



Sunspot Index and Long-term Solar Observations

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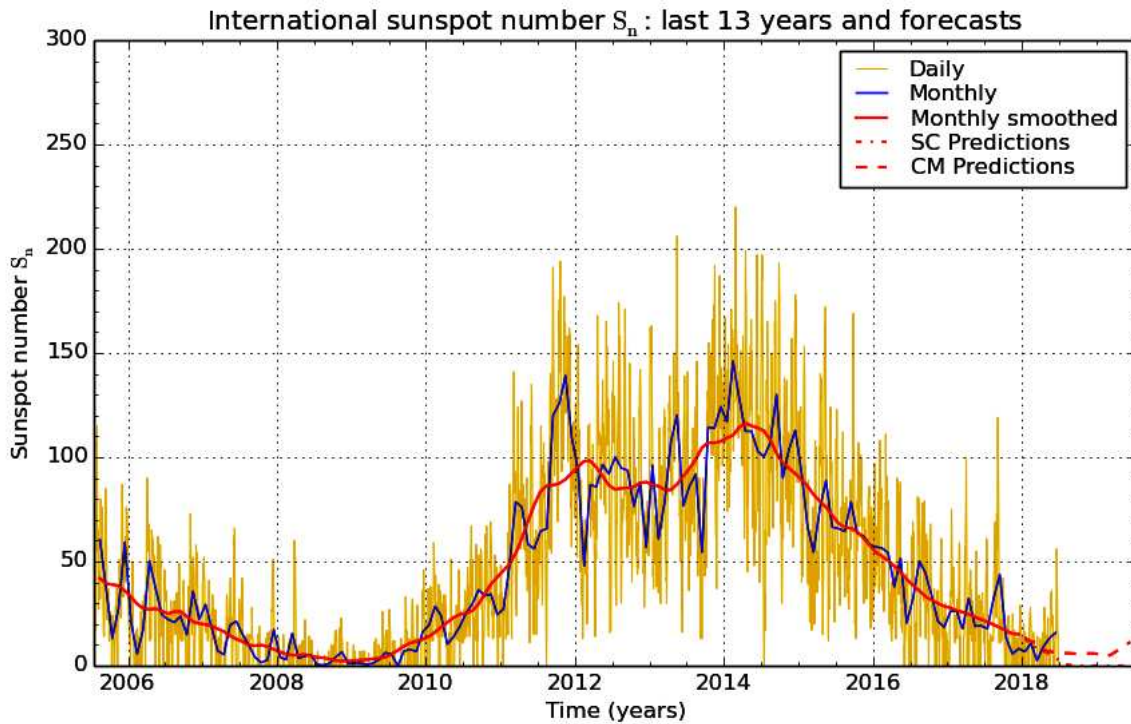
SUNSPOT BULLETIN

2018 n° 6

Provisional international and normalized hemispheric daily sunspot numbers for June 2018

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

Date	S_n	$S_n(N)$	$S_n(S)$
1	24	24	0
2	22	22	0
3	13	13	0
4	0	0	0
5	0	0	0
6	11	11	0
7	10	10	0
8	0	0	0
9	0	0	0
10	0	0	0
11	0	0	0
12	12	12	0
13	15	15	0
14	15	15	0
15	14	14	0
16	14	14	0
17	14	14	0
18	29	29	0
19	34	34	0
20	56	56	0
21	50	50	0
22	41	41	0
23	38	38	0
24	19	19	0
25	17	17	0
26	14	14	0
27	14	14	0
28	0	0	0
29	0	0	0
30	0	0	0
Monthly mean	15.9	15.9	0.0
Cooperating stations	75	59	59



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2018 July 2

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for December 2017: 15.1 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2018 Jan	14	13	2018 Jul	2	6	2019 Jan	0	6
Feb	9	12	Aug	0	6	Feb	0	4
Mar	9	11	Sep	0	6	Mar	0	6
Apr	7	8	Oct	0	6	Apr	0	8
May	6	7	Nov	0	6	May	0	10
Jun	4	6	Dec	0	6	Jun	0	11

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	S _n	PPSI	600	2800	COS	SFI	XI	Ak
31	22	6	-	77	////	2	0/0	16
1	24	4	-	75	////	1	0/0	27
2	22	2	-	74	////	1	0/0	18
3	13	1	-	74	////	1	0/0	12
4	0	0	-	71	////	0	0/0	5
5	0	0	-	71	////	0	0/0	8
6	11	0	-	71	////	0	0/0	7
7	10	0	-	69	////	0	0/0	9
8	0	0	-	68	////	0	0/0	6
9	0	0	-	70	////	0	0/0	4
10	0	0	-	70	////	0	0/0	5
11	0	0	-	70	////	0	0/0	6
12	12	0	-	70	////	0	0/0	5
13	15	2	-	71	////	0	0/0	5
14	15	1	-	72	////	0	0/0	6
15	14	1	-	71	////	1	0/0	4
16	14	1	-	71	////	0	0/0	3
17	14	1	-	71	////	0	0/0	4
18	29	9	-	74	////	1	0/0	21
19	34	4	-	77	////	2	0/0	7
20	56	14	-	82	////	0	0/0	6
21	50	18	-	82	////	1	0/0	4
22	41	13	-	80	////	0	0/0	4
23	38	13	-	77	////	4	0/0	23
24	19	8	-	75	////	2	0/0	9
25	17	3	-	73	////	0	0/0	14
26	14	1	-	71	////	0	0/0	22
27	14	0	-	70	////	0	0/0	11
28	0	0	-	70	////	0	0/0	6
29	0	0	-	69	////	0	0/0	4
30	0	0	-	69	////	0	0/0	5

S_n : 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 : 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 JUNE 2018

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
2	1645	1	13	23	23	0	0	3.6	2	SB
3	745	1	3	13	13	0	0	0.2	3	OL
4	820	0	0	0	0	0	0	0.0	3	BB
5	1658	0	0	0	0	0	0	0.0	3	SB
6	752	1	1	11	11	0	0	0.3	3	OL
7	1130	0	0	0	0	0	0	0.0	2	OL
8	1241	0	0	0	0	0	0	0.0	2	OL
9	1240	1	1	11	11	0	11	0.4	2	OL
10	715	0	0	0	0	0	0	0.0	4	OL
11	756	0	0	0	0	0	0	0.0	1	SB
13	1005	1	6	16	16	0	0	1.8	3	SB
14	615	1	7	17	17	0	0	2.9	3	SB
15	720	1	4	14	14	0	0	1.1	3	SB
16	740	1	4	14	14	0	14	1.3	2	SB
17	1500	1	3	13	13	0	13	1.5	1	SB
18	1645	2	8	28	28	0	15	2.7	3	OB
20	1130	3	16	46	46	0	32	41.7	3	BB
21	840	2	12	32	32	0	19	37.2	2	OB
22	820	2	13	33	33	0	20	33.6	3	OB
23	915	2	17	37	37	0	21	24.0	3	OB
24	1300	1	7	17	17	0	17	19.3	2	OB
25	1150	1	7	17	17	0	0	15.6	3	BB
26	850	1	3	13	13	0	0	0.8	3	BB
27	615	1	1	11	11	0	0	0.1	3	FC
28	705	0	0	0	0	0	0	0.0	3	FC
29	750	0	0	0	0	0	0	0.0	3	FC
30	650	0	0	0	0	0	0	0.0	3	FC

The relative mean sunspot number is 13.6.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR JUNE 2018

$K' = 1.106 (*)$

1	***	7	0	13	18	19	***	25	19
2	25	8	0	14	19	20	51	26	14
3	14	9	12	15	15	21	35	27	12
4	0	10	0	16	15	22	36	28	0
5	0	11	0	17	14	23	41	29	0
6	12	12	***	18	31	24	19	30	0

The normalised relative monthly mean sunspot number is 15.

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

The Sun has been observed 27 days on 30 possible.