Sunspot Index Data Center

S U N S P O T B U L L E T I N

Data Analysis Service supported by the FAGS

1989 , No 9

Provisional Sunspot-Numbers for SEPTEMBER 1989

Dependent on observations at LOCARNO Specola Solare
complemented by an international network and
determined at the Obervatoire Royal de BELGIQUE.
Thirty one coop. stations on OCTOBER 1989,1st,1000UT

Day	R_I	Day	R_I
1	147	16	180
2	171	17	159
3	180	18	155
4	204	19	152
5	212	20	137
6	230	21	111
7	277	22	109
8	261	23	110
9	296	24	85
10	270	25	80
11	264	26	93
12	264	27	101
13	248	28	111
14	215	29	134
15	207	30	142

Mean = 176. 8

Predictions of the smoothed monthly Sunspot Numbers

Classical Method		S.I.D.C. Adjusted values
1989 OCT.177(±43)	1990 APR.153(±49)	1989 OCT.186(±47)
NOV.175	MAY 148	NOV.184
DEC.171	JUN.144	DEC.180
1990 JAN.168	JUL.140	1990 JAN.175
FEB.163	AUG.137	FEB.170
MAR.158(±40)	SEP.134(±46)	MAR.164(±40)

Forecasted values on the basis of the latest provisional monthly smoothed Sunspot Number:1989 MARCH = 149 . 6 ±5%

Provisional smoothed values:

1989 APR.156	1989 JUN.168	1989 AUG.177
MAY 162	JUL.174	SEP.179

Brussels, 1989 OCTOBER ,1st

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

1989 SEPTEMBER R_{IM} = 176. 8

Date	R_I	PPSI	600	2800	COS	XFI	XI	Ak	SEA	
31	116	113	51	205	858	55	3/0	4	1604	1n(1600)
1	147	155	75	218	863	160	5/1	10		2n(2350)
2	171	285	53	231	866	78	5/0	10	1135	1b(0616-1135-2226)+sid's
3	180	241	57	242	866	137	2/1	7	1427	1b(2335)
4	204	265	70	242	850	166	5/1	30	1520	p-mgst-sid-pca+2b(0856)+ Aurora at 43°Hensall ONTARIO
5	212	226	55	261	827	57	4/0	22	1336	sb(1335)+ten+sid
6	230	291	56	278	812	31	1/0	14		
7	277	261	57	305	802	72	4/0	23	0822	ssc(1652)
8	261	207	60	295	822	88	4/0	17		
9	296	224	58	305	825	268	3/2	13	0909	2b(0908)+sid+ssc+1f(1925
10	270	193	58	295	827	85	4/0	11	0743	
11	264	222	55	294	826	60	2/0	53		2b(1938)
12	264	208	55	288	835	26	4/0	12		P(0435)+ssc(1227)+p(1935
13	248	145	53	245	827	45	2/0	12		2n(0330)+p(0825)
14	215	139	52	241	826	29	2/0	6		3cm (0658)+p(0710)
15	207	124	47	223	826	18	1/0	37		
16	180	127	48	228	827	42	1/0	18		
17	159	106	48	213	839	18	1/0	9		ssc(0742)
18	155	96	48	205	833	17	1/0	60		ssc(1026+1748)
19	152	111	48	202	791	27	2/0	44	1608	1b(1605)+ten+Aurora at 42° Detroit USA
20	137	119	43	170	808	7	0/0	6		
21	111	119	42	159	824	41	3/0	8	1257	1n(1257)+ten
22	109	106	41	160	839	16	0/0	21		
23	110	116	41	156	839	3	0/0	5		
24	85	103	41	155	850	15	2/0	10		
25	80	80	42	166	868	26	2/0	6	1306	1f(2339)
26	93	71	43	178	870	11	0/0	40	1237	
27	101	55	52	199	868	18	2/0	18		1f(2352)
28	111	55	47	192	863	3	2/0	12	1343	
29	134	53	47	209	1282	105?	0/1	12		P(1047),IV,ten,sfe(1125) pca,p(1320)
30	142	45	46	201	886	18	1/0	17		2n(0245),p,ssc(1717)

If the maximum is coming on 1989 Sept.,$R_I$max May be between 152 (symmetry around September) and 179 (Waldmeier graphical prognosis,implying a long slowly decrease, as in 1980-81). Adjusted data seem overestimated.

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 at the mean solar constant.
600 :600 Mhz solar flux from Humain station (Belgium).
2800:2800 Mhz solar flux from Ottawa (origin:Ursigrams).
COS :thousands of the cosmic ray counts (origin:Ursigrams).
XFI :X-flares index from the S.I.D.C. (origin:Ursigrams).
XI :X-flares index from the Ursigrams (M-flares/X-flares).
Ak :planetary geomagnetic index from Wingst (Germany from Ursigrams).
SEA :sudden enhancements of atmospherics from Uccle & Humain (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;ten(ten cm radio-burst);P(proton flare);p(proton event);gle(ground level event:neutron event)

OBSERVATOIRE ROYAL DE BELGIQUE

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

NOMBRES RELATIFS DE WOLF JOURNALIERS

PROVISOIRES

PROVISIONAL

SUNSPOT RELATIVE NUMBERS

STATION UCCLE BELGIUM SEPTEMBRE 1989

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OBS
1	1219	7	82	152	14	1349.	2	VI
3	0825	9	145	235	41	1769.	1	CG
4	0725	10	170	270	168	1404.	2	VI
5	1011	9	182	272	185	1580.	3	VI
6	1247	10	182	282	170	2044.	3	VI
7	0813	16	164	324	95	1872.	3	VI
8	0725	13	159	289	103	2289.	3	VI
9	1330	15	248	398	118	2441.	1	CG
10	1053	14	112	252	113	1881.	1	PC
11	0940	15	150	300	139	2210.	1	VI
12	0810	16	132	292	146	2325.	1	VI
14	1009	12	108	228	122	1296.	1	VI
16	1020	9	83	173	47	1618.	1	PC
17	1000	11	111	221	31	1857.	3	AK
18	1121	9	63	153	25	1333.	3	VI
19	1600	12	99	219	49	1306.	2	AK
20	1105	9	74	164	37	1058.	3	VI
21	0819	5	80	130	0	1312.	3	VI
22	0707	5	72	122	0	1174.	2	VI
24	0800	5	41	91	15	1283.	2	CG
25	0745	3	32	62	0	1031.	3	VI
26	1011	4	34	74	0	780.	1	VI
27	0840	5	46	96	0	694.	4	AK
28	1215	9	23	113	33	544.	1	CG
29	1425	11	42	152	22	682.	2	AK

LE SOLEIL A ETE OBSERVE 25 JOURS SUR 30 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 202.6

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U'=K'U FOR 1989 SEPTEMBER

K'= .884 (*)

1	134	7	286	13	***	19	193	25	54
2	***	8	255	14	201	20	144	26	65
3	207	9	351	15	***	21	114	27	84
4	238	10	222	16	152	22	107	28	99
5	240	11	265	17	195	23	***	29	134
6	249	12	258	18	135	24	80	30	***
								31	***

THE SUN WAS OBSERVED 25 DAYS ON 30 POSSIBLE
THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 178

* K' IS THE MEAN OF THE MONTHLY K'S FOR THE LAST FIVE YEARS

UCCLE OBSERVATIONAL MAJOR SUNSPOTS FOR 1989 SEPTEMBER
E AND F BRUNNER'S TYPE GROUPS

UCCLE NO	EAST LIMB DATE	DATE AND TYPE IST OBS	CMP	LAST OBS	WEST LIMB DATE
37-1819	8 29.0	31 F	9 4.8	12 F	9 11.5
38-1819	8 31.6	1 G	9 7.3	12 H	9 14.1
1-1820	9 4.8	5 E	9 11.5	17 E	9 18.3
2-1820	9 5.9	7 A	9 12.7	18 E	9 19.4
6-1820	9 6.4	9 C	9 13.2	19 C	9 19.9
14-1820	9 15.0	16 E	9 21.8	27 F	9 28.5

PROBABLE RETURN OF MAJOR GROUPS FOR 1989 OCTOBER

NO	NEW EAST LIMB	NEW CMP	NEW WEST LIMB
37	9 26.6	10 3.5	10 10.3
38	9 27.7	10 4.5	10 11.2
1	10 2.2	10 9.0	10 15.7
2	10 2.6	10 9.4	10 16.1
6	10 3.9	10 10.6	10 17.4
14	10 12.5	10 19.2	10 26.0