Sunspot Index and Long-term Solar Observations

World Data Center supported by the ICSU - WDS

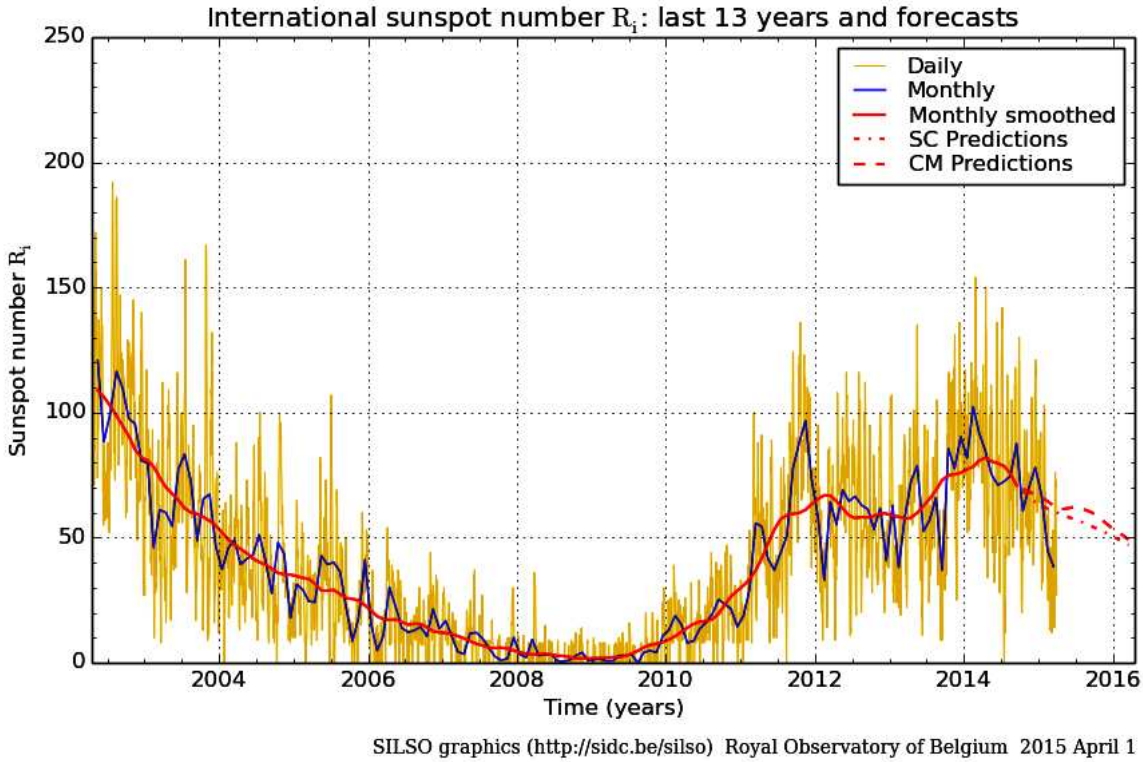
SUNSPOT BULLETIN

2015 n° 3

Provisional international and normalized hemispheric daily sunspot numbers for March 2015

Computed at the *Royal Observatory of Belgium* using observations from an international network with the *Specola Solare Ticinese Locarno* as reference station.

Date	R'_I	R'_N	R'_S
1	46	25	21
2	36	20	16
3	30	13	17
4	26	12	14
5	18	10	8
6	23	9	14
7	12	0	12
8	20	0	20
9	17	0	17
10	20	0	20
11	32	7	25
12	41	0	41
13	53	8	45
14	40	0	40
15	38	0	38
16	32	7	25
17	28	11	17
18	29	20	9
19	35	27	8
20	14	14	0
21	19	9	10
22	56	27	29
23	69	36	33
24	76	49	27
25	70	37	33
26	73	33	40
27	71	39	32
28	54	30	24
29	50	21	29
30	36	14	22
31	27	7	20
Monthly mean	38.4	15.6	22.8
Cooperating stations	76	68	68



Predictions of the monthly smoothed Sunspot Number

using the last provisional value, calculated for September 2014: 70.9 (± 5%)

	SM	CM		SM	CM		SM	CM
2014 Oct	68	70	2015 Apr	60	61	2015 Oct	54	59
Nov	67	68	May	59	62	Nov	52	57
Dec	64	67	Jun	58	62	Dec	51	55
2015 Jan	63	66	Jul	57	62	2016 Jan	50	53
Feb	62	65	Aug	56	61	Feb	49	51
Mar	61	63	Sep	55	60	Mar	47	49

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	R_i	PPSI	600	2800	COS	SFI	XI	Ak
28	41	35	-	123	////	7	0/0	12
1	46	27	-	128	////	///	///	24
2	36	24	-	130	////	14	4/0	24
3	30	20	-	125	////	2	0/0	14
4	26	17	-	124	////	14	0/0	9
5	18	4	-	130	////	///	///	7
6	23	8	-	127	////	1	2/0	12
7	12	7	-	138	////	2	1/0	22
8	20	14	-	124	////	25	0/0	10
9	17	22	-	123	////	64	2/0	8
10	20	30	-	121	////	121	2/0	4
11	32	60	-	132	////	138	3/1	10
12	41	69	-	127	////	100	5/0	7
13	53	71	-	119	////	4	2/0	6
14	40	69	-	116	////	123	1/0	6
15	38	67	-	114	////	31	1/0	9
16	32	44	-	117	////	129	1/0	12
17	28	9	-	114	////	///	///	89
18	29	27	-	115	////	28	0/0	45
19	35	17	-	109	////	7	0/0	24
20	14	13	-	113	////	0	0/0	24
21	19	14	-	114	////	0	0/0	14
22	56	27	-	122	////	0	0/0	20
23	69	50	-	128	////	1	0/0	24
24	76	71	-	133	////	6	0/0	10
25	70	84	-	138	////	18	0/0	15
26	73	96	-	136	////	5	0/0	12
27	71	66	-	138	////	7	0/0	10
28	54	91	-	146	////	9	0/0	10
29	50	65	-	145	////	16	0/0	12
30	36	47	-	134	////	0	0/0	6
31	27	25	-	128	////	0	0/0	11

R_i : 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 MARCH 2015

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE SUNSPOT NUMBERS TOTAL	NORTH	SOUTH	CENTRAL	PPSI 10-5 WM-2	QUAL	OBS
1	900	4	39	79	45	34	49	29.3	3	OL
2	900	3	26	56	24	32	36	11.0	2	AE
3	1515	4	15	55	26	29	27	17.4	2	AE
4	845	4	14	54	16	38	11	13.4	2	AE
5	845	3	6	36	14	22	11	4.3	2	AE
6	1130	2	6	26	13	13	13	19.3	3	AM
7	1030	1	8	18	0	18	0	4.7	2	OB
8	915	2	9	29	0	29	0	2.6	2	AE
9	1315	1	22	32	0	32	0	3.7	3	AM
10	1050	1	37	47	0	47	0	4.6	3	OL
11	1020	3	27	57	11	46	57	22.1	3	AM
12	821	3	39	69	0	69	44	27.7	3	AM
13	750	4	42	82	12	70	56	26.1	3	AM
14	1025	2	35	55	0	55	55	71.2	3	LL
16	820	3	16	46	12	34	12	27.0	3	AM
17	1530	3	9	39	24	15	0	3.7	2	AE
21	1450	4	9	49	14	35	0	3.4	1	AM
22	1330	7	24	94	52	42	37	13.6	2	AM
23	835	6	34	94	55	39	42	40.4	3	OL
24	825	9	37	127	88	39	14	55.0	3	OL
27	815	9	62	152	68	84	85	15.8	3	OL
30	730	4	18	58	23	35	23	6.2	2	OB
31	1110	4	11	51	12	39	23	4.2	2	OB

The relative mean sunspot number is 61.1.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'=K'U FOR MARCH 2015

K'= 0.811 (*)

1	64	7	15	13	67	19	***	25	***
2	45	8	24	14	45	20	***	26	***
3	45	9	26	15	***	21	40	27	123
4	44	10	38	16	37	22	76	28	***
5	29	11	46	17	32	23	76	29	***
6	21	12	56	18	***	24	103	30	47
								31	41

The normalised relative monthly mean sunspot number is 50.

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

The Sun has been observed 23 days on 31 possible.