

Center

Data Analysis Service supported by the FAGS

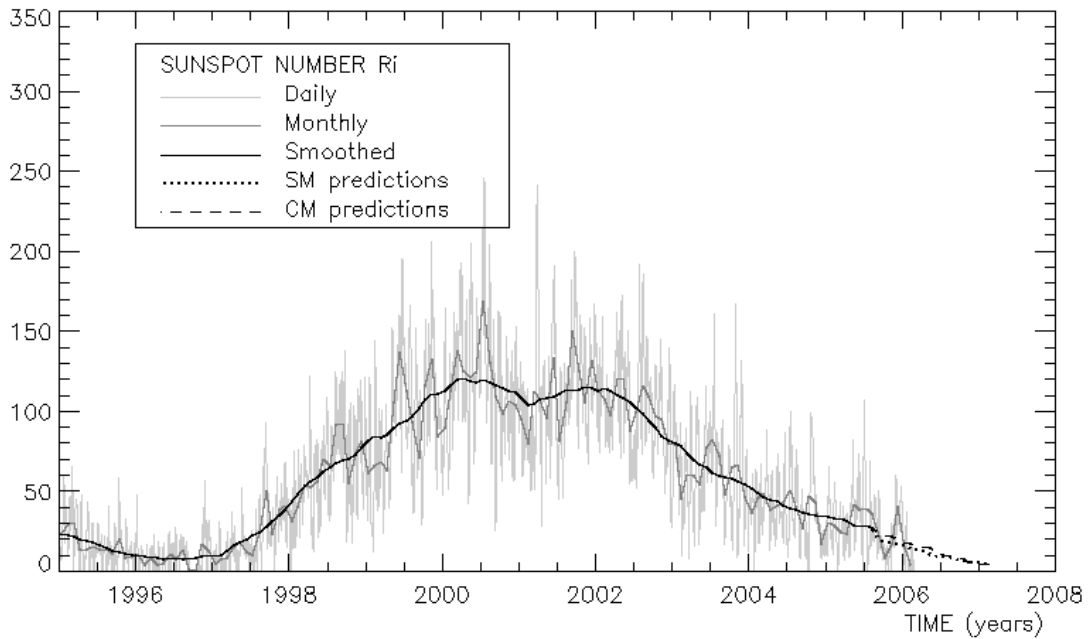
SUNSPOT BULLETIN

2006 n° 2

Provisional international and normalized hemispheric daily sunspot numbers for February 2006

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	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0
7	7	4	3
8	7	0	7
9	10	0	10
10	10	5	5
11	8	4	4
12	0	0	0
13	9	0	9
14	11	6	5
15	15	0	15
16	15	0	15
17	7	0	7
18	7	4	3
19	12	6	6
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	7	0	7
28	7	0	7
Monthly mean	4.7	1.0	3.7
Cooperating stations	48	44	44



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for August 2005 : 27.4 (\pm 5%)

	SM	CM		SM	CM		SM	CM
2005 Sep	28	25	2006 Mar	17	17	2006 Sep	11	9
Oct	25	23	Apr	16	16	Oct	10	9
Nov	21	22	May	15	15	Nov	9	6
Dec	20	21	Jun	14	13	Dec	8	6
2006 Jan	19	19	Jul	13	11	2007 Jan	8	5
Feb	18	18	Aug	12	10	Feb	7	5

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, March 1, 2006 16:06 UT

Reproduction permitted if source mentioned.
 Ed. Ronald Van der Linden, Ass. Ed. Petra Vanlommel
 Editing contributions from various members of the SIDC team

avenue Circulaire, 3 B-1180 BRUXELLES - BELGIUM
 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	0	0	-	///	////	///	///	(//)	
1	0	0	-	78	946	0	0/0	3	
2	0	0	-	77	///	0	0/0	5	
3	0	0	-	79	949	0	0/0	7	
4	0	0	-	77	///	0	0/0	6	
5	0	0	-	76	///	0	0/0	4	
6	0	0	-	75	944	0	0/0	6	
7	7	2	-	74	011	0	0/0	5	
8	7	2	-	74	///	0	0/0	4	
9	10	4	-	75	950	0	0/0	5	
10	10	2	-	75	946	0	0/0	6	
11	8	0	-	76	945	0	0/0	7	
12	0	0	-	76	945	0	0/0	6	
13	9	1	-	76	945	0	0/0	2	
14	11	1	-	77	948	0	0/0	1	
15	15	5	-	79	952	0	0/0	12	
16	15	6	-	79	950	0	0/0	8	
17	7	3	-	79	///	0	0/0	4	
18	7	3	-	79	///	0	0/0	2	
19	12	4	-	77	///	0	0/0	9	
20	0	0	-	76	///	0	0/0	4	
21	0	0	-	76	///	0	0/0	4	
22	0	0	-	76	///	0	0/0	7	
23	0	0	-	75	///	0	0/0	5	
24	0	0	-	76	///	0	0/0	5	
25	0	0	-	76	///	0	0/0	2	
26	0	0	-	77	///	0	0/0	8	
27	7	0	-	77	///	0	0/0	5	
28	7	1	-	77	///	0	0/0	6	

- 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 : $1 \times \text{Sn} + 10 \times \text{"I"} + 100 \times \text{">I"}$).
- 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 FEBRUARY 2006

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH			
1	845	0	0	0	0	0	0.0	2	FC
9	945	1	7	17	0	17	4.1	2	AE
10	1230	3	7	37	0	37	1.4	1	AE
11	1115	1	1	11	0	11	0.1	2	FC
14	1210	0	0	0	0	0	0.0	3	OB
15	1434	1	3	13	0	13	0.3	2	OB
16	1320	1	3	13	0	13	1.5	2	OB
23	1300	0	0	0	0	0	0.0	2	OB
24	940	0	0	0	0	0	0.0	2	AE
25	1205	0	0	0	0	0	0.0	3	OB
26	1020	0	0	0	0	0	0.0	3	OB
28	1525	0	0	0	0	0	0.0	3	AE

The relative mean sunspot number is 7.6.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR FEBRUARY 2006

$$K' = 0.926 (*)$$

1	0	7	***	13	***	19	***	25	0
2	***	8	***	14	0	20	***	26	0
3	***	9	16	15	12	21	***	27	***
4	***	10	34	16	12	22	***	28	0
5	***	11	10	17	***	23	0		
6	***	12	***	18	***	24	0		

The normalised relative monthly mean sunspot number is 7.

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

The Sun has been observed 12 days on 28 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR FEBRUARY 2006
E AND F BRUNNER'S TYPE GROUPS

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR MARCH 2006

NONE

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

February 2006 was definitely a quiet month with no breaking news.

First, we report all signs indicating the absence of activity on the Sun. There were 14 spotless days (Provisional Daily International Sunspot Number equal to zero), only 3 days that there was no SIDC all-quiet-alert active, only 5 B-flares occurred, on 21 days the background X-ray radiation was below the A-level, the 10cm flux did not vary much and stayed between 74 and 79 sfu.

The little bit of activity worth mentioning is quickly described. On Feb 03, a prominence erupted from the east limb around 07:30UT. The associated CME was captured by LASCO with a speed around 300 km/s. On Feb 10, CACTus detected a halo CME around 23:30UT. It was identified as a backsided event and considered as a hint for a possible increase of solar activity once the source region would rotate on the solar disk. On Feb 13, Catania observatory identified one tiny sunspot group, numbered Catania 04, which disappeared again the next day. On Feb 14, sunspot group 05 was identified, to which group 06 was added the next day. On Feb 15, the background X-ray radiation did indeed increase up to the A-level for three days. No events from those groups were seen. The third noteworthy event started on Feb 25 as the background X-ray radiation was pushed up. This was caused by a new group at that moment still behind the east limb. On Feb 27, the new group became visible and was numbered Catania 09 (NOAA 0856). This group produced some B-flares.

The last things to mention are the coronal holes present this month. On Feb 08, a first small coronal hole in the north passed the central meridian. On Feb 12, a second, small, southern coronal hole passed, and a third small coronal hole on Feb 18. The latter one was located near the equator.

II. Geomagnetic Activity

All 4 interruptions of the SIDC all-quiet-alert were caused by an induced geomagnetic disturbance. Three of them originated from the coronal holes mentioned above.

1. On Feb 06, active conditions occurred associated with a southward rotation of the interplanetary magnetic field during several hours on that day. This event may be linked to the prominence eruption of Feb 03.
2. On Feb 10, the solar wind speed started to increase to a maximum near 500 km/s on Feb 12. However, the geomagnetic consequences of this first coronal hole remained limited to unsettled conditions.
3. The third disturbance, linked to the second coronal hole mentioned above, led to active conditions late on Feb 15.
4. The last interruption of the all-quiet-alert was caused by the coronal hole passing the central meridian on Feb 18. The hole became geo-effective on Feb 20 and caused active/minor storm conditions. The influence finished early Feb 22.

III. Noticeable solar events

No M- or X-class flare occurred

IV. Halo CME list

onset time	e-mail time CACTus	da	e-mail time LASCO	e-mail time FF	Ass. Events	consequences
02/10 23:30	02/11 09:52	184	02/13 14:33	-	backsided	None

Onset time: Utime first visible in C2 field of view
CACTus: Computer Aided CME Tracking (software developed by the SIDC)
LASCO: SOHO-LASCO Operations, G. Stenborg

FF: Fearless Forecast (a NOAA trial service)
e-mail time CACTus/LASCO/FF: Utime alert e-mail sent by group
da: angular width of CME, measured by CACTus
Ass. Events: Associated Events, Long Duration Event, flare class