



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

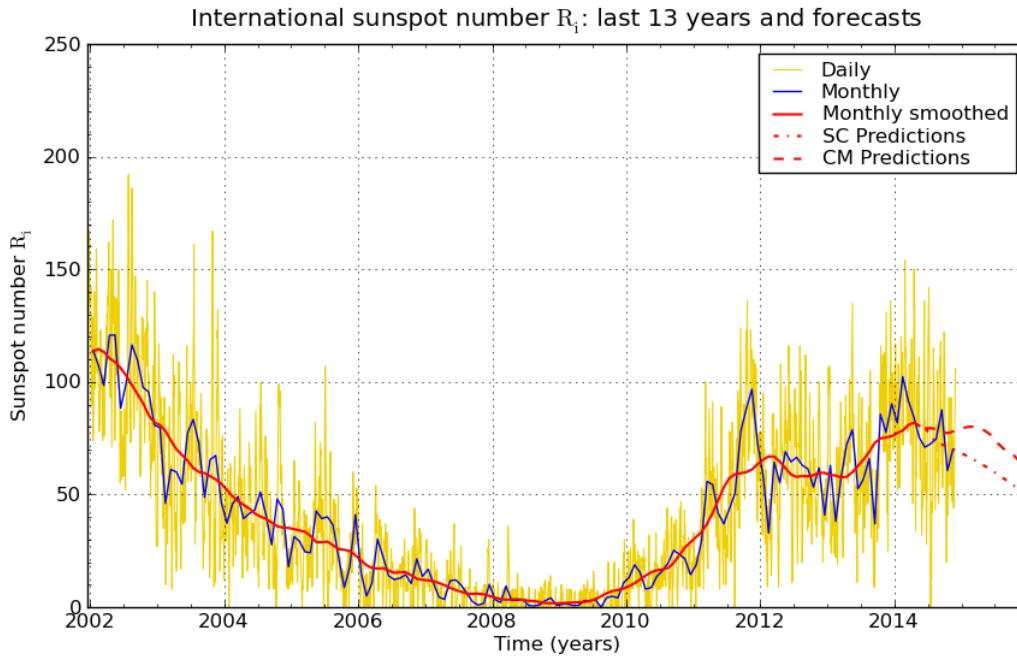
2014

n° 11

Provisional international and normalized hemispheric daily sunspot numbers for November 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	61	36	25
2	66	46	20
3	76	51	25
4	74	38	36
5	93	48	45
6	68	41	27
7	72	43	29
8	58	39	19
9	51	32	19
10	47	27	20
11	60	33	27
12	59	27	32
13	76	38	38
14	69	31	38
15	75	23	52
16	70	13	57
17	67	7	60
18	52	0	52
19	44	0	44
20	50	0	50
21	51	0	51
22	57	0	57
23	53	0	53
24	70	15	55
25	79	20	59
26	94	37	57
27	103	44	59
28	97	52	45
29	106	57	49
30	104	47	57
Monthly mean	70.1	28.2	41.9
Cooperating stations	73	64	64



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/12/2014

Predictions of the monthly smoothed Sunspot Number
using the last provisional value, calculated for May 2014: 80.5 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2014	Jun	80	79	2014	Dec	69	79	2015	Jun	61	76
	Jul	76	79	2015	Jan	68	80		Jul	59	73
	Aug	73	79		Feb	66	80		Aug	57	70
	Sep	72	78		Mar	65	80		Sep	56	69
	Oct	71	77		Apr	64	79		Oct	54	67
	Nov	70	78		May	62	78		Nov	52	64

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	54	14	-	121	////	11	0/0	6	
1	61	22	-	120	////	18	0/0	8	
2	66	67	-	124	////	10	0/0	8	
3	76	75	-	125	////	16	0/0	5	
4	74	48	-	129	////	24	2/0	27	
5	93	57	-	135	////	34	2/0	14	
6	68	64	-	136	////	129	3/0	8	
7	72	77	-	146	////	207	3/1	14	
8	58	52	-	132	////	11	0/0	9	
9	51	78	-	132	////	31	1/0	11	
10	47	75	-	136	////	26	0/0	23	
11	60	54	-	142	////	35	0/0	13	
12	59	47	-	153	////	18	0/0	10	
13	76	54	-	154	////	10	0/0	4	
14	69	95	-	161	////	21	0/0	14	
15	75	97	-	161	////	18	2/0	19	
16	70	166	-	172	////	///	///	18	
17	67	161	-	168	////	4	0/0	12	
18	52	229	-	167	////	2	0/0	10	
19	44	209	-	170	////	8	0/0	12	
20	50	179	-	168	////	///	///	16	
21	51	161	-	163	////	15	0/0	15	
22	57	176	-	167	////	///	///	10	
23	53	154	-	173	////	5	0/0	10	
24	70	141	-	172	////	22	0/0	8	
25	79	117	-	169	////	16	0/0	6	
26	94	126	-	171	////	8	0/0	3	
27	103	172	-	179	////	51	0/0	9	
28	97	147	-	181	////	22	0/0	3	
29	106	162	-	177	////	31	0/0	4	
30	104	239	-	177	////	8	0/0	10	

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 NOVEMBER 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	840	6	21	81	57	24	45	13.0	3	OL
2	840	6	33	93	62	31	66	54.9	3	OL
5	930	10	46	146	74	72	50	65.8	1	AM
6	1335	8	39	119	62	57	57	59.3	1	AM
7	1300	6	38	98	69	29	12	65.0	1	AM
8	915	4	27	67	43	24	32	22.9	1	AM
10	945	3	16	46	22	24	22	24.3	2	OB
11	1030	4	32	72	38	34	27	24.4	2	OB
12	1245	5	33	83	36	47	23	8.6	2	OB
13	1015	7	32	102	41	61	39	42.6	2	OB
15	1340	7	37	107	35	72	32	77.7	2	LL
17	1000	5	29	79	11	68	26	57.7	2	AE
20	1045	4	17	57	11	46	45	42.1	1	AE
21	1000	3	19	49	0	49	34	43.4	2	AE
22	1050	2	16	36	0	36	0	39.9	2	AE
23	1015	3	22	52	0	52	0	46.2	2	AE
24	900	5	39	89	12	77	26	45.5	1	OL
25	950	6	38	98	29	69	54	29.3	1	OL
28	945	7	43	113	63	50	59	95.3	1	OL
29	930	9	75	165	88	77	27	103.7	3	OL

The relative mean sunspot number is 87.6.

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

$$K' = 0.876 (*)$$

1	71	7	86	13	89	19	***	25	86
2	81	8	59	14	***	20	50	26	***
3	***	9	***	15	94	21	43	27	***
4	***	10	40	16	***	22	32	28	99
5	128	11	63	17	69	23	46	29	145
6	104	12	73	18	***	24	78	30	***

The normalised relative monthly mean sunspot number is 77.

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

The Sun has been observed 20 days on 30 possible.