

Center

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SUNSPOT BULLETIN

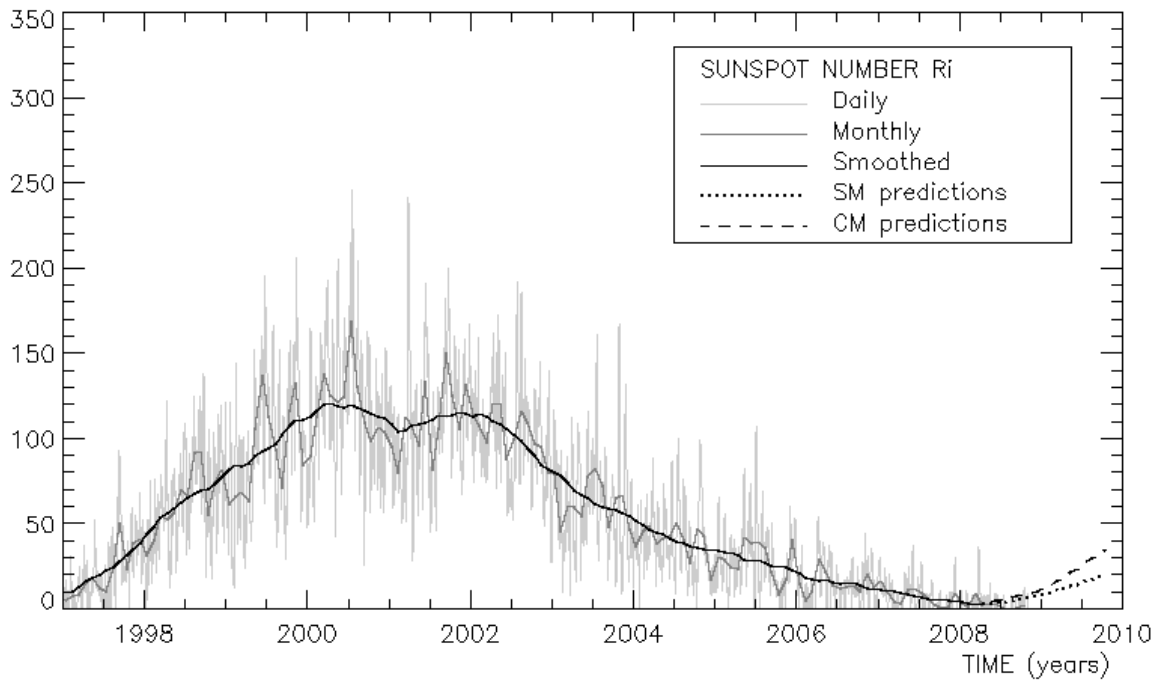
2008

n°10

Provisional international and normalized hemispheric daily sunspot numbers for October 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	0	0	0
2	0	0	0
3	0	0	0
4	7	0	7
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	7	0	7
11	9	9	0
12	11	11	0
13	9	9	0
14	9	9	0
15	8	8	0
16	12	8	4
17	8	0	8
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	0	0	0
26	0	0	0
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
31	9	9	0
Monthly mean	2.9	2.0	0.9
Cooperating stations	67	60	60



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for April 2008 : $3.3 (\pm 5\%)$

	SM	CM		SM	CM		SM	CM			
2008	May	3	4	2008	Nov	5	10	2009	May	11	22
	Jun	3	5		Dec	6	11		Jun	12	24
	Jul	2	6	2009	Jan	7	12		Jul	13	27
	Aug	3	7		Feb	8	14		Aug	14	30
	Sep	4	8		Mar	9	17		Sep	15	32
	Oct	5	9		Apr	10	19		Oct	17	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

Brussels, November 1, 2008 09:14 UT

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

Date	R _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
30	0	2	–	66	////	0	0/0	6	
1	0	///	–	66	////	0	0/0	10	
2	0	///	–	66	////	0	0/0	17	
3	0	///	–	67	////	0	0/0	18	
4	7	3	–	67	////	0	0/0	10	
5	0	///	–	67	////	0	0/0	4	
6	0	///	–	67	////	0	0/0	3	
7	0	0	–	67	////	0	0/0	2	
8	0	///	–	68	////	0	0/0	2	
9	0	2	–	69	////	0	0/0	1	
10	7	6	–	69	////	0	0/0	4	
11	9	12	–	71	////	0	0/0	40	
12	11	19	–	70	////	0	0/0	18	
13	9	22	–	71	////	0	0/0	8	
14	9	20	–	70	////	0	0/0	4	
15	8	16	–	71	////	0	0/0	10	
16	12	11	–	72	////	0	0/0	4	
17	8	2	–	70	////	0	0/0	0	
18	0	///	–	69	////	0	0/0	0	
19	0	0	–	70	////	0	0/0	10	
20	0	///	–	69	////	0	0/0	5	
21	0	4	–	69	////	0	0/0	4	
22	0	///	–	68	////	0	0/0	6	
23	0	///	–	67	////	0	0/0	3	
24	0	0	–	68	////	0	0/0	1	
25	0	///	–	68	////	0	0/0	2	
26	0	///	–	67	////	0	0/0	6	
27	0	///	–	67	////	0	0/0	1	
28	0	///	–	67	////	0	0/0	6	
29	0	///	–	67	////	0	0/0	20	
30	0	3	–	67	////	0	0/0	19	
31	9	16	–	68	////	0	0/0	(//)	

- 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 : $1 \times \text{Sn} + 10 \times \text{"1"} + 100 \times \text{">1"}$).
- 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 OCTOBER 2008

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH			
1	900	0	0	0	0	0	0.0	2	AE
2	745	0	0	0	0	0	0.0	3	AE
3	1230	0	0	0	0	0	0.0	3	AE
4	745	0	0	0	0	0	0.0	2	AE
6	1335	0	0	0	0	0	0.0	2	OB
8	1120	0	0	0	0	0	0.0	3	SV
9	750	0	0	0	0	0	0.0	2	OB
10	755	0	0	0	0	0	0.0	3	OB
11	755	1	4	14	14	0	0.8	2	OL
12	840	1	7	17	17	0	1.1	2	OB
13	840	1	2	12	12	0	2.0	2	SV
14	915	1	5	15	15	0	2.1	2	AE
16	1155	1	1	11	0	11	0.1	3	SV
17	800	0	0	0	0	0	0.0	2	SV
18	900	0	0	0	0	0	0.0	2	SV
19	1015	0	0	0	0	0	0.0	1	SV
20	756	0	0	0	0	0	0.0	1	OL
21	1424	0	0	0	0	0	0.0	1	OL
22	950	0	0	0	0	0	0.0	2	OL
23	935	0	0	0	0	0	0.0	2	OL
25	930	0	0	0	0	0	0.0	3	OB
27	925	0	0	0	0	0	0.0	2	OB
28	930	0	0	0	0	0	0.0	2	OB
29	900	0	0	0	0	0	0.0	3	OB

The relative mean sunspot number is 2.9.

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

$K' = 0.831$ (*)

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

The normalised relative monthly mean sunspot number is 2.

(*) 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 OCTOBER 2008
E AND F BRUNNER'S TYPE GROUPS

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR NOVEMBER 2008

NONE

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

Solar activity was low. A few small flares were visible in GOES10 data. A new cycle sunspot was visible for two days. Five coronal holes could be seen in EIT195.

The background X-ray flux was beneath the measurement levels of GOES10. The difference with previous months is that now 5 confined peaks were superimposed on the flat flux curve. The peak on Oct 06 was associated with active region NOAA 1003. The region was situated at high latitude in the southern hemisphere and belonged to the new solar cycle.

From Oct 11 until Oct 17, the 10cm flux reached the values 70/71/72. Another sunspot group of solar cycle 24 appeared in the northern hemisphere. Catania group 87 (NOAA AR 1005) was responsible for the small and in fact irrelevant solar flaring activity. A new magnetic structure popped up in the northern hemisphere on Oct 30: Catania sunspot group 90 (NOAA AR 1007).

Several coronal holes (CH) transited the solar disk. We cite the date the most right-part of the hole reached the central meridian:

1. a Y-shaped CH, Sep 28,
2. an equatorial CH, Oct 06,
3. a faint and small CH with a part in the northern hemisphere and an even smaller part in the southern hemisphere, Oct 15,
4. a CH even more faint than the previous (4) CH, Oct 21,
5. the recurrent Y-shaped CH, now reshaped with a dominant part in the southern hemisphere and two small parts in the northern hemisphere, Oct 25.

II. Geomagnetic Activity

The geomagnetic activity was caused by coronal holes. One geomagnetic storm caused severe disturbances for a short period.

The first CH mentioned in the previous section introduced only a moderate geomagnetic disturbance although the high solar wind speed of 700 km/s. Kp became two times 4 on Oct 02 and once 5 on Oct 04.

After this light disturbance, a geomagnetic silence was set for several days. On Oct 11, a strong co-rotating interaction region arrived: the compressed solar wind carried a strong interplanetary magnetic field. The fast solar wind followed almost immediately. These solar wind structures were associated with the second CH (see previous section). The combination of increased magnetic and plasma pressure led to a Kp of 4-6-7-5 on Oct 11.

The next period was characterized predominantly by quiet conditions. CH 3 and 4 were not geoeffective. Only the last CH of the above list introduced two active periods on Oct 29 and Oct 30 despite of the fast solar wind speed of 700 km/s.

III. Noticeable solar events

No M- or X-class flares occurred.

IV. Halo CME list

No CME alert was sent.