



Sunspot Index and Long-term Solar Observations

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SUNSPOT BULLETIN

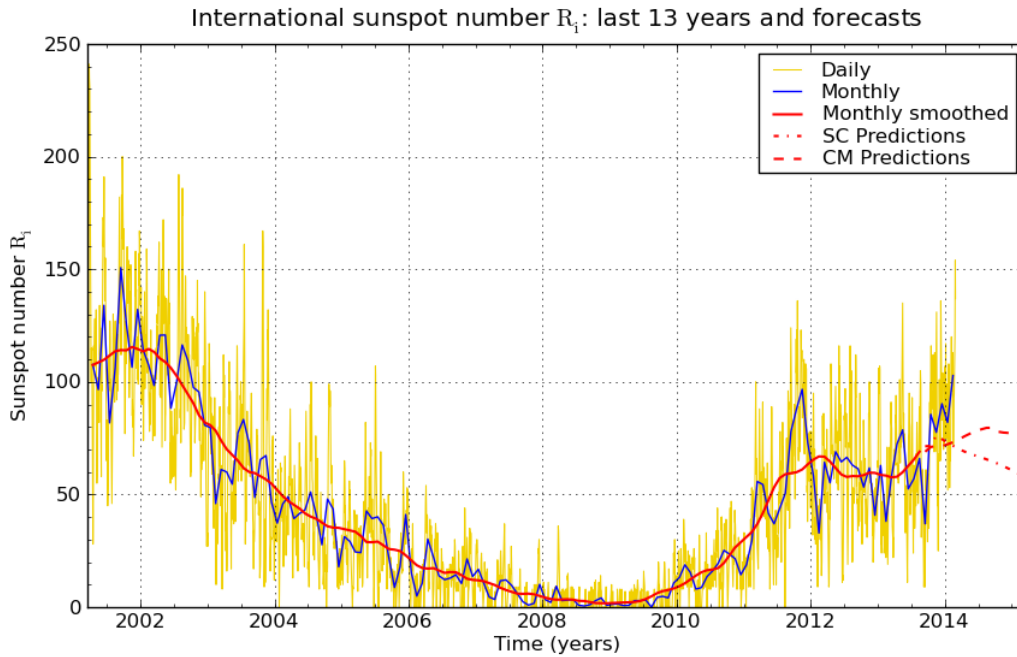
2014

n° 2

Provisional international and normalized hemispheric daily sunspot numbers for February 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	66	18	48
2	83	25	58
3	96	26	70
4	108	26	82
5	117	37	80
6	120	40	80
7	103	31	72
8	103	29	74
9	103	25	78
10	96	23	73
11	111	23	88
12	113	27	86
13	103	19	84
14	91	14	77
15	79	0	79
16	72	0	72
17	74	0	74
18	89	0	89
19	88	15	73
20	93	15	78
21	95	9	86
22	102	17	85
23	111	24	87
24	107	29	78
25	120	28	92
26	145	36	109
27	154	34	120
28	137	30	107
Monthly mean	102.8	21.4	81.4
Cooperating stations	63	57	57



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/03/2014

Predictions of the monthly smoothed Sunspot Number
using the last provisional value, calculated for August 2013: 69.0 ($\pm 5\%$)

		SM	CM		SM	CM		SM	CM		
2013	Sep	71	69	2014	Mar	70	74	2014	Sep	65	80
	Oct	72	71		Apr	69	76		Oct	64	78
	Nov	76	72		May	68	77		Nov	63	78
	Dec	75	72		Jun	67	78		Dec	61	77
2014	Jan	73	72		Jul	67	79	2015	Jan	60	77
	Feb	72	73		Aug	66	80		Feb	59	76

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	65	165	-	166	////	2	1/0	1	
1	66	255	-	177	////	27	2/0	6	
2	83	285	-	190	////	60	7/0	3	
3	96	332	-	188	////	18	0/0	5	
4	108	311	-	188	////	42	4/0	4	
5	117	265	-	194	////	14	1/0	4	
6	120	258	-	191	////	18	1/0	8	
7	103	186	-	178	////	124	2/0	12	
8	103	134	-	172	////	4	0/0	27	
9	103	85	-	169	////	6	0/0	21	
10	96	111	-	161	////	4	0/0	12	
11	111	131	-	172	////	136	2/0	6	
12	113	165	-	160	////	222	3/0	8	
13	103	242	-	167	////	156	5/0	1	
14	91	263	-	167	////	139	4/0	2	
15	79	211	-	162	////	6	0/0	11	
16	72	135	-	154	////	9	1/0	30	
17	74	97	-	152	////	21	0/0	6	
18	89	102	-	151	////	18	0/0	7	
19	88	92	-	158	////	12	0/0	41	
20	93	123	-	156	////	7	1/0	39	
21	95	117	-	157	////	1	0/0	12	
22	102	159	-	163	////	4	0/0	13	
23	111	156	-	172	////	1	0/0	22	
24	107	138	-	171	////	3	0/0	5	
25	120	119	-	174	////	119	0/1	3	
26	145	128	-	178	////	19	1/0	2	
27	154	125	-	176	////	14	0/0	21	
28	137	153	-	171	////	109	1/0	11	

- 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 : $1 \times \text{Sn} + 10 \times \text{"1"} + 100 \times \text{">1"}$).
- 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 FEBRUARY 2014

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
2	910	3	38	68	27	41	56	92.0	1	OL
3	945	5	61	111	26	85	84	95.4	2	AE
4	915	6	67	127	33	94	89	90.1	2	AE
5	930	9	67	157	58	99	96	82.1	2	AE
6	1000	7	58	128	45	83	27	66.1	2	AE
9	1410	9	60	150	34	116	64	48.6	1	FC
11	845	8	49	129	31	98	57	84.5	2	OB
12	915	8	41	121	36	85	59	61.0	2	OB
16	1020	4	55	95	0	95	50	94.1	2	OB
17	1030	6	46	106	0	106	50	59.6	3	OL
19	1330	6	48	108	13	95	0	46.1	1	OL
21	1045	5	62	112	13	99	83	47.1	1	OL
22	1517	6	73	133	25	108	89	63.4	2	OL
23	925	7	69	139	41	98	80	80.8	2	OL
24	900	8	51	131	48	83	91	96.5	2	AE
25	1315	11	74	184	73	111	81	84.0	2	AE
26	1030	13	61	191	51	140	49	73.1	2	AE

The relative mean sunspot number is 128.8.

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

$K'= 0.926$ (*)

1	***	7	***	13	***	19	100	25	170
2	63	8	***	14	***	20	***	26	177
3	103	9	139	15	***	21	104	27	***
4	118	10	***	16	88	22	123	28	***
5	145	11	119	17	98	23	129		
6	119	12	112	18	***	24	121		

The normalised relative monthly mean sunspot number is 119.

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

The Sun has been observed 17 days on 28 possible.