



# Sunspot Index and Long-term Solar Observations

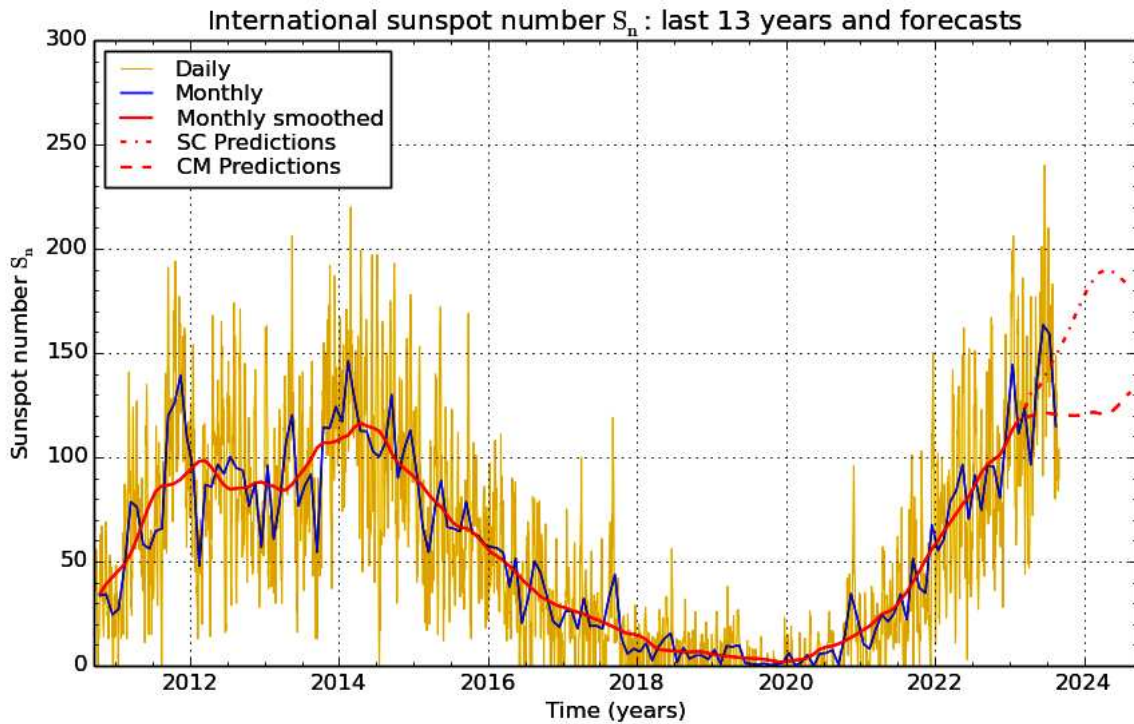
World Data Center supported by the ICSU - WDS

## ***SUNSPOT BULLETIN*** 2023 n° 08

Provisional international and normalized hemispheric daily sunspot numbers for August 2023

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	180	93	87
2	163	86	77
3	147	86	61
4	123	83	40
5	135	99	36
6	125	92	33
7	124	92	32
8	123	74	49
9	103	59	44
10	108	63	45
11	106	67	39
12	80	59	21
13	101	65	36
14	117	86	31
15	122	74	48
16	149	87	62
17	146	89	57
18	124	81	43
19	131	81	50
20	102	60	42
21	110	66	44
22	115	60	55
23	105	64	41
24	91	67	24
25	89	59	30
26	91	61	30
27	84	51	33
28	84	44	40
29	88	40	48
30	104	54	50
31	90	39	51
Monthly mean	114.9	70.4	44.5
Cooperating stations	64	55	55



SILSO graphics (<http://sidc.be/silso>) Royal Observatory of Belgium 2023 September 1

**Predictions of the monthly smoothed Sunspot Number**  
 using the last provisional value, calculated for February 2023: 117.9 ( $\pm 5\%$ )

	SM	CM		SM	CM		SM	CM
2023 Mar	123	119	2023 Sep	154	120	2024 Mar	188	121
Apr	131	120	Oct	160	120	Apr	190	121
May	132	121	Nov	167	120	May	189	122
Jun	138	121	Dec	174	120	Jun	187	125
Jul	143	121	2024 Jan	180	121	Jul	184	129
Aug	149	121	Feb	185	122	Aug	181	131

**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.

Brussels, September 1, 2023 08:25 UT  
 Reproduction permitted if source mentioned.

Editor: Laure Lefevre  
 3, avenue Circulaire, B1180 Bruxelles, Belgium  
 Fax: ../32/(0)2/374.98.22 Tel: ../32/(0)2/790.39.23 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 <sub>n</sub>	PPSI	600	2800	COS	SFI	XI	Ak
31	183	98	-	177	////	128	1/0	7
1	180	80	-	175	////	27	7/0	12
2	163	74	-	173	////	43	5/0	17
3	147	60	-	163	////	25	1/0	8
4	123	57	-	171	////	32	1/0	17
5	135	70	-	176	////	40	1/1	25
6	125	46	-	174	////	23	1/0	3
7	124	32	-	170	////	116	2/0	12
8	123	33	-	159	////	15	1/0	11
9	103	46	-	153	////	5	0/0	9
10	108	30	-	156	////	14	0/0	10
11	106	32	-	153	////	5	0/0	4
12	80	29	-	148	////	32	0/0	10
13	101	24	-	150	////	4	0/0	6
14	117	28	-	154	////	1	0/0	6
15	122	37	-	158	////	9	0/0	4
16	149	61	-	160	////	5	0/0	12
17	146	58	-	152	////	7	0/0	10
18	124	53	-	151	////	3	0/0	12
19	131	41	-	151	////	2	0/0	12
20	102	38	-	146	////	1	0/0	12
21	110	32	-	149	////	4	0/0	11
22	115	32	-	151	////	2	1/0	8
23	105	37	-	147	////	5	0/0	4
24	91	52	-	144	////	5	0/0	12
25	89	53	-	139	////	14	1/0	4
26	91	68	-	139	////	13	0/0	8
27	84	46	-	142	////	0	0/0	12
28	84	52	-	142	////	2	0/0	9
29	88	45	-	142	////	4	0/0	5
30	104	42	-	139	////	13	0/0	6
31	90	34	-	140	////	0	0/0	7

**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 :  $1 \times S_n + 10 \times ">1" + 100 \times ">1"$ ).

**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 AUGUST 2023

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	750	11	121	231	115	116	98	143.0	3	OB
2	1015	8	131	211	133	78	146	160.7	3	OB
4	1040	10	78	178	115	63	79	74.0	3	OB
7	915	9	33	123	94	29	43	42.7	3	SB
9	810	8	46	126	64	62	68	98.9	3	OB
10	808	8	49	129	81	48	70	30.6	3	OL
11	800	7	61	131	72	59	81	33.0	2	OL
12	1200	4	36	76	65	11	25	37.0	2	SB
13	925	7	29	99	53	46	33	47.6	2	SB
14	850	8	40	120	97	23	11	45.3	3	OL
15	1210	8	30	110	69	41	35	77.8	3	SB
16	1055	10	55	155	93	62	77	75.2	1	GV
17	1618	9	68	158	97	61	92	83.7	2	GV
18	1105	8	46	126	84	42	45	137.7	1	GV
19	1335	11	57	167	105	62	65	61.8	3	GV
20	755	10	45	145	93	52	67	55.2	4	GV
21	800	9	39	129	79	50	41	45.8	3	OB
22	1000	10	30	130	62	68	41	26.7	4	OB
23	805	8	42	122	80	42	25	35.8	4	OB
26	920	6	76	136	89	47	49	92.4	3	OB
27	810	5	86	136	85	51	100	47.2	4	OB
28	815	5	31	81	41	40	48	47.1	3	SB
29	1215	5	36	86	42	44	17	34.4	2	SB
30	1235	6	44	104	50	54	38	48.5	3	SB
31	835	5	53	103	49	54	12	44.1	2	GV

The relative mean sunspot number is 132.5.

-----

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS  $U'=K'U$  FOR AUGUST 2023

$K' = 0.899 (*)$

1	208	7	111	13	89	19	150	25	***
2	190	8	***	14	108	20	130	26	122
3	***	9	113	15	99	21	116	27	122
4	160	10	116	16	139	22	117	28	73
5	***	11	118	17	142	23	110	29	77
6	***	12	68	18	113	24	***	30	93
								31	93

The normalised relative monthly mean sunspot number is 119.

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

-----

The Sun has been observed 25 days on 31 possible.