



SUNSPOT BULLETIN

Supported by UNESCO and ICSU through the FASS

1989 , N° 1

Provisional Sunspot-Numbers for JANUARY 1989

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Dependent on observations at LOCARNO Specola Solare
 complemented by an international network and
 determined at the Observatoire Royal de Belgique.
 Thirty four coop. stations on FEBRUARY 1989, 1st, 1000UT

Day	R' i	Day	R' i
1	148	16	164
2	173	17	155
3	146	18	160
4	120	19	140
5	155	20	126
6	142	21	114
7	157	22	165
8	135	23	159
9	165	24	142
10	190	25	144
11	200	26	152
12	229	27	167
13	233	28	172
14	201	29	169
15	177	30	157
		31	154
Mean =		161 . 6	

Predictions of the smoothed monthly Sunspot Numbers

Classical Method	S.I.D.C Adjusted values
1989 Feb.149(±37)	1989 Aug.183(±61)
Mar.157	Sep.183
Apr.165	Oct.183
May 169	Nov.181
Jun.175	Dec.178
Jul.181(±45)	1990 Jan.175(±58)
1989 Feb.147(±37)	1989 Jul.183(±45)

Forecasted values on the basis of the latest provisional
 monthly smoothed Sunspot Number: 1988 July = 104.3 ± 5%

Provisional smoothed values:

1988 Aug.109	1988 Oct.122	1988 Dec.135
Sep.116	Nov.128	1989 Jan.143

Brussels, 1989 FEBRUARY , 1st

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

1989 JANUARY R' = 161 . 6
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Date	R'	PPSI	600	2800	COS	XFI	XI	Ak	SEA
31	172	72	70	182	901	7	0/0	15	
1	148	59	86	192	904	31	1/0	17	
2	173	75	66	202	902	38	2/0	7	2n+ten(1909)
3	146	65	68	198	910	43	4/0	6	
4	120	78	-	211	905	69	2/0	11	ssc(0847);P(1746); P(2310);ssc(2305)
5	155	100	72	209	891	6	0/0	27	ssc(1324)
6	142	97	78	208	899	30	4/0	9	1753;ssc(2354)
7	157	94	84	248	896	172	5/1	12	1249;2b(0400)
8	135	120	77	268	900	54	8/0	19	1223;1b(1221)+ten
9	165	156	77	256	903	53	6/0	16	1b(1918)+ten
10	190	173	78	251	907	170	5/1	14	1b(2021)+II+ten
11	200	210	78	269	901	68	5/0	32	ssc(1206)
12	229	177	83	226	988	36	2/0	20	
13	233	220	80	291	895	174	9/1	13	ten(0352);2b(0829)+ten+II; X(1225);ssc(1426)
14	201	240	84	274	899	145	4/2	20	1331;2b(0357)+II+sid; 1b(2231);mgst(1700)
15	177	292	75	282	896	17	3/0	37	1b(1546)
16	164	267	84	299	884	76	6/0	38	many Xray-flares
17	155	225	78	281	891	18	0/0	32	
18	160	195	78	269	899	130	2/1	14	1f(0610)+ten;3b(1807) +ten+II
19	140	148	73	249	907	8	0/0	10	
20	126	104	74	247	909	20	1/0	42	ssc(1129)+mgst
21	114	88	73	216	913	13	1/0	26	
22	165	95	72	212	916	18	3/0	32	
23	159	78	71	219	910	12	3/0	20	
24	142	181	74	221	905	39	2/0	12	
25	144	142	74	234	913	29	1/0	16	sn(1453)+ten+sid
26	152	150	73	211	908	47	3/0	12	1412;ten(2349);many Xfl.
27	167	138	73	230	899	141	2/1	12	1b(0329);2b(1908)+ten
28	172	159	71	217	896	26	2/0	15	1b(2139)+II+ten
29	169	132	67	209	898	29	1/0	11	
30	157	92	66	193	892	62	3/0	14	
31	154	75	67	-	-	-	-	-	

Ri ,Rim: 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);s-1-2-3/n(class of flares);II-IV radio-burst;
ten(ten cm radio-burst):...

OBSERVATOIRE ROYAL DE BELGIQUE

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

NOMBRES RELATIFS DE WOLF JOURNALIERS

PROVISOIRES

PROVISIONAL

SUNSPOT RELATIVE NUMBERS

STATION UCCLE BELGIUM

JANVIER 1989

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OBS
2	1249	11	61	171	44	1022.	2	HB
5	0928	10	88	188	0	1252.	4	ST
11	1008	13	135	265	85	2389.	2	VI
13	0920	13	129	259	102	2652.	4	ST
14	1145	9	141	231	108	2388.	3	ST
15	0940	9	93	183	73	2872.	1	HB
16	1250	8	132	212	119	2730.	1	VI
18	1158	8	108	188	35	2184.	1	ST
19	0939	9	111	201	15	1398.	2	ST
22	1030	14	78	218	65	1389.	3	AK
23	0936	9	79	169	24	1007.	3	ST
25	1314	7	109	179	75	1354.	1	VI
26	0911	5	135	185	75	1271.	4	ST
27	0920	6	157	217	160	1593.	3	AK
28	1230	8	172	252	134	1594.	3	AK
30	1412	7	132	202	95	846.	2	ST
31	1413	8	137	217	105	833.	2	VI

LE SOLEIL A ETE OBSERVE 17 JOURS SUR 31 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 208.1

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U* = K*U FOR 1989 JANUARY

K* = .938 (*)

1	***	7	***	13	242	19	188	25	167
2	16C	8	***	14	216	20	***	26	173
3	***	9	***	15	171	21	***	27	203
4	***	10	***	16	198	22	204	28	236
5	176	11	248	17	***	23	158	29	***
6	***	12	***	18	176	24	***	30	189
								31	203

THE SUN WAS OBSERVED 17 DAYS ON 31 POSSIBLE
THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 194

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

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

UCCLE NO	EAST LIMB DATE	DATE	AND TYPE	WEST LIMB DATE
		1ST OBS	COMP LAST OBS	
17-1810	12 21.0	26 E	12 27.7 2 G	1 3.5
24-1810	12 25.0	2 D	12 31.8 5 E	1 7.5
5-1811	1 6.3	11 F	1 13.0 19 G	1 19.8
8-1811	1 9.1	11 H	1 15.9 22 G	1 22.6
24-1811	1 19.7	22 E	1 26.4 31 G	2 2.2
26-1811	1 21.7	22 G	1 28.4 31 G	2 4.2
31-1811	1 25.0	27 D	1 31.7 31 D	2 7.5

PROBABLE RETURN OF MAJOR GROUPS FOR 1989 FEBRUARY

UCCLE NO	NEW EAST LIMB	NEW COMP	NEW WEST LIMB
24	1 20.6	1 27.3	2 3.1
5	2 3.4	2 10.1	2 16.9
8	2 6.0	2 12.8	2 19.5
24	2 16.4	2 23.1	3 1.9