

ISSN 1727-0030

太 陽 黑 子 觀 測 報 告
中 華 民 國 102 年

Report on Sunspot Observations
2013

臺北市立天文科學教育館

PUBLISHED BY
TAIPEI ASTRONOMICAL MUSEUM
TAIPEI, TAIWAN

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太陽黑子觀測報告
臺北市立天文科學教育館
中華民國102年

觀測報告說明

本館蒐集之太陽黑子觀測資料始於民國36年7月，本冊為民國102年1月至12月的觀測結果。需要參考原始黑子投影資料或攝影影像者，可與我們聯繫。來信請寄：

111013臺北市士林區基河路363號

臺北市立天文科學教育館

tam001@g.tam.gov.tw

SUNSPOT OBSERVATIONS
Taipei Astronomical Museum
2013

Introduction

Sunspot observations have been carrying on by Taipei Astronomical Museum since July, 1947. This volume contains the observational results of sunspots at Taipei from Jan. to Dec., 2013. Copies of the projected or photographic solar images may be obtained by writing to:

111013 No.363, Jihe Rd., Shilin Dist., Taipei, Taiwan

Taipei Astronomical Museum

tam001@g.tam.gov.tw

觀測站地理位置

臺北市立天文科學教育館目前使用第二觀測室進行太陽黑子觀測，地理座標為：

緯度：北緯 $25^{\circ} 5' 44''$

經度：東經 $121^{\circ} 31' 5''$

高度：海拔 40 公尺

Location of Observatory

The geographic coordinates of the observatory in the Taipei Astronomical Museum are:

Geographic Latitude : $25^{\circ} 5' 44''$

Geographic Longitude : $121^{\circ} 31' 5''$

Elevation : 40 m

望遠鏡基本資料

觀測儀器使用日本五藤光學製造廠的20公分庫德式折射鏡，詳細資料如下表：

望遠鏡		五藤光學20公分庫德式折射鏡
物鏡	有效口徑	200 mm
	焦長	1800 mm
目鏡	焦長	K-28 mm
投影直徑		200 mm

由於庫德式望遠鏡在觀測時會有影像旋轉的效應，故測量到的黑子群日面經度及日面緯度會與真實的黑子位置有一點誤差。

Telescope

The equatorially mounted Coude's telescope manufactured by Goto Optical Mfg. Co. was used to observe the projected solar disk in this year. Data of this instrument are as the table below:

Telescope		GOTO 20cm Coude's refractor
Objective lens	Effective Aperture	200 mm
	Focal Length	1800 mm
Eyepieces	Focal Length	K-28 mm
Image Diameter		200 mm

Because of the rotation effect of Coude's telescope, the heliographic longitude and latitude of the sunspot groups will have some error relative to the true locations.

報表符號說明

U. T.	觀測時的世界標準時間
g	太陽黑子群數
f	太陽黑子總數
R	相對太陽黑子數
A	經過球面差修正的太陽黑子總面積，單位：太陽半球面積的百萬分之一
Q	太陽影像視相度：5，極佳；4，良好；3，普通；2，不佳；1，惡劣
N	太陽可見半球面的北半球
S	太陽可見半球面的南半球
C	太陽可見半球面的中央區域
W	整個太陽可見半球面
Group No.	美國國家海洋暨大氣總署（NOAA）編號
Bs	被觀測的黑子群在日面座標系中的緯度
Ls	被觀測的黑子群在日面座標系中的經度
n	黑子個數
T	黑子群分類（蘇黎世天文臺分類法）

Code Table

Symbols is explained as follows:

U.T.	Universal time of the observation.
g	Number of the observed groups of sunspots.
f	Total number of the sunspots.
R	Relative sunspot number.
A	The total areas of the sunspots corrected for the effect of surface foreshortening expressed in millionths of the solar hemisphere.
Q	Solar image quality in five grades: 5,excellent; 4,good; 3,fair; 2,poor; 1,very poor.
N	Northern half of the visible solar hemisphere.
S	Southern half of the visible solar hemisphere.
C	Central zone of the visible solar disk.
W	Full visible solar hemisphere.
Group No.	National Oceanic and Atmospheric Administration (NOAA) group number.
Bs	The heliographic latitude of the observed sunspot group.
Ls	The heliographic longitude of the observed sunspot group.
n	Number of the observed sunspots.
T	Group type in Zurich classification.

月平均值

由於太陽的自轉週期比一個月略短些，因此由太陽自轉和黑子在日面經度分佈上的不均勻所造成的變動和影響，可以經由許多個月的資料綜合而將之排除。使用平滑月平均相對值就可以達到確實消除的目的。對平均相對數為 R_0 的任意一個月($n=0$)，其後各月的平均相對數依序為 $R_1, R_2, R_3, \dots, R_n, \dots$ ，則當月的平滑月平均相對值可由下式求得：

$$\overline{R_0} = \frac{R_{-6} + R_{+6} + 2 \sum_{-5}^{+5} R_n}{24}$$

Monthly Mooth Date

As the synodic rotation period is only slightly shorter than one month, the fluctuations caused by the solar rotation and the unequal distribution of the spots in heliographic longitude are eliminated to a large extent by forming monthly means. In the aim of eliminating the real fluctuations too, further smoothing is achieved by the so-called smoothed monthly mean values. For a specific month ($n=0$) the monthly mean is R_0 , and the following months are $R_1, R_2, R_3, \dots, R_n, \dots$. The smoothed relative number for the month $n=0$ is calculated according to the following definition:

$$\overline{R_0} = \frac{R_{-6} + R_{+6} + 2 \sum_{-5}^{+5} R_n}{24}$$

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Jan. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1																		Rain
2																		Rain
3																		Rain
4																		Rain
5																		Cloud
6																		Cloud
7	02:08	11	27	4	4	8	18	3	9	137	44	98	39	993	491	1	2	
8																		Rain
9																		Rain
10																		Rain
11	04:58	10	71	5	41	5	58	5	13	171	91	108	63	1548	315	1	3	
12																		Rain
13																		Rain
14	02:50	8	36	1	23	4	29	4	7	116	33	69	47	1308	143	1	2	
15																		None
16	02:00	4	41	2	35	3	38	1	3	81	55	68	13	881	78	1	3	
17																		Cloud
18																		Cloud
19	03:23	3	11	2	5	2	10	1	1	41	25	30	11	356	42	1	3	
20																		None
21	03:17	3	16	1	14	2	15	1	1	46	24	35	11	84	90	0	3	
22																		Cloud
23																		Cloud
24	03:39	3	11	0	0	3	11	0	0	41	0	41	0	193	0	0	3	
25																		Cloud
26																		Cloud
27	07:22	3	15	1	7	2	8	1	7	45	17	28	17	66	47	1	3	
28	06:47	4	17	2	14	3	7	1	10	57	34	37	20	108	75	0	3	
29	06:36	3	3	1	1	2	2	1	1	33	11	22	11	239	48	0	3	
30	01:21	4	8	1	4	2	3	2	5	48	14	23	25	145	40	1	5	
31																		None
Mean No.		5.09	23.27	1.82	13.45	3.27	18.09	1.82	5.18	74.18	31.64	50.82	23.36	538.17	124.48	Obs. Days: 11		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Feb. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1	01:50	5	12	1	5	3	6	2	6	62	15	36	26	289	62	0	3	
2																		Cloud
3																		Cloud
4	01:30	2	8	1	2	2	8	0	0	28	12	28	0	417	0	0	4	
5																		Cloud
6																		Cloud
7																		Cloud
8																		Cloud
9																		Cloud
10																		Cloud
11																		Cloud
12																		Cloud
13																		Cloud
14	08:09	2	5	0	0	2	5	0	0	25	0	25	0	198	0	0	3	
15																		Rain
16	07:22	2	3	1	1	1	1	1	2	23	11	11	12	115	88	0	3	
17																		None
18																		None
19																		Rain
20																		None
21	08:25	5	20	2	10	3	10	2	10	70	30	40	30	470	59	0	2	
22																		Cloud
23																		Cloud
24																		None
25																		None
26	06:30	3	21	1	11	1	2	2	19	51	21	12	39	26	89	0	4	
27																		Rain
28																		None
Mean No.		3.17	11.50	1.00	4.83	2.00	5.33	1.17	6.17	43.17	14.83	25.33	17.83	252.52	49.71	Obs. Days: 6		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Mar. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1	06:38	4	20	2	7	1	4	3	16	60	27	14	46	9	367	0	2	
2																		Rain
3																		Cloud
4																		None
5	02:45	6	31	1	10	1	1	5	30	91	20	11	80	8	557	3	3	
6	02:48	6	32	3	13	1	1	5	31	92	43	11	81	3	1387	2	3	
7																		None
8	02:44	4	27	2	11	2	10	2	17	67	31	30	37	100	69	1	3	
9	02:20	4	24	2	18	3	11	1	13	64	38	41	23	52	57	1	3	
10	05:43	6	35	2	23	5	16	1	19	95	43	66	29	1800	79	0	4	
11																		None
12	03:34	7	40	2	29	6	16	1	24	110	49	76	34	169	63	1	3	
13	02:48	7	43	2	24	6	32	1	11	113	44	92	21	468	22	1	3	
14																		Cloud
15																		Cloud
16	03:00	5	25	3	15	5	25	0	0	75	45	75	0	561	0	1	3	
17																		None
18	05:49	5	21	1	6	3	15	2	6	71	16	45	26	327	176	0	3	
19	06:55	4	9	1	3	3	6	1	3	49	13	36	13	786	1000	0	3	
20																		Cloud
21	07:30	3	7	0	0	3	7	0	0	37	0	37	0	2169	0	0	4	
22																		Cloud
23																		Cloud
24	03:08	3	8	0	0	2	7	1	1	38	0	27	11	143	969	0	3	
25	06:38	2	2	0	0	2	2	0	0	22	0	22	0	1367	0	0	2	
26																		Cloud
27																		Cloud
28																		Cloud
29																		Cloud
30																		Rain
31																		Rain
Mean No.		4.71	23.14	1.50	11.36	3.07	10.93	1.64	12.21	70.29	26.36	41.64	28.64	568.66	338.94	Obs. Days: 14		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Apr. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1																		Rain
2																		Rain
3																		Cloud
4																		Rain
5																		Cloud
6																		Rain
7																		None
8																		None
9																		Rain
10																		Cloud
11																		Rain
12																		Rain
13																		Rain
14																		Rain
15	02:17	6	44	2	21	2	13	4	31	104	41	33	71	193	405	0	4	
16	06:44	5	33	2	26	1	3	4	30	83	46	13	70	91	372	0	3	
17	03:41	5	28	1	13	1	2	4	26	78	23	12	66	100	364	0	2	
18																		Cloud
19																		Cloud
20																		Rain
21																		Rain
22																		Cloud
23	02:32	2	30	0	0	2	30	0	0	50	0	50	0	472	0	0	3	
24	04:24	4	34	2	11	3	27	1	7	74	31	57	17	1082	22	1	3	
25																		Rain
26	06:35	5	19	0	0	4	14	1	5	69	0	54	15	759	73	1	2	
27	08:07	4	24	2	13	2	11	2	13	64	33	31	33	308	115	0	2	
28																		Rain
29	02:49	4	36	3	34	2	24	2	12	76	64	44	32	245	148	0	3	
30	02:09	7	61	3	45	2	30	5	31	131	75	50	81	172	709	1	2	
Mean No.		4.67	34.33	1.67	18.11	2.11	17.11	2.56	17.22	81.00	34.78	38.22	42.78	380.00	245.41	Obs. Days: 9		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 May 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1																		Rain
2																		Cloud
3																		Cloud
4																		Rain
5	06:21	6	26	2	11	3	14	3	12	86	31	44	42	148	427	0	2	
6																		Rain
7	03:23	5	18	1	5	1	3	4	15	68	15	13	55	56	391	1	4	
8	02:13	7	24	3	13	2	11	5	13	94	43	31	63	90	521	2	4	
9																		Cloud
10																		Cloud
11																		Rain
12																		Rain
13																		None
14	07:47	7	86	2	24	5	64	2	22	156	44	114	42	689	225	0	3	
15																		Rain
16																		Rain
17																		Cloud
18																		Cloud
19																		Rain
20	02:24	5	18	1	5	3	9	2	9	68	15	39	29	277	289	0	3	
21																		Rain
22																		Rain
23	01:55	6	44	1	9	3	20	3	24	104	19	50	54	406	509	0	3	
24	08:40	5	61	2	21	3	26	2	35	111	41	56	55	285	270	0	3	
25	02:08	3	18	3	18	1	6	2	12	48	48	16	32	272	437	0	3	
26	01:33	5	54	4	53	2	21	3	33	104	93	41	63	237	848	1	4	
27																		None
28	03:29	5	29	1	11	1	11	4	18	79	21	21	58	35	220	1	3	
29	03:00	5	29	1	2	1	7	4	22	79	12	17	62	25	105	0	3	
30	03:13	5	11	1	2	1	4	4	7	61	12	14	47	16	77	0	3	
31																		None
Mean No.		5.33	34.83	1.83	14.50	2.17	16.33	3.17	18.50	88.17	32.83	38.00	50.17	211.21	359.95	Obs. Days: 12		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Jun. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1																		None
2																		None
3																		None
4																		Rain
5	08:47	5	23	1	5	3	13	2	10	73	15	43	30	88	304	0	4	
6																		Rain
7																		None
8	02:46	1	9	1	9	1	9	0	0	19	19	19	0	85	0	0	2	
9																		Cloud
10																		Rain
11																		Rain
12																		Rain
13																		Rain
14																		Cloud
15	02:24	5	20	0	0	0	0	5	20	70	0	0	70	0	131	1	3	
16																		Rain
17																		None
18	03:10	5	48	2	16	1	22	4	26	98	36	32	66	74	409	0	3	
19	07:35	6	50	5	45	2	26	4	24	110	95	46	64	92	398	1	3	
20																		None
21	04:00	7	58	5	33	2	19	5	39	128	83	39	89	194	385	0	3	
22																		Cloud
23	02:50	8	36	0	0	1	7	7	29	116	0	17	99	84	461	0	3	
24	02:25	7	23	0	0	1	6	6	17	93	0	16	77	85	485	1	3	
25																		None
26	06:37	3	6	1	1	0	0	3	6	36	11	0	36	0	134	0	3	
27	03:00	4	20	1	1	1	2	3	18	60	11	12	48	9	82	0	3	
28	03:17	4	20	4	20	1	2	3	18	60	60	12	48	8	150	2	3	
29																		Rain
30	07:17	4	17	2	15	1	11	3	6	57	35	21	36	56	31	0	4	
Mean No.		4.92	27.50	1.83	12.08	1.17	9.75	3.75	17.75	76.67	30.42	21.42	55.25	64.61	247.47	Obs. Days: 12		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Jul. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1																		None
2																		None
3	01:45	4	31	1	6	1	8	3	23	71	16	18	53	37	528	0	3	
4	02:05	4	42	1	10	1	1	3	41	82	20	11	71	10	324	0	3	
5																		Cloud
6																		Rain
7																		None
8	07:50	4	73	3	67	0	0	4	73	113	97	0	113	0	774	1	4	
9																		None
10																		None
11																		None
12																		Cloud
13																		Rain
14																		Cloud
15	03:29	3	18	1	10	2	8	1	10	48	20	28	20	139	45	1	4	
16																		None
17	02:15	3	29	1	15	1	9	2	20	59	25	19	40	198	54	1	4	
18																		Cloud
19																		Cloud
20																		Cloud
21																		Cloud
22																		None
23	06:20	3	19	2	11	1	8	2	11	49	31	18	31	113	32	1	4	
24	08:27	4	20	2	17	2	3	2	17	60	37	23	37	41	77	1	4	
25																		Cloud
26	02:19	4	17	1	6	2	3	2	14	57	16	23	34	320	141	0	4	
27																		Cloud
28																		None
29																		None
30	08:20	5	27	1	1	3	13	2	14	77	11	43	34	82	1289	0	4	
31																		Cloud
Mean No.		3.78	30.67	1.44	15.89	1.44	5.89	2.33	24.78	68.44	30.33	20.33	48.11	104.47	362.59	Obs. Days: 9		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Aug. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
1	02:03	7	20	2	9	5	11	2	9	90	29	61	29	263	144	0	3	
2	01:35	7	30	3	20	5	16	2	14	100	50	66	34	280	99	0	3	
3																		None
4																		None
5	03:39	4	10	2	6	2	6	2	4	50	26	26	24	97	96	0	3	
6	06:41	4	19	1	9	2	10	2	9	59	19	30	29	94	122	0	4	
7	07:03	3	14	1	6	2	7	1	7	44	16	27	17	77	35	0	4	
8																		None
9	02:17	5	15	1	8	1	2	4	13	65	18	12	53	35	108	0	4	
10	05:50	4	8	0	0	1	1	3	7	48	0	11	37	41	89	1	3	
11	02:37	6	22	0	0	1	1	5	21	82	0	11	71	19	214	1	3	
12																		None
13																		None
14																		Rain
15																		Rain
16																		Rain
17	04:11	6	27	2	18	0	0	6	27	87	38	0	87	0	514	1	3	
18																		None
19																		Rain
20																		Rain
21																		Rain
22																		Rain
23																		Rain
24	05:53	6	12	2	3	2	5	4	7	72	23	25	47	119	311	0	3	
25																		None
26																		None
27	03:14	3	13	0	0	2	7	1	6	43	0	27	16	172	212	1	3	
28	02:36	4	14	0	0	2	7	2	7	54	0	27	27	226	360	2	4	
29																		Rain
30																		None
31																		Rain
Mean No.		4.92	17.00	1.17	6.58	2.08	6.08	2.83	10.92	66.17	18.25	26.92	39.25	118.62	191.93	Obs. Days: 12		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Sep. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
		1																
2																		None
3	01:50	4	32	1	11	2	21	2	11	72	21	41	31	262	212	0	3	
4	01:10	4	43	1	12	2	21	2	22	83	22	41	42	308	283	0	3	
5																		None
6	02:07	3	9	0	0	1	5	2	4	39	0	15	24	136	265	0	4	
7																		None
8																		None
9	07:14	1	1	1	1	0	0	1	1	11	11	0	11	0	7	0	3	
10																		None
11	03:00	2	5	1	3	0	0	2	5	25	13	0	25	0	69	1	4	
12	02:33	4	9	2	5	2	5	2	4	49	25	25	24	35	128	1	4	
13	03:54	4	11	2	4	0	0	4	11	51	24	0	51	0	154	2	3	
14	09:42	3	3	0	0	0	0	3	3	33	0	0	33	0	121	1	3	
15	03:16	1	1	1	1	0	0	1	1	11	11	0	11	0	45	0	4	
16	07:00	1	1	1	1	0	0	1	1	11	11	0	11	0	28	0	3	
17	07:59	3	4	2	3	2	3	1	1	34	23	23	11	72	29	0	3	
18																		Rain
19																		Cloud
20																		Cloud
21																		Rain
22																		Rain
23																		None
24																		None
25	02:40	3	18	1	14	2	17	1	1	48	24	37	11	134	240	0	3	
26																		Cloud
27	06:30	3	8	1	6	2	7	1	1	38	16	27	11	172	261	0	3	
28																		None
29	02:57	3	5	0	0	2	4	1	1	35	0	24	11	80	110	0	4	
30																		Rain
Mean No.		2.79	10.71	1.00	4.36	1.07	5.93	1.71	4.79	38.57	14.36	16.64	21.93	85.62	139.37	Obs. Days: 14		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Oct. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
		1																
2																		None
3																		Rain
4																		Rain
5																		Rain
6																		Rain
7																		None
8																		None
9																		Rain
10																		Cloud
11																		None
12																		Cloud
13	02:35	7	31	3	12	2	7	5	24	101	42	27	74	79	603	2	4	
14	02:43	7	33	3	20	3	11	4	22	103	50	41	62	147	679	1	3	
15	06:20	7	18	2	6	2	3	5	15	88	26	23	65	40	814	0	3	
16																		None
17																		None
18																		Cloud
19																		Rain
20	07:56	6	19	3	10	2	11	4	8	79	40	31	48	174	374	0	2	
21																		None
22																		Cloud
23																		Cloud
24																		Rain
25																		Cloud
26	03:03	6	57	2	24	1	21	5	36	117	44	31	86	584	824	1	3	
27	08:15	9	45	2	7	3	18	6	27	135	27	48	87	759	1228	1	3	
28	02:28	6	19	0	0	2	7	4	12	79	0	27	52	582	869	0	4	
29	06:30	6	33	2	15	1	1	5	32	93	35	11	82	3709	2687	0	3	
30																		None
31																		Rain
Mean No.		6.75	31.88	2.13	11.75	2.00	9.88	4.75	22.00	99.38	33.00	29.88	69.50	759.32	1009.74	Obs. Days: 8		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Nov. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
		1																
2																		Rain
3																		Rain
4																		Rain
5																		Rain
6																		Cloud
7																		Cloud
8	07:53	6	53	1	32	1	6	5	47	113	42	16	97	42	953	2	3	
9	01:12	3	36	1	30	0	0	3	36	66	40	0	66	0	548	0	2	
10																		None
11																		Rain
12																		Cloud
13																		Rain
14	03:48	6	58	2	14	2	6	4	52	118	34	26	92	639	4389	0	4	
15																		Cloud
16																		Cloud
17	08:05	7	42	4	28	2	3	5	39	112	68	23	89	759	388	0	3	
18																		None
19	08:00	6	23	1	7	2	8	4	15	83	17	28	55	91	5966	0	2	
20	03:19	4	6	1	1	2	2	2	4	46	11	22	24	628	64	0	3	
21																		None
22																		Cloud
23																		None
24																		None
25																		Rain
26																		None
27	06:48	4	20	1	9	0	0	4	20	60	19	0	60	0	576	0	4	
28																		Rain
29	07:04	5	28	2	11	1	2	4	26	78	31	12	66	7	815	0	3	
30	02:53	5	21	2	7	0	0	5	21	71	27	0	71	0	461	1	4	
Mean No.		5.11	31.89	1.67	15.44	1.11	3.00	4.00	28.89	83.00	32.11	14.11	68.89	240.61	1573.34	Obs. Days: 9		

Location Lat. : 25.10° N
 Long. : 121.52° E
 Telescope : 20cm Refractor f=9.0
 Magnification : 64 Projection

太陽黑子觀測月報
 MONTHLY SUNSPOT DATA
 Dec. 2013

Taipei Astronomical Museum
 111013, Shilin Dist.
 Taipei, Taiwan

日期 Date	觀測時間 Obs. Time (U.T.)	全日面 Whole		中心區 Central Circle		北半球 N.Hemisphere		南半球 S.Hemisphere		相對數 Relative Number (10g+f)				面積 Area (in millionth hemisphere)		A. B. 型 群數 Small Type Groups	視相 Seeing (1-5)	備考 Remark
		g	f	g	f	g	f	g	f	W	C	N	S	N	S			
		1	03:10	5	37	2	18	1	5	4	32	87	38	15	72			
2	02:04	5	34	3	25	1	4	4	30	84	55	14	70	33	550	0	3	
3																		None
4																		None
5	07:10	6	29	2	21	0	0	6	29	89	41	0	89	0	373	2	4	
6	03:25	5	43	1	17	0	0	5	43	93	27	0	93	0	466	1	3	
7	03:05	5	38	2	26	0	0	5	38	88	46	0	88	0	787	0	3	
8																		Cloud
9																		Cloud
10																		Cloud
11																		Cloud
12																		Cloud
13																		Cloud
14																		Rain
15																		Rain
16																		Rain
17																		Rain
18																		Rain
19																		Rain
20																		Rain
21																		Rain
22																		Rain
23																		Rain
24																		Rain
25																		Rain
26																		Rain
27																		Cloud
28																		Cloud
29																		Rain
30																		None
31	03:05	4	52	3	46	0	0	4	52	92	76	0	92	0	908	1	4	
Mean No.		5.00	38.83	2.17	25.50	0.33	1.50	4.67	37.33	88.83	47.17	4.83	84.00	11.42	586.74	Obs. Days: 6		

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1638	7-Jan	02:08	12.0	308.9	1	97	J	2
1640	7-Jan	02:08	27.7	320.8	3	377	G	2
1641	7-Jan	02:08	0.6	281.6	1	19	J	2
1642	7-Jan	02:08	-24.5	252.3	1	128	J	2
	11-Jan	04:58	-24.4	248.0	1	80	J	3
1644	7-Jan	02:08	13.8	241.1	1	63	J	2
	11-Jan	04:58	14.2	237.7	1	34	J	3
1646	7-Jan	02:08	12.2	231.5	1	61	J	2
1648	7-Jan	02:08	4.4	225.9	1	4	A	2
1649	7-Jan	02:08	-15.8	204.9	1	80	J	2
	11-Jan	04:58	-14.8	201.2	1	80	J	3
	14-Jan	02:50	-15.3	201.2	2	35	C	2
1650	7-Jan	02:08	-29.8	196.1	7	283	E	2
	11-Jan	04:58	-28.5	196.3	6	136	E	3
	14-Jan	02:50	-29.3	194.5	2	50	C	2
1652	7-Jan	02:08	18.4	185.4	8	350	E	2
	11-Jan	04:58	18.6	183.8	30	407	E	3
	14-Jan	02:50	18.4	186.1	3	195	E	2
	16-Jan	02:00	19.3	185.8	3	156	J	3
1653	7-Jan	02:08	7.4	186.3	2	22	C	2
	11-Jan	04:58	8.2	187.2	1	7	J	3
	14-Jan	02:50	11.9	218.9	2	17	C	2
1654	11-Jan	04:58	6.7	150.8	24	1082	F	3
	14-Jan	02:50	7.1	147.8	23	1083	F	2
	16-Jan	02:00	6.0	148.5	34	716	F	3
	19-Jan	03:23	7.0	144.5	6	337	F	3
	21-Jan	03:17	9.2	139.7	1	28	G	3
1655	11-Jan	04:58	-19.9	205.2	3	11	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	14-Jan	02:50	-13.4	207.2	2	23	C	2
1656	11-Jan	04:58	21.4	128.7	2	18	A	3
	14-Jan	02:50	20.7	130.8	1	13	A	2
	16-Jan	02:00	20.2	129.1	1	9	A	3
1657	11-Jan	04:58	-16.8	158.3	2	8	C	3
1658	14-Jan	02:50	-12.2	95.3	1	35	C	2
	16-Jan	02:00	-12.5	95.5	3	78	C	3
	19-Jan	03:23	-12.8	95.0	1	42	J	3
	21-Jan	03:17	-11.7	95.1	1	90	J	3
1659	19-Jan	03:23	9.5	64.1	4	19	B	3
1660	21-Jan	03:17	11.8	65.2	14	56	D	3
	24-Jan	03:39	11.5	69.3	8	161	D	3
1661	24-Jan	03:39	12.0	339.6	2	9	C	3
	27-Jan	07:22	12.5	337.9	7	12	C	3
	28-Jan	06:47	8.5	322.8	4	10	C	3
1662	24-Jan	03:39	26.8	321.6	1	23	J	3
	27-Jan	07:22	26.7	317.4	1	54	J	3
	28-Jan	06:47	26.3	316.5	2	80	J	3
	29-Jan	06:36	26.5	316.2	1	50	J	3
	30-Jan	01:21	26.5	316.7	2	51	J	5
	1-Feb	01:50	26.6	315.5	1	90	J	3
1663	27-Jan	07:22	-11.1	299.1	7	47	B	3
	28-Jan	06:47	-10.5	300.6	10	75	D	3
	29-Jan	06:36	-10.4	303.1	1	48	D	3
	30-Jan	01:21	-10.0	303.7	4	33	D	5
	1-Feb	01:50	-10.0	303.4	5	60	C	3
1664	28-Jan	06:47	29.2	22.9	1	18	C	3
1665	29-Jan	06:36	9.6	242.6	1	190	J	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	30-Jan	01:21	9.9	243.9	1	94	J	5
	1-Feb	01:50	9.3	243.3	3	123	J	3
	4-Feb	01:30	10.0	242.0	2	230	C	4
1666	30-Jan	01:21	-25.7	244.5	1	6	A	5
	1-Feb	01:50	-25.1	245.1	1	2	J	3
1667	1-Feb	01:50	20.4	205.1	2	76	C	3
	4-Feb	01:30	21.6	198.7	6	186	D	4
1670	14-Feb	08:09	17.7	160.2	4	88	D	3
1671	14-Feb	08:09	13.9	74.7	1	110	J	3
	16-Feb	07:22	13.8	74.1	1	115	J	3
	21-Feb	08:25	14.0	72.6	1	61	J	2
1673	16-Feb	07:22	-9.6	12.5	2	88	J	3
	21-Feb	08:25	-9.8	12.0	7	22	C	2
1675	21-Feb	08:25	11.9	38.0	1	41	J	2
1676	21-Feb	08:25	-18.5	348.6	3	37	C	2
1678	21-Feb	08:25	9.9	68.1	8	368	D	2
1680	26-Feb	06:30	-27.8	273.7	8	28	D	4
	1-Mar	06:38	-28.9	269.4	3	7	C	2
1681	26-Feb	06:30	16.4	250.4	2	26	J	4
	1-Mar	06:38	14.0	250.0	4	9	C	2
1682	26-Feb	06:30	-17.3	298.7	11	62	D	4
	1-Mar	06:38	-18.8	298.9	5	204	D	2
1683	1-Mar	06:38	-16.4	197.5	8	156	D	2
	5-Mar	02:45	-16.3	202.6	10	25	D	3
	6-Mar	02:48	-17.1	201.5	10	43	D	3
	8-Mar	02:44	-17.4	201.0	2	5	B	3
	9-Mar	02:20	6.9	176.1	5	5	A	3
1685	5-Mar	02:45	-15.6	184.0	4	6	B	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	6-Mar	02:48	-15.1	198.8	2	4	B	3
1686	5-Mar	02:45	-13.7	262.4	8	67	D	3
	6-Mar	02:48	-15.4	264.0	9	1311	D	3
1687	5-Mar	02:45	8.3	160.5	1	8	B	3
	6-Mar	02:48	8.6	159.1	1	3	B	3
	8-Mar	02:44	8.6	174.4	9	16	C	3
1688	5-Mar	02:45	-21.2	183.5	6	16	J	3
	6-Mar	02:48	-18.3	179.9	1	4	C	3
1689	5-Mar	02:45	-19.3	152.7	2	443	B	3
	6-Mar	02:48	-20.9	151.0	9	24	D	3
	8-Mar	02:44	-21.6	146.3	15	64	E	3
	9-Mar	02:20	-20.8	147.7	13	57	D	3
	10-Mar	05:43	-19.2	147.3	19	79	D	4
	12-Mar	03:34	-20.6	147.9	24	63	E	3
	13-Mar	02:48	-19.8	151.6	11	22	C	3
1690	8-Mar	02:44	21.9	121.6	1	84	J	3
	9-Mar	02:20	22.0	123.2	2	32	J	3
	10-Mar	05:43	23.3	121.4	1	5	J	4
	12-Mar	03:34	23.1	121.2	1	6	A	3
	13-Mar	02:48	22.6	119.6	5	20	B	3
1691	9-Mar	02:20	10.4	121.5	4	15	C	3
	10-Mar	05:43	7.5	121.8	6	54	C	4
	12-Mar	03:34	11.0	126.7	5	60	C	3
	13-Mar	02:48	11.0	124.2	12	50	D	3
	16-Mar	03:00	11.3	123.3	6	214	C	3
1692	10-Mar	05:43	16.4	166.2	4	5	H	4
	10-Mar	05:43	8.4	77.9	3	1730	H	4
	12-Mar	03:34	2.6	89.1	3	20	J	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	13-Mar	02:48	8.0	77.7	1	249	C	3
	16-Mar	03:00	8.5	75.8	6	104	J	3
	19-Mar	06:55	7.8	73.7	2	284	D	3
	21-Mar	07:30	7.7	77.2	3	1205	D	4
1694	12-Mar	03:34	13.6	73.1	1	13	J	3
	13-Mar	02:48	14.3	74.6	1	17	J	3
1695	12-Mar	03:34	9.3	75.9	1	53	J	3
	13-Mar	02:48	8.6	53.1	1	40	J	3
	16-Mar	03:00	8.7	54.0	1	98	J	3
	19-Mar	06:55	7.3	54.2	3	98	D	3
	21-Mar	07:30	8.9	52.5	2	295	C	4
1696	10-Mar	05:43	8.9	174.8	2	6	C	4
	12-Mar	03:34	5.4	93.4	5	18	C	3
	13-Mar	02:48	2.8	93.8	12	92	D	3
	16-Mar	03:00	4.0	97.7	8	137	E	3
	19-Mar	06:55	2.4	97.1	1	404	E	3
1697	16-Mar	03:00	14.5	105.0	4	9	B	3
1699	19-Mar	06:55	-18.0	89.2	3	1000	D	3
1701	21-Mar	07:30	14.4	63.3	2	669	D	4
1702	24-Mar	03:08	6.9	15.4	6	48	C	3
	25-Mar	06:38	6.7	17.0	1	33	C	2
1703	24-Mar	03:08	-25.8	34.4	1	969	C	3
1704	24-Mar	03:08	14.8	253.5	1	95	J	3
	25-Mar	06:38	13.2	252.9	1	1334	C	2
1718	15-Apr	02:17	21.5	104.1	5	74	D	4
1719	15-Apr	02:17	9.5	74.4	8	119	C	4
	16-Apr	06:44	9.2	71.5	3	91	C	3
	17-Apr	03:41	9.3	73.6	2	100	C	2

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1721	15-Apr	02:17	-18.5	58.5	16	188	E	4
	16-Apr	06:44	-18.7	58.2	2	149	D	3
	17-Apr	03:41	-18.3	59.6	1	83	C	2
1722	15-Apr	02:17	-20.5	49.3	5	20	C	4
	16-Apr	06:44	-20.9	43.9	7	53	C	3
	17-Apr	03:41	-20.2	44.6	6	71	D	2
1723	15-Apr	02:17	-18.7	3.7	9	146	D	4
	16-Apr	06:44	-18.2	2.3	19	132	D	3
	17-Apr	03:41	-18.1	3.7	13	165	D	2
1724	15-Apr	02:17	-26.7	339.9	1	51	J	4
	16-Apr	06:44	-26.3	338.1	2	39	D	3
	17-Apr	03:41	-26.1	339.4	6	45	C	2
1726	23-Apr	02:32	11.9	325.2	26	417	E	3
	24-Apr	04:24	10.8	323.3	22	935	F	3
1727	23-Apr	02:32	24.3	277.4	4	55	C	3
	24-Apr	04:24	23.3	276.6	4	60	J	3
	26-Apr	06:35	24.7	276.2	1	19	A	2
1728	24-Apr	04:24	18.8	215.0	1	87	J	3
	26-Apr	06:35	18.8	213.9	2	47	J	2
	27-Apr	08:07	18.4	212.6	1	31	J	2
	29-Apr	02:49	17.2	213.8	1	14	J	3
	30-Apr	02:09	17.4	212.5	1	12	J	2
1729	24-Apr	04:24	-15.3	284.6	7	22	B	3
	26-Apr	06:35	13.0	318.8	4	530	C	2
1730	26-Apr	06:35	-17.4	220.0	5	73	D	2
	27-Apr	08:07	-17.0	218.0	9	87	D	2
	29-Apr	02:49	-17.6	222.1	10	106	E	3
	30-Apr	02:09	-16.6	222.6	15	76	E	2

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1731	26-Apr	06:35	8.2	188.5	7	163	D	2
	27-Apr	08:07	9.2	187.3	10	277	D	2
	29-Apr	02:49	8.0	189.9	23	231	E	3
	30-Apr	02:09	8.4	189.5	29	161	E	2
	5-May	06:21	8.8	191.5	1	28	E	2
1732	30-Apr	02:09	-18.1	155.1	6	88	D	2
	5-May	06:21	-17.1	152.6	3	114	D	2
	7-May	03:23	-17.0	152.6	2	37	D	4
	8-May	02:13	-16.6	150.0	3	74	D	4
1733	27-Apr	08:07	-16.3	251.5	4	28	C	2
	29-Apr	02:49	-17.8	249.7	2	42	C	3
	30-Apr	02:09	-16.7	252.2	1	7	A	2
1734	30-Apr	02:09	-18.5	131.9	4	502	D	2
	5-May	06:21	-18.2	126.0	8	293	E	2
	7-May	03:23	-18.0	129.2	5	295	E	4
	8-May	02:13	-17.4	127.2	4	347	D	4
	20-May	02:24	12.7	333.8	3	156	C	3
1735	30-Apr	02:09	-17.9	243.5	5	36	D	2
1736	7-May	03:23	-7.8	136.4	5	36	B	4
	8-May	02:13	-8.5	134.5	3	69	D	4
1738	5-May	06:21	15.1	84.9	3	14	C	2
	8-May	02:13	15.4	83.4	7	38	C	4
1739	5-May	06:21	11.3	75.5	10	106	D	2
	7-May	03:23	11.7	77.8	3	56	D	4
	8-May	02:13	10.7	77.9	4	51	D	4
1740	5-May	06:21	-20.2	67.2	1	20	J	2
	7-May	03:23	-21.7	69.3	3	23	J	4
	8-May	02:13	-20.2	67.4	2	15	A	4

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1741	8-May	02:13	-21.2	43.9	1	16	A	4
1742	14-May	07:47	28.9	17.6	1	6	J	3
1743	14-May	07:47	21.9	10.6	6	83	D	3
1744	14-May	07:47	4.3	358.6	18	54	D	3
	20-May	02:24	6.4	355.7	1	46	C	3
1745	14-May	07:47	13.0	335.0	32	352	D	3
1746	14-May	07:47	-27.4	334.9	12	174	D	3
	20-May	02:24	-29.0	331.1	3	117	D	3
	23-May	01:55	-29.2	327.0	1	179	J	3
1747	14-May	07:47	-17.7	338.0	10	51	C	3
1748	14-May	07:47	11.0	295.8	7	193	E	3
	20-May	02:24	10.5	296.0	5	74	F	3
	23-May	01:55	11.9	295.6	5	42	D	3
	24-May	08:40	11.2	292.6	4	48	C	3
1750	20-May	02:24	-10.0	0.6	6	172	D	3
1753	23-May	01:55	4.3	221.9	10	38	C	3
	24-May	08:40	5.1	216.7	7	15	C	3
	26-May	01:33	2.4	221.8	6	47	A	4
1754	23-May	01:55	-18.9	233.6	9	34	C	3
	24-May	08:40	-18.1	220.7	14	157	C	3
	25-May	02:08	-24.5	237.9	3	59	C	3
	26-May	01:33	-18.1	231.4	10	198	D	4
1755	23-May	01:55	10.4	201.4	5	325	D	3
	24-May	08:40	10.2	200.9	15	222	D	3
	25-May	02:08	8.6	201.7	6	272	D	3
	26-May	01:33	5.5	200.0	15	190	D	4
	28-May	03:29	10.3	204.4	11	35	D	3
	29-May	03:00	9.9	203.7	7	25	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	30-May	03:13	11.5	203.0	4	16	C	3
1756	23-May	01:55	-20.4	213.6	14	296	D	3
	24-May	08:40	-20.5	209.2	21	113	D	3
	25-May	02:08	-22.5	211.4	9	377	E	3
	26-May	01:33	-25.3	205.8	22	608	E	4
	28-May	03:29	-19.6	217.0	15	170	E	3
	29-May	03:00	-22.2	218.0	17	59	C	3
	30-May	03:13	-18.3	220.2	2	45	C	3
1757	26-May	01:33	-19.1	157.2	1	42	J	4
	28-May	03:29	-10.3	148.9	1	37	J	3
	29-May	03:00	-12.3	148.0	2	30	J	3
	30-May	03:13	-7.1	148.5	2	16	J	3
1758	28-May	03:29	-26.7	125.4	1	5	J	3
	29-May	03:00	-22.5	124.4	2	12	J	3
	30-May	03:13	-21.0	129.5	1	6	J	3
1759	28-May	03:29	-8.3	123.3	1	7	B	3
	29-May	03:00	-8.9	120.7	1	5	J	3
1760	5-Jun	08:47	18.9	109.1	4	9	C	4
1761	30-May	03:13	-19.0	111.5	2	10	J	3
	5-Jun	08:47	-14.0	116.9	4	8	C	4
1762	5-Jun	08:47	-27.9	127.9	6	296	D	4
1764	5-Jun	08:47	12.0	129.3	4	60	D	4
1765	5-Jun	08:47	7.1	51.3	5	18	C	4
	8-Jun	02:46	9.1	51.2	9	85	D	2
1768	15-Jun	02:24	-14.2	352.6	8	94	D	3
1769	15-Jun	02:24	-23.4	261.2	9	20	C	3
1770	15-Jun	02:24	-13.8	257.9	1	10	J	3
	18-Jun	03:10	-15.1	256.0	1	91	J	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	19-Jun	07:35	-12.7	253.4	1	22	J	3
	21-Jun	04:00	-15.0	251.8	1	18	J	3
	23-Jun	02:50	-15.9	251.7	1	12	J	3
	24-Jun	02:25	-15.0	251.1	1	20	J	3
1771	15-Jun	02:24	-11.4	247.4	1	2	J	3
1772	15-Jun	02:24	-24.2	240.6	1	5	B	3
	18-Jun	03:10	-22.6	256.3	15	79	D	3
	19-Jun	07:35	-20.2	254.7	13	60	D	3
	21-Jun	04:00	-23.6	254.7	23	103	D	3
	23-Jun	02:50	-25.0	256.9	6	263	D	3
	24-Jun	02:25	-23.0	251.9	1	81	C	3
1773	18-Jun	03:10	3.0	232.5	22	74	D	3
	19-Jun	07:35	5.0	234.1	19	68	C	3
	21-Jun	04:00	3.4	236.2	5	50	C	3
	23-Jun	02:50	-0.9	238.1	10	26	D	3
	24-Jun	02:25	9.8	252.3	6	85	B	3
1774	18-Jun	03:10	-19.4	239.9	5	36	C	3
	19-Jun	07:35	-15.8	238.9	5	24	C	3
	21-Jun	04:00	-20.8	239.2	5	12	C	3
	23-Jun	02:50	-16.0	235.9	3	11	C	3
	24-Jun	02:25	-17.2	238.9	2	12	J	3
1775	18-Jun	03:10	-27.5	221.3	5	203	D	3
	19-Jun	07:35	-27.2	221.6	5	292	D	3
	21-Jun	04:00	-27.4	221.3	8	162	D	3
	23-Jun	02:50	-25.2	220.2	7	83	D	3
	24-Jun	02:25	-25.5	220.6	5	110	D	3
	26-Jun	06:37	-23.6	218.5	2	35	D	3
	27-Jun	03:00	-25.4	216.5	1	30	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1776	19-Jun	07:35	11.7	252.6	7	24	A	3
	21-Jun	04:00	10.0	252.8	14	144	D	3
	23-Jun	02:50	9.1	251.0	7	84	D	3
1777	21-Jun	04:00	-15.1	167.8	2	90	J	3
	23-Jun	02:50	-15.7	165.2	1	11	C	3
	24-Jun	02:25	-16.7	161.6	1	42	J	3
	26-Jun	06:37	-15.4	161.9	1	68	J	3
	27-Jun	03:00	-17.4	161.4	1	15	J	3
	28-Jun	03:17	-16.6	159.4	1	100	J	3
	30-Jun	07:17	-16.0	157.6	1	22	J	4
1778	23-Jun	02:50	-16.6	131.7	1	54	J	3
	24-Jun	02:25	-20.0	129.2	7	220	C	3
	26-Jun	06:37	-15.7	130.8	3	31	C	3
	27-Jun	03:00	-17.8	125.2	16	36	C	3
	28-Jun	03:17	-17.3	118.4	8	24	E	3
	30-Jun	07:17	-15.8	128.3	4	6	C	4
1779	27-Jun	03:00	15.5	110.0	2	9	D	3
	28-Jun	03:17	20.0	129.0	2	8	A	3
1780	28-Jun	03:17	-16.9	127.9	9	25	A	3
1781	30-Jun	07:17	22.0	126.7	11	56	D	4
	3-Jul	01:45	21.4	121.7	8	37	D	3
	4-Jul	02:05	22.4	120.3	1	10	D	3
1782	30-Jun	07:17	-13.6	80.3	1	3	J	4
1784	3-Jul	01:45	-14.3	54.9	6	19	C	3
	4-Jul	02:05	-15.2	54.3	10	31	C	3
	8-Jul	07:50	-14.4	54.4	6	43	D	4
1785	3-Jul	01:45	-9.1	7.8	16	503	F	3
	4-Jul	02:05	-16.5	12.6	24	224	F	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	8-Jul	07:50	-10.3	4.9	38	543	E	4
1786	3-Jul	01:45	-30.2	55.8	1	6	C	3
1787	4-Jul	02:05	-16.4	347.4	7	68	D	3
	8-Jul	07:50	-15.1	351.5	11	37	E	4
1789	8-Jul	07:50	-15.7	342.2	18	151	B	4
1791	15-Jul	03:29	-12.7	252.6	10	45	D	4
	17-Jul	02:15	-12.4	253.2	15	45	D	4
1793	15-Jul	03:29	19.2	197.8	6	124	D	4
	17-Jul	02:15	19.4	196.4	9	198	E	4
	23-Jul	06:20	20.8	193.2	8	113	F	4
	24-Jul	08:27	22.9	193.3	2	36	E	4
	26-Jul	02:19	20.3	196.1	2	300	E	4
1794	15-Jul	03:29	14.2	330.0	2	15	B	4
1795	17-Jul	02:15	-20.7	218.1	5	8	A	4
1799	23-Jul	06:20	-17.1	155.6	1	3	A	4
	24-Jul	08:27	-10.2	154.4	1	5	A	4
1800	23-Jul	06:20	-6.9	155.7	10	29	D	4
	24-Jul	08:27	-7.3	157.2	16	73	D	4
	26-Jul	02:19	-5.9	158.6	8	125	D	4
1801	24-Jul	08:27	19.4	87.0	1	6	J	4
	26-Jul	02:19	18.5	85.3	1	21	J	4
	30-Jul	08:20	19.3	82.8	1	10	J	4
	1-Aug	02:03	18.6	81.8	1	12	J	3
	2-Aug	01:35	18.6	83.0	1	98	J	3
1805	26-Jul	02:19	-7.5	129.1	6	16	C	4
	30-Jul	08:20	-6.7	146.4	4	1244	D	4
1806	30-Jul	08:20	-14.9	39.7	10	45	D	4
	1-Aug	02:03	-15.7	38.6	8	26	D	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	2-Aug	01:35	-15.1	39.6	13	70	D	3
	5-Aug	03:39	-12.6	43.7	1	73	D	3
	6-Aug	06:41	-12.6	43.7	1	52	C	4
1807	30-Jul	08:20	29.0	90.4	8	27	D	4
	1-Aug	02:03	27.4	87.9	4	15	C	3
	2-Aug	01:35	27.8	89.5	2	6	C	3
1808	30-Jul	08:20	15.7	19.7	4	45	D	4
	1-Aug	02:03	13.0	21.8	1	44	C	3
	2-Aug	01:35	13.7	22.0	1	54	C	3
	5-Aug	03:39	14.9	20.0	3	44	C	3
	6-Aug	06:41	15.0	18.6	1	49	C	4
	7-Aug	07:03	15.4	18.6	1	26	J	4
1809	1-Aug	02:03	11.7	340.3	2	179	C	3
	2-Aug	01:35	11.7	342.8	6	104	D	3
	5-Aug	03:39	12.2	342.9	3	54	C	3
	6-Aug	06:41	11.5	341.9	9	45	C	4
	7-Aug	07:03	12.4	338.9	6	51	C	4
	9-Aug	02:17	10.2	342.8	2	35	J	4
	11-Aug	02:37	10.2	343.5	1	19	J	3
1810	1-Aug	02:03	-27.7	335.5	1	118	J	3
	2-Aug	01:35	-26.6	337.6	1	29	J	3
	5-Aug	03:39	-25.0	336.0	3	23	J	3
	6-Aug	06:41	-24.7	335.5	8	70	C	4
	7-Aug	07:03	-23.7	334.7	7	35	C	4
	9-Aug	02:17	-23.7	336.2	3	21	D	4
1811	1-Aug	02:03	3.8	7.0	3	13	C	3
	2-Aug	01:35	5.8	14.8	6	19	C	3
1813	9-Aug	02:17	-13.5	323.2	8	64	D	4

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	10-Aug	05:50	-12.9	320.9	5	46	C	3
	11-Aug	02:37	-13.1	322.1	4	23	C	3
1814	9-Aug	02:17	-26.9	254.5	1	13	J	4
	10-Aug	05:50	-19.7	255.3	1	5	J	3
	10-Aug	05:50	-25.6	253.4	1	38	J	3
	11-Aug	02:37	-26.1	254.9	1	21	J	3
1815	10-Aug	05:50	10.6	342.1	1	41	B	3
1816	9-Aug	02:17	-21.0	255.5	1	9	J	4
1817	11-Aug	02:37	-22.0	242.0	11	59	C	3
	17-Aug	04:11	-20.7	243.0	2	151	E	3
1818	11-Aug	02:37	-7.6	217.3	4	100	J	3
	17-Aug	04:11	-5.8	215.6	12	193	D	3
1819	11-Aug	02:37	-19.8	225.6	1	11	A	3
	17-Aug	04:11	-21.8	235.2	3	26	B	3
1820	17-Aug	04:11	-12.0	171.2	6	12	C	3
1822	17-Aug	04:11	-7.6	153.0	3	16	C	3
1823	17-Aug	04:11	-7.5	138.5	1	116	J	3
	24-Aug	05:53	-6.4	138.7	1	130	J	3
1827	24-Aug	05:53	-17.6	94.7	1	13	C	3
1828	24-Aug	05:53	15.0	90.3	2	15	C	3
	28-Aug	02:36	-19.6	99.9	1	6	A	4
1830	24-Aug	05:53	-13.1	170.5	1	78	D	3
1831	24-Aug	05:53	-4.9	165.0	4	90	D	3
1832	24-Aug	05:53	13.0	168.9	3	104	C	3
1834	27-Aug	03:14	12.5	17.5	6	48	B	3
	28-Aug	02:36	13.7	16.7	6	24	B	4
	3-Sep	01:50	11.5	21.8	10	123	D	3
	4-Sep	01:10	12.0	22.1	9	161	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1835	27-Aug	03:14	-11.5	13.0	6	212	C	3
	28-Aug	02:36	-10.6	12.9	6	354	D	4
	3-Sep	01:50	-9.2	11.1	1	106	C	3
	4-Sep	01:10	-12.4	10.2	5	123	D	3
1836	27-Aug	03:14	9.8	345.3	1	124	J	3
	28-Aug	02:36	10.0	344.0	1	202	J	4
	3-Sep	01:50	10.3	342.4	11	138	G	3
	4-Sep	01:10	10.5	342.5	12	147	J	3
	6-Sep	02:07	11.2	342.0	5	136	C	4
1837	3-Sep	01:50	-16.7	351.0	10	105	D	3
	4-Sep	01:10	-16.5	351.1	17	160	D	3
	6-Sep	02:07	-16.8	353.0	3	182	D	4
1838	6-Sep	02:07	-5.2	223.6	1	83	J	4
	9-Sep	07:14	-3.6	223.2	1	7	J	3
	11-Sep	03:00	-12.3	216.4	3	33	A	4
	12-Sep	02:33	12.7	230.1	2	9	A	4
	13-Sep	03:54	-5.3	221.9	2	9	A	3
	14-Sep	09:42	-17.0	222.6	1	38	A	3
1839	11-Sep	03:00	-12.7	253.4	2	36	J	4
	12-Sep	02:33	4.3	260.5	3	25	C	4
1840	12-Sep	02:33	-5.7	223.9	3	27	C	4
1841	12-Sep	02:33	-5.7	145.8	1	101	J	4
	13-Sep	03:54	-5.5	145.8	1	58	C	3
	14-Sep	09:42	-4.7	141.5	1	58	C	3
	15-Sep	03:16	-5.0	145.7	1	45	C	4
	16-Sep	07:00	-3.0	144.3	1	28	J	3
	17-Sep	07:59	0.7	128.1	2	13	J	3
1842	13-Sep	03:54	-13.3	254.4	6	77	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	14-Sep	09:42	-13.0	250.9	1	25	C	3
1843	17-Sep	07:59	-3.5	144.4	1	29	C	3
1844	28-Oct	02:28	1.1	265.3	1	18	D	4
1846	13-Sep	03:54	-10.0	218.5	2	10	A	3
	17-Sep	07:59	10.6	64.6	1	59	J	3
	25-Sep	02:40	-17.9	58.0	1	240	J	3
	27-Sep	06:30	-17.3	57.0	1	261	J	3
	29-Sep	02:57	-18.2	56.7	1	110	J	4
1847	25-Sep	02:40	17.7	82.0	3	25	D	3
1849	27-Sep	06:30	19.6	73.2	1	9	G	3
1850	25-Sep	02:40	8.7	32.0	14	109	C	3
	27-Sep	06:30	10.1	31.4	6	163	D	3
	29-Sep	02:57	8.5	34.3	3	46	D	4
1854	29-Sep	02:57	4.1	288.9	1	35	D	4
1856	13-Oct	02:35	3.8	202.2	2	21	B	4
1857	13-Oct	02:35	-8.2	227.1	1	51	J	4
1861	13-Oct	02:35	-9.2	169.5	6	358	E	4
	14-Oct	02:43	-7.8	167.9	5	444	D	3
	15-Oct	06:20	-7.6	167.2	7	578	D	3
1863	13-Oct	02:35	-18.9	196.5	3	27	D	4
	14-Oct	02:43	-18.3	197.6	2	24	C	3
	15-Oct	06:20	-18.5	195.8	1	20	C	3
1864	13-Oct	02:35	-21.3	146.2	13	98	J	4
	14-Oct	02:43	-22.6	157.0	1	65	J	3
	15-Oct	06:20	-21.7	155.1	1	79	J	3
1865	13-Oct	02:35	-22.7	156.7	1	70	D	4
	14-Oct	02:43	-20.2	146.3	14	146	D	3
	15-Oct	06:20	-20.1	146.1	4	123	C	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1867	13-Oct	02:35	21.8	179.3	5	58	A	4
	14-Oct	02:43	22.5	179.3	4	60	C	3
1868	14-Oct	02:43	17.0	103.1	1	9	A	3
	20-Oct	07:56	-10.3	106.4	2	31	C	2
1869	14-Oct	02:43	17.8	85.8	6	78	C	3
	15-Oct	06:20	18.7	82.2	2	29	D	3
1870	15-Oct	06:20	-13.2	143.0	2	14	C	3
1872	15-Oct	06:20	14.9	74.3	1	11	J	3
	20-Oct	07:56	-17.0	53.5	1	67	J	2
	26-Oct	03:03	-16.8	54.6	1	23	C	3
1873	20-Oct	07:56	10.5	45.0	5	43	C	2
	27-Oct	08:15	13.6	54.9	1	46	J	3
1874	20-Oct	07:56	-10.8	73.0	4	52	D	2
1875	20-Oct	07:56	5.9	26.7	6	131	G	2
	26-Oct	03:03	6.1	27.7	21	584	E	3
	27-Oct	08:15	6.6	31.0	16	685	E	3
	28-Oct	02:28	6.8	29.6	6	565	F	4
	29-Oct	06:30	7.5	20.1	1	3709	E	3
1877	20-Oct	07:56	-12.7	7.7	1	224	C	2
	26-Oct	03:03	-12.0	8.7	10	464	D	3
	27-Oct	08:15	-11.0	7.6	8	375	C	3
	28-Oct	02:28	-13.0	8.4	1	173	D	4
	29-Oct	06:30	-9.3	7.7	3	1380	D	3
1879	26-Oct	03:03	-12.3	355.2	14	121	C	3
	27-Oct	08:15	-11.1	353.4	4	109	C	3
	28-Oct	02:28	-13.4	353.6	1	71	C	4
	29-Oct	06:30	-11.3	352.2	4	777	D	3
1881	26-Oct	03:03	-22.3	331.9	6	23	B	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	27-Oct	08:15	-21.0	331.4	3	16	B	3
1882	26-Oct	03:03	-9.3	291.0	5	193	D	3
	27-Oct	08:15	-8.7	290.6	10	375	D	3
	28-Oct	02:28	-9.6	291.2	4	237	D	4
	29-Oct	06:30	-10.0	259.9	10	292	D	3
1883	27-Oct	08:15	3.1	266.8	1	27	J	3
1884	27-Oct	08:15	-13.5	257.4	1	152	J	3
	29-Oct	06:30	-9.3	293.3	2	104	D	3
1885	27-Oct	08:15	-17.6	263.0	1	202	J	3
	28-Oct	02:28	-14.1	257.6	6	388	J	4
	29-Oct	06:30	-6.6	286.6	13	134	J	3
1887	8-Nov	07:53	20.1	226.4	6	42	C	3
1889	8-Nov	07:53	-17.5	223.0	2	7	B	3
1890	8-Nov	07:53	-10.9	168.9	32	588	E	3
	9-Nov	01:12	-10.8	169.0	30	368	E	2
	14-Nov	03:48	-8.9	163.6	3	3960	E	4
1891	8-Nov	07:53	-17.0	205.4	11	114	D	3
	9-Nov	01:12	-17.2	203.5	5	36	D	2
	17-Nov	08:05	-14.4	105.4	5	6	D	3
1892	18-Mar	05:49	8.0	73.3	1	171	C	3
	8-Nov	07:53	-5.6	128.6	1	11	B	3
1893	8-Nov	07:53	-12.9	98.1	1	232	J	3
	9-Nov	01:12	-12.3	98.5	1	145	J	2
	14-Nov	03:48	-15.6	101.2	13	216	D	4
	17-Nov	08:05	-11.2	97.0	5	116	D	3
	19-Nov	08:00	-12.9	98.7	7	5847	E	2
	20-Nov	03:19	-17.2	73.8	3	13	E	3
1895	18-Mar	05:49	9.1	53.1	6	95	D	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	14-Nov	03:48	-15.6	77.6	1	70	J	4
	17-Nov	08:05	-14.4	74.5	3	38	J	3
	19-Nov	08:00	-13.2	71.6	2	11	J	2
1896	18-Mar	05:49	6.9	97.9	8	61	E	3
	14-Nov	03:48	8.7	67.7	1	148	J	4
	17-Nov	08:05	11.9	65.5	1	478	C	3
	19-Nov	08:00	11.2	65.6	1	18	J	2
	20-Nov	03:19	9.5	67.7	1	91	J	3
1897	14-Nov	03:48	-21.4	63.0	35	143	E	4
	17-Nov	08:05	-16.3	64.7	22	207	F	3
	19-Nov	08:00	-16.9	58.8	5	47	F	2
1898	18-Mar	05:49	-20.2	112.7	4	112	E	3
1899	18-Mar	05:49	-16.3	89.4	2	64	D	3
	14-Nov	03:48	4.2	41.6	5	491	H	4
	17-Nov	08:05	6.6	37.8	2	281	H	3
	19-Nov	08:00	6.3	38.8	7	73	H	2
	20-Nov	03:19	4.5	39.5	1	537	C	3
1900	17-Nov	08:05	-19.1	96.4	4	21	D	3
1903	19-Nov	08:00	-10.7	329.8	1	61	J	2
	20-Nov	03:19	-12.7	334.8	1	51	J	3
	27-Nov	06:48	-10.7	332.6	2	156	C	4
	29-Nov	07:04	-11.1	333.6	2	148	J	3
1907	27-Nov	06:48	-8.6	274.4	9	44	D	4
	29-Nov	07:04	-8.8	272.4	9	55	E	3
	30-Nov	02:53	-9.5	274.7	6	46	E	4
	1-Dec	03:10	-9.3	272.9	2	18	C	3
	2-Dec	02:04	-14.9	265.7	5	27	J	3
1908	27-Nov	06:48	-24.9	234.7	7	91	D	4

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
	29-Nov	07:04	-24.7	234.2	6	295	D	3
	30-Nov	02:53	-25.9	235.3	5	192	D	4
	1-Dec	03:10	-25.9	234.4	10	138	D	3
	2-Dec	02:04	-24.9	232.2	6	165	E	3
	5-Dec	07:10	-24.6	235.9	2	68	D	4
1909	27-Nov	06:48	-17.9	204.9	2	285	D	4
	29-Nov	07:04	-17.4	204.2	9	317	D	3
	30-Nov	02:53	-18.9	205.3	7	205	D	4
	1-Dec	03:10	-17.3	205.8	12	250	D	3
	2-Dec	02:04	-17.6	207.1	15	325	D	3
	5-Dec	07:10	-16.5	204.2	13	127	E	4
	6-Dec	03:25	-17.3	206.4	14	132	C	3
	7-Dec	03:05	-18.3	207.5	5	83	D	3
1910	29-Nov	07:04	1.1	275.1	2	7	C	3
	30-Nov	02:53	-0.1	275.3	1	6	A	4
	1-Dec	03:10	0.9	278.1	5	36	B	3
	2-Dec	02:04	0.8	275.7	4	33	D	3
1911	30-Nov	02:53	-12.4	221.9	2	11	C	4
	1-Dec	03:10	-11.7	223.5	8	30	C	3
	2-Dec	02:04	-11.6	221.9	4	34	D	3
	5-Dec	07:10	-10.8	220.6	1	5	B	4
	6-Dec	03:25	-24.5	237.3	1	61	A	3
1912	5-Dec	07:10	-20.3	142.5	1	125	J	4
	6-Dec	03:25	-21.0	145.6	1	139	J	3
	7-Dec	03:05	-20.3	145.3	1	138	C	3
1915	5-Dec	07:10	-28.8	206.0	4	24	C	4
	6-Dec	03:25	-29.4	206.1	10	34	C	3
	7-Dec	03:05	-29.7	206.8	5	36	D	3

太陽黑子群發展表
DEVELOPMENT TABLE OF SUNSPOT-GROUPS

Observatory : Taipei Astronomical Museum

Lat. : 25.10° N Long. : 121.52° E

Group No.	Date	Obs. Time (U.T.)	Bs (°)	Ls (°)	n	A (msh)	T	Q
1916	5-Dec	07:10	-12.0	167.1	8	24	B	4
	6-Dec	03:25	-12.8	170.8	17	100	D	3
	7-Dec	03:05	-12.5	170.6	25	182	D	3
1917	7-Dec	03:05	-16.6	77.5	2	349	D	3
1934	31-Dec	03:05	-14.5	272.3	6	358	E	4
1936	31-Dec	03:05	-15.1	227.3	37	473	E	4
1937	31-Dec	03:05	-12.1	197.5	5	10	B	4
1938	31-Dec	03:05	-11.9	180.6	4	68	J	4

2013年太陽黑子每日相對數表
Daily Relative Sunspot Numbers of 2013

月 日	Jan. 一月	Feb. 二月	Mar. 三月	Apr. 四月	May 五月	Jun. 六月	Jul. 七月	Aug. 八月	Sep. 九月	Oct. 十月	Nov. 十一月	Dec. 十二月
1		62	60					90				87
2								100				84
3							71		72			
4		28					82		83			
5			91		86	73		50				89
6			92					59	39			93
7	137				68			44				88
8			67		94	19	113				113	
9			64					65	11		66	
10			95					48				
11	171							82	25			
12			110						49			
13			113						51	101		
14	116	25			156				33	103	118	
15				104		70	48		11	88		
16	81	23	75	83					11			
17				78			59	87	34		112	
18			71			98						
19	41		49			110					83	
20					68					79	46	
21	46	70	37			128						
22												
23				50	104	116	49					
24	41		38	74	111	93	60	72				
25			22		48				48			
26		51		69	104	36	57			117		
27	45			64		60		43	38	135	60	
28	57				79	60		54		79		
29	33	—		76	79				35	93	78	
30	48	—		131	61	57	77				71	
31		—		—		—			—		—	92

黑子總數：8791

觀測天數：122

年平均數：72.1

1948年至2013年之每月太陽黑子相對數及平均值
 Monthly and Smooth Relative Sunspot Numbers since 1948 to 2013

Year 年		Jan. 一月	Feb. 二月	Mar. 三月	Apr. 四月	May 五月	Jun. 六月	Jul. 七月	Aug. 八月	Sep. 九月	Oct. 十月	Nov. 十一月	Dec. 十二月
1948	Wolf	107.5	66.3	92.1	159.8	128.0	146.3	107.4	138.8	120.1	98.6	86.2	113.0
	Smooth	130.1	127.4	123.4	118.8	114.6	113.2	114.0	118.3	125.6	128.2	126.3	124.0
1949	Wolf	116.4	160.0	172.6	141.3	101.5	118.2	122.2	130.7	150.9	132.6	152.1	121.8
	Smooth	123.5	123.7	124.7	127.4	131.5	134.7	134.6	130.7	124.7	120.5	119.5	118.5
1950	Wolf	105.2	79.4	109.4	102.4	116.2	80.0	75.3	82.0	53.3	72.2	57.7	65.7
	Smooth	115.0	111.0	104.9	98.3	91.8	85.6	80.6	76.9	73.5	70.6	68.7	66.6
1951	Wolf	41.7	55.5	50.3	92.7	79.5	65.9	60.4	51.6	79.7	61.1	67.1	44.8
	Smooth	65.4	63.5	63.3	63.9	63.9	63.4	62.4	60.5	57.6	53.7	48.4	45.0
1952	Wolf	39.4	12.5	23.9	24.0	20.8	44.0	35.5	61.6	25.5	24.7	25.4	37.2
	Smooth	43.1	42.5	40.6	36.8	33.6	31.5	31.1	30.8	29.9	30.5	31.6	30.7
1953	Wolf	37.7	5.7	8.8	53.8	17.3	27.2	8.0	28.1	25.1	14.6	2.4	4.1
	Smooth	28.9	26.3	24.9	24.5	23.1	20.8	17.8	16.1	15.9	13.7	10.8	9.0
1954	Wolf	0.0	0.9	10.2	0.0	0.7	0.0	5.6	11.0	1.1	8.4	6.7	19.0
	Smooth	7.7	6.9	5.2	4.0	3.9	4.7	6.8	9.4	10.5	11.1	13.2	16.0
1955	Wolf	35.6	27.6	10.9	13.7	37.5	30.1	40.2	52.4	48.1	61.2	98.3	90.9
	Smooth	18.7	21.9	25.6	29.7	35.7	42.5	47.0	51.0	58.8	68.5	77.5	85.4
1956	Wolf	70.2	89.9	134.5	123.4	144.3	112.7	127.4	167.9	165.4	157.6	215.8	185.8
	Smooth	92.5	100.9	110.6	119.5	128.4	137.3	145.2	151.0	153.9	157.6	160.9	164.7
1957	Wolf	166.0	132.7	160.0	188.5	156.8	191.8	187.6	177.2	228.8	283.4	241.2	250.1
	Smooth	170.5	173.4	176.4	184.3	190.6	194.3	201.4	207.8	212.5	217.5	222.5	226.5
1958	Wolf	272.3	178.9	227.2	240.7	224.2	221.8	257.6	276.6	243.9	226.1	197.6	244.5
	Smooth	230.7	237.8	242.5	240.8	236.6	234.5	232.0	228.1	225.8	223.4	221.6	221.3
1959	Wolf	217.6	140.3	211.3	197.2	224.1	215.9	202.6	257.6	191.9	156.4	151.0	189.3
	Smooth	218.8	215.7	212.7	207.7	202.8	198.6	194.6	193.2	189.4	183.5	178.9	171.5
1960	Wolf	177.1	148.4	111.4	156.0	153.9	108.1	160.8	165.6	138.8	98.4	108.9	114.3
	Smooth	165.2	159.7	153.6	149.0	144.8	139.9	132.1	123.8	119.0	114.9	107.9	104.0
1961	Wolf	64.0	62.5	81.4	88.5	52.6	115.5	91.8	60.0	66.8	48.4	45.7	27.8
	Smooth	101.4	94.1	86.7	81.6	76.9	70.7	66.6	65.7	64.0	61.5	60.5	58.3
1962	Wolf	52.3	51.7	52.2	57.5	59.5	56.0	22.9	24.4	58.7	48.1	31.3	34.6
	Smooth	52.9	48.6	46.8	46.4	45.8	45.5	44.4	42.0	39.5	36.6	34.6	33.0
1963	Wolf	18.8	28.1	15.1	25.3	43.9	33.1	23.7	41.1	38.5	42.5	26.1	8.3
	Smooth	32.1	32.8	32.6	31.6	31.1	29.8	28.7	27.9	27.2	26.5	24.4	21.9
1964	Wolf	18.8	8.8	16.7	7.3	11.2	6.9	4.4	13.4	5.4	7.1	6.3	23.5
	Smooth	20.0	18.1	15.5	12.7	10.4	10.2	10.8	11.4	12.1	12.4	12.9	13.5
1965	Wolf	18.5	23.2	19.9	10.9	19.0	13.5	17.2	7.0	19.2	23.9	12.5	10.7
	Smooth	14.3	14.6	14.9	16.1	17.1	16.8	16.4	16.6	16.8	18.8	22.0	25.6
1966	Wolf	19.9	27.1	20.4	59.6	48.1	70.1	60.9	60.8	55.2	53.1	31.9	56.0
	Smooth	29.8	33.9	37.6	40.3	42.3	45.0	50.6	57.7	66.1	72.3	74.4	75.6
1967	Wolf	107.5	110.4	139.2	89.0	69.3	78.2	112.0	118.9	115.6	106.3	90.4	128.4
	Smooth	78.1	82.6	87.6	92.3	97.0	102.4	104.7	102.3	98.1	95.1	97.8	101.9

1948年至2013年之每月太陽黑子相對數及平均值
 Monthly and Smooth Relative Sunspot Numbers since 1948 to 2013

Year 年		Jan. 一月	Feb. 二月	Mar. 三月	Apr. 四月	May 五月	Jun. 六月	Jul. 七月	Aug. 八月	Sep. 九月	Oct. 十月	Nov. 十一月	Dec. 十二月
1968	Wolf	89.8	71.0	76.4	80.5	141.9	104.7	114.8	90.1	112.4	104.7	77.0	120.4
	Smooth	103.1	102.0	100.7	100.5	99.9	99.0	98.6	98.6	100.9	103.3	101.7	100.2
1969	Wolf	88.8	71.0	131.9	83.6	101.2	108.5	88.1	63.6	84.3	81.8	59.4	129.8
	Smooth	99.3	97.0	94.8	92.6	91.0	90.6	91.5	94.8	96.9	96.8	99.0	101.3
1970	Wolf	101.8	136.0	116.7	97.3	140.0	126.0	132.9	100.8	98.8	96.8	101.2	82.8
	Smooth	103.9	107.4	109.5	110.7	113.1	112.9	110.4	108.7	105.4	103.3	99.9	94.8
1971	Wolf	88.7	109.5	63.9	98.0	59.3	83.3	83.2	63.2	23.8	47.5	71.1	73.4
	Smooth	90.9	87.3	82.6	77.4	74.1	72.5	71.4	71.7	74.0	74.3	73.4	73.5
1972	Wolf	73.2	131.0	97.8	71.4	63.3	82.1	79.1	83.6	63.8	58.5	21.0	48.4
	Smooth	73.2	73.9	76.4	78.6	76.9	73.8	71.2	66.3	61.0	58.2	57.1	55.6
1973	Wolf	35.7	50.9	51.3	50.8	57.3	50.6	28.2	29.2	94.9	36.9	14.8	24.3
	Smooth	52.1	47.7	46.8	47.2	46.0	44.7	43.2	42.3	40.6	38.3	36.7	35.4
1974	Wolf	21.7	45.3	14.4	34.0	35.0	42.0	60.8	44.5	42.4	55.3	32.7	8.0
	Smooth	36.4	38.4	36.9	35.4	37.0	37.0	35.9	33.8	31.9	30.4	28.6	27.0
1975	Wolf	11.0	5.3	9.1	3.1	24.0	13.9	28.1	27.5	13.4	11.6	34.4	18.3
	Smooth	24.5	22.4	20.5	17.5	15.7	16.2	16.6	16.9	17.8	19.8	20.7	21.0
1976	Wolf	11.1	10.8	26.3	34.0	15.1	29.3	0.8	22.7	20.5	29.1	4.5	20.3
	Smooth	20.5	19.2	19.3	20.3	19.8	18.6	19.1	20.7	21.2	19.5	18.5	19.8
1977	Wolf	20.1	39.5	11.1	9.1	16.1	58.8	28.0	54.5	58.8	67.6	40.3	57.3
	Smooth	22.2	24.6	27.6	30.8	33.9	36.9	39.8	44.8	52.0	60.9	70.4	77.8
1978	Wolf	54.0	124.7	97.6	136.7	116.7	135.3	95.2	68.4	155.7	143.5	93.7	180.8
	Smooth	83.8	87.1	91.8	99.0	104.3	111.7	125.5	138.7	148.2	153.1	155.5	159.2
1979	Wolf	261.3	234.1	215.2	138.7	171.1	170.4	215.1	161.1	234.7	230.1	276.0	228.1
	Smooth	165.7	174.5	181.7	188.6	199.8	209.4	206.7	199.2	193.6	193.9	199.1	202.6
1980	Wolf	151.0	162.9	153.7	207.3	225.8	201.4	201.1	193.2	228.6	222.4	201.9	241.6
	Smooth	203.3	204.1	205.2	204.6	201.2	198.7	199.9	200.6	201.5	202.6	201.1	197.1
1981	Wolf	167.7	162.1	176.4	211.5	185.9	143.5	187.3	222.9	265.4	244.9	209.6	179.1
	Smooth	194.1	194.7	197.5	200.0	201.2	199.0	196.4	198.9	202.8	202.6	197.7	194.8
1982	Wolf	169.8	219.2	213.2	169.2	110.6	149.0	161.9	152.1	178.9	122.4	123.4	163.1
	Smooth	194.0	190.0	183.4	174.7	166.0	161.7	159.8	152.5	142.4	135.9	134.5	134.8
1983	Wolf	140.5	72.7	116.6	110.3	135.0	133.6	105.4	96.5	63.5	83.0	47.8	67.4
	Smooth	131.9	127.2	120.1	113.6	108.8	101.7	95.0	94.6	97.5	96.9	94.6	90.5
1984	Wolf	74.8	131.0	126.9	85.4	105.2	65.3	57.7	35.3	18.7	13.9	25.4	29.1
	Smooth	85.7	81.2	76.7	72.0	68.2	65.7	62.3	56.1	47.3	40.3	34.9	30.6
1985	Wolf	32.4	24.8	21.9	22.9	37.6	29.4	44.9	13.1	5.3	27.4	24.9	14.3
	Smooth	28.6	27.1	25.6	25.6	26.2	25.5	23.7	22.7	23.0	22.9	21.9	19.9
1986	Wolf	2.8	31.8	21.5	21.4	15.1	2.5	20.2	9.7	5.7	42.6	19.7	7.6
	Smooth	17.7	16.5	16.4	17.1	17.5	17.0	17.0	16.0	14.6	15.6	17.8	19.8
1987	Wolf	8.5	2.7	18.5	46.6	43.8	21.6	41.6	51.0	37.6	75.9	59.8	33.3
	Smooth	21.5	24.1	27.2	29.9	32.9	35.7	40.0	45.0	49.6	55.3	59.8	65.9

1948年至2013年之每月太陽黑子相對數及平均值
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1988	Wolf	86.4	46.2	83.7	118.7	80.9	129.6	119.0	128.1	136.7	153.1	150.8	247.8
	Smooth	73.6	80.1	87.4	94.7	101.8	114.5	128.9	141.4	152.2	158.1	165.4	177.0
1989	Wolf	217.5	216.1	171.3	174.2	201.0	287.1	177.5	247.2	237.2	208.0	290.0	300.0
	Smooth	186.0	193.4	202.5	209.0	217.1	225.1	230.5	232.2	234.4	239.7	243.0	241.5
1990	Wolf	295.2	179.9	260.3	212.5	241.8	210.4	275.6	281.3	201.8	284.1	254.1	281.6
	Smooth	242.4	247.9	247.9	249.6	251.2	249.0	245.9	249.6	255.0	255.2	253.5	251.8
1991	Wolf	239.9	322.8	247.0	230.5	184.3	227.5	324.8	338.8	252.8	317.5	271.9	352.1
	Smooth	254.6	259.0	263.6	267.1	269.2	272.9	278.6	286.1	293.1	296.2	297.8	296.3
1992	Wolf	305.7	436.9	302.9	247.8	204.4	171.7	180.7	163.7	168.2	210.1	202.9	176.7
	Smooth	287.9	274.6	263.8	255.8	248.5	238.3	223.5	205.9	190.2	180.4	173.1	166.1
1993	Wolf	126.2	193.4	169.8	145.6	131.6	75.8	117.8	96.4	62.2	101.5	76.7	122.3
	Smooth	159.4	154.0	146.8	137.8	128.1	120.5	117.3	111.5	102.8	94.3	85.5	80.5
1994	Wolf	103.4	75.4	80.7	30.9	34.7	53.4	54.1	47.3	52.5	63.1	25.9	32.0
	Smooth	77.0	72.3	69.8	67.8	64.1	58.2	51.1	45.9	42.6	40.9	39.6	37.1
1995	Wolf	22.9	31.5	45.9	23.1	11.3	18.6	16.9	11.2	9.7	26.3	11.6	14.2
	Smooth	34.1	31.1	27.8	24.5	22.3	21.0	20.0	18.6	15.9	13.6	12.6	12.0
1996	Wolf	17.4	2.4	10.1	4.3	4.7	11.8	8.4	15.9	3.6	0.9	27.7	12.3
	Smooth	11.4	11.2	11.1	9.8	8.3	7.2	9.6	9.3	9.5	10.5	11.8	12.5
1997	Wolf	8.4	3.9	15.1	21.3	19.6	15.2	18.1	44.9	92.7	36.8	67.3	61.9
	Smooth	13.1	14.7	17.6	19.3	19.7	22.3	26.9	30.7	47.2	54.4	58.2	65.0
1998	Wolf	40.1	60.7	102.9	104.7	85.7	112.2	114.9	164.2	169.7	117.9	132.9	152.5
	Smooth	73.0	82.0	90.2	96.8	102.9	109.4	115.4	118.1	120.3	122.3	127.0	145.0
1999	Wolf	92.3	73.1	144.1	110.3	195.1	433.0	285.9	179.9	146.1	231.8	264.6	136.3
	Smooth	165.5	173.2	172.9	176.7	186.9	191.7	194.6	206.2	222.8	236.9	244.6	240.7
2000	Wolf	178.7	264.0	352.7	239.3	251.6	281.1	383.9	291.5	283.5	204.9	219.5	232.0
	Smooth	238.4	247.2	257.5	262.1	259.1	261.2	267.0	264.6	255.7	250.0	246.5	243.1
2001	Wolf	220.8	164.0	240.1	215.7	189.3	263.9	156.5	217.1	361.8	--	--	--
	Smooth	233.0	220.4	220.5	224.6	225.8	225.8	226.6	224.4	212.9	--	--	--
2002	Wolf	240.4	105.0	92.7	133.4	180.3	103.6	181.0	188.3	166.1	160.0	177.7	176.5
	Smooth	178.1	177.9	165.4	154.8	156.2	158.0	158.0	154.9	150.4	152.2	148.7	146.2
2003	Wolf	148.8	88.8	124.2	129.2	100.7	123.6	153.3	150.6	105.8	169.3	39.3	91.4
	Smooth	145.9	143.2	139.1	137.0	131.6	122.3	115.6	112.3	109.5	104.6	101.8	98.4
2004	Wolf	73.9	84.9	60.1	75.5	86.3	56.4	97.4	72.3	51.9	67.6	95.4	32.2
	Smooth	93.2	87.6	82.1	75.7	73.8	73.6	71.6	71.7	71.0	69.5	67.3	67.2
2005	Wolf	84.8	77.0	49.3	51.2	57.0	83.1	74.6	62.4	36.2	14.0	24.9	65.5
	Smooth	67.3	66.0	64.9	62.0	56.8	55.3	54.0	48.4	44.5	43.4	42.4	38.9
2006	Wolf	20.6	6.6	27.1	46.4	37.2	19.1	27.5	24.9	13.2	13.4	30.6	26.5
	Smooth	34.3	30.7	28.2	27.2	27.4	26.1	25.0	26.5	26.5	24.2	21.8	20.5
2007	Wolf	35.5	26.1	8.6	9.1	17.6	7.1	17.1	10.4	4.1	1.6	4.8	21.4
	Smooth	19.6	18.5	17.6	16.7	15.1	13.8	12.4	10.1	9.5	9.6	8.8	8.4

1948年至2013年之每月太陽黑子相對數及平均值
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2008	Wolf	6.9	0.0	18.0	2.1	7.3	5.9	0.5	0.0	1.4	3.4	5.7	0.7
	Smooth	7.6	6.5	5.9	5.9	6.0	5.2	4.1	4.0	3.4	2.8	2.7	2.7
2009	Wolf	1.7	3.0	0.8	4.0	4.4	7.1	10.5	0.0	4.4	17.6	3.3	19.2
	Smooth	3.1	3.6	3.7	4.4	4.9	5.5	7.3	9.9	12.8	14.1	14.6	15.2
2010	Wolf	24.4	42.9	30.5	5.3	15.5	10.0	27.0	24.6	32.7	31.3	33.1	26.3
	Smooth	16.0	17.7	19.9	21.6	23.5	25.0	26.0	26.7	29.6	36.1	42.6	47.2
2011	Wolf	40.3	45.5	95.9	97.6	78.4	57.8	70.3	80.7	131.3	144.4	132.9	152.5
	Smooth	51.0	55.1	61.6	70.4	79.3	88.7	96.3	98.5	97.4	95.3	93.8	94.7
2012	Wolf	97.7	40.7	73.6	69.8	70.5	86.6	78.7	64.3	86.9	64.1	80.7	57.0
	Smooth	96.3	95.9	93.4	88.2	82.7	76.5	71.6	70.7	70.7	71.0	72.2	72.5
2013	Wolf	74.2	43.2	70.3	81.0	88.2	76.7	68.4	66.2	38.6	99.4	83.0	88.8
	Smooth	71.7	71.3	69.4	68.8	70.4	71.8						

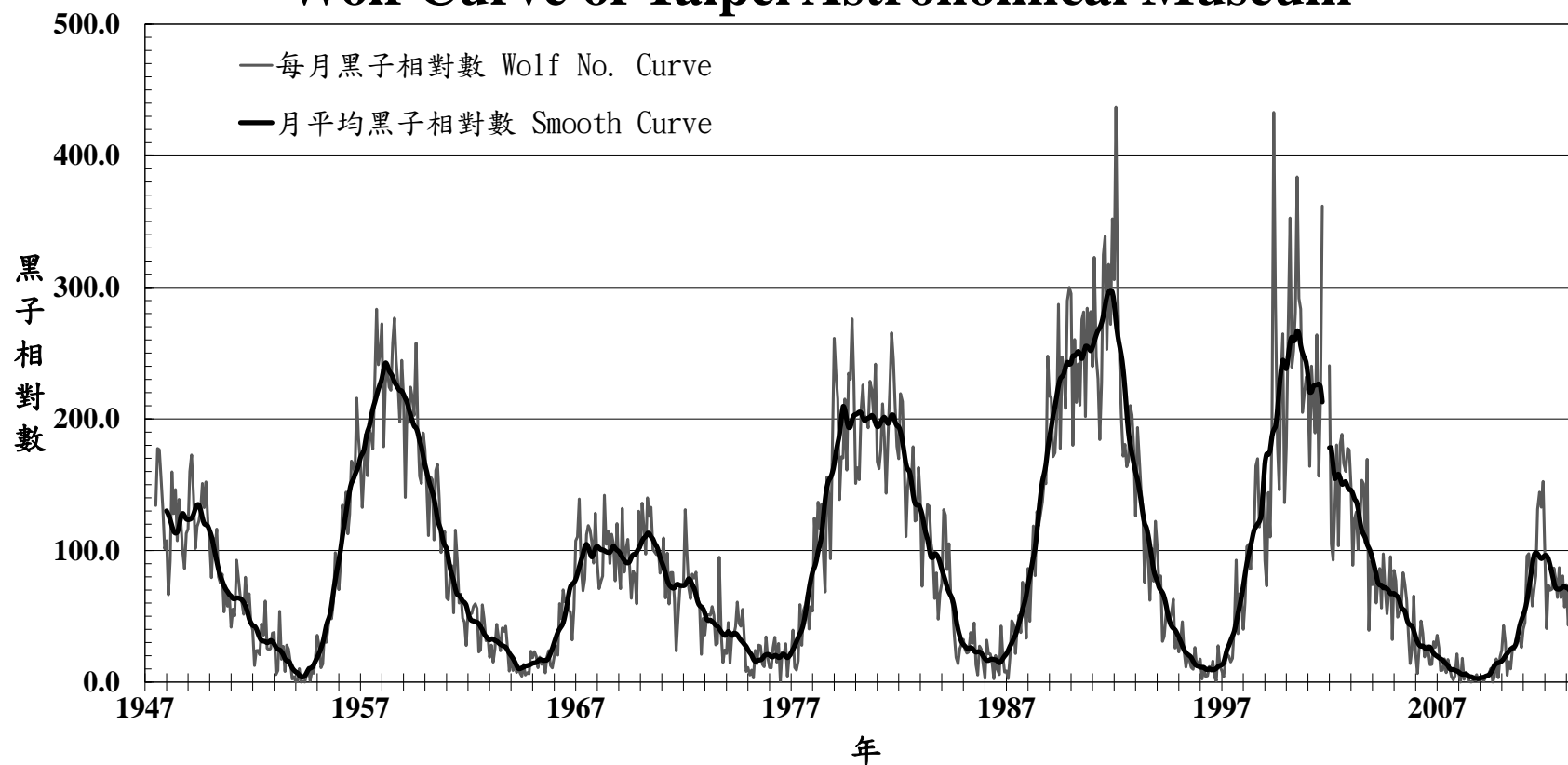
註：

* 2001年9月中旬至12月底，因望遠鏡故障，無法觀測。故暫時設定2001年9月之相對數月平均值資料以現有的觀測資料計算，逢2001年10月~12月者則跳過不計這三個月份。總計有2001年4月~2002年6月的月平滑值會受到影響。

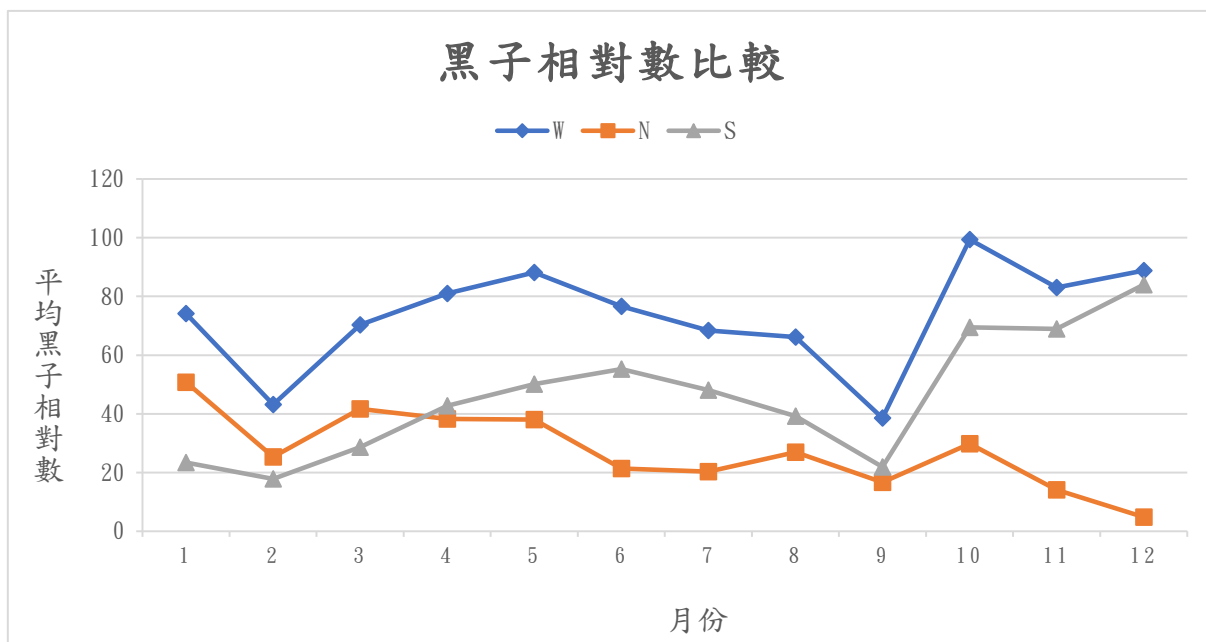
* 2005年6月10~25日，因觀測室進行圓頂工程無法觀測，影響觀測天數及黑子觀測值。

臺北市立天文科學教育館太陽黑子相對數變化圖

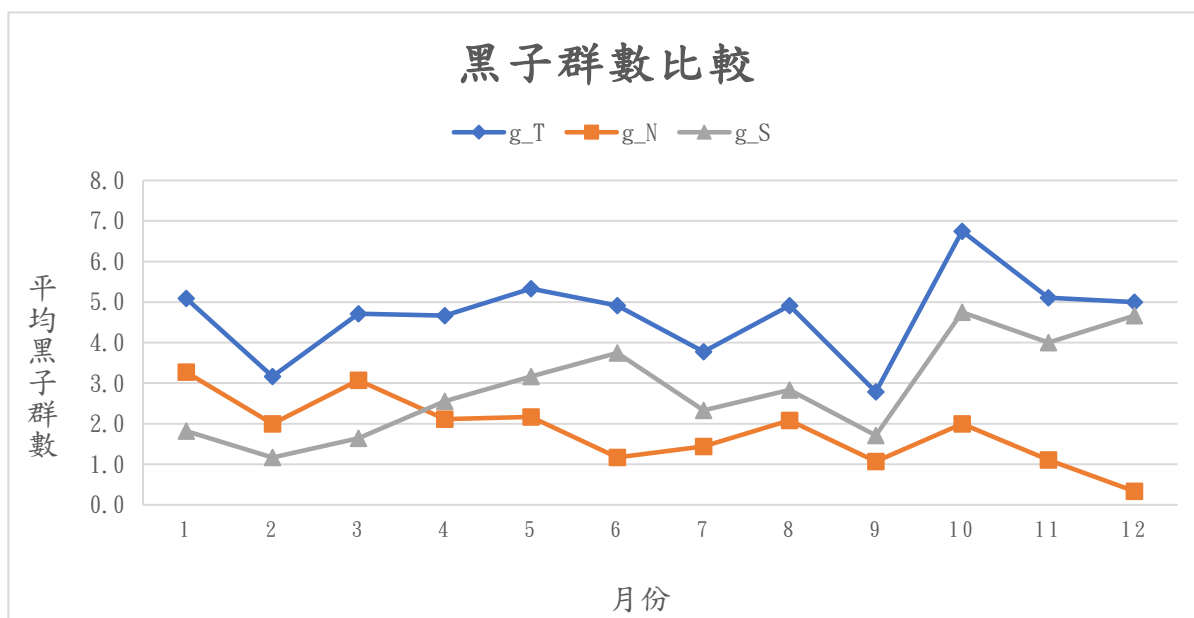
Wolf Curve of Taipei Astronomical Museum



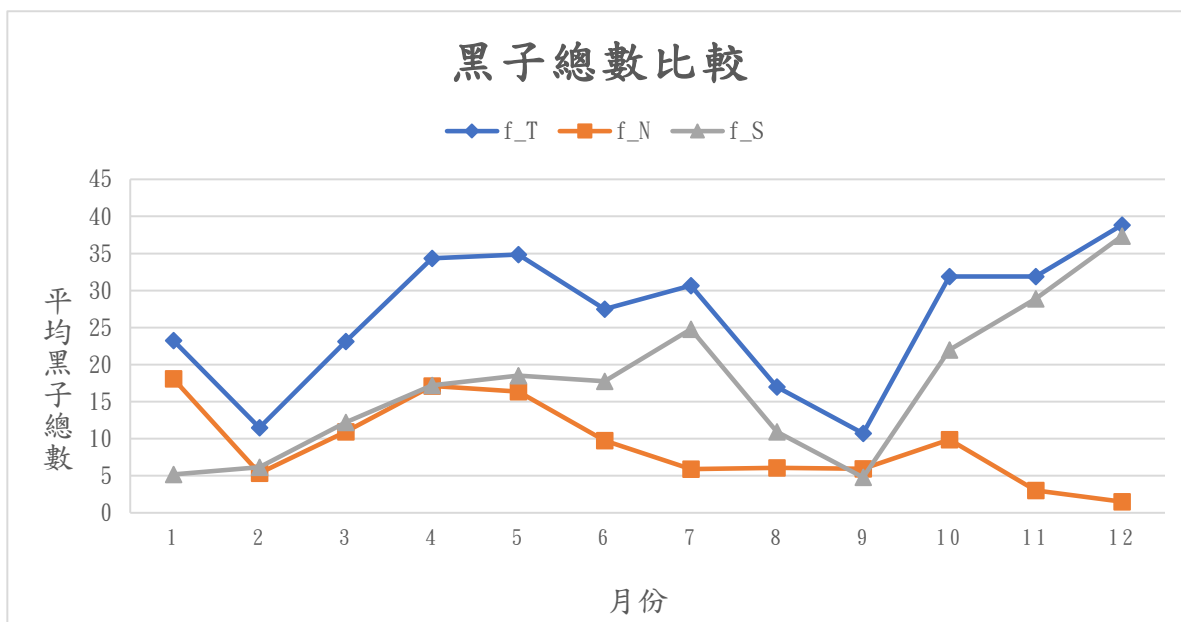
本圖為臺北天文館自1947年7月至2013年12月的每月黑子相對數（灰色細線）與月平均黑子相對數（黑色粗線）曲線圖。兩曲線均尚未做K值的修正。



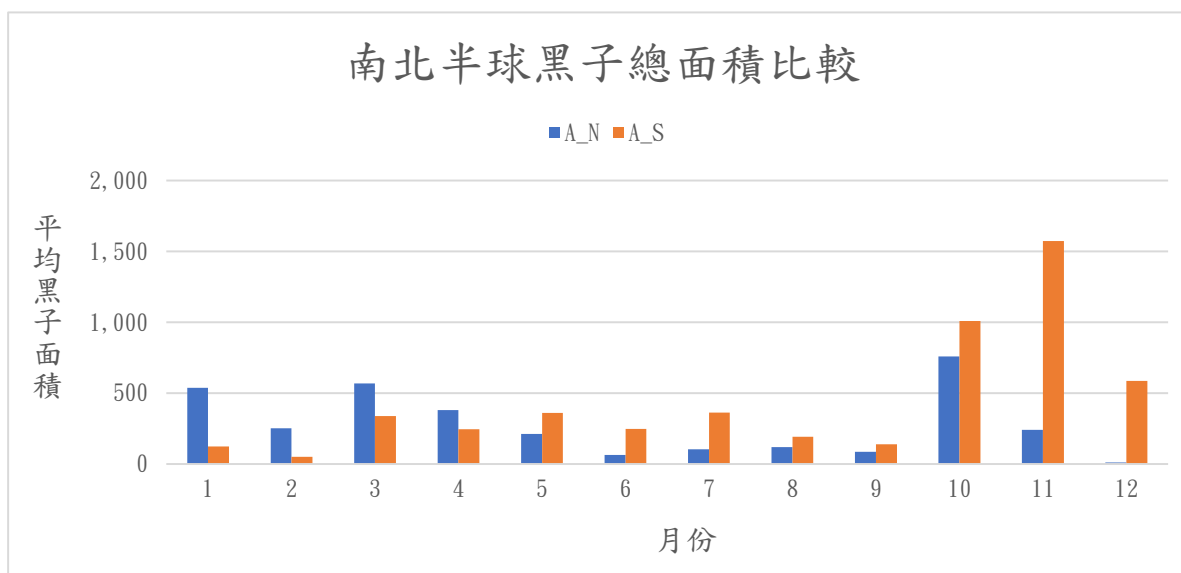
本圖為2013年各月的平均黑子相對數變化圖，其中W代表整個太陽可見半球面的黑子相對數，N與S則分別代表可見半球面中之北半球與南半球的黑子相對數。



本圖為2013年各月的平均黑子群數變化圖，其中g_T代表整個太陽可見半球面的黑子群數，g_N與g_S則分別代表可見半球面中之北半球與南半球的黑子群數。



本圖為2013年各月的平均黑子總數變化圖，其中f_T代表整個太陽可見半球面的黑子總數，f_N與f_S則分別代表可見半球面中之北半球與南半球的黑子總數。



本圖為2013年各月的南北半球黑子總面積變化圖，其中A_N與A_S分別代表可見半球面中之北半球與南半球的黑子總面積。面積以「太陽半球面總面積的百萬分之一」為單位，此為太陽投影觀測的慣用單位。

太陽黑子觀測設備沿革

The Historical Telescopes Using For Sunspot Observations

臺北天文館蒐集的太陽黑子觀測記錄資料始於民國 36 年 7 月，各時段所使用的觀測設備如下表所示。其中民國 36 年到民國 64 年所使用的儀器仍待考證。

The Taipei Astronomical Museum has been collecting sunspot observation records since July, 1947. The telescopes used during different periods is shown in the table below. The instruments used from 1947 to 1975 are still under investigation.

日期 DATE	儀器廠牌與型式 Telescope	有效口徑 Effective Aperture	目鏡焦距 Eyepieces Focal Length	焦比 Focal Ratio	倍率 Mag.	投影直徑 Projective diameter
1947.07~1975.	10.0cm refractor	10.0cm				
1975. ~1989.11	GOTO 12.5cm refractor	12.5cm	25mm	15.0	72	10cm
1989.12~1991.02	GOTO 25.0cm refractor	25.0cm	60mm	15.0	63	20cm
1991.03~1991.06	GOTO 12.5cm refractor	12.5cm	25mm	15.0	72	10cm
1991.07~1994.12	GOTO 25.0cm refractor	25.0cm	60mm	15.0	63	20cm
1995.01~1996.11	Showa 15.0cm refractor	12.5cm	25mm	14.4	72	10cm
1996.12~1997.01	Showa 15.0cm refractor GOTO 20.0cm refractor	mixing	mixing	mixing	mixing	mixing
1997.02~now	GOTO 20.0cm refractor	20.0cm	28mm	9.0	64	20cm

太陽黑子觀測報告—中華民國 102 年

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出版者：臺北市立天文科學教育館

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編輯：臺北市立天文科學教育館研究組

創刊日期：中華民國 78 年

出版日期：中華民國 114 年

刊期頻率：年報

電子全文：臺北市立天文科學教育館網站 <https://tam.gov.taipei/>

著作財產權人：臺北市立天文科學教育館

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GPN: 4711400030

ISSN: 1727-0030