

## Center

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**SUNSPOT BULLETIN**

2008

n° 7

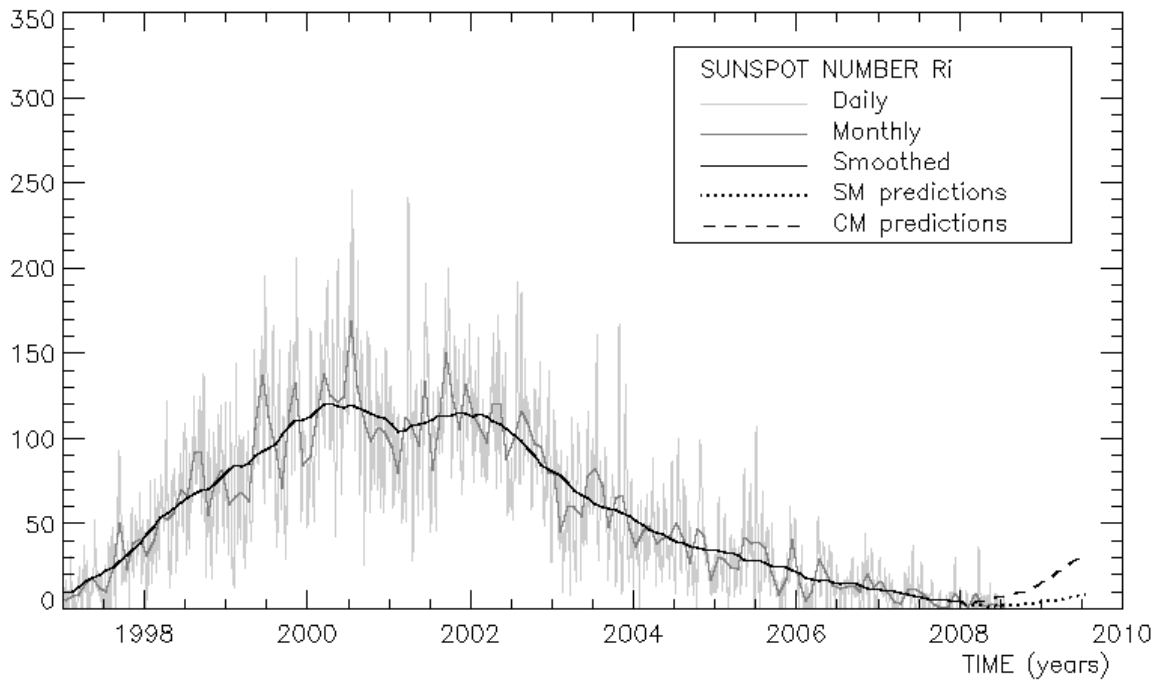
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**Provisional international and normalized hemispheric daily sunspot numbers for July 2008**


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

Date	R' <sub>I</sub>	R' <sub>N</sub>	R' <sub>S</sub>
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	8	4	4
19	0	0	0
20	8	4	4
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	0	0	0
29	0	0	0
30	0	0	0
31	0	0	0
<b>Monthly mean</b>	<b>0.5</b>	<b>0.3</b>	<b>0.2</b>
<b>Cooperating stations</b>	<b>61</b>	<b>55</b>	<b>55</b>



**Predictions of the monthly smoothed Sunspot Number**  
 using the last provisional value, calculated for January 2008 :  $4.2 (\pm 5\%)$

	<b>SM</b>	<b>CM</b>		<b>SM</b>	<b>CM</b>		<b>SM</b>	<b>CM</b>			
2008	Feb	4	3	2008	Aug	2	9	2009	Feb	4	19
	Mar	4	4		Sep	2	10		Mar	4	22
	Apr	4	5		Oct	2	11		Apr	5	24
	May	3	6		Nov	3	12		May	6	27
	Jun	3	7		Dec	3	14		Jun	6	30
	Jul	2	8	2009	Jan	4	17		Jul	7	32

**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

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

Date	R <sub>i</sub>	PPSI	600	2800	COS	SFI	XI	Ak	SEA
30	0	///	–	67	////	0	0/0	6	
1	0	0	–	66	////	0	0/0	6	
2	0	0	–	66	////	0	0/0	4	
3	0	0	–	66	////	0	0/0	3	
4	0	0	–	65	////	0	0/0	6	
5	0	0	–	65	////	0	0/0	12	
6	0	///	–	66	////	0	0/0	5	
7	0	0	–	66	////	0	0/0	3	
8	0	0	–	66	////	0	0/0	4	
9	0	0	–	66	////	0	0/0	3	
10	0	0	–	65	////	0	0/0	5	
11	0	0	–	66	////	0	0/0	10	
12	0	0	–	65	////	0	0/0	18	
13	0	///	–	65	////	0	0/0	16	
14	0	0	–	66	////	0	0/0	12	
15	0	0	–	66	////	0	0/0	10	
16	0	0	–	65	////	0	0/0	8	
17	0	0	–	65	////	0	0/0	6	
18	8	5	–	65	////	0	0/0	4	
19	0	10	–	66	////	0	0/0	2	
20	8	5	–	66	////	0	0/0	4	
21	0	0	–	66	////	0	0/0	6	
22	0	0	–	66	////	0	0/0	16	
23	0	0	–	66	////	0	0/0	17	
24	0	0	–	65	////	0	0/0	9	
25	0	0	–	66	////	0	0/0	3	
26	0	0	–	66	////	0	0/0	7	
27	0	///	–	66	////	0	0/0	8	
28	0	0	–	66	////	0	0/0	6	
29	0	0	–	66	////	0	0/0	4	
30	0	0	–	67	////	0	0/0	5	
31	0	0	–	66	////	0	0/0	5	

- R<sub>i</sub>** : provisional international sunspot numbers from the S.I.D.C.
- PPSI** : prompt photometric sunspot index from the S.I.D.C. in  $10^{-5} \text{ w/m}^2$  : 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 :  $1 \times \text{Sn} + 10 \times \text{"1"} + 100 \times \text{">1"}$ ).
- 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 2008

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH			
1	702	0	0	0	0	0	0.0	4	OL
2	705	0	0	0	0	0	0.0	3	OL
4	751	0	0	0	0	0	0.0	3	OL
5	630	0	0	0	0	0	0.0	3	OL
6	637	0	0	0	0	0	0.0	3	OL
7	700	0	0	0	0	0	0.0	2	AE
8	1100	0	0	0	0	0	0.0	3	AE
9	800	0	0	0	0	0	0.0	2	AE
11	1300	0	0	0	0	0	0.0	3	AE
12	1100	0	0	0	0	0	0.0	2	AE
13	1000	0	0	0	0	0	0.0	3	AE
14	735	0	0	0	0	0	0.0	3	OB
16	1300	0	0	0	0	0	0.0	1	SV
22	1145	0	0	0	0	0	0.0	3	SV
24	1125	0	0	0	0	0	0.0	3	SV
25	1130	0	0	0	0	0	0.0	3	SV
27	750	0	0	0	0	0	0.0	3	SV
28	1050	0	0	0	0	0	0.0	2	OL
29	856	0	0	0	0	0	0.0	3	OL
30	727	0	0	0	0	0	0.0	3	OL
31	725	0	0	0	0	0	0.0	4	OL

The relative mean sunspot number is 0.0.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS  $U'=K'U$  FOR JULY 2008

$K' = 0.755$  (\*)

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

The normalised relative monthly mean sunspot number is 0.

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

The Sun has been observed 21 days on 31 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR JULY 2008  
E AND F BRUNNER'S TYPE GROUPS

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR AUGUST 2008  
NONE

## MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

### I. Solar Activity

*No solar activity was registered during the month of July, which was characterized by quiet conditions.*

Solar activity was very low on all levels in July. The X-ray flux was below the measurement level of GOES10. The 10 cm flux fluctuated between only 65 and 67. The Provisional International monthly mean sunspot number was only 0.5! We had 29 spotless days. The lowest value for the International monthly mean sunspot number of the previous minimum was 0.9. One active region, NOAA AR 1000 was present during three days: Jul 19-20-21. From Jul 22 onwards, it degraded to a plage.

We list the coronal holes (CH) with a clear signature in EIT195 indicating when the leading part crosses the central meridian (CM):

- Jul 07: an equatorial horizontal Y-shaped CH. The two legs of the Y reached the northern and southern hemisphere,
- Jul 15: a thin southern CH,
- Jul 19: an equatorial CH.
- Jul 25: a fragmented northern CH.

### II. Geomagnetic Activity

*The earth's magnetic field was two times disturbed because of the influence of coronal holes.*

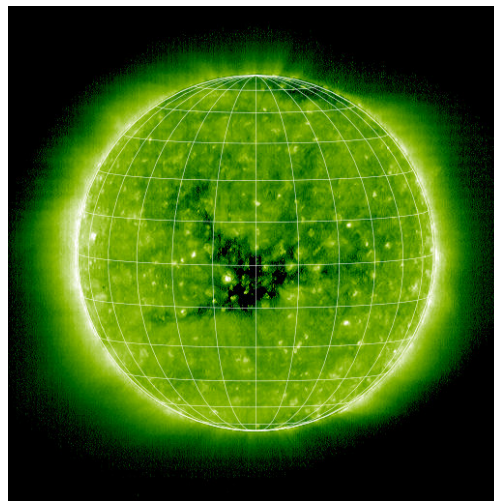
On Jul 11, a compressed plasma stream heralded the fast solar wind stream emanating from the CH first mentioned in the previous section. Only on Jul 12, the north-south component of the magnetic field imbedded in the solar wind became negative, resulting in a minor storm: 2 periods with a Kp of 5. The influence was limited in time. From the second part of Jul 12 until early Jul 15, unsettled geomagnetic conditions were measured.

The Jul 15 CH had no clear signature in in-situ ACE data.

From Jul 22 until Jul 24, the global magnetic field of earth was disturbed only slightly: three active periods were measured. The strength of the magnetic field carried by the solar wind associated with the third CH rose only to 10 nT given a low upper bound to the north-south component.

The influence of the last coronal hole was situated on a minor level: on Jul 27, the Kp index became 4 in the last period.

### III. Picture of the Month



**This picture is taken by SOHO/EIT195 on Jul 11, 2008. The black feature is the Y-shaped coronal hole. The remaining part of the solar disk shows the quiet sun.**