



SUNSPOT BULLETIN

Supported by UNESCO and ICSU through the FASS

1988 , N° 1

Provisional Sunspot-Numbers for January 1988

 Dependent on observations at Locarno Specola Solare
 complemented by an international network and
 determined at the Observatoire Royal de Belgique.
 Thirty seven coop.stations on 1988 Feb. 1st., 1000 UT.

Day	R' i	Day	R' i
1	47	16	83
2	31	17	72
3	25	18	68
4	26	19	73
5	32	20	78
6	40	21	84
7	58	22	66
8	57	23	47
9	59	24	44
10	68	25	40
11	75	26	44
12	71	27	54
13	81	28	67
14	97	29	59
15	90	30	56
		31	57

MEAN = 59.6

 Predictions of the smoothed monthly Sunspot Numbers
 New fitting for the trend one year after the minimum.
 Classical Method S.I.D.C. Adjusted values

1988 Feb.43(±10)	1988 Aug.53(±16)	1988 Feb.44(±11)
Mar.44(±11)	Sep.56(±18)	Mar.45
Apr.46	Oct.58(±19)	Apr.47(±12)
May 48(±12)	Nov.61(±20)	May 49
Jun.50	Dec.64(±21)	Jun.54(±14)
Jul.51(±13)	1989 Jan.66(±22)	Jul.60(±15)

Forecasted values on the basis of the latest provisional
 monthly smoothed Sunspot Number: 1987 July = 31.3 ± 5%
 Provisional smoothed values:

1987 Aug. 33 (±3)	1987 Nov. 38 (±6)
Sep. 34	Dec. 39
Oct. 36 (±4)	1988 Jan. 41

Brussels, February 1st. 1988

A.Koeckelenbergh.

Reproduction permitted if the source is mentioned.

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

1988 JANUARY R = 59.6
im

Date	Ri	PPSI	600	2800	COS	XFI	XI	Ak	SEA
1	47	62	79	104	971	4	0/0	5	ssc(1956),mgst
2	31	106	74	97	962	102	0/1	28	P(2133)II+IV,P,forbush
3	25	44	74	105	971	0	0/0	6	Pmax(0835)
4	26	23	70	102	964	0	0/0	18	ssc(2013)pca(2102)
5	32	16	69	103	933	0	0/0	13	Pend(1500)
6	40	14	73	105	930	5	0/0	29	ssc(1631)
7	58	32	76	106	921	9	0/0	28	
8	57	47	80	109	934	7	0/0	18	
9	59	38	80	111	939	15	0/0	5	
10	68	36	78	104	936	0	0/0	6	
11	75	73	78	108	948	2	0/0	10	
12	71	58	83	114	957	5	0/0	21	
13	81	39	82	117	953	11	0/0	8	2b(1206),sid,ssc(2330)
14	97	32	81	118	928	39	2/0	52	mgst
15	90	40	81	122	935	21	0/0	43	mgst(0730)
16	82	72	..	127	944	13	0/0	5	
17	72	75	82	120	..	3	0/0	70	
18	68	102	82	115	952	4	0/0	17	
19	73	92	81	118	961	4	0/0	11	
20	78	98	79	116	960	6	0/0	14	
21	84	120	79	115	958	3	0/0	10	
22	66	92	..	108	965	0	0/0	8	end of Forbush
23	47	53	76	108	966	0	0/0	2	
24	44	32	76	106	965	6	0/0	5	
25	40	10	76	98	969	2	0/0	6	
26	44	8	76	97	966	5	0/0	13	
27	54	11	..	105	965	13	0/0	12	
28	67	36	..	106	970	4	0/0	6	
29	59	16	..	102	..	3	0/0	4	
30	56	21	..	103	970	1	0/0	2	
31	57	63	..	106	..	1	0/0	2	

A long PROTON-Flare occurs on Jan 2,2235 UT with the beginning of a Forbush cosmic effect of twenty days duration.

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 substract 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-b(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 1988

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OES
1	0927	3	17	47	25	438.	3	AK
3	1240	2	7	27	0	282.	2	AK
4	0943	2	4	24	11	229.	2	HR
6	1009	3	15	45	13	160.	3	VI
8	0922	3	28	58	19	637.	1	VI
11	0915	6	31	91	26	791.	3	VI
12	1305	6	29	89	39	758.	3	AK
13	1114	6	18	78	12	294.	1	VI
14	1039	6	22	82	0	324.	2	VI
17	1150	3	31	61	12	898.	1	AK
19	0904	4	43	83	34	686.	3	VI
23	0925	3	24	54	0	636.	2	CG
24	1115	4	15	55	0	389.	2	AK
27	0944	4	29	69	21	30.	1	VI
29	1402	5	15	65	0	200.	2	ST
30	1130	7	23	93	46	291.	3	AK
31	1136	4	24	64	27	628.	3	AK

LE SOLEIL A ETE OBSERVE 17 JOURS SUR 31 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 63.8

ED. RESP. DR. ANDRE KOECKELENBERGH
3, AV. CIRCULAIRE, B 1180 BRUXELLES. BELGIUM.
TELEX : 21565 OBSBEL - TEL. : (02) 3752484 EXT 611

NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U* = K*U FOR 1988				JANUARY					
K* = .938 (*)									
1	44	7	***	13	73	19	77	25	***
2	***	8	54	14	76	20	***	26	***
3	25	9	***	15	***	21	***	27	64
4	22	10	***	16	***	22	***	28	***
5	***	11	85	17	57	23	50	29	60
6	42	12	83	18	***	24	51	30	87
								31	60

THE SUN WAS OBSERVED 17 DAYS ON 31 POSSIBLE
 THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 59

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

UCCLE OBSERVATIONAL MAJOR SUNSPOTS FOR 1988 JANUARY
 E AND F BRUNNER'S TYPE GROUPS

UCCLE NO	EAST LIMB		DATE AND TYPE			WEST LIMB	
	NO	DATE	IST OBS	GRP	LAST OBS	NO	DATE
1-1797	12	24.7	27	E 12 31.4	6	H	1 7.2

PROBABLE RETURN OF MAJOR GROUPS FOR 1988 FEBRUARY

NO	NEW EAST LIMB	NEW CMP	NEW WEST LIMB
----	---------------	---------	---------------

NONE