

Center

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SUNSPOT BULLETIN

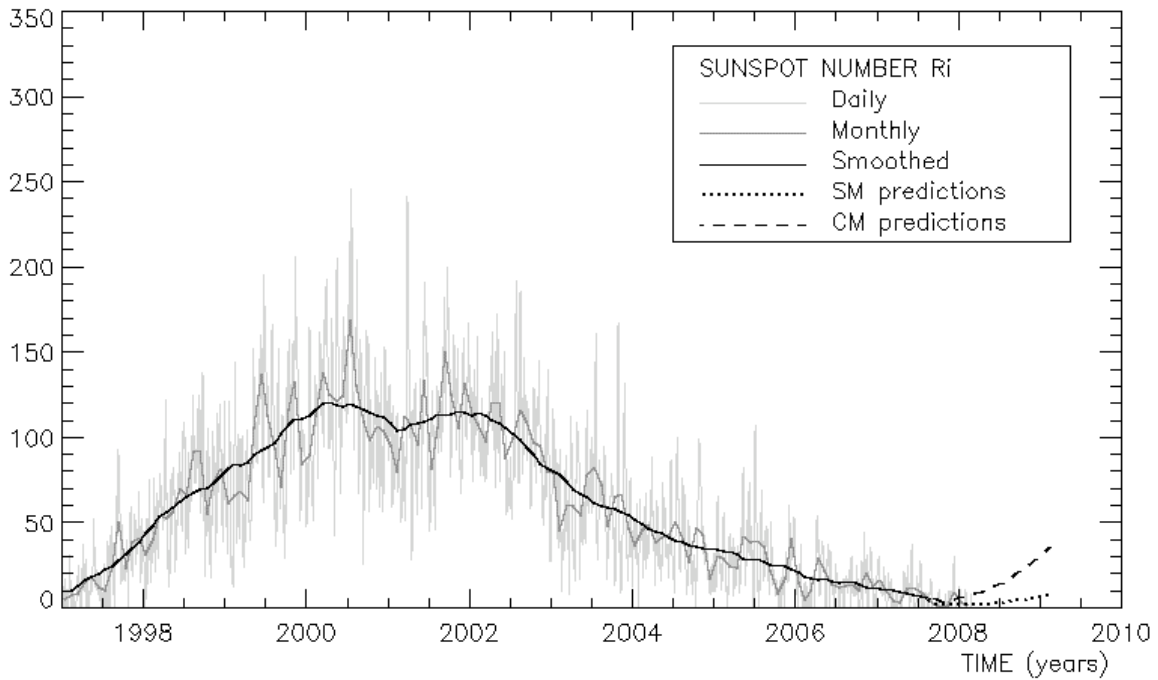
2008

n° 2

Provisional international and normalized hemispheric daily sunspot numbers for February 2008

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	11	0	11
2	9	5	4
3	9	0	9
4	8	4	4
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	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	8	4	4
26	8	0	8
27	8	0	8
28	0	0	0
29	0	0	0
Monthly mean	2.1	0.4	1.7
Cooperating stations	59	51	51



Predictions of the monthly smoothed Sunspot Number
using the last provisional value, calculated for August 2007 : 6.0 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM			
2007	Sep	6	6	2008	Mar	3	9	2008	Sep	3	20
	Oct	5	4		Apr	2	10		Oct	4	23
	Nov	4	4		May	2	12		Nov	4	26
	Dec	3	5		Jun	2	13		Dec	5	29
2008	Jan	3	7		Jul	3	15	2009	Jan	6	32
	Feb	3	8		Aug	3	17		Feb	6	36

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' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
31	8	7	-	72	////	0	0/0	6	
1	11	8	-	71	////	0	0/0	23	
2	9	5	-	72	////	0	0/0	21	
3	9	4	-	71	////	0	0/0	21	
4	8	3	-	71	////	0	0/0	12	
5	0	0	-	71	////	0	0/0	4	
6	0	///	-	72	///	0	0/0	8	
7	0	///	-	71	///	0	0/0	8	
8	0	0	-	71	////	0	0/0	10	
9	0	///	-	72	///	0	0/0	6	
10	0	0	-	73	////	0	0/0	23	
11	0	0	-	72	////	0	0/0	17	
12	0	0	-	72	////	0	0/0	17	
13	0	0	-	71	///	0	0/0	6	
14	0	0	-	71	///	0	0/0	6	
15	0	0	-	70	////	0	0/0	16	
16	0	0	-	70	////	0	0/0	12	
17	0	0	-	71	////	0	0/0	6	
18	0	///	-	71	///	0	0/0	7	
19	0	///	-	72	///	0	0/0	4	
20	0	0	-	71	///	0	0/0	6	
21	0	///	-	72	////	0	0/0	8	
22	0	0	-	72	///	0	0/0	3	
23	0	///	-	72	///	0	0/0	7	
24	0	0	-	71	////	0	0/0	6	
25	8	1	-	71	///	0	0/0	2	
26	8	5	-	71	////	0	0/0	4	
27	8	2	-	71	////	0	0/0	13	
28	0	0	-	70	///	0	0/0	6	
29	0	///	-	70	///	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 : $1 \times \text{Sn} + 10 \times "1" + 100 \times ">1"$).
- 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 FEBRUARY 2008

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	900	1	8	18	0	18	18	1.4	2	OL
2	1045	1	7	17	0	17	17	0.4	3	OL
3	1115	1	2	12	0	12	12	0.4	1	OL
5	1415	0	0	0	0	0	0	0.0	2	OB
6	1515	0	0	0	0	0	0	0.0	1	OB
7	1000	0	0	0	0	0	0	0.0	3	OB
8	1420	0	0	0	0	0	0	0.0	3	OB
9	1215	0	0	0	0	0	0	0.0	3	OB
10	1100	0	0	0	0	0	0	0.0	4	OB
11	925	0	0	0	0	0	0	0.0	3	OL
12	1445	0	0	0	0	0	0	0.0	3	AE
15	1245	0	0	0	0	0	0	0.0	2	AE
16	930	0	0	0	0	0	0	0.0	2	AE
17	830	0	0	0	0	0	0	0.0	3	AE
18	855	0	0	0	0	0	0	0.0	3	SV
19	915	0	0	0	0	0	0	0.0	2	SV
23	1300	0	0	0	0	0	0	0.0	3	SV
24	1320	0	0	0	0	0	0	0.0	3	SV
25	1225	1	3	13	0	13	0	0.3	2	OL
27	1224	1	3	13	0	13	0	0.6	2	OL
29	930	0	0	0	0	0	0	0.0	2	OL

The relative mean sunspot number is 3.5.

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

$K' = 0.926$ (*)

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

The normalised relative monthly mean sunspot number is 3.

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

The Sun has been observed 21 days on 29 possible.

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

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR MARCH 2008

NONE

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

Solar activity still stays in an overall quiet period. The number of spotless days this month adds up to 22.

No flaring activity was recorded. The background X-ray radiation was for the whole month beneath the measurement threshold level of GOES10. Only a few small and narrow peaks were superimposed on the horizontal flux curve. These spikes can be linked with Catania sunspot group 69 (NOAA AR 0982), which was visible the first week of the month, and Catania sunspot group 70 (NOAA AR 0983), visible at the end of the month.

Three coronal holes (CH) transited the solar disk this month. We indicate when the CHs reached the central meridian (CM):

- Jan 28: an equatorial CH divided into two parts,
- Feb 06: a recurrent southern mouth-shaped CH stretched over almost 90° length,
- Feb 25: a recurrent equatorial CH (at this time there was an EIT CCD bake-out from Feb 23 until Feb 29).

II. Geomagnetic Activity

Geomagnetic activity was limited to the disturbances caused by the three CHs mentioned in section I.

The first co-rotating interaction region linked with the solar wind stream emanating from the first hole mentioned in the previous section arrived on Jan 31. The north-south component of the interplanetary magnetic field imbedded in the solar wind reached values up to almost -10nT. The estimated Kp-index of NOAA, Boulder became 5 twice on Feb 01 en Feb 02. The maximum speed of the solar wind was around 650 km/s.

The next period of geomagnetic disturbances began early on Feb 10. The magnetic field carried by this stream was slightly stronger compared to the magnetic field carried by the previous fast solar wind stream. The period of disturbances lasted until Feb 18. The overall magnetic field strength was around 5nT combined with a solar wind speed of 650km/s during almost the whole period resulting in only a few active periods and further more unsettled conditions.

The third disturbance was initiated on Feb 27. Although the magnetic signature was less pronounced, the disturbance was much stronger compared to the previous disturbed period: Kp was 4 times 5 in a time span of 60 hours from late Feb 27 until early Mar 01. The fact that the Bz component of the magnetic field was negative for a long time and that the maximum solar wind speed was exceeding 700 km/s is a valid explanation for the strength of the disturbance.