



Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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SUNSPOT RESULTS FOR SEPTEMBER 2004

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 | | | | | | | | | | | | | | | |
| 02 | | | | | | | | | | | | | | | |
| 03 | | | | | | | | | | | | | | | |
| 04 | 2135 | 3 | 10 | 40 | 4 | 4 | 44 | 251 | 69 | 9 | 29 | 1.5 | 2.0 | 2.0 | 4449-0 |
| 05 | 2140 | 3 | 7 | 37 | 4 | 3 | 43 | 76 | 75 | 10 | 34 | 1.5 | 2.5 | 2.0 | 4450-0 |
| 06 | 2120 | 3 | 17 | 47 | 7 | 7 | 77 | 276 | 103 | 11 | 41 | 1.0 | 2.0 | 2.0 | 4451-0 |
| 07 | | | | | | | | | | | | | | | |
| 08 | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | |
| 13 | 2105 | 2 | 25 | 45 | 8 | 9 | 89 | 469 | 41 | 6 | 20 | 1.5 | 2.5 | 2.5 | 4452-0 |
| 14 | 2115 | 1 | 28 | 38 | 6 | 11 | 71 | 504 | 31 | 4 | 16 | 1.5 | 2.0 | 2.5 | 4453-1 |
| 15 | | | | | | | | | | | | | | | |
| 16 | 2115 | 2 | 28 | 48 | 7 | 17 | 87 | 504 | 89 | 8 | 32 | 1.5 | 2.0 | 2.0 | 4454-1 |
| 17 | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | |
| 19 | 2110 | 2 | 21 | 41 | 5 | 10 | 60 | 378 | 80 | 8 | 32 | 1.5 | 2.5 | 2.5 | 4455-1 |
| 20 | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | |
| 25 | 2100 | 2 | 2 | 22 | 2 | 0 | 20 | 81 | 50 | 5 | 13 | 1.5 | 2.0 | 2.0 | 4456-1 |
| 26 | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | |
| 28 | 2105 | 2 | 2 | 22 | 2 | 0 | 20 | 74 | 20 | 4 | 8 | 2.0 | 3.0 | 2.0 | 4457-1 |
| 29 | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | |
| 31 | — | | | | | | | | | | | | | | |
| TOTALS | — | 20 | 140 | 340 | 45 | 61 | 511 | 2613 | 558 | 65 | 225 | 13.5 | 20.5 | 19.5 | — |
| NOBS | — | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | — |
| MNS | — | 2.22 | 15.56 | 37.78 | 5.00 | 6.78 | 56.78 | 290.33 | 62.00 | 7.22 | 25.00 | 1.50 | 2.28 | 2.17 | — |

MEAN WEIGHT = 0.5098

MEAN CONDITION = 1.9815

TRUNCATED WOLF NUMBER = 37.78

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

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SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR SEPTEMBER 2004

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 | | | | | | | | | | | |
| 02 | | | | | | | | | | | |
| 03 | | | | | | | | | | | |
| 04 | 2135 | 12 | 2 | 5 | 4 | 1 | 0 | 1.5 | 2.0 | 2.0 | 4449-0 |
| 05 | 2140 | 10 | 3 | 4 | 3 | 0 | 0 | 1.5 | 2.5 | 2.0 | 4450-0 |
| 06 | 2120 | 20 | 3 | 10 | 7 | 0 | 0 | 1.0 | 2.0 | 2.0 | 4451-0 |
| 07 | | | | | | | | | | | |
| 08 | | | | | | | | | | | |
| 09 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | 2105 | 26 | 1 | 15 | 9 | 1 | 0 | 1.5 | 2.5 | 2.5 | 4452-0 |
| 14 | 2115 | 29 | 1 | 17 | 11 | 0 | 0 | 1.5 | 2.0 | 2.5 | 4453-1 |
| 15 | | | | | | | | | | | |
| 16 | 2115 | 30 | 2 | 11 | 17 | 0 | 0 | 1.5 | 2.0 | 2.0 | 4454-1 |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | 2110 | 23 | 2 | 11 | 10 | 0 | 0 | 1.5 | 2.5 | 2.5 | 4455-1 |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | 2100 | 2 | 0 | 0 | 0 | 2 | 0 | 1.5 | 2.0 | 2.0 | 4456-1 |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | 2105 | 2 | 0 | 0 | 0 | 2 | 0 | 2.0 | 3.0 | 2.0 | 4457-1 |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | — | | | | | | | | | | |
| TOTALS | — | 154 | 14 | 73 | 61 | 6 | 0 | 13.5 | 20.5 | 19.5 | — |
| NOBS | — | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | — |
| MNS | — | 17.11 | 1.56 | 8.11 | 6.78 | 0.67 | 0.00 | 1.50 | 2.28 | 2.17 | — |

Georgi Dobrovolski Solar Observatory

SUNSPOT CENSUS BY CLASSIFICATION FOR SEPTEMBER 2004

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 | | | | | | | | | | | | | | | | | | | |
| 02 | | | | | | | | | | | | | | | | | | | |
| 03 | | | | | | | | | | | | | | | | | | | |
| 04 | 2135 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 |
| 05 | 2140 | 0 | 0 | 0 | 0 | 2 | 2/3 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06 | 2120 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 6/8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07 | | | | | | | | | | | | | | | | | | | |
| 08 | | | | | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | |
| 13 | 2105 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 14 | 2115 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | | | | | | | | | | | | | | | | | | | |
| 16 | 2115 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 5/23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 17 | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | |
| 19 | 2110 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 6/15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25 | 2100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 26 | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | | | | | | | | | | | | |
| 28 | 2105 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1/1 |
| 29 | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
| 31 | — | | | | | | | | | | | | | | | | | | |
| TOTALS | — | 0 | 0 | 0 | 0 | 3 | 8 | 10 | 124 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 5 | 5 |
| REGIONAL PERCENTAGES | | | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | F | G | H | J | SIGMAg | | | | | | | | | | |
| 0.0 | 0.0 | 15.0 | 50.0 | 0.0 | 0.0 | 0.0 | 10.0 | 25.0 | 20 | | | | | | | | | | |
| NOBS = 9 | | $\overline{p/g}$ mean = 2.5556 | | | | $\overline{f/g}$ mean = 8.7037 | | | | | | | | | | | | | |
| | | $\overline{p/g}$ mean = 2.2500 | | | | $\overline{f/g}$ mean = 7.0000 | | | | | | | | | | | | | |
| GROUP COMPLEXITY INDEX (GCI) = 9.2500 | | | | | | | | | | | | | | | | | | | |

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 THE 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 APRIL | 5.74 | 92.23 | 112.48 | 790.1 | 110.09 | 17.81 | 38.75 |
| MAY | 5.42 | 87.47 | 105.66 | 754.5 | 103.35 | 16.84 | 37.04 |
| JUNE | 5.20 | 83.92 | 100.90 | 711.4 | 98.47 | 16.12 | 35.52 |
| JULY | 4.95 | 80.94 | 98.45 | 709.6 | 96.91 | 15.55 | 34.95 |
| AUGUST | 4.68 | 77.77 | 95.55 | 703.2 | 94.97 | 14.95 | 34.28 |
| SEPTEMBER | 4.55 | 76.06 | 93.48 | 700.0 | 92.65 | 14.61 | 33.78 |
| 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 |

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 APRIL | 5.66 | 90.19 | 110.04 | 745.1 | 108.03 | 17.43 | 37.52 |
| MAY | 5.46 | 88.68 | 108.35 | 769.9 | 105.78 | 16.96 | 37.93 |
| JUNE | 5.29 | 87.55 | 107.34 | 794.9 | 104.33 | 16.62 | 38.39 |
| JULY | 5.09 | 85.57 | 105.39 | 806.7 | 102.60 | 16.21 | 38.27 |
| AUGUST | 4.84 | 82.11 | 101.07 | 786.7 | 98.76 | 15.58 | 37.12 |
| SEPTEMBER | 4.60 | 78.06 | 95.50 | 750.9 | 93.61 | 14.85 | 35.37 |
| 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 |