



Sunspot Index and Long-term Solar Observations

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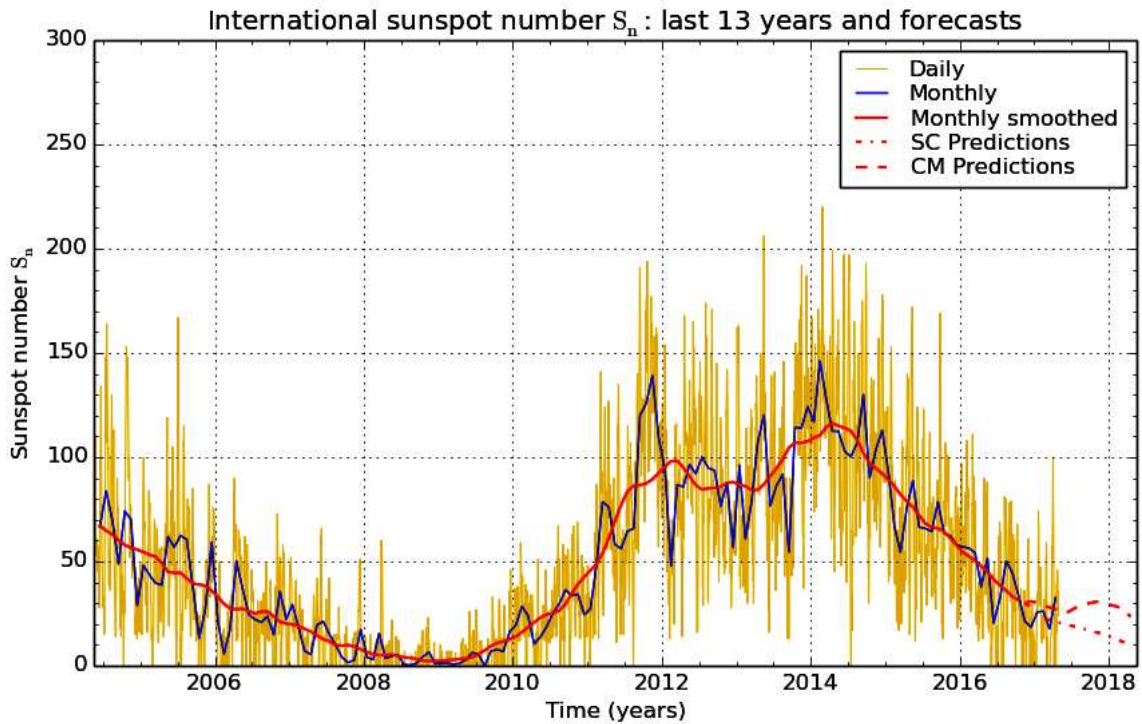
SUNSPOT BULLETIN

2017 n° 4

Provisional international and normalized hemispheric daily sunspot numbers for April 2017

Computed at the *Royal Observatory of Belgium* using observations from an international network with the *Specola Solare Ticinese Locarno* as reference station.

Date	R' _I	R' _N	R' _S
1	71	35	36
2	84	33	51
3	100	42	58
4	75	28	47
5	50	11	39
6	36	0	36
7	24	0	24
8	0	0	0
9	12	12	0
10	14	14	0
11	14	14	0
12	23	23	0
13	25	25	0
14	21	21	0
15	0	0	0
16	0	0	0
17	0	0	0
18	24	24	0
19	16	16	0
20	28	28	0
21	40	29	11
22	31	18	13
23	43	31	12
24	46	34	12
25	42	29	13
26	39	27	12
27	27	14	13
28	36	24	12
29	34	23	11
30	24	15	9
Monthly mean	32.6	19.0	13.6
Cooperating stations	78	63	63



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2017 May 1

Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for October 2016: 31.4 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2016 Nov	30	30	2017 May	20	25	2017 Nov	16	31
Dec	29	31	Jun	20	26	Dec	15	30
2017 Jan	24	30	Jul	19	28	2018 Jan	14	29
Feb	23	29	Aug	18	29	Feb	12	28
Mar	22	28	Sep	17	30	Mar	11	27
Apr	21	27	Oct	16	30	Apr	9	23

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, designed by 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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Summary of the URSIGRAMs from S.I.D.C.

Date	R _i	PPSI	600	2800	COS	SFI	XI	Ak
31	66	208	-	91	////	5	0/0	27
1	71	81	-	101	////	13	1/0	18
2	84	128	-	112	////	116	4/0	8
3	100	117	-	108	////	128	2/0	4
4	75	78	-	94	////	9	0/0	16
5	50	38	-	85	////	5	0/0	12
6	36	16	-	76	////	4	0/0	9
7	24	4	-	74	////	1	0/0	12
8	0	0	-	73	////	0	0/0	20
9	12	0	-	74	////	0	0/0	14
10	14	6	-	74	////	2	0/0	5
11	14	3	-	75	////	0	0/0	15
12	23	3	-	71	////	0	0/0	4
13	25	5	-	74	////	0	0/0	5
14	21	3	-	73	////	0	0/0	16
15	0	1	-	73	////	0	0/0	10
16	0	0	-	75	////	0	0/0	4
17	0	0	-	75	////	0	0/0	4
18	24	2	-	80	////	0	0/0	8
19	16	5	-	81	////	0	0/0	17
20	28	11	-	81	////	2	0/0	25
21	40	17	-	82	////	4	0/0	24
22	31	25	-	84	////	2	0/0	39
23	43	31	-	83	////	0	0/0	40
24	46	33	-	80	////	0	0/0	20
25	42	13	-	81	////	0	0/0	15
26	39	25	-	80	////	1	0/0	10
27	27	14	-	78	////	0	0/0	8
28	36	11	-	78	////	0	0/0	7
29	34	6	-	77	////	0	0/0	8
30	24	5	-	77	////	0	0/0	6

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/m² : 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 : Solar Flare Index from the S.I.D.C. (origin: Ursigrams - UGEOR, evaluation : $1 \times S_n + 10 \times "1" + 100 \times ">1"$).

XI : X-flares index from the Ursigrams (M-flares/X-flares) (origin: Ursigrams - UGEOR, UGEOI).

Ak : geomagnetic index from Wingst, Germany (origin: Ursigrams).

SOLAR PHYSICS DEPARTMENT

UCCLE DAILY PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR APRIL 2017

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS				PPSI 10-5	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH	CENTRAL			
2	655	3	77	107	37	70	58	94.5	3	FC
3	945	4	60	100	35	65	0	62.4	2	OB
4	630	4	56	96	30	66	0	69.3	3	FC
5	1145	3	29	59	14	45	18	20.7	2	BB
7	845	2	9	29	0	29	12	2.7	2	OB
8	920	0	0	0	0	0	0	0.0	2	OB
9	800	0	0	0	0	0	0	0.0	3	OB
10	1245	1	5	15	15	0	0	2.0	3	FC
11	610	1	3	13	13	0	0	2.9	3	FC
12	725	1	3	13	13	0	0	4.2	3	FC
13	615	2	7	27	27	0	14	6.3	3	FC
14	1540	2	3	23	23	0	23	3.7	2	FC
16	920	0	0	0	0	0	0	0.0	2	OB
17	1140	0	0	0	0	0	0	0.0	3	FC
18	1000	2	5	25	25	0	13	3.1	3	OL
19	845	1	3	13	13	0	0	5.4	3	BB
20	740	2	9	29	29	0	0	11.0	3	OB
21	1050	3	11	41	30	11	0	16.2	3	OB
22	945	2	9	29	17	12	17	19.7	3	OB
23	800	3	13	43	30	13	19	22.5	3	OB
24	915	3	20	50	37	13	37	25.2	3	FC
25	730	3	7	37	25	12	37	8.0	2	BB
26	815	3	8	38	26	12	25	21.6	3	FC
27	730	2	5	25	12	13	13	10.3	3	OL
28	830	2	6	26	12	14	14	9.0	3	OL
29	650	3	5	35	24	11	11	4.0	3	OL
30	750	2	4	24	11	13	0	4.9	3	OL

The relative mean sunspot number is 33.2.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR APRIL 2017

$K' = 1.157 (*)$

1	***	7	34	13	31	19	15	25	43
2	124	8	0	14	27	20	34	26	44
3	116	9	0	15	***	21	47	27	29
4	111	10	17	16	0	22	34	28	30
5	68	11	15	17	0	23	50	29	40
6	***	12	15	18	29	24	58	30	28

The normalised relative monthly mean sunspot number is 38.

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

The Sun has been observed 27 days on 30 possible.