

Solar Bulletin

THE AMERICAN ASSOCIATION OF VARIABLE STAR OBSERVERS - SOLAR COMMITTEE

Carl E. Feehrer, Editor
9 Gleason Rd.
Bedford, MA 01730



Email: cfeehrer@hotmail.com

ISSN 0271-8480

Volume 59 Number 7

July 2003

Table I. American Relative Sunspot Numbers (Ra) for July 2003 [boldface = maximum, minimum]

| Day | N | Raw Mean | Ra | std. error |
|-----|----|----------|------------|------------|
| 1 | 42 | 136 | 102 | 2.7 |
| 2 | 46 | 117 | 86 | 3.0 |
| 3 | 41 | 99 | 75 | 3.2 |
| 4 | 46 | 95 | 70 | 2.8 |
| 5 | 48 | 79 | 58 | 2.1 |
| 6 | 49 | 88 | 65 | 2.5 |
| 7 | 39 | 108 | 83 | 2.4 |
| 8 | 46 | 134 | 96 | 1.9 |
| 9 | 41 | 124 | 90 | 2.5 |
| 10 | 38 | 96 | 73 | 2.1 |
| 11 | 43 | 86 | 64 | 2.5 |
| 12 | 40 | 94 | 68 | 2.2 |
| 13 | 44 | 131 | 100 | 2.8 |
| 14 | 45 | 135 | 102 | 2.1 |
| 15 | 37 | 143 | 107 | 4.0 |
| 16 | 44 | 130 | 99 | 2.6 |
| 17 | 47 | 158 | 111 | 2.9 |
| 18 | 46 | 156 | 119 | 3.0 |
| 19 | 47 | 182 | 135 | 4.5 |
| 20 | 47 | 221 | 162 | 4.6 |
| 21 | 46 | 201 | 143 | 4.1 |
| 22 | 47 | 161 | 116 | 3.4 |
| 23 | 44 | 129 | 100 | 3.6 |
| 24 | 47 | 103 | 76 | 2.1 |
| 25 | 50 | 54 | 39 | 1.7 |
| 26 | 45 | 38 | 28 | 1.1 |
| 27 | 47 | 41 | 30 | 1.7 |
| 28 | 48 | 65 | 49 | 1.3 |
| 29 | 44 | 60 | 46 | 1.9 |
| 30 | 50 | 61 | 44 | 1.4 |
| 31 | 46 | 58 | 43 | 1.4 |

Means: 44.8 112.4 83.2 2.6

Total No. of Observers: 77

Total No. of Observations: 1390

Table II. July Observers

| | |
|---------------------|-------------------------|
| 22 AAP P.Abbott | 17 KAPJ J.Kaplan |
| 26 ARAG G.Araujo | 16 KHAR R.Khan |
| 28 ATON A.Attanasio | 27 KNJS J&S Knight |
| 12 BARH H.Barnes | 1 KROL L.Krozel |
| 21 BATR R.Battaiola | 6 LARJ J.Larriba |
| 13 BERJ J.Berdejo | 15 LERM M.Lerman |
| 6 BLAJ J.Blackwell | 20 LEVM M.Leventhal |
| 12 BMF M.Boschat | 7 LUBT T.Lubbers |
| 18 BOJP P.Bojda | 27 MALK K.Malde |
| 17 BOSB B.Bose | 31 MARJ J.Maranon |
| 28 BRAB B.Branchett | 10 MCE E.Mochizuki |
| 9 BRAD D.Branchett | 7 MILJ J.Miller |
| 30 BRAR R.Branch | 30 MMI M.Moeller |
| 8 BROB R.Brown | 8 OBSS IPS Observatory |
| 9 CAMP P.Campbell | 6 PARN N.Parker |
| 17 CARJ J.Carlson | 22 REYD D.Reynolds |
| 31 CHAG G.Morales | 13 RICE E.Richardson |
| 23 CKB B.Cudnik | 22 RITA A.Ritchie |
| 18 CLZ C.Laurent | 27 SCGL G.Schott |
| 21 COMT T.Compton | 7 SCHG G.Scholl |
| 31 CORA A.Coroas | 9 SIMC C.Simpson |
| 28 CR T.Cragg | 31 STAB B.Gordon-States |
| 21 CVJ J.Carvajal | 15 STEF G.Stefanopoulos |
| 28 DEJV J.van Delft | 19 STEM G.Stemmler |
| 4 DELS S.Delaney | 26 STQ N.Stoikidis |
| 26 DRAJ J.Dragesco | 15 SUZM M.Suzuki |
| 29 DUBF F.DuBois | 14 SYP Paul Soron |
| 28 ELR E.Reed | 17 SZAK K.Szatkowski |
| 19 FEEC C.Feehrer | 24 SZUM M.Szulc |
| 21 FERJ J.Fernandes | 29 TESD D.Teske |
| 26 FLET T.Fleming | 14 THR R.Thompson |
| 19 FUJK K.Fujimori | 7 TJV J.Temprano |
| 25 GIOR R.Giovanoni | 21 VARG A.Vargas |
| 7 GOEM M.Goetz | 15 VIDD D.Vidican |
| 9 GOLA A.Golovin | 24 WILW W.Wilson |
| 8 HAYK K.Hay | 30 YESH H.Yesilyaprak |
| 16 HRUT T.Hrutkay | 6 ZDM D.Zhdanok |
| 25 JAMD D.James | |
| 13 JEFT T.Jeffrey | |
| 3 JENS S.Jenner | |

Reporting Addresses

Sunspot Reports -- email: solar@aavso.org
postal mail: AAVSO, 25 Birch St. Cambridge, MA 02138
FAX (AAVSO): (617) 354-0665

SID Solar Flare Reports -- email: noatak@aol.com
postal mail: Mike Hill
114 Prospect St. Marlboro, MA 01752

Table III. Means of Raw Group Counts (RG) and Ratios of Spots to Groups (S:G) in July 2003

| Day | RG | S:G | Day | RG | S:G | Day | RG | S:G | Day | RG | S:G |
|-----|-----|------|-----|-----|-----|-----|------|------|-----|-----|-----|
| 1 | 8.3 | 6.4 | 9 | 6.4 | 9.4 | 17 | 7.8 | 10.3 | 25 | 4.4 | 2.3 |
| 2 | 6.3 | 8.6 | 10 | 5.4 | 7.8 | 18 | 7.5 | 10.8 | 26 | 3.2 | 1.9 |
| 3 | 4.1 | 14.2 | 11 | 5.3 | 6.2 | 19 | 8.5 | 11.4 | 27 | 3.3 | 2.4 |
| 4 | 3.7 | 15.7 | 12 | 5.8 | 6.2 | 20 | 10.3 | 11.5 | 28 | 4.3 | 5.1 |
| 5 | 2.9 | 17.2 | 13 | 8.1 | 6.2 | 21 | 10.3 | 9.5 | 29 | 3.8 | 5.8 |
| 6 | 3.6 | 14.4 | 14 | 8.4 | 6.1 | 22 | 8.8 | 8.3 | 30 | 3.7 | 6.5 |
| 7 | 5.4 | 10.0 | 15 | 8.6 | 6.6 | 23 | 8.3 | 5.5 | 31 | 3.8 | 5.3 |
| 8 | 6.4 | 10.9 | 16 | 7.9 | 6.5 | 24 | 7.4 | 3.9 | Mn. | 6.2 | 8.2 |

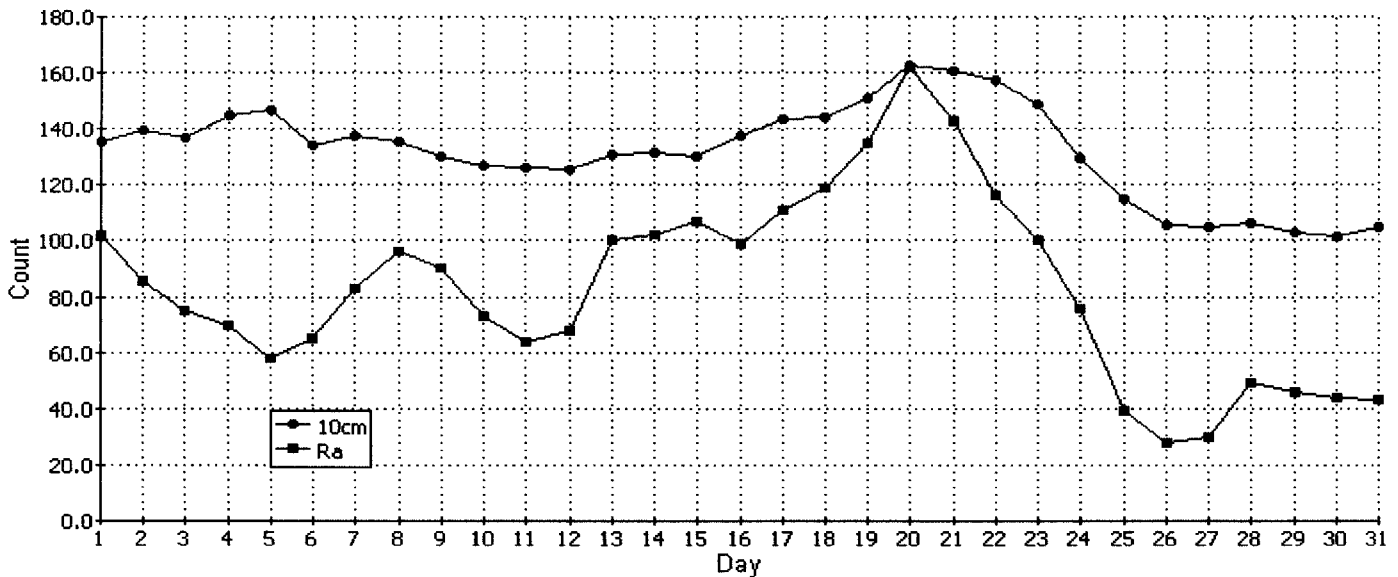


Fig. 1. 10 cm Solar Flux and American Relative Sunspot Numbers (Ra) for July 2003

10 cm source: <http://www.drao.nrc.ca/icarus>

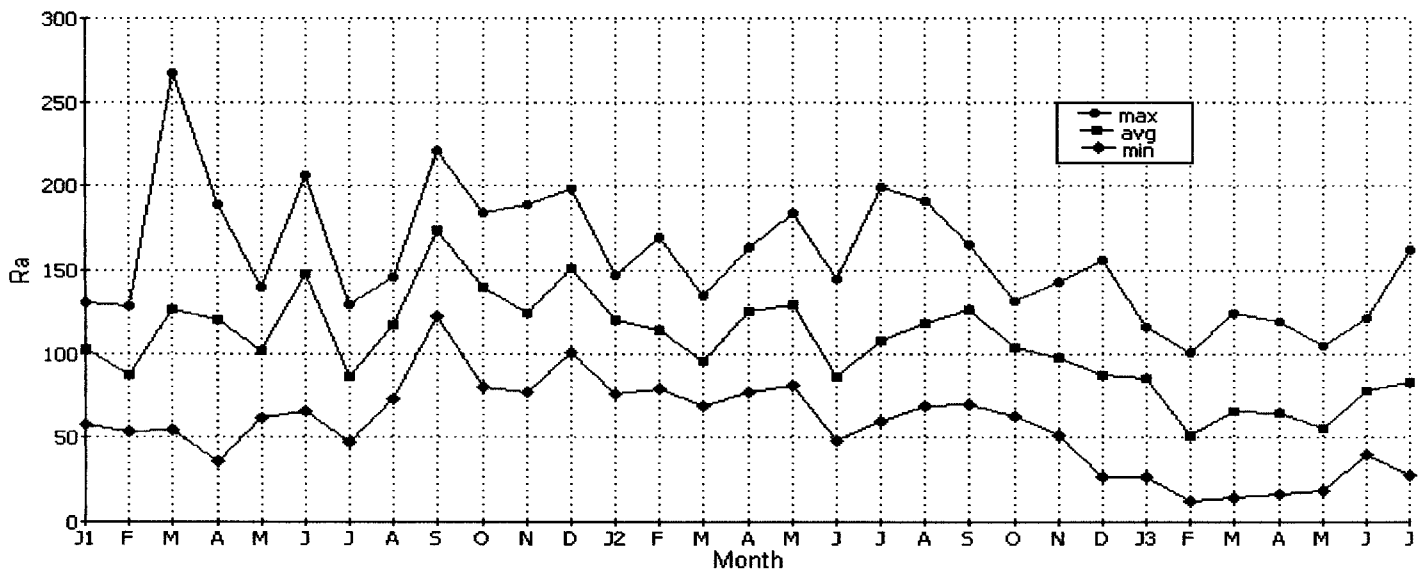


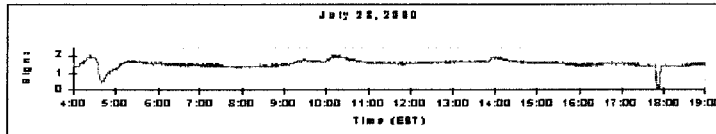
Fig. 2. Maximum, Mean, and Minimum Values of Ra for Each Month from January 2001 to Present.

Editor's Note

Beginning this month, modifications will be made to the sunspot pages of the Bulletin. For example, the content of Table I will be changed to reflect the fact that, because the Wolf scale is bounded at zero and contains no values between 0 and 11, the current statistics (s.d./s.e.) provide less and less appropriate estimates of report variation as the sunspot minimum is approached. An alternative measure of the variation in the final index (Ra), perhaps the range, will be substituted. And, since the American (Ra) and International (Ri) sunspot indices are typically highly correlated, we shall, discontinue the practice of plotting the Ri values. Observers interested in those values can find them at: <http://www.sidc.oma.be/index.php3>. Other changes will be mentioned as they occur.

Sudden Ionospheric Disturbance Report

Michael Hill, SID Analyst
 114 Prospect St
 Marlborough, MA 01752 USA
 noatak@aol.com



Sudden Ionospheric Disturbances (SID) Recorded During July 2003

(Analysis performed by Michael Hill, SID Analyst)

| Date | Max | Imp | Date | Max | Imp | Date | Max | Imp |
|--------|------|-----|--------|------|-----|------|-----|-----|
| 030702 | 0717 | 2+ | 030720 | 1208 | 1- | | | |
| 030702 | 0732 | 2 | 030720 | 1453 | 1 | | | |
| 030703 | 0603 | 2+ | 030720 | 1611 | 2 | | | |
| 030704 | 0557 | 3 | 030722 | 0717 | 2 | | | |
| 030704 | 1448 | 2+ | 030722 | 0822 | 2 | | | |
| 030704 | 1459 | 2 | 030723 | 0557 | 1+ | | | |
| 030705 | 0919 | 2 | 030723 | 1139 | 1+ | | | |
| 030708 | 0732 | 2 | 030723 | 1532 | 1+ | | | |
| 030710 | 0638 | 1+ | 030729 | 0135 | 2 | | | |
| 030710 | 1401 | 2 | | | | | | |
| 030712 | 0633 | 1 | | | | | | |
| 030712 | 0958 | 1- | | | | | | |
| 030712 | 1621 | 1+ | | | | | | |
| 030712 | 1904 | 2 | | | | | | |
| 030712 | 2048 | 2 | | | | | | |
| 030713 | 1227 | 1 | | | | | | |
| 030717 | 0800 | 3+ | | | | | | |
| 030717 | 0823 | 2 | | | | | | |
| 030717 | 0918 | 1- | | | | | | |
| 030717 | 1530 | 1 | | | | | | |
| 030719 | 0950 | 3 | | | | | | |
| 030719 | 0932 | 1 | | | | | | |
| 030720 | 0808 | 1+ | | | | | | |
| 030720 | 0822 | 1- | | | | | | |
| 030720 | 0957 | 1 | | | | | | |

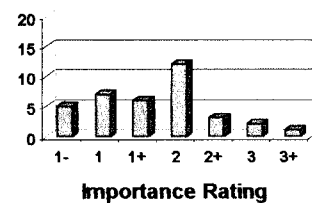
| | | | | | | | |
|-----------------------------------|---------|----------|-----------|----------|-----------|-----------|----------|
| Importance rating : Duration(min) | -1: <19 | 1: 19-25 | 1+: 26-32 | 2: 33-45 | 2+: 46-85 | 3: 86-125 | 3+: >125 |
|-----------------------------------|---------|----------|-----------|----------|-----------|-----------|----------|

The events listed above meet at least one of the following criteria

| Observer | Code | Station(s) monitored |
|---------------|------|----------------------|
| J Winkler | A50 | NPM XXX |
| D Toldo | A52 | NWC XXX |
| J Ellerbe | A63 | ICV |
| W Moos | A84 | FTA |
| G DiFillipo | A93 | DHO HWU |
| M King | A99 | HWU |
| G Bressan | A101 | DHO |
| F Steyn | A102 | NWC |
| L Observatory | A107 | DHO |

- 1) Event reported by two or more observers within ± 5 minutes
- 2) Event matched to GOES-8 XRA event to within ± 15 minutes and event time < 1000 UT
- 3) reported by observer with a quality rating > 8 (scale 1-10)

SID Events Recorded for July 2003



Solar Events

Many of you will notice a significant number of regular observers not contributing this month. This list includes myself and most of the East Coast observers who monitor NAA in Cutler, Maine. This station has been off-line for over a month now. It has been surmised, probably correctly, that it may be down for large scale maintenance of the towers in order to perform paint removal and re-painting. When one considers that there are large number of towers at this site and that they are very tall, it is no wonder that it is taking so long to complete this task. We will all be very happy when they come back on-line. We had plenty of observers to take up the slack, however. Even so, July was a pretty slow month for SID events. This month there were only 36 correlated events, quite a drop from last month's 89. Most of these were of lower importance rating. The GOES-12 Satellite reported 281 X-Ray flares. Of these, only 6 were M-Class and there were no large X-Class flares. The busiest period was from the 15th to the 21st. The M-Class flares occurred at other times of the month, however. There have been a lot of large sunspot groups still visible on the sun, however they were certainly not as active last month as they have been in previous months. It will be interesting as we approach minimum to see how the spot counts compare to the SID counts. Could the spots be large in area, but with less energetic activity as the cycle winds down? It might be worth keeping an eye on. Thanks for all your data. Your contributions are very helpful, especially when a large segment of us cannot observe due to VLF station maintenance which is inevitable from time to time.

