



# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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**NEW ALTERNATIVE SITE**

## SUNSPOT RESULTS FOR **DECEMBER 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 ; QC<sup>2</sup> = 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 <sup>2</sup>	Q	S	T	Ref.
01															
02															
03															
04															
05															
06															
07															
08															
09															
10															
11	2115	3	9	39	5	3	53	249	52	9	33	1.5	2.5	3.0	4610-7
12	2030	4	13	53	5	6	56	328	53	10	34	1.5	2.5	2.0	4611-7
13															
14															
15															
16															
17	1940	3	6	36	2	4	24	73	23	6	14	1.5	2.0	2.0	4612-7
18	2110	3	14	44	5	5	55	290	51	8	24	1.5	3.0	3.5	4613-7
19	1955	3	17	47	6	7	67	305	52	9	29	2.0	3.0	2.5	4614-7
20															
21															
22															
23															
24															
25															
26	1915	6	12	72	6	5	65	229	65	14	38	1.5	2.5	2.5	4615-8
27	2000	5	9	59	6	3	63	189	70	13	37	2.0	3.0	3.0	4616-8
28	1920	5	8	58	4	4	44	118	38	11	27	1.5	2.0	2.0	4617-8
29	1915	5	12	62	6	4	64	204	59	14	42	1.5	2.0	2.5	4618-8
30															
31															
TOTALS	—	37	100	470	45	41	491	1985	463	94	278	14.5	22.5	23.0	—
NOBS	—	9	9	9	9	9	9	9	9	9	9	9	9	9	—
MNS	—	4.11	11.11	52.22	5.00	4.56	54.56	220.56	51.44	10.44	30.89	1.61	2.50	2.56	—

MEAN WEIGHT = 0.4590

MEAN CONDITION = 2.2222

TRUNCATED WOLF NUMBER = 47.33

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

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## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR DECEMBER 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											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11	2115	10	1	4	3	2	0	1.5	2.5	3.0	4610-7
12	2030	14	1	5	5	2	1	1.5	2.5	2.0	4611-7
13											
14											
15											
16											
17	1940	7	1	1	3	1	1	1.5	2.0	2.0	4612-7
18	2110	15	1	7	5	2	0	1.5	3.0	3.5	4613-7
19	1955	19	2	9	7	1	0	2.0	3.0	2.5	4614-7
20											
21											
22											
23											
24											
25											
26	1915	14	2	4	4	3	1	1.5	2.5	2.5	4615-8
27	2000	11	2	3	3	3	0	2.0	3.0	3.0	4616-8
28	1920	10	2	2	3	2	1	1.5	2.0	2.0	4617-8
29	1915	15	3	6	4	2	0	1.5	2.0	2.5	4618-8
30											
31											
TOTALS	—	115	15	41	37	18	4	14.5	22.5	23.0	—
NOBS	—	9	9	9	9	9	9	9	9	9	—
MNS	—	12.78	1.67	4.56	4.11	2.00	0.44	1.61	2.50	2.56	—

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## SUNSPOT CENSUS BY CLASSIFICATION FOR DECEMBER 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																			
02																			
03																			
04																			
05																			
06																			
07																			
08																			
09																			
10																			
11	2115	0	0	0	0	0	0	0	0	1	7	0	0	0	0	0	0	2	1/1
12	2030	1	1	0	0	0	0	0	0	1	10	0	0	0	0	0	0	2	1/1
13																			
14																			
15																			
16																			
17	1940	1	1	0	0	1	4	0	0	0	0	0	0	0	0	0	0	1	1
18	2110	0	0	0	0	0	0	1	12	0	0	0	0	0	0	0	0	2	1/1
19	1955	0	0	0	0	1	2	1	14	0	0	0	0	0	0	0	0	1	1
20																			
21																			
22																			
23																			
24																			
25																			
26	1915	1	1	0	0	1	3	1	5	0	0	0	0	0	0	0	0	3	1/1/1
27	2000	0	0	0	0	1	3	1	3	0	0	0	0	0	0	0	0	3	1/1/1
28	1920	1	1	0	0	2	2/3	0	0	0	0	0	0	0	0	0	0	2	1/1
29	1915	0	0	0	0	2	2/3	1	5	0	0	0	0	0	0	0	0	2	1/1
30																			
31																			
<b>TOTALS</b>	—	4	4	0	0	8	22	5	39	2	17	0	0	0	0	0	0	18	18
<b>REGIONAL PERCENTAGES</b>																			
A	B	C	D	E	F	G	H	J	Σg										
10.8	0.0	21.6	13.5	5.4	0.0	0.0	0.0	48.6	37										
NOBS = 9		$\overline{p/g}$ mean = 1.2722				$\overline{f/g}$ mean = 2.9315													
		$\overline{p/g}$ mean = 1.2162				$\overline{f/g}$ mean = 2.7027													
GROUP COMPLEXITY INDEX (GCI) = 3.9189																			

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## 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	$g(S^w)$	$WN(S^w)$	$SN(S^w)$	$BX(S^w)$	$CV(S^w)$	$QC(S^w)$	$IS(S^w)$
2004 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
OCTOBER	3.05	49.75	59.58	444.3	62.91	9.67	21.33
NOVEMBER	2.95	48.53	59.05	446.4	62.64	9.47	21.14
DECEMBER	2.87	48.18	60.36	456.1	63.75	9.40	21.60
2005 JANUARY	2.83	47.36	60.71	432.0	64.03	9.38	21.14
FEBRUARY	2.81	46.03	59.67	391.9	62.75	9.27	20.02
MARCH	2.79	45.29	58.30	376.6	61.02	9.13	19.49
APRIL	2.58	41.97	53.70	350.4	56.63	8.44	18.03
MAY	2.32	37.30	47.99	301.4	50.99	7.54	15.82
JUNE	2.33	36.69	47.03	279.9	49.91	7.44	15.11

### BARNES-13 METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
2004 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
OCTOBER	3.10	51.52	63.32	486.0	66.22	10.02	22.72
NOVEMBER	2.95	48.95	60.06	459.0	63.78	9.58	21.54
DECEMBER	2.80	46.43	57.15	426.5	61.36	9.13	20.38
2005 JANUARY	2.72	44.53	55.15	390.9	59.85	8.85	19.33
FEBRUARY	2.67	43.30	54.11	362.6	58.93	8.70	18.55
MARCH	2.64	42.71	53.98	349.1	58.26	8.62	18.23
APRIL	2.58	41.72	53.68	337.8	57.16	8.43	17.88
MAY	2.50	40.44	53.26	323.2	55.88	8.20	17.39
JUNE	2.48	39.88	53.22	312.6	55.11	8.12	17.01

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## OBSERVED ANNUAL MEANS OF SUNSPOT DATA FOR

# 2005

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Q = Quietness [ ie. steadiness ] refer to Kiepenheuer scale .

S = Sharpness [ ie. clarity ] refer to Kiepenheuer scale .

T = Transparency where 1 = excellent , 5 = worthless .

<i>g</i>	=	2.43
<i>f</i>	=	13.25
<i>Wolf Number</i>	=	37.51
<i>Truncated Wolf Number</i>	=	34.10
<i>p</i>	=	4.11
<i>s</i>	=	5.02
<i>Pettisindex</i>	=	46.12
<i>Beckindex</i>	=	269.47
<i>Classification Value</i>	=	49.71
<i>Quality Count</i>	=	7.59
<i>Squared Quality Count</i>	=	27.18
<i>Inter-Sol Index</i>	=	14.96
<i>Mean Weight</i>	=	0.4902
<i>Q</i>	=	1.64
<i>S</i>	=	2.31
<i>T</i>	=	2.29
<i>Mean Condition</i>	=	2.0797
<i>Total Number of Observations</i>	=	136