

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 MAY 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															
02															
03	2045	7	57	127	18	18	198	1811	169	23	95	1.5	2.5	3.0	4253
04	2120	7	65	135	19	16	206	2246	173	24	106	1.0	2.5	2.0	4254
05	2100	7	59	129	15	14	164	2046	162	23	99	2.5	2.5	2.5	4255
06															
07	2105	5	19	69	6	10	70	481	98	16	62	2.0	2.0	2.0	4256
08															
09	2125	2	3	23	2	1	21	60	51	6	18	2.5	2.5	2.5	4257
10	2105	2	2	22	2	0	20	81	50	5	13	1.5	3.5	3.5	4258
11															
12	2130	4	13	53	5	7	57	190	86	13	43	2.0	2.5	2.5	4259
13	2125	5	25	75	5	11	61	328	56	14	46	1.5	2.0	2.5	4260
14	2125	4	19	59	6	10	70	268	69	12	42	1.5	2.0	2.0	4261
15	2135	5	19	69	5	10	60	316	48	14	42	1.5	2.0	2.0	4262
16	2145	5	18	68	6	5	65	438	63	16	54	1.5	3.5	3.5	4263
17															
18															
19															
20															
21															
22	2135	7	21	91	7	11	81	351	92	15	41	2.0	2.0	2.5	4264
23															
24	2135	5	11	61	4	5	45	215	74	11	31	1.5	1.5	2.0	4265
25	2130	4	30	70	7	11	81	524	78	12	38	1.0	2.0	2.0	4266
26															
27	2125	5	36	86	6	10	70	589	95	15	49	1.0	2.0	2.0	4267
28	2140	4	35	75	6	6	66	569	86	12	38	1.0	2.0	2.5	4268
29															
30															
31															
?	—	78	432	1212	119	145	1335	10513	1450	231	817	25.5	37.0	39.0	—
NOBS	—	16	16	16	16	16	16	16	16	16	16	16	16	16	—
MNS	—	4.88	27.00	75.75	7.44	9.06	83.44	657.06	90.62	14.44	51.06	1.59	2.31	2.44	—

MEAN WEIGHT = 0.4879

MEAN CONDITION = 2.1146

TRUNCATED WOLF NUMBER = 64.19

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

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## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MAY 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											
02											
03	2045	60	3	36	17	3	1	1.5	2.5	3.0	4253
04	2120	68	3	46	15	3	1	1.0	2.5	2.0	4254
05	2100	62	3	42	13	3	1	2.5	2.5	2.5	4255
06											
07	2105	23	4	8	10	1	0	2.0	2.0	2.0	4256
08											
09	2125	4	1	1	1	1	0	2.5	2.5	2.5	4257
10	2105	2	0	0	0	2	0	1.5	3.5	3.5	4258
11											
12	2130	16	3	5	7	1	0	2.0	2.5	2.5	4259
13	2125	29	4	14	10	0	1	1.5	2.0	2.5	4260
14	2125	22	3	9	9	0	1	1.5	2.0	2.0	4261
15	2135	24	5	9	10	0	0	1.5	2.0	2.0	4262
16	2145	23	5	13	5	0	0	1.5	3.5	3.5	4263
17											
18											
19											
20											
21											
22	2135	23	2	8	8	2	3	2.0	2.0	2.5	4264
23											
24	2135	12	1	4	3	2	2	1.5	1.5	2.0	4265
25	2130	34	4	19	11	0	0	1.0	2.0	2.0	4266
26											
27	2125	40	4	25	10	1	0	1.0	2.0	2.0	4267
28	2140	38	3	28	6	1	0	1.0	2.0	2.5	4268
29											
30											
31											
?	—	480	48	267	135	20	10	25.5	37.0	39.0	—
NOBS	—	16	16	16	16	16	16	16	16	16	—
MNS	—	30.00	3.00	16.69	8.44	1.25	0.62	1.59	2.31	2.44	—

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## SUNSPOT CENSUS BY CLASSIFICATION FOR MAY 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																			
02																			
03	2045	1	1	0	0	0	0	1	3	1	15	1	35	0	0	1	1	2	1/1
04	2120	1	1	0	0	0	0	1	4	0	0	2	24/33	0	0	1	1	2	1/1
05	2100	1	1	0	0	1	2	0	0	0	0	2	26/27	0	0	1	1	2	1/1
06																			
07	2105	0	0	1	2	2	2/3	0	0	0	0	1	11	0	0	0	0	1	1
08																			
09	2125	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	1	0	0
10	2105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
11																			
12	2130	0	0	0	0	2	3/4	1	5	0	0	0	0	0	0	1	1	0	0
13	2125	1	1	1	2	1	8	2	5/9	0	0	0	0	0	0	0	0	0	0
14	2125	1	1	0	0	1	6	2	4/8	0	0	0	0	0	0	0	0	0	0
15	2135	0	0	1	5	2	4/5	0	0	0	0	0	0	1	3	0	0	1	2
16	2145	0	0	1	2	2	2/3	1	5	0	0	0	0	1	6	0	0	0	0
17																			
18																			
19																			
20																			
21																			
22	2135	3	1/1/1	0	0	1	3	1	13	0	0	0	0	0	0	1	1	1	1
23																			
24	2135	2	1/1	0	0	0	0	1	7	0	0	0	0	0	0	1	1	1	1
25	2130	0	0	1	2	1	4	1	22	0	0	0	0	0	0	1	2	0	0
26																			
27	2125	0	0	1	2	1	5	2	3/25	0	0	0	0	0	0	0	0	1	1
28	2140	0	0	0	0	2	3/5	1	26	0	0	0	0	0	0	0	0	1	1
29																			
30																			
31																			
TOTALS	—	10	10	6	15	17	64	14	139	1	15	6	156	2	9	9	10	13	14
REGIONAL PERCENTAGES																			
A	B	C	D	E	F	G	H	J	?g										
12.8	7.7	21.8	17.9	1.3	7.7	2.6	11.5	16.7	78										
NOBS = 16				$\overline{p/g}$ mean = 1.4268					$\overline{f/g}$ mean = 5.0754										
				$\overline{p/g}$ mean = 1.5256					$\overline{f/g}$ mean = 5.5385										
GROUP COMPLEXITY INDEX (GCI) = 7.0641																			

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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	$g(S^w)$	$WN(S^w)$	$SN(S^w)$	$BX(S^w)$	$CV(S^w)$	$QC(S^w)$	$IS(S^w)$
2001 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
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

### 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 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
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