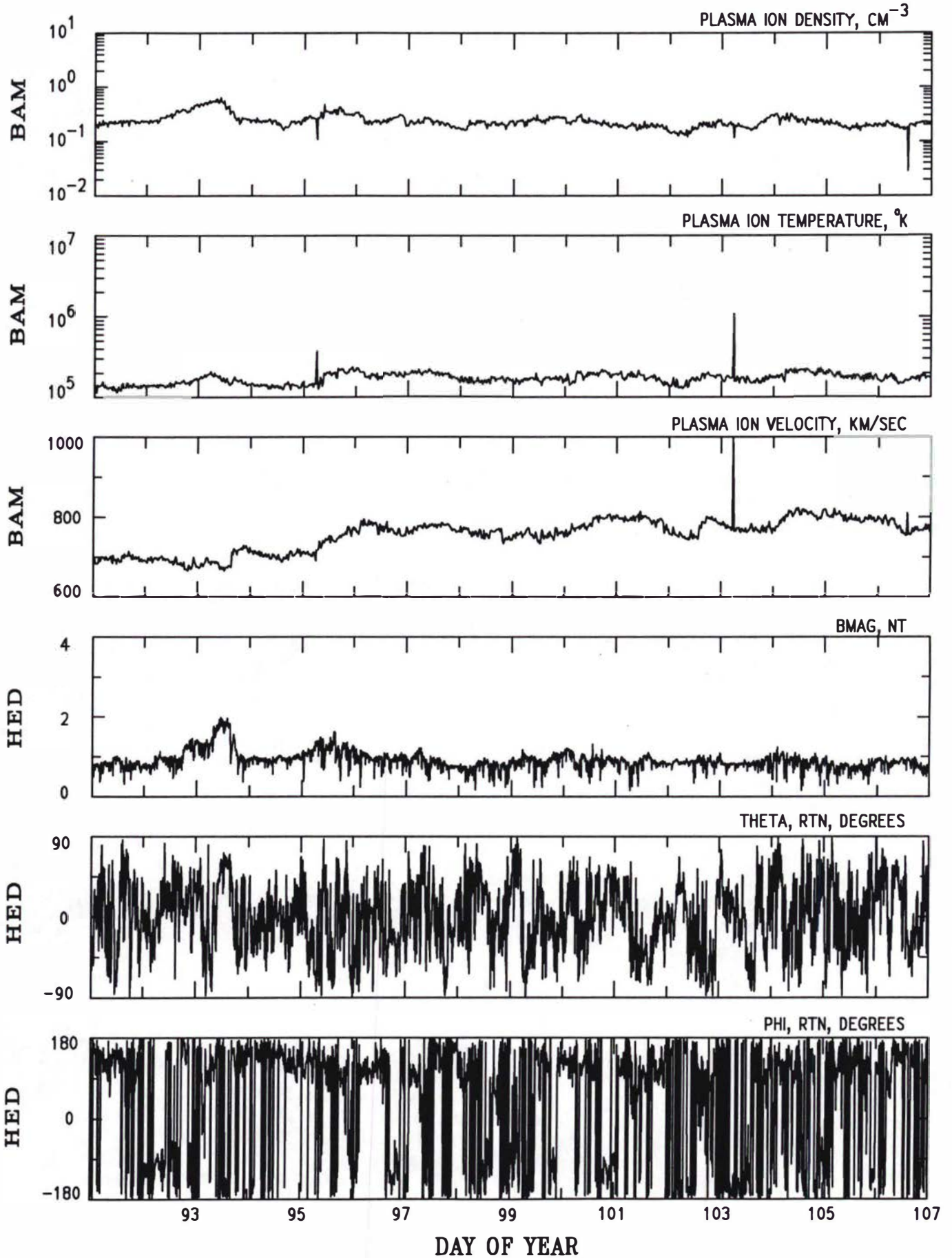


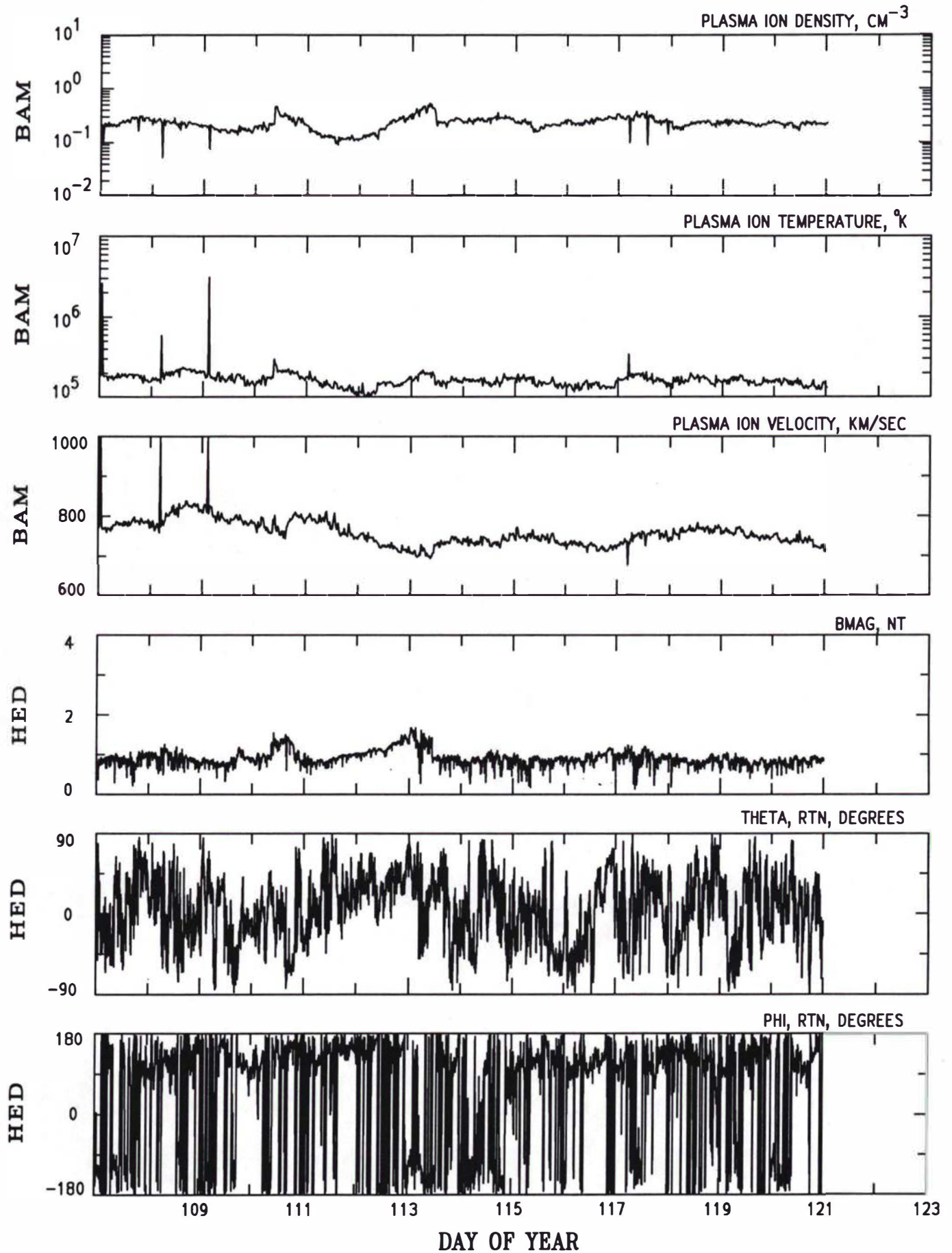
# ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



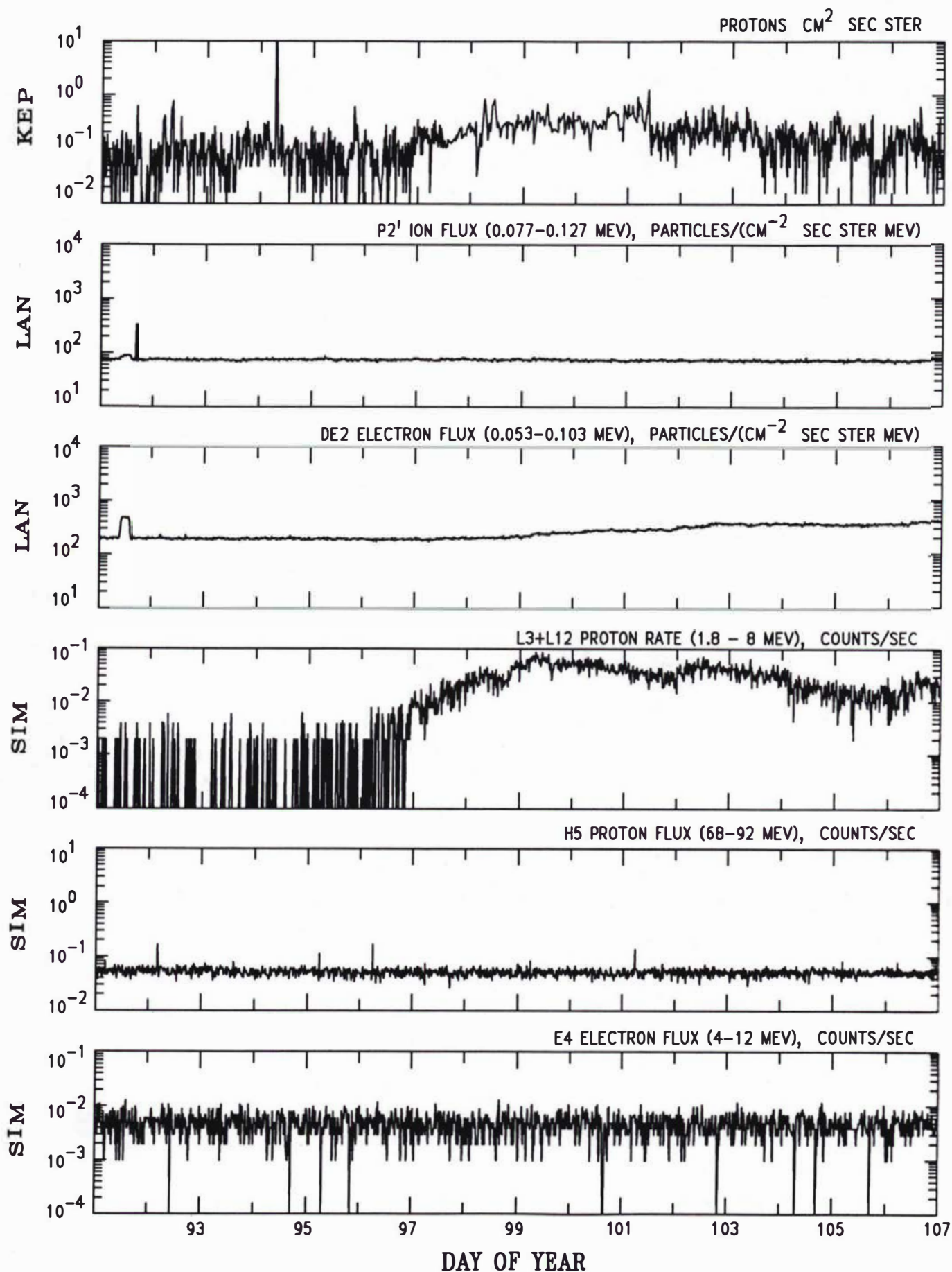
# ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000



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

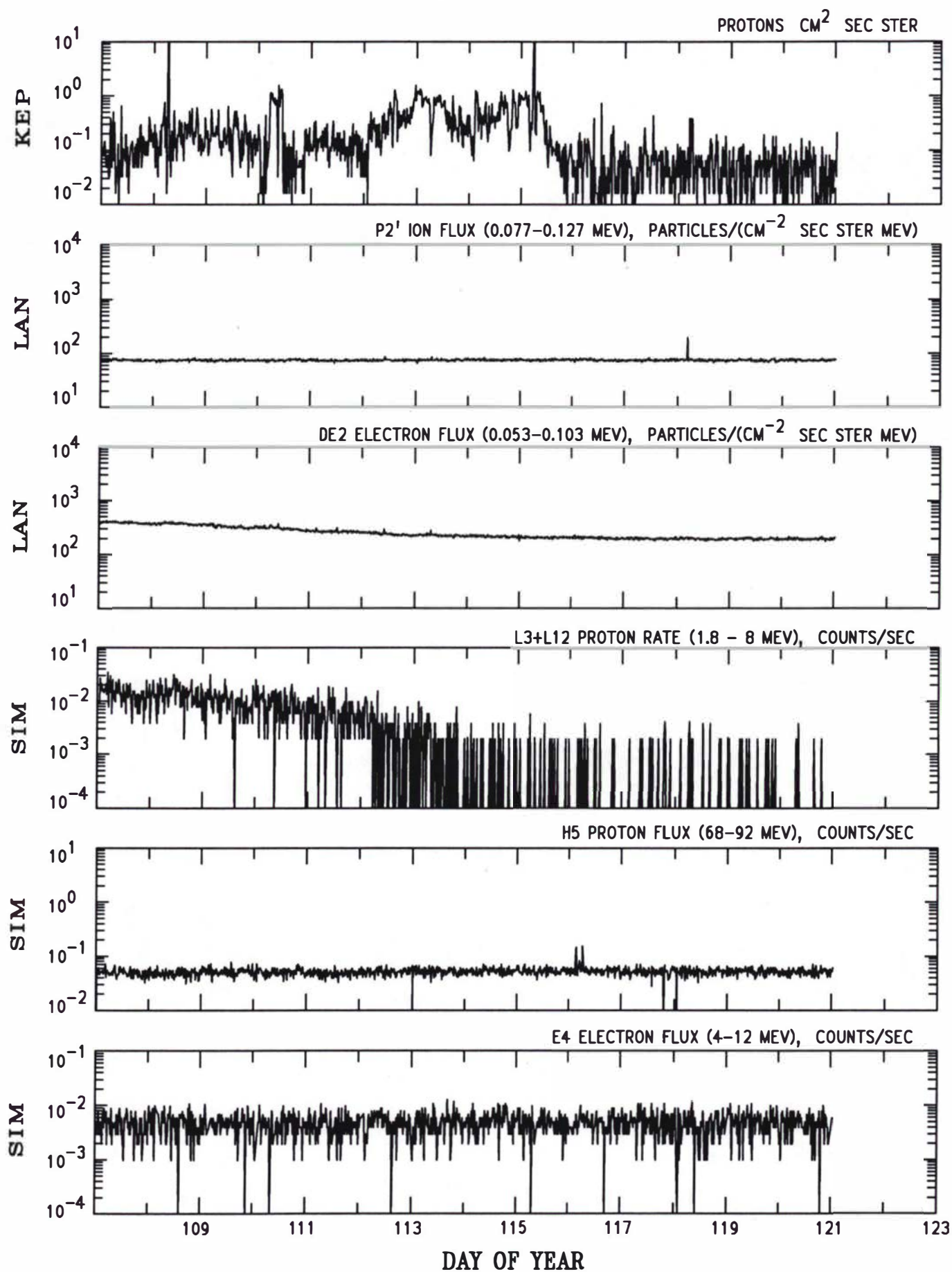
94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000





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

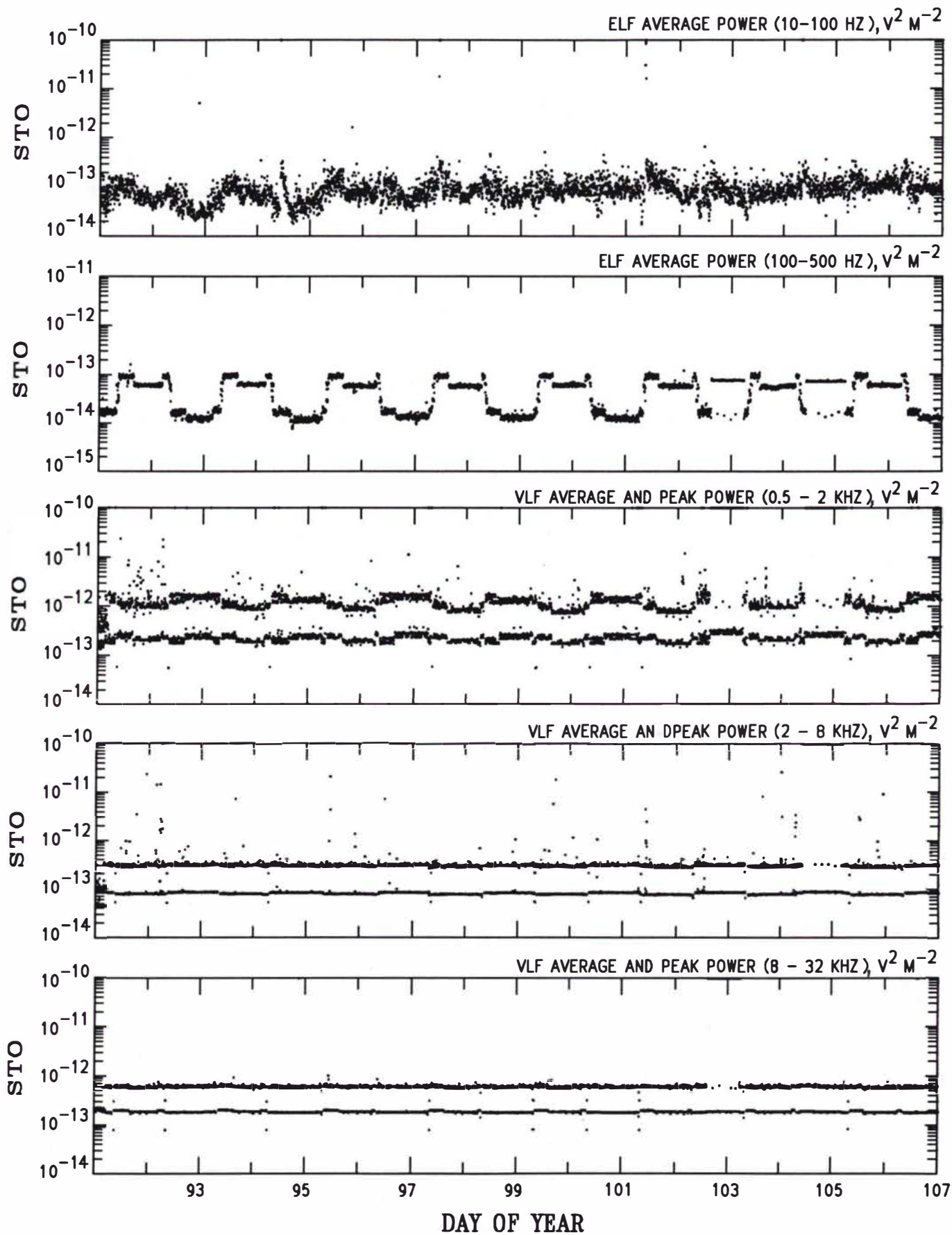
94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000





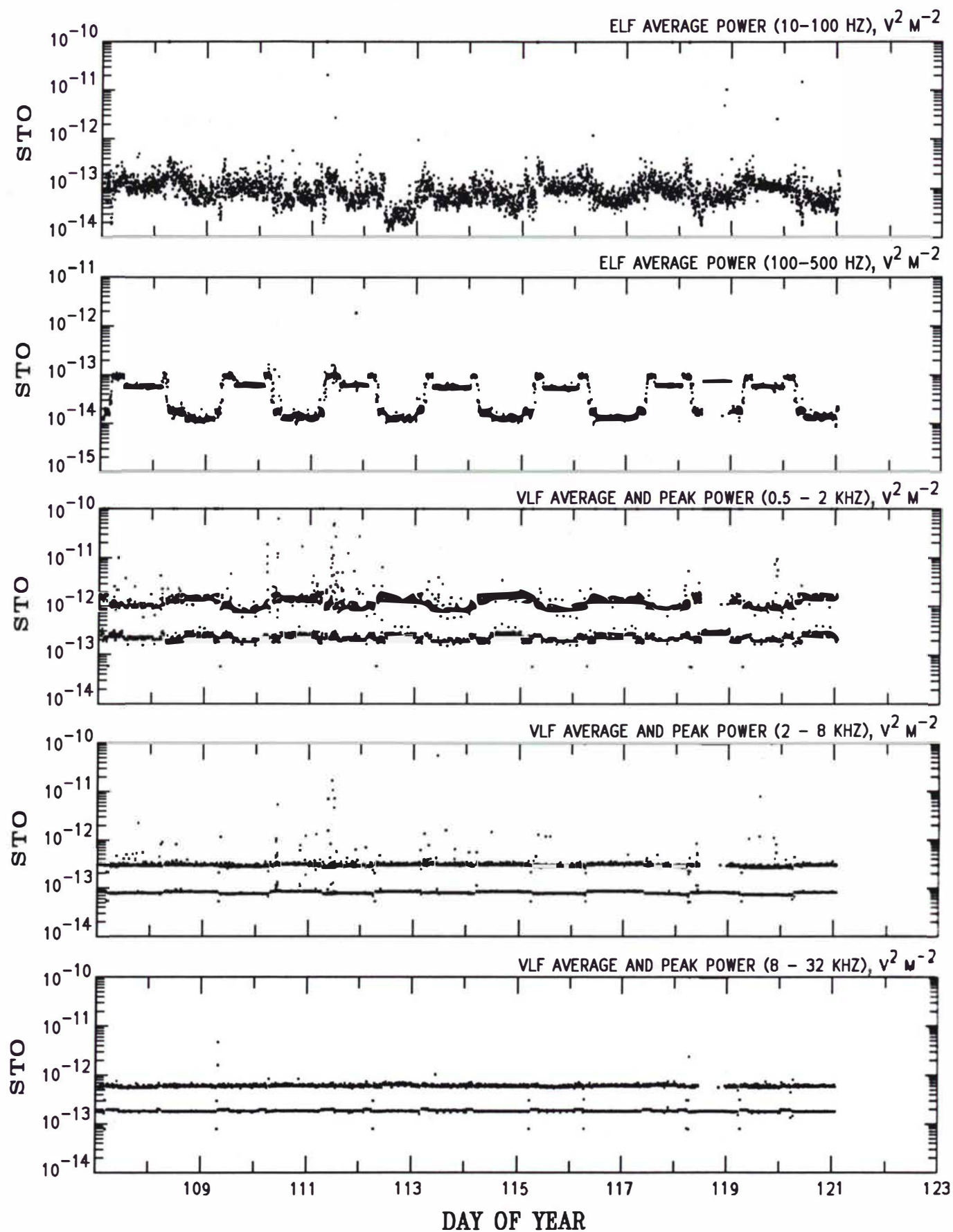
# ULYSSES CDR - PLASMA WAVE

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



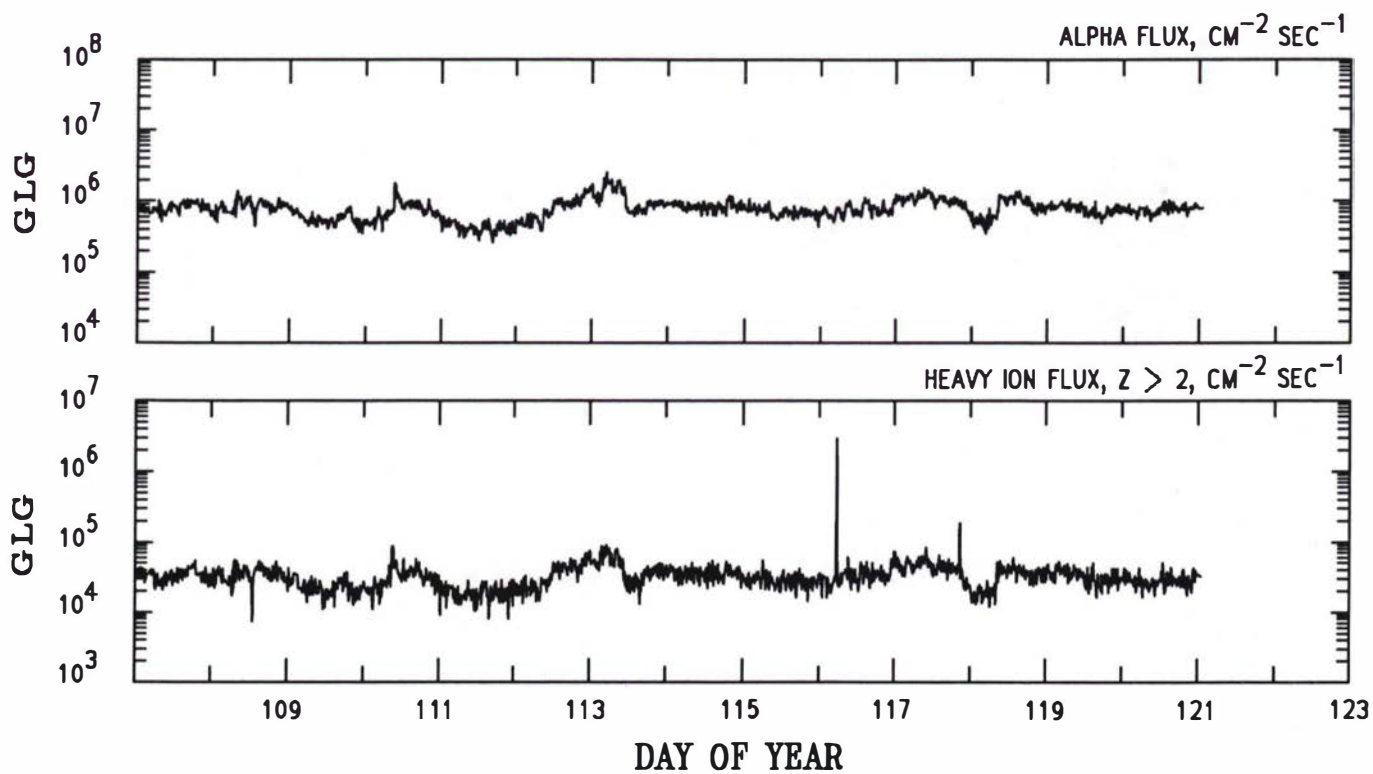
# ULYSSES CDR - PLASMA WAVE

94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000



# ULYSSES CDR - SOLAR WIND ION COMPOSITION

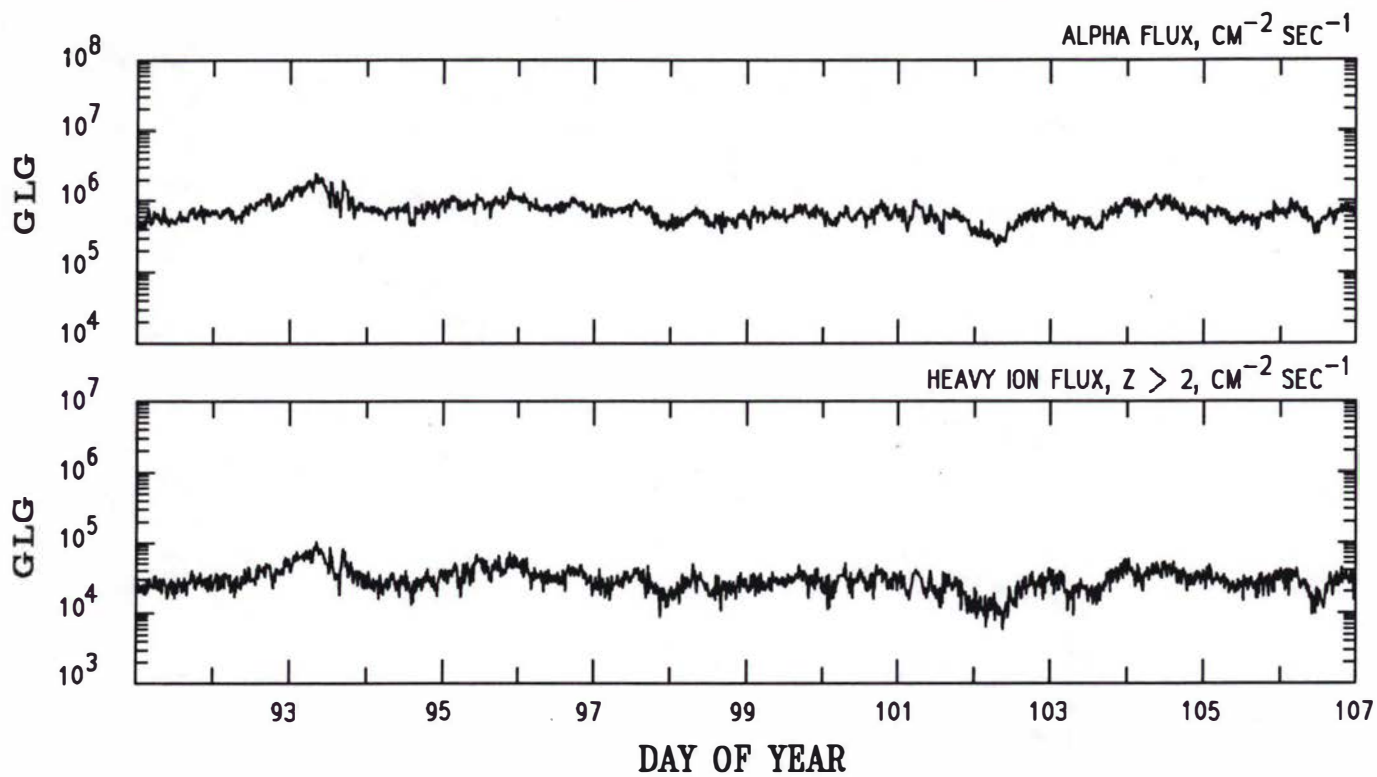
94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000





# ULYSSES CDR - SOLAR WIND ION COMPOSITION

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



.94.091.00.11.44.658

HUS monthly long term thermal data

818 HOLD RET

E002 2ARADTMP S/C

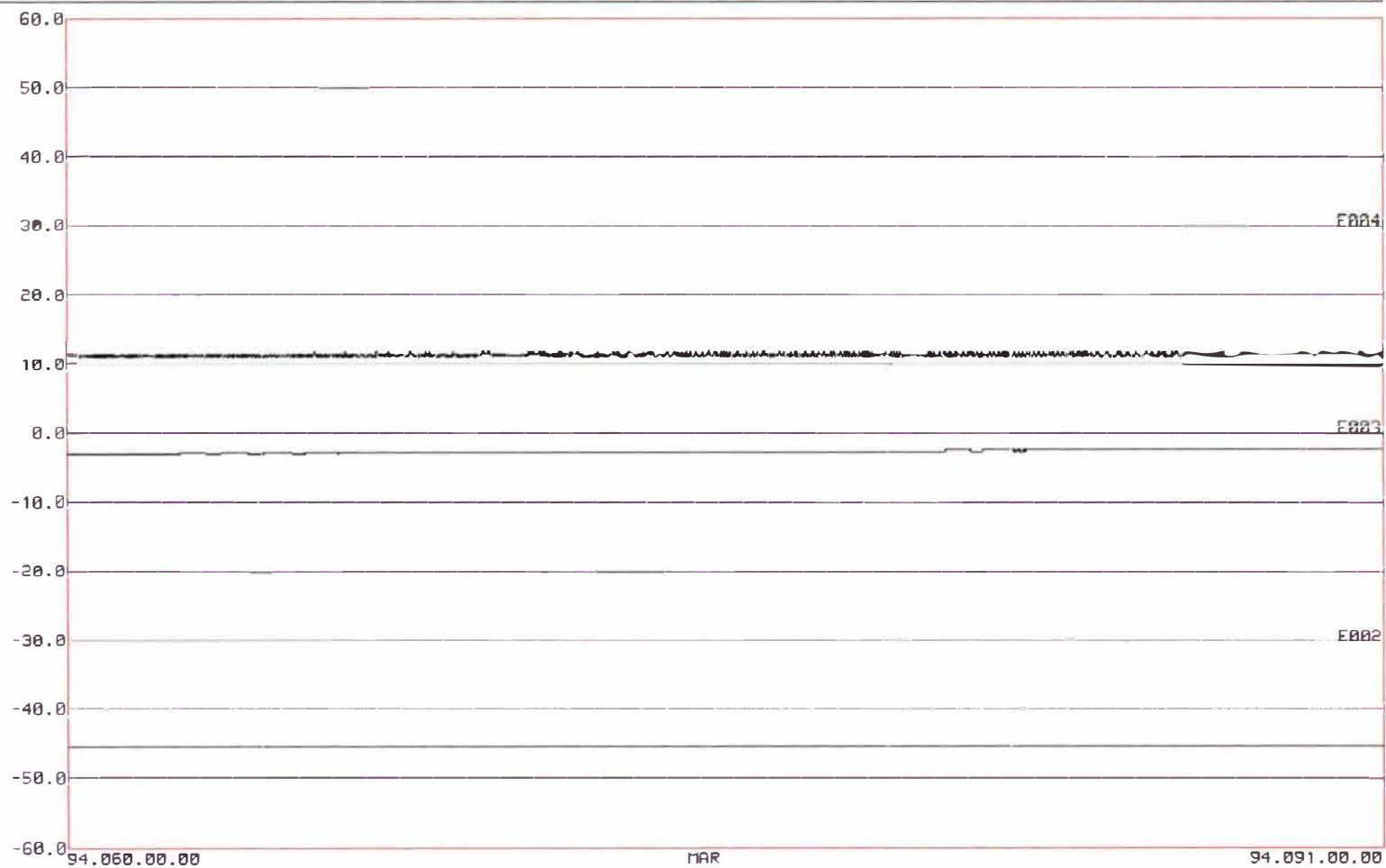
-2.4

E003 2BSENTMP S/C

-45.3

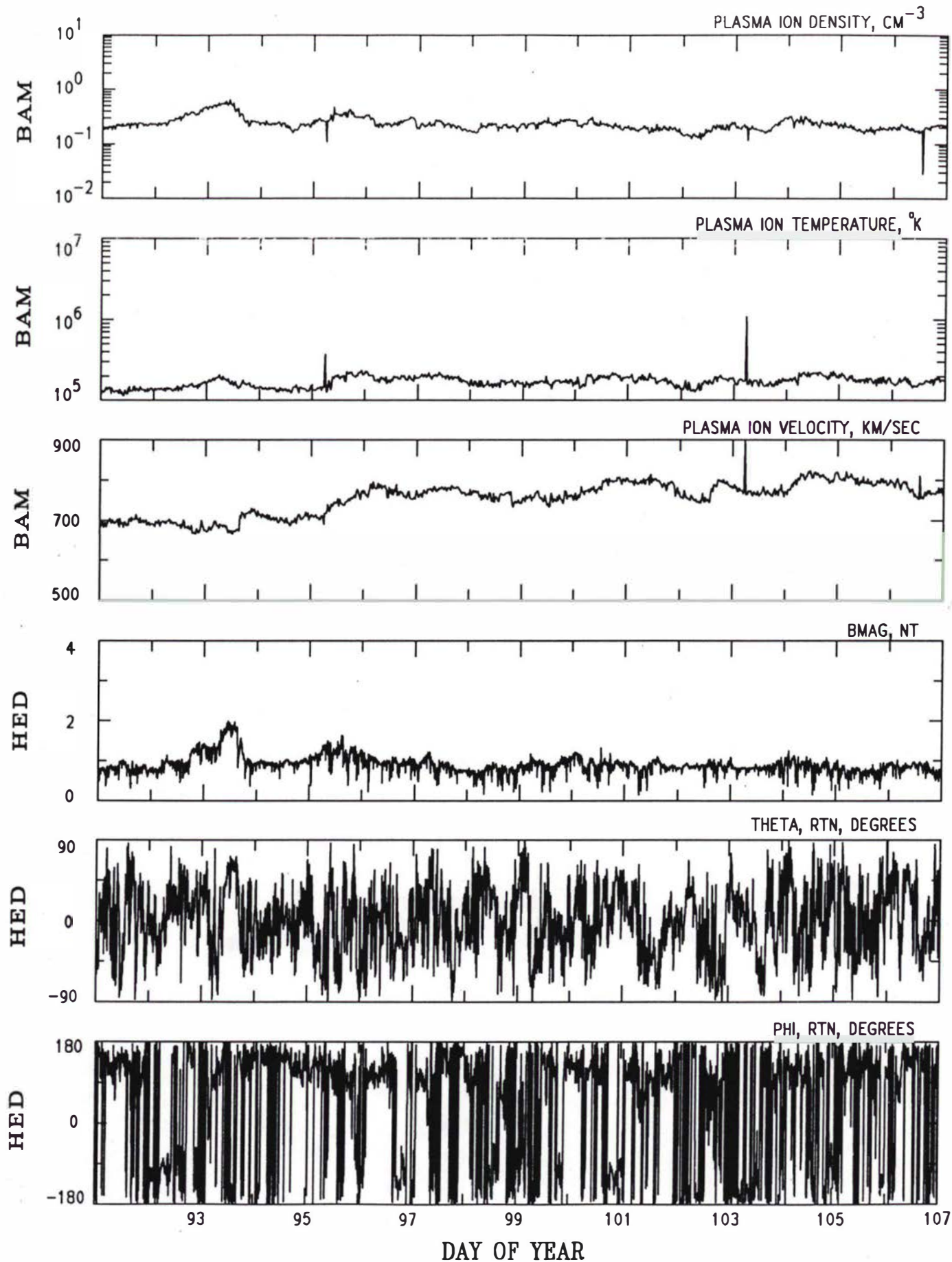
E004 2ASENSTMP EX

11.55



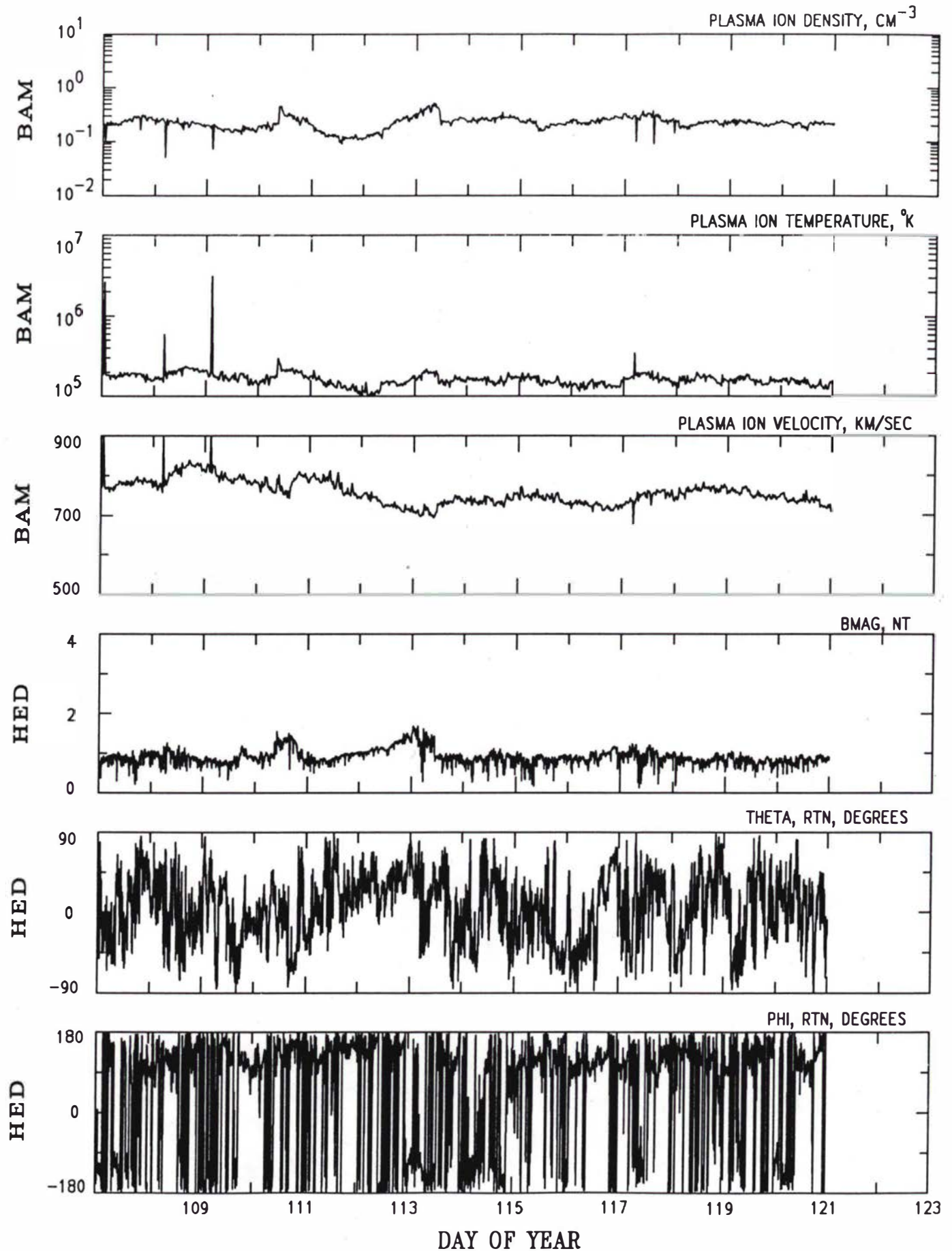
# ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



# ULYSSES CDR - SOLAR WIND PLASMA AND MAGNETIC FIELD

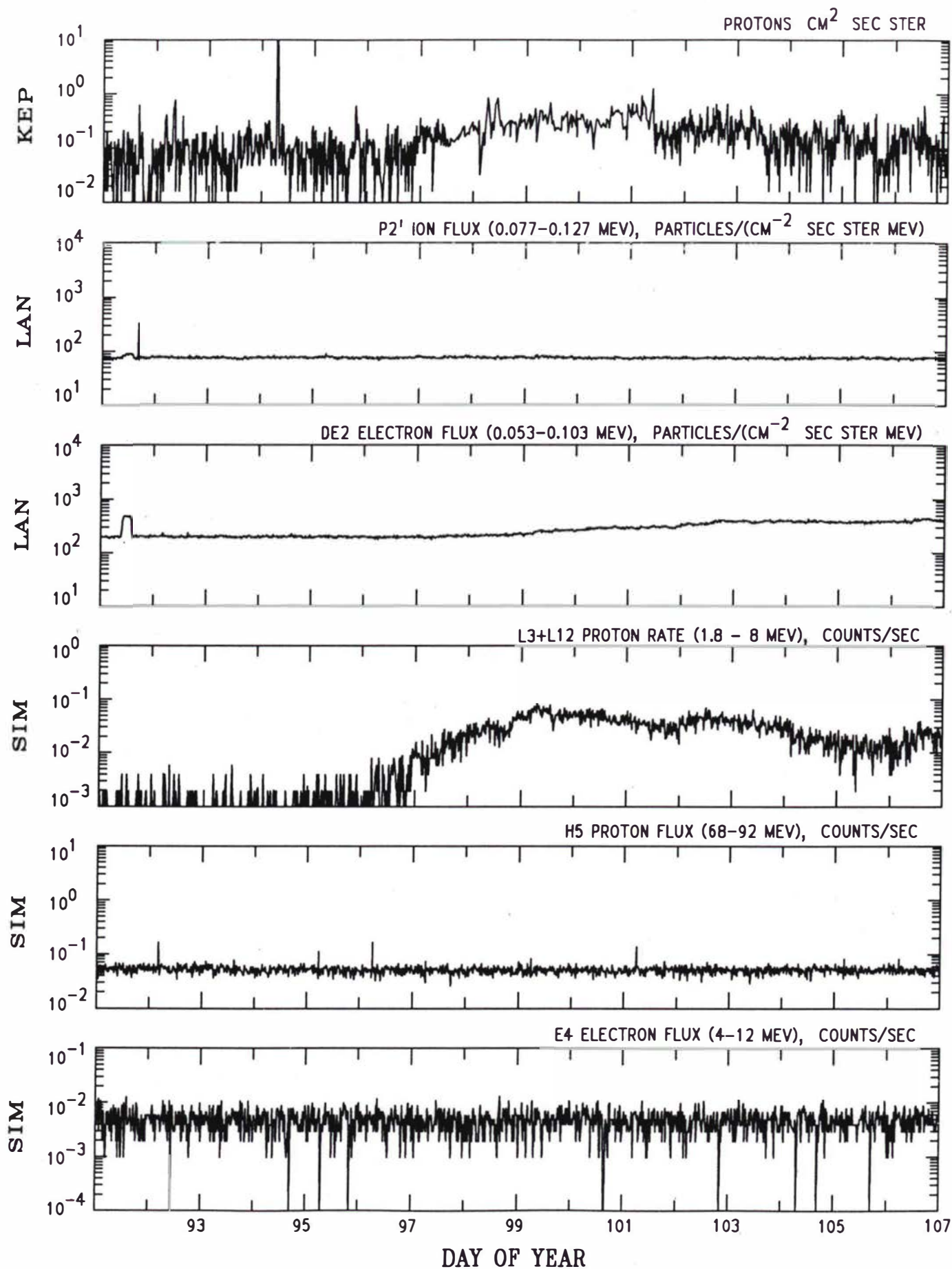
94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000





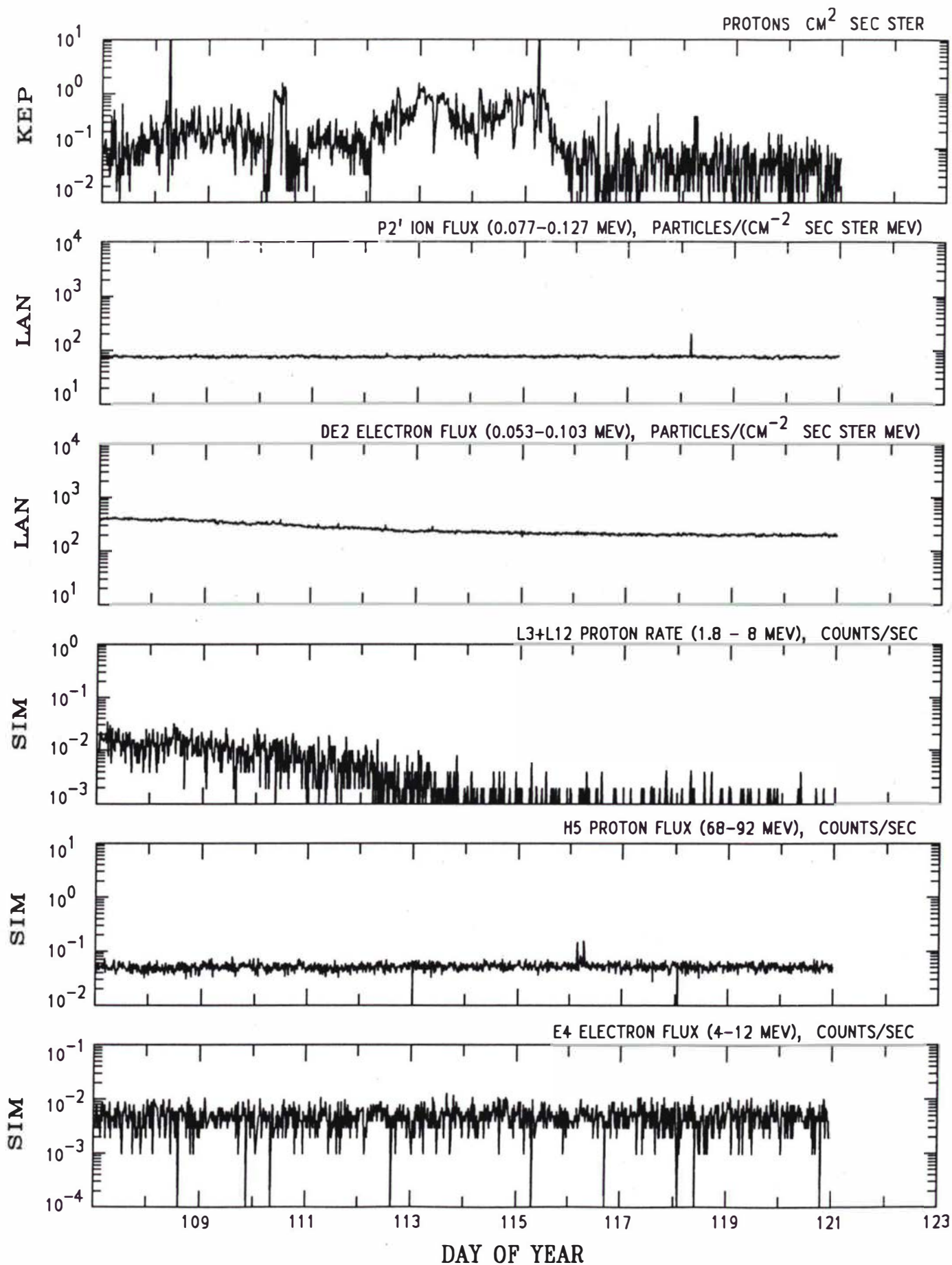
# ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



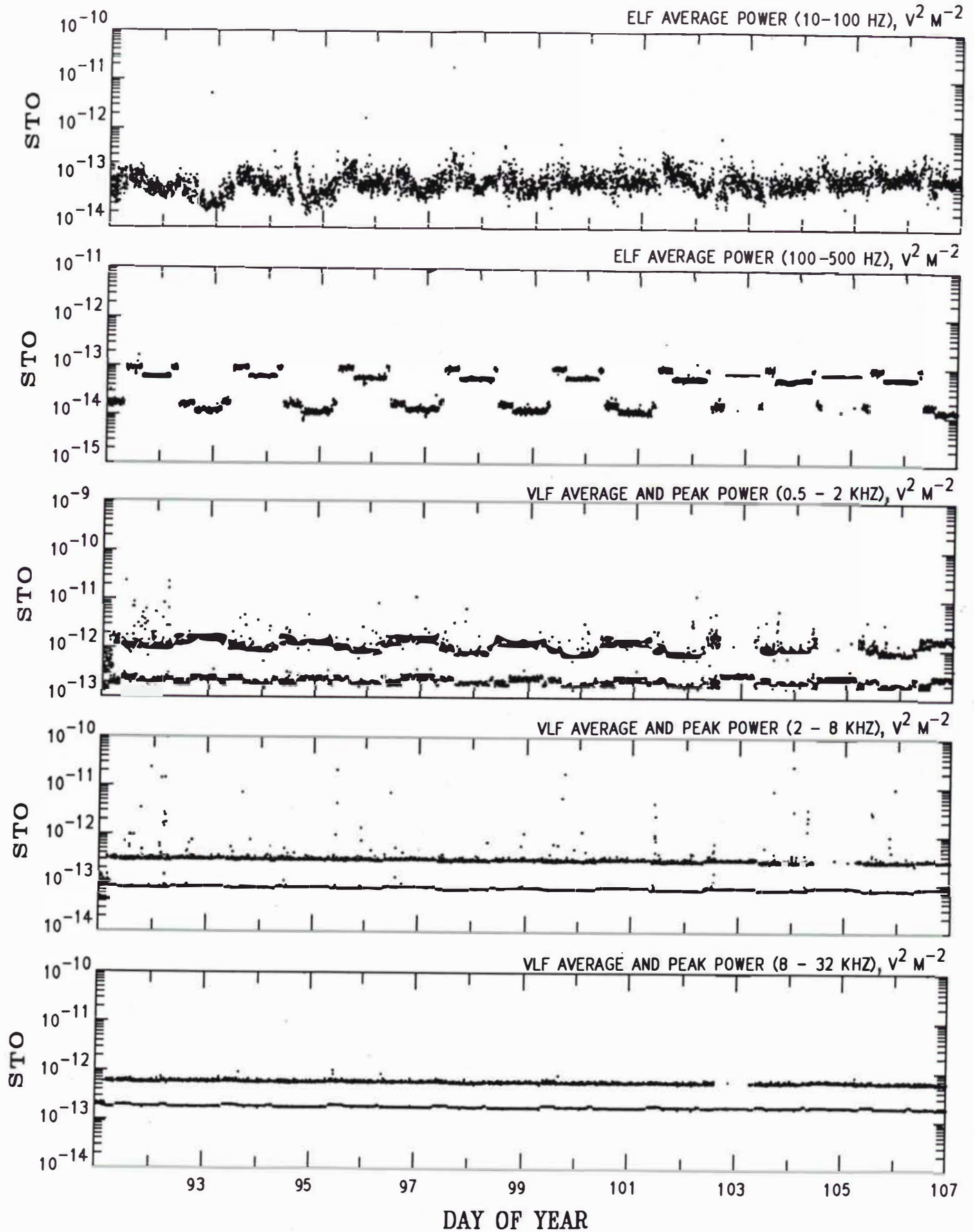
# ULYSSES CDR - ENERGETIC PARTICLES, LOW ENERGY IONS AND COSMIC RAY

94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000



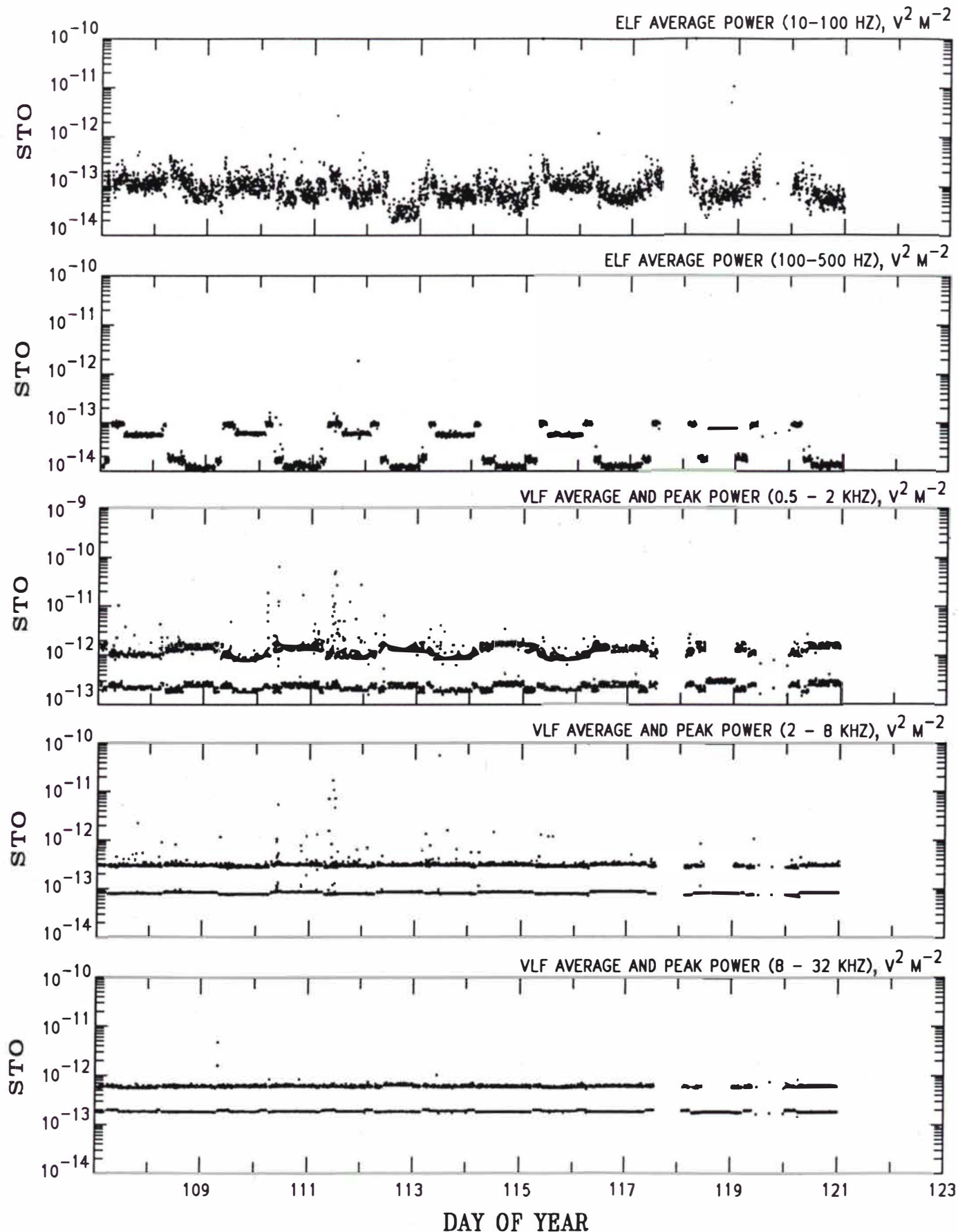
# ULYSSES CDR - PLASMA WAVE

94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



# ULYSSES CDR - PLASMA WAVE

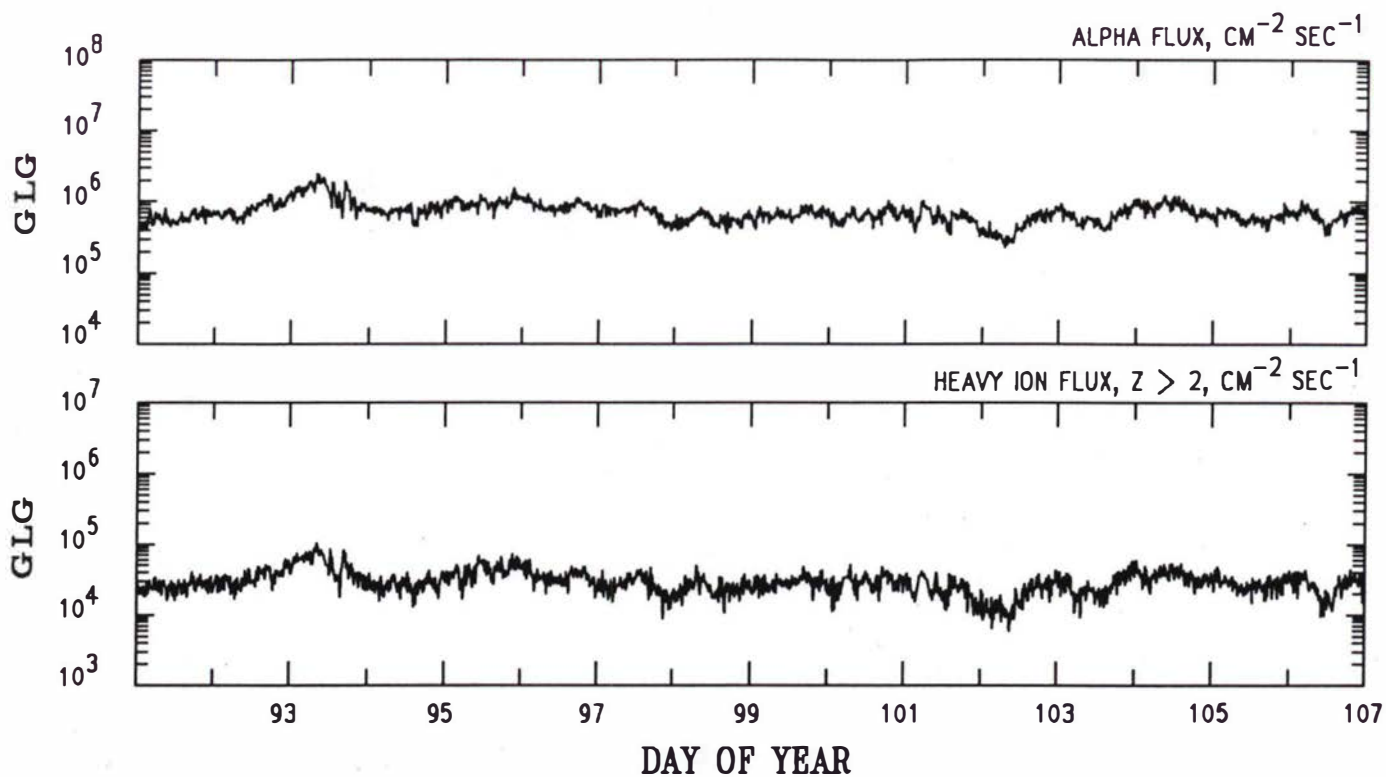
94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000





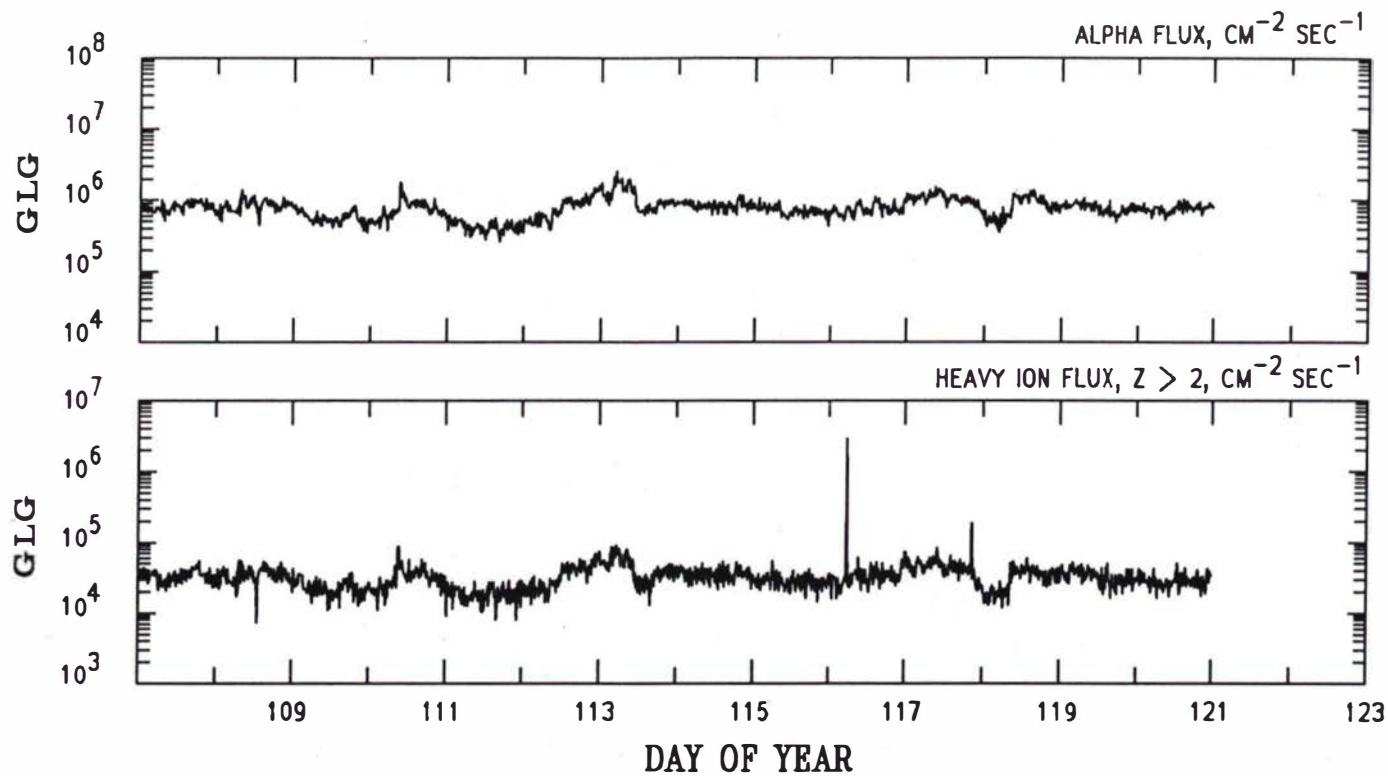
# ULYSSES CDR - SOLAR WIND ION COMPOSITION

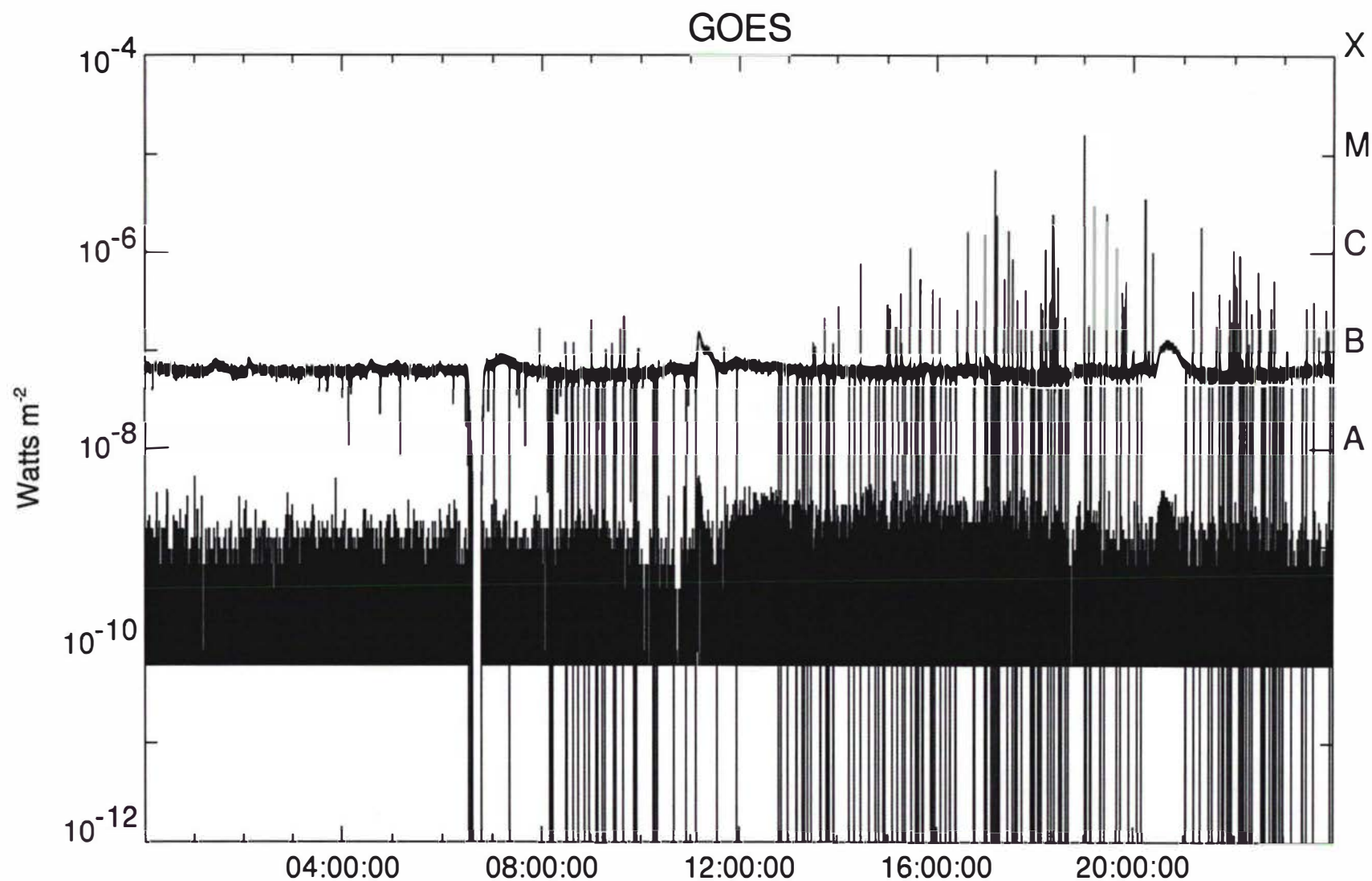
94 091 APR 1 00:00:00.000 - 94 107 APR 17 00:00:00.000



# ULYSSES CDR - SOLAR WIND ION COMPOSITION

94 107 APR 17 00:00:00.000 - 94 123 MAY 3 00:00:00.000





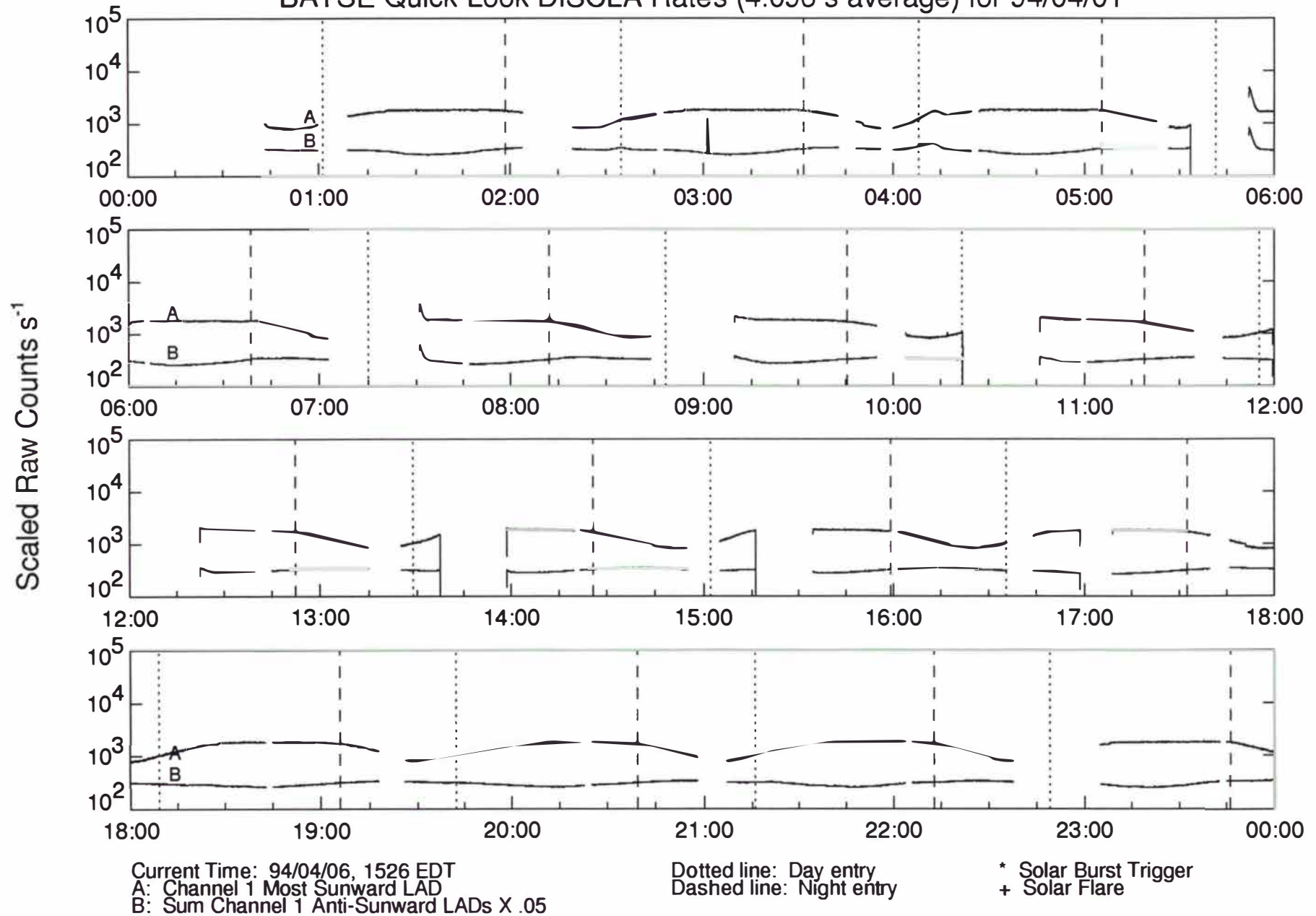
Data Start: 94/04/01, 0000:01

Plot created: 94/04/06, 1529

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

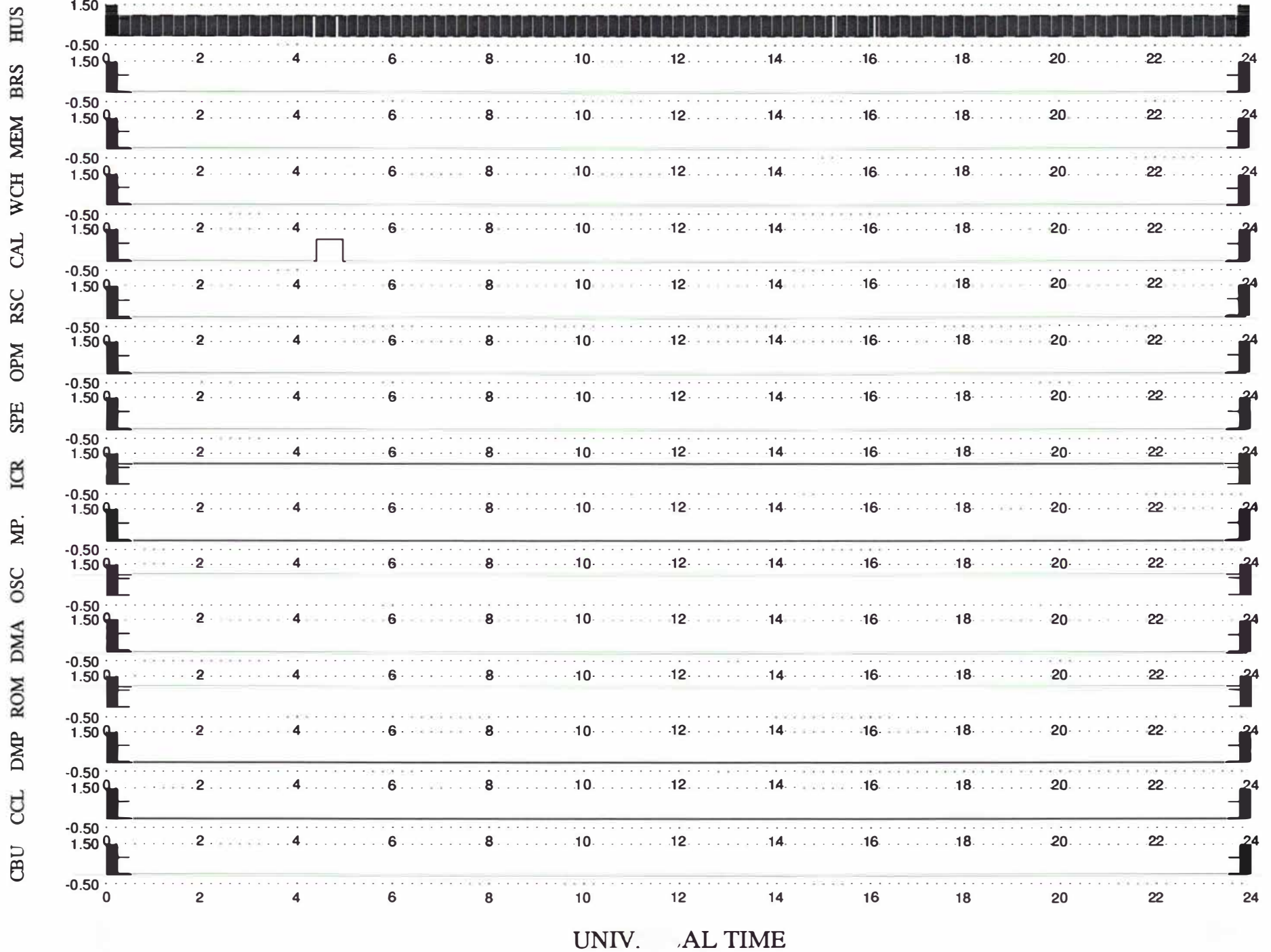
Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/01

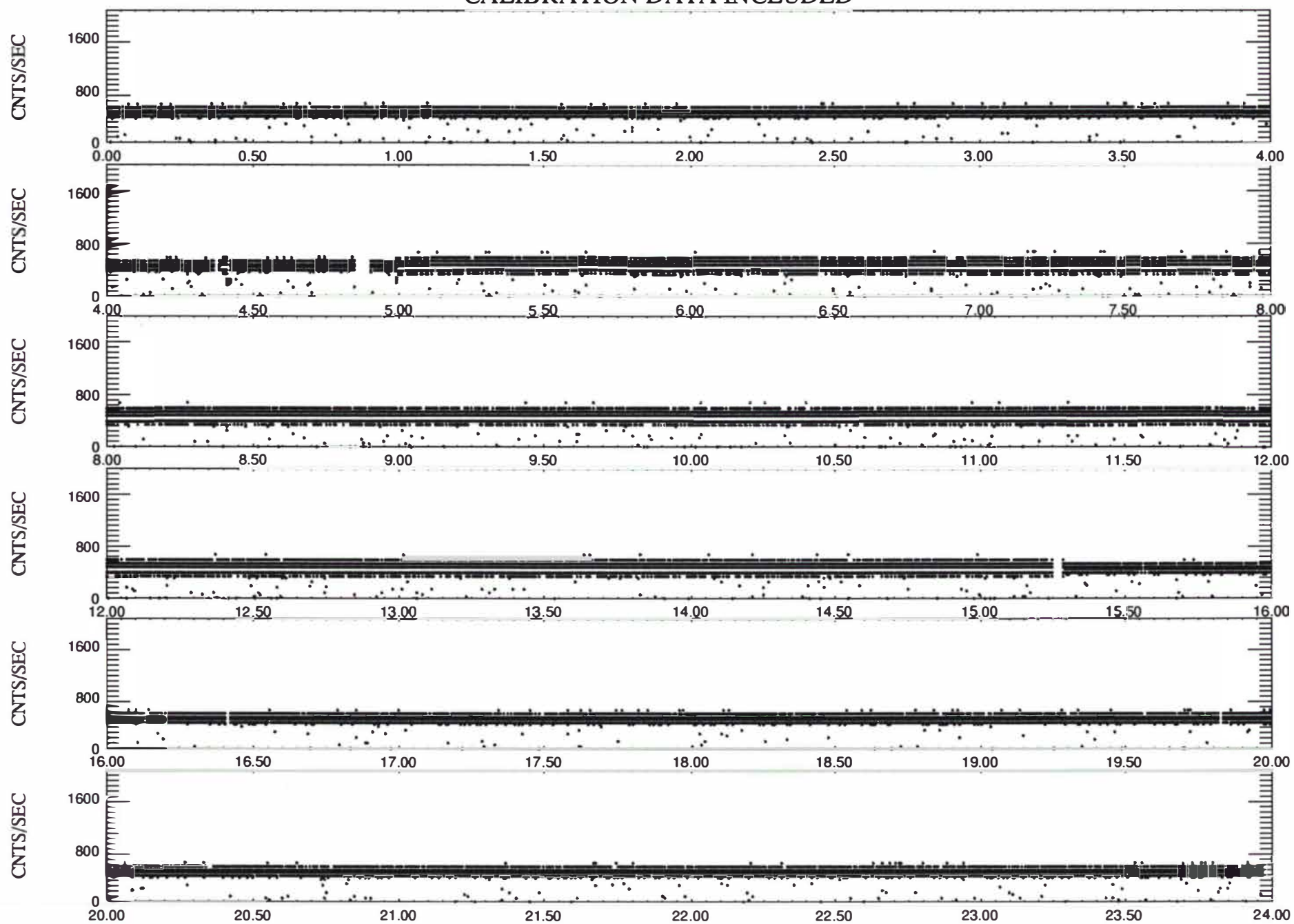




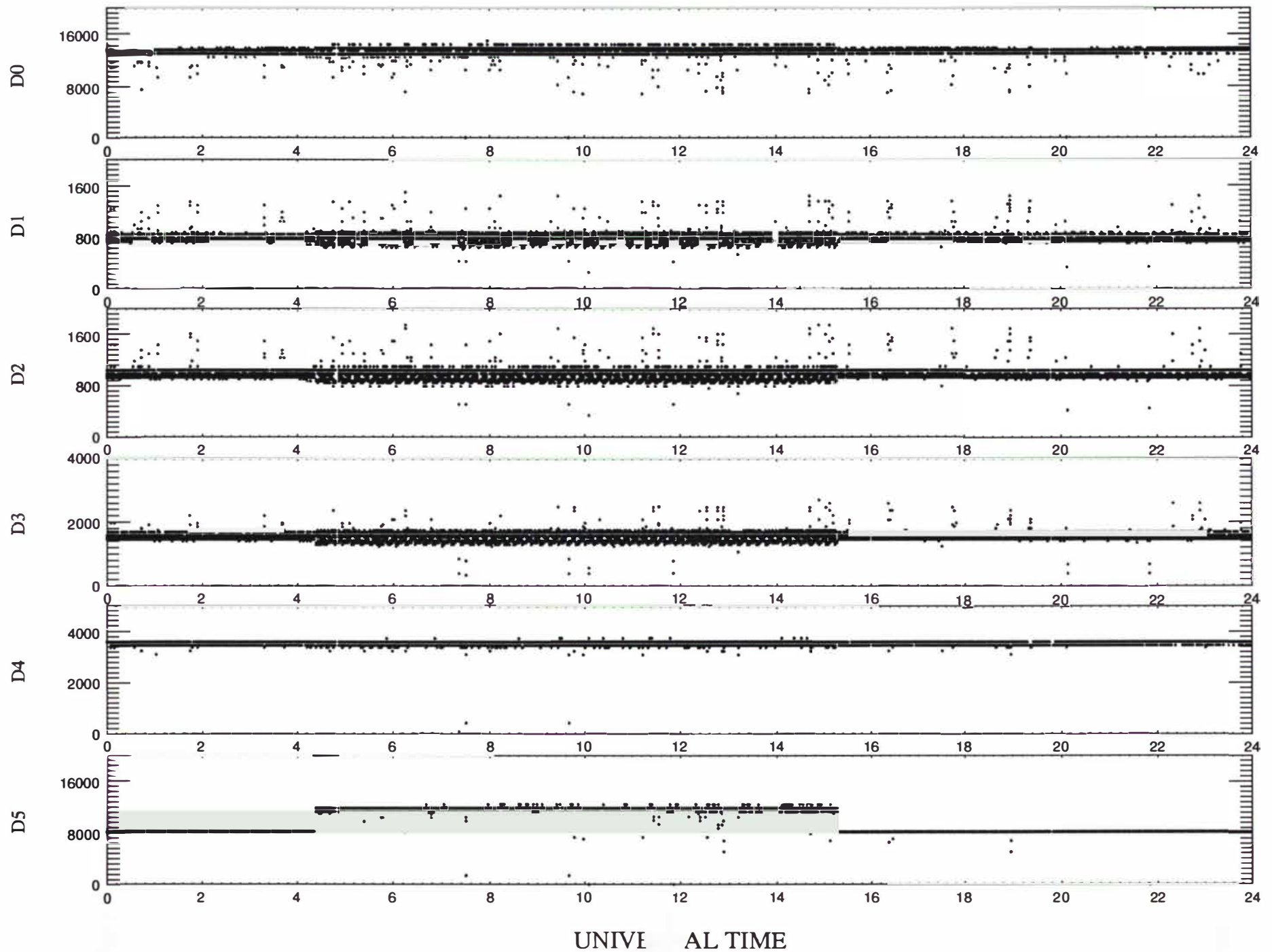
## NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV AL TIME



From SHARIFF@ssl.msfc.nasa.gov Mon Apr 4 11:14 PDT 1994  
Date: Mon, 4 Apr 1994 13:16:16 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02902

TIME: TJD=9444 SECONDS=74704

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

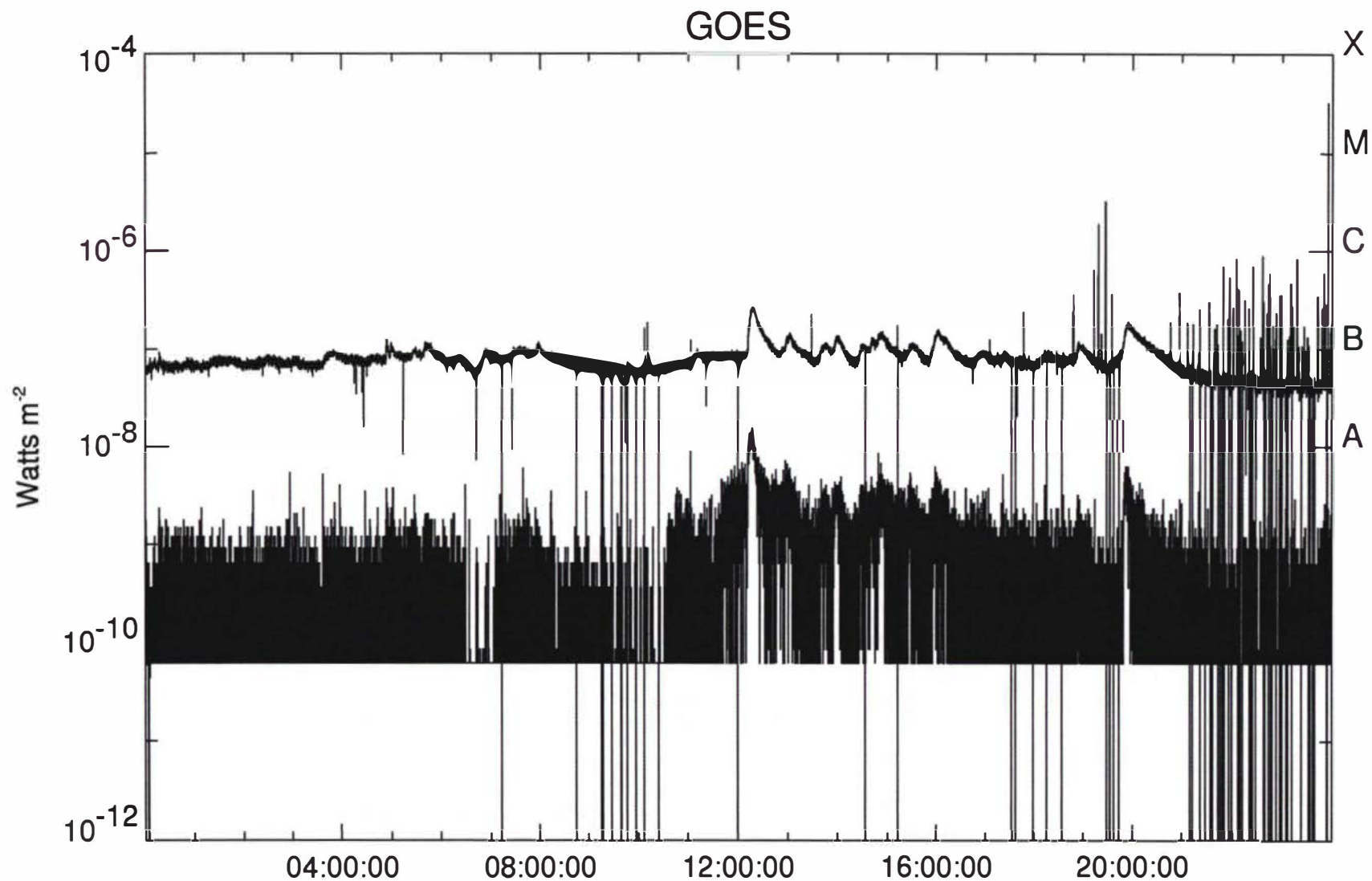
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
FLUCTUATIONS OF PARTICLE ACTIVITY.





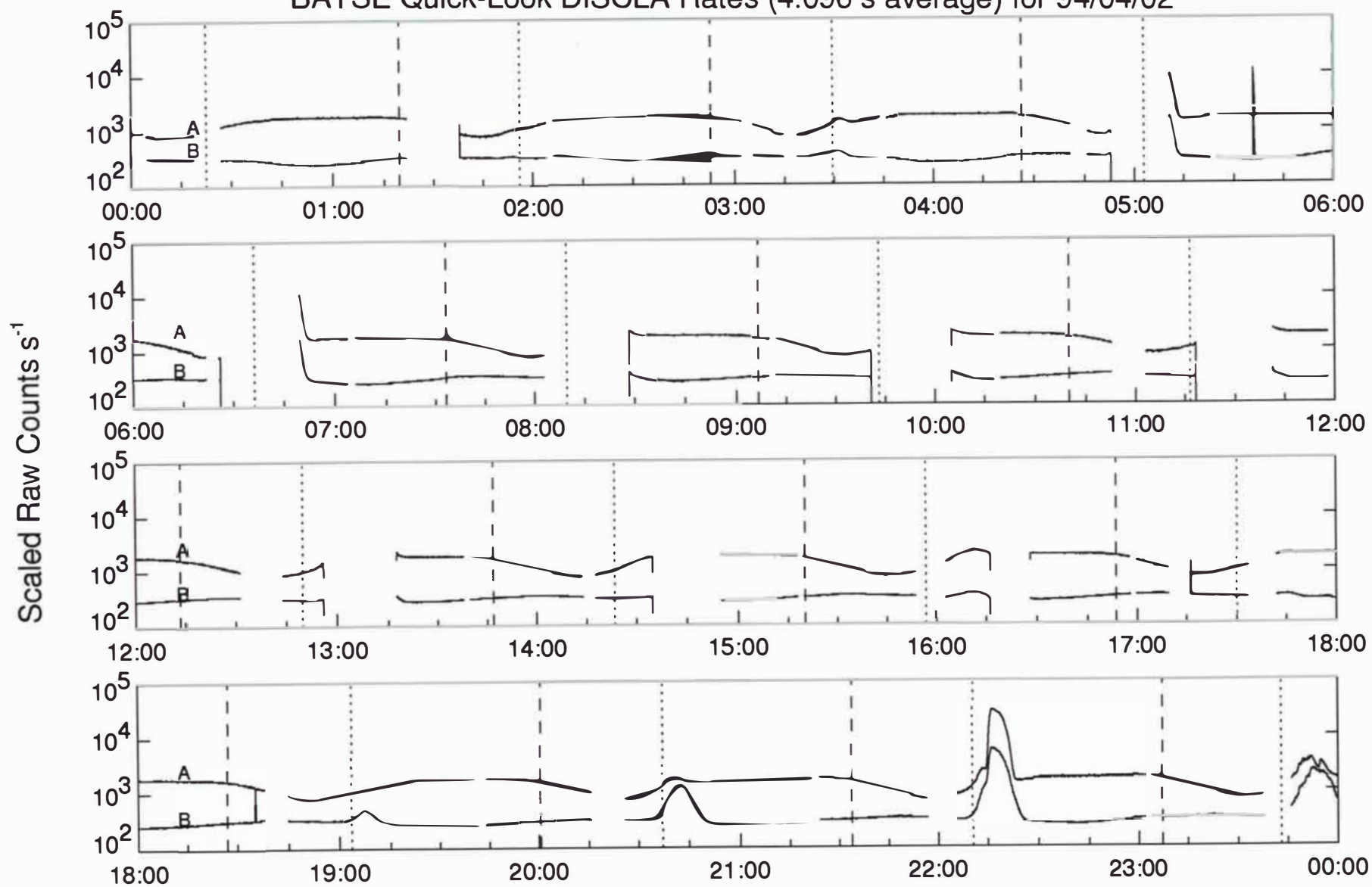
Data Start: 94/04/02, 0000:00

Plot created: 94/04/06, 1529

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/02

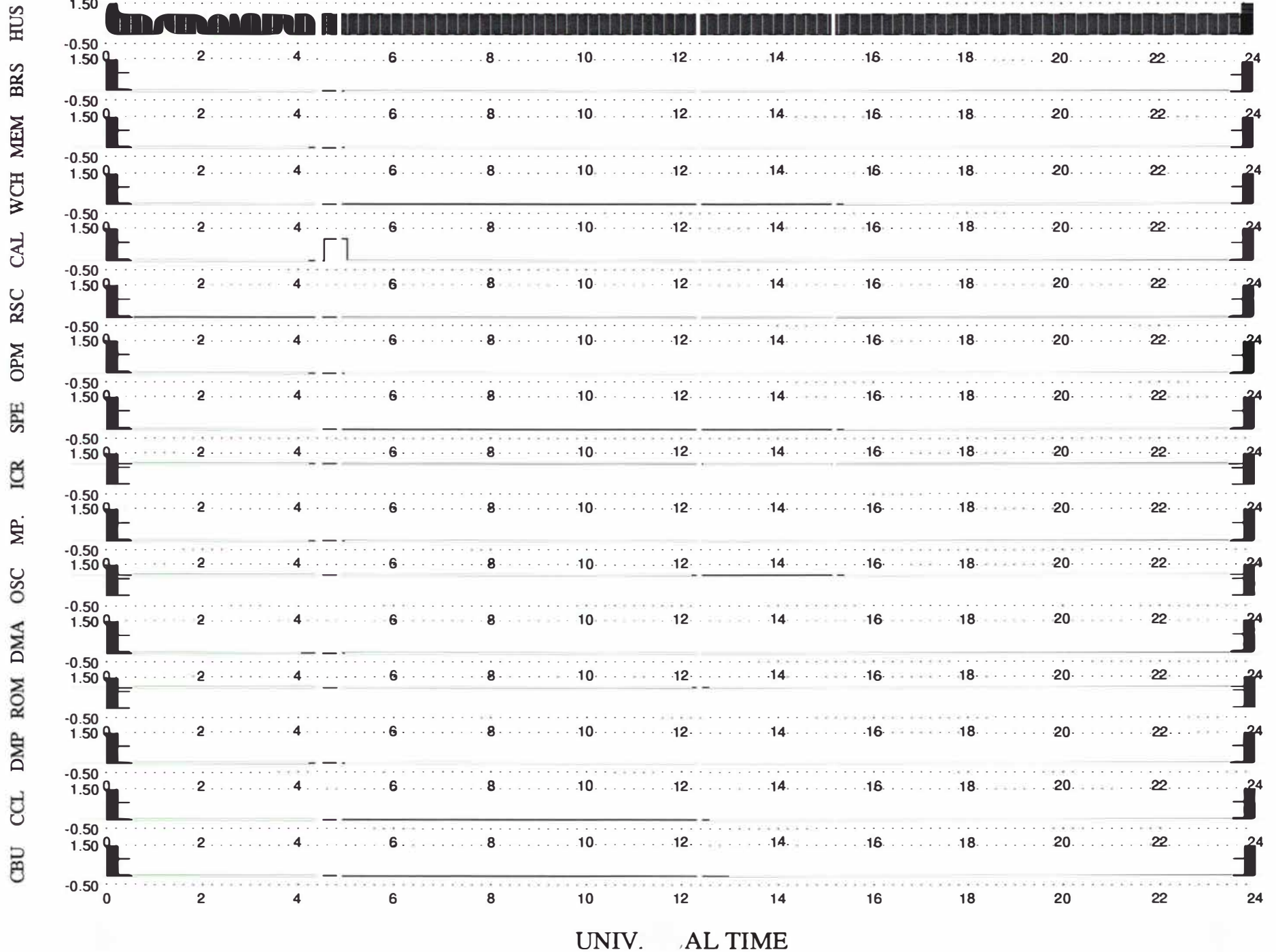


Current Time: 94/04/06, 1526 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

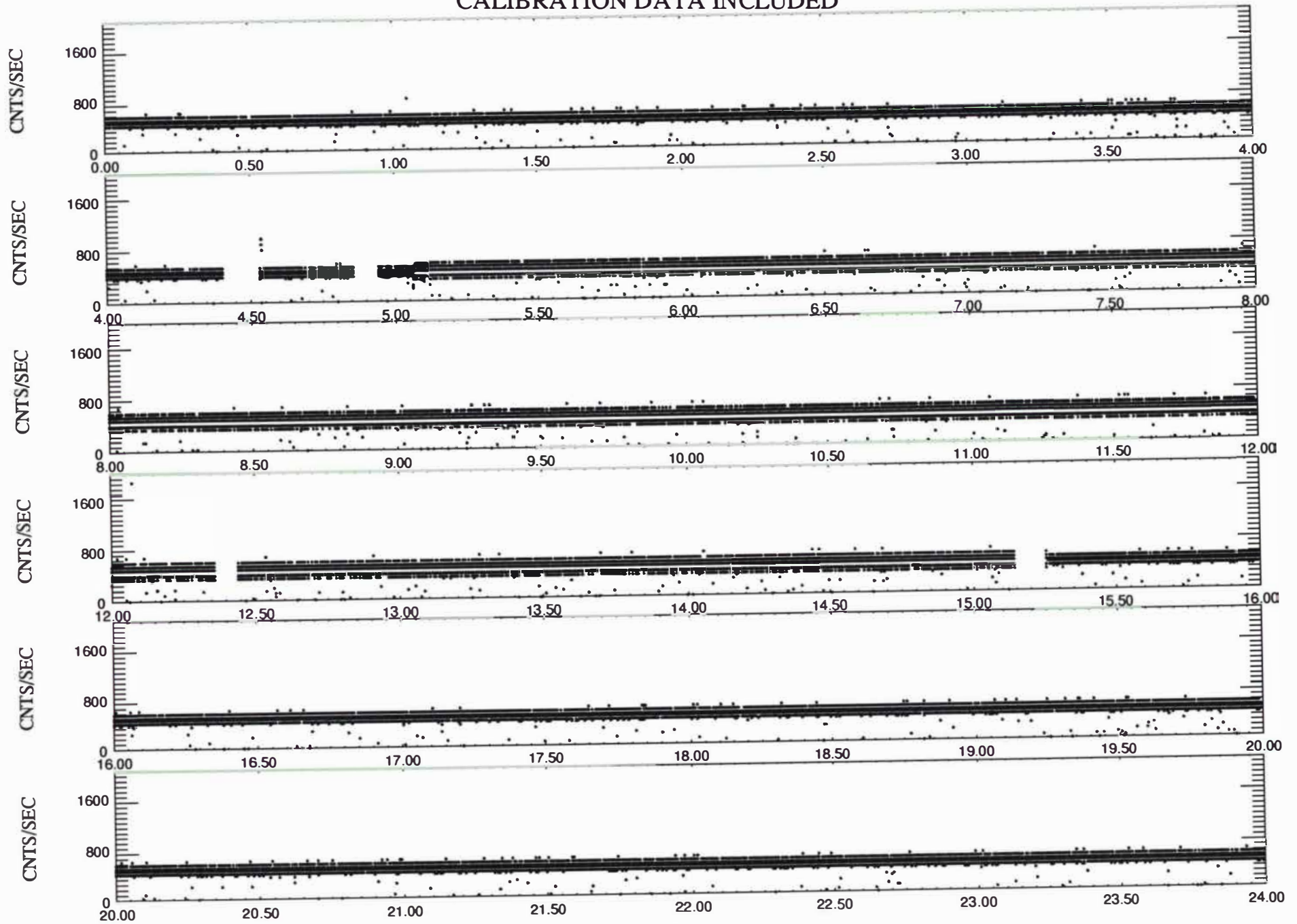
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

NO BURST (9)

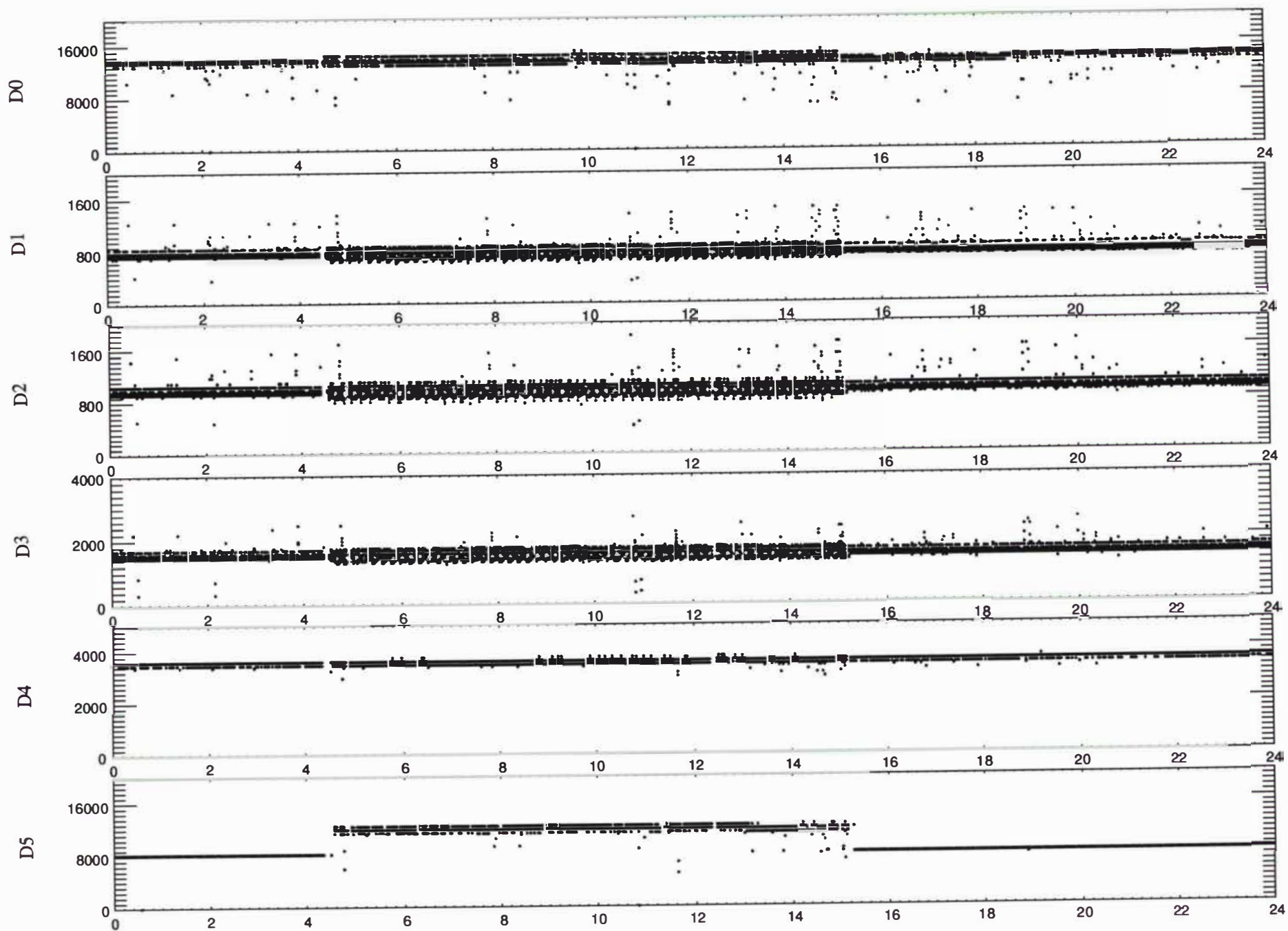


CALIBRATION DATA INCLUDED



UNIVERSAL TIME





UNIVI AL TIME

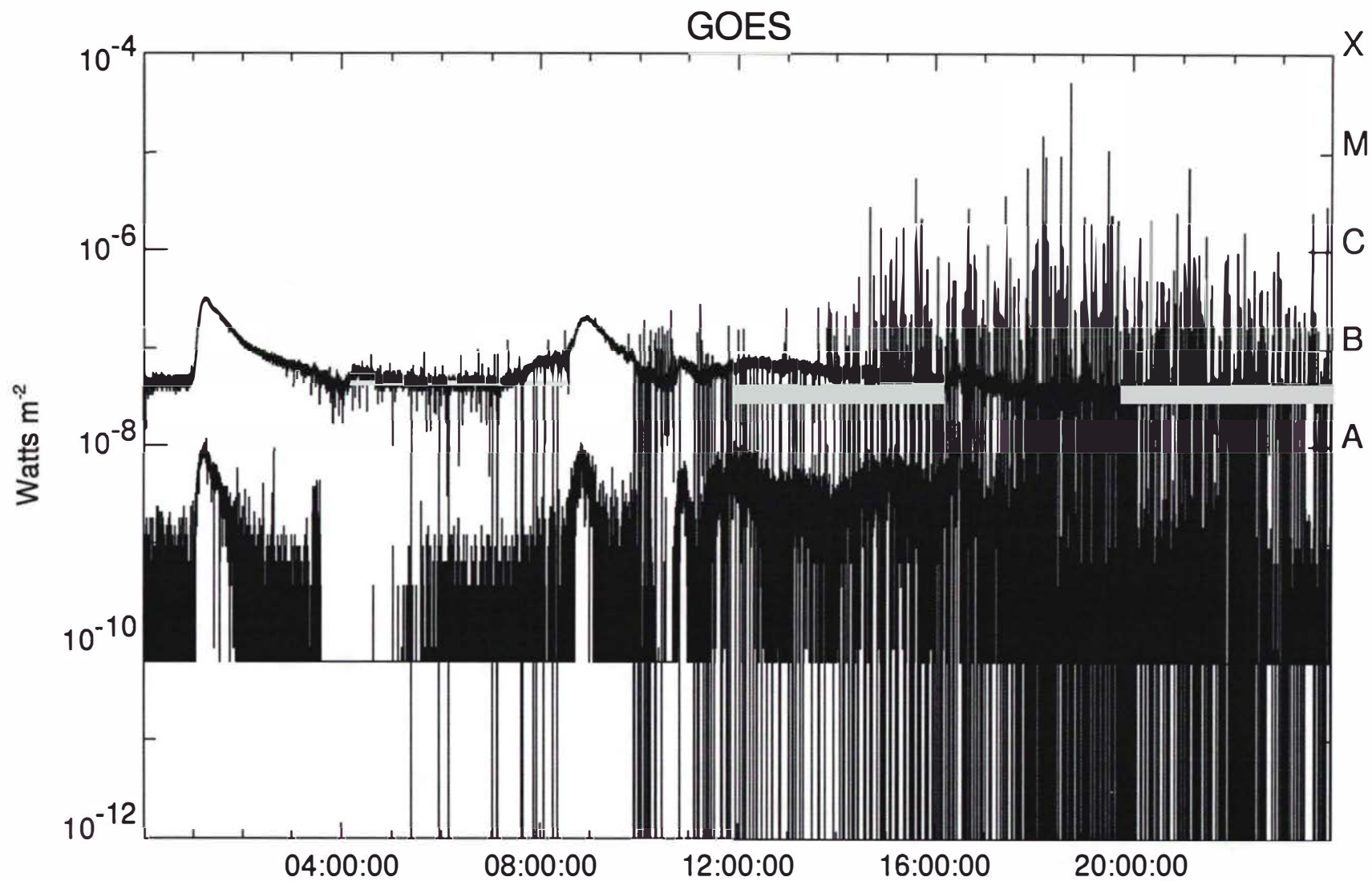
BATSE BURST TRIGGER  
NO.: 02903  
TIME: TJD=9445 SECONDS=4978  
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N  
SIGNIFICANCE: SIGMA  
INTENSITY: COUNTS/CM2  
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES  
COMMENTS:  
ELECTRON EVENT.

BATSE BURST TRIGGER  
NO.: 02904  
TIME: TJD=9445 SECONDS=43903  
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N  
SIGNIFICANCE: SIGMA  
INTENSITY: COUNTS/CM2  
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES  
COMMENTS:  
SAA ENTRY.

BATSE BURST TRIGGER  
NO.: 02905  
TIME: TJD=9445 SECONDS=66280  
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N  
SIGNIFICANCE: SIGMA  
INTENSITY: COUNTS/CM2  
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES  
COMMENTS:  
ELECTRON EVENT.

BATSE BURST TRIGGER  
NO.: 02906  
TIME: TJD=9445 SECONDS=77401  
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N  
SIGNIFICANCE: SIGMA  
INTENSITY: COUNTS/CM2  
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES  
COMMENTS:  
ELECTRON EVENT.

BATSE BURST TRIGGER  
NO.: 02907  
TIME: TJD=9445 SECONDS=86397  
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N  
SIGNIFICANCE: SIGMA  
INTENSITY: COUNTS/CM2  
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES  
COMMENTS:  
ELECTRON EVENT.



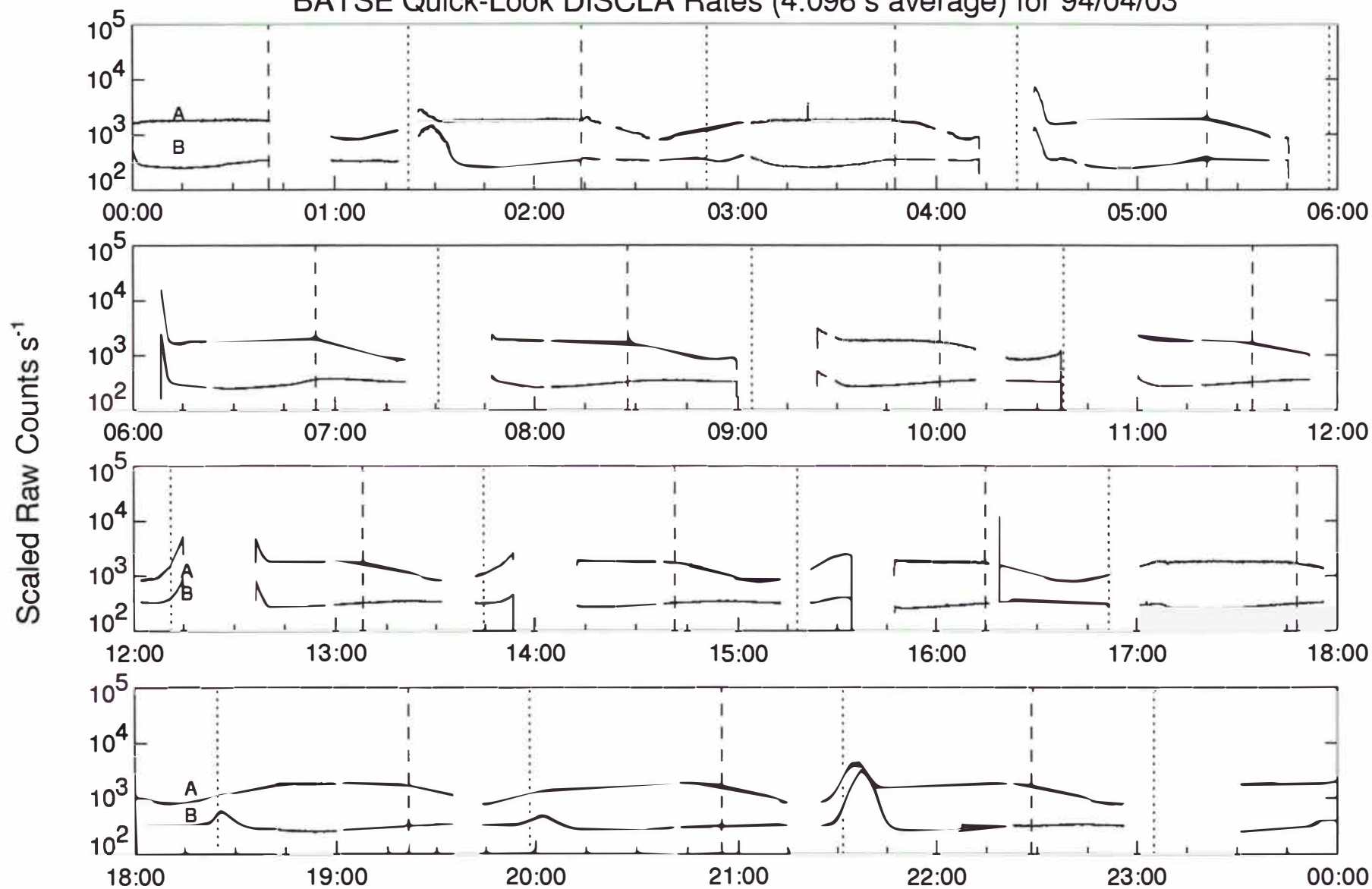
Data Start: 94/04/03, 0000:00

Plot created: 94/04/06, 1529

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/03



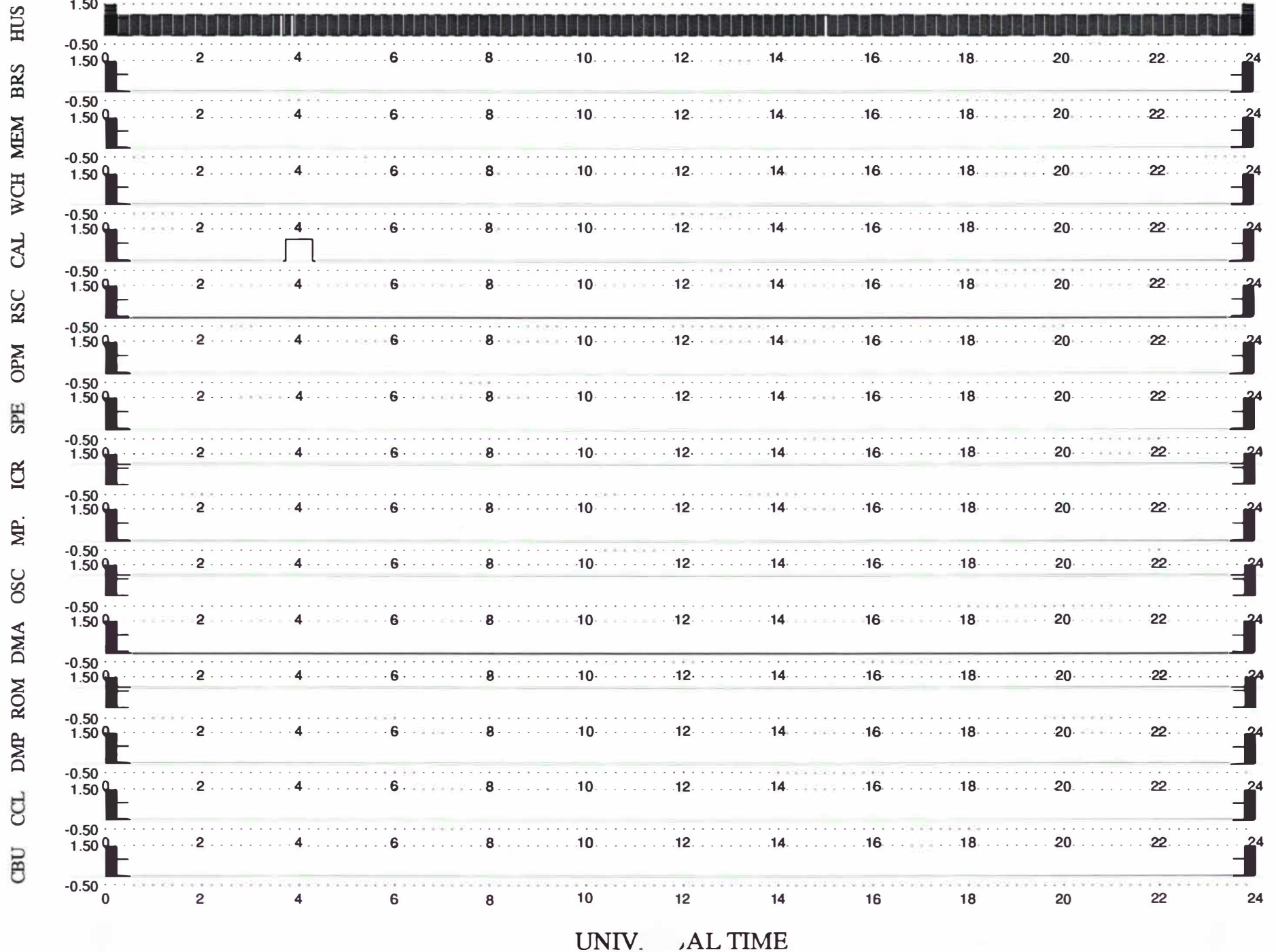
Current Time: 94/04/06, 1526 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

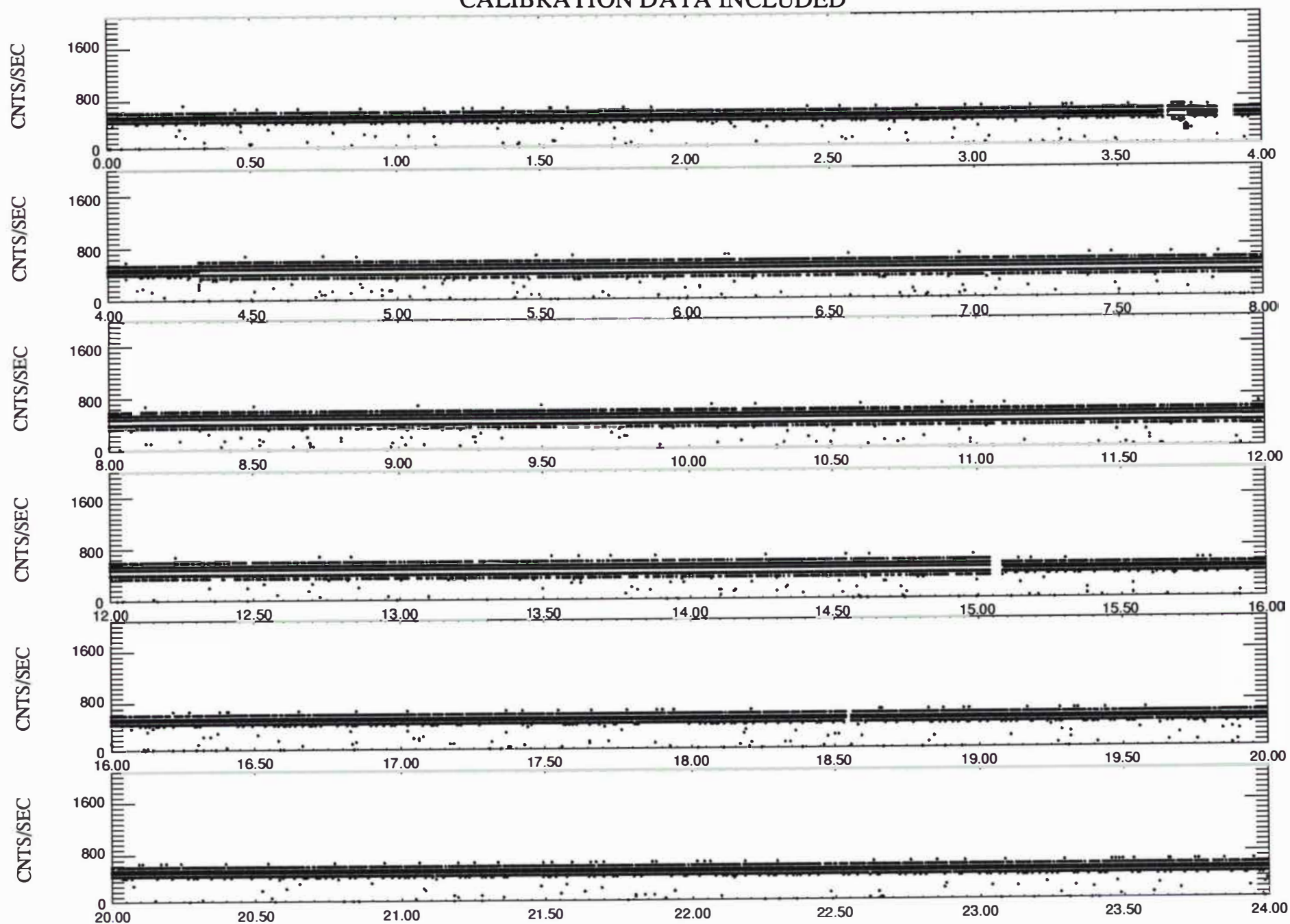
\* Solar Burst Trigger  
 + Solar Flare



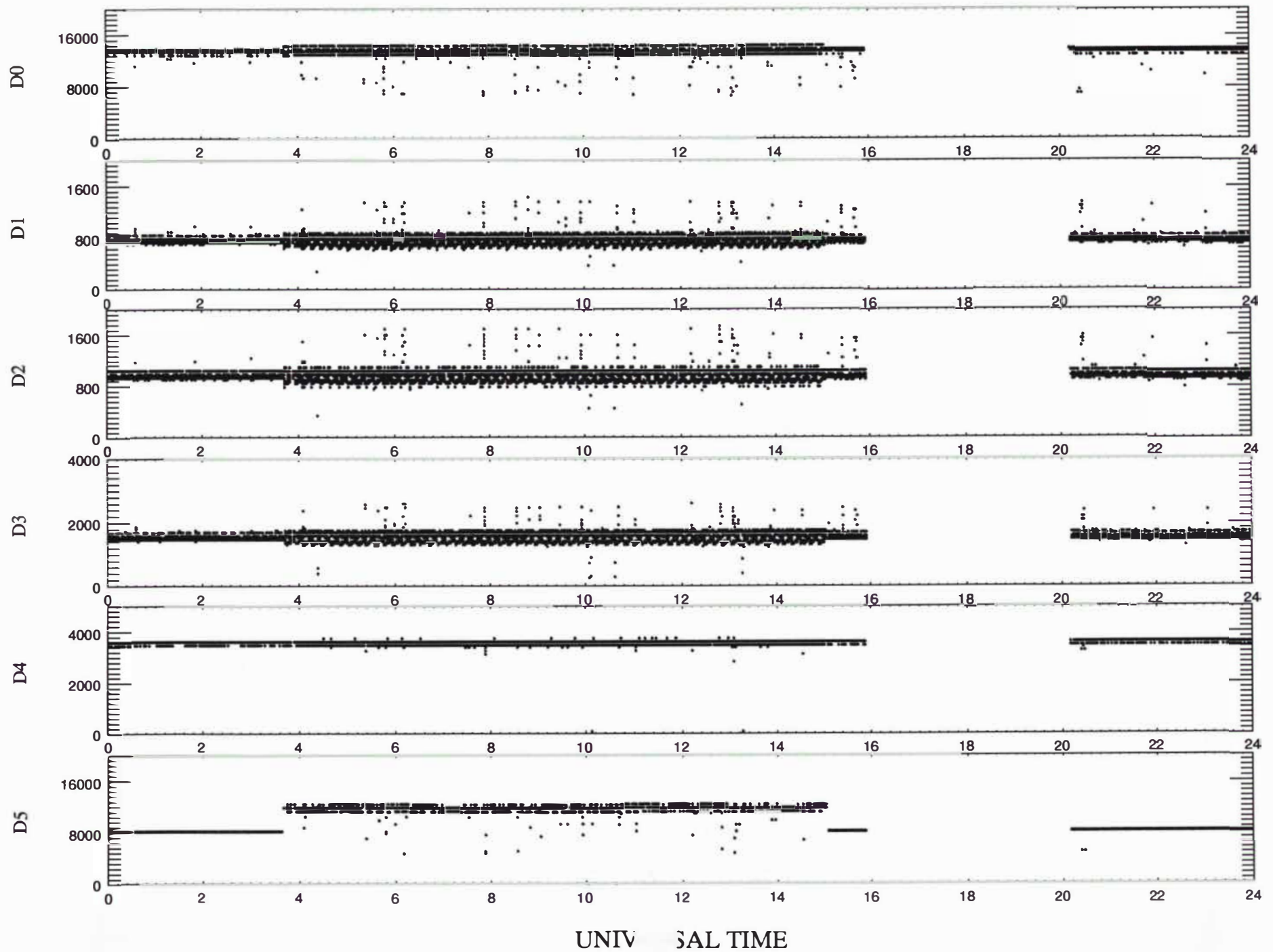
NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV. AL TIME



From SHARIFF@ssl.msfc.nasa.gov Tue Apr 5 16:44 PDT 1994  
Date: Tue, 5 Apr 1994 18:46:01 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02908

TIME: TJD=9446 SECONDS=02324

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON PREC. EVENT.

From SHARIFF@ssl.msfc.nasa.gov Tue Apr 5 16:46 PDT 1994  
Date: Tue, 5 Apr 1994 18:48:31 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02909

TIME: TJD=9446 SECONDS=12765

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
SAA EXIT (PARTICLES)



From SHARIFF@ssl.msfc.nasa.gov Tue Apr 5 16:52 PDT 1994  
Date: Tue, 5 Apr 1994 18:54:24 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2910  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2910  
EVENT OF 1994 APR 4 DAY OF YEAR= 94  
EVENT CROSSING TIME AT BATSE : 55314. S. OR 15:21:54.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 353.000 50.000  
BATSE PEAK COUNTING RATE: 4500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 4/ 4/ 94 IS:  
RA= 125.208 DEC= -48.894 DIST= 2.877 AU  
BATSE-ULYSSES DISTANCE = 430346605. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 30.56 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1236.13 SECS.  
CROSSING TIME AT ULYSSES IS 56550. S. OR 15:42:30 +/- 195.47 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 4/ 4/ 94 IS:  
RA= 352.733 DEC= -4.325 DIST= 2.252 AU  
MARS-BATSE DISTANCE = 336966848. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=125.67 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -655.48 SECS.  
CROSSING TIME AT MARS IS 54659. S. OR 15:10:58 +/- 148.57 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2910    | 940404 | 9446 | 55314 | 4500     | 353 | +50 |

#### BATSE BURST TRIGGER

NO.: 02910

TIME: TJD=9446 SECONDS=55314

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=110.0 AZIMUTH=021.0 ERROR= DEGREES

#### COMMENTS:

BURST, SINGLE SPIKE, LASTING ~0.5 SECONDS. VISIBLE ABOVE 300KEV.



\*\*\*\*\*  
\*CATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2910  
EVENT OF 1994 APR 4 DAY OF YEAR= 94  
EVENT CROSSING TIME AT BATSE : 55314. S. OR 15:21:54.1  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 47.020 56.270  
BATSE PEAK COUNTING RATE: 0000 C/S  
  
EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
POSITION OF ULYSSES ON 4/ 4/ 94 IS:  
RA= 125.421 DEC= -49.005 DIST= 2.876 AU  
BATSE-ULYSSES DISTANCE = 430284008. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 56.33 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 795.82 SECS.  
CROSSING TIME AT ULYSSES IS 56110. S. OR 15:35:09.9 +/- 269.46 SECONDS

9 / 11 / 95

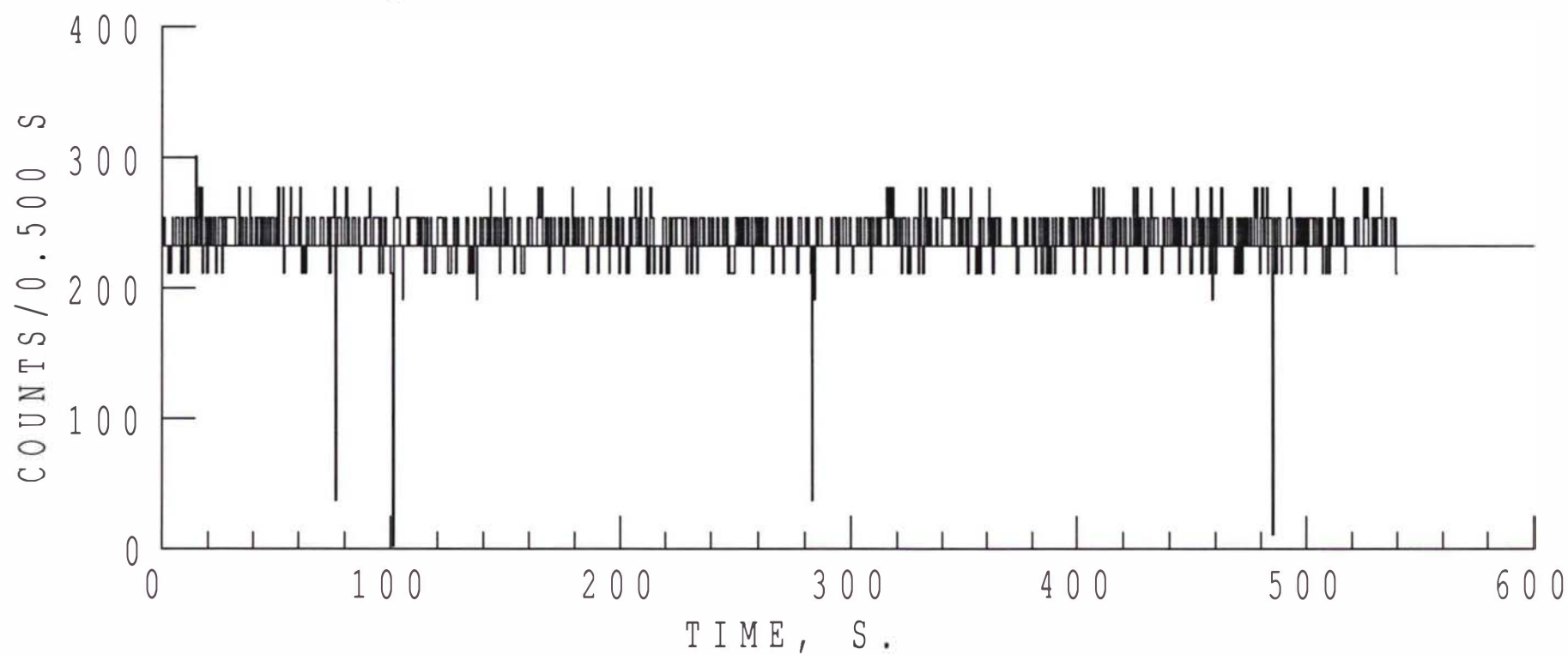
ULYSSES RT

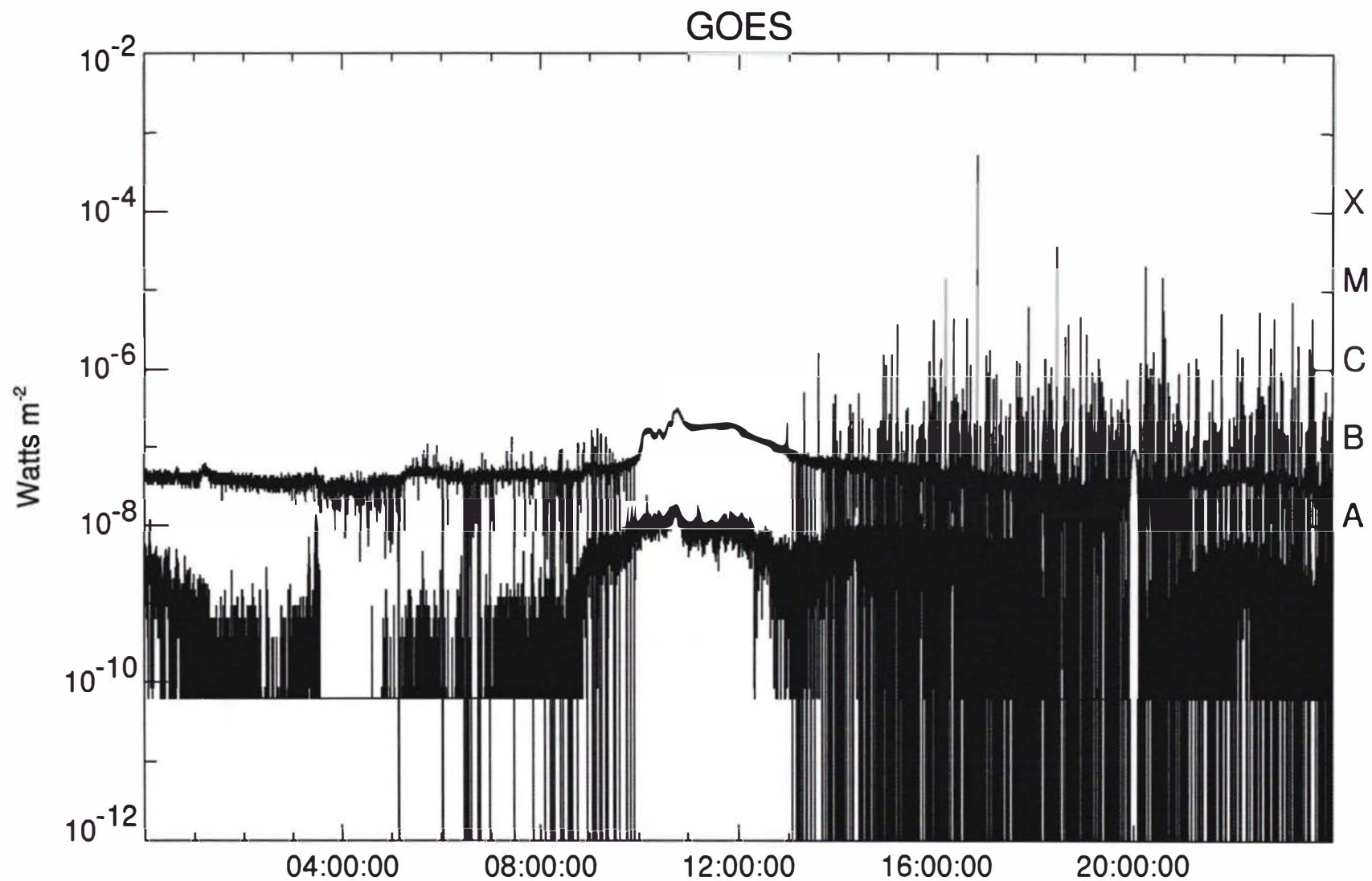
4 / 4 / 94 55836.281 s

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





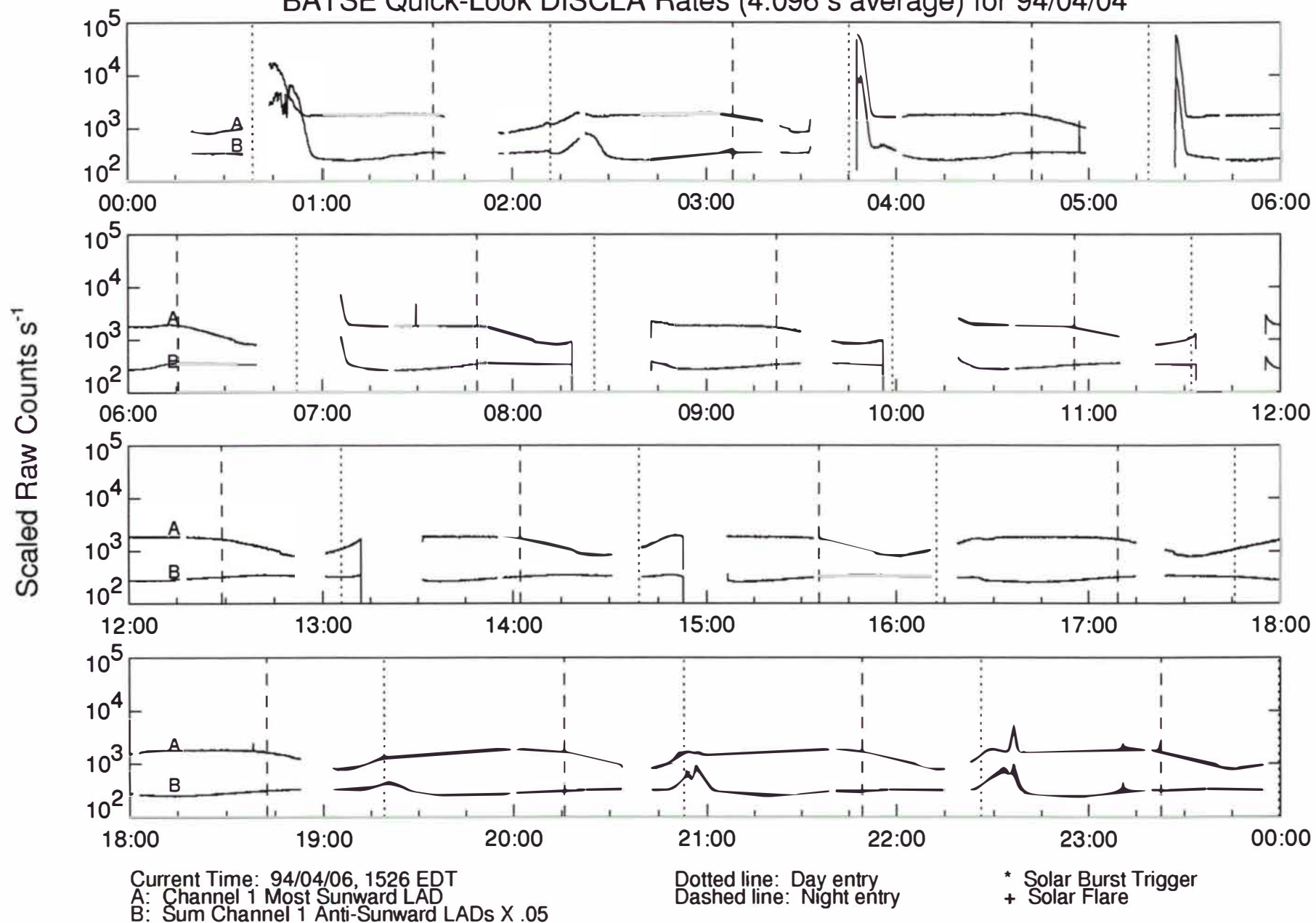
Data Start: 94/04/04, 0000:02

Plot created: 94/04/06, 1530

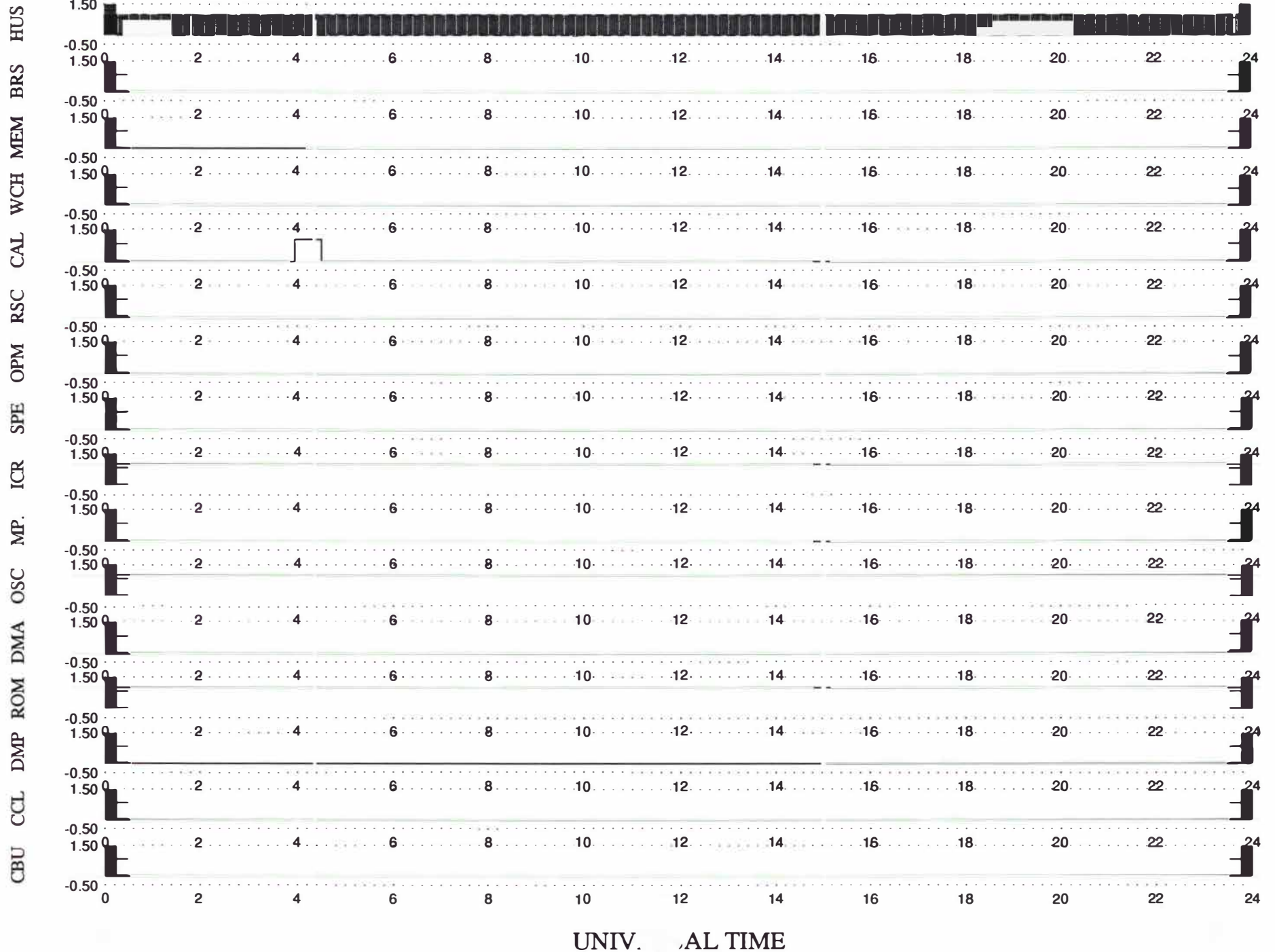
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/04

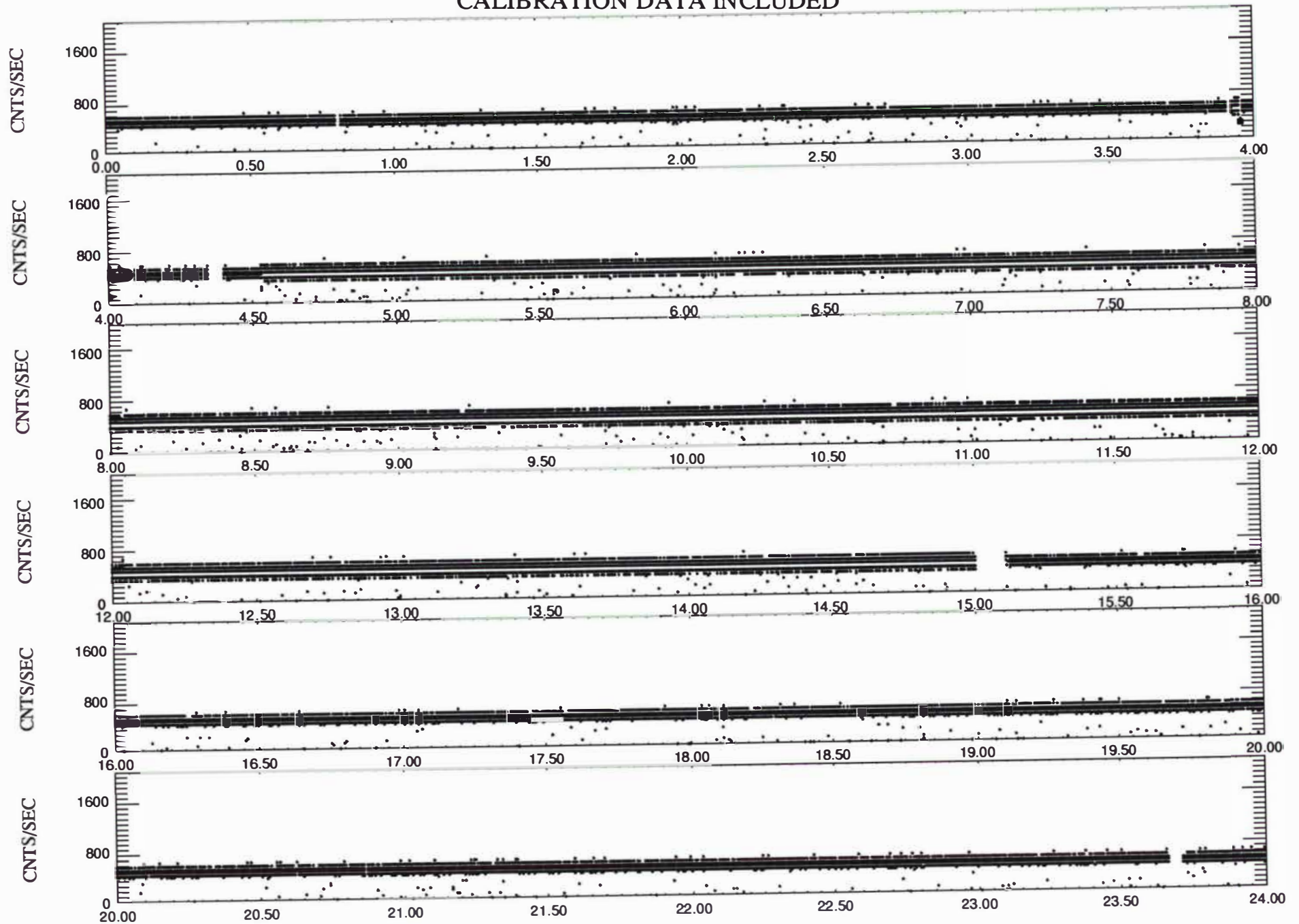


NO BURST (9)

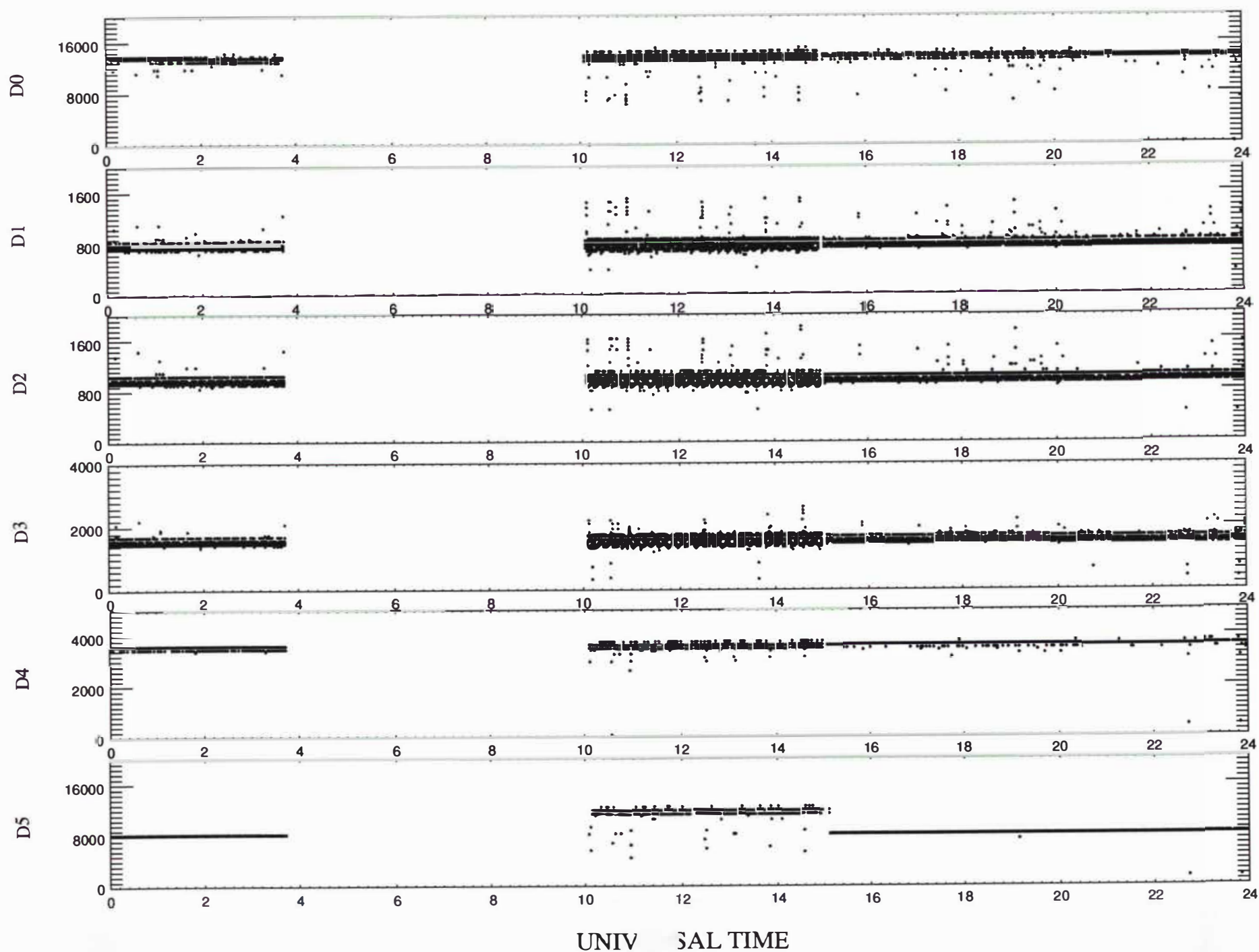




## CALIBRATION DATA INCLUDED



UNIVERSAL TIME



From HAGEDON@ssl.msfc.nasa.gov Wed Apr 6 13:20 PDT 1994  
Date: Wed, 6 Apr 1994 15:22:00 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 2911

TIME: TJD=9447 SECONDS=5923

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON EVENT.

From HAGEDON@ssl.msfc.nasa.gov Wed Apr 6 13:22 PDT 1994  
Date: Wed, 6 Apr 1994 15:24:15 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 2912

TIME: TJD=9447 SECONDS=83981

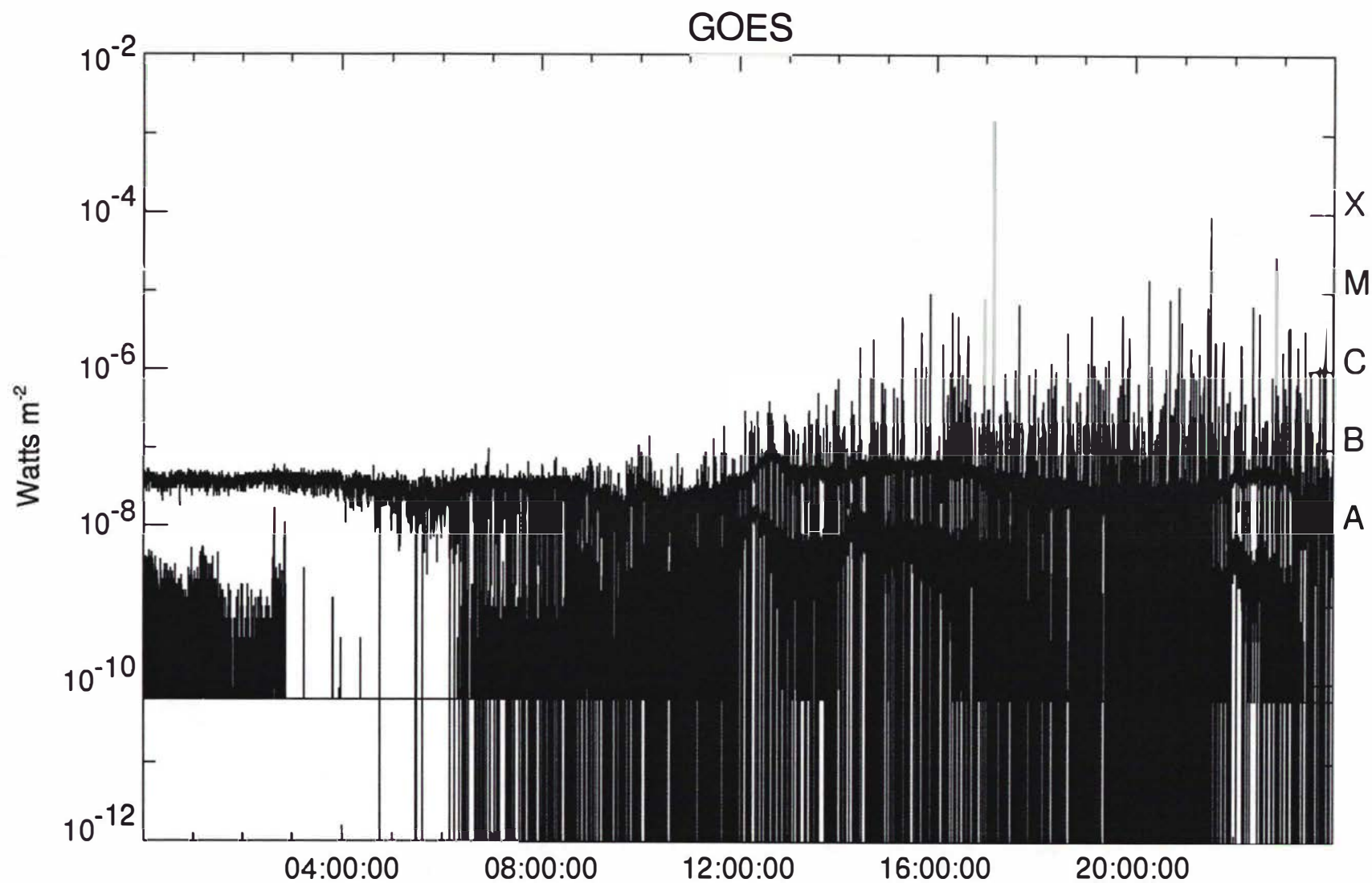
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON EVENT.



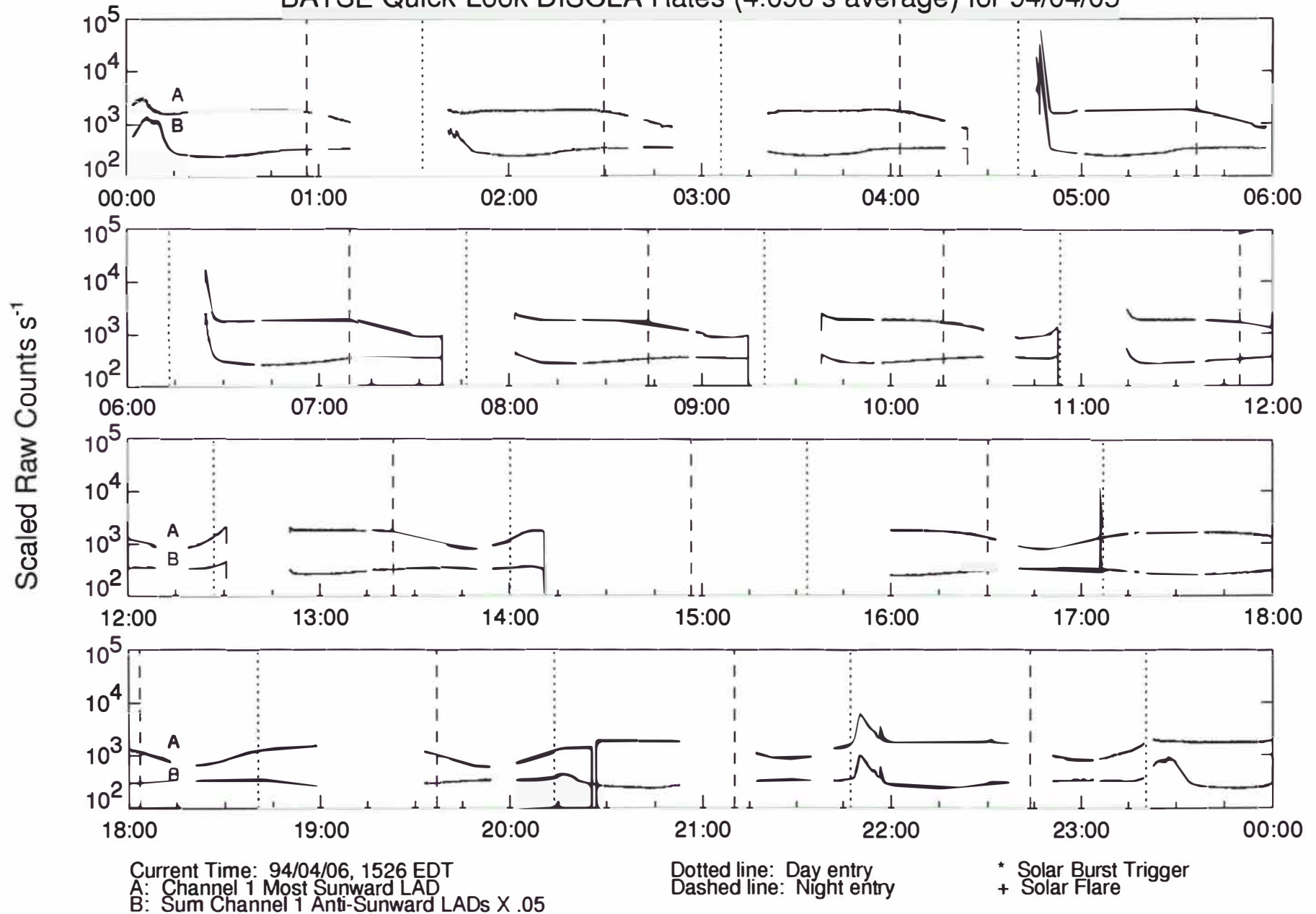
Data Start: 94/04/05, 0000:01

Plot created: 94/04/06, 1530

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

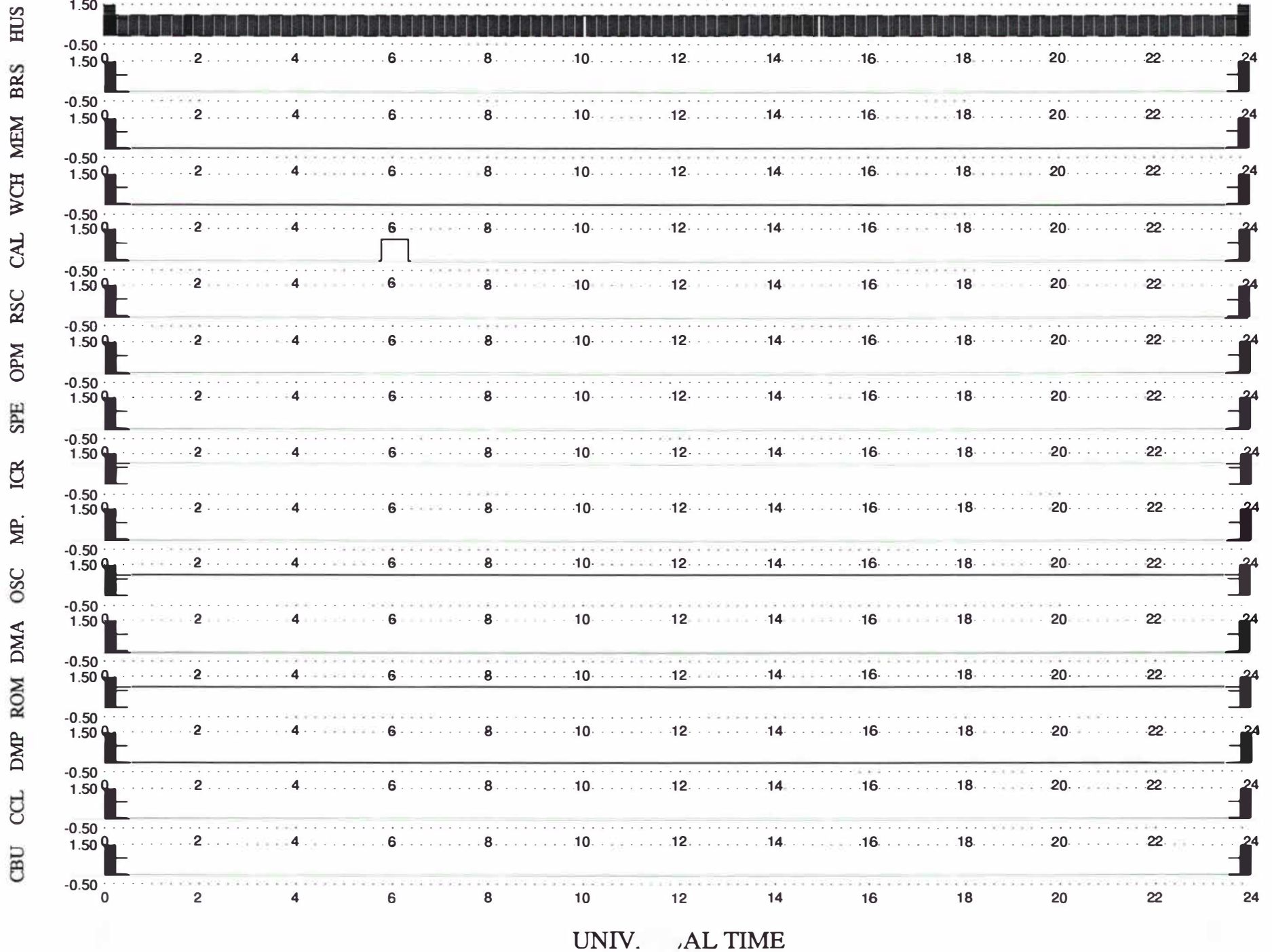
Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/05

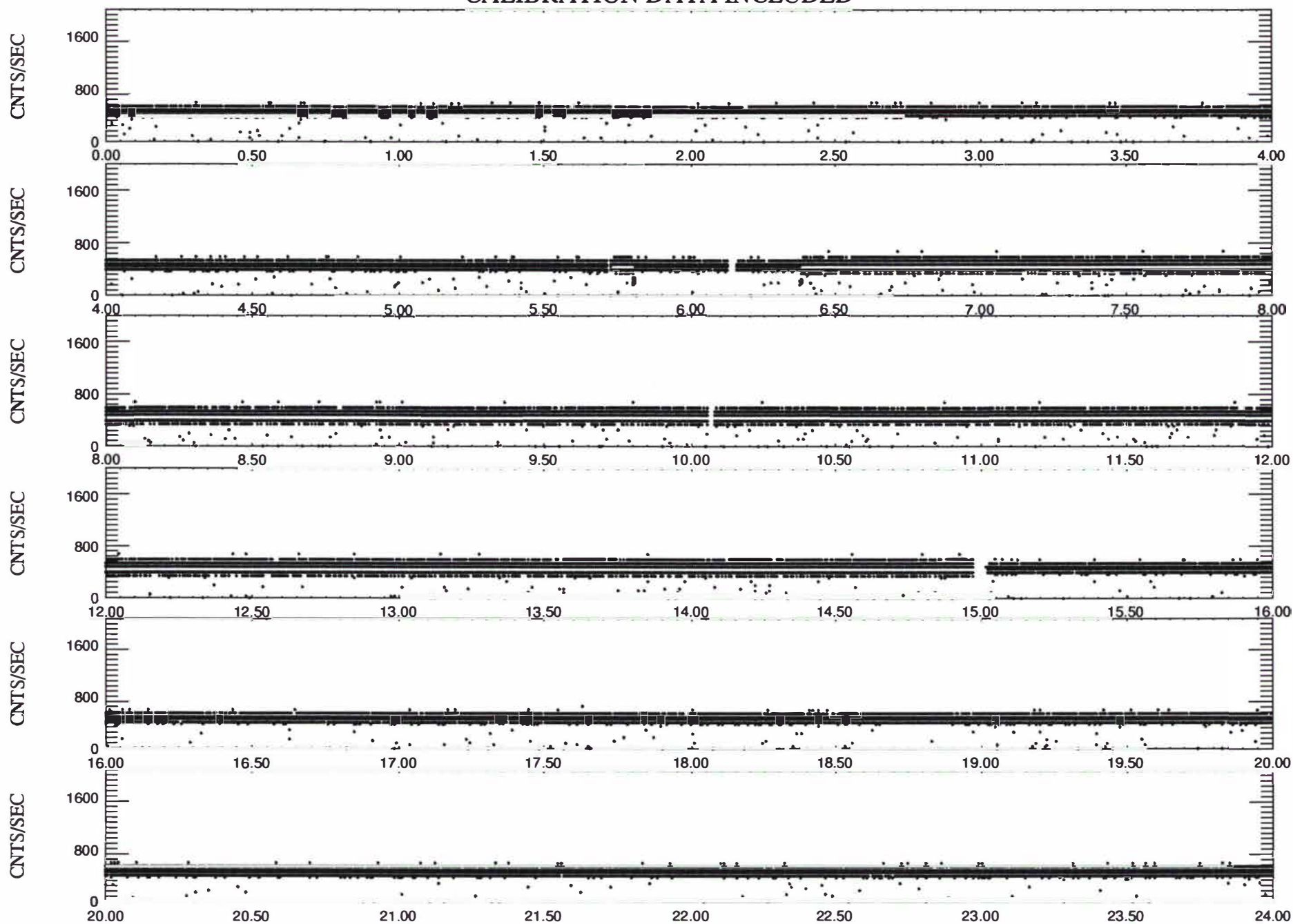




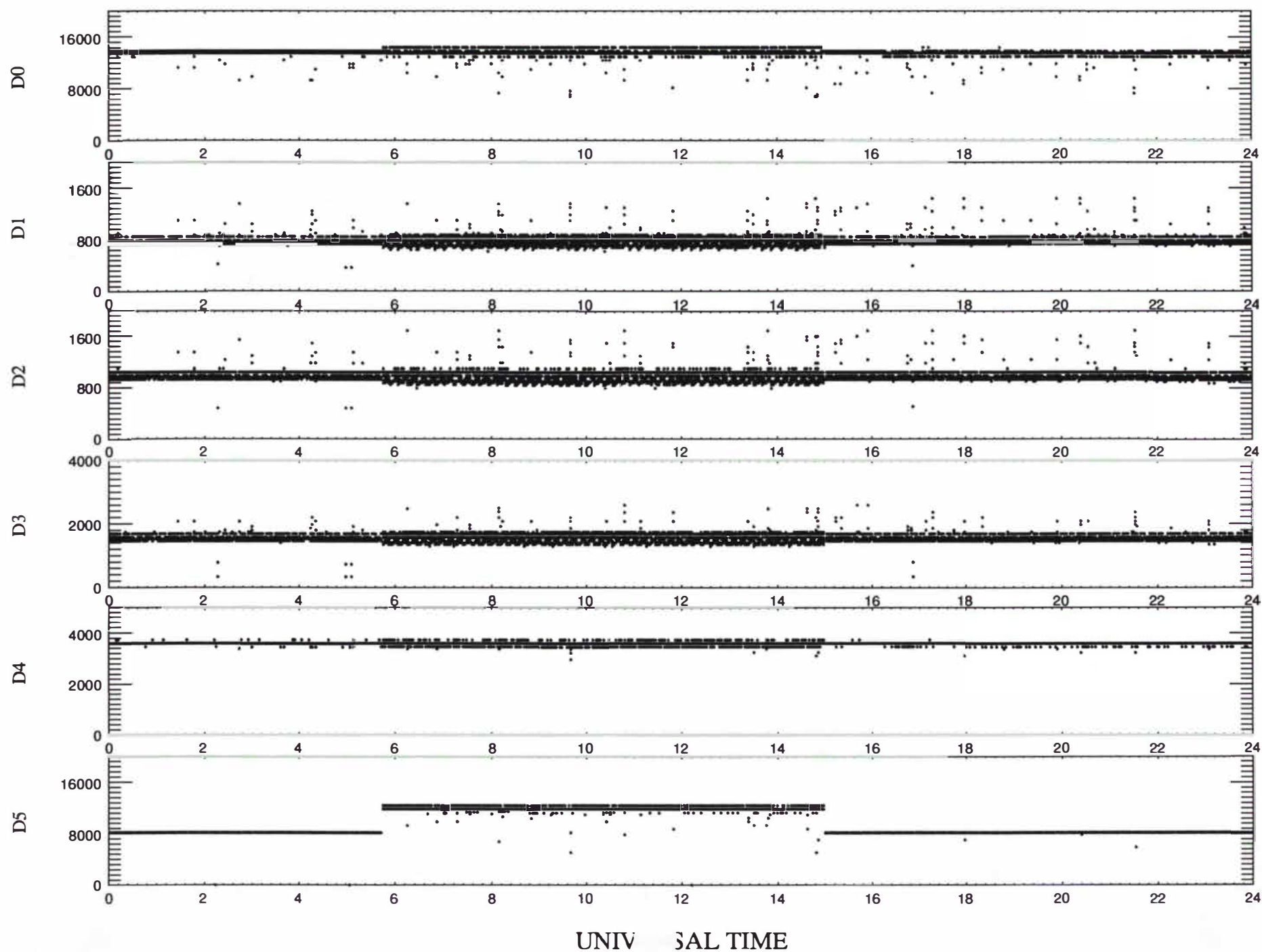
## NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV JAL TIME



From RICHARDSON@ssl.msfc.nasa.gov Fri Apr 8 09:50 PDT 1994  
Date: Fri, 8 Apr 1994 11:52:34 -0500 (CDT)  
From: RICHARDSON@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2913  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2913  
EVENT OF 1994 APR 6 DAY OF YEAR= 96  
EVENT CROSSING TIME AT BATSE : 4254. S. OR 01:10:54.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 227.000 -36.000  
BATSE PEAK COUNTING RATE: 8000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 6/ 4/ 94 IS:  
RA= 124.750 DEC= -48.648 DIST= 2.878 AU  
BATSE-ULYSSES DISTANCE = 430511424. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=109.14 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -470.76 SECS.  
CROSSING TIME AT ULYSSES IS 3783. S. OR 01:03:03 +/- 278.39 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 6/ 4/ 94 IS:  
RA= 354.169 DEC= -3.703 DIST= 2.248 AU  
MARS-BATSE DISTANCE = 336348320. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 63.27 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 504.65 SECS.  
CROSSING TIME AT MARS IS 4759. S. OR 01:19:18 +/- 181.63 SECONDS

RI

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2913    | 940406 | 9448 | 04254 | 8000     | 227 | -36 |

#### BATSE BURST TRIGGER

NO.: 02913

TIME: TJD=9448 SECONDS=04254

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=093.7 AZIMUTH=143.2 ERROR= DEGREES

#### COMMENTS:

BURST WITH STRUCTURE. MAIN PEAK LASTING APROX. 6S. SECOND PEAK LASTING APROX. 2S. STARTING AT T+4S.  
THIRD PEAK AT T+18S. LASTING APROX. 4S. MARGINALLY VISIBLE ABOVE 300KEV.  
STTE BELONGS TO TRIGGER NUMBER 2912.

*Helio corr removed*

Date: Jan 27 '98

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

- ☒ Jim Schmidling's stat file correction applied?
- ☒ Final ephemeris used?
- ☒ Final, CDROM data used?
- ☐ Were data checked by Joe Springer for 0.5 s errors?
- ☒ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?
- ☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? *No - bad stats*

#### 2. BATSE Data

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

#### 3. PVO Data

- ☐ Ephemeris of PVO used (not Venus)?
- ☐ 2000 coordinates used?
- ☐ Geocentric time used?
- ☒ ACCESS database updated?



N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

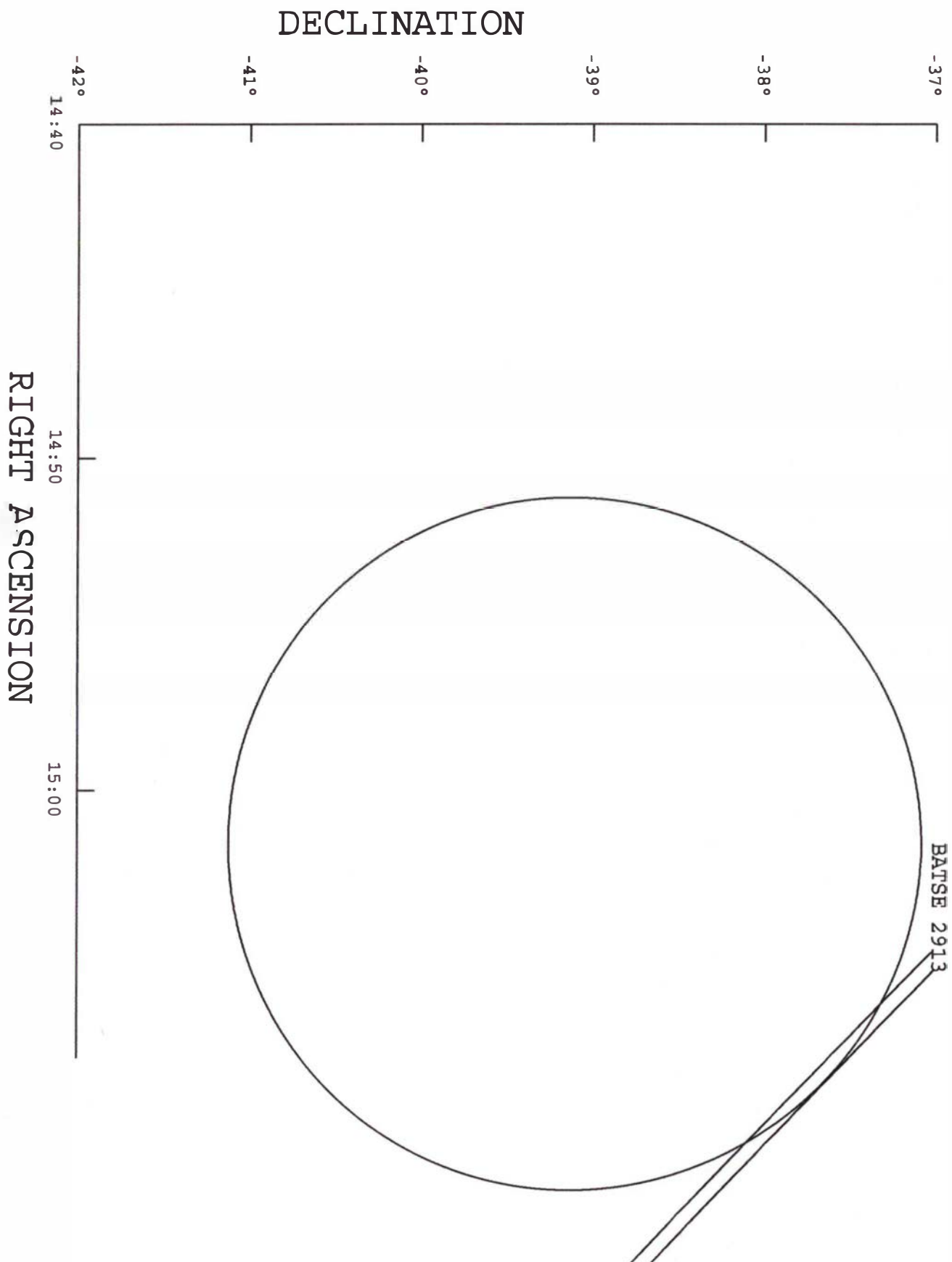
G=GALACTIC EQUATOR

1 ULYSSES

2 BATSE

EVENT OF APR 6, 1994 1:01

6/ 3/98



N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

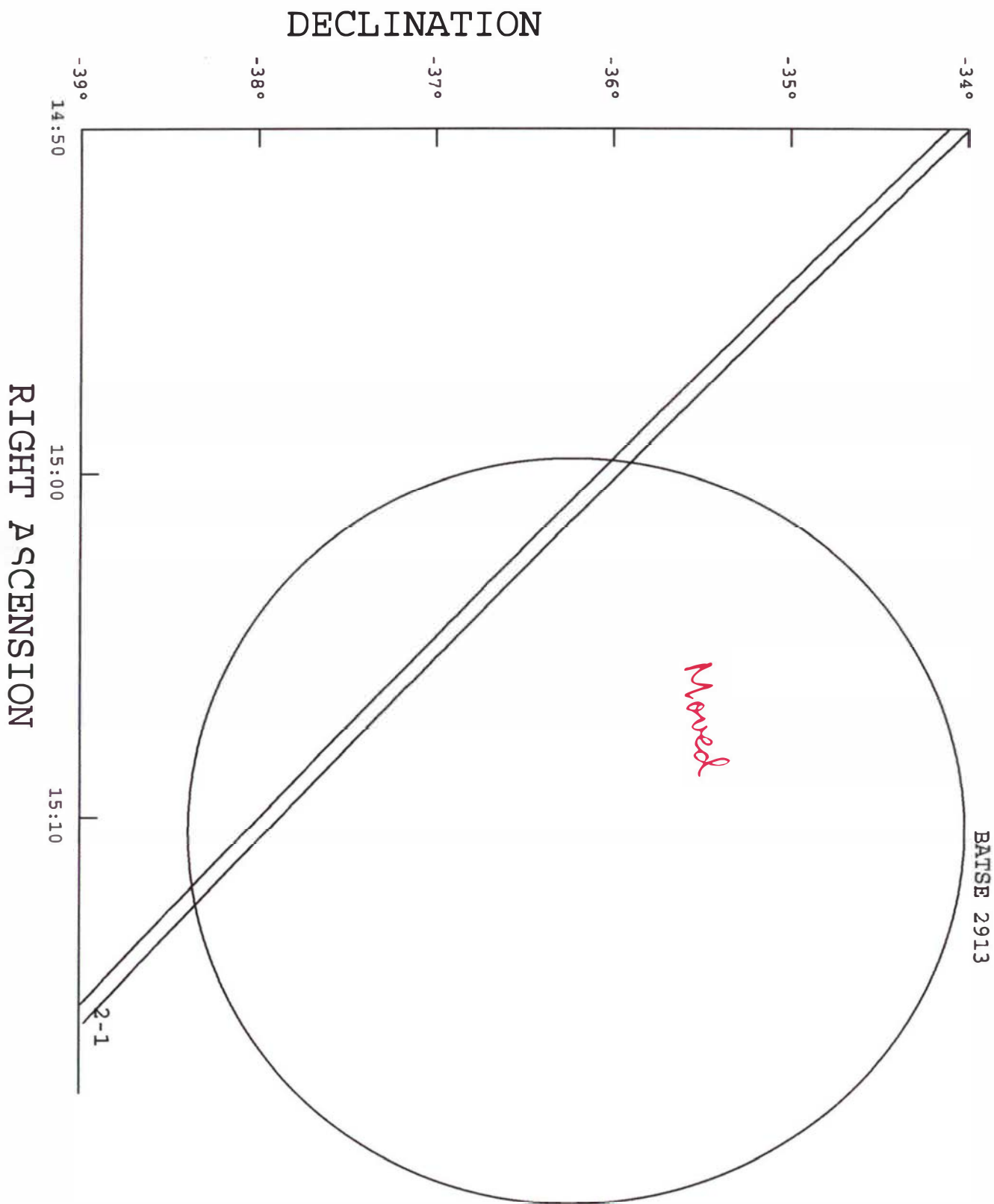
G=GALACTIC EQUATOR

1 ULYSSES

2 BATSE

EVENT OF APR 6, 1994 1:01

27 / 1/98



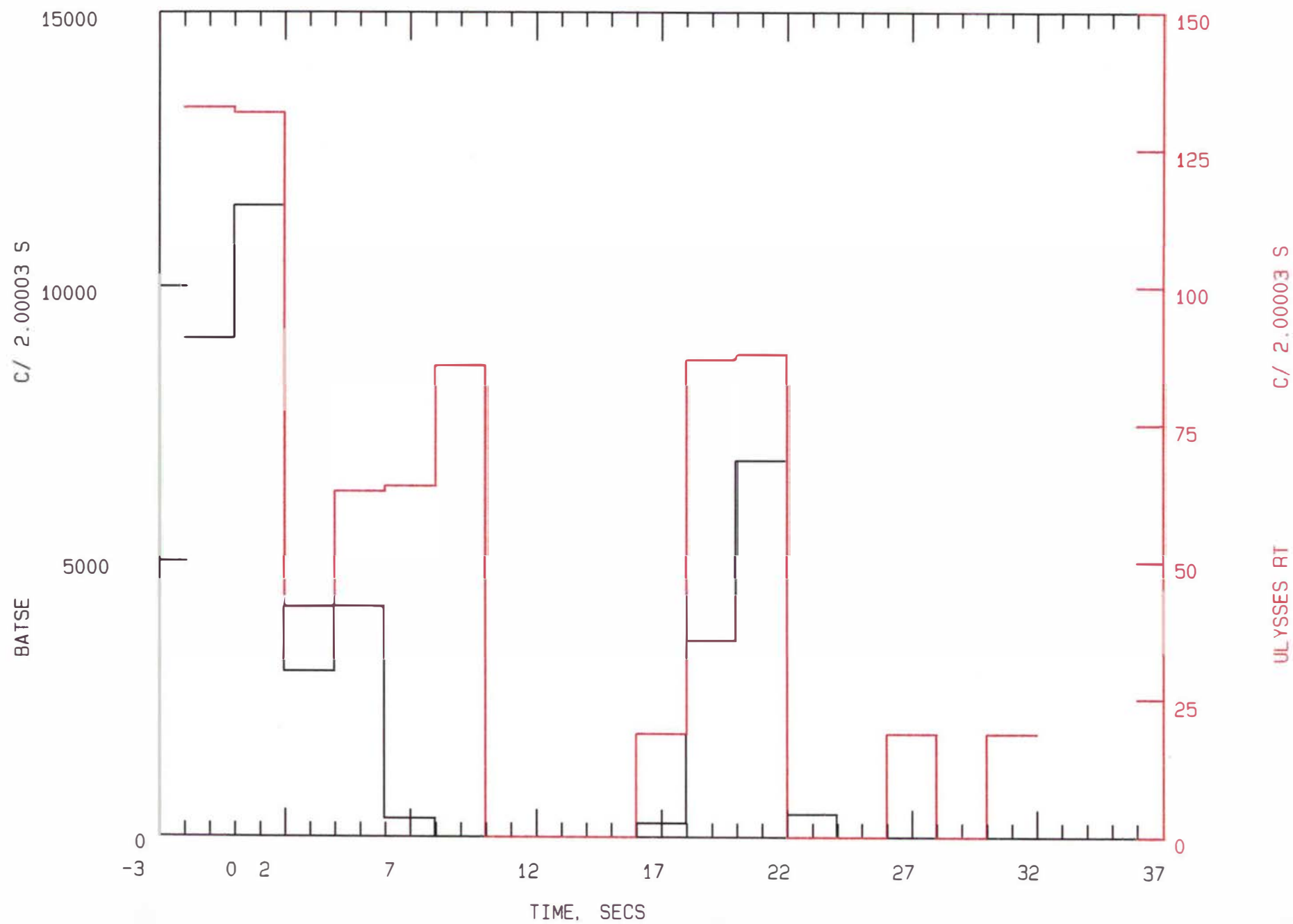
BATSE

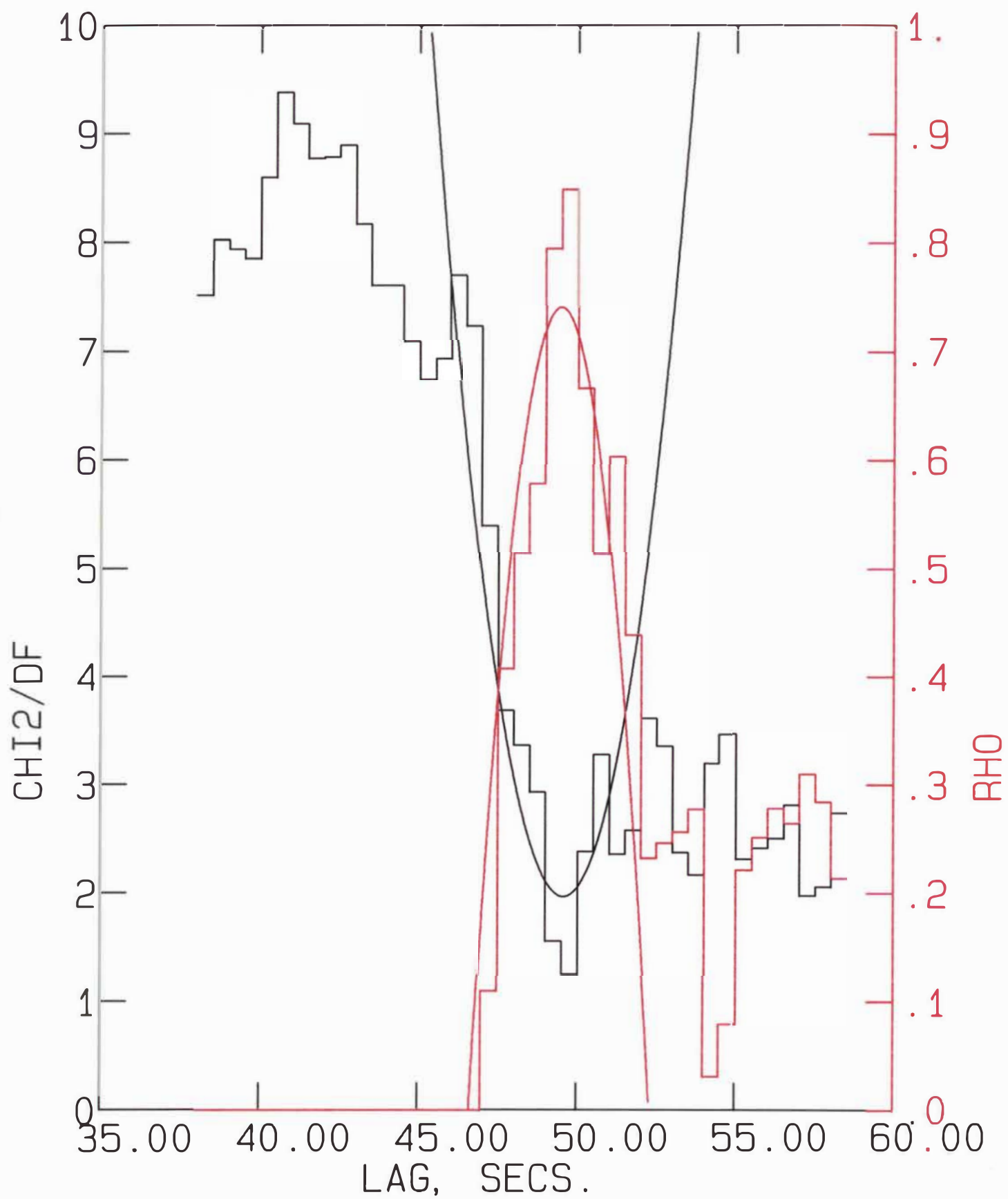
-ULYSSES RT CORRELATION

6/ 4/94

4254.234

27/ 1/98





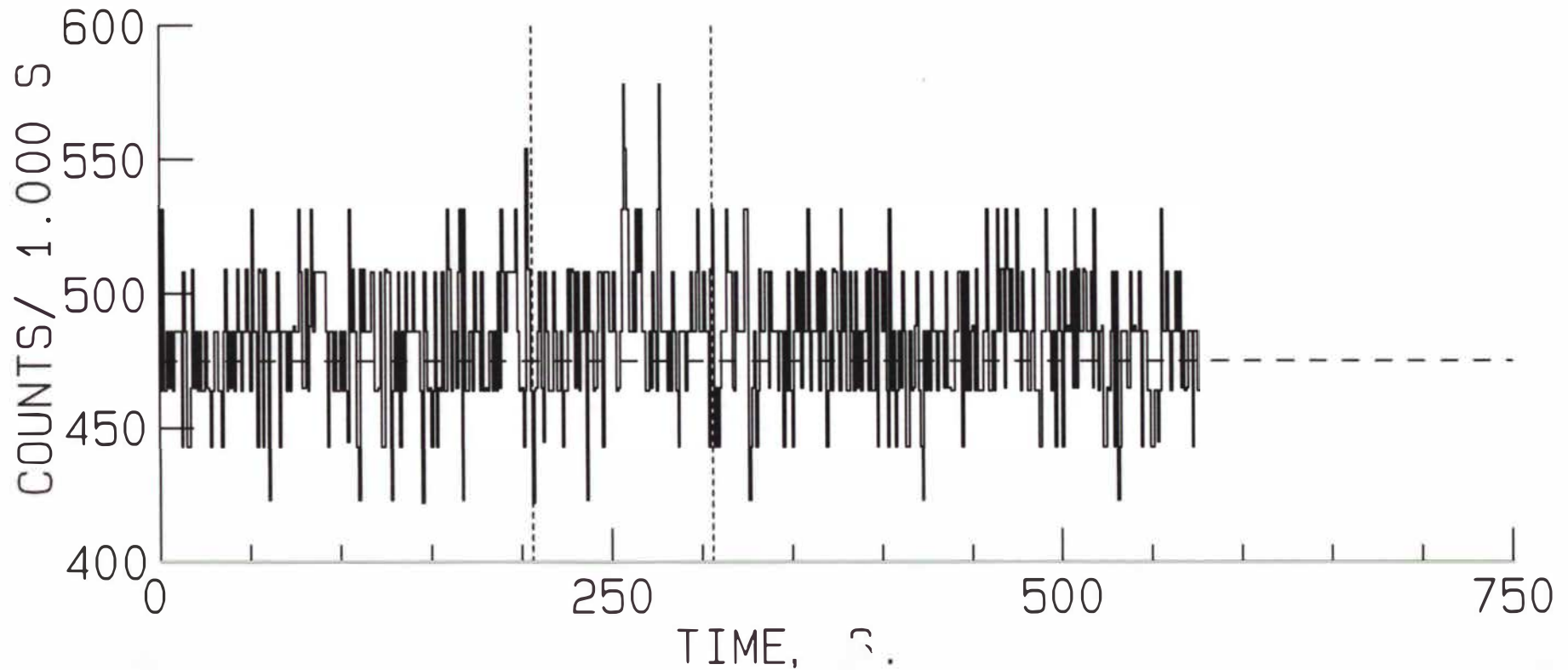
ULYSSES RT

27 / 1 / 98

6 / 4 / 94 3492.193 s

0.500 S INTERVALS REGROUPED BY 2  
22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS





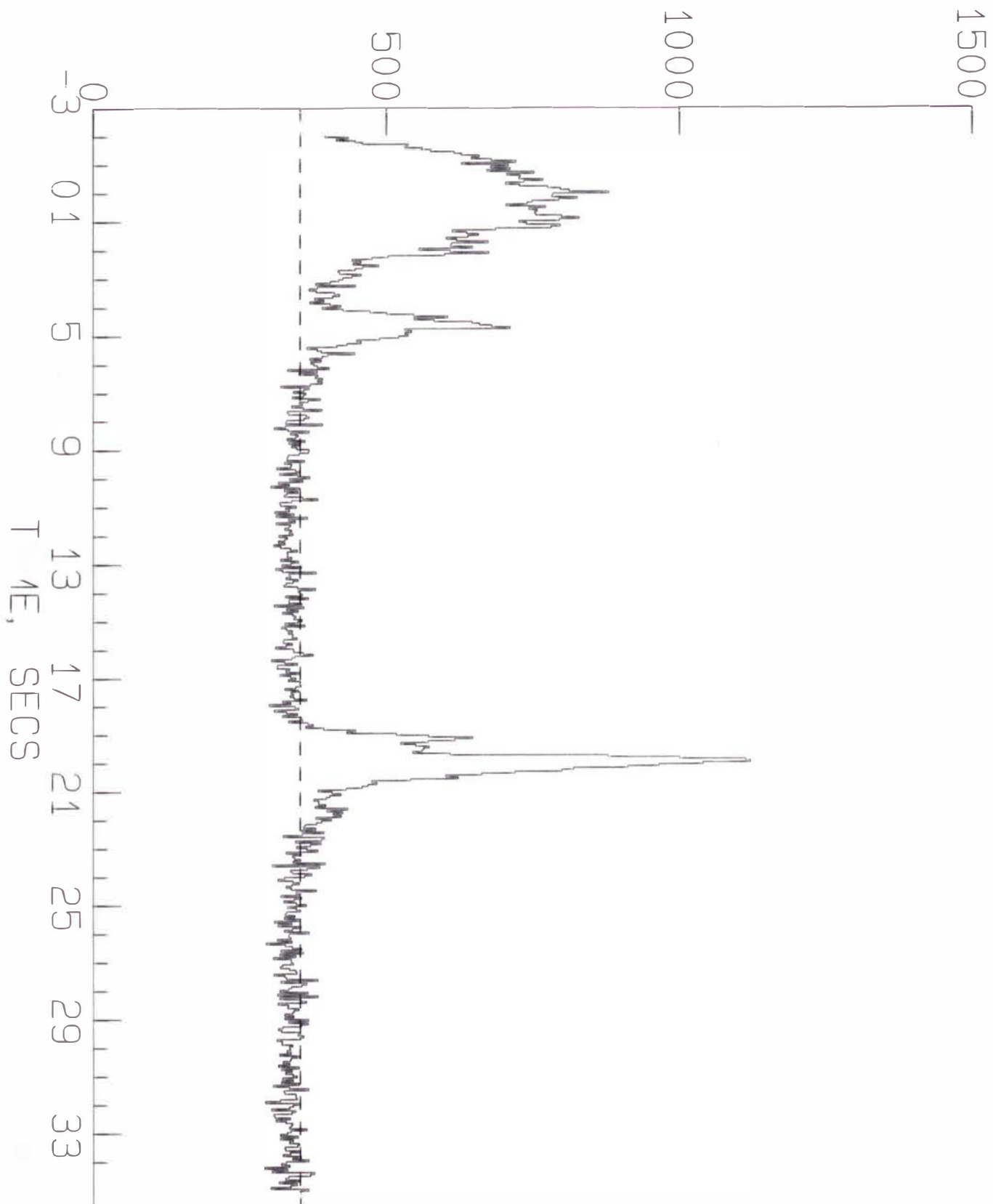
BATSE

06/04/94

4254.234

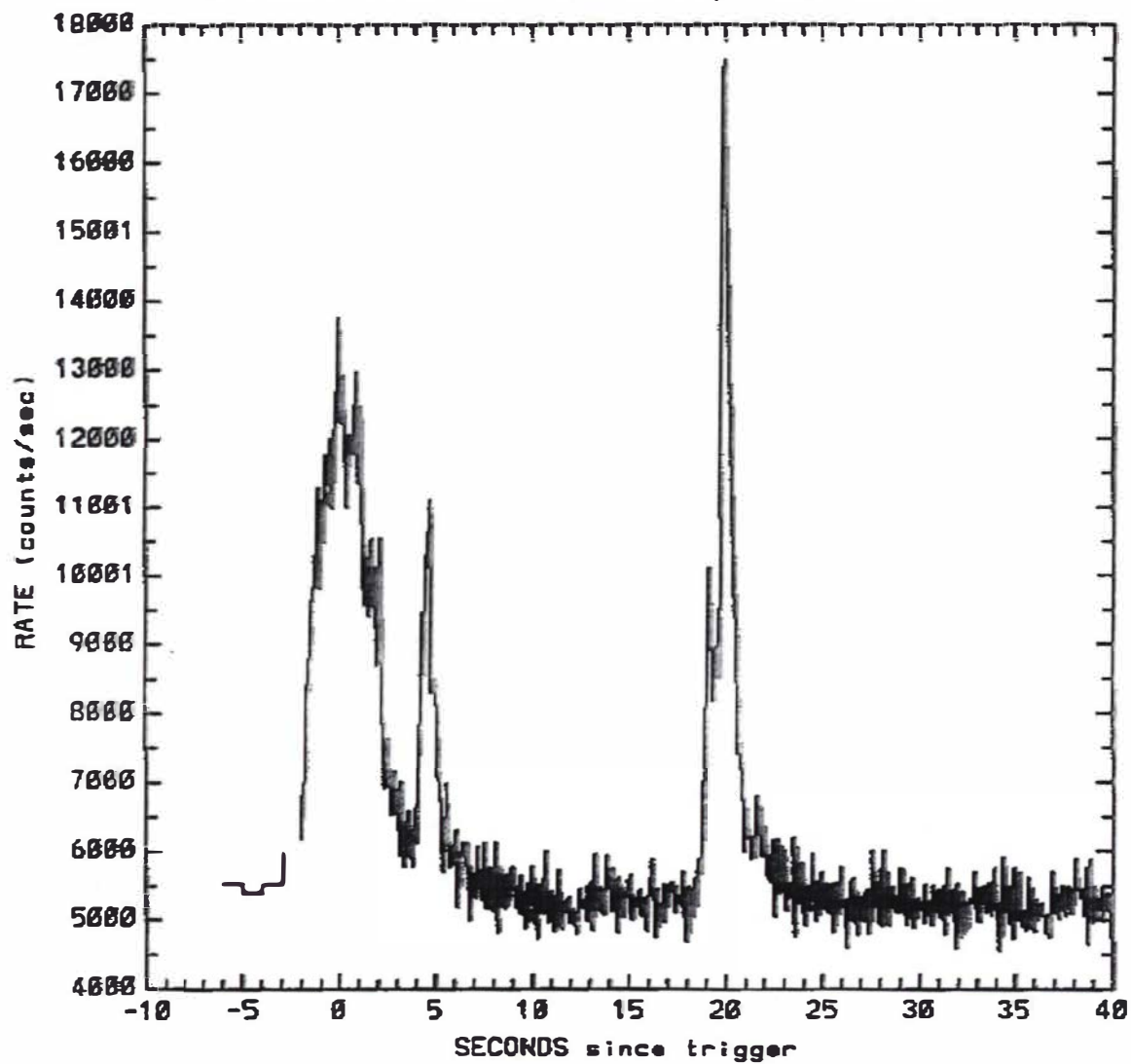
25- 100 keV

COUNTS/ .064 S



20/10/94

## DISCSC Data for K. Hurley. No. 2913



28-OCT-1994 11:28:16

Created by MDPS 80  
(Burst Display)  
Version 2.22

Trigger #: 2913

Trigger Time:  
9448 / 4254.234Burst Data Type:  
DISCSCDeadtime  
Corrected: K  
Background Data  
Type: PREB + DISCLA  
Minimum Integ. Time:  
0.064 secondsDetectors [7..8]:  
--54--Discriminators:  
(1..2)Quality Mask:  
801SP1

From RICHARDSON@ssl.msfc.nasa.gov Fri Apr 8 09:47 PDT 1994  
Date: Fri, 8 Apr 1994 11:49:21 -0500 (CDT)  
From: RICHARDSON@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 2914

TIME: TJD=9448 SECONDS=70719

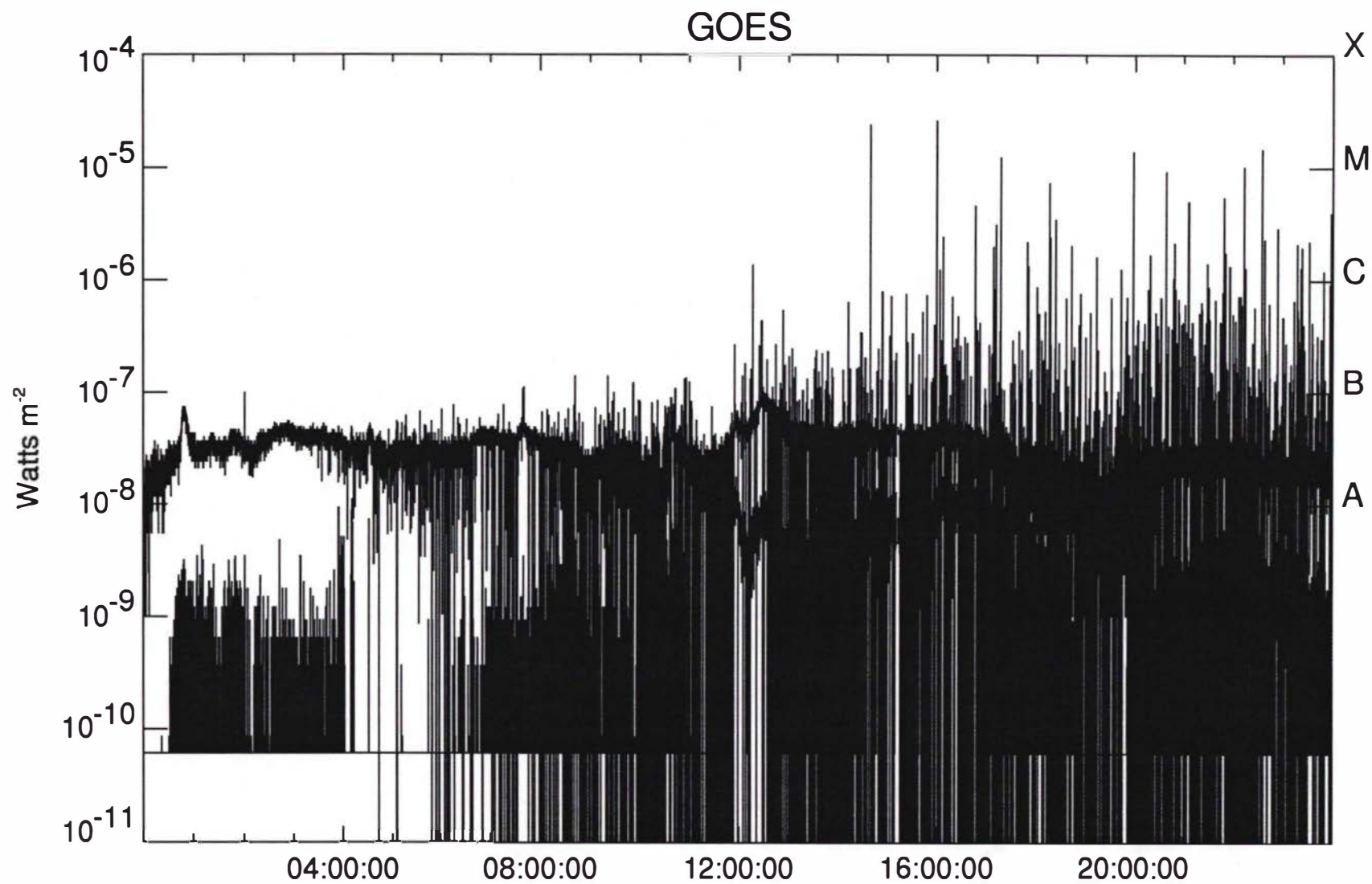
TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON EVENT



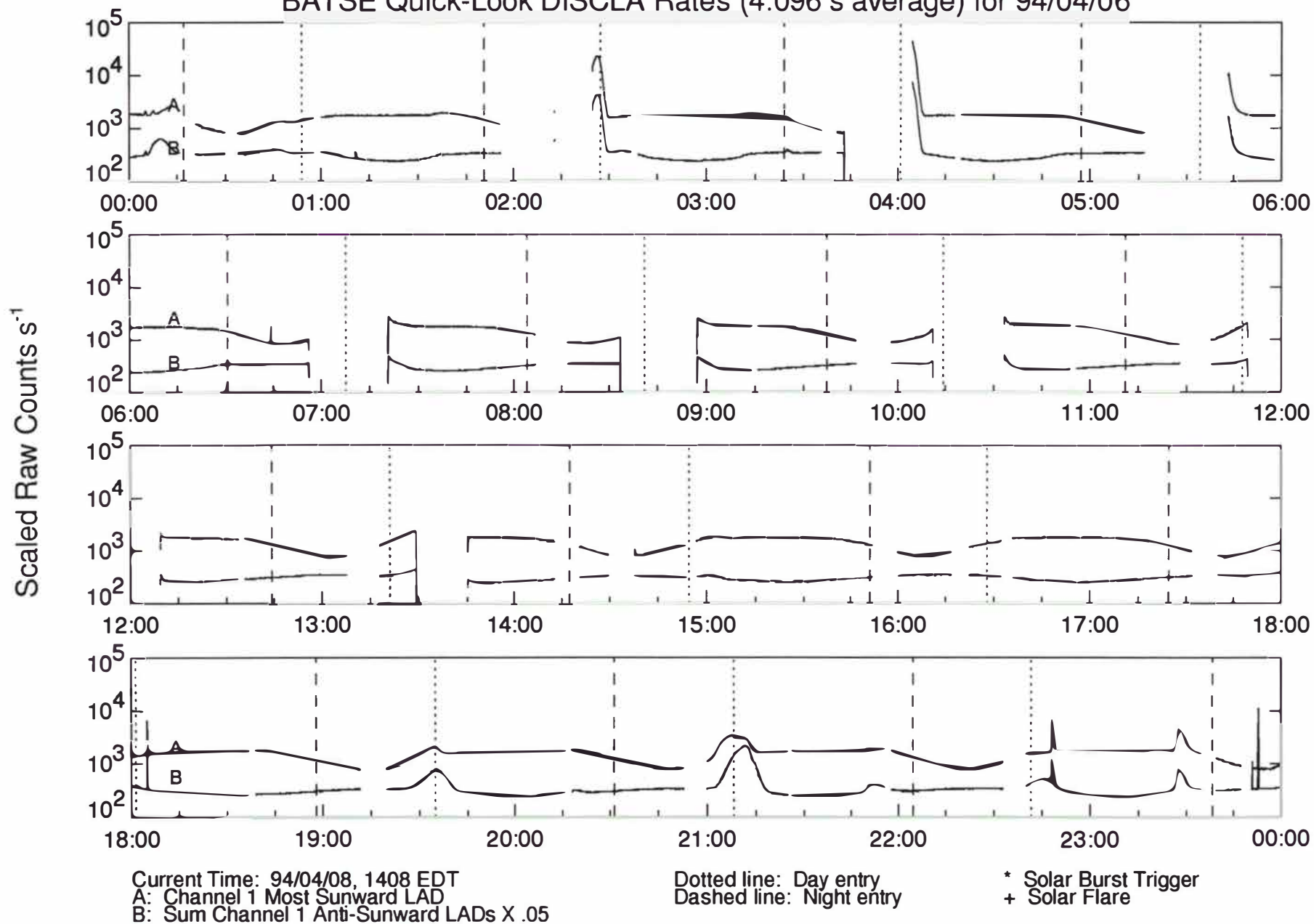
Data Start: 94/04/06, 0000:02

Plot created: 94/04/08, 1410

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

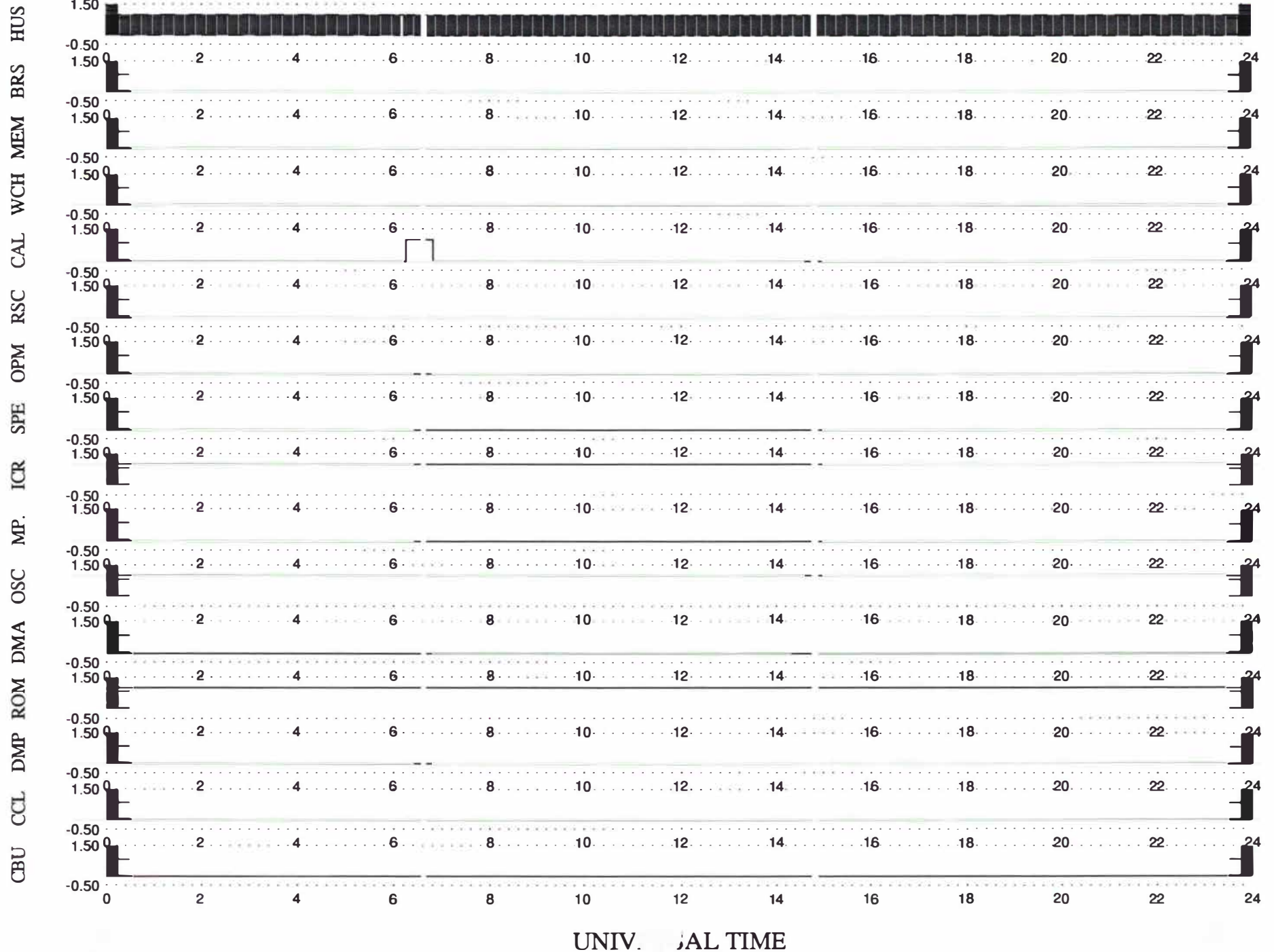
Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/06

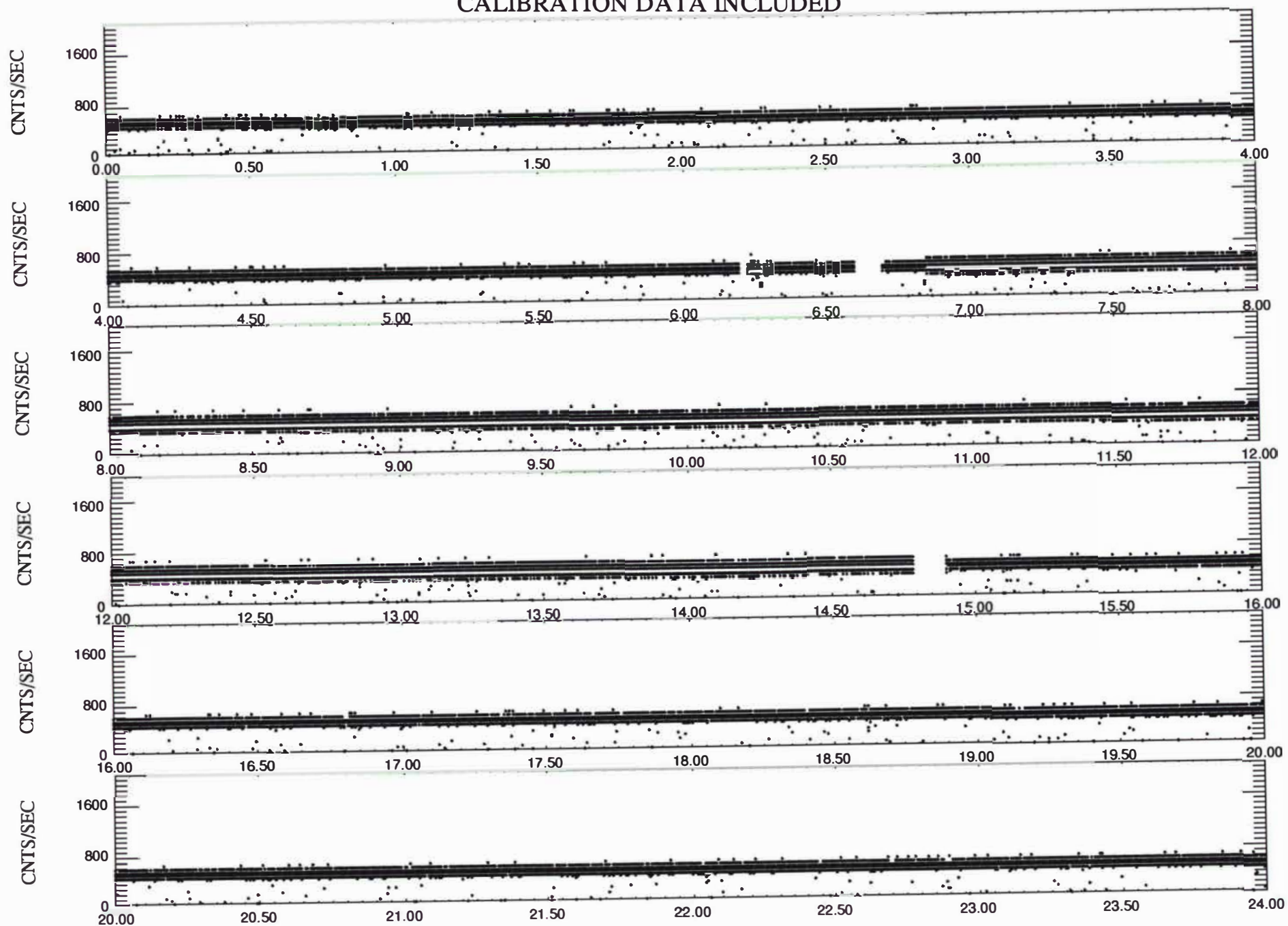




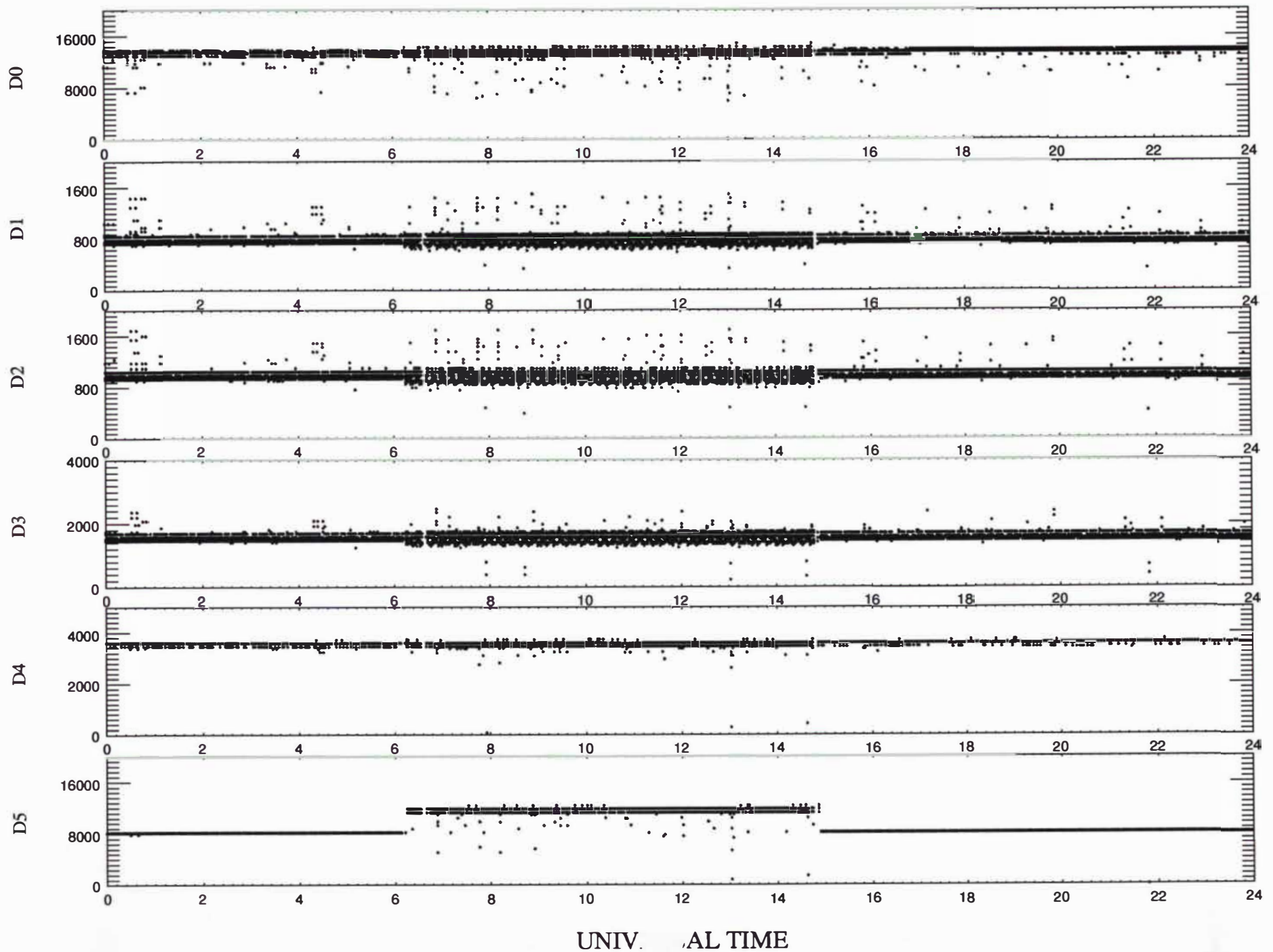
NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV UNIV TIME



From DEAL@fender.msfc.nasa.gov Mon Apr 11 09:26 PDT 1994  
Date: Mon, 11 Apr 1994 11:28:22 -0500 (CDT)  
From: DEAL@fender.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2915  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2915  
EVENT OF 1994 APR 7 DAY OF YEAR= 97  
EVENT CROSSING TIME AT BATSE : 42736. S. OR 11:52:16.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 57.000 -22.000  
BATSE PEAK COUNTING RATE: 1400 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 7/ 4/ 94 IS:  
RA= 124.306 DEC= -48.391 DIST= 2.879 AU  
BATSE-ULYSSES DISTANCE = 430735130. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=121.17 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -743.72 SECS.  
CROSSING TIME AT ULYSSES IS 41992. S. OR 11:39:52 +/- 252.13 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 7/ 4/ 94 IS:  
RA= 354.887 DEC= -3.391 DIST= 2.246 AU  
MARS-BATSE DISTANCE = 336038016. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=117.07 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -510.08 SECS.  
CROSSING TIME AT MARS IS 42226. S. OR 11:43:45 +/- 165.54 SECONDS

No

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2915    | 940407 | 9449 | 42736 | 1400     | 057 | -22 |

#### BATSE BURST TRIGGER

NO.: 02915

TIME: TJD=9449 SECONDS=42736

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=109.0 AZIMUTH=019.1 ERROR= DEGREES

#### COMMENTS:

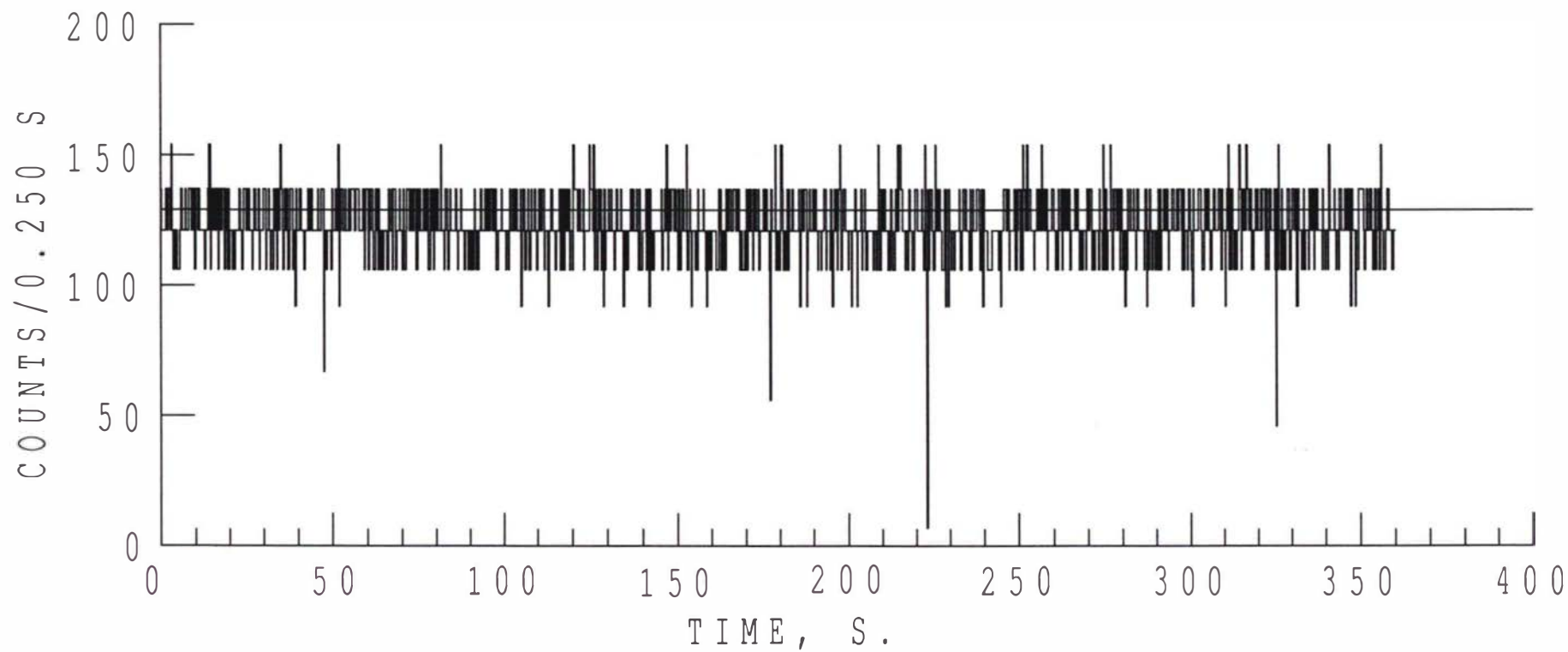
BURST. DURATION ~1S. VISIBLE ABOVE 300 KEV.

11 / 4 / 94

ULYSSES RT  
7 / 4 / 94 42048.211 s  
0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





From DEAL@fender.msfc.nasa.gov Mon Apr 11 09:24 PDT 1994  
Date: Mon, 11 Apr 1994 11:26:25 -0500 (CDT)  
From: DEAL@fender.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2916  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2916  
EVENT OF 1994 APR 7 DAY OF YEAR= 97  
EVENT CROSSING TIME AT BATSE : 66002. S. OR 18:20:02.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 21.000 50.000  
BATSE PEAK COUNTING RATE: 4600 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 7/ 4/ 94 IS:  
RA= 124.224 DEC= -48.343 DIST= 2.880 AU  
BATSE-ULYSSES DISTANCE = 430779571. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 47.93 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 962.85 SECS.  
CROSSING TIME AT ULYSSES IS 66965. S. OR 18:36:04 +/- 249.80 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 7/ 4/ 94 IS:  
RA= 354.887 DEC= -3.391 DIST= 2.246 AU  
MARS-BATSE DISTANCE = 336038016. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=122.06 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -595.03 SECS.  
CROSSING TIME AT MARS IS 65407. S. OR 18:10:06 +/- 155.89 SECONDS

*no RT? Too weak*

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2916    | 940407 | 9449 | 66002 | 4600     | 021 | +50 |

#### BATSE BURST TRIGGER

NO.: 02916

TIME: TJD=9449 SECONDS=66002

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=090.3 AZIMUTH=300.5 ERROR= DEGREES

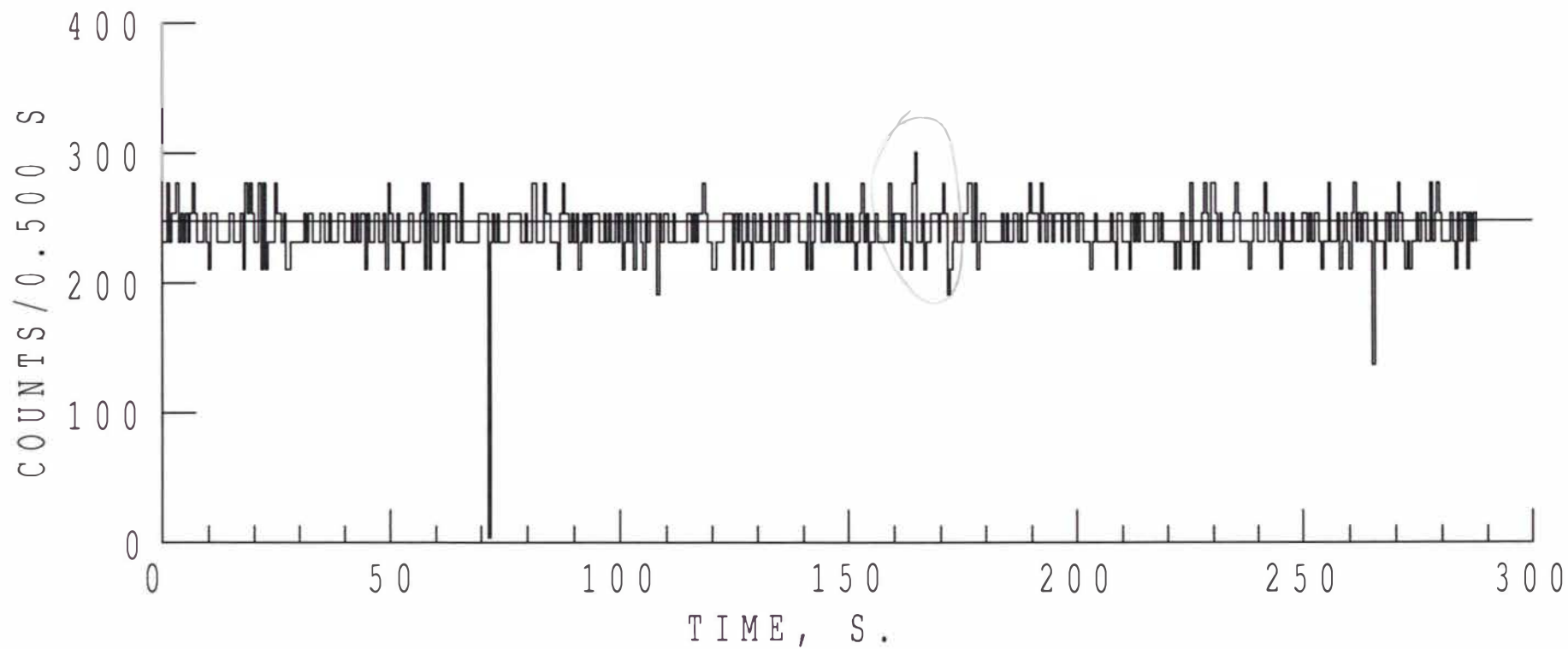
#### COMMENTS:

BURST. DURATION ~12S. MULTI PEAK, NOT VISIBLE ABOVE 300 KEV.

11 / 4 / 94

ULYSSES RT  
7 / 4 / 94 65268.078 s  
0 - 0 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



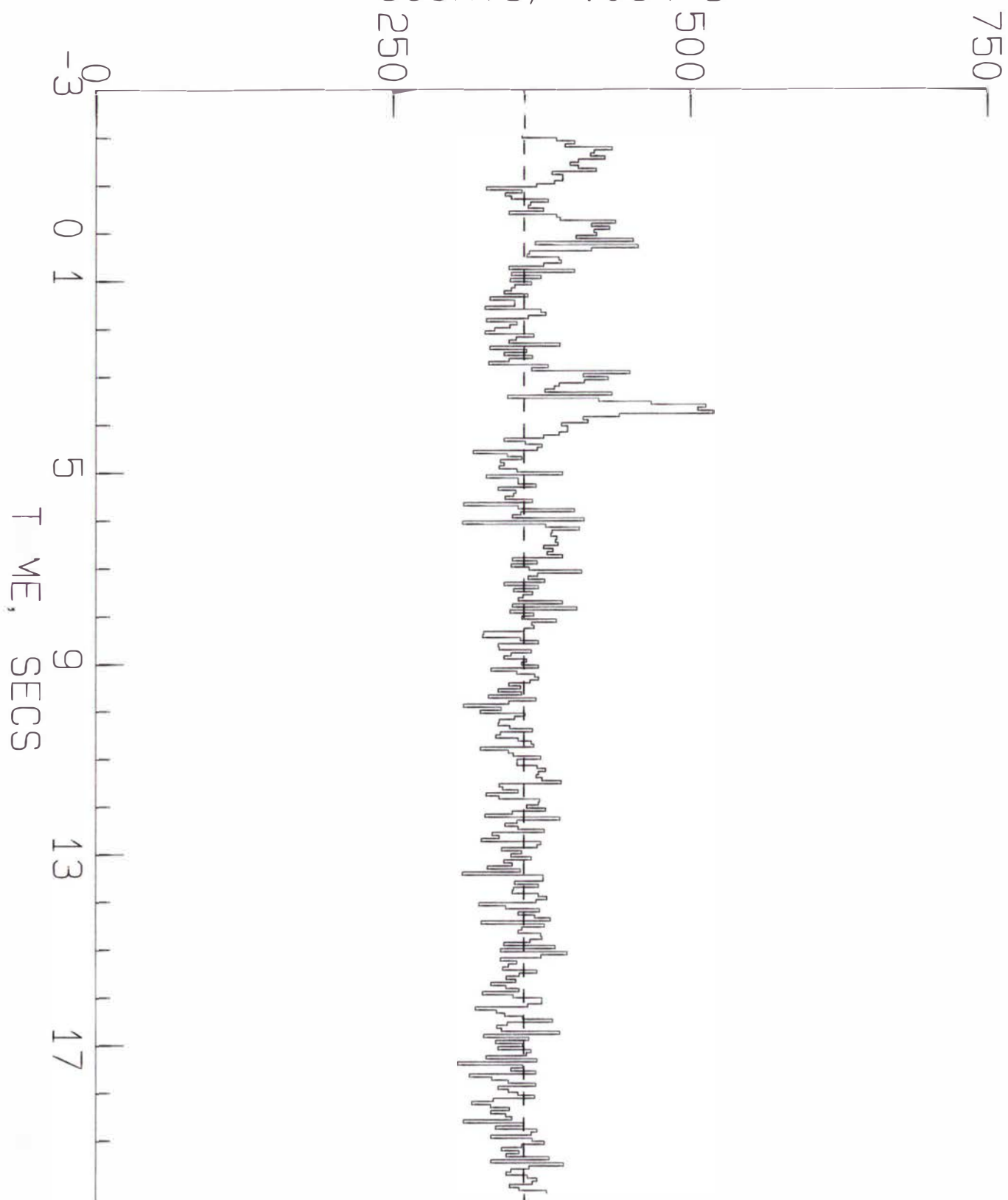
BATSE

07/04/94

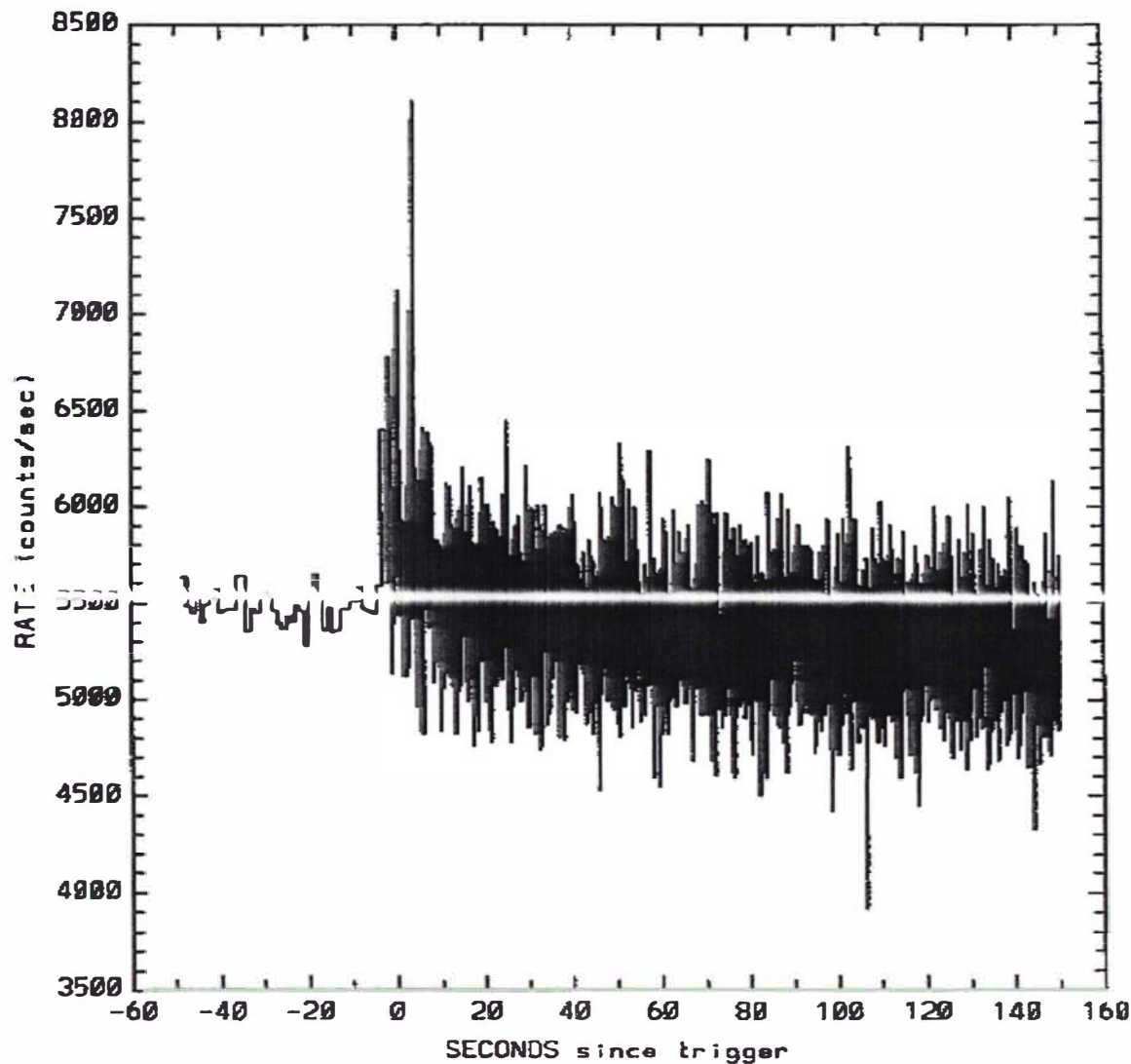
66002.073

25- 100 keV

COUNTS/ .064 S



## DATA FOR K. HURLEY

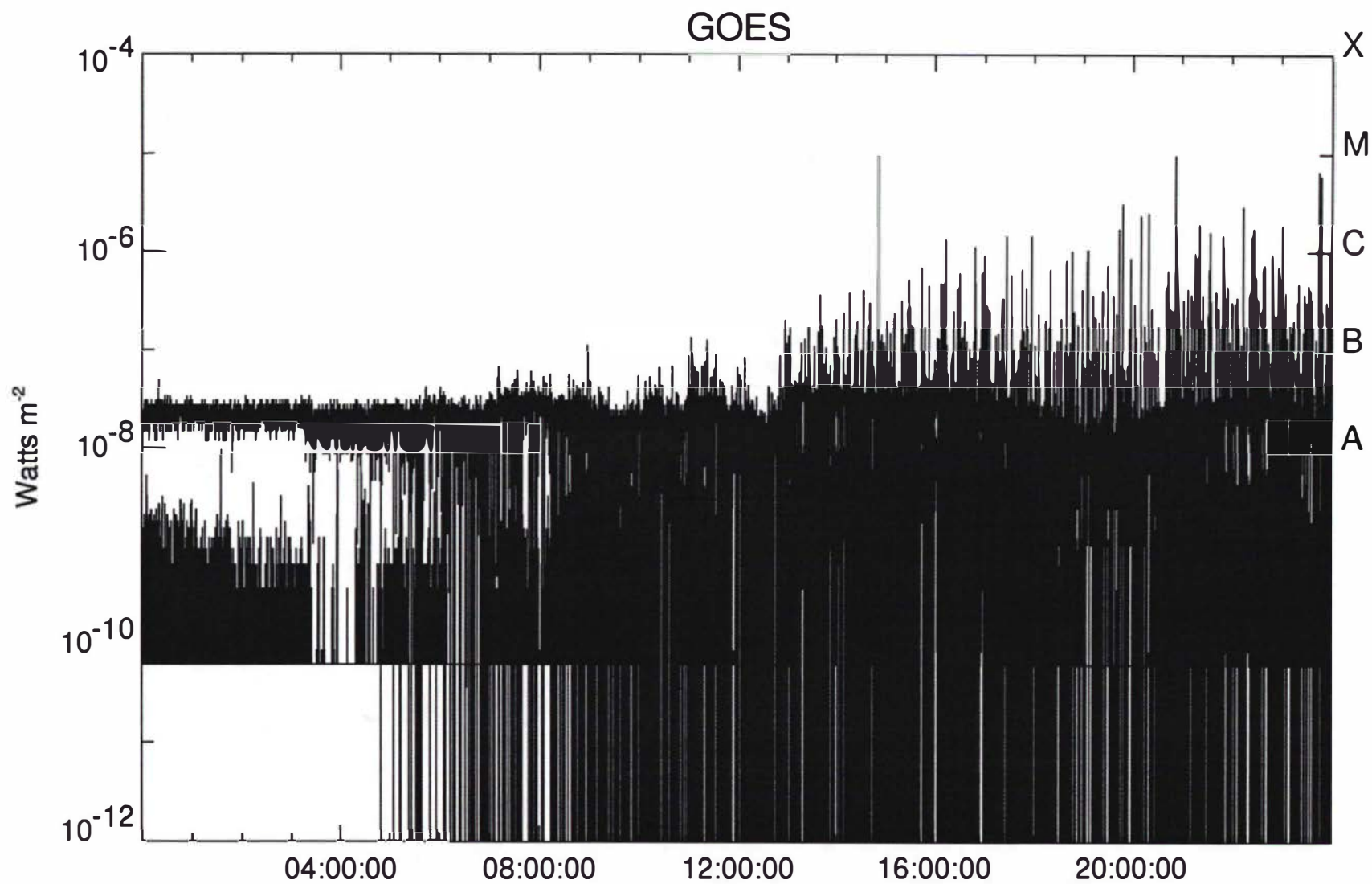


2-AUG-1994 08:50.09

Created by MOPS BD  
(Burst Display)  
Version 2.21

Trigger # : 2916

Trigger Time:  
9449 / 66002.074Burst Data Type:  
DISCSCDeadtime  
Corrected: NBackground Data  
Type: PREB + DISCLAMinimum (neg. Time):  
0.064 secondsDetectors (7..8):  
00001100Discriminators:  
(1, 2)Quality Mask:  
BDISP1



Data Start: 94/04/07, 0000:02

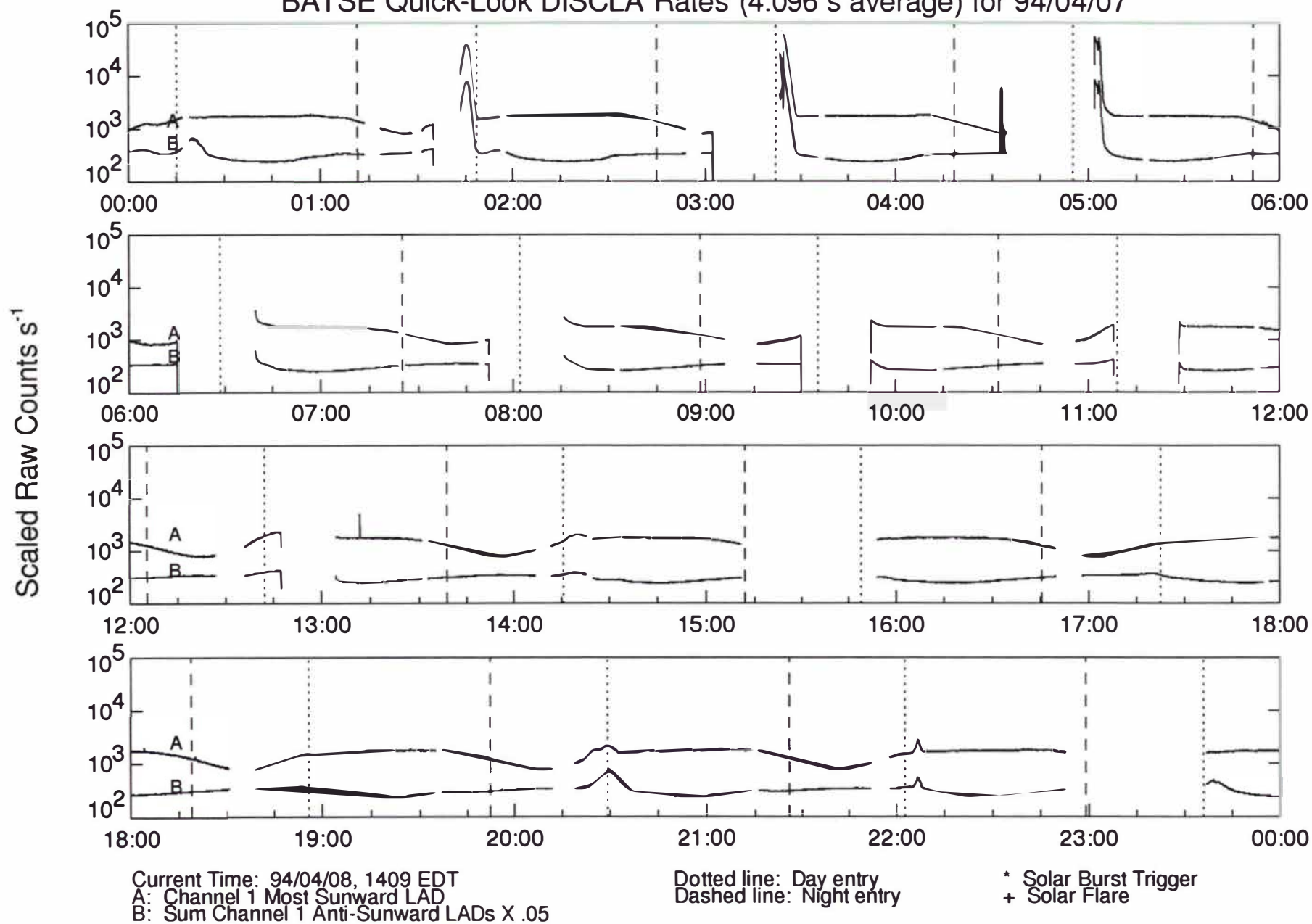
Plot created: 94/04/08, 1411

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

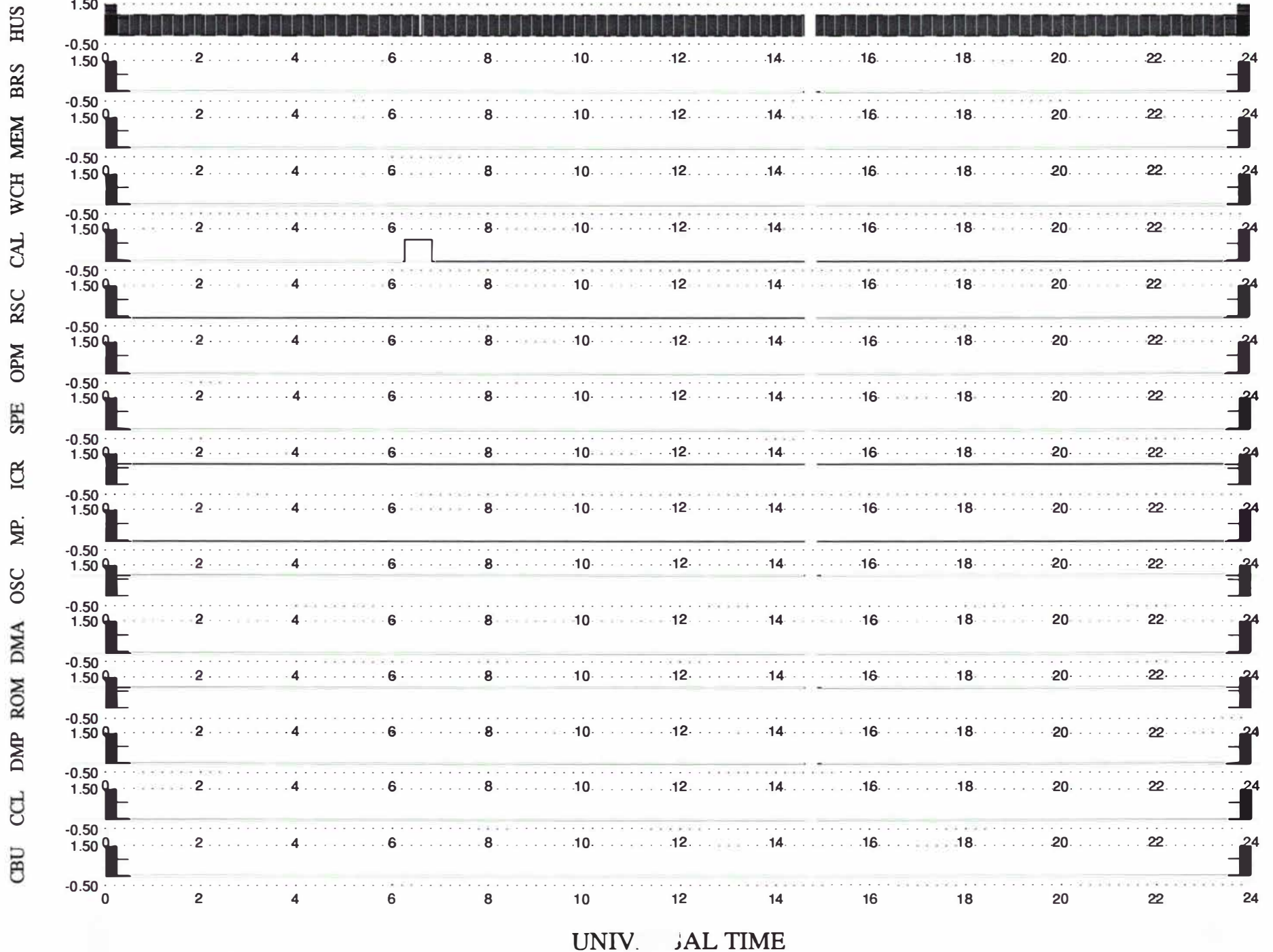
Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted



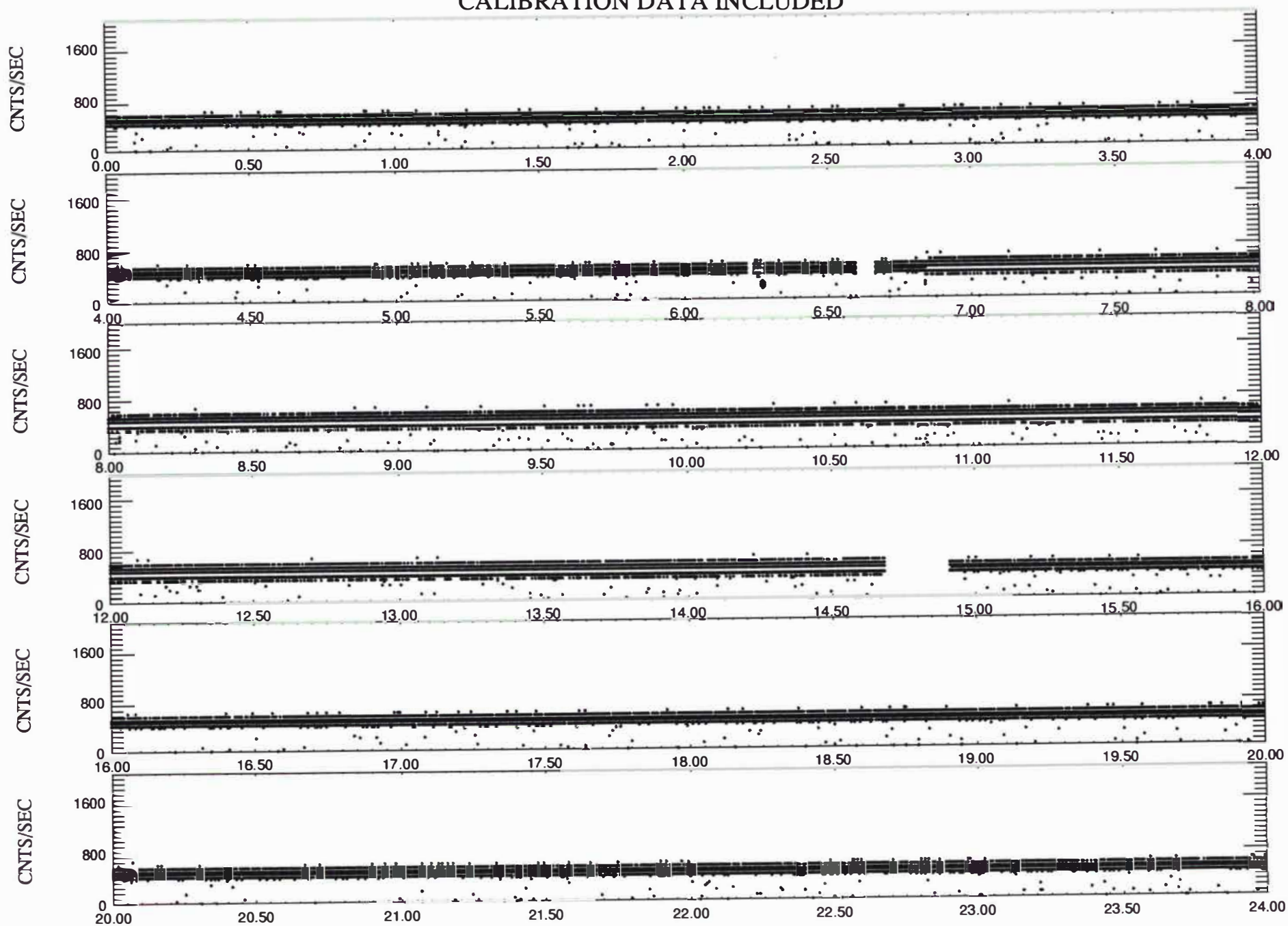
# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/07



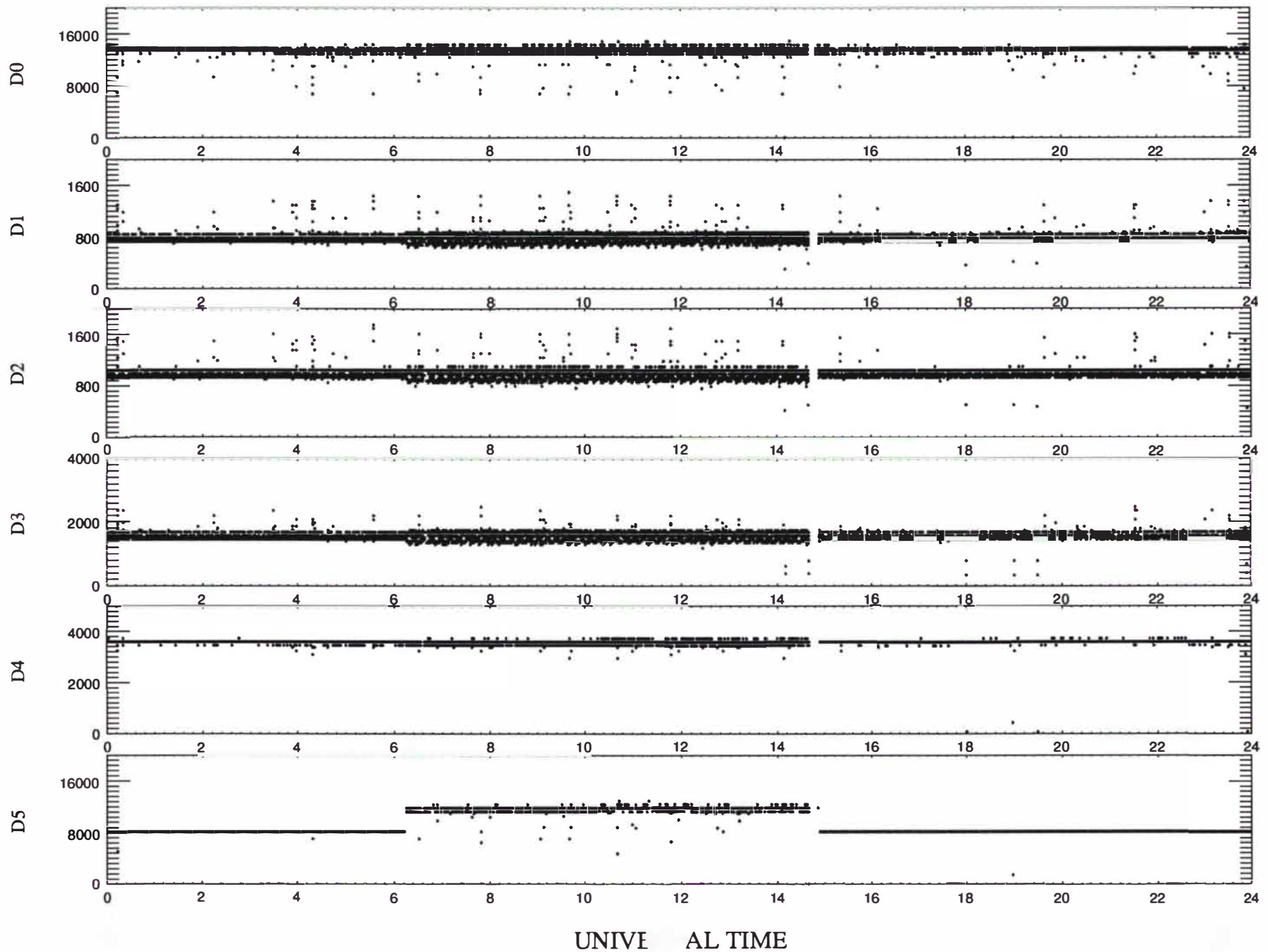
NO BURST (9)



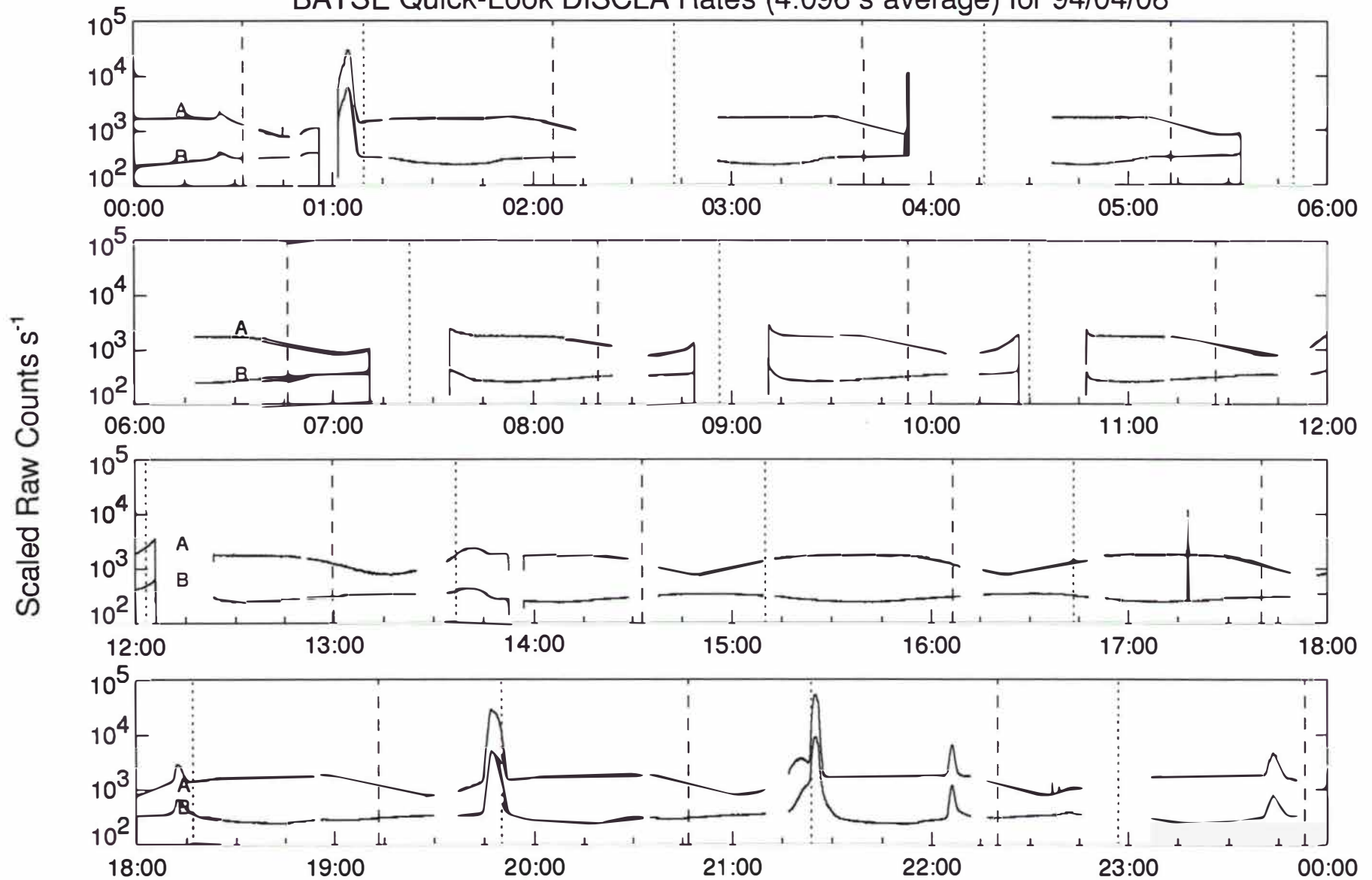
## CALIBRATION DATA INCLUDED



UNIV SAL TIME



BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/08



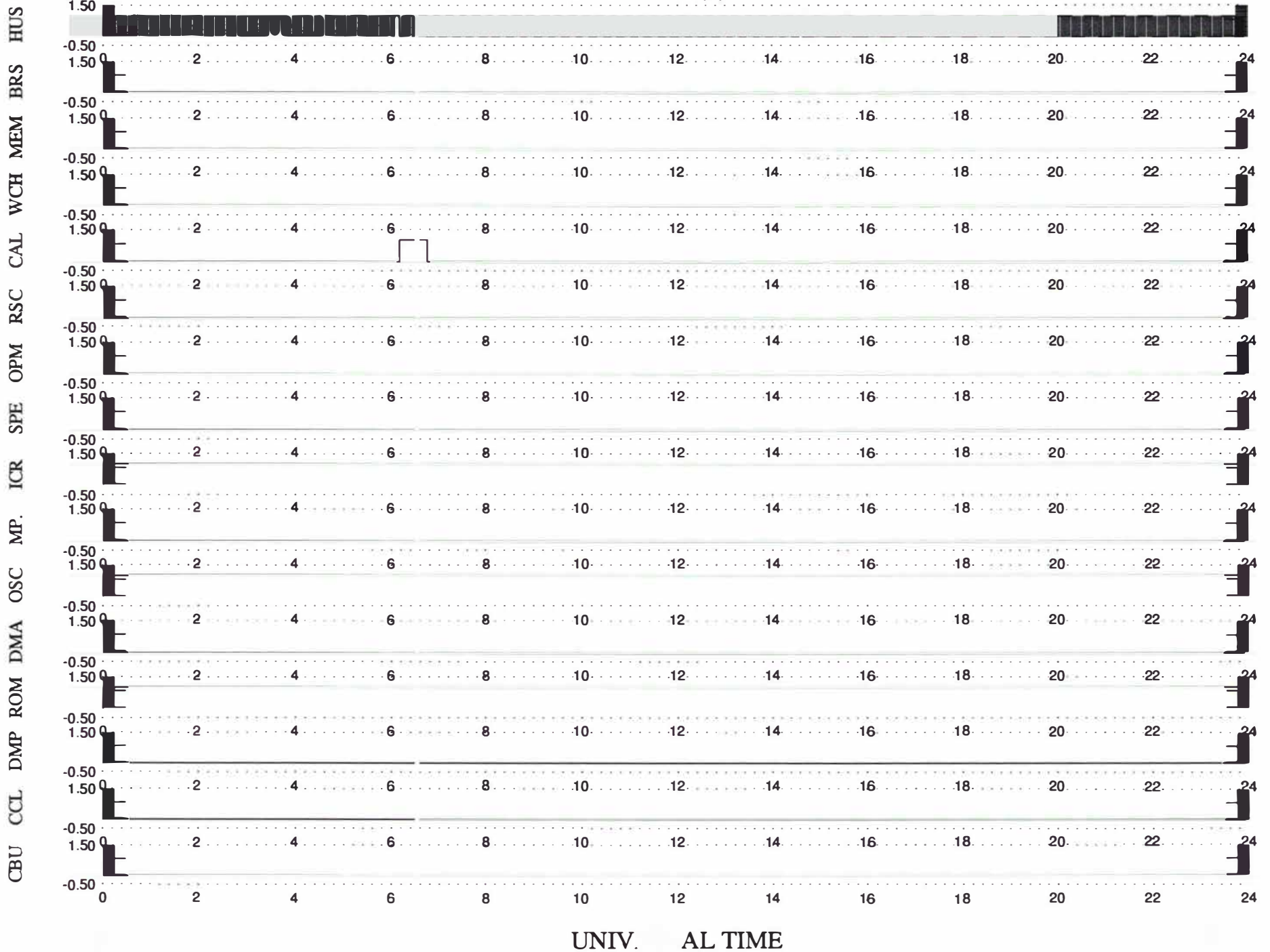
Current Time: 94/04/29, 1858 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

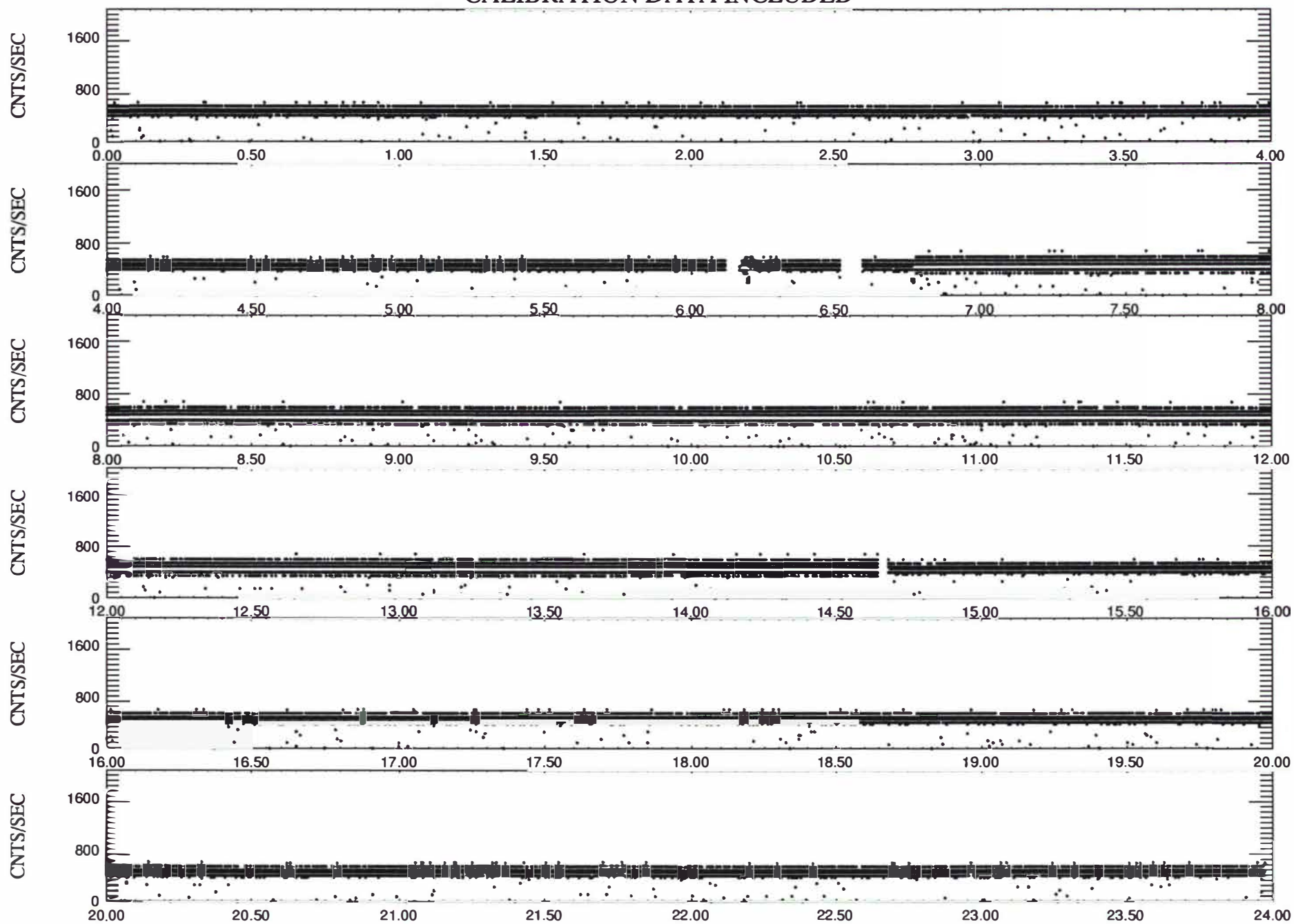
\* Solar Burst Trigger  
 + Solar Flare



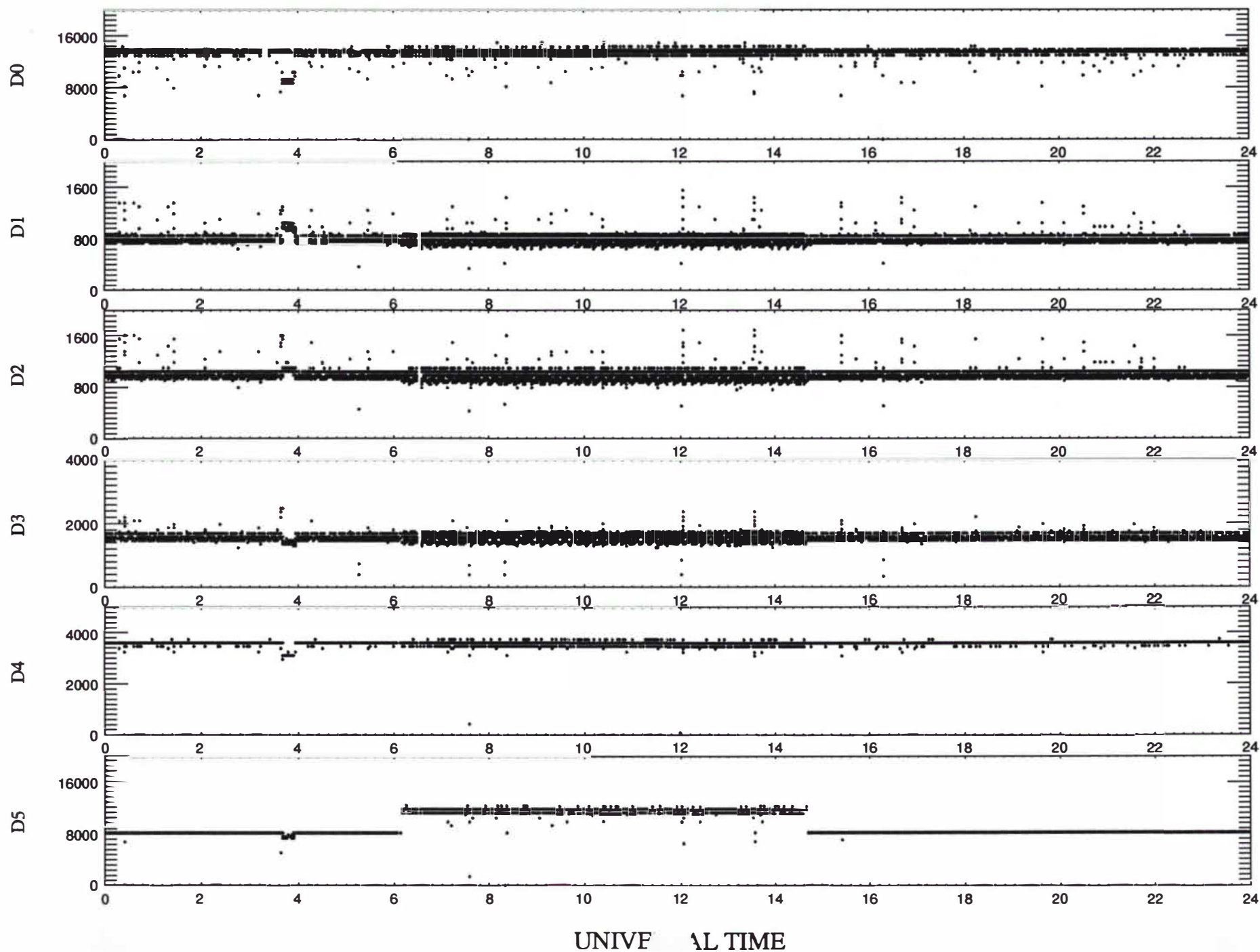
NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV AL TIME



From SHARIFF@ssl.msfc.nasa.gov Mon Apr 11 09:22 PDT 1994  
Date: Mon, 11 Apr 1994 11:24:50 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2917  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2917  
EVENT OF 1994 APR 9 DAY OF YEAR= 99  
EVENT CROSSING TIME AT BATSE : 589. S. OR 00:09:49.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 270.000 4.000  
BATSE PEAK COUNTING RATE: 2500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 9/ 4/ 94 IS:  
RA= 123.861 DEC= -48.119 DIST= 2.881 AU  
BATSE-ULYSSES DISTANCE = 431013621. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 52.78 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 869.73 SECS.  
CROSSING TIME AT ULYSSES IS 1459. S. OR 00:24:18 +/- 261.96 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 9/ 4/ 94 IS:  
RA= 356.319 DEC= -2.767 DIST= 2.242 AU  
MARS-BATSE DISTANCE = 335415104. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 93.47 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -67.80 SECS.  
CROSSING TIME AT MARS IS 521. S. OR 00:08:41 +/- 192.86 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2917    | 940409 | 9451 | 00589 | 2500     | 270 | +04 |

NO.: 02917

BATSE BURST TRIGGER

TIME: TJD=9451 SECONDS=00589

TYPE: BURST

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=107.3 AZIMUTH=199.6 ERROR= DEGREES

COMMENTS:

BURST, SINGLE PULSE, LASTING ~3 SECONDS. NOT VISIBLE ABOVE 300KEV.

12 / 4 / 94

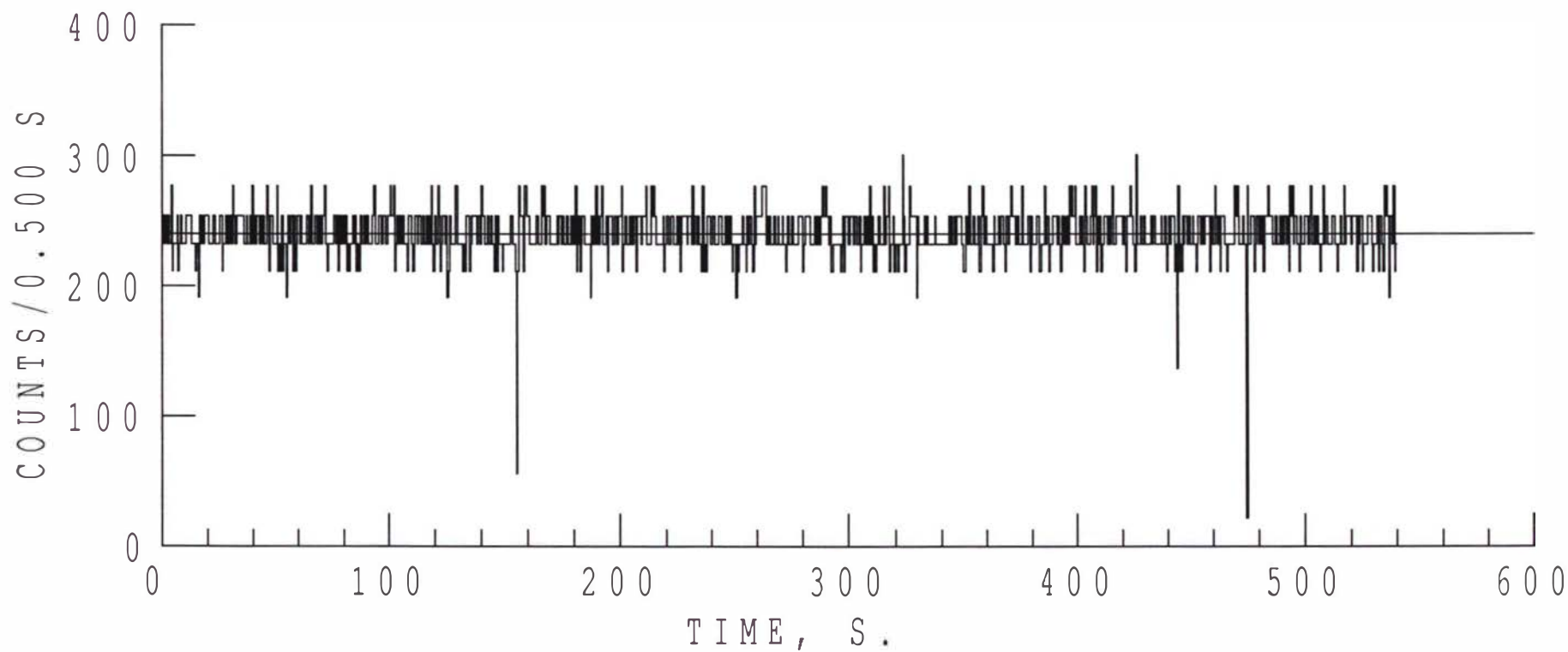
ULYSSES RT

9 / 4 / 94 1188.314 s

0 - 0 keV

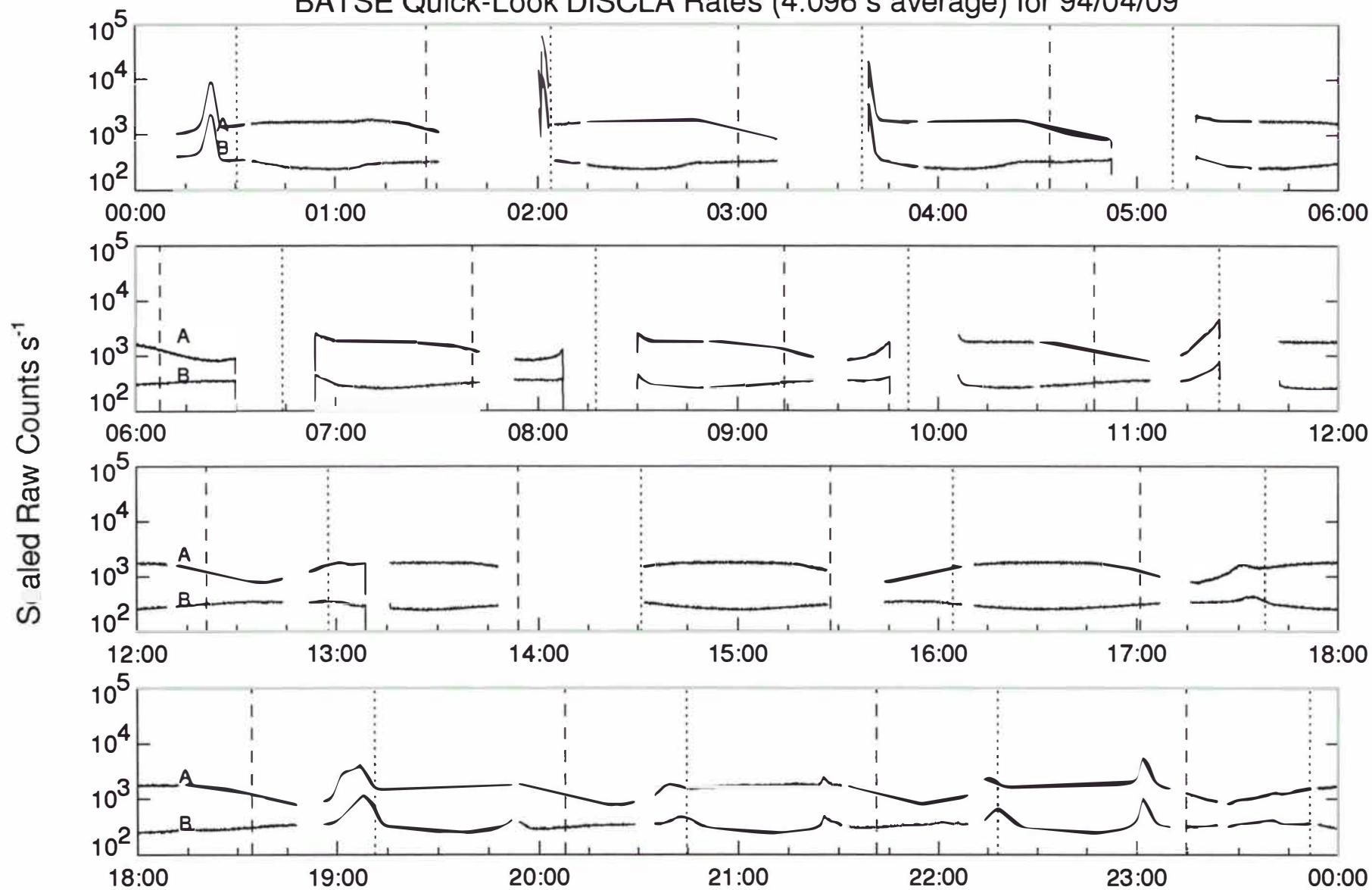
N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/09

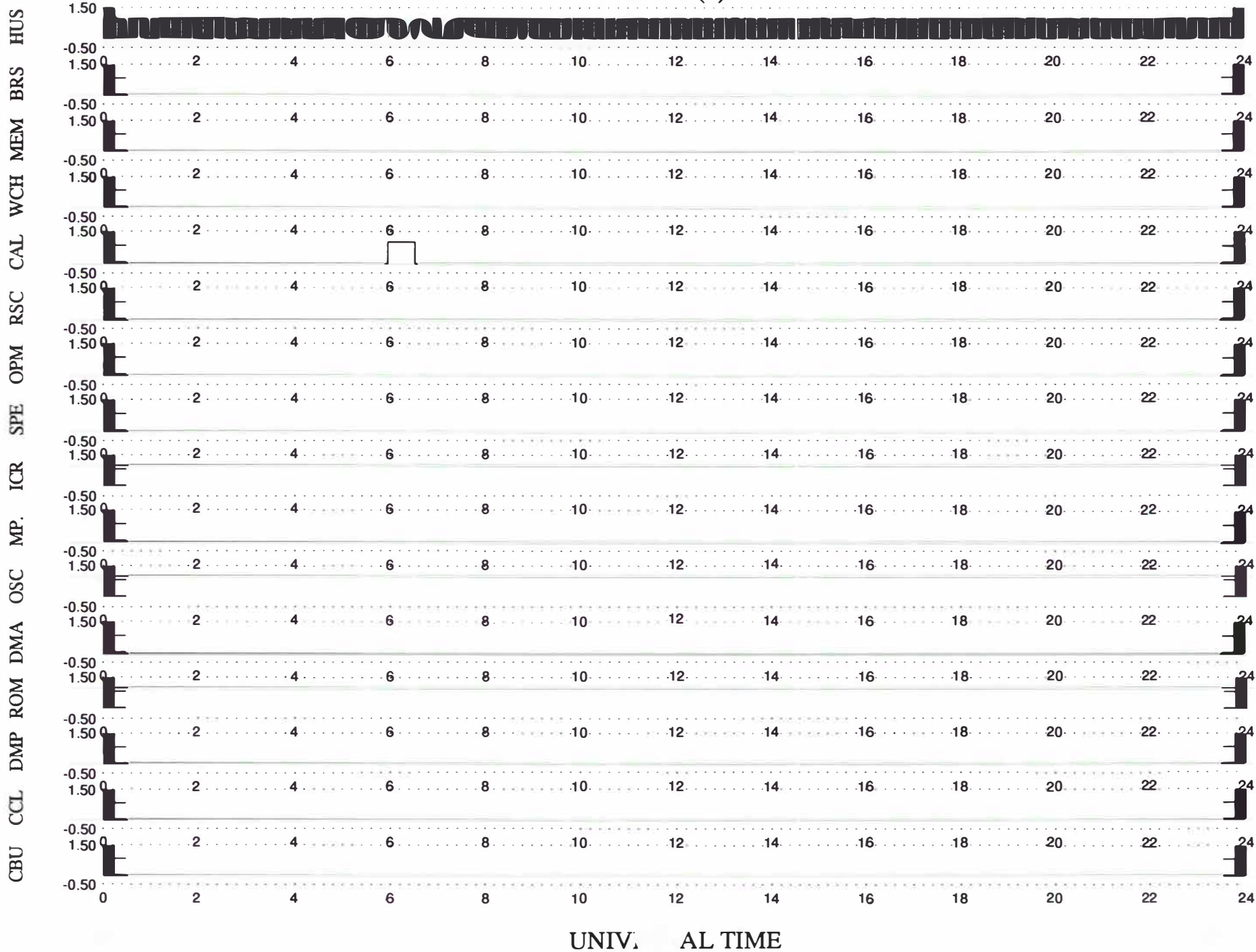


Current Time: 94/04/29, 1858 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

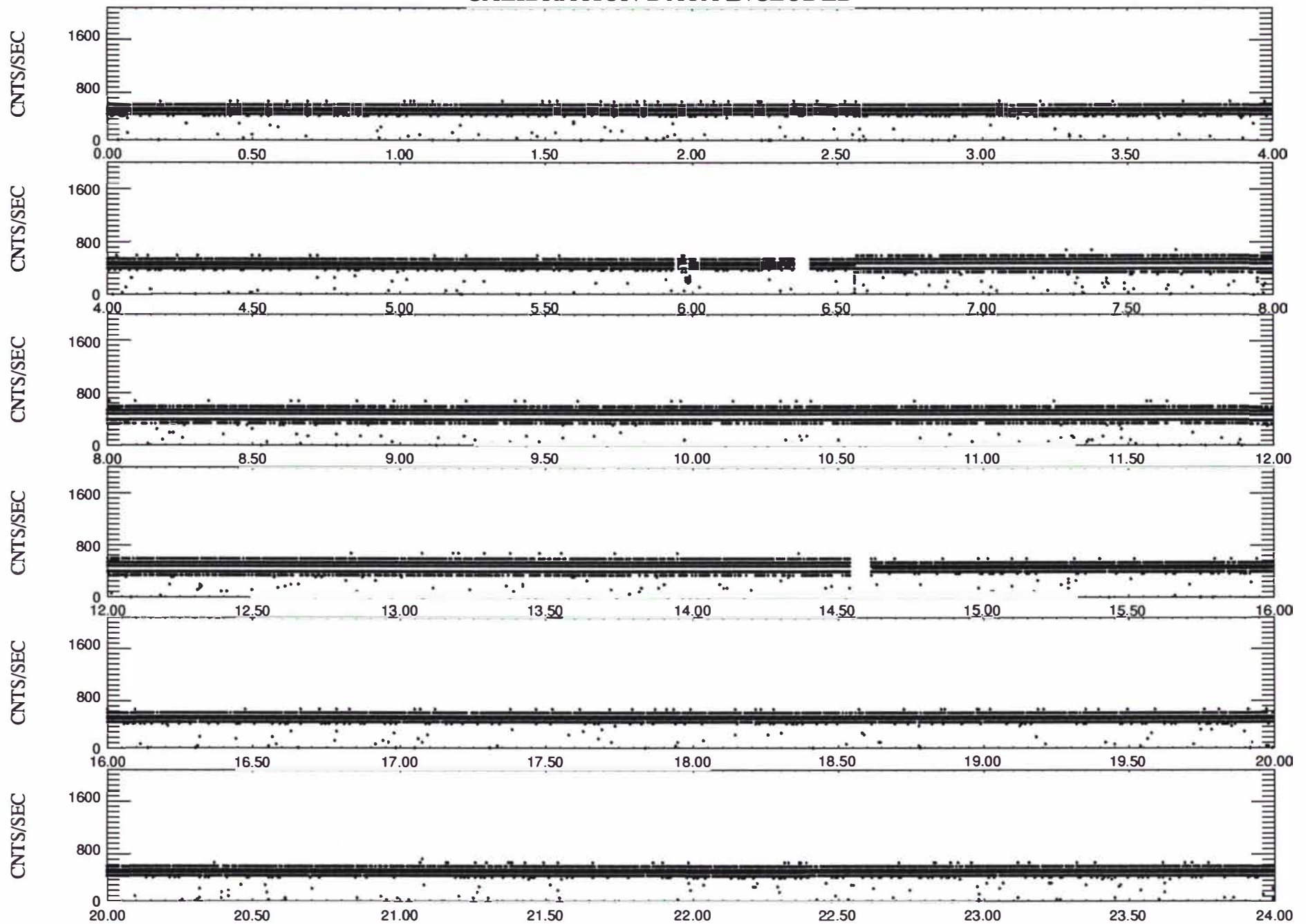
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

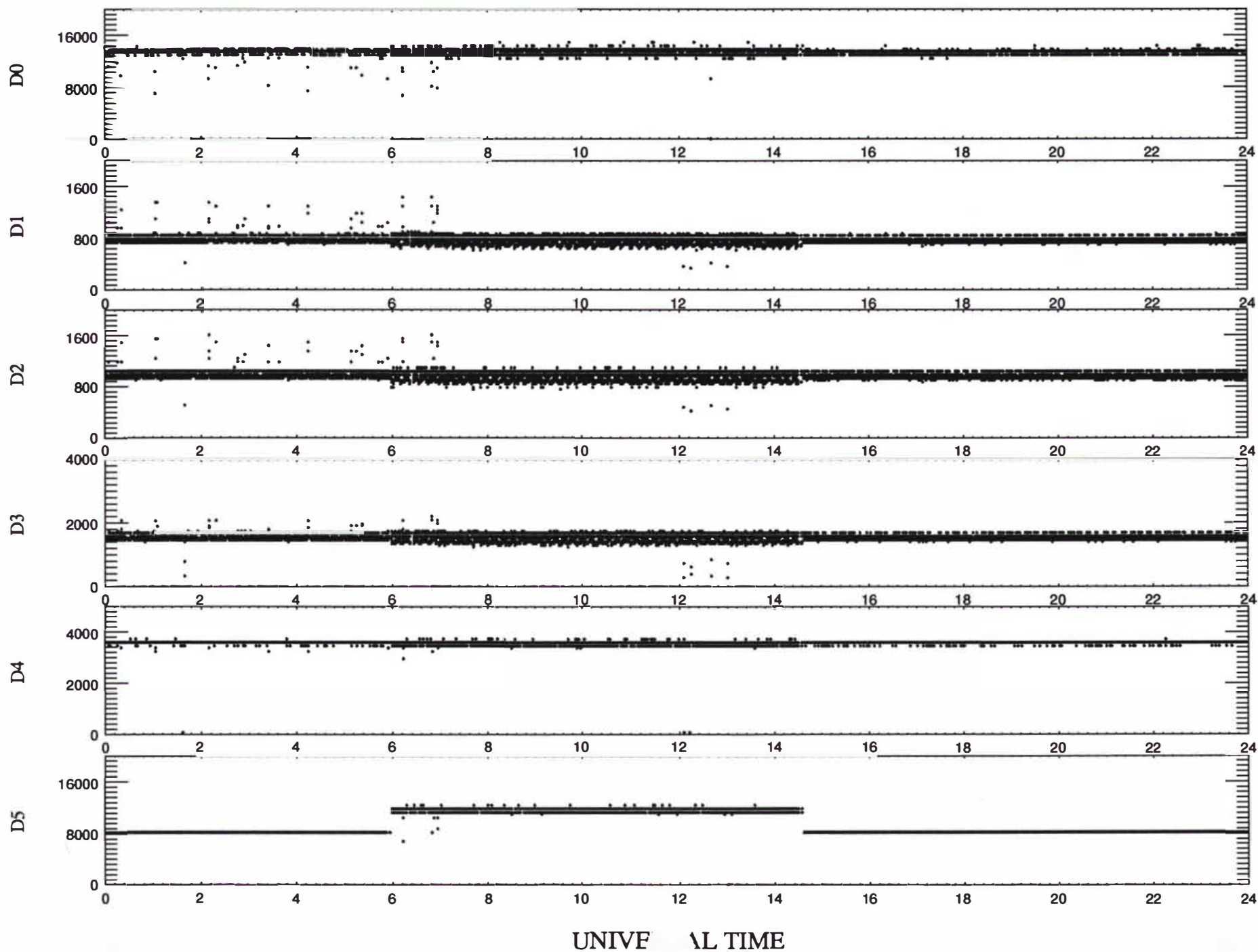
NO BURST (9)



## CALIBRATION DATA INCLUDED



UNIV. AL TIME



From MEEGAN@ssl.msfc.nasa.gov Tue Apr 12 13:21 PDT 1994  
Date: Tue, 12 Apr 1994 15:23:55 -0500 (CDT)  
From: MEEGAN@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2918  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2918  
EVENT OF 1994 APR 10 DAY OF YEAR=100  
EVENT CROSSING TIME AT BATSE : 52906. S. OR 14:41:46.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 229.000 50.000  
BATSE PEAK COUNTING RATE: 11000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 10/ 4/ 94 IS:  
RA= 123.418 DEC= -47.827 DIST= 2.883 AU  
BATSE-ULYSSES DISTANCE = 431344543. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 46.87 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 983.65 SECS.  
CROSSING TIME AT ULYSSES IS 53890. S. OR 14:58:09 +/- 247.24 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 10/ 4/ 94 IS:  
RA= 357.034 DEC= -2.454 DIST= 2.240 AU  
MARS-BATSE DISTANCE = 335102432. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 64.63 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 478.95 SECS.  
CROSSING TIME AT MARS IS 53385. S. OR 14:49:44 +/- 182.62 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2918    | 940410 | 9452 | 52906 | 11000    | 229 | +50 |

#### BATSE BURST TRIGGER

NO.: 02918

TIME: TJD=9452 SECONDS=52906

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=056. AZIMUTH=226. ERROR= DEGREES

#### COMMENTS:

TWO PULSES; TOTAL DURATION ABOUT 1/2 S. SEEN ABOVE 300 KEV.



12 / 4 / 94

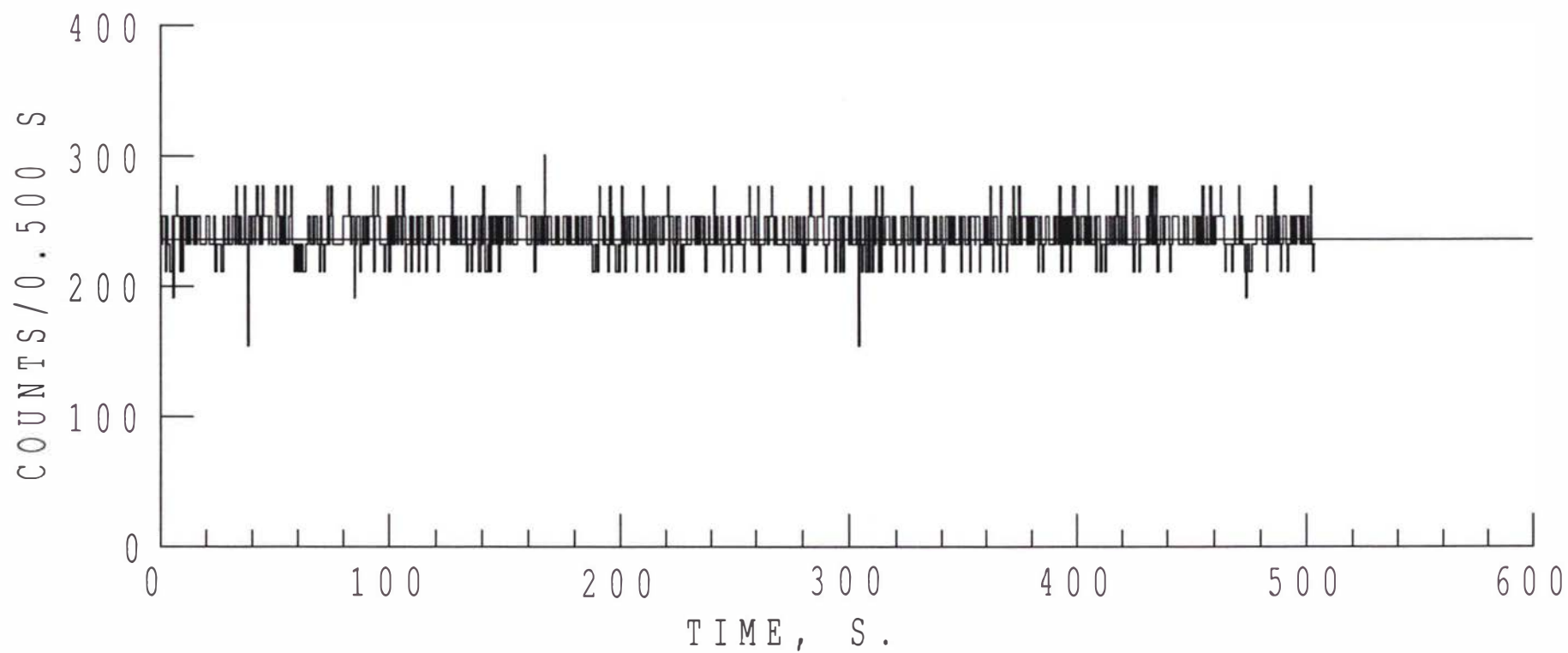
ULYSSES RT

10 / 4 / 94 53640.023 s

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From MEEGAN@ssl.msfc.nasa.gov Tue Apr 12 13:25 PDT 1994  
Date: Tue, 12 Apr 1994 15:28:03 -0500 (CDT)  
From: MEEGAN@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2919  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2919  
EVENT OF 1994 APR 10 DAY OF YEAR=100  
EVENT CROSSING TIME AT BATSE : 56702. S. OR 15:45:02.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 252.000 28.000  
BATSE PEAK COUNTING RATE: 20000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 10/ 4/ 94 IS:  
RA= 123.406 DEC= -47.819 DIST= 2.883 AU  
BATSE-ULYSSES DISTANCE = 431353924. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 44.13 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1032.69 SECS.  
CROSSING TIME AT ULYSSES IS 57735. S. OR 16:02:14 +/- 239.63 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 10/ 4/ 94 IS:  
RA= 357.034 DEC= -2.454 DIST= 2.240 AU  
MARS-BATSE DISTANCE = 335102432. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 75.59 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 278.24 SECS.  
CROSSING TIME AT MARS IS 56980. S. OR 15:49:40 +/- 192.18 SECONDS

RI

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2919    | 940410 | 9452 | 56702 | 20000    | 252 | +28 |

#### BATSE BURST TRIGGER

NO.: 02919

TIME: TJD=9452 SECONDS=56702

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=080. AZIMUTH=210. ERROR= DEGREES

#### COMMENTS:

INTENSE; FAST RISE, EXPONENTIAL DECAY. ABOUT 15 S. SEEN ABOVE 300 KEV.

*Helio corr removed*

Date: Jan 27 '98

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

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

#### 2. BATSE Data

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

#### 3. PVO Data

- ☐ Ephemeris of PVO used (not Venus)?
- ☐ 2000 coordinates used?
- ☐ Geocentric time used?
- ☒ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

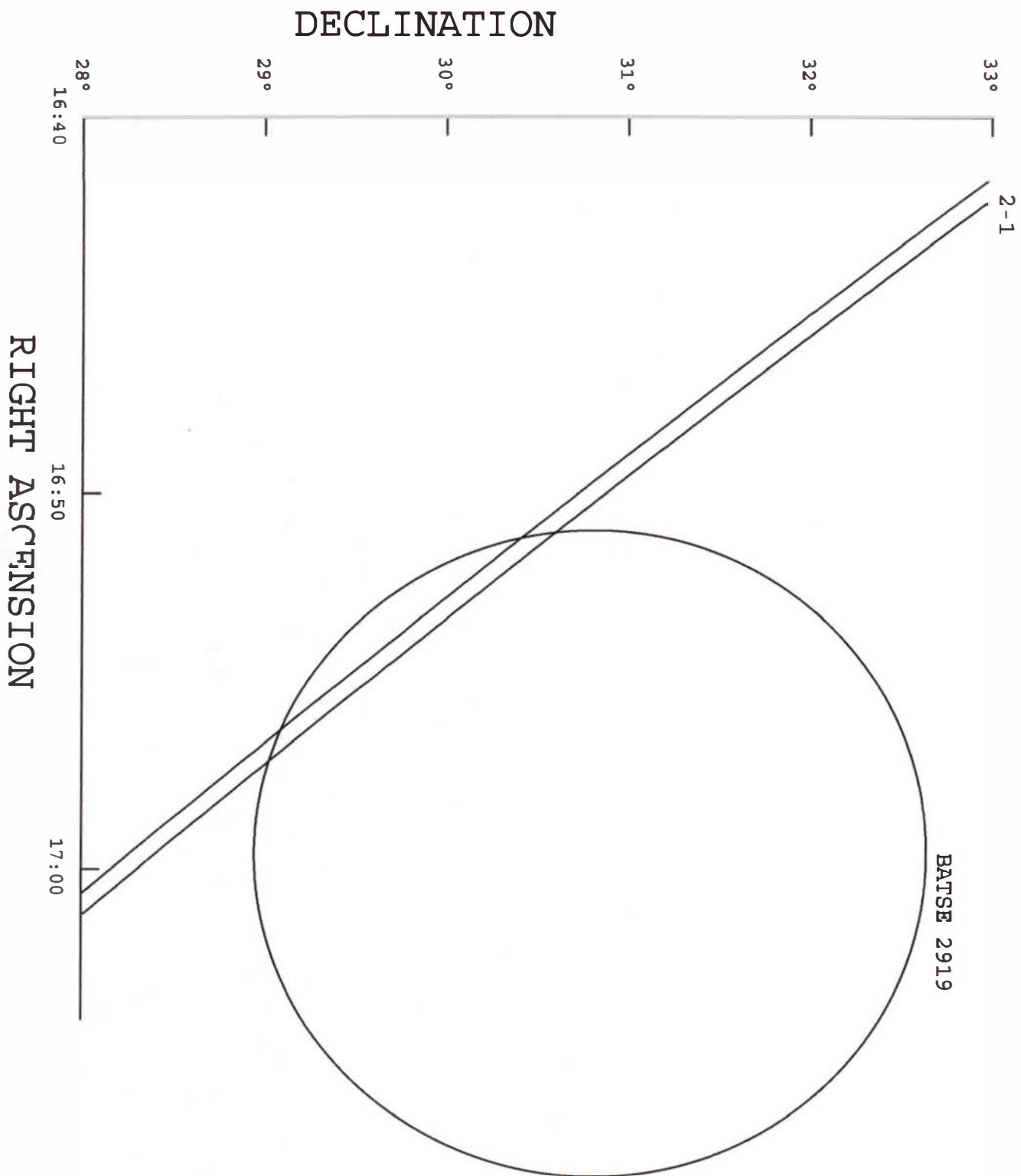
G=GALACTIC EQUATOR

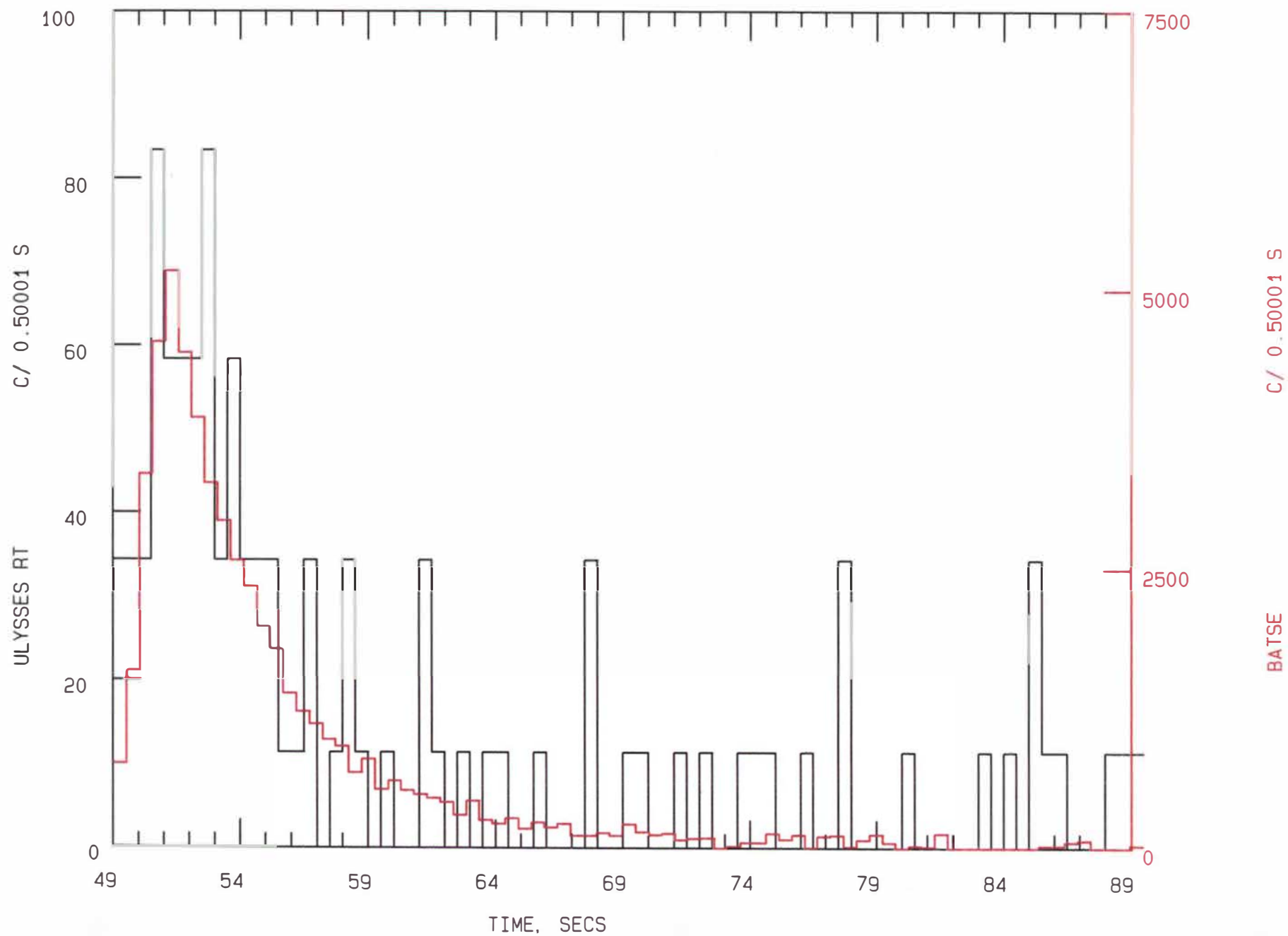
1 ULYSSES

2 BATSE

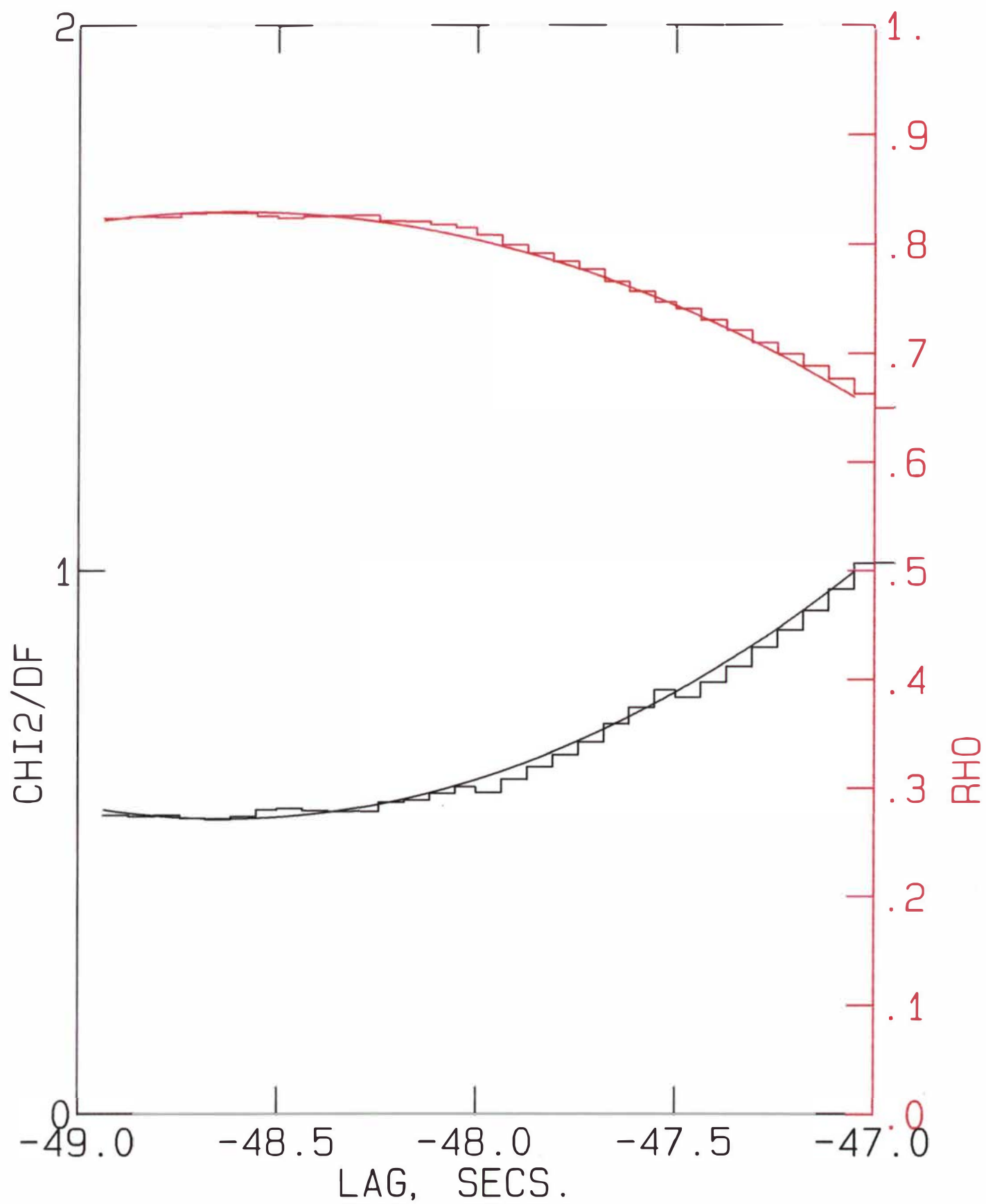
EVENT OF APR 10, 1994 16:01

27 / 1/98









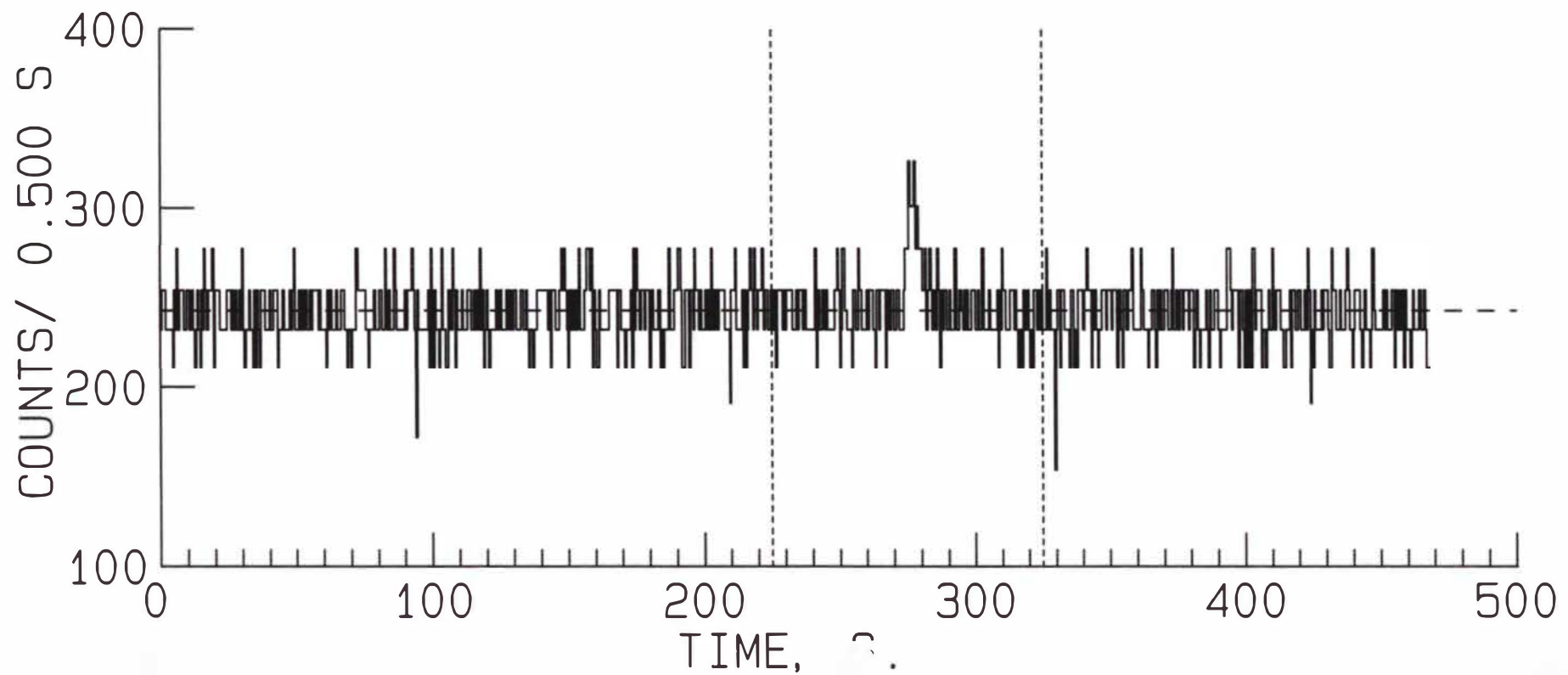
ULYSSES RT

27 / 1 / 98

10/ 4/94 57492.094 s

22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



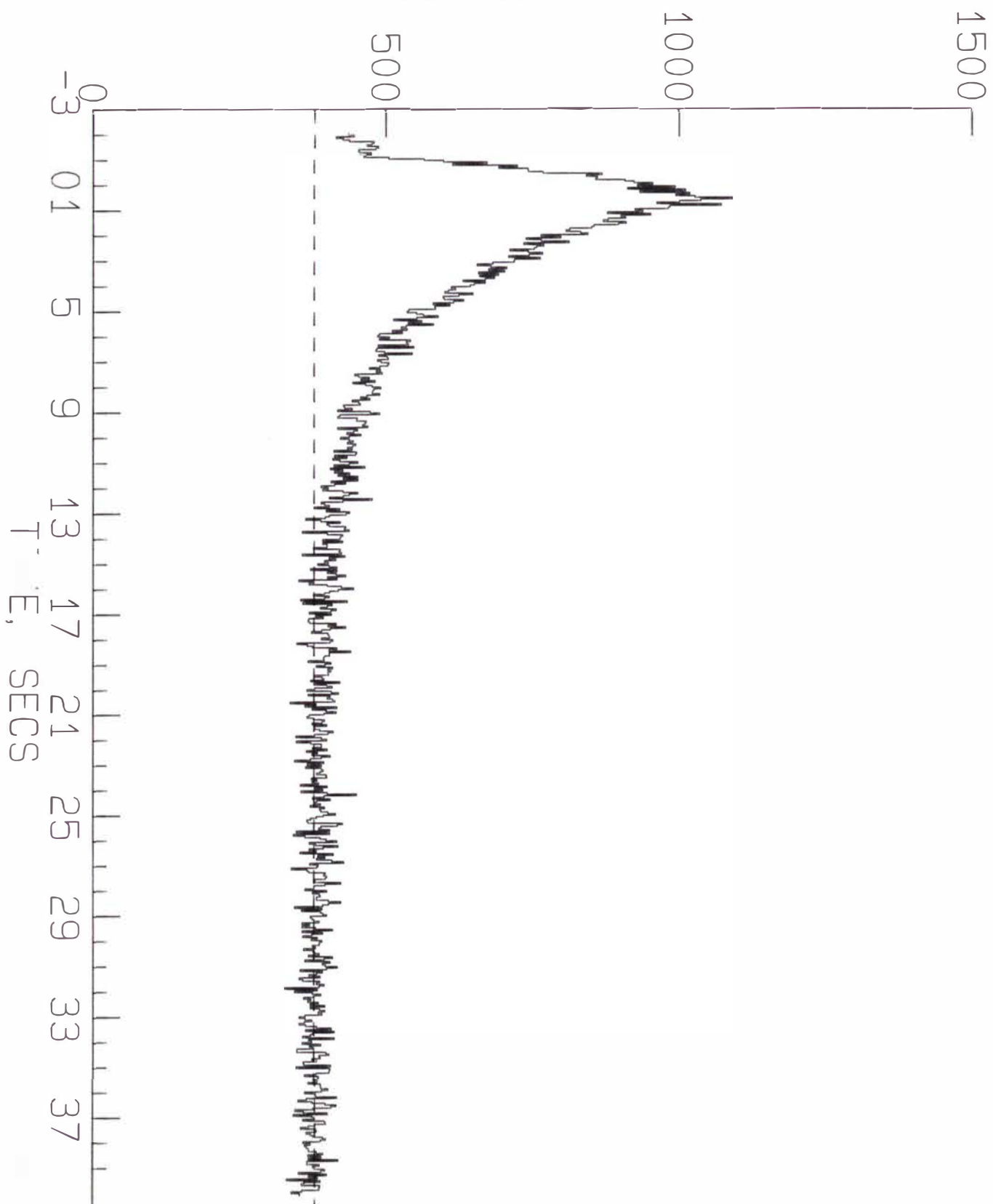
BATSE

10/04/94

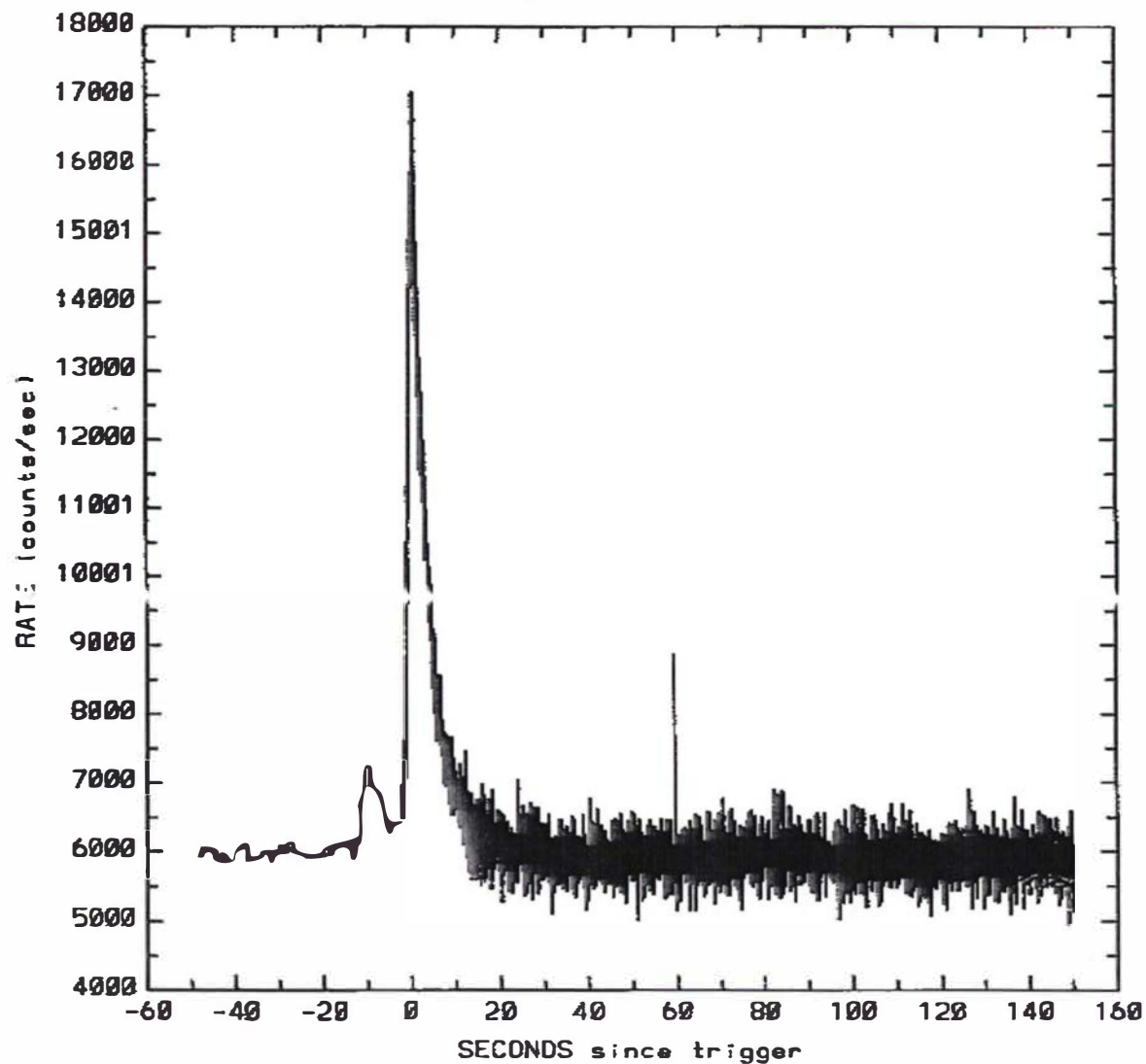
56702.937

25- 100 keV

COUNTS/ .064 S



## DATA FOR K. HURLEY



2-AUG-1994 09:29.17

Created by MOPS 80  
(Burst Display)  
Version t2.22

Trigger # : 2919

Trigger Time:  
9452 / 56702.938Burst Data Type:  
DISCSCDeadtime  
Corrected: N  
Background Data  
Type: PREB + DISCLA  
Minimum Integ. Time:  
9.064 secondsDetectors [7..8]:  
11000000Discriminators:  
( 1. 2)Quality Mask:  
DISP1

From MEEGAN@ssl.msfc.nasa.gov Tue Apr 12 12:29 PDT 1994  
Date: Tue, 12 Apr 1994 14:32:12 -0500 (CDT)  
From: MEEGAN@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02920

TIME: TJD=9452 SECONDS=83352

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

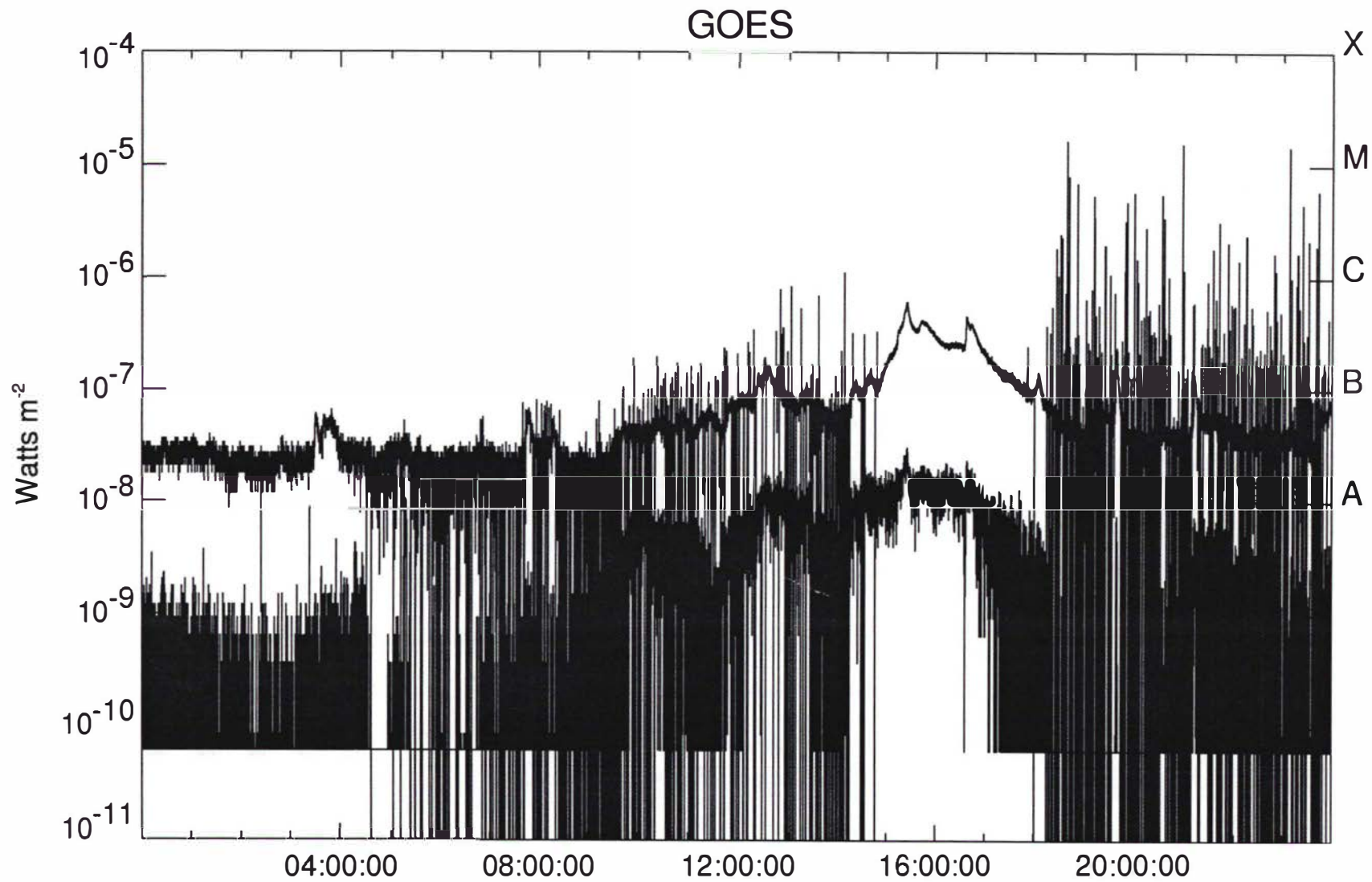
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON EVENT.





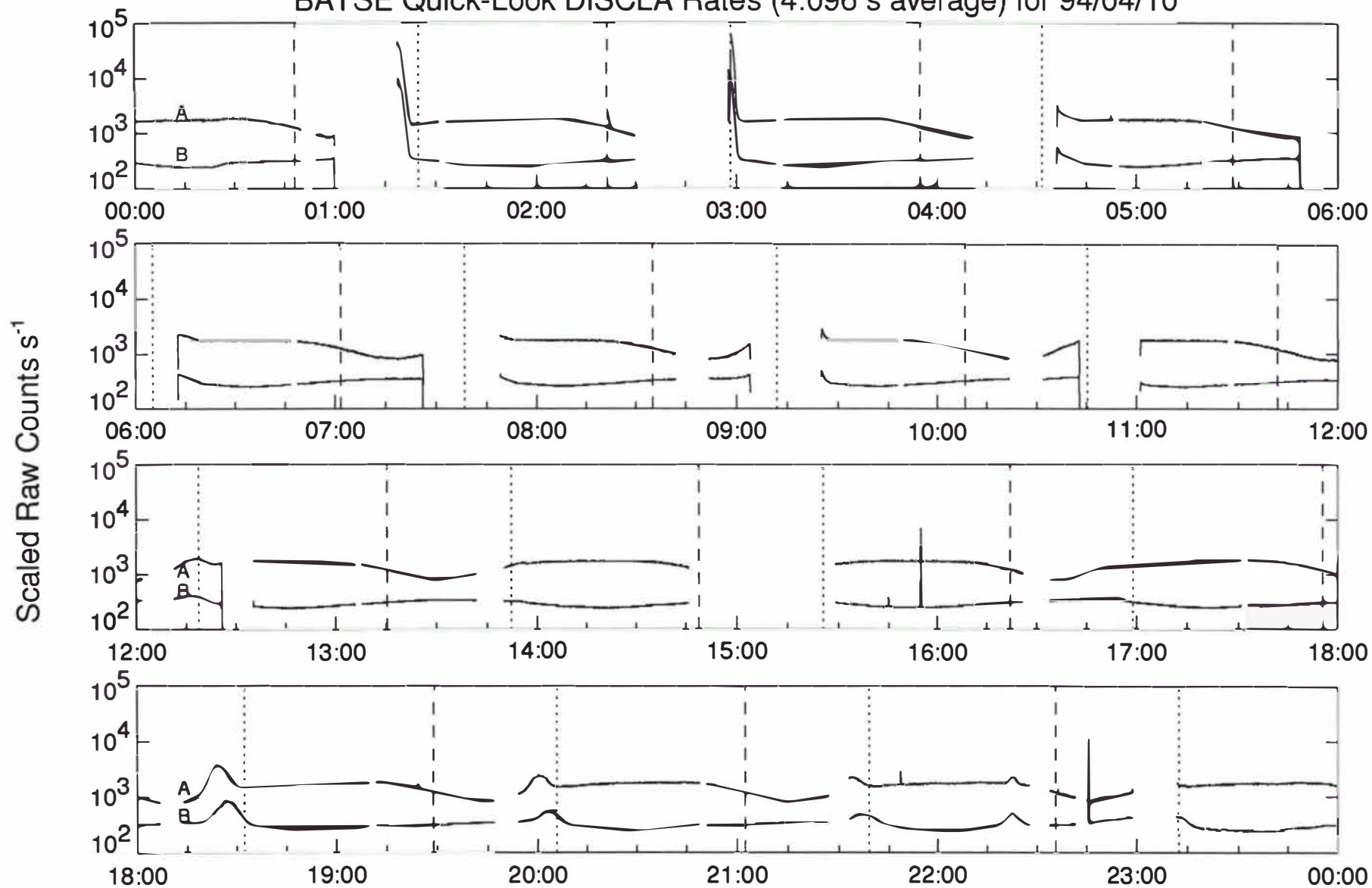
Data Start: 94/04/10, 0000:01

Plot created: 94/04/29, 1921

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/10



Current Time: 94/04/29, 1858 EDT

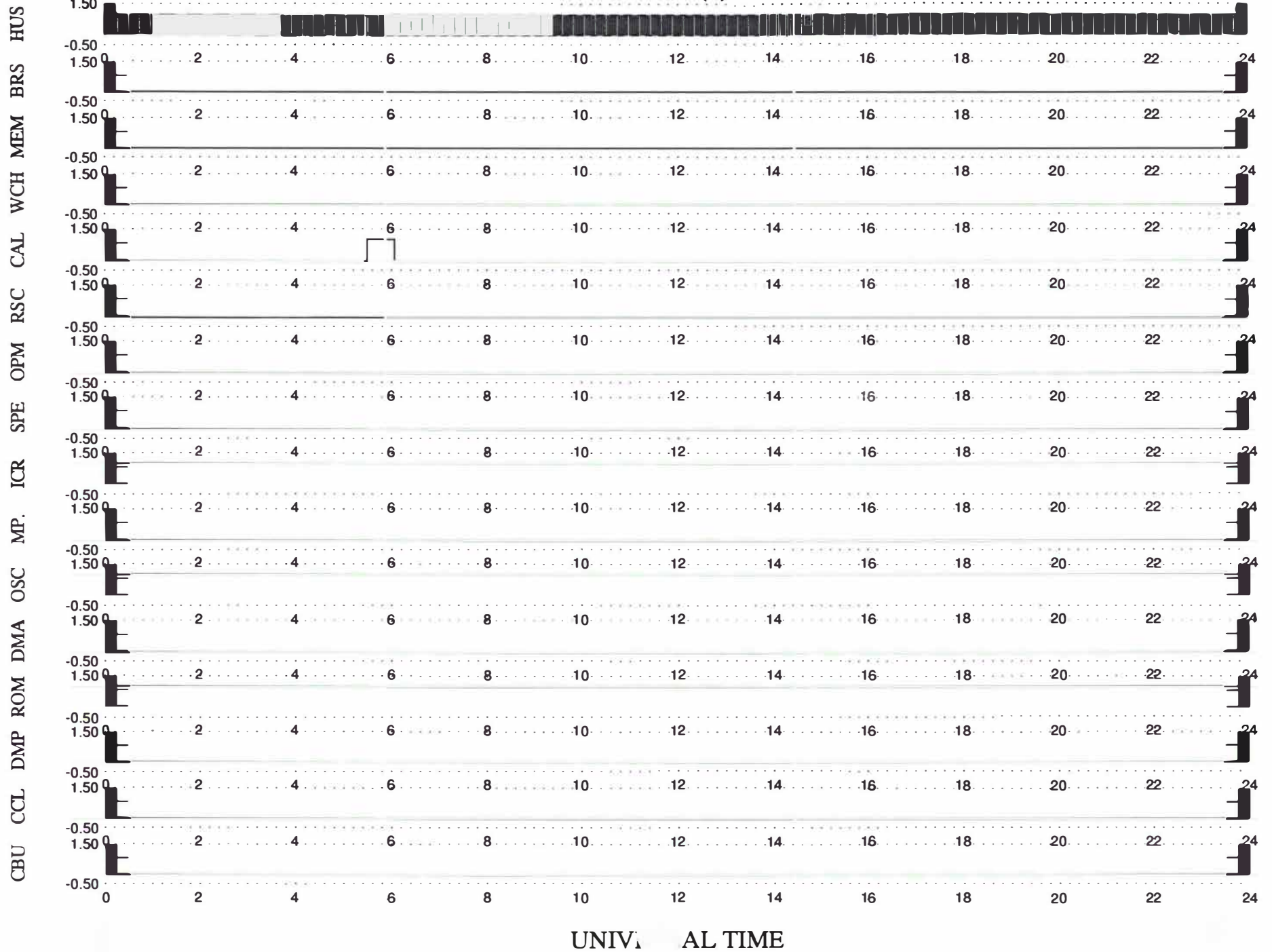
A: Channel 1 Most Sunward LAD

B: Sum Channel 1 Anti-Sunward LADs X .05

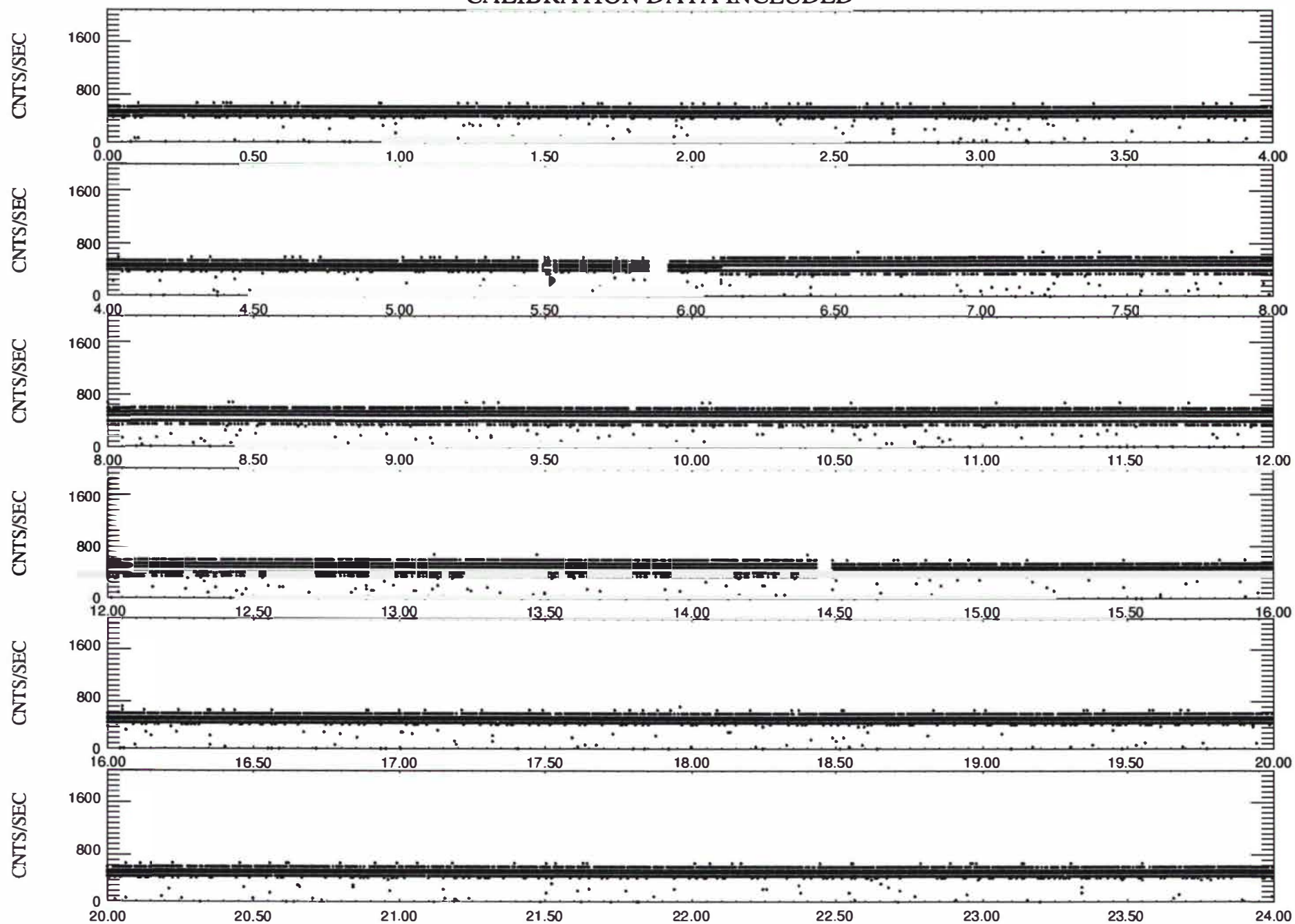
Dotted line: Day entry  
Dashed line: Night entry

\* Solar Burst Trigger  
+ Solar Flare

NO BURST (9)

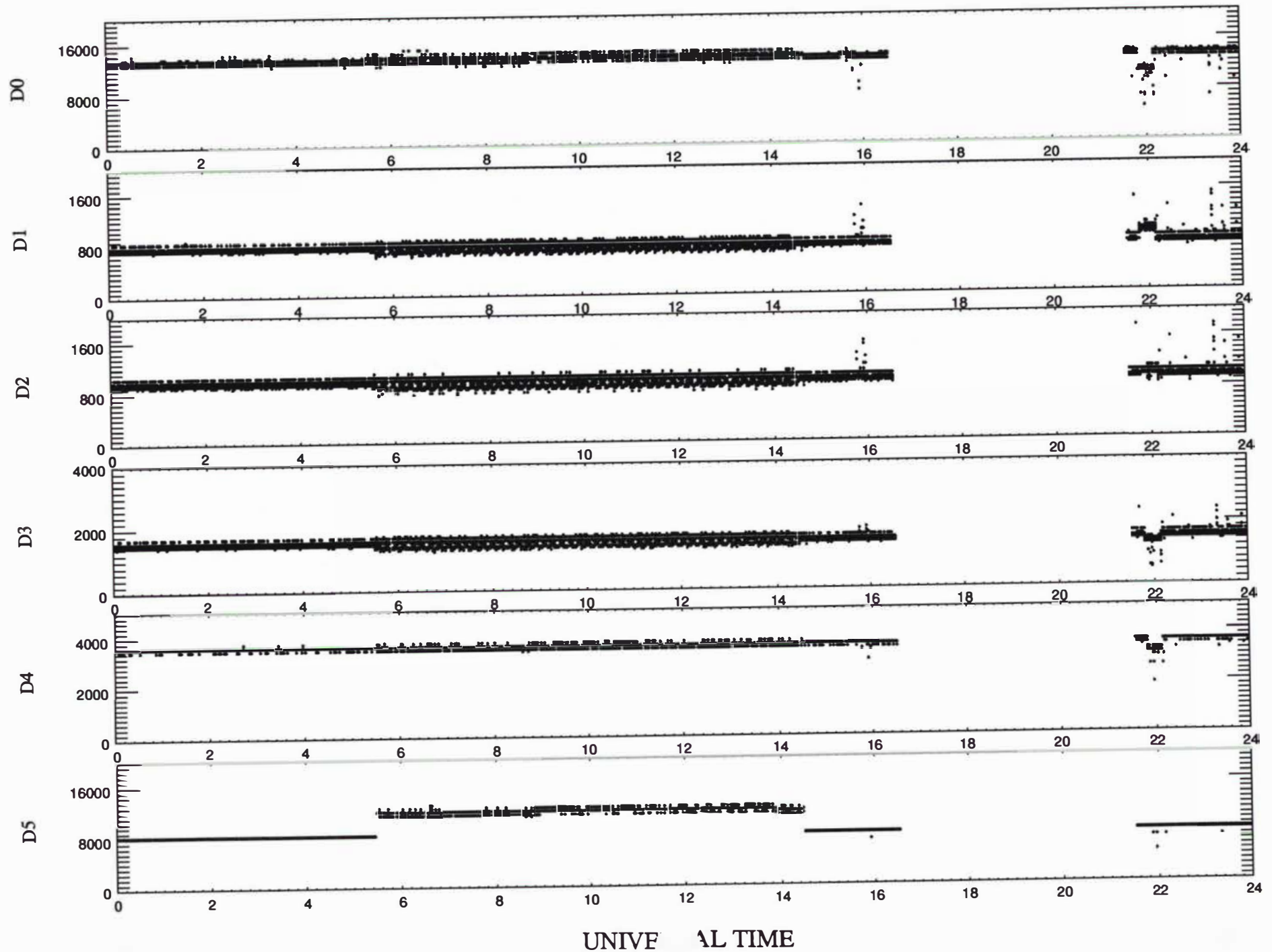


## CALIBRATION DATA INCLUDED

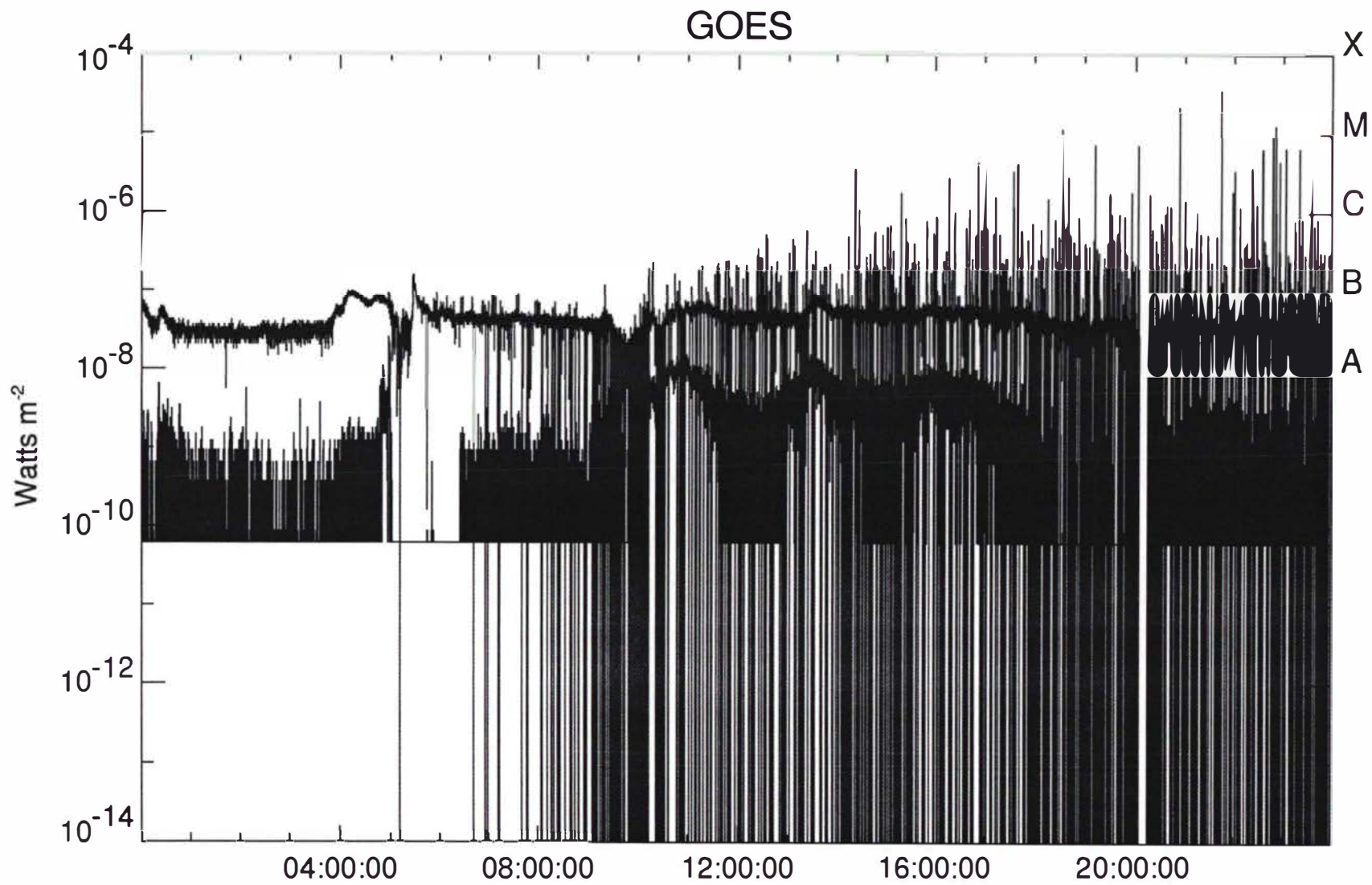


UNIV. AL TIME









Data Start: 94/04/11, 0000:01

Plot created: 94/04/29, 1921

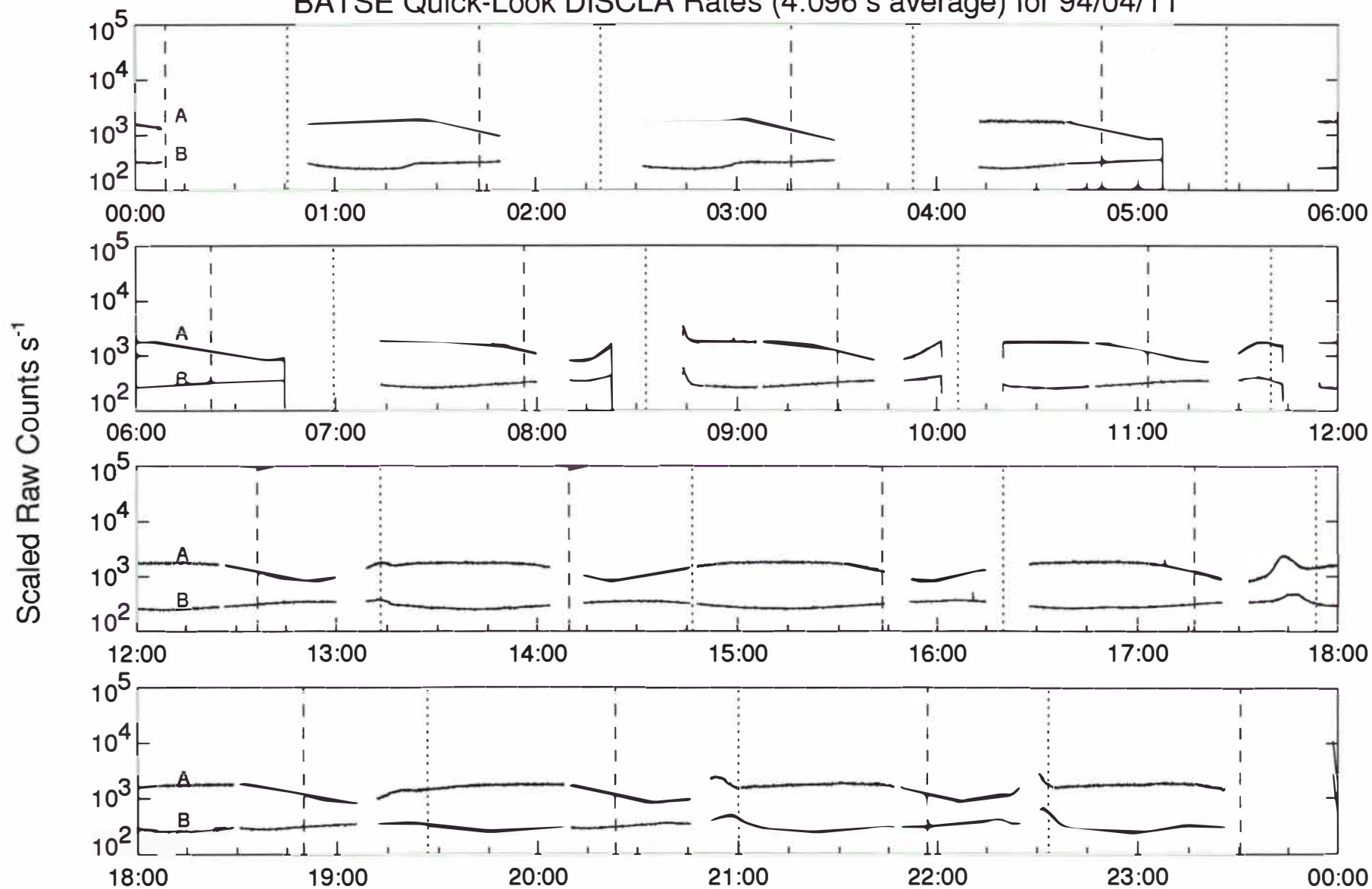
Channel 1 (1.0 - 8.0 Angstroms)

Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/11



Current Time: 94/04/29, 1858 EDT  
A: Channel 1 Most Sunward LAD  
B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
Dashed line: Night entry

\* Solar Burst Trigger  
+ Solar Flare

From HAGEDON@ssl.msfc.nasa.gov Wed Apr 13 09:21 PDT 1994  
Date: Wed, 13 Apr 1994 11:23:55 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 2921

TIME: TJD=9453 SECONDS=80843

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

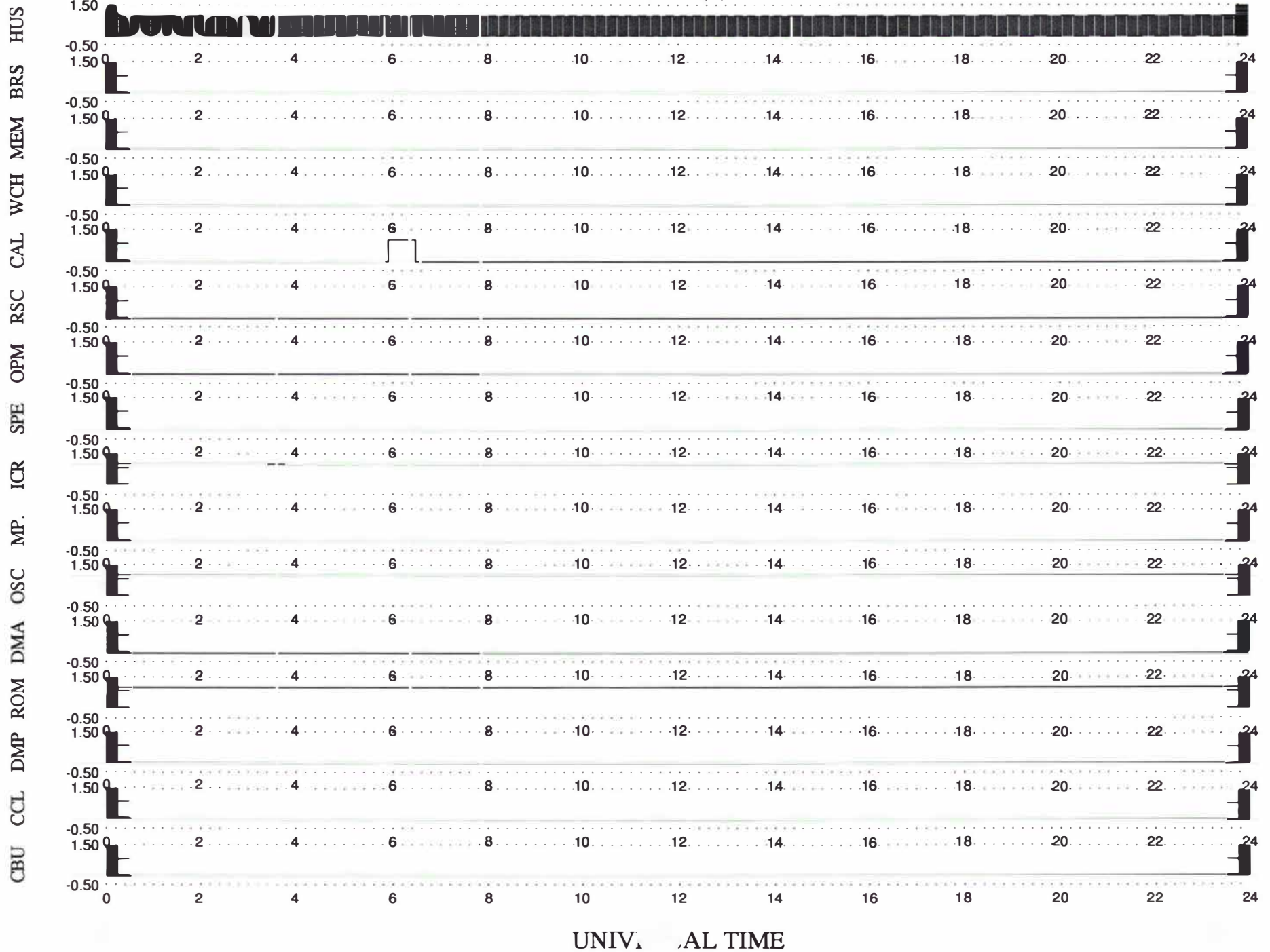
SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

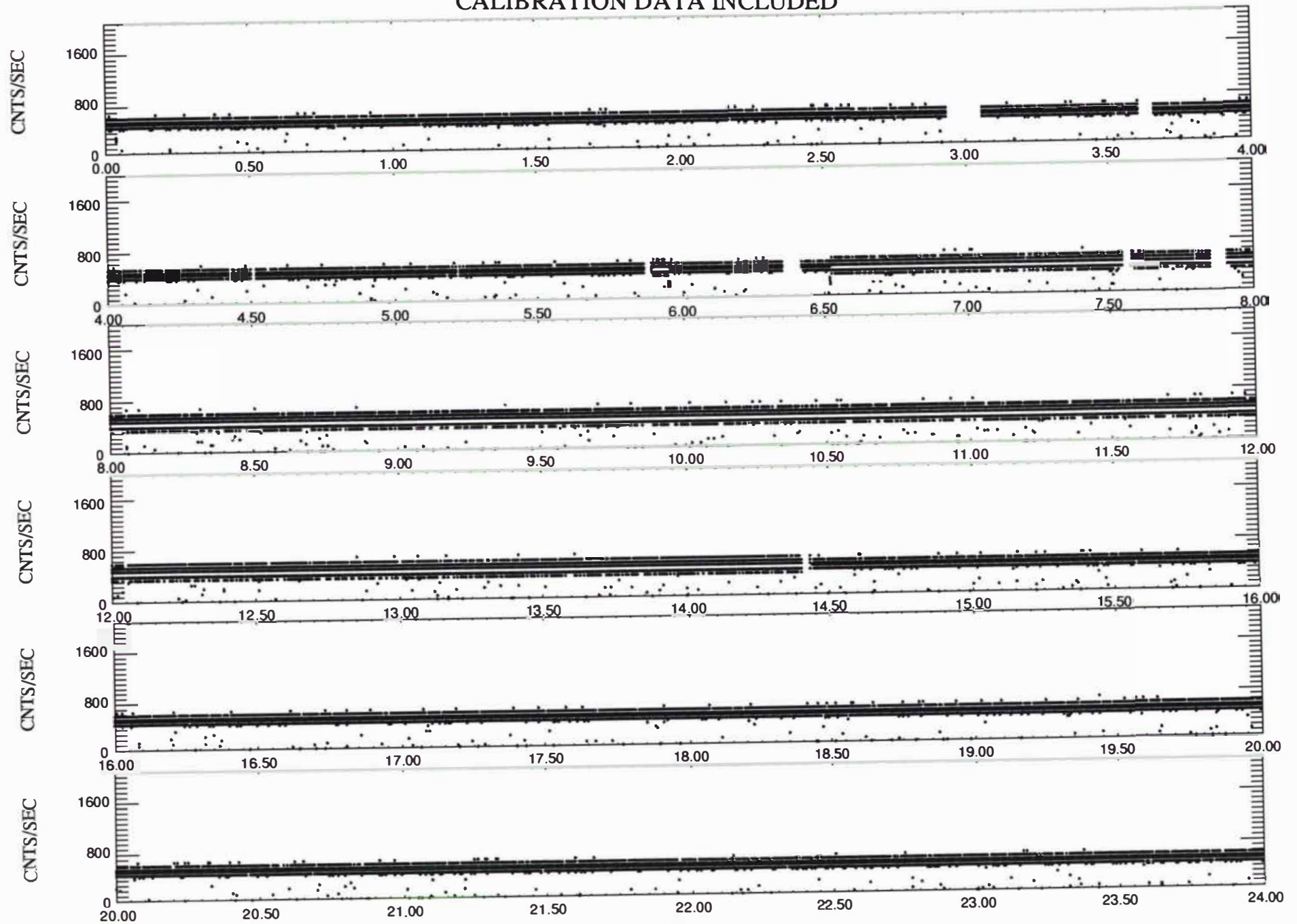
LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
ELECTRON EVENT

## NO BURST (9)

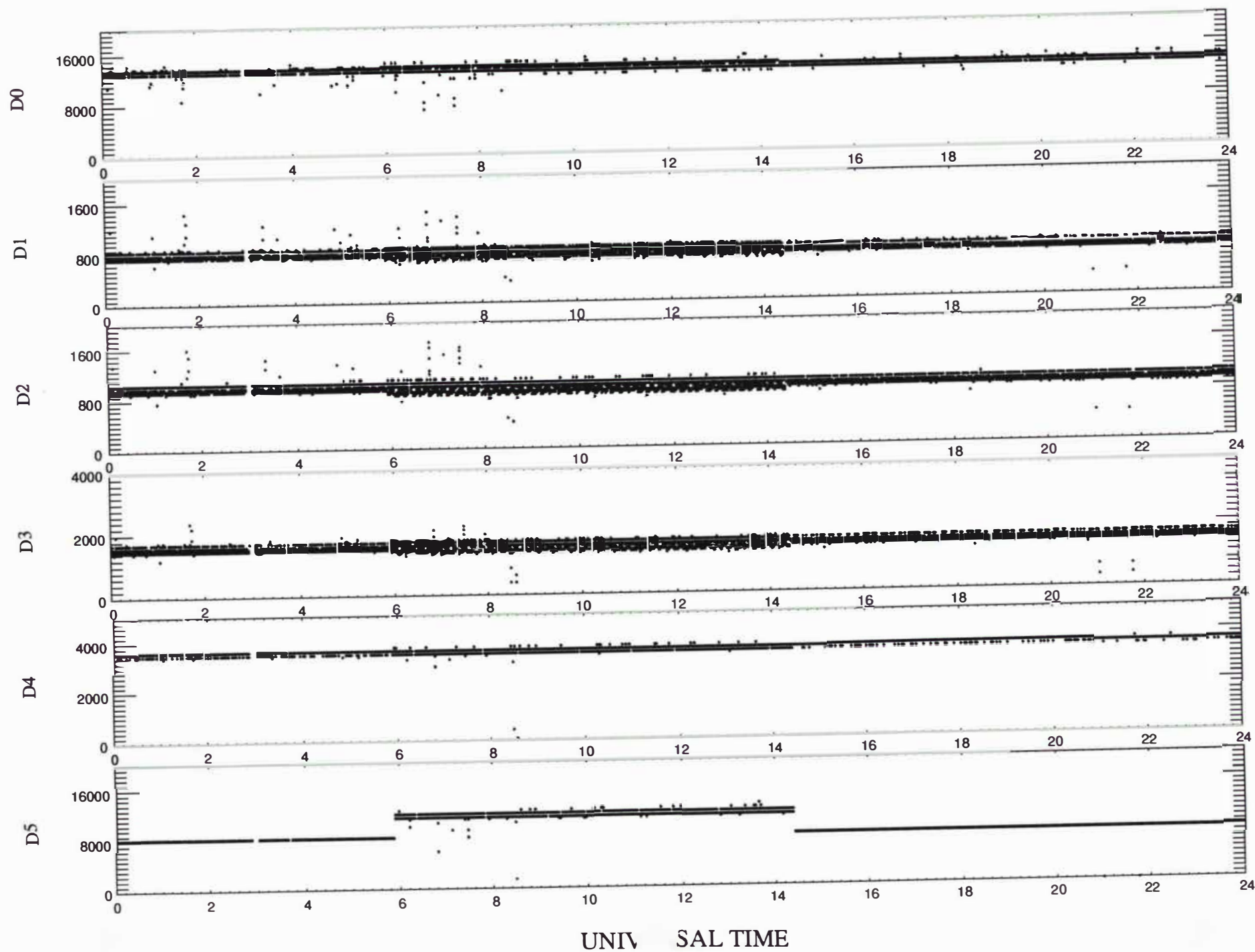


CALIBRATION DATA INCLUDED



UNIVI AL TIME





From MALLOZZI@ssl.msfc.nasa.gov Wed Apr 13 09:02 PDT 1994  
Date: Wed, 13 Apr 1994 11:04:52 -0500 (CDT)  
From: MALLOZZI@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2922  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2922  
EVENT OF 1994 APR 12 DAY OF YEAR=102  
EVENT CROSSING TIME AT BATSE : 6031. S. OR 01:40:31.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 216.000 -38.000  
BATSE PEAK COUNTING RATE: 10900 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 12/ 4/ 94 IS:  
RA= 123.036 DEC= -47.559 DIST= 2.886 AU  
BATSE-ULYSSES DISTANCE = 431687450. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=115.27 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -614.63 SECS.  
CROSSING TIME AT ULYSSES IS 5416. S. OR 01:30:16 +/- 266.75 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 12/ 4/ 94 IS:  
RA= 358.462 DEC= -1.828 DIST= 2.236 AU  
MARS-BATSE DISTANCE = 334474592. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 52.78 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 674.87 SECS.  
CROSSING TIME AT MARS IS 6706. S. OR 01:51:45 +/- 164.49 SECONDS

RI

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2922    | 940412 | 9454 | 06031 | 10900    | 216 | -38 |

#### BATSE BURST TRIGGER

NO.: 02922

TIME: TJD=9454 SECONDS=06031

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=087.7 AZIMUTH=136.7 ERROR= DEGREES

#### COMMENTS:

FAIRLY INTENSE BURST OF LONG DURATION -- APPROX. 200 SECONDS.  
THREE MAIN PEAKS WITH EMISSION FROM CENTRAL PEAK CLEARLY VISIBLE  
ABOVE 300 KEV. INDIVIDUAL PEAKS EXHIBIT MODERATE SUBSTRUCTURE.

Helio corr removed

Date: July 2 '97

### **BURST TRIANGULATION CHECKLIST**

#### **1. Ulysses Data**

- ☒ Jim Schmidling's stat file correction applied?
- ☒ Final ephemeris used?
- ☒ Final, CDROM data used?
- ☐ Were data checked by Joe Springer for 0.5 s errors? *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*

#### **2. BATSE Data**

- ☐ 2.042 s subtracted for bursts prior to June 25 1992 and DISCSC programs prior to Version 2.16 (August 28 1992)? *N/A*
- ☒ Does  $T_0$  in data file agree with  $T_0$  in plot?
- ☒ BATSE ephemeris for  $T_0$ ?
- ☒ Error circle position and radius from public catalog used?
- ☐ If MER data were used, is a 30 ms systematic error included? *N/A*

#### **3. PVO Data**

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

- ☒ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

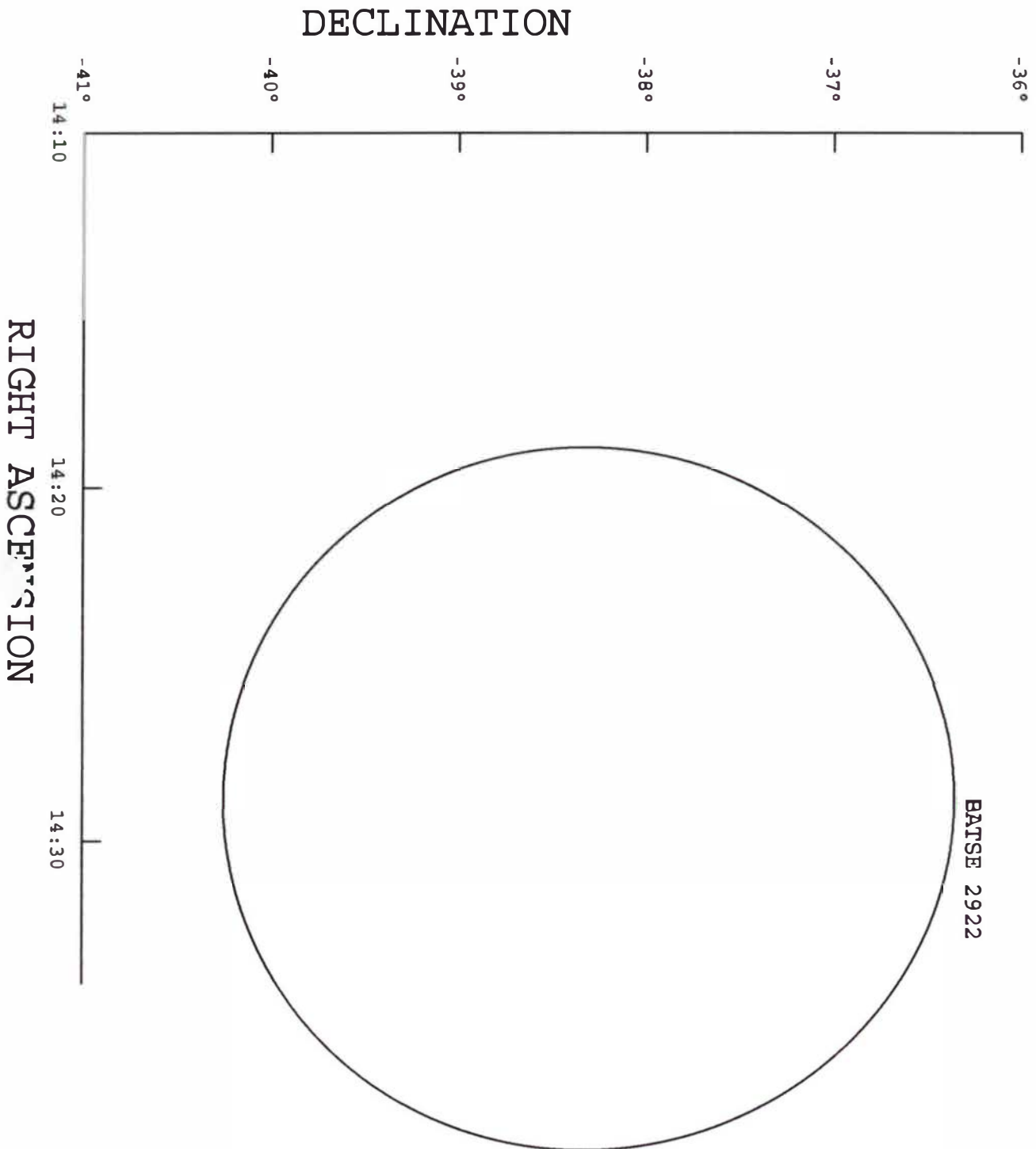
G=GALACTIC EQUATOR

1 ULYSSES

2 BATSE

EVENT OF APR 12, 1994 1:27

2/ 7/97



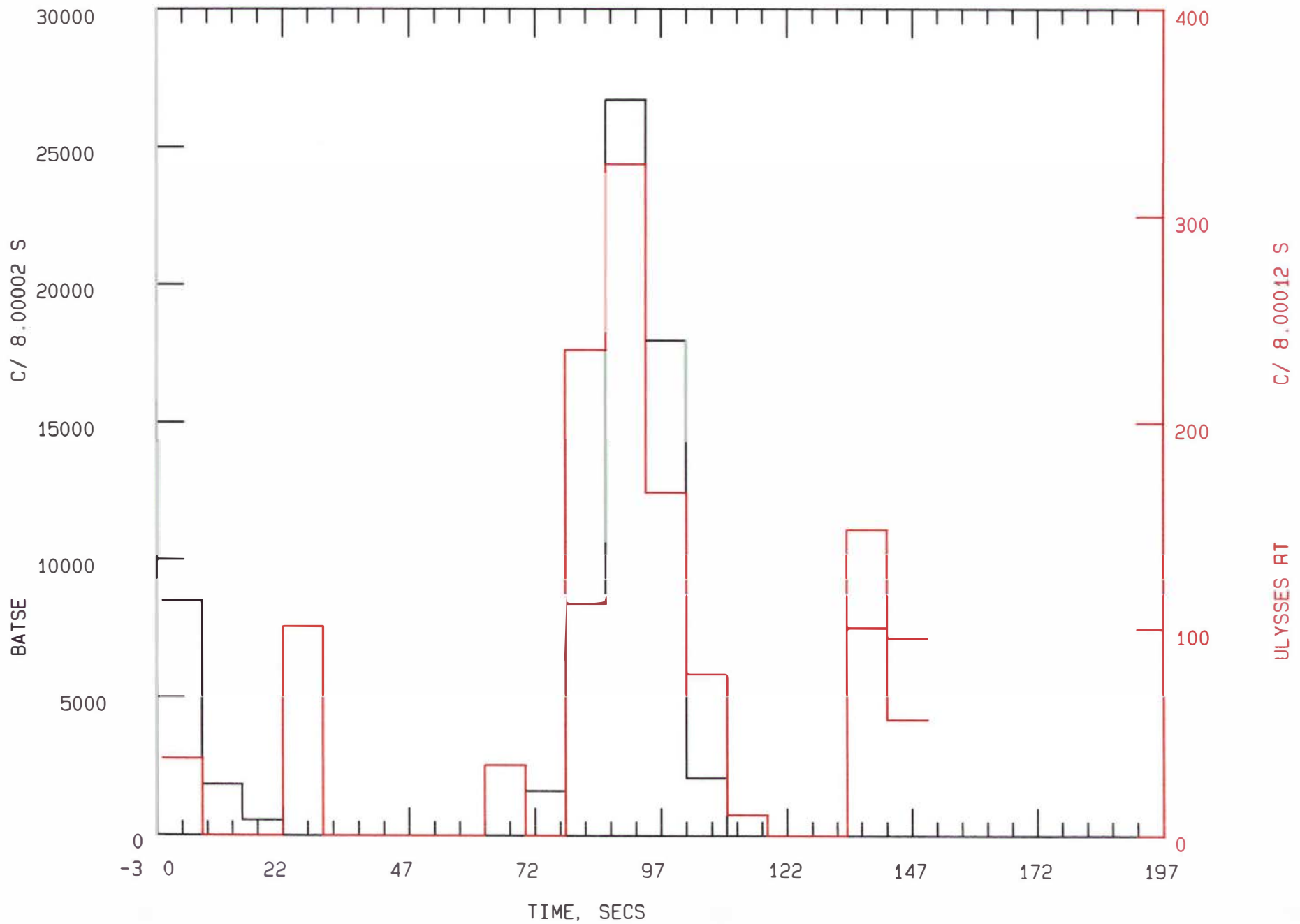
BATSE

-ULYSSES RT CORRELATION

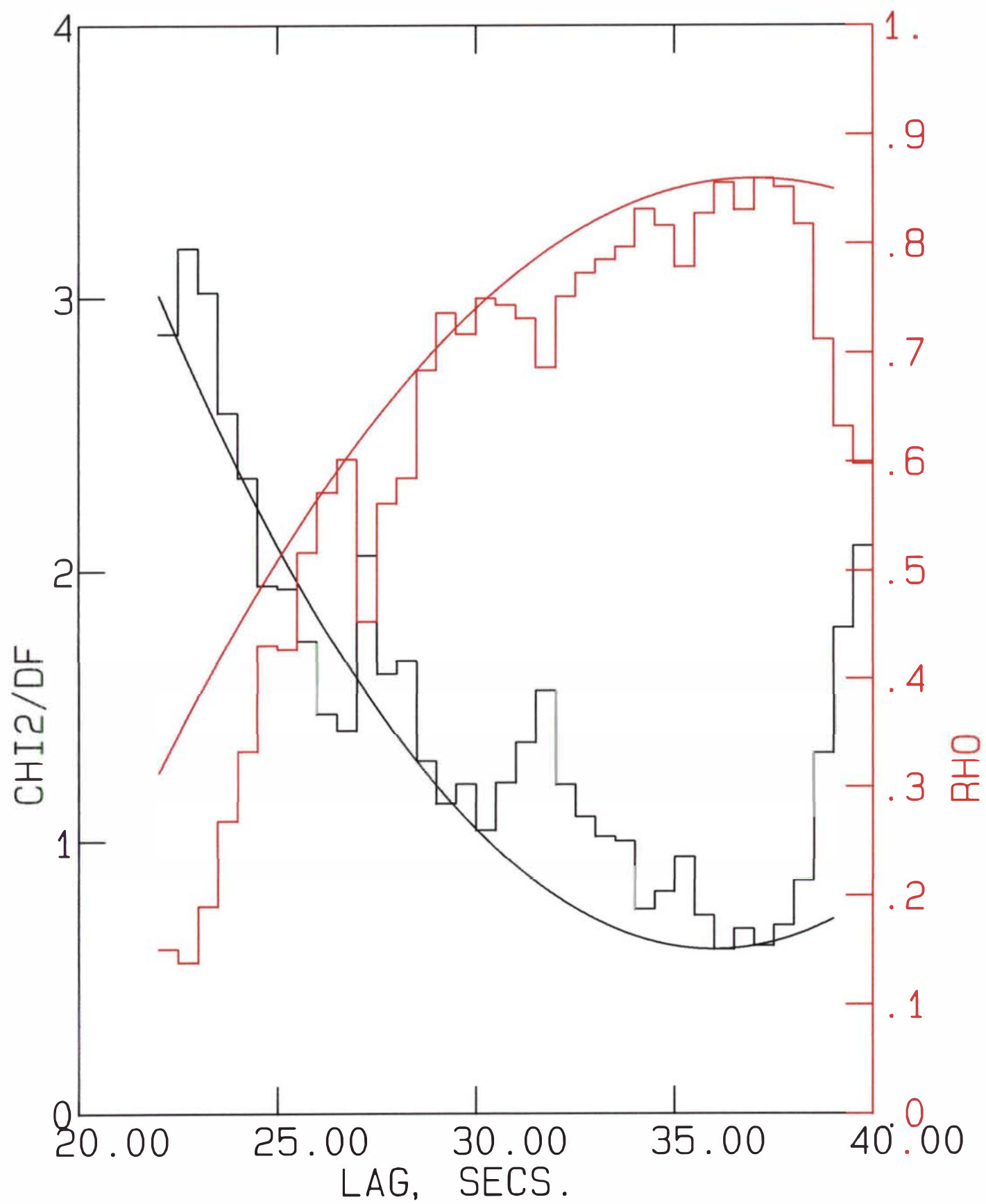
12/ 4/94

6031.001

2/ 7/97







ULYSSES RT

2 / 7 / 97

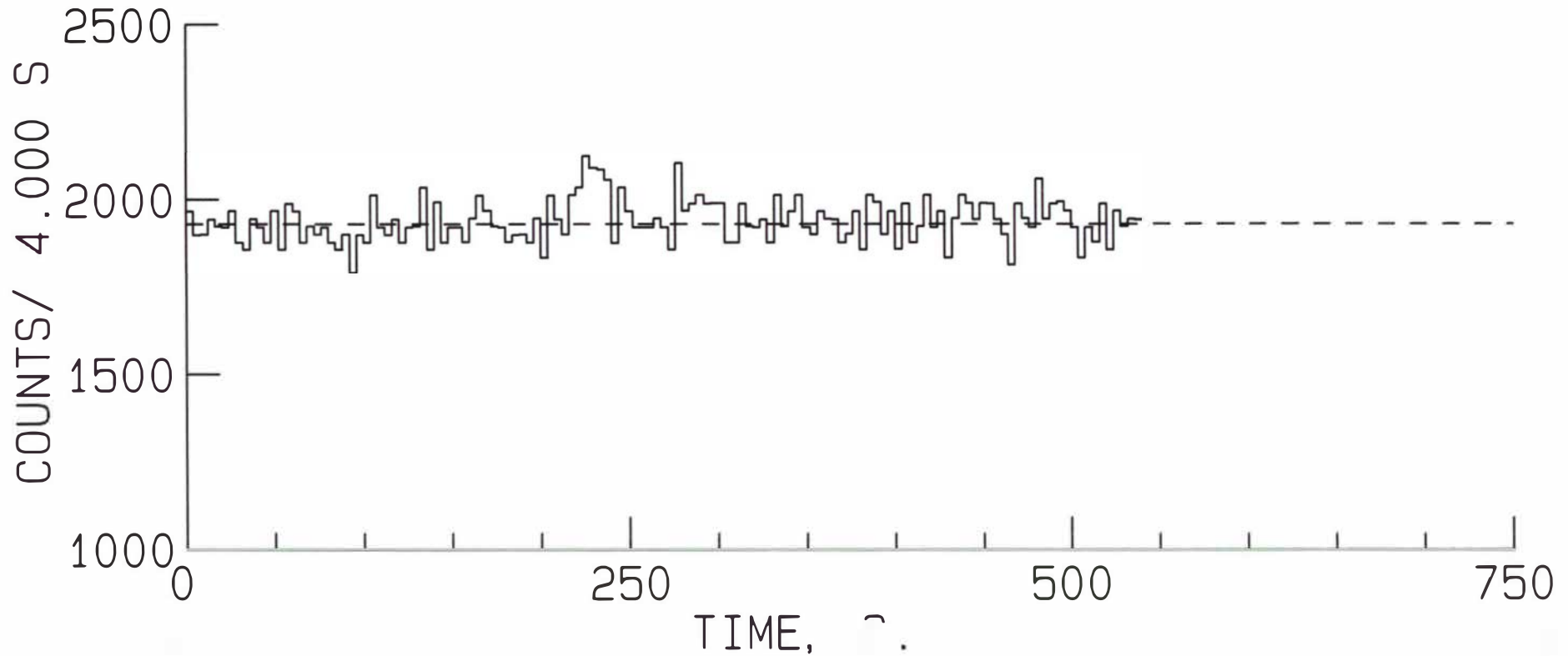
12 / 4 / 94 5148.012 s

0.500 S INTERVALS REGROUPED BY 8

22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS

|||



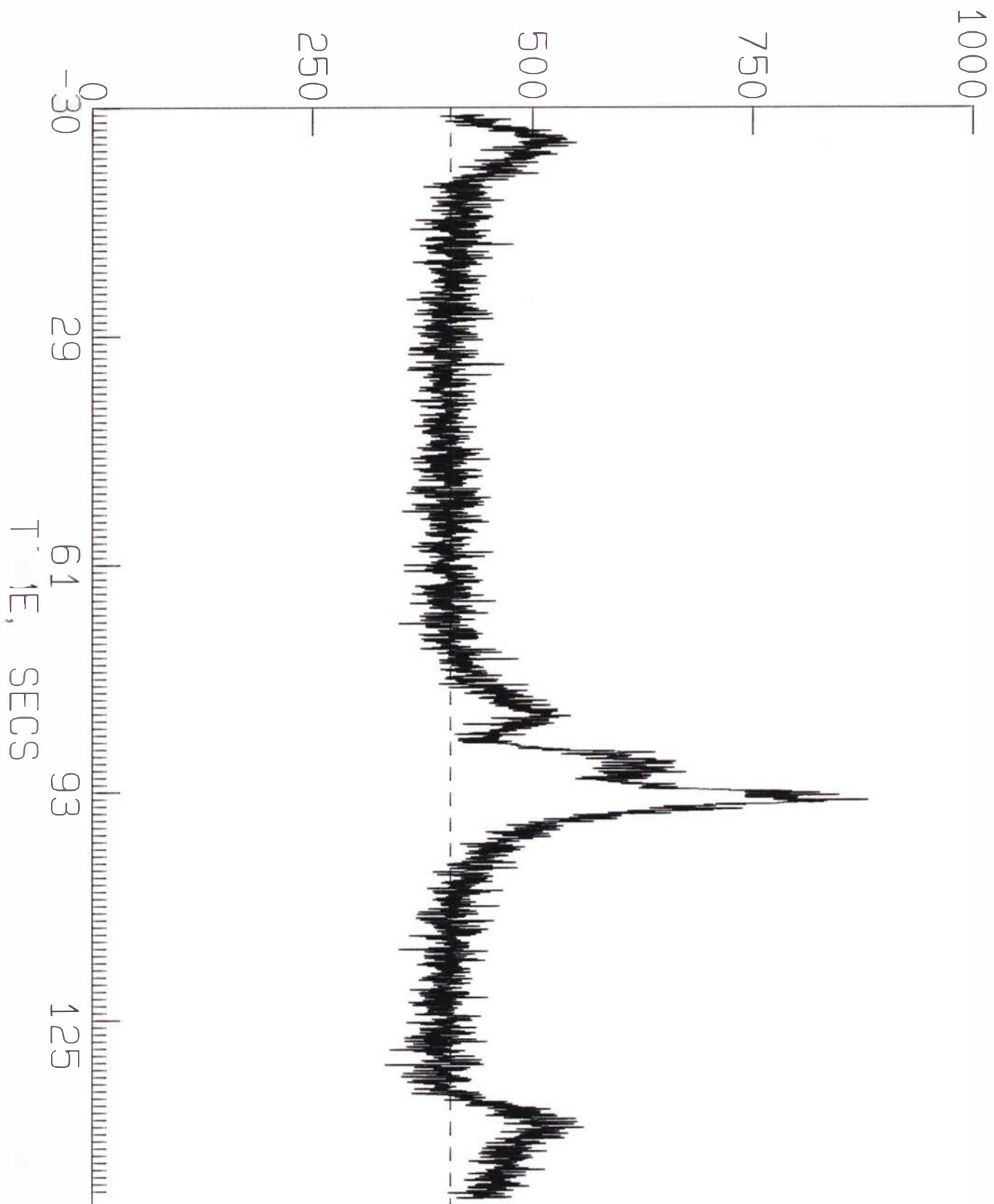
BATSE

12/04/94

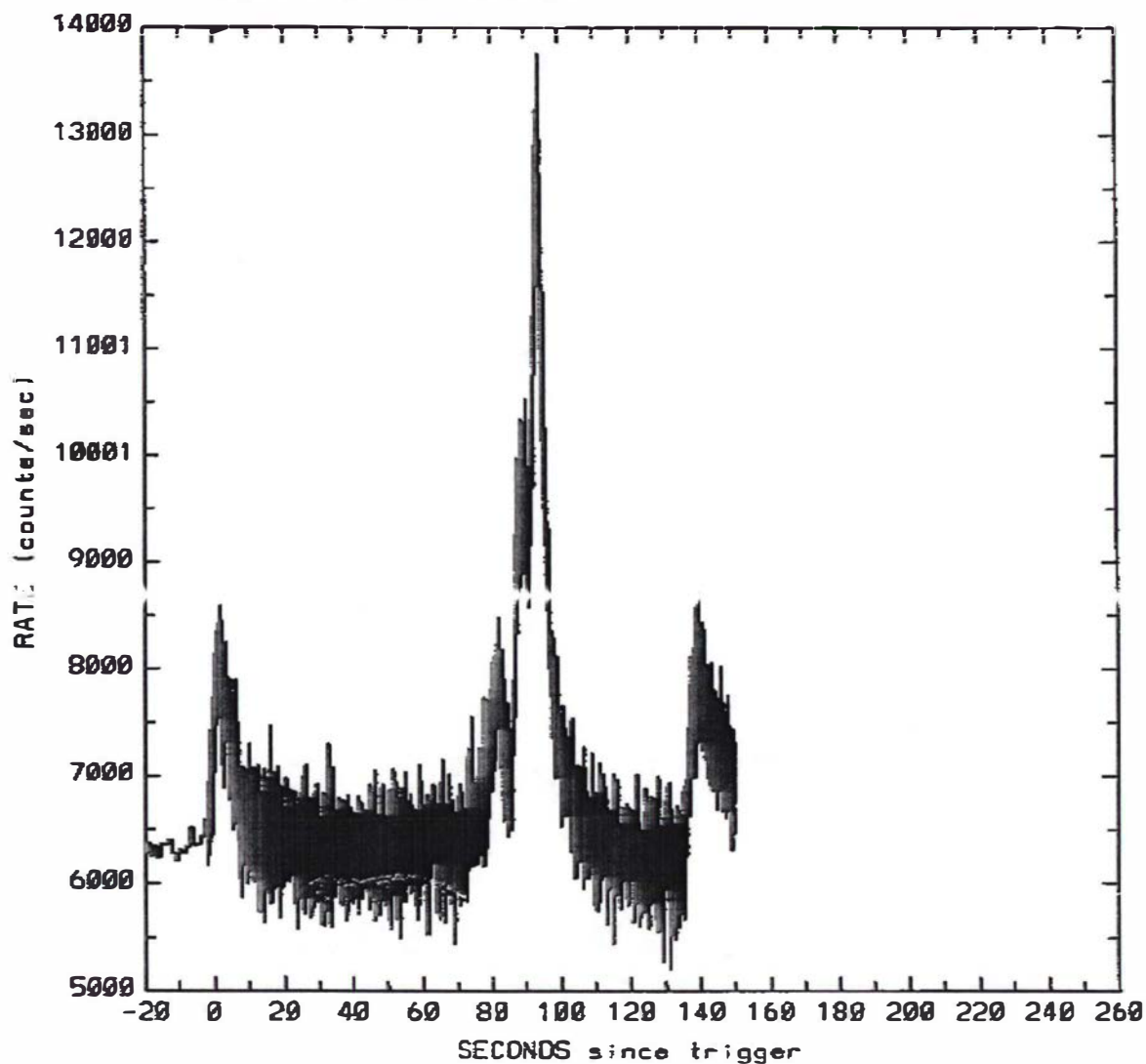
6031.001

25- 100 keV

COUNTS/ .064 S



## DATA FOR K. HURLEY

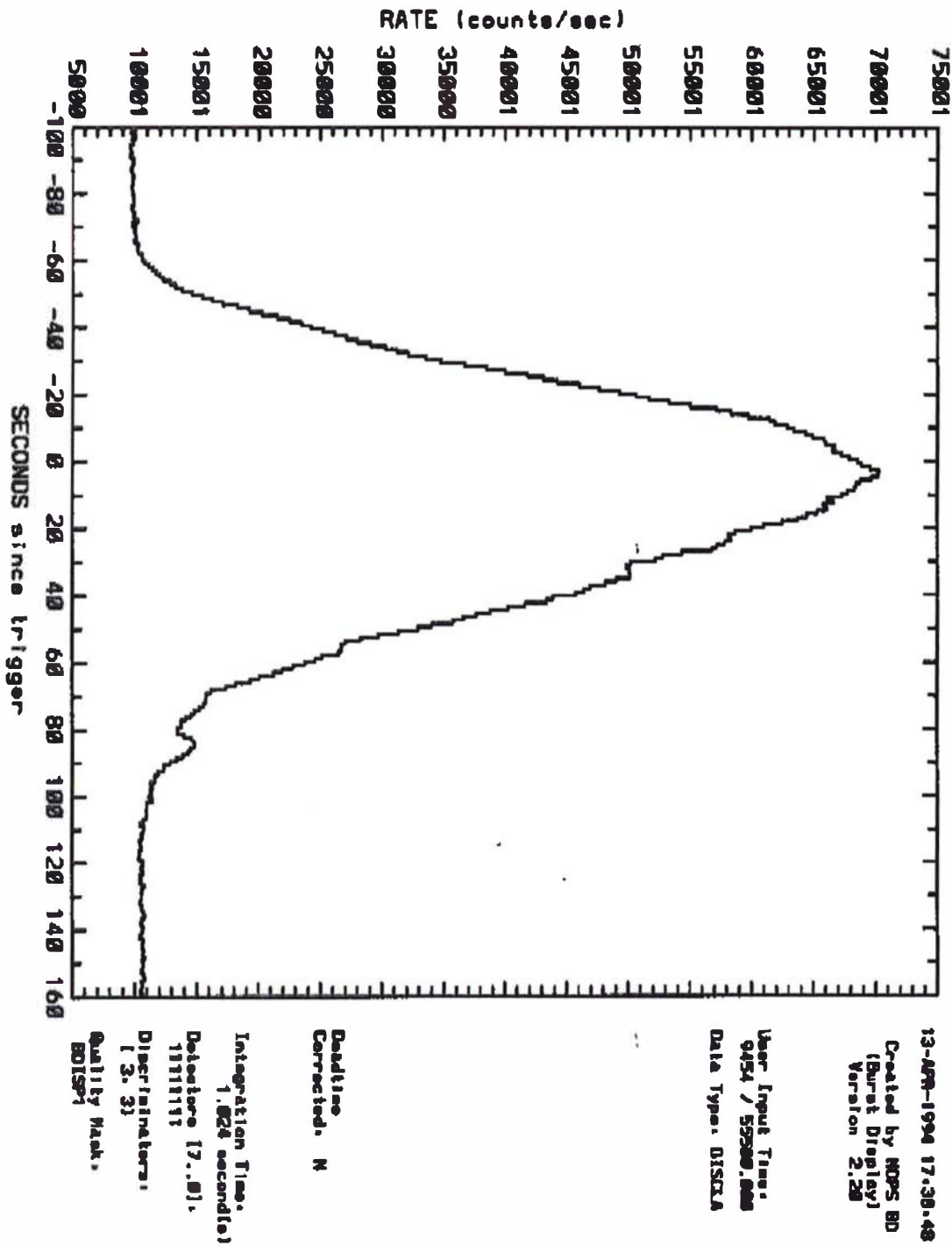


2-AUG-1994 09.32.19

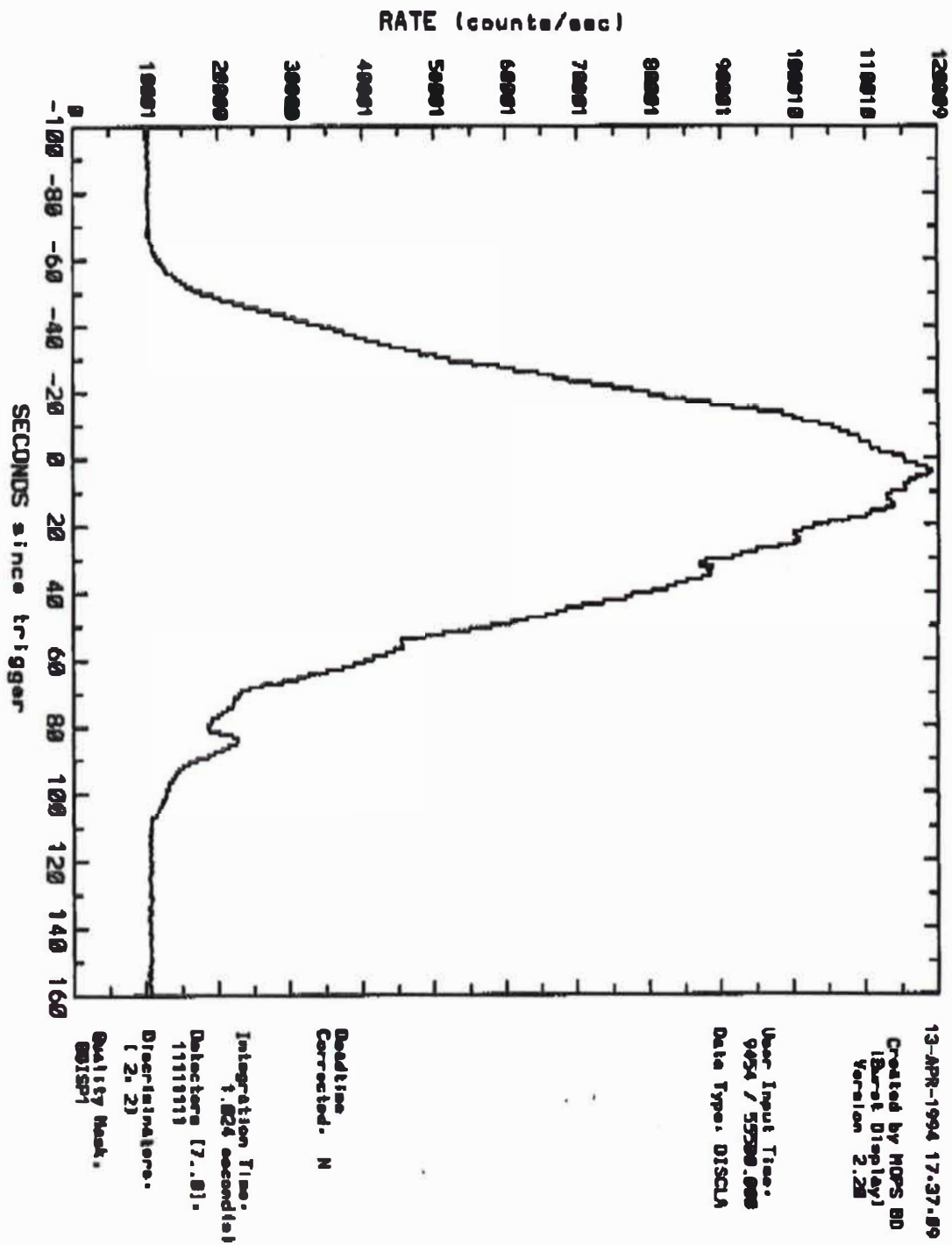
Created by MOPS 9D  
(Burst Display)  
Version 12.22

Trigger # : 2922

Trigger Time:  
9454 / 6831.882Burst Data Type:  
DISCSCDeadtime  
Corrected: N  
Background Data  
Type: PREB + DISCLA  
Minimum Integ. Time:  
0.064 second(s)Detectors (7..8):  
80110020Discriminators:  
1 1. 2)Quality Mask:  
BDISP1







From MALLOZZI@ssl.msfc.nasa.gov Thu Apr 14 08:23 PDT 1994  
Date: Thu, 14 Apr 1994 10:26:07 -0500 (CDT)  
From: "ROBERT S. MALLOZZI 205-544-6257" <MALLOZZI@ssl.msfc.nasa.gov>  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02923

TIME: TJD=9454 SECONDS=63753

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT.

From khurley@space6.ssl.berkeley.edu Thu Apr 14 07:56 PDT 1994  
Date: Thu, 14 Apr 94 07:49:39  
From: khurley@space6.ssl.berkeley.edu  
Content-Type: text  
Content-Length: 288

N. Lund, R. Sunyaev, O. Terekhov:

An intense gamma ray burst was observed by Ulysses at 14:43 (Ulysses time) on April 12 1994. This event was not detected by BATSE, probably due to Earth occultation. Ulysses was about 1500 light seconds from Earth at the time. Did WATCH observe it?

Dear Kevin

*This reply was for the incorrect time*

WATCH did not observe this burst as it was switched off just about 14 hrs UT. There were no burst-like events in the only unit #1 being operating that session excluding (probably magnetospheric) increase of background with duration of a few minutes.

The same with PHEBUS. The memory was overfilled by previous magnetospheric events. We are now in the tail of Earth magnetosphere.

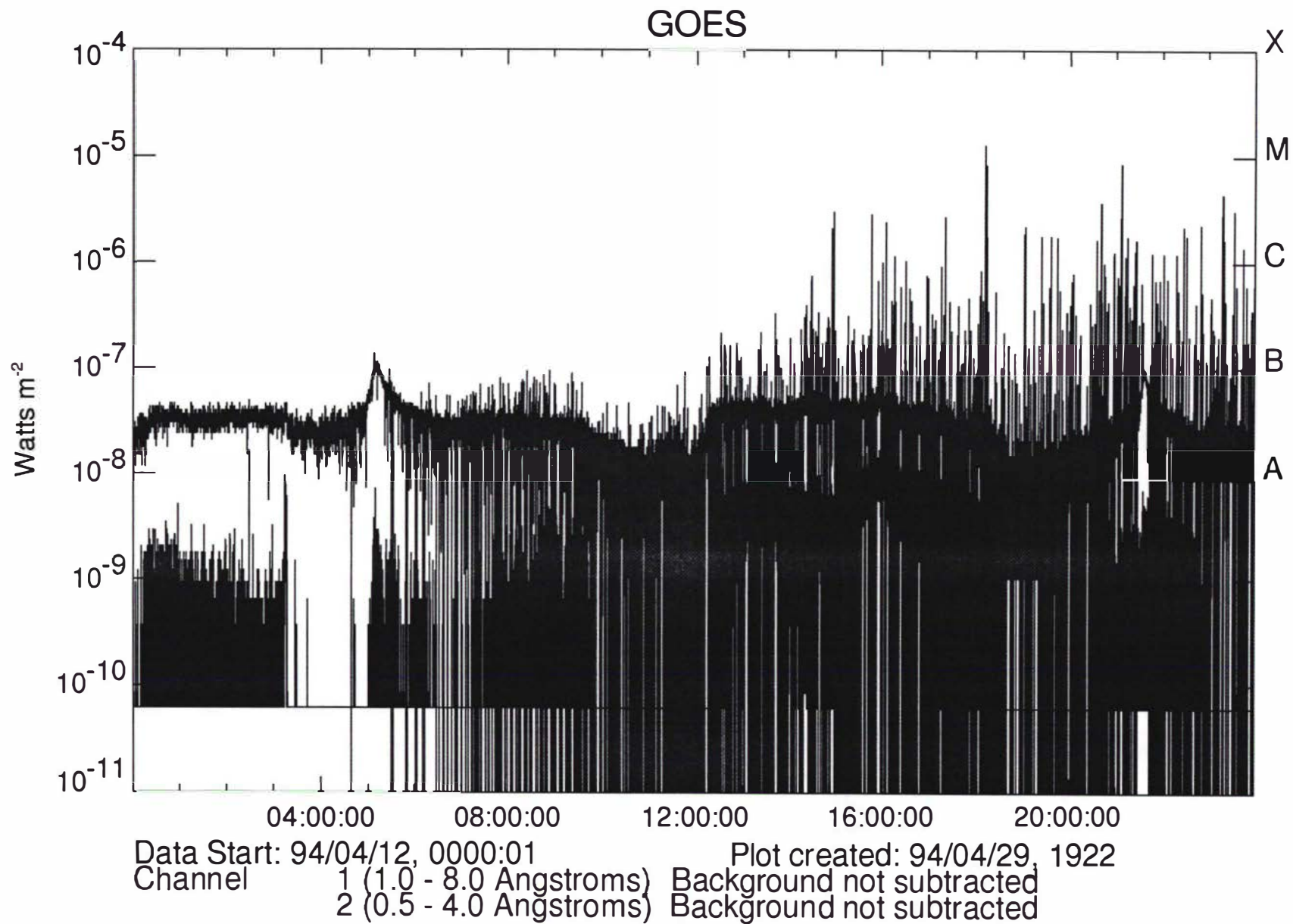
Best regards Rashid Sunyaev

----- end of message -----

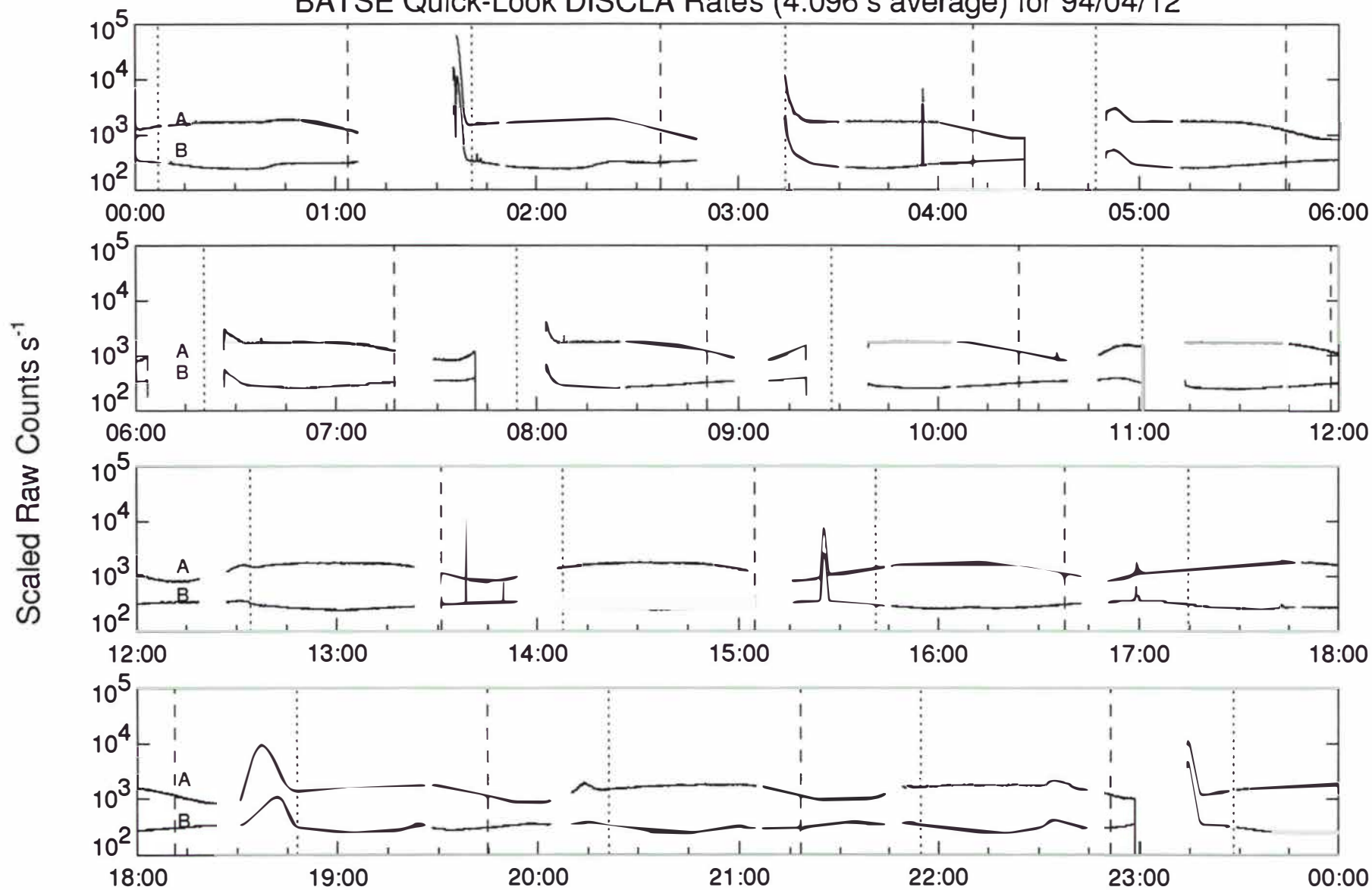
The April 12 Ulysses event which I reported last week was read out following a data gap, and contained the incorrect trigger time. The correct time should be 23:32:19 Ulysses time. Ulysses was about 1500 light-seconds from Earth. BATSE did not observe it. Sorry for the confusion; was WATCH or PHEBUS operating at this time?

PHEBUS was switched off on the 12th of April between 13:12 UT and 16:21 UT and on again on the 14th of April at 10:11 UT.

P.S. Did Ulysses or BATSE observe GRB940415 ?



BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/12



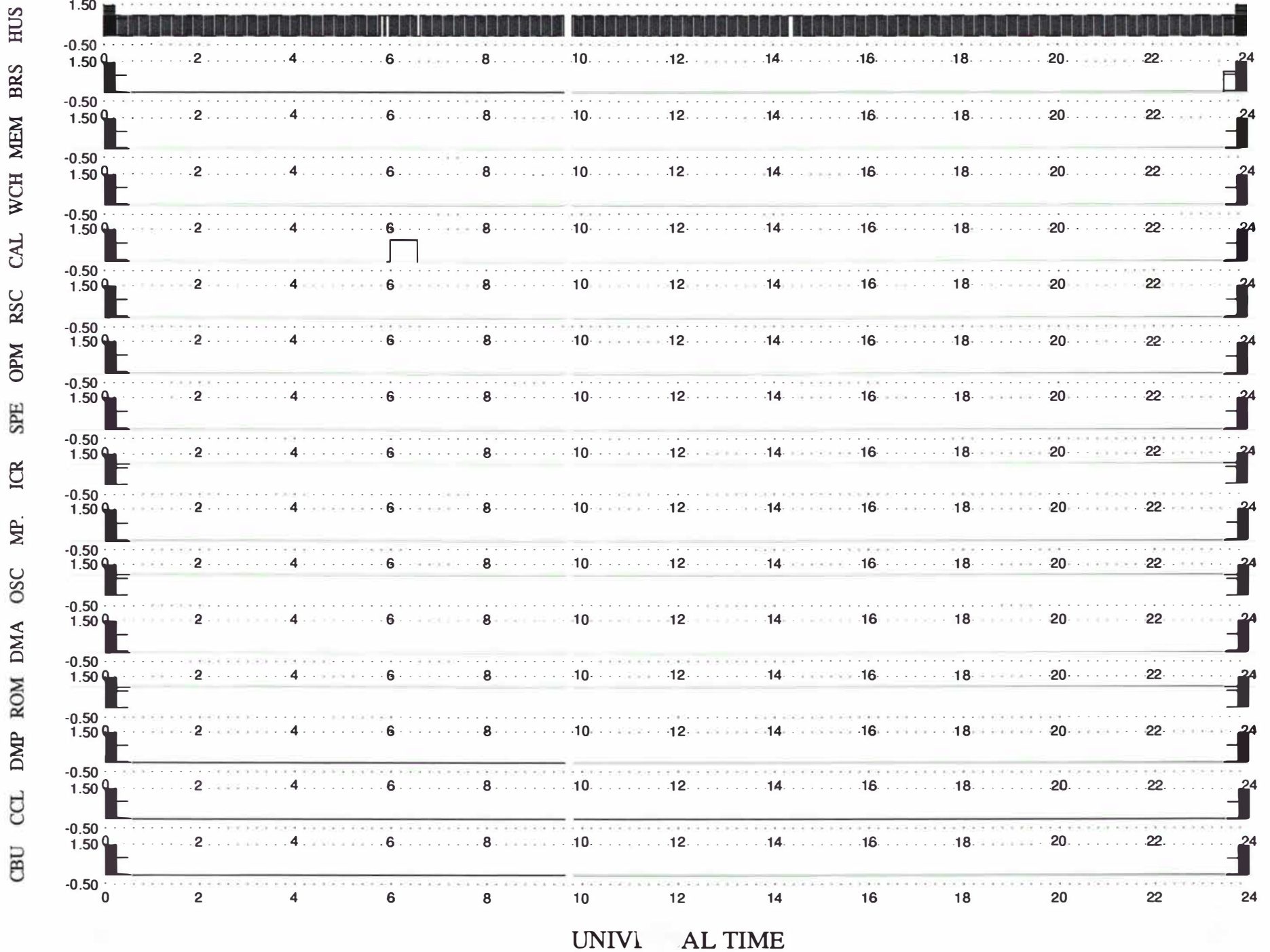
Current Time: 94/04/29, 1858 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

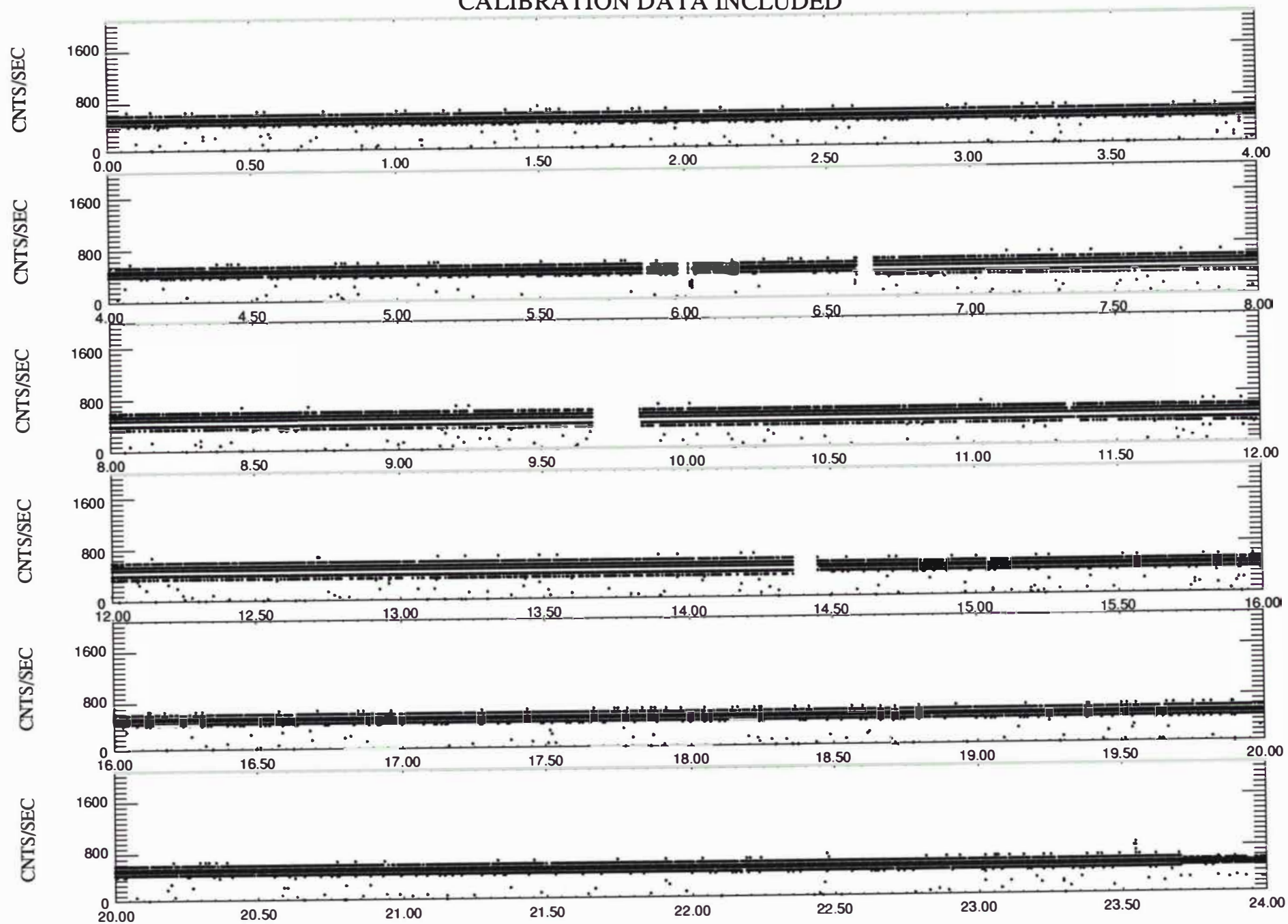
\* Solar Burst Trigger  
 + Solar Flare



BURST NUMBER 10

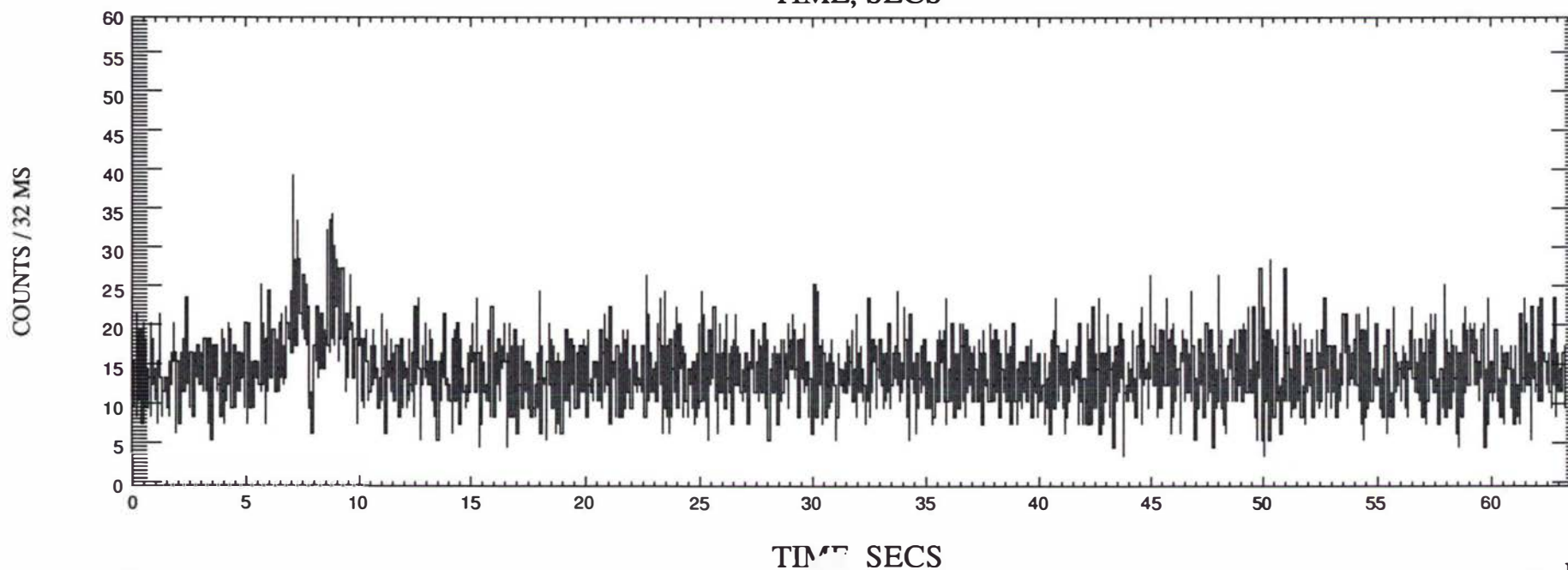
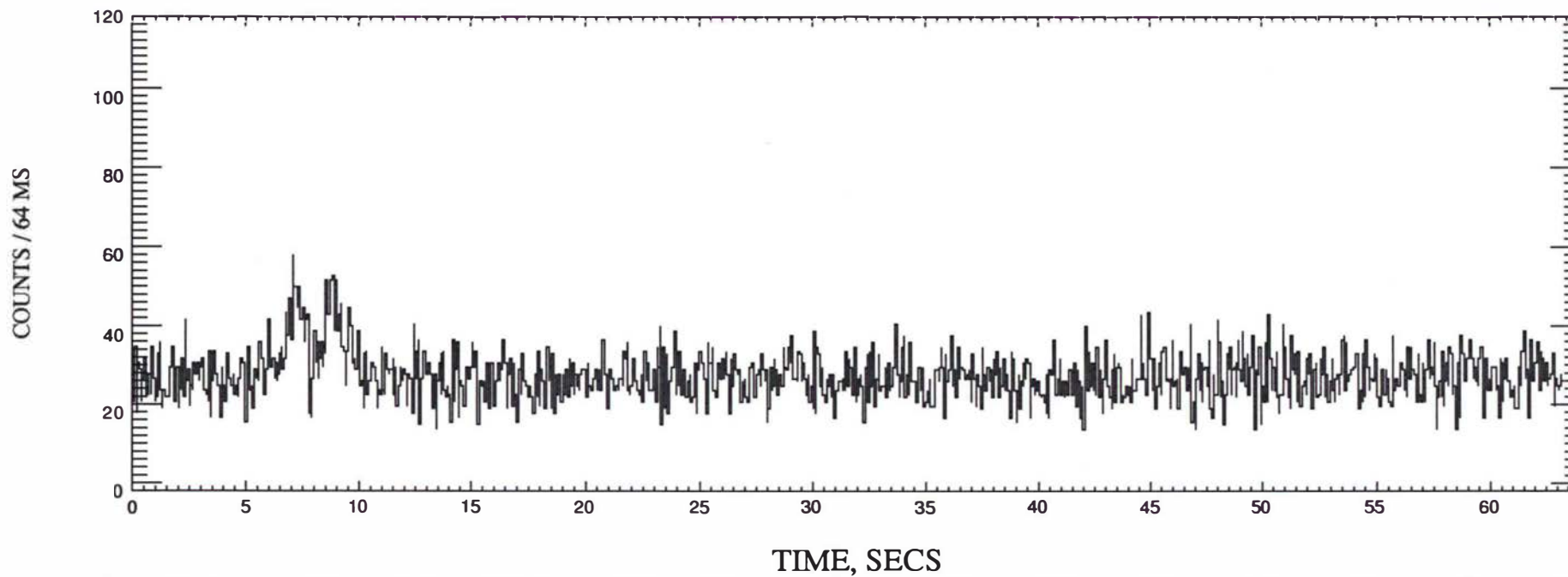


## CALIBRATION DATA INCLUDED

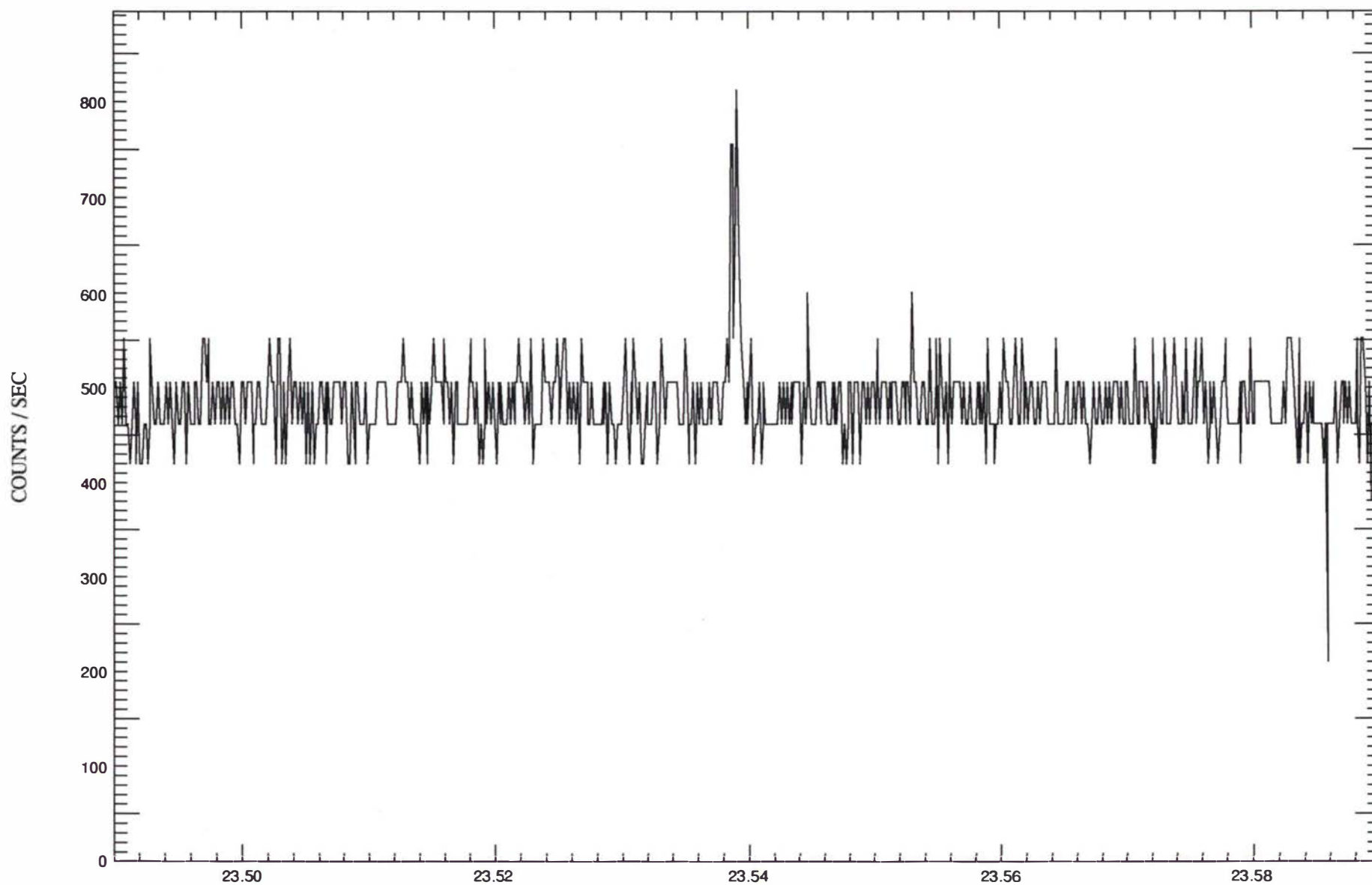


UNIV AL TIME

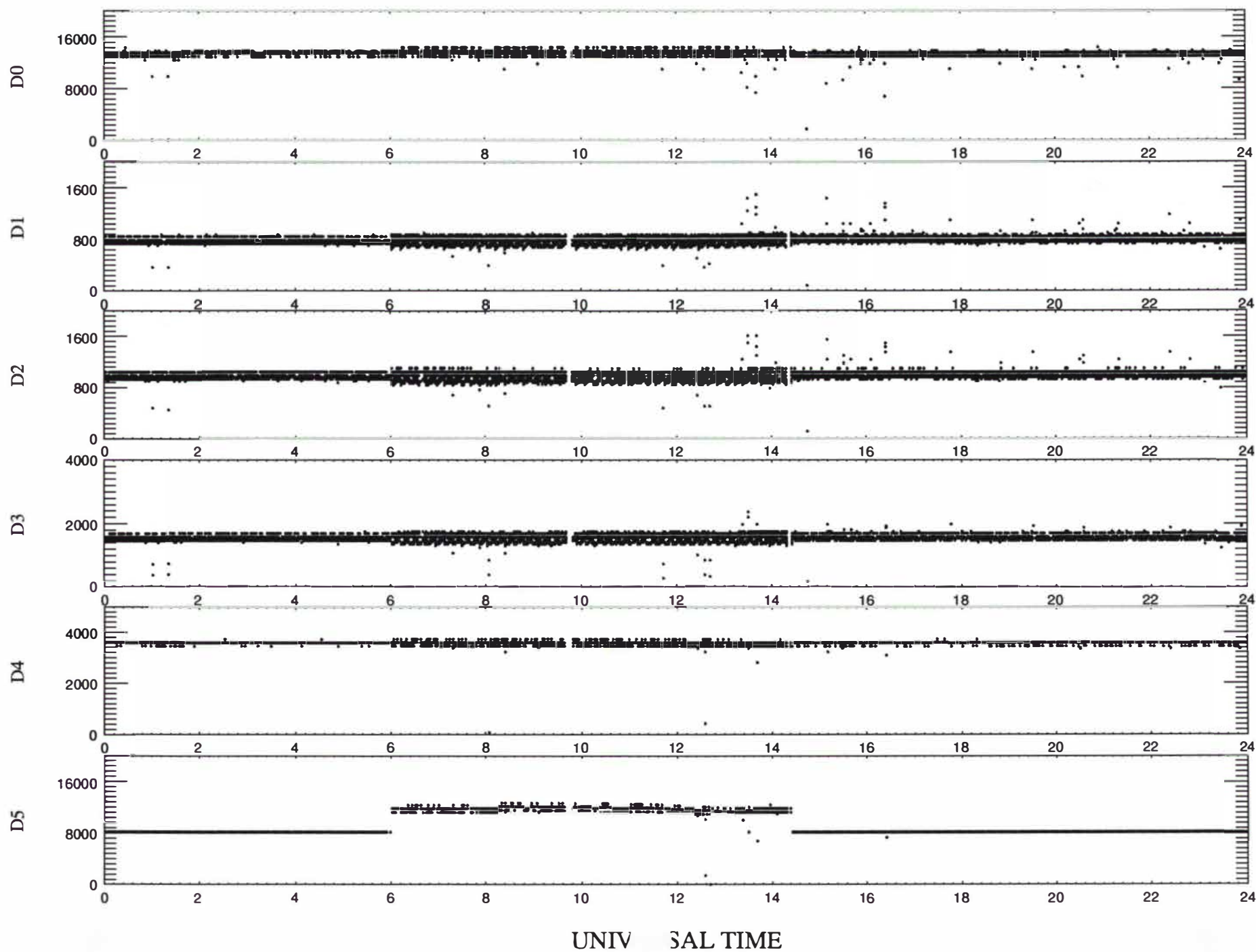
Burst Counter 10 at UT=23.538855963813 h=84739.881 s 23:32:19.881



CALIBRATION DATA INCLUDED







From KOSHUT@ssl.msfc.nasa.gov Thu Apr 14 12:36 PDT 1994  
Date: Thu, 14 Apr 1994 14:38:58 -0500 (CDT)  
From: KOSHUT@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2924  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2924  
EVENT OF 1994 APR 13 DAY OF YEAR=103  
EVENT CROSSING TIME AT BATSE : 36751. S. OR 10:12:31.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 203.000 -24.000  
BATSE PEAK COUNTING RATE: 2200 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 13/ 4/ 94 IS:  
RA= 122.702 DEC= -47.309 DIST= 2.888 AU  
BATSE-ULYSSES DISTANCE = 432024935. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.79 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -581.25 SECS.  
CROSSING TIME AT ULYSSES IS 36170. S. OR 10:02:49 +/- 270.11 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 13/ 4/ 94 IS:  
RA= 359.175 DEC= -1.516 DIST= 2.234 AU  
MARS-BATSE DISTANCE = 334159424. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 34.45 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 919.18 SECS.  
CROSSING TIME AT MARS IS 37670. S. OR 10:27:50 +/- 123.42 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2924    | 940413 | 9455 | 36751 | 2200     | 203 | -24 |

#### BATSE BURST TRIGGER

NO.: 02924

TIME: TJD=9455 SECONDS=36751

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=70. AZIMUTH=138. ERROR= DEGREES

#### COMMENTS:

BURST OF ~ 130 SECONDS DURATION, NOT OBSERVED ABOVE 300 KEV. THE TIME HISTORY CONSISTS OF TWO SEPERATE PULSES, EACH OF ~ 30 SECONDS DURATION. THE FIRST PULSE HAS A PEAK RATE (~2200 C/S) AT ~ TRIGGER + 5 SECONDS. THE SECOND PULSE HAS A PEAK RATE (~1500 C/S) AT ~ TRIGGER + 107 SECONDS. THE LOCALIZATION OF EACH PULSE IS CONSISTENT WITH THE SAME POSITION ON THE SKY.



14 / 4 / 94

ULYSSES RT

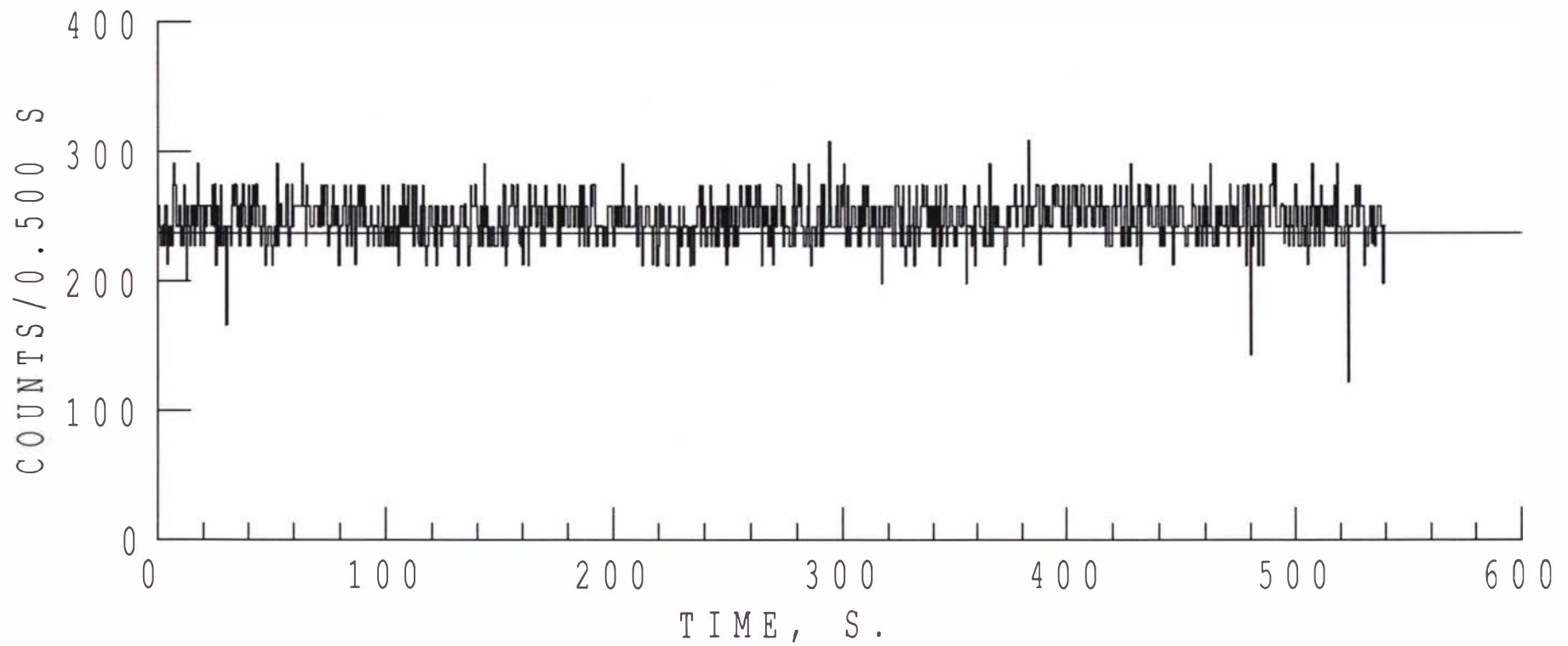
13 / 4 / 94 35892.133 s

0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From KOSHUT@ssl.msfc.nasa.gov Thu Apr 14 13:12 PDT 1994  
Date: Thu, 14 Apr 1994 15:15:28 -0500 (CDT)  
From: KOSHUT@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2925  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2925  
EVENT OF 1994 APR 13 DAY OF YEAR=103  
EVENT CROSSING TIME AT BATSE : 51084. S. OR 14:11:24.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 211.000 62.000  
BATSE PEAK COUNTING RATE: 5000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 13/ 4/ 94 IS:  
RA= 122.663 DEC= -47.278 DIST= 2.888 AU  
BATSE-ULYSSES DISTANCE = 432069163. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 50.25 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 921.55 SECS.  
CROSSING TIME AT ULYSSES IS 52006. S. OR 14:26:45 +/- 256.38 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 13/ 4/ 94 IS:  
RA= 359.175 DEC= -1.516 DIST= 2.234 AU  
MARS-BATSE DISTANCE = 334159424. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 65.03 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 470.50 SECS.  
CROSSING TIME AT MARS IS 51554. S. OR 14:19:14 +/- 182.58 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2925    | 940413 | 9455 | 51084 | 5000     | 211 | +62 |

#### BATSE BURST TRIGGER

NO.: 02925

TIME: TJD=9455 SECONDS=51084

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=46. AZIMUTH=243. ERROR= DEGREES

#### COMMENTS:

BURST OF ~ 12 SECONDS DURATION, WITH NO EMISSION OBSERVED ABOVE 300 KEV.  
TIME HISTORY CONSISTS OF 4 PULSES, EACH OF ~ 2 SECONDS DURATION, AND SEPERATED  
BY ~ 2 SECONDS. EACH OF THE 4 PULSES SHOWS SUBSTRUCTURE. PEAK RATE  
IS ~ 5000 C/S (OBSERVED AT PEAK OF FIRST PULSE).

14 / 4 / 94

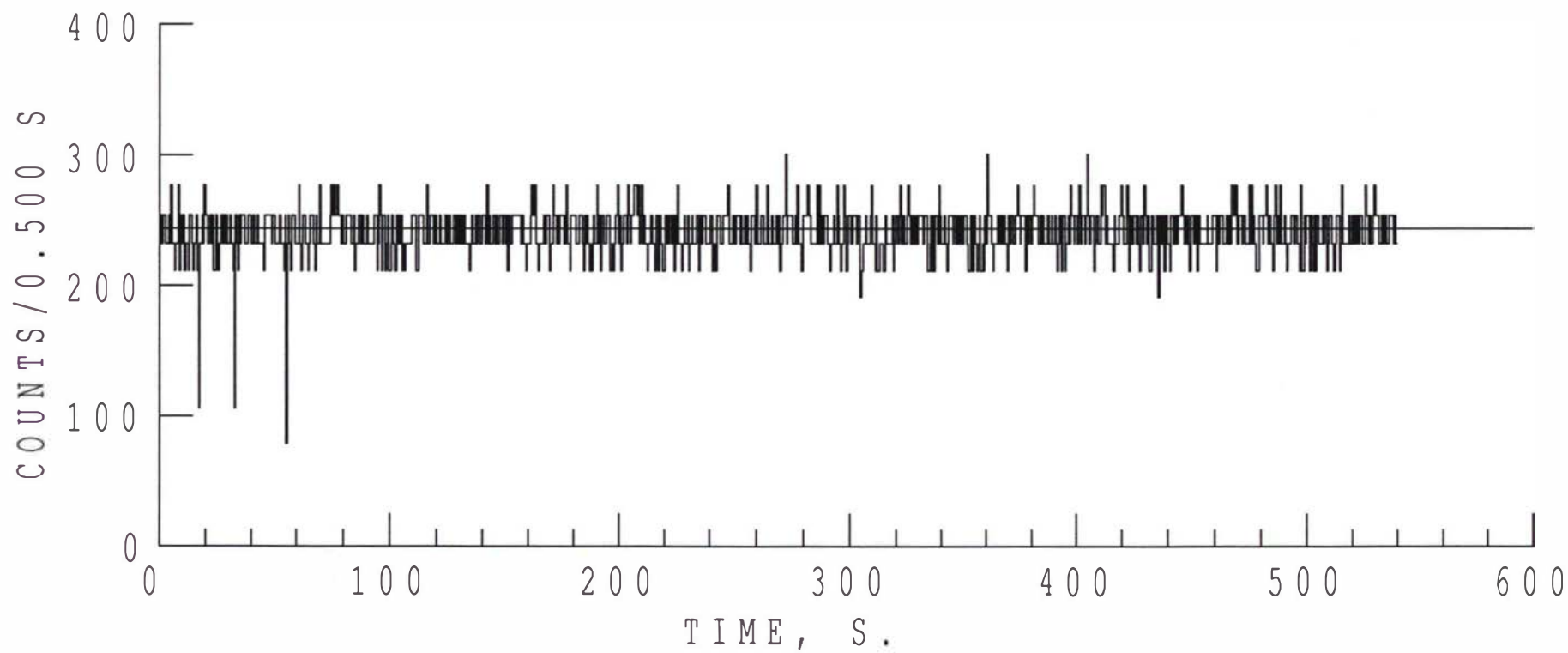
ULYSSES RT

13 / 4 / 94 51732.133 s

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From KOSHUT@ssl.msfc.nasa.gov Fri Apr 15 08:14 PDT 1994  
Date: Fri, 15 Apr 1994 10:16:38 -0500 (CDT)  
From: KOSHUT@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2927  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2927  
EVENT OF 1994 APR 13 DAY OF YEAR=103  
EVENT CROSSING TIME AT BATSE : 85375. S. OR 23:42:55.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 136.000 -12.000  
BATSE PEAK COUNTING RATE: 2700 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 13/ 4/ 94 IS:  
RA= 122.568 DEC= -47.204 DIST= 2.889 AU  
BATSE-ULYSSES DISTANCE = 432176450. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=143.03 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1151.72 SECS.  
CROSSING TIME AT ULYSSES IS 84223. S. OR 23:23:43 +/- 183.04 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 13/ 4/ 94 IS:  
RA= 359.175 DEC= -1.516 DIST= 2.234 AU  
MARS-BATSE DISTANCE = 334159424. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 44.96 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 788.70 SECS.  
CROSSING TIME AT MARS IS 86164. S. OR 23:56:03 +/- 148.72 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2927    | 940413 | 9455 | 85375 | 2700     | 136 | -12 |

#### BATSE BURST TRIGGER

NO.: 02927

TIME: TJD=9455 SECONDS=85375

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=48. AZIMUTH=66. ERROR= DEGREES

#### COMMENTS:

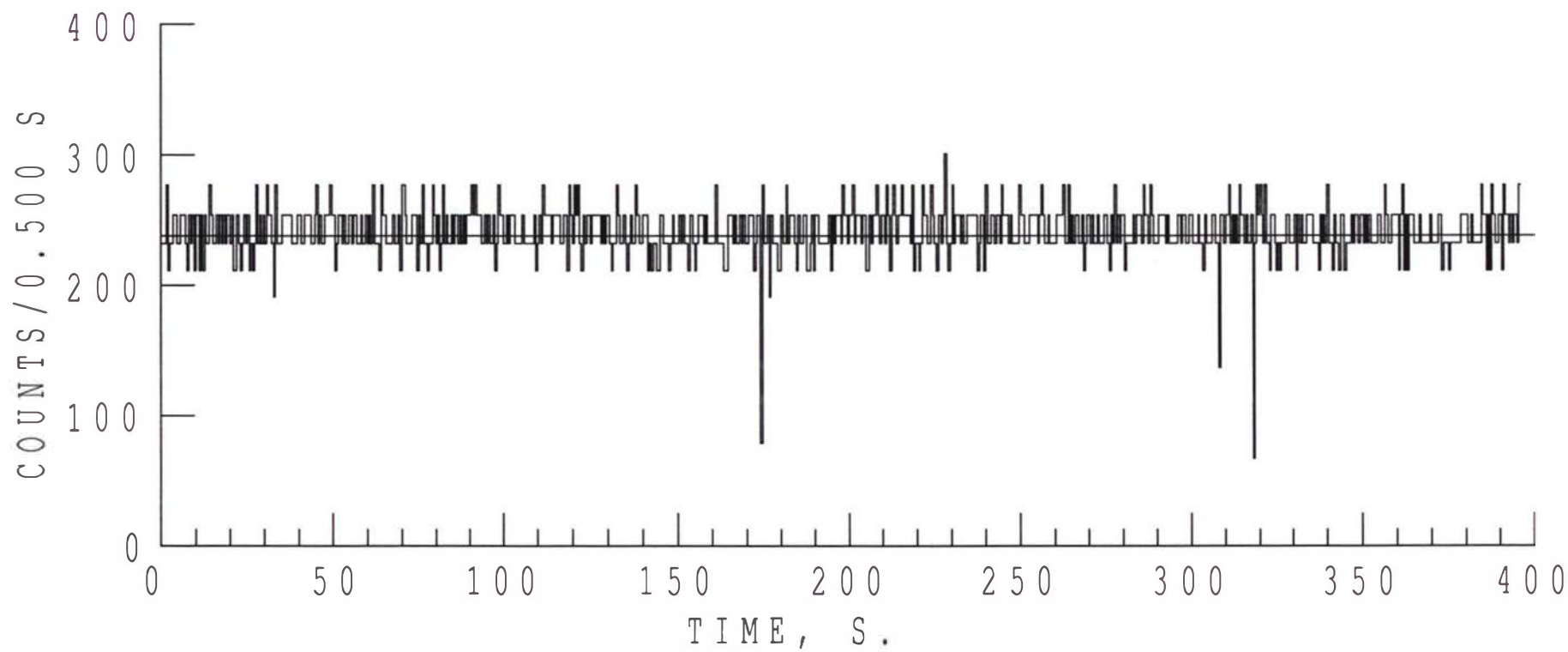
BURST OF ~ 25 SECONDS DURATION, NOT OBSERVED ABOVE 300 KEV. EMISSION  
BEGINS ~ 10 SECONDS BEFORE THE TRIGGER TIME. PEAK RATE (~2700 C/S)  
IS OBSERVED AT THE TRIGGER TIME.

15 / 4 / 94

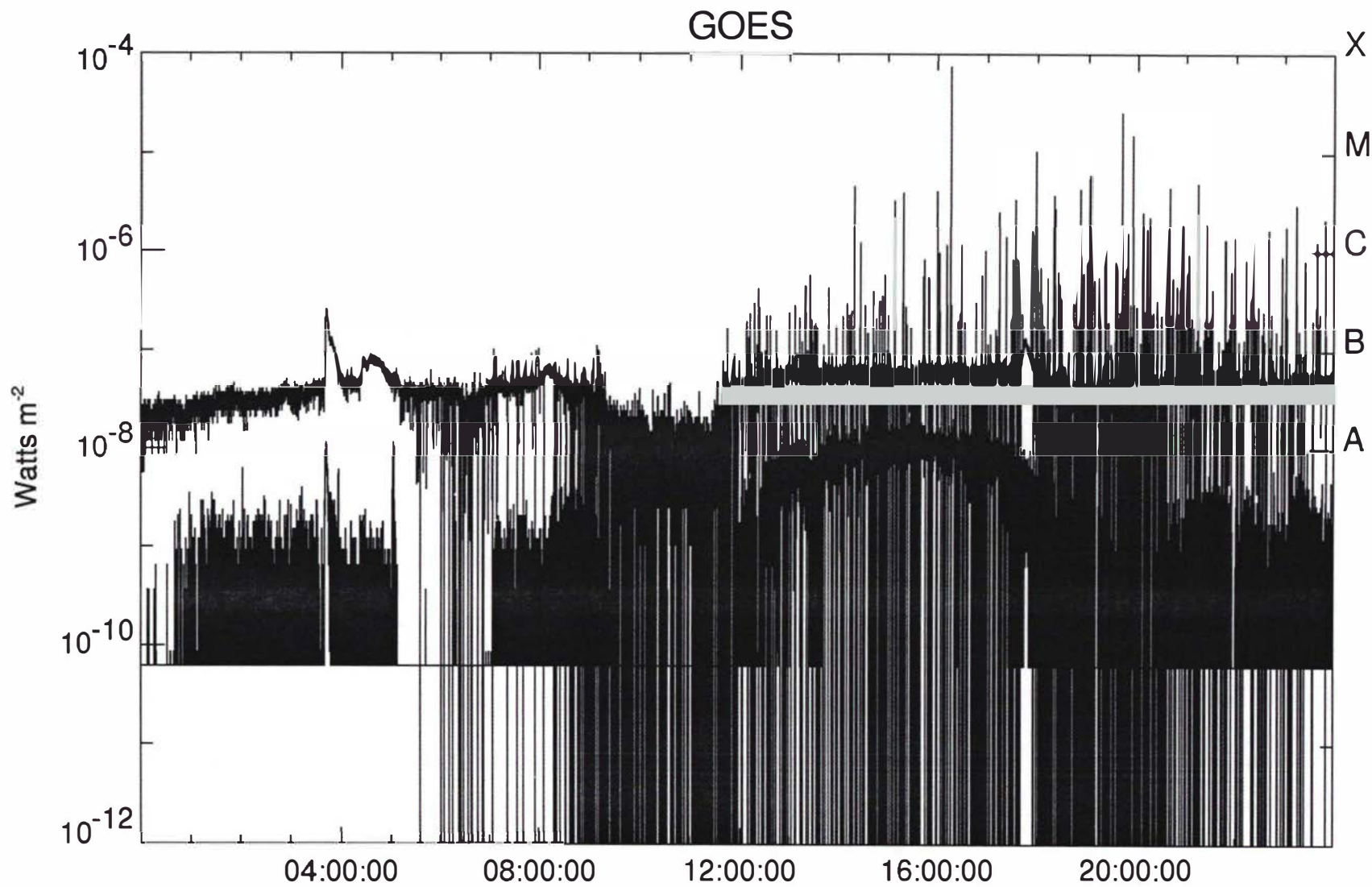
ULYSSES RT  
13 / 4 / 94 84024.141 s  
0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS







Data Start: 94/04/13, 0000:00

Plot created: 94/04/29, 1922

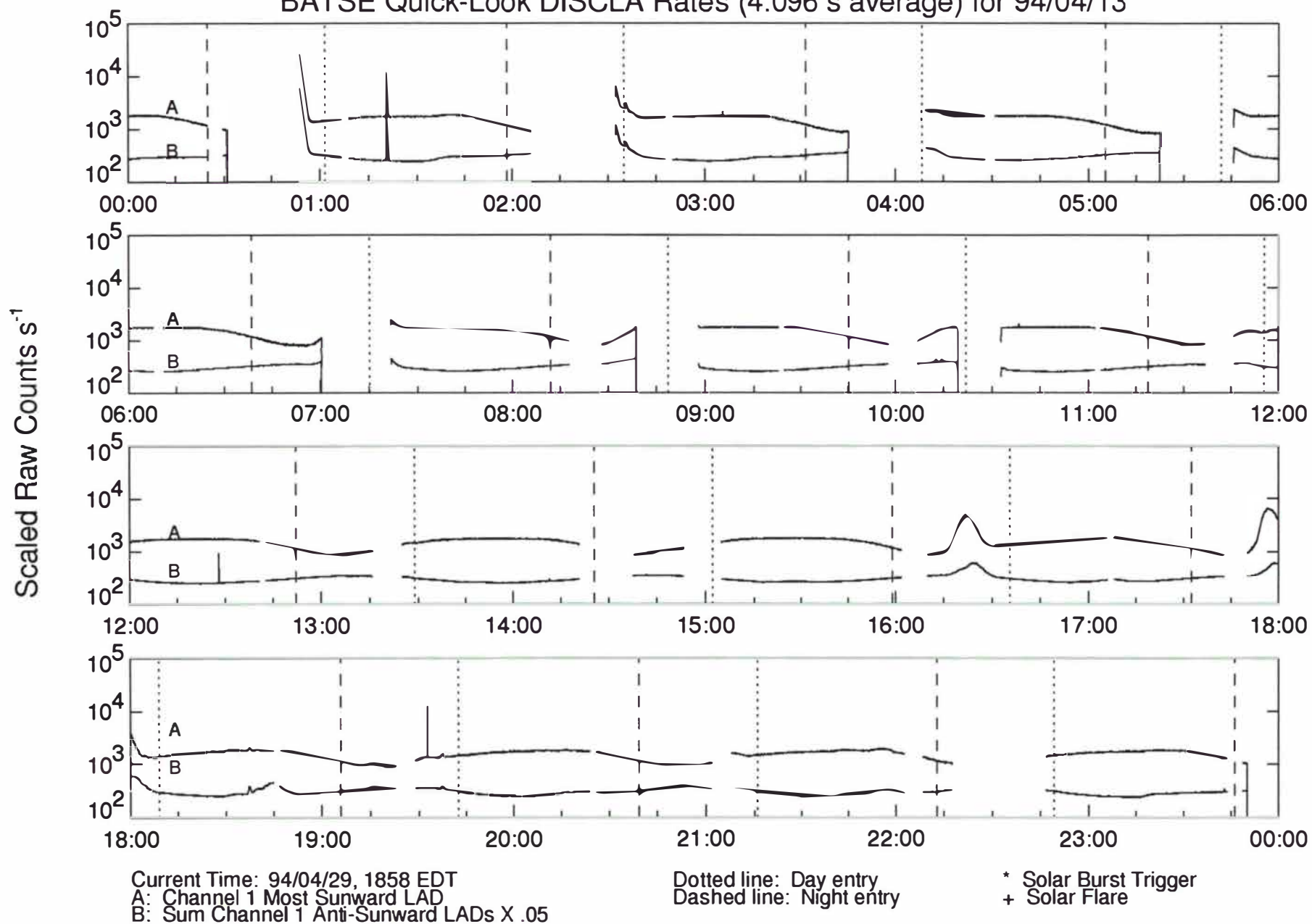
Channel 1 (1.0 - 8.0 Angstroms)

Background not subtracted

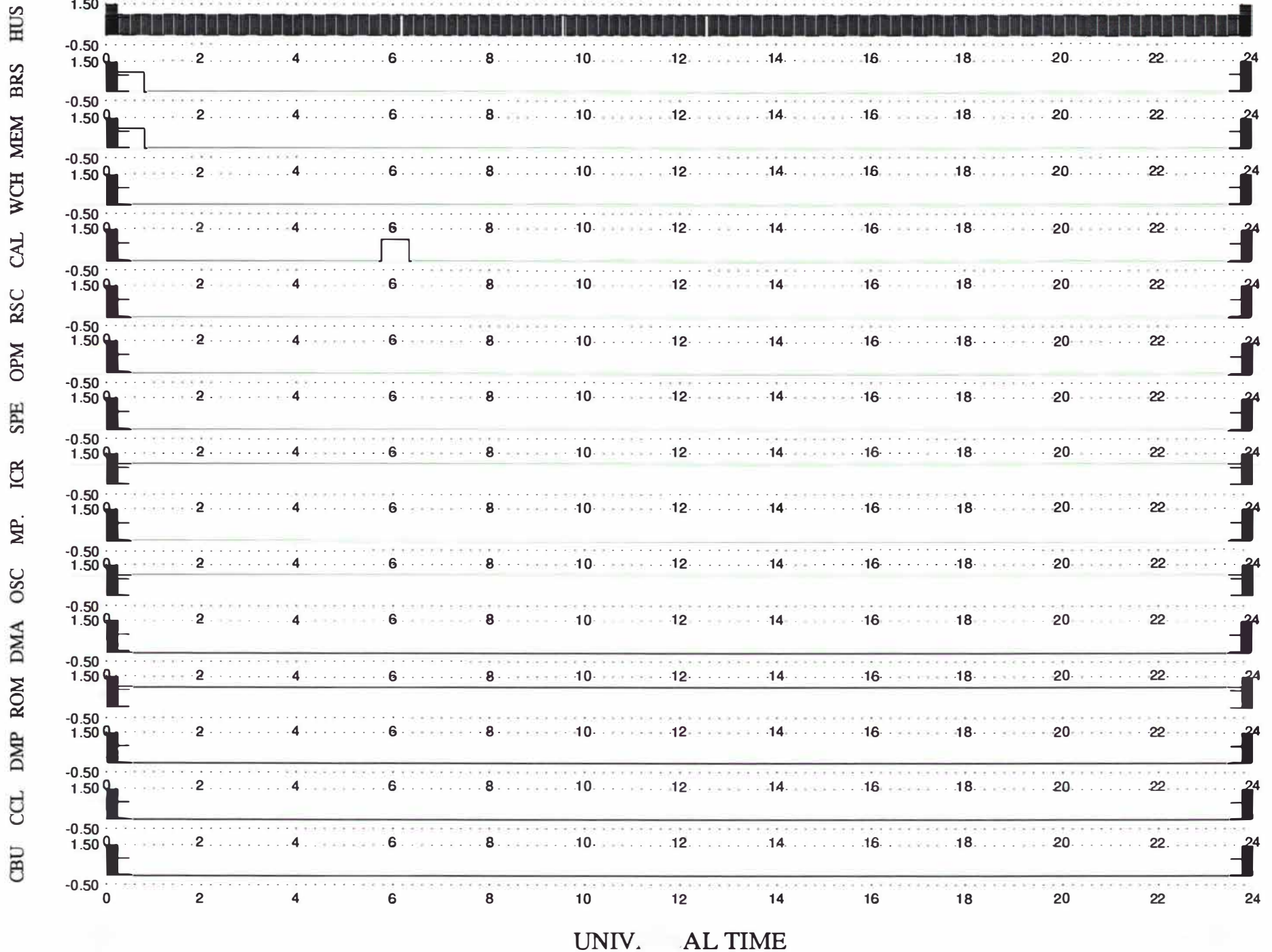
Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

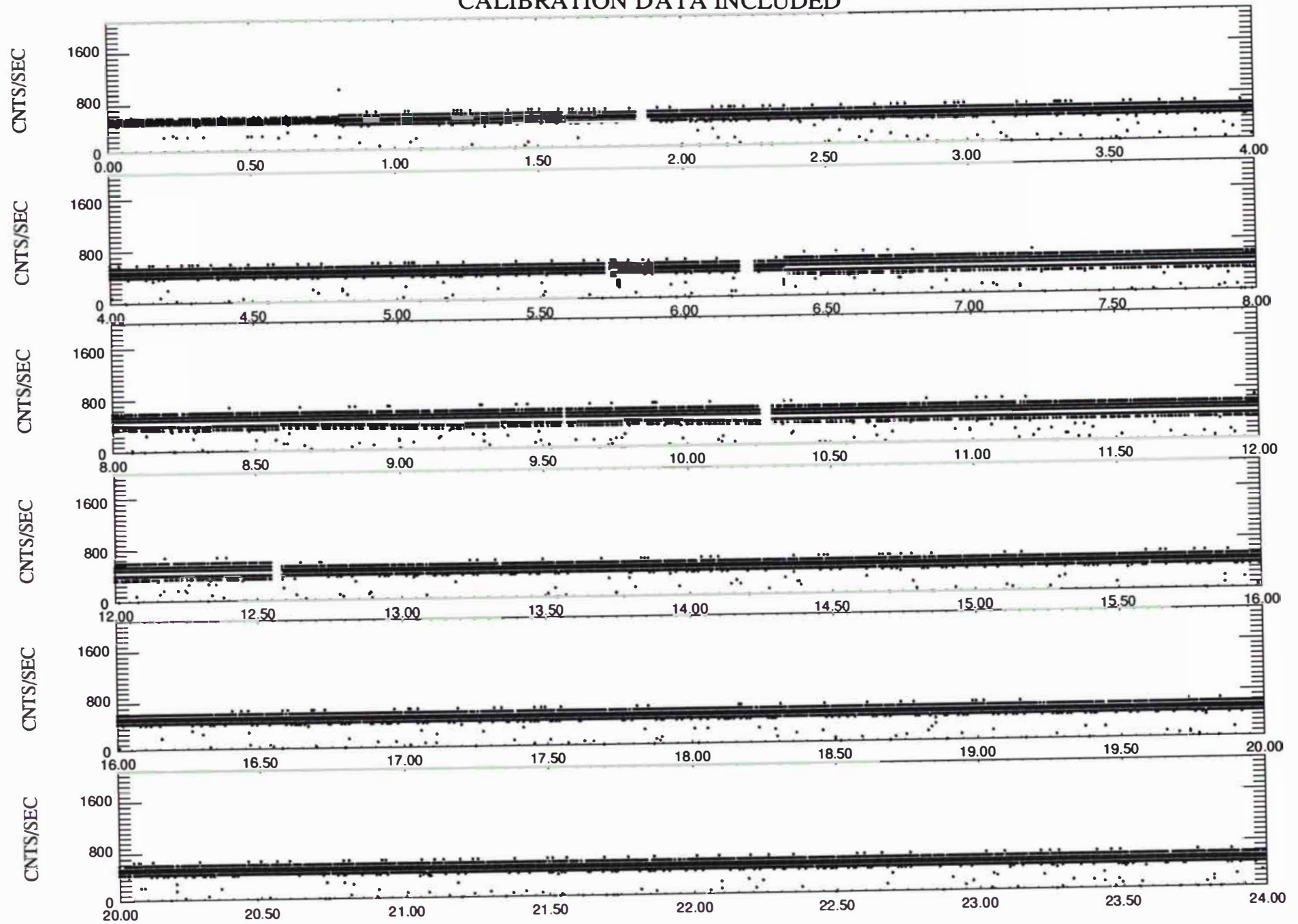
# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/13



NO BURST (10)

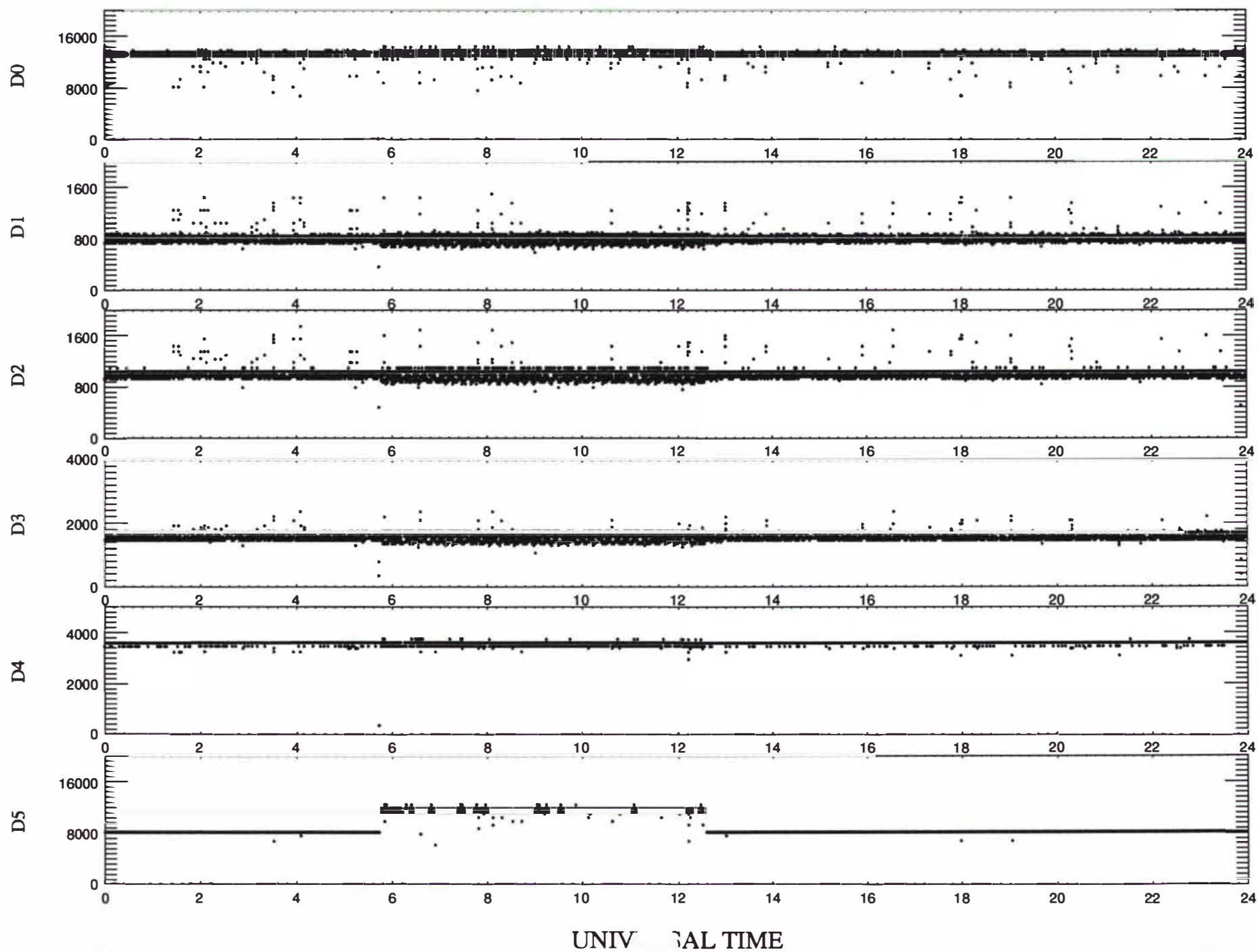


## CALIBRATION DATA INCLUDED



UNIV AL TIME





From SHARIFF@ssl.msfc.nasa.gov Fri Apr 15 16:32 PDT 1994  
Date: Fri, 15 Apr 1994 18:35:20 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2928  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2928  
EVENT OF 1994 APR 14 DAY OF YEAR=104  
EVENT CROSSING TIME AT BATSE : 33430. S. OR 09:17:10.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 208.000 73.000  
BATSE PEAK COUNTING RATE: 1000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 14/ 4/ 94 IS:  
RA= 122.476 DEC= -47.130 DIST= 2.890 AU  
BATSE-ULYSSES DISTANCE = 432289480. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 46.74 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 988.26 SECS.  
CROSSING TIME AT ULYSSES IS 34418. S. OR 09:33:38 +/- 247.31 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 14/ 4/ 94 IS:  
RA= 359.887 DEC= -1.203 DIST= 2.232 AU  
MARS-BATSE DISTANCE = 333843456. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 73.87 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 309.46 SECS.  
CROSSING TIME AT MARS IS 33739. S. OR 09:22:19 +/- 190.42 SECONDS

XJO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2928    | 940414 | 9456 | 33430 | 1000     | 208 | +73 |

#### BATSE BURST TRIGGER

NO.: 02928

TIME: TJD=9456 SECONDS=33430

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=049.0 AZIMUTH=255.7 ERROR= DEGREES

#### COMMENTS:

BURST, SINGLE PULSE WITH SUBSTRUCTURE, LASTING ~37 SECONDS. NOT VISIBLE  
ABOVE 300 KEV.



15 / 4 / 94

ULYSSES RT

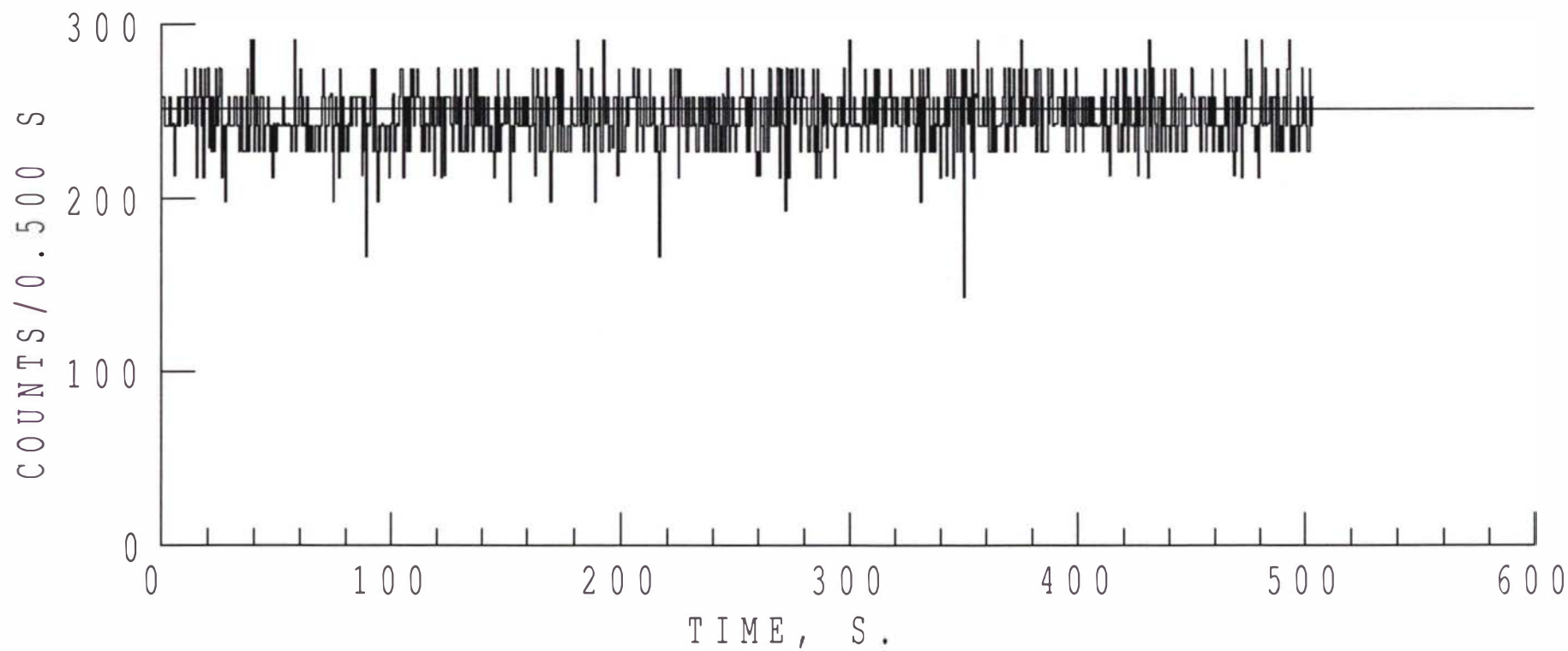
14 / 4 / 94 34164.230 s

0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From SHARIFF@ssl.msfc.nasa.gov Fri Apr 15 16:34 PDT 1994  
Date: Fri, 15 Apr 1994 18:37:12 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2929  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2929  
EVENT OF 1994 APR 14 DAY OF YEAR=104  
EVENT CROSSING TIME AT BATSE : 60385. S. OR 16:46:25.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 183.000 ~~27.000~~ - 26  
BATSE PEAK COUNTING RATE: 22000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 14/ 4/ 94 IS:  
RA= 122.405 DEC= -47.073 DIST= 2.890 AU  
BATSE-ULYSSES DISTANCE = 432378185. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 88.02 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 49.72 SECS.  
CROSSING TIME AT ULYSSES IS 60435. S. OR 16:47:14 +/- 301.01 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 14/ 4/ 94 IS:  
RA= 359.887 DEC= -1.203 DIST= 2.232 AU  
MARS-BATSE DISTANCE = 333843456. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 25.97 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1001.14 SECS.  
CROSSING TIME AT MARS IS 61386. S. OR 17:03:06 +/- 99.86 SECONDS

*No RI at 59470*

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec               |
|---------|--------|------|-------|----------|-----|-------------------|
| 2929    | 940414 | 9456 | 60385 | 22000    | 183 | <u>+27</u><br>-26 |

#### BATSE BURST TRIGGER

NO.: 02929

TIME: TJD=9456 SECONDS=60385

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=062.7 AZIMUTH=120.2 ERROR= DEGREES

#### COMMENTS:

BURST, STRONG, COMPLEX, LASTING ~75 SECONDS. VISIBLE ABOVE 300 KEV.

Helio corr removed

Date: Jan 27 '98

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

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

#### 2. BATSE Data

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

#### 3. PVO Data

- ☐ Ephemeris of PVO used (not Venus)?
- ☐ 2000 coordinates used?
- ☐ Geocentric time used?
- ☒ ACCESS database updated?

N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

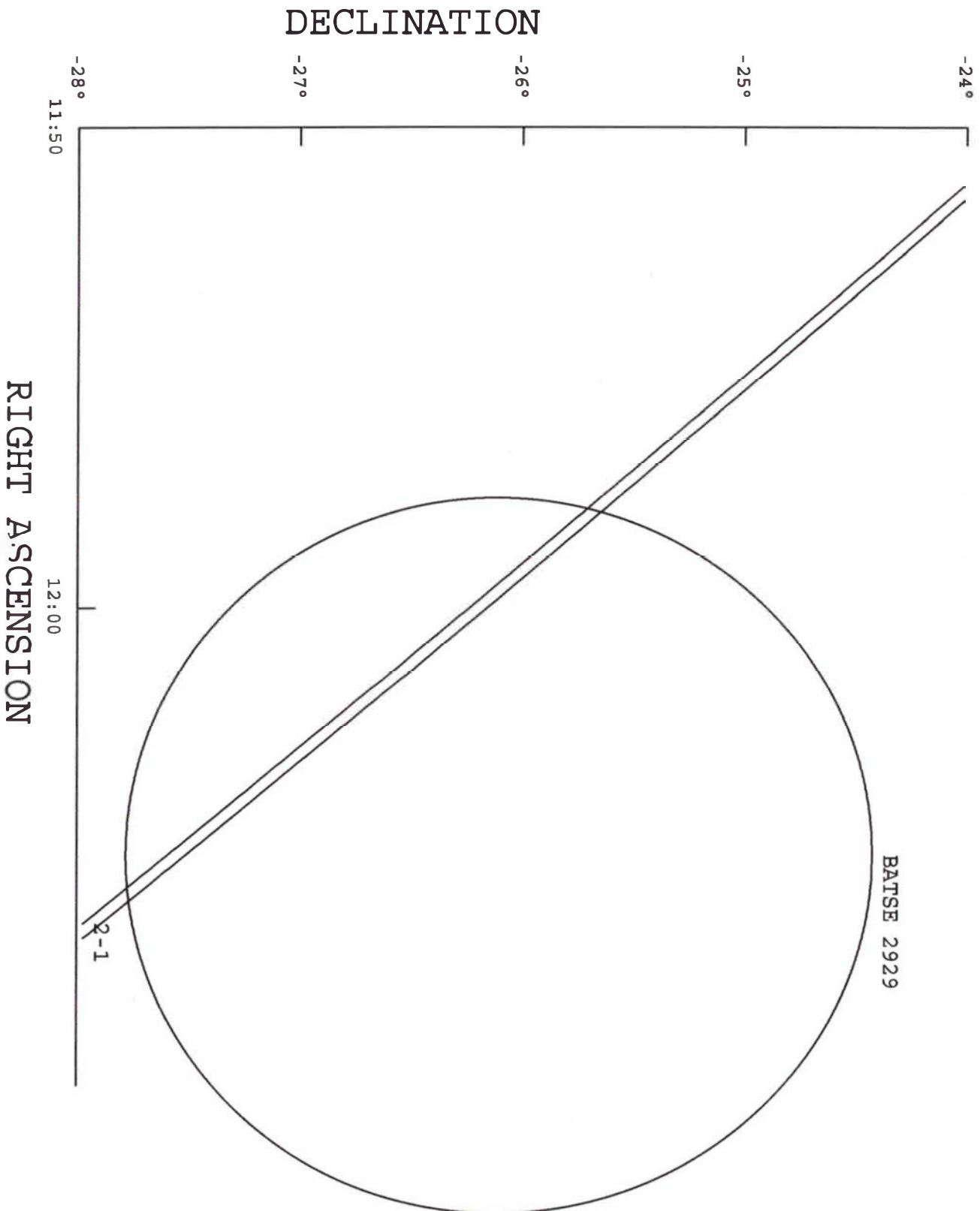
G=GALACTIC EQUATOR

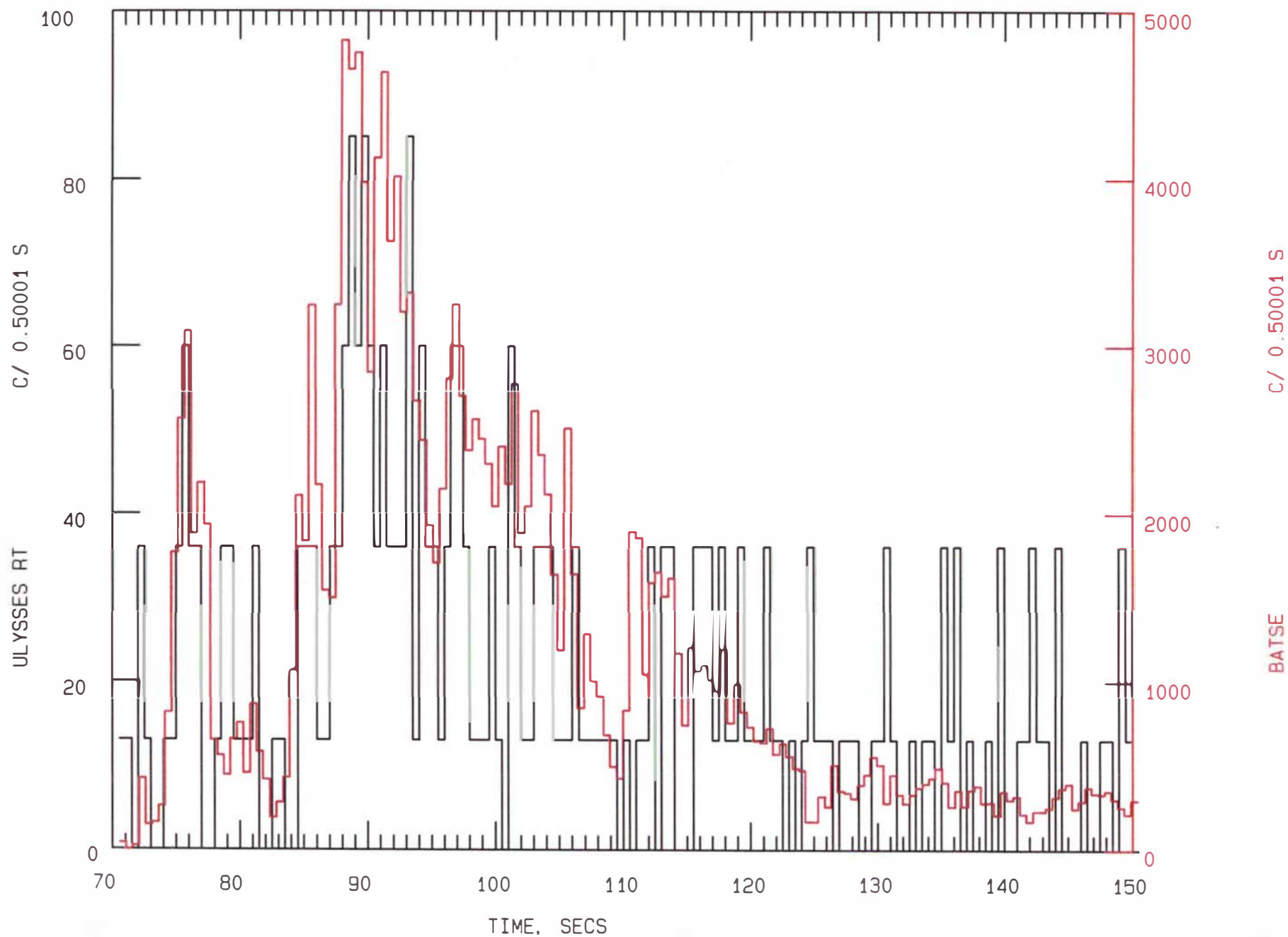
1 ULYSSES

2 BATSE

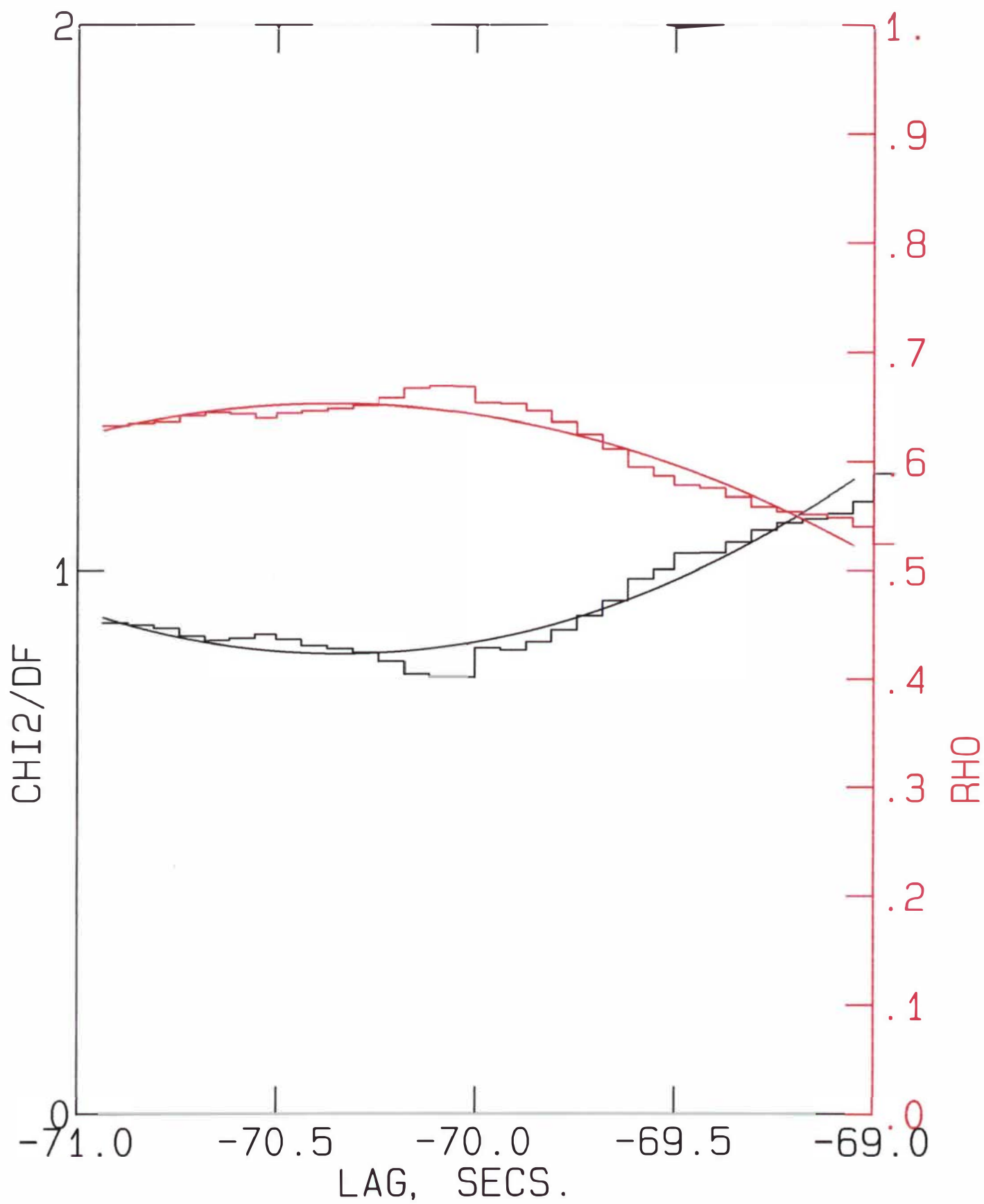
EVENT OF APR 14, 1994 16:29

27/ 1/98









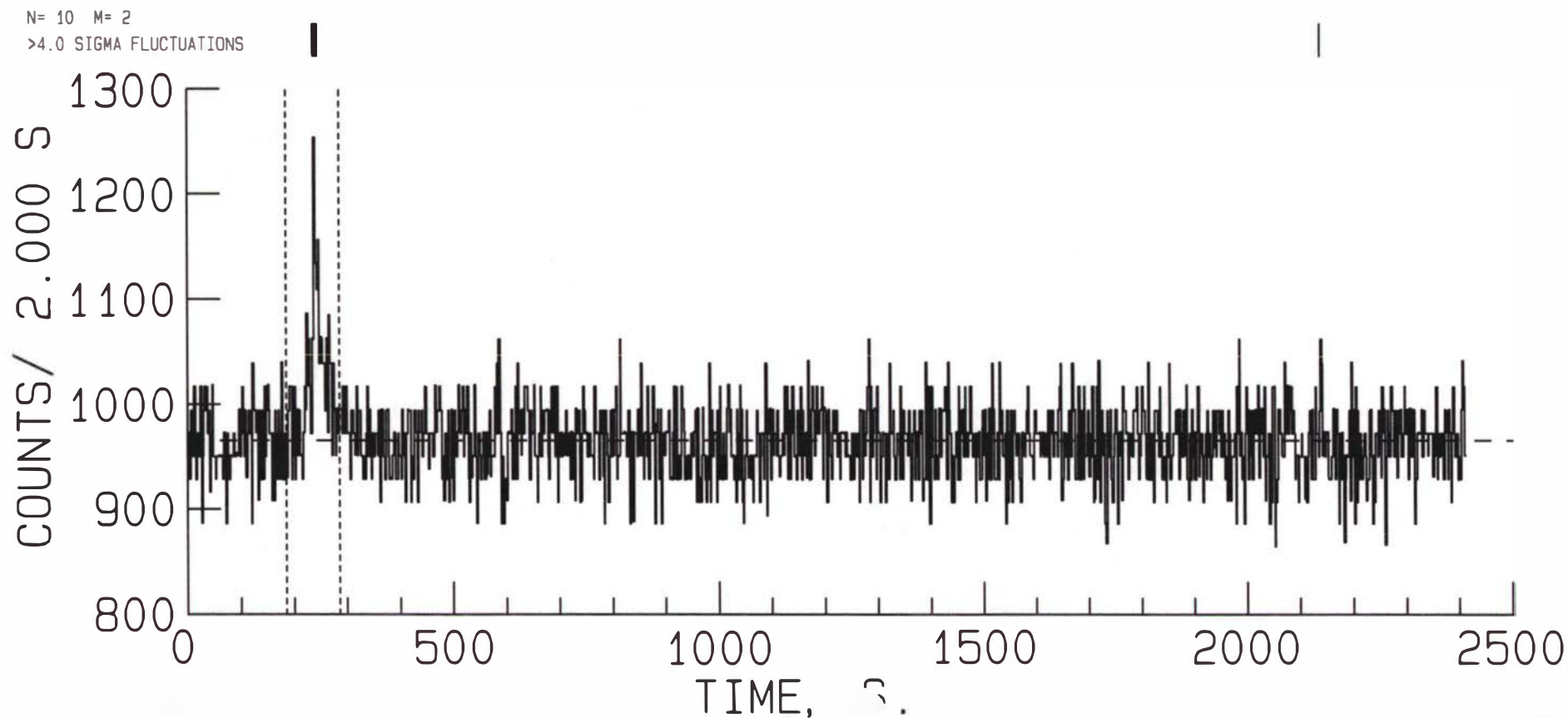
ULYSSES RT

27 / 1 / 98

14 / 4 / 94 59220.131 s

0.500 S INTERVALS REGROUPED BY 4

22- 148 keV



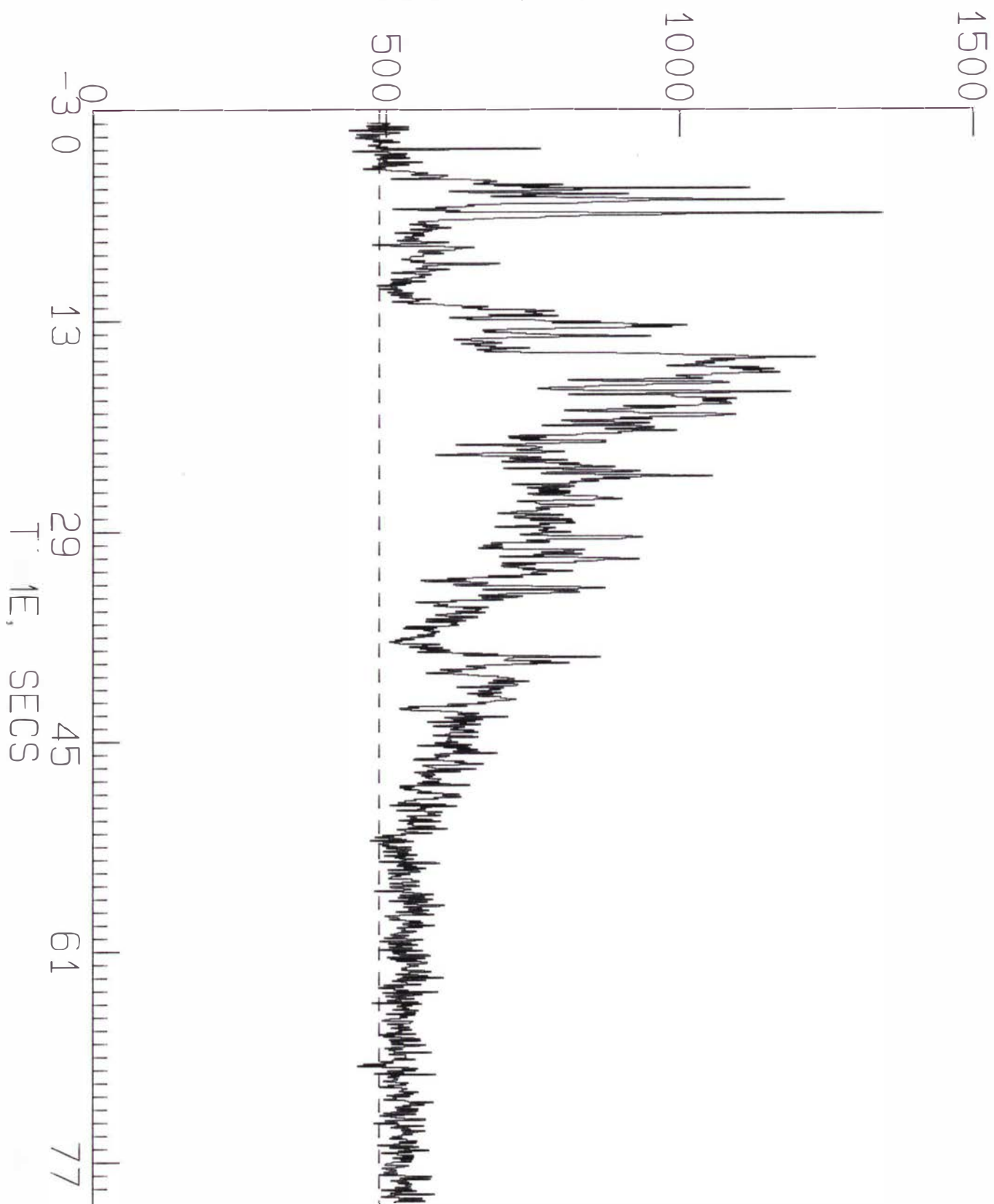
BATSE

14/04/94

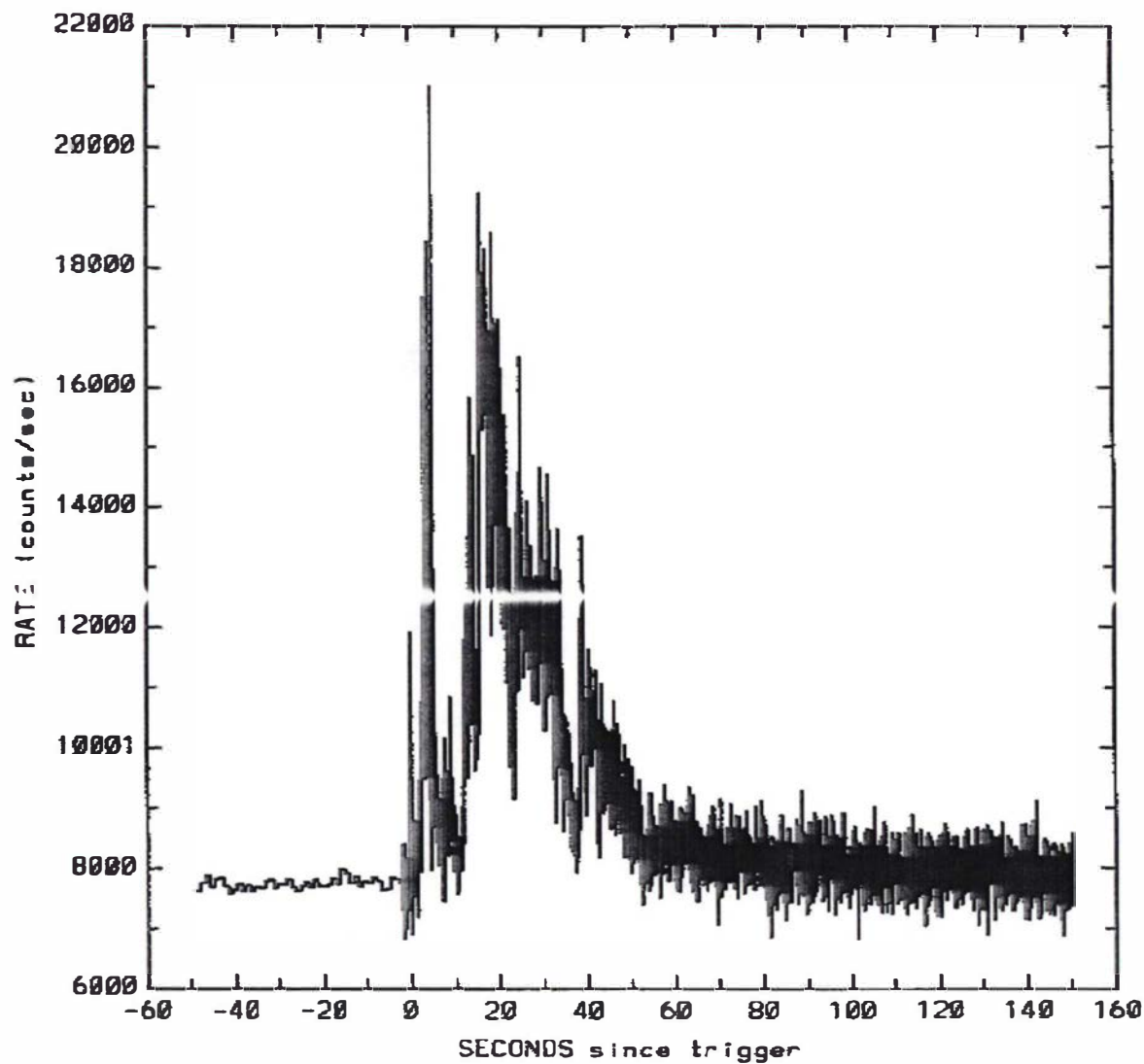
60385.562

25- 100 keV

COUNTS/ .064 S



## DATA FOR K. HURLEY



2-AUG-1994 09:39.22

Created by MDPS BD  
(Burst Display)  
Version 12.22

Trigger # : 2929

Trigger Time:  
9456 / 68385.562Burst Data Type:  
DISCSCDeadtime  
Corrected: NBackground Data  
Type: PREB + DISCLAMinimum Integ. Time:  
0.064 second(s)Detectors [7..8].  
38112221Discriminators:  
1 1. 21Quality Mask:  
BDISP1

From SHARIFF@ssl.msfc.nasa.gov Fri Apr 15 16:27 PDT 1994  
Date: Fri, 15 Apr 1994 18:30:09 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02930

TIME: TJD=9456 SECONDS=77932

TYPE: PARTICL SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:

SAA ENTRY (PARTICLES).

From SHARIFF@ssl.msfc.nasa.gov Fri Apr 15 16:37 PDT 1994  
Date: Fri, 15 Apr 1994 18:39:47 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2931  
Content-Type: text  
Content-Length: 1122

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2931  
EVENT OF 1994 APR 14 DAY OF YEAR=104  
EVENT CROSSING TIME AT BATSE : 86247. S. OR 23:57:27.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 294.000 11.000  
BATSE PEAK COUNTING RATE: 3000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
POSITION OF ULYSSES ON 14/ 4/ 94 IS:  
RA= 122.336 DEC= -47.017 DIST= 2.891 AU  
BATSE-ULYSSES DISTANCE = 432463680. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 36.70 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1156.59 SECS.  
CROSSING TIME AT ULYSSES IS 87404. S. OR 24:16:43 +/- 217.24 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 14/ 4/ 94 IS:  
RA= 359.887 DEC= -1.203 DIST= 2.232 AU  
MARS-BATSE DISTANCE = 333843456. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=113.39 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -442.01 SECS.  
CROSSING TIME AT MARS IS 85805. S. OR 23:50:04 +/- 170.74 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2931    | 940414 | 9456 | 86247 | 3000     | 294 | +11 |

#### BATSE BURST TRIGGER

NO.: 02931

TIME: TJD=9456 SECONDS=86247

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=121.2 AZIMUTH=222.2 ERROR= DEGREES

#### COMMENTS:

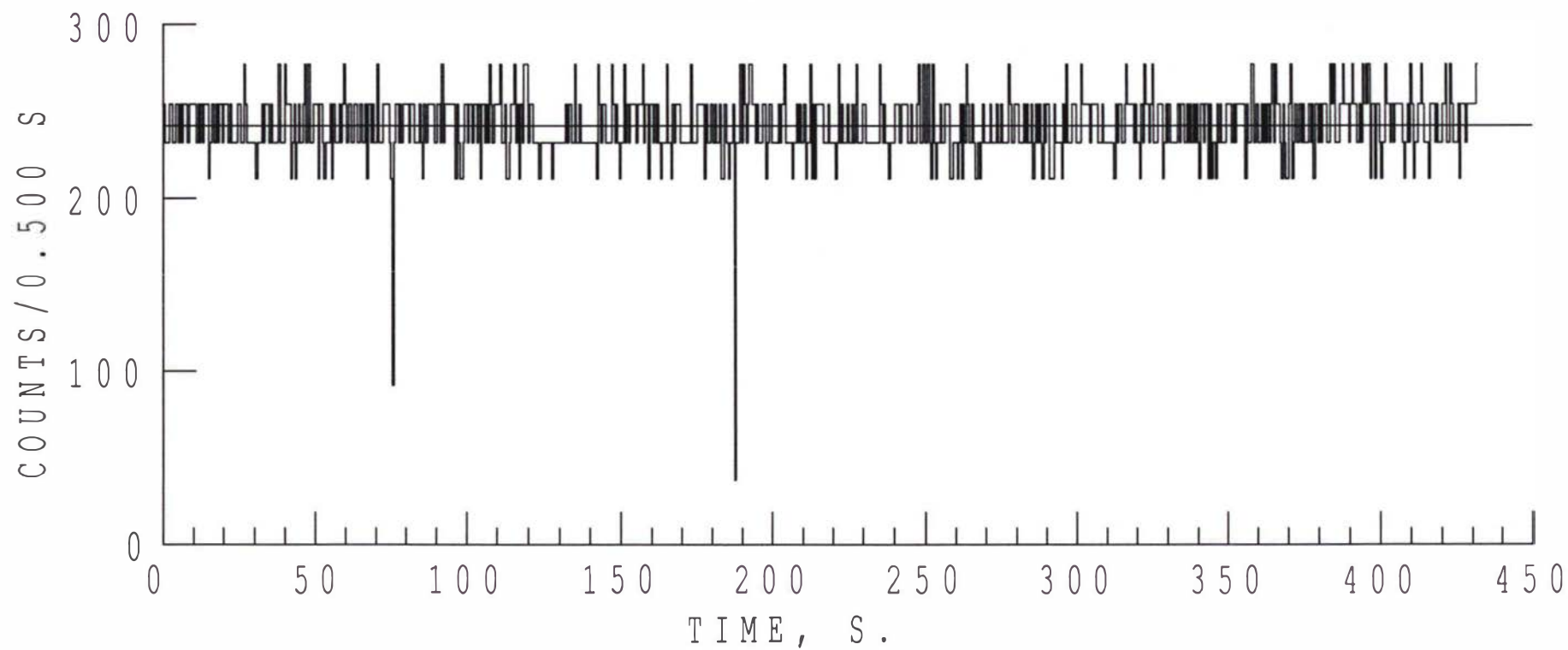
BURST, THREE PULSES, LASTING ~24 SECONDS. NOT VISIBLE ABOVE 300 KEV.

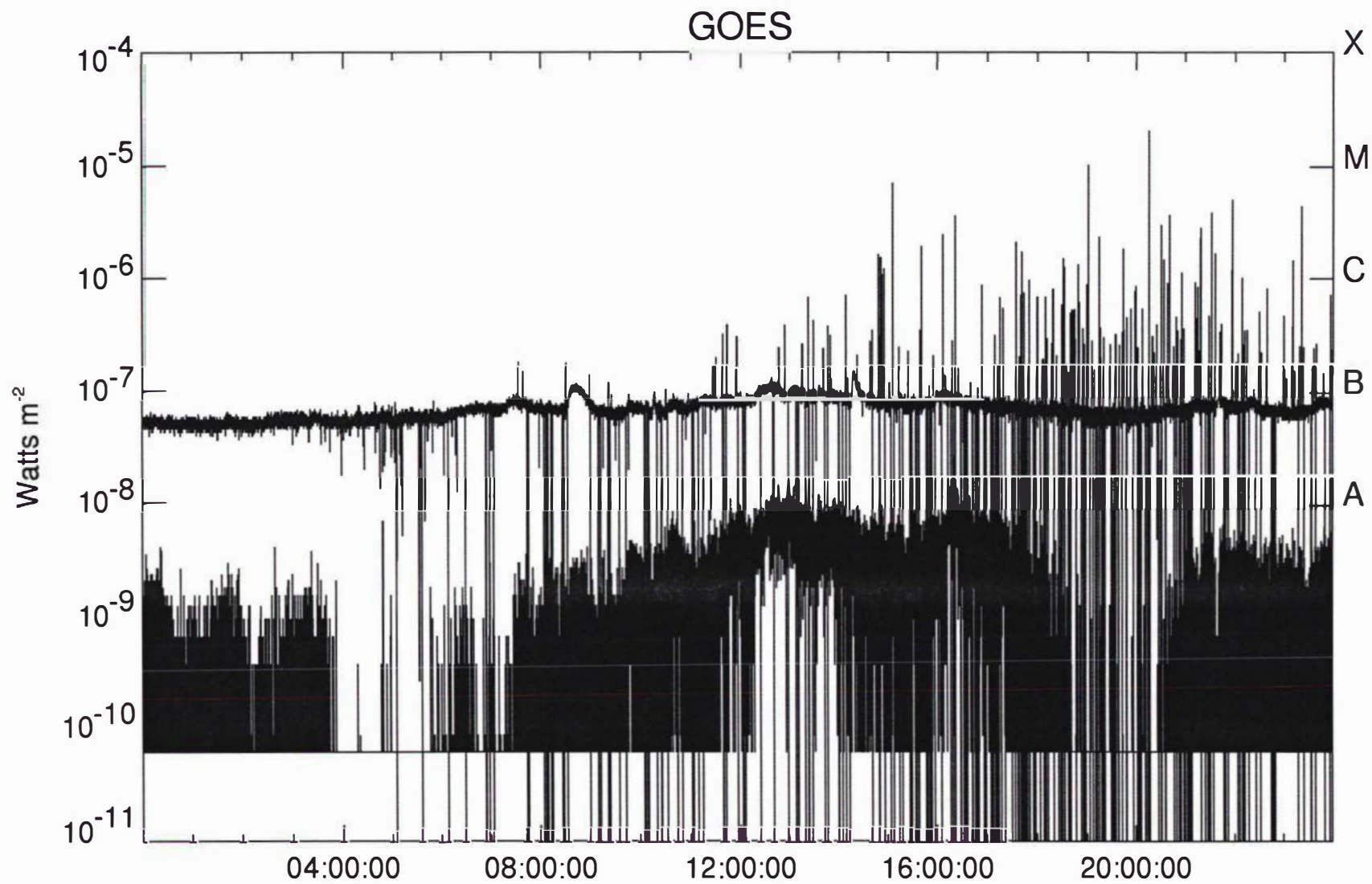


15 / 4 / 94

ULYSSES RT  
15 / 4 / 94 792.072 s  
0 - 0 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS





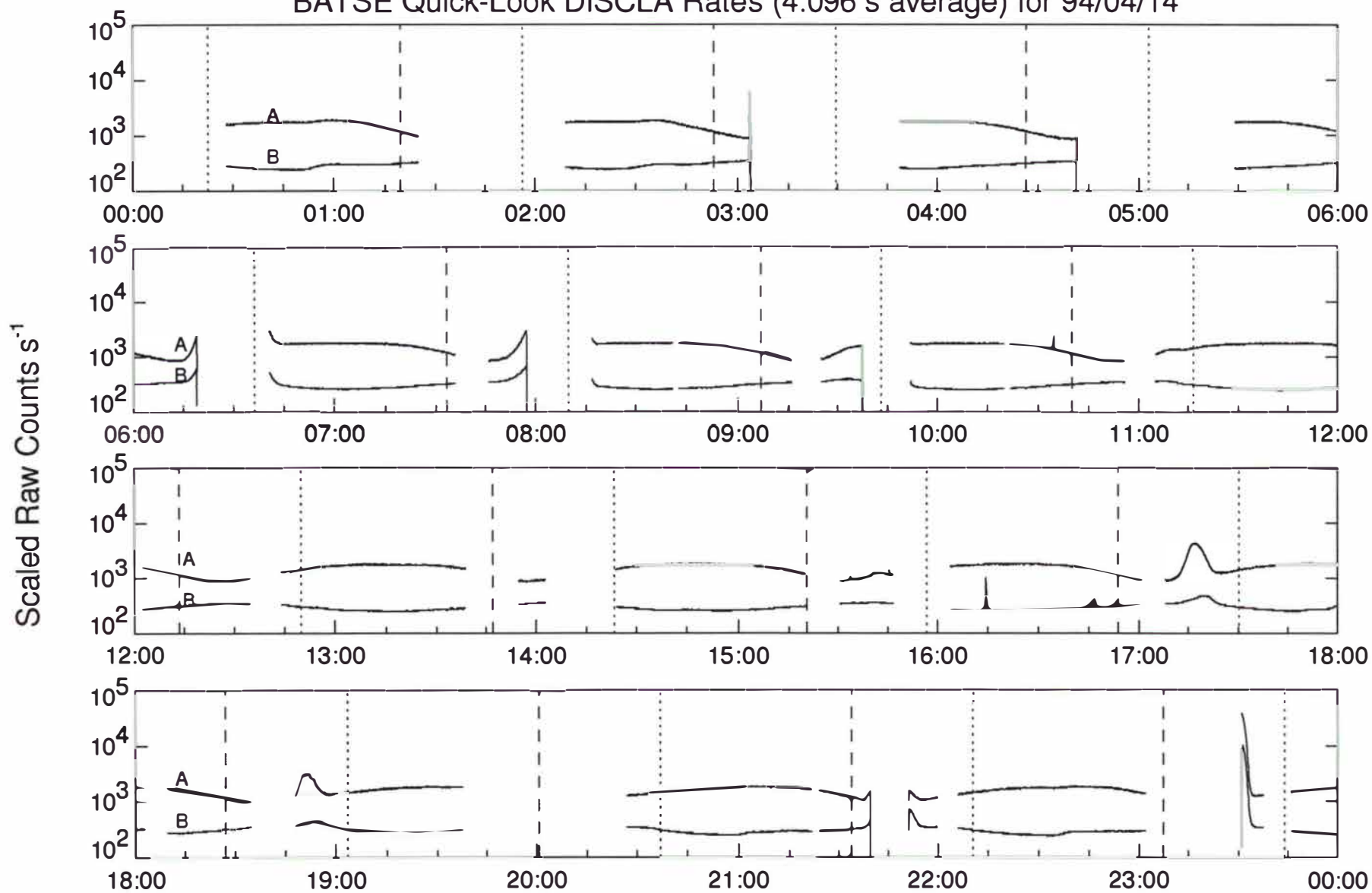
Data Start: 94/04/14, 0000:00

Plot created: 94/04/29, 1922

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/14

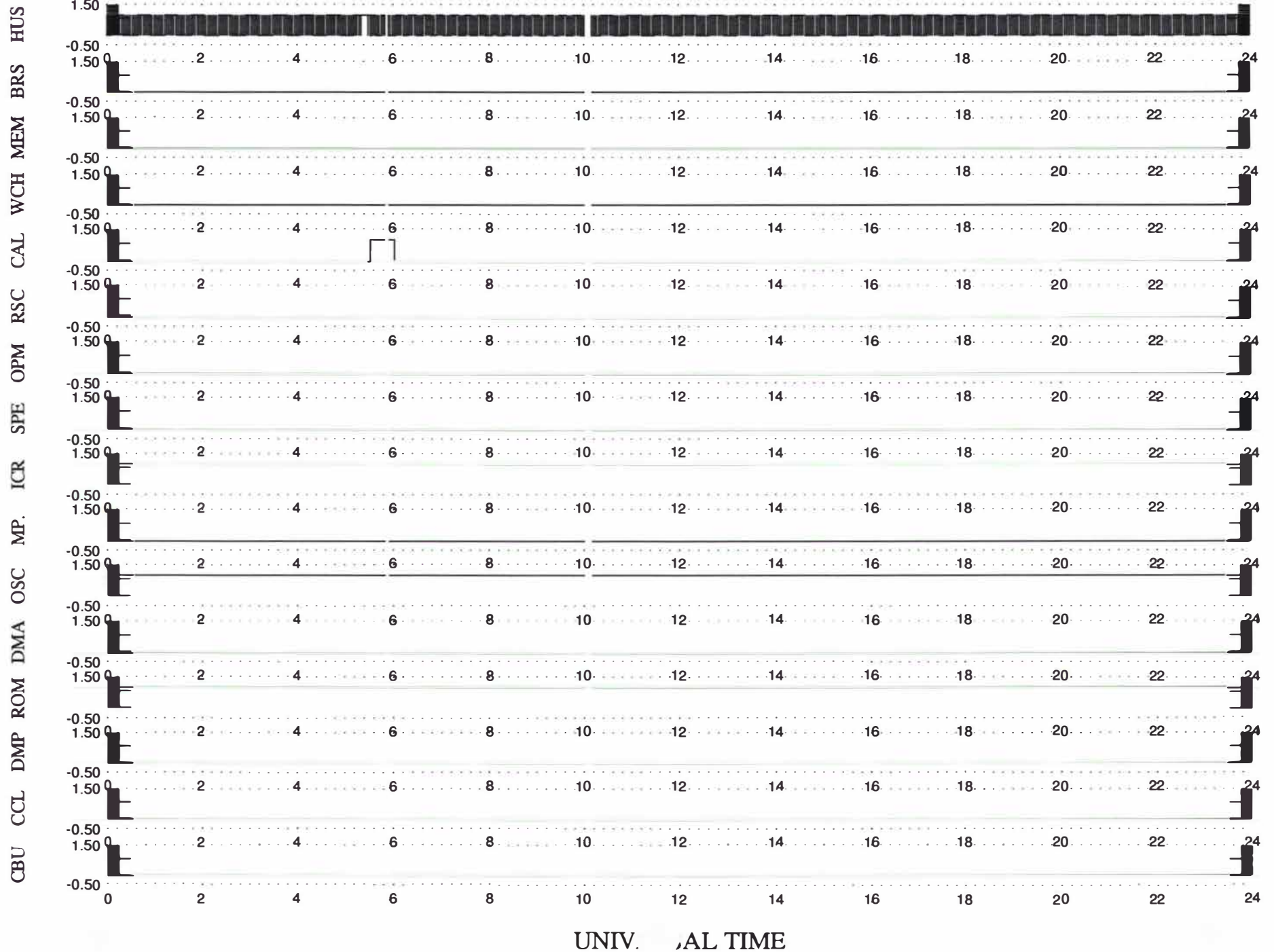


Current Time: 94/04/29, 1858 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

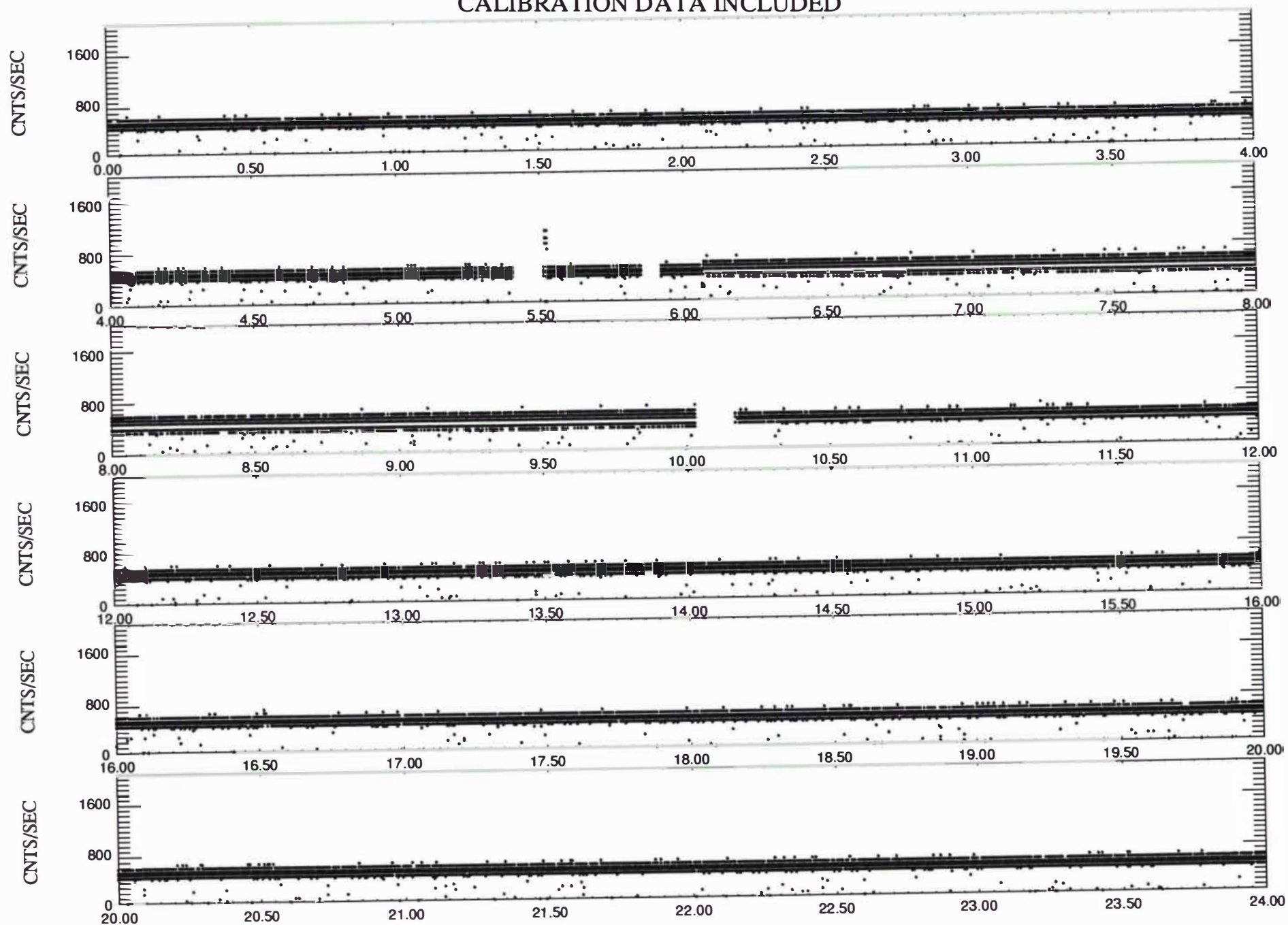
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

NO BURST (10)

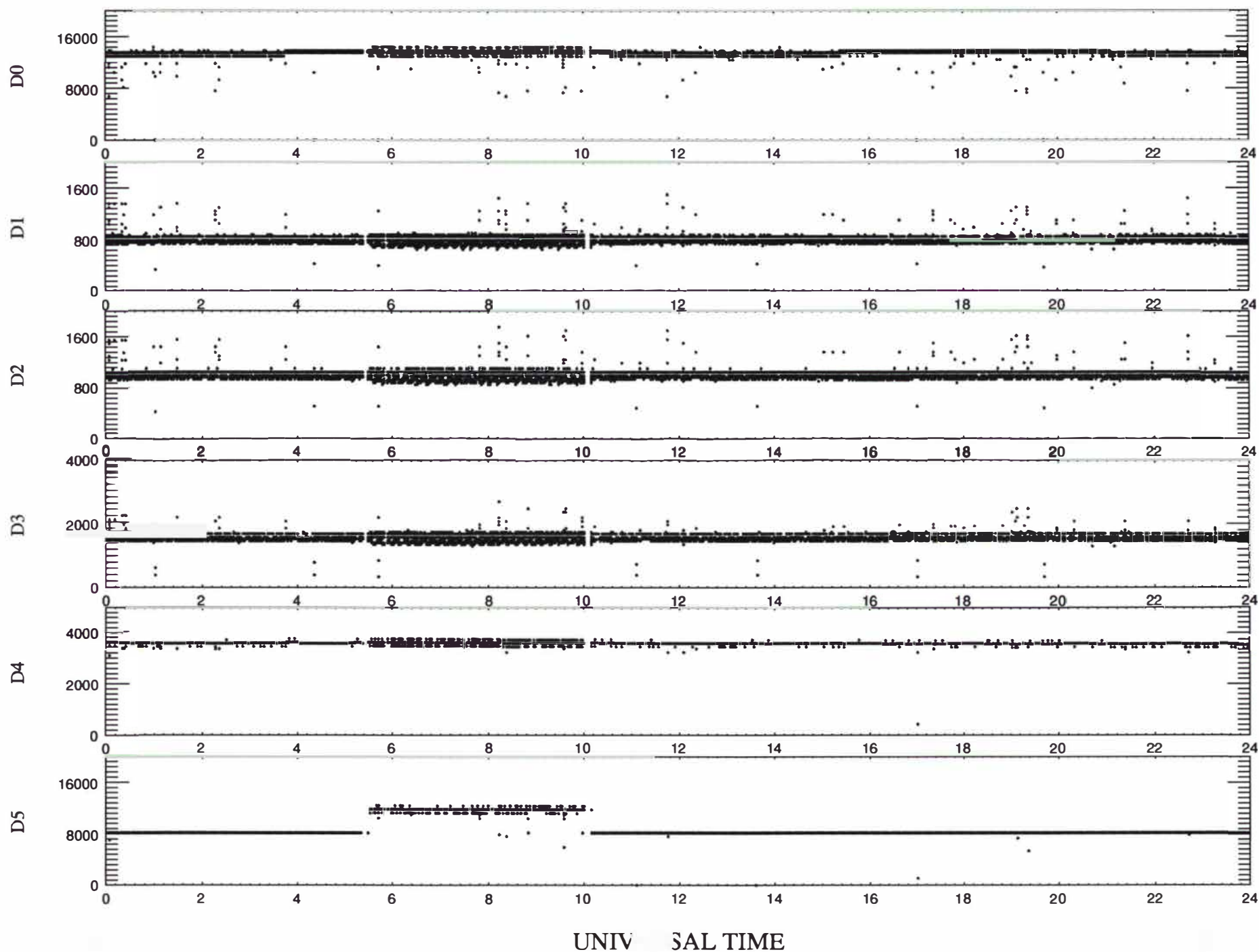


## CALIBRATION DATA INCLUDED



UNIV1 AL TIME







From SHARIFF@ssl.msfc.nasa.gov Tue Apr 19 12:03 PDT 1994  
Date: Tue, 19 Apr 1994 14:06:02 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2932  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2932  
EVENT OF 1994 APR 15 DAY OF YEAR=105  
EVENT CROSSING TIME AT BATSE : 31900. S. OR 08:51:40.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 257.000 -45.000  
BATSE PEAK COUNTING RATE: 2500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 15/ 4/ 94 IS:  
RA= 122.254 DEC= -46.948 DIST= 2.892 AU  
BATSE-ULYSSES DISTANCE = 432574534. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=100.19 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -255.24 SECS.  
CROSSING TIME AT ULYSSES IS 31645. S. OR 08:47:24 +/- 292.69 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 15/ 4/ 94 IS:  
RA= 0.599 DEC= -0.890 DIST= 2.229 AU  
MARS-BATSE DISTANCE = 333526688. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 81.07 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 172.73 SECS.  
CROSSING TIME AT MARS IS 32073. S. OR 08:54:32 +/- 193.43 SECONDS

ND

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2932    | 940415 | 9457 | 31900 | 2500     | 257 | -45 |

#### BATSE BURST TRIGGER

NO.: 02932

TIME: TJD=9457 SECONDS=31900

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=118.0 AZIMUTH=146.5 ERROR= DEGREES

#### COMMENTS:

BURST, WEAK SINGLE PULSE, DUR ~30S, RISE FASTER THAN FALL. NOT VISIBLE ABOVE 300 KEV.

\*\*\*\*\*  
\*CATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2932  
EVENT OF 1994 APR 15 DAY OF YEAR=105  
EVENT CROSSING TIME AT BATSE : 31900. S. OR 08:51:40.3  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 255.160 -28.190  
BATSE PEAK COUNTING RATE: 0000 C/S  
  
EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
POSITION OF ULYSSES ON 15/ 4/ 94 IS:  
RA= 122.336 DEC= -47.017 DIST= 2.891 AU  
BATSE-ULYSSES DISTANCE = 432474152. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 86.39 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 90.72 SECS.  
CROSSING TIME AT ULYSSES IS 31991. S. OR 08:53:11.0 +/- 301.34 SECONDS

9 / 11 / 95

ULYSSES RT

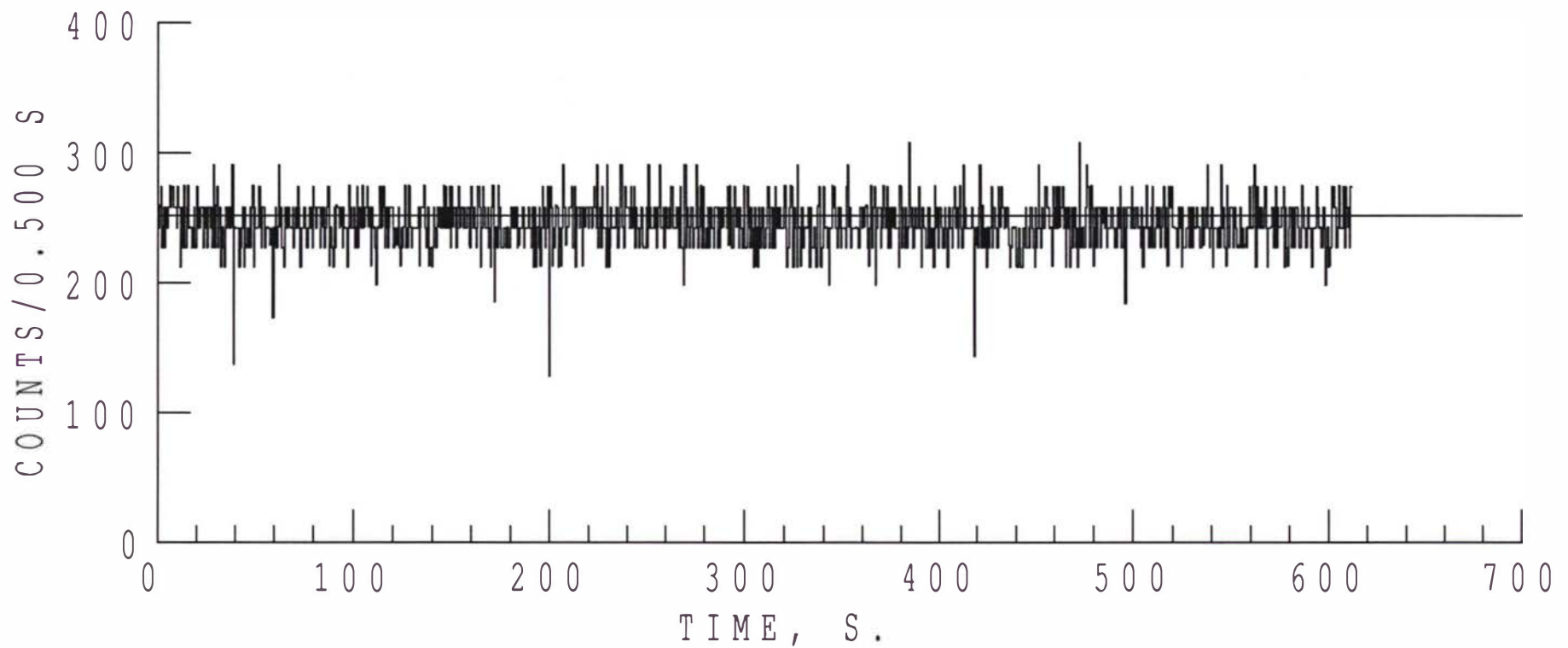
15 / 4 / 94 31680.068 s

0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From SHARIFF@ssl.msfc.nasa.gov Tue Apr 19 12:05 PDT 1994  
Date: Tue, 19 Apr 1994 14:07:56 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2933  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2933  
EVENT OF 1994 APR 15 DAY OF YEAR=105  
EVENT CROSSING TIME AT BATSE : 61273. S. OR 17:01:13.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 251.000 -17.000  
BATSE PEAK COUNTING RATE: 53000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 15/ 4/ 94 IS:  
RA= 122.180 DEC= -46.885 DIST= 2.892 AU  
BATSE-ULYSSES DISTANCE = 432676222. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 78.68 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 283.32 SECS.  
CROSSING TIME AT ULYSSES IS 61556. S. OR 17:05:56 +/- 300.00 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 15/ 4/ 94 IS:  
RA= 0.599 DEC= -0.890 DIST= 2.229 AU  
MARS-BATSE DISTANCE = 333526688. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 71.57 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 351.78 SECS.  
CROSSING TIME AT MARS IS 61625. S. OR 17:07:04 +/- 188.58 SECONDS

ND

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2933    | 940415 | 9457 | 61273 | 53000    | 251 | -17 |

#### BATSE BURST TRIGGER

NO.: 02933

TIME: TJD=9457 SECONDS=61273

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

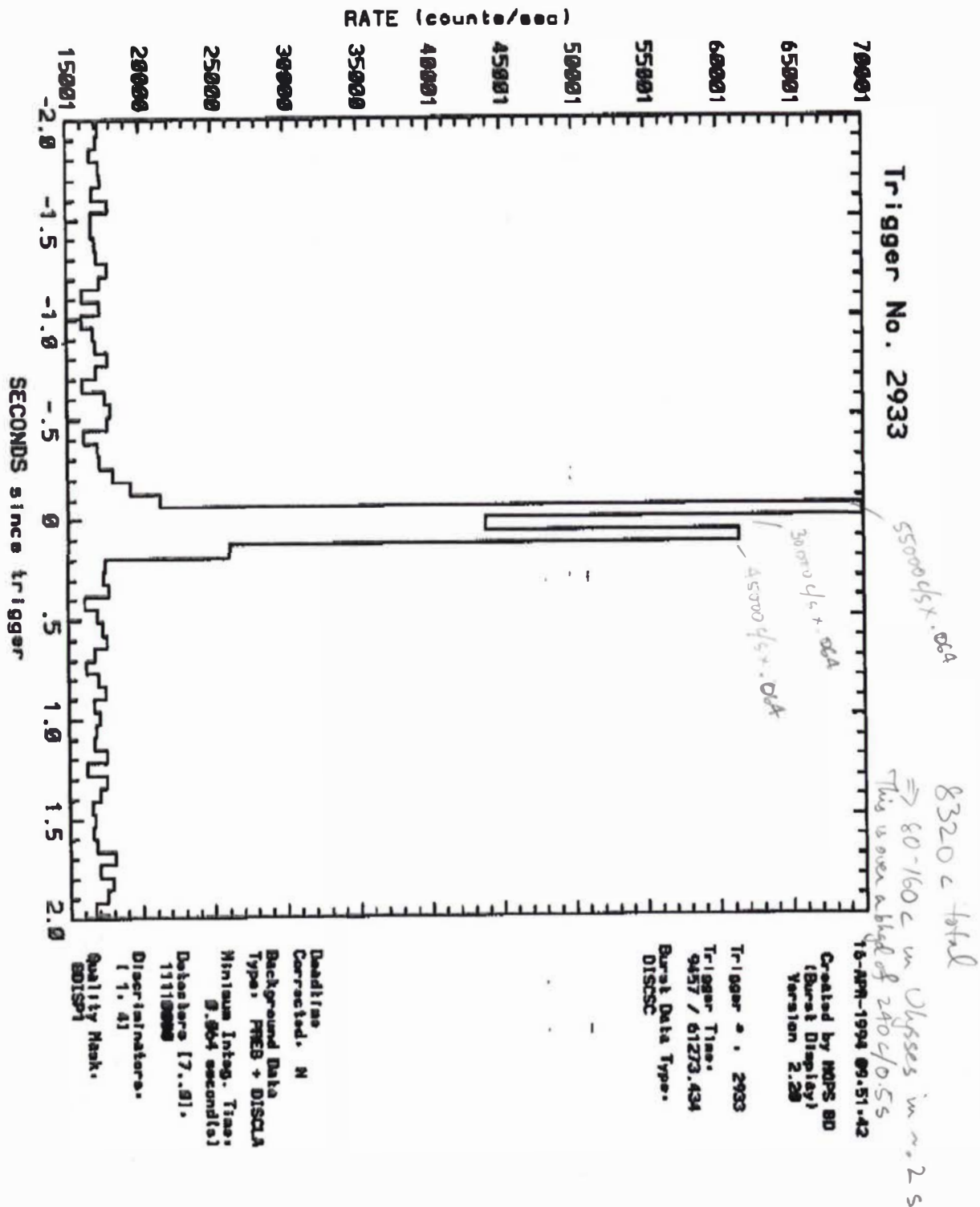
SIGNIFICANCE: SIGMA

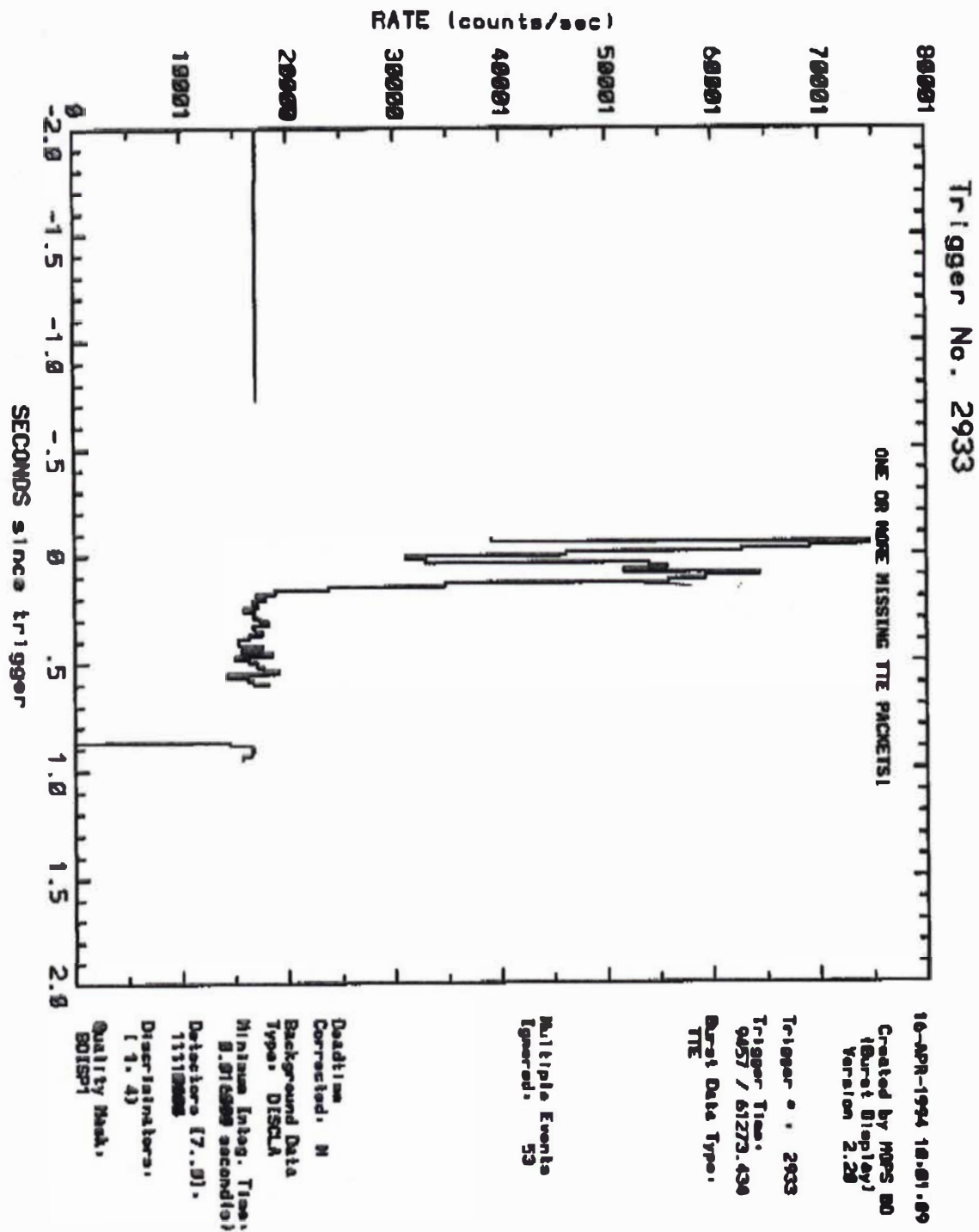
INTENSITY: COUNTS/CM2

LOCATION: ZENITH=101.8 AZIMUTH=171.7 ERROR= DEGREES

#### COMMENTS:

BURST, SINGLE SPIKE WITH STRUCTURE, DUR ~0.4 SECONDS. STRONGLY VISIBLE ABOVE 300 KEV. ALSO SEEN BY GRANAT/PHEBUS.







21 / 4 / 94

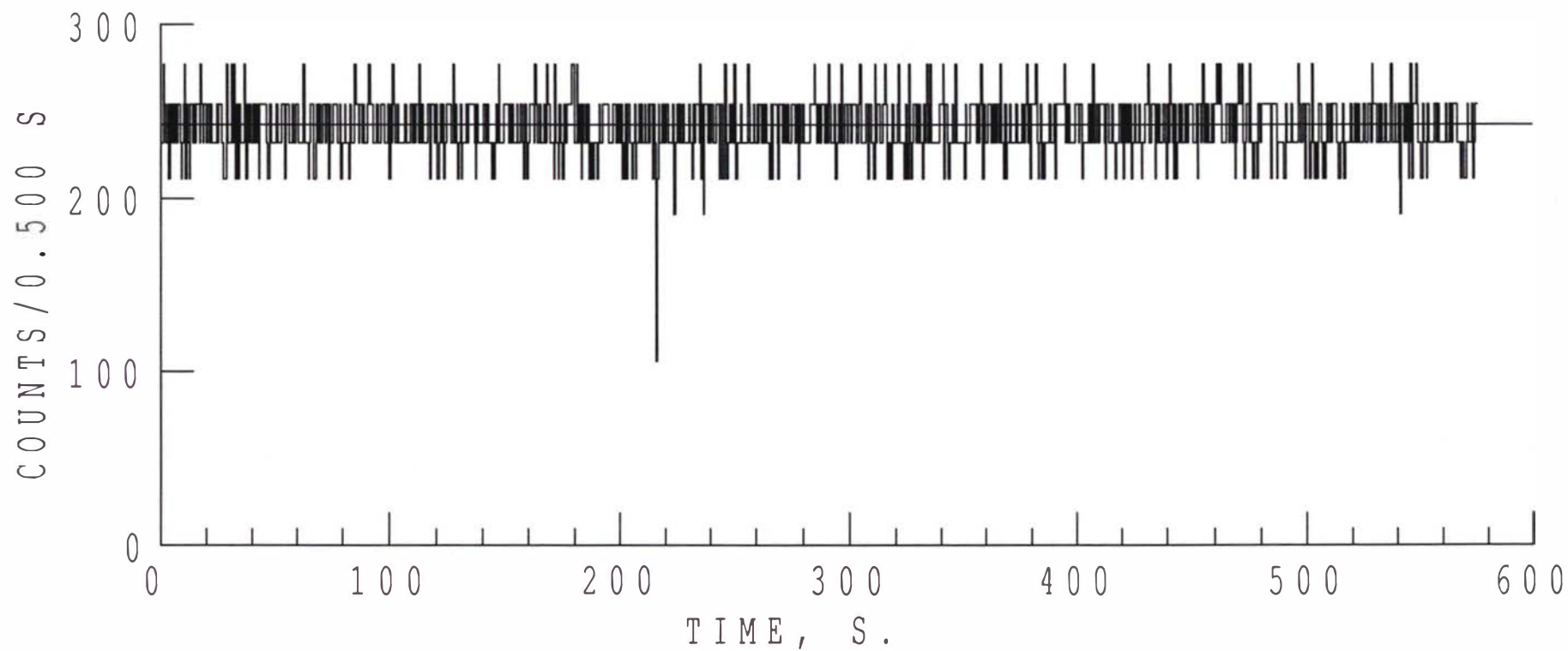
ULYSSES RT

15 / 4 / 94 61272.496 s

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



Dear Scott,

We've searched high and low for 940415 in the Ulysses data, to no avail. The experiment was on, the background was normal, and we definitely should have observed this event, given its intensity. I've asked the BATSE people to fax me the time history to see whether perhaps the peak intensity is reached over such a short period that the fluence is much less than I had estimated. Other than that, I'm at a loss to explain this.

Kevin

From root Sat Apr 23 08:57 1994

Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)

id AA02031; Sat, 23 Apr 94 08:57:33

Received: from xtelab.gsfc.nasa.gov by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)

id AA17815; Sat, 23 Apr 1994 09:03:29 +0800

Received: by xtelab.gsfc.nasa.gov (4.1/1.35)

id AA19636; Sat, 23 Apr 94 12:06:05 EDT

Date: Sat, 23 Apr 94 12:06:05 EDT

From: scott@xtelab.gsfc.nasa.gov (Scott Barthelmy)

Message-Id: <9404231606.AA19636@xtelab.gsfc.nasa.gov>

To: khurley@space6.ssl.berkeley.edu

Subject: the weakness of 940415

Cc: cline@tgrs.gsfc.nasa.gov, gehrels@lheavx.gsfc.nasa.gov,

scott@xtelab.gsfc.nasa.gov

Content-Length: 1110

Status: R

Kevin,

Since there is some question about this burst, let me make sure I haven't mislead people. BATSE had two triggers on 15 Apr 94 (TJD=9457).

The first trigger (=2932) was at 31900 sec-of-day UT and Huntsville classified it as a real GRB. It was "30 sec long, a single pulse with a rise time faster than the fall time; and not seen above 300keV".

The second trigger (=2933) was at 61273 SOD. Huntsville classified it as a real GRB. It was "a 0.4 sec single spike, seen above 300 keV".

In the 1.024sec DISCLA data that BACODINE has access to, the 1sec-averaged true planewave intensity in the 50-300 keV band was 2978 cnts/1.024sec.

I gather it is this high number that has you puzzled about why Ulysses did not see the burst. (Please note that this 2978 number is slightly different than the "Inten=3242" number in the email notification. This is because bacodine does an approximate calc to get the planewave intensity of the burst. For the 2978 I did an offline better calculation. I hope to have bacodine fixed in this regard in the near future.)

maybe this clarification is of some use,  
scott

To: Dr. C.Barat, Dr. G.Fishman, Dr. K.Hurley, Dr. C.Kouveliotou,  
Dr. C.Meegan

GRB 940415

D.Denisenko, R.Sunyaev, O.Terekhov, Space Research Institute, Moscow;  
C.Barat, J.-P.Dezalay, Centre d'Etude Spatiale des Rayonnements,  
Toulouse, report:

Short gamma-ray burst was detected by the PHEBUS instrument onboard the GRANAT observatory on 15th of April, 1994. The burst trigger time  $T_0$  is 17h01m13.840s (UT). The burst has duration of 0.25s and consists of two triangle shaped peaks. The first of them (a stronger one) appeared at  $T_0 - (0.129 \pm 0.004)$  s, the second at  $T_0 - (0.004 \pm 0.004)$  s. GRANAT's position at the time of the burst was  $R=151900$  km,  $\text{Alpha}=127.10$  deg,  $\text{Delta}=20.23$  deg.

PHEBUS was switched off on the 12th of April between 13:12 UT and 16:21 UT and on again on the 14th of April at 10:11 UT.

P.S. Did Ulysses or BATSE observe GRB940415 ?

Dear Denis,

I have searched the Ulysses data for GRB940415. We had coverage and good data for the period around this burst, but did not detect it. Judging from the BATSE time history, I believe that there just were not enough counts to produce a believable Ulysses signal.

Kevin  
Jeff,

It turns out that we do not have all our Ulysses data for March 13 yet, so we don't know whether we detected that burst or not. My guess is that we will have detected it, so if we do get the data, there should be an annulus.

As for April 15, we definitely did not detect it - it was too weak. So here we may have to scan and process the entire plate, and even that may not cover the BATSE localization completely. I'd say it's up to you whether you want to try this, but it is a situation which we will be confronted with from time to time, so give it some thought.

Kevin

From scott@rosserv.gsfc.nasa.gov Tue Apr 19 16:46 PDT 1994  
Date: Tue, 19 Apr 94 19:48:41 EDT  
From: scott@rosserv.gsfc.nasa.gov (Scott Barthelmy)  
To: cline@tgrs.gsfc.nasa.gov, gehrels@heavx.gsfc.nasa.gov,  
khurley@space6.ssl.berkeley.edu, khurley@sunspot.ssl.berkeley.edu,  
scott@xtelab.gsfc.nasa.gov

Content-Type: text  
Content-Length: 1253

I am resending the email below with the following addition:

Of course any papers/talks/discoveries/etc that come from this will include your name(s) because of the IPN contribution to the process. I know this may have been obvious to you, but it doesn't hurt to reiterate these things every now and then just be certain. sdb

////////////////////////////////////  
Kevin, 19 Apr 94

I like to ask if Ulysses saw the burst 940415 (sec-o-day=61273)? One of Rene Hudec's sites got two plates on this burst based on a BACODINE notice. I do not know any of the particulars (FOC, Lim mag, etc), but it would be nice to be able to limit the scanning area of the plates if we could get an IPN arc. It didn't have all the much fluence but it was pretty bright for its 0.4sec single spike duration. Huntsville says it was seen above 300keV. They also say that GRANAT/PHEBUS also say this burst. So maybe we can do better than an arc? A long thin box maybe?

To help in your scanning of the HK data (assuming it was an untriggered) the Huntsville position for this burst is  $\text{RA}=254.45$  Dec= $-16.73$  (J2000). The above quoted SOD was the BATSE trigger time UT.

Hoping,  
Scott

21 / 4 / 94

ULYSSES RT

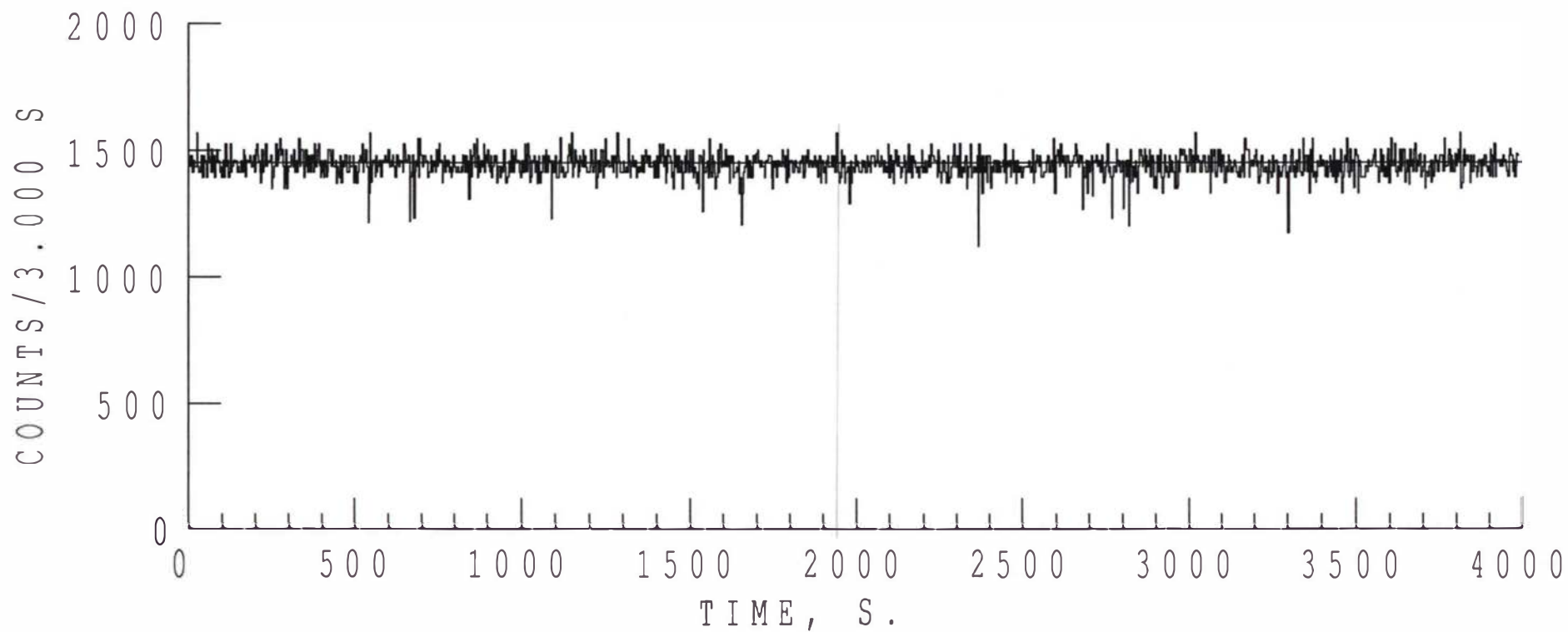
15 / 4 / 94 59508.473 s

0.500 S INTERVALS REGROUPED BY 6

0 - 0 keV

N= 10 M= 2

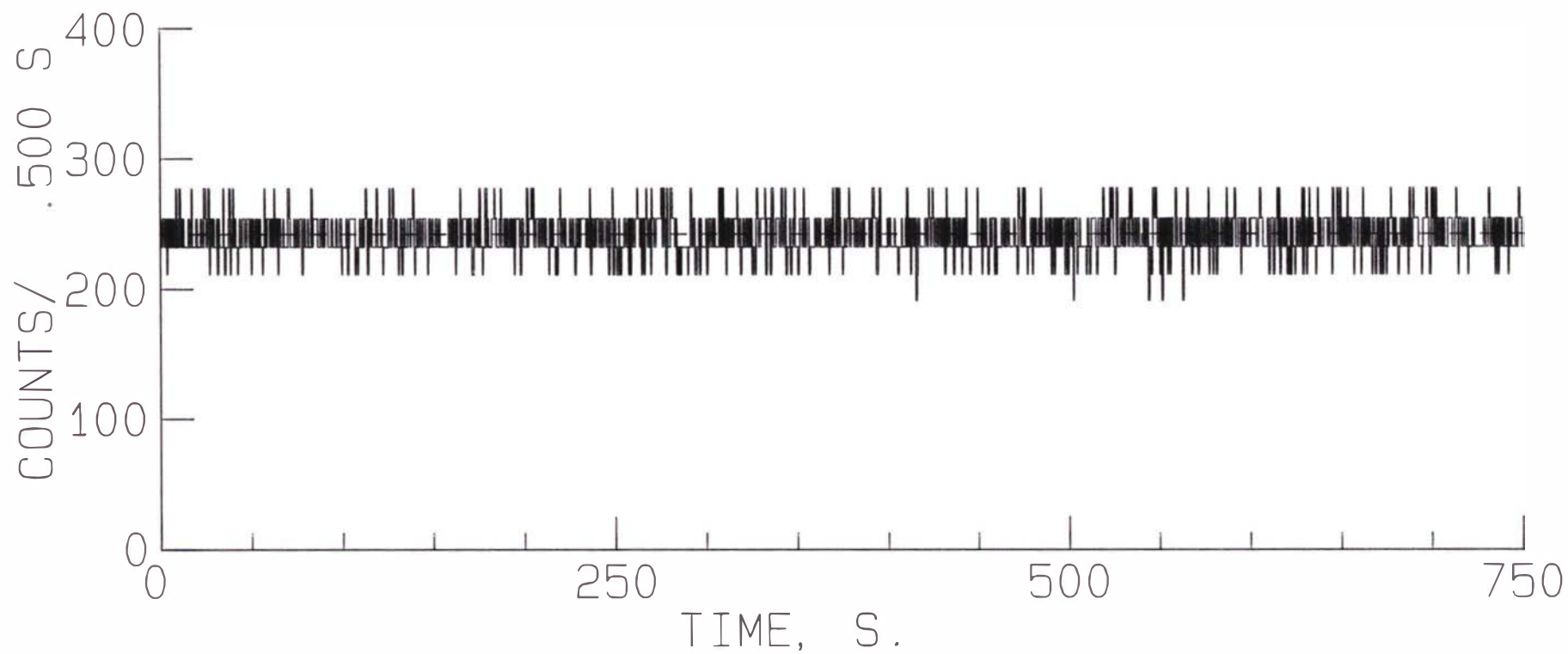
&gt;4.0 SIGMA FLUCTUATIONS



ULYSSES RT  
15/ 4/94 59508.473 s  
0- 0 keV

22/ 4/94

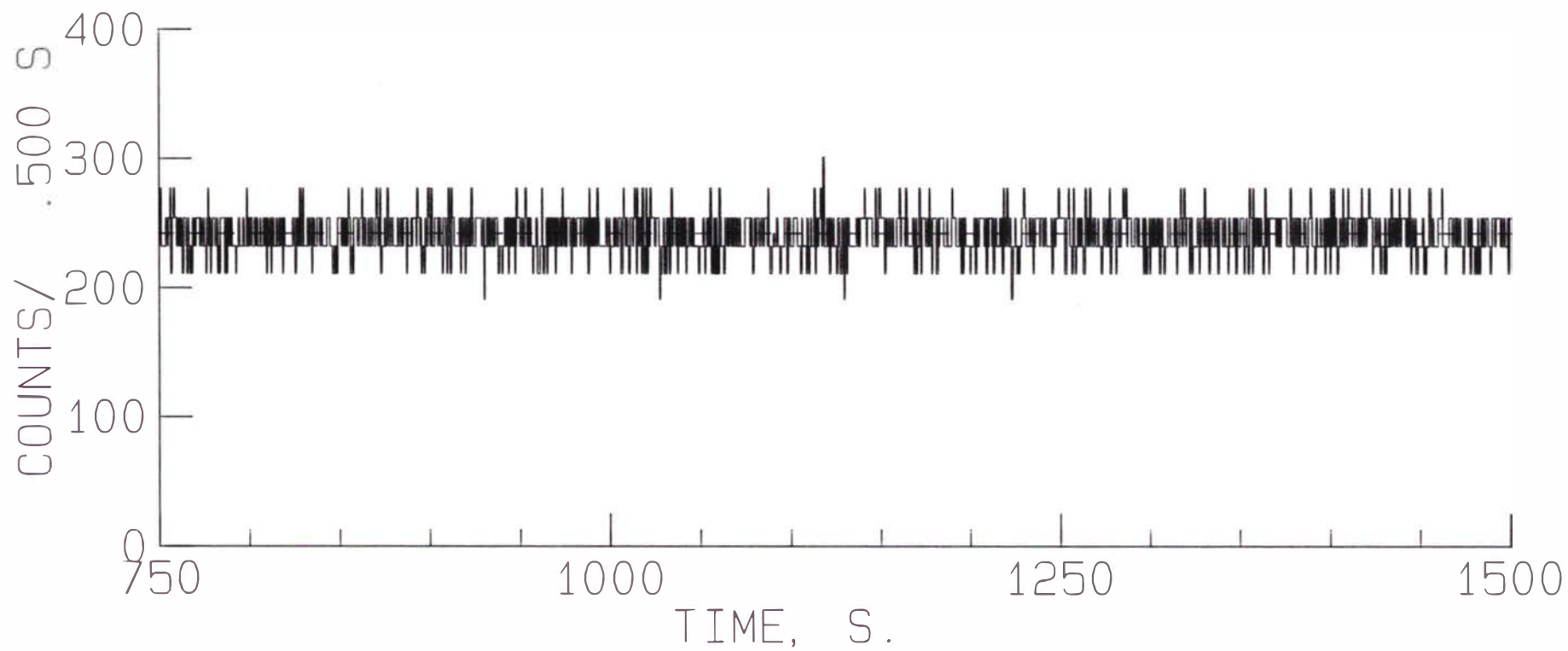
N= 10 M= 1  
>3.0 SIGMA FLUCTUATIONS



ULYSSES RT  
15/ 4/94 59508.473 s  
0- 0 keV

22/ 4/94

N= 10 M= 1  
>3.0 SIGMA FLUCTUATIONS





ULYSSES RT

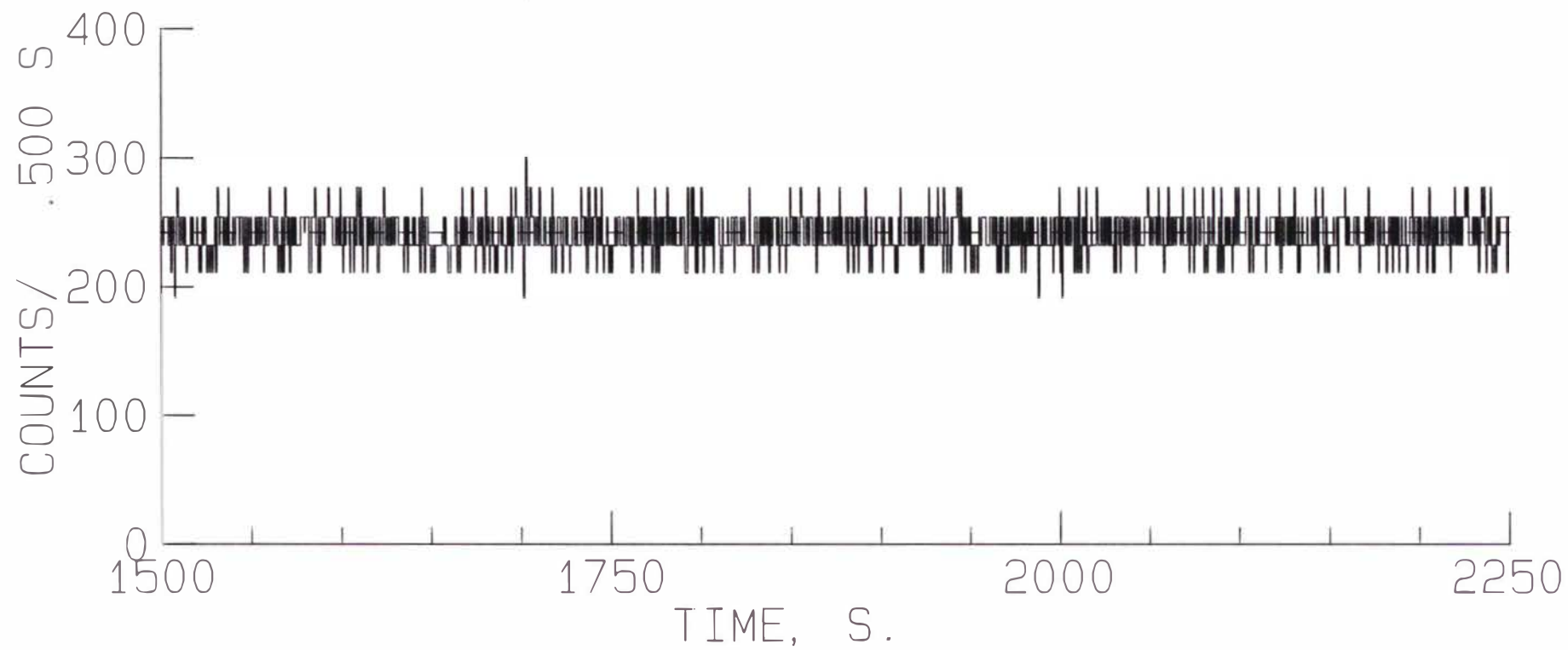
22/ 4/94

15/ 4/94 59508.473 s

0- 0 keV

N= 10 M= 1

>3.0 SIGMA FLUCTUATIONS



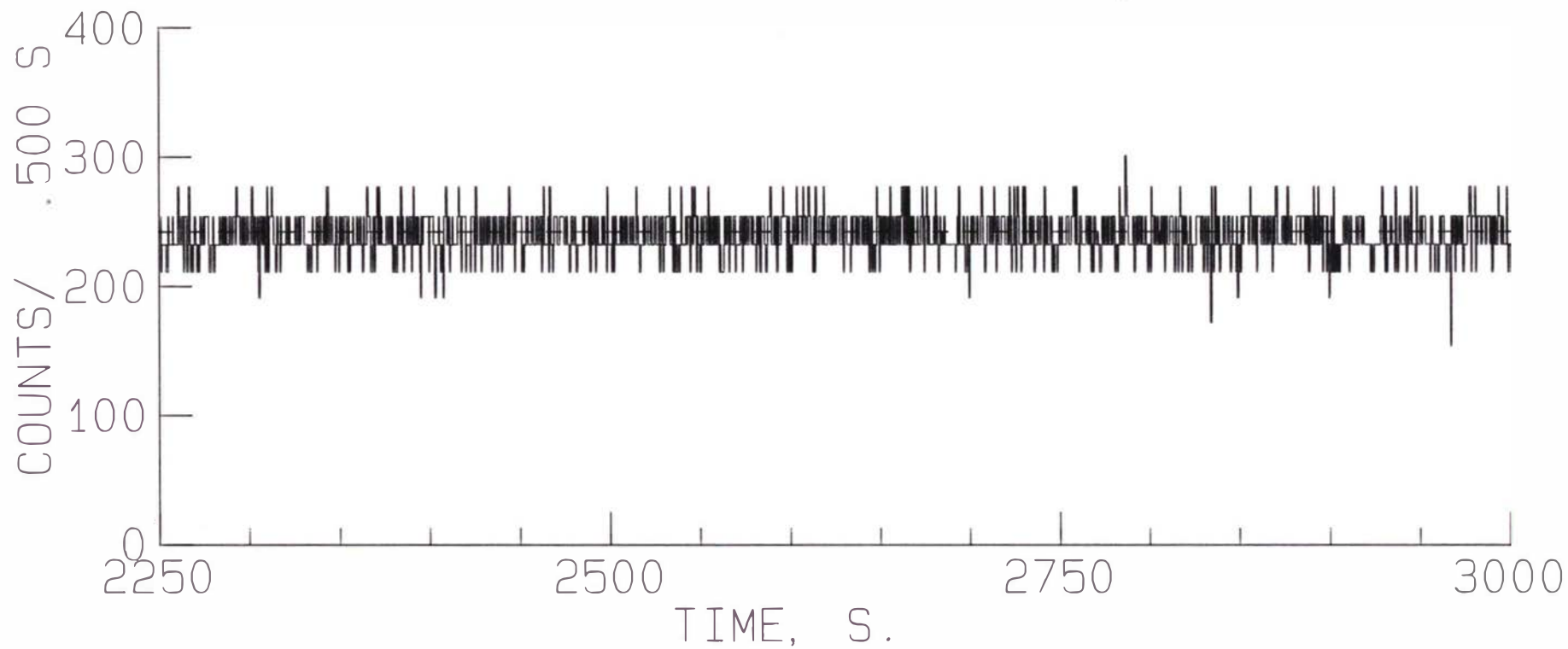
ULYSSES RT

22/ 4/94

15/ 4/94 59508.473 s

0- 0 keV

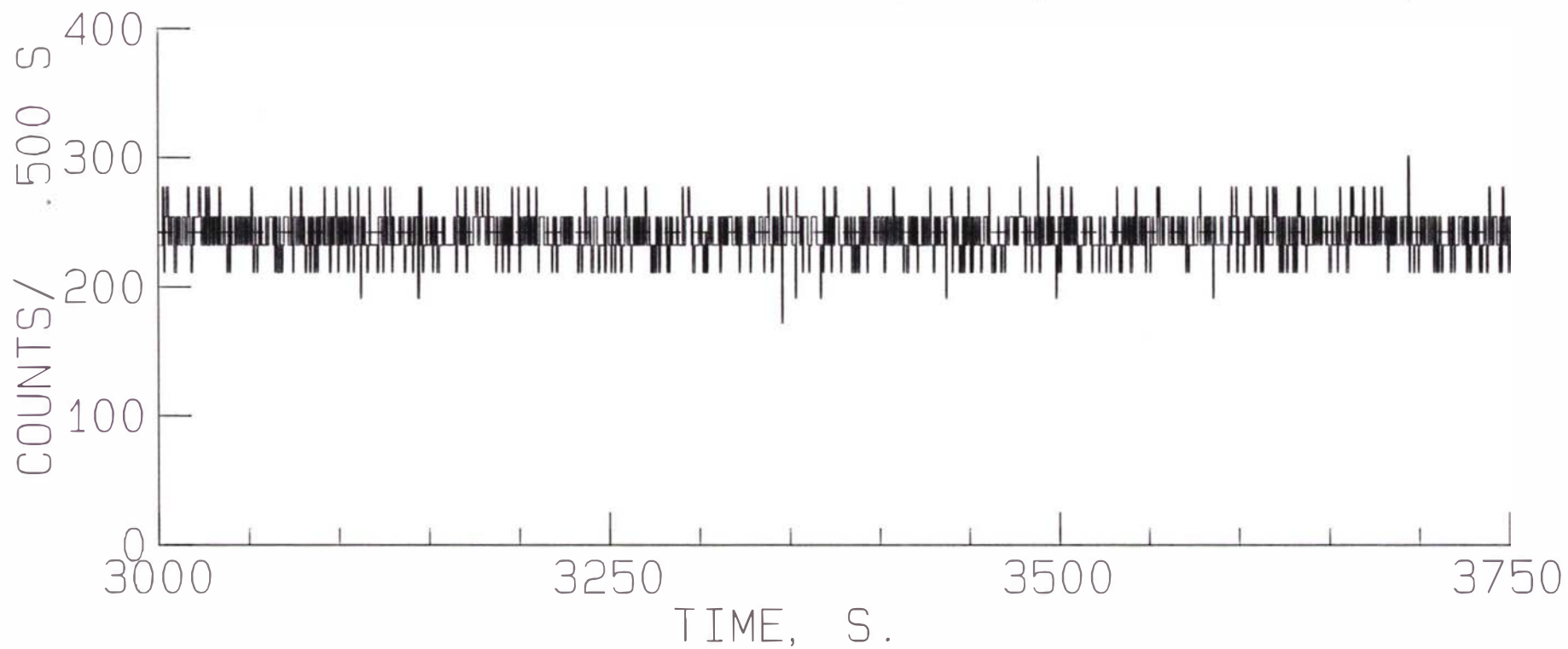
N= 10 M= 1  
>3.0 SIGMA FLUCTUATIONS



ULYSSES RT  
15/ 4/94 59508.473 s  
0- 0 keV

22/ 4/94

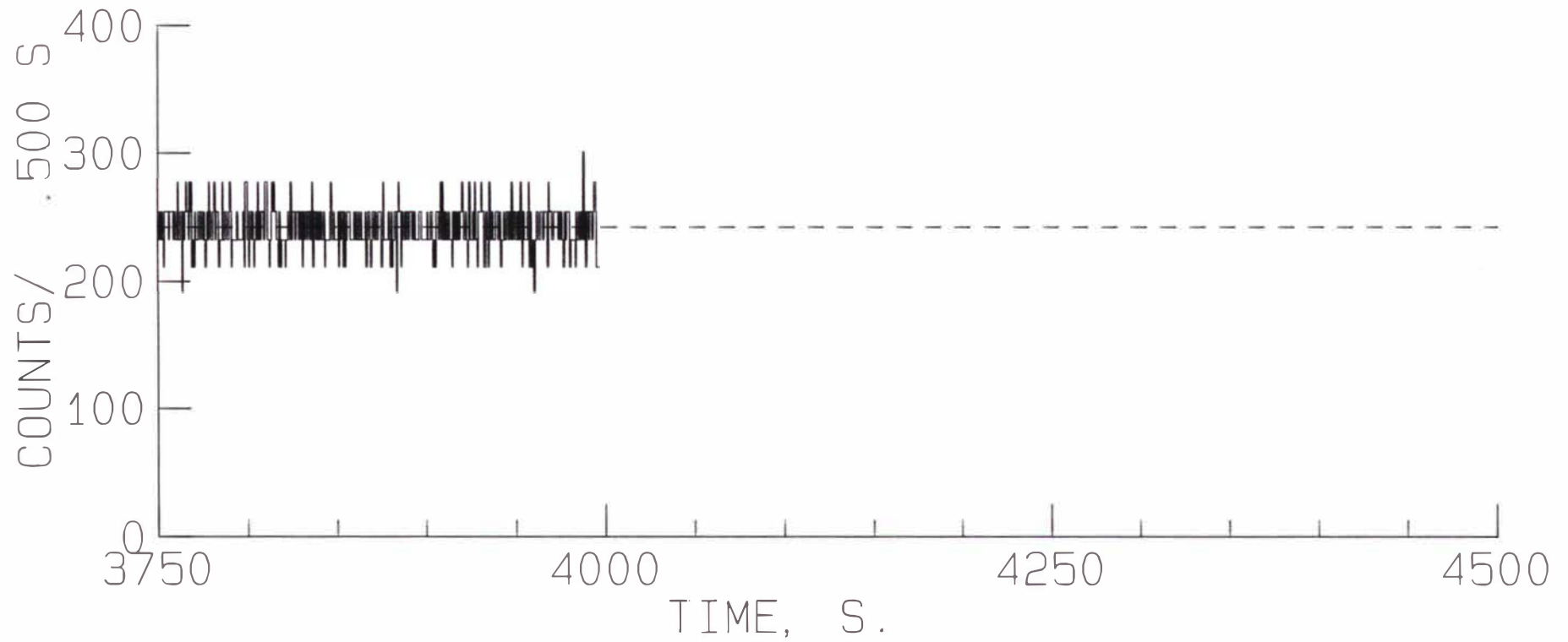
N= 10 M= 1  
>3.0 SIGMA FLUCTUATIONS



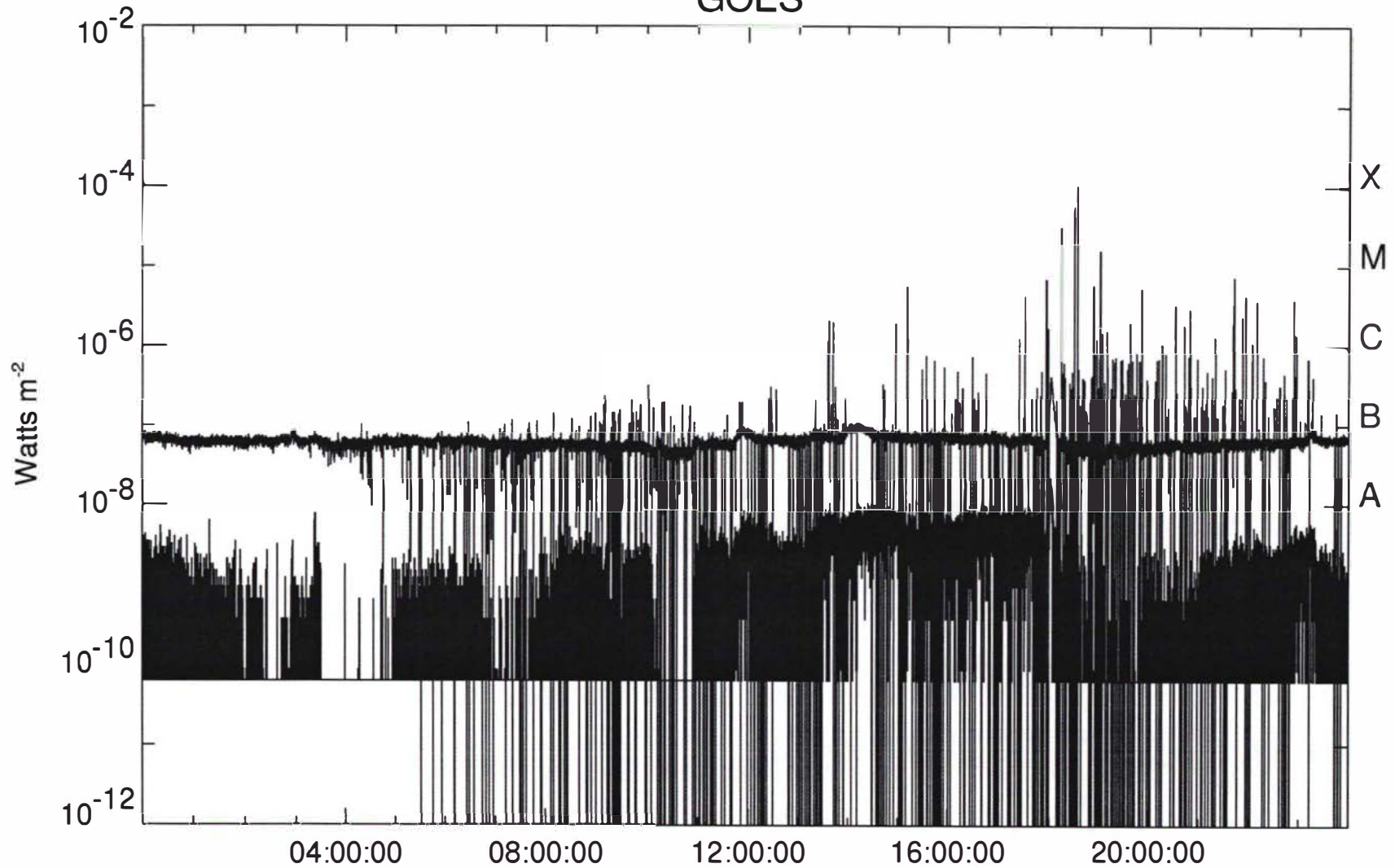
ULYSSES RT  
15/ 4/94 59508.473 s  
0- 0 keV

22/ 4/94

N= 10 M= 1  
>3.0 SIGMA FLUCTUATIONS



# GOES



Data Start: 94/04/15, 0000:00

Plot created: 94/04/29, 1937

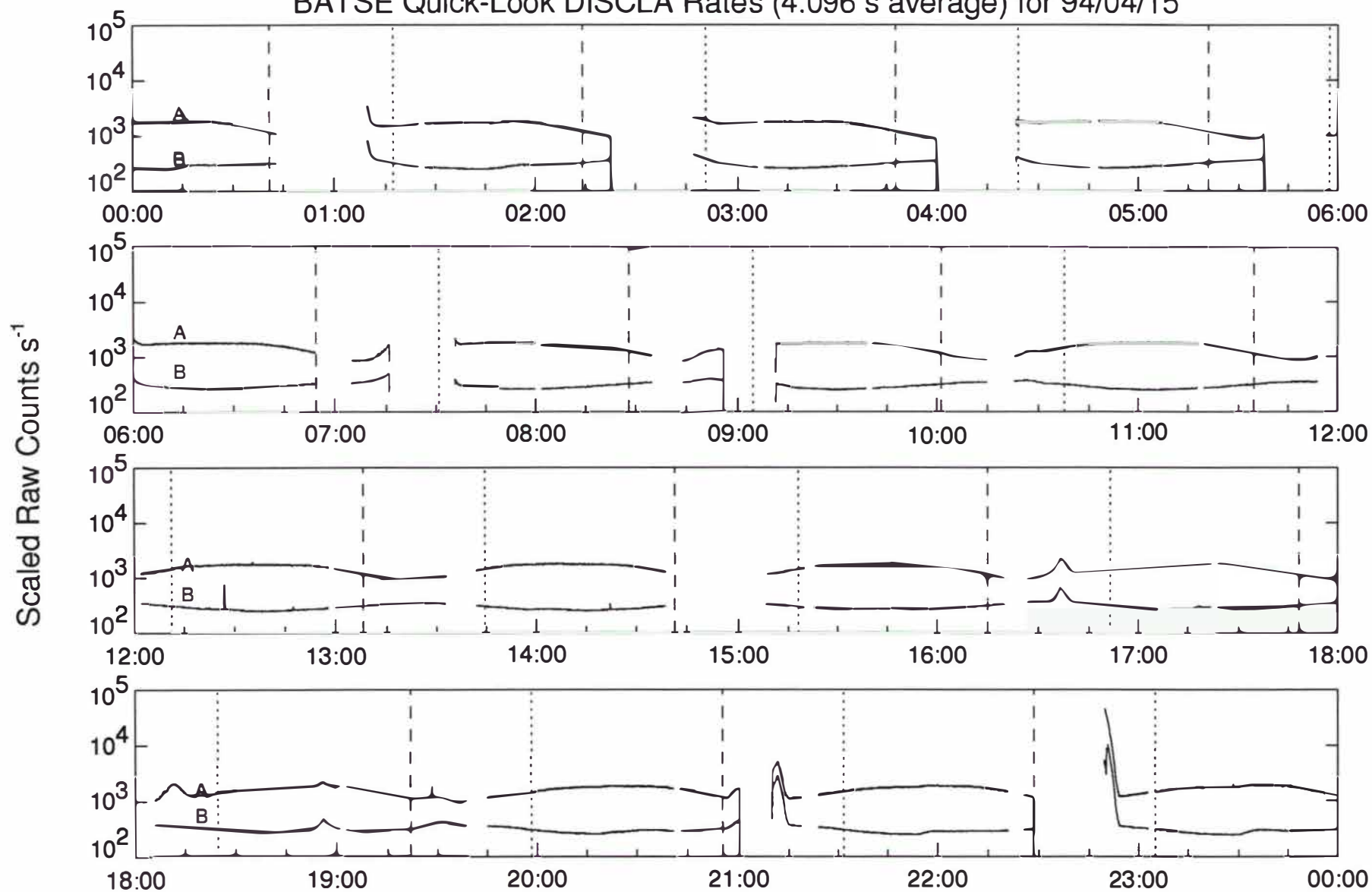
Channel 1 (1.0 - 8.0 Angstroms)

Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/15



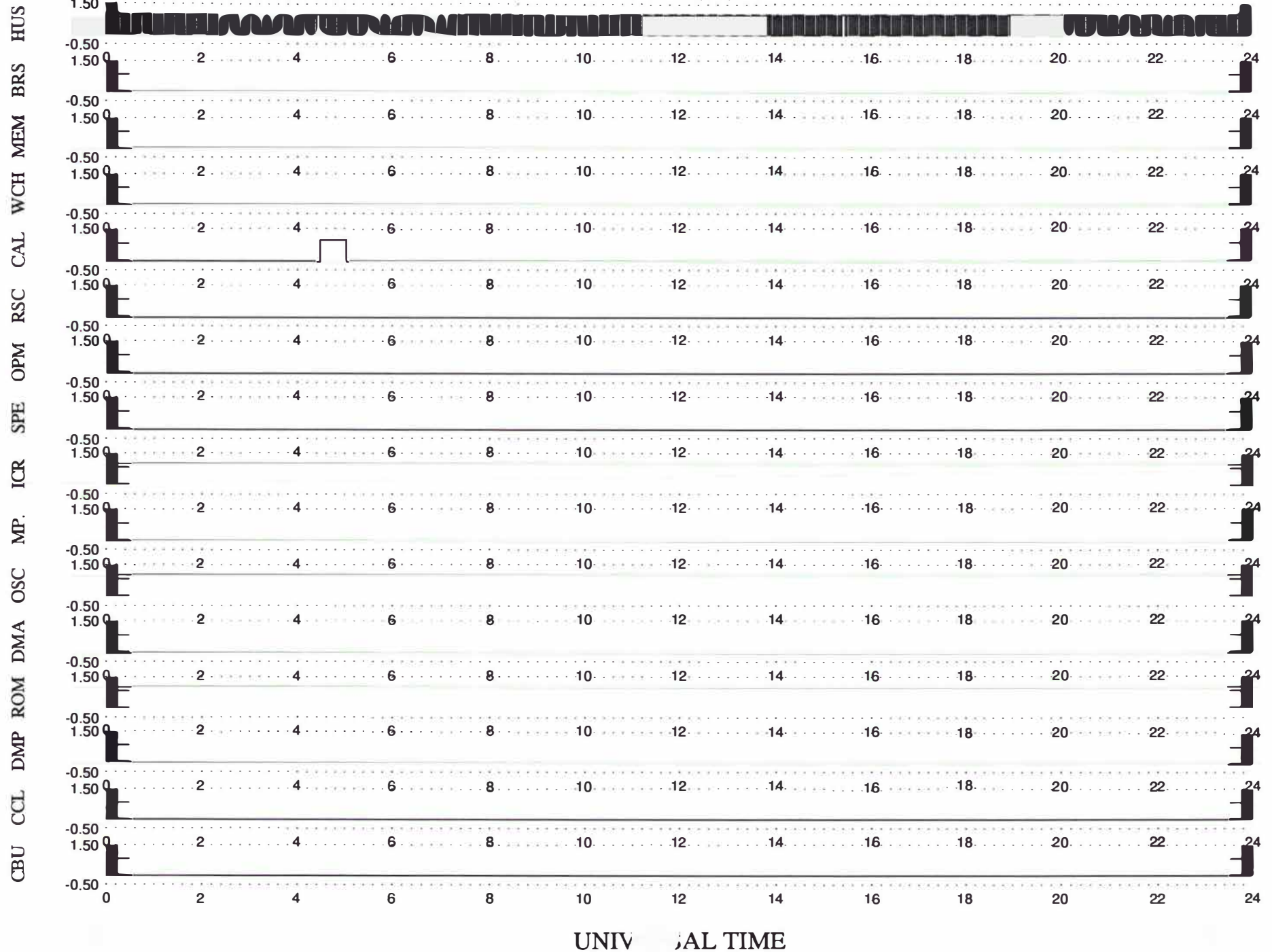
Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

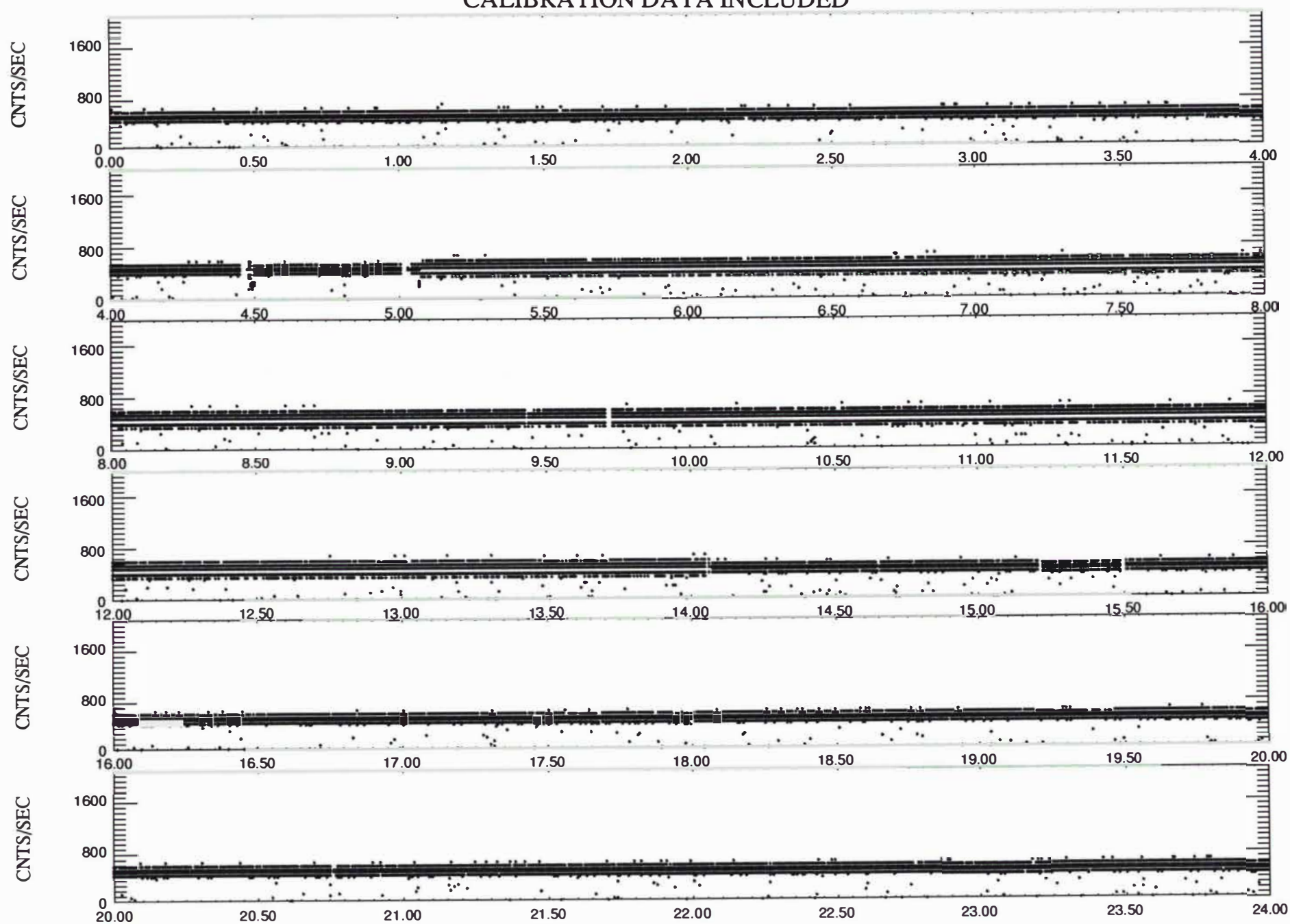
\* Solar Burst Trigger  
 + Solar Flare



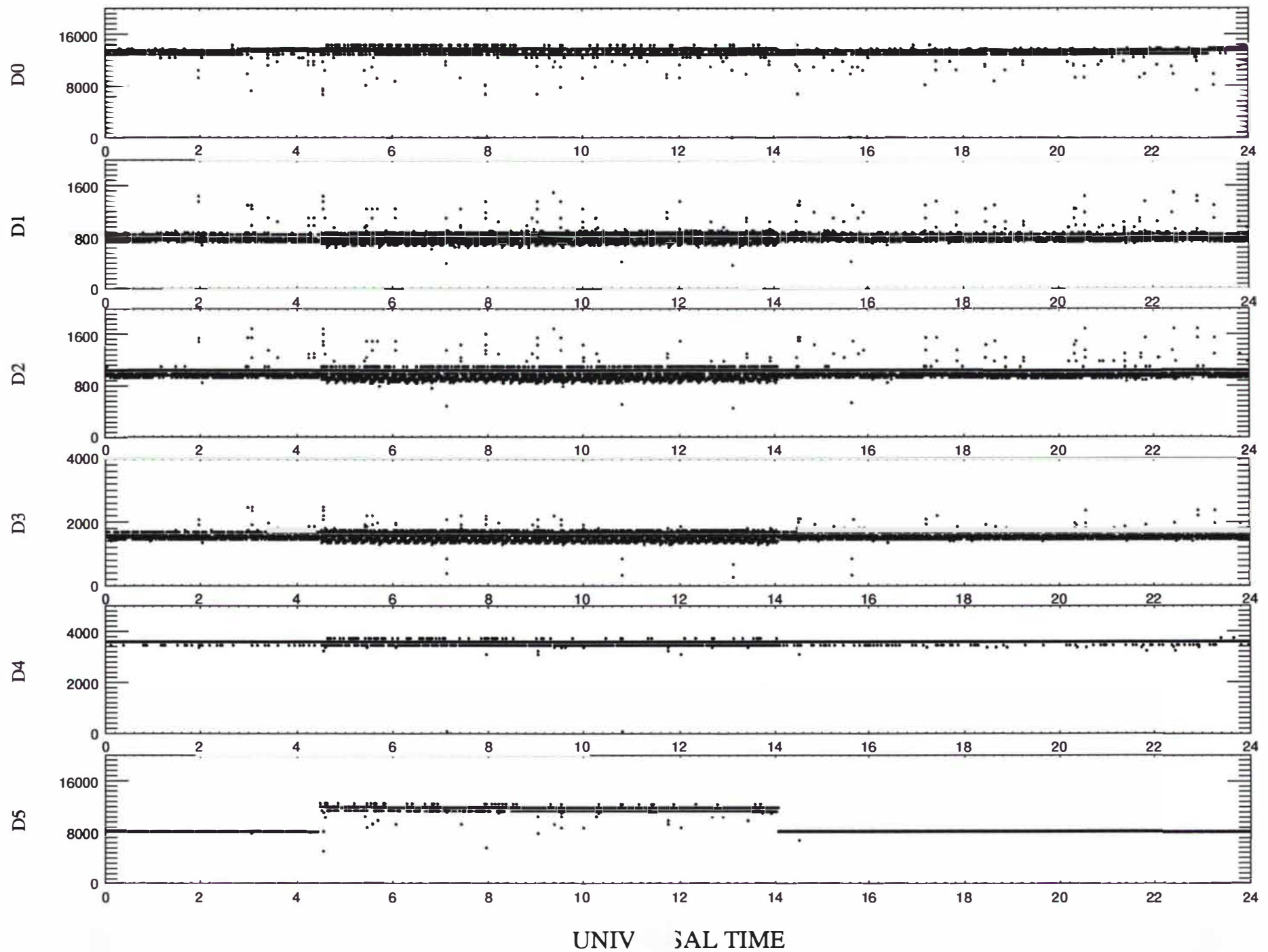
NO BURST (10)



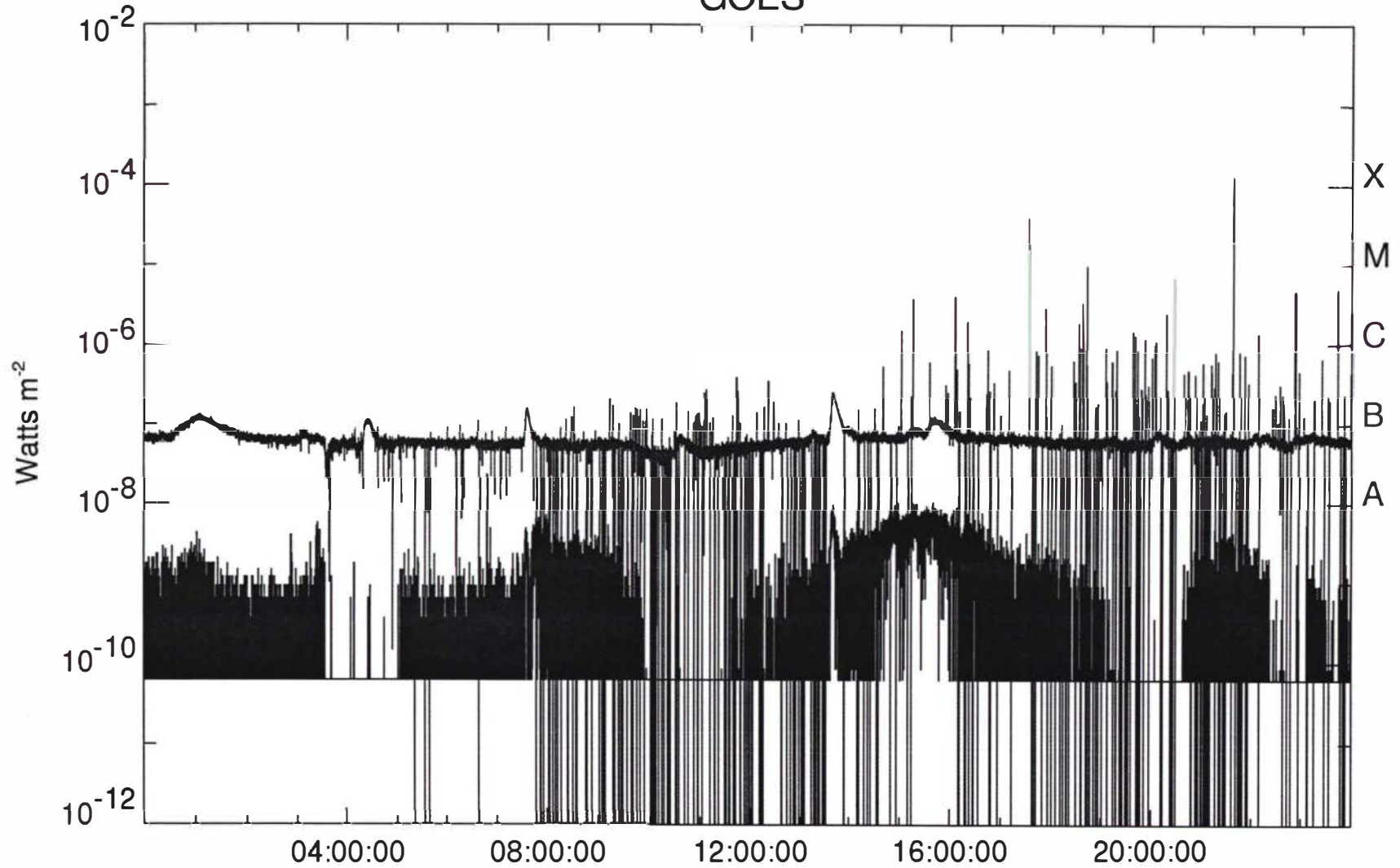
## CALIBRATION DATA INCLUDED



UNIV AL TIME



# GOES



Data Start: 94/04/16, 0000:00

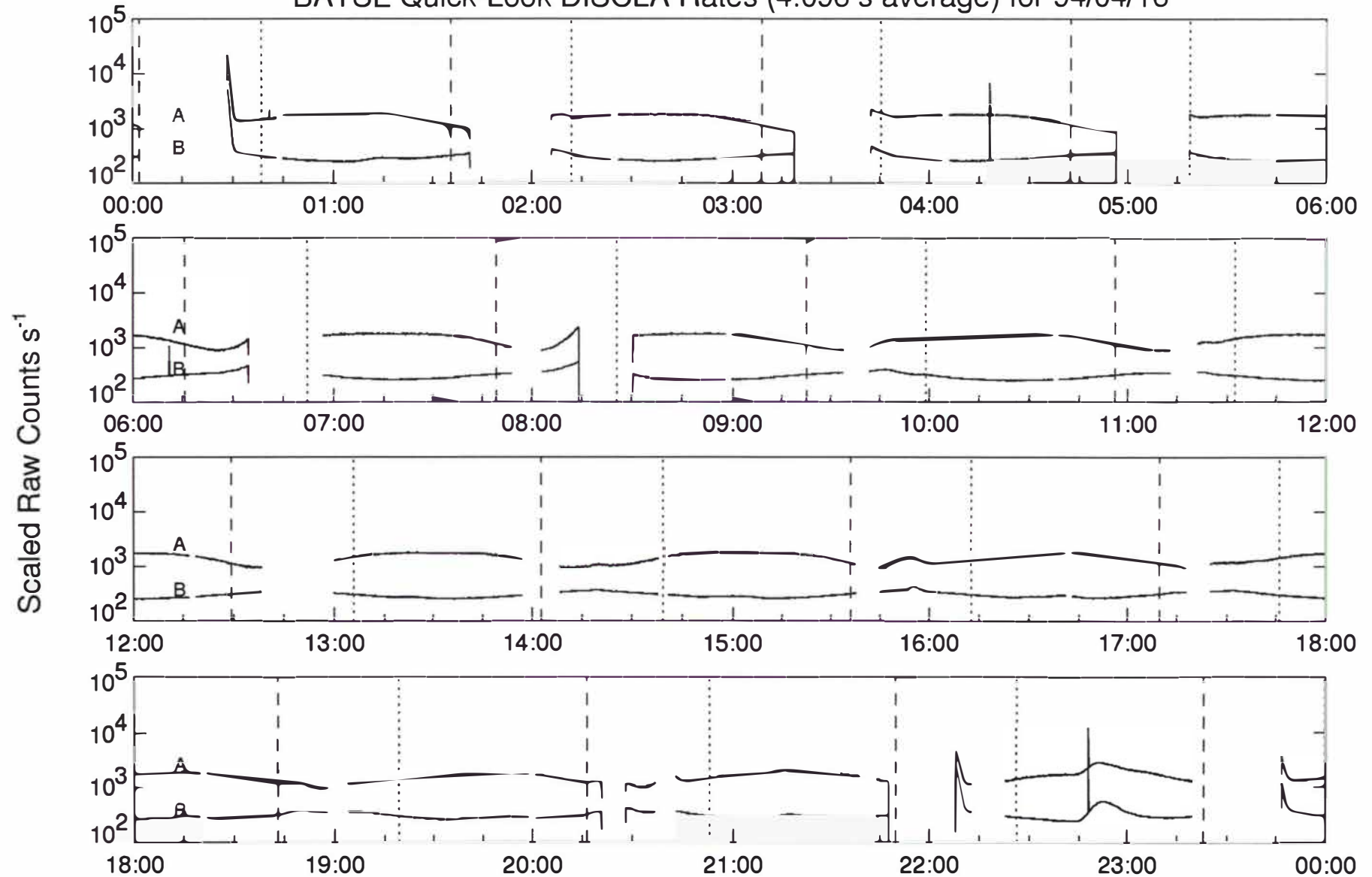
Plot created: 94/04/29, 1937

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

2 (0.5 - 4.0 Angstroms) Background not subtracted



# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/16

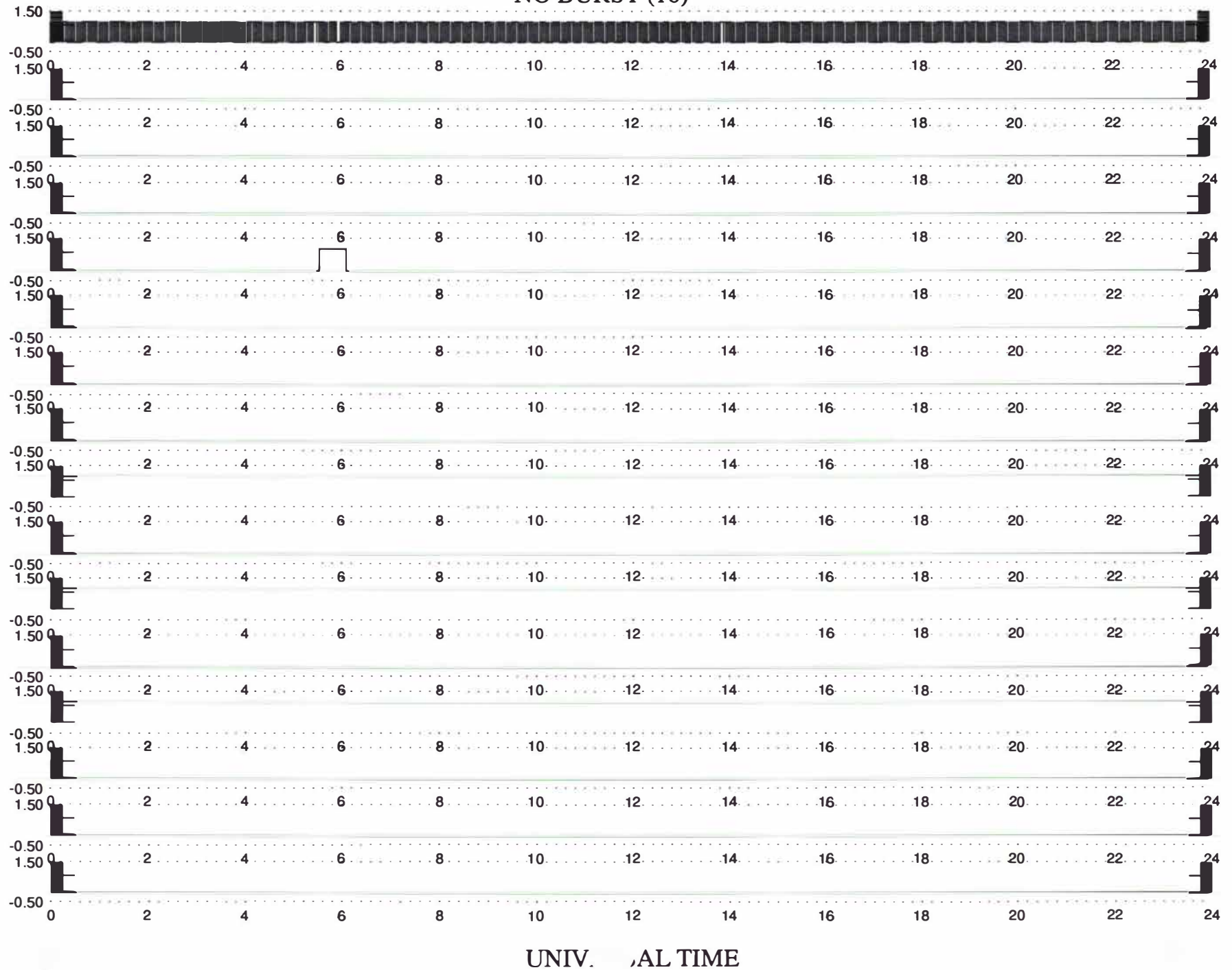


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

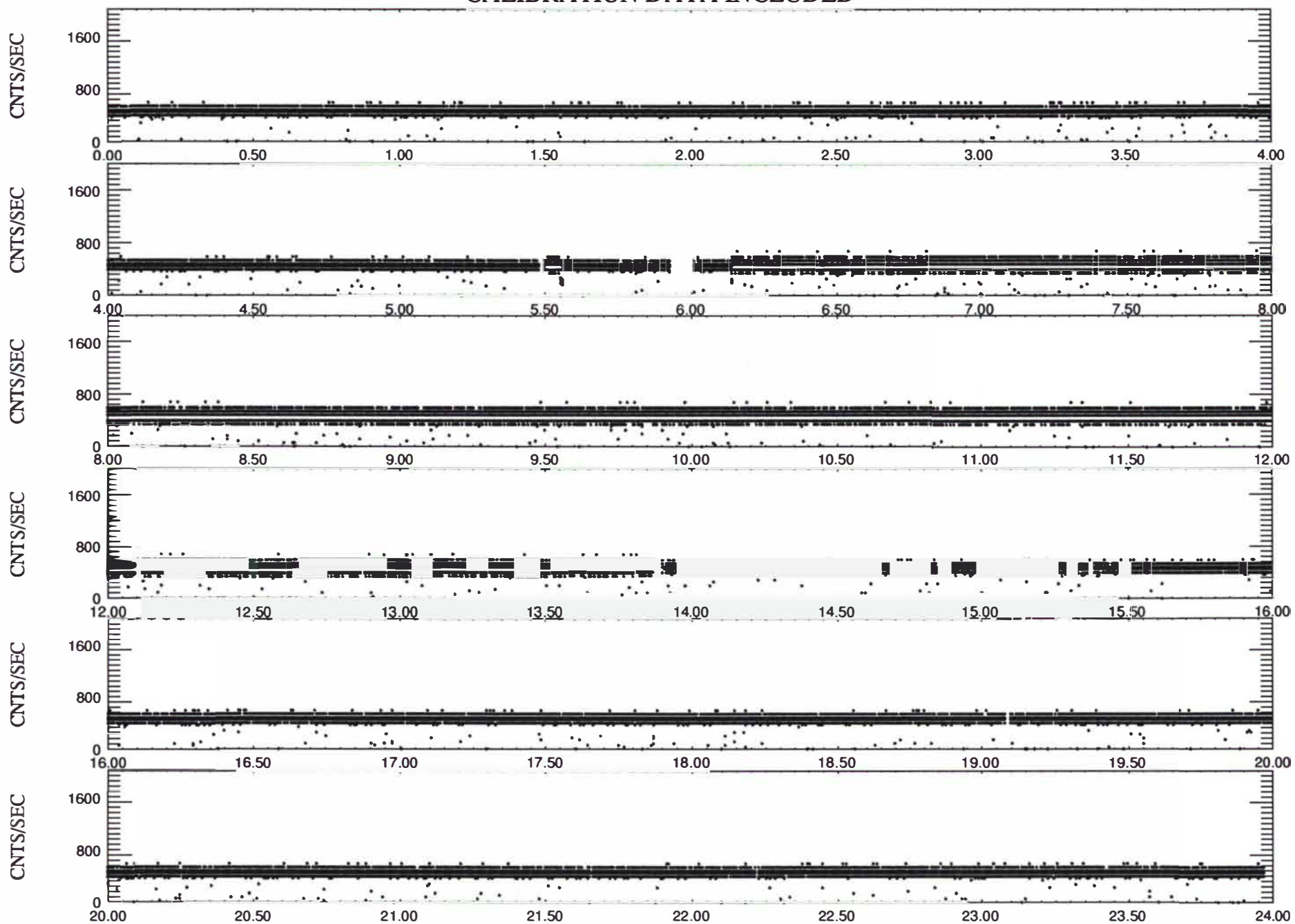
\* Solar Burst Trigger  
 + Solar Flare

CBU CCL DMP ROM DMA OSC MP. ICR SPE OPM RSC CAL WCH MEM BRS HUS

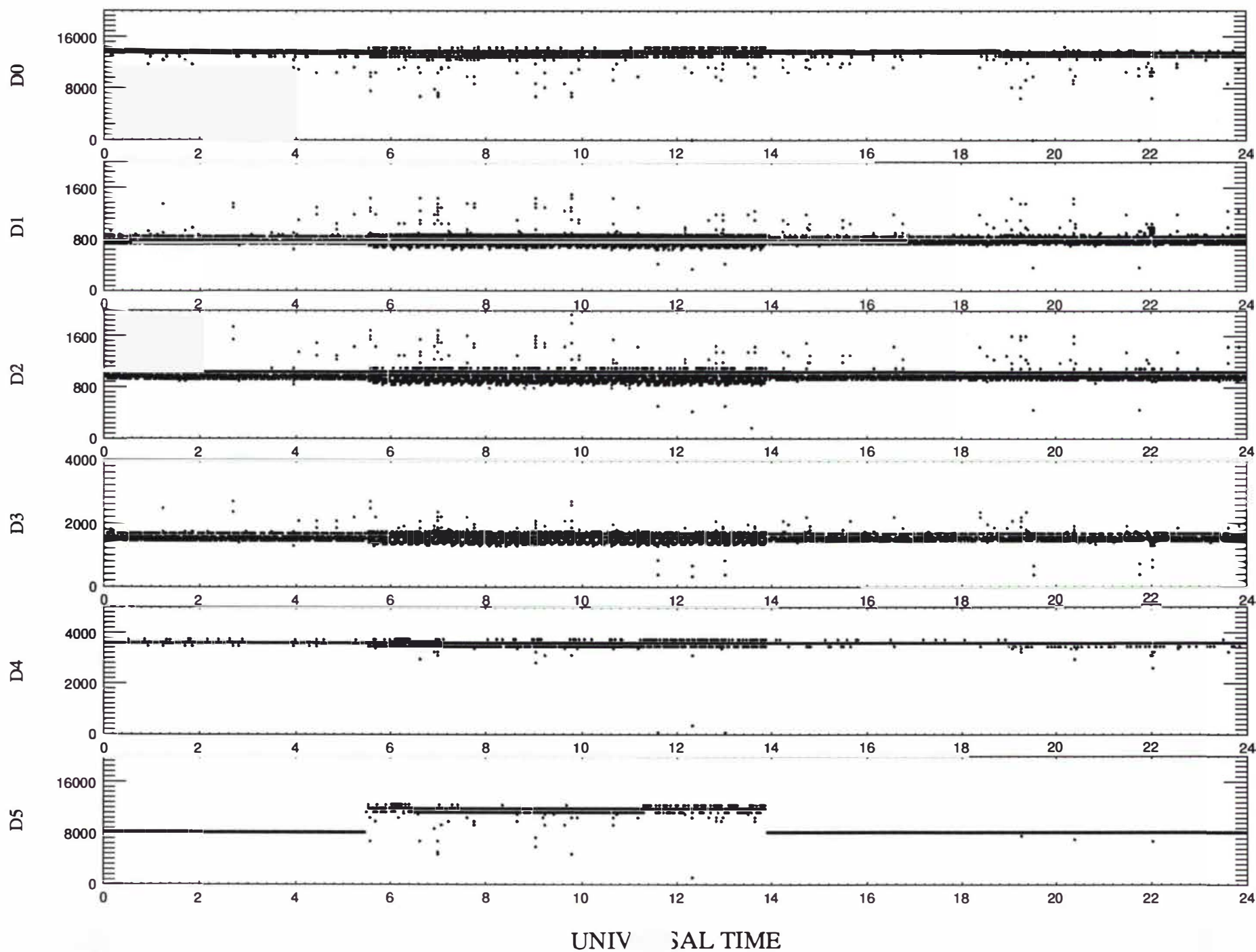




## CALIBRATION DATA INCLUDED



UNIV. AL TIME



## BATSE BURST TRIGGER

NO.: 02934

TIME: TJD=9459 SECONDS=10919

TYPE: PARTICL

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT

## BATSE BURST TRIGGER

NO.: 02935

TIME: TJD=9459 SECONDS=32171

TYPE: PARTICL

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT

## BATSE BURST TRIGGER

NO.: 02936

TIME: TJD=9459 SECONDS=56966

TYPE: PARTICL

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT.

## BATSE BURST TRIGGER

NO.: 02937

TIME: TJD=9459 SECONDS=62708

TYPE: PARTICL

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT.

## BATSE BURST TRIGGER

NO.: 02938

TIME: TJD=9459 SECONDS=70498

TYPE: PARTICL

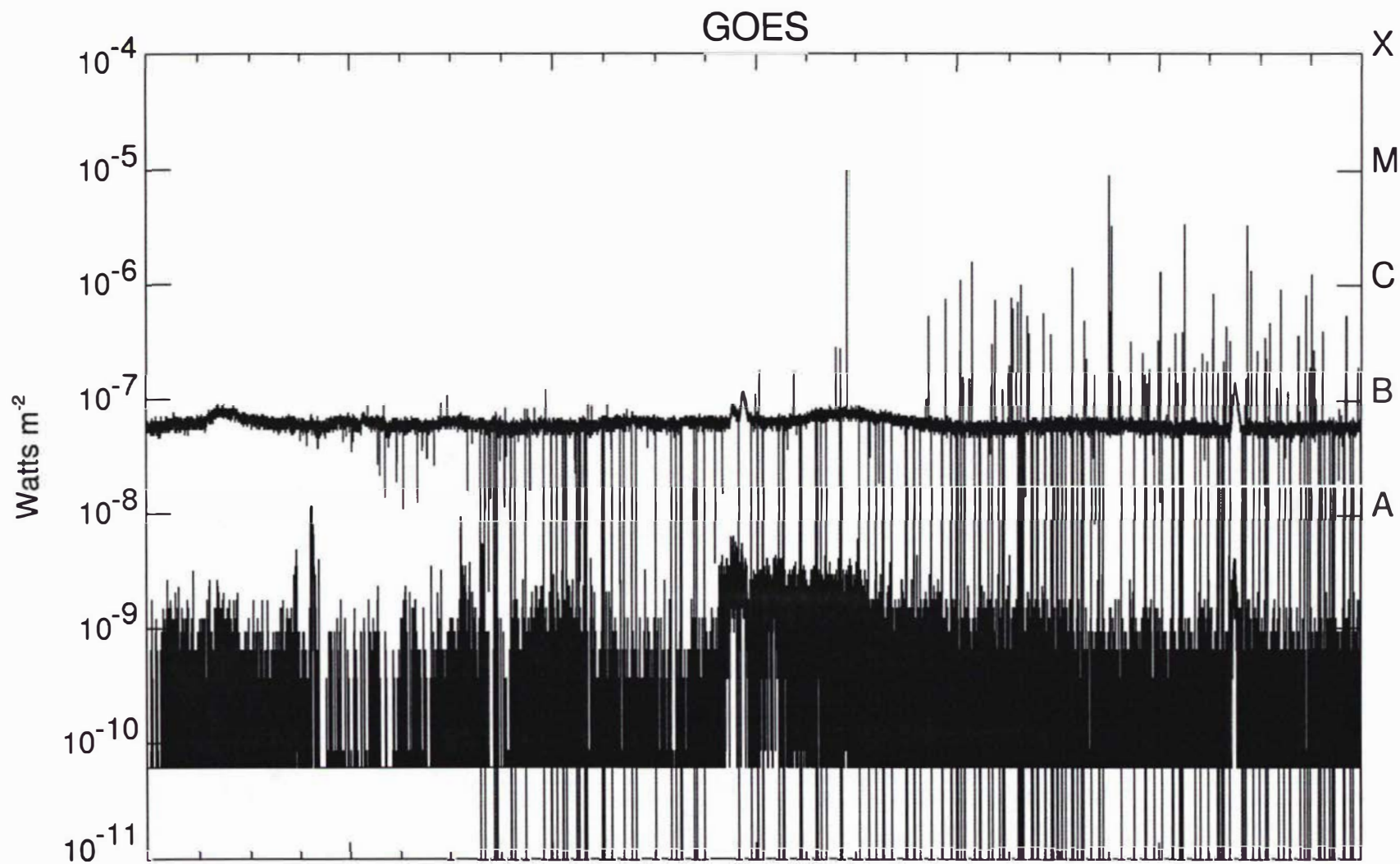
SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
PARTICLE EVENT.



Data Start: 94/04/17, 0000:02

Plot created: 94/04/29, 1937

Channel

1 (1.0 - 8.0 Angstroms)

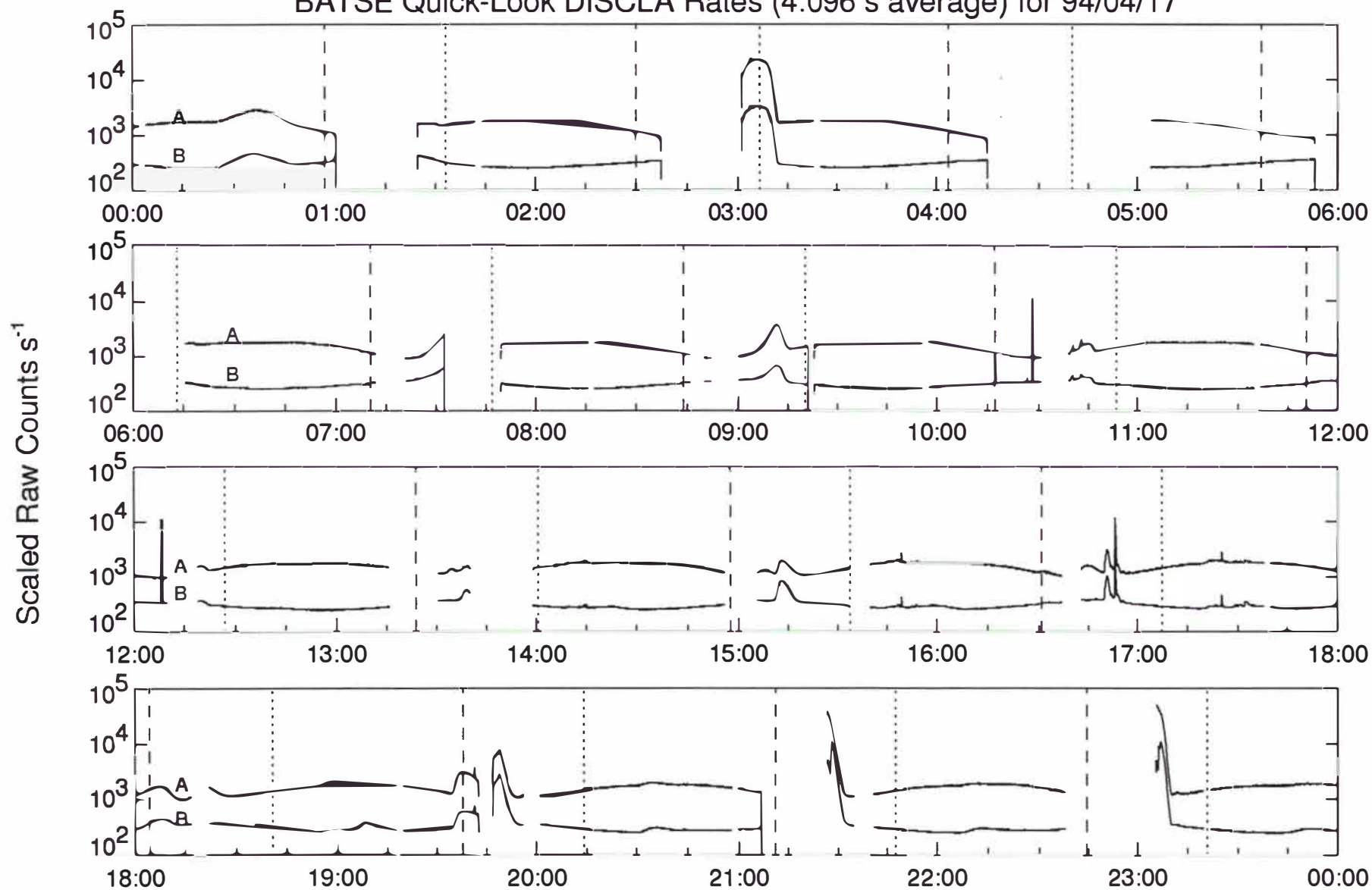
Background not subtracted

2 (0.5 - 4.0 Angstroms)

Background not subtracted



# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/17

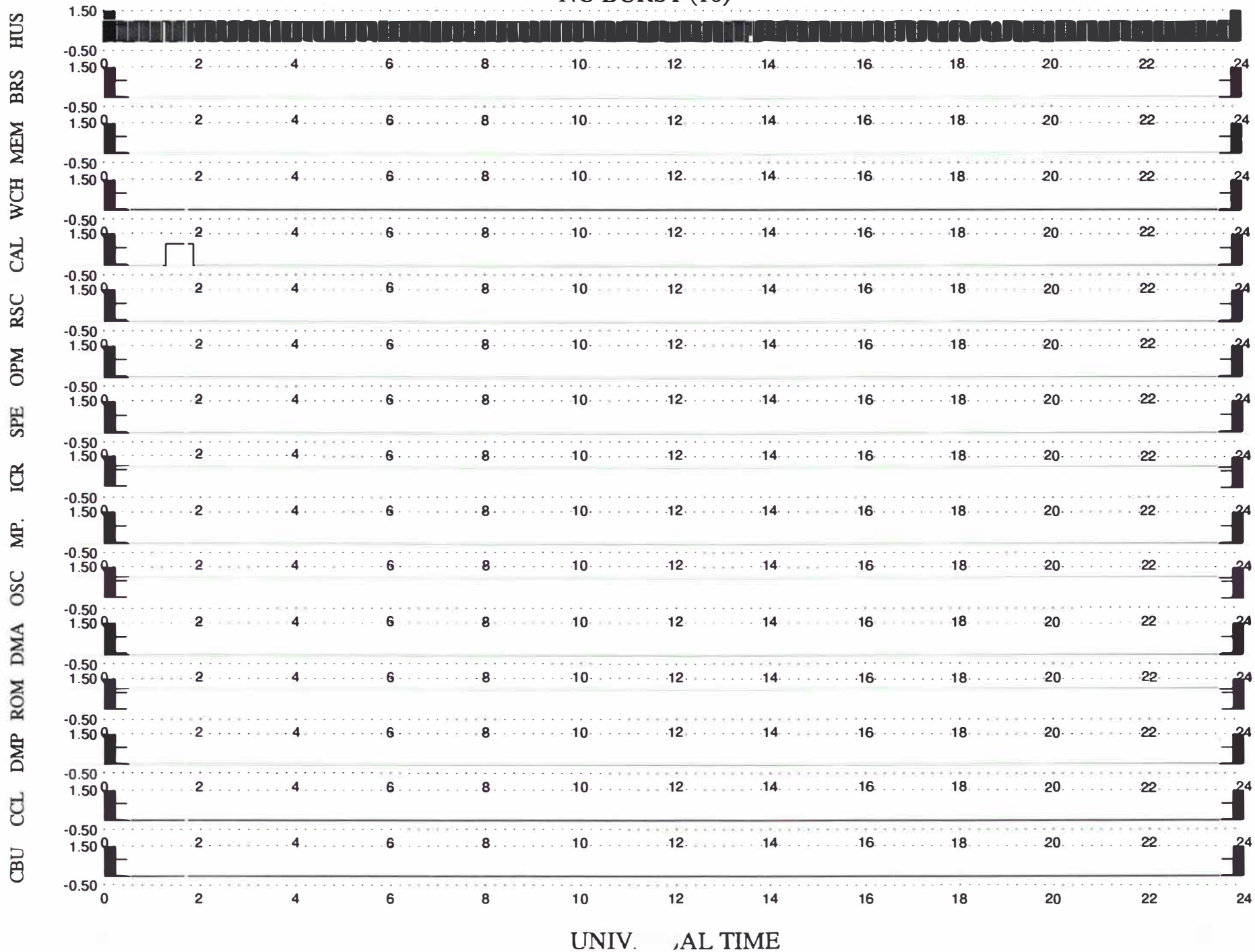


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

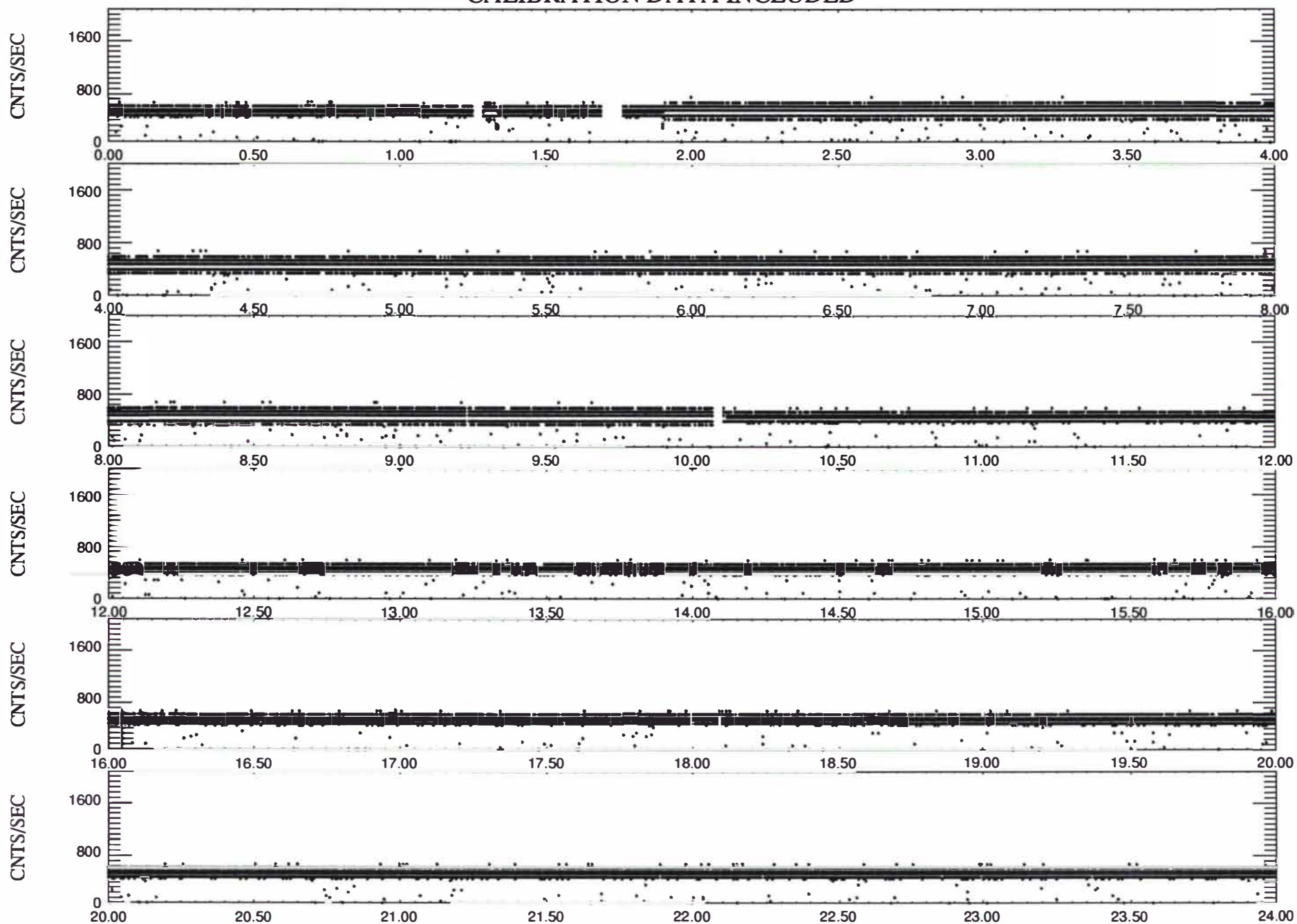
\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)

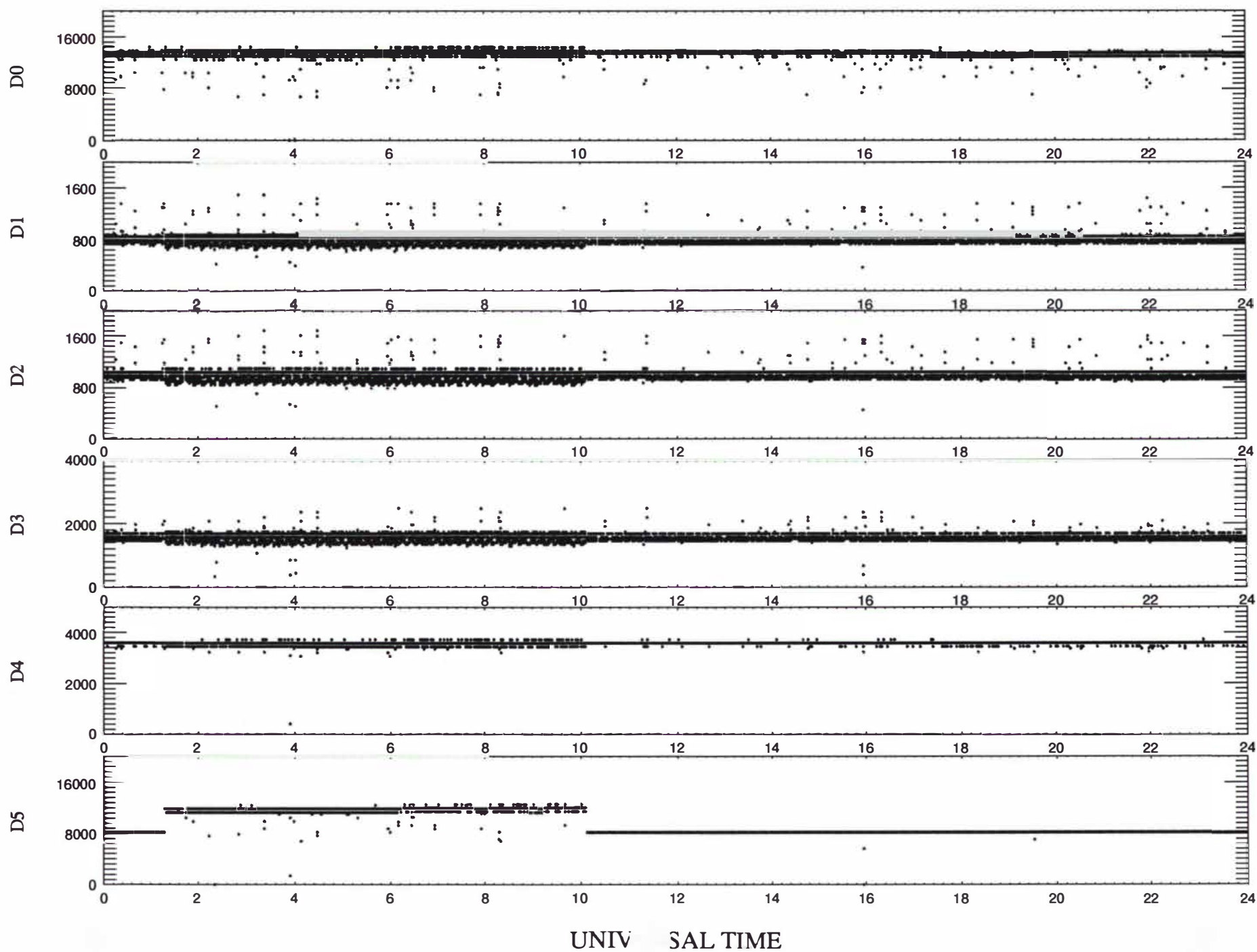


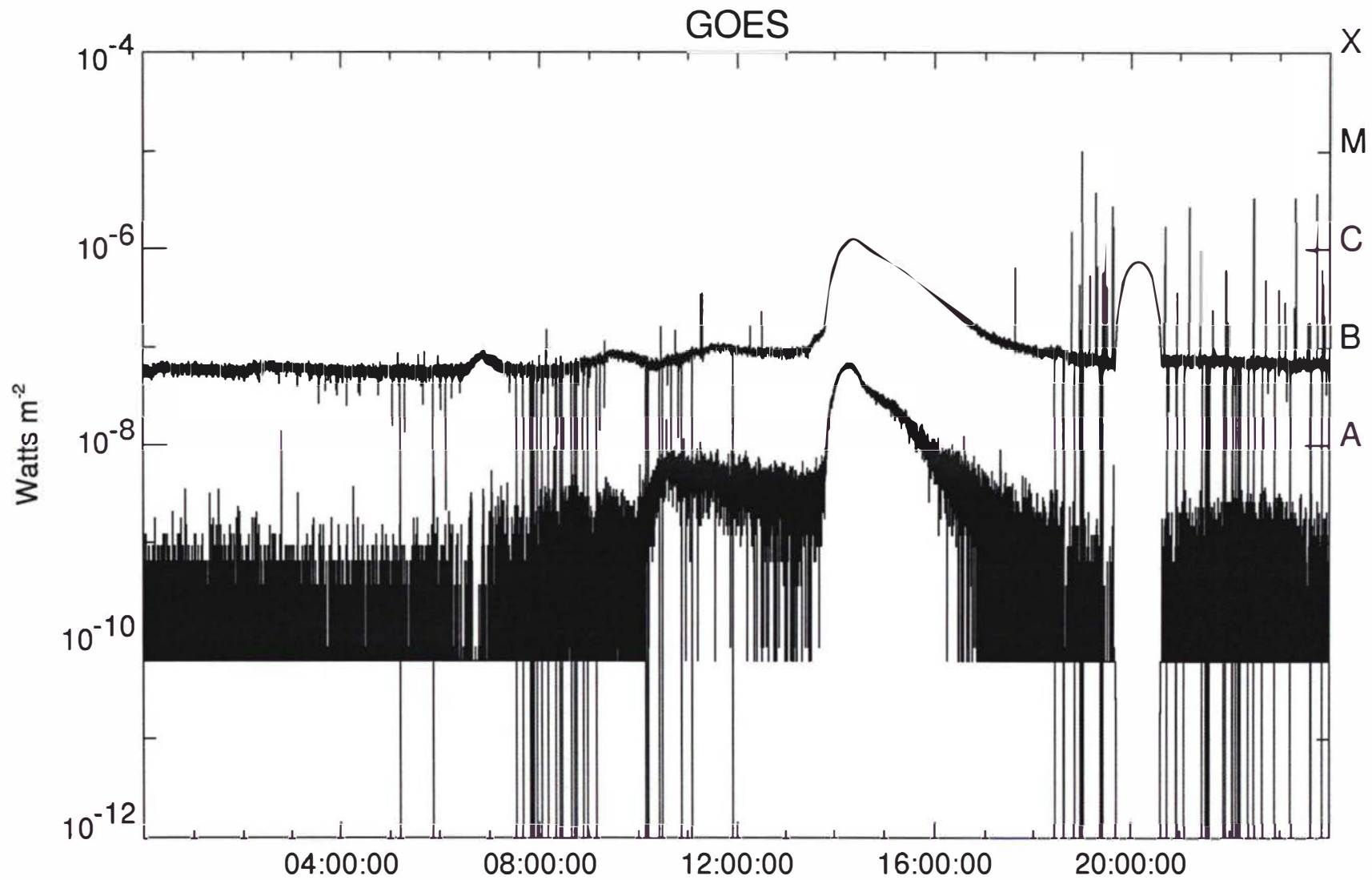


## CALIBRATION DATA INCLUDED



UNIV AL TIME





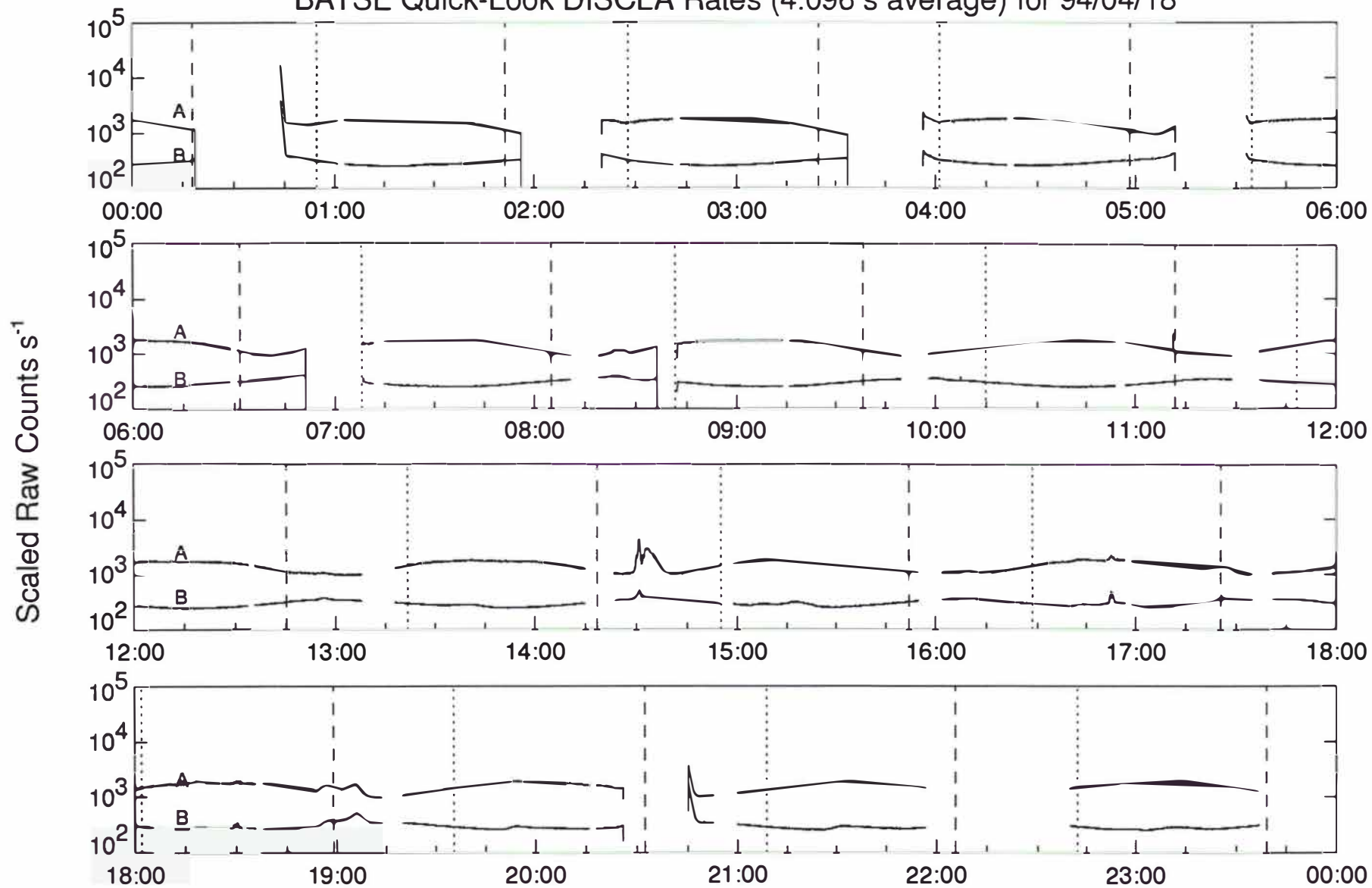
Data Start: 94/04/18, 0000:02

Plot created: 94/04/29, 1938

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/18



Current Time: 94/04/29, 1859 EDT

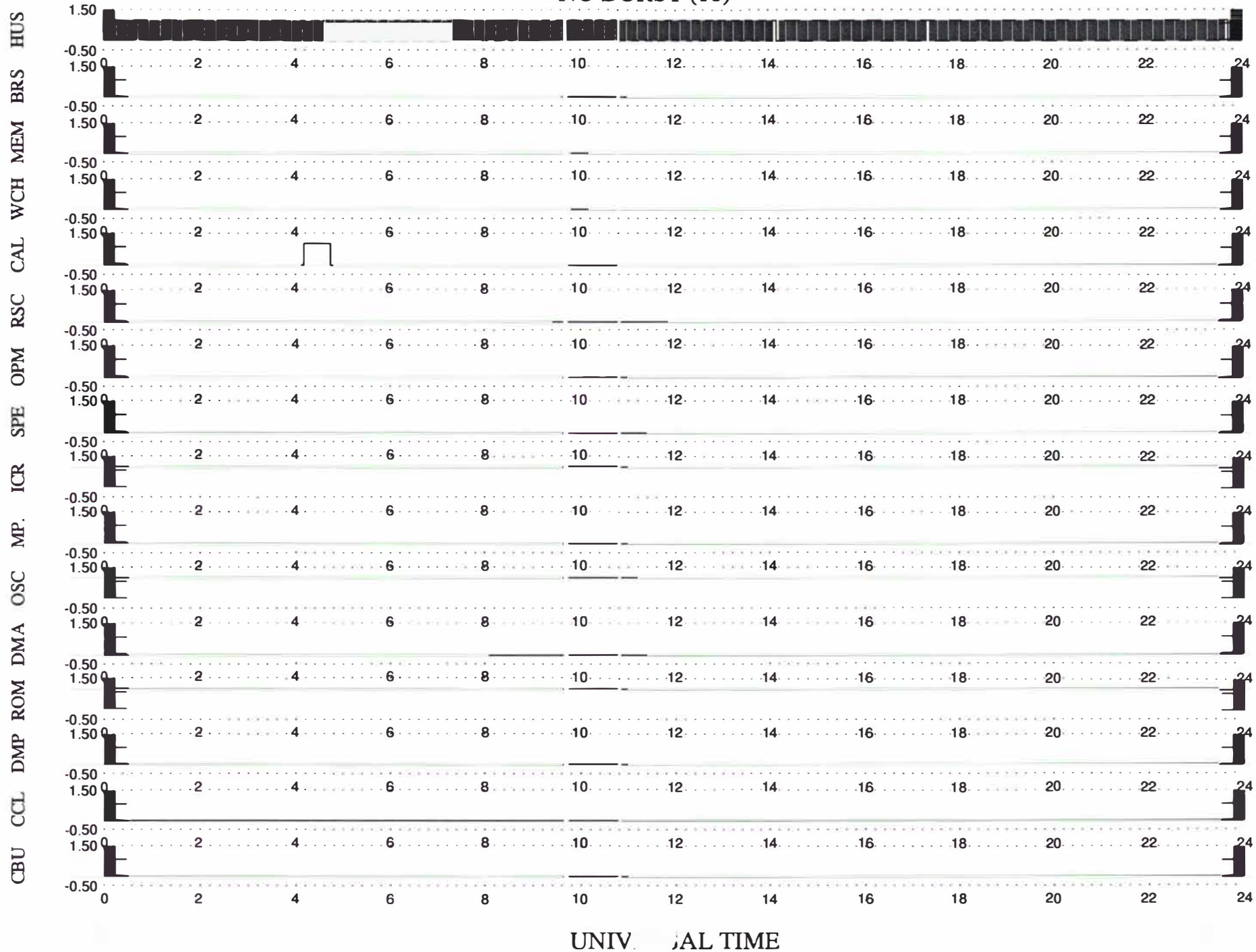
A: Channel 1 Most Sunward LAD

B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
Dashed line: Night entry

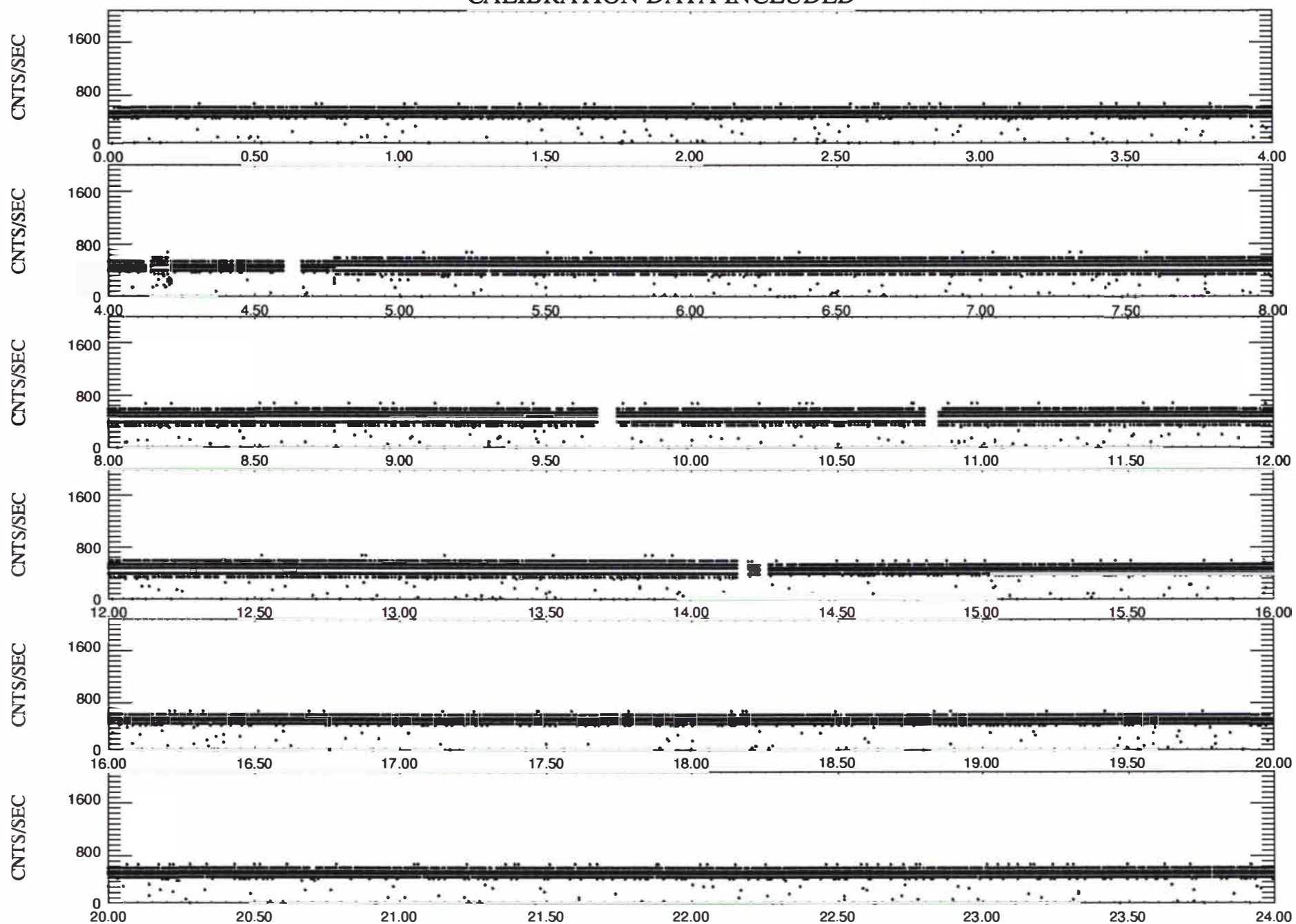
\* Solar Burst Trigger  
+ Solar Flare

## NO BURST (10)



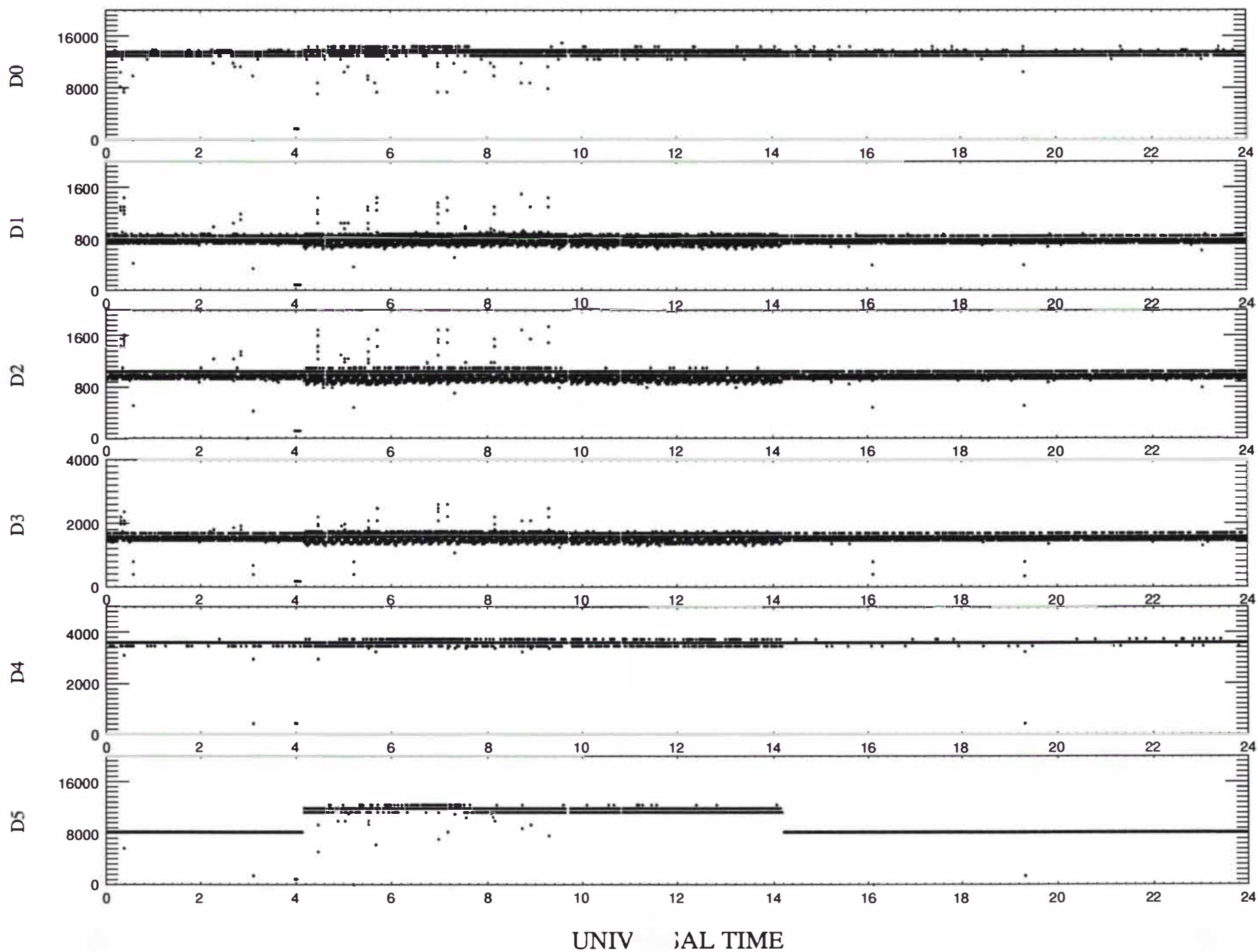


## CALIBRATION DATA INCLUDED



UNIV CAL TIME





From SHARIFF@ssl.msfc.nasa.gov Thu Apr 21 10:18 PDT 1994  
Date: Thu, 21 Apr 1994 11:39:07 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2939  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2939  
EVENT OF 1994 APR 19 DAY OF YEAR=109  
EVENT CROSSING TIME AT BATSE : 52769. S. OR 14:39:29.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 107.000 51.000  
BATSE PEAK COUNTING RATE: 7000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 19/ 4/ 94 IS:  
RA= 121.408 DEC= -46.161 DIST= 2.901 AU  
BATSE-ULYSSES DISTANCE = 433945162. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 82.05 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 200.29 SECS.  
CROSSING TIME AT ULYSSES IS 52969. S. OR 14:42:49 +/- 301.93 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 19/ 4/ 94 IS:  
RA= 3.441 DEC= 0.359 DIST= 2.221 AU  
MARS-BATSE DISTANCE = 332251968. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 81.80 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 158.11 SECS.  
CROSSING TIME AT MARS IS 52927. S. OR 14:42:07 +/- 192.85 SECONDS

RI

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2939    | 940419 | 9461 | 52769 | 7000     | 107 | +51 |

#### BATSE BURST TRIGGER

NO.: 02939

TIME: TJD=9461 SECONDS=52769

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=041.6 AZIMUTH=320.2 ERROR= DEGREES

#### COMMENTS:

BURST, SINGLE PULSE, FAST RISE, EXPONENTIAL DECAY, LASTING ~55 SECONDS.  
VISIBLE ABOVE 300KEV.

Date: Nov 4 '97

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

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

#### 2. BATSE Data

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

#### 3. PVO Data

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

- ☒ ACCESS database updated? *All rebinnings up to 16s tried, but there are too many maxima+minima in the curve, and no way to choose between them. If the uncertainty were increased to  $\sim 10$  s, the annulus width would be  $\sim 10$*

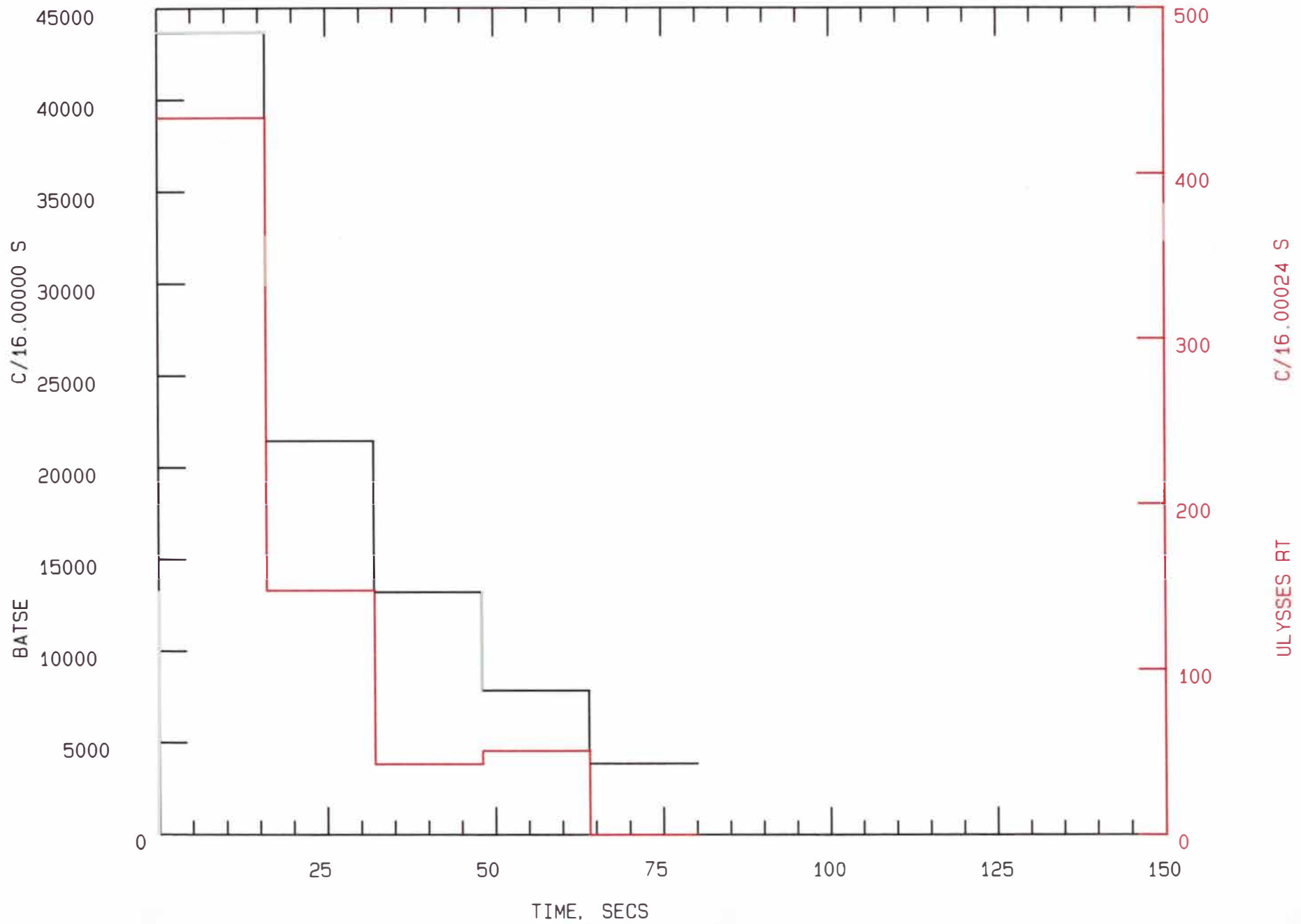
BATSE

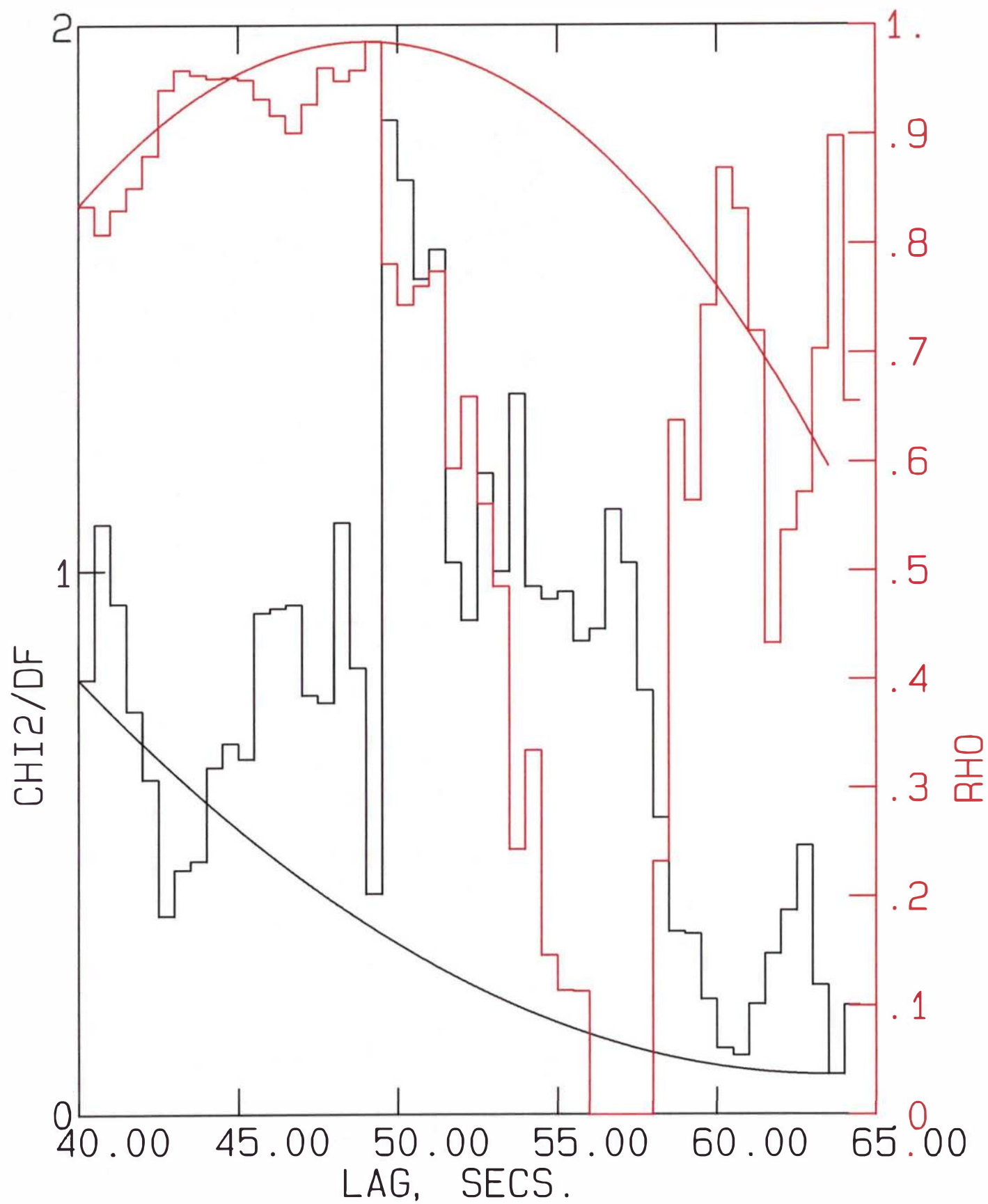
-ULYSSES RT CORRELATION

19/ 4/94

52769.434

4/11/97





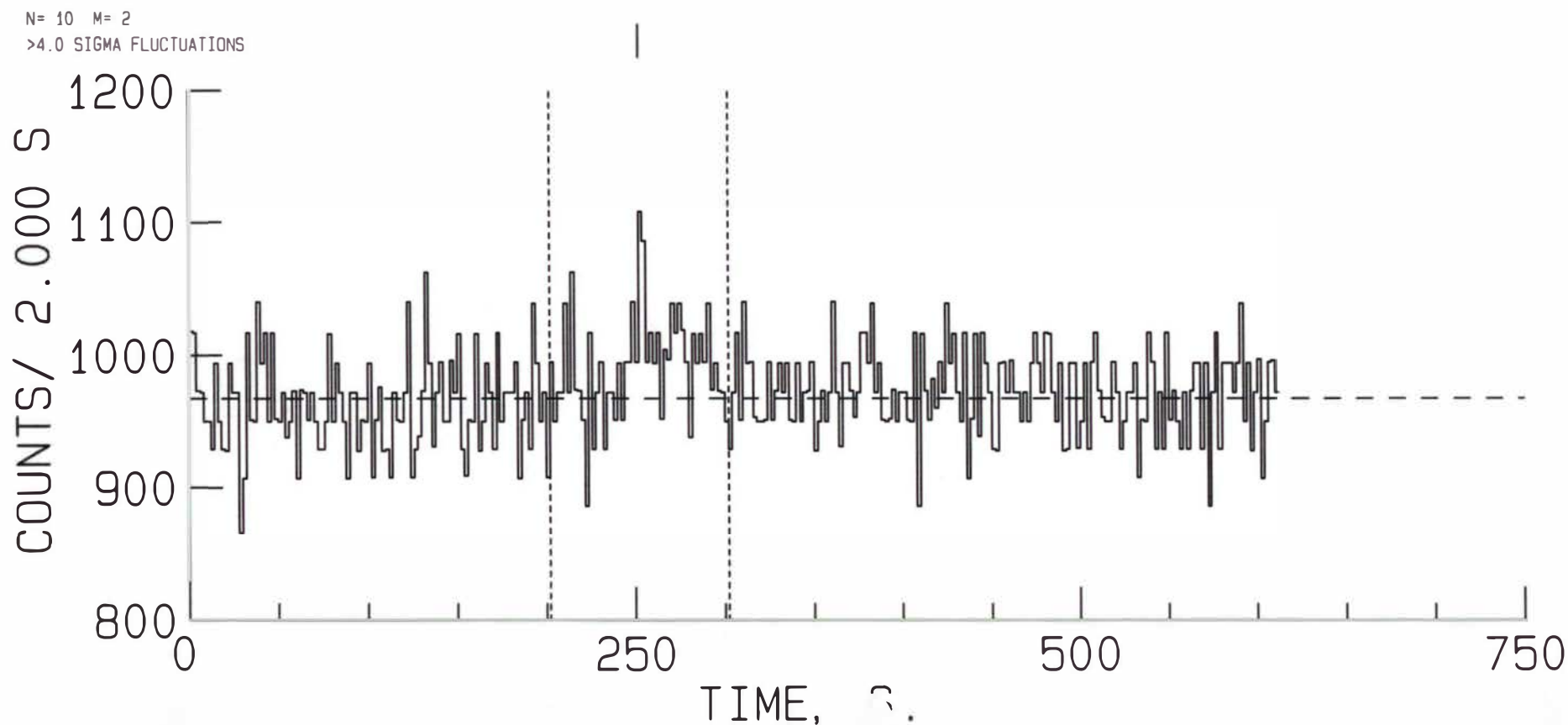
ULYSSES RT

4 / 1 1 / 97

19/ 4/94 52668.378 s

0.500 S INTERVALS REGROUPED BY 4

22- 148 keV





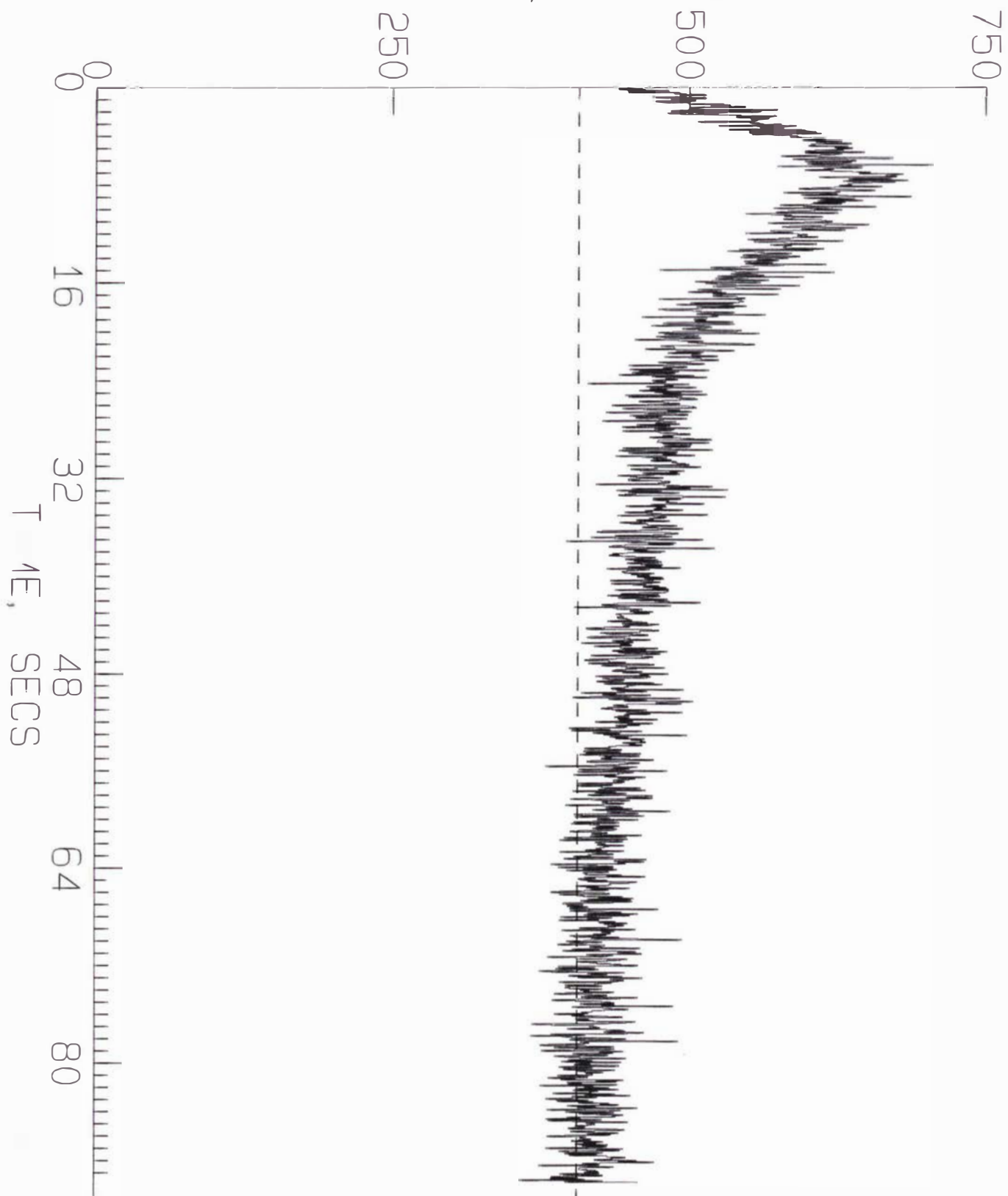
BATSE

19/04/94

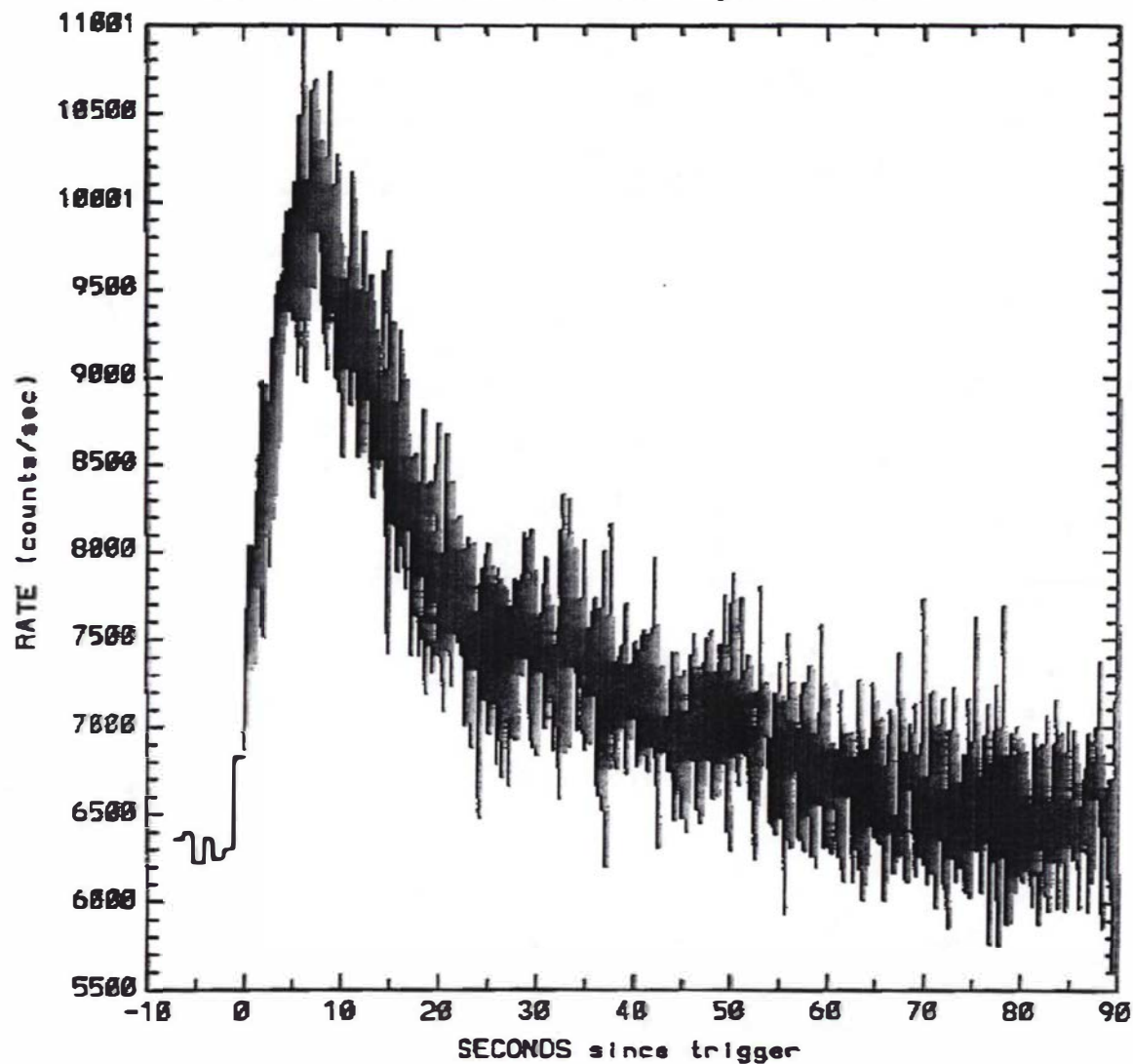
52769.434

15- 100 keV

COUNTS/ .064 S



## DISCSC Data for K. Hurley, No. 2939



28-OCT-1994 11:23:34

Created by MOPS 80  
(Burst Display)  
Version 2.22

Trigger #: 2939

Trigger Time:  
9461 / 52769.434Burst Data Type:  
DISCSCDeadtime  
Corrected: K  
Background Data  
Type: PREB + DISCLA  
Minimum Integ. Time:  
0.064 secondsDetectors [7..8]:  
-----2-8Discriminators:  
[1, 2]Quality Mask:  
BDISP1

From SHARIFF@ssl.msfc.nasa.gov Thu Apr 21 10:20 PDT 1994  
Date: Thu, 21 Apr 1994 11:40:39 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2940  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2940  
EVENT OF 1994 APR 19 DAY OF YEAR=109  
EVENT CROSSING TIME AT BATSE : 69058. S. OR 19:10:58.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 354.000 -44.000  
BATSE PEAK COUNTING RATE: 15000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 19/ 4/ 94 IS:  
RA= 121.373 DEC= -46.126 DIST= 2.901 AU  
BATSE-ULYSSES DISTANCE = 434010326. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=101.43 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -286.83 SECS.  
CROSSING TIME AT ULYSSES IS 68771. S. OR 19:06:11 +/- 292.01 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 19/ 4/ 94 IS:  
RA= 3.441 DEC= 0.359 DIST= 2.221 AU  
MARS-BATSE DISTANCE = 332251968. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=134.85 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -781.58 SECS.  
CROSSING TIME AT MARS IS 68276. S. OR 18:57:56 +/- 124.55 SECONDS

ZI

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2940    | 940419 | 9461 | 69058 | 15000    | 354 | -44 |

#### BATSE BURST TRIGGER

NO.: 02940

TIME: TJD=9461 SECONDS=69058

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=077.3 AZIMUTH=305.5 ERROR= DEGREES

#### COMMENTS:

BURST, 2 PEAKS, LASTING ~65 SECONDS. VISIBLE ABOVE 300KEV.

*Helio corr removed*

Date: Jan 27 '98

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

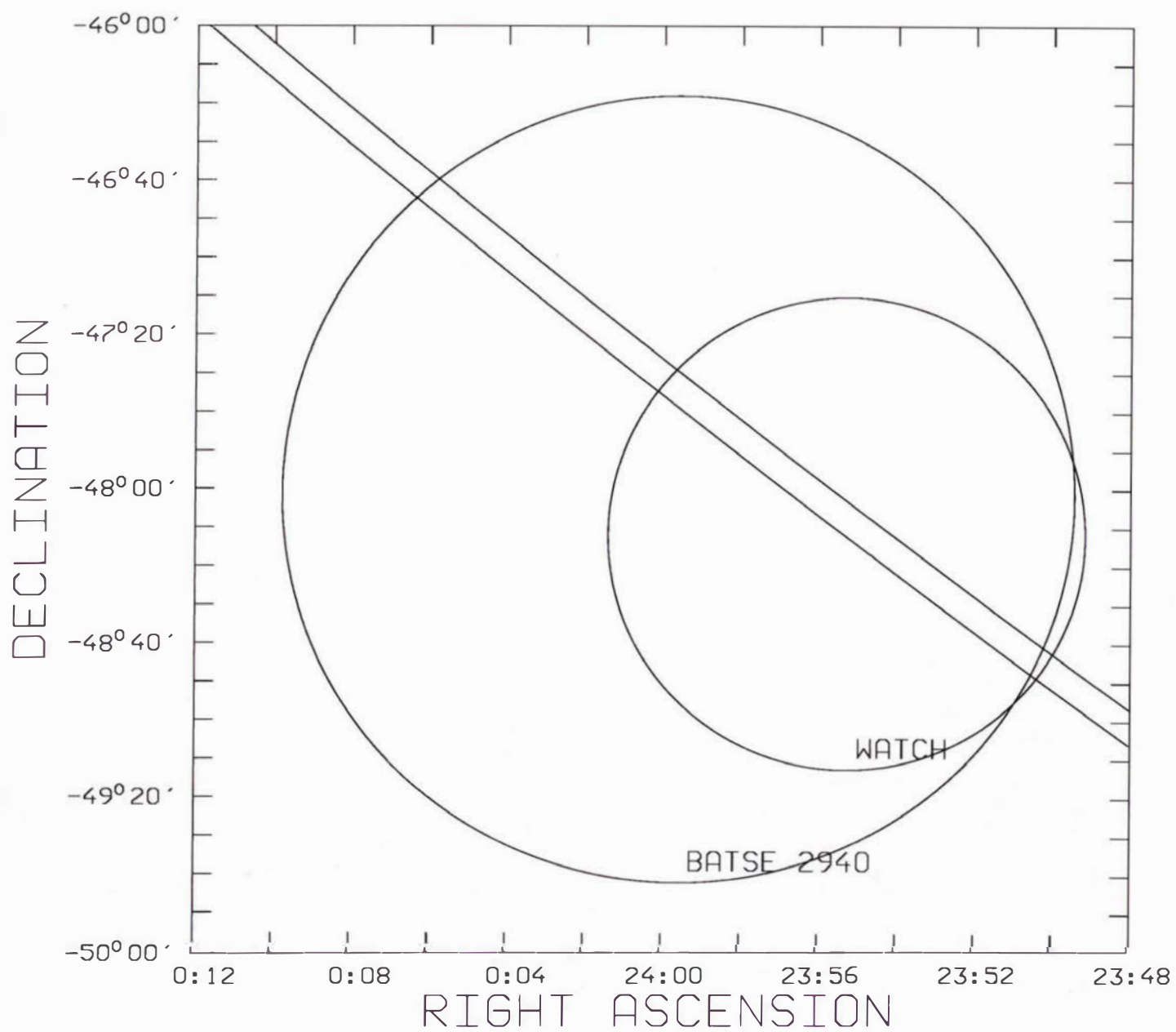
- ☒ Jim Schmidling's stat file correction applied?
- ☒ Final ephemeris used?
- ☒ Final, CDROM data used?
- ☒ Were data checked by Joe Springer for 0.5 s errors?
- ☒ If a 2 spacecraft triangulation, was Ulysses time corrected for aberration?
- ☐ Is the order of the data in CORREL such that a vernier is done on the data with the best time resolution? *No - bad stats*

#### 2. BATSE Data

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

#### 3. PVO Data

- ☐ Ephemeris of PVO used (not Venus)?
- ☐ 2000 coordinates used?
- ☐ Geocentric time used?
- ☒ ACCESS database updated?



N-M = CORRELATION BETWEEN SATELLITES N AND M

EARTH-N = EARTH AS SEEN FROM SATELLITE N

S=SUN

E=ECLIPTIC

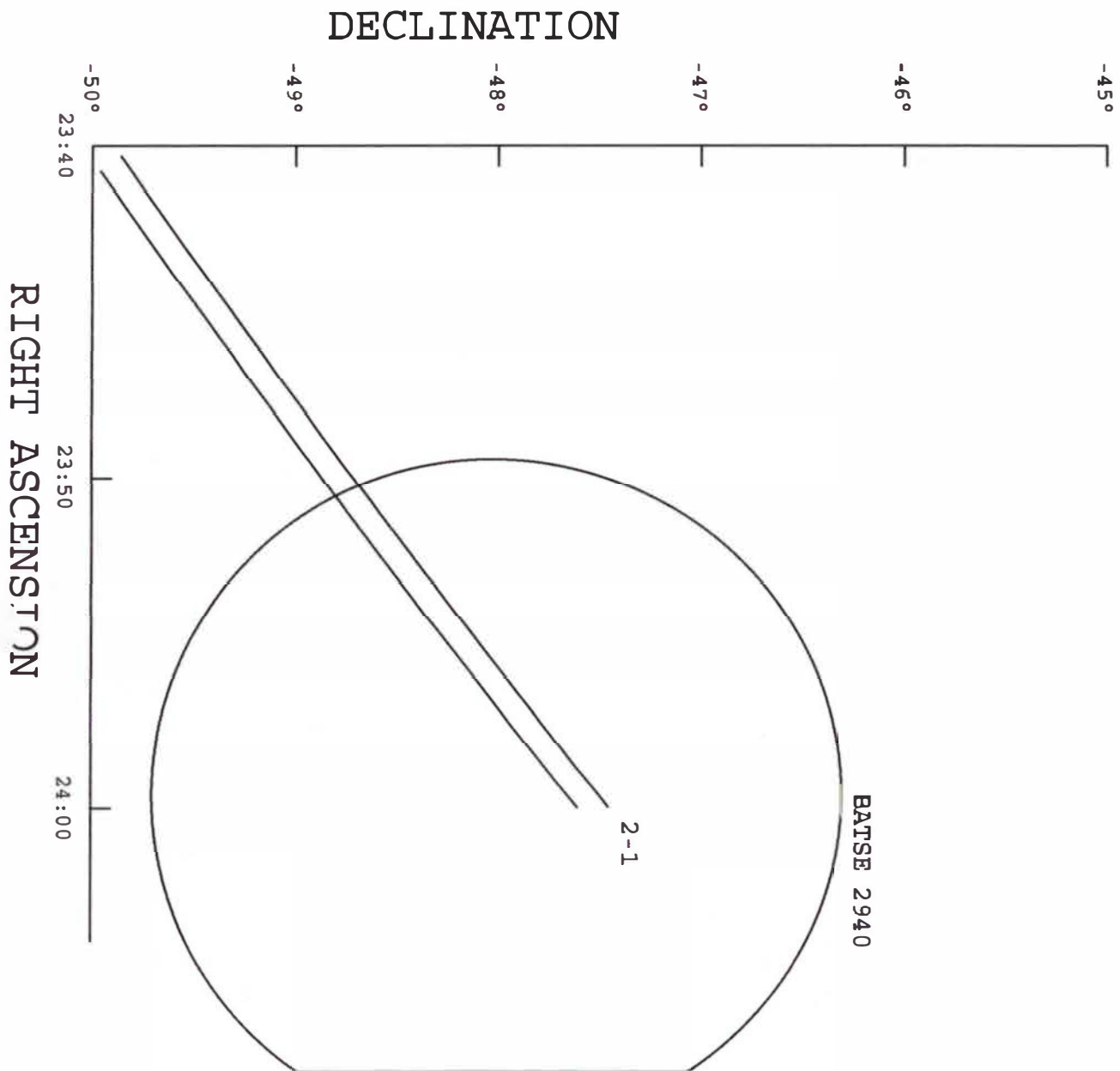
G=GALACTIC EQUATOR

1 ULYSSES

2 BATSE

EVENT OF APR 19, 1994 19:03

6/ 3/98

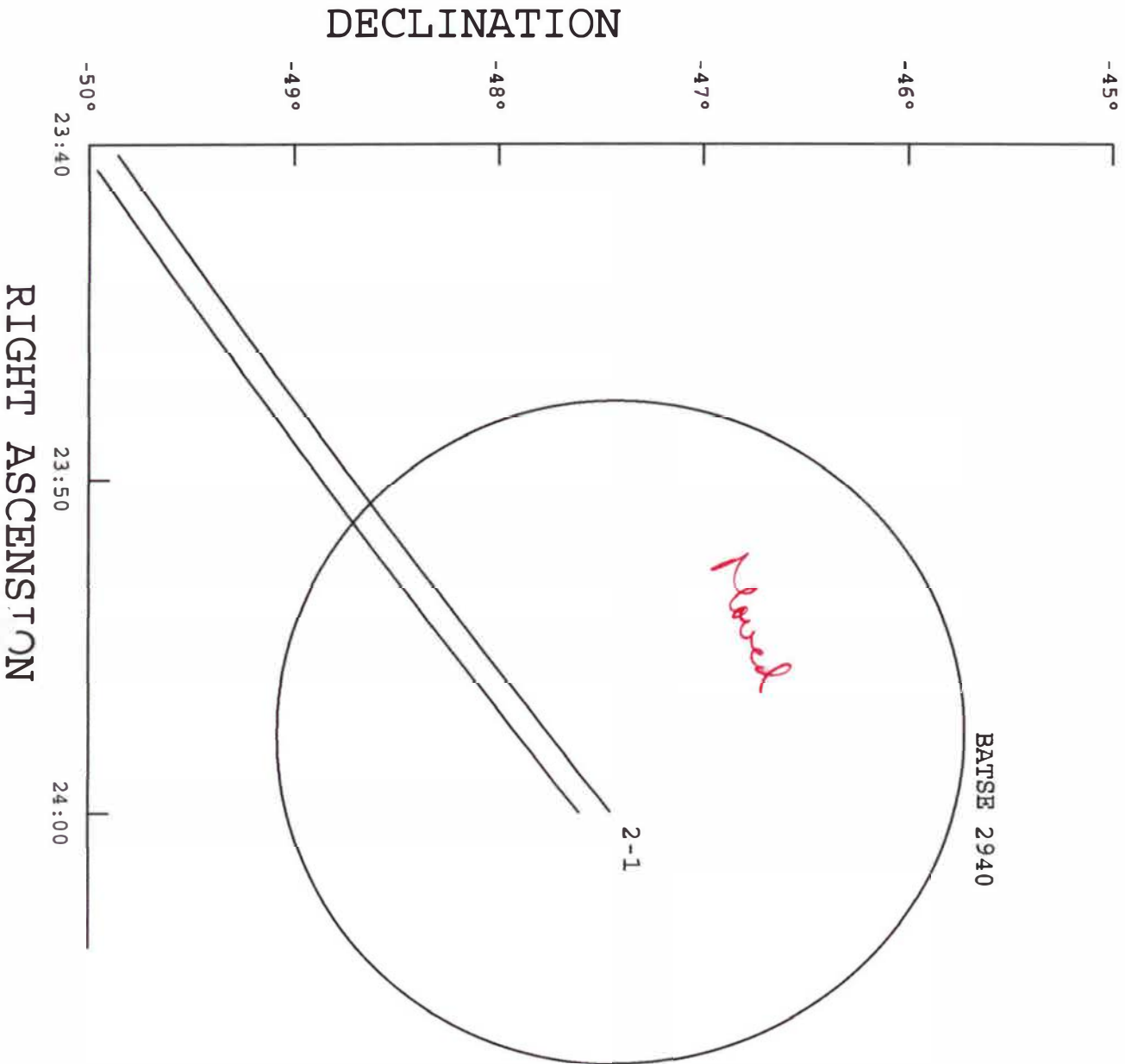




N-M = CORRELATION BETWEEN SATELLITES N AND M  
 EARTH-N = EARTH AS SEEN FROM SATELLITE N  
 S=SUN E=ECLIPTIC G=GALACTIC EQUATOR  
 1 ULYSSES 2 BATSE

EVENT OF APR 19, 1994 19:03

27 / 1/98



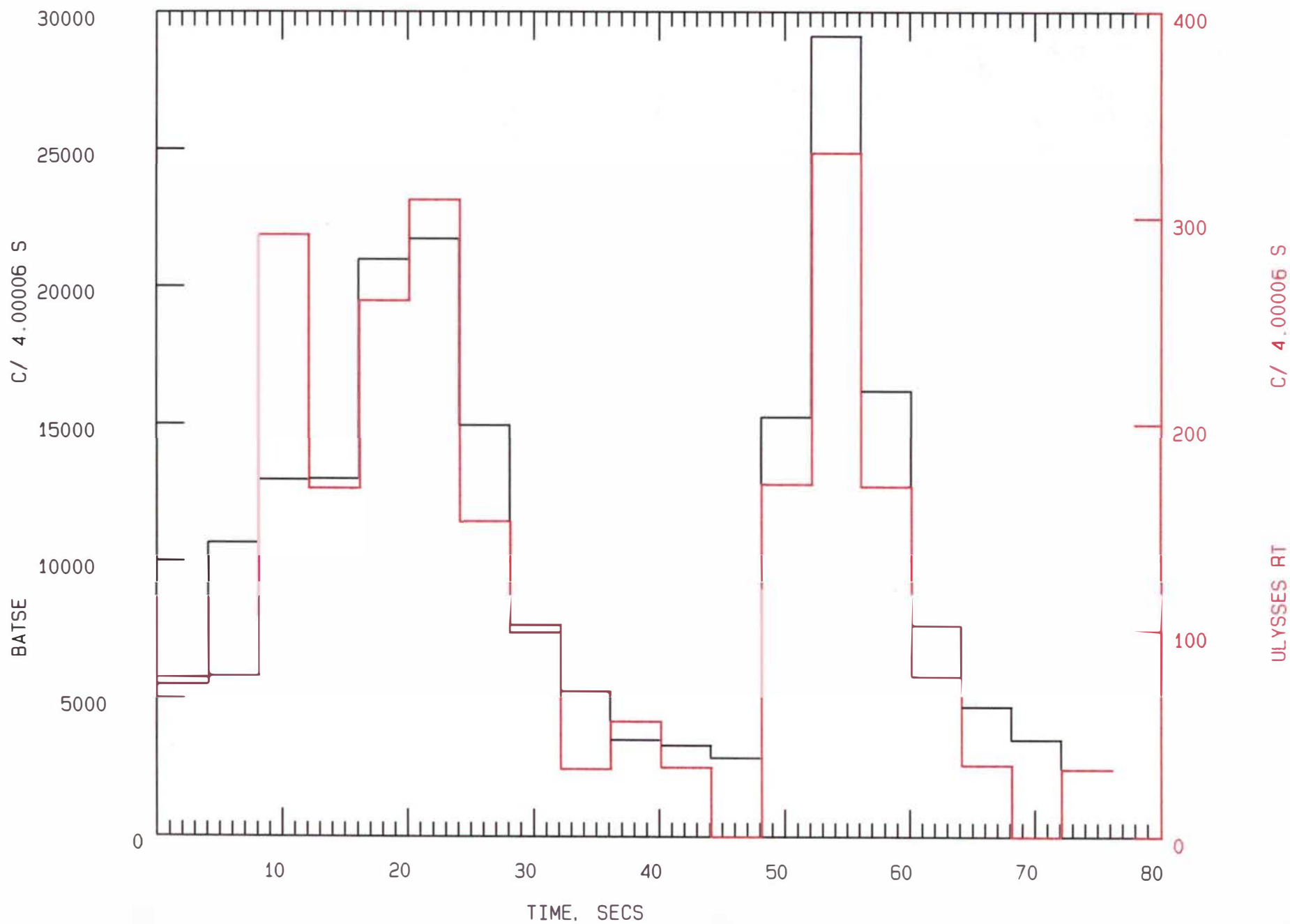
BATSE

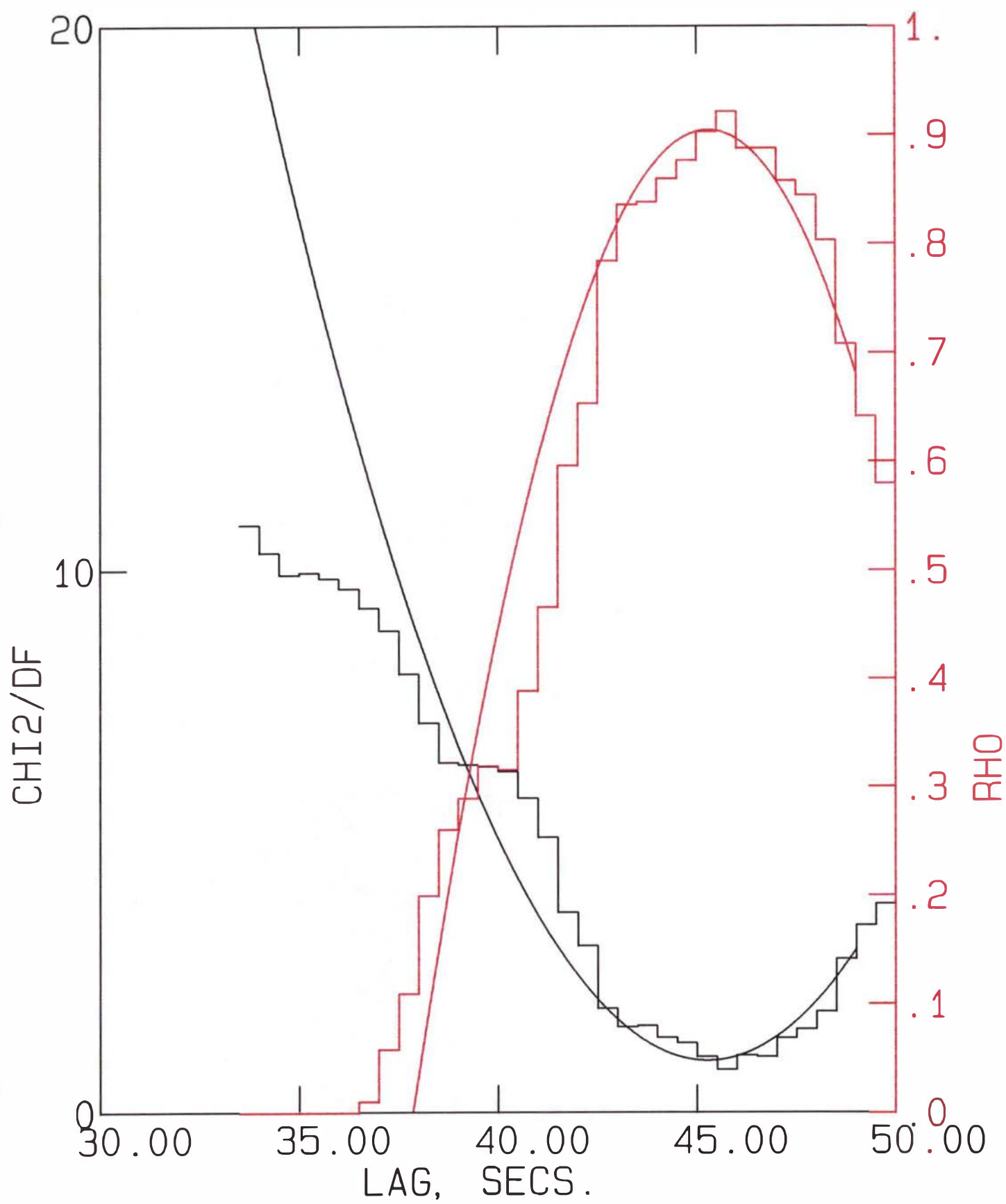
-ULYSSES RT CORRELATION

19/ 4/94

69058.202

27/ 1/98





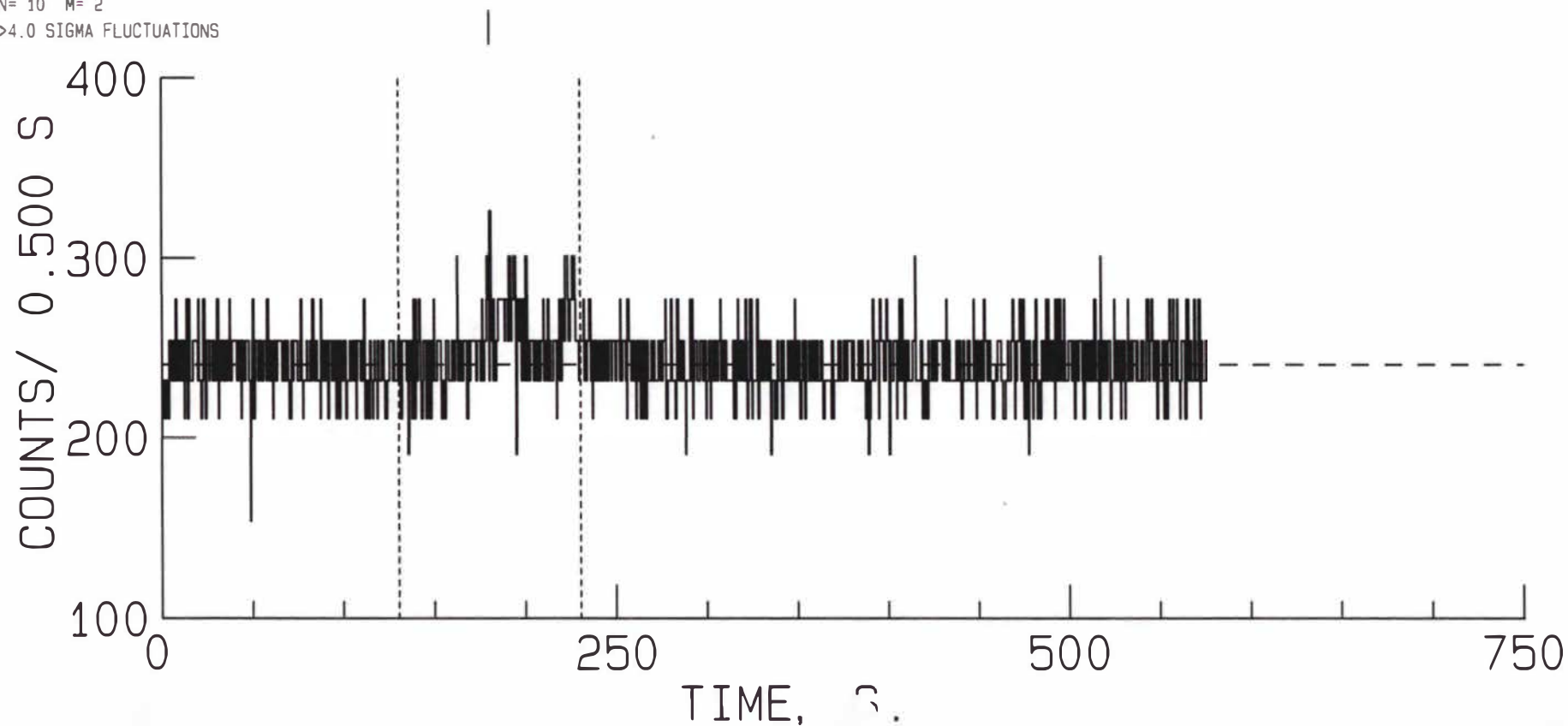
ULYSSES RT

27 / 1 / 98

19 / 4 / 94 68472.131 s

22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



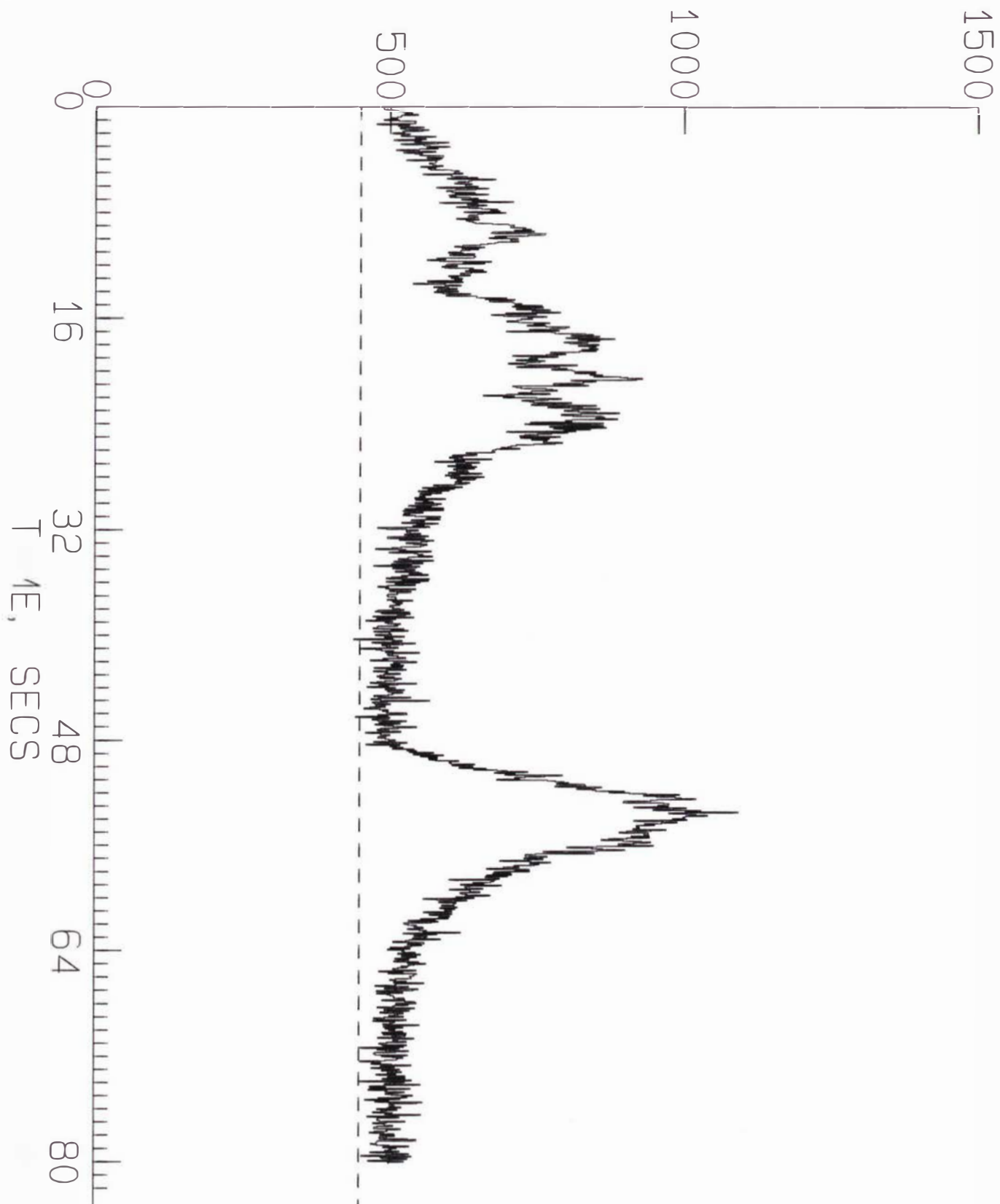
BATSE

19/04/94

69058.202

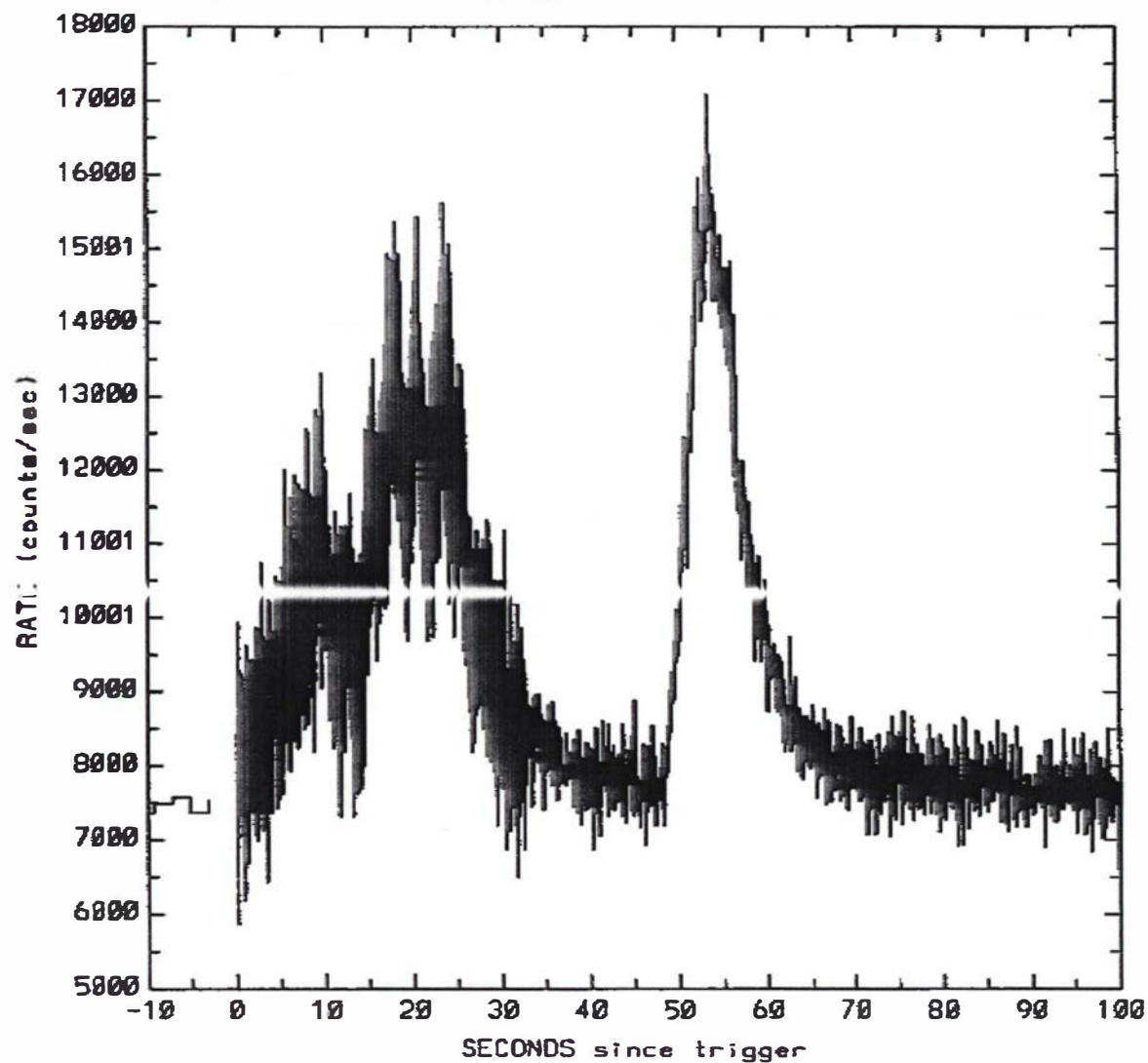
25- 100 keV

COUNTS/ .064 S



18/10/94

## DATA FOR K. HURLEY



2-AUG-1994 09:59:57

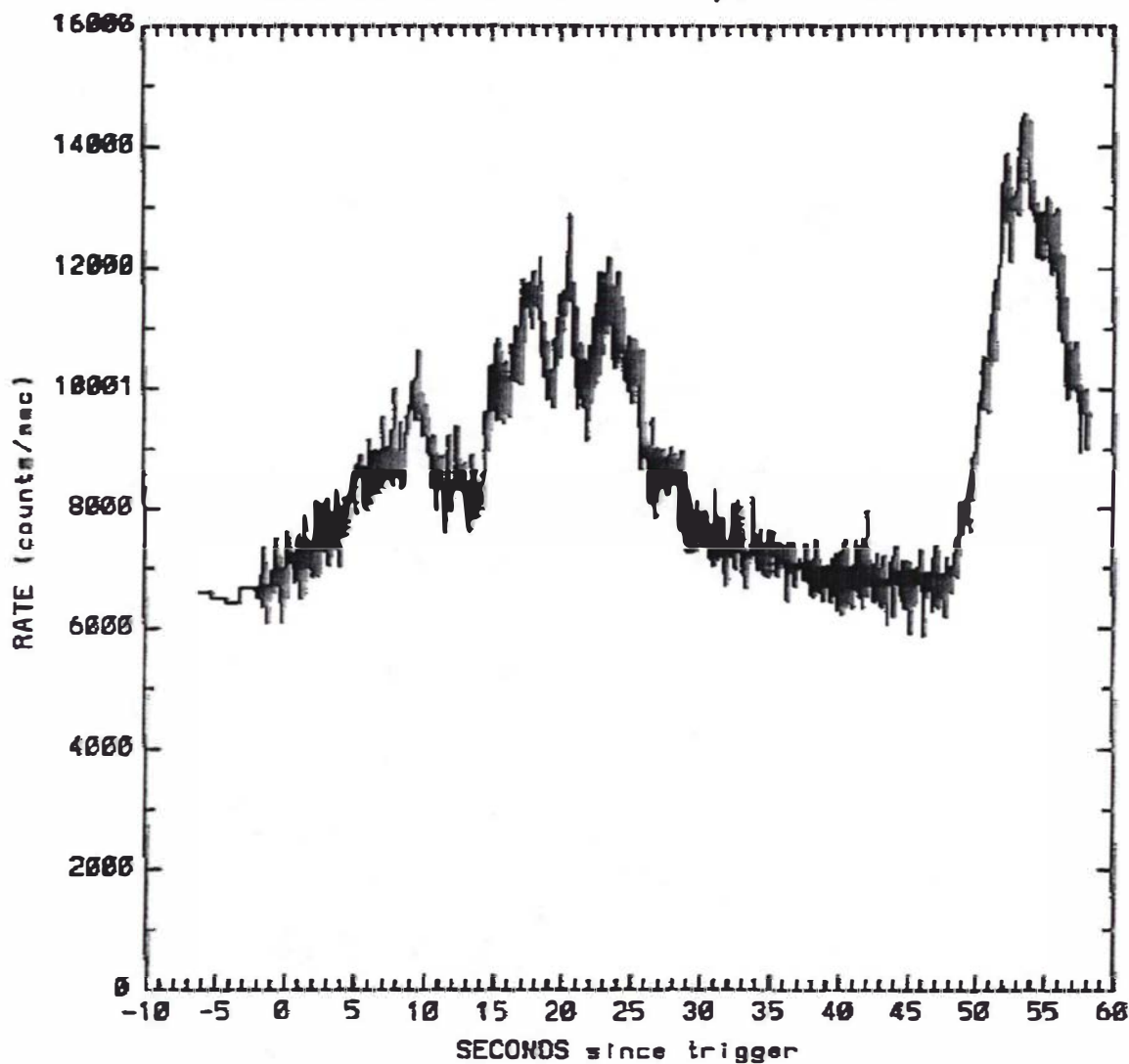
Created by MOPS BD  
(Burst Display)  
Version 12.22

Trigger # . 2948

Trigger Time:  
9461 / 69058.282Burst Data Type:  
MERDeadtime  
Corrected: N  
Background Data  
Type: CONT  
Minimum Integ. Time:  
0.016 seconds)Detectors (7..01.  
00001100Channels:  
1 0. 6)Quality Mask:  
BDISP1



## DISCSC Data for K. Hurley, No. 2940

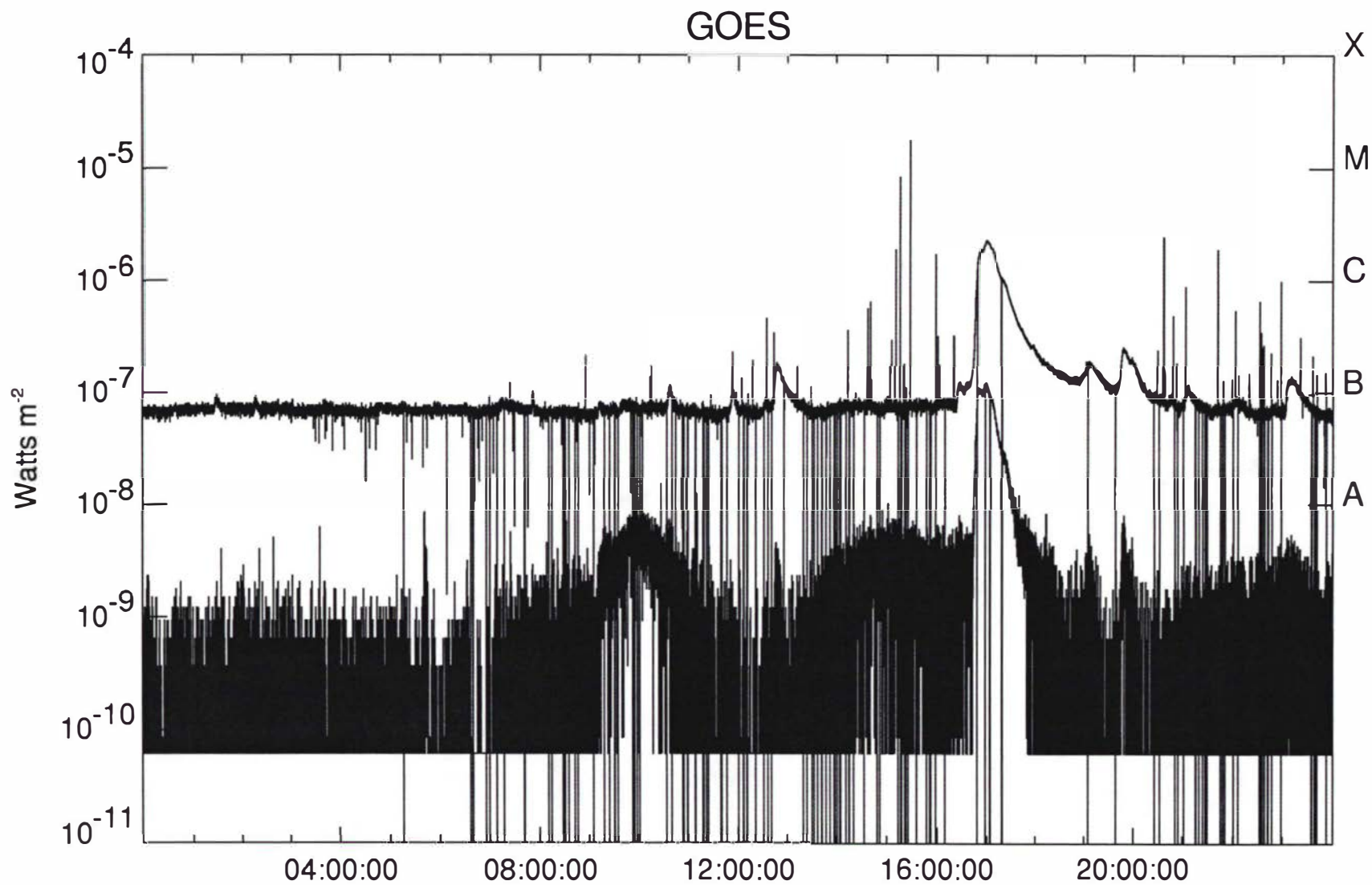


28-OCT-1994 11:26:09

Created by NOPS 80  
(Burst Display)  
Version 2.22

Trigger # : 2940

Trigger Time:  
9461 / 69858.282Burst Data Type:  
DISCSCDeadtime  
Corrected: N  
Background Data  
Type: PREB + DISCLA  
Minimum Integ. Time:  
0.064 second(s)Detectors [7..8]:  
----32--Discriminators:  
[ 1, 2]Quality Mask:  
B0ISP1



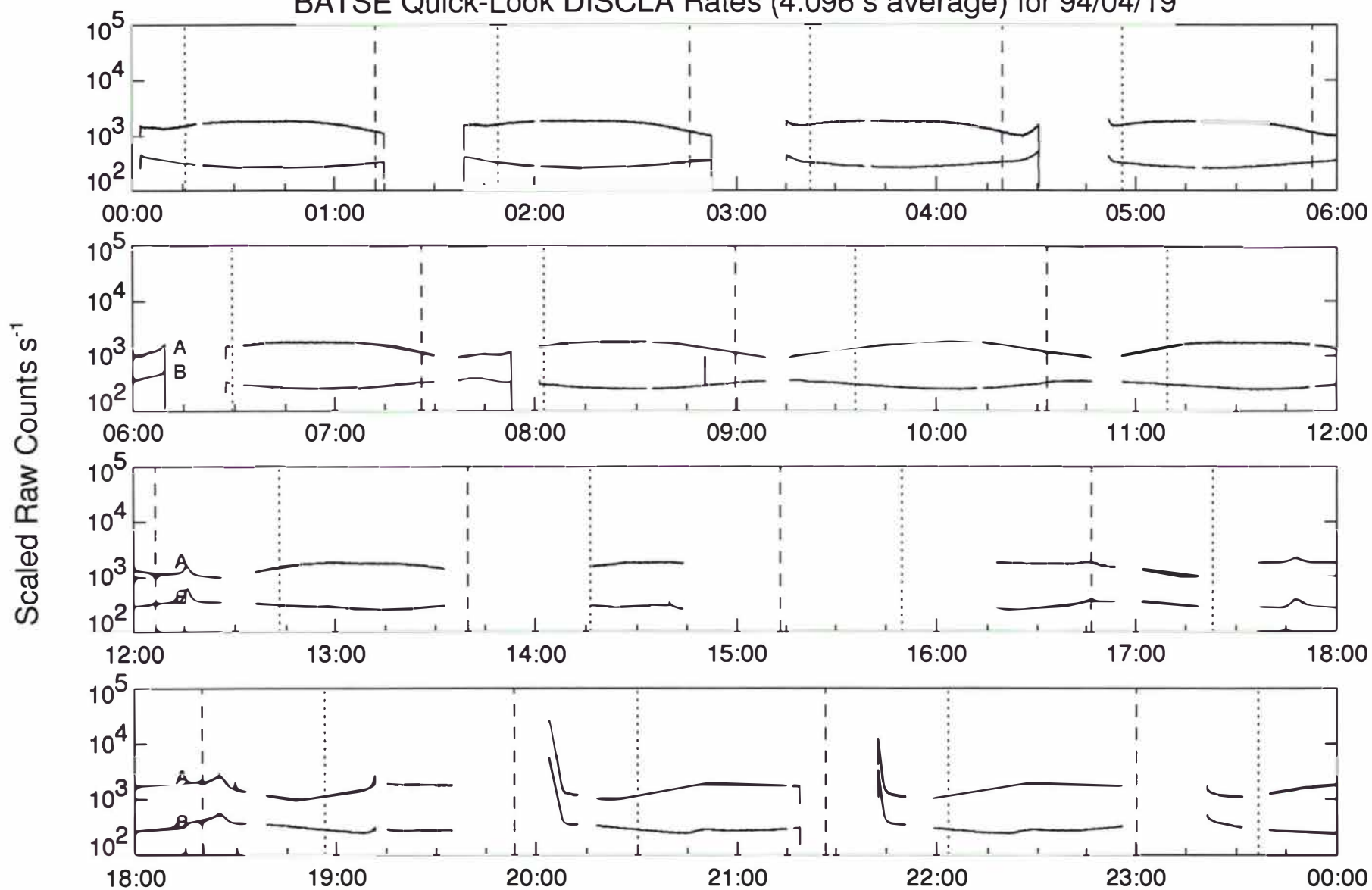
Data Start: 94/04/19, 0000:02

Plot created: 94/04/29, 1938

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/19

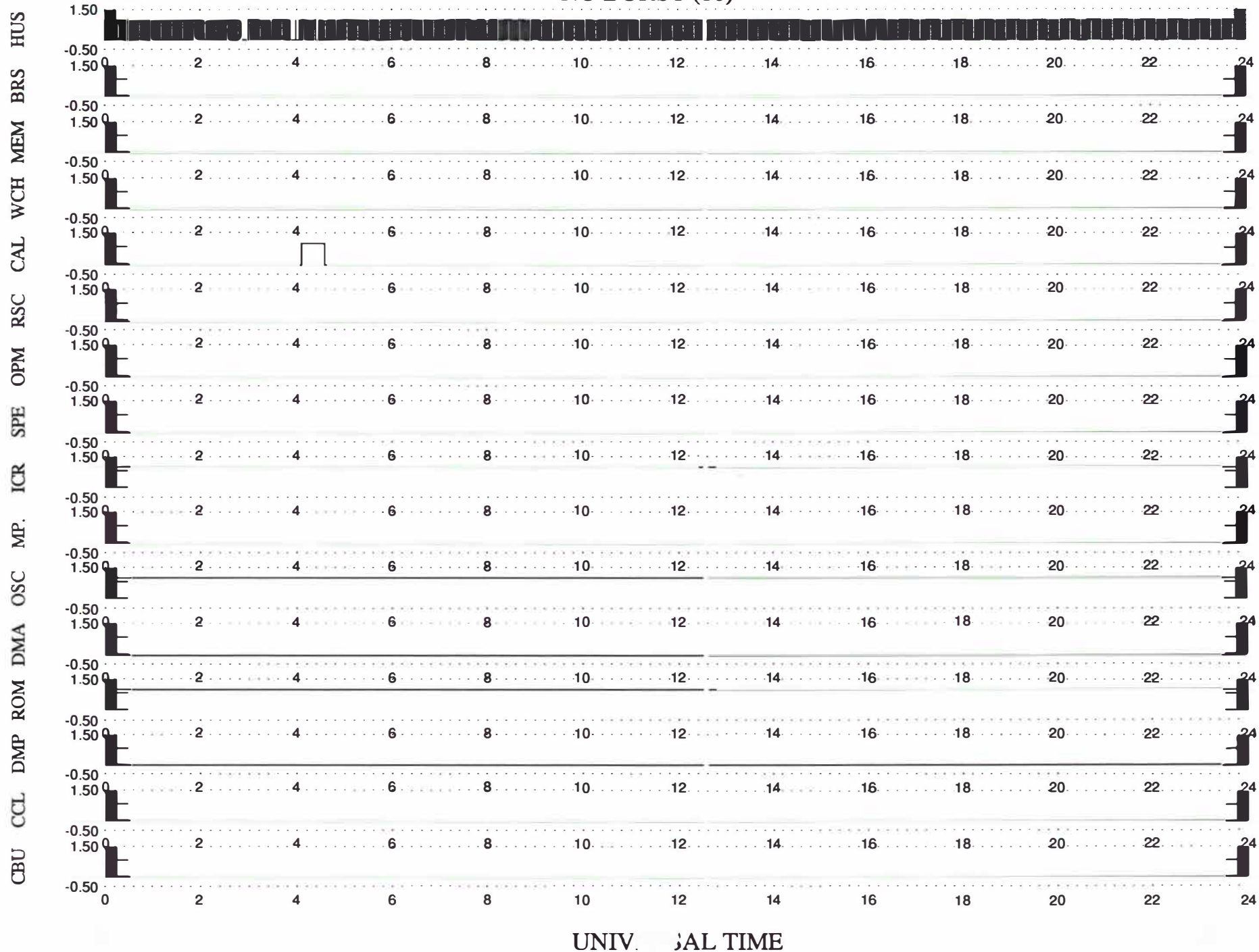


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

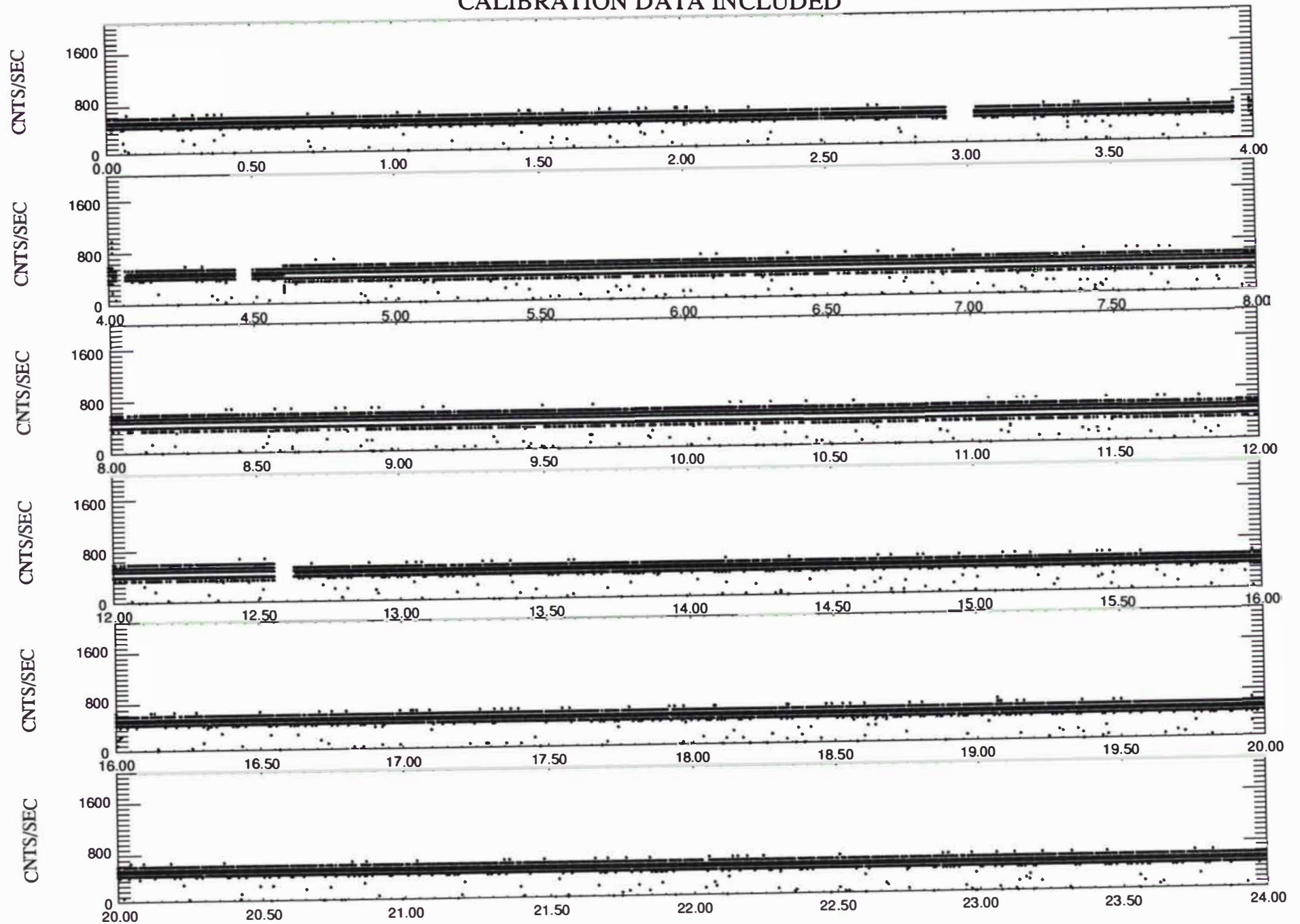
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)

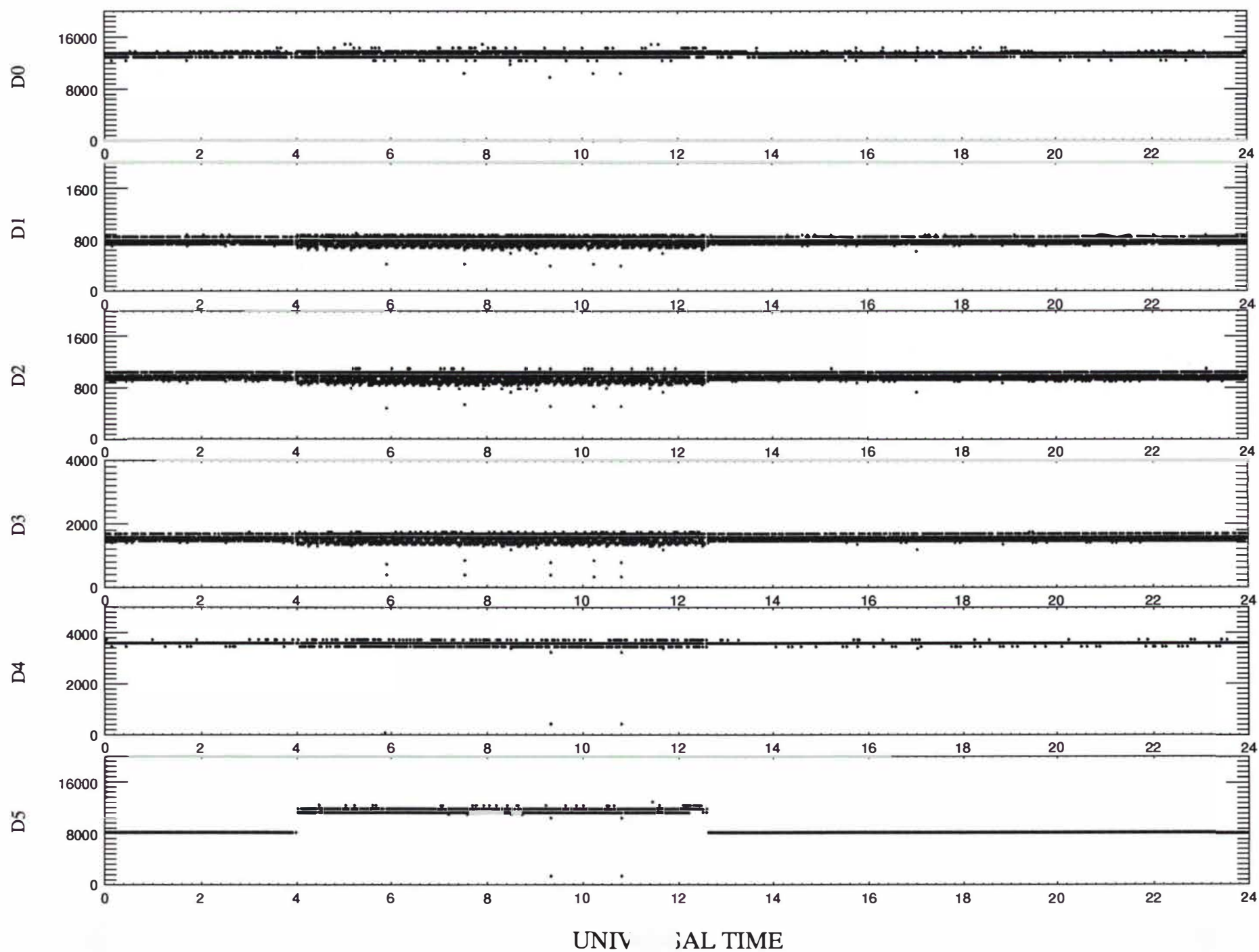


## CALIBRATION DATA INCLUDED

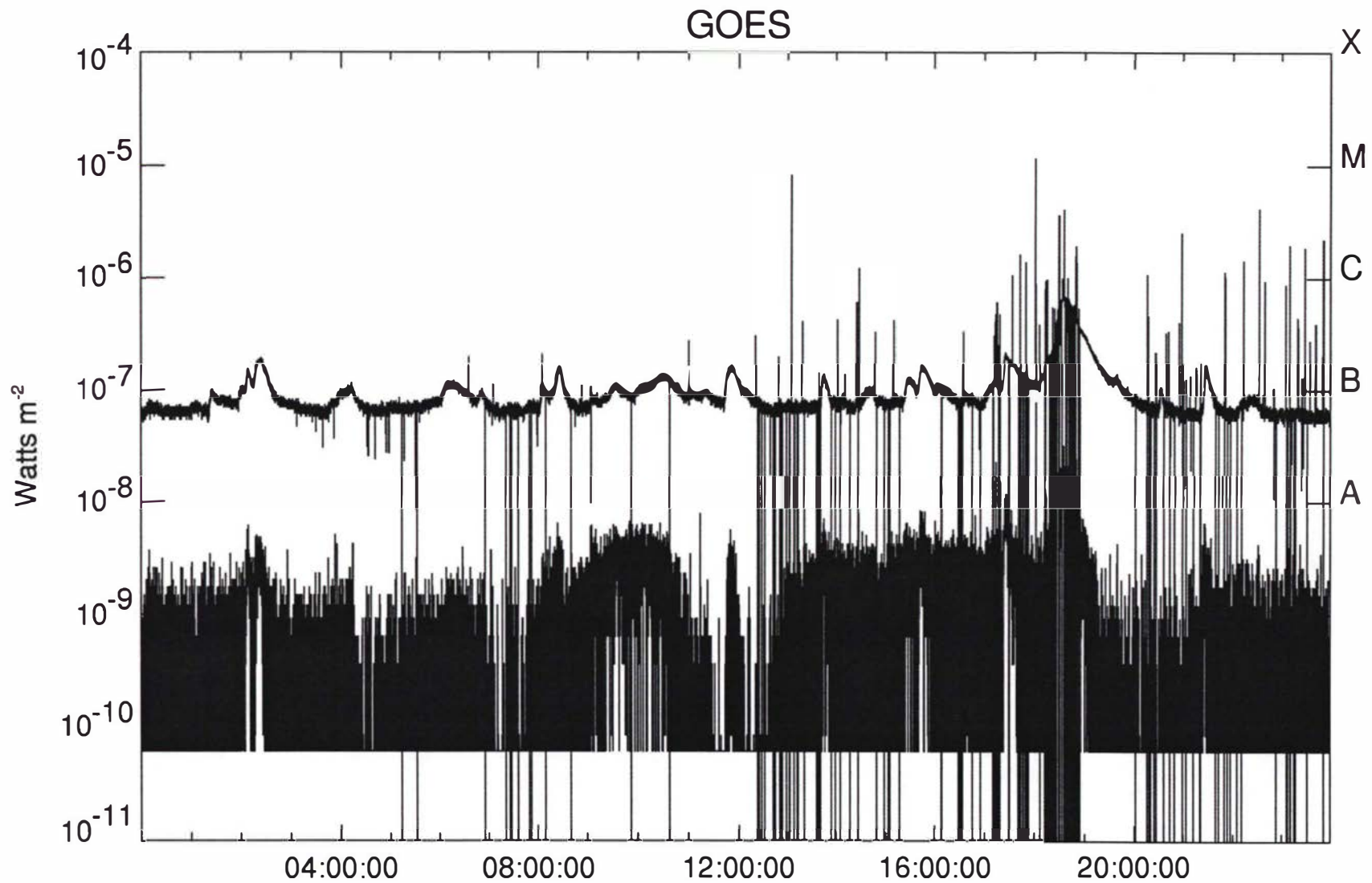


UNIV. TIME









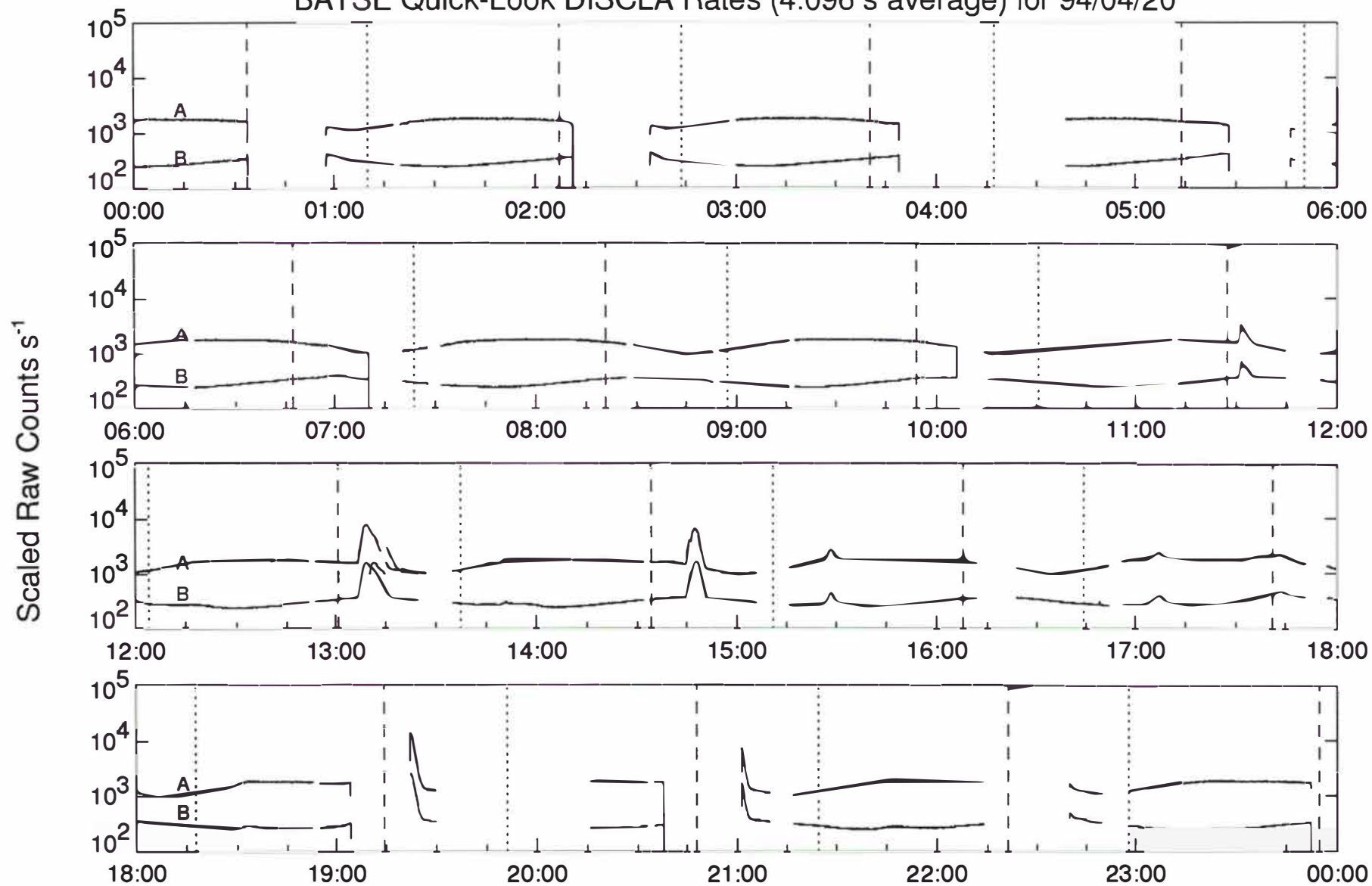
Data Start: 94/04/20, 0000:02

Plot created: 94/04/29, 1939

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/20

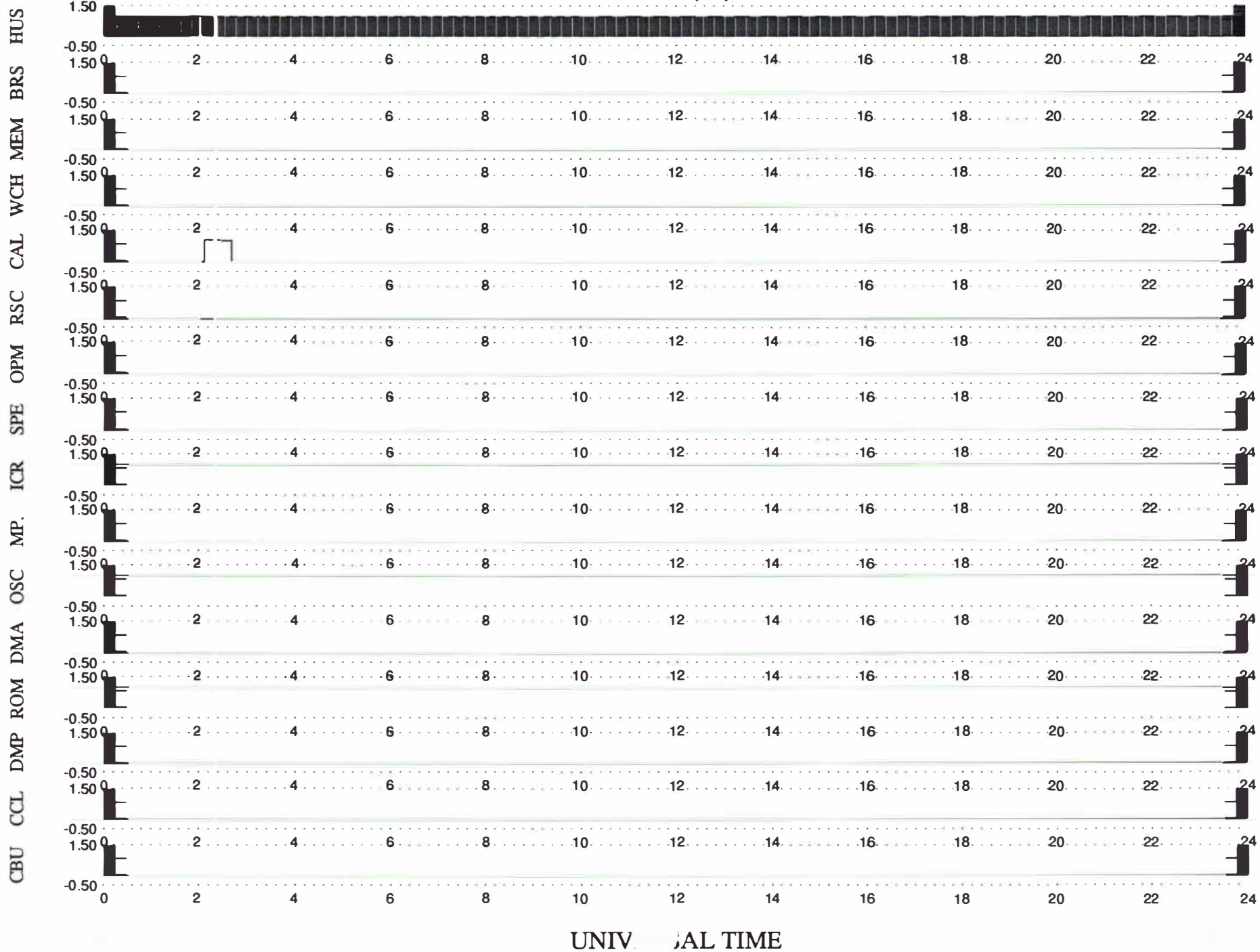


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

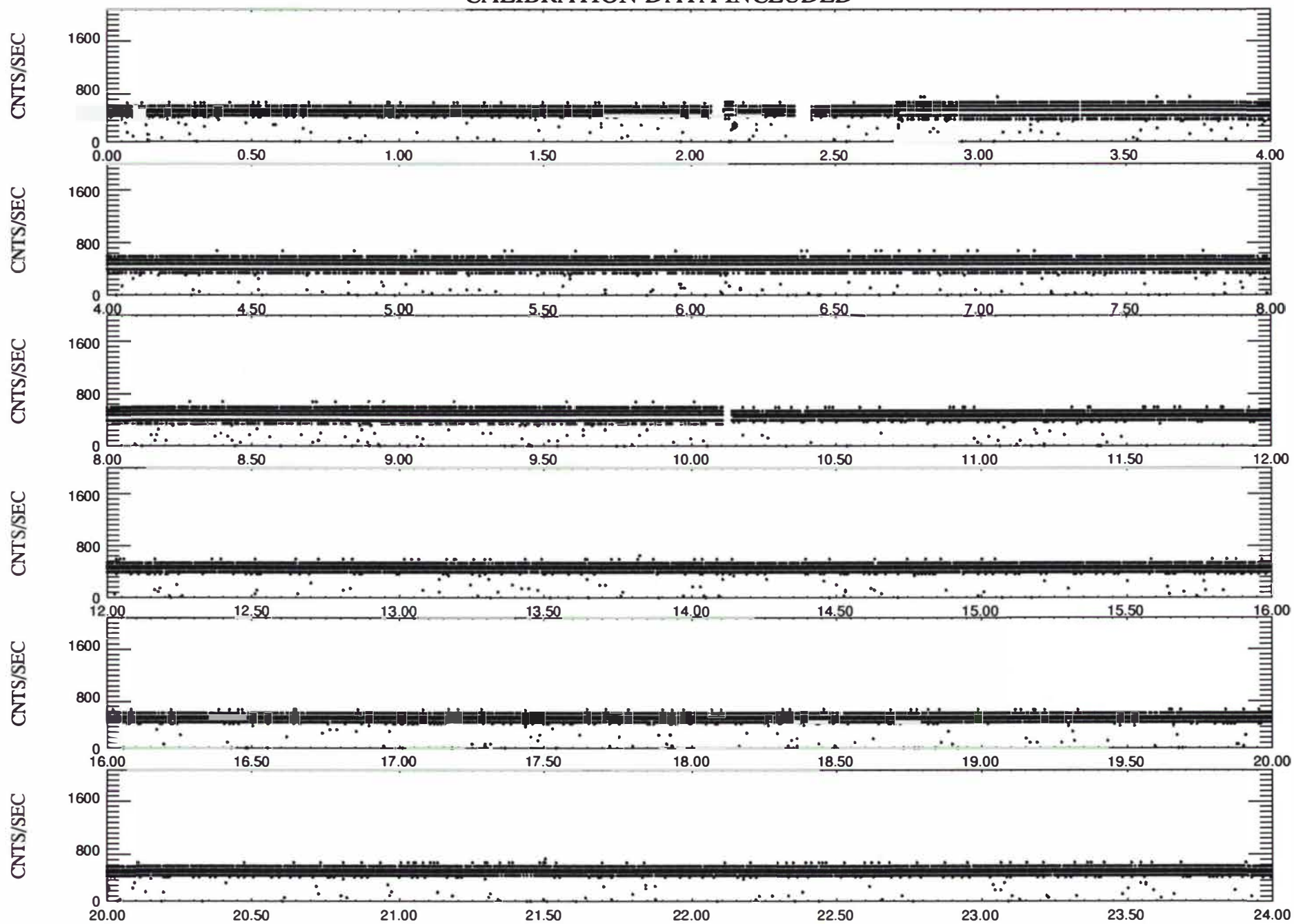
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

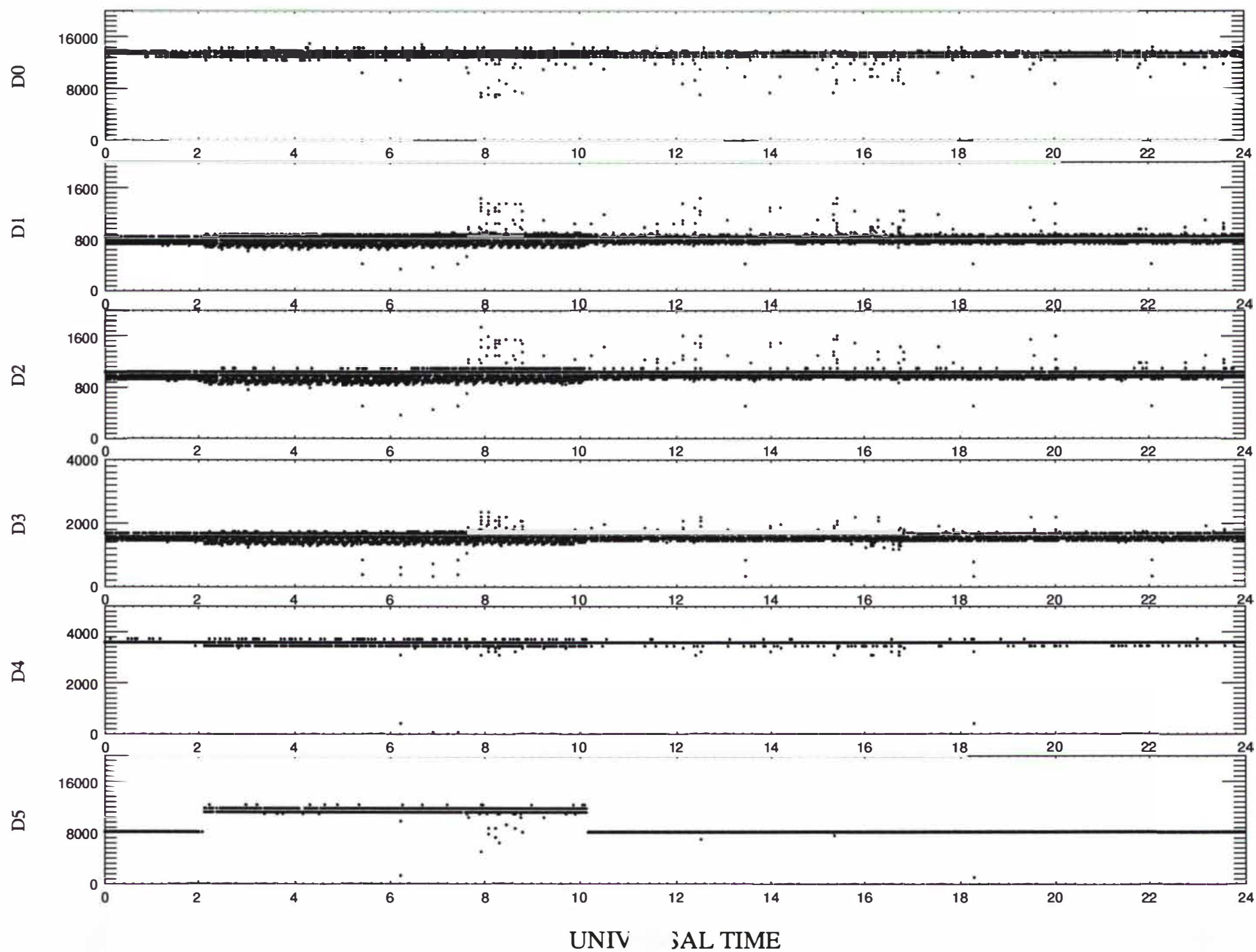
## NO BURST (10)



## CALIBRATION DATA INCLUDED



UNIV AL TIME





From KOSHUT@ssl.msfc.nasa.gov Fri Apr 22 09:11 PDT 1994  
Date: Fri, 22 Apr 1994 11:14:11 -0500 (CDT)  
From: KOSHUT@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2941  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2941  
EVENT OF 1994 APR 21 DAY OF YEAR=111  
EVENT CROSSING TIME AT BATSE : 79792. S. OR 22:09:52.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 184.000 -20.000  
BATSE PEAK COUNTING RATE: 5000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 21/ 4/ 94 IS:  
RA= 121.017 DEC= -45.734 DIST= 2.906 AU  
BATSE-ULYSSES DISTANCE = 434769436. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=122.88 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -787.28 SECS.  
CROSSING TIME AT ULYSSES IS 79005. S. OR 21:56:44 +/- 249.50 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 21/ 4/ 94 IS:  
RA= 4.859 DEC= 0.982 DIST= 2.217 AU  
MARS-BATSE DISTANCE = 331610336. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 19.04 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1045.64 SECS.  
CROSSING TIME AT MARS IS 80838. S. OR 22:27:17 +/- 78.52 SECONDS

*RI Too weak*

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2941    | 940421 | 9463 | 79792 | 5000     | 184 | -20 |

#### BATSE BURST TRIGGER

NO.: 02941

TIME: TJD=9463 SECONDS=79792

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=81. AZIMUTH=187. ERROR= DEGREES

#### COMMENTS:

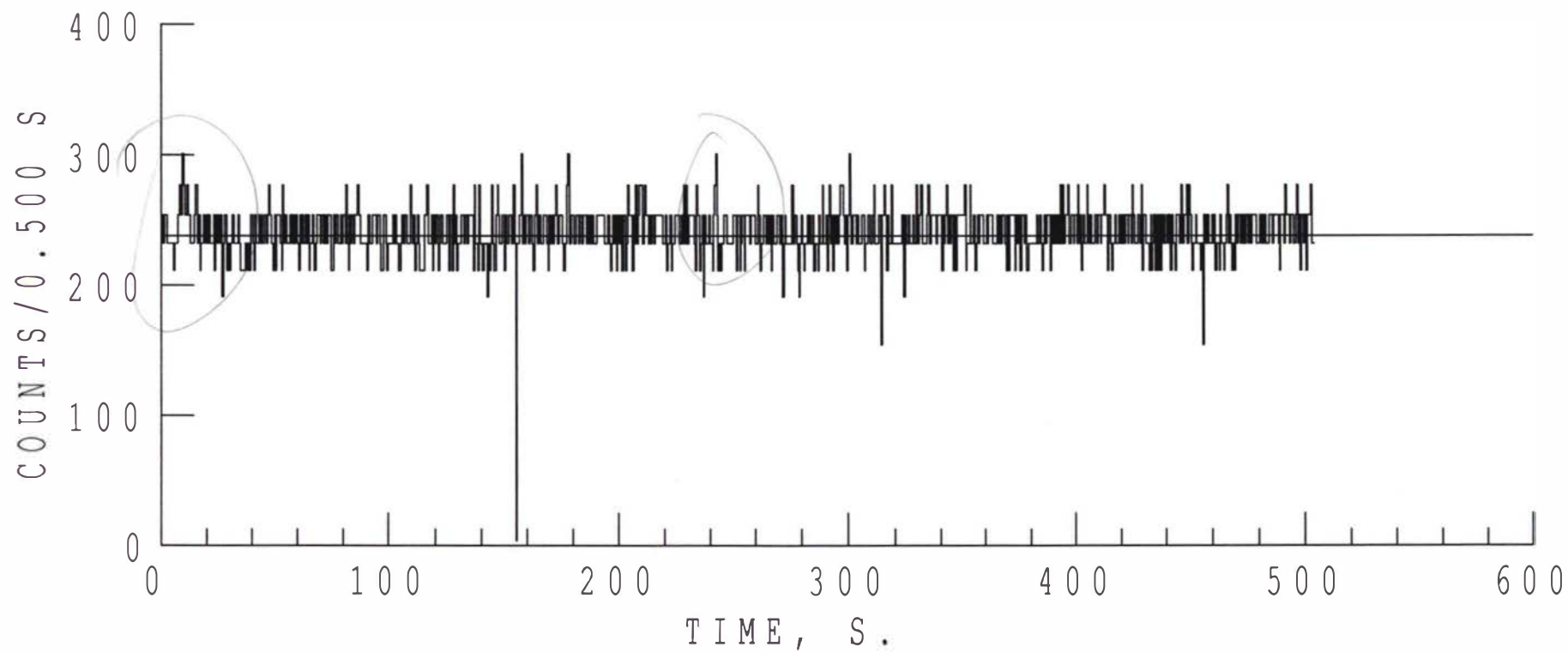
COMPLEX BURST OF ~ 20 SECONDS DURATION, WITH NO EMISSION OBSERVED ABOVE 300 KEV. PEAK RATE (~5500 C/S) OBSERVED AT ~ TRIGGER + 4 SECONDS.



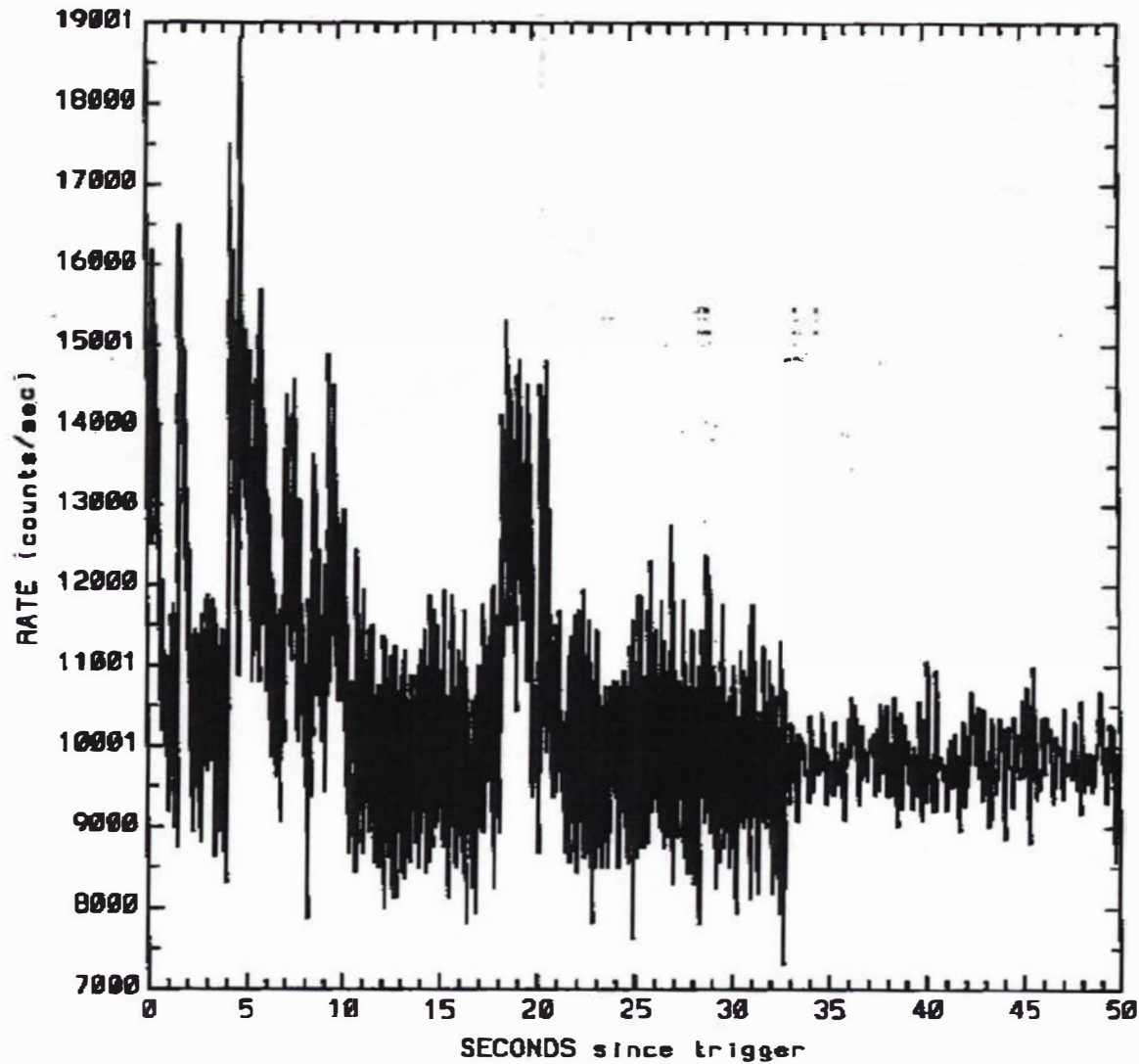
22 / 4 / 94

ULYSSES RT  
21 / 4 / 94 78768.055 s  
0 - 0 keV

N=10 M=2  
>4.0 SIGMA FLUCTUATIONS



## DATA FOR K. HURLEY



13-JUN-1994 13:49:18

Created by MBPS BD  
(Burst Display)  
Version 2.28

Trigger # . 2941

Trigger Time:  
9463 / 79792.796

Burst Data Type:  
NER

Deadtime  
Corrected: N

Background Data  
Type: CONT

Minimum Integ. Time:  
0.016 second

Detectors [7..8].  
11810000

Channels:  
[ 8. 6]

Quality Mask:  
80ISP1

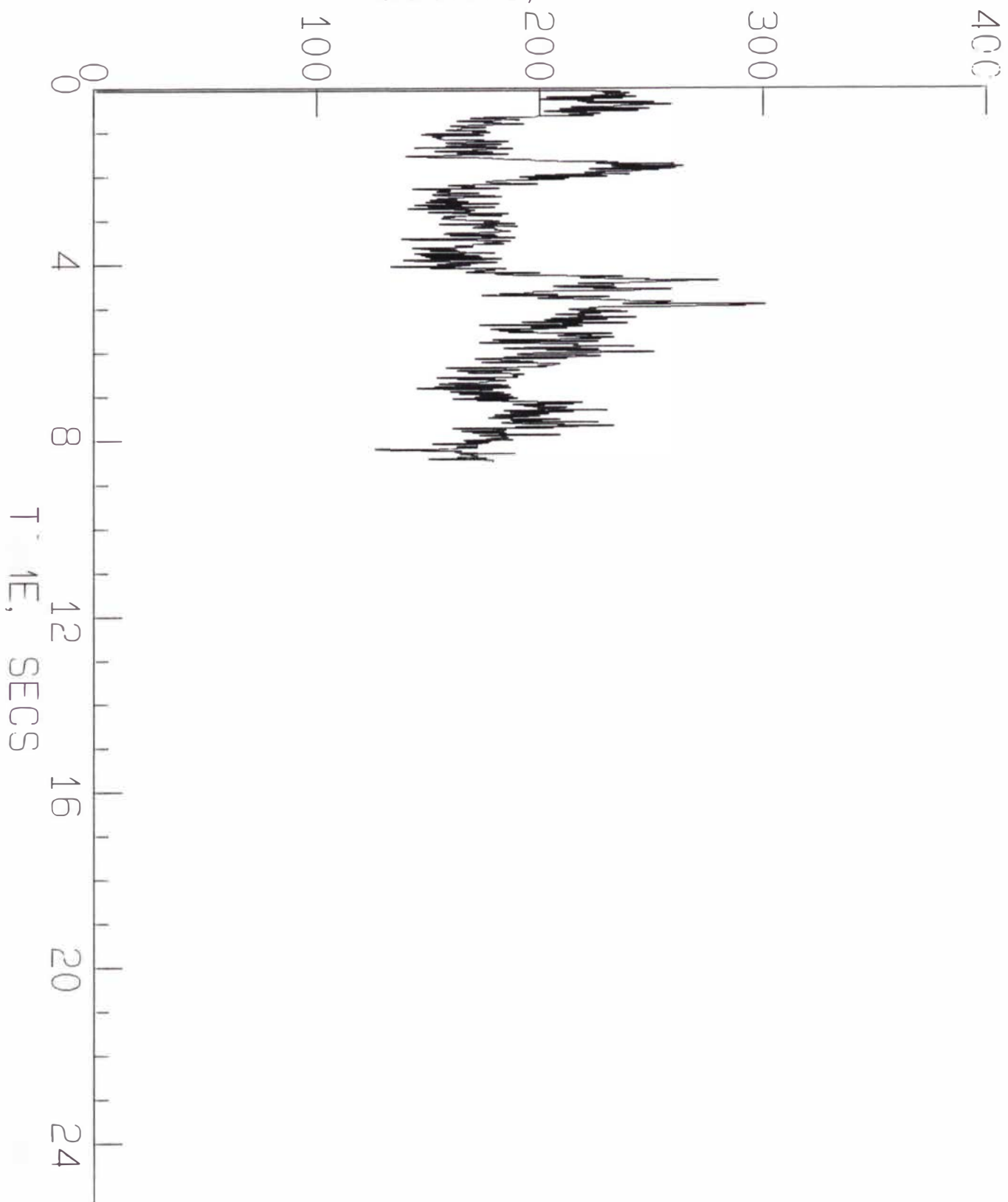
BATSE

21/04/94

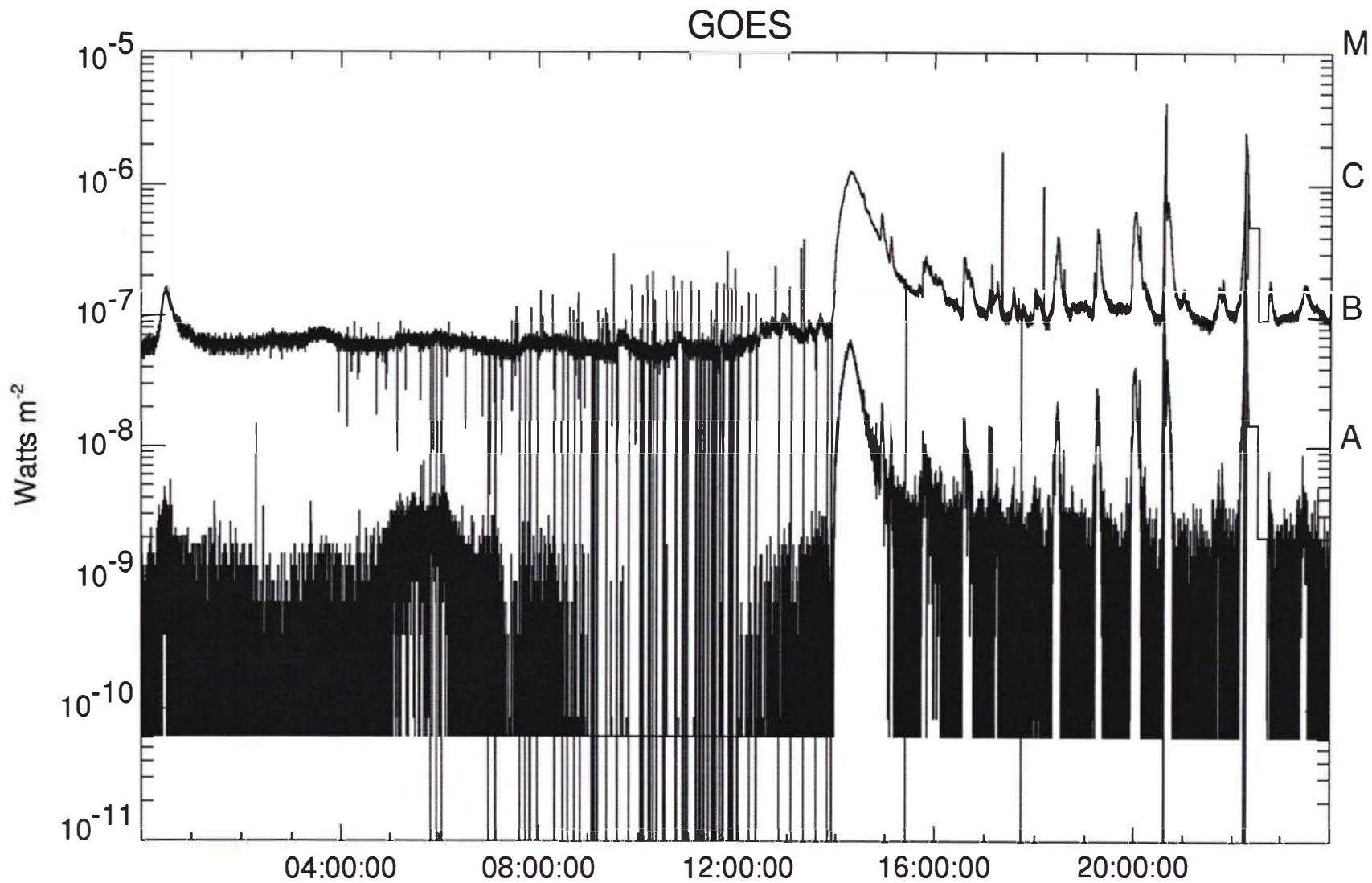
79792.794

25- 100 keV

COUNTS/ .048 S



23 / 6 / 94



Data Start: 94/04/21, 0000:01

Plot created: 94/04/29, 1939

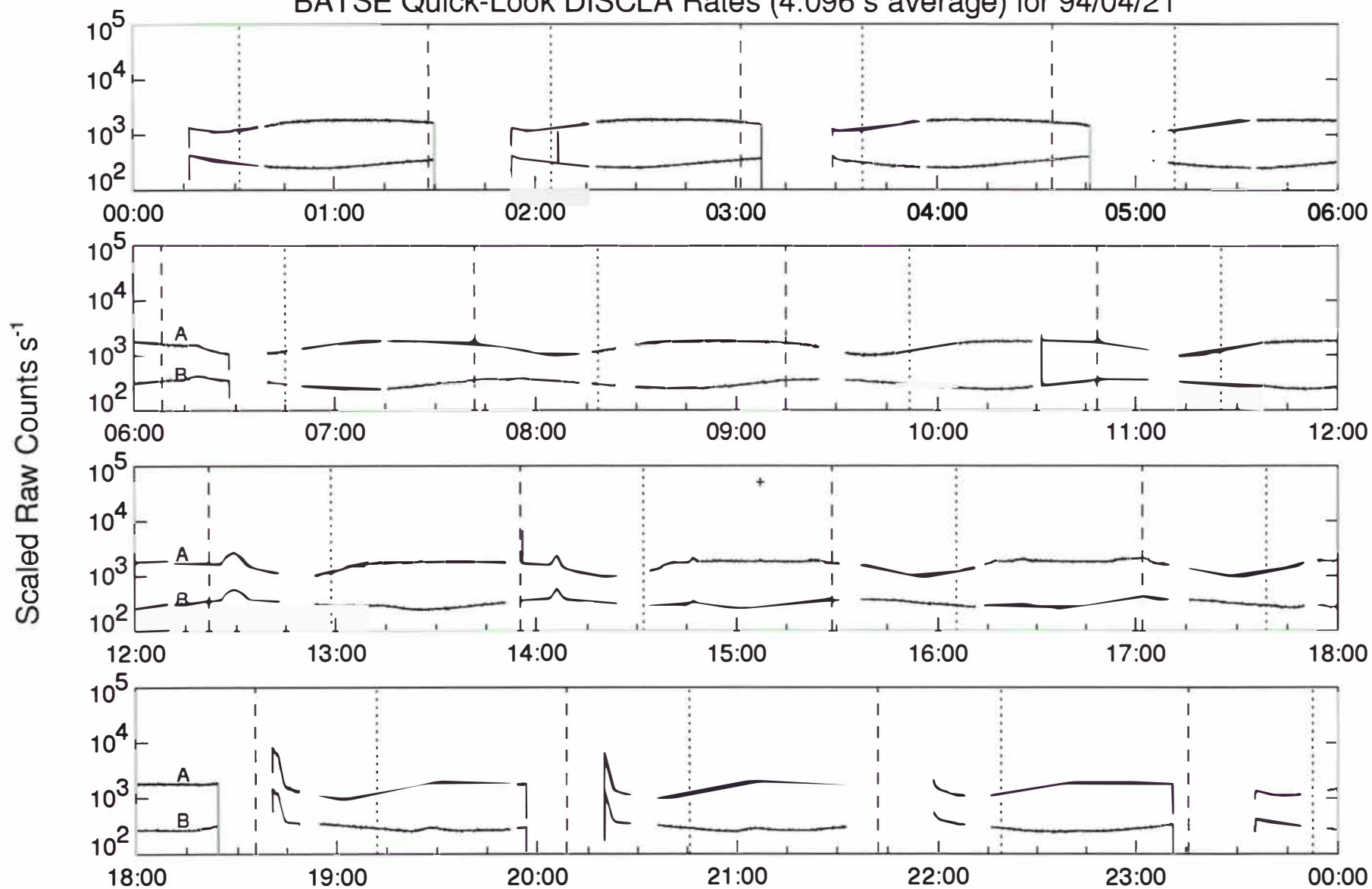
Channel 1 (1.0 - 8.0 Angstroms)

Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/21

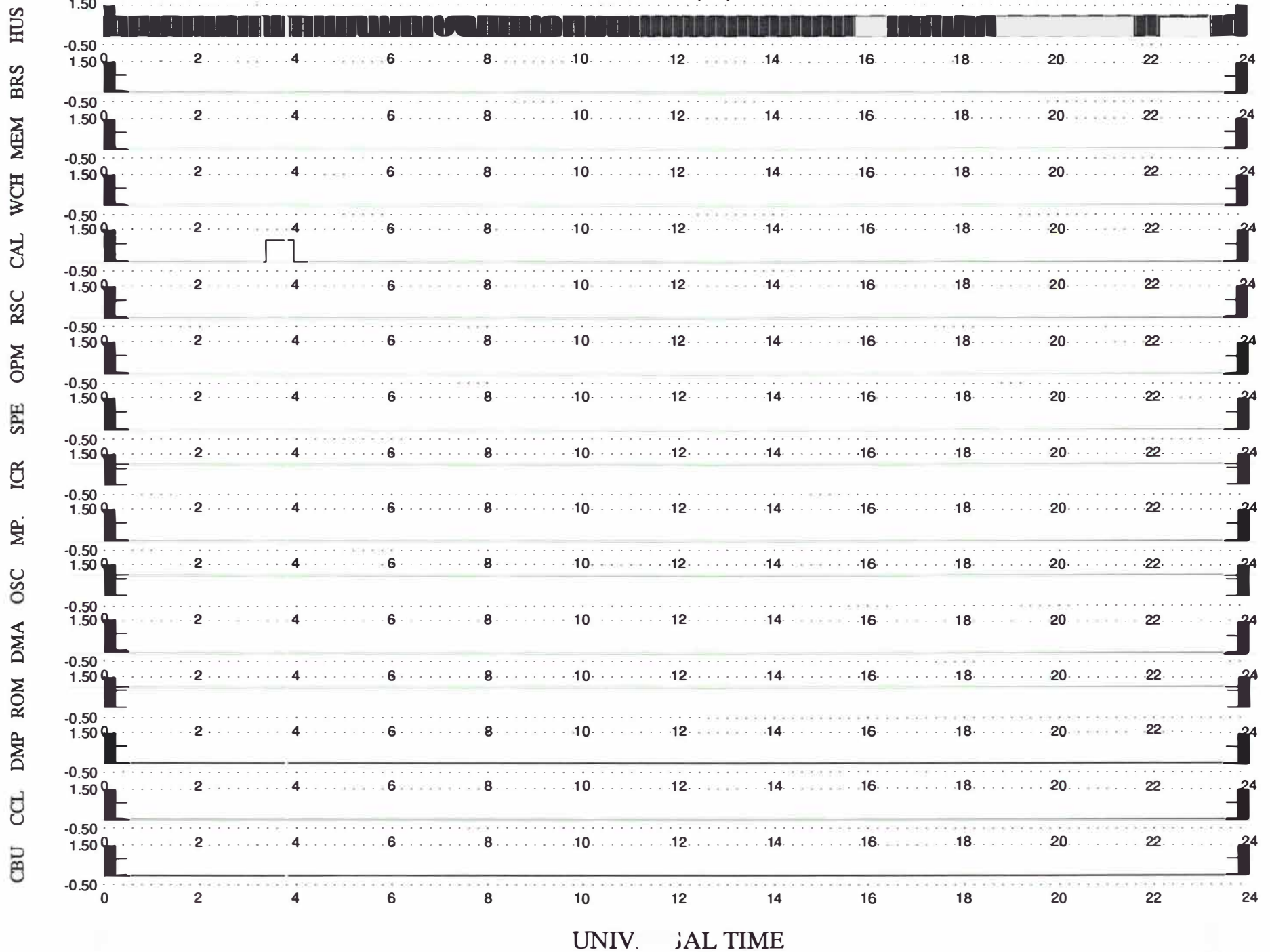


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

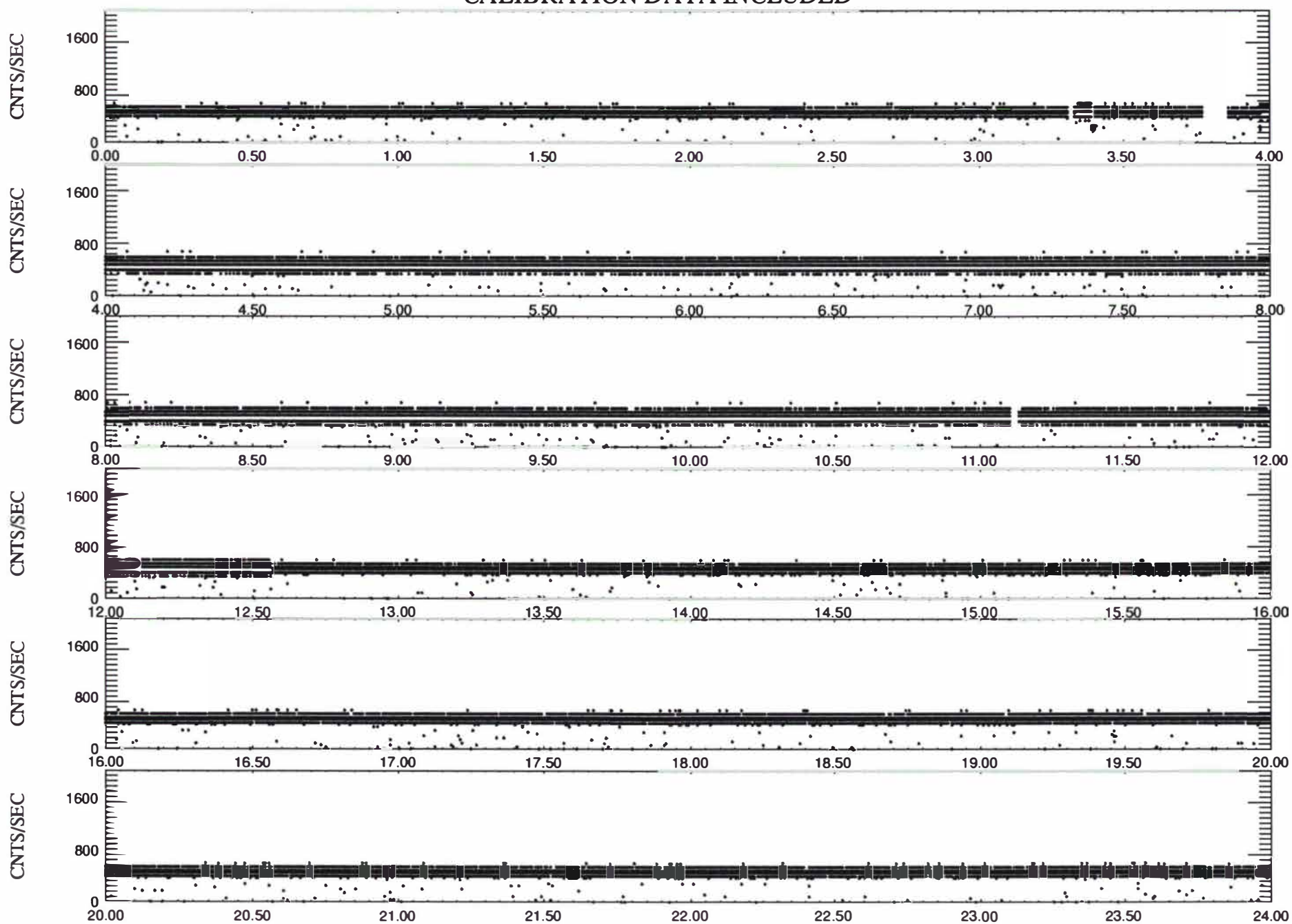
\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)

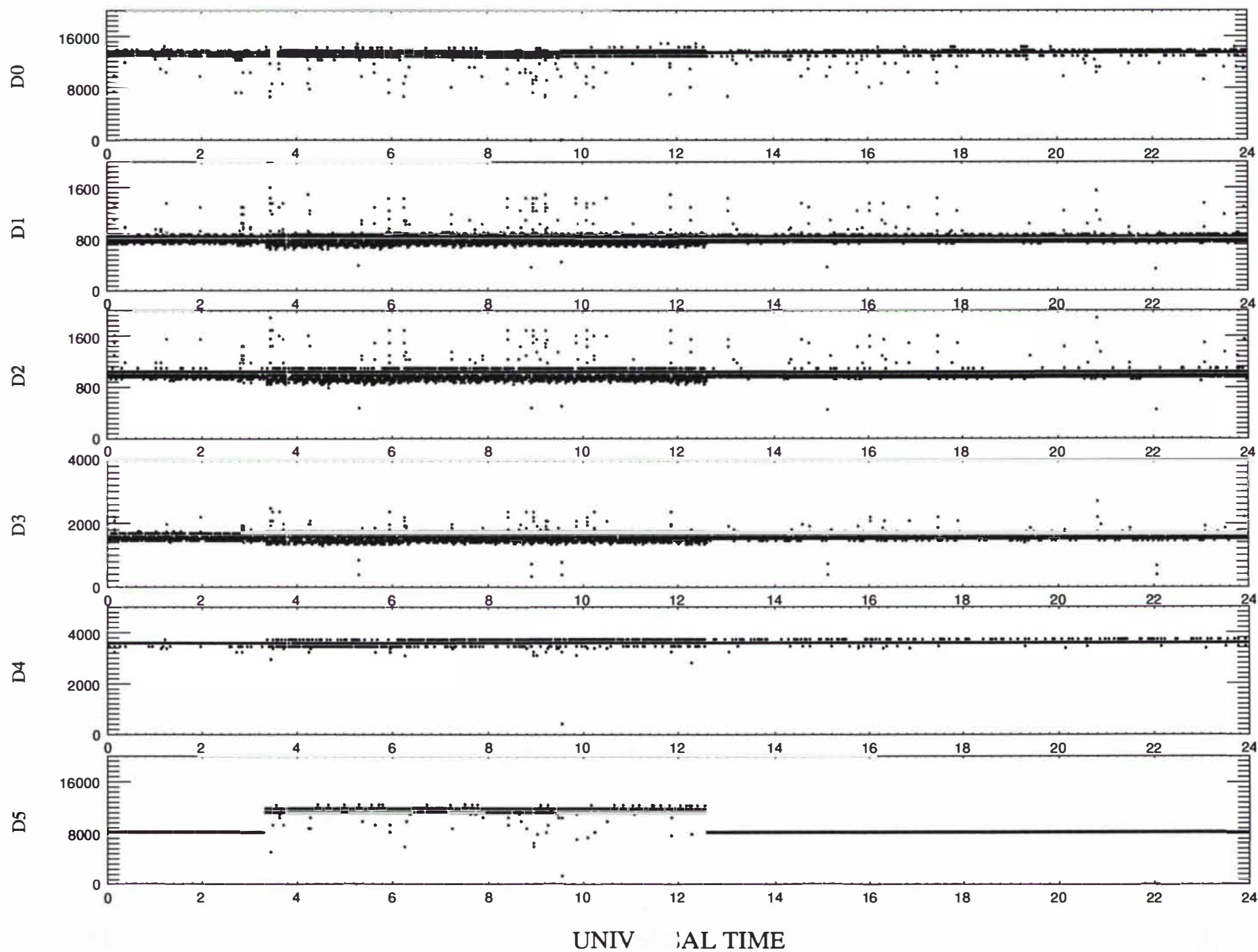




## CALIBRATION DATA INCLUDED



UNIV JAL TIME



From SHARIFF@ssl.msfc.nasa.gov Sat Apr 23 18:05 PDT 1994  
Date: Sat, 23 Apr 1994 20:08:31 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1296

BATSE BURST TRIGGER

NO.: 02942

TIME: TJD=9464 SECONDS=01079

TYPE: FLARE SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:

SOLAR FLARE, GOES C5.2, MULTIPLE PEAKS, LASTING ~200 SECONDS. NOT VISIBLE ABOVE 300KEV.

From SHARIFF@ssl.msfc.nasa.gov Sat Apr 23 18:13 PDT 1994  
Date: Sat, 23 Apr 1994 20:16:55 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2943  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2943  
EVENT OF 1994 APR 22 DAY OF YEAR=112  
EVENT CROSSING TIME AT BATSE : 22028. S. OR 06:07:08.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 256.000 -1.000  
BATSE PEAK COUNTING RATE: 1200 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 22/ 4/ 94 IS:  
RA= 120.965 DEC= -45.674 DIST= 2.907 AU  
BATSE-ULYSSES DISTANCE = 434892239. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 61.20 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 698.96 SECS.  
CROSSING TIME AT ULYSSES IS 22727. S. OR 06:18:46 +/- 281.31 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 22/ 4/ 94 IS:  
RA= 5.568 DEC= 1.293 DIST= 2.214 AU  
MARS-BATSE DISTANCE = 331288480. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 70.42 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 370.40 SECS.  
CROSSING TIME AT MARS IS 22398. S. OR 06:13:18 +/- 186.38 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2943    | 940422 | 9464 | 22028 | 1200     | 256 | -01 |

#### BATSE BURST TRIGGER

NO.: 02943

TIME: TJD=9464 SECONDS=22028

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=017.6 AZIMUTH=126.7 ERROR= DEGREES

#### COMMENTS:

BURST, TWO MAIN PULSES WITH SUBSTRUCTURE, LASTING > 55 SECONDS. VISIBLE ABOVE 30  
0 KEV.

25 / 4 / 94

ULYSSES RT

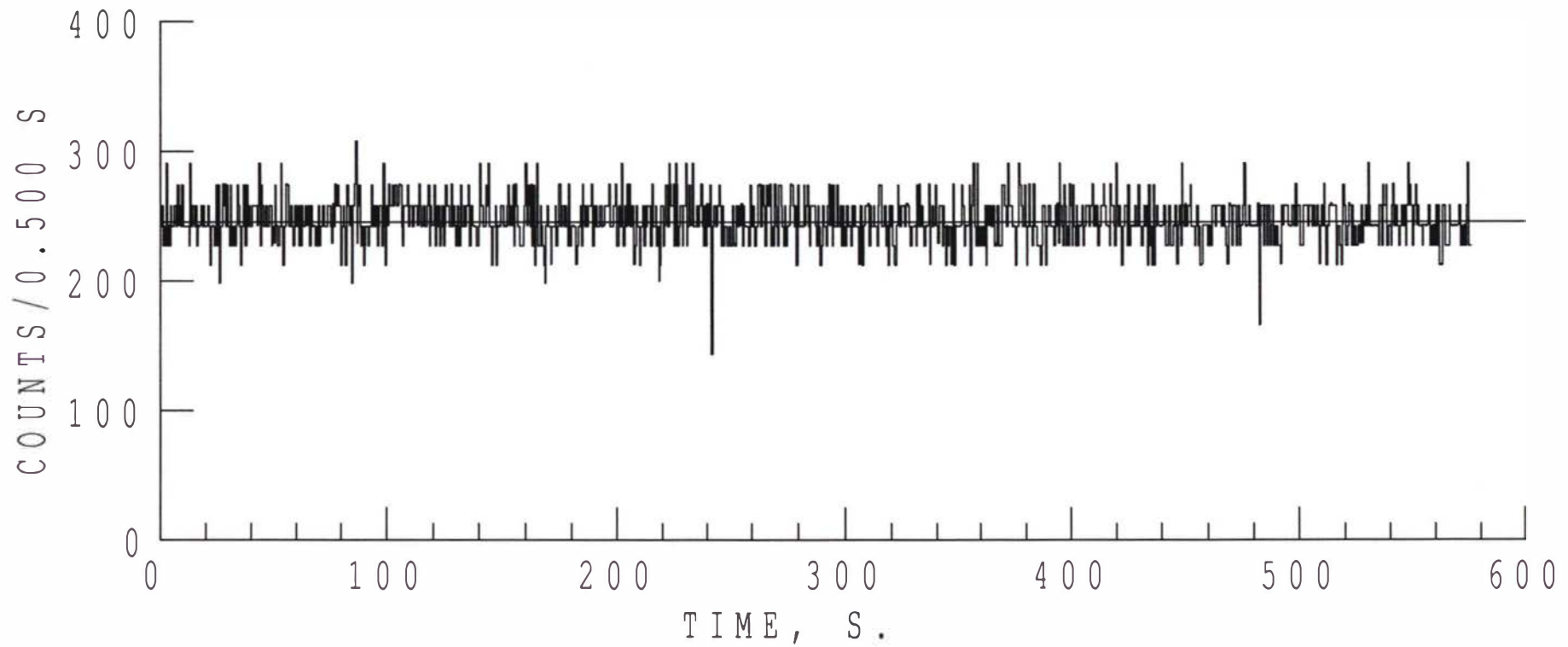
22 / 4 / 94 22428.045 s

0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



2 2 / 2 / 9 5

U L Y S S E S   R T

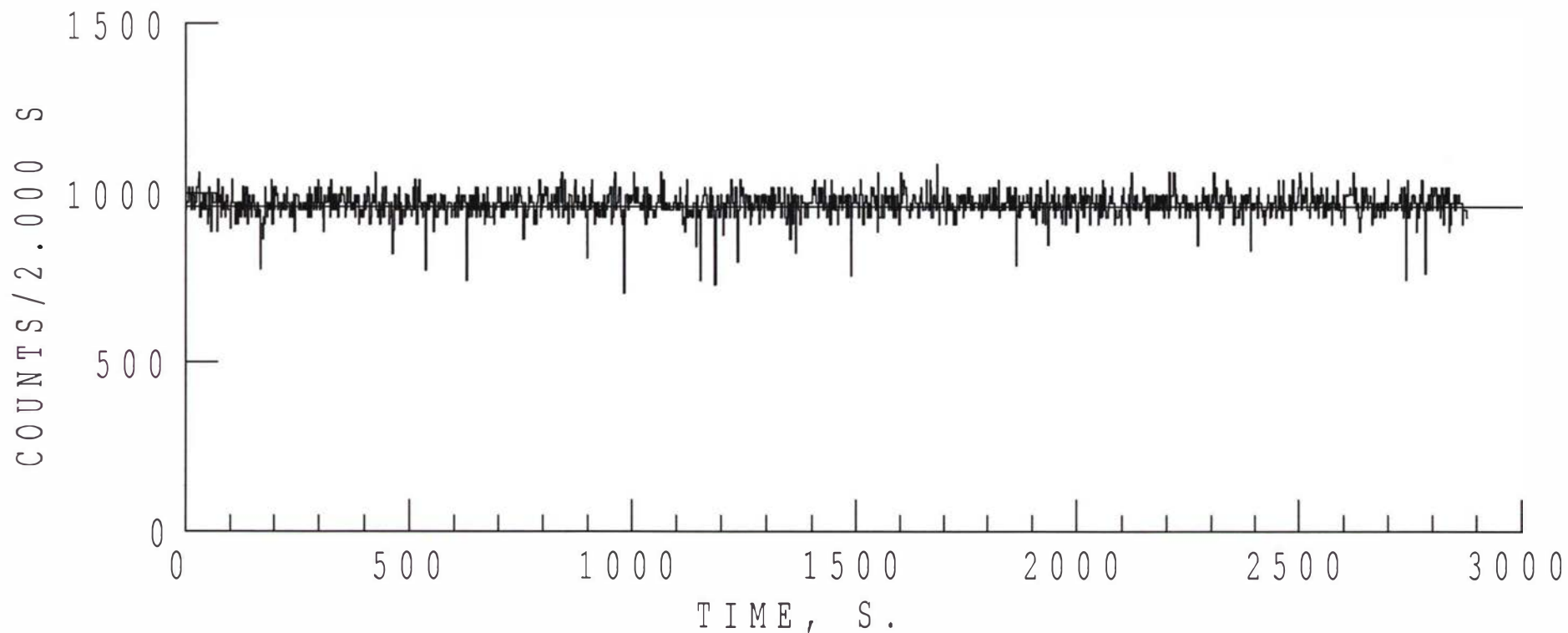
2 2 / 4 / 9 4    5 4 6 4 8 . 0 5 5   s

0 . 5 0 0   S   I N T E R V A L S   R E G R O U P E D   B Y    4

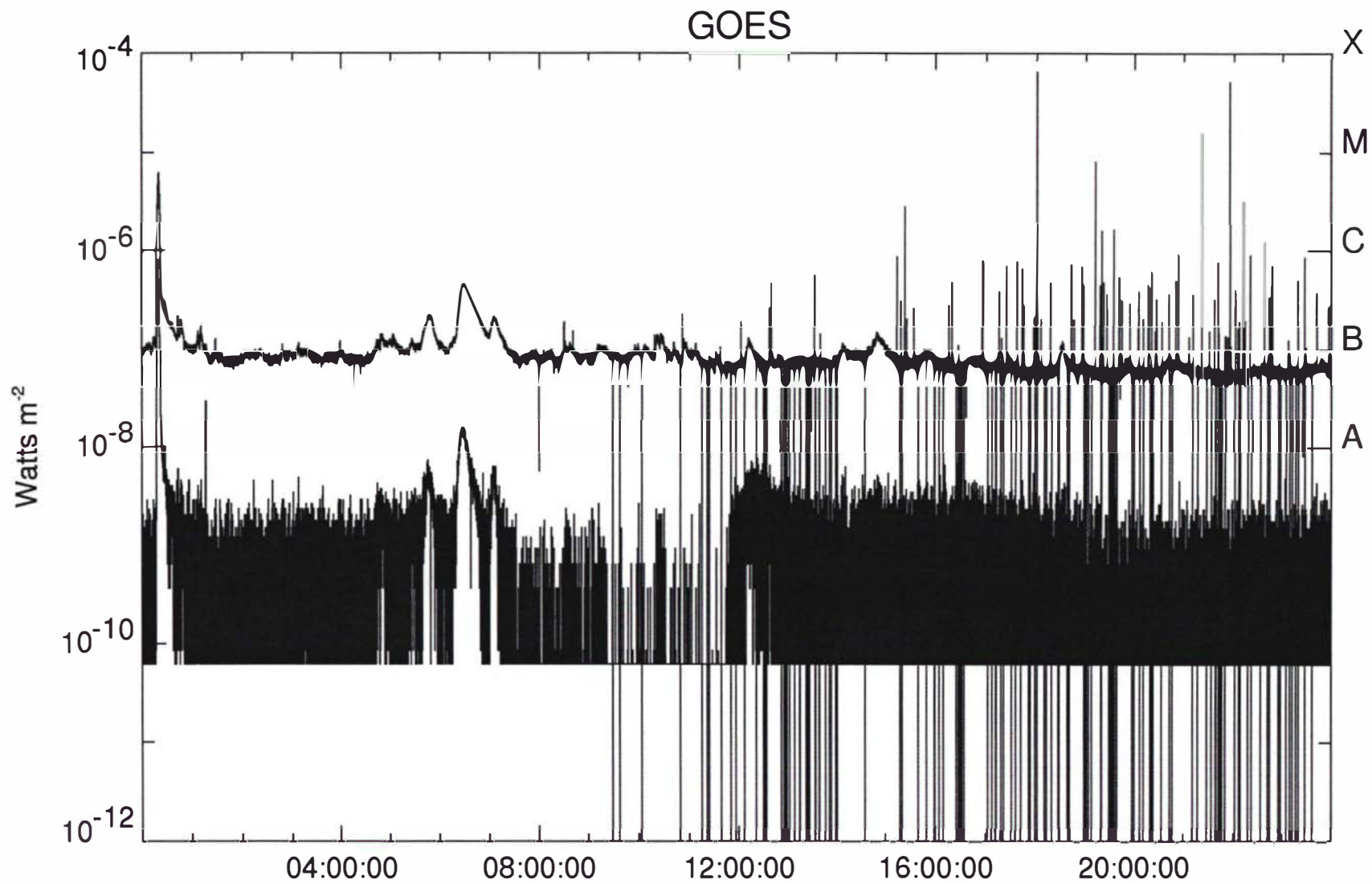
0 -        0   k e V

N= 10   M= 2

&gt;4.0 SIGMA FLUCTUATIONS







Data Start: 94/04/22, 0000:01

Plot created: 94/04/29, 1939

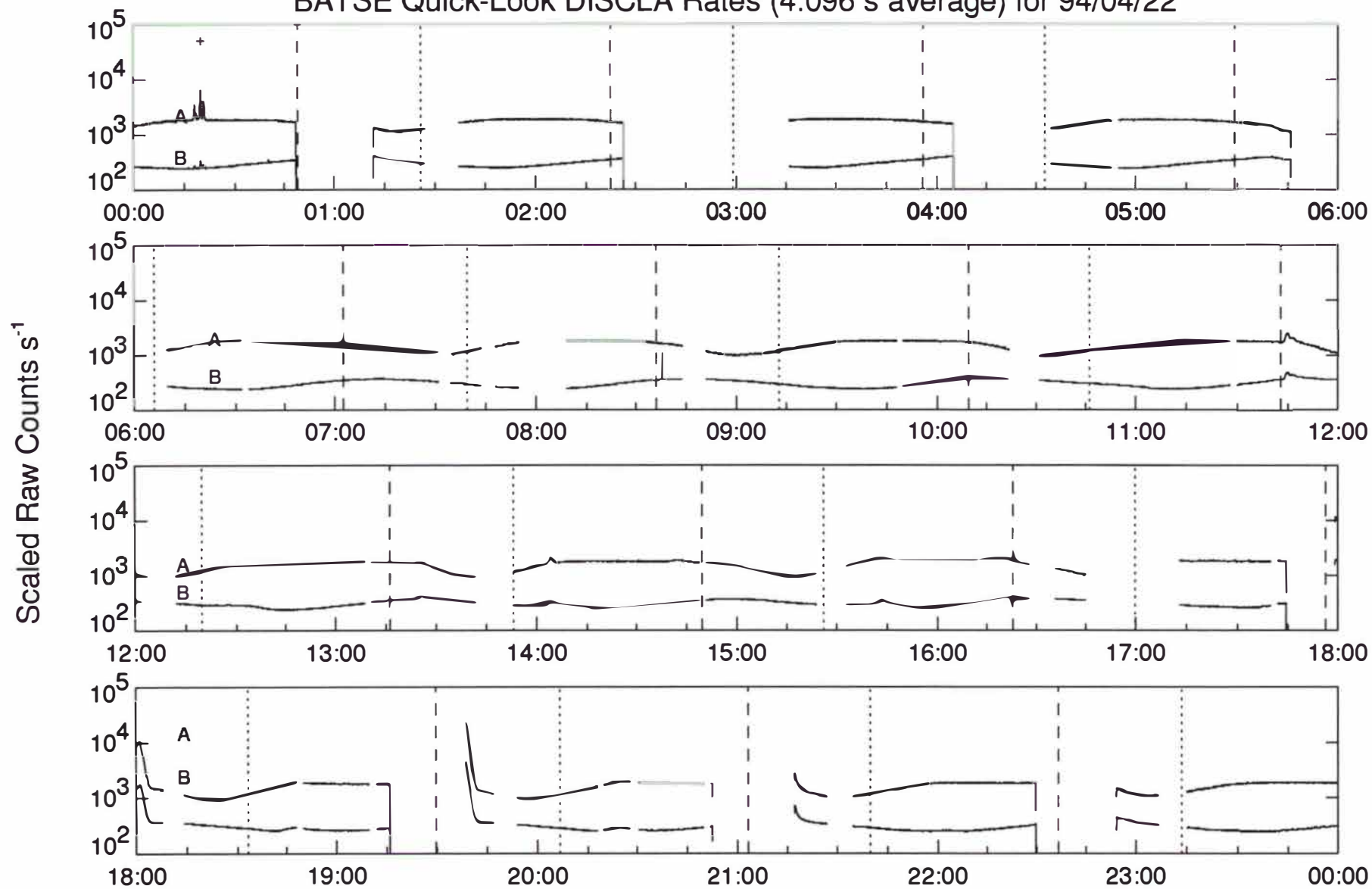
Channel 1 (1.0 - 8.0 Angstroms)

Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/22

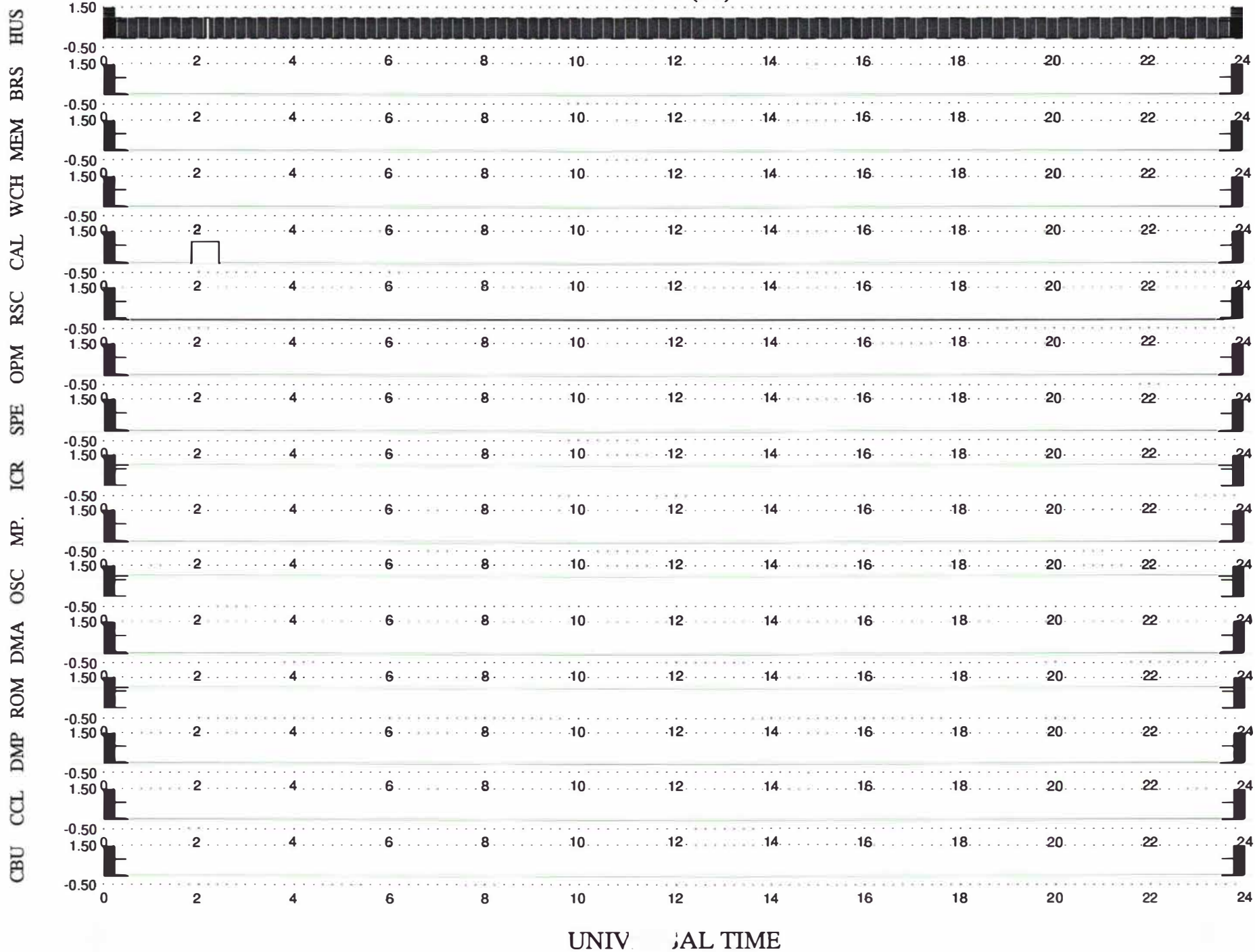


Current Time: 94/04/29, 1859 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

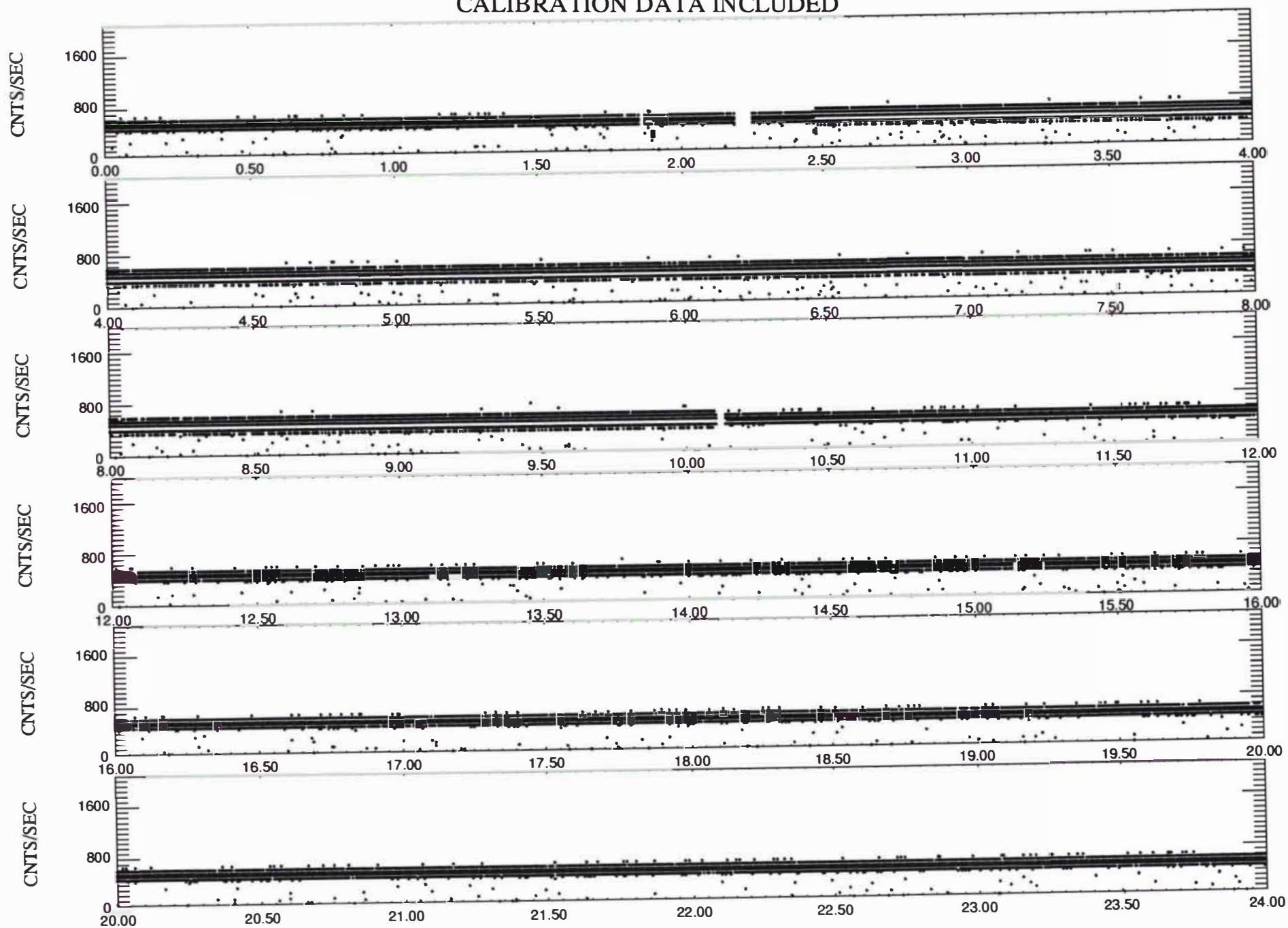
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)

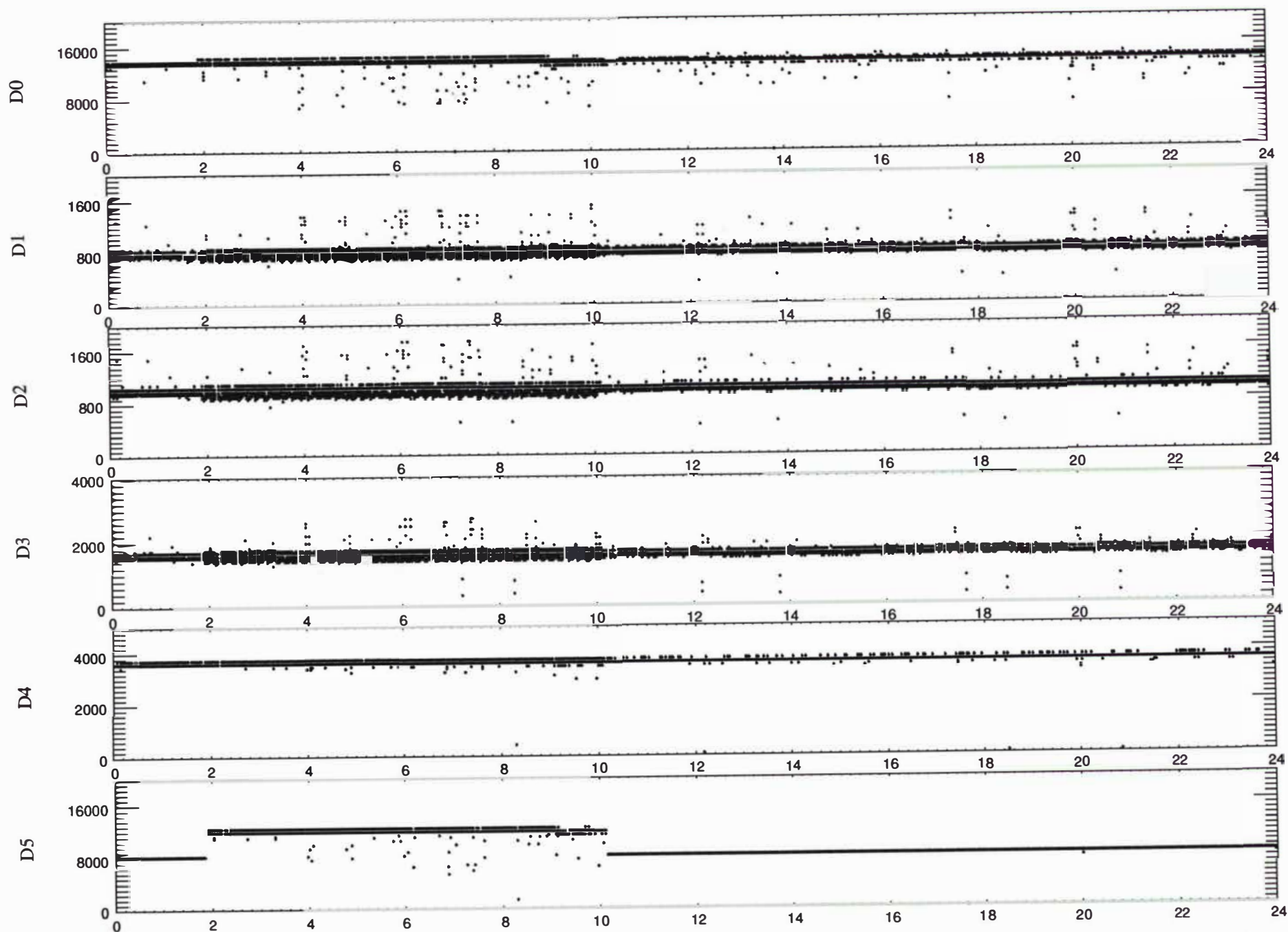


CALIBRATION DATA INCLUDED



UNIV 3AL TIME





UNIV. AL TIME

From SHARIFF@ssl.msfc.nasa.gov Mon Apr 25 07:40 PDT 1994  
Date: Mon, 25 Apr 1994 9:43:54 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2944  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2944  
EVENT OF 1994 APR 23 DAY OF YEAR=113  
EVENT CROSSING TIME AT BATSE : 84019. S. OR 23:20:19.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 5.000 -3.000  
BATSE PEAK COUNTING RATE: 5000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 23/ 4/ 94 IS:  
RA= 120.712 DEC= -45.359 DIST= 2.911 AU  
BATSE-ULYSSES DISTANCE = 435549554. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 74.50 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 388.19 SECS.  
CROSSING TIME AT ULYSSES IS 84407. S. OR 23:26:47 +/- 298.96 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 23/ 4/ 94 IS:  
RA= 6.276 DEC= 1.603 DIST= 2.212 AU  
MARS-BATSE DISTANCE = 330965920. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=175.22 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1100.15 SECS.  
CROSSING TIME AT MARS IS 82919. S. OR 23:01:58 +/- 0.75 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2944    | 940423 | 9465 | 84019 | 5000     | 005 | -03 |

#### BATSE BURST TRIGGER

NO.: 02944

TIME: TJD=9465 SECONDS=84019

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=094.9 AZIMUTH=344.3 ERROR= DEGREES

#### COMMENTS:

BURST, TWO PULSES, LASTING ~5 SECONDS. VISIBLE ABOVE 300KEV.



27 / 4 / 94

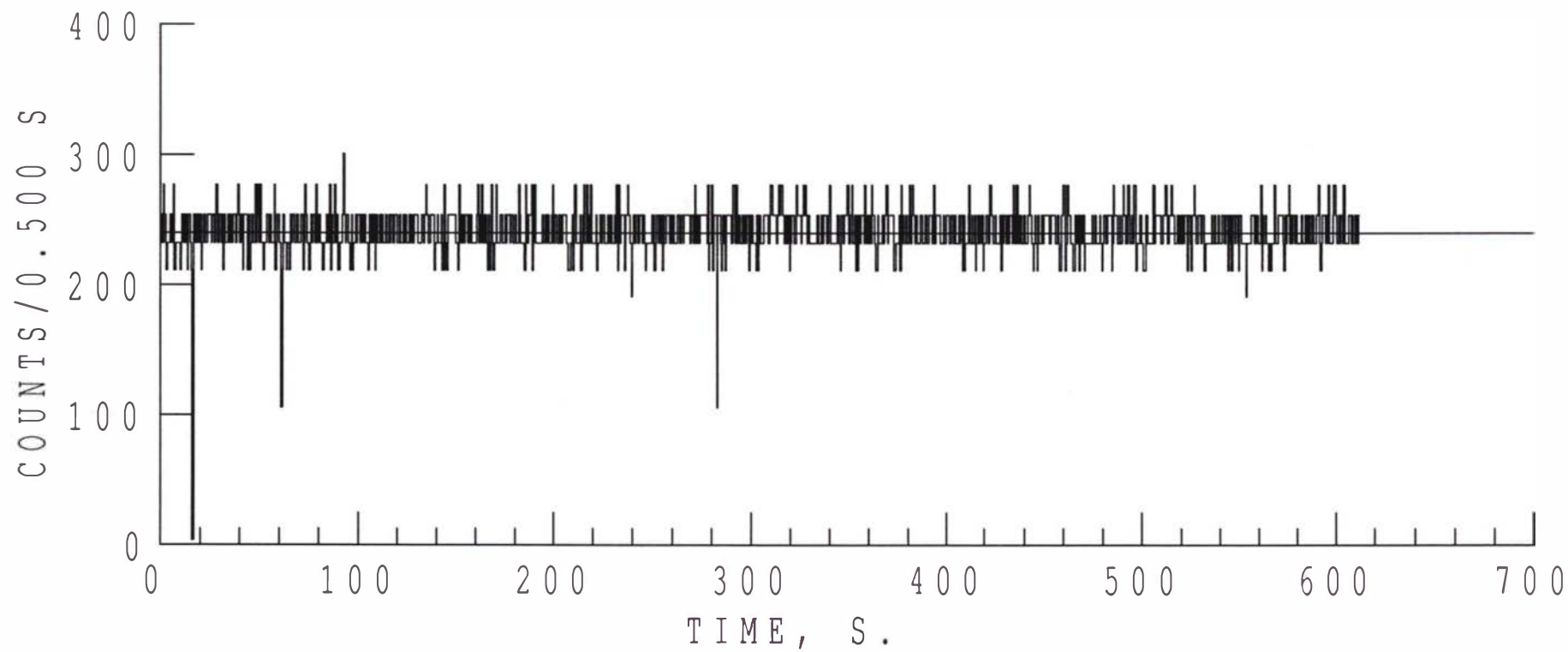
ULYSSES RT

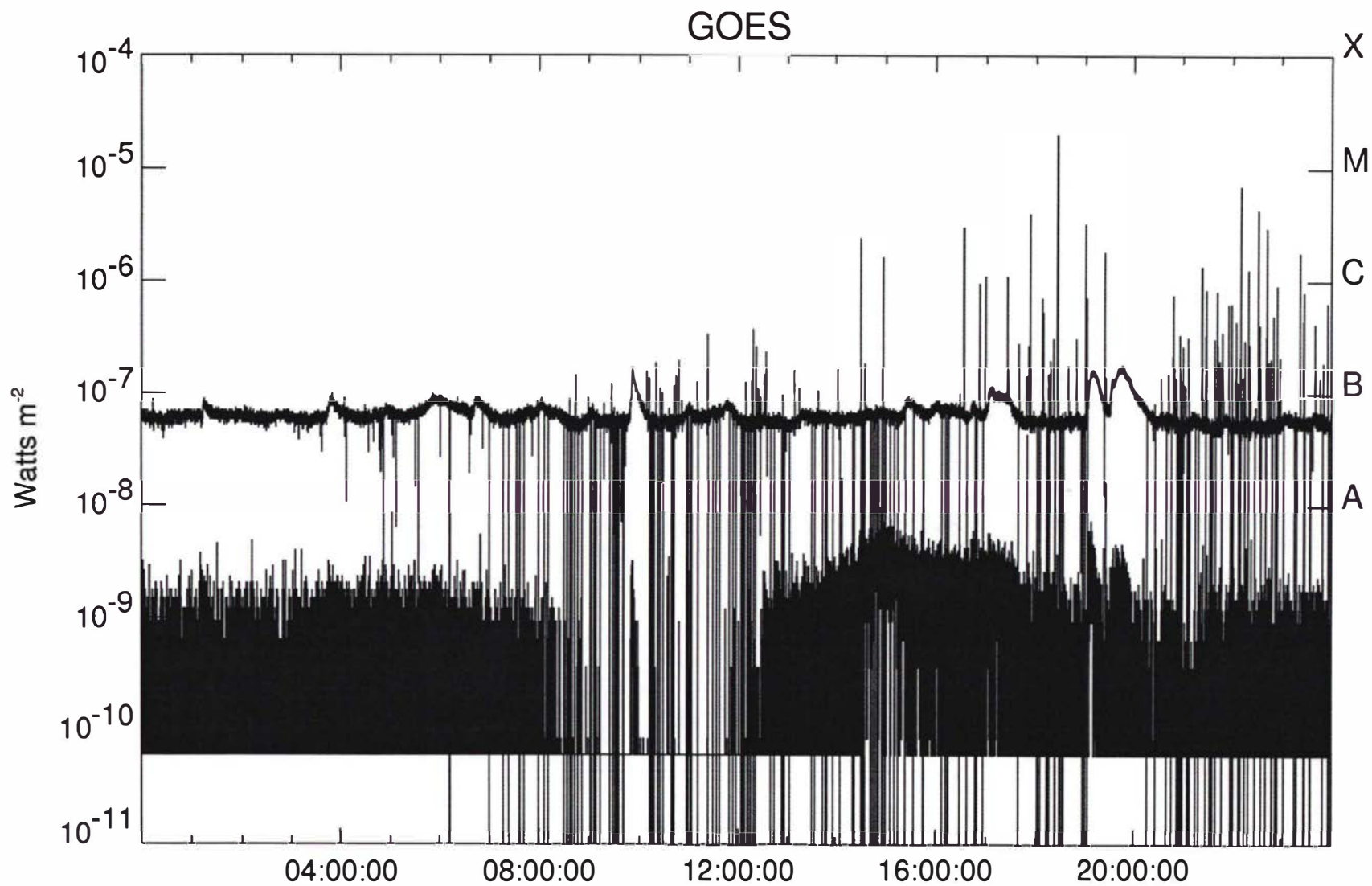
23 / 4 / 94 84096.406 s

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





Data Start: 94/04/23, 0000:01

Plot created: 94/04/29, 1942

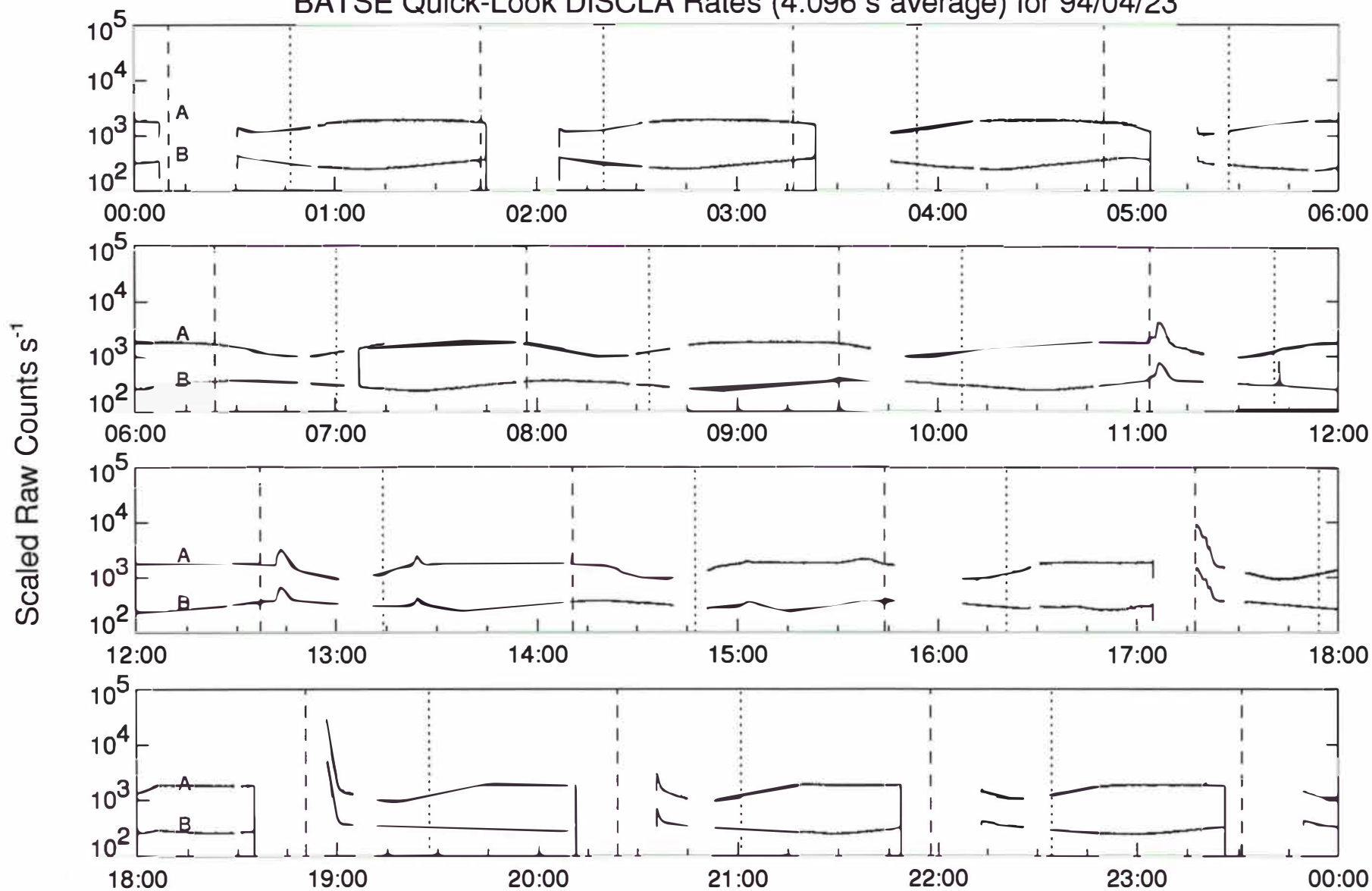
Channel 1 (1.0 - 8.0 Angstroms)

Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms)

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/23

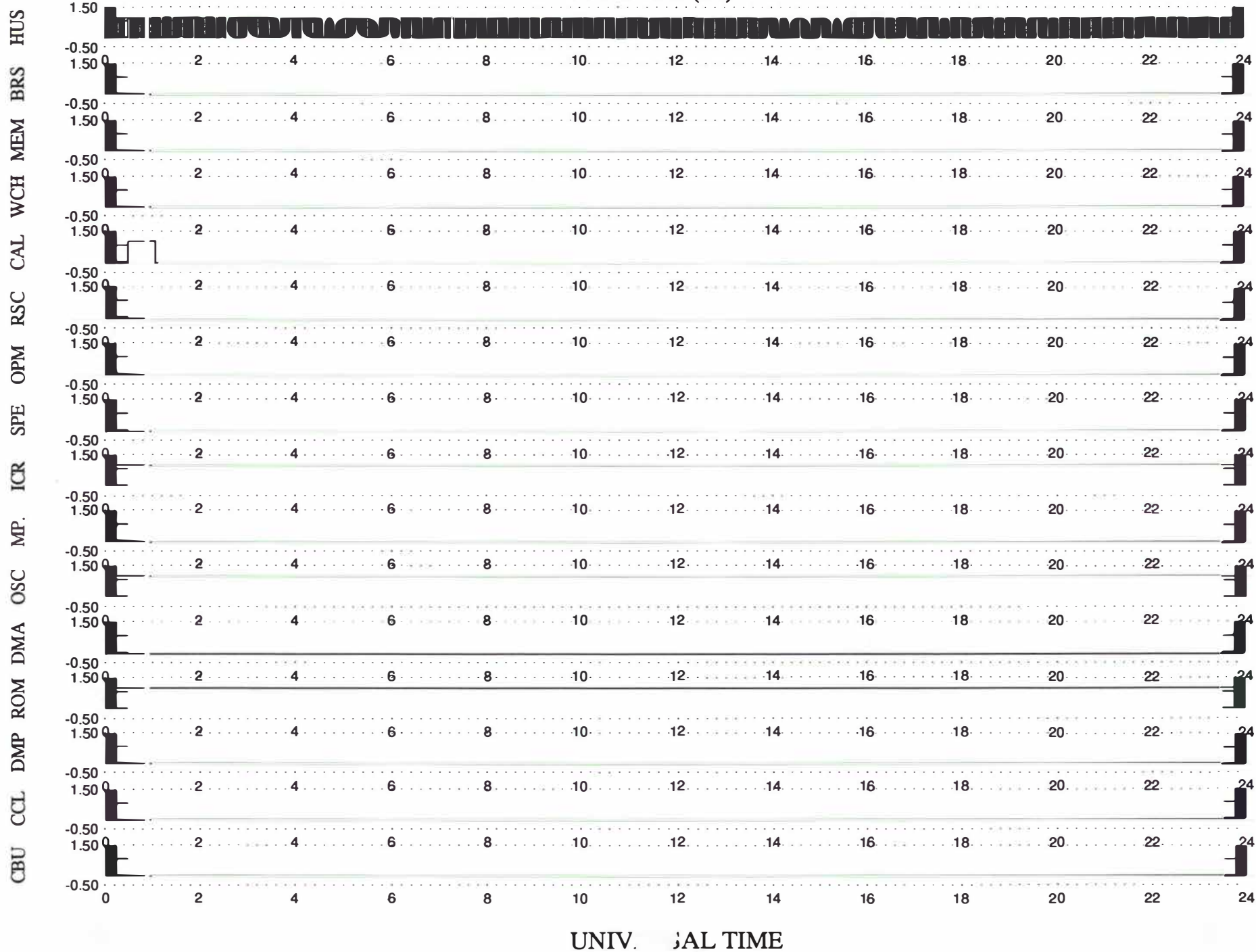


Current Time: 94/04/29, 1900 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

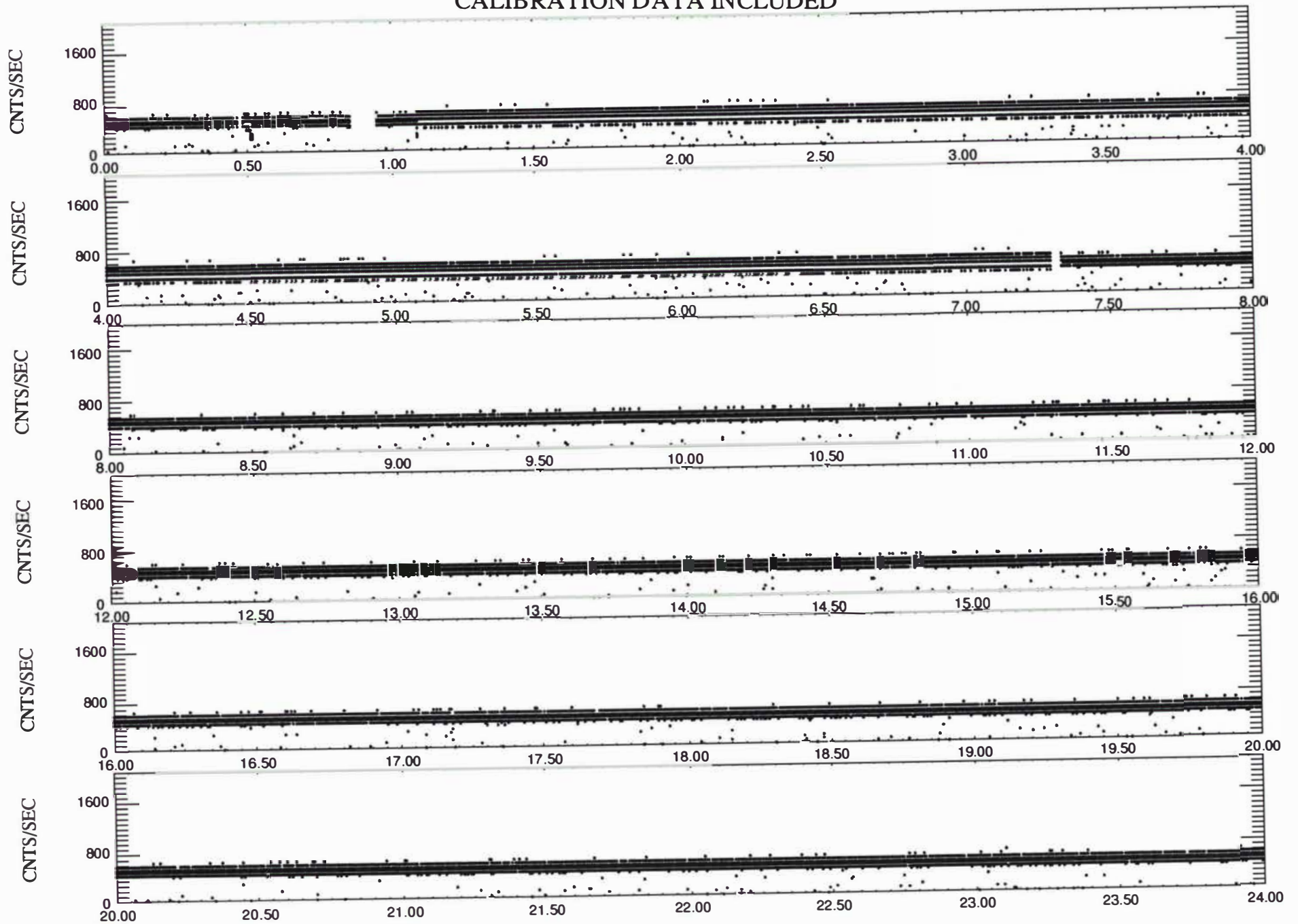
Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

NO BURST (10)

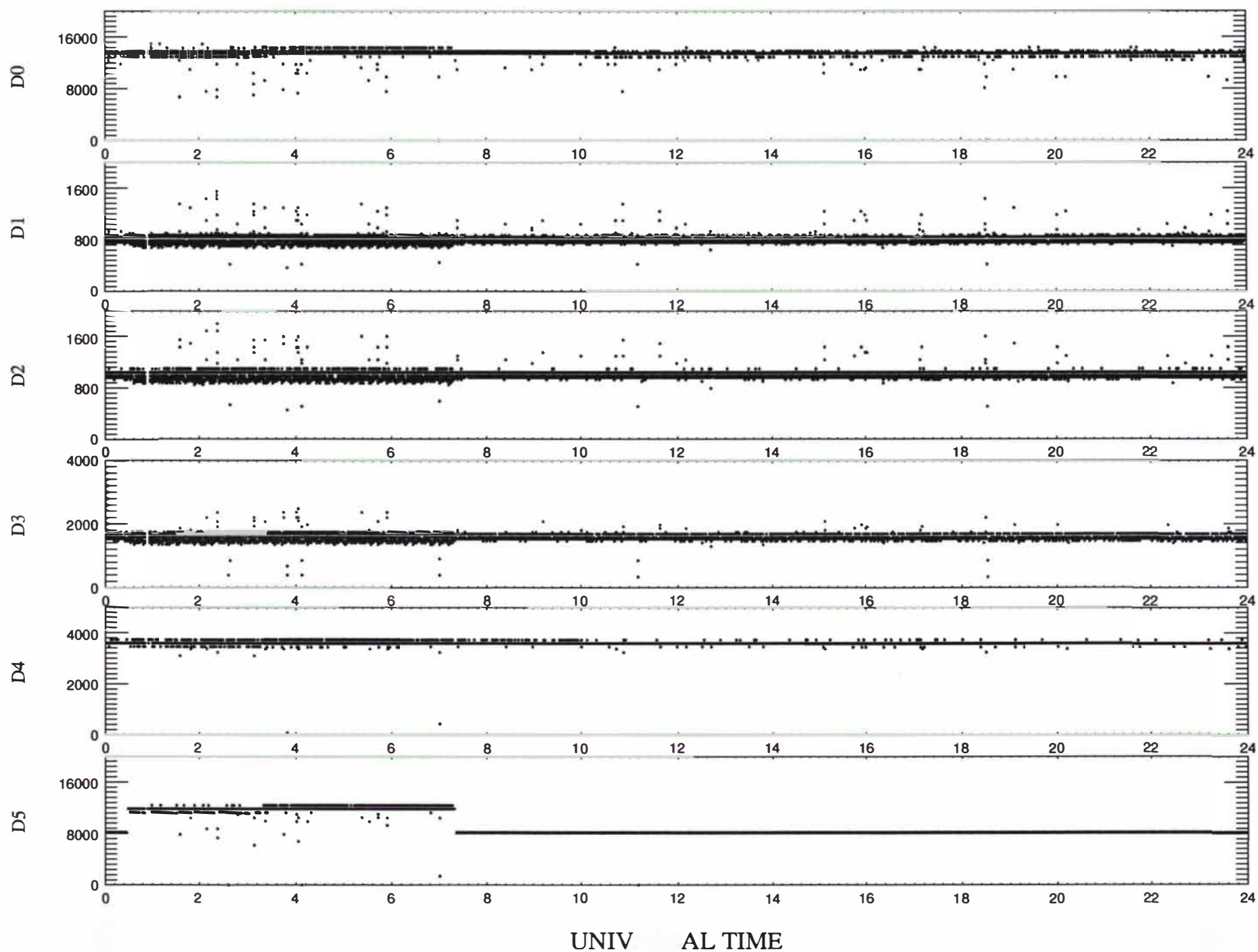


CALIBRATION DATA INCLUDED



UNIV. TIME







From HAGEDON@ssl.msfc.nasa.gov Mon Apr 25 12:17 PDT 1994  
Date: Mon, 25 Apr 1994 14:20:46 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2945  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2945  
EVENT OF 1994 APR 24 DAY OF YEAR=114  
EVENT CROSSING TIME AT BATSE : 31116. S. OR 08:38:36.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 30.000 -44.000  
BATSE PEAK COUNTING RATE: 6500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 24/ 4/ 94 IS:  
RA= 120.659 DEC= -45.289 DIST= 2.912 AU  
BATSE-ULYSSES DISTANCE = 435700177. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=119.20 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -709.00 SECS.  
CROSSING TIME AT ULYSSES IS 30407. S. OR 08:26:47 +/- 259.49 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 24/ 4/ 94 IS:  
RA= 6.984 DEC= 1.913 DIST= 2.210 AU  
MARS-BATSE DISTANCE = 330642656. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=129.68 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -704.23 SECS.  
CROSSING TIME AT MARS IS 30412. S. OR 08:26:51 +/- 136.67 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2945    | 940424 | 9466 | 31116 | 6500     | 030 | -44 |

#### BATSE BURST TRIGGER

NO.: 02945

TIME: TJD=9466 SECONDS=31116

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=102 AZIMUTH=298 ERROR= DEGREES

#### COMMENTS:

BURST. SHORT SINGLE PULSE. DUR.~4 SEC. NOT VISIBLE ABOVE 300 KEV.

27 / 4 / 94

ULYSSES RT

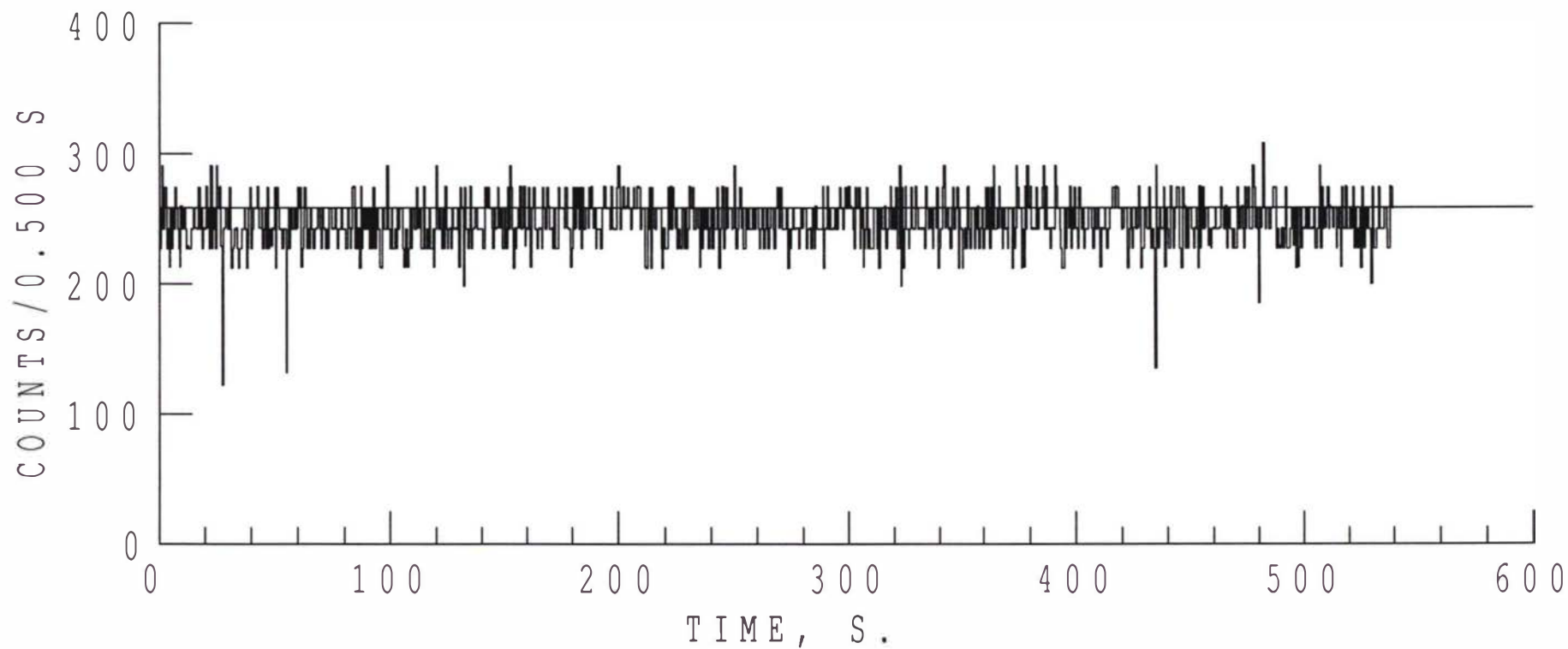
24 / 4 / 94 30132.180 s

0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



From HAGEDON@ssl.msfc.nasa.gov Mon Apr 25 12:14 PDT 1994  
Date: Mon, 25 Apr 1994 14:17:21 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: burst@comptel.unh.edu, grobad@vmprofs.estec.esa.nl,  
LHEAVXCLINE@ssl.msfc.nasa.gov, LHEAVXBARTHELMY@ssl.msfc.nasa.gov,  
LHEAVXKWOK@ssl.msfc.nasa.gov, 15733SCHAEFER@ssl.msfc.nasa.gov,  
CASS09BAND@ssl.msfc.nasa.gov, CASS09GRUBER@ssl.msfc.nasa.gov,  
CASS09MATTESON@ssl.msfc.nasa.gov, PACIESAS@ssl.msfc.nasa.gov,  
HORACK@ssl.msfc.nasa.gov, khurley@sunspot.ssl.berkeley.edu  
Subject: Burst Trigger Message  
Content-Type: text  
Content-Length: 1215

BATSE BURST TRIGGER

NO.: 02946

TIME: TJD=9466 SECONDS=59073

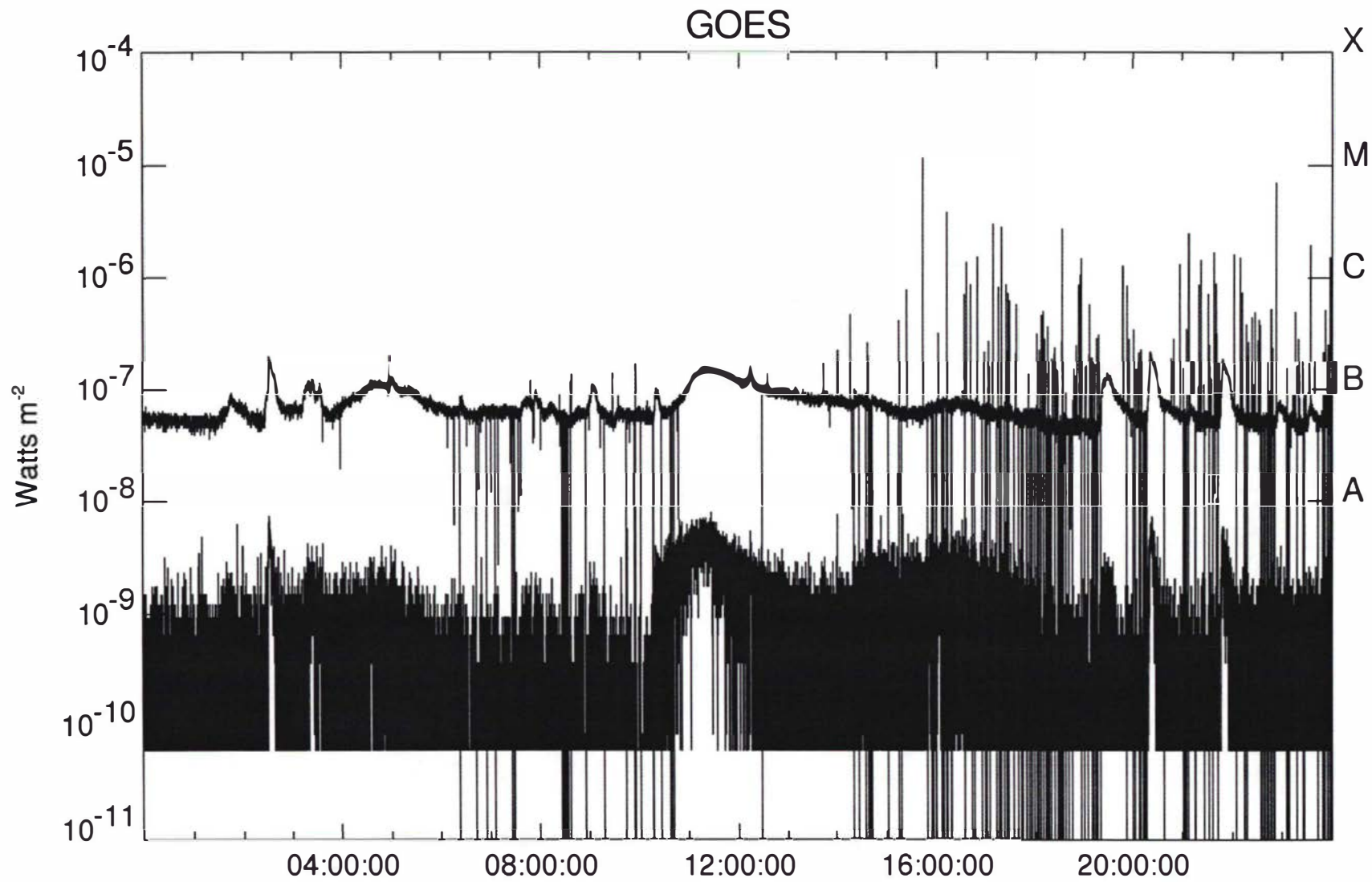
TYPE: SAA SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH= AZIMUTH= ERROR= DEGREES

COMMENTS:  
SAA ENTRY.



Data Start: 94/04/24, 0000:00

Plot created: 94/04/29, 1943

Channel

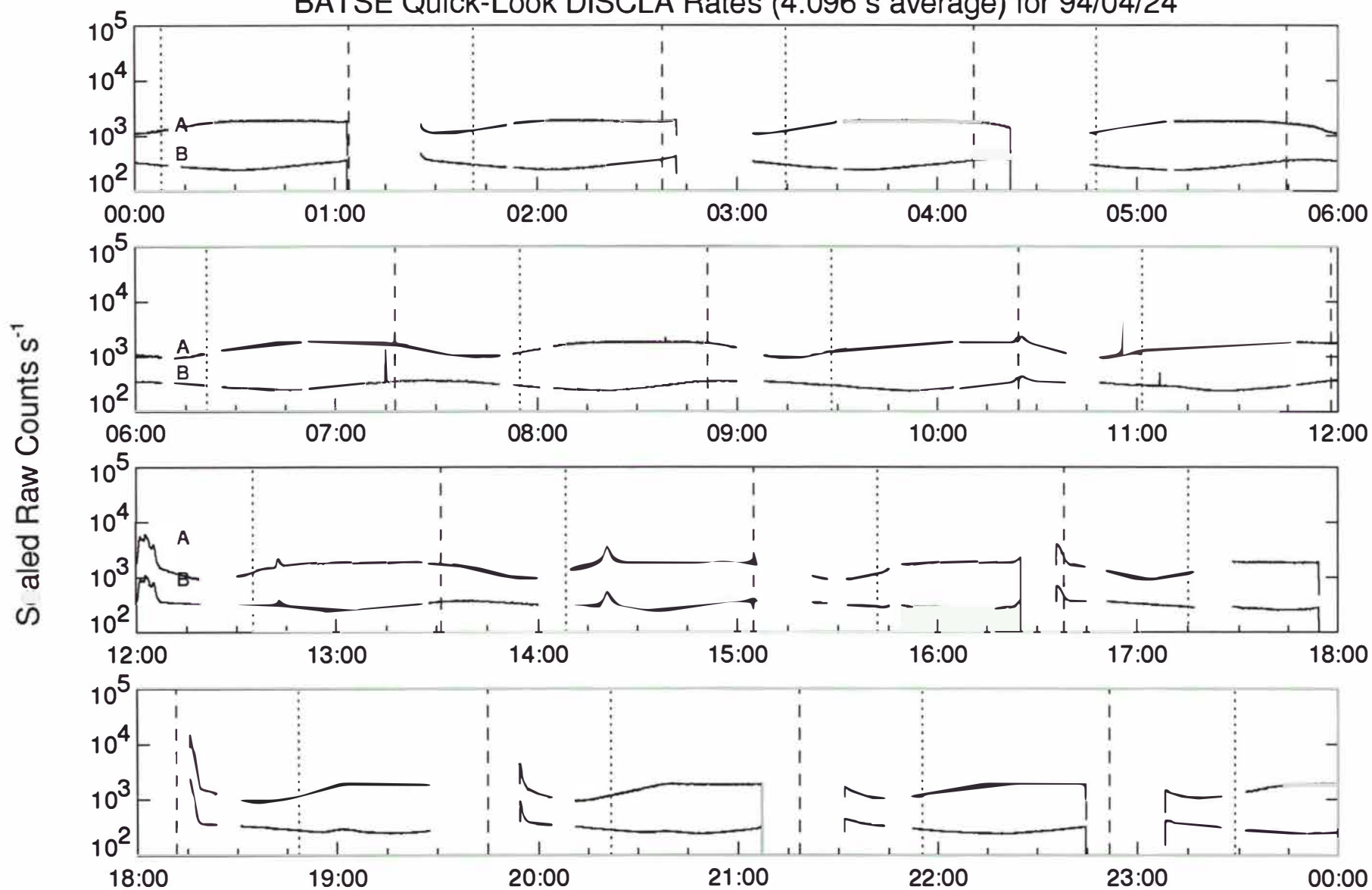
1 (1.0 - 8.0 Angstroms)

Background not subtracted

2 (0.5 - 4.0 Angstroms)

Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/24

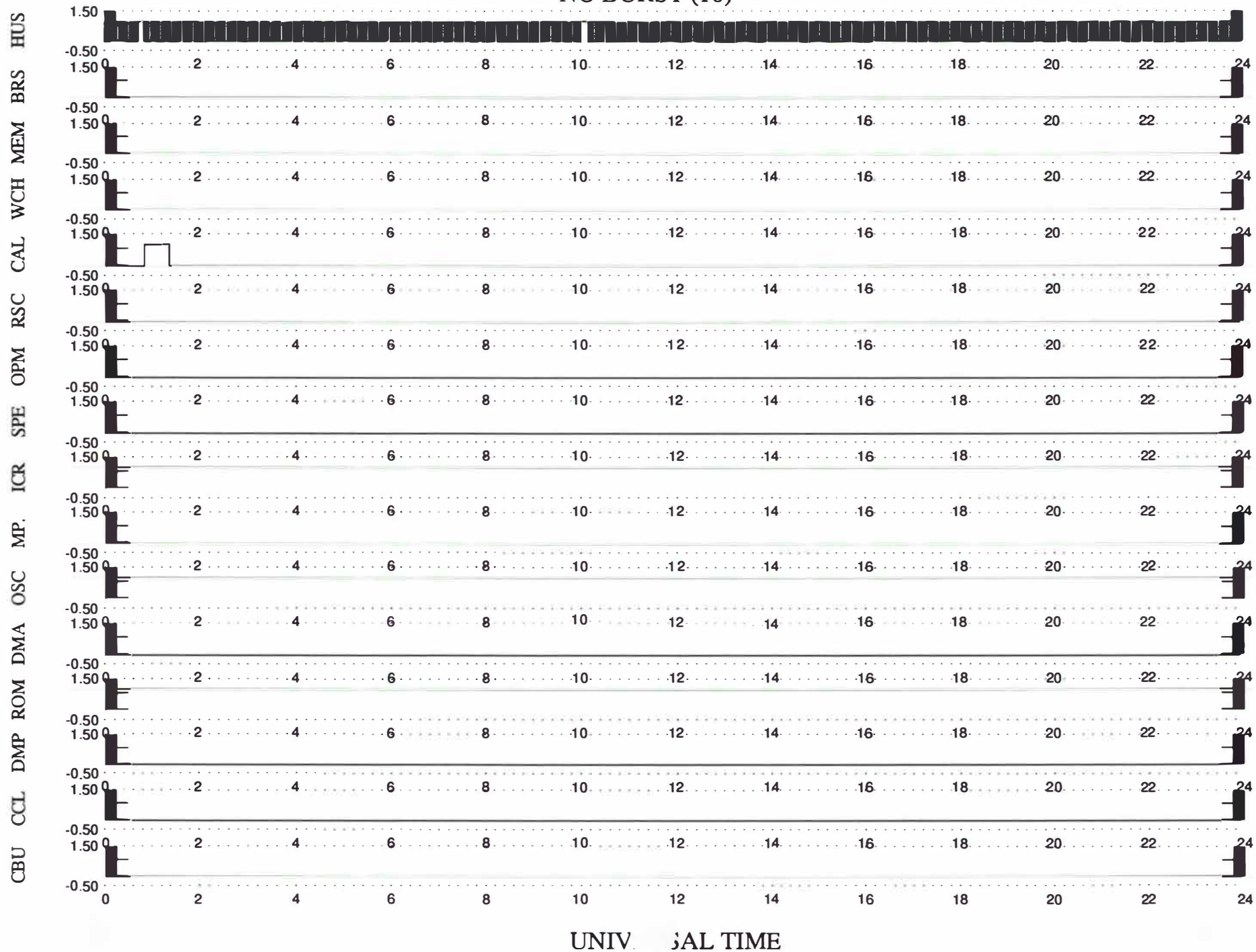


Current Time: 94/04/29, 1900 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

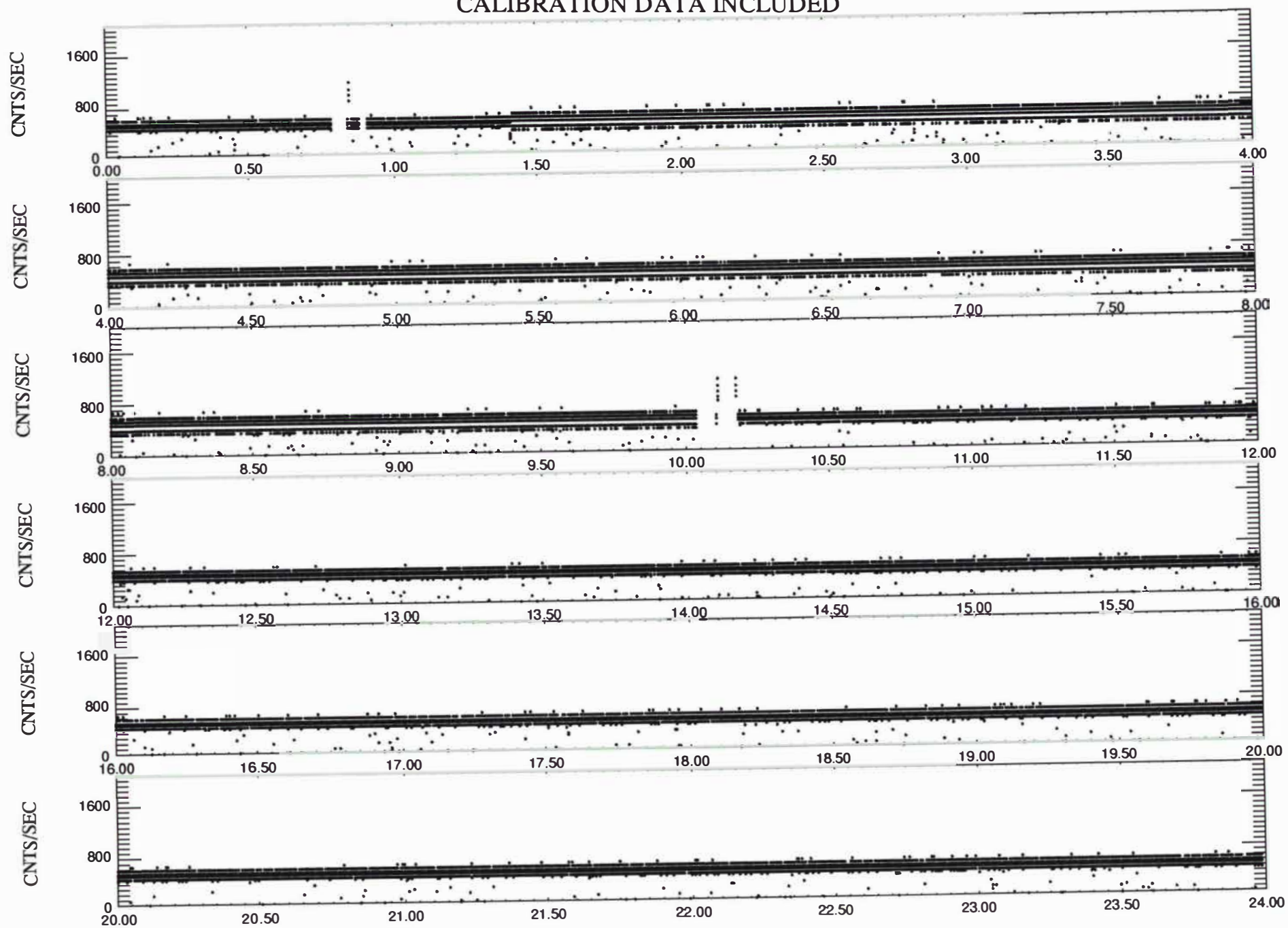
\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)

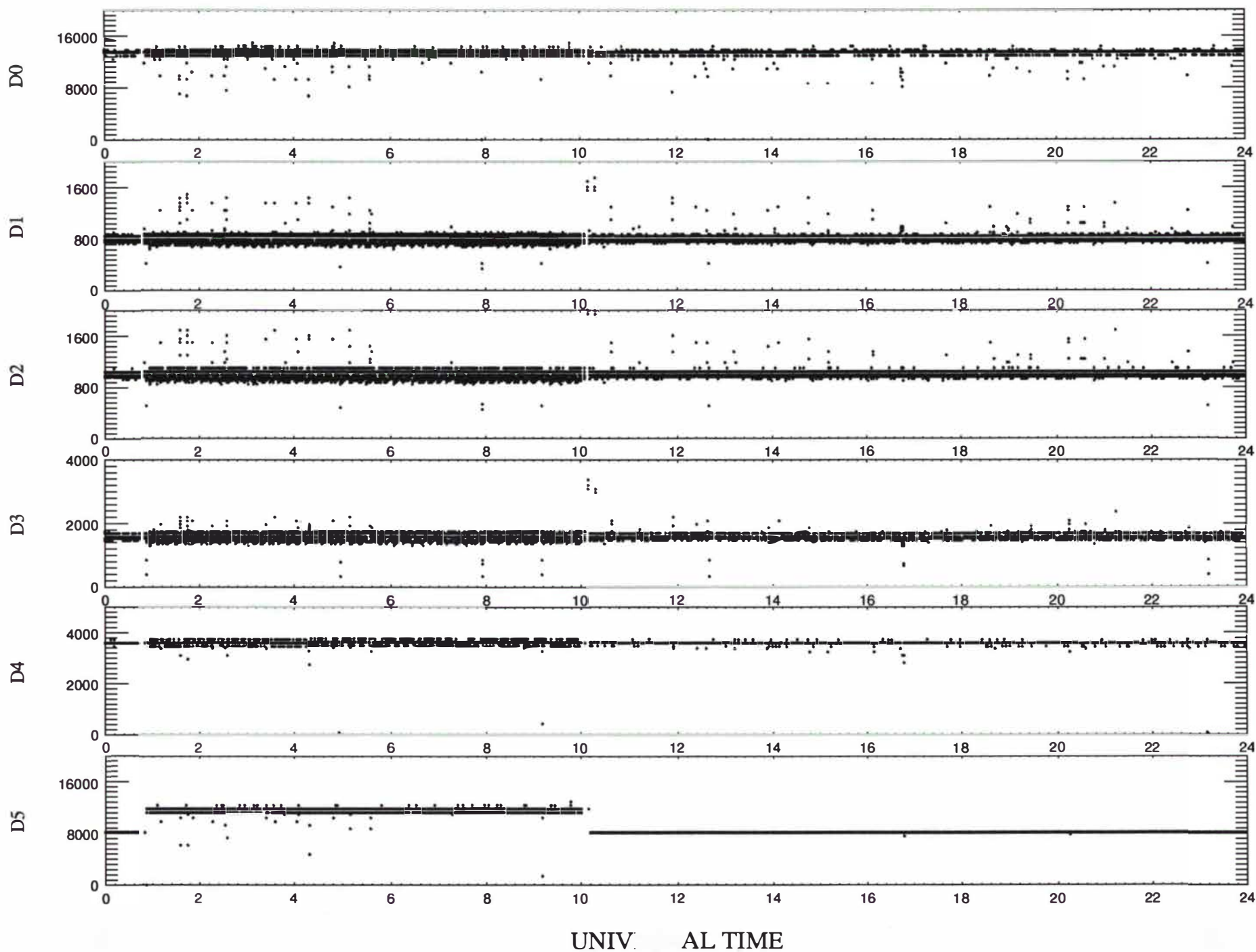




## CALIBRATION DATA INCLUDED



UNIV CAL TIME



From CRARY@ssl.msfc.nasa.gov Thu Apr 28 10:10 PDT 1994  
Date: Thu, 28 Apr 1994 12:10:40 -0500 (CDT)  
From: CRARY@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2947  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2947  
EVENT OF 1994 APR 25 DAY OF YEAR=115  
EVENT CROSSING TIME AT BATSE : 24835. S. OR 06:53:55.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 116.000 -20.000  
BATSE PEAK COUNTING RATE: 2000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 25/ 4/ 94 IS:  
RA= 120.537 DEC= -45.121 DIST= 2.915 AU  
BATSE-ULYSSES DISTANCE = 436065233. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=154.60 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1313.95 SECS.  
CROSSING TIME AT ULYSSES IS 23521. S. OR 06:32:01 +/- 138.37 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 25/ 4/ 94 IS:  
RA= 7.692 DEC= 2.222 DIST= 2.208 AU  
MARS-BATSE DISTANCE = 330318624. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 72.05 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 339.60 SECS.  
CROSSING TIME AT MARS IS 25175. S. OR 06:59:34 +/- 187.14 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2947    | 940425 | 9467 | 24835 | 2000     | 116 | -20 |

BATSE BURST TRIGGER

NO.: 02947

TIME: TJD=9467 SECONDS=24835

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=137.4 AZIMUTH=219.5 ERROR= DEGREES

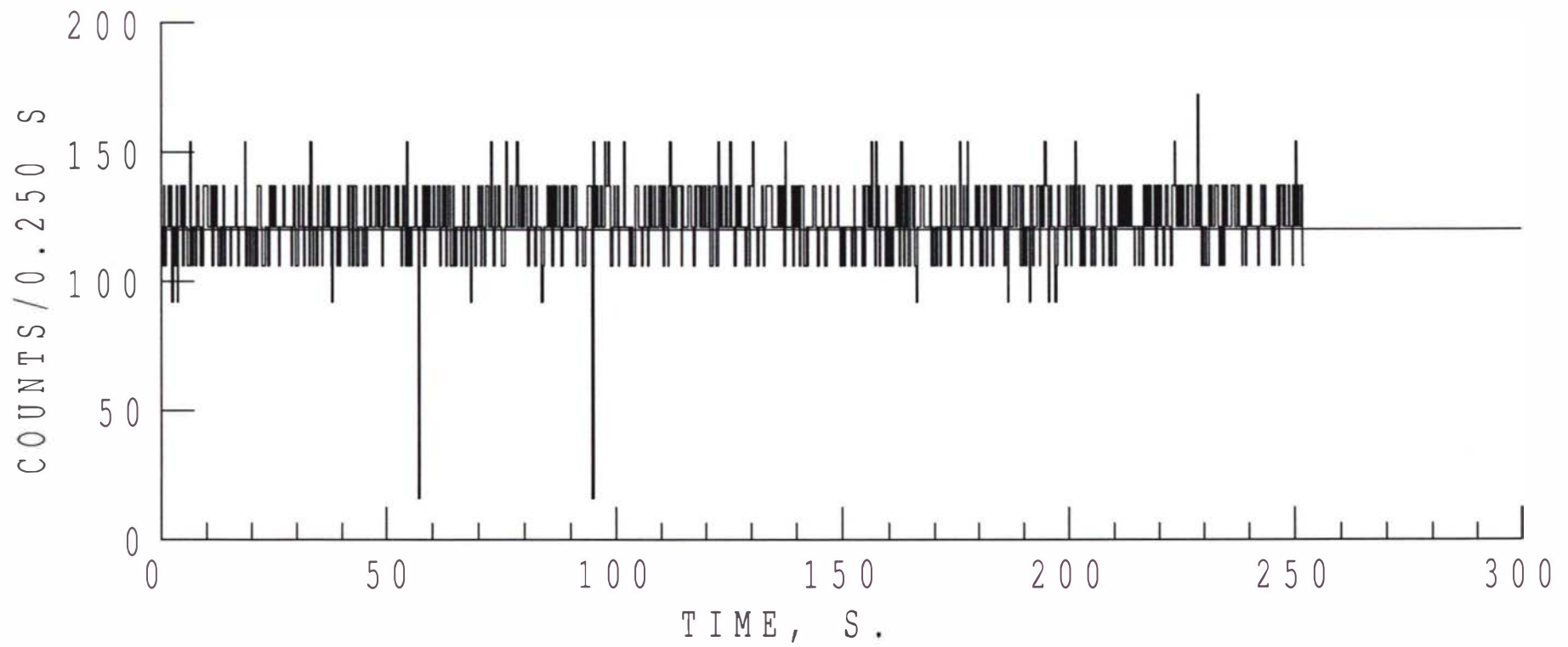
COMMENTS:

BURST, SINGLE PULSE, LASTING ~25 SECONDS. NOT VISIBLE ABOVE 300 KEV

28 / 4 / 94

ULYSSES RT  
25 / 4 / 94 23400.203 s  
0 - 0 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



From CRARY@ssl.msfc.nasa.gov Thu Apr 28 10:16 PDT 1994  
Date: Thu, 28 Apr 1994 12:16:59 -0500 (CDT)  
From: CRARY@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2948  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2948  
EVENT OF 1994 APR 25 DAY OF YEAR=115  
EVENT CROSSING TIME AT BATSE : 44063. S. OR 12:14:23.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 319.000 13.000  
BATSE PEAK COUNTING RATE: 3500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 25/ 4/ 94 IS:  
RA= 120.509 DEC= -45.081 DIST= 2.915 AU  
BATSE-ULYSSES DISTANCE = 436155258. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 35.73 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1181.02 SECS.  
CROSSING TIME AT ULYSSES IS 45244. S. OR 12:34:04 +/- 215.44 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 25/ 4/ 94 IS:  
RA= 7.692 DEC= 2.222 DIST= 2.208 AU  
MARS-BATSE DISTANCE = 330318624. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=130.65 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -717.75 SECS.  
CROSSING TIME AT MARS IS 43345. S. OR 12:02:25 +/- 134.24 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2948    | 940425 | 9467 | 44063 | 3500     | 319 | +13 |

#### BATSE BURST TRIGGER

NO.: 02948

TIME: TJD=9467 SECONDS=44063

TYPE: BURST

SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=055.1 AZIMUTH=014.0 ERROR= DEGREES

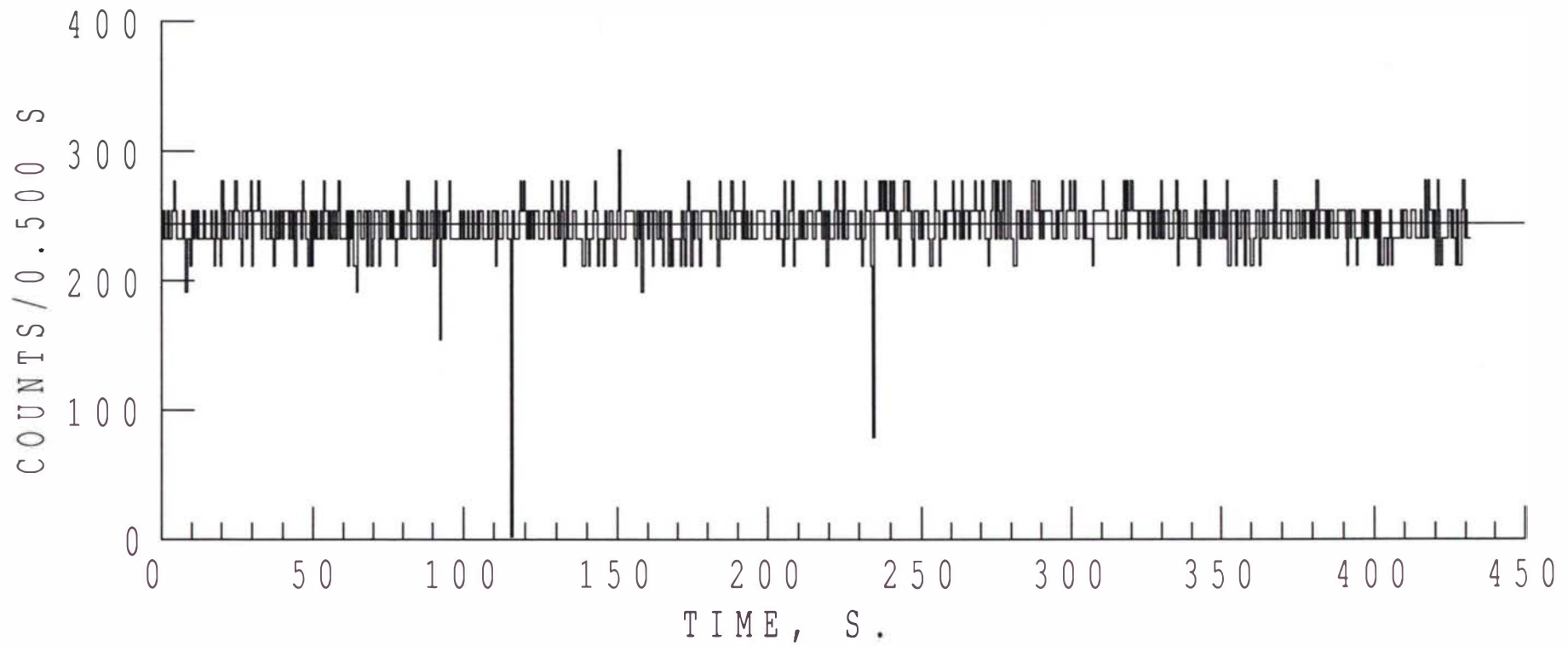
#### COMMENTS:

BURST, TWO PEAKS, LASTING ~130 SECONDS. NOT VISIBLE ABOVE 300 KEV.

28 / 4 / 94

ULYSSES RT  
25 / 4 / 94 45036.051 s  
0 - 0 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS





From CRARY@ssl.msfc.nasa.gov Thu Apr 28 10:22 PDT 1994  
Date: Thu, 28 Apr 1994 12:22:09 -0500 (CDT)  
From: CRARY@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2949  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2949  
EVENT OF 1994 APR 25 DAY OF YEAR=115  
EVENT CROSSING TIME AT BATSE : 60306. S. OR 16:45:06.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 307.000 74.000  
BATSE PEAK COUNTING RATE: 1800 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 25/ 4/ 94 IS:  
RA= 120.485 DEC= -45.047 DIST= 2.916 AU  
BATSE-ULYSSES DISTANCE = 436231764. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 29.10 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 1271.42 SECS.  
CROSSING TIME AT ULYSSES IS 61577. S. OR 17:06:17 +/- 192.18 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 25/ 4/ 94 IS:  
RA= 7.692 DEC= 2.222 DIST= 2.208 AU  
MARS-BATSE DISTANCE = 330318624. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 99.91 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -189.62 SECS.  
CROSSING TIME AT MARS IS 60116. S. OR 16:41:56 +/- 185.56 SECONDS

No

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2949    | 940425 | 9467 | 60306 | 1800     | 307 | +74 |

#### BATSE BURST TRIGGER

NO.: 02949

TIME: TJD=9467 SECONDS=60306

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=090.3 AZIMUTH=068.2 ERROR= DEGREES

#### COMMENTS:

BURST, LASTING ~30 SECONDS. NOT VISIBLE ABOVE 300 KEV.

28 / 4 / 94

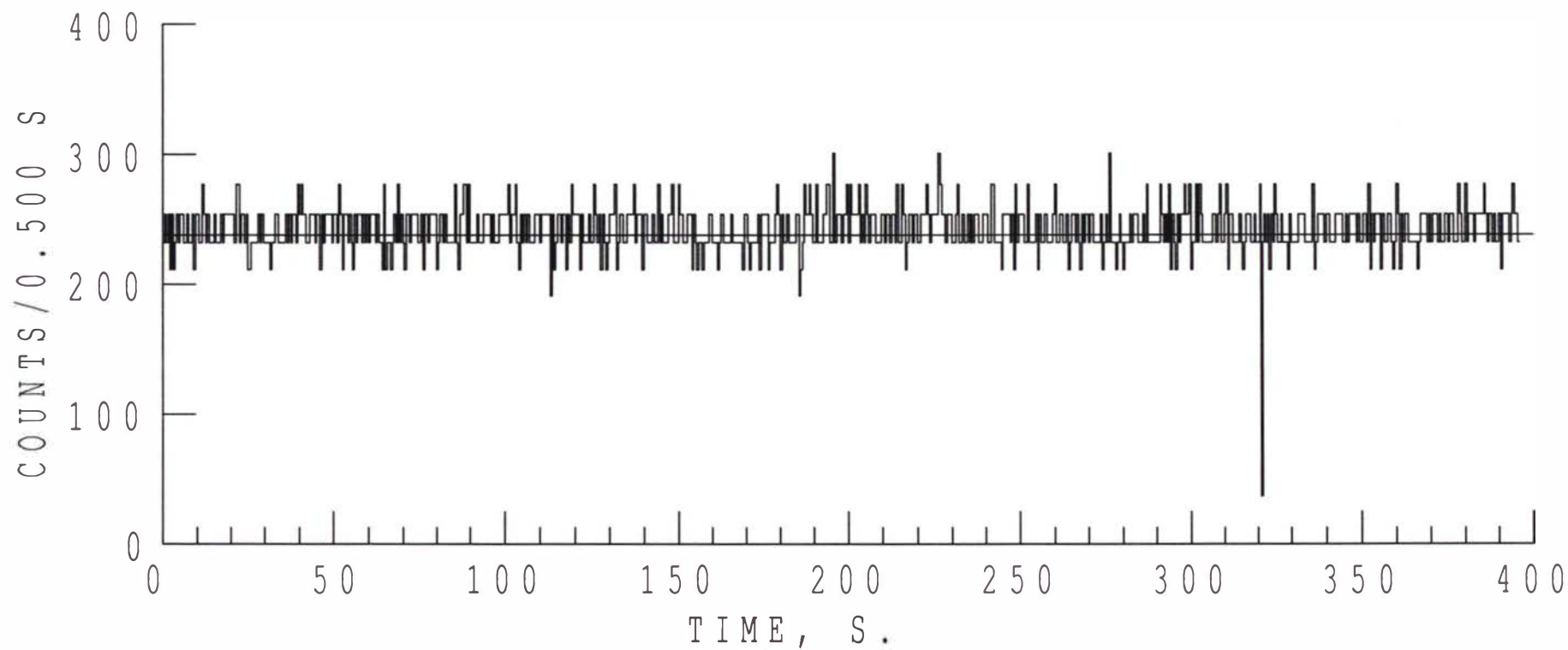
ULYSSES RT

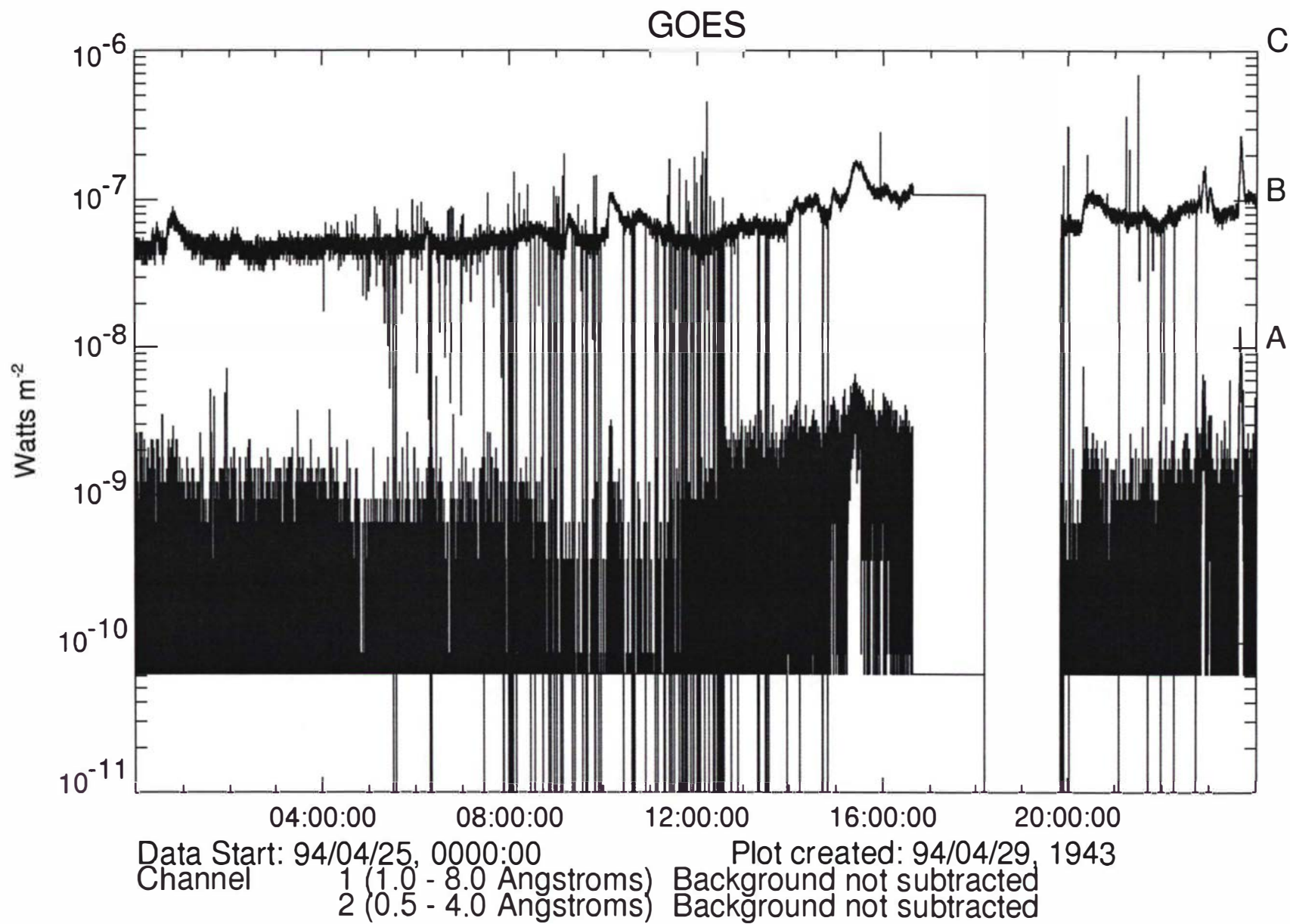
25 / 4 / 94 61380.316 s

0 - 0 keV

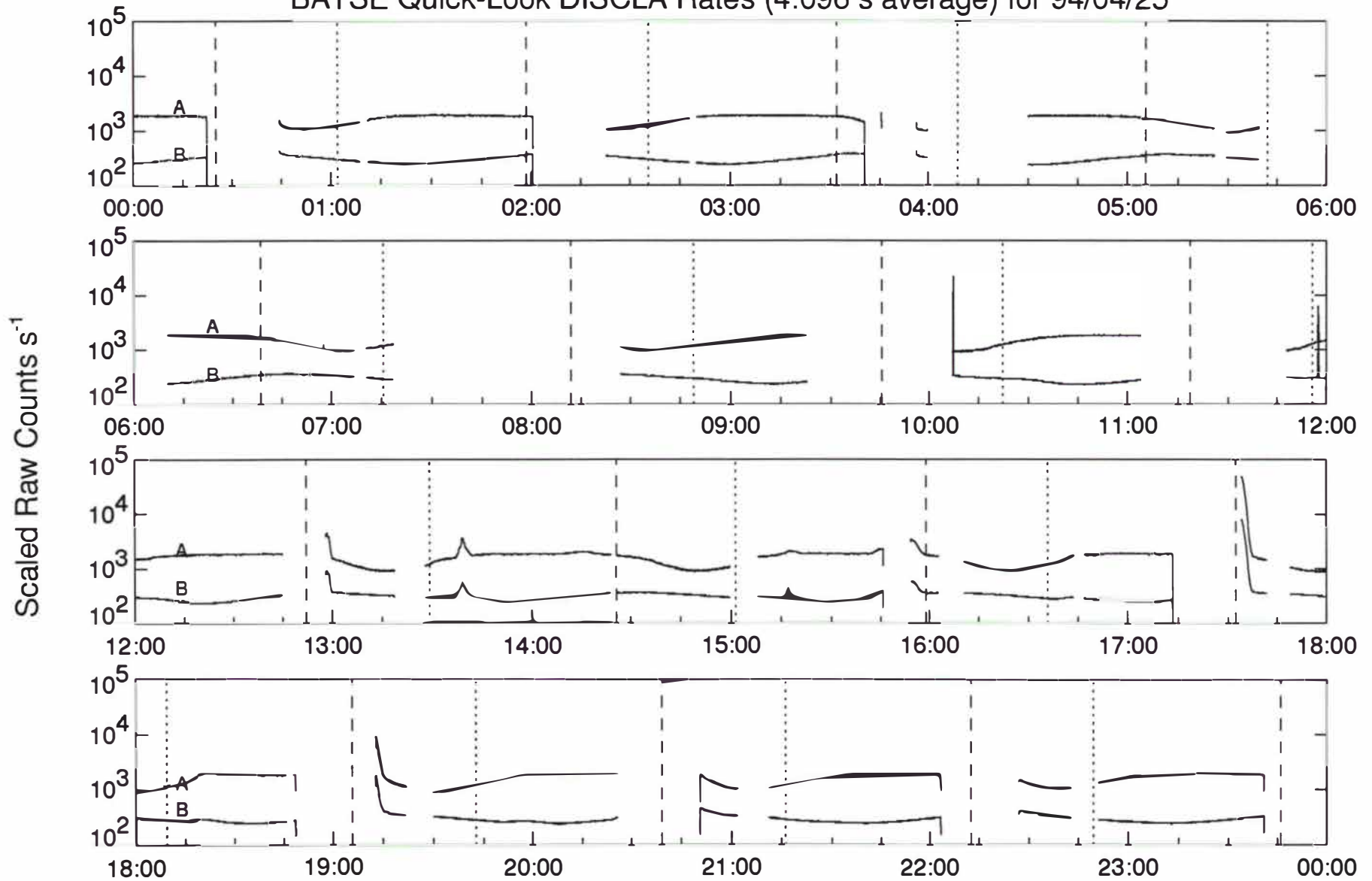
N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/25

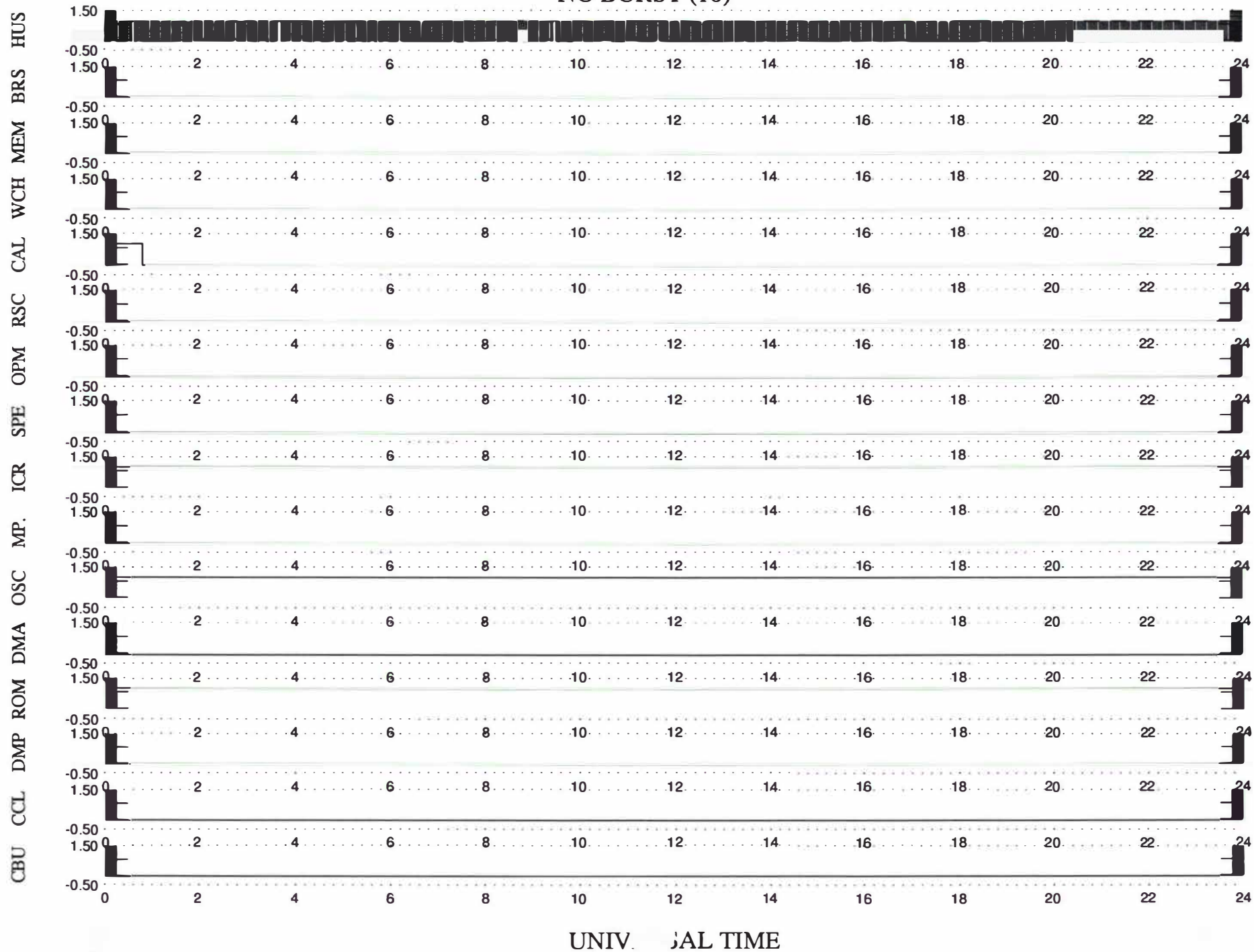


Current Time: 94/04/29, 1900 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

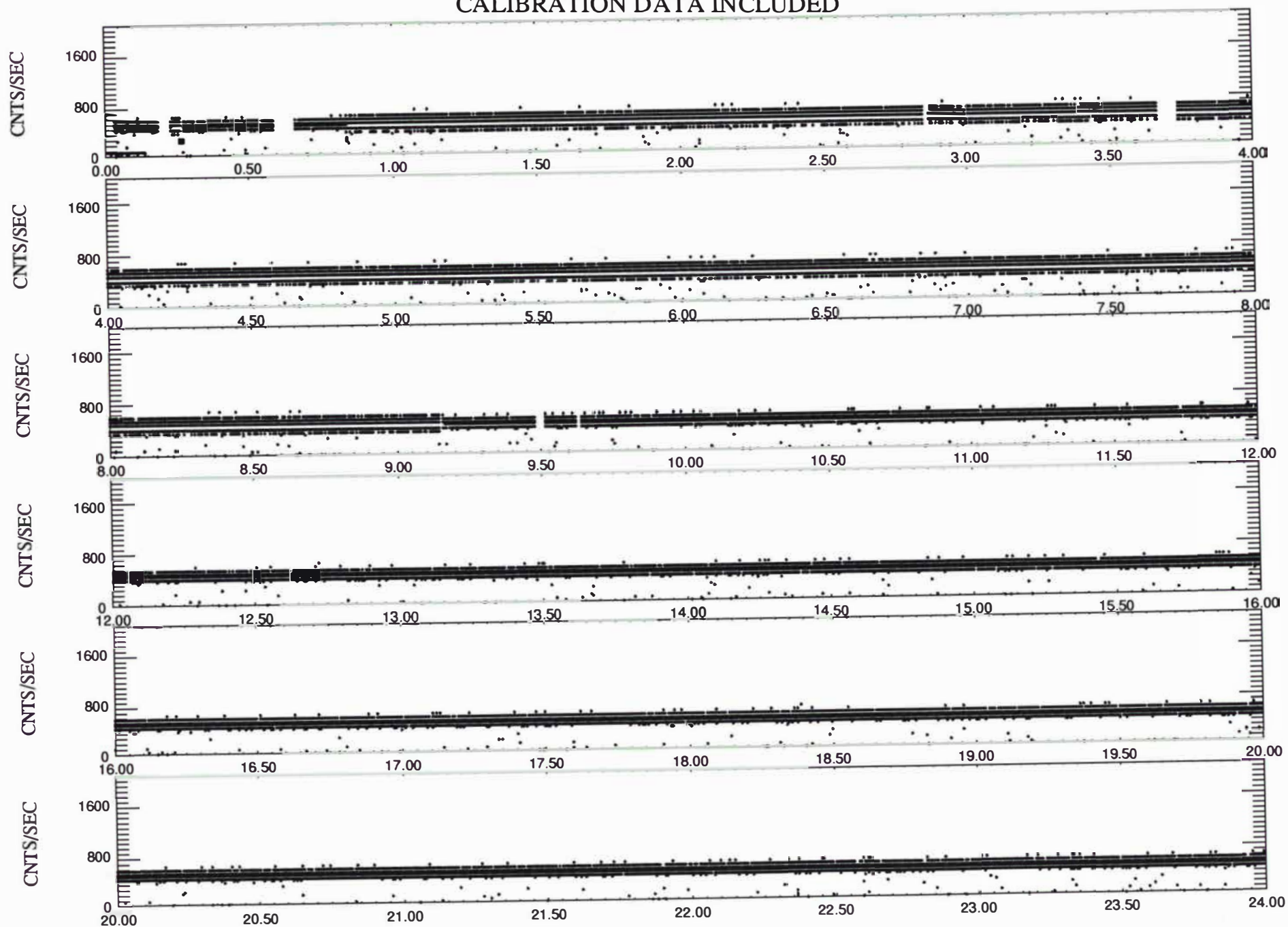
\* Solar Burst Trigger  
 + Solar Flare

## NO BURST (10)



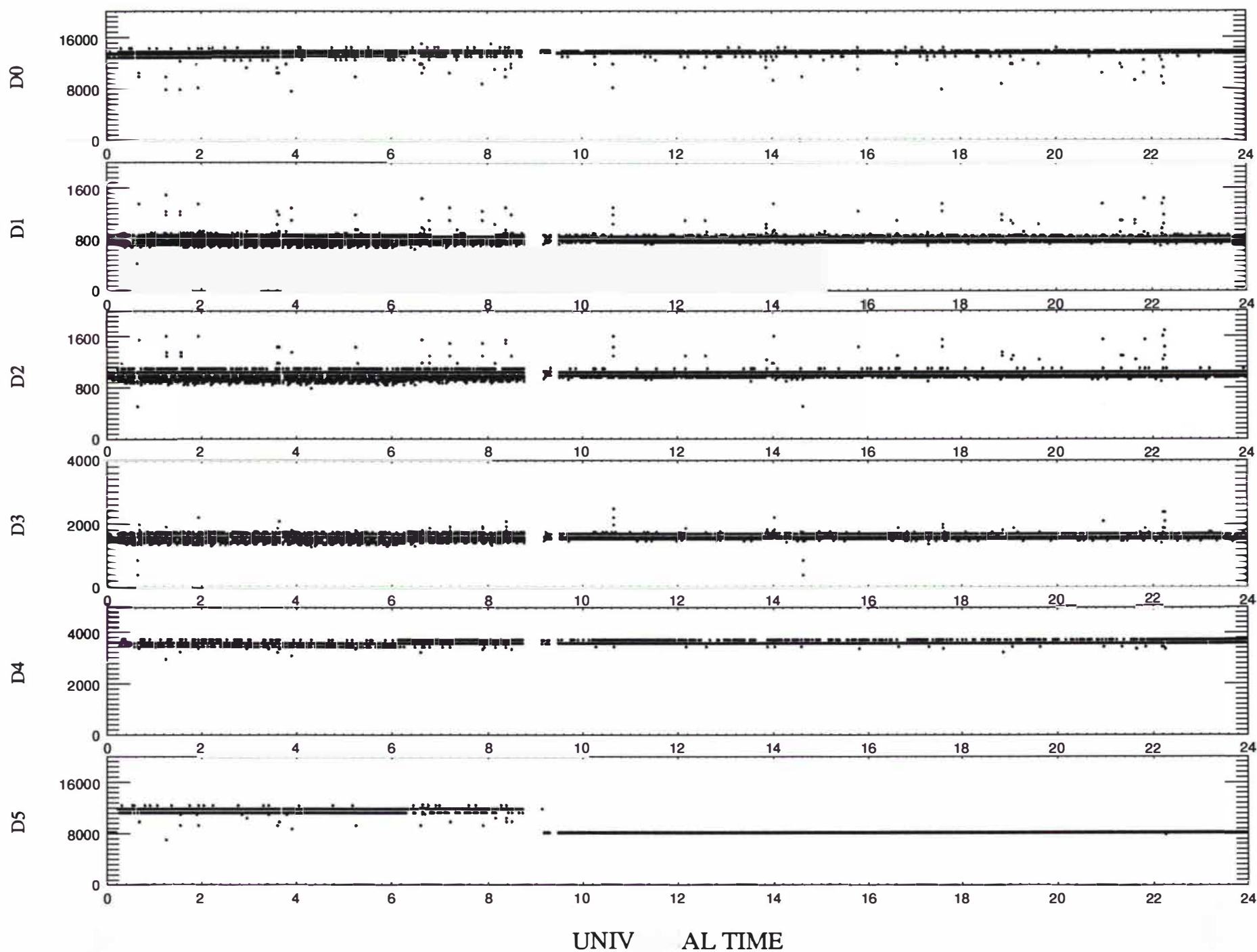


## CALIBRATION DATA INCLUDED



UNIV UNIV TIME





\*\*\*\*\*  
 \*BATSEARCH PROGRAM\*  
 \*\*\*\*\*

BATSE BURST # 2950  
 EVENT OF 1994 APR 26 DAY OF YEAR=116  
 EVENT CROSSING TIME AT BATSE : 19795. S. OR 05:29:55.0  
 COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
 BURST ARRIVAL DIRECTION: 22.000 1.000  
 BATSE PEAK COUNTING RATE: 4500 C/S

*NO Too weak -  
 possibly an artifact  
 due to nearby noise  
 spikes*

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
 INTERPOLATED POSITION OF ULYSSES ON 26/ 4/ 94 IS:  
 RA= 120.420 DEC= -44.952 DIST= 2.917 AU  
 BATSE-ULYSSES DISTANCE = 436446661. KM.  
 ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 83.34 DEG.  
 LIGHT TRAVEL TIME ALONG PROJECTED PATH= 168.79 SECS.  
 CROSSING TIME AT ULYSSES IS 19964. S. OR 05:32:43 +/- 303.61 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
 POSITION OF MARS ON 26/ 4/ 94 IS:  
 RA= 8.400 DEC= 2.531 DIST= 2.206 AU  
 MARS-BATSE DISTANCE = 329993824. KM.  
 ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=166.32 DEG.  
 LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1069.52 SECS.  
 CROSSING TIME AT MARS IS 18725. S. OR 05:12:05 +/- 28.95 SECONDS

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2950    | 940426 | 9468 | 19795 | 4500     | 022 | +01 |

BATSE BURST TRIGGER

NO.: 02950

TIME: TJD=9468 SECONDS=19795

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=112.6 AZIMUTH=344.1 ERROR= DEGREES

COMMENTS:  
 MULTI-PEAKED BURST OF DURATION APPROX. 30 SECONDS.  
 NO EMISSION OBSERVED ABOVE 100 KEV.

BATSE BURST TRIGGER

NO.: 02950

TIME: TJD=9468 SECONDS=19795

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=112.6 AZIMUTH=344.1 ERROR= DEGREES

COMMENTS:  
 REVISED MESSAGE FOR TRIGGER #2950.  
 MULTI-PEAKED BURST OF DURATION APPROX. 30 SECONDS.  
 NO EMISSION OBSERVED ABOVE 300 KEV.

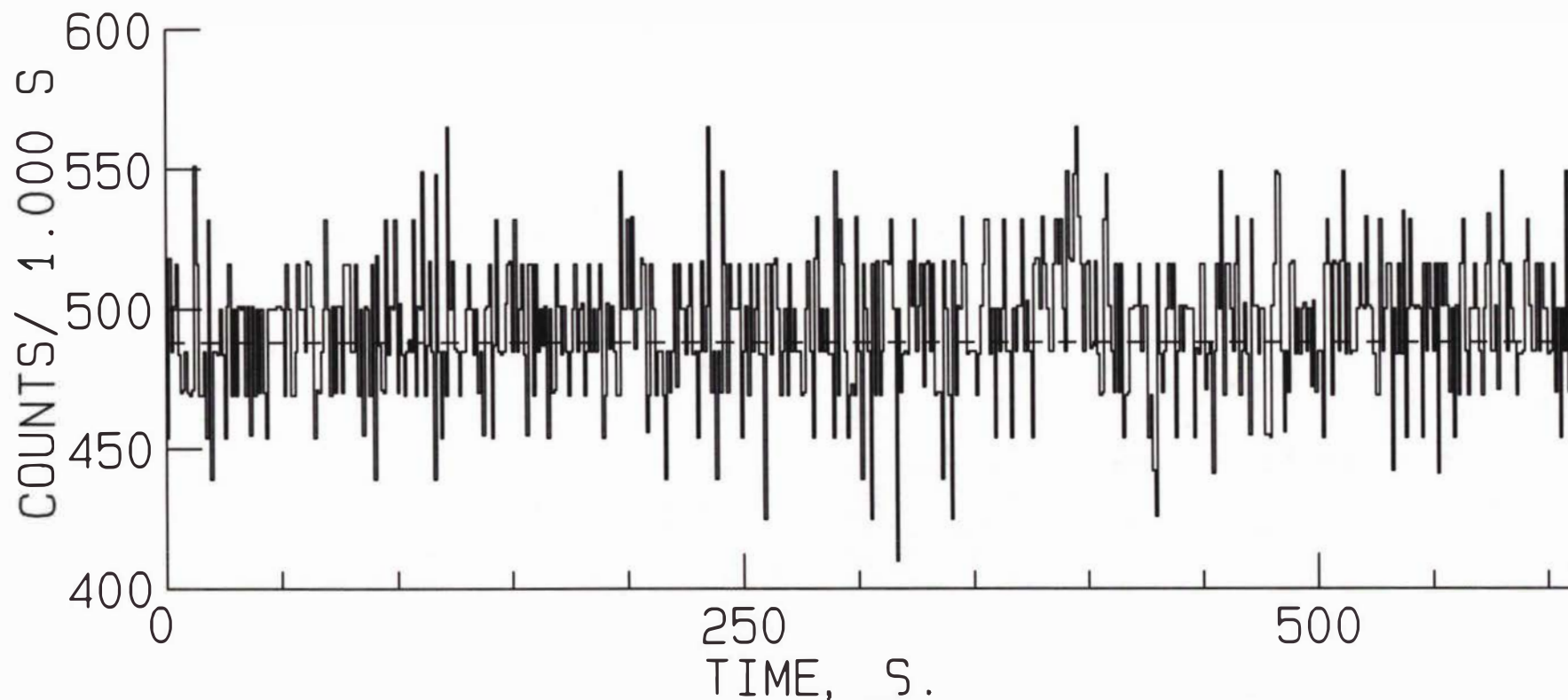
ULYSSES RT

8 / 11 / 95

26 / 4 / 94 19656.027 s

0.250 S INTERVALS REGROUPED BY 4  
22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



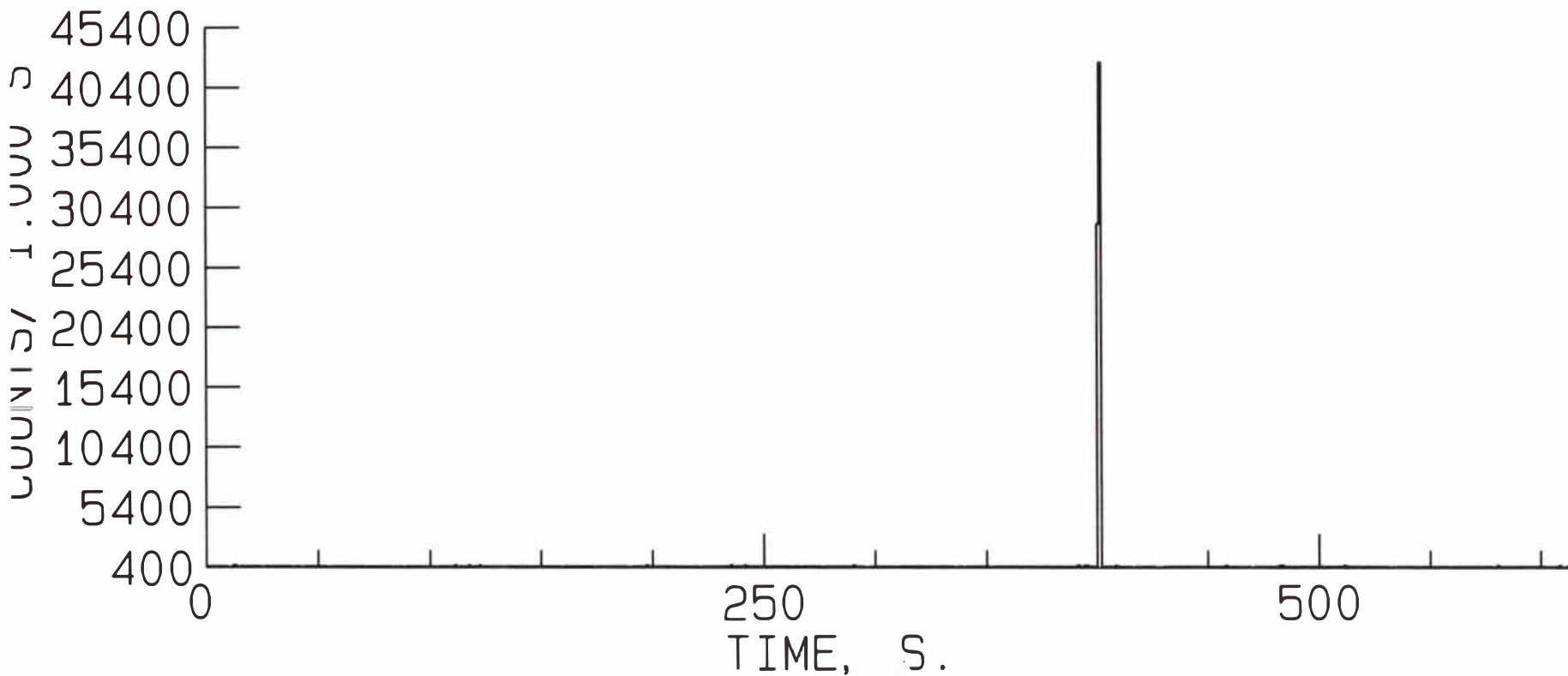
ULYSSES RT

8 / 11 / 95

26 / 4 / 94 19656.027 s

0.250 S INTERVALS REGROUPED BY 4  
22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



ULYSSES RT

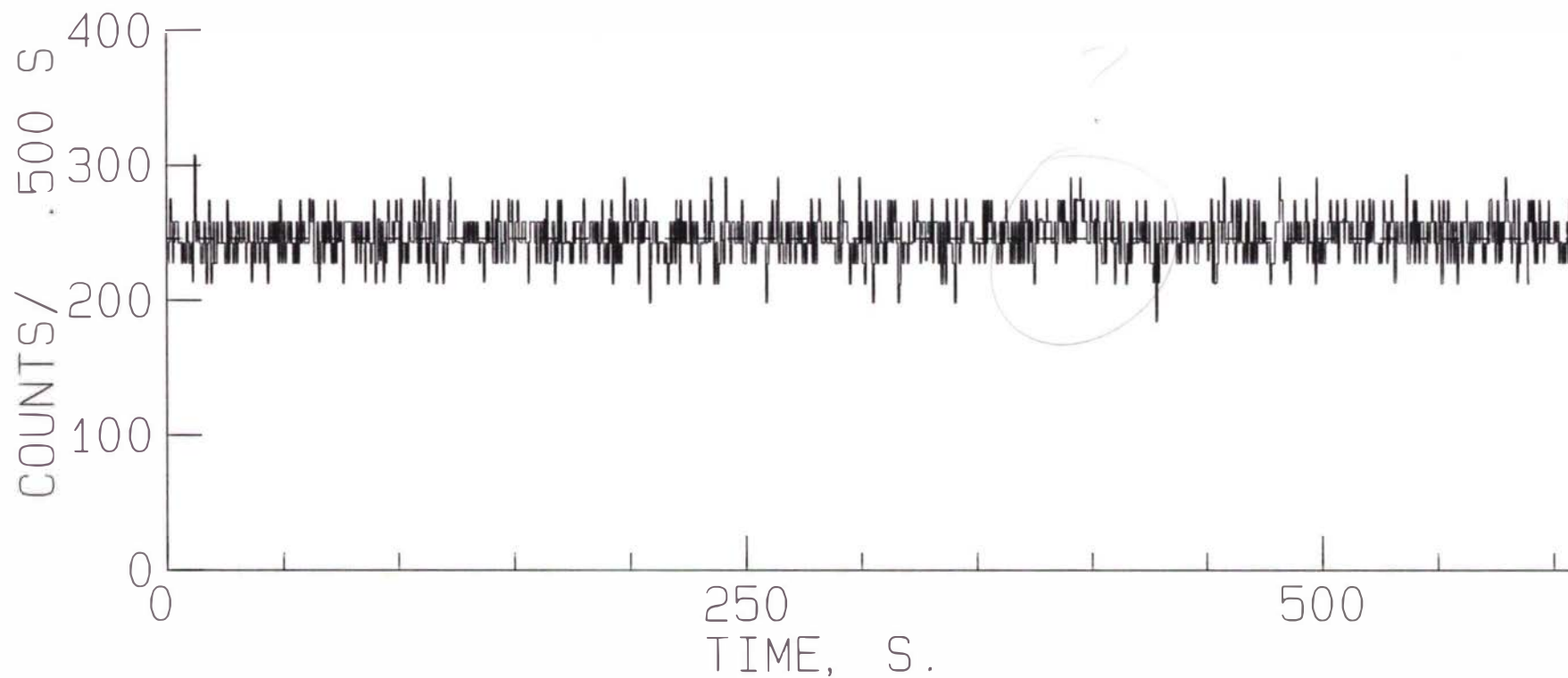
28 / 4 / 94

26 / 4 / 94 19656.027 s

.250 S INTERVALS REGROUPED BY 2

0- 0 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



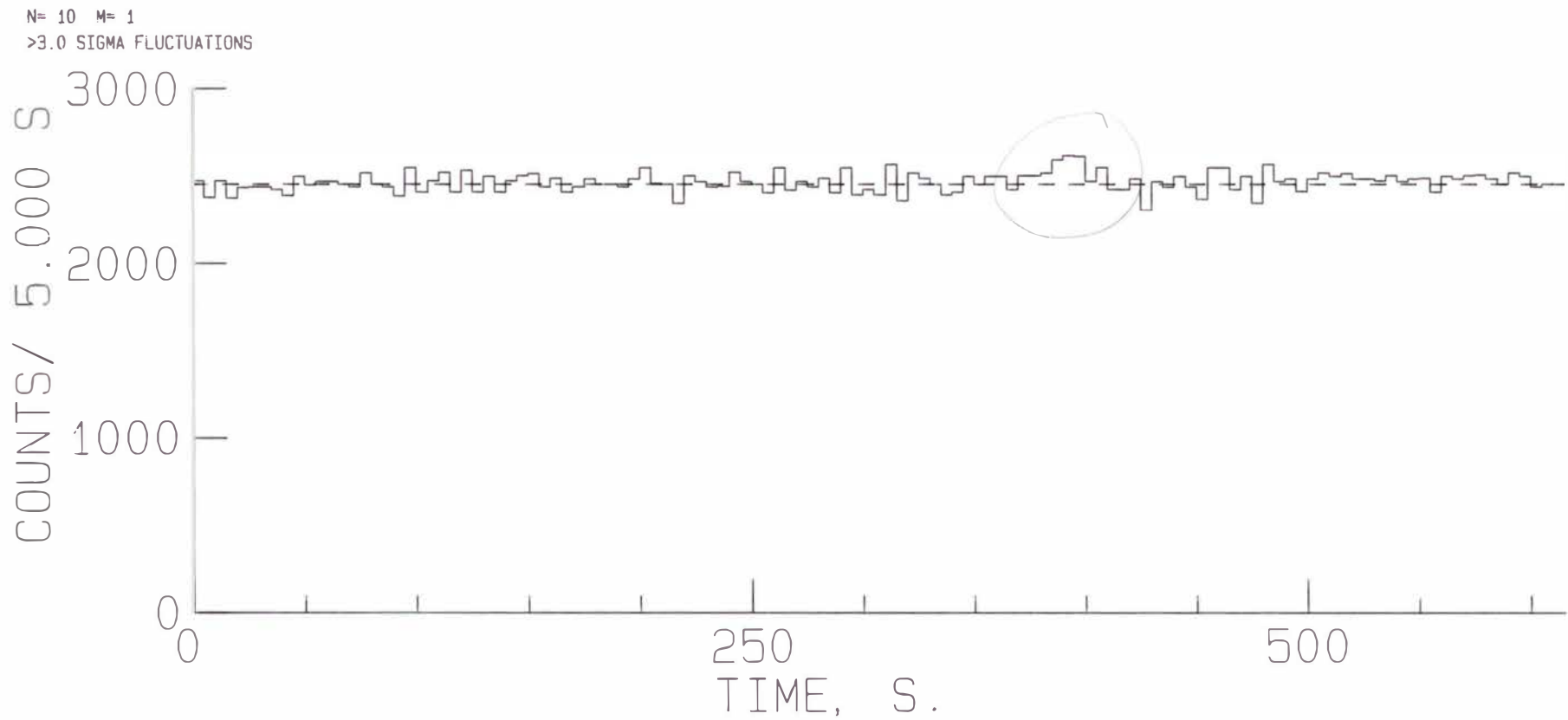
ULYSSES RT

28 / 4 / 94

26 / 4 / 94 19656.027 s

.250 S INTERVALS REGROUPED BY 20

0 - 0 keV





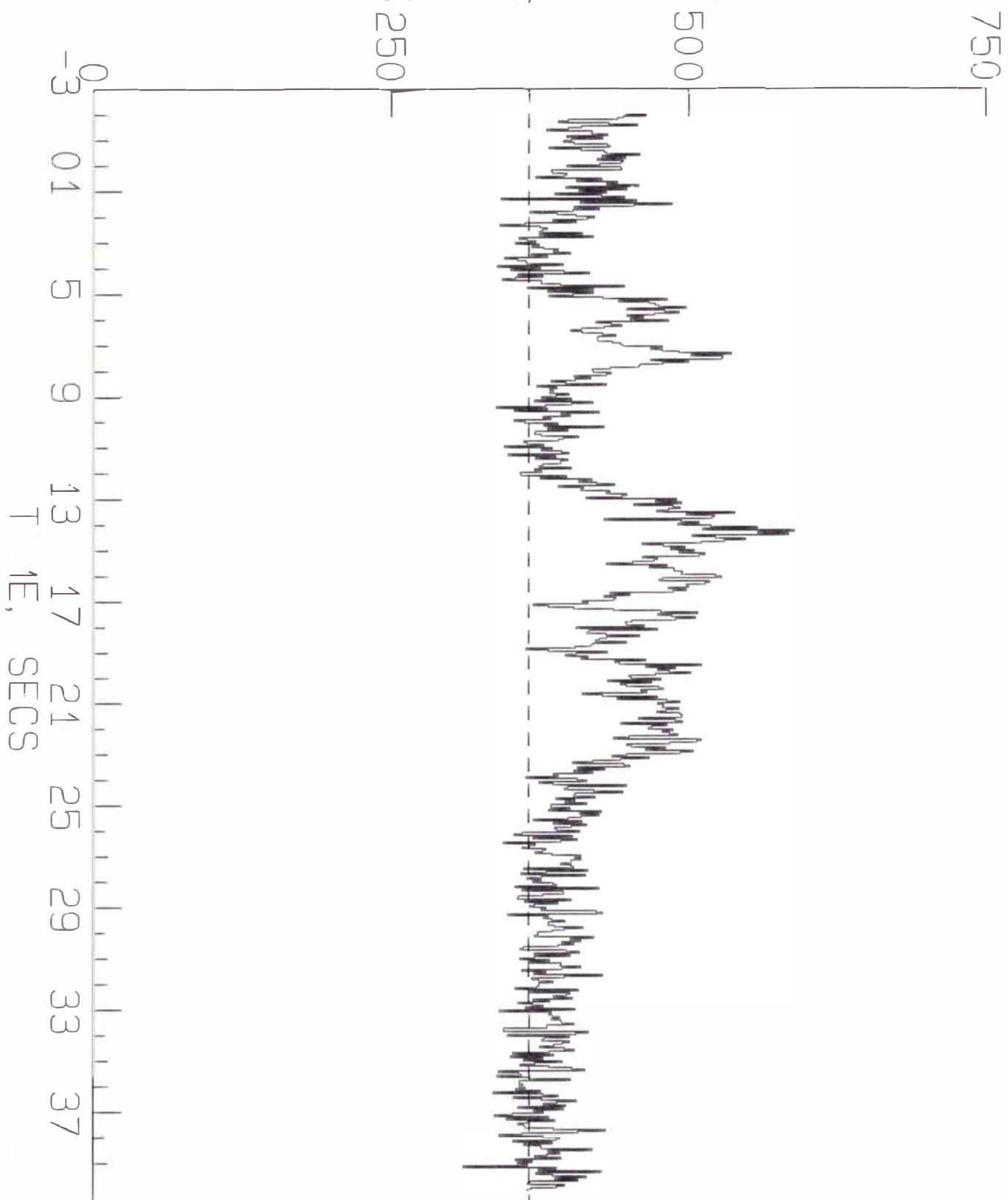
BATSE

26/04/94

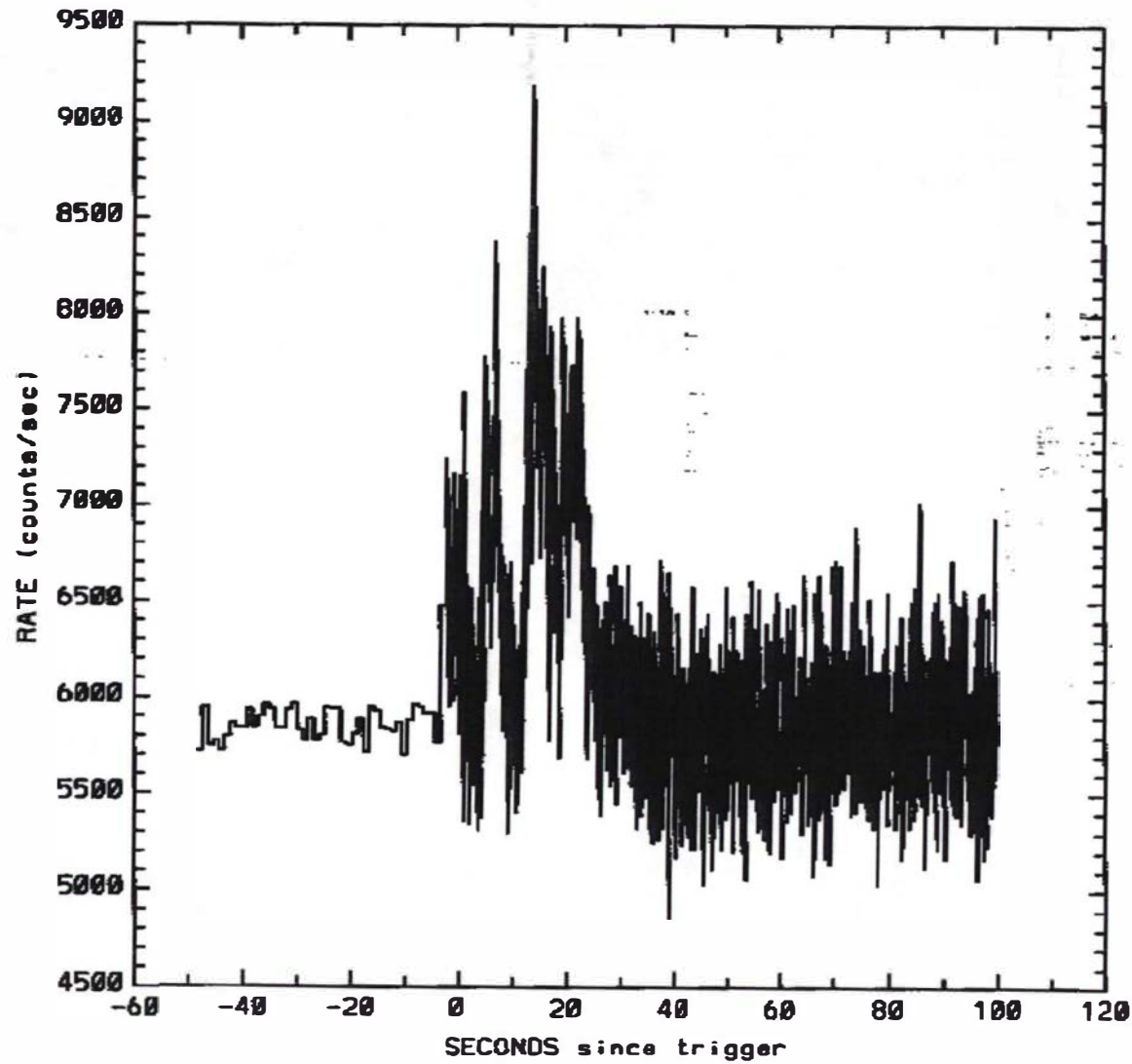
19795.610

25- 100 keV

COUNTS/ .064 S



## DATA FOR K. HURLEY

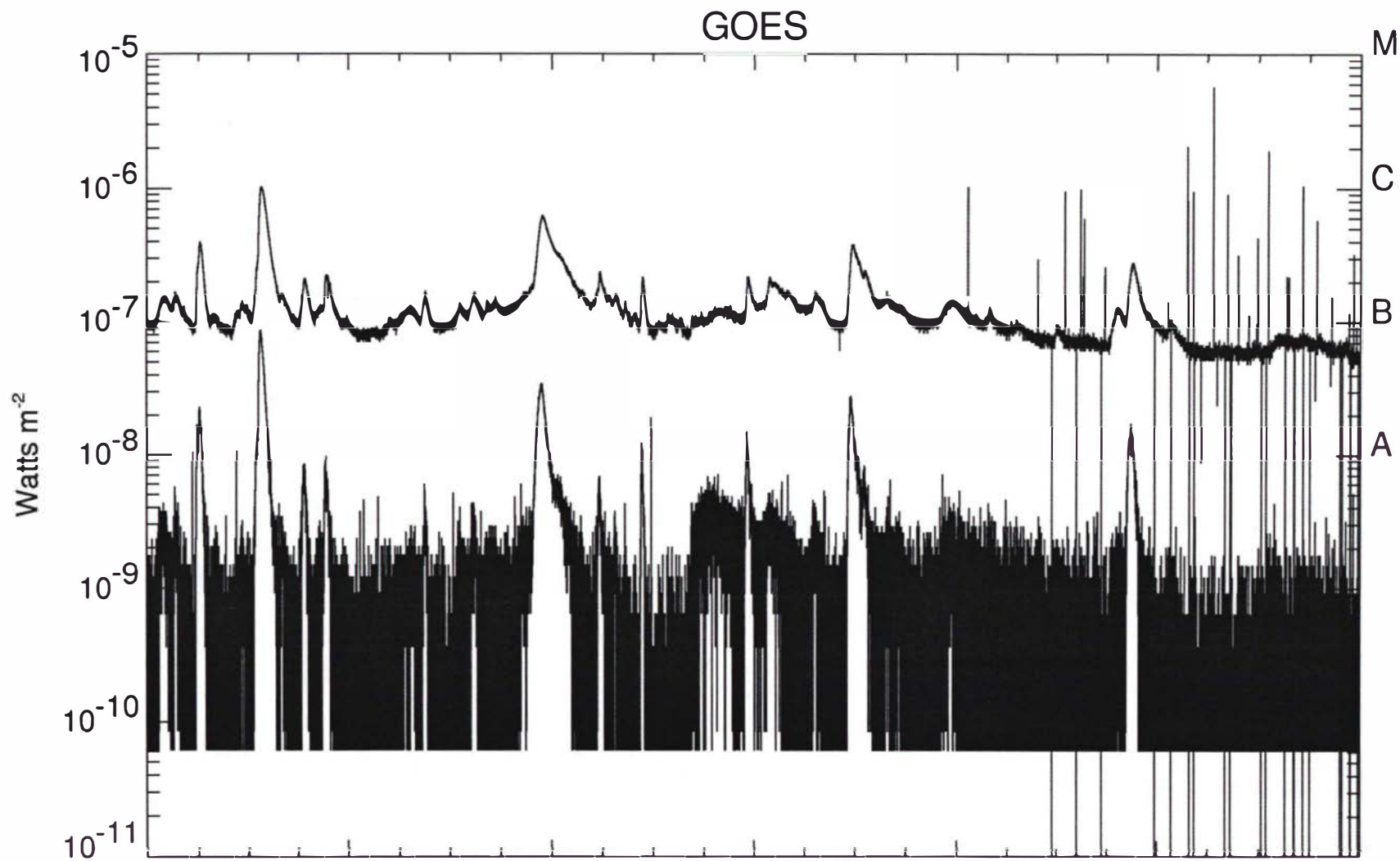


17-JUN-1994 08.43.28

Created by MOPS 80  
(Burst Display)  
Version 2.20

Trigger = . 2950

Trigger Time:  
9468 / 19795.618Burst Data Type:  
DISCSCDeadtime  
Corrected: NBackground Data  
Type: PREB + DISCLAMinimum Integ. Time:  
0.064 second(s)Detectors (7..0):  
00001818Discriminators:  
( 1. 2)Quality Mask:  
BDISP1



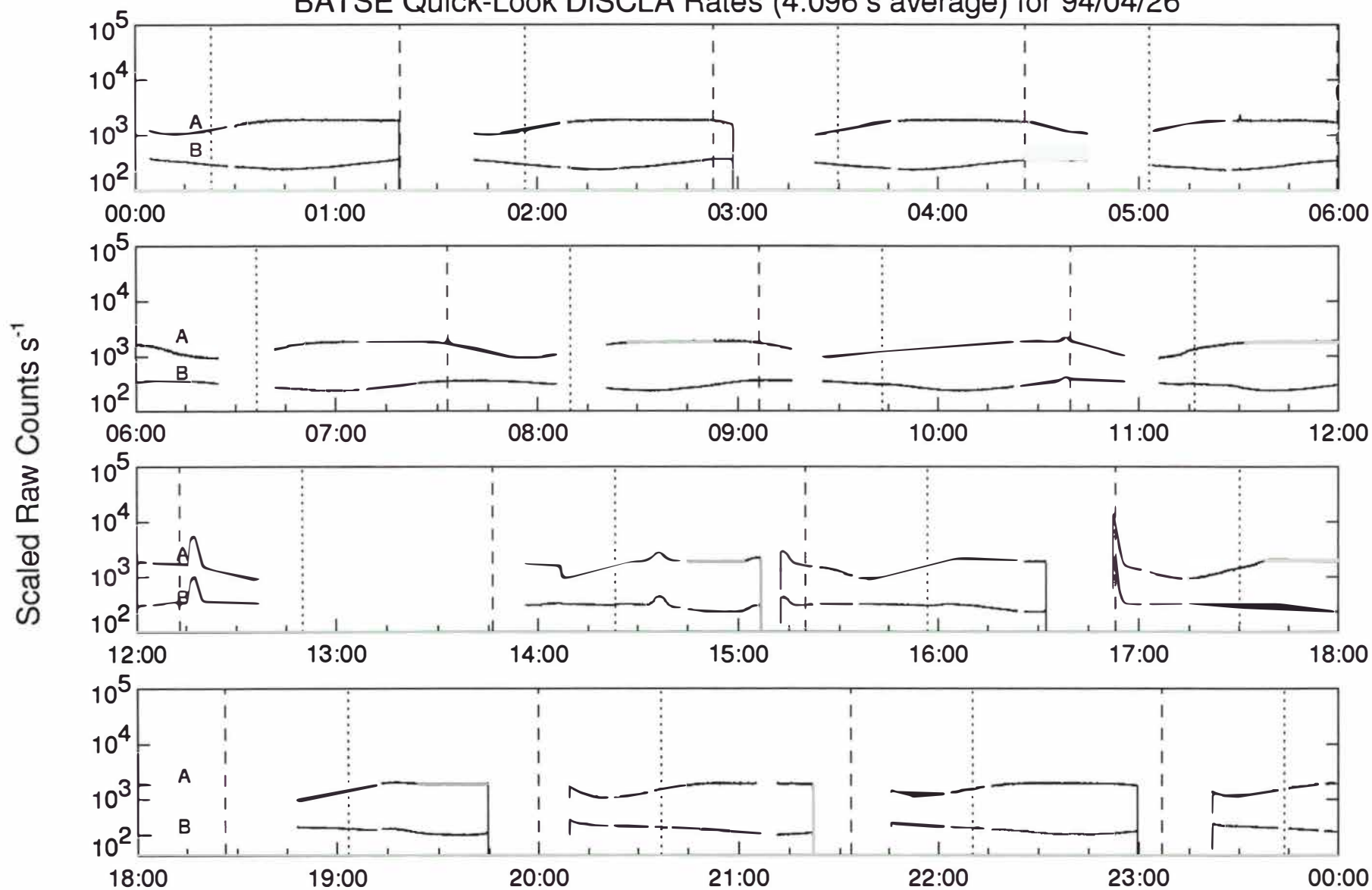
Data Start: 94/04/26, 0000:00

Plot created: 94/04/29, 1943

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/26

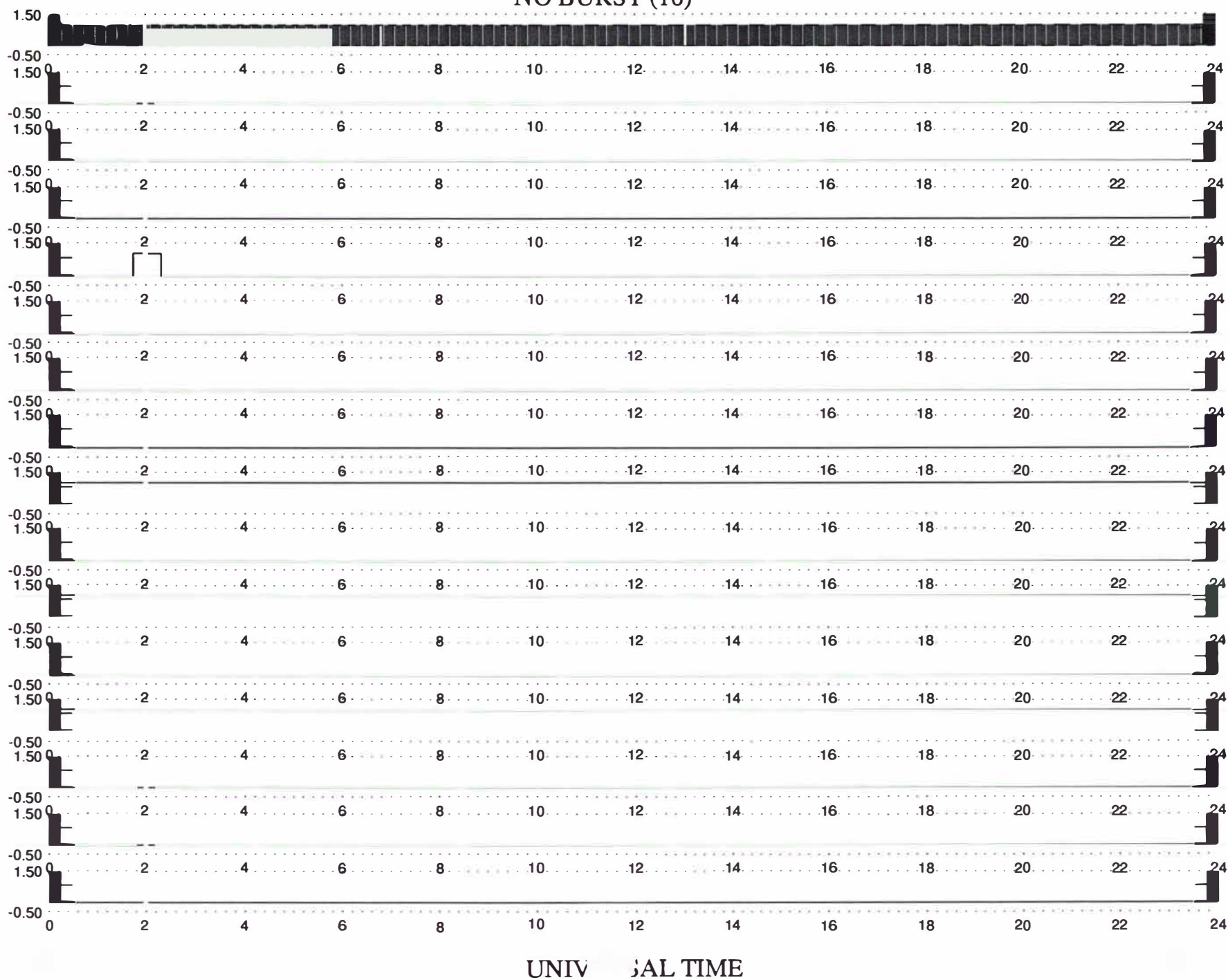


Current Time: 94/04/29, 1900 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

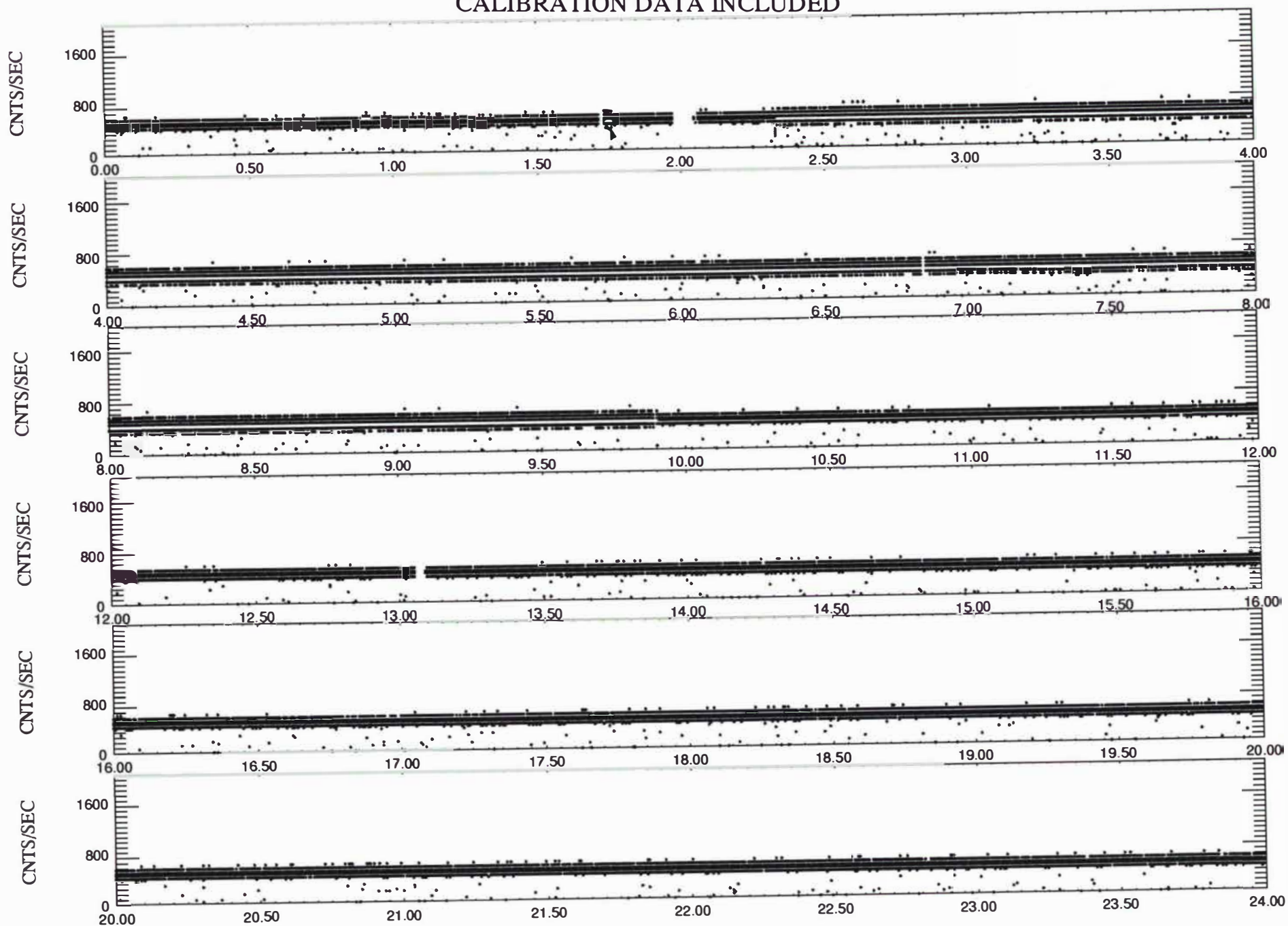
\* Solar Burst Trigger  
 + Solar Flare

| CBU | CCL | DMP | ROM | DMA | OSC | MP. | ICR | SPE | OPM | RSC | CAL | WCH | MEM | BRS | HUS |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|



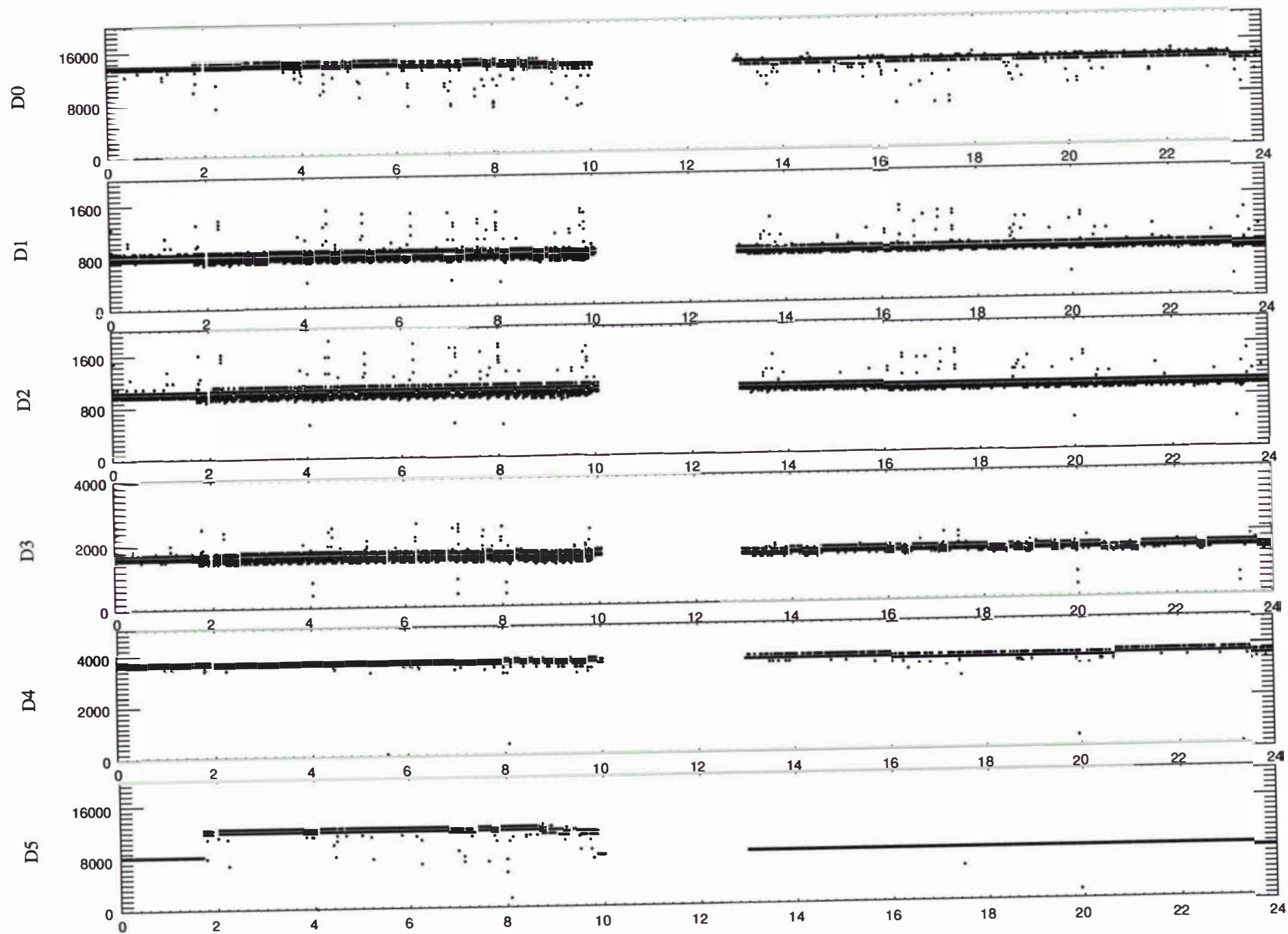


CALIBRATION DATA INCLUDED



UNIV. TIME





UNIV. AL TIME

From KOSHUT@ssl.msfc.nasa.gov Thu Apr 28 11:11 PDT 1994  
Date: Thu, 28 Apr 1994 13:11:28 -0500 (CDT)  
From: KOSHUT@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2951  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2951  
EVENT OF 1994 APR 27 DAY OF YEAR=117  
EVENT CROSSING TIME AT BATSE : 16573. S. OR 04:36:13.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 56.000 25.000  
BATSE PEAK COUNTING RATE: 5500 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 27/ 4/ 94 IS:  
RA= 120.308 DEC= -44.780 DIST= 2.920 AU  
BATSE-ULYSSES DISTANCE = 436837504. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 88.92 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 27.38 SECS.  
CROSSING TIME AT ULYSSES IS 16600. S. OR 04:36:40 +/- 303.35 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 27/ 4/ 94 IS:  
RA= 9.107 DEC= 2.839 DIST= 2.204 AU  
MARS-BATSE DISTANCE = 329668160. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=129.76 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -703.24 SECS.  
CROSSING TIME AT MARS IS 15870. S. OR 04:24:29 +/- 136.09 SECONDS

NO

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2951    | 940427 | 9469 | 16573 | 5500     | 056 | +25 |

#### BATSE BURST TRIGGER

NO.: 02951

TIME: TJD=9469 SECONDS=16573

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=22. AZIMUTH=3. ERROR= DEGREES

#### COMMENTS:

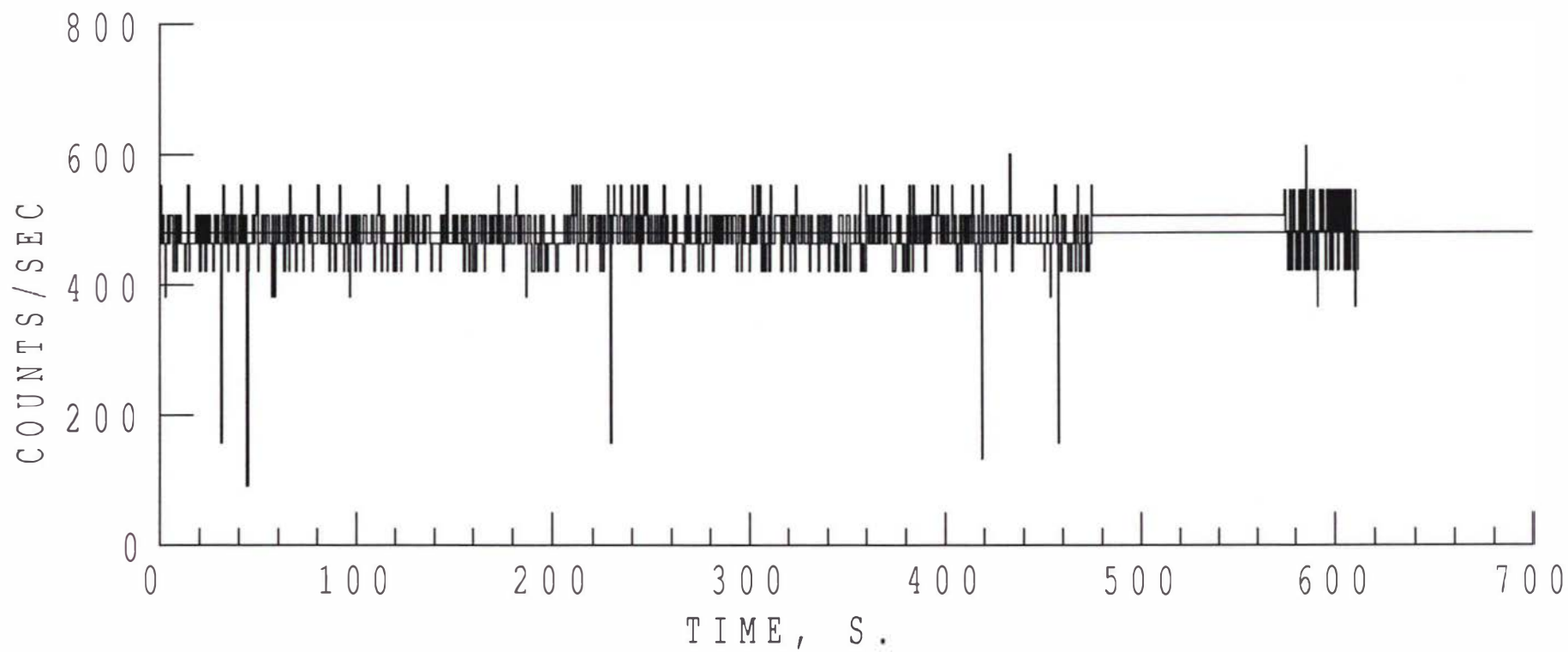
BURST OF ~ 5 SECONDS DURATION, WITH NO EMISSION OBSERVED ABOVE 300 KEV.  
TIME HISTORY CONSISTS OF 3 PULSES, EACH SHOWING SUBSTRUCTURE. THE PEAK  
BACKGROUND-SUBTRACTED COUNTRATE (~5500 C/S) IS OBSERVED AT ~ TRIGGER + 2 SECONDS

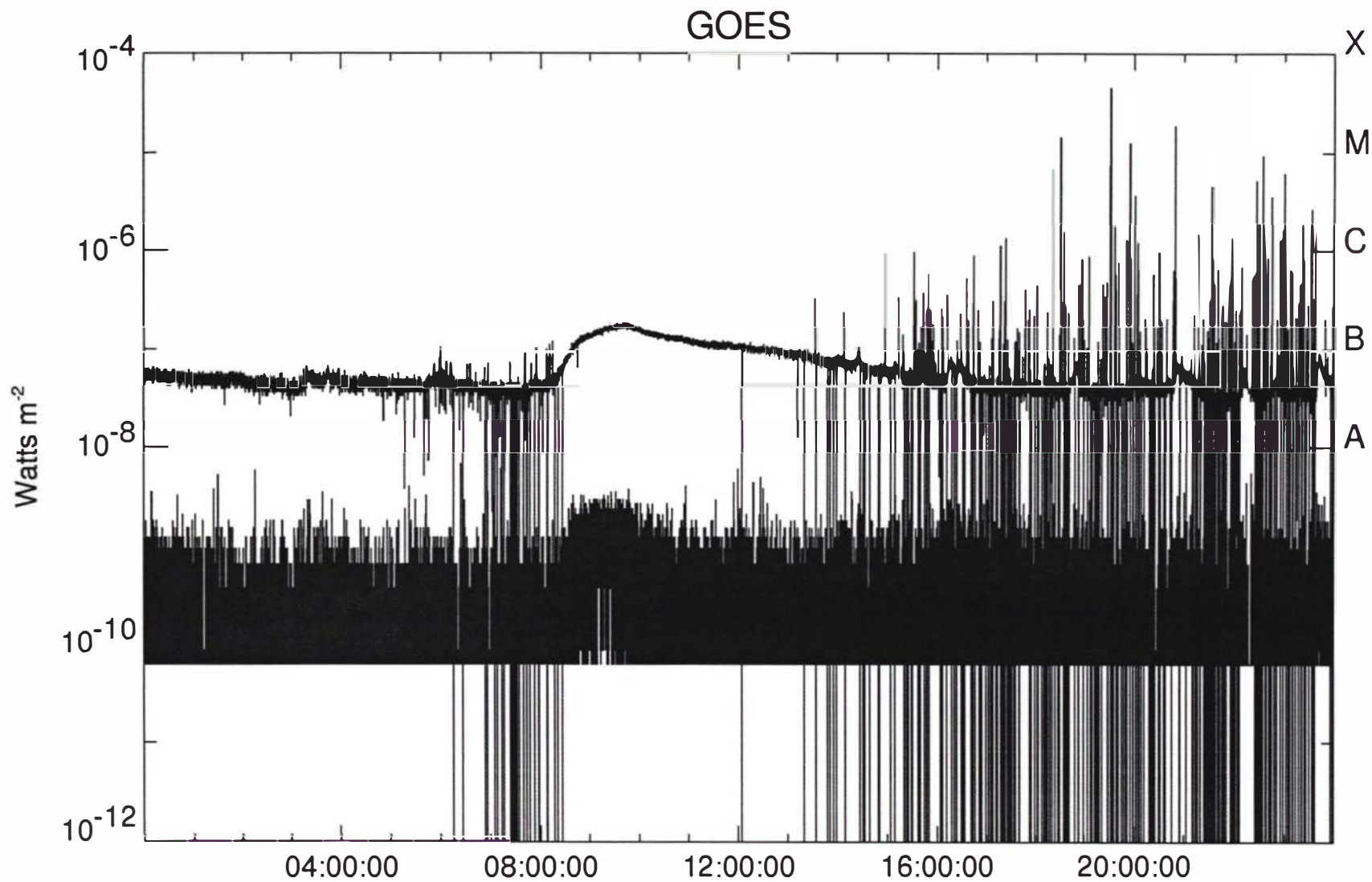
28 / 4 / 94

ULYSSES RT  
27 / 4 / 94 16308.357 s  
0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





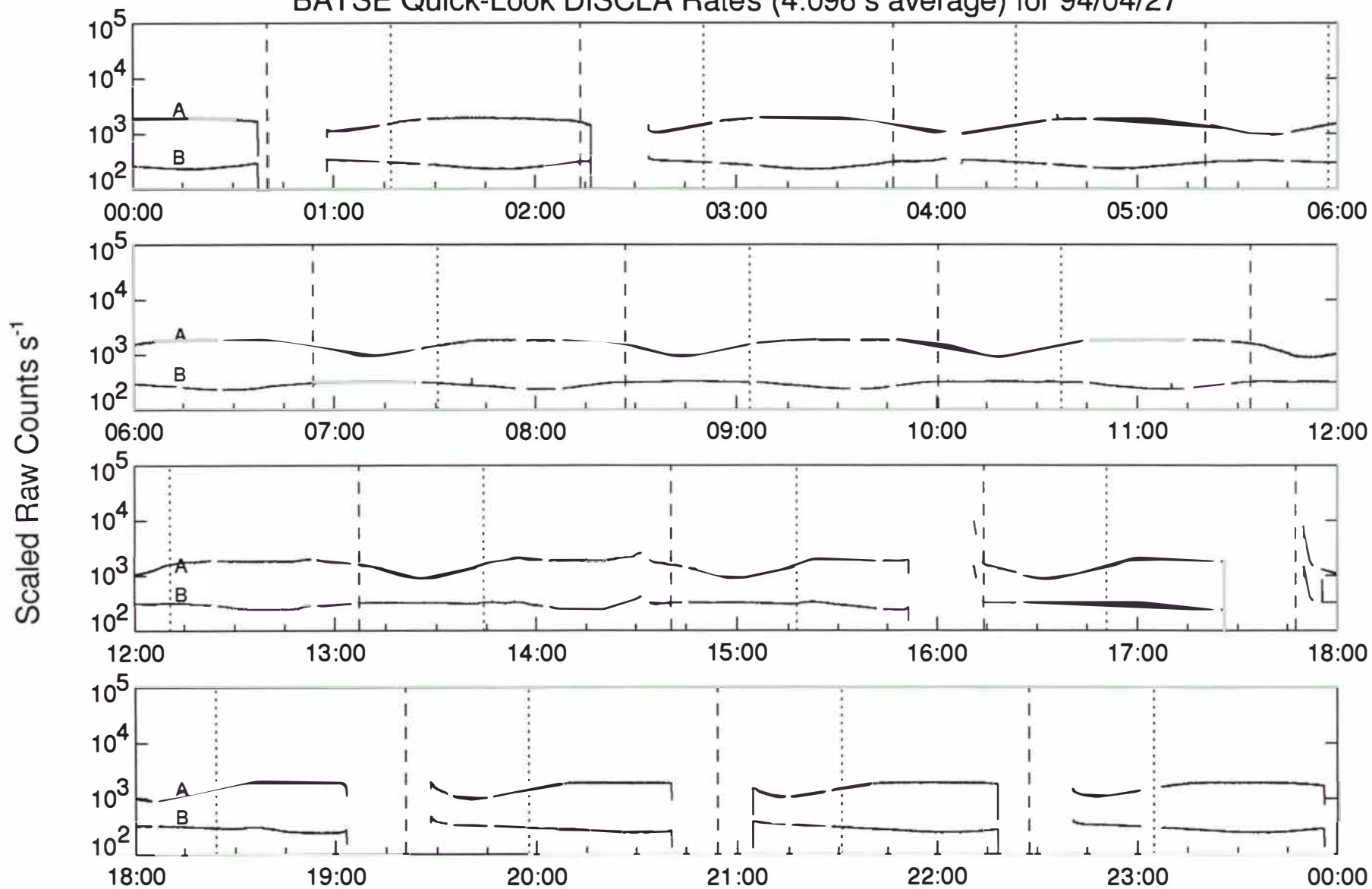
Data Start: 94/04/27, 0000:00

Plot created: 94/04/29, 1944

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/27



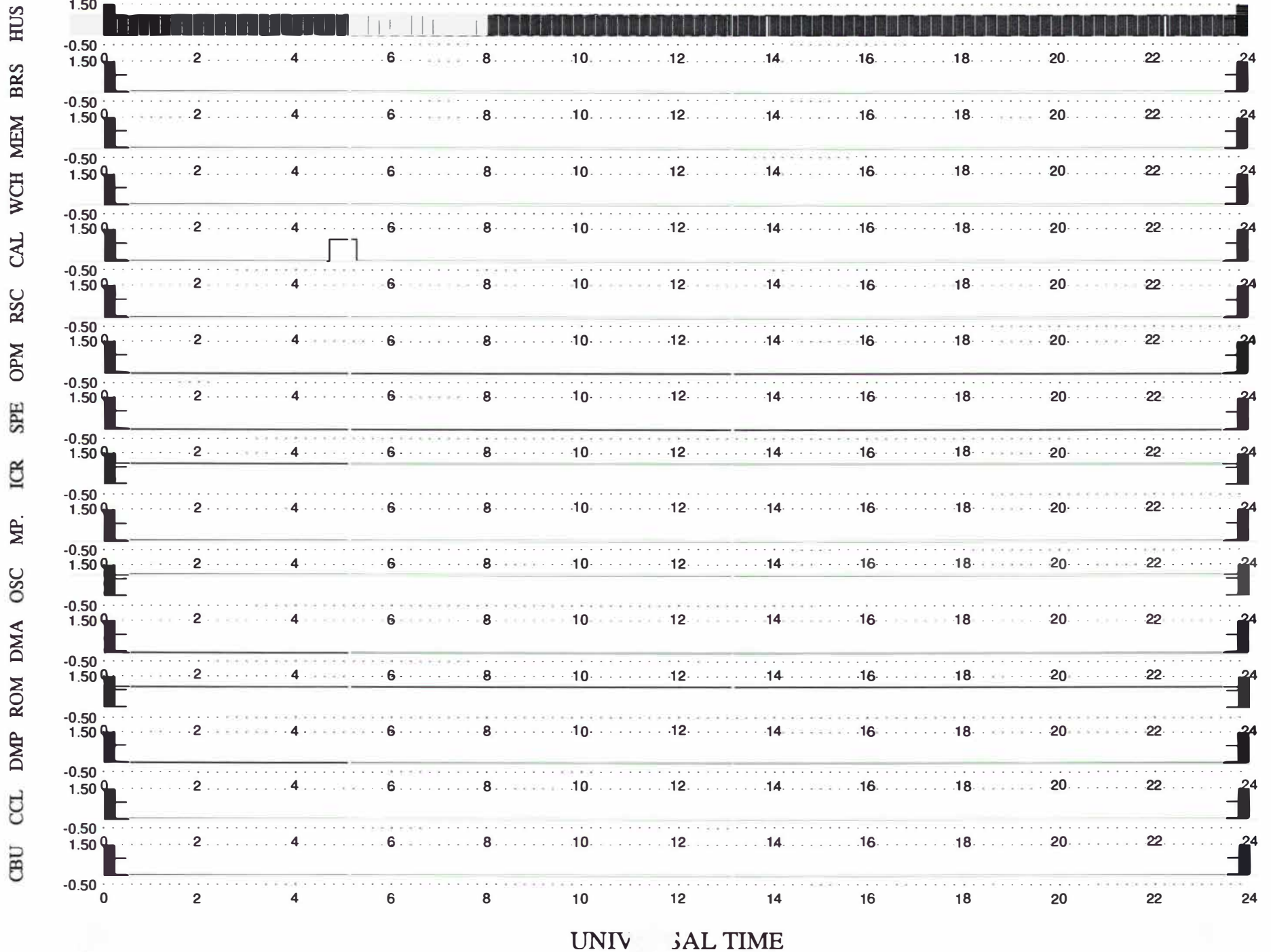
Current Time: 94/04/29, 1900 EDT  
 A: Channel 1 Most Sunward LAD  
 B: Sum Channel 1 Anti-Sunward LADs X .05

Dotted line: Day entry  
 Dashed line: Night entry

\* Solar Burst Trigger  
 + Solar Flare

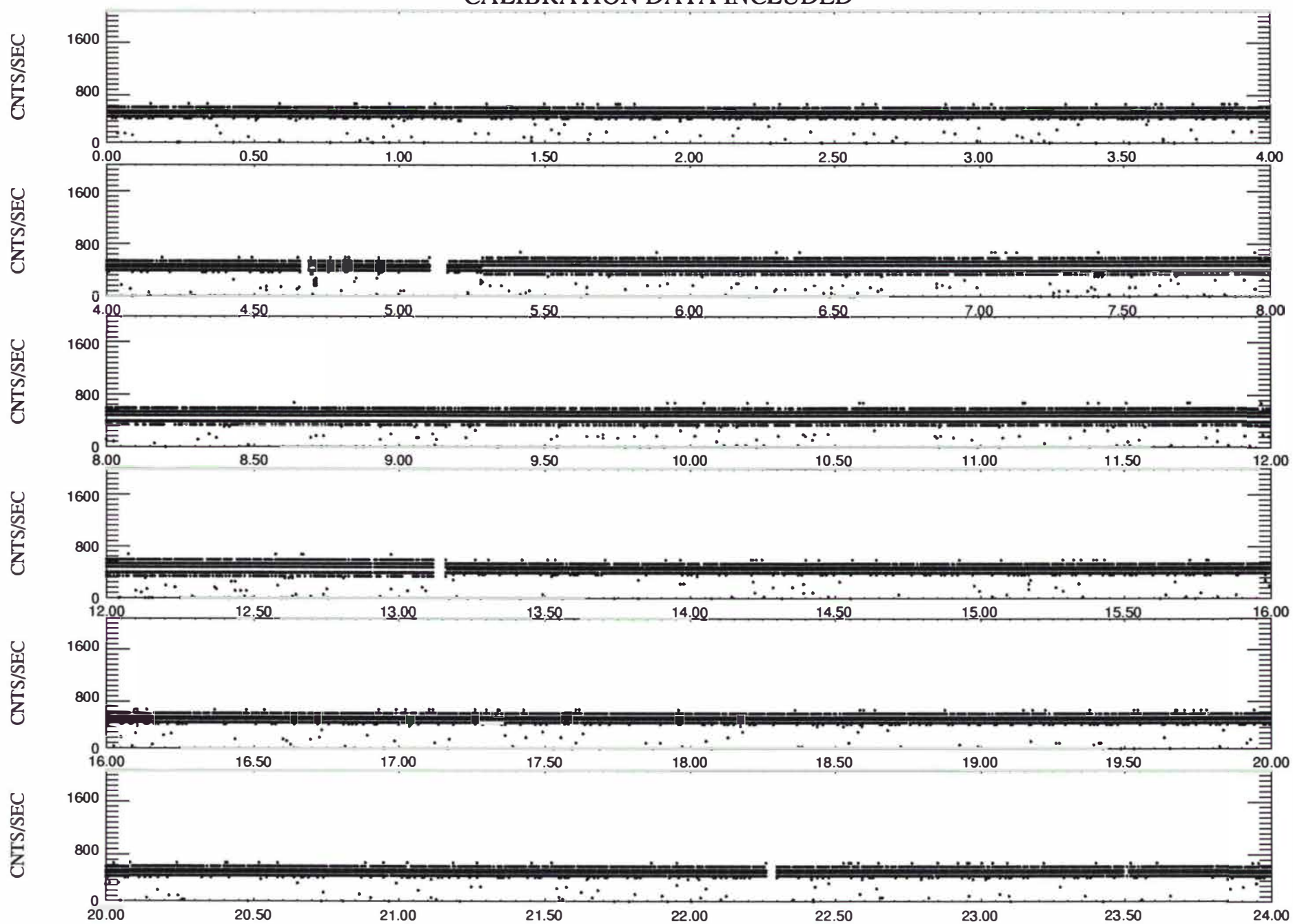


NO BURST (10)

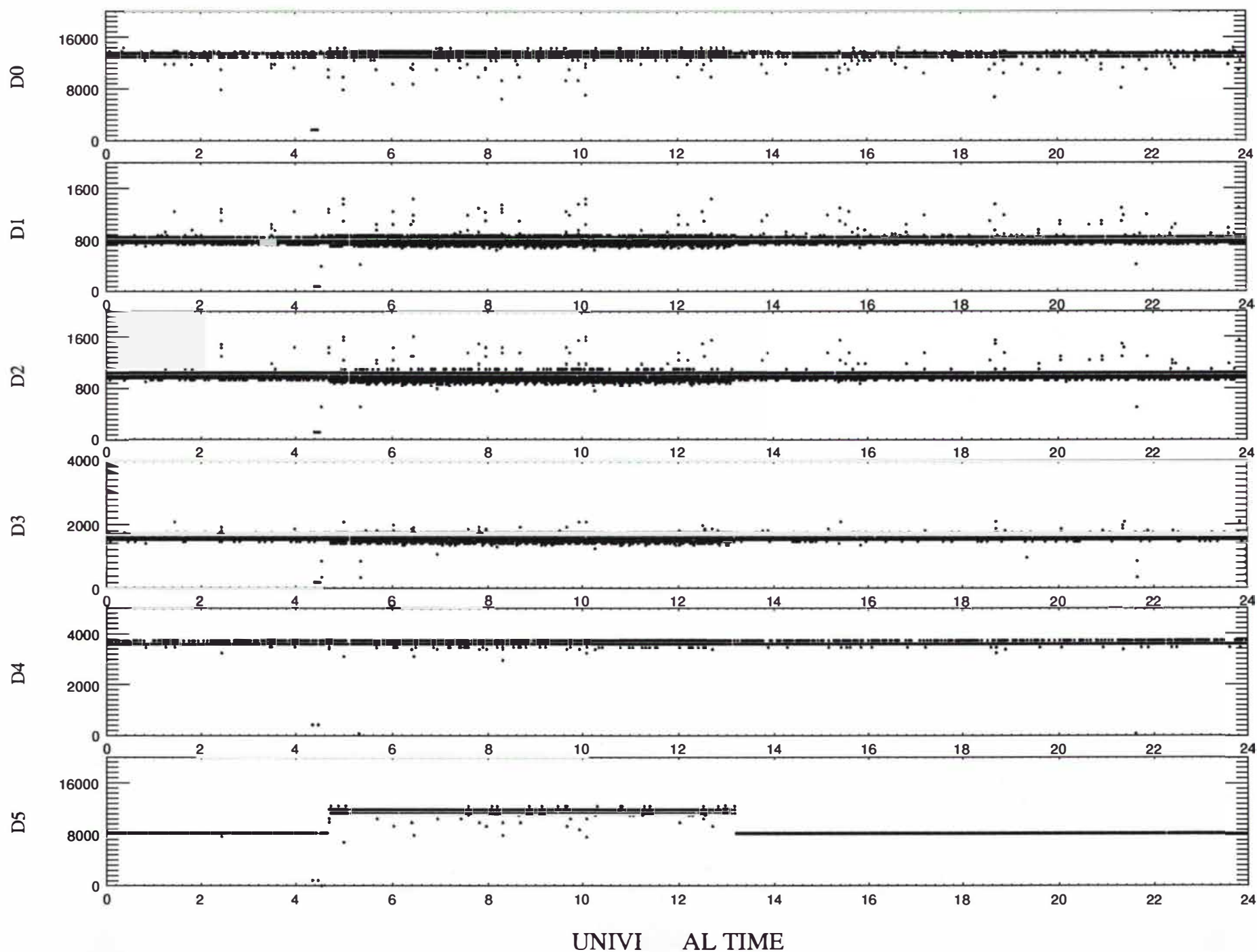




## CALIBRATION DATA INCLUDED



UNIV CAL TIME



From SHARIFF@ssl.msfc.nasa.gov Mon May 2 10:49 PDT 1994  
Date: Mon, 2 May 1994 12:50:11 -0500 (CDT)  
From: SHARIFF@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2952  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2952  
EVENT OF 1994 APR 28 DAY OF YEAR=118  
EVENT CROSSING TIME AT BATSE : 38192. S. OR 10:36:32.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 351.000 -1.000  
BATSE PEAK COUNTING RATE: 21000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 28/ 4/ 94 IS:  
RA= 120.176 DEC= -44.559 DIST= 2.924 AU  
BATSE-ULYSSES DISTANCE = 437360460. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 64.04 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= 638.70 SECS.  
CROSSING TIME AT ULYSSES IS 38831. S. OR 10:47:10 +/- 287.42 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 28/ 4/ 94 IS:  
RA= 9.815 DEC= 3.146 DIST= 2.201 AU  
MARS-BATSE DISTANCE = 329341600. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=160.74 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH=-1037.09 SECS.  
CROSSING TIME AT MARS IS 37155. S. OR 10:19:14 +/- 47.16 SECONDS

*NO - but should have been observed*

$$\frac{21000 \text{ c/s} \times .95 \times .5 \text{ average}}{100} \approx 90 \text{ c}$$

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2952    | 940428 | 9470 | 38192 | 21000    | 351 | -01 |

#### BATSE BURST TRIGGER

NO.: 02952

TIME: TJD=9470 SECONDS=38192

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=069.8 AZIMUTH=281.3 ERROR= DEGREES

#### COMMENTS:

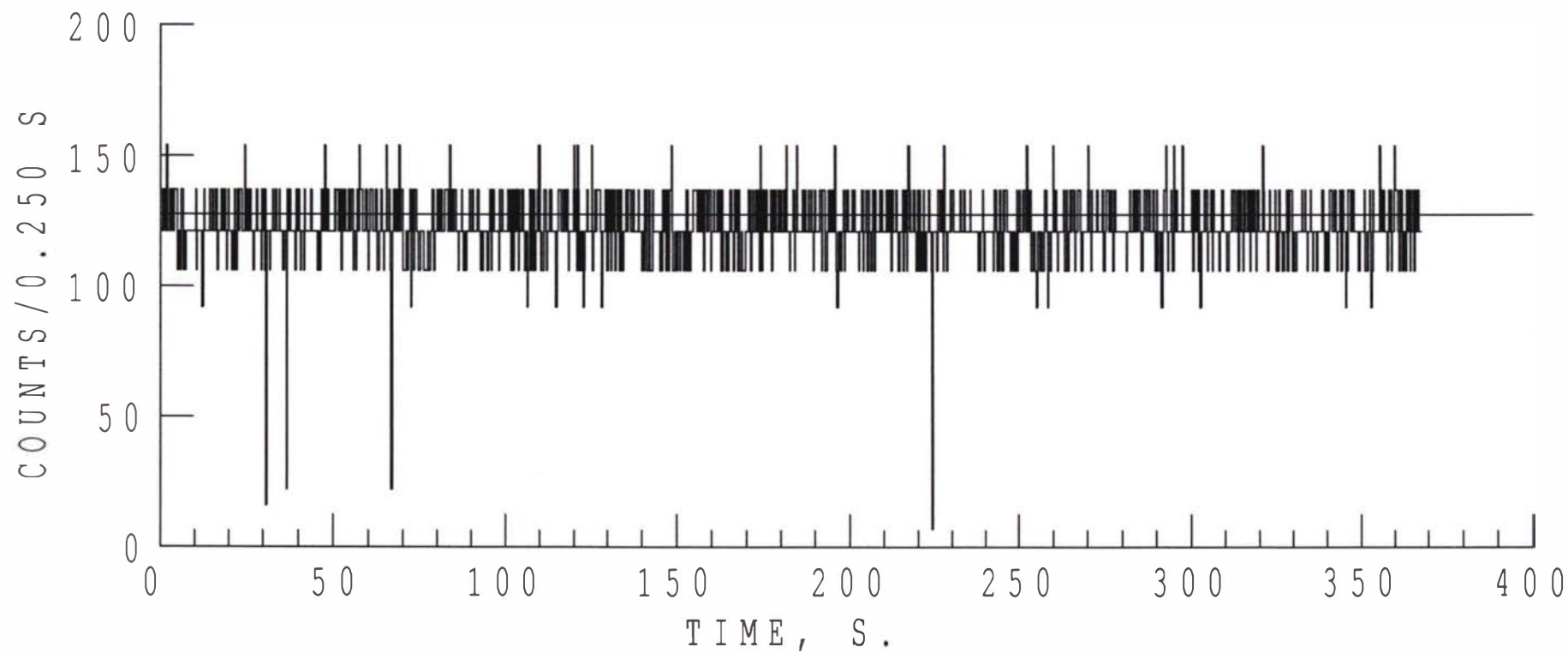
BURST, MULTI-PEAKED SPIKE, DUR ~0.9 SECONDS. VISIBLE ABOVE 300KEV.

2 / 5 / 94

ULYSSES RT  
28 / 4 / 94 38556.098 s  
0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS



GROUSE/LLNL

burstlog

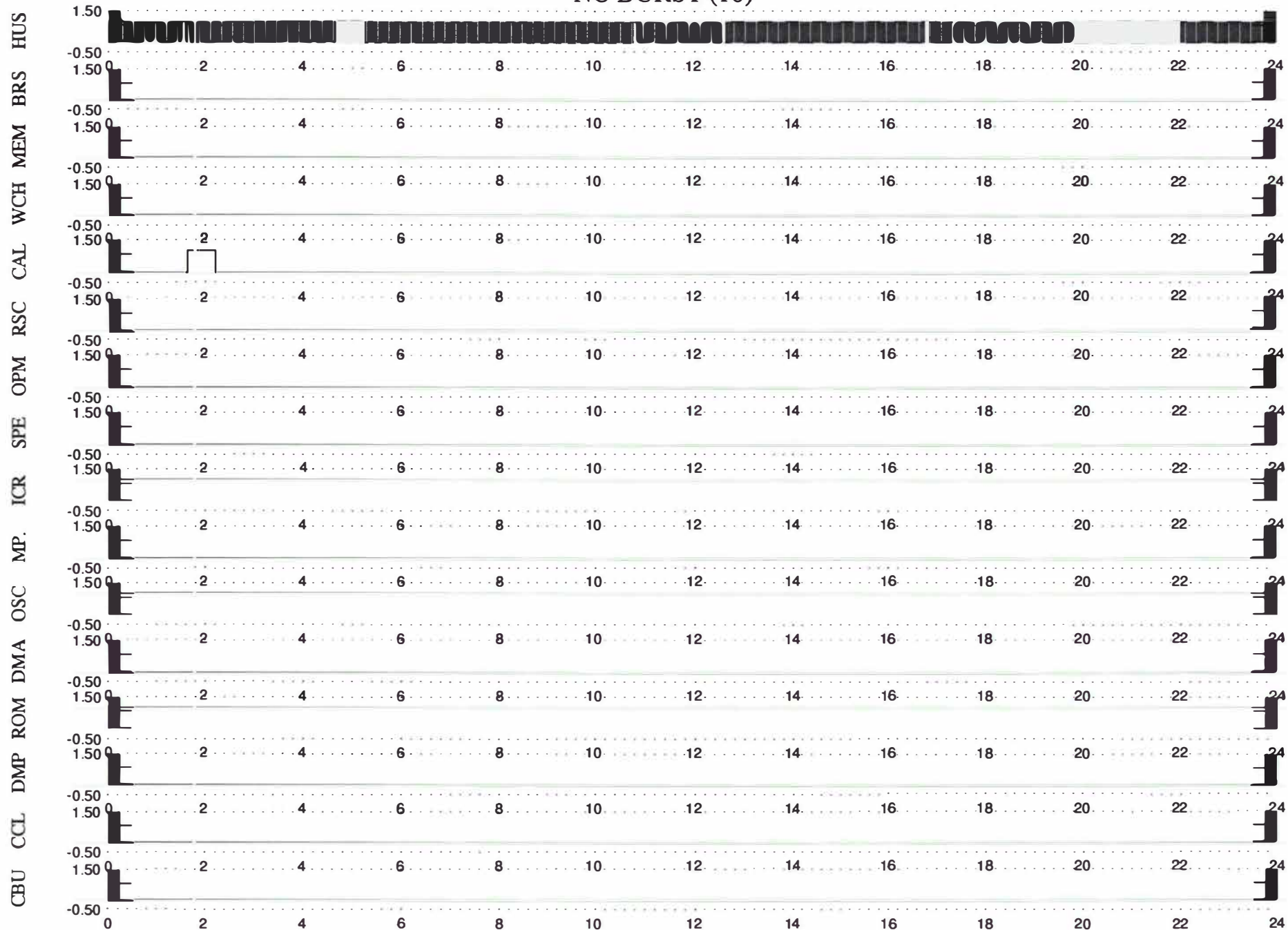
Tue Sep 13 10:49:58 1994

4

=====  
SUMMARY  
=====

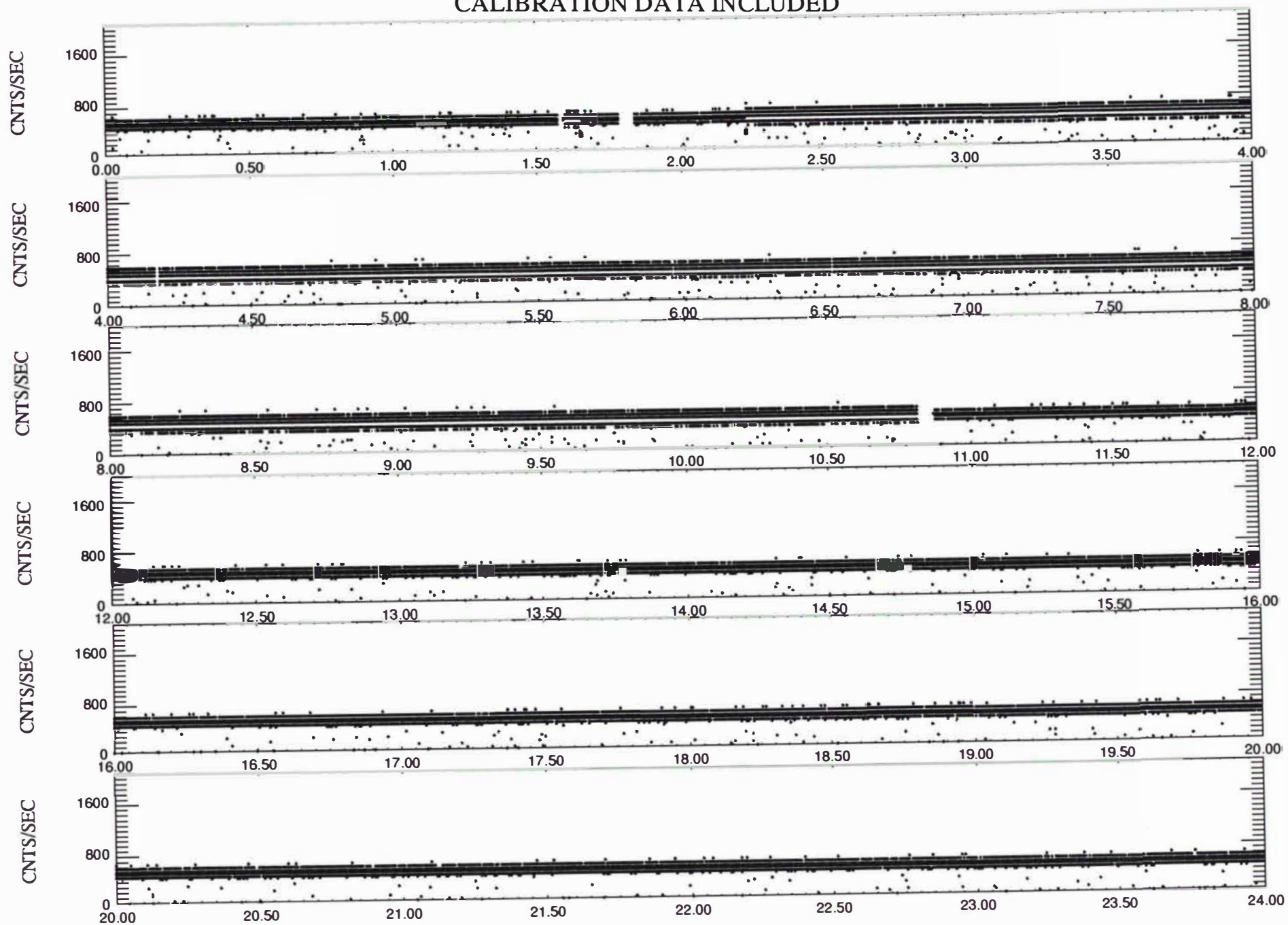
| Date<br>(UTC) | TJD  | SOD   | Trig# | Hunts_RA<br>(J2000) | Hunts_DEC | Hunts_error | BACO-Hunts | Raw data |
|---------------|------|-------|-------|---------------------|-----------|-------------|------------|----------|
| 1/29/94       | 9381 | 38599 | 2793  | 125.75              | 27.73     | ? 0.6035    | 4.3 deg    |          |
| 3/29/94       | 9440 | 42636 | 2896  | 179.98              | 8.24      | ? 1.731     | ~4 deg     |          |
| 4/28/94       | 9470 | 38193 | 2952  | 350.59              | -0.98     | 2.063 32.8  | deg        | 59. deg  |
| 6/23/94       | 9526 | 19547 | 3040  | 249.88              | 11.22     | 7.809 2.8   | deg        | 5.3 deg  |
| 8/27/94       | 9591 | 19087 | 3139  | 280.42              | -5.11     | 4.365 ?     | 9.6 deg    | -191MB   |
| 8/28/94       | 9592 | 24439 | 3141  | 340.56              | 50.57     | ? 3.839     | 8.3 deg    | -194MB   |
| 9/07/94       | 9602 | 30336 | 3159  | 105.71              | 73.56     | ? 6.252     | 18.6 deg   | -223MB   |

UNIV SAL TIME

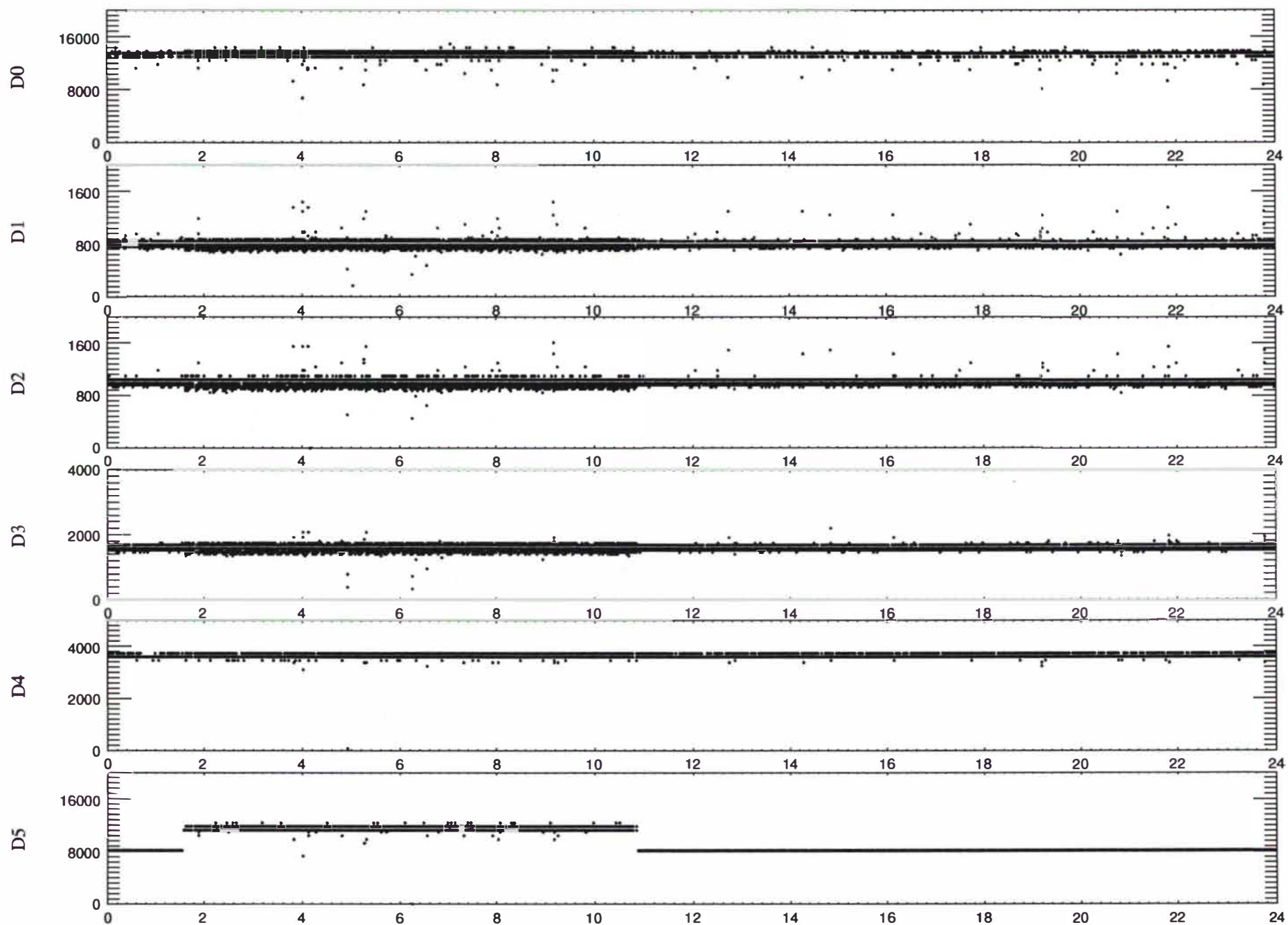




CALIBRATION DATA INCLUDED



UNIV TIME



UNIV AL TIME

From HAGEDON@ssl.msfc.nasa.gov Sat Apr 30 12:07 PDT 1994  
Date: Sat, 30 Apr 1994 14:07:44 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2953  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2953  
EVENT OF 1994 APR 29 DAY OF YEAR=119  
EVENT CROSSING TIME AT BATSE : 2633. S. OR 00:43:53.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 35.000 -58.000  
BATSE PEAK COUNTING RATE: 75000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 29/ 4/ 94 IS:  
RA= 120.117 DEC= -44.455 DIST= 2.925 AU  
BATSE-ULYSSES DISTANCE = 437607813. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION=128.76 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -913.95 SECS.  
CROSSING TIME AT ULYSSES IS 1719. S. OR 00:28:39 +/- 233.72 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 29/ 4/ 94 IS:  
RA= 10.522 DEC= 3.452 DIST= 2.199 AU  
MARS-BATSE DISTANCE = 329014048. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=115.49 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -472.29 SECS.  
CROSSING TIME AT MARS IS 2161. S. OR 00:36:00 +/- 164.82 SECONDS

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2953    | 940429 | 9471 | 02633 | 75000    | 035 | -58 |

#### BATSE BURST TRIGGER

NO.: 2953

TIME: TJD=9471 SECONDS=02633

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:N

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=105 AZIMUTH=339 ERROR= DEGREES

#### COMMENTS:

BURST. THREE PEAKS, EACH WITH FAST RISE, SLOWER DECAY. TOTAL DUR.~18 SEC.  
FIRST PEAK HAS SUBSTRUCTURE. MAX AT ~T+6 SEC. (SECOND PEAK).  
ALL THREE PEAKS VISIBLE ABOVE 300 KEV.

Helio corr removed

Date: Jan 27 '98

### BURST TRIANGULATION CHECKLIST

#### 1. Ulysses Data

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

#### 2. BATSE Data

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

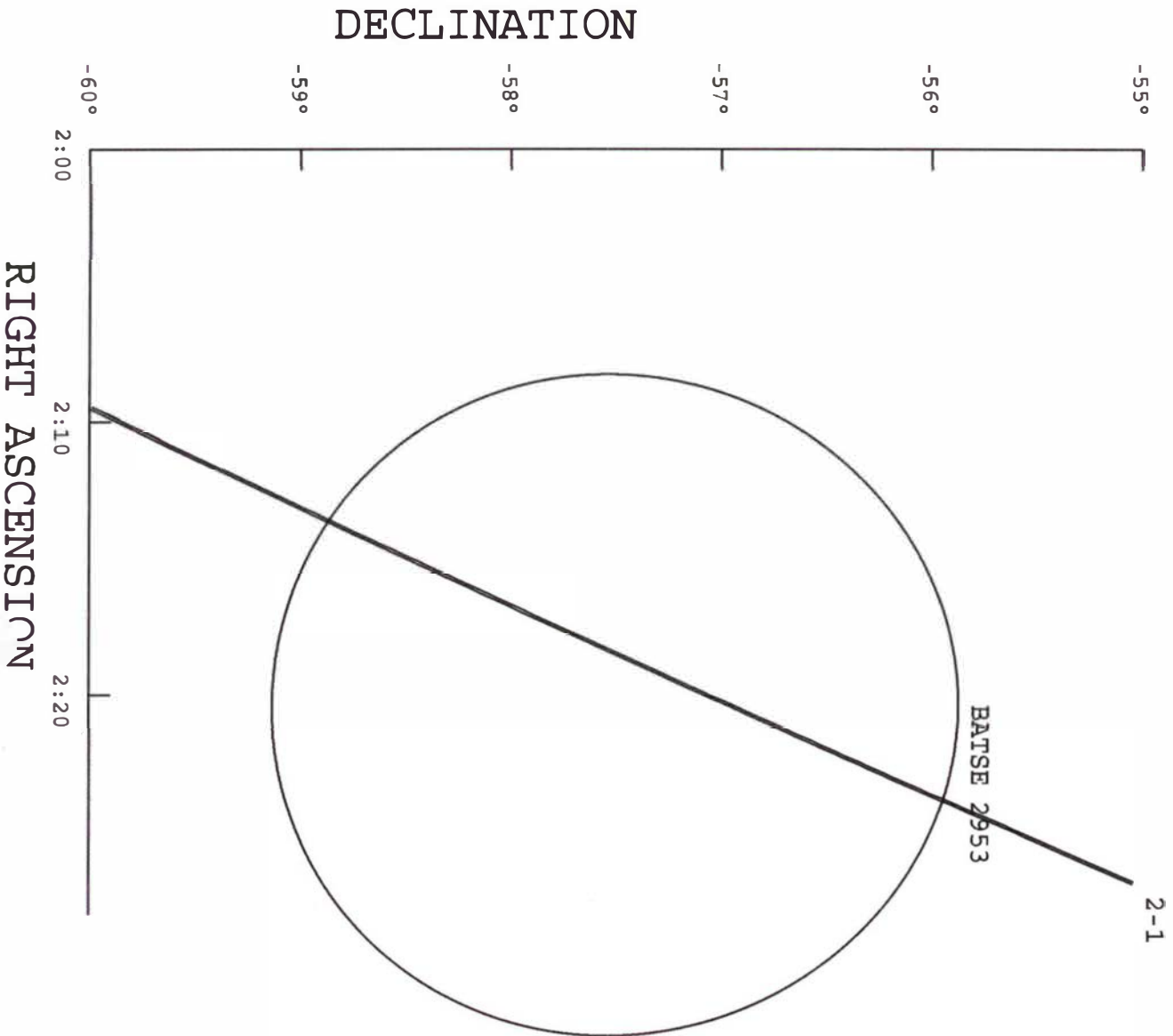
#### 3. PVO Data

- ☐ Ephemeris of PVO used (not Venus)?
- ☐ 2000 coordinates used?
- ☐ Geocentric time used?
- ☒ ACCESS database updated?

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

EVENT OF APR 29, 1994 0:28

27 / 1/98



BATSE

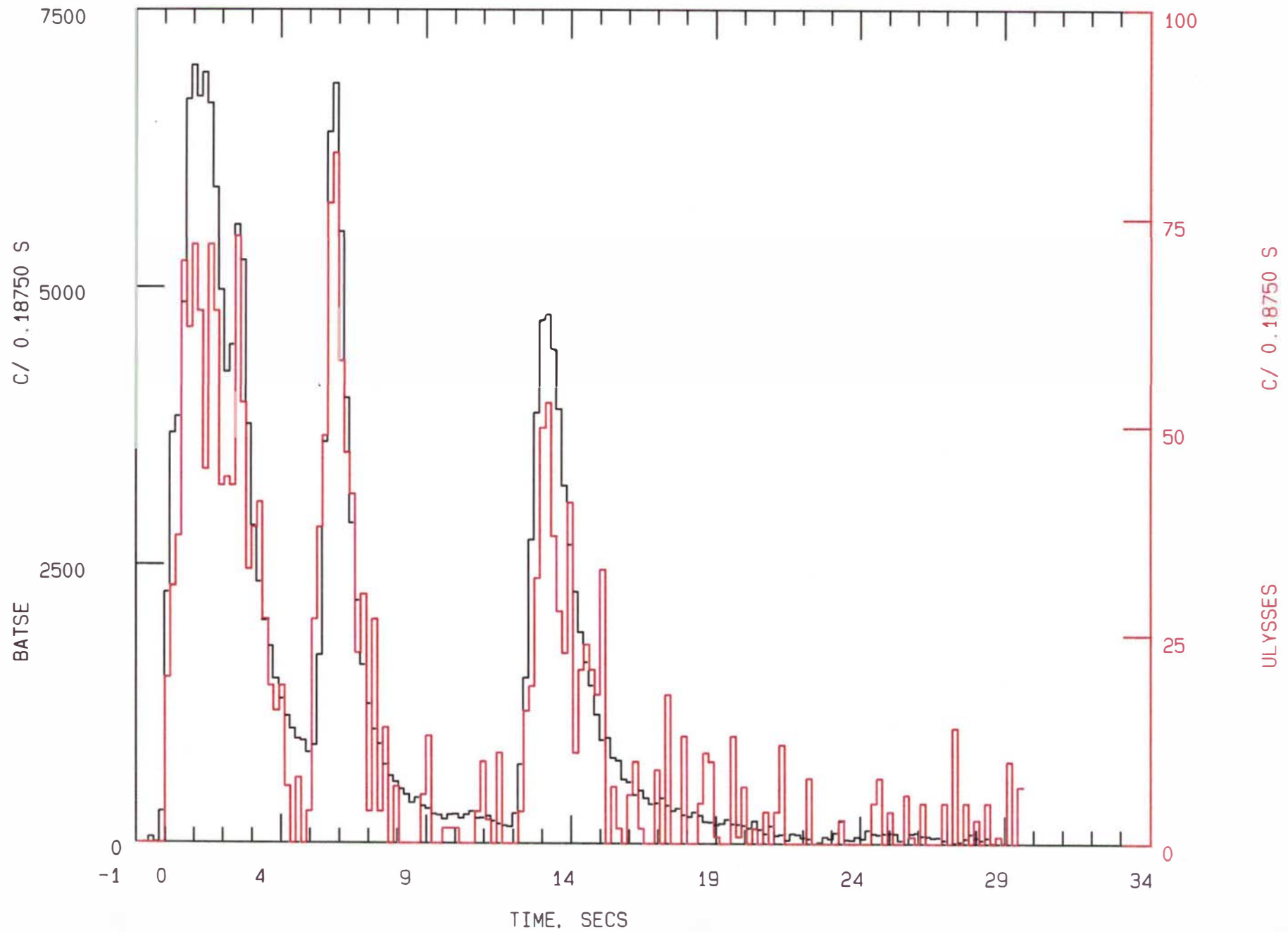
-ULYSSES

CORRELATION

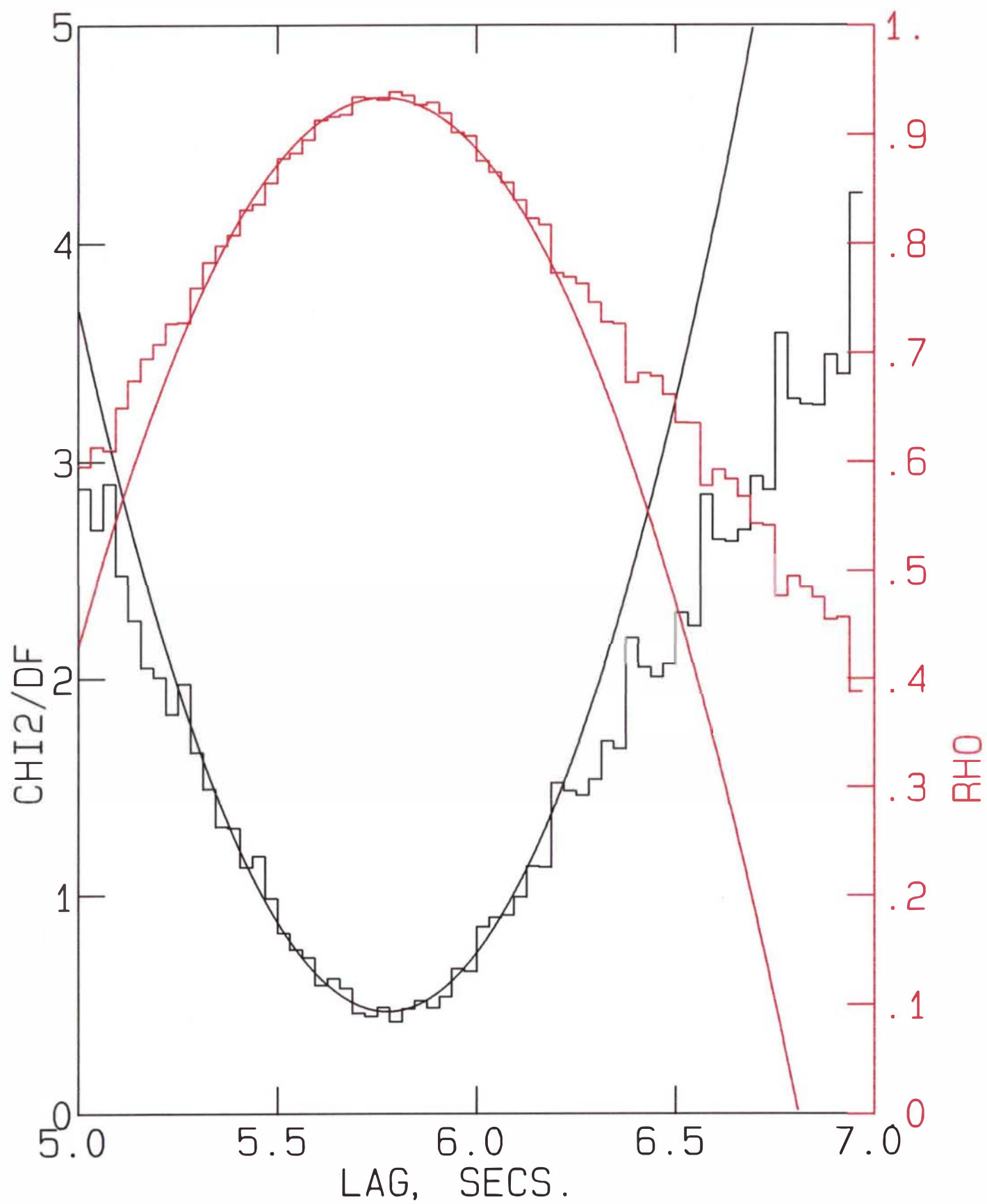
29/ 4/94

2633.434

27/ 1/98







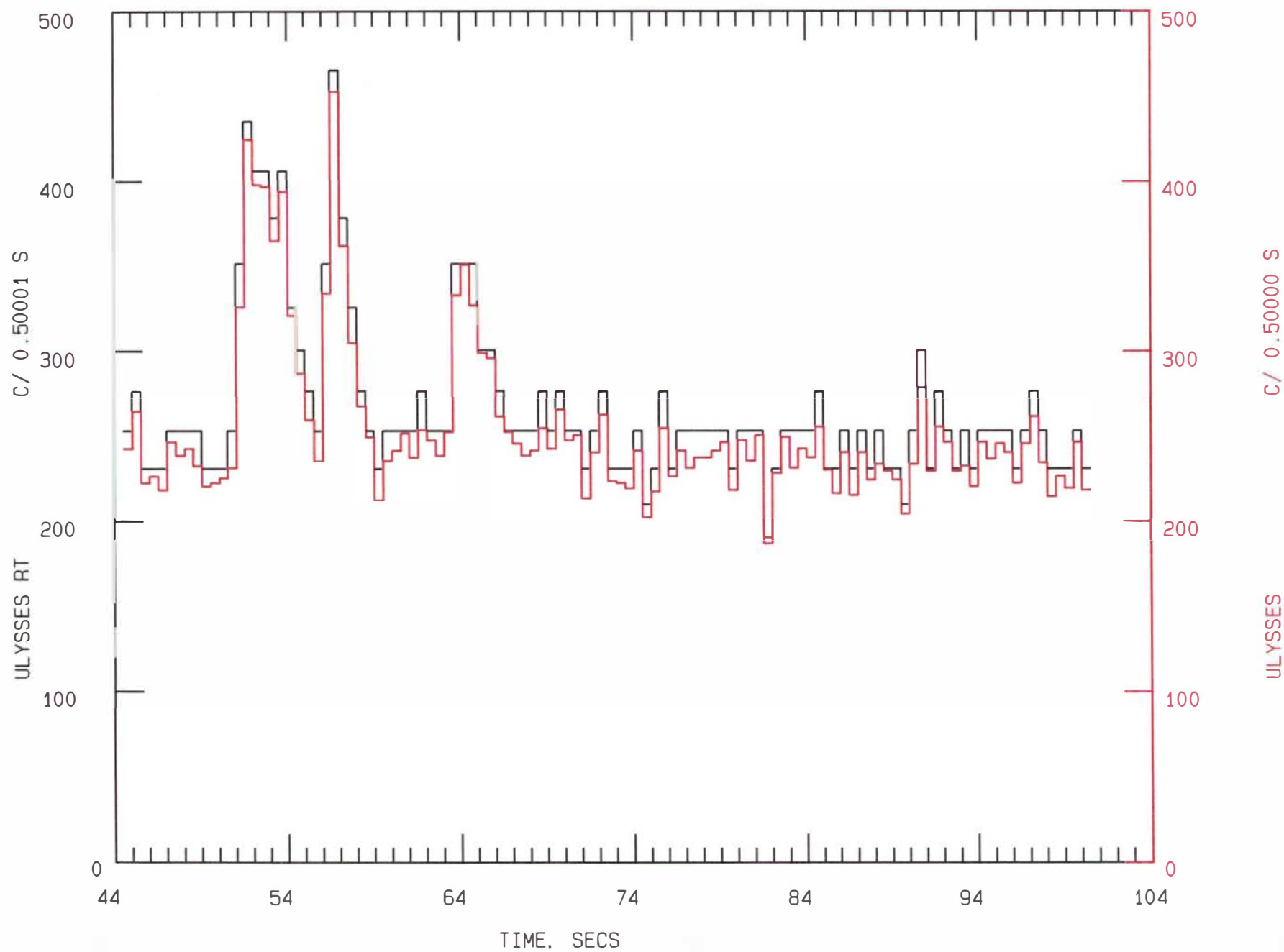
ULYSSES RT-ULYSSES

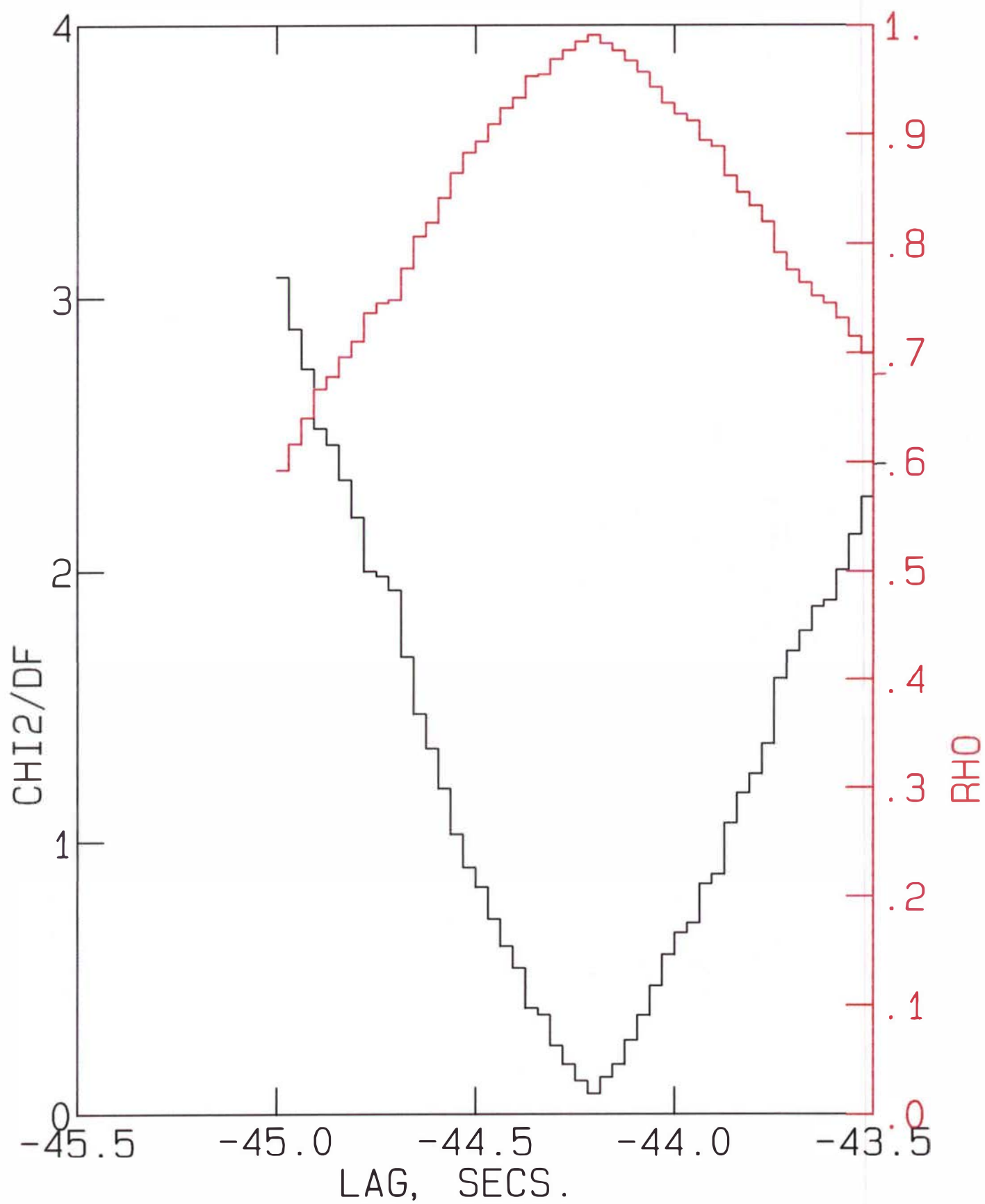
CORRELATION

29/ 4/94

1678.211

27/ 1/98

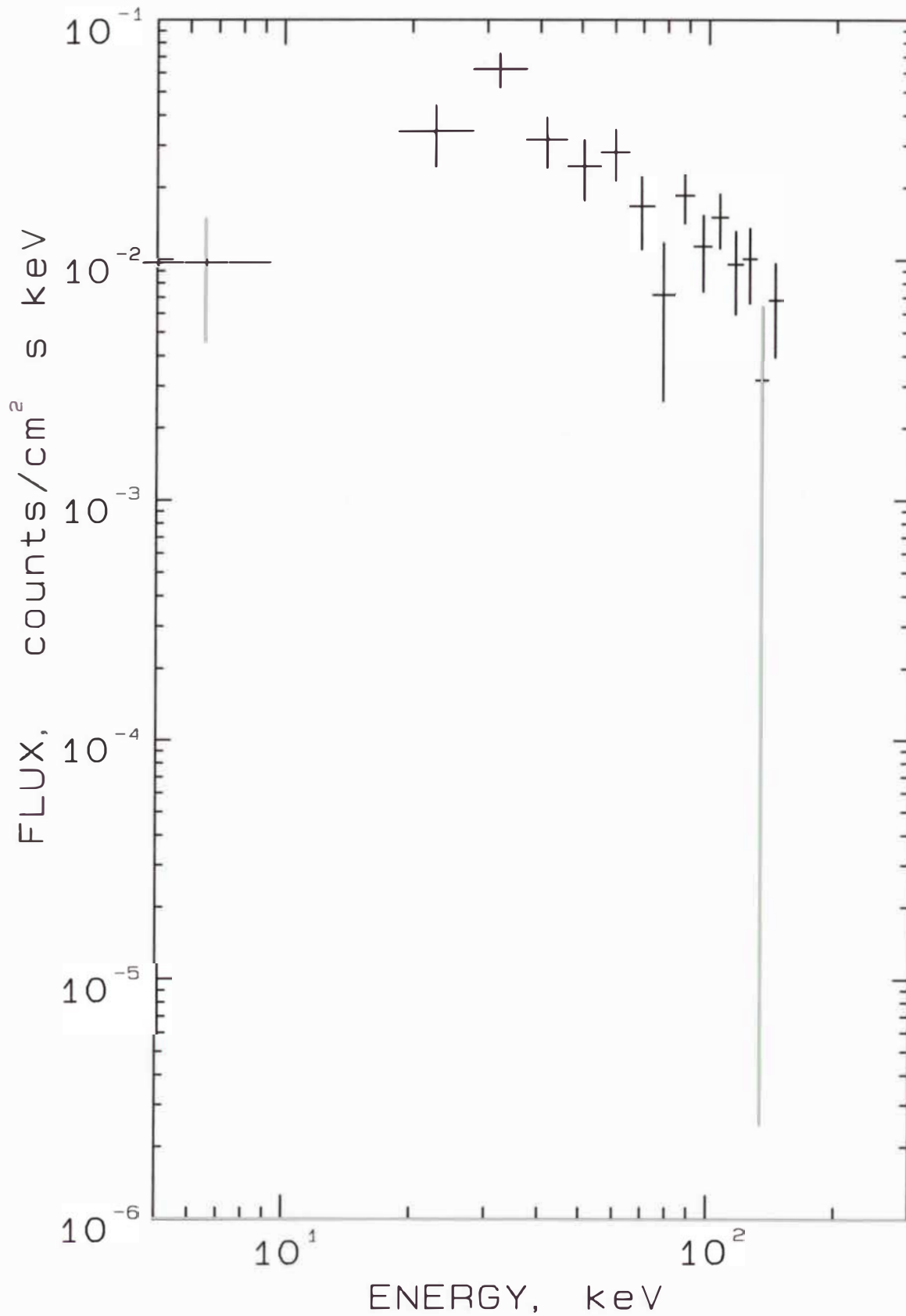




ULYSSES 29/04/94 1729.901

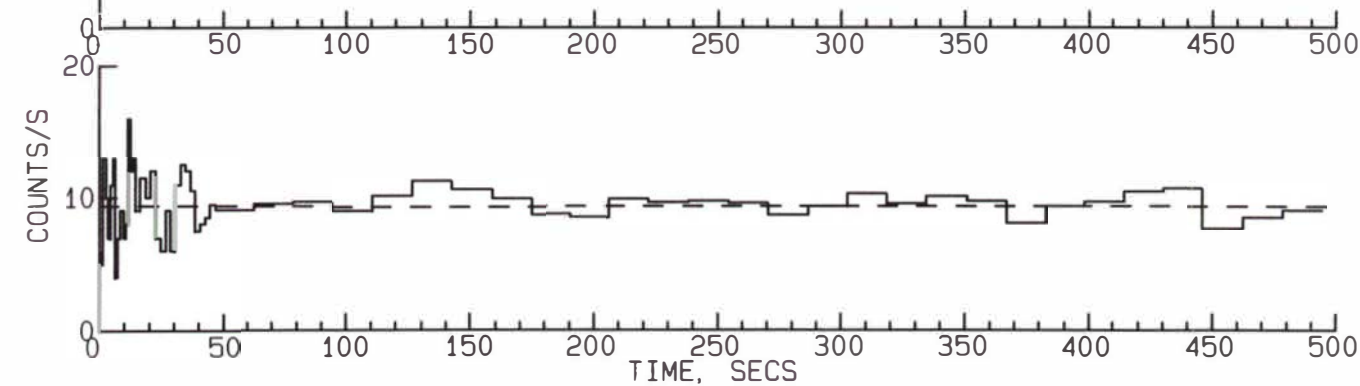
27/ 1/98

SPECTRUM INTEGRATED OVER 62.4 SECONDS, INTERVALS 2 TO 34

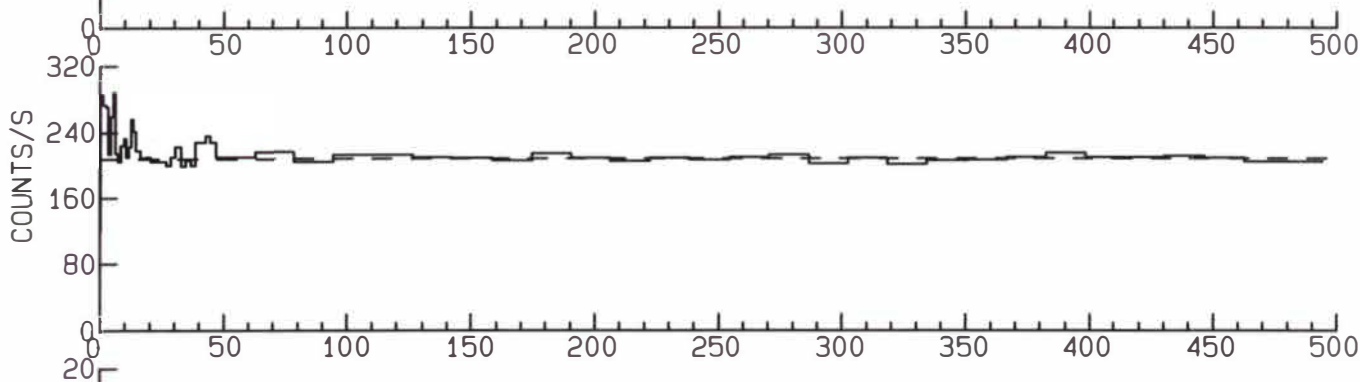


ULYSSES 29/04/94 1729.901 BURST SPECTRAL COUNT RATES

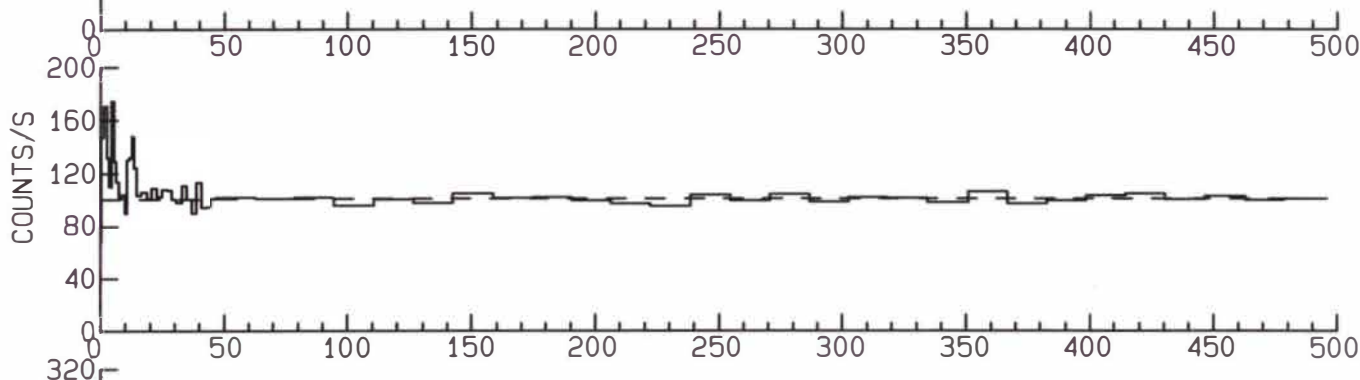
4- 18 keV



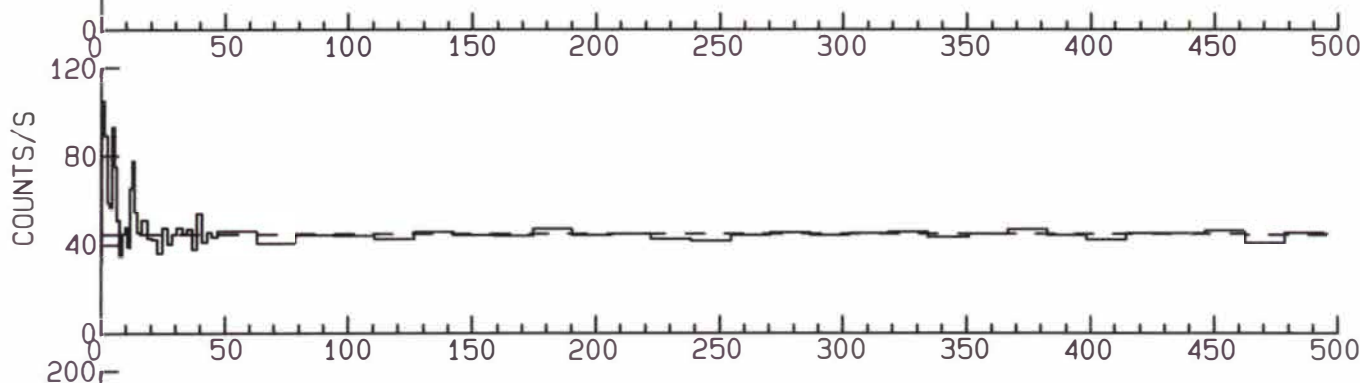
18- 46 keV



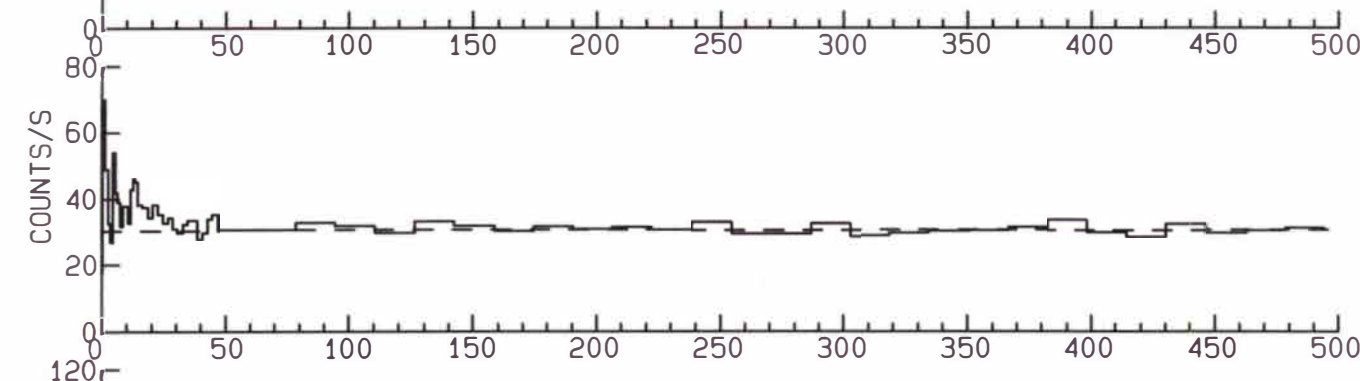
46- 73 keV



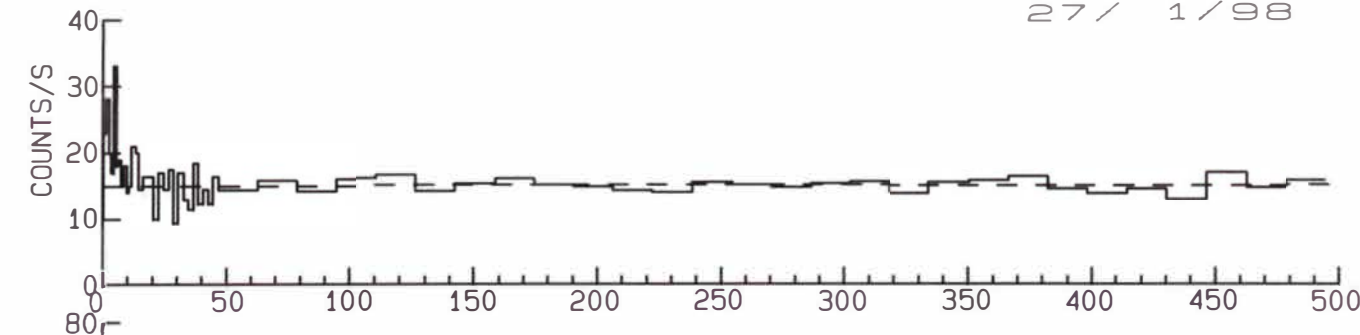
73-101 keV



101-129 keV



129-147 keV



27 / 1 / 98

ULYSSES

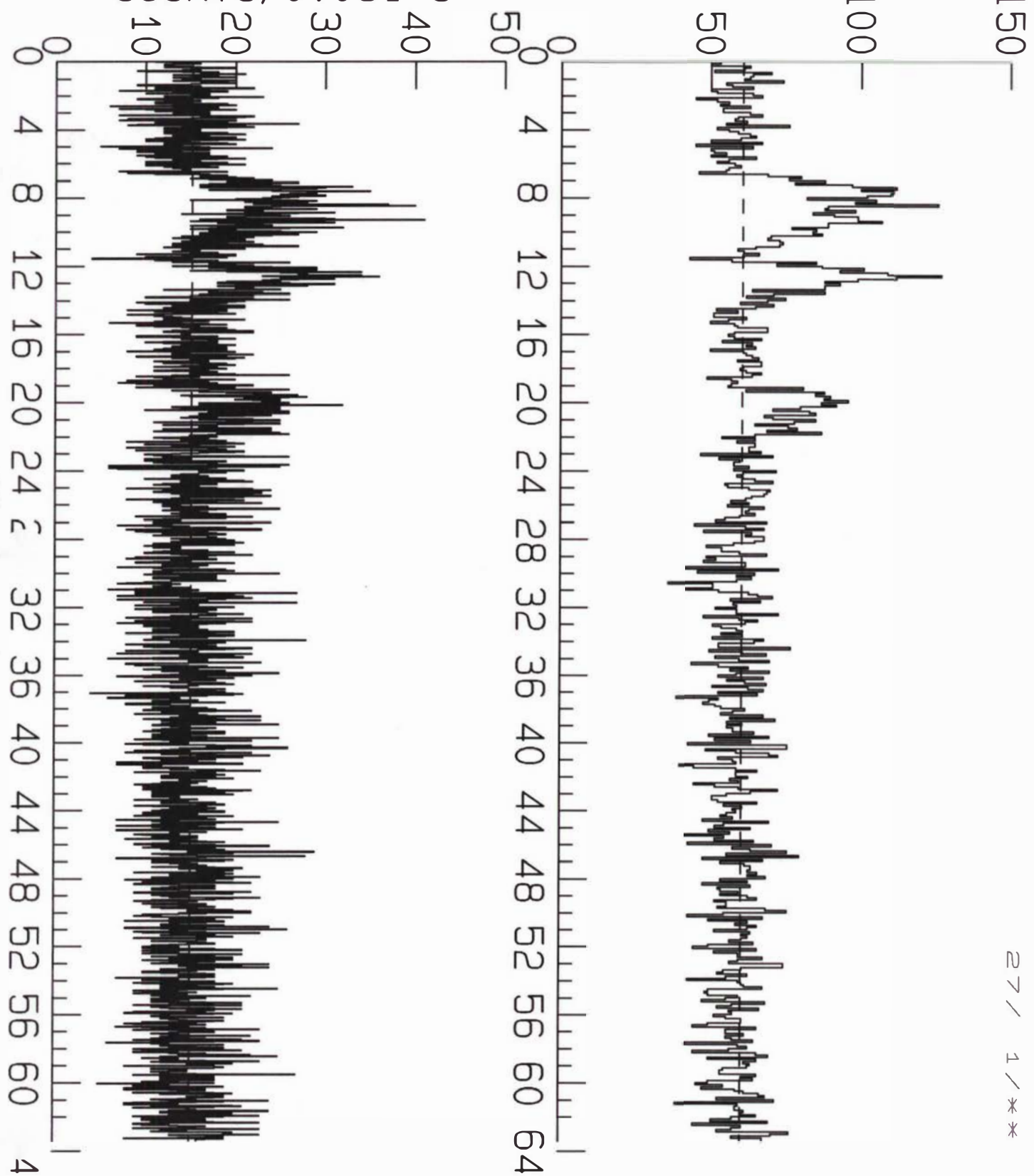
29/04/94

Ttrig= 1729.838

22- 148 keV

COUNTS/0.031 S

COUNTS/0.125 S





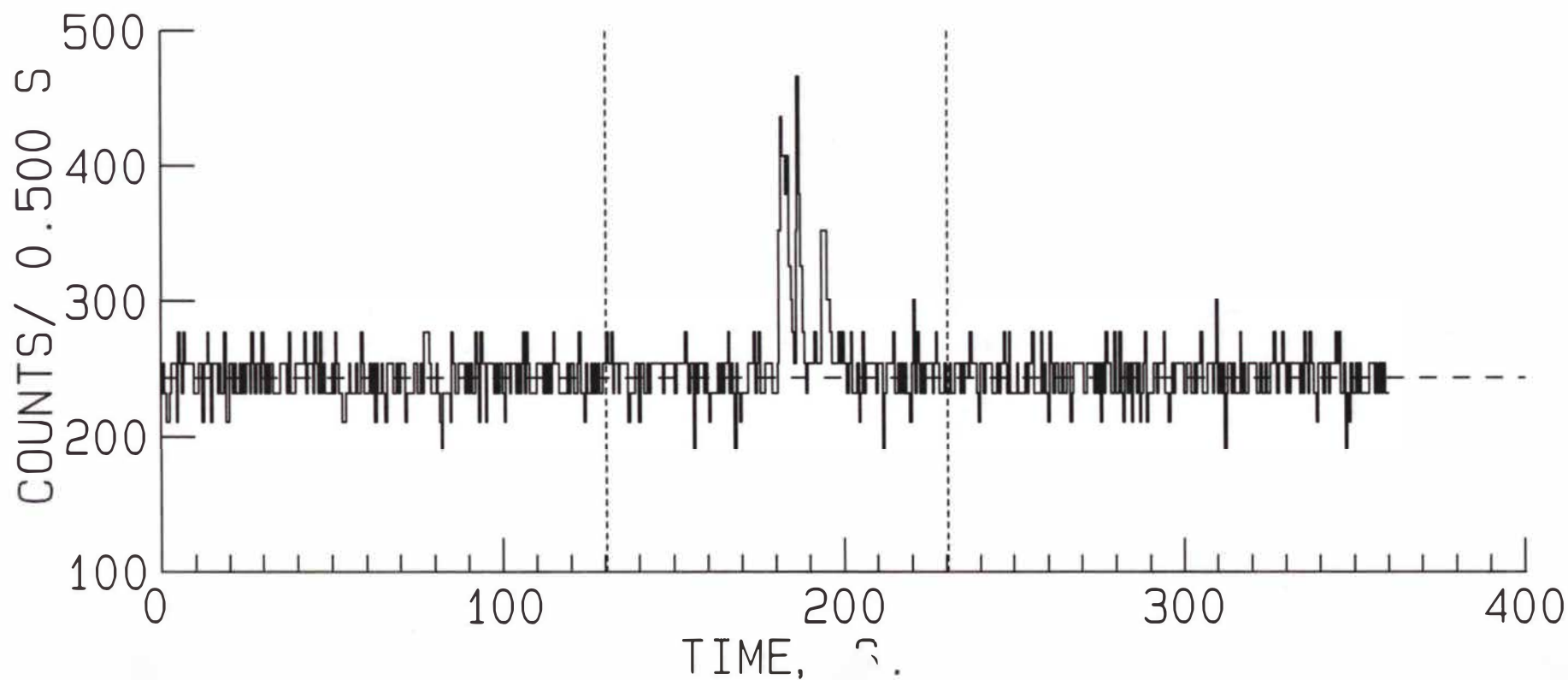
ULYSSES RT

27 / 1 / 98

29/ 4/94 1548.280 s

22- 148 keV

N= 10 M= 2  
>4.0 SIGMA FLUCTUATIONS



From root Fri Apr 29 06:36 1994  
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)  
id AA03555; Fri, 29 Apr 94 06:36:28  
Received: from HOTDOG.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)  
id AA02897; Fri, 29 Apr 1994 06:45:25 +0800  
Message-Id: <9404291345.AA02897@sunspot.ssl.berkeley.edu>  
Received: from [128.183.8.186] ([128.183.8.186]) by HOTDOG.GSFC.NASA.GOV with SMTP;  
Fri, 29 Apr 1994 9:44:31 -0400 (EDT)  
X-Sender: palmer@hotdog.gsfc.nasa.gov  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"  
Date: Fri, 29 Apr 1994 09:45:34 -0500  
To: khurley@sunspot.ssl.berkeley.edu  
From: palmer@tgrs.gsfc.nasa.gov  
Subject: GRB940429  
Content-Length: 435  
Status: R

I estimate that, IF GRB940429 = March 5, the Ulysses signal should be seen at 00:22:49 (1369 seconds) GMT of Today (940429). Does the DSN download data for GMT days beginning and ending at midnight? If so, then the data will be delayed an extra day from what it would have if the burst had been half an hour earlier.

That time is the trigger time. Look at your Fax machine for the light curves from BATSE.

David

From root Fri Apr 29 11:56 1994  
Received: by space6.ssl.berkeley.edu (AIX 2.1 2/4.03)  
id AA03875; Fri, 29 Apr 94 11:56:22  
Received: from HOTDOG.GSFC.NASA.GOV by sunspot.ssl.berkeley.edu (5.0/SMI-SVR4)  
id AA05485; Fri, 29 Apr 1994 12:05:20 +0800  
Message-Id: <9404291905.AA05485@sunspot.ssl.berkeley.edu>  
Received: from [128.183.8.186] ([128.183.8.186]) by HOTDOG.GSFC.NASA.GOV with SMTP;  
Fri, 29 Apr 1994 15:04:25 -0400 (EDT)  
X-Sender: palmer@hotdog.gsfc.nasa.gov  
Mime-Version: 1.0  
Content-Type: text/plain; charset="us-ascii"  
Date: Fri, 29 Apr 1994 15:05:29 -0500  
To: khurley@space6.ssl.berkeley.edu  
From: palmer@tgrs.gsfc.nasa.gov  
Subject: Re:  
Cc: "SSL::FISHMAN"@tgrs.gsfc.nasa.gov, "BATSE::kouveliotou"@tgrs.gsfc.nasa.gov,  
barthelmey@tgrs.gsfc.nasa.gov, schaefer@tgrs.gsfc.nasa.gov  
Content-Length: 655  
Status: R

>Ulysses triggered on the April 29 burst at 01548 seconds. If you can send  
>me the digital BATSE data, I'll work out a position for it.

>  
>cc: J. Fishman  
> D. Palmer  
> C. Kouveliotou

|                                  |                       |
|----------------------------------|-----------------------|
| A trigger at 1548 seconds ->     | deltaT = 1087 seconds |
| at a distance of                 | d = 2.9308 AU         |
| gives an annulus radius of       | r = 41.96 degrees     |
| from the Ulysses directino of    | RA = 120.6            |
|                                  | dec = -44.567         |
| which misses the N49 position by | 12 degrees            |

So this is not a re-activation of the March 5 event.

Oh well, it was still a bright burst.

David

April 29, 1994

Kevin -

There was a red-limit trigger last night, for which I was called at home. It is in the daytime sky, so there was no point to alert optical observers.

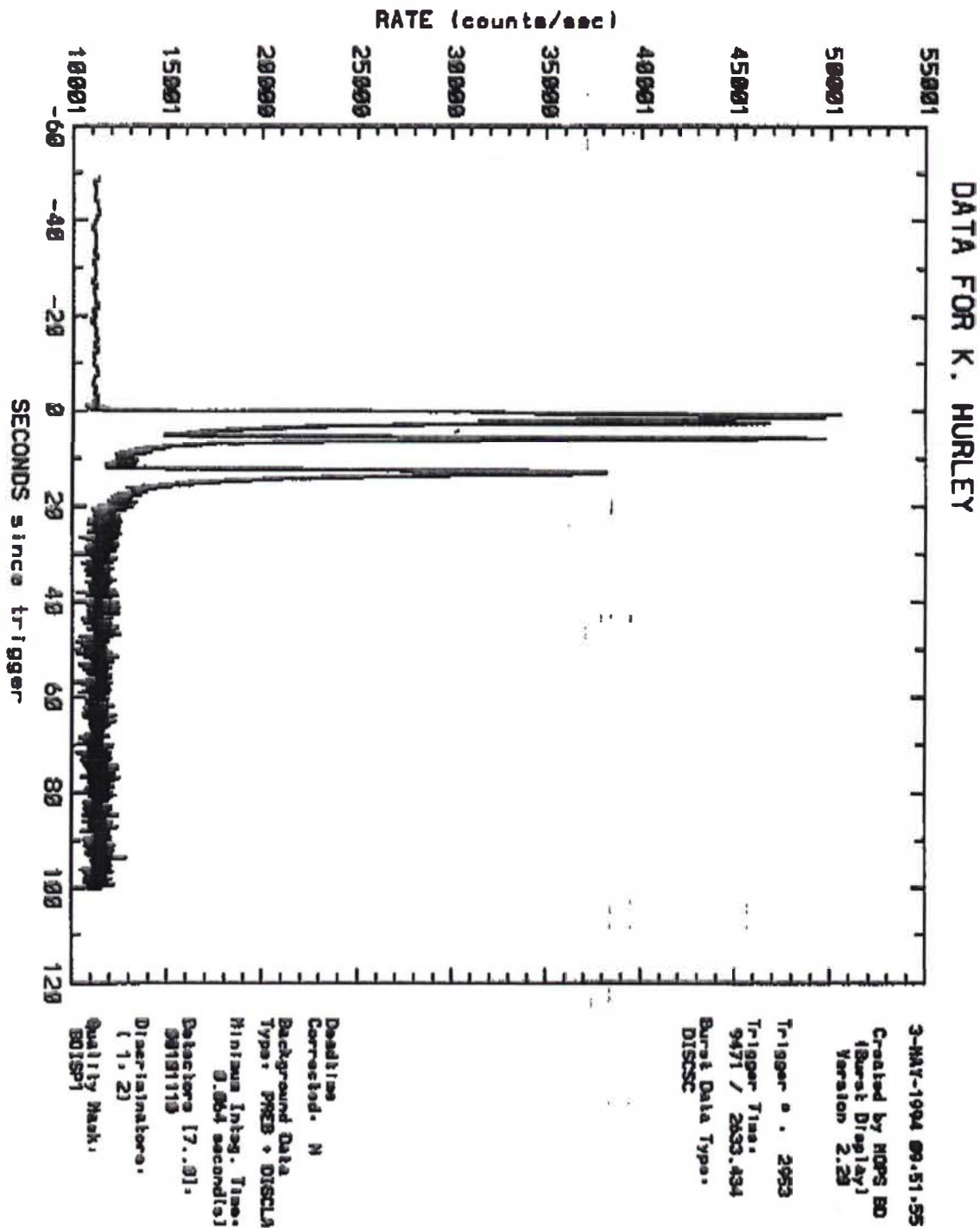
The BACODINE location (attached) is: 4h 53m ; -73 deg. This is near or within the LMC! The detector ratios are consistent with a real burst. Since the time was 00:43:55UT (TJD 9471), we won't be able to see the complete data until tomorrow.

Could you check out the Ulysses data & IPN position?

Regards,

  
Jerry

cc.: CK



From HAGEDON@ssl.msfc.nasa.gov Sat Apr 30 12:09 PDT 1994  
Date: Sat, 30 Apr 1994 14:09:55 -0500 (CDT)  
From: HAGEDON@ssl.msfc.nasa.gov  
To: khurley@sunspot.ssl.berkeley.edu  
Subject: Crossing Windows for BATSE Burst 2954  
Content-Type: text  
Content-Length: 1135

\*\*\*\*\*  
\*BATSEARCH PROGRAM\*  
\*\*\*\*\*

BATSE BURST # 2954  
EVENT OF 1994 APR 29 DAY OF YEAR=119  
EVENT CROSSING TIME AT BATSE : 18766. S. OR 05:12:46.0  
COORDINATES ARE 0.000 0.000 6800. (RA, DEC, DIST.)  
BURST ARRIVAL DIRECTION: 35.000 -8.000  
BATSE PEAK COUNTING RATE: 3000 C/S

EVENT CROSSING TIME AT ULYSSES WILL BE FOUND  
INTERPOLATED POSITION OF ULYSSES ON 29/ 4/ 94 IS:  
RA= 120.100 DEC= -44.422 DIST= 2.926 AU  
BATSE-ULYSSES DISTANCE = 437685996. KM.  
ANGLE WHICH BATSE-ULYSSES VECTOR MAKES WITH GRB ARRIVAL DIRECTION= 99.08 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -230.42 SECS.  
CROSSING TIME AT ULYSSES IS 18536. S. OR 05:08:55 +/- 296.80 SECONDS

EVENT CROSSING TIME AT MARS WILL BE FOUND  
POSITION OF MARS ON 29/ 4/ 94 IS:  
RA= 10.522 DEC= 3.452 DIST= 2.199 AU  
MARS-BATSE DISTANCE = 329014048. KM.  
ANGLE WHICH BATSE-MARS VECTOR MAKES WITH GRB ARRIVAL DIRECTION=153.03 DEG.  
LIGHT TRAVEL TIME ALONG PROJECTED PATH= -978.12 SECS.  
CROSSING TIME AT MARS IS 17788. S. OR 04:56:27 +/- 71.56 SECONDS

No

| BATSE # | Date   | TJD  | sec   | Max ct/s | RA  | Dec |
|---------|--------|------|-------|----------|-----|-----|
| 2954    | 940429 | 9471 | 18766 | 3000     | 035 | -08 |

BATSE BURST TRIGGER  
NO.: 2954

TIME: TJD=9471 SECONDS=18766

TYPE: BURST SOLAR FLARE TRIGGER SIGNAL:Y

SIGNIFICANCE: SIGMA

INTENSITY: COUNTS/CM2

LOCATION: ZENITH=57. AZIMUTH=330. ERROR= DEGREES

COMMENTS:

BURST. WEAK SINGLE PULSE. DUR.~23 SEC. FASTER RISE THAN DECAY.  
NOT VISIBLE ABOVE 300 KEV.



2 / 5 / 94

ULYSSES RT

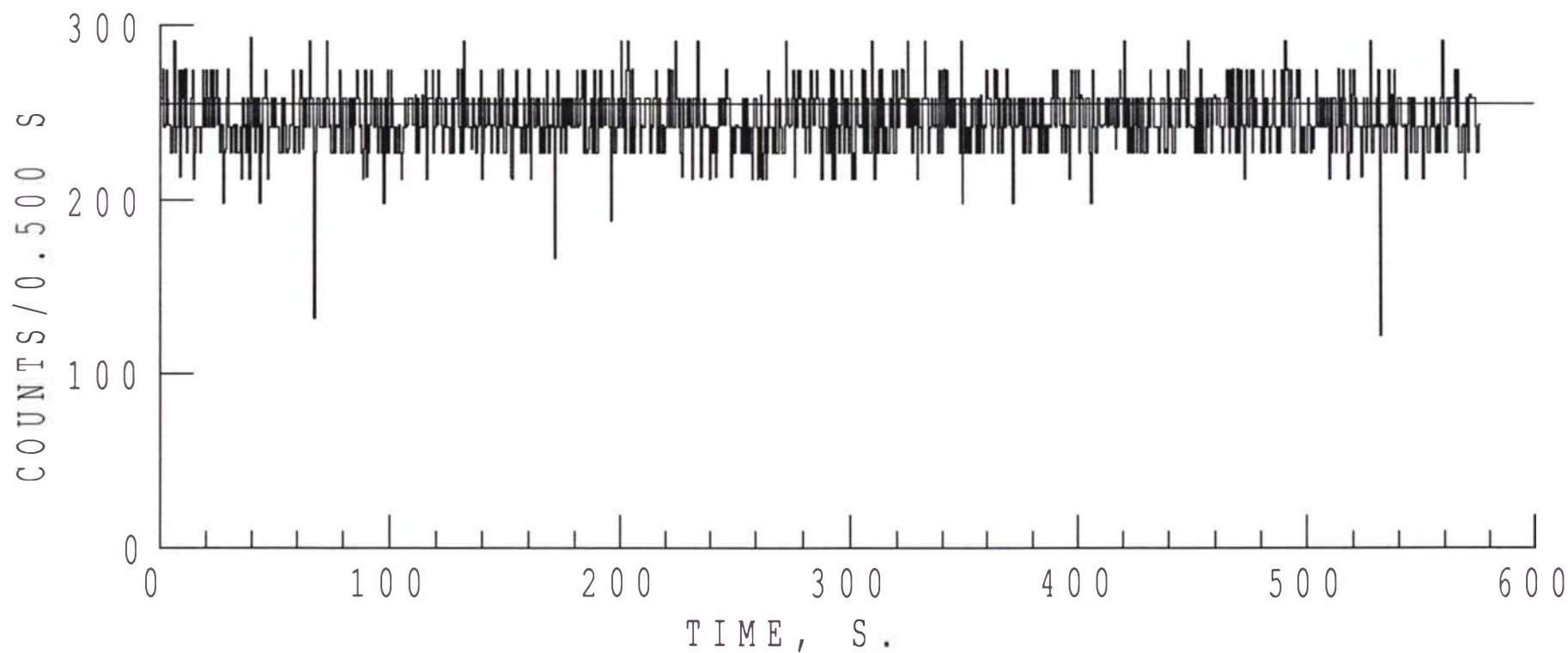
29 / 4 / 94 18252.035 s

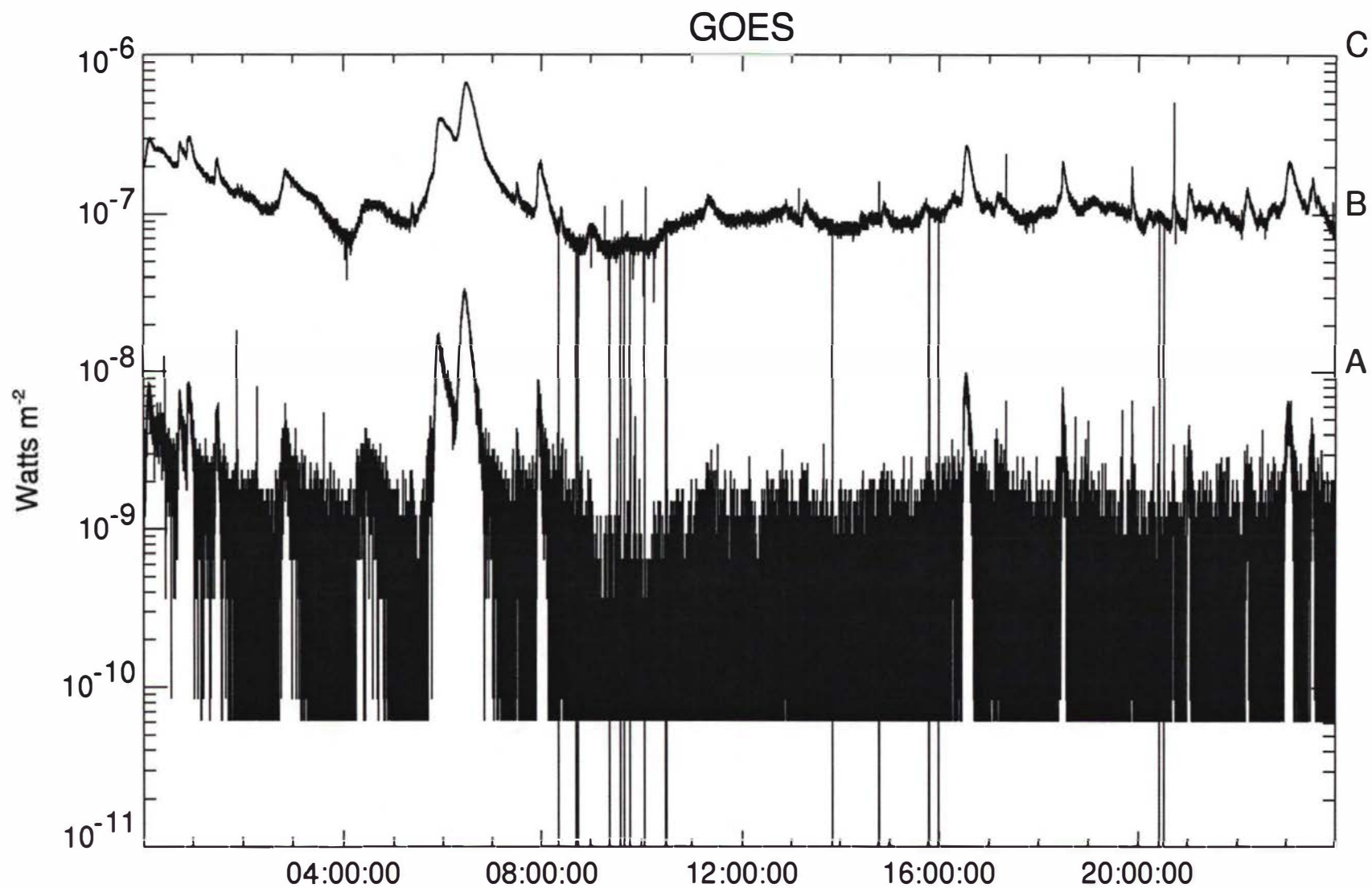
0.250 S INTERVALS REGROUPED BY 2

0 - 0 keV

N= 10 M= 2

&gt;4.0 SIGMA FLUCTUATIONS





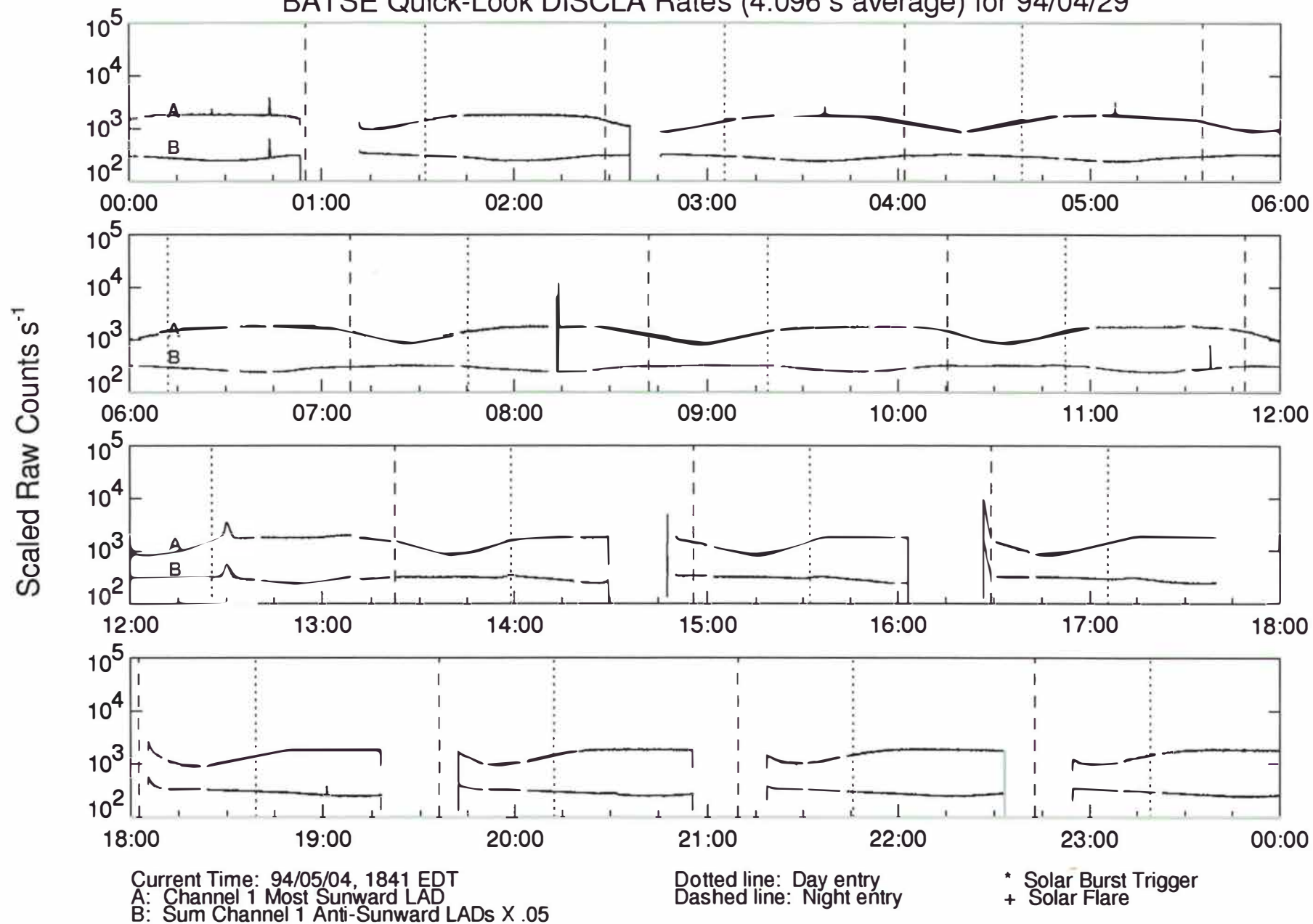
Data Start: 94/04/29, 0000:02

Plot created: 94/05/04, 1846

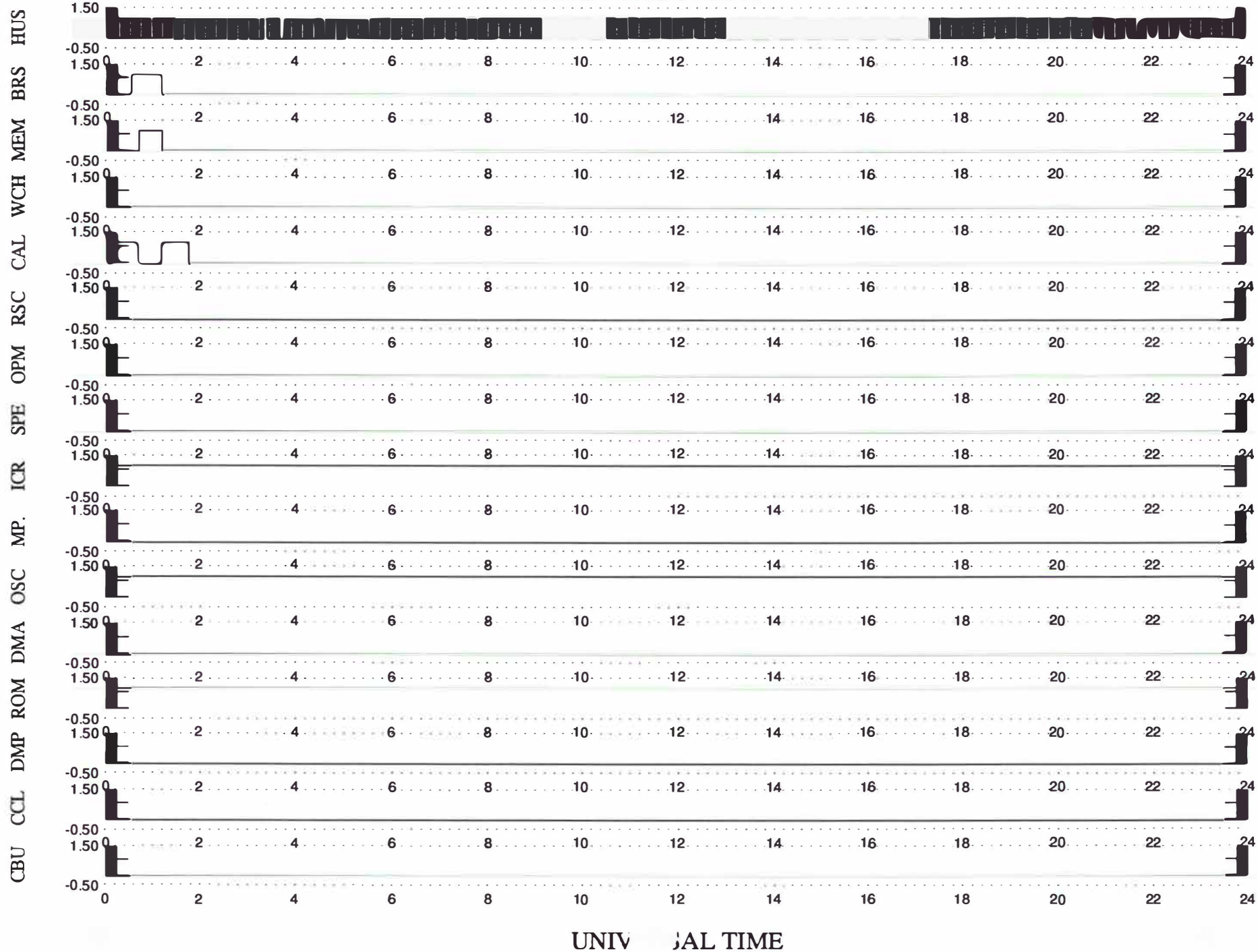
Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

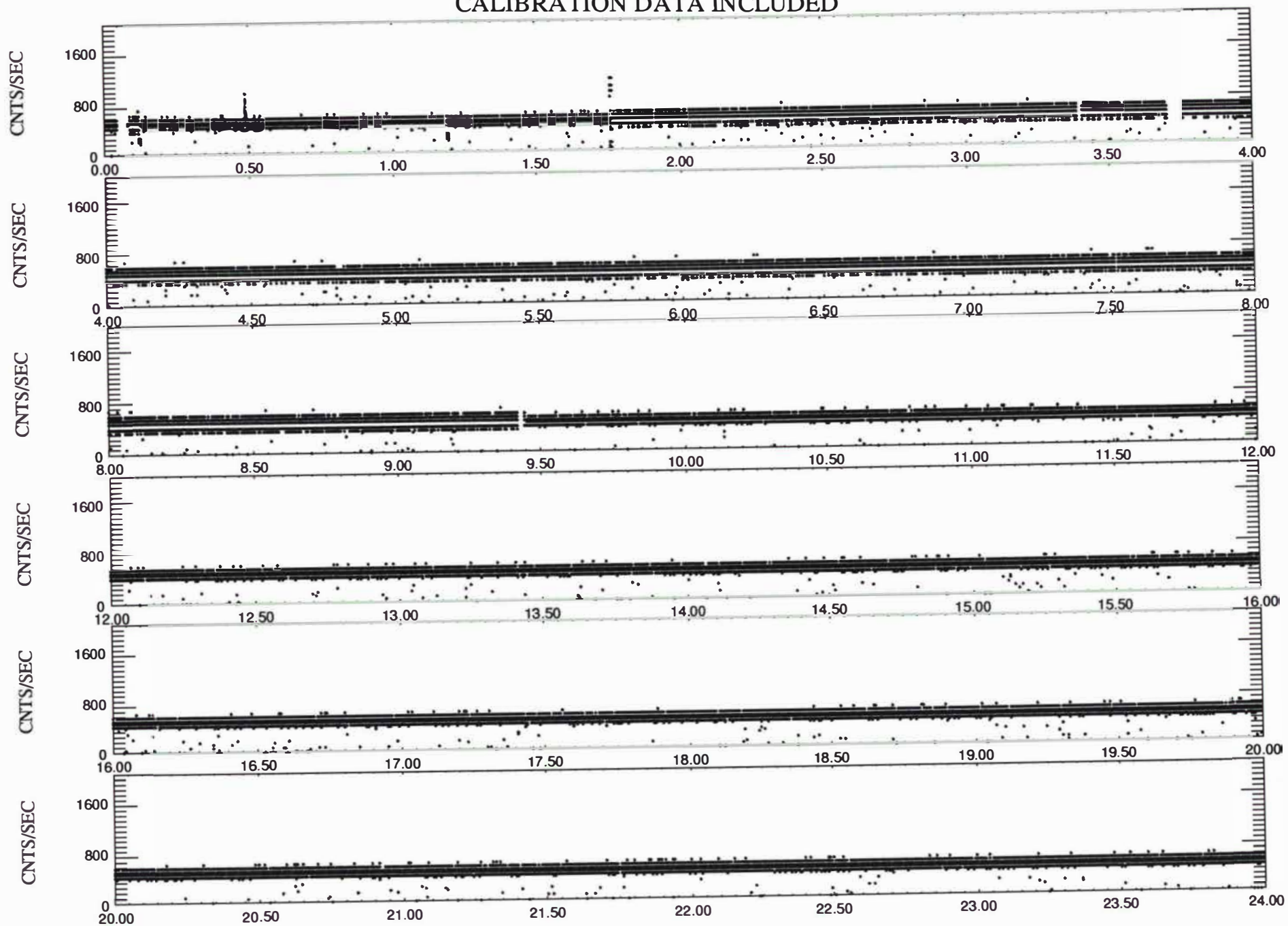
BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/29



## BURST NUMBER 11



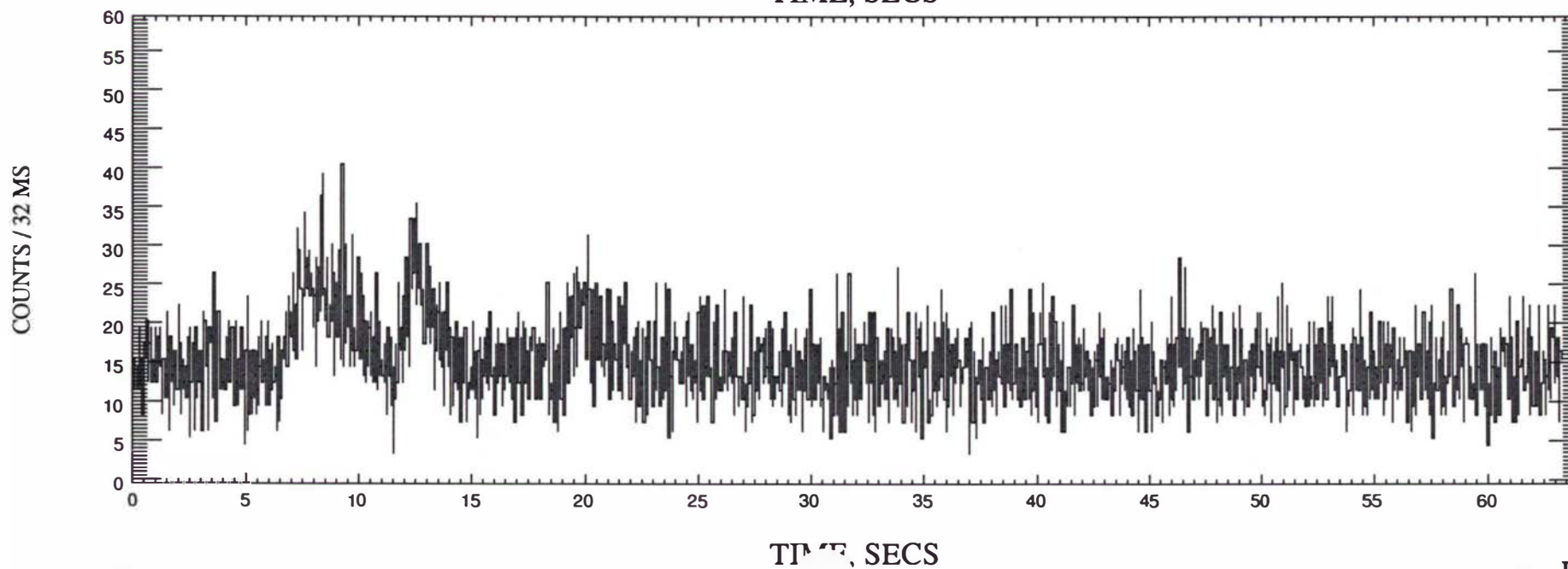
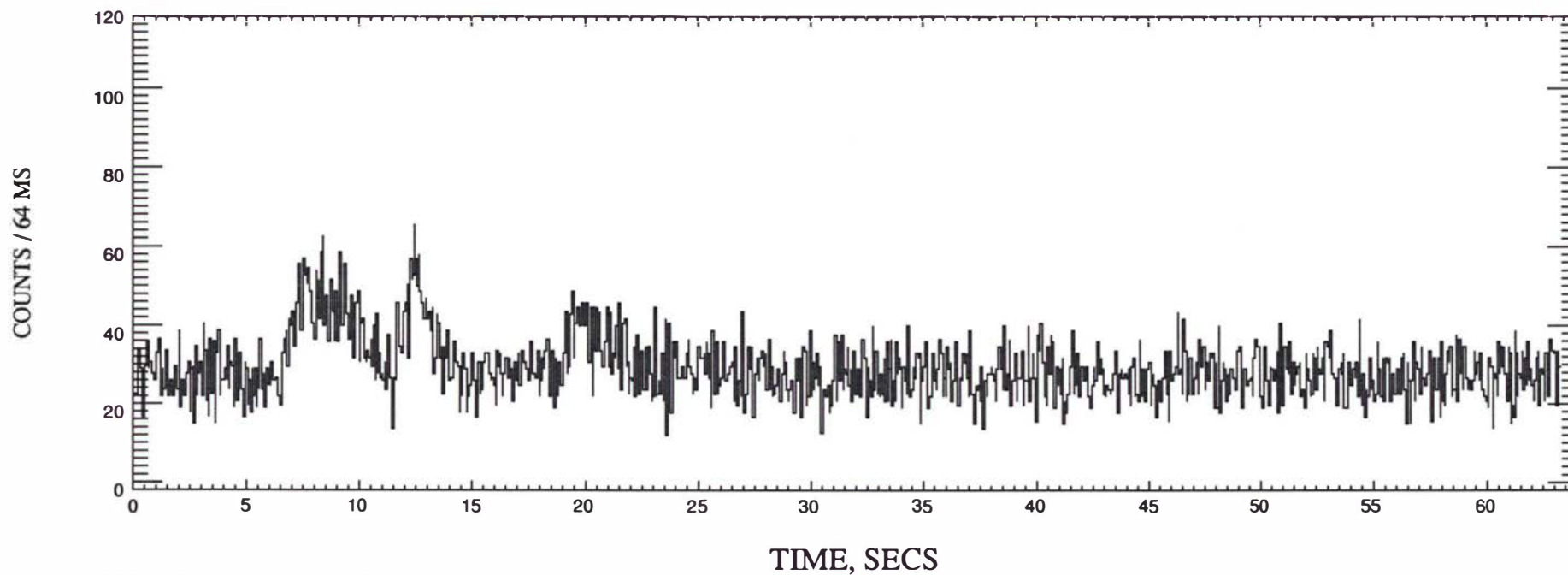
## CALIBRATION DATA INCLUDED



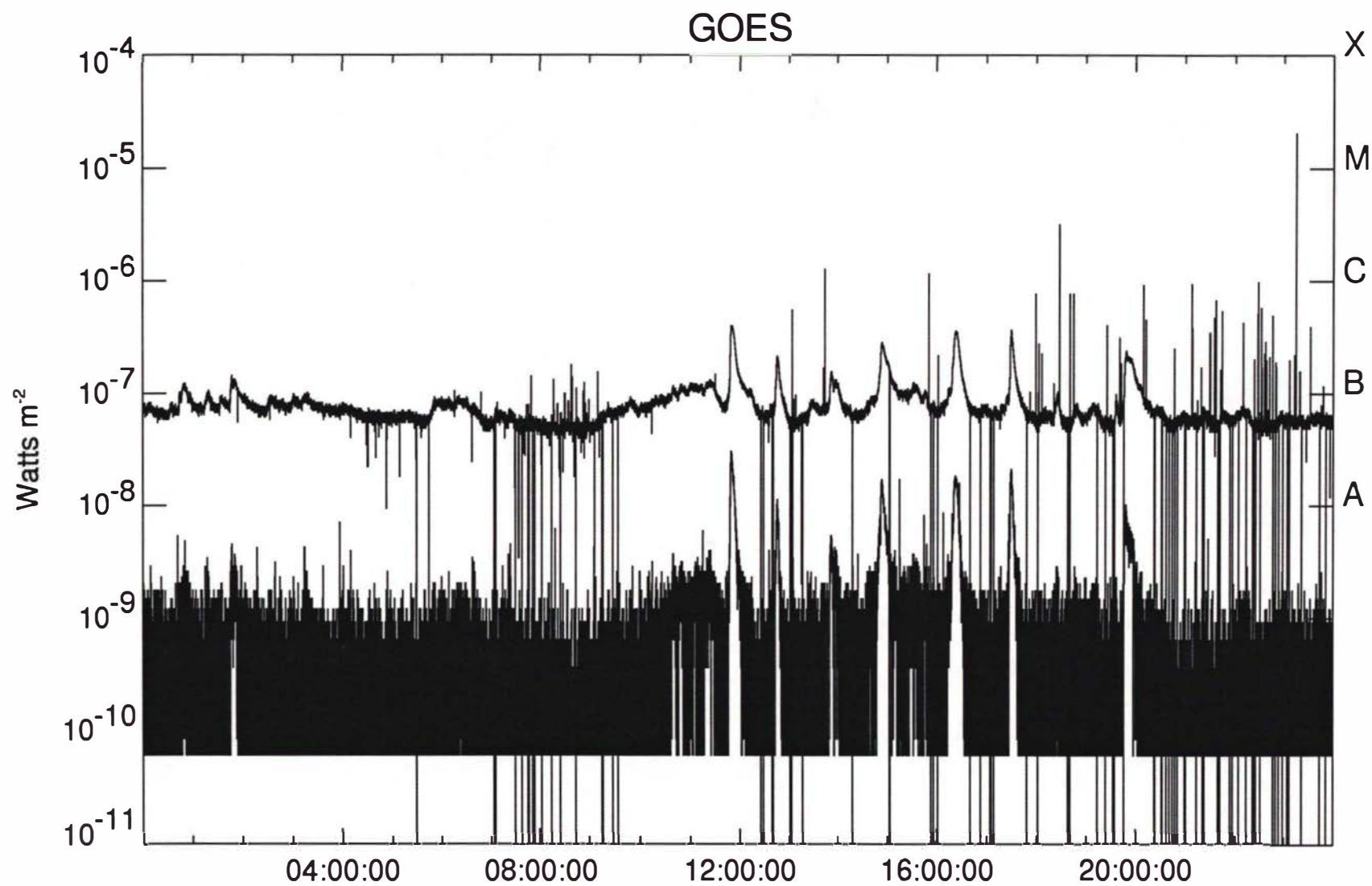
UNIV TIME



Burst Counter 11 at UT= 0.480528157552 h= 1729.901 s 00:28:49.901







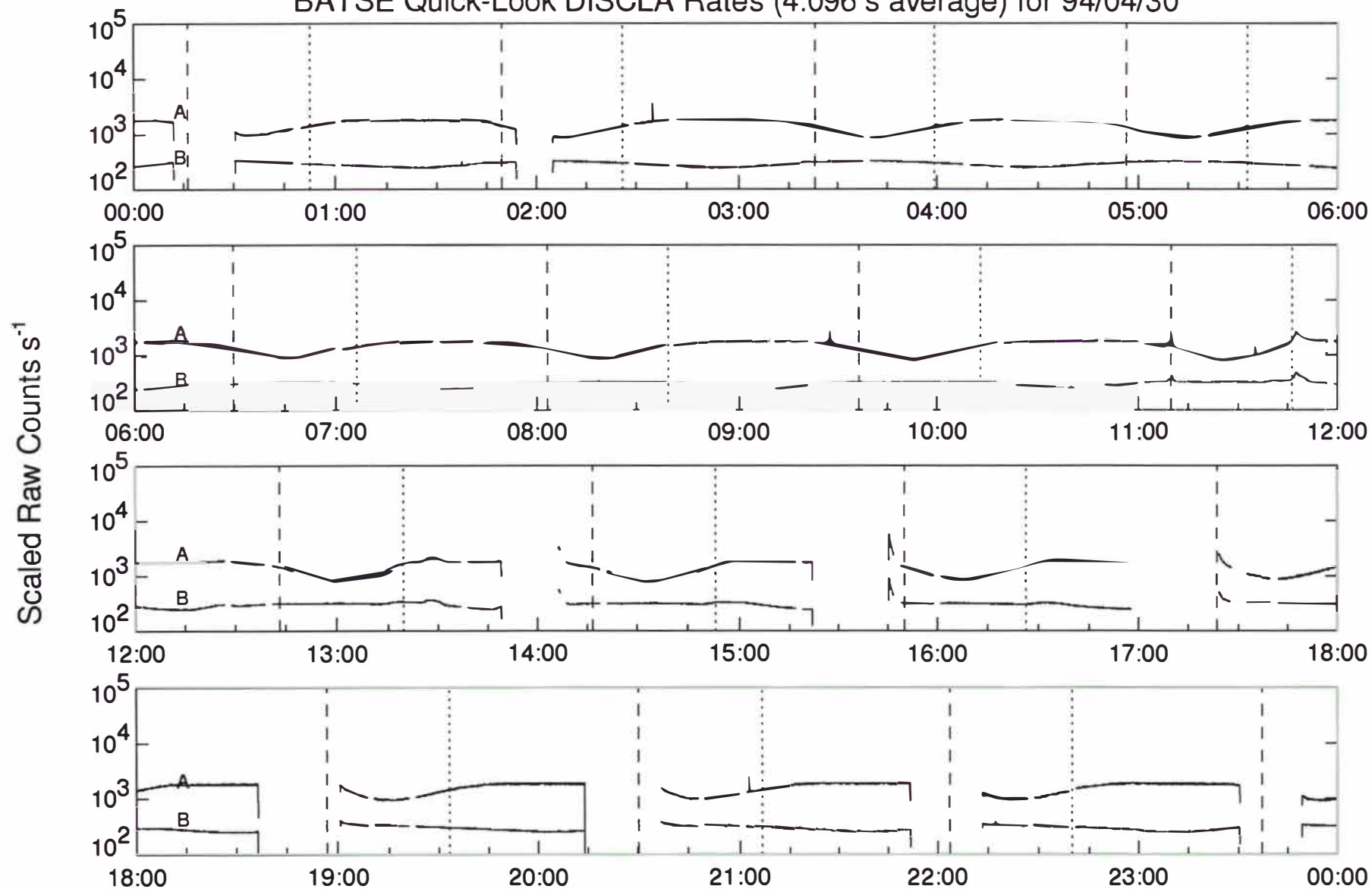
Data Start: 94/04/30, 0000:02

Plot created: 94/05/04, 1846

Channel 1 (1.0 - 8.0 Angstroms) Background not subtracted

Channel 2 (0.5 - 4.0 Angstroms) Background not subtracted

# BATSE Quick-Look DISCLA Rates (4.096 s average) for 94/04/30



Current Time: 94/05/04, 1841 EDT

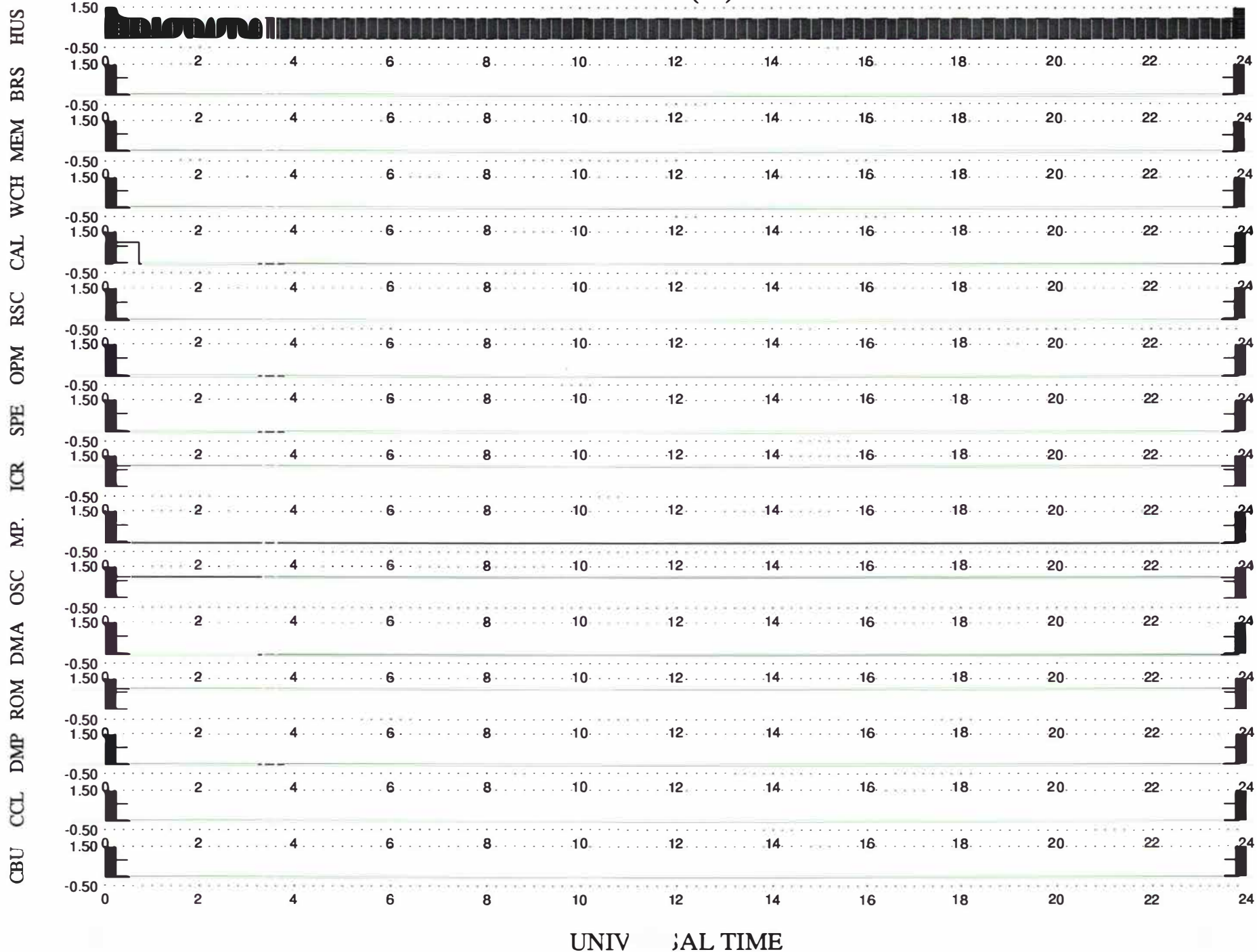
A: Channel 1 Most Sunward LAD

B: Sum Channel 1 Anti-Sunward LADs X .05

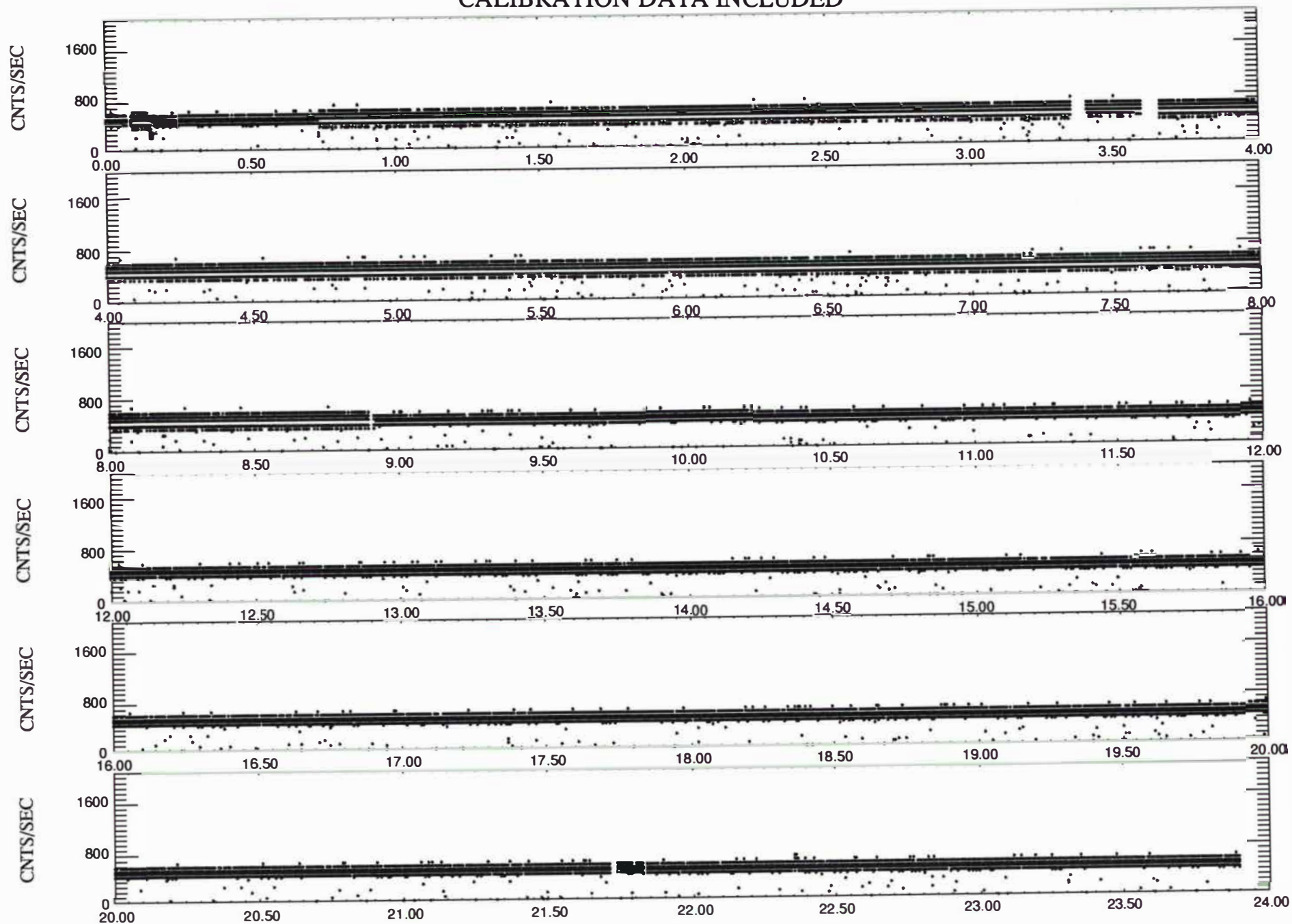
Dotted line: Day entry  
Dashed line: Night entry

\* Solar Burst Trigger  
+ Solar Flare

## NO BURST (11)

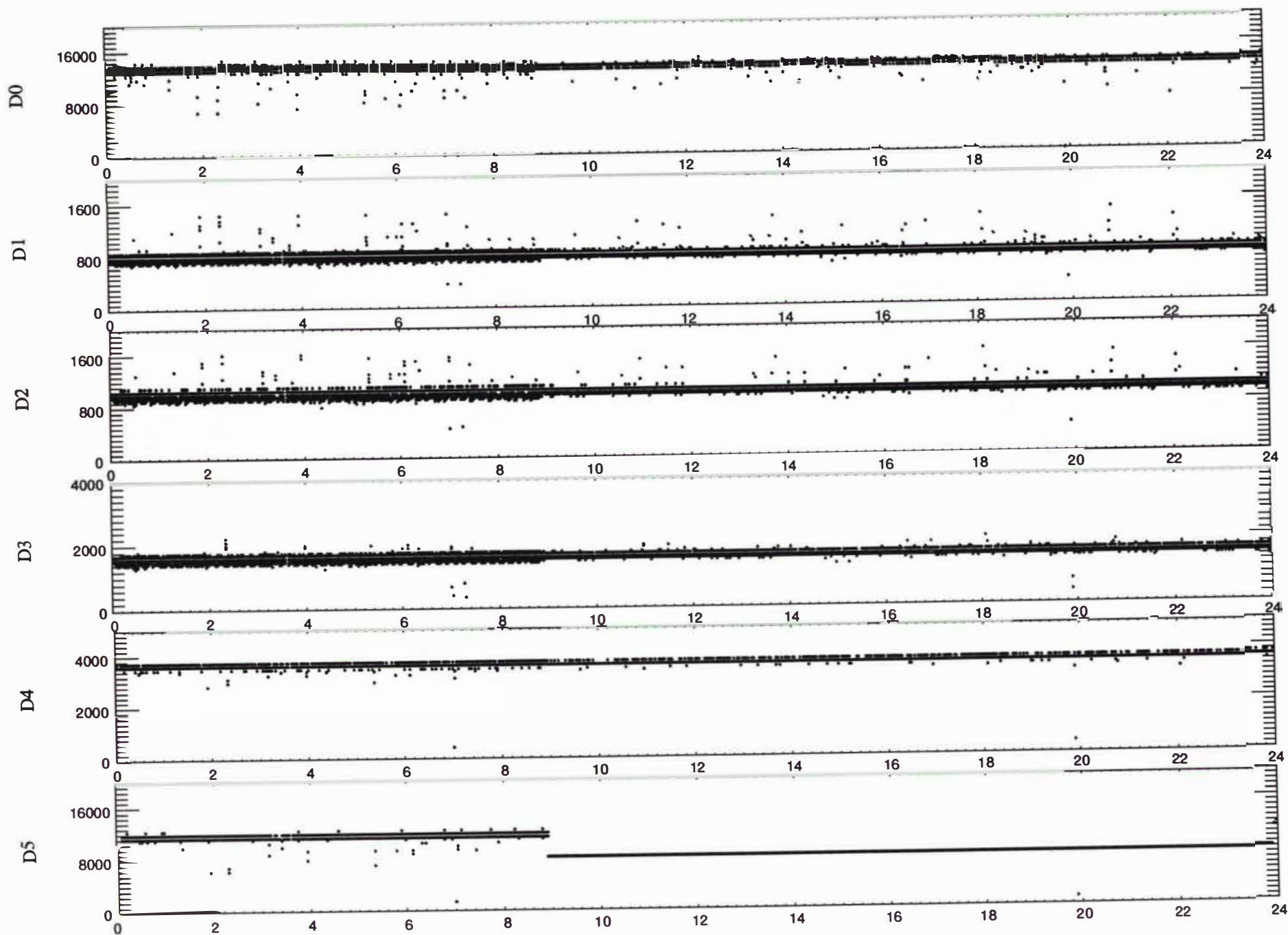


CALIBRATION DATA INCLUDED



UNIV SAL TIME





UNIVI AL TIME