




# Georgi Dobrovolski Solar Observatory

NEW ZEALAND

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## SUNSPOT RESULTS FOR APRIL 2005

All observations carried out by HOWARD BARNES .

Telescope : 76 mm refractor ( f . l . 910 mm ) k considered as 1 .

Observed by PROJECTION .

Full disc diameter = 145 mm approx .

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

QC = Quality Count ; QC<sup>2</sup> = Squared Quality Count .

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

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

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

DATE	UT*	g	f	WN	p	s	SN	BX	CV	QC	QC <sup>2</sup>	Q	S	T	Ref.
01	2100	2	3	23	1	2	12	45	12	4	8	2.0	2.0	2.0	4522-8
02	2120	3	10	40	4	3	43	218	42	8	24	2.0	2.0	2.0	4523-8
03	2105	3	17	47	5	10	60	344	51	8	24	1.5	2.0	1.5	4524-8
04															
05															
06	2105	3	8	38	4	4	44	143	55	9	29	1.5	2.5	2.5	4525-8
07	2150	3	7	37	3	3	33	85	30	8	22	1.0	2.0	2.5	4526-8
08															
09	2140	3	13	43	4	7	47	223	50	9	29	1.5	2.0	2.5	4527-8
10	2140	2	7	27	3	4	34	145	38	6	20	2.5	2.5	2.0	4528-8
11															
12	2135	2	8	28	3	4	34	190	32	7	25	2.0	2.0	1.5	4529-8
13	2125	3	11	41	4	5	45	203	45	9	35	1.5	2.0	2.5	4530-8
14	2140	4	13	53	5	5	55	221	64	14	54	1.0	2.0	2.0	4531-8
15	2145	3	10	40	4	5	45	130	45	10	34	1.5	2.5	2.5	4532-8
16															
17	2135	3	10	40	2	7	27	76	22	7	19	1.5	2.0	2.0	4533-8
18	2140	3	9	39	2	6	26	64	23	8	22	1.5	1.5	2.0	4534-8
19															
20															
21	2215	2	2	22	1	1	11	41	11	3	5	2.0	2.0	2.5	4535-9
22															
23															
24	2155	2	3	23	1	2	12	52	42	5	13	2.0	2.0	2.5	4536-9
25															
26	2155	2	8	28	1	3	13	60	40	4	10	1.5	2.0	2.0	4537-9
27															
28															
29	2145	3	29	59	3	7	37	669	70	10	42	2.0	2.0	2.0	4538-9
30															
31	—														
TOTALS	—	46	168	628	50	78	578	2909	672	129	415	28.5	35.0	36.5	—
NOBS	—	17	17	17	17	17	17	17	17	17	17	17	17	17	—
MNS	—	2.71	9.88	36.94	2.94	4.59	34.00	171.12	39.53	7.59	24.41	1.68	2.06	2.15	—

MEAN WEIGHT = 0.5151

MEAN CONDITION = 1.9608

TRUNCATED WOLF NUMBER = 30.88

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

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## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR APRIL 2005

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	2100	4	1	0	2	1	0	2.0	2.0	2.0	4522-8
02	2120	11	1	5	3	2	0	2.0	2.0	2.0	4523-8
03	2105	18	1	5	10	2	0	1.5	2.0	1.5	4524-8
04											
05											
06	2105	10	2	3	4	1	0	1.5	2.5	2.5	4525-8
07	2150	9	2	3	3	1	0	1.0	2.0	2.5	4526-8
08											
09	2140	15	2	5	7	1	0	1.5	2.0	2.5	4527-8
10	2140	8	1	2	4	1	0	2.5	2.5	2.0	4528-8
11											
12	2135	10	2	4	4	0	0	2.0	2.0	1.5	4529-8
13	2125	13	2	6	4	0	1	1.5	2.0	2.5	4530-8
14	2140	17	4	8	5	0	0	1.0	2.0	2.0	4531-8
15	2145	13	3	5	5	0	0	1.5	2.5	2.5	4532-8
16											
17	2135	12	2	3	6	0	1	1.5	2.0	2.0	4533-8
18	2140	12	3	3	6	0	0	1.5	1.5	2.0	4534-8
19											
20											
21	2215	2	0	0	0	1	1	2.0	2.0	2.5	4535-9
22											
23											
24	2155	4	1	0	2	1	0	2.0	2.0	2.5	4536-9
25											
26	2155	9	1	5	2	0	1	1.5	2.0	2.0	4537-9
27											
28											
29	2145	31	2	22	6	0	1	2.0	2.0	2.0	4538-9
30											
31	—										
TOTALS	—	198	30	79	73	11	5	28.5	35.0	36.5	—
NOBS	—	17	17	17	17	17	17	17	17	17	—
MNS	—	11.65	1.76	4.65	4.29	0.65	0.29	1.68	2.06	2.15	—

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## SUNSPOT CENSUS BY CLASSIFICATION FOR

### APRIL 2005

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	2100	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1
02	2120	0	0	0	0	0	0	1	8	0	0	0	0	0	0	0	0	2	1/1
03	2105	0	0	0	0	0	0	1	15	0	0	0	0	0	0	0	2	1/1	
04																			
05																			
06	2105	0	0	0	0	1	2	1	5	0	0	0	0	0	0	0	1	1	
07	2150	0	0	0	0	2	2/4	0	0	0	0	0	0	0	0	0	1	1	
08																			
09	2140	0	0	0	0	1	3	1	9	0	0	0	0	0	0	0	1	1	
10	2140	0	0	0	0	0	0	1	6	0	0	0	0	0	0	0	1	1	
11																			
12	2135	0	0	0	0	1	5	0	0	0	0	0	0	1	3	0	0	0	0
13	2125	1	1	0	0	1	3	0	0	1	7	0	0	0	0	0	0	0	0
14	2140	0	0	1	2	1	2	1	4	1	5	0	0	0	0	0	0	0	0
15	2145	0	0	0	0	2	2/3	1	5	0	0	0	0	0	0	0	0	0	0
16																			
17	2135	1	1	0	0	2	3/6	0	0	0	0	0	0	0	0	0	0	0	0
18	2140	0	0	1	2	2	3/4	0	0	0	0	0	0	0	0	0	0	0	0
19																			
20																			
21	2215	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	
22																			
23																			
24	2155	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	1	0	0
25																			
26	2155	1	1	0	0	1	7	0	0	0	0	0	0	0	0	0	0	0	0
27																			
28																			
29	2145	1	1	0	0	0	0	1	5	1	23	0	0	0	0	0	0	0	0
30																			
31	—																		
<b>TOTALS</b>	—	5	5	4	8	14	49	8	57	3	35	0	0	1	3	1	1	10	10

#### REGIONAL PERCENTAGES

A	B	C	D	E	F	G	H	J	SIGMAg
10.9	8.7	30.4	17.4	6.5	0.0	2.2	2.2	21.7	46

NOBS = 17

$\overline{p/g}$  mean = 1.0539

$\overline{f/g}$  mean = 3.5343

$\overline{p/g}$  mean = 1.0870

$\overline{f/g}$  mean = 3.6522

GROUP COMPLEXITY INDEX (GCI) = 4.7391

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## 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 GDSO ANNUAL REPORTS.

### WALDMEIER METHOD

MONTH	$g(S^W)$	$WN(S^W)$	$SN(S^W)$	$BX(S^W)$	$CV(S^W)$	$QC(S^W)$	$IS(S^W)$
2003 NOVEMBER	4.29	71.92	88.12	673.5	85.40	13.74	32.00
DECEMBER	4.19	69.26	84.25	630.5	82.43	13.37	30.28
2004 JANUARY	4.00	65.23	78.05	575.9	77.59	12.71	28.00
FEBRUARY	3.75	61.35	72.76	548.3	72.73	11.90	26.48
MARCH	3.56	58.70	70.01	537.4	70.74	11.30	25.59
APRIL	3.53	57.59	70.08	508.8	70.66	11.20	24.77
MAY	3.57	57.74	71.00	503.5	71.37	11.34	24.58
JUNE	3.47	56.82	70.02	515.1	70.41	11.12	24.53
JULY	3.35	54.72	66.85	494.3	67.50	10.69	23.50
AUGUST	3.28	53.46	64.65	482.4	66.12	10.40	22.91
SEPTEMBER	3.15	51.44	61.95	464.3	64.60	9.98	22.12
OCTOBER	3.05	49.75	59.58	444.3	62.91	9.67	21.33

### BARNES-13 METHOD

MONTH	$g(S^{B13})$	$WN(S^{B13})$	$SN(S^{B13})$	$BX(S^{B13})$	$CV(S^{B13})$	$QC(S^{B13})$	$IS(S^{B13})$
2003 NOVEMBER	4.14	69.20	83.99	644.3	82.96	13.34	30.79
DECEMBER	3.96	65.01	78.56	577.5	78.19	12.69	28.24
2004 JANUARY	3.80	61.44	73.72	524.8	73.91	12.09	26.12
FEBRUARY	3.68	59.12	70.59	500.3	70.85	11.63	24.88
MARCH	3.61	57.85	69.17	492.8	69.40	11.33	24.29
APRIL	3.58	57.27	68.92	486.3	68.87	11.18	23.97
MAY	3.57	57.45	69.47	497.3	69.37	11.18	24.20
JUNE	3.52	57.42	69.76	520.6	69.89	11.11	24.67
JULY	3.43	56.59	69.09	529.8	69.48	10.90	24.68
AUGUST	3.33	55.33	67.92	526.0	68.88	10.65	24.38
SEPTEMBER	3.21	53.53	65.96	508.9	67.87	10.34	23.68
OCTOBER	3.10	51.52	63.32	486.0	66.22	10.02	22.72