



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

MONTHLY SUNSPOT REPORTS

1999

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GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR JANUARY 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02	2025	4	34	74	5	12	62	769	68	1.5	2.0	2.0	3542
03													
04													
05	2030	4	16	56	5	10	60	284	81	2.0	2.5	3.0	3543
06													
07	2050	3	10	40	2	8	28	110	32	2.0	3.0	3.0	3544
08													
09													
10	2055	4	5	45	2	3	23	86	20	2.0	2.0	2.0	3545
11													
12													
13													
14	2140	5	34	84	9	14	104	701	78	1.0	2.0	2.5	3546
15													
16													
17													
18	2105	4	71	111	13	41	171	1891	99	1.0	2.0	2.5	3547
19	2020	6	88	148	16	47	207	2460	124	1.5	2.0	2.0	3548
20													
21													
22													
23													
24	1925	4	16	56	5	9	59	356	75	2.5	3.0	3.0	3549
25	2005	2	9	29	3	5	35	204	33	2.0	2.0	2.0	3550
26	2030	2	9	29	1	8	18	60	15	1.5	2.5	2.5	3551
27													
28													
29													
30													
31	2100	2	7	27	2	4	24	212	23	1.5	2.5	2.5	3552
Σ	—	40	299	699	63	161	791	7133	648	18.5	25.5	27.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	11	11	—
MNS	—	3.64	27.18	63.55	5.73	14.64	71.91	648.45	58.91	1.68	2.32	2.45	—

MEAN WEIGHT = 0.4757

MEAN CONDITION = 2.1515

QUALITY COUNT = 10.36



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR

JANUARY 1999

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	2025	38	4	22	12	0	0	1.5	2.0	2.0	3542
03											
04											
05	2030	18	2	4	10	2	0	2.0	2.5	3.0	3543
06											
07	2050	13	3	2	8	0	0	2.0	3.0	3.0	3544
08											
09											
10	2055	6	1	0	2	2	1	2.0	2.0	2.0	3545
11											
12											
13											
14	2140	37	3	19	13	1	1	1.0	2.0	2.5	3546
15											
16											
17											
18	2105	74	3	29	41	1	0	1.0	2.0	2.5	3547
19	2020	92	4	40	46	1	1	1.5	2.0	2.0	3548
20											
21											
22											
23											
24	1925	18	2	6	8	1	1	2.5	3.0	3.0	3549
25	2005	10	1	4	4	0	1	2.0	2.0	2.0	3550
26	2030	11	2	1	8	0	0	1.5	2.5	2.5	3551
27											
28											
29											
30											
31	2100	9	2	3	4	0	0	1.5	2.5	2.5	3552
Σ	—	326	27	130	156	8	5	18.5	25.5	27.0	—
NOBS	—	11	11	11	11	11	11	11	11	11	—
MNS	—	29.64	2.45	11.82	14.18	0.73	0.45	1.68	2.32	2.45	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JANUARY 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02	2025	0 ; 0	2 ; 2/3	0 ; 0	0 ; 0	1 ; 27	0 ; 0	0 ; 0	0 ; 0	1 ; 2
03										
04										
05	2030	0 ; 0	1 ; 3	0 ; 0	1 ; 11	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
06										
07	2050	0 ; 0	2 ; 2/3	0 ; 0	1 ; 5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
08										
09										
10	2055	1 ; 1	1 ; 2	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
11										
12										
13										
14	2140	2 ; 1/2	0 ; 0	0 ; 0	1 ; 14	1 ; 16	0 ; 0	0 ; 0	0 ; 0	1 ; 1
15										
16										
17										
18	2105	0 ; 0	0 ; 0	0 ; 0	2 ; 9/28	0 ; 0	1 ; 33	0 ; 0	0 ; 0	1 ; 1
19	2020	1 ; 1	1 ; 2	0 ; 0	1 ; 9	1 ; 41	1 ; 34	0 ; 0	0 ; 0	1 ; 1
20										
21										
22										
23										
24	1925	1 ; 1	1 ; 2	0 ; 0	0 ; 0	1 ; 12	0 ; 0	0 ; 0	1 ; 1	0 ; 0
25	2005	1 ; 1	0 ; 0	0 ; 0	0 ; 0	1 ; 8	0 ; 0	0 ; 0	0 ; 0	0 ; 0
26	2030	0 ; 0	1 ; 3	1 ; 6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
27										
28										
29										
30										
31	2100	0 ; 0	1 ; 3	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 4	0 ; 0	0 ; 0
TOTALS	—	6 ; 7	10 ; 25	1 ; 6	6 ; 76	5 ; 104	2 ; 67	1 ; 4	1 ; 1	8 ; 9

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
15.0	25.0	2.5	15.0	12.5	5.0	2.5	2.5	20.0	40

NOBS = 11

\bar{p} / \bar{g} mean = 1.4212

\bar{f} / \bar{g} mean = 6.6182

\bar{p} / \bar{g} mean = 1.5750

\bar{f} / \bar{g} mean = 7.4750

GROUP COMPLEXITY INDEX (GCI) = 9.0500



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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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01	2020	4	4	44	1	3	13	52	13	1.5	2.0	2.0	3553
02													
03													
04													
05													
06	2210	2	3	23	2	1	21	53	21	1.5	2.0	2.5	3554
07	2040	3	3	33	1	2	12	45	12	1.5	2.0	2.5	3555
08	2030	5	12	62	4	7	47	233	74	1.5	2.0	2.0	3556
09													
10													
11													
12													
13													
14													
15													
16													
17	2150	9	49	139	16	24	184	941	185	1.5	2.0	2.0	3557
18	1945	7	33	103	13	7	137	503	190	1.5	2.0	2.5	3558
19													
20	2010	6	19	79	7	9	79	347	110	2.0	2.0	2.0	3559
21	2005	6	18	78	4	11	51	189	72	2.0	2.0	2.0	3560
22													
23													
24													
25													
26													
27	2030	4	24	64	5	12	62	367	46	1.5	2.0	2.0	3561
28													
29													
30													
31													
Σ	—	46	165	625	53	76	606	2730	723	14.5	18.0	19.5	—
NOBS	—	9	9	9	9	9	9	9	9	9	9	9	—
MNS	—	5.11	18.33	69.44	5.89	8.44	67.33	303.33	80.33	1.61	2.00	2.17	—

MEAN WEIGHT = 0.5202

MEAN CONDITION = 1.9259

QUALITY COUNT = 13.11



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR FEBRUARY 1999

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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	2020	4	0	0	0	1	3	1.5	2.0	2.0	3553
02											
03											
04											
05											
06	2210	4	1	1	1	1	0	1.5	2.0	2.5	3554
07	2040	3	0	0	0	1	2	1.5	2.0	2.5	3555
08	2030	13	1	3	5	2	2	1.5	2.0	2.0	3556
09											
10											
11											
12											
13											
14											
15											
16											
17	2150	55	6	23	23	2	1	1.5	2.0	2.0	3557
18	1945	39	6	25	7	1	0	1.5	2.0	2.5	3558
19											
20	2010	24	5	9	9	1	0	2.0	2.0	2.0	3559
21	2005	22	4	5	11	2	0	2.0	2.0	2.0	3560
22											
23											
24											
25											
26											
27	2030	27	3	11	12	1	0	1.5	2.0	2.0	3561
28											
29											
30											
31											
Σ	—	191	26	77	68	12	8	14.5	18.0	19.5	—
NOBS	—	9	9	9	9	9	9	9	9	9	—
MNS	—	21.22	2.89	8.56	7.56	1.33	0.89	1.61	2.00	2.17	—



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SUNSPOT CENSUS BY CLASSIFICATION FOR FEBRUARY 1999

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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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01	2020	3 ; 1/1/1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
02										
03										
04										
05										
06	2210	0 ; 0	0 ; 0	1 ; 2	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
07	2040	2 ; 1/1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
08	2030	2 ; 1/1	0 ; 0	0 ; 0	1 ; 8	0 ; 0	0 ; 0	0 ; 0	1 ; 1	1 ; 1
09										
10										
11										
12										
13										
14										
15										
16										
17	2150	1 ; 1	1 ; 2	0 ; 0	4;6/6/11/12	1 ; 9	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
18	1945	0 ; 0	0 ; 0	2 ; 4/7	4;2/4/6/9	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
19										
20	2010	0 ; 0	0 ; 0	3 ; 2/3/4	1 ; 5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/4
21	2005	1 ; 2	1 ; 3	2 ; 5/6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1	1 ; 1
22										
23										
24										
25										
26										
27	2030	0 ; 0	2 ; 2/4	0 ; 0	1 ; 17	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
28										
29										
30										
31										
TOTALS	—	9 ; 10	4 ; 11	8 ; 33	11 ; 86	1 ; 9	0 ; 0	0 ; 0	2 ; 2	11 ; 14
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
19.6	8.7	17.4	23.9	2.2	0.0	0.0	4.3	23.9	46	
		NOBS = 9	\bar{p}/\bar{g} mean = 1.0113			\bar{f}/\bar{g} mean = 3.1362				
			\bar{p}/\bar{g} mean = 1.1522			\bar{f}/\bar{g} mean = 3.5870				
GROUP COMPLEXITY INDEX (GCI) = 4.7391										



PREDICTION OF MAXIMUM

1999/02/24.

As smoothed Wolf Numbers for March 1998 onwards have reached 50 (in both the Waldmeier and 'Barnes 13' systems), I have re-evaluated and re-dated predicted sunspot maximum.

In June 1997, I predicted a Wolf Number maximum of 120 ± 25 saying that it would "likely ... occur about $3\frac{1}{2}$ years into the cycle (about November 1999)". While this prediction was good considering how little data it was based upon, I am now predicting a smoothed maximum of only

110 ± 20 for April 2000 ± 4 months.

Only time will tell how accurate this prediction is.

HOWARD BARNES.



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NEW ZEALAND

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SUNSPOT RESULTS FOR MARCH 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03	2010	7	48	118	10	27	127	787	118	1.5	2.5	3.0	3562
04													
05													
06													
07													
08													
09	2125	4	25	65	7	12	82	390	107	2.0	2.5	3.0	3563
10	1955	4	34	74	7	15	85	584	77	1.0	2.0	2.5	3564
11	2040	6	39	99	12	16	136	788	126	1.0	2.0	2.0	3565
12	2020	4	42	82	9	22	112	951	109	1.5	2.0	2.5	3566
13	2100	4	53	93	12	19	139	1204	149	1.5	2.0	2.0	3567
14													
15	2215	5	69	119	14	31	171	2131	133	1.5	2.0	2.5	3568
16	2010	5	63	113	12	27	147	1893	107	1.0	2.5	2.5	3569
17	2135	6	61	121	12	28	148	1745	142	2.0	2.5	2.5	3570
18	2105	6	43	103	7	22	92	864	108	2.0	2.5	2.5	3571
19													
20													
21	2225	7	17	87	4	12	52	218	57	1.5	2.0	2.5	3572
22													
23	2045	3	3	33	2	1	21	78	21	2.0	2.5	3.0	3573
24													
25													
26													
27													
28													
29	2025	5	11	61	5	5	55	348	48	1.5	2.5	2.5	3574
30													
31	2045	4	9	49	4	3	43	378	42	1.5	2.0	2.5	3575
Σ	—	70	517	1217	117	240	1410	12359	1344	21.5	31.5	35.5	—
NOBS	—	14	14	14	14	14	14	14	14	14	14	14	—
MNS	—	5.00	36.93	86.93	8.36	17.14	100.71	882.79	96.00	1.54	2.25	2.54	—

MEAN WEIGHT = 0.4813

MEAN CONDITION = 2.1071

QUALITY COUNT = 15.50



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR

MARCH 1999

All observations carried out by HOWARD BARNES .

Telescope : 76 mm refractor (f . l . 910 mm) .

Observed by PROJECTION . Full disc diameter = 145 mm approx .

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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-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	2010	54	6	21	26	0	1	1.5	2.5	3.0	3562
04											
05											
06											
07											
08											
09	2125	29	4	13	12	0	0	2.0	2.5	3.0	3563
10	1955	38	4	19	15	0	0	1.0	2.0	2.5	3564
11	2040	44	5	23	15	0	1	1.0	2.0	2.0	3565
12	2020	46	4	20	22	0	0	1.5	2.0	2.5	3566
13	2100	56	3	33	19	1	0	1.5	2.0	2.0	3567
14											
15	2215	72	3	37	30	1	1	1.5	2.0	2.5	3568
16	2010	68	5	36	27	0	0	1.0	2.5	2.5	3569
17	2135	66	5	33	27	0	1	2.0	2.5	2.5	3570
18	2105	47	4	21	20	0	2	2.0	2.5	2.5	3571
19											
20											
21	2225	21	4	3	11	2	1	1.5	2.0	2.5	3572
22											
23	2045	3	0	0	0	2	1	2.0	2.5	3.0	3573
24											
25											
26											
27											
28											
29	2025	14	3	4	5	2	0	1.5	2.5	2.5	3574
30											
31	2045	10	1	4	2	2	1	1.5	2.0	2.5	3575
Σ	—	568	51	267	231	10	9	21.5	31.5	35.5	—
NOBS	—	14	14	14	14	14	14	14	14	14	—
MNS	—	40.57	3.64	19.07	16.50	0.71	0.64	1.54	2.25	2.54	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR MARCH 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02										
03	2010	1 ; 1	2 ; 2/4	2 ; 3/4	1 ; 21	1 ; 13	0 ; 0	0 ; 0	0 ; 0	0 ; 0
04										
05										
06										
07										
08										
09	2125	0 ; 0	0 ; 0	2 ; 3/3	2 ; 7/12	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
10	1955	0 ; 0	1 ; 2	0 ; 0	3 ; 7/9/16	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
11	2040	1 ; 1	0 ; 0	3 ; 3/3/6	0 ; 0	1 ; 24	0 ; 0	0 ; 0	1 ; 2	0 ; 0
12	2020	0 ; 0	0 ; 0	1 ; 6	1 ; 5	1 ; 29	0 ; 0	0 ; 0	1 ; 2	0 ; 0
13	2100	0 ; 0	0 ; 0	0 ; 0	2 ; 7/13	1 ; 32	0 ; 0	0 ; 0	1 ; 1	0 ; 0
14										
15	2215	1 ; 1	0 ; 0	1 ; 6	0 ; 0	1 ; 14	1 ; 47	0 ; 0	0 ; 0	1 ; 1
16	2010	1 ; 2	0 ; 0	2 ; 3/3	0 ; 0	1 ; 13	1 ; 42	0 ; 0	0 ; 0	0 ; 0
17	2135	1 ; 1	1 ; 2	0 ; 0	2 ; 3/10	1 ; 11	1 ; 34	0 ; 0	0 ; 0	0 ; 0
18	2105	2 ; 1/1	1 ; 6	1 ; 5	1 ; 16	0 ; 0	1 ; 14	0 ; 0	0 ; 0	0 ; 0
19										
20										
21	2225	1 ; 1	3 ; 2/3/3	0 ; 0	1 ; 6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
22										
23	2045	1 ; 1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
24										
25										
26										
27										
28										
29	2025	0 ; 0	1 ; 2	1 ; 2	0 ; 0	0 ; 0	0 ; 0	1 ; 5	0 ; 0	2 ; 1/1
30										
31	2045	1 ; 1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 6	0 ; 0	2 ; 1/1
TOTALS	—	10 ; 11	9 ; 26	13 ; 50	13 ; 132	7 ; 136	4 ; 137	2 ; 11	3 ; 5	9 ; 9
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
14.3	12.9	18.6	18.6	10.0	5.7	2.9	4.3	12.9	70	
		NOBS = 14	\bar{p}/\bar{g} mean = 1.6988			\bar{f}/\bar{g} mean = 7.3906				
			\bar{p}/\bar{g} mean = 1.6714			\bar{f}/\bar{g} mean = 7.3857				
GROUP COMPLEXITY INDEX (GCI) = 9.0571										



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR APRIL 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03	2030	4	29	69	6	17	77	832	44	1.5	2.0	2.0	3576
04													
05													
06	2045	6	43	103	12	18	138	823	119	2.0	2.5	3.0	3577
07													
08													
09	2040	6	50	110	12	21	141	866	143	2.5	3.0	3.0	3578
10													
11	2120	4	30	70	9	13	103	540	97	2.0	3.0	3.0	3579
12													
13													
14	2035	6	18	78	5	10	60	198	54	1.5	2.0	2.0	3580
15													
16													
17	2045	5	16	66	3	9	39	249	27	1.5	2.0	2.0	3581
18													
19	2105	4	26	66	8	10	90	378	77	1.0	2.0	2.0	3582
20	2120	3	20	50	6	9	69	310	50	1.5	2.0	2.0	3583
21	2045	3	19	49	5	7	57	341	52	1.0	2.0	2.0	3584
22	2105	3	18	48	3	11	41	270	29	1.5	2.0	2.0	3585
23													
24													
25													
26													
27	2045	4	27	67	9	12	102	505	85	2.0	2.0	2.0	3586
28	2045	5	28	78	6	12	72	432	63	1.5	2.0	2.0	3587
29													
30													
31													
Σ	—	53	324	854	84	149	989	5744	840	19.5	26.5	27	—
NOBS	—	12	12	12	12	12	12	12	12	12	12	12	—
MNS	—	4.42	27.00	71.17	7.00	12.42	82.42	478.67	70.00	1.62	2.21	2.25	—

MEAN WEIGHT = 0.5084

MEAN CONDITION = 2.0278

QUALITY COUNT = 13.50



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR

APRIL 1999

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	2030	32	3	12	16	0	1	1.5	2.0	2.0	3576
04											
05											
06	2045	48	5	25	17	0	1	2.0	2.5	3.0	3577
07											
08											
09	2040	55	5	28	21	1	0	2.5	3.0	3.0	3578
10											
11	2120	34	4	17	13	0	0	2.0	3.0	3.0	3579
12											
13											
14	2035	21	3	6	9	2	1	1.5	2.0	2.0	3580
15											
16											
17	2045	20	4	7	8	0	1	1.5	2.0	2.0	3581
18											
19	2105	30	4	16	10	0	0	1.0	2.0	2.0	3582
20	2120	23	3	11	9	0	0	1.5	2.0	2.0	3583
21	2045	21	2	11	7	1	0	1.0	2.0	2.0	3584
22	2105	20	2	7	10	0	1	1.5	2.0	2.0	3585
23											
24											
25											
26											
27	2045	30	3	14	12	1	0	2.0	2.0	2.0	3586
28	2045	31	3	14	12	2	0	1.5	2.0	2.0	3587
29											
30											
31											
Σ	—	365	41	168	144	7	5	19.5	26.5	27	—
NOBS	—	12	12	12	12	12	12	12	12	12	—
MNS	—	30.42	3.42	14.00	12.00	0.58	0.42	1.62	2.21	2.25	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR APRIL 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02										
03	2030	1 ; 1	1 ; 3	1 ; 3	0 ; 0	0 ; 0	1 ; 22	0 ; 0	0 ; 0	0 ; 0
04										
05										
06	2045	1 ; 1	1 ; 2	0 ; 0	3 ; 7/9/11	1 ; 13	0 ; 0	0 ; 0	0 ; 0	0 ; 0
07										
08										
09	2040	0 ; 0	0 ; 0	1 ; 6	4 ; 3/6/7/27	0 ; 0	0 ; 0	0 ; 0	1 ; 1	0 ; 0
10										
11	2120	0 ; 0	0 ; 0	0 ; 0	4;3/4/11/12	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
12										
13										
14	2035	1 ; 1	0 ; 0	3 ; 3/4/8	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
15										
16										
17	2045	1 ; 1	1 ; 4	1 ; 6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 2/3
18										
19	2105	0 ; 0	0 ; 0	2 ; 4/5	2 ; 4/13	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
20	2120	0 ; 0	0 ; 0	2 ; 2/3	1 ; 15	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
21	2045	0 ; 0	0 ; 0	1 ; 2	1 ; 16	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
22	2105	1 ; 1	0 ; 0	1 ; 4	1 ; 13	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
23										
24										
25										
26										
27	2045	0 ; 0	0 ; 0	0 ; 0	3 ; 5/9/12	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
28	2045	0 ; 0	1 ; 5	1 ; 4	1 ; 17	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
29										
30										
31										
TOTALS	—	5 ; 5	4 ; 14	13 ; 54	20 ; 204	1 ; 13	1 ; 22	0 ; 0	1 ; 1	8 ; 11
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
9.4	7.5	24.5	37.7	1.9	1.9	0.0	1.9	15.1	53	
		NOBS = 12	\bar{p} / \bar{g} mean = 1.6083			\bar{f} / \bar{g} mean = 6.1917				
			\bar{p} / \bar{g} mean = 1.5849			\bar{f} / \bar{g} mean = 6.1132				
GROUP COMPLEXITY INDEX (GCI) = 7.6981										



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR MAY 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03													
04													
05													
06													
07	2105	10	53	153	17	24	194	967	235	1.5	2.0	2.0	3588
08	2035	10	53	153	16	24	184	1032	257	1.5	2.5	2.5	3589
09	2155	9	57	147	15	20	170	913	163	1.0	2.0	2.0	3590
10	2045	8	61	141	10	29	129	998	125	1.5	2.0	2.5	3591
11	2150	6	67	127	12	36	156	1149	143	2.5	2.5	2.5	3592
12													
13													
14													
15													
16	2225	7	46	116	11	17	127	1061	159	2.0	2.0	2.5	3593
17													
18	2325	5	34	84	7	16	86	666	110	1.5	2.5	2.5	3594
19	2050	7	37	107	8	21	101	648	103	1.5	2.0	2.0	3595
20	2105	7	43	113	11	19	129	680	118	1.5	1.5	2.0	3596
21	2110	7	45	115	12	21	141	813	155	2.0	2.0	2.5	3597
22	2100	6	43	103	7	21	91	510	92	1.5	1.5	2.0	3598
23	2255	6	35	95	9	16	106	711	155	1.5	2.5	2.5	3599
24	2105	6	30	90	7	9	79	748	151	1.0	2.0	2.5	3600
25	2105	7	30	100	7	12	82	566	129	2.0	2.0	2.0	3601
26													
27													
28													
29													
30													
31													
Σ	—	101	634	1644	149	285	1775	11462	2095	22.5	29	32	—
NOBS	—	14	14	14	14	14	14	14	14	14	14	14	—
MNS	—	7.21	45.29	117.43	10.64	20.36	126.79	818.71	149.64	1.61	2.07	2.29	—

MEAN WEIGHT = 0.5103

MEAN CONDITION = 1.9881

QUALITY COUNT = 22.64



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR MAY 1999

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											
07	2105	62	9	28	24	1	0	1.5	2.0	2.0	3588
08	2035	62	9	28	24	1	0	1.5	2.5	2.5	3589
09	2155	64	7	36	19	1	1	1.0	2.0	2.0	3590
10	2045	67	6	31	28	1	1	1.5	2.0	2.5	3591
11	2150	72	5	30	36	1	0	2.5	2.5	2.5	3592
12											
13											
14											
15											
16	2225	50	4	27	16	2	1	2.0	2.0	2.5	3593
17											
18	2325	37	3	16	16	2	0	1.5	2.5	2.5	3594
19	2050	41	4	14	20	2	1	1.5	2.0	2.0	3595
20	2105	48	5	23	18	1	1	1.5	1.5	2.0	3596
21	2110	51	6	24	20	0	1	2.0	2.0	2.5	3597
22	2100	48	5	22	20	0	1	1.5	1.5	2.0	3598
23	2255	40	5	18	16	1	0	1.5	2.5	2.5	3599
24	2105	35	5	20	9	1	0	1.0	2.0	2.5	3600
25	2105	34	4	16	11	2	1	2.0	2.0	2.0	3601
26											
27											
28											
29											
30											
31											
Σ	—	711	77	333	277	16	8	22.5	29	32	—
NOBS	—	14	14	14	14	14	14	14	14	14	—
MNS	—	50.79	5.50	23.79	19.79	1.14	0.57	1.61	2.07	2.29	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR MAY 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02										
03										
04										
05										
06										
07	2105	0 ; 0	1 ; 2	3 ; 2/3/4	4 ; 5/6/7/7	1 ; 16	0 ; 0	0 ; 0	0 ; 0	1 ; 1
08	2035	0 ; 0	1 ; 3	3 ; 2/3/3	3 ; 7/9/10	1 ; 11	0 ; 0	0 ; 0	1 ; 4	1 ; 1
09	2155	1 ; 1	1 ; 2	3 ; 2/2/5	3 ; 7/18/19	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
10	2045	1 ; 1	1 ; 3	3 ; 5/7/9	1 ; 14	1 ; 21	0 ; 0	0 ; 0	0 ; 0	1 ; 1
11	2150	0 ; 0	0 ; 0	2 ; 10/13	2 ; 7/14	1 ; 22	0 ; 0	0 ; 0	0 ; 0	1 ; 1
12										
13										
14										
15										
16	2225	1 ; 1	0 ; 0	1 ; 3	1 ; 15	1 ; 22	0 ; 0	0 ; 0	2 ; 1/3	1 ; 1
17										
18	2325	0 ; 0	0 ; 0	1 ; 11	1 ; 4	1 ; 17	0 ; 0	0 ; 0	1 ; 1	1 ; 1
19	2050	1 ; 1	1 ; 2	2 ; 5/9	0 ; 0	1 ; 18	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
20	2105	1 ; 1	0 ; 0	3 ; 4/7/8	1 ; 9	1 ; 13	0 ; 0	0 ; 0	0 ; 0	1 ; 1
21	2110	1 ; 1	1 ; 2	1 ; 6	3 ; 3/7/11	1 ; 15	0 ; 0	0 ; 0	0 ; 0	0 ; 0
22	2100	1 ; 1	0 ; 0	4 ; 2/4/12/14	0 ; 0	1 ; 10	0 ; 0	0 ; 0	0 ; 0	0 ; 0
23	2255	0 ; 0	0 ; 0	3 ; 3/5/6	0 ; 0	1 ; 15	1 ; 5	0 ; 0	1 ; 1	0 ; 0
24	2105	0 ; 0	0 ; 0	2 ; 3/3	0 ; 0	1 ; 19	0 ; 0	1 ; 2	1 ; 2	1 ; 1
25	2105	1 ; 1	0 ; 0	3 ; 3/3/5	0 ; 0	1 ; 16	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
26										
27										
28										
29										
30										
31										
TOTALS	—	8 ; 8	6 ; 14	34 ; 186	19 ; 179	13 ; 215	1 ; 5	1 ; 2	6 ; 12	13 ; 13
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
7.9	5.9	33.7	18.8	12.9	1.0	1.0	5.9	12.9	101	
		NOBS = 14	\bar{p} / \bar{g} mean = 1.4607			\bar{f} / \bar{g} mean = 6.3742				
			\bar{p} / \bar{g} mean = 1.4752			\bar{f} / \bar{g} mean = 6.2772				
GROUP COMPLEXITY INDEX (GCI) = 7.7525										



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1997 DECEMBER	2.52	40.61	40.26	255.8	41.09	7.15	17.19
1998 JANUARY	2.87	45.50	44.81	277.3	46.95	8.08	18.86
FEBRUARY	3.24	51.22	50.76	312.1	54.08	9.15	21.10
MARCH	3.57	56.45	56.13	352.9	59.28	10.10	23.23
APRIL	3.81	60.06	59.48	377.9	61.77	10.72	24.60
MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.23	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1997 DECEMBER	2.51	40.34	40.14	255.0	40.72	7.27	17.02
1998 JANUARY	2.75	44.10	44.01	276.8	45.13	7.90	18.54
FEBRUARY	3.05	48.66	48.69	303.7	50.54	8.65	20.35
MARCH	3.38	53.88	54.01	337.4	56.48	9.53	22.43
APRIL	3.72	59.02	59.01	369.6	61.99	10.42	24.42
MAY	4.06	63.93	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.82	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.46	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

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SUNSPOT RESULTS FOR JUNE 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02	2100	11	62	172	13	15	145	1230	211	2.0	2.0	2.5	3602
03													
04	2120	11	58	168	9	26	116	920	181	1.5	2.0	2.0	3603
05	2120	11	51	161	12	21	141	815	122	2.5	2.5	2.5	3604
06	2110	9	51	141	12	27	147	840	124	1.0	2.0	2.5	3605
07													
08	2210	11	60	170	17	23	193	1002	218	1.5	2.5	2.5	3606
09	2110	11	61	171	14	26	166	1046	137	1.0	2.0	2.5	3607
10													
11													
12													
13													
14													
15	2140	9	50	140	13	22	152	946	169	1.5	2.0	2.5	3608
16	2100	7	36	106	8	21	101	557	119	2.0	2.5	3.0	3609
17	2140	7	30	100	8	11	91	462	145	1.5	2.0	2.0	3610
18	2130	6	21	81	8	11	91	330	108	1.5	2.0	2.0	3611
19													
20													
21	2115	7	21	91	7	9	79	222	59	2.5	2.5	2.0	3612
22	2125	10	27	127	9	15	105	464	108	1.0	2.0	2.0	3613
23	2150	15	49	199	15	26	176	763	214	1.5	2.0	2.0	3614
24													
25													
26													
27													
28	2105	8	73	153	22	29	249	1811	221	2.0	3.5	2.5	3615
29	2230	8	83	163	22	38	258	2220	216	2.0	2.0	2.5	3616
30	2310	8	77	157	16	29	189	1962	169	1.5	2.0	2.5	3617
31													
Σ	—	149	810	2300	205	349	2399	15590	2521	26.5	35.5	37.5	—
NOBS	—	16	16	16	16	16	16	16	16	16	16	16	—
MNS	—	9.31	50.62	143.75	12.81	21.81	149.94	974.38	157.56	1.66	2.22	2.34	—

MEAN WEIGHT = 0.4913

MEAN CONDITION = 2.0729

QUALITY COUNT = 26.56



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JUNE 1999

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	2100	67	5	45	11	2	4	2.0	2.0	2.5	3602
03											
04	2120	64	6	29	24	3	2	1.5	2.0	2.0	3603
05	2120	57	6	27	19	3	2	2.5	2.5	2.5	3604
06	2110	57	6	22	26	2	1	1.0	2.0	2.5	3605
07											
08	2210	68	8	34	23	3	0	1.5	2.5	2.5	3606
09	2110	68	7	34	23	1	3	1.0	2.0	2.5	3607
10											
11											
12											
13											
14											
15	2140	56	6	27	20	1	2	1.5	2.0	2.5	3608
16	2100	41	5	15	19	0	2	2.0	2.5	3.0	3609
17	2140	35	5	18	10	1	1	1.5	2.0	2.0	3610
18	2130	25	4	9	10	1	1	1.5	2.0	2.0	3611
19											
20											
21	2115	25	4	10	8	2	1	2.5	2.5	2.0	3612
22	2125	34	7	11	13	1	2	1.0	2.0	2.0	3613
23	2150	61	12	22	24	1	2	1.5	2.0	2.0	3614
24											
25											
26											
27											
28	2105	79	6	42	29	2	0	2.0	3.5	2.5	3615
29	2230	89	6	44	37	1	1	2.0	2.0	2.5	3616
30	2310	83	6	48	27	0	2	1.5	2.0	2.5	3617
31											
Σ	—	909	99	437	323	24	26	26.5	35.5	37.5	—
NOBS	—	16	16	16	16	16	16	16	16	16	—
MNS	—	56.81	6.19	27.31	20.19	1.50	1.62	1.66	2.22	2.34	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JUNE 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02	2100	4;1/1/1/1	1 ; 2	0 ; 0	3 ; 8/18/23	0 ; 0	0 ; 0	1 ; 5	0 ; 0	2 ; 1/1
03										
04	2120	2 ; 1/1	3 ; 2/2/6	1 ; 2	2 ; 15/26	0 ; 0	0 ; 0	0 ; 0	1 ; 1	2 ; 1/1
05	2120	2 ; 1/1	1 ; 3	3 ; 2/2/5	2 ; 13/21	0 ; 0	0 ; 0	0 ; 0	0 ; 0	3 ; 1/1/1
06	2110	1 ; 1	1 ; 3	1 ; 6	4;5/9/11/14	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
07										
08	2210	0 ; 0	1 ; 3	3 ; 2/2/6	4;4/7/9/24	0 ; 0	0 ; 0	0 ; 0	1 ; 1	2 ; 1/1
09	2110	3 ; 1/1/1	1 ; 2	2 ; 3/7	2 ; 9/20	1 ; 14	0 ; 0	0 ; 0	0 ; 0	2 ; 1/2
10										
11										
12										
13										
14										
15	2140	2 ; 1/1	1 ; 2	1 ; 5	3 ; 3/4/14	1 ; 19	0 ; 0	0 ; 0	0 ; 0	1 ; 1
16	2100	2 ; 1/1	0 ; 0	3 ; 4/5/5	1 ; 9	1 ; 11	0 ; 0	0 ; 0	0 ; 0	0 ; 0
17	2140	1 ; 1	0 ; 0	3 ; 3/3/3	2 ; 7/12	0 ; 0	0 ; 0	0 ; 0	1 ; 1	0 ; 0
18	2130	1 ; 1	0 ; 0	2 ; 3/3	2 ; 6/7	0 ; 0	0 ; 0	0 ; 0	1 ; 1	0 ; 0
19										
20										
21	2115	1 ; 1	0 ; 0	4 ; 2/4/5/7	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
22	2125	2 ; 1/1	2 ; 2/2	1 ; 3	2 ; 4/6	1 ; 5	0 ; 0	0 ; 0	0 ; 0	2 ; 1/2
23	2150	2 ; 1/1	4;2/2/2/2	2 ; 2/3	5;2/4/5/9/11	0 ; 0	0 ; 0	0 ; 0	1 ; 2	1 ; 1
24										
25										
26										
27										
28	2105	0 ; 0	0 ; 0	0 ; 0	4;7/8/11/14	1 ; 9	1 ; 22	0 ; 0	0 ; 0	2 ; 1/1
29	2230	1 ; 1	0 ; 0	0 ; 0	3 ; 5/6/11	2 ; 12/19	1 ; 28	0 ; 0	0 ; 0	1 ; 1
30	2310	2 ; 1/1	1 ; 3	0 ; 0	3 ; 3/5/11	1 ; 28	1 ; 25	0 ; 0	0 ; 0	0 ; 0
31										
TOTALS	—	26 ; 26	16 ; 40	26 ; 97	42 ; 420	8 ; 117	3 ; 75	1 ; 5	5 ; 6	22 ; 24
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
17.4	10.7	17.4	28.2	5.4	2.0	0.7	3.4	14.8	149	
		NOBS = 16	\bar{p} / \bar{g} mean = 1.4191			\bar{f} / \bar{g} mean = 5.5492				
			\bar{p} / \bar{g} mean = 1.3758			\bar{f} / \bar{g} mean = 5.4362				
GROUP COMPLEXITY INDEX (GCI) = 6.8121										



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 JANUARY	2.87	45.50	44.81	277.3	46.95	8.08	18.86
FEBRUARY	3.24	51.22	50.76	312.1	54.08	9.15	21.10
MARCH	3.57	56.45	56.13	352.9	59.28	10.10	23.23
APRIL	3.81	60.06	59.48	377.9	61.77	10.72	24.60
MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.23	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 JANUARY	2.75	44.10	44.01	276.8	45.13	7.90	18.54
FEBRUARY	3.05	48.66	48.69	303.7	50.54	8.65	20.35
MARCH	3.38	53.88	54.01	337.4	56.48	9.53	22.43
APRIL	3.72	59.02	59.01	369.6	61.99	10.42	24.42
MAY	4.06	63.93	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.82	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.46	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR JULY 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01	2130	11	62	172	13	25	155	1578	158	1.5	2.0	2.5	3618
02													
03	2135	10	64	164	13	27	157	1739	186	1.5	2.0	2.5	3619
04	2100	9	55	145	16	21	181	1454	189	2.0	3.0	3.0	3620
05													
06													
07													
08	2125	9	31	121	11	14	124	639	218	2.5	2.5	2.5	3621
09	2105	10	39	139	10	25	125	702	180	2.5	2.5	2.5	3622
10	2210	8	52	132	13	28	158	1006	164	1.0	2.0	2.5	3623
11	2235	8	46	126	15	21	171	1154	187	1.5	2.0	2.5	3624
12	2200	10	45	145	12	21	141	1040	148	2.0	2.0	2.0	3625
13	2220	7	40	110	12	15	135	1100	133	1.5	2.0	2.5	3626
14													
15													
16													
17	2225	5	30	80	9	16	106	535	98	1.5	2.0	2.5	3627
18													
19	2245	4	27	67	8	12	92	582	90	1.5	1.5	2.0	3628
20													
21													
22													
23	2215	7	51	121	11	17	127	1557	138	1.5	1.5	2.0	3629
24													
25													
26													
27	2210	10	66	166	13	26	156	1919	188	2.0	2.0	2.5	3630
28													
29	2200	10	94	194	19	46	236	1844	216	2.0	2.0	2.0	3631
30	2205	10	78	178	20	30	230	2022	198	1.5	1.5	2.0	3632
31	2205	9	82	172	18	33	213	2412	183	1.5	2.0	2.0	3633
Σ	—	137	862	2232	213	377	2507	21283	2674	27.5	32.5	37.5	—
NOBS	—	16	16	16	16	16	16	16	16	16	16	16	—
MNS	—	8.56	53.88	139.50	13.31	23.56	156.69	1330.19	167.12	1.72	2.03	2.34	—

MEAN WEIGHT = 0.5017

MEAN CONDITION = 2.0312

QUALITY COUNT = 27.19



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR JULY 1999

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	2130	66	4	33	22	4	3	1.5	2.0	2.5	3618
02											
03	2135	69	5	35	24	2	3	1.5	2.0	2.5	3619
04	2100	59	4	30	20	4	1	2.0	3.0	3.0	3620
05											
06											
07											
08	2125	37	6	15	13	2	1	2.5	2.5	2.5	3621
09	2105	46	7	12	24	2	1	2.5	2.5	2.5	3622
10	2210	58	6	23	27	1	1	1.0	2.0	2.5	3623
11	2235	52	6	23	21	2	0	1.5	2.0	2.5	3624
12	2200	51	6	22	19	2	2	2.0	2.0	2.0	3625
13	2220	45	5	24	14	1	1	1.5	2.0	2.5	3626
14											
15											
16											
17	2225	35	5	14	16	0	0	1.5	2.0	2.5	3627
18											
19	2245	31	4	15	12	0	0	1.5	1.5	2.0	3628
20											
21											
22											
23	2215	54	3	32	15	2	2	1.5	1.5	2.0	3629
24											
25											
26											
27	2210	72	6	38	24	2	2	2.0	2.0	2.5	3630
28											
29	2200	101	7	46	45	2	1	2.0	2.0	2.0	3631
30	2205	85	7	46	29	2	1	1.5	1.5	2.0	3632
31	2205	88	6	48	31	1	2	1.5	2.0	2.0	3633
Σ	—	949	87	456	356	29	21	27.5	32.5	37.5	—
NOBS	—	16	16	16	16	16	16	16	16	16	—
MNS	—	59.31	5.44	28.50	22.25	1.81	1.31	1.72	2.03	2.34	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR JULY 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01	2130	3 ; 1/1/1	0 ; 0	2 ; 2/11	0 ; 0	1 ; 18	1 ; 24	0 ; 0	0 ; 0	4 ; 1/1/1
02										
03	2135	3 ; 1/1/1	0 ; 0	2 ; 5/5	1 ; 11	0 ; 0	2 ; 17/21	0 ; 0	1 ; 1	1 ; 1
04	2100	1 ; 1	0 ; 0	0 ; 0	2 ; 6/19	1 ; 5	1 ; 20	0 ; 0	1 ; 1	3 ; 1/1/1
05										
06										
07										
08	2125	1 ; 1	1 ; 2	1 ; 3	1 ; 11	2 ; 4/6	0 ; 0	0 ; 0	1 ; 1	2 ; 1/2
09	2105	1 ; 1	2 ; 2/2	2 ; 3/5	1 ; 8	2 ; 5/11	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
10	2210	1 ; 1	0 ; 0	3 ; 5/6/6	1 ; 12	1 ; 13	1 ; 8	0 ; 0	0 ; 0	1 ; 1
11	2235	0 ; 0	0 ; 0	2 ; 3/3	1 ; 15	1 ; 6	2 ; 8/9	0 ; 0	0 ; 0	2 ; 1/1
12	2200	2 ; 1/1	1 ; 2	3 ; 3/3/3	0 ; 0	1 ; 19	1 ; 11	0 ; 0	1 ; 1	1 ; 1
13	2220	1 ; 1	0 ; 0	2 ; 3/3	0 ; 0	1 ; 15	1 ; 14	0 ; 0	1 ; 3	1 ; 1
14										
15										
16										
17	2225	0 ; 0	0 ; 0	2 ; 4/7	1 ; 4	2 ; 4/11	0 ; 0	0 ; 0	0 ; 0	0 ; 0
18										
19	2245	0 ; 0	1 ; 2	1 ; 3	0 ; 0	2 ; 5/17	0 ; 0	0 ; 0	0 ; 0	0 ; 0
20										
21										
22										
23	2215	2 ; 1/1	1 ; 3	0 ; 0	0 ; 0	1 ; 11	1 ; 33	0 ; 0	0 ; 0	2 ; 1/1
24										
25										
26										
27	2210	2 ; 1/1	1 ; 2	1 ; 2	1 ; 11	1 ; 7	2 ; 14/26	0 ; 0	0 ; 0	2 ; 1/1
28										
29	2200	1 ; 1	1 ; 2	2 ; 3/8	2 ; 21/23	1 ; 6	1 ; 28	0 ; 0	0 ; 0	2 ; 1/1
30	2205	1 ; 1	2 ; 2/2	1 ; 2	0 ; 0	3 ; 8/14/30	1 ; 17	0 ; 0	0 ; 0	2 ; 1/1
31	2205	2 ; 1/1	0 ; 0	2 ; 3/4	1 ; 4	1 ; 19	2 ; 13/36	0 ; 0	0 ; 0	1 ; 1
TOTALS	—	21 ; 21	10 ; 21	26 ; 108	12 ; 145	21 ; 234	16 ; 299	0 ; 0	5 ; 7	26 ; 27

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
15.3	7.3	19.0	8.8	15.3	11.7	0.0	3.6	19.0	137

NOBS = 16

\bar{p} / \bar{g} mean = 1.5917

\bar{f} / \bar{g} mean = 6.3064

\bar{p} / \bar{g} mean = 1.5547

\bar{f} / \bar{g} mean = 6.2920

GROUP COMPLEXITY INDEX (GCI) = 7.8467



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 FEBRUARY	3.24	51.22	50.76	312.1	54.08	9.15	21.10
MARCH	3.57	56.45	56.13	352.9	59.28	10.10	23.23
APRIL	3.81	60.06	59.48	377.9	61.77	10.72	24.60
MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 FEBRUARY	3.05	48.65	48.69	303.7	50.54	8.65	20.35
MARCH	3.38	53.87	54.01	337.4	56.48	9.53	22.43
APRIL	3.72	59.01	59.01	369.6	61.99	10.42	24.42
MAY	4.06	63.92	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.81	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	89.00	15.14	34.48



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR AUGUST 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03													
04													
05	2135	7	53	123	15	22	172	1647	167	1.5	1.5	2.0	3634
06	2100	6	38	98	14	14	154	1153	135	1.5	2.0	2.0	3635
07	2110	7	37	107	12	19	139	793	134	1.5	2.0	1.5	3636
08	2110	7	33	103	9	18	108	600	122	1.5	2.0	2.0	3637
09	2120	4	28	68	7	12	82	597	70	1.5	2.5	3.0	3638
10	2105	2	25	45	6	10	70	591	43	1.5	2.0	2.0	3639
11													
12	2110	4	17	57	4	12	52	460	47	1.5	2.0	2.5	3640
13													
14													
15													
16	2050	4	8	48	2	3	23	85	50	2.0	2.0	2.0	3641
17	2040	3	14	44	1	8	18	92	44	2.0	2.0	2.0	3642
18	2100	3	15	45	3	9	39	176	56	1.0	2.0	2.0	3643
19													
20													
21													
22	2220	4	49	89	9	24	114	1390	78	1.5	1.5	2.5	3644
23	2050	3	51	81	9	25	115	1476	104	1.5	1.5	2.5	3645
24	2100	7	69	139	14	31	171	1907	133	1.5	1.5	2.0	3646
25	2050	9	60	150	12	29	149	1640	135	1.5	2.0	2.0	3647
26	2055	8	65	145	13	22	152	1750	124	1.5	1.5	2.0	3648
27	2055	8	77	157	13	31	161	2078	130	1.0	1.5	2.0	3649
28													
29	2045	8	77	157	18	36	216	1997	155	2.0	2.5	2.0	3650
30													
31													
Σ	—	94	716	1656	161	325	1935	18432	1727	26.0	32.0	36.0	—
NOBS	—	17	17	17	17	17	17	17	17	17	17	17	—
MNS	—	5.53	42.12	97.41	9.47	19.12	113.82	1084.24	101.59	1.53	1.88	2.12	—

MEAN WEIGHT = 0.5488

MEAN CONDITION = 1.8431

QUALITY COUNT = 16.94



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR AUGUST 1999

All observations carried out by HOWARD BARNES .

Telescope : 76 mm refractor (f . l . 910 mm) .

Observed by PROJECTION . Full disc diameter = 145 mm approx .

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

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

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

IS = Inter-Sol Index .

gr = number of multi-spot groups .

grfp = number of umbrae within penumbrae within the groups (gr) .

grf = number of non-penumbra spots within the groups (gr) .

efp = number of single penumbral spots :

ef = number of single non-penumbra spots .

DATE	UT	IS	gr	grfp	grf	efp	ef	Q	S	T	Ref.
01											
02											
03											
04											
05	2135	57	4	30	20	1	2	1.5	1.5	2.0	3634
06	2100	41	3	22	13	2	1	1.5	2.0	2.0	3635
07	2110	42	5	17	18	1	1	1.5	2.0	1.5	3636
08	2110	38	5	15	16	0	2	1.5	2.0	2.0	3637
09	2120	31	3	16	11	0	1	1.5	2.5	3.0	3638
10	2105	27	2	15	10	0	0	1.5	2.0	2.0	3639
11											
12	2110	20	3	5	11	0	1	1.5	2.0	2.5	3640
13											
14											
15											
16	2050	9	1	4	1	1	2	2.0	2.0	2.0	3641
17	2040	17	3	6	8	0	0	2.0	2.0	2.0	3642
18	2100	17	2	6	8	0	1	1.0	2.0	2.0	3643
19											
20											
21											
22	2220	52	3	25	23	0	1	1.5	1.5	2.5	3644
23	2050	54	3	26	25	0	0	1.5	1.5	2.5	3645
24	2100	73	4	37	29	1	2	1.5	1.5	2.0	3646
25	2050	65	5	29	27	2	2	1.5	2.0	2.0	3647
26	2055	71	6	43	20	0	2	1.5	1.5	2.0	3648
27	2055	84	7	46	30	0	1	1.0	1.5	2.0	3649
28											
29	2045	83	6	40	35	1	1	2.0	2.5	2.0	3650
30											
31											
Σ	—	781	65	382	305	9	20	26.0	32.0	36.0	—
NOBS	—	17	17	17	17	17	17	17	17	17	—
MNS	—	45.94	3.82	22.47	17.94	0.53	1.18	1.53	1.88	2.12	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR AUGUST 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02										
03										
04										
05	2135	2 ; 1/1	0 ; 0	0 ; 0	2 ; 3/8	0 ; 0	2 ; 12/27	0 ; 0	0 ; 0	1 ; 1
06	2100	1 ; 1	0 ; 0	0 ; 0	1 ; 6	1 ; 7	1 ; 22	0 ; 0	0 ; 0	2 ; 1/1
07	2110	1 ; 1	0 ; 0	3 ; 2/4/7	1 ; 8	0 ; 0	1 ; 14	0 ; 0	0 ; 0	1 ; 1
08	2110	2 ; 1/1	1 ; 2	1 ; 5	2 ; 4/4	1 ; 16	0 ; 0	0 ; 0	0 ; 0	0 ; 0
09	2120	1 ; 1	0 ; 0	1 ; 4	1 ; 2	1 ; 21	0 ; 0	0 ; 0	0 ; 0	0 ; 0
10	2105	0 ; 0	0 ; 0	1 ; 2	0 ; 0	1 ; 23	0 ; 0	0 ; 0	0 ; 0	0 ; 0
11										
12	2110	1 ; 1	1 ; 2	1 ; 2	0 ; 0	0 ; 0	1 ; 12	0 ; 0	0 ; 0	0 ; 0
13										
14										
15										
16	2050	2 ; 1/1	0 ; 0	1 ; 5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
17	2040	0 ; 0	2 ; 2/3	1 ; 9	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
18	2100	1 ; 1	0 ; 0	1 ; 8	1 ; 6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
19										
20										
21										
22	2220	1 ; 1	0 ; 0	0 ; 0	2 ; 8/11	0 ; 0	1 ; 29	0 ; 0	0 ; 0	0 ; 0
23	2050	0 ; 0	0 ; 0	0 ; 0	2 ; 8/12	0 ; 0	1 ; 31	0 ; 0	0 ; 0	0 ; 0
24	2100	2 ; 1/1	1 ; 2	0 ; 0	2 ; 11/14	0 ; 0	1 ; 39	0 ; 0	0 ; 0	1 ; 1
25	2050	2 ; 1/1	1 ; 2	2 ; 3/4	1 ; 11	0 ; 0	1 ; 36	0 ; 0	0 ; 0	2 ; 1/1
26	2055	2 ; 1/1	1 ; 2	2 ; 3/4	2 ; 5/7	0 ; 0	1 ; 42	0 ; 0	0 ; 0	0 ; 0
27	2055	1 ; 1	2 ; 2/5	2 ; 2/4	2 ; 6/9	0 ; 0	1 ; 48	0 ; 0	0 ; 0	0 ; 0
28										
29	2045	1 ; 1	1 ; 2	2 ; 2/3	2 ; 11/19	0 ; 0	1 ; 38	0 ; 0	0 ; 0	1 ; 1
30										
31										
TOTALS	—	20 ; 20	10 ; 24	18 ; 73	21 ; 173	4 ; 67	12 ; 350	0 ; 0	0 ; 0	9 ; 9
REGIONAL PERCENTAGES										
A	B	C	D	E	F	G	H	J	Σg	
21.3	10.6	19.1	22.3	4.3	12.8	0.0	0.0	9.6	94	
		NOBS = 17	\bar{p}/\bar{g} mean = 1.7143			\bar{f}/\bar{g} mean = 7.7924				
			\bar{p}/\bar{g} mean = 1.7128			\bar{f}/\bar{g} mean = 7.6170				
GROUP COMPLEXITY INDEX (GCI) = 9.3298										



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 MARCH	3.57	56.45	56.13	352.9	59.28	10.10	23.23
APRIL	3.81	60.06	59.48	377.9	61.77	10.72	24.60
MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27
FEBRUARY	5.81	92.95	100.30	712.1	100.93	17.06	38.83

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 MARCH	3.38	53.87	54.01	337.4	56.48	9.53	22.43
APRIL	3.72	59.01	59.01	369.6	61.99	10.42	24.42
MAY	4.06	63.92	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.81	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	88.97	15.14	34.48
FEBRUARY	5.44	86.74	94.22	655.6	93.98	15.87	36.11



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR SEPTEMBER 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02	2025	7	20	90	8	10	90	251	90	1.0	2.0	2.5	3651
03	2050	7	26	96	5	18	68	246	57	1.5	1.5	2.0	3652
04	2050	6	20	80	7	12	82	314	75	2.0	3.5	3.5	3653
05													
06													
07													
08													
09	2045	4	21	61	5	9	59	467	62	2.0	2.5	2.5	3654
10	2105	6	37	97	9	21	111	734	105	2.0	2.0	2.5	3655
11													
12													
13	2100	6	59	119	14	21	161	1324	136	1.5	2.0	2.5	3656
14	2055	6	70	130	15	36	186	1494	147	2.0	2.0	2.5	3657
15													
16	2045	7	61	131	13	21	151	1410	164	2.0	2.0	2.0	3658
17	2135	7	49	119	12	27	147	1082	131	2.0	3.5	3.0	3659
18													
19	2120	6	24	84	9	13	103	452	110	1.5	2.5	2.5	3660
20													
21	2045	3	13	43	3	10	40	133	34	2.0	2.5	2.0	3661
22	2040	5	15	65	3	11	41	129	34	1.5	2.5	2.5	3662
23	2050	4	10	50	3	7	37	101	35	1.5	2.5	2.5	3663
24	2005	3	8	38	3	5	35	93	34	1.0	2.0	2.5	3664
25	2100	3	3	33	2	1	21	78	21	1.5	2.0	2.0	3665
26													
27	2035	4	4	44	3	1	31	115	31	1.5	2.5	2.5	3666
28													
29	2110	5	11	61	2	9	29	97	27	2.0	2.5	2.5	3667
30													
31													
Σ	—	89	451	1341	116	232	1392	8520	1293	28.5	40.0	42.0	—
NOBS	—	17	17	17	17	17	17	17	17	17	17	17	—
MNS	—	5.24	26.53	78.88	6.82	13.65	81.88	501.18	76.06	1.68	2.35	2.47	—

MEAN WEIGHT = 0.4712

MEAN CONDITION = 2.1667

QUALITY COUNT = 15.35



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR SEPTEMBER 1999

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	2025	26	6	9	10	1	0	1.0	2.0	2.5	3651
03	2050	30	4	6	17	2	1	1.5	1.5	2.0	3652
04	2050	23	3	6	11	2	1	2.0	3.5	3.5	3653
05											
06											
07											
08											
09	2045	23	2	11	8	1	1	2.0	2.5	2.5	3654
10	2105	42	5	15	21	1	0	2.0	2.0	2.5	3655
11											
12											
13	2100	64	5	37	21	1	0	1.5	2.0	2.5	3656
14	2055	76	6	34	36	0	0	2.0	2.0	2.5	3657
15											
16	2045	66	5	38	21	2	0	2.0	2.0	2.0	3658
17	2135	54	5	20	27	2	0	2.0	3.5	3.0	3659
18											
19	2120	28	4	10	12	1	1	1.5	2.5	2.5	3660
20											
21	2045	15	2	2	10	1	0	2.0	2.5	2.0	3661
22	2040	18	3	3	10	1	1	1.5	2.5	2.5	3662
23	2050	13	3	2	7	1	0	1.5	2.5	2.5	3663
24	2005	10	2	2	5	1	0	1.0	2.0	2.5	3664
25	2100	3	0	0	0	2	1	1.5	2.0	2.0	3665
26											
27	2035	4	0	0	0	3	1	1.5	2.5	2.5	3666
28											
29	2110	13	2	1	7	1	2	2.0	2.5	2.5	3667
30											
31											
Σ	—	508	57	196	223	23	9	28.5	40.0	42.0	—
NOBS	—	17	17	17	17	17	17	17	17	17	—
MNS	—	29.88	3.35	11.53	13.12	1.35	0.53	1.68	2.35	2.47	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR SEPTEMBER 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02	2025	0 ; 0	1 ; 2	3 ; 2/2/6	2 ; 2/5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
03	2050	1 ; 1	1 ; 4	3 ; 6/6/7	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
04	2050	1 ; 1	0 ; 0	2 ; 2/5	1 ; 10	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
05										
06										
07										
08										
09	2045	1 ; 1	0 ; 0	0 ; 0	1 ; 7	1 ; 12	0 ; 0	0 ; 0	0 ; 0	1 ; 1
10	2105	0 ; 0	2 ; 2/2	0 ; 0	2 ; 5/12	1 ; 15	0 ; 0	0 ; 0	0 ; 0	1 ; 1
11										
12										
13	2100	0 ; 0	0 ; 0	1 ; 3	1 ; 16	3 ; 9/13/17	0 ; 0	0 ; 0	0 ; 0	1 ; 1
14	2055	0 ; 0	0 ; 0	2 ; 2/4	1 ; 22	3 ; 12/13/17	0 ; 0	0 ; 0	0 ; 0	0 ; 0
15										
16	2045	0 ; 0	0 ; 0	1 ; 2	1 ; 15	3 ; 11/12/19	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
17	2135	0 ; 0	0 ; 0	1 ; 2	1 ; 19	3 ; 6/9/11	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
18										
19	2120	1 ; 1	0 ; 0	1 ; 2	2 ; 5/10	1 ; 5	0 ; 0	0 ; 0	0 ; 0	1 ; 1
20										
21	2045	0 ; 0	0 ; 0	2 ; 5/7	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
22	2040	1 ; 1	1 ; 4	2 ; 3/6	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
23	2050	0 ; 0	1 ; 2	2 ; 2/5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
24	2005	0 ; 0	0 ; 0	2 ; 3/4	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
25	2100	1 ; 1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	2 ; 1/1
26										
27	2035	1 ; 1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	3 ; 1/1/1
28										
29	2110	2 ; 1/1	1 ; 3	1 ; 5	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1
30										
31										
TOTALS	—	9 ; 9	7 ; 19	23 ; 91	12 ; 128	15 ; 181	0 ; 0	0 ; 0	0 ; 0	23 ; 23

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
10.1	7.9	25.8	13.5	16.9	0.0	0.0	0.0	25.8	89

NOBS = 17

\bar{p} / \bar{g} mean = 1.2262

\bar{f} / \bar{g} mean = 4.6609

\bar{p} / \bar{g} mean = 1.3034

\bar{f} / \bar{g} mean = 5.0674

GROUP COMPLEXITY INDEX (GCI) = 6.3708



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 APRIL	3.81	60.06	59.48	377.9	61.77	10.72	24.60
MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27
FEBRUARY	5.81	92.95	100.30	712.1	100.93	17.06	38.83
MARCH	5.75	91.97	99.82	714.8	99.56	16.91	38.44

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 APRIL	3.72	59.01	59.01	369.6	61.99	10.42	24.42
MAY	4.06	63.92	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.81	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	88.97	15.14	34.48
FEBRUARY	5.44	86.74	94.22	655.6	93.98	15.87	36.11
MARCH	5.64	90.35	98.83	697.8	99.07	16.64	37.81

NOTE: OBSERVED WALDMEIER SMOOTHINGS HAVE DROPPED FOR THE FIRST TIME SINCE 1996, WITH THE EXCEPTION OF THE BECKINDEX.



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR OCTOBER 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02	2215	5	5	55	3	2	32	126	62	2.0	2.0	2.0	3668
03	2055	5	13	63	5	8	58	231	92	1.5	2.0	2.0	3669
04	1945	8	29	109	7	17	87	340	110	1.0	2.0	2.5	3670
05													
06													
07													
08													
09													
10	2020	9	23	113	6	13	73	452	121	2.0	2.5	2.5	3671
11													
12	2110	10	62	162	18	30	210	1151	238	1.5	2.0	2.0	3672
13	2020	9	65	155	17	32	202	1338	180	2.0	2.5	2.5	3673
14	2010	9	61	151	14	22	162	1377	165	2.5	3.0	2.5	3674
15	2045	5	72	122	14	27	167	2464	127	2.0	2.5	2.5	3675
16	2040	5	64	114	14	20	160	2188	136	1.5	2.0	2.5	3676
17	1955	5	79	129	16	30	190	2560	141	1.5	1.5	2.0	3677
18	1950	8	79	159	13	39	169	2031	147	1.5	1.5	1.5	3678
19	1950	6	64	124	16	19	179	1746	163	1.5	1.5	2.0	3679
20													
21	2040	5	31	81	12	10	130	626	156	2.0	2.5	2.5	3680
22													
23													
24	2005	5	58	108	14	31	171	1829	168	2.5	3.0	3.0	3681
25													
26													
27													
28													
29													
30	1925	9	61	151	18	28	208	1187	215	1.5	2.0	2.0	3682
31													
Σ	—	103	766	1796	187	328	2198	19646	2221	26.5	32.5	34.0	—
NOBS	—	15	15	15	15	15	15	15	15	15	15	15	—
MNS	—	6.87	51.07	119.73	12.47	21.87	146.53	1309.73	148.07	1.77	2.17	2.27	—

MEAN WEIGHT = 0.4994

MEAN CONDITION = 2.0667

QUALITY COUNT = 22.07



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR OCTOBER 1999

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	2215	5	0	0	0	3	2	2.0	2.0	2.0	3668
03	2055	16	3	4	7	1	1	1.5	2.0	2.0	3669
04	1945	35	6	12	15	0	2	1.0	2.0	2.5	3670
05											
06											
07											
08											
09											
10	2020	28	5	9	10	1	3	2.0	2.5	2.5	3671
11											
12	2110	69	7	29	30	3	0	1.5	2.0	2.0	3672
13	2020	72	7	32	31	1	1	2.0	2.5	2.5	3673
14	2010	66	5	38	19	1	3	2.5	3.0	2.5	3674
15	2045	76	4	45	26	0	1	2.0	2.5	2.5	3675
16	2040	68	4	44	19	0	1	1.5	2.0	2.5	3676
17	1955	83	4	49	29	0	1	1.5	1.5	2.0	3677
18	1950	83	4	39	36	1	3	1.5	1.5	1.5	3678
19	1950	68	4	44	18	1	1	1.5	1.5	2.0	3679
20											
21	2040	35	4	20	10	1	0	2.0	2.5	2.5	3680
22											
23											
24	2005	63	5	27	31	0	0	2.5	3.0	3.0	3681
25											
26											
27											
28											
29											
30	1925	69	8	32	28	1	0	1.5	2.0	2.0	3682
31											
Σ	—	836	70	424	309	14	19	26.5	32.5	34.0	—
NOBS	—	15	15	15	15	15	15	15	15	15	—
MNS	—	55.73	4.67	28.27	20.60	0.93	1.27	1.77	2.17	2.27	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR OCTOBER 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02	2215	2 ; 1/1	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0	1 ; 1	2 ; 1/1
03	2055	1 ; 1	0 ; 0	2 ; 2/3	0 ; 0	1 ; 6	0 ; 0	0 ; 0	0 ; 0	1 ; 1
04	1945	2 ; 1/1	2 ; 2/4	2 ; 2/5	2 ; 6/8	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
05										
06										
07										
08										
09										
10	2020	3 ; 1/1/1	1 ; 2	2 ; 2/2	0 ; 0	1 ; 11	0 ; 0	0 ; 0	1 ; 2	1 ; 1
11										
12	2110	0 ; 0	1 ; 3	3 ; 3/4/5	2 ; 9/16	1 ; 19	0 ; 0	0 ; 0	1 ; 1	2 ; 1/1
13	2020	1 ; 1	1 ; 2	3 ; 3/4/4	1 ; 7	2 ; 17/26	0 ; 0	0 ; 0	0 ; 0	1 ; 1
14	2010	3 ; 1/1/1	1 ; 3	1 ; 2	0 ; 0	3 ; 9/15/28	0 ; 0	0 ; 0	0 ; 0	1 ; 1
15	2045	1 ; 1	1 ; 3	0 ; 0	0 ; 0	0 ; 0	3 ; 10/22/36	0 ; 0	0 ; 0	0 ; 0
16	2040	1 ; 1	0 ; 0	1 ; 3	0 ; 0	0 ; 0	3 ; 7/8/45	0 ; 0	0 ; 0	0 ; 0
17	1955	1 ; 1	0 ; 0	2 ; 4/5	0 ; 0	0 ; 0	2 ; 19/50	0 ; 0	0 ; 0	0 ; 0
18	1950	3 ; 1/1/1	1 ; 3	1 ; 4	0 ; 0	1 ; 47	1 ; 21	0 ; 0	1 ; 1	0 ; 0
19	1950	1 ; 1	0 ; 0	1 ; 2	1 ; 7	1 ; 32	1 ; 21	0 ; 0	1 ; 1	0 ; 0
20										
21	2040	0 ; 0	0 ; 0	0 ; 0	3 ; 3/6/14	1 ; 7	0 ; 0	0 ; 0	0 ; 0	1 ; 1
22										
23										
24	2005	0 ; 0	0 ; 0	1 ; 4	0 ; 0	2 ; 9/12	1 ; 27	1 ; 6	0 ; 0	0 ; 0
25										
26										
27										
28										
29										
30	1925	0 ; 0	0 ; 0	3 ; 4/4/7	2 ; 11/12	2 ; 7/9	1 ; 6	0 ; 0	0 ; 0	1 ; 1
31										
TOTALS	—	19 ; 19	8 ; 22	22 ; 78	11 ; 99	15 ; 254	12 ; 272	1 ; 6	5 ; 6	10 ; 10

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
18.4	7.8	21.4	10.7	14.6	11.7	1.0	4.9	9.7	103

NOBS = 15

$\overline{p/g}$ mean = 1.9119

$\overline{f/g}$ mean = 7.8733

\overline{p} / \overline{g} mean = 1.8155

\overline{f} / \overline{g} mean = 7.4369

GROUP COMPLEXITY INDEX (GCI) = 9.2524



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 MAY	4.02	63.01	62.35	389.4	65.22	11.26	25.57
JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27
FEBRUARY	5.81	92.95	100.30	712.1	100.93	17.06	38.83
MARCH	5.75	91.97	99.82	714.8	99.56	16.91	38.44
APRIL	5.83	93.57	102.90	745.9	102.86	17.29	39.29

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 MAY	4.06	63.92	63.54	395.9	67.30	11.28	26.17
JUNE	4.40	68.81	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	88.97	15.14	34.48
FEBRUARY	5.44	86.74	94.22	655.6	93.98	15.87	36.11
MARCH	5.64	90.35	98.83	697.8	99.07	16.64	37.81
APRIL	5.92	95.15	104.77	751.8	105.69	17.64	40.06



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gdso@earthling.net

WEBSITE: www.cv-helios.net/gdso

SUNSPOT RESULTS FOR NOVEMBER 1999

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03													
04	2125	6	33	93	11	15	125	828	87	2.0	2.5	2.5	3683
05													
06													
07													
08													
09													
10													
11	2055	10	105	205	23	48	278	3043	235	1.5	2.5	3.0	3684
12	2045	9	91	181	23	36	266	2430	199	2.5	2.5	2.5	3685
13													
14	1930	8	92	172	15	31	181	2588	199	1.5	2.0	2.0	3686
15	1930	10	94	194	16	30	190	2453	218	1.5	2.0	2.0	3687
16	2200	10	81	181	17	16	186	2264	207	2.0	2.5	3.0	3688
17													
18	1955	10	95	195	20	28	228	2305	214	2.0	3.0	2.5	3689
19													
20													
21	2140	8	71	151	19	28	218	1420	195	2.0	2.5	2.5	3690
22	1950	8	59	139	13	28	158	1212	179	2.0	2.0	2.5	3691
23													
24													
25													
26													
27													
28													
29	2125	3	45	75	10	16	116	810	87	1.5	2.5	2.5	3692
30	1955	5	55	105	12	26	146	1087	108	2.0	3.0	2.5	3693
31													
Σ	—	87	821	1691	179	302	2092	20440	1928	20.5	27	27.5	—
NOBS	—	11	11	11	11	11	11	11	11	11	11	11	—
MNS	—	7.91	74.64	153.73	16.27	27.45	190.18	1858.18	175.27	1.86	2.45	2.50	—

MEAN WEIGHT = 0.4454

MEAN CONDITION = 2.2727

QUALITY COUNT = 27.45



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR NOVEMBER 1999

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											
03											
04	2125	37	4	16	15	2	0	2.0	2.5	2.5	3683
05											
06											
07											
08											
09											
10											
11	2055	112	7	56	46	1	2	1.5	2.5	3.0	3684
12	2045	97	6	54	34	1	2	2.5	2.5	2.5	3685
13											
14	1930	99	7	60	31	1	0	1.5	2.0	2.0	3686
15	1930	101	7	62	29	2	1	1.5	2.0	2.0	3687
16	2200	88	7	63	15	2	1	2.0	2.5	3.0	3688
17											
18	1955	102	7	67	25	0	3	2.0	3.0	2.5	3689
19											
20											
21	2140	79	8	43	28	0	0	2.0	2.5	2.5	3690
22	1950	66	7	30	28	1	0	2.0	2.0	2.5	3691
23											
24											
25											
26											
27											
28											
29	2125	48	3	29	16	0	0	1.5	2.5	2.5	3692
30	1955	60	5	29	26	0	0	2.0	3.0	2.5	3693
31											
Σ	—	889	68	509	293	10	9	20.5	27	27.5	—
NOBS	—	11	11	11	11	11	11	11	11	11	—
MNS	—	80.82	6.18	46.27	26.64	0.91	0.82	1.86	2.45	2.50	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR NOVEMBER 1999

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 g ; f	B g ; f	C g ; f	D g ; f	E g ; f	F g ; f	G g ; f	H g ; f	J g ; f
01										
02										
03										
04	2125	0 ; 0	1 ; 3	1 ; 5	1 ; 7	0 ; 0	1 ; 16	0 ; 0	0 ; 0	2 ; 1/1
05										
06										
07										
08										
09										
10										
11	2055	2 ; 1/1	1 ; 2	0 ; 0	3 ; 5/6/18	1 ; 8	2 ; 30/33	0 ; 0	0 ; 0	1 ; 1
12	2045	2 ; 1/1	1 ; 2	1 ; 6	1 ; 8	2 ; 13/24	1 ; 35	0 ; 0	0 ; 0	1 ; 1
13										
14	1930	0 ; 0	1 ; 2	3 ; 3/4/11	0 ; 0	1 ; 27	1 ; 34	1 ; 10	0 ; 0	1 ; 1
15	1930	1 ; 1	0 ; 0	3 ; 3/4/4	1 ; 17	1 ; 35	1 ; 21	1 ; 7	0 ; 0	2 ; 1/1
16	2200	1 ; 1	1 ; 2	1 ; 3	3 ; 4/9/18	0 ; 0	1 ; 36	1 ; 6	0 ; 0	2 ; 1/1
17										
18	1955	3 ; 1/1/1	0 ; 0	1 ; 3	2 ; 3/8	3 ; 9/19/39	1 ; 11	0 ; 0	0 ; 0	0 ; 0
19										
20										
21	2140	0 ; 0	0 ; 0	3 ; 2/3/6	3 ; 4/9/11	2 ; 17/19	0 ; 0	0 ; 0	0 ; 0	0 ; 0
22	1950	0 ; 0	1 ; 5	1 ; 3	3 ; 3/3/11	2 ; 13/20	0 ; 0	0 ; 0	0 ; 0	1 ; 1
23										
24										
25										
26										
27										
28										
29	2125	0 ; 0	0 ; 0	0 ; 0	3 ; 11/16/18	0 ; 0	0 ; 0	0 ; 0	0 ; 0	0 ; 0
30	1955	0 ; 0	0 ; 0	2 ; 2/3	2 ; 10/19	1 ; 21	0 ; 0	0 ; 0	0 ; 0	0 ; 0
31										
TOTALS	—	9 ; 9	6 ; 16	16 ; 65	22 ; 218	13 ; 264	8 ; 216	3 ; 23	0 ; 0	10 ; 10

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
10.3	6.9	18.4	25.3	14.9	9.2	3.4	0.0	11.5	87

NOBS = 11

\bar{p} / \bar{g} mean = 2.1452

\bar{f} / \bar{g} mean = 9.7146

\bar{p} / \bar{g} mean = 2.0575

\bar{f} / \bar{g} mean = 9.4368

GROUP COMPLEXITY INDEX (GCI) = 11.4943



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 JUNE	4.24	66.32	66.18	413.1	68.89	11.78	26.86
JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27
FEBRUARY	5.81	92.95	100.30	712.1	100.93	17.06	38.83
MARCH	5.75	91.97	99.82	714.8	99.56	16.91	38.44
APRIL	5.83	93.57	102.90	745.9	102.86	17.29	39.29
MAY	6.05	99.17	111.45	850.1	110.56	18.32	42.86

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 JUNE	4.40	68.81	68.16	423.3	72.35	12.16	27.84
JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	88.97	15.14	34.48
FEBRUARY	5.44	86.74	94.22	655.6	93.98	15.87	36.11
MARCH	5.64	90.35	98.83	697.8	99.07	16.64	37.81
APRIL	5.92	95.15	104.77	751.8	105.69	17.64	40.06
MAY	6.25	101.36	112.43	831.3	113.73	18.86	43.17



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

NEW ZEALAND

E-MAIL: gds0@earthling.net

WEBSITE: www.cv-helios.net/gds0

SUNSPOT RESULTS FOR **DECEMBER 1999**

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 .

DATE	UT	g	f	WN	p	s	SN	BX	CV	Q	S	T	Ref.
01													
02													
03													
04	1940	4	15	55	5	5	55	511	66	2.0	2.5	2.5	3694
05													
06	2010	4	23	63	7	11	81	633	94	2.0	2.0	2.0	3695
07													
08	2015	7	23	93	7	10	80	628	98	2.0	2.0	2.0	3696
09	2030	8	44	124	11	22	132	1156	132	2.0	2.0	2.0	3697
10													
11													
12													
13	2055	6	22	82	5	13	63	468	88	2.0	2.5	2.5	3698
14	2025	7	28	98	6	12	72	356	97	1.5	2.0	2.0	3699
15													
16													
17	2105	5	57	107	13	26	156	1898	159	2.0	2.5	3.0	3700
18													
19	2140	6	73	133	12	28	148	2396	166	2.0	2.0	2.5	3701
20													
21													
22	2010	4	72	112	11	25	135	2432	142	2.0	2.5	2.5	3702
23	2055	4	61	101	10	16	116	1951	129	2.0	2.0	2.0	3703
24													
25													
26													
27	2025	4	40	80	11	19	129	1204	168	1.5	2.0	2.0	3704
28													
29	2020	5	18	68	4	7	47	432	69	2.0	2.0	2.0	3705
30													
31													
Σ	—	64	476	1116	102	194	1214	14065	1408	23.0	26.0	27.0	—
NOBS	—	12	12	12	12	12	12	12	12	12	12	12	—
MNS	—	5.33	39.67	93.00	8.50	16.17	101.17	1172.08	117.33	1.92	2.17	2.25	—

MEAN WEIGHT = 0.4782

MEAN CONDITION = 2.1111

QUALITY COUNT = 17.00



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR DECEMBER 1999

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	1940	17	2	9	4	1	1	2.0	2.5	2.5	3694
05											
06	2010	26	3	11	11	1	0	2.0	2.0	2.0	3695
07											
08	2015	26	3	11	8	2	2	2.0	2.0	2.0	3696
09	2030	49	5	20	21	2	1	2.0	2.0	2.0	3697
10											
11											
12											
13	2055	27	5	9	12	0	1	2.0	2.5	2.5	3698
14	2025	33	5	16	10	0	2	1.5	2.0	2.0	3699
15											
16											
17	2105	60	3	30	25	1	1	2.0	2.5	3.0	3700
18											
19	2140	77	4	45	26	0	2	2.0	2.0	2.5	3701
20											
21											
22	2010	75	3	46	25	1	0	2.0	2.5	2.5	3702
23	2055	65	4	45	16	0	0	2.0	2.0	2.0	3703
24											
25											
26											
27	2025	43	3	20	19	1	0	1.5	2.0	2.0	3704
28											
29	2020	19	1	9	5	2	2	2.0	2.0	2.0	3705
30											
31											
Σ	—	517	41	271	182	11	12	23.0	26.0	27.0	—
NOBS	—	12	12	12	12	12	12	12	12	12	—
MNS	—	43.08	3.42	22.58	15.17	0.92	1.00	1.92	2.17	2.25	—



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

SUNSPOT CENSUS BY CLASSIFICATION FOR DECEMBER 1999

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	1940	1	1	0	0	0	0	0	0	0	0	1	11	0	0	0	0	2	1/2
05																			
06	2010	0	0	0	0	2	3/4	0	0	0	0	1	15	0	0	0	0	1	1
07																			
08	2015	2	1/1	0	0	1	5	0	0	0	0	1	12	0	0	0	0	3	1/1/2
09	2030	1	1	0	0	1	4	2	4/12	0	0	1	19	0	0	0	0	3	1/1/2
10																			
11																			
12																			
13	2055	1	1	1	3	3	2/2/3	0	0	0	0	1	11	0	0	0	0	0	0
14	2025	2	1/1	0	0	4	2/3/7/9	0	0	0	0	1	5	0	0	0	0	0	0
15																			
16																			
17	2105	1	1	1	2	0	0	0	0	1	6	1	47	0	0	1	1	0	0
18																			
19	2140	2	1/1	0	0	2	2/4	0	0	0	0	2	26/39	0	0	0	0	0	0
20																			
21																			
22	2010	0	0	0	0	1	6	0	0	0	0	2	23/42	0	0	1	1	0	0
23	2055	0	0	0	0	1	5	0	0	1	11	1	43	0	0	1	2	0	0
24																			
25																			
26																			
27	2025	0	0	0	0	1	4	0	0	1	12	1	23	0	0	1	1	0	0
28																			
29	2020	2	1/1	0	0	0	0	0	0	1	14	0	0	0	0	0	0	2	1/1
30																			
31																			
TOTALS	—	12	12	2	5	16	65	2	16	4	43	13	316	0	0	4	5	11	14

REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	Σg
18.8	3.1	25.0	3.1	6.2	20.3	0.0	6.2	17.2	64

NOBS = 12

\bar{p}/\bar{g} mean = 1.7055

\bar{f}/\bar{g} mean = 8.0308

\bar{p}/\bar{g} mean = 1.5938

\bar{f}/\bar{g} mean = 7.4375

GROUP COMPLEXITY INDEX (GCI) = 9.0312



**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	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
1998 JULY	4.40	69.44	70.63	453.4	71.92	12.22	28.51
AUGUST	4.58	72.22	74.09	478.4	75.49	12.74	29.58
SEPTEMBER	4.73	74.30	76.38	495.4	78.30	13.22	30.19
OCTOBER	4.83	76.07	78.76	519.4	79.77	13.59	31.04
NOVEMBER	5.05	79.30	82.53	542.3	83.78	14.31	32.27
DECEMBER	5.41	84.82	88.63	582.7	90.79	15.43	34.43
1999 JANUARY	5.72	90.54	96.27	654.6	97.92	16.56	37.27
FEBRUARY	5.81	92.95	100.30	712.1	100.93	17.06	38.83
MARCH	5.75	91.97	99.82	714.8	99.56	16.91	38.44
APRIL	5.83	93.57	102.90	745.9	102.86	17.29	39.29
MAY	6.05	99.17	111.45	850.1	110.56	18.32	42.86
JUNE	6.16	102.56	116.00	929.1	115.30	18.92	45.19

'BARNES 13' METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
1998 JULY	4.69	73.27	73.00	458.5	76.76	12.97	29.56
AUGUST	4.90	76.45	76.82	489.4	79.81	13.58	30.85
SEPTEMBER	4.99	77.92	78.86	508.8	80.93	13.89	31.39
OCTOBER	5.01	78.36	80.24	524.3	81.04	14.00	31.62
NOVEMBER	5.04	79.03	82.30	543.4	82.17	14.19	32.07
DECEMBER	5.12	80.69	85.50	572.4	84.84	14.56	33.05
1999 JANUARY	5.25	83.40	89.68	611.5	88.97	15.14	34.48
FEBRUARY	5.44	86.74	94.22	655.6	93.98	15.87	36.11
MARCH	5.64	90.35	98.83	697.8	99.07	16.64	37.81
APRIL	5.92	95.15	104.77	751.8	105.69	17.64	40.06
MAY	6.25	101.36	112.43	831.3	113.73	18.86	43.17
JUNE	6.51	106.63	118.93	913.9	120.40	19.85	45.98



GEORGI DOBROVOLSKI SOLAR OBSERVATORY

OBSERVED ANNUAL MEANS OF SUNSPOT DATA FOR 1999

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 .

g	=	6.30
f	=	41.71
Wolf Number	=	104.70
Truncated Wolf Number	=	87.18
p	=	9.93
s	=	18.40
Pettisindex	=	117.73
Beckindex	=	959.78
Classification Value	=	118.43
Quality Count	=	19.35
Inter-Sol Index	=	46.04
Mean Weight	=	0.4955
Q	=	1.6768
S	=	2.1707
T	=	2.3323
Mean Condition	=	2.0600
Total Number of Observations	=	164