

Center

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SUNSPOT BULLETIN

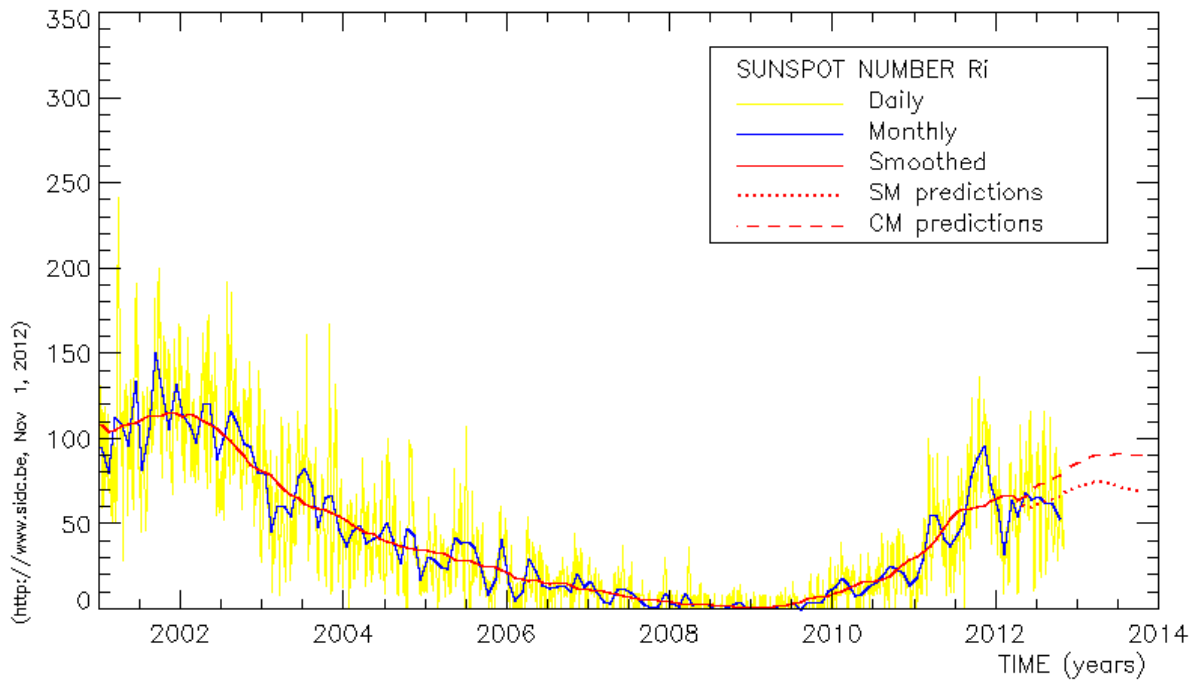
2012

n° 10

Provisional international and normalized hemispheric daily sunspot numbers for October 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	54	27	27
2	51	12	39
3	44	0	44
4	43	0	43
5	42	0	42
6	30	0	30
7	28	0	28
8	34	0	34
9	49	22	27
10	53	30	23
11	51	25	26
12	58	33	25
13	56	32	24
14	66	49	17
15	83	58	25
16	80	53	27
17	71	39	32
18	76	46	30
19	66	45	21
20	51	40	11
21	57	37	20
22	59	44	15
23	64	40	24
24	66	39	27
25	55	28	27
26	54	27	27
27	47	25	22
28	37	13	24
29	48	20	28
30	45	14	31
31	35	9	26
Monthly mean	53.3	26.0	27.3
Cooperating stations	68	62	62



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for April 2012: 64.6 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2012	May	60	66	2012	Nov	70	82	2013	May	75	91
	Jun	61	70		Dec	72	85		Jun	74	91
	Jul	63	73	2013	Jan	73	87		Jul	73	92
	Aug	64	75		Feb	75	89		Aug	72	91
	Sep	66	77		Mar	75	90		Sep	70	91
	Oct	68	79		Apr	76	91		Oct	69	91

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

Brussels, November 1, 2012 09:42 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	65	77	-	136	////	10	1/0	15	
1	54	87	-	128	////	0	0/0	23	
2	51	84	-	118	////	1	0/0	5	
3	44	84	-	113	////	3	0/0	6	
4	43	58	-	110	////	0	0/0	1	
5	42	55	-	106	////	0	0/0	6	
6	30	42	-	99	////	1	0/0	8	
7	28	23	-	98	////	0	0/0	8	
8	34	33	-	103	////	1	1/0	32	
9	49	37	-	106	////	0	1/0	32	
10	53	33	-	112	////	3	1/0	14	
11	51	37	-	117	////	5	0/0	7	
12	58	50	-	122	////	14	0/0	15	
13	56	60	-	125	////	1	0/0	35	
14	66	62	-	132	////	4	0/0	27	
15	83	78	-	137	////	2	0/0	12	
16	80	56	-	137	////	12	0/0	6	
17	71	68	-	135	////	3	0/0	9	
18	76	49	-	138	////	0	0/0	6	
19	66	54	-	141	////	15	0/0	3	
20	51	40	-	151	////	0	1/0	2	
21	57	67	-	144	////	2	1/0	4	
22	59	73	-	156	////	12	1/0	3	
23	64	86	-	142	////	4	0/1	8	
24	66	89	-	136	////	5	0/0	4	
25	55	120	-	130	////	6	0/0	3	
26	54	141	-	131	////	2	0/0	6	
27	47	96	-	122	////	1	0/0	3	
28	37	62	-	117	////	1	0/0	4	
29	48	64	-	108	////	0	0/0	2	
30	45	45	-	106	////	0	0/0	2	
31	35	32	-	104	////	0	0/0	5	

- 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 OCTOBER 2012

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	811	6	24	84	36	48	29	61.8	3	OB
2	1200	5	15	65	0	65	31	33.4	1	SV
4	910	4	16	56	0	56	0	30.6	3	SV
7	830	3	3	33	0	33	11	2.7	3	SV
9	950	5	15	65	24	41	0	21.6	3	FC
10	810	4	25	65	36	29	0	25.7	3	FC
11	810	4	24	64	27	37	11	15.8	2	OL
14	850	5	30	80	57	23	39	29.9	2	OB
15	900	7	58	128	90	38	53	44.6	3	OL
16	1150	6	24	84	48	36	35	9.4	1	SV
18	1005	8	17	97	50	47	11	12.7	3	SV
19	850	4	13	53	40	13	26	25.5	3	SV
21	1230	4	11	51	40	11	13	7.9	1	SV
22	805	4	37	77	53	24	42	28.9	3	OB
23	805	5	36	86	49	37	38	35.0	3	OB
24	810	5	45	95	50	45	28	40.3	3	OB
27	911	4	18	58	27	31	43	29.2	2	OB
28	945	4	25	65	16	49	49	43.9	3	OB
31	840	3	7	37	0	37	0	16.0	3	OL

The relative mean sunspot number is 70.7.

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

$K' = 0.831$ (*)

1	70	7	27	13	***	19	44	25	***
2	54	8	***	14	66	20	***	26	***
3	***	9	54	15	106	21	42	27	48
4	47	10	54	16	70	22	64	28	54
5	***	11	53	17	***	23	71	29	***
6	***	12	***	18	81	24	79	30	***
								31	31

The normalised relative monthly mean sunspot number is 59.

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

The Sun has been observed 19 days on 31 possible.

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

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR NOVEMBER 2012

NONE