

Georgi Dobrovolski Solar Observatory



E-mail: gdso@value.net.nz
 Website: <http://gdso.webs.com>

Auckland
 New Zealand

SUNSPOT RESULTS FOR JUNE 2017

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 ; PX = 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 .

PLEASE NOTE:
 From July 2015's issue,
 the observed Pettisindex
 is labelled PX.

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

| DATE | UT | g | f | WN | p | s | PX | BX | CV | QC | QC ² | Q | S | T | Ref. | | | | | | | | | | | |
|---------------|------|--------|------|-------|------|------|------------------|-------|-------|------|-----------------|--------|------|------|--------|--|-------------------------|--|--|--|--|-------|--|--|--|--|
| 01 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | 2245 | 1 | 15 | 25 | 4 | 5 | 45 | 375 | 32 | 5 | 25 | 1.5 | 2.5 | 2.0 | 5990-1 | | | | | | | | | | | |
| 04 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | 2255 | 1 | 3 | 13 | 1 | 0 | 10 | 111 | 7 | 2 | 4 | 1.5 | 2.5 | 2.0 | 5991-1 | | | | | | | | | | | |
| 07 | 2300 | 1 | 2 | 12 | 1 | 0 | 10 | 74 | 7 | 2 | 4 | 1.5 | 2.5 | 2.0 | 5992-1 | | | | | | | | | | | |
| 08 | 2310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.5 | 2.0 | 5993-1 | | | | | | | | | | | |
| 09 | 2245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 3.0 | 3.0 | 5994-1 | | | | | | | | | | | |
| 10 | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.5 | 2.0 | 5995-1 | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 2250 | 2 | 5 | 25 | 3 | 2 | 32 | 109 | 38 | 6 | 20 | 1.5 | 2.5 | 2.5 | 5996-1 | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | 2315 | 1 | 5 | 15 | 2 | 3 | 23 | 90 | 28 | 4 | 16 | 1.5 | 3.0 | 2.5 | 5997-2 | | | | | | | | | | | |
| 26 | 2300 | 1 | 6 | 16 | 4 | 2 | 42 | 108 | 34 | 4 | 16 | 1.0 | 2.5 | 2.0 | 5998-2 | | | | | | | | | | | |
| 27 | 2250 | 1 | 8 | 18 | 2 | 6 | 26 | 144 | 28 | 4 | 16 | 1.0 | 2.0 | 2.0 | 5999-2 | | | | | | | | | | | |
| 28 | 2255 | 1 | 4 | 14 | 1 | 3 | 13 | 32 | 12 | 3 | 9 | 1.5 | 2.5 | 2.5 | 6000-2 | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 31 | — | | | | | | | | | | | | | | | | | | | | | | | | | |
| Σ | — | 9 | 48 | 138 | 18 | 21 | 201 | 1043 | 186 | 30 | 110 | 17.0 | 28.0 | 24.5 | — | | | | | | | | | | | |
| NOBS | — | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | — | | | | | | | | | | | |
| MNS | — | 0.82 | 4.36 | 12.55 | 1.64 | 1.91 | 18.27 | 94.82 | 16.91 | 2.73 | 10.00 | 1.55 | 2.55 | 2.23 | — | | | | | | | | | | | |
| MEAN WEIGHT = | | 0.4814 | | | | | MEAN CONDITION = | | | | | 2.1061 | | | | | TRUNCATED WOLF NUMBER = | | | | | 12.55 | | | | |

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SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JUNE 2017

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 umbrae within penumbrae 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 | 2245 | 16 | 1 | 10 | 5 | 0 | 0 | 1.5 | 2.5 | 2.0 | 5990-1 |
| 04 | | | | | | | | | | | |
| 05 | | | | | | | | | | | |
| 06 | 2255 | 4 | 1 | 3 | 0 | 0 | 0 | 1.5 | 2.5 | 2.0 | 5991-1 |
| 07 | 2300 | 3 | 1 | 2 | 0 | 0 | 0 | 1.5 | 2.5 | 2.0 | 5992-1 |
| 08 | 2310 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.5 | 2.0 | 5993-1 |
| 09 | 2245 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 3.0 | 3.0 | 5994-1 |
| 10 | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 2.0 | 2.5 | 2.0 | 5995-1 |
| 11 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 13 | | | | | | | | | | | |
| 14 | 2250 | 6 | 1 | 2 | 2 | 1 | 0 | 1.5 | 2.5 | 2.5 | 5996-1 |
| 15 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 17 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 19 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | 2315 | 6 | 1 | 2 | 3 | 0 | 0 | 1.5 | 3.0 | 2.5 | 5997-2 |
| 26 | 2300 | 7 | 1 | 4 | 2 | 0 | 0 | 1.0 | 2.5 | 2.0 | 5998-2 |
| 27 | 2250 | 9 | 1 | 2 | 6 | 0 | 0 | 1.0 | 2.0 | 2.0 | 5999-2 |
| 28 | 2255 | 5 | 1 | 1 | 3 | 0 | 0 | 1.5 | 2.5 | 2.5 | 6000-2 |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | — | | | | | | | | | | |
| Σ | — | 56 | 8 | 26 | 21 | 1 | 0 | 17.0 | 28.0 | 24.5 | — |
| NOBS | — | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | — |
| MNS | — | 5.09 | 0.73 | 2.36 | 1.91 | 0.09 | 0.00 | 1.55 | 2.55 | 2.23 | — |

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SUNSPOT CENSUS BY CLASSIFICATION FOR JUNE 2017

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 | 2245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04 | | | | | | | | | | | | | | | | | | | |
| 05 | | | | | | | | | | | | | | | | | | | |
| 06 | 2255 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 07 | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 08 | 2310 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 09 | 2245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | | | | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | | | | | | | |
| 14 | 2250 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 15 | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25 | 2315 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 2300 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 2250 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | 2255 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
| 31 | — | | | | | | | | | | | | | | | | | | |
| TOTALS | — | 0 | 0 | 0 | 0 | 1 | 4 | 4 | 23 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 6 |
| REGIONAL PERCENTAGES | | | | | | | | | | | | | | | | | | | |
| A | B | C | D | E | F | G | H | J | Σg | | | | | | | | | | |
| 0.0 | 0.0 | 11.1 | 44.4 | 11.1 | 0.0 | 0.0 | 0.0 | 33.3 | 9 | | | | | | | | | | |
| NOBS = 11 | | | | \bar{p}/\bar{g} mean = 2.0625 | | | | \bar{f}/\bar{g} mean = 5.6875 | | | | | | | | | | | |
| | | | | \bar{p}/\bar{g} mean = 2.0000 | | | | \bar{f}/\bar{g} mean = 5.3333 | | | | | | | | | | | |
| GROUP COMPLEXITY INDEX (GCI) = 7.3333 | | | | | | | | | | | | | | | | | | | |



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 | $g^r(S^w)$ | $WN^r(S^w)$ | $PX^r(S^w)$ | $BX^r(S^w)$ | $CV^r(S^w)$ | $QC^r(S^w)$ | $IS^r(S^w)$ |
|--------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 2016 JANUARY | 2.30 | 36.14 | 43.49 | 334.6 | 46.88 | 7.58 | 14.69 |
| FEBRUARY | 2.22 | 34.30 | 40.69 | 297.2 | 44.01 | 7.23 | 13.60 |
| MARCH | 2.22 | 33.19 | 38.55 | 259.5 | 42.02 | 7.04 | 12.52 |
| APRIL | 2.17 | 32.24 | 37.29 | 247.2 | 40.89 | 6.80 | 12.02 |
| MAY | 2.13 | 31.38 | 36.01 | 234.1 | 39.81 | 6.59 | 11.56 |
| JUNE | 2.05 | 29.80 | 33.32 | 204.2 | 37.05 | 6.23 | 10.70 |
| JULY | 1.97 | 28.48 | 31.41 | 185.6 | 34.55 | 5.94 | 10.11 |
| AUGUST | 1.87 | 27.06 | 30.01 | 175.4 | 33.10 | 5.68 | 9.58 |
| SEPTEMBER | 1.72 | 24.88 | 27.63 | 160.7 | 30.92 | 5.22 | 8.82 |
| OCTOBER | 1.61 | 23.46 | 26.23 | 154.7 | 28.81 | 4.90 | 8.41 |
| NOVEMBER | 1.53 | 22.14 | 24.90 | 147.6 | 26.41 | 4.60 | 7.90 |
| DECEMBER | 1.44 | 20.93 | 23.87 | 143.5 | 24.34 | 4.32 | 7.51 |

BARNES-13 METHOD

| MONTH | $g^r(S^{B13})$ | $WN^r(S^{B13})$ | $PX^r(S^{B13})$ | $BX^r(S^{B13})$ | $CV^r(S^{B13})$ | $QC^r(S^{B13})$ | $IS^r(S^{B13})$ |
|--------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 2016 JANUARY | 2.28 | 35.15 | 42.32 | 310.6 | 45.29 | 7.48 | 13.92 |
| FEBRUARY | 2.23 | 33.42 | 39.24 | 266.3 | 42.84 | 7.14 | 12.63 |
| MARCH | 2.21 | 32.39 | 37.16 | 233.9 | 41.44 | 6.93 | 11.74 |
| APRIL | 2.19 | 31.84 | 36.06 | 220.0 | 40.87 | 6.77 | 11.37 |
| MAY | 2.16 | 31.26 | 34.98 | 210.5 | 39.99 | 6.59 | 11.11 |
| JUNE | 2.09 | 30.22 | 33.33 | 199.1 | 38.04 | 6.31 | 10.71 |
| JULY | 2.02 | 29.31 | 32.23 | 195.0 | 36.19 | 6.07 | 10.48 |
| AUGUST | 1.94 | 28.36 | 31.42 | 193.6 | 34.66 | 5.86 | 10.29 |
| SEPTEMBER | 1.81 | 26.63 | 29.67 | 185.3 | 32.26 | 5.49 | 9.76 |
| OCTOBER | 1.66 | 24.45 | 27.36 | 170.7 | 29.12 | 5.04 | 8.98 |
| NOVEMBER | 1.52 | 22.22 | 25.01 | 152.8 | 25.95 | 4.60 | 8.09 |
| DECEMBER | 1.39 | 20.31 | 23.16 | 137.3 | 23.42 | 4.23 | 7.33 |

NB: VALUES FROM MAY 2015 TO MAY 2016 (INCLUSIVE),
ARE BASED, IN PART, ON INTERPOLATED VALUES OF NOVEMBER 2015.