



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

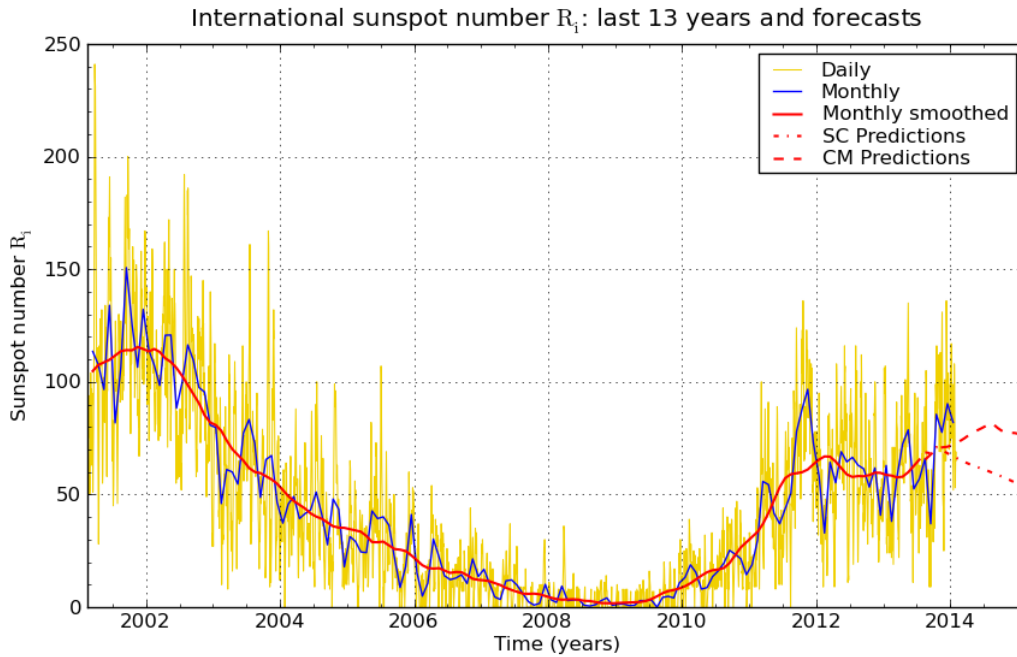
2014

n° 1

Provisional international and normalized hemispheric daily sunspot numbers for January 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	87	10	77
2	93	18	75
3	107	20	87
4	95	25	70
5	94	23	71
6	117	51	66
7	98	39	59
8	75	26	49
9	84	27	57
10	96	44	52
11	99	40	59
12	93	32	61
13	82	31	51
14	67	23	44
15	65	21	44
16	56	10	46
17	52	9	43
18	81	20	61
19	77	15	62
20	93	14	79
21	90	12	78
22	108	28	80
23	102	19	83
24	81	22	59
25	70	11	59
26	68	8	60
27	53	0	53
28	59	13	46
29	66	13	53
30	69	13	56
31	65	19	46
Monthly mean	82.0	21.2	60.8
Cooperating stations	63	56	56



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/02/2014

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for July 2013: 65.5 ($\pm 5\%$)

		SM	CM		SM	CM		SM	CM		
2013	Aug	69	66	2014	Feb	66	73	2014	Aug	60	82
	Sep	68	68		Mar	65	75		Sep	59	80
	Oct	71	70		Apr	63	77		Oct	58	78
	Nov	70	71		May	62	78		Nov	57	77
	Dec	68	71		Jun	62	79		Dec	55	77
2014	Jan	67	72		Jul	61	81	2015	Jan	54	77

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	99	74	-	145	////	106	1/0	6	
1	87	76	-	160	////	107	1/0	12	
2	93	93	-	161	////	15	2/0	23	
3	107	143	-	182	////	14	2/0	10	
4	95	232	-	215	////	110	2/0	6	
5	94	212	-	218	////	14	0/0	2	
6	117	405	-	204	////	16	0/0	3	
7	98	395	-	237	////	123	2/0	9	
8	75	399	-	195	////	5	0/0	7	
9	84	446	-	184	////	1	0/0	8	
10	96	283	-	175	////	2	0/0	6	
11	99	253	-	166	////	1	0/0	4	
12	93	171	-	155	////	2	0/0	8	
13	82	109	-	143	////	4	1/0	5	
14	67	82	-	137	////	3	0/0	12	
15	65	77	-	126	////	0	0/0	4	
16	56	53	-	121	////	0	0/0	1	
17	52	45	-	129	////	0	0/0	4	
18	81	44	-	130	////	1	0/0	1	
19	77	56	-	128	////	1	0/0	1	
20	93	93	-	137	////	2	0/0	1	
21	90	121	-	146	////	1	0/0	8	
22	108	116	-	143	////	2	0/0	9	
23	102	124	-	136	////	0	0/0	9	
24	81	102	-	136	////	0	0/0	3	
25	70	133	-	133	////	0	0/0	8	
26	68	103	-	138	////	0	0/0	9	
27	53	66	-	144	////	0	3/0	4	
28	59	61	-	157	////	26	6/0	6	
29	66	87	-	156	////	6	0/0	6	
30	69	161	-	161	////	105	3/0	2	
31	65	165	-	166	////	2	1/0	1	

- 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 JANUARY 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	1200	7	36	106	11	95	32	86.8	2	AE
5	915	6	61	121	29	92	25	116.8	1	FC
7	936	4	80	120	48	72	109	124.1	2	OB
8	1200	4	85	125	36	89	103	124.9	2	OB
10	1000	6	42	102	46	56	22	118.4	2	OB
12	925	8	42	122	37	85	60	95.6	2	FC
13	1000	9	26	116	47	69	63	67.1	3	AE
17	1145	7	10	80	12	68	23	27.1	2	AE
18	1010	8	12	92	14	78	11	35.2	1	LL
19	1115	7	22	92	15	77	0	45.6	2	LL
22	1000	9	27	117	20	97	70	59.1	2	OB
24	1000	7	24	94	20	74	40	41.9	2	OB
29	1005	5	27	77	16	61	0	36.9	2	OL
31	905	2	41	61	19	42	0	67.2	2	OL

The relative mean sunspot number is 101.8.

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

$K' = 0.882$ (*)

1	93	7	106	13	102	19	81	25	***
2	***	8	110	14	***	20	***	26	***
3	***	9	***	15	***	21	***	27	***
4	***	10	90	16	***	22	103	28	***
5	107	11	***	17	71	23	***	29	68
6	***	12	108	18	81	24	83	30	***
								31	54

The normalised relative monthly mean sunspot number is 90.

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

The Sun has been observed 14 days on 31 possible.