Sunspot Index and Long-term Solar Observations

World Data Center supported by the ICSU - WDS

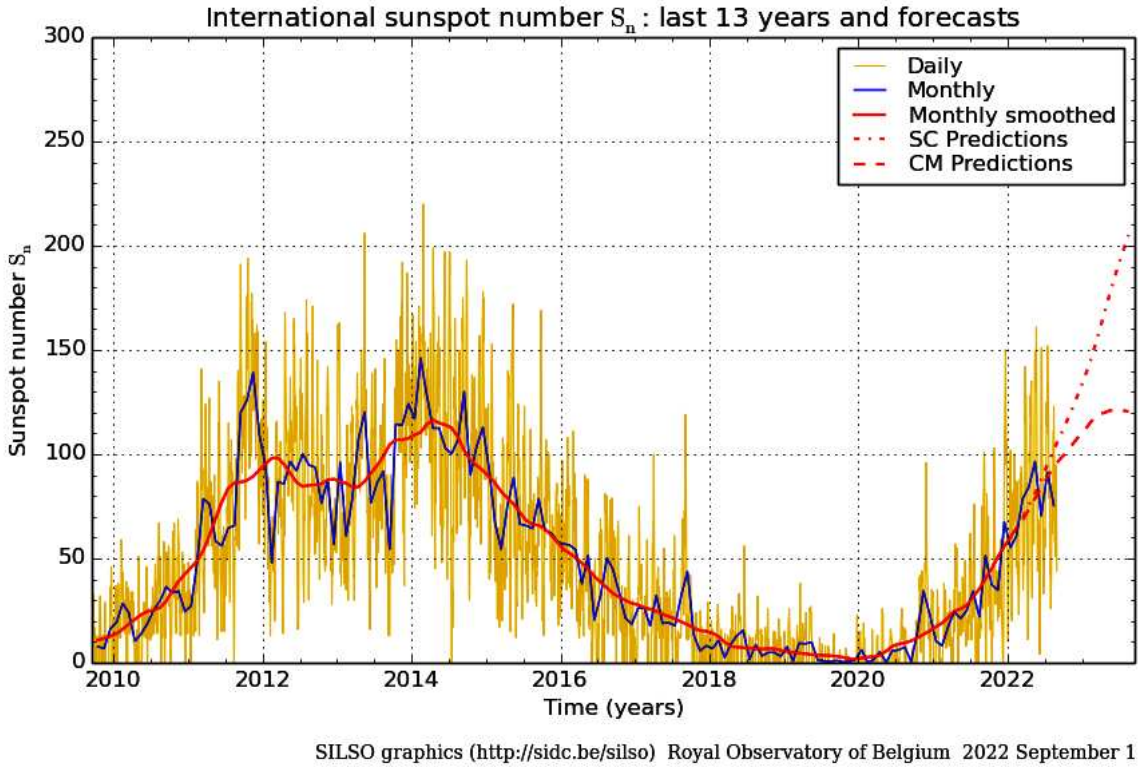
SUNSPOT BULLETIN

2022 n° 08

Provisional international and normalized hemispheric daily sunspot numbers for August 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	26	5	21
2	34	0	34
3	37	0	37
4	42	0	42
5	71	0	71
6	72	0	72
7	86	26	60
8	80	28	52
9	62	21	41
10	65	15	50
11	72	20	52
12	103	32	71
13	111	47	64
14	111	53	58
15	111	54	57
16	123	55	68
17	108	47	61
18	89	35	54
19	85	37	48
20	74	29	45
21	58	41	17
22	75	52	23
23	51	27	24
24	60	23	37
25	93	28	65
26	95	16	79
27	94	14	80
28	85	12	73
29	71	11	60
30	49	0	49
31	44	11	33
Monthly mean	75.4	23.8	51.6
Cooperating stations	68	58	58



Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for February 2022: 64.8 (± 5%)

	SM	CM		SM	CM		SM	CM
2022 Mar	70	69	2022 Sep	109	98	2023 Mar	156	119
Apr	76	74	Oct	115	101	Apr	167	120
May	82	79	Nov	122	105	May	177	121
Jun	88	84	Dec	130	109	Jun	187	121
Jul	95	90	2023 Jan	137	112	Jul	196	121
Aug	102	94	Feb	146	116	Aug	205	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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Summary of the URSIGRAMs from S.I.D.C.

Date	S_n	PPSI	600	2800	COS	SFI	XI	Ak
31	34	13	-	94	////	0	0/0	16
1	26	20	-	95	////	1	0/0	11
2	34	24	-	98	////	4	0/0	12
3	37	22	-	100	////	10	0/0	12
4	42	21	-	109	////	0	0/0	10
5	71	21	-	114	////	2	0/0	6
6	72	25	-	116	////	3	0/0	4
7	86	25	-	116	////	0	0/0	25
8	80	16	-	113	////	1	0/0	29
9	62	20	-	109	////	0	0/0	20
10	65	20	-	108	////	0	0/0	16
11	72	24	-	115	////	1	0/0	23
12	103	29	-	120	////	11	0/0	8
13	111	33	-	124	////	8	0/0	12
14	111	28	-	126	////	10	0/0	7
15	111	40	-	131	////	38	3/0	8
16	123	41	-	129	////	14	2/0	4
17	108	39	-	123	////	32	2/0	29
18	89	26	-	117	////	44	3/0	36
19	85	15	-	105	////	43	1/0	21
20	74	8	-	102	////	2	0/0	14
21	58	11	-	97	////	3	0/0	17
22	75	21	-	103	////	10	0/0	8
23	51	25	-	101	////	0	0/0	4
24	60	26	-	108	////	0	0/0	3
25	93	34	-	118	////	18	1/0	5
26	95	32	-	119	////	88	3/0	6
27	94	37	-	128	////	55	4/0	12
28	85	34	-	252	////	25	3/0	8
29	71	34	-	131	////	23	4/0	14
30	49	39	-	126	////	4	0/0	17
31	44	38	-	113	////	5	0/0	16

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 x Sn+10 x "1"+100 x ">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 2022

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE SUNSPOT NUMBERS TOTAL	NORTH	SOUTH	CENTRAL	PPSI 10-5 WM-2	QUAL	OBS
1	1225	1	12	22	0	22	22	62.5	2	SB
2	735	2	25	45	0	45	34	64.3	3	SB
3	734	2	27	47	0	47	36	61.2	3	GV
4	651	5	28	78	0	78	24	55.7	3	GV
5	758	5	33	83	0	83	0	42.1	3	GV
8	705	8	16	96	36	60	26	8.5	4	FC
9	820	5	13	63	23	40	29	10.7	4	OB
10	650	5	12	62	11	51	29	11.2	4	OB
11	740	7	25	95	44	51	42	14.9	4	OB
12	745	8	32	112	34	78	49	13.9	4	OB
13	800	9	40	130	51	79	45	29.7	4	OB
14	755	7	45	115	55	60	30	31.2	2	OB
15	845	6	67	127	66	61	61	49.7	2	SB
16	705	9	61	151	64	87	24	46.5	3	JV
17	1435	6	55	115	48	67	31	49.8	2	SB
18	840	6	36	96	37	59	32	40.1	2	SB
20	755	8	25	105	41	64	64	16.9	4	SB
21	620	6	16	76	39	37	51	13.4	4	SB
22	841	7	25	95	72	23	50	62.4	1	CB
23	705	5	21	71	46	25	24	30.3	2	CB
24	715	5	24	74	33	41	22	73.8	2	CB
25	705	8	37	117	42	75	11	44.2	2	CB
26	1220	6	49	109	25	84	27	39.5	1	CB
27	715	5	55	105	13	92	11	74.9	2	CB
28	723	5	40	90	12	78	11	82.1	2	CB
29	935	4	43	83	11	72	11	56.2	3	OL
30	915	2	44	64	0	64	52	58.2	3	OL
31	830	2	38	58	12	46	12	56.3	3	OL

The relative mean sunspot number is 88.7.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'=K'U FOR AUGUST 2022

K'= 0.966 (*)

1	21	7	***	13	126	19	***	25	113
2	43	8	93	14	111	20	101	26	105
3	45	9	61	15	123	21	73	27	101
4	75	10	60	16	146	22	92	28	87
5	80	11	92	17	111	23	69	29	80
6	***	12	108	18	93	24	71	30	62
								31	56

The normalised relative monthly mean sunspot number is 86.

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

The Sun has been observed 28 days on 31 possible.