

I. SUNSPOTS

Sunspot Relative-Numbers and Sunspot Areas

Cooperating Observatories for Sunspot Relative-Numbers :

Altamira(Venezuela), Ankara, Athens(Nat.Obs.), Attikis(Nat.Obs.Greece), Beyazit, Boom(Belgium), Boulder(USA), Bruxelles-Uccle, Bruxelles-Univ., Bucarest, Campinas(Capric.Obs.Brazil), Campinas, Catania, Chung-li (Telecom.Taiwan), Cochabamba(Bolivia), Dinant(Belgium), Dover(UK), Holloman(USA), Huancayo, Hurbanovo, Helwan, Inzernhagen(West-Germ.), Jeddah, Kandilli, Kanzelhoehe, Kawaguchi-Saitama, Kayeme(Venezuela), Kiev, Kislovodsk, Learmonth(Australia), Locarno, Lunping(Taiwan), Madrid, Manila, Mercedes(Uruguay), Mie-Ken(OAA Japan), Nogales(Orion-Mexico), Nymegen(Netherland), Oakland(USA), Potsdam, Palehua(Hawaii), Puerto Montt (Chili), Querzon City(Mexico), Rambouillet(France), Ramey(Puerto-Rico), Roma, Ronze-Renaix(Belgium), Roquetas-Tortosa, Rudolstadt(East-Germ.), San Miguel, Santiago, Sao Francisco de Oliveira(Brazil), Sao Quirino (Brazil), Skalnaté-Pleso, Sonneberg(East Germ.), Suwa-City, Taipei(Obs.), Taipei(Weather-Bureau), Tashkent, Tokyo-Mitaka, Tokyo(Nat.Science Museum), Trieste(Italia), Urawa-Saitama, Valencia(Spain), 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 Athens(Nat.Obs.), Bruxelles-Uccle, Inzernhagen, Kawaguchi-Saitama, Kiev, Kislovodsk, Mie-Ken, Nijmegen, Rambouillet, Roquetas-Tortosa, Skalnaté-Pleso, Suwa-City, Taipei-Obs., Tashkent, 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_R at Roma and A_T are evaluated by the Sunspot Index Data Centre-Brussels on the observations of Athens(Nat.Obs.), Chung-li, Helwan, Jeddah, Manila, Rambouillet, Roma, Taipei(Obs.) and Taipei(Weath.Bur.) 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 1984

1984 Jan.	R _I	R _{IC}	A _C	A _R	A _I
1	10	10	-	-	18
2	16	12	47	-	77
3	17	0	126	-	130
4	18	0	158	-	208
5	21	0	-	-	272
6	29	14	126	-	209
7	37	20	85	-	163
8	38	27	169	-	254
9	50	36	363	-	600
10	44	39	-	-	614
11	48	19	521	-	799
12	51	20	1019	-	1027
13	48	22	1234	-	1294
14	46	46	1355	-	1891
15	44	43	1181	-	1608
16	46	46	1376	-	1071
17	51	37	1377	-	1313
18	49	18	1003	-	1367
19	51	10	973	-	877
20	69	25	-	-	861
21	76	52	1213	-	1576
22	64	33	1103	-	1367
23	70	27	1508	-	1826
24	70	20	2196	-	2423
25	99	30	4090	-	3928
26	105	60	5004	-	4226
27	99	82	5786	-	5323
28	106	101	6468	-	5470
29	110	102	6537	-	6132
30	102	55	-	-	6018
31	82	41	-	-	6598
Mean	57.0	33.8	1601	-	1921

FEBRUARY 1984

1984 Feb.	R _I	R _{IC}	A _C	A _R	A _I
1	110	48	-	-	3949
2	82	21	3019	-	3380
3	67	11	-	-	2289
4	61	0	1125	-	1525
5	66	17	-	-	909
6	76	32	1046	-	958
7	79	38	1350	-	1208
8	94	76	1430	-	1403
9	115	78	2531	-	2165
10	123	101	2657	-	2408
11	118	96	3193	-	2705
12	108	51	2168	-	2215
13	82	52	2090	-	1841
14	77	34	-	-	1404
15	80	8	1081	-	1034
16	53	12	-	-	714
17	51	15	599	-	633
18	50	15	1004	-	1087
19	54	19	1607	-	1722
20	54	0	2541	-	2272
21	76	20	2941	-	2490
22	100	56	2762	-	2770
23	121	70	-	-	2370
24	117	82	-	-	2540
25	117	75	-	-	3097
26	101	30	2998	-	2918
27	78	66	2064	-	2061
28	78	50	1859	-	1947
29	88	44	1318	-	1474
30					
31					
Mean	85.4	42.0	1971	-	1982

MARCH 1984

1984 Mar.	R _I	R _{IC}	A _C	A _R	A _I
1	74	29	1193	-	1735
2	78	21	752	-	1011
3	66	36	405	-	669
4	54	37	353	-	495
5	65	30	405	-	470
6	49	24	447	-	615
7	51	35	668	-	566
8	64	59	-	-	417
9	60	54	789	-	544
10	46	32	721	-	654
11	65	48	594	-	741
12	72	50	673	884	748
13	79	44	961	877	769
14	88	28	-	-	871
15	112	35	1439	956	1204
16	117	28	1393	-	1520
17	105	36	1078	-	1246
18	95	36	1042	-	1039
19	90	39	690	636	706
20	103	36	-	-	668
21	98	28	-	-	562
22	87	44	814	975	744
23	89	61	761	-	678
24	80	64	736	-	629
25	97	70	510	-	582
26	97	43	500	-	551
27	96	29	757	534	790
28	98	12	1560	1841	1441
29	94	28	1634	-	1831
30	107	33	2368	3125	2188
31	113	64	2300	-	1746
Mean	83.5	39.1	946	1228	917

APRIL 1984

1984 Apr.	R _I	R _{IC}	A _C	A _R	A _I
1	103	72	2331	-	2142
2	94	87	2222	-	2093
3	88	60	1935	-	2051
4	81	65	1697	-	1810
5	61	10	-	-	1538
6	70	28	-	846	1502
7	50	26	594	-	626
8	33	10	158	-	304
9	36	12	16	0	22
10	12	0	5	0	10
11	21	9	-	-	110
12	28	9	378	605	697
13	24	0	882	-	873
14	32	20	998	986	1272
15	59	51	1291	-	1557
16	60	46	-	-	1664
17	56	47	1418	-	1532
18	73	36	1303	1371	1843
19	82	40	1281	-	1455
20	69	26	1055	693	1297
21	68	20	883	-	976
22	55	27	830	-	1985
23	59	22	1895	-	2307
24	80	17	2998	-	3259
25	99	32	4301	-	3767
26	124	67	4898	-	4495
27	121	116	5093	-	4250
28	125	128	5481	-	5236
29	120	145	5418	-	4972
30	107	99	-	-	4751
31					
Mean	69.7	44.2	1974	643	2013

I - 4 (1984)

MAY 1984

1984 May	R _I	R _{IC}	A _C	A _R	A _I
1	109	33	4122	-	3804
2	89	38	3308	-	3245
3	69	12	1755	1525	2251
4	52	0	851	-	1673
5	38	0	278	-	428
6	27	0	169	-	456
7	35	0	1176	1502	1862
8	54	0	2315	-	2317
9	72	13	3140	-	2805
10	85	54	3523	-	2990
11	94	91	3339	-	2977
12	100	107	3271	4050	2657
13	118	123	3954	-	3012
14	111	114	3255	3717	2735
15	85	32	2336	-	2044
16	97	39	1728	2549	2375
17	83	32	1281	-	2167
18	70	21	579	273	875
19	74	30	614	-	797
20	70	15	-	-	1102
21	65	14	1093	2042	1132
22	77	34	1318	-	1042
23	83	51	1303	1896	960
24	86	86	1444	-	1047
25	75	83	1050	-	1097
26	87	89	1119	-	882
27	86	34	987	-	948
28	69	25	710	-	905
29	74	12	988	840	1149
30	70	28	951	983	788
31	63	60	-	1129	917
Mean	76.4	41.0	1792	1864	1724

JUNE 1984

1984 Jun.	R _I	R _{IC}	A _C	A _R	A _I
1	48	40	841	897	798
2	44	37	594	700	624
3	45	20	546	-	628
4	34	9	500	223	531
5	30	0	652	-	701
6	23	0	400	859	574
7	34	26	331	270	468
8	31	17	178	-	209
9	26	15	189	239	204
10	31	16	184	-	153
11	37	15	121	-	186
12	39	17	153	-	186
13	41	20	179	190	197
14	50	25	315	306	332
15	80	39	868	814	790
16	83	31	1251	932	1008
17	73	45	998	-	955
18	62	29	894	1114	934
19	51	32	920	-	807
20	53	49	993	-	902
21	43	11	625	-	719
22	48	26	683	-	757
23	54	26	894	-	968
24	58	33	1067	-	873
25	44	25	967	-	994
26	49	17	805	-	916
27	40	10	830	-	837
28	41	10	505	-	600
29	50	9	704	-	666
30	42	19	546	-	587
31					
Mean	46.1	22.3	624	595	637

JULY 1984

1984 Jul.	R _I	R _{IC}	A _C	A _R	A _I
1	33	10	515	-	555
2	36	11	525	-	434
3	61	25	625	-	574
4	80	27	625	-	682
5	72	13	574	-	704
6	61	19	599	-	650
7	64	32	630	-	615
8	74	54	547	-	529
9	63	41	589	-	521
10	74	34	494	-	577
11	57	31	647	-	554
12	54	13	448	-	426
13	44	16	295	-	314
14	34	23	221	-	231
15	30	10	179	-	180
16	25	9	153	-	160
17	21	10	74	-	127
18	26	15	52	-	115
19	22	10	37	-	32
20	18	9	68	-	77
21	12	10	79	-	68
22	22	16	189	-	190
23	25	10	278	-	243
24	38	0	225	-	288
25	30	0	120	-	187
26	25	0	90	-	134
27	9	9	26	-	48
28	9	9	42	-	40
29	12	13	47	-	25
30	16	11	16	-	17
31	12	10	32	-	36
Mean	37.4	16.1	292	-	301

AUGUST 1984

1984 Aug.	R _I	R _{IC}	A _C	A _R	A _I
1	14	12	32	-	49
2	17	0	63	-	49
3	19	18	105	-	139
4	25	16	47	-	103
5	18	13	32	-	46
6	24	11	47	-	50
7	27	16	147	-	159
8	32	34	147	-	174
9	35	41	357	-	322
10	31	37	357	-	351
11	29	40	242	185	249
12	31	36	116	-	111
13	28	15	127	64	117
14	27	16	95	9	78
15	23	16	63	-	50
16	23	0	16	-	21
17	18	0	47	-	68
18	17	0	85	73	123
19	11	0	63	-	50
20	16	0	100	175	104
21	12	12	110	216	120
22	10	12	116	143	116
23	19	25	53	-	85
24	24	29	116	-	127
25	36	23	163	95	161
26	49	22	336	-	339
27	41	0	347	525	411
28	37	0	599	-	540
29	34	29	761	-	742
30	27	32	756	-	943
31	36	38	851	-	828
Mean	25.5	17.5	210	165	220

SEPTEMBER 1984

1984 Sep.	R _I	R _{IC}	A _C	A _R	A _I
1	45	35	1197	-	1113
2	50	25	1092	-	971
3	61	17	940	-	931
4	58	30	909	-	932
5	53	26	299	-	678
6	32	12	89	-	206
7	21	14	132	-	193
8	20	11	37	-	154
9	13	0	42	-	55
10	10	12	21	-	29
11	9	10	0	0	3
12	9	0	0	0	0
13	9	0	0	0	0
14	0	0	0	-	0
15	8	0	0	-	0
16	12	9	0	0	3
17	0	0	0	0	0
18	0	0	0	-	0
19	10	12	-	-	2
20	0	0	0	-	0
21	9	0	21	-	16
22	10	0	11	-	28
23	8	0	5	-	8
24	8	0	0	-	0
25	7	0	0	0	0
26	0	0	0	-	0
27	0	0	0	-	0
28	0	0	0	0	0
29	0	0	0	-	0
30	8	12	0	-	2
31					
Mean	15.7	7.5	165		177

OCTOBER 1984

1984 Oct.	R _I	R _{IC}	A _C	A _R	A _I
1	7	0	0	-	5
2	8	0	0	0	0
3	11	0	0	-	0
4	11	0	0	0	15
5	0	0	0	-	0
6	0	0	0	0	0
7	0	0	0	-	0
8	12	10	-	0	38
9	14	10	63	67	154
10	17	14	69	-	125
11	22	12	-	25	116
12	16	9	26	-	81
13	10	0	5	0	10
14	9	0	0	-	0
15	14	0	74	70	79
16	19	0	410	257	612
17	24	17	1617	401	884
18	25	18	357	-	591
19	25	21	252	-	480
20	17	16	231	252	357
21	19	16	262	-	289
22	12	7	116	130	203
23	11	0	105	-	135
24	9	0	42	-	114
25	10	0	21	0	80
26	10	12	21	-	8
27	8	7	0	-	2
28	0	0	0	-	0
29	8	0	-	0	0
30	11	0	16	0	5
31	14	14	27	0	10
Mean	12.0	5.9	133	75	142

NOVEMBER 1984

1984 Nov.	R _I	R _{IC}	A _C	A _R	A _I
1	16	16	21	-	9
2	14	13	16	0	10
3	11	0	0	0	2
4	14	0	53	-	54
5	12	0	0	-	13
6	0	0	0	-	0
7	11	0	0	0	0
8	13	11	0	0	7
9	13	13	47	73	65
10	21	21	210	264	199
11	27	39	173	-	194
12	21	18	-	-	73
13	16	17	47	-	81
14	15	0	53	-	60
15	13	0	37	-	39
16	11	13	21	-	28
17	11	13	21	-	15
18	14	0	63	-	31
19	13	0	0	-	3
20	27	16	127	-	285
21	36	22	273	-	567
22	36	14	578	697	532
23	41	0	600	-	591
24	47	17	615	706	537
25	59	36	798	-	689
26	44	42	967	-	955
27	39	43	940	-	764
28	39	43	609	936	586
29	30	19	-	849	375
30	20	0	-	-	313
31					
Mean	22.8	14.2	232	352	236

DECEMBER 1984

1984 Dec.	R _I	R _{IC}	A _C	A _R	A _I
1	19	14	131	-	224
2	22	9	95	-	126
3	19	0	58	-	39
4	19	8	-	54	72
5	16	0	53	16	59
6	21	14	42	-	39
7	18	17	37	48	51
8	23	14	89	-	76
9	21	18	16	-	11
10	15	11	11	0	1
11	28	19	179	248	197
12	29	18	378	-	308
13	28	18	394	-	303
14	28	0	362	-	290
15	26	12	205	-	196
16	30	18	242	-	260
17	24	15	116	-	161
18	12	14	58	-	180
19	11	11	-	-	60
20	11	0	26	-	32
21	14	0	21	-	25
22	12	11	11	-	12
23	11	15	-	-	5
24	16	14	26	-	44
25	21	13	79	-	57
26	20	11	58	-	62
27	14	15	42	-	34
28	16	15	-	-	51
29	15	11	21	-	16
30	10	10	5	-	6
31	10	9	-	-	2
Mean	18.7	11.4	106	73	97