


Sunspot Index Data Center
SUNSPOT BULLETIN

Data Analysis Service supported by the FAGS

1992 n° 12
 Provisional Sunspot numbers for December 1992

From observations at the Locarno Specola Solare
 completed with data from an international network,
 computed at the Observatoire Royal de Belgique
 28 cooperating stations on January 1st, 11 UT

Day	Ri	Day	Ri
1	65	16	109
2	56	17	105
3	59	18	98
4	59	19	104
5	51	20	97
6	48	21	84
7	34	22	91
8	58	23	84
9	96	24	82
10	95	25	81
11	132	26	95
12	109	27	73
13	113	28	80
14	106	29	78
15	112	30	69
		31	59

Mean = 83.3

Predictions of the smoothed monthly Sunspot Numbers

Classical Method		SIDC Adjusted values			
1993 Jan.	83(± 20)	1993 Jul.	71(± 22)	1993 Jan.	93(± 21)
Feb.	81	Aug.	69	Feb.	89
Mar.	79	Sep.	67	Mar.	86
Apr.	77	Oct.	65	Apr.	83
May	75	Nov.	63	May	81
Jun.	73	Dec.	61	Jun.	79

forecasted on the basis of the most recent provisional monthly smoothed Sunspot Number calculated for 1992 June : 97.1 (± 5%)

Provisional smoothed values :

1992 Jul.	95(± 13)	1992 Sep.	91	1992 Nov.	87
Aug.	93	Oct.	89	Dec.	85

Brussels, 1993 January 01

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

1992 DECEMBER R_{IM} = 83.3

Date	R' ₁	PPSI	600	2800	COS	SFI	XI	Ak	SEA	MAG
30	74	96	34	140	960	18	1/0	14		
1	65	118	33	131	959	19	1/0	18		
2	56	87	35	130	958	26	0/0	13		
3	59	55	33	126	966	8	0/0	20		
4	59	27	32	120	966	9	2/0	18		
5	51	29	32	116	954	2	0/0	7		
6	48	30	31	120	955	0	0/0	6		
7	34	27	31	120	950	6	0/0	14		ssc 0754+1230+1248+1345
8	58	41	32	129	948	3	0/0	33		
9	96	83	32	134	952	5	0/0	21		
10	95	148	33	142	955	9	0/0	25		
11	132	234	37	164	951	7	0/0	11		
12	109	274	38	175	950	5	0/0	9		
13	113	241	37	173	956	18	0/0	10		
14	106	202	37	167	958	6	0/0	12		
15	112	162	37	156	963	-	-/-	16		T(O111)
16	109	117	37	151	964	24	0/0	6		T(O313)
17	105	84	36	150	959	0	0/0	25		
18	98	64	35	150	---	2	0/0	15		
19	104	80	37	147	963	0	0/0	15		
20	97	85	38	148	960	3	0/0	16		
21	84	107	38	145	956	-	-/-	20		
22	91	118	38	142	957	-	-/-	10		
23	84	106	38	144	960	6	0/0	(7)		
24	82	109	38	136	961	7	0/0	8		
25	81	95	--	136	969	11	0/0	7		
26	95	102	37	131	?	2	0/0	6		
27	73	115	37	125	987	1	0/0	10		ssc 2012
28	80	116	36	127	968	0	0/0	42		
29	78	89	35	125	969	5	0/0	45		
30	69	64	35	126	960	7	0/0	10		
31	59	30	35	130	952	4	1/0	10		

R'₁, R'₁₁: 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 from the mean solar constant.
 600: 600 Mhz solar flux from Humain station (Belgium).
 2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrams:UGEO1 group2).
 COS: thousands of the cosmic ray counts (origin: Ursigrams:UCOSE Kerguelen).
 SFI: New (October 1992) Solar Flare Index from the S.I.D.C. (origin: Ursigrams:UGEO3 group3).
 XI: X-flares index from the Ursigrams (N-flares/X-flares)(origin: Ursigrams:UGEO2 group2;UGEO1 group5).
 Ak: planetary geomagnetic index from Wangst (Germany from Ursigrams).
 SEA: sudden enhancements of atmospherics from Uccle & Humain (Belgium).
 MAG: magnetic events from Dourbes station(Royal Hétéo. Institute Belgium).
 Remarks: sld(sudden ionospheric disturbance); ssc(sudden storm commencement); mgst(magnetic storm); sfe(solar flare effect);
 s-1-2-3-4(class of flares); II-IV radio-burst; T(ten cm radio-burst); P(proton flare); p(proton event); gle(ground level event;
 neutron event); si(sudden impulse); F(Forbush); SFI Evaluation(1 x S_n+10 x "1"+100 x "1").

OBSERVATOIRE ROYAL DE BELGIQUE

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

DAILY PROVISIONAL

RELATIVE SUNSPOT NUMBERS

STATION UCCLE BELGIUM

DECEMBER 1992

DATE	UT	NUMBER		RELATIVE SUNSPOT NUMBERS			PPSI 10-5 WM-2	QUAL	OBS	
		OF GROUPS	OF SPOTS	TOTAL	NORTH	SOUTH				CENTRAL
1	948	5	35	85	48	37	14	112.5	3	ST
3	911	5	19	69	33	36	13	48.2	3	ST
5	940	5	17	67	31	36	19	22.4	3	PC
6	1108	5	13	63	16	47	16	34.7	2	ST
12	1047	8	81	161	26	135	118	198.0	3	ST
13	940	7	53	123	12	111	85	165.2	2	AK
15	1231	9	62	152	12	140	46	132.4	4	ST
16	1035	8	54	134	12	122	39	135.0	4	ST
17	1315	8	42	122	11	111	15	107.7	3	AK
22	914	8	43	123	38	85	63	154.3	2	ST
27	1103	6	22	82	44	38	55	127.8	2	VI
28	1221	8	39	119	57	62	66	118.2	4	ST
29	916	8	42	122	58	64	70	104.3	4	ST
30	1218	7	32	102	54	48	11	62.2	5	ST
31	941	6	22	82	41	41	14	28.3	4	PC

The Sun has been observed 15 days on 31 possible.
The relative mean sunspot number is 107.1.

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS $U'=K'U$ FOR

1992 DECEMBER

$K' = 0.921$ (*)

1	78	7	***	13	113	19	***	25	***
2	***	8	***	14	***	20	***	26	***
3	63	9	***	15	139	21	***	27	75
4	***	10	***	16	123	22	113	28	109
5	61	11	***	17	112	23	***	29	112
6	58	12	148	18	***	24	***	30	93
								31	75

The Sun has been observed 15 days on 31 possible.
The normalized relative monthly mean Wolf number is 98.

* K' is the mean of the monthly K 's for the last five years.

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR 1992 DECEMBER
E AND F BRUNNER'S TYPE GROUPS

Uccle N°	East Limb Date	Date and type			West Limb	
		1st obs	CMP	Last Obs	Date	
4-1863	11 21.9	25 B	11 28.7	5 H	12	5.4
13-1863	12 4.5	12 E	12 11.3	17 G	12	18.0
25-1863	12 17.8	22 E	12 24.6	30 J	12	31.3

PROBABLE RETURN OF MAJOR GROUPS FOR 1993 JANUARY

N°	New East Limb	New CMP	New West Limb
4	12 19.9	12 26.7	1 2.4
13	12 31.8	1 7.5	1 14.3