

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot Areas

Cooperating Observatories for Sunspot Relative-Numbers : Ankara, Athens(Nat.Obs.), Athens(Eug.Plan.), Attikis(Nat.Obs.Greece), Beyazit, Bruxelles-Uccle, Bucarest, Campinas(Capric.Obs.Brazil), Campinas, Catania, Chung-li(Telecom.Taiwan), Cochabamba(Bolivia), Crimmitchau(East-Germ.), Dinant(Belgium), Dover(U.K.), Huancayo, Hurbanovo, Helwan, Inzernhagen(West-Germ.), Jeddah, Kandilli, Kanzelhoehe, Kawagushi-Saitama, Kiev, Kislovodsk, Leval-Trahegnies (Belgium), Locarno, Lunping(Taiwan), Madrid, Manila, Mie-ken(O.A.A. Japan), Nogales(Orion-Mexico), Oostende(Belgium), Potsdam, Rambouillet(France), Roma, Ronse-Renaix(Belgium), Roquetas-Tortosa, Rudolstadt(East-Germ.), San Miguel, Santiago, San Francisco de Oliveira(Brazil), Skalnaté-Pleso, Sonneberg(East-Germ.), Suwa-City, Taipei(Observatory), Taipei(Weather-Bureau), Tashkent, Tokyo-Mitaka, Tokyo(Nat.Science Museum), Urawa-Saitama, Valparaiso, Vivy(Belgium).

The first column gives the definitive international Sunspot-Numbers for whole disk of the sun (R_T) established by the Sunspot Index Data Centre-Brussels on the basis of the observations of Locarno station as reference, the second that for the central zone(R_{IC}) on the basis of the observations of Bruxelles-Uccle station with a cooperating network (Tashkent, Bruxelles-Uccle, Kawagushi-Saitama, Kiev, Kislovodsk, Mie-Ken, Roquetas-Tortosa, Skalnaté Pleso, Suwa-City, Taipei-Obs., Taipei-Weather Bur., Tokyo-Sc.mus., Urawa-Saitama).

The diameter of the central zone is half that of the sun's disk.

The sunspot-Areas A_C are determined at Catania, A_P at Roma and A_T are evaluated by the Sunspot Index Data Center - Brussels on the observations of Chung-li, Helwan and Rambouillet rattached to Catania values by a monthly scaling factor. The apparent total area of the umbra plus penumbra is uncorrected for foreshortening and expressed in millionths of the solar disk.

JANUARY 1982

1982 Jan.	R _I	R _{IC}	A _C	A _R	A _I
1	92	34	756	-	1001
2	94	45	536	-	504
3	112	86	941	-	1030
4	109	87	669	836	699
5	112	94	694	-	726
6	86	55	725	-	1024
7	94	49	1036	-	1036
8	97	50	-	-	1483
9	98	62	1051	-	1211
10	85	58	742	-	1218
11	46	24	1071	-	1407
12	52	0	709	865	728
13	51	0	740	853	821
14	58	12	-	-	1123
15	81	69	-	1163	1065
16	76	82	-	-	759
17	111	97	-	-	1575
18	139	91	-	2348	1699
19	143	77	-	-	1788
20	134	49	-	-	2123
21	134	69	-	-	1848
22	121	82	-	996	1040
23	93	46	-	557	782
24	70	68	-	-	997
25	82	27	789	-	1110
26	119	34	966	1085	930
27	125	60	1361	-	1617
28	168	66	-	-	3171
29	216	116	4432	5160	4522
30	211	168	5912	6581	6069
31	237	214	6345	-	6485
Mean	111.2	66.8	1639	2044	

FEBRUARY 1982

1982 Feb.	R _I	R _{IC}	A _C	A _R	A _I
1	258	153	5593	-	5928
2	241	174	4669	-	5068
3	232	147	5062	5034	4680
4	221	119	4773	3878	4761
5	219	103	4505	2717	4003
6	230	65	4694	-	4932
7	226	30	6509	-	6564
8	232	72	-	-	-
9	211	105	5929	6478	6044
10	181	127	5435	6519	5982
11	158	129	5897	7873	6656
12	156	99	5029	6846	5734
13	162	65	5455	-	5772
14	142	56	-	-	5120
15	134	33	3361	-	3656
16	111	28	-	-	3952
17	120	49	-	-	-
18	103	50	-	2813	2904
19	107	71	2437	-	2731
20	119	54	2494	2787	2637
21	120	40	-	-	-
22	100	29	-	-	2411
23	97	32	1460	-	1630
24	120	27	1417	785	1193
25	128	43	1734	-	1625
26	136	59	2709	-	2784
27	154	67	3299	1974	2694
28	163	77	4121	-	3862
29					
30					
31					
Mean	163.6	75.1	4123	4337	

MARCH 1982

1982 Mar.	R _I	R _{IC}	A _C	A _R	A _I
1	168	94	4020	4006	3773
2	174	115	4290	5762	4607
3	175	143	4189	4595	4204
4	177	125	3570	3961	3981
5	163	90	3906	-	4055
6	165	72	4069	4450	4007
7	146	64	3586	-	3586
8	140	39	3037	-	3009
9	116	47	2260	2099	2127
10	122	73	1914	-	1914
11	119	69	1906	-	1903
12	135	62	-	2253	2273
13	155	47	2888	-	2957
14	153	45	2867	-	3053
15	140	91	4546	4799	4209
16	156	102	4746	5775	4695
17	180	141	5544	6553	5460
18	168	132	5765	-	5721
19	167	114	6354	5134	5648
20	160	33	4715	5527	4866
21	153	34	4186	-	4160
22	146	26	-	4270	3656
23	144	39	-	2661	3481
24	122	34	4153	-	3661
25	152	42	-	-	3894
26	147	63	4521	4470	4302
27	182	105	4227	4969	4188
28	179	107	3895	-	3930
29	169	101	3581	-	3509
30	162	123	-	-	3245
31	132	63	-	-	3079
Mean	153.8	78.6	3949	4455	

APRIL 1982

1982 Apr.	R _I	R _{IC}	A _C	A _R	A _I
1	145	58	1750	2390	1822
2	115	24	-	2450	1758
3	151	41	1551	-	1444
4	137	61	964	-	984
5	112	68	972	942	910
6	117	74	1188	1222	1111
7	130	60	1467	-	1236
8	131	86	1257	1137	1070
9	132	54	1398	-	1225
10	138	46	1916	-	1916
11	152	96	2804	-	2427
12	142	100	2502	-	2589
13	133	120	2395	-	2405
14	136	101	2412	-	2374
15	127	59	-	-	1949
16	122	60	2227	2158	1983
17	108	46	1654	1431	1555
18	91	40	1319	-	1319
19	87	41	1691	1585	1414
20	93	11	-	1722	1719
21	91	20	1722	1804	1669
22	109	23	1771	1876	1793
23	138	98	2359	-	2272
24	145	140	3135	3672	3191
25	149	129	-	-	2612
26	150	131	-	2204	2377
27	126	67	2438	2659	2156
28	90	6	-	2189	2402
29	85	0	1193	1588	1300
30	79	28	1308	-	1269
31					
Mean	122.0	62.9	1808	1939	

MAY 1982

1982 May	R _I	R _{IC}	A _C	A _R	A _I
1	63	46	-	-	1244
2	57	22	914	-	986
3	46	21	1250	1189	1130
4	58	23	1118	1071	1065
5	63	0	1449	-	1419
6	64	27	1717	-	1813
7	69	37	1838	-	1678
8	89	56	-	-	-
9	47	52	-	-	1652
10	53	32	-	-	994
11	58	21	972	-	1118
12	75	19	1056	1108	1200
13	78	11	998	906	938
14	58	9	809	955	845
15	52	23	868	881	858
16	69	42	1234	-	1249
17	76	47	1707	1565	1598
18	89	45	1722	1788	1661
19	110	35	1733	2115	1879
20	112	11	2474	2517	2138
21	98	45	2541	2721	2561
22	121	81	2249	2346	2314
23	107	71	2169	-	2464
24	110	79	1427	-	1463
25	88	33	924	986	1153
26	117	40	1182	1523	1293
27	130	23	1607	1896	1594
28	119	41	2525	2405	2360
29	112	64	1948	1205	1787
30	77	55	1340	-	1341
31	82	56	841	703	843
Mean	82.2	37.6	1504	1549	

JUNE 1982

1982 Jun.	R _I	R _{IC}	A _C	A _R	A _I
1	70	31	777	573	748
2	83	3	997	739	848
3	94	13	1450	456	1135
4	104	37	2290	1963	2334
5	111	50	2667	-	2487
6	108	64	-	-	2450
7	115	100	2526	-	2521
8	127	85	2779	2415	2706
9	142	57	2883	2692	2959
10	147	66	3224	3302	3378
11	138	42	3996	4184	3875
12	144	53	4274	-	3288
13	139	56	4380	-	4377
14	137	69	5229	5051	5241
15	125	54	5313	5360	5575
16	128	70	5472	5883	5277
17	136	73	5356	-	5572
18	134	71	3267	5203	5130
19	134	89	6221	5765	5435
20	139	131	5591	-	5327
21	143	80	5702	5566	5491
22	146	120	4610	4517	4589
23	116	72	4510	3672	4292
24	112	29	3775	2886	3576
25	92	17	2316	-	2394
26	94	13	1115	267	983
27	49	13	306	-	287
28	36	16	184	185	181
29	32	26	242	175	219
30	38	25	179	99	165
31					
Mean	110.4	54.2	3160	2912	

JULY 1982

1982 Jul.	R _I	R _{IC}	A _C	A _R	A _I
1	50	0	157	159	147
2	41	24	58	-	70
3	33	14	59	38	47
4	42	19	115	-	101
5	39	20	168	79	127
6	32	14	242	-	201
7	33	12	278	145	189
8	42	0	257	296	230
9	61	22	1428	-	1091
10	110	25	2761	2532	2396
11	146	44	4132	-	3580
12	187	17	5473	6745	5152
13	219	125	5346	6892	5376
14	222	142	6742	7250	6145
15	246	165	7073	-	6178
16	263	218	8271	7675	6835
17	272	227	5727	-	5452
18	270	165	5535	-	5790
19	234	130	4484	4359	3789
20	192	95	2588	2039	2255
21	138	24	1445	661	1080
22	99	13	548	-	548
23	74	14	205	-	215
24	27	0	37	35	42
25	25	4	105	-	88
26	29	13	16	0	52
27	22	12	37	0	43
28	19	0	168	-	125
29	23	13	189	48	125
30	38	13	325	284	281
31	60	27	646	321	461
Mean	106.1	52.0	2084	2327	

AUGUST 1982

1982 Aug.	R _I	R _{IC}	A _C	A _R	A _I
1	55	20	641	-	647
2	68	44	861	-	835
3	68	49	977	-	994
4	81	45	1796	1626	1464
5	97	55	2273	2131	2179
6	128	47	2405	2752	2473
7	144	60	2641	-	2534
8	150	92	3193	-	3259
9	161	105	2148	2692	2399
10	155	76	2322	3705	2768
11	157	99	2180	1973	2140
12	138	91	1897	-	1888
13	113	60	1517	1765	1621
14	100	44	1723	1177	1409
15	100	51	1906	-	1906
16	86	59	1907	2179	1915
17	93	27	2006	2482	2155
18	105	12	1986	1588	1813
19	97	18	2163	2306	2223
20	77	16	1680	1146	1572
21	79	25	1566	-	1624
22	90	43	1287	-	1293
23	71	45	2499	2355	2352
24	79	53	2290	2642	2495
25	101	61	2752	3109	2781
26	98	52	3687	3735	3540
27	115	58	3855	3961	4105
28	132	39	3486	-	3555
29	134	34	4867	-	3559
30	144	45	2527	2148	2319
31	120	35	1598	1369	1609
Mean	107.6	50.3	2214	2342	

SEPTEMBER 1982

1982 Sep.	R _I	R _{IC}	A _C	A _R	A _I
1	115	38	1410	-	1468
2	124	62	1403	1680	1492
3	146	73	1519	1934	1589
4	176	92	1971	2303	2007
5	160	84	1874	-	1829
6	141	59	2029	2333	1852
7	117	52	2102	-	1763
8	115	54	1554	-	1646
9	94	50	1709	1632	1606
10	81	42	1261	1317	1229
11	86	40	1471	1566	1315
12	78	28	1439	-	1265
13	81	17	1288	1506	1352
14	104	19	1330	1419	1350
15	129	41	1440	1309	1430
16	133	57	-	1686	1934
17	127	71	1856	1693	1834
18	107	61	1582	1861	1613
19	117	81	1771	-	1779
20	104	76	1491	2279	1697
21	102	101	1461	-	1461
22	95	67	900	-	811
23	97	42	641	727	687
24	109	32	520	527	516
25	118	0	1078	-	1071
26	138	21	1623	-	1487
27	133	61	2117	2524	1940
28	132	96	2517	3301	1478
29	144	115	3005	-	2775
30	160	165	3397	3919	3245
31					
Mean	118.8	59.9	1647	1869	

OCTOBER 1982

1982 Oct.	R _I	R _{IC}	A _C	A _R	A _I
1	132	94	3340	-	3281
2	164	99	4420	4397	4211
3	143	35	2610	-	2870
4	120	9	2316	-	2655
5	109	9	1607	-	1768
6	55	0	803	-	732
7	54	24	541	273	416
8	55	23	646	318	589
9	54	46	473	439	507
10	88	70	689	-	622
11	87	50	730	789	743
12	92	33	-	661	643
13	98	50	652	817	788
14	88	42	999	-	1224
15	71	30	767	897	866
16	65	10	657	855	757
17	54	14	788	-	788
18	33	15	605	640	627
19	56	15	747	592	698
20	70	27	946	-	975
21	95	23	-	1619	1448
22	100	35	-	-	1574
23	128	53	2132	-	2288
24	145	77	2373	-	2373
25	142	66	2663	-	2663
26	135	105	2448	3480	2970
27	131	110	2216	3529	2841
28	103	55	-	3014	2814
29	101	44	1670	-	1824
30	96	47	-	1744	1639
31	73	27	1402	-	1439
Mean	94.7	43.1	1509	1504	

NOVEMBER 1982

1982 Nov.	R _I	R _{IC}	A _C	A _R	A _I
1	80	28	-	-	1316
2	88	0	-	661	1443
3	75	0	-	448	901
4	100	28	521	339	629
5	100	15	437	334	534
6	76	34	453	452	618
7	98	49	-	-	752
8	86	97	-	-	824
9	102	62	-	-	-
10	109	50	1302	1378	1914
11	112	32	1643	1750	2193
12	83	15	1702	2341	2291
13	98	90	2636	-	2479
14	116	92	2950	-	3178
15	116	56	2443	-	2667
16	100	82	2053	-	2053
17	108	11	1738	318	1189
18	117	48	1445	-	1698
19	122	69	2374	-	2444
20	118	65	3076	-	3148
21	131	92	4176	-	4162
22	141	50	4137	-	4093
23	120	25	-	-	4418
24	96	33	2585	-	2961
25	75	39	1696	-	1385
26	73	58	1140	-	1251
27	71	24	-	-	1457
28	74	21	-	-	1128
29	82	24	1523	1929	2279
30	76	45	-	-	1786
31					
Mean	98.1	44.5	2002	995	

DECEMBER 1982

1982 Dec.	R _I	R _{IC}	A _C	A _R	A _I
1	88	58	1817	-	2212
2	125	63	2150	-	2528
3	132	62	2569	-	3068
4	137	48	2774	-	3210
5	137	58	-	-	3354
6	174	76	3493	3853	3196
7	175	47	3204	-	3204
8	184	55	3488	-	3399
9	152	52	4101	-	4121
10	166	34	-	-	4677
11	171	40	5241	-	4595
12	194	97	4065	-	4273
13	172	111	4128	-	4128
14	160	97	4202	5193	3767
15	166	89	3934	3914	3150
16	140	62	3409	-	3409
17	118	53	3136	-	3136
18	102	39	-	-	2949
19	79	23	1120	-	1174
20	63	7	772	-	712
21	87	18	706	-	691
22	88	47	935	-	1029
23	96	43	-	-	1684
24	100	47	1629	-	1977
25	122	38	2453	-	2453
26	116	39	2242	-	2242
27	126	45	2562	-	2562
28	120	54	2153	-	2257
29	98	61	1807	-	1991
30	79	38	1459	-	1405
31	69	23	935	-	951
Mean	127.0	52.4	2611	4320	