Solar Influences Data analysis Center

Data Analysis Service supported by the FAGS

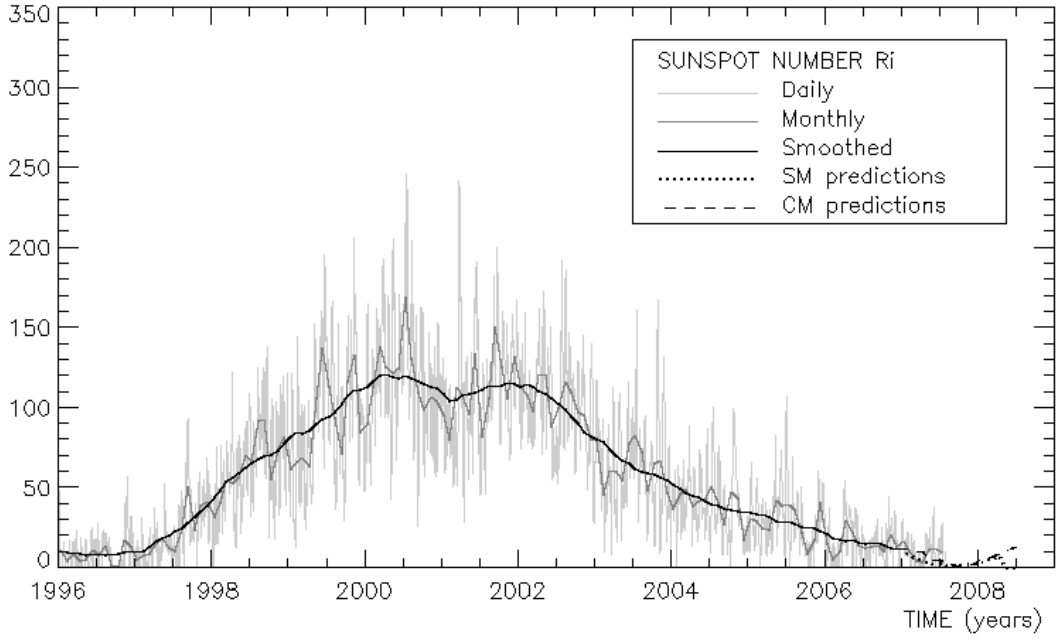
SUNSPOT BULLETIN

2007 n° 7

Provisional international and normalized hemispheric daily sunspot numbers for July 2007

computed at the *Royal Observatory of Belgium* using observations from an international network with the *Locarno Specola Solare* as reference station.

Date	R'_I	R'_N	R'_S
1	19	0	19
2	11	0	11
3	9	0	9
4	9	0	9
5	9	0	9
6	9	0	9
7	8	0	8
8	10	0	10
9	14	0	14
10	17	0	17
11	17	0	17
12	15	0	15
13	26	0	26
14	27	10	17
15	25	0	25
16	20	0	20
17	11	0	11
18	9	0	9
19	8	0	8
20	0	0	0
21	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	0	0	0
27	0	0	0
28	9	0	9
29	9	0	9
30	9	0	9
31	10	5	5
Monthly mean	**10.0**	**0.5**	**9.5**
Cooperating stations	**54**	**49**	**49**



Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for January 2007 : 12.0 (± 5%)

	SM	CM		SM	CM		SM	CM
2007 Feb	12	12	2007 Aug	4	4	2008 Feb	2	6
Mar	11	11	Sep	3	2	Mar	3	7
Apr	9	10	Oct	2	1	Apr	4	9
May	8	5	Nov	2	2	May	5	11
Jun	6	5	Dec	2	3	Jun	6	12
Jul	5	4	2008 Jan	2	5	Jul	8	14

SM : SIDC classical method : based on an interpolation of Waldmeier's standard curves; the estimated error ranges from 7% (first month) to 35% (last month)
CM : Combined method : the combined method is a regression technique coupling a dynamo-based estimator with Waldmeier's idea of standard curves, due to K. Denkmayr.
ref. : **K. Denkmayr, P. Cugnon**, 1997 : "About Sunspot Number Medium-Term Predictions", in "Solar-Terrestrial Prediction Workshop V", eds G. Heckman et al., Hiraiso Solar Terrestrial Research Center, Japan, 103

Brussels, August 1, 2007 09:52 UT

Ed. Ronald Van der Linden, Ass. Ed. Petra Vanlommel
Editing contributions from various members of the SIDC team

Fax 32-(0)2-373 02 24 Tel 32-(0)2-373 04 91
e-mail : arille@oma.be, ronald@oma.be
ftp anonymous : omaftp.oma.be, directory dist/astro/sidcdata
http://sidc.oma.be

S.I.D.C. SUMMARY OF THE URSIGRAMS

Date	R'_i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
30	18	32	-	74	////	0	0/0	5	
1	19	17	-	74	////	0	0/0	6	
2	11	19	-	73	////	0	0/0	3	
3	9	16	-	72	////	0	0/0	10	
4	9	9	-	72	////	0	0/0	20	
5	9	6	-	72	////	0	0/0	8	
6	9	2	-	71	////	0	0/0	8	
7	8	1	-	73	////	0	0/0	8	
8	10	5	-	75	////	10	0/0	4	
9	14	15	-	77	////	11	0/0	2	
10	17	49	-	78	////	42	0/0	7	
11	17	53	-	79	////	0	0/0	20	
12	15	72	-	77	////	0	0/0	6	
13	26	86	-	78	////	0	0/0	5	
14	27	62	-	76	////	0	0/0	26	
15	25	60	-	75	////	1	0/0	11	
16	20	43	-	73	////	0	0/0	5	
17	11	26	-	72	////	0	0/0	4	
18	9	17	-	70	////	12	0/0	4	
19	8	2	-	68	////	0	0/0	3	
20	0	0	-	67	////	0	0/0	6	
21	0	////	-	66	////	0	0/0	4	
22	0	0	-	66	////	0	0/0	3	
23	0	0	-	67	////	0	0/0	4	
24	0	////	-	68	////	0	0/0	3	
25	0	////	-	69	////	0	0/0	3	
26	0	0	-	68	////	0	0/0	3	
27	0	////	-	69	////	0	0/0	0	
28	9	4	-	70	////	3	0/0	5	
29	9	8	-	69	////	0	0/0	20	
30	9	5	-	69	////	0	0/0	12	
31	10	2	-	68	////	0	0/0	8	

R'_i : provisional international sunspot numbers from the S.I.D.C.

PPSI : prompt photometric sunspot index from the S.I.D.C. in 10-5 w/m ^{2} : the quantity to be subtracted from the mean solar constant to account for the sunspot contribution.

600 : 600 Mhz solar flux from the station at Humain (Belgium).

2800 : 2800 Mhz solar flux from Ottawa (origin : Ursigrams - UGEOI). The 10.7cm Flux data are a service of the National Research Council of Canada.

COS : thousands of the cosmic ray counts (origin : Ursigrams - UCOSE Terre Adélie).

SFI : From October 1992, Solar Flare Index from the S.I.D.C. (origin : Ursigrams – UGEOR, evaluation : 1 x Sn+10 x "1"+100 x ">1".

XI : X-flares index from the Ursigrams (M-flares/X-flares) (origin : Ursigrams – UGEOR, UGEOI).

Ak : geomagnetic index from Wingst, Germany (origin : Ursigrams).

SEA : sudden enhancements of atmospherics from Uccle & Humain (Royal Observatory, Belgium).

Note that due to problems of interferences saturating our receivers, no SEA could be detected this month.

SOLAR PHYSICS DEPARTMENT

UCCLE DAILY PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR JULY 2007

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE SUNSPOT NUMBERS TOTAL	NORTH	SOUTH	CENTRAL	PPSI 10-5 WM-2	QUAL	OBS
1	750	2	7	27	0	27	16	2.6	2	AB
2	1400	1	7	17	0	17	17	2.2	3	AE
3	1200	1	2	12	0	12	12	2.0	2	AE
4	1200	1	3	13	0	13	0	1.6	3	AE
5	1200	1	2	12	0	12	0	1.1	3	AE
6	1130	1	2	12	0	12	0	0.7	3	AE
7	1100	1	2	12	0	12	0	0.2	3	DB
8	905	1	4	14	0	14	0	3.4	3	DB
9	845	1	8	18	0	18	0	8.1	2	AE
10	1230	1	15	25	0	25	0	40.6	3	AE
12	1115	1	12	22	0	22	22	63.2	2	AE
13	1115	2	21	41	21	20	41	74.6	3	AE
14	1200	2	18	38	17	21	21	70.0	3	AE
15	1145	2	18	38	14	24	24	66.8	3	AE
16	930	1	10	20	0	20	0	54.3	3	OB
17	900	1	6	16	0	16	0	41.1	3	OB
18	1210	1	3	13	0	13	0	24.4	3	OB
19	1310	1	1	11	0	11	0	0.3	3	OB
21	1115	0	0	0	0	0	0	0.0	4	OB
22	1115	0	0	0	0	0	0	0.0	3	OB
24	1015	0	0	0	0	0	0	0.0	3	OB
25	1045	0	0	0	0	0	0	0.0	3	OB
27	1230	0	0	0	0	0	0	0.0	3	OB
28	1155	1	4	14	0	14	0	0.3	2	LR
30	1215	1	4	14	0	14	14	1.4	4	OB
31	1015	0	0	0	0	0	0	0.0	3	OB

The relative mean sunspot number is 15.0.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'=K'U FOR JULY 2007

K'= 0.755 (*)

1	20	7	9	13	31	19	8	25	0
2	13	8	11	14	29	20	***	26	***
3	9	9	14	15	29	21	0	27	0
4	10	10	19	16	15	22	0	28	11
5	9	11	***	17	12	23	***	29	***
6	9	12	17	18	10	24	0	30	11
								31	0

The normalised relative monthly mean sunspot number is 11.

(*) K' is the mean of the monthly K' for the last five years.

The Sun has been observed 26 days on 31 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR JULY 2007
E AND F BRUNNER'S TYPE GROUPS

Uccle Nø	East Limb Date	Date and type 1st obs	CMP	Last obs	West Limb Date
3-2058	7 7.2	8 D	7 14.0	18 E	7 20.7

PROBABLE RETURN OF MAJOR GROUPS FOR AUGUST 2007

Nø	New East Limb	New CMP	New West Limb
3	8 3.3	8 10.0	8 16.8

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

Solar activity was low during the whole month and was dominated by the passage of NOAA AR 0963 (Catania sunspot group 49).

The month stared very quiet, the only sunspot group present being Catania 47 (NOAA AR 0961). The GOES X-ray background level was below the B1 level from the beginning of the month until July 07. On July 07, a new active region (Catania Sunspot group 49, NOAA AR 963) crossed the east solar limb and produced a minor C-flare. This active region developed a beta-gamma configuration on July 10-11. It produced several C-flares on July 09-10, with July 10 being the most active day, including the biggest flare of the period, a C8 flare at12h40 UT. The passage of NOAA AR 0963 left on imprint on the international sunspot index Ri, the F10.7 radio flux as well as the X-ray background. These 3 indices reached a maximum of respectively 27, 79 sfu and B1 level respectively but dropped below the measurement threshold in the second half of the month.

A new active region emerged on the disk on July 13th, and was called Catania 50 (NOAA AR 0964). No significant activity was reported from this region. A small filament in the SW disappeared overnight on July 22 but with no significant CME associated with it. Catania observatory reported a small spot on July 28, labeled Catania 51 (NOAA AR 0965).

II. Geomagnetic Activity

In the current phase in the solar cycle, space weather is typically dominated by geomagnetic activity triggered by high speed wind streams from coronal holes. Also this month, a handful of recurrent coronal holes kept geomagnetic activity interesting.

During the month, the ACE spacecraft measured 6 peaks in the solar wind speeds. The first one followed a rapid sector boundary crossing and reached 650 km/s early on July 04. In association to this, the interplanetary magnetic field made a short southward excursion on July 03 in the afternoon. The geomagnetic activity responded with Kp=4 episodes on July 04 morning.

A week later, on July 10, ACE measured the onset of a recurrent coronal hole high-speed stream. Velocities reached a peak of 600 km/s late on July 11. While the Kp indices revealed minor storm conditions from 00h00 to 09h00 UT, only isolated active conditions (K=4) were observed at Dourbes station at 00h00 UT.

The following period of unsettled condition were observed on Bastille day (July, 14), possibly due to an extension of the previous coronal hole. The solar wind speed peaked on July 15 morning to a value of 630 km/s. Active conditions were observed with Kp from July 14th 09h00 UT to July 15, 06h00 UT with isolated minor storm conditions at 18h00 UT on July 14th. A K=5 was observed at Dourbes station from 18h00 to 21h00 UT on July 14th.

The next coronal had transited the central meridian already on July 16 but the fast stream was not observed till July 20. Although the IMF was initially with a significant negative Bz, the initially slow wind speed (~300km/s) resulted in only isolated active periods (K=4 at both Dourbes and Niemegk). The wind speed increased to ~550km/s during the next 24hrs and as a result a single period of Kp=5 was recorded, with further intervals of K=4 at Dourbes and Niemegk.

III. Noticeable solar events

No M- or X-class flare occurred.

IV. Halo CME list

No CME alert was sent