

30 Years  
of  
Solar  
Observing

1973  
-  
2003

# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

E-MAIL: [gdso@earthling.net](mailto:gdso@earthling.net)

WEBSITE: [www.cv-helios.net/gdso](http://www.cv-helios.net/gdso)

## SUNSPOT RESULTS FOR JUNE 2003

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	2140	3	12	42	5	6	56	202	54	9	33	2.0	2.5	2.5	
02	2145	3	20	50	6	10	70	360	66	12	48	1.5	2.5	2.5	
03															
04															
05															
06	2150	7	52	122	15	20	170	1095	168	23	85	1.5	2.0	2.5	
07	2140	7	68	138	19	27	217	1412	170	21	75	2.0	2.0	2.5	
08	2220	6	81	141	16	23	183	1995	159	19	81	2.0	2.0	2.5	
09															
10	2145	6	117	177	23	36	266	3260	174	23	107	2.0	2.0	2.0	
11	2150	6	106	166	24	42	282	3393	209	26	130	2.0	2.0	2.0	
12	2150	6	96	156	21	28	238	2886	173	27	129	1.5	2.0	2.0	
13															
14															
15	2155	3	17	47	6	6	66	306	72	12	48	1.5	2.0	2.5	
16	2315	7	25	95	7	11	81	381	80	18	56	1.5	2.5	2.5	
17															
18	2135	6	32	92	10	9	109	551	95	18	62	1.5	2.5	3.0	
19															
20	2155	4	47	87	10	17	117	930	110	14	58	1.0	2.0	2.5	
21	2200	4	43	83	12	14	134	837	96	15	61	1.5	2.5	2.5	
22															
23															
24	2305	6	32	92	9	10	100	626	95	19	71	2.0	2.5	3.0	
25	2235	7	31	101	12	10	130	600	100	20	68	2.0	2.0	2.0	
26															
27															
28															
29															
30															
31	—														
?	—	81	779	1589	195	269	2219	18834	1821	276	1112	25.5	33.0	36.5	
NOBS	—	15	15	15	15	15	15	15	15	15	15	15	15	15	
MNS	—	5.40	51.93	105.93	13.00	17.93	147.93	1255.60	121.40	18.40	74.13	1.70	2.20	2.43	

MEAN WEIGHT = 0.4770

MEAN CONDITION = 2.1111

TRUNCATED WOLF NUMBER = 92.60

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

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## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JUNE 2003

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-penumbra spots within the groups (gr) .

efp = number of single penumbral spots .

ef = number of single non-penumbra 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	2140	14	2	6	5	0	1	2.0	2.5	2.5	4269
02	2145	23	3	10	10	0	0	1.5	2.5	2.5	4270
03											
04											
05											
06	2150	58	6	31	20	1	0	1.5	2.0	2.5	4271
07	2140	73	5	40	26	1	1	2.0	2.0	2.5	4272
08	2220	84	3	57	21	1	2	2.0	2.0	2.5	4273
09											
10	2145	122	5	81	35	0	1	2.0	2.0	2.0	4274
11	2150	111	5	64	41	0	1	2.0	2.0	2.0	4275
12	2150	102	6	68	28	0	0	1.5	2.0	2.0	4276
13											
14											
15	2155	20	3	11	6	0	0	1.5	2.0	2.5	4277
16	2315	29	4	13	9	1	2	1.5	2.5	2.5	4278
17											
18	2135	36	4	22	8	1	1	1.5	2.5	3.0	4279
19											
20	2155	50	3	30	16	0	1	1.0	2.0	2.5	4280
21	2200	47	4	29	14	0	0	1.5	2.5	2.5	4281
22											
23											
24	2305	37	5	22	9	0	1	2.0	2.5	3.0	4282
25	2235	36	5	20	9	1	1	2.0	2.0	2.0	4283
26											
27											
28											
29											
30											
31	—										
?	—	842	63	504	257	6	12	25.5	33.0	36.5	—
NOBS	—	15	15	15	15	15	15	15	15	15	—
MNS	—	56.13	4.20	33.60	17.13	0.40	0.80	1.70	2.20	2.43	—

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## SUNSPOT CENSUS BY CLASSIFICATION FOR JUNE 2003

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	2140	1	1	0	0	0	0	2	3/8	0	0	0	0	0	0	0	0	0	0
02	2145	0	0	0	0	0	0	3	5/5/10	0	0	0	0	0	0	0	0	0	0
03																			
04																			
05																			
06	2150	0	0	2	3/4	0	0	3	2/2/6	1	34	0	0	0	0	0	0	1	1
07	2140	1	1	1	5	1	2	2	9/11	1	39	0	0	0	0	0	0	1	1
08	2220	2	1/1	0	0	0	0	0	0	3	15/17/46	0	0	0	0	0	0	1	1
09																			
10	2145	1	1	1	4	0	0	1	11	2	18/36	1	47	0	0	0	0	0	0
11	2150	1	1	0	0	0	0	2	3/12	1	11	2	37/42	0	0	0	0	0	0
12	2150	0	0	0	0	1	3	3	7/8/12	0	0	2	21/45	0	0	0	0	0	0
13																			
14																			
15	2155	0	0	0	0	0	0	3	3/6/8	0	0	0	0	0	0	0	0	0	0
16	2315	2	1/1	0	0	2	3/3	2	6/10	0	0	0	0	0	0	0	0	1	1
17																			
18	2135	1	1	0	0	1	3	3	4/5/18	0	0	0	0	0	0	0	0	1	1
19																			
20	2155	1	1	0	0	0	0	2	15/17	1	14	0	0	0	0	0	0	0	0
21	2200	0	0	1	2	0	0	2	13/15	1	13	0	0	0	0	0	0	0	0
22																			
23																			
24	2305	1	1	0	0	1	3	2	2/16	1	8	0	0	0	0	0	0	1	2
25	2235	1	1	0	0	2	2/3	1	15	1	7	0	0	0	0	0	0	2	1/2
26																			
27																			
28																			
29																			
30																			
31	—																		
<b>TOTALS</b>	—	12	12	5	18	8	22	31	267	12	258	5	192	0	0	0	0	8	10
<b>REGIONAL PERCENTAGES</b>																			
A	B	C	D	E	F	G	H	J	?g										
14.8	6.2	9.9	38.3	14.8	6.2	0.0	0.0	9.9	81										
				NOBS = 15				$\overline{p/g}$ mean = 2.3937				$\overline{f/g}$ mean = 9.4206							
								$\overline{p/g}$ mean = 2.4074				$\overline{f/g}$ mean = 9.6173							
GROUP COMPLEXITY INDEX (GCI) = 12.0247																			

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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 THE GDSO ANNUAL REPORTS.

### WALDMEIER METHOD

MONTH	$g(S^w)$	$WN(S^w)$	$SN(S^w)$	$BX(S^w)$	$CV(S^w)$	$QC(S^w)$	$IS(S^w)$
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
MARCH	9.28	155.62	198.73	1505.9	185.22	29.81	69.44
APRIL	9.15	153.37	196.02	1476.5	181.17	29.24	68.37
MAY	9.03	151.55	195.32	1467.9	179.03	28.89	67.66
JUNE	8.78	146.77	189.58	1420.1	173.86	28.11	65.19
JULY	8.49	141.03	180.68	1341.4	165.59	27.02	62.07
AUGUST	8.26	135.98	172.48	1261.2	158.58	25.99	59.16
SEPTEMBER	7.97	130.68	165.10	1197.0	153.84	24.94	56.49
OCTOBER	7.67	125.50	158.44	1141.3	149.33	23.91	54.09
NOVEMBER	7.24	118.58	149.12	1070.6	141.32	22.49	51.12
DECEMBER	6.87	113.99	143.55	1054.5	134.37	21.39	50.07

### BARNES-13 METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
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
MARCH	9.26	152.50	194.87	1426.0	180.44	29.69	66.49
APRIL	9.19	152.11	195.10	1438.7	179.61	29.42	66.73
MAY	9.10	151.78	195.65	1462.1	179.48	29.12	67.22
JUNE	8.90	149.77	193.63	1473.0	177.57	28.48	67.06
JULY	8.65	146.84	189.67	1462.8	173.66	27.66	66.36
AUGUST	8.43	143.01	183.85	1415.2	168.42	26.78	64.62
SEPTEMBER	8.13	137.03	175.09	1329.4	161.27	25.65	61.34
OCTOBER	7.75	128.96	163.61	1214.9	152.05	24.25	56.83
NOVEMBER	7.29	119.51	150.09	1080.1	140.95	22.64	51.58
DECEMBER	6.88	110.96	137.75	957.8	130.18	21.17	46.90