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1987, 7-8

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太阳黑子相对数与面积数  
DAILY RELATIVE SUNSPOT NUMBERS AND SUNSPOT AREAS

1987年 7 月

JUL 1987

| 日 群  |      | 相 对 数 值       |       |      | 面 积 数 值 (Areas) |       |       | 照 像 Photo |       |       |
|------|------|---------------|-------|------|-----------------|-------|-------|-----------|-------|-------|
|      |      | Relative-Num. |       |      | 手 描 Drawing     |       |       |           |       |       |
| 期 数  |      | 北半球           | 南半球   | 合计   | 北半球             | 南半球   | 合计    | 北半球       | 南半球   | 合计    |
| Day  | Cro. | N. H.         | S. H. | Sum  | N. H.           | S. H. | Sum   | N. H.     | S. H. | Sum   |
| 1    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 2    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 3    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 4    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 5    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 6    | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 7    | 1    | 0             | 8     | 8    | 0               | 5     | 5     | 0         | 0     | 0     |
| 8    | 1    | 0             | 8     | 8    | 0               | 9     | 9     | 0         | 0     | 0     |
| 9    | 1    | 0             | 14    | 14   | 0               | 14    | 14    | 0         | 0     | 0     |
| 10   | 1    | 0             | 12    | 12   | 0               | 17    | 17    | 0         | 0     | 0     |
| 11   | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 12   | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 13   | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 14   | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 15   | 0    | 0             | 0     | 0    | 0               | 0     | 0     | 0         | 0     | 0     |
| 16   | 2    | 9             | 7     | 16   | 9               | 28    | 37    |           |       |       |
| 17   | 1    | 0             | 8     | 8    | 0               | 121   | 121   |           |       |       |
| 18   | 1    | 0             | 9     | 9    | 0               | 123   | 123   | 0         | 87    | 87    |
| 19   | 2    | 0             | 18    | 18   | 0               | 91    | 91    |           |       |       |
| 20   | 2    | 0             | 26    | 26   | 0               | 147   | 147   | 0         | 118   | 118   |
| 21   | 4    | 19            | 46    | 65   | 26              | 334   | 360   | 24        | 292   | 316   |
| 22   | 5    | 14            | 56    | 70   | 15              | 442   | 457   | 22        | 314   | 336   |
| 23   | 8    | 22            | 75    | 97   | 132             | 542   | 674   | 14        | 332   | 346   |
| 24   | 6    | 22            | 71    | 93   | 217             | 585   | 802   | 105       | 326   | 431   |
| 25   | 5    | 11            | 66    | 77   | 262             | 629   | 891   | 124       | 285   | 409   |
| 26   | 5    | 19            | 69    | 88   | 262             | 572   | 834   | 191       | 367   | 558   |
| 27   | 4    | 20            | 52    | 72   | 225             | 795   | 1020  | 113       | 356   | 469   |
| 28   | 3    | 16            | 26    | 42   | 136             | 165   | 301   | 105       | 122   | 227   |
| 29   | 3    | 31            | 28    | 59   | 91              | 65    | 156   |           |       |       |
| 30   | 4    | 30            | 25    | 55   | 75              | 57    | 132   |           |       |       |
| 31   | 5    | 41            | 29    | 70   | 91              | 67    | 158   |           |       |       |
| Mean |      | 8.2           | 21.1  | 29.3 | 49.7            | 155.1 | 204.8 | 27.9      | 104.0 | 131.9 |

# 太阳黑子相对数与面积数

## DAILY RELATIVE SUNSPOT NUMBERS AND SUNSPOT AREAS

1987年8月

AUG 1987

| 日<br>期<br>Day | 群<br>数<br>Cro. | 相 对 数 值<br>Relative-Num. |              |            | 面 积 数 值 (Areas) |              |            | 照 像<br>Photo |              |            |
|---------------|----------------|--------------------------|--------------|------------|-----------------|--------------|------------|--------------|--------------|------------|
|               |                | 手 描<br>Drawing           |              |            | 合 计<br>Sum      |              |            | 合 计<br>Sum   |              |            |
|               |                | 北半球<br>N. H.             | 南半球<br>S. H. | 合 计<br>Sum | 北半球<br>N. H.    | 南半球<br>S. H. | 合 计<br>Sum | 北半球<br>N. H. | 南半球<br>S. H. | 合 计<br>Sum |
| 1             | 5              | 37                       | 19           | 56         | 197             | 29           | 226        |              |              |            |
| 2             | 4              | 31                       | 10           | 41         | 214             | 45           | 259        |              |              |            |
| 3             | 3              | 31                       | 15           | 46         | 232             | 2            | 234        | 109          | 17           | 126        |
| 4             | 2              | 15                       | 22           | 37         | 124             | 31           | 155        | 132          | 26           | 158        |
| 5             | 2              | 7                        | 14           | 21         | 76              | 17           | 93         | 92           | 33           | 125        |
| 6             | 2              | 7                        | 24           | 31         | 70              | 40           | 110        |              |              |            |
| 7             | 1              | 0                        | 30           | 30         | 0               | 96           | 96         | 0            | 56           | 56         |
| 8             | 2              | 8                        | 35           | 43         | 7               | 371          | 378        | 0            | 197          | 197        |
| 9             | 2              | 9                        | 27           | 36         | 6               | 428          | 434        | 0            | 190          | 190        |
| 10            | 4              | 15                       | 24           | 39         | 10              | 791          | 801        | 0            | 397          | 397        |
| 11            | 3              | 14                       | 48           | 62         | 14              | 588          | 602        | 0            | 339          | 339        |
| 12            | 4              | 8                        | 29           | 37         | 4               | 827          | 831        |              |              |            |
| 13            | 3              | 0                        | 38           | 38         | 0               | 1204         | 1204       |              |              |            |
| 14            | 4              | 7                        | 37           | 44         | 5               | 1113         | 1118       |              |              |            |
| 15            | 3              | 0                        | 45           | 45         | 0               | 940          | 940        | 0            | 513          | 513        |
| 16            | 4              | 0                        | 56           | 56         | 0               | 997          | 997        | 0            | 562          | 562        |
| 17            | 3              | 0                        | 39           | 39         | 0               | 889          | 889        | 0            | 483          | 483        |
| 18            | 3              | 0                        | 35           | 35         | 0               | 760          | 760        | 0            | 497          | 497        |
| 19            | 3              | 0                        | 33           | 33         | 0               | 685          | 685        | 0            | 440          | 440        |
| 20            | 3              | 0                        | 40           | 40         | 0               | 714          | 714        | 0            | 356          | 356        |
| 21            | 3              | 0                        | 36           | 36         | 0               | 828          | 828        | 0            | 362          | 362        |
| 22            | 3              | 7                        | 21           | 28         | 70              | 628          | 698        | 29           | 295          | 324        |
| 23            | 3              | 10                       | 19           | 29         | 112             | 619          | 731        |              |              |            |
| 24            | 3              | 15                       | 16           | 31         | 18              | 288          | 306        | 31           | 456          | 487        |
| 25            | 2              | 24                       | 7            | 31         | 32              | 0            | 32         | 36           | 0            | 36         |
| 26            | 2              | 28                       | 0            | 28         | 193             | 0            | 193        |              |              |            |
| 27            | 3              | 31                       | 0            | 31         | 98              | 0            | 98         | 103          | 0            | 103        |
| 28            | 3              | 20                       | 7            | 27         | 10              | 8            | 18         | 11           | 7            | 18         |
| 29            | 2              | 9                        | 7            | 16         | 4               | 9            | 13         | 0            | 8            | 8          |
| 30            | 2              | 8                        | 7            | 15         | 4               | 6            | 10         | 0            | 7            | 7          |
| 31            | 2              | 0                        | 14           | 14         | 0               | 15           | 15         | 0            | 6            | 6          |
| Mean          |                | 11.0                     | 24.3         | 35.3       | 48.4            | 418.3        | 466.7      | 23.6         | 228.1        | 251.7      |

# 太阳黑子观测 DAILY SUNSPOT OBSERVATIONS

1987年 7 月

JUL 1987

| 日<br>期<br>Day | 群<br>号<br>No | 过日面中<br>心经圈<br>(月, 日)<br>CMP-Day | 日面位置<br>纬 经<br>度 度<br>Lat L | 中<br>型<br>经 距<br>CMD Type | 日<br>心<br>距<br>r/R | 视<br>面<br>积<br>Sd | 校正面积Sp<br>全 最大<br>群 黑子<br>Whole Max | 备<br>注<br>Remarks |
|---------------|--------------|----------------------------------|-----------------------------|---------------------------|--------------------|-------------------|-------------------------------------|-------------------|
| 1.03          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 2.10          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 3.29          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 4.00          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 5.19          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 6.39          | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 7.15          | 66           | VII- 5.1                         | -19 112                     | 27W                       | A 0.56             | 8                 | 5 3                                 |                   |
| 8.10          | 66           |                                  |                             | 39W                       | B 0.70             | 13                | 9 6                                 |                   |
| 9.02          | 66           |                                  |                             | 51W                       | B 0.81             | 17                | 14 4                                | PURP              |
| 10.11         | 66           |                                  |                             | 67W                       | B 0.93             | 13                | 17 6                                |                   |
| 11.27         | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 12.07         | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 13.00         | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 14.00         | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 15.24         | 0            |                                  |                             |                           |                    |                   |                                     |                   |
| 16.13         | 67           | VII-11.5                         | 27 27                       | 61W                       | B 0.89             | 8                 | 9 5                                 |                   |
|               | 68           | VII-22.3                         | -32 245                     | 82E                       | A 0.99             | 8                 | 28 28                               |                   |
| 17.10         | 68           |                                  |                             | 70E                       | H 0.97             | 63                | 121 121                             |                   |
| 18.13         | 68           |                                  |                             | 56E                       | H 0.90             | 109               | 123 119                             |                   |
| 19.21         | 68           |                                  |                             | 42E                       | J 0.80             | 101               | 85 42                               |                   |
|               | 69           | VII-21.4                         | -28 257                     | 29E                       | B 0.68             | 8                 | 6 3                                 |                   |
| 20.18         | 68           |                                  |                             | 30E                       | H 0.72             | 185               | 134 131                             |                   |
|               | 69           |                                  |                             | 17E                       | B 0.60             | 21                | 13 3                                |                   |
| 21.31         | 68           |                                  |                             | 16E                       | H 0.62             | 181               | 115 121                             | PLAT              |
|               | 69           |                                  |                             | 2E                        | B 0.53             | 50                | 30 2                                | PLAT              |
|               | 70           | VII-21.7                         | 21 253                      | 7E                        | B 0.29             | 50                | 26 2                                | PLAT              |

1987 年 7 月

JUL 1987

| 日 期   | 群 号 | 过日面中<br>心 经 圈<br>(月, 日) | 日面位置<br>纬 度 | 经 度 | 中 型<br>经 距 | 型 别  | 日 心<br>距 | 视 面<br>积 | 校正面积  | Sp<br>全 最大 | 备 注     |
|-------|-----|-------------------------|-------------|-----|------------|------|----------|----------|-------|------------|---------|
| Day   | No  | CMP-Day                 | Lat         | L   | CMD        | Type | r/R      | Sd       | Whole | Max        | Remarks |
|       | 71  | VII-26.8                | -23         | 186 | 72E        | C    | 0.95     | 114      | 189   | 147        | PLAT    |
| 22.00 | 68  |                         |             |     | 8E         | H    | 0.59     | 193      | 120   | 117        | PLAT    |
|       | 69  |                         |             |     | 8W         | B    | 0.53     | 38       | 22    | 2          | PLAT    |
|       | 70  |                         |             |     | 2W         | B    | 0.28     | 29       | 15    | 4          | PLAT    |
|       | 71  |                         |             |     | 64E        | D    | 0.93     | 210      | 288   | 132        | PLAT    |
|       | 72  | VII-23.8                | -19         | 225 | 24E        | B    | 0.54     | 21       | 12    | 5          | PLAT    |
| 23.21 | 68  |                         |             |     | 8W         | H    | 0.60     | 227      | 142   | 134        |         |
|       | 69  |                         |             |     | 20W        | D    | 0.62     | 244      | 156   | 51         |         |
|       | 70  |                         |             |     | 20W        | A    | 0.41     | 8        | 5     | 2          |         |
|       | 71  |                         |             |     | 48E        | D    | 0.80     | 278      | 234   | 120        |         |
|       | 72  |                         |             |     | 8E         | B    | 0.43     | 13       | 7     | 2          |         |
|       | 73  | VII-24.0                | 19          | 222 | 11E        | A    | 0.30     | 4        | 2     | 2          |         |
|       | 74  | VII-25.9                | -19         | 197 | 36E        | A    | 0.68     | 4        | 3     | 3          |         |
|       | 75  | VII-29.8                | 28          | 152 | 81E        | J    | 0.99     | 38       | 125   | 125        |         |
| 24.00 | 68  |                         |             |     | 17W        | H    | 0.61     | 147      | 93    | 93         | PLAT    |
|       | 69  |                         |             |     | 30W        | E    | 0.68     | 404      | 275   | 71         | PLAT    |
|       | 71  |                         |             |     | 37E        | D    | 0.70     | 248      | 174   | 118        | PLAT    |
|       | 72  |                         |             |     | 0          | C    | 0.37     | 80       | 43    | 32         | PLAT    |
|       | 73  |                         |             |     | 5E         | A    | 0.31     | 13       | 7     | 2          | PLAT    |
|       | 75  |                         |             |     | 77E        | D    | 0.97     | 109      | 210   | 97         | PLAT    |
| 25.26 | 68  |                         |             |     | 34W        | J    | 0.75     | 160      | 120   | 117        |         |
|       | 69  |                         |             |     | 47W        | E    | 0.84     | 336      | 309   | 112        |         |
|       | 71  |                         |             |     | 21E        | D    | 0.56     | 320      | 193   | 102        |         |
|       | 73  |                         |             |     | 18W        | B    | 0.48     | 13       | 7     | 2          |         |
|       | 75  |                         |             |     | 61E        | E    | 0.89     | 244      | 262   | 126        |         |
| 26.00 | 68  |                         |             |     | 43W        | J    | 0.82     | 143      | 124   | 124        |         |
|       | 69  |                         |             |     | 57W        | E    | 0.90     | 257      | 290   | 123        |         |
|       | 71  |                         |             |     | 11E        | D    | 0.49     | 261      | 150   | 80         |         |
|       | 73  |                         |             |     | 29W        | B    | 0.61     | 13       | 8     | 3          |         |
|       | 75  |                         |             |     | 51E        | E    | 0.80     | 311      | 262   | 127        |         |
| 27.05 | 68  |                         |             |     | 57W        | J    | 0.97     | 55       | 105   | 97         |         |
|       | 69  |                         |             |     | 71W        | E    | 0.98     | 240      | 562   | 266        |         |
|       | 71  |                         |             |     | 3W         | C    | 0.49     | 223      | 128   | 87         |         |
|       | 75  |                         |             |     | 37E        | E    | 0.66     | 341      | 225   | 106        |         |
| 28.05 | 68  |                         |             |     | 72W        | J    | 0.98     | 29       | 69    | 69         | PLAT    |
|       | 71  |                         |             |     | 15W        | C    | 0.52     | 164      | 96    | 66         | PLAT    |
|       | 75  |                         |             |     | 26E        | D    | 0.55     | 227      | 136   | 58         | PLAT    |
| 29.02 | 71  |                         |             |     | 27W        | C    | 0.63     | 88       | 57    | 51         | PURP    |
|       | 75  |                         |             |     | 13E        | C    | 0.44     | 164      | 91    | 56         | PURP    |
|       | 76  | VII-27.8                | -29         | 173 | 15W        | B    | 0.61     | 13       | 8     | 3          | PURP    |
| 30.05 | 71  |                         |             |     | 42W        | C    | 0.76     | 46       | 36    | 26         |         |

1987 年 7 月

JUL 1987

| 日     | 群  | 过日面中     | 日面位置   | 中   | 型    | 日    | 视   | 校正面积Sp    | 备       |
|-------|----|----------|--------|-----|------|------|-----|-----------|---------|
| 期     | 号  | 心 经 圈    | 纬 经    | 经   |      | 心    | 面   | 全 最大      |         |
| Day   | No | (月, 日)   | 度 度    | 距   | 别    | 距    | 积   | 群 黑子      | 注       |
|       |    | CMP-Day  | Lat L  | CMD | Type | r/R  | Sd  | Whole Max | Remarks |
|       | 75 |          |        | 2W  | C    | 0.39 | 118 | 64        | 53      |
|       | 76 |          |        | 30W | B    | 0.70 | 29  | 21        | 6       |
|       | 77 | VII-29.4 | 19 152 | 9W  | B    | 0.28 | 21  | 11        | 4       |
| 31.01 | 71 |          |        | 53W | B    | 0.85 | 34  | 32        | 12      |
|       | 75 |          |        | 15W | C    | 0.46 | 126 | 71        | 54      |
|       | 76 |          |        | 43W | C    | 0.80 | 42  | 35        | 25      |
|       | 77 |          |        | 21W | B    | 0.41 | 8   | 5         | 2       |
|       | 78 | VII-30.7 | 15 121 | 9E  | C    | 0.23 | 29  | 15        | 9       |

# 太阳黑子观测

## DAILY SUNSPOT OBSERVATIONS

1987年 8 月

AUG 1987

| 日 期   | 群 号 | 过日面中心经度<br>(月, 日)<br>CMP-Day | 日面位置<br>纬 度<br>Lat | 经 度<br>L | 中 型<br>经 距<br>CMD | 型 别<br>Type | 日 心<br>距<br>r/R | 视 面<br>积<br>Sd | 校正面积<br>全 群<br>Whole | Sp<br>最大<br>黑子<br>Max | 备 注<br>Remarks |
|-------|-----|------------------------------|--------------------|----------|-------------------|-------------|-----------------|----------------|----------------------|-----------------------|----------------|
| 1.06  | 71  | VII-26.9                     | -21                | 184      | 68W               | B           | 0.89            | 8              | 9                    | 4                     |                |
|       | 75  | VII-29.9                     | 28                 | 145      | 29W               | C           | 0.57            | 130            | 79                   | 59                    |                |
|       | 76  | VII-27.7                     | -29                | 173      | 57W               | B           | 0.90            | 16             | 20                   | 10                    |                |
|       | 77  | VII-29.4                     | 20                 | 151      | 35W               | A           | 0.59            | 8              | 5                    | 2                     |                |
|       | 78  | VII-31.7                     | 16                 | 121      | 5W                | C           | 0.18            | 222            | 113                  | 98                    |                |
| 2.22  | 75  |                              |                    |          | 44W               | C           | 0.74            | 50             | 37                   | 34                    |                |
|       | 78  |                              |                    |          | 20W               | C           | 0.39            | 323            | 175                  | 159                   |                |
|       | 79  | VIII- 6.5                    | -23                | 44       | 57E               | B           | 0.88            | 42             | 45                   | 22                    |                |
|       | 80  | VIII- 3.3                    | 22                 | 87       | 15E               | A           | 0.35            | 4              | 2                    | 2                     | PLAT           |
| 3.00  | 78  |                              |                    |          | 31W               | C           | 0.50            | 294            | 170                  | 155                   | PURP           |
|       | 79  |                              |                    |          | 46E               | A           | 0.25            | 4              | 2                    | 2                     | PURP           |
|       | 80  |                              |                    |          | 3E                | D           | 0.79            | 75             | 62                   | 37                    | PURP           |
| 4.00  | 78  |                              |                    |          | 44W               | C           | 0.68            | 180            | 124                  | 119                   | PURP           |
|       | 79  |                              |                    |          | 32E               | C           | 0.67            | 46             | 31                   | 11                    | PURP           |
| 5.27  | 78  |                              |                    |          | 64W               | J           | 0.88            | 71             | 76                   | 76                    |                |
|       | 79  |                              |                    |          | 16E               | B           | 0.54            | 29             | 17                   | 4                     |                |
| 6.08  | 78  |                              |                    |          | 75W               | J           | 0.95            | 42             | 70                   | 70                    |                |
|       | 79  |                              |                    |          | 3E                | C           | 0.48            | 71             | 40                   | 21                    |                |
| 7.10  | 79  |                              |                    |          | 9W                | D           | 0.49            | 168            | 96                   | 29                    | PLAT           |
| 8.22  | 79  |                              |                    |          | 25W               | D           | 0.60            | 588            | 371                  | 251                   |                |
|       | 81  | VIII- 5.6                    | 6                  | 55       | 34W               | B           | 0.55            | 12             | 7                    | 5                     |                |
| 9.05  | 79  |                              |                    |          | 36W               | D           | 0.71            | 601            | 428                  | 299                   |                |
|       | 81  |                              |                    |          | 46W               | B           | 0.72            | 8              | 6                    | 3                     |                |
| 10.11 | 79  |                              |                    |          | 49W               | D           | 0.82            | 525            | 468                  | 307                   |                |
|       | 81  |                              |                    |          | 61W               | A           | 0.87            | 8              | 8                    | 4                     |                |
|       | 82  | VIII-15.5                    | -27                | 285      | 71E               | C           | 0.96            | 168            | 323                  | 314                   |                |
|       | 83  | VIII-12.8                    | 13                 | 321      | 37E               | A           | 0.59            | 4              | 2                    | 2                     |                |
| 11.00 | 79  |                              |                    |          | 61W               | E           | 0.91            | 264            | 337                  | 203                   | PURP           |
|       | 81  |                              |                    |          | 76W               | B           | 0.95            | 8              | 14                   | 7                     | PURP           |
|       | 82  |                              |                    |          | 62E               | D           | 0.91            | 197            | 251                  | 197                   | PURP           |
| 12.15 | 79  |                              |                    |          | 78W               | D           | 0.98            | 50             | 166                  | 111                   |                |
|       | 82  |                              |                    |          | 45E               | D           | 0.81            | 315            | 272                  | 192                   |                |
|       | 84  | VIII-14.0                    | 23                 | 305      | 24E               | A           | 0.47            | 8              | 4                    | 2                     |                |
|       | 85  | VIII-18.1                    | -31                | 251      | 78E               | H           | 0.98            | 117            | 389                  | 389                   |                |
| 13.04 | 82  |                              |                    |          | 33E               | D           | 0.72            | 340            | 246                  | 189                   |                |

1987年 8 月

AUG 1987

| 日     | 群                    | 过日面中<br>心经圈<br>(月, 日) | 日面位置<br>纬度 | 中<br>经<br>距 | 型<br>别                   | 日<br>心<br>距<br>$r/R$                 | 视<br>面<br>积<br>Sd      | 校正面积<br>全<br>群<br>Whole | 最大<br>燕子<br>Max        | 备<br>注<br>Remarks    |
|-------|----------------------|-----------------------|------------|-------------|--------------------------|--------------------------------------|------------------------|-------------------------|------------------------|----------------------|
| Day   | No                   | CMP-Day               | Lat        | L           | Type                     |                                      |                        |                         |                        |                      |
| 14.16 | 85<br>86             | VIII-18.9             | -24        | 241         | 68E<br>77E               | H 0.96<br>D 0.98                     | 361<br>79              | 594<br>264              | 694<br>194             |                      |
|       | 82<br>85<br>86<br>87 |                       |            |             | 18E<br>54E<br>63E<br>70E | C 0.60<br>D 0.89<br>D 0.93<br>A 0.93 | 344<br>462<br>273<br>4 | 217<br>522<br>374<br>5  | 201<br>469<br>184<br>5 |                      |
| 15.20 | 82<br>85<br>86       |                       |            |             | 6E<br>41E<br>51E         | C 0.65<br>C 0.80<br>C 0.83           | 340<br>592<br>235      | 225<br>499<br>216       | 214<br>424<br>131      | PLAT<br>PLAT<br>PLAT |
| 16.06 | 82<br>85<br>86<br>88 |                       |            |             | 5W<br>30E<br>39E<br>27W  | C 0.55<br>D 0.72<br>D 0.74<br>A 0.64 | 370<br>693<br>357<br>8 | 221<br>503<br>268<br>5  | 214<br>435<br>173<br>2 |                      |
| 17.15 | 82<br>85<br>86       | VIII-14.0             | -25        | 304         | 18W<br>17E<br>26E        | C 0.59<br>D 0.64<br>D 0.63           | 349<br>656<br>378      | 217<br>428<br>244       | 212<br>362<br>84       |                      |
| 18.08 | 82<br>85<br>86       |                       |            |             | 31W<br>5E<br>13E         | C 0.71<br>C 0.59<br>D 0.52           | 281<br>613<br>302      | 200<br>382<br>178       | 197<br>375<br>106      |                      |
| 19.13 | 82<br>85<br>86       |                       |            |             | 45W<br>9W<br>1W          | C 0.80<br>C 0.60<br>D 0.49           | 256<br>534<br>231      | 216<br>336<br>133       | 212<br>334<br>48       |                      |
| 20.11 | 82<br>85<br>86       |                       |            |             | 58W<br>21W<br>13W        | C 0.90<br>C 0.67<br>D 0.54           | 214<br>571<br>117      | 256<br>389<br>69        | 250<br>383<br>34       |                      |
| 21.04 | 82<br>85<br>86       |                       |            |             | 73W<br>34W<br>26W        | J 0.97<br>D 0.75<br>B 0.62           | 121<br>689<br>21       | 286<br>529<br>13        | 286<br>422<br>5        |                      |
| 22.22 | 85<br>86<br>89       |                       |            |             | 49W<br>39W<br>75E        | D 0.86<br>A 0.73<br>J 0.95           | 630<br>8<br>42         | 622<br>6<br>70          | 464<br>3<br>70         |                      |
| 23.16 | 85<br>86<br>89       | VIII-27.9             | 15         | 121         | 61W<br>53W<br>62E        | D 0.93<br>B 0.86<br>J 0.86           | 437<br>21<br>113       | 599<br>20<br>112        | 489<br>12<br>74        |                      |
| 24.03 | 85<br>86<br>89       |                       |            |             | 71W<br>67W<br>49E        | H 0.96<br>A 0.94<br>B 0.73           | 147<br>4<br>25         | 282<br>6<br>18          | 266<br>6<br>6          |                      |
| 25.09 | 89                   |                       |            |             | 35E                      | C 0.57                               | 37                     | 23                      | 12                     |                      |

1987年 8 月

AUG 1987

| 日     | 群  | 过日面中         | 日面位置   | 中   | 型    | 日    | 视   | 校正面积  | Sp  | 备       |
|-------|----|--------------|--------|-----|------|------|-----|-------|-----|---------|
| 期     | 号  | 心经圈          | 纬 经    | 经   | 别    | 心    | 面   | 全     | 最大  | 注       |
| Day   | No | CMP-Day      | Lat L  | CMD | Type | r/R  | Sd  | Whole | Max | Remarks |
|       |    | 90 VIII-21.3 | 19 208 | 50W | B    | 0.75 | 12  | 9     | 3   |         |
| 26.12 | 89 |              |        | 21E | B    | 0.37 | 25  | 13    | 4   |         |
|       | 90 |              |        | 63W | D    | 0.88 | 168 | 180   | 49  |         |
| 27.32 | 89 |              |        | 7E  | B    | 0.18 | 12  | 6     | 2   |         |
|       | 90 |              |        | 80W | C    | 0.97 | 37  | 88    | 69  |         |
|       | 91 | VIII-28.1    | 21 119 | 10E | A    | 0.28 | 8   | 4     | 2   |         |
| 28.00 | 89 |              |        | 3W  | B    | 0.16 | 12  | 6     | 2   |         |
|       | 91 |              |        | 1W  | B    | 0.25 | 8   | 4     | 2   |         |
|       | 92 | IX- 2.5      | -23 48 | 72E | A    | 0.96 | 4   | 8     | 8   |         |
| 29.19 | 92 |              |        | 56E | A    | 0.88 | 8   | 9     | 9   |         |
|       | 93 | VIII-28.4    | 16 114 | 10W | B    | 0.24 | 8   | 4     | 2   |         |
| 30.02 | 92 |              |        | 45E | A    | 0.79 | 8   | 6     | 6   |         |
|       | 93 |              |        | 19W | B    | 0.34 | 8   | 4     | 2   |         |
| 31.00 | 92 |              |        | 32E | A    | 0.67 | 4   | 2     | 2   |         |
|       | 94 | IX- 5.8      | -24 3  | 77E | A    | 0.98 | 4   | 13    | 13  |         |

# 太阳黑子群表

## SUNSPOT GROUPS

1987年 7 月

JUL 1987

JUL 1987

| 黑子群编号<br>及过日心经圈<br>日期(月, 日)<br>CMP-Day No | 日<br>期<br>Date                                                                    | 日面位置<br>纬 度<br>Lat L | 中<br>经 度<br>CMD | 型<br>别<br>Type                                                                        | 日<br>心<br>距<br>r/R                                            | 视<br>面<br>积<br>Sd                                                                                    | 校正面积Sp<br>全 最大<br>群 黑子<br>Whole Max                                                | 备<br>注<br>Remarks                                                                   |                                                                                    |                                                                  |
|-------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 66<br>VII- 5.1                            | VII<br>7<br>8<br>9<br>10                                                          | -19                  | 112             | 27W<br>39W<br>51W<br>67W                                                              | A<br>B<br>B<br>B                                              | 0.56<br>0.70<br>0.81<br>0.93                                                                         | 8<br>13<br>17<br>13                                                                | 5<br>9<br>14<br>17                                                                  | 3<br>6<br>4<br>6                                                                   | PURP                                                             |
| 67<br>VII-11.5                            | VII<br>16                                                                         | 27                   | 27              | 61W                                                                                   | B                                                             | 0.89                                                                                                 | 8                                                                                  | 9                                                                                   | 5                                                                                  |                                                                  |
| 68<br>VII-22.3                            | VII<br>16<br>17<br>18<br>19<br>20<br>21<br>22<br>23<br>24<br>25<br>26<br>27<br>28 | -32                  | 245             | 82E<br>70E<br>56E<br>42E<br>30E<br>16E<br>8E<br>8W<br>17W<br>34W<br>43W<br>57W<br>72W | A<br>H<br>H<br>J<br>H<br>H<br>H<br>H<br>H<br>J<br>J<br>J<br>J | 0.99<br>0.97<br>0.90<br>0.80<br>0.72<br>0.62<br>0.59<br>0.60<br>0.61<br>0.75<br>0.82<br>0.97<br>0.98 | 8<br>63<br>109<br>101<br>185<br>181<br>193<br>227<br>147<br>160<br>143<br>55<br>29 | 28<br>121<br>123<br>85<br>134<br>115<br>120<br>142<br>93<br>120<br>124<br>105<br>69 | 28<br>121<br>119<br>42<br>131<br>121<br>117<br>134<br>93<br>117<br>124<br>97<br>69 | PLAT<br>PLAT<br><br><br>PLAT<br>PLAT<br>PLAT                     |
| 69<br>VII-21.4                            | VII<br>19<br>20<br>21<br>22<br>23<br>24<br>25<br>26<br>27                         | -28                  | 257             | 29E<br>17E<br>2E<br>8W<br>20W<br>30W<br>47W<br>57W<br>71W                             | B<br>B<br>B<br>B<br>D<br>E<br>E<br>E<br>E                     | 0.68<br>0.60<br>0.53<br>0.53<br>0.62<br>0.68<br>0.84<br>0.90<br>0.98                                 | 8<br>21<br>50<br>38<br>244<br>404<br>336<br>257<br>240                             | 6<br>13<br>30<br>22<br>156<br>275<br>309<br>290<br>562                              | 3<br>3<br>2<br>2<br>51<br>71<br>112<br>123<br>266                                  | PLAT<br>PLAT<br>PLAT                                             |
| 70<br>VII-21.7                            | VII<br>21<br>22<br>23                                                             | 21                   | 253             | 7E<br>2W<br>20W                                                                       | B<br>B<br>A                                                   | 0.29<br>0.28<br>0.41                                                                                 | 50<br>29<br>8                                                                      | 26<br>15<br>5                                                                       | 2<br>4<br>2                                                                        | PLAT<br>PLAT                                                     |
| 71<br>VII-26.8                            | VII<br>21<br>22<br>23<br>24<br>25<br>26<br>27<br>28<br>29<br>30                   | -23                  | 186             | 72E<br>64E<br>48E<br>37E<br>21E<br>11E<br>3W<br>15W<br>27W<br>42W                     | C<br>D<br>D<br>D<br>D<br>D<br>C<br>C<br>C<br>C                | 0.95<br>0.93<br>0.80<br>0.70<br>0.56<br>0.49<br>0.49<br>0.52<br>0.63<br>0.76                         | 114<br>210<br>278<br>248<br>320<br>261<br>223<br>164<br>88<br>46                   | 189<br>288<br>234<br>174<br>193<br>150<br>128<br>96<br>57<br>36                     | 147<br>132<br>120<br>118<br>102<br>80<br>87<br>66<br>51<br>26                      | PLAT<br>PLAT<br><br>PLAT<br>PLAT<br>PLAT<br>PLAT<br>PLAT<br>PURP |

[illegible][illegible]

# 太阳黑子群表

SUNSPOT GROUPS

1987年 8 月

AUG 1987

| 黑子群编号<br>及过日心经圈<br>日期(月, 日)<br>CMP-Day No | 日<br>期<br>Date                                                       | 日面位置<br>纬 度<br>Lat L | 中<br>经<br>距<br>CMD                                                             | 型<br>别<br>Type                                           | 日<br>心<br>距<br>r/R                                                                           | 视<br>面<br>积<br>Sd                                                                | 校正面积Sp<br>全 群<br>Whole                                                           | 最大<br>黑子<br>Max                                                                  | 备<br>注<br>Remarks                                    |
|-------------------------------------------|----------------------------------------------------------------------|----------------------|--------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|
| 79 VIII<br>VIII- 6.5                      | 2<br>3<br>4<br>5<br>6<br>7<br>8<br>9<br>10<br>11<br>12               | -23<br>44            | 57E<br>46E<br>32E<br>16E<br>3E<br>9W<br>25W<br>36W<br>49W<br>61W<br>78W        | B<br>A<br>C<br>B<br>C<br>D<br>D<br>D<br>D<br>E<br>D      | 0.88<br>0.25<br>0.67<br>0.54<br>0.48<br>0.49<br>0.60<br>0.71<br>0.82<br>0.91<br>0.98         | 42<br>4<br>46<br>29<br>71<br>168<br>588<br>601<br>525<br>264<br>50               | 45<br>2<br>31<br>17<br>40<br>96<br>371<br>428<br>468<br>337<br>166               | 22<br>2<br>11<br>4<br>21<br>29<br>251<br>299<br>307<br>203<br>111                | <br><br>PURP<br>PURP<br><br>PLAT<br><br><br><br>PURP |
| 80 VIII<br>VIII- 3.3                      | 2<br>3                                                               | 22<br>87             | 15E<br>3E                                                                      | A<br>D                                                   | 0.35<br>0.79                                                                                 | 4<br>75                                                                          | 2<br>62                                                                          | 2<br>37                                                                          | PLAT<br>PURP                                         |
| 81 VIII<br>VIII- 5.6                      | 8<br>9<br>10<br>11                                                   | 6<br>55              | 34W<br>46W<br>61W<br>76W                                                       | B<br>B<br>A<br>B                                         | 0.55<br>0.72<br>0.87<br>0.95                                                                 | 12<br>8<br>8<br>8                                                                | 7<br>6<br>8<br>14                                                                | 5<br>3<br>4<br>7                                                                 | <br><br><br>PURP                                     |
| 82 VIII<br>VIII-15.5                      | 10<br>11<br>12<br>13<br>14<br>15<br>16<br>17<br>18<br>19<br>20<br>21 | -27<br>285           | 71E<br>62E<br>45E<br>33E<br>18E<br>6E<br>5W<br>18W<br>31W<br>45W<br>58W<br>73W | C<br>D<br>D<br>D<br>C<br>C<br>C<br>C<br>C<br>C<br>C<br>J | 0.96<br>0.91<br>0.81<br>0.72<br>0.60<br>0.65<br>0.55<br>0.59<br>0.71<br>0.80<br>0.90<br>0.97 | 168<br>197<br>315<br>340<br>344<br>340<br>370<br>349<br>281<br>256<br>214<br>121 | 323<br>251<br>272<br>246<br>217<br>225<br>221<br>217<br>200<br>216<br>256<br>286 | 314<br>197<br>192<br>189<br>201<br>214<br>214<br>212<br>197<br>212<br>250<br>286 | <br>PURP<br><br><br>PLAT                             |
| 83 VIII<br>VIII-12.8                      | 10                                                                   | 13<br>321            | 37E                                                                            | A                                                        | 0.59                                                                                         | 4                                                                                | 2                                                                                | 2                                                                                |                                                      |
| 84 VIII<br>VIII-14.0                      | 12                                                                   | 23<br>305            | 24E                                                                            | A                                                        | 0.47                                                                                         | 8                                                                                | 4                                                                                | 2                                                                                |                                                      |
| 85 VIII<br>VIII-18.1                      | 12<br>13<br>14<br>15<br>16<br>17<br>18                               | -31<br>251           | 78E<br>68E<br>54E<br>41E<br>30E<br>17E<br>5E                                   | H<br>H<br>D<br>C<br>D<br>D<br>C                          | 0.98<br>0.96<br>0.89<br>0.80<br>0.72<br>0.64<br>0.59                                         | 117<br>361<br>462<br>592<br>693<br>656<br>613                                    | 389<br>694<br>522<br>499<br>503<br>428<br>382                                    | 389<br>694<br>469<br>424<br>435<br>362<br>375                                    | <br><br><br>PLAT                                     |

1987年8月

AUG 1987

| 星子群编号<br>及过日心经圈<br>日期(月, 日)<br>CMP-Day No | 日<br>期<br>Date | 日面位置          |             | 中<br>经<br>距<br>CMD | 型<br>别<br>Type | 日<br>心<br>距<br>r/R | 视<br>面<br>积<br>Sd | 校正面积                 |                 | 备<br>注 |
|-------------------------------------------|----------------|---------------|-------------|--------------------|----------------|--------------------|-------------------|----------------------|-----------------|--------|
|                                           |                | 纬<br>度<br>Lat | 经<br>度<br>L |                    |                |                    |                   | 全<br>面<br>积<br>Whole | 最大<br>黑子<br>Max |        |
| 86 VIII<br>VIII-18.9                      | 19             |               |             | 9W                 | C              | 0.60               | 534               | 336                  | 334             |        |
|                                           | 20             |               |             | 21W                | C              | 0.67               | 571               | 389                  | 383             |        |
|                                           | 21             |               |             | 34W                | D              | 0.75               | 689               | 529                  | 422             |        |
|                                           | 22             |               |             | 49W                | D              | 0.86               | 630               | 622                  | 464             |        |
|                                           | 23             |               |             | 61W                | D              | 0.93               | 437               | 599                  | 489             |        |
|                                           | 24             |               |             | 71W                | H              | 0.96               | 147               | 282                  | 266             |        |
|                                           | 13             | -24           | 241         | 77E                | D              | 0.98               | 79                | 264                  | 194             |        |
|                                           | 14             |               |             | 63E                | D              | 0.93               | 273               | 374                  | 184             |        |
| 87 VIII<br>VIII-19.5                      | 15             |               |             | 51E                | C              | 0.83               | 235               | 216                  | 131             | PLAT   |
|                                           | 16             |               |             | 39E                | D              | 0.74               | 357               | 268                  | 173             |        |
|                                           | 17             |               |             | 26E                | D              | 0.63               | 378               | 244                  | 84              |        |
|                                           | 18             |               |             | 13E                | D              | 0.52               | 302               | 178                  | 106             |        |
|                                           | 19             |               |             | 1W                 | D              | 0.49               | 231               | 133                  | 48              |        |
|                                           | 20             |               |             | 13W                | D              | 0.54               | 117               | 69                   | 34              |        |
|                                           | 21             |               |             | 26W                | B              | 0.62               | 21                | 13                   | 5               |        |
|                                           | 22             |               |             | 39W                | A              | 0.73               | 8                 | 6                    | 3               |        |
|                                           | 23             |               |             | 53W                | B              | 0.86               | 21                | 20                   | 12              |        |
|                                           | 24             |               |             | 67W                | A              | 0.94               | 4                 | 6                    | 6               |        |
|                                           | 14             | 17            | 233         | 70E                | A              | 0.93               | 4                 | 5                    | 5               |        |
| 88 VIII<br>VIII-14.0                      | 16             | -25           | 304         | 27W                | A              | 0.64               | 8                 | 5                    | 2               |        |
|                                           |                |               |             |                    |                |                    |                   |                      |                 |        |
| 89 VIII<br>VIII-27.9                      | 22             | 15            | 121         | 75E                | J              | 0.95               | 42                | 70                   | 70              |        |
|                                           | 23             |               |             | 62E                | J              | 0.86               | 113               | 112                  | 74              |        |
|                                           | 24             |               |             | 49E                | B              | 0.73               | 25                | 18                   | 6               |        |
|                                           | 25             |               |             | 35E                | C              | 0.57               | 37                | 23                   | 12              |        |
|                                           | 26             |               |             | 21E                | B              | 0.37               | 25                | 13                   | 4               |        |
|                                           | 27             |               |             | 7E                 | B              | 0.18               | 12                | 6                    | 2               |        |
|                                           | 28             |               |             | 3W                 | B              | 0.16               | 12                | 6                    | 2               |        |
|                                           |                |               |             |                    |                |                    |                   |                      |                 |        |
| 90 VIII<br>VIII-21.3                      | 25             | 19            | 208         | 50W                | B              | 0.75               | 12                | 9                    | 3               |        |
|                                           | 26             |               |             | 63W                | D              | 0.88               | 168               | 180                  | 49              |        |
|                                           | 27             |               |             | 80W                | C              | 0.97               | 37                | 88                   | 69              |        |
| 91 VIII<br>VIII-28.1                      | 27             | 21            | 119         | 10E                | A              | 0.28               | 8                 | 4                    | 2               |        |
|                                           | 28             |               |             | 1W                 | B              | 0.25               | 8                 | 4                    | 2               |        |
| 92 VIII<br>IX- 2.5                        | 28             | -23           | 48          | 72E                | A              | 0.96               | 4                 | 8                    | 8               |        |
|                                           | 29             |               |             | 56E                | A              | 0.88               | 8                 | 9                    | 9               |        |
|                                           | 30             |               |             | 45E                | A              | 0.79               | 8                 | 6                    | 6               |        |
|                                           | 31             |               |             | 32E                | A              | 0.67               | 4                 | 2                    | 2               |        |
|                                           | 1              |               |             | 17E                | A              | 0.57               | 8                 | 5                    | 3               |        |
|                                           | 2              |               |             | 10E                | A              | 0.54               | 4                 | 2                    | 2               |        |
|                                           |                |               |             |                    |                |                    |                   |                      |                 |        |
| 93 VIII<br>VIII-28.4                      | 29             | 16            | 114         | 10W                | B              | 0.24               | 8                 | 4                    | 2               |        |
|                                           | 30             |               |             | 19W                | B              | 0.34               | 8                 | 4                    | 2               |        |

1987年 8 月

AUG 1987

| 黑子群编号<br>及过日心经圈<br>日期(月, 日)<br>CMP-Day No | 日<br>期<br>Date                                  | 日面位置<br>纬 经<br>度 度<br>Lat L                 | 中<br>经<br>距<br>CMD                        | 型<br>别<br>Type                                                   | 日<br>心<br>距<br>r/R                             | 视<br>面<br>积<br>Sd                                                            | 校正面积Sp<br>全 最大<br>群 黑子<br>Whole Max               | 备<br>注<br>Remarks                                 |                                                                          |
|-------------------------------------------|-------------------------------------------------|---------------------------------------------|-------------------------------------------|------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------|
| 94 VIII<br>IX- 5.8 IX                     | 31<br>1<br>2<br>3<br>4<br>5<br>6<br>7<br>8<br>9 | -24<br><br><br><br><br><br><br><br><br><br> | 3<br><br><br><br><br><br><br><br><br><br> | 77E<br>61E<br>50E<br>33E<br>20E<br>8E<br>6W<br>17W<br>29W<br>44W | A<br>B<br>B<br>A<br>A<br>A<br>A<br>A<br>A<br>A | 0.98<br>0.92<br>0.85<br>0.71<br>0.60<br>0.54<br>0.53<br>0.56<br>0.67<br>0.80 | 4<br>13<br>13<br>8<br>13<br>8<br>8<br>4<br>4<br>8 | 13<br>16<br>12<br>6<br>8<br>5<br>5<br>2<br>3<br>7 | 13<br>11<br>8<br>6<br>5<br>5<br>5<br>2<br>3<br>7<br>PLAT<br>PLAT<br>PLAT |

# H<sub>α</sub> 太 阳 耀 斑 H-ALPHA SOLAR FLARES

1987 年 7 月

JUL 1987

| 日   | 台    | 开     | 极     | 结     | 纬   | 经   | 中   | 日    | 面积    | 级    | 观测  | 对应   | 备     |         |
|-----|------|-------|-------|-------|-----|-----|-----|------|-------|------|-----|------|-------|---------|
| 期   | 站    | 始     | 大     | 束     | 度   | 度   | 经   | 心    | Area  |      | 资料  | 黑子   | 注     |         |
| Day | Sta  | Start | Max   | End   | Lat | L   | CMD | Cen  | Appar | Corr | 别   | Obs  | A. R. | Remarks |
|     |      | (UT)  | (UT)  | (UT)  |     |     |     | Dist | (Sd)  | (Sp) | Imp | Type |       |         |
| 18  | YUNN | 0531  | 0538  | 0540D | S28 | 256 | E43 | .794 | 16    | 13   | -N  | P    |       | D       |
| 18  | YUNN | 0534  | 0538  | 0541  | N20 | 221 | E78 | .976 | 16    |      | -N  | C    |       | EGHW    |
| 18  | YUNN | 0611D | 0612  | 0638  | S27 | 255 | E44 | .797 | 9     | 7    | -N  | P    |       | D       |
| 18  | YUNN | 0616  | 0617  | 0619  | S14 | 265 | E34 | .623 | 8     | 5    | -F  | C    |       | DG      |
| 24  | WLMQ | 0035  | 0040  | 0105  | S29 | 253 | W31 | .713 | 63    | 45   | -N  | C    | 69    | ET      |
| 24  | PURP | 0058E | 0104  | 0127  | S28 | 256 | W34 | .722 | 340   | 246  | 1N  | C    | 69    |         |
| 25  | YUNN | 0656  | 0659  | 0710  | S27 | 257 | W51 | .851 | 141   | 134  | 1N  | C    | 69    |         |
| 26  | YUNN | 0303E | 0303U | 0307  | S26 | 181 | E14 | .563 | 8     | 5    | -N  | P    | 71    | D       |
| 26  | YUNN | 0316  | 0318  | 0325  | S27 | 256 | W61 | .921 | 16    |      | -N  | C    | 69    | E       |
| 26  | YUNN | 0328  | 0332  | 0354  | S28 | 253 | W59 | .912 | 16    |      | -N  | C    | 69    | E       |
| 26  | YUNN | 0353  | 0358  | 0426  | N30 | 140 | E54 | .831 | 11    | 10   | -N  | C    | 75    | E       |
| 26  | YUNN | 0547  | 0550U | 0550D | S29 | 254 | W61 | .929 | 94    |      | 1N  | P    | 69    |         |
| 31  | YUNN | 0040  | 0041  | 0056  | N16 | 120 | E10 | .247 | 8     | 4    | -N  | C    | 78    | D       |
| 31  | YUNN | 0045  | 0046  | 0054  | N20 | 154 | W24 | .456 | 31    | 17   | -N  | C    | 77    | D       |
| 31  | YUNN | 0048  | 0050  | 0054  | N31 | 138 | W 8 | .447 | 16    | 9    | -B  | C    | 75    | D       |
| 31  | YUNN | 0147  | 0149  | 0158  | S30 | 173 | W44 | .817 | 47    | 41   | -N  | C    | 76    | D       |

# H<sub>α</sub> 太 阳 耀 斑 H-ALPHA SOLAR FLARES

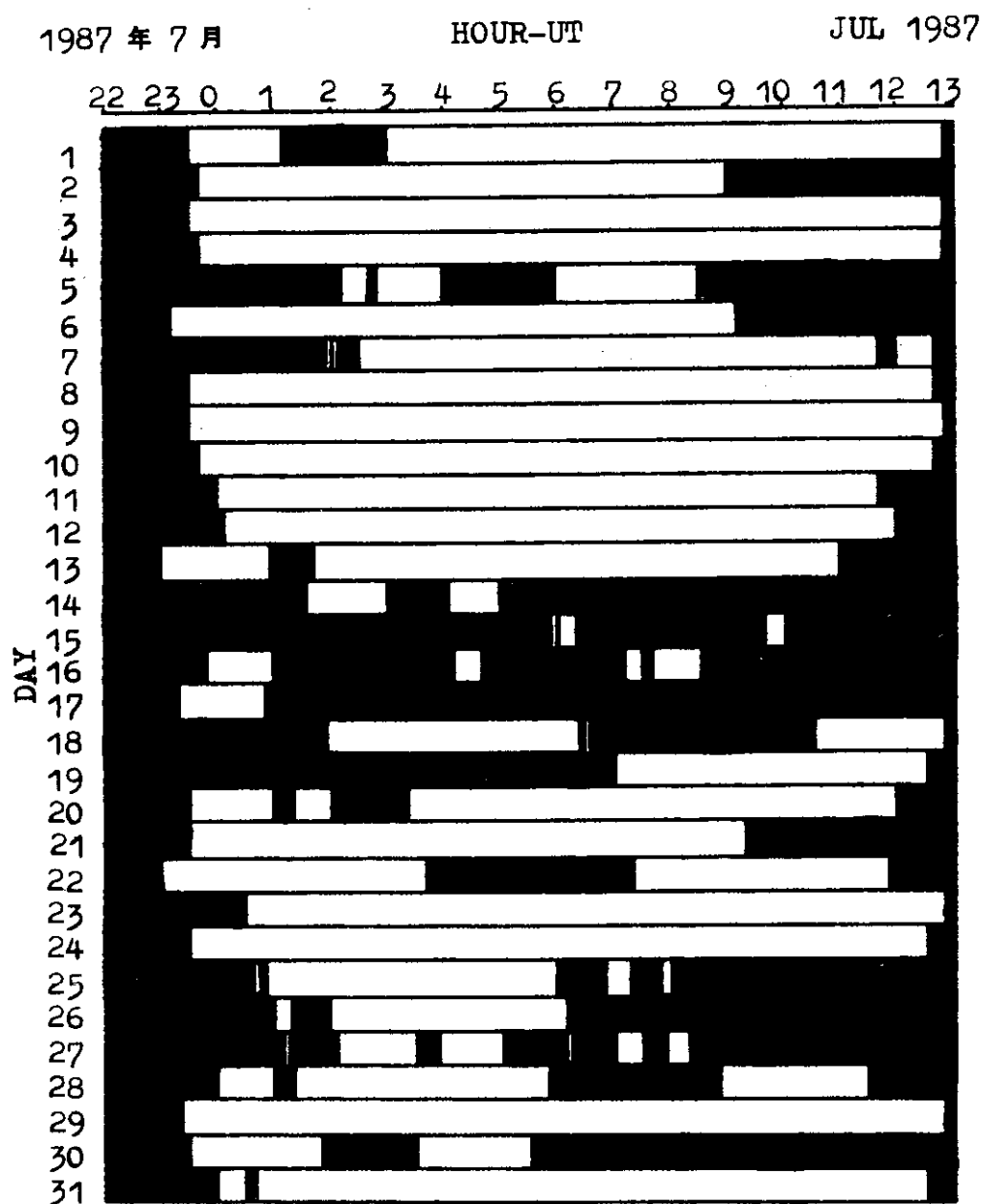
1987 年 8 月

AUG 1987

| 日   | 台    | 开     | 极     | 结     | 纬   | 经   | 中   | 日    | 面积    | 级    | 观测  | 对应   | 备     |         |
|-----|------|-------|-------|-------|-----|-----|-----|------|-------|------|-----|------|-------|---------|
| 期   | 站    | 始     | 大     | 束     | 度   | 度   | 经   | 心    | Area  |      | 资料  | 黑子   | 注     |         |
| Day | Sta  | Start | Max   | End   | Lat | L   | CMD | Cen  | Appar | Corr | 别   | Obs  | A. R. | Remarks |
|     |      | (UT)  | (UT)  | (UT)  |     |     |     | Dist | (Sd)  | (Sp) | Imp | Type |       |         |
| 4   | WLMQ | 0835E | 0835U | 0846  | N14 | 121 | W48 | .764 | 48    | 37   | -F  | C    | 78    | DT      |
| 5   | WLMQ | 0220  | 0224  | 0240  | N14 | 121 | W58 | .854 | 32    | 31   | -F  | C    | 78    | ET      |
| 6   | YUNN | 0236  | 0239  | 0252  | S23 | 45  | E 4 | .491 | 31    | 18   | -N  | C    | 79    | D       |
| 7   | WLMQ | 0535  | 0548  | 0610  | S25 | 46  | W11 | .561 | 161   | 97   | -N  | C    | 79    | ET      |
| 8   | WLMQ | 0123  | 0132  | 0142  | S25 | 44  | W20 | .606 | 193   | 121  | 1B  | C    | 79    | ET      |
| 11  | WLMQ | 0152  | 0157  | 0217  | N 8 | 56  | W72 | .955 | 64    |      | -N  | C    | 81    | DT      |
| 13  | WLMQ | 0249  | 0300  | 0310  | S25 | 285 | E32 | .700 | 129   | 90   | -N  | C    | 82    | ET      |
| 13  | WLMQ | 0254  | 0306  | 0326  | S24 | 285 | E32 | .676 | 96    | 65   | -F  | C    | 82    | ET      |
| 16  | YUNN | 0400  | 0417U | 0432  | S29 | 282 | W 6 | .587 | 31    | 19   | -N  | P    | 82    |         |
| 18  | YUNN | 0229  | 0231  | 0247  | N17 | 232 | E19 | .366 | 8     | 4    | -N  | C    |       | G       |
| 18  | YUNN | 0720  | 0723  | 0728  | S26 | 304 | W56 | .893 | 8     | 9    | -N  | P    |       | G       |
| 21  | YUNN | 0618E | 0623  | 0628  | S29 | 248 | W39 | .790 | 47    | 38   | -N  | C    | 85    | E       |
| 22  | YUNN | 0603E | 0603U | 0623  | N15 | 121 | E75 | .958 | 141   |      | 1N  | P    | 89    |         |
| 23  | YUNN | 0230E | 0232  | 0311  | N14 | 121 | E64 | .894 | 47    | 52   | -B  | P    | 89    | D       |
| 25  | WLMQ | 0540  | 0552  | 0615D | N12 | 122 | E34 | .561 | 321   | 194  | 1N  | C    | 89    | UT      |
| 26  | YUNN | 0254E | 0258U | 0302D | N18 | 210 | W65 | .900 | 31    | 36   | -N  | P    | 90    | D       |

# H<sub>α</sub> 耀 斑 巡 视 时 间

## INTERVALS OF H-ALPHA FLARE PATROL OBSERVATION

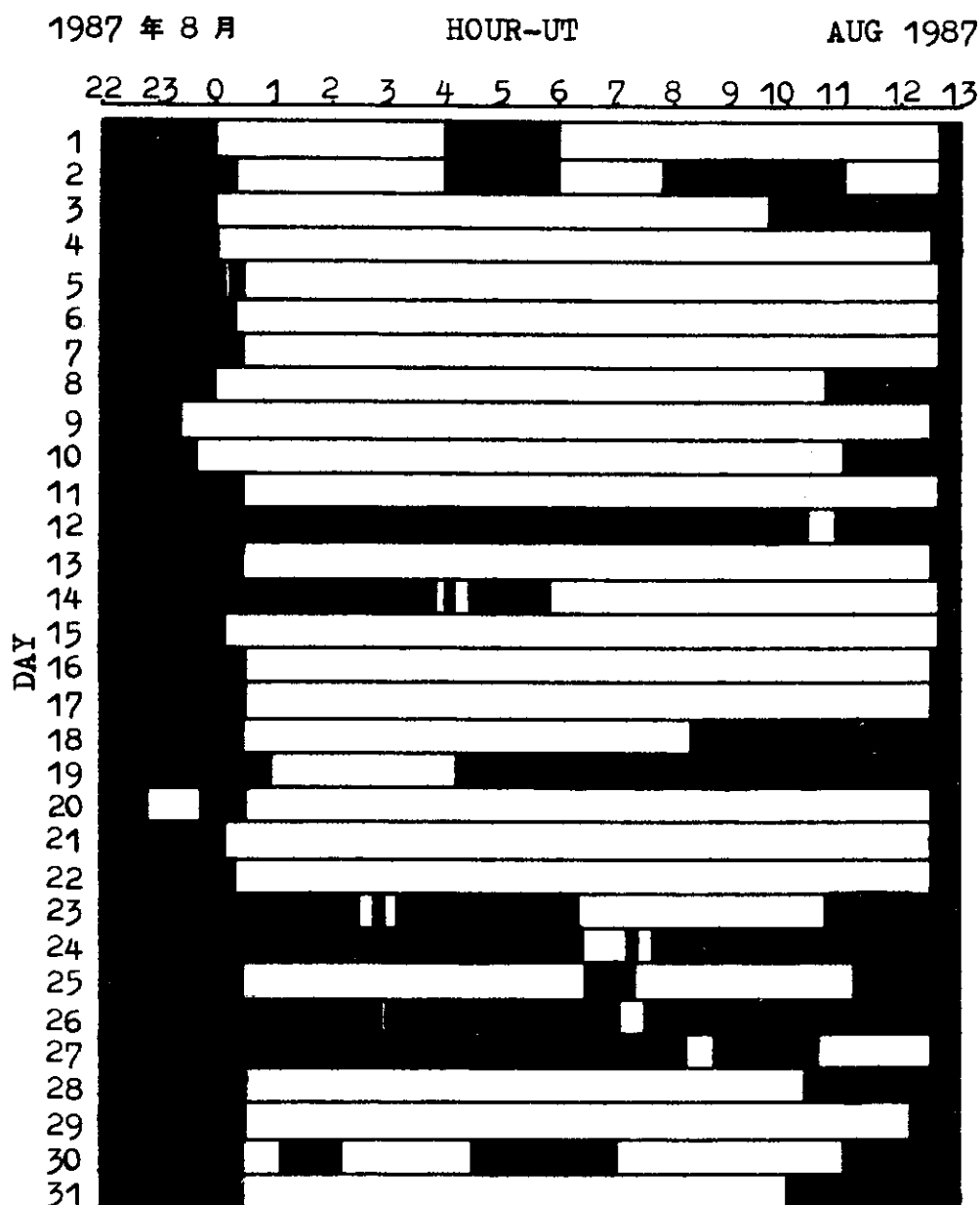


黑色表示当天没有进行耀斑巡视

Time of no flare patrol are shown by the  
shaded area for each day.

# H $\alpha$ 耀 斑 巡 视 时 间

## INTERVALS OF H-ALPHA FLARE PATROL OBSERVATION



黑色表示当天没有进行耀斑巡视

Time of no flare patrol are shown by the shaded area for each day.

太阳射电辐射流量  
SOLAR RADIO EMISSION FLUX

| 1987 年 7 月    |                     |                     |                     | JUL 1987            |                     |
|---------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| 日<br>期<br>Day | 北 台<br>BEIJ<br>9395 | 紫 台<br>PURP<br>9375 | 紫 台<br>PURP<br>2700 | 云 台<br>YUNN<br>2840 | 北 台<br>BEIJ<br>2840 |
| 1             |                     |                     | 69                  | 77                  | 70                  |
| 2             |                     |                     | 59                  | 76                  | 66                  |
| 3             |                     |                     | 61                  | 76                  | 67                  |
| 4             |                     |                     | 63                  | 74                  | 68                  |
| 5             |                     |                     | 66                  | 74                  | 67                  |
| 6             |                     |                     | 60                  | 75                  | 66                  |
| 7             |                     |                     | 65                  | 75                  | 64                  |
| 8             |                     |                     | 69                  | 76                  | 70                  |
| 9             |                     |                     |                     | 77                  | 67                  |
| 10            |                     |                     |                     | 75                  | 69                  |
| 11            |                     |                     | 68                  | 74                  | 69                  |
| 12            |                     |                     | 68                  | 75                  | 69                  |
| 13            |                     |                     | 67                  | 75                  | 61                  |
| 14            |                     |                     | 69                  | 72                  | 61                  |
| 15            |                     |                     | 72                  | 77                  | 66                  |
| 16            |                     |                     | 74                  | 74                  | 70                  |
| 17            |                     |                     | 74                  | 79                  | 71                  |
| 18            |                     |                     | 68                  | 81                  | 70                  |
| 19            |                     |                     | 76                  | 82                  | 70                  |
| 20            |                     |                     |                     | 84                  | 68                  |
| 21            |                     |                     | 84                  | 87                  | 85                  |
| 22            |                     |                     | 91                  | 91                  | 89                  |
| 23            |                     |                     | 103                 | 99                  | 100                 |
| 24            |                     |                     | 107                 | 100                 | 102                 |
| 25            |                     |                     | 104                 | 98                  | 104                 |
| 26            |                     |                     | 95                  | 101                 | 104                 |
| 27            |                     |                     | 104                 | 100                 | 99                  |
| 28            |                     |                     | 94                  | 95                  | 97                  |
| 29            |                     |                     | 96                  | 93                  | 89                  |
| 30            |                     |                     | 89                  | 92                  | 87                  |
| 31            |                     |                     | 86                  | 89                  | 86                  |
| Mean          |                     |                     | 78.6                | 83.0                | 77.1                |

# 太阳射电辐射流量 SOLAR RADIO EMISSION FLUX

1987 年 8 月

AUG 1987

| 日    | 期    | Day | 北台   | 紫台   | 紫台 | 云台   | 北台   |
|------|------|-----|------|------|----|------|------|
| 9395 | BEIJ |     | 9375 | PURP |    | 2840 | BEIJ |
| 2700 | PURP |     | 2840 | YUNN |    |      |      |

|      |      |      |    |      |
|------|------|------|----|------|
| 1    | 83   | 88   | 88 | 79   |
| 2    | 83   | 88   | 88 | 82   |
| 3    | 80   | 86   | 86 | 76   |
| 4    | 75   | 82   | 81 | 76   |
| 5    | 75   | 75   | 81 | 75   |
| 6    | 71   | 82   | 82 | 75   |
| 7    | 80   | 84   | 88 | 78   |
| 8    | 83   | 88   | 91 | 84   |
| 9    | 83   | 91   | 91 | 91   |
| 10   | 90   | 91   | 91 | 89   |
| 11   | 89   | 90   | 90 | 87   |
| 12   | 89   | 92   | 92 | 83   |
| 13   | 90   | 95   | 95 | 87   |
| 14   | 94   | 96   | 96 | 89   |
| 15   | 88   | 95   | 95 | 92   |
| 16   | 94   | 97   | 97 | 93   |
| 17   | 96   | 96   | 96 | 89   |
| 18   | 94   | 93   | 93 | 91   |
| 19   | 92   | 94   | 94 | 88   |
| 20   | 92   | 95   | 95 | 90   |
| 21   | 82   | 94   | 94 | 86   |
| 22   | 84   | 94   | 94 | 83   |
| 23   | 82   | 92   | 92 |      |
| 24   | 83   | 91   | 91 |      |
| 25   | 80   | 91   |    |      |
| 26   | 81   | 89   |    |      |
| 27   | 79   | 86   |    | 77   |
| 28   | 72   | 84   |    | 75   |
| 29   | 74   | 82   |    | 74   |
| 30   | 72   | 82   |    | 72   |
| 31   | 74   | 84   |    | 73   |
| Mean | 83.4 | 89.5 |    | 82.7 |

太阳射电辐射显著事件  
SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

1987 年 7-8 月

JUL - AUG 1987

| 日      | 频    | 台    | 型      | 开             | 极           | 持             | 流量密度       |            |             |
|--------|------|------|--------|---------------|-------------|---------------|------------|------------|-------------|
| 期      | 率    | 站    | 别      | 始             | 大           | 续             | Flux       | Density    |             |
| Day    | Freq | Sta  | Type   | Start<br>(UT) | Max<br>(UT) | Dura-<br>tion | 峰值<br>Peak | 相对值<br>Rel | 平均值<br>Mean |
| 1987,7 |      |      |        |               |             |               |            |            |             |
| 26     | 2840 | YUNN | 1 S    | 0327.5        | 0328.5      | 7.2           | 10         |            |             |
| 1987,8 |      |      |        |               |             |               |            |            |             |
| 8      | 2840 | YUNN | 45 C   | 0333.3        | 0335.5      | 10.7          | 23         |            |             |
| 8      | 2840 | BEIJ | 45 C   | 0335          | 0337.1      | 4             | 22.2       | 26.4       | 9.3         |
| 8      | 2840 | BEIJ | 29 FBI | 0339          |             | 74            | 5.9        | 7.0        | 3.3         |
| 10     | 2840 | YUNN | 1 S    | 0231.9        | 0235.9      | 5.4           | 6          |            |             |
| 10     | 2840 | YUNN | 45 C   | 0302.4        | 0307.0      | 7.4           | 15         |            |             |
| 13     | 2840 | YUNN | 1 S    | 0250.9        | 0251.8      | 1.9           | 5          |            |             |
| 13     | 2840 | YUNN | 1 S    | 0340.1        | 0340.6      | 1.6           | 2          |            |             |
| 21     | 2840 | BEIJ | 45 C   | 0528          | 0529        | 4             | 12.9       | 15.0       | 2.9         |
| 22     | 2840 | BEIJ | 45 C   | 0545          | 0550.7      | 15            | 53.0       | 63.8       | 6.9         |
| 22     | 2700 | PURP | 4 S/F  | 0546.6        | 0551.0      | 10.4          | 46         |            |             |

# 太阳射电辐射巡视时间 INTERVALS OF SOLAR RADIO EMISSION PATROL OBSERVATION

1987 年 7 月

JUL 1987

| 日   | 北台   | 紫台   | 紫台   | 紫台   | 云台   | 北台   |
|-----|------|------|------|------|------|------|
| 期   | From | To   | From | To   | From | To   |
| Day | 9395 | 9375 | 2700 | 2840 | 2840 | 2840 |

|    |           |           |           |           |           |
|----|-----------|-----------|-----------|-----------|-----------|
| 1  | 0000 0643 | 2315 2400 | 0100 0610 | 0000 0720 | 2340 2400 |
| 2  | 0000 0645 | 2317 2400 | 0026 0700 | 0000 0720 | 2333 2400 |
| 3  | 0000 0641 | 2310 2400 | 0035 0813 | 0000 0620 | 2333 2400 |
| 4  | 0000 0647 | 2309 2400 | 0032 0700 | 0000 0650 |           |
| 5  | 0000 0737 | 2319 2400 | 0054 0720 | 0013 1010 | 2213 2400 |
| 6  | 0000 0455 |           | 0130 0810 | 0000 0716 | 2345 2400 |
| 7  | 0013 0645 | 2330 2400 | 0100 0810 | 0000 0720 | 2337 2400 |
| 8  | 0000 0643 | 2313 2400 | 0130 0830 | 0000 0721 | 2333 2400 |
| 9  | 0000 0642 |           | 0200 0850 | 0000 0655 | 2335 2400 |
| 10 | 0237 0619 | 2312 2400 | 0000 0720 | 0000 0720 | 2335 2400 |
| 11 | 0000 0643 | 2338 2400 | 0005 0730 | 0000 0650 | 2343 2400 |
| 12 | 0000 0713 | 2342 2400 | 0130 0730 | 0000 0955 | 2235 2400 |
| 13 | 0000 0640 | 2312 2400 | 0130 0810 | 0000 0715 | 2340 2400 |
| 14 | 0000 0645 |           | 0150 0822 | 0000 0715 | 2335 2400 |
| 15 | 0223 0650 | 2350 2400 | 0120 0819 | 0000 0715 | 2335 2400 |

1987 年 7 月

JUL 1987

| 日    | 期  | Day  |
|------|----|------|
| 北台   | 开始 | From |
| 结束   | 结束 | To   |
| 9395 |    |      |
| 蒙台   | 开始 | From |
| 结束   | 结束 | To   |
| 9375 |    |      |
| 蒙台   | 开始 | From |
| 结束   | 结束 | To   |
| 2700 |    |      |
| 蒙台   | 开始 | From |
| 结束   | 结束 | To   |
| 2840 |    |      |
| 云台   | 开始 | From |
| 结束   | 结束 | To   |
| 2840 |    |      |
| 北台   | 开始 | From |
| 结束   | 结束 | To   |
| 2840 |    |      |

|    |           |           |           |           |
|----|-----------|-----------|-----------|-----------|
| 16 | 0000 0647 | 0145 0800 | 0000 0716 | 2350 2400 |
| 17 | 0000 0648 | 0150 0810 | 0000 0655 | 2335 2400 |
| 18 | 0000 0648 | 0030 0730 | 0000 0650 | 2356 2400 |
| 19 | 0000 0631 | 0150 0810 | 0000 0755 | 2343 2400 |
| 20 | 2347 2400 | 0106 0703 | 0000 0715 | 2357 2400 |
| 21 | 0000 0650 | 0028 0734 | 0000 0720 |           |
| 22 | 0000 0641 | 0035 0720 | 0105 0724 | 2327 2400 |
| 23 | 0000 0645 | 0058 0730 | 0000 0720 |           |
| 24 | 0000 0640 | 0051 0836 | 0253 0600 | 2332 2400 |
| 25 | 0000 0640 | 0026 0912 | 0000 0650 | 2350 2400 |
| 26 | 0000 0735 | 0040 0836 | 0000 0700 |           |
| 27 | 0000 0642 | 0050 0700 | 0255 0557 | 2357 2400 |
| 28 | 0000 0642 | 0123 0731 | 0000 0533 | 2350 2400 |
| 29 | 0000 0641 | 0100 0845 | 0000 0557 | 2359 2400 |
| 30 | 0000 0640 | 0102 0708 | 0000 0715 | 2358 2400 |
| 31 | 0000 0641 | 0046 0730 | 0000 0715 | 2344 2400 |
| 22 |           |           |           |           |

# 太阳射电辐射巡视时间 INTERVALS OF SOLAR RADIO EMISSION PATROL OBSERVATION

| 1987 年 8 月    |             |          |             |          |                        | AUG 1987 |             |          |                                     |          |
|---------------|-------------|----------|-------------|----------|------------------------|----------|-------------|----------|-------------------------------------|----------|
| 日<br>期<br>Day | 北 台<br>BEIJ |          | 紫 台<br>PURP |          | 紫 台<br>PURP            |          | 云 台<br>YUNN |          | 北 台<br>BEIJ                         |          |
|               | 开始<br>From  | 结束<br>To | 开始<br>From  | 结束<br>To | 开始<br>From             | 结束<br>To | 开始<br>From  | 结束<br>To | 开始<br>From                          | 结束<br>To |
|               | 9395        |          | 9375        |          | 2700                   |          | 2840        |          | 2840                                |          |
| 1             |             |          |             |          | 0000 0643<br>2310 2400 |          | 0035 0649   |          | 0000 0650<br>2350 2400              |          |
| 2             |             |          |             |          | 0000 0652<br>2315 2400 |          | 0120 0725   |          | 0000 0720                           |          |
| 3             |             |          |             |          | 0000 0602<br>2256 2400 |          | 0124 0706   |          | 0025 0727<br>2332 2400              |          |
| 4             |             |          |             |          | 0000 0715<br>2330 2400 |          | 0124 0826   |          | 0000 0713<br>2348 2400              |          |
| 5             |             |          |             |          | 0000 0737<br>2310 2400 |          | 0135 0825   |          | 0000 0025<br>0310 0720<br>2335 2400 |          |
| 6             |             |          |             |          | 0000 0745<br>2337 2400 |          | 0120 0815   |          | 0000 0720                           |          |
| 7             |             |          |             |          | 0000 0740<br>2309 2400 |          | 0150 0840   |          | 0010 0718                           |          |
| 8             |             |          |             |          | 0000 0747<br>2309 2400 |          | 0125 1000   |          | 0032 0650<br>2346 2400              |          |
| 9             |             |          |             |          | 0000 0740<br>2341 2400 |          | 0150 0837   |          | 0000 0850<br>2224 2400              |          |
| 10            |             |          |             |          | 0000 0745<br>2337 2400 |          | 0030 1006   |          | 0000 0005<br>0328 0630<br>2330 2400 |          |
| 11            |             |          |             |          | 0000 0747<br>2349 2400 |          | 0011 1000   |          | 0000 0720                           |          |
| 12            |             |          |             |          | 0000 0741              |          | 0025 0850   |          | 0004 0031<br>0319 0540              |          |
| 13            |             |          |             |          | 0200 0746              |          | 0005 0905   |          | 0007 0719                           |          |
| 14            |             |          |             |          | 0006 0750<br>2358 2400 |          | 0115 0855   |          | 0041 0715<br>2344 2400              |          |
| 15            |             |          |             |          | 0000 0738<br>2314 2400 |          | 0035 0845   |          | 0000 0650<br>2355 2400              |          |

1987 年 8 月

AUG 1987

| 日    | 期    | Day  | 9395 | 9375 | 2700 | 2840 | 2840 |
|------|------|------|------|------|------|------|------|
| 北台   | 紫台   | 紫台   | 紫台   | 紫台   | 云台   | 北台   | 北台   |
| 开始   | 开始   | 开始   | 开始   | 开始   | 开始   | 开始   | 开始   |
| 结束   | 结束   | 结束   | 结束   | 结束   | 结束   | 结束   | 结束   |
| From | From | From | From | From | From | From | From |
| To   | To   | To   | To   | To   | To   | To   | To   |
| BEIJ | PURP | PURP | PURP | PURP | YUNN | BEIJ | BEIJ |

|    |           |           |           |           |
|----|-----------|-----------|-----------|-----------|
| 16 | 0000 0730 | 0029 0831 | 0000 0701 | 2339 2400 |
| 17 | 0000 0647 | 0230 0824 | 0000 0525 | 2334 2400 |
| 18 | 0000 0644 | 0110 0700 | 0000 0720 | 2346 2400 |
| 19 | 0000 0642 | 0200 0836 | 0000 0710 | 2340 2400 |
| 20 | 0000 0643 | 0008 0611 | 0000 0720 | 2347 2400 |
| 21 | 0000 0644 | 0212 0830 | 0000 0605 | 2334 2400 |
| 22 | 0000 0644 | 0120 0800 | 0000 0647 | 2340 2400 |
| 23 | 0000 0718 | 0200 0315 |           |           |
| 24 | 0000 0644 | 0230 0910 |           |           |
| 25 | 0000 0643 | 0158 0810 |           |           |
| 26 | 0000 0729 | 0040 1000 | 0000 0606 | 2334 2400 |
| 27 | 0000 0830 | 0137 0830 | 0500 0710 | 2344 2400 |
| 28 | 0000 0728 | 0104 0800 | 0000 0714 | 2342 2400 |
| 29 | 0000 0655 | 0100 0630 | 0000 0641 |           |
| 30 | 0000 0818 | 0110 0703 | 0112 0627 |           |
| 31 | 0000 0721 | 0032 0636 | 0300 0711 |           |
| 24 | 2310 2400 |           |           |           |

突然电离层扰动(D层)  
SUDDEN IONOSPHERIC DISTURBANCES (D-Region)

1987 年 7-8 月

JUL-AUG 1987

| 日      | 台    | 开     | 极    | 结     | 级   | 相位异常<br>SPA |       | 场强异常<br>SFA |
|--------|------|-------|------|-------|-----|-------------|-------|-------------|
| 期      | 站    | 始     | 大    | 束     | 别   | 低频          | 甚低频   | 低频          |
| Day    | Sta  | Start | Max  | End   | Imp | LF          | VLF   | LF          |
| 1987,7 |      |       |      |       |     |             |       |             |
| 2      | YUNN | 0521  | 0523 | 0527  | 1-  | - 0.4       |       |             |
| 4      | YUNN | 0625  | 0628 | 0632  | 1-  | - 0.4       |       |             |
| 6      | YUNN | 0750  | 0755 | 0805  | 1-  | - 0.4       |       |             |
| 9      | YUNN | 0140  | 0143 | 0153  | 1   | - 1.7       |       |             |
| 15     | LINT | 0335  | 0340 | 0350  | 1-  | - 0.2       | 0     | - 0.5       |
| 16     | LINT | 0113  | 0118 | 0200  | 1   | - 1.8       | - 3.5 | - 1.3       |
| 16     | YUNN | 0112  | 0121 | 0200  | 2-  | - 3.8       |       |             |
| 17     | YUNN | 0346  | 0348 | 0351  | 1-  | - 0.3       |       |             |
| 18     | YUNN | 0142  | 0146 | 0151  | 1-  | - 0.7       |       |             |
| 19     | LINT | 0224  | 0229 | 0239U | 1-  | - 0.2       | 0     | 0           |
| 23     | LINT | 0022  | 0028 | 0038  | 1-  | - 0.6       | 0     | 0           |
| 23     | LINT | 0128  | 0140 | 0153U | 1-  | - 0.2       | 0.6   | 0           |
| 23     | LINT | 0313  | 0318 | 0328U | 1-  | - 0.5       | - 0.9 | - 0.7       |
| 23     | LINT | 0333  | 0339 | 0350  | 1-  | - 0.5       | - 0.7 | - 0.5       |
| 23     | YUNN | 0314  | 0342 | 0400  | 1   | - 1.4       |       |             |
| 23     | LINT | 0454  | 0500 | 0520  | 1-  | - 0.7       | - 1.0 | - 1         |
| 23     | YUNN | 0455  | 0504 | 0524  | 1-  | - 0.7       |       |             |
| 23     | YUNN | 0641  | 0644 | 0700  | 1-  | - 0.5       |       |             |
| 23     | LINT | 0721  | 0726 | 0740  | 1-  | - 0.6       | - 0.6 | - 1.3       |
| 25     | YUNN | 0621  | 0629 | 0710  | 1-  | - 0.6       |       |             |
| 25     | LINT | 0626  | 0630 | 0636U | 1-  | - 0.6       | 0     | 0           |
| 25     | LINT | 0634  | 0637 | 0646  | 1-  | - 0.4       | 0     | 0.5         |
| 26     | LINT | 0328  | 0334 | 0400  | 1-  | - 0.8       | - 1.5 | - 1.1       |
| 27     | LINT | 0218  | 0226 | 0251  | 1   | - 1.5       | - 2.5 | - 1.3       |
| 1987,8 |      |       |      |       |     |             |       |             |
| 3      | LINT | 0003  | 0014 | 0053  | 1+  | - 3.0       | - 2.4 | 2.8         |
| 3      | YUNN | 0653  | 0654 | 0657  | 1-  | - 0.6       |       |             |
| 5      | YUNN | 0157  | 0200 | 0204  | 1-  | - 0.8       |       |             |

1987 年 7-8 月

JUL-AUG 1987

| 日      | 台    | 开     | 极    | 站     | 级   | 相位异常<br>SPA |       | 场强异常<br>SFA |
|--------|------|-------|------|-------|-----|-------------|-------|-------------|
| 期      | 站    | 始     | 大    | 束     | 别   | 低频          | 甚低频   | 低频          |
| Day    | Sta  | Start | Max  | End   | Imp | LF          | VLF   | LF          |
| 1987,8 |      |       |      |       |     |             |       |             |
| 7      | LINT | 0210  | 0215 | 0221  | 1-  | - 0.2       | 0     | 0.6         |
| 7      | YUNN | 0549  | 0552 | 0600  | 1-  | - 0.8       |       |             |
| 7      | LINT | 0543  | 0552 | 0611  | 1-  | - 0.8       | - 0.7 | 0           |
| 7      | YUNN | 0746  | 0747 | 0754  | 1-  | - 0.7       |       |             |
| 7      | LINT | 0742  | 0747 | 0757  | 1-  | - 0.5       | 0     | 0.9         |
| 7      | LINT | 0835  | 0847 | 0914  | 1   | - 1.9       | - 1.9 | 1.4         |
| 7      | YUNN | 0839  | 0849 | 0930  | 1-  | - 0.8       |       |             |
| 8      | LINT | 2347  | 2355 | 0013  | 1   | - 1.9       | - 1.4 | 1.8         |
| 8      | LINT | 0123  | 0134 | 0241  | 2+  | - 5.3       | - 8.0 | -1.9, 1.6   |
| 8      | LINT | 0334  | 0340 | 0452  | 2   | - 4.2       | - 7.2 | 2.7         |
| 8      | LINT | 0504  | 0510 | 0524  | 1-  | - 0.4       | 0     | 0.7         |
| 9      | LINT | 0125  | 0130 | 0140  | 1-  | - 0.4       | 0     | 0.3         |
| 9      | LINT | 0229  | 0230 | 0252  | 1-  | - 0.7       | - 1.3 | - 0.9       |
| 9      | YUNN | 0231  | 0241 | 0300  | 1   | - 1.2       |       |             |
| 9      | LINT | 0305  | 0311 | 0325  | 1-  | - 0.4       | - 0.7 | 0.5         |
| 9      | LINT | 0352  | 0403 | 0421  | 1-  | - 0.8       | - 1.0 | 0.5         |
| 10     | LINT | 0233  | 0241 | 0254  | 1   | - 1.7       | - 1.9 | 0.2         |
| 10     | LINT | 0256  | 0311 | 0406  | 1+  | - 2.7       | - 1.7 | -0.7, 1.8   |
| 12     | LINT | 0805  | 0811 | 0818  | 1-  | - 0.9       | 0     | 4           |
| 13     | LINT | 0254  | 0300 | 0309D | 1-  | - 0.7       | 0     | - 0.8       |
| 13     | LINT | 0303  | 0309 | 0327  | 1-  | - 0.5       | 0     | 0.3         |
| 21     | LINT | 0529  | 0533 | 0554  | 1-  | - 0.8       | 0     | - 0.6       |
| 21     | YUNN | 0531  | 0535 | 0550  | 1-  | - 1.0       |       |             |
| 21     | LINT | 0558  | 0608 | 0636  | 1-  | - 0.6       | - 1.1 | 0.7         |
| 22     | LINT | 0551  | 0601 | 0712  | 2-  | - 3.7       | - 3.2 | 1.8         |
| 22     | YUNN | 0926  | 0937 | 1050  | 2-  | - 3.8       |       |             |
| 23     | YUNN | 0225  | 0237 | 0310  | 1+  | - 2.4       |       |             |
| 23     | LINT | 0224  | 0240 | 0324  | 1+  | - 2.5       | - 1.7 | - 0.7       |
| 23     | LINT | 0925  | 0935 | 1015U | 2   | - 4.3       | 0     | 4.8         |
| 25     | LINT | 0144  | 0150 | 0218  | 1-  | - 0.7       | 0     | - 1.1       |
| 25     | YUNN | 0145  | 0157 | 0212  | 1   | - 1.9       |       |             |
| 26     | LINT | 0053  | 0107 | 0132  | 1-  | - 1.0       | 0     | 0.9         |
| 29     | YUNN | 0230  | 0236 | 0330  | 1   | - 1.7       |       |             |
| 29     | LINT | 0224  | 0257 | 0358  | 2-  | - 3.7       | - 4.5 | -1.5, 2.3   |

地磁活动指数 K 和 A<sub>K</sub>  
THE GEOMAGNETIC ACTIVITY INDICES K AND A<sub>K</sub>

| 1987年 7月 |   | JUL 1987 |     |     |      |       |       |       |       |      |                |
|----------|---|----------|-----|-----|------|-------|-------|-------|-------|------|----------------|
| 日        | 期 | 三        | 小   | 时   | 时    | 段     | K     | 指     | 数     | 总    | A <sub>K</sub> |
| Day      |   | 0-3      | 3-6 | 6-9 | 9-12 | 12-15 | 15-18 | 18-21 | 21-24 | Sum  |                |
| 1        |   | 1        | 2   | 2   | 2    | 1     | 2     | 1     | 1     | 12   | 5              |
| 2        | D | 2        | 2   | 1   | 1    | 2     | 1     | 2     | 2     | 13   | 6              |
| 3        |   | 1        | 4   | 3   | 3    | 2     | 1     | 5     | 4     | 23   | 18             |
| 4        |   | 4        | 4   | 3   | 2    | 1     | 2     | 3     | 3     | 22   | 15             |
| 5        |   | 1        | 3   | 3   | 2    | 2     | 2     | 3     | 2     | 18   | 10             |
| 6        |   | 2        | 3   | 2   | 2    | 2     | 1     | 1     | 2     | 15   | 7              |
| 7        | Q | 2        | 2   | 2   | 2    | 1     | 1     | 3     | 1     | 14   | 7              |
| 8        |   | 4        | 2   | 4   | 3    | 2     | 2     | 1     | 2     | 20   | 13             |
| 9        |   | 2        | 3   | 2   | 4    | 3     | 3     | 2     | 3     | 22   | 14             |
| 10       |   | 2        | 3   | 3   | 3    | 3     | 2     | 1     | 2     | 19   | 11             |
| 11       | Q | 2        | 1   | 3   | 1    | 2     | 1     | 3     | 2     | 15   | 8              |
| 12       |   | 3        | 2   | 2   | 3    | 3     | 2     | 2     | 2     | 19   | 10             |
| 13       |   | 3        | 3   | 3   | 2    | 1     | 1     | 2     | 2     | 17   | 9              |
| 14       | Q | 2        | 3   | 4   | 3    | 1     | 2     | 2     | 2     | 19   | 11             |
| 15       | Q | 2        | 2   | 5   | 5    | 5     | 5     | 3     | 4     | 31   | 31             |
| 16       |   | 4        | 4   | 4   | 4    | 3     | 4     | 3     | 3     | 29   | 23             |
| 17       |   | 3        | 4   | 4   | 4    | 3     | 2     | 3     | 2     | 25   | 18             |
| 18       |   | 3        | 2   | 3   | 3    | 3     | 3     | 2     | 2     | 21   | 12             |
| 19       |   | 2        | 2   | 3   | 3    | 3     | 3     | 2     | 2     | 20   | 11             |
| 20       | Q | 2        | 2   | 3   | 3    | 2     | 1     | 2     | 2     | 17   | 9              |
| 21       |   | 3        | 3   | 2   | 2    | 1     | 2     | 0     | 2     | 15   | 8              |
| 22       |   | 3        | 2   | 3   | 3    | 2     | 1     | 2     | 3     | 19   | 11             |
| 23       |   | 2        | 3   | 2   | 2    | 2     | 2     | 2     | 2     | 17   | 8              |
| 24       |   | 1        | 2   | 3   | 3    | 1     | 4     | 3     | 4     | 21   | 14             |
| 25       | D | 3        | 4   | 4   | 6    | 5     | 3     | 3     | 3     | 31   | 30             |
| 26       | D | 2        | 2   | 3   | 2    | 1     | 1     | 1     | 2     | 14   | 7              |
| 27       | D | 4        | 3   | 2   | 2    | 2     | 2     | 1     | 2     | 18   | 10             |
| 28       |   | 2        | 3   | 4   | 5    | 4     | 5     | 4     | 5     | 32   | 31             |
| 29       | D | 6        | 5   | 4   | 5    | 3     | 3     | 1     | 2     | 31   | 35             |
| 30       |   | 3        | 2   | 3   | 3    | 3     | 3     | 2     | 4     | 23   | 15             |
| 31       |   | 3        | 4   | 3   | 2    | 3     | 2     | 2     | 2     | 21   | 13             |
|          |   |          |     |     |      |       |       |       |       | Sum  | 430            |
|          |   |          |     |     |      |       |       |       |       | Mean | 13.9           |

地磁活动指数 K 和 A<sub>K</sub>  
THE GEOMAGNETIC ACTIVITY INDICES K AND A<sub>K</sub>

| 1987年8月 |                        |     |     |      |       |       |       |       |      | AUG 1987 |  |  |  |
|---------|------------------------|-----|-----|------|-------|-------|-------|-------|------|----------|--|--|--|
| 日期      | 三                      | 小   | 时   | 时    | 段     | K     | 指     | 数     | 总    |          |  |  |  |
| 期       | Three-hourly Indices K |     |     |      |       |       |       |       | 和    |          |  |  |  |
| Day     | 0-3                    | 3-6 | 6-9 | 9-12 | 12-15 | 15-18 | 18-21 | 21-24 | Sum  |          |  |  |  |
| 1       | 3                      | 4   | 3   | 3    | 2     | 2     | 1     | 1     | 19   |          |  |  |  |
| 2 Q     | 2                      | 2   | 3   | 1    | 2     | 2     | 1     | 2     | 15   |          |  |  |  |
| 3       | 1                      | 3   | 3   | 4    | 3     | 5     | 3     | 2     | 24   |          |  |  |  |
| 4       | 1                      | 2   | 2   | 1    | 2     | 4     | 3     | 3     | 18   |          |  |  |  |
| 5       | 4                      | 2   | 5   | 4    | 3     | 3     | 2     | 2     | 25   |          |  |  |  |
| 6       | 2                      | 2   | 2   | 3    | 4     | 3     | 2     | 1     | 19   |          |  |  |  |
| 7 Q     | 2                      | 3   | 2   | 2    | 2     | 2     | 1     | 2     | 16   |          |  |  |  |
| 8       | 2                      | 2   | 2   | 2    | 3     | 3     | 3     | 3     | 20   |          |  |  |  |
| 9       | 3                      | 4   | 3   | 3    | 3     | 2     | 2     | 2     | 22   |          |  |  |  |
| 10      | 3                      | 2   | 2   | 3    | 2     | 3     | 3     | 2     | 20   |          |  |  |  |
| 11      | 3                      | 2   | 2   | 3    | 3     | 3     | 2     | 3     | 21   |          |  |  |  |
| 12      | 3                      | 3   | 3   | 3    | 4     | 4     | 3     | 3     | 26   |          |  |  |  |
| 13      | 3                      | 3   | 5   | 4    | 2     | 2     | 2     | 3     | 24   |          |  |  |  |
| 14      | 4                      | 5   | 4   | 3    | 3     | 3     | 3     | 3     | 28   |          |  |  |  |
| 15      | 3                      | 4   | 4   | 5    | 4     | 3     | 3     | 3     | 29   |          |  |  |  |
| 16 Q    | 3                      | 3   | 3   | 3    | 3     | 2     | 2     | 2     | 21   |          |  |  |  |
| 17      | 2                      | 2   | 2   | 3    | 3     | 4     | 3     | 2     | 21   |          |  |  |  |
| 18 Q    | 2                      | 2   | 3   | 2    | 2     | 2     | 2     | 1     | 16   |          |  |  |  |
| 19 Q    | 2                      | 2   | 2   | 2    | 2     | 3     | 1     | 2     | 16   |          |  |  |  |
| 20      | 3                      | 3   | 1   | 3    | 3     | 2     | 3     | 3     | 21   |          |  |  |  |
| 21 D    | 3                      | 3   | 2   | 1    | 1     | 1     | 2     | 0     | 13   |          |  |  |  |
| 22 D    | 2                      | 2   | 3   | 4    | 3     | 3     | 3     | 2     | 22   |          |  |  |  |
| 23 D    | 2                      | 2   | 3   | 4    | 3     | 4     | 3     | 2     | 23   |          |  |  |  |
| 24      | 2                      | 3   | 2   | 5    | 3     | 4     | 3     | 3     | 25   |          |  |  |  |
| 25      | 3                      | 2   | 5   | 4    | 6     | 4     | 4     | 4     | 32   |          |  |  |  |
| 26      | 5                      | 6   | 4   | 5    | 5     | 4     | 3     | 2     | 34   |          |  |  |  |
| 27      | 3                      | 3   | 3   | 4    | 4     | 5     | 4     | 3     | 29   |          |  |  |  |
| 28      | 3                      | 3   | 2   | 3    | 3     | 3     | 3     | 4     | 24   |          |  |  |  |
| 29 D    | 3                      | 2   | 2   | 4    | 2     | 4     | 4     | 2     | 23   |          |  |  |  |
| 30 D    | 3                      | 4   | 6   | 4    | 2     | 4     | 4     | 3     | 30   |          |  |  |  |
| 31      | 3                      | 4   | 5   | 3    | 5     | 5     | 3     | 3     | 31   |          |  |  |  |
| Sum     |                        |     |     |      |       |       |       |       | 508  |          |  |  |  |
| Mean    |                        |     |     |      |       |       |       |       | 16.4 |          |  |  |  |

磁 暴  
MAGNETIC STORMS

1987年7-8月

JUL-AUG 1987

| 日      | 磁暴时间         |        | 类    | 急始变幅        |                 |                 | 活动    | 最大活动程度          |       |       | 最大幅度  |                 |                 |
|--------|--------------|--------|------|-------------|-----------------|-----------------|-------|-----------------|-------|-------|-------|-----------------|-----------------|
|        | Time of M.S. |        |      | Sudden Com. |                 |                 | 程度    | Max. Acti. on K |       |       | Range |                 |                 |
| 期      | 始            | 终      |      | Amplitude   |                 |                 | Deg.  | 日               | 三小时   | 指数    |       |                 |                 |
| (时, 分) | (日, 时)       |        | 型    | D'          | H <sup>aT</sup> | Z <sup>aT</sup> | of    | 期               | 3Hour | K     | D'    | H <sup>aT</sup> | Z <sup>aT</sup> |
| Day    | Start        | End    | Type |             |                 |                 | Acti. | Day             | Int.  | Index |       |                 |                 |
| 1987,7 |              |        |      |             |                 |                 |       |                 |       |       |       |                 |                 |
| 15     | 5            | 16 10  | ...  |             |                 |                 | m     | 15              | 3     | 5     | 8.4   | 123             | 31              |
| 24     | 16 36        | 25 21  | SC   | 0.6         | 36              | 3               | ms    | 25              | 4     | 6     | 13.4  | 94              | 40              |
| 28     | 8 50         | 29 19  | SC   | 0.2         | 25              | 3               | ms    | 29              | 1     | 6     | 16.4  | 168             | 43              |
| 1987,8 |              |        |      |             |                 |                 |       |                 |       |       |       |                 |                 |
| 24     | 9 40         | 27 23  | SC   | 0.9         | 38              | 4               | ms    | 25              | 5     | 6     | 13.4  | 151             | 36              |
| 30     | 16           | 1/9 24 | ...  |             |                 |                 | m     | 31              | 3     | 5     | 14.0  | 91              | 26              |

## 双频微波毫秒尖峰事件及可能的谐波结构发现

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(中国科学院 云南天文台)

1987年5月下旬全国太阳联测期间,云南天文台三波段(21、10、8厘米)快速取样射电望远镜成功地观测到一系列毫秒级太阳微波尖峰事件,其中5月19日0550 UT及5月21日0344 UT两事件最为令人感兴趣。

图1、2、3分别为5月19日事件的秒级记录图;毫秒级记录;及若干尖峰群的精细结构图。

图4、5、6分别为5月21日事件的秒级记录;034358 UT—034406 UT毫秒取样记录;及034243 UT—034251 UT毫秒取样记录。

5月19日事件是我们记下的第一个在两个波段(1420 MHz、2840 MHz)同时发生的事件,可能存在基波与二次谐波的谐波结构,这一尖峰事件几乎没有秒级爆发共生,事件由总持续约8秒的8组尖峰群组成,每组持续10到数十毫秒,由1到10个尖峰组成,每个尖峰持续从数毫秒到约10毫秒,其中若干小于2毫秒,这一尖峰事件与一SF级耀斑的峰值时刻发生在同一分钟内(Region No. 4808, 19 May 0523—0550—0602 UT, SESC PRF 612, 26 May 1987)。

1987年5月21日事件与一秒级复杂型爆发共生,同时日面上在4811区产生一1B级耀斑,由图4可见,除与耀斑的峰值对应的一群脉冲形成的第一个极大外,8、10、21厘米都有,在21厘米波段还存在一个幅度大得多的第二组脉冲,这是一个典型的分米波窄带脉冲爆发,尖峰事件发生在第二群脉冲的极大前后,只在有脉冲群的21厘米波段发生,而在宽带的第一群脉冲前后没有。

这些事件中包含了在耀斑过程中高能电子的产生、加速,它们的能量释放,传布以及环境等离子体的重要信息,我们正进一步分析、研究这些资料,将陆续发表有关文章。

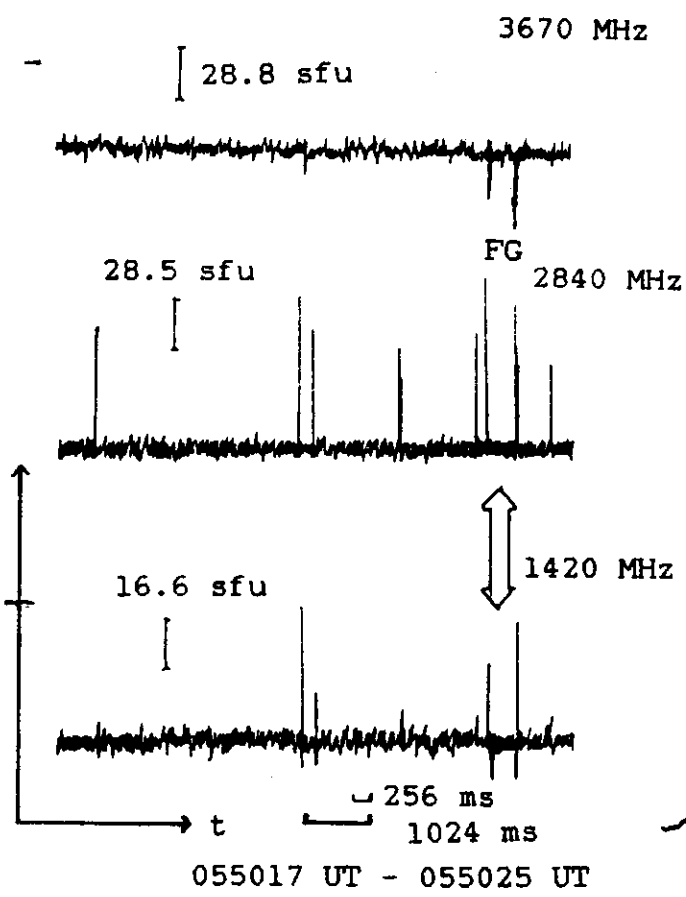


Fig.2

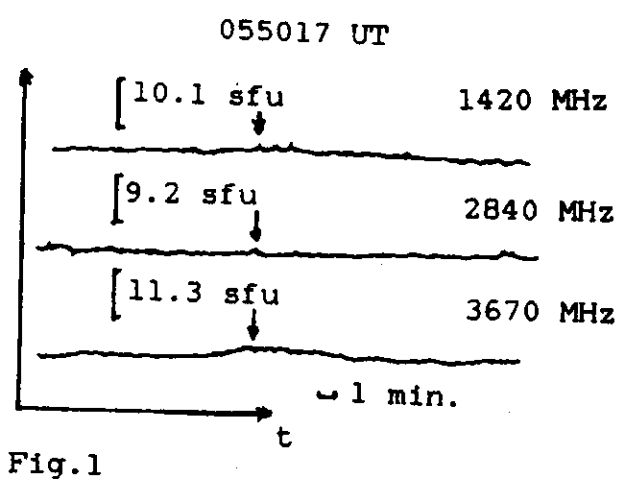


Fig.1

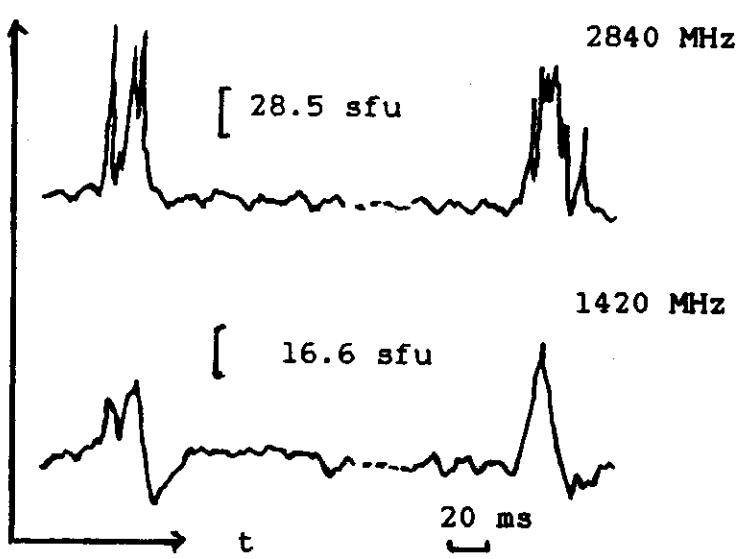
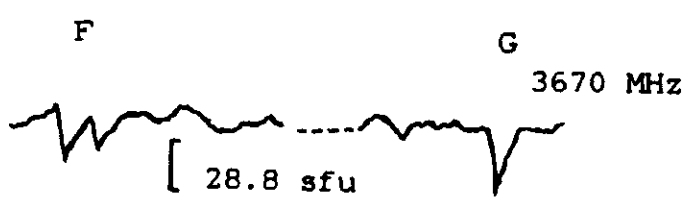


Fig.3

Fig. 4

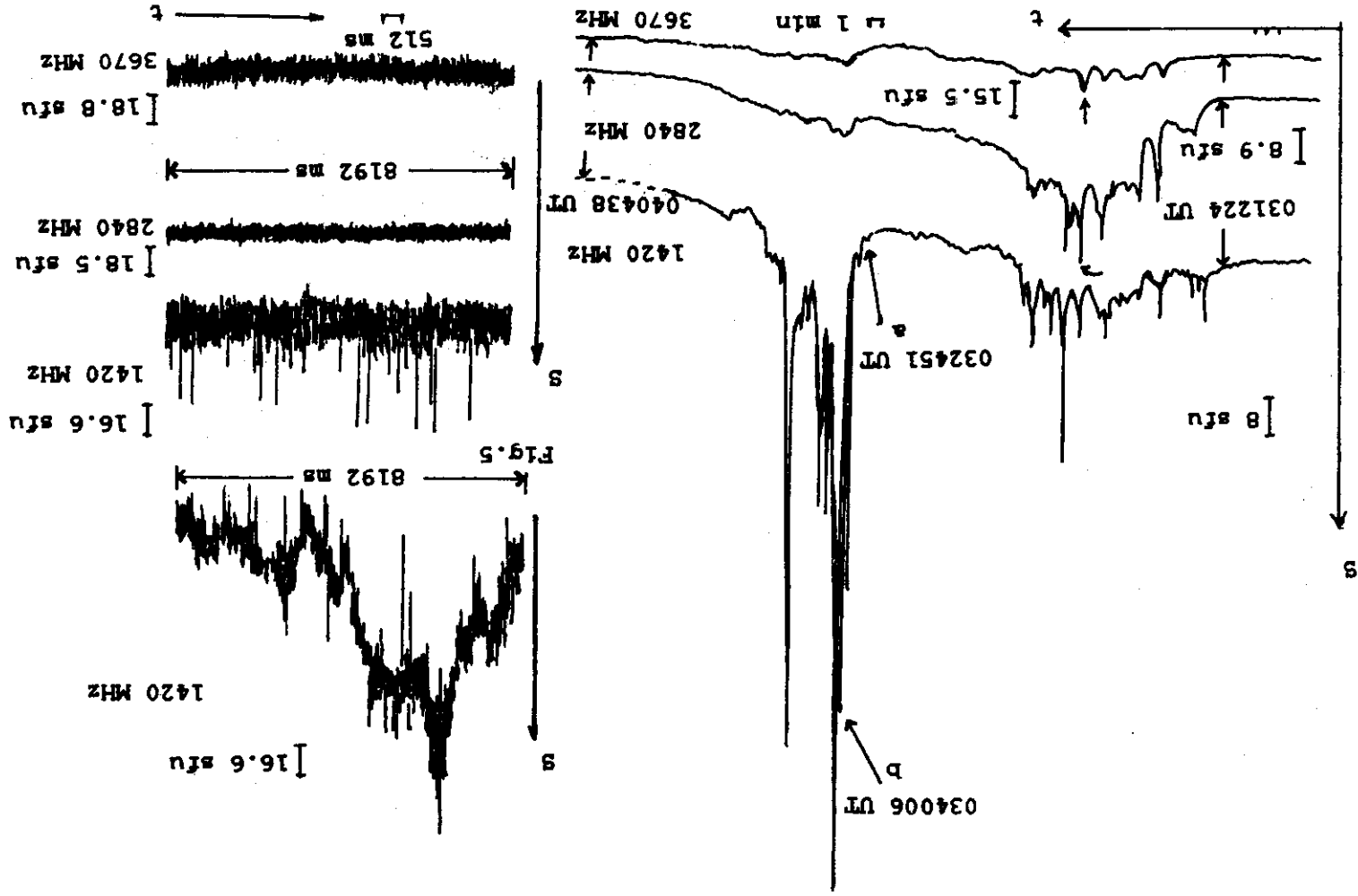
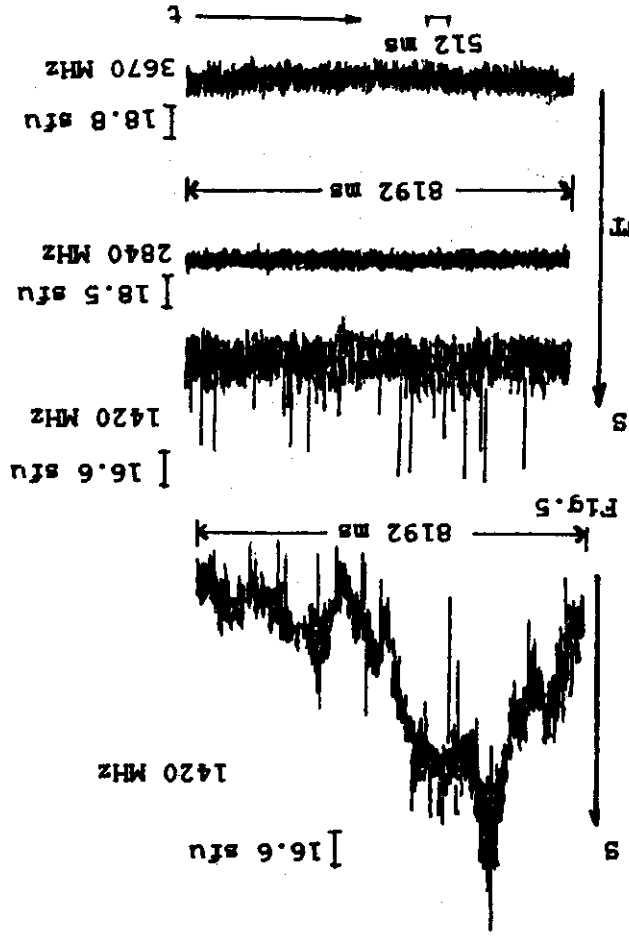


Fig. 6



## Microwave Millisecond Spike Events at Two Frequencies and Possible Evidence of Harmonic Structure

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During the time period of solar joint observations in the second half of May, 1987, several solar microwave millisecond spike events were successfully recorded with Tri-frequency Fast Sampling Radiotelescope ( 3670 MHz, 2840 MHz, 1420 MHz ) with time resolution of 1 ms at Yunnan Observatory. Among these events the events of 0550 UT May 19 and 0344 UT May 21 are the two of the most interesting ones.

Fig. 1,2,3 are time profiles with time resolution of 1 second of May 19 event, with time resolution of 1 ms, and fine structure of individual spike groups, respectively.

Fig. 4,5,6 are time profiles with time resolution of 1 second of May 21 event, with time resolution of 1 ms between 034358 UT - 034406 UT, and with time resolution of 1 ms between 034243 UT - 034252 UT, respectively.

The May 19 event is the first one obtained at two frequency of 1420 MHz and 2840 MHz simultaneously. It is possible that it might be harmonic structure with fundamental and second harmonics. There also was no response in the slow time structure ( Fig. 1 ). The event consisted of eight groups of spikes with total duration of about eight seconds. Each group consisted of 1-10 spikes with group duration of tens milliseconds. Duration of individual spike was a few to ten milliseconds, for some of them less than two milliseconds. This event was coincident with the maximum time of a flare of importance SF in one minute ( Region NO. 4808. 0523 UT-0550 UT-0602 UT, 19 May, SESC PRF 612, 26 May 1987 ).

The May 21 event was associated with a complex slow time burst and a flare of importance 1 B on solar disk (Region NO. 4811), From Fig. 4, it shows that, except the first group of impulses at 8 cm, 10 cm and 21 cm associated with the peak of the flare, there were second group of impulses with much stronger intensity at 21cm. It is a typical narrow-band decimeter impulsive burst. The spike event only occurred around the second group of impulses ( with narrow band ) at 21 cm, while did not occurred around the first group of impulses ( with broad-band ).

These events contained important information concerning energetic electrons producing and accelerating, their energy releasing, propagating and ambient plasma in the process of flare. We are analysing these data and papers will be published in near future.