



## SUNSPOT RESULTS FOR APRIL 2017

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 ; PX = 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 .

**PLEASE NOTE:**  
 From July 2015's issue,  
 the observed Pettisindex  
 is labelled PX.

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

DATE	UT	g	f	WN	p	s	PX	BX	CV	QC	QC <sup>2</sup>	Q	S	T	Ref.					
01																				
02																				
03																				
04																				
05	2150	2	16	36	6	6	66	464	45	9	45	1.5	2.5	2.0	5966-9					
06																				
07	2200	0	0	0	0	0	0	0	0	0	0	2.0	3.0	2.5	5967-9					
08																				
09	2225	0	0	0	0	0	0	0	0	0	0	1.0	2.0	2.0	5968-9					
10																				
11																				
12																				
13																				
14																				
15	2205	0	0	0	0	0	0	0	0	0	0	2.0	2.5	2.5	5969-9					
16																				
17	2235	0	0	0	0	0	0	0	0	0	0	1.5	2.5	2.0	5970-9					
18	2245	1	3	13	2	0	20	54	19	4	16	2.0	3.0	3.0	5971-9					
19																				
20																				
21																				
22																				
23	2255	3	10	40	3	6	36	132	35	9	29	2.0	2.5	2.0	5972-9					
24	2215	3	8	38	3	4	34	110	34	8	26	1.0	2.0	2.0	5973-9					
25	2220	3	6	36	3	2	32	113	33	7	21	1.5	2.0	2.0	5974-9					
26	2215	2	4	24	3	1	31	91	38	6	20	1.5	2.5	2.0	5975-9					
27	2230	2	3	23	3	0	30	73	35	6	20	1.5	2.5	2.5	5976-9					
28																				
29																				
30	2240	1	1	11	1	0	10	37	10	2	4	2.0	3.0	2.0	5977-0					
31	—																			
Σ	—	17	51	221	24	19	259	1074	249	51	181	19.5	30.0	26.5	—					
NOBS	—	12	12	12	12	12	12	12	12	12	12	12	12	12	—					
MNS	—	1.42	4.25	18.42	2.00	1.58	21.58	89.50	20.75	4.25	15.08	1.63	2.50	2.21	—					
MEAN WEIGHT =		0.4834					MEAN CONDITION =			2.1111					TRUNCATED WOLF NUMBER =			15.58		

# Georgi Dobrovolski Solar Observatory



## SUNSPOT DISTRIBUTION & INTER-SOL INDICES FOR APRIL 2017

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											
03											
04											
05	2150	18	2	10	6	0	0	1.5	2.5	2.0	5966-9
06											
07	2200	0	0	0	0	0	0	2.0	3.0	2.5	5967-9
08											
09	2225	0	0	0	0	0	0	1.0	2.0	2.0	5968-9
10											
11											
12											
13											
14											
15	2205	0	0	0	0	0	0	2.0	2.5	2.5	5969-9
16											
17	2235	0	0	0	0	0	0	1.5	2.5	2.0	5970-9
18	2245	4	1	3	0	0	0	2.0	3.0	3.0	5971-9
19											
20											
21											
22											
23	2255	13	3	4	6	0	0	2.0	2.5	2.0	5972-9
24	2215	10	2	4	3	0	1	1.0	2.0	2.0	5973-9
25	2220	7	1	3	1	1	1	1.5	2.0	2.0	5974-9
26	2215	5	1	2	1	1	0	1.5	2.5	2.0	5975-9
27	2230	4	1	2	0	1	0	1.5	2.5	2.5	5976-9
28											
29											
30	2240	1	0	0	0	1	0	2.0	3.0	2.0	5977-0
31	—										
Σ	—	62	11	28	17	4	2	19.5	30.0	26.5	—
NOBS	—	12	12	12	12	12	12	12	12	12	—
MNS	—	5.17	0.92	2.33	1.42	0.33	0.17	1.63	2.50	2.21	—

# Georgi Dobrovolski Solar Observatory



## SUNSPOT CENSUS BY CLASSIFICATION FOR APRIL 2017

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	2150	0	0	0	0	1	4	0	0	0	0	1	12	0	0	0	0	0	0
06																			
07	2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08																			
09	2225	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10																			
11																			
12																			
13																			
14																			
15	2205	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16																			
17	2235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	2245	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0
19																			
20																			
21																			
22																			
23	2255	0	0	1	2	1	2	1	6	0	0	0	0	0	0	0	0	0	0
24	2215	1	1	0	0	1	2	1	5	0	0	0	0	0	0	0	0	0	0
25	2220	1	1	0	0	0	0	1	4	0	0	0	0	0	0	0	0	1	1
26	2215	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	1	1
27	2230	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	1
28																			
29																			
30	2240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
31	—																		
TOTALS	—	2	2	1	2	3	8	6	23	0	0	1	12	0	0	0	0	4	4
REGIONAL PERCENTAGES																			
A	B	C	D	E	F	G	H	J	Σg										
11.8	5.9	17.6	35.3	0.0	5.9	0.0	0.0	23.5	17										
NOBS = 12				$\bar{p/g}$ mean = 1.5000				$\bar{f/g}$ mean = 2.9375											
				$\bar{p/g}$ mean = 1.4118				$\bar{f/g}$ mean = 3.0000											
GROUP COMPLEXITY INDEX (GCI) = 4.4118																			



## 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	$g^r(S^w)$	$WN^r(S^w)$	$PX^r(S^w)$	$BX^r(S^w)$	$CV^r(S^w)$	$QC^r(S^w)$	$IS^r(S^w)$
2015 NOVEMBER	2.61	41.52	50.26	407.9	51.92	8.57	17.23
DECEMBER	2.51	39.57	47.78	374.0	50.79	8.28	16.24
2016 JANUARY	2.30	36.14	43.49	334.6	46.88	7.58	14.69
FEBRUARY	2.22	34.30	40.69	297.2	44.01	7.23	13.60
MARCH	2.22	33.19	38.55	259.5	42.02	7.04	12.52
APRIL	2.17	32.24	37.29	247.2	40.89	6.80	12.02
MAY	2.13	31.38	36.01	234.1	39.81	6.59	11.56
JUNE	2.05	29.80	33.32	204.2	37.05	6.23	10.70
JULY	1.97	28.48	31.41	185.6	34.55	5.94	10.11
AUGUST	1.87	27.06	30.01	175.4	33.10	5.68	9.58
SEPTEMBER	1.72	24.88	27.63	160.7	30.92	5.22	8.82
OCTOBER	1.61	23.46	26.23	154.7	28.81	4.90	8.41

### BARNES-13 METHOD

MONTH	$g^r(S^{B13})$	$WN^r(S^{B13})$	$PX^r(S^{B13})$	$BX^r(S^{B13})$	$CV^r(S^{B13})$	$QC^r(S^{B13})$	$IS^r(S^{B13})$
2015 NOVEMBER	2.47	39.93	49.32	408.4	50.56	8.33	16.95
DECEMBER	2.38	37.61	46.09	360.9	48.30	7.94	15.49
2016 JANUARY	2.28	35.15	42.32	310.6	45.29	7.48	13.92
FEBRUARY	2.23	33.42	39.24	266.3	42.84	7.14	12.63
MARCH	2.21	32.39	37.16	233.9	41.44	6.93	11.74
APRIL	2.19	31.84	36.06	220.0	40.87	6.77	11.37
MAY	2.16	31.26	34.98	210.5	39.99	6.59	11.11
JUNE	2.09	30.22	33.33	199.1	38.04	6.31	10.71
JULY	2.02	29.31	32.23	195.0	36.19	6.07	10.48
AUGUST	1.94	28.36	31.42	193.6	34.66	5.86	10.29
SEPTEMBER	1.81	26.63	29.67	185.3	32.26	5.49	9.76
OCTOBER	1.66	24.45	27.36	170.7	29.12	5.04	8.98

NB: VALUES FROM MAY 2015 TO MAY 2016 (INCLUSIVE),  
ARE BASED, IN PART, ON INTERPOLATED VALUES OF NOVEMBER 2015.