



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

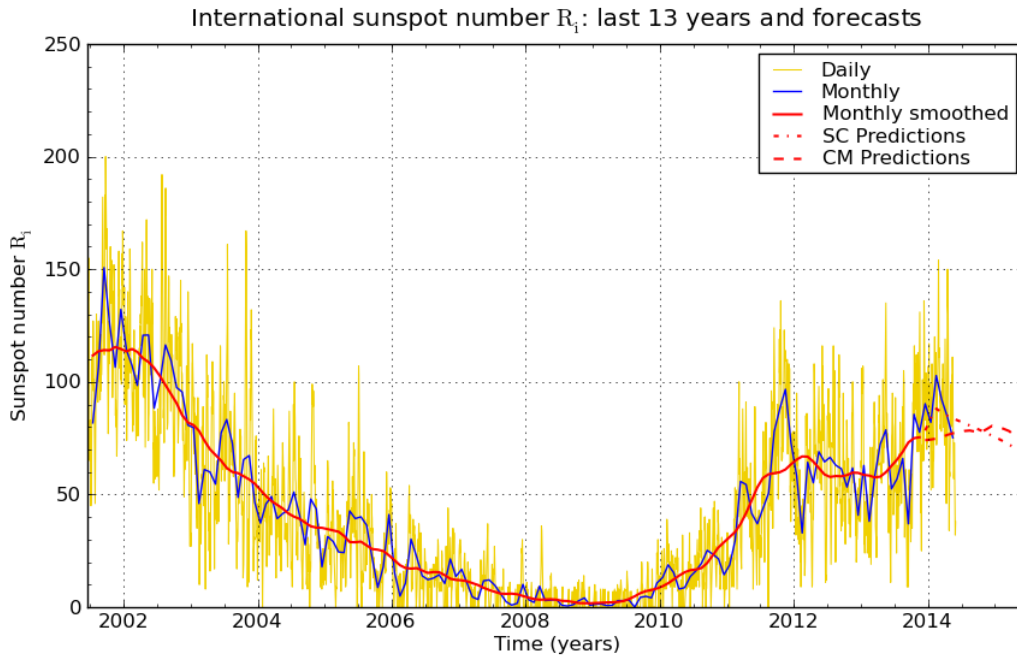
2014

n° 5

Provisional international and normalized hemispheric daily sunspot numbers for May 2014

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	59	8	51
2	77	8	69
3	82	9	73
4	85	16	69
5	95	28	67
6	99	43	56
7	80	52	28
8	88	53	35
9	93	55	38
10	82	51	31
11	100	52	48
12	103	50	53
13	89	40	49
14	111	58	53
15	104	59	45
16	89	54	35
17	101	40	61
18	92	29	63
19	68	16	52
20	58	8	50
21	57	0	57
22	44	0	44
23	61	0	61
24	73	0	73
25	73	0	73
26	61	0	61
27	52	0	52
28	47	0	47
29	32	0	32
30	37	0	37
31	38	0	38
Monthly mean	75.2	23.5	51.7
Cooperating stations	66	58	58



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 02/06/2014

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for November 2013: 75.4 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2013	Dec	78	74	2014	Jun	83	78	2014	Dec	76	81
2014	Jan	84	74		Jul	82	78	2015	Jan	75	80
	Feb	88	75		Aug	81	78		Feb	74	79
	Mar	86	76		Sep	80	78		Mar	72	78
	Apr	85	77		Oct	78	78		Apr	71	76
	May	84	77		Nov	77	79		May	69	74

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
30	62	61	-	124	////	10	0/0	16	
1	59	88	-	126	////	1	0/0	5	
2	77	152	-	135	////	5	0/0	3	
3	82	130	-	133	////	4	0/0	7	
4	85	89	-	132	////	7	0/0	15	
5	95	56	-	139	////	3	0/0	12	
6	99	52	-	139	////	13	2/0	3	
7	80	59	-	146	////	3	0/0	4	
8	88	106	-	148	////	101	1/0	21	
9	93	133	-	152	////	22	0/0	8	
10	82	154	-	152	////	28	0/0	12	
11	100	157	-	164	////	111	0/0	16	
12	103	153	-	163	////	34	0/0	9	
13	89	128	-	159	////	15	0/0	4	
14	111	118	-	163	////	23	0/0	5	
15	104	102	-	152	////	2	0/0	5	
16	89	74	-	139	////	14	0/0	6	
17	101	56	-	134	////	3	0/0	4	
18	92	44	-	128	////	3	0/0	6	
19	68	21	-	117	////	0	0/0	6	
20	58	15	-	117	////	4	0/0	5	
21	57	23	-	114	////	10	0/0	2	
22	44	26	-	111	////	5	0/0	13	
23	61	24	-	116	////	5	0/0	18	
24	73	35	-	118	////	29	1/0	6	
25	73	40	-	113	////	8	0/0	5	
26	61	24	-	108	////	0	0/0	2	
27	52	24	-	106	////	5	0/0	5	
28	47	21	-	99	////	0	0/0	6	
29	32	11	-	103	////	1	0/0	8	
30	37	13	-	102	////	2	0/0	14	
31	38	7	-	103	////	2	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 : $1 \times \text{Sn} + 10 \times "1" + 100 \times ">1"$).
- 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 MAY 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	800	5	31	81	11	70	59	43.0	2	OB
3	730	5	45	95	12	83	32	64.1	2	AE
4	730	7	63	133	26	107	53	56.8	3	OL
5	800	8	33	113	37	76	48	12.5	2	OB
6	1115	9	27	117	55	62	29	9.5	2	OB
7	1300	8	15	95	62	33	35	14.2	2	OB
9	845	8	25	105	60	45	40	37.0	2	OB
12	1300	7	71	141	68	73	113	85.1	3	OL
13	1235	7	63	133	59	74	82	78.5	2	OL
14	810	8	74	154	76	78	69	75.2	3	OL
15	740	6	58	118	76	42	57	53.6	3	OL
16	720	8	48	128	79	49	76	41.8	3	OL
17	715	10	44	144	63	81	52	41.4	3	OL
18	725	8	29	109	30	79	62	37.7	3	OL
19	715	8	16	96	25	71	25	6.3	3	OB
20	800	6	9	69	11	58	0	3.6	2	OB
21	920	6	13	73	0	73	25	6.8	2	OB
22	845	5	8	58	0	58	11	16.5	2	OB
23	815	5	14	64	0	64	29	7.8	2	OB
24	845	6	37	97	0	97	21	29.9	2	AE
25	815	6	32	92	0	92	39	22.4	2	AE
30	1345	4	8	48	0	48	14	7.8	2	OB
31	735	5	11	61	0	61	13	3.9	2	OL

The relative mean sunspot number is 101.0.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR MAY 2014

$K' = 0.779$ (*)

1	63	7	74	13	104	19	75	25	72
2	***	8	***	14	120	20	54	26	***
3	74	9	82	15	92	21	57	27	***
4	104	10	***	16	100	22	45	28	***
5	88	11	***	17	112	23	50	29	***
6	91	12	110	18	85	24	76	30	37
								31	48

The normalised relative monthly mean sunspot number is 79.

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

The Sun has been observed 23 days on 31 possible.