QUARTERLY BULLETIN ON SOLAR ACTIVITY

Published by the **Eidgen. Sternwarte in Zürich**

with financial support from UNESCO

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot-Areas

Cooperating Observatories for Sunspot Relative-Numbers: Arcetri, Arosa, Athens (National Observatory), Athens (Eugenides Planetarium), Bucarest, Catania, Helwan, Herstmonceux, Hurbanovo, Istanbul, Kandilli, Kanzelhöhe, Kiev, Kislovodsk, Locarno, Madrid, Manila, Mitaka–Tokyo, Potsdam, Quezon–City, Roma–Monte Mario, Roquetas–Tortosa, Rosario, San Miguel, Santiago de Chile, Skalnaté Pleso, Taipei, Tashkent, Tokyo (Science Museum), Uccle, Zürich.

The first column gives the Relative-Numbers for the whole disk of the sun (R), the second that for the central zone (R_C). The diameter of the central zone is half that of the sun's disk.

The Sunspot-Areas A are based upon measurements made at Catania A_C, Roma–Monte Mario A_R, and at Locarno and Zürich (combined values) A_Z. The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

1976 Jan.	R	R_C	A_C	A_R	A_Z
1	0	0	0	--	0
2	0	0	0	--	--
3	0	0	0	--	--
4	0	0	0	--	--
5	0	0	0	0	0
6	0	0	--	--	--
7	0	0	0	0	0
8	0	0	--	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	0	--	--
12	20	0	68	80	61
13	26	0	289	--	--
14	34	0	--	679	519
15	20	0	672	670	--
16	22	22	630	573	--
17	22	22	546	604	--
18	20	20	--	--	438
19	18	18	347	430	294
20	16	0	336	--	276
21	11	0	236	--	--
22	10	0	84	--	--
23	10	0	95	--	41
24	0	0	0	--	0
25	0	0	0	--	0
26	0	0	0	--	0
27	7	7	--	--	3
28	0	0	0	0	0
29	8	8	0	0	4
30	8	0	0	--	10
31	0	0	--	--	--
Mean	8.1	3.1	132	234	87

1976 Feb.	R	R_C	A_C	A_R	A_Z
1	0	0	0	--	0
2	0	0	--	0	--
3	0	0	0	0	0
4	0	0	0 .	0	--
5	0	0	0	--	--
6	0	0	--	--	--
7	0	0	0	0	0
8	0	0	0	--	--
9	0	0	0	--	0
10	0	0	0	--	0
11	0	0	0	--	0
12	0	0	0	0	0
13	13	13	74	86	44
14	16	16	105	--	84
15	18	18	79	--	53
16	11	0	74	--	27
17	8	0	32	38	8
18	15	0	16	35	10
19	10	0	26	48	8
20	12	0	26	35	11
21	8	8	21	26	5
22	7	7	0	--	2
23	0	0	0	0	0
24	0	0	0	0	1
25	0	0	0	0	0
26	0	0	0	0	0
27	7	0	0	0	2
28	0	0	0	0	0
29	0	0	0	--	0
Mean	4.3	2.1	17	16	11

1976 March	R	R_C	A_C	A_R	A_Z
1	0	0	0	--	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	--	--
6	10	0	--	--	12
7	12	0	26	--	6
8	7	0	21	--	1
9	10	0	53	--	18
10	12	0	63	--	25
11	13	13	84	--	48
12	13	13	63	86	29
13	13	13	89	--	--
14	22	0	79	--	57
15	16	0	10	--	8
16	11	0	26	70	19
17	30	22	--	--	201
18	43	43	536	891	451
19	47	47	630	--	550
20	48	48	940	--	--
21	44	44	672	--	695
22	36	0	--	763	593
23	26	0	693	--	516
24	22	0	231	--	307
25	22	0	462	509	378
26	38	16	946	884	750
27	45	0	1150	1197	1010
28	43	0	--	--	1303
29	38	27	1365	1317	1278
30	32	23	--	1184	1208
31	26	26	1092	1082	1154
Mean	21.9	10.8	355	614	379

Zürich, January 1977   M. Waldmeier

QUARTERLY BULLETIN ON SOLAR ACTIVITY

Published by the Eidgen. Sternwarte in Zürich

with financial support from UNESCO

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot-Areas

Cooperating Observatories for Sunspot Relative-Numbers: Arcetri, Arosa, Athens (National Observatory), Athens (Eugenides Planetarium), Bucarest, Catania, Helwan, Herstmonceux, Hurbanovo, Istanbul, Kandilli, Kanzelhöhe, Kiev, Kislovodsk, Locarno, Madrid, Manila, Mitaka – Tokyo, Potsdam, Quezon – City, Roma – Monte Mario, Roquetas – Tortosa, Rosario, San Miguel, Santiago de Chile, Skalnaté Pleso, Taipei, Tashkent, Tokyo (Science Museum), Uccle, Zürich.

The first column gives the Relative-Numbers for the whole disk of the sun (R), the second that for the central zone (R_C). The diameter of the central zone is half that of the sun's disk.

The Sunspot-Areas A are based upon measurements made at Catania A_C, Roma – Monte Mario A_R, and at Locarno and Zürich (combined values) A_Z. The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

1976 Apr.	R	R_C	A_C	A_R	A_Z
1	23	23	1323	1050	1131
2	23	23	903	--	978
3	21	0	840	636	867
4	13	0	588	--	469
5	12	0	378	334	296
6	9	0	63	--	130
7	0	0	0	--	0
8	0	0	0	--	0
9	8	0	84	102	117
10	10	0	--	--	224
11	15	0	305	--	308
12	17	7	420	--	393
13	17	17	462	382	421
14	19	11	546	573	493
15	19	11	567	557	544
16	19	10	609	573	562
17	22	0	525	--	542
18	27	8	420	--	509
19	27	20	305	--	476
20	30	22	389	--	354
21	37	20	273	--	338
22	20	0	95	446	350
23	17	0	357	--	--
24	16	0	431	--	--
25	17	11	462	--	369
26	26	8	415	350	400
27	23	11	399	397	371
28	21	11	378	--	325
29	24	24	357	323	--
30	32	7	651	654	738
Mean	18.8	8.1	433	491	434

1976 May	R	R_C	A_C	A_R	A_Z
1	30	7	462	--	460
2	23	0	210	--	194
3	25	0	68	127	81
4	8	8	5	0	6
5	21	7	11	52	21
6	10	0	--	95	66
7	10	0	84	--	131
8	9	0	147	223	159
9	8	0	--	--	212
10	10	10	147	289	221
11	16	8	252	255	237
12	17	10	189	--	233
13	23	9	215	254	198
14	30	7	--	207	176
15	17	0	147	--	114
16	12	0	63	--	110
17	18	0	--	--	40
18	8	0	5	19	4
19	20	7	16	26	14
20	20	7	16	12	8
21	13	7	10	--	5
22	7	0	21	--	11
23	15	15	32	--	--
24	8	8	5	--	4
25	0	0	5	0	0
26	7	7	5	--	2
27	0	0	0	--	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	--	0
31	0	0	0	0	0
Mean	12.4	3.8	78	97	90

1976 June	R	R_C	A_C	A_R	A_Z
1	0	0	0	0	0
2	0	0	0	--	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	--	--	0
6	0	0	0	--	0
7	0	0	0	0	0
8	10	0	0	0	7
9	10	0	0	0	12
10	7	0	0	0	4
11	7	0	0	0	1
12	8	0	0	0	10
13	8	0	0	--	2
14	15	0	5	--	13
15	18	0	53	61	63
16	15	0	110	--	67
17	18	0	0	--	289
18	24	24	0	430	317
19	23	23	0	--	295
20	20	20	0	204	108
21	30	16	84	--	91
22	31	9	47	--	85
23	22	0	84	--	115
24	25	7	63	--	110
25	18	0	0	178	93
26	17	0	0	159	153
27	9	9	0	--	130
28	11	0	0	--	137
29	11	0	105	--	137
30	10	0	116	121	126
Mean	12.2	3.6	23	77	79

QUARTERLY BULLETIN ON SOLAR ACTIVITY

Published by the **Eidgen. Sternwarte in Zürich**

with financial support from UNESCO

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot-Areas

Cooperating Observatories for Sunspot Relative-Numbers: Arcetri, Arosa, Athens (National Observatory), Athens (Eugenides Planetarium), Bucarest, Catania, Helwan, Herstmonceux, Hurbanovo, Istanbul, Kandilli, Kanzelhöhe, Kiev, Kislovodsk, Locarno, Madrid, Manila, Mitaka – Tokyo, Potsdam, Quezon – City, Roma – Monte Mario, Roquetas – Tortosa, Rosario, San Miguel, Santiago de Chile, Skalnaté Pleso, Taipei, Tashkent, Tokyo (Science Museum), Uccle, Zürich.

The first column gives the Relative-Numbers for the whole disk of the sun (R), the second that for the central zone (R_C). The diameter of the central zone is half that of the sun's disk.

The Sunspot-Areas A are based upon measurements made at Catania A_C, Roma – Monte Mario A_R, and at Locarno and Zürich (combined values) A_Z. The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

1976 July	R	R_C	A_C	A_R	A_Z
1	9	0	42	70	74
2	8	0	26	--	56
3	10	0	21	--	8
4	8	8	21	--	4
5	8	8	5	0	6
6	10	0	16	--	11
7	7	0	5	--	4
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	--	0
11	0	0	0	--	0
12	0	0	0	--	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0	0
18	0	0	0	--	0
19	0	0	0	0	0
20	0	0	0	--	0
21	0	0	0	0	0
22	0	0	0	0	--
23	0	0	0	--	0
24	0	0	0	0	0
25	0	0	0	--	0
26	0	0	0	0	0
27	0	0	0	--	0
28	0	0	0	0	0
29	0	0	0	0	0
30	0	0	0	0	0
31	0	0	0	0	0
Mean	1.9	0.5	4	4	5

1976 Aug.	R	R_C	A_C	A_R	A_Z
1	10	0	105	--	132
2	16	8	252	--	338
3	17	8	693	636	597
4	13	0	924	764	764
5	16	0	1029	890	835
6	14	14	·777	1018	988
7	24	12	945	1050	1043
8	27	16	903	--	939
9	31	13	924	994	908
10	24	10	819	--	841
11	23	10	746	--	652
12	28	18	462	--	466
13	26	18	210	--	290
14	15	0	58	--	39
15	8	8	21	--	--
16	15	15	42	--	32
17	19	19	84	270	140
18	22	0	168	334	192
19	25	0	106	243	158
20	20	0	84	185	138
21	17	0	63	114	116
22	8	0	74	--	--
23	9	9	--	111	78
24	15	9	95	127	105
25	10	10	32	80	48
26	14	14	32	32	21
27	7	7	11	--	2
28	8	0	0	0	--
29	9	0	95	--	--
30	10	0	273	--	240
31	9	0	231	--	316
Mean	16.4	7.0	342	428	386

1976 Sep.	R	R_C	A_C	A_R	A_Z
1	17	0	483	--	422
2	20	9	483	569	412
3	12	12	441	--	--
4	11	11	504	445	--
5	17	17	336	--	361
6	10	0	284	398	366
7	9	0	231	318	303
8	9	0	--	256	217
9	18	0	84	--	127
10	22	0	294	238	--
11	24	24	294	413	264
12	20	14	263	--	--
13	18	0	105	112	--
14	10	0	53	70	42
15	16	0	21	32	31
16	14	0	21	--	10
17	8	0	21	38	24
18	8	0	21	10	9
19	7	7	0	--	4
20	0	0	0	0	1
21	0	0	0	0	0
22	0	0	0	0	0
23	7	0	0	0	1
24	7	0	0	0	0
25	16	0	100	128	71
26	17	0	63	--	187
27	18	0	231	318	248
28	18	0	347	382	358
29	23	15	389	447	--
30	30	15	431	--	455
Mean	13.5	4.1	190	199	163

Zürich, January 1977

M. Waldmeier

QUARTERLY BULLETIN ON SOLAR ACTIVITY

Published by the Eidgen. Sternwarte in Zürich

with financial support from UNESCO

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot-Areas

Cooperating Observatories for Sunspot Relative-Numbers: Arcetri, Arosa, Athens (National Observatory), Athens (Eugenides Planetarium), Bucarest, Catania, Helwan, Herstmonceux, Hurbanovo, Istanbul, Kandilli, Kanzelhöhe, Kiev, Kislovodsk, Locarno, Madrid, Manila, Mitaka – Tokyo, Potsdam, Quezon – City, Roma – Monte Mario, Roquetas – Tortosa, Rosario, San Miguel, Santiago de Chile, Skalnaté Pleso, Taipei, Tashkent, Tokyo (Science Museum), Uccle, Zürich.

The first column gives the Relative-Numbers for the whole disk of the sun (R), the second that for the central zone (R_C). The diameter of the central zone is half that of the sun's disk.

The Sunspot-Areas A are based upon measurements made at Catania A_C, Roma – Monte Mario A_R, and at Locarno and Zürich (combined values) A_Z. The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

1976 Oct.	R	R_C	A_C	A_R	A_Z
1	30	17	442	462	431
2	28	17	399	308	445
3	30	0	347	--	--
4	30	0	326	370	285
5	25	0	137	--	--
6	24	0	95	169	112
7	30	0	42	--	48
8	7	0	--	0	2
9	14	7	11	0	8
10	0	0	0	--	0
11	0	0	0	0	--
12	13	0	32	--	--
13	17	0	21	--	32
14	23	0	100	--	77
15	25	0	158	--	157
16	28	7	--	--	212
17	31	7	252	--	273
18	24	7	189	270	202
19	20	7	189	--	106
20	19	0	68	--	23
21	15	0	42	--	9
22	22	15	10	--	14
23	28	16	168	--	128
24	30	22	294	--	--
25	30	0	--	--	--
26	29	0	420	--	602
27	24	0	326	--	--
28	19	0	179	--	--
29	15	0	89	--	47
30	8	0	26	--	--
31	0	0	0	--	0
Mean	20.6	3.9	156	197	146

1976 Nov.	R	R_C	A_C	A_R	A_Z
1	0	0	--	--	2
2	0	0	0	--	0
3	0	0	0	--	--
4	0	0	0	--	--
5	0	0	--	0	0
6	0	0	--	0	--
7	0	0	0	--	--
8	0	0	0	0	0
9	0	0	0	0	0
10	0	0	0	0	0
11	0	0	--	--	--
12	0	0	0	--	0
13	0	0	0	--	--
14	0	0	0	--	0
15	7	0	0	0	2
16	7	0	0	0	3
17	14	0	--	--	55
18	20	0	--	--	144
19	13	0	--	--	234
20	12	0	284	--	285
21	8	8	273	--	265
22	13	13	399	--	407
23	11	11	--	289	--
24	10	10	--	289	--
25	9	9	252	255	--
26	9	0	242	208	--
27	8	0	189	159	183
28	8	0	84	--	122
29	8	0	74	--	49
30	0	0	0	--	--
Mean	5.2	1.7	86	100	92

1976 Dec.	R	R_C	A_C	A_R	A_Z
1	0	0	0	--	0
2	0	0	0	--	0
3	0	0	0	0	--
4	0	0	0	--	0
5	0	0	0	--	0
6	0	0	0	--	0
7	7	0	0	--	--
8	19	9	63	--	71
9	22	7	121	--	119
10	19	19	336	--	--
11	22	22	462	493	--
12	16	16	378	--	--
13	12	12	368	--	--
14	32	13	405	431	--
15	34	0	394	--	376
16	36	0	352	--	352
17	34	0	--	--	--
18	24	0	294	--	--
19	15	8	257	--	--
20	8	8	273	--	271
21	9	9	--	--	238
22	9	9	--	--	224
23	9	0	210	--	217
24	17	0	200	--	178
25	22	0	263	--	--
26	25	0	--	--	--
27	16	0	--	--	--
28	17	0	--	--	204
29	19	19	--	--	175
30	19	19	--	--	216
31	12	12	--	--	--
Mean	15.3	5.9	199	308	155

Zürich, January 1977   M. Waldmeier