



Georgi Dobrovolski Solar Observatory

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

30 Years of Solar Observing
1973 - 2003

SUNSPOT RESULTS FOR JANUARY 2003

All observations carried out by HOWARD BARNES.
 Telescope : 76 mm refractor (f.l. 910 mm) k considered as 1.
 Observed by PROJECTION. Full disc diameter = 145 mm approx.
 WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;
 QC = Quality Count ; QC² = Squared Quality Count .
 Q = Quietness [ie. steadiness] refer to Kiepenheuer scale .
 S = Sharpness [ie. clarity] refer to Kiepenheuer scale .
 T = Transparency where 1 = excellent , 5 = worthless .

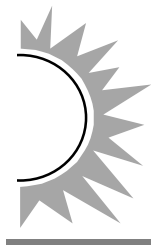
| DATE | UT* | g | f | WN | p | s | SN | BX | CV | QC | QC ² | Q | S | T | Ref. |
|------|------|------|-------|--------|-------|-------|--------|--------|--------|-------|-----------------|------|------|------|------|
| 01 | 1915 | 2 | 11 | 31 | 3 | 4 | 34 | 217 | 32 | 6 | 20 | 2.0 | 2.0 | 2.0 | 4205 |
| 02 | 2005 | 5 | 11 | 61 | 4 | 6 | 46 | 194 | 45 | 11 | 29 | 1.5 | 2.5 | 2.5 | 4206 |
| 03 | | | | | | | | | | | | | | | |
| 04 | | | | | | | | | | | | | | | |
| 05 | | | | | | | | | | | | | | | |
| 06 | 1920 | 8 | 51 | 131 | 15 | 20 | 170 | 784 | 136 | 25 | 85 | 1.5 | 2.0 | 2.5 | 4207 |
| 07 | | | | | | | | | | | | | | | |
| 08 | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | | | | | | | |
| 10 | 1925 | 6 | 62 | 122 | 17 | 23 | 193 | 1243 | 126 | 22 | 86 | 2.0 | 2.5 | 3.0 | 4208 |
| 11 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | |
| 14 | 1945 | 9 | 48 | 138 | 12 | 22 | 142 | 767 | 105 | 23 | 67 | 2.0 | 2.0 | 2.0 | 4209 |
| 15 | 1950 | 10 | 31 | 131 | 12 | 14 | 134 | 505 | 124 | 27 | 79 | 1.0 | 2.0 | 2.0 | 4210 |
| 16 | 1955 | 10 | 32 | 132 | 10 | 15 | 115 | 572 | 104 | 25 | 73 | 1.5 | 2.5 | 3.0 | 4211 |
| 17 | | | | | | | | | | | | | | | |
| 18 | 1950 | 9 | 29 | 119 | 8 | 13 | 93 | 489 | 82 | 22 | 62 | 1.5 | 2.0 | 2.0 | 4212 |
| 19 | 2025 | 10 | 30 | 130 | 11 | 14 | 124 | 534 | 121 | 27 | 83 | 2.0 | 2.5 | 3.0 | 4213 |
| 20 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | 2005 | 6 | 47 | 107 | 10 | 26 | 126 | 851 | 112 | 21 | 81 | 2.0 | 2.5 | 2.5 | 4214 |
| 26 | | | | | | | | | | | | | | | |
| 27 | 2100 | 8 | 32 | 112 | 12 | 15 | 135 | 593 | 130 | 26 | 90 | 2.0 | 3.0 | 3.0 | 4215 |
| 28 | | | | | | | | | | | | | | | |
| 29 | 1945 | 8 | 36 | 116 | 15 | 13 | 163 | 696 | 113 | 20 | 62 | 1.5 | 2.0 | 2.0 | 4216 |
| 30 | 1955 | 9 | 31 | 121 | 8 | 19 | 99 | 491 | 92 | 22 | 62 | 1.5 | 2.0 | 2.0 | 4217 |
| 31 | | | | | | | | | | | | | | | |
| Σ | — | 100 | 451 | 1451 | 137 | 204 | 1574 | 7936 | 1322 | 277 | 879 | 22.0 | 29.5 | 31.5 | — |
| NOBS | — | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | — |
| MNS | — | 7.69 | 34.69 | 111.62 | 10.54 | 15.69 | 121.08 | 610.46 | 101.69 | 21.31 | 67.62 | 1.69 | 2.27 | 2.42 | — |

MEAN WEIGHT = 0.4792

MEAN CONDITION = 2.1282

TRUNCATED WOLF NUMBER = 92.62

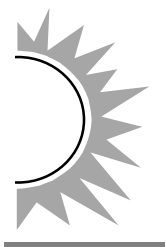
* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



**SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR
JANUARY 2003**

All observations carried out by HOWARD BARNES .
 Telescope : 76 mm refractor (f.l. 910 mm) .
 Observed by PROJECTION . Full disc diameter = 145 mm approx .
 IS = Inter-Sol Index .
 gr = number of multi-spot groups .
 grfp = number of umbræ within penumbrae within the groups (gr) .
 grf = number of non-penumbra spots within the groups (gr) .
 efp = number of single penumbral spots .
 ef = number of single non-penumbra spots .
 Q = Quietness [ie. steadiness] refer to Kiepenheuer scale .
 S = Sharpness [ie. clarity] refer to Kiepenheuer scale .
 T = Transparency where 1 = excellent , 5 = worthless .

| DATE | UT | IS | gr | grfp | grf | efp | ef | Q | S | T | Ref. |
|------|------|-------|------|-------|-------|------|------|------|------|------|------|
| 01 | 1915 | 12 | 1 | 6 | 4 | 1 | 0 | 2.0 | 2.0 | 2.0 | 4205 |
| 02 | 2005 | 13 | 2 | 3 | 5 | 2 | 1 | 1.5 | 2.5 | 2.5 | 4206 |
| 03 | | | | | | | | | | | |
| 04 | | | | | | | | | | | |
| 05 | | | | | | | | | | | |
| 06 | 1920 | 58 | 7 | 31 | 19 | 0 | 1 | 1.5 | 2.0 | 2.5 | 4207 |
| 07 | | | | | | | | | | | |
| 08 | | | | | | | | | | | |
| 09 | | | | | | | | | | | |
| 10 | 1925 | 67 | 5 | 38 | 23 | 1 | 0 | 2.0 | 2.5 | 3.0 | 4208 |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | 1945 | 55 | 7 | 25 | 21 | 1 | 1 | 2.0 | 2.0 | 2.0 | 4209 |
| 15 | 1950 | 38 | 7 | 14 | 14 | 3 | 0 | 1.0 | 2.0 | 2.0 | 4210 |
| 16 | 1955 | 39 | 7 | 16 | 13 | 1 | 2 | 1.5 | 2.5 | 3.0 | 4211 |
| 17 | | | | | | | | | | | |
| 18 | 1950 | 36 | 7 | 15 | 12 | 1 | 1 | 1.5 | 2.0 | 2.0 | 4212 |
| 19 | 2025 | 37 | 7 | 14 | 13 | 2 | 1 | 2.0 | 2.5 | 3.0 | 4213 |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | 2005 | 53 | 6 | 21 | 26 | 0 | 0 | 2.0 | 2.5 | 2.5 | 4214 |
| 26 | | | | | | | | | | | |
| 27 | 2100 | 39 | 7 | 16 | 15 | 1 | 0 | 2.0 | 3.0 | 3.0 | 4215 |
| 28 | | | | | | | | | | | |
| 29 | 1945 | 40 | 4 | 21 | 11 | 2 | 2 | 1.5 | 2.0 | 2.0 | 4216 |
| 30 | 1955 | 36 | 5 | 9 | 18 | 3 | 1 | 1.5 | 2.0 | 2.0 | 4217 |
| 31 | | | | | | | | | | | |
| Σ | — | 523 | 72 | 229 | 194 | 18 | 10 | 22.0 | 29.5 | 31.5 | — |
| NOBS | — | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | — |
| MNS | — | 40.23 | 5.54 | 17.62 | 14.92 | 1.38 | 0.77 | 1.69 | 2.27 | 2.42 | — |



**SUNSPOT CENSUS BY CLASSIFICATION FOR
JANUARY 2003**

All observations carried out by HOWARD BARNES.
Telescope : 76 mm refractor (f . l . 910 mm).
Observed by PROJECTION . Full disc diameter = 145 mm approx .
IF 2 OR MORE REGIONS ARE OF THE SAME CLASSIFICATION , THEN SUNSPOT COUNTS
ARE SEPARATED BY SOLIDI (/).

| DATE | UT | A | | B | | C | | D | | E | | F | | G | | H | | J | |
|---------------|------|----|-----|----|-----|----|---------|----|---------|---|----|---|---|---|---|---|---|----|---------|
| | | g | f | g | f | g | f | g | f | g | f | g | f | g | f | g | f | g | f |
| 01 | 1915 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 02 | 2005 | 1 | 1 | 1 | 2 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1/1 |
| 03 | | | | | | | | | | | | | | | | | | | |
| 04 | | | | | | | | | | | | | | | | | | | |
| 05 | | | | | | | | | | | | | | | | | | | |
| 06 | 1920 | 1 | 1 | 0 | 0 | 4 | 2/3/3/4 | 3 | 5/9/24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07 | | | | | | | | | | | | | | | | | | | |
| 08 | | | | | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | | | | | | | | | | | |
| 10 | 1925 | 0 | 0 | 0 | 0 | 1 | 6 | 3 | 5/12/14 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 11 | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | |
| 14 | 1945 | 1 | 1 | 2 | 2/3 | 2 | 3/4 | 2 | 15/17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1/2 |
| 15 | 1950 | 0 | 0 | 1 | 2 | 3 | 3/4/5 | 2 | 4/8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 1/1/1/2 |
| 16 | 1955 | 2 | 1/1 | 0 | 0 | 3 | 2/3/4 | 2 | 7/8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1/2/3 |
| 17 | | | | | | | | | | | | | | | | | | | |
| 18 | 1950 | 1 | 1 | 2 | 2/4 | 1 | 3 | 2 | 5/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1/2/2 |
| 19 | 2025 | 1 | 1 | 1 | 2 | 2 | 2/2 | 3 | 3/7/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1/1/2 |
| 20 | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25 | 2005 | 0 | 0 | 2 | 2/3 | 0 | 0 | 3 | 5/7/18 | 1 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | | | | | | | | | | | | | | | | | | | |
| 27 | 2100 | 0 | 0 | 0 | 0 | 2 | 2/2 | 4 | 3/6/7/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1/2 |
| 28 | | | | | | | | | | | | | | | | | | | |
| 29 | 1945 | 2 | 1/1 | 0 | 0 | 0 | 0 | 3 | 5/11/14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1/1/2 |
| 30 | 1955 | 1 | 1 | 2 | 2/3 | 1 | 4 | 2 | 6/12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1/1/1 |
| 31 | | | | | | | | | | | | | | | | | | | |
| TOTALS | — | 10 | 10 | 11 | 27 | 19 | 61 | 31 | 280 | 2 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 37 |

REGIONAL PERCENTAGES

| A | B | C | D | E | F | G | H | J | Σg |
|------|------|------|------|-----|-----|-----|-----|------|-----|
| 10.0 | 11.0 | 19.0 | 31.0 | 2.0 | 0.0 | 0.0 | 0.0 | 27.0 | 100 |

NOBS = 13

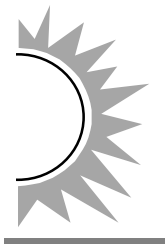
\bar{p}/\bar{g} mean = 1.4201

\bar{f}/\bar{g} mean = 4.7724

\bar{p}/\bar{g} mean = 1.3700

\bar{f}/\bar{g} mean = 4.5100

GROUP COMPLEXITY INDEX (GCI) = 5.8800



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

WALDMEIER METHOD

| <i>MONTH</i> | $g(S^W)$ | $WN(S^W)$ | $SN(S^W)$ | $BX(S^W)$ | $CV(S^W)$ | $QC(S^W)$ | $IS(S^W)$ |
|--------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 2001 AUGUST | 8.94 | 145.63 | 180.81 | 1319.6 | 169.94 | 28.18 | 62.47 |
| SEPTEMBER | 9.05 | 146.85 | 183.01 | 1317.4 | 171.83 | 28.54 | 62.71 |
| OCTOBER | 9.12 | 147.40 | 184.28 | 1298.2 | 172.46 | 28.78 | 62.72 |
| NOVEMBER | 9.34 | 151.25 | 189.72 | 1335.1 | 177.55 | 29.61 | 64.49 |
| DECEMBER | 9.39 | 151.90 | 190.62 | 1344.3 | 180.28 | 29.78 | 64.61 |
| 2002 JANUARY | 9.32 | 152.68 | 193.33 | 1406.6 | 182.22 | 29.68 | 66.03 |
| FEBRUARY | 9.35 | 156.18 | 199.58 | 1508.3 | 186.49 | 30.04 | 69.31 |
| MARCH | 9.28 | 155.62 | 198.73 | 1505.9 | 185.22 | 29.81 | 69.44 |
| APRIL | 9.15 | 153.37 | 196.02 | 1476.5 | 181.17 | 29.24 | 68.37 |
| MAY | 9.03 | 151.55 | 195.32 | 1467.9 | 179.03 | 28.89 | 67.66 |
| JUNE | 8.78 | 146.77 | 189.58 | 1420.1 | 173.86 | 28.11 | 65.19 |
| JULY | 8.49 | 141.03 | 180.68 | 1341.4 | 165.59 | 27.02 | 62.07 |

BARNES-13 METHOD

| <i>MONTH</i> | $g(S^{B13})$ | $WN(S^{B13})$ | $SN(S^{B13})$ | $BX(S^{B13})$ | $CV(S^{B13})$ | $QC(S^{B13})$ | $IS(S^{B13})$ |
|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 2001 AUGUST | 9.06 | 147.06 | 182.12 | 1309.5 | 172.55 | 28.43 | 62.82 |
| SEPTEMBER | 9.25 | 150.77 | 187.66 | 1355.9 | 178.21 | 29.16 | 64.86 |
| OCTOBER | 9.33 | 152.58 | 190.50 | 1376.9 | 180.94 | 29.57 | 65.89 |
| NOVEMBER | 9.42 | 154.21 | 193.31 | 1399.4 | 183.08 | 29.96 | 66.78 |
| DECEMBER | 9.45 | 154.58 | 194.69 | 1404.9 | 183.77 | 30.15 | 66.82 |
| 2002 JANUARY | 9.42 | 154.17 | 195.39 | 1412.4 | 183.21 | 30.13 | 66.66 |
| FEBRUARY | 9.36 | 153.64 | 195.76 | 1426.3 | 182.20 | 30.00 | 66.73 |
| MARCH | 9.26 | 152.50 | 194.87 | 1426.0 | 180.44 | 29.69 | 66.49 |
| APRIL | 9.19 | 152.11 | 195.10 | 1438.7 | 179.61 | 29.42 | 66.73 |
| MAY | 9.10 | 151.78 | 195.65 | 1462.1 | 179.48 | 29.12 | 67.22 |
| JUNE | 8.90 | 149.77 | 193.63 | 1473.0 | 177.57 | 28.48 | 67.06 |
| JULY | 8.65 | 146.84 | 189.67 | 1462.8 | 173.66 | 27.66 | 66.36 |