



Sunspot Index and Long-term Solar Observations

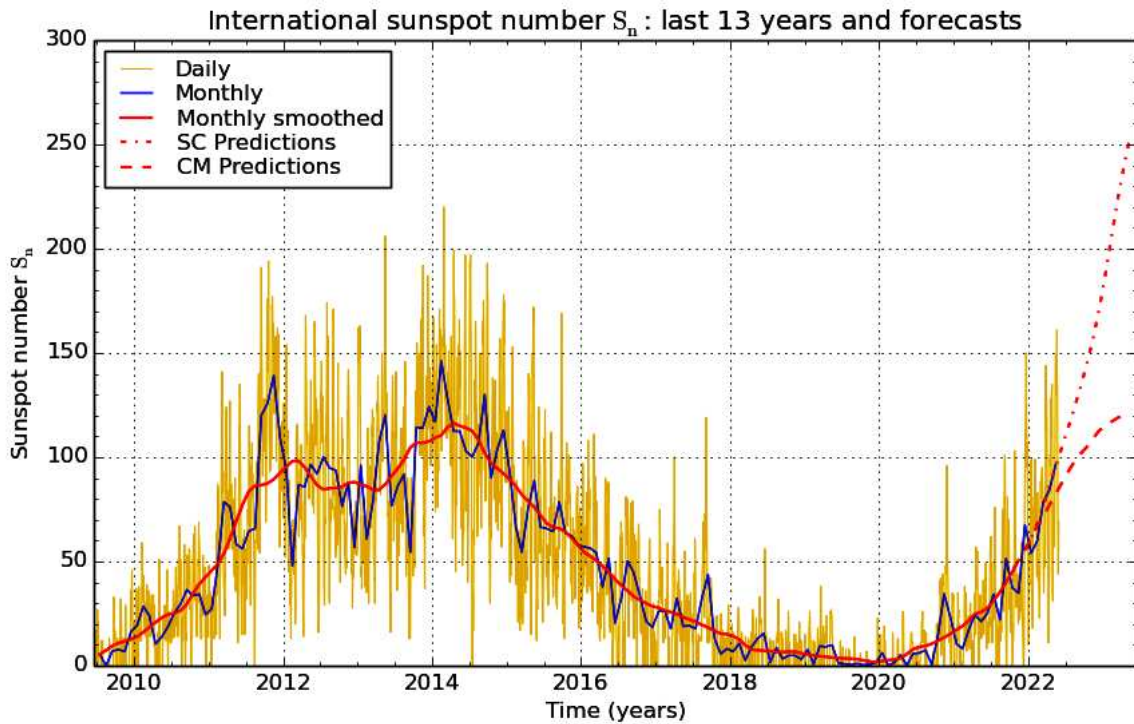
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SUNSPOT BULLETIN 2022 n° 05

Provisional international and normalized hemispheric daily sunspot numbers for May 2022

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	36	10	26
2	31	3	28
3	78	13	65
4	78	1	77
5	77	0	77
6	77	0	77
7	64	0	64
8	78	12	66
9	72	4	68
10	57	0	57
11	80	22	58
12	110	31	79
13	124	27	97
14	133	36	97
15	145	48	97
16	149	58	91
17	146	63	83
18	131	60	71
19	144	86	58
20	130	85	45
21	151	107	44
22	161	121	40
23	142	102	40
24	134	85	49
25	106	53	53
26	81	44	37
27	60	22	38
28	44	17	27
29	45	15	30
30	59	28	31
31	69	29	40
Monthly mean	96.5	38.1	58.4
Cooperating stations	71	60	60



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2022 June 1

Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for November 2021: 50.6 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2021 Dec	56	55	2022 Jun	105	88	2022 Dec	172	113
2022 Jan	61	62	Jul	115	93	2023 Jan	188	115
Feb	68	67	Aug	124	98	Feb	207	117
Mar	77	72	Sep	134	102	Mar	224	119
Apr	86	77	Oct	145	105	Apr	240	120
May	96	83	Nov	157	109	May	255	121

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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Editors: Frédéric Clette and Laure Lefèvre
 3, avenue Circulaire, B1180 Bruxelles, Belgium

Fax: .. /32/(0)2/374.98.22 Tel: .. /32/(0)2/373.02.33 Email: silso.info@oma.be

Web: <http://sidc.oma.be/silso>

FTP anonymous : omaftp.oma.be, directory: dist/astro/sidcdata

Summary of the URSIGRAMs from S.I.D.C.

Date	S _n	PPSI	600	2800	COS	SFI	XI	Ak
30	51	19	-	120	////	0	0/0	20
1	36	13	-	109	////	0	0/0	9
2	31	15	-	112	////	0	0/0	7
3	78	28	-	114	////	4	0/1	7
4	78	43	-	130	////	47	2/0	8
5	77	53	-	120	////	11	2/0	4
6	77	37	-	119	////	2	0/0	6
7	64	32	-	118	////	1	0/0	2
8	78	26	-	119	////	1	0/0	8
9	72	23	-	117	////	2	0/0	8
10	57	52	-	116	////	19	0/1	4
11	80	42	-	133	////	25	2/0	7
12	110	57	-	133	////	10	0/0	10
13	124	42	-	150	////	6	0/0	8
14	133	73	-	153	////	10	0/0	8
15	145	71	-	154	////	1	0/0	14
16	149	80	-	162	////	4	1/0	13
17	146	66	-	171	////	2	0/0	14
18	131	95	-	180	////	///	///	7
19	144	110	-	173	////	26	3/0	13
20	130	124	-	166	////	27	1/0	16
21	151	126	-	167	////	3	0/0	14
22	161	103	-	165	////	1	0/0	14
23	142	82	-	158	////	1	0/0	4
24	134	48	-	147	////	0	0/0	6
25	106	27	-	137	////	0	0/0	8
26	81	26	-	123	////	1	0/0	6
27	60	18	-	114	////	5	0/0	21
28	44	21	-	102	////	1	0/0	21
29	45	24	-	98	////	5	0/0	20
30	59	20	-	101	////	3	0/0	10
31	69	17	-	98	////	0	0/0	10

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 2022

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	800	2	9	29	0	29	17	7.4	3	OL
2	1245	4	13	53	13	40	41	6.4	2	GV
3	630	7	39	109	15	94	62	12.2	2	GV
4	625	5	44	94	0	94	48	27.0	3	GV
5	1050	4	47	87	0	87	50	24.7	3	GV
6	915	5	44	94	0	94	12	25.3	3	GV
7	750	4	43	83	0	83	0	19.0	2	GV
8	845	5	30	80	12	68	0	14.8	3	GV
9	700	4	30	70	0	70	24	29.5	3	FC
10	1000	2	26	46	0	46	25	30.4	2	OB
11	655	3	49	79	13	66	41	64.6	3	FC
12	730	4	57	97	30	67	0	53.0	3	OB
13	730	5	45	95	15	80	64	28.4	3	OB
14	800	6	68	128	26	102	53	76.0	3	OB
15	900	7	63	133	39	94	41	81.4	3	OB
16	715	7	97	167	50	117	12	131.5	3	SB
17	815	7	81	151	61	90	33	83.4	3	OB
18	840	7	81	151	74	77	43	57.2	2	SB
19	1310	9	66	156	99	57	76	41.9	3	OB
21	920	8	76	156	112	44	98	118.8	2	SB
22	800	9	85	175	136	39	59	87.7	3	SB
23	820	9	81	171	123	48	72	69.0	3	OB
24	845	9	51	141	97	44	16	19.4	3	OB
25	750	7	30	100	53	47	0	23.2	3	OB
26	920	6	30	90	55	35	26	8.5	3	OB
27	920	5	12	62	27	35	26	20.5	3	OB
28	912	4	7	47	23	24	11	26.1	4	OB
29	925	3	5	35	11	24	13	29.5	3	OB
30	700	4	10	50	27	23	12	6.5	3	OL
31	745	6	15	75	30	45	48	7.5	3	OL

The relative mean sunspot number is 100.1.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR MAY 2022

$K' = 1.009 (*)$

1	29	7	84	13	96	19	157	25	101
2	53	8	81	14	129	20	***	26	91
3	110	9	71	15	134	21	157	27	63
4	95	10	46	16	169	22	177	28	47
5	88	11	80	17	152	23	173	29	35
6	95	12	98	18	152	24	142	30	50
								31	76

The normalised relative monthly mean sunspot number is 101.

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

The Sun has been observed 30 days on 31 possible.