1965 güneş leke gözlemleri

The sunspot observations made in 1965

by. F. YILMAZ

(Istanbul University Observatory)

Özet : İstanbul Üniversitesi Observatuarında yapılan fotosferik gözlemlerde güneşin görüntüsü bir projeksiyon diski üzerine düşürülmekte ve yüzeyinde görülebilen lekeler ile meşalelerin şekli çizilmektedir. Bu şekilde elde edilen resimlere dayanarak leke gruplarının helyografal koordinatları her gün için tayin edilmektedir.

Bu yazıda 1965 yılında gözlenen leke gruplarının gelişimleri bir cetvel halinde verilmektedir.

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Summary : In the photospheric observations made at the Istanbul University Observatory, observable sunspots and faculae are drawn on a projected disk of the sun and the heliographic coordinates of the sunspots are determined from this drawings.

In this paper the evolution of sunspot groups observed in 1965 is given in a table.

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The photosphere of the sun is observed on every clear day at the Istanbul University Observatory. A refracting telescope is used for this purpose ; the apperture of the objective and the focal length are 13 cm. and 200 cm. respectively. Sunspots and faculae are drawn on a projected disk of a diameter of 25 cm. American Ephemeris and Nautical Almanac are used to determine the heliographic coordinates of the sunspot groups. Each sunspot group is observed for a single rotation of the sun and the results obtained during this period are given in Table I.

Columns in Table I give the following : (1) current numbers of the groups ; (2) and (3) : the latitudes and longitudes of the groups, respectively, which are the average of the latitudes and longitudes measured each day ; (4) and (5) : first and last observations of the groups respectively ; (6) : evolution of the groups which are classified according to the standard classification of Zurich. The letters characterize the types of the groups and the numbers behind them give the number of umbrae in each group. The sign (?) denotes a group which was observed at the edge of the disk so that it could not be identified in the Zurich classification. The sign (—) is used to express that the group probably could not be observed on that day and that no observation was made on that day because of weather conditions or other reasons.

In 1965 the sun was observed 281 days and 114 groups were determined on it ; only 19 of them are in the South Hemisphere whereas remained 95 groups are in the North Hemisphere.

In Table II, numbers of the groups and umbrae are given by decimal numbers for each day ; the integer part of these numbers denote numbers of the groups and fractional part numbers of umbrae. Letters across these numbers are the abbreviations of the observers' names ; the complete names are given at the end of the table.

Table I

Number	Heliographic		Date of		Evolution of the sunspot groups
	Lati-tude	longi-tude	first obser-vation	last obser-vation	
1	+24	259	I,2	I,5	E16,D10,D6,?2
2	+21	141	I,3	I,8	?2,?4,J2,H6,—,J2
3	+20	134	I,5	I,9	J2,J2,—,H4,J1
4	+22	44	I,14	I,22	A1,J1,A1,A1,D5,G4,—,G2,?1
5	+27	312	I,19	I,19	J1
6	+33	332	I,21	I,22	G3,G2
7	+23	251	I,22	I,30	?2,?2,—,—,—,—,G3,J1
8	+21	240	I,23	I,23	?2
9	+ 7	161	I,29	II,6	?2,C3,C7,C7,—,—,H3,H3,J1
10	+30	12	II,14	II,15	J2,J2
11	+23	47	II,14	II,18	J1,J1,—,J1,J1
12	+ 9	42	II,15	II,15	A2
13	— 5	183	II,24	III,2	A1,—,—,A2,B2,A1,A1
14	+ 6	170	II,27	III,1	A2,A1,A1
15	—18	182	II,27	II,27	A1
16	+ 7	208	III,2	III,2	A1
17	+30	125	III,4	III,7	A4,A2,A3,B9
18	+15	135	III,6	III,6	A4
19	+22	168	III,7	III,7	B4
20	+21	100	III,11	III,12	H4,J1
21	+30	346	III,12	III,20	B3,D11,D8,G4,—,J2,—,E7,?5
22	+28	353	III,17	III,17	A1
23	+23	202	III,25	III,25	A1
24	+ 9	166	III,25	III,25	A1
25	+16	128	III,31	III,31	A1
26	+ 6	283	IV,16	IV,18	J1,—,A1
27	+ 4	275	IV,16	IV,16	A3
28	+18	222	IV,21	IV,25	B2,D9,—,J2,J1
29	— 2	203	IV,28	IV,28	J3
30	+26	17	V,2	V,5	?1,A1,—,A2
31	+39	68	V,7	V,8	A2,?3
32	+22	276	V,12	V,19	A4,B6,C4,—,B8,C3,C4,A2
33	—11	352	V,12	V,13	A4,J1
34	+16	344	V,13	V,13	A2
35	+23	200	V,16	V,26	E10,E20,F31,E25,E27,E28,E14,D5,D8,J3,J1
36	+24	177	V,17	V,26	?4,?9,C12,C8,C19,D8,J4,B5,J4,A3
37	+20	260	V,18	V,22	B6,D9,C15,C7,?2
38	+29	168	V,23	V,25	C5,C6,J2
39	—10	20	VI,1	VI,9	A1,D10,D19,E20,D11,G6,G4,H1,?1
40	— 9	43	VI,3	VI,7	A3,C7,H7,H6,?2
41	+21	260	VI,7	VI,11	?2,J2,C7,A3,A2
42	+19	266	VI,8	VI,8	A1
43	+27	386	VI,9	VI,9	?1
44	+21	268	VI,14	VI,14	A2
45	—29	187	VI,14	VI,14	A1

Table I (cont.)

46	−26	209	VI,18	VI,22	C14,C8,B9,G5,?2
47	+29	108	VI,20	VI,22	A2,A4,A2
48	+32	100	VI,24	VI,24	A2
49	+26	22	VI,26	VI,26	A2
50	+25	31	VI,26	VI,26	A2
51	+30	10	VI,27	VII,2	A2,C3,B5,C3,C4,B4
52	+28	39	VI,28	VI,28	A1
53	+25	23	VI,28	VI,28	A2
54	+19	85	VI,28	VI,28	A1
55	+32	338	VII,2	VII,2	B6
56	− 9	14	VII,2	VII,2	A1
57	+34	334	VII,5	VII,5	B6
58	+20	273	VII,6	VII,14	B5,D15,E12,E23,E18,E12,—,D7,?5
59	+19	204	VII,10	VII,10	A2
60	+20	208	VII,15	VII,17	J4,A1,A1
61	+30	302	VII,30	VII,30	A4
62	+38	274	VIII,3	VIII,4	A2,A1
63	−32	212	VIII,6	VIII,6	A4
64	+35	186	VIII,7	VIII,9	A4,B4,A7
65	−25	224	VIII,7	VIII,8	A2,A2
66	+26	203	VIII,8	VIII,8	A1
67	+21	295	VIII,8	VIII,8	A1
68	−29	215	VIII,10	VIII,13	B3,A4,B7,B2
69	+ 8	95	VIII,18	VIII,18	A1
70	+ 5	106	VIII,19	VIII,19	A2
71	+ 2	39	VIII,20	VIII,20	A2
72	+31	110	VIII,21	VIII,21	A2
73	+24	12	VIII,24	VIII,24	A2
74	+26	300	VIII,28	VIII,31	C4,—,B9,B9
75	+ 6	304	VIII,31	IX,5	B3,C8,C9,C4,?3,?1
76	+26	186	IX,3	IX,13	B3,B7,D11,D10,D22,D14,C15,C8.H4,J2,A4
77	+21	56	IX,12	IX,19	?1,A3,J3,J2,C3,J1,B5,A4
78	+43	79	IX,16	IX,16	A1
79	+25	52	IX,16	IX,16	A3
80	− 1	44	IX,16	IX,16	A3
81	+37	36	IX,19	IX,19	A3
82	+33	14	IX,19	IX,19	A4
83	+29	51	IX,19	IX,19	A1
84	+25	42	IX,19	IX,19	A2
85	+18	45	IX,19	IX,19	A2
86	+ 9	41	IX,19	IX,19	A1
87	+30	8	IX,23	IX,26	B8,C8,D4,C5
88	+21	218	IX,26	X,8	?1,?2,C9,E22,E42,E71,E89,E93,E32,E21,C8 B9,?1
89	−28	221	IX,27	IX,29	?1,A1,A1
90	−18	232	X,3	X,7	D16,G4,G6,G5,?3
91	+24	179	X,4	X,4	A2
92	−32	174	X,4	X,5	A3,A1
93	+18	54	X,9	X,13	?6,J8,C5,J1,—,A1
94	+19	55	X,16	X,16	B4
95	+22	354	X,20	X,22	C5,J2,D8

Table I (Cont.)

96	+28	257	X,25	X,25	A1
97	—16	239	X,25	XI,3	J1,J1,H3,J1,J1,J1,J1,—,—,A1
98	+28	258	X,27	X,27	A1
99	+ 7	209	X,31	X,31	A1
100	+ 9	201	XI,3	XI,4	C11,B6
101	+27	114	XI,7	XI,12	D28,E13,D15,E19,D15, ?3
102	+23	66	XI,7	XI,16	C4,A1,A1,A1
103	+25	55	XI,10	XI,17	D10,D11,D7,D16,D7,—,—, ?1
104	+34	40	XI,13	XI,13	A3
105	+22	229	XI,24	XI,24	A2
106	+28	111	XI,29	XII,8	?1,J1,J1,—,—,—,—,J1,,3,J1
107	+18	342	XII,8	XII,9	?1,A2
108	+21	343	XII,18	XII,20	D13,D8, ?2
109	—11	250	XII,20	XII,20	A1
110	+19	276	XII,21	XII,21	A1
111	+11	204	XII,27	XII,29	E23,E13,E15
112	+22	109	XII,28	XII,29	B2,B4
113	—28	120	XII,28	XII,29	C4,G5
114	+ 9	130	XII,29	XII,29	B3

Table II

Day	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	1.16 AÖ	1.7 SK	2.2 SK	—	0.0 AÖ	1.1 SK	0.0 SK	1.8 AÖ	AÖ	1.71 LT	1.1	1.1 SK
2	—	—	2.2 SK	0.0 SB	1.1 AÖ	2.10 AÖ	0.0 SK	1.9 HİE	LT	1.89 HİE	—	—
3	2.12 AÖ	—	1.4 SK	0.0 AÖ	1.1 SK	2.22 SK	1.2 AÖ	2.7 HİE	LT	2.109 HİE	2.12 HİE	—
4	2.10 SK	1.4 SK	1.2 SB	0.0 AÖ	—	2.27 SB	1.1 AÖ	2.10 SB	AÖ	4.41 SB	1.6 SK	—
5	3.6 SK	1.3 NK	2.7 NK	0.0 SK	1.2 AÖ	2.18 AÖ	0.0 SK	2.12 LT	AÖ	2.27 SB	0.0 LT	1.1 SB
6	2.8 AÖ	1.1 AÖ	2.13 AÖ	0.0 SK	0.0 SK	2.12 AÖ	1.4 AÖ	1.10 AÖ	HİE	2.13 SB	0.0 LT	1.3 SK
7	—	—	—	0.0 AÖ	1.2 SB	3.8 SB	2.6 SK	1.22 AÖ	HİE	2.12 LT	—	2.2 SK
8	2.6 SB	—	—	—	1.3 AÖ	3.4 SK	4.8 SK	1.14 AÖ	AÖ	1.1 LT	2.32 LT	1.2 HİE
9	1.1 AÖ	—	—	0.0 SK	—	3.9 AÖ	1.7 LT	1.15 HİE	LT	1.6 HİE	2.14 HİE	0.0 LT
10	—	—	—	—	0.0 SK	1.3 SK	1.3 AÖ	1.8 HİE	AÖ	1.8 HİE	2.16 SB	0.0 LT
11	—	—	1.4 SK	—	0.0 SK	1.2 SK	1.4 AÖ	1.4 SB	AÖ	1.5 AÖ	3.30 SK	—
12	—	—	2.4 SB	—	2.8 AÖ	0.0 AÖ	1.7	2.3 LT	AÖ	1.1 SB	2.26 SK	—
13	0.0 AÖ	2.3 AÖ	1.11 NK	—	3.9 SK	0.0 AÖ	1.2 SK	2.7 AÖ	HİE	1.1 LT	2.10 LT	—
14	1.1 SK	3.5 SB	1.8 NK	—	1.4 SB	2.3 SK	0.0 AÖ	1.3 AÖ	HİE	0.0 LT	2.19 HİE	—
15	1.1 SB	—	1.4 SK	—	—	0.0 SK	0.0 HİE	1.2 AÖ	SB	1.4 HİE	1.7 HİE	0.0 SK
16	1.1 AÖ	1.1 SK	—	2.4 SB	2.18 AÖ	0.0 AÖ	0.0 HİE	4.10 HİE	LT	0.0 HİE	—	—
17	1.1 AÖ	1.1 SK	2.3 SB	—	3.27 SK	1.14 NK	0.0 AÖ	1.1 HİE	AÖ	0.0 HİE	1.11 SK	1.13 LT
18	1.5 SK	0.0 SB	—	1.11 AÖ	4.50 SK	1.8 AÖ	1.1 AÖ	1.5 SB	HİE	0.0 SB	0.0 SK	1.8 HİE
19	2.5 SK	0.0 AÖ	1.7 SB	0.0 SK	4.48 AÖ	2.11 AÖ	1.2 LT	7.18 LT	AÖ	0.0 SK	HİE	2.3 SB
20	—	0.0 AÖ	1.5 AÖ	1.1 SK	3.50 SK	2.9 SK	1.2 HİE	0.0 AÖ	HİE	1.5 LT	0.0 LT	2.3 SB
21	2.5 SK	0.0 SK	—	1.2 AÖ	3.52 SB	2.4 SK	1.2 AÖ	0.0 AÖ	SB	1.2 LT	0.0 HİE	1.1 SB
22	3.5 SB	0.0 SK	—	1.9 SK	3.24 AÖ	0.0 AÖ	HİE	0.0	SB	1.8 HİE	0.0 SB	1.1 SK
23	2.4 AÖ	0.0 SK	0.0 SK	—	3.14 NK	1.1 SB	0.0 SB	1.8 HİE	SB	0.0 SK	—	—
24	—	0.0 SK	0.0 AÖ	1.2 AÖ	3.19 SK	0.0 AÖ	1.2 AÖ	1.8 HİE	LT	—	1.2 SK	—
25	—	—	2.2 SK	1.1 AÖ	3.9 SK	2.4 AÖ	0.0 LT	1.4 SB	LT	0.0 SB	—	—
26	—	—	—	—	2.4 AÖ	1.2 SK	0.0 HİE	2.6 AÖ	HİE	2.2 SK	—	—
27	—	3.5 AÖ	—	1.3 SB	0.0 SK	4.7 SK	1.4 LT	2.3	HİE	1.1 SK	—	1.23 SB
28	2.5 SB	2.4 AÖ	—	0.0 SK	0.0 SB	1.5 SK	1.4 SB	2.10 AÖ	AÖ	2.4 SK	0.0 LT	3.19 SK
29	2.4 AÖ	—	—	0.0 SB	0.0 AÖ	1.3 AÖ	1.9 SB	2.23	SB	1.1 LT	0.0 HİE	4.27 SK
30	1.7 AÖ	—	—	—	0.0 AÖ	—	2,12 AÖ	1.42 HİE	SB	1.1 HİE	1.1 SB	—
31	—	—	1.1 NK	—	0.0 SK	—	—	HİE	LT	2.2 HİE	1.1 SK	—

Observers :
AÖ = A. Özgüç
HİE = H. İ. Erdoğan
LT = L. Topaktaş
NK = N. Kulalı
SB = S. Bengi
SK = S. Karaali