

# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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## SUNSPOT RESULTS FOR MARCH 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 .

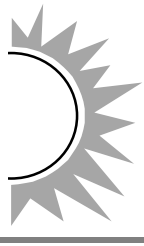
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC <sup>2</sup>	Q	S	T	Ref.
01															
02															
03	1940	6	27	87	11	10	120	428	137	21	77	1.5	2.0	2.5	4227
04															
05															
06															
07															
08															
09															
10															
11															
12															
13															
14															
15															
16	2020	4	34	74	9	9	99	755	109	14	54	1.0	2.0	2.0	4228
17															
18															
19	2000	4	21	61	7	7	77	568	92	12	42	2.0	2.0	2.5	4229
20															
21															
22	0210	1	1	11	1	0	10	37	10	2	4	2.0	2.5	2.5	4230
23	2200	2	7	27	4	2	42	126	47	8	32	1.5	2.5	2.0	4231
24	2025	5	13	63	6	7	67	152	77	14	46	2.0	3.5	4.0	4232
25															
26															
27															
28	2050	8	74	154	21	33	243	1550	252	30	118	1.5	2.0	2.5	4233
29															
30															
31	2020	9	52	142	13	22	152	993	154	26	90	1.5	2.0	2.0	4234
Σ	—	39	229	619	72	90	810	4609	878	127	463	13.0	18.5	20.0	—
NOBS	—	8	8	8	8	8	8	8	8	8	8	8	8	8	—
MNS	—	4.88	28.62	77.38	9.00	11.25	101.25	576.12	109.75	15.88	57.88	1.62	2.31	2.50	—

MEAN WEIGHT = 0.4814

MEAN CONDITION = 2.1458

TRUNCATED WOLF NUMBER = 68.25

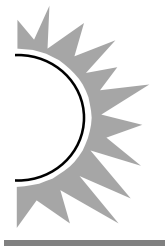
\* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



**SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR  
MARCH 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 umbræ 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 .  
 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	1940	33	6	17	10	0	0	1.5	2.0	2.5	4227
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											
16	2020	37	3	24	9	1	0	1.0	2.0	2.0	4228
17											
18											
19	2000	22	1	11	7	3	0	2.0	2.0	2.5	4229
20											
21											
22	0210	1	0	0	0	1	0	2.0	2.5	2.5	4230
23	2200	9	2	5	2	0	0	1.5	2.5	2.0	4231
24	2025	17	4	6	6	0	1	2.0	3.5	4.0	4232
25											
26											
27											
28	2050	81	7	40	33	1	0	1.5	2.0	2.5	4233
29											
30											
31	2020	59	7	29	21	1	1	1.5	2.0	2.0	4234
Σ	—	259	30	132	88	7	2	13.0	18.5	20.0	—
NOBS	—	8	8	8	8	8	8	8	8	8	—
MNS	—	32.38	3.75	16.50	11.0	0.88	0.25	1.62	2.31	2.50	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR  
MARCH 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	1940	0	0	1	2	1	3	4	2/4/5/11	0	0	0	0	0	0	0	0	0	0
04																			
05																			
06																			
07																			
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15																			
16	2020	0	0	0	0	1	3	1	8	1	22	0	0	0	0	0	0	1	1
17																			
18																			
19	2000	0	0	0	0	0	0	0	0	1	18	0	0	0	0	1	1	2	1/1
20																			
21																			
22	0210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
23	2200	0	0	0	0	0	0	2	2/5	0	0	0	0	0	0	0	0	0	0
24	2025	1	1	1	2	1	4	2	3/3	0	0	0	0	0	0	0	0	0	0
25																			
26																			
27																			
28	2050	0	0	0	0	0	0	5	3/7/8/15/17	1	21	0	0	0	0	1	2	1	1
29																			
30																			
31	2020	1	1	2	2/5	0	0	3	6/9/10	1	16	0	0	0	0	0	0	2	1/2
TOTALS	—	2	2	4	11	3	10	17	118	4	77	0	0	0	0	2	3	7	8

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
5.1	10.3	7.7	43.6	10.3	0.0	0.0	5.1	17.9	39

NOBS = 8

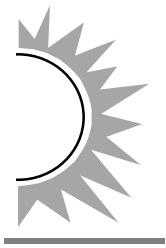
$\bar{p}/\bar{g}$  mean = 1.7628

$\bar{f}/\bar{g}$  mean = 5.0472

$\bar{p}/\bar{g}$  mean = 1.8462

$\bar{f}/\bar{g}$  mean = 5.8718

GROUP COMPLEXITY INDEX (GCI) = 7.7179



**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**

<i>MONTH</i>	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
2001 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
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

**BARNES-13 METHOD**

<i>MONTH</i>	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
2001 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
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