



Sunspot Index Data Center
SUNSPOT BULLETIN

Data Analysis Service supported by the FAGS

1991 n° 2
Provisional Sunspot numbers for February 1991

From observations at the Locarno Specola Solare
completed with data from an international network,
computed at the Observatoire Royal de Belgique
37 cooperating stations on March 1st, 10 UT

Day	Rt	Day	Rt
1	205	16	159
2	209	17	142
3	180	18	191
4	140	19	206
5	127	20	192
6	117	21	223
7	119	22	214
8	118	23	200
9	134	24	192
10	136	25	194
11	140	26	187
12	153	27	175
13	166	28	134
14	163		
15	173		

Mean = 167.5

Predictions of the smoothed monthly Sunspot Numbers

Classical Method		SIDC Adjusted values
1991 Mar. 126(± 30)	1991 Sep. 113(± 36)	1991 Mar. 117(± 28)
Apr. 124	Oct. 111	Apr. 115
May 122	Nov. 108	May 112
Jun. 120	Dec. 106	Jun. 110
Jul. 118	1992 Jan. 103	Jul. 108
Aug. 115	Feb. 101	Aug. 106

forecasted on the basis of the most recent provisional monthly smoothed
Sunspot Number calculated for 1990 August : 140.3 (± 5%)

Provisional smoothed values :

1990 Sep. 138(± 20)	1990 Nov. 134	1991 Jan. 130
Oct. 136	Dec. 132	Feb. 128

Brussels, 1991 March 03

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

1991 FEBRUARY R_{IM} = 167.5

Date	R _i	PPSI	600	2800	COS	XFI	XI	Ak	SEA
31	256	510	61	357	898	121	1/1	12	1150 2b(0153)+II+IV+T+sid p(1130)pca(2200)
1	205	427	61	314	885	31	3/0	30	1257 ssc(1843); (1540)
2	209	320	59	293	884	89	7/0	11	1345
3	180	224	62	265	887	73	4/0	5	1050
4	140	154	56	245	890	12	6/0	6	1042 1n(1044);ssc(2213)
5	127	135	56	222	892	10	0/0	10	
6	117	95	51	205	897	84	8/0	7	Ten(0646);1n(1457)+Ten
7	119	93	50	208	802	28	5/0	12	1449 1f(1454)+T+sid;sn(2118) +T+sid
8	118	95	46	200	902	14	3/0	14	1552 sf(0629)+T;p(0915)sf(1553)
9	134	118	47	179	903	5	0/0	28	
10	136	128	50	175	901	8	0/0	8	
11	140	110	46	180	901	21	1/0	21	
12	153	120	44	185	900	8	0/0	14	
13	166	106	47	185	901	13	0/0	13	
14	163	81	48	188	898	23	1/0	10	1230 2b(1229)
15	173	75	48	194	---	12	0/0	14	
16	159	63	47	207	908	15	0/0	6	1333
17	142	57	49	214	911	19	1/0	4	
18	191	147	51	267	910	37	4/0	4	1n(0722)
19	206	144	53	267	914	45	3/0	12	
20	192	186	57	286	910	25	1/0	9	
21	223	244	54	302	910	15	0/0	8	
22	214	270	57	302	900	16	0/0	8	
23	200	317	57	306	896	22	1/0	27	1625
24	192	302	58	311	897	20	0/0	8	1139+1606
25	194	253	58	310	899	137	2/1	12	1600 3n(0806)+T+sid;p(1210)
26	187	230	56	274	901	9	0/0	9	
27	175	171	56	251	906	24	0/0	9	
28	134	150	--	233	910	9	0/0	18	

High activity during 1 to 10 period and on the end of the month.

R_i,R_{IM}: 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).
 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); 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)

OBSERVATOIRE ROYAL DE BELGIQUE

DEPARTEMENT 4 RADIOASTRONOMIE ET PHYSIQUE SOLAIRE

DAILY PROVISIONAL

RELATIVE SUNSPOT NUMBERS

STATION UCCLE BELGIUM

FEBRUARY 1991

DATE	UT	NUMBER OF GROUPS	NUMBER OF SPOTS	RELATIVE SUNSPOT NUMBER	REL NUMB CENTRAL ZONE	PPSI 10-5 WM-2	QUAL	OBS
2	1020	14	138	278	138	275.7	2	AK
3	1100	14	124	264	150	239.1	3	PC
4	1106	10	78	178	48	192.7	2	VI
5	1027	11	71	181	32	161.7	2	VI
6	1205	10	58	158	46	144.1	3	AK
7	1210	12	70	190	53	147.0	3	AK
8	1435	10	67	167	60	95.6	1	AK
11	1325	10	64	164	110	112.1	1	VI
14	844	13	52	182	77	92.7	2	VI
17	900	14	74	214	65	103.7	2	FC
18	947	14	90	230	56	85.8	2	VI
19	1221	15	113	263	77	142.2	2	VI
21	1219	16	177	337	91	281.8	2	VI
22	825	14	119	259	108	307.6	2	VI
24	852	10	124	224	122	189.0	3	VI
26	945	12	147	267	183	195.8	3	AK
27	1335	10	86	186	59	111.6	2	AK

The Sun has been observed 17 days on 28 possible.
The relative mean sunspot number is 220.1.

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NORMALISED UCCLE OBSERVATIONAL SUNSPOT NUMBERS U'-K'U FOR

1991 FEBRUARY

K' = 0.765 (*)

1 ***	7 145	13 ***	19 201	25 ***
2 212	8 127	14 139	20 ***	26 204
3 202	9 ***	15 ***	21 257	27 142
4 136	10 ***	16 ***	22 198	28 ***
5 138	11 125	17 163	23 ***	
6 120	12 ***	18 175	24 171	

The Sun has been observed 17 days on 28 possible.
The normalized relative monthly mean Wolf number is 167.

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

UCCLE OBSERVATIONAL MAJOR SUNSPOT GROUPS FOR 1991 FEBRUARY
E AND F BRUNNER'S TYPE GROUPS

Uccle N°	East Limb Date	Date and type			West Limb Date
		1st obs	CMP	Last Obs	
16-1838	1 20.3	21 E	1 27.0	3 G	2 2.8
20-1838	1 21.1	25 E	1 27.9	2 G	2 3.6
21-1838	1 22.3	25 C	1 29.1	4 G	2 4.8
23-1838	1 24.7	25 E	1 31.4	7 F	2 7.2
39-1838	2 4.2	5 G	2 11.0	17 H	2 17.7
18-1839	2 17.5	18 E	2 24.2	27 G	3 3.0
23-1839	2 17.9	19 E	2 24.7	27 G	3 3.4

PROBABLE RETURN OF MAJOR GROUPS FOR 1991 MARCH

N°	New East Limb	New CMP	New West Limb
16	2 17.7	2 24.4	3 3.2
20	2 17.2	2 23.9	3 2.7
21	2 18.7	2 25.5	3 4.2
23	2 21.8	2 28.5	3 7.3
39	3 3.7	3 10.5	3 17.2