Solar Influences Data analysis Center

Data Analysis Service supported by the FAGS

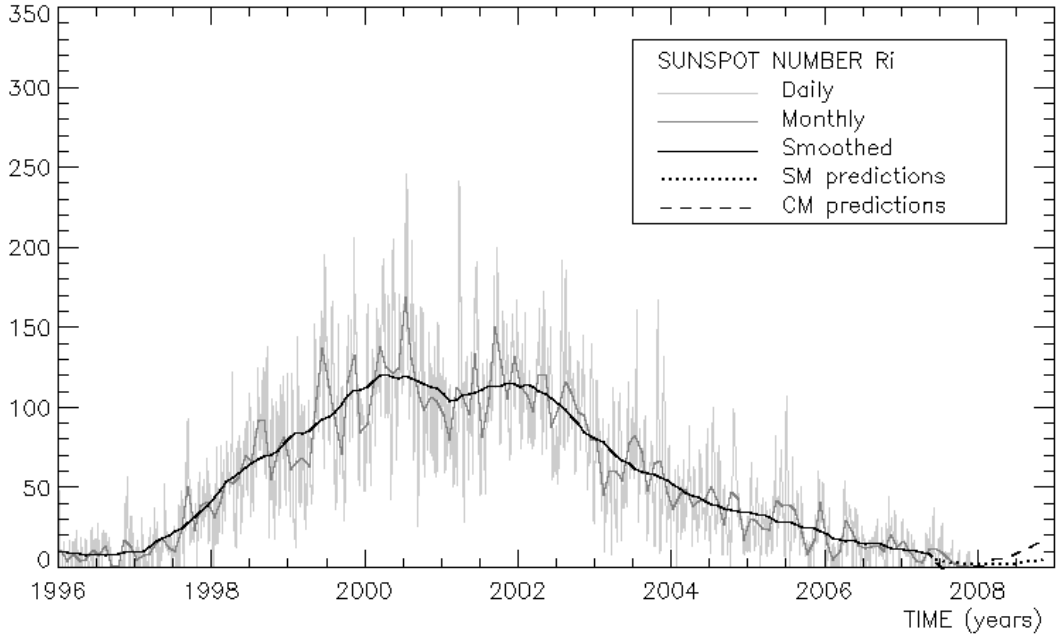
SUNSPOT BULLETIN

2007 n°11

Provisional international and normalized hemispheric daily sunspot numbers for November 2007

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	8	4	4
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	10	5	5
17	9	5	4
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	10	10	0
25	8	4	4
26	7	4	3
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
Monthly mean	**1.7**	**1.1**	**0.6**
Cooperating stations	**61**	**50**	**50**



Predictions of the monthly smoothed Sunspot Number
using the last provisional value, calculated for May 2007 : 8.7 (± 5%)

	SM	CM		SM	CM		SM	CM
2007 Jun	7	4	2007 Dec	4	1	2008 Jun	2	8
Jul	6	0	2008 Jan	3	2	Jul	2	10
Aug	6	1	Feb	3	3	Aug	3	12
Sep	6	1	Mar	3	5	Sep	3	13
Oct	5	1	Apr	2	6	Oct	3	16
Nov	4	1	May	2	7	Nov	4	18

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	0	///	-	67	///	0	0/0	7	
1	0	///	-	67	////	0	0/0	5	
2	0	///	-	68	///	0	0/0	3	
3	0	///	-	68	////	0	0/0	1	
4	0	///	-	68	////	0	0/0	9	
5	0	///	-	67	///	0	0/0	2	
6	8	1	-	69	////	0	0/0	0	
7	0	///	-	68	///	0	0/0	0	
8	0	///	-	70	///	0	0/0	3	
9	0	0	-	70	///	0	0/0	6	
10	0	///	-	70	///	0	0/0	6	
11	0	///	-	69	////	0	0/0	4	
12	0	0	-	70	///	0	0/0	5	
13	0	0	-	70	///	0	0/0	3	
14	0	0	-	70	///	0	0/0	0	
15	0	0	-	69	///	0	0/0	9	
16	10	2	-	71	////	0	0/0	8	
17	9	2	-	70	////	1	0/0	9	
18	0	0	-	69	////	0	0/0	2	
19	0	0	-	70	///	0	0/0	3	
20	0	0	-	70	///	0	0/0	6	
21	0	0	-	69	///	0	0/0	5	
22	0	0	-	70	///	0	0/0	5	
23	0	0	-	70	///	0	0/0	6	
24	10	3	-	71	////	0	0/0	20	
25	8	2	-	71	////	0	0/0	22	
26	7	2	-	72	////	0	0/0	10	
27	0	///	-	71	////	0	0/0	5	
28	0	///	-	71	////	0	0/0	6	
29	0	///	-	71	///	0	0/0	5	
30	0	///	-	71	///	0	0/0	4	

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 x Sn+10 x "1"+100 x ">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 NOVEMBER 2007

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE SUNSPOT NUMBERS TOTAL	NORTH	SOUTH	CENTRAL	PPSI 10-5 WM-2	QUAL	OBS
6	930	1	1	11	0	11	0	0.2	2	AE
9	1200	0	0	0	0	0	0	0.0	3	AE
12	900	0	0	0	0	0	0	0.0	2	OB
14	859	0	0	0	0	0	0	0.0	4	OB
15	855	0	0	0	0	0	0	0.0	4	OB
16	900	1	3	13	13	0	13	1.5	3	OB
17	1000	1	3	13	13	0	13	1.5	2	AE
18	1115	1	1	11	0	11	11	0.4	3	AE
19	1030	1	1	11	11	0	11	0.4	2	AE
20	945	0	0	0	0	0	0	0.0	2	AE
21	1345	0	0	0	0	0	0	0.0	2	AE
22	1250	0	0	0	0	0	0	0.0	3	AE
23	1500	0	0	0	0	0	0	0.0	2	AE
24	1325	1	4	14	14	0	14	1.5	3	FC

The relative mean sunspot number is 5.2.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'=K'U FOR NOVEMBER 2007

K'= 0.876 (*)

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

The normalised relative monthly mean sunspot number is 5.

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

The Sun has been observed 14 days on 30 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR NOVEMBER 2007
E AND F BRUNNER'S TYPE GROUPS

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR DECEMBER 2007

NONE

MONTHLY SUMMARY OF SOLAR AND GEOMAGNETIC ACTIVITY

I. Solar Activity

This report is once again a variation on the same theme as the previous one. Solar activity was minimal. The only relevant features present were coronal holes.

There is still no sign of the start of the next solar cycle. The two sunspots visible this month had low latitude. The leading polarity of Catania sunspot 60 in the northern hemisphere visible on Nov 06 and 07 was positive and the leading polarity of Catania sunspot 61 in the southern hemisphere was negative. This magnetic configuration, leading negative/positive polarity in the northern/southern hemisphere, is associated with solar cycle 23. Catania sunspot region 61 corresponded to NOAA AR 0974 on Nov 16, 17 and 18. Despite of the initial β and thereafter βγ magnetic configuration, NOAA AR 0974 remained quiet. This was reflected in the value of the 10cm flux which increased with only 2 units when this active region appeared. The group produced only a B1.0 flare.

We list the 3 coronal holes (CH) visible this month while passing the central meridian:

- Nov 04: a faint southern CH,
- Nov 09: a stretched equatorial CH,
- Nov 17: a recurrent stretched southern CH with a dark front and faint trailing parts.

II. Geomagnetic Activity

All disturbances were linked to coronal holes. The first half of the month was quiet despite the presence of a coronal hole. During the last part of the month the geomagnetic field was slightly more disrupted.

The first coronal hole mentioned in the section *Solar Activity* was influencing the earth magnetic field only weakly: Kp became maximum 2 in the period from the arrival of the co-rotating interaction region on Nov 08 until Nov 11 when the interplanetary magnetic field stabilized. The solar wind emanating from the second CH had a speed of 700 km/s, the strength of the magnetic field carried with this wind was slightly more than 10 nT for a short period. But the influence was limited: Kp became only 3 once the co-rotating interaction region arrived on Nov 12. The third elongated recurrent coronal hole induced the most significant magnetic disturbance of this month. The interplanetary magnetic field measured by the ACE spacecraft showed strong excursions late on Nov 19, while unsettled to minor storm conditions were observed with Kp indices of once 6 and 5 by mid Nov 20. The stretched form of the coronal hole was responsible for the long period of sporadically active conditions up till Nov 24 and unsettled conditions up till Nov 26. After this day, we turned again to very quiet conditions.

III. Noticeable solar events

No M- or X-class flares occurred.

IV. Halo CME list

onset time	e-mail time CACTus	da	e-mail time LASCO	Ass. Events	onset time NEMO	consequences
11/22 09:48	11/23 18:12	352	-	False alert	-	-

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
NEMO: Novel EIT wave Machine Observing (software developed by the SIDC)

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 (LDE), flare class