

# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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## SUNSPOT RESULTS FOR AUGUST 2002

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 .

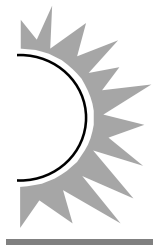
T = Transparency where 1 = excellent , 5 = worthless .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC <sup>2</sup>	Q	S	T	Ref.
01															
02	2055	9	70	160	22	26	246	1927	228	34	158	2.0	2.0	2.0	4131
03															
04															
05															
06	2125	9	51	141	16	22	182	1149	165	31	121	2.0	3.0	3.0	4132
07	2120	8	40	120	14	13	153	1042	136	25	91	2.0	2.0	2.5	4133
08															
09	2125	4	37	77	9	22	112	813	79	16	70	2.0	2.5	2.5	4134
10															
11															
12															
13															
14	2120	14	112	252	27	34	304	2575	276	47	181	2.0	2.5	3.0	4135
15	2110	13	114	244	33	34	364	2527	300	46	184	2.0	2.0	3.0	4136
16	2120	11	121	231	25	36	286	2947	267	41	169	3.0	3.5	2.5	4137
17	2130	14	141	281	31	43	353	3263	261	43	155	2.0	2.0	2.5	4138
18	2100	12	120	240	23	42	272	2740	240	38	140	1.5	2.5	2.5	4139
19															
20	2125	9	98	188	18	31	211	2199	203	29	111	1.5	2.0	2.0	4140
21	2055	11	80	190	17	33	203	1621	233	35	135	1.5	2.0	2.0	4141
22	2045	8	71	151	13	34	164	1238	223	26	96	1.0	2.0	2.0	4142
23															
24	2135	7	58	128	14	35	175	1142	223	24	92	2.0	3.0	3.0	4143
25															
26	2045	6	35	95	9	11	101	596	150	19	67	1.5	2.0	2.0	4144
27	2105	8	36	116	9	14	104	644	122	19	59	2.5	3.0	2.5	4145
28	2030	6	31	91	10	12	112	500	127	17	59	1.5	2.5	2.5	4146
29															
30	2045	7	72	142	22	27	247	1670	195	28	118	2.0	3.5	4.0	4147
31	2040	7	75	145	18	19	199	1843	155	27	113	1.5	2.0	1.5	4148
<b>Σ</b>	—	163	1362	2992	330	488	3788	30436	3583	545	2119	33.5	44.0	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	18	18	18	18	—
MNS	—	9.06	75.67	166.22	18.33	27.11	210.44	1690.89	199.06	30.28	117.72	1.86	2.44	2.50	—

MEAN WEIGHT = 0.4563

MEAN CONDITION = 2.2685

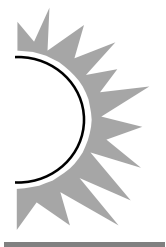
TRUNCATED WOLF NUMBER = 147.89



SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR  
**AUGUST 2002**

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	2055	77	7	43	25	1	1	2.0	2.0	2.0	4131
03											
04											
05											
06	2125	59	8	28	22	1	0	2.0	3.0	3.0	4132
07	2120	46	6	26	12	1	1	2.0	2.0	2.5	4133
08											
09	2125	41	4	15	22	0	0	2.0	2.5	2.5	4134
10											
11											
12											
13											
14	2120	122	10	76	32	2	2	2.0	2.5	3.0	4135
15	2110	124	10	78	33	2	1	2.0	2.0	3.0	4136
16	2120	130	9	83	36	2	0	3.0	3.5	2.5	4137
17	2130	151	10	95	42	3	1	2.0	2.0	2.5	4138
18	2100	128	8	75	41	3	1	1.5	2.5	2.5	4139
19											
20	2125	104	6	66	29	1	2	1.5	2.0	2.0	4140
21	2055	89	9	47	31	0	2	1.5	2.0	2.0	4141
22	2045	77	6	36	33	1	1	1.0	2.0	2.0	4142
23											
24	2135	63	5	22	34	1	1	2.0	3.0	3.0	4143
25											
26	2045	40	5	24	10	0	1	1.5	2.0	2.0	4144
27	2105	39	3	20	11	2	3	2.5	3.0	2.5	4145
28	2030	35	4	19	10	0	2	1.5	2.5	2.5	4146
29											
30	2045	79	7	45	27	0	0	2.0	3.5	4.0	4147
31	2040	81	6	55	19	1	0	1.5	2.0	1.5	4148
Σ	—	1485	123	853	469	21	19	33.5	44.0	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	—
MNS	—	82.50	6.83	47.39	26.06	1.17	1.06	1.86	2.44	2.50	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR  
AUGUST 2002**

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 ( / ) .

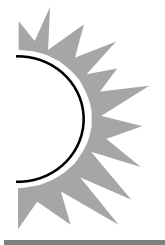
DATE	UT	A		B		C		D		E		F		G		H		J	
		g	f	g	f	g	f	g	f	g	f	g	f	g	f	g	f	g	f
01																			
02	2055	1	1	1	2	1	3	2	5/18	0	0	3	9/14/17	0	0	0	0	1	1
03																			
04																			
05																			
06	2125	0	0	2	2/2	1	3	3	5/8/15	0	0	1	13	1	2	0	0	1	1
07	2120	1	1	0	0	1	3	1	4	1	23	0	0	2	2/4	0	0	2	1/2
08																			
09	2125	0	0	1	2	0	0	1	10	2	8/17	0	0	0	0	0	0	0	0
10																			
11																			
12																			
13																			
14	2120	2	1/1	0	0	1	2	6	4/4/6/6/6/13	2	30/33	0	0	1	4	0	0	2	1/1
15	2110	1	1	1	2	0	0	5	4/4/6/9/14	3	7/24/39	0	0	1	2	0	0	2	1/1
16	2120	0	0	1	2	1	2	2	2/16	4	8/13/29/43	0	0	1	4	0	0	2	1/1
17	2130	1	1	1	2	3	3/3/4	2	8/10	3	19/28/58	0	0	0	0	0	0	4	1/1/1/2
18	2100	1	1	1	2	3	2/3/5	1	10	3	12/26/56	0	0	0	0	1	1	2	1/1
19																			
20	2125	2	1/1	0	0	2	2/4	2	6/12	2	23/48	0	0	0	0	1	1	0	0
21	2055	2	1/1	2	2/3	2	2/3	2	9/12	3	6/13/28	0	0	0	0	0	0	0	0
22	2045	1	1	0	0	2	3/12	3	6/13/20	1	15	0	0	0	0	0	0	1	1
23																			
24	2135	1	1	0	0	1	4	3	8/9/17	1	18	0	0	0	0	1	1	0	0
25																			
26	2045	1	1	0	0	2	2/10	3	3/6/13	0	0	0	0	0	0	0	0	0	0
27	2105	3	1/1/1	0	0	0	0	3	5/8/18	0	0	0	0	0	0	0	0	2	1/1
28	2030	2	1/1	0	0	1	3	3	4/6/16	0	0	0	0	0	0	0	0	0	0
29																			
30	2045	0	0	0	0	2	2/2	4	2/8/9/26	0	0	1	23	0	0	0	0	0	0
31	2040	0	0	0	0	1	3	4	3/7/9/23	0	0	1	29	0	0	0	0	1	1
TOTALS	—	19	19	10	21	24	85	50	465	25	624	6	105	6	18	3	3	20	22

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.7	6.1	14.7	30.7	15.3	3.7	3.7	1.8	12.3	163

NOBS = 18       $\bar{p}/\bar{g}$  mean = 2.0150       $\bar{f}/\bar{g}$  mean = 8.1865  
 $\bar{p}/\bar{g}$  mean = 2.0245       $\bar{f}/\bar{g}$  mean = 8.3558

GROUP COMPLEXITY INDEX (GCI) = 10.3804



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
2001 MARCH	7.95	128.81	155.32	1100.1	144.66	24.81	54.96
APRIL	8.28	134.01	162.38	1149.5	152.74	25.88	57.06
MAY	8.43	136.39	164.70	1186.5	156.86	26.32	58.00
JUNE	8.61	139.64	169.78	1235.4	161.27	26.92	59.59
JULY	8.80	142.89	175.64	1277.1	165.76	27.58	61.10
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

**BARNES-13 METHOD**

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
2001 MARCH	7.90	127.24	152.53	1092.6	142.11	24.56	53.83
APRIL	8.15	130.80	157.98	1125.0	147.42	25.31	54.99
MAY	8.38	134.26	162.98	1158.1	152.64	26.01	56.30
JUNE	8.61	138.25	168.82	1199.3	158.70	26.79	58.13
JULY	8.84	142.43	175.08	1247.7	165.30	27.57	60.26
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