

Center

Data Analysis Service supported by the FAGS

SUNSPOT BULLETIN

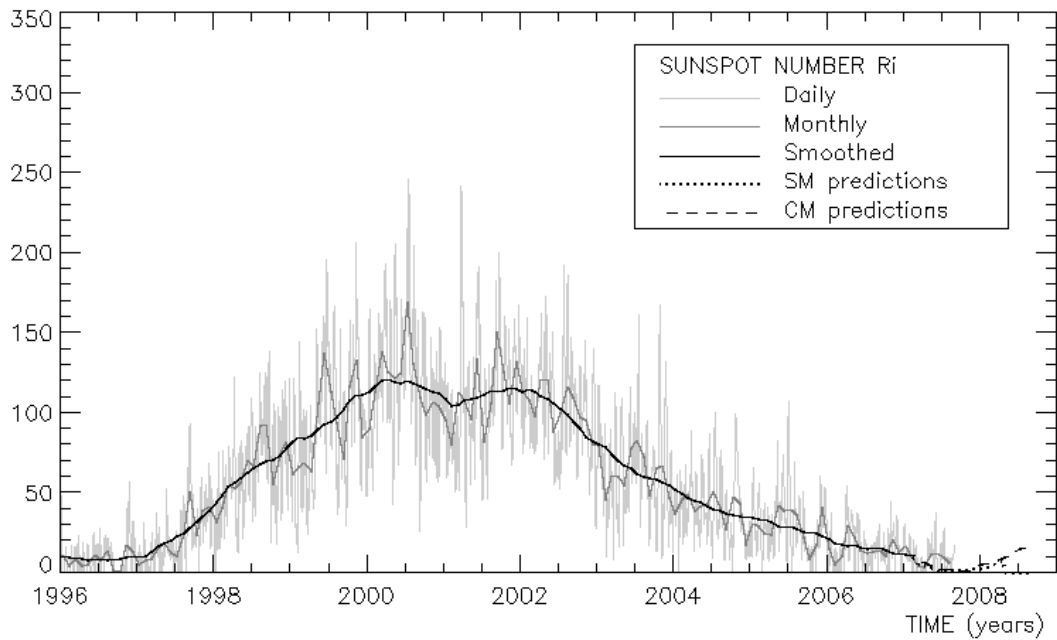
2007

n° 8

Provisional international and normalized hemispheric daily sunspot numbers for August 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	0	0	0
2	0	0	0
3	7	4	3
4	7	0	7
5	7	0	7
6	8	0	8
7	8	0	8
8	9	0	9
9	9	0	9
10	9	0	9
11	8	0	8
12	8	4	4
13	8	4	4
14	0	0	0
15	7	4	3
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	9	0	9
22	8	0	8
23	8	0	8
24	8	0	8
25	8	0	8
26	8	0	8
27	8	0	8
28	8	0	8
29	8	0	8
30	8	0	8
31	17	0	17
Monthly mean	6.2	0.5	5.7
Cooperating stations	50	45	45



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for February 2007 : 11.6 (\pm 5%)

	SM	CM		SM	CM		SM	CM
2007 Mar	11	9	2007 Sep	3	3	2008 Mar	3	7
Apr	10	6	Oct	2	2	Apr	4	9
May	8	4	Nov	2	2	May	5	11
Jun	7	3	Dec	2	4	Jun	6	13
Jul	5	3	2008 Jan	2	5	Jul	8	15
Aug	4	3	Feb	2	6	Aug	0	17

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, September 1, 2007 09:02 UT

Reproduction permitted if source mentioned.
 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
31	10	2	-	68	////	0	0/0	8	
1	0	////	-	68	////	0	0/0	6	
2	0	////	-	69	////	0	0/0	8	
3	7	0	-	70	////	0	0/0	6	
4	7	1	-	69	////	0	0/0	3	
5	7	1	-	69	////	0	0/0	3	
6	8	3	-	70	////	14	0/0	00	
7	8	3	-	69	////	0	0/0	20	
8	9	9	-	69	////	0	0/0	8	
9	9	8	-	67	////	0	0/0	4	
10	9	5	-	68	////	0	0/0	24	
11	8	3	-	68	////	0	0/0	12	
12	8	2	-	68	////	0	0/0	6	
13	8	3	-	68	////	0	0/0	2	
14	0	3	-	69	////	0	0/0	5	
15	7	1	-	68	////	0	0/0	12	
16	0	////	-	67	////	0	0/0	6	
17	0	////	-	68	////	0	0/0	4	
18	0	0	-	68	////	0	0/0	3	
19	0	0	-	68	////	0	0/0	6	
20	0	0	-	69	////	0	0/0	4	
21	9	3	-	69	////	0	0/0	6	
22	8	4	-	70	////	0	0/0	4	
23	8	6	-	71	////	0	0/0	2	
24	8	10	-	72	////	3	0/0	2	
25	8	15	-	72	////	0	0/0	9	
26	8	17	-	70	////	0	0/0	14	
27	8	18	-	69	////	0	0/0	20	
28	8	19	-	70	////	0	0/0	12	
29	8	16	-	70	////	0	0/0	8	
30	8	12	-	72	////	0	0/0	5	
31	17	12	-	71	////	1	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 : $1 \times \text{Sn} + 10 \times "1" + 100 \times ">1"$).
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 AUGUST 2007

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE TOTAL	SUNSPOT NORTH	NUMBERS SOUTH	PPSI CENTRAL	QUAL 10-5 WM-2	OBS	
1	745	0	0	0	0	0	0	0.0	3	AE
2	1100	0	0	0	0	0	0	0.0	3	AE
3	1300	0	0	0	0	0	0	0.0	3	AE
4	1000	1	1	11	0	11	0	0.1	3	DB
5	1048	1	1	11	0	11	0	0.2	2	DB
6	730	1	4	14	0	14	0	0.2	2	OB
7	750	1	1	11	0	11	11	0.3	2	OB
11	915	1	1	11	0	11	11	0.3	3	AE
12	1100	1	2	12	12	0	12	0.4	3	AE
13	730	1	4	14	14	0	14	1.5	3	AE
14	1215	0	0	0	0	0	0	0.0	3	AE
15	930	0	0	0	0	0	0	0.0	3	AE
16	845	0	0	0	0	0	0	0.0	3	AE
17	1215	0	0	0	0	0	0	0.0	3	AE
18	655	0	0	0	0	0	0	0.0	3	FC
19	835	0	0	0	0	0	0	0.0	3	FC
23	1445	1	2	12	0	12	0	0.2	1	OB
24	1010	1	3	13	0	13	0	1.5	4	OB
25	1400	1	3	13	0	13	13	1.9	2	LR
27	1415	1	2	12	0	12	12	2.3	3	AE
28	845	1	2	12	0	12	12	2.2	2	AE
29	1300	1	3	13	0	13	13	2.0	3	AE
30	800	1	2	12	0	12	0	1.7	3	AE
31	815	2	11	31	0	31	14	2.7	3	AE

The relative mean sunspot number is 8.4.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR AUGUST 2007

$K' = 0.747 (*)$

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

The normalised relative monthly mean sunspot number is 6.

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

The Sun has been observed 24 days on 31 possible.

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

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR SEPTEMBER 2007
NONE

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

August 2007 was a rather calm month. We had 4 all-quiet-periods, which were all interrupted simply because of the passage of a few coronal holes.

During this month, the satellite GOES measured almost no outbursts of X-ray radiation coming from the visible side of the sun. The background radiation stayed below the A-level for the complete month. Only 4 days attracted some attention: on Aug 06, Catania sunspot group 52 (NOAA AR 0966) fired off 2 C-flares; on Aug 18, small flares came from the east limb and on Aug 24 and 31, Catania sunspot group 55 (NOAA AR 0969) exhibited 2 C-flares and other smaller events. Group 55 was already present during several rotations with a first appearance in the beginning of May 2007.

Space weather was this month influenced by 6 coronal holes. We list the day the coronal hole passed the central meridian and give some input about the form and place on the solar disk:

1. Jul 25, an extended equatorial coronal hole split in three parts, only the first part is recurrent;
2. Aug 02, a small recurrent southern coronal hole and an even smaller northern coronal hole at the same longitude;
3. Aug 06, a southern coronal hole with a large extension to the pole;
4. Aug 11, a stretched southern coronal hole curved along an active region;
5. Aug 22, a recurrent equatorial coronal hole, split into two parts;
6. Aug 27, a southern coronal hole. At that time SOHO EIT was in bake-out.

II. Geomagnetic Activity

There is a one-to-one relationship between the presence of coronal holes on the solar disk and geomagnetic disturbances. There were 5 periods in August where the Kp-index estimated by NOAA, Boulder was elevated.

Our story coincides with the numbering of the previous section.

1. On Aug 01, the geomagnetic conditions became slightly active. This was the influence of the hole transiting the central meridian the previous month. The co-rotating interaction region (CIR) of the third part of this hole arrived on July 31. The solar wind increased to more than 600 km/s, but the magnetic field strength associated with the last part of the hole was not able to disturb the geomagnetic field much.
2. Late on Aug 06, early on Aug 07, the Earth entered the stormy outflow of the next coronal hole. Kp reached even 6. The interplanetary magnetic field (IMF) reached values above 10nT, the Bz component was predominantly negative for half a day.
3. Late on Aug 10, we experienced an active period. The solar wind speed increased only to 600 km/s while in the previous disturbed period, it reached values of 700 km/s.
4. Between Aug 14 and 16, NOAA estimated unsettled conditions. They were initiated by the fourth coronal hole. The footprint of this hole was clearly visible in ACE-data. The actual influence on Earth was limited.
5. Two CIRs arrived, one on Aug 25, the second on Aug 26. The second arrival caused the IMF to increase up to 20nT. The geomagnetic conditions became only active since the coupling of the magnetic field carried by the solar wind and the earth magnetic field was not strong: the north-south component of the IMF was predominantly positive.
6. The geomagnetic influence of the last coronal hole was only visible on Sep 02. We experienced a minor storm.

III. Noticeable solar events

No M- or X-class flares occurred.

IV. Halo CME list

No CME alert was sent