



Center

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SUNSPOT BULLETIN

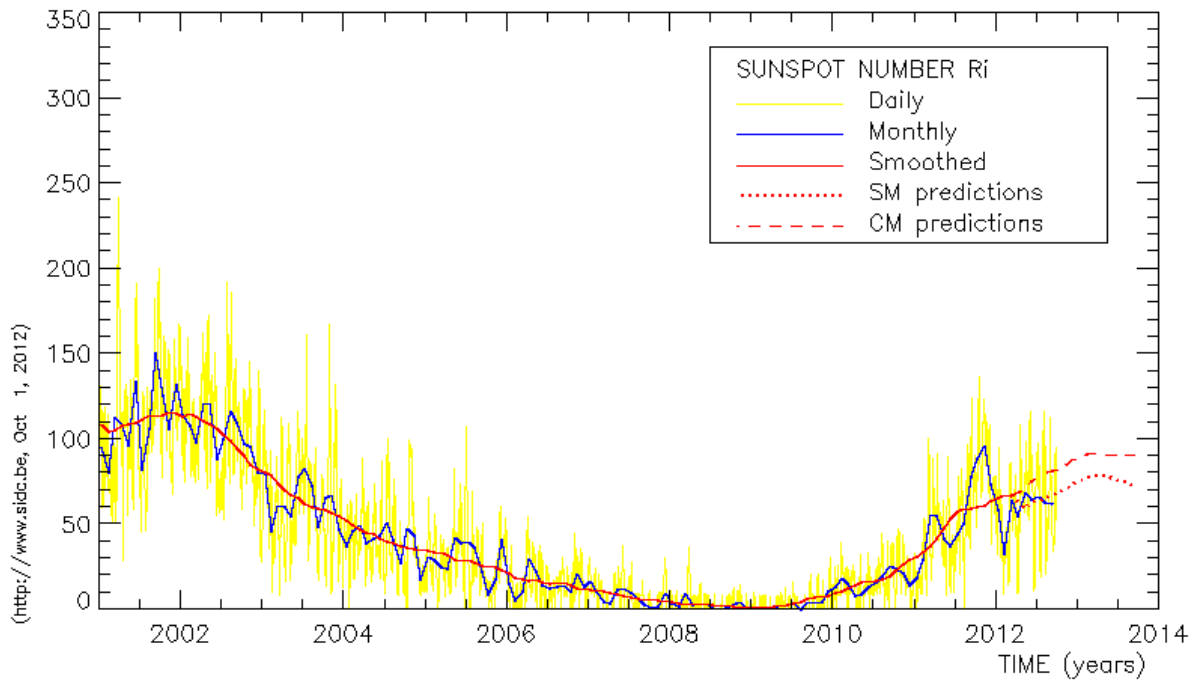
2012

n° 9

Provisional international and normalized hemispheric daily sunspot numbers for September 2012

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

Date	R' _I	R' _N	R' _S
1	95	36	59
2	93	28	65
3	112	42	70
4	104	46	58
5	80	35	45
6	76	34	42
7	62	24	38
8	54	21	33
9	58	20	38
10	46	17	29
11	50	15	35
12	48	9	39
13	38	8	30
14	34	9	25
15	40	15	25
16	42	15	27
17	36	7	29
18	42	15	27
19	44	11	33
20	53	13	40
21	55	19	36
22	38	29	9
23	49	33	16
24	66	47	19
25	89	68	21
26	95	62	33
27	74	48	26
28	56	31	25
29	52	32	20
30	65	40	25
Monthly mean	61.5	27.6	33.9
Cooperating stations	70	64	64



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for March 2012: 66.8 ($\pm 5\%$)

	SM	CM		SM	CM		SM	CM
2012 Apr	63	69	2012 Oct	70	83	2013 Apr	79	92
May	59	72	Nov	72	85	May	78	91
Jun	64	75	Dec	74	88	Jun	77	91
Jul	65	78	2013 Jan	76	90	Jul	76	92
Aug	66	80	Feb	78	91	Aug	75	91
Sep	68	81	Mar	79	92	Sep	74	91

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, due to 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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S.I.D.C. SUMMARY OF THE URSIGRAMS

Date	R' _i	PPSI	600	2800	COS	SFI	XI	Ak	SEA
31	100	95	-	131	////	114	0/0	2	
1	95	73	-	146	////	27	0/0	8	
2	93	77	-	142	////	17	0/0	21	
3	112	92	-	142	////	18	0/0	34	
4	104	91	-	138	////	6	0/0	17	
5	80	66	-	133	////	9	0/0	25	
6	76	52	-	128	////	5	1/0	15	
7	62	49	-	133	////	6	0/0	14	
8	54	34	-	129	////	5	1/0	8	
9	58	46	-	123	////	12	1/0	4	
10	46	27	-	111	////	8	0/0	4	
11	50	23	-	105	////	2	0/0	1	
12	48	24	-	103	////	1	0/0	6	
13	38	33	-	99	////	2	0/0	6	
14	34	38	-	101	////	2	0/0	8	
15	40	35	-	98	////	0	0/0	10	
16	42	28	-	97	////	1	0/0	8	
17	36	23	-	102	////	0	0/0	5	
18	42	21	-	104	////	0	0/0	9	
19	44	24	-	110	////	3	0/0	16	
20	53	33	-	117	////	11	0/0	9	
21	55	32	-	117	////	2	0/0	8	
22	38	42	-	125	////	0	0/0	5	
23	49	52	-	134	////	0	0/0	0	
24	66	42	-	137	////	2	0/0	2	
25	89	53	-	140	////	6	0/0	2	
26	95	59	-	139	////	0	0/0	6	
27	74	52	-	133	////	0	0/0	6	
28	56	61	-	138	////	1	0/0	0	
29	52	76	-	136	////	6	0/0	3	
30	65	77	-	136	////	10	1/0	15	

- 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** : From October 1992, Solar Flare Index from the S.I.D.C. (origin : Ursigrams – UGEOR, evaluation : $1 \times \text{Sn} + 10 \times "1" + 100 \times ">1"$).
- XI** : X-flares index from the Ursigrams (M-flares/X-flares) (origin : Ursigrams – UGEOR, UGEOI).
- Ak** : geomagnetic index from Wingst, Germany (origin : Ursigrams).
- SEA** : sudden enhancements of atmospherics from Uccle & Humain (Royal Observatory, Belgium).

Note that due to problems of interferences saturating our receivers, no SEA could be detected this month.

SOLAR PHYSICS DEPARTMENT

UCCLE DAILY PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR SEPTEMBER 2012

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	610	8	64	144	62	82	62	93.1	3	FC
2	945	8	64	144	56	88	75	86.2	2	AE
3	1245	7	80	150	64	86	77	132.5	2	OB
4	730	9	73	163	80	83	95	100.8	3	AE
5	820	5	40	90	46	44	39	54.9	2	OB
6	800	5	42	92	41	51	34	36.5	2	OB
7	740	4	48	88	23	65	59	30.9	3	OB
8	810	4	48	88	30	58	11	28.0	3	OB
9	635	5	30	80	26	54	31	56.0	4	FC
10	945	5	15	65	24	41	24	31.6	2	OL
12	825	6	17	77	23	54	0	24.0	3	OL
13	1305	3	21	51	12	39	0	31.8	3	OL
14	1350	3	15	45	11	34	20	38.3	2	OL
15	745	4	16	56	22	34	19	11.2	4	OL
16	750	3	23	53	12	41	41	11.8	3	OL
17	1300	4	14	54	11	43	28	12.0	2	AE
18	1400	5	13	63	24	39	14	12.3	2	AE
19	730	5	10	60	14	46	0	20.9	2	AE
20	945	6	18	78	26	52	11	28.0	2	AE
22	830	4	16	56	44	12	21	45.0	3	AE
24	1155	5	44	94	71	23	83	23.1	2	OL
25	935	7	59	129	101	28	84	24.2	2	OL
26	1405	11	36	146	100	46	70	38.6	2	OL
27	1105	8	14	94	61	33	22	56.7	3	OL
28	810	5	13	63	39	24	13	68.5	3	OL
29	735	5	21	71	44	27	16	60.4	3	OL
30	725	5	9	59	37	22	22	61.1	3	OL

The relative mean sunspot number is 87.1.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR SEPTEMBER 2012

$K' = 0.844$ (*)

1	122	7	74	13	43	19	51	25	109
2	122	8	74	14	38	20	66	26	123
3	127	9	68	15	47	21	***	27	79
4	138	10	55	16	45	22	47	28	53
5	76	11	***	17	46	23	***	29	60
6	78	12	65	18	53	24	79	30	50

The normalised relative monthly mean sunspot number is 74.

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

The Sun has been observed 27 days on 30 possible.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR SEPTEMBER 2012
E AND F BRUNNER'S TYPE GROUPS

Uccle Nø	East Limb Date	Date and type			West Limb Date
		1st obs	CMP	Last obs	
20-2127	8 25.9	30 C	9 1.6	5 E	9 8.4
23-2127	8 30.2	1 D	9 6.0	10 D	9 12.7

PROBABLE RETURN OF MAJOR GROUPS FOR OCTOBER 2012
NONE