



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

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## SUNSPOT RESULTS FOR FEBRUARY 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	2035	11	86	196	29	25	315	2303	247	41	169	2.0	2.5	2.5	4048
03															
04															
05	2040	13	79	209	25	35	285	2305	248	39	143	2.0	2.5	2.5	4049
06															
07	1950	11	44	154	14	17	157	647	179	34	114	2.0	3.0	3.0	4050
08	2105	12	46	166	13	23	153	746	175	33	105	2.0	2.5	2.5	4051
09															
10															
11															
12	2025	9	64	154	13	29	159	1549	128	27	95	1.5	2.0	2.5	4052
13	2055	9	53	143	14	26	166	1465	110	23	79	2.0	2.5	2.5	4053
14	2030	6	53	113	12	25	145	1517	90	18	70	2.5	2.5	2.5	4054
15															
16	2025	5	47	97	16	21	181	1613	130	23	117	1.5	2.0	2.0	4055
17	2025	5	48	98	16	17	177	1575	100	20	96	2.0	2.0	2.5	4056
18															
19															
20															
21															
22	2120	8	39	119	11	16	126	1004	92	22	78	2.0	2.5	2.5	4057
23	2100	8	43	123	15	17	167	1143	157	26	106	2.0	2.5	3.0	4058
24															
25	2025	13	84	214	25	36	286	1471	250	45	169	1.5	2.0	2.5	4059
26	2045	11	69	179	21	24	234	1341	184	36	136	1.5	2.0	2.5	4060
27	2055	11	69	179	23	24	254	1574	199	38	156	2.5	2.5	2.5	4061
28															
29															
30															
31															
Σ	—	132	824	2144	247	335	2805	20253	2289	425	1633	27.0	33.0	35.5	—
NOBS	—	14	14	14	14	14	14	14	14	14	14	14	14	14	—
MNS	—	9.43	58.86	153.14	17.64	23.93	200.36	1446.64	163.50	30.36	116.64	1.93	2.36	2.54	—

MEAN WEIGHT = 0.4446

MEAN CONDITION = 2.2738

TRUNCATED WOLF NUMBER = 133.86



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR FEBRUARY 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-penumbra spots within the groups (gr) .

efp = number of single penumbral spots :

ef = number of single non-penumbra spots .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01											
02	2035	94	8	58	25	3	0	2.0	2.5	2.5	4048
03											
04											
05	2040	87	8	41	33	3	2	2.0	2.5	2.5	4049
06											
07	1950	53	9	26	16	1	1	2.0	3.0	3.0	4050
08	2105	53	7	20	21	3	2	2.0	2.5	2.5	4051
09											
10											
11											
12	2025	70	6	32	29	3	0	1.5	2.0	2.5	4052
13	2055	57	4	24	24	3	2	2.0	2.5	2.5	4053
14	2030	57	4	27	24	1	1	2.5	2.5	2.5	4054
15											
16	2025	51	4	25	21	1	0	1.5	2.0	2.0	4055
17	2025	52	4	30	17	1	0	2.0	2.0	2.5	4056
18											
19											
20											
21											
22	2120	44	5	21	15	2	1	2.0	2.5	2.5	4057
23	2100	48	5	25	15	1	2	2.0	2.5	3.0	4058
24											
25	2025	95	11	47	35	1	1	1.5	2.0	2.5	4059
26	2045	77	8	43	23	2	1	1.5	2.0	2.5	4060
27	2055	78	9	45	22	0	2	2.5	2.5	2.5	4061
28											
29											
30											
31											
Σ	—	916	92	464	320	25	15	27.0	33.0	35.5	—
NOBS	—	14	14	14	14	14	14	14	14	14	—
MNS	—	65.43	6.57	33.14	22.86	1.79	1.07	1.93	2.36	2.54	—



# GEORGI DOBROVOLSKI SOLAR OBSERVATORY

## SUNSPOT CENSUS BY CLASSIFICATION FOR FEBRUARY 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	2035	0	0	0	0	2	3/3	3	2/3/4	2	12/31	1	25	0	0	1	1	2	1/1
03																			
04																			
05	2040	2	1/1	0	0	1	2	4	2/6/9/12	0	0	1	34	1	7	0	0	4	1/1/1/2
06																			
07	1950	1	1	0	0	5	2/2/3/3/5	4	2/4/8/13	0	0	0	0	0	0	0	0	1	1
08	2105	2	1/1	1	2	2	3/6	4	3/6/8/13	0	0	0	0	0	0	1	1	2	1/1
09																			
10																			
11																			
12	2025	0	0	1	2	3	2/4/4	1	23	0	0	1	26	0	0	0	0	3	1/1/1
13	2055	2	1/1	1	4	1	2	1	11	0	0	1	31	0	0	0	0	3	1/1/1
14	2030	1	1	1	3	1	3	1	10	0	0	1	35	0	0	0	0	1	1
15																			
16	2025	0	0	0	0	0	0	1	2	1	4	2	18/22	0	0	0	0	1	1
17	2025	0	0	1	2	0	0	1	5	0	0	2	11/29	0	0	0	0	1	1
18																			
19																			
20																			
21																			
22	2120	1	1	2	2/3	1	3	1	7	0	0	1	21	0	0	0	0	2	1/1
23	2100	2	1/1	0	0	0	0	4	3/4/5/7	0	0	1	21	0	0	0	0	1	1
24																			
25	2025	1	1	0	0	3	2/4/7	7	3/5/6/7/9/13/14	1	12	0	0	0	0	0	0	1	1
26	2045	1	1	1	5	1	3	4	5/9/9/10	2	12/13	0	0	0	0	0	0	2	1/1
27	2055	2	1/1	1	2	1	3	5	3/5/6/7/8	1	16	1	17	0	0	0	0	0	0
28																			
29																			
30																			
31																			
TOTALS	—	15	15	9	25	21	69	41	289	7	100	12	288	1	7	2	2	24	25

### REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.4	6.8	15.9	31.1	5.3	9.1	0.8	1.5	18.2	132

NOBS = 14

$\overline{p/g}$  mean = 1.9635

$\overline{f/g}$  mean = 6.5585

$\overline{p/g}$  mean = 1.8712

$\overline{f/g}$  mean = 6.2424

GROUP COMPLEXITY INDEX (GCI) = 8.1136



**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 SEPTEMBER	8.54	146.69	169.59	1429.2	158.97	27.13	67.36
OCTOBER	8.39	142.73	165.93	1381.5	153.81	26.46	64.80
NOVEMBER	8.24	138.20	162.24	1314.1	149.88	25.83	61.64
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

**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 SEPTEMBER	8.46	144.68	168.12	1401.5	155.14	26.70	66.17
OCTOBER	8.16	138.10	161.29	1299.4	148.64	25.68	62.37
NOVEMBER	7.94	132.78	155.82	1213.8	144.21	24.92	59.09
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