

**U.S. DEPARTMENT OF COMMERCE**

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**NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE**

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AUGUST 1997 NUMBER 636 - Part II

# **Solar-Geophysical Data comprehensive reports**

Data for February 1997

International Standard Serial Number: 0038-0911

Library of Congress Catalog Number: 79-640375 //r81

**NATIONAL GEOPHYSICAL DATA CENTER**

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Boulder, Colorado

Subscription information is on the inside back cover.

# SOLAR-GEOPHYSICAL DATA

Number 636

(Issued in Two Parts)

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Feb 97

H $\alpha$  SOLAR FLARES

FEBRUARY 1997

| Grp # | Sta  | Day | Start (UT) | Max (UT) | End (UT) | Lat | NOAA/<br>USAF<br>Region | CMP<br>Mo | Dur<br>Day | Imp<br>(Min) | Opt | Xray  | Obs<br>See | Type | Area Measurement |                      |               | Remarks |  |
|-------|------|-----|------------|----------|----------|-----|-------------------------|-----------|------------|--------------|-----|-------|------------|------|------------------|----------------------|---------------|---------|--|
|       |      |     |            |          |          |     |                         |           |            |              |     |       |            |      | Time (UT)        | Apparent (10-6 Disk) | Corr (Sq Deg) |         |  |
|       |      |     | 01 0557    |          | 0701     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
| 0001  | LEAR | 02  | 0116       | 0116     | 0130     | N03 | W09 8015                | 02        | 1.4        | 14           | SF  |       | 3          | E    |                  |                      | 15            |         |  |
|       |      |     | 02 0202    |          | 0259     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 02 0332    |          | 0537     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 02 0616    |          | 0635     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
| 0002  | SVTO | 02  | 0636E      | 0638U    | 0646D    | S23 | E36 8016                | 02        | 5.0        | 10D          | SF  | C 2.6 | 2          | E    |                  |                      | 52            | F       |  |
| 0003  |      | 02  | 09312      | 0933     | 0938     | S21 | E30 8016                | 02        | 4.7        | 7            | SF  |       |            |      |                  |                      | 17            |         |  |
|       | SVTO | 02  | 0931       | 0933     | 0939     | S20 | E31 8016                | 02        | 4.8        | 8            | SF  |       | 3          | E    |                  |                      | 17            |         |  |
|       | KANZ | 02  | 0933       | 0933     | 0937     | S22 | E30 8016                | 02        | 4.7        | 4            | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0004  |      | 02  | 09432      | 0945     | 1000     | S21 | E30 8016                | 02        | 4.7        | 17           | SF  | B 3.7 |            |      |                  |                      | 26            |         |  |
|       | SVTO | 02  | 0943       | 0945     | 0959     | S20 | E31 8016                | 02        | 4.8        | 16           | SF  | B 3.7 | 3          | E    |                  |                      | 26            |         |  |
|       | KANZ | 02  | 0945       | 0945     | 1001     | S22 | E30 8016                | 02        | 4.7        | 16           | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0005  |      | 02  | 10561      | 1057     | 1105     | S21 | E30 8016                | 02        | 4.7        | 9            | SF  | B 5.2 |            |      |                  |                      | 19            |         |  |
|       | SVTO | 02  | 1056       | 1057U    | 1104D    | S20 | E30 8016                | 02        | 4.7        | 8D           | SF  | B 5.2 | 3          | E    |                  |                      | 19            |         |  |
|       | KANZ | 02  | 1057       | 1057     | 1105     | S22 | E30 8016                | 02        | 4.8        | 8            | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0006  |      | 02  | 1145       | 11451    | 1150     | S20 | E30 8016                | 02        | 4.8        | 5            | SF  |       |            |      |                  |                      | 19            |         |  |
|       | KANZ | 02  | 1145       | 1145     | 1149     | S21 | E30 8016                | 02        | 4.8        | 4            | SF  |       | 2          | C    |                  |                      |               |         |  |
|       | SVTO | 02  | 1145       | 1146     | 1150     | S20 | E30 8016                | 02        | 4.8        | 5            | SF  |       | 3          | E    |                  |                      | 19            |         |  |
| 0007  |      | 02  | 13481      | 13492    | 1359     | S21 | E29 8016                | 02        | 4.8        | 11           | SF  | B 6.4 |            |      |                  |                      | 13            |         |  |
|       | SVTO | 02  | 1348       | 1351     | 1401     | S20 | E28 8016                | 02        | 4.7        | 13           | SF  | B 6.4 | 3          | E    |                  |                      | 13            |         |  |
|       | KANZ | 02  | 1349       | 1349     | 1357     | S22 | E30 8016                | 02        | 4.9        | 8            | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0008  | RAMY | 02  | 1428       | 1434     | 1604     | S21 | E27 8016                | 02        | 4.7        | 96           | SF  |       | 3          | E    |                  |                      | 25            | F       |  |
| 0009  | HOLL | 02  | 1928       | 1931     | 1933     | S21 | E25 8016                | 02        | 4.7        | 5            | SF  | B 6.2 | 3          | E    |                  |                      | 12            |         |  |
|       |      |     | 03 0107    |          | 0538     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
| 0010  |      | 03  | 10173      | 10182    | 1032     | S22 | E16 8016                | 02        | 4.6        | 15           | SF  | B 4.2 |            |      |                  |                      | 36            | F       |  |
|       | SVTO | 03  | 1017       | 1018     | 1030D    | S22 | E16 8016                | 02        | 4.6        | 13D          | SF  | B 4.2 | 3          | E    |                  |                      | 33            | F       |  |
|       | LEAR | 03  | 1018E      | 1018     | 1024D    | S22 | E17 8016                | 02        | 4.7        | 6D           | SF  |       | 3          | E    |                  |                      | 40            | F       |  |
|       | KANZ | 03  | 1020       | 1020     | 1032     | S21 | E16 8016                | 02        | 4.6        | 12           | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0011  |      | 03  | 12582      | 13004    | 1326     | N05 | W28 8015                | 02        | 1.4        | 28           | SF  |       |            |      |                  |                      | 15            | F       |  |
|       | RAMY | 03  | 1258       | 1300     | 1329     | N05 | W28 8015                | 02        | 1.4        | 31           | SF  |       | 3          | E    |                  |                      | 15            | F       |  |
|       | KANZ | 03  | 1300       | 1304     | 1324     | N05 | W28 8015                | 02        | 1.4        | 24           | SF  |       | 2          | C    |                  |                      |               |         |  |
|       |      |     | 03 1950    |          | 1958     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
| 0012  | PALE | 04  | 0107       | 0107     | 0111     | S21 | E08 8016                | 02        | 4.6        | 4            | SF  | B 3.6 | 3          | E    |                  |                      | 13            |         |  |
| 0013  | LEAR | 04  | 0125       | 0129     | 0136     | N05 | W36 8015                | 02        | 1.4        | 11           | SF  |       | 3          | E    |                  |                      | 16            |         |  |
| 0014  | LEAR | 04  | 0524       | 0530     | 0536     | S21 | E05 8016                | 02        | 4.6        | 12           | SF  | B 2.8 | 3          | E    |                  |                      | 22            |         |  |
| 0015  |      | 04  | 1116       | 1116     | 1132     | S22 | E02 8016                | 02        | 4.6        | 16           | SF  | C 1.8 |            |      |                  |                      | 20            | F       |  |
|       | KANZ | 04  | 1116       | 1116     | 1132     | S22 | E03 8016                | 02        | 4.7        | 16           | SF  |       | 2          | C    |                  |                      |               |         |  |
|       | SVTO | 04  | 1116E      | 1118U    | 1132D    | S21 | E01 8016                | 02        | 4.5        | 16D          | SF  | C 1.8 | 3          | E    |                  |                      | 20            | F       |  |
| 0016  |      | 04  | 13142      | 13142    | 1319     | N05 | W46 8015                | 02        | 1.1        | 5            | SF  | B 1.6 |            |      |                  |                      | 24            |         |  |
|       | SVTO | 04  | 1314       | 1314     | 1318     | N06 | W46 8015                | 02        | 1.1        | 4            | SF  | B 1.6 | 3          | E    |                  |                      | 24            |         |  |
|       | KANZ | 04  | 1316       | 1316     | 1320     | N04 | W45 8015                | 02        | 1.2        | 4            | SF  |       | 2          | C    |                  |                      |               |         |  |
| 0017  |      | 04  | 18462      | 18493    | 1912     | N04 | W47 8015                | 02        | 1.3        | 26           | SF  | B 5.8 |            |      |                  |                      | 16            | F       |  |
|       | RAMY | 04  | 1846       | 1852     | 1913     | N04 | W48 8015                | 02        | 1.2        | 27           | SF  | B 5.8 | 3          | E    |                  |                      | 17            | F       |  |
|       | PALE | 04  | 1848       | 1849     | 1910     | N05 | W46 8015                | 02        | 1.3        | 22           | SF  |       | 3          | E    |                  |                      | 14            |         |  |
|       |      |     | 04 2039    |          | 2240     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 04 2246    |          | 2303     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 05 1121    |          | 1127     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 05 1404    |          | 1412     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |
|       |      |     | 05 1728    |          | 1734     |     | No Flare Patrol         |           |            |              |     |       |            |      |                  |                      |               |         |  |



FEBRUARY 1997

| Grp # | Sta  | Start Day (UT) | Max (UT) | End (UT) | Lat | CMD | NOAA/<br>USAF<br>Region | CMP<br>Mo | Dur<br>Day | Dur<br>(Min) | Imp<br>Opt | Imp<br>Xray | Obs<br>See | Obs<br>Type | Area Measurement |                      |               | Remarks         |
|-------|------|----------------|----------|----------|-----|-----|-------------------------|-----------|------------|--------------|------------|-------------|------------|-------------|------------------|----------------------|---------------|-----------------|
|       |      |                |          |          |     |     |                         |           |            |              |            |             |            |             | Time (UT)        | Apparent (10-6 Disk) | Corr (Sq Deg) |                 |
| 0019  | HOLL | 19 2220        | 2222     | 2228     | N08 | W79 | 8018                    | 02        | 14.0       | 8            | SF         | C           | 3.9        | 3           | E                |                      | 24            |                 |
| 0020  | KANZ | 20 0751        | 0751     | 0755     | N06 | W70 | 8018                    | 02        | 15.1       | 4            | SF         |             |            | 2           | C                |                      |               |                 |
| 0021  | KANZ | 20 1047        | 1047     | 1051     | N06 | W79 | 8018                    | 02        | 14.5       | 4            | SF         |             |            | 2           | C                |                      |               |                 |
| 0022  | KANZ | 20 1115        | 1115     | 1155     | N05 | W79 | 8018                    | 02        | 14.5       | 40           | SF         |             |            | 2           | C                |                      |               |                 |
|       |      | 20 1611        |          | 1713     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 21 0356        |          | 0406     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 21 0443        |          | 0612     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 23 1552        |          | 1612     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 23 1635        |          | 1643     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 24 1443        |          | 1620     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 25 0758        |          | 0829     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 25 1543        |          | 2313     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 0518        |          | 0754     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 0820        |          | 0859     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 1046        |          | 1111     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 1113        |          | 1231     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 1346        |          | 1409     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 1436        |          | 1556     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 26 1604        |          | 1609     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 27 1120        |          | 1243     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 27 1343        |          | 1346     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 27 1357        |          | 1405     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 27 1442        |          | 1504     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 27 1510        |          | 1816     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 28 0329        |          | 0450     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 28 0516        |          | 0558     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 28 0742        |          | 0750     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 28 1618        |          | 1722     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |
|       |      | 28 2309        |          | 2354     |     |     |                         |           |            |              |            |             |            |             |                  |                      |               | No Flare Patrol |

## "Remarks"

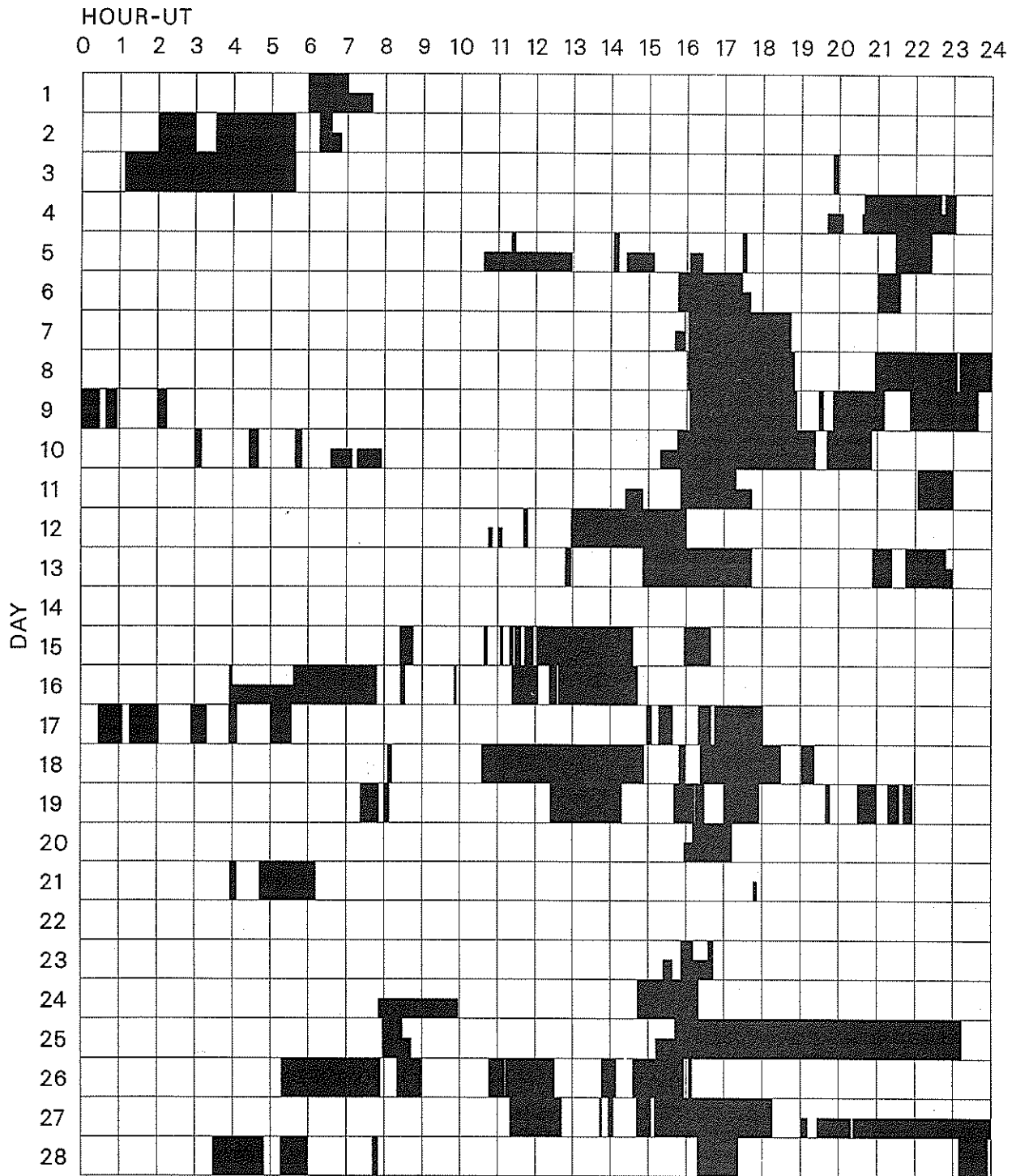
- A = Eruptive prominence whose base is less than 90 degrees from central meridian.  
 B = Probably the end of a more important flare.  
 C = Invisible 10 minutes before.  
 D = Brilliant point.  
 E = Two or more brilliant points.  
 F = Several eruptive centers.  
 G = No visible spots in the neighborhood.  
 H = Flare accompanied by high-speed dark filament.  
 I = Active region very extended.  
 J = Distinct variations of plage intensity before or after the flare.  
 K = Several intensity maxima.  
 L = Existing filaments show signs of sudden activity.  
 M = White-light flare.  
 N = Continuous spectrum shows effects of polarization.
- O = Observations have been made in the H and K lines of Ca II.  
 P = Flare shows Helium D3 in emission.  
 Q = Flare shows Balmer continuum in emission.  
 R = Marked asymmetry in H-alpha line suggests ejection of high-velocity material.  
 S = Brightness follows disappearance of filament in same position.  
 T = Region active all day.  
 U = Two bright branches, parallel or converging.  
 V = Occurrence of an explosive phase; important, expansion within roughly 1 minute that often includes a significant intensity increase.  
 W = Great increase in area after time of maximum intensity.  
 X = Unusually wide H-alpha line.  
 Y = System of loop-type prominences.  
 Z = Major sunspot umbra covered by flare.

Observation Type: C=Cinematographic, E=Electronic, P=Photographic, V=Visual

# INTERVALS OF NO FLARE PATROL OBSERVATION FOR PRECEDING SOLAR FLARE TABLE

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Feb 97

## FEBRUARY 1997

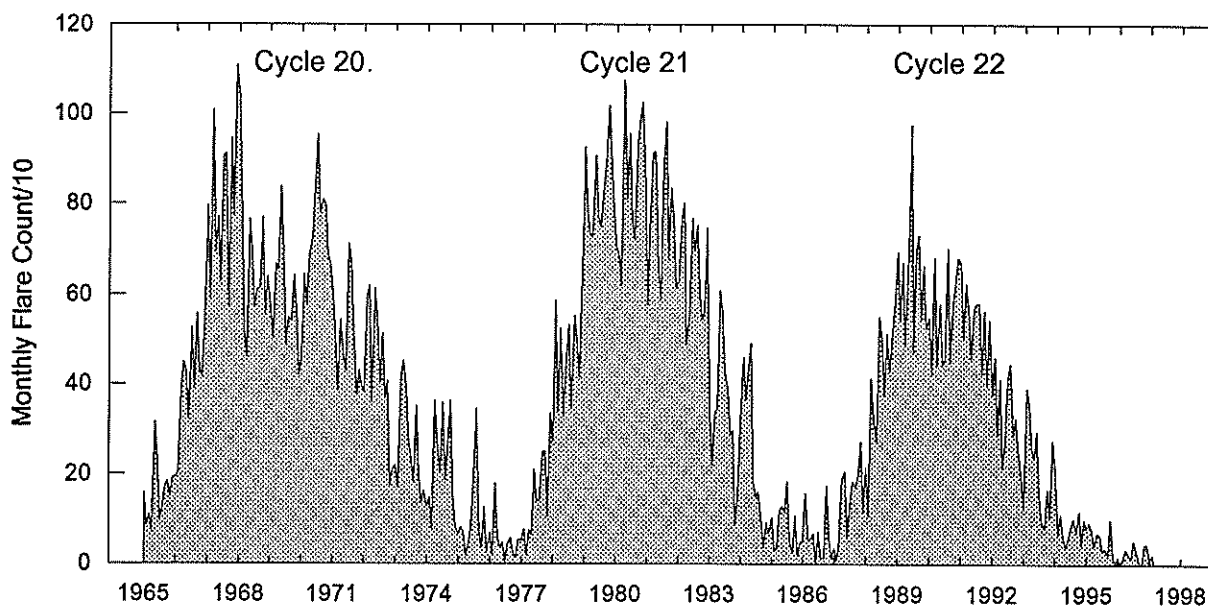


Times of no flare patrol, shown here as shaded areas, combine reports from the stations listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind (neither visual nor cinematographic); portions of a panel with only the bottom half shaded mark times of only visual patrol.

- |           |             |         |            |
|-----------|-------------|---------|------------|
| Bucharest | Kanzelhoehe | Meudon  | Ramey      |
| Holloman  | Kharkov     | Mitaka  | San Vito   |
| Hurbanovo | Learmonth   | Palehua | Voroshilov |



## Monthly Counts of Grouped Solar Flares Jan 1965 - Feb 1997



| Year | Jan  | Feb | Mar  | Apr  | May | Jun | Jul | Aug | Sep | Oct  | Nov  | Dec  | Total |
|------|------|-----|------|------|-----|-----|-----|-----|-----|------|------|------|-------|
| 1965 | 158  | 85  | 110  | 74   | 315 | 231 | 99  | 127 | 173 | 184  | 150  | 193  | 1899  |
| 1966 | 194  | 205 | 390  | 449  | 429 | 323 | 528 | 391 | 558 | 432  | 417  | 543  | 4859  |
| 1967 | 796  | 589 | 1009 | 694  | 771 | 629 | 907 | 911 | 573 | 946  | 775  | 1109 | 9709  |
| 1968 | 1037 | 773 | 519  | 460  | 768 | 697 | 573 | 611 | 616 | 772  | 556  | 640  | 8022  |
| 1969 | 581  | 504 | 669  | 655  | 839 | 694 | 489 | 551 | 540 | 643  | 566  | 422  | 7153  |
| 1970 | 466  | 646 | 578  | 688  | 722 | 836 | 954 | 780 | 811 | 797  | 687  | 667  | 8632  |
| 1971 | 598  | 505 | 387  | 546  | 461 | 430 | 713 | 673 | 518 | 375  | 431  | 394  | 6031  |
| 1972 | 384  | 599 | 621  | 361  | 614 | 541 | 404 | 515 | 371 | 408  | 175  | 210  | 5203  |
| 1973 | 221  | 171 | 410  | 453  | 388 | 270 | 232 | 182 | 353 | 201  | 136  | 163  | 3180  |
| 1974 | 127  | 148 | 79   | 364  | 255 | 204 | 360 | 187 | 270 | 366  | 153  | 81   | 2594  |
| 1975 | 68   | 82  | 69   | 19   | 42  | 85  | 196 | 346 | 68  | 38   | 127  | 25   | 1165  |
| 1976 | 69   | 18  | 180  | 60   | 38  | 48  | 6   | 47  | 57  | 23   | 13   | 55   | 614   |
| 1977 | 54   | 77  | 18   | 76   | 64  | 210 | 140 | 140 | 250 | 252  | 107  | 336  | 1724  |
| 1978 | 274  | 588 | 338  | 526  | 330 | 460 | 533 | 346 | 554 | 499  | 418  | 648  | 5514  |
| 1979 | 926  | 781 | 731  | 731  | 907 | 772 | 750 | 821 | 901 | 1018 | 888  | 786  | 10012 |
| 1980 | 703  | 689 | 621  | 1092 | 811 | 956 | 763 | 720 | 924 | 988  | 1027 | 838  | 10132 |
| 1981 | 578  | 782 | 914  | 915  | 658 | 592 | 893 | 982 | 680 | 836  | 773  | 615  | 9218  |
| 1982 | 631  | 766 | 803  | 490  | 553 | 769 | 696 | 753 | 615 | 544  | 564  | 748  | 7932  |
| 1983 | 332  | 220 | 337  | 346  | 609 | 561 | 427 | 389 | 289 | 298  | 88   | 152  | 4048  |
| 1984 | 353  | 461 | 366  | 440  | 492 | 185 | 151 | 161 | 95  | 36   | 92   | 69   | 2901  |
| 1985 | 104  | 29  | 38   | 119  | 129 | 116 | 185 | 53  | 25  | 108  | 19   | 50   | 975   |
| 1986 | 51   | 158 | 54   | 56   | 68  | 3   | 71  | 12  | 14  | 174  | 56   | 13   | 730   |
| 1987 | 36   | 7   | 52   | 192  | 205 | 61  | 132 | 185 | 172 | 198  | 273  | 114  | 1627  |
| 1988 | 217  | 109 | 413  | 328  | 274 | 551 | 502 | 375 | 513 | 429  | 518  | 587  | 4816  |
| 1989 | 695  | 544 | 672  | 488  | 691 | 977 | 474 | 699 | 733 | 547  | 665  | 526  | 7711  |
| 1990 | 550  | 424 | 684  | 442  | 580 | 445 | 454 | 703 | 449 | 574  | 623  | 682  | 6610  |
| 1991 | 672  | 503 | 625  | 570  | 458 | 574 | 582 | 581 | 425 | 565  | 396  | 544  | 6495  |
| 1992 | 380  | 462 | 287  | 412  | 214 | 271 | 413 | 447 | 287 | 325  | 248  | 206  | 3952  |
| 1993 | 123  | 392 | 357  | 262  | 237 | 296 | 154 | 92  | 82  | 167  | 104  | 275  | 2541  |
| 1994 | 217  | 67  | 111  | 60   | 40  | 56  | 81  | 101 | 72  | 117  | 45   | 99   | 1066  |
| 1995 | 82   | 95  | 77   | 42   | 69  | 66  | 29  | 37  | 23  | 99   | 14   | 6    | 639   |
| 1996 | 14   | 3   | 15   | 34   | 21  | 16  | 54  | 31  | 3   | 0    | 44   | 45   | 280   |
| 1997 | 8    | 22  |      |      |     |     |     |     |     |      |      |      | 30    |

The term 'grouped' means observations of the same event by different sites were lumped together and counted as one.

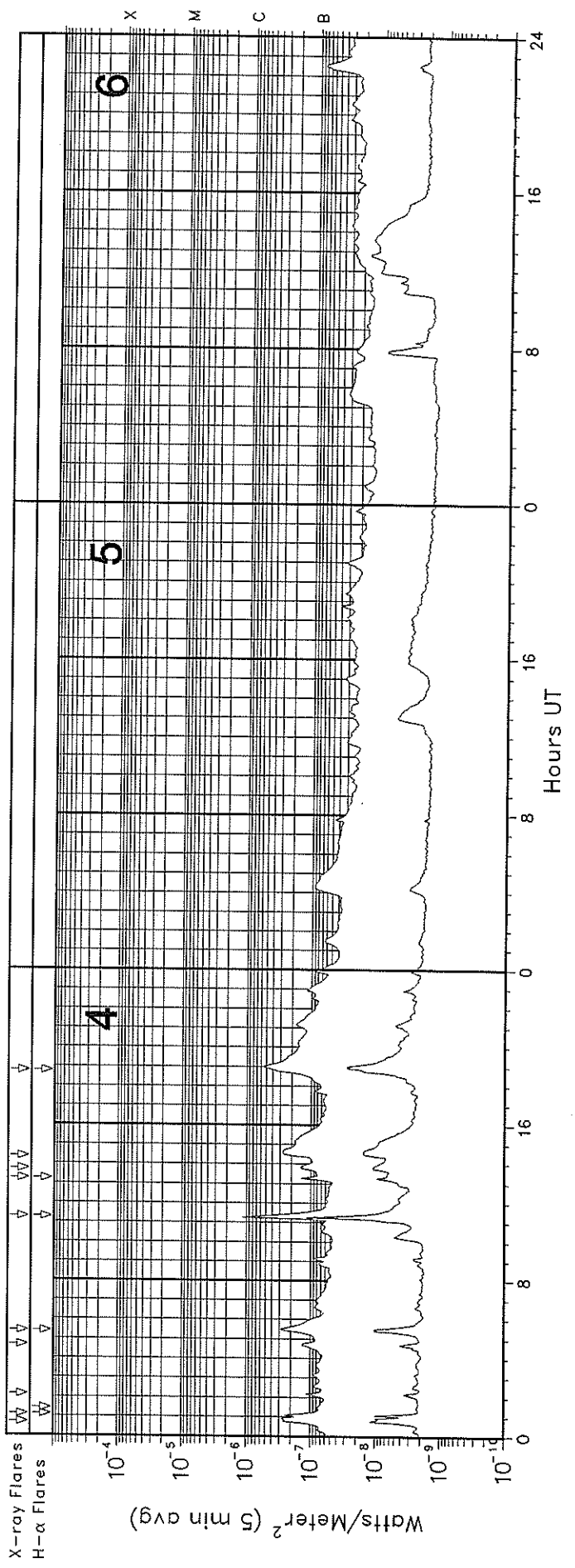
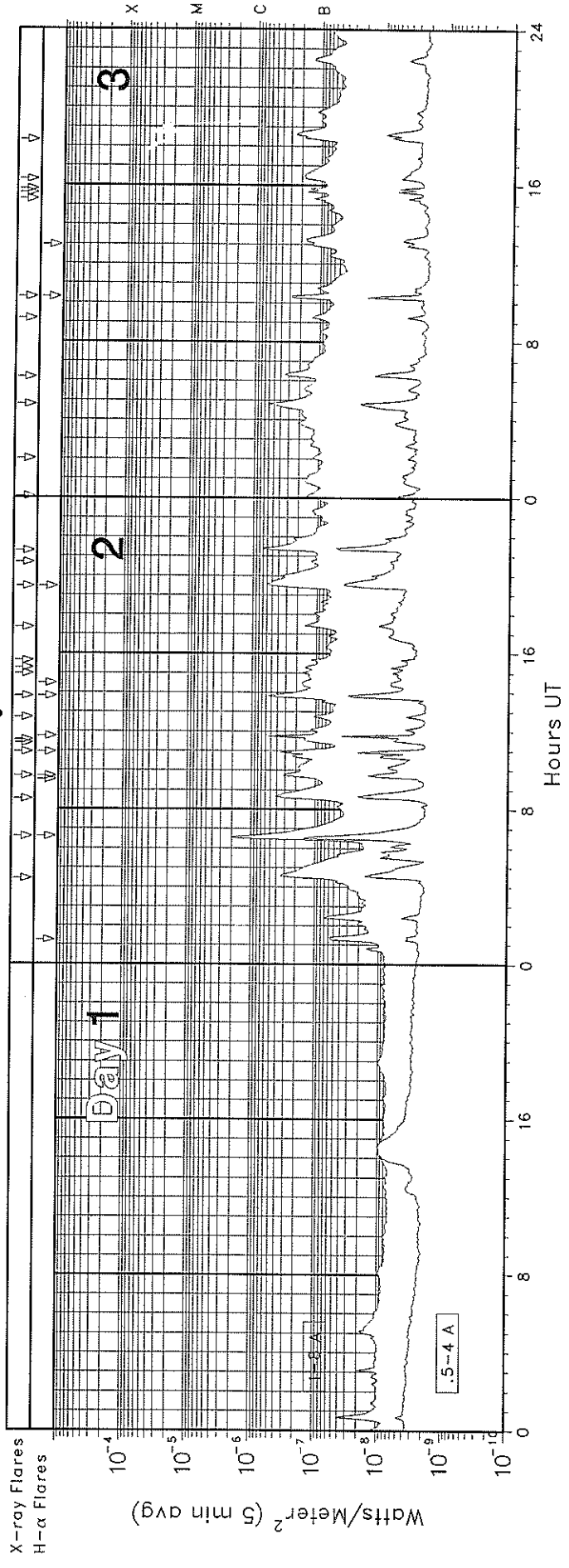
S O L A R   R A D I O   E M I S S I O N  
Outstanding Occurrences

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Feb 97

FEBRUARY 1997

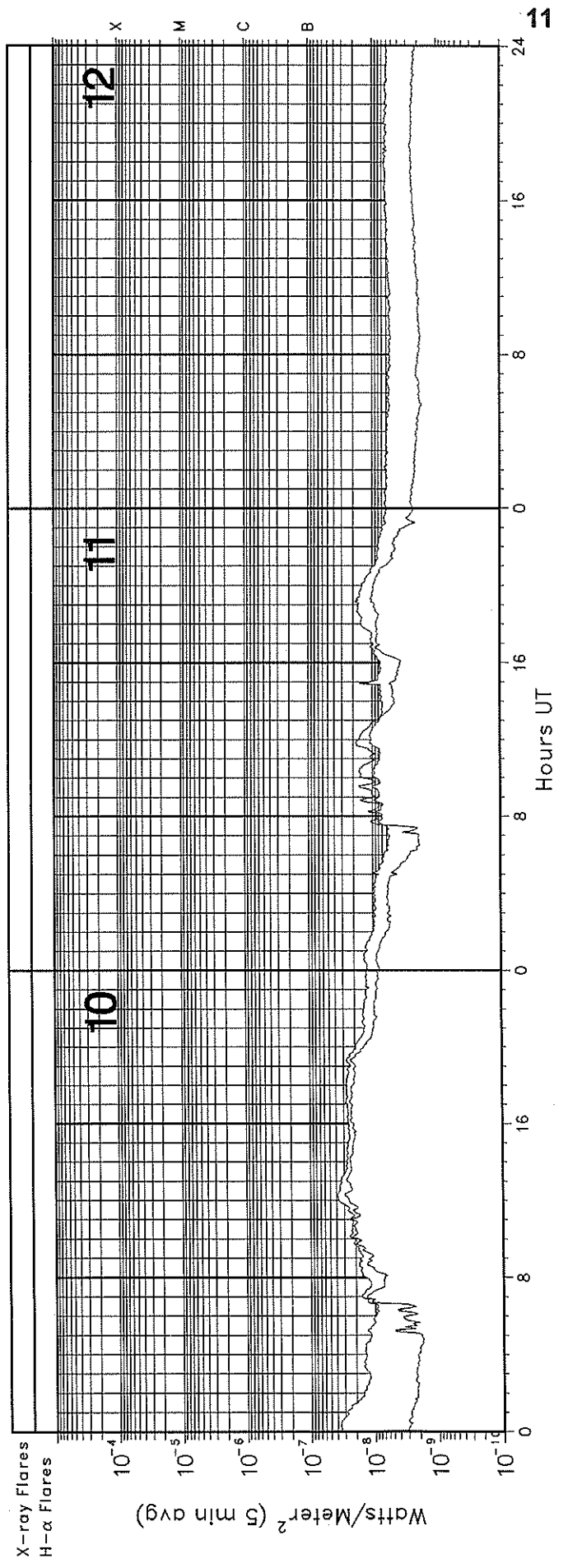
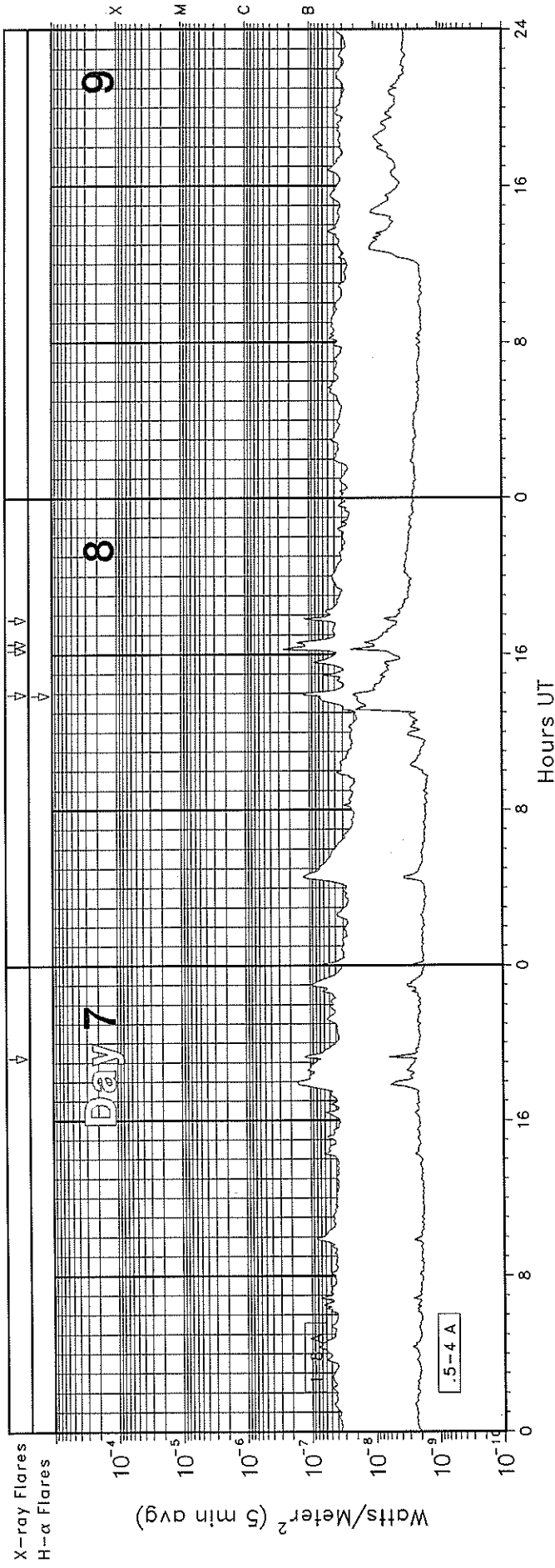
| Day | Freq | Sta  | Type   | Start<br>(UT) | Time of<br>Maximum<br>(UT) | Duration<br>(Min) | Flux Density                                    |      | Int             | Remarks         |
|-----|------|------|--------|---------------|----------------------------|-------------------|---|------|-----------------|-----------------|
|     |      |      |        |               |                            |                   | Peak<br>(10 <sup>-22</sup> W/m <sup>2</sup> Hz) | Mean |                 |                 |
| 02  | 245  | LEAR | 4 S/F  | 0434.0        | 0435.0                     | 3.0               | 4.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 610  | LEAR | 8 S    | 0434.0        | 0434.0                     | 1.0               | 3.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 410  | LEAR | 8 S    | 0435.0        | 0435.0                     | U                 | 3.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 5730 | IRKU | 29 PBI | 0624.8        | 0633.0                     | 45.2              | 7.0   |      | U               |                 |
|     | 410  | LEAR | 4 S/F  | 0630.0        | 0631.0                     | 5.0               | 8.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 1415 | LEAR | 4 S/F  | 0630.0        | 0631.0                     | 5.0               | 1.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 610  | LEAR | 4 S/F  | 0630.0        | 0631.0                     | 5.0               | 2.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 4995 | LEAR | 4 S/F  | 0630.0        | 0633.0                     | 5.0               | 1.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 245  | LEAR | 4 S/F  | 0630.0        | 0633.0                     | 5.0               | 14.0  |      |                 | QL=4 ST=2 TYP=3 |
|     | 2695 | LEAR | 4 S/F  | 0630.0        | 0633.0                     | 5.0               | 1.0   |      |                 | QL=4 ST=2 TYP=3 |
|     | 2695 | SVTO | 20 GRF | 0631.0        | 0632.0                     | 2.0               | 3.0   |      |                 | QL=2 ST=3 TYP=2 |
|     | 410  | SVTO | 8 S    | 0631.0        | 0631.0                     | 2.0               | 9.0   |      |                 | QL=2 ST=3 TYP=3 |
|     | 245  | SVTO | 8 S    | 0632.0        | 0633.0                     | 2.0               | 33.0  |      |                 | QL=2 ST=3 TYP=3 |
|     | 204  | IZMI | 41 F   | 1053.0        | 1053.5                     | 1.5               | 11.0  |      |                 |                 |
|     | 3000 | IZMI | 7 C    | 1144.8        | 1146.0                     | 3.0               | 28.0  | 14.0 |                 |                 |
|     | 1415 | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 15.0  |      |                 | QL=4 ST=3 TYP=3 |
|     | 8800 | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 2.0   |      |                 | QL=4 ST=3 TYP=3 |
|     | 610  | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 30.0  |      |                 | QL=4 ST=3 TYP=3 |
|     | 4995 | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 2.0   |      |                 | QL=4 ST=3 TYP=3 |
|     | 2695 | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 4.0   |      |                 | QL=4 ST=3 TYP=3 |
|     | 410  | SVTO | 8 S    | 1145.0        | 1146.0                     | 1.0               | 12.0  |      |                 | QL=4 ST=3 TYP=3 |
|     | 245  | SVTO | 8 S    | 1145.0        | 1145.0                     | 1.0               | 25.0  |      |                 | QL=2 ST=3 TYP=3 |
|     | 204  | IZMI | 45 C   | 1145.3        | 1146.0                     | 2.0               | 150.0U  |      |                 |                 |
|     | 245  | SVTO | 4 S/F  | 1458.0        | 1459.0                     | 3.0               | 32.0  |      |                 | QL=2 ST=2 TYP=3 |
|     | 245  | SGMR | 8 S    | 1459.0        | 1459.0                     | 2.0               | 33.0  |      |                 | QL=4 ST=3 TYP=3 |
|     | 245  | PALE | 8 S    | 2049.0        | 2050.0                     | 1.0               | 25.0  |      |                 | QL=4 ST=2 TYP=3 |
| 245 | SGMR | 8 S  | 2049.0 | 2050.0        | 1.0                        | 13.0              |   |      | QL=4 ST=2 TYP=3 |                 |
| 03  | 204  | IZMI | 43 NS  | 0830.0        |                            | 230.0D            |   | 15.0 |                 |                 |
|     | 245  | LEAR | 43 NS  | 1033.0        | 1033.0                     | 807.0             | 7.0   |      |                 | QL=4 ST=1 TYP=1 |
|     | 245  | LEAR | 43 NS  | 1039.0        | 1039.0                     | 801.0             | 6.0   |      |                 | QL=4 ST=1 TYP=1 |
| 04  | 204  | IZMI | 44 NS  | 0700.0E       |                            | 300.0D            |   | 10.0 |                 |                 |
|     | 3000 | IZMI | 5 S    | 0959.3        | 0959.4                     | 0.8               | 4.0   | 2.0  |                 |                 |
|     | 9100 | GORK | 1 S    | 1000.3        | 1000.3                     | 6.6               | 6.6   |      |                 |                 |
| 05  | 5730 | IRKU | 20 GRF | 0400.8        | 0413.0                     | 26.7              | 1.0   |      | U               |                 |
| 20  | 950  | GORK | F      |               | 0802.7                     |                   | 4.1   |      |                 |                 |
|     | 2950 | GORK | C      |               | 0802.9                     |                   | 1.5   |      |                 |                 |
|     | 3000 | IZMI | 7 C    | 0801.0        | 0801.8                     | 4.0               | 7.0   |      |                 |                 |
|     | 950  | GORK | 41 F   | 0801.2        | 0801.7                     | 2.0               | 18.2  |      |                 |                 |
|     | 2950 | GORK | 7 C    | 0801.4        | 0801.8                     | 2.0               | 3.6   |      |                 |                 |
| 21  | 3000 | IZMI | 5 S    | 0812.5        | 0812.6                     | 1.0               | 4.0   | 2.0  |                 |                 |
| 24  | 245  | SGMR | 8 S    | 1932.0        | 1932.0                     | 1.0               | 13.0  |      |                 | QL=2 ST=2 TYP=3 |

# GOES X-RAY DETECTOR February 1997



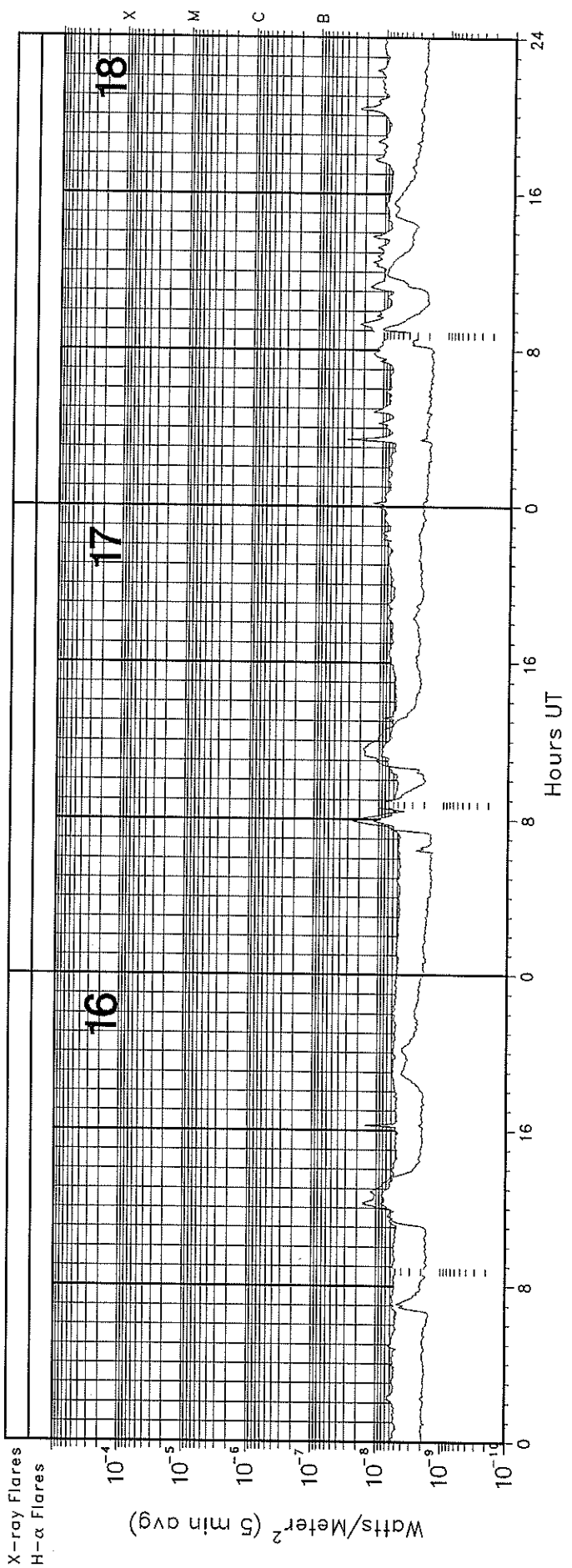
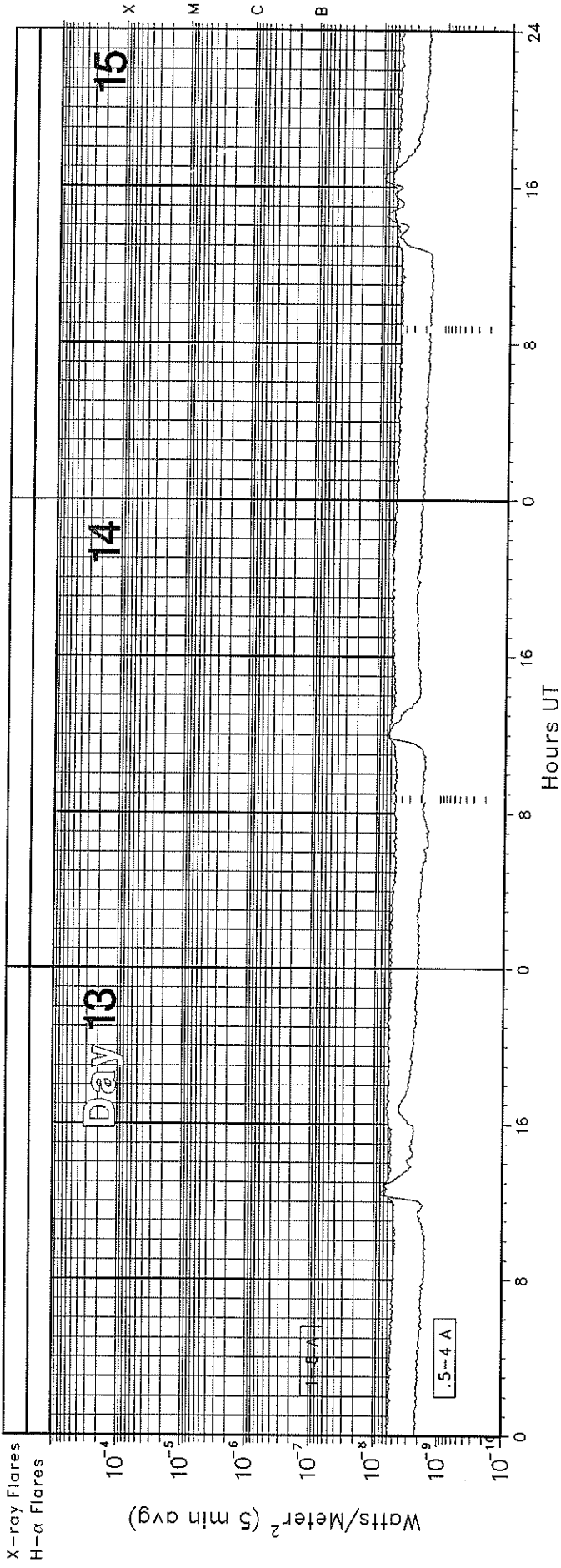
# GOES X-RAY DETECTOR

February 1997



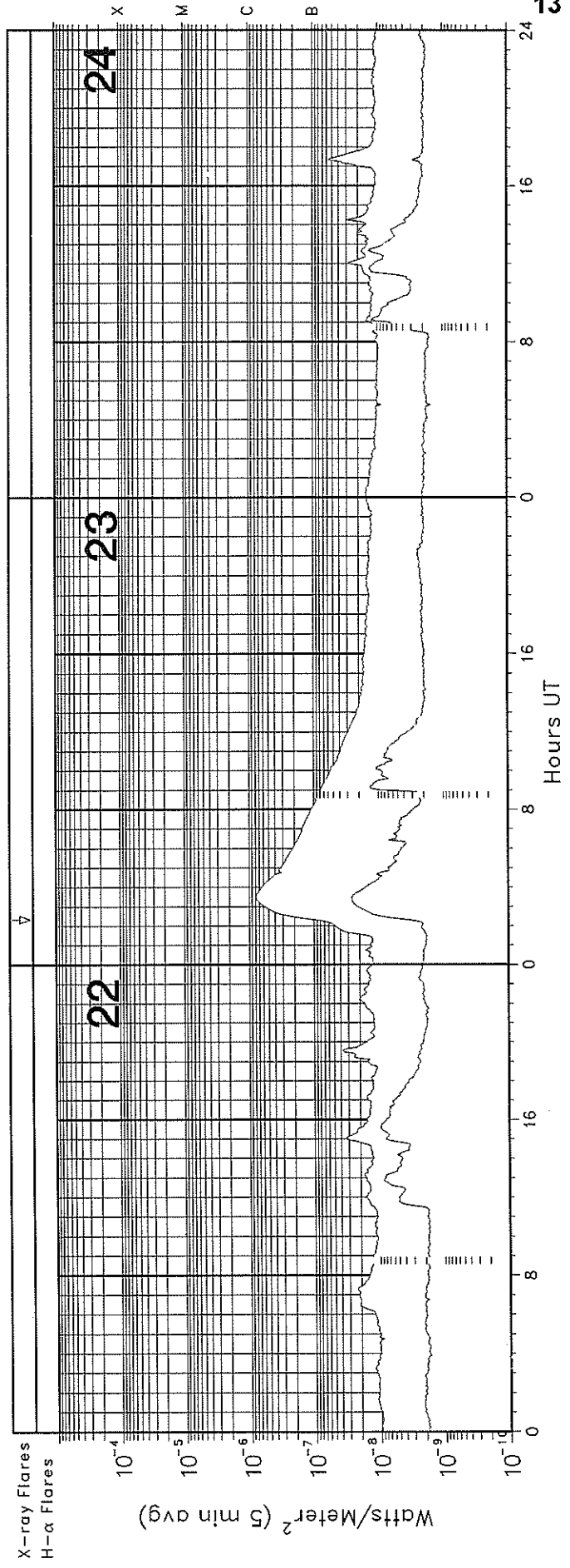
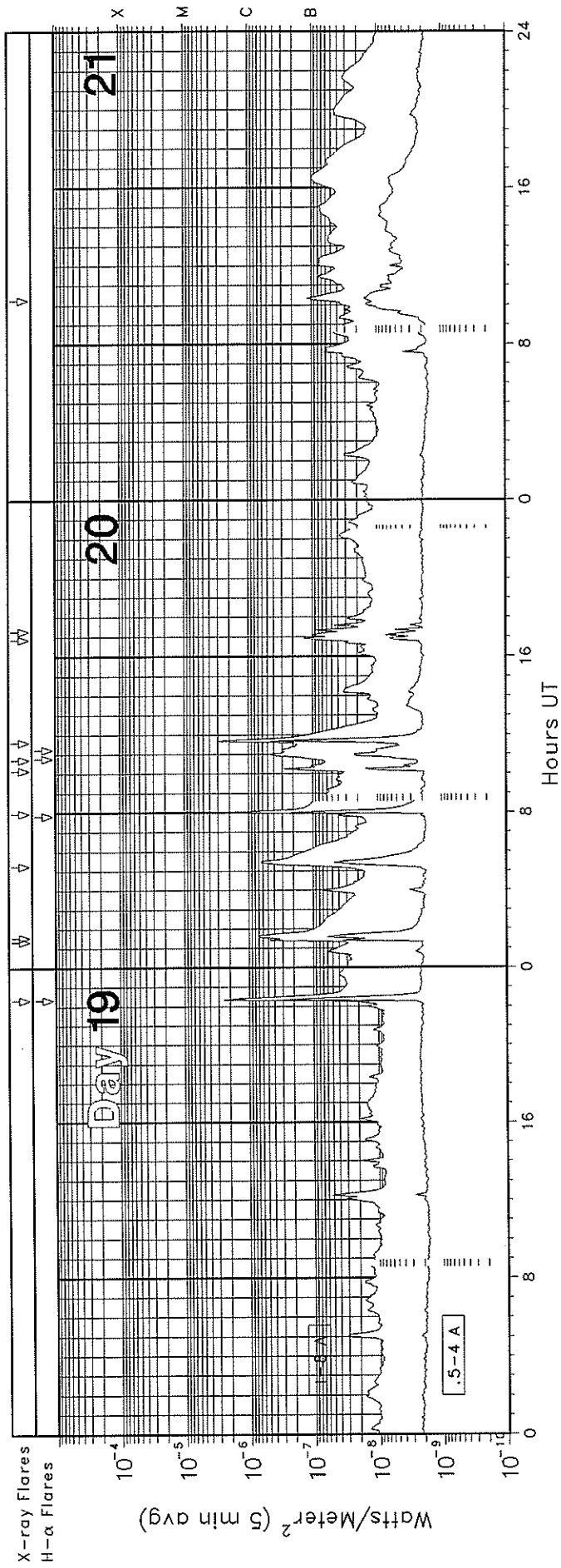
# GOES X-RAY DETECTOR

February 1997



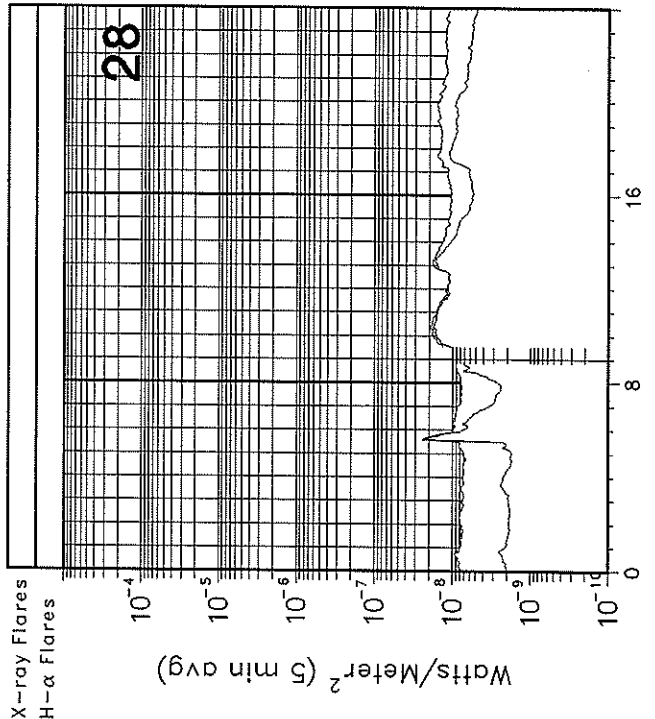
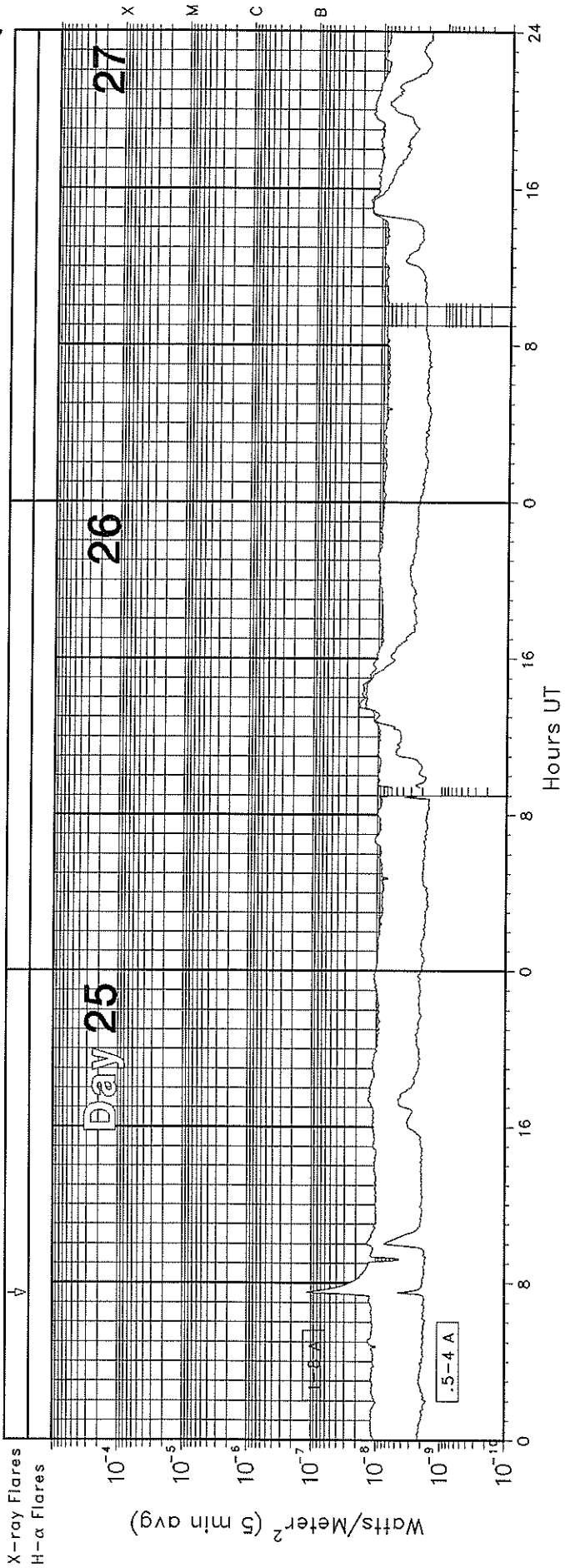
# GOES X-RAY DETECTOR

February 1997



# GOES X-RAY DETECTOR

February 1997



GOES SOLAR X-RAY FLARES  
 \*\*Preliminary Listing\*\*

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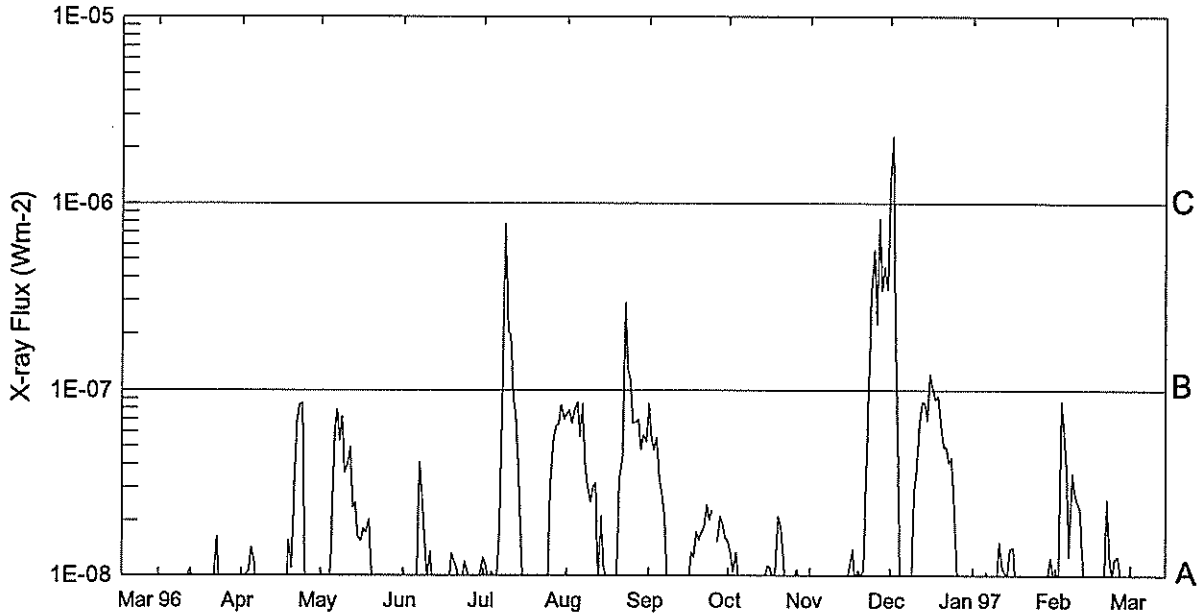
| Day | Start (UT) | Max (UT) | End (UT) | Lat | CMD | Imp Opt | Xray | NOAA/USAF Region |
|-----|------------|----------|----------|-----|-----|---------|------|------------------|
| 02  | 0427       | 0439     | 0450     |     |     |         | B3.5 |                  |
| 02  | 0636       | 0638     | 0646     | S23 | E36 | SF      | C2.6 |                  |
| 02  | 0832       | 0842     | 0855     |     |     |         | B3.8 |                  |
| 02  | 0943       | 0945     | 0959     | S20 | E31 | SF      | B3.7 |                  |
| 02  | 1056       | 1057     | 1104     | S20 | E20 | SF      | B5.2 |                  |
| 02  | 1124       | 1146     | 1148     |     |     |         | B9.0 |                  |
| 02  | 1134       | 1137     | 1140     |     |     |         | B1.4 |                  |
| 02  | 1242       | 1246     | 1251     |     |     |         | B1.1 |                  |
| 02  | 1348       | 1351     | 1401     | S20 | E28 | SF      | B6.4 |                  |
| 02  | 1457       | 1500     | 1506     |     |     |         | B1.5 |                  |
| 02  | 1515       | 1519     | 1521     |     |     |         | B1.9 |                  |
| 02  | 1537       | 1540     | 1543     |     |     |         | B1.4 |                  |
| 02  | 1720       | 1726     | 1736     |     |     |         | B1.5 |                  |
| 02  | 1928       | 1931     | 1933     | S21 | E25 | SF      | B6.2 | 8016             |
| 02  | 2042       | 2045     | 2047     |     |     |         | B1.5 |                  |
| 02  | 2116       | 2124     | 2130     |     |     |         | B9.0 |                  |
| 03  | 0003       | 0007     | 0015     |     |     |         | B1.5 |                  |
| 03  | 0200       | 0203     | 0207     |     |     |         | B1.2 |                  |
| 03  | 0446       | 0450     | 0453     |     |     |         | B7.2 |                  |
| 03  | 0610       | 0620     | 0630     |     |     |         | B3.5 |                  |
| 03  | 0912       | 0917     | 0925     |     |     |         | B1.3 |                  |
| 03  | 1017       | 1018     | 1030     | S22 | E16 | SF      | B4.2 | 8016             |
| 03  | 1517       | 1521     | 1523     |     |     |         | B1.4 |                  |
| 03  | 1537       | 1541     | 1544     |     |     |         | B1.8 |                  |
| 03  | 1548       | 1551     | 1553     |     |     |         | B1.7 |                  |
| 03  | 1618       | 1630     | 1639     |     |     |         | B1.7 |                  |
| 03  | 1820       | 1838     | 1850     |     |     |         | B2.6 |                  |
| 04  | 0042       | 0057     | 0100     |     |     |         | B3.0 |                  |
| 04  | 0107       | 0107     | 0111     | S21 | E08 | SF      | B3.6 | 8016             |
| 04  | 0207       | 0211     | 0213     |     |     |         | B1.2 |                  |

| Day | Start (UT) | Max (UT) | End (UT) | Lat | CMD | Imp Opt | Xray | NOAA/USAF Region |
|-----|------------|----------|----------|-----|-----|---------|------|------------------|
| 04  | 0440       | 0444     | 0447     |     |     |         | B1.6 |                  |
| 04  | 0524       | 0530     | 0536     | S21 | E05 | SF      | B2.8 | 8016             |
| 04  | 1116       | 1118     | 1132     | S21 | E01 | SF      | C1.8 | 8016             |
| 04  | 1314       | 1314     | 1318     | N06 | W46 | SF      | B1.6 | 8015             |
| 04  | 1343       | 1350     | 1359     |     |     |         | B1.2 |                  |
| 04  | 1422       | 1436     | 1454     |     |     |         | B2.4 |                  |
| 04  | 1846       | 1852     | 1913     | N04 | W48 | SF      | B5.8 | 8015             |
| 07  | 1914       | 1917     | 1923     |     |     |         | B1.2 |                  |
| 08  | 1356       | 1359     | 1402     |     |     |         | B1.9 |                  |
| 08  | 1612       | 1616     | 1623     |     |     |         | B3.3 |                  |
| 08  | 1633       | 1636     | 1639     |     |     |         | B1.4 |                  |
| 08  | 1746       | 1750     | 1753     |     |     |         | B1.3 |                  |
| 19  | 2220       | 2222     | 2228     | N08 | W79 | SF      | C3.9 | 8018             |
| 20  | 0122       | 0129     | 0132     |     |     |         | B6.1 |                  |
| 20  | 0134       | 0139     | 0143     |     |     |         | C1.0 |                  |
| 20  | 0516       | 0529     | 0533     |     |     |         | B9.0 |                  |
| 20  | 0758       | 0803     | 0805     |     |     |         | C3.4 |                  |
| 20  | 1010       | 1015     | 1019     |     |     |         | B3.5 |                  |
| 20  | 1044       | 1100     | 1105     |     |     |         | B5.0 |                  |
| 20  | 1137       | 1144     | 1146     |     |     |         | C4.8 |                  |
| 20  | 1652       | 1655     | 1658     |     |     |         | B1.6 |                  |
| 20  | 1717       | 1721     | 1723     |     |     |         | B1.5 |                  |
| 21  | 1015       | 1019     | 1028     |     |     |         | B1.3 |                  |
| 23  | 0221       | 0333     | 0434     |     |     |         | B7.2 |                  |
| 25  | 0727       | 0731     | 0739     |     |     |         | B1.2 |                  |

EDITOR'S NOTE: Please note that whenever optical flares are given, the times given are times of the optical flares and not the times of the X-ray flares. These data are taken directly from the NOAA SEC "Preliminary Report and Forecast of Solar Geophysical Data" weekly report.



## Preliminary GOES Satellite Daily X-Ray Background Mar 96 - Feb 97



| Day | Mar 96 | Apr   | May   | Jun   | Jul   | Aug   | Sep   | Oct   | Nov   | Dec   | Jan 97 | Feb   |
|-----|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|
| 1   | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A1.2  | A7.4  | A8.5  | A1.5  | <A1.0 | C1.3  | <A1.0  | <A1.0 |
| 2   | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A1.1  | A7.7  | A5.5  | A1.3  | <A1.0 | C2.3  | <A1.0  | <A1.0 |
| 3   | <A1.0  | A1.0  | <A1.0 | <A1.0 | <A1.0 | A6.6  | A4.7  | A1.0  | <A1.0 | B2.4  | <A1.0  | A8.7  |
| 4   | <A1.0  | A1.0  | <A1.0 | <A1.0 | A1.0  | A7.8  | A5.5  | A1.3  | <A1.0 | A3.7  | <A1.0  | A5.9  |
| 5   | <A1.0  | A1.4  | A1.3  | <A1.0 | <A1.0 | A8.5  | A3.2  | <A1.0 | <A1.0 | <A1.0 | <A1.0  | A3.8  |
| 6   | <A1.0  | A1.1  | A5.9  | A1.0  | A1.0  | A5.6  | A2.7  | <A1.0 | <A1.0 | <A1.0 | A1.0   | A1.2  |
| 7   | ---    | <A1.0 | A7.8  | A4.1  | A1.8  | A8.4  | A2.1  | <A1.0 | <A1.0 | <A1.0 | <A1.0  | A3.5  |
| 8   | <A1.0  | <A1.0 | A5.3  | A2.6  | B1.2  | A4.0  | <A1.0 | <A1.0 | <A1.0 | <A1.0 | <A1.0  | A2.7  |
| 9   | <A1.0  | <A1.0 | A7.2  | A1.4  | B7.7  | A3.0  | <A1.0 | <A1.0 | <A1.0 | <A1.0 | <A1.0  | A2.4  |
| 10  | <A1.0  | <A1.0 | A3.6  | <A1.0 | B2.0  | A2.4  | <A1.0 | <A1.0 | <A1.0 | A2.7  | <A1.0  | A2.3  |
| 11  | <A1.0  | <A1.0 | A4.0  | A1.3  | B1.9  | A3.0  | <A1.0 | <A1.0 | <A1.0 | A3.6  | A1.5   | A1.1  |
| 12  | A1.0   | <A1.0 | A4.9  | <A1.0 | A9.0  | A3.1  | <A1.0 | <A1.0 | <A1.0 | A6.7  | A1.0   | <A1.0 |
| 13  | A1.0   | <A1.0 | A2.3  | <A1.0 | A7.4  | <A1.0 | <A1.0 | <A1.0 | <A1.0 | A8.5  | A1.0   | <A1.0 |
| 14  | <A1.0  | <A1.0 | A2.4  | <A1.0 | A3.9  | A2.1  | <A1.0 | <A1.0 | <A1.0 | A8.5  | <A1.0  | <A1.0 |
| 15  | <A1.0  | <A1.0 | A1.6  | <A1.0 | A1.5  | A1.1  | <A1.0 | <A1.0 | <A1.0 | A6.8  | A1.4   | <A1.0 |
| 16  | <A1.0  | <A1.0 | A1.5  | <A1.0 | <A1.0 | <A1.0 | <A1.0 | A1.1  | A1.1  | B1.2  | A1.4   | <A1.0 |
| 17  | <A1.0  | <A1.0 | A1.8  | <A1.0 | <A1.0 | <A1.0 | A1.3  | A1.1  | A1.3  | B1.0  | <A1.0  | <A1.0 |
| 18  | <A1.0  | <A1.0 | A1.7  | <A1.0 | <A1.0 | <A1.0 | A1.2  | <A1.0 | <A1.0 | A8.9  | <A1.0  | <A1.0 |
| 19  | <A1.0  | A1.5  | A2.0  | A1.3  | <A1.0 | <A1.0 | A1.7  | A1.1  | A1.0  | A9.2  | <A1.0  | <A1.0 |
| 20  | <A1.0  | A1.1  | A1.0  | A1.1  | <A1.0 | A1.0  | A1.5  | A2.1  | A1.0  | A6.7  | <A1.0  | A2.5  |
| 21  | <A1.0  | A3.0  | <A1.0 | A1.1  | <A1.0 | A3.3  | A1.7  | A1.8  | A1.0  | A4.9  | <A1.0  | A1.2  |
| 22  | A1.0   | A6.8  | <A1.0 | <A1.0 | <A1.0 | A4.3  | A1.8  | A1.2  | A3.3  | A4.9  | <A1.0  | <A1.0 |
| 23  | A1.6   | A8.3  | <A1.0 | <A1.0 | <A1.0 | B2.9  | A2.4  | <A1.0 | B1.0  | A4.0  | <A1.0  | A1.2  |
| 24  | <A1.0  | A8.5  | <A1.0 | A1.2  | <A1.0 | B1.2  | A1.9  | <A1.0 | B3.3  | A4.3  | <A1.0  | A1.2  |
| 25  | <A1.0  | A1.0  | <A1.0 | A1.0  | <A1.0 | B1.1  | A2.2  | <A1.0 | B5.5  | A2.6  | <A1.0  | A1.0  |
| 26  | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A3.1  | A6.6  | ---   | <A1.0 | B2.2  | A1.0  | <A1.0  | <A1.0 |
| 27  | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A5.5  | A6.7  | A1.5  | A1.0  | B8.2  | <A1.0 | <A1.0  | <A1.0 |
| 28  | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A6.4  | A6.9  | A2.1  | <A1.0 | B3.3  | <A1.0 | <A1.0  | <A1.0 |
| 29  | <A1.0  | <A1.0 | <A1.0 | <A1.0 | A6.5  | A4.7  | A1.8  | <A1.0 | B4.5  | <A1.0 | <A1.0  |       |
| 30  | <A1.0  | <A1.0 | <A1.0 | A1.0  | A8.3  | A5.7  | A1.6  | <A1.0 | B3.4  | <A1.0 | A1.2   |       |
| 31  | <A1.0  |       | <A1.0 |       | A7.0  | A5.2  |       | <A1.0 |       | <A1.0 | <A1.0  |       |

## ACTIVE PROMINENCES AND FILAMENTS

17  
Feb 97

FEBRUARY 1997

| Day | Event Type | Start (UT) | End (UT) | Lat | CMD | CMP Mo | Day  | Imp | Extent | Blue Shift (.1 A) | Red Shift (.1 A) | Obs Type | Sta  | NOAA/USAF Reg# | Remarks |
|-----|------------|------------|----------|-----|-----|--------|------|-----|--------|-------------------|------------------|----------|------|----------------|---------|
| 01  | ADF        | 0049E      | 0954     | N03 | E07 | 02     | 1.5  | 1   | 03     | 9                 | 9                | E        | LEAR | 8015           |         |
| 01  | ADF        | 0050E      | 0330     | N03 | E07 | 02     | 1.5  | 1   | 04     | 9                 | 9                | E        | PALE | 8015           |         |
| 01  | AFS        | 0849E      | 1122D    | N05 | E03 | 02     | 1.6  |     | 02     | 9                 | 9                | E        | SVTO | 8015           |         |
| 01  | DSD        | 1156E      | 1241D    | N05 | E01 | 02     | 1.6  |     | 02     | 0                 | 0                | E        | SVTO | 8015           |         |
| 01  | DSD        | 1220E      | 1241D    | N03 | E01 | 02     | 1.6  |     | 02     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | DSD        | 1245E      | 1318D    | N05 | W04 | 02     | 1.2  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | AFS        | 1246E      | 2153     | S21 | E23 | 02     | 3.3  |     | 01     | 6                 | 8                | E        | RAMY | 8016           |         |
| 01  | AFS        | 1321E      | 2153     | N04 | W15 | 01     | 31.4 |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | DSD        | 1409E      | 2153     | N05 | W19 | 01     | 31.2 |     | 02     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | DSD        | 1411E      | 2153     | S22 | E26 | 02     | 3.6  |     | 01     | 9                 | 9                | E        | RAMY | 8016           |         |
| 01  | DSD        | 1420E      | 1612     | N05 | W05 | 02     | 1.2  |     | 03     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | DSD        | 1512E      | 2153     | N05 | W20 | 01     | 31.1 |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 01  | AFS        | 1545E      | 1914D    | S73 | W41 | 01     | 29.0 |     | 01     | 9                 | 9                | E        | HOLL | 8014           |         |
| 01  | DSD        | 1600       | 1631     | N04 | W04 | 02     | 1.4  |     | 01     | 9                 | 9                | E        | HOLL | 8015           |         |
| 01  | DSD        | 1729E      | 2153     | S23 | E28 | 02     | 3.9  |     | 02     | 9                 | 9                | E        | RAMY | 8016           |         |
| 01  | AFS        | 1740E      | 2153     | S23 | E24 | 02     | 3.6  |     | 01     | 9                 | 9                | E        | RAMY | 8016           |         |
| 01  | DSD        | 2040E      | 0051     | N03 | W06 | 02     | 1.4  |     | 02     | 9                 | 9                | E        | PALE | 8015           |         |
| 01  | DSD        | 2120E      | 2210D    | N05 | W09 | 02     | 1.2  |     | 03     | 9                 | 9                | E        | HOLL | 8015           |         |
| 02  | AFS        | 0130E      | 0240     | N04 | W10 | 02     | 1.3  |     | 01     | 9                 | 9                | E        | LEAR | 8015           |         |
| 02  | AFS        | 0130E      | 0240     | S22 | E33 | 02     | 4.6  |     | 01     | 8                 | 9                | E        | LEAR |                |         |
| 02  | AFS        | 0525E      | 0615     | N04 | W11 | 02     | 1.4  |     | 02     | 9                 | 9                | E        | LEAR | 8015           |         |
| 02  | BSD        | 0740E      | 0830     | N04 | W12 | 02     | 1.4  | 1   |        |                   |                  | V        | BUCA |                |         |
| 02  | ADF        | 0840E      | 1132D    | N06 | W14 | 02     | 1.3  |     | 02     | 9                 | 9                | E        | SVTO | 8015           |         |
| 02  | AFS        | 0840E      | 1140D    | N07 | W13 | 02     | 1.4  |     | 01     | 9                 | 9                | E        | SVTO | 8015           |         |
| 02  | DSD        | 0849E      | 1238D    | S20 | E33 | 02     | 4.9  |     | 02     | 9                 | 9                | E        | SVTO |                |         |
| 02  | AFS        | 0849E      | 1241D    | S19 | E31 | 02     | 4.7  |     | 02     | 9                 | 9                | E        | SVTO |                |         |
| 02  | AFS        | 1246E      | 2153     | S21 | E23 | 02     | 4.3  |     | 01     | 6                 | 8                | E        | RAMY | 8016           |         |
| 02  | AFS        | 1321E      | 2153     | N04 | W15 | 02     | 1.4  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 02  | AFS        | 1338E      | 1540     | S21 | E29 | 02     | 4.8  |     | 02     | 8                 | 8                | E        | SVTO |                |         |
| 02  | DSD        | 1409E      | 2153     | N05 | W19 | 02     | 1.2  |     | 02     | 9                 | 9                | E        | RAMY | 8015           |         |
| 02  | DSD        | 1411E      | 2153     | S22 | E26 | 02     | 4.6  |     | 01     | 9                 | 9                | E        | RAMY | 8016           |         |
| 02  | AFS        | 1415E      | 2349     | N04 | W17 | 02     | 1.3  |     | 01     | 9                 | 9                | E        | HOLL | 8015           |         |
| 02  | AFS        | 1415E      | 2349     | S21 | E28 | 02     | 4.7  |     | 01     | 9                 | 9                | E        | HOLL | 8016           |         |
| 02  | AFS        | 1502E      | 1540     | N07 | W17 | 02     | 1.3  |     | 03     | 9                 | 9                | E        | SVTO | 8015           |         |
| 02  | DSD        | 1512E      | 2153     | N05 | W20 | 02     | 1.1  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 02  | DSD        | 1703       | 1855D    | N05 | W20 | 02     | 1.2  |     | 02     | 9                 | 9                | E        | HOLL | 8015           |         |
| 02  | DSD        | 1729E      | 2153     | S23 | E28 | 02     | 4.9  |     | 02     | 9                 | 9                | E        | RAMY | 8016           |         |
| 02  | AFS        | 1740E      | 2153     | S23 | E24 | 02     | 4.6  |     | 01     | 9                 | 9                | E        | RAMY | 8016           |         |
| 03  | AFS        | 0715E      | 1122D    | N07 | W24 | 02     | 1.5  |     | 01     | 9                 | 9                | E        | SVTO | 8015           |         |
| 03  | AFS        | 0718E      | 1544     | N05 | W26 | 02     | 1.3  |     | 02     | 8                 | 8                | E        | SVTO | 8015           |         |
| 03  | AFS        | 0854E      | 1544     | S21 | E15 | 02     | 4.5  |     | 02     | 9                 | 8                | E        | SVTO | 8016           |         |
| 03  | AFS        | 1154E      | 2154     | N05 | W28 | 02     | 1.4  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 03  | DSD        | 1230E      | 2154     | N05 | W30 | 02     | 1.3  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 03  | AFS        | 1231E      | 2154     | S23 | E15 | 02     | 4.7  |     | 01     | 8                 | 8                | E        | RAMY | 8016           |         |
| 03  | DSD        | 1303E      | 1545D    | N05 | W32 | 02     | 1.1  |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 03  | ADF        | 1329E      | 1545D    | S20 | E20 | 02     | 5.1  | 1   | 04     | 8                 | 9                | E        | RAMY | 8016           |         |
| 03  | AFS        | 1450E      | 0028     | N05 | W30 | 02     | 1.4  |     | 01     | 9                 | 9                | E        | HOLL | 8016           |         |
| 03  | AFS        | 1455E      | 0028     | S21 | E14 | 02     | 4.7  |     | 01     | 9                 | 8                | E        | HOLL | 8015           |         |
| 03  | DSD        | 1518E      | 1545D    | S21 | E12 | 02     | 4.5  |     | 02     | 9                 | 9                | E        | RAMY | 8016           |         |
| 03  | DSD        | 1742E      | 0106     | S23 | E25 | 02     | 5.7  |     | 02     | 9                 | 9                | E        | PALE | 8016           |         |
| 03  | AFS        | 1743E      | 0106     | N04 | W18 | 02     | 2.4  |     | 01     | 9                 | 9                | E        | PALE | 8015           |         |
| 03  | AFS        | 1802E      | 0347     | N05 | W32 | 02     | 1.3  |     | 02     | 9                 | 9                | E        | PALE | 8015           |         |
| 03  | DSD        | 2325       | 0106     | S21 | E26 | 02     | 6.0  |     | 03     | 9                 | 9                | E        | PALE | 8016           |         |
| 04  | AFS        | 0240E      | 0945     | N06 | W38 | 02     | 1.3  |     | 02     | 9                 | 9                | E        | LEAR | 8015           |         |
| 04  | AFS        | 0749E      | 1144D    | N06 | W41 | 02     | 1.2  |     | 03     | 9                 | 9                | E        | SVTO | 8015           |         |
| 04  | DSF        | 0942U      | 2303U    | S23 | E66 | 02     | 9.5  |     | 28     | 0                 | 0                | E        | LEAR |                |         |
| 04  | DSD        | 1115E      | 2038     | S01 | W47 | 01     | 31.9 |     | 01     | 9                 | 9                | E        | RAMY | 8015           |         |
| 04  | ADF        | 1310E      | 1414D    | N05 | W46 | 02     | 1.1  |     | 02     | 8                 | 8                | E        | SVTO | 8015           |         |
| 04  | DSD        | 1314E      | 1540D    | N03 | W41 | 02     | 1.5  |     | 03     | 7                 | 9                | E        | RAMY | 8015           |         |
| 04  | DSF        | 1419U      | 1626U    | S24 | E69 | 02     | 9.9  | 2   | 15     | 0                 | 0                | E        | RAMY |                |         |
| 04  | DSF        | 1443U      | 0915U    | S20 | E51 | 02     | 8.5  | 2   | 22     | 0                 | 0                | E        | SVTO |                |         |
| 04  | BSD        | 1610E      | 1645D    | N07 | W44 | 02     | 1.4  |     | 01     | 0                 | 0                | E        | RAMY | 8015           |         |
| 04  | ADF        | 1610E      | 2038     | N07 | W42 | 02     | 1.5  |     | 02     | 8                 | 8                | E        | RAMY | 8015           |         |
| 05  | DSD        | 1256E      | 1745D    | S20 | W13 | 02     | 4.5  |     | 02     | 9                 | 9                | E        | RAMY | 8016           |         |
| 05  | DSD        | 1823E      | 2016     | S20 | W16 | 02     | 4.5  |     | 02     | 7                 | 9                | E        | RAMY | 8016           |         |
| 05  | DSF        | 2230U      | 1729U    | S43 | W27 | 02     | 3.7  | 2   | 11     | 0                 | 0                | E        | PALE |                |         |

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Feb 97

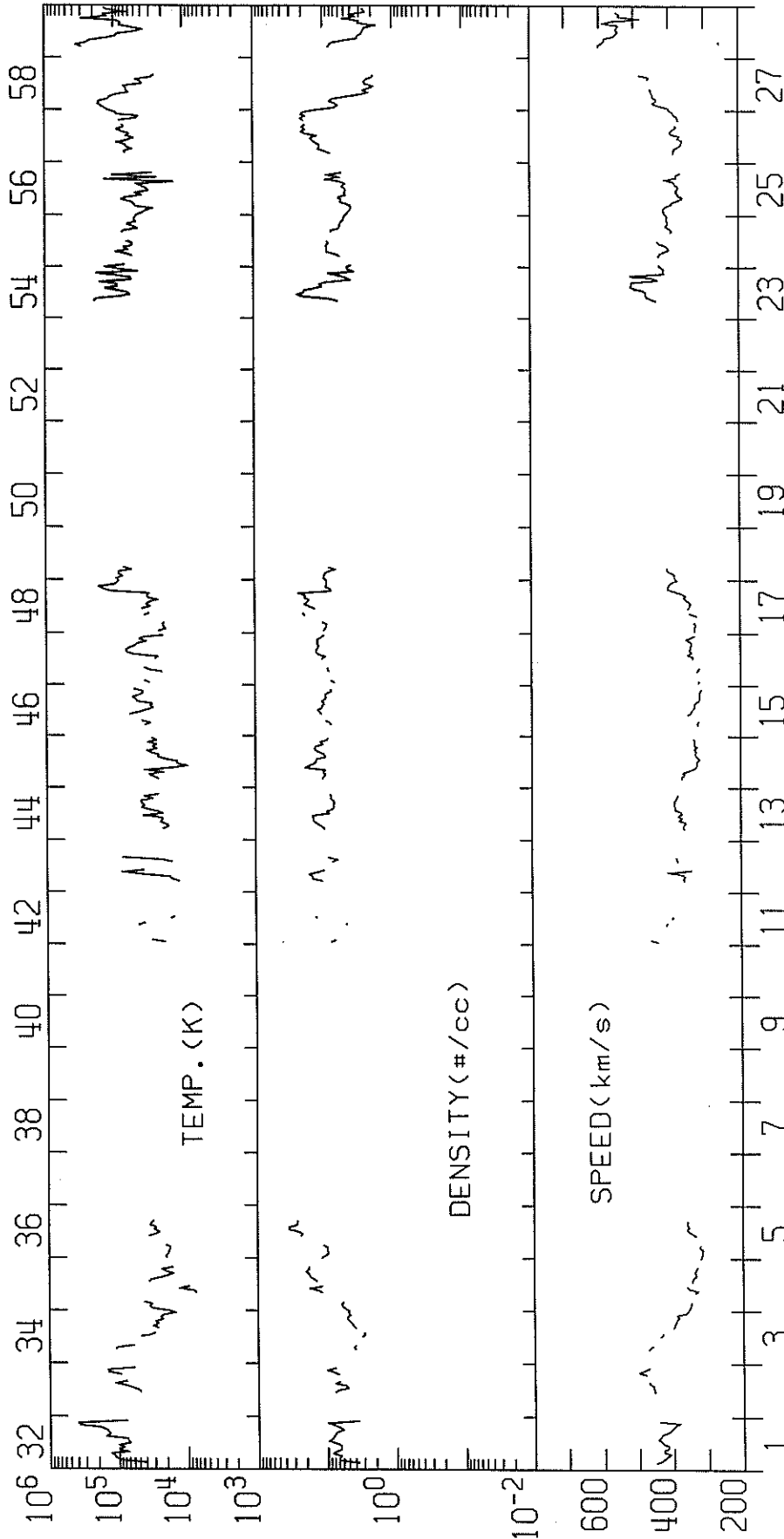
ACTIVE PROMINENCES AND FILAMENTS

FEBRUARY 1997

| Day | Event Type | Start (UT) | End (UT) | Lat | CMD | CMP Mo | Day  | Imp | Extent | Blue Shift (.1 A) | Red Shift (.1 A) | Obs Type | Sta  | NOAA/ USAF Reg# | Remarks          |
|-----|------------|------------|----------|-----|-----|--------|------|-----|--------|-------------------|------------------|----------|------|-----------------|------------------|
| 06  | AFS        | 0530E      | 1026     | N07 | W67 | 02     | 1.2  |     | 02     | 4                 | 8                | E        | LEAR | 8015            |                  |
| 06  | DSD        | 0530E      | 1026     | S20 | W23 | 02     | 4.5  |     | 06     | 4                 | 7                | E        | LEAR | 8016            |                  |
| 06  | AFS        | 0748E      | 0803     | N35 | W47 | 02     | 2.6  |     | 02     | 7                 | 7                | E        | SVTO |                 |                  |
| 06  | AFS        | 1729E      | 0026     | N37 | W56 | 02     | 2.2  |     | 02     | 9                 | 9                | E        | PALE | 8017            |                  |
| 07  | AFS        | 0030E      | 0730D    | S20 | W32 | 02     | 4.6  |     | 01     | 5                 | 5                | E        | LEAR | 8016            |                  |
| 07  | AFS        | 0030E      | 1018     | N34 | W59 | 02     | 2.3  |     | 01     | 9                 | 9                | E        | LEAR | 8017            |                  |
| 07  | ADF        | 0107E      | 0412D    | S49 | W02 | 02     | 6.9  | 1   | 21     | 8                 | 8                | E        | LEAR |                 |                  |
| 07  | DSF        | 0107U      | 0412U    | S49 | W02 | 02     | 6.9  | 2   | 21     | 0                 | 0                | E        | LEAR |                 |                  |
| 07  | AFS        | 0808E      | 1556     | N34 | W58 | 02     | 2.7  |     | 02     | 9                 | 9                | E        | SVTO | 8017            |                  |
| 08  | APR        | 0650E      | 1014     | S01 | E83 | 02     | 14.5 | 1   |        | 9                 | 7                | E        | LEAR |                 |                  |
| 08  | APR        | 0818E      | 1557     | N00 | E86 | 02     | 14.8 | 1   |        | 7                 | 7                | E        | SVTO |                 |                  |
| 08  | ASR        | 1100E      | 1144D    | N32 | W82 | 02     | 2.0  |     |        | 5                 | 5                | E        | SVTO | 8017            |                  |
| 08  | AFS        | 1301E      | 1348D    | S19 | W53 | 02     | 4.5  |     | 02     | 9                 | 9                | E        | SVTO | 8016            |                  |
| 08  | ASR        | 1355E      | 1408D    | N34 | W82 | 02     | 2.0  |     |        | 9                 | 9                | E        | SVTO | 8017            |                  |
| 09  | APR        | 0325E      | 0835     | N34 | W85 | 02     | 2.4  | 1   |        | 9                 | 9                | E        | LEAR | 8017            |                  |
| 09  | APR        | 0745E      | 1410D    | N30 | W90 | 02     | 2.2  | 1   |        | 9                 | 9                | E        | SVTO | 8017            |                  |
| 09  | AFS        | 0840E      | 0920D    | S20 | W65 | 02     | 4.4  |     | 02     | 7                 | 7                | E        | SVTO | 8016            |                  |
| 12  | ADF        | 0550E      | 1045     | N03 | E40 | 02     | 15.2 | 1   | 07     | 9                 | 9                | E        | LEAR |                 |                  |
| 12  | ADF        | 0715E      | 1045     | N31 | W12 | 02     | 11.3 | 1   | 03     | 9                 | 9                | E        | LEAR |                 |                  |
| 12  | ADF        | 0715E      | 1045     | S18 | W51 | 02     | 8.4  | 1   | 06     | 9                 | 9                | E        | LEAR |                 |                  |
| 12  | ADF        | 0742E      | 1330D    | N08 | E29 | 02     | 14.5 | 2   | 10     | 9                 | 7                | E        | SVTO |                 |                  |
| 13  | ADF        | 0742E      | 1330D    | N08 | E29 | 02     | 15.5 | 2   | 10     | 9                 | 7                | E        | SVTO |                 |                  |
| 13  | DSF        | 1031U      | 2311U    | N01 | E25 | 02     | 15.3 | 2   | 07     | 0                 | 0                | E        | LEAR |                 |                  |
| 13  | DSF        | 1330U      | 1410     | N08 | E29 | 02     | 15.7 | 2   | 10     | 9                 | 7                | E        | SVTO |                 |                  |
| 17  | AFS        | 0621E      | 1018     | N09 | W37 | 02     | 14.5 |     | 02     | 9                 | 9                | E        | LEAR |                 |                  |
| 17  | AFS        | 0745E      | 1235D    | N10 | W38 | 02     | 14.5 |     | 01     | 3                 | 5                | E        | SVTO |                 |                  |
| 17  | AFS        | 1450E      | 0044     | S25 | W58 | 02     | 13.1 |     | 01     | 9                 | 9                | E        | HOLL |                 |                  |
| 17  | AFS        | 2305E      | 0855D    | N09 | W47 | 02     | 14.4 |     | 02     | 9                 | 9                | E        | LEAR |                 |                  |
| 18  | DSD        | 0417E      | 0454D    | N08 | W51 | 02     | 14.3 |     | 02     | 9                 | 9                | E        | LEAR |                 |                  |
| 18  | DSD        | 0910E      | 1034D    | N09 | W52 | 02     | 14.5 |     | 02     | 9                 | 9                | E        | SVTO |                 |                  |
| 19  | DSD        | 1030U      | 1120U    | N08 | W65 | 02     | 14.6 | 1   |        | 9                 | 9                | V        | KHAR |                 |                  |
| 19  | BSL        | 2231       | 2237     | N07 | W90 | 02     | 13.2 |     |        | 9                 | 7                | E        | HOLL | 8018            | Flare Associated |
| 20  | BSD        | 0050E      | 0055     | N08 | W74 | 02     | 14.5 |     | 04     | 0                 | 0                | E        | PALE | 8018            |                  |
| 20  | DSF        | 0100U      | 0406U    | S44 | W09 | 02     | 19.3 | 2   | 18     | 0                 | 0                | E        | LEAR |                 |                  |
| 20  | BSD        | 0131E      | 0145D    | N08 | W78 | 02     | 14.2 |     | 04     | 9                 | 9                | E        | PALE | 8018            |                  |
| 20  | ASR        | 0406E      | 0904     | N07 | W77 | 02     | 14.4 |     |        | 9                 | 9                | E        | LEAR | 8018            |                  |
| 20  | ASR        | 1143E      | 1235D    | N11 | W90 | 02     | 13.7 |     |        | 9                 | 9                | E        | SVTO | 8018            |                  |
| 20  | ASR        | 1717E      | 0331     | N08 | W90 | 02     | 14.0 |     |        | 7                 | 7                | E        | PALE | 8018            |                  |
| 20  | ASR        | 1720E      | 0048     | N09 | W90 | 02     | 14.0 |     |        | 9                 | 9                | E        | HOLL | 8018            |                  |
| 21  | ASR        | 0230E      | 0352     | N07 | W90 | 02     | 14.4 |     |        | 9                 | 9                | E        | LEAR | 8018            |                  |
| 21  | ASR        | 0613E      | 0644D    | N09 | W90 | 02     | 14.5 |     |        | 9                 | 9                | E        | SVTO | 8018            |                  |
| 21  | BSL        | 1030U      | 1050     | S07 | W90 | 02     | 14.7 | 1   |        | 9                 | 9                | V        | KHAR |                 |                  |
| 22  | AFS        | 1550E      | 2145D    | S03 | E61 | 02     | 27.2 |     | 01     | 7                 | 6                | E        | HOLL |                 |                  |
| 24  | DSD        | 1228E      | 1354D    | N23 | E63 | 03     | 1.4  |     | 02     | 7                 | 7                | E        | SVTO |                 |                  |
| 26  | ADF        | 0905E      | 1030D    | N25 | E37 | 03     | 1.2  | 1   | 08     | 9                 | 9                | E        | SVTO | 8019            |                  |
| 27  | ADF        | 0000E      | 0520D    | N14 | E18 | 02     | 28.4 | 1   | 07     | 5                 | 4                | E        | LEAR |                 |                  |
| 27  | ADF        | 0000E      | 0520D    | N30 | E39 | 03     | 2.1  | 1   | 19     | 9                 | 9                | E        | LEAR | 8019            |                  |
| 27  | ADF        | 0000E      | 0520D    | N39 | E53 | 03     | 3.3  | 1   | 19     | 9                 | 9                | E        | LEAR | 8019            |                  |

IMP 8 SOLAR WIND PLASMA  
FEBRUARY 1997

MIT/CSR IMP 8 PLASMA PARAMETERS



FEB 1997

FEB 1997

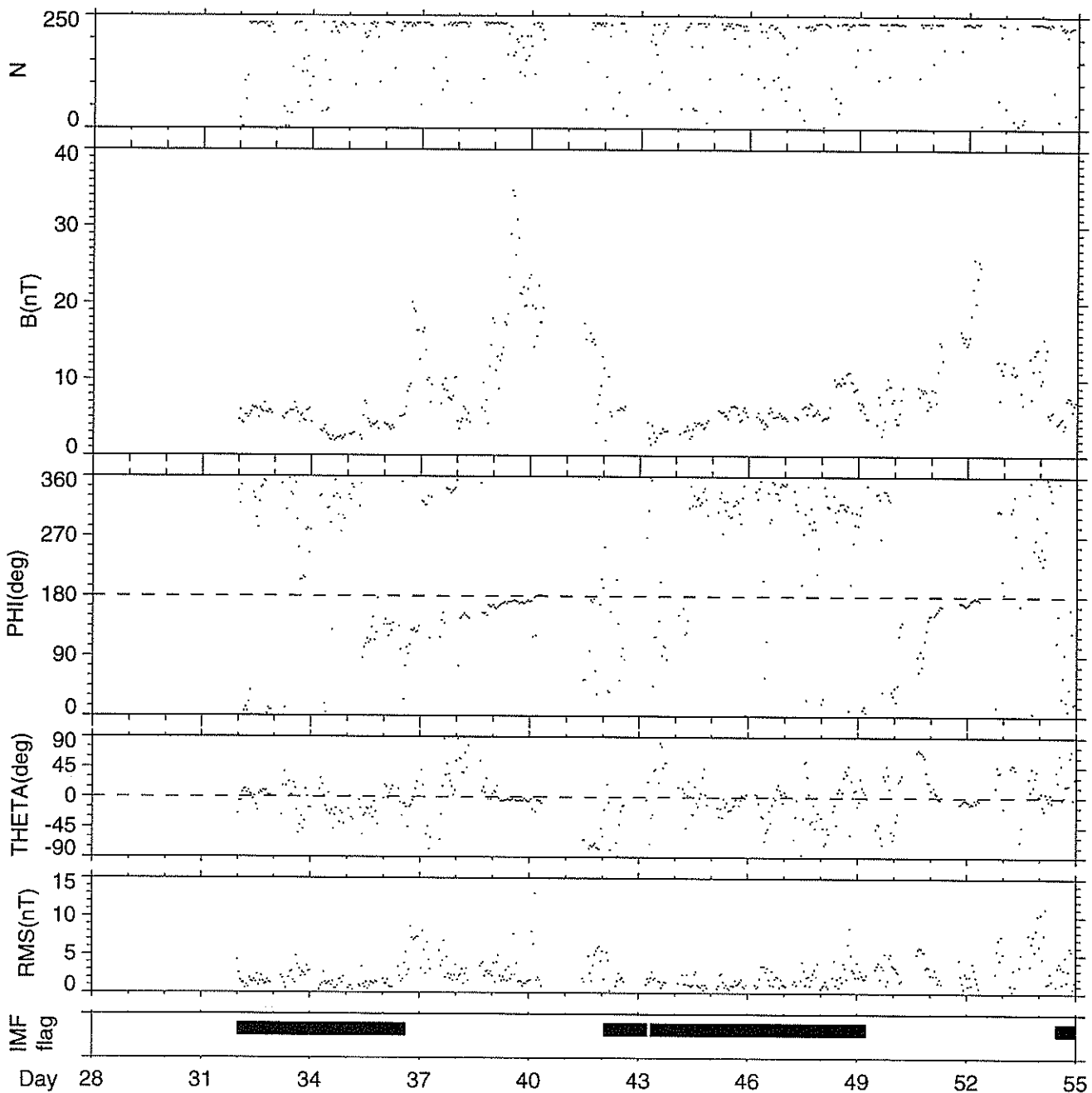
IMP 8 MIT ONE-HOUR AVERAGES

### IMP-8 Magnetic Field Data in GSE Coordinates

1 Hour Averages

(c) DOY 32 - 55

February 1 1997 - February 24 1997



Generation Date : Thu Jun 12 08:13:49 1997

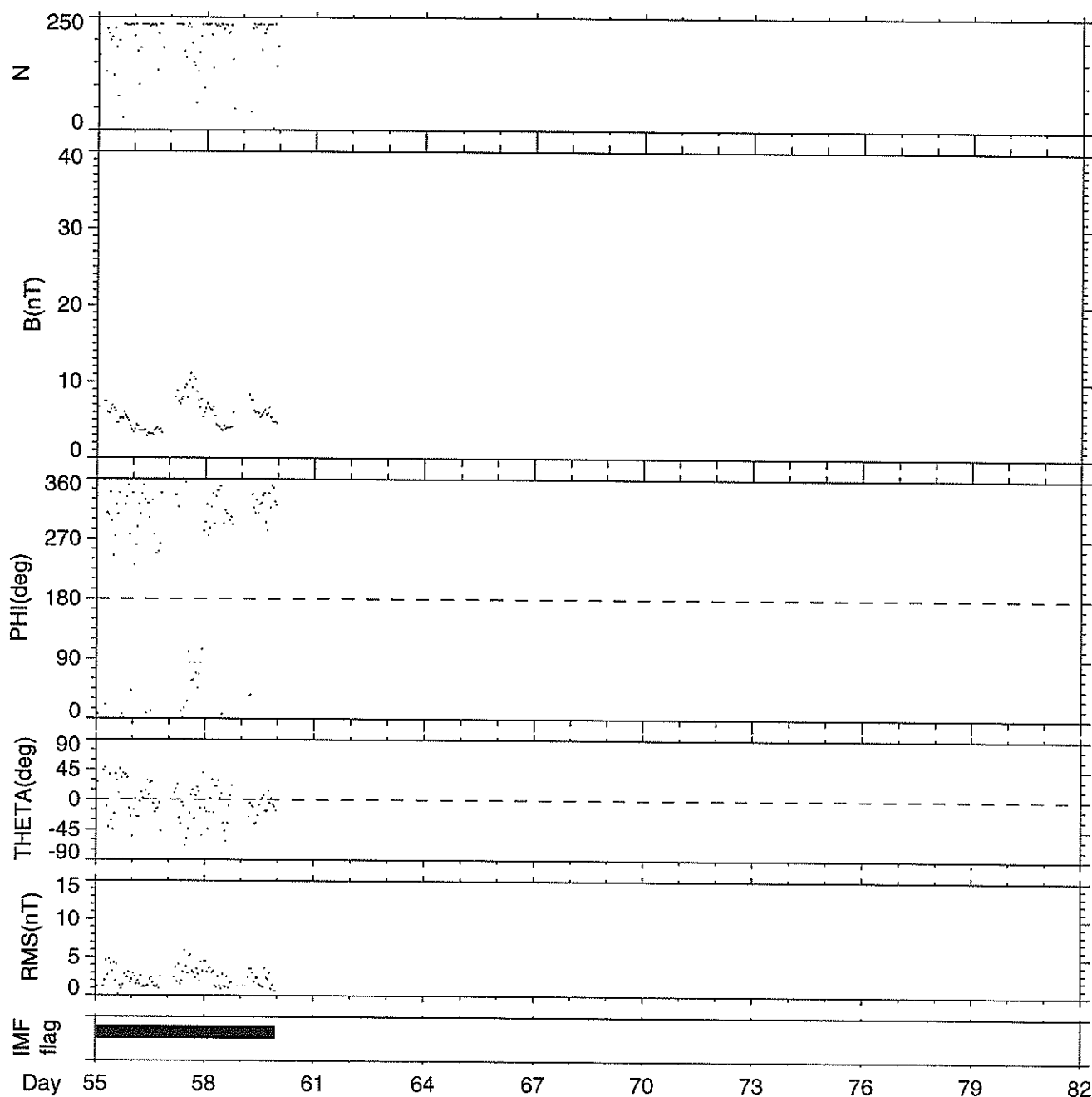
NOTE: The IMF "flag" (black boxes at the bottom of the plots) indicates where the interplanetary magnetic field regions are according to a dynamic model of the location of the bow shock. At all other times IMP-8 is in the magnetosphere.

### IMP-8 Magnetic Field Data in GSE Coordinates

1 Hour Averages

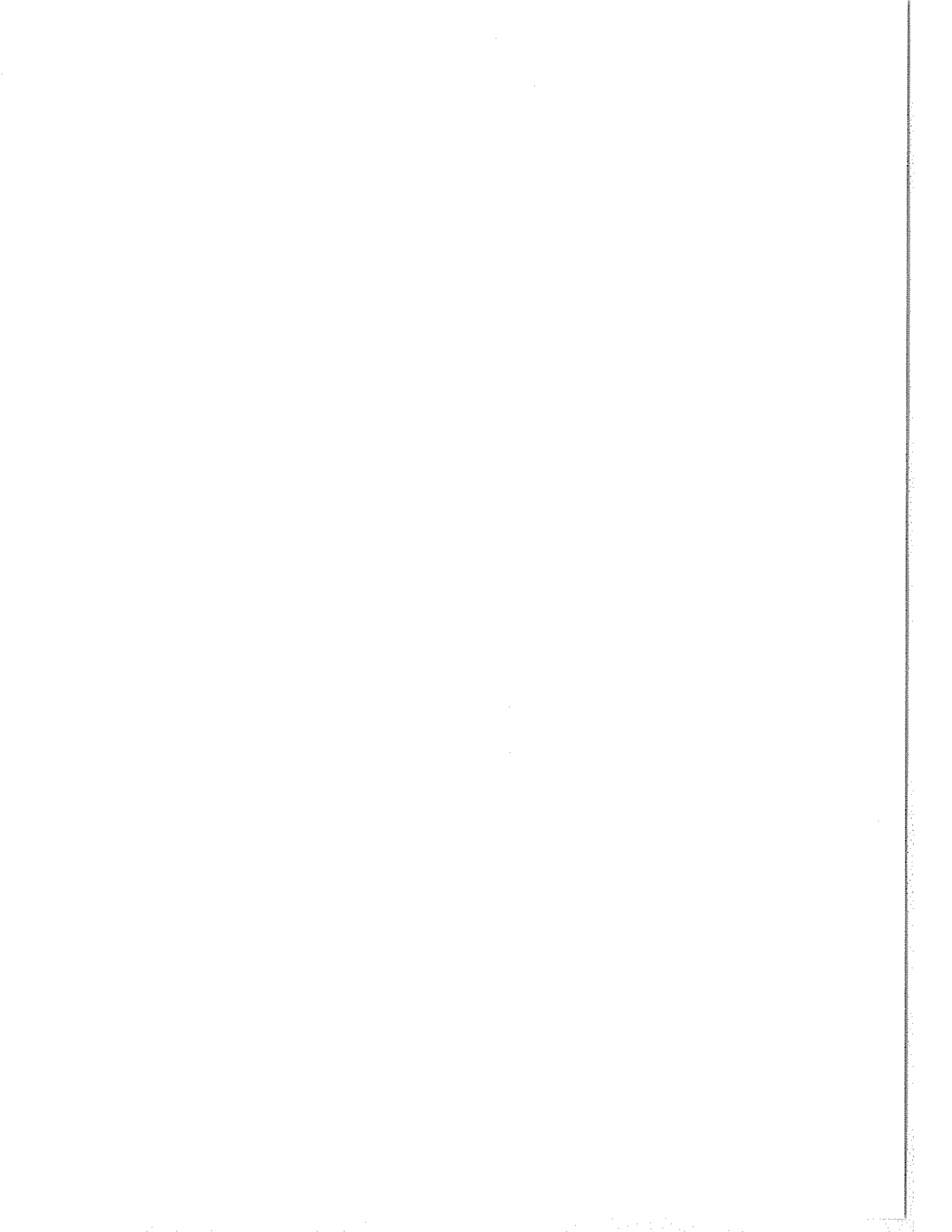
(c) DOY 55 - 59

February 24 1997 - February 28 1997



Generation Date : Thu Jun 12 08:13:49 1997

NOTE: The IMF "flag" (black boxes at the bottom of the plots) indicates where the interplanetary magnetic field regions are according to a dynamic model of the location of the bow shock. At all other times IMP-8 is in the magnetosphere.



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Comprehensive Reports

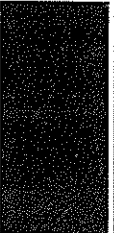
Number 636 Part II

## MISCELLANEOUS DATA

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SOLAR ACTIVITY INDICES 1996

Daily Sunspot Numbers by Hemisphere from Sunspot Index Data Center ..... 24-25





## International Sunspot Numbers

### Rn 1996

| Day  | Jan  | Feb | Mar | Apr | May | Jun  | Jul | Aug | Sep | Oct | Nov | Dec |
|------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|
| 1    | 0    | 9   | 0   | 0   | 0   | 8    | 8   | 0   | 0   | 0   | 0   | 0   |
| 2    | 12   | 9   | 0   | 5   | 0   | 8    | 10  | 0   | 0   | 0   | 0   | 0   |
| 3    | 19   | 7   | 0   | 5   | 0   | 8    | 9   | 0   | 0   | 0   | 0   | 0   |
| 4    | 30   | 0   | 9   | 8   | 0   | 9    | 0   | 0   | 0   | 0   | 0   | 0   |
| 5    | 39   | 0   | 0   | 0   | 0   | 11   | 0   | 0   | 0   | 0   | 0   | 0   |
| 6    | 47   | 0   | 7   | 0   | 6   | 13   | 0   | 4   | 0   | 0   | 0   | 0   |
| 7    | 41   | 0   | 5   | 0   | 6   | 12   | 0   | 9   | 0   | 0   | 0   | 0   |
| 8    | 35   | 0   | 0   | 0   | 0   | 20   | 0   | 6   | 0   | 0   | 0   | 0   |
| 9    | 19   | 0   | 0   | 0   | 0   | 16   | 0   | 14  | 0   | 0   | 0   | 0   |
| 10   | 11   | 0   | 0   | 0   | 5   | 12   | 0   | 15  | 0   | 0   | 0   | 0   |
| 11   | 0    | 0   | 6   | 0   | 0   | 9    | 0   | 21  | 0   | 0   | 0   | 9   |
| 12   | 0    | 0   | 0   | 9   | 0   | 9    | 0   | 17  | 8   | 0   | 5   | 9   |
| 13   | 0    | 0   | 0   | 8   | 0   | 0    | 0   | 12  | 0   | 0   | 5   | 10  |
| 14   | 0    | 0   | 0   | 0   | 0   | 0    | 0   | 21  | 0   | 0   | 0   | 9   |
| 15   | 0    | 7   | 0   | 0   | 0   | 0    | 0   | 19  | 0   | 0   | 10  | 13  |
| 16   | 0    | 0   | 0   | 0   | 0   | 0    | 0   | 10  | 0   | 0   | 28  | 11  |
| 17   | 0    | 0   | 0   | 10  | 0   | 0    | 0   | 11  | 0   | 0   | 9   | 11  |
| 18   | 0    | 0   | 0   | 8   | 4   | 10   | 0   | 9   | 0   | 0   | 4   | 18  |
| 19   | 0    | 0   | 0   | 5   | 0   | 17   | 0   | 11  | 0   | 0   | 10  | 15  |
| 20   | 0    | 8   | 0   | 0   | 4   | 8    | 0   | 10  | 0   | 0   | 9   | 15  |
| 21   | 5    | 10  | 12  | 0   | 0   | 8    | 0   | 10  | 0   | 0   | 9   | 21  |
| 22   | 0    | 8   | 16  | 0   | 0   | 8    | 0   | 9   | 0   | 0   | 12  | 21  |
| 23   | 0    | 8   | 16  | 0   | 0   | 17   | 0   | 5   | 0   | 0   | 21  | 11  |
| 24   | 11   | 17  | 14  | 8   | 0   | 18   | 0   | 8   | 0   | 0   | 17  | 0   |
| 25   | 9    | 13  | 13  | 0   | 0   | 17   | 0   | 0   | 0   | 9   | 17  | 0   |
| 26   | 9    | 8   | 23  | 0   | 0   | 18   | 8   | 0   | 0   | 10  | 12  | 0   |
| 27   | 9    | 7   | 11  | 0   | 0   | 18   | 0   | 0   | 0   | 0   | 10  | 0   |
| 28   | 10   | 4   | 11  | 0   | 0   | 18   | 0   | 0   | 0   | 0   | 0   | 0   |
| 29   | 9    | 0   | 10  | 0   | 0   | 17   | 0   | 0   | 0   | 0   | 0   | 0   |
| 30   | 16   | 0   | 0   | 0   | 0   | 17   | 0   | 0   | 0   | 0   | 0   | 0   |
| 31   | 11   | 0   | 0   | 0   | 0   | 0    | 0   | 7   | 0   | 0   | 0   | 0   |
| Mean | 11.0 | 4.0 | 4.9 | 2.2 | 0.8 | 10.9 | 1.1 | 7.4 | 0.3 | 0.6 | 5.9 | 5.6 |

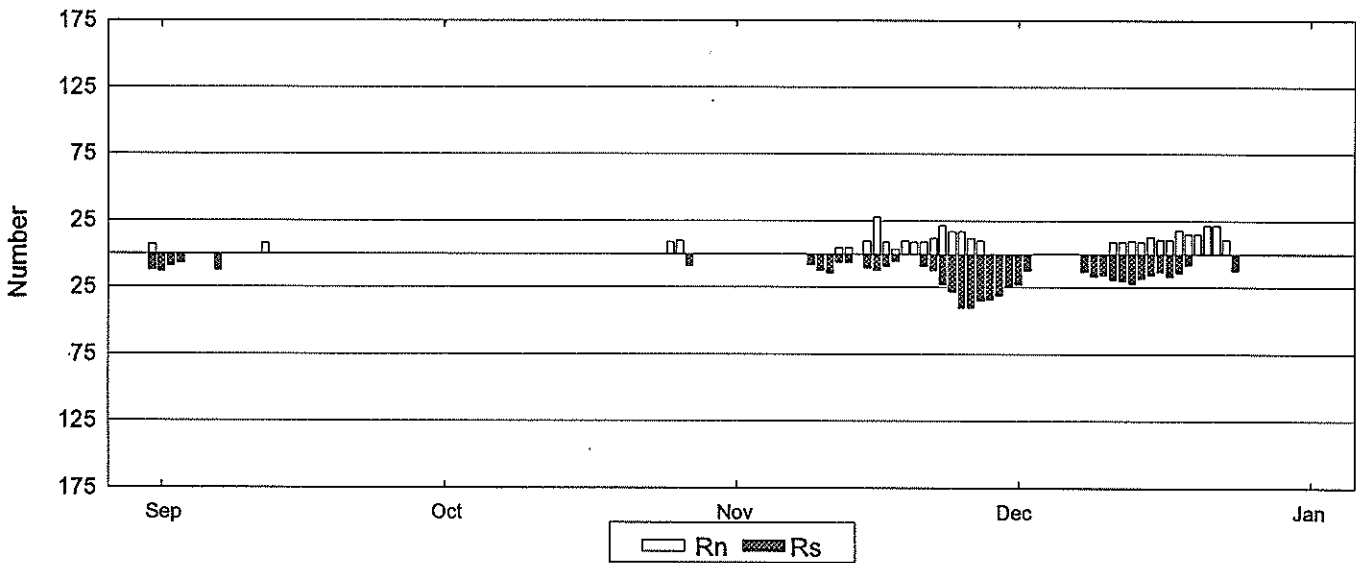
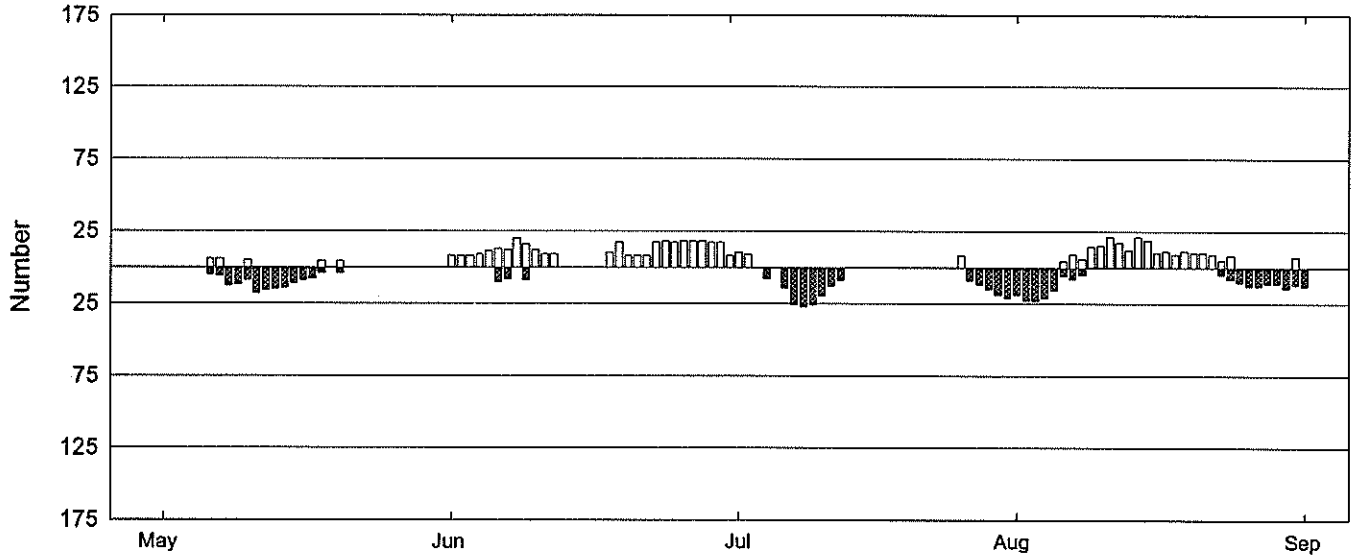
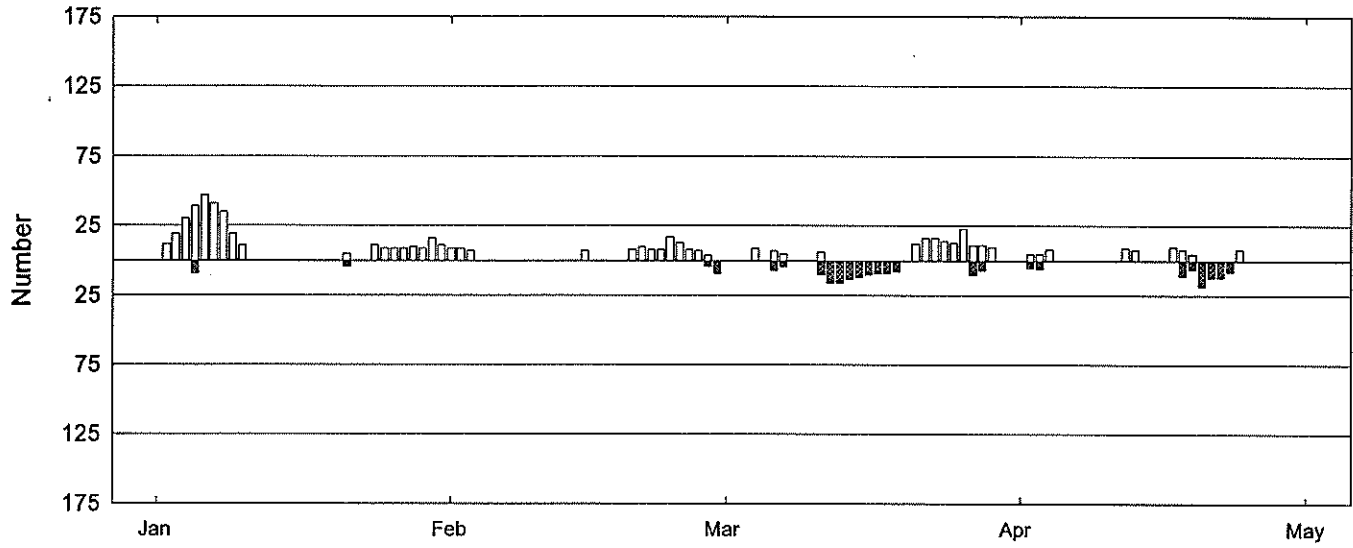
### Rs 1996

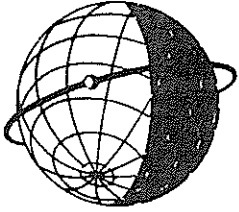
| Day  | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov  | Dec |
|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 1    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 19  | 13  | 0   | 0    | 23  |
| 2    | 0   | 0   | 0   | 5   | 0   | 0   | 0   | 23  | 9   | 0   | 0    | 12  |
| 3    | 0   | 0   | 0   | 6   | 0   | 0   | 0   | 23  | 7   | 0   | 0    | 0   |
| 4    | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 21  | 0   | 0   | 0    | 0   |
| 5    | 9   | 0   | 0   | 0   | 0   | 0   | 8   | 16  | 0   | 0   | 0    | 0   |
| 6    | 0   | 0   | 7   | 0   | 5   | 10  | 0   | 6   | 0   | 0   | 0    | 0   |
| 7    | 0   | 0   | 4   | 0   | 6   | 8   | 14  | 8   | 12  | 0   | 0    | 0   |
| 8    | 0   | 0   | 0   | 0   | 13  | 0   | 26  | 5   | 0   | 0   | 0    | 13  |
| 9    | 0   | 0   | 0   | 0   | 12  | 9   | 27  | 0   | 0   | 0   | 8    | 17  |
| 10   | 0   | 0   | 0   | 0   | 9   | 0   | 26  | 0   | 0   | 0   | 12   | 16  |
| 11   | 0   | 0   | 10  | 0   | 18  | 0   | 20  | 0   | 0   | 0   | 14   | 19  |
| 12   | 0   | 0   | 16  | 0   | 16  | 0   | 13  | 0   | 0   | 0   | 6    | 20  |
| 13   | 0   | 0   | 16  | 0   | 15  | 0   | 9   | 0   | 0   | 0   | 6    | 22  |
| 14   | 0   | 0   | 13  | 0   | 14  | 0   | 0   | 0   | 0   | 0   | 0    | 18  |
| 15   | 0   | 0   | 12  | 0   | 11  | 0   | 0   | 0   | 0   | 0   | 10   | 16  |
| 16   | 0   | 0   | 10  | 0   | 9   | 0   | 0   | 0   | 0   | 0   | 12   | 13  |
| 17   | 0   | 0   | 9   | 0   | 8   | 0   | 0   | 0   | 0   | 0   | 9    | 17  |
| 18   | 0   | 0   | 9   | 11  | 4   | 0   | 0   | 0   | 0   | 0   | 5    | 14  |
| 19   | 0   | 0   | 8   | 6   | 0   | 0   | 0   | 0   | 0   | 0   | 0    | 8   |
| 20   | 0   | 0   | 0   | 18  | 4   | 0   | 0   | 0   | 0   | 0   | 0    | 0   |
| 21   | 4   | 0   | 0   | 12  | 0   | 0   | 0   | 0   | 0   | 0   | 9    | 0   |
| 22   | 0   | 0   | 0   | 12  | 0   | 0   | 0   | 0   | 0   | 0   | 12   | 0   |
| 23   | 0   | 0   | 0   | 8   | 0   | 0   | 0   | 5   | 0   | 0   | 23   | 0   |
| 24   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 8   | 0   | 0   | 28   | 12  |
| 25   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 10  | 0   | 0   | 40   | 0   |
| 26   | 0   | 0   | 0   | 0   | 0   | 0   | 0   | 13  | 0   | 0   | 40   | 0   |
| 27   | 0   | 0   | 10  | 0   | 0   | 0   | 9   | 13  | 0   | 9   | 35   | 0   |
| 28   | 0   | 4   | 7   | 0   | 0   | 0   | 12  | 11  | 0   | 0   | 34   | 0   |
| 29   | 0   | 9   | 0   | 0   | 0   | 0   | 15  | 11  | 0   | 0   | 31   | 0   |
| 30   | 0   | 0   | 0   | 0   | 0   | 0   | 19  | 14  | 0   | 0   | 25   | 0   |
| 31   | 0   | 0   | 0   | 0   | 0   | 0   | 21  | 12  | 0   | 0   | 0    | 0   |
| Mean | 0.5 | 0.4 | 4.3 | 2.6 | 4.7 | 0.9 | 7.1 | 7.0 | 1.3 | 0.3 | 12.0 | 7.7 |

# 1996 International Rn and Rs Sunspot Numbers

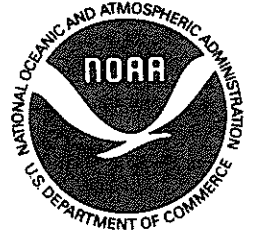
## Sunspot Index Data Center, Brussels

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Misc





**WORLD DATA CENTER A**  
**FOR**  
**SOLAR-TERRESTRIAL PHYSICS**



The ICSU Panel on WDCs has recommended that it would be appropriate courtesy to acknowledge in publications that data were obtained from the originating station or investigator through the intermediary of the WDCs. The following statement is suggested:

"Data used in this study were provided by WDC-A for Solar-Terrestrial Physics, NOAA E/GC2, 325 Broadway, Boulder Colorado 80303, USA."