



Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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SUNSPOT RESULTS FOR MARCH 2005

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 | 2045 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 2.5 | 2.0 | 4506-7 |
| 02 | | | | | | | | | | | | | | | |
| 03 | | | | | | | | | | | | | | | |
| 04 | 2035 | 1 | 1 | 11 | 1 | 0 | 10 | 37 | 10 | 2 | 4 | 1.5 | 2.0 | 2.0 | 4507-7 |
| 05 | 2025 | 1 | 4 | 14 | 1 | 1 | 11 | 32 | 8 | 3 | 9 | 2.0 | 2.5 | 2.5 | 4508-7 |
| 06 | | | | | | | | | | | | | | | |
| 07 | | | | | | | | | | | | | | | |
| 08 | 2015 | 2 | 15 | 35 | 6 | 5 | 65 | 270 | 53 | 8 | 32 | 1.5 | 2.0 | 2.0 | 4509-7 |
| 09 | 2035 | 3 | 23 | 53 | 5 | 12 | 62 | 441 | 81 | 11 | 43 | 1.0 | 1.5 | 2.0 | 4510-7 |
| 10 | | | | | | | | | | | | | | | |
| 11 | 2030 | 3 | 21 | 51 | 6 | 9 | 69 | 512 | 81 | 11 | 43 | 2.0 | 2.0 | 2.0 | 4511-7 |
| 12 | 2100 | 3 | 20 | 50 | 6 | 9 | 69 | 531 | 82 | 10 | 38 | 1.5 | 2.5 | 2.5 | 4512-7 |
| 13 | | | | | | | | | | | | | | | |
| 14 | 2110 | 3 | 18 | 48 | 6 | 3 | 63 | 474 | 94 | 12 | 50 | 2.0 | 2.5 | 2.0 | 4513-7 |
| 15 | 2050 | 2 | 25 | 45 | 4 | 15 | 55 | 591 | 73 | 8 | 34 | 1.5 | 2.0 | 2.0 | 4514-7 |
| 16 | 2045 | 2 | 12 | 32 | 4 | 4 | 44 | 232 | 95 | 8 | 34 | 2.0 | 2.5 | 2.5 | 4515-7 |
| 17 | | | | | | | | | | | | | | | |
| 18 | 2040 | 2 | 12 | 32 | 4 | 5 | 45 | 186 | 100 | 7 | 25 | 2.0 | 2.5 | 2.0 | 4516-7 |
| 19 | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | |
| 21 | 2150 | 3 | 15 | 45 | 5 | 6 | 56 | 266 | 79 | 10 | 34 | 2.0 | 2.5 | 3.0 | 4517-7 |
| 22 | 2050 | 2 | 16 | 36 | 4 | 7 | 47 | 288 | 44 | 8 | 32 | 1.5 | 2.0 | 2.5 | 4518-7 |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | |
| 29 | 2120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 2.0 | 2.5 | 4519-8 |
| 30 | 2055 | 1 | 1 | 11 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 2.0 | 2.0 | 2.5 | 4520-8 |
| 31 | 2145 | 1 | 1 | 11 | 0 | 1 | 1 | 4 | 1 | 1 | 1 | 1.5 | 2.0 | 2.0 | 4521-8 |
| TOTALS | — | 29 | 184 | 474 | 52 | 78 | 598 | 3868 | 802 | 100 | 380 | 26.5 | 35 | 36 | — |
| NOBS | — | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | — |
| MNS | — | 1.81 | 11.50 | 29.62 | 3.25 | 4.88 | 37.38 | 241.75 | 50.12 | 6.25 | 23.75 | 1.66 | 2.19 | 2.25 | — |

MEAN WEIGHT = 0.4998

MEAN CONDITION = 2.0312

TRUNCATED WOLF NUMBER = 28.25

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

Georgi Dobrovolski Solar Observatory

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MARCH 2005

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 penumbræ within the groups (gr) .

grf = number of non-penumbral spots within the groups (gr) .

efp = number of single penumbral spots .

ef = number of single non-penumbral 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 | 2045 | 0 | 0 | 0 | 0 | 0 | 0 | 1.5 | 2.5 | 2.0 | 4506-7 |
| 02 | | | | | | | | | | | |
| 03 | | | | | | | | | | | |
| 04 | 2035 | 1 | 0 | 0 | 0 | 1 | 0 | 1.5 | 2.0 | 2.0 | 4507-7 |
| 05 | 2025 | 5 | 1 | 3 | 1 | 0 | 0 | 2.0 | 2.5 | 2.5 | 4508-7 |
| 06 | | | | | | | | | | | |
| 07 | | | | | | | | | | | |
| 08 | 2015 | 17 | 2 | 10 | 5 | 0 | 0 | 1.5 | 2.0 | 2.0 | 4509-7 |
| 09 | 2035 | 25 | 2 | 10 | 12 | 1 | 0 | 1.0 | 1.5 | 2.0 | 4510-7 |
| 10 | | | | | | | | | | | |
| 11 | 2030 | 24 | 3 | 12 | 9 | 0 | 0 | 2.0 | 2.0 | 2.0 | 4511-7 |
| 12 | 2100 | 21 | 1 | 9 | 9 | 2 | 0 | 1.5 | 2.5 | 2.5 | 4512-7 |
| 13 | | | | | | | | | | | |
| 14 | 2110 | 21 | 3 | 15 | 3 | 0 | 0 | 2.0 | 2.5 | 2.0 | 4513-7 |
| 15 | 2050 | 27 | 2 | 10 | 15 | 0 | 0 | 1.5 | 2.0 | 2.0 | 4514-7 |
| 16 | 2045 | 14 | 2 | 8 | 4 | 0 | 0 | 2.0 | 2.5 | 2.5 | 4515-7 |
| 17 | | | | | | | | | | | |
| 18 | 2040 | 14 | 2 | 7 | 5 | 0 | 0 | 2.0 | 2.5 | 2.0 | 4516-7 |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 21 | 2150 | 17 | 2 | 8 | 6 | 1 | 0 | 2.0 | 2.5 | 3.0 | 4517-7 |
| 22 | 2050 | 18 | 2 | 9 | 7 | 0 | 0 | 1.5 | 2.0 | 2.5 | 4518-7 |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | 2120 | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 2.0 | 2.5 | 4519-8 |
| 30 | 2055 | 1 | 0 | 0 | 0 | 0 | 1 | 2.0 | 2.0 | 2.5 | 4520-8 |
| 31 | 2145 | 1 | 0 | 0 | 0 | 0 | 1 | 1.5 | 2.0 | 2.0 | 4521-8 |
| TOTALS | — | 206 | 22 | 101 | 76 | 5 | 2 | 26.5 | 35 | 36 | — |
| NOBS | — | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | — |
| MNS | — | 12.88 | 1.38 | 6.31 | 4.75 | 0.31 | 0.12 | 1.66 | 2.19 | 2.25 | — |

Georgi Dobrovolski Solar Observatory

SUNSPOT CENSUS BY CLASSIFICATION FOR

MARCH 2005

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 | 2045 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02 | | | | | | | | | | | | | | | | | | | |
| 03 | | | | | | | | | | | | | | | | | | | |
| 04 | 2035 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 05 | 2025 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06 | | | | | | | | | | | | | | | | | | | |
| 07 | | | | | | | | | | | | | | | | | | | |
| 08 | 2015 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09 | 2035 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 | 1 | 13 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 10 | | | | | | | | | | | | | | | | | | | |
| 11 | 2030 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 16 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| 12 | 2100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 13 | | | | | | | | | | | | | | | | | | | |
| 14 | 2110 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 14 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 |
| 15 | 2050 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 2045 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | | | | | | | | | | | | | | | | | | | |
| 18 | 2040 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | |
| 21 | 2150 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 22 | 2050 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 7/9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | | | | | | | | | | | | | | | |
| 29 | 2120 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | 2055 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 2145 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TOTALS | — | 2 | 2 | 0 | 0 | 7 | 28 | 7 | 53 | 6 | 92 | 0 | 0 | 0 | 0 | 5 | 7 | 2 | 2 |

REGIONAL PERCENTAGES

| A | B | C | D | E | F | G | H | J | SIGMAg |
|-----|-----|------|------|------|-----|-----|------|-----|--------|
| 6.9 | 0.0 | 24.1 | 24.1 | 20.7 | 0.0 | 0.0 | 17.2 | 6.9 | 29 |

NOBS = 16

$\overline{p/g}$ mean = 1.5952

$\overline{f/g}$ mean = 5.6667

\overline{p} / \overline{g} mean = 1.7931

\overline{f} / \overline{g} mean = 6.3448

GROUP COMPLEXITY INDEX (GCI) = 8.1379

Georgi Dobrovolski Solar Observatory

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 GDSO ANNUAL REPORTS.

WALDMEIER METHOD

| MONTH | $g(S^W)$ | $WN(S^W)$ | $SN(S^W)$ | $BX(S^W)$ | $CV(S^W)$ | $QC(S^W)$ | $IS(S^W)$ |
|--------------|----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 2003 OCTOBER | 4.41 | 73.76 | 90.28 | 690.5 | 88.82 | 14.13 | 32.79 |
| NOVEMBER | 4.29 | 71.92 | 88.12 | 673.5 | 85.40 | 13.74 | 32.00 |
| DECEMBER | 4.19 | 69.26 | 84.25 | 630.5 | 82.43 | 13.37 | 30.28 |
| 2004 JANUARY | 4.00 | 65.23 | 78.05 | 575.9 | 77.59 | 12.71 | 28.00 |
| FEBRUARY | 3.75 | 61.35 | 72.76 | 548.3 | 72.73 | 11.90 | 26.48 |
| MARCH | 3.56 | 58.70 | 70.01 | 537.4 | 70.74 | 11.30 | 25.59 |
| APRIL | 3.53 | 57.59 | 70.08 | 508.8 | 70.66 | 11.20 | 24.77 |
| MAY | 3.57 | 57.74 | 71.00 | 503.5 | 71.37 | 11.34 | 24.58 |
| JUNE | 3.47 | 56.82 | 70.02 | 515.1 | 70.41 | 11.12 | 24.53 |
| JULY | 3.35 | 54.72 | 66.85 | 494.3 | 67.50 | 10.69 | 23.50 |
| AUGUST | 3.28 | 53.46 | 64.65 | 482.4 | 66.12 | 10.40 | 22.91 |
| SEPTEMBER | 3.15 | 51.44 | 61.95 | 464.3 | 64.60 | 9.98 | 22.12 |

BARNES-13 METHOD

| MONTH | $g(S^{B13})$ | $WN(S^{B13})$ | $SN(S^{B13})$ | $BX(S^{B13})$ | $CV(S^{B13})$ | $QC(S^{B13})$ | $IS(S^{B13})$ |
|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 2003 OCTOBER | 4.35 | 73.60 | 89.51 | 704.8 | 88.15 | 14.07 | 33.20 |
| NOVEMBER | 4.14 | 69.20 | 83.99 | 644.3 | 82.96 | 13.34 | 30.79 |
| DECEMBER | 3.96 | 65.01 | 78.56 | 577.5 | 78.19 | 12.69 | 28.24 |
| 2004 JANUARY | 3.80 | 61.44 | 73.72 | 524.8 | 73.91 | 12.09 | 26.12 |
| FEBRUARY | 3.68 | 59.12 | 70.59 | 500.3 | 70.85 | 11.63 | 24.88 |
| MARCH | 3.61 | 57.85 | 69.17 | 492.8 | 69.40 | 11.33 | 24.29 |
| APRIL | 3.58 | 57.27 | 68.92 | 486.3 | 68.87 | 11.18 | 23.97 |
| MAY | 3.57 | 57.45 | 69.47 | 497.3 | 69.37 | 11.18 | 24.20 |
| JUNE | 3.52 | 57.42 | 69.76 | 520.6 | 69.89 | 11.11 | 24.67 |
| JULY | 3.43 | 56.59 | 69.09 | 529.8 | 69.48 | 10.90 | 24.68 |
| AUGUST | 3.33 | 55.33 | 67.92 | 526.0 | 68.88 | 10.65 | 24.38 |
| SEPTEMBER | 3.21 | 53.53 | 65.96 | 508.9 | 67.87 | 10.34 | 23.68 |