

## Center

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**SUNSPOT BULLETIN**

2008

n° 8

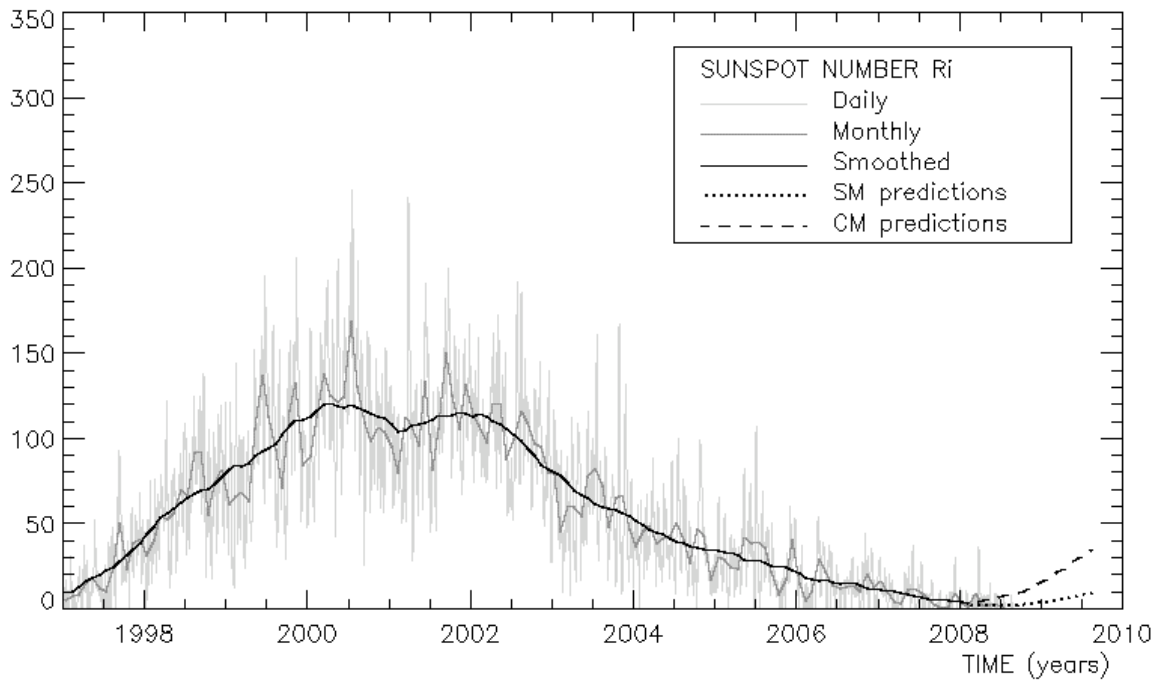
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**Provisional international and normalized hemispheric daily sunspot numbers for August 2008**


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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	0	0	0
19	0	0	0
20	0	0	0
21	7	4	3
22	8	4	4
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>65</b>	<b>59</b>	<b>59</b>



**Predictions of the monthly smoothed Sunspot Number**  
 using the last provisional value, calculated for February 2008 : 3.5 ( $\pm 5\%$ )

	<b>SM</b>	<b>CM</b>		<b>SM</b>	<b>CM</b>		<b>SM</b>	<b>CM</b>
2008 Mar	4	4	2008 Sep	2	10	2009 Mar	4	22
Apr	4	5	Oct	2	11	Apr	5	24
May	3	6	Nov	3	13	May	5	27
Jun	3	7	Dec	3	15	Jun	6	30
Jul	2	8	2009 Jan	3	17	Jul	7	32
Aug	2	9	Feb	4	19	Aug	8	35

**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
31	0	0	-	66	////	0	0/0	5	
1	0	///	-	66	////	0	0/0	5	
2	0	///	-	66	////	0	0/0	3	
3	0	///	-	66	////	0	0/0	8	
4	0	///	-	66	////	0	0/0	4	
5	0	///	-	67	////	0	0/0	4	
6	0	///	-	67	////	0	0/0	6	
7	0	///	-	66	////	0	0/0	6	
8	0	///	-	66	////	0	0/0	6	
9	0	///	-	66	////	0	0/0	25	
10	0	///	-	66	////	0	0/0	18	
11	0	///	-	66	////	0	0/0	9	
12	0	///	-	65	////	0	0/0	10	
13	0	///	-	65	////	0	0/0	6	
14	0	///	-	66	////	0	0/0	7	
15	0	///	-	65	////	0	0/0	4	
16	0	///	-	66	////	0	0/0	5	
17	0	///	-	67	////	0	0/0	12	
18	0	///	-	66	////	0	0/0	23	
19	0	///	-	67	////	0	0/0	11	
20	0	///	-	66	////	0	0/0	5	
21	7	1	-	67	////	0	0/0	4	
22	8	1	-	68	////	0	0/0	3	
23	0	///	-	68	////	0	0/0	4	
24	0	///	-	67	////	0	0/0	3	
25	0	///	-	67	////	0	0/0	2	
26	0	///	-	67	////	0	0/0	3	
27	0	///	-	67	////	0	0/0	4	
28	0	///	-	66	////	0	0/0	4	
29	0	///	-	67	////	0	0/0	4	
30	0	///	-	67	////	0	0/0	2	
31	0	///	-	67	////	0	0/0	7	

**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 AUGUST 2008

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH			
1	1102	0	0	0	0	0	0.0	2	OL
2	720	0	0	0	0	0	0.0	3	OL
3	835	0	0	0	0	0	0.0	2	OL
4	745	0	0	0	0	0	0.0	3	AE
5	745	0	0	0	0	0	0.0	3	AE
6	800	0	0	0	0	0	0.0	3	AE
7	1230	0	0	0	0	0	0.0	3	AE
8	1045	0	0	0	0	0	0.0	3	AE
9	915	0	0	0	0	0	0.0	3	AE
11	750	0	0	0	0	0	0.0	2	OB
12	1150	0	0	0	0	0	0.0	2	OB
13	845	0	0	0	0	0	0.0	2	OB
14	750	0	0	0	0	0	0.0	2	OB
15	730	0	0	0	0	0	0.0	2	OB
16	745	0	0	0	0	0	0.0	2	OB
17	1035	0	0	0	0	0	0.0	3	OB
19	810	0	0	0	0	0	0.0	2	SV
20	1325	0	0	0	0	0	0.0	3	SV
21	715	0	0	0	0	0	0.0	2	SV
25	732	0	0	0	0	0	0.0	3	OL
26	1208	0	0	0	0	0	0.0	2	OL
30	735	0	0	0	0	0	0.0	3	OL
31	700	0	0	0	0	0	0.0	2	OL

The relative mean sunspot number is 0.0.

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

$K' = 0.747$  (\*)

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

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

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR SEPTEMBER 2008

NONE

# MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

## I. Solar Activity

*Solar activity was low throughout.*

Several indices confirm this low activity level: the provisional international sunspot number (ISN) was zero for 29 days, the estimated ISN was zero for the complete month, the 10cm flux stayed at a low value (65-68). EIT195, STEREO A and STEREO B images in EUV show a quiet Sun with a complete absence of active regions. The solar X-ray flux was beneath the measurement level of the GOES10 satellite for the whole month.

Only two coronal holes (CH) were present: the recurrent Y-shaped coronal hole passing the central meridian on Aug 05 and an equatorial hole with a small southern part in front of it. This small part passed the central meridian around Aug 13. There was a CCD bake-out of EIT at that moment.

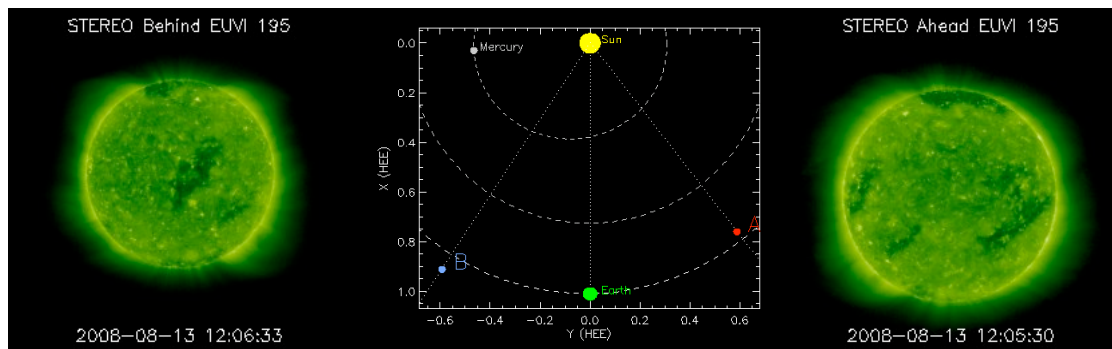
## II. Geomagnetic Activity

*We had only two short periods of magnetic disturbances on Earth.*

Both periods were linked with the coronal holes mentioned in the previous section. A strong co-rotating interaction region (CIR) arrived late Aug 08. As soon as the solar wind increased its speed, the index Kp reached one period the value of 5. This happened at the end of Aug 09. The first part of Aug 10, geomagnetic conditions were active.

The second period with geomagnetic disturbances was short: only on Aug 18 Kp reached three times the value of 4 and once the value of 5. ACE-data show a weak signature of a CIR on Aug 16. This CIR was probably associated with the small coronal hole preceding the equatorial one. On Aug 18, the solar wind emanating from the second part arrived leading to the disturbances.

## V. Picture of the Month



*The Sun seen by STEREO B and STEREO A on Aug 13, 2008. The position of the satellites in space is given in the middle picture by the blue and red dot. Note also the difference in size of both pictures. This has to do with the distance between the satellite and the Sun. The equatorial coronal hole with a small southern part in front of it is visible. The small hole is seen more to the right by STEREO B, while STEREO A pictures the small hole more to the left. SOHO/EIT would see the small hole at the center of the solar disk. At that moment, SOHO had a CCD bake-out.*