

Sunspot Index Data Center

SUNSPOT BULLETIN

Data Analysis Service supported by the FAGS

1993 n° 9
Provisional Sunspot numbers for September 1993

From observations at the *Locarno Specola Solare*,
completed with data from an international network and
computed at the *Observatoire Royal de Belgique*.
42 cooperating stations on October 1, 10 UT

Day	R' _I	Day	R' _I
1	26	16	23
2	24	17	19
3	20	18	19
4	22	19	14
5	21	20	13
6	14	21	14
7	12	22	14
8	12	23	16
9	16	24	23
10	9	25	43
11	12	26	43
12	9	27	43
13	10	28	52
14	10	29	48
15	9	30	40

Mean = 21.7

Predictions of the smoothed monthly Sunspot Numbers :

Classical Method		SIDC Adjusted values			
1993 Oct.	52(± 12)	1994 Apr.	40(± 12)	1993 Oct.	32(± 7)
Nov.	50	May	38	Nov.	30
Dec.	48	Jun.	36	Dec.	28
1994 Jan.	46	Jul.	34	1994 Jan.	26
Feb.	44	Aug.	32	Feb.	24
Mar.	42	Sep.	30	Mar.	22

forecasted on the basis of the most recent provisional monthly smoothed
Sunspot Number calculated for 1993 March : 66.5 (± 5%)

Provisional smoothed values :

1993 Apr.	64(± 9)	1993 Jun.	60	1993 Aug.	56
May	62	Jul.	58	Sep.	54

Brussels, 1993 October 01

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

1993 SEPTEMBER $R'_M = 21.7$

Date	R'	PPSI	600	2800	COS	SFI	XI	Ak	SEA	MAG
31	28	19	26	89	971	0	0/0	8		
1	26	7	28	86	975	0	0/0	3		
2	24	9	26	81	973	0	0/0	9		
3	20	10	25	80	978	0	0/0	35		
4	22	10	25	79	972	5	0/0	23		
5	21	8	25	80	967	2	0/0	15		
6	14	3	26	79	971	2	0/0	12		
7	12	2	25	78	978	1	0/0	8		
8	12	1	24	79	975	1	0/0	12		
9	16	2	26	79	974	0	0/0	7		
10	9	0	25	79	978	0	0/0	4		
11	12	0	24	79	976	0	0/0	9		
12	9	1	26	79	973	0	0/0	21		mgst(1428)
13	10	1	26	80	982	0	0/0	65		
14	10	0	26	82	980	0	0/0	28		
15	9	2	26	85	985	0	0/0	16		
16	23	4	29	88	980	101	0/0	8		
17	19	4	28	85	986	1	0/0	4		
18	19	7	28	85	996	2	0/0	4		
19	14	6	28	84	996	0	0/0	5		
20	13	5	28	80	994	0	0/0	25		
21	14	1	28	80	995	1	0/0	15		
22	14	1	26	79	998	0	0/0	6		
23	16	4	26	78	997	8	0/0	13		
24	23	37	26	70	970	6	0/0	20		
25	43	53	26	96	959	2	0/0	13		
26	43	57	26	106	954	3	0/0	11		X-flare(0054) II+IV
27	43	52	28	104	962	10	2/0	10	1319	1233 ssc X-flare(1204)
28	52	63	29	111	961	3	0/0	11		
29	48	81	29	116	-	6	0/0	29		
30	40	80	29	-	-	-	-	-		

R', R'_M : 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 - UGEOI group 2).

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; UGEOI 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; I (ten cm radio-burst); P (proton flare); p (proton event);

gle (ground level event : neutron event); si (sudden impulse); F (Forbush); SFI Evaluation ($1 \times 10^4 \times 10^4 \times 10^4$).

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

DAILY PROVISIONAL

RELATIVE SUNSPOT NUMBERS

STATION UCCLE BELGIUM

SEPTEMBER 1993

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS				PPSI 10-3 WM-2	QUAL	OBS
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH	CENTRAL			
1	703	3	3	33	33	0	11	32.7	4	DC
2	917	3	3	33	33	0	0	31.6	4	DC
3	1525	2	4	24	24	0	0	20.8	3	AK
4	1030	3	7	37	25	12	0	25.2	3	AK
5	828	2	6	26	15	11	15	2.3	3	PC
6	726	2	6	26	26	0	26	2.7	5	DC
7	739	2	5	25	25	0	25	2.7	5	DC
8	917	0	0	0	0	0	0	0.0	1	VI
9	655	0	0	0	0	0	0	0.0	1	VI
10	1150	0	0	0	0	0	0	0.0	1	PC
11	1005	0	0	0	0	0	0	0.0	3	AK
12	831	0	0	0	0	0	0	0.0	3	PC
13	1218	1	1	11	11	0	11	0.4	2	VI
16	1306	0	0	0	0	0	0	0.0	1	VI
17	755	2	4	24	0	24	11	0.6	3	AK
18	739	2	8	28	0	28	12	5.8	2	VI
19	1105	1	8	18	0	18	18	5.4	4	AK
20	750	1	7	17	0	17	17	5.8	3	AK
21	734	0	0	0	0	0	0	0.0	1	VI
23	1227	1	7	17	0	17	17	1.4	1	VI
26	1314	3	31	61	27	34	61	62.5	3	DC
28	1430	3	30	60	45	15	13	36.0	3	DC
29	825	3	30	60	48	12	0	40.1	4	DC
30	1141	2	49	69	57	12	0	50.0	4	DC

The Sun has been observed 24 days on 30 possible.
The relative mean sunspot number is 23.7.

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

1993 SEPTEMBER

$K' = 0.914$ (*)

1	30	7	22	13	10	19	16	25	***
2	30	8	0	14	***	20	15	26	55
3	21	9	0	15	***	21	0	27	***
4	33	10	0	16	0	22	***	28	54
5	23	11	0	17	21	23	15	29	54
6	23	12	0	18	25	24	***	30	63

The Sun has been observed 24 days on 30 possible.

The normalized relative monthly mean Wolf number is 21.

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

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR 1993 SEPTEMBER
E AND F BRUNNER'S TYPE GROUPS

Uccle N°	East Limb Date	Date and type			West Limb	
		1st obs	CMP	Last Obs	Date	Date
1-1874	9 18.2	23 B	9 24.9	30 H	10 1.7	
4-1874	9 26.8	28 E	10 3.5	30 E	10 10.3	

PROBABLE RETURN OF MAJOR GROUPS FOR 1993 OCTOBER

N°	New East Limb	New CMP	New West Limb
1	10 15.1	10 21.9	10 28.6

SEPTEMBER 1993

PROVISIONAL INTERNATIONAL NORMALIZED HEMISPHERIC SUNSPOT NUMBERS

Date	Ri	Rn	Rs
1	26	26	0
2	24	24	0
3	20	20	0
4	22	22	0
5	21	21	0
6	14	14	0
7	12	6	6
8	12	12	0
9	16	16	0
10	9	5	4
11	12	6	6
12	9	5	4
13	10	5	5
14	10	5	5
15	9	0	9
16	23	6	17
17	19	0	19
18	19	0	19
19	14	0	14
20	13	0	13
21	14	0	14
22	14	7	7
23	16	0	16
24	23	0	23
25	43	19	24
26	43	19	24
27	43	24	19
28	52	41	11
29	48	39	9
30	40	31	9

MONTHLY MEAN : 21.7 12.4 9.3

COOPERATING STATIONS : 42 25 25

PILOT STATION : Specola Solare Ticinese, Locarno

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