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Robert S. Winokur, Assistant Administrator

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Michael S. Loughridge, Director

Boulder, Colorado

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# SOLAR-GEOPHYSICAL DATA

Number 630

(Issued in Two Parts)

Editor: Helen E. Coffey

Chief: Herbert W. Kroehl  
Solar-Terrestrial Physics Division

Staff: Christine D. Hanchett  
Edward H. Erwin

Computer Consultant:  
Daniel C. Wilkinson

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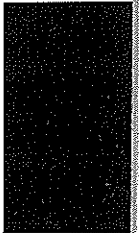
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H $\alpha$  SOLAR FLARES

AUGUST 1996

| Grp # | Sta  | Day | Start (UT) | Max (UT) | End (UT) | NOAA/USAF       |        | CMP Mo | Dur (Min) | Imp Opt | Xray | Obs See  | Type | Area Measurement |                      |               | Remarks |    |
|-------|------|-----|------------|----------|----------|-----------------|--------|--------|-----------|---------|------|----------|------|------------------|----------------------|---------------|---------|----|
|       |      |     |            |          |          | Lat             | Region |        |           |         |      |          |      | Time (UT)        | Apparent (10-6 Disk) | Corr (Sq Deg) |         |    |
| 0001  | KANZ | 01  | 0739       | 0743     | 0747     | S10             | E17    | 7981   | 08        | 2.6     | 8    | SF       | 2    | C                |                      |               |         |    |
| 0002  | KANZ | 01  | 1617       | 1621     | 1626     | S10             | E12    | 7981   | 08        | 2.6     | 9    | SF       | 2    | C                |                      |               |         |    |
|       |      | 01  | 2306       |          | 2310     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
| 0003  |      | 02  | 1036       | 1036     | 1048     | S08             | W02    | 7981   | 08        | 2.3     | 12   | SF B 1.4 |      |                  | 24                   |               | H       |    |
|       | KANZ | 02  | 1036       | 1036     | 1048     | S09             | W03    | 7981   | 08        | 2.2     | 12   | SF       | 2    | C                |                      |               |         |    |
|       | RAMY | 02  | 1036       | 1037     | 1047     | S07             | W02    | 7981   | 08        | 2.3     | 11   | SF B 1.4 | 3    | E                | 24                   |               | H       |    |
| 0004  |      | 02  | 1522       | 1523     | 1546     | S08             | W04    | 7981   | 08        | 2.3     | 24   | SF B 2.8 |      |                  | 22                   |               | F       |    |
|       | RAMY | 02  | 1522       | 1523     | 1546     | S07             | W03    | 7981   | 08        | 2.4     | 24   | SF B 2.8 | 4    | E                | 23                   |               |         |    |
|       | SVTO | 02  | 1522       | 1523     | 1547     | S09             | W04    | 7981   | 08        | 2.3     | 25   | SF       | 3    | E                | 20                   |               | F       |    |
|       |      | 02  | 2303       |          | 2400     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 03  | 0000       |          | 0035     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 03  | 0044       |          | 0056     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 03  | 0253       |          | 0303     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
| 0005  | SVTO | 03  | 0515       | 0519     | 0534     | S09             | W05    | 7981   | 08        | 2.8     | 19   | SF B 2.2 | 3    | E                | 31                   |               | F       |    |
| 0006  |      | 03  | 1236       | 1240     | 1259     | S08             | W13    | 7981   | 08        | 2.5     | 23   | SF B 4.8 |      |                  | 44                   |               | FU      |    |
|       | SVTO | 03  | 1236       | 1240     | 1257     | S08             | W12    | 7981   | 08        | 2.6     | 21   | SF       | 3    | E                | 43                   |               | UF      |    |
|       | RAMY | 03  | 1237       | 1240     | 1301     | S08             | W14    | 7981   | 08        | 2.5     | 24   | SF B 4.8 | 4    | E                | 46                   |               | F       |    |
| 0007  | HOLL | 03  | 2116       | 2118     | 2124     | S09             | W21    | 7981   | 08        | 2.3     | 8    | SF B 1.2 | 3    | E                | 26                   |               |         |    |
|       |      | 03  | 2145       |          | 2314     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
| 0008  | MEUD | 04  | 1007       | 1010     | 1024     | S09             | W23    | 7981   | 08        | 2.7     | 17   | SN       |      | C                | 1010                 | 180           | 2.0     | CF |
| 0009  | HOLL | 04  | 1815       | 1815     | 1824     | S10             | W30    | 7981   | 08        | 2.5     | 9    | SF B 2.1 | 3    | E                | 18                   |               |         |    |
| 0010  | SVTO | 05  | 0753       | 0753     | 0756     | S11             | W37    | 7981   | 08        | 2.5     | 3    | SF B 2.6 | 3    | E                | 19                   |               | FS      |    |
| 0011  |      | 05  | 0920       | 0920     | 0929     | S10             | W34    | 7981   | 08        | 2.8     | 9    | SF B 5.1 |      |                  | 31                   |               | FL      |    |
|       | KHAR | 05  | 0918U      | 0920U    | 0928     | S10             | W34    | 7981   | 08        | 2.8     | 10U  | SF       | 2    | V                |                      |               | L       |    |
|       | SVTO | 05  | 0920       | 0920     | 0930     | S10             | W35    | 7981   | 08        | 2.7     | 10   | SF B 5.1 | 3    | E                | 31                   |               | F       |    |
| 0012  |      | 05  | 14224      | 14242    | 1432     | S09             | W38    | 7981   | 08        | 2.7     | 10   | SN B 5.5 |      |                  | 109                  | 2.2           | EFU     |    |
|       | MEUD | 05  | 1422       | 1424     | 1432     | S09             | W39    | 7981   | 08        | 2.7     | 10   | 1B       |      | C                | 1424                 | 160           | 2.2     | E  |
|       | RAMY | 05  | 1423       | 1424     | 1434     | S09             | W39    | 7981   | 08        | 2.7     | 11   | SF B 5.5 | 3    | E                | 99                   |               | UF      |    |
|       | SVTO | 05  | 1423       | 1425     | 1431     | S10             | W38    | 7981   | 08        | 2.7     | 8    | SF       | 3    | E                | 67                   |               |         |    |
|       | KANZ | 05  | 1426       | 1426     | 1430     | S09             | W37    | 7981   | 08        | 2.8     | 4    | SF       | 2    | C                |                      |               |         |    |
| 0013  |      | 05  | 1506       | 1506     | 1512     | S09             | W38    | 7981   | 08        | 2.8     | 6    | SF B 2.4 |      |                  | 14                   |               | F       |    |
|       | KANZ | 05  | 1506       | 1506     | 1514     | S08             | W37    | 7981   | 08        | 2.8     | 8    | SF       | 2    | C                |                      |               |         |    |
|       | SVTO | 05  | 1506       | 1507     | 1511     | S10             | W38    | 7981   | 08        | 2.8     | 5    | SF       | 3    | E                | 14                   |               |         |    |
|       | RAMY | 05  | 1506       | 1508     | 1511     | S09             | W39    | 7981   | 08        | 2.7     | 5    | SF B 2.4 | 3    | E                | 14                   |               | F       |    |
| 0014  |      | 05  | 15331      | 1534     | 1545     | S08             | W42    | 7981   | 08        | 2.5     | 12   | SF B 2.0 |      |                  | 13                   |               | F       |    |
|       | RAMY | 05  | 1533       | 1534     | 1543     | S08             | W44    | 7981   | 08        | 2.3     | 10   | SF B 2.0 | 3    | E                | 16                   |               | F       |    |
|       | KANZ | 05  | 1534       | 1534     | 1546     | S08             | W41    | 7981   | 08        | 2.6     | 12   | SF       | 2    | C                |                      |               |         |    |
|       | SVTO | 05  | 1534       | 1534     | 1546     | S08             | W42    | 7981   | 08        | 2.5     | 12   | SF       | 3    | E                | 10                   |               |         |    |
| 0015  | KHAR | 06  | 0957       | 1000     | 1012     | S12             | W52    | 7981   | 08        | 2.5     | 15   | SF       | 2    | V                |                      |               | EH      |    |
|       |      | 06  | 1726       |          | 1823     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 06  | 1857       |          | 1923     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 06  | 1947       |          | 2142     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 07  | 1918       |          | 1943     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 07  | 1951       |          | 2004     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 07  | 2020       |          | 2028     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 07  | 2108       |          | 2118     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 07  | 2223       |          | 2246     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
|       |      | 08  | 0311       |          | 0416     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |
| 0016  | RAMY | 08  | 1151E      | 1152U    | 1200     | S20             | W73    |        | 08        | 2.9     | 9D   | SF B 2.7 | 2    | E                | 53                   |               |         |    |
|       |      | 09  | 0109       |          | 0118     | No Flare Patrol |        |        |           |         |      |          |      |                  |                      |               |         |    |

H $\alpha$  SOLAR FLARES

5  
Aug 96

AUGUST 1996

| Grp # | Sta  | Day | Start (UT) | Max (UT) | End (UT) | Lat             | CMD | 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) |         |
| 0017  | KHAR | 09  | 0954       | 0955     | 1001     | N11             | E03 | 7982                    | 08        | 9.6        | 7            | SF   |      | 2          | V    |                  |                      | DH      |
| 0018  |      | 09  | 14421      | 14433    | 1500     | N08             | W01 | 7982                    | 08        | 9.5        | 18           | SF   |      |            |      |                  | 12                   |         |
|       | KANZ | 09  | 1442       | 1446     | 1458D    | N08             | W01 | 7982                    | 08        | 9.5        | 16D          | SF   |      | 2          | C    |                  |                      |         |
|       | RAMY | 09  | 1443       | 1443     | 1500     | N08             | W01 | 7982                    | 08        | 9.5        | 17           | SF   |      | 2          | E    |                  | 12                   |         |
|       |      | 09  | 1558       |          | 1611     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 09  | 1956       |          | 2008     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 09  | 2213       |          | 2236     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 09  | 2259       |          | 2310     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 10  | 2039       |          | 2113     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
| 0019  | HOLL | 10  | 2120       | 2133     | 2153     | N10             | W19 | 7982                    | 08        | 9.5        | 33           | SF B | 1.5  | 3          | E    |                  | 17                   |         |
|       |      | 10  | 2213       |          | 2309     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 11  | 2149       |          | 2354     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 12  | 0106       |          | 0123     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 12  | 0133       |          | 0256     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 12  | 0433       |          | 0443     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 13  | 0150       |          | 0155     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 13  | 0222       |          | 0239     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 15  | 0957       |          | 1043     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 16  | 2309       |          | 2310     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 16  | 2400       |          | 2400     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 17  | 0000       |          | 0459     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 17  | 2234       |          | 2240     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 18  | 2215       |          | 2233     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 19  | 0417       |          | 0424     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 19  | 2058       |          | 2100     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 19  | 2123       |          | 2200     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 19  | 2236       |          | 2258     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 20  | 1842       |          | 1903     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 20  | 1918       |          | 1925     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 20  | 1931       |          | 2012     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 20  | 2050       |          | 2100     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 21  | 2002       |          | 2020     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 21  | 2138       |          | 2146     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 21  | 2151       |          | 2400     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 22  | 0000       |          | 0118     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 22  | 0415       |          | 0441     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
| 0020  | KHAR | 22  | 0835E      |          | 1000D    | N03             | E90 |                         | 08        | 29.1       | 85D          | 1N   |      | 2          | V    |                  |                      | H       |
|       |      | 22  | 1001       |          | 1029     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 22  | 1041       |          | 1046     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 22  | 2053       |          | 2116     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 22  | 2141       |          | 2251     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 23  | 0603       |          | 0609     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 23  | 0632       |          | 0638     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 23  | 0644       |          | 0719     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 24  | 0151       |          | 0213     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 24  | 0347       |          | 0357     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 24  | 0414       |          | 0449     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
|       |      | 24  | 2217       |          | 2302     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
| 0021  |      | 25  | 12284      | 12352    | 1244     | S12             | E64 | 7986                    | 08        | 30.3       | 16           | SF C | 1.0  |            |      |                  | 20                   |         |
|       | RAMY | 25  | 1228       | 1235     | 1237D    | S13             | E64 | 7986                    | 08        | 30.3       | 9D           | SF C | 1.0  | 4          | E    |                  | 24                   |         |
|       | SVTO | 25  | 1232       | 1237     | 1244     | S12             | E63 | 7986                    | 08        | 30.3       | 12           | SF   |      | 3          | E    |                  | 17                   |         |
|       |      | 25  | 2244       |          | 2250     | No Flare Patrol |     |                         |           |            |              |      |      |            |      |                  |                      |         |
| 0022  | SVTO | 26  | 0525E      | 0534U    | 0555     | S12             | E54 | 7986                    | 08        | 30.3       | 30D          | SF B | 3.4  | 2          | E    |                  | 29                   | F       |
| 0023  |      | 26  | 14081      | 14096    | 1424     | S11             | E50 | 7986                    | 08        | 30.3       | 16           | SF B | 3.3  |            |      |                  | 21                   | F       |
|       | SVTO | 26  | 1408       | 1415     | 1425     | S11             | E49 | 7986                    | 08        | 30.3       | 17           | SF   |      | 3          | E    |                  | 23                   | F       |
|       | RAMY | 26  | 1409       | 1409     | 1424     | S11             | E49 | 7986                    | 08        | 30.3       | 15           | SF B | 3.3  | 4          | E    |                  | 19                   | F       |
|       | KANZ | 26  | 1413E      | 1413U    | 1413D    | S12             | E51 | 7986                    | 08        | 30.4       | 15D          | SF   |      | 2          | C    |                  |                      |         |

AUGUST 1996

| Grp # | Sta  | Start Day (UT) | Max (UT) | End (UT) | Lat             | NOAA/ USAF Region | CMP Mo Day | Dur (Min) | Imp Opt | Xray  | Obs See | Type | Area Measurement |                      |               | Remarks |
|-------|------|----------------|----------|----------|-----------------|-------------------|------------|-----------|---------|-------|---------|------|------------------|----------------------|---------------|---------|
|       |      |                |          |          |                 |                   |            |           |         |       |         |      | Time (UT)        | Apparent (10-6 Disk) | Corr (Sq Deg) |         |
| 0024  |      | 26 1458        | 1459     | 1505     | S12 E49         | 7986              | 08 30.3    | 7         | SF      | B 1.9 |         |      |                  |                      | 11            |         |
|       | SVTO | 26 1458        | 1459     | 1504     | S11 E50         | 7986              | 08 30.4    | 6         | SF      |       | 3       | E    |                  |                      | 12            |         |
|       | RAMY | 26 1458        | 1459     | 1504     | S12 E50         | 7986              | 08 30.4    | 6         | SF      | B 1.9 | 4       | E    |                  |                      | 10            |         |
|       | HOLL | 26 1458        | 1459     | 1506     | S13 E48         | 7986              | 08 30.2    | 8         | SF      |       | 2       | E    |                  |                      | 10            |         |
| 0025  |      | 26 1817        | 1819     | 1839     | S11 E46         | 7986              | 08 30.2    | 22        | SF      | B 5.0 |         |      |                  |                      | 28            | F       |
|       | RAMY | 26 1817        | 1819     | 1839     | S11 E48         | 7986              | 08 30.4    | 22        | SF      | B 5.0 | 4       | E    |                  |                      | 25            | F       |
|       | PALE | 26 1817        | 1819     | 1854D    | S11 E44         | 7986              | 08 30.1    | 37D       | SF      |       | 3       | E    |                  |                      | 31            |         |
| 0026  | RAMY | 26 1954        | 1955     | 2000     | S11 E46         | 7986              | 08 30.3    | 6         | SF      | B 1.3 | 4       | E    |                  |                      | 20            |         |
| 0027  |      | 26 2117        | 2118     | 2134     | S12 E46         | 7986              | 08 30.3    | 17        | SF      |       |         |      |                  |                      | 26            |         |
|       | RAMY | 26 2117        | 2118     | 2129     | S12 E47         | 7986              | 08 30.4    | 12        | SF      |       | 3       | E    |                  |                      | 17            |         |
|       | HOLL | 26 2117        | 2119     | 2139     | S13 E45         | 7986              | 08 30.3    | 22        | SF      |       | 3       | E    |                  |                      | 34            |         |
| 0028  | HOLL | 26 2317        | 2320     | 2354     | S13 E44         | 7986              | 08 30.3    | 37        | SF      | B 5.5 | 3       | E    |                  |                      | 94            | H       |
|       |      | 27 0105        |          | 0544     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 27 2011        |          | 2020     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 27 2210        |          | 2225     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
| 0029  |      | 28 08031       | 08041    | 0819     | S10 E25         | 7986              | 08 30.2    | 16        | SF      |       |         |      |                  |                      | 73            | EFL     |
|       | KHAR | 28 0800U       | 0805     | 0830D    | S11 E29         | 7986              | 08 30.5    | 30U       | SF      |       | 2       | V    |                  |                      |               | LE      |
|       | SVTO | 28 0803        | 0804     | 0820     | S08 E22         | 7986              | 08 30.0    | 17        | SF      |       | 3       | E    |                  |                      | 93            | F       |
|       | LEAR | 28 0804        | 0804     | 0818     | S11 E23         | 7986              | 08 30.1    | 14        | SF      |       | 3       | E    |                  |                      | 53            | F       |
|       |      | 28 1524        |          | 1549     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 28 2234        |          | 2246     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 29 0421        |          | 0439     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 29 2233        |          | 2252     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 30 0606        |          | 0624     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 30 1006        |          | 1021     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
|       |      | 31 1351        |          | 1402     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |
| 0030  | RAMY | 31 1541        | 1543     | 1559     | S16 W18         | 7986              | 08 30.3    | 18        | SF      | B 5.1 | 3       | E    |                  |                      | 26            | F       |
| 0031  |      | 31 1819        | 1838     | 1902     | S16 W18         | 7986              | 08 30.4    | 43        | SF      | B 8.8 |         |      |                  |                      | 54            | F       |
|       | HOLL | 31 1819        | 1840     | 1912     | S15 W19         | 7986              | 08 30.3    | 53        | SF      | B 8.8 | 3       | E    |                  |                      | 67            | F       |
|       | RAMY | 31 1820        | 1838     | 1852     | S16 W18         | 7986              | 08 30.4    | 32        | SF      |       | 3       | E    |                  |                      | 42            | F       |
|       |      | 31 2231        |          | 2250     | No Flare Patrol |                   |            |           |         |       |         |      |                  |                      |               |         |

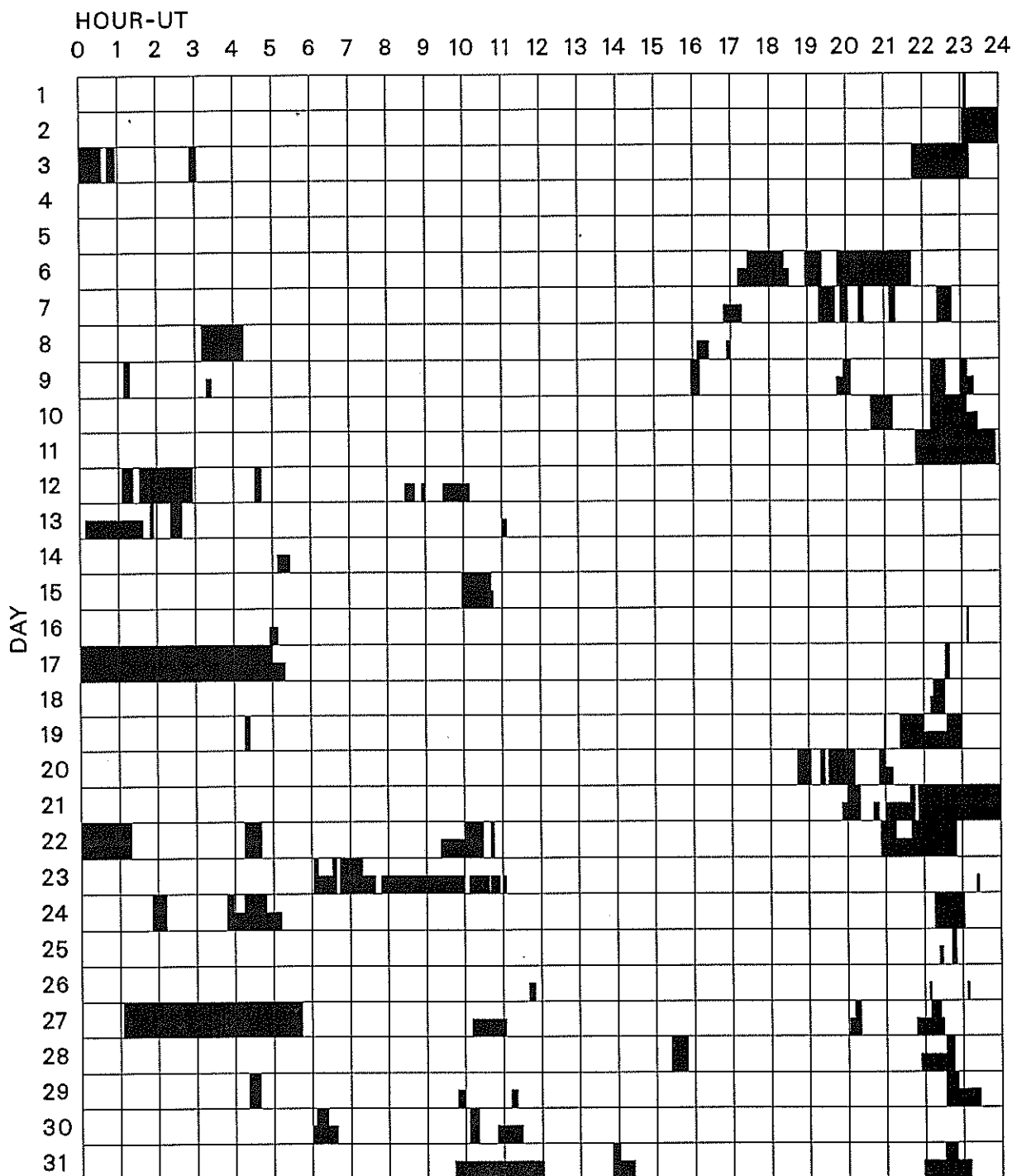
"Remarks"

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

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

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

## AUGUST 1996



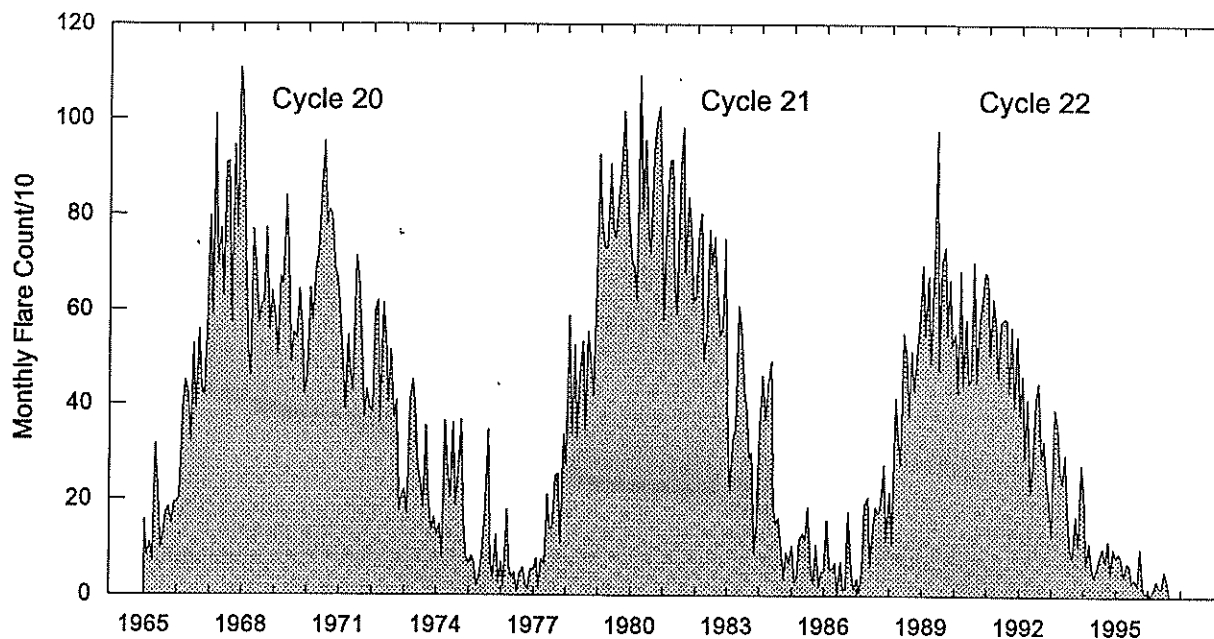
Times of no flare patrol, shown here as shaded areas, combine reports from the stations listed below. Portions of a panel completely shaded mark dates and times of no patrol of any kind (neither visual nor cinematographic); portions of a panel with only the bottom half shaded mark times of only visual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

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



# Monthly Counts of Grouped Solar Flares

## Jan 1965 - Aug 1996



| 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  |     |      |      |      | 188   |

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  
Selected Fixed Frequency Events

9  
Aug 96

AUGUST 1996

| 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<br>(2 Hz) |                 |                 |
| 01  | 245  | PALE  | 43 NS  | 0039.0        | 0122.0                     | 132.0             | 14.0  |                |                 | QL=2 ST=2 TYP=1 |
|     | 245  | LEAR  | 43 NS  | 0039.0        | 0122.0                     | 461.0             | 15.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 204  | IZMI  | 44 NS  | 0600.0E       |                            | 360.0D            |   | 20.0           |                 |                 |
|     | 610  | SVTO  | 43 NS  | 0645.0        | 1029.0                     | 224.0             | 14.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 127  | TORN  | 43 NS  | 0705.0        |                            | 312.0             |   | 5.0            |                 | V=2             |
|     | 245  | SVTO  | 43 NS  | 0830.0        | 0925.0                     | 96.0              | 7.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 235  | CUBA  | 44 NS  | 1300.0E       |                            | 530.0D            |   | 7.0            |                 |                 |
|     | 280  | CUBA  | 44 NS  | 1300.0E       |                            | 530.0D            |   | 14.0           |                 |                 |
|     | 500  | HIRA  | 27 RF  | 0012.6        | 0202.3                     | 184.0             | 10.0  | 4.0            |                 | 0               |
|     | 33   | UPIC  | 2 S/F  | 1305.5        | 1305.9                     | 0.9               |   |                |                 |                 |
| 245 | SGMR | 8 S   | 2020.0 | 2021.0        | 2.0                        | 6.0               |   |                |                 | QL=4 ST=2 TYP=3 |
| 02  | 204  | IZMI  | 44 NS  | 0600.0E       |                            | 360.0D            |   | 20.0           |                 |                 |
|     | 127  | TORN  | 43 NS  | 0751.0        |                            | 360.0             |   | 70.0           |                 | V=2             |
|     | 245  | LEAR  | 43 NS  | 0752.0        | 0939.0                     | 114.0             | 26.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SVTO  | 43 NS  | 0754.0        | 1100.0                     | 321.0             | 28.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 410  | SVTO  | 43 NS  | 0811.0        | 1013.0                     | 171.0             | 8.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 410  | LEAR  | 43 NS  | 0932.0        | 0936.0                     | 14.0              | 5.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 0959.0        | 1027.0U                    | 841.0             | 14.0  |                |                 | QL=4 ST=1 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 0959.0        | 1056.0U                    | 841.0             | 21.0  |                |                 | QL=4 ST=1 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1006.0        | 1138.0U                    | 174.0             | 26.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1006.0        | 1056.0U                    | 834.0             | 21.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 280  | CUBA  | 44 NS  | 1300.0E       |                            | 520.0D            |   | 19.0           |                 |                 |
|     | 235  | CUBA  | 44 NS  | 1300.0E       |                            | 520.0D            |   | 14.0           |                 |                 |
|     | 245  | SVTO  | 43 NS  | 1601.0        | 1601.0                     | U                 | 9.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1601.0        | 1808.0                     | 134.0             | 9.0   |                |                 | QL=4 ST=3 TYP=1 |
|     | 245  | SVTO  | 43 NS  | 1720.0        | 1720.0                     | 21.0              | 7.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | PALE  | 43 NS  | 1807.0        | 1808.0                     | 353.0             | 7.0   |                |                 | QL=2 ST=3 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 2026.0        | 2027.0                     | 1.0               | 5.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | LEAR  | 8 S    | 0018.0        | 0018.0                     | 1.0               | 15.0  |                |                 | QL=4 ST=2 TYP=3 |
|     | 245  | PALE  | 8 S    | 0018.0        | 0018.0                     | 1.0               | 15.0  |                |                 | QL=2 ST=2 TYP=3 |
|     | 204  | IZMI  | 25 R   | 0810.0        |                            | 230.0D            |   | 200.0          |                 |                 |
|     | 245  | PALE  | 8 S    | 1720.0        | 1720.0                     | U                 | 5.0   |                |                 | QL=2 ST=3 TYP=3 |
|     | 245  | PALE  | 8 S    | 2038.0        | 2038.0                     | U                 | 5.0   |                |                 | QL=2 ST=2 TYP=3 |
|     | 410  | PALE  | 8 S    | 2053.0        | 2054.0                     | 2.0               | 5.0   |                |                 | QL=2 ST=2 TYP=3 |
| 245 | PALE | 8 S   | 2053.0 | 2053.0        | U                          | 2.0               |   |                | QL=2 ST=2 TYP=3 |                 |
| 245 | PALE | 4 S/F | 2346.0 | 2347.0        | 8.0                        | 8.0               |   |                | QL=2 ST=3 TYP=3 |                 |
| 245 | LEAR | 8 S   | 2347.0 | 2347.0        | U                          | 8.0               |   |                | QL=4 ST=2 TYP=3 |                 |
| 03  | 245  | LEAR  | 43 NS  | 0100.0        | 0827.0                     | 526.0             | 27.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | PALE  | 43 NS  | 0101.0        | 0103.0                     | 75.0              | 23.0  |                |                 | QL=2 ST=2 TYP=1 |
|     | 204  | IZMI  | 44 NS  | 0600.0E       |                            | 360.0D            |   | 120.0          |                 |                 |
|     | 245  | SVTO  | 43 NS  | 0649.0        | 0854.0                     | 244.0             | 10.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 127  | TORN  | 43 NS  | 0650.0        |                            | 370.0D            |   | 10.0           |                 | V=2             |
|     | 245  | SGMR  | 43 NS  | 1009.0        | 1018.0                     | 60.0              | 14.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1203.0        | 1204.0                     | 15.0              | 6.0   |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SVTO  | 43 NS  | 1203.0        | 1203.0                     | 15.0              | 8.0   |                |                 | QL=4 ST=3 TYP=1 |
|     | 235  | CUBA  | 44 NS  | 1300.0E       |                            | 530.0D            |   | 18.0           |                 |                 |
|     | 280  | CUBA  | 44 NS  | 1300.0E       |                            | 530.0D            |   | 12.0           |                 |                 |
|     | 245  | SGMR  | 43 NS  | 1315.0        | 1339.0                     | 24.0              | 12.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SVTO  | 43 NS  | 1315.0        | 1339.0                     | 50.0              | 12.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1638.0        | 1705.0                     | 81.0              | 14.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 1638.0        | 1705.0                     | 442.0             | 14.0  |                |                 | QL=4 ST=3 TYP=1 |
|     | 245  | PALE  | 43 NS  | 1642.0        | 1721.0                     | 77.0              | 16.0  |                |                 | QL=2 ST=2 TYP=1 |
|     | 245  | SVTO  | 43 NS  | 1705.0        | 1705.0                     | 34.0              | 13.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | PALE  | 43 NS  | 1951.0        | 2305.0                     | 197.0             | 23.0  |                |                 | QL=2 ST=2 TYP=1 |
|     | 245  | SGMR  | 43 NS  | 2013.0        | 2050.0                     | 205.0             | 16.0  |                |                 | QL=4 ST=2 TYP=1 |
|     | 245  | LEAR  | 8 S    | 0056.0        | 0057.0                     | 1.0               | 11.0  |                |                 | QL=4 ST=2 TYP=3 |
|     | 245  | PALE  | 8 S    | 0057.0        | 0057.0                     | 1.0               | 10.0  |                |                 | QL=2 ST=2 TYP=3 |
|     | 410  | LEAR  | 8 S    | 0140.0        | 0141.0                     | 2.0               | 3.0   |                |                 | QL=4 ST=2 TYP=3 |
|     | 245  | LEAR  | 8 S    | 0141.0        | 0141.0                     | U                 | 7.0   |                |                 | QL=4 ST=2 TYP=3 |
|     | 500  | HIRA  | 8 S    | 0141.0        | 0141.1                     | 0.5               | 7.0   |                |                 | WL              |
|     | 245  | PALE  | 4 S/F  | 0323.0        | 0325.0                     | 3.0               | 19.0  |                |                 | QL=2 ST=2 TYP=3 |
|     | 245  | LEAR  | 4 S/F  | 0402.0        | 0403.0                     | 3.0               | 25.0  |                |                 | QL=4 ST=2 TYP=3 |
|     | 245  | PALE  | 8 S    | 0402.0        | 0403.0                     | 1.0               | 27.0  |                |                 | QL=2 ST=2 TYP=3 |
|     | 245  | PALE  | 8 S    | 0420.0        | 0420.0                     | 1.0               | 12.0  |                |                 | QL=2 ST=2 TYP=3 |
| 245 | SVTO | 8 S   | 0420.0 | 0420.0        | 1.0                        | 14.0              |   |                | QL=4 ST=3 TYP=3 |                 |
| 245 | SVTO | 8 S   | 0506.0 | 0506.0        | U                          | 16.0              |   |                | QL=4 ST=3 TYP=3 |                 |
| 245 | SVTO | 4 S/F | 0642.0 | 0644.0        | 3.0                        | 6.0               |   |                | QL=4 ST=2 TYP=3 |                 |

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Aug 96

S O L A R R A D I O E M I S S I O N  
Selected Fixed Frequency Events

AUGUST 1996

| Day  | Freq | Sta    | Type   | Start (UT) | Time of Maximum (UT) | Duration (Min) | Flux Density           |      | Int | Remarks         |                 |
|------|------|--------|--------|------------|----------------------|----------------|------------------------|------|-----|-----------------|-----------------|
|      |      |        |        |            |                      |                | Peak (10 -22 W/m 2 Hz) | Mean |     |                 |                 |
| 03   | 610  | SVTO   | 4 S/F  | 0642.0     | 0646.0               | 5.0            | 4.0                    |      |     | QL=4 ST=2 TYP=3 |                 |
|      | 410  | SVTO   | 4 S/F  | 0642.0     | 0643.0               | 3.0            | 5.0                    |      |     | QL=4 ST=2 TYP=3 |                 |
|      | 245  | LEAR   | 4 S/F  | 0643.0     | 0650.0               | 7.0            | 6.0                    |      |     | QL=4 ST=2 TYP=3 |                 |
|      | 410  | LEAR   | 8 S    | 0643.0     | 0643.0               | 1.0            | 2.0                    |      |     | QL=4 ST=2 TYP=3 |                 |
|      | 610  | SVTO   | 4 S/F  | 0652.0     | 0658.0               | 9.0            | 10.0                   |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 245  | SVTO   | 8 S    | 0729.0     | 0731.0               | 2.0            | 9.0                    |      |     | QL=4 ST=2 TYP=3 |                 |
|      | 245  | SVTO   | 4 S/F  | 0748.0     | 0752.0               | 4.0            | 5.0                    |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 610  | SVTO   | 4 S/F  | 0748.0     | 0752.0               | 5.0            | 16.0                   |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 410  | SVTO   | 8 S    | 0748.0     | 0750.0               | 2.0            |                        |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 245  | SVTO   | 8 S    | 0827.0     | 0827.0               | U              | 28.0                   |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 245  | SVTO   | 8 S    | 0827.0     | 0827.0               | U              | 29.0                   |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 245  | SVTO   | 8 S    | 0827.0     | 0827.0               | U              | 26.0                   |      |     | QL=4 ST=3 TYP=3 |                 |
|      | 245  | LEAR   | 46 C   | 0918.0     | 0923.0               | 7.0            | 36.0                   |      |     | QL=4 ST=2 TYP=8 |                 |
|      | 245  | SVTO   | 46 C   | 0923.0     | 0923.0               | 4.0            | 33.0                   |      |     | QL=4 ST=2 TYP=8 |                 |
|      | 245  | SVTO   | 46 C   | 0950.0     | 0950.0               | 5.0            | 25.0                   |      |     | QL=4 ST=3 TYP=8 |                 |
|      | 33   | UPIC   | 45 C   | 0950.2     | 0950.3               | 0.6            |                        |      |     |                 |                 |
|      | 245  | SVTO   | 46 C   | 1017.0     | 1018.0               | 2.0            | 21.0                   |      |     |                 | QL=4 ST=2 TYP=8 |
| 245  | SGMR | 4 S/F  | 1950.0 | 1952.0     | 4.0                  | 9.0            |                        |      |     | QL=4 ST=3 TYP=3 |                 |
| 245  | PALE | 8 S    | 2349.0 | 2350.0     | 1.0                  | 9.0            |                        |      |     | QL=2 ST=2 TYP=3 |                 |
| 04   | 245  | LEAR   | 43 NS  | 0320.0     | 0608.0               | 171.0          | 18.0                   |      |     | QL=4 ST=3 TYP=1 |                 |
|      | 245  | SVTO   | 43 NS  | 0520.0     | 0608.0               | 48.0           | 19.0                   |      |     | QL=4 ST=3 TYP=1 |                 |
|      | 127  | TORN   | 43 NS  | 1135.0     |                      | 85.00          |                        |      |     | V=2, DISTURBED  |                 |
|      | 280  | CUBA   | 44 NS  | 1400.0E    |                      | 455.00         |                        | 12.0 |     |                 |                 |
|      | 235  | CUBA   | 44 NS  | 1400.0E    |                      | 455.00         |                        | 6.0  |     |                 |                 |
|      | 245  | PALE   | 8 S    | 0006.0     | 0008.0               | 2.0            | 6.0                    |      |     |                 | QL=2 ST=2 TYP=3 |
|      | 245  | PALE   | 4 S/F  | 0320.0     | 0320.0               | 3.0            | 6.0                    |      |     |                 | QL=2 ST=2 TYP=3 |
|      | 245  | PALE   | 8 S    | 0347.0     | 0347.0               | 1.0            | 6.0                    |      |     |                 | QL=2 ST=2 TYP=3 |
|      | 245  | SVTO   | 8 S    | 0534.0     | 0534.0               | U              | 14.0                   |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 204  | IZMI   | 8 S    | 0734.8     | 0734.9               | 0.3            | 250.0                  |      |     |                 |                 |
|      | 245  | SVTO   | 8 S    | 0849.0     | 0850.0               | 1.0            | 7.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 204  | IZMI   | 42 SER | 0852.5     | 0856.1               | 7.2            | 120.0                  |      |     |                 |                 |
|      | 204  | IZMI   | 42 SER | 0912.5     | 0914.8               | 4.5            | 110.0                  |      |     |                 |                 |
|      | 245  | SVTO   | 46 C   | 1002.0     | 1002.0               | 1.0            | 30.0                   |      |     |                 | QL=4 ST=2 TYP=8 |
|      | 204  | IZMI   | 42 SER | 1002.2     | 1002.5               | 2.7            | 200.0                  |      |     |                 |                 |
|      | 33   | UPIC   | 46 C   | 1002.5     | 1003.0               | 3.0            |                        |      |     |                 |                 |
|      | 3000 | IZMI   | 20 GRF | 1006.7     | 1007.6               | 8.0            | 4.8                    |      |     |                 |                 |
|      | 204  | IZMI   | 41 F   | 1024.0     | 1024.2               | 0.8            | 27.0                   |      |     |                 |                 |
|      | 245  | SGMR   | 8 S    | 1134.0     | 1135.0               | 2.0            | 16.0                   |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 204  | IZMI   | 41 F   | 1134.5     | 1135.2               | 2.0            | 45.0                   |      |     |                 |                 |
|      | 245  | SVTO   | 8 S    | 1135.0     | 1135.0               | U              | 20.0                   |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 33   | UPIC   | 4 S/F  | 1135.2     | 1135.5               | 1.3            |                        |      |     |                 |                 |
|      | 204  | IZMI   | 42 SER | 1144.0     | 1158.5               | 16.0           | 33.0                   |      |     |                 |                 |
|      | 245  | SGMR   | 4 S/F  | 1226.0     | 1227.0               | 4.0            | 6.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 245  | SVTO   | 8 S    | 1227.0     | 1227.0               | 1.0            | 8.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 245  | SGMR   | 4 S/F  | 1252.0     | 1254.0               | 7.0            | 5.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 33   | UPIC   | 2 S/F  | 1340.9     | 1341.1               | 0.7            |                        |      |     |                 |                 |
| 410  | PALE | 8 S    | 1723.0 | 1723.0     | 1.0                  | 14.0           |                        |      |     | QL=4 ST=2 TYP=3 |                 |
| 410  | PALE | 8 S    | 1723.0 | 1723.0     | 1.0                  | 14.0           |                        |      |     | QL=2 ST=2 TYP=3 |                 |
| 410  | SGMR | 8 S    | 1723.0 | 1723.0     | U                    | 11.0           |                        |      |     | QL=4 ST=3 TYP=3 |                 |
| 410  | SVTO | 8 S    | 1723.0 | 1723.0     | U                    | 14.0           |                        |      |     | QL=4 ST=2 TYP=3 |                 |
| 245  | PALE | 4 S/F  | 2107.0 | 2109.0     | 5.0                  | 9.0            |                        |      |     | QL=4 ST=3 TYP=3 |                 |
| 245  | SGMR | 8 S    | 2108.0 | 2109.0     | 1.0                  | 6.0            |                        |      |     | QL=4 ST=3 TYP=3 |                 |
| 05   | 280  | CUBA   | 44 NS  | 1300.0E    |                      | 530.00         |                        | 12.0 |     |                 |                 |
|      | 235  | CUBA   | 44 NS  | 1300.0E    |                      | 530.00         |                        | 6.0  |     |                 |                 |
|      | 245  | PALE   | 8 S    | 0416.0     | 0417.0               | 1.0            | 5.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 245  | SVTO   | 8 S    | 0416.0     | 0416.0               | 1.0            | 5.0                    |      |     |                 | QL=4 ST=2 TYP=3 |
|      | 204  | IZMI   | 42 SER | 0656.5     | 0718.0               | 45.0           | 28.0                   |      |     |                 |                 |
|      | 204  | IZMI   | 41 F   | 0745.0     | 0745.5               | 1.3            | 50.0                   |      |     |                 |                 |
|      | 3000 | IZMI   | 5 S    | 0919.3     | 0920.1               | 4.0            | 8.0                    | 5.0  |     |                 |                 |
| 5730 | IRKU | 1 S    | 0919.5 | 0920.0     | 1.5                  | 13.0           |                        |      |     | U               |                 |
| 204  | IZMI | 42 SER | 1143.0 | 1143.5     | 3.3                  | 20.0           |                        |      |     |                 |                 |
| 07   | 33   | UPIC   | 2 S/F  | 0724.3     | 0724.5               | 0.6            |                        |      |     |                 |                 |
|      | 2800 | HIRA   | 20 GRF | 2317.0     | 2317.5               | 2.1            | 4.0                    | 2.0  |     |                 | 0               |
|      | 500  | HIRA   | 42 SER | 2317.2     | 2317.6               | 0.7            | 12.0                   |      |     |                 | 0               |
| 08   | 204  | IZMI   | 7 C    | 0824.5     | 0825.5               | 2.5            | 27.0                   |      |     |                 |                 |

S O L A R R A D I O E M I S S I O N  
Selected Fixed Frequency Events

11  
Aug 96

AUGUST 1996

| Day  | Freq  | Sta    | Type   | Start (UT) | Time of Maximum (UT) | Duration (Min) | Flux Density           |      | Int             | Remarks         |
|------|-------|--------|--------|------------|----------------------|----------------|------------------------|------|-----------------|-----------------|
|      |       |        |        |            |                      |                | Peak (10 -22 W/m 2 Hz) | Mean |                 |                 |
| 08   | 33    | UPIC   | 2 S/F  | 1325.3     | 1326.0               | 1.0            |                        |      |                 |                 |
| 09   | 204   | IZMI   | 42 SER | 0634.0     | 0634.9               | 5.0            | 93.0                   |      |                 |                 |
| 11   | 33    | UPIC   | 2 S/F  | 1625.5     | 1626.2               | 1.3            |                        |      |                 |                 |
| 12   | 235   | CUBA   | 44 NS  | 1300.0E    |                      | 520.0D         |                        | 6.0  |                 |                 |
|      | 280   | CUBA   | 44 NS  | 1300.0E    |                      | 520.0D         |                        | 10.0 |                 |                 |
|      | 33    | UPIC   | 2 S/F  | 1117.4     | 1117.9               | 0.7            |                        |      |                 |                 |
| 13   | 280   | CUBA   | 44 NS  | 1300.0E    |                      | 290.0D         |                        | 11.0 |                 |                 |
|      | 280   | CUBA   | 41 F   | 1505.0     | 1509.0               | 9.0            | 2.0                    |      |                 |                 |
|      | 235   | CUBA   | 41 F   | 1505.0     | 1509.0               | 110.0          | 110.0                  |      |                 |                 |
|      | 245   | SGMR   | 8 S    | 1506.0     | 1507.0               | 1.0            | 13.0                   |      |                 | QL=4 ST=2 TYP=3 |
| 14   | 235   | CUBA   | 44 NS  | 1300.0E    |                      | 420.0D         |                        | 5.0  |                 |                 |
|      | 204   | IZMI   | 7 C    | 0940.0     | 0940.3               | 0.8            | 80.0                   |      |                 |                 |
|      | 204   | IZMI   | 7 C    | 1024.4     | 1024.6               | 0.8            | 50.0                   |      |                 |                 |
| 17   | 33    | UPIC   | 2 S/F  | 0729.2     | 0729.4               | 0.8            |                        |      |                 |                 |
| 19   | 204   | IZMI   | 7 C    | 0928.1     | 0929.0               | 2.0            | 220.0                  |      |                 |                 |
|      | 127   | TORN   | 45 C   | 0929.0     | 0930.5               | 3.7            | 30.0                   | 10.0 |                 |                 |
| 21   | 204   | IZMI   | 7 C    | 0637.7     | 0638.0               | 0.5            | 21.0                   |      |                 |                 |
| 22   | 204   | IZMI   | 41 F   | 0630.0     | 0630.6               | 1.0            | 19.0                   |      |                 |                 |
|      | 2700  | PURP   | 3 S    | 0735.0     | 0736.0               | 5.0            | 65.0                   |      |                 |                 |
|      | 33    | UPIC   | 2 S/F  | 0742.7     | 0743.2               | 1.0            |                        |      |                 |                 |
|      | 3000  | IZMI   | 7 C    | 0747.5     | 0754.3               | 14.3           | 26.3                   |      |                 |                 |
|      | 5730  | IRKU   | 1 S    | 0751.0     | 0753.8               | 12.0           | 10.0                   | U    |                 |                 |
|      | 2695  | LEAR   | 8 S    | 0753.0     | 0754.0               | 2.0            | 5.0                    |      |                 | QL=4 ST=2 TYP=3 |
|      | 1415  | LEAR   | 4 S/F  | 0753.0     | 0754.0               | 3.0            | 4.0                    |      |                 | QL=4 ST=2 TYP=3 |
|      | 2840  | PEKG   | 5 S    | 0753.0     | 0754.0               | 4.0            | 35.7                   |      |                 |                 |
|      | 2695  | SVTO   | 8 S    | 0753.0     | 0754.0               | 2.0            | 4.0                    |      |                 | QL=4 ST=2 TYP=3 |
|      | 1415  | SVTO   | 4 S/F  | 0753.0     | 0754.0               | 3.0            | 4.0                    |      |                 | QL=4 ST=2 TYP=3 |
|      | 2800  | HIRA   | 3 S    | 0753.0     | 0754.1               | 3.8            | 28.0                   | 7.0  |                 | 0               |
|      | 500   | HIRA   | 3 S    | 0754.5     | 0755.7               | 1.2            | 2.0                    |      |                 | 0               |
|      | 204   | IZMI   | 42 SER | 0756.5     | 0756.7               | 1.5            | 20.0                   |      |                 |                 |
|      | 127   | TORN   | 45 C   | 0758.0     | 0802.2               | 11.0           | 70.0                   | 10.0 |                 |                 |
|      | 200   | HIRA   | 8 S    | 0807.5     | 0807.5               | 1.2            | 60.0                   |      |                 | WR              |
|      | 3000  | IZMI   | 20 GRF | 0811.5     | 0822.5               | 25.0           | 11.0                   |      |                 |                 |
|      | 2800  | HIRA   | 20 GRF | 0812.5     | 0821.1               | 18.0           | 8.0                    | 2.0  |                 | 0               |
|      | 500   | HIRA   | 46 C   | 0812.5     | 0815.3               | 10.0           | 11.0                   | 3.0  |                 | 0               |
|      | 610   | LEAR   | 4 S/F  | 0815.0     | 0820.0               | 7.0            | 11.0                   |      |                 | QL=4 ST=2 TYP=3 |
|      | 610   | SVTO   | 4 S/F  | 0815.0     | 0820.0               | 7.0            | 11.0                   |      |                 | QL=2 ST=2 TYP=3 |
| 204  | IZMI  | 40 F   | 0815.0 | 0830.5     | 25.0                 | 12.0           |                        |      |                 |                 |
| 5730 | IRKU  | 1 S    | 0821.0 | 0823.3     | 4.5                  | 4.0            | U                      |      |                 |                 |
| 245  | LEAR  | 8 S    | 0830.0 | 0830.0     | U                    | 3.0            |                        |      | QL=4 ST=2 TYP=3 |                 |
| 5730 | IRKU  | 21 GRF | 0901.4 | 0953.4     | 120.0D               | 25.0           | U                      |      |                 |                 |
| 3000 | IZMI  | 20 GRF | 0927.0 | 0950.0     | 65.0                 | 25.7           |                        |      |                 |                 |
| 23   | 204   | IZMI   | 7 C    | 0737.1     | 0737.5               | 1.0            | 40.0                   |      |                 |                 |
| 26   | 204   | IZMI   | 7 C    | 0600.1     | 0600.2               | 0.7            | 40.0                   |      |                 |                 |
|      | 204   | IZMI   | 42 SER | 0650.5     | 0654.5               | 4.5            | 10.0                   |      |                 |                 |
|      | 204   | IZMI   | 7 C    | 1016.3     | 1016.6               | 0.7            | 25.0                   |      |                 |                 |
| 27   | 2695  | PALE   | 49 GB  | 1929.0     | 1929.0               | 271.0          | 4400.0                 |      |                 | QL=4 ST=1 TYP=6 |
|      | 4995  | PALE   | 49 GB  | 1931.0     | 1933.0               | 269.0          | 4800.0                 |      |                 | QL=4 ST=1 TYP=6 |
|      | 8800  | PALE   | 49 GB  | 1934.0     | 1936.0               | 266.0          | 5000.0                 |      |                 | QL=4 ST=1 TYP=6 |
|      | 15400 | PALE   | 49 GB  | 1938.0     | 1941.0               | 262.0          | 4900.0                 |      |                 | QL=2 ST=1 TYP=6 |
| 28   | 2800  | HIRA   | 1 S    | 0250.5     | 0252.0               | 3.5            | 3.0                    |      |                 | 0               |
|      | 500   | HIRA   | 8 S    | 0251.7     | 0252.0               | 0.7            | 8.0                    |      |                 | 0               |
|      | 204   | IZMI   | 42 SER | 0716.5     | 0718.6               | 3.5            | 10.0                   |      |                 |                 |
|      | 4995  | SVTO   | 4 S/F  | 0800.0     | 0804.0               | 6.0            | 2.0                    |      |                 | QL=2 ST=2 TYP=3 |
|      | 2840  | PEKG   | 4 S/F  | 0801.0     | 0804.0               | 6.0            | 51.8                   |      |                 |                 |
|      | 610   | LEAR   | 4 S/F  | 0802.0     | 0804.0               | 3.0            | 2.0                    |      |                 | QL=4 ST=2 TYP=3 |

S O L A R R A D I O E M I S S I O N  
Selected Fixed Frequency Events

AUGUST 1996

| Day      | Freq Sta  | Type   | Start (UT) | Time of Maximum (UT) | Duration (Min) | Flux Density           |      | Int | Remarks         |
|----------|-----------|--------|------------|----------------------|----------------|------------------------|------|-----|-----------------|
|          |           |        |            |                      |                | Peak (10 -22 W/m 2 Hz) | Mean |     |                 |
| 28       | 410 LEAR  | 4 S/F  | 0802.0     | 0803.0               | 3.0            | 3.0                    |      |     |                 |
|          | 2700 PURP | 4 S/F  | 0802.4     | 0804.2               | 4.6            | 59.0                   |      |     | QL=4 ST=2 TYP=3 |
|          | 204 IZMI  | 45 C   | 0802.5     | 0804.1               | 3.5            | 300.0                  |      |     |                 |
|          | 3000 IZMI | 7 C    | 0802.5     | 0804.1               | 15.0           | 41.0                   |      |     |                 |
|          | 5730 IRKU | 4 S/F  | 0802.5     | 0804.2               | 24.5           | 10.0                   |      | U   |                 |
|          | 2800 HIRA | 3 S    | 0802.7     | 0804.0               | 3.0            | 34.0                   |      | 6.0 | WR              |
|          | 200 HIRA  | 4 S/F  | 0802.7     | 0804.3               | 2.3            | 11.0                   |      | 2.0 | 0               |
|          | 500 HIRA  | 3 S    | 0802.7     | 0803.8               | 3.0            | 13.0                   |      | 3.0 | 0               |
|          | 245 LEAR  | 8 S    | 0803.0     | 0804.0               | 1.0            | 19.0                   |      |     |                 |
|          | 4995 LEAR | 8 S    | 0803.0     | 0804.0               | 2.0            | 2.0                    |      |     | QL=4 ST=2 TYP=3 |
|          | 2695 LEAR | 8 S    | 0803.0     | 0804.0               | 1.0            | 4.0                    |      |     | QL=4 ST=2 TYP=3 |
|          | 1415 LEAR | 8 S    | 0803.0     | 0803.0               | 1.0            | 9.0                    |      |     | QL=4 ST=2 TYP=3 |
|          | 410 SVTO  | 8 S    | 0803.0     | 0803.0               | 1.0            | 5.0                    |      |     | QL=4 ST=2 TYP=3 |
|          | 245 SVTO  | 8 S    | 0803.0     | 0804.0               | 1.0            | 21.0                   |      |     | QL=4 ST=2 TYP=3 |
|          | 1415 SVTO | 8 S    | 0803.0     | 0803.0               | 1.0            | 8.0                    |      |     | QL=4 ST=2 TYP=3 |
|          | 4995 SVTO | 4 S/F  | 0803.0     | 0804.0               | 3.0            | 2.0                    |      |     | QL=2 ST=3 TYP=3 |
|          | 2695 SVTO | 8 S    | 0803.0     | 0804.0               | 1.0            | 4.0                    |      |     | QL=4 ST=2 TYP=3 |
| 204 IZMI | 7 C       | 1017.1 | 1017.5     | 0.8                  | 43.0           |                        |      |     |                 |
| 30       | 2840 PEKG | 5 S    | 0041.0     | 0052.7               | 14.0           | 13.6                   |      |     |                 |
|          | 33 UPIC   | 2 S/F  | 1023.0     | 1023.2               | 0.3            |                        |      |     |                 |
|          | 33 UPIC   | 2 S/F  | 1636.7     | 1636.9               | 0.5            |                        |      |     |                 |
|          | 33 UPIC   | 2 S/F  | 1747.0     | 1747.3               | 0.5            |                        |      |     |                 |
| 31       | 33 UPIC   | 42 SER | 1115.8     | 1205.6               | 385.5          |                        |      |     |                 |

Reports are received routinely from the following observatories:

LEAR = Learmonth      PALE = Palehua      SGMR = Sagamore Hill      SVTO = San Vito

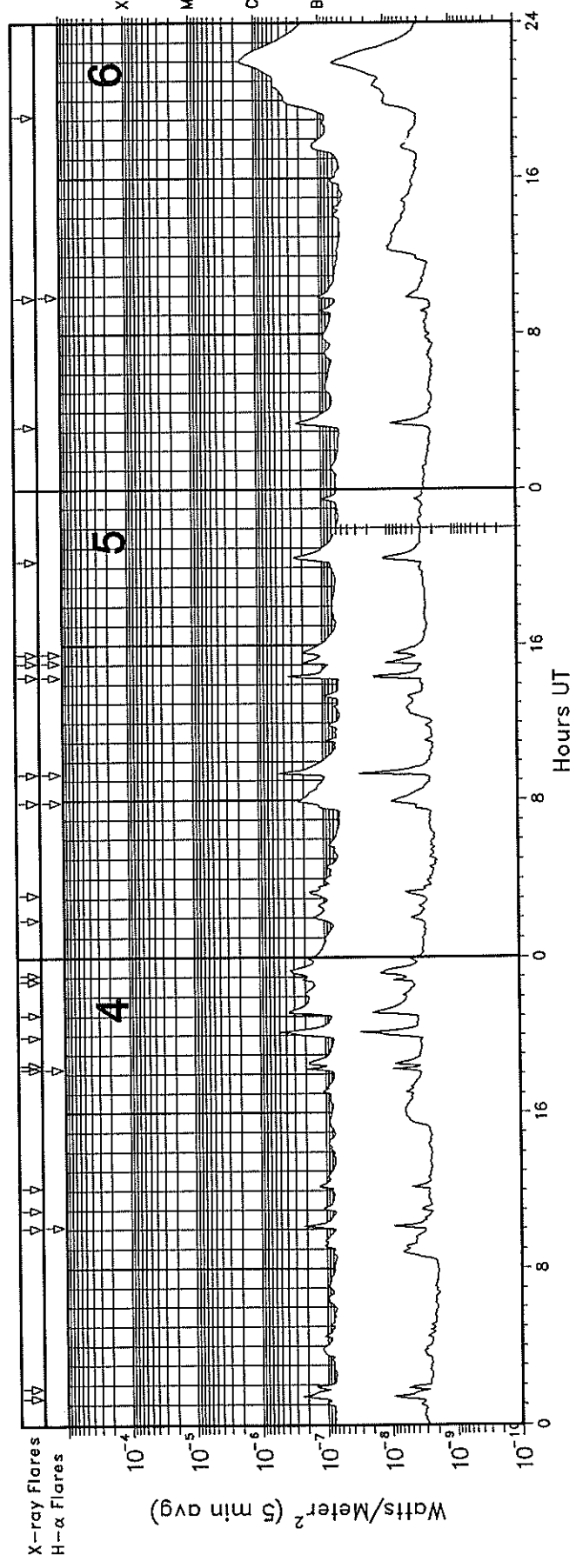
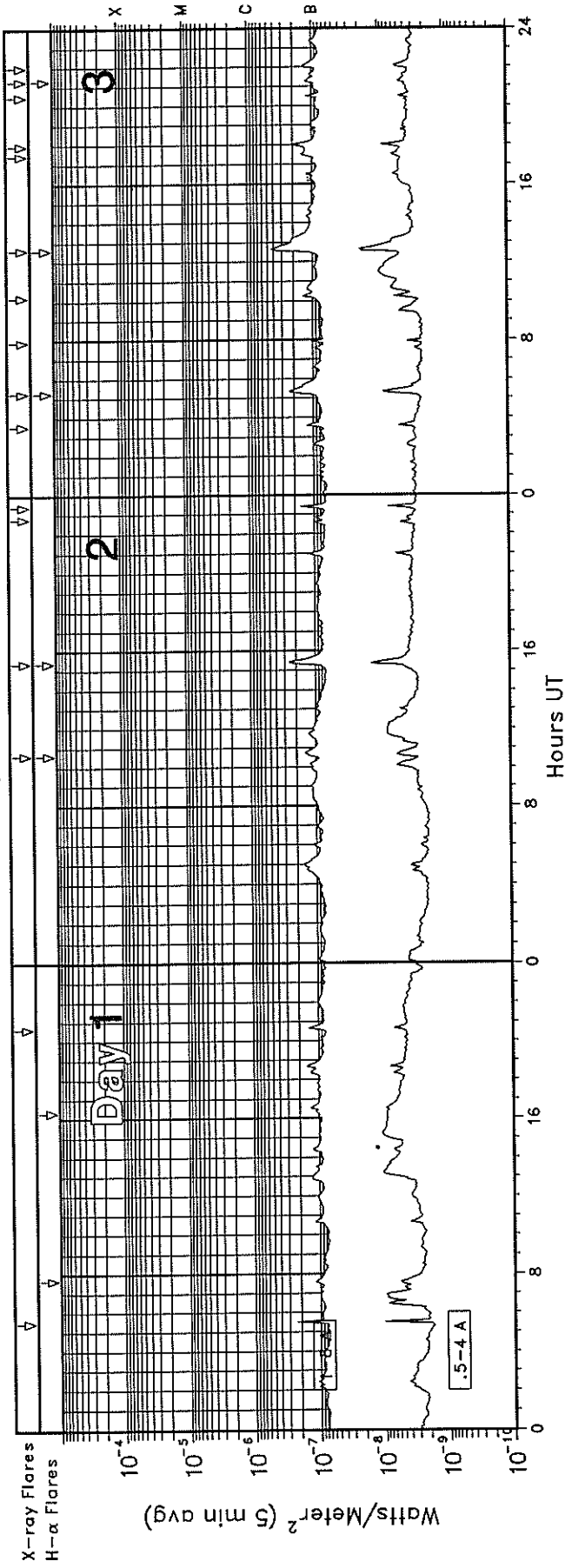
Explanation of Type Code:

|                   |                 |                        |                           |                            |
|-------------------|-----------------|------------------------|---------------------------|----------------------------|
| 1 Simple 1        | 7 Minor +       | 24 Rise                | 30 Post Burst Increase A  | 43 Onset of Noise Storm    |
| 2 Simple 1F       | 8 Spike         | 25 Rise A              | 31 Post Burst Decrease    | 44 Noise Storm in Progress |
| 3 Simple 2        | 20 Simple 3     | 26 Fall                | 33 Absorption             | 45 Complex                 |
| 4 Simple 2F       | 21 Simple 3A    | 27 Rise and Fall       | 40 Fluctuation            | 46 Complex F               |
| 5 Simple          | 22 Simple 3F    | 28 Precursor           | 41 Group of Bursts        | 47 Great Burst             |
| 6 Minor           | 23 Simple 3AF   | 29 Post Burst Increase | 42 Series of Bursts       | 48 Major                   |
| 1A Simple 1A      | 4A Simple 2AF   | 24PF Post Rise F       | 27F Rise and Fall F       |                            |
| 3A Simple 2A      | 40 Rise Only    | 16A Fall A             | 27AF Rise and Fall AF     |                            |
| 21A Simple 3A GRF | 40F Rise Only F | 260 Fall Only          | 31A Post Burst Decrease A |                            |
| 2A Simple 1AF     | 4P Post Rise    | 26F Fall F             | 32A Absorption A          |                            |

RSTN Site Information: Beginning in April 1986, the RSTN sites LEAR, PALE, SGMR, and SVTO fixed frequency solar radio data are periodically adjusted to several world standard stations. These world standard stations include: Kislovodsk, USSR 15,500 MHz; Penticton, Canada 2800 MHz; Hiraiso, Japan 500 and 200 MHz; and Toyokawa, Japan 9400, 3750, 2000 and 1000 MHz.

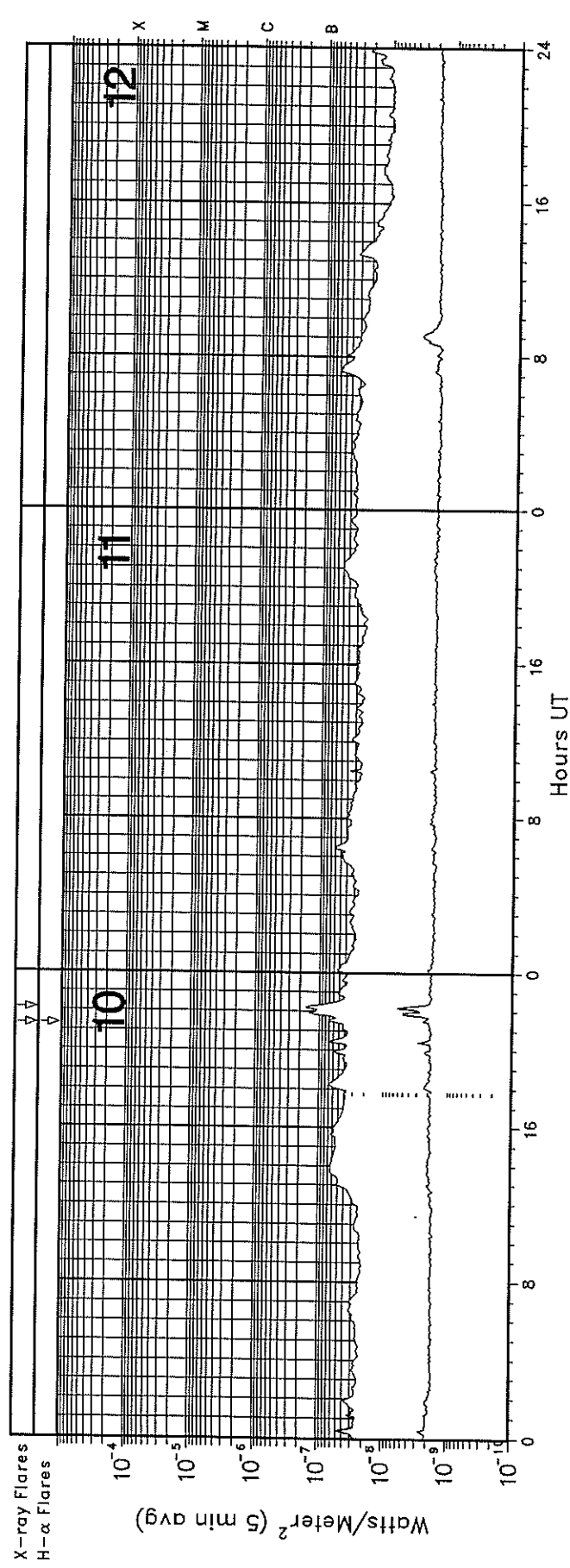
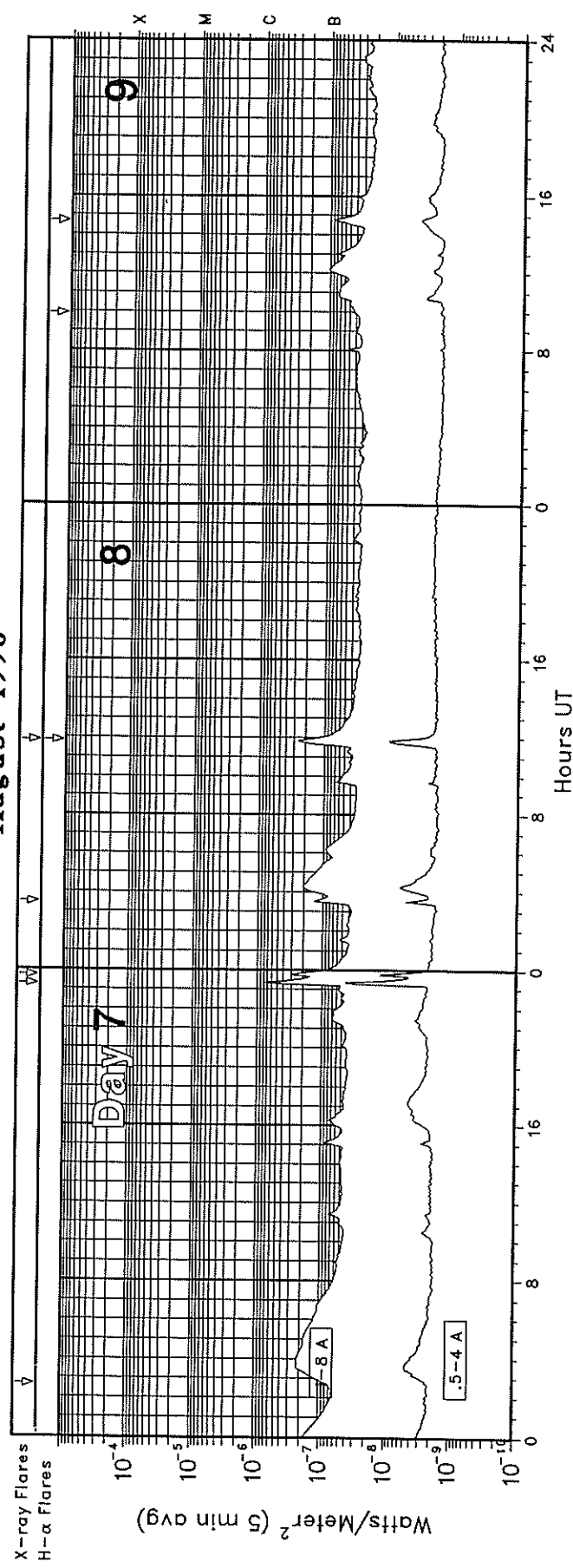
# GOES-7 X-RAY DETECTOR

August 1996



# GOES-7 X-RAY DETECTOR

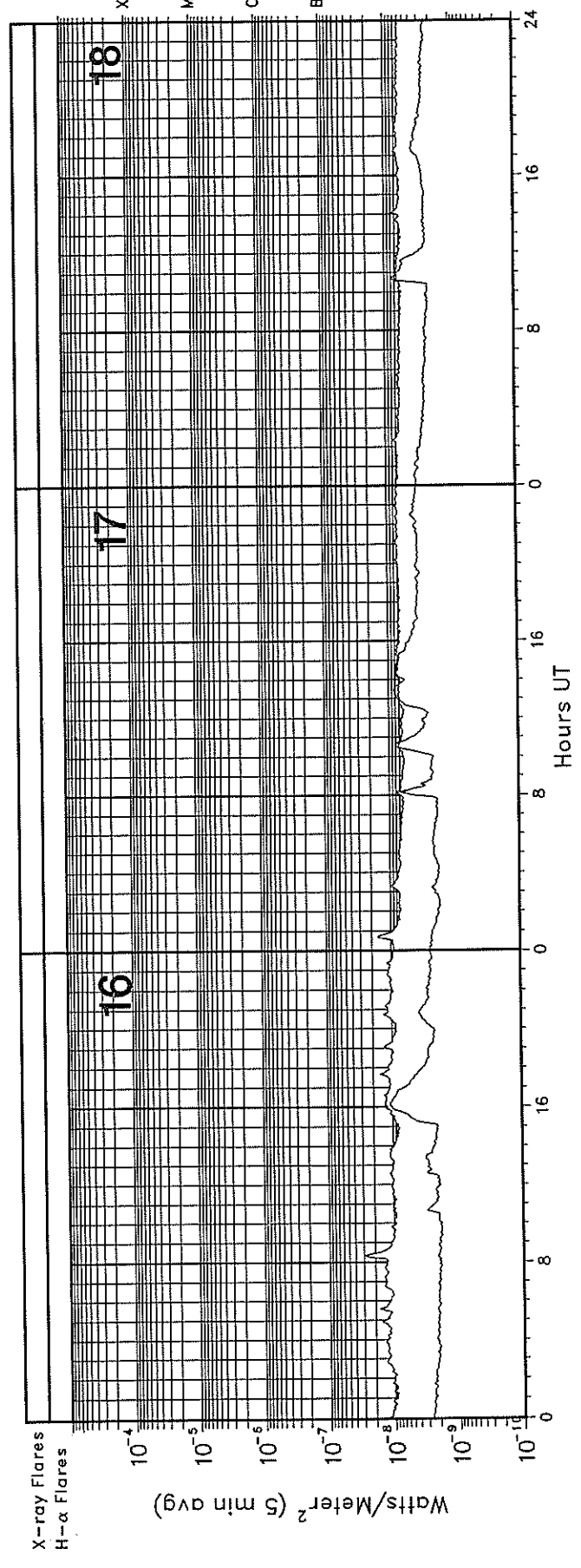
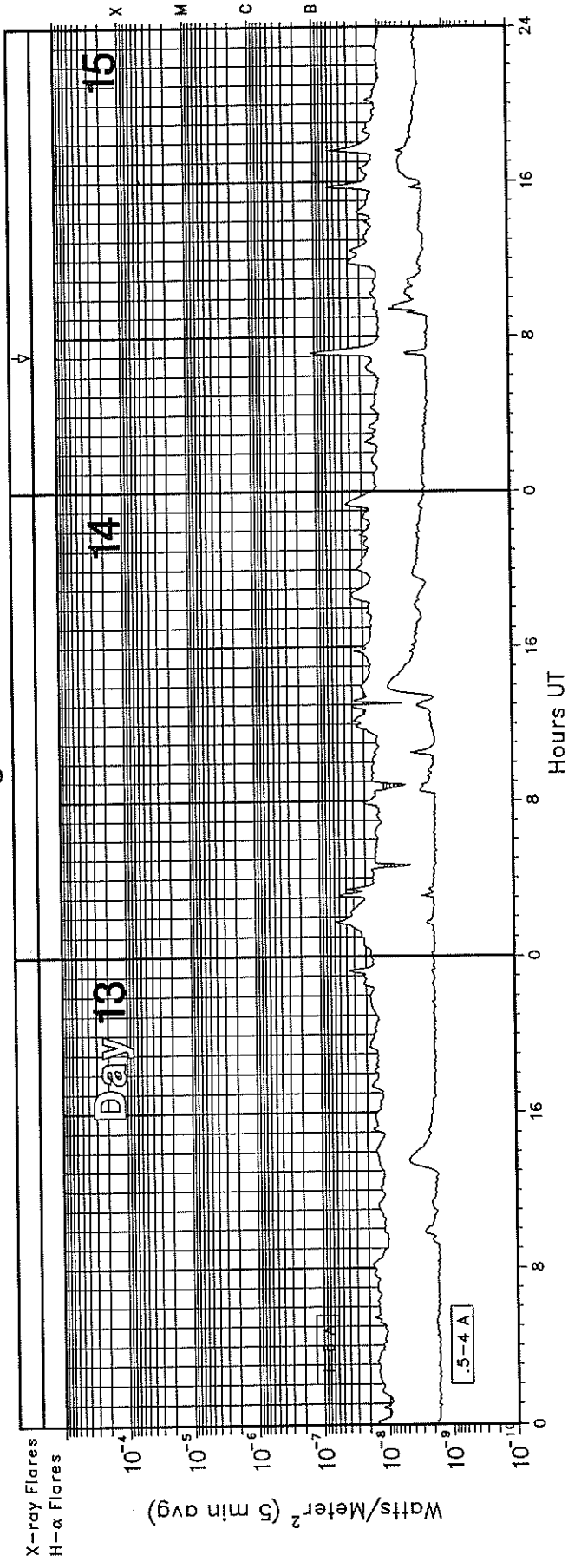
August 1996



# GOES-7 X-RAY DETECTOR

August 1996

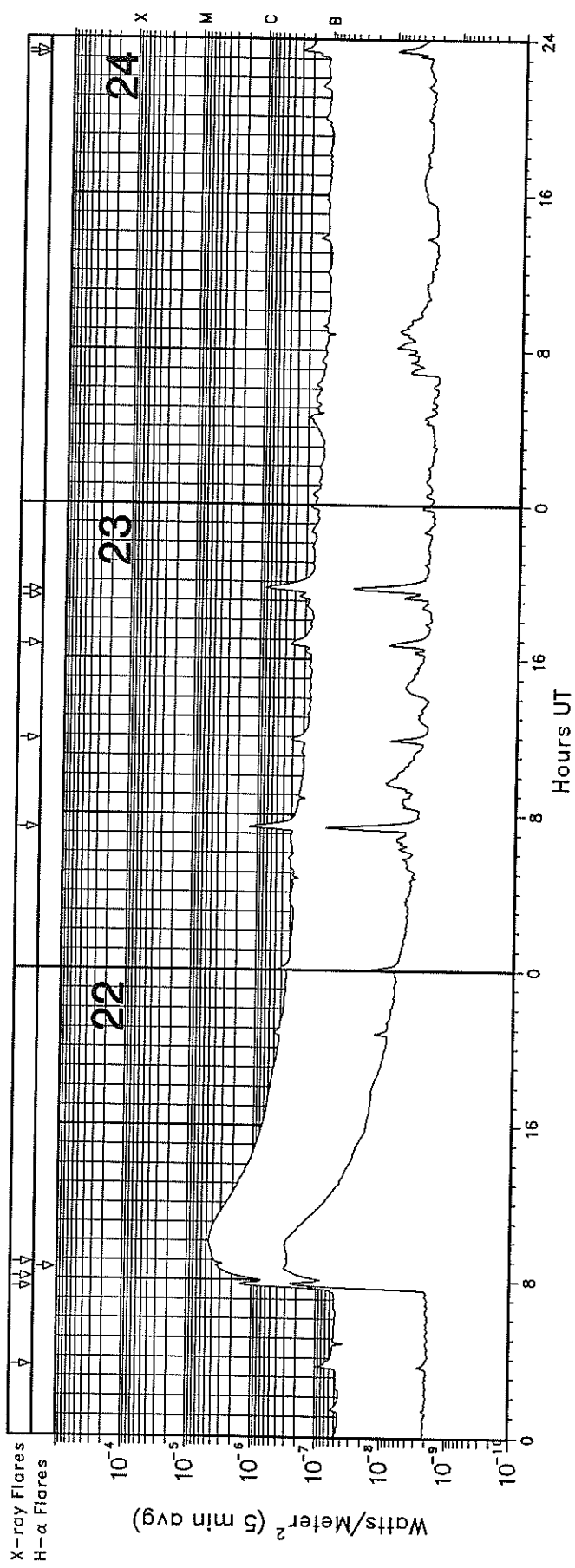
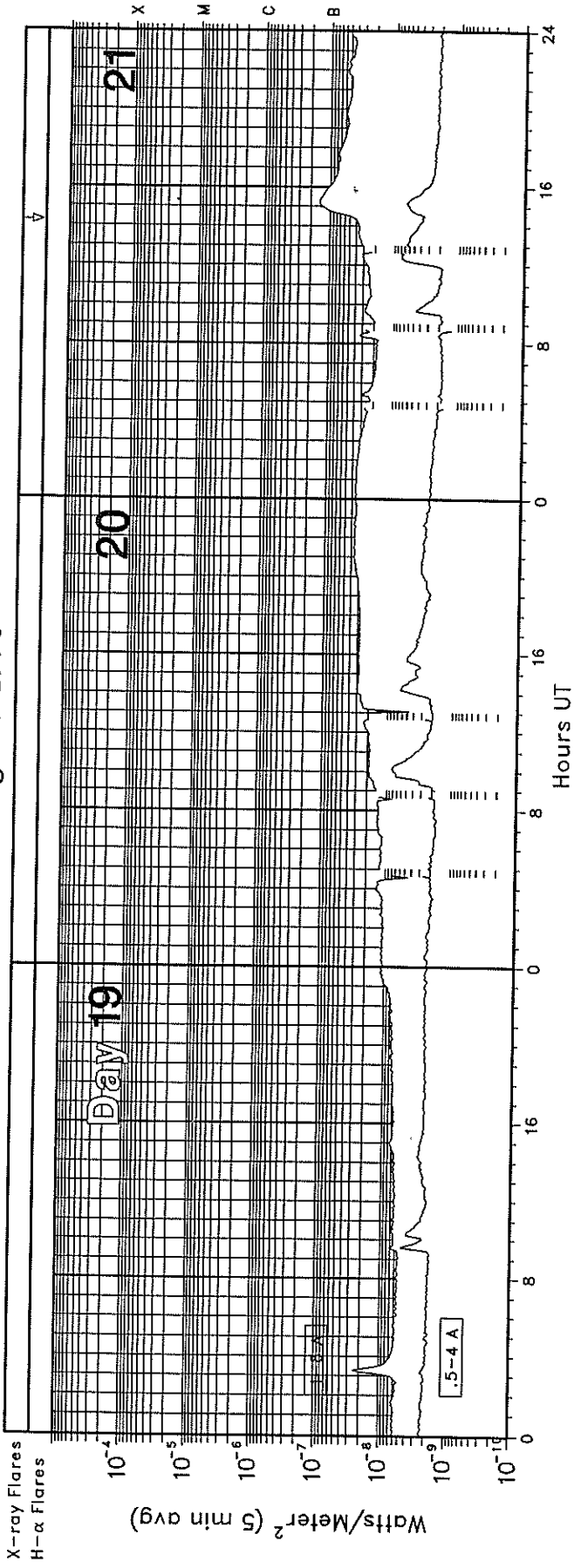
15  
Aug 96





# GOES-7 X-RAY DETECTOR

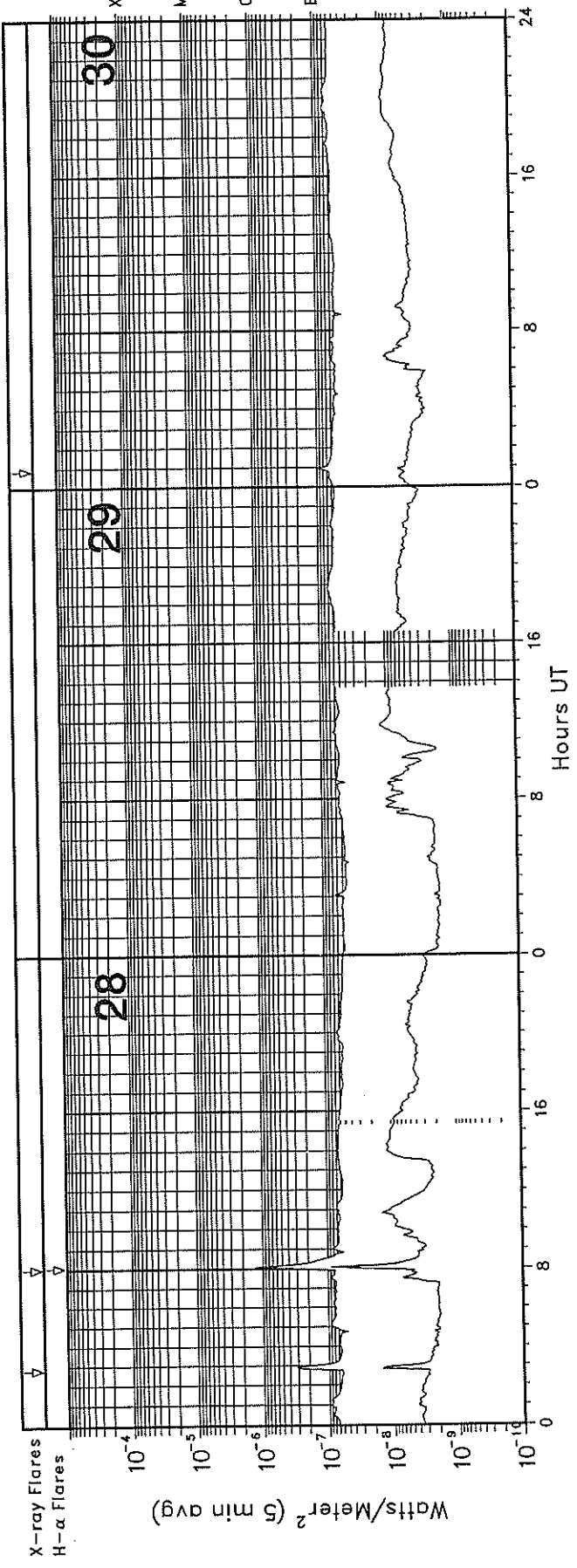
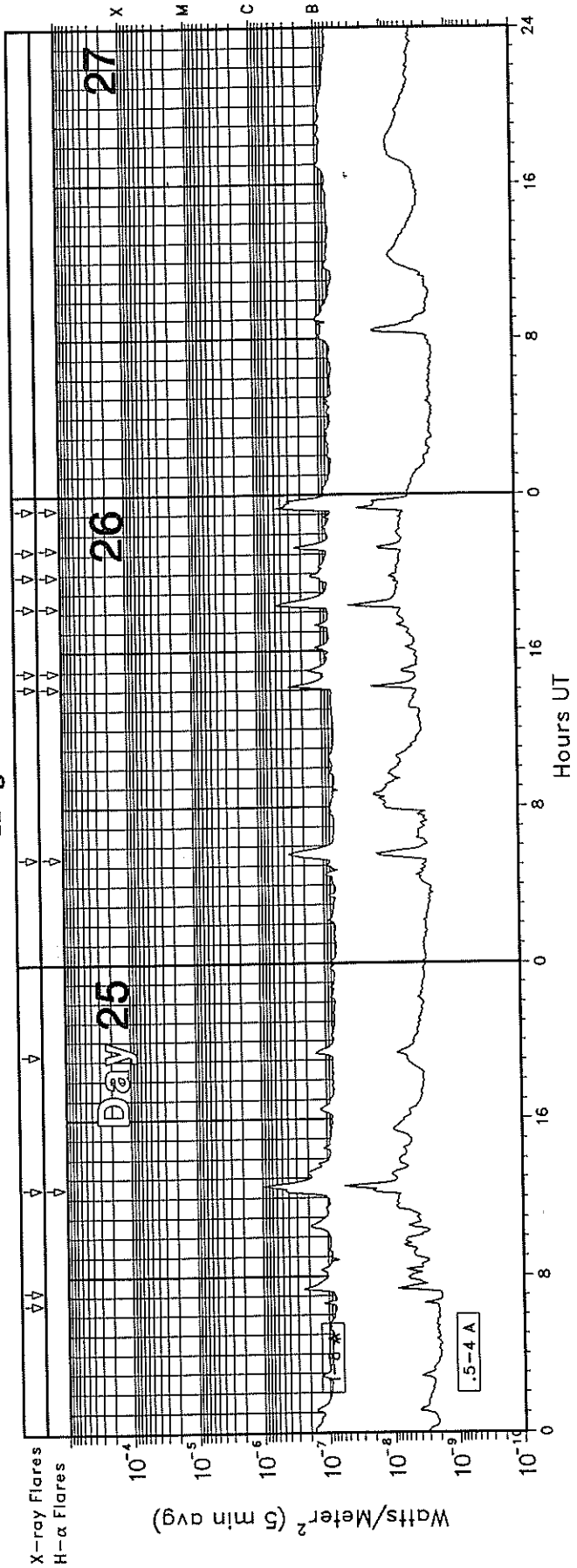
August 1996



# GOES-7 X-RAY DETECTOR

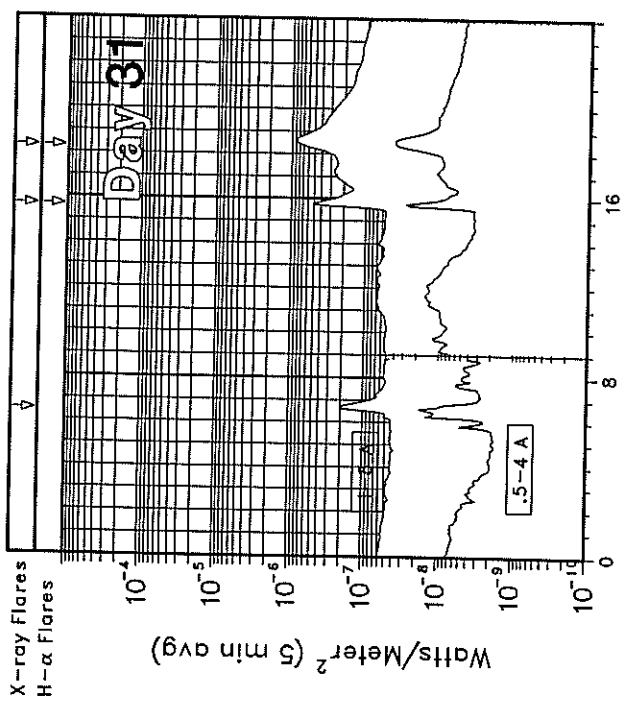
August 1996

17  
Aug 96



# GOES-7 X-RAY DETECTOR

August 1996



X-ray Flares  
H- $\alpha$  Flares

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

19  
 Aug 96

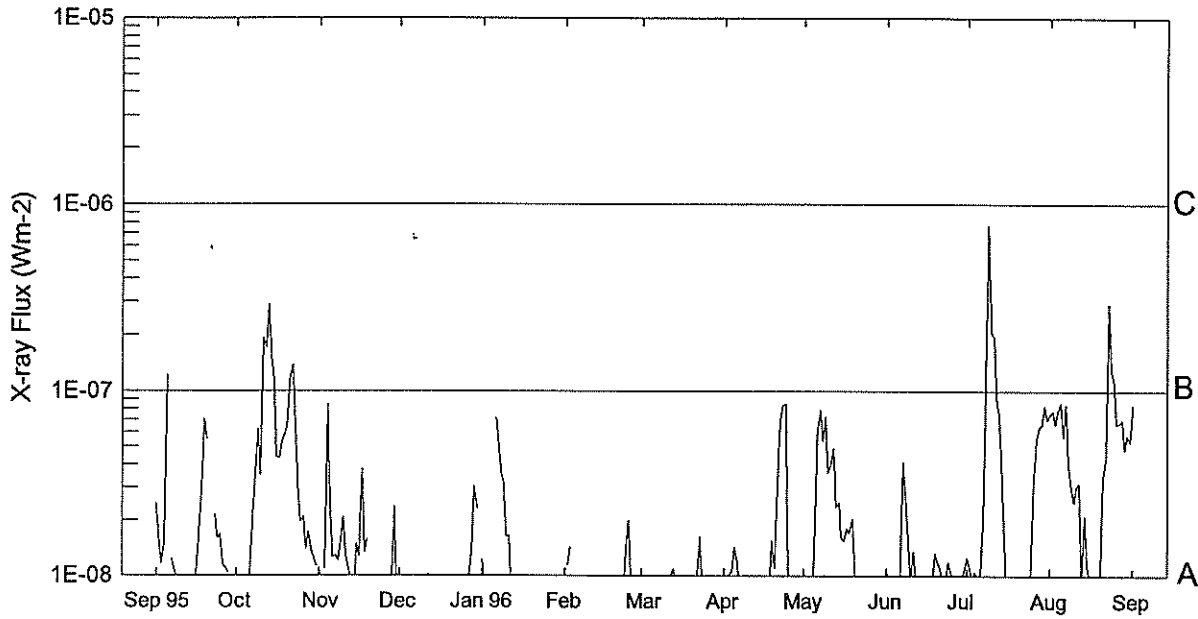
August 1996

| Day | Start (UT) | Max (UT) | End (UT) | Lat | CMD | Imp Opt | Xray | NOAA/USAF Region |
|-----|------------|----------|----------|-----|-----|---------|------|------------------|
| 01  | 0527       | 0532     | 0534     |     |     |         | B3.1 |                  |
| 01  | 2037       | 2041     | 2049     |     |     |         | B1.2 |                  |
| 02  | 1036       | 1037     | 1047     | S07 | W02 | SF      | B1.4 | 7981             |
| 02  | 1522       | 1523     | 1546     | S07 | W03 | SF      | B2.8 | 7981             |
| 02  | 2246       | 2249     | 2254     |     |     |         | B1.0 |                  |
| 02  | 2324       | 2327     | 2329     |     |     |         | B1.9 |                  |
| 03  | 0333       | 0337     | 0343     |     |     |         | B1.3 |                  |
| 03  | 0515       | 0519     | 0534     | S09 | W05 | SF      | B2.2 | 7981             |
| 03  | 0753       | 0756     | 0758     |     |     |         | B1.2 |                  |
| 03  | 1012       | 1018     | 1023     |     |     |         | B1.3 |                  |
| 03  | 1237       | 1240     | 1301     | S08 | W14 | SF      | B4.8 | 7981             |
| 03  | 1726       | 1731     | 1748     |     |     |         | B1.3 |                  |
| 03  | 1757       | 1801     | 1805     |     |     |         | B2.2 |                  |
| 03  | 2028       | 2031     | 2036     |     |     |         | B1.1 |                  |
| 03  | 2116       | 2118     | 2124     | S09 | W21 | SF      | B1.2 | 7981             |
| 03  | 2159       | 2205     | 2212     |     |     |         | B1.4 |                  |
| 04  | 0120       | 0126     | 0131     |     |     |         | B2.7 |                  |
| 04  | 0150       | 0154     | 0157     |     |     |         | B2.1 |                  |
| 04  | 1004       | 1010     | 1015     |     |     |         | B2.5 |                  |
| 04  | 1100       | 1104     | 1111     |     |     |         | B1.1 |                  |
| 04  | 1209       | 1214     | 1219     |     |     |         | B1.4 |                  |
| 04  | 1815       | 1815     | 1824     | S10 | W30 | SF      | B2.1 | 7981             |
| 04  | 1828       | 1833     | 1841     |     |     |         | B2.1 |                  |
| 04  | 1955       | 2011     | 2018     |     |     |         | B5.4 |                  |
| 04  | 2105       | 2114     | 2130     |     |     |         | B3.7 |                  |
| 04  | 2248       | 2252     | 2258     |     |     |         | B2.2 |                  |
| 04  | 2308       | 2320     | 2326     |     |     |         | B3.1 |                  |
| 05  | 0155       | 0201     | 0209     |     |     |         | B1.5 |                  |
| 05  | 0311       | 0321     | 0323     |     |     |         | B107 |                  |
| 05  | 0753       | 0753     | 0756     | S11 | W37 | SF      | B2.6 | 7981             |
| 05  | 0920       | 0920     | 0930     | S10 | W35 | SF      | B5.1 | 7981             |
| 05  | 1423       | 1424     | 1434     | S09 | W39 | SF      | B5.5 | 7981             |
| 05  | 1506       | 1508     | 1511     | S09 | W39 | SF      | B2.4 | 7981             |
| 05  | 1533       | 1534     | 1546     | S08 | W44 | SF      | B2.0 | 7981             |
| 05  | 2019       | 2030     | 2040     |     |     |         | B2.5 |                  |
| 06  | 0315       | 0326     | 0339     |     |     |         | B2.4 |                  |
| 06  | 0953       | 0957     | 1008     |     |     |         | B1.0 |                  |
| 06  | 1910       | 2201     | 2243     |     |     |         | C1.5 | T                |
| 07  | 0240       | 0341     | 0610     |     |     |         | B2.2 |                  |
| 07  | 2316       | 2320     | 2324     |     |     |         | C1.0 |                  |
| 07  | 2342       | 2348     | 2353     |     |     |         | B3.1 |                  |

| Day | Start (UT) | Max (UT) | End (UT) | Lat | CMD | Imp Opt | Xray | NOAA/USAF Region |
|-----|------------|----------|----------|-----|-----|---------|------|------------------|
| 08  | 0327       | 0332     | 0338     |     |     |         | B1.6 |                  |
| 08  | 1151       | 1152     | 1200     | S20 | W73 | SF      | B2.7 |                  |
| 10  | 2120       | 2133     | 2153     | N10 | W19 | SF      | B1.5 | 7982             |
| 10  | 2208       | 2213     | 2218     |     |     |         | B1.7 |                  |
| 15  | 0705       | 0711     | 0715     |     |     |         | B1.2 |                  |
| 21  | 1415       | 1515     | 1801     |     |     |         | B1.4 | T                |
| 22  | 0332       | 0335     | 0339     |     |     |         | B1.0 |                  |
| 22  | 0734       | 0750     | 0756     |     |     |         | C1.5 |                  |
| 22  | 0805       | 0845     | 0852     |     |     |         | C3.6 |                  |
| 22  | 0850       | 1003     | 1106     |     |     |         | C4.5 |                  |
| 23  | 0714       | 0721     | 0730     |     |     |         | C1.2 |                  |
| 23  | 1148       | 1152     | 1159     |     |     |         | B3.3 |                  |
| 23  | 1641       | 1648     | 1704     |     |     |         | B3.3 |                  |
| 23  | 1909       | 1913     | 1922     |     |     |         | B2.7 |                  |
| 23  | 1929       | 1941     | 1958     |     |     |         | B8.2 |                  |
| 24  | 2309       | 2313     | 2319     |     |     |         | B1.4 |                  |
| 24  | 2321       | 2329     | 2339     |     |     |         | B2.9 |                  |
| 25  | 0634       | 0638     | 0640     |     |     |         | B1.4 |                  |
| 25  | 0714       | 0722     | 0731     |     |     |         | B2.2 |                  |
| 25  | 1228       | 1235     | 1237     | S13 | E64 | SF      | C1.0 | 7986             |
| 25  | 1917       | 1922     | 1932     |     |     |         | B1.2 |                  |
| 26  | 0525E      | 0534D    | 0555     | S12 | E54 | SF      | B3.4 | 7986             |
| 26  | 1409       | 1409     | 1424     | S11 | E49 | SF      | B3.3 | 7986             |
| 26  | 1458       | 1459     | 1504     | S12 | E50 | SF      | B1.9 | 7986             |
| 26  | 1817       | 1819     | 1839     | S11 | E48 | SF      | B5.0 | 7986             |
| 26  | 1954       | 1955     | 2000     | S11 | E46 | SF      | B1.3 | 7986             |
| 26  | 2113       | 2119     | 2125     |     |     |         | B2.8 |                  |
| 26  | 2317       | 2320     | 2354     | S13 | E44 | SF      | B5.5 | 7986             |
| 28  | 0249       | 0254     | 0300     |     |     |         | B4.0 |                  |
| 28  | 0800       | 0806     | 0810     |     |     |         | C1.3 |                  |
| 30  | 0052       | 0056     | 0102     |     |     |         | B1.0 |                  |
| 31  | 0630       | 0639     | 0653     |     |     |         | B2.0 |                  |
| 31  | 1541       | 1543     | 1559     | S16 | W18 | SF      | B5.1 | 7986             |
| 31  | 1819       | 1840     | 1912     | S15 | W19 | SF      | B8.8 | 7986             |

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 Sep 95 - Aug 96



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

## ACTIVE PROMINENCES AND FILAMENTS

21  
Aug 96

AUGUST 1996

| Day | Event Type | Start (UT) | End (UT) | Lat | CMD | CMP |     | Imp | Extent | Blue         | Red          | Obs | Sta  | NOAA/ | Remarks          |
|-----|------------|------------|----------|-----|-----|-----|-----|-----|--------|--------------|--------------|-----|------|-------|------------------|
|     |            |            |          |     |     | Mo  | Day |     |        | Shift (.1 A) | Shift (.1 A) |     |      | Reg#  |                  |
| 01  | ADF        | 0230E      | 0948     | S10 | E24 | 08  | 2.9 | 1   | 06     | 9            | 9            | E   | LEAR | 7981  |                  |
| 01  | ADF        | 0600E      | 0948     | S11 | E12 | 08  | 2.1 | 1   | 06     | 6            | 4            | E   | LEAR | 7981  |                  |
| 01  | ADF        | 0836E      | 1415D    | S09 | E09 | 08  | 2.0 | 1   | 07     | 9            | 9            | E   | SVTO | 7981  |                  |
| 01  | ADF        | 1000E      | 1220D    | S03 | E14 | 08  | 2.5 | 1   | 05     | 9            | 9            | E   | SVTO | 7981  |                  |
| 01  | ADF        | 1017E      | 1725     | S09 | E20 | 08  | 2.9 | 1   | 08     | 9            | 8            | E   | SVTO | 7981  |                  |
| 01  | AFS        | 1021E      | 1725     | S06 | E20 | 08  | 2.9 |     | 01     | 9            | 9            | E   | SVTO | 7981  |                  |
| 01  | DSD        | 1037E      | 2225     | S10 | E09 | 08  | 2.1 |     | 03     | 9            | 9            | E   | RAMY | 7981  |                  |
| 01  | ADF        | 1050E      | 2225     | S13 | E18 | 08  | 2.8 | 1   | 09     | 9            | 9            | E   | RAMY | 7981  |                  |
| 01  | DSD        | 1058E      | 2113D    | S10 | E19 | 08  | 2.9 |     | 01     | 9            | 9            | E   | RAMY | 7981  |                  |
| 01  | AFS        | 1140E      | 2225     | S08 | E16 | 08  | 2.7 |     | 01     | 9            | 9            | E   | RAMY | 7981  |                  |
| 01  | DSD        | 1240E      | 1415D    | S08 | E16 | 08  | 2.7 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |
| 01  | ADF        | 1800E      | 0153     | S10 | E13 | 08  | 2.7 | 1   | 05     | 9            | 9            | E   | PALE | 7981  |                  |
| 01  | AFS        | 1806E      | 2304     | S08 | E07 | 08  | 2.3 |     | 02     | 6            | 7            | E   | HOLL | 7981  |                  |
| 01  | ADF        | 1812E      | 2304     | S10 | E08 | 08  | 2.3 | 1   | 10     | 9            | 9            | E   | HOLL | 7981  |                  |
| 01  | DSD        | 1840E      | 2304     | S10 | E04 | 08  | 2.1 |     | 04     | 9            | 9            | E   | HOLL | 7981  |                  |
| 01  | DSF        | 2225U      | 1016U    | S09 | E01 | 08  | 2.0 | 2   | 07     | 0            | 0            | E   | RAMY | 7981  |                  |
| 02  | ADF        | 0030E      | 0924     | S11 | E09 | 08  | 2.7 | 1   | 06     | 9            | 9            | E   | LEAR | 7981  |                  |
| 02  | AFS        | 0510E      | 0915D    | S08 | E01 | 08  | 2.3 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | ADF        | 0512E      | 1737     | S08 | E10 | 08  | 3.0 | 1   | 11     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | ADF        | 0530E      | 1506D    | S10 | W02 | 08  | 2.1 | 2   | 12     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | DSD        | 0635E      | 0838D    | S12 | E01 | 08  | 2.3 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | DSD        | 1027E      | 1737     | S09 | W03 | 08  | 2.2 |     | 03     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | DSD        | 1037       | 1056     | S07 | W02 | 08  | 2.3 |     | 01     | 9            | 9            | E   | RAMY | 7981  | Flare Associated |
| 02  | AFS        | 1058E      | 2229     | S08 | W01 | 08  | 2.4 |     | 02     | 9            | 9            | E   | RAMY | 7981  |                  |
| 02  | DSD        | 1329E      | 1543D    | S10 | E01 | 08  | 2.6 |     | 03     | 9            | 9            | E   | RAMY | 7981  |                  |
| 02  | ADF        | 1330E      | 1506D    | S10 | E01 | 08  | 2.6 | 1   | 04     | 9            | 9            | E   | SVTO | 7981  |                  |
| 02  | DSD        | 1709E      | 2229     | S10 | W07 | 08  | 2.2 |     | 02     | 9            | 9            | E   | RAMY | 7981  |                  |
| 02  | DSD        | 1731E      | 1810D    | S06 | E00 | 08  | 2.7 |     | 01     | 9            | 9            | E   | RAMY | 7981  |                  |
| 03  | ADF        | 0115E      | 0940     | S08 | W09 | 08  | 2.4 | 1   | 05     | 6            | 6            | E   | LEAR | 7981  |                  |
| 03  | ADF        | 0115E      | 0940     | S09 | W15 | 08  | 1.9 | 1   | 05     | 6            | 6            | E   | LEAR | 7981  |                  |
| 03  | ADF        | 0115E      | 0940     | S12 | W03 | 08  | 2.8 | 1   | 06     | 5            | 4            | E   | LEAR | 7981  |                  |
| 03  | AFS        | 0552E      | 1016D    | S09 | W12 | 08  | 2.3 |     | 01     | 9            | 9            | E   | SVTO | 7981  |                  |
| 03  | ADF        | 0730E      | 1653     | S10 | W17 | 08  | 2.0 | 2   | 08     | 9            | 9            | E   | SVTO | 7981  |                  |
| 03  | ADF        | 0745E      | 1653     | S09 | W05 | 08  | 2.9 | 1   | 07     | 9            | 9            | E   | SVTO | 7981  |                  |
| 03  | ADF        | 0830E      | 0900D    | S11 | W02 | 08  | 3.2 | 1   |        | 9            | 9            | V   | KHAR |       |                  |
| 03  | DSD        | 0930E      | 0955     | S09 | W02 | 08  | 3.2 | 1   |        |              | 9            | V   | KHAR |       |                  |
| 03  | DSD        | 1017E      | 1653     | S09 | W15 | 08  | 2.3 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |
| 03  | ADF        | 1041E      | 1653     | S03 | W11 | 08  | 2.6 | 1   | 09     | 9            | 9            | E   | SVTO | 7981  |                  |
| 03  | DSD        | 1052E      | 1320D    | S09 | W16 | 08  | 2.2 |     | 02     | 9            | 9            | E   | RAMY | 7981  |                  |
| 03  | AFS        | 1052E      | 1637     | S08 | W14 | 08  | 2.4 |     | 02     | 9            | 9            | E   | RAMY | 7981  |                  |
| 03  | DSD        | 1100       | 1117     | S09 | W02 | 08  | 3.3 | 1   |        |              | 9            | V   | KHAR |       |                  |
| 03  | ADF        | 1200E      | 1430D    | S02 | W12 | 08  | 2.6 | 1   | 08     | 9            | 9            | E   | RAMY | 7981  |                  |
| 03  | ADF        | 1200E      | 1637     | S09 | W11 | 08  | 2.7 | 1   | 09     | 9            | 9            | E   | RAMY | 7981  |                  |
| 03  | AFS        | 1330E      | 1540D    | S09 | W10 | 08  | 2.8 |     | 01     | 6            | 8            | E   | HOLL | 7981  |                  |
| 03  | ADF        | 1330E      | 2144     | S10 | W11 | 08  | 2.7 | 1   | 07     | 9            | 9            | E   | HOLL | 7981  |                  |
| 03  | DSD        | 1710E      | 0506D    | S11 | W05 | 08  | 3.3 |     | 02     | 9            | 9            | E   | PALE | 7981  |                  |
| 04  | ADF        | 0200E      | 0945     | S09 | W23 | 08  | 2.3 | 1   | 05     | 9            | 8            | E   | LEAR | 7981  |                  |
| 04  | ADF        | 0350E      | 0945     | S19 | W20 | 08  | 2.6 | 1   | 06     | 9            | 9            | E   | LEAR | 7981  |                  |
| 04  | AFS        | 0520E      | 0600D    | S09 | W25 | 08  | 2.3 |     | 01     | 7            | 6            | E   | SVTO | 7981  |                  |
| 04  | ADF        | 0520E      | 1730     | S10 | W26 | 08  | 2.3 | 1   | 03     | 9            | 9            | E   | SVTO | 7981  |                  |
| 04  | ADF        | 0855E      | 1730     | S18 | W22 | 08  | 2.7 | 1   | 10     | 9            | 9            | E   | SVTO | 7981  |                  |
| 04  | DSD        | 1030E      | 1434D    | S12 | W23 | 08  | 2.7 |     | 02     | 9            | 9            | E   | RAMY | 7981  |                  |
| 04  | DSD        | 1030E      | 1701D    | S12 | W25 | 08  | 2.5 |     | 03     | 9            | 9            | E   | RAMY | 7981  |                  |
| 04  | ADF        | 1210E      | 1710     | S08 | W24 | 08  | 2.7 | 1   | 10     | 9            | 9            | E   | RAMY | 7981  |                  |
| 04  | AFS        | 1237E      | 0037     | S10 | W25 | 08  | 2.6 | 1   | 07     | 9            | 9            | E   | HOLL | 7981  |                  |
| 04  | DSD        | 1350E      | 1615     | S11 | W30 | 08  | 2.3 |     | 01     | 0            | 0            | E   | HOLL | 7981  |                  |
| 04  | ADF        | 1400E      | 1710     | S10 | W34 | 08  | 2.0 | 1   | 04     | 9            | 9            | E   | RAMY | 7981  |                  |
| 04  | DSD        | 1706E      | 1710     | S08 | W24 | 08  | 2.9 |     | 02     | 4            | 7            | E   | RAMY | 7981  |                  |
| 04  | ADF        | 2050       | 2300D    | S09 | W39 | 08  | 1.9 | 1   | 04     | 6            | 7            | E   | PALE | 7981  |                  |
| 05  | ADF        | 0050E      | 0413     | S11 | W32 | 08  | 2.6 | 1   | 04     | 9            | 9            | E   | PALE | 7981  |                  |
| 05  | ADF        | 0145E      | 0940     | S12 | W32 | 08  | 2.7 | 1   | 02     | 9            | 9            | E   | LEAR | 7981  |                  |
| 05  | DSD        | 0438E      | 0605D    | S14 | W38 | 08  | 2.3 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |
| 05  | ADF        | 0440E      | 0840D    | S10 | W37 | 08  | 2.4 | 1   | 05     | 9            | 9            | E   | SVTO | 7981  |                  |
| 05  | ADF        | 0441E      | 1728     | S13 | W33 | 08  | 2.7 | 2   | 12     | 9            | 9            | E   | SVTO | 7981  |                  |
| 05  | DSF        | 0750U      | 0753U    | S07 | W38 | 08  | 2.5 | 3   | 03     | 0            | 0            | E   | SVTO | 7981  | Flare Associated |
| 05  | DSD        | 0915E      | 1019D    | S13 | W39 | 08  | 2.4 |     | 02     | 9            | 9            | E   | SVTO | 7981  |                  |

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Aug 96

ACTIVE PROMINENCES AND FILAMENTS

AUGUST 1996

| 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 |
|-----|------------|------------|----------|-----|-----|------------|-----|--------|-------------------|------------------|----------|-----------|----------------|---------|
| 05  | ADF        | 0926       | 0933     | S12 | W30 | 08 3.1     | 1   |        |                   | 9                | V        | KHAR      |                |         |
| 05  | ADF        | 1330E      | 2215     | S09 | W38 | 08 2.7     | 1   | 10     | 8                 | 7                | E        | RAMY 7981 |                |         |
| 05  | ADF        | 1455E      | 2215     | S08 | W45 | 08 2.2     | 1   | 06     | 8                 | 8                | E        | RAMY 7981 |                |         |
| 05  | ADF        | 1521E      | 1728     | S08 | W43 | 08 2.4     | 1   | 04     | 9                 | 9                | E        | SVTO 7981 |                |         |
| 05  | ADF        | 1728E      | 0423     | S10 | W41 | 08 2.6     | 1   | 06     | 9                 | 9                | E        | PALE 7981 |                |         |
| 05  | ADF        | 1730E      | 0153     | S10 | W41 | 08 2.6     | 1   | 03     | 9                 | 9                | E        | HOLL 7981 |                |         |
| 05  | ADF        | 1824       | 0423     | S09 | W45 | 08 2.4     | 1   | 03     | 9                 | 9                | E        | PALE 7981 |                |         |
| 05  | ADF        | 1850E      | 0153     | S07 | W47 | 08 2.3     | 1   | 05     | 9                 | 9                | E        | HOLL 7981 |                |         |
| 06  | ADF        | 0035E      | 0945     | S08 | W50 | 08 2.3     | 1   | 06     | 6                 | 6                | E        | LEAR 7981 |                |         |
| 06  | ADF        | 0035E      | 0945     | S11 | W46 | 08 2.6     | 1   | 08     | 6                 | 6                | E        | LEAR 7981 |                |         |
| 06  | ADF        | 0500E      | 1145D    | S12 | W43 | 08 3.0     | 1   | 05     | 9                 | 9                | E        | SVTO 7981 |                |         |
| 06  | AFS        | 0615E      | 1452D    | N10 | E46 | 08 9.7     |     | 02     | 9                 | 9                | E        | SVTO      |                |         |
| 06  | ADF        | 0910E      | 1225D    | S08 | W52 | 08 2.5     | 1   | 06     | 9                 | 9                | E        | SVTO 7981 |                |         |
| 06  | DSD        | 0957       | 1010     | S09 | W54 | 08 2.3     | 1   |        |                   | 9                | V        | KHAR      |                |         |
| 06  | DSD        | 0957       | 1010     | S13 | W51 | 08 2.6     | 1   |        |                   |                  | V        | KHAR      |                |         |
| 06  | ADF        | 1122E      | 1940D    | S16 | W55 | 08 2.3     | 1   | 08     | 9                 | 9                | E        | RAMY 7981 |                |         |
| 06  | AFS        | 2300E      | 0150     | N10 | E35 | 08 9.6     |     | 01     | 9                 | 9                | E        | HOLL      |                |         |
| 07  | AFS        | 0245E      | 0945     | N10 | E34 | 08 9.7     |     | 02     | 9                 | 9                | E        | LEAR      |                |         |
| 07  | AFS        | 0522E      | 1725     | N11 | E33 | 08 9.7     |     | 01     | 9                 | 9                | E        | SVTO 7982 |                |         |
| 07  | AFS        | 0700E      | 0945     | S05 | W70 | 08 2.0     |     | 04     | 9                 | 9                | E        | LEAR 7981 |                |         |
| 07  | AFS        | 1431E      | 1828     | N11 | E26 | 08 9.6     |     | 01     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 07  | DSF        | 1641U      | 0508U    | N25 | W46 | 08 4.1     |     | 21     | 0                 | 0                | E        | SVTO      |                |         |
| 07  | AFS        | 1830E      | 0258     | N10 | E25 | 08 9.6     |     | 02     | 7                 | 7                | E        | PALE 7982 |                |         |
| 08  | ADF        | 0555E      | 1520     | N08 | E20 | 08 9.7     | 1   | 02     | 9                 | 9                | E        | SVTO 7982 |                |         |
| 08  | ASR        | 0751       | 0847D    | S14 | W79 | 08 2.3     |     | 7      | 7                 | 7                | E        | SVTO 7981 |                |         |
| 08  | ASR        | 0939       | 1010     | S14 | W80 | 08 2.3     |     | 9      | 9                 | 9                | E        | SVTO 7981 |                |         |
| 08  | ASR        | 1045E      | 1520     | S14 | W79 | 08 2.5     |     | 7      | 8                 | 8                | E        | SVTO 7981 |                |         |
| 08  | ASR        | 1050E      | 1909     | S09 | W90 | 08 1.7     |     | 9      | 9                 | 9                | E        | RAMY 7981 |                |         |
| 08  | ASR        | 1820E      | 1909     | S15 | W90 | 08 1.9     |     | 9      | 9                 | 9                | E        | RAMY 7981 |                |         |
| 08  | APR        | 1847E      | 2257     | S10 | W90 | 08 2.0     |     | 8      | 9                 | 9                | E        | HOLL 7981 |                |         |
| 09  | AFS        | 0330E      | 0950     | N13 | E06 | 08 9.6     |     | 02     | 9                 | 9                | E        | LEAR 7982 |                |         |
| 09  | DSD        | 0355E      | 0435D    | N11 | E03 | 08 9.4     |     | 03     | 9                 | 9                | E        | LEAR 7982 |                |         |
| 09  | ADF        | 0500E      | 1725     | N08 | E07 | 08 9.7     | 1   | 03     | 9                 | 9                | E        | SVTO 7982 |                |         |
| 09  | AFS        | 0500E      | 1725     | N11 | E05 | 08 9.6     |     | 01     | 7                 | 8                | E        | SVTO 7982 |                |         |
| 09  | ASR        | 0505E      | 0701D    | S16 | W90 | 08 2.4     |     | 9      | 9                 | 9                | E        | SVTO 7981 |                |         |
| 09  | APR        | 0505E      | 1725     | S06 | W90 | 08 2.5     | 1   | 9      | 9                 | 9                | E        | SVTO 7981 |                |         |
| 09  | APR        | 0505E      | 1725     | S23 | W90 | 08 2.3     | 1   | 9      | 9                 | 9                | E        | SVTO 7981 |                |         |
| 09  | DSD        | 0509E      | 0714D    | N09 | E03 | 08 9.4     |     | 01     | 9                 | 9                | E        | SVTO 7982 |                |         |
| 09  | AFS        | 0513E      | 1725     | N10 | E05 | 08 9.6     |     | 01     | 7                 | 7                | E        | SVTO 7982 |                |         |
| 09  | BSD        | 0848       | 0858     | N10 | E04 | 08 9.7     | 1   | 9      | 9                 | 9                | V        | KHAR      |                |         |
| 09  | DSD        | 0956       | 1020D    | N12 | E03 | 08 9.6     | 1   | 9      | 9                 | 9                | V        | KHAR      |                |         |
| 09  | APR        | 1021E      | 2031D    | S19 | W90 | 08 2.6     | 1   | 9      | 9                 | 9                | E        | RAMY 7981 |                |         |
| 09  | AFS        | 1022E      | 2144     | N10 | E02 | 08 9.6     |     | 01     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 09  | ADF        | 1056E      | 1536D    | N08 | E01 | 08 9.5     | 1   | 04     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 09  | AFS        | 1251E      | 0034     | N09 | E00 | 08 9.5     |     | 02     | 9                 | 9                | E        | HOLL 7982 |                |         |
| 09  | DSD        | 1315E      | 1842D    | N10 | W01 | 08 9.5     |     | 01     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 09  | DSF        | 1429U      | 1852U    | N09 | E00 | 08 9.6     | 1   | 05     | 0                 | 0                | E        | LEAR 7982 |                |         |
| 09  | DSF        | 1429U      | 1852U    | N09 | E00 | 08 9.6     | 2   | 05     | 0                 | 0                | E        | RAMY 7982 |                |         |
| 09  | ASR        | 2116       | 2144D    | S11 | W90 | 08 3.1     |     | 9      | 9                 | 9                | E        | RAMY 7981 |                |         |
| 09  | ASR        | 2117       | 2144     | S14 | W90 | 08 3.1     |     | 9      | 9                 | 9                | E        | RAMY 7981 |                |         |
| 09  | AFS        | 2321E      | 0510D    | N10 | W04 | 08 9.7     |     | 03     | 9                 | 9                | E        | LEAR 7982 |                |         |
| 10  | AFS        | 0115E      | 0949     | N10 | W08 | 08 9.4     |     | 02     | 9                 | 9                | E        | LEAR 7982 |                |         |
| 10  | AFS        | 0500E      | 1730     | N04 | W06 | 08 9.7     |     | 03     | 9                 | 9                | E        | SVTO 7982 |                |         |
| 10  | APR        | 0841E      | 1258D    | S14 | W90 | 08 3.6     | 1   | 3      |                   |                  | P        | WROC      |                |         |
| 10  | AFS        | 1007E      | 1215D    | N12 | W50 | 08 6.6     |     | 01     | 7                 | 8                | E        | SVTO      |                |         |
| 10  | AFS        | 1034E      | 1815     | N09 | W13 | 08 9.5     |     | 02     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 10  | DSD        | 1154E      | 1340D    | N06 | W12 | 08 9.6     |     | 03     | 7                 | 9                | E        | RAMY 7982 |                |         |
| 10  | DSD        | 1310E      | 1815     | N09 | W13 | 08 9.6     |     | 02     | 9                 | 9                | E        | RAMY 7982 |                |         |
| 10  | ADF        | 1347E      | 1815     | N07 | W10 | 08 9.8     | 1   | 02     | 4                 | 6                | E        | RAMY 7982 |                |         |
| 10  | DSD        | 1452E      | 1530D    | N26 | E18 | 08 12.0    |     | 01     | 7                 | 9                | E        | RAMY      |                |         |
| 10  | AFS        | 1730E      | 0421     | N10 | W02 | 08 10.6    |     | 03     | 9                 | 9                | E        | PALE 7982 |                |         |
| 10  | ASR        | 1920E      | 0003     | S14 | W90 | 08 4.0     |     | 9      | 9                 | 9                | E        | PALE 7981 |                |         |
| 10  | AFS        | 2345E      | 0946     | N10 | W19 | 08 9.6     |     | 01     | 8                 | 5                | E        | LEAR 7982 |                |         |
| 11  | AFS        | 0429E      | 1725     | N09 | W22 | 08 9.5     |     | 02     | 9                 | 9                | E        | SVTO 7982 |                |         |

## ACTIVE PROMINENCES AND FILAMENTS

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Aug 96

AUGUST 1996

| 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 |
|-----|------------|------------|----------|-----|-----|--------|------|-----|--------|-------------------|------------------|----------|------|-----------------|---------|
| 11  | DSD        | 0511E      | 0610D    | N09 | W26 | 08     | 9.3  |     | 02     | 9                 | 9                | E        | SVTO | 7982            |         |
| 11  | ADF        | 1024E      | 1515D    | S07 | E38 | 08     | 14.3 | 1   | 02     | 7                 | 7                | E        | SVTO |                 |         |
| 11  | ADF        | 1024E      | 1515D    | S09 | E38 | 08     | 14.3 | 1   | 03     | 7                 | 7                | E        | SVTO |                 |         |
| 11  | AFS        | 1032E      | 2001     | N10 | W20 | 08     | 9.9  |     | 02     | 8                 | 8                | E        | RAMY | 7982            |         |
| 11  | DSD        | 1105E      | 1425D    | S09 | E39 | 08     | 14.4 |     | 03     | 6                 | 9                | E        | RAMY |                 |         |
| 11  | AFS        | 1110E      | 2232     | N10 | W39 | 08     | 8.5  |     | 01     | 7                 | 8                | E        | RAMY | 7982            |         |
| 11  | DSD        | 1125E      | 1322D    | N08 | W29 | 08     | 9.3  |     | 02     | 7                 | 9                | E        | RAMY | 7982            |         |
| 11  | ADF        | 1200E      | 2232     | S09 | E26 | 08     | 13.4 | 1   | 03     | 7                 | 6                | E        | RAMY |                 |         |
| 11  | DSD        | 1245E      | 1659D    | N07 | W41 | 08     | 8.5  |     | 01     | 8                 | 9                | E        | RAMY | 7982            |         |
| 11  | AFS        | 1335E      | 0132     | N10 | W26 | 08     | 9.6  |     | 01     | 9                 | 9                | E        | HOLL | 7982            |         |
| 11  | DSD        | 1335E      | 1507D    | N28 | E08 | 08     | 12.2 |     | 01     | 3                 | 5                | E        | RAMY | 7983            |         |
| 11  | ADF        | 1335E      | 1620D    | N25 | E12 | 08     | 12.5 | 1   | 03     | 9                 | 4                | E        | RAMY | 7983            |         |
| 11  | ADF        | 1410E      | 0132     | N12 | W28 | 08     | 9.5  | 1   | 03     | 8                 | 6                | E        | HOLL | 7982            |         |
| 11  | AFS        | 1658E      | 0017     | N09 | W18 | 08     | 10.3 |     | 02     | 9                 | 9                | E        | PALE | 7982            |         |
| 11  | ADF        | 1658E      | 2038     | N11 | W16 | 08     | 10.5 | 1   | 02     | 9                 | 9                | E        | PALE | 7982            |         |
| 11  | ADF        | 1700E      | 2001     | N30 | E07 | 08     | 12.2 | 1   | 04     | 5                 | 9                | E        | RAMY | 7983            |         |
| 11  | AFS        | 2355E      | 0947     | N09 | W33 | 08     | 9.5  |     | 02     | 9                 | 9                | E        | LEAR | 7982            |         |
| 12  | AFS        | 0319E      | 0406     | N07 | W37 | 08     | 9.4  |     | 02     | 9                 | 9                | E        | PALE | 7982            |         |
| 12  | AFS        | 0620E      | 1415D    | N09 | W34 | 08     | 9.7  |     | 02     | 9                 | 9                | E        | SVTO | 7982            |         |
| 12  | ADF        | 1026E      | 1325D    | S08 | E29 | 08     | 14.6 | 1   | 03     | 9                 | 9                | E        | SVTO |                 |         |
| 12  | AFS        | 1110E      | 2232     | N10 | W39 | 08     | 9.5  |     | 01     | 7                 | 8                | E        | RAMY | 7982            |         |
| 12  | ADF        | 1200E      | 2232     | S09 | E26 | 08     | 14.4 | 1   | 03     | 7                 | 6                | E        | RAMY |                 |         |
| 12  | DSD        | 1245E      | 1659D    | N07 | W41 | 08     | 9.5  |     | 01     | 8                 | 9                | E        | RAMY | 7982            |         |
| 13  | AFS        | 0813E      | 1233D    | N05 | W51 | 08     | 9.5  |     | 02     | 8                 | 8                | E        | SVTO | 7982            |         |
| 13  | ADF        | 1125U      | 1143     | N09 | W54 | 08     | 9.4  | 1   |        | 9                 |                  | V        | KHAR |                 |         |
| 13  | DSD        | 1350E      | 1921D    | N08 | W56 | 08     | 9.4  |     | 01     | 9                 | 9                | E        | RAMY | 7982            |         |
| 13  | DSD        | 1350E      | 1935D    | N10 | W56 | 08     | 9.4  |     | 01     | 9                 | 9                | E        | RAMY | 7982            |         |
| 14  | AFS        | 0155E      | 0947     | N28 | E37 | 08     | 17.0 |     | 03     | 9                 | 9                | E        | LEAR |                 |         |
| 14  | AFS        | 0205E      | 0440     | N30 | E37 | 08     | 17.0 |     | 02     | 9                 | 9                | E        | PALE |                 |         |
| 14  | DSD        | 0315E      | 0355D    | N27 | E37 | 08     | 17.0 |     | 04     | 9                 | 9                | E        | LEAR |                 |         |
| 14  | DSD        | 0315E      | 0425D    | N29 | E36 | 08     | 16.9 |     | 02     | 9                 | 9                | E        | PALE |                 |         |
| 14  | DSD        | 0547E      | 0922D    | N30 | E32 | 08     | 16.7 |     | 02     | 9                 | 9                | E        | SVTO | 7984            |         |
| 14  | DSD        | 0547E      | 0922D    | N31 | E33 | 08     | 16.8 |     | 01     | 9                 | 9                | E        | SVTO | 7984            |         |
| 14  | AFS        | 0547E      | 1715     | N30 | E33 | 08     | 16.8 |     | 02     | 9                 | 9                | E        | SVTO | 7984            |         |
| 14  | DSD        | 1057E      | 1701D    | N07 | W70 | 08     | 9.2  |     | 01     | 9                 | 9                | E        | RAMY | 7982            |         |
| 14  | AFS        | 1057E      | 1740     | N29 | E30 | 08     | 16.8 |     | 02     | 7                 | 9                | E        | RAMY |                 |         |
| 14  | AFS        | 1658E      | 0354     | N29 | E27 | 08     | 16.8 |     | 02     | 9                 | 9                | E        | PALE | 7984            |         |
| 14  | AFS        | 1900E      | 0128     | N28 | E26 | 08     | 16.8 |     | 03     | 9                 | 9                | E        | HOLL | 7984            |         |
| 14  | AFS        | 2330E      | 0950     | N28 | E24 | 08     | 16.8 |     | 03     | 3                 | 7                | E        | LEAR | 7984            |         |
| 15  | ASR        | 0005E      | 0050D    | N08 | W90 | 08     | 8.2  |     |        | 0                 | 0                | E        | HOLL | 7982            |         |
| 15  | AFS        | 0600E      | 1530D    | N31 | E20 | 08     | 16.8 |     | 02     | 7                 | 8                | E        | SVTO | 7984            |         |
| 15  | ASR        | 1115E      | 1220D    | N01 | W90 | 08     | 8.7  |     |        | 6                 | 7                | E        | SVTO | 7982            |         |
| 15  | APR        | 1246E      | 1935D    | N15 | E90 | 08     | 22.3 |     |        | 5                 | 6                | E        | HOLL |                 |         |
| 15  | DSD        | 1340E      | 1530D    | N31 | E16 | 08     | 16.8 |     | 02     | 9                 | 9                | E        | SVTO | 7984            |         |
| 16  | ASR        | 0005E      | 0050D    | N08 | W90 | 08     | 9.2  |     |        | 0                 | 0                | E        | HOLL | 7982            |         |
| 16  | ADF        | 0112E      | 0429     | S40 | E10 | 08     | 16.9 | 1   | 05     | 9                 | 9                | E        | PALE |                 |         |
| 16  | ADF        | 0227       | 0342     | N03 | E20 | 08     | 17.6 | 1   | 02     | 9                 | 9                | E        | PALE |                 |         |
| 16  | AFS        | 0330E      | 0415D    | N28 | E08 | 08     | 16.8 |     | 02     | 4                 | 5                | E        | LEAR | 7984            |         |
| 16  | ADF        | 0555E      | 0933D    | N06 | E20 | 08     | 17.7 | 1   | 03     | 9                 | 9                | E        | SVTO |                 |         |
| 16  | BSL        | 0930       | 0938     | N06 | W90 | 08     | 9.6  | 1   |        | 9                 | 9                | V        | KHAR |                 |         |
| 16  | BSL        | 0942       | 1010     | N06 | W90 | 08     | 9.6  | 1   |        | 9                 | 9                | V        | KHAR |                 |         |
| 16  | BSL        | 1202       | 1222     | N06 | W90 | 08     | 9.7  | 1   |        | 9                 | 9                | V        | KHAR |                 |         |
| 16  | ASR        | 1251E      | 1624     | N07 | W90 | 08     | 9.8  |     |        | 7                 | 8                | E        | RAMY | 7982            |         |
| 16  | ADF        | 1450E      | 1624     | N28 | E02 | 08     | 16.8 |     | 05     | 8                 | 8                | E        | RAMY | 7984            |         |
| 16  | DSD        | 1515E      | 1624     | N01 | E30 | 08     | 18.9 |     | 02     | 5                 | 6                | E        | RAMY | 7984            |         |
| 17  | ADF        | 0950       | 1000     | N29 | W15 | 08     | 16.3 | 1   |        | 9                 | 9                | V        | KHAR |                 |         |
| 17  | ADF        | 1230E      | 1536D    | N04 | E01 | 08     | 17.6 | 1   | 03     | 9                 | 9                | E        | SVTO |                 |         |
| 18  | DSD        | 1000E      | 1040D    | N28 | W25 | 08     | 16.5 |     | 01     | 7                 | 7                | E        | SVTO | 7984            |         |
| 19  | AFS        | 0510E      | 1725     | N10 | W04 | 08     | 18.9 |     | 02     | 9                 | 9                | E        | SVTO | 7985            |         |
| 19  | DSD        | 0519E      | 0735D    | N10 | W03 | 08     | 19.0 |     | 02     | 9                 | 9                | E        | SVTO | 7985            |         |
| 19  | AFS        | 1040E      | 2235     | N09 | W07 | 08     | 18.9 |     | 01     | 9                 | 9                | E        | RAMY | 7985            |         |
| 19  | AFS        | 1249E      | 0058     | N10 | W13 | 08     | 18.5 |     | 02     | 5                 | 9                | E        | HOLL | 7985            |         |



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## ACTIVE PROMINENCES AND FILAMENTS

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| 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 |
|-----|------------|------------|----------|-----|-----|------------|-----|--------|-------------------|------------------|----------|------|-----------------|---------|
| 19  | AFS        | 1950E      | 0435     | N10 | W13 | 08 18.8    |     | 02     | 9                 | 9                | E        | PALE | 7985            |         |
| 19  | DSD        | 2009E      | 2021     | N07 | W13 | 08 18.9    |     | 02     | 0                 | 0                | E        | HOLL | 7985            |         |
| 19  | AFS        | 2303E      | 0900D    | N11 | W14 | 08 18.9    |     | 02     | 6                 | 4                | E        | LEAR | 7985            |         |
| 20  | ADF        | 0250E      | 0500D    | N10 | W16 | 08 18.9    | 1   | 02     | 6                 | 9                | E        | LEAR | 7895            |         |
| 20  | AFS        | 0520E      | 1205D    | N09 | W19 | 08 18.8    |     | 02     | 9                 | 9                | E        | SVTO | 7985            |         |
| 20  | DSD        | 0710E      | 0833D    | N08 | W20 | 08 18.8    |     | 01     | 9                 | 9                | E        | SVTO | 7985            |         |
| 20  | APR        | 0751E      | 1345     | S41 | E90 | 08 27.7    | 1   | 7      |                   |                  | P        | WROC |                 |         |
| 20  | BSL        | 0840       | 0906     | S55 | E90 | 08 28.1    | 2   | 11     |                   |                  | P        | WROC |                 |         |
| 20  | ASR        | 0847E      | 0908D    | S60 | E90 | 08 28.3    |     |        | 9                 | 9                | E        | SVTO |                 |         |
| 20  | ADF        | 0930E      | 1205D    | N30 | W47 | 08 16.7    | 1   | 07     | 7                 | 7                | E        | SVTO | 7984            |         |
| 20  | DSD        | 1047E      | 1339D    | N11 | W21 | 08 18.9    |     | 01     | 6                 | 7                | E        | RAMY | 7985            |         |
| 20  | AFS        | 1235E      | 1612D    | N09 | W25 | 08 18.6    |     | 01     | 7                 | 7                | E        | RAMY | 7985            |         |
| 21  | AFS        | 0210E      | 0604     | N10 | W31 | 08 18.8    |     | 02     | 6                 | 7                | E        | LEAR | 7985            |         |
| 21  | DSD        | 0525E      | 0545D    | N33 | W54 | 08 16.9    |     | 04     | 9                 | 9                | E        | LEAR | 7984            |         |
| 21  | DSD        | 0525E      | 0555D    | N32 | W55 | 08 16.9    |     | 03     | 9                 | 9                | E        | SVTO | 7984            |         |
| 21  | DSD        | 0610E      | 0743D    | N27 | W50 | 08 17.4    |     | 02     | 9                 | 9                | E        | SVTO | 7984            |         |
| 21  | AFS        | 0610E      | 1655     | N10 | W33 | 08 18.8    |     | 02     | 9                 | 9                | E        | SVTO | 7985            |         |
| 21  | APR        | 0753       | 1331D    | N03 | E90 | 08 28.0    | 1   | 6      |                   |                  | P        | WROC |                 |         |
| 21  | EPL        | 0804E      | 0815     | N19 | W90 | 08 14.5    | 2   | 6      |                   |                  | P        | WROC |                 |         |
| 21  | DSD        | 1344E      | 1852D    | N09 | W37 | 08 18.8    |     | 01     | 9                 | 9                | E        | RAMY | 7985            |         |
| 21  | DSD        | 1704E      | 2041D    | S28 | E73 | 08 27.4    |     | 03     | 9                 | 9                | E        | RAMY |                 |         |
| 22  | BSL        | 0835E      | 1000D    | N02 | E90 | 08 29.2    | 1   | 03     | 9                 | 9                | V        | KHAR |                 |         |
| 22  | LPS        | 0918       | 1358D    | S07 | E90 | 08 29.1    | 3   | 11     |                   |                  | P        | WROC |                 |         |
| 22  | AFS        | 1116E      | 1401D    | N10 | W48 | 08 18.9    |     | 01     | 7                 | 7                | E        | RAMY | 7985            |         |
| 22  | APR        | 1232E      | 2117D    | S12 | E90 | 08 29.3    | 1   |        | 9                 | 9                | E        | RAMY |                 |         |
| 22  | ASR        | 1306E      | 2117D    | S11 | E90 | 08 29.3    |     |        | 9                 | 9                | E        | RAMY |                 |         |
| 22  | APR        | 1320E      | 2018     | S03 | E90 | 08 29.3    | 1   |        | 9                 | 8                | E        | HOLL |                 |         |
| 22  | APR        | 1652E      | 0349     | S05 | E90 | 08 29.4    | 1   |        | 9                 | 9                | E        | PALE |                 |         |
| 22  | DSD        | 1805E      | 0453     | S28 | E70 | 08 28.2    |     | 02     | 9                 | 9                | E        | PALE |                 |         |
| 23  | ASR        | 0325E      | 0349     | S09 | E90 | 08 29.9    |     |        | 9                 | 9                | E        | PALE |                 |         |
| 23  | DSD        | 0325E      | 0349     | S27 | E53 | 08 27.3    |     | 01     | 9                 | 9                | E        | PALE |                 |         |
| 23  | ASR        | 0523E      | 1540     | S09 | E90 | 08 30.0    |     |        | 8                 | 8                | E        | SVTO |                 |         |
| 23  | ASR        | 1037E      | 1705     | S08 | E75 | 08 29.1    |     |        | 9                 | 9                | E        | RAMY | 7986            |         |
| 23  | DSD        | 1105E      | 1705     | N11 | W62 | 08 18.8    |     | 03     | 4                 | 7                | E        | RAMY | 7985            |         |
| 23  | APR        | 1410E      | 1908     | S05 | E90 | 08 30.3    |     |        | 9                 | 9                | E        | HOLL | 7986            |         |
| 23  | ASR        | 1410E      | 1908     | S13 | E90 | 08 30.4    |     |        | 8                 | 9                | E        | HOLL | 7986            |         |
| 23  | ADF        | 1520E      | 1705     | S27 | E45 | 08 27.1    | 1   | 02     | 4                 | 4                | E        | RAMY |                 |         |
| 23  | ASR        | 2205E      | 0413     | S15 | E90 | 08 30.7    |     |        | 9                 | 9                | E        | PALE | 7986            |         |
| 24  | ASR        | 0115E      | 0955     | S15 | E90 | 08 30.9    |     |        | 8                 | 9                | E        | LEAR | 7986            |         |
| 24  | ASR        | 0545E      | 1230D    | S13 | E87 | 08 30.8    |     |        | 9                 | 9                | E        | SVTO | 7986            |         |
| 24  | ADF        | 0611E      | 1710     | S03 | E67 | 08 29.3    | 1   | 23     | 9                 | 9                | E        | SVTO | 7986            |         |
| 24  | APR        | 0802E      | 1159D    | S04 | E90 | 08 31.1    | 1   | 4      |                   |                  | P        | WROC |                 |         |
| 24  | BSL        | 0834       | 0849     | S06 | E90 | 08 31.1    | 2   | 12     |                   |                  | P        | WROC |                 |         |
| 24  | BSD        | 1203E      | 1320D    | S13 | E79 | 08 30.5    |     | 07     | 6                 | 9                | E        | RAMY | 7986            |         |
| 24  | BSD        | 1456E      | 1716     | S13 | E81 | 08 30.7    |     | 07     | 5                 | 7                | E        | RAMY | 7986            |         |
| 24  | ASR        | 1520E      | 1710     | S10 | E78 | 08 30.5    |     |        | 9                 | 9                | E        | SVTO | 7986            |         |
| 24  | ASR        | 1532E      | 1716     | S11 | E85 | 08 31.0    |     |        | 9                 | 8                | E        | RAMY | 7986            |         |
| 24  | AFS        | 1602E      | 1710     | S27 | E32 | 08 27.2    |     | 02     | 9                 | 9                | E        | SVTO |                 |         |
| 25  | ADF        | 0530E      | 0958     | S03 | E59 | 08 29.6    | 1   | 10     | 9                 | 9                | E        | LEAR | 7986            |         |
| 25  | ADF        | 0538E      | 1638     | S23 | E69 | 08 30.5    | 2   | 34     | 9                 | 9                | E        | SVTO | 7986            |         |
| 25  | ASR        | 0550E      | 1023D    | N06 | W90 | 08 18.5    |     |        | 9                 | 9                | E        | SVTO | 7985            |         |
| 25  | ASR        | 0712E      | 0958     | N09 | W90 | 08 18.5    |     |        | 9                 | 8                | E        | LEAR | 7985            |         |
| 25  | DSF        | 0832U      | 2330U    | N36 | W45 | 08 21.7    |     | 10     | 0                 | 0                | E        | LEAR |                 |         |
| 25  | AFS        | 0901E      | 1638     | S27 | E23 | 08 27.2    |     | 01     | 7                 | 7                | E        | SVTO |                 |         |
| 25  | ASR        | 1134E      | 1210D    | N11 | W90 | 08 18.7    |     |        | 7                 | 7                | E        | RAMY | 7985            |         |
| 25  | ADF        | 1215E      | 2240     | S12 | E64 | 08 30.3    | 1   | 05     | 9                 | 9                | E        | RAMY | 7986            |         |
| 25  | ADF        | 1253E      | 2351     | S16 | E62 | 08 30.2    | 1   | 12     | 9                 | 9                | E        | HOLL | 7986            |         |
| 25  | DSD        | 1307E      | 1420D    | S12 | E59 | 08 30.0    |     | 02     | 9                 | 9                | E        | RAMY | 7986            |         |
| 25  | DSD        | 1553E      | 2240     | S26 | E20 | 08 27.2    |     | 01     | 9                 | 9                | E        | RAMY |                 |         |
| 25  | DSD        | 1642E      | 1947D    | S14 | E67 | 08 30.7    |     | 03     | 9                 | 9                | E        | RAMY | 7986            |         |
| 25  | ASR        | 1646       | 1729D    | N11 | W90 | 08 18.9    |     |        | 9                 | 9                | E        | RAMY | 7985            |         |
| 25  | ADF        | 1800E      | 0405     | S07 | E48 | 08 29.3    | 1   | 09     | 9                 | 9                | E        | PALE | 7986            |         |
| 26  | ADF        | 0030E      | 0955     | S05 | E42 | 08 29.2    | 1   | 15     | 6                 | 7                | E        | LEAR | 7986            |         |

## ACTIVE PROMINENCES AND FILAMENTS

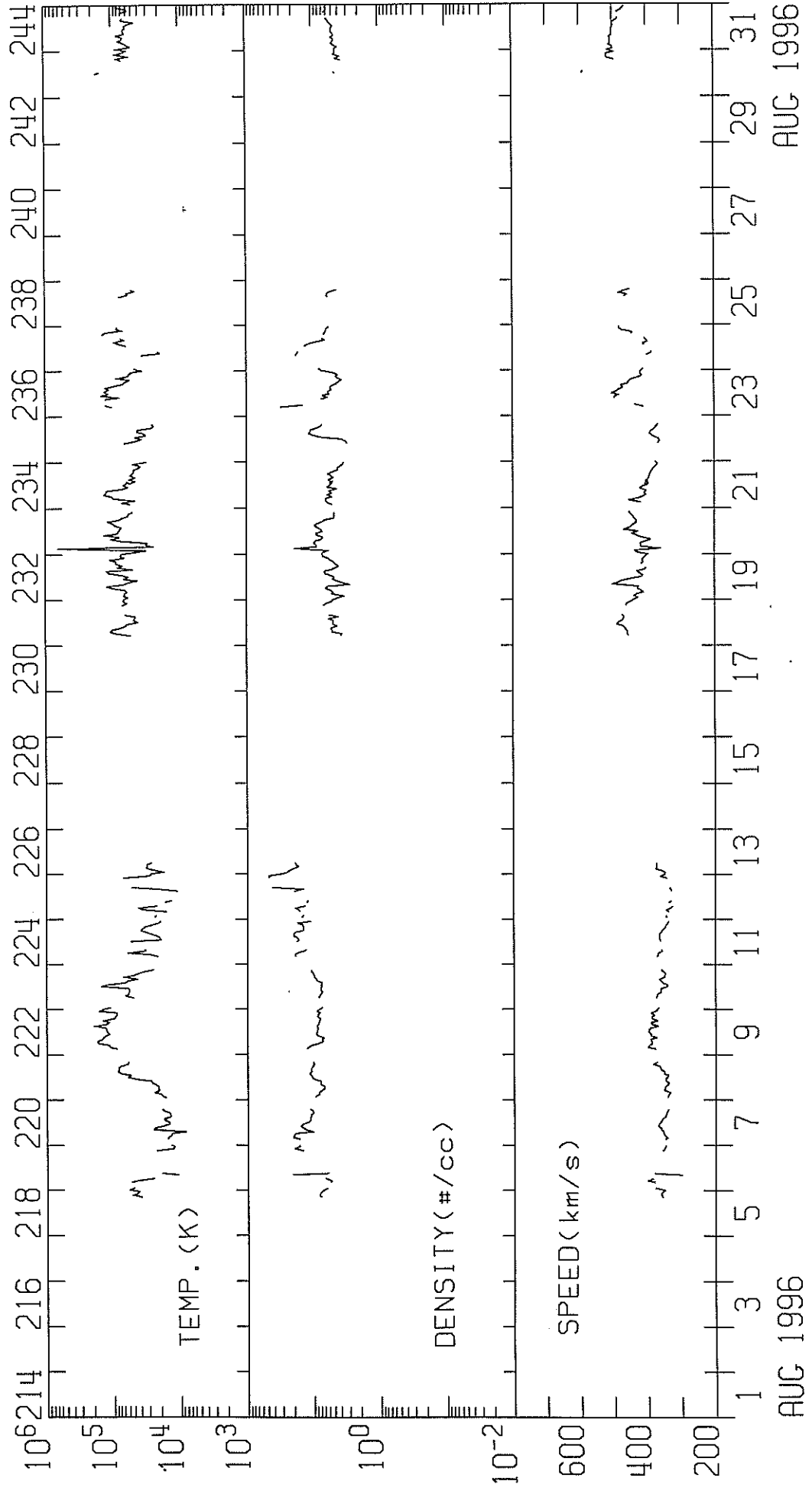
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Aug 96

AUGUST 1996

| 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 |
|-----|------------|------------|----------|-----|-----|------------|-----|--------|-------------------|------------------|----------|------|-----------------|---------|
| 26  | DSD        | 0615E      | 0810D    | S13 | E51 | 08 30.1    |     | 02     | 9                 | 9                | E        | SVTO | 7986            |         |
| 26  | ADF        | 0617E      | 1215D    | S09 | E51 | 08 30.1    | 1   | 15     | 9                 | 9                | E        | SVTO | 7986            |         |
| 26  | DSD        | 0630E      | 0815D    | S29 | E13 | 08 27.3    |     | 01     | 7                 | 7                | E        | SVTO |                 |         |
| 26  | APR        | 0746E      | 1055D    | N45 | E90 | 09 2.8     | 2   | 5      |                   |                  | P        | WROC |                 |         |
| 26  | APR        | 0747E      | 1038D    | S45 | W90 | 08 18.8    | 1   | 11     |                   |                  | P        | WROC |                 |         |
| 26  | BSL        | 0858E      | 0907D    | S46 | E90 | 09 2.9     | 1   | 3      |                   |                  | P        | WROC |                 |         |
| 26  | DSD        | 1210E      | 1735D    | S10 | E43 | 08 29.7    |     | 01     | 7                 | 7                | E        | RAMY | 7986            |         |
| 26  | ADF        | 1210E      | 2132D    | S04 | E34 | 08 29.0    | 1   | 16     | 9                 | 9                | E        | RAMY | 7986            |         |
| 26  | DSD        | 1210E      | 2225     | S11 | E48 | 08 30.1    |     | 02     | 9                 | 9                | E        | RAMY | 7986            |         |
| 26  | ADF        | 1330E      | 2225     | S17 | E54 | 08 30.7    | 1   | 04     | 9                 | 9                | E        | RAMY | 7986            |         |
| 26  | BSD        | 1603E      | 1630D    | S07 | E44 | 08 30.0    |     | 02     | 0                 | 0                | E        | RAMY | 7986            |         |
| 26  | ADF        | 2316E      | 0104     | S06 | E39 | 08 29.9    | 1   | 12     | 9                 | 9                | E        | HOLL | 7986            |         |
| 26  | DSD        | 2320E      | 0043D    | S14 | E43 | 08 30.2    |     | 03     | 9                 | 9                | E        | LEAR | 7986            |         |
| 26  | ADF        | 2320E      | 0956     | S04 | E28 | 08 29.1    | 1   | 15     | 9                 | 9                | E        | LEAR | 7986            |         |
| 27  | ADF        | 0720E      | 1705     | S10 | E40 | 08 30.3    | 1   | 20     | 9                 | 9                | E        | SVTO | 7986            |         |
| 27  | ADF        | 0848E      | 1000U    | S01 | E28 | 08 29.5    | 1   | 07     | 9                 | 9                | V        | KHAR |                 |         |
| 27  | ADF        | 1311E      | 2232     | S08 | E33 | 08 30.0    | 1   | 15     | 9                 | 9                | E        | RAMY | 7986            |         |
| 27  | ADF        | 1311E      | 2232     | S20 | E38 | 08 30.4    | 1   | 05     | 9                 | 9                | E        | RAMY | 7986            |         |
| 27  | BSD        | 1318E      | 1924D    | S14 | E40 | 08 30.6    |     | 01     | 9                 | 9                | E        | RAMY | 7986            |         |
| 27  | DSD        | 1436E      | 2114D    | S12 | E32 | 08 30.0    |     | 01     | 9                 | 9                | E        | RAMY | 7986            |         |
| 27  | ADF        | 1530E      | 0048     | S19 | E37 | 08 30.5    | 1   | 05     | 9                 | 9                | E        | HOLL | 7986            |         |
| 27  | ASR        | 1645E      | 2005D    | S09 | E90 | 09 3.4     |     |        | 8                 | 8                | E        | RAMY |                 |         |
| 27  | ADF        | 1717E      | 2146     | S09 | E32 | 08 30.1    | 1   | 10     | 9                 | 9                | E        | PALE | 7986            |         |
| 27  | DSF        | 2129U      | 1233U    | N44 | E25 | 08 30.0    | 2   | 07     | 0                 | 0                | E        | RAMY |                 |         |
| 28  | ADF        | 0205E      | 0420D    | S01 | E14 | 08 29.1    | 1   | 14     | 9                 | 9                | E        | LEAR | 7986            |         |
| 28  | ADF        | 0420E      | 0955     | S14 | E28 | 08 30.3    | 1   | 08     | 9                 | 9                | E        | LEAR | 7986            |         |
| 28  | ADF        | 0710E      | 1520     | S10 | E23 | 08 30.0    | 1   | 17     | 9                 | 9                | E        | SVTO | 7986            |         |
| 28  | ADF        | 0800U      | 0835     | S03 | E21 | 08 29.9    | 1   | 02     | 9                 | 9                | V        | KHAR |                 |         |
| 28  | ADF        | 0822E      | 1520     | S01 | E18 | 08 29.7    | 2   | 18     | 9                 | 9                | E        | SVTO |                 |         |
| 28  | ADF        | 0830E      | 0853     | S15 | E29 | 08 30.6    | 1   | 03     | 9                 | 9                | V        | KHAR |                 |         |
| 28  | DSD        | 0838U      | 0850     | S01 | E01 | 08 28.4    | 1   | 01     |                   |                  | V        | KHAR |                 |         |
| 28  | ADF        | 0850       | 0930     | S02 | E06 | 08 28.8    | 1   | 04     | 9                 | 9                | V        | KHAR |                 |         |
| 28  | ADF        | 0958       | 1020     | S01 | E11 | 08 29.2    | 1   | 08     | 9                 | 9                | V        | KHAR |                 |         |
| 28  | ADF        | 1040E      | 2233     | S12 | E24 | 08 30.2    | 1   | 09     | 9                 | 9                | E        | RAMY | 7986            |         |
| 28  | ADF        | 1050E      | 2233     | S04 | E19 | 08 29.9    | 1   | 12     | 9                 | 9                | E        | RAMY |                 |         |
| 28  | ADF        | 1657E      | 2101     | S08 | E12 | 08 29.6    | 1   | 08     | 9                 | 9                | E        | PALE |                 |         |
| 28  | ADF        | 1657E      | 2101     | S08 | E16 | 08 29.9    | 1   | 10     | 9                 | 9                | E        | PALE | 7986            |         |
| 28  | ADF        | 1740E      | 2330     | S03 | E02 | 08 28.9    | 1   | 09     | 9                 | 9                | E        | HOLL |                 |         |
| 28  | ADF        | 1745E      | 2330     | S17 | E19 | 08 30.2    | 1   | 06     | 9                 | 9                | E        | HOLL | 7986            |         |
| 29  | ADF        | 0636E      | 1217     | S07 | E08 | 08 29.9    | 1   | 15     | 9                 | 9                | E        | SVTO |                 |         |
| 29  | ADF        | 0636E      | 1217     | S09 | E08 | 08 29.9    | 1   | 12     | 9                 | 9                | E        | SVTO | 7986            |         |
| 29  | ADF        | 0640E      | 1217     | S28 | W29 | 08 27.0    | 1   | 04     | 9                 | 9                | E        | SVTO |                 |         |
| 29  | ADF        | 1033E      | 2216     | S04 | W10 | 08 28.7    | 1   | 17     | 9                 | 9                | E        | RAMY |                 |         |
| 29  | ADF        | 1033E      | 2216     | S11 | W04 | 08 29.1    | 1   | 05     | 9                 | 9                | E        | RAMY | 7986            |         |
| 29  | ADF        | 1033E      | 2216     | S14 | W01 | 08 29.4    | 1   | 06     | 9                 | 9                | E        | RAMY | 7986            |         |
| 29  | ADF        | 1150E      | 2102     | S03 | W09 | 08 28.8    | 1   | 17     | 7                 | 8                | E        | RAMY |                 |         |
| 29  | ADF        | 1154E      | 2102     | S09 | E11 | 08 30.3    | 1   | 10     | 9                 | 9                | E        | RAMY | 7986            |         |
| 29  | ADF        | 1210E      | 1500     | S27 | W45 | 08 26.0    | 2   | 05     | 9                 | 9                | E        | RAMY |                 |         |
| 29  | ADF        | 1256E      | 0019     | S07 | E04 | 08 29.8    | 1   | 19     | 7                 | 7                | E        | HOLL |                 |         |
| 29  | ADF        | 1256E      | 0019     | S18 | E06 | 08 30.0    | 1   | 06     | 7                 | 8                | E        | HOLL | 7986            |         |
| 29  | DSD        | 1358E      | 2102     | S13 | E06 | 08 30.0    |     | 01     | 9                 | 9                | E        | RAMY | 7986            |         |
| 29  | ADF        | 1649E      | 2107     | S04 | W01 | 08 29.6    | 1   | 12     | 9                 | 9                | E        | PALE |                 |         |
| 29  | DSD        | 1740       | 1747     | S12 | E03 | 08 30.0    |     | 01     | 8                 | 6                | E        | PALE | 7986            |         |
| 30  | DSF        | 1500U      | 1527U    | S27 | W45 | 08 27.1    | 2   | 05     | 9                 | 9                | E        | RAMY |                 |         |
| 31  | DSD        | 1107E      | 1210D    | S11 | W22 | 08 29.8    |     | 02     | 9                 | 9                | E        | RAMY | 7986            |         |
| 31  | DSD        | 1107E      | 1210D    | S12 | W21 | 08 29.9    |     | 02     | 9                 | 9                | E        | RAMY | 7986            |         |
| 31  | ADF        | 1114E      | 2230     | S05 | W23 | 08 29.7    | 1   | 12     | 8                 | 9                | E        | RAMY |                 |         |
| 31  | ADF        | 1114E      | 2230     | S20 | W13 | 08 30.5    | 1   | 11     | 8                 | 9                | E        | RAMY | 7986            |         |
| 31  | ADF        | 1425E      | 0113     | S12 | W21 | 08 30.0    | 1   | 13     | 9                 | 9                | E        | HOLL | 7986            |         |
| 31  | ADF        | 1440E      | 0113     | N00 | W37 | 08 28.8    | 1   | 11     | 8                 | 8                | E        | HOLL |                 |         |
| 31  | DSD        | 1454E      | 1544D    | N17 | E51 | 09 4.5     |     | 01     | 9                 | 9                | E        | RAMY | 7987            |         |

IMP 8 SOLAR WIND PLASMA  
AUGUST 1996

MIT/CSR IMP 8 PLASMA PARAMETERS



AUG 1996

IMP 8 ONE-HOUR AVERAGES

MIT

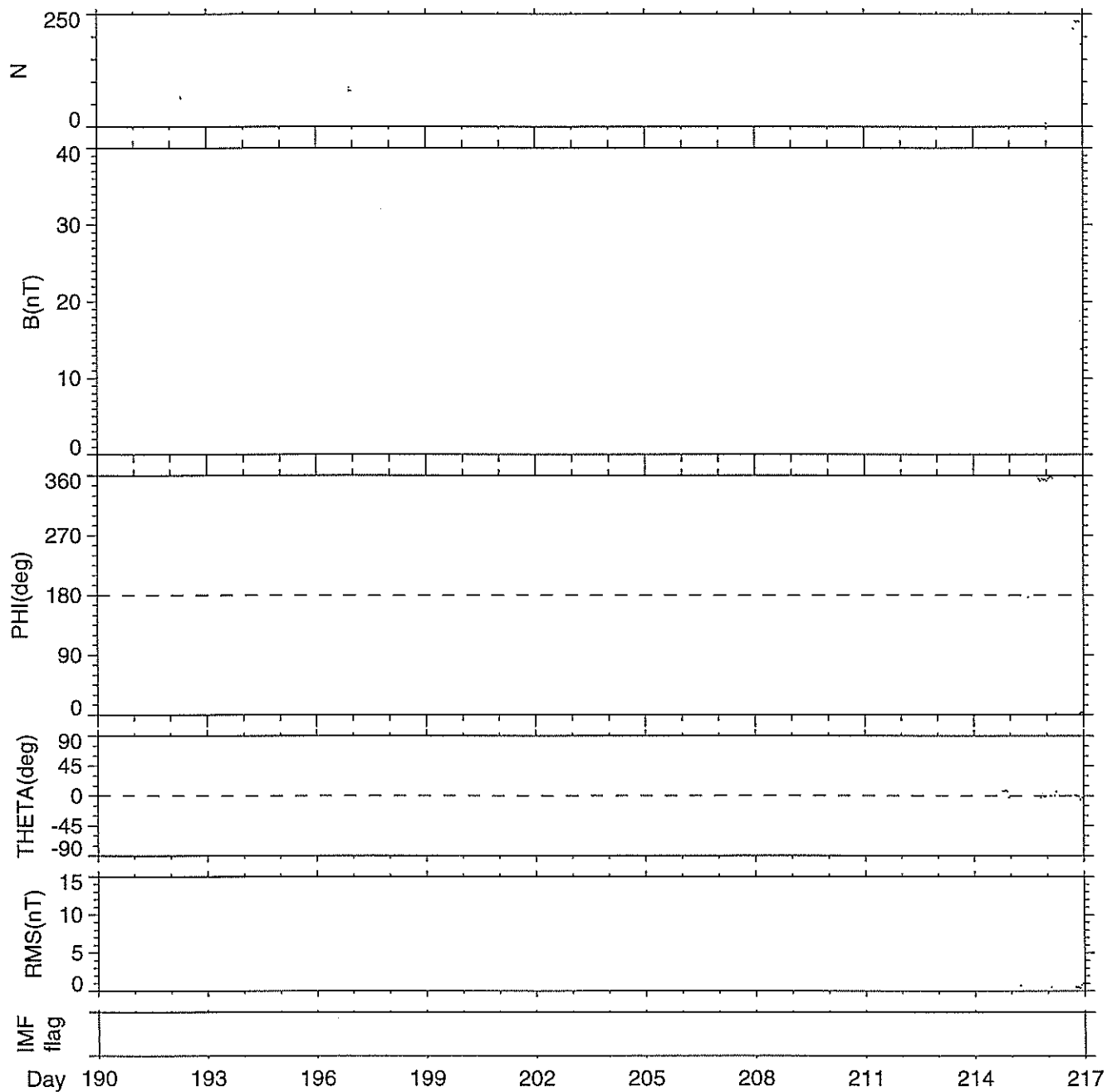
IMP 8

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

1 Hour Averages

(c) DOY 214 - 217

August 1 1996 - August 4 1996



Generation Date : Wed Feb 19 08:09:42 1997

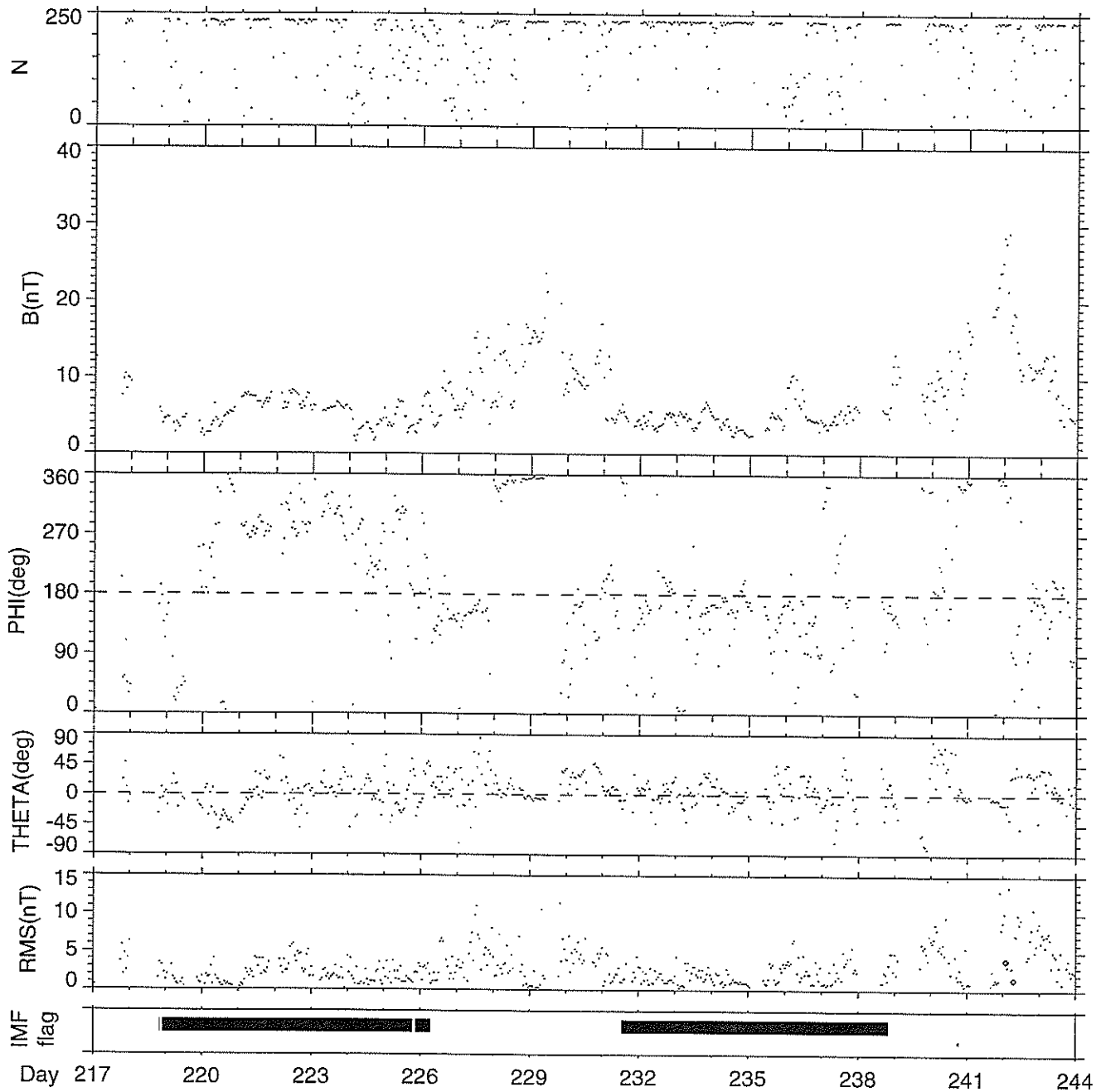
**NOTE:** The IMF "flag" (black boxes at the bottom of the plots) indicates where the interplanetary magnetic field regions are according to a dynamic model of the location of the bow shock. At all other times IMP-8 is in the magnetosphere.

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

1 Hour Averages

(c) DOY 217 - 244

August 4 1996 - August 31 1996



Generation Date : Wed Feb 19 08:09:44 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.

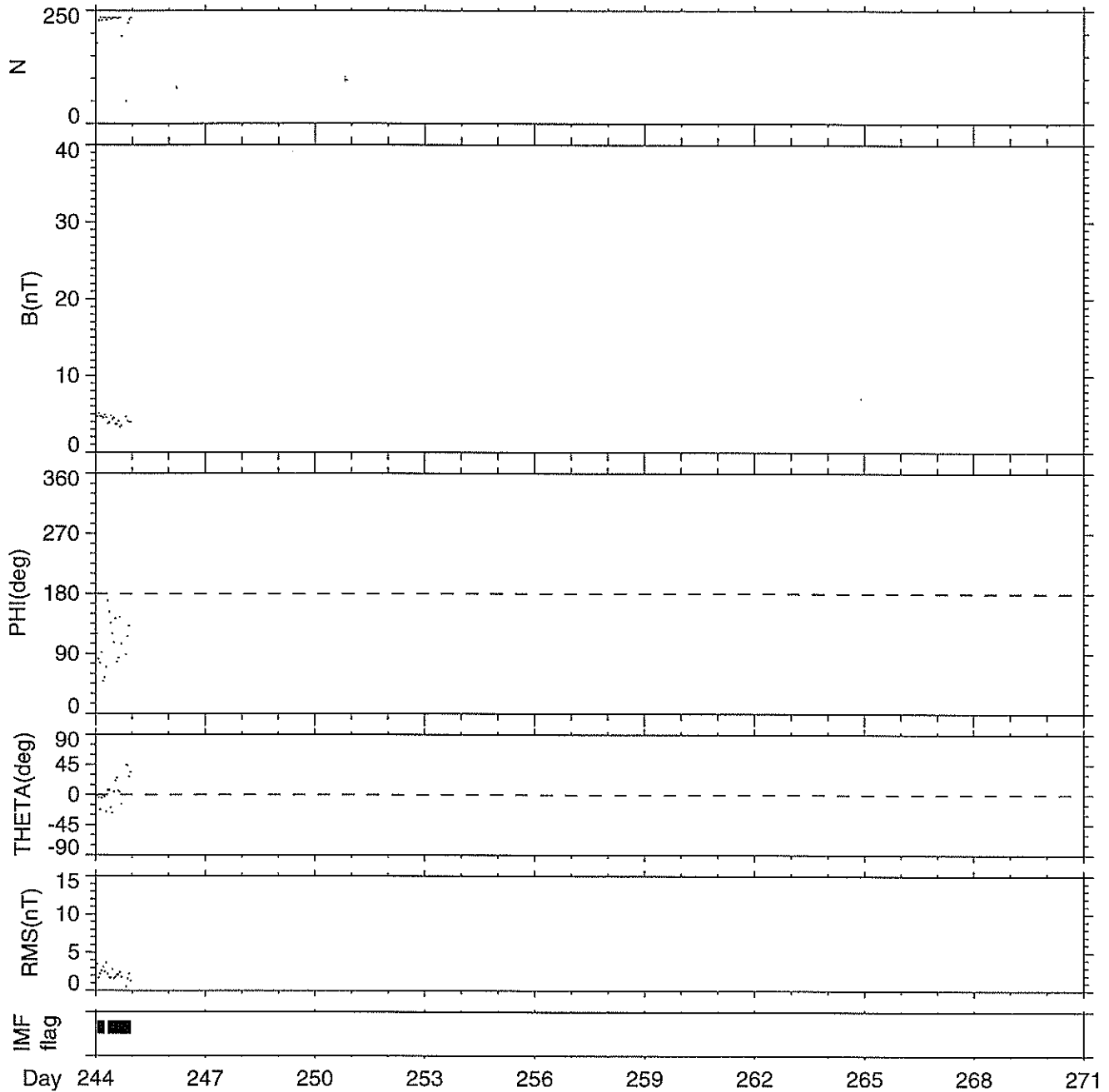
IMP-8 Magnetic Field Data in GSE Coordinates

1 Hour Averages

(c) DOY 244 - 244

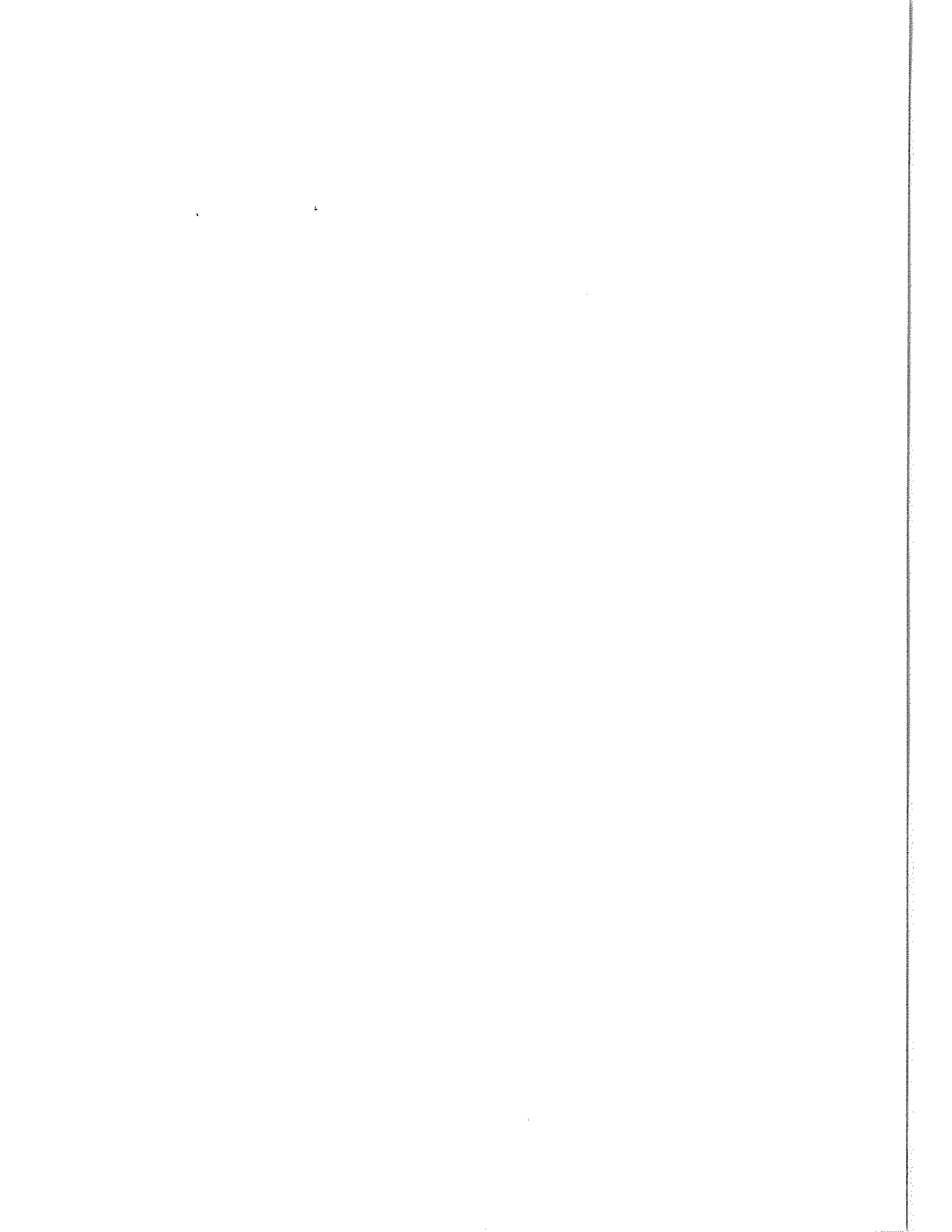
August 31 1996 -

August 31 1996



Generation Date : Wed Feb 19 08:09:44 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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\*\*\*NEW DATA\*\*\*

SAN FERNANDO OBSERVATORY CALCIUM II K-LINE FACULAR DATA  
May 1988-December 1991

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## San Fernando Observatory (SFO) Photometric Observations July-December 1996

The data presented here are based on synoptic full-disk images obtained by photoelectric photometry of sunspots at the solar San Fernando Observatory (SFO) (see Chapman et al., 1994). A description of the Cartesian Full Disk Telescope (CFDT) can be found in Chapman et al. (1989, 1992). This system has obtained photometric images of the Sun at several wavelengths since 1985. Results for the wavelength 672.3 nm are presented here.

Rapid changes in the total solar irradiance from space borne sensors are largely due to the passage of large sunspots across the disk. The effects of sunspots have often been modeled using ground-based observations by the use of a Photometric Sunspot Index (PSI), usually assuming all sunspots have the same thermal structure. The SFO data measures the mean temperature or bolometric contrast and corrected hemispherical areas, incorporating these into the PSI calculation. A discussion is found in Chapman et al. (1994). The PSI is calculated for each sunspot group and then summed over all groups present on the solar disk. The PSI is given by (Willson et al., 1981; Foukal 1981; Hudson et al., 1982)

$$PSI = \alpha \sum_i A_s^i \mu_i [(3\mu_i + 2)/2]$$

where  $A_s^i$  is the area of a sunspot in millionths of the solar hemisphere  
 $\mu_i$  is the cosine of the heliocentric angle theta,  
and  $\alpha$  is the bolometric contrast.

With photometric images, one can determine the relative temperature of each pixel from its contrast, assuming LTE (see the discussion in Chapman et al., 1994). The San Fernando PSI has  $\alpha = 0.328$  and  $A_s^i$  is the corrected area of each sunspot pixel.

Recent investigations have shown that the bolometric contrast ( $\alpha$ ) is not constant but depends on the umbral/penumbral area ratio of a sunspot. Changes in  $\alpha$  can be up to a factor of 2. The sunspot pixels are used to determine a photometric deficit in the irradiance (DEF) by summing the measured contrast of each sunspot pixel, projected against the disk, and weighted by the observed limb darkening at that wavelength. For single sunspot groups from one day to the next, it was found that the DEF and the PSI were highly correlated. However, there were often smoothly changing temporal differences. The obvious cause for differences between these two quantities must be related to temporal changes in  $\alpha$  for the sunspot group.

For further information, please contact:

Dr. Gary Chapman  
San Fernando Observatory  
Dept of Physics and Astronomy  
California State University Northridge  
Northridge, CA 91330  
gchapman@apollo.sfo.csun.edu

The tables give the date and time of the observations, the hemispherical area in pixels (5" square), the corrected total area, corrected umbral area, photometric deficit, and photometric sunspot index (PSI) in parts per million (PPM) of the solar hemisphere (or millionths of the solar hemisphere). Zeroes mean there were no sunspots visible. In the 1985 data there are no times for the first nine entries which were made before the clock was on-line. Also, there are some days with inconsistent UT date and time because the SFO date does not change when observations continue past 24:00:00 UT. If an observation is shown with a UT time of between 00:00:01 and 03:00:00, then that observation belongs to the previous UT day. The date is always the correct local date.

Data for 1985-June 1996 appeared in previous issues of SGD. Mar 85-Dec 89 in 611B 30; Jan 90-Dec 94 in 612B 36; Jan-Jul 95 in 615B 32; and Aug 95-Jun 96 in 624B 24. These data are available on-line via the NGDC ftp anonymous account (log on as anonymous with your e-mail address as the password):

```
ftp ftp.ngdc.noaa.gov  
cd STP/SOLAR_DATA/SUNSPOT_PHOTOMETRY
```

Alternatively the data can be accessed via our world wide web page at <http://www.ngdc.noaa.gov/stp/SOLAR/solar.html>.

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**SAN FERNANDO OBSERVATORY  
1996 SUNSPOT OBSERVATIONS**

WAVELENGTH 672.3nm

| Date      | Time (UT) | Hemi Area in Pixels (5" square) | Corr. Total Area (PPM) | Corr. Umbral Area (PPM) | Photo-metric Deficit (PPM) | PSI (PPM) |
|-----------|-----------|---------------------------------|------------------------|-------------------------|----------------------------|-----------|
| 1-Jul-96  | 22:16:13  | 213442.8                        | 0                      | 0                       | 0                          | 0         |
| 2-Jul-96  | 18:57:50  | 213558.7                        | 0                      | 0                       | 0                          | 0         |
| 3-Jul-96  |           |                                 |                        |                         |                            |           |
| 4-Jul-96  | 19:15:11  | 213513.7                        | 0                      | 0                       | 0                          | 0         |
| 5-Jul-96  | 17:24:36  | 213633.5                        | 0                      | 0                       | 0                          | 0         |
| 6-Jul-96  | 19:46:46  | 213336.8                        | 0                      | 0                       | 0                          | 0         |
| 7-Jul-96  | 16:11:26  | 213610.8                        | 43.6                   | 0                       | -11.6                      | -33.8     |
| 8-Jul-96  | 18:22:24  | 213657.3                        | 462.6                  | 57.7                    | -179.9                     | -321.3    |
| 9-Jul-96  | 19:09:32  | 213435.9                        | 573.3                  | 37.3                    | -170.8                     | -316.4    |
| 10-Jul-96 |           |                                 |                        |                         |                            |           |
| 11-Jul-96 | 20:06:07  | 213540.7                        | 378.3                  | 51.4                    | -42.9                      | -79.1     |
| 12-Jul-96 | 18:53:31  | 213665.3                        | 0                      | 0                       | 0                          | 0         |
| 13-Jul-96 | 21:14:32  | 213581.5                        | 0                      | 0                       | 0                          | 0         |
| 14-Jul-96 | 16:03:11  | 213688.3                        | 0                      | 0                       | 0                          | 0         |
| 15-Jul-96 | 19:01:36  | 213663.6                        | 0                      | 0                       | 0                          | 0         |
| 16-Jul-96 | 19:33:56  | 213717.3                        | 0                      | 0                       | 0                          | 0         |
| 17-Jul-96 |           |                                 |                        |                         |                            |           |
| 18-Jul-96 |           |                                 |                        |                         |                            |           |
| 19-Jul-96 | 19:50:46  | 213702.1                        | 0                      | 0                       | 0                          | 0         |
| 20-Jul-96 | 20:35:23  | 213547.1                        | 0                      | 0                       | 0                          | 0         |
| 21-Jul-96 |           |                                 |                        |                         |                            |           |
| 22-Jul-96 | 19:09:08  | 213980                          | 0                      | 0                       | 0                          | 0         |
| 23-Jul-96 | 19:20:14  | 213835.2                        | 0                      | 0                       | 0                          | 0         |
| 24-Jul-96 | 19:57:30  | 213910.2                        | 0                      | 0                       | 0                          | 0         |
| 25-Jul-96 | 21:01:59  | 213893                          | 0                      | 0                       | 0                          | 0         |
| 26-Jul-96 |           |                                 |                        |                         |                            |           |
| 27-Jul-96 | 20:11:42  | 214054.3                        | 0                      | 0                       | 0                          | 0         |
| 28-Jul-96 |           |                                 |                        |                         |                            |           |
| 29-Jul-96 | 19:25:33  | 214101.4                        | 467.8                  | 58.8                    | -106                       | -174.9    |
| 30-Jul-96 | 19:46:48  | 214105.6                        | 489.7                  | 71.4                    | -168.3                     | -263      |
| 31-Jul-96 | 19:32:15  | 214298.2                        | 460.9                  | 62.6                    | -202                       | -309.2    |

| Date      | Time (UT) | Hemi Area in Pixels (5" square) | Corr. Total Area (PPM) | Corr. Umbral Area (PPM) | Photo-metric Deficit (PPM) | PSI (PPM) |
|-----------|-----------|---------------------------------|------------------------|-------------------------|----------------------------|-----------|
| 1-Aug-96  | 19:05:31  | 214328.6                        | 428.5                  | 78.6                    | -202.6                     | -322.4    |
| 2-Aug-96  | 19:20:05  | 214354.5                        | 380.6                  | 63.8                    | -184                       | -290.5    |
| 3-Aug-96  | 20:53:16  | 214258.7                        | 286.6                  | 67.9                    | -140.3                     | -197.3    |
| 4-Aug-96  |           |                                 |                        |                         |                            |           |
| 5-Aug-96  | 19:32:45  | 214322.7                        | 230.2                  | 43.2                    | -64.9                      | -96.6     |
| 6-Aug-96  | 19:40:38  | 214735.7                        | 182                    | 30.1                    | -28.7                      | -46.5     |
| 7-Aug-96  | 19:42:01  | 214626.1                        | 0                      | 0                       | 0                          | 0         |
| 8-Aug-96  | 19:14:51  | 215336.2                        | 0                      | 0                       | 0                          | 0         |
| 9-Aug-96  | 18:52:45  | 214763.7                        | 4.7                    | 0                       | -1.1                       | -3.8      |
| 10-Aug-96 | 19:20:17  | 214830.1                        | 34.3                   | 0                       | -10.1                      | -25.9     |
| 11-Aug-96 |           |                                 |                        |                         |                            |           |
| 12-Aug-96 | 18:40:02  | 215113.3                        | 52.5                   | 0                       | -10.8                      | -25.2     |
| 13-Aug-96 | 18:24:55  | 215161.5                        | 0                      | 0                       | 0                          | 0         |
| 14-Aug-96 | 19:10:51  | 215142.5                        | 16.6                   | 0                       | -2.8                       | -10.3     |
| 15-Aug-96 |           |                                 |                        |                         |                            |           |
| 16-Aug-96 |           |                                 |                        |                         |                            |           |
| 17-Aug-96 | 18:47:28  | 215324.2                        | 0                      | 0                       | 0                          | 0         |
| 18-Aug-96 |           |                                 |                        |                         |                            |           |
| 19-Aug-96 | 20:29:43  | 215559.5                        | 0                      | 0                       | 0                          | 0         |
| 20-Aug-96 | 18:48:26  | 215471.4                        | 0                      | 0                       | 0                          | 0         |
| 21-Aug-96 | 19:46:32  | 215502.3                        | 0                      | 0                       | 0                          | 0         |
| 22-Aug-96 | 18:37:22  | 215827.8                        | 0                      | 0                       | 0                          | 0         |
| 23-Aug-96 | 20:07:37  | 215779.8                        | 0                      | 0                       | 0                          | 0         |
| 24-Aug-96 | 18:29:33  | 216127.2                        | 118.6                  | 0                       | -7.5                       | -17.8     |
| 25-Aug-96 |           |                                 |                        |                         |                            |           |
| 26-Aug-96 |           |                                 |                        |                         |                            |           |
| 27-Aug-96 | 20:29:56  | 216053                          | 71                     | 5.5                     | -23.5                      | -44.8     |
| 28-Aug-96 | 18:34:49  | 216458.8                        | 60.3                   | 5                       | -25.1                      | -43.3     |
| 29-Aug-96 |           |                                 |                        |                         |                            |           |
| 30-Aug-96 | 19:11:43  | 216705.4                        | 60.1                   | 5                       | -23.1                      | -43.3     |
| 31-Aug-96 | 20:00:23  | 216684.2                        | 60.4                   | 0                       | -19.1                      | -37.6     |

**SAN FERNANDO OBSERVATORY  
1996 SUNSPOT OBSERVATIONS**

WAVELENGTH 672.3nm

| Date      | Time (UT) | Hemi Area in Pixels (5" square) | Corr. Total Area (PPM) | Corr. Umbral Area (PPM) | Photo-metric Deficit (PPM) | PSI   |
|-----------|-----------|---------------------------------|------------------------|-------------------------|----------------------------|-------|
| 1-Sep-96  | 16:13:23  | 216892.6                        | 25.2                   | 0                       | -6.6                       | -12.7 |
| 2-Sep-96  | 19:32:11  | 216859.6                        | 0                      | 0                       | 0                          | 0     |
| 3-Sep-96  |           |                                 |                        |                         |                            |       |
| 4-Sep-96  | 19:13:13  | 217212                          | 0                      | 0                       | 0                          | 0     |
| 5-Sep-96  | 20:47:06  | 217066.6                        | 0                      | 0                       | 0                          | 0     |
| 6-Sep-96  | 18:18:59  | 217265.7                        | 0                      | 0                       | 0                          | 0     |
| 7-Sep-96  | 20:53:36  | 217235.8                        | 0                      | 0                       | 0                          | 0     |
| 8-Sep-96  | 15:58:05  | 217545.3                        | 0                      | 0                       | 0                          | 0     |
| 9-Sep-96  | 19:31:07  | 217532.8                        | 0                      | 0                       | 0                          | 0     |
| 10-Sep-96 | 20:31:52  | 217659.1                        | 0                      | 0                       | 0                          | 0     |
| 11-Sep-96 | 20:26:11  | 217544                          | 0                      | 0                       | 0                          | 0     |
| 12-Sep-96 | 17:35:01  | 217808.7                        | 0                      | 0                       | 0                          | 0     |
| 13-Sep-96 |           |                                 |                        |                         |                            |       |
| 14-Sep-96 | 20:34:05  | 218246.2                        | 0                      | 0                       | 0                          | 0     |
| 15-Sep-96 |           |                                 |                        |                         |                            |       |
| 16-Sep-96 |           |                                 |                        |                         |                            |       |
| 17-Sep-96 |           |                                 |                        |                         |                            |       |
| 18-Sep-96 | 20:29:07  | 218610.2                        | 0                      | 0                       | 0                          | 0     |
| 19-Sep-96 | 17:41:34  | 218944.3                        | 0                      | 0                       | 0                          | 0     |
| 20-Sep-96 | 19:52:06  | 218945.1                        | 0                      | 0                       | 0                          | 0     |
| 21-Sep-96 | 20:13:55  | 218938                          | 0                      | 0                       | 0                          | 0     |
| 22-Sep-96 |           |                                 |                        |                         |                            |       |
| 23-Sep-96 | 19:58:44  | 219170.8                        | 0                      | 0                       | 0                          | 0     |
| 24-Sep-96 | 20:42:05  | 219125.3                        | 0                      | 0                       | 0                          | 0     |
| 25-Sep-96 | 20:00:43  | 219626.9                        | 0                      | 0                       | 0                          | 0     |
| 26-Sep-96 | 19:45:31  | 219582.7                        | 0                      | 0                       | 0                          | 0     |
| 27-Sep-96 | 19:51:49  | 219615                          | 0                      | 0                       | 0                          | 0     |
| 28-Sep-96 | 20:20:45  | 219731.7                        | 0                      | 0                       | 0                          | 0     |
| 29-Sep-96 | 16:13:15  | 219954                          | 0                      | 0                       | 0                          | 0     |
| 30-Sep-96 | 20:37:25  | 220185.6                        | 0                      | 0                       | 0                          | 0     |
| 1-Oct-96  |           |                                 |                        |                         |                            |       |
| 2-Oct-96  | 19:25:37  | 220416.5                        | 0                      | 0                       | 0                          | 0     |
| 3-Oct-96  | 19:36:47  | 220488.9                        | 0                      | 0                       | 0                          | 0     |
| 4-Oct-96  | 19:40:40  | 220407.8                        | 0                      | 0                       | 0                          | 0     |
| 5-Oct-96  | 20:24:49  | 220609                          | 0                      | 0                       | 0                          | 0     |
| 6-Oct-96  | 16:05:12  | 220534                          | 0                      | 0                       | 0                          | 0     |
| 7-Oct-96  | 20:41:03  | 221002.9                        | 0                      | 0                       | 0                          | 0     |
| 8-Oct-96  | 20:26:06  | 220976.2                        | 0                      | 0                       | 0                          | 0     |
| 9-Oct-96  | 20:23:10  | 221177.2                        | 0                      | 0                       | 0                          | 0     |
| 10-Oct-96 | 19:39:40  | 221388.1                        | 0                      | 0                       | 0                          | 0     |
| 11-Oct-96 | 20:32:24  | 221534.1                        | 0                      | 0                       | 0                          | 0     |
| 12-Oct-96 | 22:27:58  | 222013.1                        | 0                      | 0                       | 0                          | 0     |
| 13-Oct-96 | 15:42:24  | 221868.1                        | 0                      | 0                       | 0                          | 0     |
| 14-Oct-96 | 20:24:59  | 221987.6                        | 0                      | 0                       | 0                          | 0     |
| 15-Oct-96 | 19:42:04  | 221989.7                        | 0                      | 0                       | 0                          | 0     |
| 16-Oct-96 | 20:37:50  | 222119.4                        | 0                      | 0                       | 0                          | 0     |
| 17-Oct-96 |           |                                 |                        |                         |                            |       |
| 18-Oct-96 | 17:36:00  | 222351.7                        | 0                      | 0                       | 0                          | 0     |
| 19-Oct-96 | 19:33:04  | 222589.5                        | 0                      | 0                       | 0                          | 0     |
| 20-Oct-96 | 15:53:34  | 222701.2                        | 0                      | 0                       | 0                          | 0     |
| 21-Oct-96 | 20:42:11  | 222658.6                        | 0                      | 0                       | 0                          | 0     |
| 22-Oct-96 | 19:50:44  | 222922                          | 0                      | 0                       | 0                          | 0     |
| 23-Oct-96 | 20:10:47  | 223115.6                        | 0                      | 0                       | 0                          | 0     |
| 24-Oct-96 |           |                                 |                        |                         |                            |       |
| 25-Oct-96 | 20:48:18  | 223312.5                        | 5.7                    | 0                       | -1.1                       | -3.2  |
| 26-Oct-96 |           |                                 |                        |                         |                            |       |
| 27-Oct-96 | 16:14:14  | 223209                          | 0                      | 0                       | 0                          | 0     |
| 28-Oct-96 | 22:12:31  | 223603.7                        | 0                      | 0                       | 0                          | 0     |
| 29-Oct-96 |           |                                 |                        |                         |                            |       |
| 30-Oct-96 |           |                                 |                        |                         |                            |       |
| 31-Oct-96 |           |                                 |                        |                         |                            |       |

**SAN FERNANDO OBSERVATORY  
1996 SUNSPOT OBSERVATIONS**

WAVELENGTH 672.3nm

| Date      | Time (UT) | Hemi Area in Pixels (5" square) | Corr. Total Area (PPM) | Corr. Umbral Area (PPM) | Photo-metric Deficit (PPM) | PSI    |
|-----------|-----------|---------------------------------|------------------------|-------------------------|----------------------------|--------|
| 1-Nov-96  | 20:45:33  | 224091.6                        | 0                      | 0                       | 0                          | 0      |
| 2-Nov-96  | 20:53:12  | 224262.6                        | 0                      | 0                       | 0                          | 0      |
| 3-Nov-96  |           |                                 |                        |                         |                            |        |
| 4-Nov-96  |           |                                 |                        |                         |                            |        |
| 5-Nov-96  | 22:05:36  | 224770.3                        | 0                      | 0                       | 0                          | 0      |
| 6-Nov-96  | 21:02:41  | 224681.3                        | 0                      | 0                       | 0                          | 0      |
| 7-Nov-96  | 18:33:03  | 224792.4                        | 0                      | 0                       | 0                          | 0      |
| 8-Nov-96  |           |                                 |                        |                         |                            |        |
| 9-Nov-96  |           |                                 |                        |                         |                            |        |
| 10-Nov-96 |           |                                 |                        |                         |                            |        |
| 11-Nov-96 | 21:37:17  | 225350                          | 0                      | 0                       | 0                          | 0      |
| 12-Nov-96 |           |                                 |                        |                         |                            |        |
| 13-Nov-96 |           |                                 |                        |                         |                            |        |
| 14-Nov-96 |           |                                 |                        |                         |                            |        |
| 15-Nov-96 |           |                                 |                        |                         |                            |        |
| 16-Nov-96 |           |                                 |                        |                         |                            |        |
| 17-Nov-96 |           |                                 |                        |                         |                            |        |
| 18-Nov-96 | 21:20:45  | 225966.1                        | 14.4                   | 0                       | -3.9                       | -10.4  |
| 19-Nov-96 | 19:25:02  | 226174                          | 4.5                    | 0                       | -1.7                       | -3.6   |
| 20-Nov-96 |           |                                 |                        |                         |                            |        |
| 21-Nov-96 |           |                                 |                        |                         |                            |        |
| 22-Nov-96 |           |                                 |                        |                         |                            |        |
| 23-Nov-96 | 20:43:39  | 226393.6                        | 753.9                  | 90.4                    | -237.6                     | -428.1 |
| 24-Nov-96 |           |                                 |                        |                         |                            |        |
| 25-Nov-96 |           |                                 |                        |                         |                            |        |
| 26-Nov-96 | 18:59:32  | 226787.3                        | 964.1                  | 147.6                   | -467.4                     | -775.4 |
| 27-Nov-96 | 19:39:13  | 226628.2                        | 944                    | 82.3                    | -377.7                     | -695.7 |
| 28-Nov-96 |           |                                 |                        |                         |                            |        |
| 29-Nov-96 | 20:13:26  | 226866.5                        | 561.3                  | 68.1                    | -144.4                     | -246.6 |
| 30-Nov-96 | 17:32:10  | 226696.4                        | 452.5                  | 28.2                    | -66.5                      | -129.4 |

| Date      | Time (UT) | Hemi Area in Pixels (5" square) | Corr. Total Area (PPM) | Corr. Umbral Area (PPM) | Photo-metric Deficit (PPM) | PSI   |
|-----------|-----------|---------------------------------|------------------------|-------------------------|----------------------------|-------|
| 1-Dec-96  | 16:57:23  | 226716.6                        | 95.8                   | 0                       | -7.6                       | -18   |
| 2-Dec-96  | 22:16:50  | 227290.2                        | 0                      | 0                       | 0                          | 0     |
| 3-Dec-96  | 19:18:33  | 227123                          | 0                      | 0                       | 0                          | 0     |
| 4-Dec-96  | 21:11:29  | 227171.4                        | 0                      | 0                       | 0                          | 0     |
| 5-Dec-96  |           |                                 |                        |                         |                            |       |
| 6-Dec-96  |           |                                 |                        |                         |                            |       |
| 7-Dec-96  | 21:35:43  | 227397.6                        | 0                      | 0                       | 0                          | 0     |
| 8-Dec-96  | 16:46:36  | 227339.1                        | 0                      | 0                       | 0                          | 0     |
| 9-Dec-96  |           |                                 |                        |                         |                            |       |
| 10-Dec-96 |           |                                 |                        |                         |                            |       |
| 11-Dec-96 |           |                                 |                        |                         |                            |       |
| 12-Dec-96 |           |                                 |                        |                         |                            |       |
| 13-Dec-96 | 19:21:50  | 227731.8                        | 244.5                  | 6.8                     | -38.6                      | -79.1 |
| 14-Dec-96 | 21:45:25  | 227531.4                        | 150.1                  | 0                       | -25.7                      | -62.2 |
| 15-Dec-96 | 17:33:20  | 227463.5                        | 87                     | 0                       | -32.2                      | -61.4 |
| 16-Dec-96 | 18:39:35  | 227732.5                        | 80.7                   | 0                       | -36.3                      | -64   |
| 17-Dec-96 |           |                                 |                        |                         |                            |       |
| 18-Dec-96 | 20:43:16  | 227846                          | 112.3                  | 0                       | -38.7                      | -83.2 |
| 19-Dec-96 |           |                                 |                        |                         |                            |       |
| 20-Dec-96 | 20:26:45  | 228034.1                        | 68.5                   | 12.5                    | -21.3                      | -32.5 |
| 21-Dec-96 |           |                                 |                        |                         |                            |       |
| 22-Dec-96 |           |                                 |                        |                         |                            |       |
| 23-Dec-96 | 19:31:10  | 228156.8                        | 0                      | 0                       | 0                          | 0     |
| 24-Dec-96 |           |                                 |                        |                         |                            |       |
| 25-Dec-96 | 17:57:15  | 228403.1                        | 0                      | 0                       | 0                          | 0     |
| 26-Dec-96 |           |                                 |                        |                         |                            |       |
| 27-Dec-96 |           |                                 |                        |                         |                            |       |
| 28-Dec-96 |           |                                 |                        |                         |                            |       |
| 29-Dec-96 |           |                                 |                        |                         |                            |       |
| 30-Dec-96 |           |                                 |                        |                         |                            |       |
| 31-Dec-96 |           |                                 |                        |                         |                            |       |

## San Fernando Observatory Calcium II K-line Facular Data

The K-line data presented here were obtained from photometric images taken at the San Fernando Observatory (SFO) with a 2.5 cm telescope and photometer known as the Cartesian Full Disk Telescope No. 1 (CFDT1). The system and the method of acquiring these data are described more fully in Chapman, et al. (1992,1996). The filter used in these observations has a FWHM of 1 nm centered on the Ca II K-line (3934 nm).

Facular pixels in the K-line are determined by the following procedure. The quiet sun limb darkening is first removed from flattened images, then pixels having a contrast greater or equal to 4.8% are identified as facular. This value is approximately 3 times the standard deviation of the quiet sun near disk center. Since facular contrast is observed to increase toward the limb, the 4.8% criterion is increased as the inverse of  $\mu$  to compensate for this contrast increase.

The facular area is corrected for foreshortening and is in millionths of a solar hemisphere.

The various irradiance indices derived from the K-line images are as follows:

The index called PFIFX is the excess spectral irradiance in the K-line. The measured contrast of each facular pixel is weighted by the quiet sun intensity at that disk position and all such quantities for the solar disk are summed. This index should correspond to the spectral irradiance measured by a spacecraft in this band.

The remaining indices are for modeling variations in total solar irradiance. PFIF, PFIFA, PFIFB, and PFIFC differ in the assumed contrast of faculae at the center of the solar disk and are based on a simple center-to-limb variation in contrast. PFIFSOFIA is from Sofia, et al. (1982); PFIFOUK is from Foukal (1981); and PFIF2 is from Lawrence and Chapman (1988). These last three differ somewhat in their assumed center-to-limb variation.

In conclusion, for variations in spectral irradiance, use PFIFX. For variations in total irradiance, use of PFIF, PFIFA, PFIFB, PFIFSOFIA, or PFIFOUK is recommended.

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Foukal, P, in **Physics of Sunspots**, L.E. Cram and J.H. Thomas, eds. Sacramento Peak Obs., Sunspot, NM, p.391, 1981.

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**SAN FERNANDO OBSERVATORY**  
**1988 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac:Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 16-Jul-88 | 19:44:23 | 214454.2             | 14333.2           | 2358.3         | 242.4          | 155.6          | 68.9           | 94.6           | 502.8         | 247                | 151.8             |
| 17-Jul-88 | 18:05:42 | 214384.3             | 13268.1           | 2111.8         | 221.5          | 141.3          | 61             | 85.4           | 462.3         | 200.6              | 140.3             |
| 18-Jul-88 | 19:19:59 | 214422.8             | 15527.3           | 2545.3         | 258            | 164.2          | 70.4           | 97.7           | 539.4         | 232.6              | 156.5             |
| 19-Jul-88 | 19:36:11 | 214485.8             | 13793.3           | 2334.5         | 222.7          | 136.6          | 50.5           | 90.2           | 480.9         | 258.8              | 134.7             |
| 20-Jul-88 | 18:33:48 | 214593               | 15169             | 2412.1         | 274.4          | 185.2          | 95.9           | 104.9          | 542.2         | 311.1              | 166.1             |
| 21-Jul-88 | 19:47:53 | 214584.1             | 12250.4           | 1830.1         | 245            | 177.9          | 110.8          | 87.3           | 446.3         | 244.2              | 149.8             |
| 22-Jul-88 | 18:16:53 | 214582.2             | 10442.6           | 1489.2         | 217.5          | 162.7          | 108            | 73.3           | 381.8         | 186.6              | 131.3             |
| 23-Jul-88 | 19:43:38 | 214575               | 10104.4           | 1370           | 219            | 168.2          | 117.5          | 69.4           | 371.3         | 177                | 124               |
| 24-Jul-88 | 18:33:19 | 214689.8             | 13669.5           | 1853           | 337.4          | 276            | 214.5          | 103.4          | 521.8         | 280                | 197.7             |
| 25-Jul-88 | 20:36:56 | 214597.3             | 13520.7           | 1909.3         | 322.3          | 258            | 193.8          | 105            | 515.1         | 309.1              | 193.7             |
| 26-Jul-88 | 20:57:37 | 214536.4             | 13937.1           | 2150.5         | 261.1          | 181.4          | 101.7          | 96.1           | 500.3         | 270.2              | 157.9             |
| 27-Jul-88 | 19:56:22 | 214853.8             | 15646             | 2731.9         | 213.4          | 109.6          | 5.8            | 92.8           | 524.7         | 207.9              | 137               |
| 28-Jul-88 | 20:40:17 | 214746.6             | 19670.9           | 3445.9         | 266            | 136.5          | 7.1            | 113.2          | 654.5         | 195.2              | 178.7             |
| 29-Jul-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Jul-88 | 19:05:06 | 214872.6             | 21167.6           | 3816.8         | 302.9          | 164.3          | 25.6           | 130.9          | 718.8         | 324.6              | 194.4             |
| 31-Jul-88 | 18:50:16 | 215078.5             | 20031.2           | 3537.9         | 308.8          | 181.2          | 53.5           | 128.9          | 691.8         | 355.1              | 191.6             |
| 1-Aug-88  | 22:24:12 | 214889.2             | 19090.1           | 3196.6         | 331.1          | 217            | 103            | 127.6          | 673.2         | 333.8              | 207.9             |
| 2-Aug-88  | 23:22:32 | 215299.5             | 18224.8           | 3009           | 323.1          | 216.9          | 110.6          | 119.2          | 642           | 276.1              | 202.7             |
| 3-Aug-88  | 21:06:24 | 215097.8             | 16864.2           | 2721.8         | 289.6          | 190            | 90.5           | 105.6          | 588.3         | 243.6              | 172.4             |
| 4-Aug-88  | 22:41:21 | 214839.2             | 15767             | 2515           | 286.1          | 195.3          | 104.6          | 102.7          | 558.2         | 262.4              | 167.8             |
| 5-Aug-88  | 19:09:55 | 215300.3             | 18351.8           | 2847.8         | 386.9          | 290.9          | 195            | 131.1          | 674.7         | 354.9              | 232.1             |
| 6-Aug-88  | 19:12:46 | 215342.5             | 20209.9           | 3268.6         | 415            | 306.5          | 197.9          | 146.1          | 740.5         | 397.7              | 258.1             |
| 7-Aug-88  | 19:45:14 | 215324.5             | 17200.1           | 2605.3         | 354            | 263.2          | 172.4          | 119            | 626.5         | 302.4              | 210.8             |
| 8-Aug-88  | 19:04:03 | 215500.3             | 17395.8           | 2627.3         | 360.1          | 269.5          | 178.9          | 117.4          | 631.8         | 280.5              | 210.5             |
| 9-Aug-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Aug-88 | 19:06:11 | 215528.3             | 17382.8           | 2835.5         | 296.6          | 192.4          | 88.3           | 113.1          | 608.9         | 279                | 184.6             |
| 11-Aug-88 | 22:13:47 | 215652.3             | 16317.4           | 2802.5         | 232.3          | 125.2          | 18             | 100.7          | 553.9         | 255                | 147.4             |
| 12-Aug-88 | 19:47:00 | 215628.8             | 17847.2           | 3258           | 233.9          | 113            | -7.8           | 106.5          | 596.3         | 251.2              | 152.8             |
| 13-Aug-88 | 18:38:14 | 215675.9             | 17555             | 3014.8         | 252.5          | 138.5          | 24.6           | 107.4          | 594.4         | 231.6              | 168.3             |
| 14-Aug-88 | 18:48:03 | 215894.3             | 17817.1           | 3005.5         | 279.8          | 168.5          | 57.3           | 113            | 613.7         | 256.6              | 183.2             |
| 15-Aug-88 | 19:52:14 | 215797.4             | 15767.8           | 2555.7         | 273.5          | 180            | 86.5           | 102            | 554.2         | 268.7              | 161.3             |
| 16-Aug-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Aug-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Aug-88 | 19:32:53 | 216163.3             | 12453.2           | 1823.1         | 281.6          | 220.8          | 160.1          | 90.1           | 463.8         | 222.8              | 170.3             |
| 19-Aug-88 | 18:06:34 | 216297.6             | 10364.3           | 1531.1         | 197.8          | 140.1          | 82.4           | 69.1           | 370.9         | 174.1              | 117.3             |
| 20-Aug-88 | 22:42:34 | 216577.4             | 9319.4            | 1361.4         | 176.6          | 124            | 71.5           | 63.3           | 334.1         | 166.7              | 106.6             |
| 21-Aug-88 | 18:56:21 | 216487               | 11238             | 1619.3         | 221.2          | 159.4          | 97.5           | 78.6           | 406.8         | 205.4              | 136.8             |
| 22-Aug-88 | 18:09:27 | 216598.3             | 12740.3           | 1956.4         | 223.9          | 148.3          | 72.7           | 85.9           | 450.6         | 225.1              | 141               |
| 23-Aug-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Aug-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Aug-88 | 20:01:39 | 216894.7             | 15657.5           | 2531           | 244.1          | 146.4          | 48.6           | 97.9           | 537.4         | 210.8              | 159.9             |
| 26-Aug-88 | 20:00:13 | 216978.5             | 20895.8           | 3083.8         | 406.7          | 292.1          | 177.6          | 140.4          | 750.2         | 336.5              | 246.1             |
| 27-Aug-88 | 20:06:11 | 216902.9             | 24707             | 3849.8         | 490.3          | 355            | 219.8          | 173.1          | 896           | 455.8              | 301.6             |
| 28-Aug-88 | 19:59:20 | 217105.7             | 23352.4           | 3698.3         | 443.5          | 311.9          | 180.4          | 160.2          | 838           | 413.4              | 274.3             |
| 29-Aug-88 | 19:09:33 | 217209.9             | 25064.5           | 4307.6         | 417.4          | 264.9          | 112.3          | 163            | 874.9         | 409.1              | 261.8             |
| 30-Aug-88 | 19:16:18 | 217347.1             | 22471.2           | 4013.3         | 306.5          | 156.9          | 7.4            | 134.9          | 755.1         | 313.7              | 198.2             |
| 31-Aug-88 | 18:30:49 | 217465.5             | 22000.7           | 4110.7         | 273.6          | 122.1          | -29.4          | 127.8          | 728.1         | 292.8              | 178.1             |





**SAN FERNANDO OBSERVATORY**  
**1988 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 19-Oct-88 | 20:21:52 | 223653.1             | 19928.8           | 3195.7         | 366.6          | 252.3          | 137.9          | 134.7          | 709.8         | 338.3              | 229.1             |
| 20-Oct-88 | 18:18:58 | 223811.7             | 19558             | 3077           | 368.8          | 257.7          | 146.6          | 135.7          | 702.2         | 356.3              | 231.9             |
| 21-Oct-88 | 21:26:02 | 223642.8             | 19835             | 3074.3         | 368.7          | 256.6          | 144.4          | 130.6          | 705.2         | 317.1              | 221.7             |
| 22-Oct-88 | 20:02:53 | 223872               | 20422.8           | 3404.2         | 331.1          | 205.7          | 80.3           | 129.8          | 707.2         | 300.2              | 210.9             |
| 23-Oct-88 | 19:01:56 | 223985.5             | 20967.2           | 3687.2         | 292.1          | 154            | 15.8           | 127.1          | 706.5         | 280                | 194.3             |
| 24-Oct-88 | 20:41:28 | 224014.7             | 21511.8           | 3836.7         | 288.2          | 144.7          | 1.2            | 126.4          | 718.6         | 272.8              | 186.9             |
| 25-Oct-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Oct-88 | 21:34:02 | 224915.9             | 22299.1           | 3859.2         | 352.7          | 213.2          | 73.7           | 143.3          | 771.3         | 356.7              | 225.8             |
| 27-Oct-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Oct-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Oct-88 | 19:48:02 | 224597.5             | 21821.9           | 3340.1         | 458.8          | 346            | 233.2          | 149.7          | 797.3         | 382.9              | 264.7             |
| 30-Oct-88 | 19:53:04 | 224650.6             | 18628             | 2853.6         | 365.1          | 262            | 159            | 130.4          | 674.4         | 352.9              | 223.3             |
| 31-Oct-88 | 20:26:39 | 224914.7             | 17258.6           | 2692.9         | 322.2          | 223.7          | 125.1          | 117.9          | 617.9         | 317.4              | 196.5             |
| 1-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Nov-88  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 13-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Nov-88 | 22:59:07 | 225975.8             | 21657.5           | 3595.6         | 381.9          | 255            | 128.2          | 140.8          | 762.4         | 343                | 232.9             |
| 15-Nov-88 | 18:56:53 | 226476.5             | 22196.8           | 3529.6         | 438.5          | 317.7          | 196.8          | 151.5          | 801.1         | 378                | 265               |
| 16-Nov-88 | 20:36:00 | 226588.9             | 25242.8           | 4218.2         | 487.9          | 347.3          | 206.7          | 174.8          | 909.9         | 457                | 300.9             |
| 17-Nov-88 | 18:23:38 | 226617.2             | 20245.2           | 3356.4         | 359.4          | 240.4          | 121.3          | 135.2          | 716.6         | 355.2              | 220.9             |
| 18-Nov-88 | 19:02:22 | 226689.8             | 20008.2           | 3454.7         | 323.3          | 199.9          | 76.6           | 127.3          | 693.3         | 312.6              | 201.5             |
| 19-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Nov-88 | 19:34:10 | 227000.6             | 17467.7           | 3012           | 262.6          | 151.7          | 40.7           | 106.4          | 595.5         | 242.7              | 164.2             |
| 21-Nov-88 | 20:36:53 | 227225.5             | 18696             | 3119.2         | 314.7          | 202.1          | 89.4           | 120.2          | 652.8         | 299.3              | 192.5             |
| 22-Nov-88 | 19:19:42 | 227152.4             | 17466.4           | 2712.7         | 348.2          | 252.8          | 157.4          | 122.5          | 634.3         | 329.3              | 211.6             |
| 23-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Nov-88 | 23:02:58 | 227125.6             | 16819.5           | 2523.2         | 346.6          | 257.3          | 168            | 118.2          | 614.5         | 316.8              | 206.6             |
| 25-Nov-88 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Nov-88 | 21:22:01 | 227577               | 15234.4           | 2347.2         | 308.9          | 227            | 145.1          | 106.8          | 554.6         | 279.5              | 187.7             |
| 27-Nov-88 | 19:43:00 | 227520.1             | 15407.9           | 2562.1         | 268.5          | 176.6          | 84.7           | 103.3          | 544.2         | 275.4              | 167.5             |
| 28-Nov-88 | 21:38:34 | 227665.3             | 15640             | 2774.2         | 223.5          | 121            | 18.6           | 96.3           | 530.9         | 241.8              | 141.6             |
| 29-Nov-88 | 19:35:25 | 227690.3             | 15940.2           | 2730           | 213.7          | 106.9          | 0.1            | 95.2           | 534.1         | 219.6              | 139               |
| 30-Nov-88 | 19:11:45 | 227671.5             | 17444.6           | 3009.4         | 245.2          | 130.6          | 16             | 106            | 589           | 242                | 160.3             |



## SAN FERNANDO OBSERVATORY

## 1989 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Jan-89  | 19:23:11 | 228858.3             | 18031.3           | 2656.9         | 401.4          | 312.6          | 223.8          | 127.7          | 667.9         | 314.3              | 237.8             |
| 2-Jan-89  | 20:25:14 | 229030.4             | 14558.1           | 2097.3         | 338.6          | 269.9          | 201.2          | 103.9          | 544.8         | 267.2              | 193.5             |
| 3-Jan-89  | 19:02:41 | 228910.2             | 14233.8           | 2023           | 343.7          | 278            | 212.3          | 107.5          | 540.8         | 290.6              | 204.3             |
| 4-Jan-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Jan-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Jan-89  | 18:42:48 | 228935.1             | 22734.3           | 3301.8         | 504.8          | 391.7          | 278.7          | 163.4          | 844           | 426.5              | 299.4             |
| 7-Jan-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Jan-89  | 18:50:08 | 228842               | 32330.8           | 5250.5         | 581.2          | 393.1          | 205            | 215            | 1145          | 547.2              | 356.7             |
| 9-Jan-89  | 20:00:23 | 228917.6             | 37382.6           | 6426.4         | 629            | 403.2          | 177.4          | 242.3          | 1306          | 605.4              | 390.2             |
| 10-Jan-89 | 20:36:14 | 228755.6             | 42390.6           | 7383.8         | 734.4          | 482.8          | 231.2          | 276.6          | 1489          | 688.2              | 452.5             |
| 11-Jan-89 | 21:24:51 | 228780.3             | 44126.9           | 7242.5         | 843.8          | 596.7          | 349.5          | 302.6          | 1585          | 780.5              | 518.7             |
| 12-Jan-89 | 18:30:40 | 228537.7             | 37761.2           | 6047.4         | 715.1          | 501.2          | 287.3          | 261.1          | 1357          | 699.7              | 441.2             |
| 13-Jan-89 | 20:35:45 | 228774.3             | 42599.6           | 7113.3         | 844.4          | 610.4          | 376.4          | 298            | 1546          | 830.7              | 504.5             |
| 14-Jan-89 | 20:03:52 | 228677.1             | 38468.6           | 6625.2         | 694.9          | 470.3          | 245.8          | 259.1          | 1368          | 719.9              | 416.7             |
| 15-Jan-89 | 19:12:07 | 228908.8             | 34845.1           | 6012.3         | 592.2          | 381.8          | 171.4          | 229.5          | 1223          | 612.2              | 364               |
| 16-Jan-89 | 20:14:38 | 228600.7             | 31322             | 5299.2         | 545.4          | 359.5          | 173.7          | 206.5          | 1103          | 524.3              | 337.7             |
| 17-Jan-89 | 20:57:19 | 228620.8             | 25488.6           | 4113.8         | 456.6          | 307.6          | 158.6          | 170.5          | 903.6         | 446.7              | 280               |
| 18-Jan-89 | 19:59:13 | 228531.2             | 25150.4           | 3833.1         | 529.8          | 398.3          | 266.8          | 178.8          | 924.3         | 490.3              | 313.7             |
| 19-Jan-89 | 23:25:55 | 228228.7             | 28184.5           | 3979.8         | 679.5          | 549.2          | 419            | 212.1          | 1070          | 576.9              | 400.7             |
| 20-Jan-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Jan-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Jan-89 | 18:42:08 | 227845.9             | 26068.3           | 4201.6         | 481.8          | 333.2          | 184.5          | 174            | 927.8         | 433.4              | 294.6             |
| 23-Jan-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Jan-89 | 20:29:36 | 228327.3             | 28699.2           | 4842.2         | 488            | 315.8          | 143.6          | 186.8          | 1004          | 451.5              | 307.5             |
| 25-Jan-89 | 18:52:15 | 228155.3             | 27433.5           | 4783.3         | 419.3          | 245.1          | 70.9           | 173            | 941.9         | 422                | 268.4             |
| 26-Jan-89 | 21:51:34 | 228181.4             | 25957.4           | 4590.3         | 373.2          | 204.6          | 36             | 157            | 878.9         | 364.6              | 235.8             |
| 27-Jan-89 | 19:21:02 | 228232.3             | 28465.9           | 5305           | 415.1          | 231.3          | 47.4           | 175.2          | 966.8         | 388.6              | 274               |
| 28-Jan-89 | 21:45:16 | 228188.5             | 27660.4           | 5191.2         | 408.5          | 231.1          | 53.7           | 170.8          | 940.6         | 364.4              | 272.8             |
| 29-Jan-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Jan-89 | 20:01:17 | 227995.8             | 22496.6           | 4088.5         | 386.5          | 252.8          | 119.1          | 146.1          | 787.7         | 335.4              | 245.9             |
| 31-Jan-89 | 20:07:19 | 228010.9             | 22664.4           | 4122.1         | 431.5          | 305.1          | 178.8          | 151.6          | 810.5         | 370.3              | 261.3             |
| 1-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Feb-89  | 19:41:28 | 227416.6             | 26502.5           | 3974.6         | 548.4          | 408.1          | 267.9          | 187.4          | 969.2         | 490.2              | 333.2             |
| 6-Feb-89  | 20:48:41 | 227257               | 28176             | 4209.3         | 565.6          | 414.1          | 262.5          | 193.5          | 1020          | 479.7              | 342.5             |
| 7-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Feb-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Feb-89 | 20:24:29 | 227073.7             | 36394.9           | 6351.8         | 615.6          | 393.9          | 172.1          | 243.3          | 1281          | 697.2              | 375.5             |
| 11-Feb-89 | 21:23:19 | 226968.5             | 37473.2           | 6346.9         | 627.7          | 399.2          | 170.7          | 246.3          | 1313          | 673.1              | 383.6             |
| 12-Feb-89 | 19:02:05 | 226983.9             | 39358.2           | 6663.3         | 665.2          | 427.6          | 190            | 256.4          | 1378          | 661.8              | 408.9             |
| 13-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Feb-89 | 18:58:54 | 226797.7             | 39909.5           | 6622.2         | 740.9          | 512.8          | 284.6          | 271.7          | 1425          | 695                | 461.6             |
| 15-Feb-89 | 16:57:09 | 226726.1             | 38681.3           | 6266.9         | 756.8          | 543.8          | 330.8          | 266.1          | 1396          | 688.3              | 459.5             |
| 16-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Feb-89 | 19:44:16 | 226558.3             | 35171.1           | 5478.8         | 722.5          | 535.8          | 349.1          | 245.7          | 1283          | 640.6              | 433.2             |

**SAN FERNANDO OBSERVATORY**  
**1989 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 18-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Feb-89 | 19:32:42 | 226237.2             | 27877.6           | 4654.7         | 449            | 277.3          | 105.7          | 177.3          | 963.9         | 398.3              | 291.2             |
| 21-Feb-89 | 18:12:15 | 226185.4             | 27449.5           | 4626.6         | 430.4          | 259            | 87.7           | 172.8          | 944.4         | 390.6              | 278.7             |
| 22-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Feb-89 | 21:10:10 | 225645.5             | 31620.5           | 5214.7         | 576.7          | 394.7          | 212.7          | 212.6          | 1123          | 505.6              | 367.5             |
| 26-Feb-89 | 20:27:31 | 225558.9             | 28635.5           | 4651.7         | 521.4          | 356.8          | 192.1          | 190.2          | 1015          | 456.6              | 324.7             |
| 27-Feb-89 | 18:53:41 | 225554.3             | 23983.4           | 4074.5         | 386.5          | 238.9          | 91.3           | 151.2          | 829.4         | 357.2              | 241.4             |
| 28-Feb-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-Mar-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Mar-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Mar-89  | 18:49:09 | 225170.7             | 14040.8           | 2159.3         | 251.7          | 169.2          | 86.7           | 95             | 499.3         | 267.7              | 151.9             |
| 4-Mar-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Mar-89  | 21:52:30 | 224988               | 19022.1           | 2769.3         | 400.9          | 302.3          | 203.7          | 133.6          | 696.8         | 332.6              | 242.6             |
| 6-Mar-89  | 18:51:51 | 224882.1             | 18803.2           | 2822.9         | 366.1          | 262.4          | 158.7          | 128.4          | 677.1         | 326                | 222.1             |
| 7-Mar-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Mar-89  | 22:34:25 | 224829.2             | 30287.8           | 4705.6         | 624            | 463.3          | 302.7          | 213.1          | 1106          | 550                | 379.2             |
| 9-Mar-89  | 17:55:03 | 224701.2             | 32067             | 5039.7         | 644.7          | 470.7          | 296.7          | 226.2          | 1167          | 605.1              | 394.1             |
| 10-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 13-Mar-89 | 18:29:04 | 224047.5             | 33366.5           | 5510.2         | 581.9          | 384.3          | 186.7          | 220.7          | 1175          | 543.2              | 367.2             |
| 14-Mar-89 | 18:18:05 | 223858.1             | 36349.8           | 5755.2         | 706.6          | 505.8          | 305            | 249.7          | 1309          | 622.5              | 436.9             |
| 15-Mar-89 | 19:12:25 | 223899.5             | 35896.2           | 5847.4         | 702.5          | 504.1          | 305.6          | 249.5          | 1298          | 668.5              | 427               |
| 16-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Mar-89 | 18:39:36 | 223510.6             | 34871.2           | 5228.4         | 715.2          | 530.5          | 345.9          | 241.9          | 1269          | 600.2              | 433.4             |
| 18-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Mar-89 | 19:20:38 | 223407.5             | 29325.8           | 4803.5         | 475.4          | 295.1          | 114.7          | 188.3          | 1017          | 437.2              | 307.9             |
| 20-Mar-89 | 19:06:10 | 223219.5             | 27140             | 4589.1         | 393.3          | 217.1          | 41             | 166.7          | 921.6         | 389.7              | 253.9             |
| 21-Mar-89 | 22:08:49 | 223083.7             | 25041.1           | 4272.6         | 353            | 188.7          | 24.5           | 151.5          | 845.8         | 352.9              | 226.2             |
| 22-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Mar-89 | 18:13:34 | 222428.7             | 18973.1           | 3015.5         | 329.7          | 218.1          | 106.4          | 121.9          | 664.8         | 281.1              | 203.6             |
| 27-Mar-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Mar-89 | 18:06:47 | 222222               | 12875.6           | 2153.9         | 173.5          | 87.8           | 2.1            | 76.1           | 430.8         | 165.6              | 112.9             |
| 29-Mar-89 | 18:59:25 | 222093.1             | 13631.2           | 2240.9         | 222.6          | 138.6          | 54.6           | 88.4           | 474.7         | 231.4              | 138.1             |
| 30-Mar-89 | 18:35:59 | 221945               | 13290.2           | 1974.6         | 267.2          | 194.7          | 122.2          | 94.5           | 484.6         | 267.8              | 160.9             |
| 31-Mar-89 | 19:33:06 | 221735.5             | 16093.6           | 2274.8         | 360.3          | 280.2          | 200.1          | 118.4          | 600.5         | 321.3              | 216.6             |
| 1-Apr-89  | 21:22:18 | 221551               | 17583.1           | 2557.5         | 358.1          | 264.2          | 170.3          | 122            | 639.7         | 317.9              | 213.8             |
| 2-Apr-89  | 18:11:59 | 221505.8             | 14846.6           | 2162.6         | 281.3          | 198.1          | 115            | 99.6           | 530.7         | 242.7              | 172.1             |
| 3-Apr-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Apr-89  | 17:20:04 | 221268.4             | 21295.9           | 3210.2         | 392.1          | 271.4          | 150.7          | 139.2          | 754.1         | 310                | 242.6             |
| 5-Apr-89  | 17:53:13 | 221136.4             | 29151.3           | 4518.2         | 560.4          | 399.5          | 238.7          | 194.9          | 1043          | 443.5              | 346.4             |

**SAN FERNANDO OBSERVATORY**  
**1989 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 6-Apr-89  | 17:10:52 | 221014.5             | 31219             | 4934.4         | 589            | 413.1          | 237.2          | 211.6          | 1117          | 524                | 365.1             |
| 7-Apr-89  | 16:55:51 | 220925.8             | 35594.2           | 5884.6         | 646            | 439.6          | 233.3          | 239.1          | 1265          | 621.2              | 397.2             |
| 8-Apr-89  | 20:37:41 | 220650.7             | 35075.2           | 5916.2         | 617.2          | 409.3          | 201.4          | 235.7          | 1241          | 625.6              | 384.3             |
| 9-Apr-89  | 18:10:34 | 220825               | 37977.5           | 6498.8         | 682.6          | 460.1          | 237.6          | 258.7          | 1350          | 685.3              | 428.8             |
| 10-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 13-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Apr-89 | 20:45:46 | 219972.7             | 26845             | 3946.6         | 559.5          | 419.2          | 278.9          | 187.6          | 980.4         | 457.6              | 341.6             |
| 15-Apr-89 | 20:25:47 | 219884.2             | 20757.1           | 3223.3         | 367.8          | 246.5          | 125.3          | 135.6          | 731.4         | 327.8              | 226.3             |
| 16-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Apr-89 | 22:36:42 | 219686.6             | 18561.9           | 2878.2         | 295.4          | 180.5          | 65.7           | 116.3          | 640.1         | 270                | 185.2             |
| 18-Apr-89 | 20:20:50 | 219635.3             | 24849.4           | 4000.1         | 422.6          | 273.7          | 124.9          | 161            | 869.2         | 386.5              | 264.7             |
| 19-Apr-89 | 20:16:08 | 219409.6             | 24609.2           | 4024.5         | 418.5          | 270.1          | 121.7          | 162.7          | 863.7         | 417.4              | 263.8             |
| 20-Apr-89 | 20:51:59 | 219209.9             | 27278.2           | 4410.3         | 499.5          | 342.7          | 185.9          | 182.4          | 969.8         | 459.9              | 306.7             |
| 21-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Apr-89 | 18:20:05 | 219148.7             | 24366             | 4100.8         | 412.9          | 265.8          | 118.7          | 160.9          | 854.1         | 399.6              | 264.5             |
| 23-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Apr-89 | 20:05:00 | 218813.3             | 17409.7           | 3023.1         | 229.4          | 111.8          | -5.7           | 103            | 581.9         | 250                | 144.6             |
| 25-Apr-89 | 17:23:02 | 218955.4             | 20938.6           | 3372           | 370.8          | 248.3          | 125.8          | 136.7          | 738.2         | 340.4              | 224.8             |
| 26-Apr-89 | 17:32:11 | 218911.4             | 24206.7           | 3648.4         | 524.8          | 401.4          | 278            | 174.1          | 895           | 463.2              | 314.3             |
| 27-Apr-89 | 17:02:53 | 218468.2             | 24524.2           | 3949           | 536.6          | 411.1          | 285.7          | 181.3          | 912.8         | 521.2              | 321.9             |
| 28-Apr-89 | 17:04:59 | 218437.3             | 23824.3           | 3994.3         | 489.5          | 362.4          | 235.3          | 168            | 870.9         | 463.1              | 290.5             |
| 29-Apr-89 | 19:28:38 | 218334.5             | 21176.1           | 3774.6         | 363.5          | 237.3          | 111.2          | 137.6          | 741.9         | 326.7              | 228.5             |
| 30-Apr-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-May-89  | 18:05:32 | 218044.5             | 21225.7           | 3763.9         | 301.6          | 163.5          | 25.3           | 127.9          | 716.1         | 268.1              | 199.3             |
| 2-May-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-May-89  | 18:14:57 | 217954.6             | 27623.8           | 4568.4         | 521.9          | 366            | 210.2          | 187.4          | 989.6         | 490.9              | 315.8             |
| 4-May-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-May-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-May-89  | 22:54:50 | 217572.9             | 31443.3           | 5082.4         | 583.2          | 402.8          | 222.4          | 214.5          | 1124          | 578.5              | 355.9             |
| 7-May-89  | 17:34:48 | 217513.3             | 29950.8           | 4923.7         | 519.5          | 340.2          | 160.8          | 200.2          | 1058          | 554.8              | 316.6             |
| 8-May-89  | 17:51:43 | 217501.9             | 35366.2           | 5991           | 620.3          | 411.1          | 201.9          | 234.1          | 1248          | 608                | 380.8             |
| 9-May-89  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-May-89 | 23:12:07 | 217112.6             | 34820.9           | 5572.9         | 674.3          | 480.2          | 286.1          | 241.2          | 1257          | 657.6              | 407.4             |
| 13-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-May-89 | 18:32:06 | 216566.9             | 26754.3           | 4533.2         | 380.5          | 205.9          | 31.2           | 162.3          | 904.6         | 369.4              | 246.1             |
| 17-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-May-89 | 18:12:36 | 216459.9             | 26136.7           | 4389.4         | 432.7          | 273.5          | 114.3          | 168.8          | 910.3         | 409.4              | 273.8             |
| 20-May-89 | 18:17:30 | 216350.8             | 23708             | 4001.5         | 372.8          | 224.2          | 75.6           | 151.3          | 818.5         | 372.8              | 237.8             |
| 21-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-May-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-May-89 | 19:59:43 | 215997.8             | 22091.3           | 3347.8         | 445.8          | 327.3          | 208.8          | 152.8          | 801.4         | 378.4              | 272.3             |

## SAN FERNANDO OBSERVATORY

## 1989 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemisphere<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|------------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 24-May-89 | 17:02:00 | 215961.3               | 18871.9           | 2643.1         | 401.6          | 304.9          | 208.3          | 130.6          | 691.7         | 334                | 232.9             |
| 25-May-89 | 19:40:28 | 215849.1               | 21114.1           | 3120.1         | 459.4          | 351.9          | 244.4          | 152.3          | 781.9         | 415.1              | 272.7             |
| 26-May-89 | 21:19:13 | 215655.5               | 21498             | 3286.1         | 442.5          | 327.8          | 213            | 153.5          | 786.8         | 414.8              | 270               |
| 27-May-89 | 22:01:21 | 215757.1               | 19664.3           | 3153.2         | 356            | 241.8          | 127.6          | 132.6          | 698.6         | 338.7              | 222.4             |
| 28-May-89 | 21:42:10 | 215579.5               | 18908.9           | 3045           | 305.5          | 189.8          | 74             | 117.3          | 652.8         | 270.9              | 186.5             |
| 29-May-89 | 22:41:50 | 215361.9               | 17963.2           | 3033.2         | 250            | 131.8          | 13.6           | 107.4          | 604.7         | 243.8              | 159.7             |
| 30-May-89 | 18:29:44 | 215629.8               | 20872.4           | 3387.3         | 346.5          | 220            | 93.6           | 132.9          | 725.9         | 315.6              | 215               |
| 31-May-89 | 19:16:54 | 215571.5               | 22571.2           | 3663.9         | 399.4          | 266.4          | 133.4          | 150.6          | 798.4         | 394.3              | 246               |
| 1-Jun-89  | 19:40:40 | 215357.4               | 25571             | 4045.8         | 482.4          | 337.2          | 191.9          | 175.5          | 918.1         | 487.1              | 289.7             |
| 2-Jun-89  | 19:20:03 | 215380.2               | 24776.2           | 3805.8         | 483.7          | 346            | 208.4          | 173.6          | 896.7         | 475.9              | 295.2             |
| 3-Jun-89  |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 4-Jun-89  |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 5-Jun-89  | 22:14:33 | 215247.7               | 27125.8           | 4190.6         | 510.7          | 357.6          | 204.4          | 183.5          | 970.1         | 462                | 313.9             |
| 6-Jun-89  | 18:31:46 | 215089.7               | 28449.5           | 4678.4         | 492.6          | 322            | 151.4          | 191.3          | 1004          | 516.8              | 307.9             |
| 7-Jun-89  |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 8-Jun-89  |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 9-Jun-89  |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 10-Jun-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 11-Jun-89 | 19:31:54 | 214973                 | 39813.5           | 6405.3         | 764.1          | 541.8          | 319.4          | 272            | 1431          | 712.5              | 462.6             |
| 12-Jun-89 | 22:39:25 | 214957.5               | 37312.9           | 6129.4         | 693.3          | 478.5          | 263.7          | 258.6          | 1338          | 717.4              | 428.2             |
| 13-Jun-89 | 19:29:11 | 214787.2               | 40009.6           | 6667           | 742.1          | 513            | 284            | 272.3          | 1429          | 708.1              | 459.1             |
| 14-Jun-89 | 19:56:35 | 214624.9               | 36166.7           | 5736.9         | 660.2          | 454.4          | 248.7          | 233.5          | 1278          | 524                | 401.3             |
| 15-Jun-89 | 18:41:13 | 214795.6               | 34021.8           | 5801.1         | 532.3          | 320.1          | 108            | 211.9          | 1169          | 473.3              | 340.2             |
| 16-Jun-89 | 18:58:47 | 214701.4               | 34569.2           | 6190.1         | 521.8          | 301.4          | 81             | 215.5          | 1183          | 516.8              | 332.3             |
| 17-Jun-89 | 19:25:36 | 214774.6               | 34416.7           | 5930.5         | 557.8          | 344.7          | 131.5          | 223            | 1197          | 588.6              | 346.1             |
| 18-Jun-89 | 18:58:04 | 214637.4               | 34235.4           | 5651.9         | 624            | 425.6          | 227.3          | 231.3          | 1219          | 621.9              | 379.7             |
| 19-Jun-89 | 19:12:13 | 214654.1               | 29844.4           | 4650.7         | 596.4          | 434.7          | 273            | 206.2          | 1082          | 534.2              | 359               |
| 20-Jun-89 | 19:38:26 | 214405.8               | 29715             | 4433.9         | 618.9          | 464.3          | 309.7          | 204.2          | 1083          | 495.3              | 368.6             |
| 21-Jun-89 | 17:09:37 | 214565                 | 29208.3           | 4487.5         | 594.2          | 438.6          | 283.1          | 201.7          | 1061          | 498.2              | 360               |
| 22-Jun-89 | 18:22:26 | 214581.3               | 28367.4           | 4267.8         | 600            | 452.7          | 305.4          | 200.7          | 1042          | 533.6              | 356.4             |
| 23-Jun-89 | 20:38:34 | 214428.6               | 28994.7           | 4491.1         | 599.2          | 445.2          | 291.1          | 205.8          | 1061          | 557.5              | 360.6             |
| 24-Jun-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 25-Jun-89 | 19:14:39 | 214554.9               | 24470.7           | 4173.4         | 349.7          | 189.4          | 29.1           | 150.7          | 830.5         | 373.4              | 222.8             |
| 26-Jun-89 | 19:06:38 | 214456.5               | 23970.6           | 4195.9         | 296.9          | 132            | -33            | 138.1          | 791.8         | 304.9              | 194               |
| 27-Jun-89 | 18:42:35 | 214401.5               | 26149.1           | 4670.4         | 319.7          | 139.1          | -41.5          | 150.5          | 861.6         | 316.9              | 214.9             |
| 28-Jun-89 | 19:35:38 | 214476.8               | 24228.1           | 4135           | 348.1          | 190.3          | 32.5           | 148.9          | 821.4         | 340.7              | 228.5             |
| 29-Jun-89 | 18:15:22 | 214504.4               | 24706.3           | 4109.6         | 424            | 275.9          | 127.9          | 163.2          | 868.1         | 414.1              | 266.3             |
| 30-Jun-89 | 22:36:47 | 214327.4               | 20855.3           | 3032.9         | 453.5          | 347.8          | 242.1          | 148.3          | 770.6         | 396.4              | 265.5             |
| 1-Jul-89  | 20:37:51 | 214228.4               | 20401.1           | 2824.9         | 494.4          | 400.7          | 307            | 153.7          | 775.5         | 416.3              | 291.6             |
| 2-Jul-89  | 17:26:53 | 214399.7               | 21870.4           | 3152.9         | 514            | 410            | 305.9          | 164.3          | 826.2         | 451.9              | 306.6             |
| 3-Jul-89  | 19:14:59 | 214243.4               | 22545.7           | 3316.2         | 490            | 375.8          | 261.5          | 160.3          | 832.8         | 423.1              | 288.5             |
| 4-Jul-89  | 16:36:24 | 214300.8               | 22436.1           | 3714.4         | 380.9          | 246            | 111            | 145.9          | 785.8         | 372.9              | 233.9             |
| 5-Jul-89  | 23:59:56 | 214651.4               | 19427             | 3293.3         | 247.2          | 115.5          | -16.3          | 111            | 642.4         | 226.6              | 161               |
| 6-Jul-89  | 19:51:33 | 214483                 | 25364.5           | 4089.6         | 428.6          | 278.8          | 129            | 155.6          | 878.1         | 299                | 266.2             |
| 7-Jul-89  | 21:01:09 | 214404.6               | 29392.8           | 4923.4         | 491            | 312.7          | 134.4          | 192            | 1026          | 457.7              | 317.2             |
| 8-Jul-89  | 19:39:57 | 214427.6               | 32811.4           | 5762.7         | 527.6          | 323.9          | 120.3          | 212.1          | 1138          | 533.7              | 335.6             |
| 9-Jul-89  | 20:11:16 | 214284                 | 31567.5           | 5340.7         | 518.9          | 325.5          | 132            | 204.4          | 1099          | 512.4              | 326.5             |

**SAN FERNANDO OBSERVATORY**  
**1989 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 10-Jul-89 | 20:08:48 | 214208.3             | 31962.9           | 5523.3         | 499.3          | 299.9          | 100.6          | 198.8          | 1097          | 438.1              | 320.2             |
| 11-Jul-89 | 19:49:09 | 214446               | 28891.4           | 5244.6         | 388            | 195.9          | 3.7            | 170.7          | 964.4         | 331.7              | 265.2             |
| 12-Jul-89 | 20:13:14 | 214370               | 25988.3           | 4388           | 379            | 211.6          | 44.3           | 157.9          | 880.9         | 337.7              | 247.5             |
| 13-Jul-89 | 20:12:31 | 214456.2             | 22839.7           | 3765.9         | 344.5          | 198.5          | 52.6           | 142.4          | 782.5         | 365.2              | 212.5             |
| 14-Jul-89 | 18:57:02 | 214572.6             | 25443             | 4177.6         | 432.3          | 278            | 123.7          | 169.4          | 895.2         | 471.9              | 264.9             |
| 15-Jul-89 | 18:36:04 | 214678.4             | 26502             | 4163.9         | 499.8          | 349.1          | 198.4          | 183.5          | 951.9         | 494.8              | 309.1             |
| 16-Jul-89 | 20:04:57 | 214140.9             | 21449.4           | 3089.8         | 418.8          | 301.3          | 183.9          | 144.5          | 771.2         | 356.7              | 250.8             |
| 17-Jul-89 | 17:30:59 | 214612               | 20975.3           | 3156.7         | 386.2          | 266.7          | 147.3          | 138.8          | 744.5         | 327.3              | 238.8             |
| 18-Jul-89 | 17:08:39 | 214646.3             | 22935.1           | 3530.4         | 433.6          | 304.7          | 175.7          | 155.2          | 820.4         | 380.9              | 268.8             |
| 19-Jul-89 | 20:22:35 | 214491.3             | 21072.3           | 3311           | 372.9          | 248.4          | 123.9          | 141.4          | 746.4         | 384.1              | 227.9             |
| 20-Jul-89 | 19:25:07 | 214684.9             | 22197.1           | 3589.2         | 375.6          | 241.1          | 106.5          | 147            | 779.3         | 393.1              | 233.4             |
| 21-Jul-89 | 17:08:04 | 214746.5             | 28426.2           | 4751.9         | 467.3          | 293.3          | 119.3          | 184.3          | 989.5         | 449.5              | 298.3             |
| 22-Jul-89 | 18:50:26 | 214714.9             | 24288.2           | 4091.4         | 353            | 196            | 39.1           | 147.9          | 823.9         | 335.8              | 226.3             |
| 23-Jul-89 | 18:13:20 | 214770.7             | 24318             | 4166.6         | 335.1          | 174.4          | 13.7           | 144.8          | 817.4         | 332.1              | 213               |
| 24-Jul-89 | 19:20:52 | 214801.1             | 24662.8           | 4138.2         | 375.6          | 218.3          | 61             | 155.9          | 847.4         | 400.1              | 236.3             |
| 25-Jul-89 | 20:11:16 | 214677.9             | 24446.7           | 3889.8         | 447.4          | 305.6          | 163.8          | 168            | 872.8         | 450.5              | 280.1             |
| 26-Jul-89 | 18:52:34 | 214977               | 20761.4           | 3021.4         | 433.5          | 324.9          | 216.3          | 145.2          | 759.4         | 375.3              | 258.2             |
| 27-Jul-89 | 18:05:36 | 215014.1             | 16980.4           | 2478           | 344.6          | 254.2          | 163.8          | 115.6          | 615.6         | 290.5              | 202.7             |
| 28-Jul-89 | 20:01:32 | 214908.4             | 12577.2           | 1816.6         | 249.8          | 181.1          | 112.5          | 87.8           | 455.6         | 223.3              | 154.9             |
| 29-Jul-89 | 19:43:38 | 214898.2             | 17348.7           | 2611.1         | 355.4          | 263.3          | 171.2          | 121.2          | 631.8         | 301.7              | 217.5             |
| 30-Jul-89 | 20:59:45 | 214853.9             | 18531.3           | 2888.8         | 351.4          | 246.7          | 142            | 127.1          | 665.5         | 344.2              | 212.6             |
| 31-Jul-89 | 20:27:33 | 214998.2             | 21756.5           | 3575.8         | 374.4          | 244            | 113.6          | 144.1          | 765.6         | 378.5              | 232               |
| 1-Aug-89  | 22:49:59 | 214871.5             | 25031.2           | 4097           | 413.6          | 261.6          | 109.6          | 159.5          | 869.6         | 370.7              | 260.5             |
| 2-Aug-89  | 23:21:00 | 215132.5             | 25637             | 4334.1         | 396.8          | 236.1          | 75.3           | 159.8          | 879.1         | 351.3              | 257.6             |
| 3-Aug-89  | 23:28:13 | 215270.7             | 29012.9           | 4893           | 456.6          | 276.3          | 96.1           | 180.6          | 997.3         | 401.7              | 290.7             |
| 4-Aug-89  | 21:18:48 | 215010.2             | 29059.5           | 4635.9         | 474.9          | 297.4          | 119.9          | 184.7          | 1008          | 431.5              | 299.2             |
| 5-Aug-89  | 23:00:07 | 215360.2             | 30662.5           | 5095.3         | 509.7          | 323            | 136.4          | 199.5          | 1070          | 489                | 324.3             |
| 6-Aug-89  | 0:15:10  | 215438               | 29922.7           | 5045.5         | 461.7          | 272.8          | 83.9           | 189.1          | 1028          | 446.4              | 298.9             |
| 7-Aug-89  | 21:15:23 | 215517.1             | 33250.8           | 5472.6         | 563            | 363.6          | 164.3          | 214.5          | 1161          | 499.8              | 355.6             |
| 8-Aug-89  | 23:10:17 | 215613.1             | 28592.3           | 4617.5         | 477.4          | 303.8          | 130.1          | 186.5          | 998.3         | 455.8              | 304.3             |
| 9-Aug-89  | 19:51:10 | 215601.8             | 26945.7           | 4410.8         | 445.6          | 280.8          | 115.9          | 175.1          | 940.1         | 451.6              | 277.2             |
| 10-Aug-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Aug-89 | 20:18:00 | 215623.6             | 27944.1           | 4551.6         | 489            | 323.5          | 158            | 185.7          | 985.6         | 470.8              | 306.2             |
| 12-Aug-89 | 19:49:44 | 215815.2             | 33264.8           | 5413           | 637.5          | 452.2          | 266.9          | 226.1          | 1193          | 557.7              | 393.1             |
| 13-Aug-89 | 21:06:31 | 215805.3             | 32668.1           | 5216.7         | 645.4          | 467.2          | 289            | 224.9          | 1180          | 558.7              | 396.5             |
| 14-Aug-89 | 21:44:19 | 215982.2             | 32681             | 5355.4         | 611.2          | 426.5          | 241.9          | 217.6          | 1165          | 543.5              | 368.4             |
| 15-Aug-89 | 17:02:18 | 216084.7             | 34170.7           | 6112.4         | 561.5          | 352.1          | 142.6          | 221.8          | 1190          | 546.7              | 357.7             |
| 16-Aug-89 | 19:26:31 | 216118.5             | 33477.6           | 5923.5         | 509.2          | 297.2          | 85.3           | 208.1          | 1145          | 465.2              | 330.9             |
| 17-Aug-89 | 18:25:43 | 216295.5             | 32989             | 5959.2         | 431.5          | 210.1          | -11.3          | 191.9          | 1096          | 370.2              | 292.3             |
| 18-Aug-89 | 21:59:25 | 216305.6             | 27395.5           | 5019.4         | 331.1          | 141            | -49.1          | 158.1          | 901.4         | 329.2              | 226.9             |
| 19-Aug-89 | 20:46:45 | 216375.3             | 29757.5           | 5254.2         | 424.4          | 230.3          | 36.1           | 180.6          | 1007          | 418.9              | 271.8             |
| 20-Aug-89 | 21:51:53 | 216410.9             | 31539.5           | 5382.3         | 552.5          | 365.2          | 177.9          | 210.6          | 1114          | 560                | 341.1             |
| 21-Aug-89 | 19:46:40 | 216461.2             | 29846.9           | 4712.6         | 589.4          | 424.9          | 260.5          | 209.5          | 1083          | 576.7              | 357.4             |
| 22-Aug-89 | 19:18:11 | 216615.2             | 26489.3           | 4067.4         | 550.8          | 411.1          | 271.4          | 187.4          | 969.9         | 496.3              | 331.8             |
| 23-Aug-89 | 21:00:52 | 216820.6             | 21432.8           | 3181           | 400.9          | 280.4          | 159.9          | 141            | 762.4         | 333.6              | 242.2             |
| 24-Aug-89 | 20:44:31 | 216857.6             | 16416.8           | 2329.9         | 312.6          | 221.3          | 130            | 109.3          | 586.5         | 257.8              | 190.6             |
| 25-Aug-89 | 21:24:32 | 216899.2             | 17577             | 2512.3         | 342.2          | 245            | 147.9          | 120.8          | 633.6         | 310.5              | 208.8             |
| 26-Aug-89 | 19:29:27 | 216969.2             | 16701.8           | 2412.6         | 319.6          | 225.7          | 131.8          | 115.7          | 601.4         | 311.9              | 195.7             |





**SAN FERNANDO OBSERVATORY**  
**1989 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 13-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Oct-89 | 21:00:41 | 222674               | 26317.6           | 4483.5         | 444.2          | 286.5          | 128.8          | 168.9          | 917.2         | 375.2              | 283.9             |
| 16-Oct-89 | 19:30:02 | 222984.2             | 27976.2           | 4935           | 459.8          | 288.6          | 117.4          | 180.6          | 973.5         | 445.4              | 290               |
| 17-Oct-89 | 18:09:57 | 222952.9             | 25936.6           | 4507.4         | 411.1          | 248.6          | 86.2           | 166.8          | 898.5         | 439.2              | 256.2             |
| 18-Oct-89 | 19:09:22 | 223243.8             | 26375.4           | 4466.9         | 452.6          | 294.5          | 136.3          | 173            | 927.1         | 462.1              | 273.9             |
| 19-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Oct-89 | 17:57:58 | 224173               | 20532.2           | 3333           | 342            | 217.2          | 92.4           | 133.4          | 716.4         | 328                | 216.4             |
| 27-Oct-89 | 17:24:52 | 224349               | 22385             | 3777           | 349.2          | 208.5          | 67.8           | 141.5          | 771.3         | 350.8              | 219.3             |
| 28-Oct-89 | 18:12:47 | 224478.3             | 24242.2           | 4130.8         | 369.3          | 215.1          | 61             | 152.1          | 831.6         | 374.7              | 233.4             |
| 29-Oct-89 | 21:25:03 | 224690.7             | 23833.1           | 3889           | 378.7          | 230.7          | 82.7           | 150.4          | 822.7         | 361.2              | 237.4             |
| 30-Oct-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-Oct-89 | 18:52:33 | 224858.1             | 30761.6           | 4930.5         | 577.1          | 403.2          | 229.3          | 206.5          | 1099          | 530.6              | 347.7             |
| 1-Nov-89  | 20:24:03 | 224915.8             | 30067.4           | 4833.9         | 557.7          | 384.8          | 212            | 206.5          | 1076          | 562.5              | 342.8             |
| 2-Nov-89  | 19:01:17 | 225064.7             | 31829             | 5360.3         | 562            | 374.8          | 187.6          | 210.5          | 1124          | 531.9              | 347.3             |
| 3-Nov-89  | 18:17:33 | 225109               | 27881.7           | 4747.6         | 436.7          | 262.3          | 88             | 175.6          | 959.7         | 408.9              | 279.5             |
| 4-Nov-89  | 18:53:53 | 225267.5             | 29218.8           | 5099.9         | 443.5          | 258.5          | 73.4           | 180.2          | 998.8         | 414.3              | 280.9             |
| 5-Nov-89  | 21:09:03 | 225553.6             | 33499.3           | 6170.4         | 494.6          | 278.9          | 63.2           | 207.9          | 1142          | 485.6              | 321.1             |
| 6-Nov-89  | 21:02:23 | 225689.9             | 36735.6           | 6633.3         | 566.4          | 335            | 103.7          | 229.9          | 1261          | 530.8              | 363.9             |
| 7-Nov-89  | 20:04:30 | 225592.8             | 38212.6           | 6713.8         | 640.6          | 410.5          | 180.3          | 245.4          | 1331          | 560.8              | 407.4             |
| 8-Nov-89  | 20:02:29 | 225734.8             | 38999.9           | 6305           | 725.6          | 505            | 284.5          | 259.6          | 1387          | 600                | 453.2             |
| 9-Nov-89  | 19:25:59 | 225880               | 38740             | 6533.6         | 663.1          | 432.2          | 201.3          | 250.7          | 1356          | 592.5              | 415.3             |
| 10-Nov-89 | 18:25:18 | 225995.4             | 35935.2           | 6120           | 604.2          | 388.4          | 172.7          | 227.5          | 1252          | 545.5              | 366.2             |
| 11-Nov-89 | 18:41:24 | 226063.8             | 37424.6           | 6514.9         | 657            | 437.4          | 217.9          | 243.7          | 1316          | 571                | 410               |
| 12-Nov-89 | 21:33:40 | 226326.5             | 35487.8           | 6072.2         | 658.8          | 457.6          | 256.3          | 237.8          | 1263          | 548.9              | 416.9             |
| 13-Nov-89 | 20:23:28 | 226396.4             | 39251.3           | 7185.1         | 672.9          | 438.7          | 204.4          | 256.3          | 1376          | 614.2              | 425.3             |
| 14-Nov-89 | 19:38:09 | 226454.8             | 31869.1           | 5866.4         | 494.7          | 293.8          | 92.9           | 201.5          | 1097          | 502.1              | 311.4             |
| 15-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Nov-89 | 19:03:51 | 226518.1             | 30585.9           | 5422.8         | 527.4          | 345.3          | 163.3          | 199            | 1073          | 496.3              | 324               |
| 17-Nov-89 | 18:35:04 | 226685.9             | 30907.9           | 5326.8         | 564            | 386            | 208            | 206.1          | 1098          | 521                | 345               |
| 18-Nov-89 | 20:11:45 | 226876.7             | 28497.4           | 4926.1         | 516.3          | 350.1          | 183.8          | 193.6          | 1015          | 535.8              | 314               |
| 19-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Nov-89 | 19:32:42 | 226996.4             | 33519.8           | 5296.5         | 652.1          | 469.2          | 286.3          | 223.7          | 1201          | 494.8              | 402.8             |
| 22-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Nov-89 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Nov-89 | 21:32:55 | 227438.2             | 31534.1           | 5432.4         | 504.2          | 309.1          | 113.9          | 200.3          | 1090          | 464.5              | 323.6             |
| 27-Nov-89 | 20:27:31 | 227517               | 27122.3           | 4344.1         | 487            | 329.9          | 172.7          | 178.1          | 958.5         | 429.7              | 299.4             |
| 28-Nov-89 | 19:16:06 | 227578.4             | 26372.1           | 4459.1         | 444.7          | 284.5          | 124.3          | 174.4          | 925.4         | 470.6              | 275.3             |
| 29-Nov-89 | 20:28:06 | 227718.2             | 29951.2           | 4921.7         | 563.1          | 392.7          | 222.4          | 206.4          | 1074          | 547.9              | 348.8             |
| 30-Nov-89 | 19:19:11 | 227803.7             | 34075.5           | 5592.3         | 654.5          | 465.5          | 276.5          | 230.4          | 1221          | 550.2              | 405               |

## SAN FERNANDO OBSERVATORY

## 1989 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemisphere<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|------------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Dec-89  | 18:28:19 | 227875.2               | 27849.2           | 4532.3         | 481.4          | 317.2          | 153            | 178.1          | 973.9         | 395.9              | 300.5             |
| 2-Dec-89  | 18:55:21 | 228001.1               | 29560.9           | 5130.3         | 447.6          | 260.3          | 73             | 182            | 1010          | 410.3              | 285.5             |
| 3-Dec-89  | 20:48:37 | 228037.8               | 33081.9           | 5730.7         | 510.9          | 302.6          | 94.2           | 208.1          | 1136          | 479                | 331.6             |
| 4-Dec-89  | 20:32:52 | 228220.7               | 33116.2           | 5697.4         | 525.1          | 319.5          | 113.9          | 209.5          | 1142          | 476.1              | 339.5             |
| 5-Dec-89  | 19:22:19 | 228231.3               | 31952             | 5349.2         | 516.8          | 320.6          | 124.3          | 202.8          | 1106          | 463.9              | 330.3             |
| 6-Dec-89  | 20:28:39 | 228202.2               | 29631.3           | 4773.6         | 521.2          | 347.6          | 173.9          | 192.8          | 1042          | 454.6              | 323.5             |
| 7-Dec-89  | 18:55:21 | 228232.9               | 26575.5           | 4290.1         | 451.4          | 291.5          | 131.6          | 173.4          | 931.1         | 442.4              | 278.8             |
| 8-Dec-89  | 18:47:02 | 228484.6               | 32459.8           | 5293.6         | 597.4          | 411.6          | 225.7          | 217.4          | 1155          | 540.8              | 368.5             |
| 9-Dec-89  | 19:12:09 | 228467.9               | 33912.6           | 5597.9         | 630.4          | 438.2          | 246.1          | 225.5          | 1207          | 542.6              | 387.1             |
| 10-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 11-Dec-89 | 19:56:09 | 228664.1               | 21486.9           | 3471.7         | 326.6          | 189.9          | 53.1           | 135.2          | 736.8         | 324.9              | 210.6             |
| 12-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 13-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 14-Dec-89 | 19:05:24 | 228776.3               | 23520.3           | 3853.2         | 392            | 249.7          | 107.4          | 151            | 819.1         | 356.4              | 246.9             |
| 15-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 16-Dec-89 | 19:04:11 | 228866.6               | 23079.2           | 3801.3         | 397.5          | 258.9          | 120.3          | 153.3          | 813.3         | 422.6              | 241.6             |
| 17-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 18-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 19-Dec-89 | 19:31:07 | 228952.4               | 25694.2           | 4357.6         | 385.1          | 221.7          | 58.4           | 156.8          | 875.1         | 344.5              | 246               |
| 20-Dec-89 | 19:29:39 | 228934.3               | 23239.3           | 3793.2         | 359.9          | 215            | 70.2           | 141.3          | 794.4         | 299                | 226.3             |
| 21-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 22-Dec-89 | 18:59:17 | 229067                 | 28333.5           | 4780.8         | 444.5          | 267.4          | 90.3           | 179.5          | 975.8         | 412.8              | 288.7             |
| 23-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 24-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 25-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 26-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 27-Dec-89 | 20:04:44 | 229327.1               | 38247.6           | 6921.8         | 577.4          | 333.9          | 90.5           | 237.8          | 1308          | 553.5              | 370.7             |
| 28-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 29-Dec-89 |          |                        |                   |                |                |                |                |                |               |                    |                   |
| 30-Dec-89 | 18:58:22 | 229083.7               | 38705             | 6708.6         | 575.3          | 327.5          | 79.8           | 238.5          | 1319          | 541.7              | 371.2             |
| 31-Dec-89 | 20:57:32 | 229096.1               | 36287.1           | 6167.3         | 615.2          | 395.9          | 176.6          | 239.6          | 1273          | 619.3              | 386.4             |





**SAN FERNANDO OBSERVATORY**  
**1990 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Apr-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Apr-90  | 18:33:28 | 220849.3             | 15105.1           | 2290.6         | 316.4          | 236.4          | 156.4          | 109.8          | 556.5         | 313.9              | 191.1             |
| 10-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Apr-90 | 20:15:51 | 220401.1             | 11492             | 1688.7         | 212.2          | 146.4          | 80.6           | 77             | 409.6         | 202.5              | 127.5             |
| 12-Apr-90 | 19:00:54 | 221247.7             | 15898.6           | 2322.4         | 328.5          | 244.2          | 160            | 111.9          | 581.2         | 298.2              | 196.6             |
| 13-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Apr-90 | 21:12:15 | 220143.3             | 29410             | 4333.2         | 669            | 525.3          | 381.6          | 215.8          | 1100          | 576                | 398.8             |
| 15-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Apr-90 | 21:53:24 | 219718.8             | 46070.6           | 8069.1         | 753.5          | 470.9          | 188.2          | 297.7          | 1601          | 719.5              | 481.9             |
| 22-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Apr-90 | 21:52:41 | 219481.9             | 27939.7           | 4075.4         | 575.5          | 428.4          | 281.3          | 194.1          | 1017          | 461                | 354.6             |
| 25-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Apr-90 | 21:30:20 | 218914               | 18960.5           | 3184.1         | 271.2          | 147.8          | 24.4           | 115            | 641.3         | 256.8              | 176               |
| 27-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Apr-90 | 19:02:11 | 218806.8             | 18734.5           | 3014.4         | 313.5          | 199.7          | 85.9           | 122.9          | 654.8         | 302.3              | 201.1             |
| 29-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Apr-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-May-90  | 17:42:42 | 218497.1             | 12734.1           | 2076           | 205.1          | 126.3          | 47.5           | 81             | 441.6         | 212.5              | 124               |
| 2-May-90  | 18:00:03 | 218217.5             | 10611.5           | 1677.7         | 172            | 106.5          | 41             | 68.4           | 368.5         | 170.2              | 108.9             |
| 3-May-90  | 22:49:52 | 218349.4             | 8386.1            | 1285.8         | 144.4          | 94.6           | 44.8           | 54.5           | 293.8         | 126.7              | 91.3              |
| 4-May-90  | 18:21:18 | 218011.5             | 9429.8            | 1368.9         | 174.6          | 120.8          | 67.1           | 63.2           | 335.8         | 156                | 107.7             |
| 5-May-90  | 17:51:59 | 217941               | 9505.5            | 1406.9         | 175.8          | 121.3          | 66.7           | 64.6           | 339.5         | 172                | 107.4             |
| 6-May-90  | 20:23:22 | 217856.7             | 9072.3            | 1394.8         | 144.4          | 87.7           | 31             | 58.6           | 314.6         | 152.6              | 91                |
| 7-May-90  | 18:03:48 | 217694.8             | 11736             | 1918.8         | 178.2          | 104.1          | 30.1           | 71.7           | 400.3         | 153.6              | 114.2             |
| 8-May-90  | 20:30:08 | 217340.1             | 15516             | 2426.9         | 268            | 177.1          | 86.2           | 98.2           | 540.7         | 189.4              | 172.8             |
| 9-May-90  | 18:03:41 | 217399.1             | 17382.3           | 2935.4         | 286.8          | 180.9          | 75             | 112.1          | 604.4         | 259.6              | 185               |
| 10-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-May-90 | 18:14:52 | 217272               | 35012.1           | 5620.4         | 701.4          | 512.7          | 324.1          | 241.4          | 1267          | 584.7              | 432.3             |
| 13-May-90 | 20:25:43 | 216892.7             | 37012             | 6129.2         | 680.1          | 468.8          | 257.6          | 245.9          | 1314          | 580.1              | 423.8             |
| 14-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-May-90 | 20:01:37 | 216730               | 39033.4           | 7109.4         | 554.5          | 298.2          | 41.8           | 241.3          | 1324          | 584.1              | 361.8             |
| 16-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-May-90 | 18:34:21 | 216760.2             | 40722.8           | 7151.4         | 610            | 349.8          | 89.6           | 252.2          | 1390          | 591.2              | 389.7             |
| 18-May-90 | 22:56:35 | 216947.9             | 36623.9           | 6295.1         | 575.1          | 345.3          | 115.5          | 233.8          | 1265          | 584.8              | 364.7             |

SAN FERNANDO OBSERVATORY

1990 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 19-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-May-90 | 19:26:22 | 216779.7             | 32436.4           | 5035.5         | 617.9          | 435.2          | 252.4          | 223.7          | 1166          | 593                | 380.1             |
| 21-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-May-90 | 20:40:00 | 216368.2             | 26401             | 4040.6         | 462.7          | 308.5          | 154.3          | 170.2          | 925.4         | 362.6              | 294.6             |
| 23-May-90 | 19:03:44 | 216230.8             | 22315.5           | 3597.2         | 352.6          | 214.8          | 77.1           | 137.8          | 765.9         | 281.4              | 228               |
| 24-May-90 | 18:57:14 | 216131.7             | 18189.8           | 3001.3         | 253            | 134            | 15             | 106.9          | 609.9         | 214.2              | 164.6             |
| 25-May-90 | 18:22:30 | 216167.9             | 17542             | 2978.8         | 246.6          | 131.3          | 16             | 107.2          | 592.4         | 239.7              | 164.6             |
| 26-May-90 | 23:30:25 | 216049.3             | 19088.1           | 2939.6         | 348.9          | 239.5          | 130.2          | 126.2          | 676.9         | 301.2              | 215.4             |
| 27-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-May-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-Jun-90  | 18:26:40 | 215830.5             | 12907.4           | 1939.7         | 238            | 164.3          | 90.5           | 86.1           | 459.2         | 213.8              | 145.9             |
| 2-Jun-90  | 19:00:38 | 215535.9             | 12650.7           | 1896.8         | 235.2          | 162.8          | 90.4           | 86.9           | 452.5         | 226.5              | 147.2             |
| 3-Jun-90  | 19:49:57 | 215339.4             | 12471.1           | 1883.6         | 225.2          | 153            | 80.8           | 82.7           | 441.8         | 205.1              | 138.8             |
| 4-Jun-90  | 18:57:27 | 215420.8             | 12879.1           | 1908.2         | 231            | 156.5          | 82             | 84             | 454.4         | 195.3              | 142.9             |
| 5-Jun-90  | 19:30:57 | 215239.9             | 17285             | 2807.5         | 289.2          | 184.6          | 80.1           | 112.3          | 602.8         | 259.8              | 187.2             |
| 6-Jun-90  | 18:14:19 | 215345.6             | 17407.1           | 2943.9         | 235.6          | 119.5          | 3.3            | 104.9          | 584           | 233.9              | 157.2             |
| 7-Jun-90  | 20:56:05 | 215268.6             | 20186.3           | 3428.7         | 278.5          | 145.7          | 12.8           | 119.3          | 677           | 250.2              | 180.9             |
| 8-Jun-90  | 19:46:43 | 215047.4             | 23438.8           | 3699.1         | 377.6          | 234.3          | 91.1           | 145.8          | 807.4         | 300.2              | 243.1             |
| 9-Jun-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Jun-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Jun-90 | 19:08:03 | 214817.5             | 32007.5           | 5382.2         | 551.6          | 360.1          | 168.5          | 212.1          | 1126          | 550.6              | 343.7             |
| 12-Jun-90 | 19:51:54 | 214788.9             | 34075.1           | 5595.2         | 594.7          | 392.4          | 190.1          | 226.1          | 1202          | 588                | 367.6             |
| 13-Jun-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Jun-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Jun-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Jun-90 | 18:39:59 | 214728.1             | 27414.8           | 4746.2         | 385.1          | 204.2          | 23.3           | 168.3          | 927.7         | 411.4              | 248.8             |
| 17-Jun-90 | 19:54:22 | 214767.4             | 25629.4           | 4280.8         | 381.6          | 217            | 52.5           | 160.7          | 875.1         | 369.9              | 252.9             |
| 18-Jun-90 | 20:47:47 | 214405.7             | 24603.5           | 3964.4         | 401.4          | 250.7          | 100.1          | 158.5          | 853.5         | 356.1              | 264.1             |
| 19-Jun-90 | 20:19:57 | 214552.9             | 19090.3           | 2823.1         | 353.1          | 245            | 136.8          | 126.3          | 677.5         | 282.5              | 221.9             |
| 20-Jun-90 | 17:21:22 | 214847.5             | 17697.6           | 2581.7         | 350.1          | 254.3          | 158.4          | 119.8          | 637.7         | 285.4              | 212.5             |
| 21-Jun-90 | 21:04:11 | 214495.5             | 12703.6           | 1758.4         | 266.6          | 200.2          | 133.7          | 90.4           | 465.9         | 231.3              | 163.4             |
| 22-Jun-90 | 21:42:25 | 214559.9             | 11054.8           | 1572.6         | 210.1          | 148.2          | 86.3           | 74.7           | 395.9         | 187.7              | 127.9             |
| 23-Jun-90 | 17:42:30 | 214614.8             | 12521.8           | 1847.4         | 221.3          | 147.9          | 74.6           | 82.5           | 441.3         | 195.3              | 139.5             |
| 24-Jun-90 | 18:35:26 | 214548.2             | 12137.8           | 1889.2         | 183.1          | 106.6          | 30.1           | 73.8           | 412.7         | 141.3              | 121.8             |
| 25-Jun-90 | 17:13:29 | 214621.3             | 13729.1           | 2293.6         | 182.7          | 90.9           | -0.9           | 81.7           | 458.1         | 160.6              | 127               |
| 26-Jun-90 | 19:46:20 | 214470               | 11741.6           | 1952           | 143.6          | 62.4           | -18.9          | 67.9           | 387.3         | 148.9              | 95.8              |
| 27-Jun-90 | 17:15:44 | 214480.4             | 15276.2           | 2540.7         | 223.1          | 124.8          | 26.5           | 92             | 518.1         | 210.1              | 139.3             |
| 28-Jun-90 | 21:28:48 | 214502               | 21622.3           | 3437.9         | 386.6          | 260            | 133.4          | 145.5          | 766.5         | 373.2              | 242.5             |
| 29-Jun-90 | 21:53:21 | 214555.6             | 22950.1           | 3601.8         | 421.8          | 290.6          | 159.3          | 152.3          | 815.5         | 380.8              | 255.8             |
| 30-Jun-90 | 19:05:55 | 214362.2             | 27818.4           | 4403.6         | 510.5          | 351.7          | 193            | 183.4          | 986.7         | 435.5              | 313.2             |

**SAN FERNANDO OBSERVATORY**  
**1990 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Jul-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Jul-90  | 18:46:34 | 214616               | 31949.6           | 5805.2         | 451.2          | 241.6          | 32             | 195.7          | 1080          | 440.1              | 300.4             |
| 3-Jul-90  | 18:45:40 | 214547.2             | 30588.1           | 5399.5         | 413.6          | 209.7          | 5.8            | 182.6          | 1025          | 408.8              | 270.7             |
| 4-Jul-90  | 19:34:49 | 214482.2             | 27266.4           | 4615.4         | 366.7          | 184.9          | 3              | 161            | 912.2         | 357.2              | 236.8             |
| 5-Jul-90  | 21:08:03 | 214382.2             | 26550.4           | 4448           | 388.9          | 217.6          | 46.3           | 164.7          | 902.9         | 365.3              | 259.6             |
| 6-Jul-90  | 21:22:31 | 214322.2             | 28256.7           | 4492.9         | 488.2          | 320.6          | 153            | 184.7          | 991           | 426.5              | 312.1             |
| 7-Jul-90  | 21:31:48 | 214349.8             | 21200.5           | 3104.3         | 411.8          | 294.9          | 177.9          | 144.2          | 762.6         | 361.3              | 250.1             |
| 8-Jul-90  | 18:58:02 | 214681.3             | 20451.9           | 3070.6         | 372.1          | 253.8          | 135.5          | 137.3          | 726.9         | 352.3              | 229.2             |
| 9-Jul-90  | 18:13:20 | 214615.4             | 22168.9           | 3323.8         | 419.1          | 293.7          | 168.3          | 152.4          | 795.3         | 396.8              | 259.8             |
| 10-Jul-90 | 17:35:24 | 214599.4             | 21416.6           | 3225.8         | 388            | 264.6          | 141.1          | 141.3          | 758.3         | 341.6              | 238.8             |
| 11-Jul-90 | 17:19:25 | 214679.8             | 20166.2           | 3083.5         | 323            | 198.9          | 74.8           | 125.8          | 695.4         | 283.1              | 202.9             |
| 12-Jul-90 | 22:00:31 | 214568.4             | 17098.4           | 2665.9         | 249.6          | 138.9          | 28.2           | 105.7          | 581.6         | 248.7              | 161.6             |
| 13-Jul-90 | 23:08:15 | 214473.4             | 18718.4           | 3039.5         | 259.4          | 135.1          | 10.9           | 114.4          | 632           | 280                | 167.7             |
| 14-Jul-90 | 19:07:11 | 214473.2             | 19618.1           | 3175.6         | 297.1          | 171.9          | 46.6           | 123.4          | 672.8         | 309.1              | 188.3             |
| 15-Jul-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Jul-90 | 17:35:36 | 214705               | 17182.1           | 2682.6         | 302.9          | 202.2          | 101.5          | 112            | 605.1         | 275.7              | 184.9             |
| 17-Jul-90 | 18:05:56 | 214680.6             | 12422.4           | 1940           | 210.7          | 135.5          | 60.3           | 82             | 436.2         | 219.5              | 130.1             |
| 18-Jul-90 | 18:19:38 | 214650.9             | 11834.5           | 1789.7         | 214.7          | 146.3          | 78             | 78.8           | 419.8         | 195.4              | 132.8             |
| 19-Jul-90 | 20:16:40 | 214574.5             | 10981             | 1606           | 201.6          | 138.6          | 75.7           | 74.3           | 390.5         | 174.3              | 130.1             |
| 20-Jul-90 | 19:38:30 | 214662.1             | 12897.3           | 1905.8         | 236.1          | 162.3          | 88.4           | 86.3           | 457.7         | 197.9              | 151.1             |
| 21-Jul-90 | 17:46:25 | 214692.8             | 13135.8           | 2103.9         | 199.2          | 115.5          | 31.9           | 82.5           | 450.1         | 196.4              | 128.8             |
| 22-Jul-90 | 20:52:08 | 214614               | 15199.1           | 2460.8         | 219.7          | 121.3          | 22.8           | 92.3           | 515           | 209.3              | 140.8             |
| 23-Jul-90 | 20:38:15 | 214623.9             | 17172.9           | 2684.3         | 260.6          | 151.9          | 43.2           | 106.3          | 586.7         | 232.7              | 169.7             |
| 24-Jul-90 | 19:27:42 | 214663.2             | 20250.6           | 3186.4         | 335.4          | 212.3          | 89.2           | 130.9          | 704.7         | 303.1              | 216.7             |
| 25-Jul-90 | 20:52:11 | 214705.9             | 24377.6           | 3929.1         | 430.1          | 287.3          | 144.5          | 160.1          | 858.5         | 376.8              | 270.8             |
| 26-Jul-90 | 20:24:30 | 214851.5             | 24188.7           | 4021.8         | 401.4          | 254.1          | 106.9          | 156.6          | 843           | 382.4              | 253.8             |
| 27-Jul-90 | 20:02:13 | 214991               | 24284.6           | 4205.4         | 359.6          | 203.4          | 47.3           | 150.4          | 828.2         | 359.7              | 229.6             |
| 28-Jul-90 | 19:27:04 | 214850.3             | 24610.3           | 4112.4         | 392.5          | 239.8          | 87.1           | 156.7          | 850.6         | 372.2              | 250.7             |
| 29-Jul-90 | 21:29:44 | 215038.4             | 25884.1           | 4401.6         | 389.6          | 224.7          | 59.9           | 161.1          | 884.1         | 360.8              | 255.3             |
| 30-Jul-90 | 17:44:42 | 215248.4             | 25124.6           | 4312.6         | 362.4          | 199.6          | 36.7           | 152.3          | 851           | 344.8              | 232.1             |
| 31-Jul-90 | 19:25:00 | 215169.7             | 21754.9           | 3710.6         | 307.7          | 165            | 22.3           | 132.1          | 735.7         | 314.7              | 195.8             |
| 1-Aug-90  | 19:00:04 | 215319.4             | 26131.4           | 4175.4         | 478.7          | 329.9          | 181.2          | 170.9          | 924.9         | 387.7              | 295.8             |
| 2-Aug-90  | 20:27:56 | 215162.9             | 25972.8           | 3946.3         | 527.8          | 388.9          | 250            | 182.9          | 944.6         | 439.6              | 334               |
| 3-Aug-90  | 18:46:25 | 215373.9             | 26635.6           | 4262.2         | 489.6          | 336.4          | 183.2          | 180.2          | 949.2         | 466.4              | 302.2             |
| 4-Aug-90  | 18:17:30 | 215345.7             | 21635.1           | 3666.3         | 316.9          | 176.6          | 36.3           | 134            | 737.8         | 346.7              | 196.3             |
| 5-Aug-90  | 21:05:17 | 215376.5             | 20978.1           | 3586.6         | 266.1          | 123.2          | -19.8          | 122.4          | 694.9         | 250                | 181.4             |
| 6-Aug-90  | 17:55:23 | 215501.7             | 20101.9           | 3424.5         | 223.2          | 80.9           | -61.3          | 111            | 649.9         | 176.2              | 164.3             |
| 7-Aug-90  | 19:13:30 | 215490.3             | 21793.5           | 3674           | 272.8          | 124.6          | -23.5          | 123.6          | 717.2         | 216.3              | 187.8             |
| 8-Aug-90  | 18:47:23 | 215574.3             | 21509.2           | 3411           | 345.1          | 212.6          | 80             | 135.3          | 742.8         | 311.6              | 217.6             |
| 9-Aug-90  | 20:43:49 | 215503.2             | 21791             | 3365.3         | 410            | 286.3          | 162.6          | 148.9          | 781.1         | 398.5              | 249.4             |
| 10-Aug-90 | 20:17:41 | 215621.4             | 21381.3           | 3245.3         | 422.2          | 304.5          | 186.8          | 149.6          | 775.4         | 414                | 253.8             |
| 11-Aug-90 | 19:22:30 | 215531.6             | 18529.7           | 2883.2         | 346.9          | 241.5          | 136            | 126.3          | 663.2         | 331                | 213               |
| 12-Aug-90 | 20:28:33 | 215858.9             | 20063.8           | 3278           | 46.6           | 228.4          | 110.2          | 128            | 701.3         | 282.9              | 215.9             |
| 13-Aug-90 | 18:57:12 | 216053.3             | 21714.8           | 3758.5         | 339.7          | 204.4          | 69.2           | 135.9          | 745.4         | 283.9              | 224.8             |
| 14-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Aug-90 | 20:48:30 | 216039.5             | 28127.4           | 4992.6         | 393.6          | 209.4          | 25.1           | 169.7          | 946.4         | 340                | 268.4             |
| 17-Aug-90 | 21:46:35 | 216367.6             | 27665.8           | 4628.8         | 438.8          | 267.4          | 96.1           | 173.6          | 952.9         | 386.7              | 281.6             |



## SAN FERNANDO OBSERVATORY

## 1990 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 18-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Aug-90 | 22:44:10 | 216593.6             | 36343.4           | 5770.7         | 706.8          | 506.2          | 305.7          | 249.4          | 1308          | 614.8              | 438.5             |
| 21-Aug-90 | 18:46:19 | 216641               | 36319.3           | 5695.6         | 734.7          | 540.3          | 345.9          | 251.4          | 1318          | 618.5              | 449.5             |
| 22-Aug-90 | 19:31:08 | 216570.7             | 35053.9           | 5684.5         | 660.4          | 462.7          | 265            | 237.2          | 1253          | 589.6              | 408.1             |
| 23-Aug-90 | 20:45:20 | 217077.1             | 36206.7           | 6355.6         | 627.4          | 412.4          | 197.5          | 237.8          | 1272          | 573.7              | 396.3             |
| 24-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Aug-90 | 20:28:03 | 217015.9             | 32730             | 5736.3         | 520            | 315.2          | 110.4          | 210.9          | 1134          | 555.4              | 324.2             |
| 27-Aug-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Aug-90 | 19:24:50 | 217014.3             | 30968.9           | 5156.1         | 577.8          | 401.8          | 225.8          | 210.6          | 1106          | 516                | 364.8             |
| 29-Aug-90 | 18:45:20 | 217397.3             | 32003             | 4962.8         | 645.1          | 474.8          | 304.5          | 217.5          | 1156          | 485.8              | 398.8             |
| 30-Aug-90 | 21:25:22 | 217315               | 27558             | 4427.6         | 500.5          | 342.3          | 184            | 182.3          | 975.3         | 416.3              | 316.3             |
| 31-Aug-90 | 21:49:28 | 217580.7             | 25021.1           | 4172.4         | 402            | 248.1          | 94.3           | 156.3          | 863.6         | 360.4              | 249.8             |
| 1-Sep-90  | 18:22:30 | 217682.8             | 20532.3           | 3515.4         | 287.1          | 151.7          | 16.4           | 124.5          | 693.1         | 294.1              | 184.6             |
| 2-Sep-90  | 18:57:58 | 217880               | 19966.4           | 3339.2         | 276.9          | 144.9          | 12.9           | 121.4          | 673           | 276.8              | 183.1             |
| 3-Sep-90  | 18:28:50 | 217844.3             | 19794.1           | 3135.7         | 312.9          | 190.3          | 67.8           | 123            | 680.4         | 265.8              | 200.1             |
| 4-Sep-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Sep-90  | 18:20:00 | 218102.9             | 18729.6           | 2907.2         | 321.5          | 209            | 96.5           | 124.1          | 658.9         | 327.1              | 199.6             |
| 6-Sep-90  | 20:17:00 | 218039.5             | 16954.7           | 2661           | 294.4          | 193.2          | 92             | 112.9          | 598           | 299.9              | 182.1             |
| 7-Sep-90  | 19:57:30 | 218202.3             | 17627.2           | 2647.9         | 313.6          | 211.3          | 108.9          | 114.6          | 620.6         | 260.9              | 195.6             |
| 8-Sep-90  | 18:35:44 | 218311.7             | 19979.6           | 2946           | 386.1          | 276.3          | 166.5          | 134.3          | 715.4         | 296.3              | 242.6             |
| 9-Sep-90  | 20:32:18 | 218530.1             | 20630.7           | 3268.7         | 336.3          | 210.3          | 84.2           | 130.9          | 714.4         | 294.7              | 215               |
| 10-Sep-90 | 19:43:00 | 218555.2             | 23871.1           | 3766.5         | 407.1          | 265            | 122.9          | 152.8          | 833.4         | 348.6              | 254.2             |
| 11-Sep-90 | 19:47:55 | 218598               | 27305.9           | 4537.3         | 434.5          | 265.4          | 96.2           | 173.2          | 942           | 387.2              | 283.4             |
| 12-Sep-90 | 19:19:30 | 218783.9             | 28356             | 4761.9         | 441.6          | 264.4          | 87.2           | 177            | 973.2         | 389.1              | 286               |
| 13-Sep-90 | 19:26:17 | 218895.9             | 31123.3           | 5346.8         | 448            | 246.1          | 44.3           | 189.4          | 1054          | 412.8              | 294.4             |
| 14-Sep-90 | 19:23:42 | 218980.6             | 30576.1           | 5320.6         | 433            | 232.6          | 32.2           | 186.5          | 1034          | 432.8              | 281.1             |
| 15-Sep-90 | 19:34:45 | 219063.3             | 34087.1           | 5802.5         | 534.4          | 321.9          | 109.4          | 212.1          | 1172          | 492.9              | 334.6             |
| 16-Sep-90 | 20:54:52 | 219031.3             | 35061.4           | 5772.1         | 589.9          | 378.5          | 167.1          | 227.3          | 1224          | 537.8              | 375.1             |
| 17-Sep-90 | 20:37:19 | 219281.5             | 36329             | 6086.8         | 607.4          | 387.5          | 167.6          | 234.9          | 1267          | 568.9              | 382.3             |
| 18-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Sep-90 | 18:47:27 | 220111.9             | 25327.7           | 4230.3         | 400.4          | 242.4          | 84.3           | 160.5          | 874.6         | 398.8              | 250.3             |
| 23-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Sep-90 | 20:14:30 | 220267.1             | 28130             | 4822           | 436.4          | 259.7          | 83             | 177.4          | 966.3         | 396.6              | 287               |
| 25-Sep-90 | 18:45:16 | 220398.9             | 23772.4           | 4037.4         | 338.2          | 183.7          | 29.2           | 143.9          | 801.7         | 284.9              | 230.4             |
| 26-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 27-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Sep-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Sep-90 | 19:55:17 | 220907               | 14666.5           | 2277.5         | 246.7          | 158.5          | 70.4           | 94.2           | 511.1         | 212.9              | 157.4             |

**SAN FERNANDO OBSERVATORY**  
**1990 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Oct-90  | 20:14:30 | 221221.9             | 14249.1           | 2291.8         | 234.2          | 147.5          | 60.7           | 90.7           | 494.4         | 207.6              | 148.8             |
| 2-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Oct-90  | 19:05:30 | 221236.3             | 14661.3           | 2197.7         | 284.8          | 203.9          | 123.1          | 99.1           | 527.3         | 255.3              | 169               |
| 4-Oct-90  | 18:07:34 | 221526.7             | 14000.2           | 2287.6         | 233.1          | 147.9          | 62.6           | 91             | 489           | 235.7              | 144               |
| 5-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Oct-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 13-Oct-90 | 22:10:41 | 222706.3             | 26344.1           | 4283.7         | 430.1          | 269.1          | 108.1          | 168.2          | 913.1         | 378.5              | 277.9             |
| 14-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Oct-90 | 20:25:52 | 222979.5             | 30444.2           | 5436.1         | 446.5          | 250.1          | 53.7           | 187.5          | 1036          | 435.9              | 287.9             |
| 16-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Oct-90 | 20:29:26 | 223186.8             | 27500.6           | 4711.3         | 469.1          | 304.6          | 140.1          | 178.6          | 962.8         | 434                | 292.8             |
| 18-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Oct-90 | 20:24:16 | 223689.7             | 26288.7           | 4439.7         | 388.8          | 220.9          | 52.9           | 160.6          | 892.8         | 331.6              | 257.7             |
| 23-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Oct-90 | 19:56:10 | 223953.7             | 22477.1           | 3811.7         | 294.6          | 143.2          | -8.2           | 133.2          | 748.7         | 271.9              | 202.2             |
| 25-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Oct-90 | 19:19:33 | 224275.9             | 20314.9           | 3396.5         | 307.3          | 177.4          | 47.5           | 128.3          | 697           | 323.8              | 195.4             |
| 27-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Oct-90 | 21:08:41 | 224797.9             | 14618.7           | 2313.6         | 265.7          | 181.8          | 98             | 96.1           | 517.2         | 221.8              | 165.2             |
| 30-Oct-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-Oct-90 | 19:52:51 | 224842.8             | 10517.1           | 1645.6         | 185.7          | 124            | 62.4           | 69.1           | 370.6         | 166.8              | 115.8             |
| 1-Nov-90  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Nov-90  | 19:40:33 | 225046               | 10515.5           | 1702.2         | 153.5          | 85.9           | 18.2           | 64.5           | 356.5         | 130.7              | 104.4             |
| 3-Nov-90  | 20:26:27 | 225262.1             | 10278.3           | 1769           | 120.9          | 49             | -23            | 59.2           | 336.8         | 118.5              | 85.5              |
| 4-Nov-90  | 21:26:41 | 225405.1             | 16156.4           | 2778.2         | 217.2          | 110.2          | 3.2            | 93.4           | 538.2         | 180.5              | 142.1             |
| 5-Nov-90  | 21:11:30 | 225577.6             | 21222.8           | 3527.4         | 338.2          | 207.5          | 76.8           | 131.7          | 730.3         | 283.6              | 214.9             |
| 6-Nov-90  | 19:10:53 | 225588.6             | 22270             | 3624.3         | 391.5          | 260.3          | 129.2          | 146.6          | 784.8         | 362.9              | 242.9             |
| 7-Nov-90  | 19:34:00 | 225618.5             | 27164.7           | 4253.2         | 525.9          | 374.9          | 223.9          | 186.6          | 978.9         | 495.7              | 317.3             |
| 8-Nov-90  | 18:57:00 | 225881               | 31541.6           | 5110.7         | 568.2          | 384            | 199.8          | 213.5          | 1121          | 561.5              | 353.6             |
| 9-Nov-90  | 19:55:00 | 225975.1             | 32179.6           | 5422.8         | 512.8          | 313.3          | 113.9          | 204.8          | 1111          | 463.6              | 334.4             |
| 10-Nov-90 | 19:57:01 | 226046.7             | 31332.2           | 5455.6         | 434.2          | 228.6          | 23.1           | 186.1          | 1051          | 368.3              | 290.9             |
| 11-Nov-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Nov-90 | 21:17:50 | 226320.5             | 27353.6           | 5090.3         | 307.3          | 113.2          | -80.9          | 153.8          | 889.6         | 305.5              | 214.5             |
| 13-Nov-90 | 19:14:50 | 226404.6             | 27429.6           | 4957.7         | 382.9          | 201.8          | 20.7           | 168            | 926.3         | 390.2              | 253.4             |
| 14-Nov-90 | 19:29:00 | 226417.3             | 28990.2           | 4622.3         | 545.6          | 382.6          | 219.6          | 194.4          | 1034          | 462.1              | 338.6             |
| 15-Nov-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Nov-90 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Nov-90 | 20:16:38 | 226846               | 16900.3           | 2626.7         | 309.6          | 212.6          | 115.6          | 112.7          | 600.5         | 279.1              | 190.7             |



**SAN FERNANDO OBSERVATORY**  
**1991 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Jan-91  | 20:20:30 | 229381.2             | 27470.9           | 4548.5         | 390.2          | 211.7          | 33.2           | 164.3          | 925.7         | 336.4              | 256.7             |
| 2-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Jan-91  | 20:02:15 | 229354.2             | 24219             | 3822           | 433            | 291.1          | 149.3          | 162.6          | 858.7         | 424.7              | 268.1             |
| 6-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Jan-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Jan-91 | 22:29:30 | 229310.9             | 23128.3           | 3913.8         | 391.9          | 252.5          | 113.2          | 152            | 809.9         | 370.9              | 250.8             |
| 11-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Jan-91 | 20:09:00 | 229370.8             | 22709.9           | 3887.5         | 343.1          | 198.6          | 54.1           | 141.4          | 776.7         | 328.5              | 220.9             |
| 13-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Jan-91 | 20:51:30 | 229285.7             | 21096.6           | 3785.1         | 256.2          | 109.9          | -36.3          | 121.4          | 694.9         | 262.5              | 171.1             |
| 15-Jan-91 | 18:46:30 | 229227.8             | 20313.8           | 3664.5         | 246.8          | 106.2          | -34.4          | 116.9          | 668.5         | 240.3              | 168.5             |
| 16-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Jan-91 | 19:20:00 | 229128.4             | 22580.1           | 3400.4         | 458.5          | 338.4          | 218.4          | 155.3          | 818.8         | 367.9              | 281               |
| 19-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Jan-91 | 21:12:00 | 229061.9             | 20095.7           | 3197.3         | 382.9          | 269.8          | 156.6          | 138.4          | 722.4         | 366.8              | 234.8             |
| 21-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Jan-91 | 18:43:30 | 228912.8             | 21321             | 3205           | 393.5          | 273            | 152.5          | 139.8          | 755           | 296.9              | 248.8             |
| 23-Jan-91 | 21:11:00 | 228932.9             | 27300.9           | 4569.7         | 430.2          | 259.6          | 89.1           | 174.1          | 941.8         | 407.1              | 280.2             |
| 24-Jan-91 | 19:31:00 | 228916.1             | 28691.5           | 4798.5         | 436.2          | 254.3          | 72.4           | 178.3          | 982           | 416.8              | 277.8             |
| 25-Jan-91 | 18:10:00 | 228710.5             | 29734.7           | 5107.5         | 405.7          | 208.2          | 10.7           | 178.5          | 998.2         | 395                | 268.1             |
| 26-Jan-91 | 19:52:30 | 228850.2             | 35372.6           | 6136.8         | 470.3          | 233.7          | -2.8           | 209.3          | 1180          | 419.9              | 320.7             |
| 27-Jan-91 | 21:08:30 | 228737.1             | 34930.1           | 6011.2         | 439            | 200.9          | -37.1          | 202            | 1153          | 374                | 307.5             |
| 28-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Jan-91 | 22:06:11 | 228719.9             | 38509.9           | 6190.7         | 615.5          | 377.5          | 139.5          | 243.4          | 1329          | 554                | 394.6             |
| 30-Jan-91 | 21:04:45 | 228614               | 43231.8           | 7188.3         | 718.5          | 454.8          | 191.2          | 283            | 1509          | 701.6              | 459.7             |
| 31-Jan-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-Feb-91  | 21:49:00 | 228342.7             | 33706.2           | 5344.3         | 578.8          | 378.7          | 178.6          | 217            | 1179          | 503                | 361.3             |
| 2-Feb-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Feb-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Feb-91  | 22:28:03 | 228281.8             | 25240.2           | 3880           | 478.7          | 336.4          | 194.1          | 172.3          | 905.6         | 456.3              | 290.5             |
| 5-Feb-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Feb-91  | 22:24:00 | 228021.8             | 26524             | 3865.5         | 561.2          | 424            | 286.8          | 187.4          | 972.8         | 465.5              | 342.3             |
| 7-Feb-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Feb-91  | 20:41:23 | 227891.2             | 25650.4           | 4343.9         | 379.5          | 214.9          | 50.3           | 157.2          | 873.2         | 365.2              | 240.9             |
| 9-Feb-91  | 20:36:44 | 227848.8             | 23446.8           | 4013.7         | 292.6          | 131.2          | -30.1          | 136.5          | 776.6         | 315.3              | 190.2             |
| 10-Feb-91 | 21:08:01 | 227768.6             | 25608.3           | 4465.7         | 329.1          | 154.7          | -19.7          | 151.7          | 852.3         | 342.4              | 219.5             |
| 11-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Feb-91 | 21:04:51 | 227706.3             | 26340.7           | 4728.8         | 350.2          | 173.7          | -2.8           | 156.4          | 879.7         | 331.4              | 235.2             |
| 13-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Feb-91 | 20:59:17 | 227130               | 21166.5           | 3174.7         | 431.4          | 319.4          | 207.3          | 144.6          | 767.6         | 345.5              | 259.8             |

**SAN FERNANDO OBSERVATORY**  
**1991 Ca II K-line Facular Data**

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 18-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Feb-91 | 20:44:36 | 227093.5             | 28798.4           | 4494           | 550.2          | 389.9          | 229.6          | 194.4          | 1031          | 466.2              | 340.1             |
| 20-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Feb-91 | 21:36:49 | 226737               | 44526.7           | 7897.3         | 643.3          | 355.9          | 68.5           | 270.1          | 1505          | 538.5              | 433.8             |
| 24-Feb-91 | 21:14:30 | 226299.3             | 47462.8           | 8796.6         | 622.1          | 302.7          | -16.8          | 280.5          | 1580          | 572.2              | 424.8             |
| 25-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Feb-91 | 20:36:43 | 226271.2             | 43479.4           | 8238.4         | 580.3          | 289.9          | -0.4           | 256.4          | 1451          | 531                | 387.1             |
| 27-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Feb-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 4-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Mar-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Mar-91 | 21:35:03 | 223969               | 34045.4           | 6105.7         | 372.1          | 129.9          | -112.3         | 186.2          | 1099          | 313.3              | 266.3             |
| 12-Mar-91 | 20:49:46 | 224455.8             | 36179.4           | 6545.6         | 485.4          | 245.7          | 6              | 210.4          | 1205          | 382.2              | 329.4             |
| 13-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Mar-91 | 20:20:52 | 224124.2             | 33187.9           | 5780.7         | 563.6          | 362.5          | 161.4          | 220.5          | 1167          | 605.2              | 346.7             |
| 15-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Mar-91 | 20:48:42 | 223158.5             | 36285.3           | 5816.8         | 755.4          | 566.2          | 377            | 252.7          | 1323          | 587.6              | 467.5             |
| 17-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 27-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Mar-91 | 21:51:30 | 221450               | 23770.7           | 3698.6         | 460.4          | 330.6          | 200.8          | 157.5          | 849.7         | 337.6              | 284.9             |
| 29-Mar-91 | 21:29:30 | 221490.6             | 19105             | 2830.6         | 403.5          | 305.1          | 206.7          | 132.4          | 698.7         | 321.2              | 241.2             |
| 30-Mar-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-Mar-91 | 20:57:00 | 221408               | 14934.3           | 2189.1         | 315.9          | 237.4          | 159            | 108.5          | 551.4         | 314.6              | 188.2             |

## SAN FERNANDO OBSERVATORY

## 1991 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 1-Apr-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Apr-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Apr-91  | 21:35:59 | 220883.9             | 23214.3           | 3837.2         | 357.1          | 211.3          | 65.4           | 144.5          | 794.6         | 302.9              | 236.8             |
| 4-Apr-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Apr-91  | 19:29:22 | 221633               | 32669.1           | 5488.5         | 507.9          | 302.7          | 97.6           | 205            | 1123          | 486.3              | 322.1             |
| 6-Apr-91  | 20:41:17 | 221474.3             | 36014.6           | 6252.2         | 554.2          | 326.5          | 98.8           | 228            | 1237          | 535.8              | 361.5             |
| 7-Apr-91  | 20:11:44 | 221095.7             | 32816.4           | 5183.6         | 523.8          | 321.2          | 118.5          | 207            | 1132          | 455.7              | 339.6             |
| 8-Apr-91  | 20:43:27 | 220895.2             | 32844.6           | 5326           | 499.6          | 291.8          | 84             | 203.4          | 1123          | 456.3              | 321.8             |
| 9-Apr-91  | 19:35:37 | 221073.4             | 35619             | 5730.9         | 564.6          | 344.6          | 124.5          | 221.1          | 1225          | 477.9              | 359.7             |
| 10-Apr-91 | 21:49:00 | 220678.9             | 33633             | 5397.1         | 558.5          | 353.7          | 148.8          | 218.8          | 1173          | 537.4              | 355.2             |
| 11-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Apr-91 | 18:59:47 | 220822.3             | 35576.5           | 5624           | 648.6          | 442.9          | 237.2          | 240.7          | 1266          | 610                | 406.9             |
| 13-Apr-91 | 20:17:05 | 220572               | 40972.7           | 6663.7         | 725.9          | 486.8          | 247.7          | 267.5          | 1443          | 633.6              | 449.9             |
| 14-Apr-91 | 20:26:38 | 220019.6             | 43378.7           | 7199.3         | 750.8          | 494.2          | 237.6          | 281.6          | 1521          | 646.4              | 474.8             |
| 15-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 27-Apr-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Apr-91 | 20:22:31 | 218099.3             | 17788.6           | 2680.6         | 331.1          | 229.9          | 128.7          | 119.9          | 634.6         | 300.1              | 204.3             |
| 29-Apr-91 | 20:15:34 | 218294.2             | 18249.1           | 2951.2         | 273.3          | 156.3          | 39.3           | 114.4          | 624.2         | 276.7              | 176.2             |
| 30-Apr-91 | 19:35:42 | 218480               | 20392.6           | 3278.1         | 313.9          | 186.2          | 58.5           | 124.5          | 697           | 267.7              | 198.5             |
| 1-May-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-May-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-May-91  | 18:46:10 | 218214.7             | 22722             | 3675.8         | 334.2          | 187.6          | 41.1           | 140.6          | 773.8         | 331.2              | 215.8             |
| 4-May-91  | 20:11:26 | 217288.8             | 22012.1           | 3428.7         | 312.2          | 168.7          | 25.1           | 133            | 742.8         | 282                | 206.7             |
| 5-May-91  | 20:23:10 | 217517.8             | 22558.3           | 3606.9         | 330            | 184.6          | 39.2           | 138.9          | 766.2         | 302.5              | 219.2             |
| 6-May-91  | 19:55:49 | 217384.8             | 18518.2           | 2819.6         | 282.7          | 165.9          | 49.2           | 114.7          | 632.9         | 243.1              | 186               |
| 7-May-91  | 20:09:53 | 217161.6             | 23670.6           | 3500           | 433.6          | 298.7          | 163.9          | 154.6          | 838.1         | 357.7              | 264.9             |
| 8-May-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-May-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-May-91 | 20:24:45 | 217141.2             | 29061.1           | 5051           | 388.2          | 194.7          | 1.3            | 171.4          | 968.5         | 318.6              | 269.5             |
| 13-May-91 | 19:35:42 | 217042.3             | 30989.2           | 5363.8         | 449            | 249            | 49             | 188.6          | 1049          | 388                | 300.5             |
| 14-May-91 | 22:06:28 | 216857.6             | 28794.9           | 4984.8         | 372.7          | 177.8          | -17            | 169.6          | 957.3         | 350.7              | 253.8             |
| 15-May-91 | 20:14:29 | 216269.6             | 30432.4           | 5131.7         | 425.9          | 225.7          | 25.6           | 184.4          | 1026          | 416.2              | 279.1             |
| 16-May-91 | 23:22:27 | 216694               | 32796.7           | 5547.4         | 504.9          | 298.1          | 91.3           | 206            | 1125          | 470.9              | 328.3             |
| 17-May-91 | 18:35:19 | 216397.1             | 24723.2           | 3954.4         | 367.8          | 209.6          | 51.4           | 152.7          | 842.2         | 338.2              | 240.8             |
| 18-May-91 | 19:28:11 | 216527.3             | 19253             | 2954.8         | 284.9          | 161.3          | 37.7           | 118.5          | 655.6         | 271.6              | 183.4             |

## SAN FERNANDO OBSERVATORY

## 1991 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 19-May-91 | 19:11:41 | 216468.1             | 20875.8           | 3289.5         | 316            | 183.1          | 50.3           | 130            | 714.7         | 313.7              | 199.9             |
| 20-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 21-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-May-91 | 21:06:30 | 216138.3             | 16024.7           | 2459.5         | 290.2          | 197.2          | 104.3          | 107.3          | 569           | 276.9              | 178.3             |
| 23-May-91 | 22:46:46 | 215788.9             | 16997.3           | 2559.6         | 334.6          | 241            | 147.5          | 118.4          | 615.2         | 314.2              | 204.1             |
| 24-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-May-91 | 21:44:45 | 216119.7             | 16795.8           | 2559.8         | 308.3          | 212.2          | 116            | 112.4          | 596.6         | 264.9              | 194.6             |
| 26-May-91 | 20:18:55 | 215982.1             | 16620.7           | 2633.5         | 272.9          | 171.8          | 70.6           | 104.7          | 576.4         | 248.2              | 167.6             |
| 27-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-May-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 1-Jun-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 2-Jun-91  | 17:20:42 | 215655.6             | 23539.6           | 3911.2         | 316.1          | 160.4          | 4.8            | 136.9          | 783           | 230.7              | 219.8             |
| 3-Jun-91  | 19:44:30 | 215303.6             | 25992.6           | 4147.3         | 452.7          | 299.3          | 145.9          | 169.3          | 913           | 403.3              | 282.3             |
| 4-Jun-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Jun-91  | 20:53:01 | 215209.7             | 27380.6           | 4208.2         | 545.5          | 396            | 246.4          | 192.5          | 994.2         | 511.2              | 335               |
| 6-Jun-91  | 19:42:00 | 215195               | 26236.1           | 4305.2         | 437.9          | 278.7          | 119.5          | 171.2          | 915.6         | 409.2              | 282.1             |
| 7-Jun-91  | 18:50:00 | 215114.9             | 27278.1           | 4829.5         | 366.7          | 185.1          | 3.6            | 160.9          | 911.5         | 336.5              | 242.3             |
| 8-Jun-91  | 18:44:31 | 215081.7             | 28921.6           | 5192.8         | 356.3          | 157.2          | -41.8          | 167            | 953.4         | 336                | 244.3             |
| 9-Jun-91  | 19:30:39 | 214974.3             | 31044.9           | 5523.4         | 398            | 186.5          | -25            | 183.2          | 1032          | 409.2              | 265               |
| 10-Jun-91 | 17:38:40 | 215255.1             | 34657.2           | 6214.9         | 479.1          | 249.7          | 20.3           | 209.8          | 1167          | 484.1              | 313.1             |
| 11-Jun-91 | 20:27:00 | 215017.5             | 36526.3           | 6184.1         | 590.7          | 365.9          | 141            | 233.5          | 1265          | 545.9              | 379.1             |
| 12-Jun-91 | 19:19:00 | 214979               | 31813.4           | 5021.9         | 572            | 387.8          | 203.6          | 210.2          | 1125          | 495.3              | 359               |
| 13-Jun-91 | 21:30:30 | 214900.2             | 26900.5           | 4177.9         | 487.8          | 332.8          | 177.7          | 179.1          | 953.1         | 420.7              | 308.7             |
| 14-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Jun-91 | 19:28:00 | 214798.3             | 19671.1           | 3066           | 345.7          | 229.3          | 112.9          | 130.8          | 694.9         | 345.3              | 211.9             |
| 16-Jun-91 | 19:48:53 | 214862.1             | 21964             | 3350.6         | 430            | 309.8          | 189.5          | 149.4          | 790.8         | 364.1              | 262.9             |
| 17-Jun-91 | 21:42:30 | 214775.6             | 21446.4           | 3427.8         | 376.6          | 250.3          | 124            | 141.6          | 755.6         | 342.7              | 237.6             |
| 18-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Jun-91 | 21:35:00 | 214754.9             | 20495             | 3394           | 373.3          | 254.9          | 136.6          | 137.2          | 728.2         | 348.7              | 229.8             |
| 20-Jun-91 | 17:51:07 | 214724               | 22900             | 4004.7         | 395.1          | 258.7          | 122.2          | 151.2          | 804.6         | 366.9              | 252.1             |
| 21-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 22-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Jun-91 | 20:24:30 | 214353.3             | 23440.8           | 3888.3         | 360            | 213            | 66.1           | 143.2          | 800.8         | 304.1              | 229.4             |
| 24-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Jun-91 | 19:41:05 | 214136.5             | 27685.4           | 4513.2         | 482.2          | 318            | 153.8          | 182.6          | 974.9         | 462.2              | 299.3             |
| 26-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 27-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Jun-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Jun-91 | 17:38:35 | 214265.8             | 23722             | 4110.1         | 306.9          | 146.1          | -14.6          | 140            | 789.3         | 302.2              | 206.1             |





## SAN FERNANDO OBSERVATORY

## 1991 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 18-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 19-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Aug-91 | 19:02:16 | 216640               | 41265.1           | 7635           | 513.5          | 229.5          | -54.6          | 240.9          | 1365          | 532                | 343.8             |
| 21-Aug-91 | 18:42:24 | 216739.8             | 41560.5           | 7688.5         | 508.1          | 221.1          | -65.8          | 239.8          | 1369          | 488                | 348.7             |
| 22-Aug-91 | 19:15:38 | 216856               | 38880.4           | 7103           | 538.3          | 282.1          | 25.8           | 234.3          | 1307          | 489.2              | 363.3             |
| 23-Aug-91 | 18:53:30 | 216747.8             | 40068.6           | 7101.4         | 608.1          | 355            | 102            | 246.7          | 1367          | 520.4              | 397.9             |
| 24-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Aug-91 | 19:14:30 | 217174.6             | 34111             | 5191.9         | 694.6          | 511.8          | 328.9          | 240.2          | 1243          | 625.2              | 424.8             |
| 26-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 27-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Aug-91 | 20:32:30 | 217503.9             | 23549             | 3717.3         | 366.6          | 219.7          | 72.8           | 145.1          | 807.2         | 319.3              | 231.5             |
| 29-Aug-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Aug-91 | 22:42:50 | 217028.1             | 26075.3           | 4651.7         | 294.6          | 110.1          | -74.4          | 146.7          | 848.2         | 279.5              | 208.9             |
| 31-Aug-91 | 20:41:33 | 217609.2             | 23322             | 4168.1         | 272.5          | 108.7          | -55.1          | 133            | 763.8         | 282.8              | 185               |
| 1-Sep-91  | 18:31:40 | 217757.2             | 26759.6           | 4793.1         | 345.3          | 163.1          | -19            | 158.6          | 891.8         | 373.9              | 225.1             |
| 2-Sep-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 3-Sep-91  | 18:51:29 | 217970.9             | 24086.6           | 3774.2         | 489.5          | 359.8          | 230.2          | 170.6          | 878.5         | 454.6              | 299.3             |
| 4-Sep-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 5-Sep-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Sep-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Sep-91  | 20:29:29 | 218341.9             | 14813.2           | 2230.2         | 291.8          | 211            | 130.2          | 101.1          | 534.1         | 246.1              | 178.5             |
| 8-Sep-91  | 20:09:09 | 218353.3             | 12558.2           | 1858.3         | 226.4          | 154.4          | 82.4           | 81             | 442.5         | 178.5              | 139.5             |
| 9-Sep-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Sep-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Sep-91 | 20:07:05 | 218662.7             | 21838.7           | 3341.1         | 452.5          | 336.7          | 220.9          | 156            | 799.8         | 409.9              | 278.4             |
| 12-Sep-91 | 18:15:59 | 219011.4             | 25558.7           | 4232           | 466            | 318.5          | 171.1          | 171.4          | 908.5         | 438.2              | 286.7             |
| 13-Sep-91 | 20:31:48 | 219193.3             | 30089             | 5172.2         | 511.7          | 331.6          | 151.5          | 194.8          | 1052          | 460.2              | 322.4             |
| 14-Sep-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 15-Sep-91 | 17:54:30 | 219172               | 31799.4           | 5770.4         | 457            | 249.4          | 41.9           | 195.6          | 1080          | 479.8              | 290.7             |
| 16-Sep-91 | 20:18:19 | 219439.4             | 32707.9           | 6133.9         | 425.5          | 203.1          | -19.4          | 195.5          | 1093          | 476.6              | 275.9             |
| 17-Sep-91 | 18:30:30 | 219495.3             | 31331.9           | 5729.9         | 427.7          | 219.2          | 10.6           | 189.6          | 1053          | 435                | 282.4             |
| 18-Sep-91 | 19:53:55 | 219503.8             | 30355.3           | 5329.7         | 456.2          | 263.2          | 70.2           | 188.7          | 1035          | 396.5              | 306.5             |
| 19-Sep-91 | 18:12:30 | 219676.3             | 30128.3           | 5284.1         | 459.2          | 269.3          | 79.5           | 186.4          | 1029          | 382.6              | 305.4             |
| 20-Sep-91 | 20:17:13 | 219822.4             | 23580             | 3887           | 379.6          | 234.4          | 89.1           | 148.7          | 815.2         | 351.5              | 237.1             |
| 21-Sep-91 | 19:23:30 | 219945.6             | 27312.1           | 4238.7         | 535.5          | 385.1          | 234.8          | 189.3          | 986.5         | 484.1              | 330.5             |
| 22-Sep-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Sep-91 | 20:43:52 | 220209.1             | 26663.4           | 4388           | 478.2          | 323.3          | 168.3          | 177.4          | 943           | 420                | 303.8             |
| 24-Sep-91 | 18:17:00 | 220346.8             | 24277.7           | 4213.7         | 340.3          | 181.5          | 22.6           | 144.8          | 816.8         | 307.7              | 221.5             |
| 25-Sep-91 | 19:50:01 | 220512.2             | 27176.6           | 4607.3         | 396.1          | 221.6          | 47.1           | 164            | 919.6         | 330.2              | 261.5             |
| 26-Sep-91 | 17:40:00 | 220693.1             | 29164.2           | 4755.9         | 480.3          | 303.2          | 126.1          | 186.1          | 1012          | 405.4              | 311.8             |
| 27-Sep-91 | 20:28:43 | 220750.4             | 33149.3           | 5721.4         | 501.1          | 290.4          | 79.7           | 206.1          | 1133          | 466.9              | 325.5             |
| 28-Sep-91 | 20:25:43 | 220706.8             | 29146.1           | 4850           | 442            | 256            | 70             | 184            | 1000          | 458.6              | 282.2             |
| 29-Sep-91 | 18:31:30 | 220913.9             | 27458.2           | 4519.6         | 419.8          | 245.2          | 70.6           | 173.8          | 943.6         | 433.9              | 267.7             |
| 30-Sep-91 | 19:43:24 | 221051.4             | 26025             | 4241.8         | 414.6          | 252.9          | 91.2           | 164.8          | 899.5         | 405.6              | 258.4             |

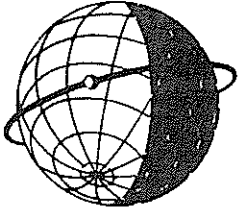


## SAN FERNANDO OBSERVATORY

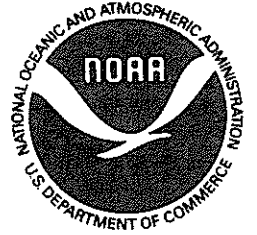
## 1991 Ca II K-line Facular Data

WAVELENGTH 3934nm

| Date      | U.T.     | Hemiarea<br>(pixels) | Fac Area<br>(ppm) | PFIFX<br>(ppm) | PFIFA<br>(ppm) | PFIFB<br>(ppm) | PFIFC<br>(ppm) | PFIF2<br>(ppm) | PFIF<br>(ppm) | PFIFOUKAL<br>(ppm) | PFISOFIA<br>(ppm) |
|-----------|----------|----------------------|-------------------|----------------|----------------|----------------|----------------|----------------|---------------|--------------------|-------------------|
| 18-Nov-91 | 21:33:10 | 226904.3             | 11765.4           | 1689.7         | 236.6          | 173.4          | 110.1          | 81.4           | 426.4         | 200.3              | 145.2             |
| 19-Nov-91 | 18:58:00 | 227175.7             | 15537.7           | 2110.5         | 340            | 262.3          | 184.7          | 109.7          | 572.9         | 258.8              | 206.2             |
| 20-Nov-91 | 20:38:29 | 227339.5             | 19011.7           | 2797           | 367.9          | 262.9          | 157.8          | 129.3          | 683.1         | 315.3              | 226.8             |
| 21-Nov-91 | 19:01:30 | 227218.5             | 20909             | 3312.2         | 361.3          | 236.8          | 112.2          | 137.7          | 735.1         | 344.4              | 226.2             |
| 22-Nov-91 | 21:08:00 | 227425.2             | 17764.9           | 2969.6         | 243.6          | 125.3          | 7.1            | 108.1          | 598.2         | 253.5              | 160.6             |
| 23-Nov-91 | 19:14:00 | 227312.5             | 17747.3           | 2966.9         | 222.5          | 100.7          | -21.1          | 104.2          | 587.9         | 225.5              | 151.1             |
| 24-Nov-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 25-Nov-91 | 20:00:20 | 227614.2             | 20009             | 3520.1         | 225.1          | 83.7           | -57.6          | 110.8          | 649.1         | 199.7              | 158               |
| 26-Nov-91 | 18:43:00 | 227711.8             | 22191.2           | 3968.5         | 284.2          | 133.3          | -17.6          | 129.8          | 736.9         | 282.9              | 188.2             |
| 27-Nov-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 28-Nov-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Nov-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Nov-91 | 21:17:30 | 227906.4             | 14960.5           | 2274.7         | 276.2          | 190.3          | 104.4          | 102            | 533.9         | 261.8              | 172.9             |
| 1-Dec-91  | 18:12:30 | 227686               | 10531.6           | 1542.2         | 182.7          | 120.3          | 57.8           | 69.2           | 370.1         | 167.2              | 115.4             |
| 2-Dec-91  | 20:48:40 | 228208.5             | 14487.6           | 2174.8         | 255.7          | 171.1          | 86.5           | 94.7           | 509.6         | 212.1              | 163               |
| 3-Dec-91  | 18:55:29 | 228250               | 15565.4           | 2452.1         | 251.9          | 156.2          | 60.5           | 99.8           | 539.1         | 225.4              | 165               |
| 4-Dec-91  | 20:14:01 | 228259.9             | 17457.3           | 2682.6         | 309.9          | 208.5          | 107.2          | 113.2          | 613.9         | 249.2              | 195.1             |
| 5-Dec-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 6-Dec-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 7-Dec-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 8-Dec-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 9-Dec-91  |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 10-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 11-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 12-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 13-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 14-Dec-91 | 20:55:32 | 228946.3             | 18911             | 3187.3         | 289.6          | 171.3          | 52.9           | 114.6          | 644.5         | 227.5              | 186.9             |
| 15-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 16-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 17-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 18-Dec-91 | 20:40:30 | 229258.4             | 19494.2           | 3134.7         | 351.8          | 238.1          | 124.4          | 131.2          | 692.9         | 355.4              | 213.3             |
| 19-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 20-Dec-91 | 20:57:30 | 229131.2             | 19307.2           | 2836.9         | 347.7          | 236.8          | 125.9          | 126.1          | 680.4         | 262.7              | 223.6             |
| 21-Dec-91 | 21:44:58 | 229125.4             | 21462.3           | 3704.1         | 263.5          | 116.1          | -31.3          | 123.1          | 705.8         | 225.9              | 185.4             |
| 22-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 23-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 24-Dec-91 | 19:25:00 | 229278.2             | 26545             | 4285.9         | 415.3          | 250.4          | 85.5           | 163.7          | 910           | 345.1              | 266.6             |
| 25-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 26-Dec-91 | 20:18:30 | 229298.1             | 25898.7           | 4394           | 438.1          | 281.7          | 125.4          | 169.9          | 907.1         | 426.8              | 276.1             |
| 27-Dec-91 | 17:46:00 | 229269.4             | 23655.1           | 4148.3         | 351.7          | 199.6          | 47.4           | 147.6          | 808.1         | 362                | 224.4             |
| 28-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 29-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 30-Dec-91 |          |                      |                   |                |                |                |                |                |               |                    |                   |
| 31-Dec-91 | 18:20:00 | 229394               | 25936.1           | 4450.5         | 412.5          | 251.4          | 90.3           | 165.5          | 895.7         | 379.3              | 269.5             |



**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."