



Sunspot Index and Long-term Solar Observations

World Data Center supported by the ICSU – WDS

SUNSPOT BULLETIN

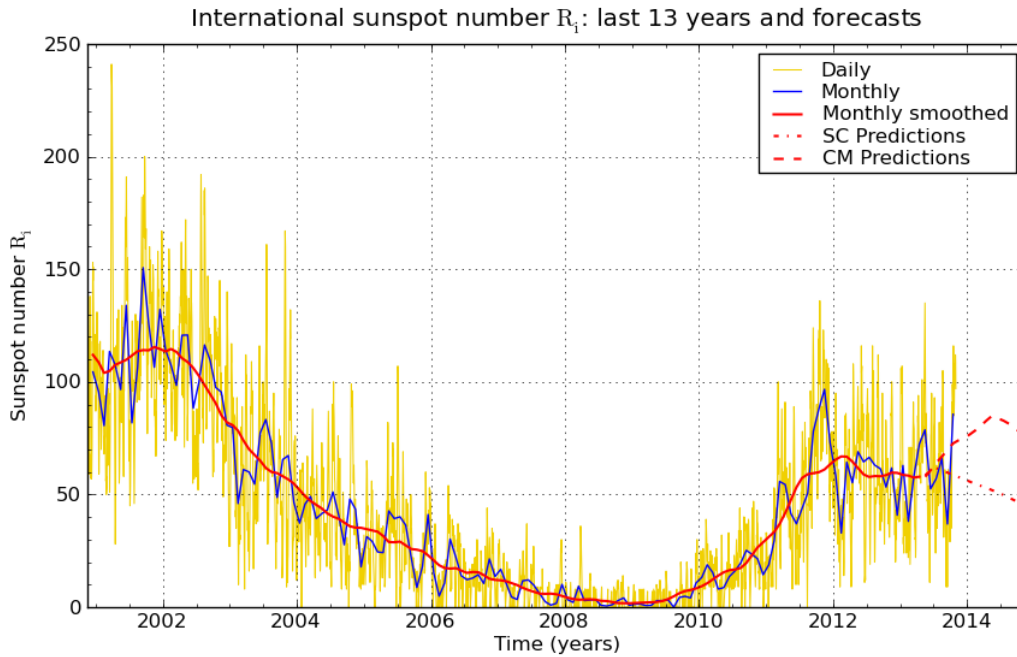
2013

n° 10

Provisional international and normalized hemispheric daily sunspot numbers for October 2013

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	36	16	20
2	45	17	28
3	51	23	28
4	59	22	37
5	43	12	31
6	35	9	26
7	55	12	43
8	72	15	57
9	79	18	61
10	90	14	76
11	91	23	68
12	84	18	66
13	99	37	62
14	96	34	62
15	96	37	59
16	89	29	60
17	109	48	61
18	116	51	65
19	97	49	48
20	85	39	46
21	96	49	47
22	88	47	41
23	93	43	50
24	108	42	66
25	103	36	67
26	99	34	65
27	111	39	72
28	110	32	78
29	112	32	80
30	109	32	77
31	97	22	75
Monthly mean	85.6	30.0	55.6
Cooperating stations	67	58	58



SILSO graphics (<http://sidc.be>) Royal Observatory of Belgium 01/11/2013

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for April 2013: 57.9 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
2013	May	59	58	2013	Nov	58	74	2014	May	52	85
	Jun	60	61		Dec	57	75		Jun	51	84
	Jul	62	64	2014	Jan	56	77		Jul	50	83
	Aug	61	67		Feb	55	79		Aug	49	81
	Sep	60	70		Mar	54	81		Sep	47	79
	Oct	59	73		Apr	53	83		Oct	46	78

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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 Web: <http://sidc.oma.be>, "Sunspots" section in sidebar.

Important announcement

The WDC - Sunspot Index becomes SILSO !

<http://www.sidc.be/silso>

From SIDC to SILSO

Over the past two years, a deep modernization of the sunspot index processing has been undertaken. So far, this evolution remained largely invisible to our users but in the coming months, it will lead to improved and expanded data products. Moreover, a full revision of the historical sunspot index series itself is also in preparation, following a series of Sunspot Number Workshops that started in 2011 (<http://ssnworkshop.wikia.com/wiki/Home>). In view of this major step, we have now created a brand new Web site that is destined to become the central portal for accessing the sunspot index data and other long-term records of solar activity: <http://www.sidc.be/silso>.

In order to reflect this major milestone and the new scope of our World Data Center, we also decided to adopt a new name and acronym: SILSO for "Sunspot Index and Long-term Solar Observations", with a new logo.

SILSO also becomes our new official name as member of the ICSU World Data System (<http://www.icsu-wds.org/>). The WDC-SILSO remains hosted at the SIDC Brussels. Since 1981, the SIDC (originally "Sunspot Index Data Center") evolved to become the overarching name of the current Solar physics team of the Royal Observatory of Belgium ("Solar Influences Data analysis Center"). In the very wide range of activities and projects encompassed by the current SIDC, SILSO now gathers all long-term ground-based services and research activities addressing the specific needs of our users interested primarily in the evolution of solar activity and Sun-Earth relations over secular timescales.

The new SILSO Web site

It is thus with pleasure that we publicly release our new SILSO Web site: sidc.be/silso. We designed those new Web pages to provide a user-friendly access to the existing sunspot data and to the associated information. This new communication platform is destined to grow over the coming weeks and months, with new data and graphical products and new sections providing additional information about the World Data Center, its methods and its worldwide observing network.

In order to avoid an abrupt transition for our users, the current initial version still provides our data files in their traditional format, but it already includes various additional features: improved data documentation, a dynamical plot of the latest Estimated sunspot number (EISN) updated every 5 minutes, files in CSV format (for direct import in your favourite spreadsheet) and a FAQ section.

Please explore the new sections and don't hesitate to make comments and suggestions. New ideas are always welcome and we will strive to implement them while the site is maturing. Our future plans include e.g. SILSO network statistics, error bars on the sunspot numbers and the extension of the group number series (Hoyt & Schatten 1998).

So, please bookmark this new central "Sunspot" Web site and stay tuned for upcoming changes and new features !

Frédéric Clette

WDC Director

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

Date	R' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
30	36	6	-	105	////	0	0/0	2	
1	36	19	-	107	////	1	0/0	6	
2	45	28	-	108	////	0	0/0	48	
3	51	24	-	114	////	3	0/0	4	
4	59	22	-	109	////	1	0/0	1	
5	43	32	-	106	////	0	0/0	0	
6	35	33	-	107	////	1	0/0	2	
7	55	28	-	112	////	22	0/0	4	
8	72	31	-	112	////	2	0/0	15	
9	79	46	-	113	////	2	1/0	25	
10	90	67	-	121	////	12	0/0	10	
11	91	116	-	129	////	114	0/0	7	
12	84	102	-	128	////	29	0/0	8	
13	99	133	-	129	////	102	1/0	2	
14	96	110	-	125	////	11	0/0	24	
15	96	82	-	125	////	22	2/0	21	
16	89	65	-	128	////	18	0/0	14	
17	109	54	-	136	////	15	1/0	11	
18	116	52	-	140	////	8	0/0	1	
19	97	51	-	133	////	0	0/0	2	
20	85	82	-	133	////	6	0/0	2	
21	96	92	-	136	////	9	0/0	1	
22	88	126	-	146	////	40	3/0	5	
23	93	177	-	153	////	11	1/0	4	
24	108	198	-	161	////	149	3/0	2	
25	103	212	-	161	////	21	5/2	2	
26	99	148	-	165	////	42	5/0	2	
27	111	144	-	167	////	53	1/0	2	
28	110	123	-	160	////	439	5/1	1	
29	112	115	-	153	////	10	0/0	7	
30	109	147	-	142	////	0	0/0	15	
31	97	123	-	143	////	2	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 OCTOBER 2013

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	745	3	13	43	22	21	32	21.7	2	OB
2	930	4	15	55	23	32	32	23.6	2	OB
3	745	4	10	50	23	27	16	8.1	2	OB
4	730	5	14	64	24	40	12	5.9	2	OB
7	815	6	15	75	13	62	25	8.2	2	AE
8	900	7	18	88	27	61	38	22.7	3	AE
10	745	7	30	100	23	77	45	24.0	2	AE
12	805	4	43	83	15	68	40	83.3	3	OL
15	1221	8	41	121	39	82	16	39.4	3	OL
17	1410	9	47	137	69	68	11	59.2	3	OL
18	1005	9	51	141	64	77	45	48.0	3	OL
19	1015	8	24	104	56	48	63	21.4	2	AE
20	1020	7	43	113	43	70	52	31.4	3	OL
21	900	6	33	93	41	52	65	44.7	2	OB
22	815	4	31	71	32	39	44	49.0	2	OB
23	915	4	37	77	33	44	52	104.5	2	OB
24	1110	5	55	105	37	68	80	98.1	2	LL
26	915	6	43	103	37	66	47	74.1	1	LL
27	1100	9	70	160	58	102	27	70.7	3	FC
28	1200	9	41	131	39	92	52	45.0	2	AE
29	900	8	46	126	41	85	44	51.3	2	AE
30	830	9	47	137	37	100	63	99.4	2	AE
31	915	7	27	97	25	72	48	47.4	1	AE

The relative mean sunspot number is 98.9.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR OCTOBER 2013

$K'= 0.831$ (*)

1	36	7	62	13	***	19	86	25	***
2	46	8	73	14	***	20	94	26	86
3	42	9	***	15	101	21	77	27	133
4	53	10	83	16	***	22	59	28	109
5	***	11	***	17	114	23	64	29	105
6	***	12	69	18	117	24	87	30	114
								31	81

The normalised relative monthly mean sunspot number is 82.

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

The Sun has been observed 23 days on 31 possible.