

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, Bucarest, Catania, Herstmonceux, Hurbanovo, Istanbul, Kandilli, Kanzelhöhe, Kiev, Kislovodsk, Locarno, Madrid, Manila, Potsdam, Quezon City, Roma-Monte Mario, Roquetas, San Miguel, Santiago, Skalnaté Pleso, Tashkent, Tokyo, Trieste, Uccle, Zürich.

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1969	Jan.	R	R_C	A_C	A_R	A_Z
	1	68	28	657	—	847
	2	75	43	486	—	—
	3	72	38	508	652	—
	4	98	17	975	1023	1151
	5	117	7	1606	—	1785
	6	128	0	2104	2634	2415
	7	146	38	2799	3031	2914
	8	155	94	—	—	—
	9	152	93	3287	—	3658
	10	150	118	3180	3324	3699
	11	138	91	—	3491	2803
	12	137	73	2375	—	2668
	13	124	51	1548	1336	1842
	14	119	65	1341	—	—
	15	116	8	1166	1447	1332
	16	116	17	1219	—	1120
	17	100	17	530	1332	1053
	18	85	8	594	1120	—
	19	73	26	—	986	837
	20	76	39	514	661	713
	21	85	54	572	796	648
	22	105	76	509	901	633
	23	88	36	508	—	—
	24	97	44	275	696	—
	25	103	50	943	478	—
	26	100	52	725	—	949
	27	85	8	657	1197	877
	28	79	8	609	—	690
	29	82	9	572	—	623
	30	80	8	238	—	348
	31	87	14	444	480	424
Mean		104.4	39.7	1105	1421	1480

1969 Feb.	R	R _C	A _C	A _R	A _Z
1	92	7	443	—	447
2	96	8	370	—	—
3	98	0	891	—	648
4	86	34	—	—	646
5	94	43	997	—	528
6	101	68	954	1260	1029
7	122	92	911	1488	1256
8	109	74	1166	1508	1080
9	102	42	1101	841	827
10	85	9	1039	—	489
11	74	0	616	407	188
12	64	0	212	—	—
13	55	16	191	—	203
14	54	33	573	—	368
15	70	9	678	524	—
16	87	45	742	—	—
17	104	45	933	788	574
18	101	26	657	—	650
19	126	42	763	—	—
20	142	48	1061	—	611
21	169	86	1209	1907	1051
22	198	135	1506	—	1369
23	207	143	2184	1984	2249
24	215	133	—	2524	—
25	208	44	2606	2717	2171
26	189	0	2204	2660	2388
27	171	60	2131	2539	2018
28	155	73	—	—	1929
Mean	120.5	47.0	1046	1627	1033

1969 Mar.	R	R _C	A _C	A _R	A _Z
1	132	59	1462	—	1902
2	111	61	1335	—	1573
3	103	68	1123	—	1469
4	105	57	—	—	—
5	108	67	1145	—	—
6	117	83	953	899	777
7	115	55	678	1510	635
8	108	40	—	—	692
9	113	20	—	—	1011
10	107	20	678	1321	966
11	101	19	742	—	782
12	85	31	742	—	714
13	88	20	608	—	—
14	90	11	—	—	—
15	114	34	773	1001	780
16	158	58	1408	—	1644
17	170	37	2330	—	—
18	198	49	2407	3052	3225
19	192	65	3178	—	3536
20	196	98	3223	3835	3812
21	207	103	3583	4671	4095
22	195	115	4191	4498	4588
23	157	85	3997	—	—
24	146	39	3138	3738	3255
25	142	17	2428	2703	2240
26	149	13	2236	2599	2278
27	138	26	1675	1852	1616
28	140	49	1203	1884	1644
29	142	36	1956	2427	2116
30	145	35	2189	3247	2866
31	138	45	2989	3610	3478
Mean	135.8	48.9	1940	2678	2068

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1969	Apr.	R	R_C	A_C	A_R	A_Z
	1	156	73	3201	3866	4121
	2	143	54	3412	—	3987
	3	143	87	3392	3521	3675
	4	122	85	3361	—	3449
	5	101	31	—	—	2628
	6	78	0	2396	2468	—
	7	82	28	1400	1845	1689
	8	77	40	974	1305	1176
	9	90	44	958	1031	993
	10	85	37	873	1177	1072
	11	92	14	958	1419	1104
	12	91	19	1017	1475	1192
	13	122	40	1134	1745	1422
	14	149	58	1335	2235	2035
	15	152	87	1018	2038	—
	16	144	121	1382	2371	2020
	17	155	122	1695	2026	1913
	18	148	101	1579	1649	1390
	19	128	44	1758	1559	1460
	20	124	56	1256	—	1384
	21	122	30	1002	1277	1190
	22	90	21	780	—	—
	23	80	0	359	586	—
	24	81	11	249	410	326
	25	81	8	338	419	337
	26	78	28	418	558	440
	27	78	61	705	723	568
	28	72	42	487	—	470
	29	68	39	413	—	391
	30	72	40	382	478	—
	Mean	106.8	47.4	1318	1573	1617

1969	May	R	R _C	A _C	A _R	A _Z
	1	90	42	519	681	592
	2	77	16	667	961	800
	3	70	8	838	1106	928
	4	73	18	605	1089	—
	5	88	9	—	—	846
	6	71	28	560	—	—
	7	57	30	636	—	510
	8	87	24	594	683	521
	9	81	51	509	602	522
	10	100	23	530	672	486
	11	125	33	397	845	608
	12	149	63	1187	954	1020
	13	155	98	1011	1643	979
	14	169	125	1117	1375	921
	15	146	93	1538	1508	1012
	16	121	56	1140	1292	958
	17	124	35	1176	1007	730
	18	117	9	790	—	585
	19	120	17	911	1129	992
	20	123	0	1733	—	1454
	21	163	90	2369	2879	2137
	22	178	126	2480	2460	2753
	23	198	145	3053	2353	2850
	24	205	121	3052	2219	2786
	25	182	98	3340	—	2931
	26	177	32	2903	2300	2076
	27	145	33	2062	1626	1707
	28	136	22	1277	1153	894
	29	88	7	620	765	561
	30	54	17	355	494	346
	31	50	21	345	382	322
	Mean	120.0	48.1	1277	1287	1166

1969	June	R	R _C	A _C	A _R	A _Z
	1	32	13	191	281	258
	2	47	30	217	264	245
	3	74	15	253	399	240
	4	77	15	359	427	376
	5	116	16	794	—	—
	6	157	33	2073	2629	2495
	7	187	93	3136	3918	—
	8	190	154	4027	4255	4612
	9	185	161	4664	5809	5572
	10	192	179	4983	6282	5814
	11	195	135	5513	5815	5728
	12	187	64	5094	—	5322
	13	178	41	4323	4649	4620
	14	166	18	3264	3896	3638
	15	149	31	2750	3192	2640
	16	134	62	1880	1610	1446
	17	105	44	1054	1372	916
	18	102	68	953	1125	811
	19	86	64	975	1352	950
	20	97	66	1107	1418	1186
	21	84	49	1028	1353	1154
	22	56	8	832	992	883
	23	43	0	594	645	632
	24	43	8	339	520	—
	25	51	12	233	363	316
	26	28	11	84	86	—
	27	35	22	84	138	46
	28	49	24	190	188	154
	29	63	35	503	637	501
	30	71	30	593	890	750
	Mean	106.0	50.0	1736	1947	1973

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1969	July	R	R_C	A_C	A_R	A_Z
	1	125	41	1097	1329	1037
	2	134	51	1425	1754	1564
	3	167	32	1792	—	2047
	4	160	56	2040	2468	2127
	5	145	58	1869	2458	2333
	6	130	73	2038	2228	2028
	7	123	72	1844	2039	—
	8	122	60	1610	2100	1642
	9	122	35	1718	1973	1642
	10	120	32	1356	1808	1428
	11	120	50	1186	1388	1218
	12	112	37	742	1071	888
	13	98	47	721	880	534
	14	79	69	847	1057	858
	15	77	58	810	1058	860
	16	75	23	657	814	629
	17	78	23	572	420	477
	18	73	34	524	608	446
	19	66	16	551	666	441
	20	61	0	530	—	491
	21	62	24	381	464	315
	22	60	31	318	289	206
	23	55	21	212	175	65
	24	55	25	275	346	184
	25	53	22	286	—	265
	26	53	0	445	—	367
	27	57	0	572	—	478
	28	79	23	954	1273	806
	29	95	43	1579	1600	1128
	30	109	74	1786	1843	1491
	31	137	78	2343	—	1648
Mean		96.8	39.0	1067	1284	988

1969	Aug.	R	R _C	A _C	A _R	A _Z
	1	175	87	3084	3433	2296
	2	182	98	3624	3503	3644
	3	177	37	3642	—	3511
	4	180	45	3053	3853	3093
	5	171	62	2883	3355	2770
	6	153	72	2353	2470	2107
	7	139	75	1075	1543	1134
	8	114	36	621	—	608
	9	108	14	621	863	401
	10	105	7	551	619	484
	11	86	15	609	—	528
	12	70	7	441	606	446
	13	62	25	308	398	341
	14	59	24	403	459	306
	15	62	15	403	585	340
	16	50	12	276	416	297
	17	41	35	190	326	208
	18	35	21	169	168	134
	19	32	15	63	181	52
	20	28	19	47	254	40
	21	39	7	21	95	22
	22	48	17	276	455	330
	23	62	17	710	869	518
	24	68	16	959	—	—
	25	77	7	996	—	1081
	26	91	54	1336	1447	1495
	27	104	49	1844	2131	1870
	28	117	62	1907	2641	1880
	29	143	74	1802	2975	1353
	30	138	109	1627	2258	1325
	31	121	74	1087	—	1094
	Mean	98.0	38.9	1193	1436	1124

1969	Sep.	R	R _C	A _C	A _R	A _Z
	1	105	38	917	1087	666
	2	94	37	615	853	356
	3	81	20	281	—	183
	4	74	19	313	646	341
	5	71	9	393	481	339
	6	72	31	345	281	208
	7	71	24	477	646	313
	8	67	21	530	611	381
	9	51	13	625	468	467
	10	51	0	637	—	535
	11	67	8	742	646	561
	12	73	0	805	674	534
	13	91	0	1019	1247	958
	14	95	62	996	—	—
	15	114	92	1186	1486	944
	16	118	92	1586	1807	964
	17	123	64	1331	—	796
	18	121	57	917	—	—
	19	89	34	573	—	375
	20	65	10	329	—	172
	21	75	7	—	—	270
	22	89	21	—	—	274
	23	91	29	—	—	572
	24	98	31	—	1370	984
	25	119	65	—	1379	1514
	26	127	83	1780	1859	1414
	27	123	84	—	1223	1126
	28	117	80	827	—	1078
	29	107	65	1377	—	943
	30	99	31	1186	930	799
	Mean	91.3	37.6	824	983	645

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1969	Oct.	R	R_C	A_C	A_R	A_Z
	1	99	43	594	1007	508
	2	101	40	1102	1433	721
	3	99	45	1038	1468	1059
	4	99	50	1167	1330	829
	5	109	44	1262	1795	1060
	6	120	48	1622	2361	1493
	7	123	73	1675	2468	1414
	8	109	22	1845	1606	1170
	9	93	22	1864	1813	1616
	10	85	40	1665	1702	---
	11	72	30	---	1559	1171
	12	60	14	---	844	824
	13	57	27	690	875	701
	14	63	26	678	939	530
	15	54	22	577	763	434
	16	47	7	---	462	445
	17	42	7	---	---	111
	18	45	14	68	95	90
	19	50	15	265	439	302
	20	87	25	689	1129	796
	21	102	13	2513	2226	1801
	22	113	26	3303	2937	2627
	23	127	32	3519	3294	2956
	24	137	89	4102	3814	3344
	25	141	110	3932	---	3235
	26	145	102	4187	---	3174
	27	145	68	3902	3124	2942
	28	131	28	3255	3166	2724
	29	120	29	2661	2652	2139
	30	104	25	2204	1899	1465
	31	87	29	1113	1055	876
Mean		95.7	37.6	1907	1723	1419

1969	Nov.	R	R _C	A _C	A _R	A _Z
	1	82	33	351	613	314
	2	68	41	297	779	212
	3	83	43	291	939	270
	4	86	34	334	891	357
	5	88	39	640	1208	654
	6	98	40	906	1496	650
	7	97	44	1223	1814	—
	8	89	38	1196	—	—
	9	94	57	1187	—	1000
	10	85	53	1176	—	—
	11	81	55	890	—	—
	12	76	44	651	—	—
	13	67	10	642	—	464
	14	67	8	726	—	—
	15	68	17	928	1162	668
	16	67	10	1166	1256	864
	17	75	0	1961	—	1774
	18	86	0	3259	3788	—
	19	94	37	—	—	—
	20	123	82	2672	4994	3890
	21	127	86	5145	—	4437
	22	132	103	3990	—	4252
	23	129	112	2587	—	3909
	24	119	35	2937	3785	—
	25	118	34	3318	—	2974
	26	113	8	3217	—	—
	27	109	16	1531	2211	—
	28	102	33	950	1327	1081
	29	92	65	—	1607	1134
	30	90	60	911	1931	1004
	Mean	93.5	41.2	1610	1863	1574

1969	Dec.	R	R _C	A _C	A _R	A _Z
	1	91	52	—	—	1000
	2	107	49	1325	—	1108
	3	102	41	1030	1686	1018
	4	103	37	891	—	1232
	5	95	37	1055	—	—
	6	70	22	832	—	576
	7	53	42	583	—	401
	8	43	13	276	—	310
	9	44	26	292	668	342
	10	39	0	233	—	—
	11	28	0	149	254	139
	12	51	0	223	350	248
	13	74	7	—	—	542
	14	94	18	965	—	796
	15	97	11	1044	1654	—
	16	97	60	1013	—	—
	17	99	68	1261	2117	—
	18	93	80	—	—	—
	19	88	76	1383	—	—
	20	96	64	1467	—	—
	21	116	37	1505	2099	—
	22	135	31	—	—	—
	23	122	33	1977	—	2108
	24	129	58	—	2763	—
	25	137	75	1878	3116	2159
	26	131	89	1674	2497	2071
	27	136	84	2152	—	1675
	28	139	29	1781	—	—
	29	152	59	1802	2651	1439
	30	152	43	1988	2417	—
	31	122	26	—	—	—
	Mean	97.9	40.9	1151	1856	1010