



Center

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SUNSPOT BULLETIN

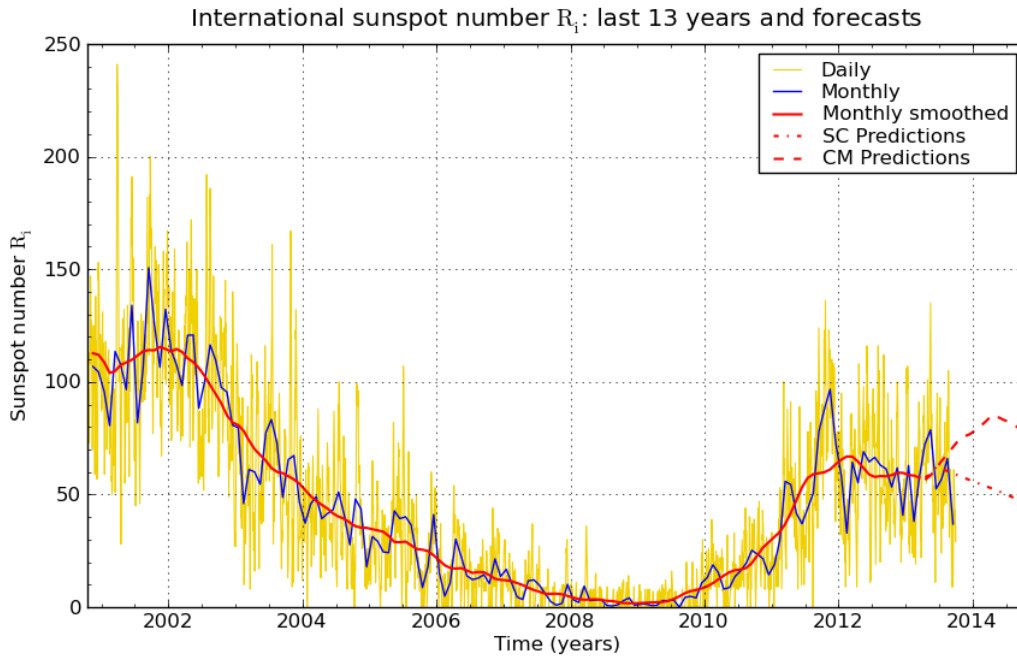
2013

n° 9

Provisional international and normalized hemispheric daily sunspot numbers for September 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	50	36	14
2	61	36	25
3	49	25	24
4	53	24	29
5	44	14	30
6	33	16	17
7	25	8	17
8	17	7	10
9	9	0	9
10	10	0	10
11	41	0	41
12	35	10	25
13	25	0	25
14	17	0	17
15	9	0	9
16	17	0	17
17	35	9	26
18	43	17	26
19	43	12	31
20	61	37	24
21	52	31	21
22	54	29	25
23	49	22	27
24	44	27	17
25	48	33	15
26	37	26	11
27	43	27	16
28	38	29	9
29	29	21	8
30	36	22	14
Monthly mean	36.9	17.3	19.6
Cooperating stations	67	60	60



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/10/2013

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for March 2013: 57.5 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2013 Apr	58	57	2013 Oct	58	74	2014 Apr	53	85
May	59	59	Nov	57	76	May	52	84
Jun	62	62	Dec	56	77	Jun	51	83
Jul	61	65	2014 Jan	55	79	Jul	50	82
Aug	60	68	Feb	55	81	Aug	48	81
Sep	59	71	Mar	54	83	Sep	47	79

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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 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	53	51	-	///	////	///	///	(///)	
1	50	53	-	104	////	3	0/0	12	
2	61	61	-	106	////	2	0/0	8	
3	49	49	-	106	////	12	0/0	8	
4	53	38	-	109	////	18	0/0	6	
5	44	20	-	110	////	4	0/0	3	
6	33	13	-	101	////	0	0/0	6	
7	25	8	-	99	////	1	0/0	4	
8	17	3	-	96	////	1	0/0	7	
9	9	3	-	94	////	0	0/0	4	
10	10	2	-	95	////	1	0/0	9	
11	41	8	-	93	////	0	0/0	6	
12	35	4	-	93	////	0	0/0	8	
13	25	4	-	92	////	0	0/0	12	
14	17	4	-	93	////	0	0/0	6	
15	9	4	-	93	////	0	0/0	2	
16	17	7	-	95	////	0	0/0	4	
17	35	6	-	99	////	0	0/0	10	
18	43	17	-	104	////	2	0/0	13	
19	43	23	-	108	////	2	0/0	12	
20	61	35	-	109	////	2	0/0	10	
21	52	40	-	110	////	13	0/0	11	
22	54	47	-	111	////	1	0/0	5	
23	49	44	-	108	////	2	0/0	6	
24	44	43	-	110	////	5	0/0	12	
25	48	42	-	111	////	3	0/0	4	
26	37	53	-	110	////	1	0/0	1	
27	43	35	-	108	////	1	0/0	1	
28	38	24	-	106	////	0	0/0	1	
29	29	10	-	103	////	1	0/0	3	
30	36	6	-	105	////	0	0/0	2	

- 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 SEPTEMBER 2013

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	850	4	26	66	48	18	66	33.8	2	OL
2	800	5	27	77	49	28	43	37.0	3	OB
3	745	4	26	66	34	32	15	36.6	3	OB
4	745	4	28	68	31	37	0	30.8	3	OB
5	715	3	11	41	15	26	0	7.0	3	OB
6	730	3	6	36	12	24	0	4.5	2	OB
8	740	2	2	22	11	11	0	0.3	3	SV
9	730	1	3	13	0	13	13	0.3	2	AE
10	840	1	2	12	0	12	12	1.3	2	AE
11	745	5	10	60	11	49	25	3.7	2	AE
13	715	2	2	22	0	22	0	0.3	2	OB
16	730	2	3	23	0	23	11	2.7	3	SV
17	650	1	1	11	0	11	11	0.4	2	SV
19	800	4	9	49	16	33	16	7.5	2	SV
22	1015	4	13	53	29	24	40	46.7	2	AE
23	1220	5	17	67	32	35	45	40.0	3	OL
24	745	4	17	57	35	22	33	37.8	3	OL
25	1110	5	39	89	65	24	38	32.3	3	OL
26	1145	4	10	50	39	11	16	44.0	2	AE
27	1000	4	10	50	39	11	28	35.5	2	OL
28	750	4	10	50	39	11	0	28.1	2	OL
29	940	3	5	35	24	11	0	8.5	2	OL
30	750	3	8	38	22	16	16	2.2	2	OB

The relative mean sunspot number is 45.9.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR SEPTEMBER 2013

$$K' = 0.844 (*)$$

1	56	7	***	13	19	19	41	25	75
2	65	8	19	14	***	20	***	26	42
3	56	9	11	15	***	21	***	27	42
4	57	10	10	16	19	22	45	28	42
5	35	11	51	17	9	23	57	29	30
6	30	12	***	18	***	24	48	30	32

The normalised relative monthly mean sunspot number is 39.

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

The Sun has been observed 23 days on 30 possible.