



SUNSPOT BULLETIN

Supported by UNESCO and ICSU through the FAGS

1988

N° 4

Provisional Sunspot-Numbers for APRIL 1988

Dependent on observations at Locarno Specola Solare
 complemented by an international network and
 determined at the Observatoire Royal de Belgique.
 Thirty two cooperating stations on 1988 May 1st, 0900 UT.

Day	R' i	Day	R' i
1	110	16	148
2	96	17	144
3	94	18	137
4	74	19	108
5	66	20	88
6	62	21	79
7	84	22	72
8	92	23	48
9	115	24	30
10	107	25	44
11	115	26	44
12	118	27	36
13	120	28	43
14	138	29	39
15	145	30	44

MEAN = 88.0

Predictions of the smoothed monthly Sunspot Numbers
 Classical Method S.I.D.C. Adjusted values

1988 May 56(±14)	1988 Nov. 68(±23)	1988 May 58(±15)
Jun. 57	Dec. 71	Jun. 61
Jul. 59	1989 Jan. 74(±25)	Jul. 66(±16)
Aug. 61(±15)	Feb. 76	Aug. 69
Sep. 63	Mar. 79	Sep. 73
Oct. 66(±16)	Apr. 81(±27)	Oct. 77(±18)

Forecasted values on the basis of the latest provisional
 monthly smoothed Sunspot Number: 1987 October = 43.6 ± 5%
 Provisional smoothed values:

1987 Nov. 45 (± 6)	1988 Feb. 52 (± 9)
Dec. 47	Mar. 55
1988 Jan. 50 (± 8)	Apr. 58 (±10)

Brussels, 1988 May 1st

A. Koeckelenbergh.

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

1988 APRIL R = 88 .0
im

Date	Ri	PPSI	600	2800	COS	XFI	XI	Ak	SEA
1	110	127	54	127	956	4	0/0	17	
2	96	103	54	127	954	8	0/0	16	sf(0535);ten(0550);
3	94	92	54	128	954	6	0/0	50	ssc(1637) \ II
4	74	75	54	123	951	3	0/0	61	
5	66	54	52	114	949	5	0/0	23	mgst(1815)
6	62	51	49	117	949	5	0/0	33	
7	84	64	49	120	950	12	0/0	16	1308 and (1358?)
8	92	82	57	125	946	7	0/0	10	
9	115	95	58	127	946	9	0/0	14	
10	107	116	48	127	955	2	0/0	16	
11	115	109	47	131	957	20	0/0	12	1345
12	118	129	49	136	957	28	1/0	16	1707
13	120	116	48	134	956	13	0/0	11	
14	138	130	53	145	965	108	0/1	10	2b(1942);ten;sid
15	145	190	50	143	968	18	2/0	8	2b(2000);II;IV;t
16	148	182	50	147	969	19	1/0	6	\ 1n(2111);
17	144	197	50	144	959	16	1/0	6	
18	137	258	49	144	963	25	2/0	8	Xf;ten(0055)
19	108	155	48	137	966	17	0/0	11	ssc(0859)
20	88	124	47	134	962	17	1/0	9	
21	79	77	48	126	969	19	1/0	10	2n(0927)
22	72	49	48	119	960	17	1/0	32	1409 mgst
23	48	24	48	110	953	3	0/0	24	
24	30	14	44	104	.	15	1/0	8	
25	44	18	44	105	961	9	0/0	7	
26	44	29	41	103	964	8	0/0	5	
27	36	43	43	101	971	1	0/0	7	
28	43	43	..	100	968	0	0/0	12	
29	39	56	..	101	.	0	0/0	6	
30	44	64	

! The solar activity continues to grow. The monthly smoothed mean will come above the turning point Ri=50 around 1989 January. For the next months it is possible that the mean activity will be stationary or slightly decreasing!

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 atmospheric from Uccle and 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

AVRIL 1968

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OCS
1	0836	7	66	136	50	1014.	2	VI
2	0800	5	61	111	19	1050.	4	AK
3	0901	6	35	95	27	926.	4	HB
4	0805	5	49	99	0	743.	3	AK
5	1154	5	19	69	0	452.	1	VI
6	1340	4	28	68	0	472.	3	AK
7	0735	6	31	91	C	540.	2	VI
8	0958	6	34	94	19	923.	1	VI
10	0825	7	52	122	15	1279.	4	AK
11	0644	8	59	139	27	1324.	2	VI
12	0733	8	32	112	44	1205.	2	VI
13	0709	10	56	156	78	1005.	3	VI
14	0630	10	66	166	80	1237.	3	VI
15	0611	9	78	168	49	1684.	2	VI
16	1000	9	106	196	91	1756.	2	AK
18	0655	9	93	183	73	2018.	2	VI
19	0650	7	68	138	26	1211.	3	VI
20	1330	5	60	110	53	1447.	2	AK
21	1008	4	44	84	44	876.	2	VI
22	1020	6	34	94	14	470.	2	AK
23	0746	4	12	52	0	306.	3	HB
24	1120	3	5	35	0	211.	2	CG
25	0638	2	6	26	0	200.	2	VI
26	0904	3	15	45	11	370.	2	VI
27	0705	3	16	46	23	460.	3	VI
28	0713	2	18	38	38	526.	1	VI
29	1018	2	13	33	33	713.	1	VI
30	1050	5	24	74	52	705.	2	CG

LE SOLEIL A ETE OBSERVE 28 JOURS SUR 30 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 99.3

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U* = K*U FOR 1988 APRIL

K* = .961 (*)

1	130	7	87	13	149	19	132	25	24
2	106	8	90	14	159	20	105	26	43
3	91	9	***	15	161	21	80	27	44
4	95	10	117	16	188	22	90	28	36
5	66	11	133	17	***	23	49	29	31
6	65	12	107	18	175	24	33	30	71
								31	***

THE SUN WAS OBSERVED 28 DAYS ON 30 POSSIBLE
 THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 94

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

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

UCCLE NO	EAST LIMB DATE	DATE	AND TYPE	WEST LIMB DATE
		IST OBS	LAST OBS	
11-1800	3 23.4	24 E	5 D	4 5.9
8-1801	4 10.7	12 C	23 G	4 24.2
12-1801	4 13.6	15 C	21 G	4 27.1

PROBABLE RETURN OF MAJOR GROUPS FOR 1988 MAY

NO	NEW EAST LIMB	NEW CMP	NEW WEST LIMB
11	4 20.2	4 27.0	5 3.7
8	5 8.4	5 15.2	5 21.9