

## Sunspot Relative Numbers and Sunspot Areas

2006

Cooperating Observatories to the International Sunspot Number :

AMATEUR SOUTHERN CROSS OBSERVATORY (BOLIVIA); ANDRE GABRIEL BELGIUM; ANDRIES SON BELGIUM; ASTRO. DE REUX CINEY BELGIUM; AUSTRALIAN OBS. COONABARABRAN AUSTRALIA; BARNES AUCKLAND NEW-ZEALAND; BORTOLOTTI MAURO ITALIA; BULLON VALENCIA SPAIN; CAMAGUEY CUBA; CAPRICORNO CAMPINAS BRASIL; CATANIA ITALY; CENTRAL WEATHER BUREAU REPUBLIC OF CHINA; CLAEYS VEDRIN BELGIUM; COURDURIE MARCQ EN BAROEUL FRANCE; CRIMEAN OBSERVATORY UKRAINE; CULGOORA NARRABRI AUSTRALIA; DE BACKER BOOM BELGIUM; DUBOIS LANGEMARK BELGIUM; EBRO ROQUETES SPAIN; EDWIN DE CEUNINCK BELGIUM; EUROPLANETARIUM BELGIUM; EVANS INVERCAGILL NEW-ZEALAND; FERNANDEZ RUIS SANTANDER SPAIN; Franck GOBET FRANCE; FUJIMORI NAGANO JAPAN; GEMA ARAUJO SPAIN; GERARD DINANT BELGIUM; GERMAN MORALES COCHABAMBA BOLIVIA; HANS COECKELBERGHS BELGIUM; HAVANA SOLAR STATION CUBA; HAZEL COLLETT UNITED-KINGDOM; HELWAN EGYPT; HOLLOMAN U.S.A; HUANCAYO PERU; HUGO TRIGOSO PERU; HURBANOVO SLOVAKIA; HVEZDAREN KYSUCKE SLOVAKIA; HVEZDAREN PRESOV SLOVAKIA; JEF CLAES BELGIUM; JEFFREY CARELS BELGIUM; JOHNSTON GWYNEDD ENGLAND; JORGE LUIS GARCIA SPAIN; JURI GAGARIN EILENBURG GERMANY; KANDILLI TURKEY; KANZELHOHE TREFFEN AUSTRIA; KAREL DEWAELE BELGIUM; KAWAGUCHI JAPAN; KISLOVODSK RUSSIA; KLDADNO CZECH-REPUBLIC; LARISSA OBSERVATORY GREECE; LEARMOUTH AUSTRALIA; LIEVE MEEUS BELGIUM; LOCARNO SWITZERLAND; MAC KENZIE DOVER UNITED-KINGDOM; MILANO ITALY; MIRA GRIMBERGEN BELGIUM; MITAKA JAPAN; MOCHIZUKI URAWA SAITAMA JAPAN; MONTE MOR Walter Maluf (BRASIL); MURMANSK RUSSIA; NIJMEGEN NETHERLANDS; OBSERVATORY FRANTISKA CZECH-REP.; OBSERVATORY PROSTEJOV CZECH REPUBL.; ONDREJOV OBSERV. CZECH-REPUBLIC; PASTERNAK BERLIN GERMANY; PASTERNAK LEER GERMANY; PHILIPPE WITTELSHEIM FRANCE; QUEZON PHILIPPINES; ROBERTO de MANZANO ITALIA; RUBEN VERBOVEN BELGIUM; SAN MIGUEL ARGENTINA; SAN VITO ITALY ; SAUDI ARABIA JEDDAH; SCHOTT; LUTZ GERD GERMANY; SKALNATE SLOVAKIA; SOBOTA SLOVAKIA; SPANINKS TILBURG NETHERLANDS; STEFANIKS OBS. PRAGUE CZECH-REP.; SUZUKI JAPAN; THOMAS TEAGUE UNITED KINGDOM; UCCLE BELGIUM; ZAGORA BULGARIA

The first column gives the definitive international Sunspot Numbers for the whole disk of the sun ( $R_i$ ) established by the Sunspot Index Data Center Brussels on the basis of Locarno as reference station, the second gives the same quantity for the central zone ( $R_{ic}$ ) on the basis of the observations of AMATEUR SOUTHERN CROSS OBSERVATORY (BOLIVIA); ANDRE GABRIEL BELGIUM; ANDRIES SON BELGIUM; ASTRO. DE REUX CINEY BELGIUM; AUSTRALIAN OBS. COONABARABRAN AUSTRALIA; BARNES AUCKLAND NEW-ZEALAND; BORTOLOTTI MAURO ITALIA; BULLON VALENCIA SPAIN; CAMAGUEY CUBA; CAPRICORNO CAMPINAS BRASIL; CATANIA ITALY ; CENTRAL WEATHER BUREAU REPUBLIC OF CHINA; CLAEYS VEDRIN BELGIUM; COURDURIE MARCQ EN BAROEUL FRANCE; CRIMEAN OBSERVATORY UKRAINE; CULGOORA NARRABRI AUSTRALIA; DE BACKER BOOM BELGIUM; DUBOIS LANGEMARK BELGIUM; EBRO ROQUETES SPAIN; EVANS INVERCAGILL NEW-ZEALAND; FERNANDEZ RUIS SANTANDER SPAIN; FUJIMORI; NAGANO JAPAN; GEMA ARAUJO SPAIN; GERARD DINANT BELGIUM; GERMAN MORALES COCHABAMBA BOLIVIA; HANS COECKELBERGHS BELGIUM; HAVANA SOLAR STATION CUBA; HOLLOMAN U.S.A; HURBANOVO SLOVAKIA; HVEZDAREN KYSUCKE SLOVAKIA; HVEZDAREN PRESOV SLOVAKIA; JEF CLAES BELGIUM; JEFFREY CARELS BELGIUM; JOHNSTON GWYNEDD ENGLAND; JORGE LUIS GARCIA SPAIN; JURI GAGARIN EILENBURG GERMANY; KANDILLI TURKEY; KANZELHOHE TREFFEN AUSTRIA; KAWAGUCHI JAPAN; KISLOVODSK RUSSIA; KLDADNO CZECH-REPUBLIC; LARISSA OBSERVATORY GREECE; LEARMOUTH AUSTRALIA ; LIEVE MEEUS BELGIUM; LOCARNO SWITZERLAND; MAC KENZIE DOVER UNITED-KINGDOM; MILANO ITALY; MIRA GRIMBERGEN BELGIUM; MITAKA JAPAN; MOCHIZUKI URAWA SAITAMA JAPAN; NIJMEGEN NETHERLANDS; OBSERVATORY FRANTISKA CZECH-REP.; OBSERVATORY PROSTEJOV CZECH REPUBL.; ONDREJOV OBSERV. CZECH-REPUBLIC; PASTERNAK BERLIN GERMANY; PASTERNAK LEER GERMANY; PHILIPPE WITTELSHEIM FRANCE; QUEZON PHILIPPINES; ROBERTO de MANZANO ITALIA; RUBEN VERBOVEN BELGIUM; SAN MIGUEL ARGENTINA; SAN VITO ITALY ; SAUDI ARABIA JEDDAH; SCHOTT LUTZ; GERD GERMANY; SKALNATE SLOVAKIA; SMOLYAN BULGARIA; SOBOTA SLOVAKIA; SPANINKS TILBURG NETHERLANDS; STEFANIKS OBS. PRAGUE CZECH-REP.; SUZUKI JAPAN; UCCLE BELGIUM; ZAGORA BULGARIA

The diameter of the central zone is half size of the solar disk.

The Sunspot areas  $A_c$  are from Catania,  $A_r$  from Roma and  $A_i$ , are mean quantifies calculated by the Sunspot Index Data Center on the basis of observations of Roma, Helwan, Jeddah and rattached to Catania 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.

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JANUARY 2006						FEBRUARY 2006					
2006 JAN.	Ri	Ric	Ac	Ar	Ai	2006 FEB.	Ri	Ric	Ac	Ar	Ai
1	25	17	-	-	0	1	0	0	-	-	0
2	24	9	354	-	73	2	0	0	-	-	0
3	19	8	312	281	80	3	0	0	-	-	0
4	17	0	285	-	55	4	0	0	-	-	0
5	15	0	73	26	29	5	0	0	-	-	0
6	15	0	51	-	5	6	0	0	-	-	0
7	8	0	47	57	17	7	7	7	-	-	0
8	7	0	-	-	7	8	7	9	21	-	4
9	8	0	-	72	13	9	14	8	52	-	5
10	8	0	42	63	15	10	10	0	5	-	0
11	8	7	42	51	12	11	8	0	-	-	0
12	8	7	63	-	10	12	0	0	-	-	0
13	0	0	-	-	0	13	9	0	31	-	3
14	8	7	-	-	0	14	11	0	21	-	4
15	20	13	132	-	22	15	15	9	89	97	22
16	24	14	-	-	29	16	15	11	74	-	14
17	22	8	-	-	24	17	7	7	26	34	7
18	26	13	158	-	38	18	7	9	26	-	4
19	24	8	396	484	118	19	12	7	15	-	1
20	16	7	615	780	160	20	0	0	-	-	0
21	19	16	-	1127	158	21	0	0	-	-	0
22	31	14	742	-	121	22	0	0	-	-	0
23	37	24	-	935	102	23	0	0	-	-	0
24	30	7	535	1001	152	24	0	0	-	-	0
25	19	0	-	503	85	25	0	0	-	-	0
26	14	0	-	-	24	26	0	0	-	-	0
27	9	0	-	-	7	27	7	0	21	-	2
28	7	0	-	-	0	28	7	0	26	-	7
29	7	0	-	-	0						
30	0	0	-	-	0						
31	0	0	-	-	0						
MEAN	15.3	5.8	256.5	448.3	43.7	MEAN	4.9	2.4	33.9	65.5	2.6

MARCH 2006						APRIL 2006					
2006 MAR.	Ri	Ric	Ac	Ar	Ai	2006 APR.	Ri	Ric	Ac	Ar	Ai
1	0	0	-	-	0	1	35	0	868	1549	277
2	0	0	-	-	0	2	39	0	-	-	151
3	0	0	-	-	0	3	44	0	1292	2459	442
4	9	9	47	-	6	4	49	9	1664	2993	591
5	16	11	84	-	12	5	50	11	1457	2494	536
6	14	13	-	-	0	6	54	13	-	1519	167
7	0	9	-	-	0	7	46	9	798	-	247
8	0	0	-	-	0	8	41	0	614	368	168
9	0	0	-	-	0	9	33	0	-	-	44
10	0	0	-	-	0	10	36	0	433	-	48
11	0	0	-	-	0	11	38	0	485	-	86
12	9	10	-	-	4	12	41	10	433	454	118
13	10	9	73	42	12	13	40	9	454	340	98
14	14	8	41	-	4	14	36	8	247	231	55
15	14	0	36	35	12	15	23	0	110	-	26
16	13	0	26	-	9	16	15	0	-	-	12
17	19	24	67	23	12	17	8	24	-	-	0
18	16	19	-	-	7	18	7	19	-	-	0
19	16	18	-	-	0	19	14	18	62	-	6
20	19	22	344	-	38	20	10	22	42	-	6
21	19	23	-	-	22	21	9	23	53	-	12
22	19	9	142	-	15	22	11	9	25	-	2
23	18	0	121	-	13	23	8	0	-	-	29
24	21	0	121	-	21	24	11	0	349	386	115
25	11	0	52	-	5	25	28	0	-	-	107
26	0	0	-	-	0	26	35	0	-	-	0
27	0	0	-	-	0	27	39	0	-	-	0
28	9	0	42	-	8	28	37	0	1007	-	111
29	19	0	529	-	97	29	32	0	567	-	123
30	20	0	376	660	144	30	37	0	-	-	0
31	24	14	645	985	204						
MEAN	10.6	6.4	171.6	349.0	20.8	MEAN	30.2	6.1	576.8	1279.3	119.2

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MAY 2006						JUNE 2006					
2006 MAY	Ri	Ric	Ac	Ar	Ai	2006 JUN.	Ri	Ric	Ac	Ar	Ai
1	33	25	-	-	44	1	8	0	-	-	0
2	35	16	395	660	138	2	0	0	-	-	0
3	34	15	370	513	145	3	0	0	-	-	0
4	36	18	-	420	99	4	11	0	-	-	29
5	32	12	225	-	51	5	15	0	249	284	93
6	27	7	311	-	58	6	18	0	440	-	97
7	32	12	-	-	22	7	33	20	556	-	116
8	31	7	539	-	80	8	33	22	714	1165	241
9	28	8	766	-	119	9	27	25	832	-	161
10	19	7	407	245	87	10	28	27	491	775	142
11	16	7	158	41	28	11	21	22	-	506	81
12	7	7	21	38	7	12	17	8	280	397	67
13	7	0	21	-	4	13	16	8	169	317	78
14	0	0	-	-	0	14	8	11	116	176	42
15	0	10	-	-	0	15	8	9	73	57	21
16	0	0	-	-	0	16	12	0	47	-	9
17	0	0	-	-	0	17	13	9	72	-	9
18	8	0	-	-	0	18	10	10	-	-	2
19	8	0	10	-	3	19	12	13	100	-	18
20	19	0	105	119	22	20	12	13	100	-	21
21	20	10	-	-	14	21	10	10	47	-	13
22	28	20	147	232	50	22	0	0	-	-	0
23	30	16	216	222	62	23	0	0	5	-	0
24	26	13	248	-	51	24	0	0	-	-	0
25	25	18	-	409	60	25	8	0	-	-	7
26	28	13	205	229	49	26	10	0	106	65	29
27	32	7	146	209	68	27	13	0	153	99	33
28	37	25	-	-	44	28	24	15	487	-	84
29	35	14	158	249	55	29	26	16	688	-	133
30	32	13	141	-	29	30	25	14	-	857	2407
31	27	13	78	21	17						
MEAN	22.3	10.1	233.4	257.6	45.4	MEAN	13.9	8.4	286.2	427.1	131.1

JULY 2006						AUGUST 2006					
2006 JULY	Ri	Ric	Ac	Ar	Ai	2006 AUG.	Ri	Ric	Ac	Ar	Ai
1	21	12	630	-	123	1	7	0	15	-	3
2	17	19	-	-	87	2	7	0	21	-	4
3	19	24	715	1148	255	3	9	0	21	-	8
4	20	16	789	1317	271	4	0	0	-	-	0
5	19	13	905	1323	299	5	0	0	-	-	0
6	20	10	879	-	206	6	0	0	-	-	0
7	20	0	-	948	194	7	0	0	-	-	0
8	19	0	519	702	121	8	7	0	21	-	4
9	17	10	-	-	82	9	16	0	31	-	16
10	8	9	53	58	16	10	17	0	349	-	38
11	8	9	37	30	10	11	16	0	949	-	209
12	7	8	37	-	5	12	15	0	938	-	228
13	0	0	10	-	1	13	16	12	-	-	161
14	8	0	36	24	11	14	19	19	1049	-	282
15	9	0	90	-	17	15	19	18	-	-	174
16	11	12	-	-	4	16	19	19	1166	-	233
17	12	14	148	128	29	17	17	0	1034	-	222
18	12	14	196	238	51	18	19	0	906	-	225
19	13	15	164	158	43	19	15	0	964	-	215
20	8	10	42	-	8	20	10	0	-	-	104
21	0	0	10	-	1	21	16	0	232	-	117
22	8	0	-	-	7	22	9	0	424	-	85
23	10	0	-	-	34	23	12	0	641	648	171
24	11	0	206	210	55	24	12	0	593	779	136
25	10	11	174	231	50	25	15	14	774	1039	231
26	10	12	127	155	41	26	14	13	747	1095	235
27	10	12	159	183	35	27	21	19	-	-	0
28	9	11	111	125	31	28	22	20	800	914	207
29	9	11	-	89	9	29	17	16	418	421	112
30	17	9	-	-	9	30	12	0	307	315	88
31	15	0	84	28	2054	31	22	0	354	403	2147
MEAN	12.2	8.4	266.1	394.2	134.2	MEAN	12.9	4.8	554.5	701.8	182.4

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SEPTEMBER 2006						OCTOBER 2006					
2006 SEP.	Ri	Ric	Ac	Ar	Ai	2006 OCT.	Ri	Ric	Ac	Ar	Ai
1	21	0	360	218	82	1	25	0	-	-	32
2	10	0	153	-	33	2	23	0	226	256	70
3	0	0	-	-	0	3	16	16	174	247	48
4	0	0	-	-	0	4	16	16	184	-	29
5	16	0	121	-	77	5	17	17	153	207	42
6	24	0	338	415	127	6	16	8	-	182	24
7	29	0	534	719	172	7	16	0	-	-	9
8	29	0	571	900	202	8	15	0	-	-	7
9	30	0	651	-	130	9	15	8	36	-	4
10	30	0	-	-	74	10	10	9	41	-	4
11	27	0	534	775	169	11	0	0	-	-	0
12	19	0	-	726	116	12	0	0	-	-	0
13	18	12	603	665	157	13	0	0	-	-	0
14	9	19	354	-	62	14	0	0	-	-	0
15	9	18	254	383	94	15	0	0	-	-	0
16	8	19	212	-	45	16	0	0	-	-	0
17	15	0	-	-	44	17	0	0	-	-	0
18	7	0	47	42	16	18	0	0	-	-	0
19	8	0	90	61	19	19	10	9	57	-	12
20	8	0	68	68	14	20	10	10	42	-	4
21	8	0	58	77	14	21	11	11	-	-	4
22	11	0	84	142	24	22	16	0	-	-	19
23	8	0	-	63	10	23	27	7	258	468	102
24	9	0	-	-	7	24	21	0	147	-	41
25	8	14	-	-	2	25	10	0	58	-	6
26	10	13	10	-	1	26	0	0	-	-	0
27	7	19	26	-	2	27	9	8	21	-	4
28	8	20	106	-	24	28	9	9	26	-	2
29	22	16	179	-	42	29	0	0	-	-	0
30	25	0	374	306	77	30	9	0	90	52	27
						31	23	0	460	405	2151
MEAN	14.4	5.0	260.3	370.7	61.2	MEAN	10.5	4.1	131.5	259.6	85.2

NOVEMBER 2006						DECEMBER 2006					
2006 NOV.	Ri	Ric	Ac	Ar	Ai	2006 DEC.	Ri	Ric	Ac	Ar	Ai
1	32	0	-	-	67	1	34	24	598	-	124
2	42	26	773	1377	261	2	32	26	-	-	54
3	44	40	726	1332	247	3	28	23	-	-	59
4	39	41	-	1156	174	4	24	13	364	-	40
5	32	32	-	-	54	5	28	0	454	611	105
6	24	20	243	405	91	6	33	0	815	987	266
7	19	11	153	255	55	7	31	0	1033	1056	207
8	26	0	486	161	113	8	17	0	-	-	0
9	18	0	481	-	169	9	13	20	704	-	153
10	9	0	461	1211	252	10	14	14	-	-	99
11	11	0	631	1713	360	11	17	15	-	1554	170
12	13	13	-	-	0	12	17	15	1240	2097	444
13	21	13	906	2144	302	13	16	14	-	1815	325
14	28	12	979	2090	454	14	14	0	-	-	0
15	27	11	1027	2177	425	15	13	0	-	-	139
16	31	23	1484	2073	462	16	12	0	-	-	109
17	28	19	1308	1728	388	17	9	0	-	-	0
18	28	21	921	-	246	18	0	0	-	-	0
19	27	18	-	-	184	19	0	0	-	-	0
20	18	0	285	-	113	20	0	0	-	-	0
21	0	0	-	-	0	21	0	0	-	-	0
22	0	0	-	-	0	22	0	0	-	-	0
23	7	0	21	-	2	23	0	0	-	-	0
24	0	0	-	-	0	24	8	0	-	-	0
25	8	0	111	-	38	25	10	0	-	-	0
26	9	0	-	-	34	26	13	9	-	-	7
27	20	0	444	400	127	27	12	11	26	-	2
28	23	0	-	673	136	28	0	0	-	-	0
29	24	13	942	986	245	29	0	0	-	-	0
30	35	37	1064	1209	2305	30	10	0	84	-	9
						31	17	0	-	-	2543
MEAN	21.4	11.7	672.3	1240.6	243.5	MEAN	13.6	5.9	590.9	1353.3	156.6