

# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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## SUNSPOT RESULTS FOR FEBRUARY 2003

30 Years of Solar Observing  
1973 - 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 .

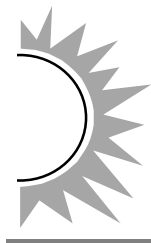
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC <sup>2</sup>	Q	S	T	Ref.
01	1940	5	11	61	6	2	62	222	62	13	41	1.5	2.5	2.5	4218
02															
03															
04															
05															
06	1940	9	46	136	15	24	174	957	146	25	87	1.5	2.0	2.5	4219
07															
08															
09	1955	10	33	133	12	17	137	565	129	26	86	1.0	2.5	2.0	4220
10															
11	2020	8	28	108	11	14	124	468	124	24	82	2.0	3.5	3.5	4221
12															
13	2025	6	10	70	6	4	64	203	70	14	38	2.0	2.0	2.5	4222
14	2010	6	12	72	6	5	65	248	65	14	44	2.0	2.0	2.0	4223
15	2025	2	7	27	3	2	32	96	31	7	25	1.5	2.0	2.0	4224
16															
17	2020	1	6	16	2	3	23	108	22	4	16	1.5	2.5	2.5	4225
18															
19															
20															
21															
22															
23															
24															
25															
26															
27															
28	1955	4	15	55	6	5	65	317	92	12	46	2.0	2.0	2.5	4226
29	—														
30	—														
31	—														
Σ	—	51	168	678	67	76	746	3184	741	139	465	15.0	21.0	22.0	—
NOBS	—	9	9	9	9	9	9	9	9	9	9	9	9	9	—
MNS	—	5.67	18.67	75.33	7.44	8.44	82.89	353.78	82.33	15.44	51.67	1.67	2.33	2.44	—

MEAN WEIGHT = 0.4745

MEAN CONDITION = 2.1481

TRUNCATED WOLF NUMBER = 60.56

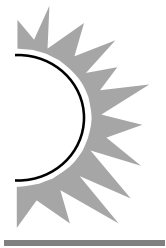
\* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



**SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR  
FEBRUARY 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 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	1940	13	2	7	1	2	1	1.5	2.5	2.5	4218
02											
03											
04											
05											
06	1940	51	5	20	22	2	2	1.5	2.0	2.5	4219
07											
08											
09	1955	39	6	15	14	1	3	1.0	2.5	2.0	4220
10											
11	2020	33	5	12	13	2	1	2.0	3.5	3.5	4221
12											
13	2025	12	2	3	3	3	1	2.0	2.0	2.5	4222
14	2010	14	2	5	3	2	2	2.0	2.0	2.0	4223
15	2025	9	2	5	2	0	0	1.5	2.0	2.0	4224
16											
17	2020	7	1	3	3	0	0	1.5	2.5	2.5	4225
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
28	1955	17	2	9	4	1	1	2.0	2.0	2.5	4226
29	—										
30	—										
31	—										
Σ	—	195	27	79	65	13	11	15.0	21.0	22.0	—
NOBS	—	9	9	9	9	9	9	9	9	9	—
MNS	—	21.67	3.00	8.78	7.22	1.44	1.22	1.67	2.33	2.44	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR  
FEBRUARY 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	1940	1	1	0	0	0	0	2	3/5	0	0	0	0	0	0	0	0	2	1/1
02																			
03																			
04																			
05																			
06	1940	2	1/1	1	2	0	0	3	4/7/8	1	21	0	0	0	0	0	0	2	1/1
07																			
08																			
09	1955	3	1/1/1	0	0	2	4/6	2	4/5	1	8	0	0	0	0	0	0	2	1/2
10																			
11	2020	1	1	0	0	1	6	4	2/4/5/8	0	0	0	0	0	0	0	0	2	1/1
12																			
13	2025	1	1	0	0	1	2	1	4	0	0	0	0	0	0	0	0	3	1/1/1
14	2010	2	1/1	0	0	1	2	0	0	1	6	0	0	0	0	0	0	2	1/1
15	2025	0	0	0	0	1	3	1	4	0	0	0	0	0	0	0	0	0	0
16																			
17	2020	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	0	0
18																			
19																			
20																			
21																			
22																			
23																			
24																			
25																			
26																			
27																			
28	1955	1	1	0	0	0	0	1	7	1	6	0	0	0	0	0	0	1	1
29	—																		
30	—																		
31	—																		
TOTALS	—	11	11	1	2	6	23	15	76	4	41	0	0	0	0	0	0	14	15

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
21.6	2.0	11.8	29.4	7.8	0.0	0.0	0.0	27.5	51

NOBS = 9

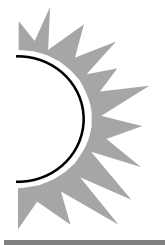
$\bar{p} / \bar{g}$  mean = 1.3824

$\bar{f} / \bar{g}$  mean = 3.4475

$\bar{p} / \bar{g}$  mean = 1.3137

$\bar{f} / \bar{g}$  mean = 3.2941

GROUP COMPLEXITY INDEX (GCI) = 4.6078



**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**

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

**BARNES-13 METHOD**

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