



SUNSPOT BULLETIN

Supported by UNESCO and ICSU through the FAGS

1987

N° 12

Provisional Sunspot-Numbers for DECEMBER 1987

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HAPPY NEW YEAR + BEST WISHES + HAPPY NEW YEAR + BEST WISHES

Dependent on observations at Locarno Specola Solare
complemented by an international network and
determined at the Observatoire Royal de Belgique.

Thirty coop.stations on 1988 January 1st, 1000 UT.

Day	R' i	Day	R' i
1	17	16	40
2	16	17	39
3	18	18	43
4	12	19	28
5	15	20	26
6	19	21	14
7	34	22	24
8	39	23	17
9	37	24	10
10	34	25	28
11	17	26	22
12	13	27	29
13	20	28	28
14	26	29	30
15	42	30	42
		31	43

MEAN = 26 .5

Predictions of the smoothed monthly Sunspot Numbers

Classical Method	S.I.D.C. Adjusted values
1988 Jan.34(± 7)	1988 Jan. 40 (± 8)
Feb.35	Feb. 41
Mar.36	Mar. 42
Apr.37	Apr. 44 (± 9)
May 37	May 45
Jun.38(± 8)	Jun. 46
1988 Jul.39(±13)!	1988 Jul. 40 (± 8)
Aug.40	Aug. 41
Sep.41(±14)!	Sep. 42
Oct.41	Oct. 43
Nov.42	Nov. 44
Dec.43	Dec. 45

Forecasted values on the basis of the latest provisional
monthly smoothed Sunspot Number:1987 June = 28 .5 ± 5%

Provisional smoothed values:

1987 Jul. 30 (± 6)	1987 Oct. 34 (± 7)
Aug. 31	Nov. 35
Sep. 32	Dec. 36

Brussels, January 1st, 1988

A.Koeckelenbergh.

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

1987 DECEMBER R = 26 .5
im

Date	Ri	PPSI	600	2800	COS	XFI	XI	Ak	SEA
1	17	3	68	90	+	0	0/0	5	
2	16	3	68	89	971	1	0/0	4	
3	18	0	68	88	967	1	0/0	12	
4	12	0	+	88	970	0	0/0	12	
5	15	10	65	89	969	2	0/0	16	
6	19	17	+	88	969	2	0/0	9	
7	34	25	68	88	970	0	0/0	5	
8	39	25	68	91	974	2	0/0	1	
9	37	21	72	94	975	3	0/0	6	SSC(1941)
10	34	10	74	93	972	1	0/0	40	
11	17	2	68	94	968	0	0/0	18	
12	13	0	68	98	973	2	0/0	10	
13	20	6	70	94	971	1	0/0	4	
14	26	10	70	94	976	2	0/0	4	
15	42	17	73	97	977	3	0/0	13	
16	40	38	+	99	972	6	0/0	40	
17	39	38	70	95	973	1	0/0	18	
18	43	41	70	93	980	0	0/0	10	
19	28	38	68	91	981	1	0/0	9	
20	26	34	+	90	977	0	0/0	4	
21	14	48	72	94	978	4	0/0	14	
22	24	28	72	91	978	0	0/0	25	
23	17	16	72	91	984	0	0/0	8	
24	10	5	78	93	981	2	0/0	9	
25	28	7	80	102	984	4	0/0	8	
26	22	10	79	106	983	20	2/0	4	1n(1947)Ten.
27	29	34	78	105	982	8	0/0	2	
28	28	36	+	106	976	3	0/0	4	
29	30	77	+	105	977	7	0/0	4	
30	42	84	77	103	981	4	0/0	1	
31	43	71	+	103	978	3	0/0	3	

!If Rsmoothed =50 would come on 1988 october: maximalist prediction for the !
!next maximum =1990 september with R=100. For a minimalist hypoth. see SBn°11 !

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-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

DECEMBRE 1987

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OBS
1	1048	1	4	14	14	4.	2	VI
2	1112	1	3	13	0	3.	2	VI
3	0904	1	1	11	0	2.	2	VI
4	1118	0	0	0	0	0.	3	ST
7	1130	3	16	48	34	325.	2	VI
8	0919	3	14	44	0	327.	2	VI
9	1055	4	12	52	0	259.	3	VI
10	0940	3	6	36	0	131.	2	VI
13	1050	2	3	23	0	67.	2	AK
22	0954	2	5	25	0	241.	1	VI
23	0917	1	1	11	0	176.	1	VI
27	1220	1	16	26	0	310.	2	AK
28	1055	1	13	23	0	234.	1	VI
31	0905	2	23	43	0	433.	2	AK

LE SOLEIL A ETE OBSERVE 14 JOURS SUR 31 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 26.4

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U* \bar{K} *U FOR 1987 DECEMBER

K* = 1.038 (*)

1	14	7	49	13	23	19	***	25	***
2	13	8	45	14	***	20	***	26	***
3	11	9	53	15	***	21	***	27	26
4	0	10	37	16	***	22	25	28	23
5	***	11	***	17	***	23	11	29	***
6	***	12	***	18	***	24	***	30	***
								31	44

THE SUN WAS OBSERVED 14 DAYS ON 31 POSSIBLE
THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 26

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

UCCLE OBSERVATIONAL MAJOR SUNSPOTS FOR 1987 DECEMBER
E AND F BRUNNER'S TYPE GROUPS

UCCLE EAST LIMB NO	DATE	IST OBS	DATE AND TYPE	WEST LIMB	DATE
			CMP	LAST OBS	
1-1797	12 24.7	27 E	12 31.4	31 G	1 7.2

PROBABLE RETURN OF MAJOR GROUPS FOR 1987 JANUARY

NO	NEW EAST LIMB	NEW CMP	NEW WEST LIMB

NONE