



Sunspot Index and Long-term Solar Observations

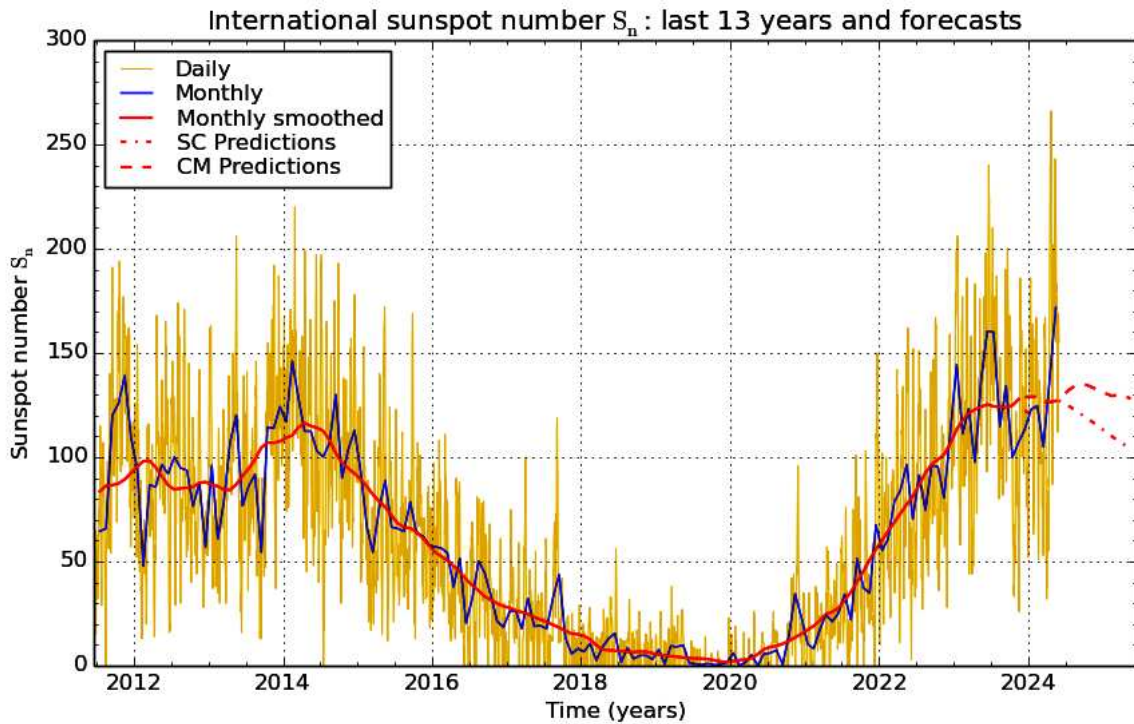
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SUNSPOT BULLETIN 2024 n° 05

Provisional international and normalized hemispheric daily sunspot numbers for May 2024

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	116	58	58
2	144	82	62
3	160	105	55
4	183	115	68
5	183	108	75
6	202	118	84
7	193	95	98
8	173	75	98
9	180	81	99
10	173	79	94
11	170	73	97
12	200	67	133
13	243	102	141
14	203	105	98
15	210	96	114
16	211	86	125
17	200	58	142
18	179	31	148
19	183	34	149
20	155	11	144
21	177	13	164
22	164	14	150
23	144	14	130
24	142	31	111
25	112	34	78
26	128	59	69
27	142	90	52
28	163	104	59
29	169	124	45
30	165	113	52
31	155	109	46
Monthly mean	171.7	73.7	98.0
Cooperating stations	62	56	56



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2024 June 1

Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for November 2023: 127.8 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2023 Dec	122	129	2024 Jun	127	129	2024 Dec	114	132
2024 Jan	120	129	Jul	125	132	2025 Jan	112	131
Feb	124	129	Aug	123	134	Feb	110	129
Mar	126	127	Sep	121	135	Mar	108	130
Apr	127	126	Oct	119	135	Apr	106	130
May	128	127	Nov	117	133	May	104	128

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	87	31	-	130	////	109	4/0	17
1	116	25	-	135	////	18	2/0	10
2	144	30	-	142	////	39	2/0	35
3	160	50	-	156	////	70	4/1	8
4	183	84	-	167	////	61	6/0	7
5	183	104	-	177	////	302	9/2	10
6	202	127	-	171	////	450	4/1	22
7	193	128	-	204	////	141	11/	
8	173	161	-	227	////	461	10/	
9	180	140	-	233	////	275	10/	
10	173	137	-	223	////	330	10/	12
11	170	119	-	214	////	421	5/2	15
12	200	88	-	222	////	///	///	46
13	243	62	-	215	////	///	///	25
14	203	45	-	220	////	103	1/0	10
15	210	49	-	216	////	5	0/0	13
16	211	79	-	207	////	4	1/0	25
17	200	77	-	204	////	125	1/0	31
18	179	85	-	194	////	26	0/0	14
19	183	93	-	201	////	32	3/0	12
20	155	203	-	200	////	4	0/0	8
21	177	80	-	191	////	119	1/0	10
22	164	102	-	196	////	124	2/0	5
23	144	77	-	176	////	47	4/0	12
24	142	47	-	163	////	22	3/0	12
25	112	50	-	152	////	1	0/0	9
26	128	40	-	156	////	1	0/0	14
27	142	50	-	170	////	18	0/0	10
28	163	57	-	166	////	8	0/0	6
29	169	64	-	171	////	432	6/1	7
30	165	82	-	175	////	14	1/0	14
31	155	80	-	179	////	128	1/1	12

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 2024

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	820	6	40	100	50	50	0	45.4	2	OL
2	840	6	73	133	77	56	0	49.9	2	OL
3	1330	6	73	133	90	43	63	59.0	1	OL
4	930	7	98	168	110	58	32	75.6	1	OL
5	715	8	93	173	104	69	74	91.0	2	OL
7	1300	7	128	198	77	121	121	168.7	2	OB
9	930	8	142	222	84	138	121	124.7	3	OB
10	800	8	148	228	73	155	29	115.2	4	OB
11	815	9	80	170	62	108	34	100.4	3	SB
12	700	11	69	179	62	117	56	78.3	2	SB
13	740	13	106	236	95	141	90	102.9	1	JV
14	722	11	68	178	98	80	45	62.2	3	JV
16	1320	11	72	182	71	111	80	149.9	1	JV
17	1045	11	63	173	47	126	77	118.6	1	JV
18	1421	9	56	146	25	121	56	146.1	2	JV
19	1317	9	77	167	25	142	58	193.3	2	JV
20	1427	8	67	147	11	136	85	179.7	3	JV
21	838	8	48	128	0	128	55	107.9	1	JV
22	1130	7	71	141	13	128	76	187.2	2	LL
23	705	6	101	161	13	148	77	130.9	3	OL
24	1545	7	59	129	29	100	40	42.8	2	OB
25	1120	7	23	93	25	68	26	125.1	1	LL
26	1115	7	33	103	45	58	29	69.4	3	LL
27	804	8	41	121	77	44	31	71.2	1	CB
28	745	9	48	138	90	48	45	79.6	2	CB
29	1032	9	68	158	121	37	27	100.4	1	CB
30	1335	8	95	175	128	47	91	118.3	2	CB
31	1330	7	86	156	120	36	99	150.0	2	OL

The relative mean sunspot number is 158.4.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR MAY 2024

$$K' = 0.978 (*)$$

1	98	7	194	13	231	19	163	25	91
2	130	8	***	14	174	20	144	26	101
3	130	9	217	15	***	21	125	27	118
4	164	10	223	16	178	22	138	28	135
5	169	11	166	17	169	23	157	29	155
6	***	12	175	18	143	24	126	30	171
								31	153

The normalised relative monthly mean sunspot number is 155.

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

The Sun has been observed 28 days on 31 possible.