



Sunspot Index and Long-term Solar Observations

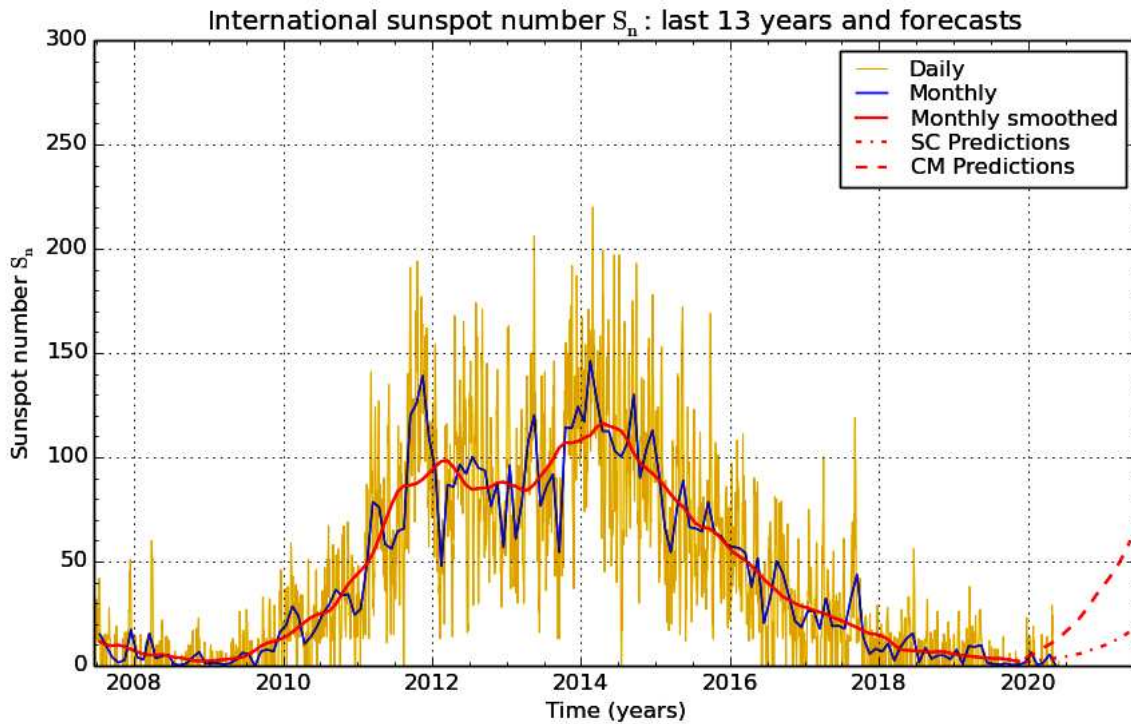
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SUNSPOT BULLETIN 2020 n° 5

Provisional international and normalized hemispheric daily sunspot numbers for May 2020

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	4	0	4
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	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	0	0	0
22	0	0	0
23	0	0	0
24	0	0	0
25	0	0	0
26	0	0	0
27	0	0	0
28	0	0	0
29	0	0	0
30	0	0	0
31	2	2	0
Monthly mean	0.2	0.1	0.1
Cooperating stations	63	49	49



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2020 June 1

Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for November 2019: 2.1 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2019 Dec	2	3	2020 Jun	4	15	2020 Dec	9	36
2020 Jan	2	5	Jul	5	18	2021 Jan	10	40
Feb	3	7	Aug	5	20	Feb	11	44
Mar	3	9	Sep	6	24	Mar	13	48
Apr	3	10	Oct	7	28	Apr	15	54
May	4	12	Nov	8	32	May	17	60

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
30	20	2	-	70	////	0	0/0	2
1	4	0	-	70	////	0	0/0	5
2	0	0	-	69	////	0	0/0	6
3	0	0	-	69	////	0	0/0	6
4	0	0	-	69	////	0	0/0	6
5	0	0	-	69	////	0	0/0	8
6	0	0	-	70	////	0	0/0	6
7	0	0	-	69	////	0	0/0	3
8	0	0	-	68	////	0	0/0	4
9	0	0	-	71	////	0	0/0	2
10	0	0	-	68	////	0	0/0	4
11	0	0	-	66	////	0	0/0	5
12	0	0	-	69	////	0	0/0	6
13	0	0	-	69	////	0	0/0	4
14	0	0	-	68	////	0	0/0	4
15	0	0	-	68	////	0	0/0	3
16	0	0	-	69	////	0	0/0	5
17	0	0	-	70	////	0	0/0	4
18	0	0	-	70	////	0	0/0	6
19	0	0	-	69	////	0	0/0	8
20	0	0	-	70	////	0	0/0	3
21	0	0	-	70	////	0	0/0	6
22	0	0	-	71	////	0	0/0	8
23	0	0	-	69	////	0	0/0	5
24	0	0	-	69	////	0	0/0	7
25	0	0	-	70	////	0	0/0	8
26	0	0	-	70	////	0	0/0	5
27	0	0	-	68	////	0	0/0	4
28	0	0	-	68	////	0	0/0	4
29	0	0	-	70	////	0	0/0	4
30	0	0	-	70	////	0	0/0	20
31	2	0	-	71	////	0	0/0	4

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 MAY 2020

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	750	1	3	13	0	13	0	1.2	2	OL
2	935	0	0	0	0	0	0	0.0	2	OL
3	1405	0	0	0	0	0	0	0.0	2	OL
4	1230	0	0	0	0	0	0	0.0	2	SB
5	700	0	0	0	0	0	0	0.0	2	SB
6	700	0	0	0	0	0	0	0.0	3	SB
7	655	0	0	0	0	0	0	0.0	3	SB
8	700	0	0	0	0	0	0	0.0	3	SB
9	840	0	0	0	0	0	0	0.0	2	SB
11	730	0	0	0	0	0	0	0.0	3	OB
13	805	0	0	0	0	0	0	0.0	3	OB
14	830	0	0	0	0	0	0	0.0	3	OB
15	900	0	0	0	0	0	0	0.0	3	OB
16	740	0	0	0	0	0	0	0.0	3	OB
17	730	0	0	0	0	0	0	0.0	3	OB
18	740	0	0	0	0	0	0	0.0	3	CB
19	746	0	0	0	0	0	0	0.0	2	CB
20	752	0	0	0	0	0	0	0.0	3	CB
21	820	0	0	0	0	0	0	0.0	3	CB
22	944	0	0	0	0	0	0	0.0	1	CB
23	1000	0	0	0	0	0	0	0.0	2	CB
24	612	0	0	0	0	0	0	0.0	2	CB
25	740	0	0	0	0	0	0	0.0	3	OL
26	700	0	0	0	0	0	0	0.0	3	OL
27	740	0	0	0	0	0	0	0.0	3	OL
28	730	0	0	0	0	0	0	0.0	3	OL
29	720	0	0	0	0	0	0	0.0	3	OL
30	845	0	0	0	0	0	0	0.0	3	OL
31	840	0	0	0	0	0	0	0.0	3	OL

The relative mean sunspot number is 0.4.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR MAY 2020

$K'= 1.066$ (*)

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

The normalised relative monthly mean sunspot number is 0.

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

The Sun has been observed 29 days on 31 possible.