



Center

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SUNSPOT BULLETIN

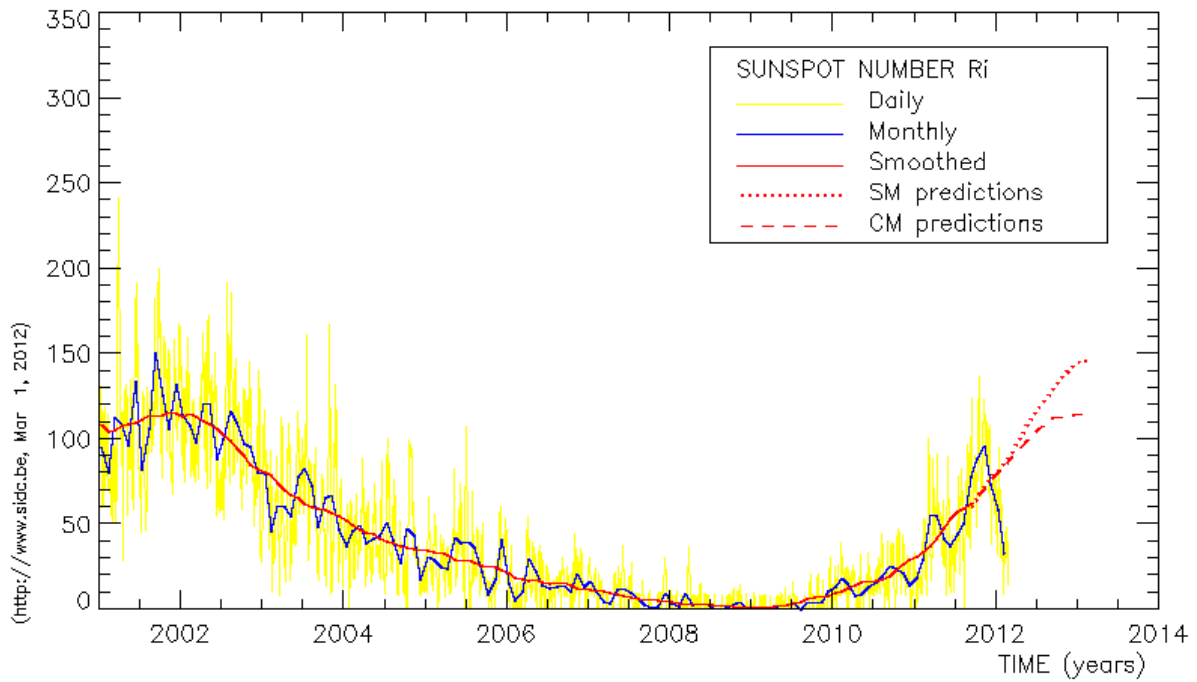
2012

n° 2

Provisional international and normalized hemispheric daily sunspot numbers for February 2012

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	61	40	21
2	41	30	11
3	24	24	0
4	26	26	0
5	23	23	0
6	29	29	0
7	22	22	0
8	9	9	0
9	20	8	12
10	32	14	18
11	32	9	23
12	34	9	25
13	45	18	27
14	40	17	23
15	37	19	18
16	33	17	16
17	34	18	16
18	38	26	12
19	48	35	13
20	44	44	0
21	41	41	0
22	30	30	0
23	38	38	0
24	40	40	0
25	33	25	8
26	33	33	0
27	30	30	0
28	29	29	0
29	14	14	0
Monthly mean	33.1	24.7	8.4
Cooperating stations	68	64	64



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for August 2011: 59.0 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2011	Sep	61	62	2012	Mar	93	89	2012	Sep	129	112
	Oct	65	66		Apr	100	94		Oct	135	113
	Nov	73	71		May	106	98		Nov	139	113
	Dec	77	76		Jun	113	102		Dec	143	114
2012	Jan	82	80		Jul	119	106	2013	Jan	146	115
	Feb	87	84		Aug	124	109		Feb	147	114

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

Date	R' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
31	46	47	-	117	////	0	0/0	3	
1	61	45	-	118	////	0	0/0	5	
2	41	49	-	118	////	0	0/0	4	
3	24	38	-	111	////	0	0/0	6	
4	26	24	-	107	////	0	0/0	11	
5	23	9	-	103	////	0	0/0	11	
6	29	9	-	112	////	4	1/0	10	
7	22	4	-	107	////	12	0/0	20	
8	9	3	-	97	////	2	0/0	13	
9	20	10	-	99	////	0	0/0	7	
10	32	30	-	111	////	4	0/0	6	
11	32	53	-	112	////	0	0/0	6	
12	34	2	-	110	////	0	0/0	5	
13	45	50	-	108	////	0	0/0	13	
14	40	37	-	107	////	0	0/0	17	
15	37	31	-	105	////	0	0/0	25	
16	33	24	-	103	////	0	0/0	5	
17	34	19	-	104	////	0	0/0	1	
18	38	13	-	104	////	0	0/0	8	
19	48	23	-	105	////	1	0/0	20	
20	44	46	-	111	////	4	0/0	22	
21	41	38	-	103	////	0	0/0	9	
22	30	27	-	104	////	0	0/0	10	
23	38	30	-	103	////	0	0/0	4	
24	40	18	-	109	////	0	0/0	6	
25	33	14	-	108	////	0	0/0	8	
26	33	42	-	107	////	0	0/0	7	
27	30	13	-	106	////	0	0/0	31	
28	29	17	-	103	////	0	0/0	14	
29	14	18	-	102	////	0	0/0	9	

- 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 FEBRUARY 2012

DATE	UT	NUMBER OF		RELATIVE SUNSPOT NUMBERS			PPSI 10-5	QUAL	OBS	
		GROUPS	SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	1150	6	28	88	62	26	52	41.1	2	OL
2	1230	4	21	61	49	12	49	50.7	2	OL
3	850	3	16	46	46	0	29	44.5	2	OL
4	910	3	5	35	24	11	11	24.9	2	OL
5	1115	3	5	35	24	11	11	2.5	2	OL
6	905	2	6	26	26	0	0	2.2	3	SV
7	850	1	3	13	13	0	0	1.2	1	SV
8	930	1	2	12	12	0	0	0.7	2	SV
10	1130	2	18	38	11	27	27	21.6	3	SV
11	845	2	9	29	12	17	17	23.5	2	SV
14	1300	4	14	54	23	31	11	55.8	2	AE
19	1100	5	12	62	50	12	40	24.7	3	AE
20	845	4	27	67	67	0	44	23.3	3	OB
21	940	4	32	72	72	0	38	21.9	2	OB
22	910	2	23	43	43	0	0	23.9	3	OB
25	1115	4	9	49	38	11	11	8.3	3	OB
27	835	4	6	46	46	0	11	3.3	3	OL

The relative mean sunspot number is 45.6.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR FEBRUARY 2012

$K' = 0.926$ (*)

1	81	7	12	13	***	19	57	25	45
2	56	8	11	14	50	20	62	26	***
3	43	9	***	15	***	21	67	27	43
4	32	10	35	16	***	22	40	28	***
5	32	11	27	17	***	23	***	29	***
6	24	12	***	18	***	24	***		

The normalised relative monthly mean sunspot number is 42.

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

The Sun has been observed 17 days on 29 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR FEBRUARY 2012
E AND F BRUNNER'S TYPE GROUPS

Uccle Nø	East Limb		Date and type			West Limb
	Date		1st obs	CMP	Last obs	Date
1-2120	2	5.0	10 D	2 11.8	14 E	2 18.5

PROBABLE RETURN OF MAJOR GROUPS FOR MARCH 2012

Nø	New East Limb		New CMP	New West Limb	
1	3	3.3	3 10.0	3	16.8