



Center

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SUNSPOT BULLETIN

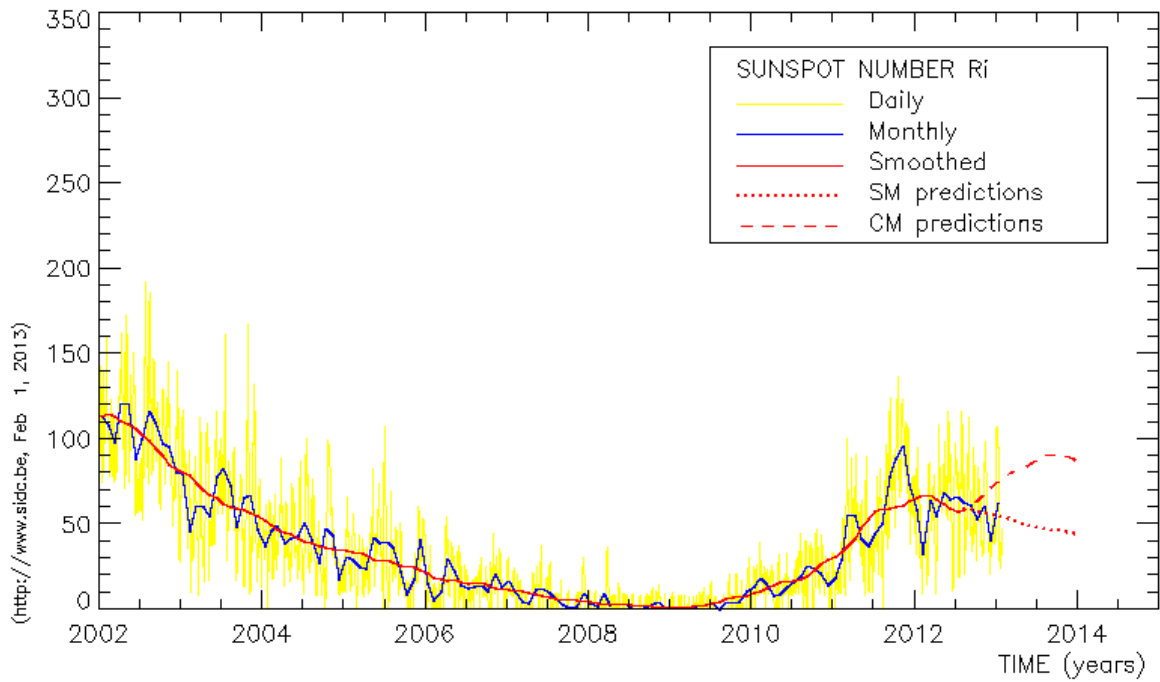
2013

n° 1

Provisional international and normalized hemispheric daily sunspot numbers for January 2013

computed at the *Royal Observatory of Belgium* using observations from an international network with the *Locarno Specola Solare* as reference station.

Date	R' ₁	R' _N	R' _S
1	65	49	16
2	62	46	16
3	85	59	26
4	98	71	27
5	106	71	35
6	105	77	28
7	95	67	28
8	101	66	35
9	102	62	40
10	97	56	41
11	107	67	40
12	105	73	32
13	84	54	30
14	78	47	31
15	72	47	25
16	59	42	17
17	41	33	8
18	28	18	10
19	31	23	8
20	31	24	7
21	24	17	7
22	36	28	8
23	39	32	7
24	36	29	7
25	32	32	0
26	43	35	8
27	47	36	11
28	40	29	11
29	34	18	16
30	35	19	16
31	32	16	16
Monthly mean	62.9	43.3	19.6
Cooperating stations	70	62	62



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for July 2012: 57.7 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2012	Aug	60	58	2013	Feb	54	78	2013	Aug	48	91
	Sep	60	61		Mar	53	80		Sep	47	91
	Oct	57	64		Apr	51	82		Oct	46	91
	Nov	57	68		May	50	83		Nov	46	90
	Dec	57	72		Jun	49	86		Dec	45	88
2013	Jan	56	75		Jul	49	89	2014	Jan	44	87

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 method 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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FTP anonymous : omaftp.oma.be, directory: dist/astro/sidcdata
 Web: http://sidc.oma.be, "Sunspots" section in sidebar.

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

Date	R' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
31	64	31	-	114	////	0	0/0	1	
1	65	47	-	118	////	2	0/0	0	
2	62	47	-	119	////	0	0/0	4	
3	85	82	-	129	////	0	0/0	1	
4	98	83	-	143	////	1	0/0	2	
5	106	74	-	145	////	3	1/0	1	
6	105	90	-	142	////	0	0/0	3	
7	95	76	-	150	////	1	0/0	2	
8	101	68	-	156	////	0	0/0	6	
9	102	106	-	169	////	0	0/0	3	
10	97	125	-	174	////	2	0/0	2	
11	107	178	-	172	////	12	2/0	3	
12	105	138	-	169	////	7	0/0	4	
13	84	152	-	156	////	7	2/0	12	
14	78	163	-	154	////	3	0/0	10	
15	72	197	-	140	////	2	0/0	5	
16	59	103	-	137	////	0	0/0	8	
17	41	77	-	123	////	0	0/0	16	
18	28	55	-	115	////	1	0/0	14	
19	31	34	-	107	////	0	0/0	12	
20	31	24	-	107	////	0	0/0	11	
21	24	24	-	108	////	0	0/0	4	
22	36	28	-	110	////	1	0/0	0	
23	39	26	-	105	////	0	0/0	1	
24	36	20	-	103	////	0	0/0	1	
25	32	20	-	101	////	0	0/0	6	
26	43	14	-	99	////	0	0/0	25	
27	47	23	-	98	////	0	0/0	10	
28	40	19	-	98	////	0	0/0	6	
29	34	27	-	95	////	0	0/0	2	
30	35	24	-	97	////	0	0/0	1	
31	32	27	-	103	////	1	0/0	3	

- 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 JANUARY 2013

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	1330	8	35	115	93	22	41	48.6	3	FC
2	945	6	19	79	57	22	22	11.4	3	OB
10	1000	8	26	106	59	47	47	80.0	2	OL
12	1200	8	65	145	96	49	85	94.8	3	OL
13	1400	6	54	114	76	38	45	129.0	2	OL
14	1300	7	35	105	55	50	29	127.4	2	AE
16	915	4	21	61	47	14	49	48.7	1	AE
18	1215	2	12	32	19	13	13	51.5	1	AE
22	900	3	16	46	35	11	24	21.5	2	SV
23	1220	4	20	60	49	11	0	18.1	2	OL
28	1130	3	8	38	22	16	16	7.3	3	OB
30	1500	5	5	55	22	33	22	5.6	2	OB
31	1445	3	4	34	22	12	12	26.7	2	OB

The relative mean sunspot number is 76.2.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'=K'U FOR JANUARY 2013

K' = 0.882 (*)

1	101	7	***	13	101	19	***	25	***
2	70	8	***	14	93	20	***	26	***
3	***	9	***	15	***	21	***	27	***
4	***	10	93	16	54	22	41	28	34
5	***	11	***	17	***	23	53	29	***
6	***	12	128	18	28	24	***	30	49
								31	30

The normalised relative monthly mean sunspot number is 67.

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

The Sun has been observed 13 days on 31 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR JANUARY 2013
E AND F BRUNNER'S TYPE GROUPS

Uccle Nø	East Limb		Date and type			West Limb
	Date		1st obs	CMP	Last obs	Date
18-2132	1	7.7	10 E	1 14.4	18 G	1 21.2

PROBABLE RETURN OF MAJOR GROUPS FOR FEBRUARY 2013
NONE