



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

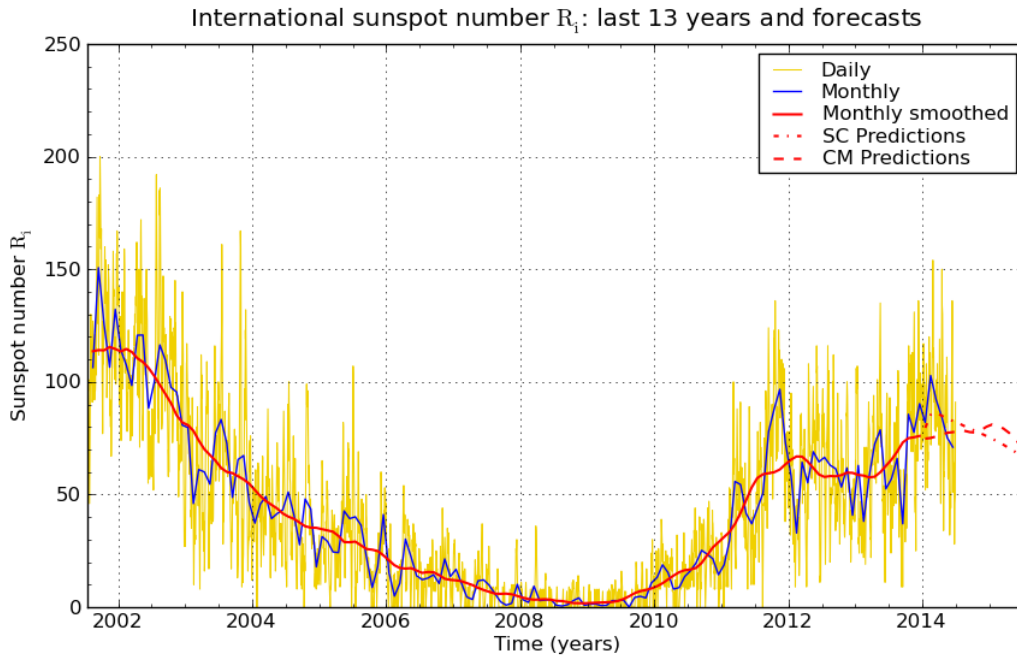
2014

n° 6

Provisional international and normalized hemispheric daily sunspot numbers for June 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	44	8	36
2	43	9	34
3	51	15	36
4	44	16	28
5	60	18	42
6	82	30	52
7	92	27	65
8	98	30	68
9	108	35	73
10	112	35	77
11	120	50	70
12	136	52	84
13	126	41	85
14	95	34	61
15	51	30	21
16	58	26	32
17	66	24	42
18	83	28	55
19	66	24	42
20	55	8	47
21	64	16	48
22	62	16	46
23	53	22	31
24	28	17	11
25	38	18	20
26	46	20	26
27	46	25	21
28	49	33	16
29	64	36	28
30	91	51	40
Monthly mean	71.0	26.5	44.5
Cooperating stations	69	61	61



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/07/2014

Predictions of the monthly smoothed Sunspot Number
using the last provisional value, calculated for December 2013: 76.0 ($\pm 5\%$)

		SM	CM		SM	CM		SM	CM		
2014	Jan	80	75	2014	Jul	82	78	2015	Jan	75	81
	Feb	85	75		Aug	80	78		Feb	74	80
	Mar	86	76		Sep	79	78		Mar	72	79
	Apr	85	77		Oct	78	78		Apr	71	77
	May	84	77		Nov	77	79		May	69	75
	Jun	83	78		Dec	76	80		Jun	68	72

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	38	7	-	103	////	2	0/0	4	
1	44	42	-	103	////	3	0/0	4	
2	43	21	-	105	////	0	0/0	6	
3	51	25	-	107	////	102	1/0	10	
4	44	38	-	105	////	14	0/0	7	
5	60	47	-	111	////	10	0/0	10	
6	82	79	-	133	////	8	1/0	8	
7	92	166	-	137	////	8	0/0	18	
8	98	183	-	149	////	4	0/0	39	
9	108	200	-	161	////	21	0/0	7	
10	112	194	-	166	////	16	0/2	10	
11	120	157	-	168	////	218	3/1	11	
12	136	138	-	175	////	72	7/0	3	
13	126	117	-	153	////	61	1/0	7	
14	95	79	-	153	////	14	0/0	10	
15	51	66	-	130	////	6	0/0	4	
16	58	86	-	117	////	23	0/0	8	
17	66	85	-	114	////	4	0/0	12	
18	83	64	-	111	////	15	0/0	20	
19	66	42	-	111	////	9	0/0	12	
20	55	36	-	102	////	15	0/0	12	
21	64	35	-	101	////	20	0/0	7	
22	62	27	-	94	////	1	0/0	4	
23	53	11	-	93	////	1	0/0	4	
24	28	15	-	94	////	1	0/0	10	
25	38	38	-	97	////	4	0/0	8	
26	46	32	-	100	////	2	0/0	6	
27	46	31	-	104	////	1	0/0	4	
28	49	31	-	115	////	2	0/0	8	
29	64	39	-	126	////	9	0/0	8	
30	91	63	-	141	////	8	0/0	8	

- 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 JUNE 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	800	4	10	50	12	38	13	4.9	2	OB
2	720	4	12	52	12	40	11	5.4	3	OB
3	1320	3	5	35	11	24	24	3.8	1	OB
5	1045	6	35	95	25	70	31	28.8	3	OL
6	715	6	54	114	40	74	63	48.5	3	OL
7	820	7	66	136	35	101	125	89.9	3	OL
8	905	7	77	147	41	106	122	73.4	3	OL
9	730	6	61	121	29	92	84	83.5	3	OB
10	745	7	56	126	34	92	76	87.5	3	OB
11	800	8	60	140	62	78	29	64.1	3	OB
12	715	10	52	152	59	93	30	62.3	3	OB
13	700	9	54	144	43	101	28	52.4	3	OB
15	1030	5	21	71	33	38	27	44.0	1	LL
18	735	8	36	116	44	72	27	31.4	3	OL
19	1200	6	13	73	11	62	12	7.9	2	OB
20	830	5	13	63	11	52	27	8.4	2	OB
21	930	7	25	95	23	72	49	37.1	2	LL
22	830	7	26	96	22	74	52	32.8	1	LL
23	745	6	18	78	23	55	43	4.1	2	OL
24	720	2	8	28	13	15	15	11.6	3	OL
25	855	2	13	33	14	19	19	37.6	2	OL
26	745	4	18	58	18	40	36	25.9	3	OL
27	737	4	20	60	33	27	47	28.8	2	OL
29	905	6	24	84	39	45	13	49.0	3	FC
30	645	7	26	96	50	46	40	45.8	2	AE

The relative mean sunspot number is 90.5.

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

$K' = 0.741$ (*)

1	37	7	101	13	107	19	54	25	24
2	39	8	109	14	***	20	47	26	43
3	26	9	90	15	53	21	70	27	44
4	***	10	93	16	***	22	71	28	***
5	70	11	104	17	***	23	58	29	62
6	84	12	113	18	86	24	21	30	71

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 25 days on 30 possible.