



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

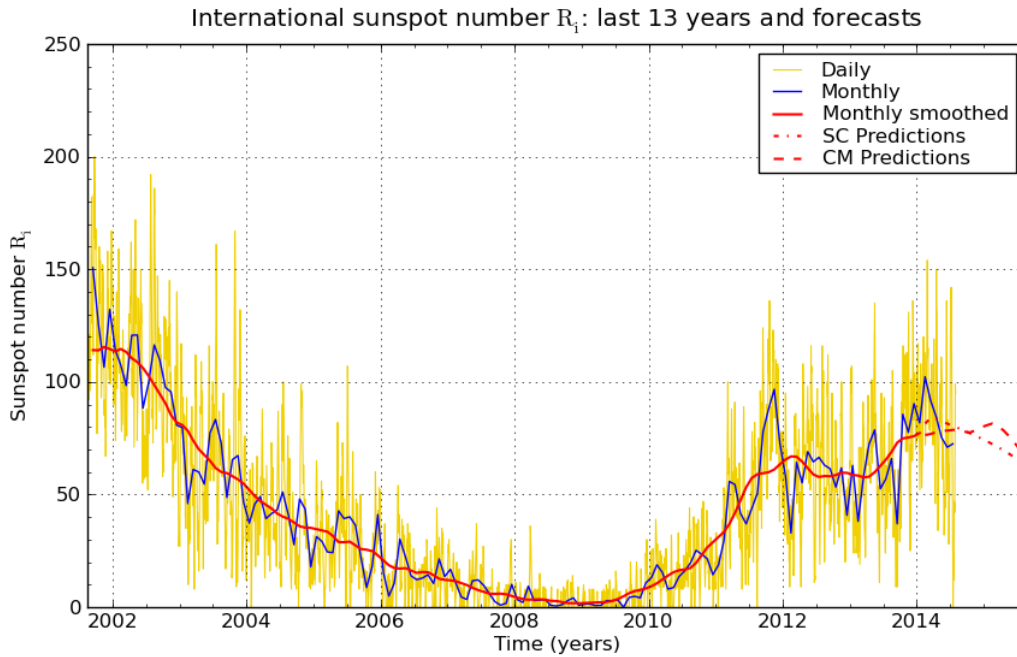
2014

n° 7

Provisional international and normalized hemispheric daily sunspot numbers for July 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	97	53	44
2	105	51	54
3	121	49	72
4	124	48	76
5	140	40	100
6	134	35	99
7	142	42	100
8	132	46	86
9	117	46	71
10	116	40	76
11	104	38	66
12	86	33	53
13	62	29	33
14	45	24	21
15	15	15	0
16	7	7	0
17	0	0	0
18	11	11	0
19	25	14	11
20	25	14	11
21	12	0	12
22	28	9	19
23	47	21	26
24	45	17	28
25	46	23	23
26	42	16	26
27	59	16	43
28	79	12	67
29	99	12	87
30	88	10	78
31	95	15	80
Monthly mean	72.5	25.4	47.1
Cooperating stations	65	57	57



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/08/2014

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for January 2014: 77.3 ($\pm 5\%$)

		SM	CM		SM	CM		SM	CM		
2014	Feb	82	76	2014	Aug	79	79	2015	Feb	72	82
	Mar	84	77		Sep	78	78		Mar	71	80
	Apr	84	78		Oct	77	78		Apr	70	79
	May	83	78		Nov	76	79		May	68	76
	Jun	81	78		Dec	75	80		Jun	67	73
	Jul	81	79	2015	Jan	74	81		Jul	65	70

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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Editor: Frédéric Clette
 3, avenue Circulaire, B-1180 Bruxelles, Belgium
 Fax: ..32/(0)2/374.98.22 Tel: ..32/(0)2/373.02.33 E-mail: silso.info@oma.be

Web: <http://sidc.oma.be/silso>
 FTP anonymous : omaftp.oma.be, directory: dist/astro/sidcdata

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

Date	R' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
30	91	63	-	141	////	8	0/0	8	
1	97	73	-	152	////	21	1/0	4	
2	105	119	-	169	////	34	0/0	6	
3	121	145	-	178	////	22	0/0	6	
4	124	195	-	188	////	37	0/0	6	
5	140	311	-	193	////	11	0/0	4	
6	134	282	-	201	////	14	0/0	7	
7	142	323	-	198	////	16	0/0	8	
8	132	399	-	201	////	125	1/0	10	
9	117	324	-	198	////	47	1/0	10	
10	116	238	-	177	////	20	1/0	8	
11	104	153	-	166	////	14	0/0	8	
12	86	125	-	145	////	19	0/0	6	
13	62	43	-	127	////	13	0/0	7	
14	45	21	-	109	////	1	0/0	12	
15	15	4	-	101	////	0	0/0	10	
16	7	0	-	92	////	0	0/0	6	
17	0	1	-	89	////	0	0/0	4	
18	11	4	-	89	////	0	0/0	3	
19	25	7	-	86	////	0	0/0	2	
20	25	12	-	87	////	0	0/0	3	
21	12	56	-	90	////	0	0/0	6	
22	28	10	-	93	////	0	0/0	8	
23	47	14	-	99	////	7	0/0	6	
24	45	23	-	104	////	13	0/0	8	
25	46	31	-	107	////	12	0/0	6	
26	42	32	-	117	////	6	0/0	8	
27	59	44	-	121	////	6	0/0	6	
28	79	71	-	132	////	14	0/0	12	
29	99	82	-	142	////	7	0/0	4	
30	88	79	-	152	////	12	0/0	4	
31	95	69	-	156	////	4	1/0	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 JULY 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	730	6	36	96	61	35	15	35.0	2	AE
2	745	7	48	118	52	66	37	58.6	2	AE
3	715	8	56	136	53	83	79	51.4	3	AE
4	715	9	56	146	59	87	72	68.2	2	AE
6	800	10	55	155	47	108	106	79.6	3	AE
7	800	8	48	128	35	93	90	92.9	2	OB
14	900	4	23	63	35	28	52	14.8	3	OL
16	715	1	3	13	13	0	0	0.2	3	OL
17	740	0	0	0	0	0	0	0.0	3	OL
18	730	1	7	17	17	0	17	1.4	3	OL
19	815	3	12	42	24	18	30	7.5	3	OL
20	940	1	4	14	0	14	14	20.2	1	OB
22	1030	3	8	38	12	26	0	5.8	2	AE
23	715	4	8	48	23	25	11	2.7	2	AE
24	745	4	12	52	15	37	0	7.7	2	AE
25	1015	4	17	57	33	24	11	22.4	2	AE
26	930	4	19	59	18	41	47	27.7	2	LL
27	815	5	18	68	13	55	46	14.9	1	AE
30	715	8	42	122	12	110	11	50.8	3	OL
31	715	8	67	147	20	127	44	51.4	3	OL

The relative mean sunspot number is 75.9.

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

$K'= 0.755$ (*)

1	72	7	97	13	***	19	32	25	43
2	89	8	***	14	48	20	11	26	45
3	103	9	***	15	***	21	***	27	51
4	110	10	***	16	10	22	29	28	***
5	***	11	***	17	0	23	36	29	***
6	117	12	***	18	13	24	39	30	92
								31	111

The normalised relative monthly mean sunspot number is 57.

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

The Sun has been observed 20 days on 31 possible.