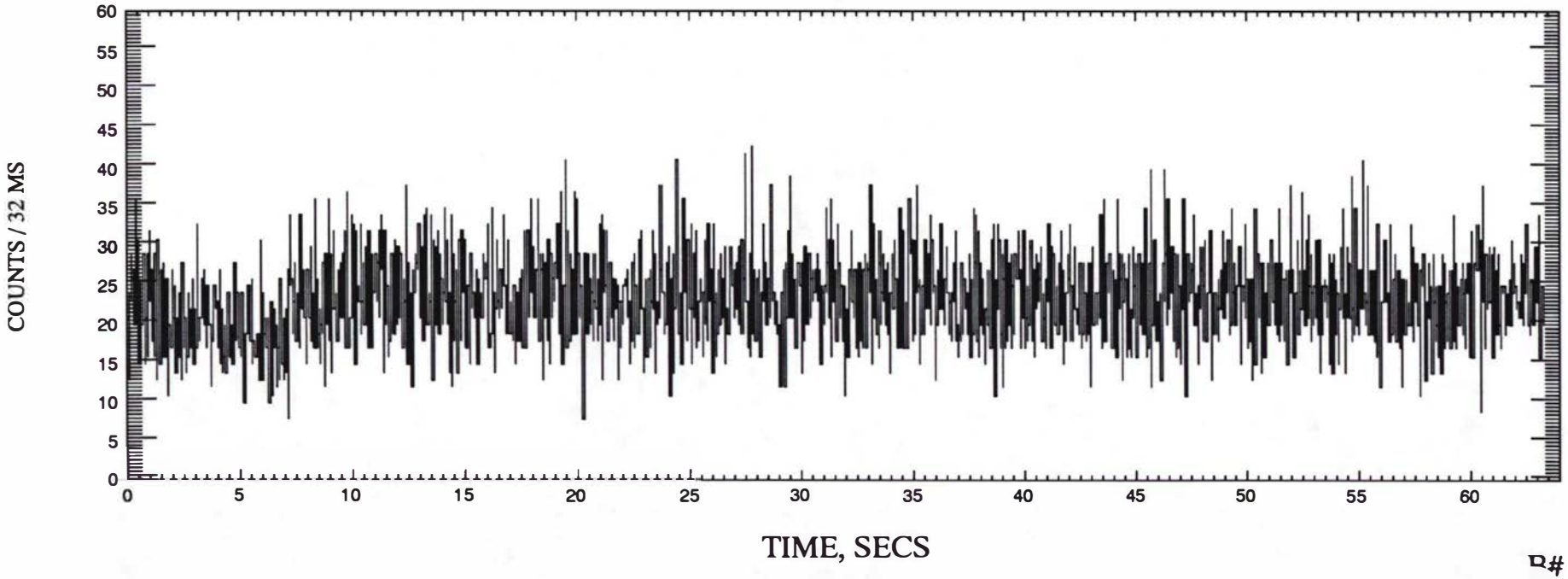


P# 12

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 2 at UT= 8.765549265544 h=31555.977 s 08:45:55.977

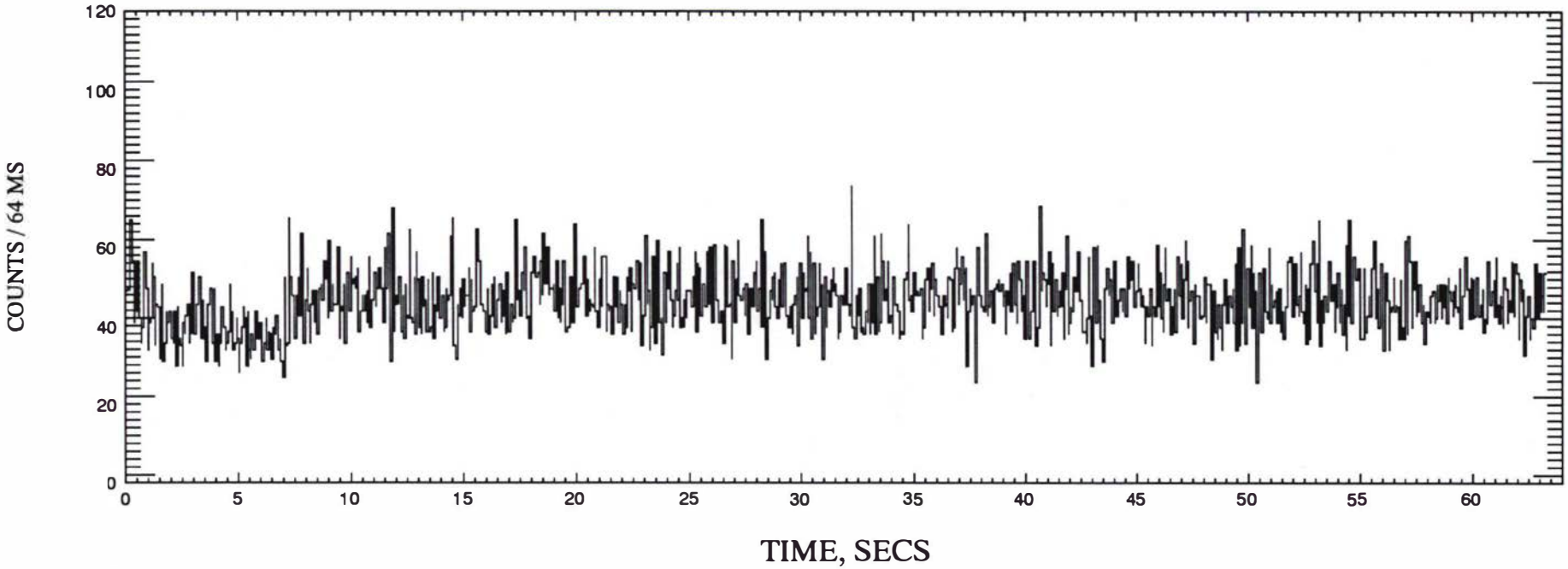


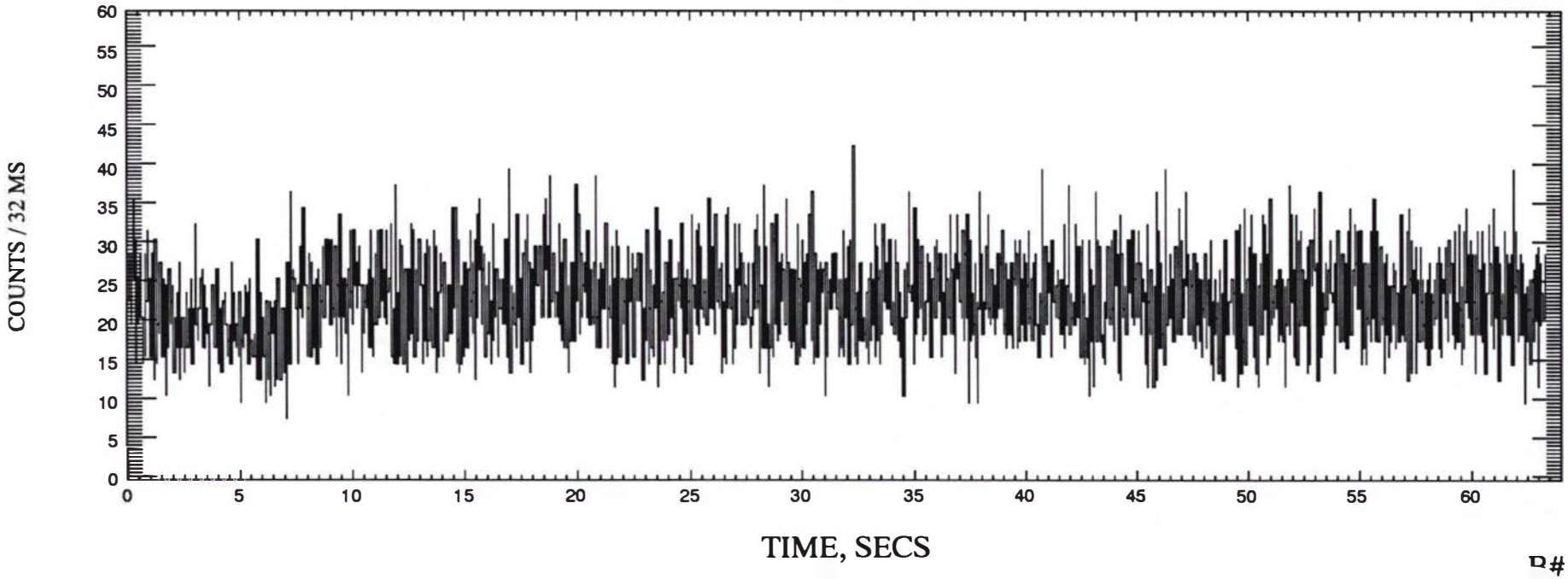


R# 13

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 3 at UT=10.027819887797 h=36100.152 s 10:01:40.152

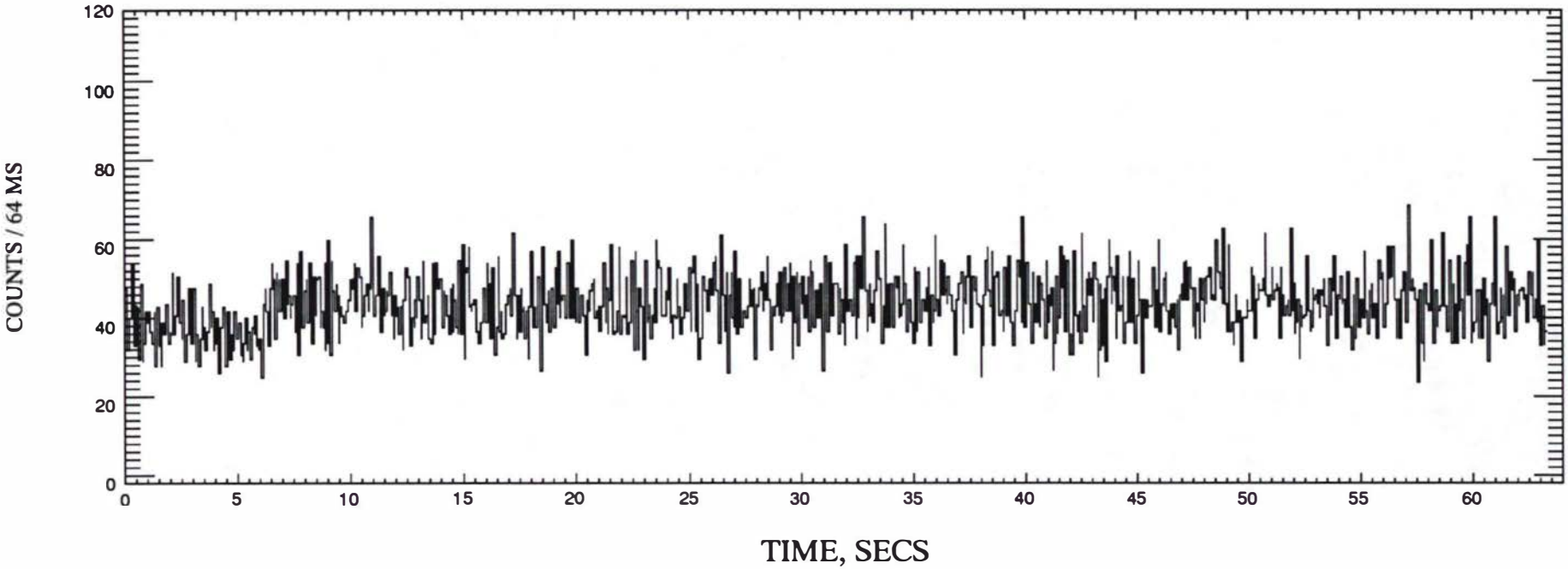


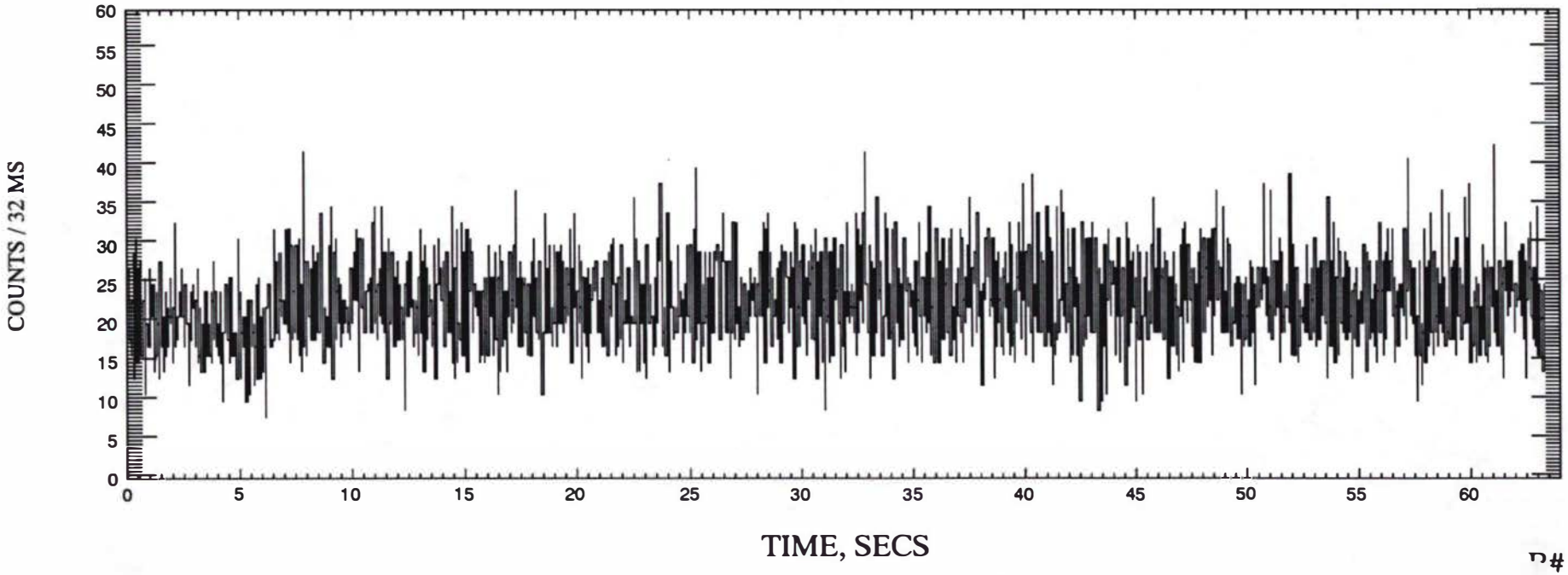


R# 14

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 4 at UT=11.290303179423 h=40645.091 s 11:17:25.091

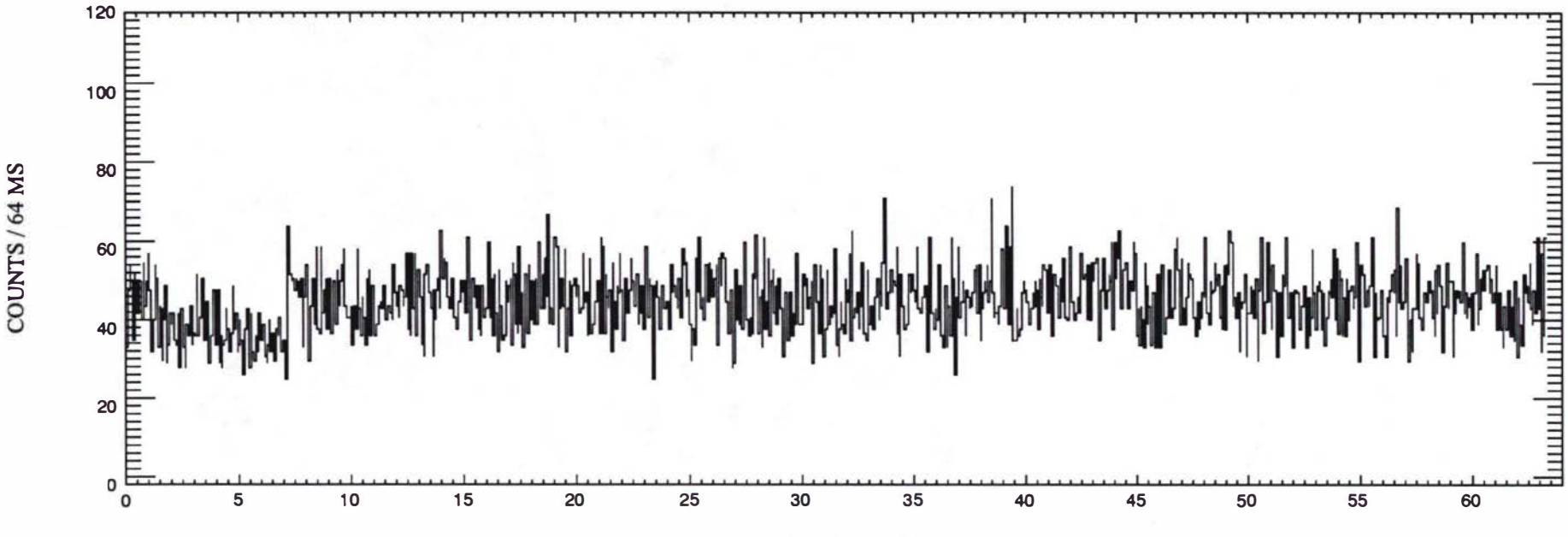


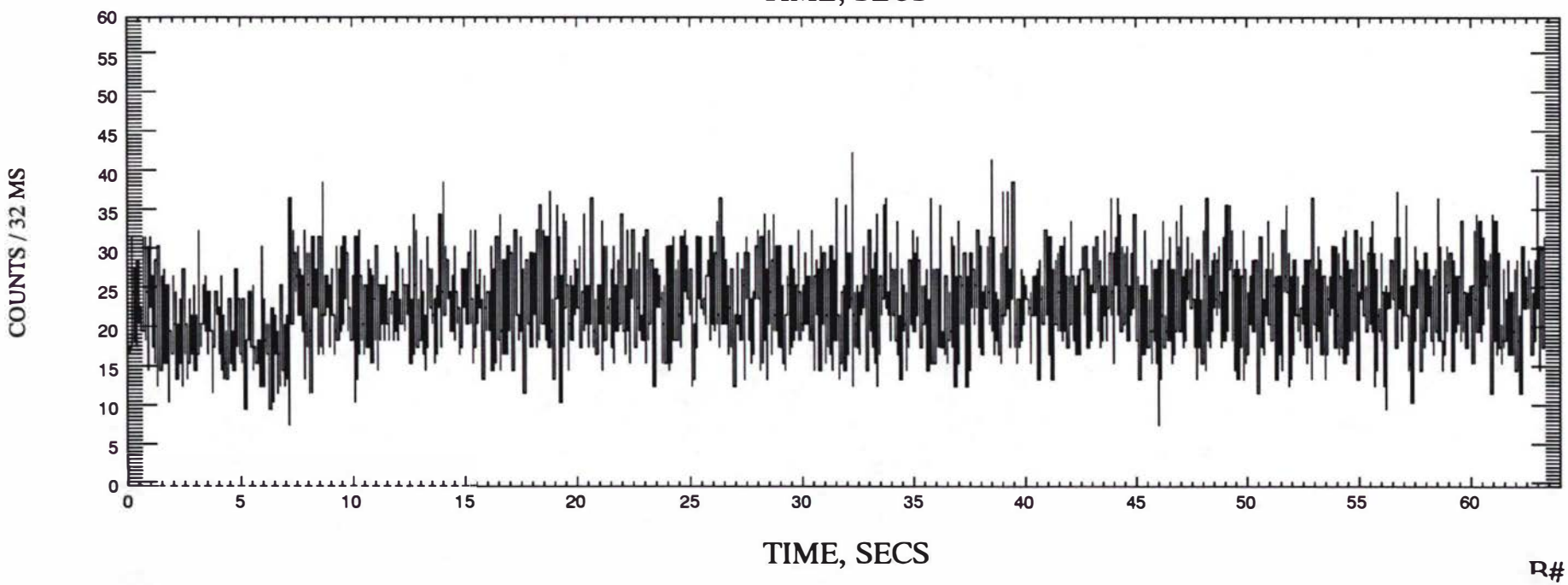


P# 15

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 5 at UT=12.552255439758 h=45188.120 s 12:33:08.120

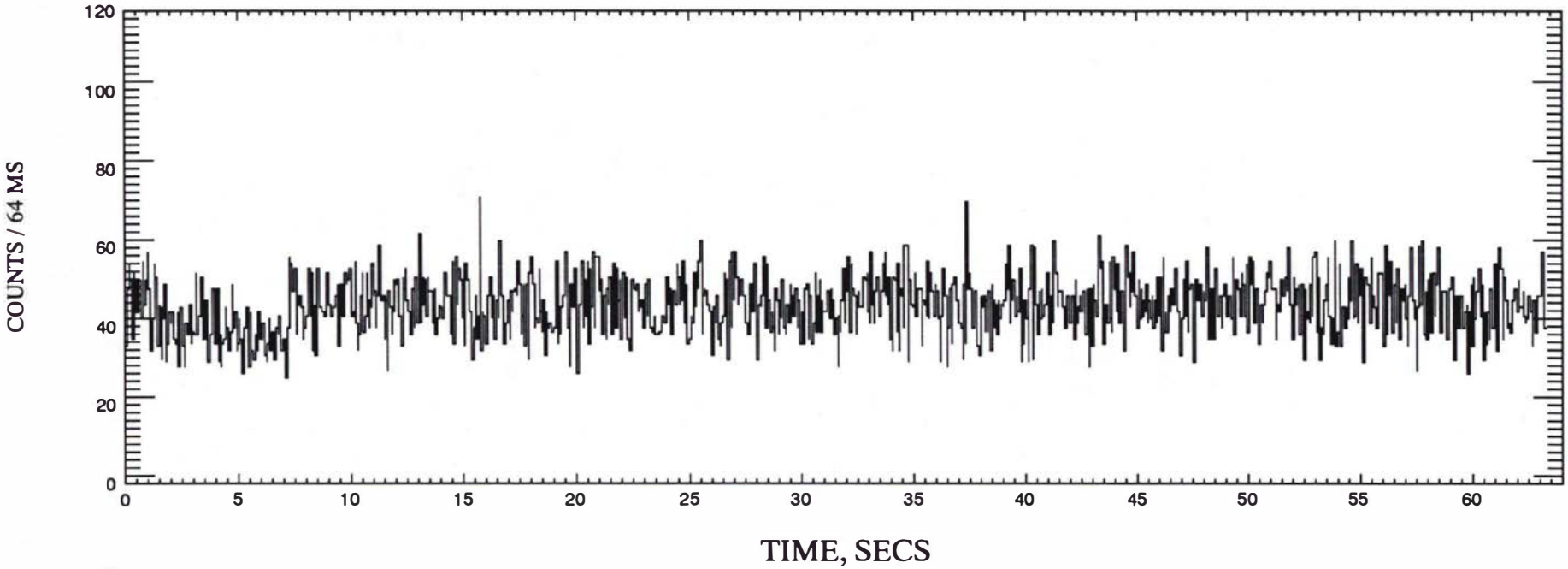


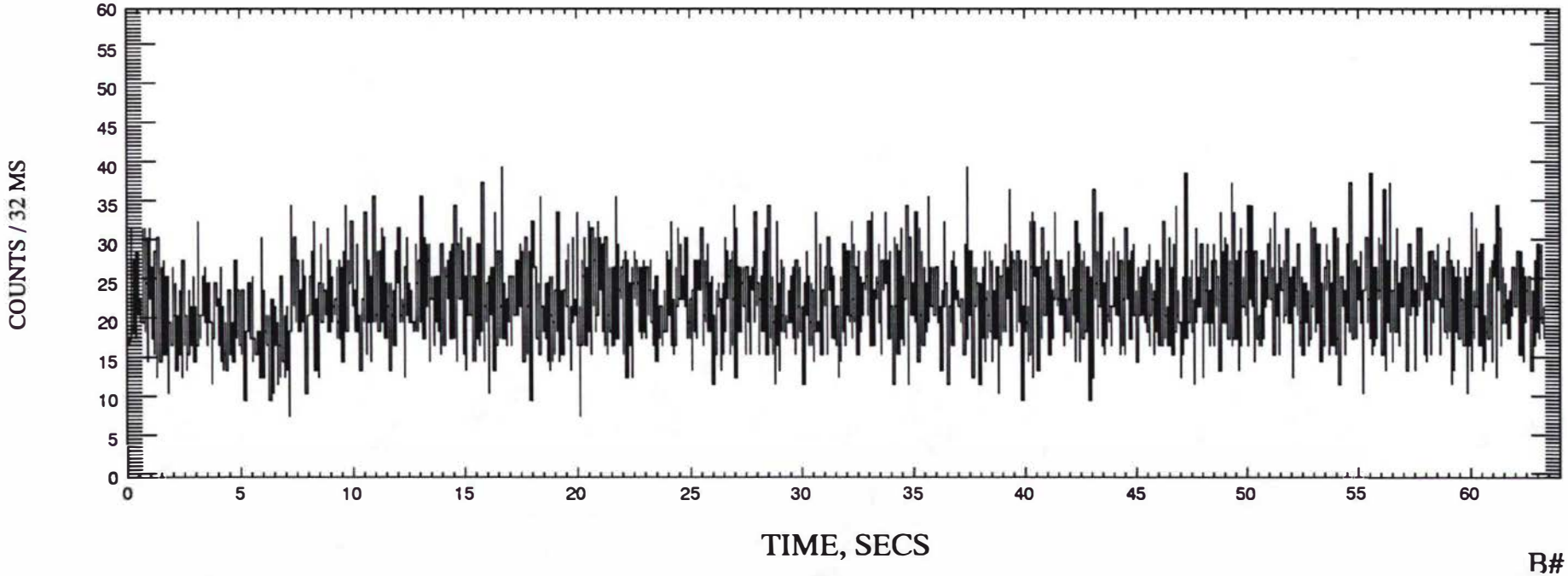


R# 16

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 6 at UT=13.814495675829 h=49732.184 s 13:48:52.184

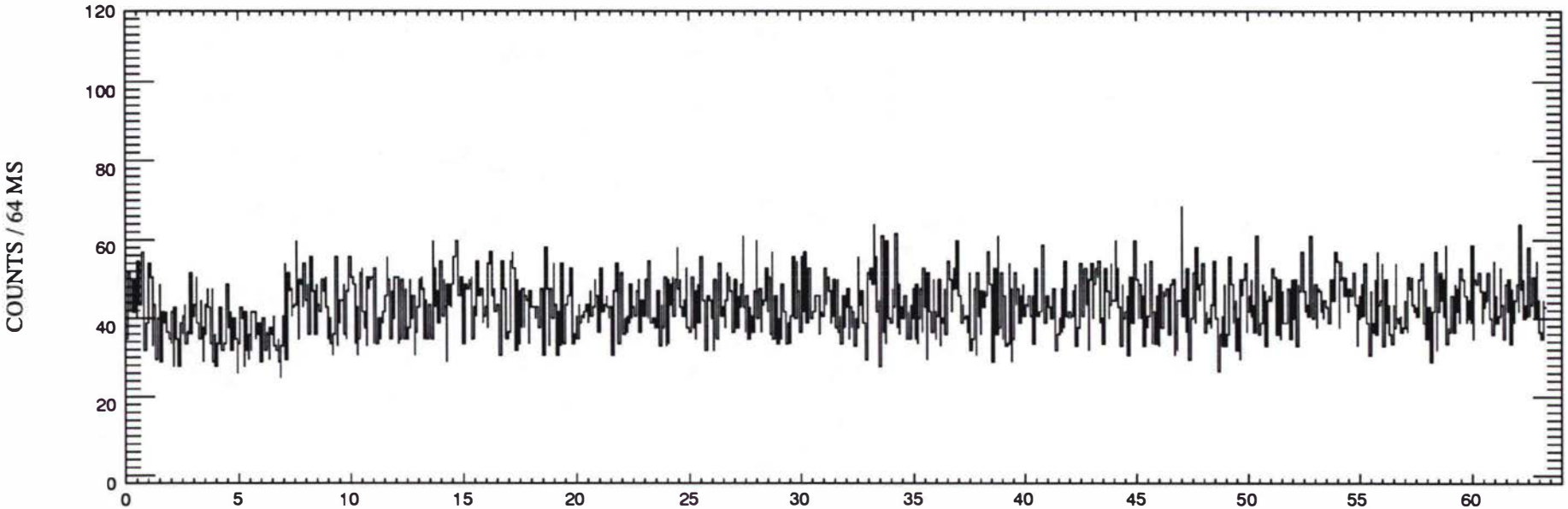




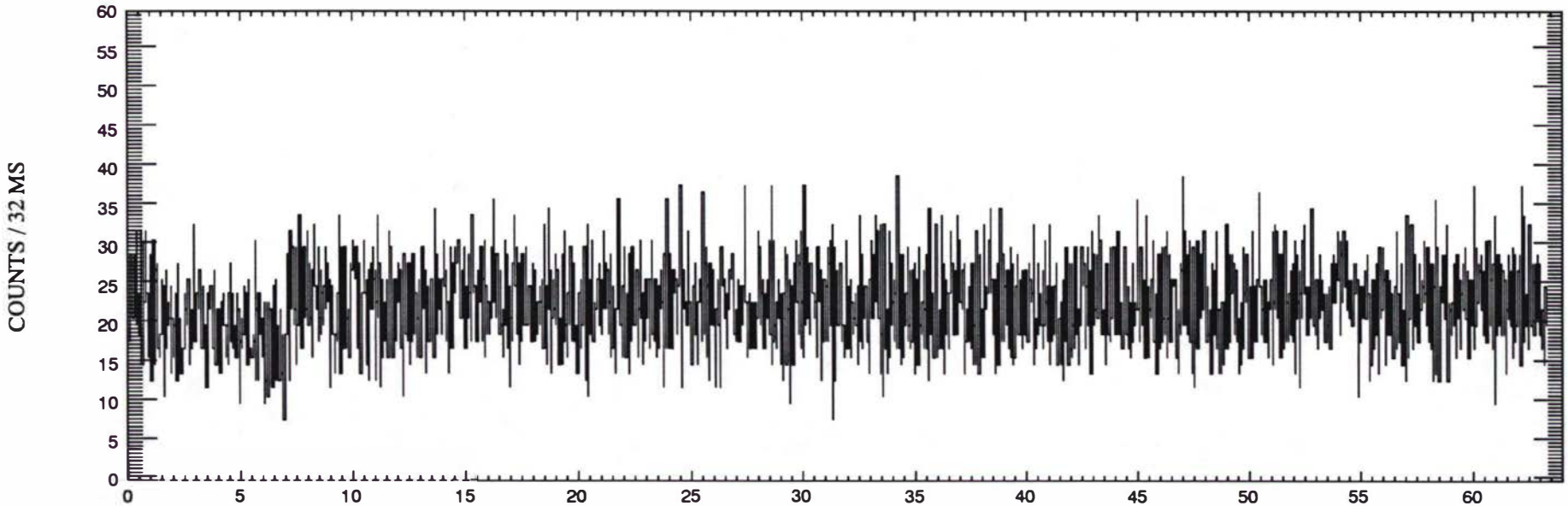
B# 17

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 7 at UT=15.076801016066 h=54276.484 s 15:04:36.484



TIME, SECS

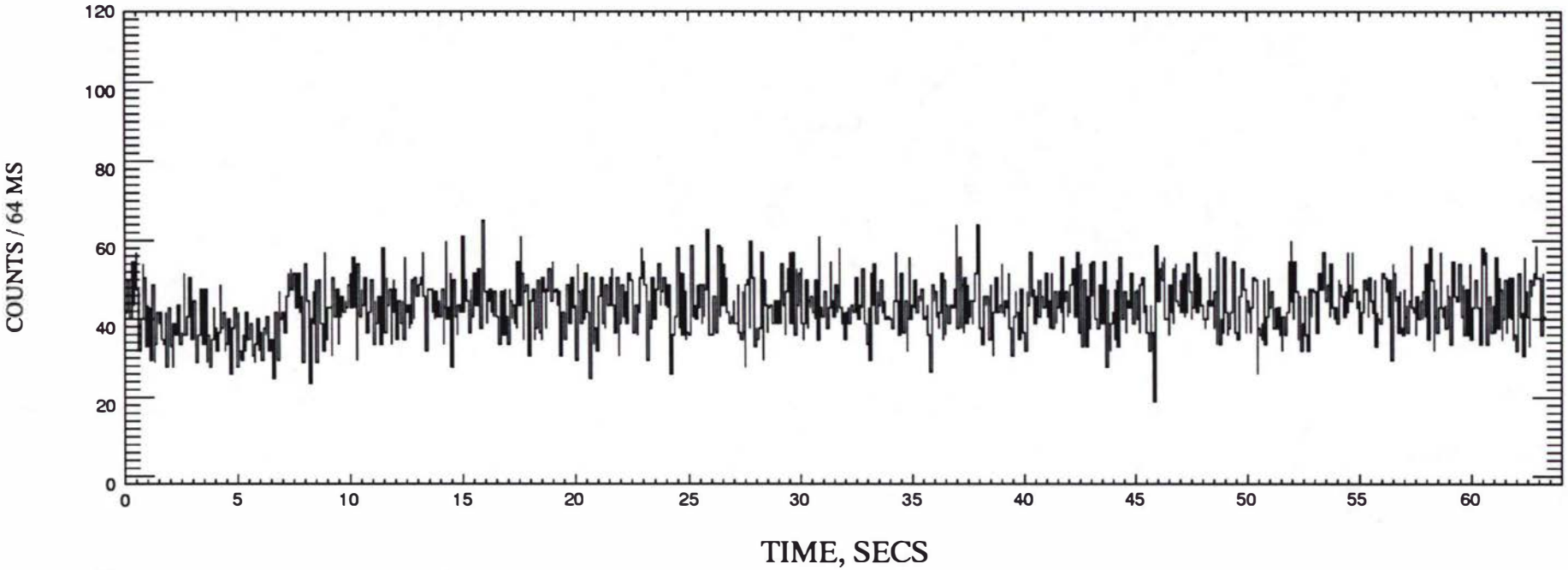


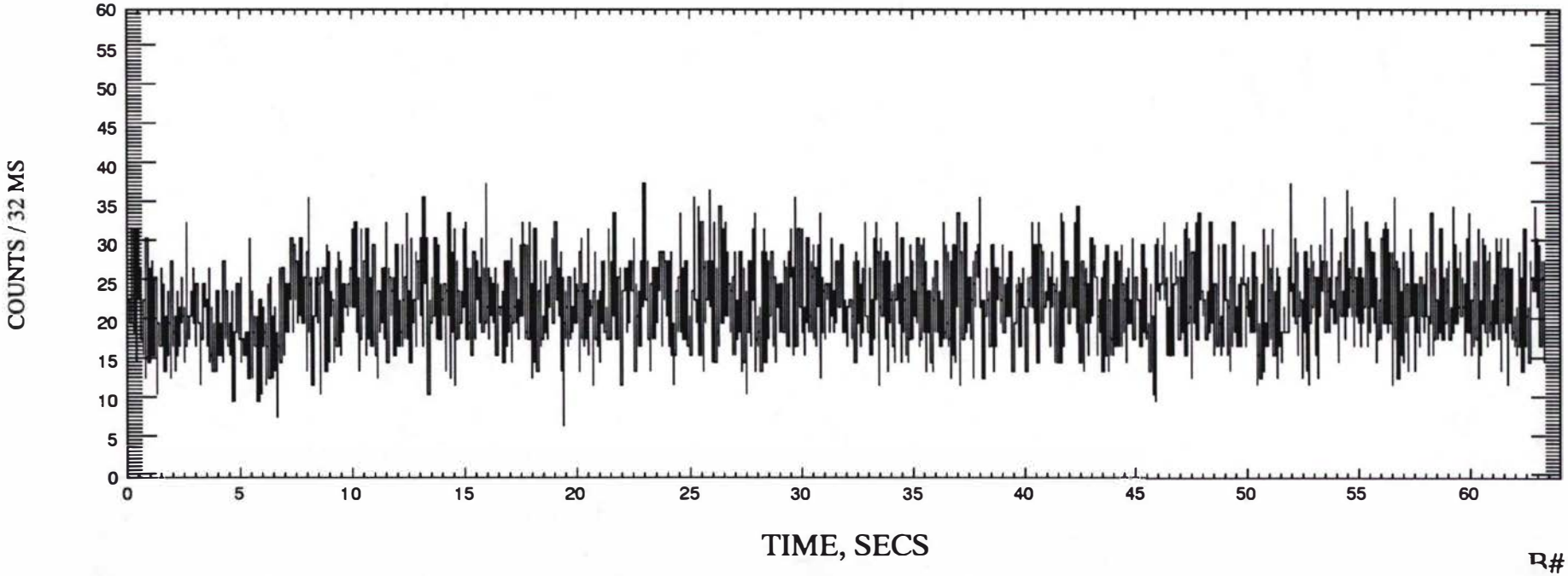
TIME, SECS

R# 18

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 8 at UT=16.339104190403 h=58820.775 s 16:20:20.775

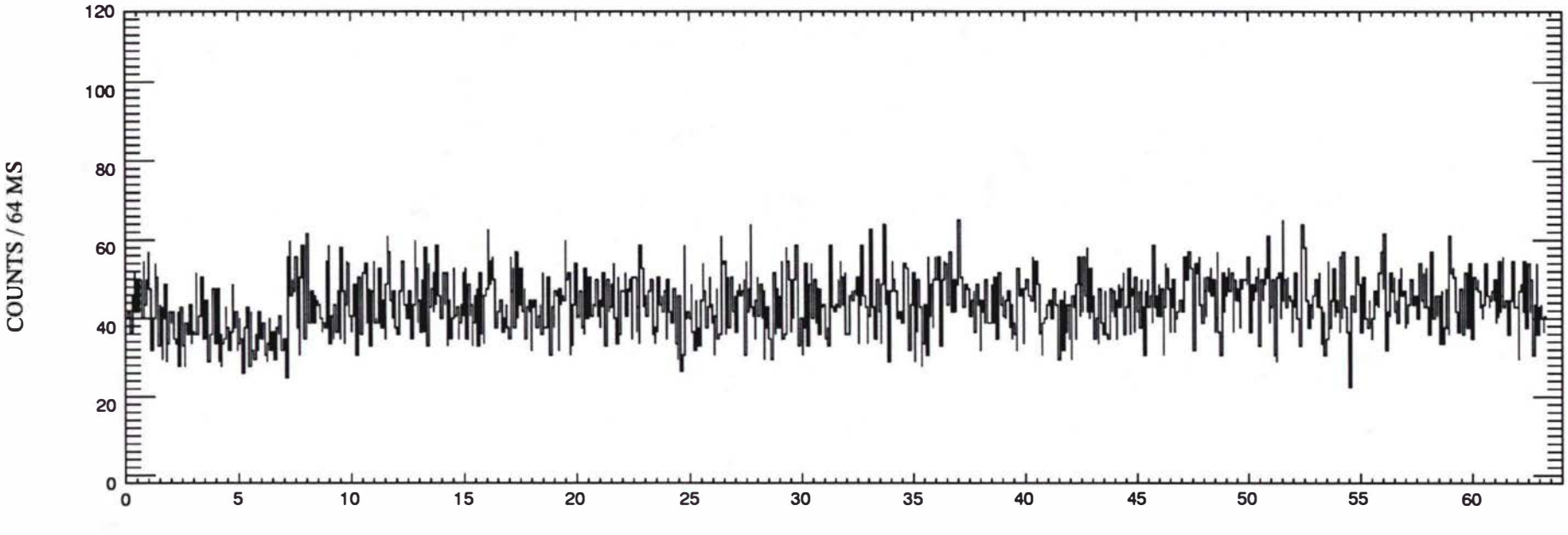


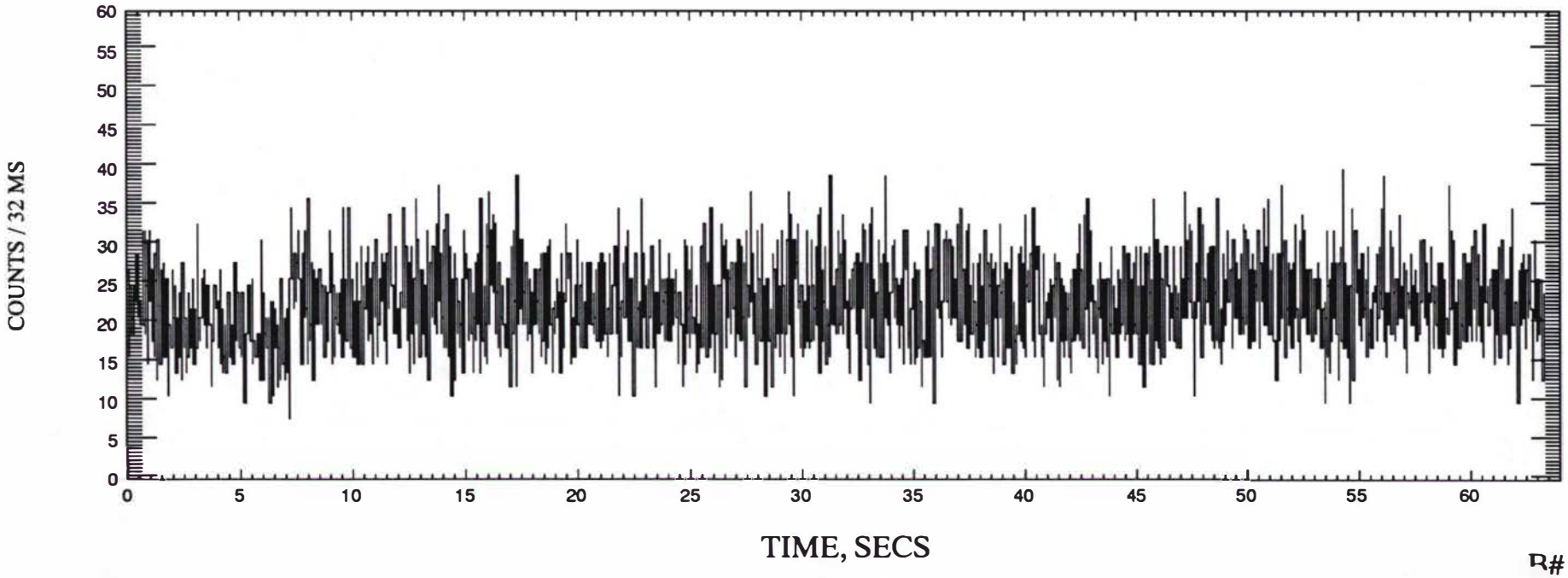


B# 19

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 9 at UT=17.601196857029 h=63364.309 s 17:36:04.309

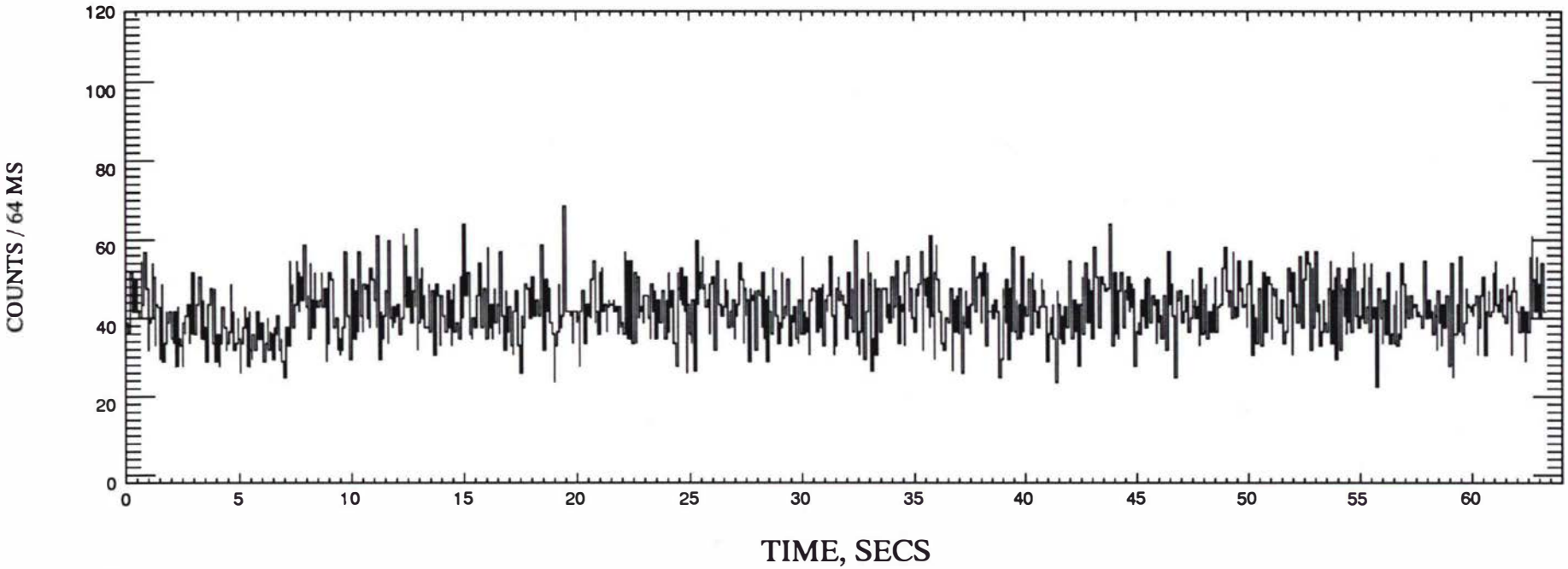


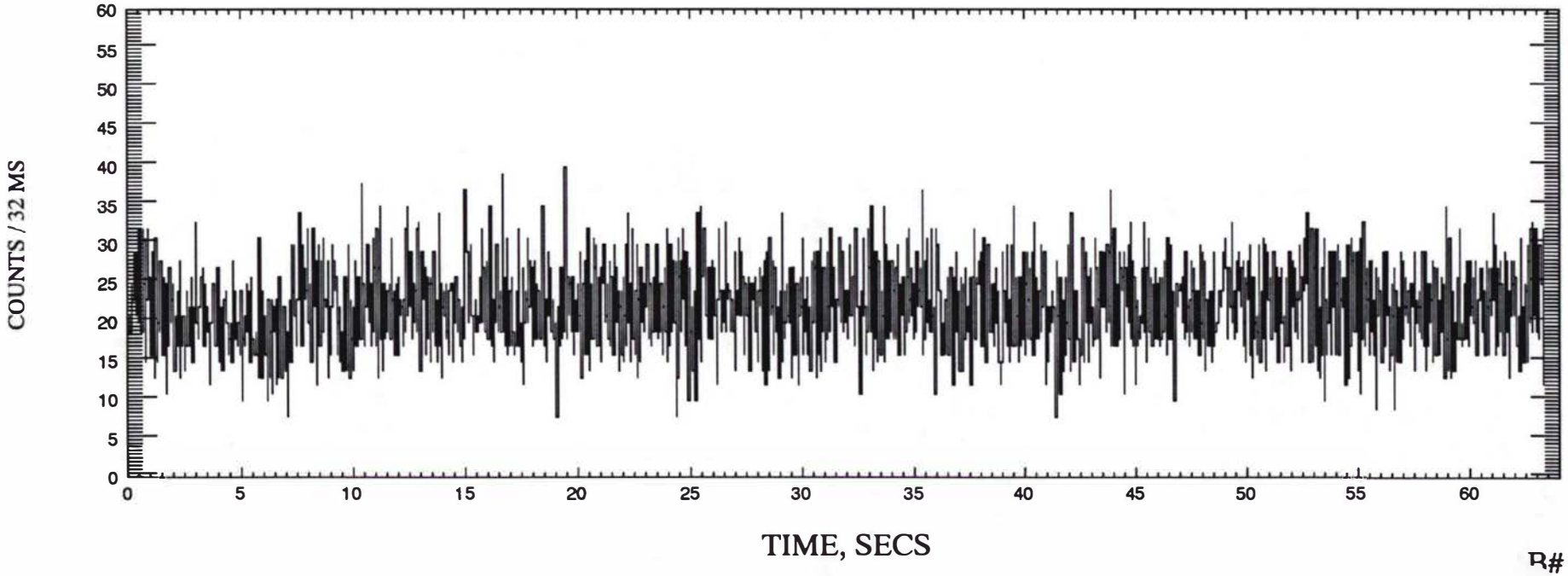


B# 20

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 10 at UT=18.863473985460 h=67908.506 s 18:51:48.506

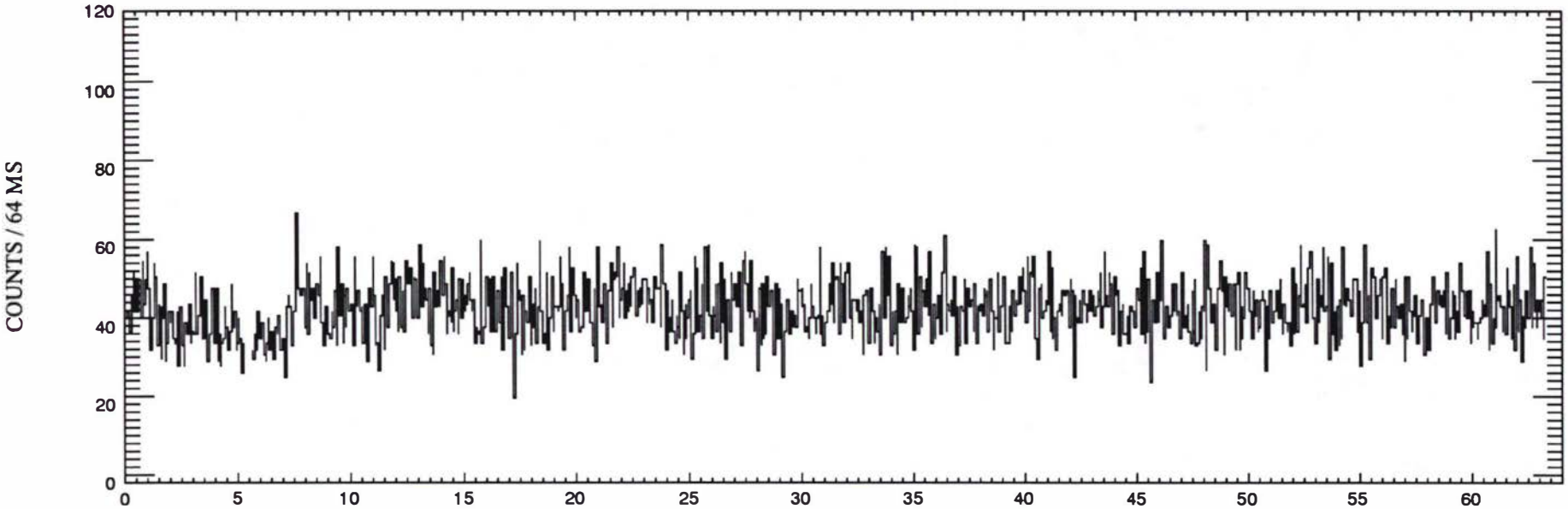




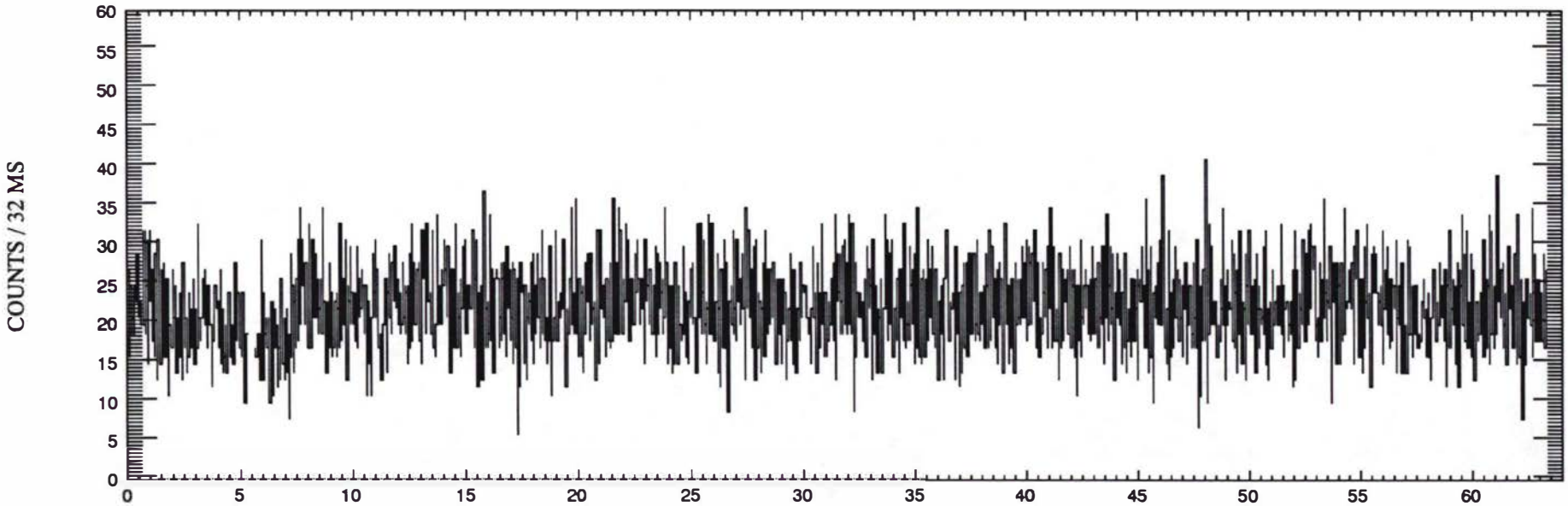
R# 21

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 11 at UT=20.125675163269 h=72452.431 s 20:07:32.431



TIME, SECS

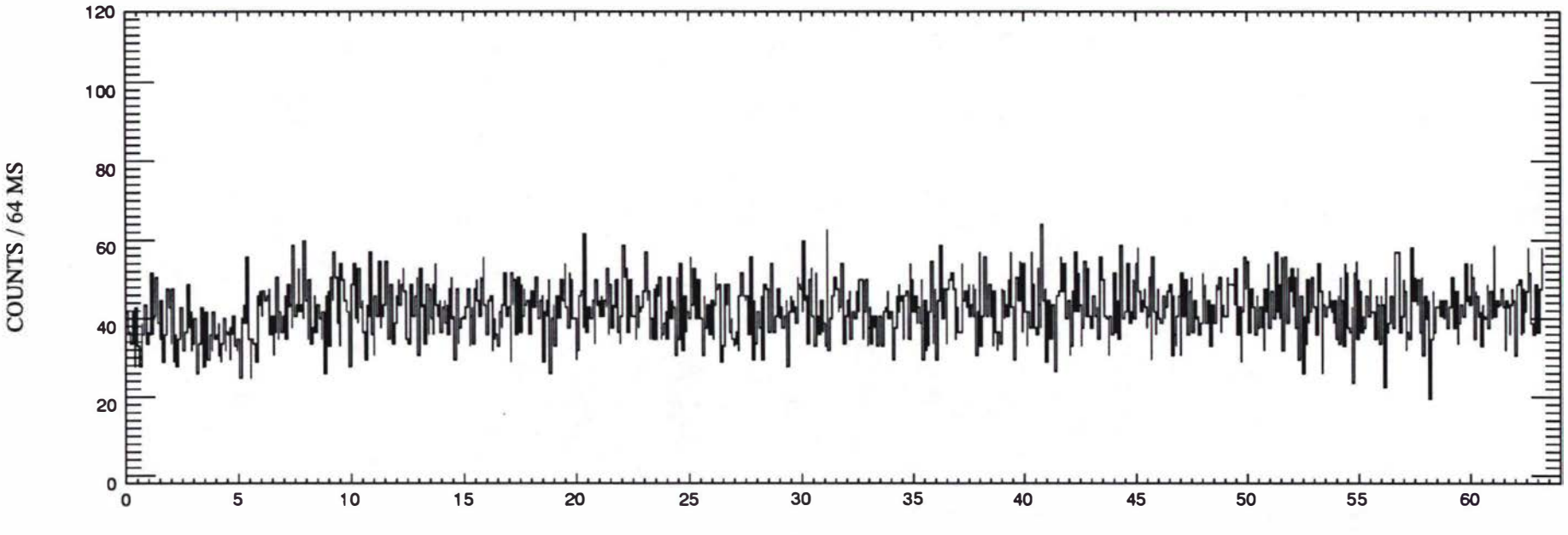


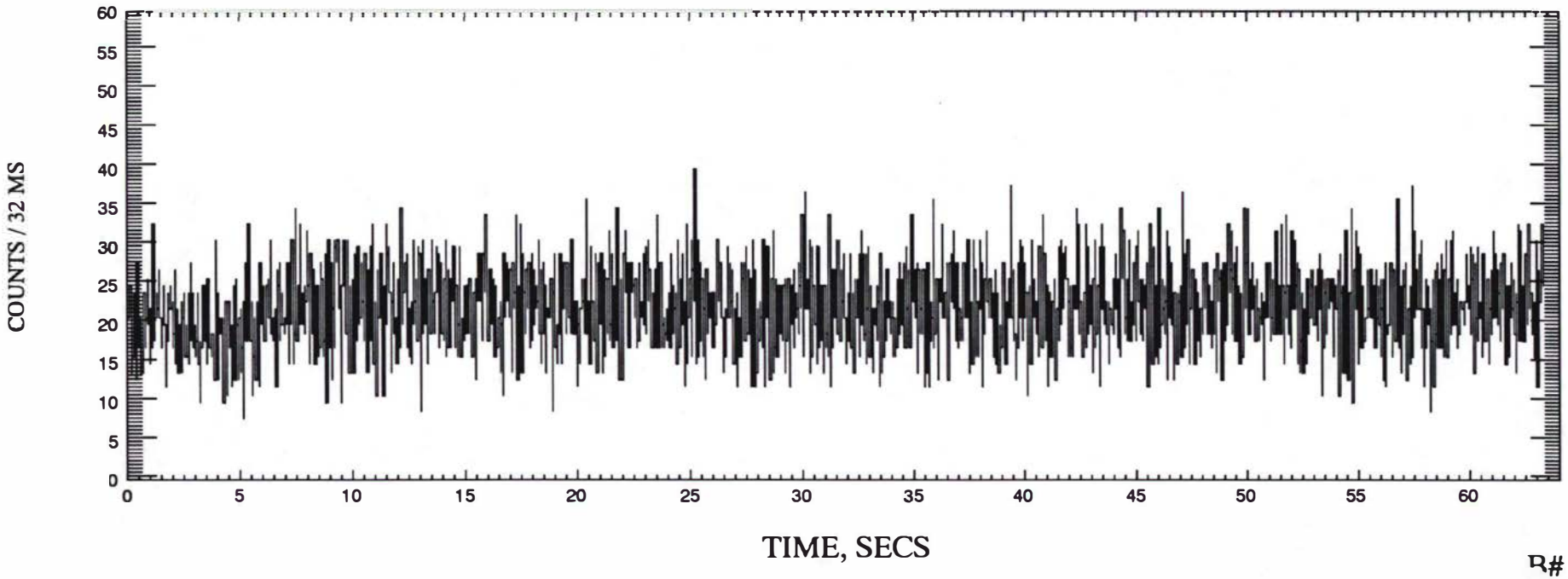
TIME, SECS

R# 22

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 12 at UT=21.388466614617 h=76998.480 s 21:23:18.480

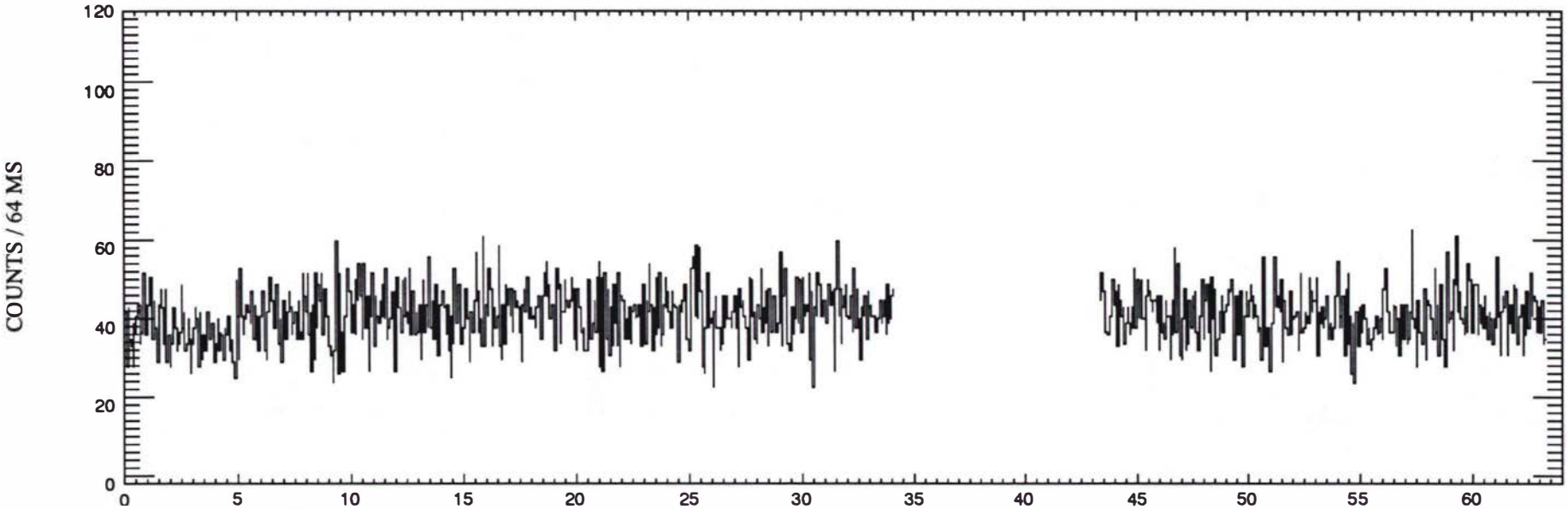




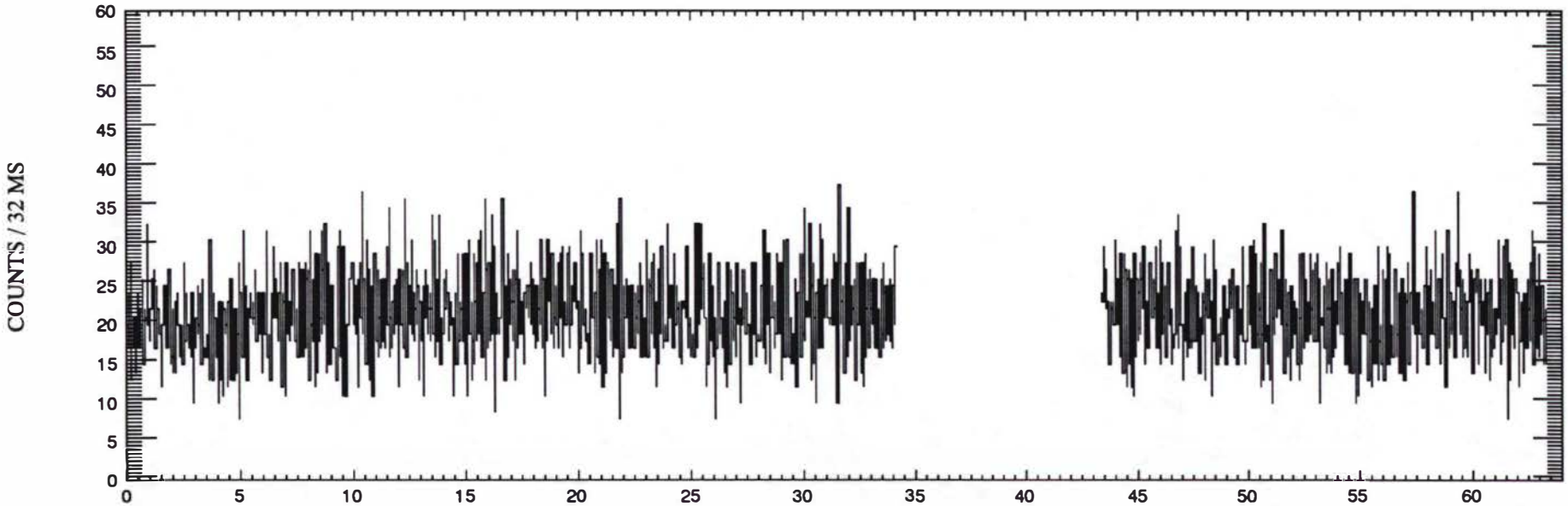
R# 23

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 13 at UT=22.650770437453 h=81542.774 s 22:39:02.774



TIME, SECS

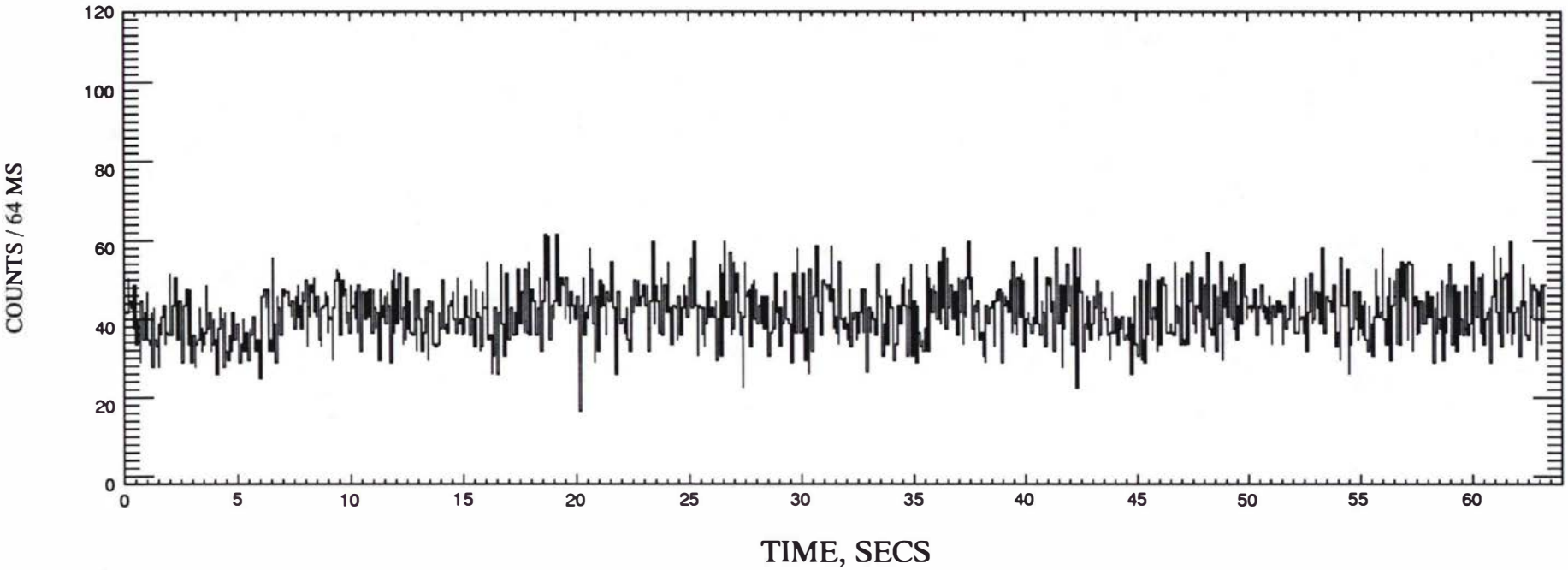


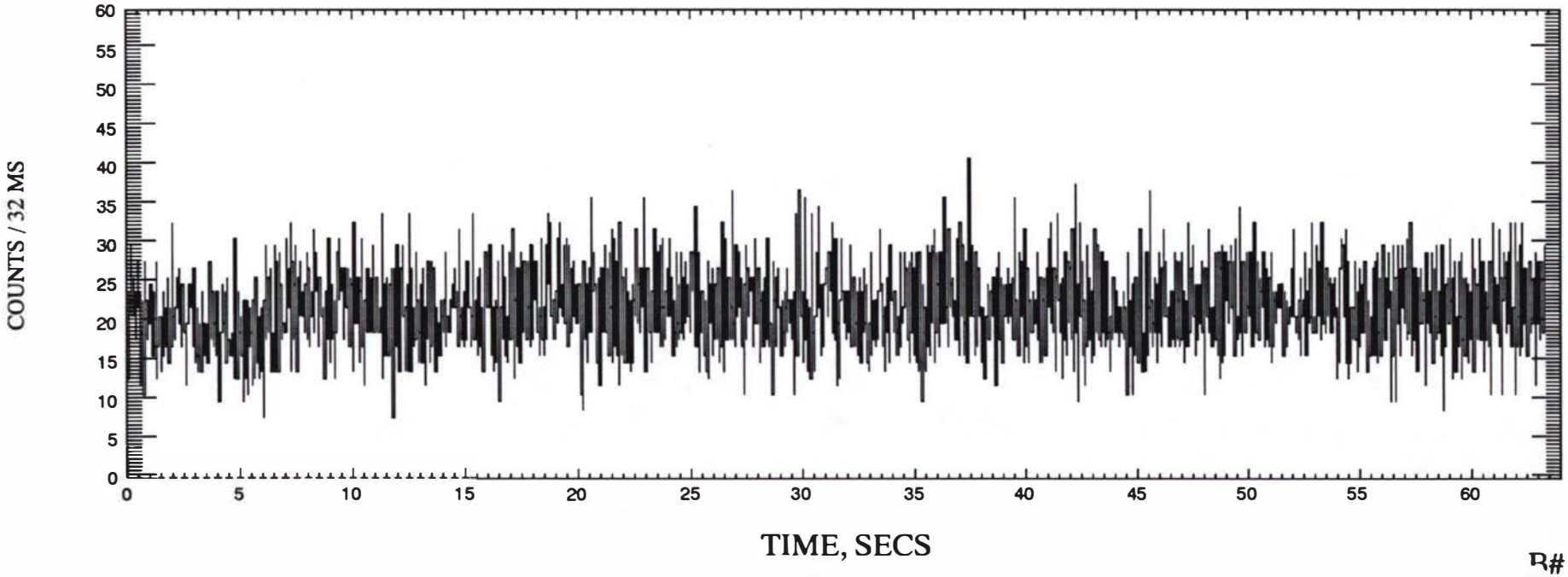
TIME, SECS

R# 24

HUS 2A TRIGGERED DATA QEDR day 115, year 1998 4/27/98

Burst Counter 14 at UT=23.521576754252 h=84677.676 s 23:31:17.676

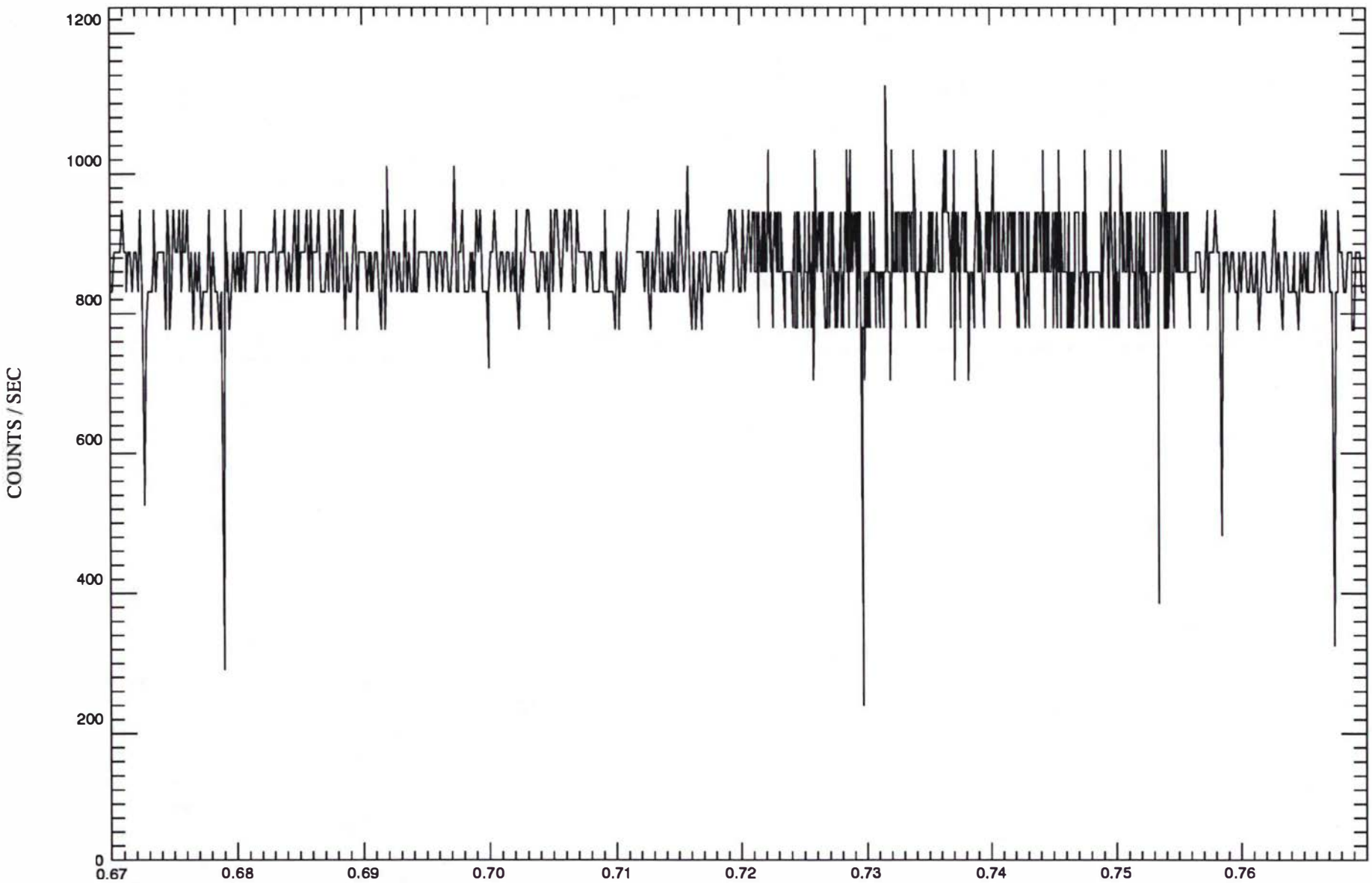




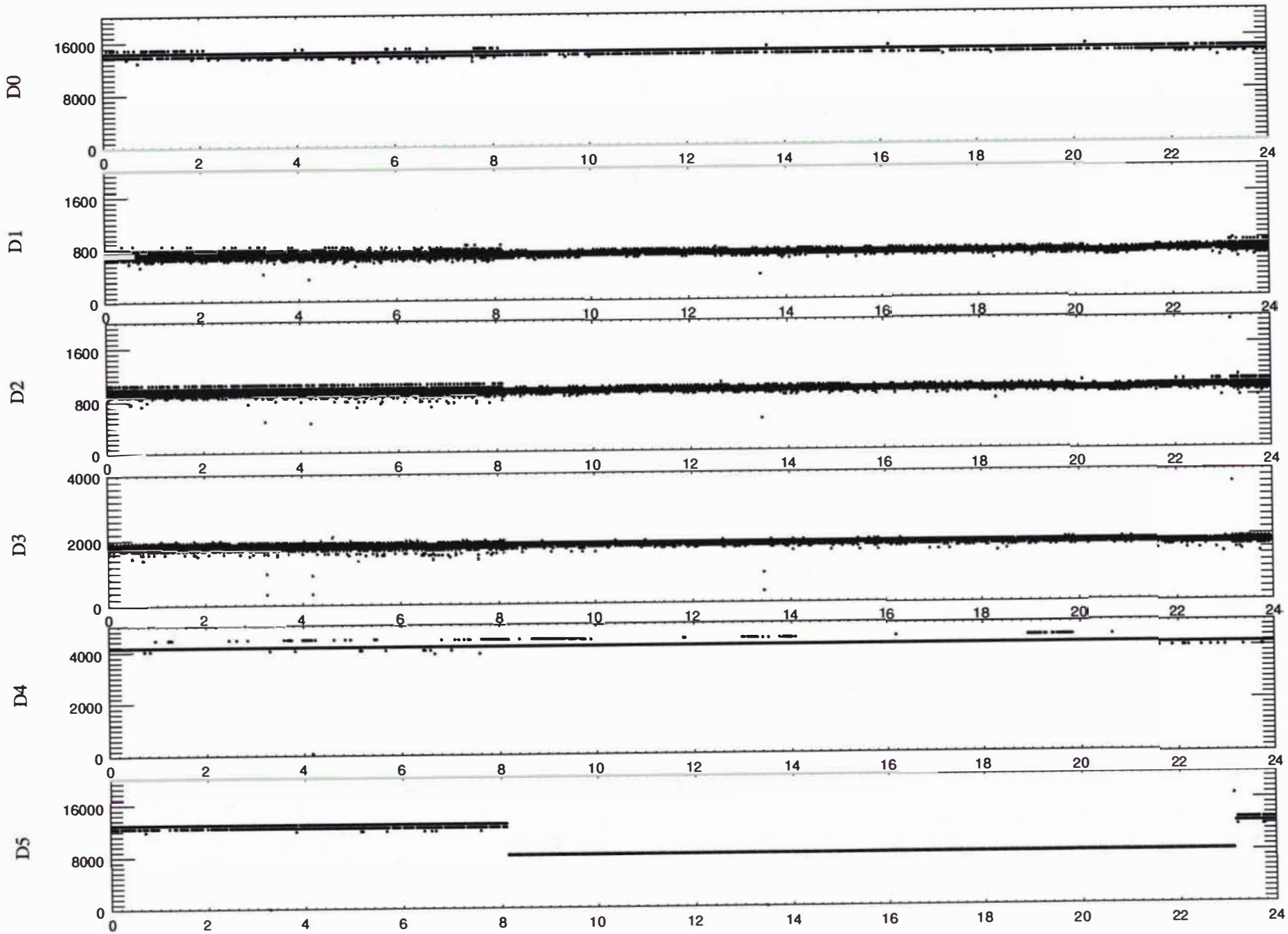
B# 25

HUS 2A, MODE 1, NOT AVERAGED QEDR day 115, year 1998 to day 115, year 1998 4/27/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 115, year 1998 to day 115, year 1998 8/18/98



From RICHARDSON@fender.msfc.nasa.gov Fri May 8 11:12:51 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA29744; Fri, 8 May 1998 11:12:50 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA16254; Fri, 8 May 1998 11:12:48 -0700
Date: Fri, 8 May 1998 13:12:41 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980508131241.2220bfa9@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6708
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6708
EVENT OF 1998 APR 26 DAY OF YEAR=116
EVENT CROSSING TIME AT BATSE      : 38958. S. OR 10:49:18.0
COORDINATES ARE   0.000   0.000        6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 207.000  -30.000
BATSE PEAK COUNTING RATE:   7000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 26/ 4/  98 IS:
RA=  149.766 DEC=   12.975 DIST=    4.964 AU
BATSE-ULYSSES DISTANCE =  742637974. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=110.15 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -853.33 SECS.
CROSSING TIME AT ULYSSES    IS 38105. S. OR   10:35:04 +/-  440.79 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 26/ 4/  98 IS:
RA=   37.260 DEC=   14.564 DIST=    2.458 AU
MARS-BATSE DISTANCE =  367702336. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 18.10 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1165.84 SECS.
CROSSING TIME AT MARS       IS 40124. S. OR   11:08:43 +/-   83.85 SECONDS

                BATSE BURST TRIGGER
NO.: 6708

TIME: TJD=0929 SECONDS=38958

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=40.1   AZIMUTH=178.3  ERROR=3.0   DEGREES

COMMENTS:
GRB. RISE FASTER THAN DECAY. DURATION APPROX. = 20SEC. VISIBLE ABOVE 300KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6708   980426   10929   38958     7000   207   -30     20
```

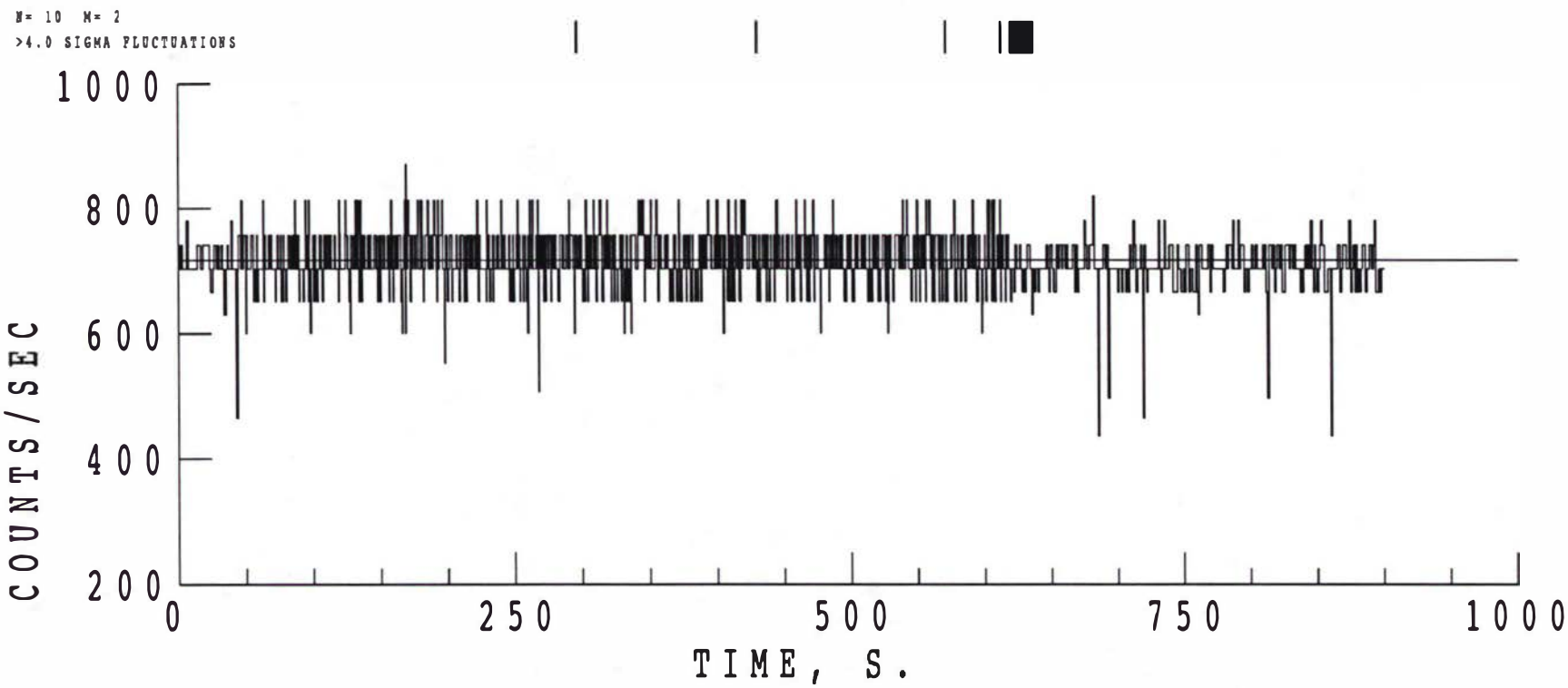
BATSE BURST# 6708

ULYSSES RT

29/ 5/98

26/ 4/98 37656.863 s

0- 0 keV



1

From RICHARDSON@fender.msfc.nasa.gov Fri May 8 11:14:18 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
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id LAA29838; Fri, 8 May 1998 11:14:17 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA16279; Fri, 8 May 1998 11:14:16 -0700
Date: Fri, 8 May 1998 13:14:17 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980508131417.2220bfa9@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6709
Content-Length: 1135
X-Lines: 26
Status: RO

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*******************
*BATSEARCH PROGRAM*
*******************

BATSE BURST #     6709
EVENT OF 1998 APR 26 DAY OF YEAR=116
EVENT CROSSING TIME AT BATSE      : 62953. S. OR 17:29:13.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION:  96.000   82.000
BATSE PEAK COUNTING RATE:   7000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 26/ 4/  98 IS:
RA=  149.744 DEC=   12.967 DIST=    4.969 AU
BATSE-ULYSSES DISTANCE =  743289761. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=107.60 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -749.78 SECS.
CROSSING TIME AT ULYSSES    IS 62203. S. OR   17:16:43 +/-  448.91 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 26/ 4/  98 IS:
RA=   37.260 DEC=   14.564 DIST=    2.458 AU
MARS-BATSE DISTANCE =  367702336. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=108.60 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -391.15 SECS.
CROSSING TIME AT MARS       IS 62562. S. OR   17:22:41 +/-  195.88 SECONDS

                BATSE BURST TRIGGER
NO.: 6709

TIME: TJD=0929 SECONDS=62953

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=143.4  AZIMUTH=256.0  ERROR=6.0   DEGREES

COMMENTS:
GRB SINGLE SPIKE. DURATION APPROX. = 0.06 SEC. SLIGHTLY VISIBLE ABOVE 300KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6709	980426	10929	62953	7000	096	+82	.06

BATSE BURST# 6709

ULYSSES RT 29/ 5/98

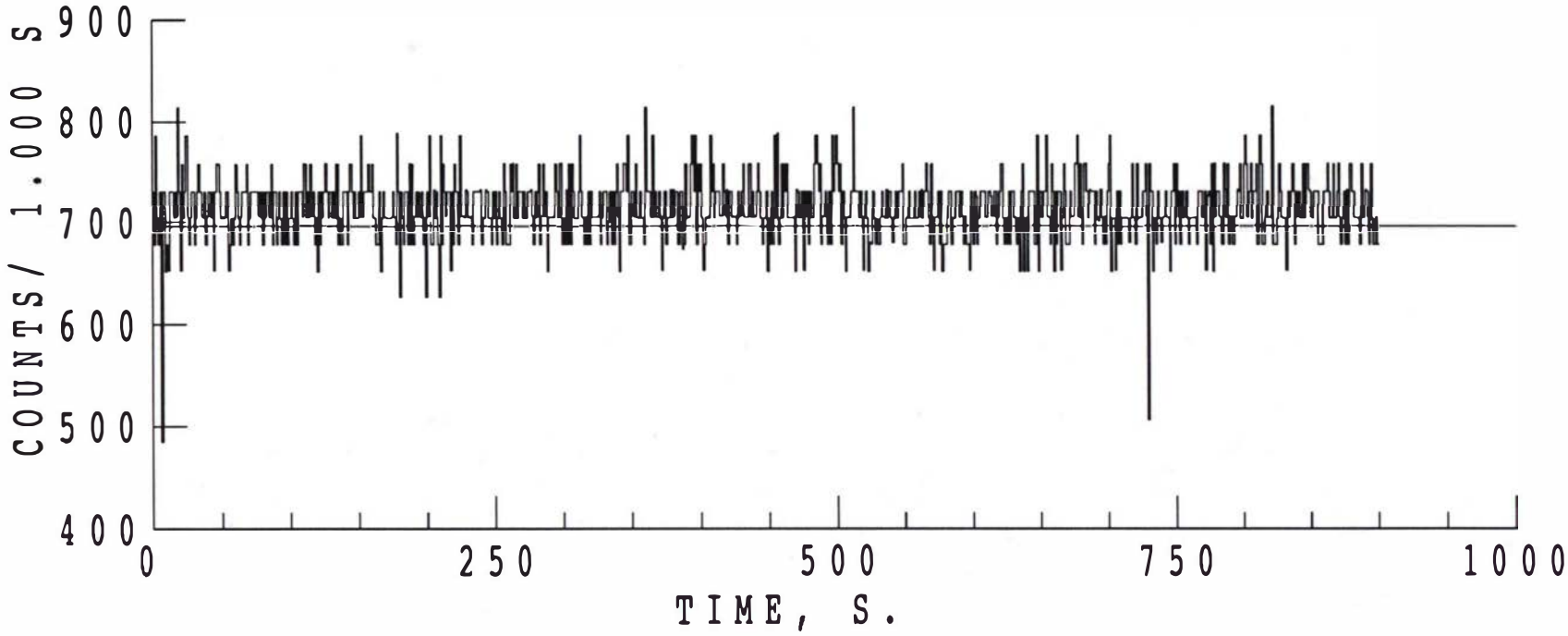
26/ 4/98 61740.125 s

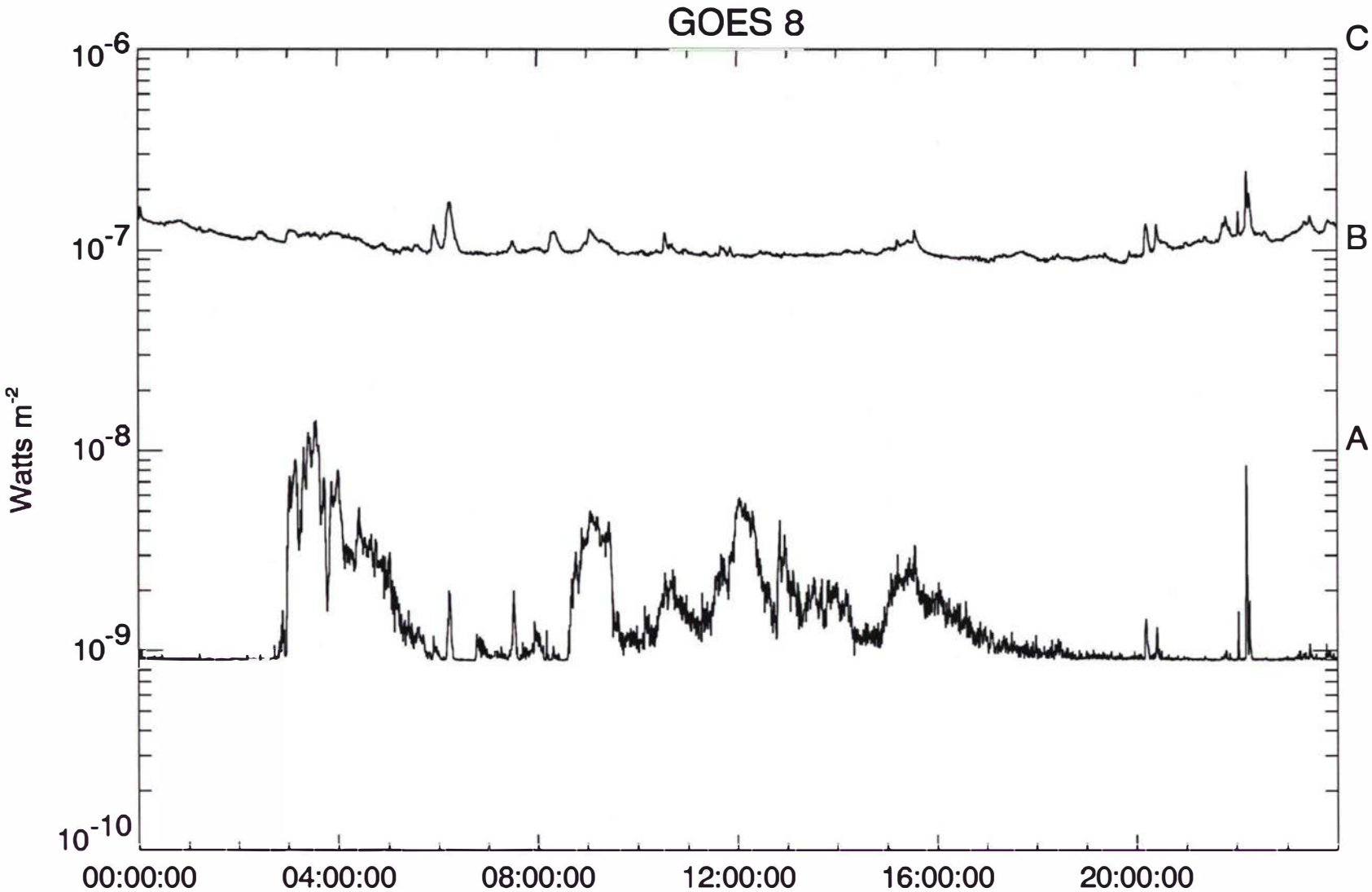
0.500 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS

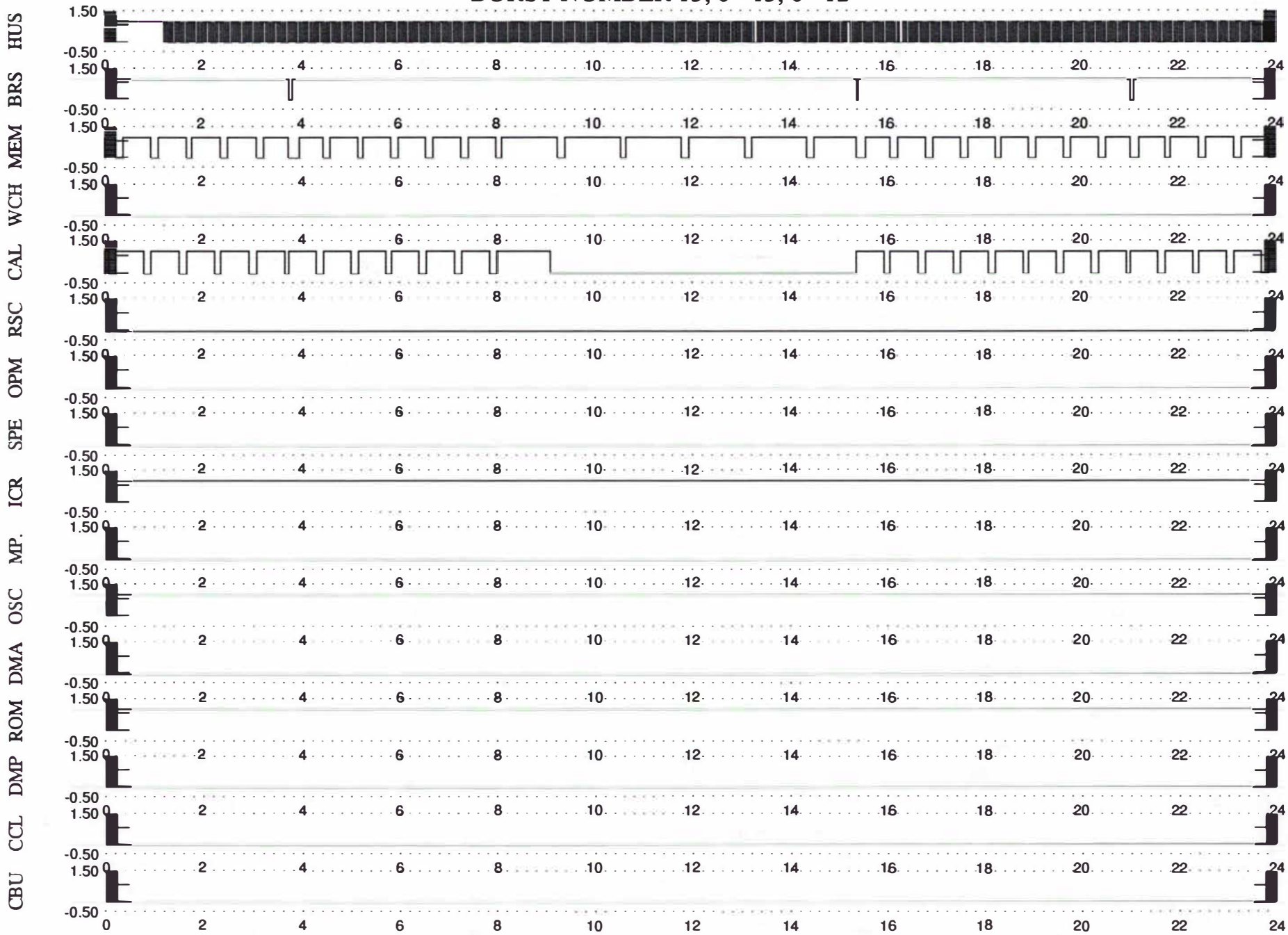




Data Start: 98/04/26, 0000:00 Plot created: 98/04/30, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

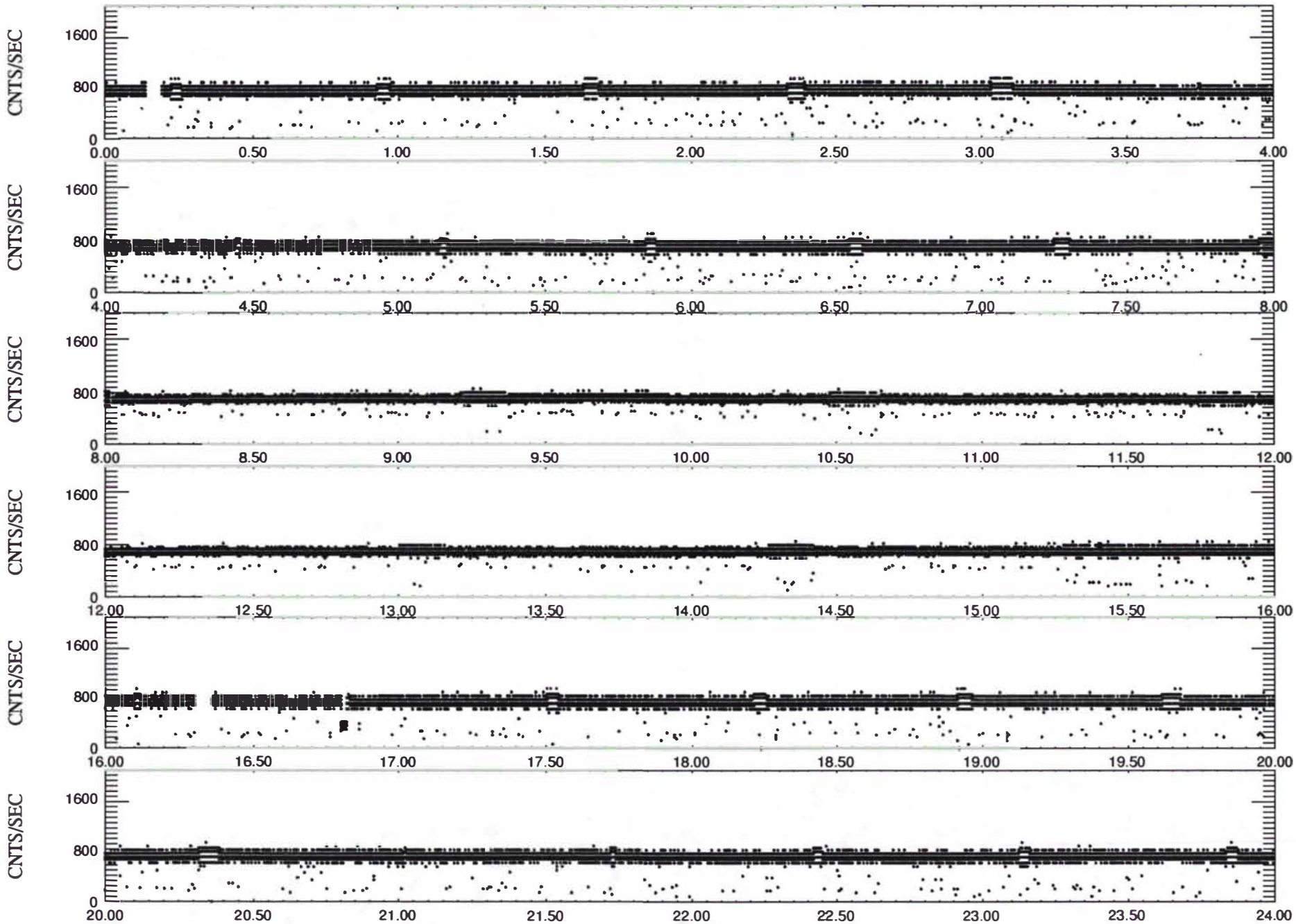
HUS MODES EDR day 116, year 1998 to day 116, year 1998 8/18/98

BURST NUMBER 15, 0 - 15, 0 - 12



HUS 2A, MODE 1, NOT AVERAGED EDR day 116, year 1998 to day 116, year 1998 8/18/98

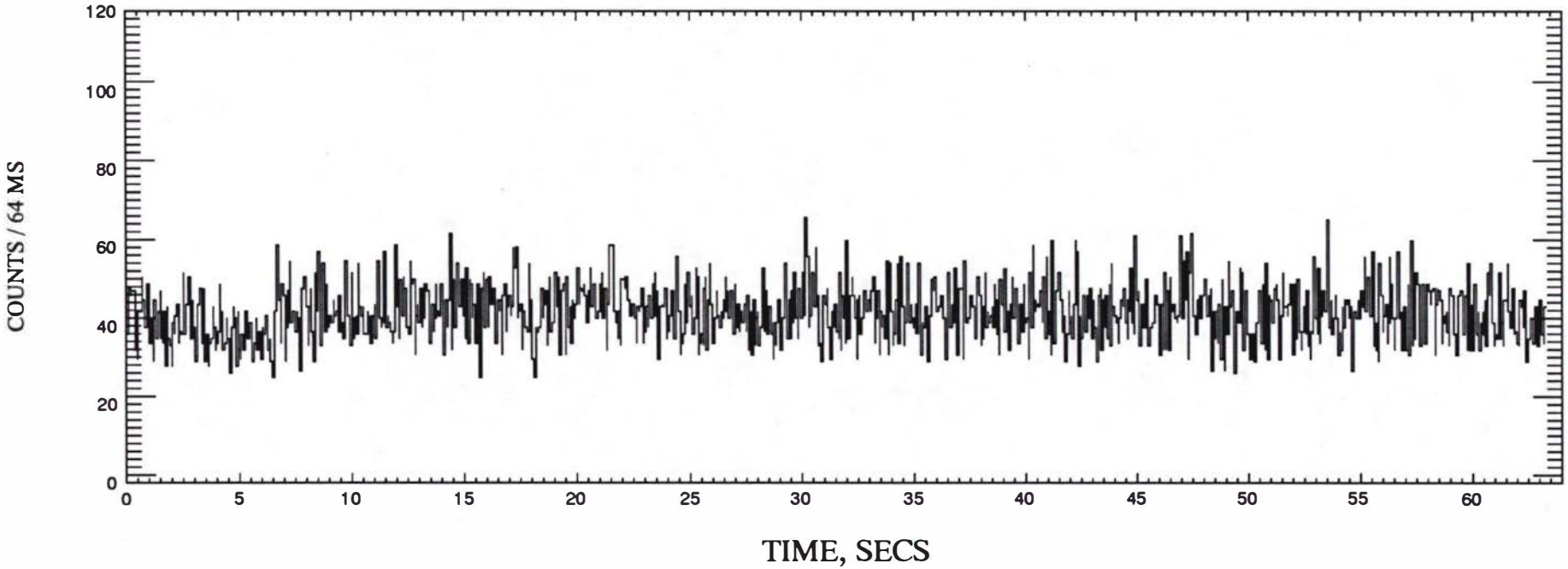
CALIBRATION DATA INCLUDED

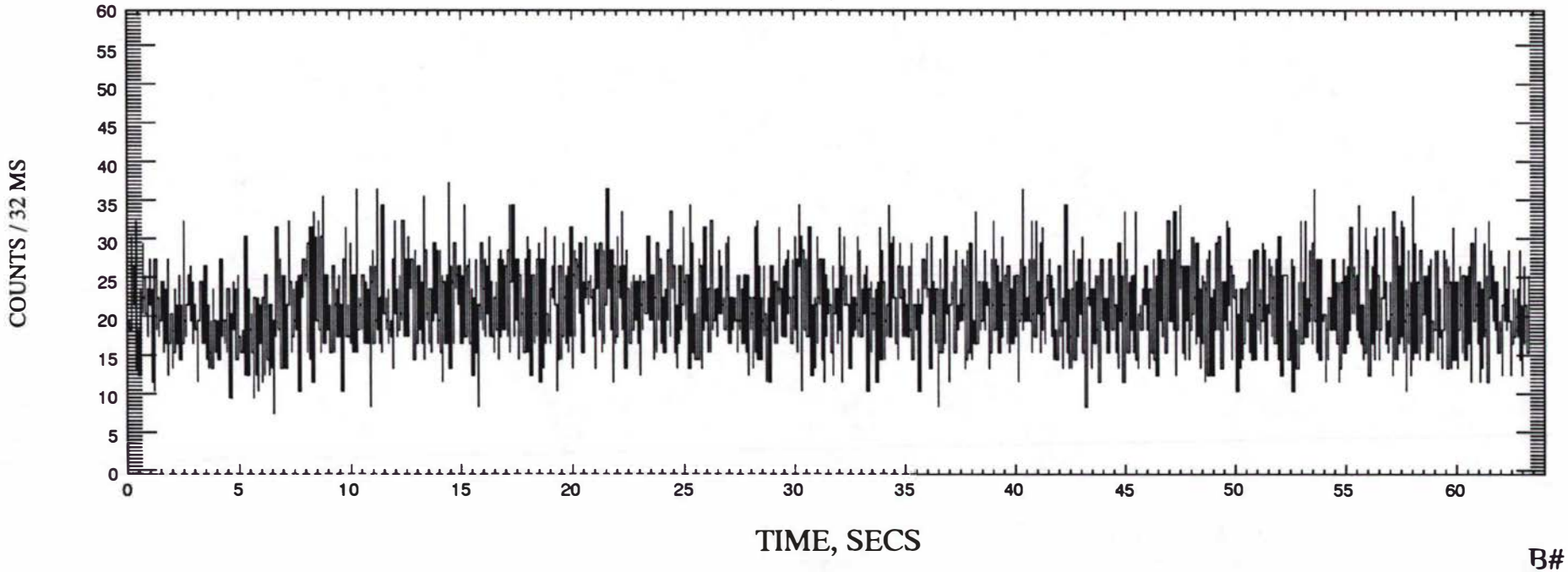


UNIV! 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 15 at UT= 0.152555813260 h= 549.201 s 00:09:09.201

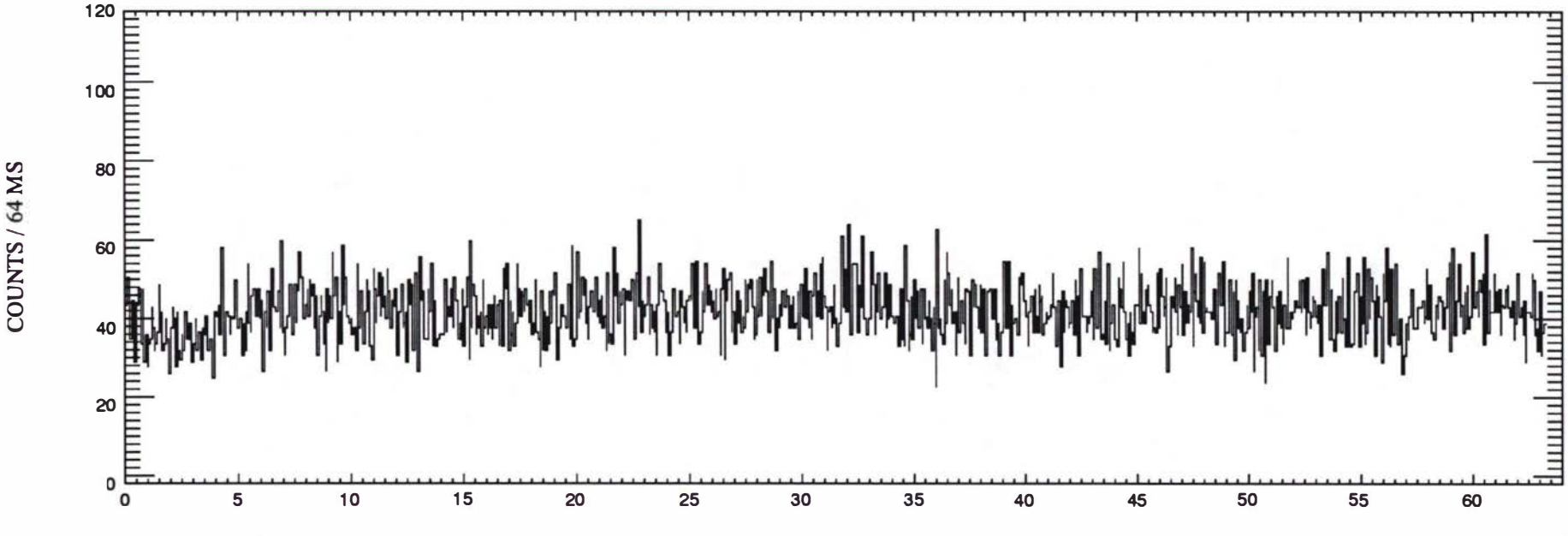


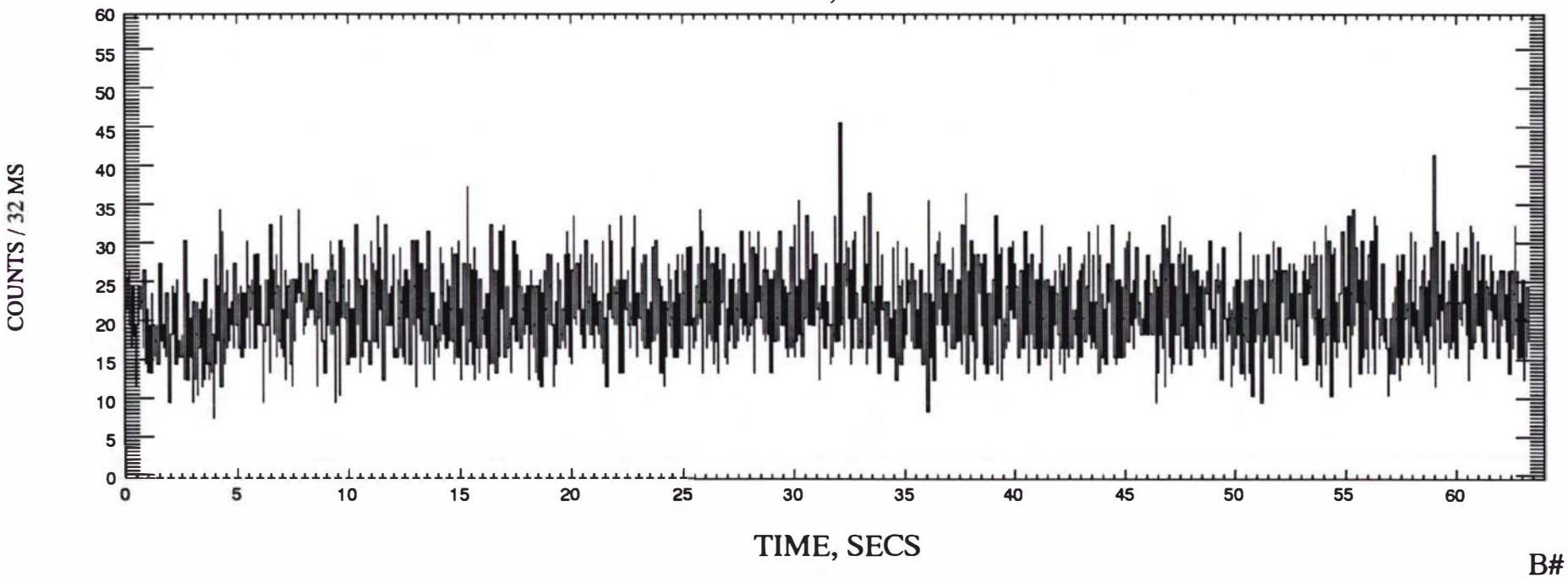


B# 1

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 0 at UT= 0.926624501546 h= 3335.848 s 00:55:35.848

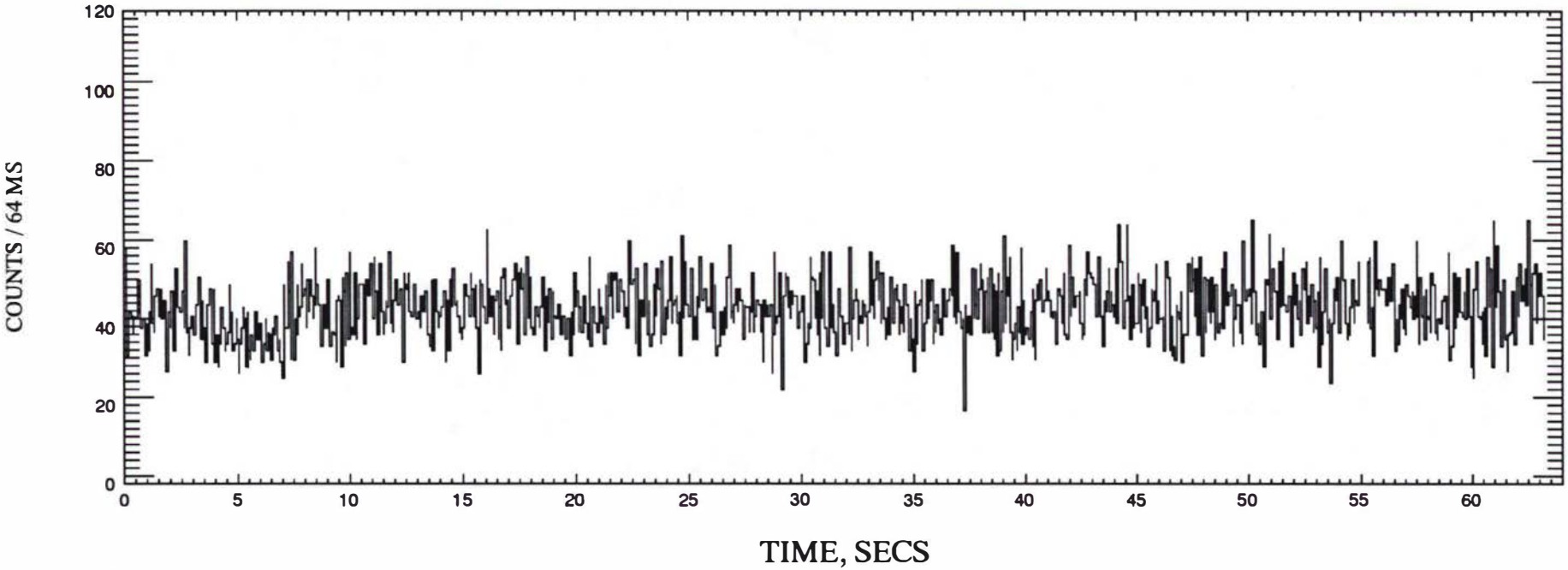


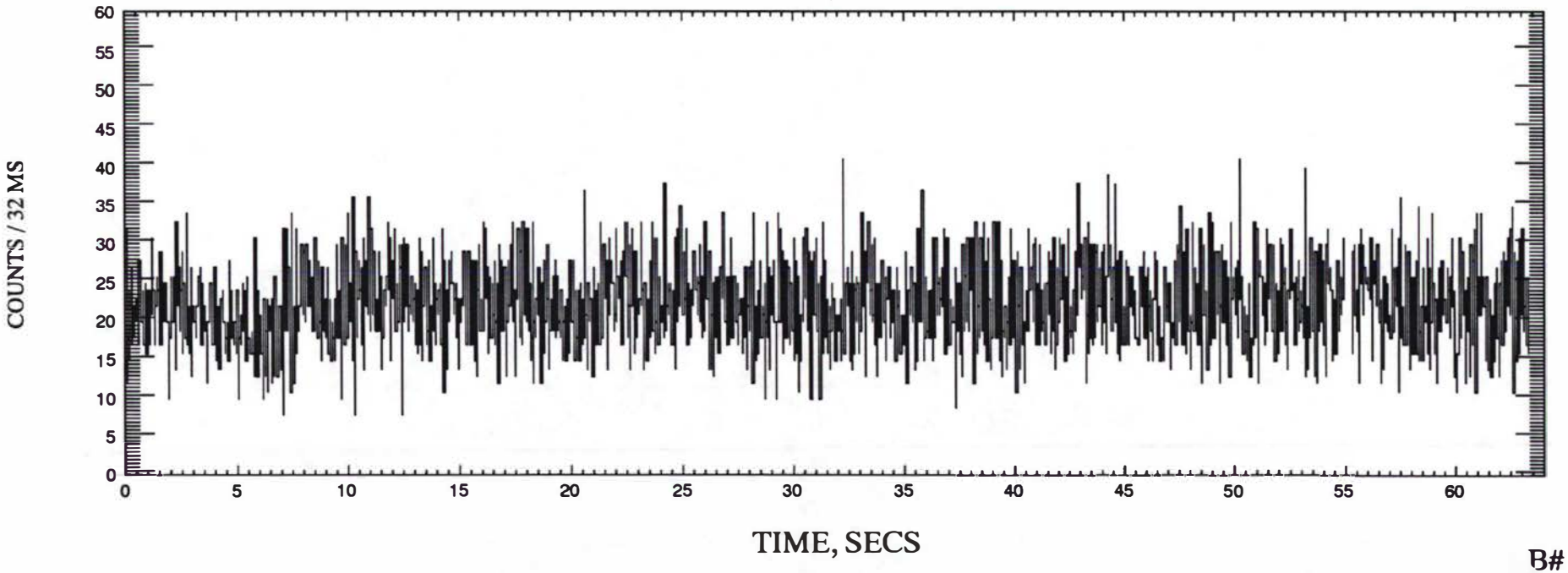


B# 2

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 1 at UT= 1.627990603977 h= 5860.766 s 01:37:40.766

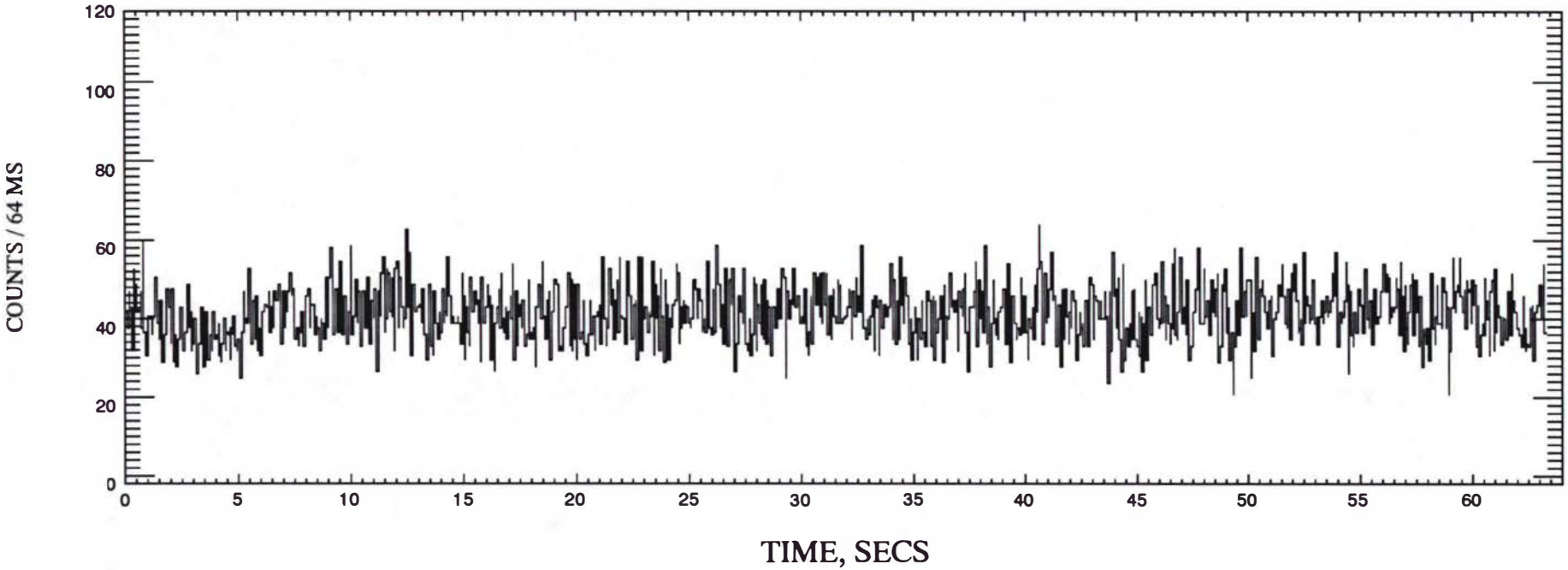


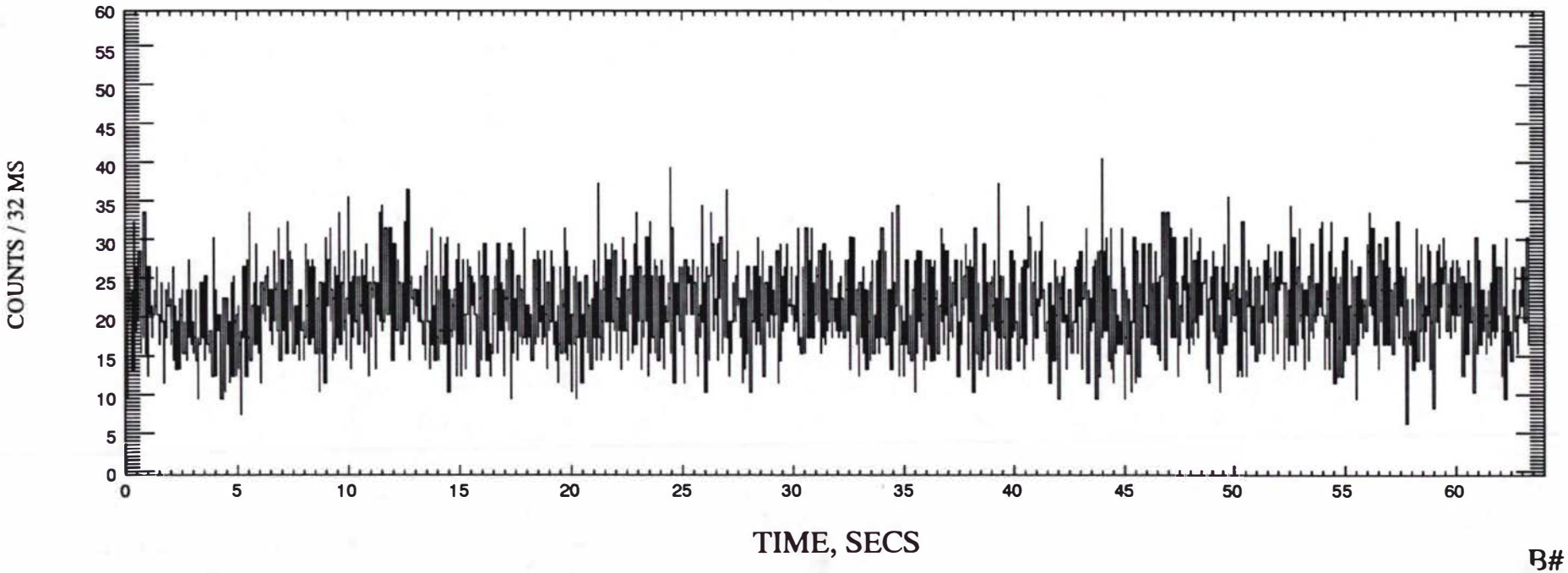


B# 3

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 2 at UT= 2.330739084880 h= 8390.661 s 02:19:50.661

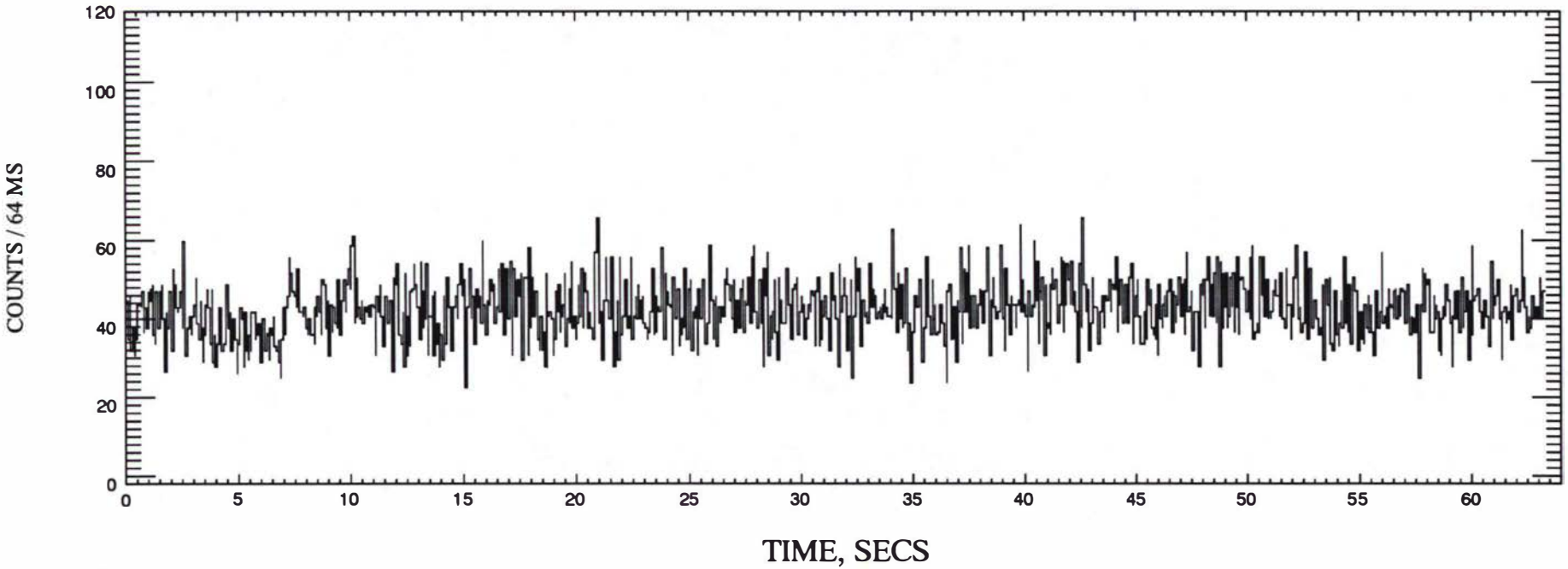


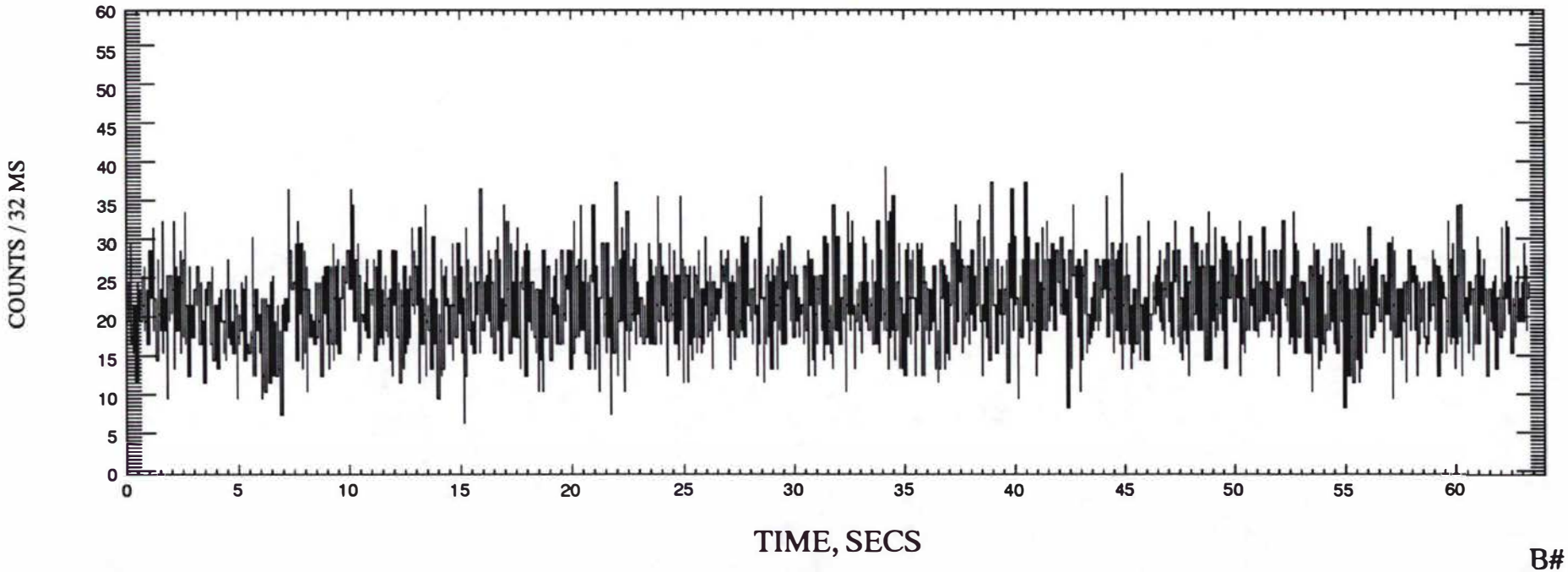


B# 4

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 3 at UT= 3.032482795715 h=10916.938 s 03:01:56.938

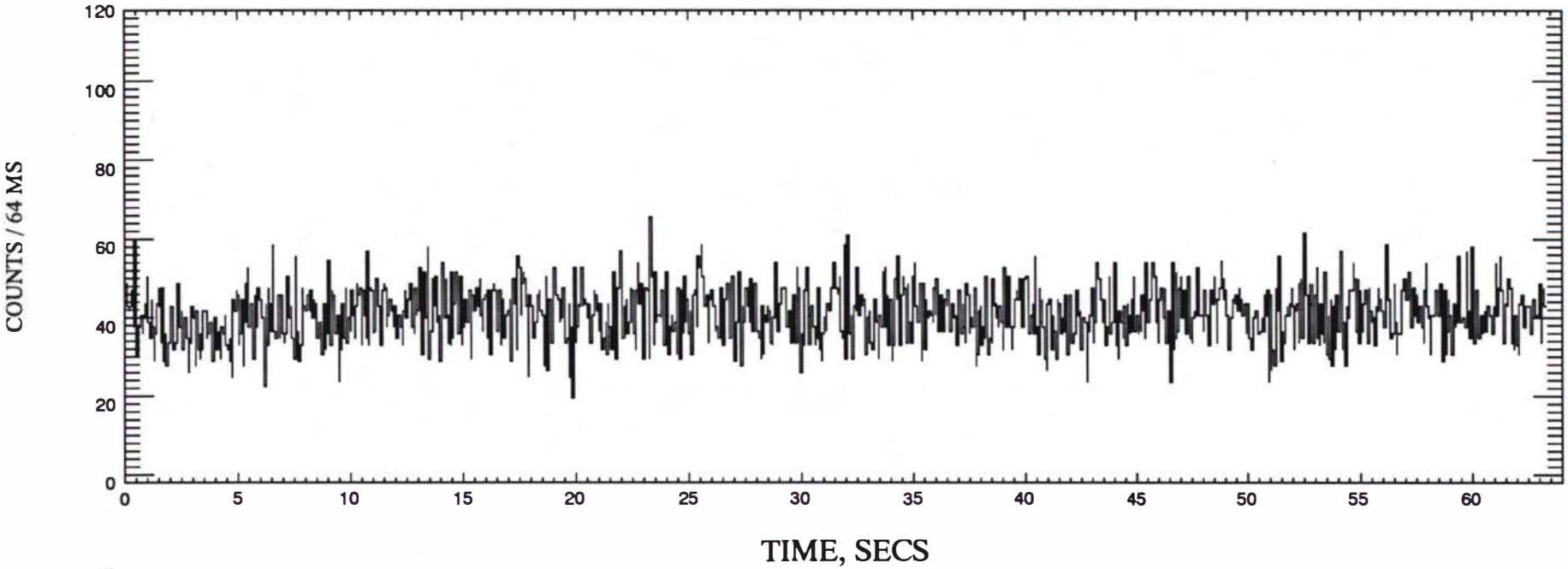


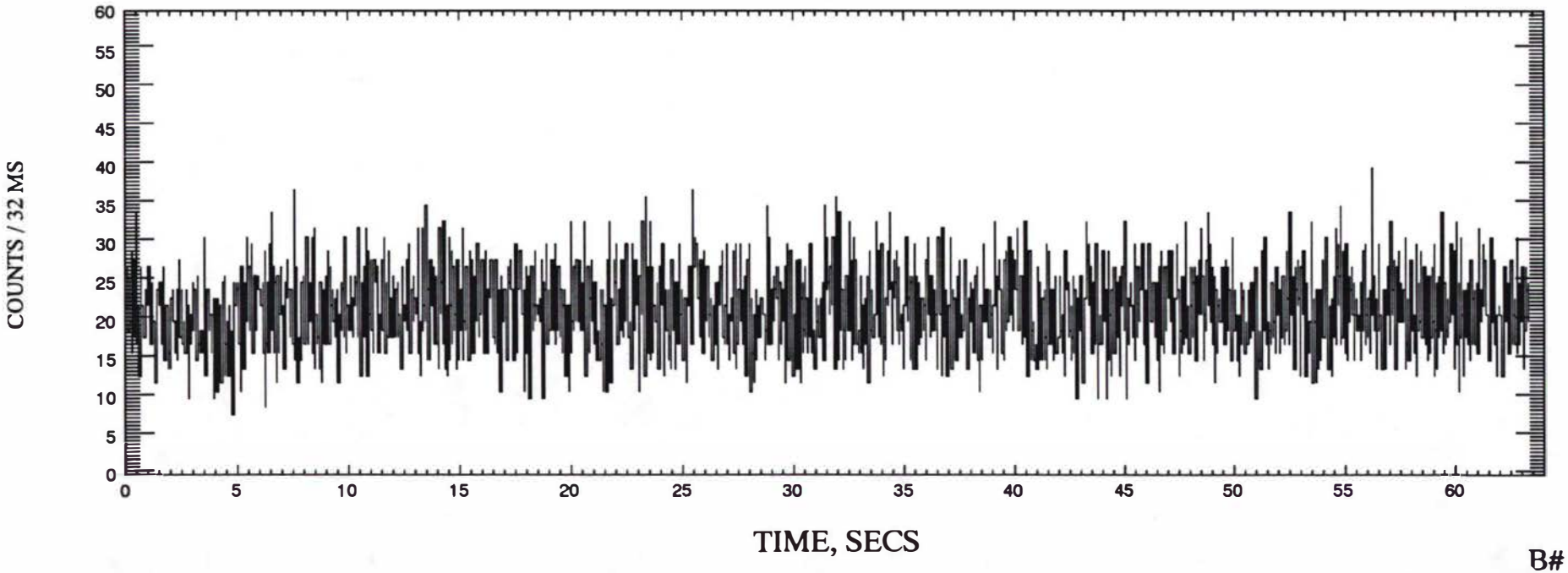


B# 5

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 4 at UT= 3.735305061340 h=13447.098 s 03:44:07.098

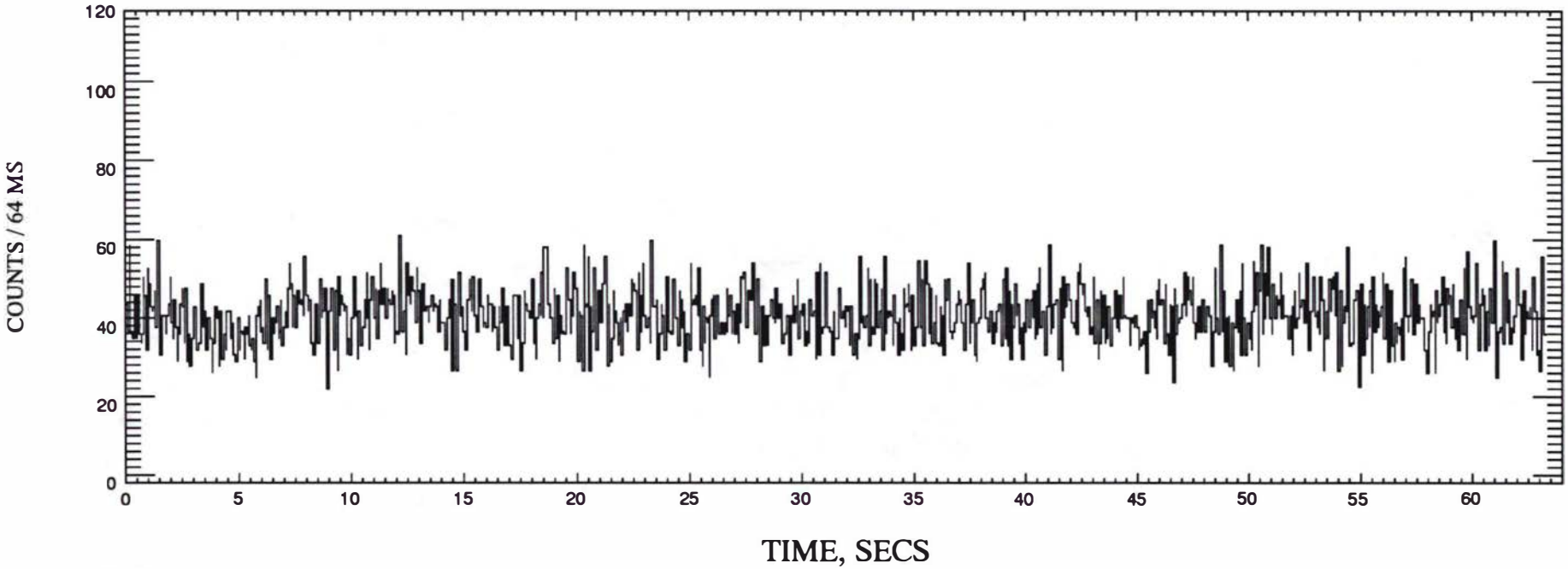


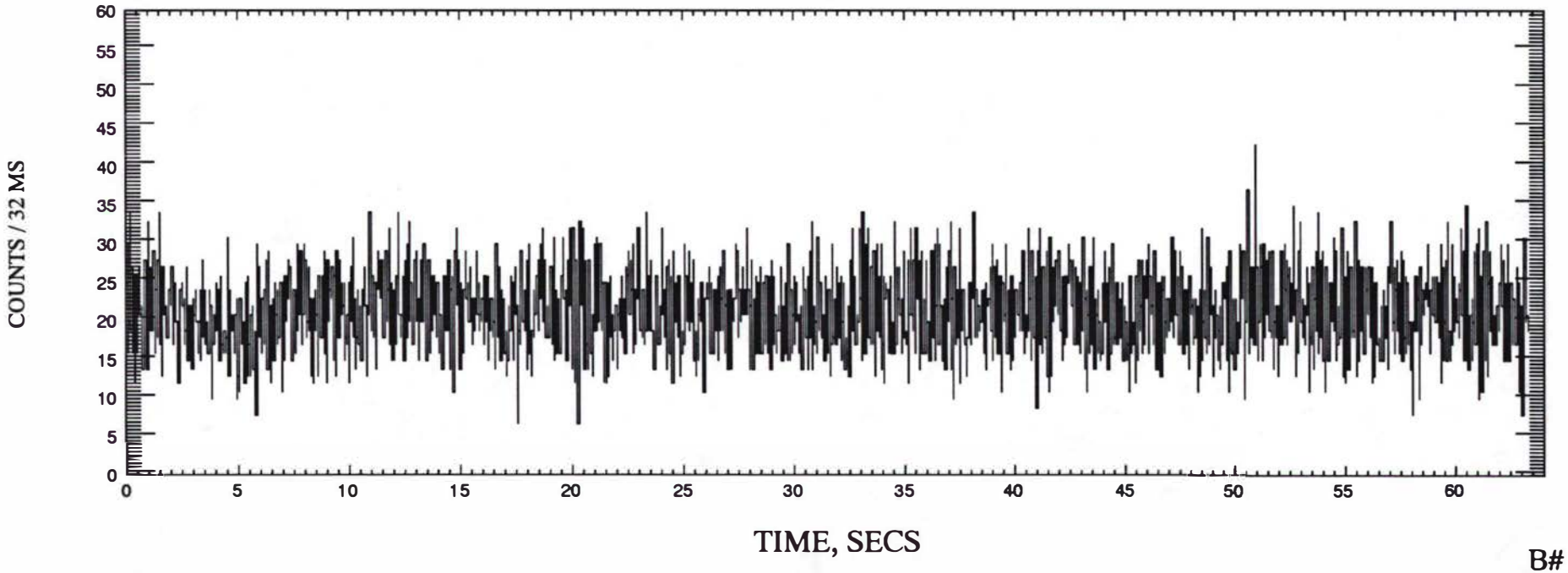


B# 6

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 5 at UT= 4.437252002292 h=15974.107 s 04:26:14.107

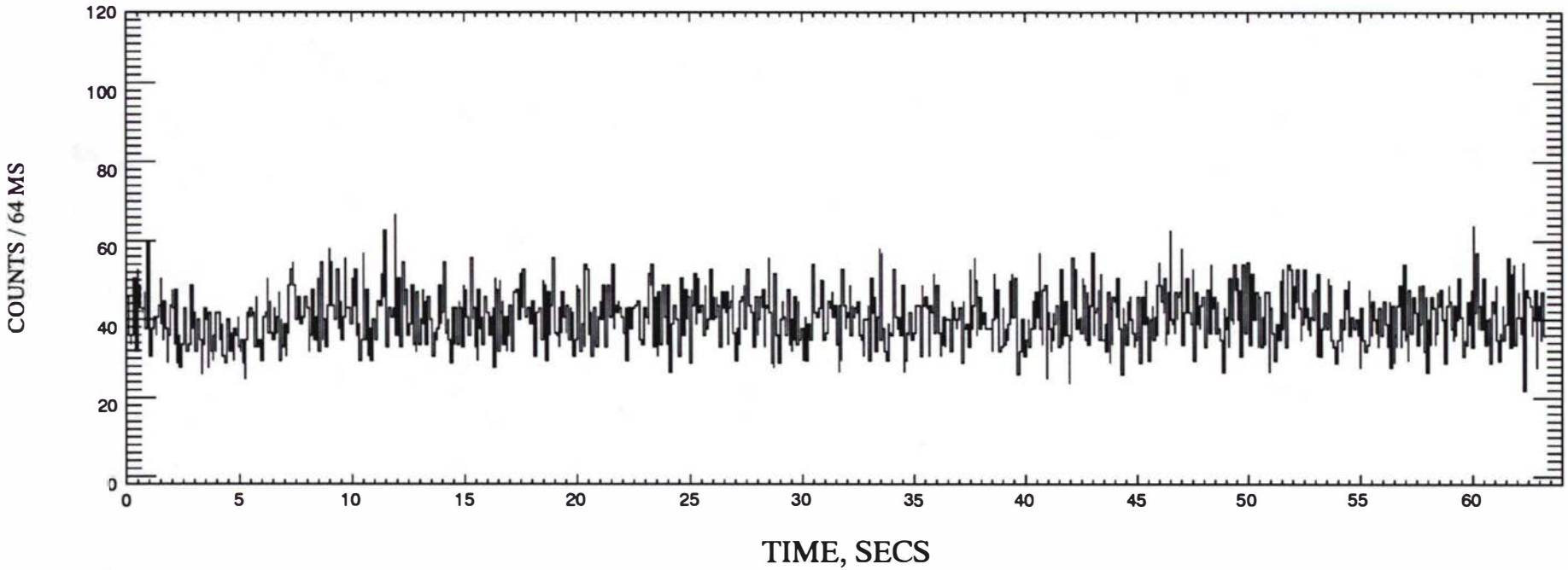


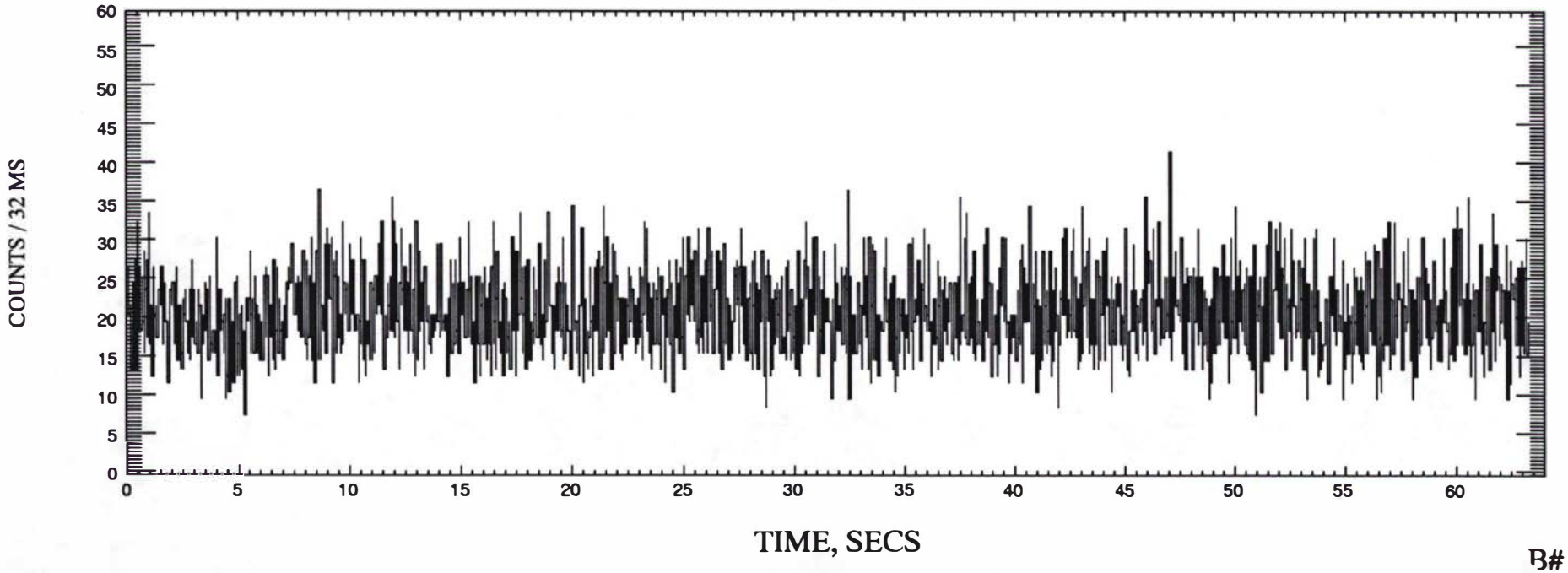


B# 7

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 6 at UT= 5.139625053406 h=18502.650 s 05:08:22.650

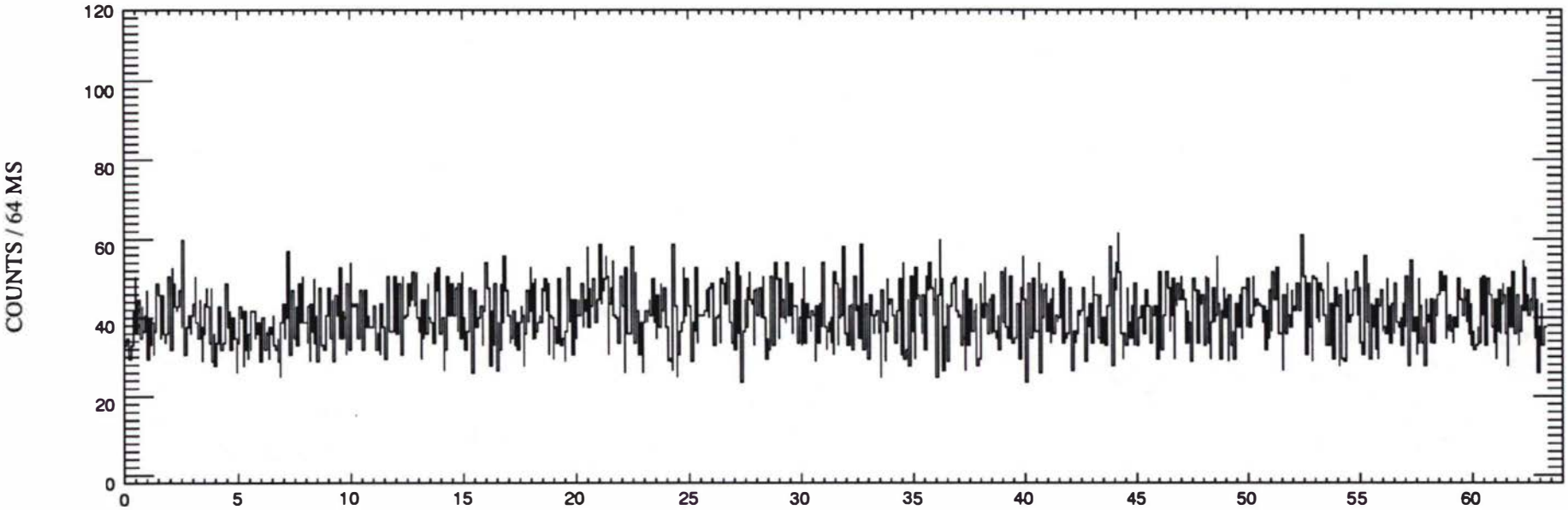




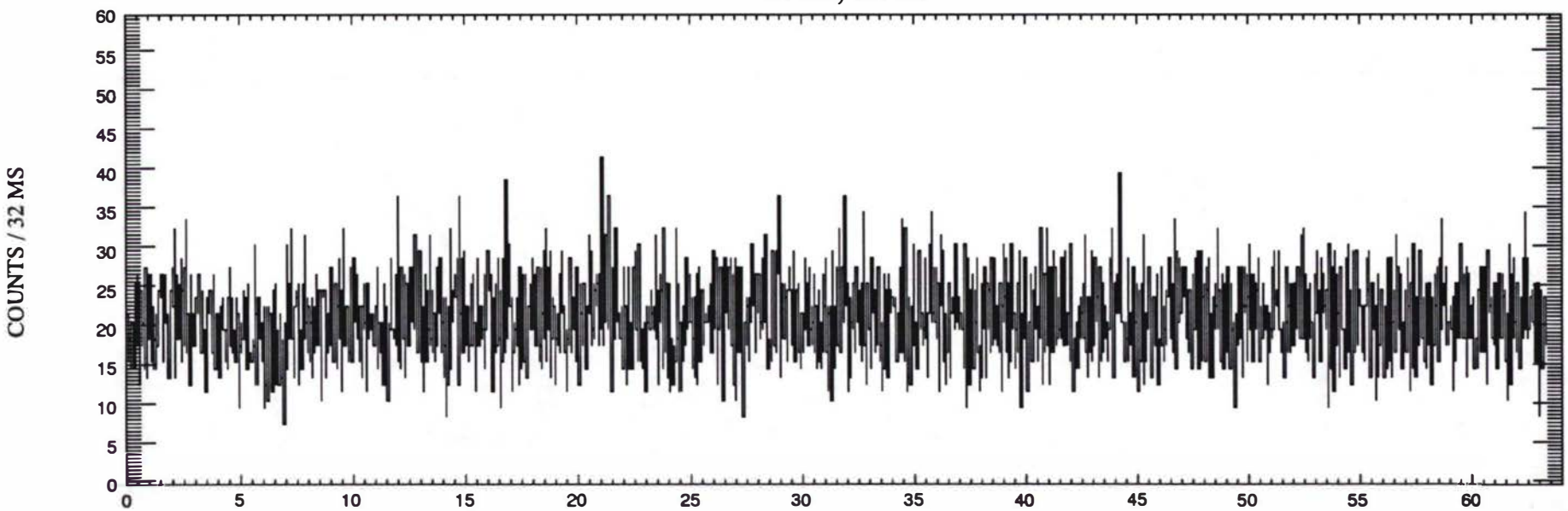
B# 8

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 7 at UT= 5.841403482225 h=21029.053 s 05:50:29.053



TIME, SECS

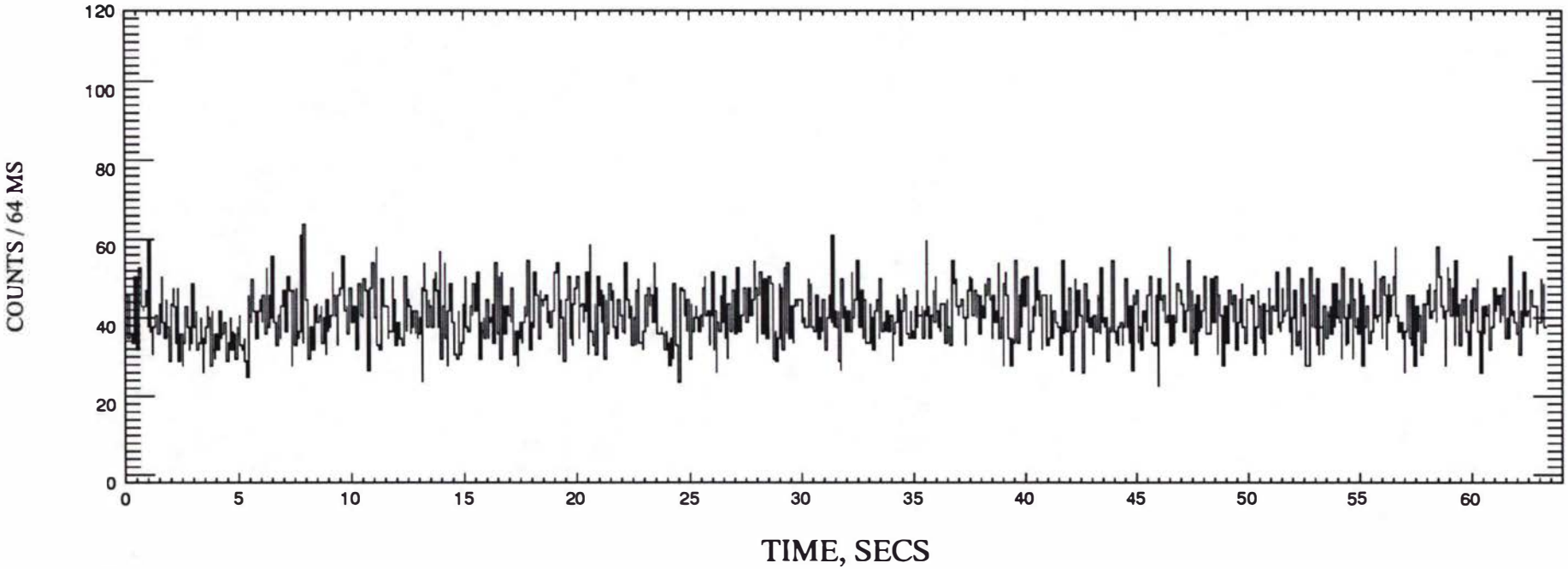


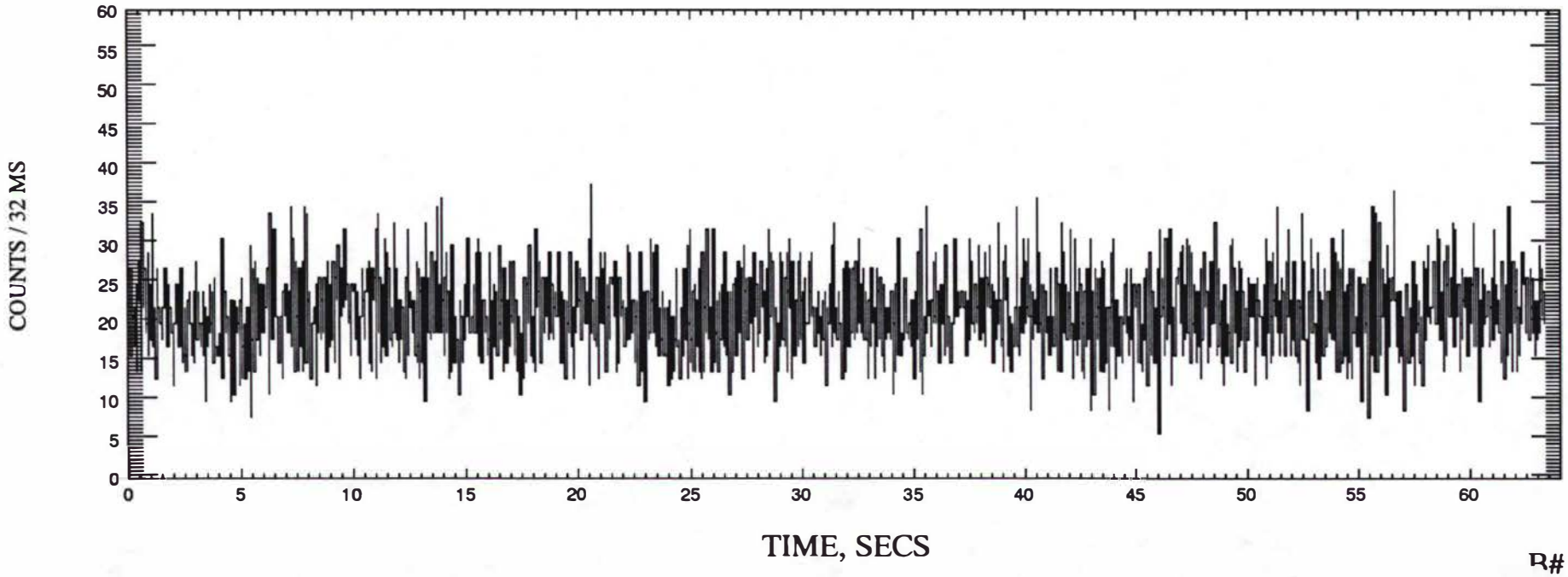
TIME, SECS

B# 9

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 8 at UT= 6.544047800700 h=23558.572 s 06:32:38.572

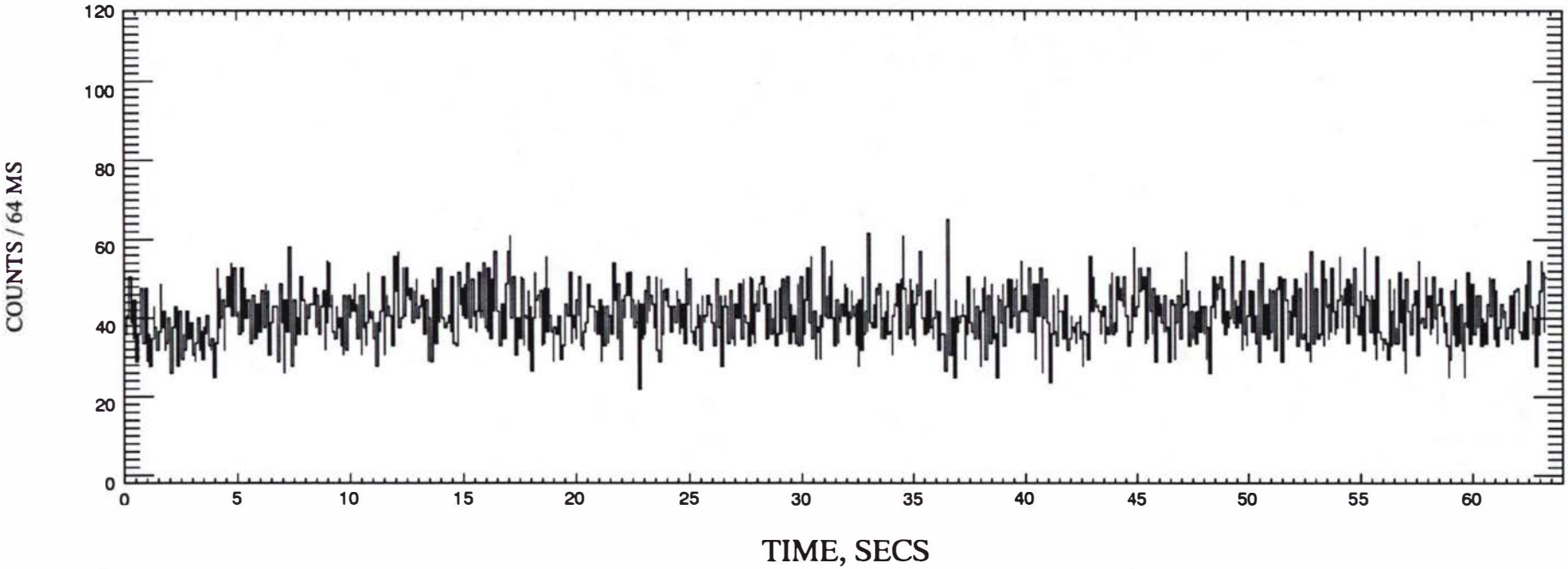


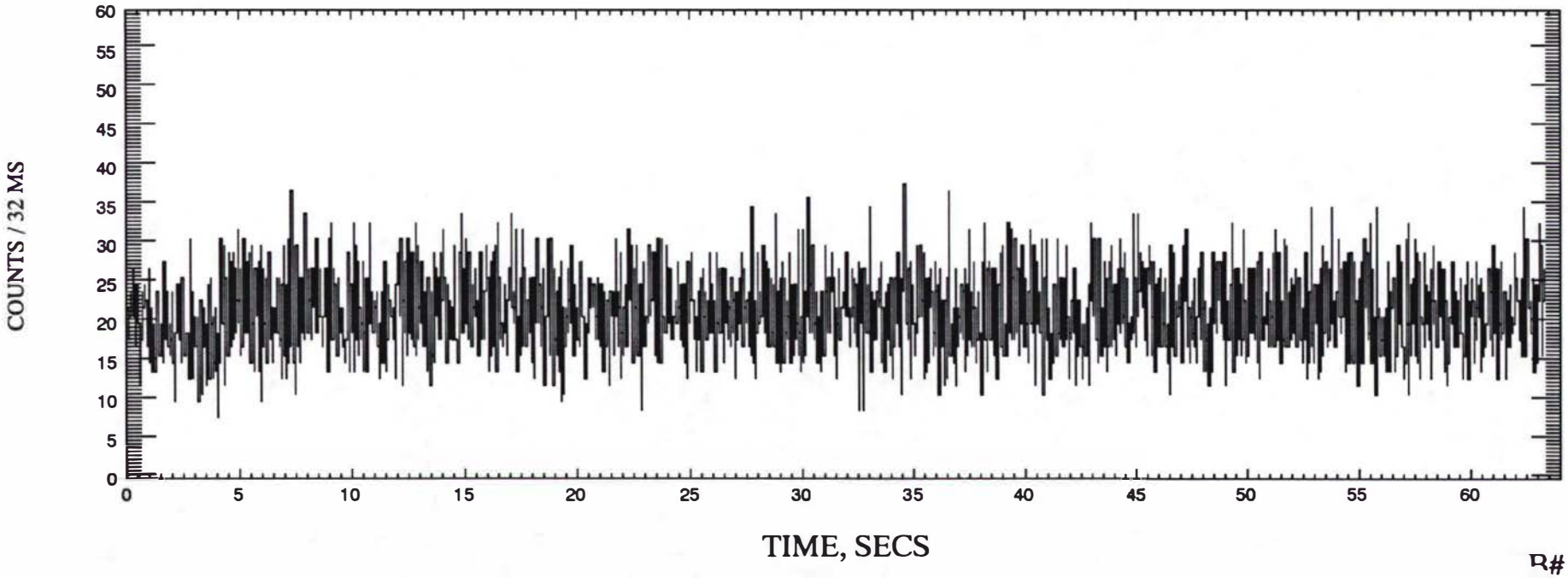


R# 10

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 9 at UT= 7.246659562853 h=26087.974 s 07:14:47.974

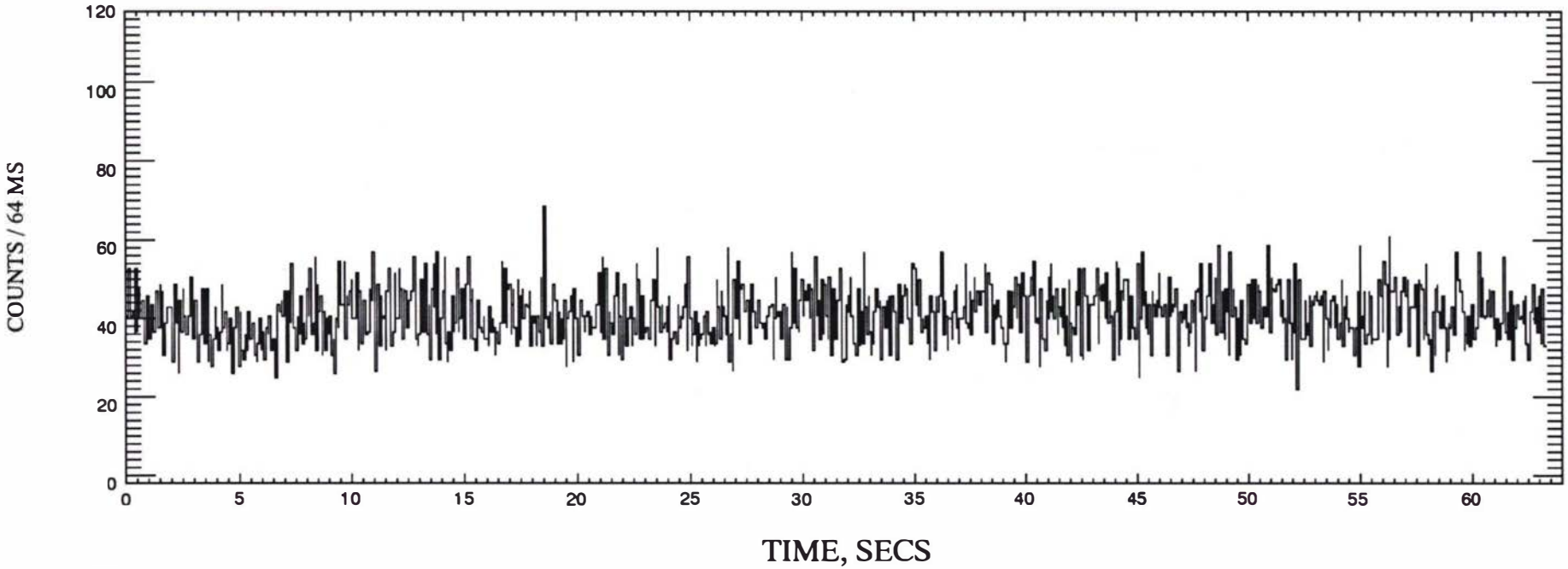


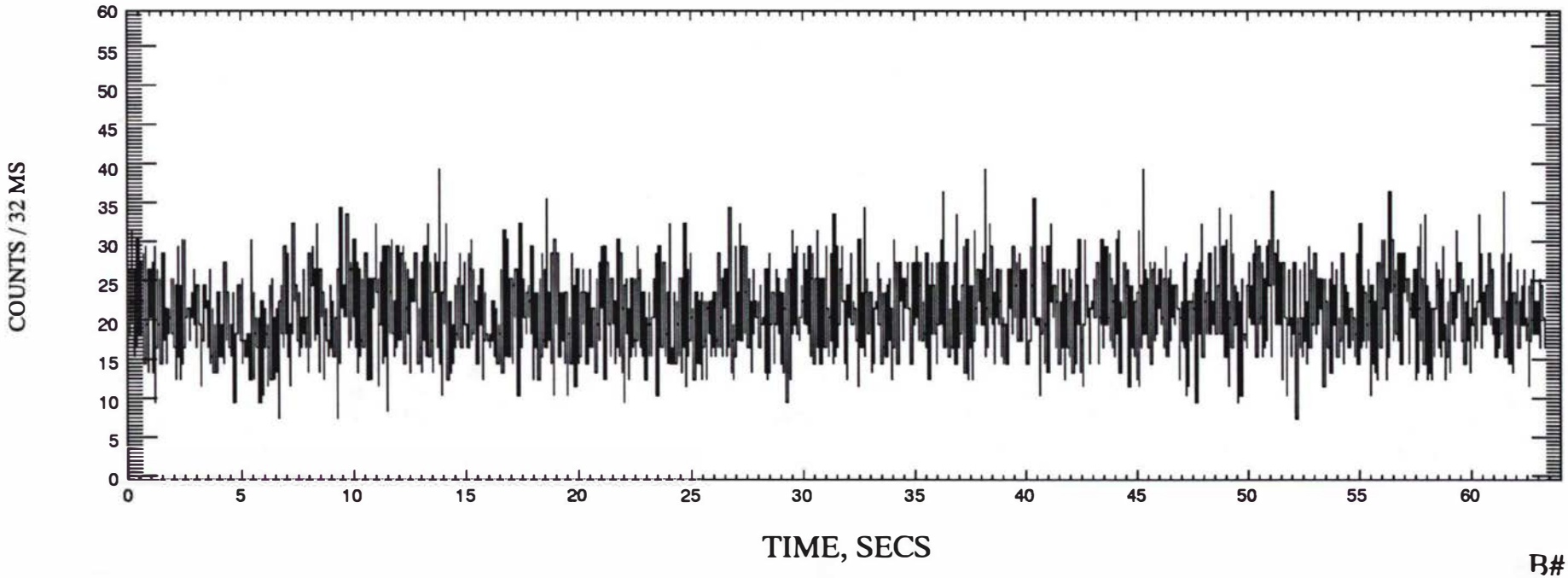


R# 11

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 10 at UT= 7.948162384033 h=28613.385 s 07:56:53.385

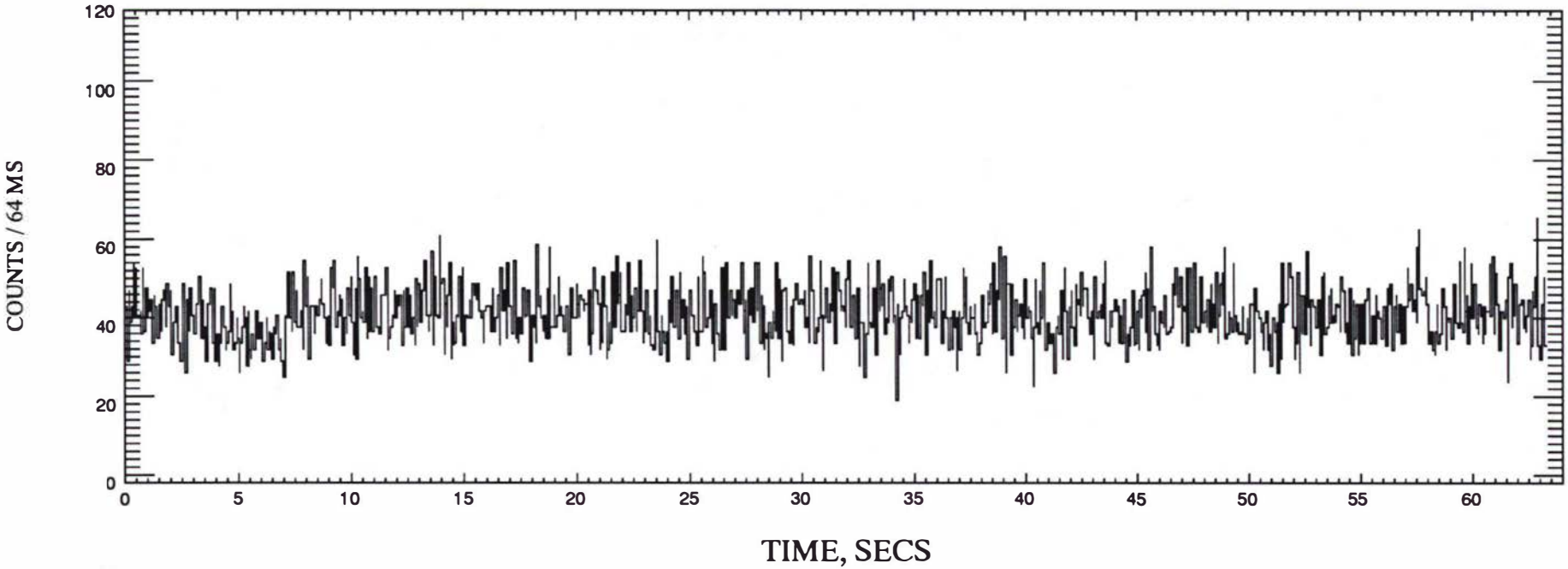


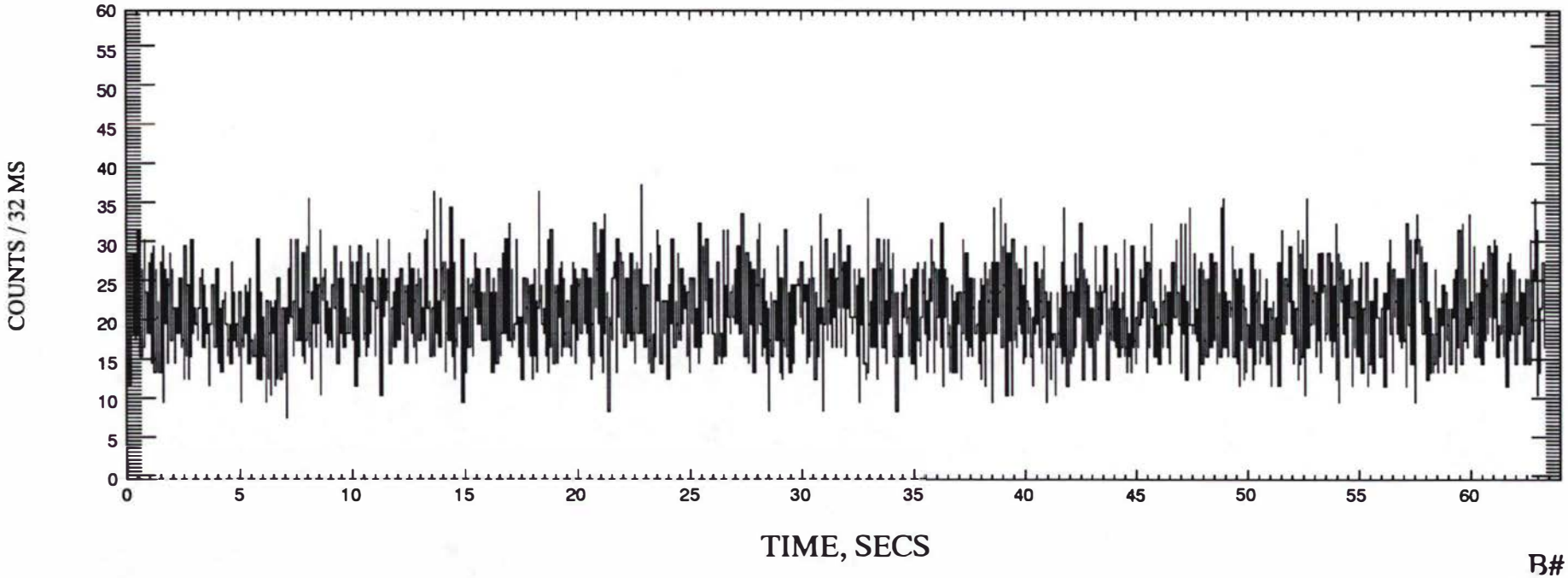


B# 12

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 11 at UT= 9.210292595757 h=33157.053 s 09:12:37.053

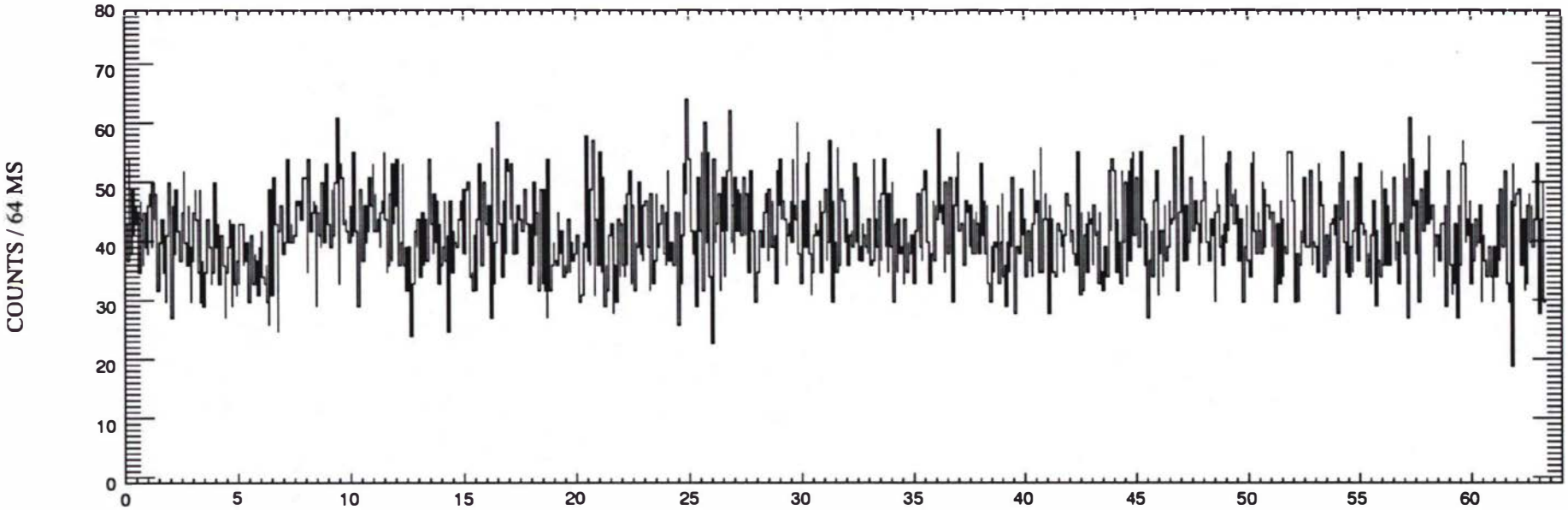




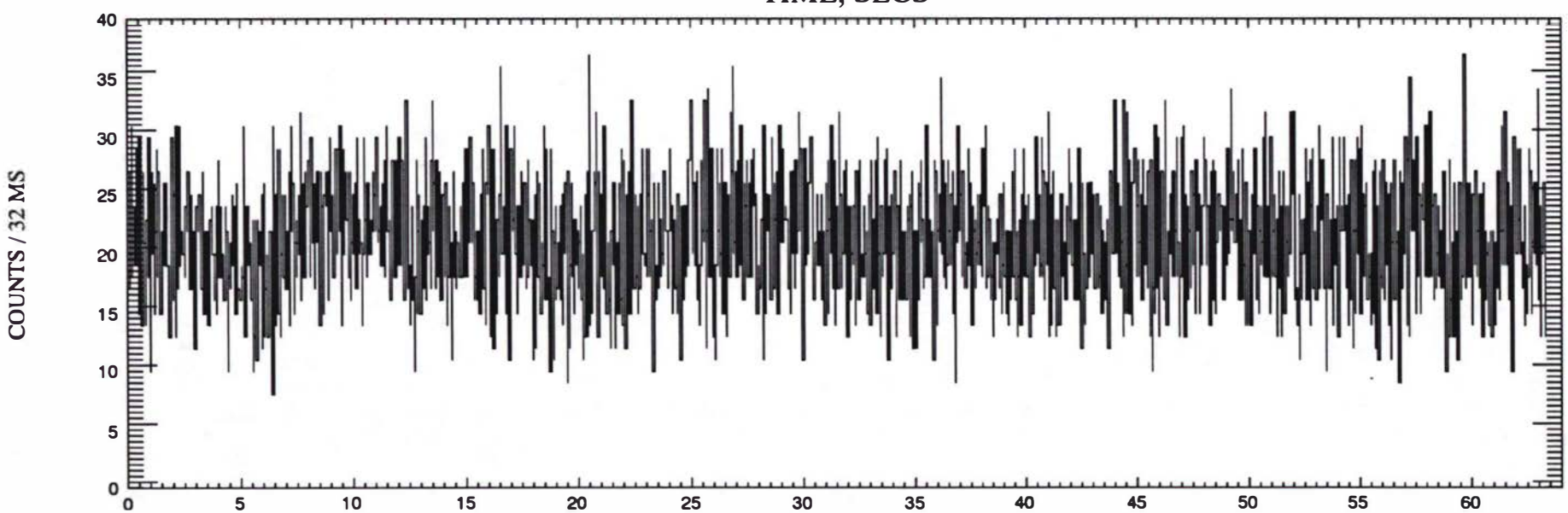
B# 13

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 12 at UT=10.472702102661 h=37701.728 s 10:28:21.728



TIME, SECS

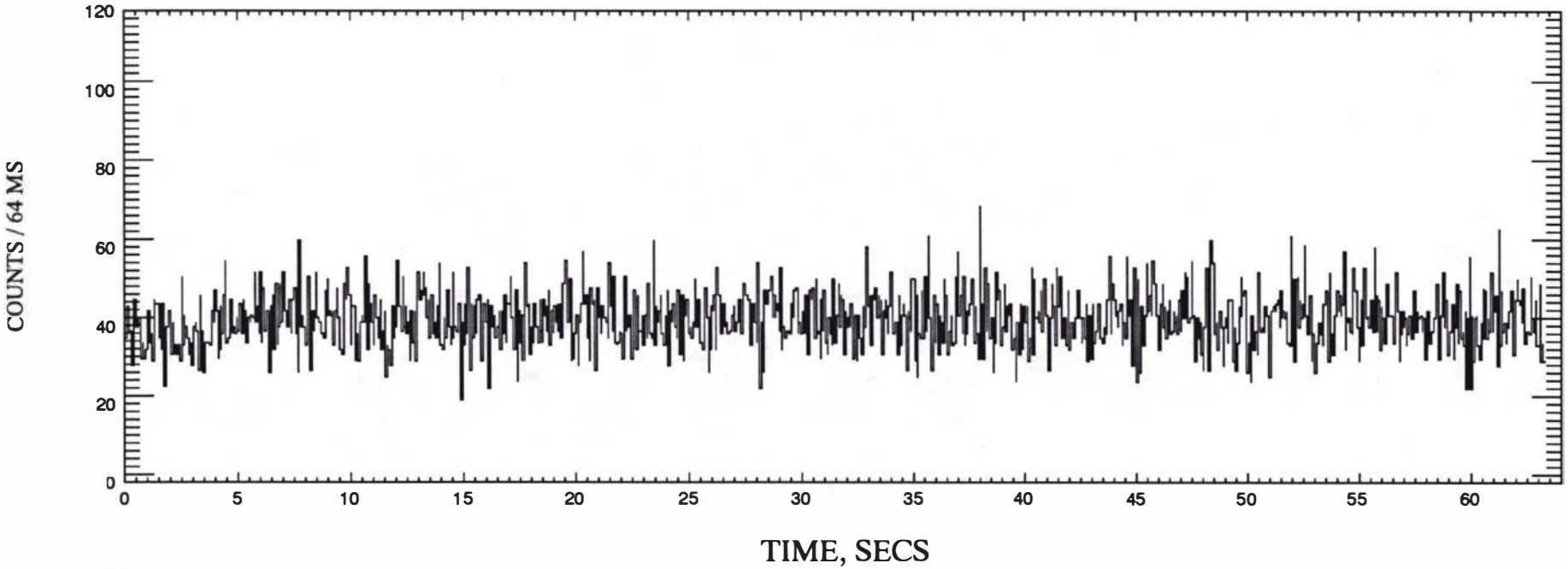


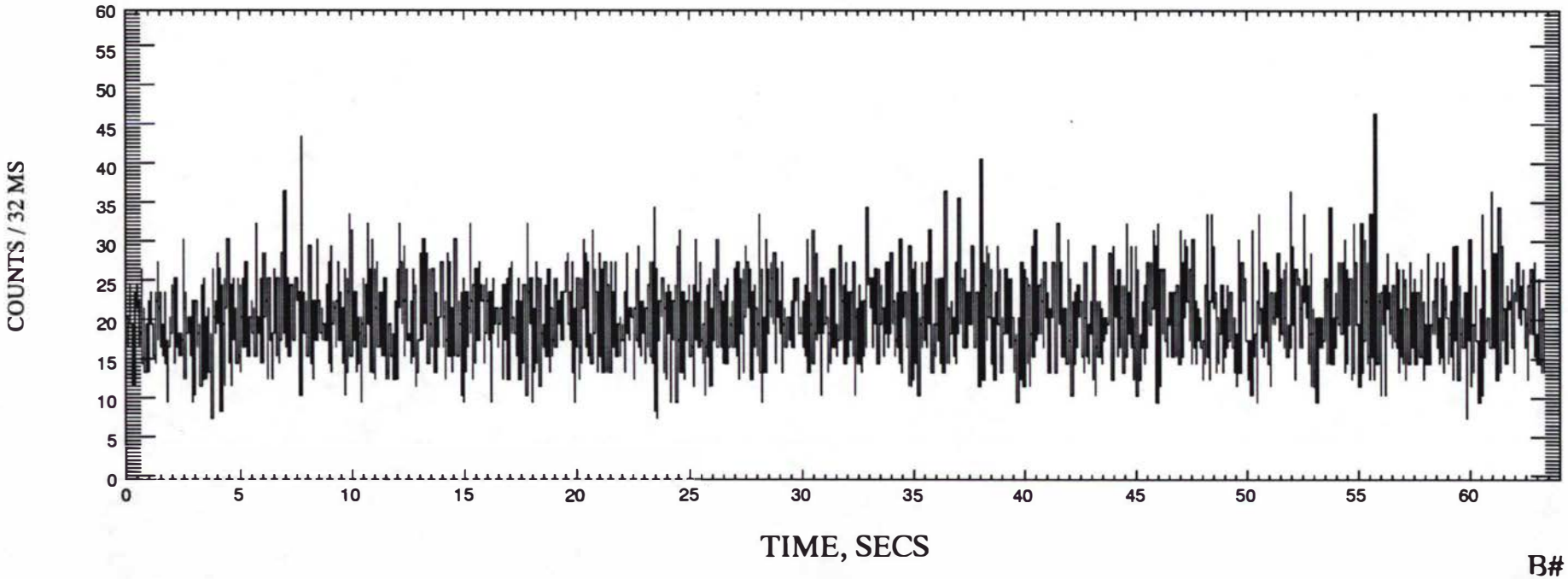
TIME, SECS

B# 14

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 13 at UT=11.735675849915 h=42248.433 s 11:44:08.433

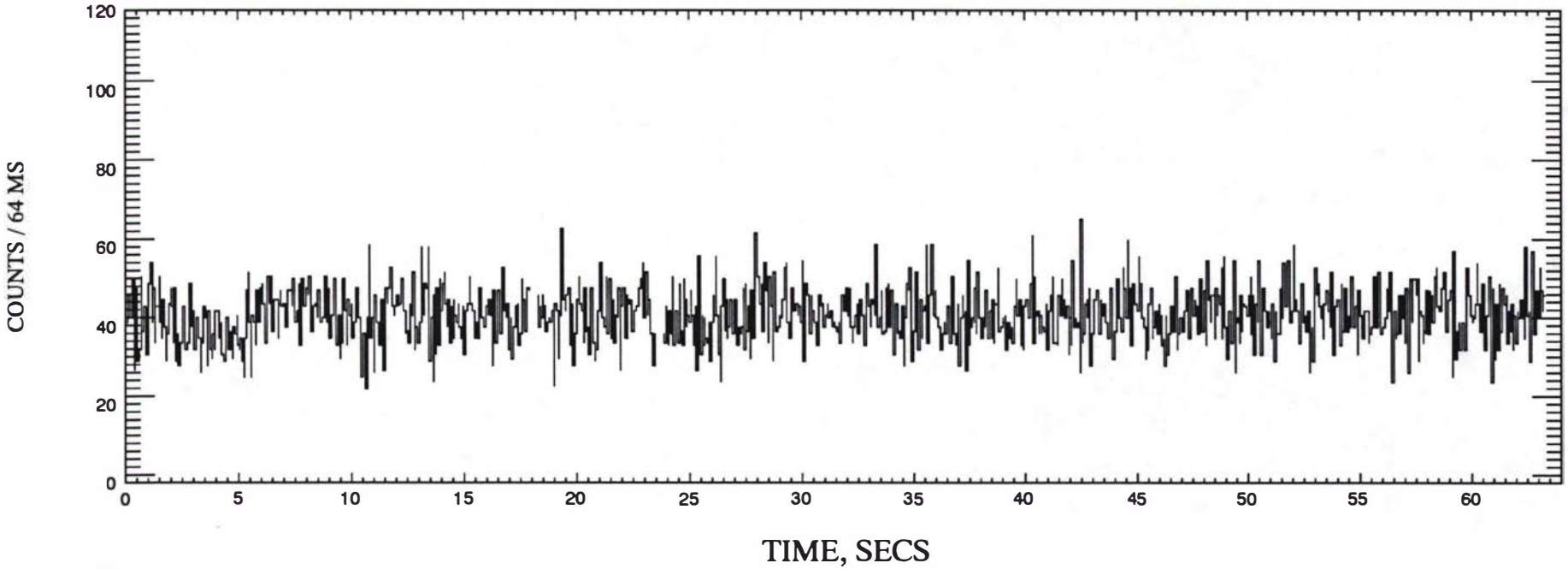


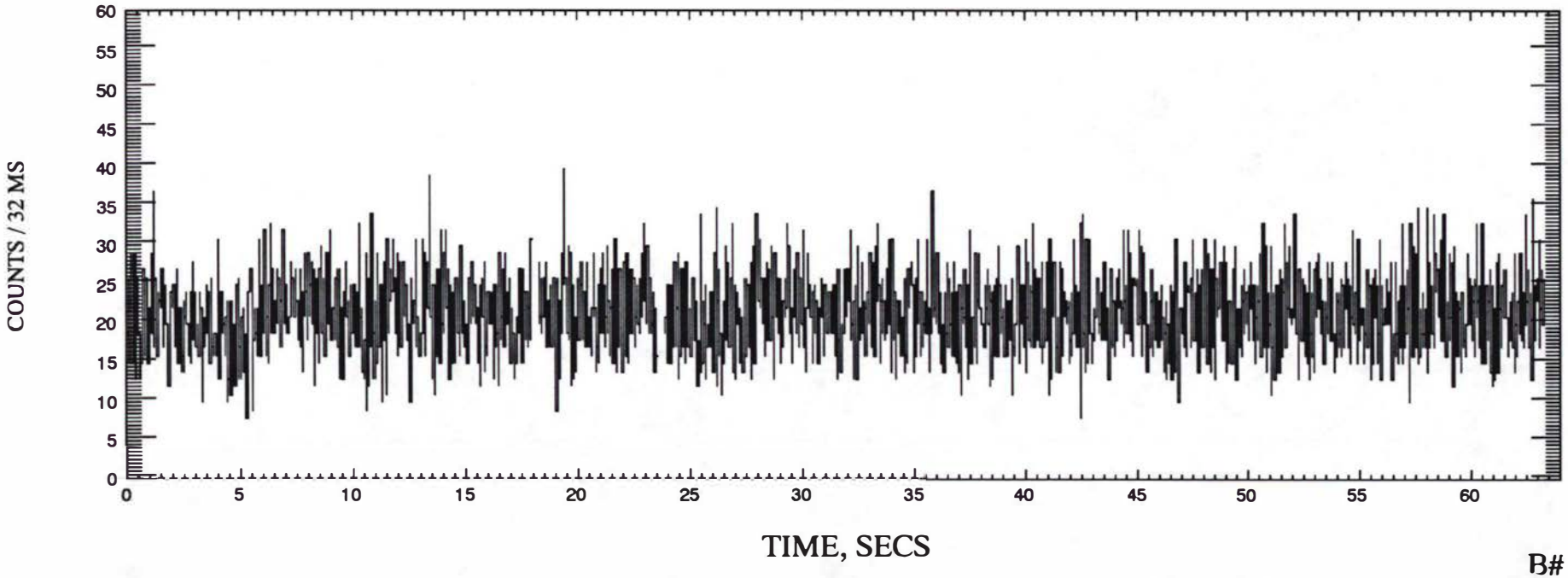


B# 15

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 14 at UT=12.997486398485 h=46790.951 s 12:59:50.951

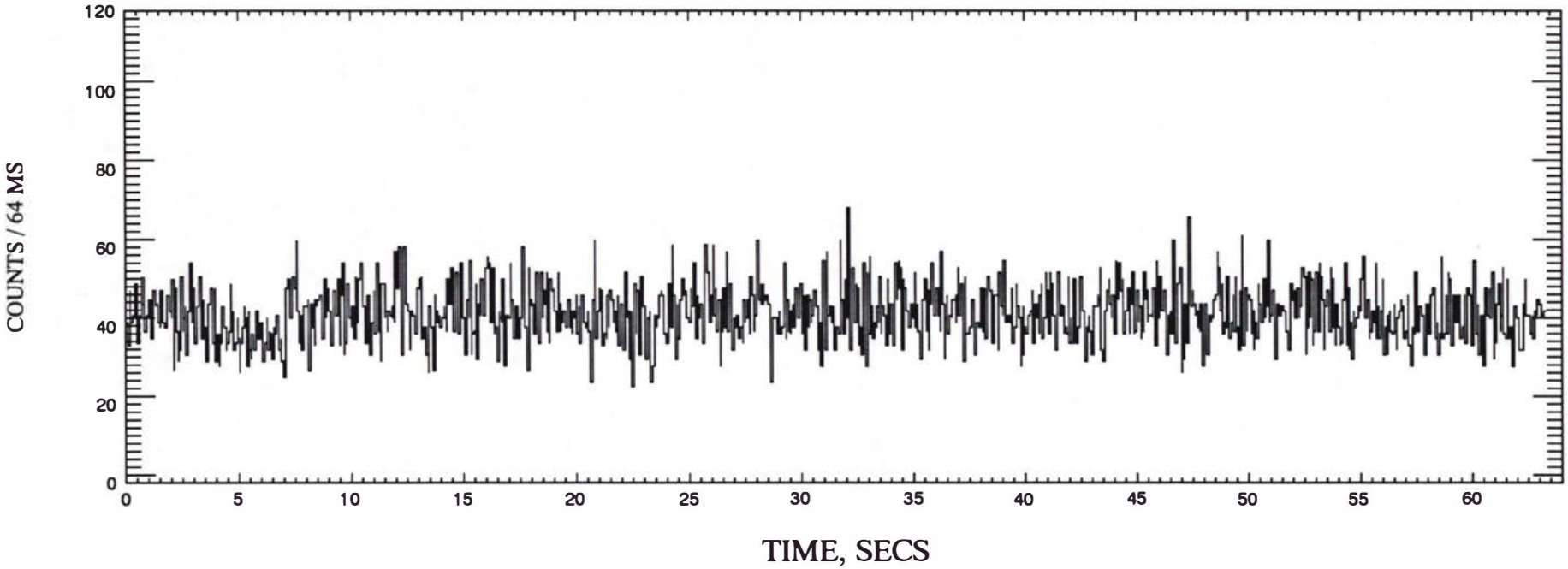


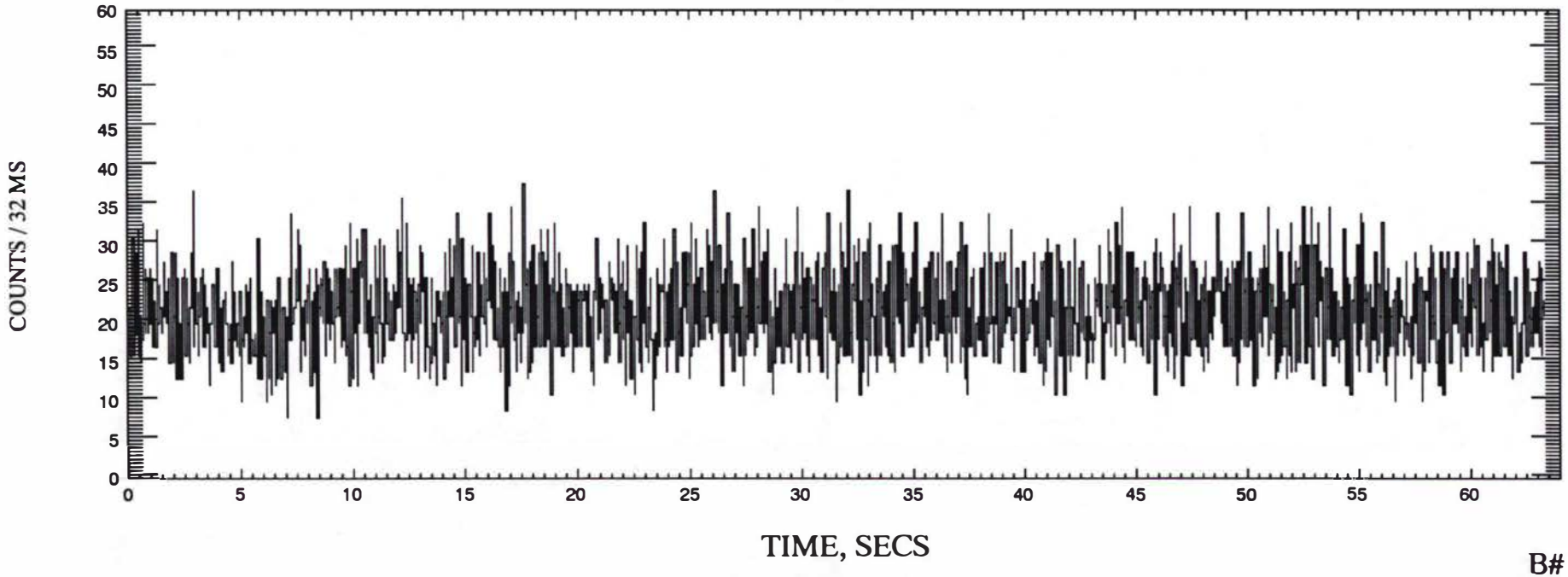


B# 16

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 15 at UT=14.259236183167 h=51333.250 s 14:15:33.250

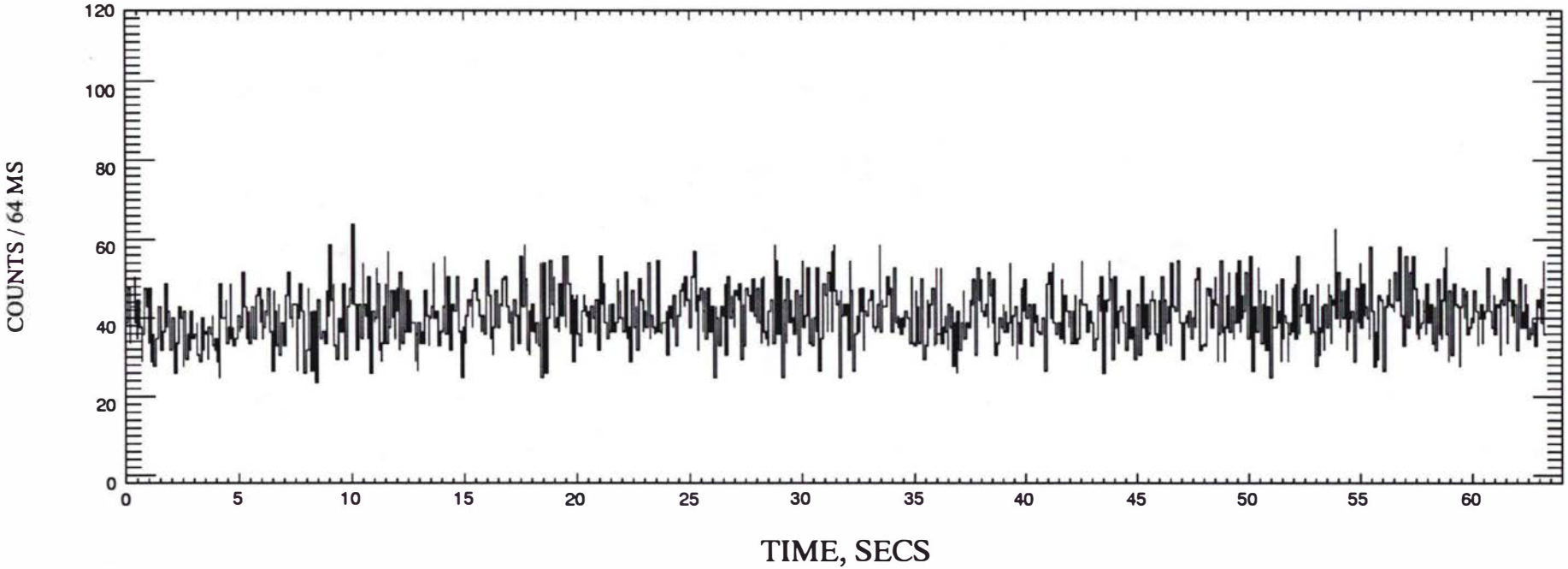


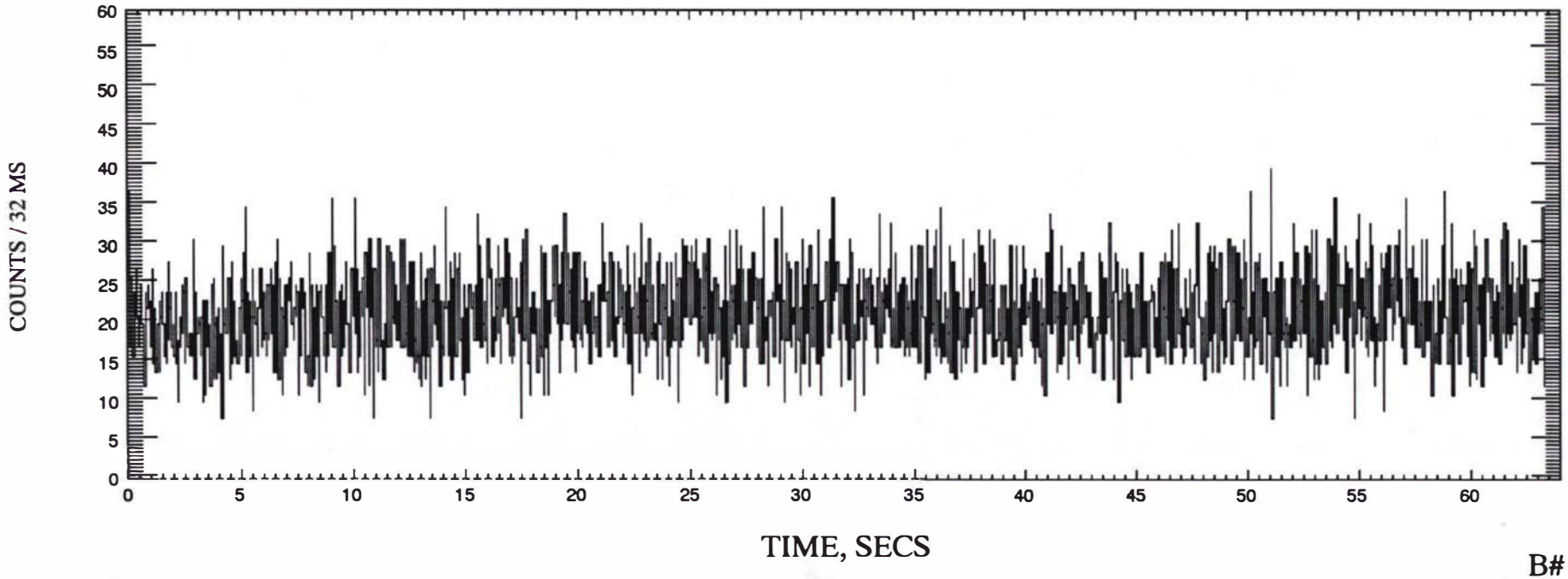


B# 17

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 0 at UT=15.396436598036 h=55427.172 s 15:23:47.172

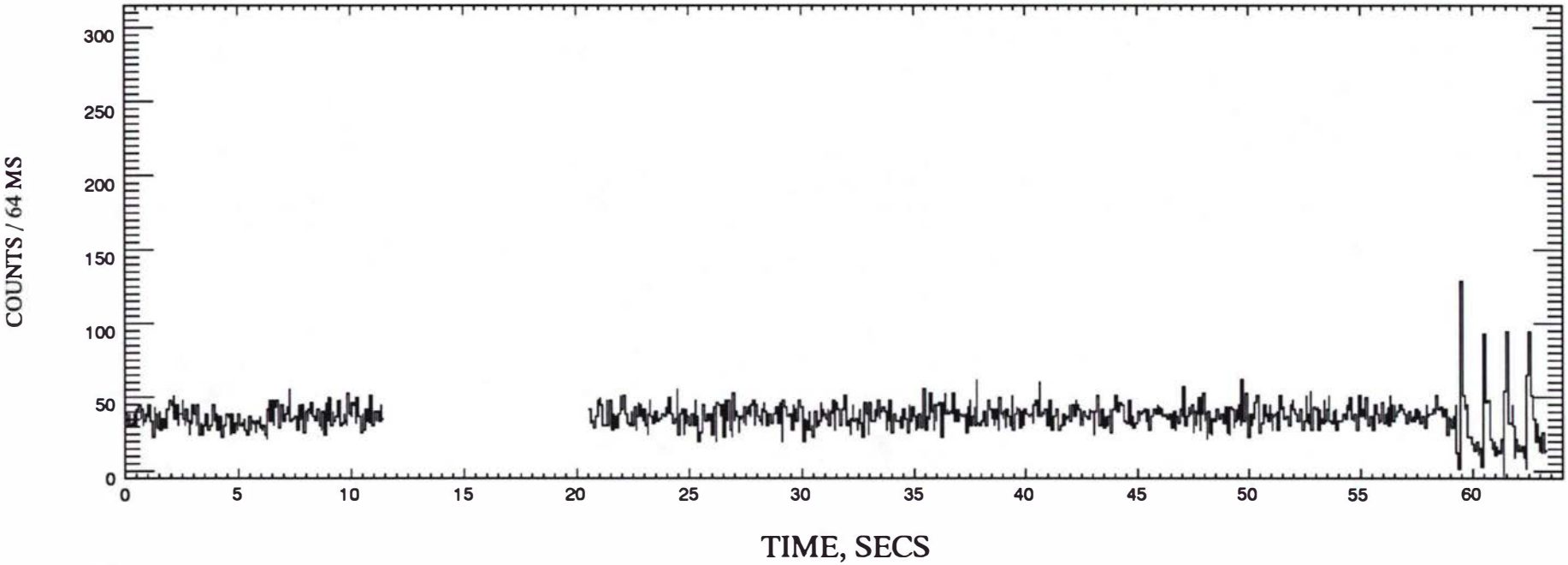


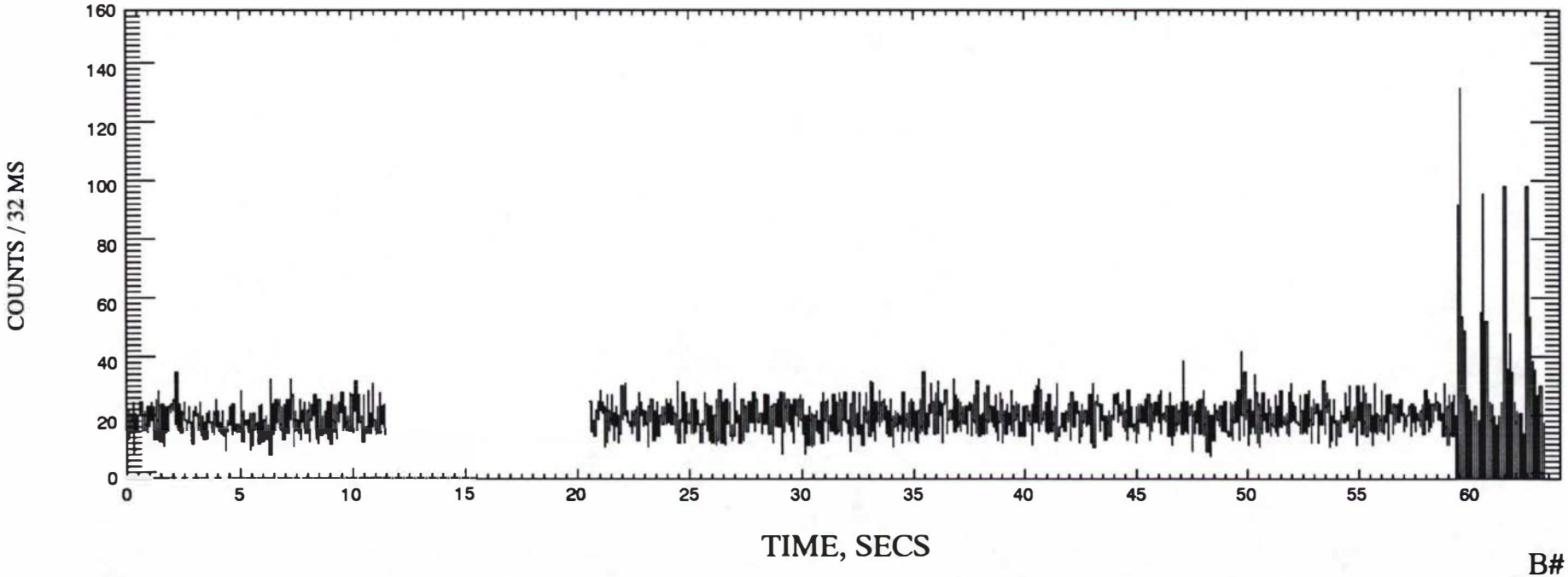


B# 18

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 1 at UT=16.099462102254 h=57958.064 s 16:05:58.064

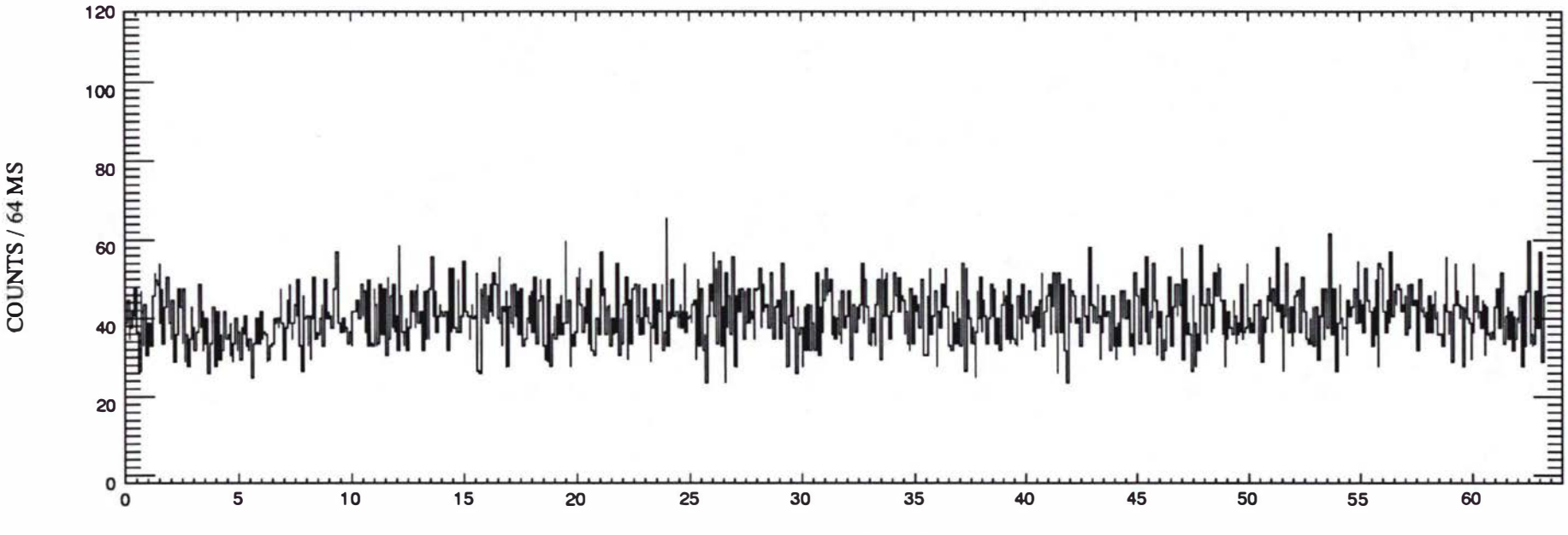


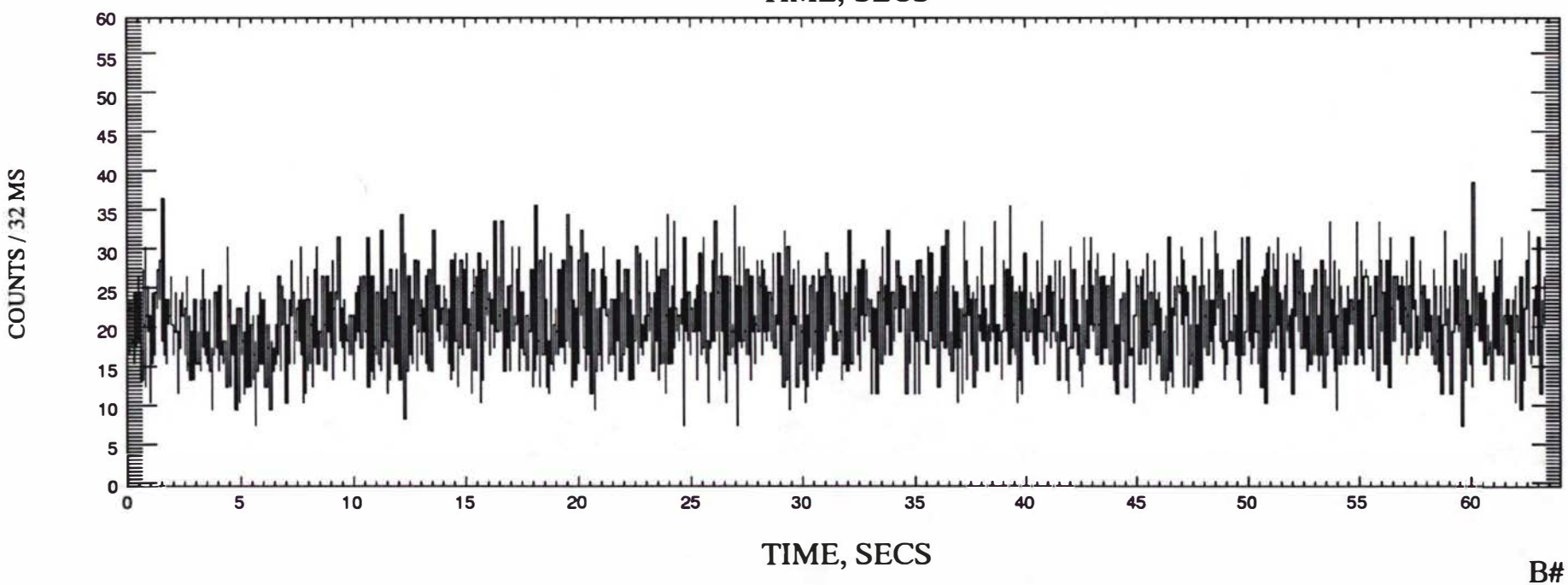


B# 19

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 2 at UT=16.801867891947 h=60486.724 s 16:48:06.724

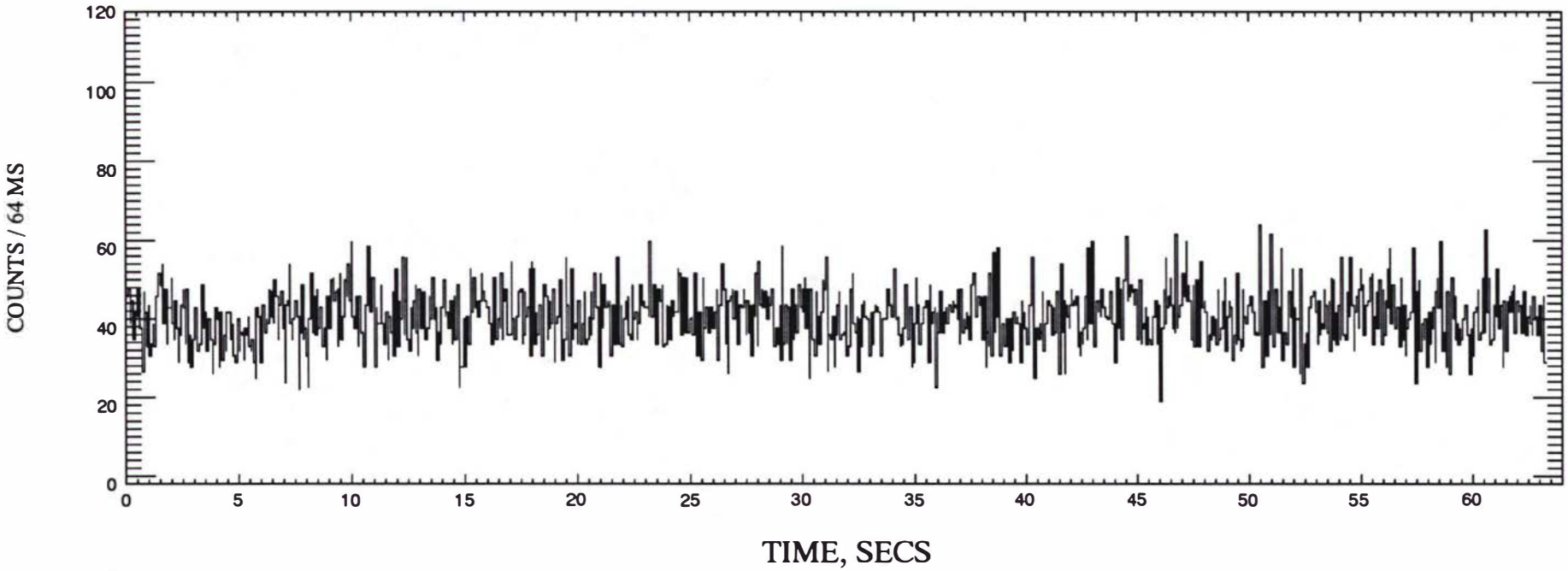


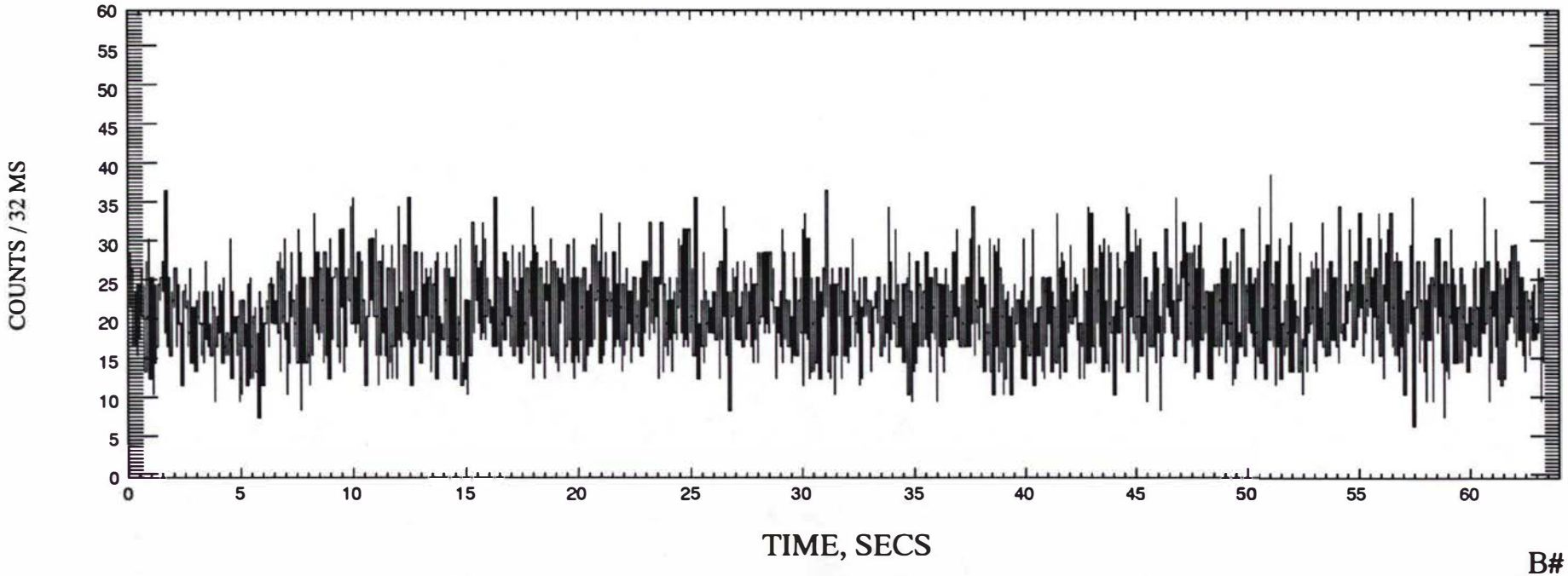


B# 20

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 3 at UT=17.504062987434 h=63014.627 s 17:30:14.627

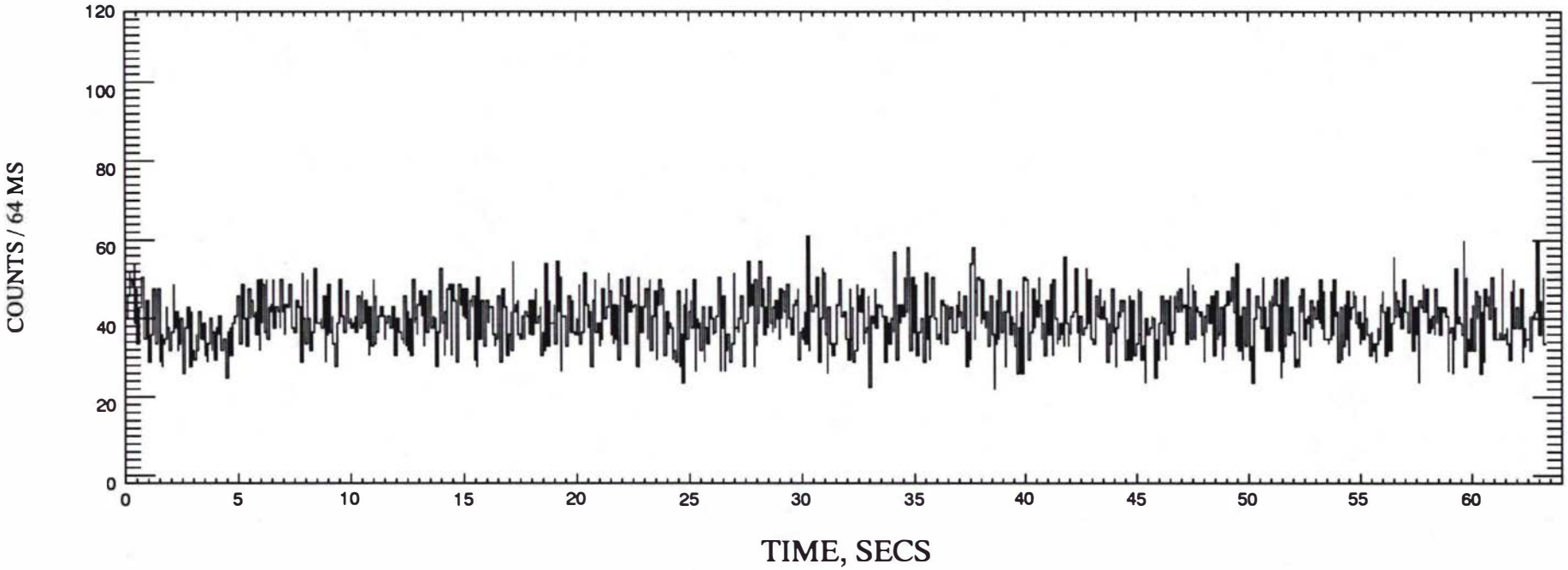


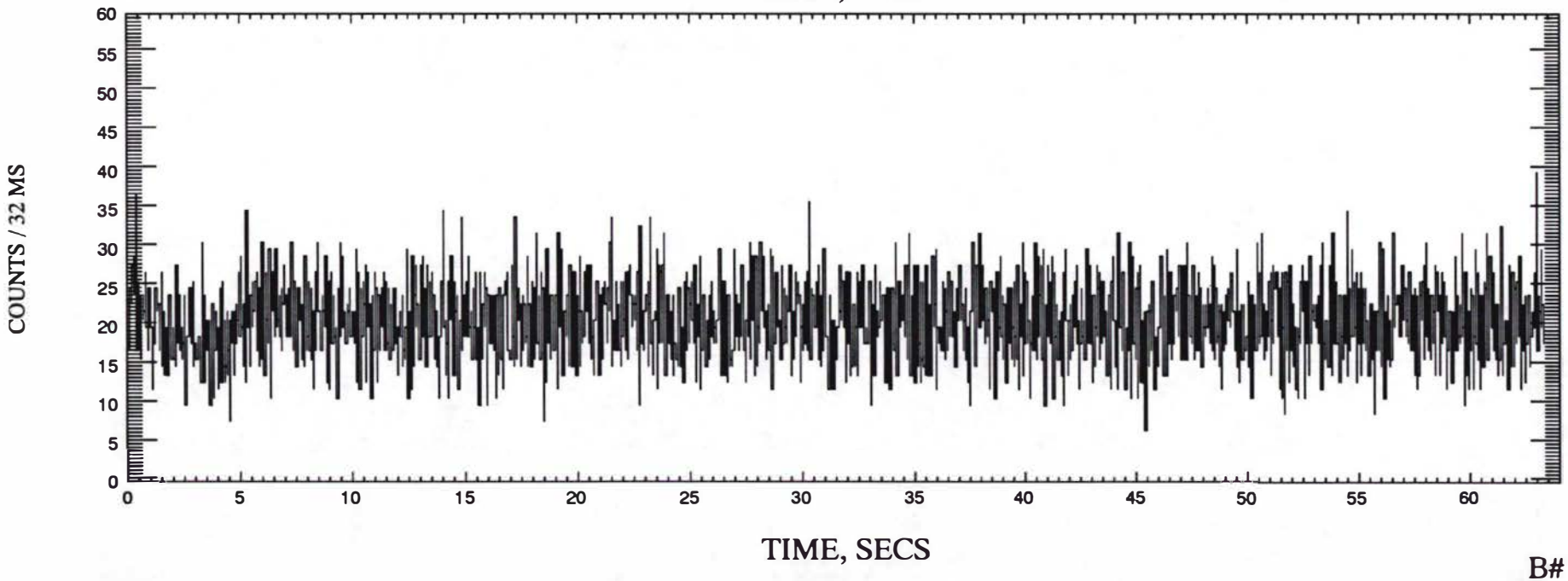


B# 21

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 4 at UT=18.206640031603 h=65543.904 s 18:12:23.904

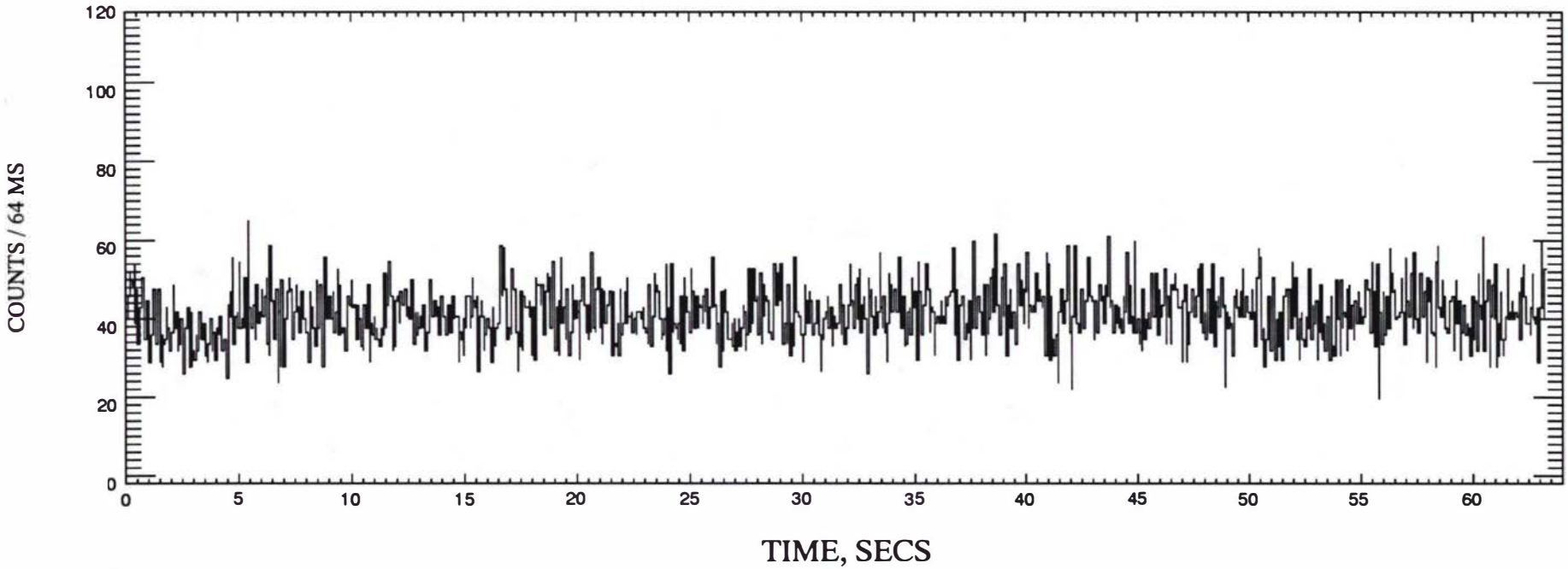


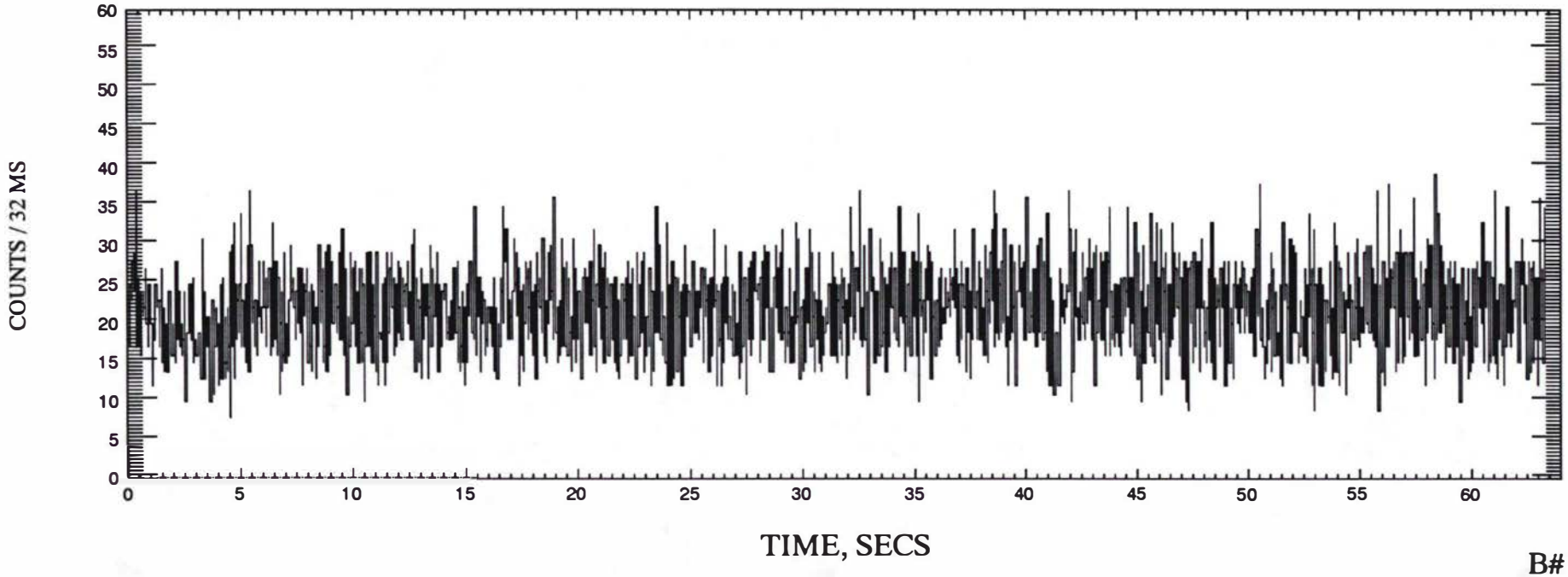


B# 22

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 5 at UT=18.908869849311 h=68071.931 s 18:54:31.931

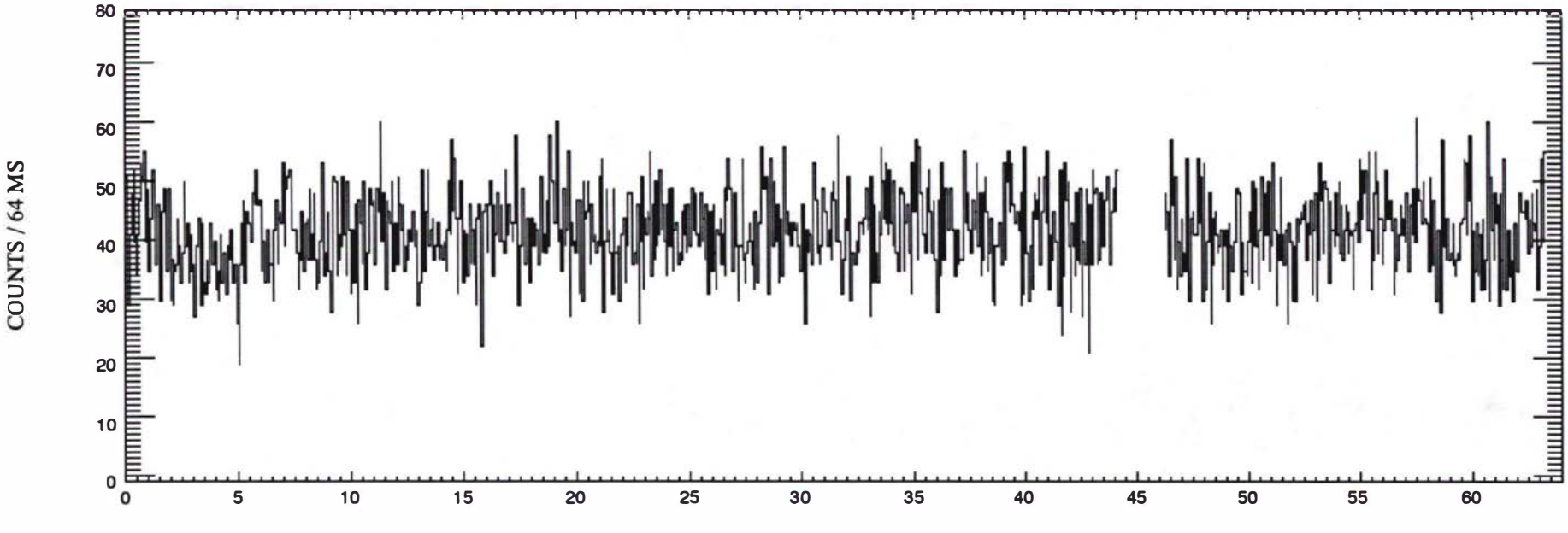


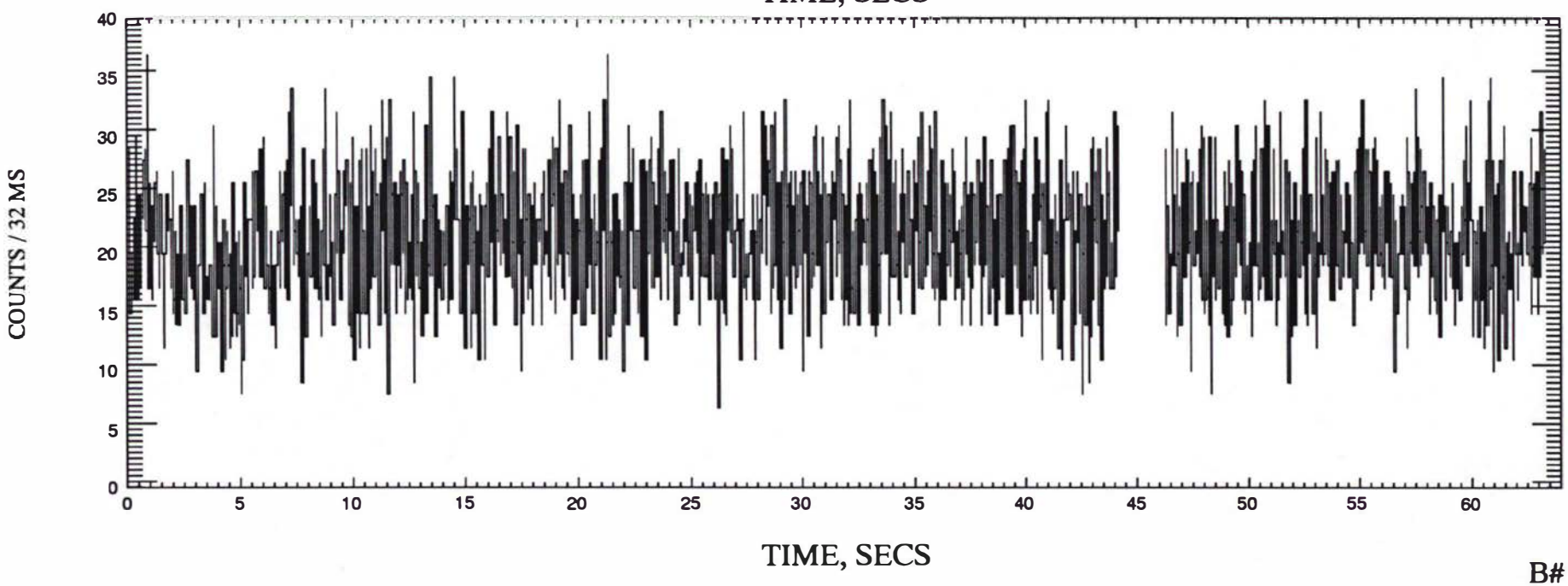


B# 23

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 6 at UT=19.610958607992 h=70599.451 s 19:36:39.451

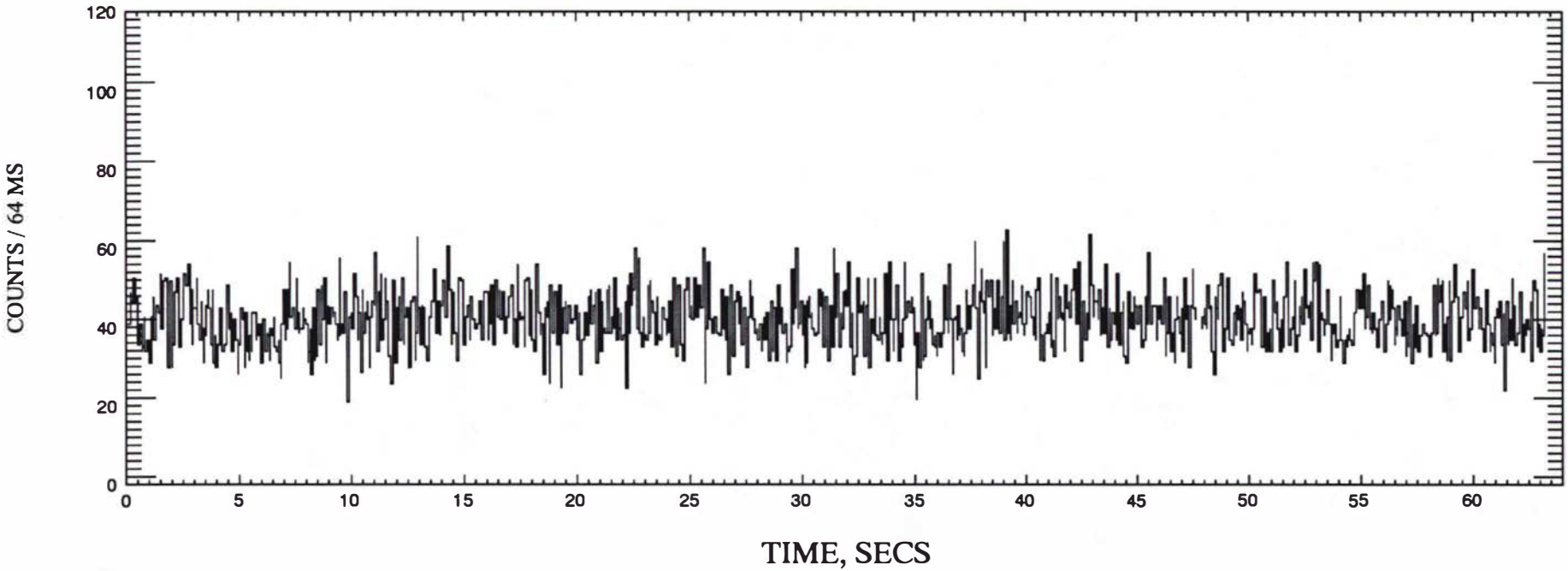


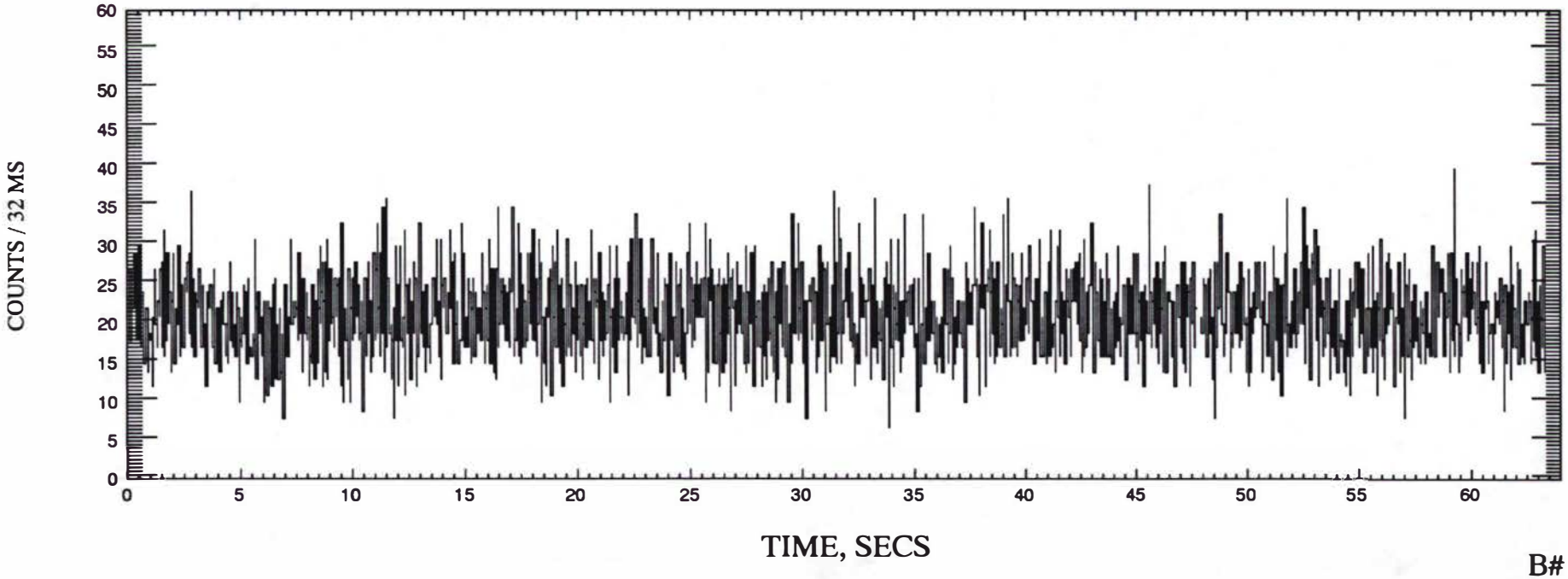


B# 24

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 7 at UT=20.312667596605 h=73125.603 s 20:18:45.603

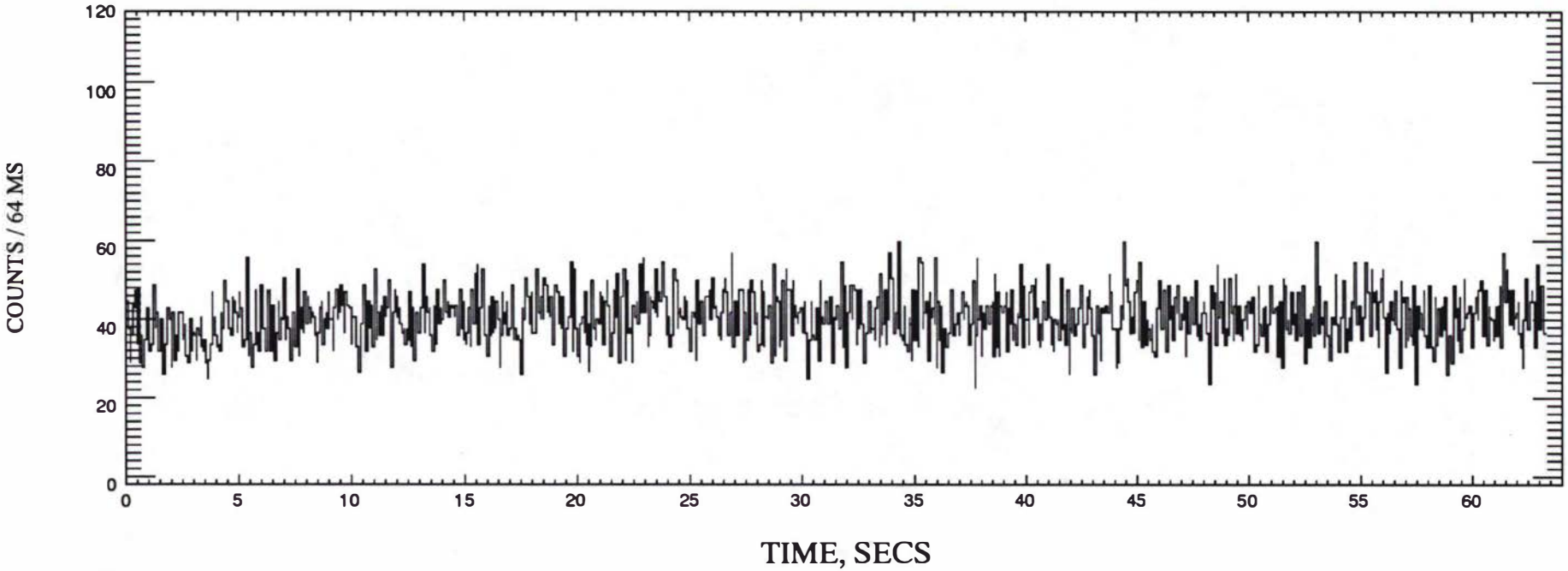


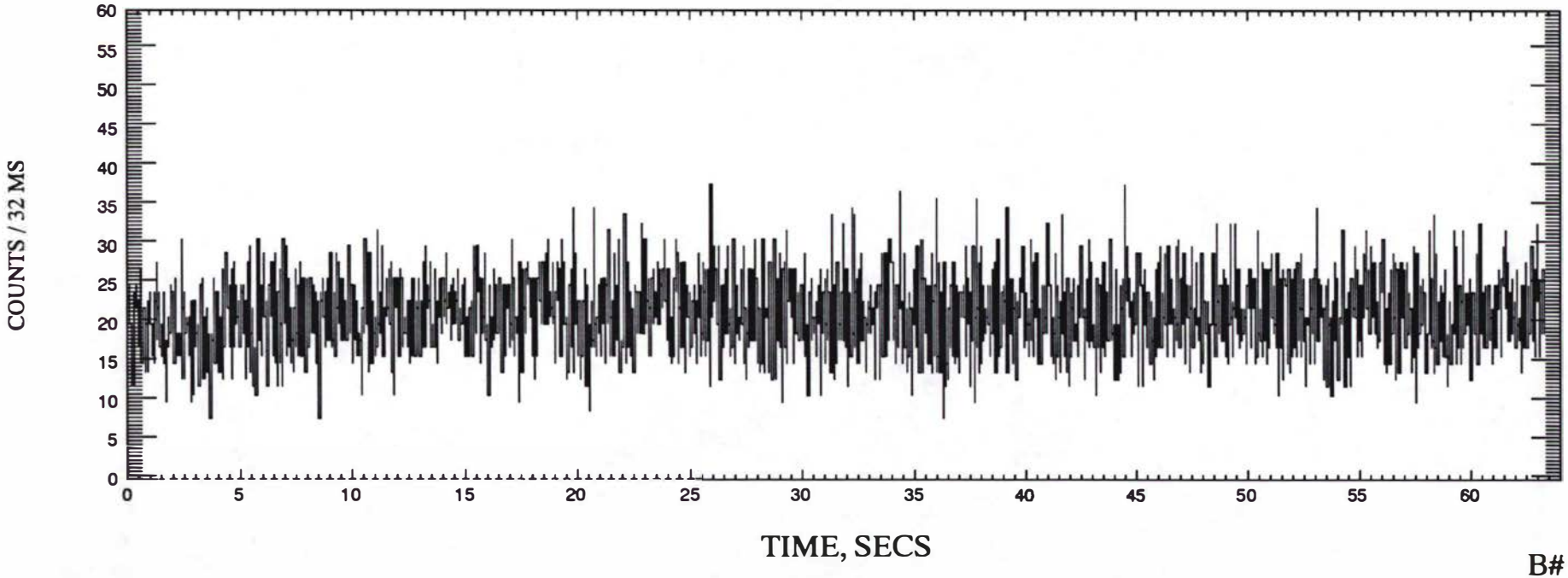


B# 25

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 8 at UT=21.015800192091 h=75656.881 s 21:00:56.881

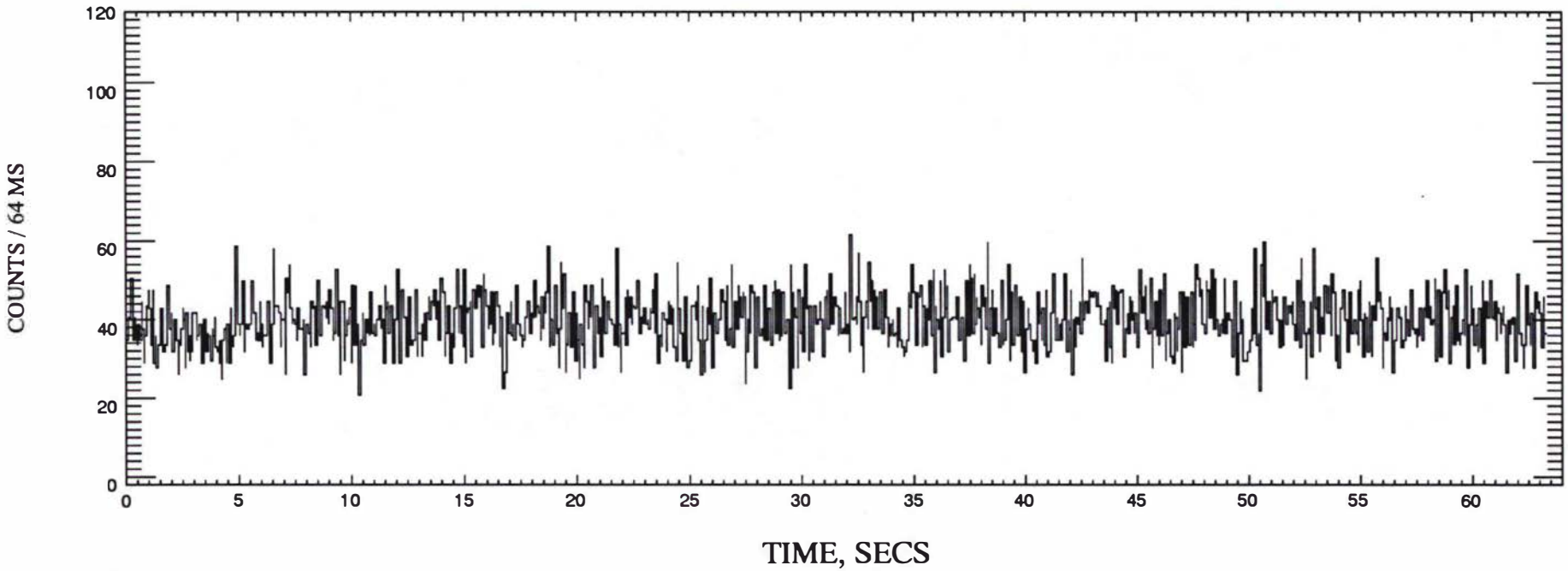


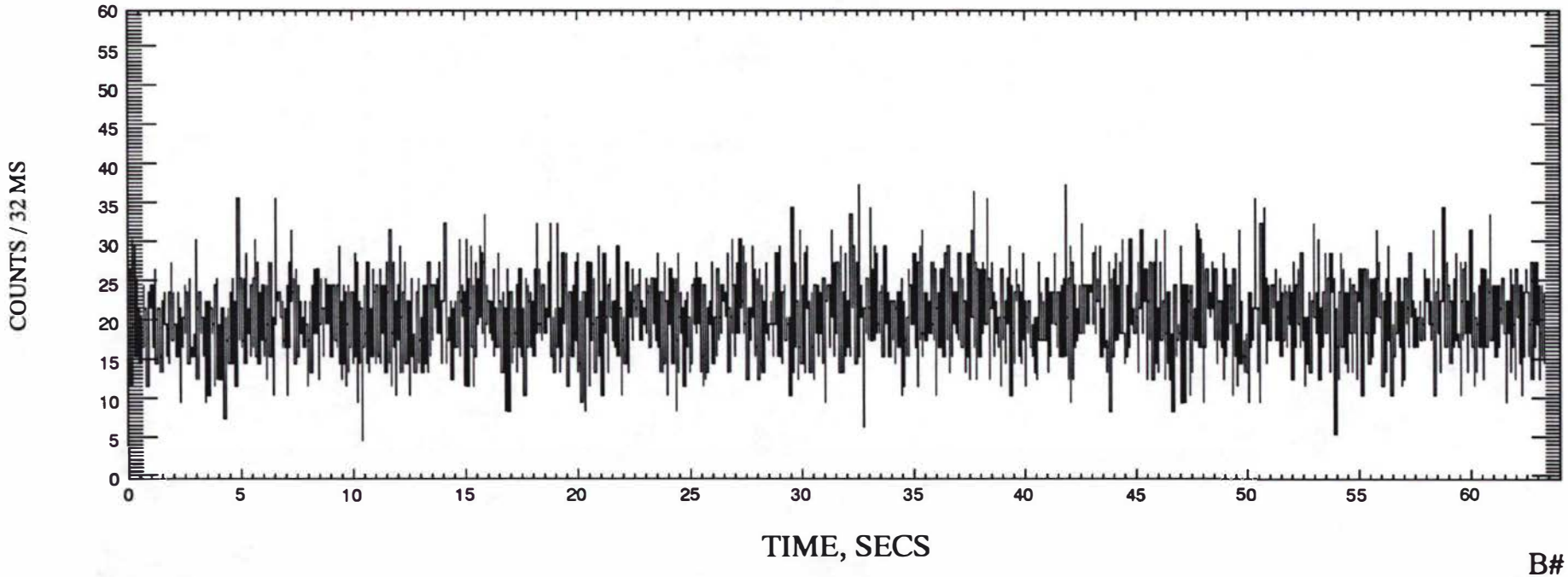


B# 26

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 9 at UT=21.717857810126 h=78184.288 s 21:43:04.288

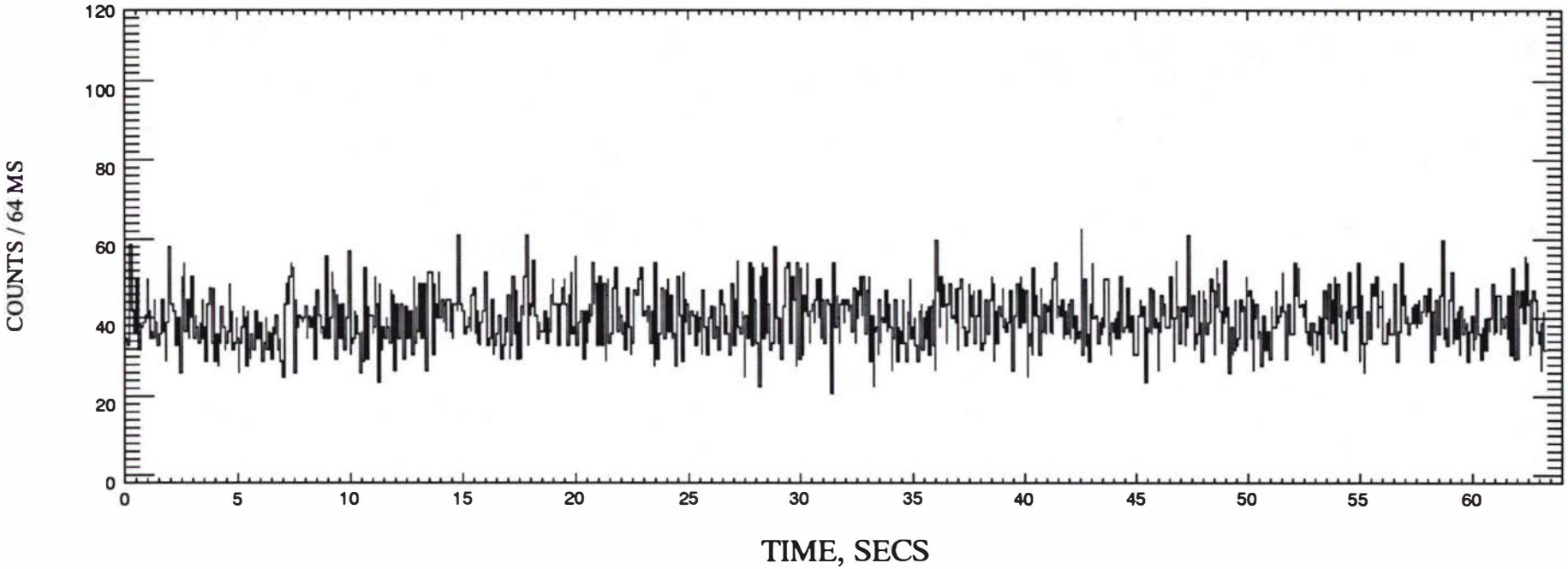


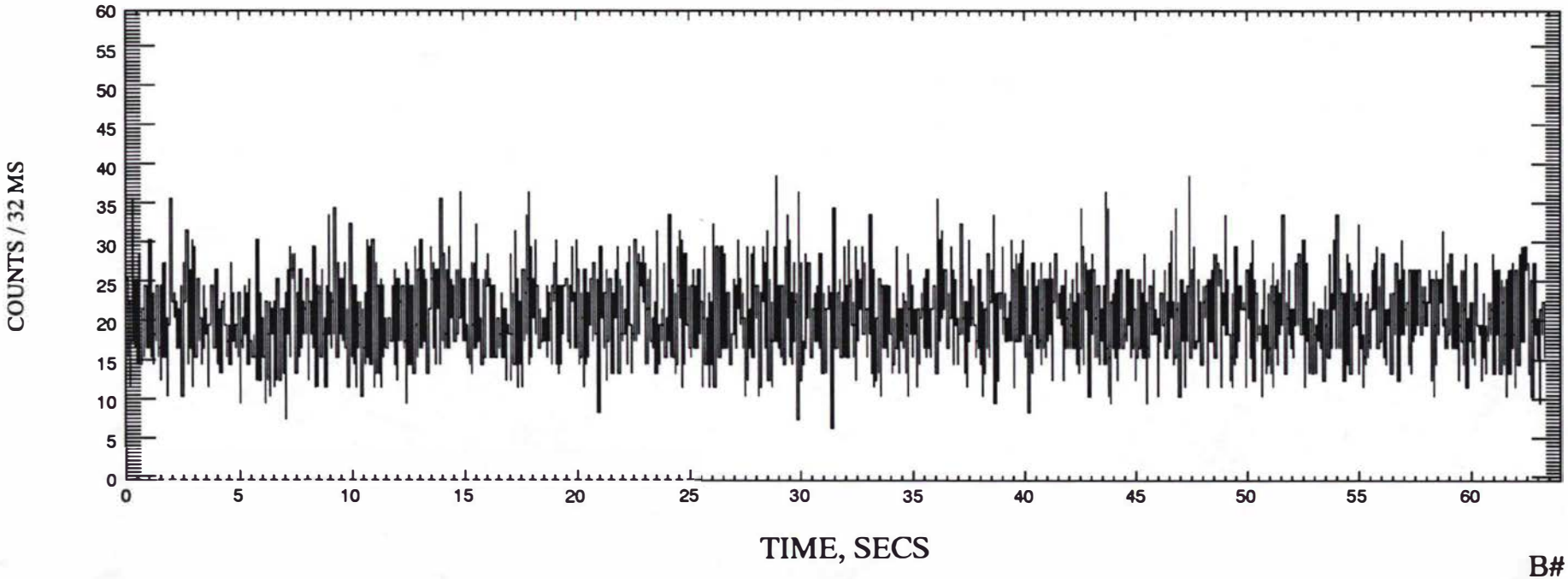


B# 27

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 10 at UT=22.419323743184 h=80709.565 s 22:25:09.565

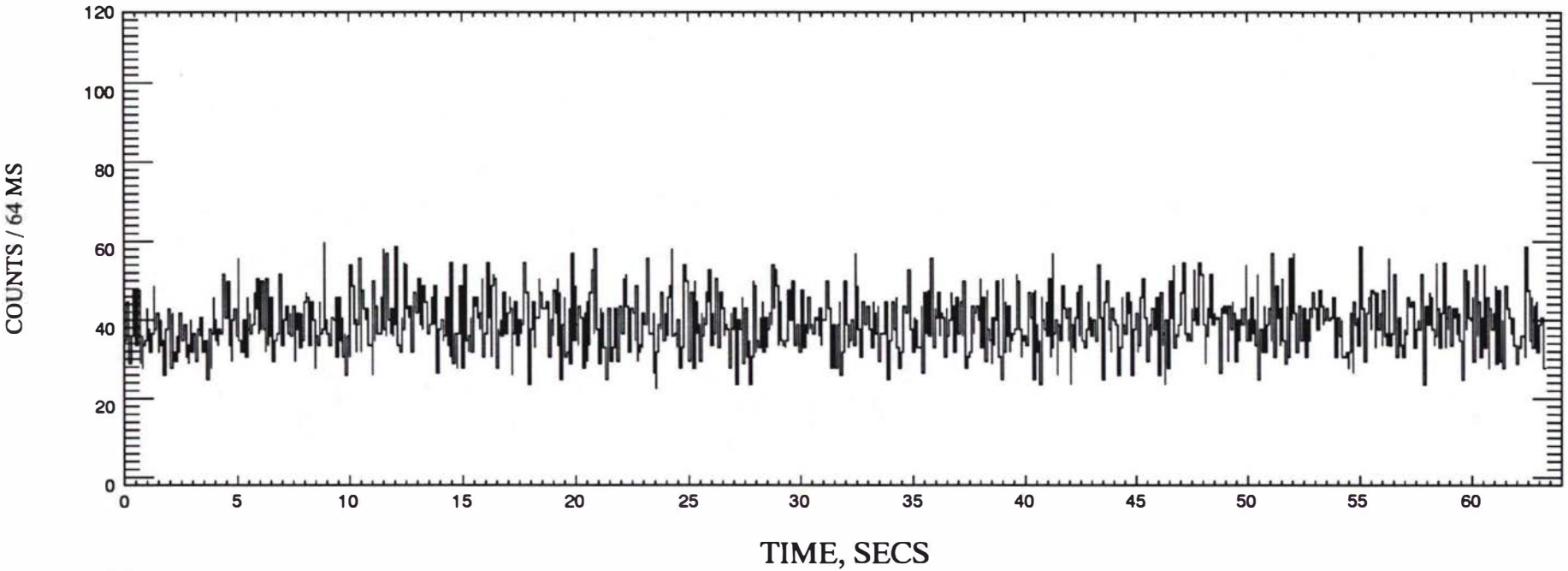


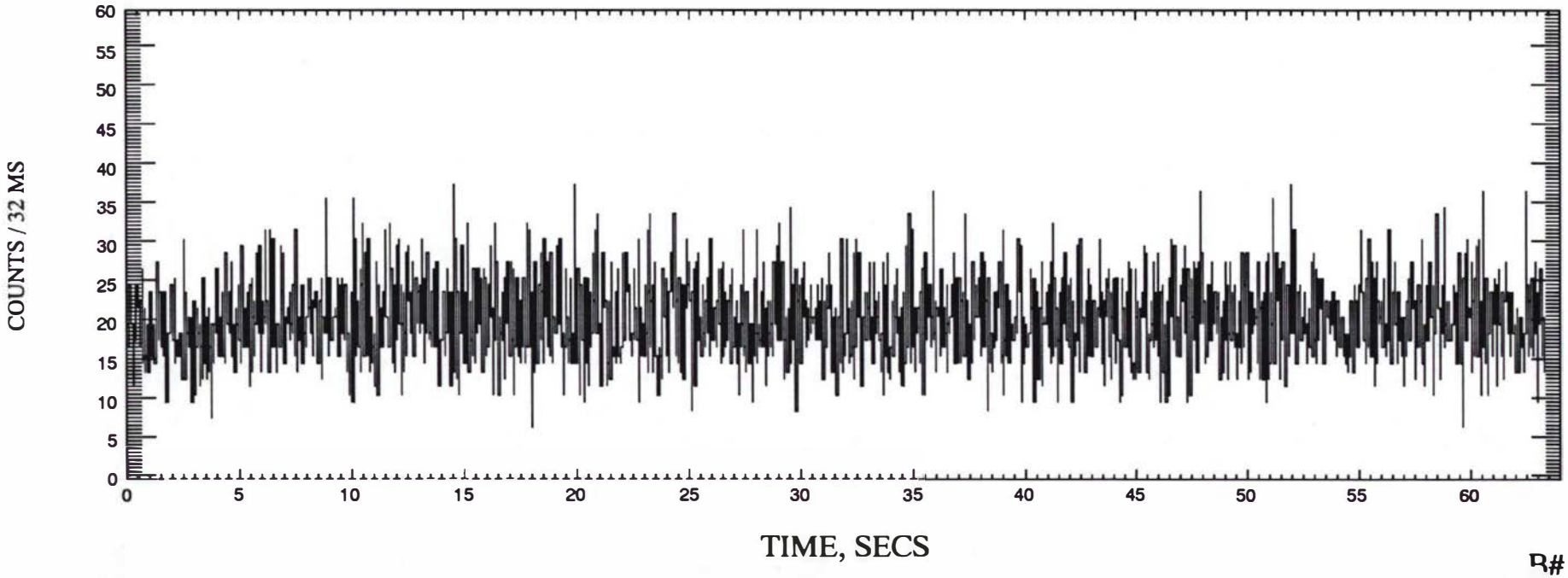


B# 28

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 11 at UT=23.122467189365 h=83240.882 s 23:07:20.882

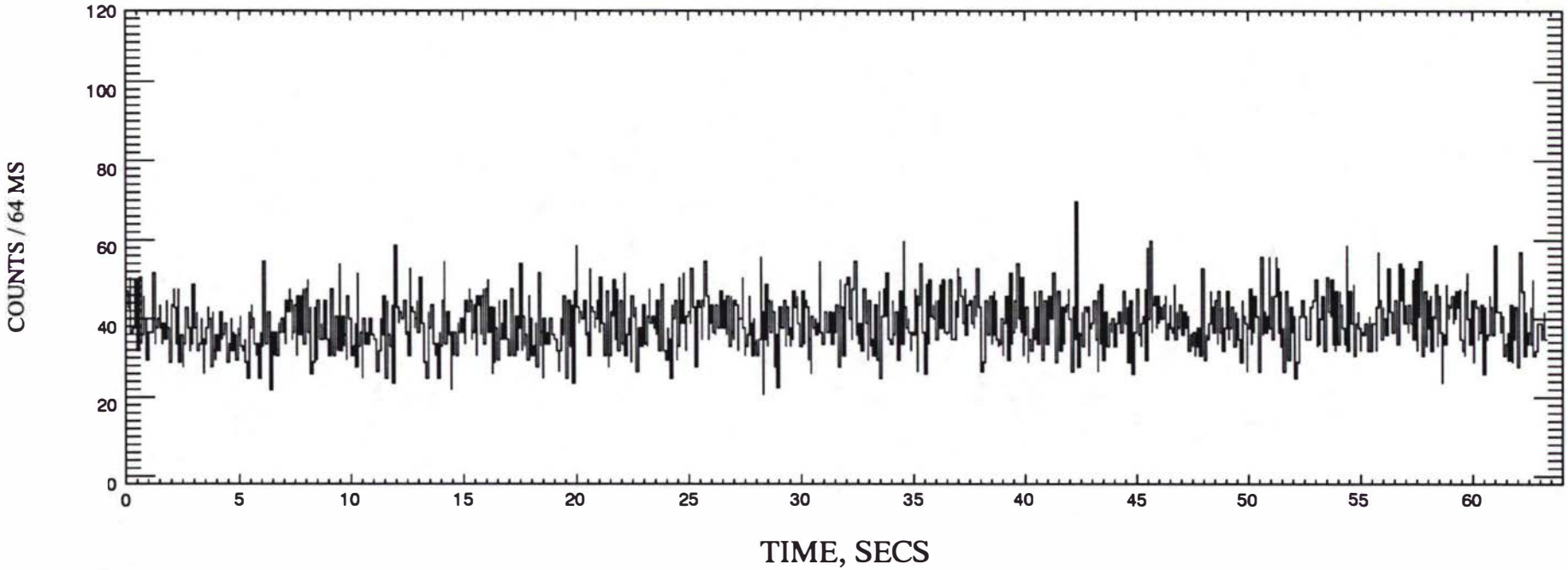


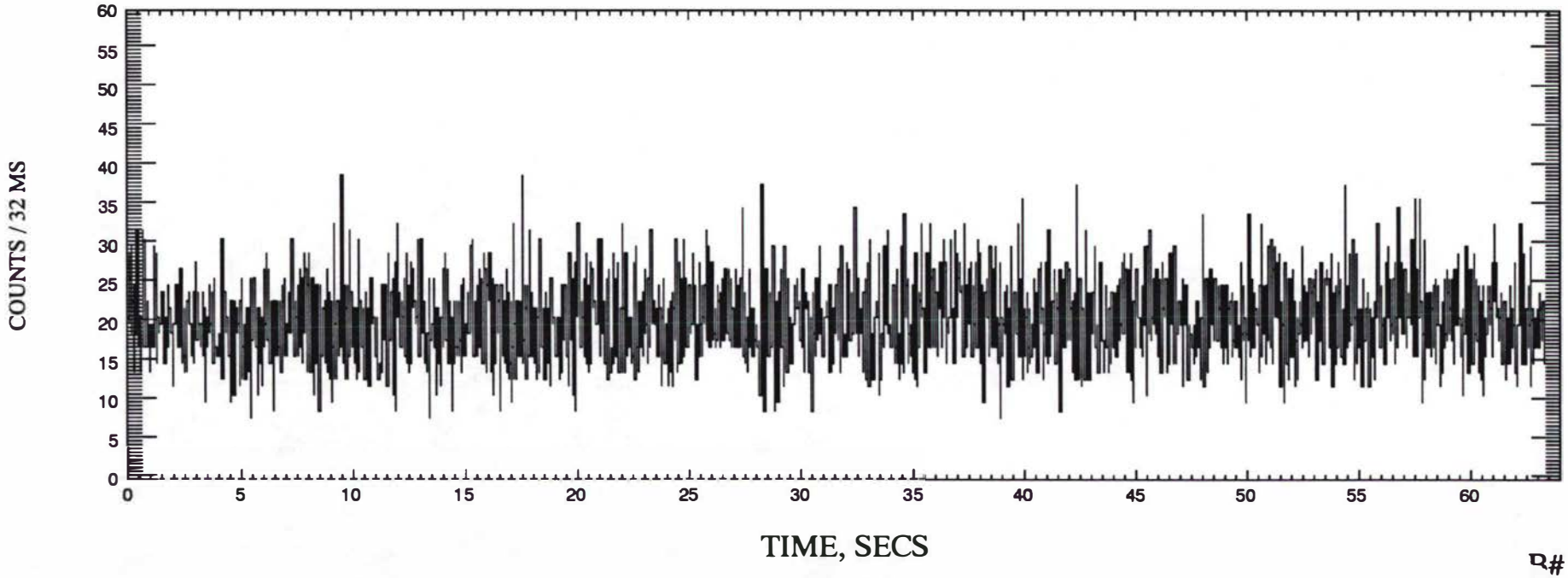


B# 29

HUS 2A TRIGGERED DATA QEDR day 116, year 1998 4/28/98

Burst Counter 12 at UT=23.824232597351 h=85767.237 s 23:49:27.237

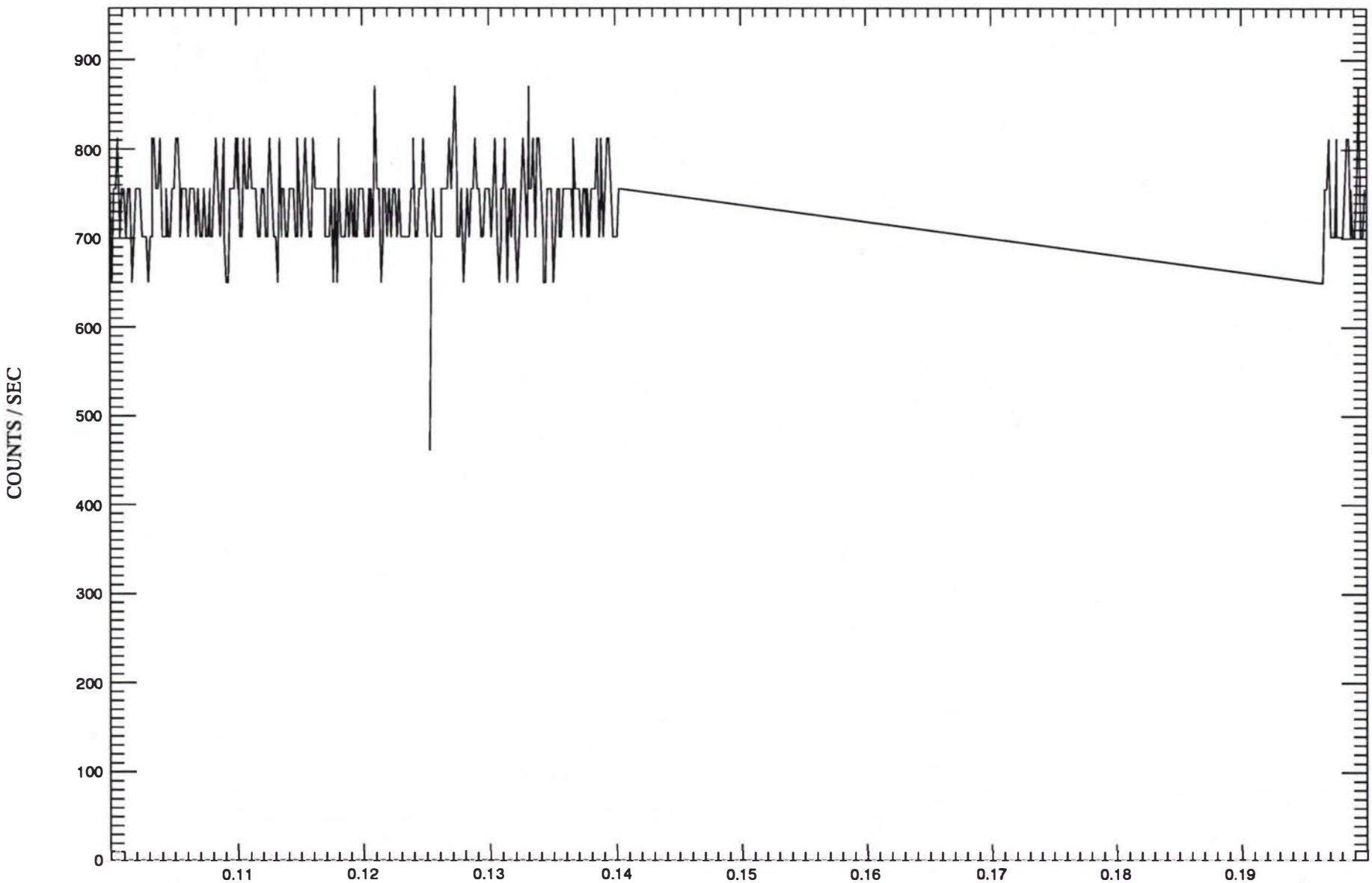




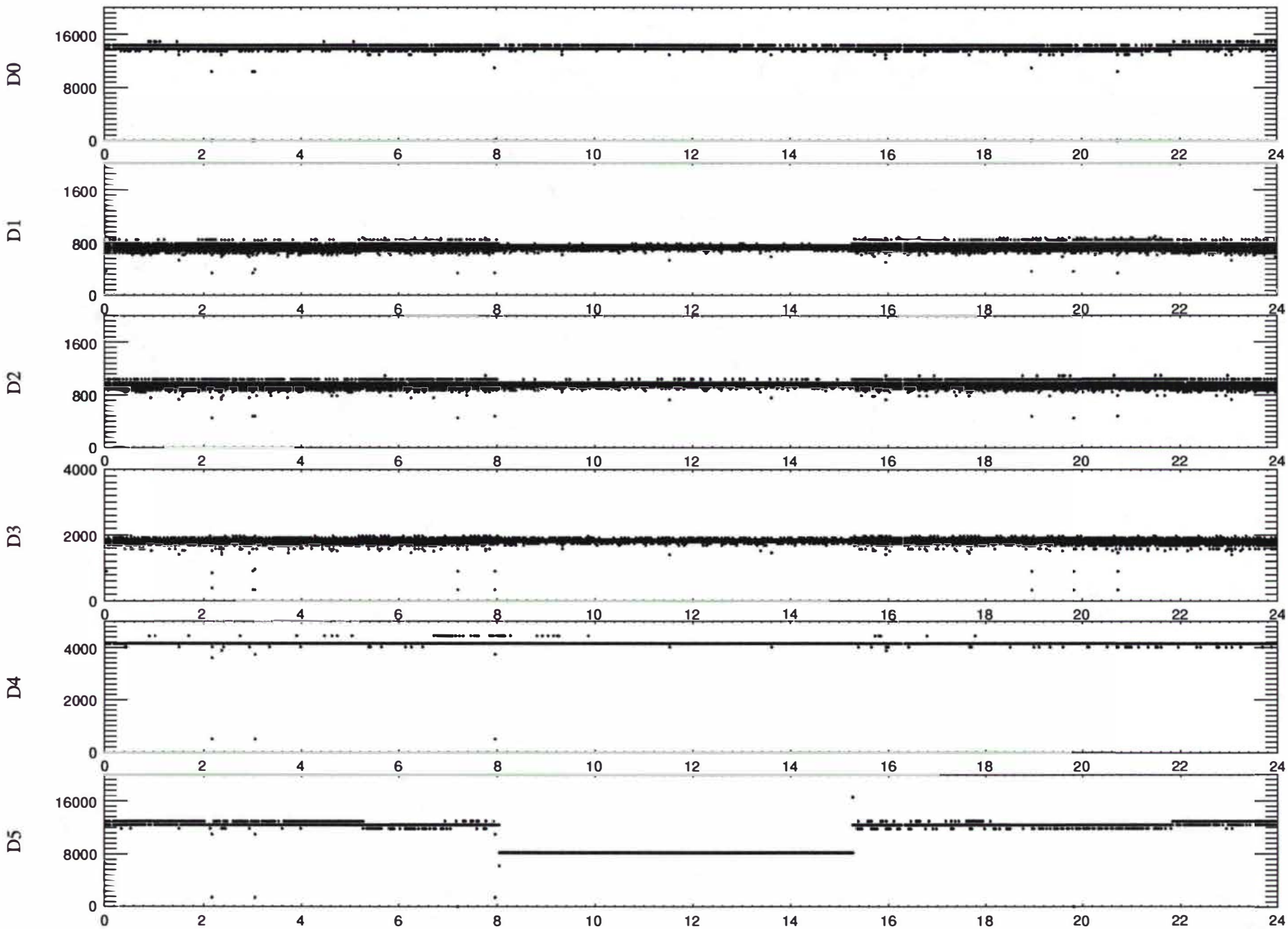
R# 30

HUS 2A, MODE 1, NOT AVERAGED QEDR day 116, year 1998 to day 116, year 1998 4/28/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 116, year 1998 to day 116, year 1998 8/18/98



From RICHARDSON@fender.msfc.nasa.gov Fri May 8 11:16:56 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA29945; Fri, 8 May 1998 11:16:56 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id LAA16324; Fri, 8 May 1998 11:16:52 -0700
Date: Fri, 8 May 1998 13:16:52 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980508131652.2220bfa9@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6710
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6710
EVENT OF 1998 APR 27 DAY OF YEAR=117
EVENT CROSSING TIME AT BATSE      : 56431. S. OR 15:40:31.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 225.000  -22.000
BATSE PEAK COUNTING RATE:   3000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 27/ 4/  98 IS:
RA=  149.672 DEC=   12.939 DIST=    4.983 AU
BATSE-ULYSSES DISTANCE =  745460979. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 98.34 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -360.55 SECS.
CROSSING TIME AT ULYSSES    IS 56070. S. OR   15:34:30 +/-  471.67 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 27/ 4/  98 IS:
RA=   37.978 DEC=   14.806 DIST=    2.460 AU
MARS-BATSE DISTANCE =  367993888. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=  9.80 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1209.58 SECS.
CROSSING TIME AT MARS       IS 57641. S. OR   16:00:40 +/-   54.64 SECONDS

                BATSE BURST TRIGGER
NO.: 6710

TIME: TJD=0930 SECONDS=56431

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=56.0   AZIMUTH=165.9  ERROR=8.6   DEGREES

COMMENTS:
GRB SINGLE PULSE. DURATION APPROX. = 1.7 SEC. NOT VISIBLE ABOVE 300KEV.
```

BATSE #	Date	TJD	SoD	Max ct/s	RA	Dec	Dur (s)
6710	980427	10930	56431	3000	225	-22	1.7

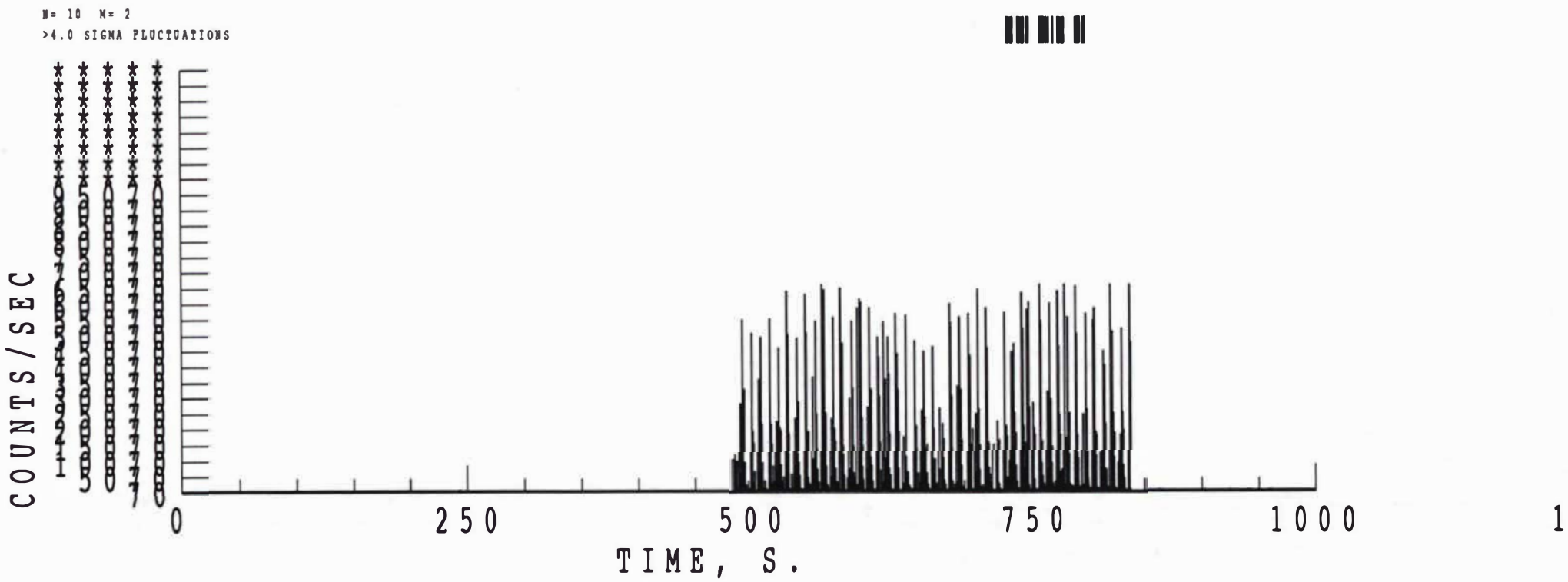
BATSE BURST# 6710

ULYSSES RT 29/ 5/98

27/ 4/98 55584.480 s

INTERVALS REGROUPED BY 2

0- 0 keV



1

GRBM 19980427 56430

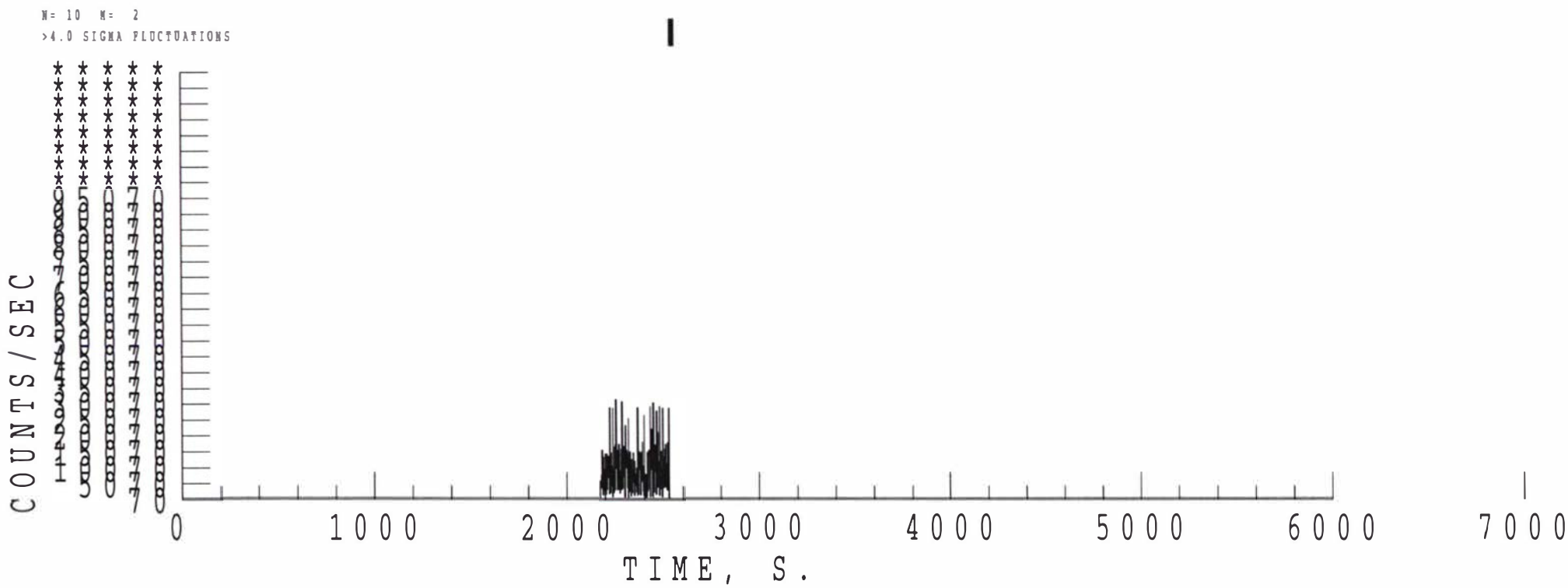
ULYSSES RT

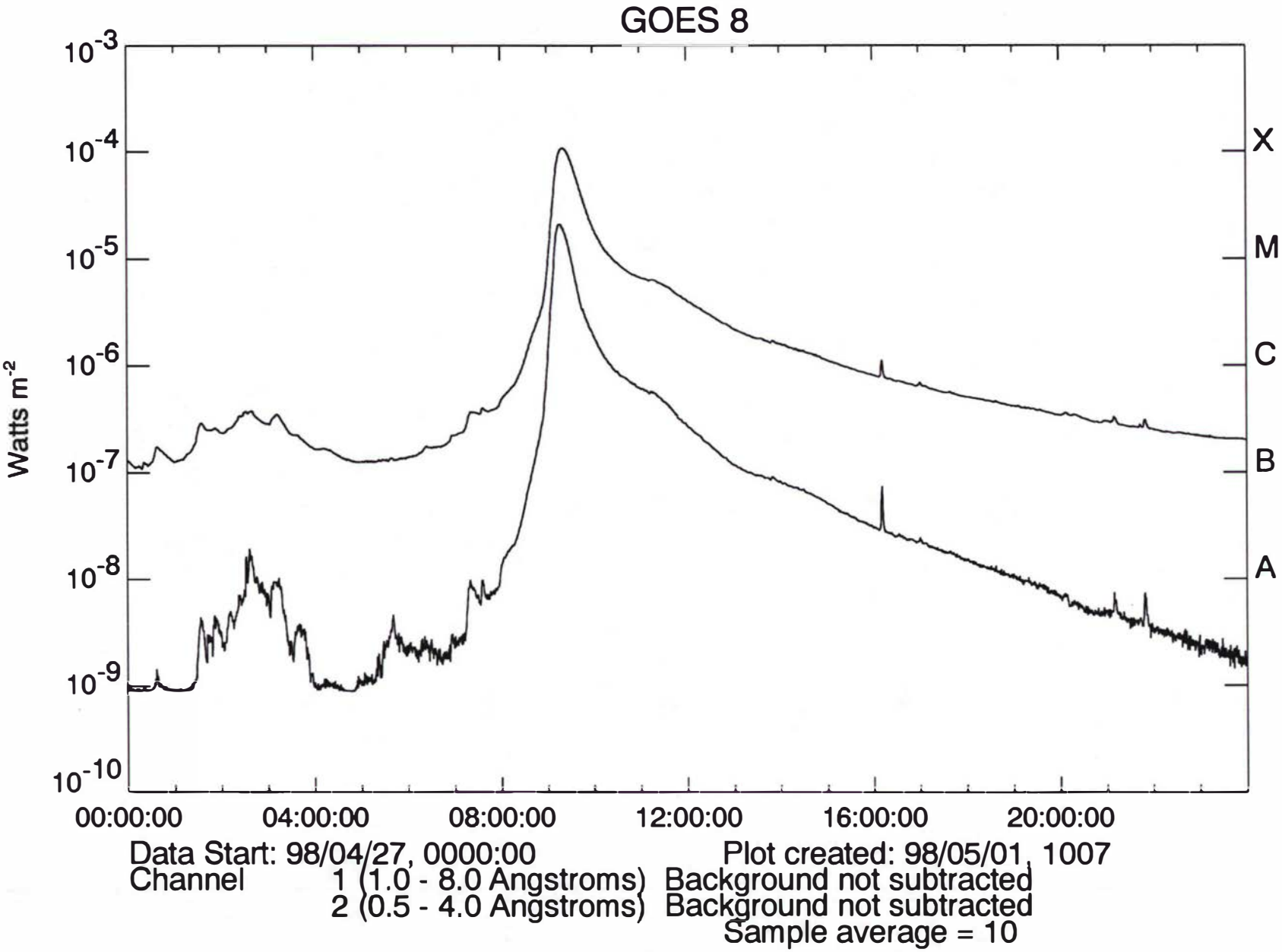
26/08/09

27/04/98 53892.207 s

INTERVALS REGROUPED BY 8

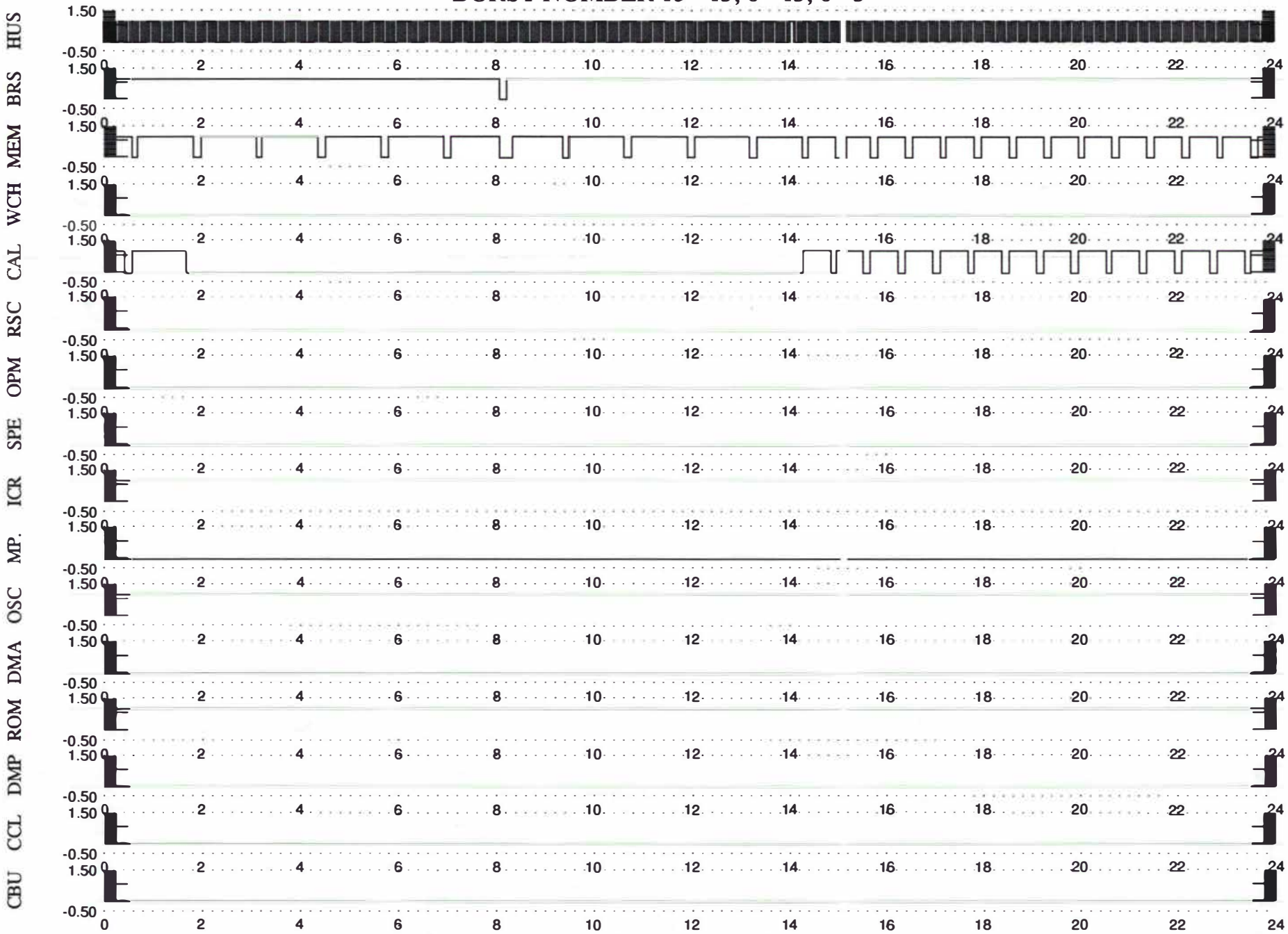
0- 0 keV




GOES 8
Watts m-2
10-3
10-4
10-5
10-6
10-7
10-8
10-9
10-10
X
M
C
B
A
00:00:00
04:00:00
08:00:00
12:00:00
16:00:00
20:00:00
Data Start: 98/04/27, 0000:00
Plot created: 98/05/01, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

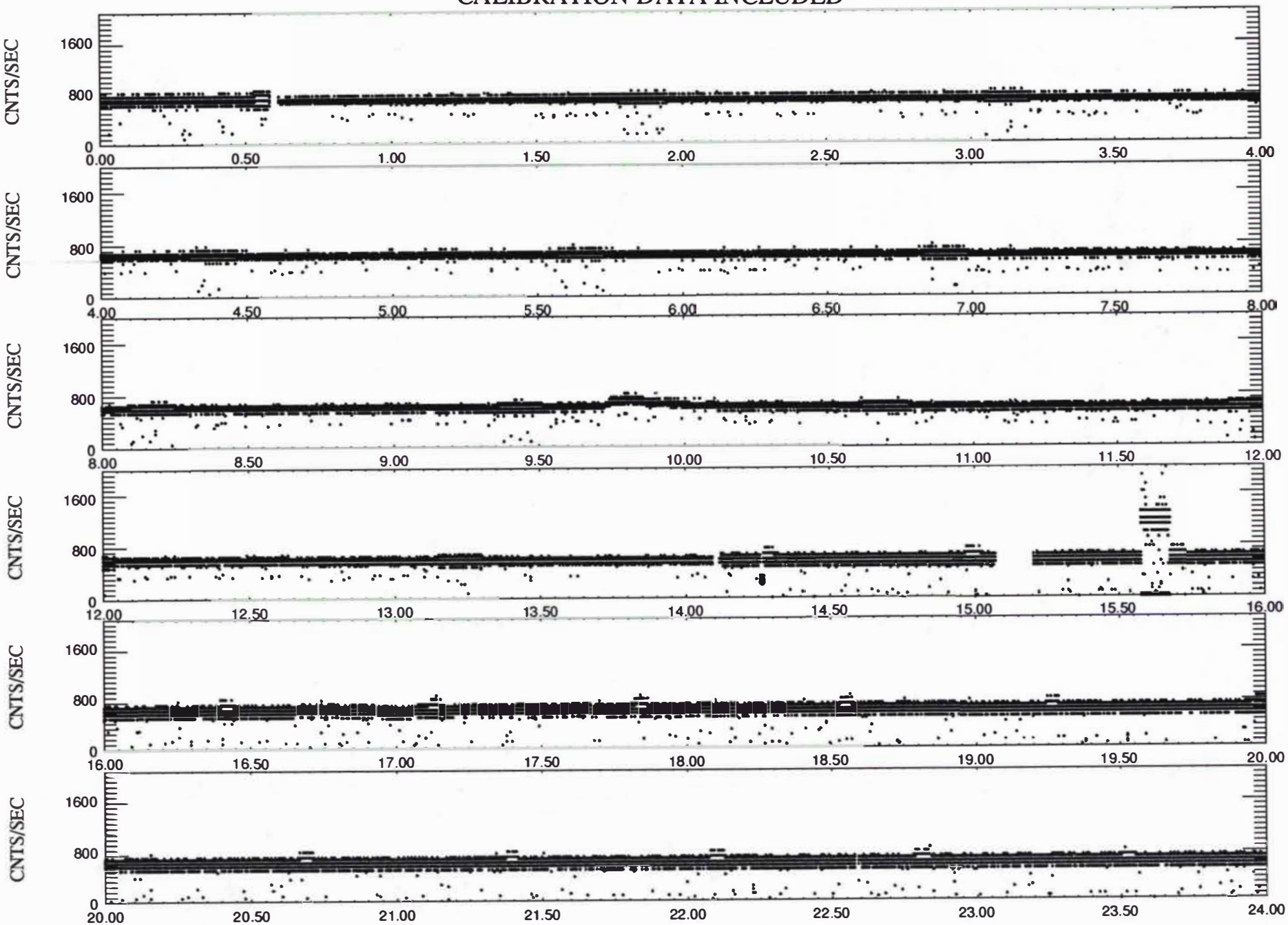
HUS MODES EDR day 117, year 1998 to day 117, year 1998 8/18/98

BURST NUMBER 13 - 15, 0 - 15, 0 - 5



HUS 2A, MODE 1, NOT AVERAGED EDR day 117, year 1998 to day 117, year 1998 8/18/98

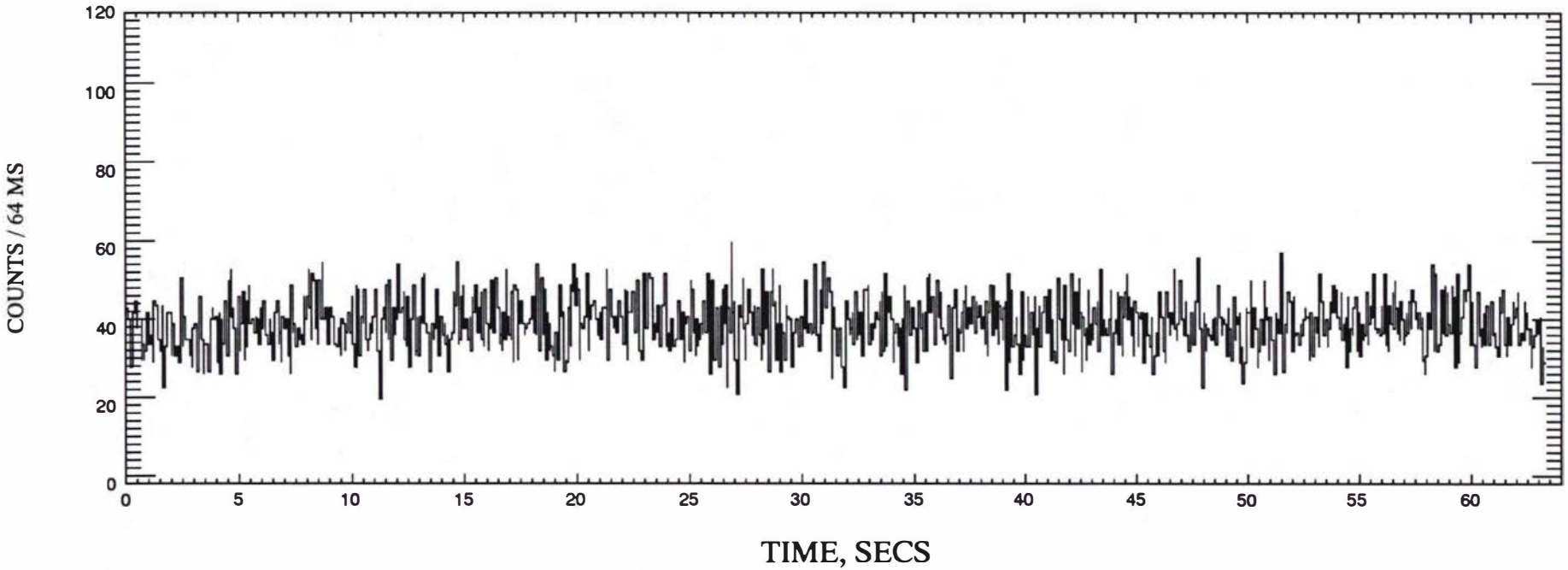
CALIBRATION DATA INCLUDED

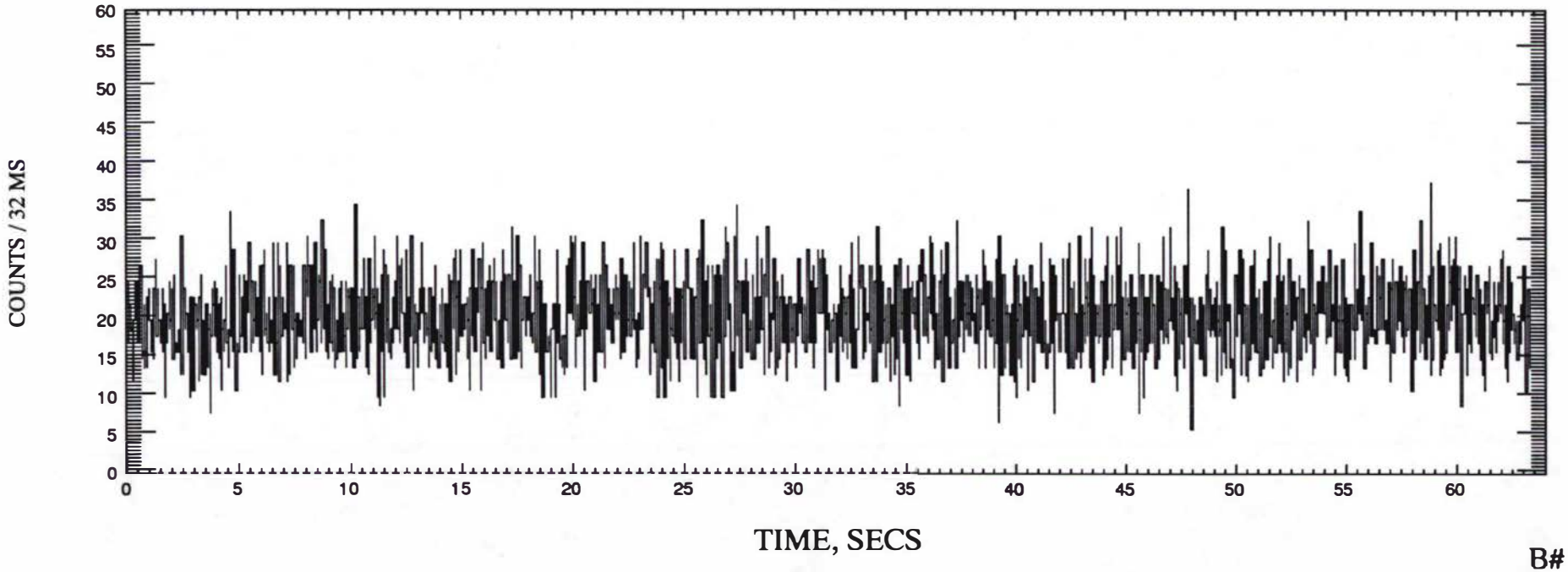


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 13 at UT= 0.526940227085 h= 1896.985 s 00:31:36.985

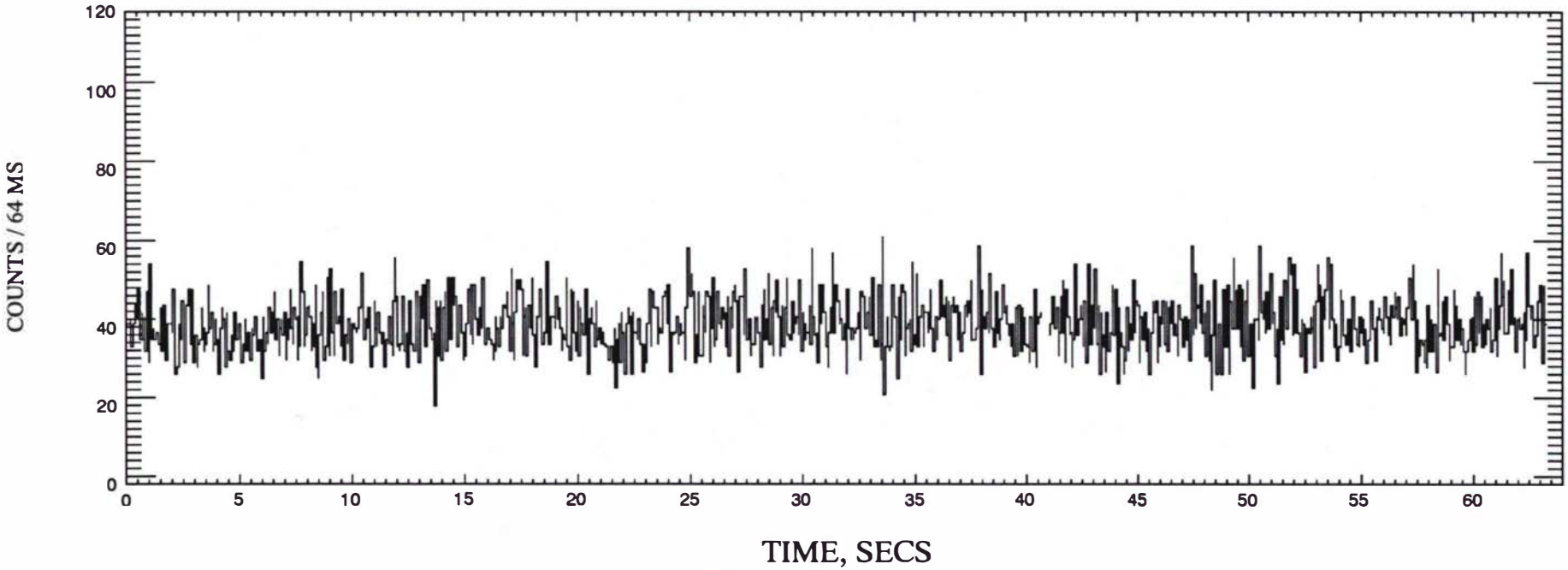


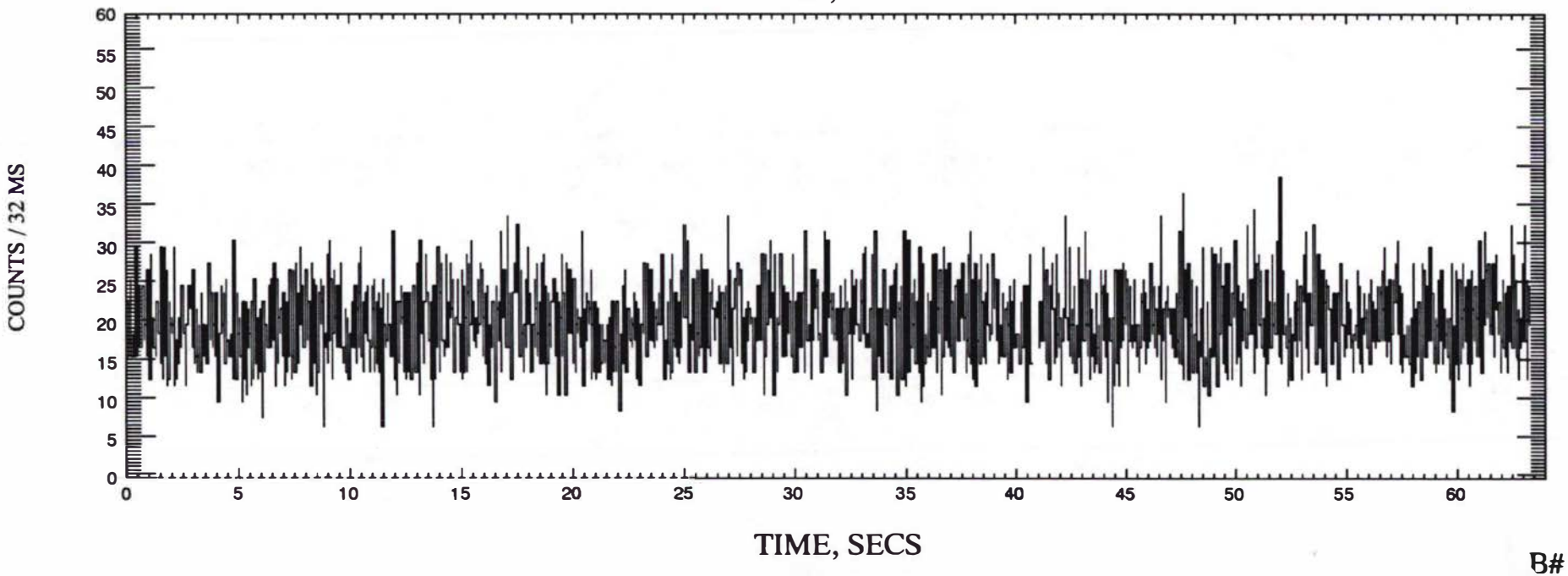


B# 1

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 14 at UT= 1.779636277093 h= 6406.691 s 01:46:46.691

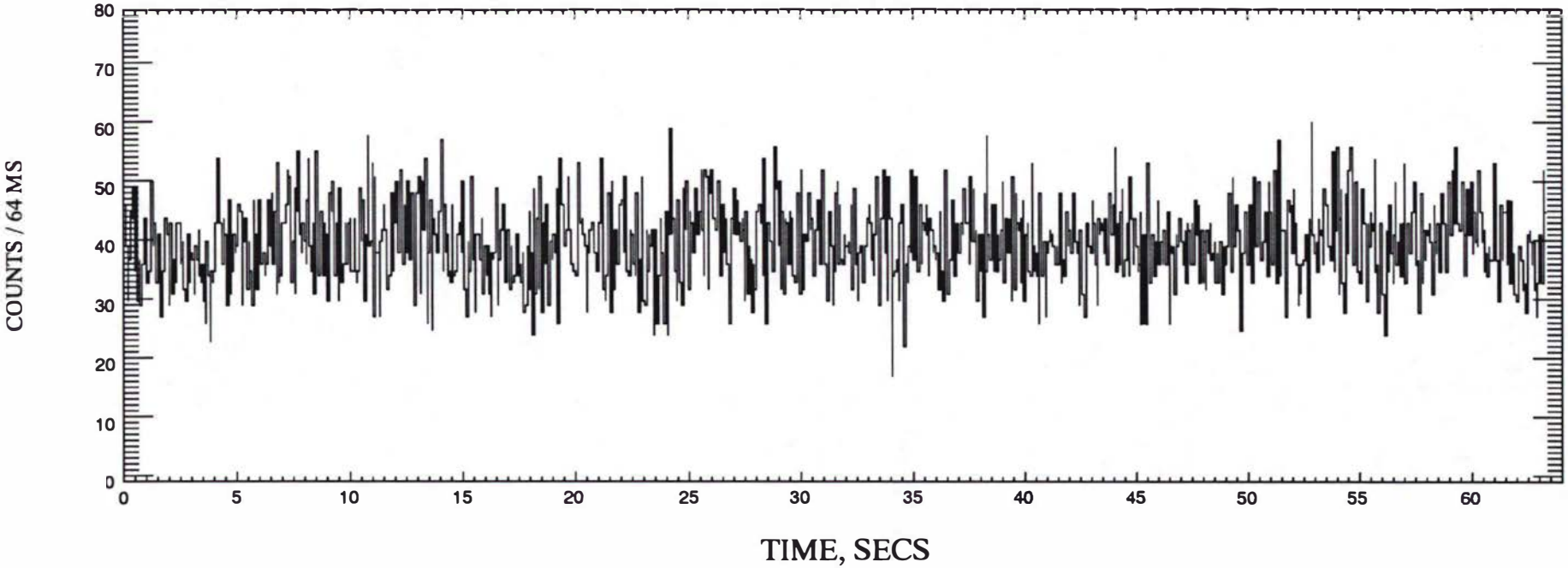


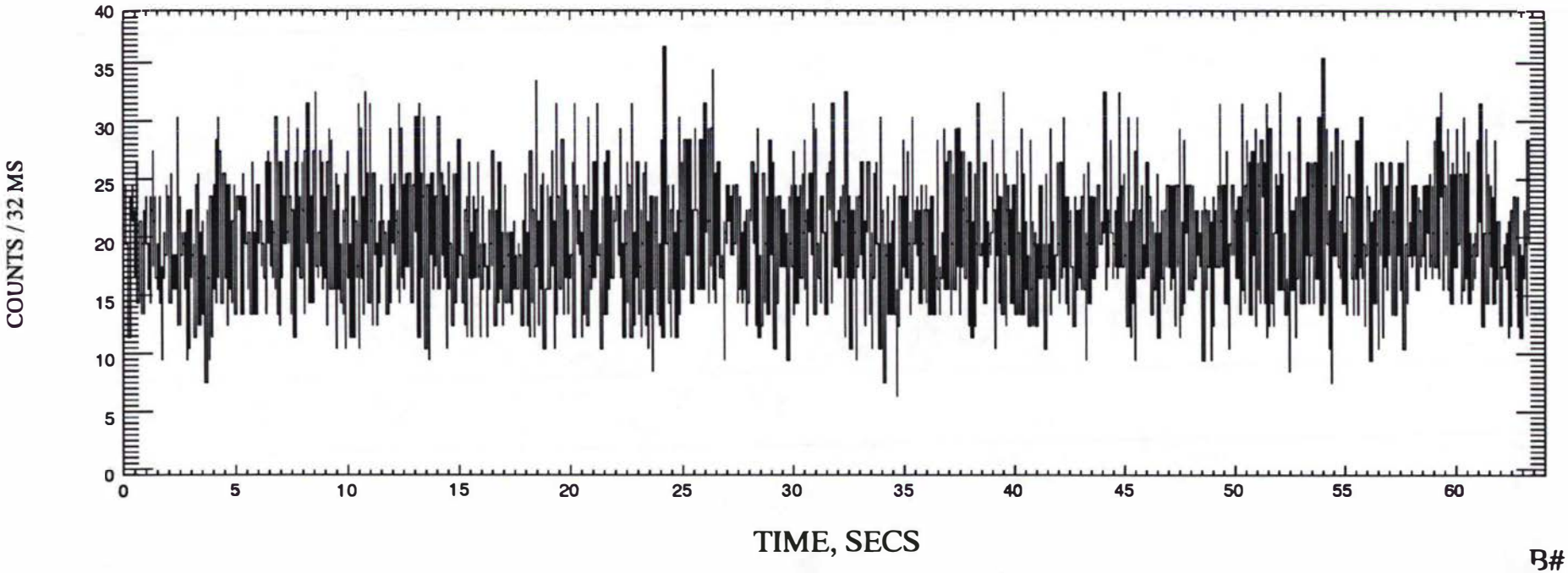


B# 2

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 15 at UT= 3.042531895108 h=10953.115 s 03:02:33.115

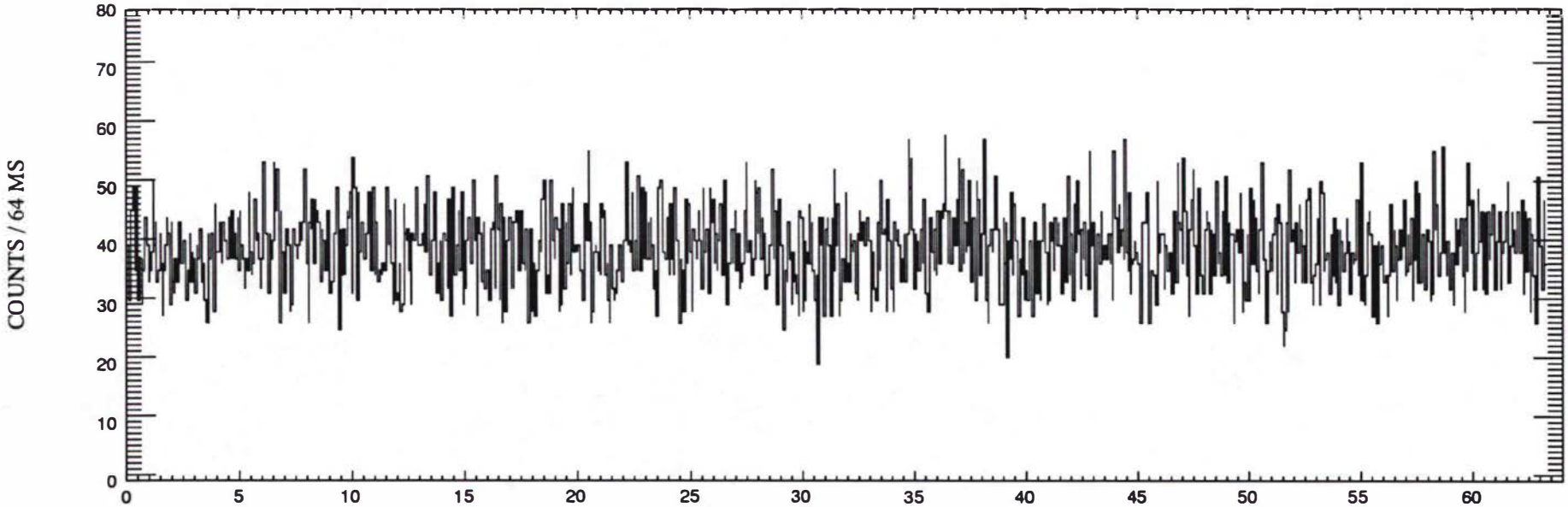




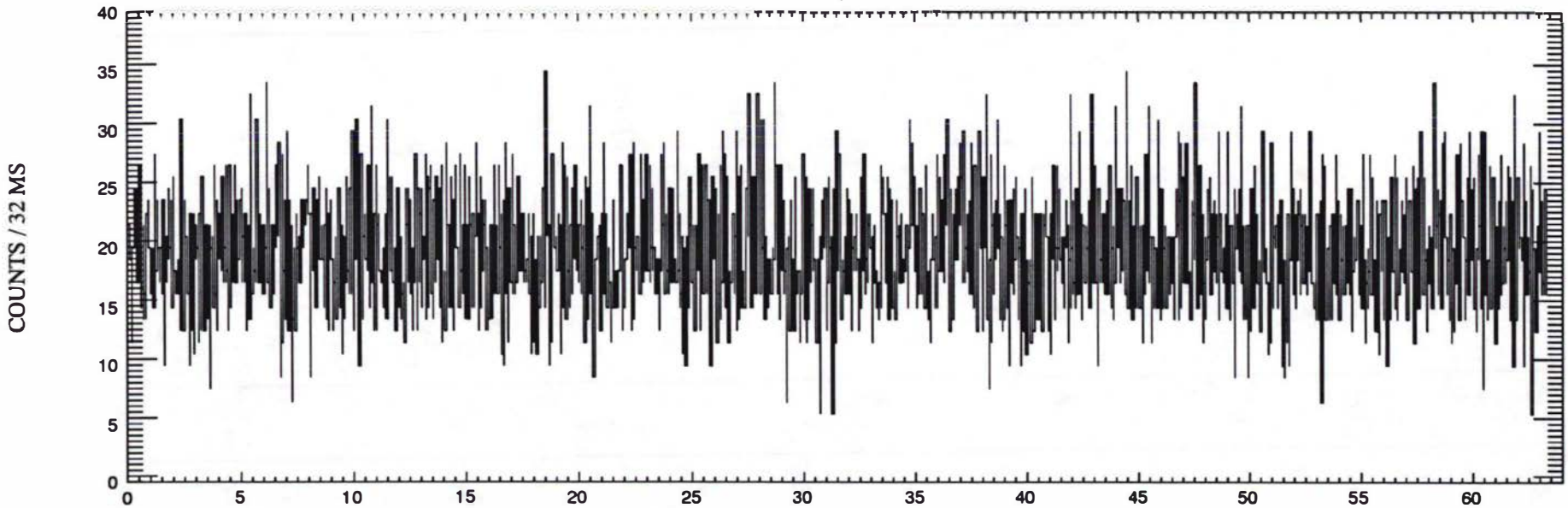
B# 3

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 0 at UT= 4.304780815972 h=15497.211 s 04:18:17.211



TIME, SECS

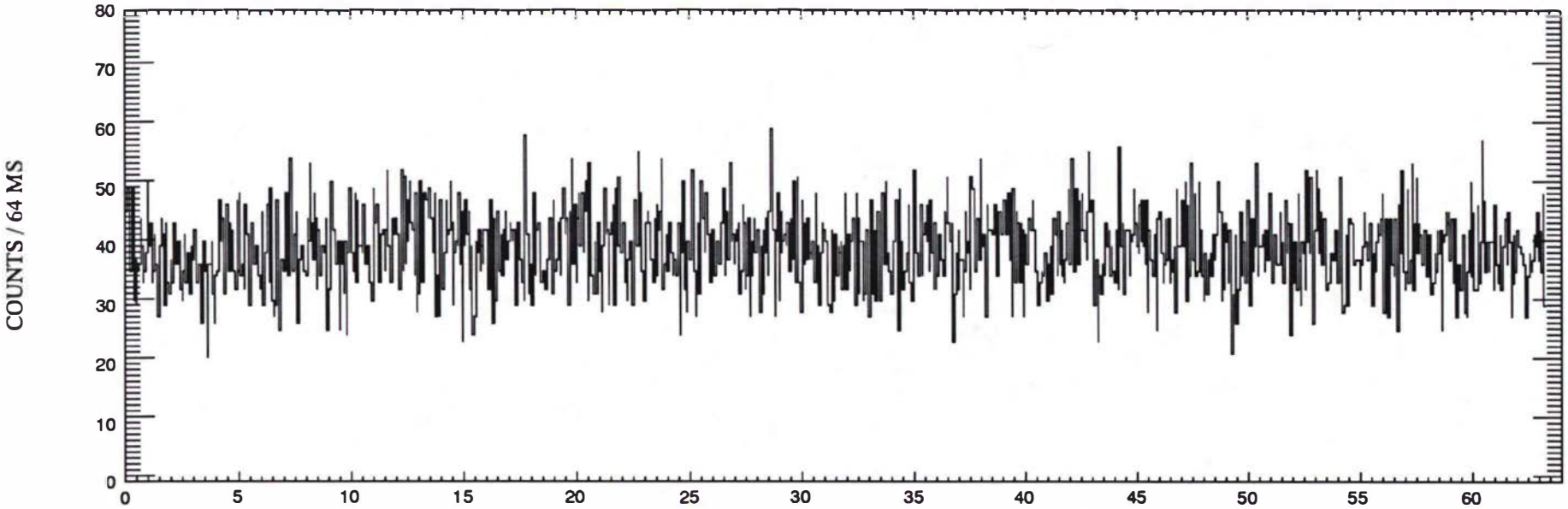


TIME, SECS

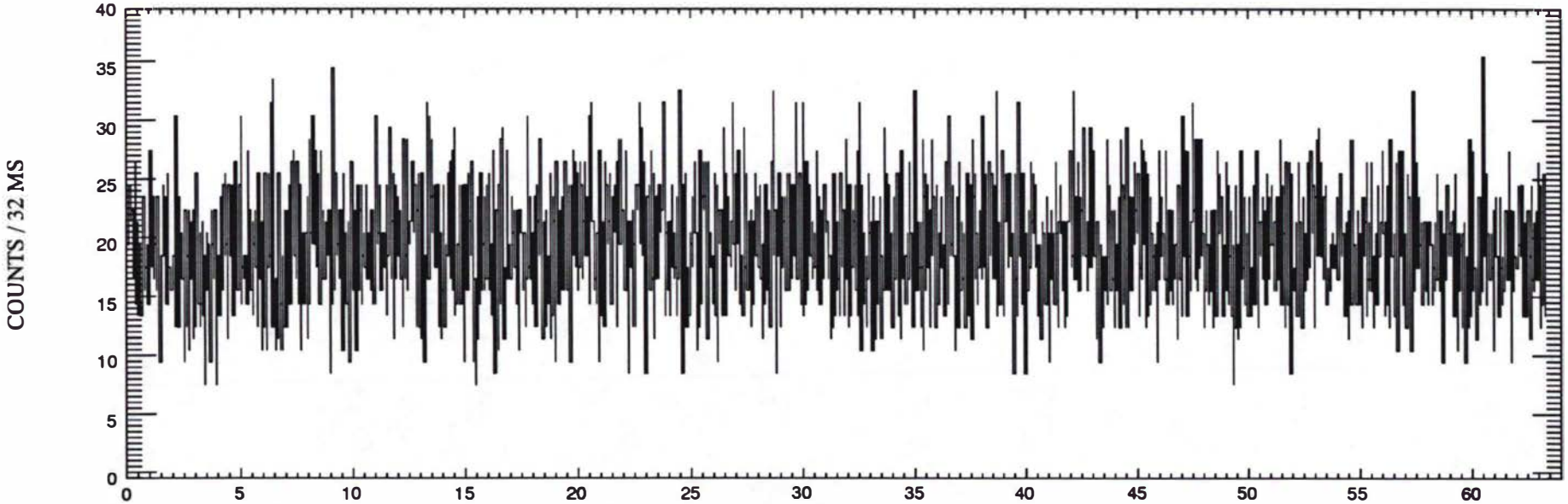
B# 4

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 1 at UT= 5.567066624959 h=20041.440 s 05:34:01.440



TIME, SECS

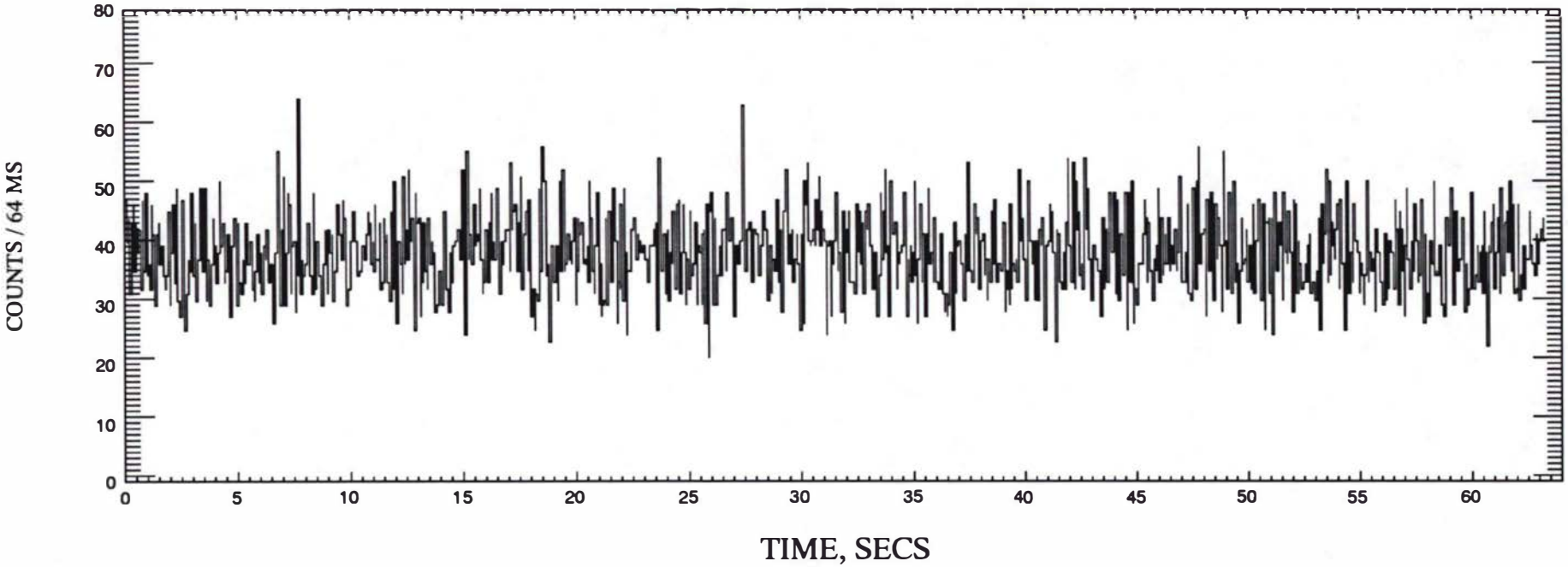


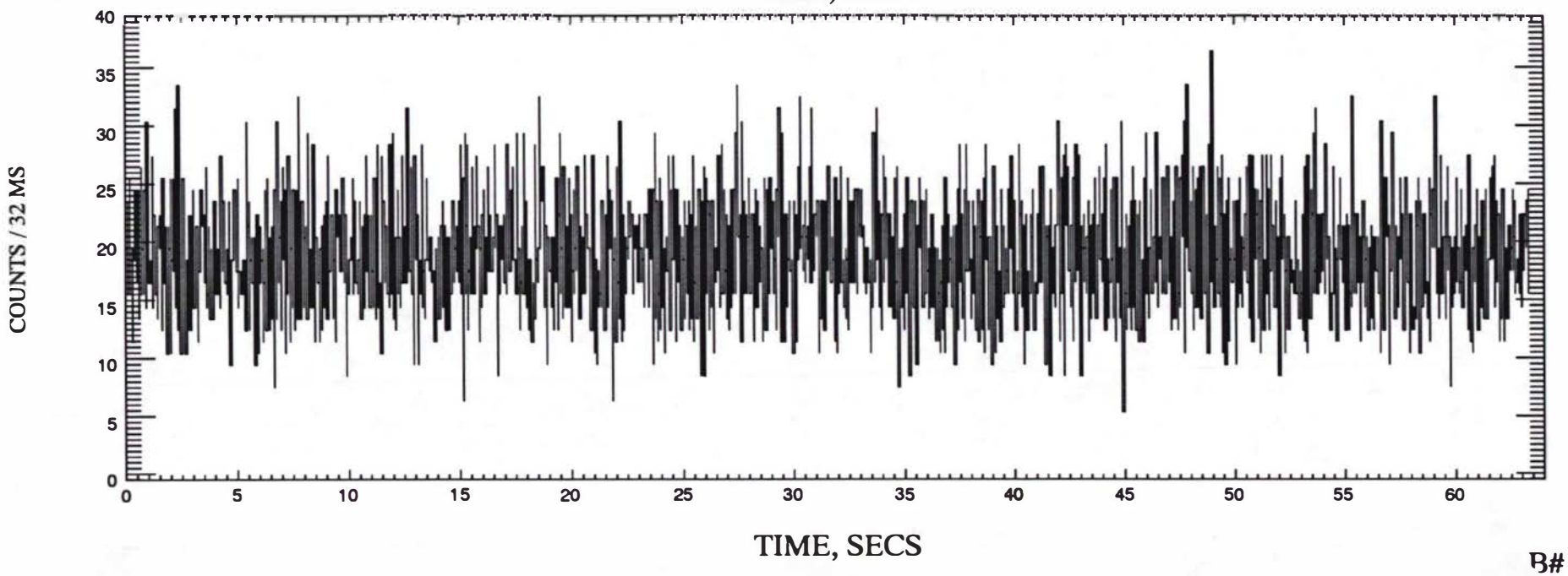
TIME, SECS

B# 5

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 2 at UT= 6.828408423530 h=24582.270 s 06:49:42.270

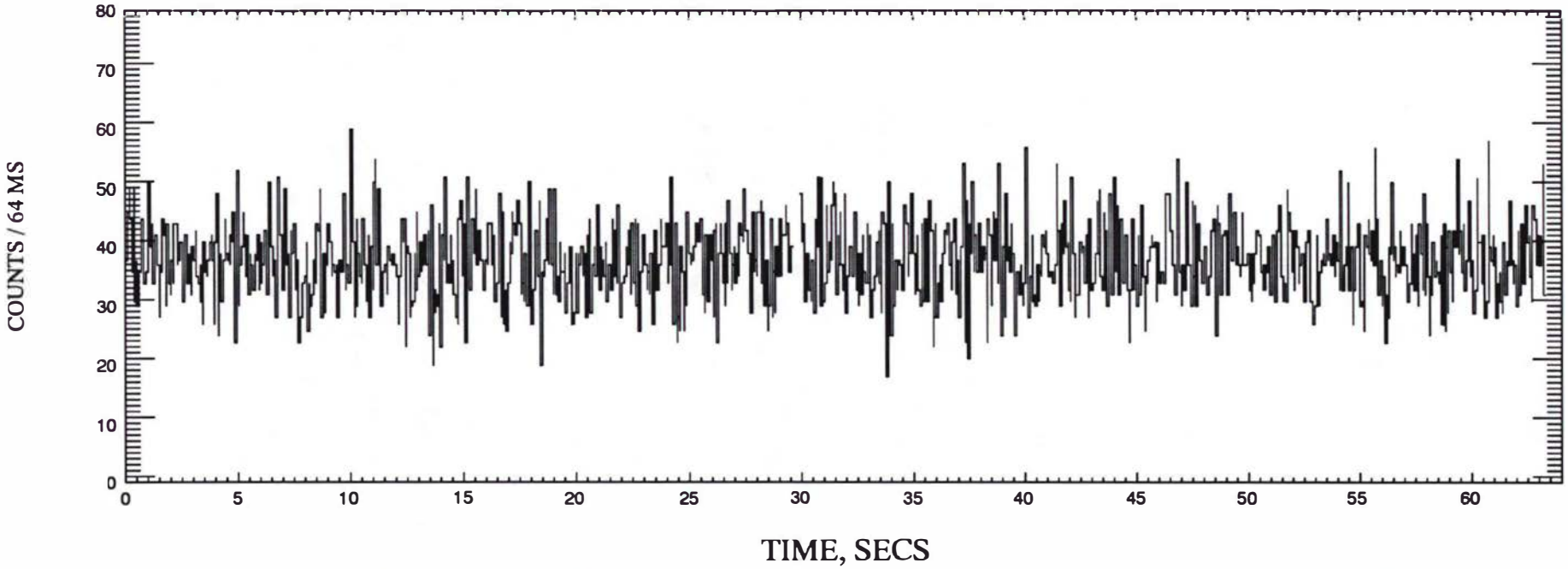


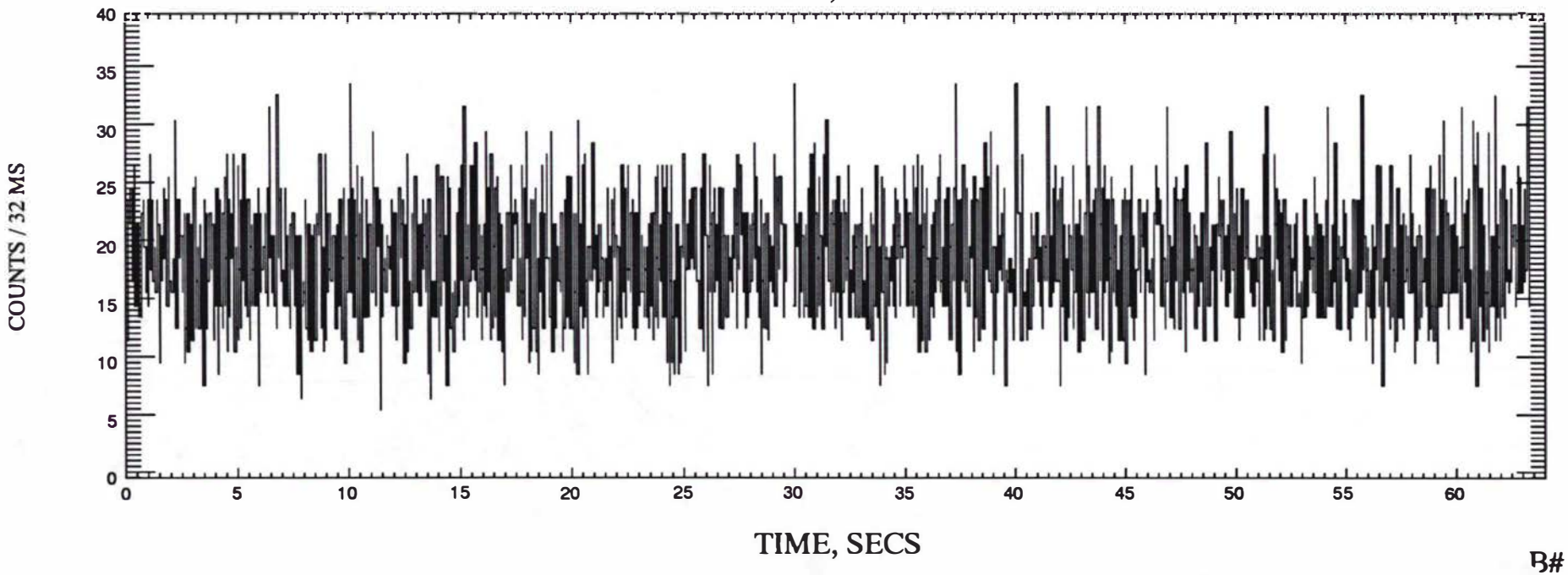


B# 6

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 3 at UT= 8.091521055433 h=29129.476 s 08:05:29.476

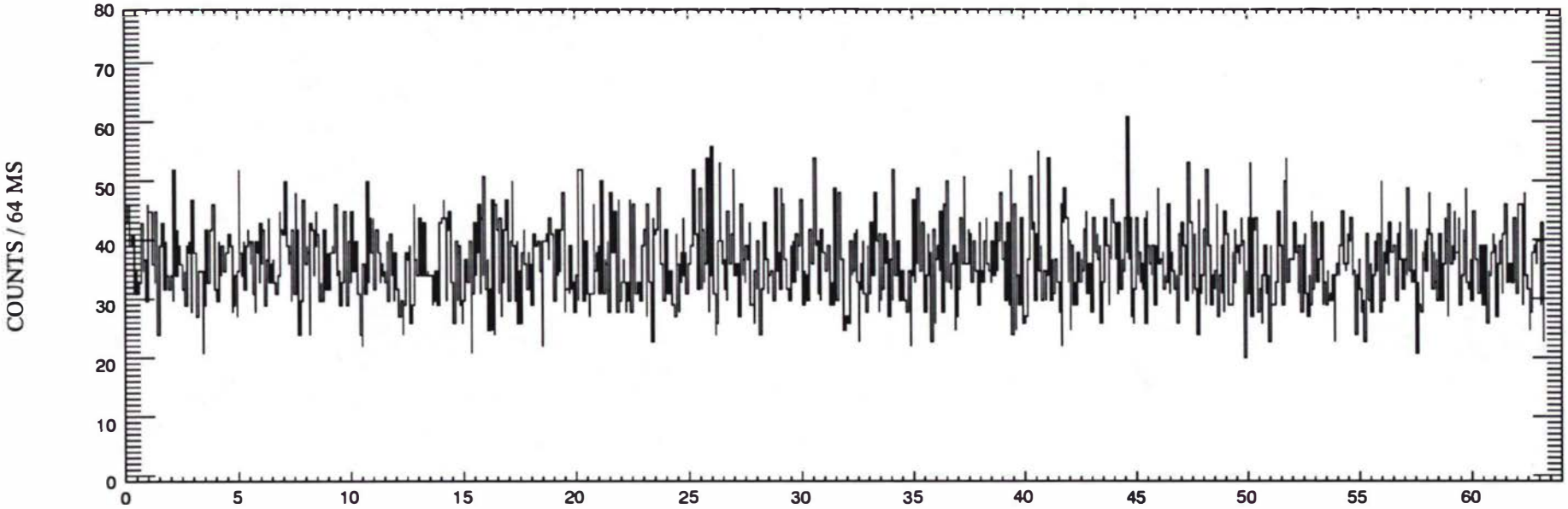




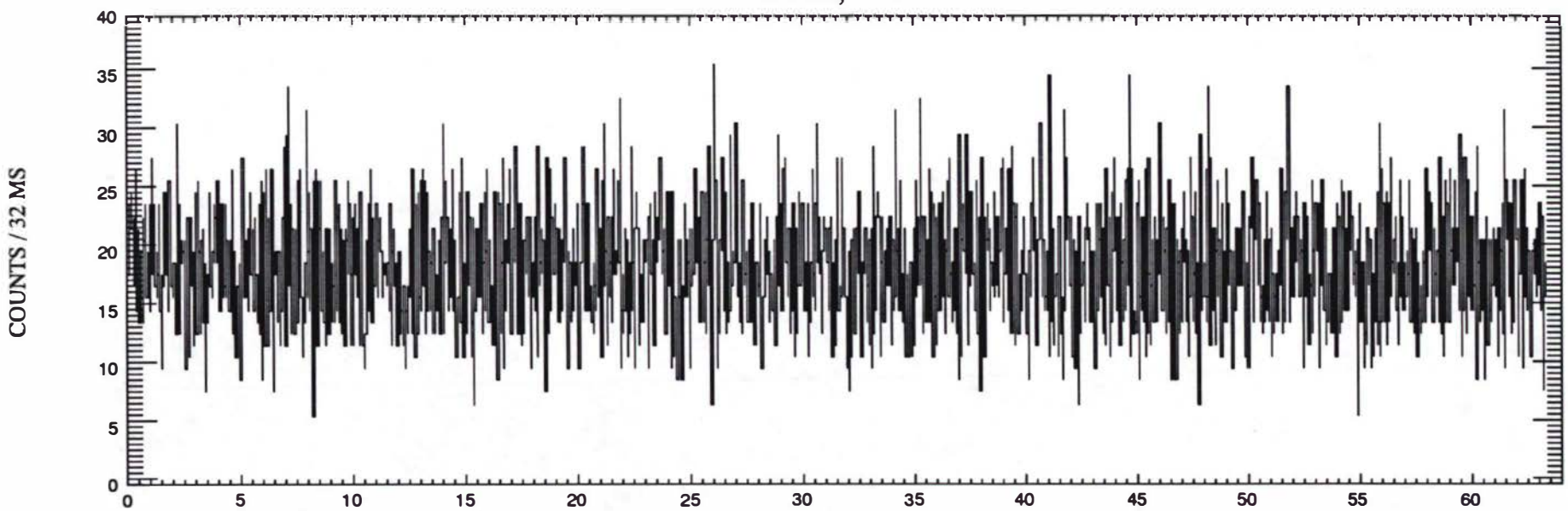
B# 7

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 4 at UT= 9.353764114380 h=33673.551 s 09:21:13.551



TIME, SECS

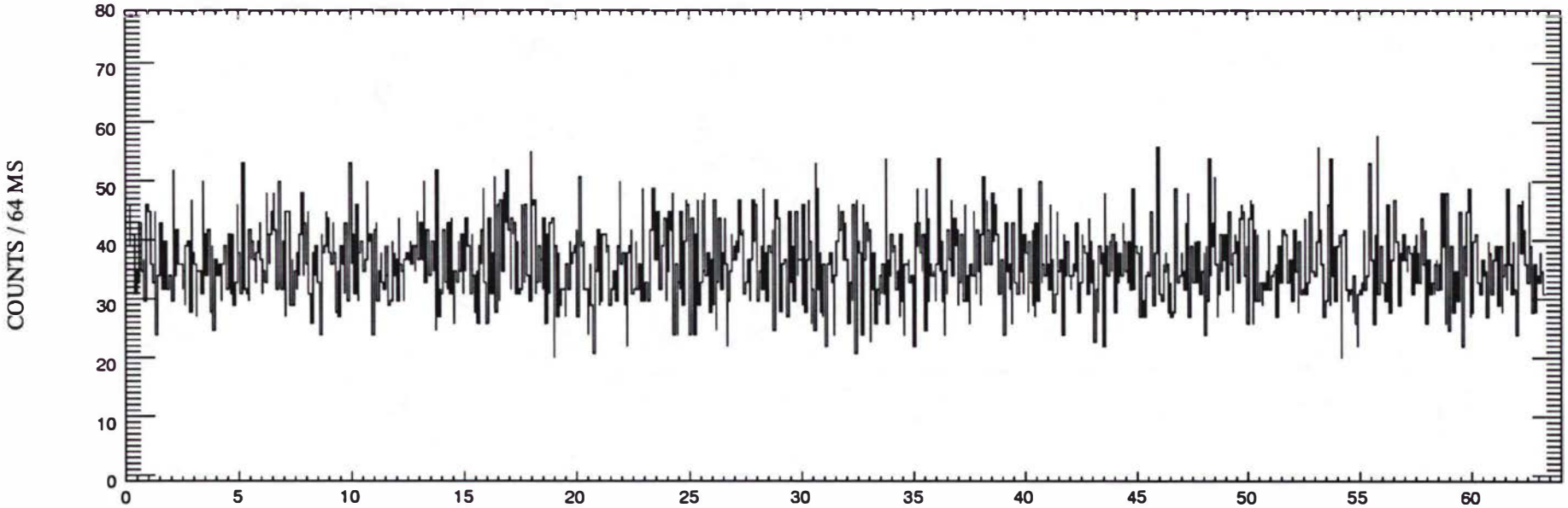


TIME, SECS

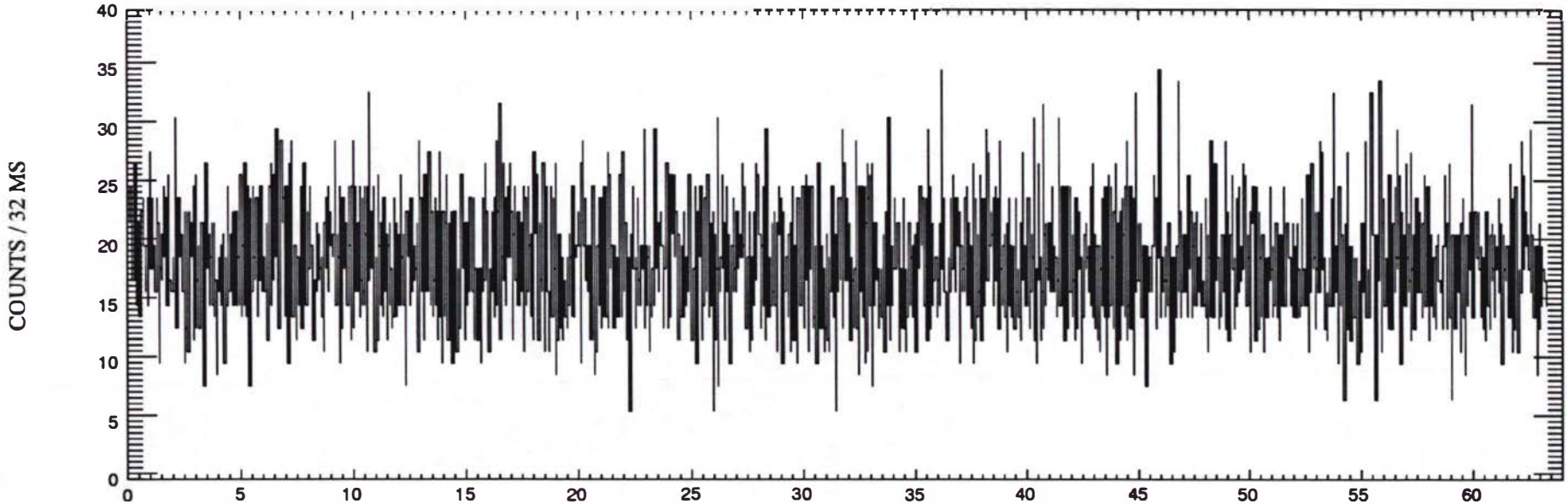
B# 8

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 5 at UT=10.616017375522 h=38217.663 s 10:36:57.663



TIME, SECS

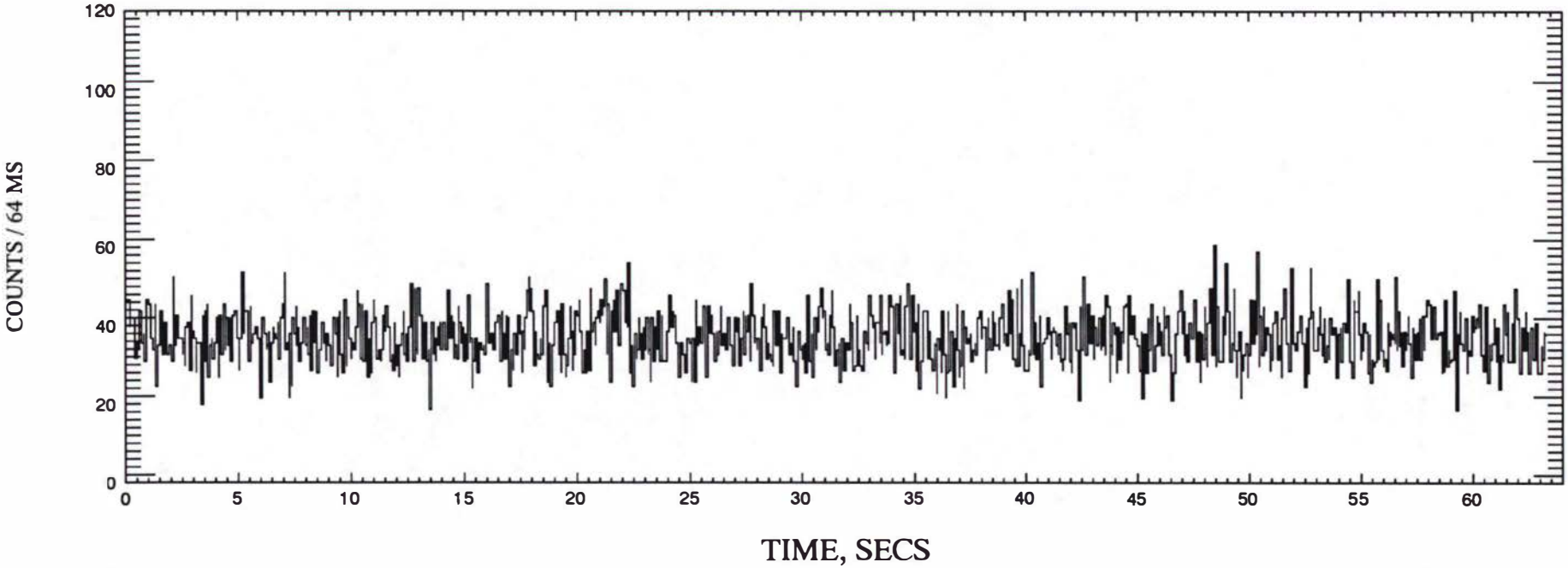


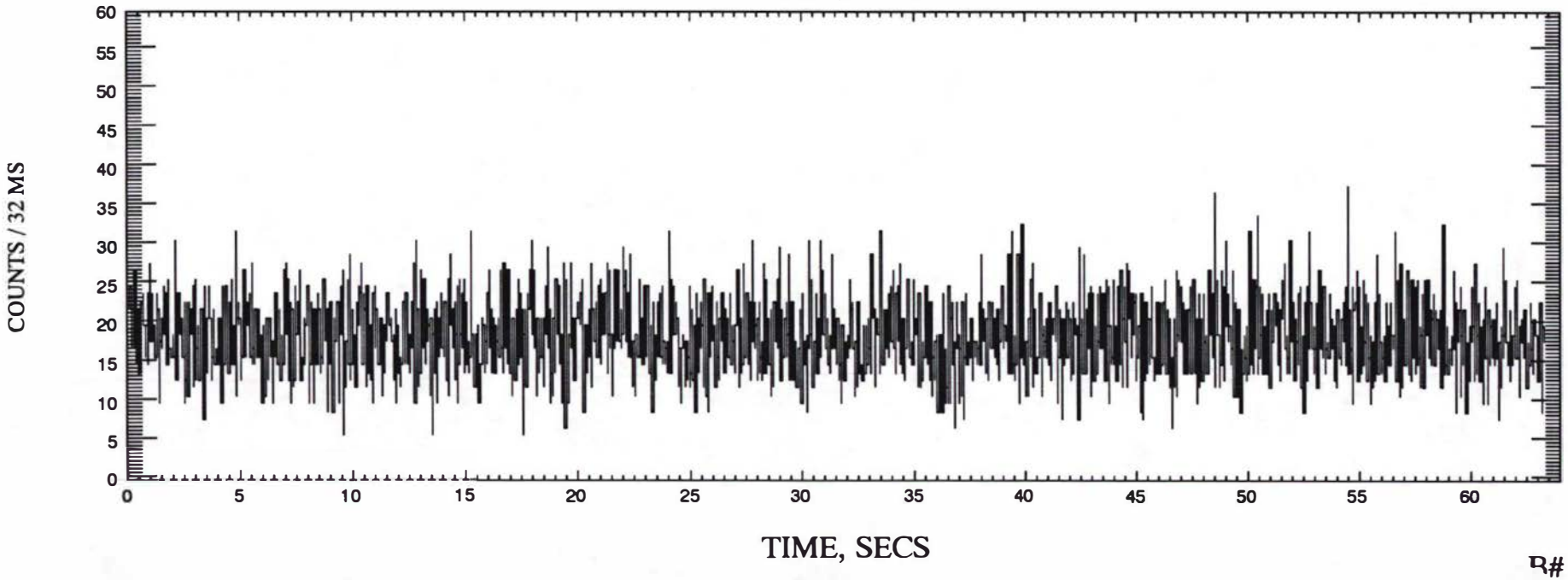
TIME, SECS

B# 9

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 6 at UT=11.878259781732 h=42761.735 s 11:52:41.735

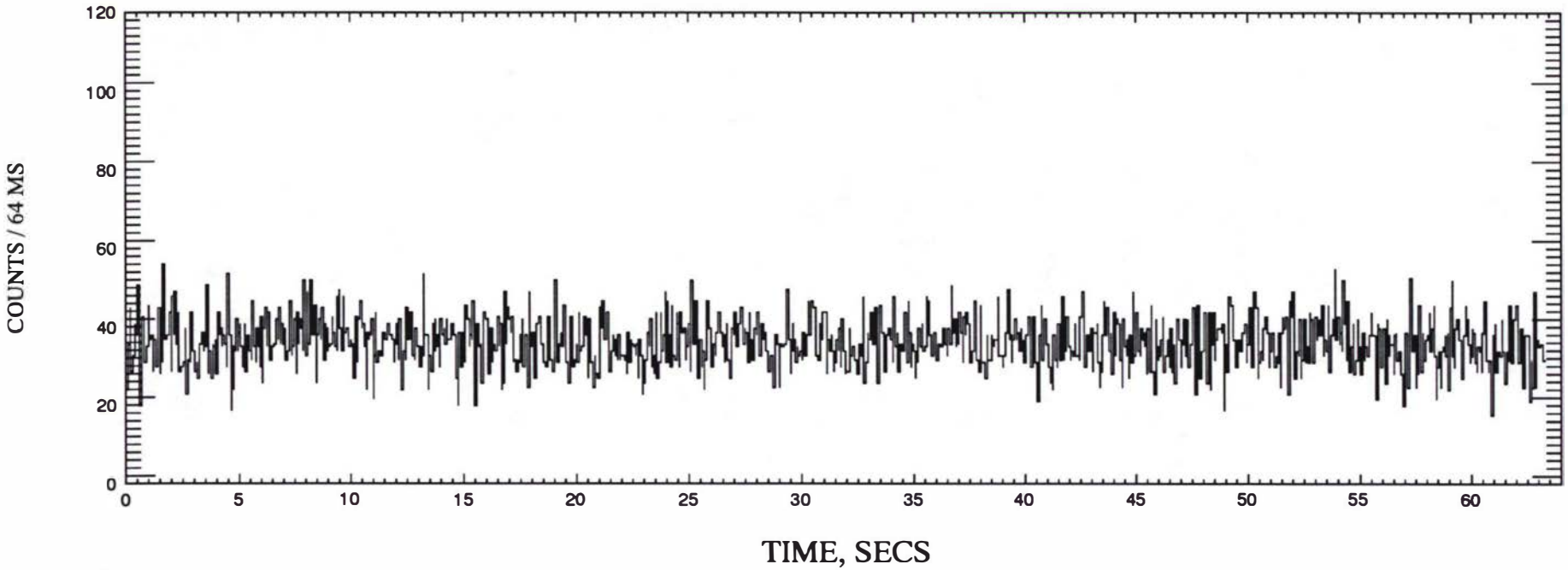


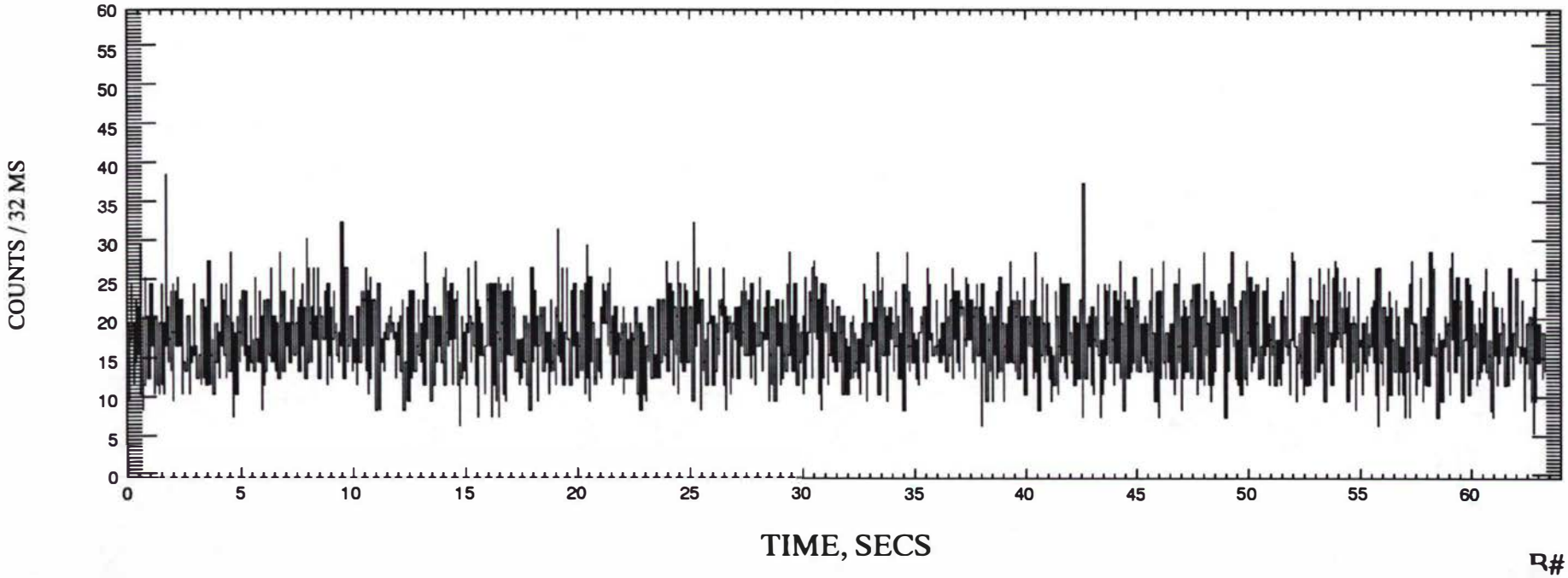


B# 10

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 7 at UT=13.147181875441 h=47329.855 s 13:08:49.855

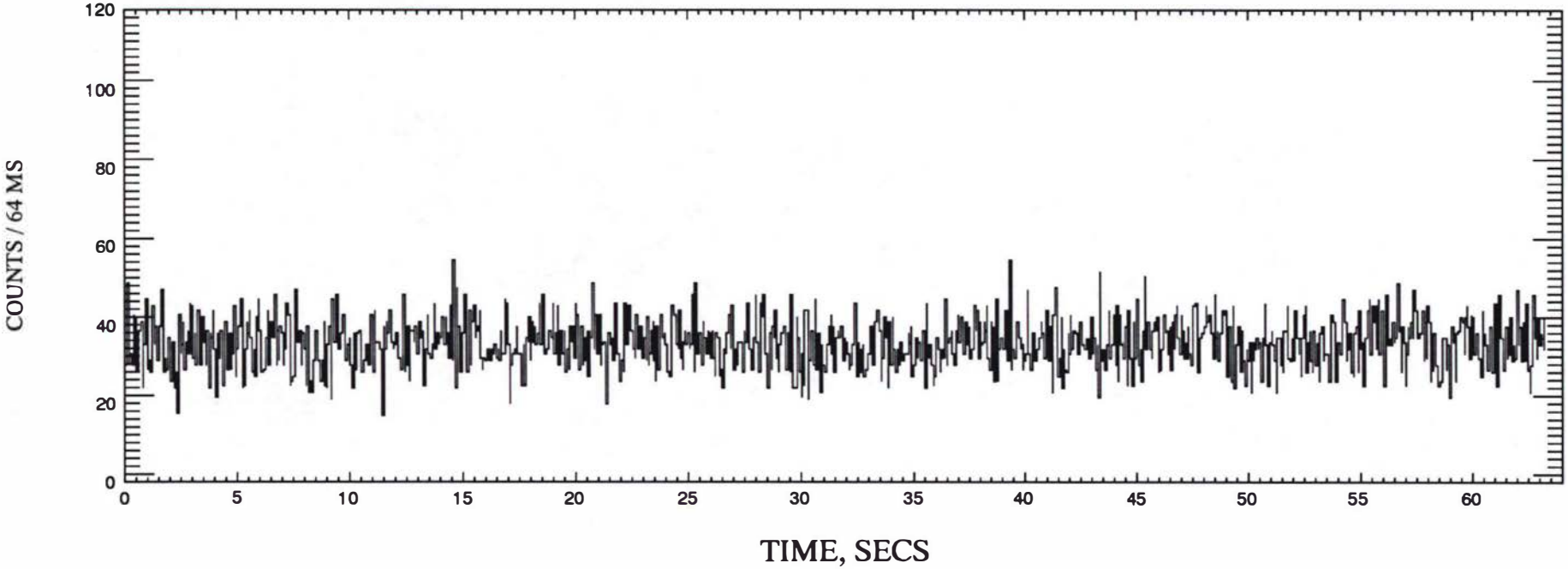


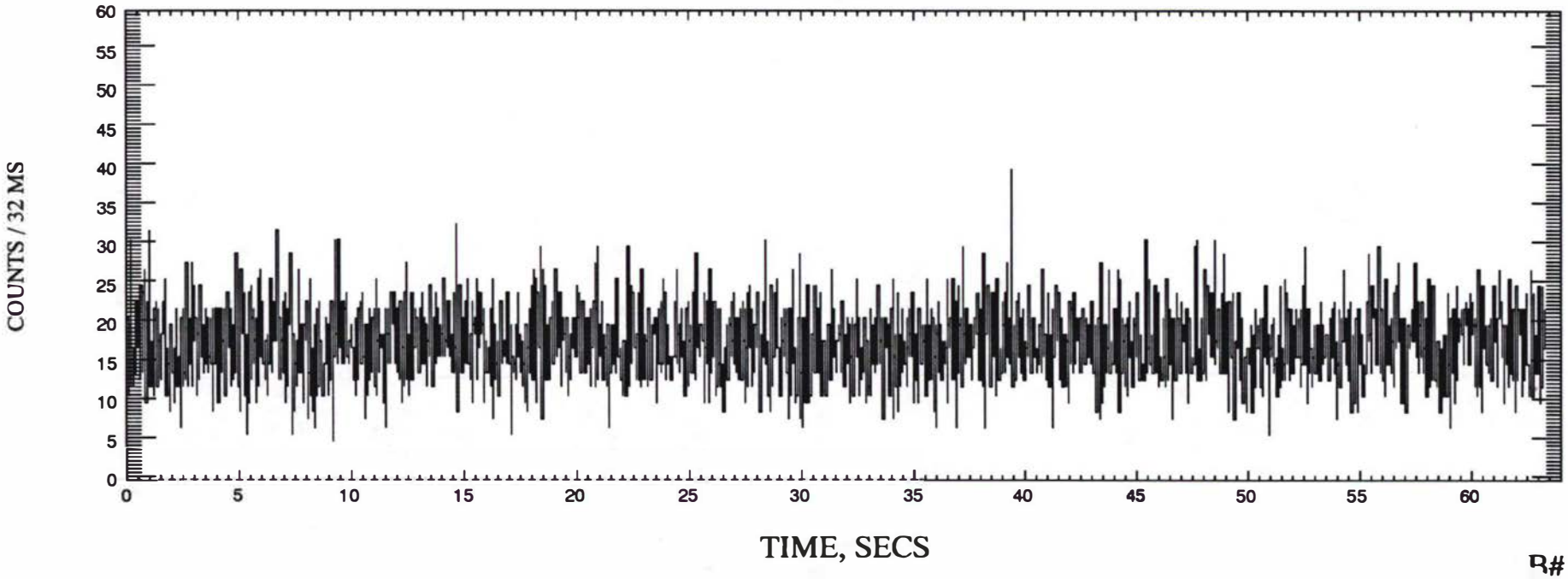


R# 11

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 8 at UT=14.257375102573 h=51326.550 s 14:15:26.550

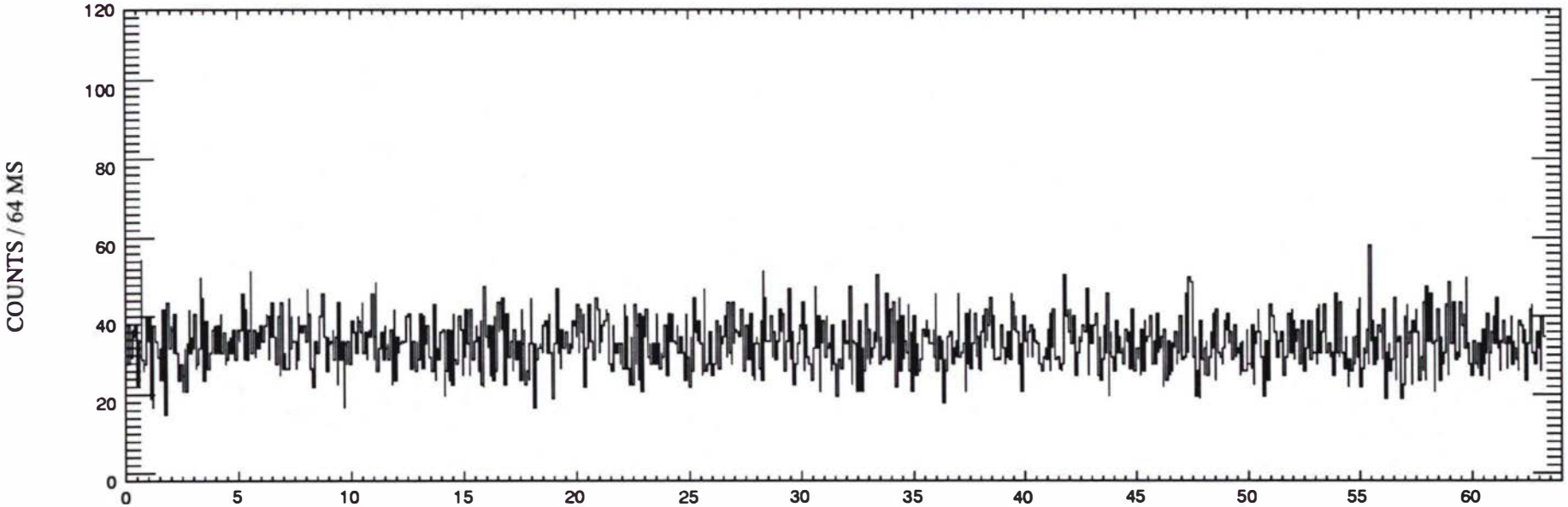




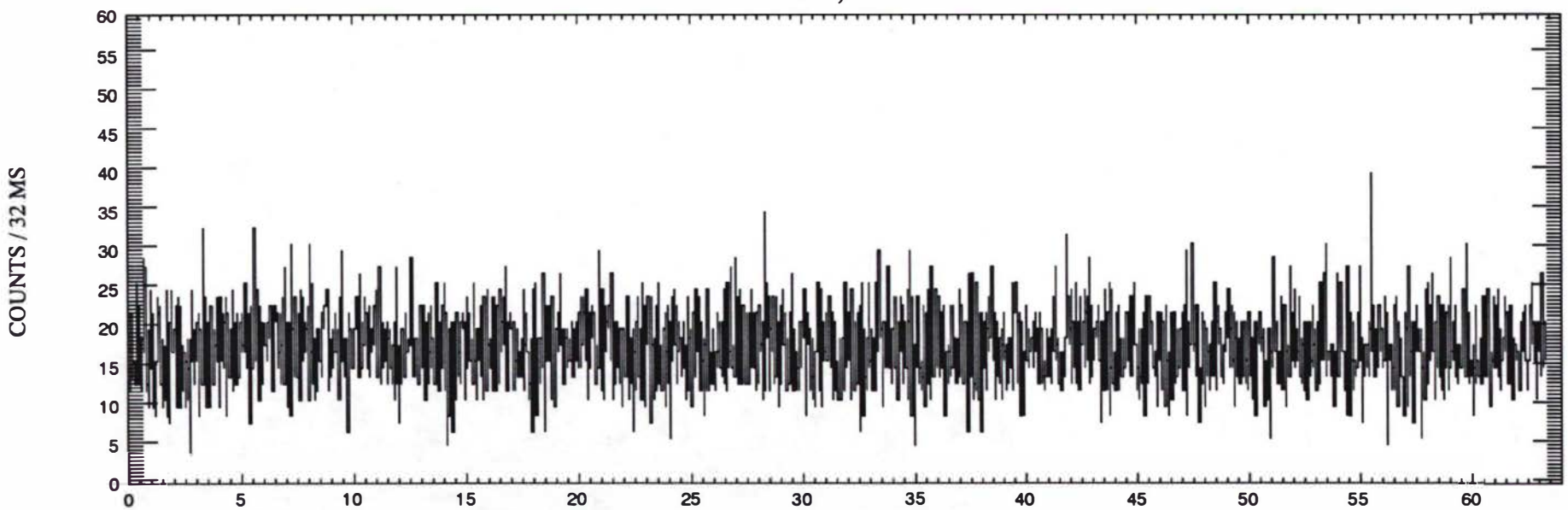
B# 12

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 10 at UT=15.687214707269 h=56473.973 s 15:41:13.973



TIME, SECS

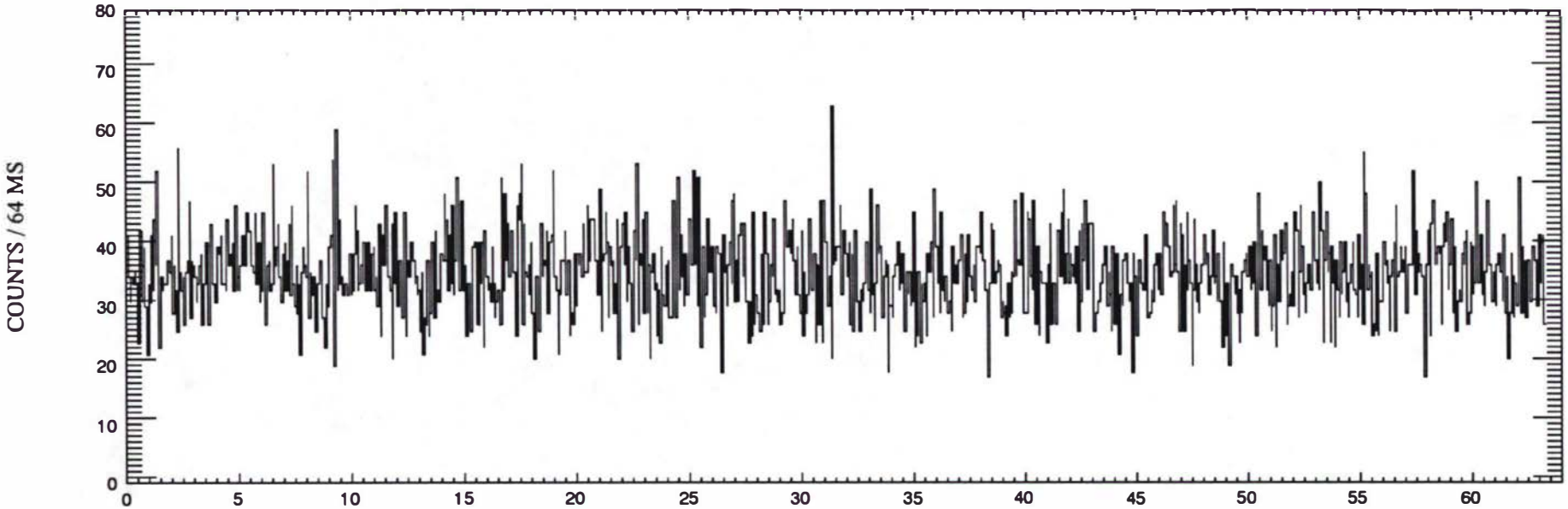


TIME, SECS

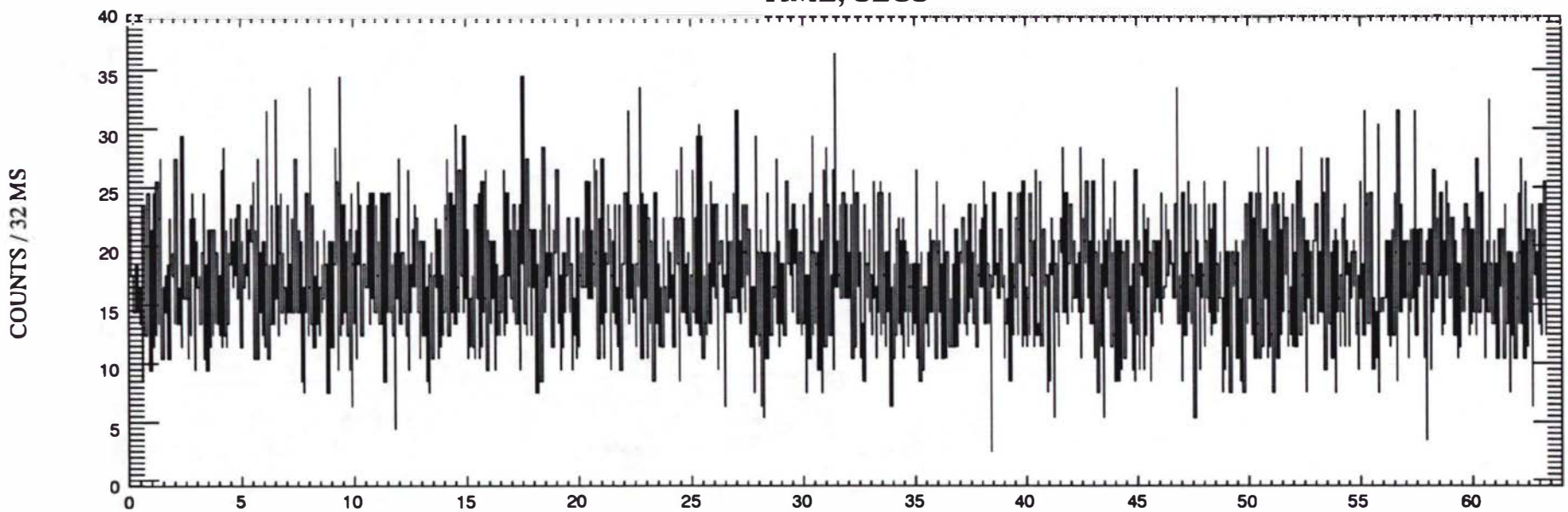
B# 13

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 11 at UT=16.401666747199 h=59046.000 s 16:24:06.000



TIME, SECS

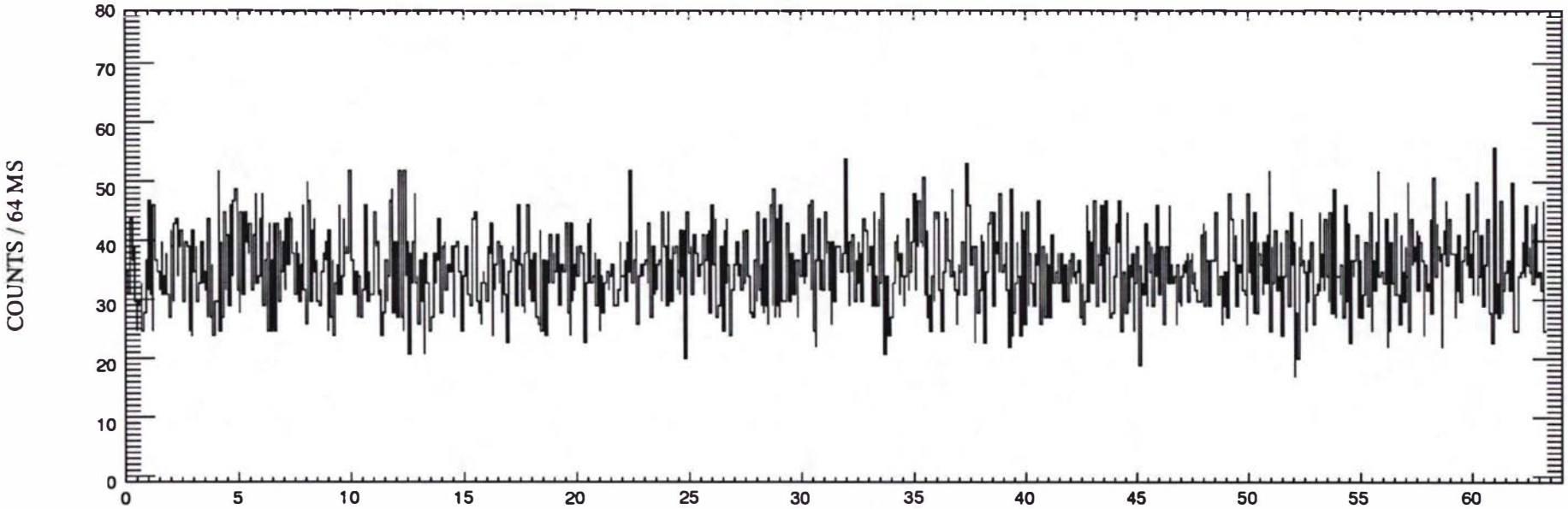


TIME, SECS

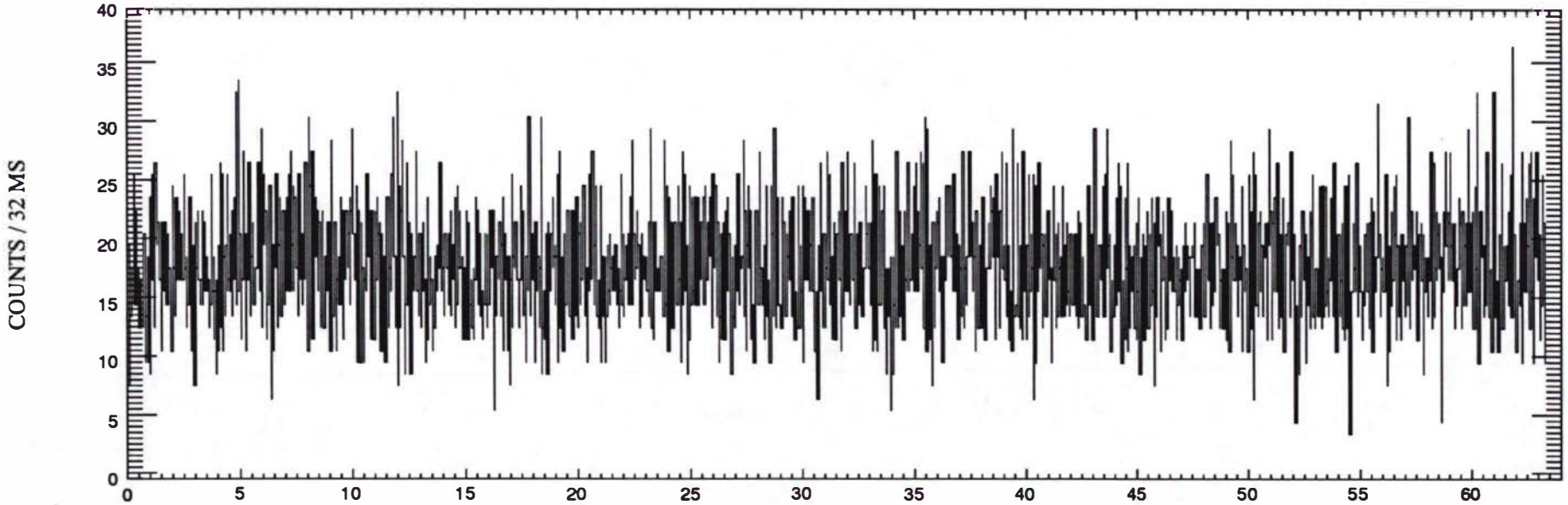
B# 14

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 12 at UT=17.111670002408 h=61602.012 s 17:06:42.012



TIME, SECS

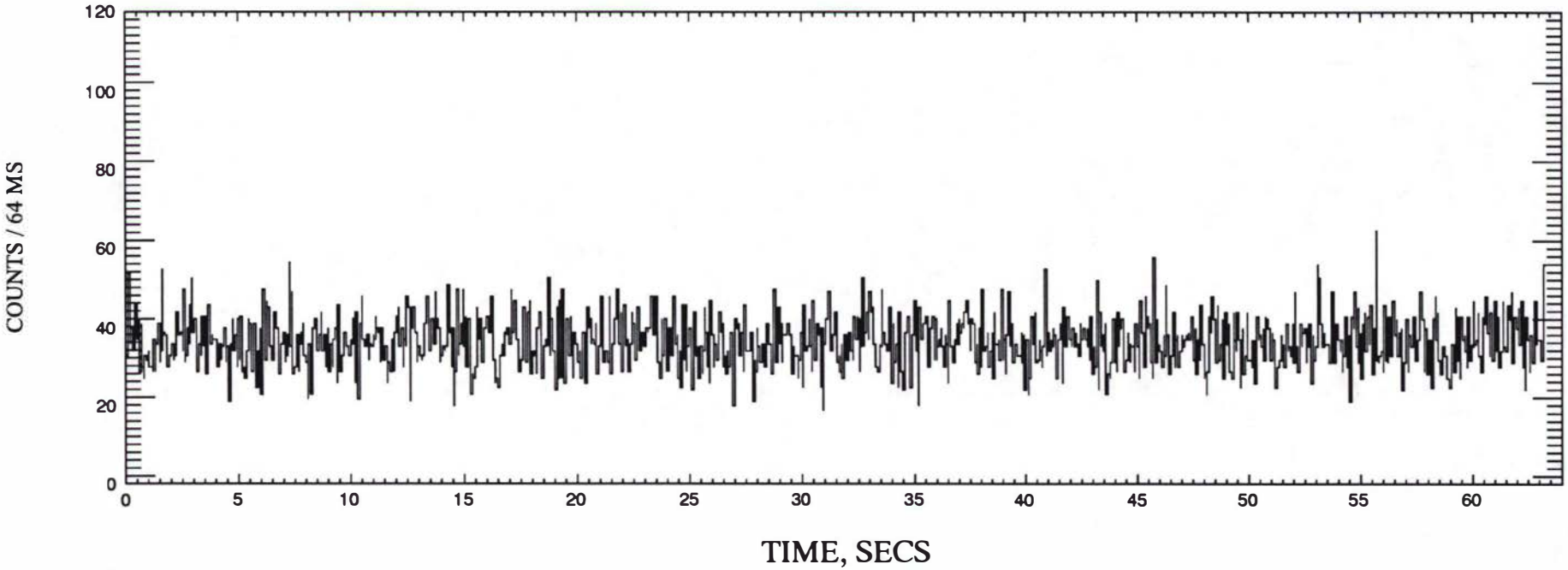


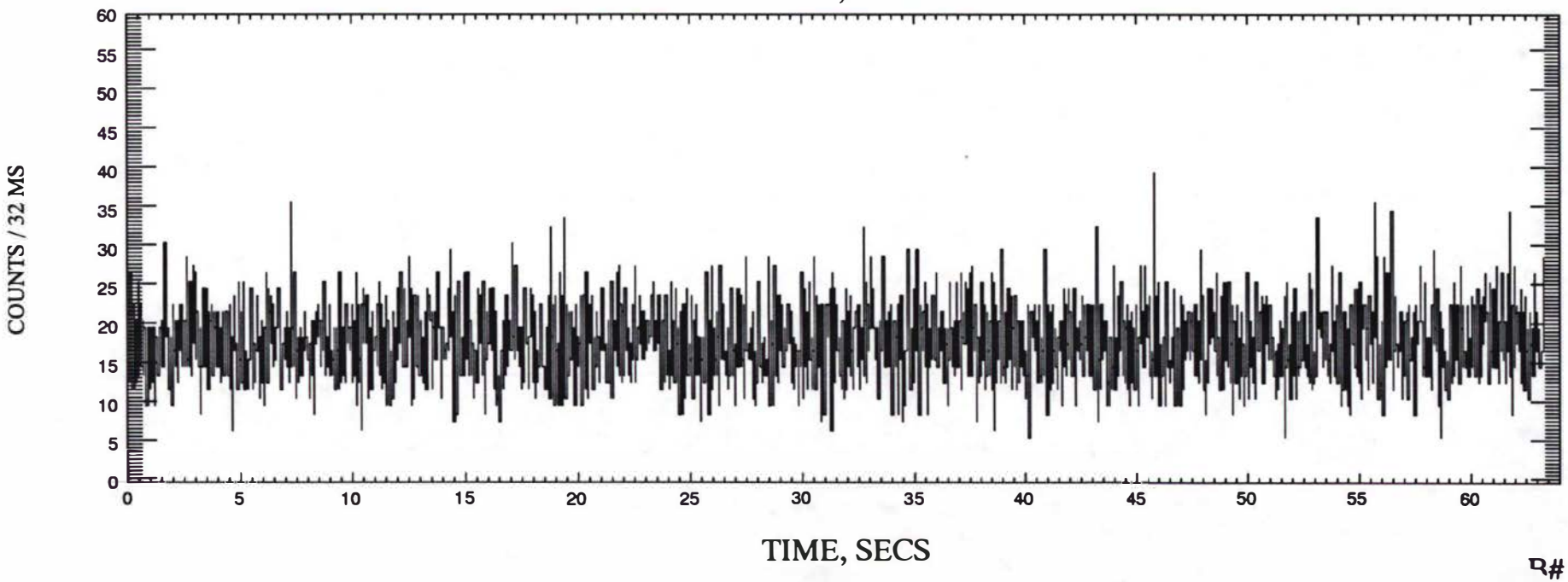
TIME, SECS

R# 15

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 13 at UT=17.825642445882 h=64172.313 s 17:49:32.313

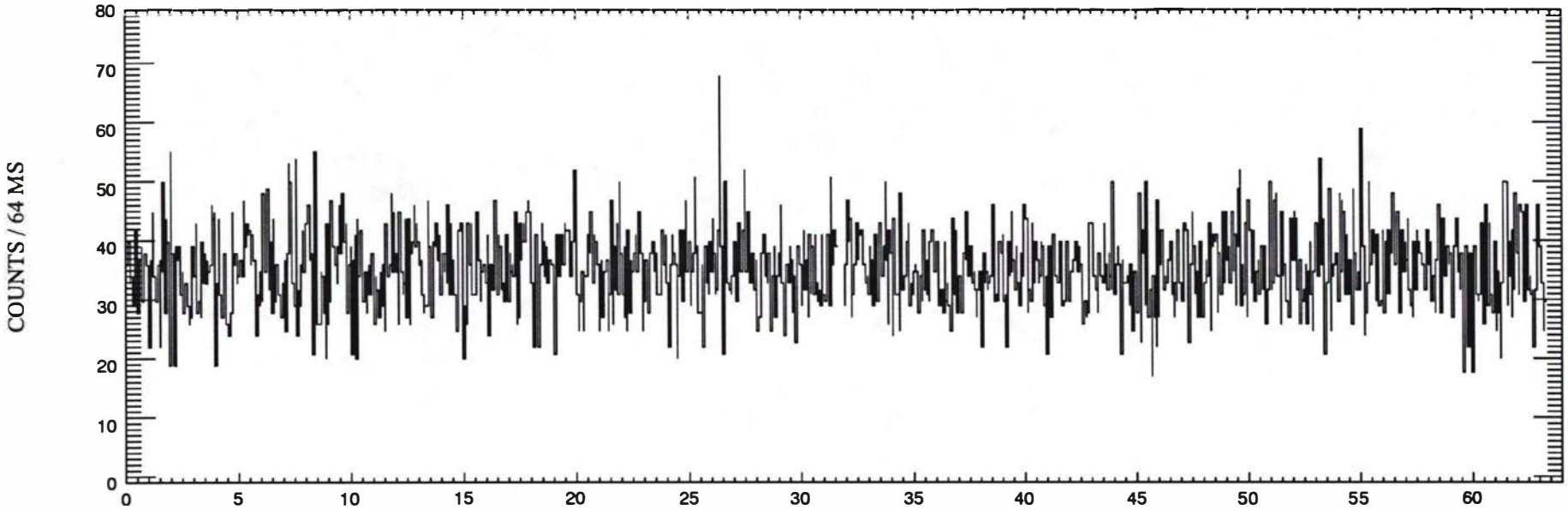




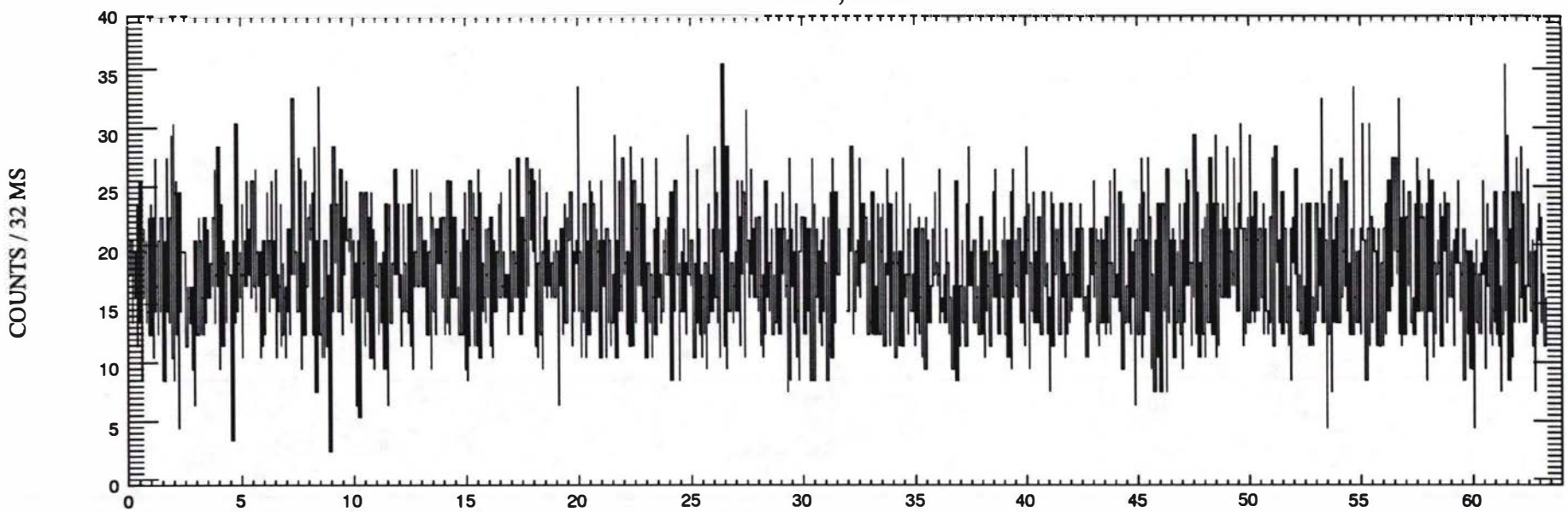
R# 16

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 14 at UT=18.531587541368 h=66713.715 s 18:31:53.715



TIME, SECS

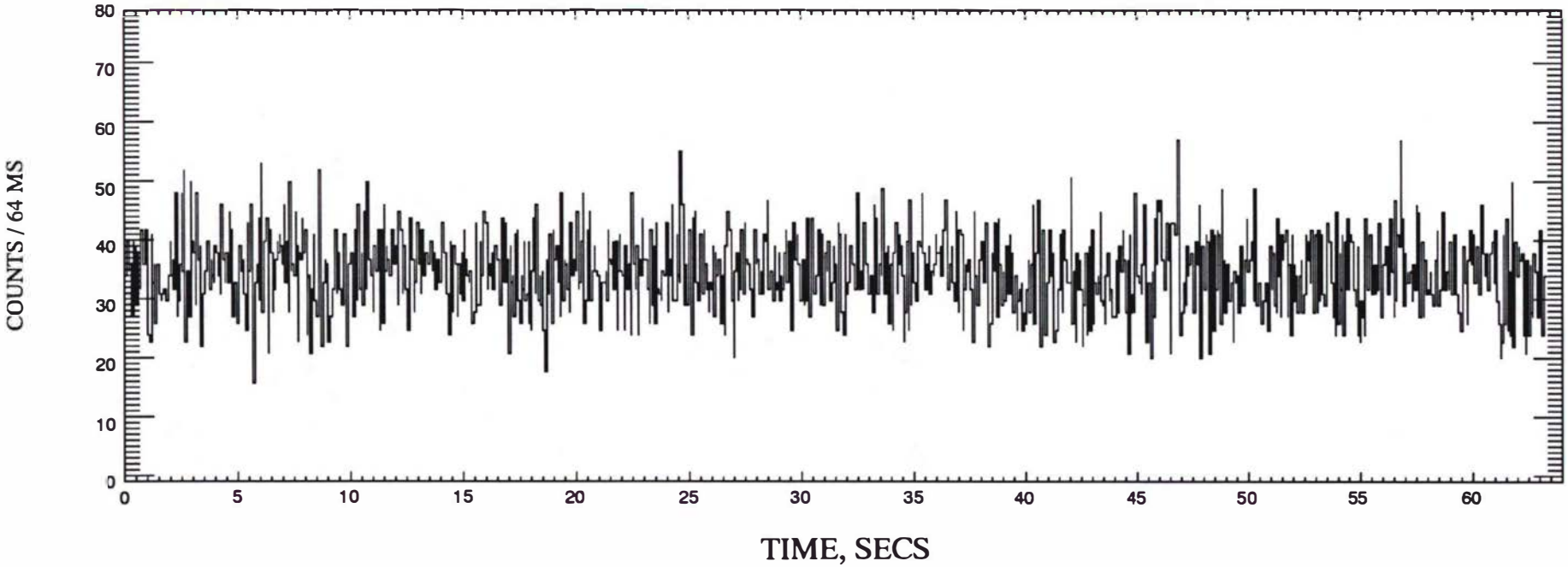


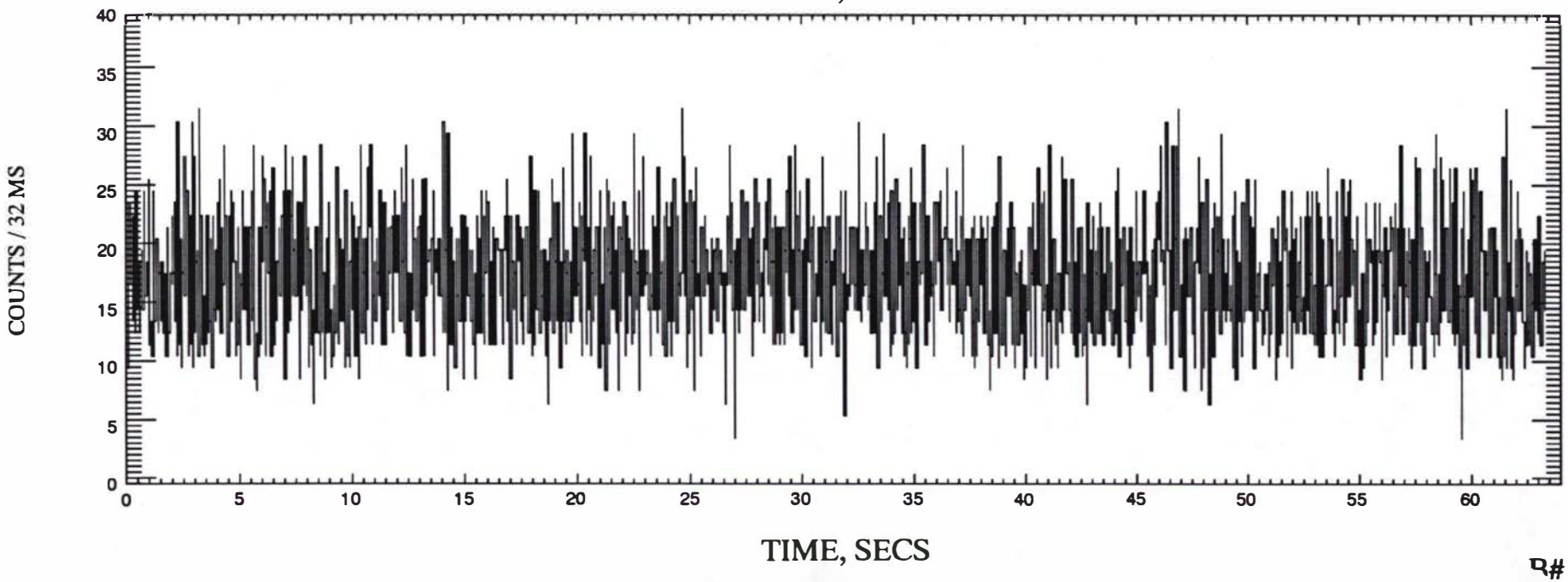
TIME, SECS

R# 17

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 15 at UT=19.243917189704 h=69278.102 s 19:14:38.102

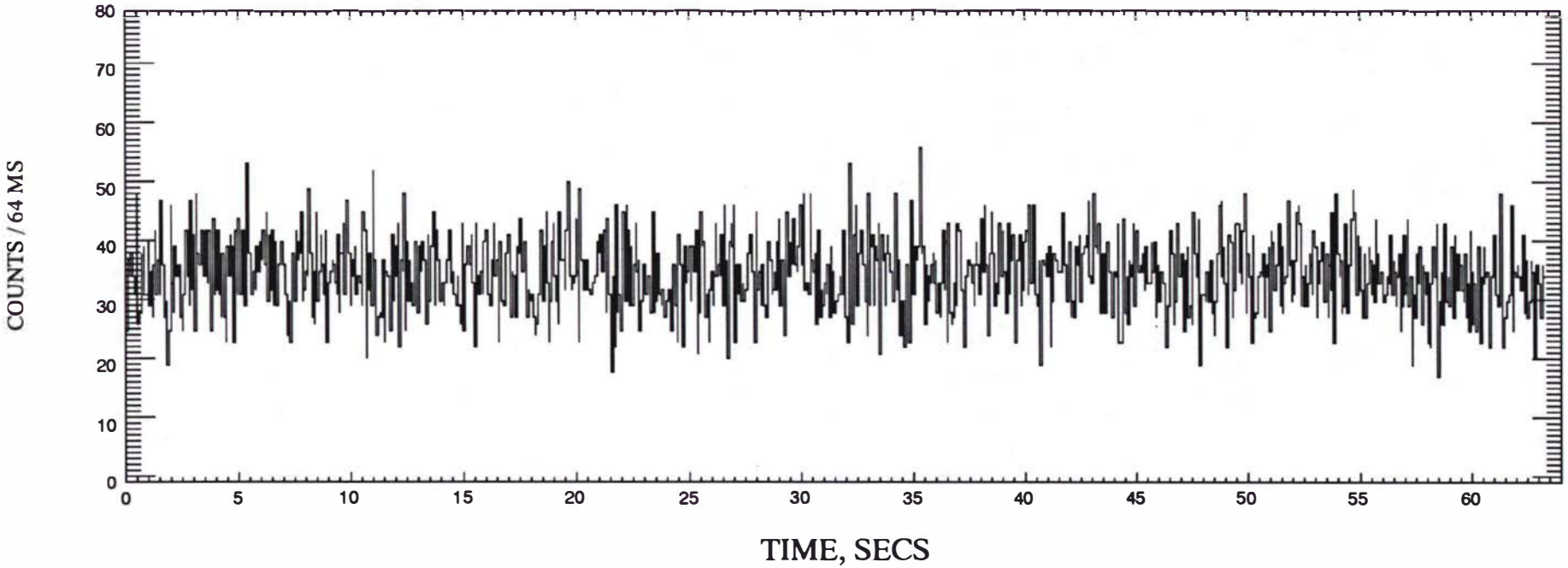


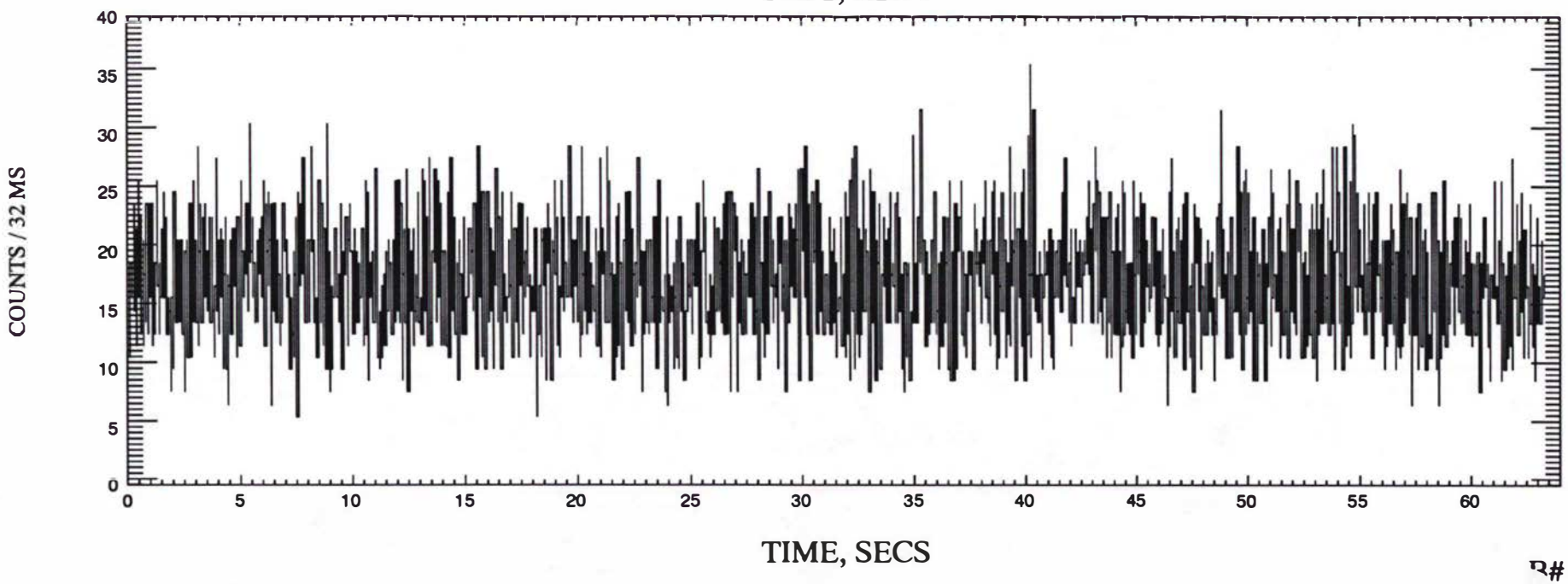


R# 18

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 0 at UT=19.957260288662 h=71846.137 s 19:57:26.137

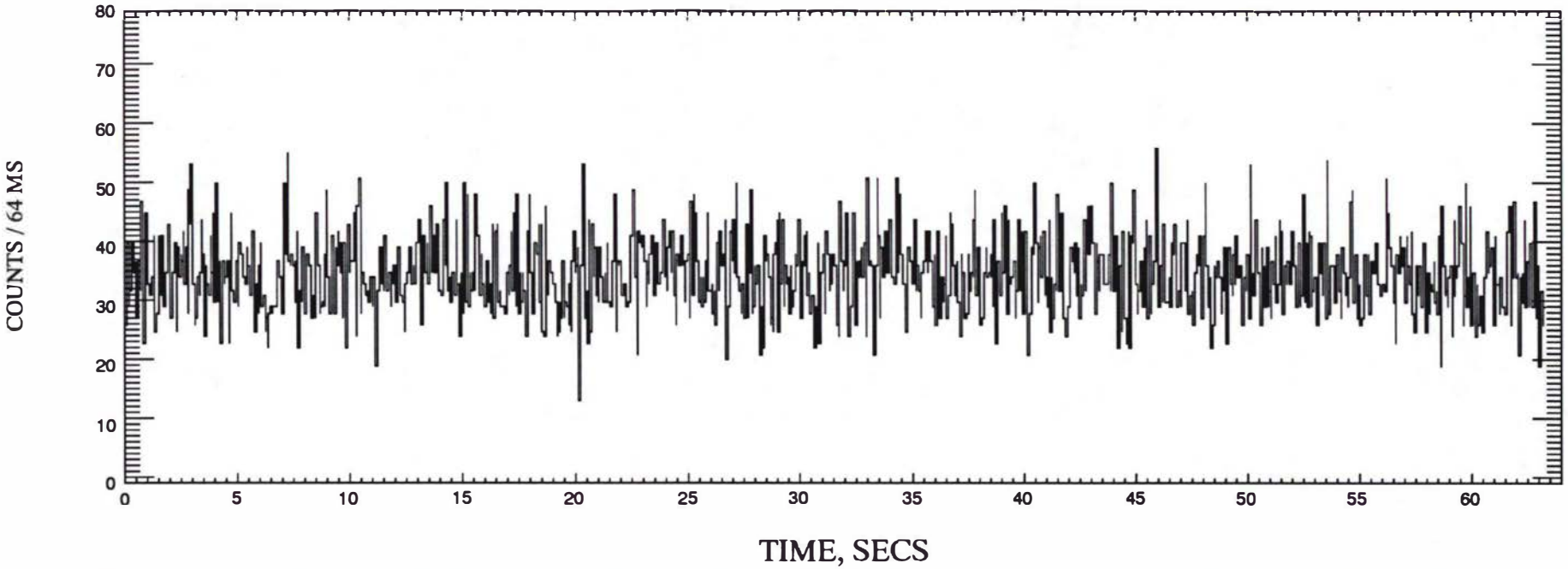


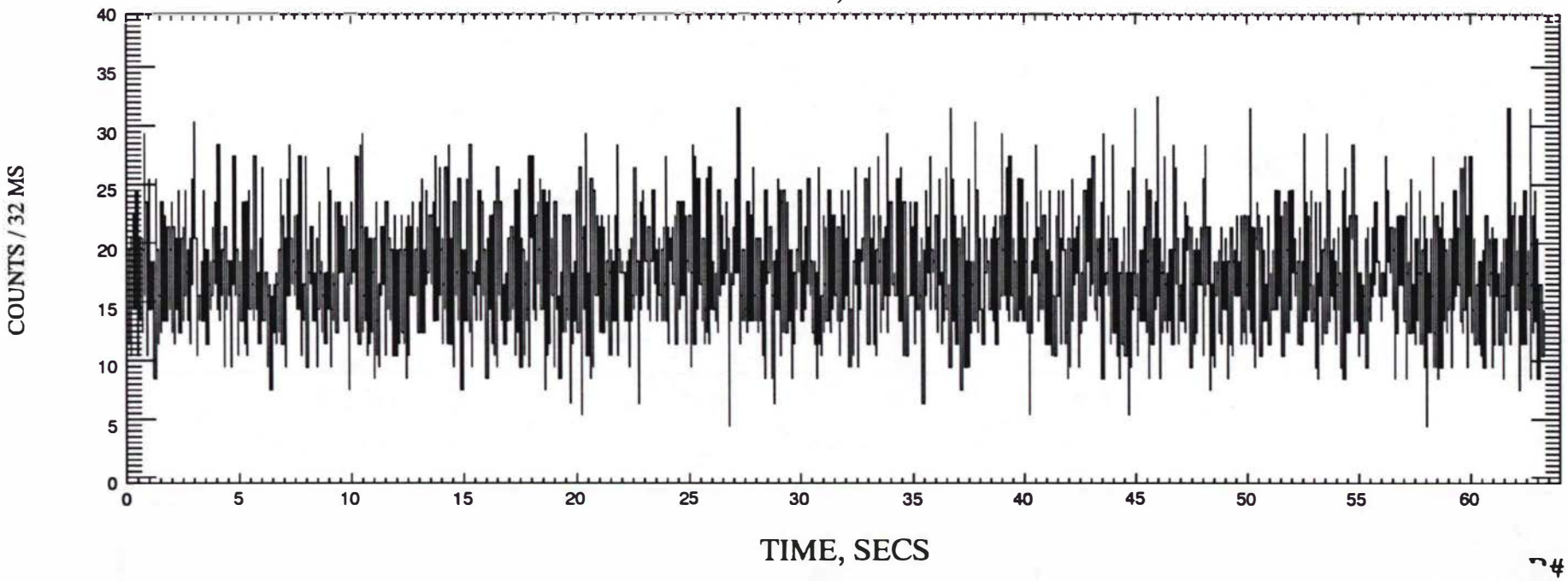


B# 19

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

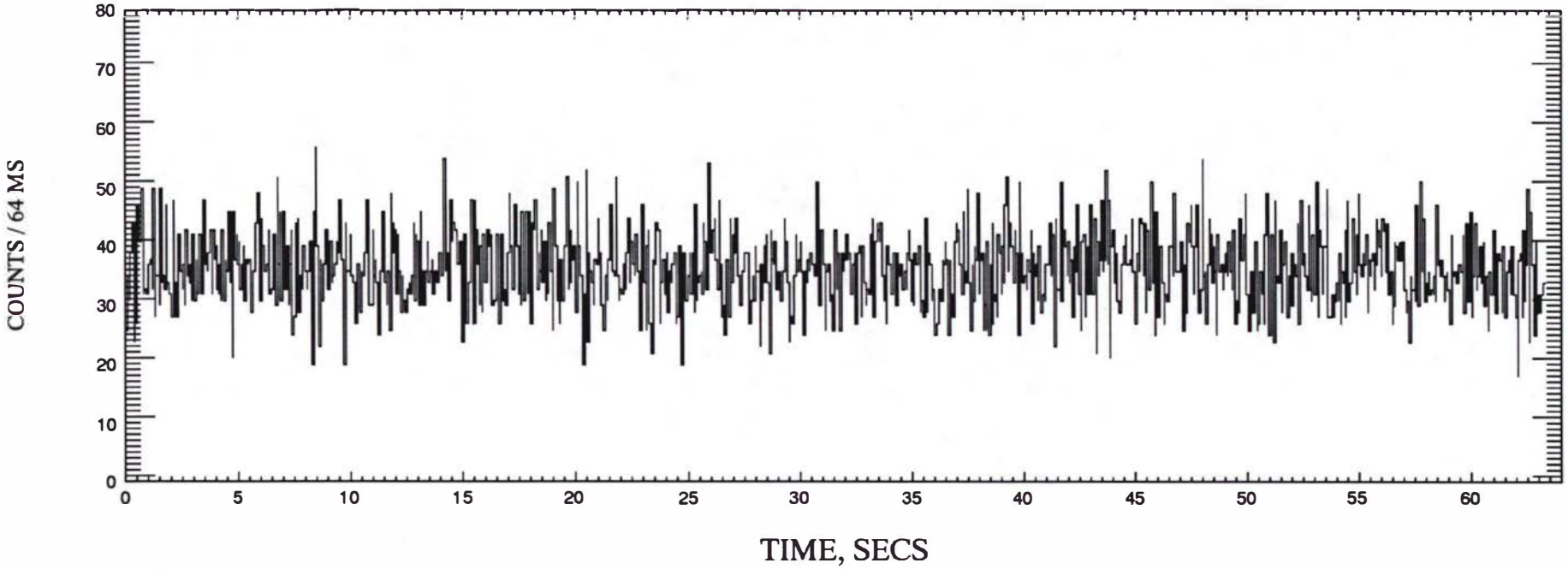
Burst Counter 1 at UT=20.666957554287 h=74401.047 s 20:40:01.047

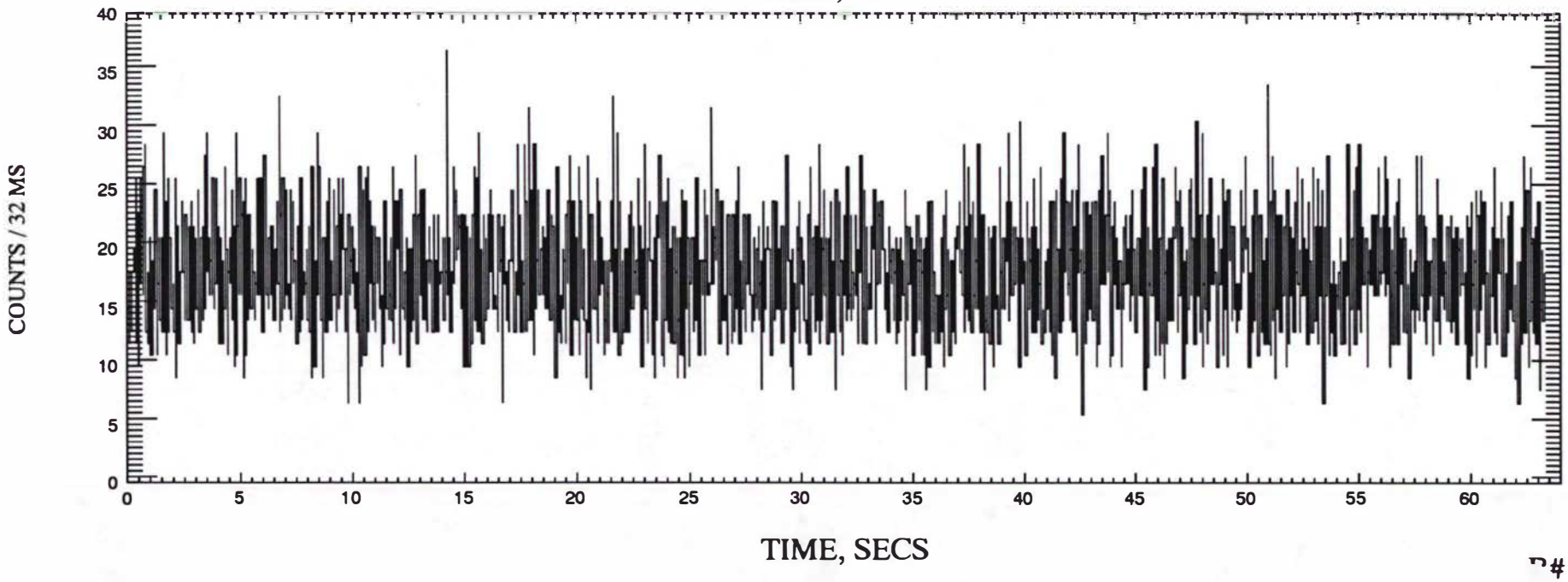




HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 2 at UT=21.371691716512 h=76938.090 s 21:22:18.090

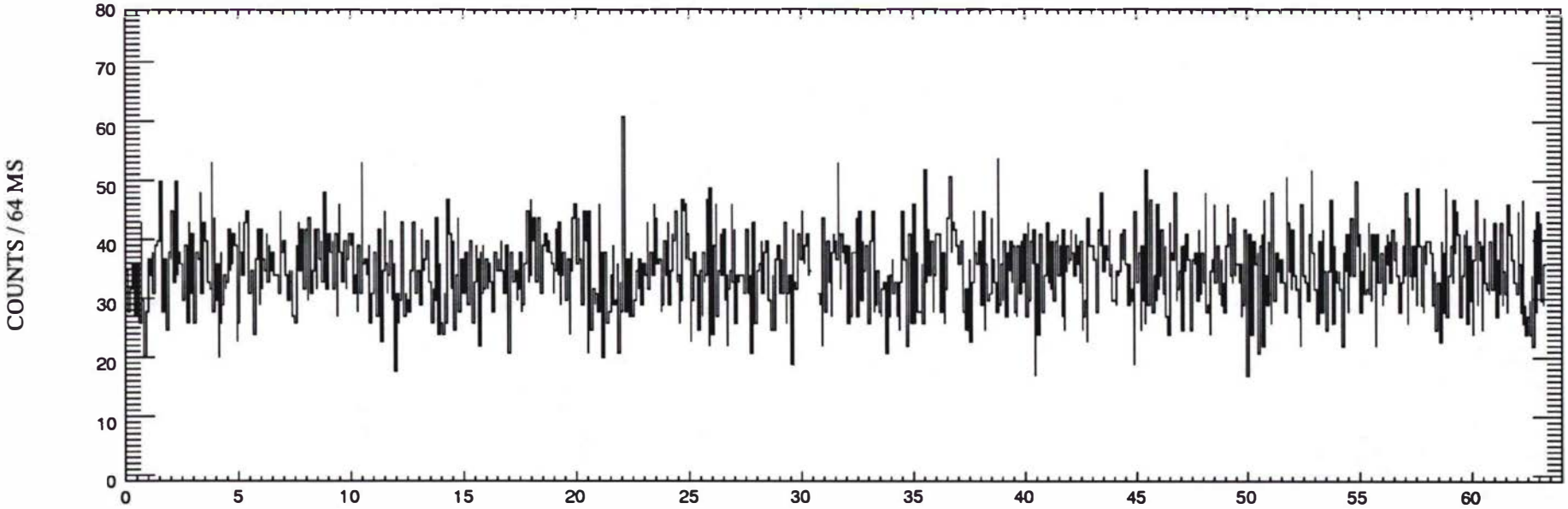




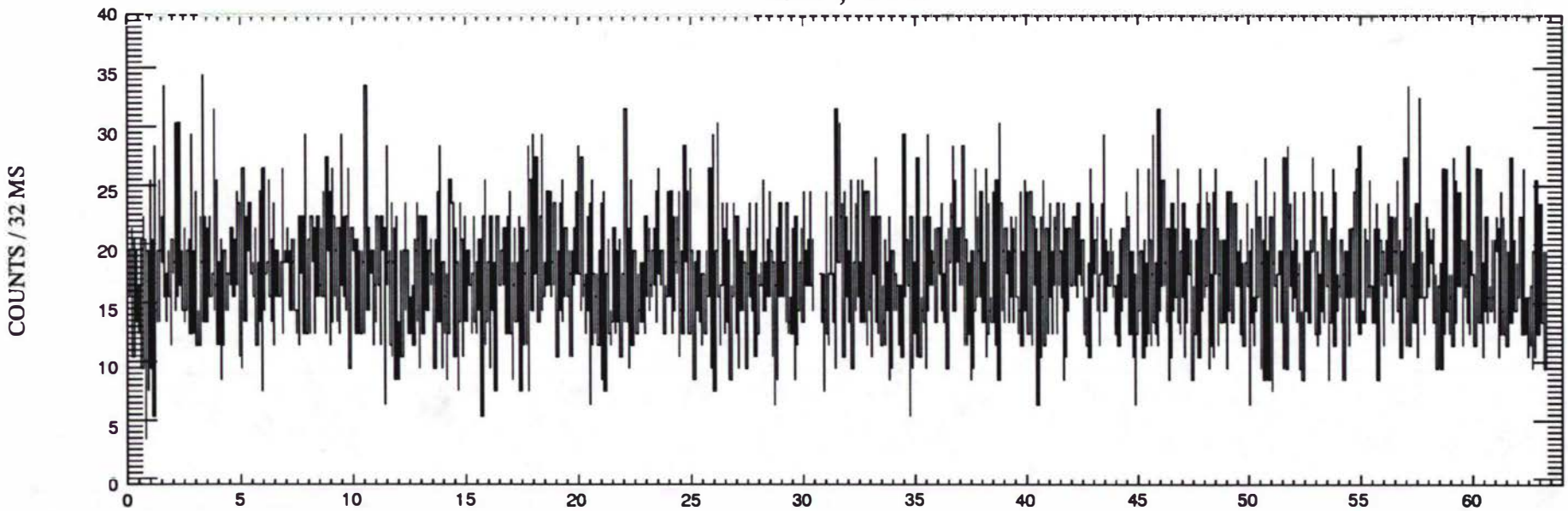
P# 21

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 3 at UT=22.078389850193 h=79482.203 s 22:04:42.203



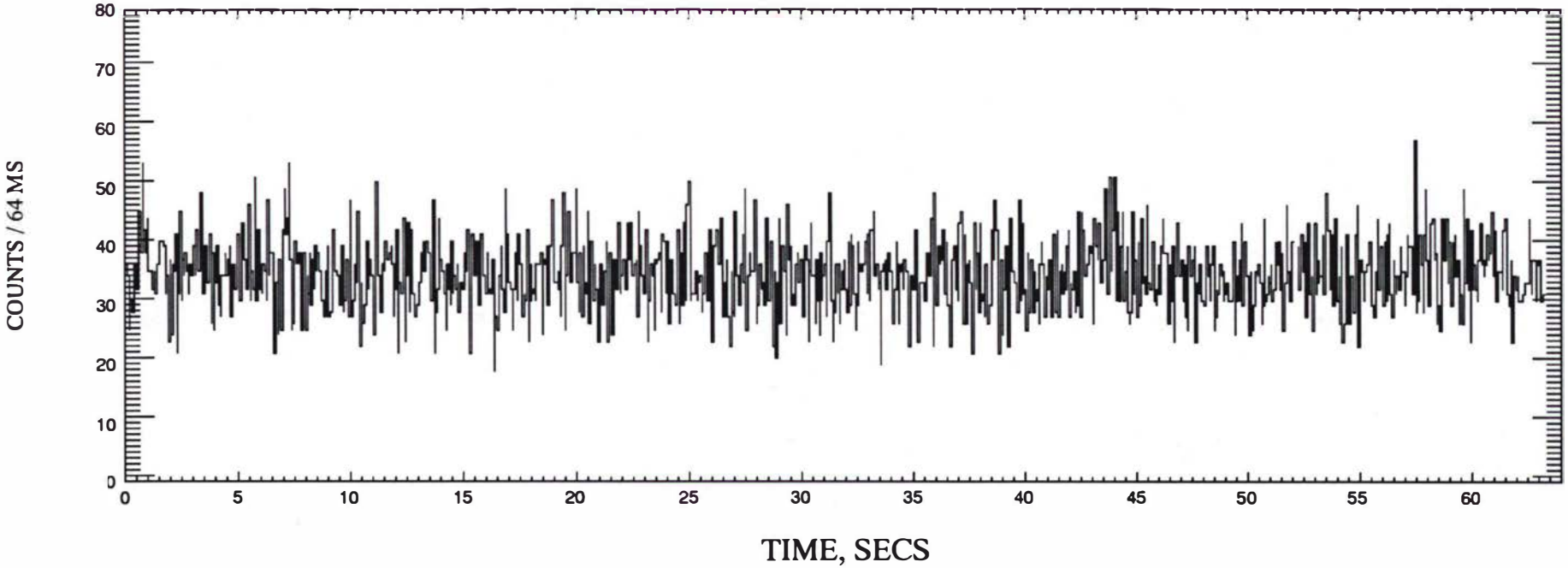
TIME, SECS

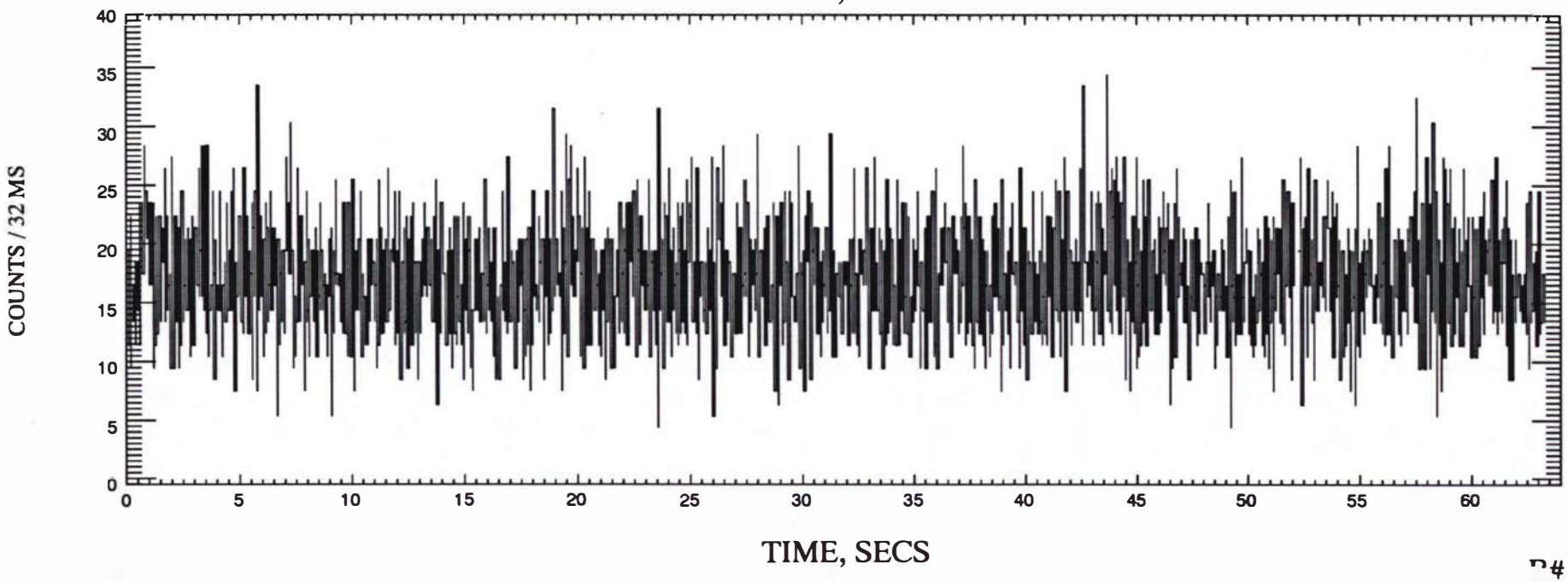


TIME, SECS

HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

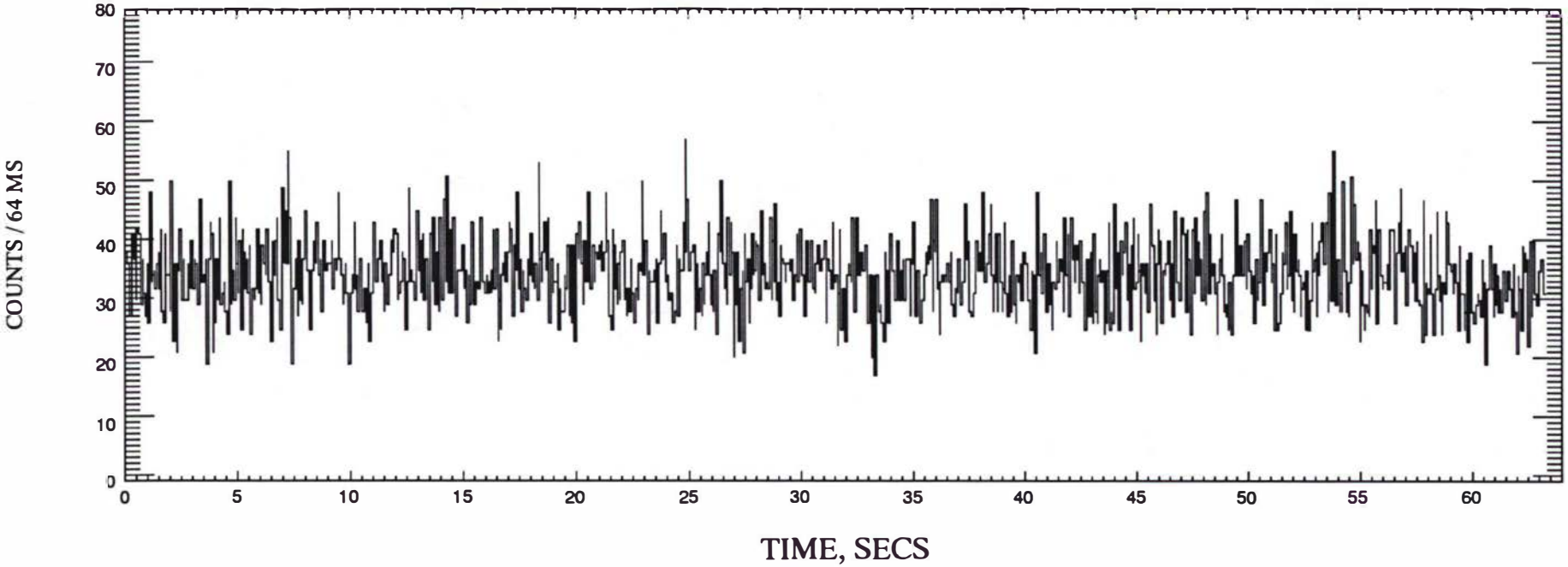
Burst Counter 4 at UT=22.788785904778 h=82039.629 s 22:47:19.629

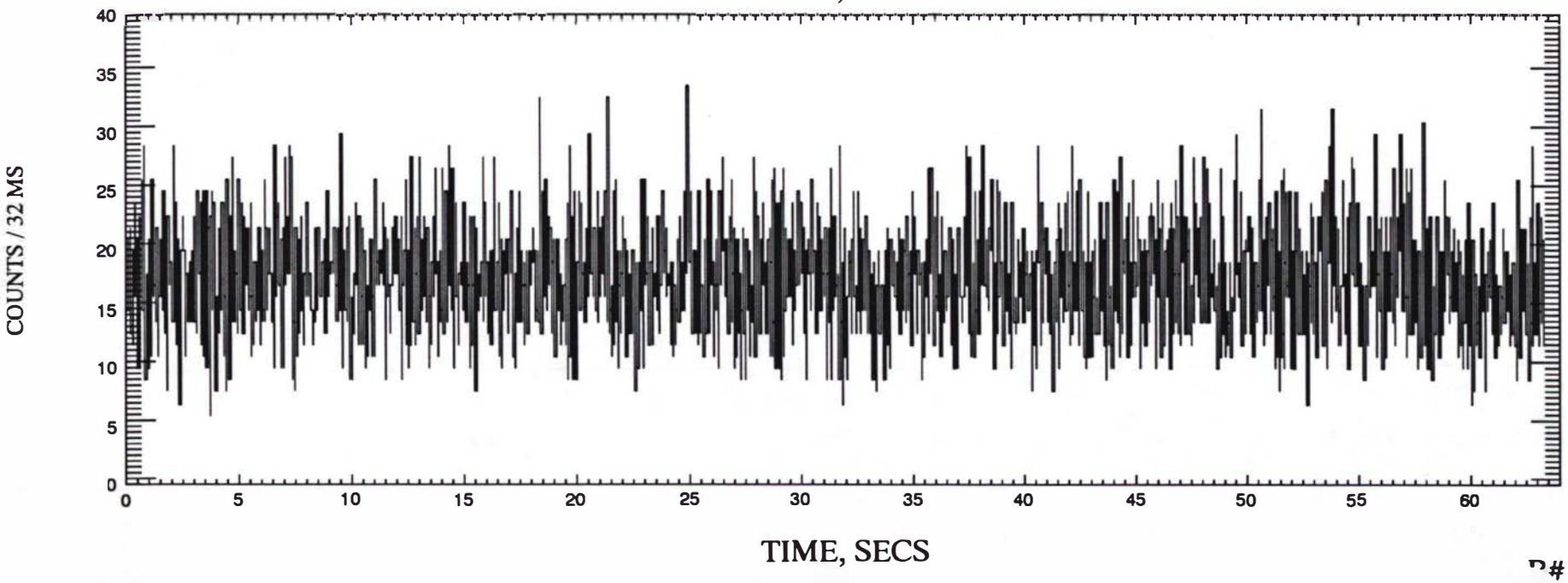




HUS 2A TRIGGERED DATA QEDR day 117, year 1998 4/28/98

Burst Counter 5 at UT=23.505668500264 h=84620.407 s 23:30:20.407

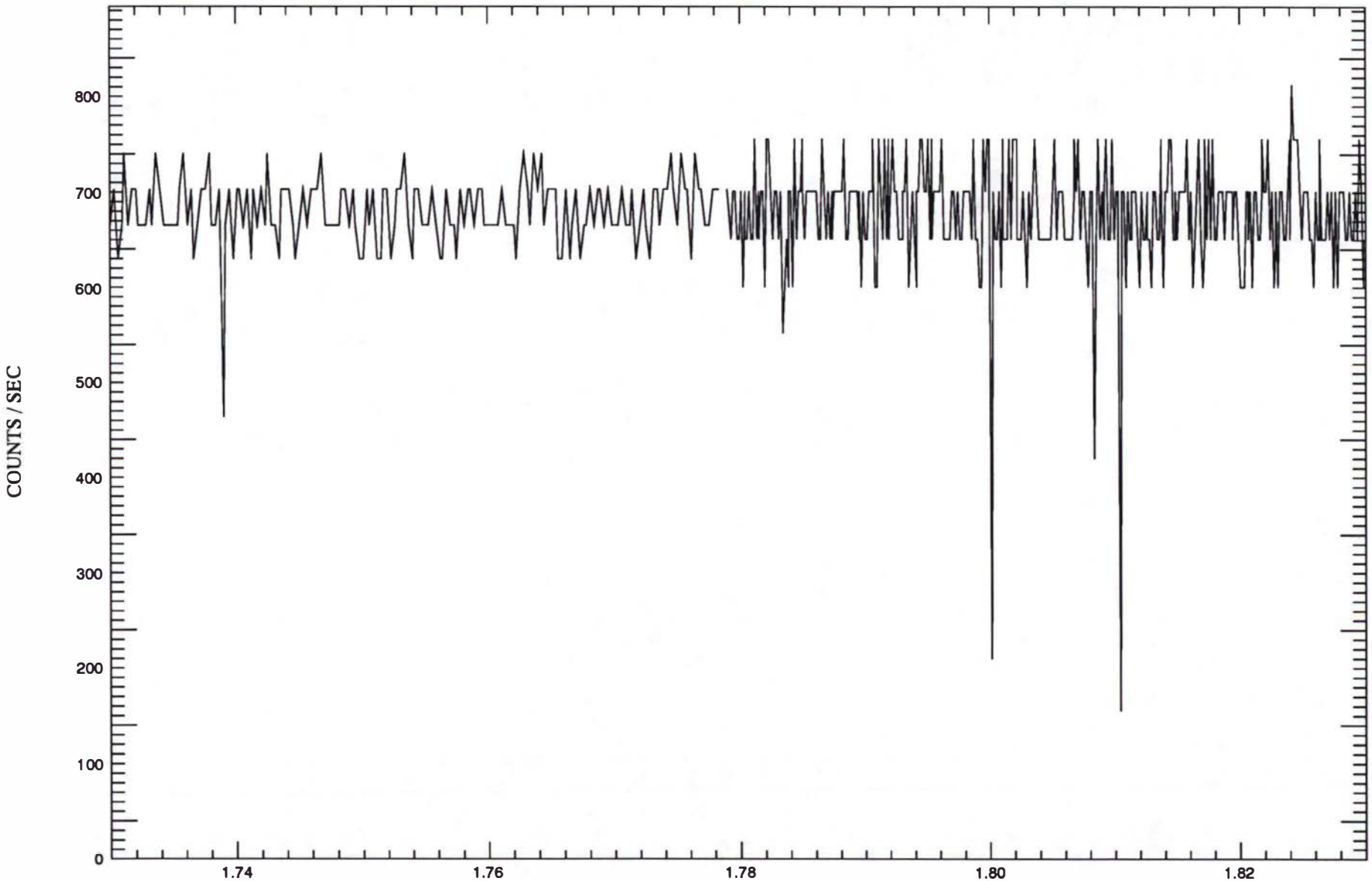




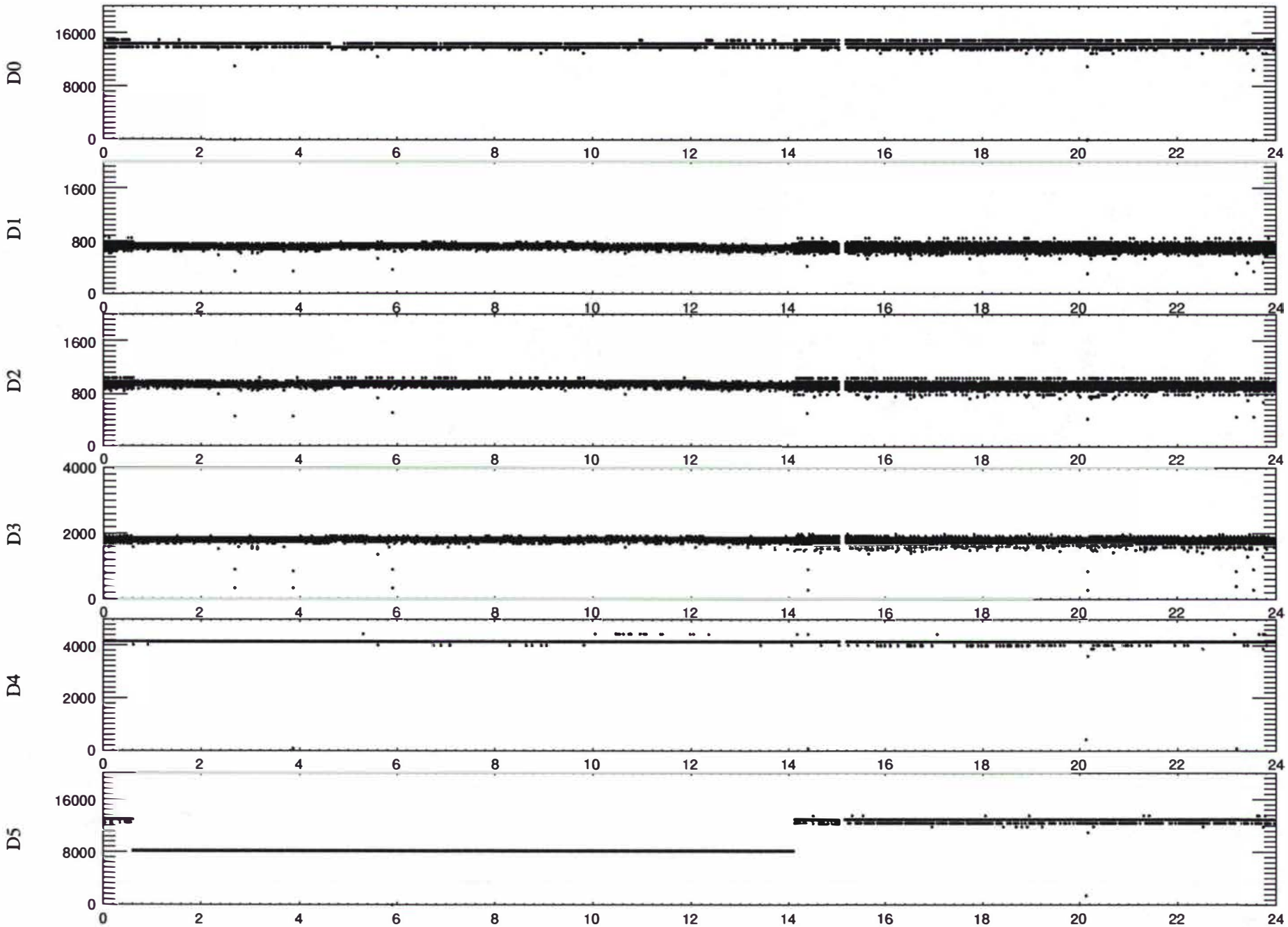
P# 24

HUS 2A, MODE 1, NOT AVERAGED QEDR day 117, year 1998 to day 117, year 1998 4/28/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 117, year 1998 to day 117, year 1998 8/18/98



Date: Mar 16 2012

BURST TRIANGULATION CHECKLIST

1. Ulysses Data

- [x] Jim Schmidling's stat file correction applied?
- [x] Final ephemeris used?
- [x] Final, CDROM data used?
- [x] Were data checked by Joe Springer for 0.5 s errors?
- [x] If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?
- [x] 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

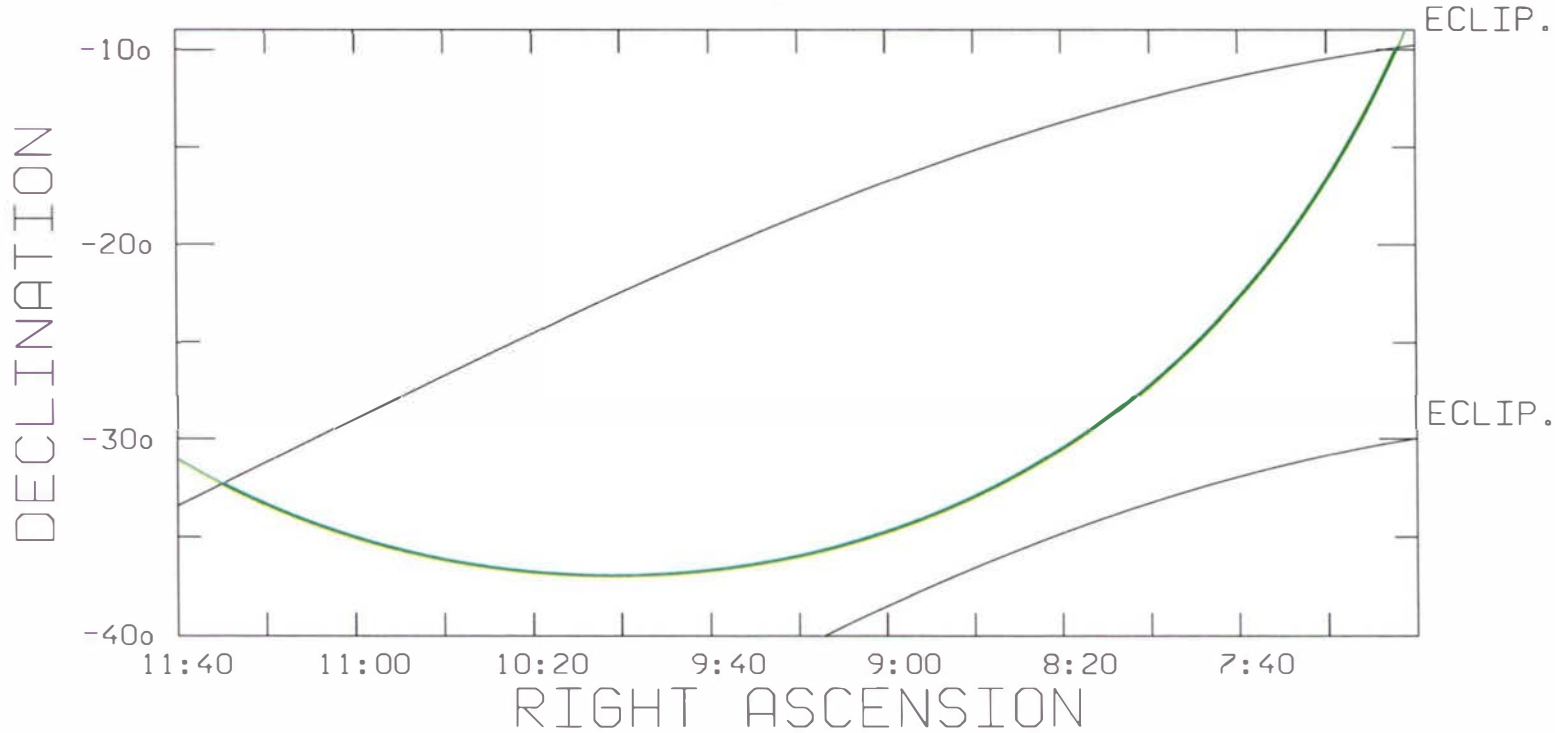
- [ ] 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)?
- [ ] BATSE ephemeris for T_0?
- [ ] Error circle position and radius from public catalog used?
- [ ] If MER data were used, is a 30 ms systematic error included?

3. PVO Data

- [ ] Ephemeris of PVO used (not Venus)?
- [ ] 2000 coordinates used?
- [ ] Geocentric time used?

- [x] ACCESS and MBL databases updated with identical times?

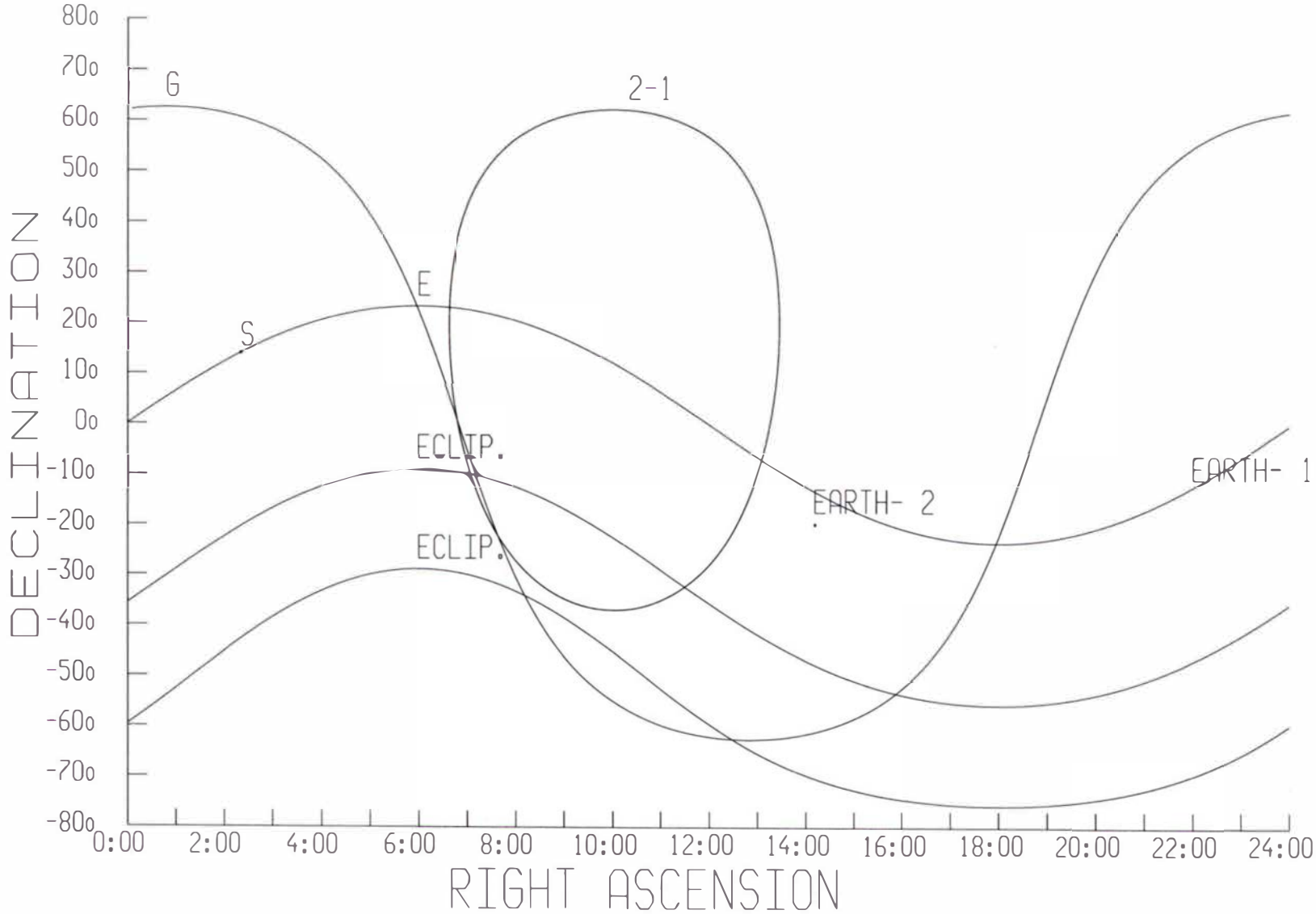
GRB980428 ~03146 S 16/03/2012



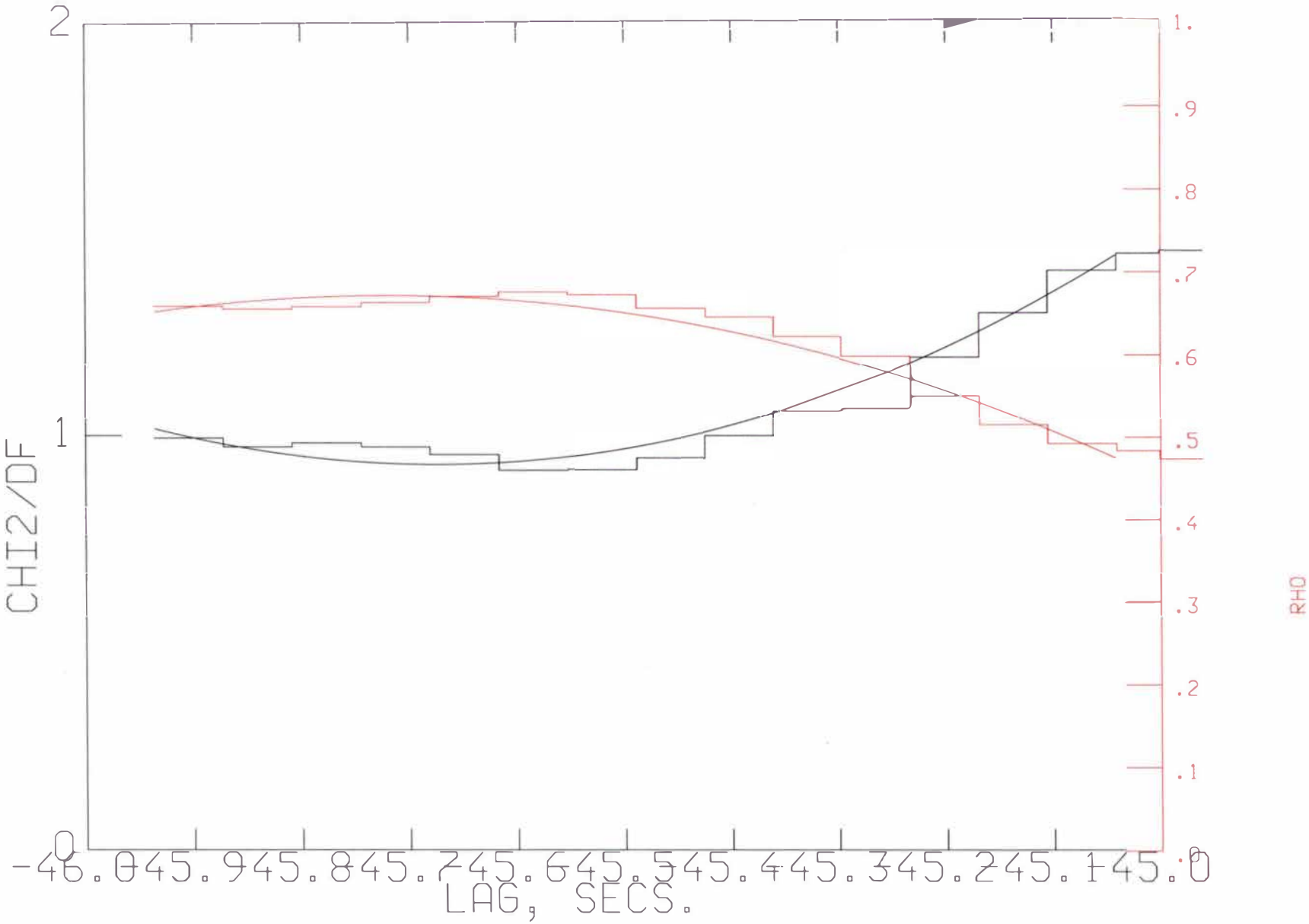
EVENT OF APR 28, 1998 0:25

16/03/2012

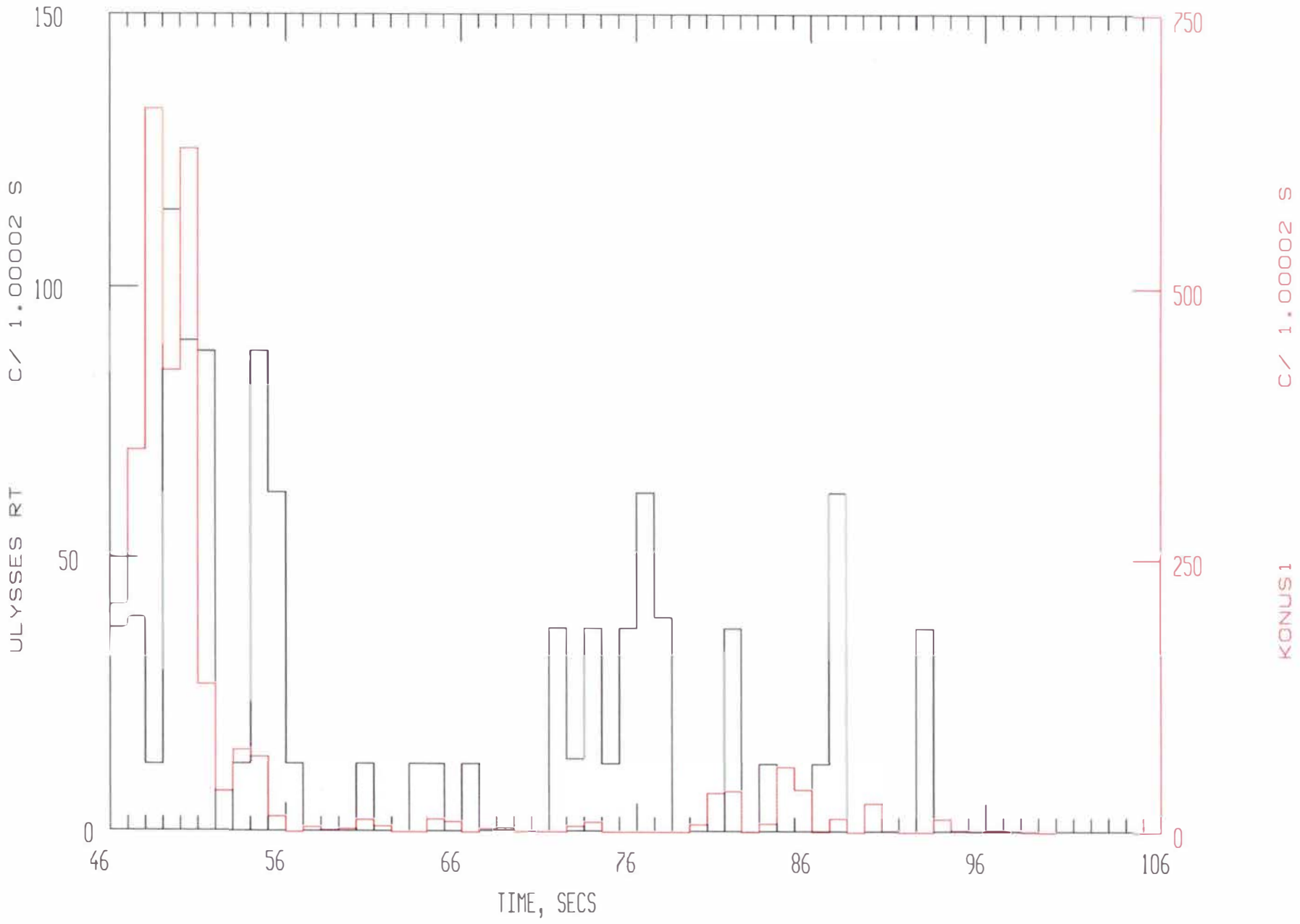
N-M = CORRELATION BETWEEN SATELLITES N AND M
EARTH-N = EARTH AS SEEN FROM SATELLITE N
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR
1 ULYSSES 2 KONUS1



ULYSSES RT-KONUS1 CORRELATION 28/ 4/98 1535.321

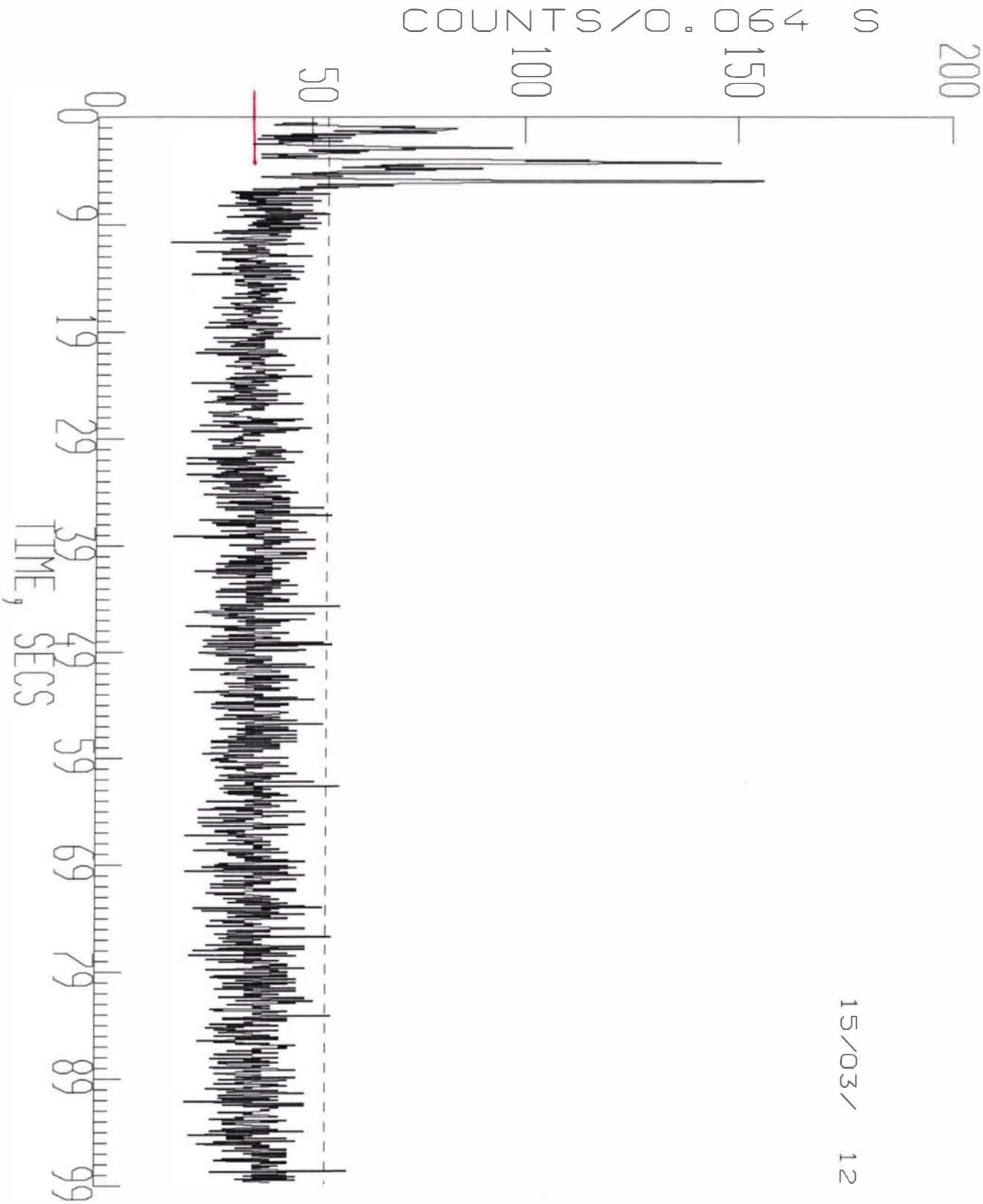


ULYSSES RT-KONUS1 CORRELATION 28/ 4/98 1535.321 16/ 3/12



KONUS 28/04/98 3189.970

50- 200 keV



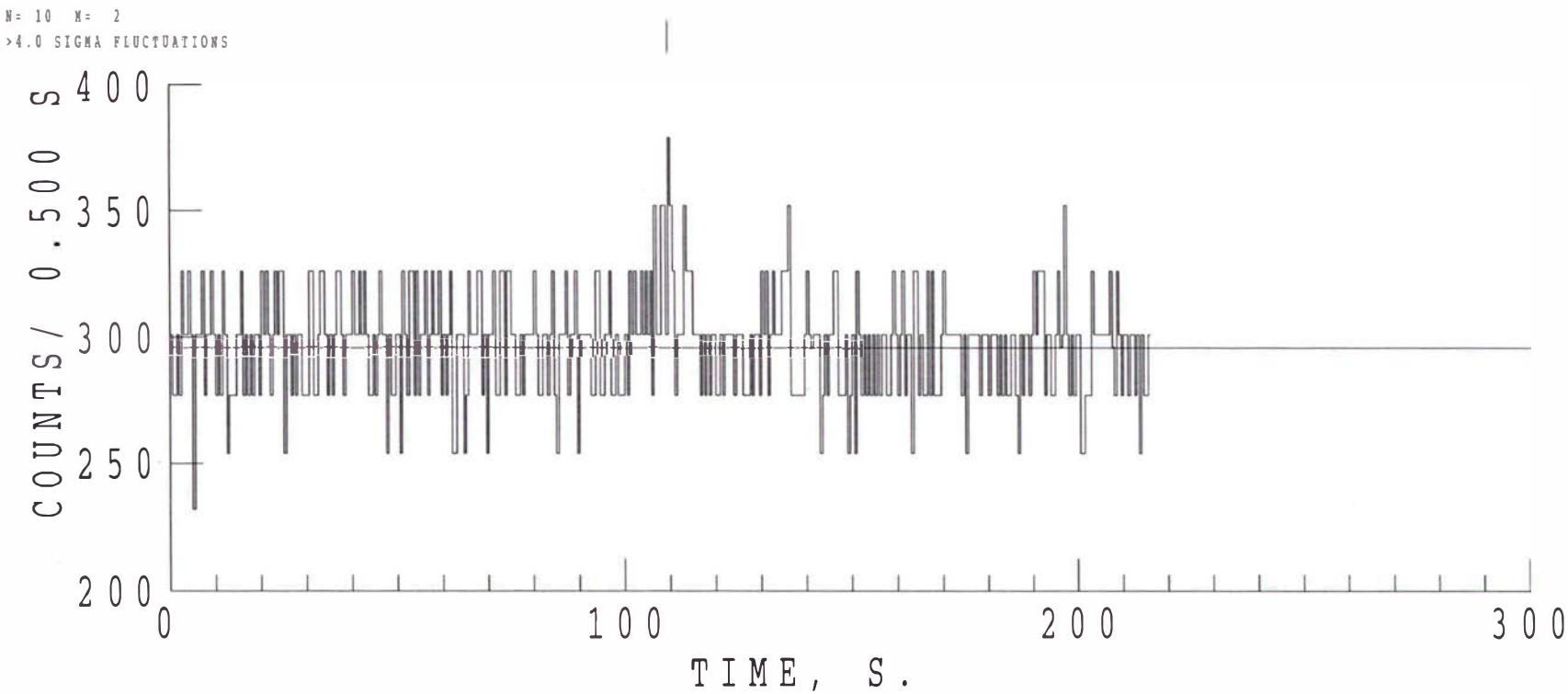
15/03/ 12

KONUS 19980428 01584

ULYSSES RT 07/03/12

28/04/98 1476.324 s

0- 0 keV



KONUS 676

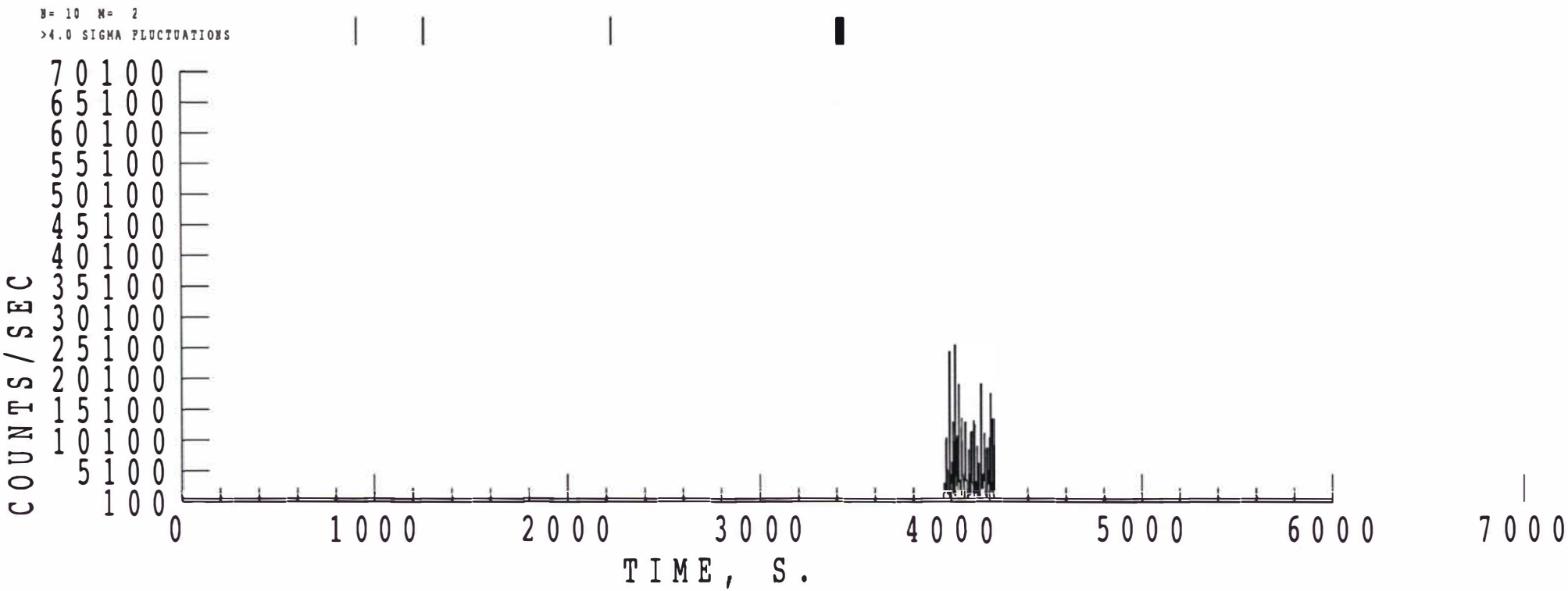
5/10/98

ULYSSES RT

28/ 4/98 648.316 s

INTERVALS REGROUPED BY 5

0- 0 keV

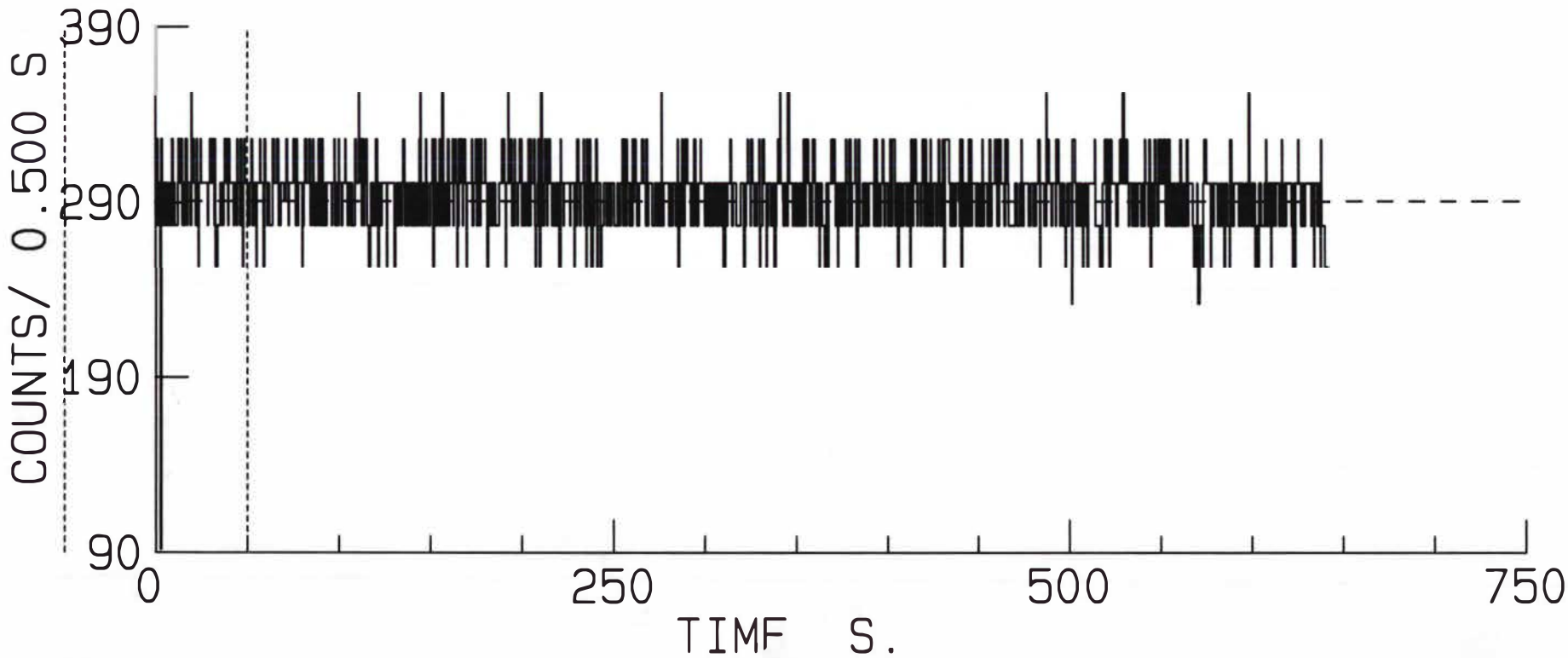


ULYSSES RT

5/10/98

28/ 4/98 4870.361 s

22- 150 keV



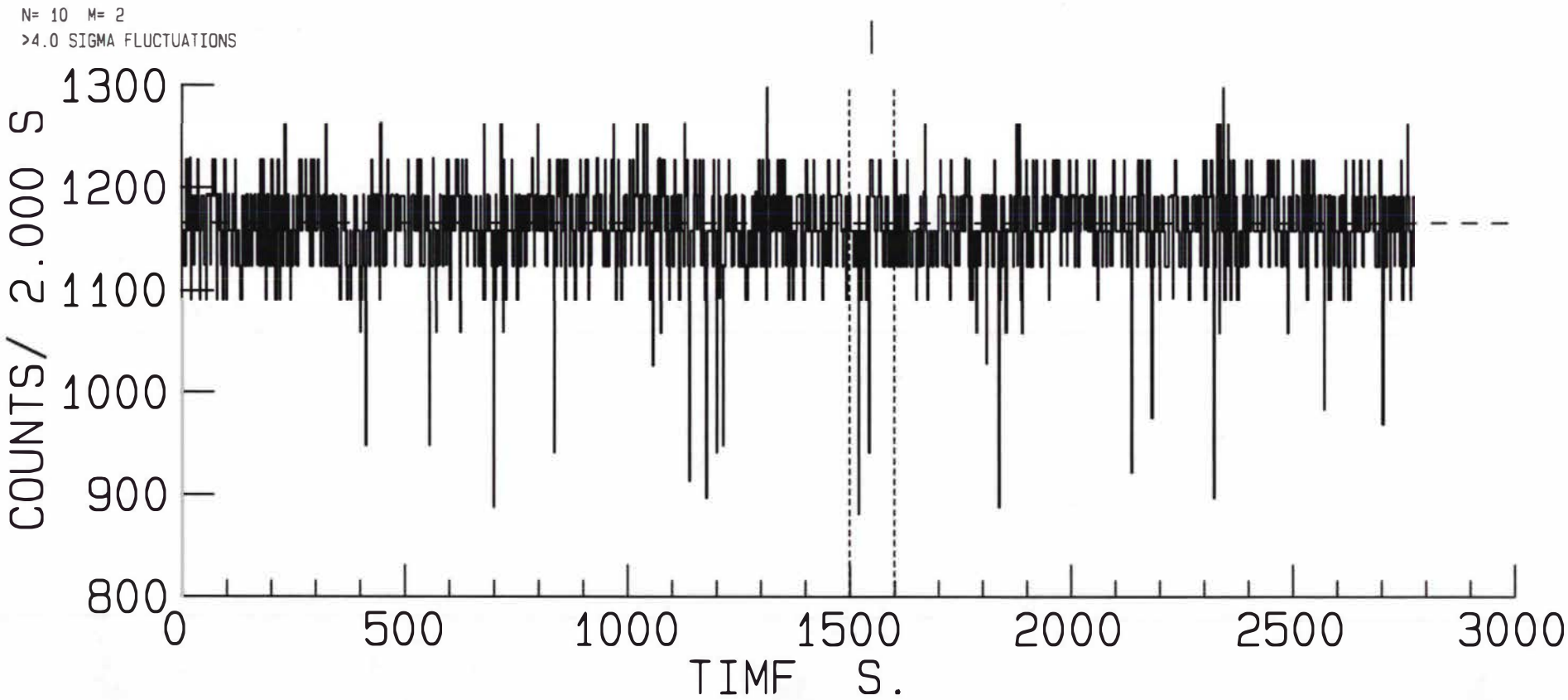
ULYSSES RT

5/10/98

28/ 4/98 1840.330 s

1.000 S INTERVALS REGROUPED BY 2

22- 150 keV



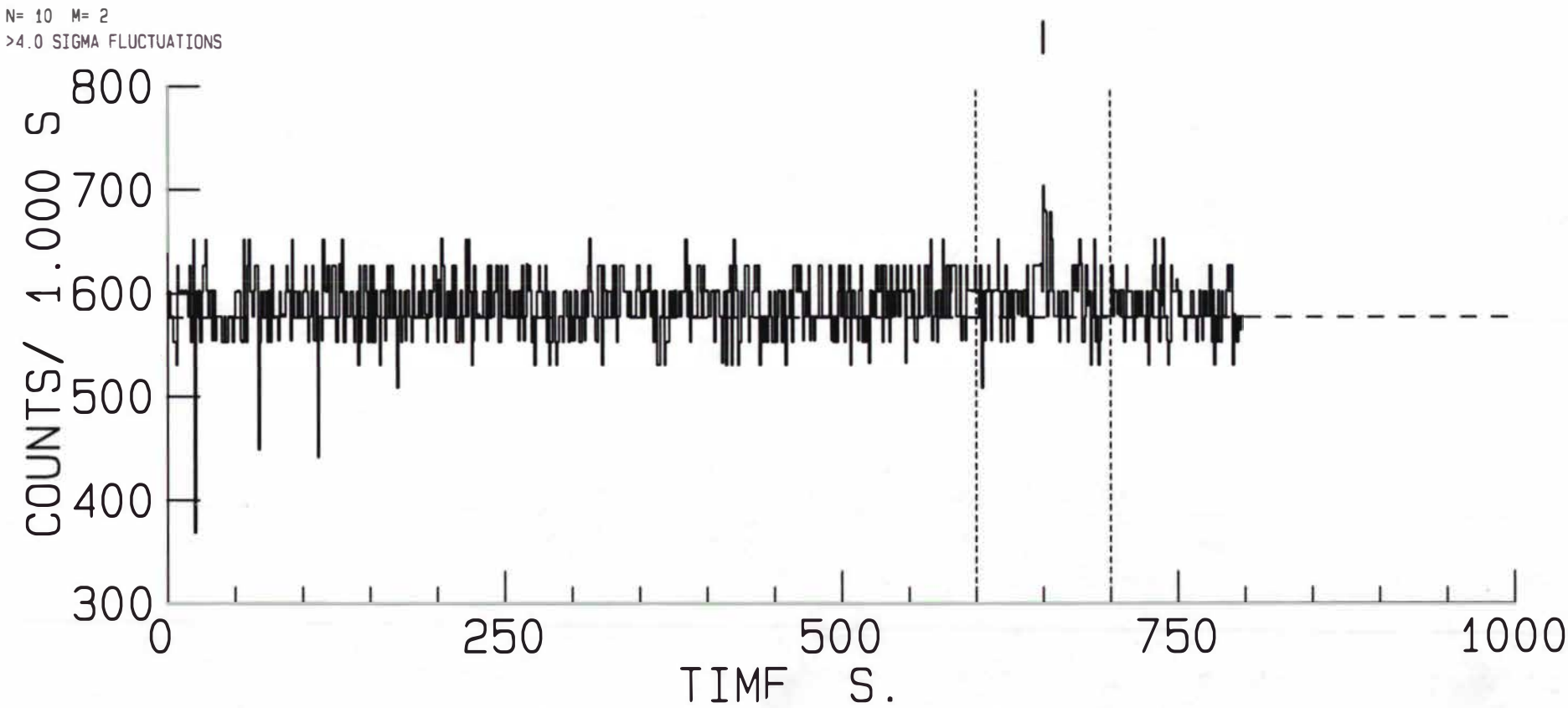
ULYSSES RT

5/10/98

28/ 4/98 934.319 s

0.500 S INTERVALS REGROUPED BY 2

22- 150 keV

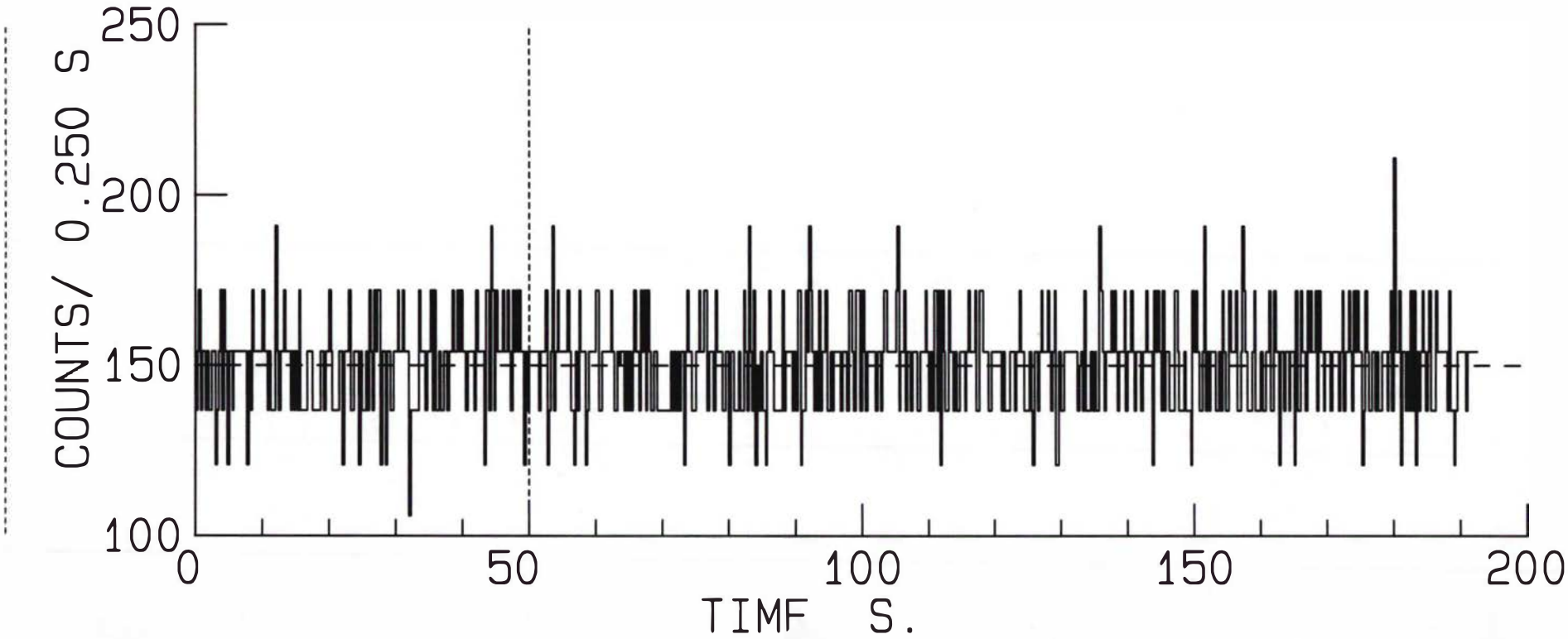


ULYSSES RT

5/10/98

28/ 4/98 742.316 s

22- 150 keV

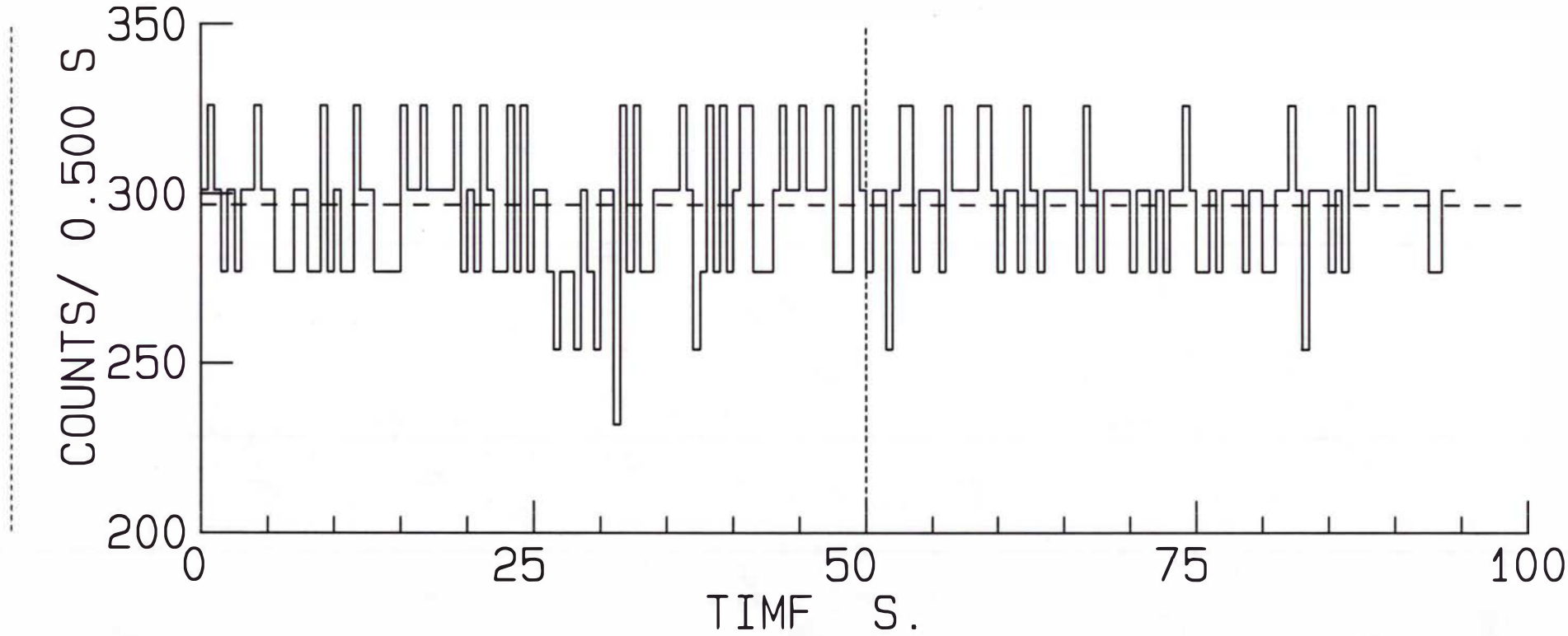


ULYSSES RT

5/10/98

28/ 4/98 648.316 s

22- 150 keV



KONUS 677

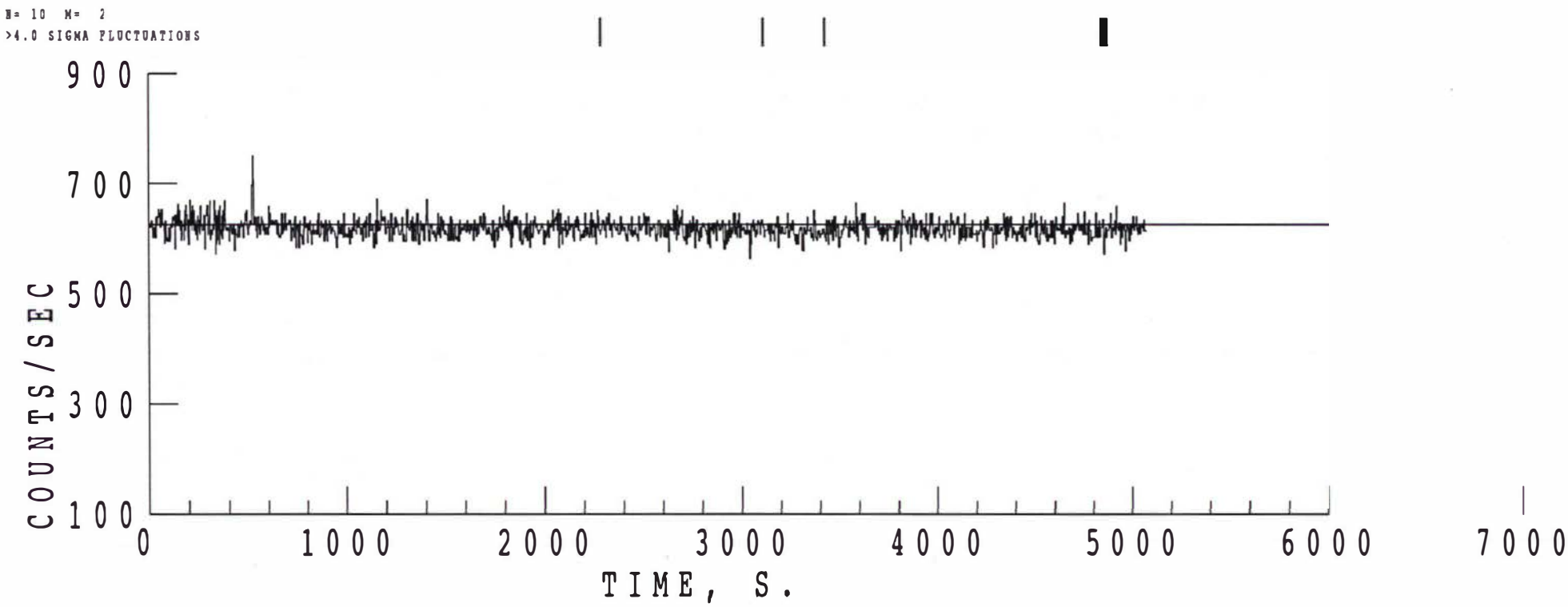
5/10/98

ULYSSES RT

28/ 4/98 70056.055 s

INTERVALS REGROUPED BY 8

0- 0 keV



Date: Oct 26 '09

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?

2. For Konus events

☑ Konus ecliptic latitude used with latest calibration?

2. For Odyssey events

□ Was CHECKMO run to eliminate data gaps?

□ Did the Odyssey ephemeris correspond to the event time? (When there is data in the database, the ephemeris is for the start of record, usually ~1320 s prior to the request time; when there is no data in the database, the ephemeris is for the request time in the e-mail, so the request time in mosearch should be equal to the GRB time. Note that the time in the return e-mail will be ~1320 s prior to the time requested, in the line "no HEND data…")

□ Was Mars-blocking used?

□ For cruise phase data (April – October 2001), was the updated data used? (Old data has timing errors)

□ GRS database searched for triggered data? Database data between August 2005 and January 2006 should be re-extracted, due to timing errors. (E-mailed data should be OK).

□ GRS and HEND data cross-correlated to check timing?

2. For 3 or More Spacecraft events

□ Σ 3Δt's calculated, and/or BMAPSUM executed?

3. For INTEGRAL events

□ INTEGRAL SPI-ACS website checked for bursts that weren't transmitted automatically?

□ 125 ms added to INTEGRAL SPI-ACS time for bursts prior to April 2 2004 11:00 UT?

□ Updated ephemeris used for bursts prior to September 30, 2003?

☑ ACCESS and MBL4 databases updated?

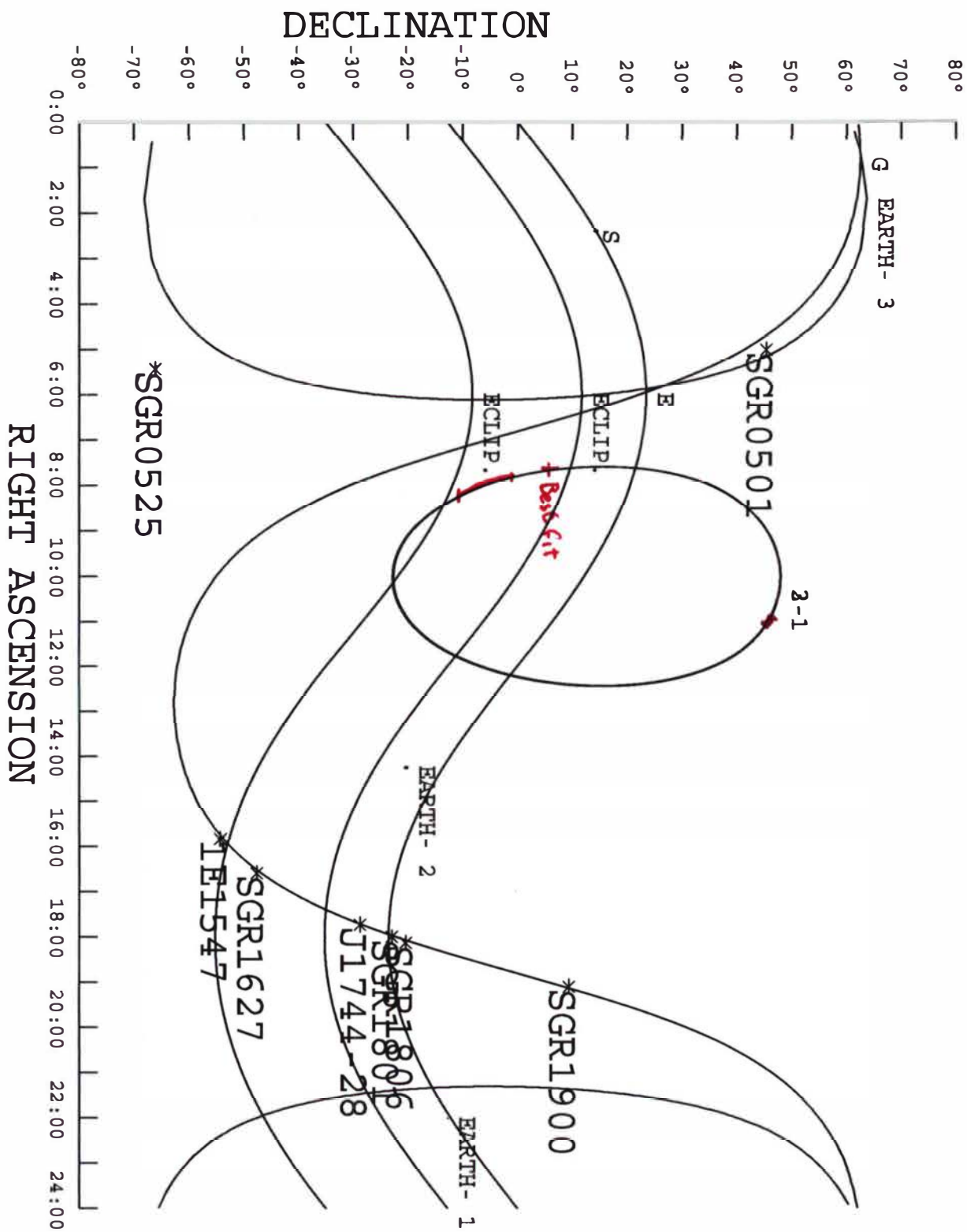
SAX added Jan 8

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

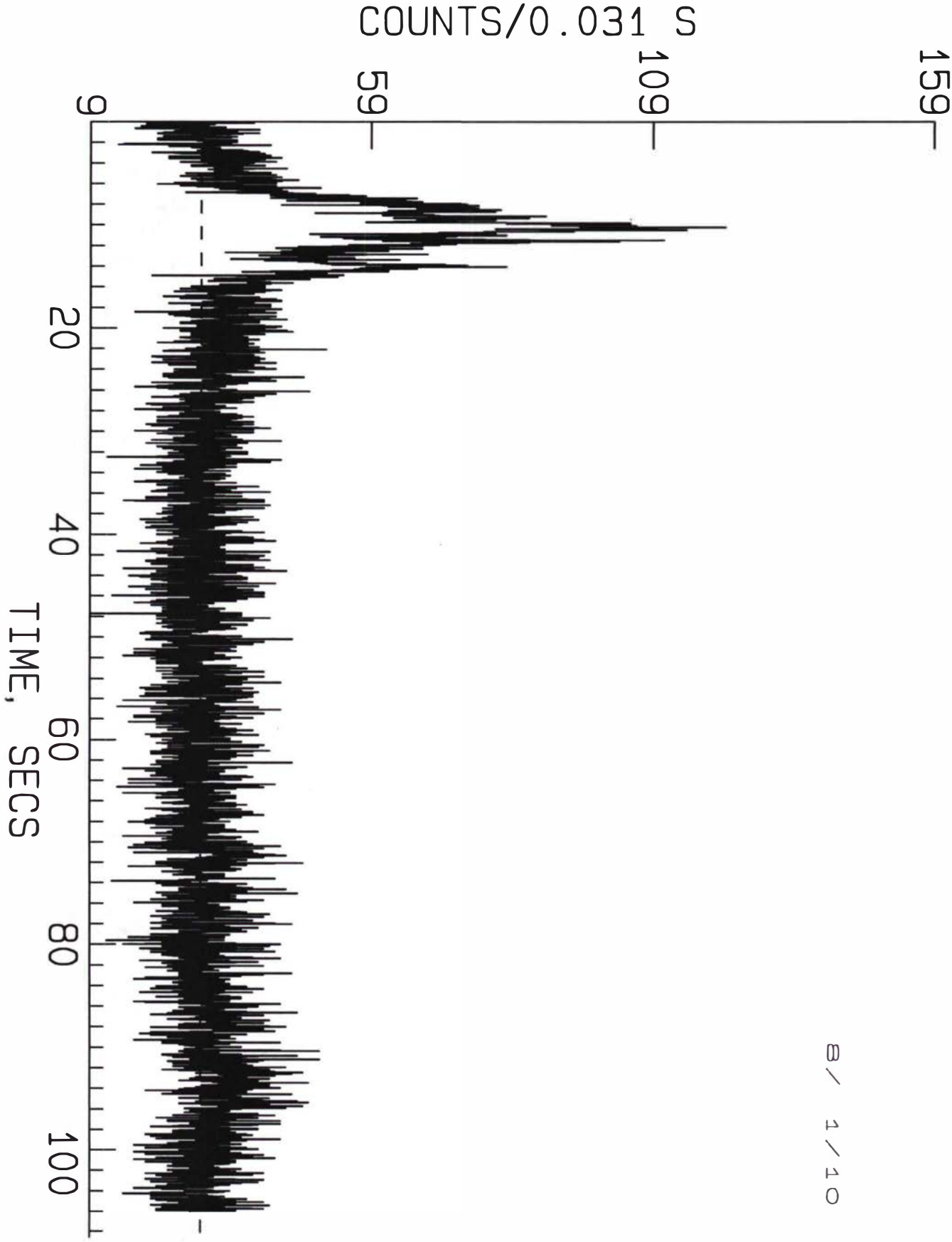
S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

1 ULYSSES 2 KONUS1 3 SAX

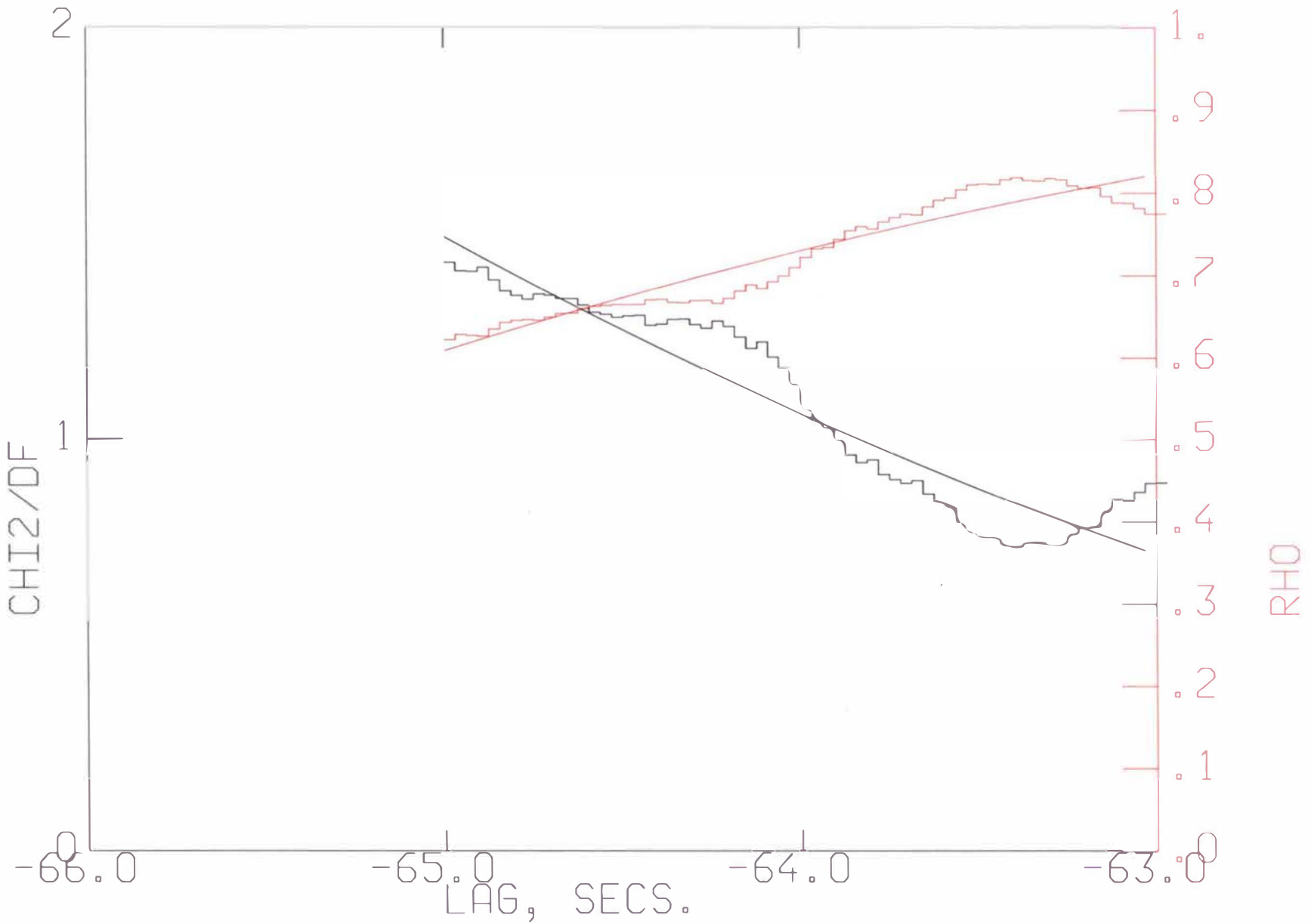


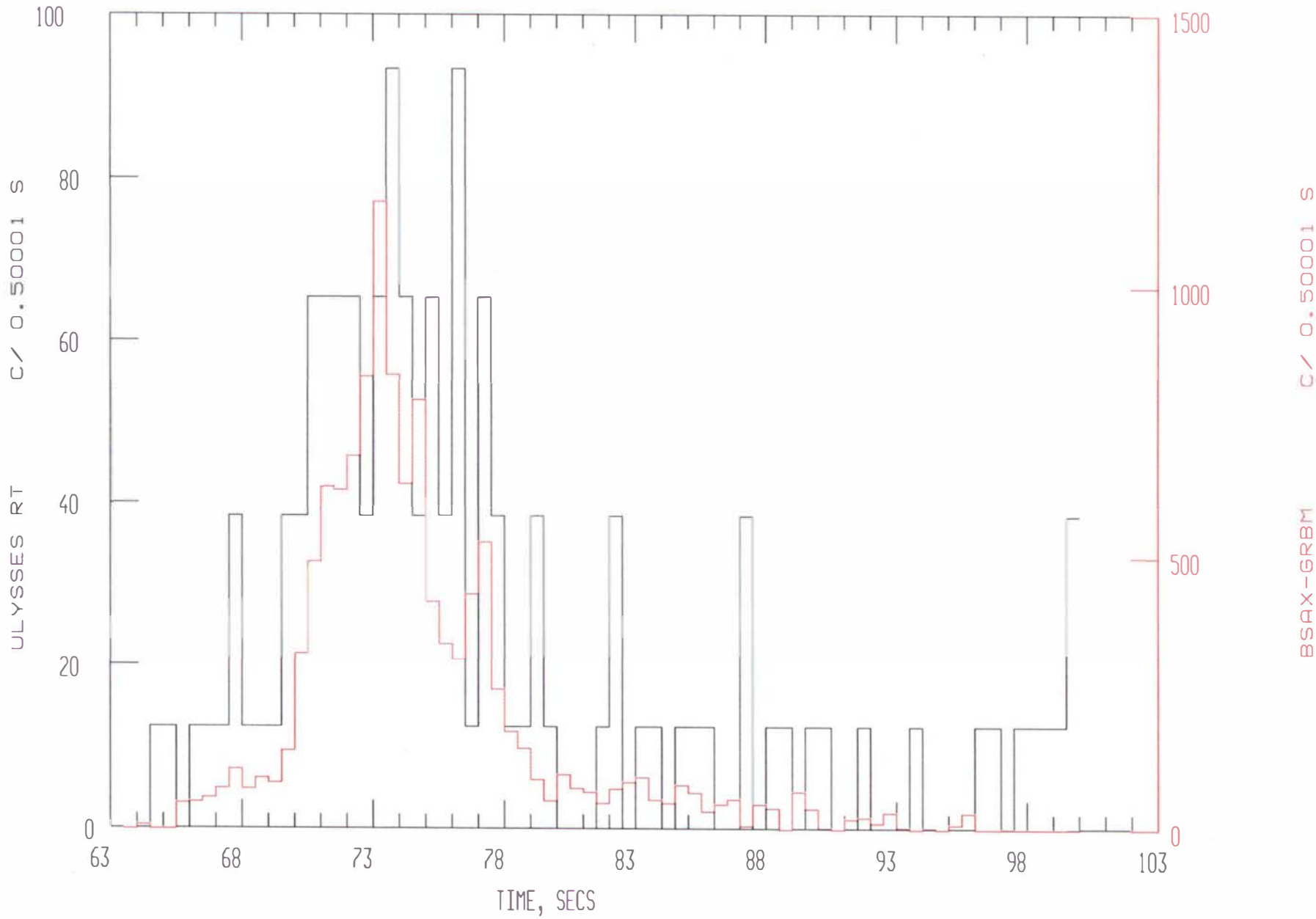
SAX GRBM 28/04/98 72599.922

40- 700 keV

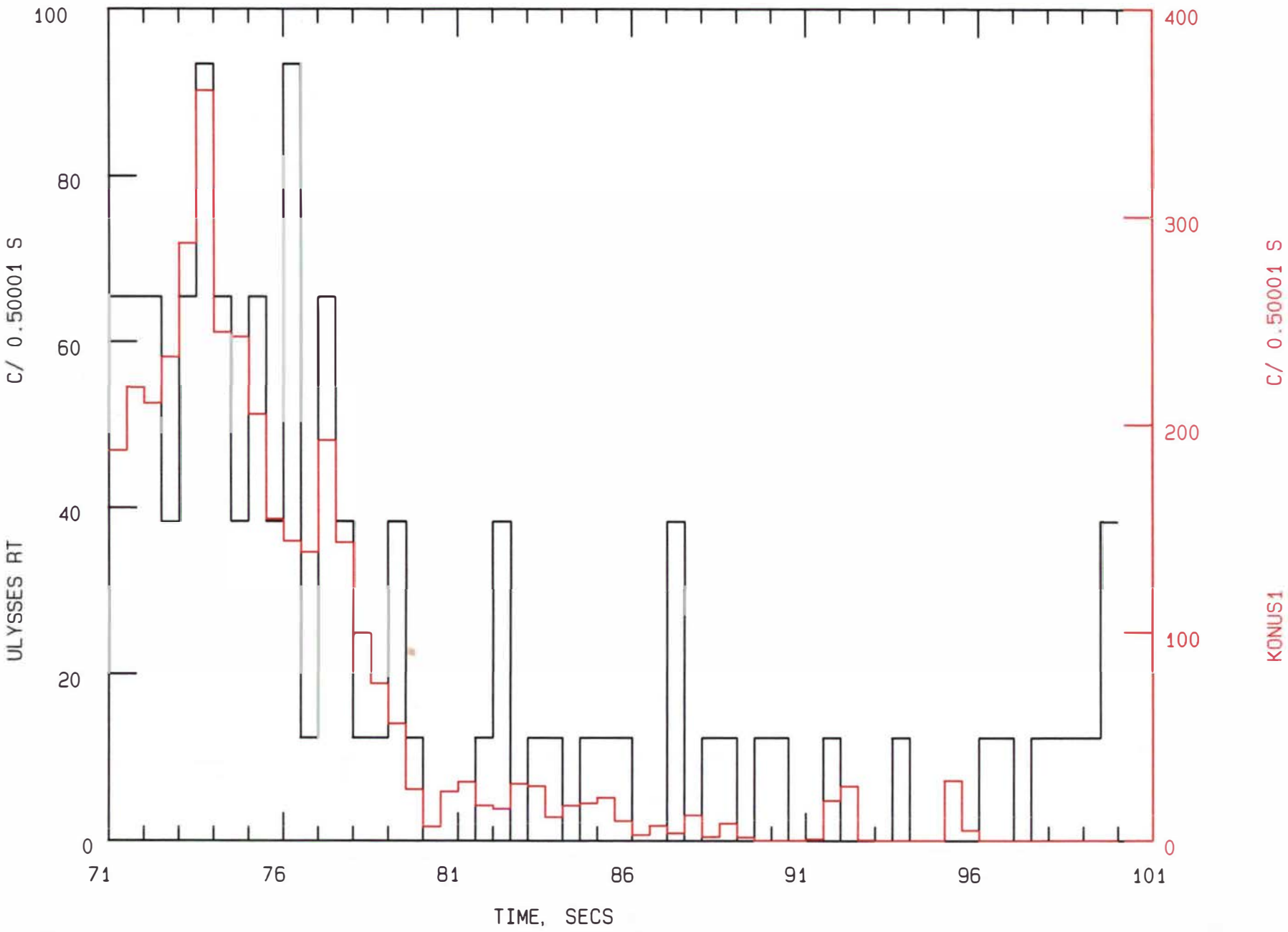


ULYSSES RT-BSAX-GRBM CORRELATION 28/ 4/98 70506.056

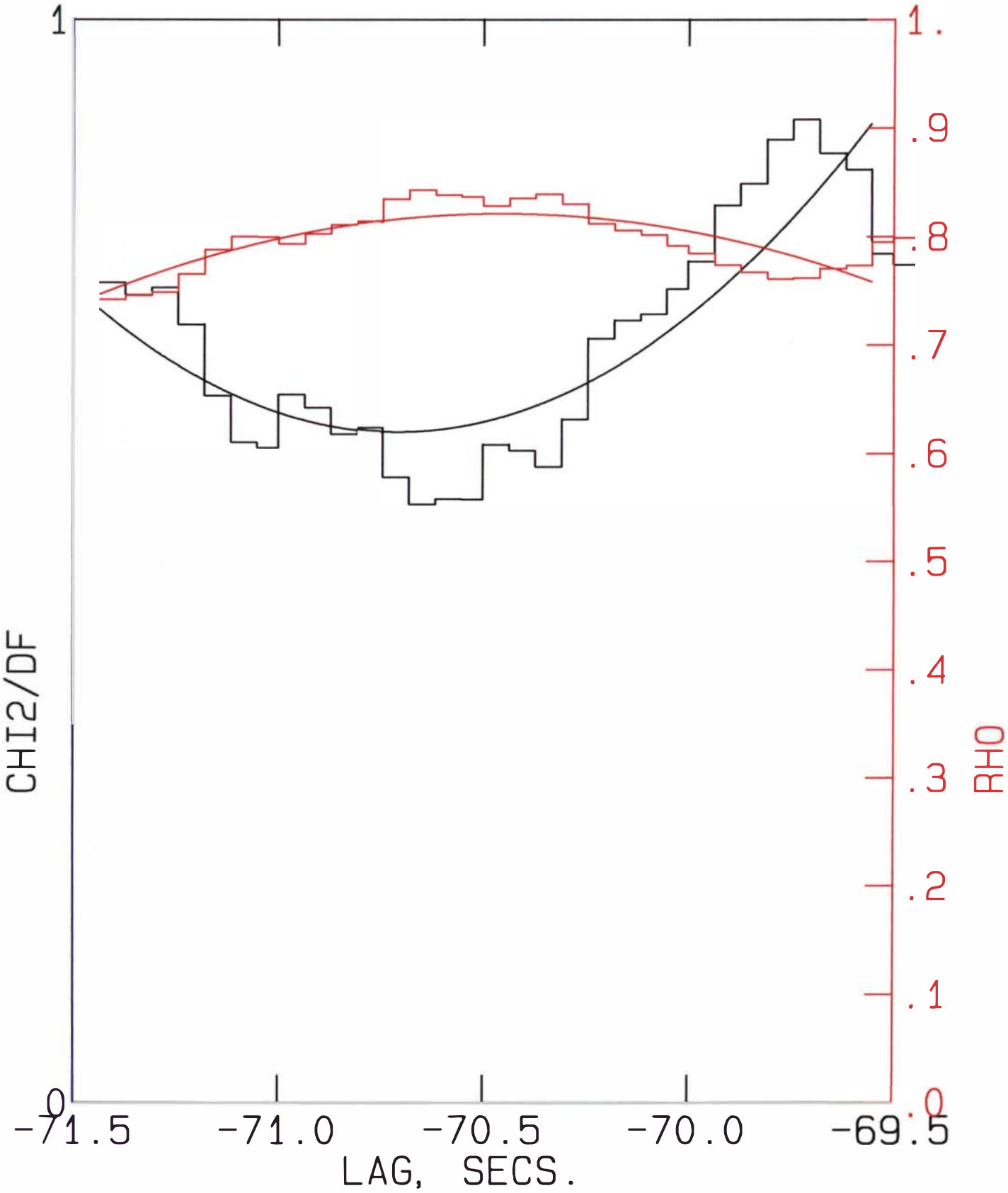



100
80
60
40
20
0
ULYSSES RT C/ 0.50001 S
1500
1000
500
0
BSAX-GRBM C/ 0.50001 S
63
68
73
78
83
88
93
98
103
TIME, SECS

ULYSSES RT-KONUS1 CORRELATION 28/ 4/98 70506.056 26/10/ 9



ULYSSES RT-KONUS1 CORRELATION 28/ 4/98 70506.056



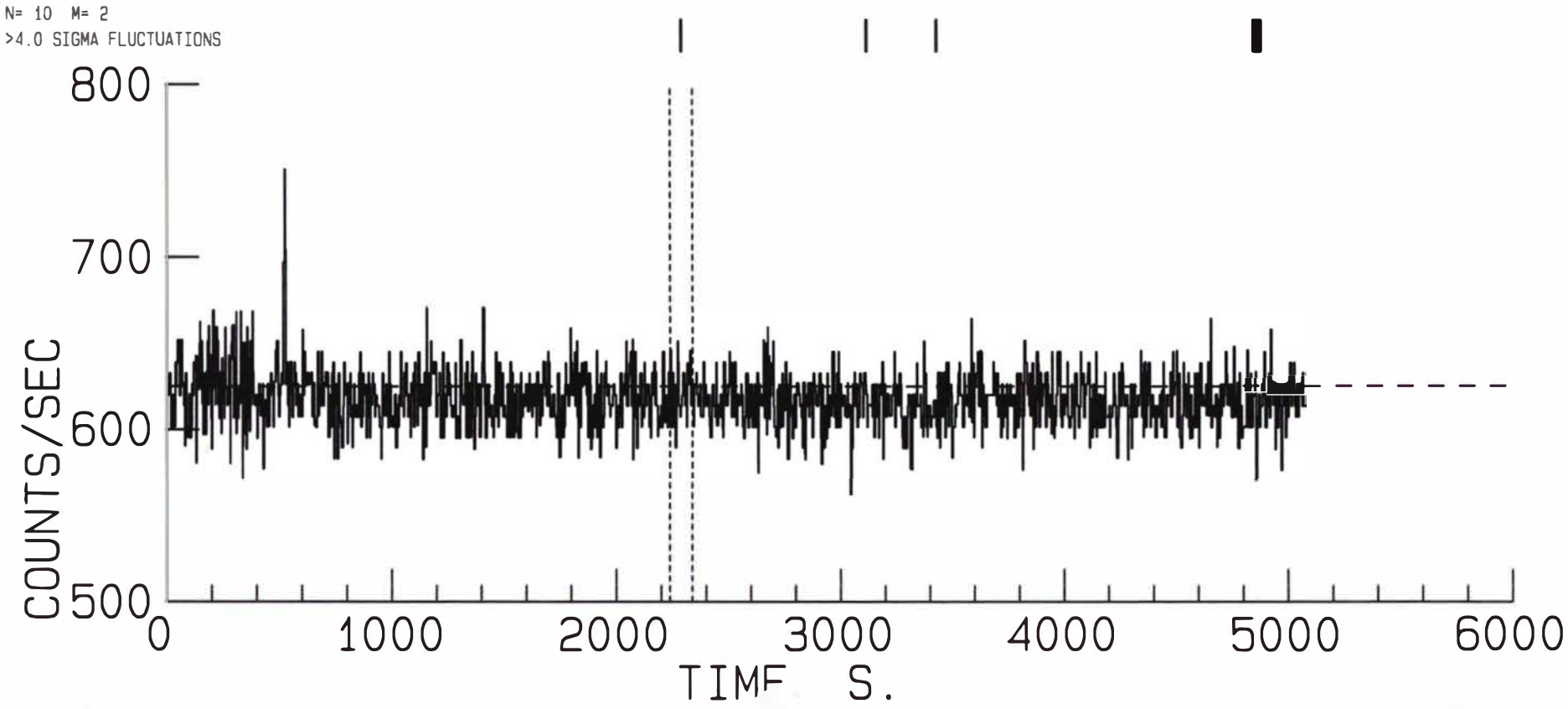
ULYSSES RT

26/10/ 9

28/ 4/98 70056.055 s

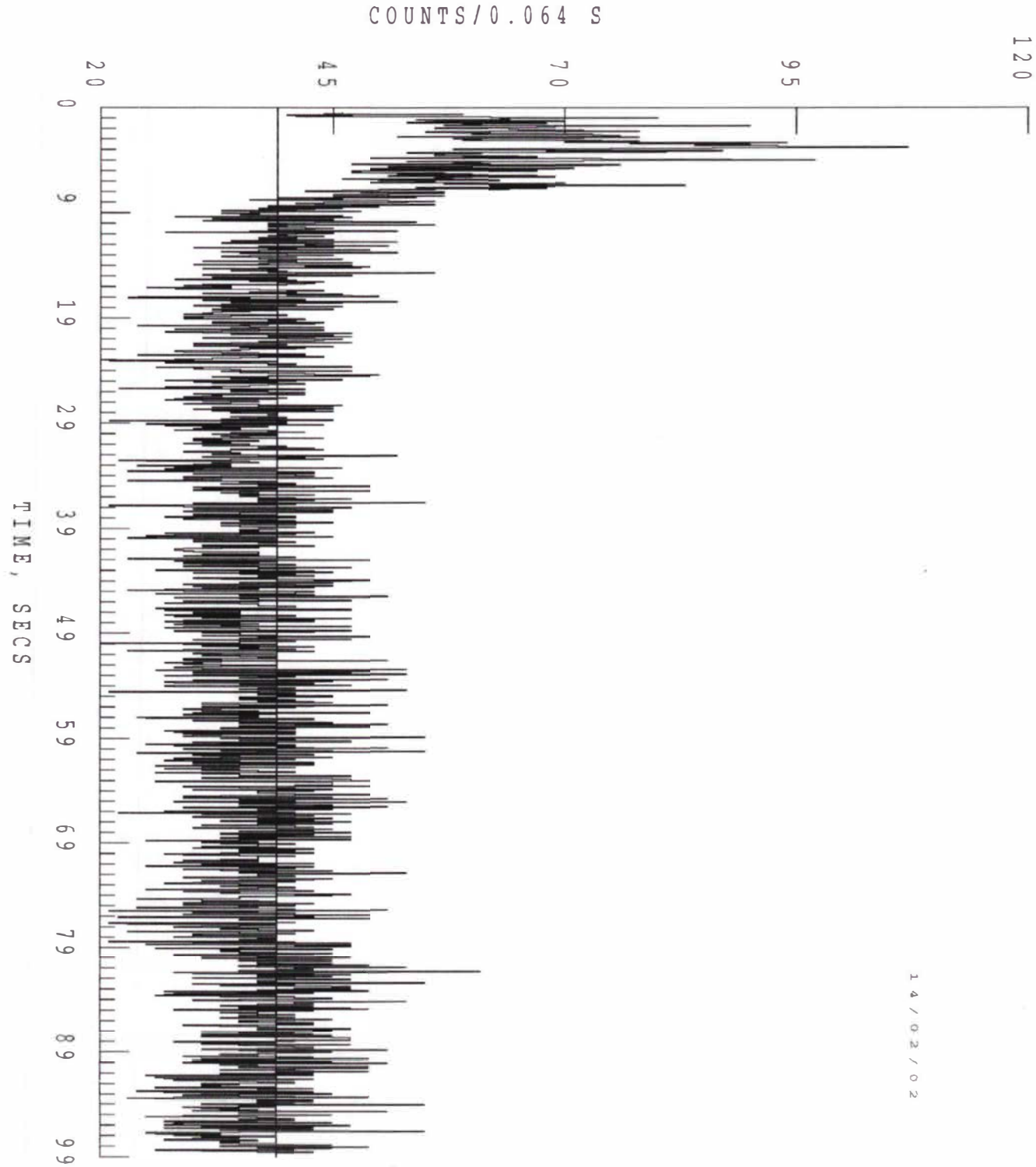
INTERVALS REGROUPED BY 8

22- 150 keV



KONUS1 28/04/98 72606.888

50- 200 keV



14/02/02

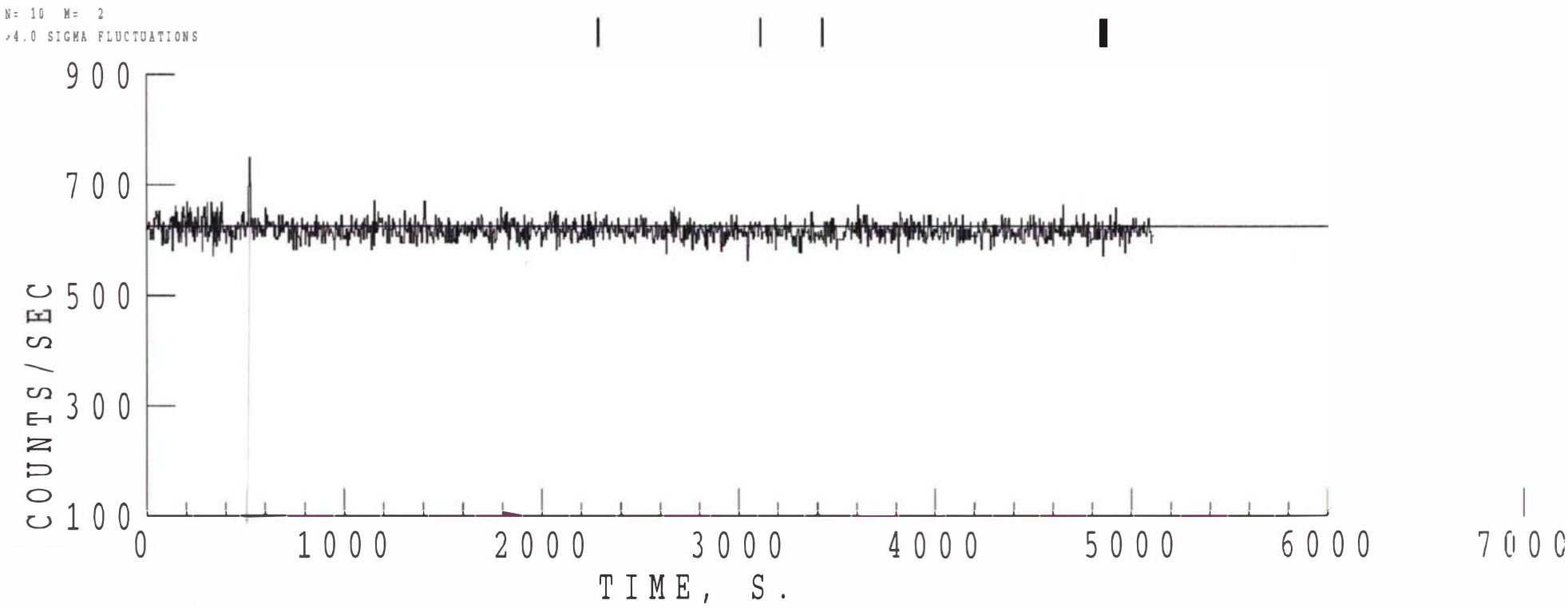
KONUS1 19980428 72606

ULYSSES RT 14/02/02

28/04/98 70056.055 s

INTERVALS REGROUPED BY 8

0- 0 keV



From HENZE@fender.msfc.nasa.gov Wed Apr 29 11:26:50 1998
Date: Wed, 29 Apr 1998 13:26:13 -0500 (CDT)
From: Bill Henze (256-544-7616) <HENZE@fender.msfc.nasa.gov>
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6711

TIME: TJD=0931 SECONDS=44247

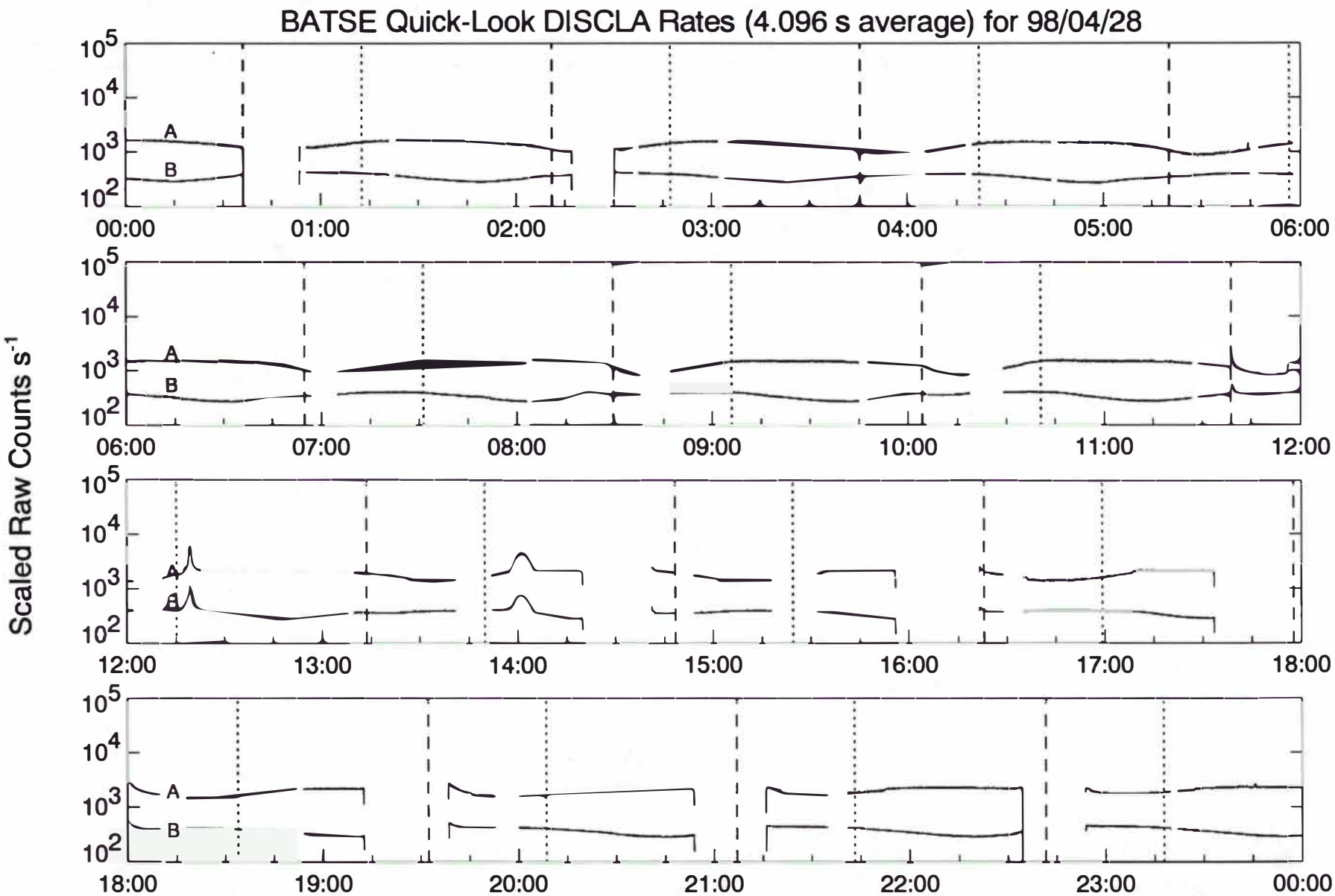
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

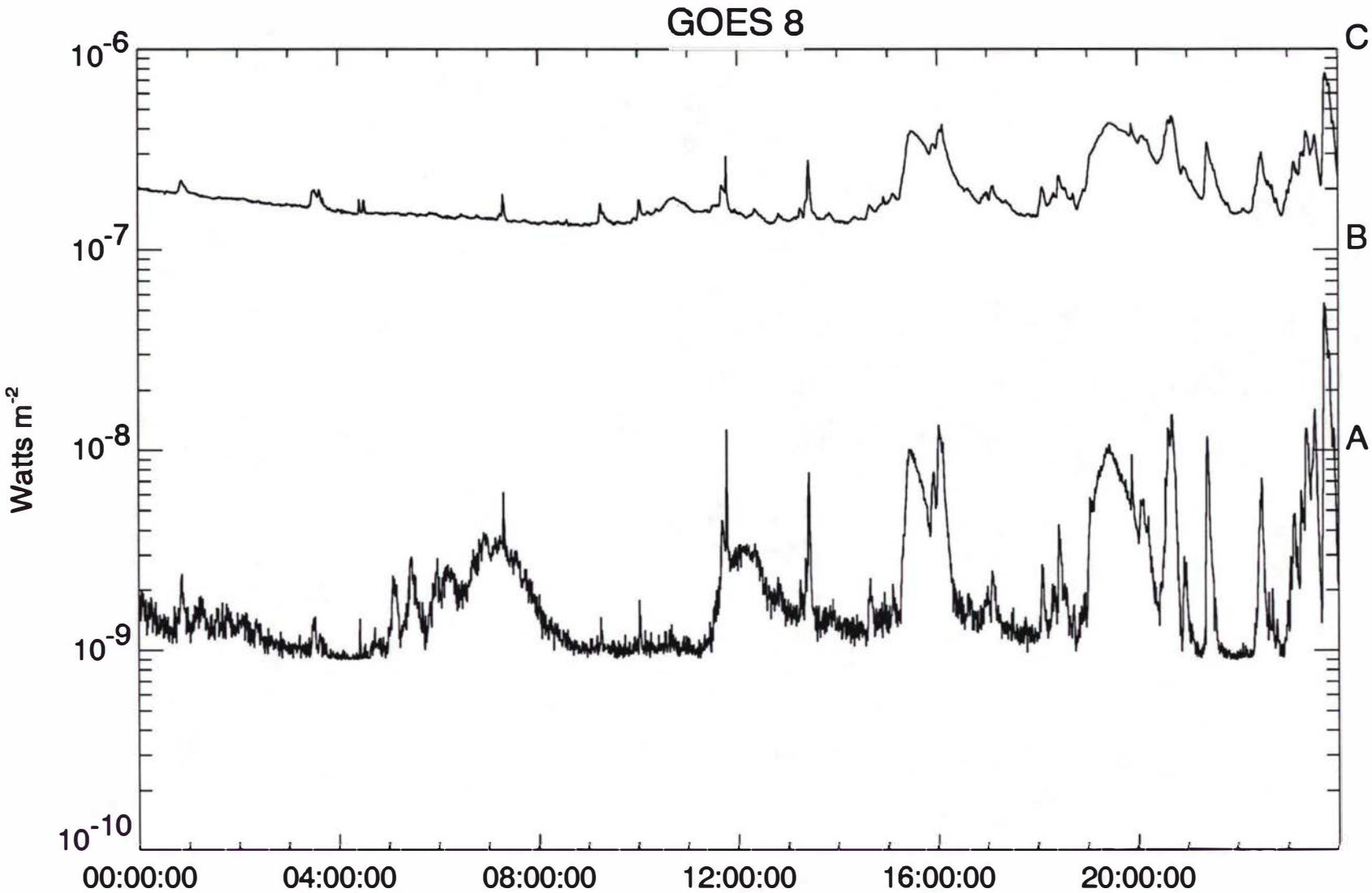
COMMENTS:
PARTICLE EVENT, WEST OF NORTH AMERICA



Current Time: 98/05/02, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

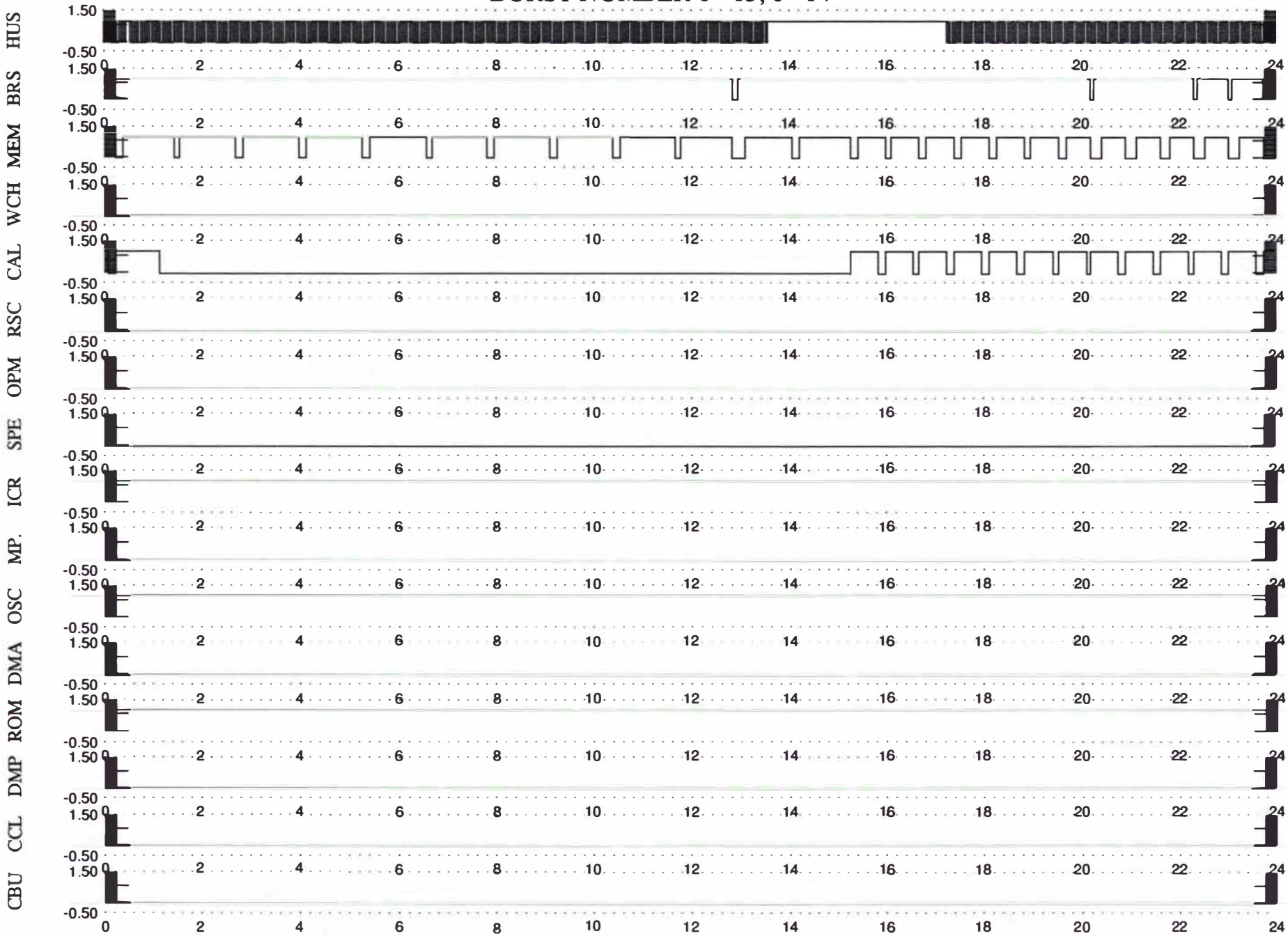
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/28, 0000:00 Plot created: 98/05/02, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

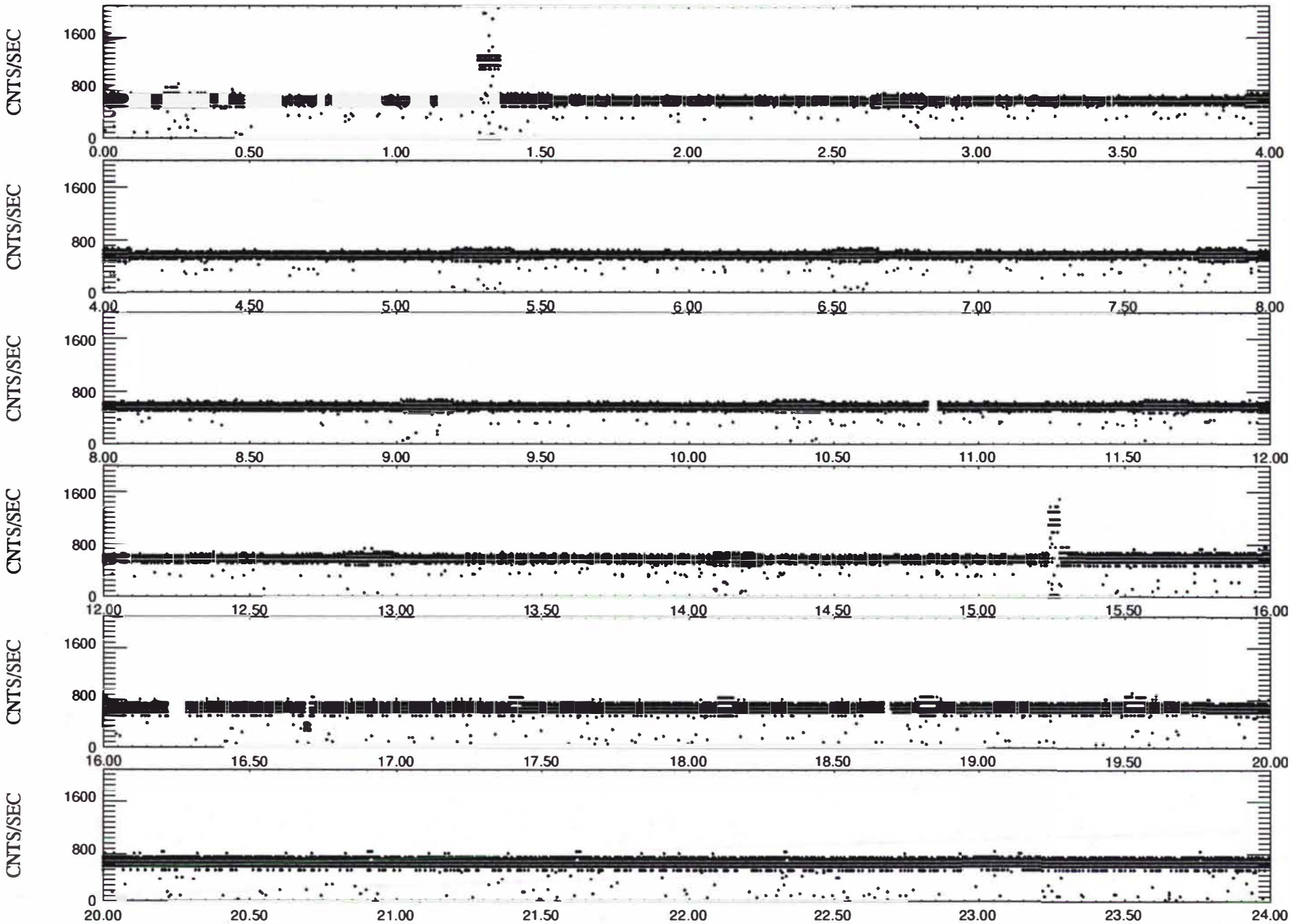
HUS MODES EDR day 118, year 1998 to day 118, year 1998 8/18/98

BURST NUMBER 6 - 15, 0 - 14



HUS 2A, MODE 1, NOT AVERAGED EDR day 118, year 1998 to day 118, year 1998 8/18/98

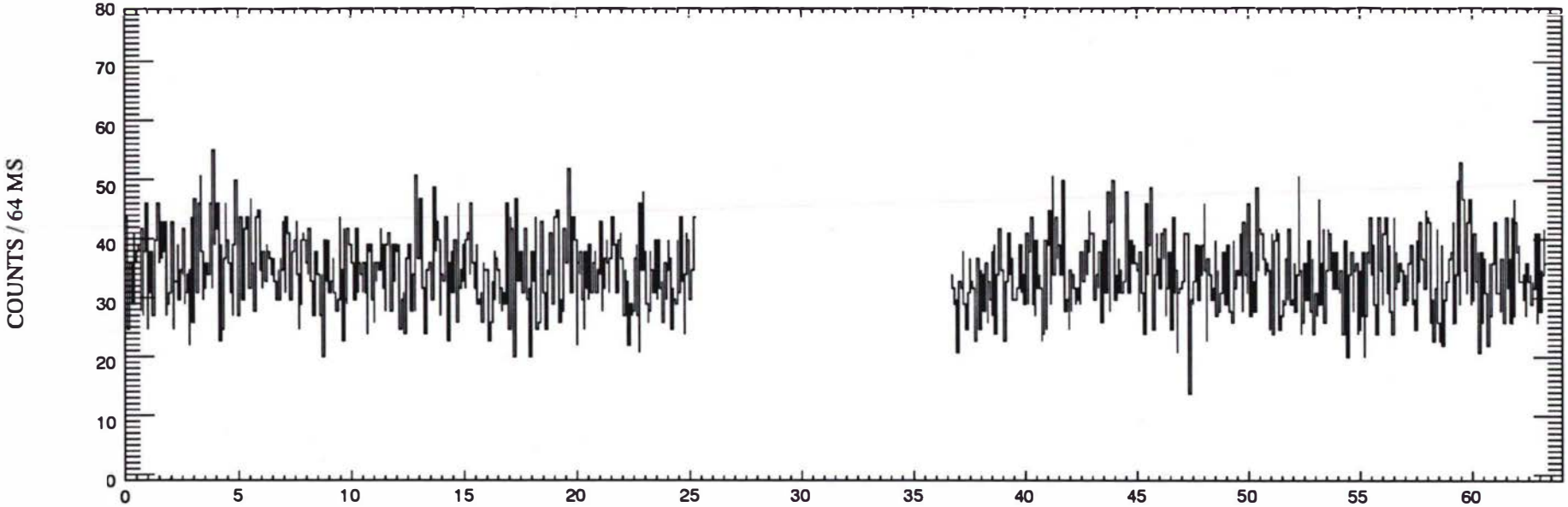
CALIBRATION DATA INCLUDED

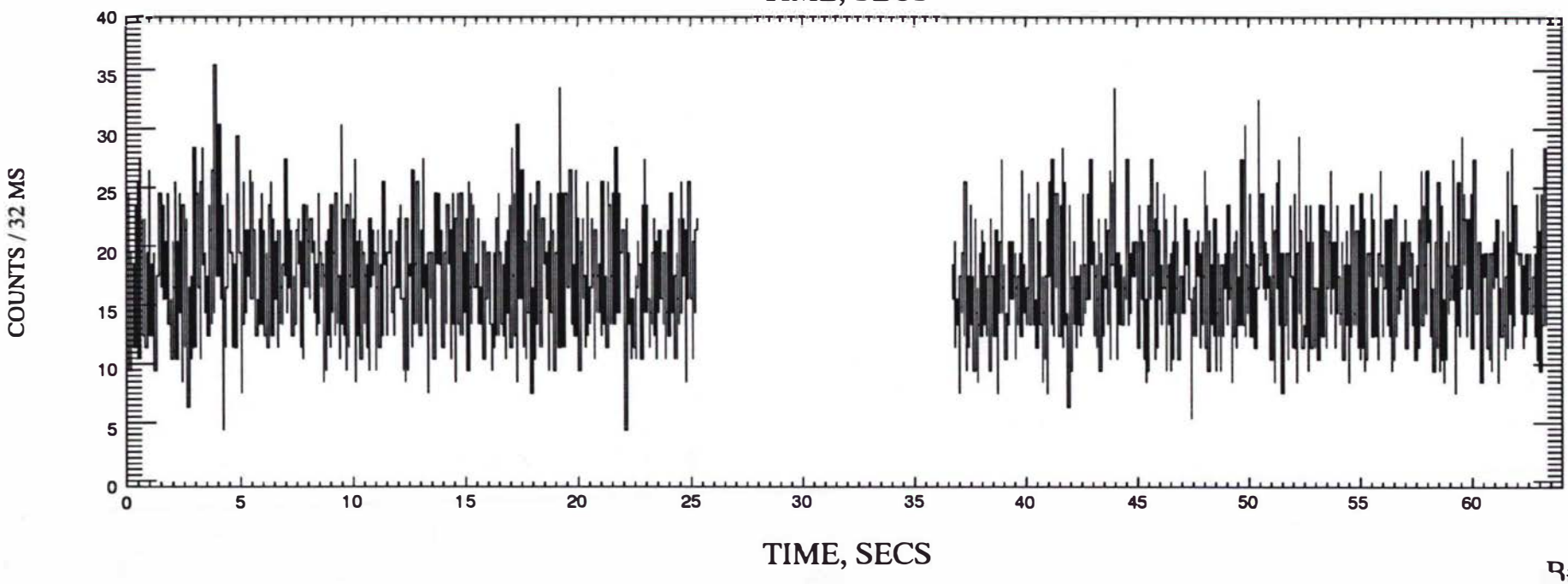


UNIV! AL TIME

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 6 at UT= 0.219506390889 h= 790.223 s 00:13:10.223

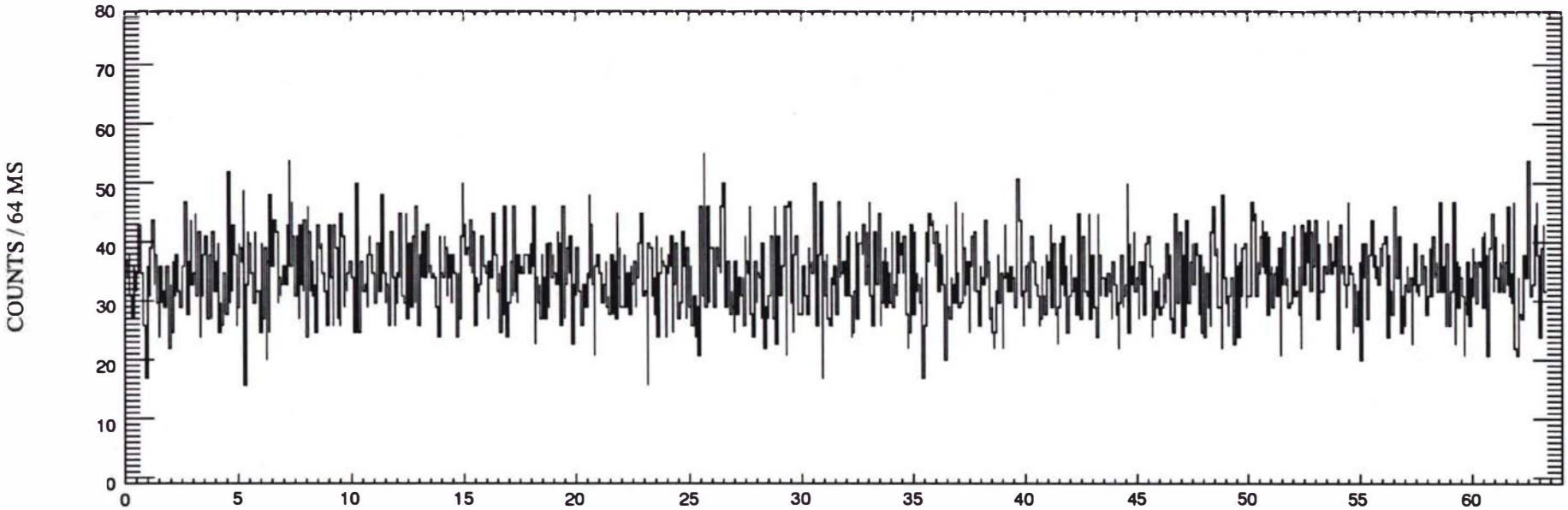




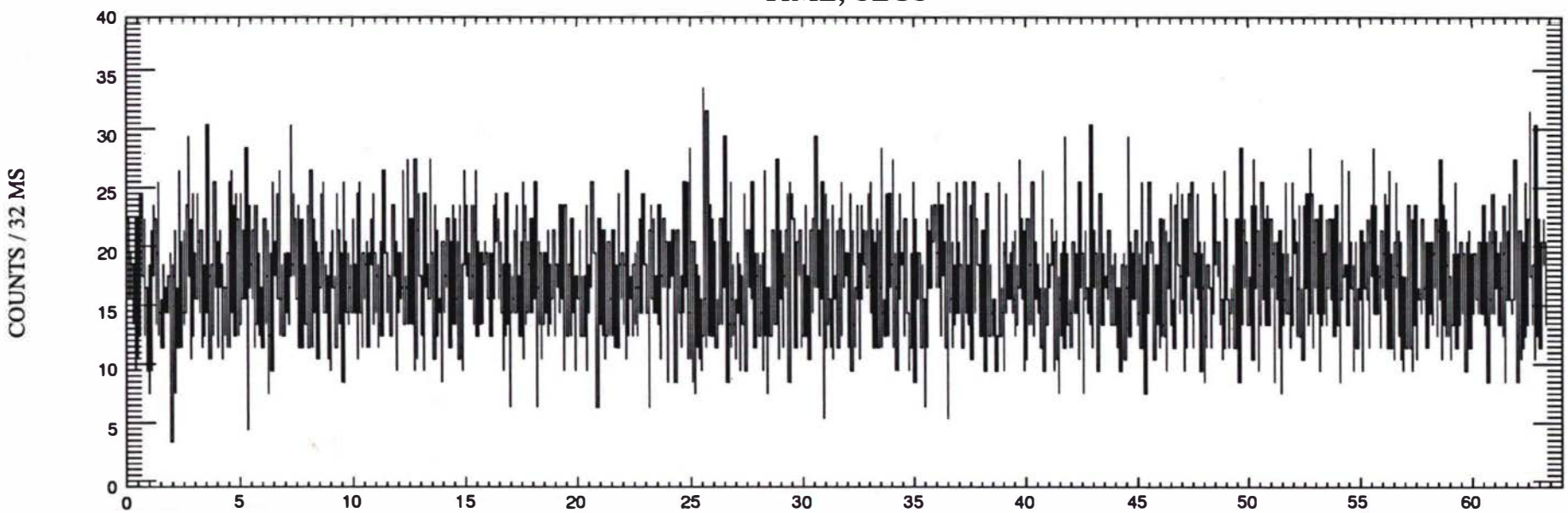
B# 1

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 13 at UT= 9.033408809238 h=32520.272 s 09:02:00.272



TIME, SECS

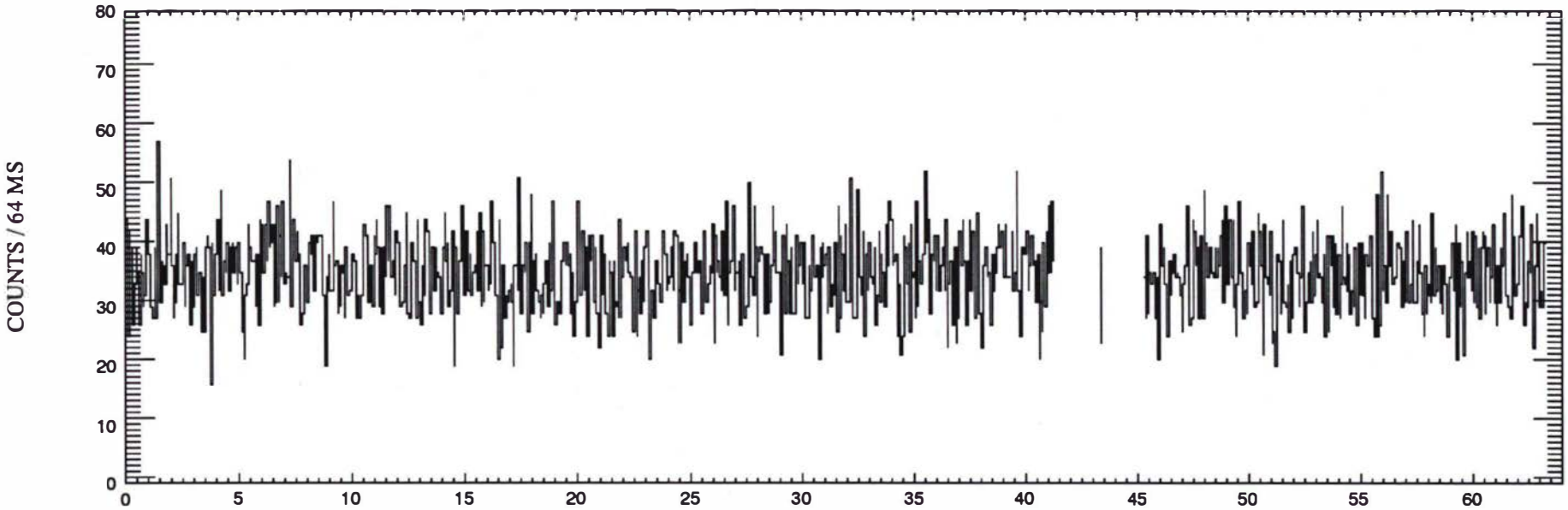


TIME, SECS

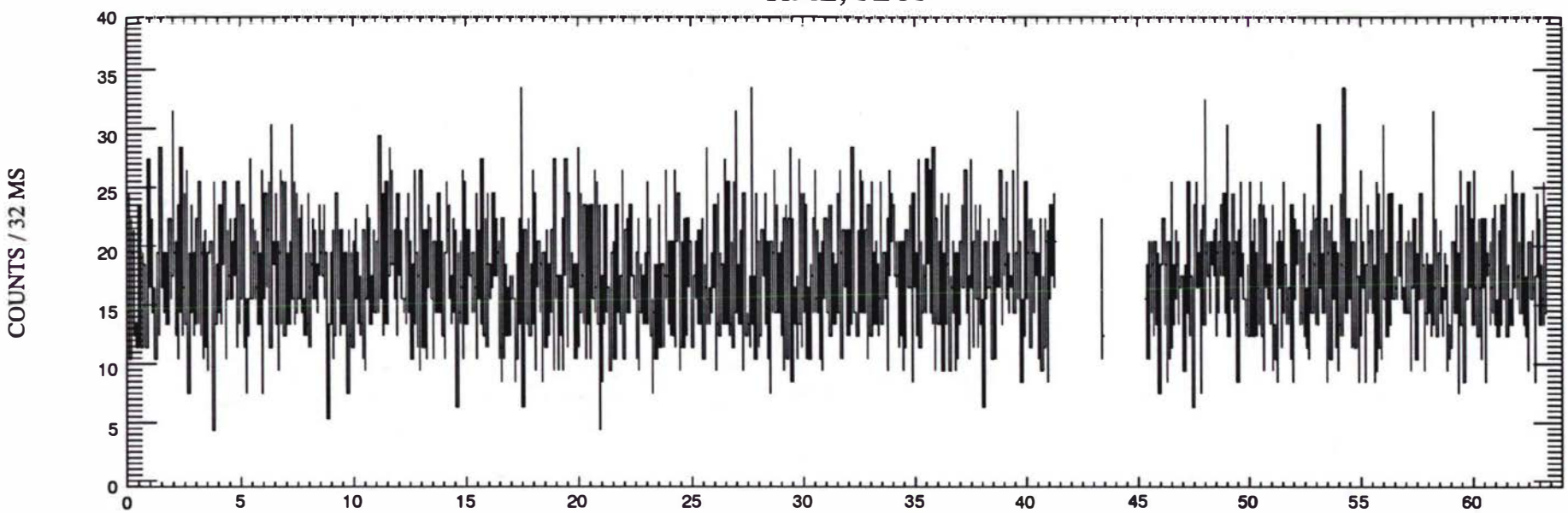
B# 2

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 14 at UT=10.297413372464 h=37070.688 s 10:17:50.688



TIME, SECS

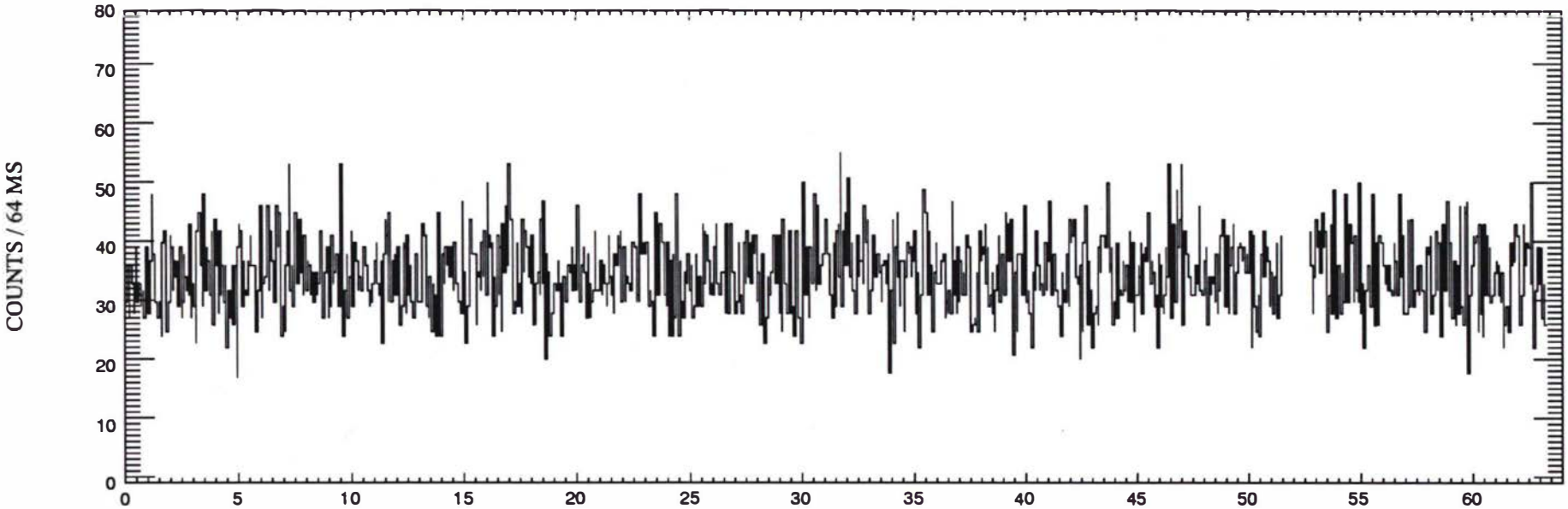


TIME, SECS

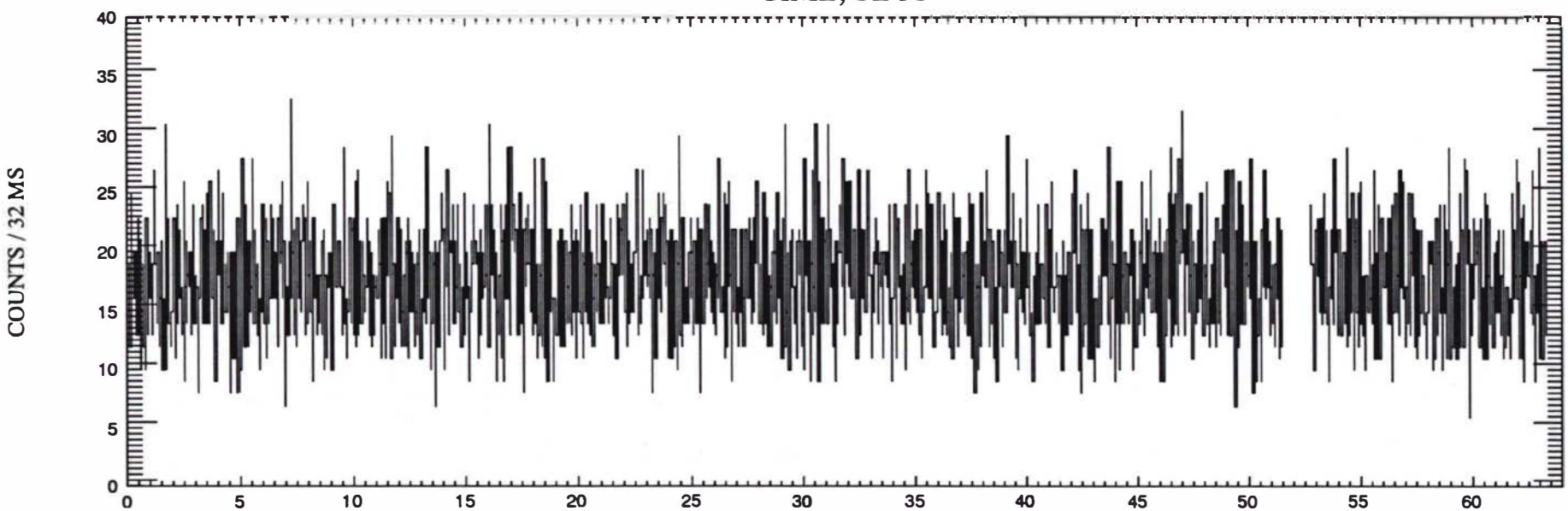
B# 3

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 15 at UT=11.567880605062 h=41644.370 s 11:34:04.370



TIME, SECS

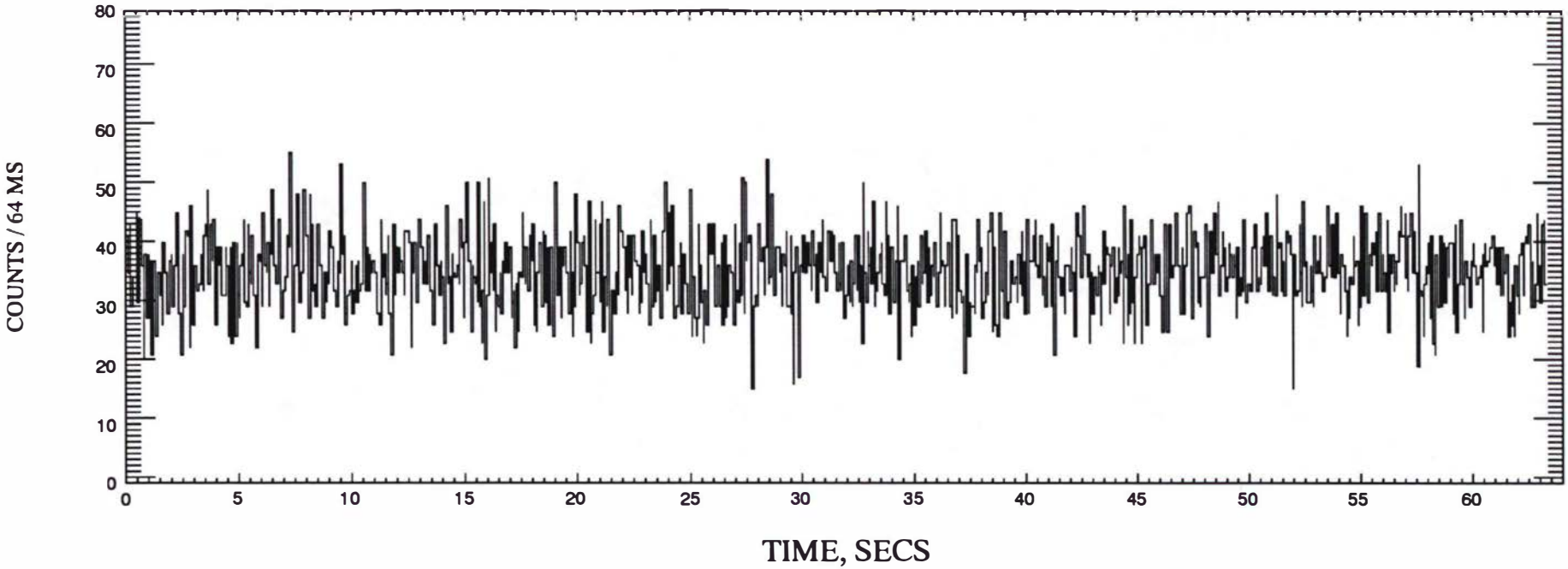


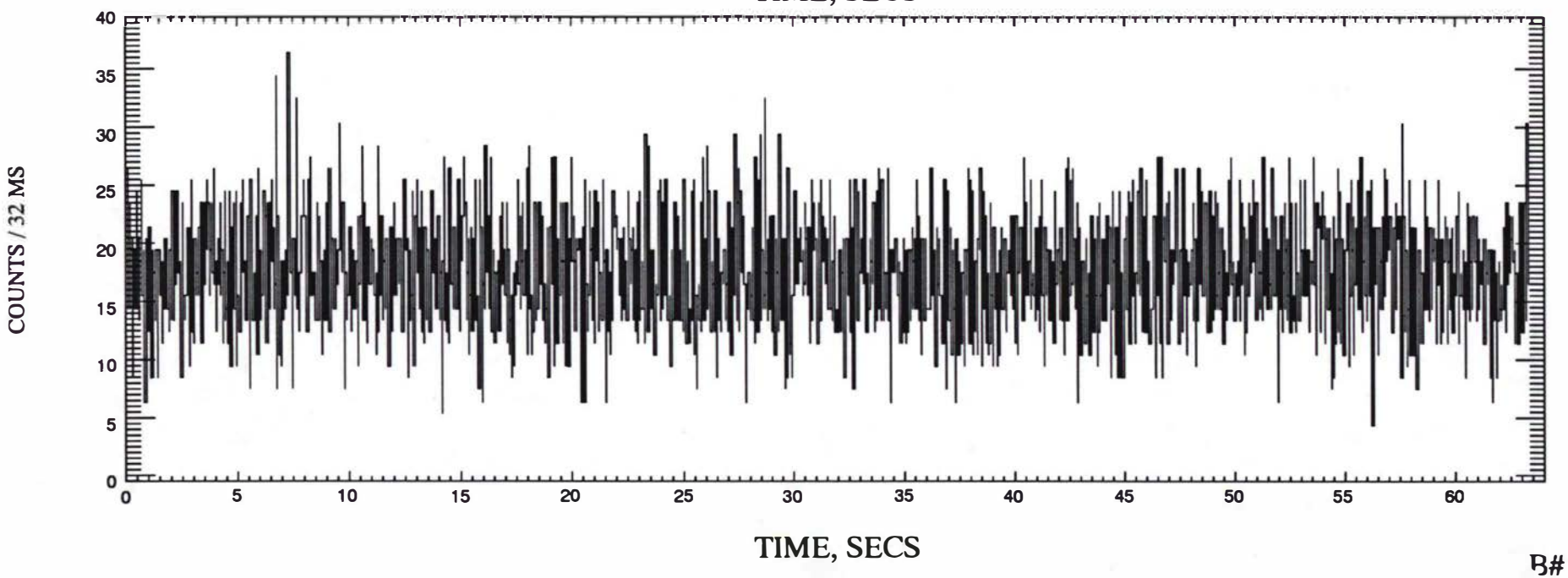
TIME, SECS

B# 4

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 0 at UT=12.821993670993 h=46159.177 s 12:49:19.177

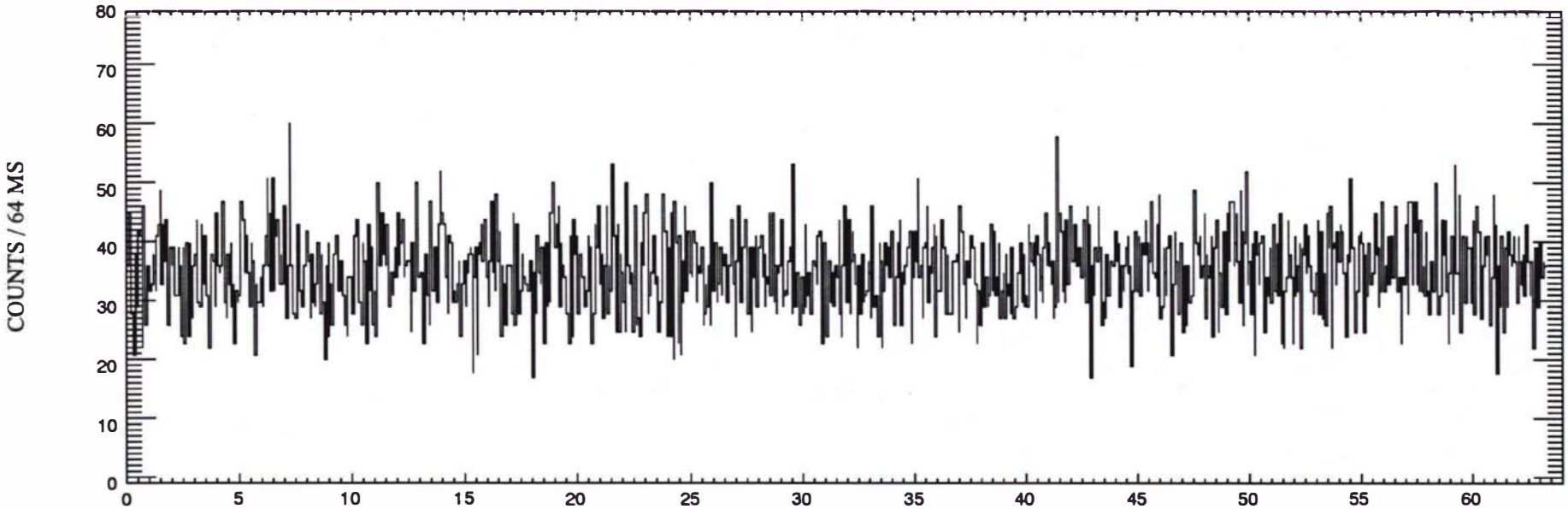




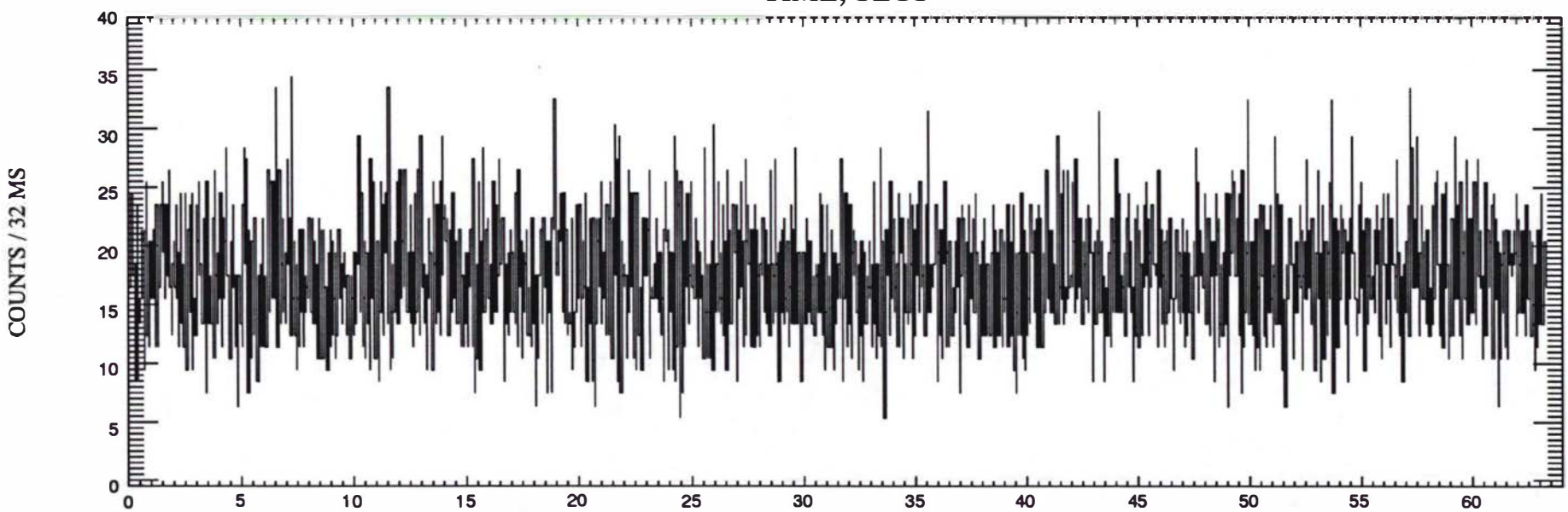
B# 5

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 1 at UT=14.082767545912 h=50697.963 s 14:04:57.963



TIME, SECS

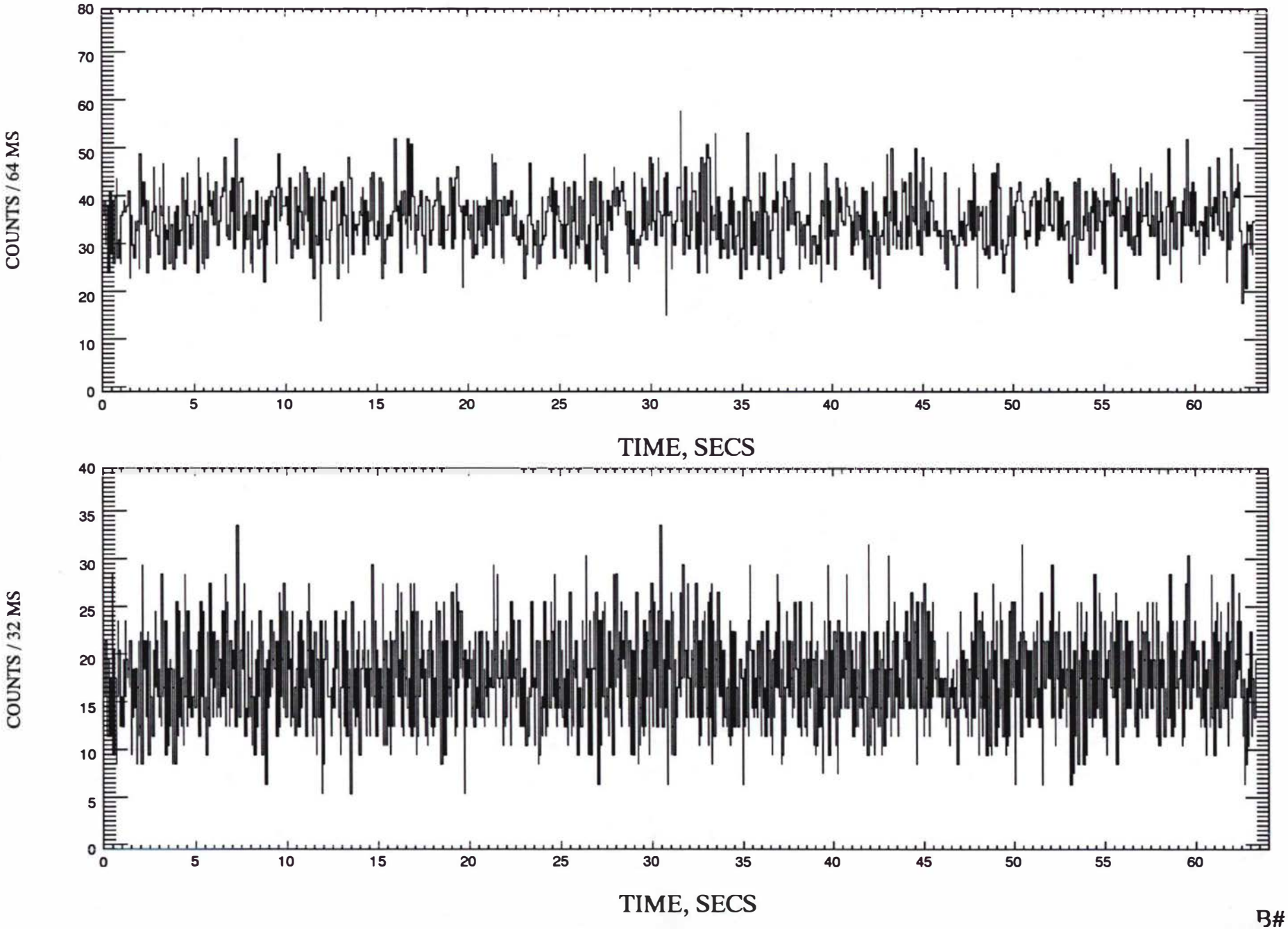


TIME, SECS

B# 6

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

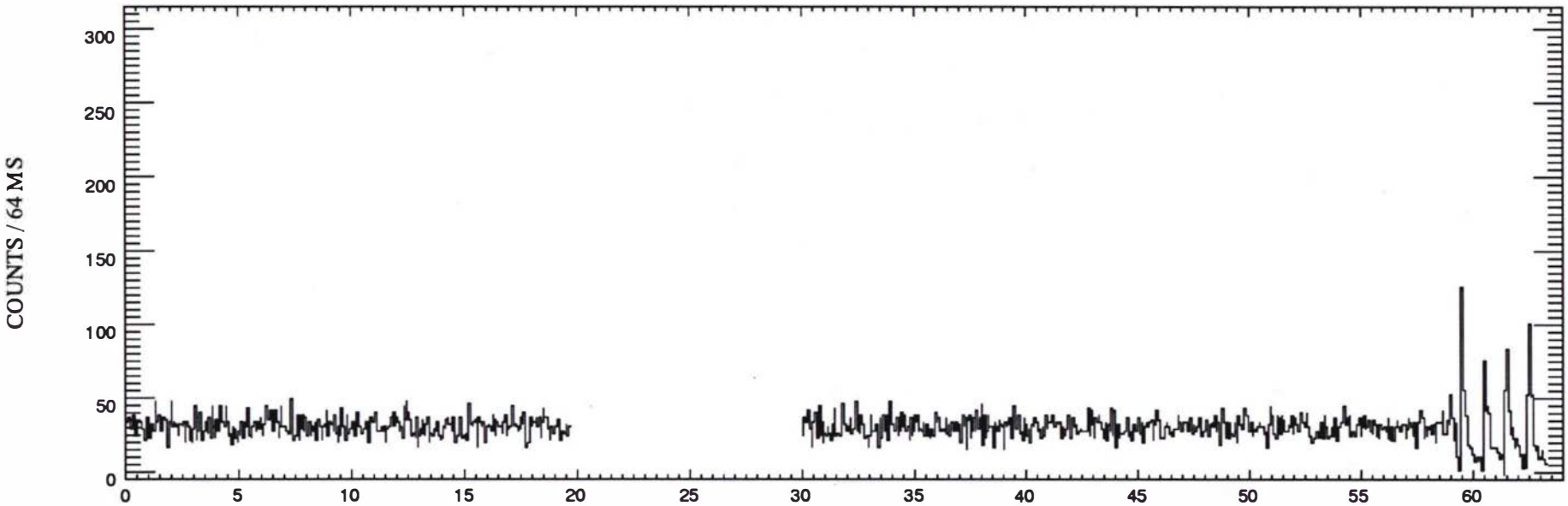
Burst Counter 2 at UT=15.152781872220 h=54550.015 s 15:09:10.015

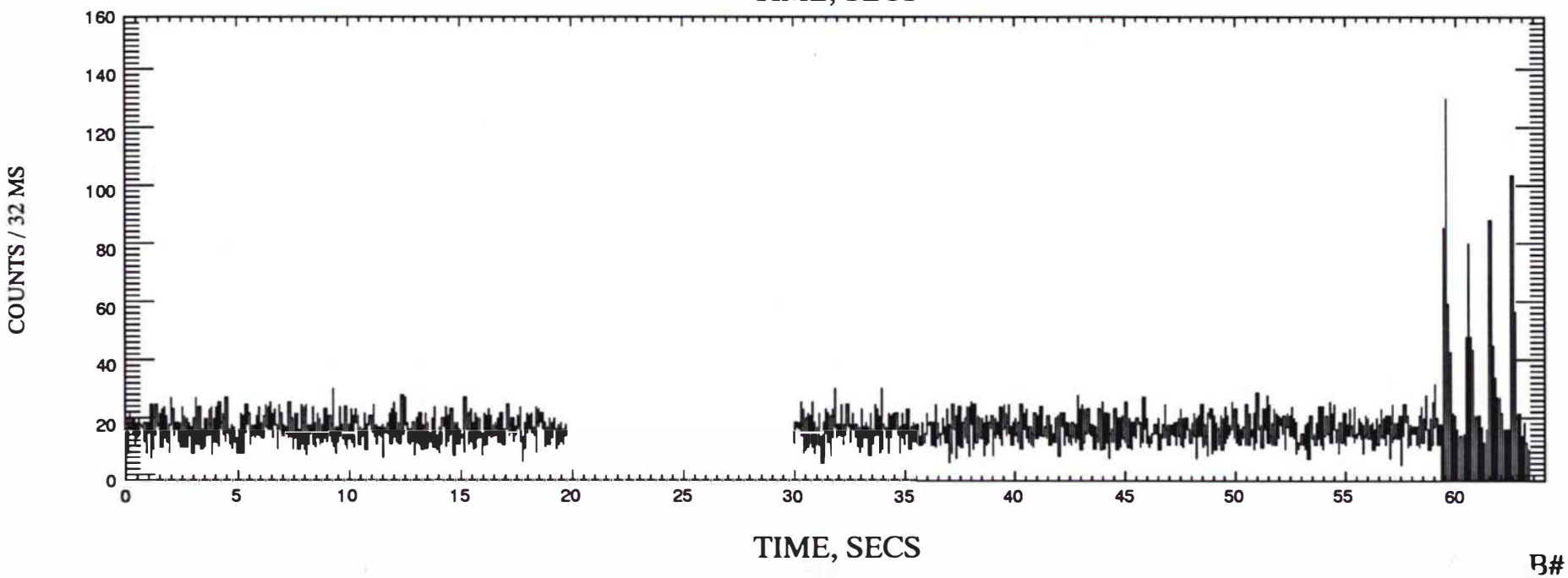


B# 7

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 3 at UT=15.981920763652 h=57534.915 s 15:58:54.915

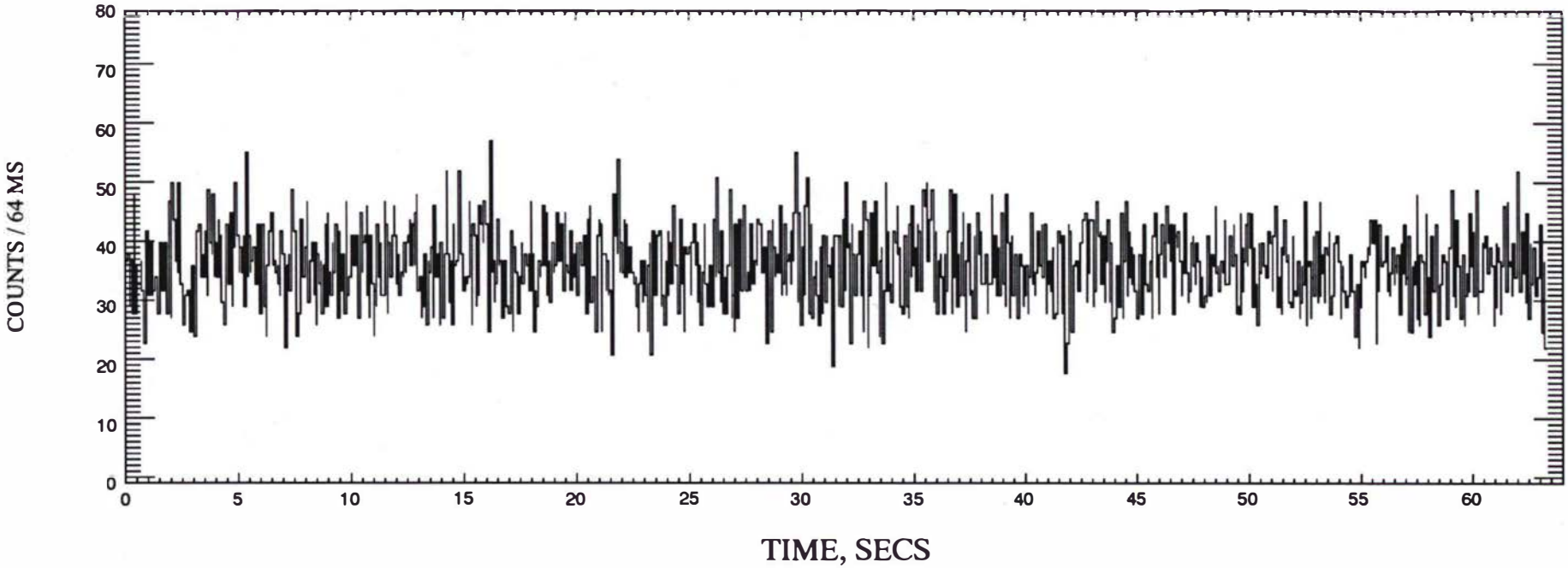


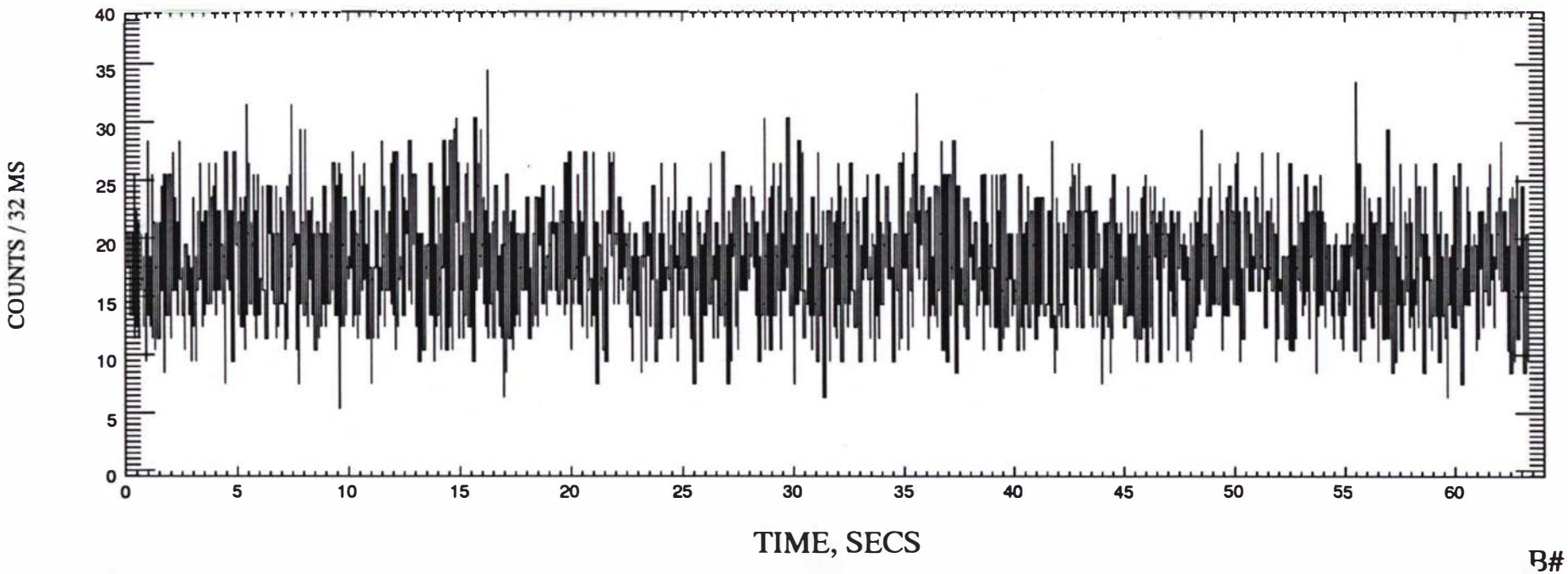


B# 8

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 4 at UT=16.687468914456 h=60074.888 s 16:41:14.888

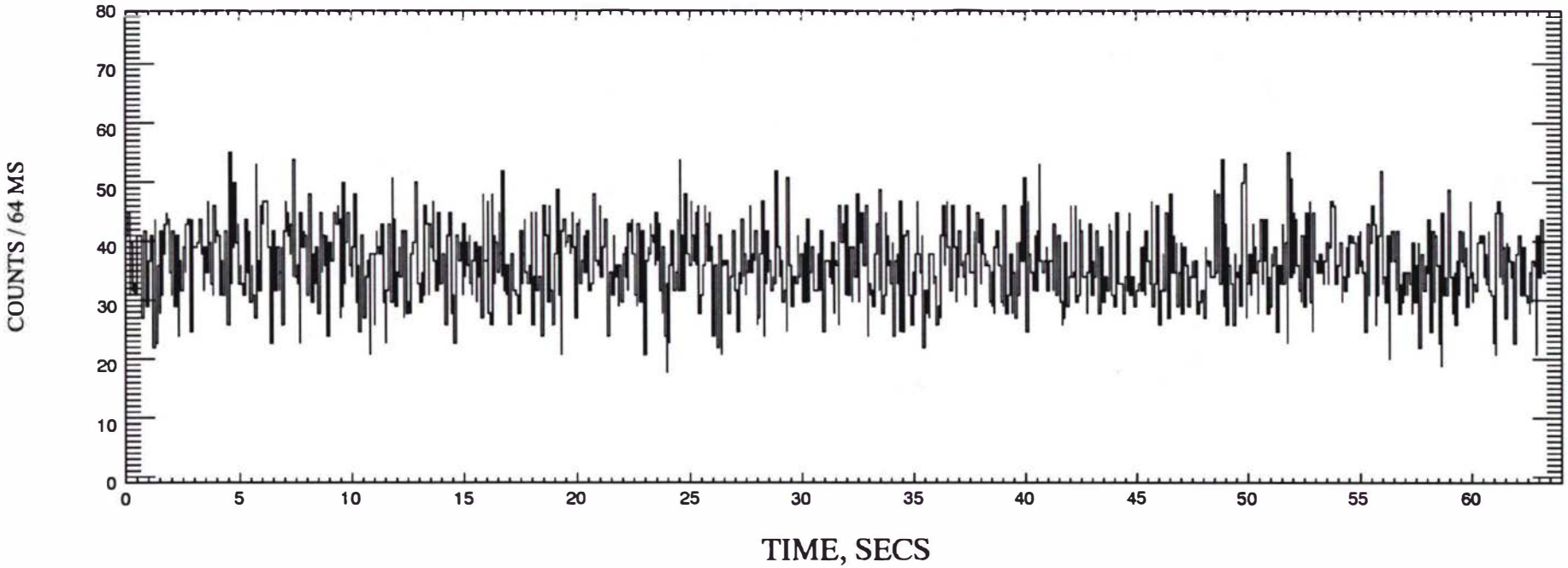


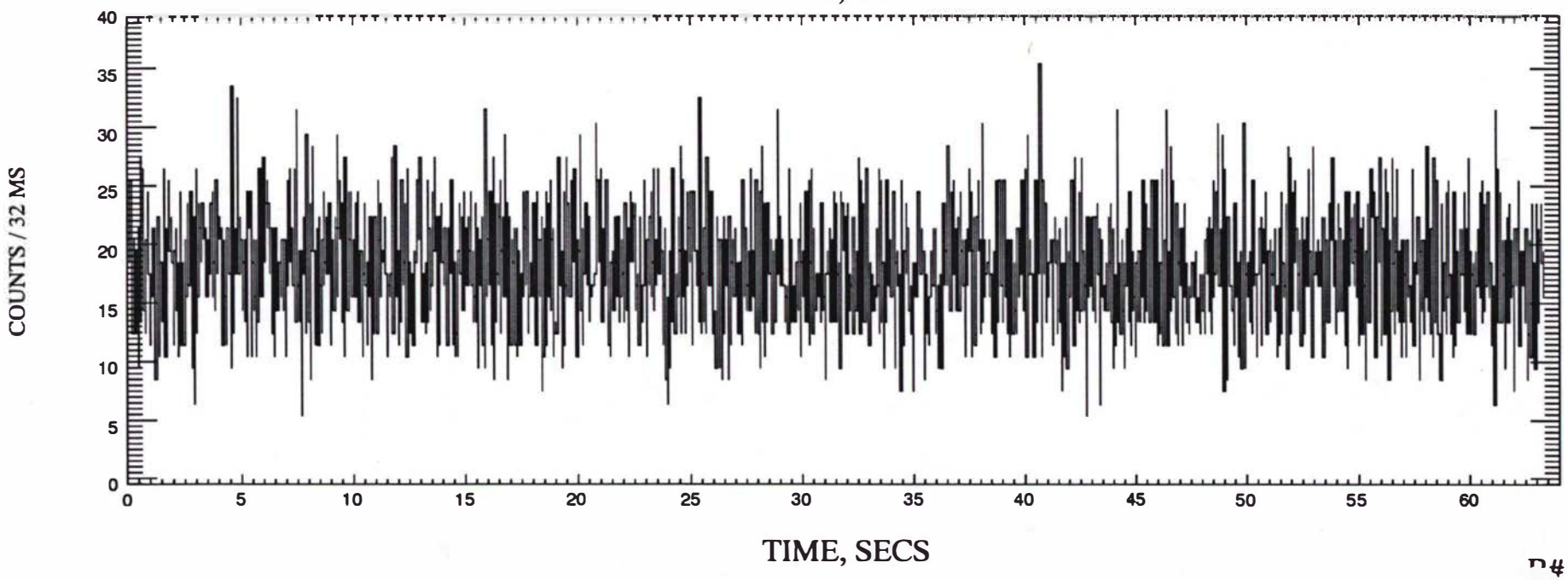


B# 9

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 5 at UT=17.390781635708 h=62606.814 s 17:23:26.814

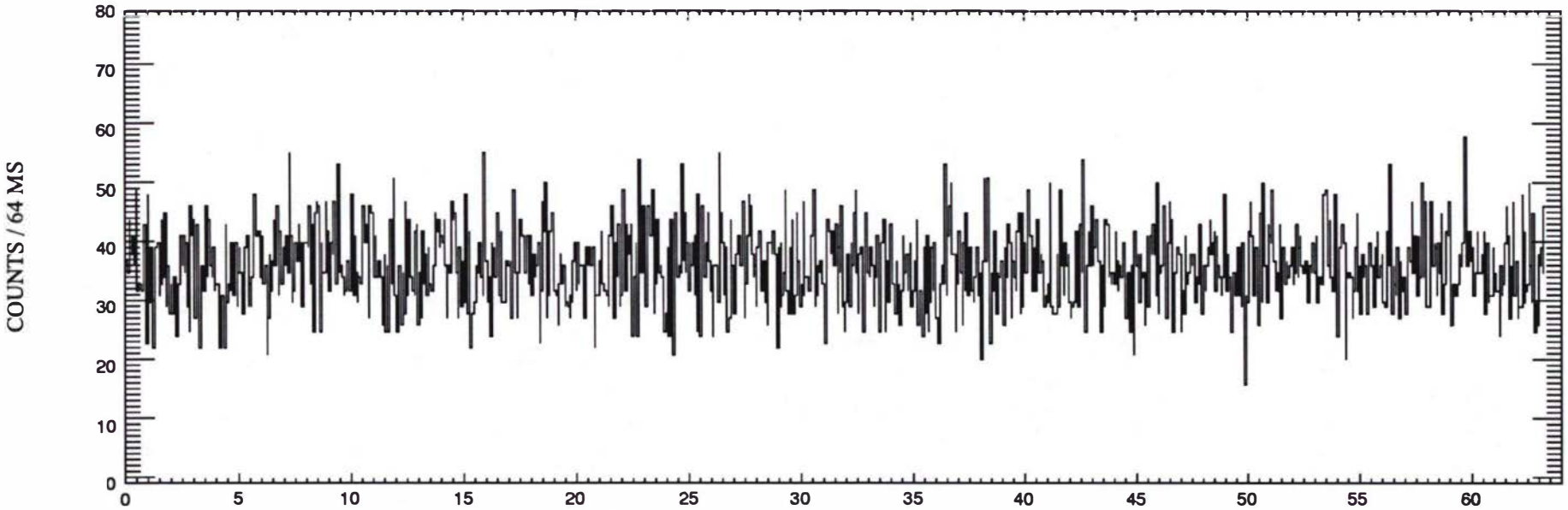




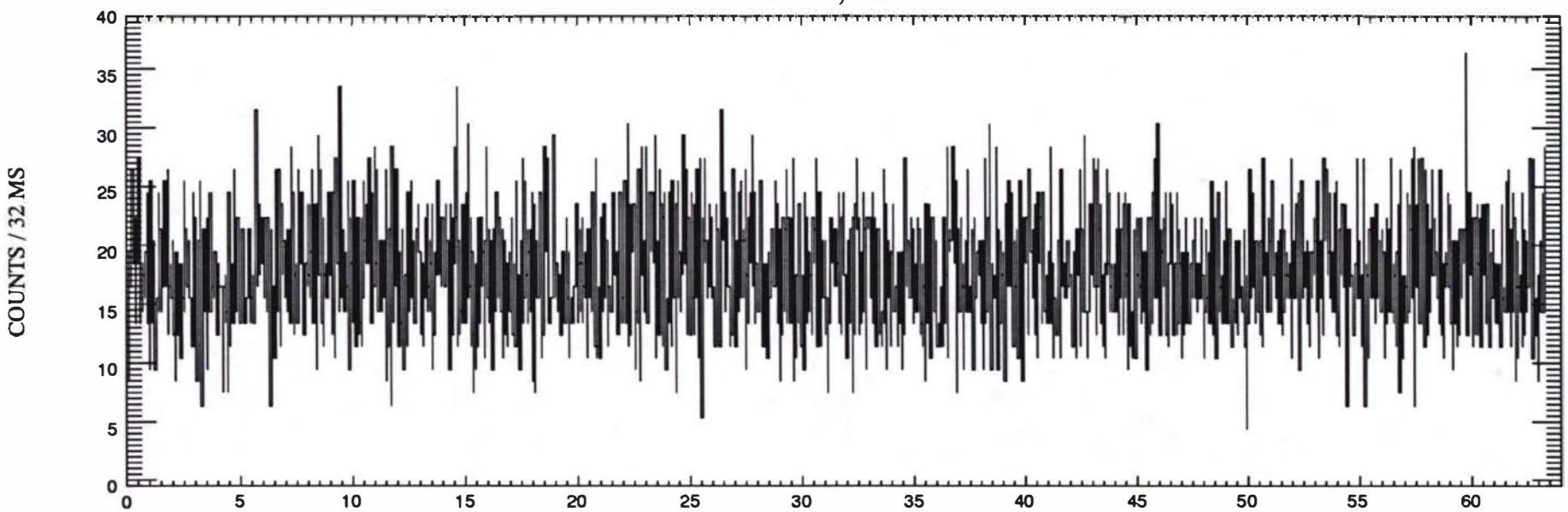
P# 10

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 6 at UT=18.093853467306 h=65137.872 s 18:05:37.872



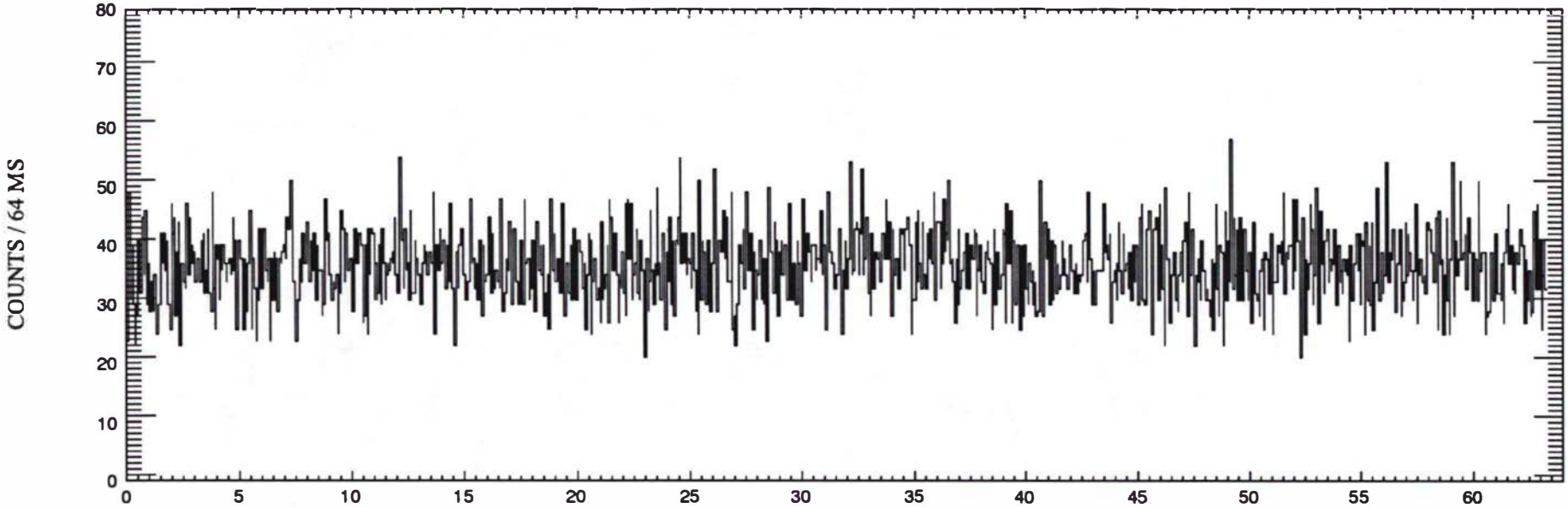
TIME, SECS



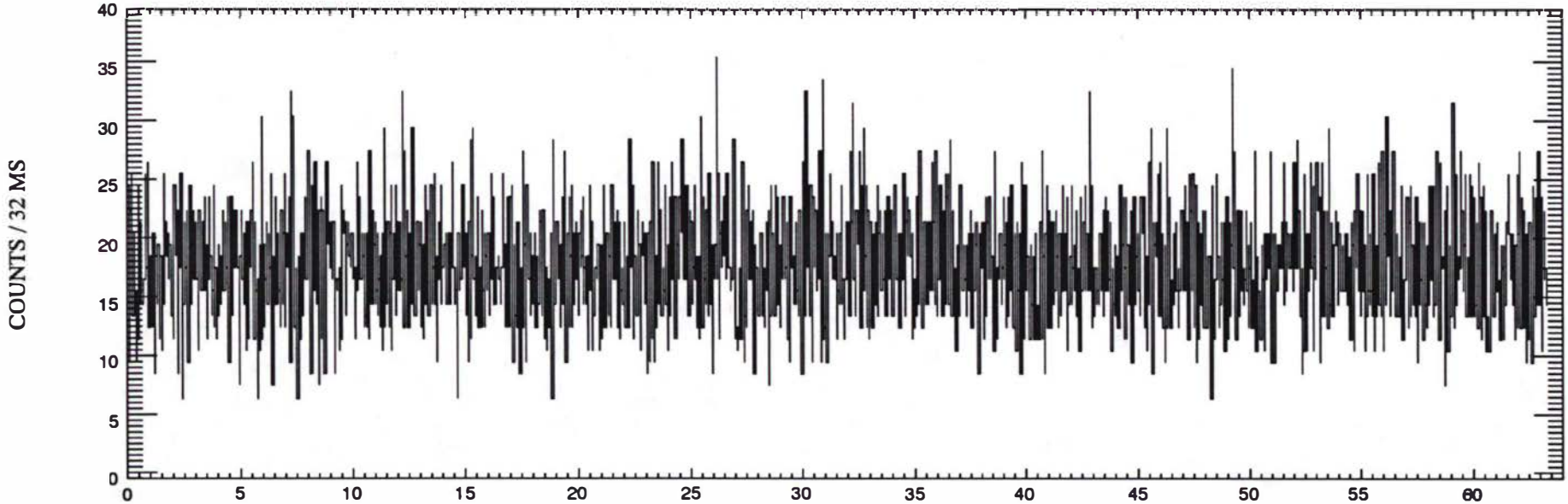
TIME, SECS

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 7 at UT=18.794277729458 h=67659.400 s 18:47:39.400



TIME, SECS

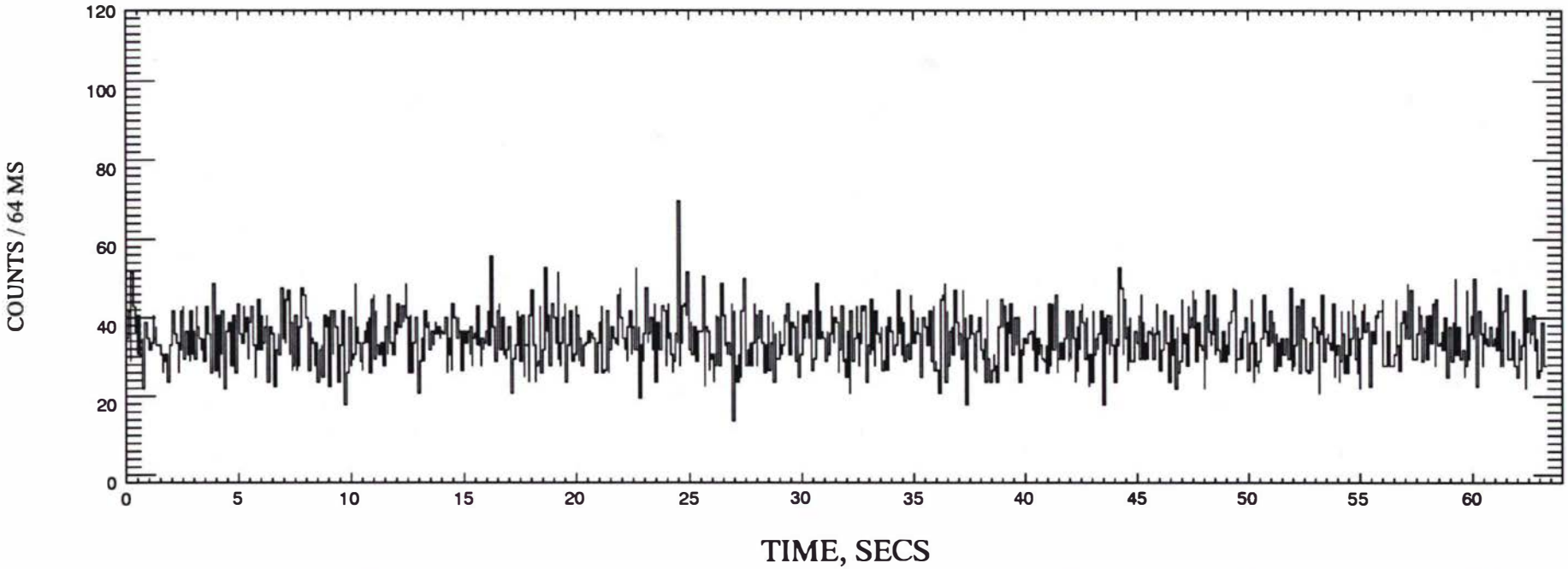


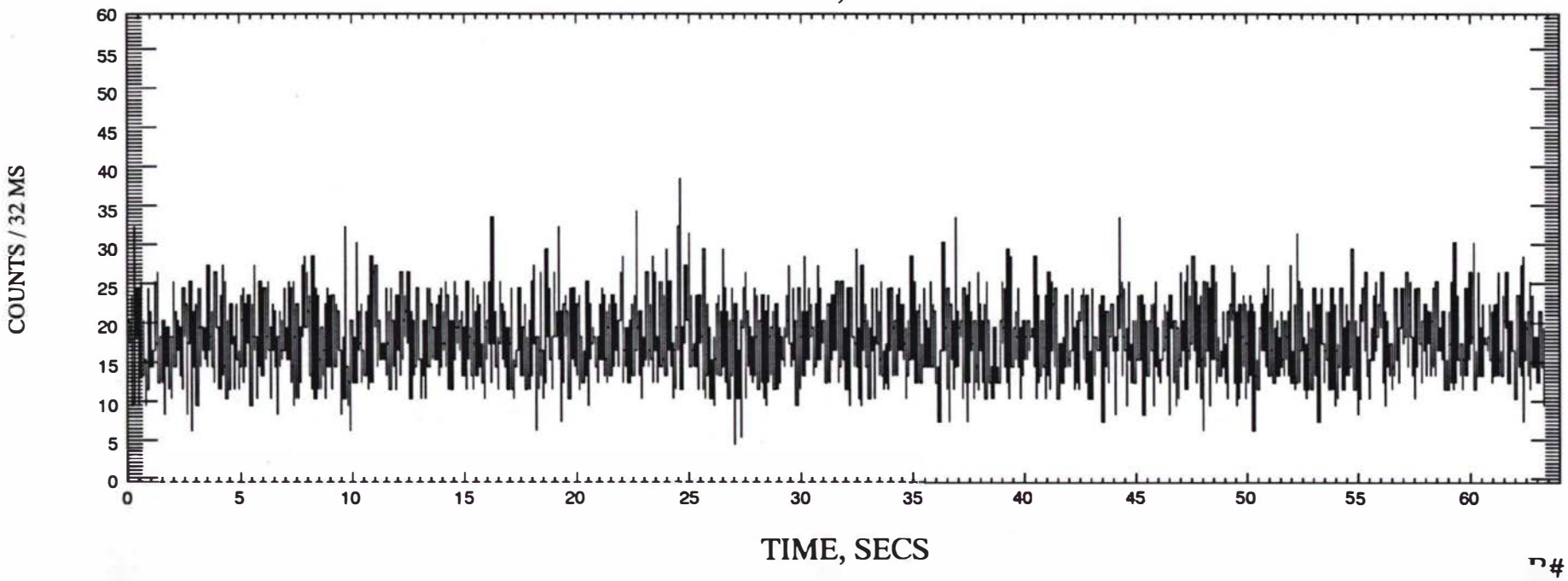
TIME, SECS

P# 12

HUS 2A TRIGGERED DATA QEDR day 118, year 1998 4/28/98

Burst Counter 8 at UT=19.496392534044 h=70187.013 s 19:29:47.013

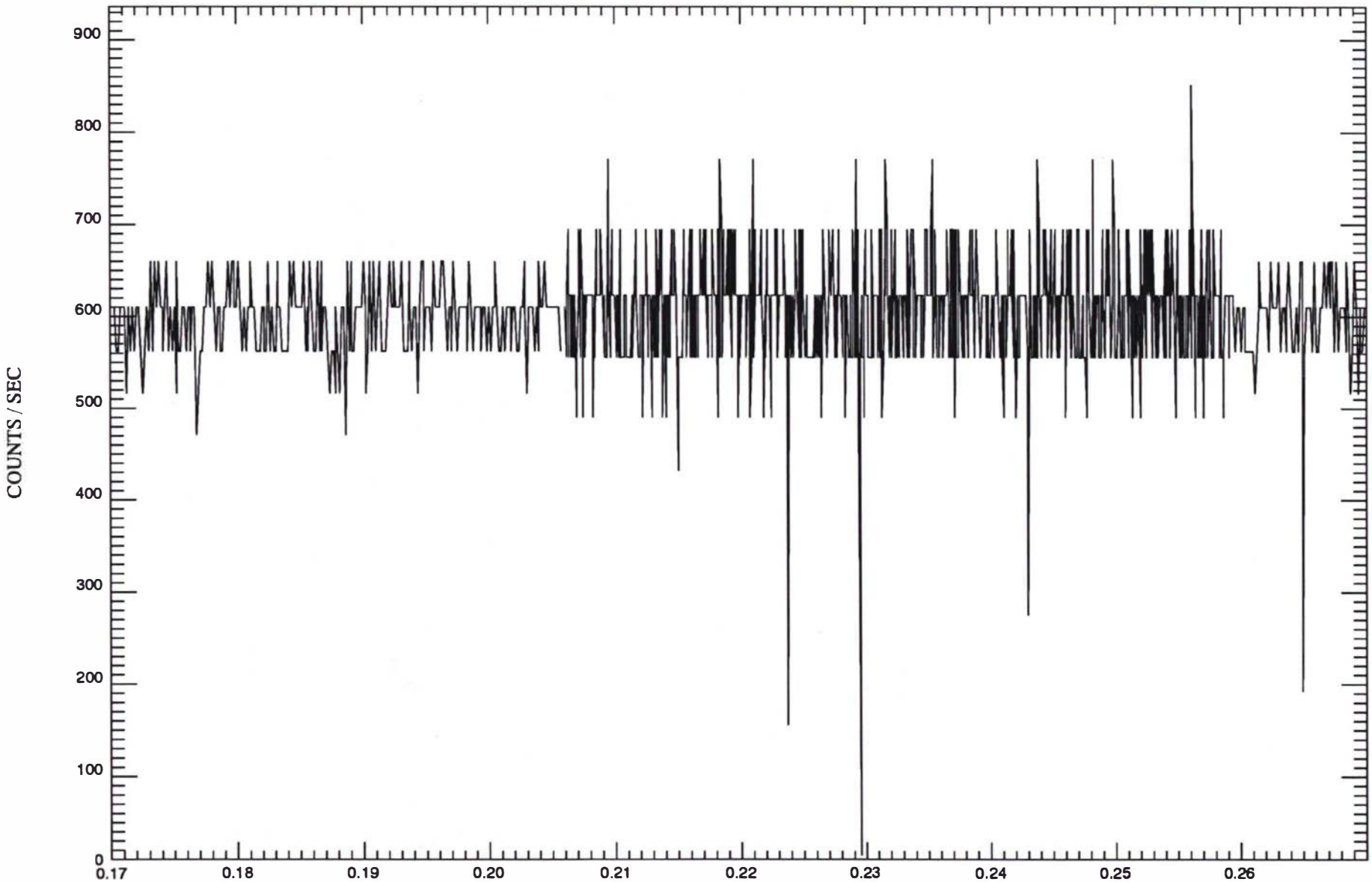




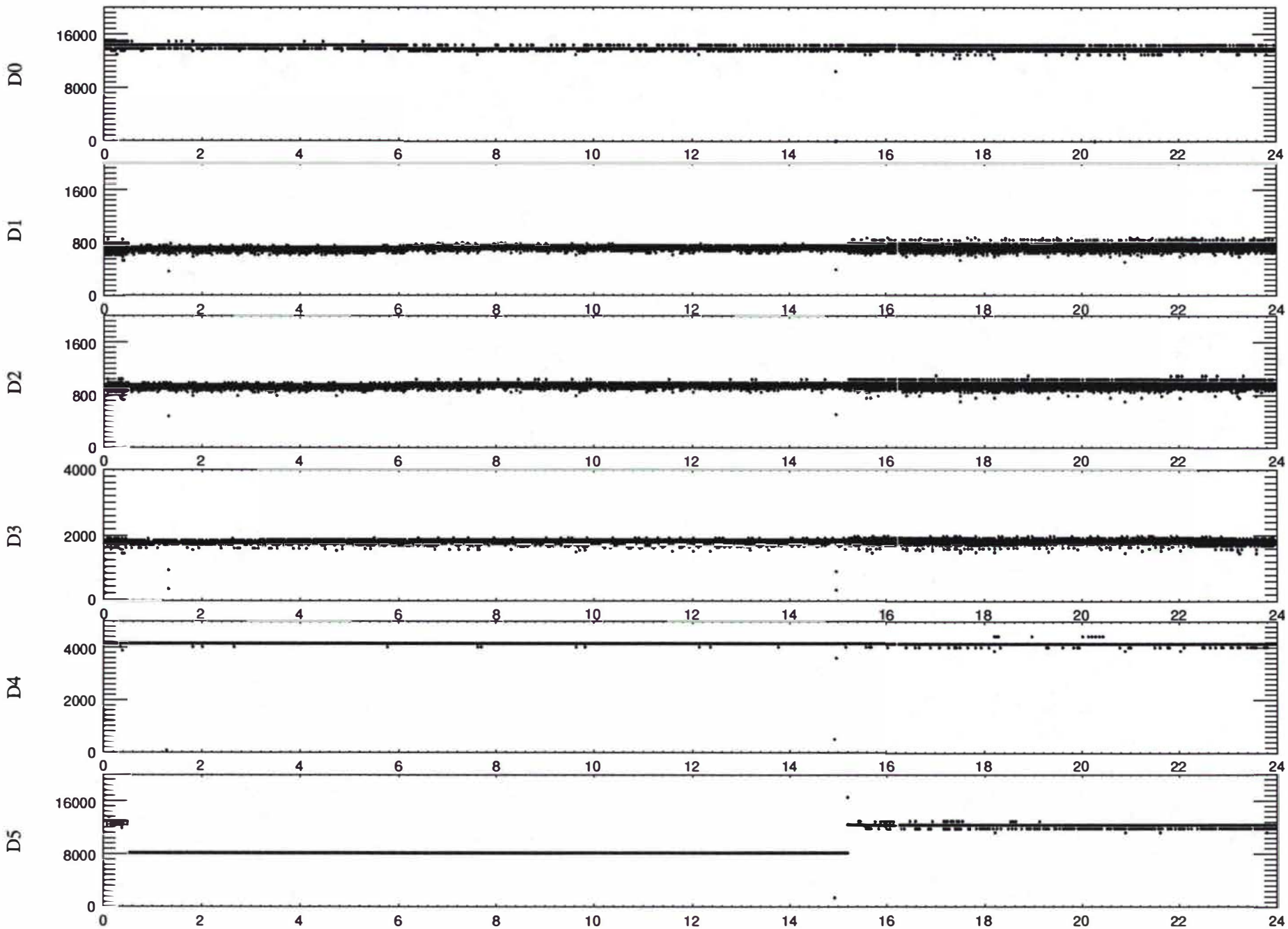
P# 13

HUS 2A, MODE 1, NOT AVERAGED QEDR day 118, year 1998 to day 118, year 1998 4/28/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 118, year 1998 to day 118, year 1998 8/18/98



Date: June 18 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 3Δt's calculated?

3. For 4 Spacecraft Events

☐ BMAPSUM executed to get chisquare for alternate positions?

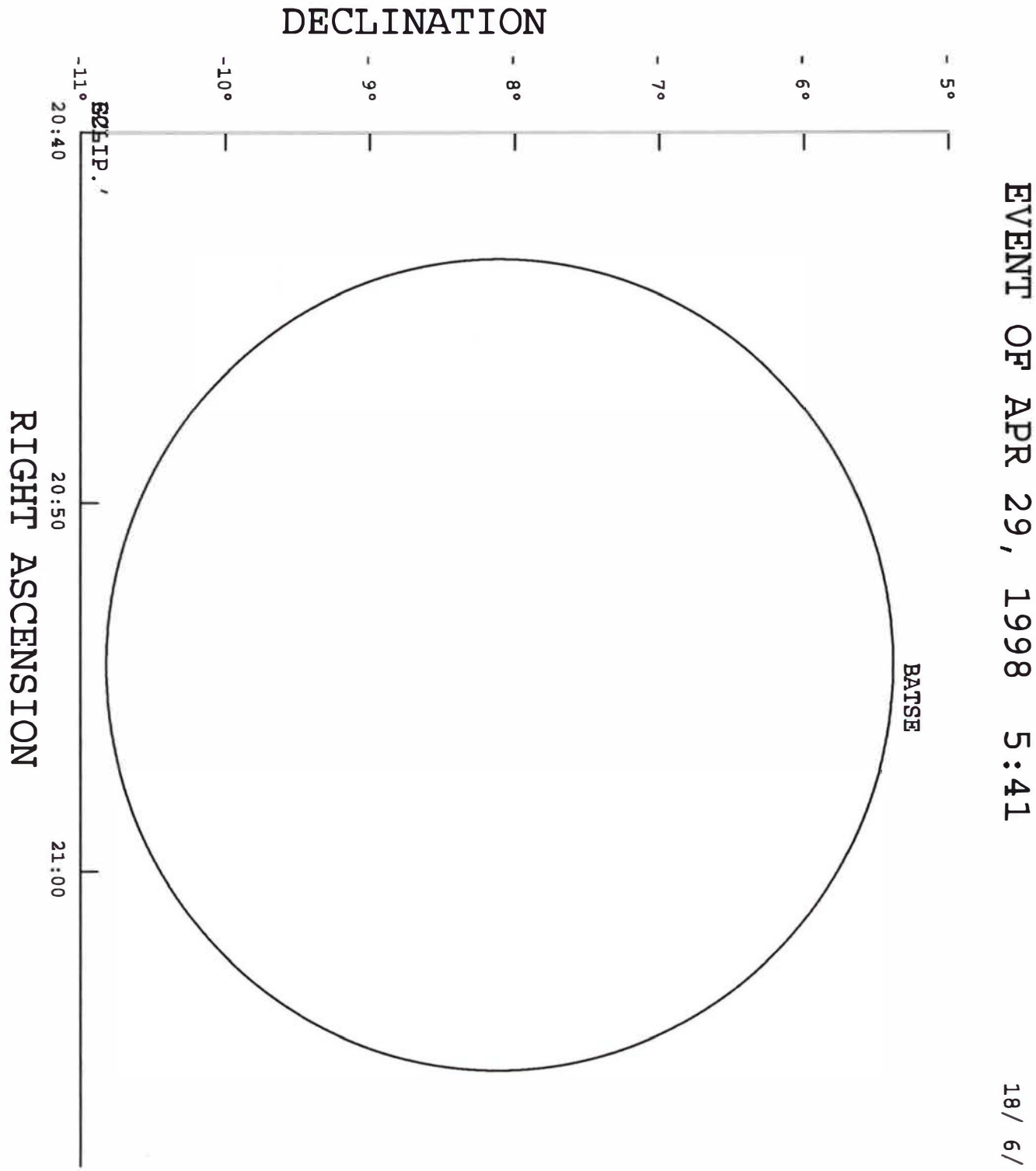
☑ ACCESS database updated? No - K-B annulus width > BATSE radius and U-B annulus is not trustworthy

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

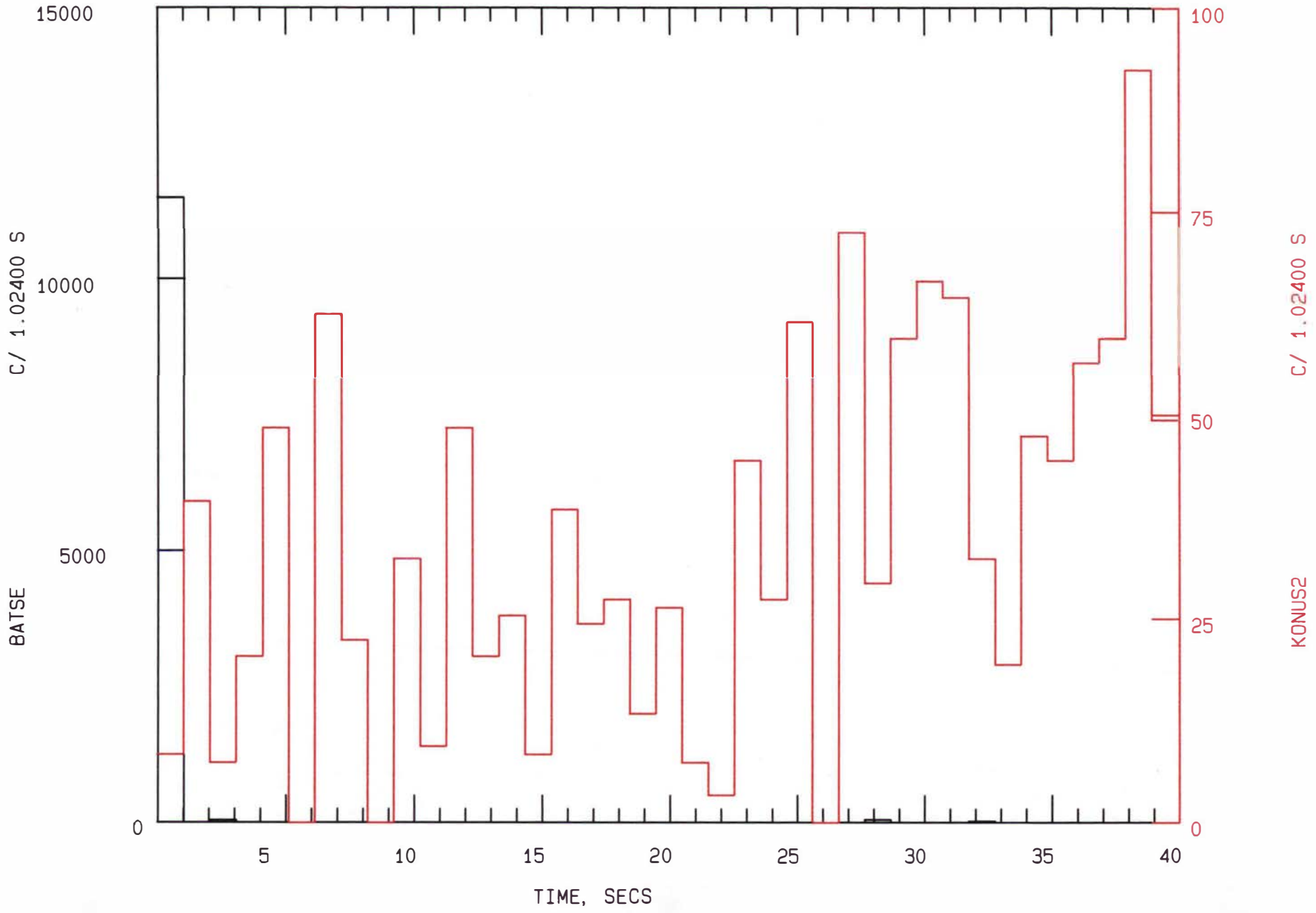
1 BATSE 2 ULYSSES 3 KONUS



EVENT OF APR 29, 1998 5:41

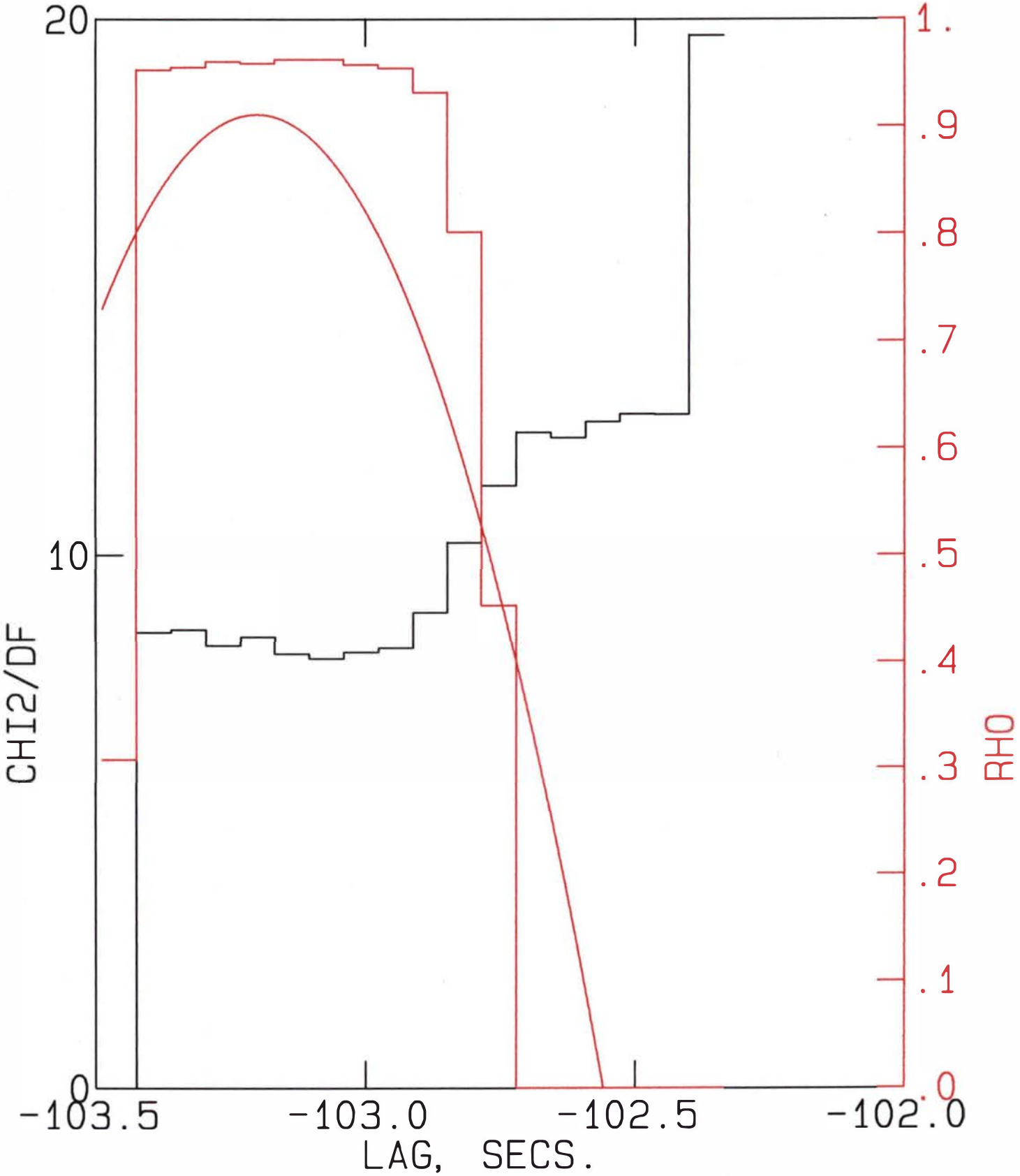
18/ 6/ 2

BATSE -KONUS2 CORRELATION 29/04/98 20492.513 18/ 6/ 2



18/ 6/ 2

BATSE -KONUS2 CORRELATION 29/04/98 20492.513

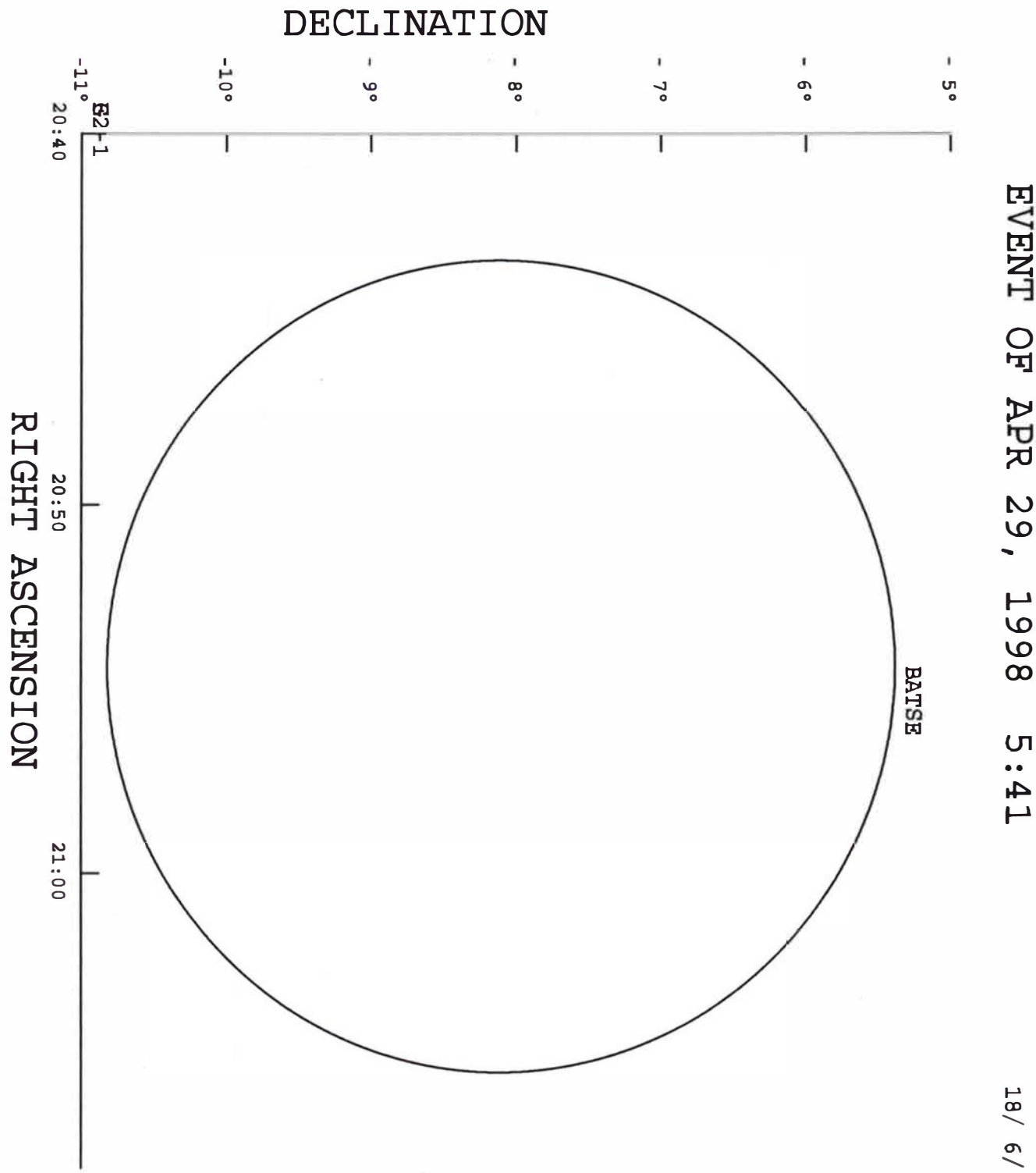


N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN E=ECLIPTIC G=GALACTIC EQUATOR

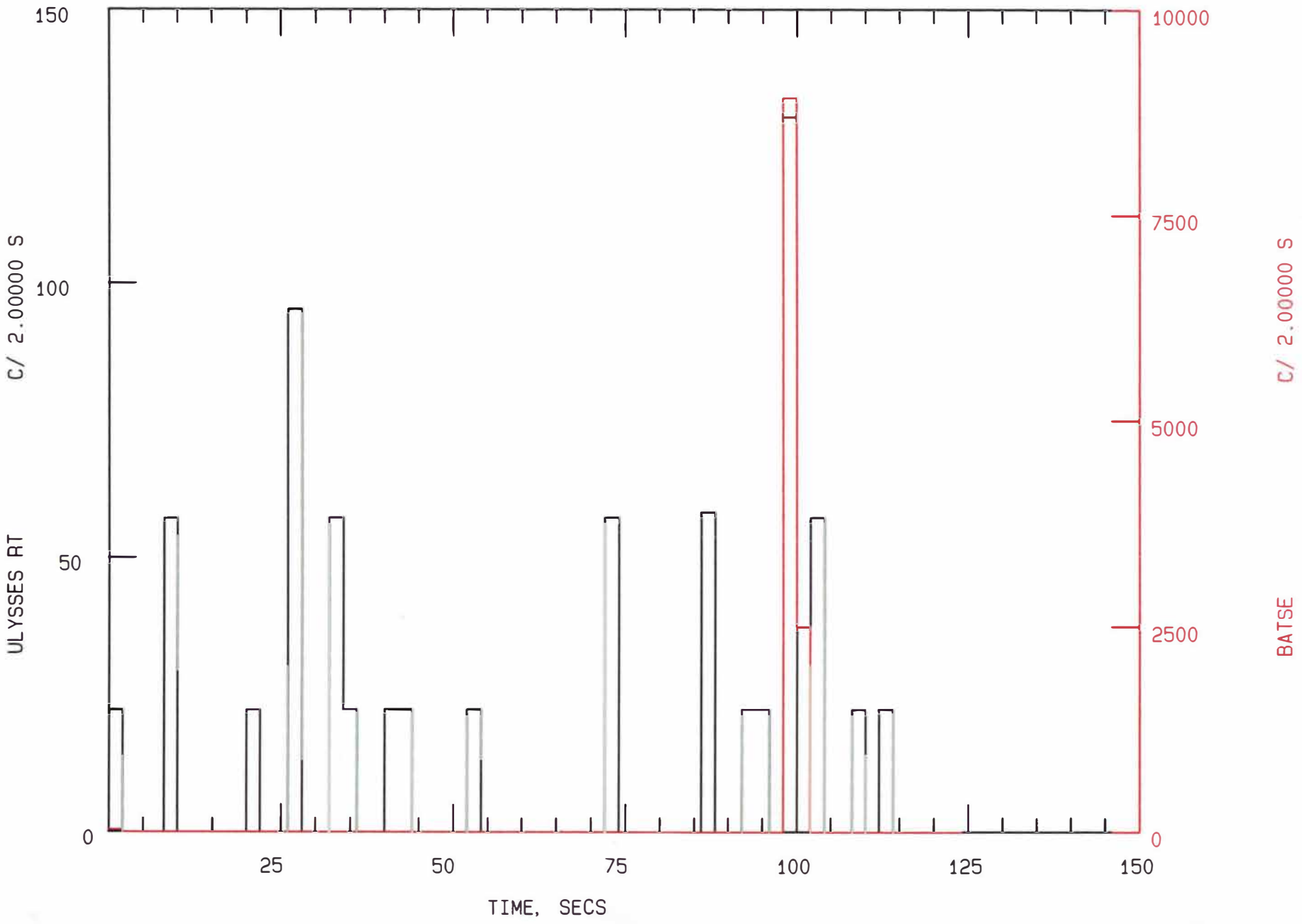
1 BATSE 2 ULYSSES



EVENT OF APR 29, 1998 5:41

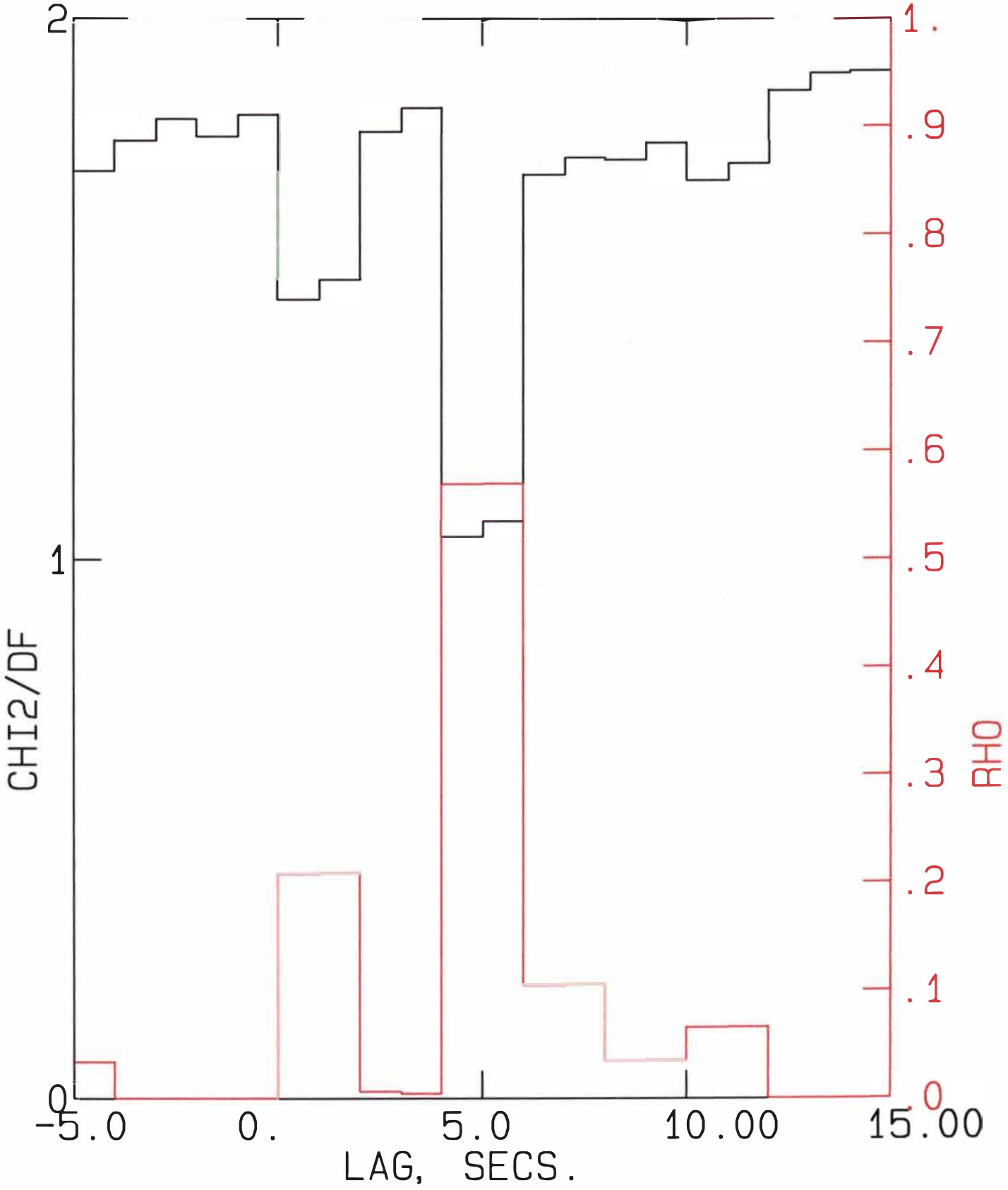
18/ 6/ 2

ULYSSES RT-BATSE CORRELATION 29/ 4/98 22847.465 18/ 6/ 2



18/ 6/ 2

ULYSSES RT-BATSE CORRELATION 29/ 4/98 22847.465

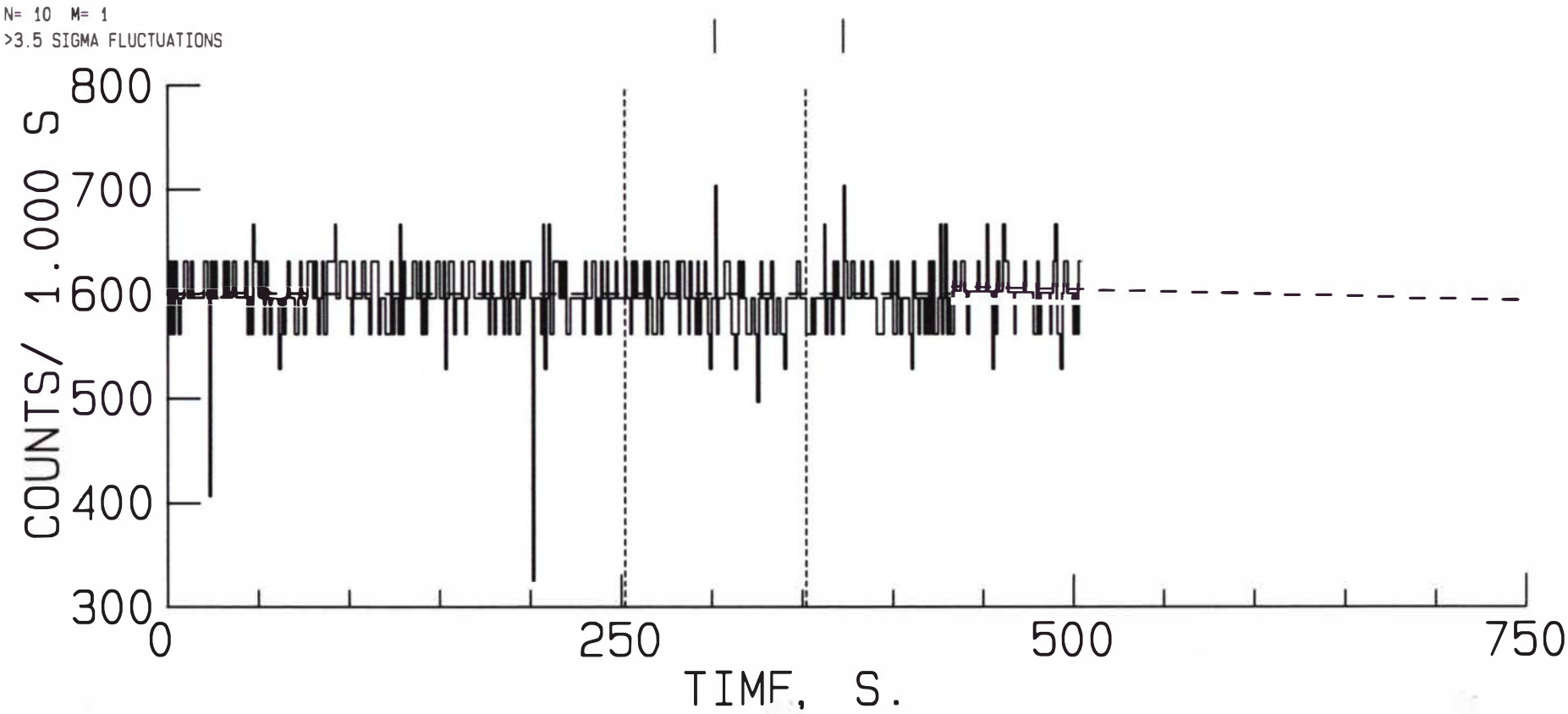


ULYSSES RT

29/ 4/98 22572.471 s

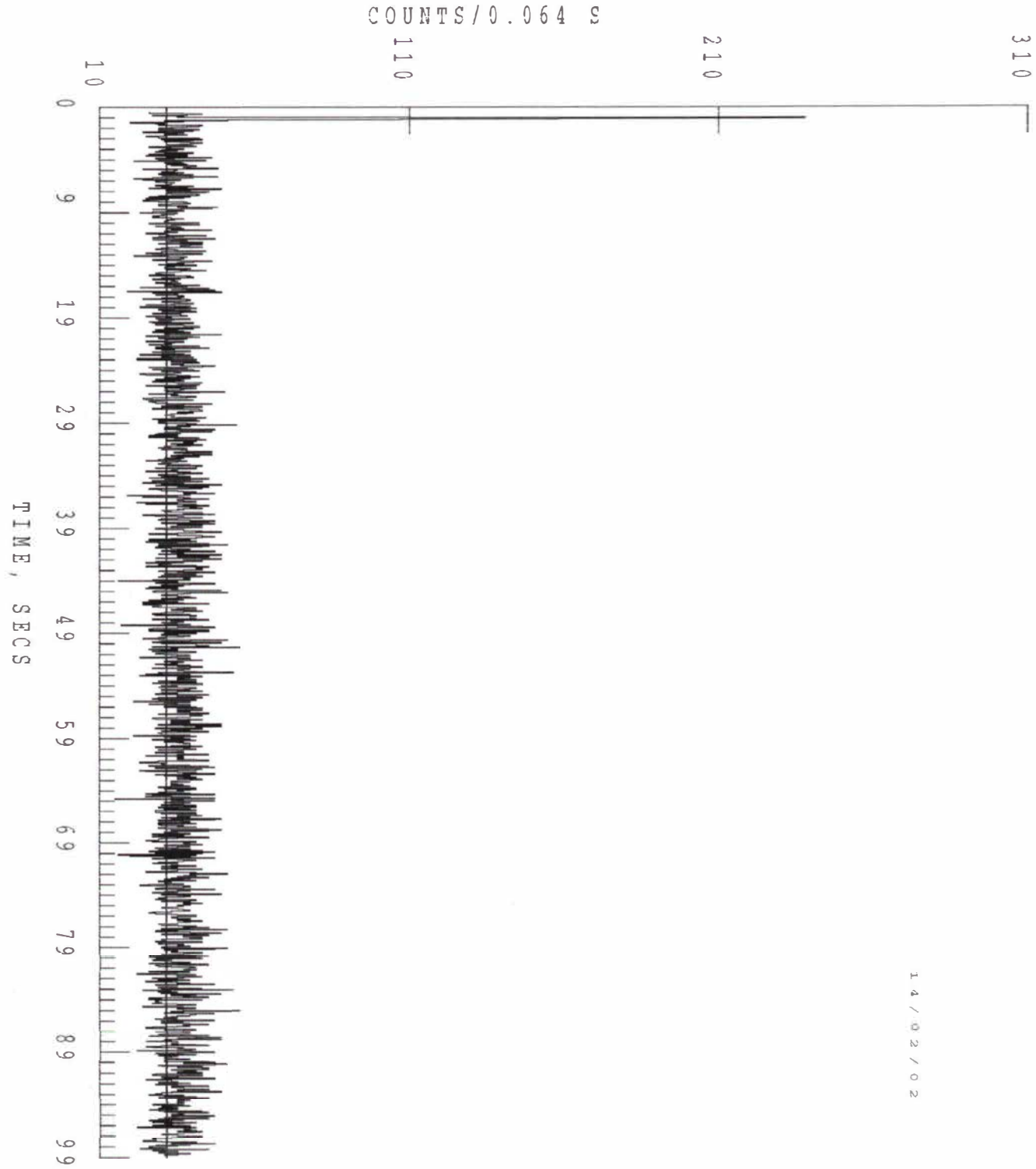
22- 149 keV

18/ 6/ 2



KONUS2 29/04/98 20492.079

50- 200 keV



14/02/02

From SURASAK@fender.msfc.nasa.gov Fri May 1 10:31:35 1998
From: SURASAK@fender.msfc.nasa.gov
Date: Fri, 1 May 1998 12:31:15 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6712

TIME: TJD=0932 SECONDS=20355

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=124.7 AZIMUTH=352.6 ERROR=1.182 DEGREES

COMMENTS:
SOLARE FLARE. GOES B7.6, OPT SF. SINGLE PULSE. START AT ABOUT T-35S. DURATION ABOUT 70 S. NOT VISIBLE ABOVE 100 KEV. THERE IS POSSIBLE UNTRIGGERRED EVENT AT ABOUT T+136.5 S. STRONG SINGLE SHORT PULSE. DUR ABOUT .3 S. VISIBLE ABOVE 300 KEV.

From atel@astronomerstelegram.org Thu May 31 22:38:35 2007
X-ASG-Debug-ID: 1180676334-61e800200000-HMYXr3
X-Barracuda-URL: http://mailwall.ssl.berkeley.edu:8000/cgi-bin/mark.cgi
X-Barracuda-Connect: astronomerstelegram.org[69.5.7.158]
X-Barracuda-Start-Time: 1180676334
X-Originating-IP: [69.5.7.158]
To: khurley@sunspot.ssl.berkeley.edu
From: atel@astronomerstelegram.org
X-ASG-Orig-Subj: ATel 1089, 1090
Subject: ATel 1089, 1090
Date: Thu, 31 May 2007 22:38:54 -0700 (PDT)
X-Barracuda-Bayes: INNOCENT GLOBAL 0.0272 1.0000 -1.8447
X-Barracuda-Virus-Scanned: by Barracuda Spam Firewall at ssl.berkeley.edu
X-Barracuda-Spam-Report: Code version 3.1, rules version 3.1.18619
Rule breakdown below

pts	rule name	description
0.55	NO_REAL_NAME	From: does not include a real name
0.70	MSGID_FROM_MTA_ID	Message-Id for external message added locall

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The Astronomer's Telegram http://www.astronomerstelegram.org

Posted: Thu May 31 01:30:01 EDT 2007 -- Fri Jun 1 01:30:01 EDT 2007
==========
ATEL #1089 ATEL #1089

Title: Swift uncovers that SAX J0840.7+2248 is not a X-ray Binary, but BeppoSAX X-ray Rich GRB980429

Author: L. Sidoli (INAF-IASF Milano), P. Romano (Univ Bicocca&INAF-OABrera), A. Cucchiara (PSU), S. Mereghetti (INAF-IASF Milano), N. Masetti Bologna), C. Guidorzi (Univ Bicocca&INAF-OABrera), E. Montanari Ferrara& IIS "Calvi"), F. Frontera (Univ Ferrara & INAF-IASF Bol L. Amati (INAF-IASF Bologna), F. Rossi (Univ Ferrara)
Queries: sidoli@iasf-milano.inaf.it
Posted: 31 May 2007; 13:03 UT
Subjects: Optical, X-ray, Gamma Ray, Binaries, Gamma-Ray Bursts, Transient

The transient source SAX J0840.7+2248 has recently been observed by Swift/XRT and UVOT for a total of 10.6ks on May 29 00:35:49 to 23:21:57 UT. The Swift/XRT data show no X-ray counterpart within the BeppoSAX/WFC position error circle of 3 arcmin radius centered on RA,Decl(J2000)=08h 40m 40s, +22d 48m 18s (Heise et al., 1998, IAUC 6892). A 3sigma upper limit on a source within the SAX error box can be placed at 4.5E-14 erg cm-2 s-1 (for a spectrum of photon index 2, no intrinsic absorption, and a Galactic Hydrogen column of NH=(3.45)10^+20 cm-2). Assuming a distance of 8 kpc (1 kpc), we obtain a 3sigma upper limit on the luminosity of 3x10^32 (5x10^30) erg s-1. These values are quite low for a Galactic X-ray Binary.

Prompted by this finding, we performed a reanalysis of the BeppoSAX/GRBM data on this transient. We discovered that the X-ray Fast Transient (IAUC 6892) is an X-ray rich gamma-ray burst, ~100s long, with an onset time of 1998-04-29 08:46 UT. The GRBM spectrum was fit with a simple power law. We find a total 40-700 keV fluence of 1.7 (-0.4, +0.5) x10^-6 erg cm-2 and a photon index of 3.4 (-0.6,+0.7). The peak flux evaluated over 16s (40-700 keV) is (2.7 +/- 0.9)x 10^-8 erg cm-2 s-1 with a photon index of 2.5+/-0.8. All quoted errors are at the 90% level.

31560 s

We would like to thank the Swift Team for performing these observations.

`assword Certification: Lara Sidoli (sidoli@mi.iasf.cnr.it)
 ttp://www.astronomerstelegram.org/?read=1089

From SURASAK@fender.msfc.nasa.gov Thu Apr 30 12:18:20 1998
From: SURASAK@fender.msfc.nasa.gov
Date: Thu, 30 Apr 1998 14:16:59 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6713

TIME: TJD=0932 SECONDS=42930

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:
PARTICLE EVENT.

From RICHARDSON@fender.msfc.nasa.gov Thu Apr 30 15:15:39 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Thu, 30 Apr 1998 17:15:23 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6714

TIME: TJD=0932 SECONDS=59943

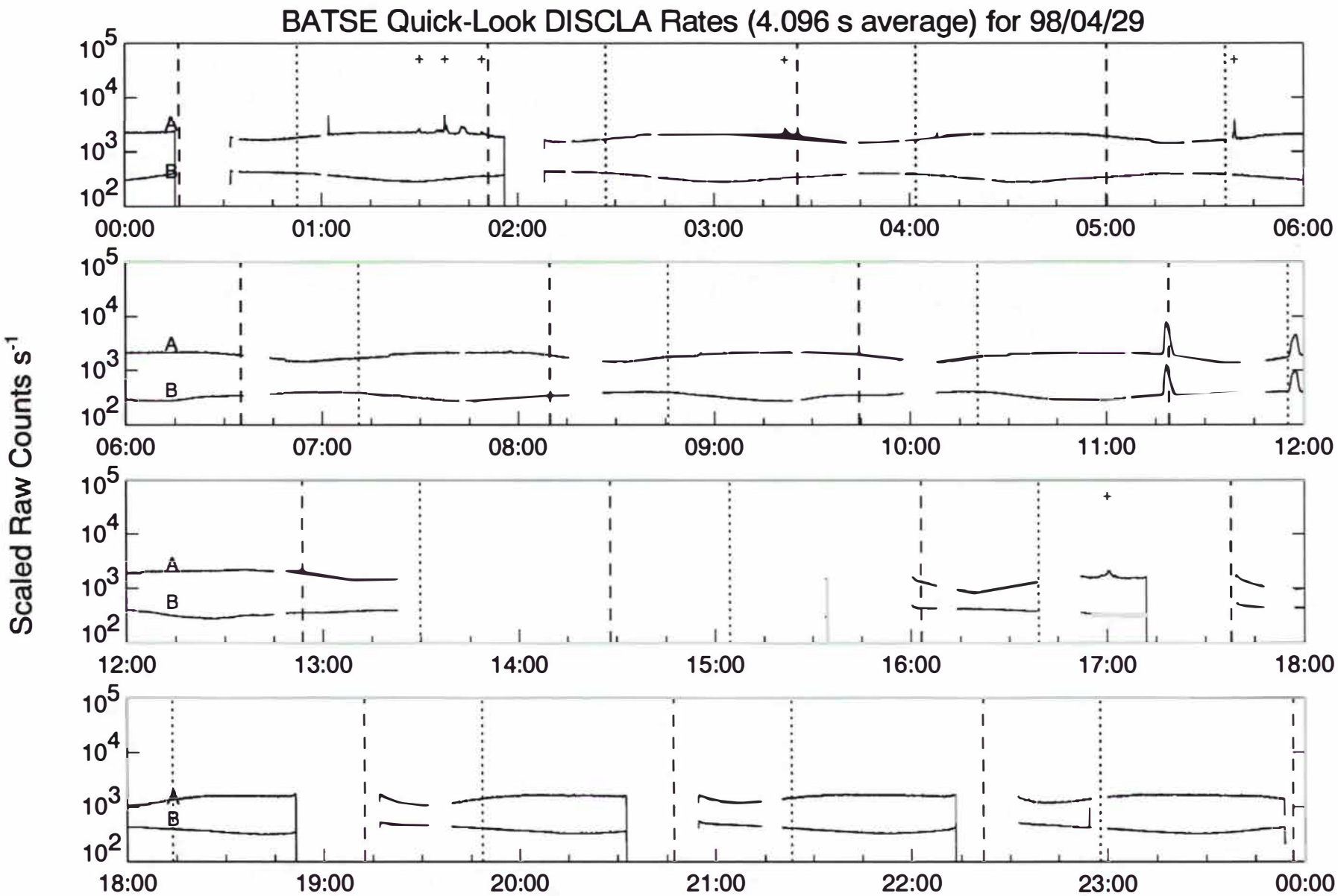
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

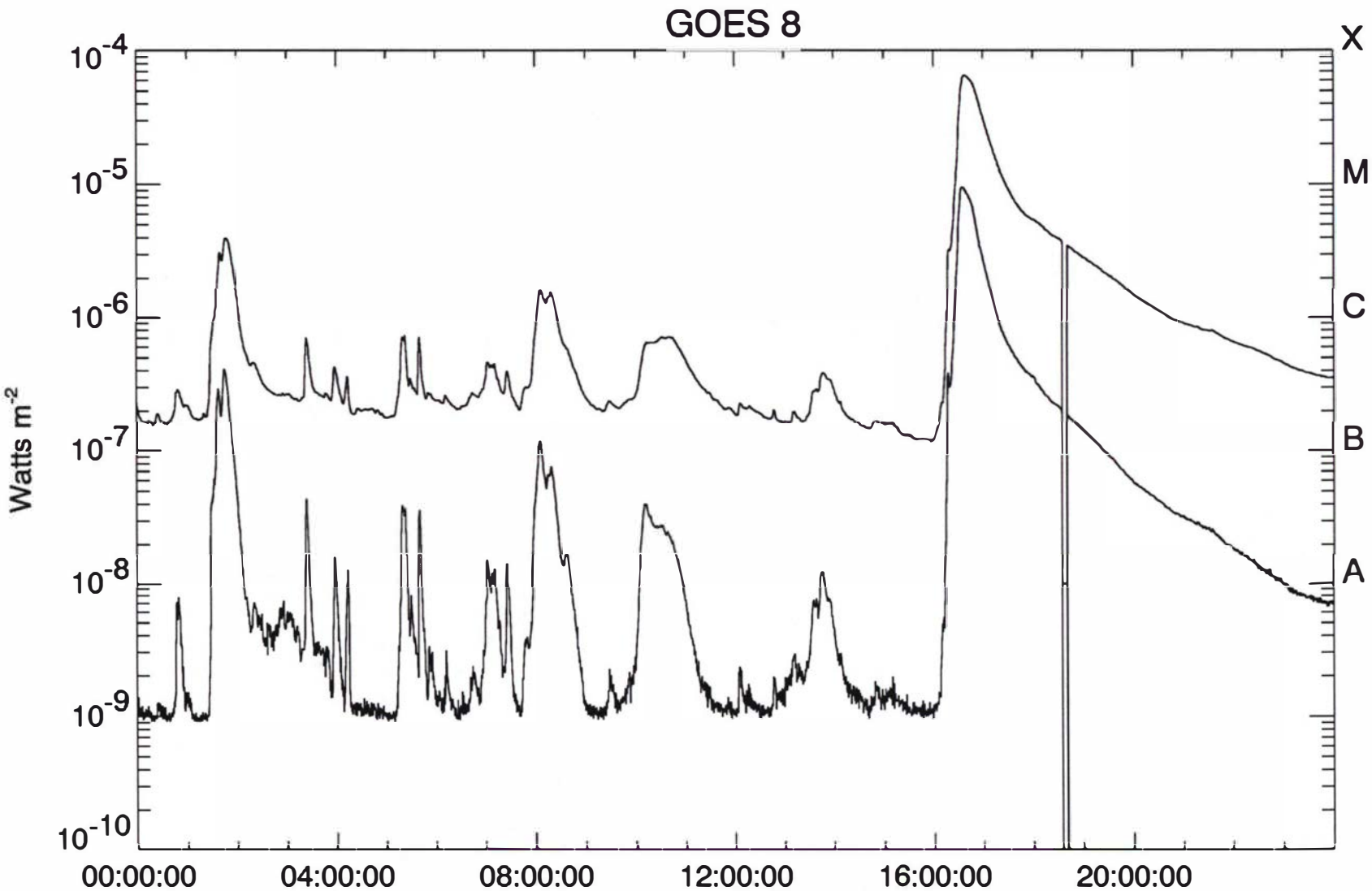
COMMENTS:
SOLAR FLARE. GOES M6.8 OPTICAL 3B. TIGGERED ON EARTH SUNRISE. DURATION UNKNOWN SINCE PART OF EVENT WAS OCCULTED. NOT VISIBLE ABOVE 300KEV.



Current Time: 98/05/03, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

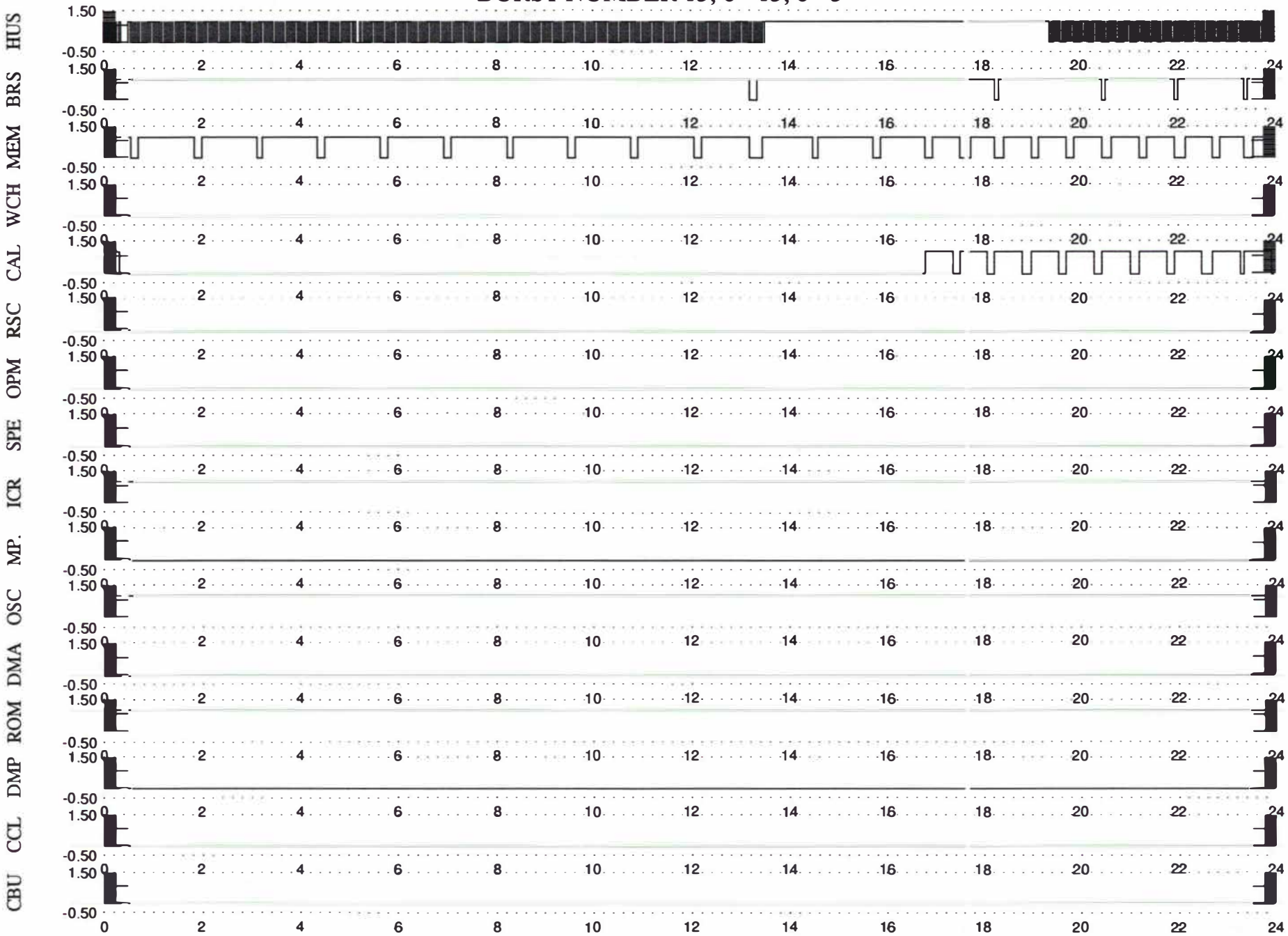
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/29, 0000:00 Plot created: 98/05/03, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

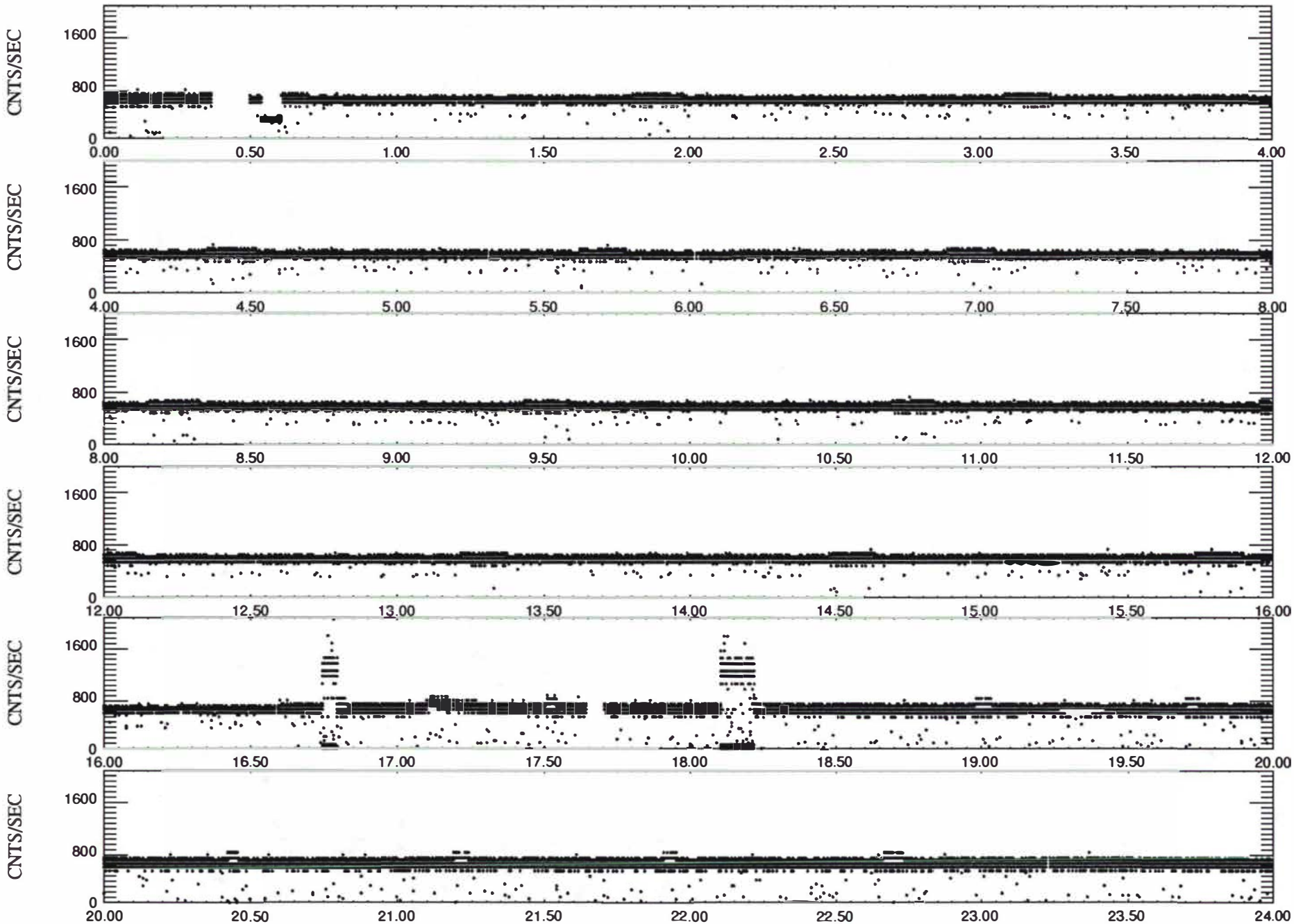
HUS MODES EDR day 119, year 1998 to day 119, year 1998 8/18/98

BURST NUMBER 15, 0 - 15, 0 - 5



HUS 2A, MODE 1, NOT AVERAGED EDR day 119, year 1998 to day 119, year 1998 8/18/98

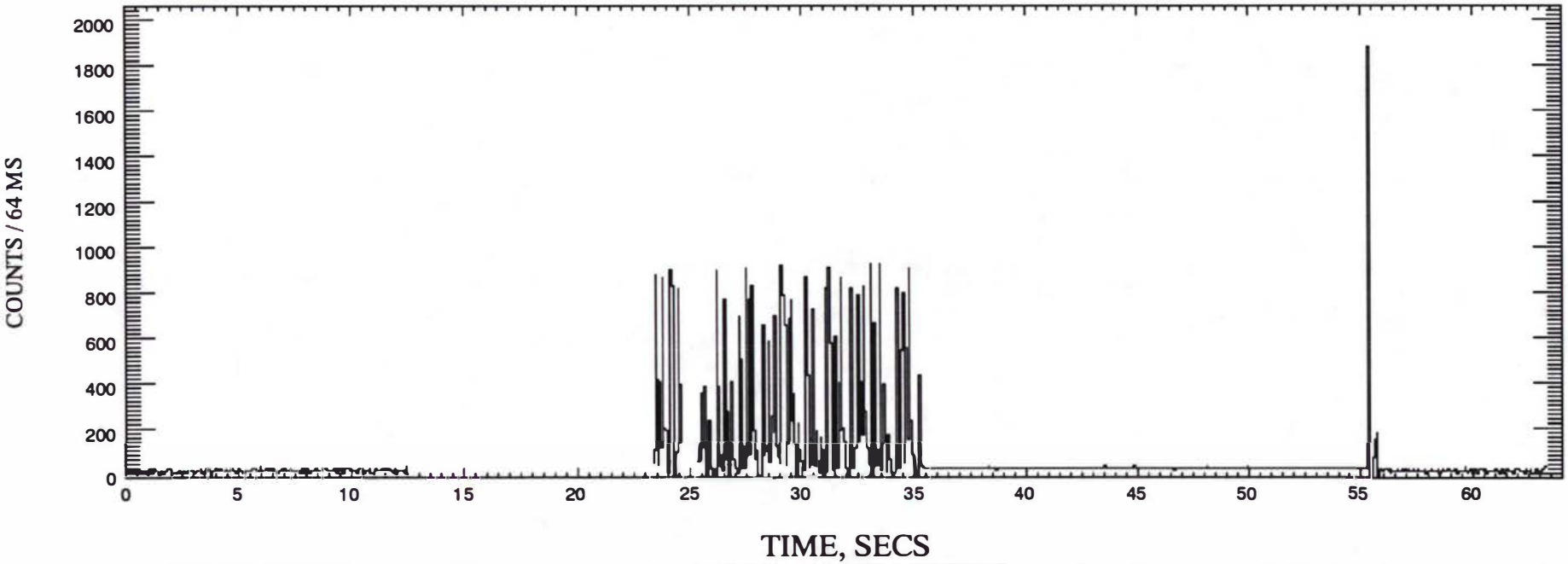
CALIBRATION DATA INCLUDED

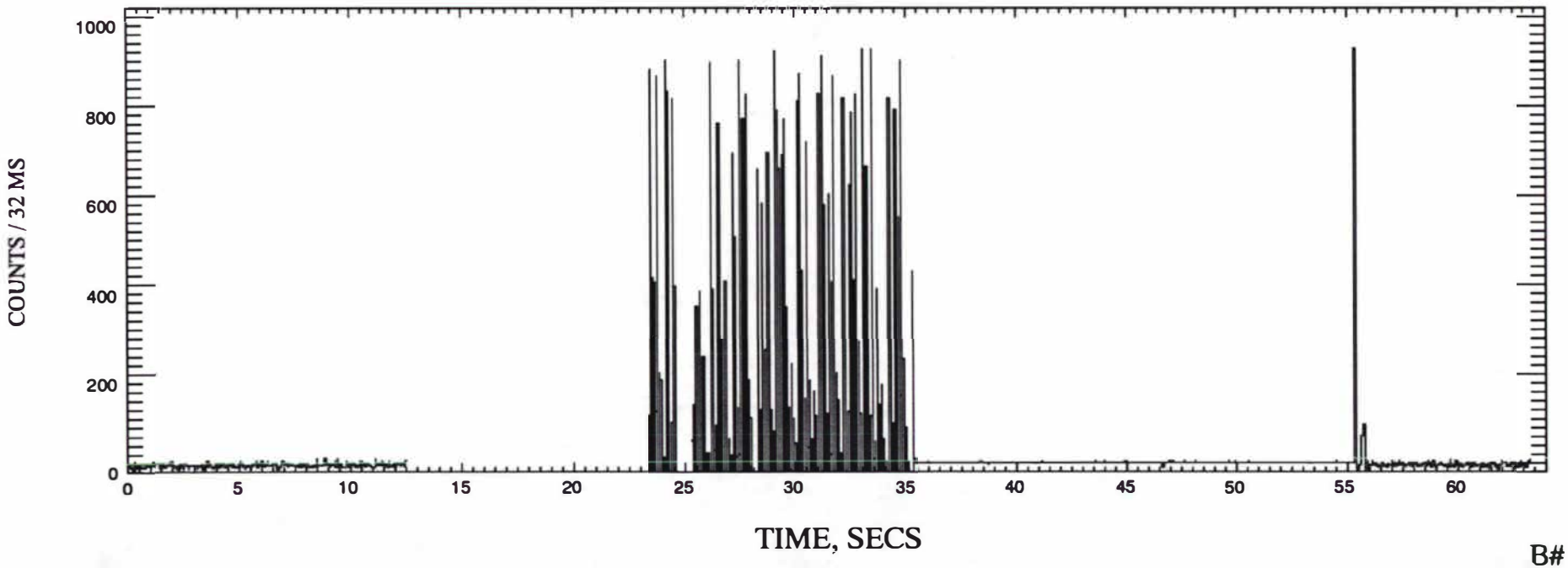


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 0 at UT= 0.448663864136 h= 1615.190 s 00:26:55.190

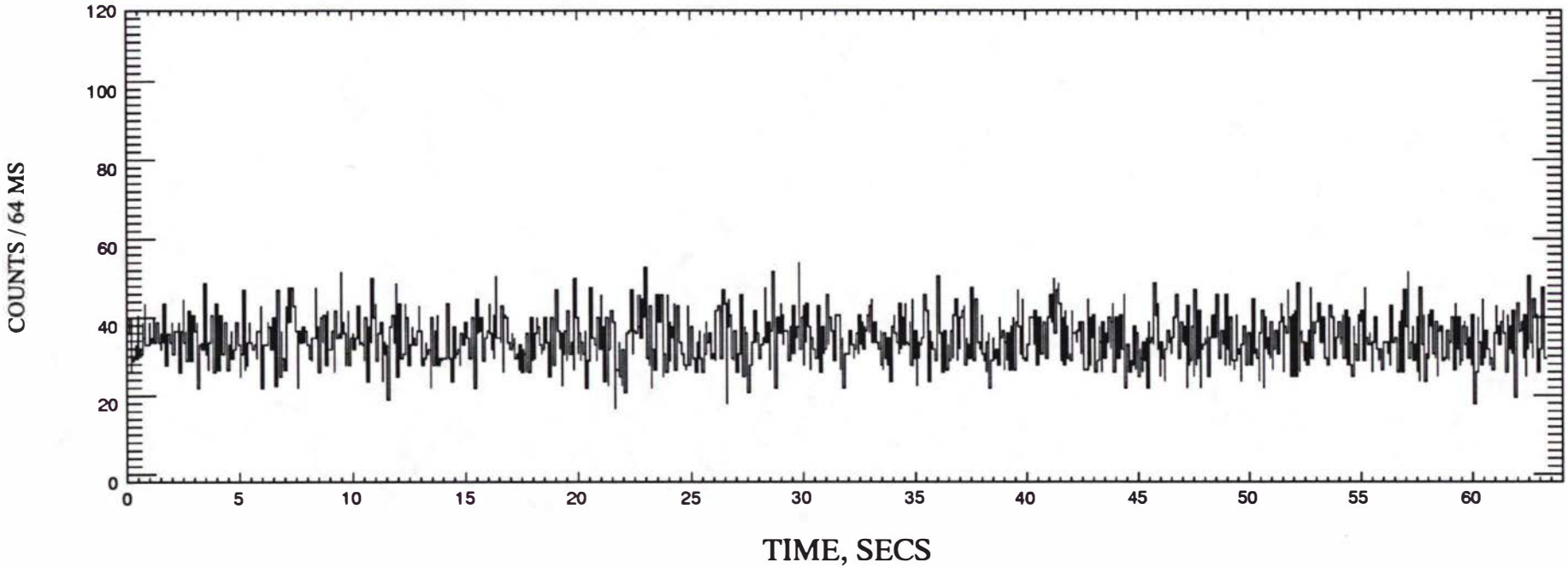


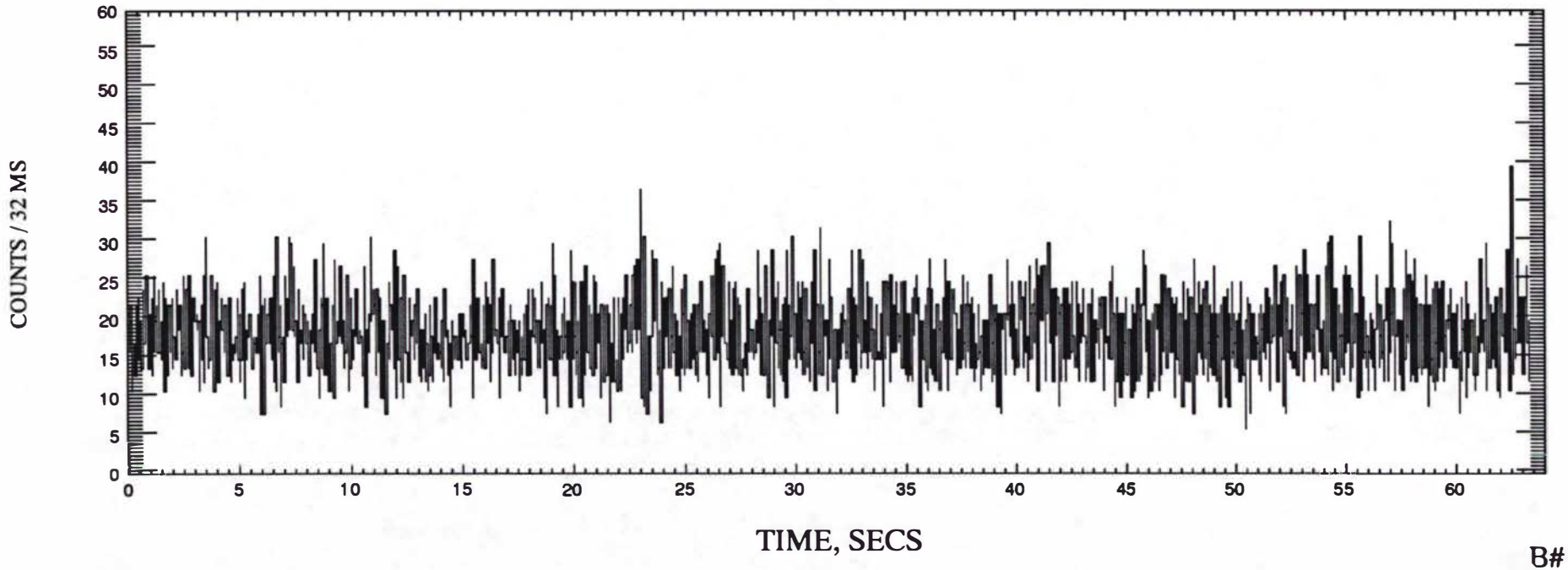


B# 1

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 1 at UT= 3.078150011698 h=11081.340 s 03:04:41.340

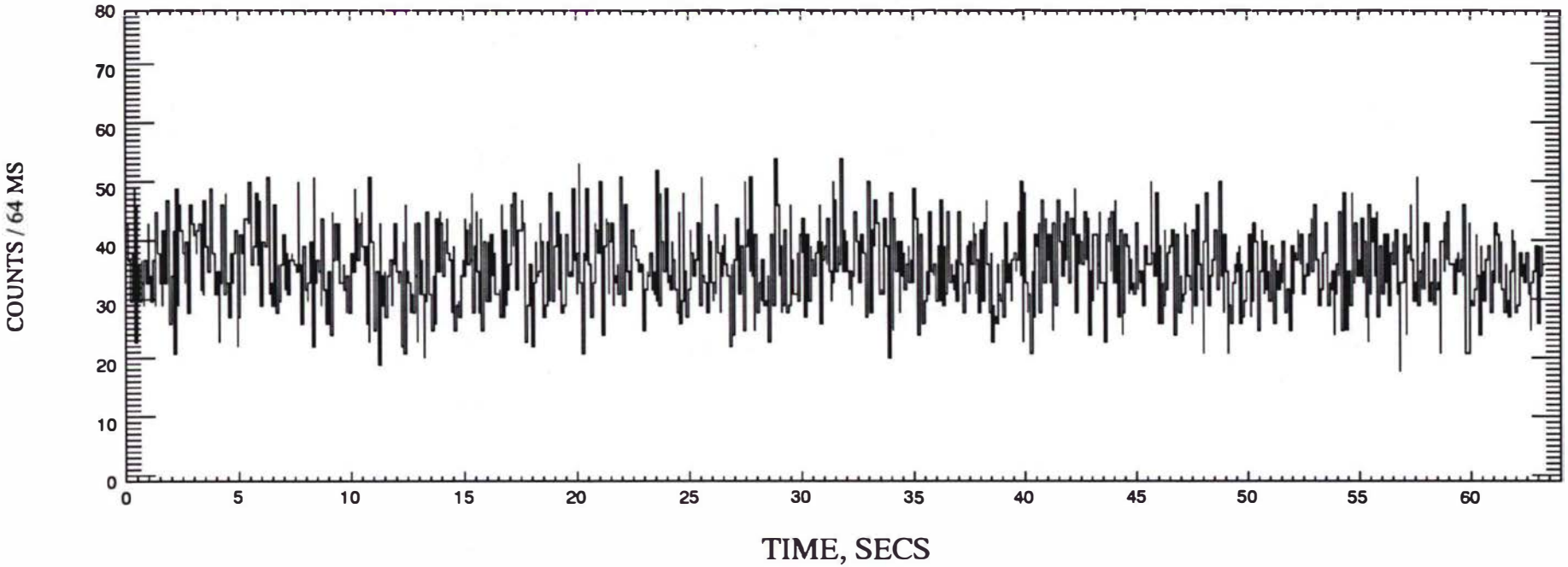


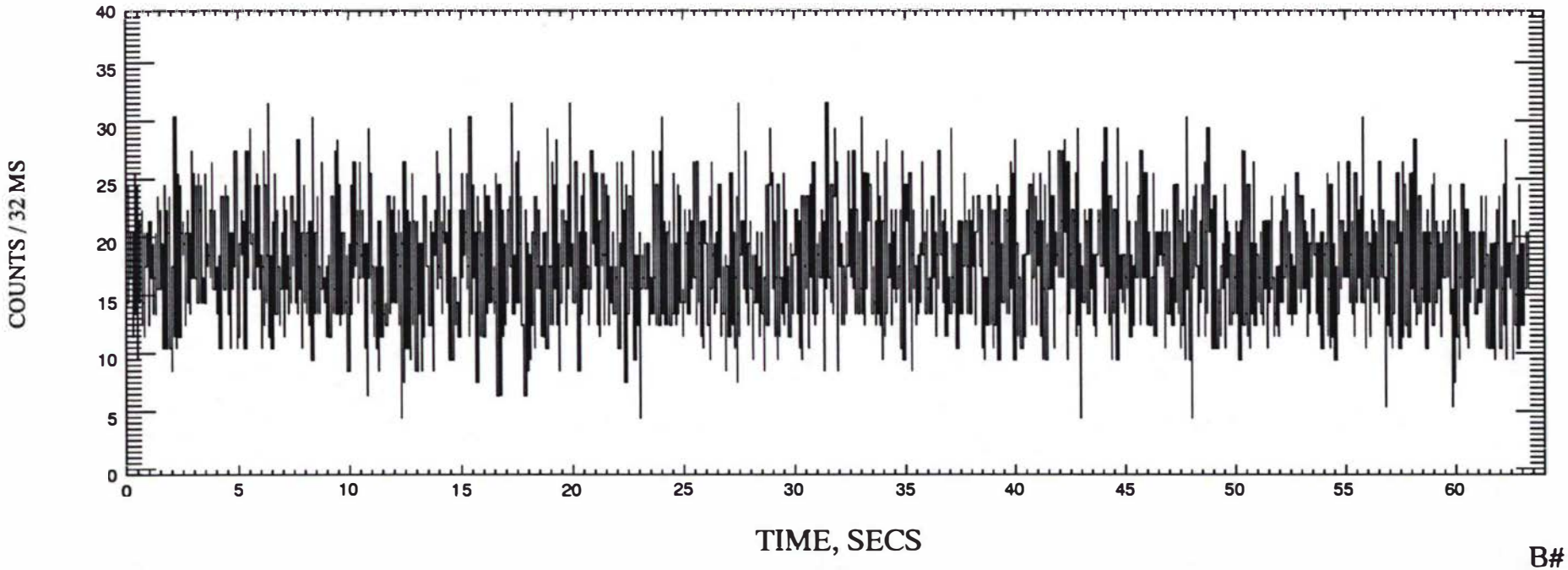


B# 2

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 2 at UT= 4.367605959574 h=15723.381 s 04:22:03.381

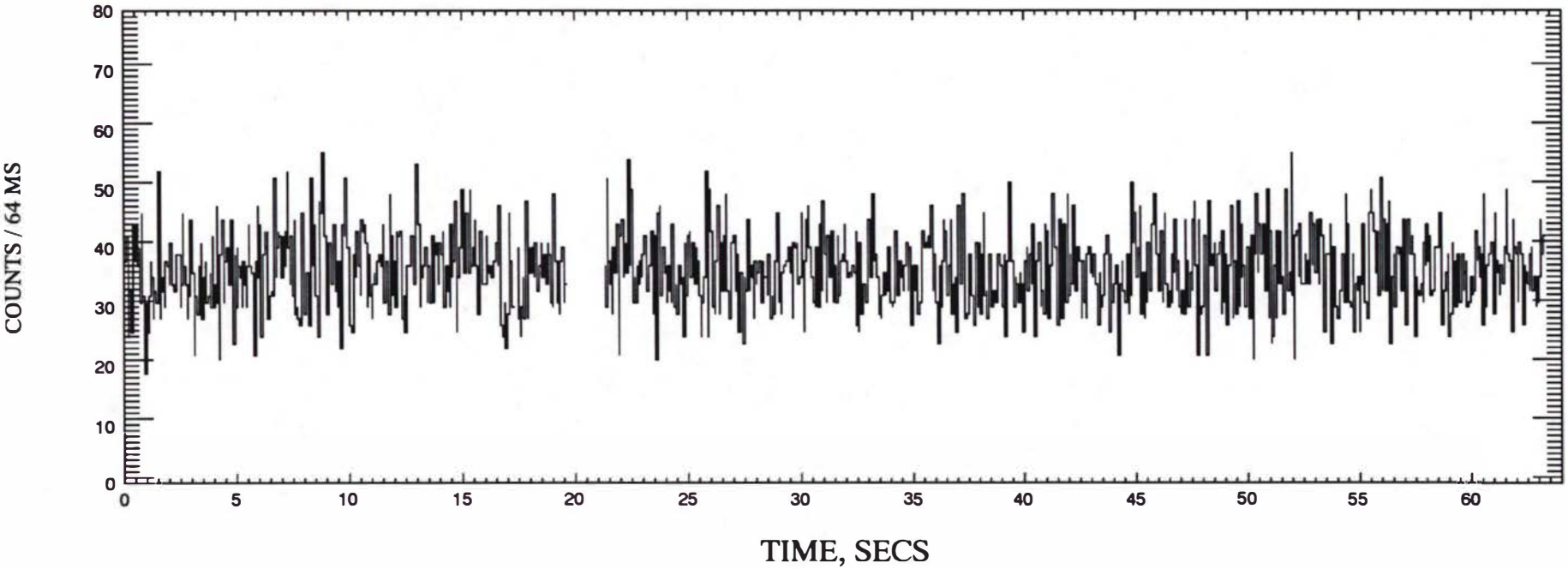


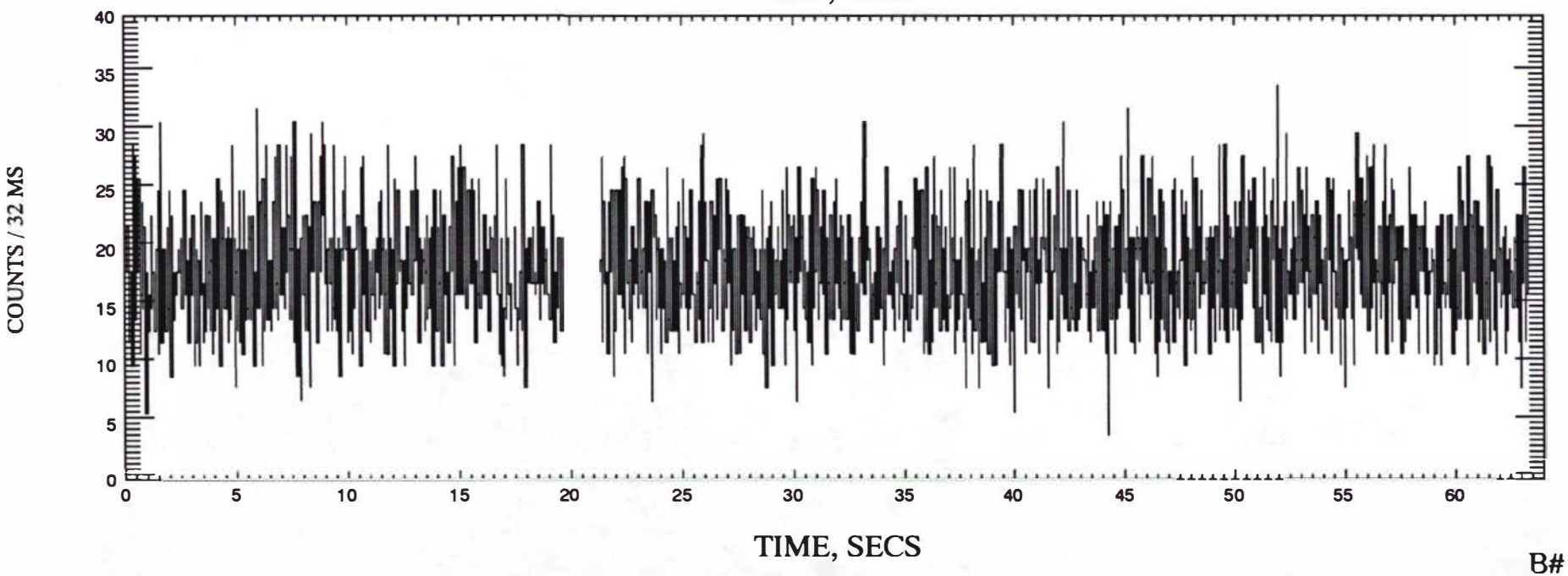


B# 3

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 3 at UT= 5.623871803284 h=20245.938 s 05:37:25.938

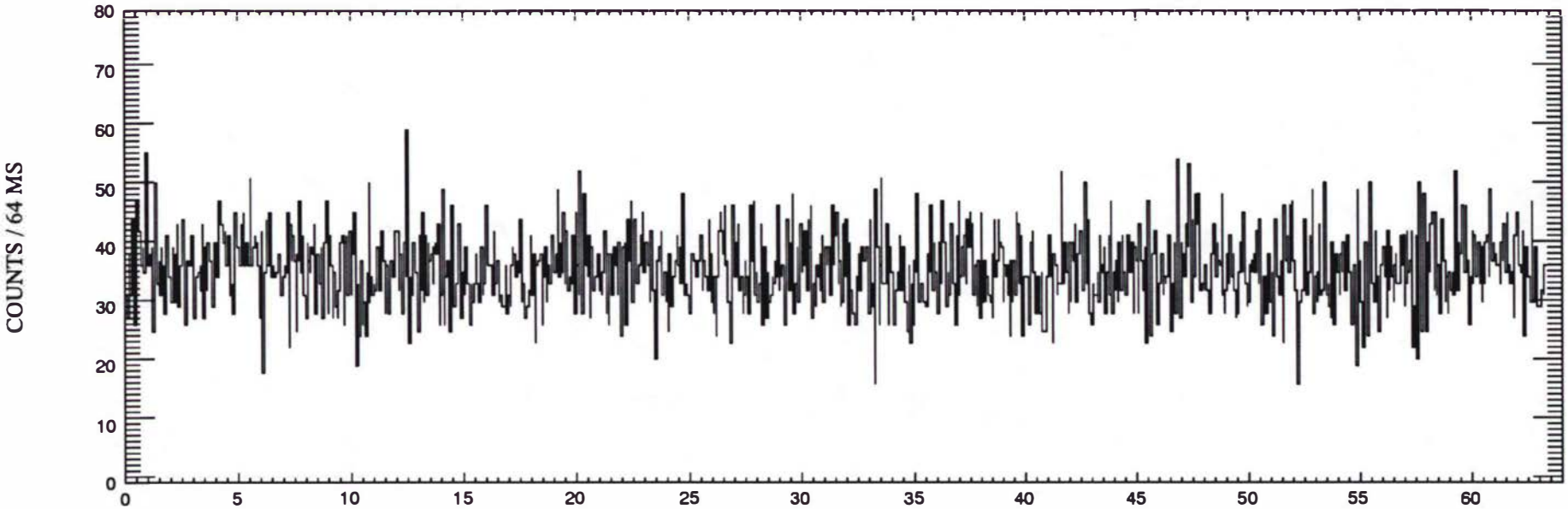




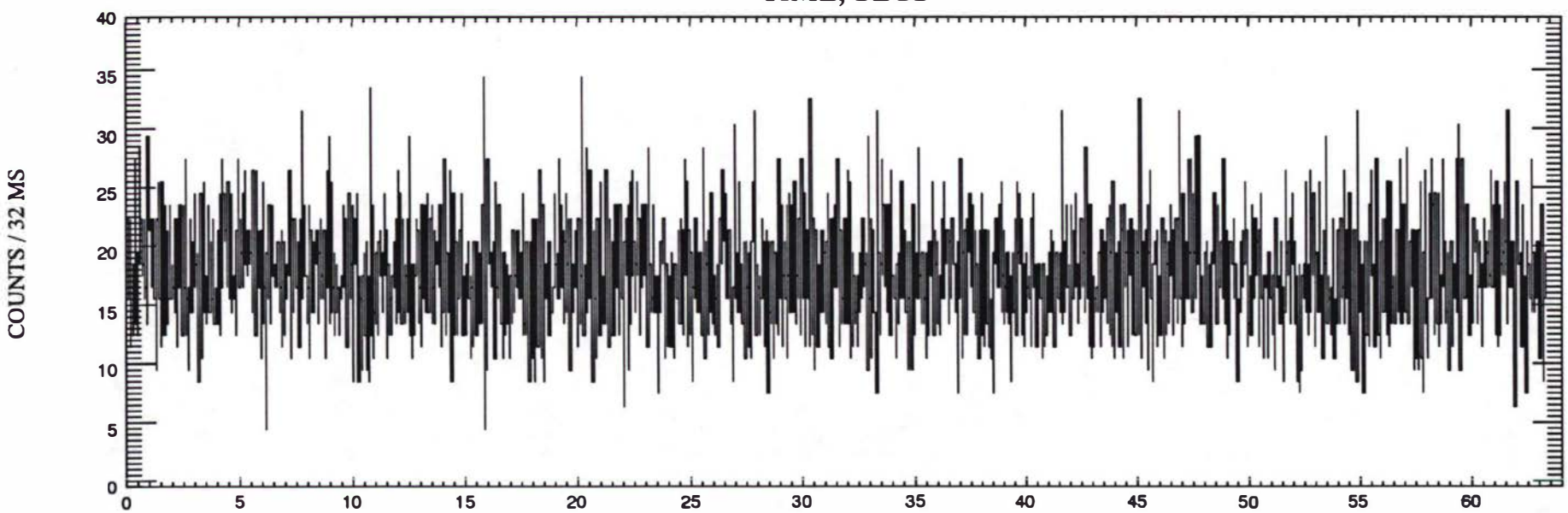
B# 4

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 4 at UT= 6.884282616509 h=24783.417 s 06:53:03.417



TIME, SECS

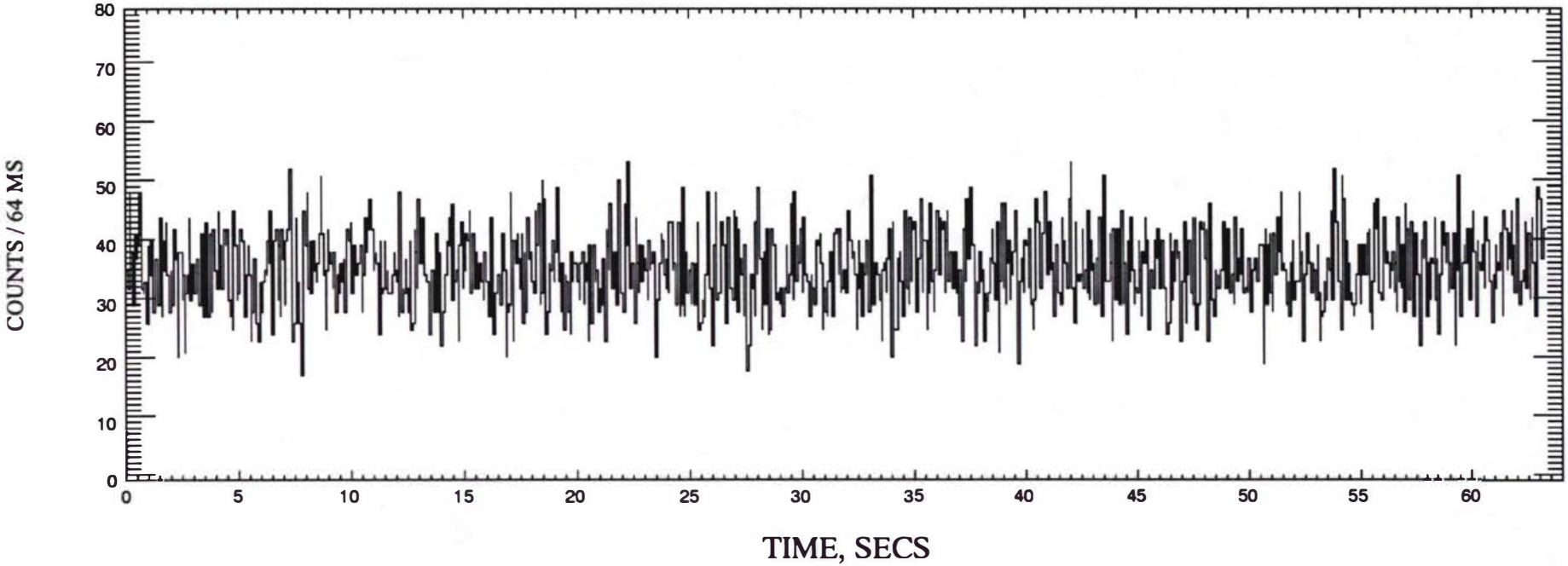


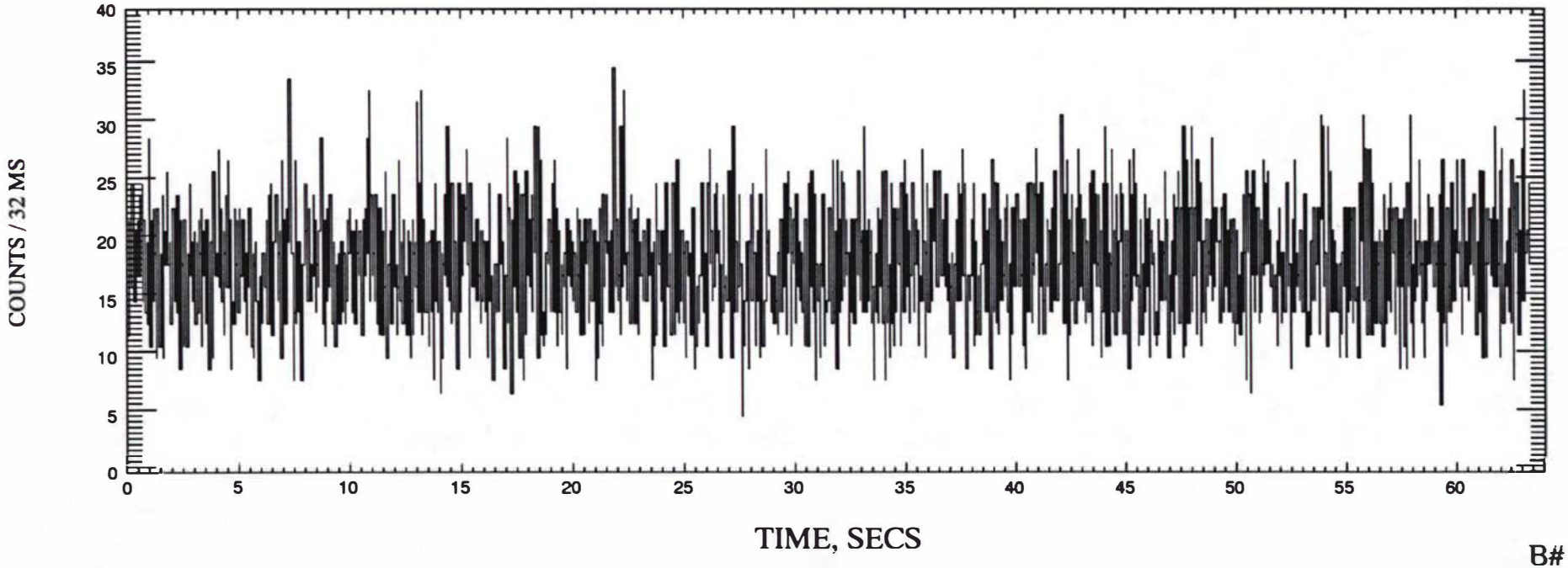
TIME, SECS

B# 5

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 5 at UT= 8.164211654663 h=29391.162 s 08:09:51.162

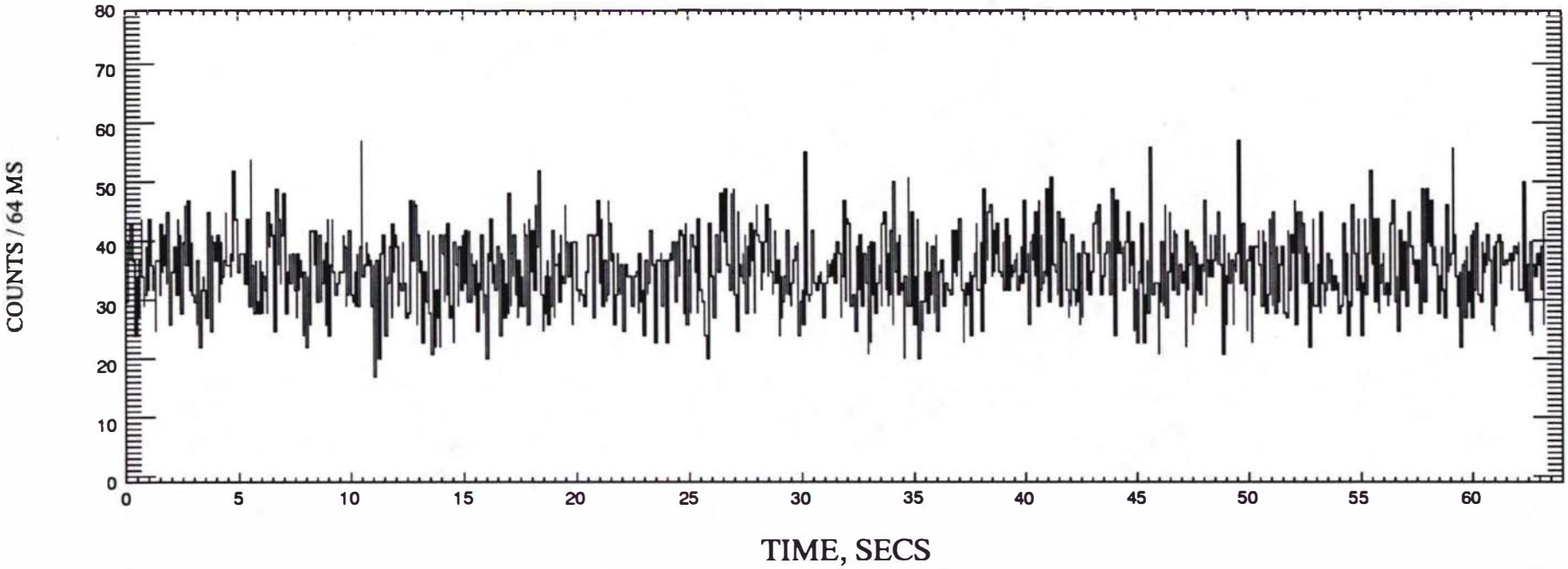


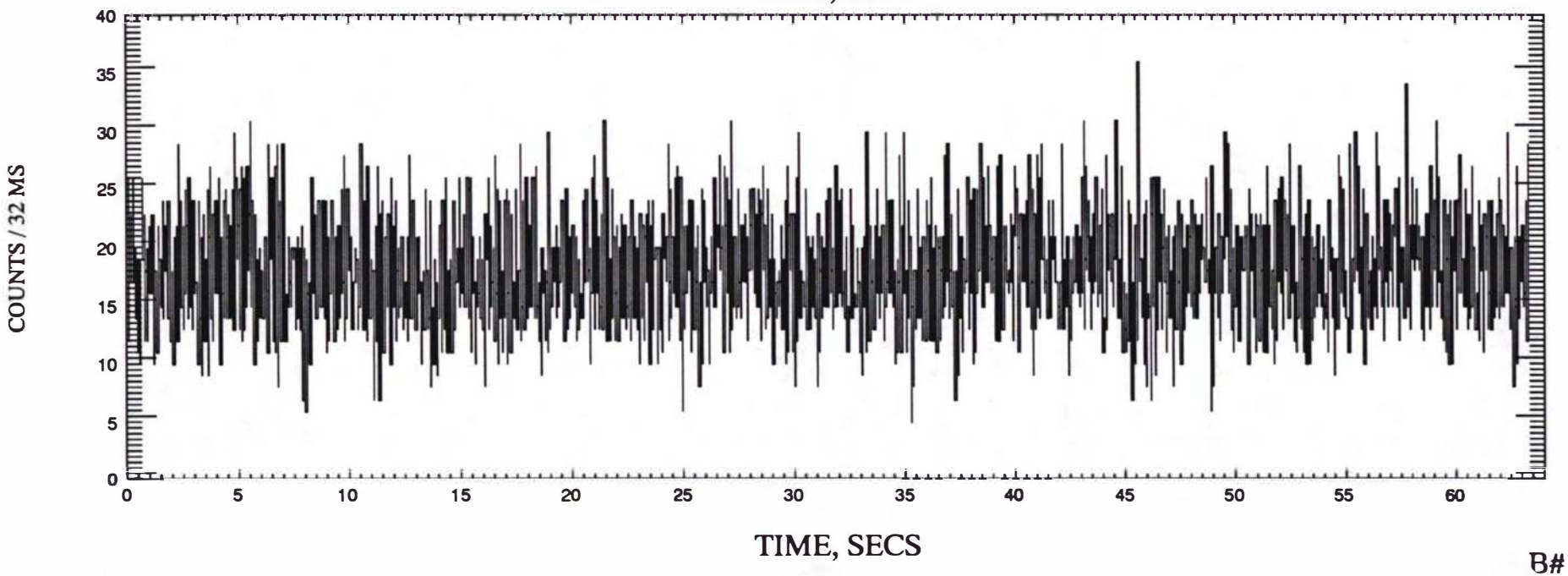


B# 6

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 6 at UT= 9.429872029622 h=33947.539 s 09:25:47.539

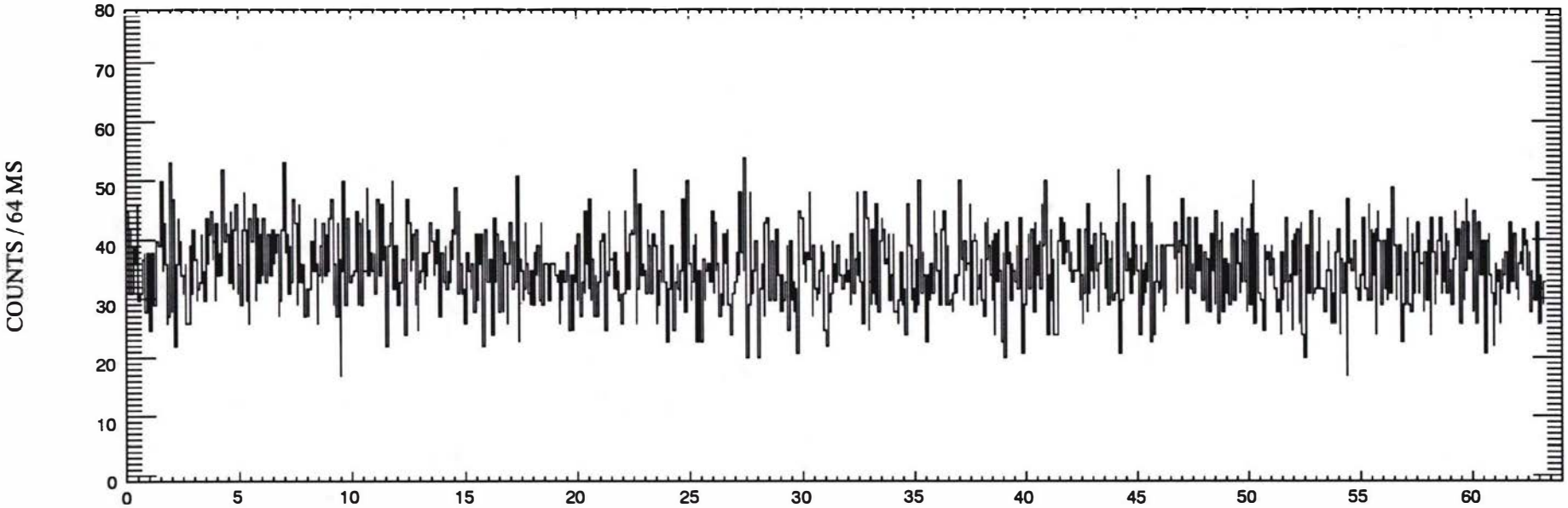




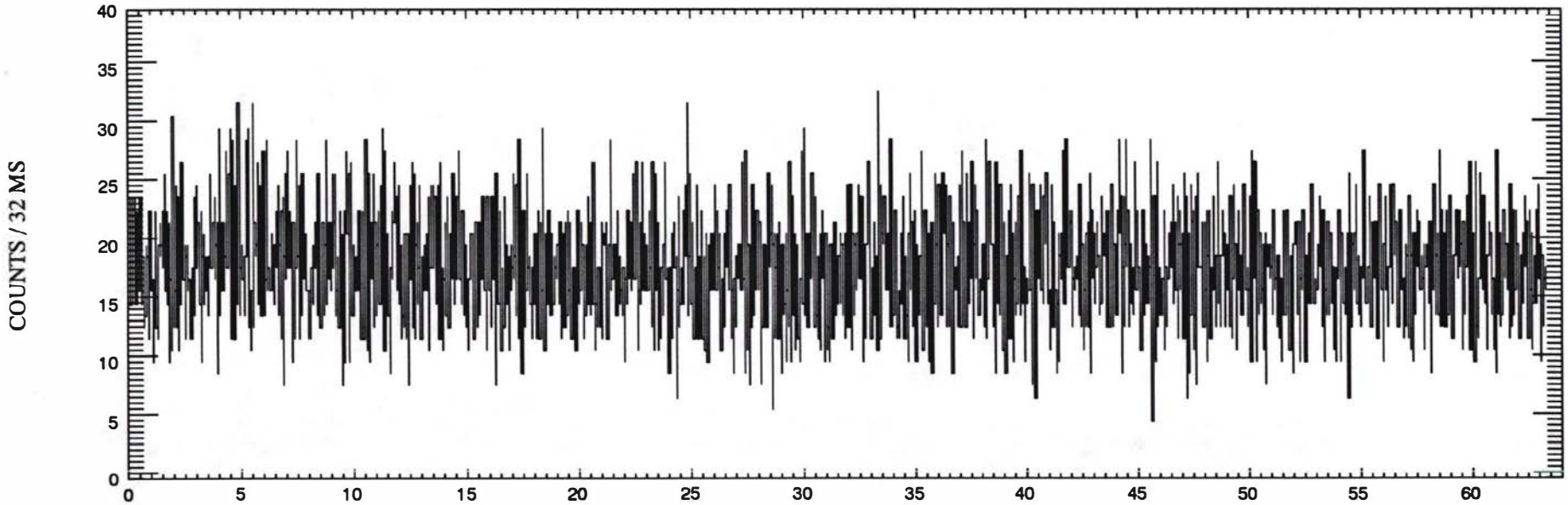
B# 7

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 7 at UT=10.697652634515 h=38511.549 s 10:41:51.549



TIME, SECS

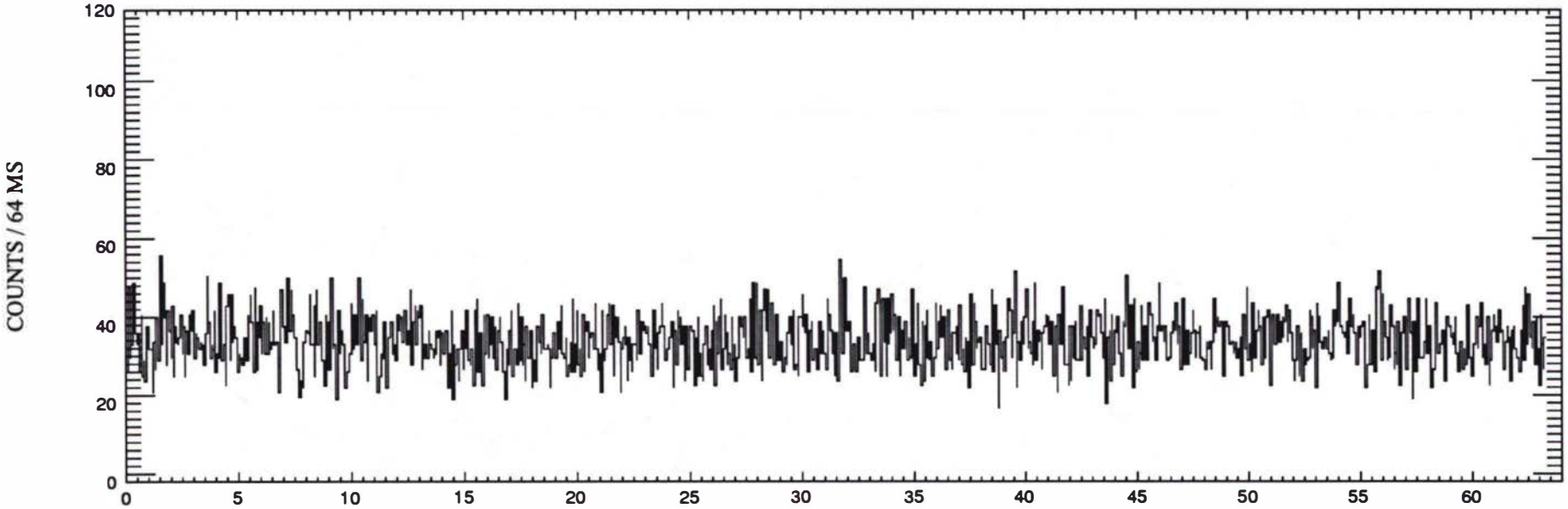


TIME, SECS

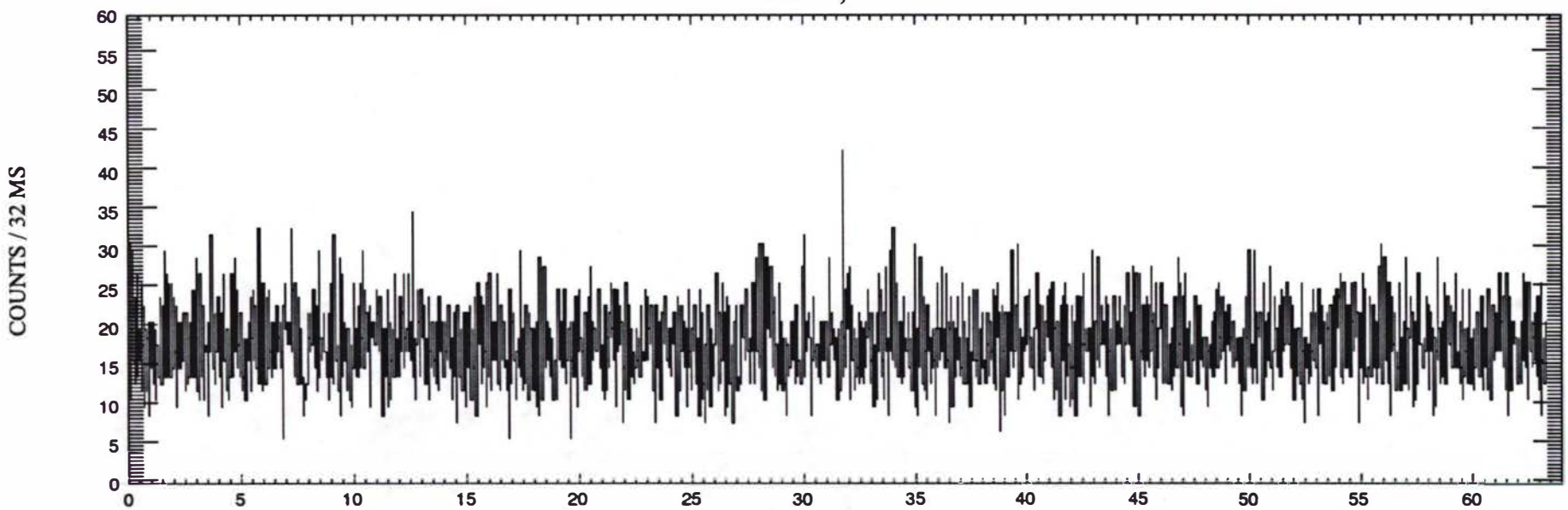
B# 8

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 8 at UT=11.956995735168 h=43045.185 s 11:57:25.185



TIME, SECS

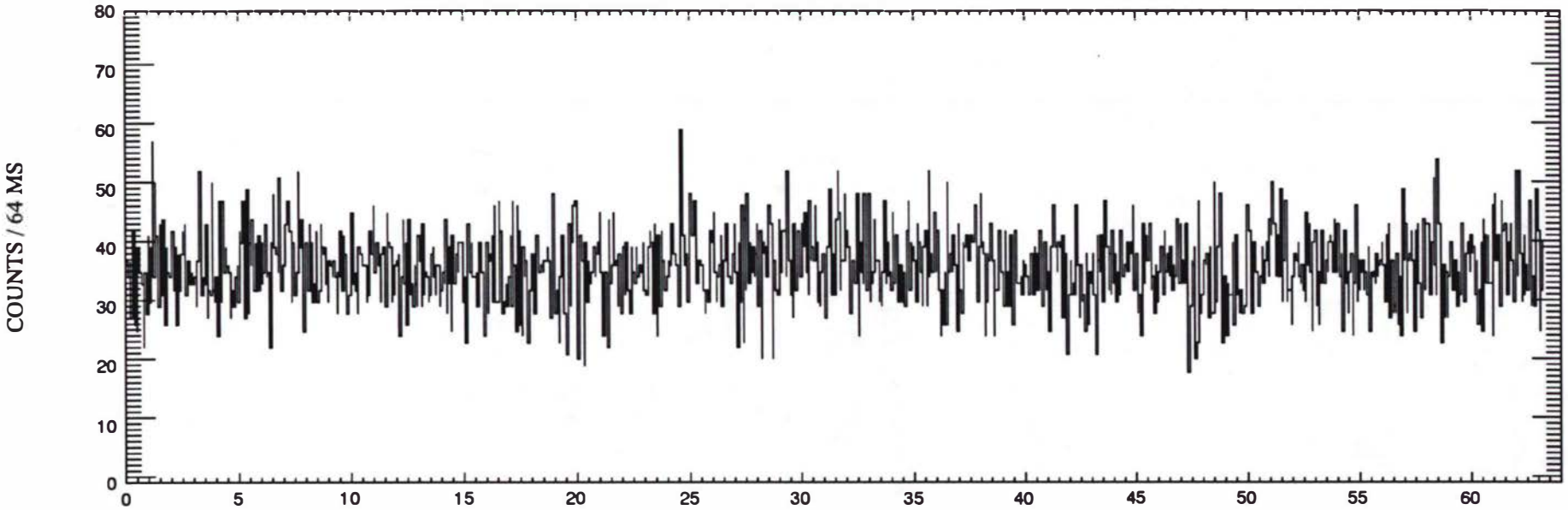


TIME, SECS

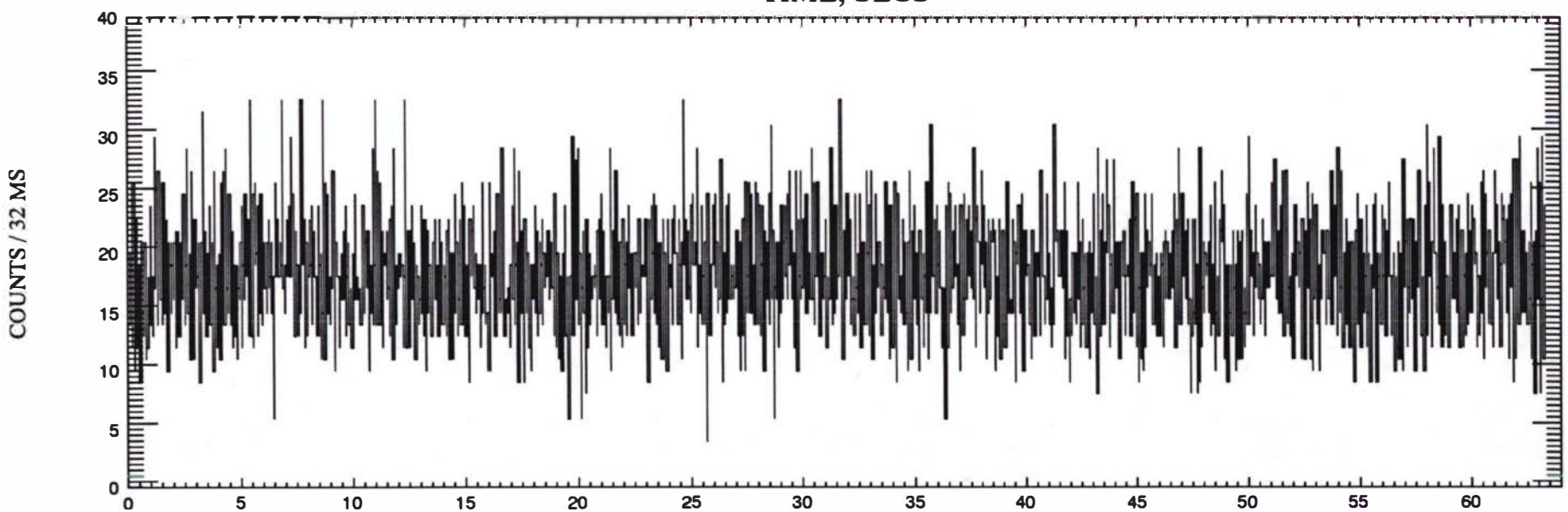
B# 9

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 9 at UT=13.211141353183 h=47560.109 s 13:12:40.109



TIME, SECS

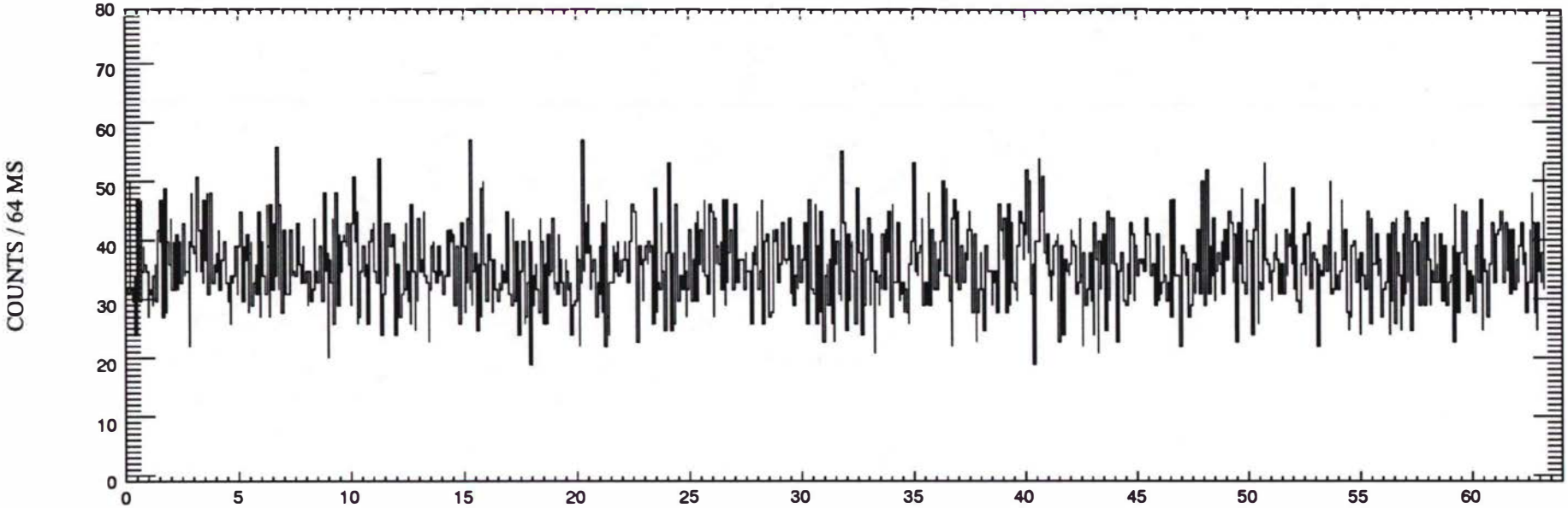


TIME, SECS

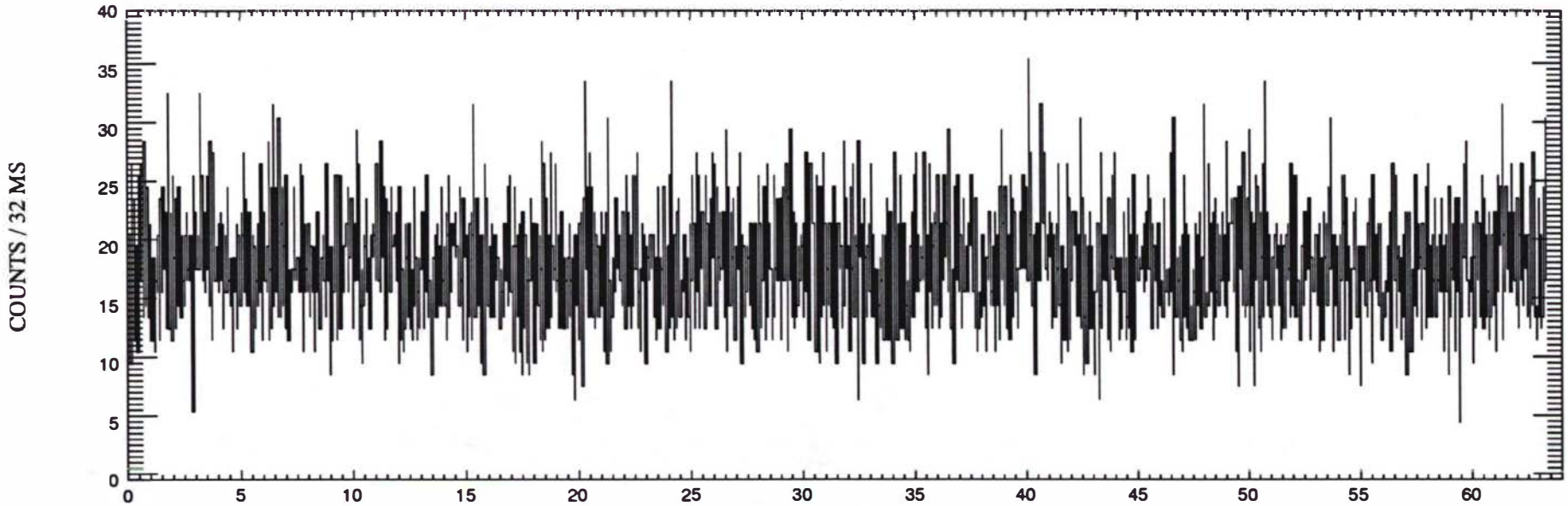
B# 10

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 10 at UT=14.474382676019 h=52107.778 s 14:28:27.778



TIME, SECS

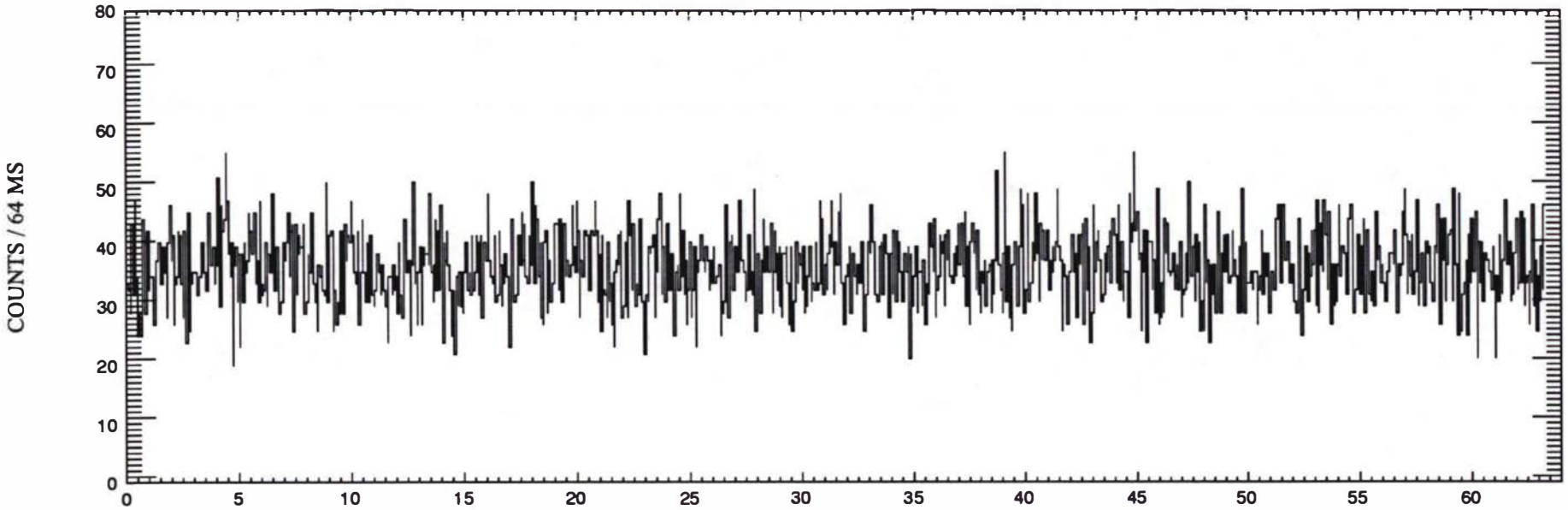


TIME, SECS

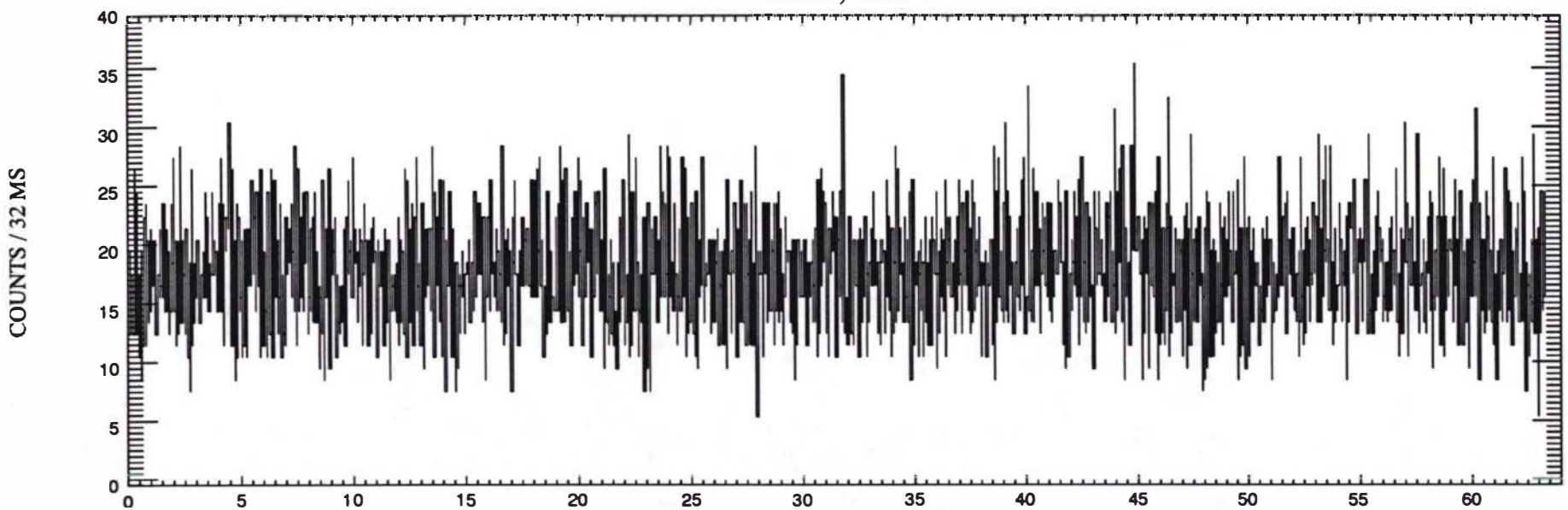
B# 11

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 11 at UT=15.739951905145 h=56663.827 s 15:44:23.827



TIME, SECS

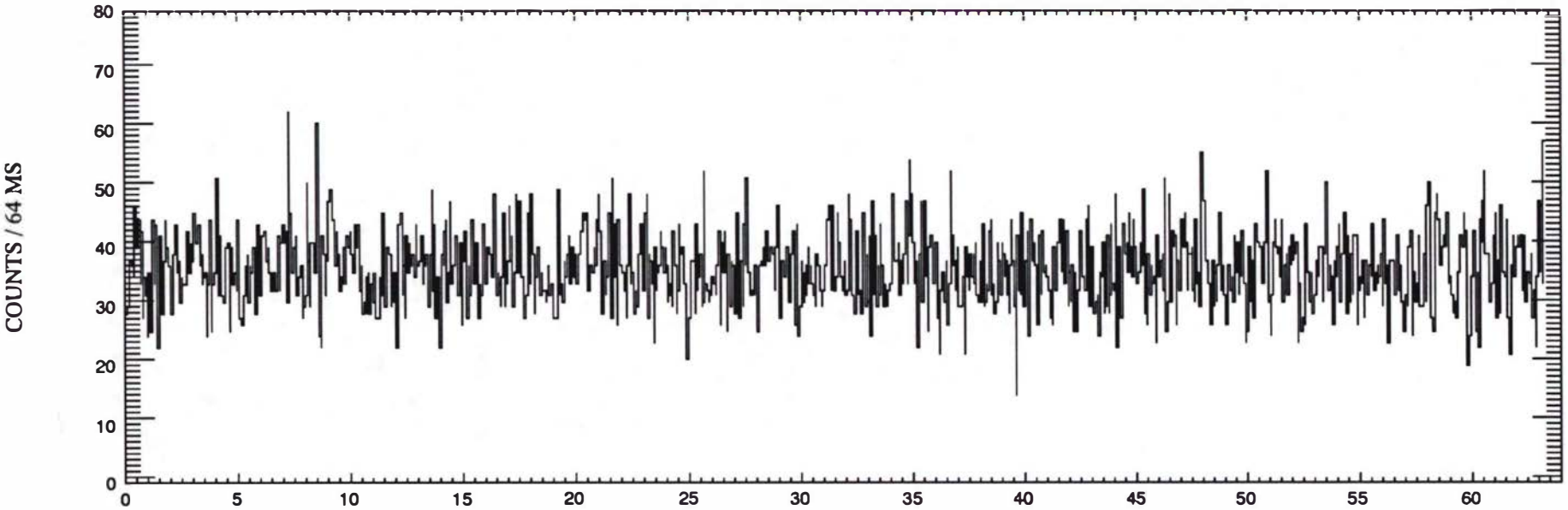


TIME, SECS

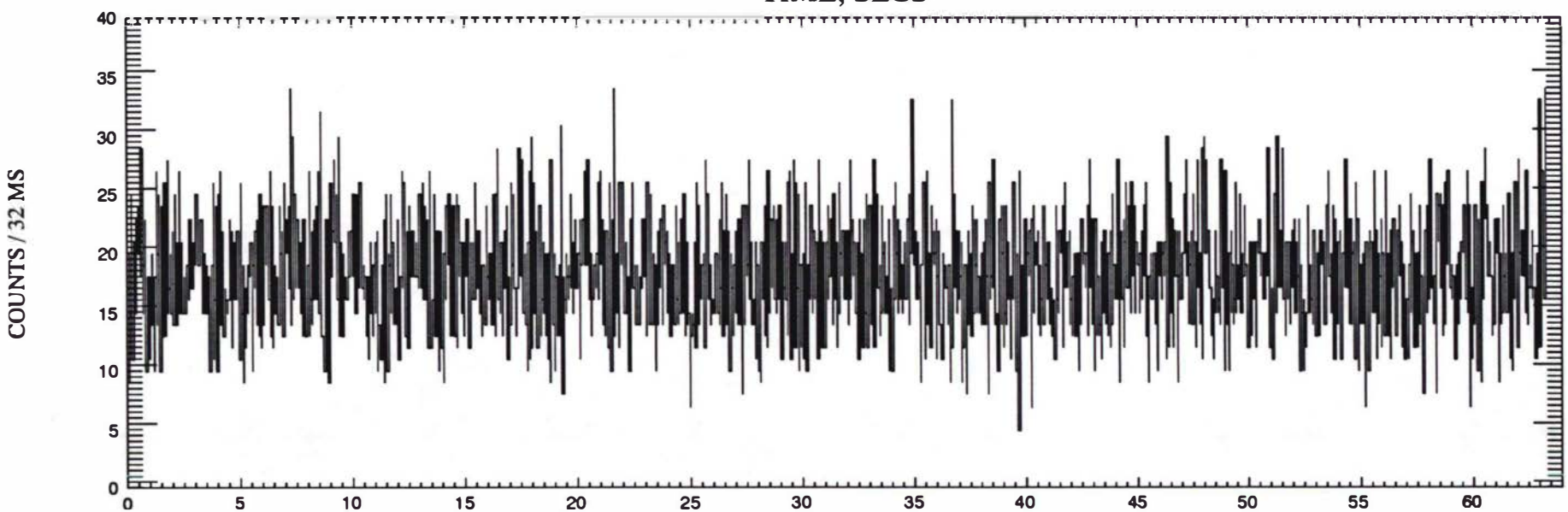
B# 12

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 12 at UT=16.804405954149 h=60495.861 s 16:48:15.861



TIME, SECS

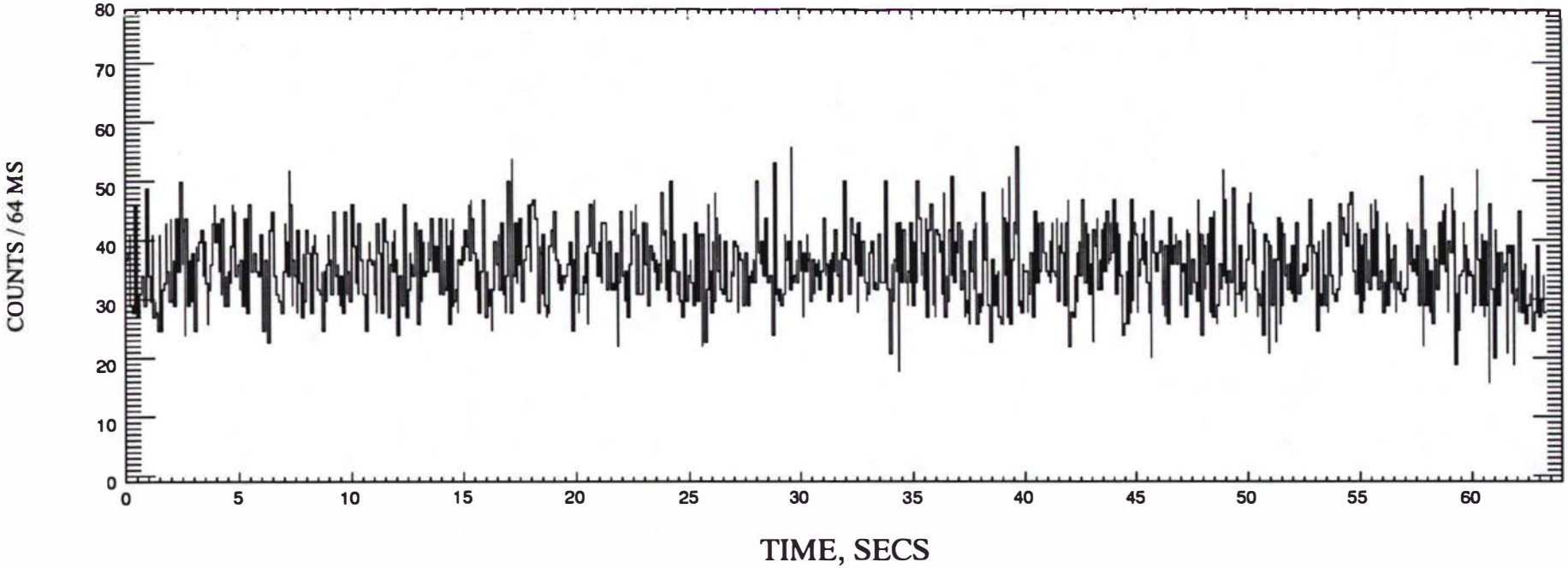


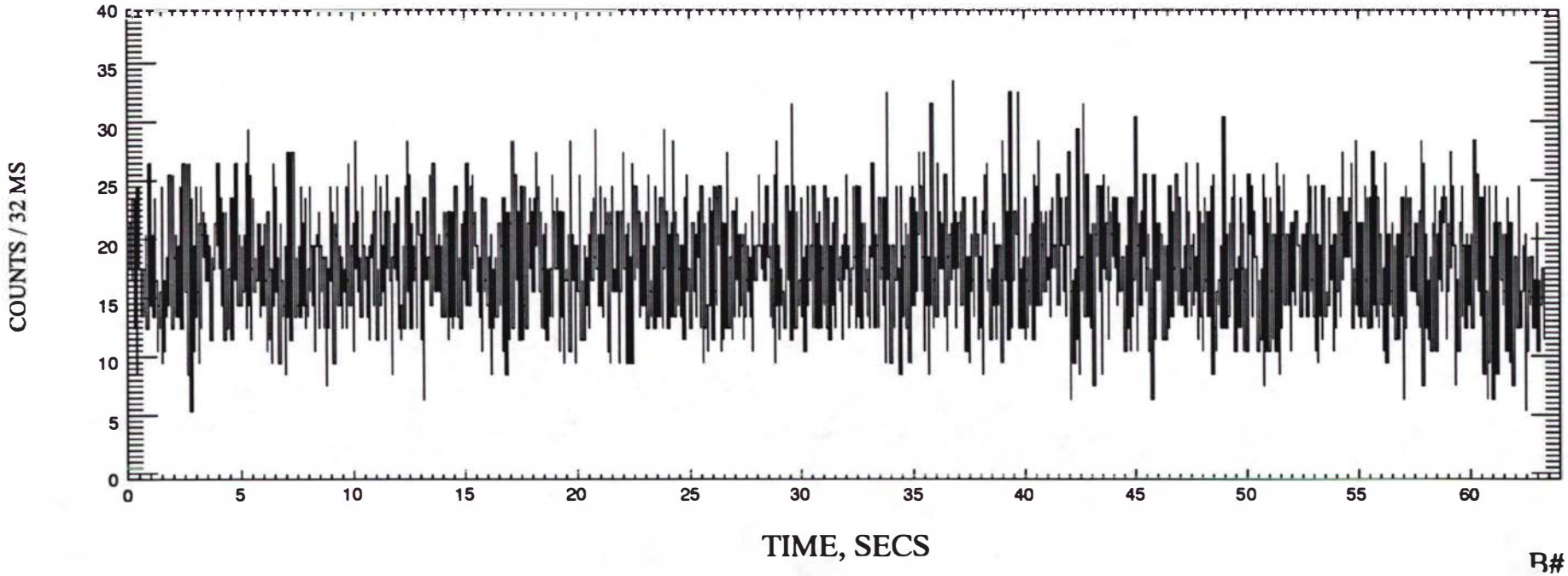
TIME, SECS

B# 13

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 14 at UT=18.271437589857 h=65777.175 s 18:16:17.175

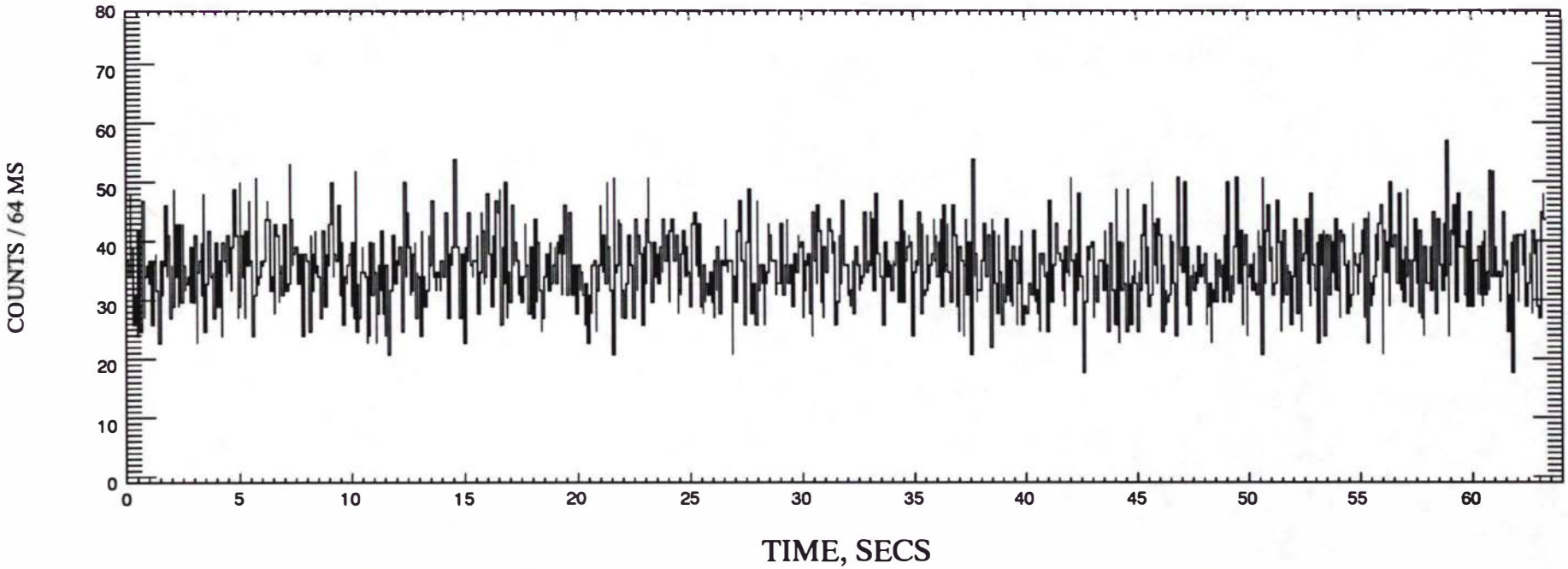


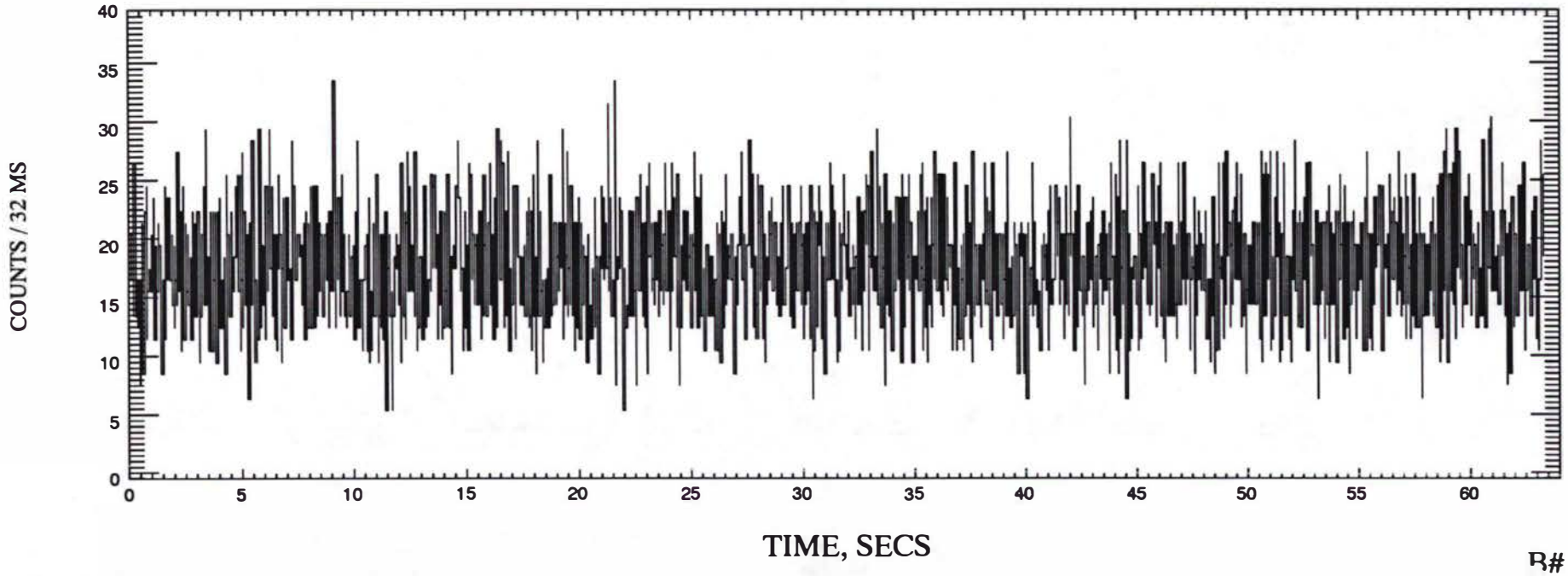


B# 14

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 15 at UT=18.996792407566 h=68388.453 s 18:59:48.453

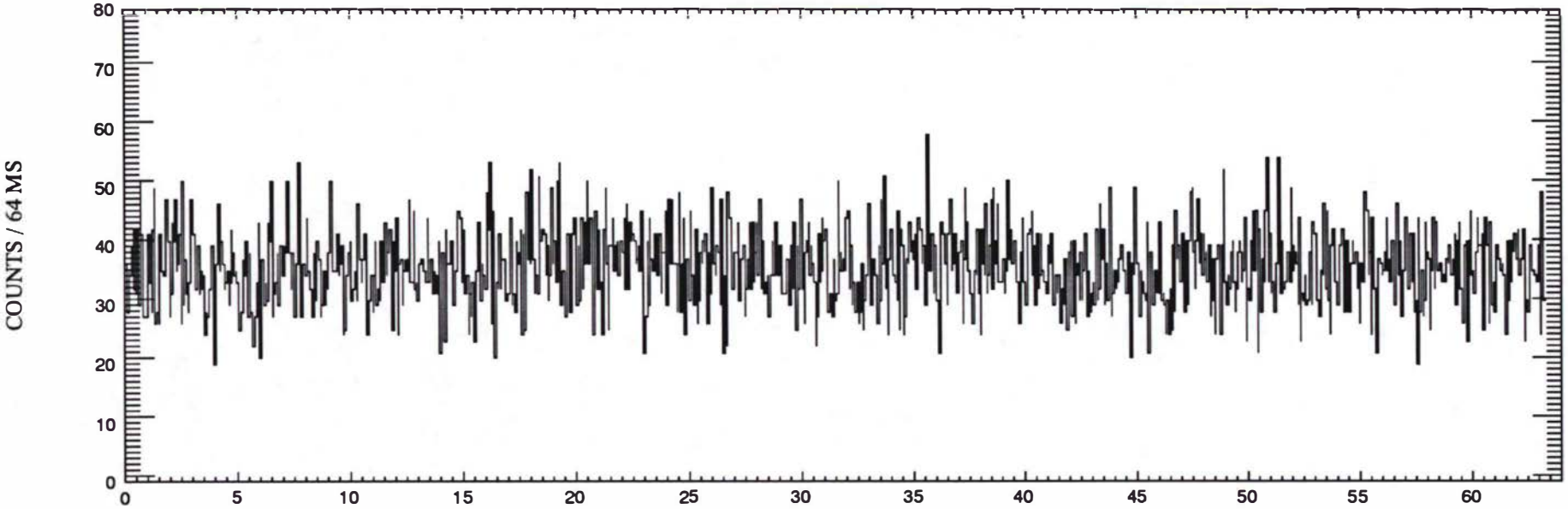




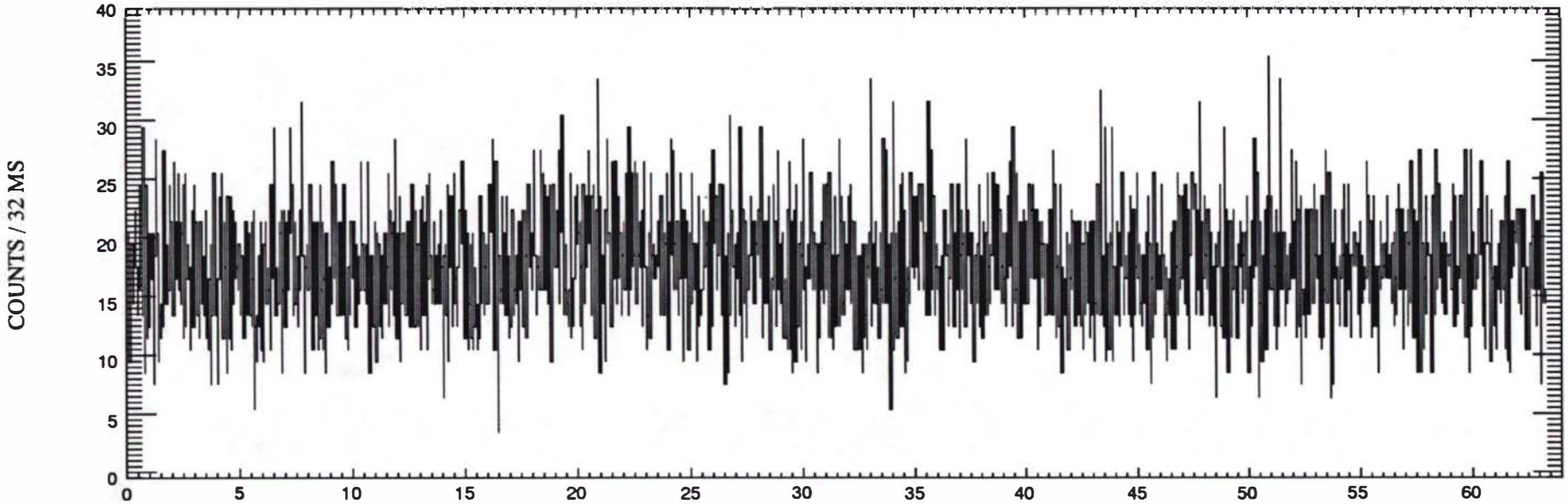
B# 15

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 0 at UT=19.713813896179 h=70969.730 s 19:42:49.730



TIME, SECS

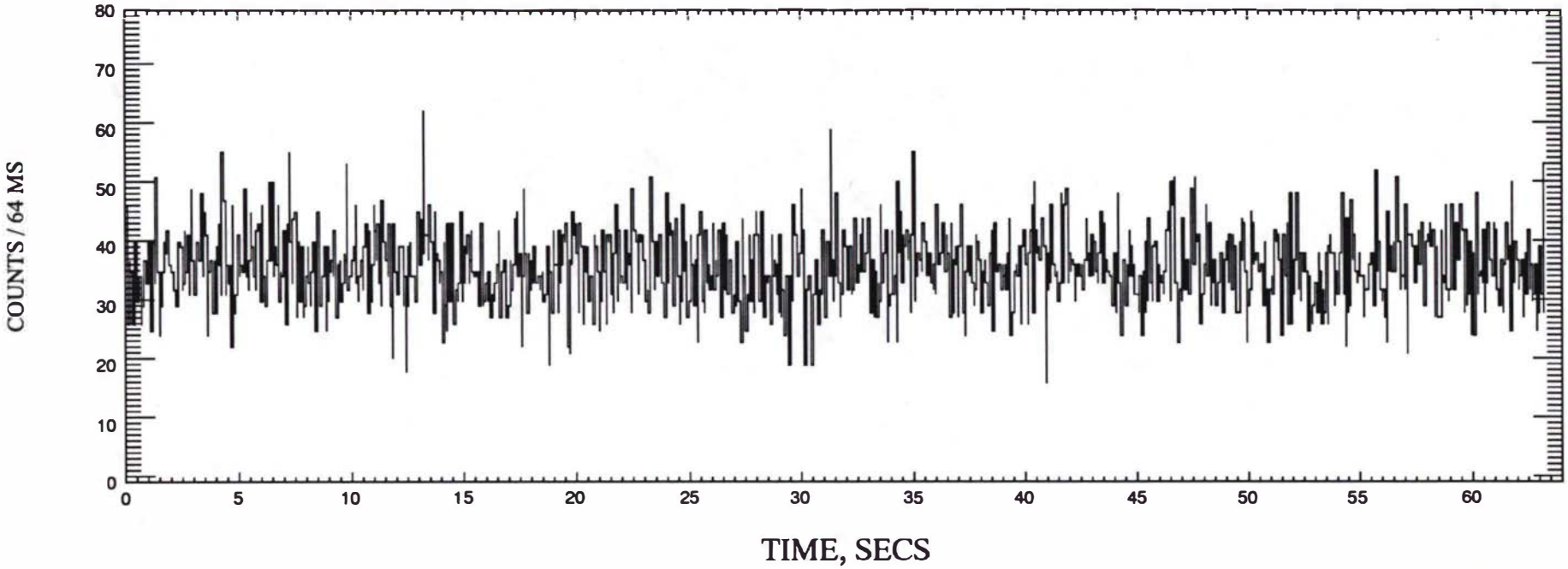


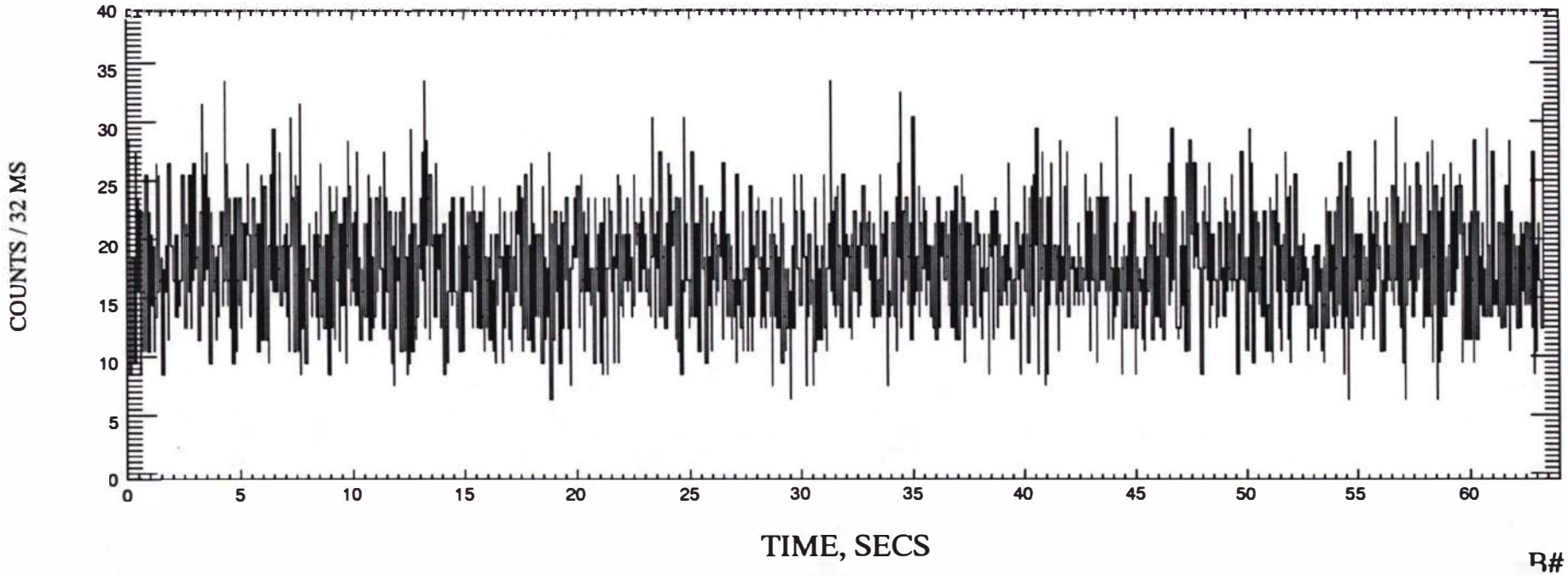
TIME, SECS

B# 16

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 1 at UT=20.478197250366 h=73721.510 s 20:28:41.510

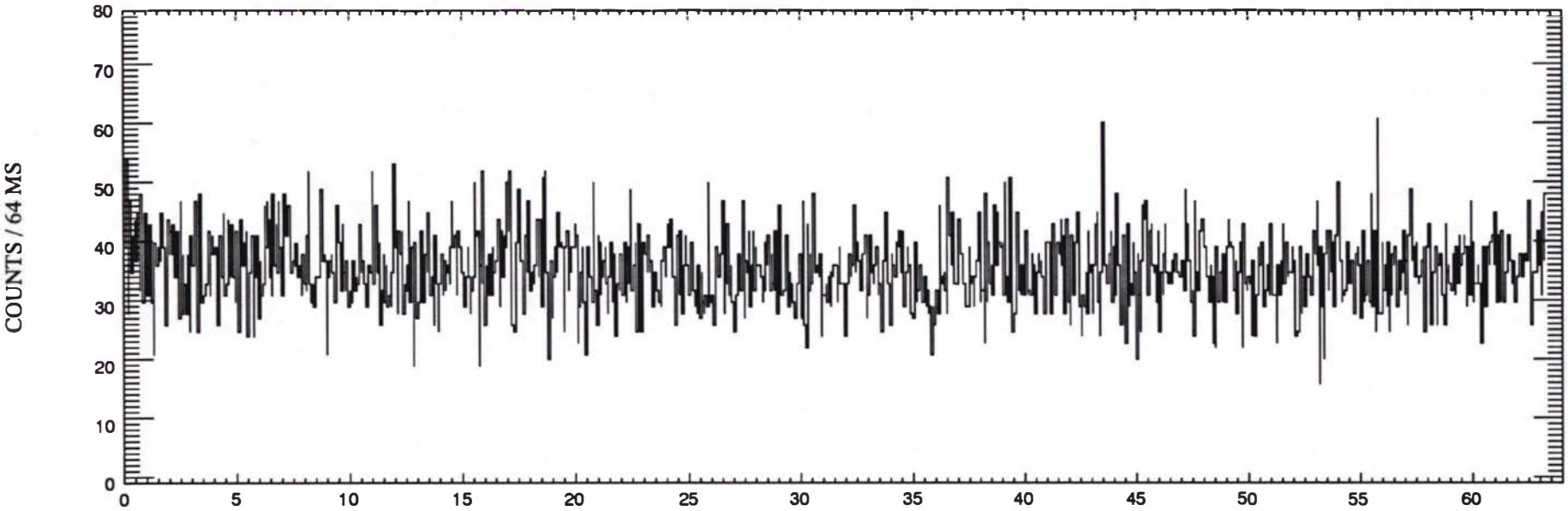




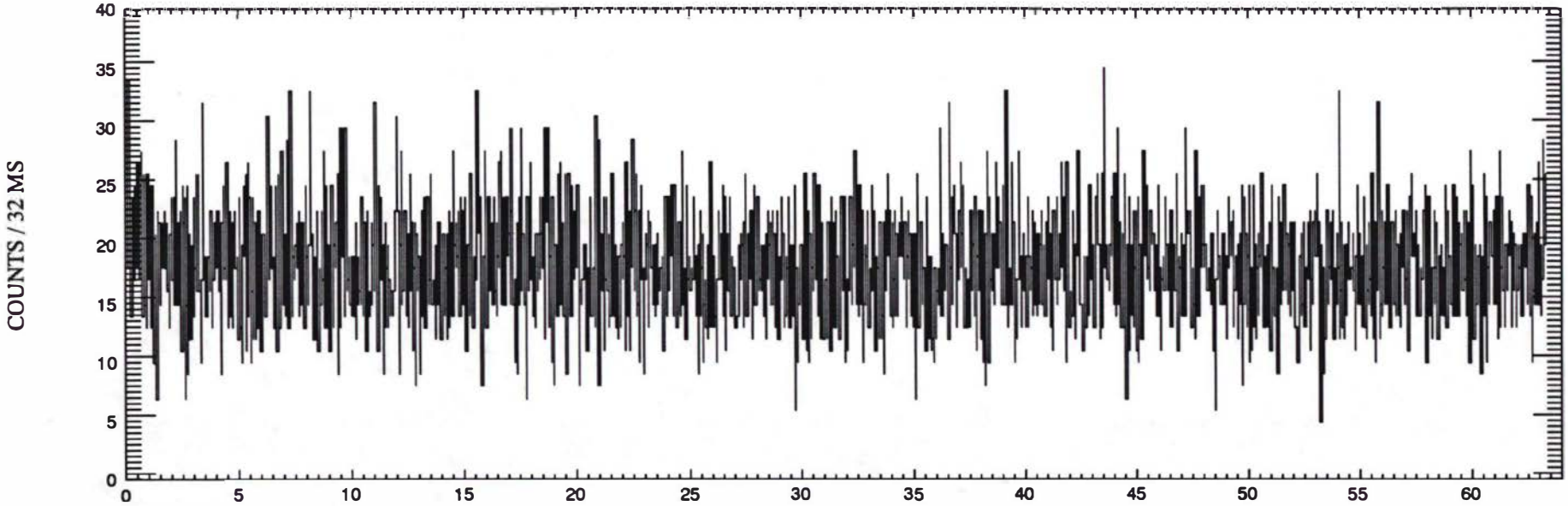
B# 17

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 2 at UT=21.203413183424 h=76332.287 s 21:12:12.287



TIME, SECS

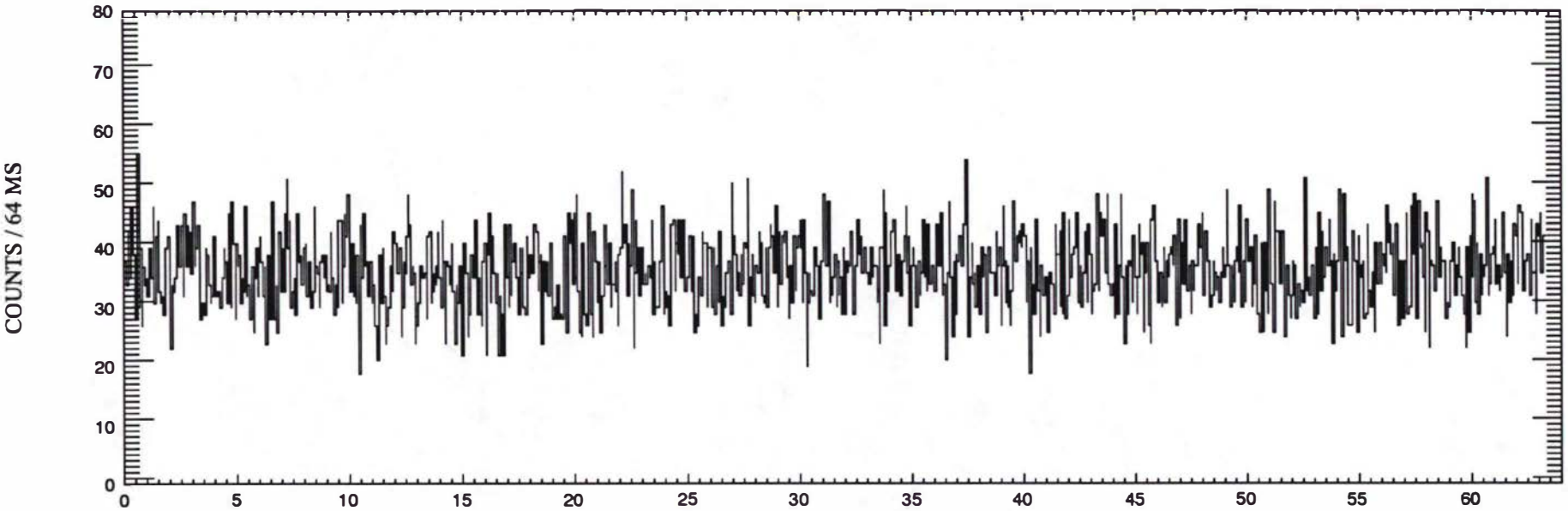


TIME, SECS

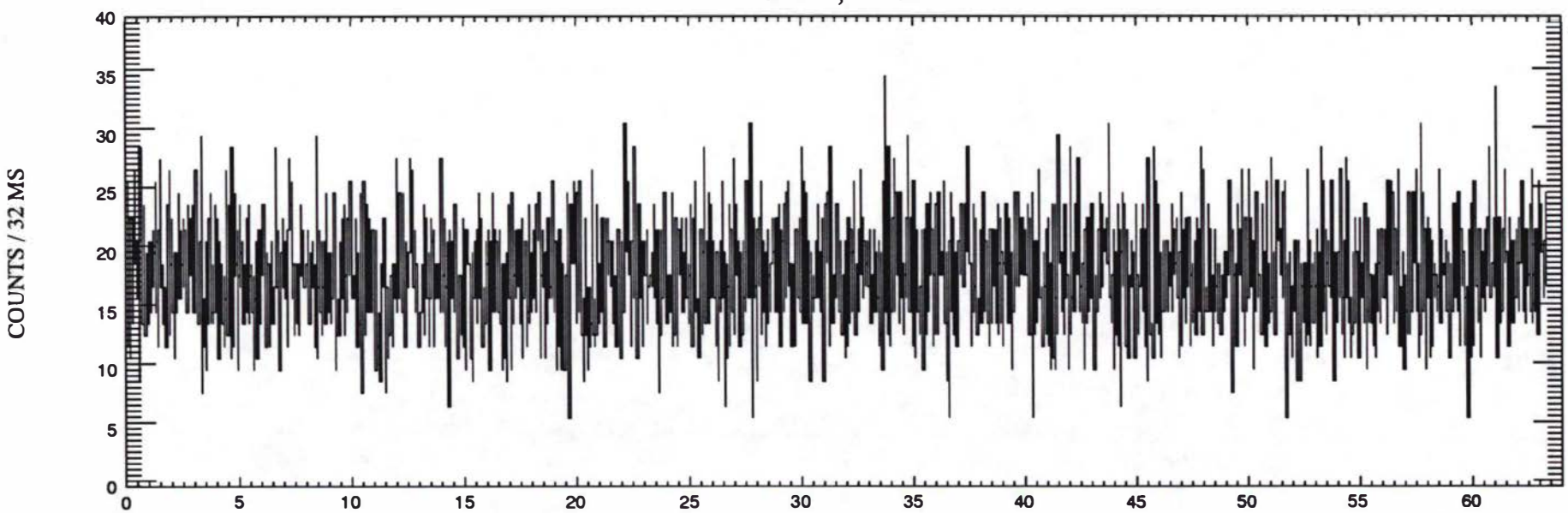
B# 18

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 3 at UT=21.958039593167 h=79048.943 s 21:57:28.943



TIME, SECS

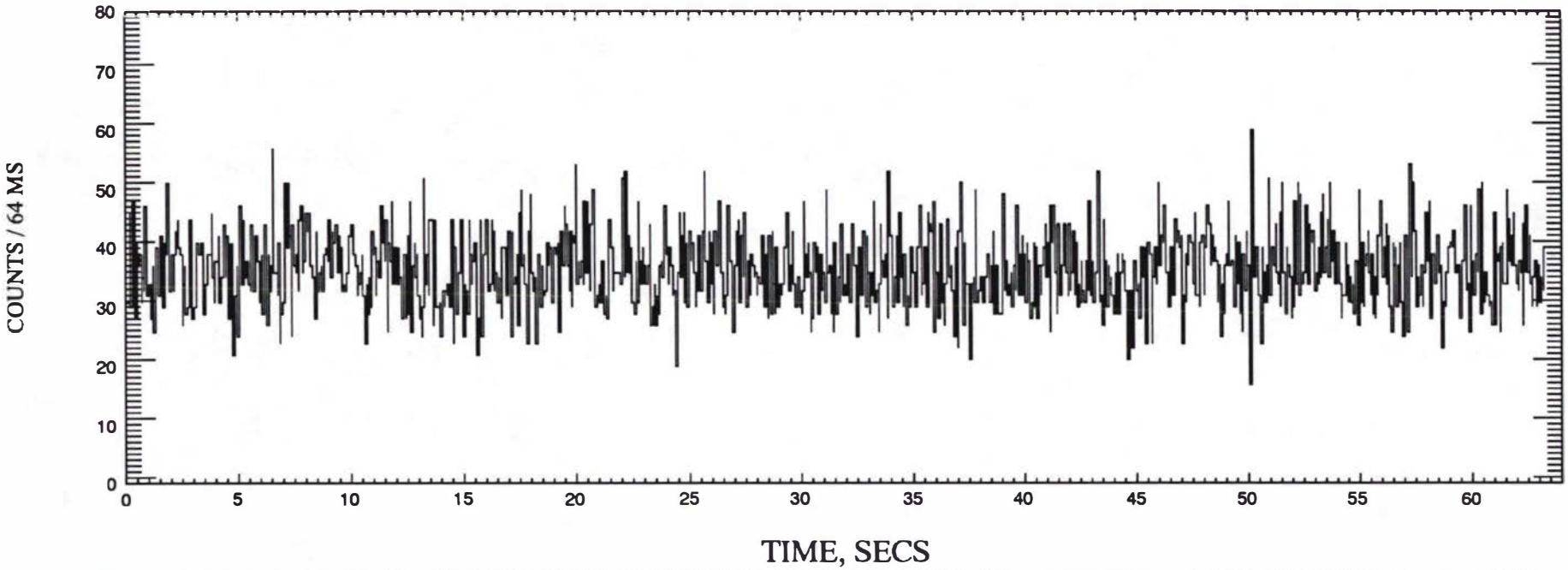


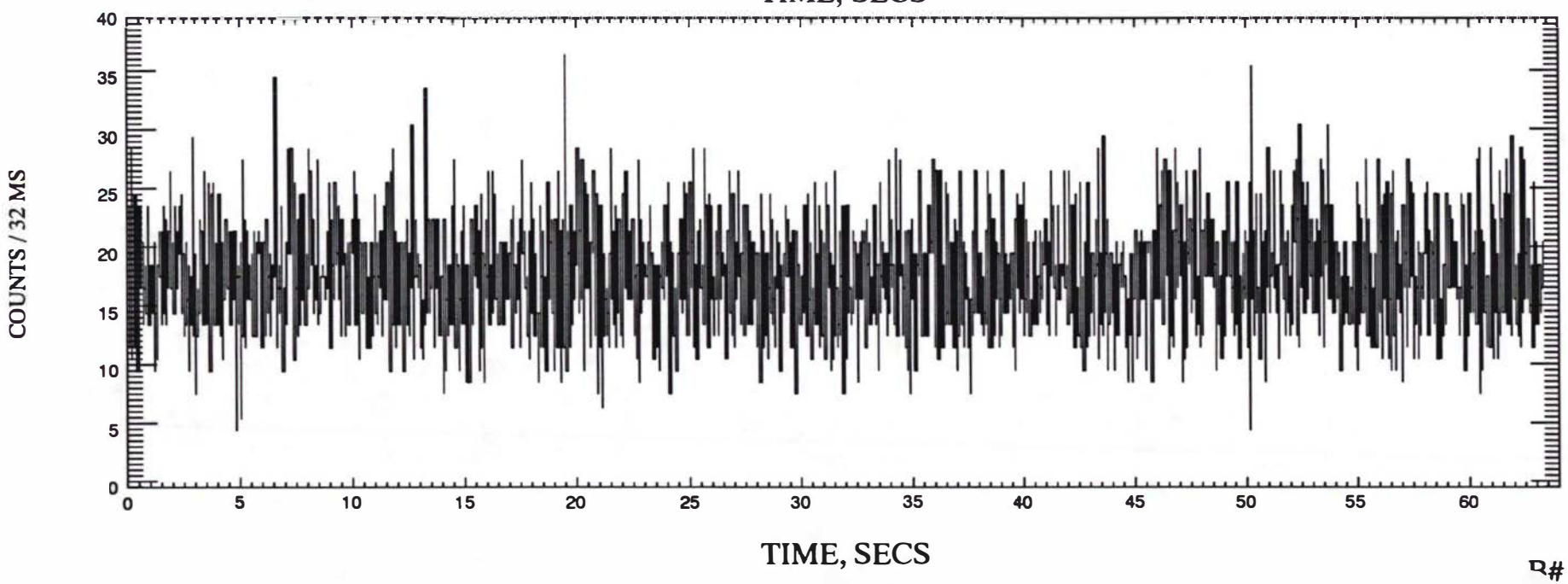
TIME, SECS

B# 19

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 4 at UT=22.661591029697 h=81581.728 s 22:39:41.728

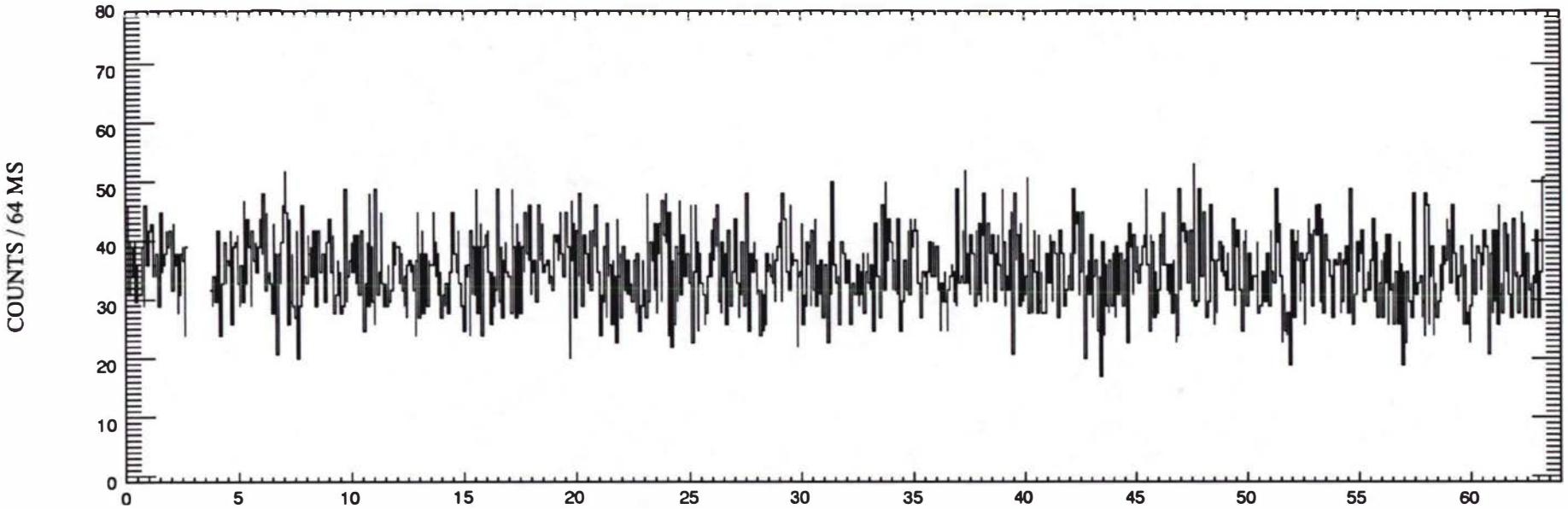




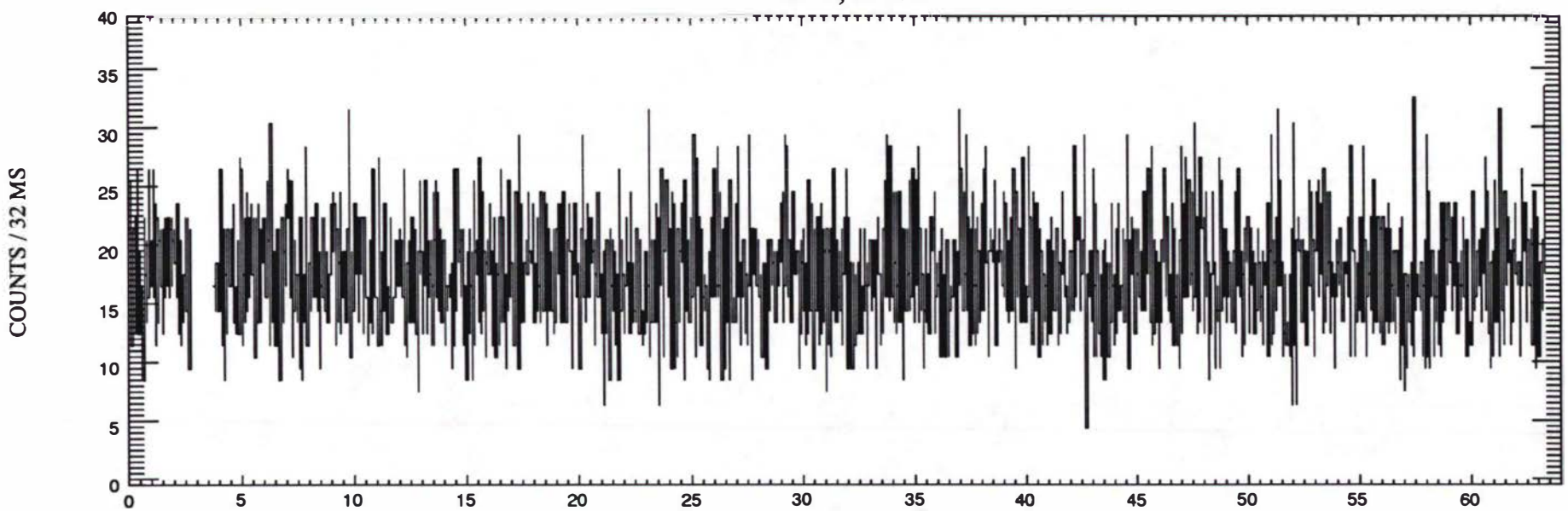
B# 20

HUS 2A TRIGGERED DATA QEDR day 119, year 1998 4/30/98

Burst Counter 5 at UT=23.384478399489 h=84184.122 s 23:23:04.122



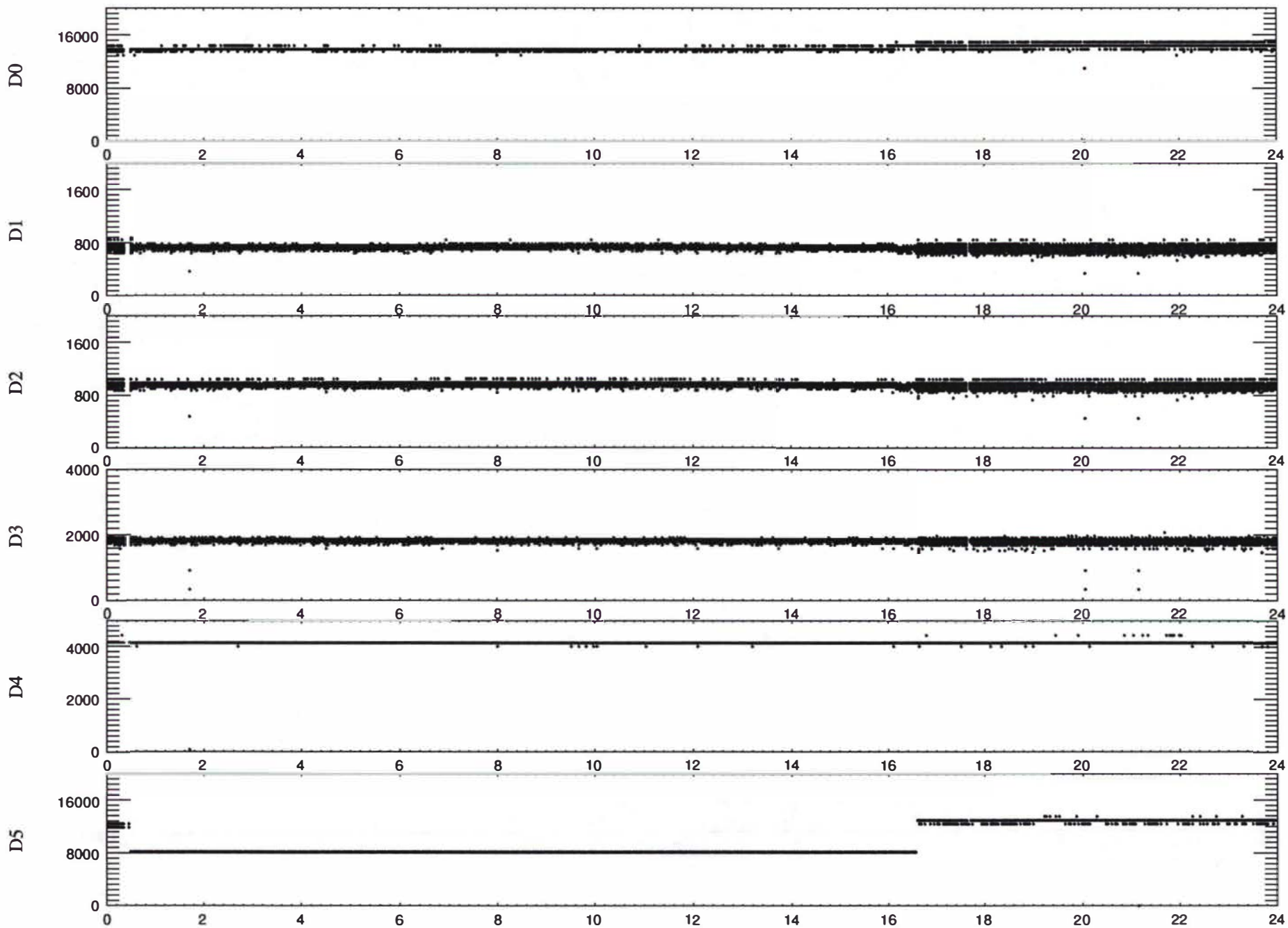
TIME, SECS



TIME, SECS

B# 21

HUS 2B COUNTS / SEC EDR day 119, year 1998 to day 119, year 1998 8/18/98



From RICHARDSON@fender.msfc.nasa.gov Fri May 1 10:16:21 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA25701; Fri, 1 May 1998 10:16:21 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA02384; Fri, 1 May 1998 10:16:18 -0700
Date: Fri, 1 May 1998 12:16:20 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980501121620.2220102a@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6715
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6715
EVENT OF 1998 APR 30 DAY OF YEAR=120
EVENT CROSSING TIME AT BATSE     :  3887. S. OR 01:04:47.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 293.000  -67.000
BATSE PEAK COUNTING RATE:  11000    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 30/ 4/  98 IS:
RA=  149.500 DEC=   12.863 DIST=    5.021 AU
BATSE-ULYSSES DISTANCE =  751110841. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 59.26 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1280.62 SECS.
CROSSING TIME AT ULYSSES    IS  5168. S. OR   01:26:07 +/-  443.32 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 30/ 4/  98 IS:
RA=   40.139 DEC=   15.518 DIST=    2.466 AU
MARS-BATSE DISTANCE =  368844416. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 69.07 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  439.50 SECS.
CROSSING TIME AT MARS       IS  4326. S. OR   01:12:06 +/-  206.19 SECONDS

                BATSE BURST TRIGGER
NO.: 6715

TIME: TJD=0933 SECONDS=3887

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=45.8   AZIMUTH=112.3  ERROR=3.5   DEGREES

COMMENTS:
GRB. SHORT PULSE WITH STRUCTURE. DURATION APPROX. = 0.6 SEC.
VISIBLE ABOVE 300KEV.

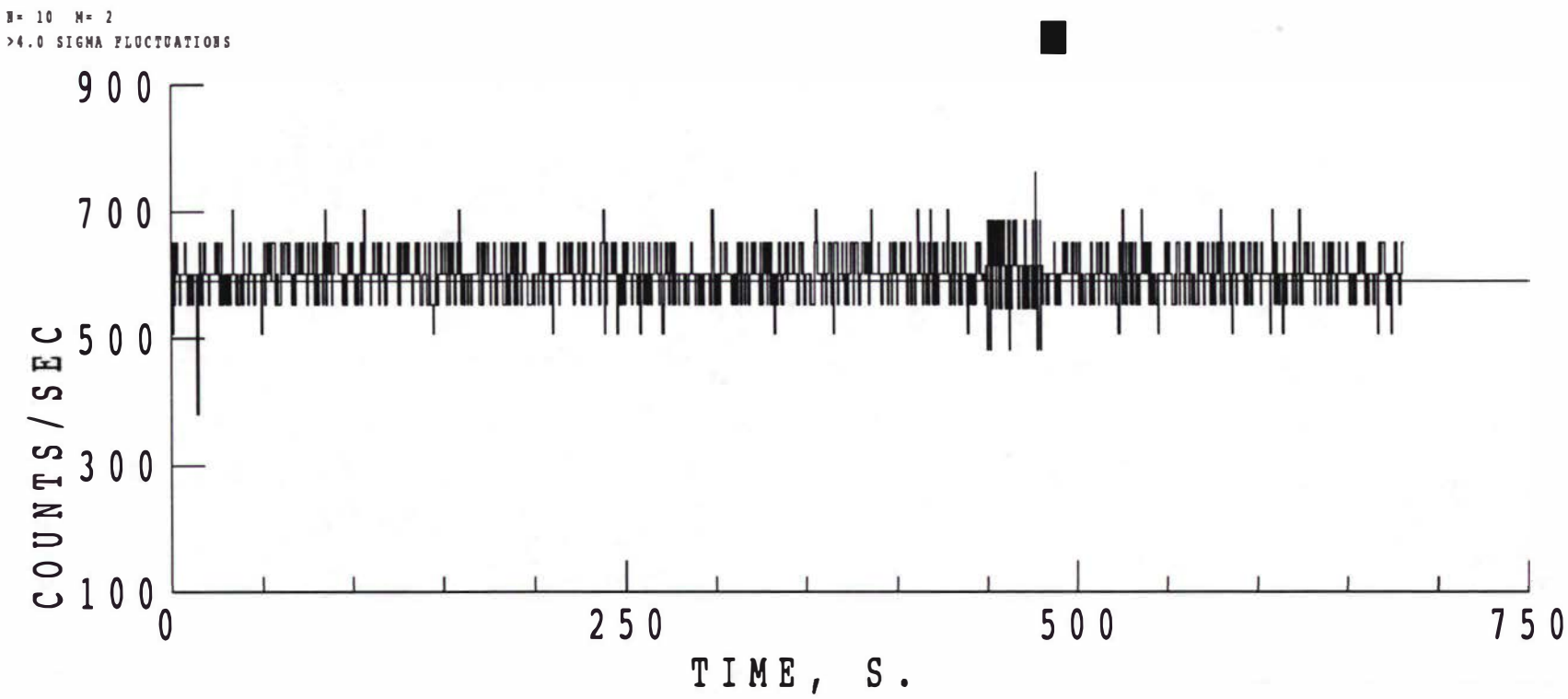
 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6715   980430   10933   03887    11000   293   -67    .6
```

BATSE BURST# 6715

ULYSSES RT 1/ 5/98

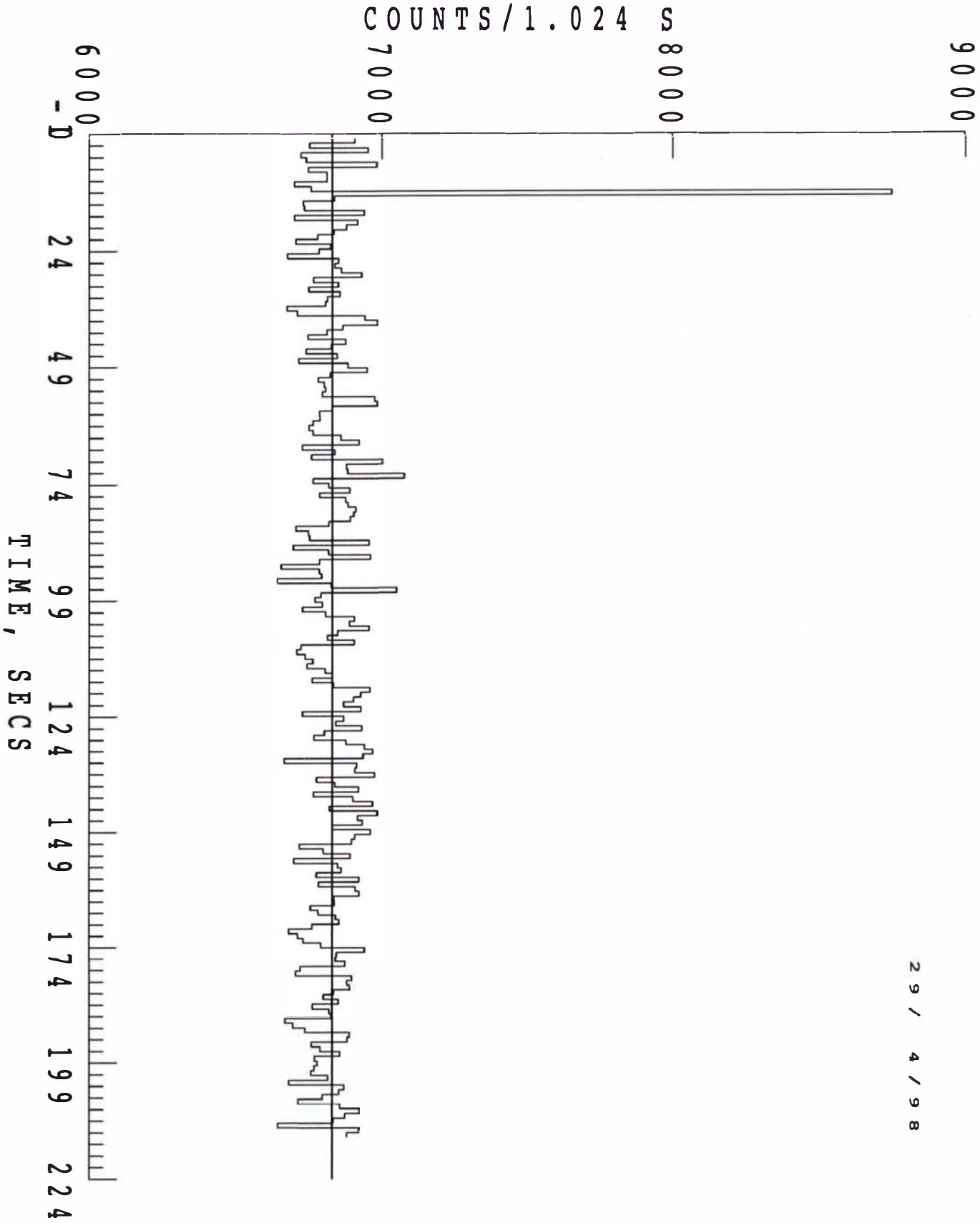
30/ 4/98 4935.209 s

0- 0 keV



BACODINE 6715 30/04/98 3876.577

25- 100 keV



29/ 4/98

From RICHARDSON@fender.msfc.nasa.gov Fri May 1 10:17:34 1998
Return-Path: <RICHARDSON@fender.msfc.nasa.gov>
Received: from sunspot.ssl.berkeley.edu by apollo.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA25722; Fri, 1 May 1998 10:17:33 -0700
From: RICHARDSON@fender.msfc.nasa.gov
Received: from FENDER.MSFC.NASA.GOV by sunspot.ssl.berkeley.edu (SMI-8.6/SMI-SVR4)
id KAA02412; Fri, 1 May 1998 10:17:30 -0700
Date: Fri, 1 May 1998 12:17:32 -0500 (CDT)
To: khurley@sunspot.ssl.berkeley.edu
Message-Id: <980501121732.2220102a@fender.msfc.nasa.gov>
Subject: Crossing Windows for BATSE Burst 6716
Content-Length: 1135
X-Lines: 26
Status: RO

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

BATSE BURST #     6716
EVENT OF 1998 APR 30 DAY OF YEAR=120
EVENT CROSSING TIME AT BATSE      : 28910. S. OR 08:01:50.0
COORDINATES ARE   0.000   0.000       6800. (RA, DEC, DIST.)
BURST ARRIVAL DIRECTION: 241.000   29.000
BATSE PEAK COUNTING RATE:   4500    C/S

EVENT CROSSING TIME AT ULYSSES    WILL BE FOUND
INTERPOLATED POSITION OF ULYSSES ON 30/ 4/  98 IS:
RA=  149.486 DEC=   12.856 DIST=    5.024 AU
BATSE-ULYSSES DISTANCE =  751601482. KM.
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 94.90 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -213.96 SECS.
CROSSING TIME AT ULYSSES    IS 28696. S. OR   07:58:16 +/-  480.43 SECONDS

EVENT CROSSING TIME AT MARS       WILL BE FOUND
POSITION OF MARS ON 30/ 4/  98 IS:
RA=   40.139 DEC=   15.518 DIST=    2.466 AU
MARS-BATSE DISTANCE =  368844416. KM.
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 48.87 DEG.
LIGHT TRAVEL TIME ALONG PROJECTED PATH=  809.31 SECS.
CROSSING TIME AT MARS       IS 29719. S. OR   08:15:19 +/-  173.18 SECONDS

                BATSE BURST TRIGGER
NO.: 6716

TIME: TJD=0933 SECONDS=28910

TYPE: BURST                    SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE:       SIGMA

INTENSITY:          COUNTS/CM2

LOCATION: ZENITH=106.3  AZIMUTH=205.5  ERROR=4.3   DEGREES

COMMENTS:
GRB. TWO SOFT PULSES WITH STRUCTURE. TOTAL DURATION APPROX. = 70 SEC.
NOT VISIBLE ABOVE 300KEV.


 BATSE #   Date     TJD     SoD   Max ct/s   RA   Dec  Dur (s)
   6716   980430   10933   28910     4500   241   +29     70
```

BATSE BURST# 6716

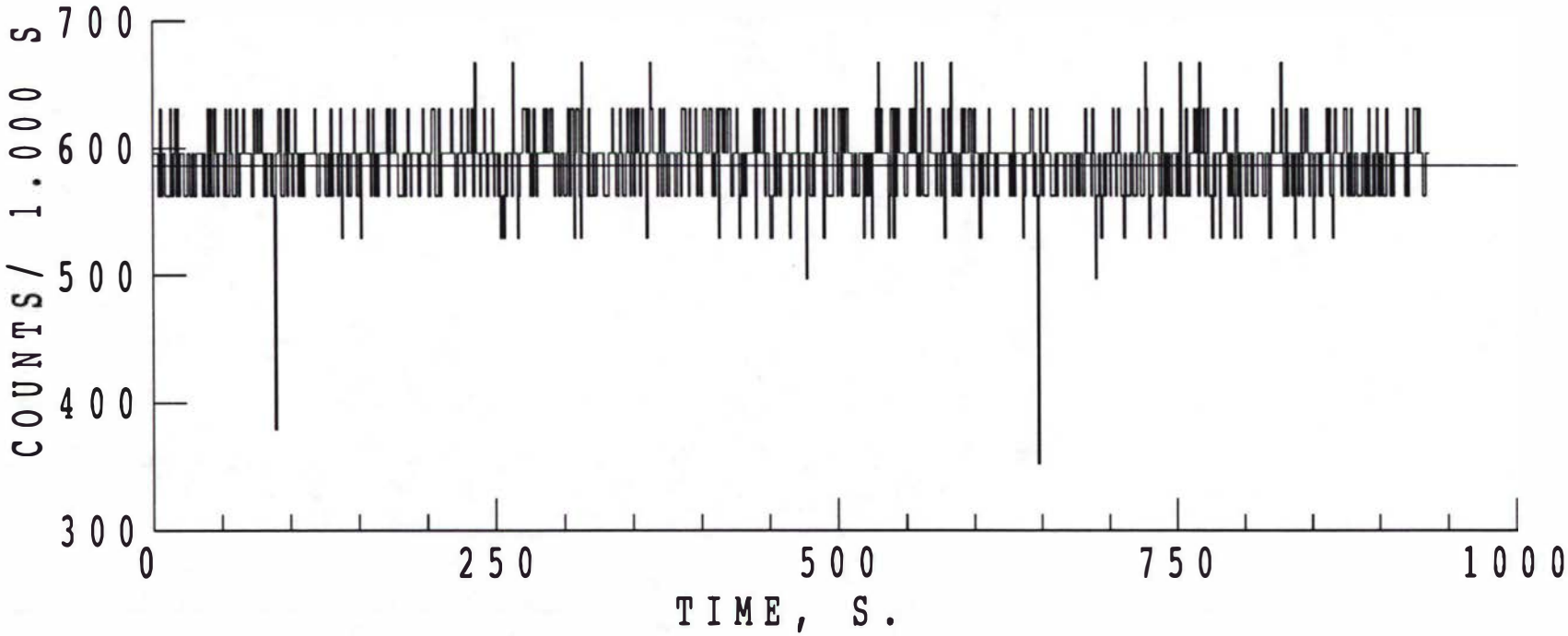
ULYSSES RT 1/ 5/98

30/ 4/98 28224.453 s

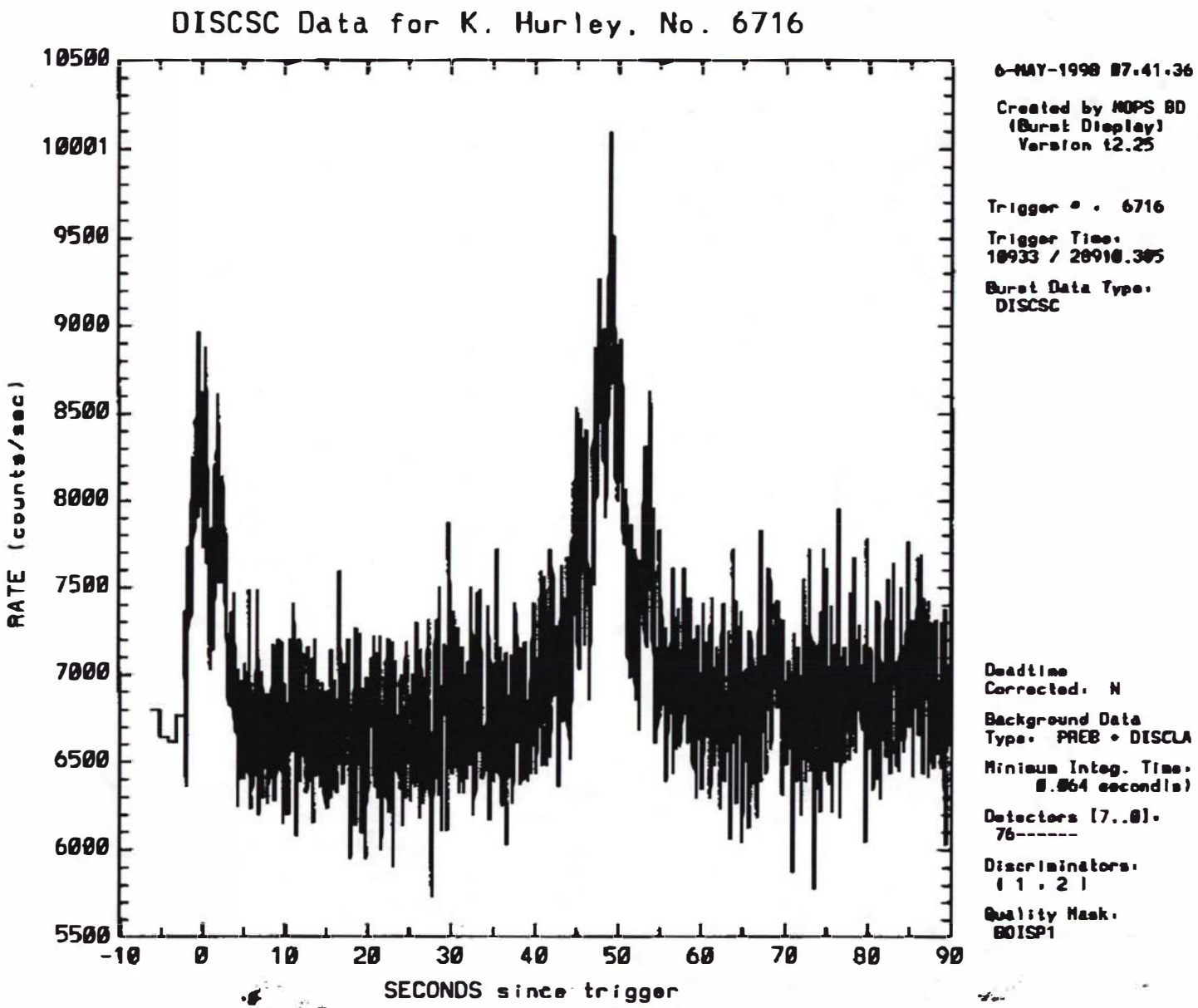
0- 0 keV

N= 10 M=10
>4.0 SIGMA FLUCTUATIONS

N= 10 M= 2
>4.0 SIGMA FLUCTUATIONS



1


DISCSC Data for K. Hurley, No. 6716
RATE (counts/sec)
10500
10001
9500
9000
8500
8000
7500
7000
6500
6000
5500
-10
0
10
20
30
40
50
60
70
80
90
SECONDS since trigger
6-MAY-1998 07:41:36
Created by MOPS BD
(Burst Display)
Version t2.25
Trigger # : 6716
Trigger Time:
10933 / 28910.305
Burst Data Type:
DISCSC
Deadtime
Corrected: N
Background Data
Type: PREB + DISCLA
Minimum Integ. Time:
0.064 seconds)
Detectors [7..0]:
76------
Discriminators:
(1 , 2)
Quality Mask:
BDISP1

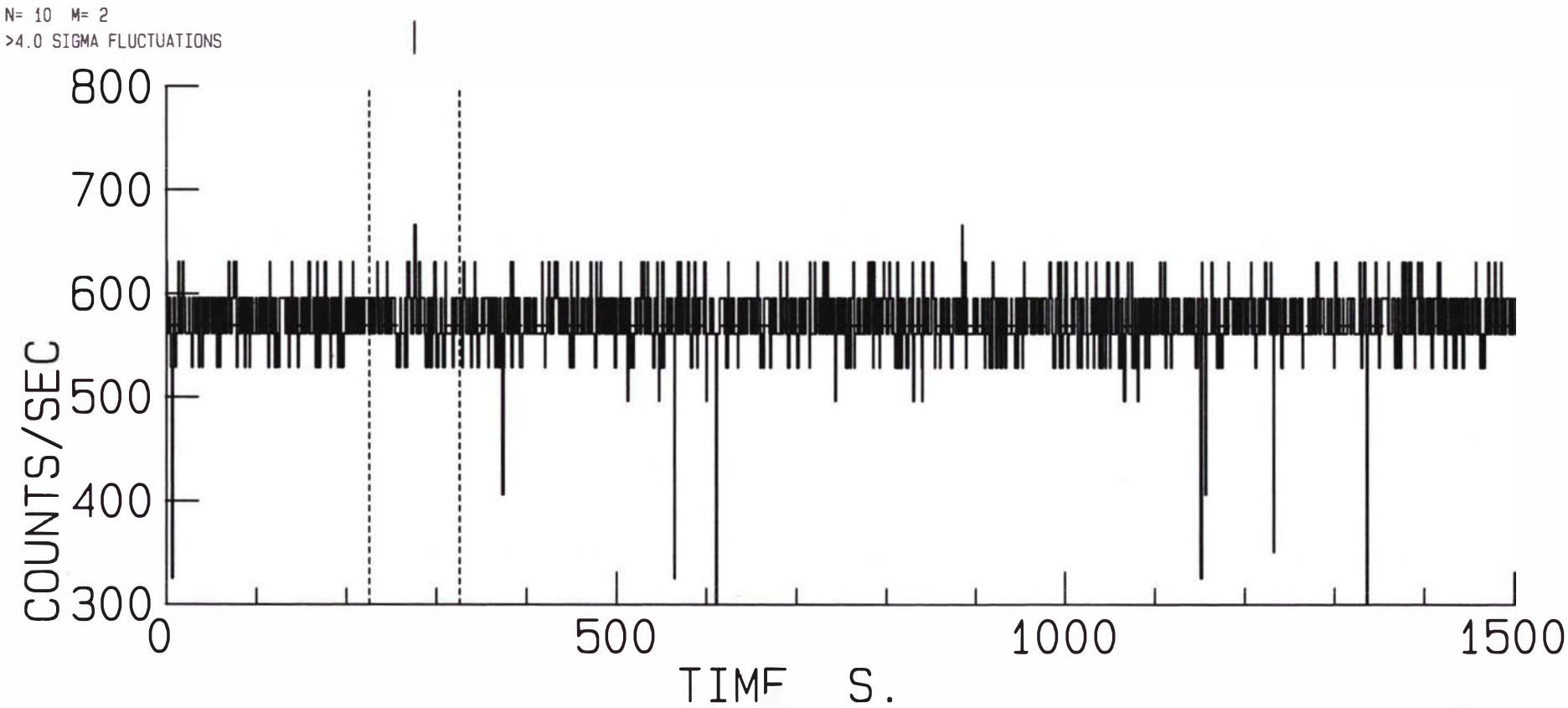
Konus 0.4 s long

ULYSSES RT

14/11/ 8

30/ 4/98 57132.766 s

22- 152 keV

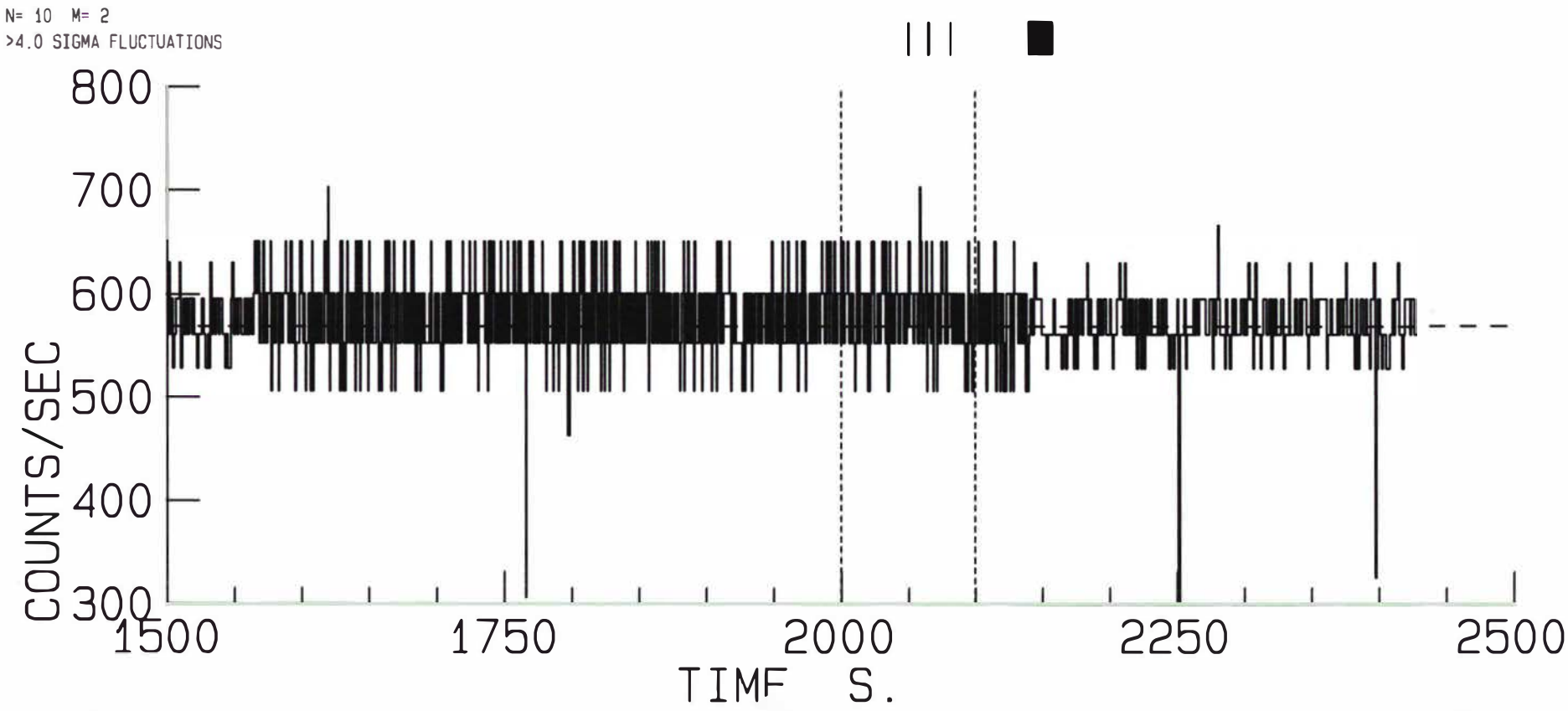


ULYSSES RT

30/ 4/98 57132.766 s

22- 152 keV

14/11/ 8

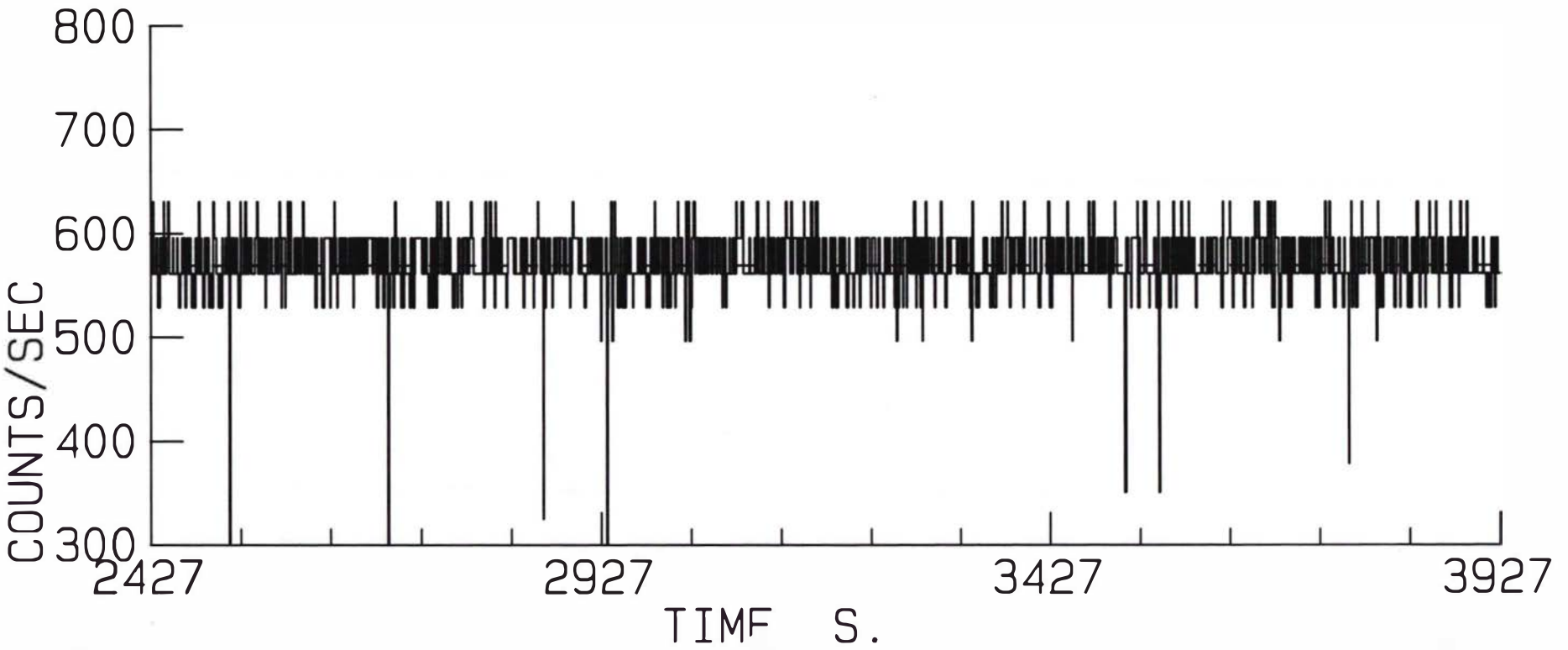


ULYSSES RT

14/11/ 8

30/ 4/98 57132.766 s

22- 152 keV

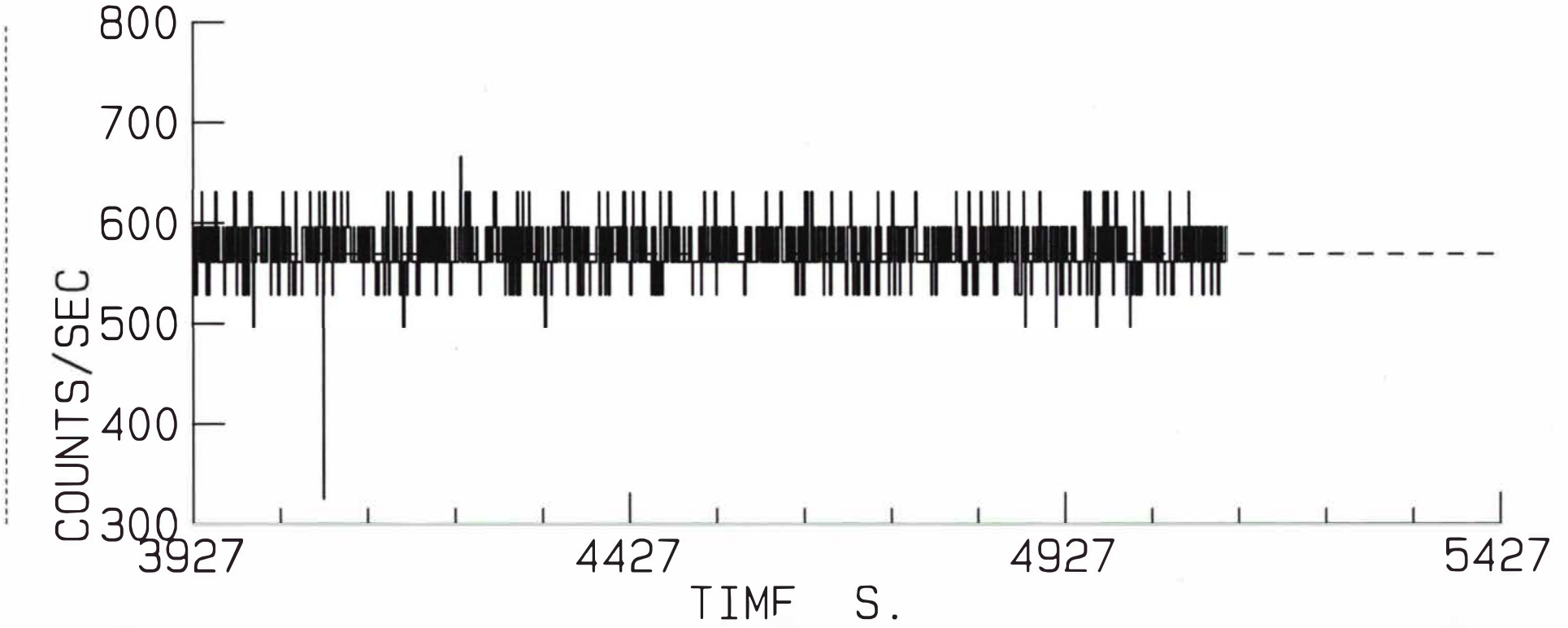


ULYSSES RT

14/11/ 8

30/ 4/98 57132.766 s

22- 152 keV



KONUS 680

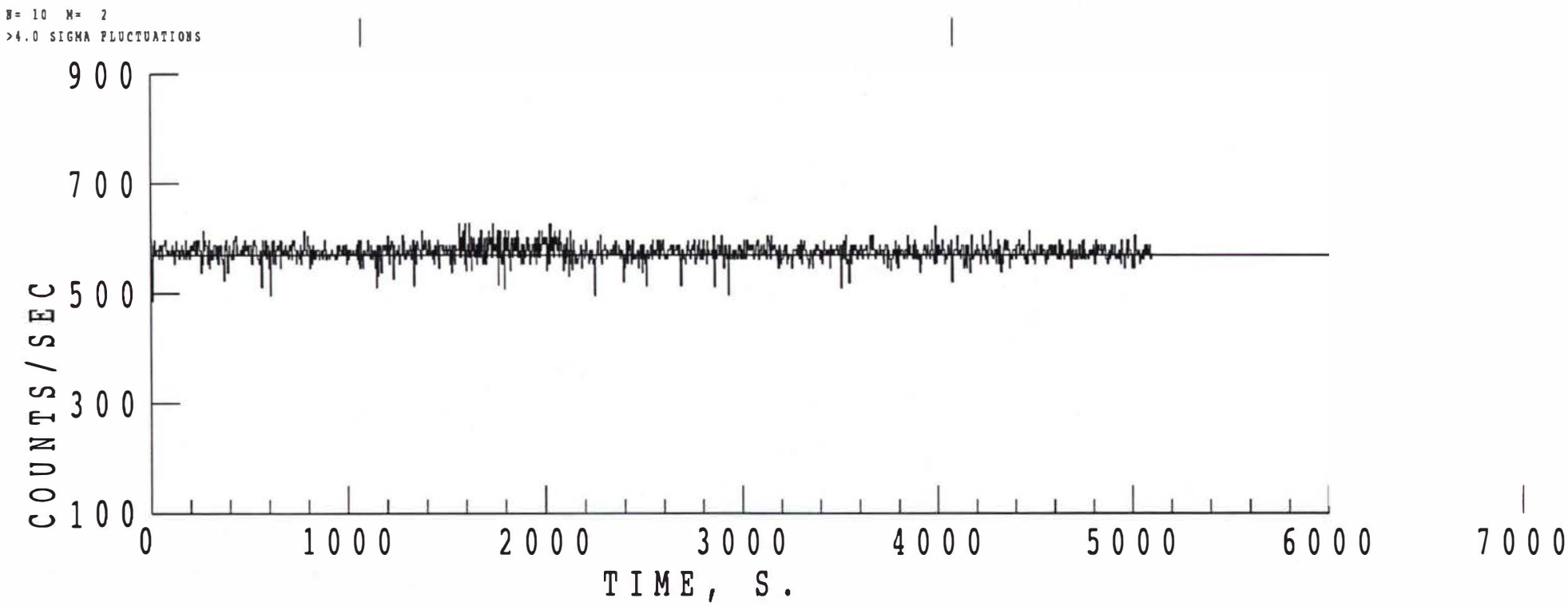
5/10/98

ULYSSES RT

30/ 4/98 57132.766 s

INTERVALS REGROUPED BY 4

0- 0 keV



From RICHARDSON@fender.msfc.nasa.gov Fri May 1 10:15:12 1998
From: RICHARDSON@fender.msfc.nasa.gov
Date: Fri, 1 May 1998 12:14:54 -0500 (CDT)
To: burst@comptel.sr.unh.edu, grobad@estsa2.estec.esa.nl,
cline@lheavx.gsfc.nasa.gov, barthelmy@lheavx.gsfc.nasa.gov,
bacodine@lheawww.gsfc.nasa.gov, scott@circe.gsfc.nasa.gov,
butterworth@lheavx.gsfc.nasa.gov, dband@ucsd.edu, dgruber@ucsd.edu,
jmatteson@ucsd.edu, PACIESAS@fender.msfc.nasa.gov,
HORACK@fender.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu,
hpark@llnl.gov
Subject: Burst Trigger Message

BATSE BURST TRIGGER

NO.: 6717

TIME: TJD=0933 SECONDS=76859

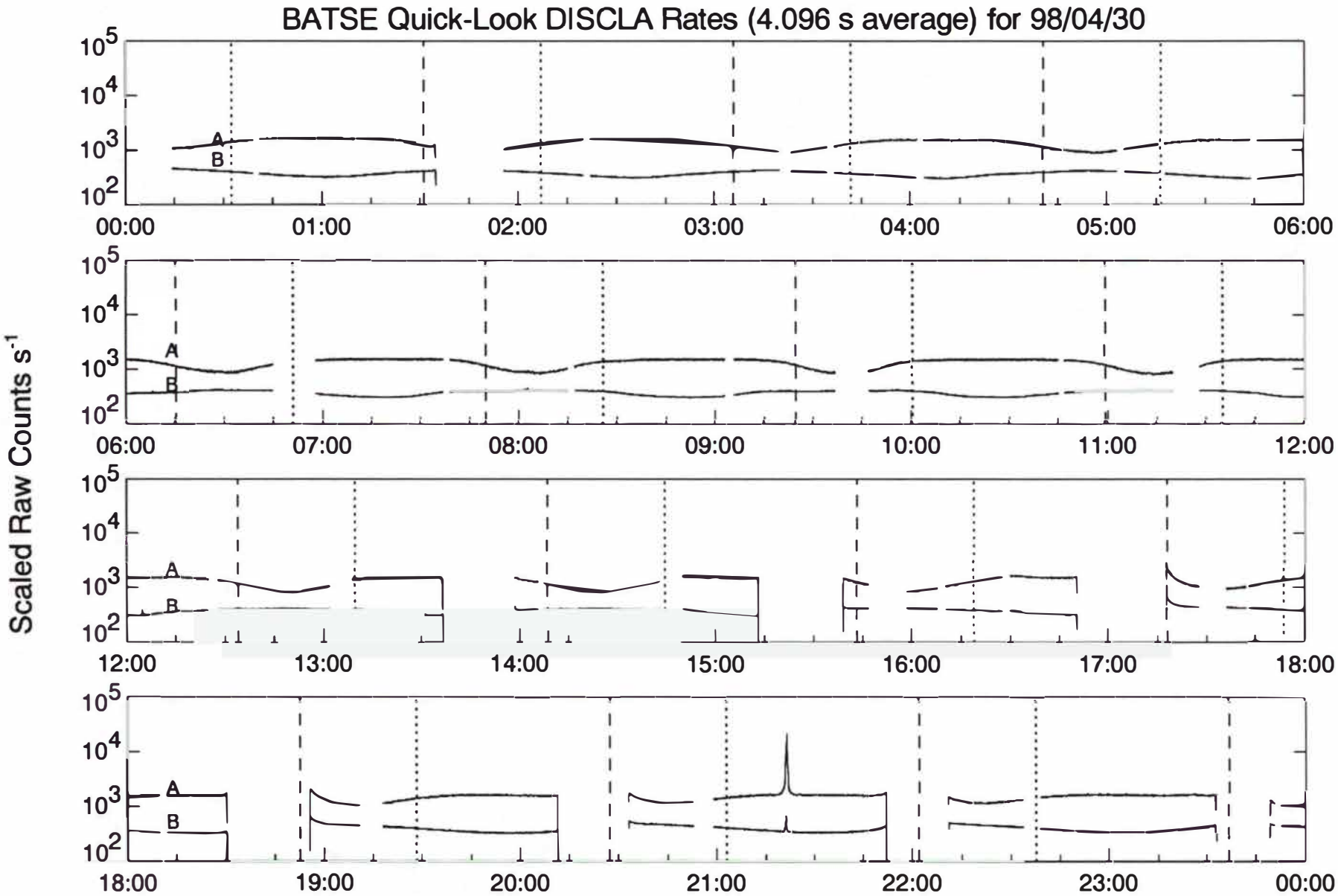
TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=124.5 AZIMUTH=25.7 ERROR=0.3 DEGREES

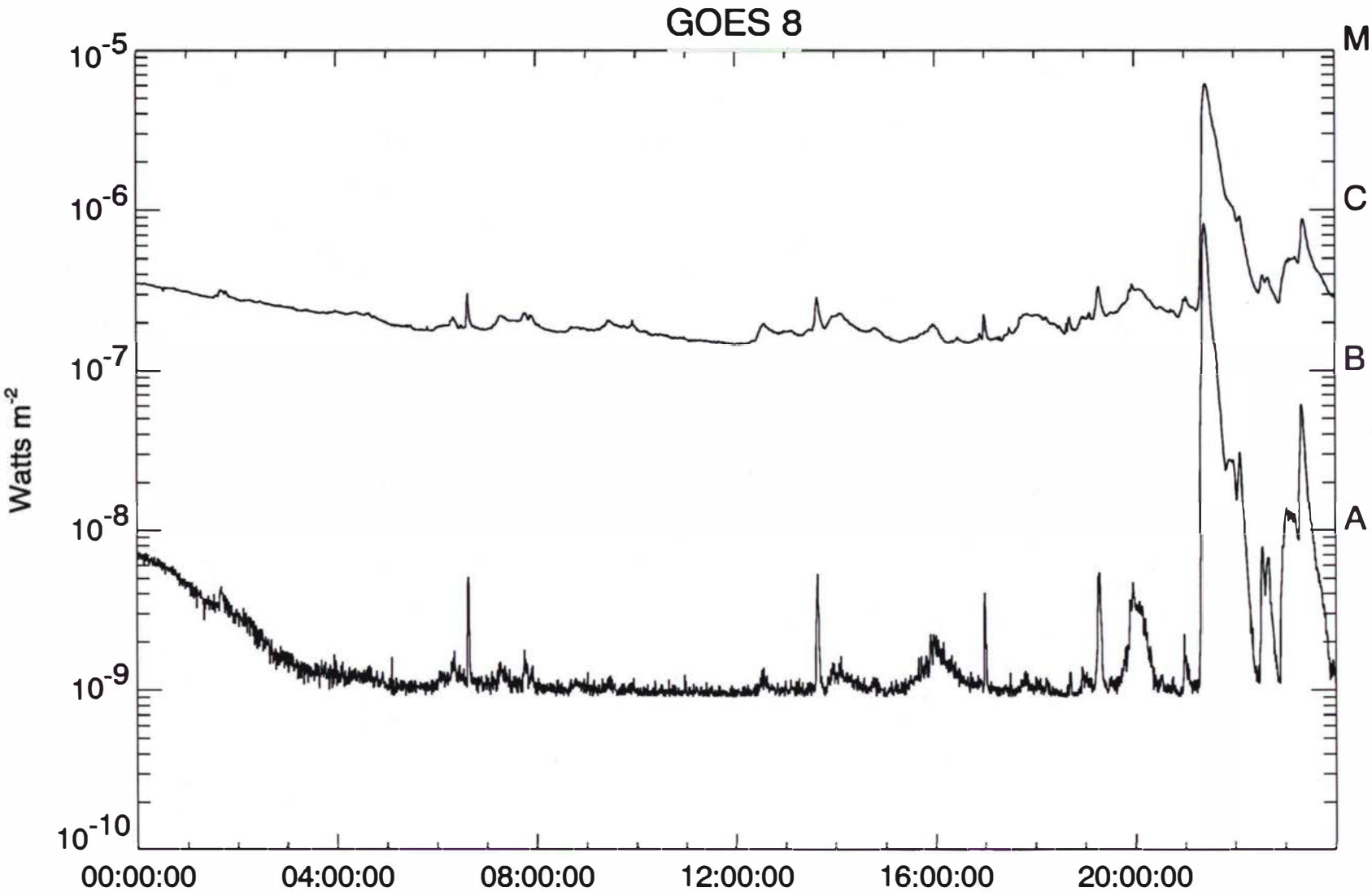
COMMENTS:
SOLAR FLARE. GOES C6.6 OPTICAL 2N. LOTS OF STRUCTURE. DURATION APPROX. =
70 SEC. NOT VISIBLE ABOVE 300KEV.



Current Time: 98/05/04, 1008 EDT
A: Channel 0 Most Sunward LAD
B: Sum Channel 0 Anti-Sunward LADs X .05

Dotted line: Day entry
Dashed line: Night entry

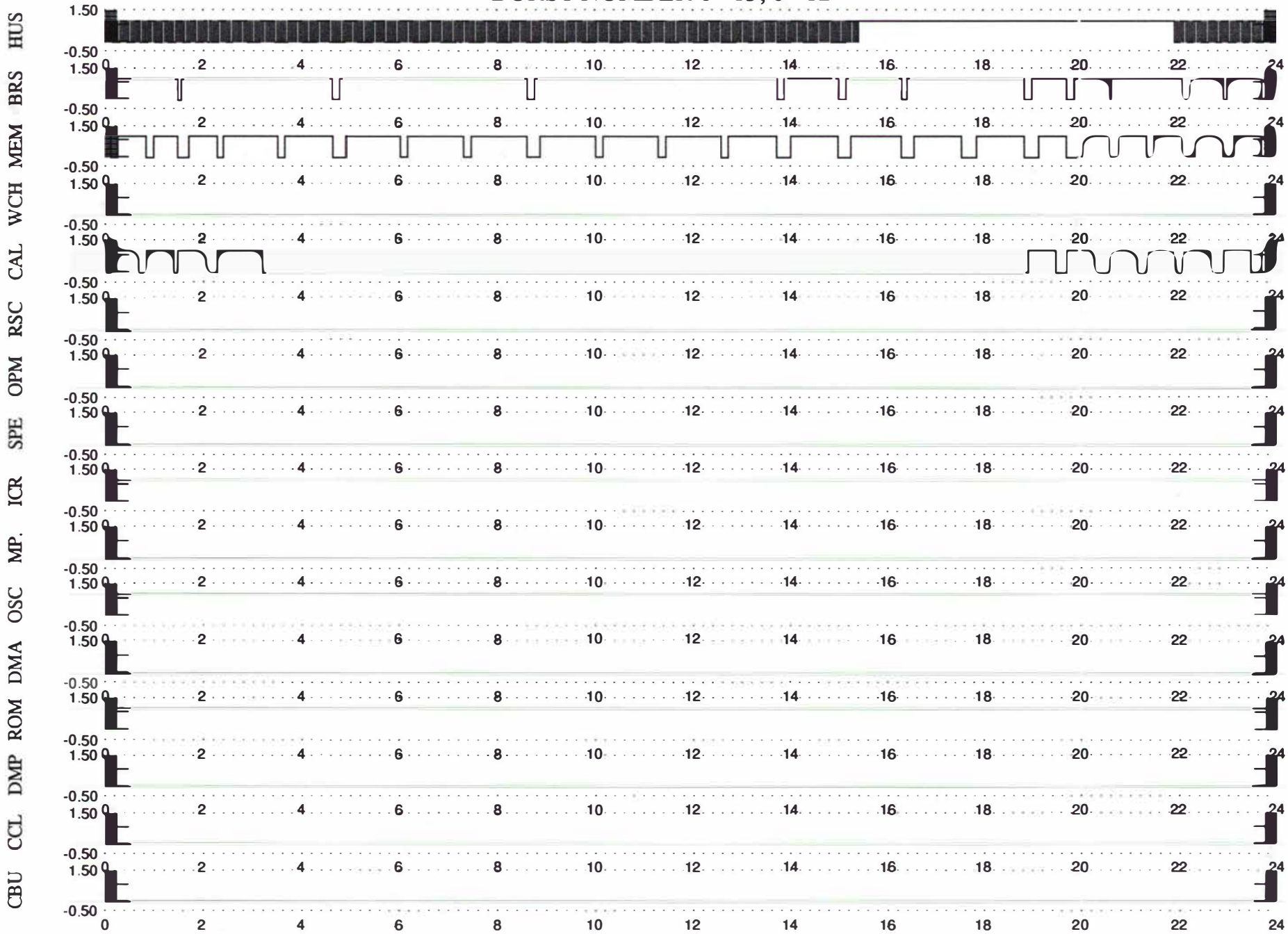
* Solar Burst Trigger
\+ Solar Flare



Data Start: 98/04/30, 0000:00 Plot created: 98/05/04, 1007
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted
2 (0.5 - 4.0 Angstroms) Background not subtracted
Sample average = 10

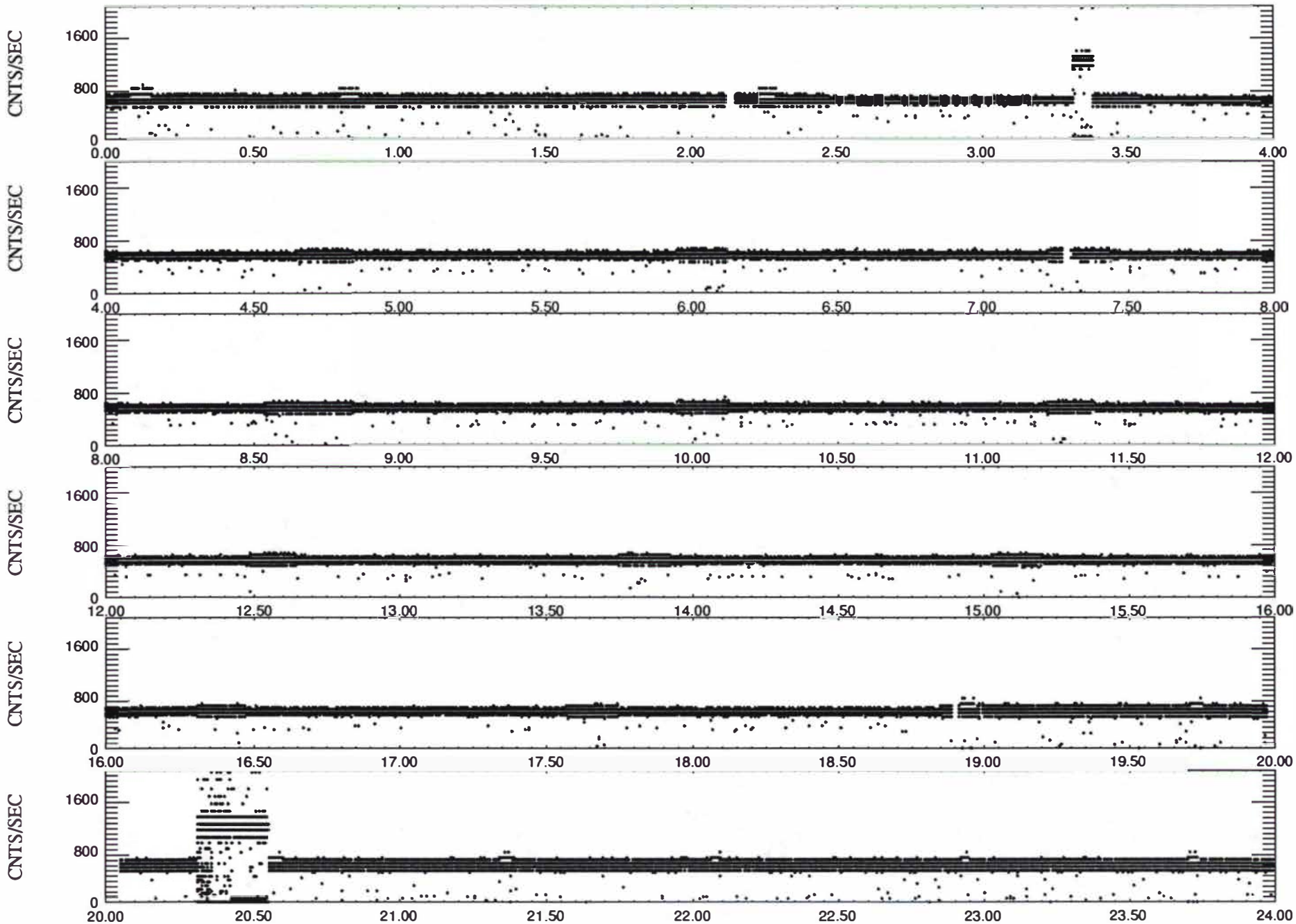
HUS MODES EDR day 120, year 1998 to day 120, year 1998 8/18/98

BURST NUMBER 6 - 15, 0 - 12



HUS 2A, MODE 1, NOT AVERAGED EDR day 120, year 1998 to day 120, year 1998 8/18/98

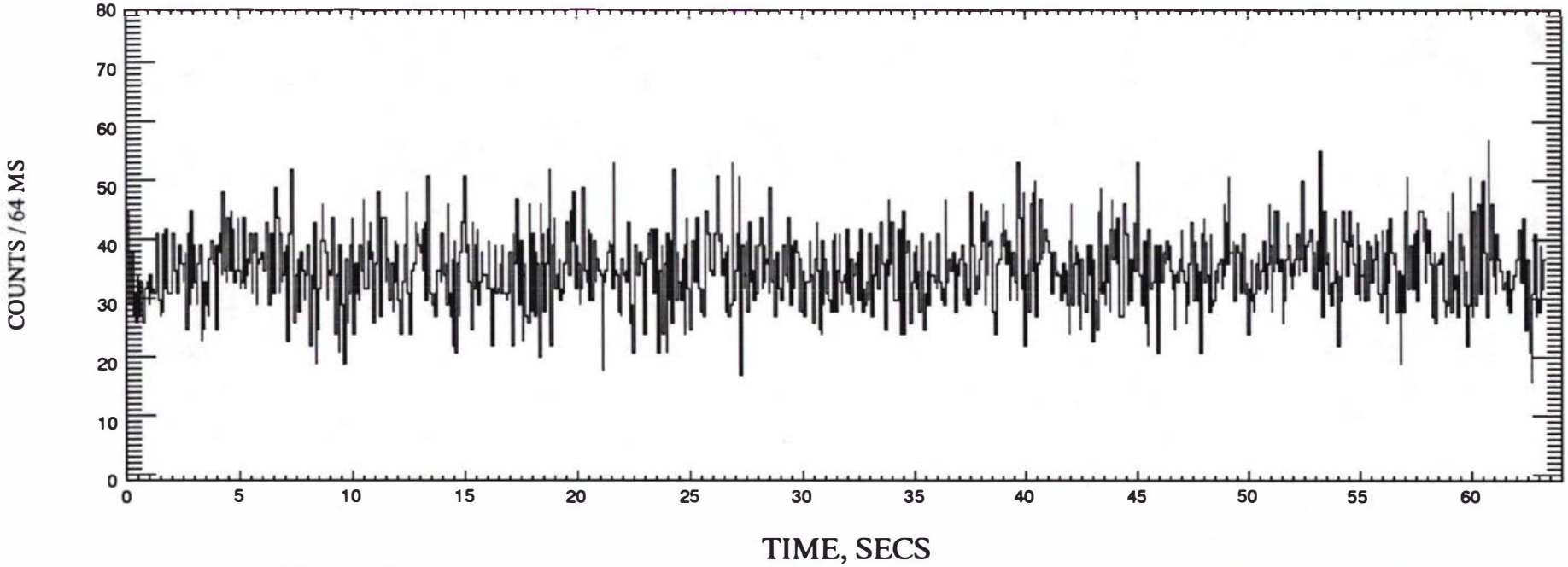
CALIBRATION DATA INCLUDED

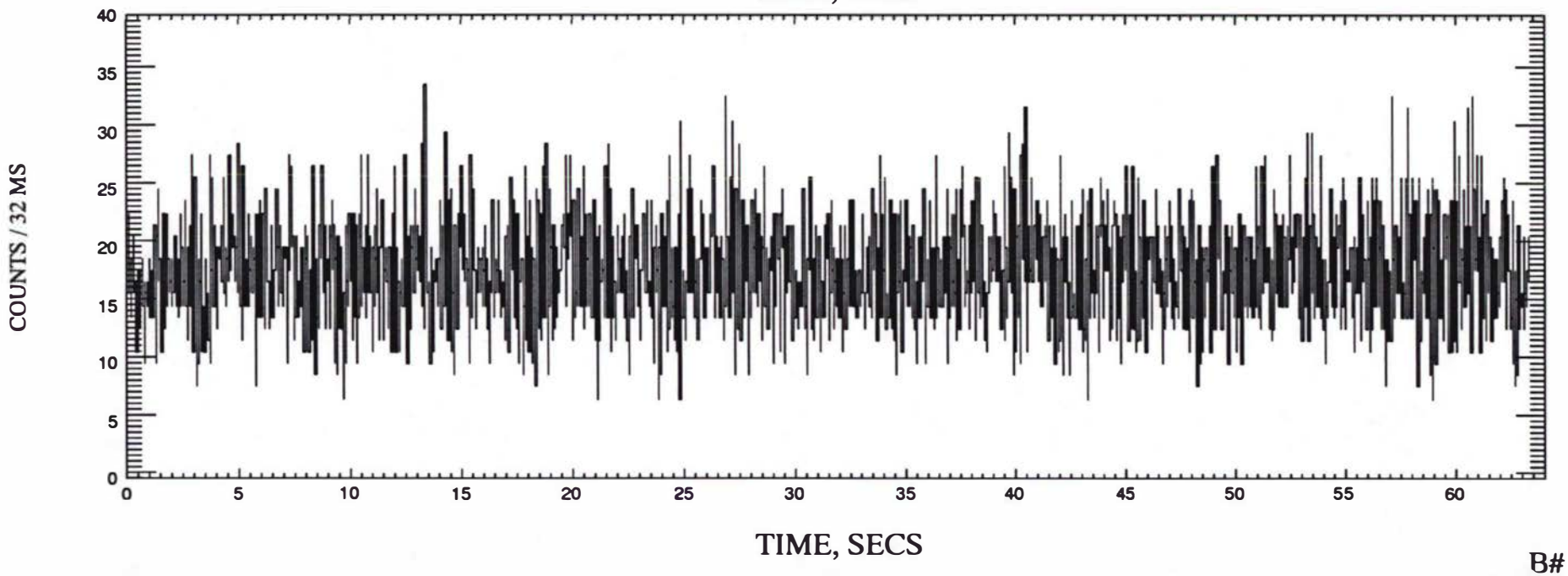


UNIV' 'AL TIME

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 6 at UT= 0.091881832547 h= 330.775 s 00:05:30.775

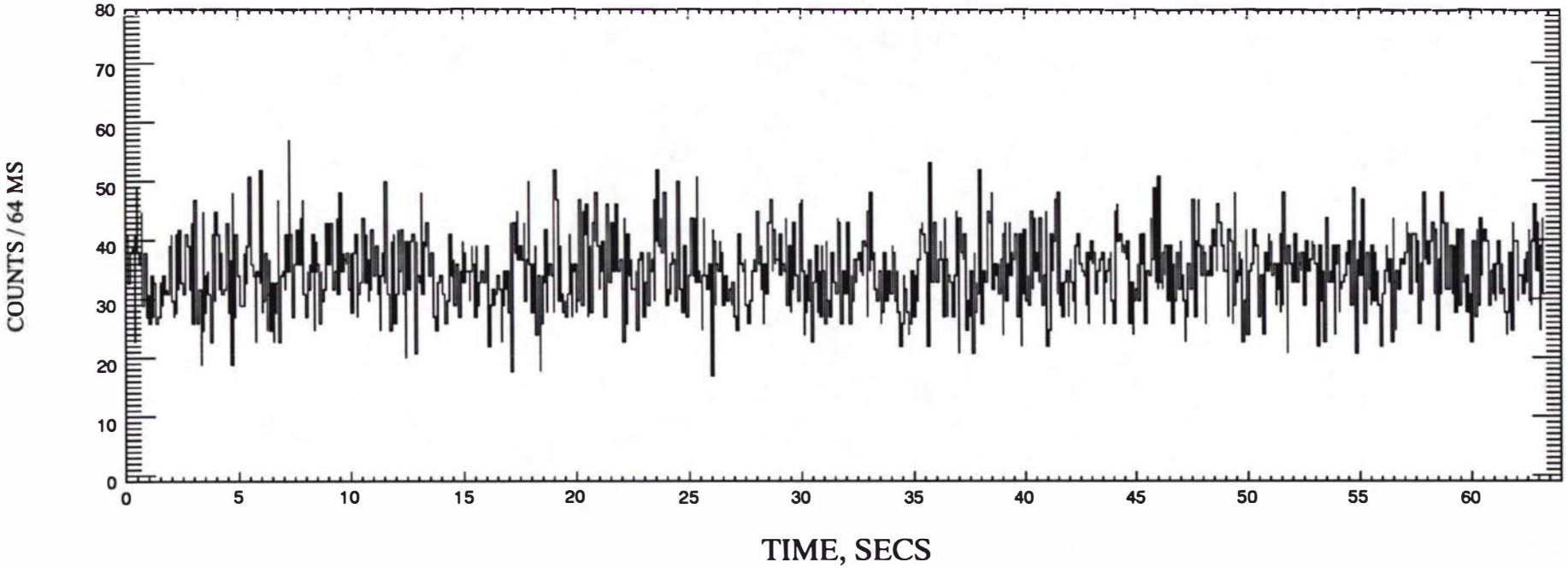


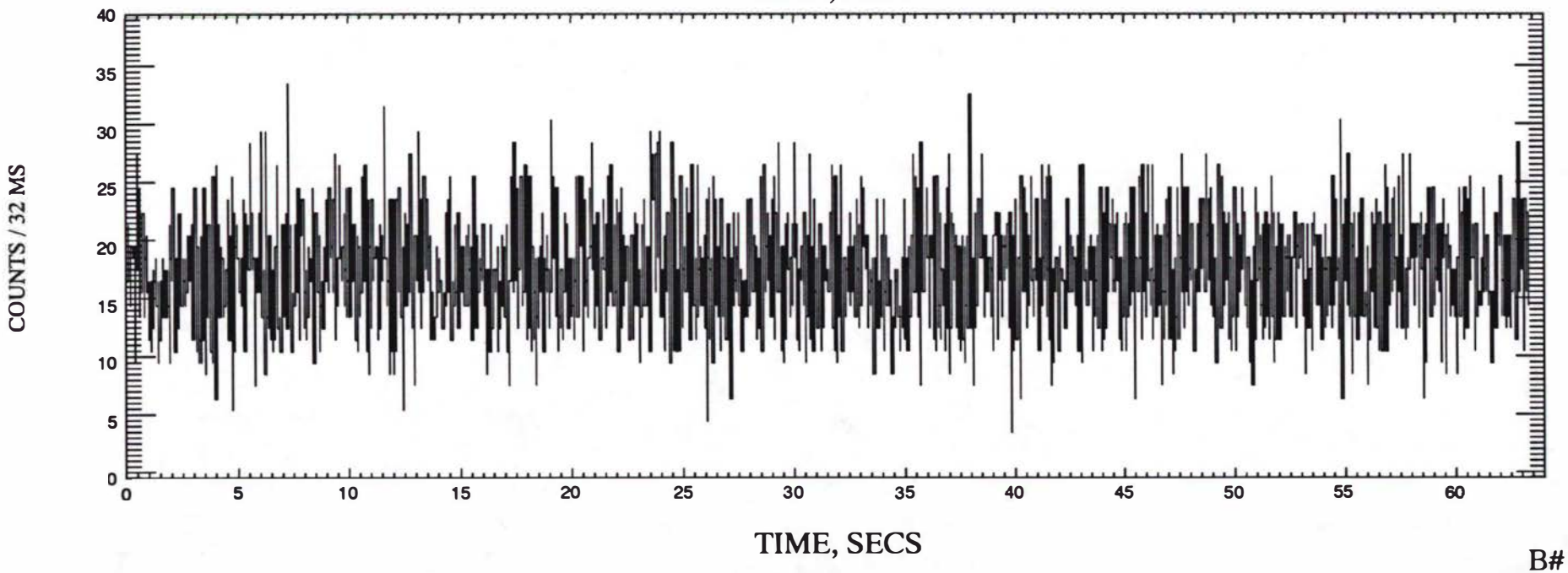


B# 1

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 7 at UT= 0.794632483588 h= 2860.677 s 00:47:40.677

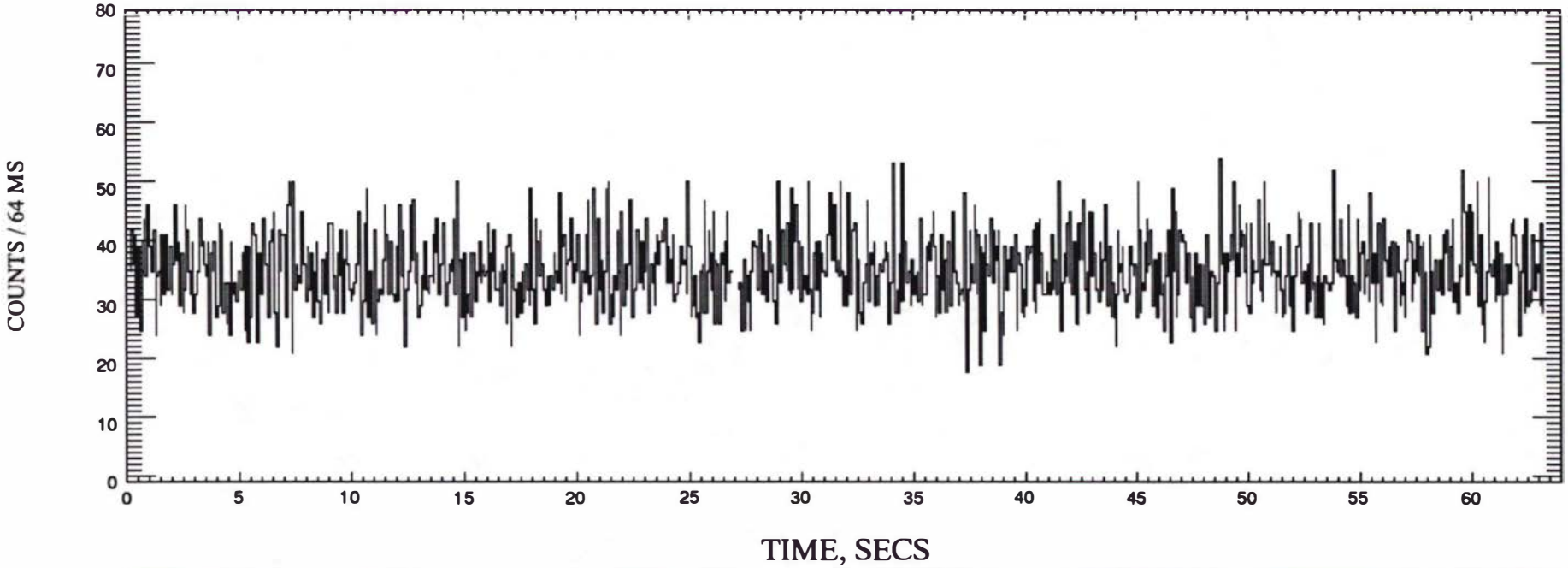


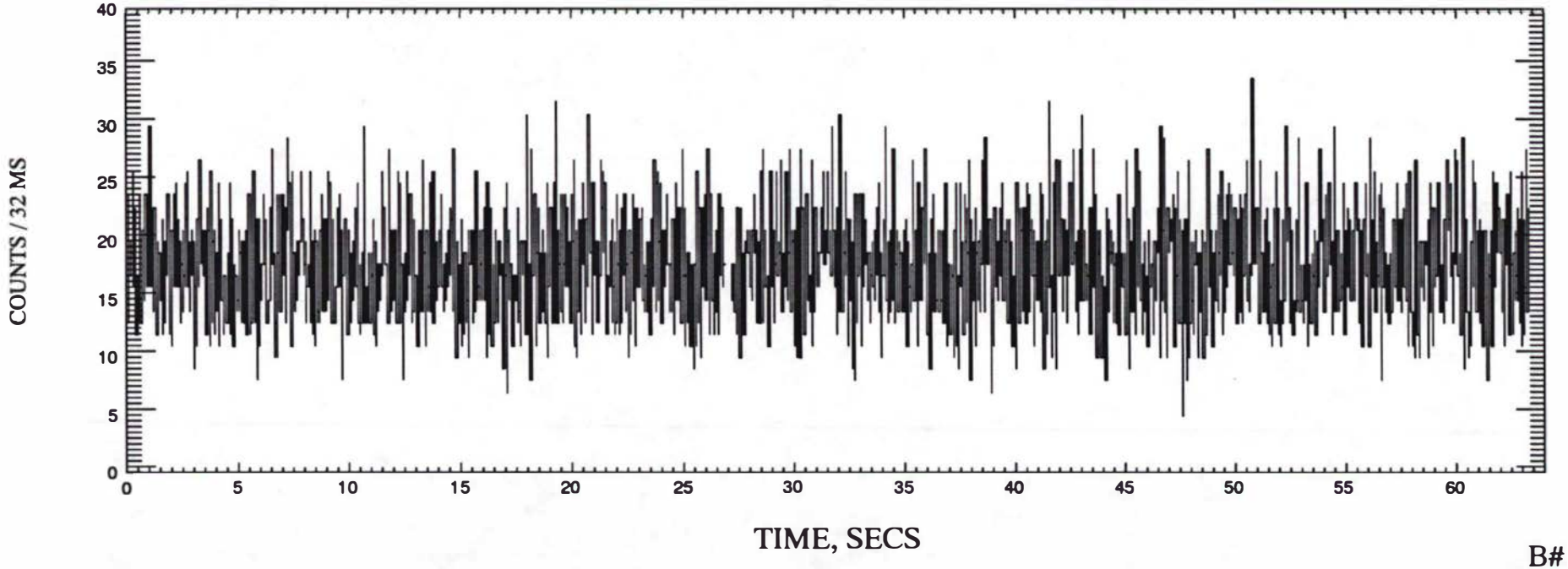


B# 2

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 8 at UT= 1.525438690186 h= 5491.579 s 01:31:31.579

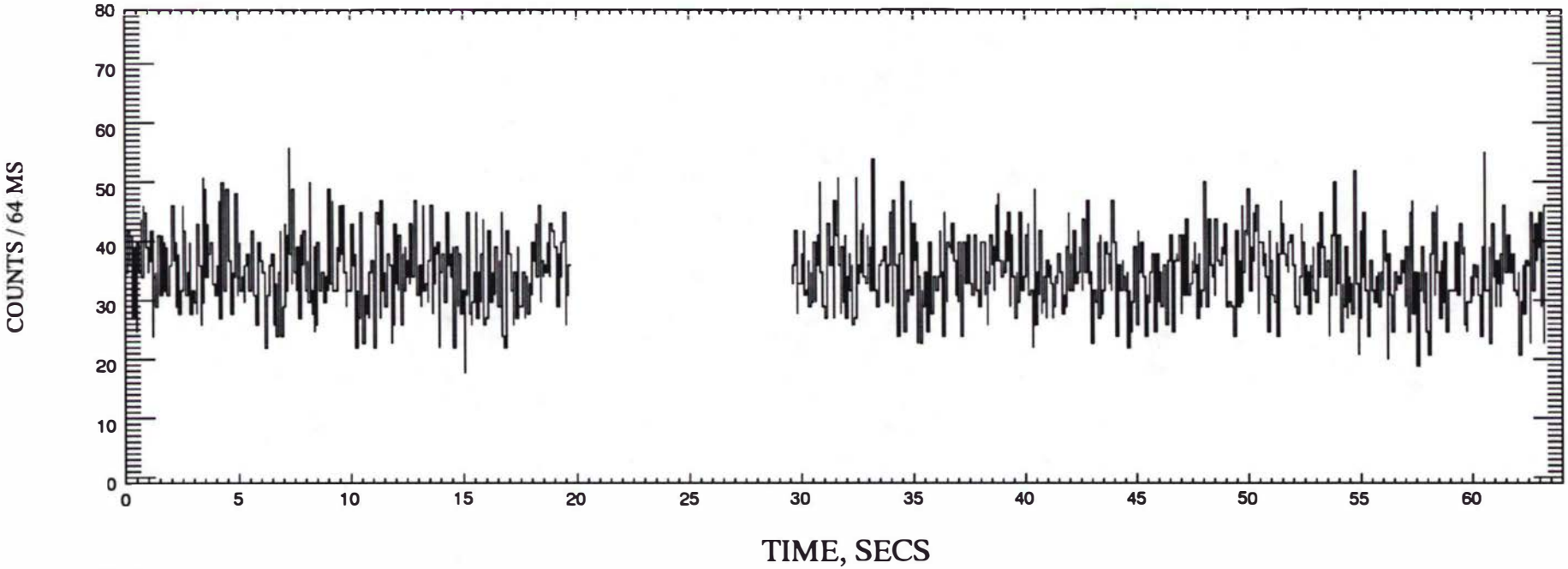


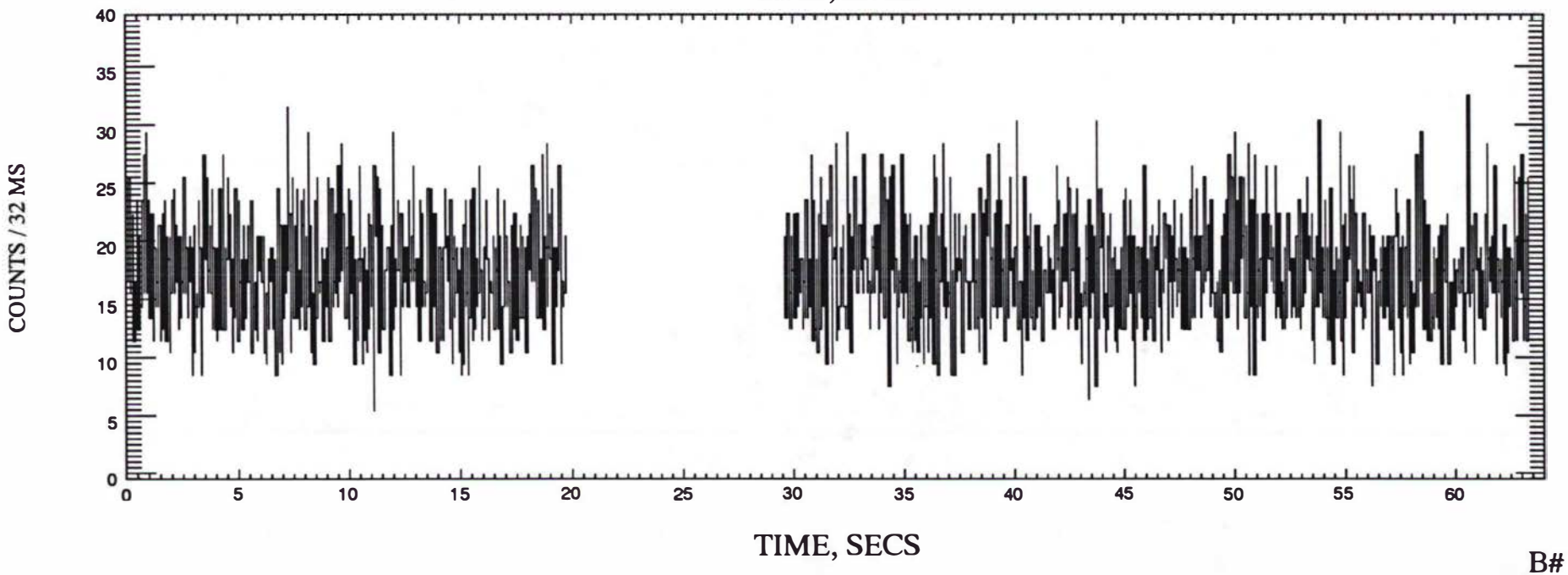


B# 3

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 9 at UT= 2.225687175327 h= 8012.474 s 02:13:32.474

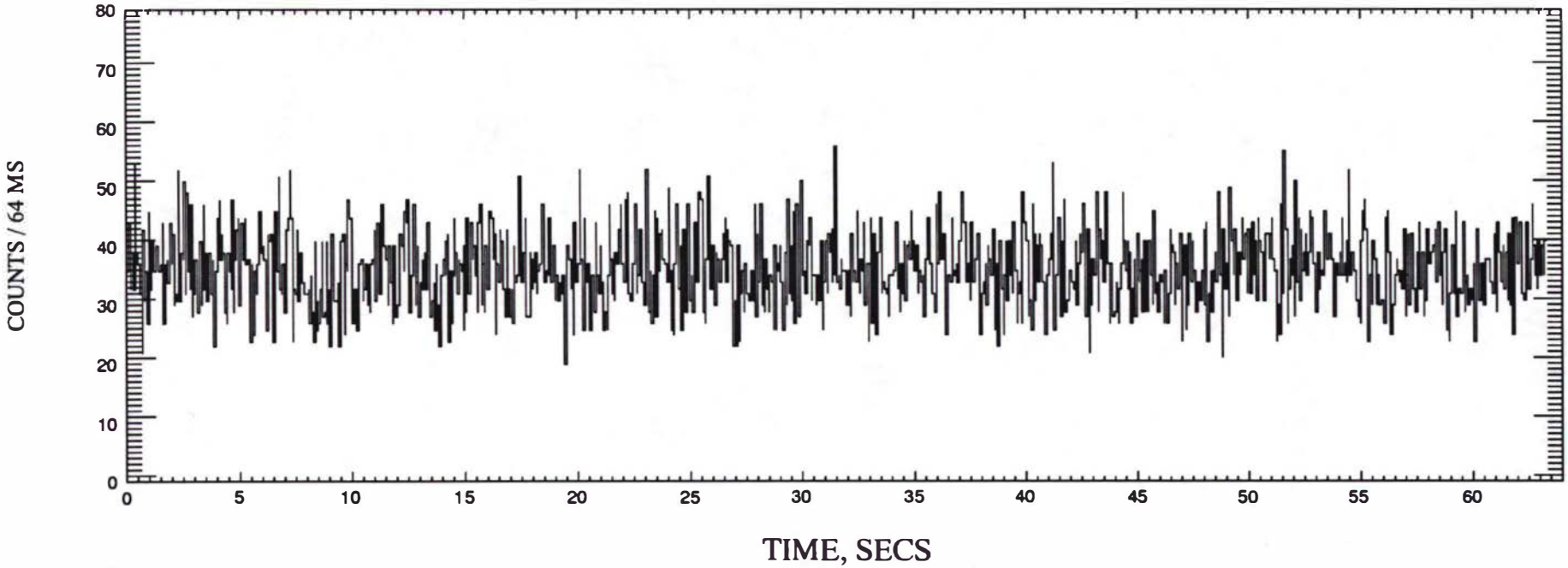


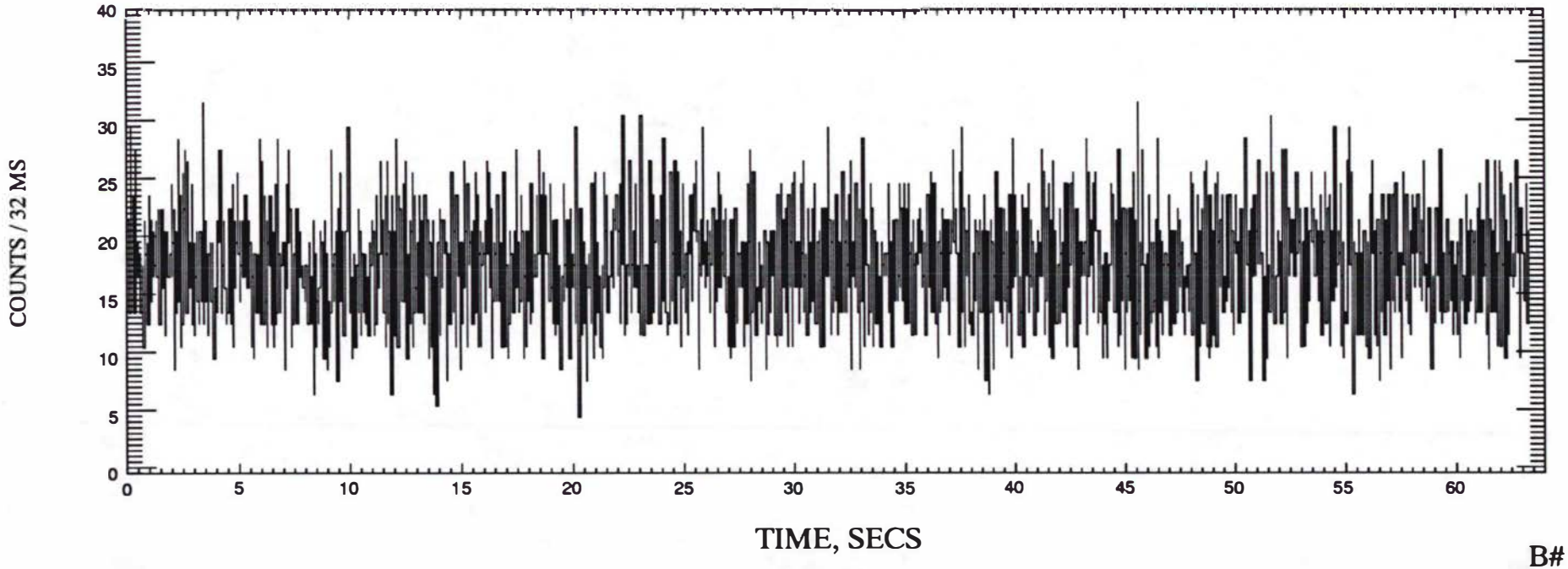


B# 4

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 10 at UT= 3.391812989977 h=12210.527 s 03:23:30.527

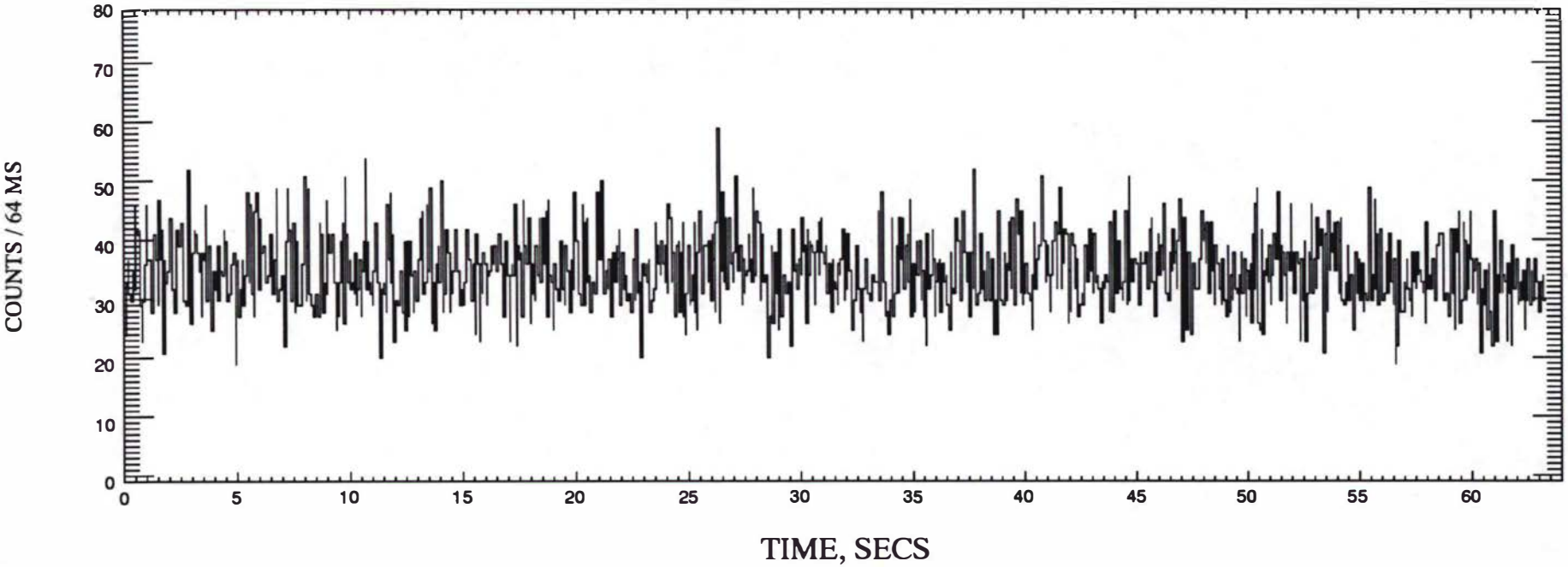


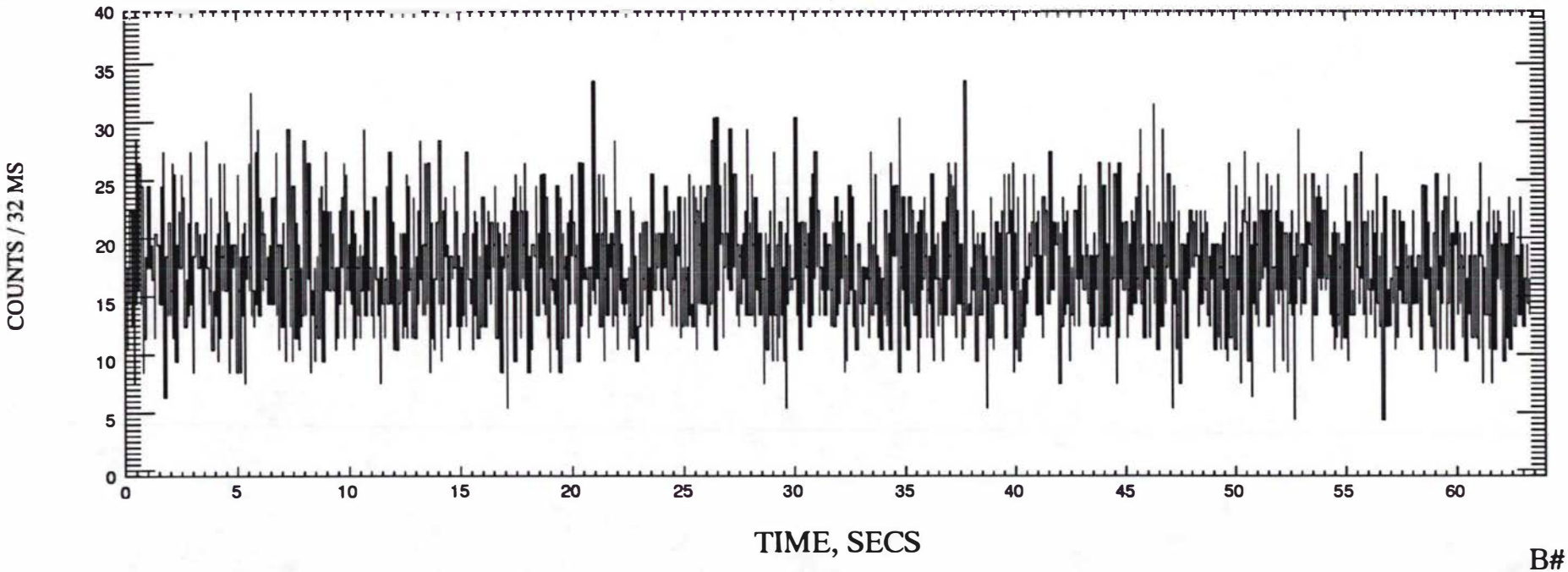


B# 5

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 11 at UT= 4.677729441325 h=16839.826 s 04:40:39.826

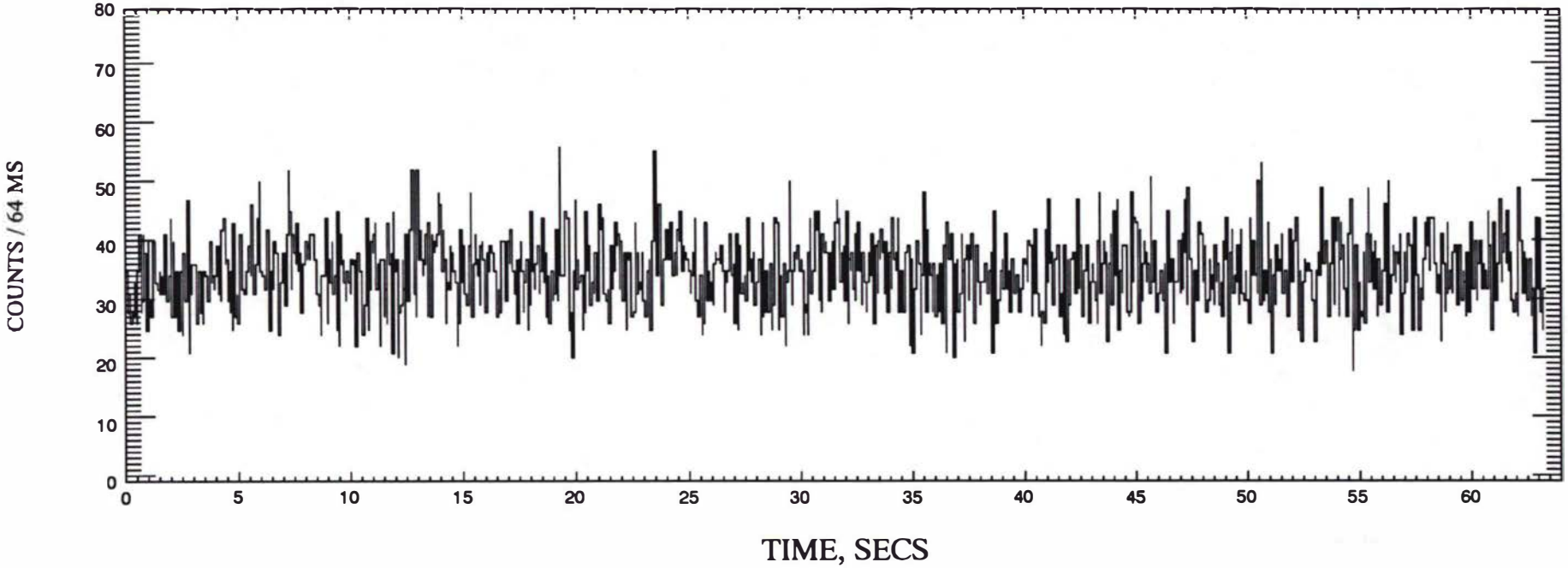


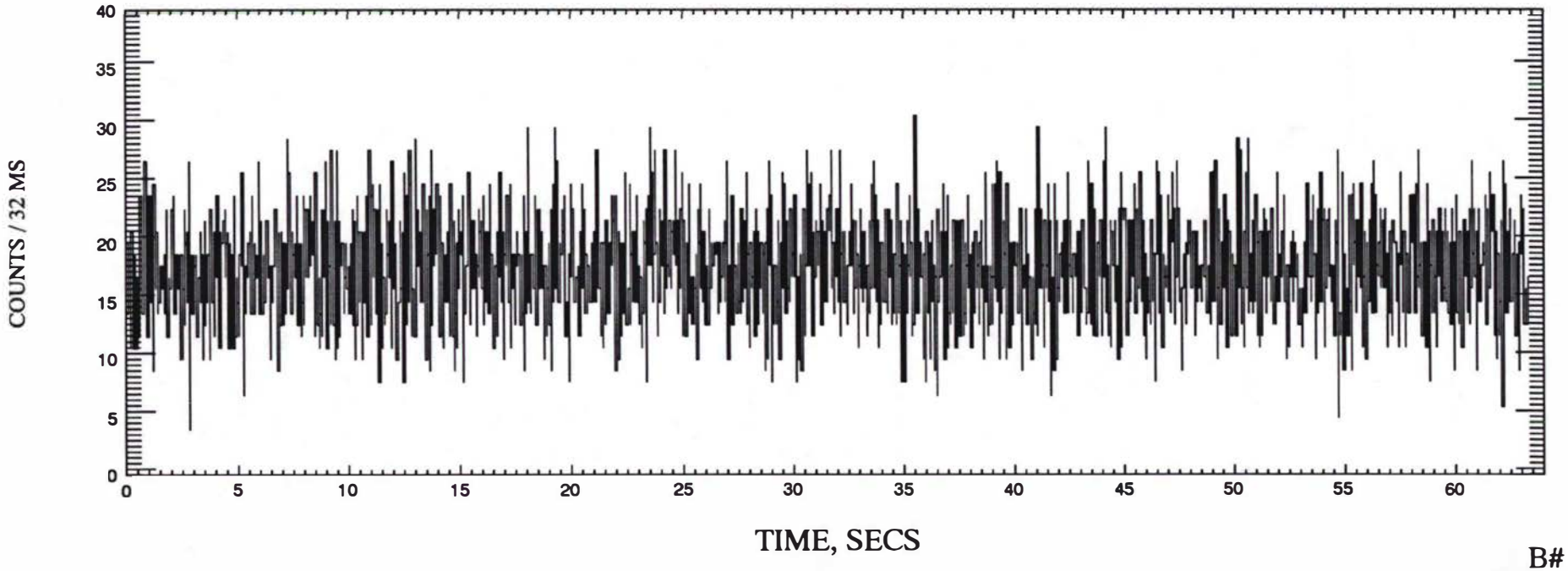


B# 6

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 12 at UT= 5.960622893439 h=21458.242 s 05:57:38.242

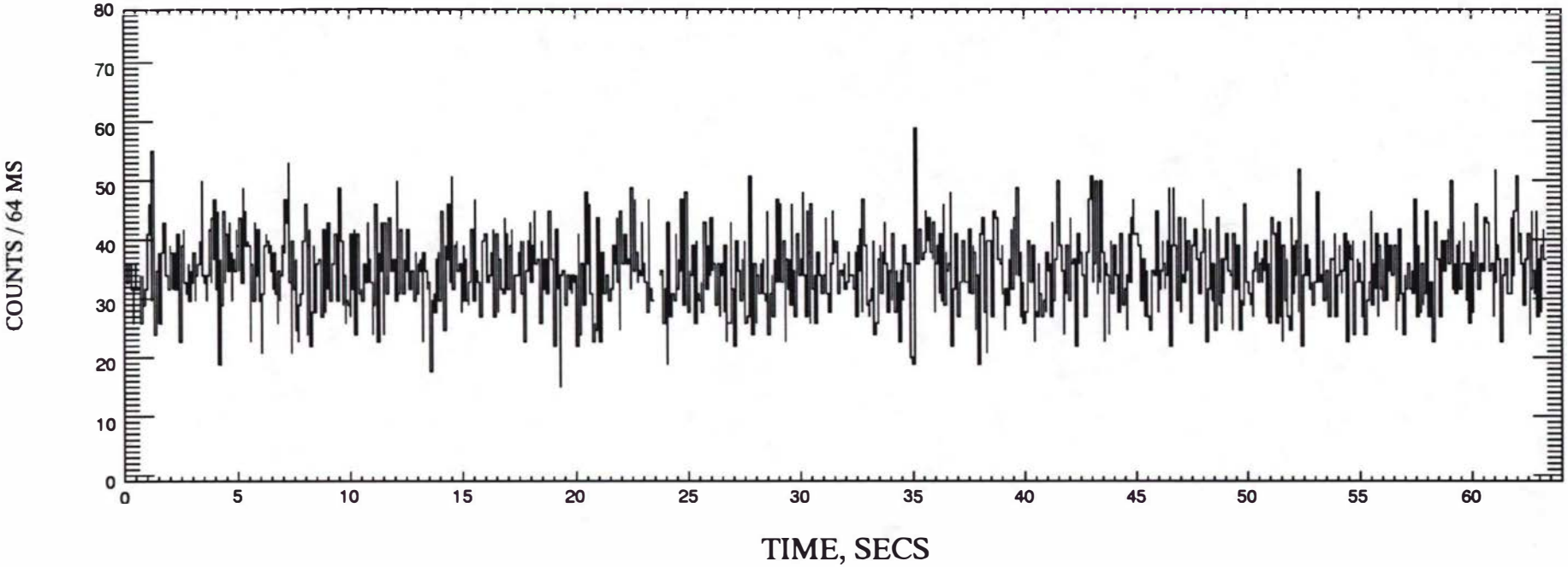


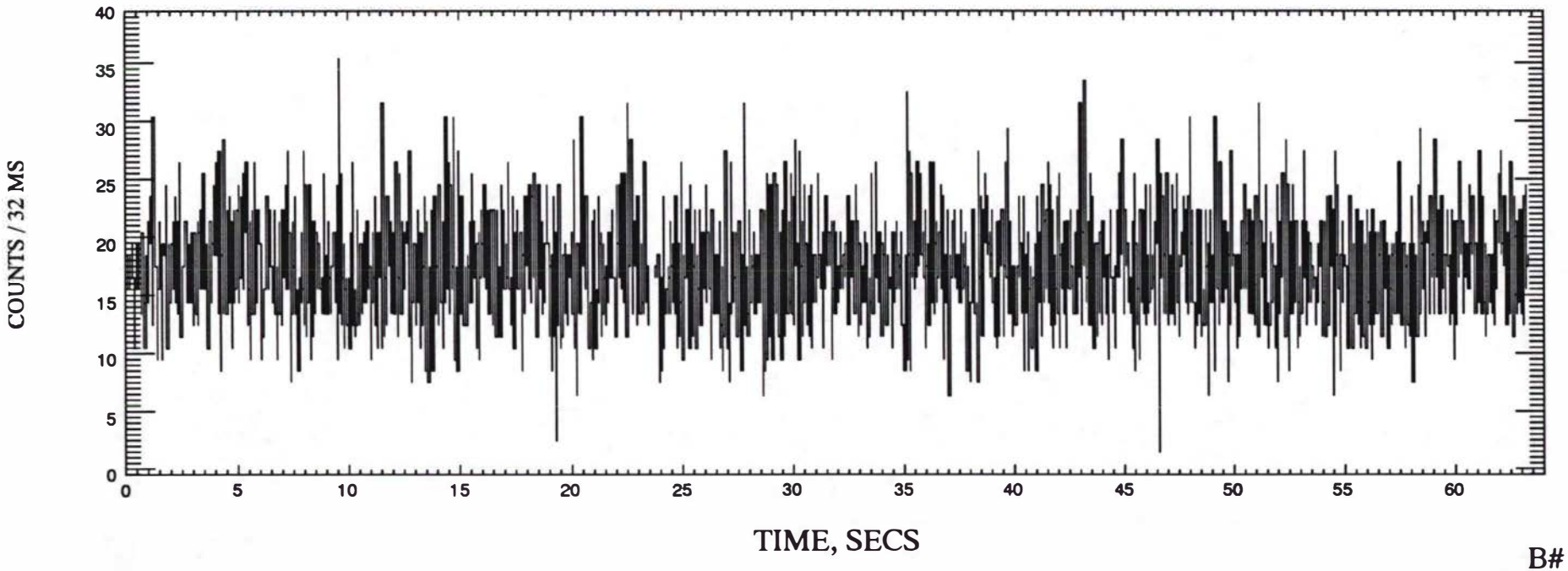


B# 7

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 13 at UT= 7.278972070482 h=26204.299 s 07:16:44.299

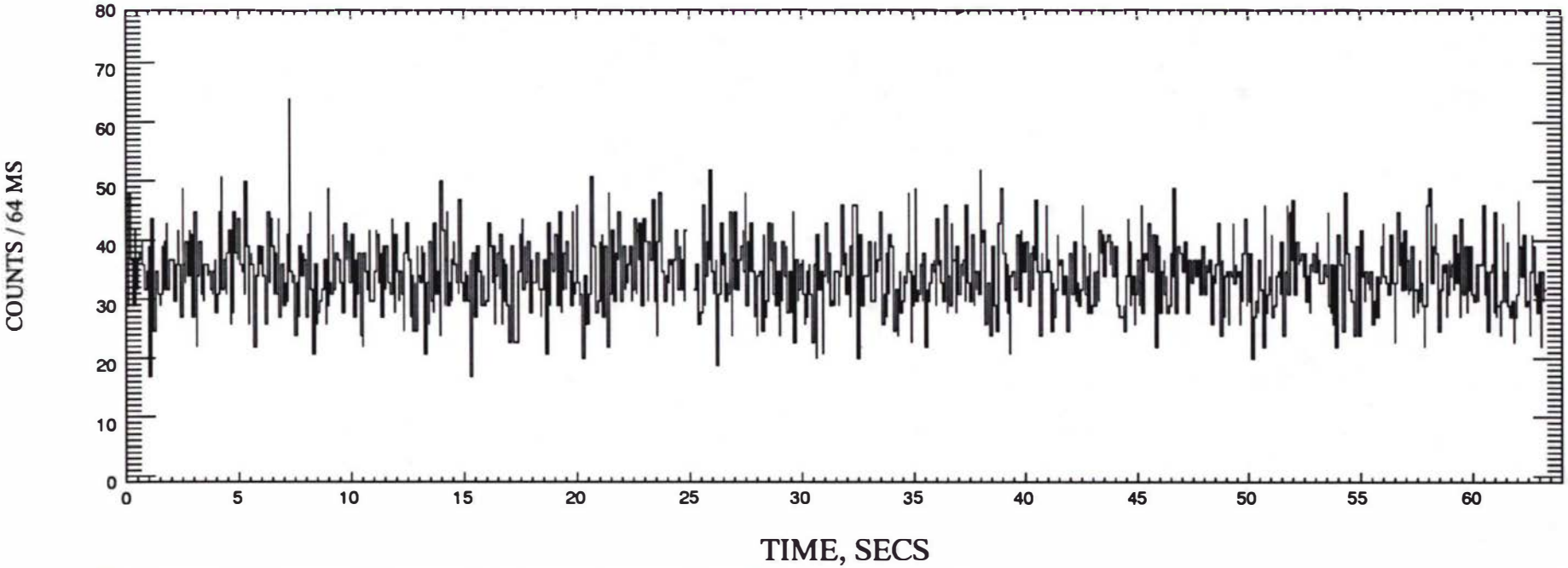


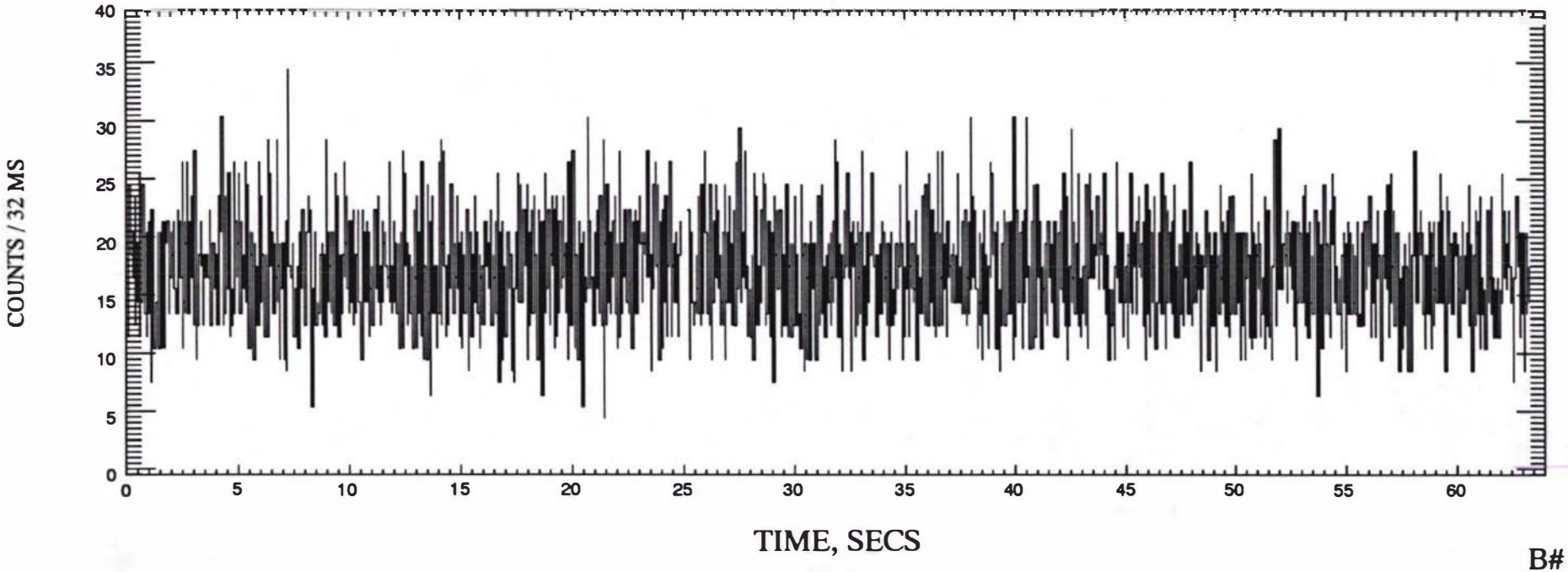


B# 8

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 14 at UT= 8.677702543471 h=31239.729 s 08:40:39.729

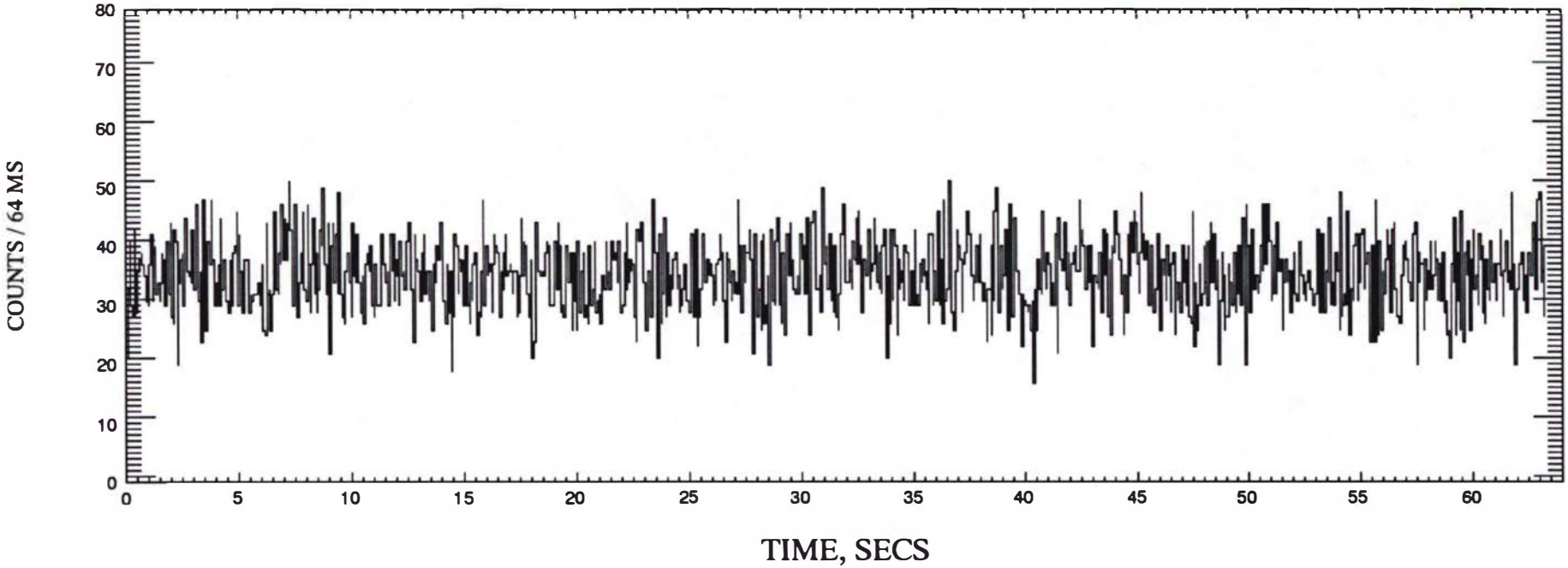


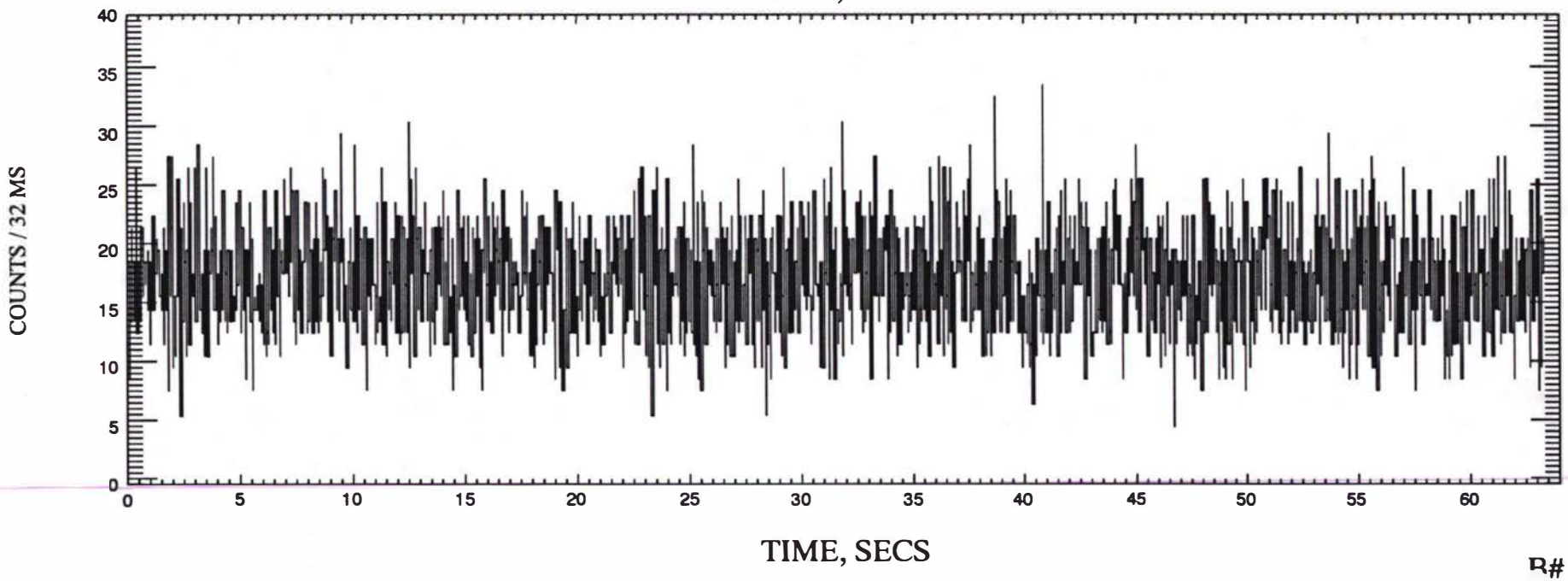


B# 9

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 15 at UT= 9.953271772597 h=35831.778 s 09:57:11.778

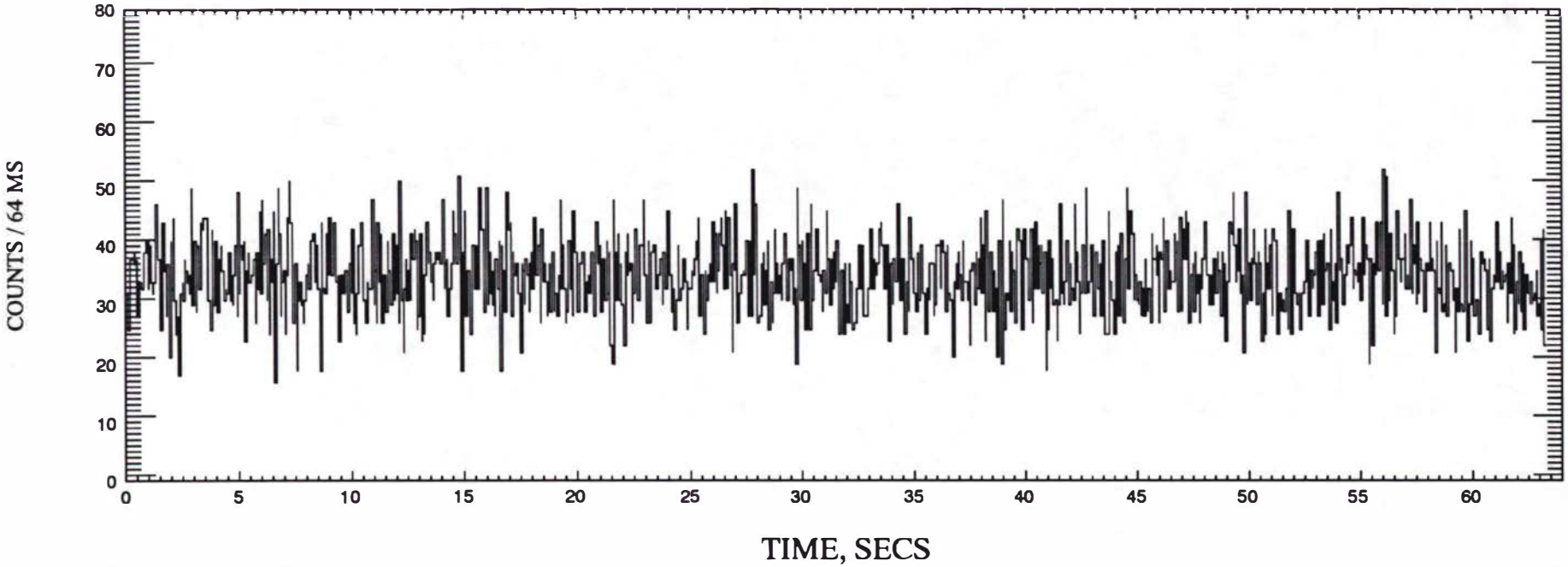


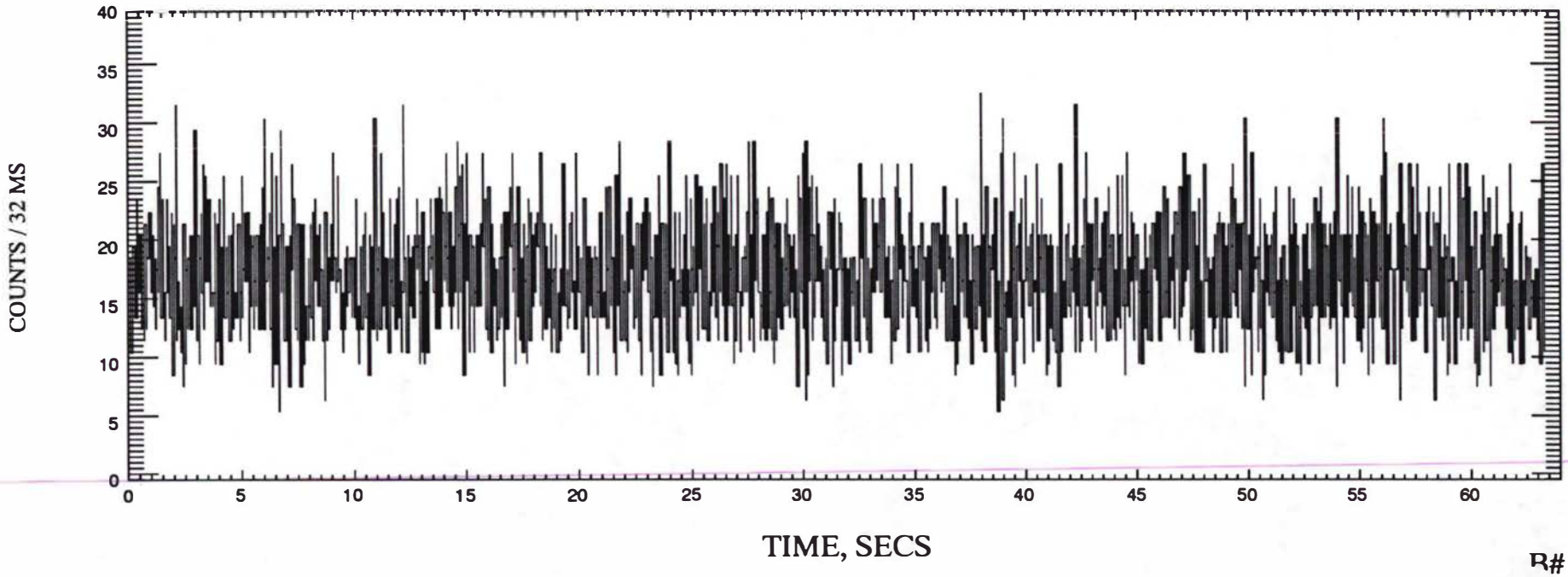


B# 10

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 0 at UT=11.233424335056 h=40440.328 s 11:14:00.328

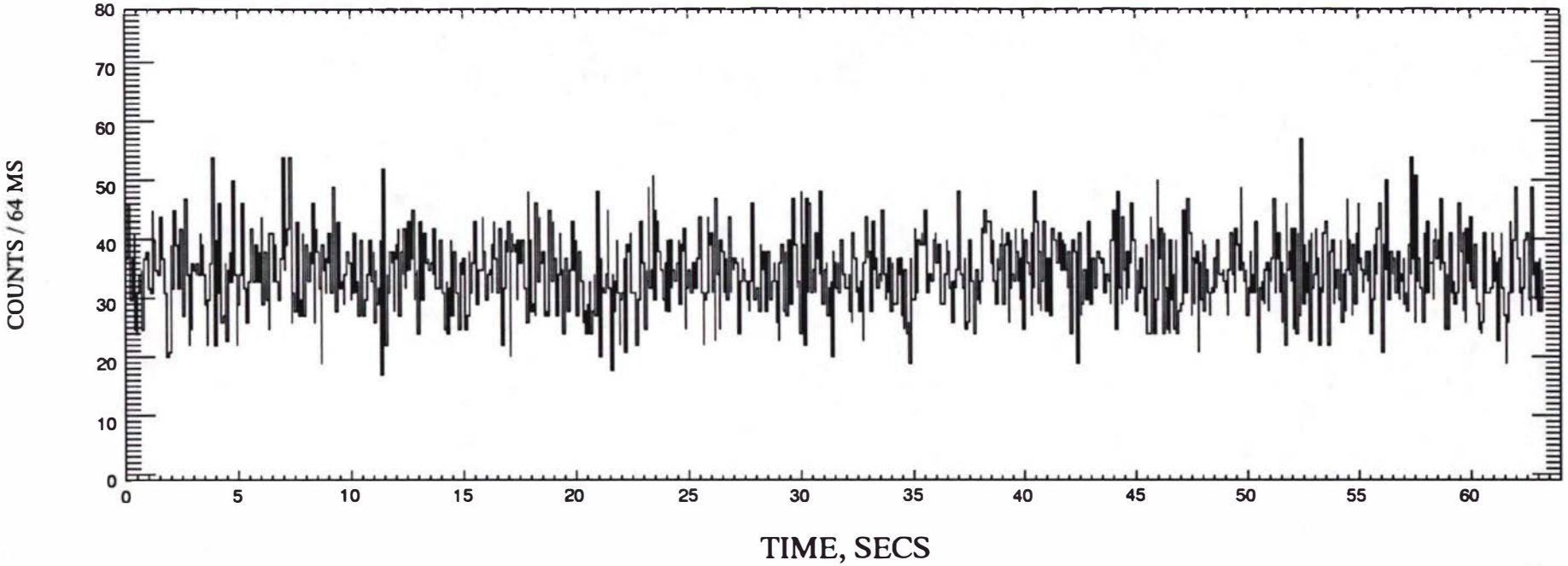


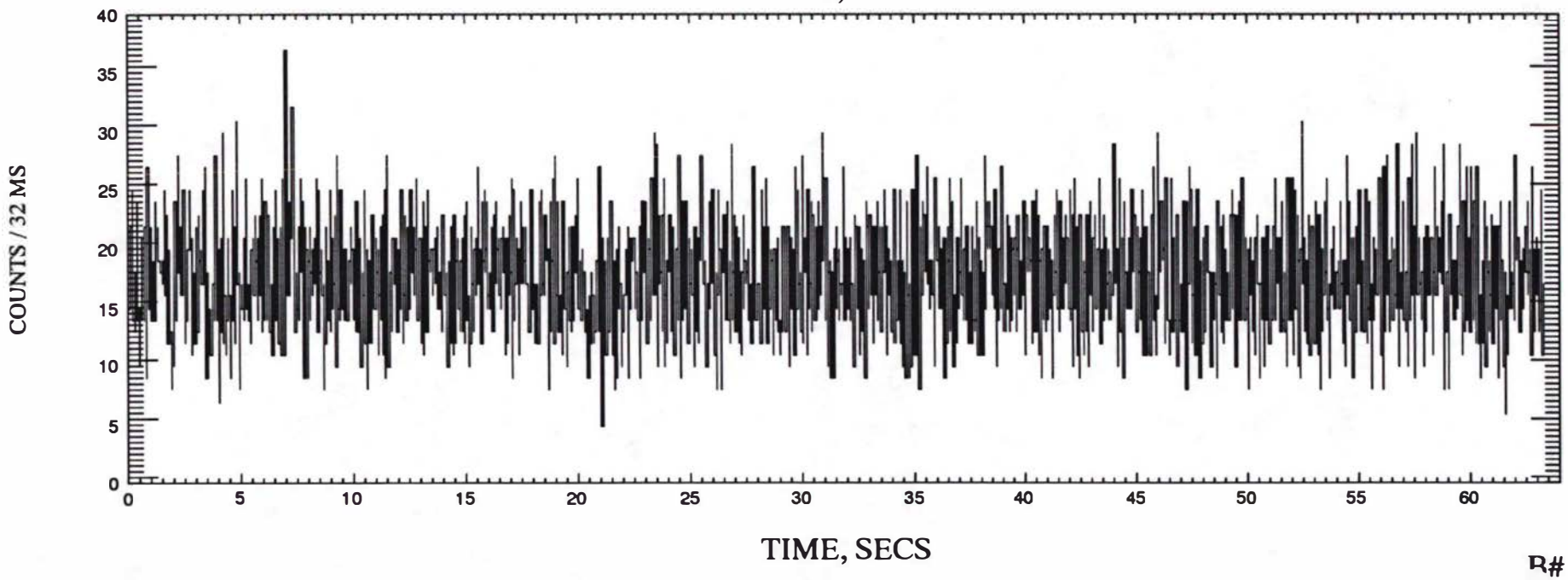


B# 11

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 1 at UT=12.486111623976 h=44950.002 s 12:29:10.002

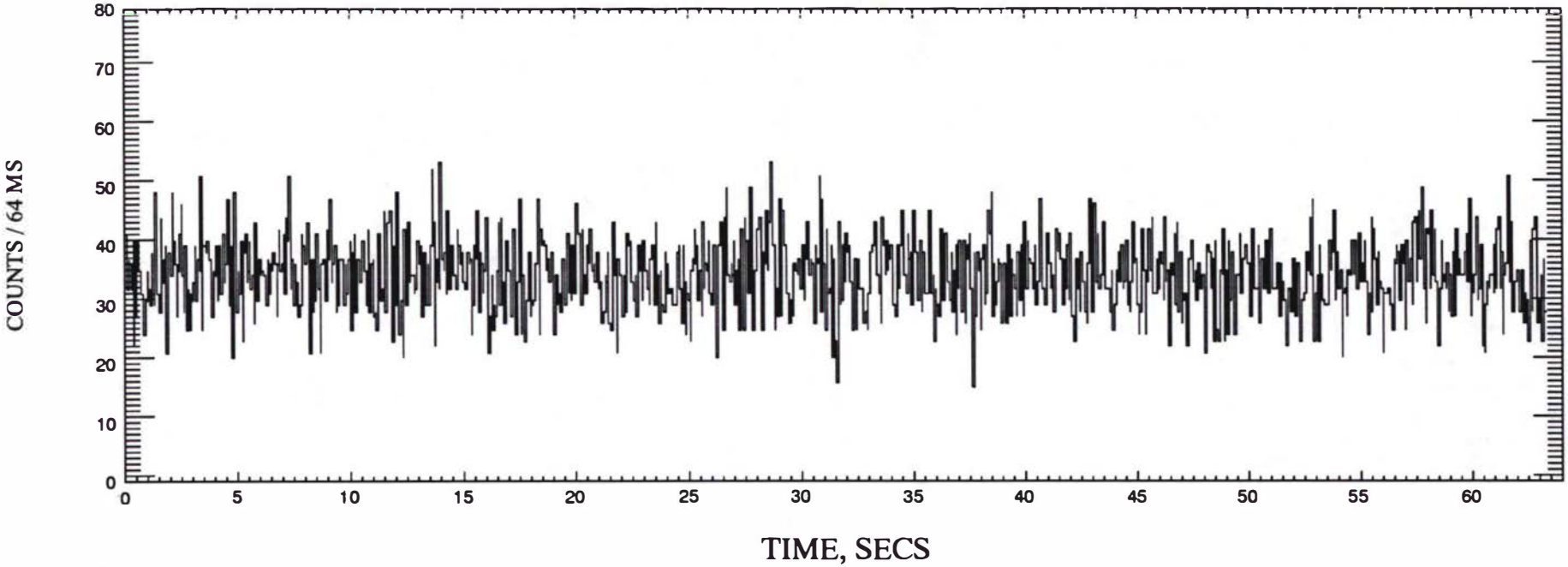


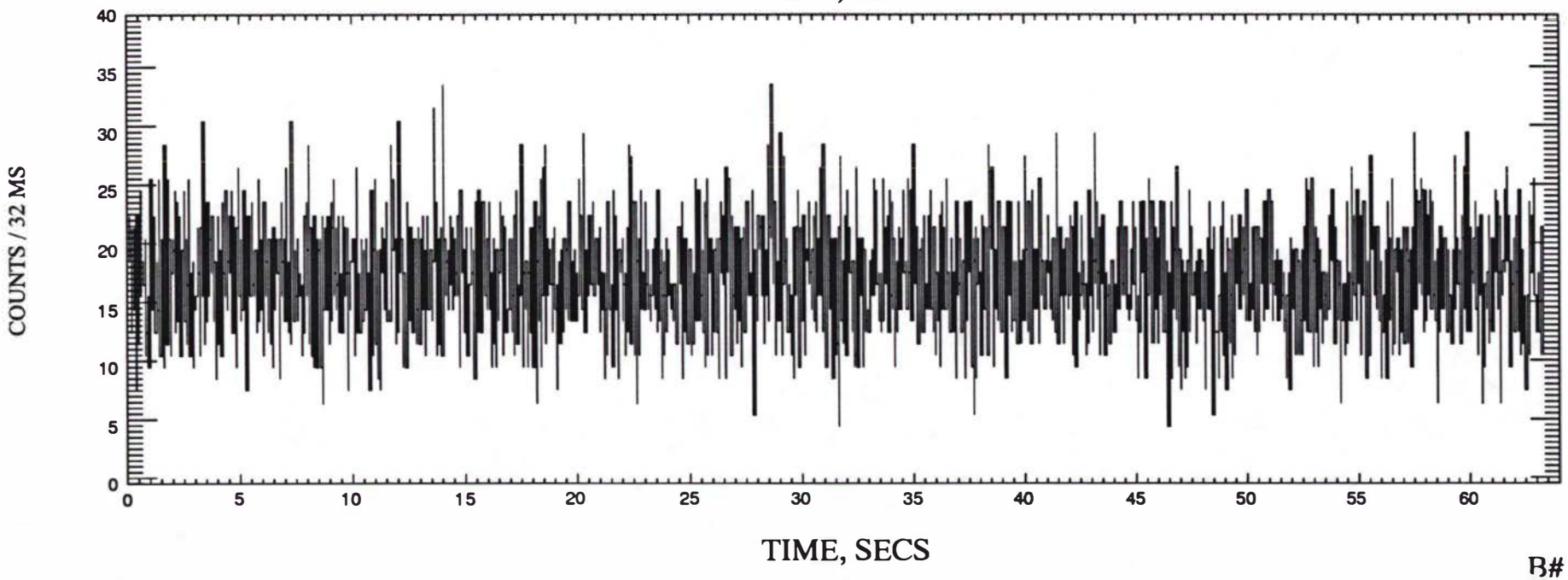


B# 12

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 2 at UT=13.763173908657 h=49547.426 s 13:45:47.426

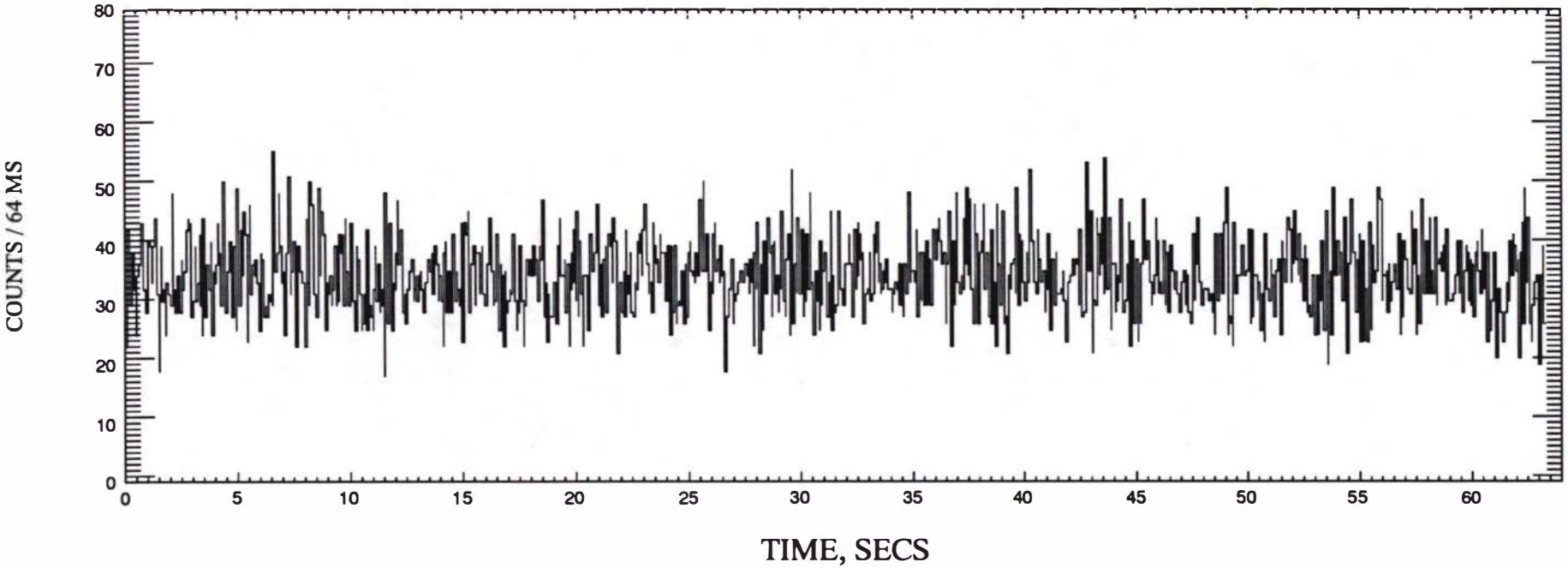


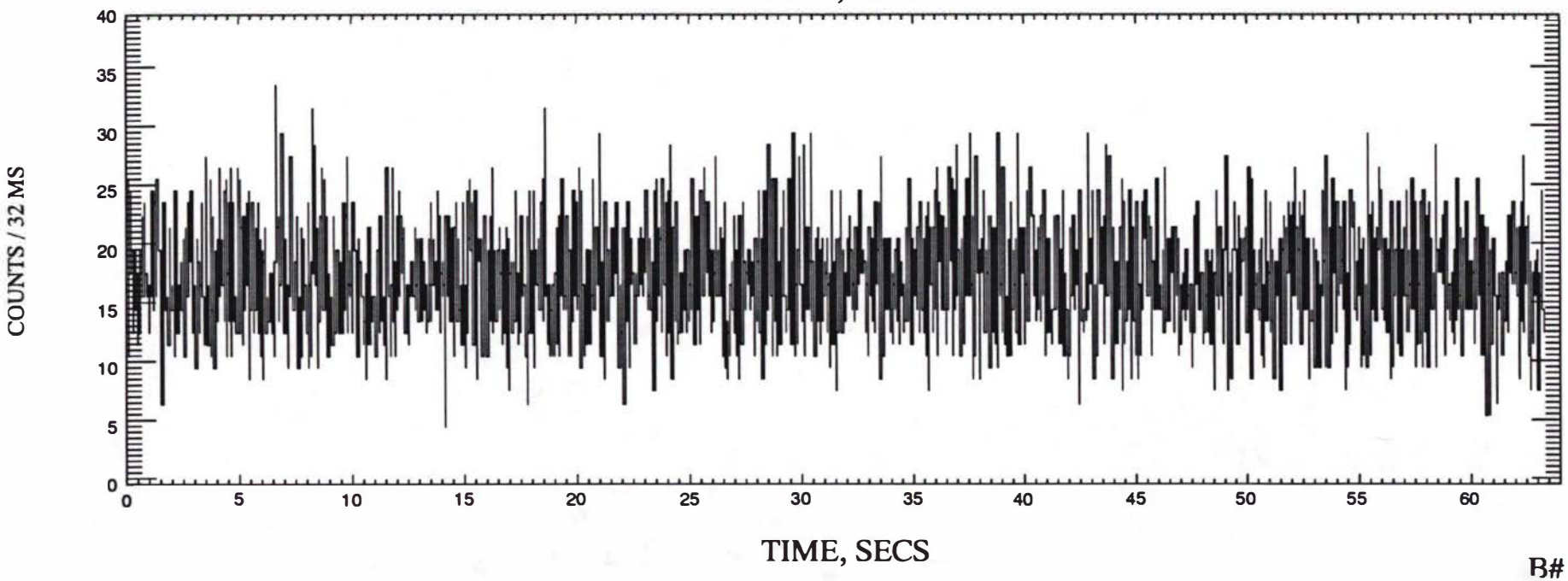


B# 13

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 3 at UT=15.051243137783 h=54184.475 s 15:03:04.475

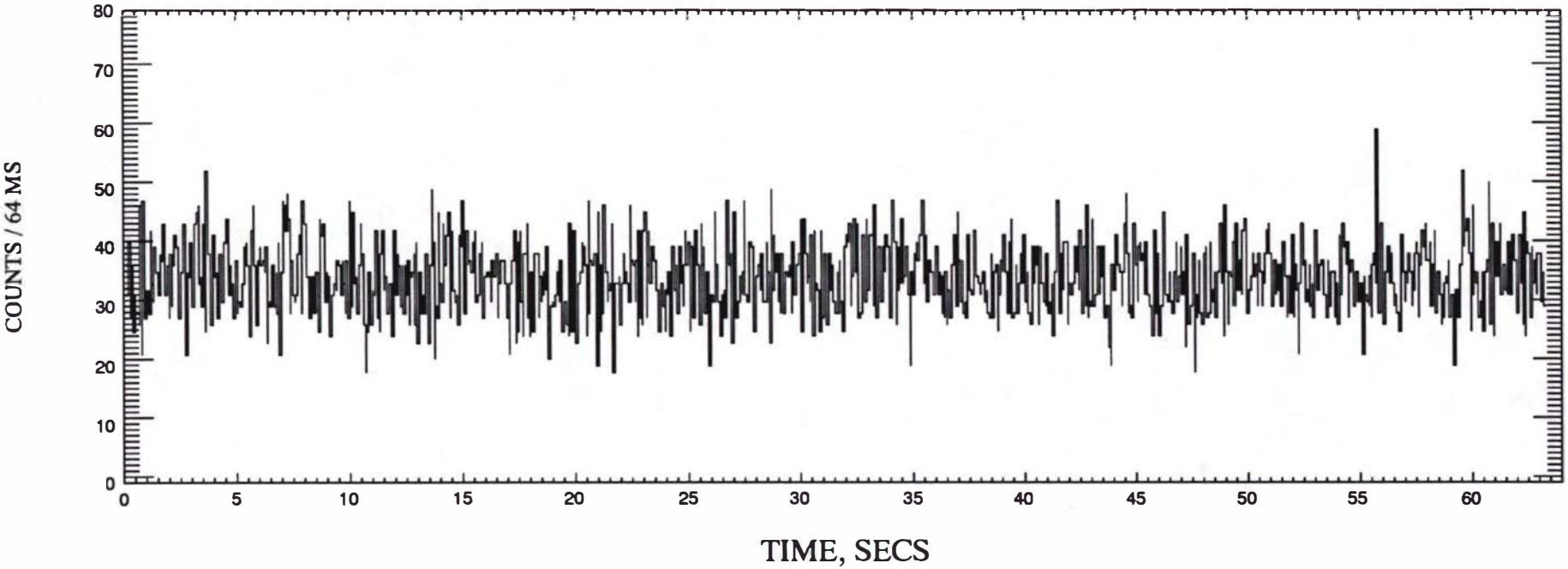


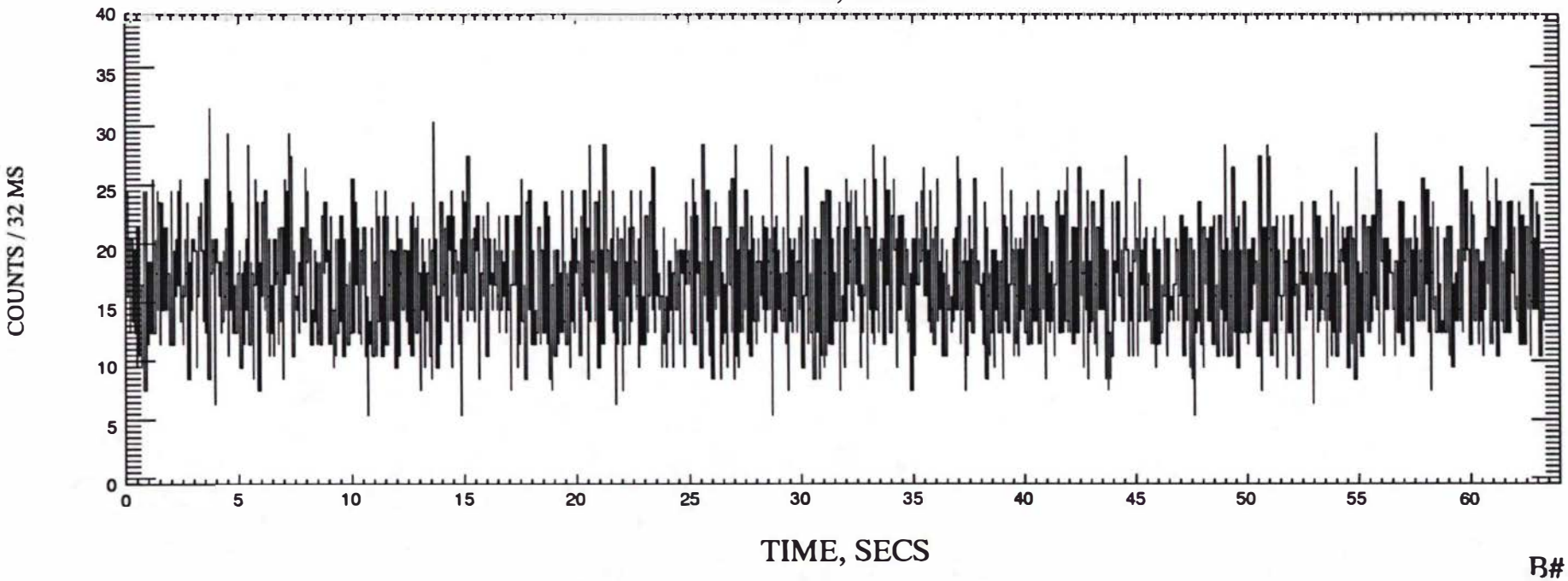


B# 14

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 4 at UT=16.312367926704 h=58724.525 s 16:18:44.525

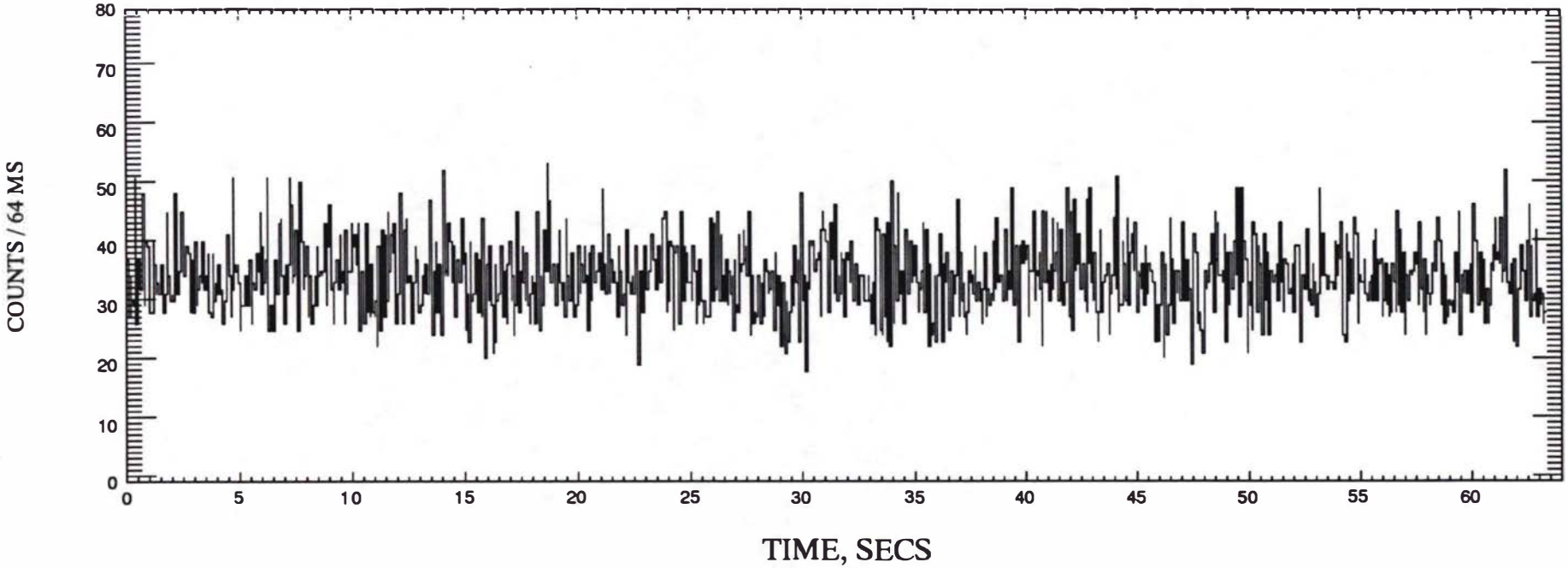


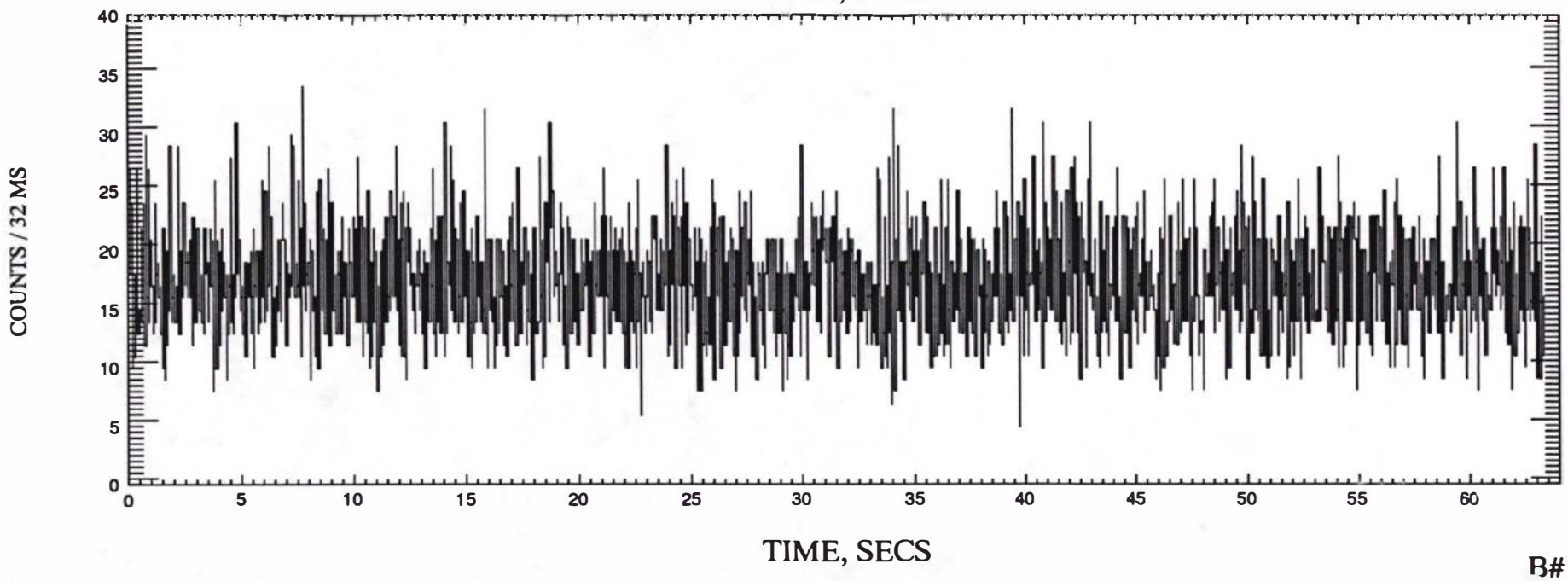


B# 15

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 5 at UT=17.583456471761 h=63300.443 s 17:35:00.443

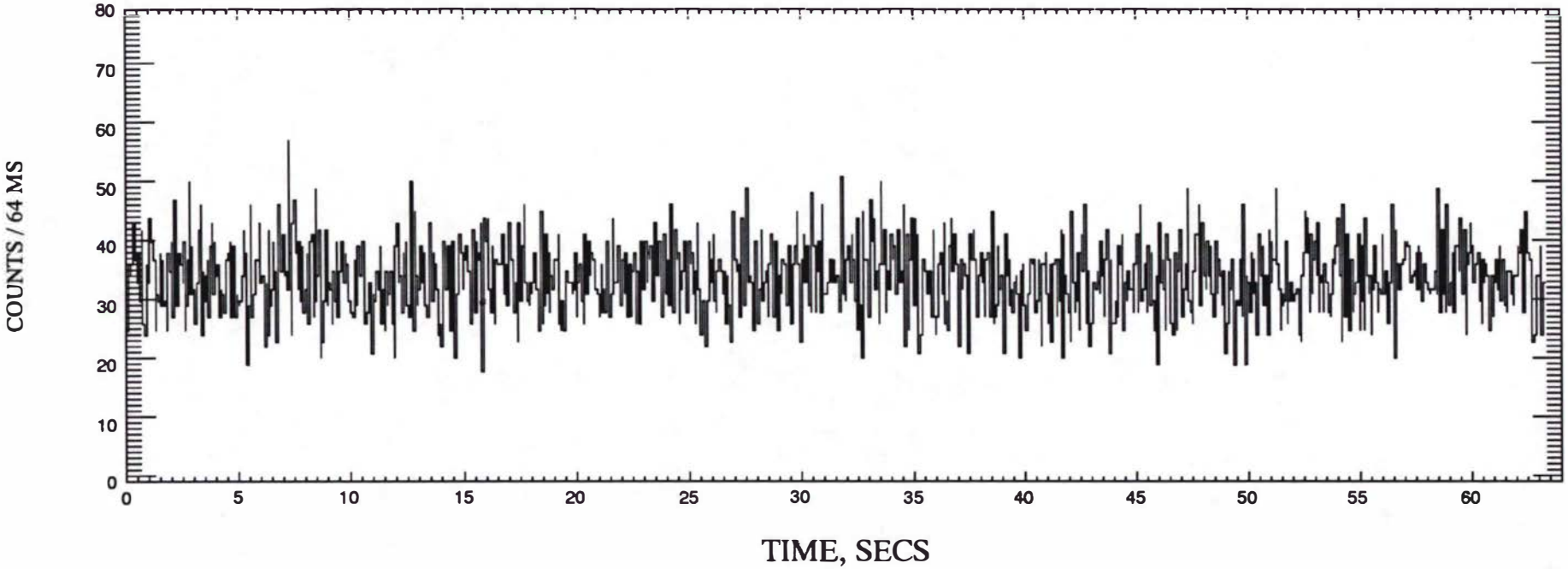


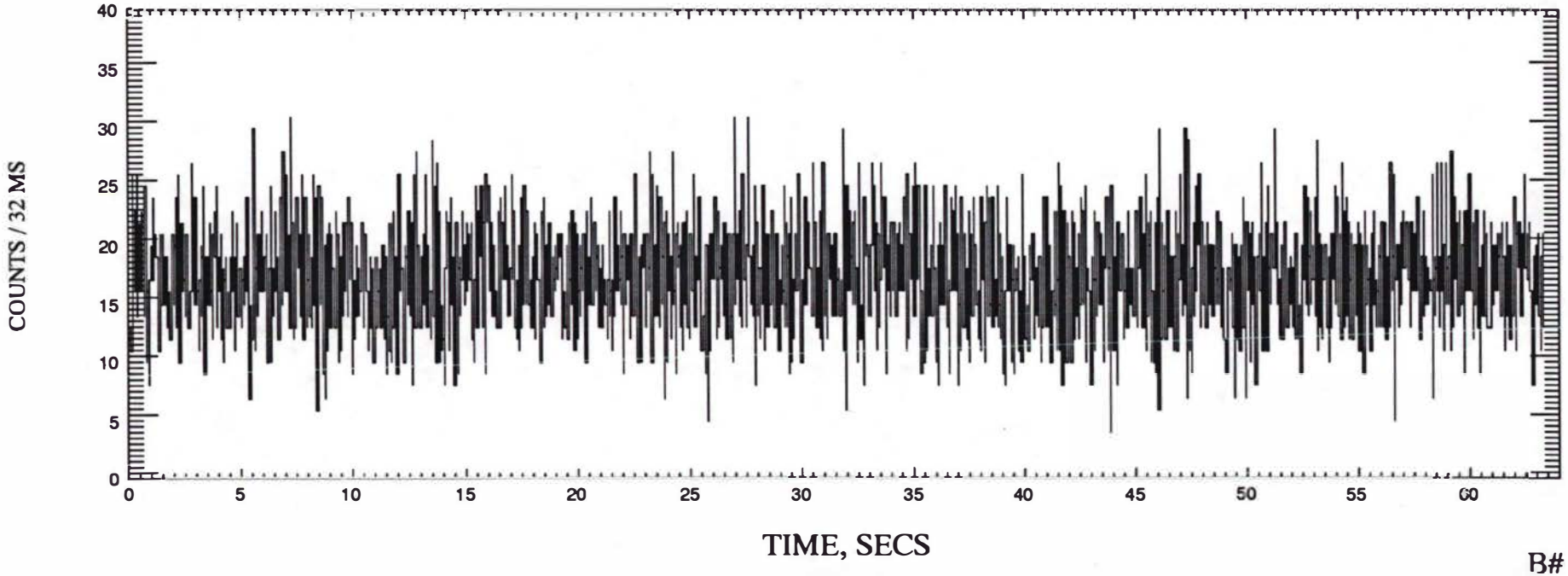


B# 16

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 6 at UT=18.995937889947 h=68385.376 s 18:59:45.376

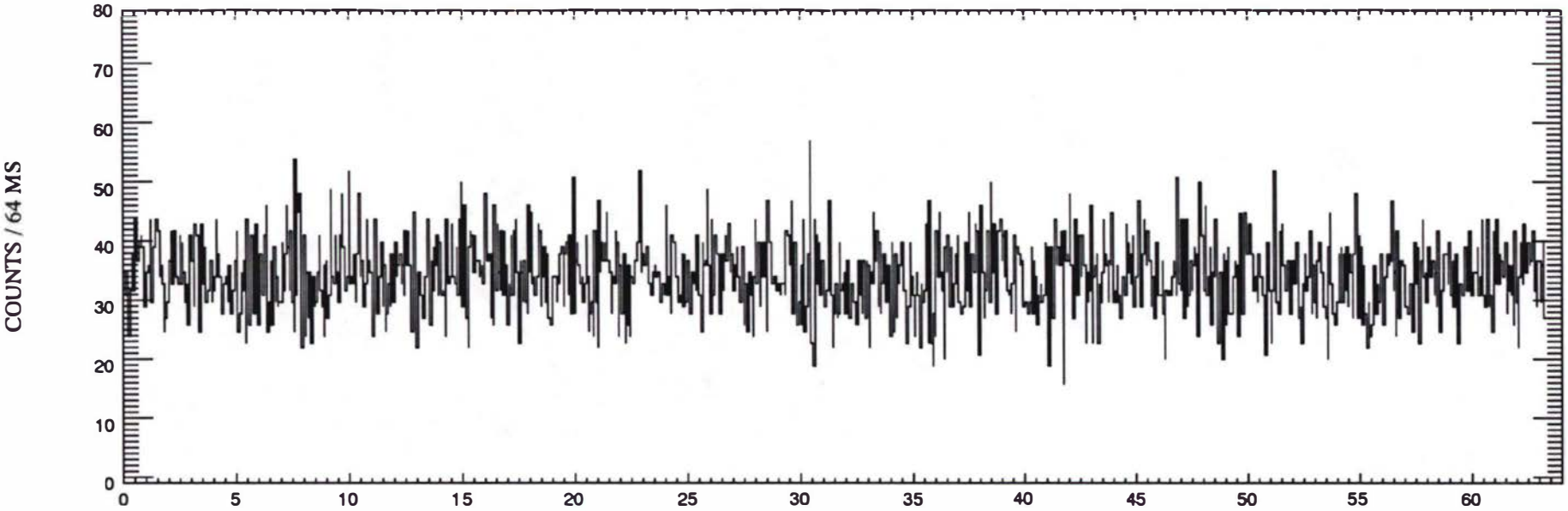




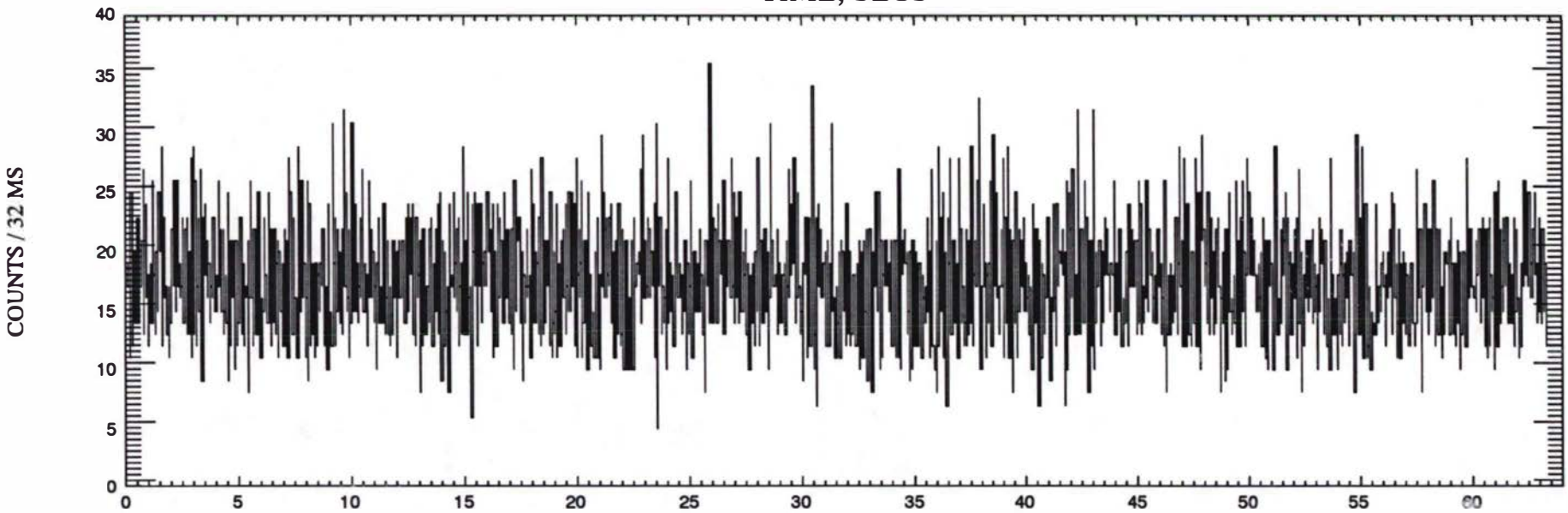
B# 17

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 8 at UT=20.629985122681 h=74267.946 s 20:37:47.946



TIME, SECS

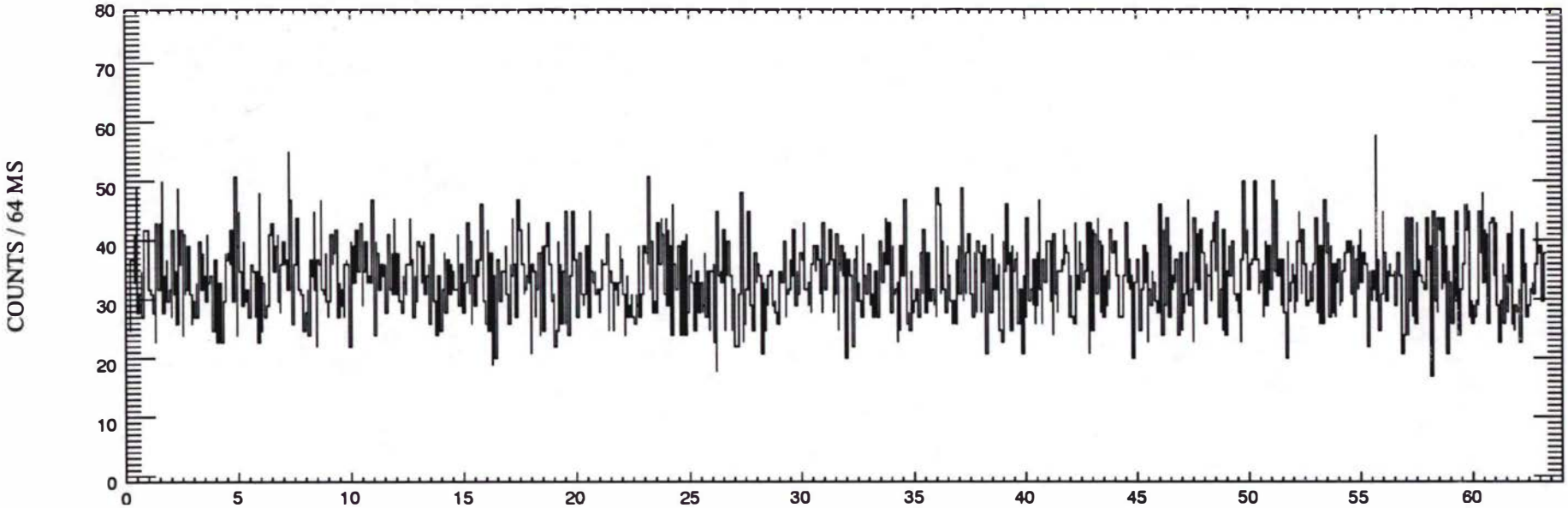


TIME, SECS

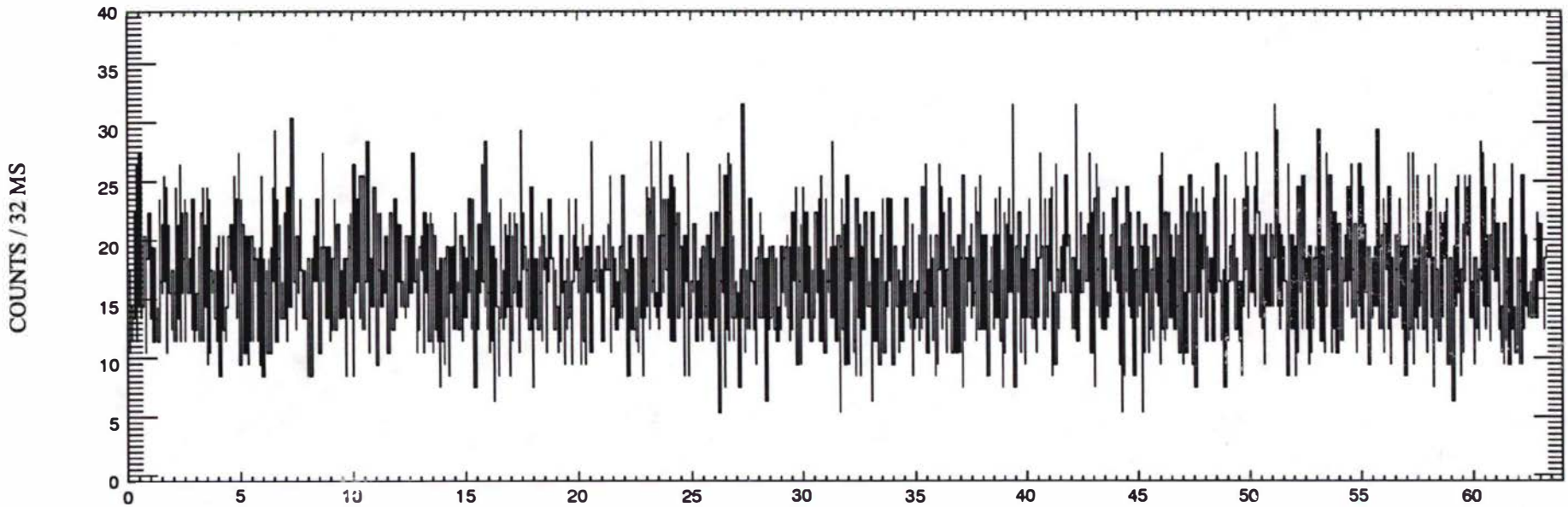
B# 18

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 9 at UT=21.353393325806 h=76872.216 s 21:21:12.216



TIME, SECS

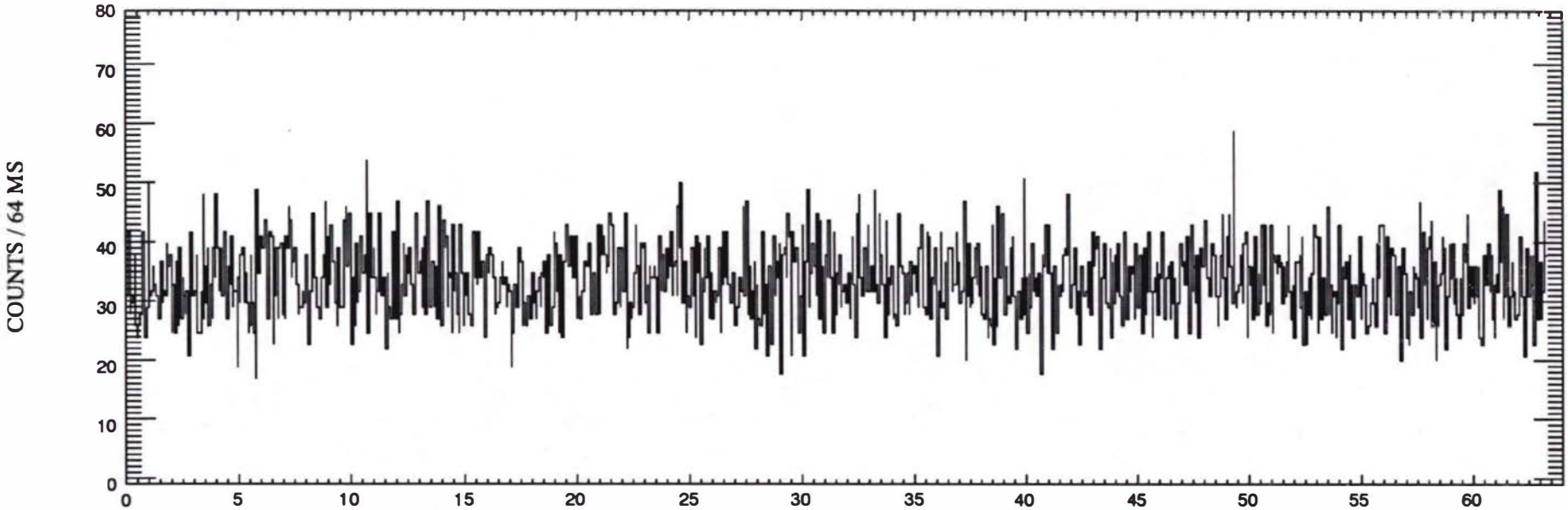


TIME, SECS

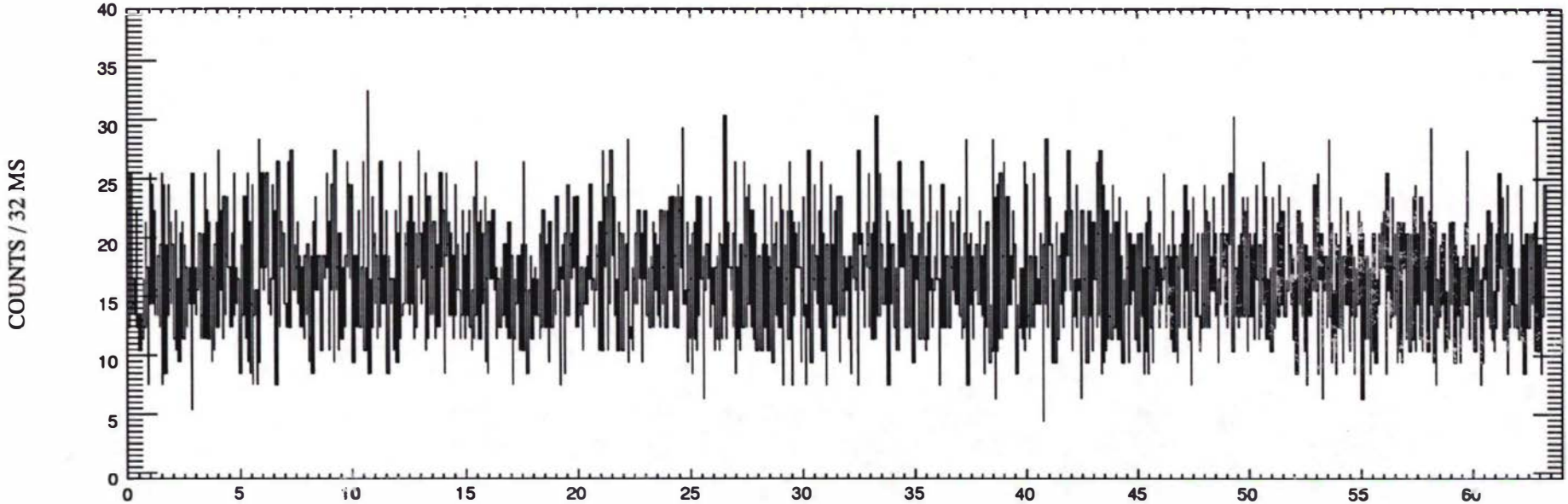
B# 19

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 10 at UT=22.214374665154 h=79971.749 s 22:12:51.749



TIME, SECS

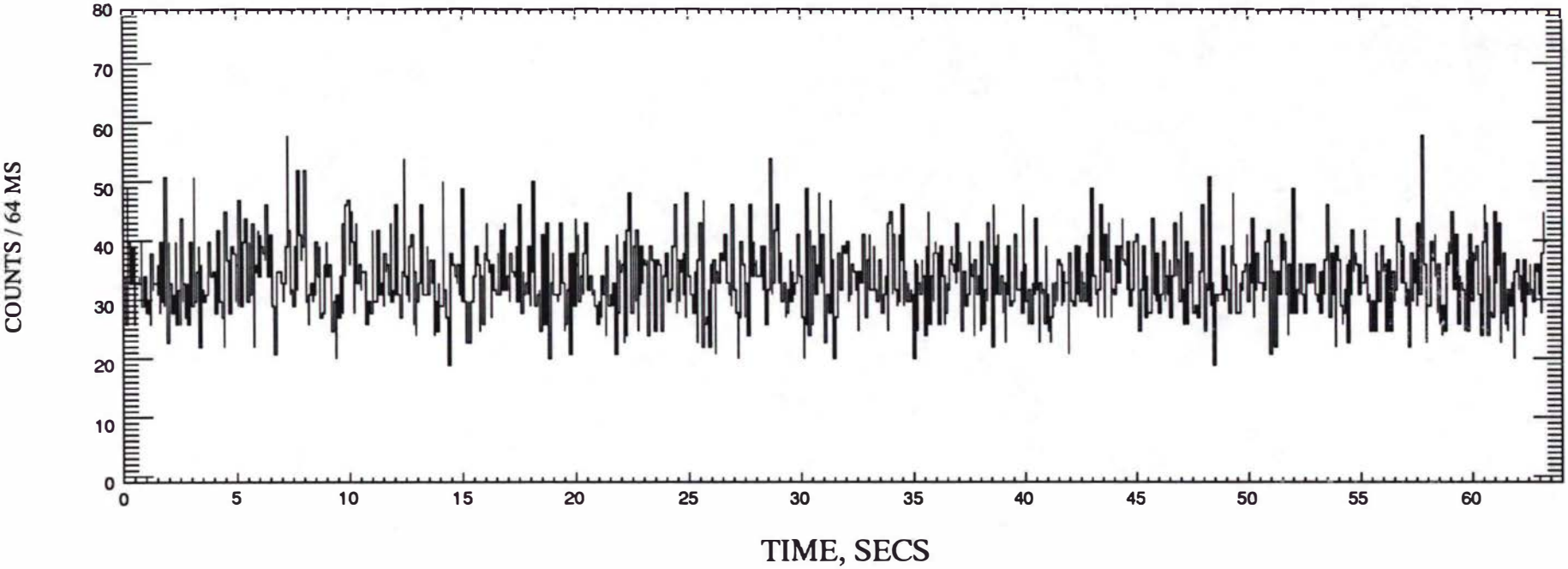


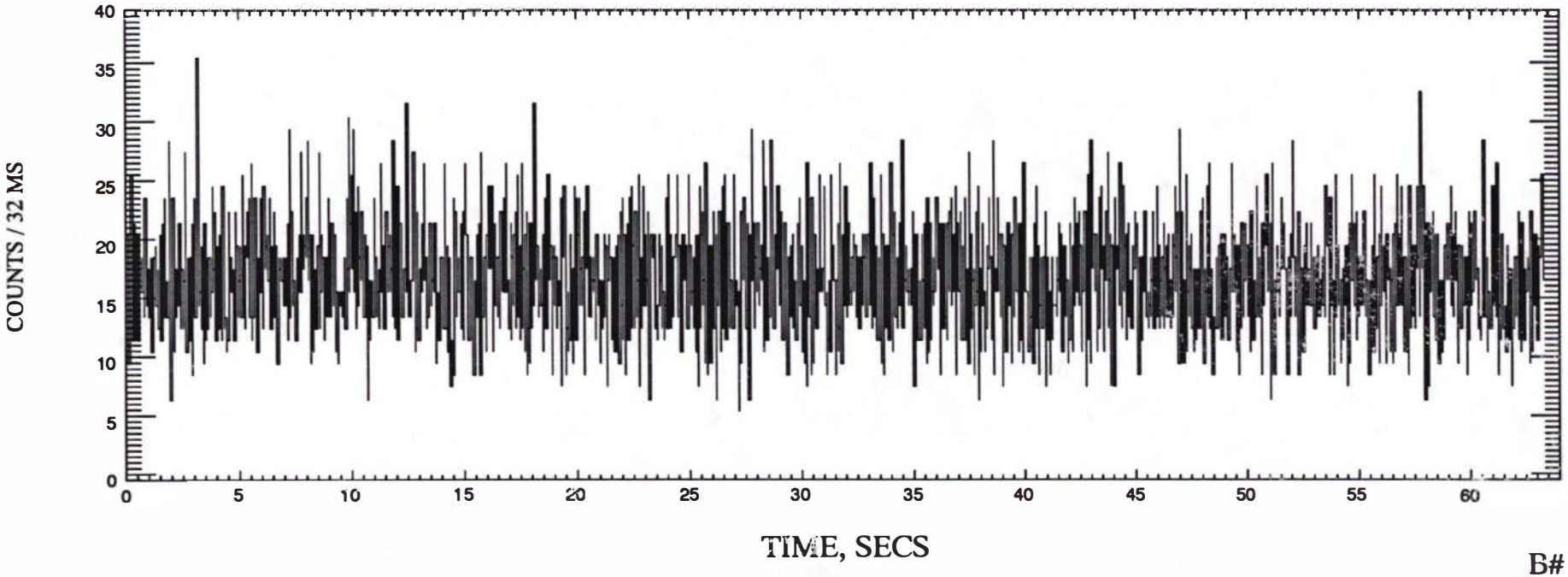
TIME, SECS

B# 20

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 11 at UT=22.991151686774 h=82768.146 s 22:59:28.146

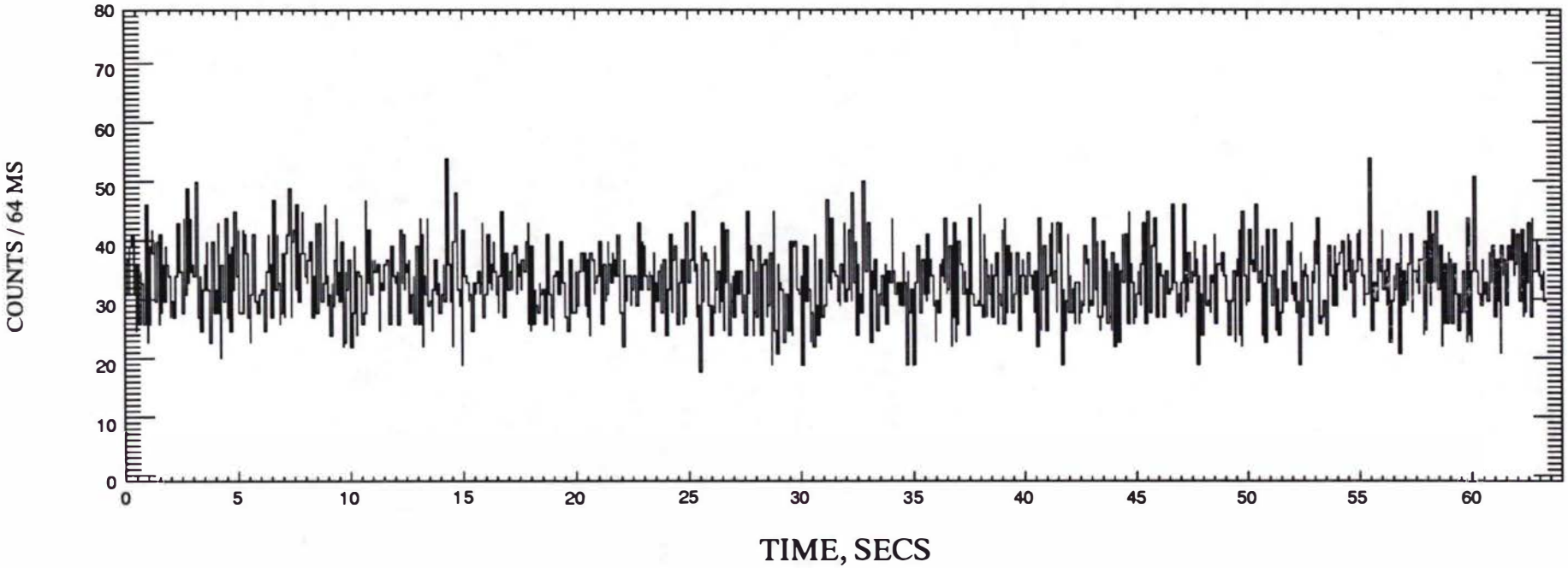


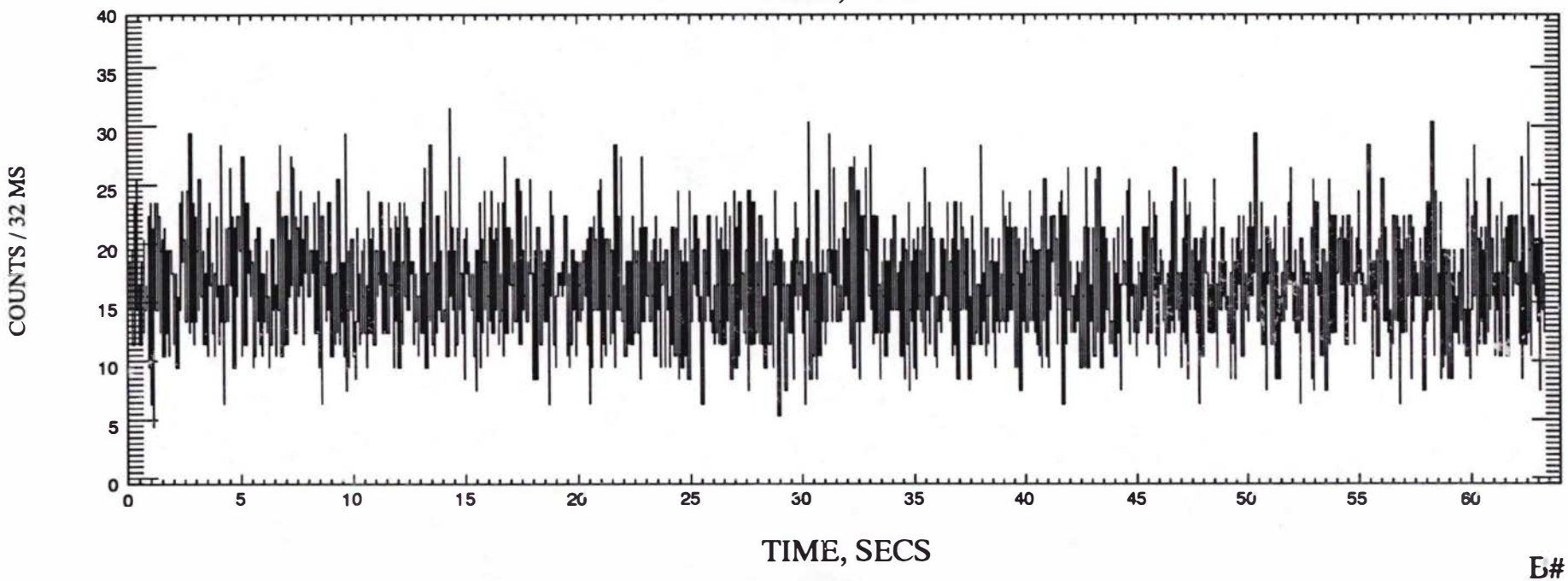


B# 21

HUS 2A TRIGGERED DATA QEDR day 120, year 1998 5/1/98

Burst Counter 12 at UT=23.914010954963 h=86090.439 s 23:54:50.439

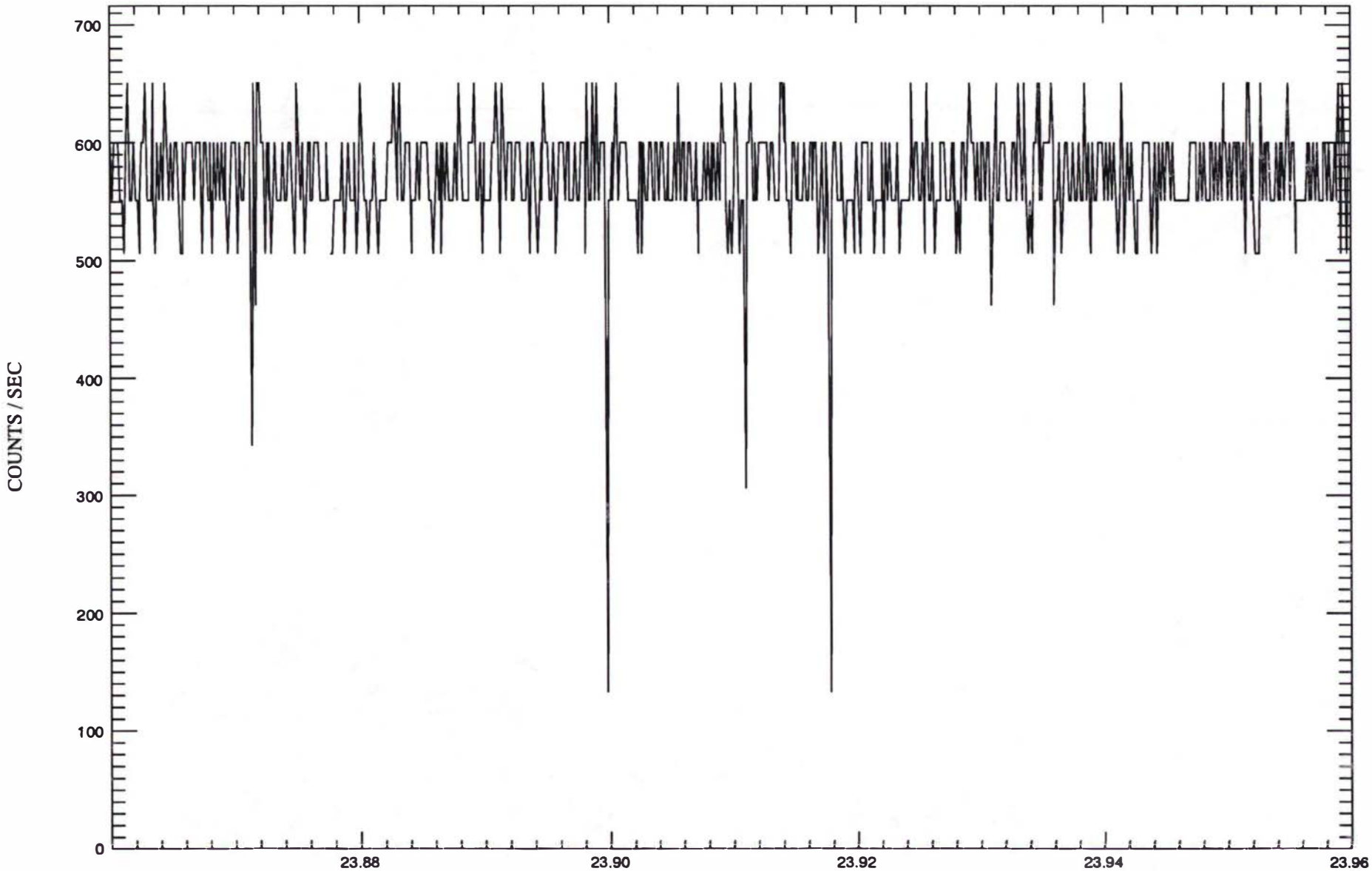
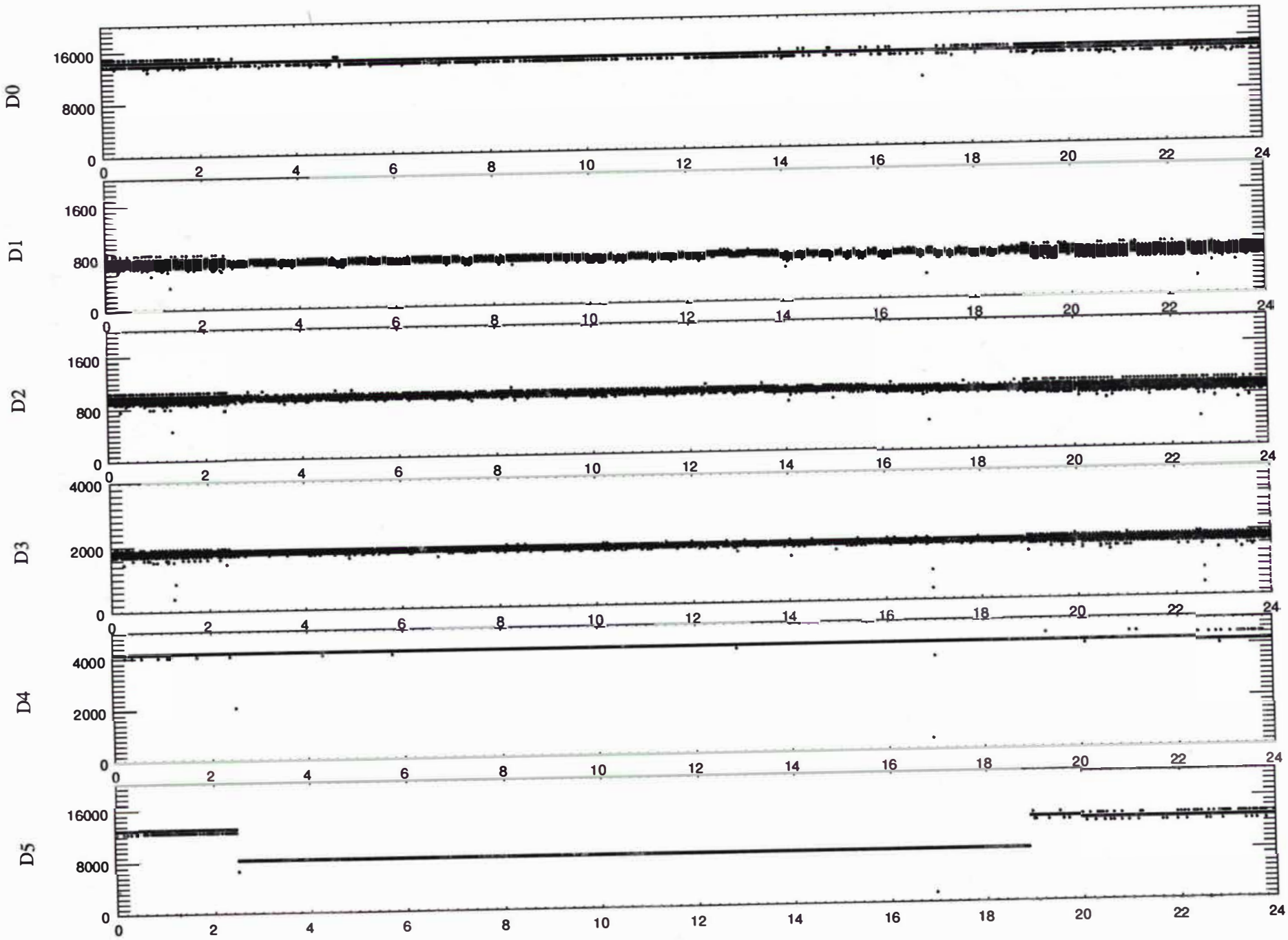




B# 22

HUS 2A, MODE 1, NOT AVERAGED QEDR day 120, year 1998 to day 120, year 1998 5/1/98

CALIBRATION DATA INCLUDED



HUS 2B COUNTS / SEC EDR day 120, year 1998 to day 120, year 1998 8/18/98