



Sunspot Index and Long-term Solar Observations

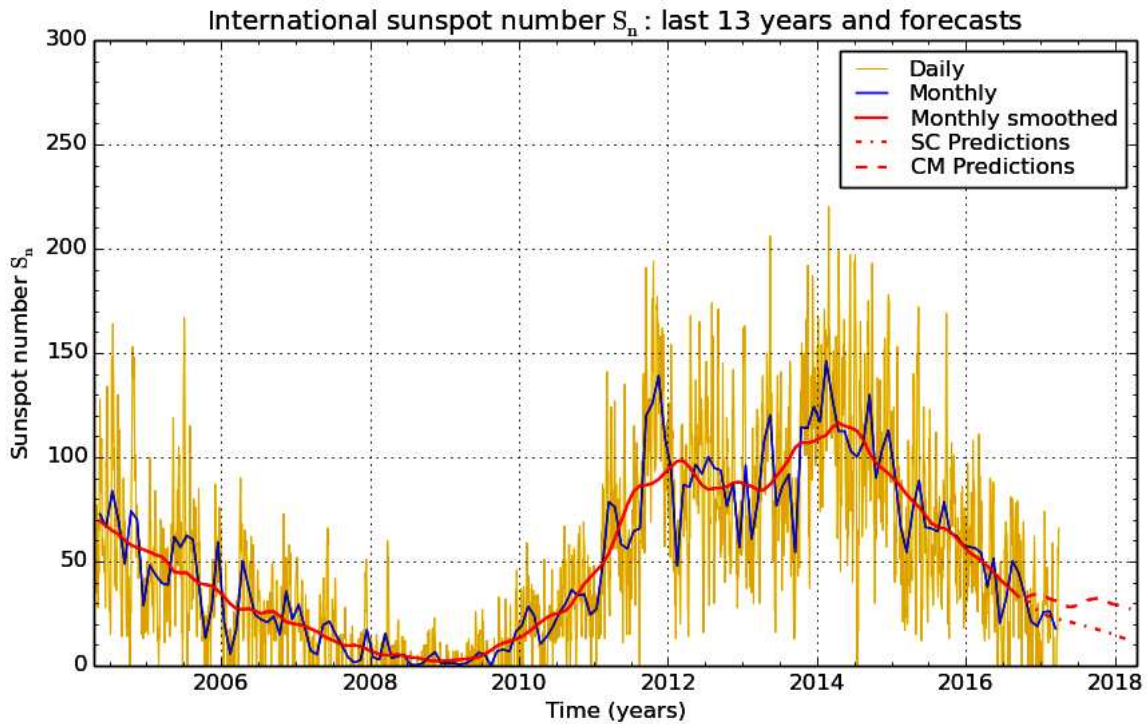
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SUNSPOT BULLETIN 2017 n° 3

Provisional international and normalized hemispheric daily sunspot numbers for March 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	59	59	0
2	57	57	0
3	37	37	0
4	0	0	0
5	14	14	0
6	0	0	0
7	0	0	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	0	0	0
13	0	0	0
14	0	0	0
15	0	0	0
16	0	0	0
17	0	0	0
18	0	0	0
19	0	0	0
20	0	0	0
21	13	13	0
22	14	14	0
23	14	14	0
24	14	14	0
25	18	18	0
26	33	33	0
27	51	39	12
28	57	36	21
29	52	28	24
30	49	20	29
31	66	25	41
Monthly mean	17.7	13.6	4.1
Cooperating stations	79	64	64



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

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for September 2016: 33.3 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2016 Oct	31	33	2017 Apr	22	30	2017 Oct	17	33
Nov	31	34	May	21	28	Nov	16	31
Dec	26	35	Jun	20	29	Dec	15	30
2017 Jan	25	34	Jul	20	30	2018 Jan	14	29
Feb	24	32	Aug	19	31	Feb	13	28
Mar	23	31	Sep	18	32	Mar	12	27

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
28	59	21	-	82	////	3	0/0	10
1	59	54	-	81	////	2	0/0	41
2	57	40	-	79	////	0	0/0	36
3	37	20	-	78	////	0	0/0	17
4	0	0	-	75	////	0	0/0	24
5	14	0	-	73	////	0	0/0	20
6	0	3	-	72	////	0	0/0	26
7	0	0	-	72	////	0	0/0	17
8	0	0	-	71	////	0	0/0	14
9	0	0	-	71	////	0	0/0	15
10	0	0	-	71	////	0	0/0	10
11	0	0	-	70	////	0	0/0	9
12	0	0	-	70	////	0	0/0	10
13	0	0	-	70	////	0	0/0	2
14	0	1	-	70	////	0	0/0	6
15	0	2	-	70	////	0	0/0	6
16	0	0	-	71	////	0	0/0	6
17	0	0	-	71	////	0	0/0	4
18	0	0	-	70	////	0	0/0	2
19	0	0	-	71	////	0	0/0	2
20	0	0	-	73	////	0	0/0	2
21	13	1	-	71	////	0	0/0	32
22	14	4	-	73	////	0	0/0	28
23	14	4	-	72	////	0	0/0	10
24	14	4	-	72	////	0	0/0	6
25	18	3	-	74	////	0	0/0	3
26	33	18	-	77	////	4	0/0	4
27	51	48	-	83	////	12	0/0	48
28	57	93	-	84	////	13	0/0	24
29	52	114	-	83	////	4	0/0	22
30	49	136	-	86	////	0	0/0	27
31	66	208	-	91	////	5	0/0	27

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 MARCH 2017

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
5	850	0	0	0	0	0	0.0	3	OB	
7	900	0	0	0	0	0	0.0	2	BB	
9	1300	0	0	0	0	0	0.0	4	OL	
10	910	0	0	0	0	0	0.0	3	OL	
11	945	0	0	0	0	0	0.0	3	OL	
12	910	0	0	0	0	0	0.0	3	OL	
13	835	0	0	0	0	0	0.0	2	BB	
14	800	0	0	0	0	0	0.0	3	FC	
15	950	1	1	11	0	11	11	0.4	3	FC
16	825	0	0	0	0	0	0	0.0	3	FC
17	945	0	0	0	0	0	0	0.0	3	FC
21	925	0	0	0	0	0	0	0.0	3	BB
22	820	1	2	12	12	0	0	0.6	3	BB
23	830	1	2	12	12	0	0	0.2	3	OB
24	900	1	2	12	12	0	0	0.3	2	OB
25	800	1	1	11	11	0	11	0.3	3	OB
26	1355	1	12	22	22	0	0	15.1	3	FC
27	655	3	23	53	41	12	0	19.7	3	FC
28	830	3	33	63	44	19	33	32.3	3	FC
29	635	2	26	46	22	24	22	37.8	2	FC
30	900	2	27	47	17	30	47	54.9	3	OL
31	650	2	33	53	15	38	38	99.0	3	OB

The relative mean sunspot number is 15.5.

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

$$K' = 0.850 (*)$$

1	***	7	0	13	0	19	***	25	9
2	***	8	***	14	0	20	***	26	19
3	***	9	0	15	9	21	0	27	45
4	***	10	0	16	0	22	10	28	54
5	0	11	0	17	0	23	10	29	39
6	***	12	0	18	***	24	10	30	40
								31	45

The normalised relative monthly mean sunspot number is 13.

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

The Sun has been observed 22 days on 31 possible.