



SUNSPOT BULLETIN

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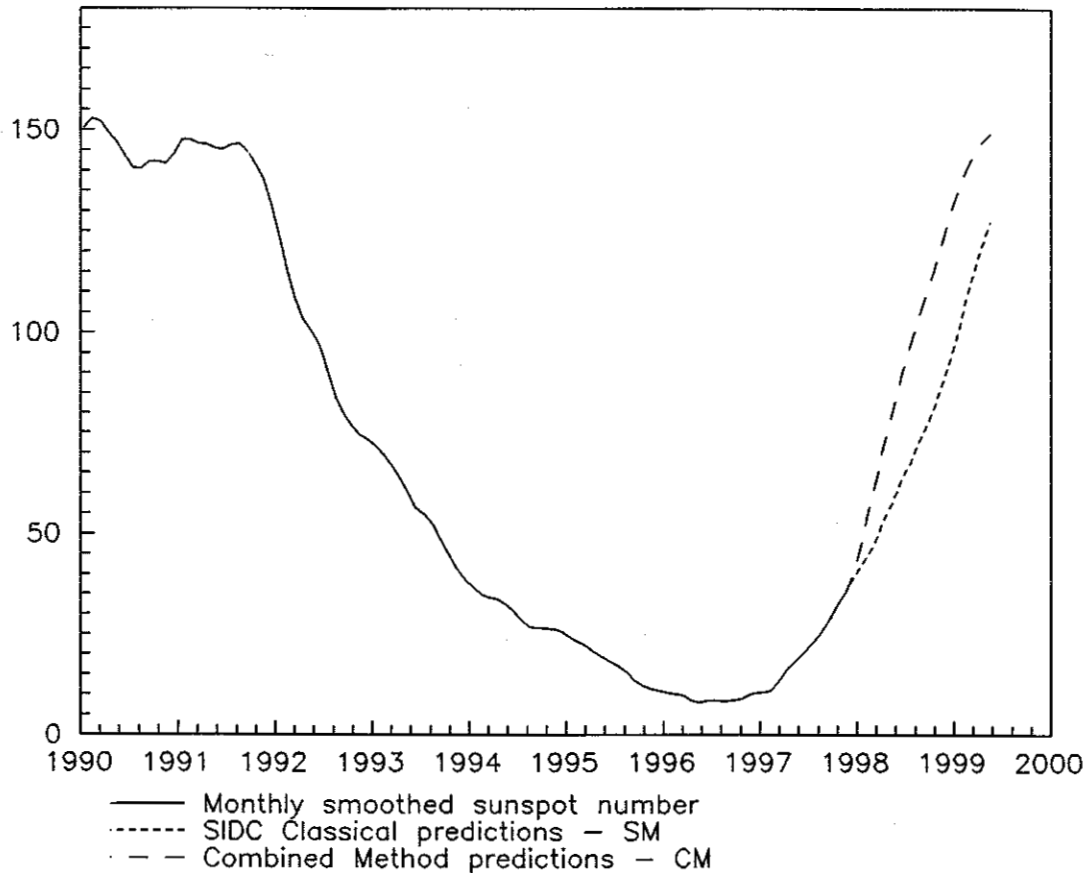
1998

n° 5

Provisional international and normalized hemispheric daily sunspot numbers for May 1998

computed at the *Observatoire Royal de Belgique*
using observations from an international network
with the *Locarno Specola Solare* as reference station.

Date	R' _I	R' _N	R' _S
1	57	26	31
2	78	31	47
3	74	39	35
4	73	46	27
5	79	51	28
6	76	43	33
7	71	35	36
8	68	38	30
9	49	16	33
10	48	13	35
11	58	11	47
12	73	15	58
13	80	20	60
14	82	27	55
15	80	30	50
16	79	28	51
17	71	27	44
18	67	30	37
19	56	22	34
20	43	23	20
21	26	15	11
22	21	13	8
23	31	23	8
24	32	24	8
25	41	32	9
26	43	34	9
27	51	32	19
28	33	24	9
29	32	18	14
30	43	16	27
31	49	17	32
Monthly mean :	56.9	26.4	30.5
Cooperating stations :	37	23	23



Predictions of the monthly smoothed Sunspot Number
 using the last provisional value, calculated for November 1997 : 35.0 ($\pm 5\%$)

		SM	CM			SM	CM			SM	CM
1997	Dec	39	40	1998	Jun	63	89	1998	Dec	93	129
1998	Jan	42	47		Jul	67	96	1999	Jan	100	135
	Feb	45	56		Aug	72	103		Feb	108	140
	Mar	49	64		Sep	76	109		Mar	115	144
	Apr	54	73		Oct	81	115		Apr	121	147
	May	58	81		Nov	87	122		May	127	149

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 idea 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

The **SIDC adjusted method**, a linear algorithm applied to SM predictions of which the purpose was to produce predictions taking more into account the trend observed is no more proposed, because of its poor efficiency.

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S.I.D.C. SUMMARY OF THE URSIGRAMS

1998 MAY $R'_{IM} = 56.9$

Date	R'_I	PPSI	600	2800	COS	SFI	XI	Ak	SEA	MAG
30	46	65	42	103	1020	107	0/0	(11)		
1	57	79	46	113	1026	28	2/0	10		
2	78	105	78	117	1060	123	0/1	48	1337	S3B(1331), p, mgst
3	74	127	47	117	1054	30	1/0	49		
4	73	146	48	121	1058	23	0/0	80		
5	79	146	48	133	1062	224	1/0	35		
6	76	999	54	130	1045	45	1/1	8	1334	s1N(0758), p(0825)
7	71	80	55	123	1041	36	2/0	14	1325	s1B(1105)
8	68	52	50	118	1033	12	3/0	24	1350	
9	49	49	49	111	1021	101	1/0	15	1303	CME(0304)
10	48	43	-	107	1014	0	2/0	11	1315	SF(1313)
11	58	55	48	108	1011	11	0/0	14		
12	73	60	49	112	1010	4	0/0	14		
13	80	64	48	117	1005	7	0/0	6		
14	82	73	48	117	1002	9	0/0	4		
15	80	72	48	116	1001	2	0/0	12		mgst, ssc(1453)
16	79	77	48	118	1017	4	0/0	16		
17	71	85	48	110	1026	0	0/0	15		
18	67	45	43	102	1020	0	0/0	12		
19	56	32	43	099	1023	0	0/0	8		
20	43	16	43	092	1035	0	0/0	21		
21	26	8	41	089	1032	0	0/0	17		
22	21	5	42	087	1026	0	0/0	14		
23	31	5	42	090	1028	2	0/0	16		
24	32	35	44	096	1027	5	0/0	13		
25	41	42	44	092	1021	0	0/0	12		
26	43	40	42	093	1012	11	0/0	10		
27	51	32	41	094	1012	6	0/0	(7)		CME(1330)
28	33	30	43	098	1008	8	1/0	6	1346	
29	32	27	43	095	1011	0	1/0	27		ssc(1532)
30	43	32	42	096	1023	0	0/0	21		
31	49	31	42	094	1014	1	0/0	6		

Solar activity : from high to low, then moderate at the end of the month.
 Geomagnetic activity : begin very high, then low, increasing again at the end.

R'_I, R'_{IM} : 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 subtract from the mean solar constant.
 600 : 600 Mhz solar flux from Humain station (Belgium).
 2800 : 2800 Mhz solar flux from Ottawa (origin : Ursigrams - UGEOR group 2). "The 10.7cm Flux data are provided as a service of the National Research Council of Canada."
 COS : thousands of the cosmic ray counts (origin : Ursigrams - UCOSE Kerguelen).
 SFI : From October 1992, Solar Flare Index from the S.I.D.C. (origin : Ursigrams - UGEOR group 3).
 XI : X-flares index from the Ursigrams (M-flares/X-flares) (origin : Ursigrams - UGEOR group 2; UGEOR group 5).
 Ak : planetary geomagnetic index from Wingst, Germany (origin : Ursigrams).
 SEA : sudden enhancements of atmospherics from Uccle & Humain (Royal Observatory, Belgium).
 MAG : magnetic events from Dourbes station (Royal Meteorological Institute, Belgium).
 Remarks : sid (sudden ionospheric disturbance); ssc (sudden storm commencement); mgst (magnetic storm); sfe (solar flare effect); s-1-2-3-4 (class of flares); II-IV radio-burst; T (ten cm radio-burst); P (proton flare); p (proton event); gle (ground level event : neutron event); si (sudden impulse); F (Forbush); SFI Evaluation ($1 \times S_n + 10 \times "I" + 100 \times ">1"$).
 CME (coronal mass ejection).

DEPARTEMENT DE RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

UCCLE DAILY PROVISIONAL RELATIVE SUNSPOT NUMBERS FOR MAY 1998

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-3 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
19	917	5	31	81	25	56	0	20.8	3	VI
20	848	2	14	34	20	14	0	16.3	2	DC
23	713	2	10	30	19	11	19	1.5	2	JR
24	1427	2	23	43	32	11	32	19.8	2	JR
25	955	2	17	37	25	12	0	17.5	3	DC
26	1027	3	23	53	42	11	0	20.5	2	DC
27	1005	3	18	48	37	11	11	15.1	2	DC
28	848	2	16	36	36	0	0	17.4	2	DC
29	1203	3	10	40	16	24	24	22.9	3	DC
30	752	4	13	53	16	37	28	25.3	3	DC
31	951	3	21	51	18	33	18	27.7	3	DC

The Sun has been observed 11 days on 31 possible.
The relative mean sunspot number is 46.0.

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR MAY 1998

$$K' = .806 (*)$$

1	***	7	***	13	***	19	65	25	29
2	***	8	***	14	***	20	27	26	42
3	***	9	***	15	***	21	***	27	38
4	***	10	***	16	***	22	***	28	29
5	***	11	***	17	***	23	24	29	32
6	***	12	***	18	***	24	34	30	42
								31	41

The Sun has been observed 11 days on 31 possible.
The normalized relative monthly mean Wolf number is 36.

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

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR MAY 1998
E AND F BRUNNER'S TYPE GROUPS

NONE

PROBABLE RETURN OF MAJOR GROUPS FOR JUNE 1998
NONE

For safety reasons (work around the dome) the Sun has not been observed at Uccle during the first half of May.