Sunspot Index Data Center

SUNSPOT BULLETIN

Supported by UNESCO and ICSU through the FAGS

1987 , No. 4

Provisional Sunspot - Numbers for April 1987

Dependent on observations at Locarno Specola Solare,
complemented by an international network and
determined at the Observatoire Royal de Belgique.
Forty cooperating stations on May 1 st ,0830 UT

Day	R'_I	Day	R'_I
1	14	16	60
2	12	17	41
3	10	18	36
4	13	19	29
5	28	20	16
6	47	21	19
7	56	22	26
8	64	23	25
9	69	24	35
10	72	25	23
11	80	26	21
12	77	27	11
13	79	28	14
14	74	29	20
15	78	30	30

MEAN = 39 .3

Predictions of the smoothed monthly Sunspot - Numbers

Classical Method		S.I.D.C. Adjusted Values	
1987 May 21	1987 Aug. 25	1987 May 25	1987 Aug. 29
Jun. 22	Sep. 26	Jun. 26	Sep. 31
Jul. 23	Oct. 27	Jul. 28	Oct. 33

Precision on the sixth predicted value : ± 7

Classical estimated smoothed value for 1988 Jan. 30 ± 8

Forecasted values are evaluated on the basis of the latest provisional monthly smoothed value (1986 October) : 13. 3 ± 5 %

Brussels, May 1 st , 1987

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S.I.D.C. SUMMARY OF URSIGRAMS

1987 APRIL R'_{im} = 39.3

Date	R_i	PPSI	600	2800	COS	XFI	XI	A_k			
1	14	25	55	73	1032	0	0/0	10		4N	
2	12	23	54	72	28	0	0/0	4	SSC		21N
3	10	18	54	72	34	0	0/0	2			
4	13	15	54	74	38	0	0/0	15	SSC	4S	
S 5	28	13	54	78	19	15	1/0	14			22S
6	47	16	55	89	26	20	0/0	7			(29S
7	56	42	58	94	34	0	0/0	12		5S	24S,32S,/
8	64	50	61	95	37	10	0/0	14			
9	69	67	61	100	35	18	0/0	11		6S	22S
10	72	69	63	100	32	0	0/0	10			
11	80	79	66	101	31	9	0/0	6			25N
S12	77	85	69	98	30	3	0/0	4			
13	79	88	68	99	27	2	0/0	17	SSC		
14	74	87	68	98	31	2	0/0	7			
15	78	55	69	97	34	8	0/0	6	1b		17S
16	60	47	..	93	23	20	1/0	4			
17	41	38	65	97	22	2	0/0	7			
18	36	24	61	93	27	10	0/0	5			31N
S19	29	7	59	91	28	1	0/0	9		3N	16N
20	16	0	63	85	21	0	0/0	8			
21	19	2	61	76	31	1	0/0	3			24S ,41S
22	26	2	58	76	28	3	0/0	5		4N	,26N ;31N
23	25	2	54	76	27	0	0/0	3		12N	
24	35	7	54	78	22	3	0/0	12			
25	23	4	56	75	25	0	0/0	6			
S26	21	1	56	73	34	0	0/0	5			
27	11	2	56	74	31	0	0/0	7			22S ; 28S
28	14	2	56	73	32	0	0/0	4			
29	20	3	54	73	33	0	0/0	6			
30	30	5	..	.	.	.	.	.			

Twenty two sunspot groups , seven equatorial, one at 16°,fourteen at high latitude .
Minimum of the cycle around 1986 July (± 2 months) ;predicted smoothed R=50 for 1989 July.
First SIDC hypothesis for the further maximum :second part of 1991 at smoothed R= 80 ± 15 .

R'_{im} : provisional International monthly Sunspot-Number from the S.I.D.C.

R'_i : provisional International daily Sunspot-Numbers from the S.I.D.C.

PPSI : Prompt Photometric Sunspot Index from the S.I.D.C. in 10^{-5} $W.m^{-2}$ Quantity to substract at the mean solar constant , due to the presence of the sunspots .

2800 : 2800 Mhz solar flux from the Ursigrams (origin:Herzberg Institute Ottawa)

600 : 600 Mhz solar flux from HUMAIN station of the Royal Observatory of Belgium .

COS : thousands of cosmic rays counts from the Ursigrams

XFI : X-flare Index from the S.I.D.C.on the base of the Ursigrams .The sum of number of class C-flares +10 x class M-flares of significative X-ray flux + 100 x X-flares with important X-ray flux .

XI : X-flare Index from the Ursigrams (number of M-flares/number of X-flares)

A_k : geomagnetic Index of Wingst station from the Ursigrams (Ampli.fluct.in 2nT).

sid : Sudden ionospheric disturbance ;ssc :sudden storm commencement
sfe : solar flare effect ; // :two ribbons flare ; P :proton flare
mst : magnetic storm ; II radio- outburst ; pca :polar cap absorption
aur : aurorae ; 1b ,2b ...: flare of class 1 or2 (bright) .

OBSERVATOIRE ROYAL DE BELGIQUE

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

NOMBRES RELATIFS DE WOLF JOURNALIERS

PROVISOIRES

PROVISIONAL

SUNSPOT RELATIVE NUMBERS

STATION UCCLE BELGIUM AVRIL 1987

DATE	UT	NOMBRE DE GROUPES	NOMBRE DE TACHES	NOMBRE DE WOLF	NOMB REL ZONE CENTRALE	PPSI 10-6 WM-2	QUAL	OBS
1	0912	1	11	21	21	325.	2	VI
3	1610	1	2	12	0	228.	2	AK
4	1030	1	1	11	0	170.	2	AK
5	0834	2	5	25	0	213.	4	HB
6	0731	4	32	72	0	207.	2	VI
7	1220	5	42	92	54	416.	2	AK
8	0705	5	26	76	39	518.	3	VI
9	0926	5	35	85	26	622.	3	VI
10	0815	5	63	113	28	678.	2	VI
11	0921	5	46	96	19	859.	3	PC
13	1211	5	24	74	51	893.	1	VI
15	0821	6	35	95	32	559.	2	VI
16	1208	4	20	60	12	412.	2	VI
17	0856	3	17	47	0	497.	3	VI
18	0810	4	15	55	0	291.	4	AK
19	0920	3	7	37	0	97.	2	AK
20	0738	0	0	0	0	0.	2	HB
21	0744	2	5	25	13	17.	2	AK
22	0641	3	5	35	12	13.	3	VI
23	0741	2	6	26	0	22.	3	VI
24	0750	4	10	50	11	56.	3	AK
25	0745	2	4	24	0	40.	4	AK
27	0800	1	1	11	11	25.	4	AK
28	0845	1	1	11	11	24.	5	HB
29	0800	2	6	26	26	39.	2	AK
30	0801	3	13	43	18	61.	2	HB

LE SOLEIL A ETE OBSERVE 26 JOURS SUR 30 POSSIBLES
LE NOMBRE RELATIF DE WOLF MOYEN EST DE 47.0

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS

U'=K'U FOR 1987 APRIL

K'= .961 (*)

1	20	7	88	13	71	19	35	25	23
2	***	8	73	14	***	20	0	26	***
3	11	9	81	15	91	21	24	27	10
4	10	10	108	16	57	22	33	28	10
5	24	11	92	17	45	23	24	29	24
6	69	12	***	18	52	24	48	30	41
								31	***

THE SUN WAS OBSERVED 26 DAYS ON 30 POSSIBLE
THE NORMALISED RELATIVE MONTHLY MEAN WOLF NUMBER IS 44

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

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

UCCLE NO	EAST LIMB DATE	DATE AND TYPE 1ST OBS	CMP	LAST OBS	WEST LIMB DATE
3-1787	4 2.7	5 D	4 9.4	15 H	4 16.2
5-1787	4 5.9	6 C	4 12.6	19 E	4 19.4

PROBABLE RETURN OF MAJOR GROUPS FOR 1987 MAY

NO	NEW EAST LIMB	NEW CMP	NEW WEST LIMB
5	5 3.6	5 10.4	5 17.1