



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

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## SUNSPOT RESULTS FOR MAY 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 .

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

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

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

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC<sup>2</sup> = Squared Quality Count .

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	2115	17	59	229	19	23	213	1035	234	43	123	1.5	2.0	2.5	4089
07															
08															
09															
10															
11															
12															
13															
14															
15	2120	9	35	125	14	16	156	591	187	27	95	1.5	3.0	3.0	4090
16															
17															
18															
19	2230	9	52	142	14	8	148	1596	142	25	87	2.0	3.5	4.0	4091
20															
21															
22															
23	2040	11	76	186	21	24	234	2022	196	35	133	2.5	2.5	2.5	4092
24	2030	11	75	185	24	24	264	2219	199	35	145	2.5	2.5	3.0	4093
25	2100	10	70	170	22	33	253	1994	216	36	156	2.0	2.5	3.0	4094
26	2110	11	62	172	21	24	234	1698	225	39	165	2.0	2.5	2.5	4095
27	2205	10	45	145	17	18	188	1159	206	32	120	2.0	3.0	3.0	4096
28	2155	11	49	159	16	20	180	1201	226	33	123	2.0	2.5	3.0	4097
29	2140	10	56	156	20	17	217	1261	266	35	139	2.0	2.0	2.0	4098
30	2200	11	55	165	17	21	191	1343	179	32	114	2.0	2.5	2.5	4099
31															
Σ	—	120	634	1834	205	228	2278	16119	2276	372	1400	22.0	28.5	31.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	11	11	11	11	—
MNS	—	10.91	57.64	166.73	18.64	20.73	207.09	1465.36	206.91	33.82	127.27	2.00	2.59	2.82	—

MEAN WEIGHT = 0.4112

MEAN CONDITION = 2.4697

TRUNCATED WOLF NUMBER = 147.27



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MAY 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 .

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

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

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

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 .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01											
02											
03											
04											
05											
06	2115	68	9	30	21	6	2	1.5	2.0	2.5	4089
07											
08											
09											
10											
11											
12											
13											
14											
15	2120	41	6	17	15	2	1	1.5	3.0	3.0	4090
16											
17											
18											
19	2230	56	4	40	7	4	1	2.0	3.5	4.0	4091
20											
21											
22											
23	2040	84	8	50	23	2	1	2.5	2.5	2.5	4092
24	2030	81	6	48	22	3	2	2.5	2.5	3.0	4093
25	2100	77	7	35	32	2	1	2.0	2.5	3.0	4094
26	2110	70	8	36	23	2	1	2.0	2.5	2.5	4095
27	2205	52	7	25	17	2	1	2.0	3.0	3.0	4096
28	2155	55	6	26	18	3	2	2.0	2.5	3.0	4097
29	2140	64	8	38	16	1	1	2.0	2.0	2.0	4098
30	2200	62	7	31	20	3	1	2.0	2.5	2.5	4099
31											
Σ	—	710	76	376	214	30	14	22.0	28.5	31.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	—
MNS	—	64.55	6.91	34.18	19.45	2.73	1.27	2.00	2.59	2.82	—



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

## SUNSPOT CENSUS BY CLASSIFICATION FOR MAY 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																			
03																			
04																			
05																			
06	2115	2	1/1	1	2	4	2/3/3/5	3	4/7/23	0	0	0	0	0	0	1	1	6	5x1/2
07																			
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15	2120	1	1	1	2	1	7	3	3/6/9	1	5	0	0	0	0	0	0	2	1/1
16																			
17																			
18																			
19	2230	1	1	0	0	1	6	1	5	0	0	1	33	0	0	1	1	4	1/1/1/3
20																			
21																			
22																			
23	2040	1	1	1	2	3	2/2/3	2	7/8	1	14	1	35	0	0	0	0	2	1/1
24	2030	2	1/1	0	0	2	2/3	1	7	1	14	2	18/26	0	0	0	0	3	1/1/1
25	2100	1	1	0	0	2	2/3	2	2/8	1	16	2	17/19	0	0	0	0	2	1/1
26	2110	1	1	0	0	3	2/3/3	2	3/4	1	14	2	13/17	0	0	0	0	2	1/1
27	2205	1	1	0	0	1	2	2	4/8	2	7/14	0	0	1	5	0	0	3	1/1/2
28	2155	2	1/1	0	0	1	5	3	4/9/11	0	0	1	10	1	5	0	0	3	1/1/1
29	2140	1	1	0	0	2	2/2	5	3/4/8/9/10	0	0	1	16	0	0	0	0	1	1
30	2200	1	1	2	2/2	1	3	3	6/7/9	0	0	1	22	0	0	0	0	3	1/1/1
31																			
<b>TOTALS</b>	—	14	14	5	10	21	65	27	188	7	84	11	226	2	10	2	2	31	35

### REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.7	4.2	17.5	22.5	5.8	9.2	1.7	1.7	25.8	120

NOBS = 11       $\bar{p}/\bar{g}$  mean = 1.7390       $\bar{f}/\bar{g}$  mean = 5.3687  
 $\bar{p}/\bar{g}$  mean = 1.7083       $\bar{f}/\bar{g}$  mean = 5.2833

GROUP COMPLEXITY INDEX (GCI) = 6.9917



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
2000 DECEMBER	8.21	136.50	162.20	1276.9	148.25	25.71	60.22
2001 JANUARY	8.05	131.46	155.91	1154.6	143.18	25.02	56.64
FEBRUARY	7.78	125.52	148.96	1055.4	138.47	24.10	53.21
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

**BARNES-13 METHOD**

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
2000 DECEMBER	7.82	129.35	152.48	1154.3	141.35	24.48	56.77
2001 JANUARY	7.75	126.55	149.53	1095.9	139.05	24.16	54.60
FEBRUARY	7.73	125.05	148.49	1068.2	138.43	24.05	53.23
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