



# Sunspot Index and Long-term Solar Observations

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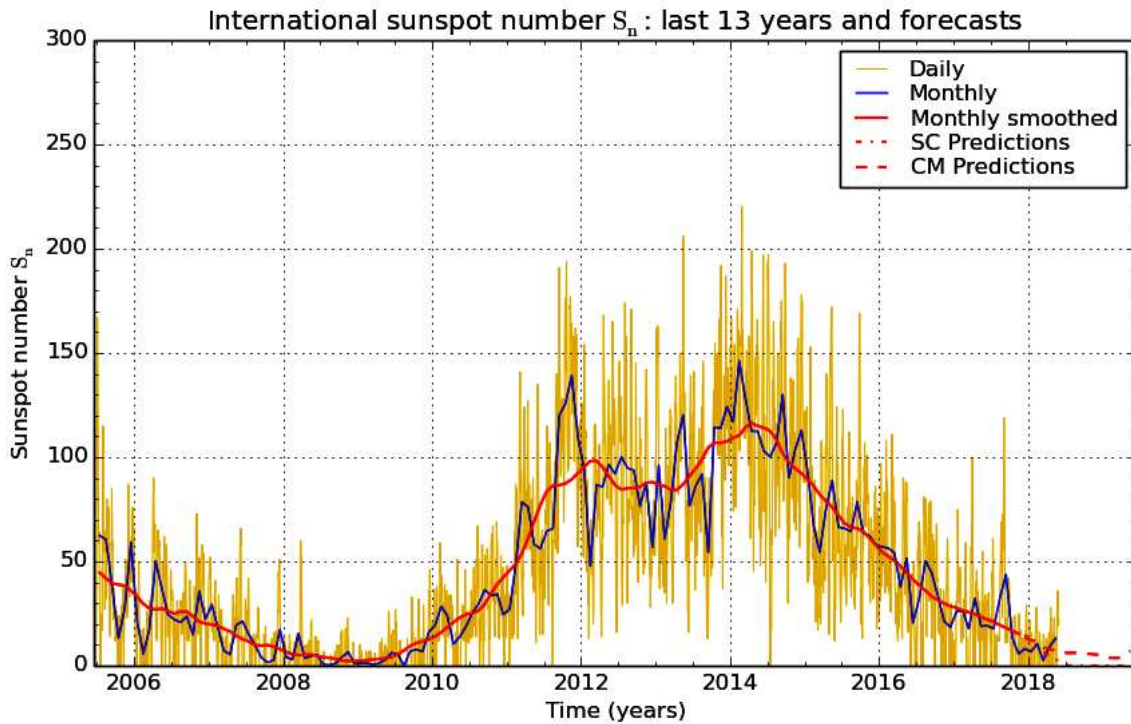
## ***SUNSPOT BULLETIN***

2018 n° 5

**Provisional international and normalized hemispheric daily sunspot numbers for May 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	0	0	0
2	0	0	0
3	0	0	0
4	13	0	13
5	14	0	14
6	15	0	15
7	14	0	14
8	20	9	11
9	23	12	11
10	11	11	0
11	11	11	0
12	13	13	0
13	12	12	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	11	11	0
22	13	13	0
23	28	28	0
24	35	35	0
25	30	30	0
26	27	27	0
27	36	25	11
28	19	19	0
29	23	23	0
30	20	20	0
31	22	22	0
Monthly mean	13.2	10.4	2.8
Cooperating stations	70	54	54



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2018 June 1

**Predictions of the monthly smoothed Sunspot Number**  
 using the last provisional value, calculated for November 2017: 15.4 ( $\pm 5\%$ )

	SM	CM		SM	CM		SM	CM
2017 Dec	15	14	2018 Jun	1	6	2018 Dec	0	5
2018 Jan	11	12	Jul	0	6	2019 Jan	0	4
Feb	8	12	Aug	0	6	Feb	0	4
Mar	7	9	Sep	0	6	Mar	0	4
Apr	5	8	Oct	0	6	Apr	0	5
May	3	7	Nov	0	6	May	0	7

**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 <sub>n</sub>	PPSI	600	2800	COS	SFI	XI	Ak
30	0	0	-	70	////	0	0/0	7
1	0	0	-	68	////	0	0/0	2
2	0	0	-	67	////	0	0/0	5
3	0	0	-	67	////	0	0/0	4
4	13	0	-	68	////	0	0/0	6
5	14	2	-	68	////	0	0/0	26
6	15	2	-	67	////	0	0/0	26
7	14	1	-	70	////	0	0/0	20
8	20	1	-	70	////	0	0/0	17
9	23	1	-	70	////	0	0/0	19
10	11	0	-	70	////	0	0/0	14
11	11	0	-	70	////	0	0/0	16
12	13	1	-	70	////	0	0/0	10
13	12	1	-	71	////	0	0/0	10
14	0	0	-	70	////	0	0/0	6
15	0	0	-	70	////	0	0/0	5
16	0	0	-	70	////	0	0/0	4
17	0	0	-	69	////	0	0/0	13
18	0	0	-	69	////	0	0/0	8
19	0	0	-	70	////	0	0/0	3
20	0	0	-	69	////	0	0/0	3
21	11	0	-	70	////	1	0/0	3
22	13	1	-	71	////	0	0/0	7
23	28	4	-	73	////	0	0/0	10
24	35	5	-	74	////	3	0/0	4
25	30	4	-	76	////	3	0/0	4
26	27	3	-	73	////	0	0/0	4
27	36	3	-	75	////	1	0/0	4
28	19	5	-	77	////	7	0/0	7
29	23	6	-	75	////	2	0/0	6
30	20	4	-	75	////	0	0/0	4
31	22	6	-	77	////	2	0/0	16

**S<sub>n</sub>** : provisional international sunspot numbers from the S.I.D.C.

**PPSI** : prompt photometric sunspot index from the S.I.D.C. in  $10^{-5} \text{ w/m}^2$  : 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 :  $1 \times S_n + 10 \times \text{"1"} + 100 \times \text{">1"}$ ).

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

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

SOLAR PHYSICS DEPARTMENT

UCCLE DAILY PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR MAY 2018

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	830	0	0	0	0	0	0.0	2	SB	
2	640	0	0	0	0	0	0.0	3	SB	
3	720	0	0	0	0	0	0.0	3	SB	
4	640	1	1	11	0	11	0	0.1	3	SB
5	730	1	3	13	0	13	0	0.9	3	OP
6	720	1	6	16	0	16	0	1.2	3	SB
7	715	1	5	15	0	15	15	1.4	3	SB
8	715	0	0	0	0	0	0	0.0	3	BB
9	730	2	2	22	11	11	11	0.5	3	SB
10	830	1	1	11	11	0	0	0.2	2	SB
11	810	1	1	11	11	0	0	0.3	3	OB
12	720	1	4	14	14	0	14	2.1	2	FC
14	1320	0	0	0	0	0	0	0.0	2	BB
15	910	0	0	0	0	0	0	0.0	3	BB
16	710	0	0	0	0	0	0	0.0	3	OL
17	805	0	0	0	0	0	0	0.0	3	OL
18	720	0	0	0	0	0	0	0.0	3	OL
19	1520	0	0	0	0	0	0	0.0	3	OB
20	812	0	0	0	0	0	0	0.0	3	SB
21	915	1	1	11	11	0	0	0.1	3	LL
22	705	1	3	13	13	0	0	0.5	3	BB
23	1007	2	11	31	31	0	18	2.3	2	SB
24	725	2	13	33	33	0	0	5.2	2	SB
25	700	2	13	33	33	0	0	4.0	3	SB
26	830	2	5	25	25	0	0	3.6	3	OB
27	825	2	6	26	15	11	11	4.5	3	OL
28	720	1	6	16	16	0	16	4.8	3	BB
29	720	1	12	22	22	0	22	5.6	3	OL
30	715	1	10	20	20	0	20	5.9	3	BB
31	930	1	10	20	20	0	20	21.3	2	OB

The relative mean sunspot number is 12.1.

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

$K'= 1.139 (*)$

1	0	7	17	13	***	19	0	25	38
2	0	8	0	14	0	20	0	26	28
3	0	9	25	15	0	21	13	27	30
4	13	10	13	16	0	22	15	28	18
5	15	11	13	17	0	23	35	29	25
6	18	12	16	18	0	24	38	30	23
								31	23

The normalised relative monthly mean sunspot number is 14.

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

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The Sun has been observed 30 days on 31 possible.