

*Georgi Dobrovolski
Solar Observatory*

**MONTHLY SUNSPOT
REPORTS**

2002

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GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

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SUNSPOT RESULTS FOR JANUARY 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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2030	10	68	168	21	25	235	1609	222	35	143	1.5	2.5	2.5	4029
02	2040	12	65	185	22	27	247	1503	262	41	157	1.5	2.0	2.0	4030
03	2215	12	61	181	22	29	249	1556	225	40	152	2.0	2.5	2.5	4031
04	2020	11	56	166	17	28	198	1561	153	32	112	2.0	2.0	2.5	4032
05															
06	2100	7	37	107	12	17	137	719	101	21	71	1.5	2.0	2.5	4033
07															
08															
09	2035	8	67	147	19	25	215	1763	185	31	129	1.5	2.0	2.0	4034
10															
11	2015	10	93	193	19	45	235	2506	216	33	139	1.5	2.0	2.0	4035
12	2035	10	77	177	20	30	230	2403	264	35	153	2.0	2.5	2.5	4036
13															
14															
15	2040	7	42	112	13	16	146	1042	134	26	110	2.0	2.0	2.5	4037
16	2055	8	24	104	11	7	117	531	104	22	72	1.5	2.0	2.0	4038
17															
18	2045	9	41	131	11	16	126	763	134	25	81	1.5	1.5	2.0	4039
19															
20	2035	10	54	154	19	25	215	1029	213	33	119	2.0	3.0	2.5	4040
21	2045	10	48	148	18	20	200	979	200	32	110	2.5	3.0	2.5	4041
22	2015	11	52	162	21	20	230	1165	211	32	116	2.0	2.5	2.5	4042
23															
24															
25															
26															
27	2155	10	71	171	20	26	226	1799	242	36	144	1.5	2.5	2.5	4043
28	2020	10	64	164	15	26	176	1222	204	30	108	2.0	2.0	2.5	4044
29	2035	10	69	169	16	29	189	1494	212	29	101	2.0	2.0	2.0	4045
30	2025	10	65	165	20	34	234	1747	145	29	113	2.0	2.0	2.5	4046
31	2050	7	75	145	17	32	202	2015	161	27	119	2.0	2.5	3.0	4047
Σ	—	182	1129	2949	333	477	3807	27406	3588	589	2249	34.5	42.5	45.0	—
NOBS	—	19	19	19	19	19	19	19	19	19	19	19	19	19	—
MNS	—	9.58	59.42	155.21	17.53	25.11	200.37	1442.42	188.84	31.00	118.37	1.82	2.24	2.37	—

MEAN WEIGHT = 0.4743

MEAN CONDITION = 2.1404

TRUNCATED WOLF NUMBER = 139.47



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JANUARY 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 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 .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01	2030	75	7	41	24	2	1	1.5	2.5	2.5	4029
02	2040	75	10	36	27	2	0	1.5	2.0	2.0	4030
03	2215	70	9	30	28	2	1	2.0	2.5	2.5	4031
04	2020	62	6	23	28	5	0	2.0	2.0	2.5	4032
05											
06	2100	43	6	19	17	1	0	1.5	2.0	2.5	4033
07											
08											
09	2035	74	7	41	25	1	0	1.5	2.0	2.0	4034
10											
11	2015	100	7	47	43	1	2	1.5	2.0	2.0	4035
12	2035	82	5	43	29	4	1	2.0	2.5	2.5	4036
13											
14											
15	2040	48	6	25	16	1	0	2.0	2.0	2.5	4037
16	2055	29	5	15	6	2	1	1.5	2.0	2.0	4038
17											
18	2045	47	6	23	15	2	1	1.5	1.5	2.0	4039
19											
20	2035	62	8	28	24	1	1	2.0	3.0	2.5	4040
21	2045	55	7	25	20	3	0	2.5	3.0	2.5	4041
22	2015	58	6	30	17	2	3	2.0	2.5	2.5	4042
23											
24											
25											
26											
27	2155	80	9	44	26	1	0	1.5	2.5	2.5	4043
28	2020	71	7	37	24	1	2	2.0	2.0	2.5	4044
29	2035	76	7	38	28	2	1	2.0	2.0	2.0	4045
30	2025	69	4	27	32	4	2	2.0	2.0	2.5	4046
31	2050	81	6	42	32	1	0	2.0	2.5	3.0	4047
Σ	—	1257	128	614	461	38	16	34.5	42.5	45.0	—
NOBS	—	19	19	19	19	19	19	19	19	19	—
MNS	—	66.16	6.74	32.32	24.26	2.00	0.84	1.82	2.24	2.37	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JANUARY 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	2030	1	1	0	0	1	5	4	3/6/9/10	1	15	1	17	0	0	0	0	2	1/1
02	2040	0	0	1	3	4	3/3/3/4	3	4/5/9	1	5	1	24	0	0	0	0	2	1/1
03	2215	1	1	0	0	3	2/2/3	5	2/3/4/5/9	0	0	1	28	0	0	0	0	2	1/1
04	2020	0	0	0	0	3	2/3/5	2	3/7	0	0	1	31	0	0	0	0	5	5 x 1
05																			
06	2100	0	0	2	2/3	2	2/3	1	4	1	22	0	0	0	0	0	0	1	1
07																			
08																			
09	2035	0	0	0	0	1	2	5	3/4/4/10/12	0	0	1	31	0	0	0	0	1	1
10																			
11	2015	2	1/1	0	0	2	2/4	0	0	3	5/24/26	1	27	0	0	0	0	2	1/2
12	2035	1	1	0	0	1	3	0	0	2	7/17	2	19/26	0	0	1	1	3	1/1/1
13																			
14																			
15	2040	0	0	0	0	1	2	2	5/9	1	15	1	8	0	0	0	0	2	1/2
16	2055	1	1	0	0	2	2/2	1	4	1	11	0	0	0	0	0	0	3	1/1/2
17																			
18	2045	1	1	1	2	3	2/3/4	1	10	1	17	0	0	0	0	0	0	2	1/1
19																			
20	2035	1	1	0	0	2	5/9	5	3/5/6/7/11	0	0	0	0	1	6	0	0	1	1
21	2045	0	0	0	0	2	2/5	4	5/7/8/14	0	0	0	0	1	4	0	0	3	1/1/1
22	2015	3	1/1/1	0	0	0	0	4	4/5/9/10	1	15	0	0	1	4	0	0	2	1/1
23																			
24																			
25																			
26																			
27	2155	0	0	2	2/2	0	0	6	3/5/6/6/7/8	0	0	1	31	0	0	0	0	1	1
28	2020	2	1/1	1	3	1	4	4	3/5/6/17	1	23	0	0	0	0	0	0	1	1
29	2035	1	1	2	2/2	2	2/6	1	2	2	19/33	0	0	0	0	0	0	2	1/1
30	2025	2	1/1	0	0	1	10	0	0	2	3/20	1	26	0	0	0	0	4	1/1/1/1
31	2050	0	0	1	2	1	6	1	2	2	7/31	1	26	0	0	0	0	1	1
TOTALS	—	16	16	10	23	32	115	49	308	19	315	12	294	3	14	1	1	40	43

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
8.8	5.5	17.6	26.9	10.4	6.6	1.6	0.5	22.0	182

NOBS = 19 $\overline{p/g}$ mean = 1.8365 $\overline{f/g}$ mean = 6.2710
 $\overline{p/g}$ mean = 1.8297 $\overline{f/g}$ mean = 6.2033

GROUP COMPLEXITY INDEX (GCI) = 8.0330



**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 AUGUST	8.70	149.18	171.29	1439.2	164.10	27.62	68.46
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

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 AUGUST	8.81	151.85	175.57	1506.4	163.56	27.89	70.06
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



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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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	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

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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

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 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



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdsso@earthling.net

WEBSITE: www.cv-helios.net/gdsso

SUNSPOT RESULTS FOR MARCH 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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01															
02	2025	8	39	119	12	18	138	858	90	21	77	2.0	2.5	2.5	4062
03															
04															
05	2030	11	47	157	12	28	148	1226	138	27	107	1.5	1.5	2.0	4063
06															
07															
08															
09															
10															
11															
12															
13															
14															
15															
16	2040	6	58	118	14	22	162	1636	163	24	106	2.0	2.5	2.5	4064
17	2100	6	49	109	12	19	139	1021	133	24	100	2.0	2.5	2.5	4065
18	2030	6	51	111	11	23	133	1033	104	22	88	2.0	2.5	2.5	4066
19	2055	8	40	120	10	20	120	869	99	24	84	2.5	2.5	2.5	4067
20	2100	9	35	125	12	9	129	870	130	28	98	2.0	3.0	3.0	4068
21	2100	9	36	126	14	11	151	787	160	28	102	2.0	2.5	2.5	4069
22	2055	9	44	134	15	21	171	938	173	31	125	2.0	2.0	2.5	4070
23	2050	10	48	148	16	22	182	789	154	30	104	2.0	2.0	2.5	4071
24															
25	2125	7	52	122	20	20	220	1044	159	26	102	1.5	2.0	2.5	4072
26	2130	8	53	133	17	17	187	1092	153	27	99	2.0	3.0	3.5	4073
27															
28	2030	7	55	125	19	22	212	1157	193	27	111	1.5	1.5	2.0	4074
29															
30															
31															
Σ	—	104	607	1647	184	252	2092	13320	1849	339	1303	25.0	30.0	33.0	—
NOBS	—	13	13	13	13	13	13	13	13	13	13	13	13	13	—
MNS	—	8.00	46.69	126.69	14.15	19.38	160.92	1024.62	142.23	26.08	100.23	1.92	2.31	2.54	—

MEAN WEIGHT = 0.4534

MEAN CONDITION = 2.2564

TRUNCATED WOLF NUMBER = 110.08



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MARCH 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 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 .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01											
02	2025	44	5	21	15	0	3	2.0	2.5	2.5	4062
03											
04											
05	2030	52	5	19	22	0	6	1.5	1.5	2.0	4063
06											
07											
08											
09											
10											
11											
12											
13											
14											
15											
16	2040	64	6	36	22	0	0	2.0	2.5	2.5	4064
17	2100	55	6	30	19	0	0	2.0	2.5	2.5	4065
18	2030	56	5	27	23	1	0	2.0	2.5	2.5	4066
19	2055	46	6	19	19	1	1	2.5	2.5	2.5	4067
20	2100	42	7	24	9	2	0	2.0	3.0	3.0	4068
21	2100	42	6	23	10	2	1	2.0	2.5	2.5	4069
22	2055	51	7	22	20	1	1	2.0	2.0	2.5	4070
23	2050	56	8	25	21	1	1	2.0	2.0	2.5	4071
24											
25	2125	58	6	31	20	1	0	1.5	2.0	2.5	4072
26	2130	61	8	36	17	0	0	2.0	3.0	3.5	4073
27											
28	2030	61	6	32	22	1	0	1.5	1.5	2.0	4074
29											
30											
31											
Σ	—	688	81	345	239	10	13	25.0	30.0	33.0	—
NOBS	—	13	13	13	13	13	13	13	13	13	—
MNS	—	52.92	6.23	26.54	18.38	0.77	1.00	1.92	2.31	2.54	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR MARCH 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	2025	3	1/1/1	1	2	2	3/5	1	9	0	0	1	17	0	0	0	0	0	0
03																			
04																			
05	2030	6	6x1	1	2	1	3	1	7	0	0	2	13/16	0	0	0	0	0	0
06																			
07																			
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15																			
16	2040	0	0	0	0	1	2	2	4/12	1	10	1	28	0	0	0	0	1	2
17	2100	0	0	0	0	2	2/3	2	6/11	2	13/14	0	0	0	0	0	0	0	0
18	2030	0	0	0	0	2	3/7	1	12	2	13/15	0	0	0	0	0	0	1	1
19	2055	1	1	1	3	2	2/7	1	8	1	12	0	0	1	6	0	0	1	1
20	2100	0	0	1	2	1	2	2	2/9	1	12	0	0	1	4	0	0	3	1/1/2
21	2100	1	1	0	0	0	0	4	3/3/4/10	1	11	0	0	0	0	0	0	3	1/1/2
22	2055	1	1	1	2	1	2	2	4/7	3	6/8/13	0	0	0	0	0	0	1	1
23	2050	1	1	1	2	2	7/9	3	5/5/6	1	10	0	0	0	0	0	0	2	1/2
24																			
25	2125	0	0	0	0	1	3	4	2/9/9/11	1	17	0	0	0	0	0	0	1	1
26	2130	0	0	0	0	2	2/3	3	4/11/13	1	16	0	0	0	0	0	0	2	2/2
27																			
28	2030	0	0	0	0	1	2	3	7/9/12	2	7/17	0	0	0	0	0	0	1	1
29																			
30																			
31																			
TOTALS	—	13	13	6	13	18	67	29	214	16	194	4	74	2	10	0	0	16	22

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
12.5	5.8	17.3	27.9	15.4	3.8	1.9	0.0	15.4	104

NOBS = 13 \bar{p}/\bar{g} mean = 1.8354 \bar{f}/\bar{g} mean = 6.1515
 \bar{p}/\bar{g} mean = 1.7692 \bar{f}/\bar{g} mean = 5.8365

GROUP COMPLEXITY INDEX (GCI) = 7.6058



**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 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
SEPTEMBER	9.05	146.85	183.01	1317.4	171.83	28.54	62.71

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 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
SEPTEMBER	9.25	150.77	187.66	1355.9	178.21	29.16	64.86



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

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SUNSPOT RESULTS FOR APRIL 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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2050	9	102	192	19	50	240	2486	219	30	124	1.5	2.0	1.5	4075
02	2140	10	83	183	22	36	256	1971	212	32	130	2.0	2.5	2.5	4076
03	2150	9	79	169	19	29	219	2160	212	34	148	2.0	2.0	2.5	4077
04															
05															
06	2025	12	74	194	22	28	248	2188	261	37	149	2.0	2.0	2.0	4078
07															
08															
09	2100	11	78	188	25	31	281	1630	256	41	169	1.5	2.0	2.0	4079
10	2115	11	76	186	27	28	298	1565	279	41	171	2.0	2.5	2.5	4080
11	2115	13	96	226	27	42	312	2171	270	49	209	1.5	2.0	2.0	4081
12															
13															
14															
15	2105	10	73	173	21	31	241	1641	218	34	130	2.0	2.0	2.0	4082
16	2110	10	53	153	13	21	151	1152	166	28	98	1.5	2.0	2.5	4083
17	2055	7	56	126	12	22	142	1240	131	22	82	1.5	1.5	2.0	4084
18															
19															
20	2100	8	46	126	13	24	154	749	117	25	89	1.0	1.5	2.0	4085
21															
22															
23															
24															
25															
26															
27															
28	2040	5	30	80	7	14	84	462	77	17	61	3.0	3.0	3.0	4086
29	2050	9	27	117	10	14	114	325	106	23	69	1.5	1.5	2.0	4087
30	2055	10	27	127	10	13	113	339	108	26	74	2.0	2.5	2.5	4088
31	—														
Σ	—	134	900	2240	247	383	2853	20079	2632	439	1703	25.0	29.0	31.0	—
NOBS	—	14	14	14	14	14	14	14	14	14	14	14	14	14	—
MNS	—	9.57	64.29	160.00	17.64	27.36	203.79	1434.21	188.00	31.36	121.64	1.79	2.07	2.21	—

MEAN WEIGHT = 0.5099

MEAN CONDITION = 2.0238

TRUNCATED WOLF NUMBER = 140.07



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR APRIL 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 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 .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01	2050	110	8	52	49	0	1	1.5	2.0	1.5	4075
02	2140	91	8	47	34	0	2	2.0	2.5	2.5	4076
03	2150	87	8	49	29	1	0	2.0	2.0	2.5	4077
04											
05											
06	2025	81	7	44	25	2	3	2.0	2.0	2.0	4078
07											
08											
09	2100	87	9	45	31	2	0	1.5	2.0	2.0	4079
10	2115	85	9	47	27	1	1	2.0	2.5	2.5	4080
11	2115	107	11	53	41	1	1	1.5	2.0	2.0	4081
12											
13											
14											
15	2105	81	8	40	31	2	0	2.0	2.0	2.0	4082
16	2110	58	5	29	19	3	2	1.5	2.0	2.5	4083
17	2055	61	5	33	21	1	1	1.5	1.5	2.0	4084
18											
19											
20	2100	53	7	22	23	0	1	1.0	1.5	2.0	4085
21											
22											
23											
24											
25											
26											
27											
28	2040	35	5	16	14	0	0	3.0	3.0	3.0	4086
29	2050	33	6	12	12	1	2	1.5	1.5	2.0	4087
30	2055	33	6	11	12	3	1	2.0	2.5	2.5	4088
31	—										
Σ	—	1002	102	500	368	17	15	25.0	29.0	31.0	—
NOBS	—	14	14	14	14	14	14	14	14	14	—
MNS	—	71.57	7.29	35.71	26.29	1.21	1.07	1.79	2.07	2.21	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR APRIL 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	2050	1	1	3	2/2/2	1	7	1	12	2	21/29	1	26	0	0	0	0	0	0
02	2140	2	1/1	1	3	2	3/4	1	13	2	14/25	1	17	0	0	0	0	1	2
03	2150	0	0	1	3	3	2/3/4	1	12	1	11	2	19/24	0	0	0	0	1	1
04																			
05																			
06	2025	3	1/1/1	0	0	2	2/6	2	7/8	0	0	2	15/23	1	8	0	0	2	1/1
07																			
08																			
09	2100	0	0	1	5	1	5	3	3/7/12	4	3/5/15/21	0	0	0	0	0	0	2	1/1
10	2115	1	1	0	0	1	2	6	3/4/6/6/12/17	1	20	1	4	0	0	0	0	1	1
11	2115	1	1	0	0	3	3/5/6	5	4/5/10/11/13	1	8	2	5/24	0	0	0	0	1	1
12																			
13																			
14																			
15	2105	0	0	0	0	3	2/3/7	1	4	3	9/21/23	0	0	0	0	0	0	3	1/1/2
16	2110	2	1/1	0	0	2	4/5	1	2	2	18/19	0	0	0	0	0	0	3	1/1/1
17	2055	1	1	0	0	0	0	3	3/9/13	1	27	0	0	0	0	0	0	2	1/2
18																			
19																			
20	2100	1	1	1	2	3	3/3/4	2	11/13	1	9	0	0	0	0	0	0	0	0
21																			
22																			
23																			
24																			
25																			
26																			
27																			
28	2040	0	0	1	2	1	5	3	5/6/12	0	0	0	0	0	0	0	0	0	0
29	2050	2	1/1	1	3	3	2/4/5	2	3/7	0	0	0	0	0	0	0	0	1	1
30	2055	1	1	0	0	5	3/3/3/4/6	1	4	0	0	0	0	0	0	0	0	3	1/1/1
31	—																		
TOTALS	—	15	15	9	24	30	118	32	257	18	298	9	157	1	8	0	0	20	23

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.2	6.7	22.4	23.9	13.4	6.7	0.7	0.0	14.9	134

NOBS = 14

$\bar{p/g}$ mean = 1.8079

$\bar{f/g}$ mean = 6.7152

$\bar{p/g}$ mean = 1.8433

$\bar{f/g}$ mean = 6.7164

GROUP COMPLEXITY INDEX (GCI) = 8.5597



**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 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
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

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 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
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



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR MAY 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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01															
02															
03															
04															
05															
06	2115	17	59	229	19	23	213	1035	234	43	123	1.5	2.0	2.5	4089
07															
08															
09															
10															
11															
12															
13															
14															
15	2120	9	35	125	14	16	156	591	187	27	95	1.5	3.0	3.0	4090
16															
17															
18															
19	2230	9	52	142	14	8	148	1596	142	25	87	2.0	3.5	4.0	4091
20															
21															
22															
23	2040	11	76	186	21	24	234	2022	196	35	133	2.5	2.5	2.5	4092
24	2030	11	75	185	24	24	264	2219	199	35	145	2.5	2.5	3.0	4093
25	2100	10	70	170	22	33	253	1994	216	36	156	2.0	2.5	3.0	4094
26	2110	11	62	172	21	24	234	1698	225	39	165	2.0	2.5	2.5	4095
27	2205	10	45	145	17	18	188	1159	206	32	120	2.0	3.0	3.0	4096
28	2155	11	49	159	16	20	180	1201	226	33	123	2.0	2.5	3.0	4097
29	2140	10	56	156	20	17	217	1261	266	35	139	2.0	2.0	2.0	4098
30	2200	11	55	165	17	21	191	1343	179	32	114	2.0	2.5	2.5	4099
31															
Σ	—	120	634	1834	205	228	2278	16119	2276	372	1400	22.0	28.5	31.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	11	11	11	11	—
MNS	—	10.91	57.64	166.73	18.64	20.73	207.09	1465.36	206.91	33.82	127.27	2.00	2.59	2.82	—

MEAN WEIGHT = 0.4112

MEAN CONDITION = 2.4697

TRUNCATED WOLF NUMBER = 147.27



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MAY 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-penumbral spots within the groups (gr) .

efp = number of single penumbral spots :

ef = number of single non-penumbral spots .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01											
02											
03											
04											
05											
06	2115	68	9	30	21	6	2	1.5	2.0	2.5	4089
07											
08											
09											
10											
11											
12											
13											
14											
15	2120	41	6	17	15	2	1	1.5	3.0	3.0	4090
16											
17											
18											
19	2230	56	4	40	7	4	1	2.0	3.5	4.0	4091
20											
21											
22											
23	2040	84	8	50	23	2	1	2.5	2.5	2.5	4092
24	2030	81	6	48	22	3	2	2.5	2.5	3.0	4093
25	2100	77	7	35	32	2	1	2.0	2.5	3.0	4094
26	2110	70	8	36	23	2	1	2.0	2.5	2.5	4095
27	2205	52	7	25	17	2	1	2.0	3.0	3.0	4096
28	2155	55	6	26	18	3	2	2.0	2.5	3.0	4097
29	2140	64	8	38	16	1	1	2.0	2.0	2.0	4098
30	2200	62	7	31	20	3	1	2.0	2.5	2.5	4099
31											
Σ	—	710	76	376	214	30	14	22.0	28.5	31.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	—
MNS	—	64.55	6.91	34.18	19.45	2.73	1.27	2.00	2.59	2.82	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR MAY 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																			
03																			
04																			
05																			
06	2115	2	1/1	1	2	4	2/3/3/5	3	4/7/23	0	0	0	0	0	0	1	1	6	5x1/2
07																			
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15	2120	1	1	1	2	1	7	3	3/6/9	1	5	0	0	0	0	0	0	2	1/1
16																			
17																			
18																			
19	2230	1	1	0	0	1	6	1	5	0	0	1	33	0	0	1	1	4	1/1/1/3
20																			
21																			
22																			
23	2040	1	1	1	2	3	2/2/3	2	7/8	1	14	1	35	0	0	0	0	2	1/1
24	2030	2	1/1	0	0	2	2/3	1	7	1	14	2	18/26	0	0	0	0	3	1/1/1
25	2100	1	1	0	0	2	2/3	2	2/8	1	16	2	17/19	0	0	0	0	2	1/1
26	2110	1	1	0	0	3	2/3/3	2	3/4	1	14	2	13/17	0	0	0	0	2	1/1
27	2205	1	1	0	0	1	2	2	4/8	2	7/14	0	0	1	5	0	0	3	1/1/2
28	2155	2	1/1	0	0	1	5	3	4/9/11	0	0	1	10	1	5	0	0	3	1/1/1
29	2140	1	1	0	0	2	2/2	5	3/4/8/9/10	0	0	1	16	0	0	0	0	1	1
30	2200	1	1	2	2/2	1	3	3	6/7/9	0	0	1	22	0	0	0	0	3	1/1/1
31																			
TOTALS	—	14	14	5	10	21	65	27	188	7	84	11	226	2	10	2	2	31	35

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.7	4.2	17.5	22.5	5.8	9.2	1.7	1.7	25.8	120

NOBS = 11 \bar{p}/\bar{g} mean = 1.7390 \bar{f}/\bar{g} mean = 5.3687
 \bar{p}/\bar{g} mean = 1.7083 \bar{f}/\bar{g} mean = 5.2833

GROUP COMPLEXITY INDEX (GCI) = 6.9917



**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 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
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

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 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
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



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdsos@earthling.net

WEBSITE: www.cv-helios.net/gdsos

SUNSPOT RESULTS FOR JUNE 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 ; QC² = Squared Quality Count .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2230	9	64	154	20	19	219	1687	224	32	130	1.5	2.0	2.5	4100
02	2145	12	65	185	20	27	227	1565	204	36	132	1.5	2.0	2.0	4101
03	2135	13	66	196	18	28	208	1283	207	35	117	1.5	2.0	2.5	4102
04															
05	2225	9	51	141	17	22	192	942	171	27	91	1.5	3.0	3.0	4103
06	2250	12	57	177	21	23	233	1122	252	37	129	2.0	2.5	3.0	4104
07	2235	12	56	176	24	22	262	1102	273	36	124	1.5	2.0	2.0	4105
08															
09															
10															
11															
12															
13															
14															
15	2115	6	23	83	8	9	89	398	118	18	62	2.0	2.0	2.5	4106
16															
17															
18															
19															
20															
21															
22	2115	5	19	69	8	8	88	319	124	16	56	2.0	2.0	2.5	4107
23	2135	7	26	96	9	12	102	417	126	18	58	2.0	2.0	2.5	4108
24	2055	6	36	96	12	16	136	637	164	21	77	1.5	2.5	2.5	4109
25	2100	6	23	83	9	9	99	404	111	17	53	2.0	2.0	2.0	4110
26															
27															
28	2055	7	18	88	6	9	69	293	96	18	52	2.0	2.5	2.5	4111
29															
30	2130	5	32	82	12	11	131	666	166	19	75	1.5	2.0	2.0	4112
31	—														
Σ	—	109	536	1626	184	215	2055	10835	2236	330	1156	22.5	28.5	31.5	—
NOBS	—	13	13	13	13	13	13	13	13	13	13	13	13	13	—
MNS	—	8.38	41.23	125.08	14.15	16.54	158.08	833.46	172.00	25.38	88.92	1.73	2.19	2.42	—

MEAN WEIGHT = 0.4778

MEAN CONDITION = 2.1154

TRUNCATED WOLF NUMBER = 105.31



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JUNE 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 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 .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01	2230	70	6	43	18	1	2	1.5	2.0	2.5	4100
02	2145	74	9	37	25	1	2	1.5	2.0	2.0	4101
03	2135	74	8	36	25	2	3	1.5	2.0	2.5	4102
04											
05	2225	57	6	26	22	3	0	1.5	3.0	3.0	4103
06	2250	64	7	30	22	4	1	2.0	2.5	3.0	4104
07	2235	62	6	29	21	5	1	1.5	2.0	2.0	4105
08											
09											
10											
11											
12											
13											
14											
15	2115	27	4	13	8	1	1	2.0	2.0	2.5	4106
16											
17											
18											
19											
20											
21											
22	2115	23	4	10	8	1	0	2.0	2.0	2.5	4107
23	2135	30	4	13	10	1	2	2.0	2.0	2.5	4108
24	2055	41	5	19	16	1	0	1.5	2.5	2.5	4109
25	2100	27	4	12	9	2	0	2.0	2.0	2.0	4110
26											
27											
28	2055	23	5	8	8	1	1	2.0	2.5	2.5	4111
29											
30	2130	36	4	20	11	1	0	1.5	2.0	2.0	4112
31	—										
Σ	—	608	72	296	203	24	13	22.5	28.5	31.5	—
NOBS	—	13	13	13	13	13	13	13	13	13	—
MNS	—	46.77	5.54	22.77	15.62	1.85	1.00	1.73	2.19	2.42	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JUNE 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	2230	1	1	0	0	0	0	5	4/5/7/8/9	0	0	1	28	0	0	1	1	1	1
02	2145	2	1/1	2	3/3	2	2/5	4	2/4/6/6	0	0	1	31	0	0	0	0	1	1
03	2135	3	1/1/1	2	2/3	1	2	4	2/5/6/14	1	27	0	0	0	0	0	0	2	1/1
04																			
05	2225	0	0	1	2	2	5/6	2	9/11	1	15	0	0	0	0	0	0	3	1/1/1
06	2250	1	1	0	0	2	2/3	4	3/9/10/14	1	11	0	0	0	0	1	1	3	1/1/1
07	2235	1	1	0	0	1	5	4	3/7/12/15	1	8	0	0	0	0	1	1	4	1/1/1/1
08																			
09																			
10																			
11																			
12																			
13																			
14																			
15	2115	1	1	1	2	0	0	3	5/5/9	0	0	0	0	0	0	1	1	0	0
16																			
17																			
18																			
19																			
20																			
21																			
22	2115	0	0	1	3	0	0	3	3/3/9	0	0	0	0	0	0	0	0	1	1
23	2135	2	1/1	1	3	0	0	3	4/5/11	0	0	0	0	0	0	0	0	1	1
24	2055	0	0	0	0	1	3	4	3/7/8/14	0	0	0	0	0	0	0	0	1	1
25	2100	0	0	1	2	1	2	2	8/9	0	0	0	0	0	0	0	0	2	1/1
26																			
27																			
28	2055	1	1	1	2	2	3/3	1	6	0	0	0	0	0	0	1	2	1	1
29																			
30	2130	0	0	0	0	1	2	2	3/14	1	12	0	0	0	0	1	1	0	0
31	—																		
TOTALS	—	12	12	10	25	13	43	41	297	5	73	2	59	0	0	6	7	20	20

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.0	9.2	11.9	37.6	4.6	1.8	0.0	5.5	18.3	109

NOBS = 13

\bar{p}/\bar{g} mean = 1.6837

\bar{f}/\bar{g} mean = 4.8339

\bar{p}/\bar{g} mean = 1.6881

\bar{f}/\bar{g} mean = 4.9174

GROUP COMPLEXITY INDEX (GCI) = 6.6055



**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 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
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

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 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
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



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR JULY 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = 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 ²	Q	S	T	Ref.
01	2130	5	24	74	10	9	109	398	123	16	58	2.0	2.5	3.0	4113
02	2050	4	29	69	10	9	109	502	119	15	57	2.0	3.0	3.0	4114
03															
04	2240	7	43	113	18	17	197	885	168	26	102	1.5	2.5	3.0	4115
05	2120	8	36	116	14	14	154	653	130	25	89	2.0	3.0	3.0	4116
06															
07															
08															
09	2125	7	22	92	8	8	88	465	124	19	63	1.5	2.5	2.5	4117
10															
11															
12	2205	3	34	64	9	10	100	1169	54	11	49	2.0	2.5	3.5	4118
13	2055	3	45	75	13	15	145	1565	78	11	49	2.0	2.5	2.5	4119
14	2125	7	70	140	16	27	187	2181	83	17	59	1.5	2.0	2.5	4120
15	2110	9	68	158	14	23	163	2086	95	20	70	1.5	1.5	2.0	4121
16															
17	2125	6	105	165	19	30	220	3444	123	16	68	1.5	2.0	2.0	4122
18	2120	6	102	162	20	36	236	3143	186	20	88	1.0	2.0	2.0	4123
19															
20															
21															
22															
23	2100	11	98	208	22	23	243	2967	247	40	172	1.0	1.5	1.5	4124
24	2140	10	104	204	28	37	317	2942	232	35	143	1.5	2.5	2.5	4125
25	2130	10	134	234	33	39	369	3702	273	40	180	2.5	2.5	3.0	4126
26															
27															
28	2045	10	165	265	36	57	417	4772	325	41	183	2.0	2.0	2.0	4127
29	2110	11	174	284	35	49	399	5693	257	41	185	2.0	2.0	2.5	4128
30	2110	10	124	224	26	41	301	4176	243	34	156	2.5	2.5	2.0	4129
31	2100	10	110	210	23	30	260	3518	199	34	148	2.0	2.5	2.5	4130
Σ	—	137	1487	2857	354	474	4014	44261	3059	461	1919	32.0	41.5	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	18	18	18	18	—
MNS	—	7.61	82.61	158.72	19.67	26.33	223.00	2458.94	169.94	25.61	106.61	1.78	2.31	2.50	—

MEAN WEIGHT = 0.4719

MEAN CONDITION = 2.1944

TRUNCATED WOLF NUMBER = 141.67



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JULY 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 .
 IS = Inter-Sol Index .
 gr = number of multi-spot groups .
 grfp = number of umbrae 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	2130	28	4	15	8	0	1	2.0	2.5	3.0	4113
02	2050	33	4	20	9	0	0	2.0	3.0	3.0	4114
03											
04	2240	49	6	25	17	1	0	1.5	2.5	3.0	4115
05	2120	42	6	21	13	1	1	2.0	3.0	3.0	4116
06											
07											
08											
09	2125	26	4	13	6	1	2	1.5	2.5	2.5	4117
10											
11											
12	2205	36	2	23	10	1	0	2.0	2.5	3.5	4118
13	2055	47	2	29	15	1	0	2.0	2.5	2.5	4119
14	2125	74	4	42	25	1	2	1.5	2.0	2.5	4120
15	2110	72	4	45	18	0	5	1.5	1.5	2.0	4121
16											
17	2125	108	3	75	27	0	3	1.5	2.0	2.0	4122
18	2120	105	3	65	34	1	2	1.0	2.0	2.0	4123
19											
20											
21											
22											
23	2100	107	9	74	22	1	1	1.0	1.5	1.5	4124
24	2140	112	8	65	37	2	0	1.5	2.5	2.5	4125
25	2130	143	9	95	38	0	1	2.5	2.5	3.0	4126
26											
27											
28	2045	173	8	106	57	2	0	2.0	2.0	2.0	4127
29	2110	183	9	124	48	1	1	2.0	2.0	2.5	4128
30	2110	129	5	80	39	3	2	2.5	2.5	2.0	4129
31	2100	117	7	78	29	2	1	2.0	2.5	2.5	4130
Σ	—	1584	97	995	452	18	22	32.0	41.5	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	—
MNS	—	88.00	5.39	55.28	25.11	1.00	1.22	1.78	2.31	2.50	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JULY 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	2130	1	1	0	0	1	2	3	3/9/9	0	0	0	0	0	0	0	0	0	0
02	2050	0	0	0	0	1	2	3	4/11/12	0	0	0	0	0	0	0	0	0	0
03																			
04	2240	0	0	0	0	1	2	4	5/6/6/7	1	16	0	0	0	0	0	0	1	1
05	2120	1	1	0	0	3	2/2/3	2	8/9	1	10	0	0	0	0	0	0	1	1
06																			
07																			
08																			
09	2125	2	1/1	0	0	0	0	3	3/6/7	0	0	0	0	0	0	1	3	1	1
10																			
11																			
12	2205	0	0	0	0	1	2	0	0	0	0	1	31	0	0	0	0	1	1
13	2055	0	0	0	0	1	2	0	0	0	0	1	42	0	0	0	0	1	1
14	2125	2	1/1	2	3/3	1	3	0	0	0	0	1	58	0	0	0	0	1	1
15	2110	5	1/1/1/1/1	1	2	1	3	1	3	0	0	1	55	0	0	0	0	0	0
16																			
17	2125	3	1/1/1	0	0	0	0	0	0	1	22	1	78	0	0	0	0	1	2
18	2120	2	1/1	0	0	0	0	1	11	1	25	1	63	0	0	1	1	0	0
19																			
20																			
21																			
22																			
23	2100	1	1	1	2	2	2/2	3	3/5/8	1	6	2	27/41	0	0	0	0	1	1
24	2140	0	0	0	0	3	3/4/7	2	11/12	0	0	2	28/35	0	0	0	0	3	1/1/2
25	2130	1	1	0	0	2	3/4	4	2/5/11/17	1	24	2	21/46	0	0	0	0	0	0
26																			
27																			
28	2045	0	0	0	0	1	2	4	2/9/13/23	1	25	2	42/47	0	0	1	1	1	1
29	2110	1	1	0	0	3	2/4/5	1	2	1	18	3	39/48/52	0	0	0	0	2	1/2
30	2110	2	1/1	0	0	1	3	0	0	1	13	3	30/35/38	0	0	0	0	3	1/1/1
31	2100	1	1	1	5	3	2/3/4	0	0	0	0	3	29/30/34	0	0	0	0	2	1/1
TOTALS	—	22	22	5	15	25	73	31	242	9	159	23	949	0	0	3	5	19	22

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
16.1	3.6	18.2	22.6	6.6	16.8	0.0	2.2	13.9	137

NOBS = 18

\bar{p}/\bar{g} mean = 2.6345

\bar{f}/\bar{g} mean = 10.7029

\bar{p}/\bar{g} mean = 2.5839

\bar{f}/\bar{g} mean = 10.8540

GROUP COMPLEXITY INDEX (GCI) = 13.4380



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

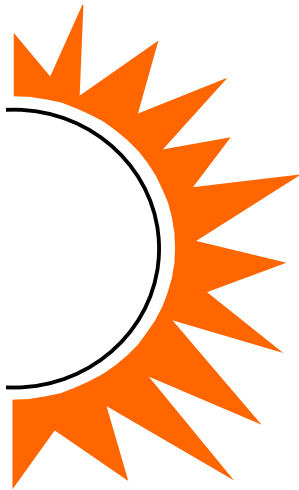
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



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SUNSPOT RESULTS FOR AUGUST 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = Squared Quality Count .

Q = Quietness [ie. steadiness] refer to Kiepenheuer scale .

S = Sharpness [ie. clarity] refer to Kiepenheuer scale .

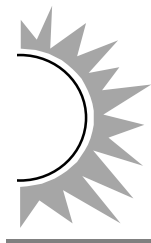
T = Transparency where 1 = excellent , 5 = worthless .

DATE	UT	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01															
02	2055	9	70	160	22	26	246	1927	228	34	158	2.0	2.0	2.0	4131
03															
04															
05															
06	2125	9	51	141	16	22	182	1149	165	31	121	2.0	3.0	3.0	4132
07	2120	8	40	120	14	13	153	1042	136	25	91	2.0	2.0	2.5	4133
08															
09	2125	4	37	77	9	22	112	813	79	16	70	2.0	2.5	2.5	4134
10															
11															
12															
13															
14	2120	14	112	252	27	34	304	2575	276	47	181	2.0	2.5	3.0	4135
15	2110	13	114	244	33	34	364	2527	300	46	184	2.0	2.0	3.0	4136
16	2120	11	121	231	25	36	286	2947	267	41	169	3.0	3.5	2.5	4137
17	2130	14	141	281	31	43	353	3263	261	43	155	2.0	2.0	2.5	4138
18	2100	12	120	240	23	42	272	2740	240	38	140	1.5	2.5	2.5	4139
19															
20	2125	9	98	188	18	31	211	2199	203	29	111	1.5	2.0	2.0	4140
21	2055	11	80	190	17	33	203	1621	233	35	135	1.5	2.0	2.0	4141
22	2045	8	71	151	13	34	164	1238	223	26	96	1.0	2.0	2.0	4142
23															
24	2135	7	58	128	14	35	175	1142	223	24	92	2.0	3.0	3.0	4143
25															
26	2045	6	35	95	9	11	101	596	150	19	67	1.5	2.0	2.0	4144
27	2105	8	36	116	9	14	104	644	122	19	59	2.5	3.0	2.5	4145
28	2030	6	31	91	10	12	112	500	127	17	59	1.5	2.5	2.5	4146
29															
30	2045	7	72	142	22	27	247	1670	195	28	118	2.0	3.5	4.0	4147
31	2040	7	75	145	18	19	199	1843	155	27	113	1.5	2.0	1.5	4148
Σ	—	163	1362	2992	330	488	3788	30436	3583	545	2119	33.5	44.0	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	18	18	18	18	—
MNS	—	9.06	75.67	166.22	18.33	27.11	210.44	1690.89	199.06	30.28	117.72	1.86	2.44	2.50	—

MEAN WEIGHT = 0.4563

MEAN CONDITION = 2.2685

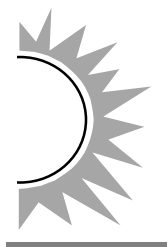
TRUNCATED WOLF NUMBER = 147.89



SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR
AUGUST 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 .
 IS = Inter-Sol Index .
 gr = number of multi-spot groups .
 grfp = number of umbrae 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	2055	77	7	43	25	1	1	2.0	2.0	2.0	4131
03											
04											
05											
06	2125	59	8	28	22	1	0	2.0	3.0	3.0	4132
07	2120	46	6	26	12	1	1	2.0	2.0	2.5	4133
08											
09	2125	41	4	15	22	0	0	2.0	2.5	2.5	4134
10											
11											
12											
13											
14	2120	122	10	76	32	2	2	2.0	2.5	3.0	4135
15	2110	124	10	78	33	2	1	2.0	2.0	3.0	4136
16	2120	130	9	83	36	2	0	3.0	3.5	2.5	4137
17	2130	151	10	95	42	3	1	2.0	2.0	2.5	4138
18	2100	128	8	75	41	3	1	1.5	2.5	2.5	4139
19											
20	2125	104	6	66	29	1	2	1.5	2.0	2.0	4140
21	2055	89	9	47	31	0	2	1.5	2.0	2.0	4141
22	2045	77	6	36	33	1	1	1.0	2.0	2.0	4142
23											
24	2135	63	5	22	34	1	1	2.0	3.0	3.0	4143
25											
26	2045	40	5	24	10	0	1	1.5	2.0	2.0	4144
27	2105	39	3	20	11	2	3	2.5	3.0	2.5	4145
28	2030	35	4	19	10	0	2	1.5	2.5	2.5	4146
29											
30	2045	79	7	45	27	0	0	2.0	3.5	4.0	4147
31	2040	81	6	55	19	1	0	1.5	2.0	1.5	4148
Σ	—	1485	123	853	469	21	19	33.5	44.0	45.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	—
MNS	—	82.50	6.83	47.39	26.06	1.17	1.06	1.86	2.44	2.50	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR
AUGUST 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	2055	1	1	1	2	1	3	2	5/18	0	0	3	9/14/17	0	0	0	0	1	1
03																			
04																			
05																			
06	2125	0	0	2	2/2	1	3	3	5/8/15	0	0	1	13	1	2	0	0	1	1
07	2120	1	1	0	0	1	3	1	4	1	23	0	0	2	2/4	0	0	2	1/2
08																			
09	2125	0	0	1	2	0	0	1	10	2	8/17	0	0	0	0	0	0	0	0
10																			
11																			
12																			
13																			
14	2120	2	1/1	0	0	1	2	6	4/4/6/6/6/13	2	30/33	0	0	1	4	0	0	2	1/1
15	2110	1	1	1	2	0	0	5	4/4/6/9/14	3	7/24/39	0	0	1	2	0	0	2	1/1
16	2120	0	0	1	2	1	2	2	2/16	4	8/13/29/43	0	0	1	4	0	0	2	1/1
17	2130	1	1	1	2	3	3/3/4	2	8/10	3	19/28/58	0	0	0	0	0	0	4	1/1/1/2
18	2100	1	1	1	2	3	2/3/5	1	10	3	12/26/56	0	0	0	0	1	1	2	1/1
19																			
20	2125	2	1/1	0	0	2	2/4	2	6/12	2	23/48	0	0	0	0	1	1	0	0
21	2055	2	1/1	2	2/3	2	2/3	2	9/12	3	6/13/28	0	0	0	0	0	0	0	0
22	2045	1	1	0	0	2	3/12	3	6/13/20	1	15	0	0	0	0	0	0	1	1
23																			
24	2135	1	1	0	0	1	4	3	8/9/17	1	18	0	0	0	0	1	1	0	0
25																			
26	2045	1	1	0	0	2	2/10	3	3/6/13	0	0	0	0	0	0	0	0	0	0
27	2105	3	1/1/1	0	0	0	0	3	5/8/18	0	0	0	0	0	0	0	0	2	1/1
28	2030	2	1/1	0	0	1	3	3	4/6/16	0	0	0	0	0	0	0	0	0	0
29																			
30	2045	0	0	0	0	2	2/2	4	2/8/9/26	0	0	1	23	0	0	0	0	0	0
31	2040	0	0	0	0	1	3	4	3/7/9/23	0	0	1	29	0	0	0	0	1	1
TOTALS	—	19	19	10	21	24	85	50	465	25	624	6	105	6	18	3	3	20	22

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.7	6.1	14.7	30.7	15.3	3.7	3.7	1.8	12.3	163

NOBS = 18

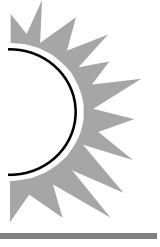
\bar{p} / \bar{g} mean = 2.0150

\bar{f} / \bar{g} mean = 8.1865

\bar{p} / \bar{g} mean = 2.0245

\bar{f} / \bar{g} mean = 8.3558

GROUP COMPLEXITY INDEX (GCI) = 10.3804



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

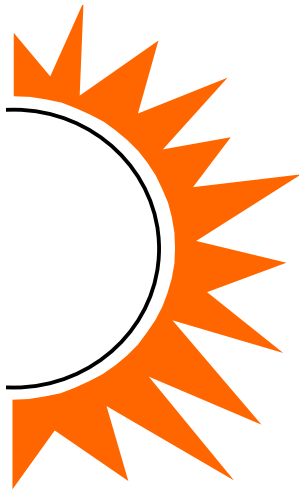
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



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SUNSPOT RESULTS FOR SEPTEMBER 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = 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 .

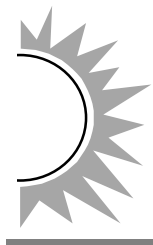
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2055	11	87	197	27	26	296	2377	263	39	153	2.0	2.5	2.5	4149
02															
03	2045	11	90	200	30	39	339	2207	219	37	139	2.0	3.0	3.0	4150
04															
05															
06	2035	9	83	173	19	40	230	2008	150	29	117	1.5	2.0	2.5	4151
07															
08															
09															
10	2135	9	113	203	25	41	291	2970	197	30	124	2.0	2.0	2.5	4152
11	2125	7	117	187	23	50	280	3222	195	27	117	2.0	3.0	3.0	4153
12															
13	2015	7	72	142	15	30	180	1936	155	23	99	2.0	3.0	2.5	4154
14															
15															
16															
17															
18															
19															
20	2010	13	63	193	20	29	229	1210	247	40	138	2.0	2.0	2.5	4155
21	2115	10	71	171	19	23	213	1462	196	30	102	2.0	2.5	2.5	4156
22															
23	2055	12	78	198	21	31	241	1667	232	36	126	2.0	2.5	3.0	4157
24															
25	2010	11	61	171	19	20	210	1202	188	32	112	1.5	1.5	2.0	4158
26	2045	8	44	124	15	12	162	916	139	26	104	2.0	2.5	2.5	4159
27															
28															
29	2105	7	38	108	10	17	117	776	62	17	53	2.0	2.0	2.0	4160
30															
31	—														
Σ	—	115	917	2067	243	358	2788	21953	2243	366	1384	23.0	28.5	30.5	—
NOBS	—	12	12	12	12	12	12	12	12	12	12	12	12	12	—
MNS	—	9.58	76.42	172.25	20.25	29.83	232.33	1829.42	186.92	30.50	115.33	1.92	2.38	2.54	—

MEAN WEIGHT = 0.4466

MEAN CONDITION = 2.2778

TRUNCATED WOLF NUMBER = 151.25

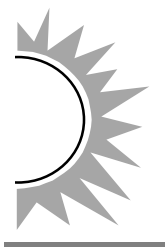
* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR
SEPTEMBER 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 .
 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	2055	95	8	58	26	3	0	2.0	2.5	2.5	4149
02											
03	2045	99	9	49	39	2	0	2.0	3.0	3.0	4150
04											
05											
06	2035	89	6	42	38	1	2	1.5	2.0	2.5	4151
07											
08											
09											
10	2135	120	7	72	39	0	2	2.0	2.0	2.5	4152
11	2125	123	6	66	50	1	0	2.0	3.0	3.0	4153
12											
13	2015	77	5	42	28	0	2	2.0	3.0	2.5	4154
14											
15											
16											
17											
18											
19											
20	2010	73	10	32	28	2	1	2.0	2.0	2.5	4155
21	2115	77	6	45	22	3	1	2.0	2.5	2.5	4156
22											
23	2055	87	9	45	30	2	1	2.0	2.5	3.0	4157
24											
25	2010	67	6	38	18	3	2	1.5	1.5	2.0	4158
26	2045	49	5	31	10	1	2	2.0	2.5	2.5	4159
27											
28											
29	2105	42	4	20	15	1	2	2.0	2.0	2.0	4160
30											
31	—										
Σ	—	998	81	540	343	19	15	23.0	28.5	30.5	—
NOBS	—	12	12	12	12	12	12	12	12	12	—
MNS	—	83.17	6.75	45.00	28.58	1.58	1.25	1.92	2.38	2.54	—



SUNSPOT CENSUS BY CLASSIFICATION FOR
SEPTEMBER 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	2055	0	0	0	0	1	2	6	3/5/6/7/9/9	0	0	1	43	0	0	0	0	3	1/1/1
02																			
03	2045	0	0	0	0	3	2/4/6	4	3/9/13/14	0	0	1	34	0	0	0	0	3	1/1/3
04																			
05																			
06	2035	2	1/1	0	0	2	2/8	2	7/18	1	17	1	28	0	0	0	0	1	1
07																			
08																			
09																			
10	2135	2	1/1	1	2	1	2	3	7/9/14	1	34	1	43	0	0	0	0	0	0
11	2125	0	0	1	3	0	0	3	7/10/15	1	29	1	52	0	0	0	0	1	1
12																			
13	2015	2	1/1	1	2	0	0	2	6/16	1	12	1	34	0	0	0	0	0	0
14																			
15																			
16																			
17																			
18																			
19																			
20	2010	1	1	2	2/2	3	2/2/2	4	3/4/6/14	1	23	0	0	0	0	1	1	1	1
21	2115	1	1	0	0	3	2/3/4	2	3/23	1	32	0	0	0	0	1	1	2	1/1
22																			
23	2055	1	1	1	4	2	2/3	2	9/16	2	17/20	0	0	0	0	1	2	3	1/1/2
24																			
25	2010	2	1/1	0	0	1	3	4	4/7/9/18	1	15	0	0	0	0	0	0	3	1/1/1
26	2045	2	1/1	0	0	0	0	3	4/5/13	2	8/11	0	0	0	0	0	0	1	1
27																			
28																			
29	2105	2	1/1	1	2	2	3/3	0	0	1	27	0	0	0	0	0	0	1	1
30																			
31	—																		
TOTALS	—	15	15	7	17	18	55	35	325	12	245	6	234	0	0	3	4	19	22

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
13.0	6.1	15.7	30.4	10.4	5.2	0.0	2.6	16.5	115

NOBS = 12

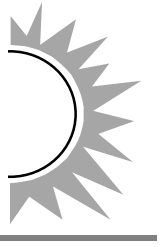
$\bar{p/g}$ mean = 2.1432

$\bar{f/g}$ mean = 8.3157

$\bar{p/g}$ mean = 2.1130

$\bar{f/g}$ mean = 7.9739

GROUP COMPLEXITY INDEX (GCI) = 10.0870



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

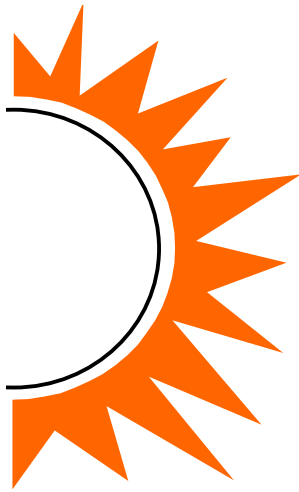
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



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SUNSPOT RESULTS FOR **OCTOBER 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = 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 .

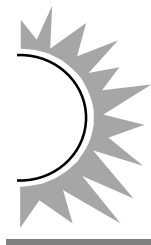
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01															
02	2045	4	41	81	7	18	88	694	62	12	42	2.0	2.0	2.5	4161
03	2035	4	40	80	10	13	113	700	86	15	57	1.5	2.5	2.5	4162
04	2035	6	52	112	12	18	138	953	154	19	65	2.0	2.5	2.5	4163
05	2005	7	49	119	17	12	182	913	178	22	78	2.0	2.5	2.5	4164
06	2010	6	45	105	12	17	137	775	140	18	62	2.5	2.5	2.5	4165
07	2030	6	52	112	12	23	143	875	156	20	70	2.5	2.5	2.0	4166
08	2025	11	49	159	15	22	172	857	185	31	99	1.5	2.0	2.0	4167
09	2020	10	34	134	12	15	135	530	149	24	68	2.0	2.5	2.5	4168
10	2125	11	62	172	18	29	209	1023	191	32	102	2.5	2.5	2.0	4169
11															
12	2010	10	63	163	17	21	191	1123	225	29	99	2.5	2.5	2.5	4170
13															
14	2020	10	58	158	15	26	176	1005	176	29	89	1.5	2.5	2.5	4171
15															
16	2015	11	63	173	17	32	202	1289	156	31	103	2.0	2.0	2.5	4172
17															
18	2030	9	74	164	20	27	227	1466	187	32	128	2.0	2.5	2.5	4173
19	2050	9	82	172	21	25	235	2696	203	31	129	1.5	2.5	2.5	4174
20															
21	2120	6	48	108	12	16	136	1296	144	20	80	2.0	3.0	3.0	4175
22															
23	2020	5	52	102	12	21	141	1619	138	16	66	2.0	2.5	2.5	4176
24															
25	1935	8	42	122	10	23	123	1243	124	22	78	1.5	2.0	2.0	4177
26															
27															
28															
29															
30	2020	13	47	177	13	20	150	911	153	31	93	1.5	2.0	2.0	4178
31															
Σ	—	146	953	2413	252	378	2898	19968	2807	434	1508	35.0	43.0	43.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	18	18	18	18	—
MNS	—	8.11	52.94	134.06	14.00	21.00	161.00	1109.33	155.94	24.11	83.78	1.94	2.39	2.39	—

MEAN WEIGHT = 0.4511

MEAN CONDITION = 2.2407

TRUNCATED WOLF NUMBER = 116.11

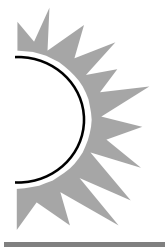
* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



**SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR
OCTOBER 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 .
 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											
02	2045	44	3	23	17	0	1	2.0	2.0	2.5	4161
03	2035	44	4	27	13	0	0	1.5	2.5	2.5	4162
04	2035	56	4	32	18	2	0	2.0	2.5	2.5	4163
05	2005	53	4	35	11	2	1	2.0	2.5	2.5	4164
06	2010	49	4	27	16	1	1	2.5	2.5	2.5	4165
07	2030	57	5	28	23	1	0	2.5	2.5	2.0	4166
08	2025	56	7	24	21	3	1	1.5	2.0	2.0	4167
09	2020	38	4	15	13	4	2	2.0	2.5	2.5	4168
10	2125	70	8	30	29	3	0	2.5	2.5	2.0	4169
11											
12	2010	70	7	41	19	1	2	2.5	2.5	2.5	4170
13											
14	2020	67	9	31	26	1	0	1.5	2.5	2.5	4171
15											
16	2015	69	6	27	31	4	1	2.0	2.0	2.5	4172
17											
18	2030	83	9	47	27	0	0	2.0	2.5	2.5	4173
19	2050	88	6	56	23	1	2	1.5	2.5	2.5	4174
20											
21	2120	53	5	32	15	0	1	2.0	3.0	3.0	4175
22											
23	2020	55	3	30	20	1	1	2.0	2.5	2.5	4176
24											
25	1935	46	4	16	22	3	1	1.5	2.0	2.0	4177
26											
27											
28											
29											
30	2020	54	7	24	17	3	3	1.5	2.0	2.0	4178
31											
Σ	—	1052	99	545	361	30	17	35.0	43.0	43.0	—
NOBS	—	18	18	18	18	18	18	18	18	18	—
MNS	—	58.44	5.50	30.28	20.06	1.67	0.94	1.94	2.39	2.39	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR
OCTOBER 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	2045	1	1	0	0	1	3	2	16/21	0	0	0	0	0	0	0	0	0	0
03	2035	0	0	0	0	1	2	3	7/14/17	0	0	0	0	0	0	0	0	0	0
04	2035	0	0	1	2	0	0	3	8/18/22	0	0	0	0	0	0	1	1	1	1
05	2005	1	1	0	0	0	0	4	3/5/15/23	0	0	0	0	0	0	1	1	1	1
06	2010	1	1	0	0	1	4	3	7/11/21	0	0	0	0	0	0	0	0	1	1
07	2030	0	0	0	0	2	3/5	3	6/10/27	0	0	0	0	0	0	0	0	1	1
08	2025	1	1	1	2	2	2/2	4	4/5/8/22	0	0	0	0	0	0	0	0	3	1/1/1
09	2020	2	1/1	0	0	2	4/9	2	6/9	0	0	0	0	0	0	0	0	4	1/1/1/1
10	2125	0	0	2	2/3	2	2/6	4	5/12/12/17	0	0	0	0	0	0	0	0	3	1/1/1
11																			
12	2010	2	1/1	0	0	1	4	5	4/6/7/18/19	0	0	0	0	0	0	0	0	2	1/2
13																			
14	2020	0	0	1	2	4	2/3/3/4	2	8/31	0	0	0	0	0	0	1	2	2	1/2
15																			
16	2015	1	1	1	3	1	4	3	5/10/11	1	25	0	0	0	0	0	0	4	1/1/1/1
17																			
18	2030	0	0	2	2/3	3	2/3/7	2	13/15	1	18	1	11	0	0	0	0	0	0
19	2050	2	1/1	0	0	1	3	2	4/11	1	14	1	25	1	22	1	1	0	0
20																			
21	2120	1	1	0	0	3	2/5/6	1	2	0	0	1	32	0	0	0	0	0	0
22																			
23	2020	1	1	0	0	1	6	1	3	0	0	1	41	0	0	0	0	1	1
24																			
25	1935	1	1	1	2	1	5	1	2	0	0	1	29	0	0	0	0	3	1/1/1
26																			
27																			
28																			
29																			
30	2020	3	1/1/1	2	2/3	1	3	2	4/11	1	16	0	0	0	0	0	0	4	1/1/1/2
31																			
TOTALS	—	17	17	11	26	27	104	47	535	4	73	5	138	1	22	4	5	30	33

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
11.6	7.5	18.5	32.2	2.7	3.4	0.7	2.7	20.5	146

NOBS = 18

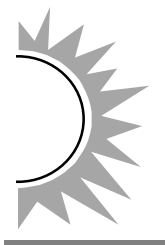
\bar{p}/\bar{g} mean = 1.8239

\bar{f}/\bar{g} mean = 7.1111

\bar{p}/\bar{g} mean = 1.7260

\bar{f}/\bar{g} mean = 6.5274

GROUP COMPLEXITY INDEX (GCI) = 8.2534



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

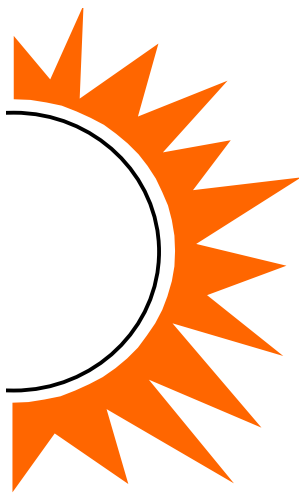
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



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SUNSPOT RESULTS FOR NOVEMBER 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = 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 .

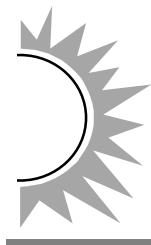
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2110	11	51	161	20	21	221	1012	231	33	109	2.5	2.5	2.5	4179
02	2000	13	56	186	15	34	184	1037	219	36	120	2.0	2.0	2.0	4180
03															
04															
05															
06	2000	10	94	194	21	40	250	2478	238	32	120	2.0	2.0	2.0	4181
07															
08															
09															
10															
11	2100	6	64	124	20	29	229	2049	124	23	105	2.0	2.5	2.5	4182
12	2020	7	67	137	20	26	226	1957	127	24	100	2.5	3.0	2.5	4183
13															
14															
15															
16	1955	7	89	159	16	30	190	2853	267	29	139	1.5	1.5	2.0	4184
17	2030	5	61	111	18	21	201	2116	270	26	142	2.0	3.0	2.5	4185
18	1940	6	50	110	18	18	198	1573	183	26	126	2.0	2.5	2.5	4186
19	2145	5	40	90	10	22	122	1182	161	22	104	2.0	3.0	2.5	4187
20	2010	7	41	111	13	18	148	1097	190	27	115	2.5	3.0	3.5	4188
21															
22	2010	6	36	96	10	17	117	1123	145	20	84	1.5	2.5	2.5	4189
23															
24	2000	5	20	70	9	7	97	758	143	17	69	2.0	2.5	2.0	4190
25	2015	7	19	89	6	10	70	599	121	18	62	2.0	2.0	2.0	4191
26															
27															
28															
29	1945	6	18	78	7	7	77	351	81	17	59	2.0	2.5	2.5	4192
30	2035	5	22	72	9	10	100	458	103	18	70	2.0	3.0	3.0	4193
31	—														
Σ	—	106	728	1788	212	310	2430	20643	2603	368	1524	30.5	37.5	36.5	—
NOBS	—	15	15	15	15	15	15	15	15	15	15	15	15	15	—
MNS	—	7.07	48.53	119.20	14.13	20.67	162.00	1376.20	173.53	24.53	101.60	2.03	2.50	2.43	—

MEAN WEIGHT = 0.4395

MEAN CONDITION = 2.3222

TRUNCATED WOLF NUMBER = 106.80

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



SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR

NOVEMBER 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 .

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 .

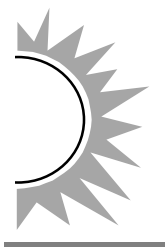
ef = number of single non-penumbral spots .

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	2110	58	7	26	21	4	0	2.5	2.5	2.5	4179
02	2000	64	8	19	32	3	2	2.0	2.0	2.0	4180
03											
04											
05											
06	2000	100	6	51	39	3	1	2.0	2.0	2.0	4181
07											
08											
09											
10											
11	2100	69	5	34	29	1	0	2.0	2.5	2.5	4182
12	2020	72	5	40	25	1	1	2.5	3.0	2.5	4183
13											
14											
15											
16	1955	95	6	58	30	1	0	1.5	1.5	2.0	4184
17	2030	65	4	39	21	1	0	2.0	3.0	2.5	4185
18	1940	55	5	31	18	1	0	2.0	2.5	2.5	4186
19	2145	44	4	17	22	1	0	2.0	3.0	2.5	4187
20	2010	47	6	22	18	1	0	2.5	3.0	3.5	4188
21											
22	2010	39	3	17	16	2	1	1.5	2.5	2.5	4189
23											
24	2000	22	2	10	7	3	0	2.0	2.5	2.0	4190
25	2015	21	2	5	9	4	1	2.0	2.0	2.0	4191
26											
27											
28											
29	1945	22	4	10	6	1	1	2.0	2.5	2.5	4192
30	2035	26	4	11	10	1	0	2.0	3.0	3.0	4193
31	—										
Σ	—	799	71	390	303	28	7	30.5	37.5	36.5	—
NOBS	—	15	15	15	15	15	15	15	15	15	—
MNS	—	53.27	4.73	26.00	20.20	1.87	0.47	2.03	2.50	2.43	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR
NOVEMBER 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	2110	0	0	0	0	1	2	5	3/6/9/11/14	0	0	0	0	0	0	0	0	5	1/1/1/1/2
02	2000	2	1/1	3	2/2/3	0	0	4	2/5/8/16	1	13	0	0	0	0	1	1	2	1/1
03																			
04																			
05																			
06	2000	1	1	0	0	2	3/8	3	6/9/17	0	0	1	47	0	0	1	1	2	1/1
07																			
08																			
09																			
10																			
11	2100	0	0	1	2	1	3	1	6	0	0	2	12/40	0	0	0	0	1	1
12	2020	1	1	0	0	2	3/4	1	9	1	6	1	43	0	0	0	0	1	1
13																			
14																			
15																			
16	1955	0	0	2	2/2	0	0	0	0	2	9/12	2	18/45	0	0	1	1	0	0
17	2030	0	0	0	0	0	0	0	0	1	8	3	9/11/32	0	0	1	1	0	0
18	1940	0	0	1	2	0	0	1	4	1	9	2	16/18	0	0	1	1	0	0
19	2145	0	0	0	0	1	4	0	0	2	6/8	1	21	0	0	1	1	0	0
20	2010	0	0	0	0	2	2/3	2	2/6	1	8	1	19	0	0	0	0	1	1
21																			
22	2010	1	1	0	0	1	3	0	0	1	6	1	24	0	0	1	1	1	1
23																			
24	2000	0	0	0	0	0	0	0	0	0	0	1	15	1	2	1	1	2	1/1
25	2015	1	1	1	2	0	0	0	0	0	0	1	12	0	0	1	1	3	1/1/1
26																			
27																			
28																			
29	1945	1	1	1	2	1	2	1	2	1	10	0	0	0	0	0	0	1	1
30	2035	0	0	0	0	1	2	2	4/6	1	9	0	0	0	0	0	0	1	1
31	—																		
TOTALS	—	7	7	9	19	12	39	20	145	12	104	16	382	1	2	9	9	20	21

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
6.6	8.5	11.3	18.9	11.3	15.1	0.9	8.5	18.9	106

NOBS = 15

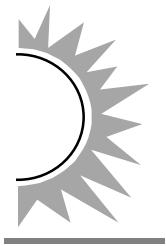
$\overline{p/g}$ mean = 2.0864

$\overline{f/g}$ mean = 7.0534

$\overline{p/g}$ mean = 2.0000

$\overline{f/g}$ mean = 6.8679

GROUP COMPLEXITY INDEX (GCI) = 8.8679



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

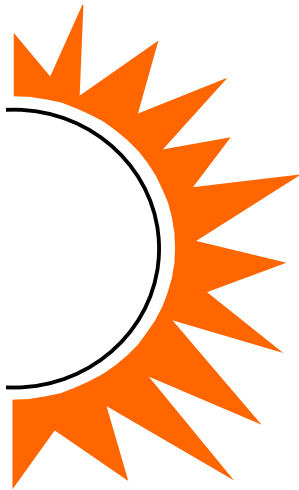
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



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SUNSPOT RESULTS FOR **DECEMBER 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 .

WN = Wolf Number ; SN = Pettisindex ; BX = Beckindex ; CV = Classification Value ;

QC = Quality Count ; QC² = 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 .

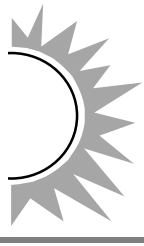
DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC ²	Q	S	T	Ref.
01	2000	6	36	96	12	17	137	730	101	18	66	2.0	2.5	2.5	4194
02															
03															
04	2125	7	40	110	11	20	130	789	129	24	96	2.0	2.5	2.5	4195
05															
06															
07															
08	2115	12	25	145	13	10	140	427	143	29	81	1.5	2.0	2.0	4196
09	2055	10	43	143	14	15	155	742	144	29	91	2.0	2.5	2.0	4197
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22	2140	6	41	101	15	16	166	992	165	25	113	2.0	2.5	2.5	4198
23															
24	1910	5	11	61	6	4	64	153	64	13	39	2.0	2.5	2.5	4199
25															
26	1940	3	4	34	4	0	40	110	45	8	24	2.0	2.5	2.5	4200
27															
28	1935	4	5	45	2	3	23	61	23	7	15	1.5	2.5	2.0	4201
29	2000	4	14	54	5	8	58	188	55	11	35	1.5	2.0	2.0	4202
30	2015	2	7	27	3	3	33	145	32	6	20	1.5	2.5	2.5	4203
31	1920	2	10	30	2	7	27	80	21	6	18	1.0	2.0	2.0	4204
Σ	—	61	236	846	87	103	973	4417	922	176	598	19.0	26.0	25.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	11	11	11	11	—
MNS	—	5.55	21.45	76.91	7.91	9.36	88.45	401.55	83.82	16.00	54.36	1.73	2.36	2.27	—

MEAN WEIGHT = 0.4779

MEAN CONDITION = 2.1212

TRUNCATED WOLF NUMBER = 65.64

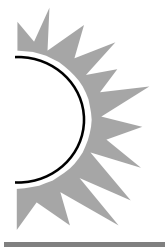
* Stated times approximate Co-ordinated Universal Time / Temps Universel Coordonné (UTC).



**SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR
DECEMBER 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 .
 IS = Inter-Sol Index .
 gr = number of multi-spot groups .
 grfp = number of umbræ 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	2000	40	4	18	16	1	1	2.0	2.5	2.5	4194
02											
03											
04	2125	46	6	20	19	0	1	2.0	2.5	2.5	4195
05											
06											
07											
08	2115	30	5	10	8	5	2	1.5	2.0	2.0	4196
09	2055	51	8	26	15	2	0	2.0	2.5	2.0	4197
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22	2140	46	5	24	16	1	0	2.0	2.5	2.5	4198
23											
24	1910	14	3	6	3	1	1	2.0	2.5	2.5	4199
25											
26	1940	5	1	2	0	2	0	2.0	2.5	2.5	4200
27											
28	1935	6	1	1	1	1	2	1.5	2.5	2.0	4201
29	2000	17	3	6	7	0	1	1.5	2.0	2.0	4202
30	2015	8	1	3	3	1	0	1.5	2.5	2.5	4203
31	1920	12	2	3	7	0	0	1.0	2.0	2.0	4204
Σ	—	275	39	119	95	14	8	19	26	25	—
NOBS	—	11	11	11	11	11	11	11	11	11	—
MNS	—	25.00	3.55	10.82	8.64	1.27	0.73	1.73	2.36	2.27	—



**SUNSPOT CENSUS BY CLASSIFICATION FOR
DECEMBER 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	2000	1	1	1	2	0	0	2	7/10	1	15	0	0	0	0	0	0	1	1
02																			
03																			
04	2125	1	1	1	2	1	5	2	3/6	2	7/16	0	0	0	0	0	0	0	0
05																			
06																			
07																			
08	2115	2	1/1	0	0	3	2/3/4	2	3/6	0	0	0	0	0	0	0	0	5	1/1/1/ 1/1
09	2055	0	0	1	2	3	2/2/4	3	8/9/12	0	0	0	0	0	0	0	0	3	1/1/2
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			
21																			
22	2140	0	0	0	0	0	0	3	3/5/11	1	13	1	8	0	0	0	0	1	1
23																			
24	1910	1	1	0	0	2	2/3	1	4	0	0	0	0	0	0	0	0	1	1
25																			
26	1940	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	2	1/1
27																			
28	1935	2	1/1	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	1
29	2000	1	1	0	0	2	2/3	1	8	0	0	0	0	0	0	0	0	0	0
30	2015	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	0	1	1
31	1920	0	0	0	0	2	3/7	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	—	8	8	3	6	14	44	16	103	4	51	1	8	0	0	0	0	15	16

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
13.1	4.9	23.0	26.2	6.6	1.6	0.0	0.0	24.6	61

NOBS = 11

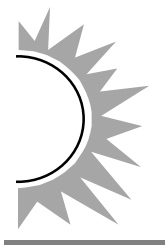
$\overline{p/g}$ mean = 1.3944

$\overline{f/g}$ mean = 3.7922

$\overline{p/g}$ mean = 1.4262

$\overline{f/g}$ mean = 3.8689

GROUP COMPLEXITY INDEX (GCI) = 5.2951



**SMOOTHED RESULTS OF OBSERVED VALUES FOR THE
LAST 12 MONTHS (OBTAINABLE)
USING THE WALDMEIER & BARNES-13 METHODS.**

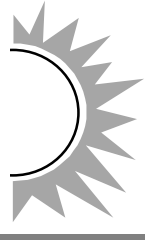
DATA BELOW ARE PRELIMINARY. FINAL VALUES WILL BE PUBLISHED IN THE GDSO ANNUAL REPORTS.

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 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
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

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 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
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



**OBSERVED ANNUAL MEANS OF SUNSPOT DATA FOR
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 .

<i>g</i>	=	8.57
<i>f</i>	=	58.60
Wolf Number	=	144.34
Truncated Wolf Number	=	126.97
<i>p</i>	=	16.35
<i>s</i>	=	22.73
Pettisindex	=	186.26
Beckindex	=	1418.69
Classification Value	=	170.95
Quality Count	=	27.52
Squared Quality Count	=	105.09
Inter-Sol Index	=	64.62
Mean Weight	=	0.4604
Q	=	1.87
S	=	2.34
T	=	2.45
Mean Condition	=	2.2216
Total Number of Observations	=	176