



# Bulletin Werkgroep Zon

Januari 1997

NMWS Werkgroep Zon. Secretariaat: Veenenburg 36, 2804 WZ Gouda. Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr 6	Groe	iden	Jn 9	Kroes	vSlo	Sp 7	Vers	Zans	Zijle
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0
5	16	0	0	0	0	0	16	0	0	0	0
6	12	0	0	0	0	0	14	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0
15	14	15	0	0	0	25	17	14	14	15	0
16	26	13	24	0	0	27	14	13	27	0	11
17	12	11	0	0	0	0	11	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	12	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0
24	11	0	0	0	0	0	11	0	0	0	0
25	12	0	0	0	0	0	11	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	22	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	23	14	0	0	0	0
observ	13	6	14	2	17	10	16	5	10	10	3
k	0.71	0.63	0.92	0.71	0.44	0.73	1.00	1.05	0.69	0.73	0.73
st.dev	0.07	0.33	0.36	0.36	0.00	0.21	0.30	0.37	0.07	0.07	0.07
std./k	0.10	0.36	0.36	0.36	0.01	0.29	0.30	0.35	0.11	0.11	0.11

Observers	[...] = Reflector, d = ... mm
Bals = H.A.M. Baister [70]	Jn 9 = D. Jannink [9]
Gr 6 = Mw G. Gravers [60]	Kroes = K. Kroesen [102]
Groe = A. Groenewegen [102]	vSlo = B. van Slooten [90]
iden = J.A. Idenburg [70]	Sp 7 = T. Spaninks [75]
	[R...] = Reflector, d = ... mm
	Vers = D. Verschuuren [Rf 80]
	Zans = W. Zanstra [Rf 155]
	Zijle = W.A. Zijlema [90]

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

1997 JANUARY R<sub>IM</sub> = 6.5

Date R<sub>i</sub> PPSI 600 2800 COS SFI XI AK SEA MAG

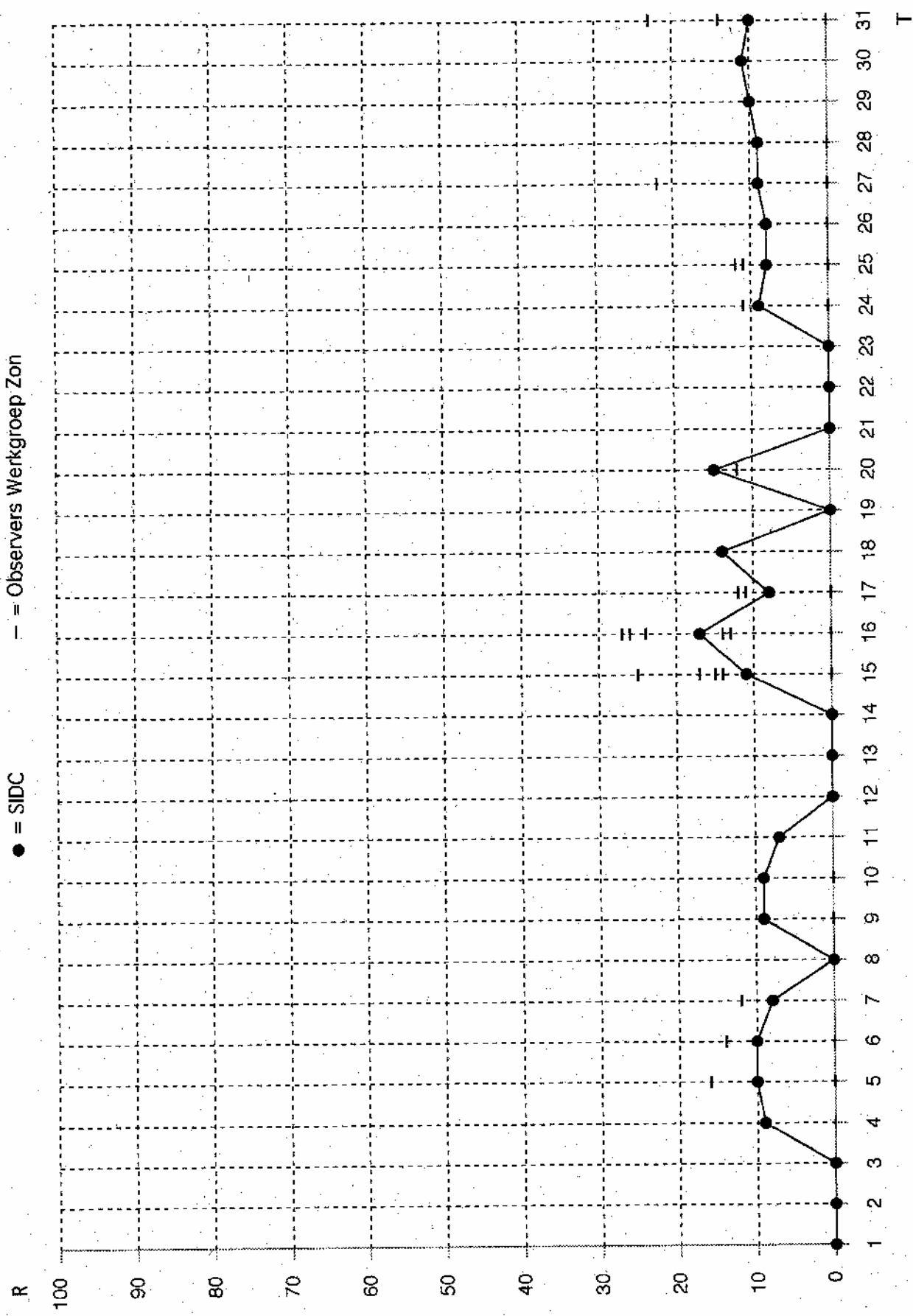
31	0	0	34	072	-	0	0/0	6			
1	0	0	35	072	-	0	0/0	4			
2	0	0	35	072	-	0	0/0	6			
3	0	0	34	073	-	0	0/0	4			
4	9	2	074	-	0	0/0	4	4			
5	10	5	34	074	-	0	0/0	4			
6	10	3	34	073	-	0	0/0	2			
7	8	1	34	073	-	1	0/0	12			
8	0	0	33	074	-	0	0/0	9			
9	9	1	33	074	-	0	0/0	8			mgst SSC 0105
10	9	2	35	075	-	0	0/0	26			mgst SSC 0116
11	7	0	35	074	-	0	0/0	14			
12	0	0	35	075	-	0	0/0	12			
13	0	0	35	075	-	0	0/0	7			
14	0	0	36	075	-	0	0/0	4			
15	11	5	36	076	-	0	0/0	4			
16	17	4	36	075	-	0	0/0	3			
17	8	1	35	074	-	0	0/0	2			
18	14	1	075	982	0	0/0	5	5			
19	0	0	075	973	0	0/0	5	5			
20	15	0	35	077	980	0	0/0	8			
21	0	0	35	074	984	0	0/0	9			
22	0	0	35	073	978	0	0/0	9			
23	0	0	35	073	984	0	0/0	4			
24	9	1	33	074	983	0	0/0	6			
25	8	0	33	073	985	0	0/0	8			
26	8	1	33	074	993	0	0/0	22			
27	9	0	33	074	998	0	0/0	19			
28	9	1	33	073	998	0	0/0	26			
29	10	0	33	075	997	1	0/0	10			
30	11	6	33	074	994	0	0/0	20			
31	10	3	32	072	986	0	0/0	9			

Very low solar activity, low to moderate geomagnetic activity.

R<sub>i</sub>, R<sub>IM</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> w/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 Mhz solar flux from human station (Belgium).  
 2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrama - UGE01 group 2); the 10.7cm Flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrama - UGOS Kerquelen).  
 SFI: From October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrama - UGEOR group 3).  
 XI: x-flares Index from the Ursigrama (A-flares/A-flares); (origin: Ursigrama - UGEOR group 2; UGE01 group 5).  
 AK: planetary geomagnetic index from Wingst, Germany (origin: Ursigrama).  
 SEA: sudden enhancements of atmosphere from Uccle & Human (Royal Observatory, Belgium).  
 MAG: magnetic events from Bourbes station (Royal Meteorological Institute, Belgium).  
 Remarks: sid (sudden ionospheric disturbance); asc (sudden storm commencement); mgt (magnetic storm); sfc (solar flare effect); s-1-2-3-4 (class of flares); II-TV radio-burst; T (ten cm radio-burst); P (proton flare); P (proton event); s-1 (sudden event); F (Forbush); SFI Evaluation (1 x SFI-10 x n<sup>1.5</sup>); n<sup>1.5</sup> (n=100 x n<sup>1.5</sup>); gte (ground level event; neutron event); st (sudden impulse);

● = SIDC

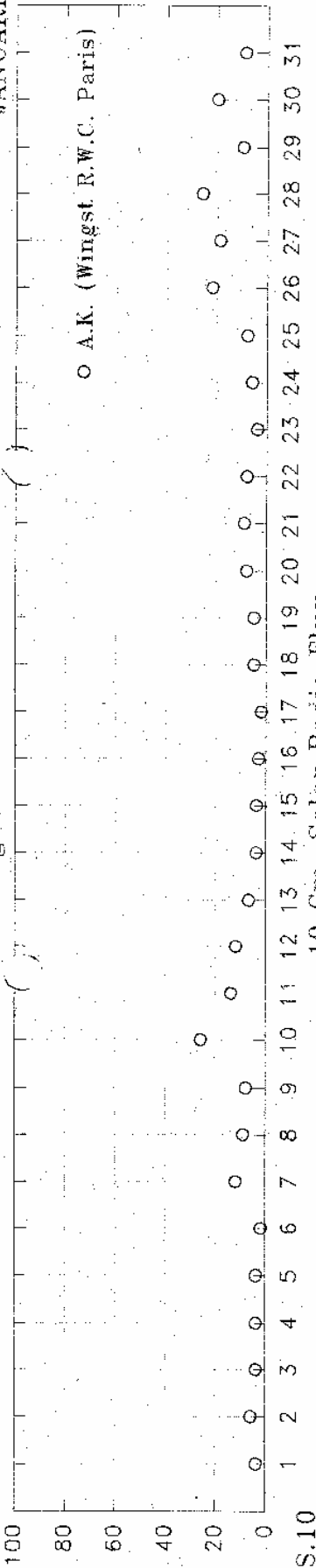
— = Observers Werkgroep Zon



Geomagnetic A.K. Index

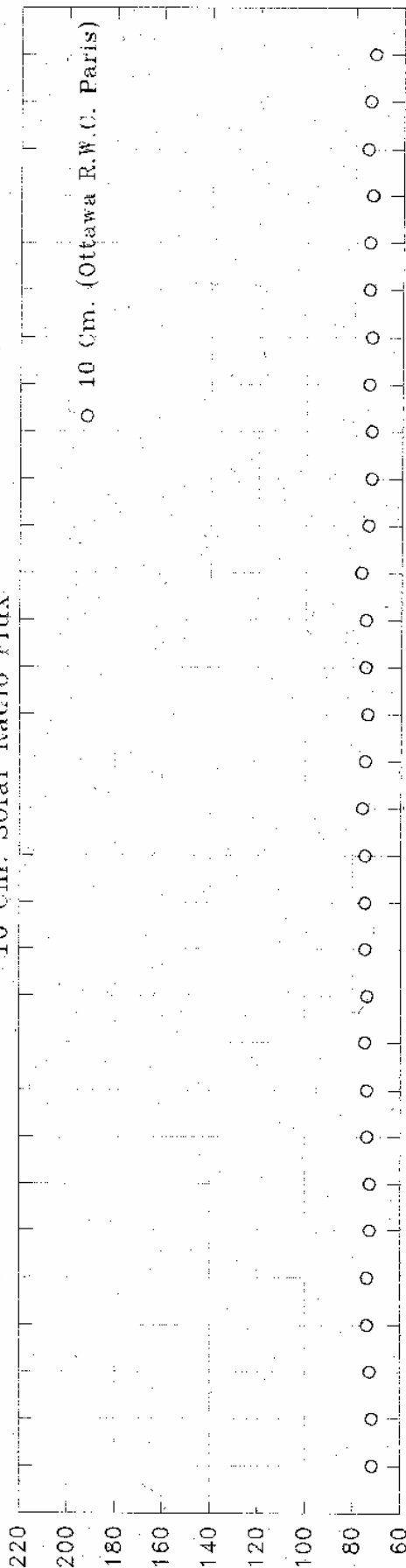
JANUARI 1997

A.K.



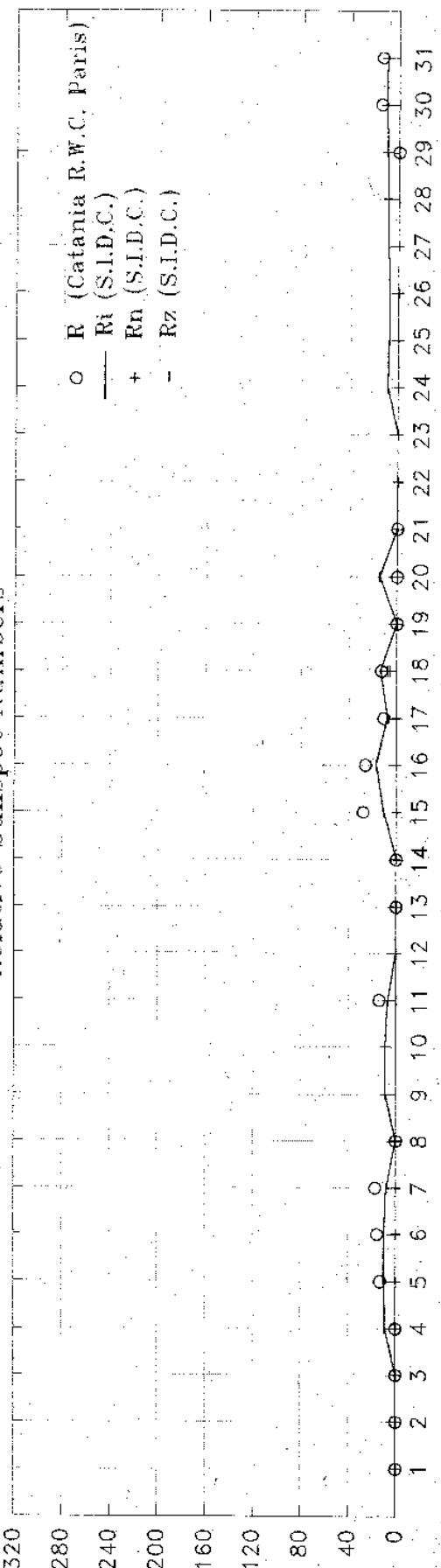
○ A.K. (Wingst. R.W.C. Paris)

S.10



○ 10 Cm. (Ottawa R.W.C. Paris)

R.



○ R (Catania R.W.C. Paris)

— Ri (S.I.D.C.)

+ Rn (S.I.D.C.)

- Rz (S.I.D.C.)

Rimax 17

Jan. 16.

Rimin 0

Jan. 1, 2, 3,

8, 12, 13,

14, 19, 21,

22, 23.

Rigeni.

6, 5

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

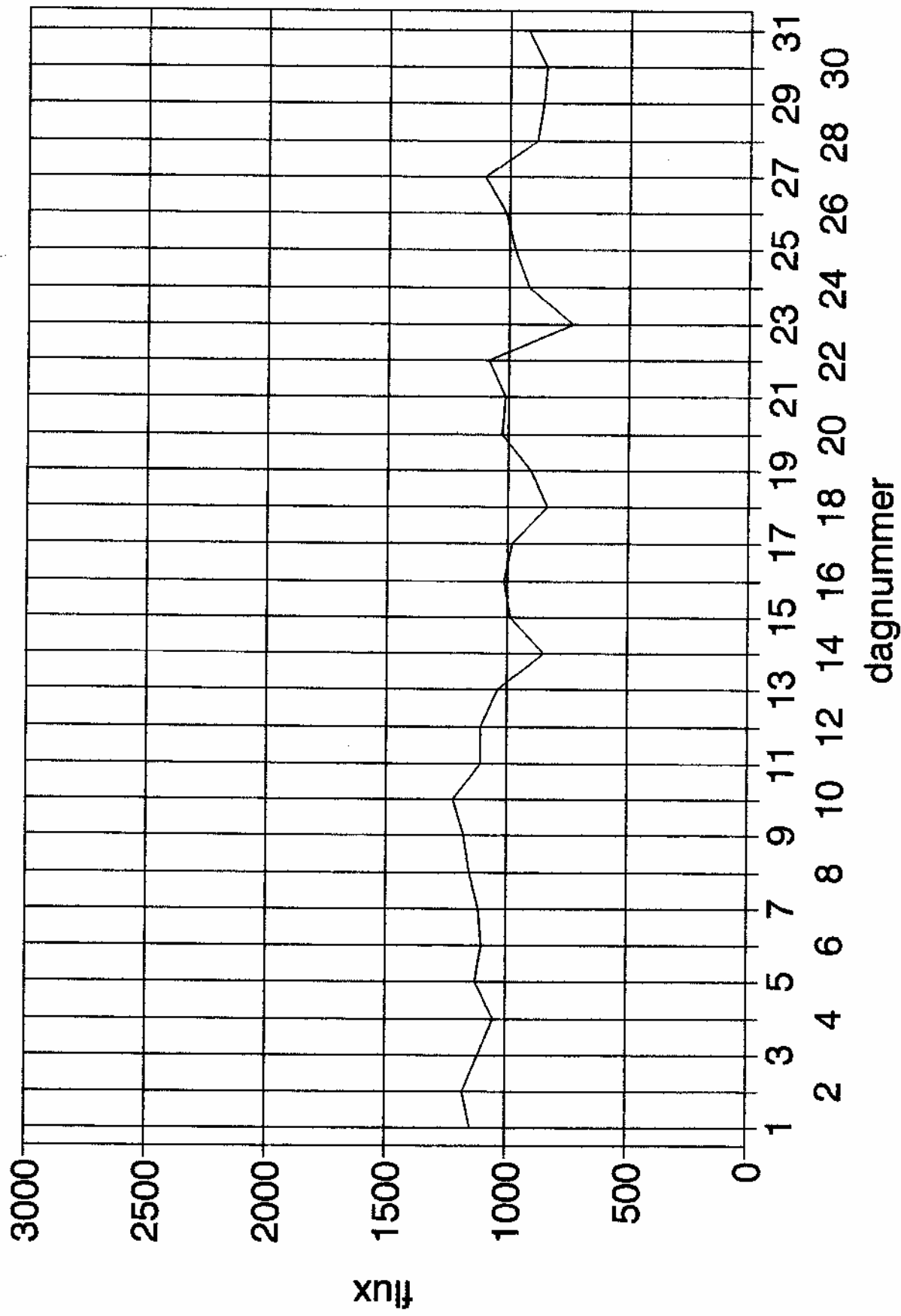
(Hemispheric sunspot numbers)

januari 1997

Day	S.I.D.C.		Baister		Groenew.		Idenburg		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	0	0	0	0	0	0			0	0	0	0
2	0	0	0	0	0	0			0	0		
3	0	0			0	0					0	0
4	0	9										
5	0	10							0	16		
6	0	10							0	14		
7	0	8	0	12								
8	0	0	0	0	0	0						
9	9	0										
10	9	0										
11	7	0										
12	0	0										
13	0	0	0	0	0	0			0	0		
14	0	0	0	0	0	0			0	0		
15	0	11	0	14	15	0			0	17	0	14
16	0	17	0	26	13	0	0	24	0	27	0	14
17	0	8	0	12	11	0	0	0	0	11		
18	8	6										
19	0	0										
20	0	15							0	12		
21	0	0	0	0	0	0						
22	0	0							0	0		
23	0	0	0	0	0	0			0	0	0	0
24	0	9	0	11	0	0			0	11		
25	0	8	0	12	0	0			0	11		
26	0	8										
27	0	9			0	0			11	11		
28	9	0										
29	10	0										
30	11	0										
31	10	0							14	0		

# rel.radioflux van de ZON op 1421 MHz

januari 1997





# Bulletin Werkgroep Zon

Februari 1997

NVWS Werkgroep Zon. Secretariaat: Veenenburg 36, 2804 WZ Gouda. Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bats	Gr 6	Gro	Iden	Jun 9	Jun 4	Kro	vSlo	Sp 7	Zans	Zijg
1					0					0	13
2	30				11			38			33
3		37									
4			28		12	12		34		14	
5	34		23		0			35			
6	27				0			22			
7					0			11	11		0
8	12	12	11		0			11	0		0
9		11			0						
10					0						
11	0				0			0			
12					0						
13	0				0						
14	0				0						
15	0				0						
16	0				0						
17	0				0						
18	24	13			0			0	12		12
19					0						
20	0				0						
21					0						
22					0						
23	0				0						
24	0				0						
25	0				0						
26	0				0						
27	0				0						
28	0				0						
observ	16	3	15	6	20	1	3	17	6	14	4
k	0.62	0.67	0.73		2.00	1.92		0.65	0.73	0.99	0.69
st. dev.	0.17		0.08		0.12			0.07			0.56
std. dev.	0.27		0.11		0.06			0.11			0.57

Observers	[...] = Reflector, d = ... mm
Bats = H.A.M. Balster [70]	Jun 9 = D. Jannink [9]
Gr 6 = M.W.G. Gravers [60]	Jun 4 = D. Jannink [40]
Gro = A. Groenewegjan [102]	Kro = K. Kroesan [102]
Iden = J.A. Idenburg [70]	vSlo = B. van Slooten [90]
	Sp 7 = T. Spahniks [75]
	Zans = W. Zanstra [Rf 155]
	Zijg = W.A. Zijlema [90]

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

1997 FEBRUARY R[M] = 7.6

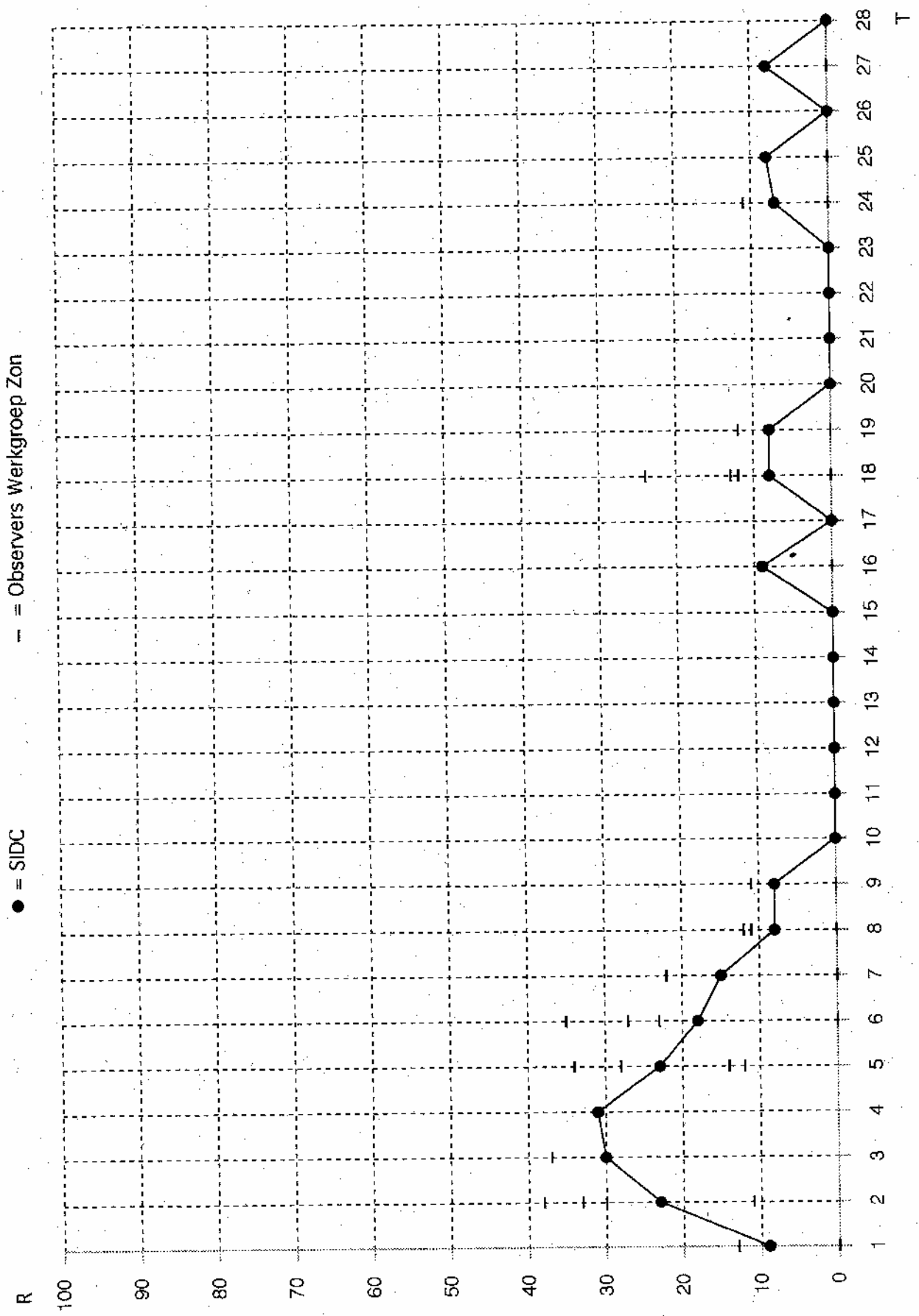
Date	Rf	PPSI	600	2800	COS	SFI	XI	AK	SEA	MAG
31	10	3	32	072	986	0	0/0	9		
1	9	5	34	071	986	0	0/0	6		
2	23	22	35	078	993	2	0/0	14		
3	30	64	35	080	992	2	0/0	8		
4	31	-	35	081	987	5	0/0	4		
5	23	11	33	075	988	0	0/0	6		
6	18	5	32	074	993	0	0/0	10		
7	15	2	34	076	983	0	0/0	7		
8	8	1	34	075	985	0	0/0	28		
9	8	0	34	073	992	0	0/0	24		
10	0	0	34	072	990	0	0/0	22		
11	0	0	33	071	985	0	0/0	20		
12	0	0	32	071	979	0	0/0	6		
13	0	0	32	071	986	0	0/0	4		
14	0	0	32	071	980	0	0/0	6		
15	0	0	32	072	980	0	0/0	4		
16	9	1	32	072	985	0	0/0	10		
17	0	0	32	073	981	0	0/0	10		
18	8	2	31	073	987	0	0/0	-		
19	8	1	32	072	976	1	0/0	3		
20	0	0	32	073	976	0	0/0	5		
21	0	0	32	073	982	0	0/0	11		
22	0	0	32	074	981	0	0/0	8		
23	0	0	32	075	979	0	0/0	8		
24	7	1	32	075	988	0	0/0	10		
25	8	1	32	074	982	0	0/0	6		
26	0	0	33	074	984	0	0/0	14		
27	8	0	33	074	989	0	0/0	25		
28	0	0	33	073	992	0	0/0	38		

Low to very low solar activity, CME on 7. Moderate to low geomagnetic activity.

mgst 1810

Rf, Rm: 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/p: 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 - USEOI group 2), the 10.7cm Flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrams - UGOS Kerguelen).  
 SFI: From October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrams - UGEOR group 3).  
 XI: X-flares index from the Ursigrams (M-flares/X-flares) (origin: Ursigrams - UGEOR group 3).  
 AK: planetary geomagnetic index from Hingst, Germany (origin: Ursigrams).  
 SEA: sudden enhancements of atmospherics from Uccle & Humain (Royal Observatory, Belgium).  
 MAG: magnetic events from Dourbes station (Royal Meteorological Institute, Belgium).  
 Remarks: sfd (sudden ionospheric disturbance); sac (sudden storm commencement); mgst (magnetic storm); sfc (solar flare effect); s-1-2-3-4 (class of flares); I1-Iv radio-burst; I (ten cm radio-burst); p (proton flare); p (proton event); sft (ground level event); neutron event); si (sudden impulse); f (Forbush); SFI Evaluation (1 x 5n+10 x 10 x 10 x 10).

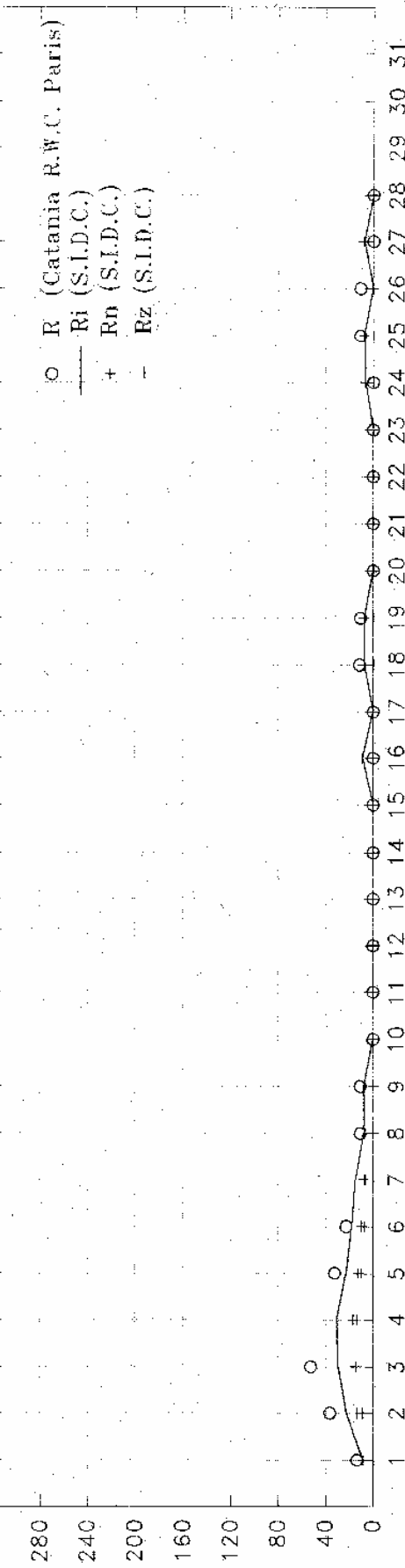
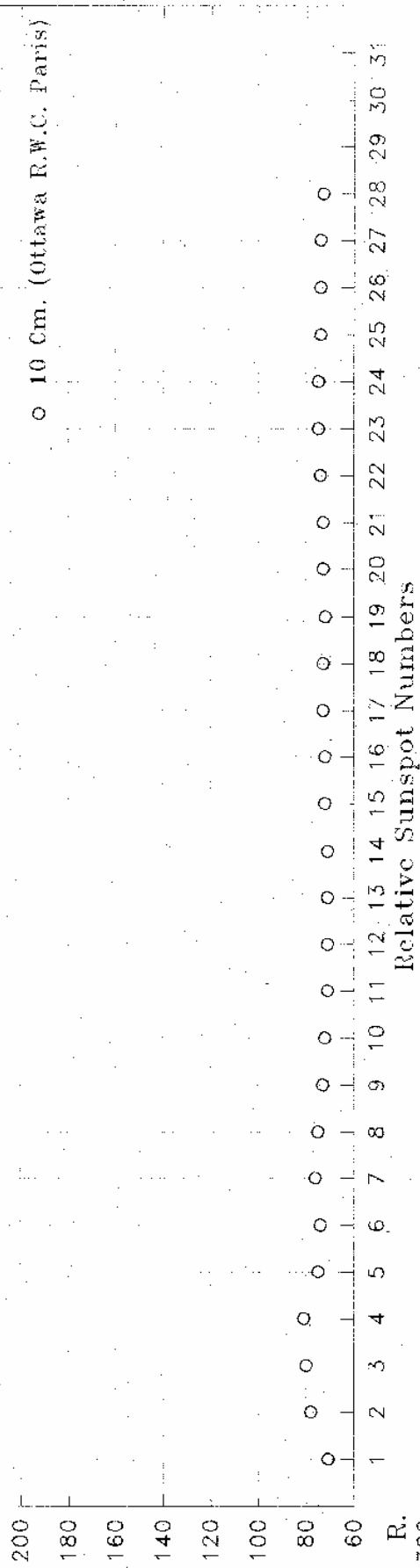
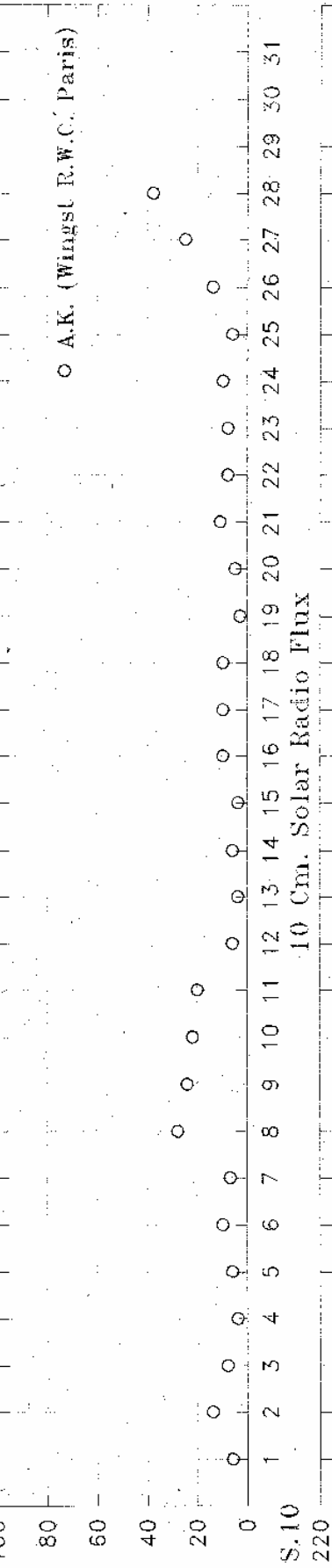
● = SIDC  
- = Observers Werkgroep Zon



Geomagnetic A.K. Index

A.K.

FEBRUARY 1997



Rimax 31  
Feb. 4  
Kimin 0  
Feb. 10,  
11t/m15,  
17,20t/m  
23,26,28  
Rigem.  
7,6



# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

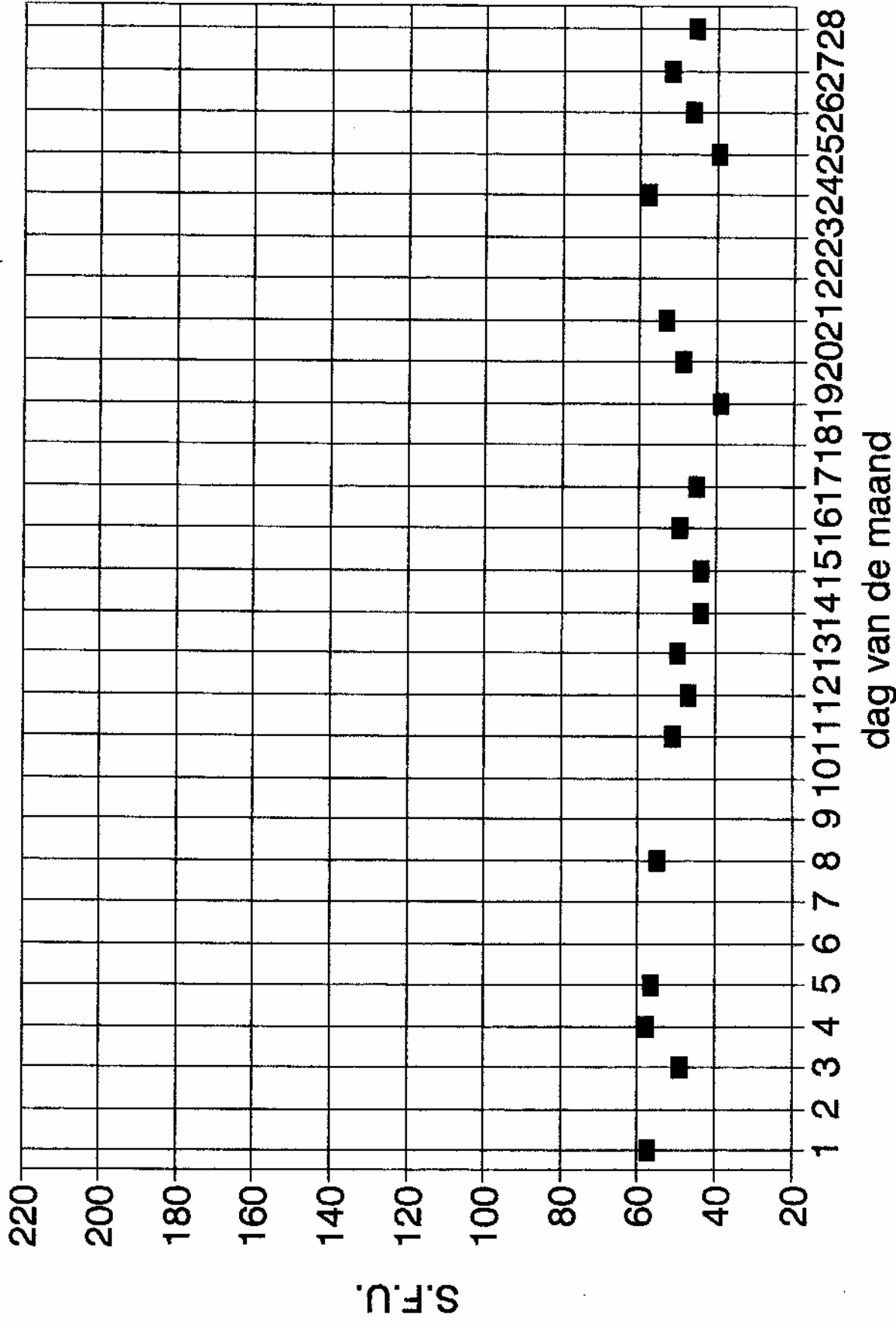
(Hemispheric sunspot numbers)

februari 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	9	0												
2	9	14	13	17							17	21		
3	15	15			18	19								
4	17	14												
5	13	10	21	13	15	13			12	0	20	14		
6	10	8	15	12	12	11					24	11		
7	8	7									11	11		
8	0	8	0	12	0	11	0	0			0	11		
9	0	8			0	11					0	11	0	0
10	0	0												
11	0	0	0	0							0	0		
12	0	0											0	0
13	0	0	0	0										
14	0	0	0	0	0	0					0	0	0	0
15	0	0	0	0	0	0	0	0			0	0		
16	0	9	0	0	0	0					0	0		
17	0	0			0	0								
18	8	0	24	0	13	0					12	0		
19	8	0					0	0						
20	0	0	0	0	0	0	0	0			0	0		
21	0	0									0	0		
22	0	0												
23	0	0	0	0			0	0			0	0	0	0
24	7	0			11	0					11	0		
25	8	0	0	0										
26	0	0	0	0	0	0								
27	8	0	0	0	0	0	0	0			0	0		
28	0	0	0	0	0	0					0	0	0	0

# SOLAR FLUX UNITS februari 1997

frequentie: 1421 MHz





# Bulletin Werkgroep Zon

Maart 1997

NVWS Werkgroep Zon. Secretariaat: Veenenburg 36, 2804-WZ Gouda. Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bais	Gr 6	Grae	Iden	Jn 9	Jn 4	Kroe	Scho	xSlo	Sp 7	Vers	Zans	Zijle
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0
6	11	11	11	11	11	11	11	11	11	11	11	11	11
7	13	12	11	11	11	11	11	11	11	11	11	11	11
8	24	29	24	11	11	11	11	11	11	11	11	11	11
9	15	12	12	11	11	11	11	11	11	11	11	11	11
10	15	13	13	13	13	13	13	13	13	13	13	13	13
11	16	16	16	16	16	16	16	16	16	16	16	16	16
12	16	16	16	16	16	16	16	16	16	16	16	16	16
13	14	14	14	14	14	14	14	14	14	14	14	14	14
14	14	14	14	14	14	14	14	14	14	14	14	14	14
15	34	34	34	34	34	34	34	34	34	34	34	34	34
16	14	14	14	14	14	14	14	14	14	14	14	14	14
17	14	14	14	14	14	14	14	14	14	14	14	14	14
18	11	11	11	11	11	11	11	11	11	11	11	11	11
19	11	11	11	11	11	11	11	11	11	11	11	11	11
20	11	11	11	11	11	11	11	11	11	11	11	11	11
21	0	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0	0
27	0	14	0	0	12	15	15	13	0	13	0	0	0
28	19	16	16	11	12	15	15	17	17	17	16	16	18
29	23	20	15	12	25	25	22	24	22	24	20	15	18
30	29	22	19	12	25	22	22	29	30	30	20	15	18
31	19	18	17	12	24	16	21	19	16	19	16	18	18
obsrv	18	5	18	10	22	2	19	4	21	15	9	14	5
k	0.81	0.84	0.94	1.32	1.43	1.13	0.95	1.20	0.76	0.87	1.28	1.00	0.99
st dev	0.10	0.15	0.14	0.42	0.22	0.06	0.33	0.38	0.07	0.25	0.33	0.22	0.26
st.d./k	0.12	0.18	0.15	0.32	0.15	0.05	0.35	0.32	0.09	0.29	0.26	0.22	0.27

Observers	[...]	Reflector, d = ... mm	[R...]	Reflector, d = ... mm
Bais	= H.A.M. Balster [70]	Jn 9 = D. Jannink [9]	xSlo	= B. van Soosten [90]
Gr 6	= Mw.G. Gravers [60]	Jn 4 = D. Jannink [40]	Sp 7	= T. Spaninks [75]
Grae	= A. Groenewegen [102]	Kroe = K. Kroesen [102]	Vers	= D. Verschuuren [R180]
Iden	= J.A. Idenburg [70]	Scho = A. Scholten [60]	Zans	= W. Zanstra [Rf 155]
			Zijle	= W.A. Zijlema [90]

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

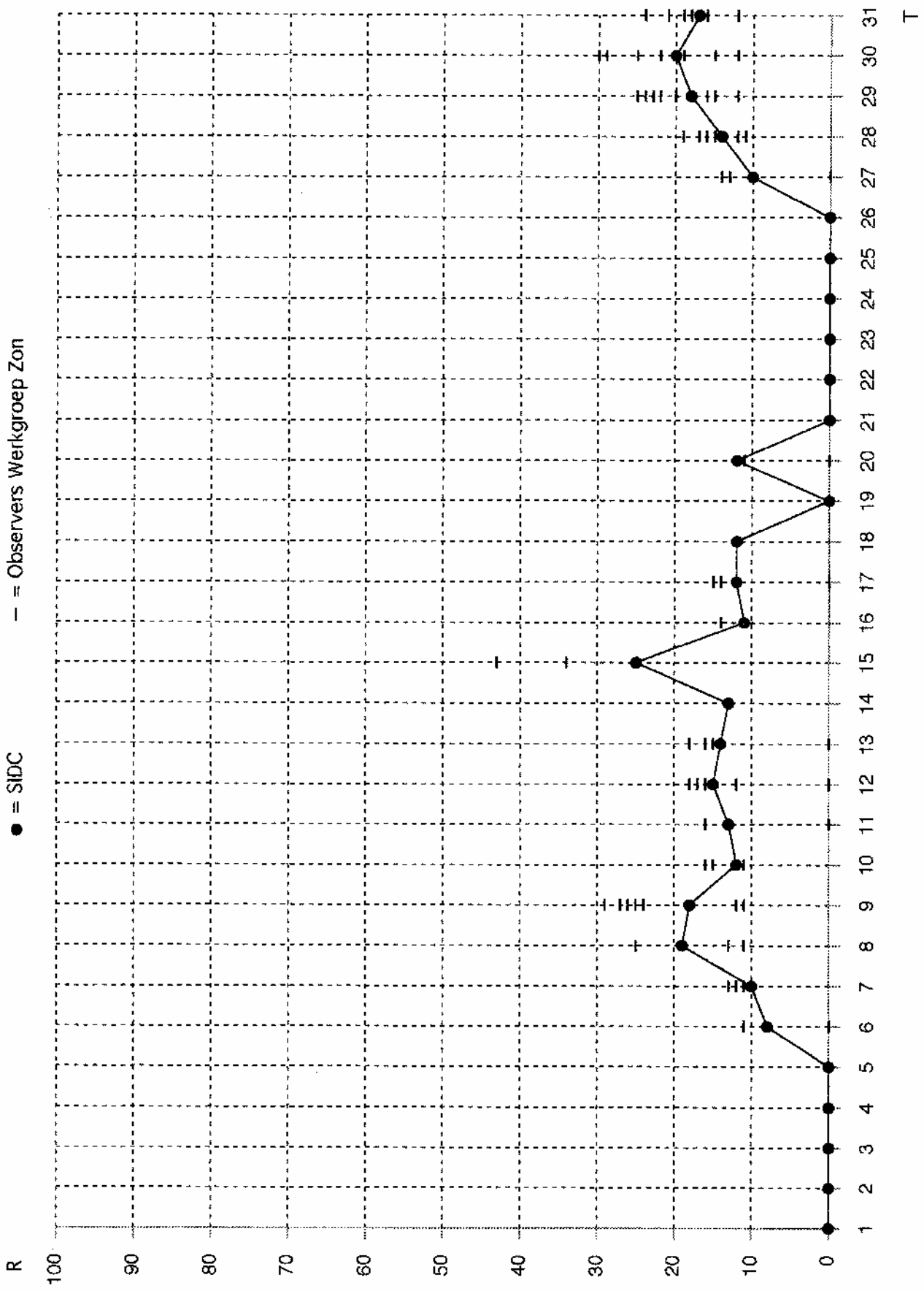
1997 MARCH R<sub>I,M</sub> = 8.8

Date	Rf	PPSI	600	2800	COS	SFI	XI	AK	SEA	MAG
28	0	0	33	073	992	0	0/0	38		
1	0	0	34	074	997	0	0/0	19		
2	0	0	34	072	996	0	0/0	12		
3	0	0	34	074	991	0	0/0	10		
4	0	0	34	074	988	0	0/0	5		
5	0	0	34	075	991	0	0/0	12		
6	8	1	34	075	986	2	0/0	10		
7	10	2	34	074	984	0	0/0	8		
8	19	5	34	075	979	0	0/0	8		
9	18	5	34	075	984	0	0/0	2		
10	12	4	34	075	-	0	0/0	4		
11	13	5	35	074	979	0	0/0	3		
12	15	3	35	074	990	0	0/0	12		
13	14	2	35	074	976	0	0/0	9		
14	13	2	36	076	-	0	0/0	7		
15	25	3	35	076	-	0	0/0	8		
16	11	2	34	076	984	1	0/0	8		
17	12	3	34	075	981	0	0/0	10		
18	12	0	34	074	987	0	0/0	7		
19	0	0	34	-	985	0	-	2		
20	12	1	33	072	993	0	0/0	3		
21	0	0	-	071	985	0	0/0	3		
22	0	0	-	071	984	0	0/0	10		
23	0	0	-	071	981	0	0/0	4		
24	0	0	33	-	986	0	-	14		
25	0	0	33	071	987	0	0/0	14		
26	0	0	32	070	985	0	0/0	21		
27	10	1	32	072	989	3	0/0	(5)		
28	14	2	32	073	989	5	0/0	22		
29	18	5	32	075	991	1	0/0	21		
30	20	10	32	074	993	0	0/0	12		
31	17	8	32	075	995	0	0/0	6		

Low to very low solar activity. Low geomagnetic activity.

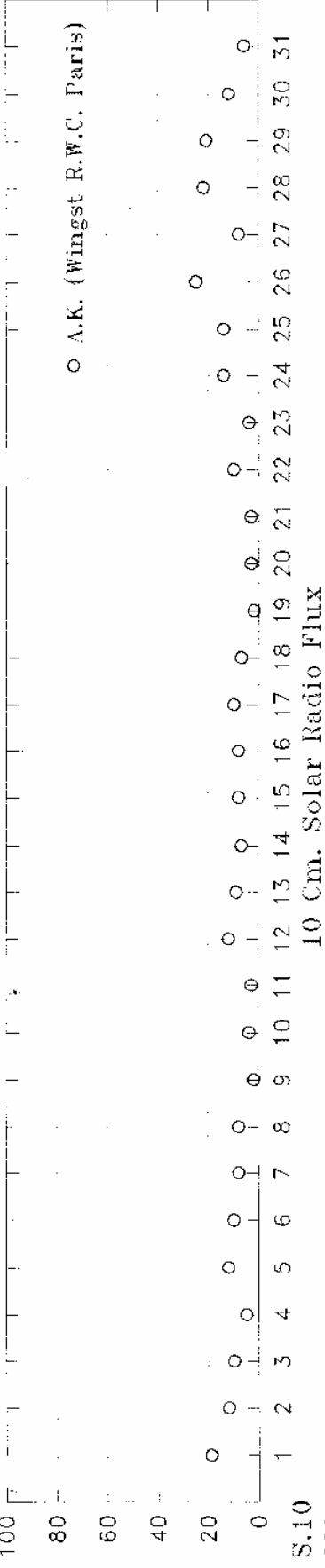
R<sub>I</sub>, R<sub>II</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10-5 w/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 Mhz solar flux from Hawaii station (Belgium).  
 2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrans - UGE01 group 2). The 10.7cm Flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrans - UG05 Kerquelen).  
 SFI: X-flares index from the Ursigrans (M-flares/X-flares) (origin: Ursigrans - UGE00 group 3).  
 XI: planetary geomagnetic index from Wlmgst, Germany (origin: Ursigrans).  
 AK: sudden enhancements of atmospheric ions from Uccle & Namur (Royal Observatory, Belgium).  
 SEA: magnetic events from Bourbes station (Royal Meteorological Institute, Belgium).  
 MAG: s1-s4 (sudden ionospheric disturbance); ssc (sudden storm commencement); magt (magnetic storm); sfs (solar flare effect); s1-2-3-4 (class of flares); I1-IV radio-burst; T (ten cm radio-burst); P (proton flare); p (proton event); g1e (ground level event); neutron event); s1 (sudden impulse); f (forbush); SFI Evaluation (1 x S<sub>10</sub> x 10<sup>10</sup> x 10<sup>10</sup>).

● = SIDC  
— = Observers Werkgroep Zon



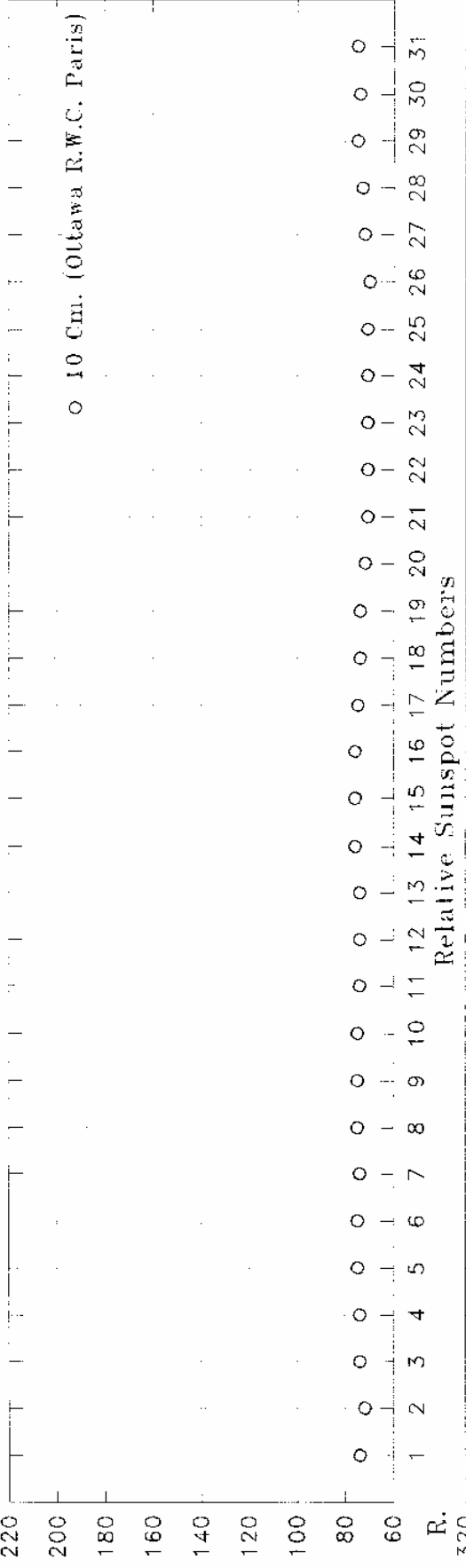
Geomagnetic A.K. Index

A.K.



○ A.K. (Wingst R.W.C. Paris)

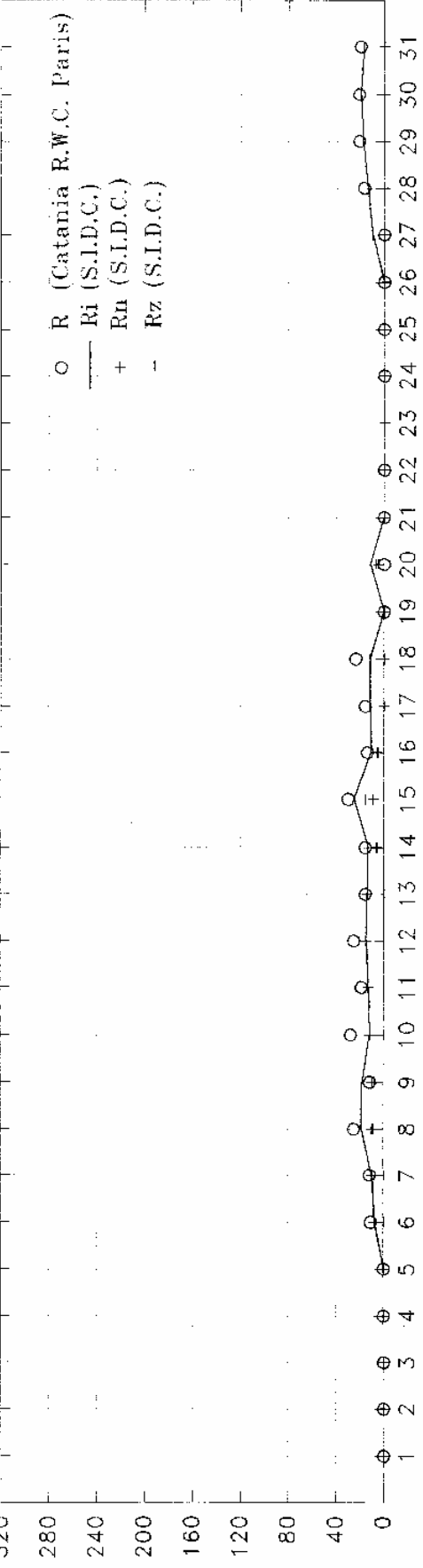
S.10



○ 10 Cm. (Ottawa R.W.C. Paris)

Relative Sunspot Numbers

R.



○ R (Catania R.W.C. Paris)  
 — Ri (S.I.D.C.)  
 + Ru (S.I.D.C.)  
 - Rz (S.I.D.C.)

Rimax 25  
 Mrt. 15  
 Rimin 0  
 Mrt. 1,2,  
 3,4,5,19,  
 21t/m26

Rigcm.  
 8,8

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

(Hemispheric sunspot numbers)

januari 19XX

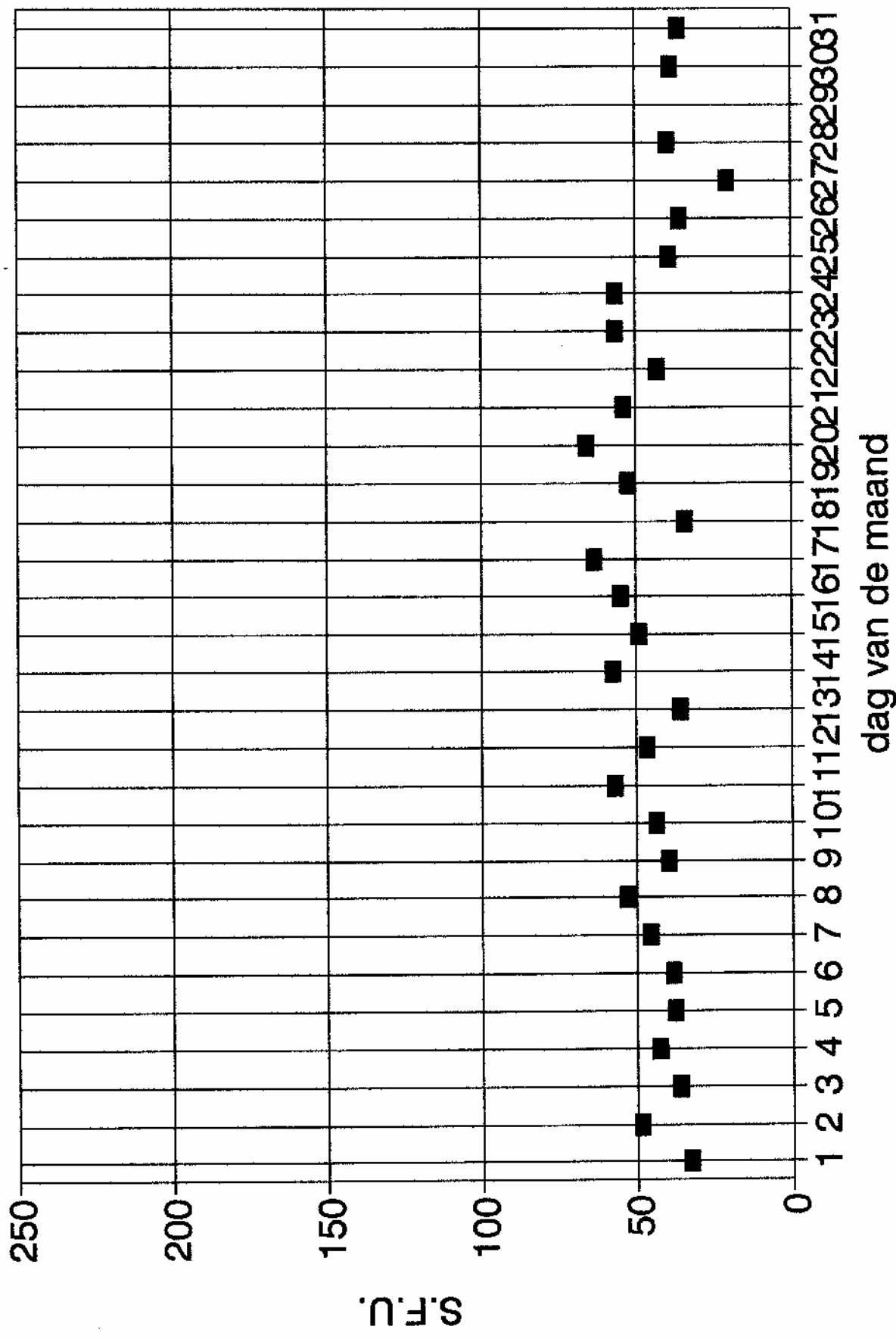
*maart 1992*

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Scholten		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	0	0	0	0			0	0					0	0	0	0
2	0	0														
3	0	0	0	0	0	0	0	0					0	0	0	0
4	0	0	0	0	0	0	0	0					0	0		
5	0	0	0	0			0	0					0	0	0	0
6	8	0			11	0							11	0		
7	10	0	13	0	12	0	11	0					12	0		
8	10	9					11	0					12	13	13	0
9	10	8	13	11	12	12	11	0			11	0	13	12	15	12
10	12	0	15	0	12	0	12	0	11	0			16	0	15	0
11	13	0			13	0							16	0		
12	15	0	16	0	15	0							18	0	17	0
13	14	0	14	0	16	0							18	0		
14	6	7														
15	9	16	11	23									15	28		
16	6	0														
17	0	12	0	14									0	15		
18	0	12														
19	0	0											0	0		
20	5	7			0	11									0	0
21	0	0	0	0									0	0	0	0
22	0	0	0	0	0	0	0	0			0	0	0	0	0	0
23	0	0														
24	0	0														
25	0	0			0	0										
26	0	0														
27	0	10	0	0	0	16	0	0					0	13	0	0
28	0	14	0	19	0	16			0	12					0	17
29	0	18	0	23	0	15							0	22	0	24
30	0	20	0	29	0	19					0	22	0	29	0	30
31	0	17	0	29	0	17					0	16	0	21	0	19

# RADIO FLUX van de ZON

maart 1997

Radio Observ. Den Helder, 1421 MHz





# Bulletin Werkgroep Zon

April 1997

NVWS Werkgroep Zon, Secretariaat: Veenenburg 36, 2804 WZ Gouda, Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr.5	Gr.6	Groe	iden	Jn.9	Jn.4	Kroe	Scho	vSlo	Sp.7	Vers	Zijle
1	23			21	25	12			23	25	16	16	
2	19			34		13				25	20		
3						13			42	49			28
4	33			26		23		35	33	32	26	30	
5													
6	25		17	13	15	11	11	12	29	29		15	15
7	14			12	14	11	12	12	14	13	12	15	13
8	13			12	12	11	11	14	14	13	15	13	
9	32		20	16		0	0	15	32	33	21	25	
10	23			20		12	12	28	23		19	17	
11				14		12		25	31	14	13	16	
12	12		15	11	11	11	13	13	26	16	11	13	
13	26		29	13	13	12	22	29	33	35	12		
14	21				12	12	12	34	34	15	15		
15	38			31		12	47	41	30	36			
16	34				17	0			36		19		
17	16		0	13	25	0		15	41	18	16	15	13
18			0		0	0		11	12		11	11	
19	0				0	0		0	0	0	0	0	0
20	0				0	0		0	0	0	0	0	0
21	0				0	0		0	0	0	0	0	0
22	11				0	0		0	0	0	0	0	0
23	12				0	0		12	11	0	0	0	0
24	12				0	0		12	0	0	0	0	0
25						0							
26					15				30		0	18	
27					13				15		0		
28									14				
29													
30					0				0	0	0	0	0

Observers	[ ] = Reflector, d = ... mm	[RT] = Reflector, d = ... mm
Bals = H.A.M. Balster [70]	Jn.9 = D. Jannink [9]	Sp.7 = T. Spanniks [75]
Gr.5 = M.w.G. Gravers [50]	Jn.4 = D. Jannink [40]	Vers = D. Verschuuren [RT 80]
Gr.6 = M.w.G. Gravers [60]	Kroe = K. Kroesen [102]	Zans = W. Zanstra [RT 155]
Groe = A. Groenewegen [102]	Scho = A. Scholten [60]	Zijle = W.A. Zijlma [90]
iden = J.A. Idenburg [70]	vSlo = B. van Slooten [90]	

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

1997 APRIL R<sub>MI</sub> = 15.8

Date R<sub>i</sub> PPSI 600 2800 COS SFI XI AK SEA MAG

31	17	8	32	075	995	0	0/0	6					
1	17	16	34	076	998	0	1/0	10	1346				S2 1325 sid
2	31	30	34	081	993	8	0/0	12					
3	37	34	35	079	981	0	0/0	8					
4	27	23	36	079	982	0	0/0	14					
5	25	15	36	080	978	3	0/0	15					
6	20	12	36	078	975	1	0/0	12					S3 1350 ten
7	11	5	39	077	973	0	0/0	13					
8	10	5	35	076	972	0	0/0	6					
9	21	5	36	078	976	1	0/0	-					mgst 1225
10	24	23	36	078	984	1	0/0	14					
11	23	20	36	077	999	0	0/0	30					
12	12	6	36	076	994	0	0/0	10					
13	22	8	36	079	988	1	0/0	8					
14	24	9	36	077	988	0	0/0	5					
15	28	13	35	079	994	4	0/0	2					
16	26	14	35	075	988	2	0/0	20					mgst 1200
17	13	5	33	072	993	0	0/0	20					
18	9	1	33	070	990	0	0/0	14					
19	11	1	33	070	993	0	0/0	13					
20	0	0	33	070	991	0	0/0	6					
21	0	0	32	070	990	0	0/0	21					
22	8	0	32	071	989	0	0/0	15					
23	9	0	31	069	986	0	0/0	10					
24	9	1	31	070	985	0	0/0	18					
25	8	1	31	069	983	0	0/0	8					mgst 1136
26	17	6	32	071	984	1	0/0	4					
27	11	4	32	073	987	0	0/0	5					
28	12	4	32	072	982	0	0/0	3					
29	8	1	32	072	986	0	0/0	5					
30	0	0	33	073	984	0	0/0	14					

Moderate solar activity during the first half of the month, then low to very low at the end of April. Geomagnetic activity from low to moderate.

R<sub>i</sub>, R<sub>MI</sub>: provisional international sunspot numbers from the S.I.D.C.

PPSI: prompt photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> w/m<sup>2</sup>; 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 - UGE01 group 2). The 10.7cm Flux data are provided as a service of The National Research Council of Canada.

COS: thousands of the cosmic ray counts (origin: Ursigrams - UG05 Kerguelen).

SFI: solar flare index from the S.I.D.C. (origin: Ursigrams - UGE0R group 3).

XI: X-flares index from the Ursigrams (X-flares/X-flares) (origin: Ursigrams).

AK: planetary geomagnetic index from Wüst, Germany (Royal Observatory, Belgium).

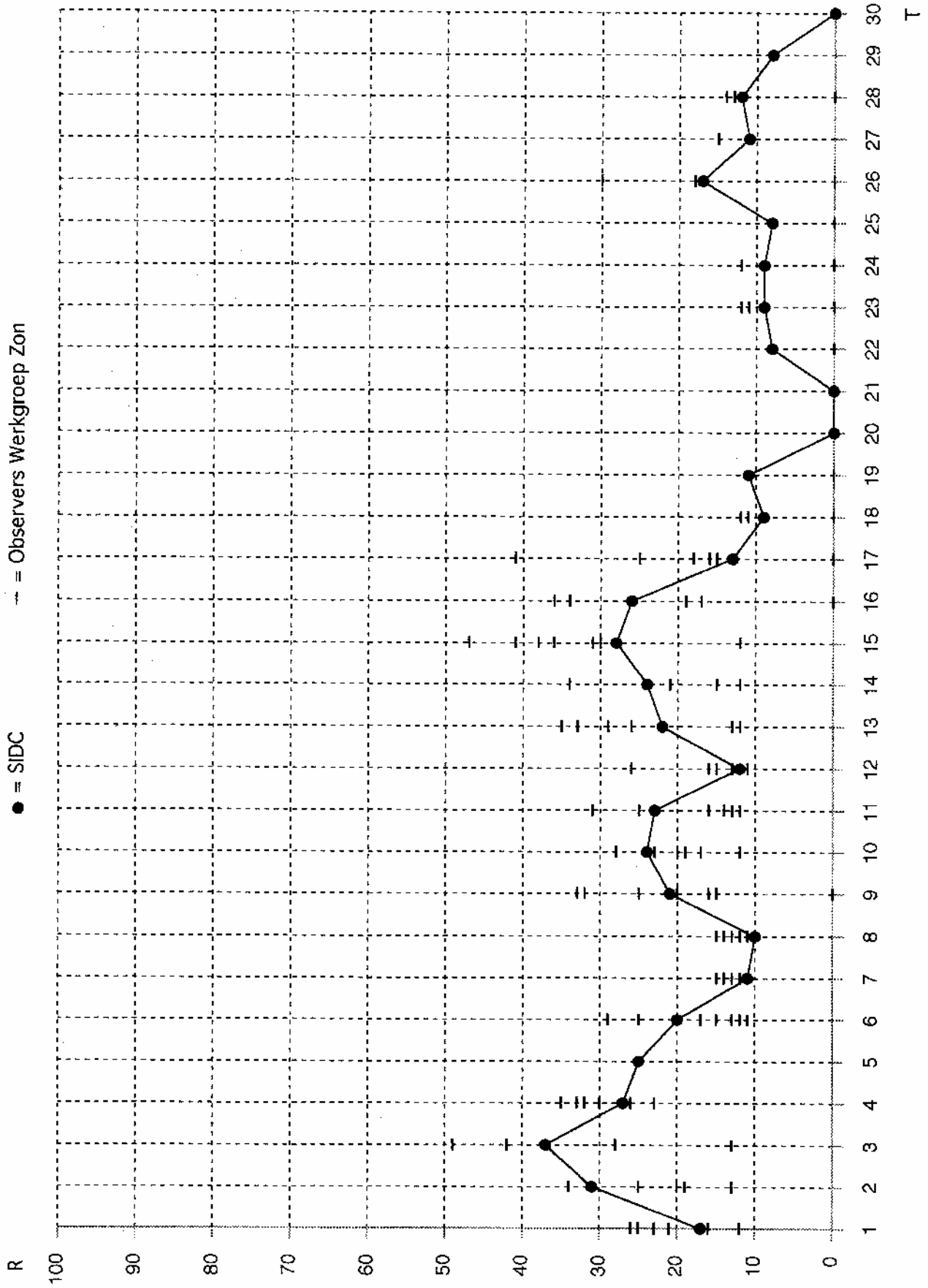
SEA: sudden enhancements of atmospherics from Uccle & Humain (Royal Observatory, Belgium).

MAG: magnetic events from Doubes station (Royal Meteorological Institute, Belgium).

Remarks: sid (sudden ionospheric disturbance); ssc (sudden storm commencement); mgst (magnetic storm); sfc (solar flare effect); s-1-2-4 (class of flares); II-IV (radio-burst); P (proton flare); P (proton event);

gfe (ground level event); n (neutron event); si (sudden impulse); F (Forbush); SFI Evaluation (1 x 50<sup>-10</sup> x 10<sup>-14</sup> x 10<sup>-13</sup>).





A.K.

Geomagnetic A.K. Index

APRIL, 1997

o A.K. (Wingst R.W.C. Paris)

100

80

60

40

20

0

S.10

10 Cm. Solar Radio Flux

o 10 Cm. (Ottawa R.W.C. Paris)

220

200

180

160

140

120

100

80

60

Relative Sunspot Numbers

o R (Catania R.W.C. Paris)

320

280

240

200

160

120

80

40

0

— Ri (S.I.D.C.)

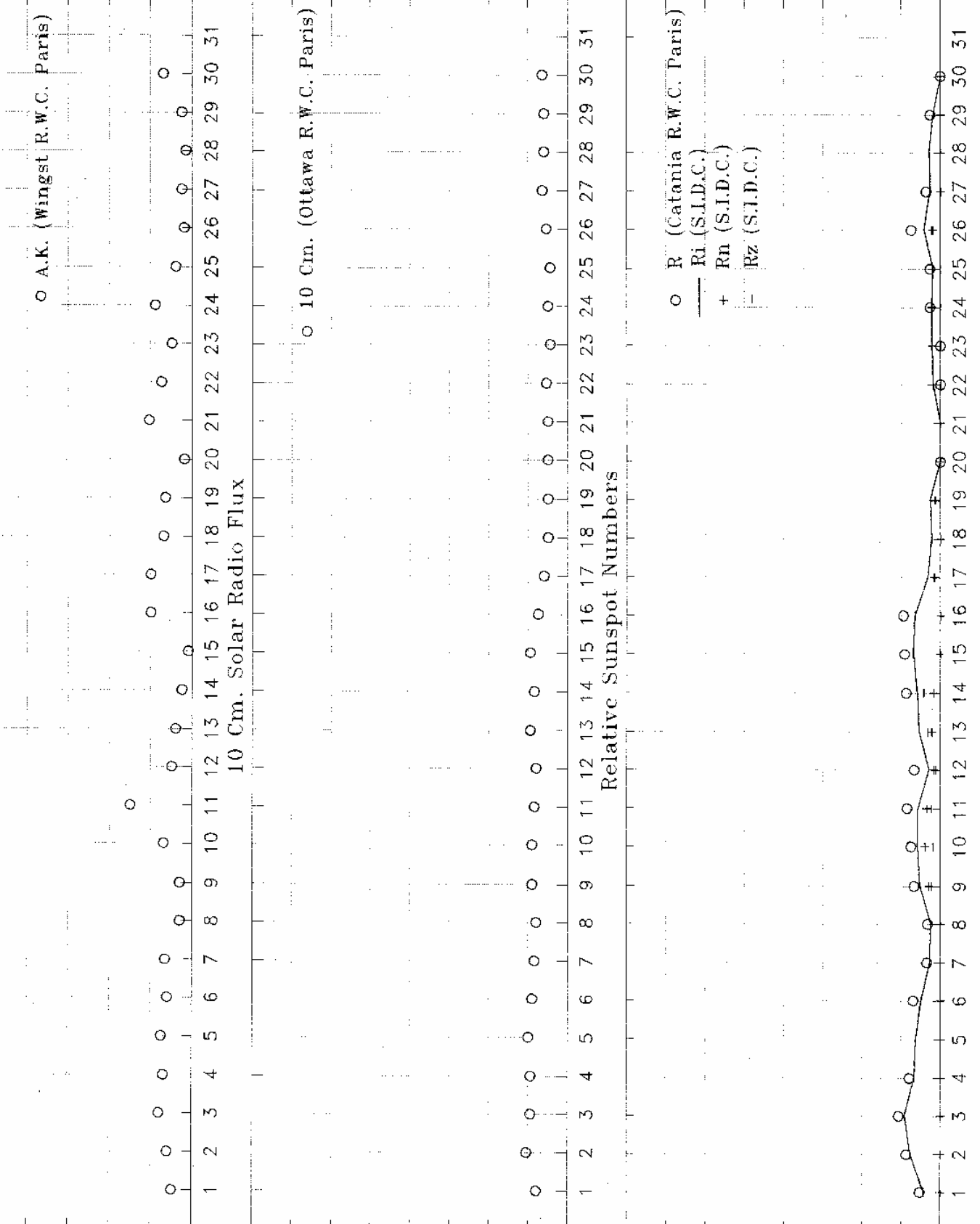
+ Rn (S.I.D.C.)

- Rz (S.I.D.C.)

Rimax 37  
Apr. 3

Rimin 0  
April 20,  
21 en 30

Rigem.  
15,8



## Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

(Hemispheric sunspot numbers)

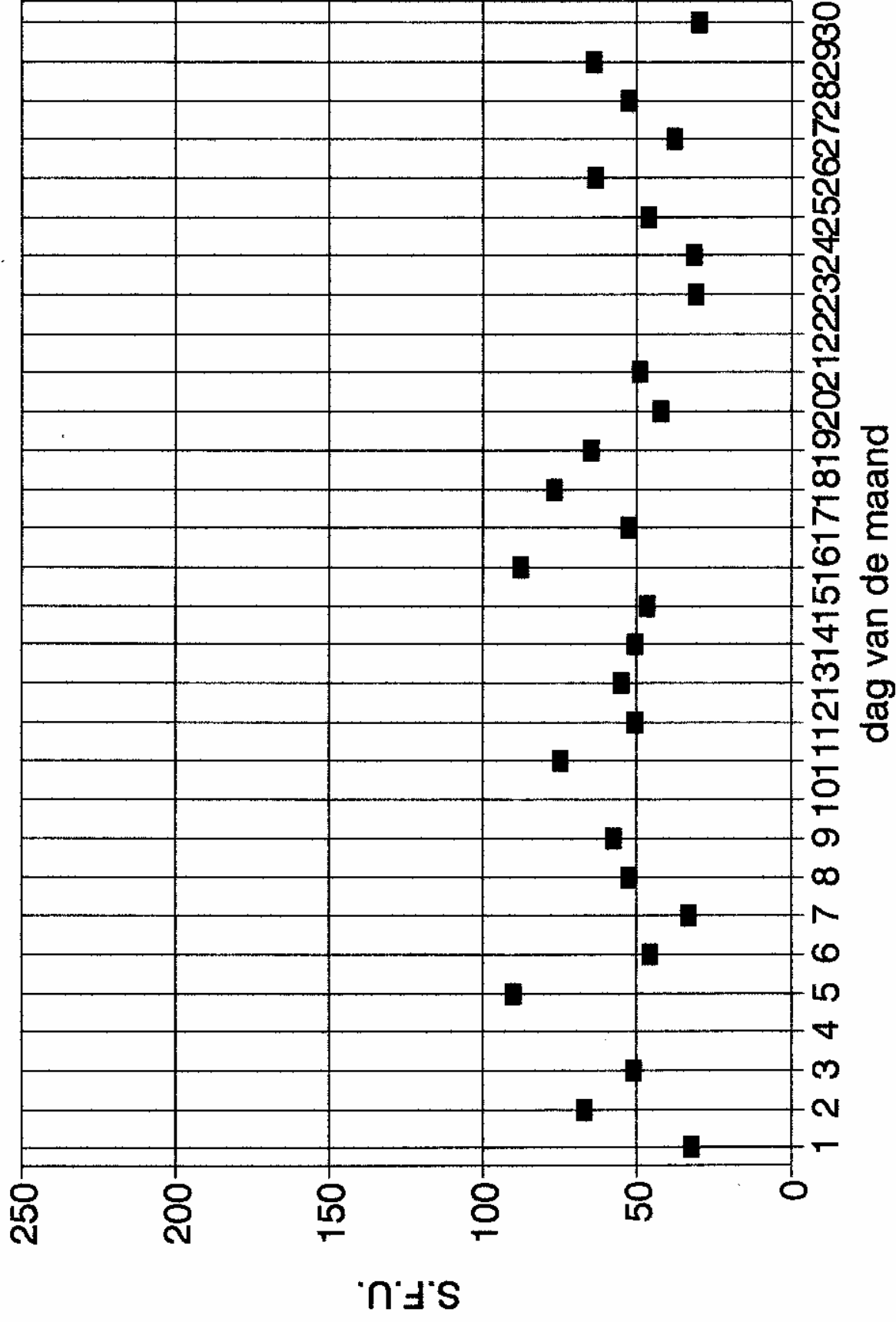
april 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Scholten		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	0	17	0	23	0	21	0	26					0	23	0	25
2	0	31	0	19	0	34									0	25
3	0	37											0	42	0	49
4	0	27	0	33	0	26							0	33	0	32
5	0	25														
6	0	20	0	25	0	13	0	15	0	11			0	29	0	29
7	0	11	0	14	0	12	0	14					0	14	0	13
8	0	10	0	13	0	12							0	14	0	14
9	12	9	19	13	16	0					19	13	20	13	21	0
10	16	8	23	0	20	0			12	0			23	0		
11	14	9			14	0							17	14	14	0
12	7	5	12	0	11	0							15	11	16	0
13	9	13	11	15	0	13	0	13			12	17	13	20	14	21
14	7	17	0	21									0	34		
15	0	28	0	38	0	31							0	41		
16	0	26	0	34			0	17					0	36		
17	6	7	0	16	0	13	0	25			0	15	12	29	0	18
18	0	9									0	11	0	12		
19	6	5	0	0			0	0					0	0		
20	0	0	0	0							0	0	0	0	0	0
21	0	0	0	0			0	0			0	0	0	0	0	0
22	8	0											0	0		
23	9	0	11	0			0	0					12	0	11	0
24	9	0	12	0									12	0	0	0
25	8	0														
26	8	9											17	13		
27	0	11			0	15							0	15		
28	0	12			0	13							0	14		
29	0	8														
30	0	0			0	0							0	0	0	0

# RADIO FLUX van de ZON

april 1997

Radio Observ. Den Helder, 1421 MHz





# Bulletin Werkgroep Zon

Mei 1997

NVWS Werkgroep Zon. Secretariaat: Veenenburg 36, 2804 WZ Gouda. Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bats	Gr 5	Gro	Iden	Jun 9	Jun 4	Kme	Scho	vSlo	Sp 7	Vers	Zans	Alle
1	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0
5	11	11	11	11	11	11	11	11	11	11	11	11	11
6	11	11	11	11	11	11	11	11	11	11	11	11	11
7	12	11	12	11	11	11	11	11	11	11	11	11	11
8	22	12	12	11	11	11	11	11	11	11	11	11	11
9	15	11	11	11	11	11	11	11	11	11	11	11	11
10	11	11	11	11	11	11	11	11	11	11	11	11	11
11	13	11	11	11	11	11	11	11	11	11	11	11	11
12	14	11	11	11	11	11	11	11	11	11	11	11	11
13	17	15	13	11	11	11	11	11	11	11	11	11	11
14	15	15	11	11	11	11	11	11	11	11	11	11	11
15	13	14	11	11	11	11	11	11	11	11	11	11	11
16	25	24	11	0	0	0	0	0	0	0	0	0	0
17	22	14	0	0	0	0	0	0	0	0	0	0	0
18	15	15	11	11	11	11	11	11	11	11	11	11	11
19	29	17	12	12	12	12	12	12	12	12	12	12	12
20	53	17	17	13	13	13	13	13	13	13	13	13	13
21													
22	55	35	25	23	23	23	23	23	23	23	23	23	23
23	24	38	22	11	11	11	11	11	11	11	11	11	11
24	36	38	23	11	11	11	11	11	11	11	11	11	11
25	39	35	23	0	0	0	0	0	0	0	0	0	0
26													
27													
28	15	12	13	0	0	0	0	0	0	0	0	0	0
29	23	24	13	11	11	11	11	11	11	11	11	11	11
30	23	24	13	11	11	11	11	11	11	11	11	11	11
31	23	29	13	11	11	11	11	11	11	11	11	11	11
observ	16	14	19	13	29	3	11	12	28	19	10	20	18
k	0.83	0.79	1.07	1.16	1.59	1.42	1.58	1.27	0.82	0.84	1.12	1.08	1.00
sd dev	0.24	0.26	0.29	0.35	0.73	0.73	1.01	0.34	0.25	0.14	0.31	0.29	0.30
std.k	0.29	0.32	0.27	0.30	0.46	0.51	0.64	0.27	0.31	0.17	0.28	0.26	0.30

**Observers**  
 Bals = H.A.M. Balster [70]  
 Gr 5 = Mw G. Gravers [50]  
 Groe = A. Groenewegen [102]  
 Iden = J.A. Idenburg [70]

[ ] = Refractor, d = mm  
 Jun 9 = D. Jannink [9]  
 Jun 4 = D. Jannink [40]  
 Kme = K. Kroesen [102]  
 Scho = A. Scholten [60]

[Rf. ] = Reflector, d = mm  
 vSlo = B. van Slooten [90]  
 Sp 7 = I. Spaninks [75]  
 Vers = D. Verschuuren [Rf. 90]  
 Zans = W. Zanstra [Rf. 155]  
 Zijle = W.A. Zijlstra [90]

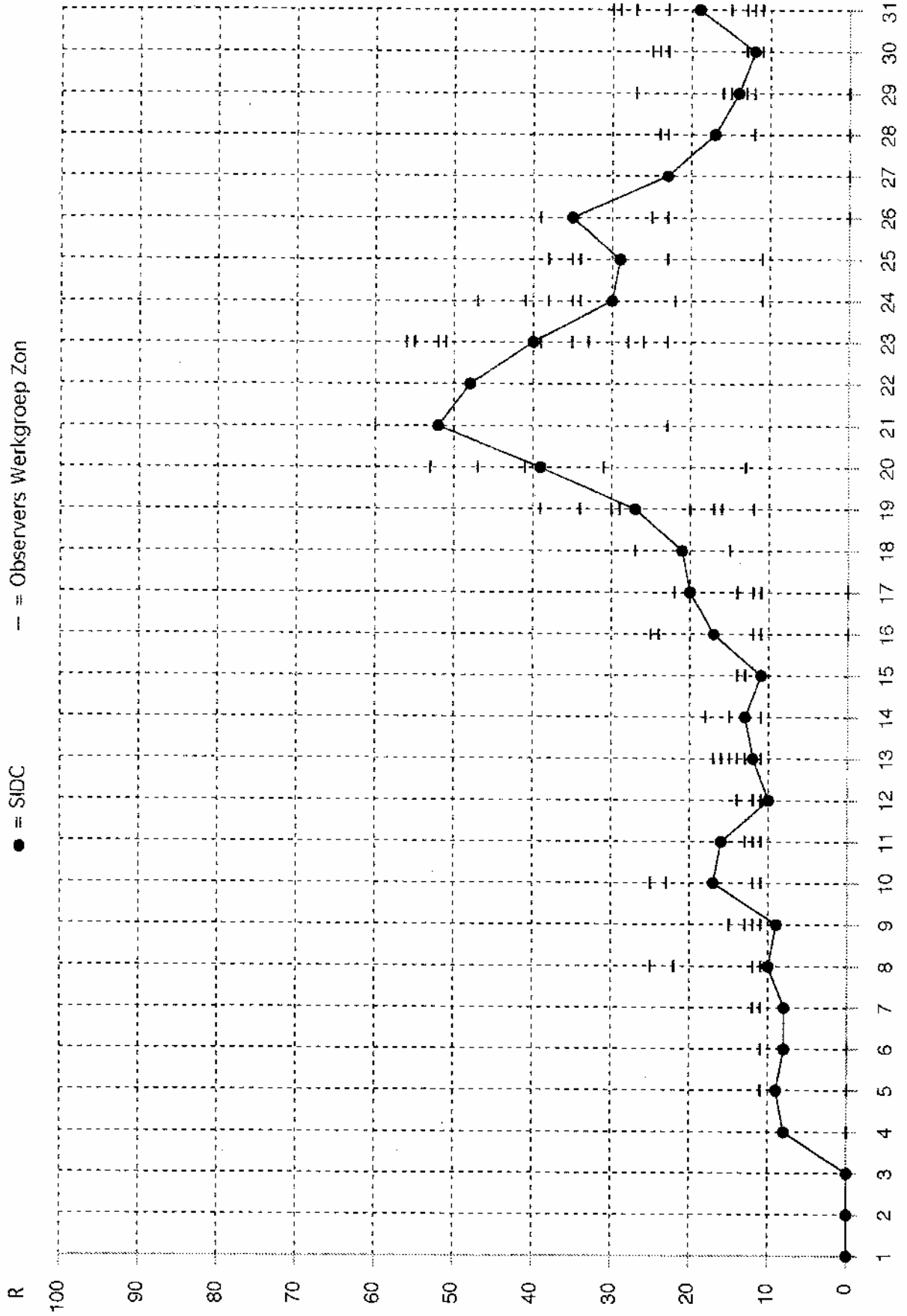
## S.I.D.C. SUMMARY OF THE URSIGRAMS

1997 MAY  $R_{IM} = 18.5$

Date	Rf	PPSI	600	2800	COS	SFI	XI	AK	SEA	MAG
30	0	0	33	073	984	0	0/0	14		SSC 1243
1	0	0	33	072	986	0	0/0	28		
2	0	0	33	072	982	0	0/0	15		
3	0	0	34	071	979	0	0/0	12		
4	8	0	-	071	980	0	0/0	11		
5	9	2	34	072	978	0	0/0	8		
6	8	4	34	072	976	1	0/0	4		
7	8	8	34	072	970	0	0/0	6		
8	10	12	34	072	966	0	0/0	6		
9	9	18	34	072	968	0	0/0	4		
10	17	16	34	072	976	0	0/0	5		
13	16	16	34	072	980	0	0/0	5		
12	10	15	33	072	985	10	0/0	2		
13	12	14	33	074	985	0	0/0	3		
14	13	9	32	074	982	0	0/0	-		
15	11	7	32	073	1000	0	0/0	44		
16	17	2	32	072	992	1	0/0	-		
17	20	2	32	073	993	0	0/0	-		
18	21	9	32	074	989	0	0/0	-		
19	27	26	32	074	989	0	0/0	-		
20	39	24	32	079	985	0	0/0	5		
21	52	43	34	085	984	18	1/0	6	SF 2003	
22	48	45	34	081	983	0	0/0	4		
23	40	30	34	076	982	2	0/0	3		
24	30	18	34	077	981	1	0/0	12		
25	29	11	34	078	981	1	0/0	6		
26	35	7	34	080	990	0	0/0	14		SSC 0956
27	23	3	35	078	987	14	0/0	20		S-1F 0941
28	17	1	35	077	989	1	0/0	6		
29	14	4	35	076	985	1	0/0	4		
30	12	3	36	075	979	0	0/0	10		
31	19	5	34	073	983	0	0/0	13		

We are now clearly in the ascent phase of cycle 23. The absolute minimum seems to have been reached in May 1996. However, the smoothed sunspot number remained between 8 and 9 from April to October 1996.

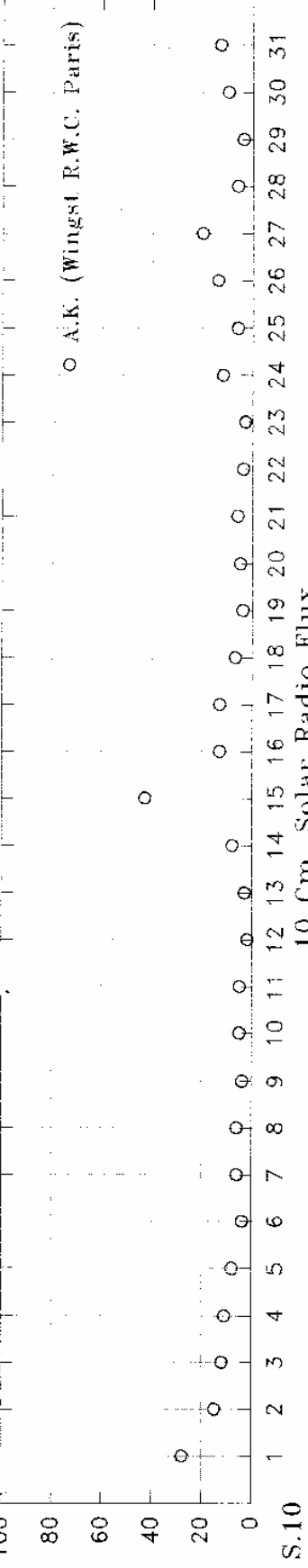
Rf, RfA : provisional international sunspot numbers from the S.I.D.C.  
 PPSI : prompt photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> w/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600 : 600 Mhz solar flux from Huairou station (Belgium).  
 2800 : 2800 Mhz solar flux from Ottawa (origin : Ursigrams - UGEO group 2); The 10.7cm flux data are provided as a service of the National Research Council of Canada.  
 COS : thousands of the cosmic ray counts (origin : Ursigrams - UGEO Kerkgarten).  
 SFI : From October 1992, Solar Flare Index from the S.I.D.C. (origin : Ursigrams - UGEO group 3).  
 XI : X flares index from the Ursigrams (M flares/A flares) (origin : Ursigrams - UGEO group 2; UGEO group 5).  
 AK : planetary geomagnetic index from Mingst, Germany (origin : Ursigrams).  
 SEA : sudden enhancements of atmospheres from Uccle & Kulain (Royal Observatory, Belgium).  
 MAG : magnetic events from Dourbes station (Royal Meteorological Institute, Belgium).  
 Remarks : sid (sudden ionospheric disturbance); ssc (sudden storm commencement); mst (magnetic storm); sse (solar flare effect); s-1, 2, 3, 4 (class of flares); 11-14 radio-burst; T (ten cm radio-burst); p (proton flare); p (proton event); gte (ground level event); neutron event; si (sudden impulse); F (forbush); SFI Evaluation (1 X 10<sup>-10</sup> x 10<sup>-14</sup> x 10<sup>-10</sup> x 10<sup>-14</sup>).



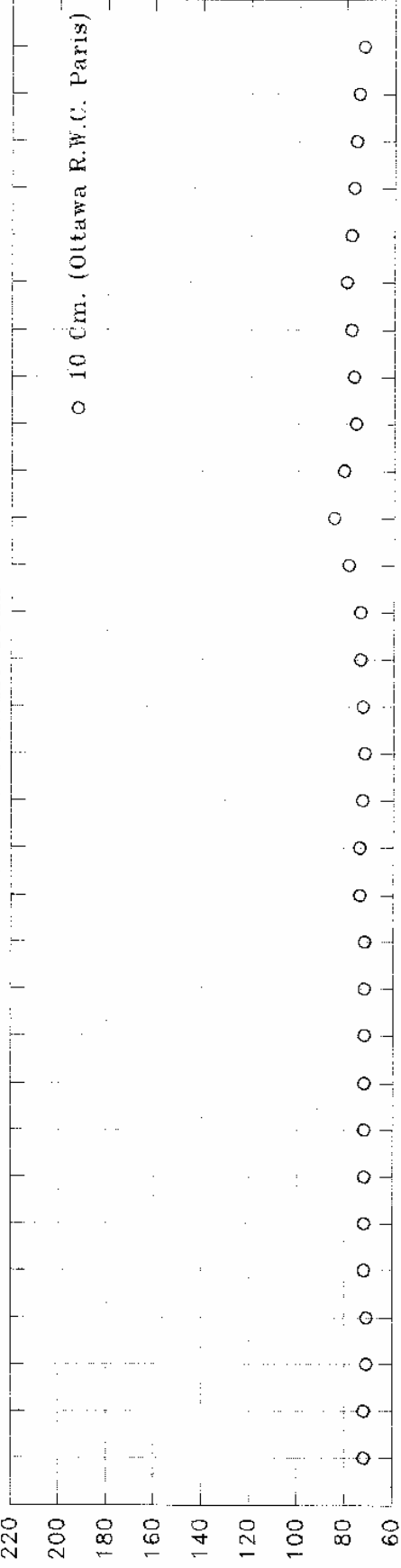
A.K.

Geomagnetic A.K. Index

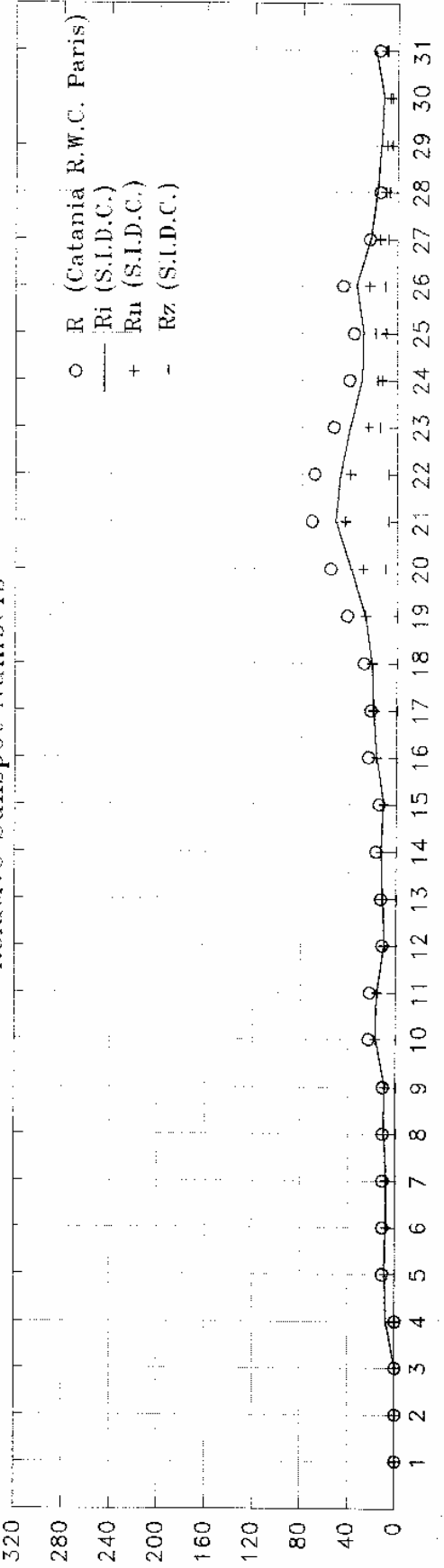
MEI 1907



10 Cm. Solar Radio Flux



Relative Sunspot Numbers



Rimax 52  
 Mei. 21  
 Rimin 0  
 Mei. 1,2  
 en 3.

Rigem.  
 18,5

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

(Hemispheric sunspot numbers)

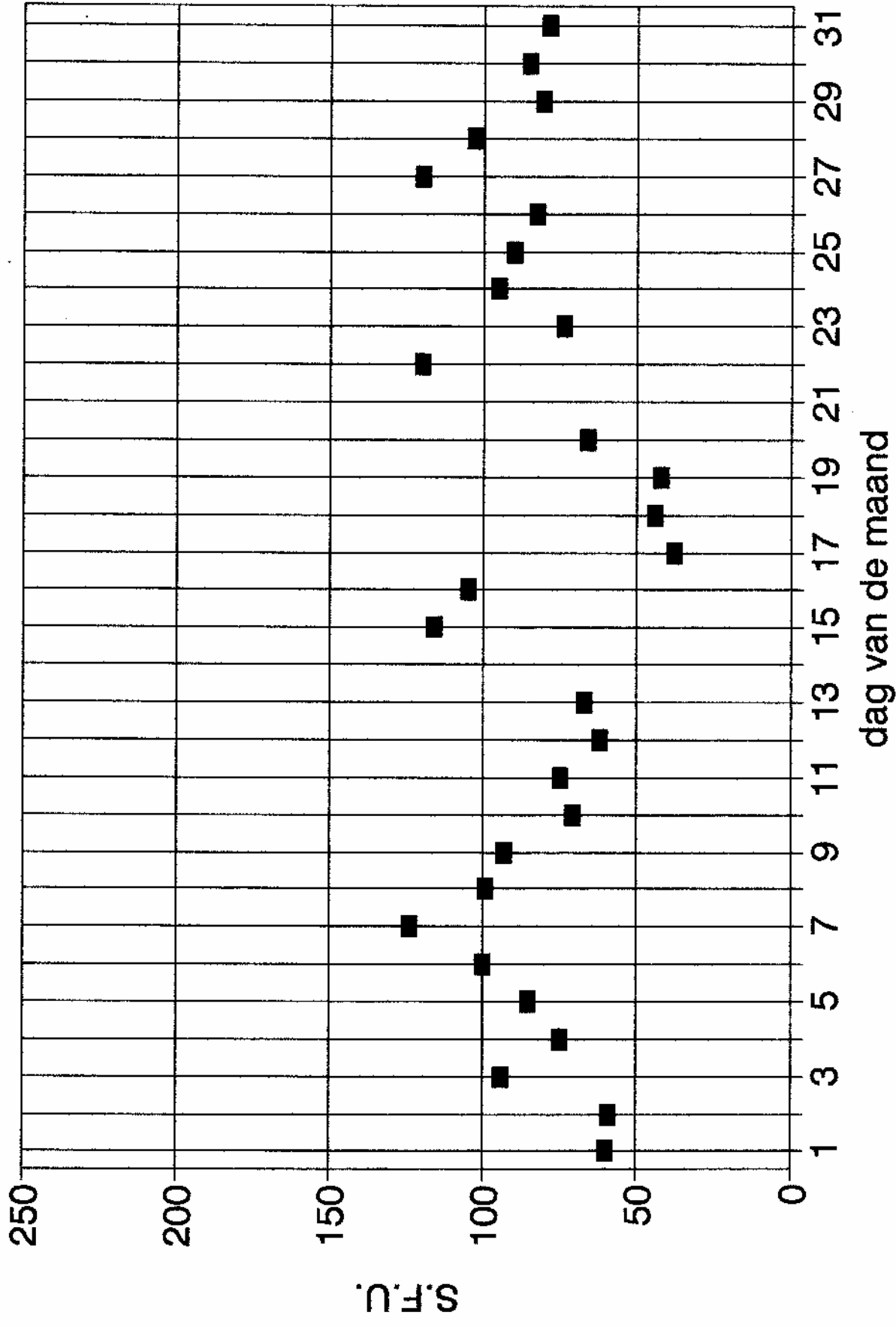
mei 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Scholten		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	0	0			0	0	0	0			0	0	0	0	0	0
2	0	0					0	0			0	0	0	0	0	0
3	0	0					0	0			0	0	0	0	0	0
4	0	8													0	0
5	9	0			11	0							11	0	11	0
6	8	0											11	0		
7	8	0			11	0	12	0					11	0	11	0
8	10	0	22	0			12	0	11	0	11	0	25	0	11	0
9	9	0			11	0							13	0	12	0
10	17	0			11	0	11	0			12	0	25	0	23	0
11	16	0	13	0									12	0		
12	10	0	14	0	11	0	11	0					12	0	12	0
13	12	0	17	0	15	0	13	0			16	0	15	0	15	0
14	13	0			15	0							18	0		
15	11	0	13	0	11	0	11	0					14	0		
16	17	0	25	0	11	0							12	0		
17	20	0	22	0	0	0					11	0	22	0	22	0
18	21	0	15	0									21	0		
19	27	0	29	0	17	0	17	0	12	0	20	0	39	0	34	0
20	29	10	40	13									41	0		
21	44	8											42	18		
22	40	8														
23	25	15	32	23	24	11	26	0			17	11	33	23	41	11
24	13	17			11	11							16	25	24	23
25	10	19	13	25	11	12							11	24	11	24
26	24	11	26	13	23	12	0	23					13	12		
27	15	8														
28	10	7			12	11					12	0	13	11		
29	9	5	15	0	13	0							16	11	16	0
30	7	5	12	11	13	0	11	0	11	0	13	0	14	11	13	0
31	10	9	12	11							13	0	13	14	15	0



# RADIO FLUX van de ZON mei 1997

Radio Observ. Den Helder, 1421 MHz





# Bulletin Werkgroep Zon

Juni 1997

NMWS Werkgroep Zon - Secretariaat: Veenenburg 36, 2804 WZ Gouda. Tel: 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bais	Gr 5	Groo	Iden	Jun 9	Jun 4	Kroo	Scho	vslo	Sp 7	Vers	Zans	Zijle
1	28	33	27	26	0	16	28	30	28	30	26	28	31
2	33	38	14	12	12	31	35	35	29	31	24	31	24
3	22	27	16	14	13	24	17	21	20	17	22	17	22
4	18	13	24	12	23	23	16	13	13	13	13	13	13
5	17	19	24	12	26	15	15	15	12	13	14	14	14
6	18	21	24	12	16	15	17	12	13	13	13	13	13
7	16	24	22	0	0	16	29	14	12	14	15	15	15
8	23	24	22	0	0	24	23	23	11	0	22	22	22
9	24	24	22	0	0	23	23	11	11	11	11	11	11
10	11	12	11	0	0	11	11	11	11	11	11	11	11
11	22	26	26	0	0	23	23	23	23	23	23	23	23
12	22	26	26	0	0	23	23	23	23	23	23	23	23
13	26	26	26	0	0	29	29	29	24	24	24	24	24
14	27	31	0	0	0	31	30	30	17	17	17	17	17
15	16	16	27	0	0	33	33	33	14	14	14	14	14
16	21	18	19	0	0	21	32	34	24	14	17	24	24
17	15	16	16	14	0	25	16	17	15	12	18	18	18
18	25	0	0	0	0	0	26	25	11	28	14	14	14
19	13	11	11	0	0	17	17	17	17	17	17	17	17
20	11	12	11	0	0	11	11	11	11	11	11	11	11
21	11	0	0	0	0	0	11	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0	0
23	11	0	0	0	0	0	0	0	0	0	0	0	0
24	11	11	11	0	0	12	22	22	0	0	0	0	0
25	14	0	0	0	0	18	18	18	0	0	0	0	0
26	15	16	16	0	0	23	23	23	11	11	11	11	11
27	0	0	0	0	0	0	11	25	12	11	0	11	11
28	12	0	0	0	0	0	11	25	12	11	0	11	11
29	0	0	0	0	0	0	11	11	11	11	11	11	11
30	24	15	16	14	28	1	8	11	26	18	16	21	15
observ	0.78	0.73	0.79	0.88	1.15	1.15	0.71	0.73	0.67	0.73	1.03	0.82	0.80
k	0.18	0.19	0.12	0.34	0.35	—	0.33	0.08	0.13	0.11	0.31	0.15	0.17
std./k	0.23	0.26	0.15	0.39	0.30	—	0.46	0.12	0.19	0.15	0.30	0.19	0.21

Observers	[...]	Reflector, d = ... mm	[R...]
Bais = H.A.M. Baister [70]	Jun 9 = D. Jannink [9]	vslo = B. van Slooten [90]	Sp7 = T. Spaninks [75]
Gr 5 = M.w.G. Gravers [50]	Jun 4 = D. Jannink [40]	Vers = D. Verschuuren [R1 80]	Zans = W. Zanstra [R1 155]
Groo = A. Groenewagen [102]	Kroo = K. Kroesen [102]	Zijle = W.A. Zijlma [96]	
Iden = J.A. Idenburg [70]	Scho = A. Scholten [60]		

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

1997 JUNE R<sub>M</sub> = 13.1

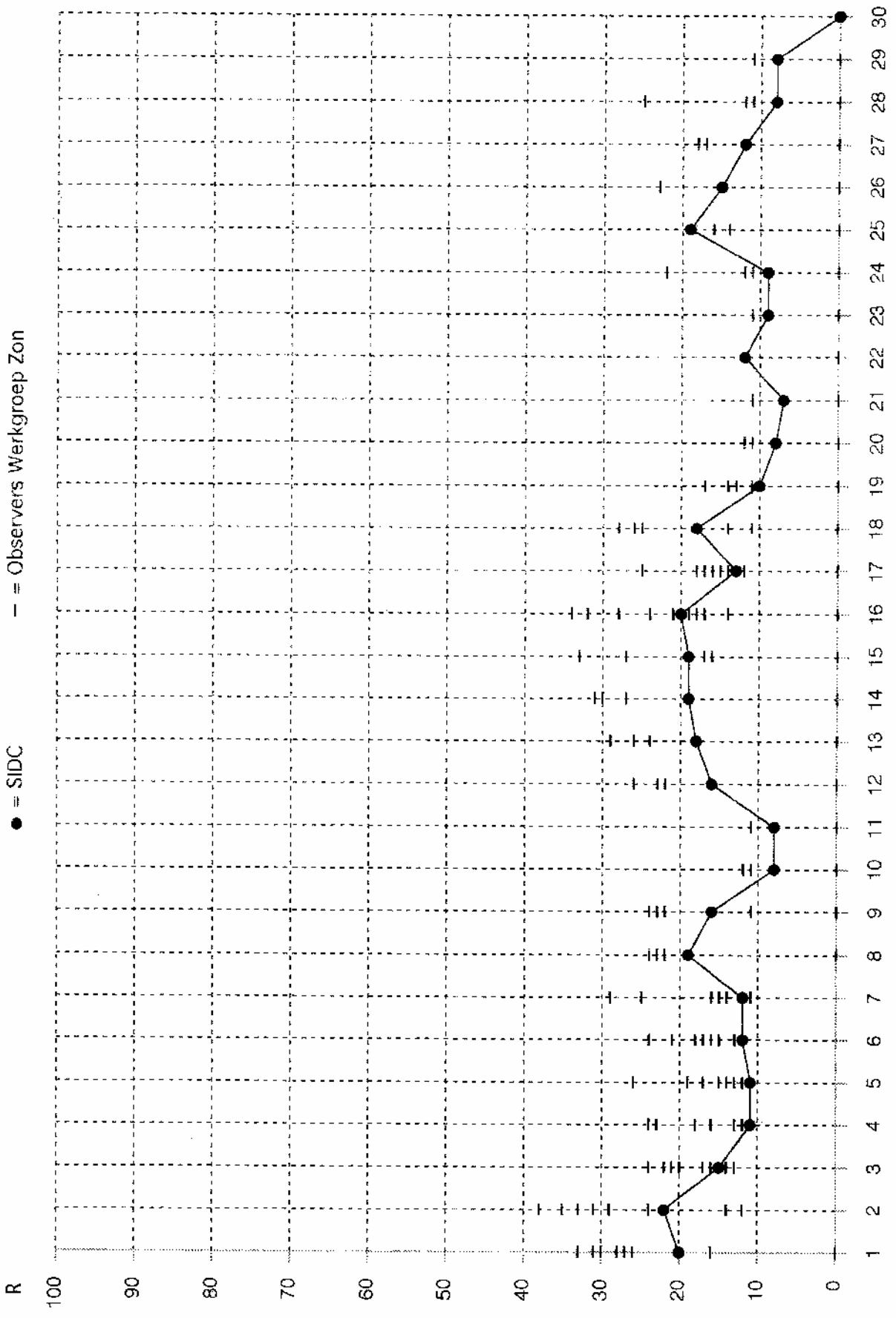
Date R<sub>f</sub> PPSI 600 2800 COS SFI XI AK SEA MAG

31	19	5	34	073	1017	0	0/0	13				
1	20	5	35	077	1021	2	0/0	10				
2	22	17	35	077	1022	0	0/0	7				
3	15	25	35	075	1018	0	0/0	12				
4	11	21	35	074	1027	0	0/0	7				
5	11	23	35	074	1030	0	0/0	4				
6	12	16	34	074	1026	0	0/0	12				
7	12	9	34	075	1023	0	0/0	15				
8	19	3	34	073	1021	0	0/0	17				
9	16	2	34	073	1019	0	0/0	30				
10	8	1	33	072	-	0	0/0	7				
11	8	1	33	071	1018	0	0/0	4				
12	16	3	32	070	1018	0	0/0	6				
13	18	4	32	070	1021	0	0/0	4				
14	19	7	32	071	1016	0	0/0	3				
15	19	7	32	071	1018	0	0/0	7				
16	20	11	32	072	1014	0	0/0	10				
17	13	5	32	070	1013	1	0/0	5				
18	18	5	33	071	1021	0	0/0	4				
19	10	3	32	070	1015	0	0/0	10				
20	8	1	32	070	1019	0	0/0	5				
21	7	0	32	068	1019	0	0/0	2				
22	12	1	31	070	1019	0	0/0	12				
23	9	1	32	069	1013	0	0/0	9				
24	9	2	32	070	1011	0	0/0	5				
25	19	7	34	072	1010	0	0/0	11				
26	15	7	33	072	-	0	0/0	7				
27	12	4	31	072	1012	0	0/0	19				
28	8	2	32	071	1018	2	0/0	10				
29	8	999	32	070	1017	0	0/0	11				
30	0	999	32	070	1015	0	0/0	5				

Low solar and geomagnetic activity.

R<sub>f</sub>, R<sub>M</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> W/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 MHz solar flux from Hurler station (Belgium).  
 2800: 2800 MHz solar flux from Ottawa (origin: Ursigrams - UGE01 group 2). The 10.7cm flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrams - UG05 Kerguelen).  
 SFI: from October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrams - UGE01 group 2).  
 XI: X-flares index from the Ursigrams (X-flares/X-flares) (origin: Ursigrams - UGE01 group 2).  
 AK: planetary geomagnetic index from Uccle & Hulin (Royal Observatory, Belgium).  
 SEA: sudden enhancements of atmospheric ionospheric disturbance (Royal Meteorological Institute, Belgium).  
 MAG: magnetic events from Bourbes station (Royal Meteorological Institute, Belgium).  
 Remarks: sid (sudden ionospheric disturbance); asc (sudden storm commencement); mgst (magnetic storm); sfc (solar flare effect); s-1-2-3-4 (class of flares); 11-14 radio-burst; I (10 cm radio-burst); P (proton flare); P (proton event); gte (ground level event); neutron event); st (sudden impulse); F (Forbush); SFI Evaluation (1 x SFI-10 x "10 x "10 x "10).

● = SIDC  
— = Observers Werkgroep Zon

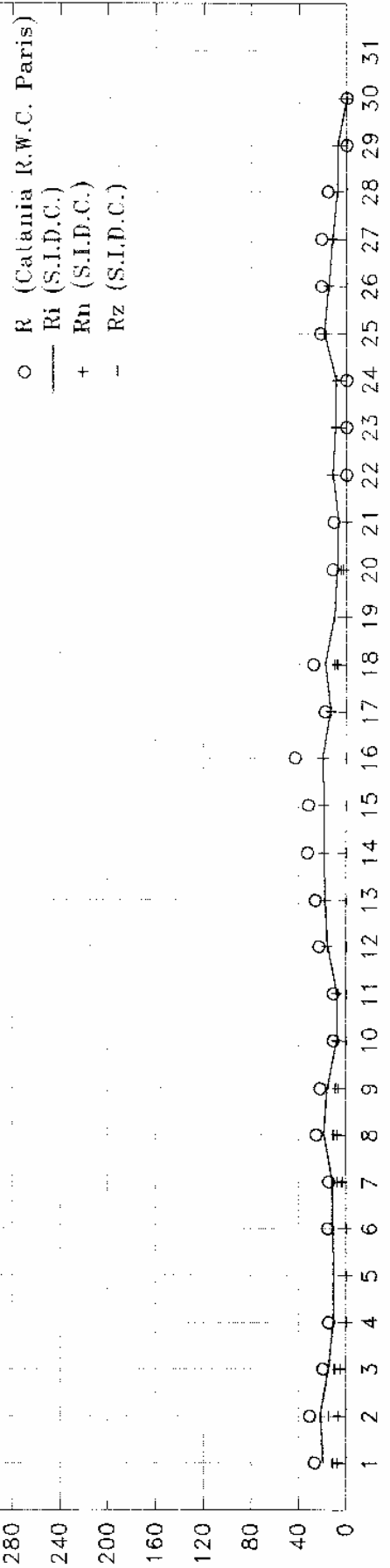
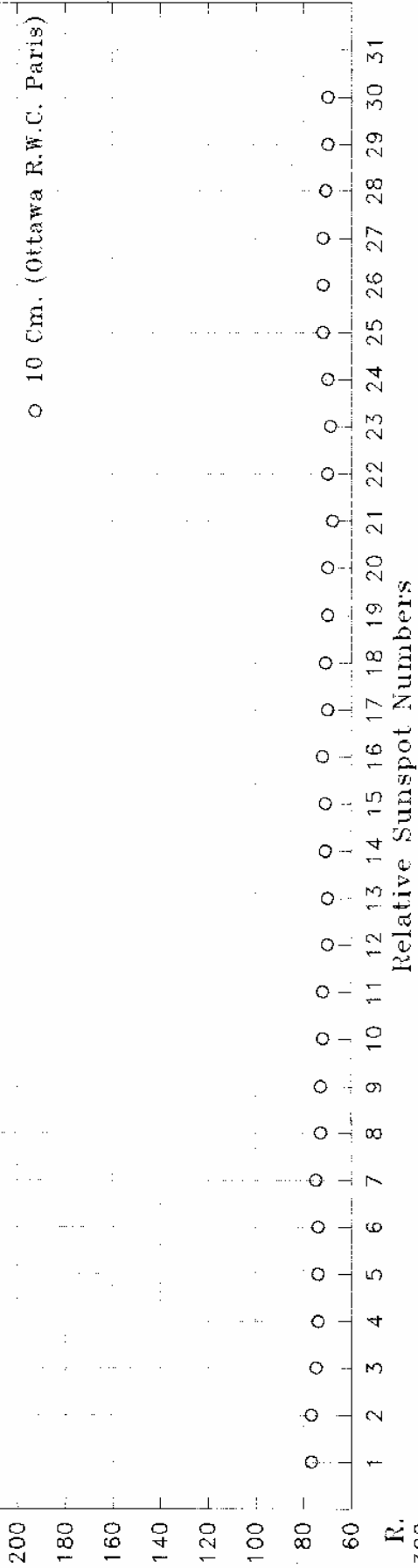
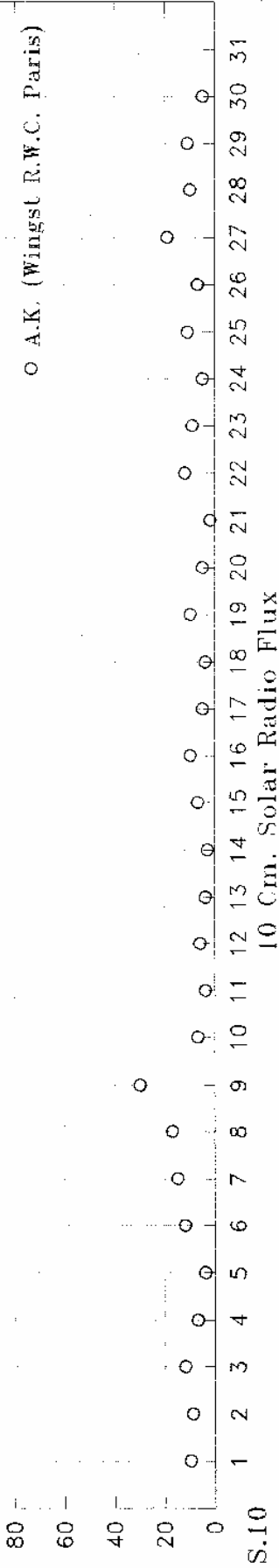


T

A.K.

Geomagnetic A.K. Index

JUNI 1997



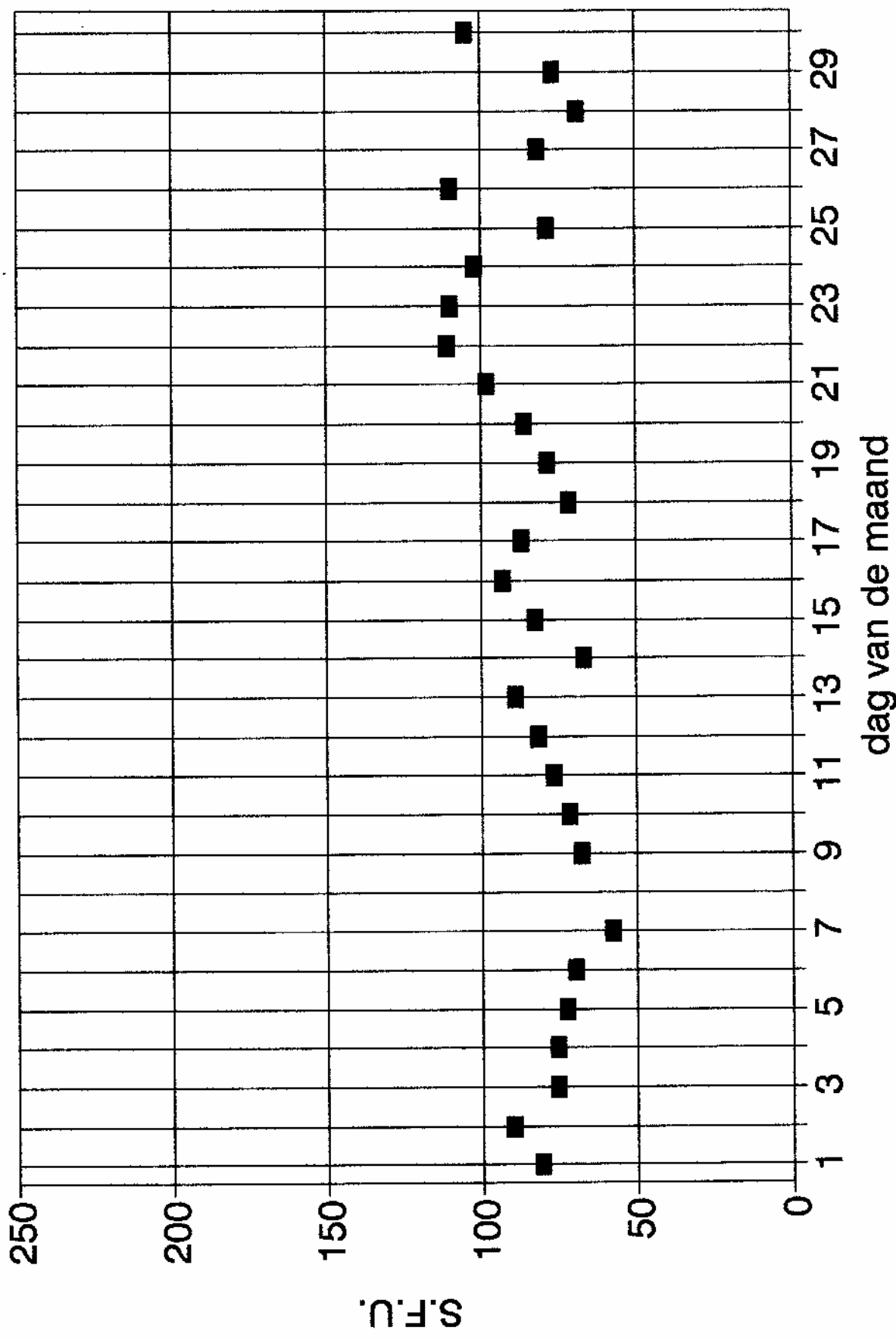
Rimax 22  
Jun. 2  
Rimin 0  
Jun. 30  
Rigem.  
13.1



# RADIO FLUX van de ZON

juni 1997

Radio Observ. Den Helder, 1421 MHz





# Bulletin Werkgroep Zon

Juli 1997

NVWS Werkgroep Zon, Secretaraat: Veenenburg 36, 2804 WZ Gouda Tel 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr 5	Groet	Jm	g	Kroes	Scho	vSlo	Sp 7	Vers	Zijle
1	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	12	0	0	0
4	11	0	0	0	0	0	0	13	12	0	13
5	11	0	0	0	0	0	0	11	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0
7	46	0	0	0	0	0	0	47	25	0	38
8	0	0	0	0	0	0	0	14	0	0	0
9	0	0	0	0	0	0	0	20	0	0	15
10	0	0	0	0	0	0	0	0	0	0	16
11	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	12	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0
18	11	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0
20	12	0	0	0	0	0	0	13	12	0	12
21	0	0	0	0	0	0	0	0	0	0	0
22	11	0	0	0	0	0	0	22	0	0	0
23	32	29	12	0	0	0	0	34	35	14	0
24	0	0	0	0	0	0	0	49	0	0	0
25	45	0	0	0	0	0	0	47	0	0	0
26	53	0	0	0	0	0	0	45	32	14	0
27	0	0	0	0	0	0	0	24	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0
observ	26	6	10	31	10	1	31	20	10	19	
k	0.75	-	0.69	2.67	0.90	-	0.77	0.89	2.04	0.85	
si dev	0.15	-	-	0.87	-	-	0.20	0.23	0.86	0.19	
st dev/k	0.19	-	-	0.33	-	-	0.26	0.26	0.42	0.22	

Observers	[.] = Reflector, d = min	[R.] = Reflector, d = min
Bals = H.A.M. Baister [70]	Kroes = K. Kroesen [102]	Sp 7 = T. Spaninks [75]
Gr 5 = Mw G. Gravers [50]	Scho = A. Scholten [60]	Vers = D. Verschuuren [Rf 80]
Groe = A. Groenewegen [102]	vSlo = B van Stooten [90]	Zijle = W.A. Zijlema [90]
Jn 9 = D. Jannink [9]		

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

1997 JULY RfM = 10.5

Date Rf PPSI 600 2800 COS SFI XI AK SEA MAG

30	0	0	32	070	1015	0	0/0	5	
1	0	0	32	070	1021	0	0/0	4	
2	0	0	32	070	1025	0	0/0	5	
3	8	0	32	069	1029	0	0/0	8	
4	9	0	34	070	1027	0	0/0	8	
5	8	-	33	070	1024	0	0/0	6	
6	10	0	33	068	1026	0	0/0	6	
7	26	3	32	070	1019	0	0/0	14	
8	16	1	32	070	1014	0	0/0	6	
9	17	1	32	070	1011	0	0/0	14	
10	11	2	31	069	1009	0	0/0	7	
11	0	0	31	069	1007	0	0/0	4	
12	0	0	31	067	1010	0	0/0	4	
13	0	0	30	067	1013	0	0/0	4	
14	9	1	30	068	1010	0	0/0	4	
15	0	0	31	069	1011	0	0/0	15	
16	0	0	31	070	1014	0	0/0	6	
17	7	0	31	070	1013	0	0/0	8	
18	7	-	31	070	1015	0	0/0	10	
19	0	0	32	071	1013	0	0/0	14	
20	11	0	32	-	1014	-	-	9	
21	0	0	32	071	1017	0	0/0	8	
22	11	0	32	072	1016	0	0/0	6	
23	20	4	37	076	1022	0	0/0	7	
24	29	8	32	079	1020	3	0/0	15	
25	39	12	32	080	1027	8	0/0	7	
26	37	7	32	072	1025	1	0/0	4	
27	28	6	31	075	1030	3	0/0	6	
28	11	1	31	074	1024	0	0/0	6	
29	11	-	32	073	1026	3	0/0	4	
30	0	0	32	071	1030	0	0/0	10	
31	0	0	32	070	-	0	0/0	-	

C4,4 flare 2007

Very low to moderate solar activity after July 22, with new cycle active regions giving low-level flares with strong radio bursts.

Rf, RfM : provisional international sunspot numbers from the S.I.D.C.

PPSI : proton photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> W/m<sup>2</sup>; the quantity to subtract from the mean solar constant.

SFO : 640 Mhz solar flux from Humain station (Belgium).

2800 : 2800 Mhz solar flux from Ottawa (origin : Ursigrams - UGE01 group 2); The 10.7cm flux data are provided as a service by the National Research Council of Canada.

LOS : thousands of the cosmic ray counts (origin : Ursigrams - UGSE (Kerguelen)).

SFI : From October 1992, Solar Flare Index from the S.I.D.C. (origin : Ursigrams - UGEOR group 3).

XI : X-flares index from the Ursigrams (X-flares/X-flares) (origin : Ursigrams - UGEOR group 2; UGE01 group 5).

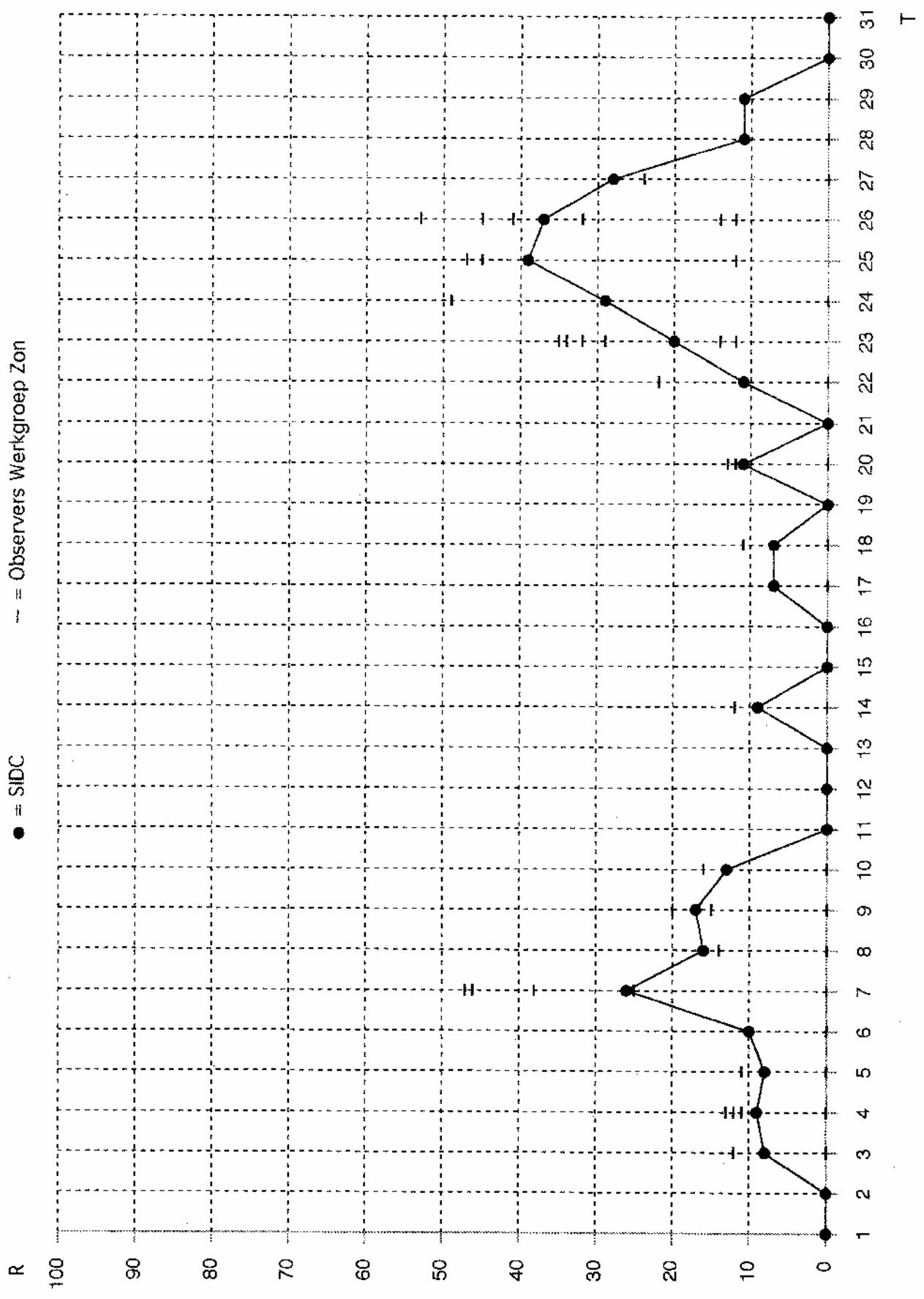
AK : planetary geomagnetic index from Wingst, Germany (origin : Ursigrams).

SEA : sudden enhancements of atmospherics from Jectis & Humain (Royal Observatory, Belgium).

MAG : magnetic events from Dourbes station (Royal Meteorological Institute, Belgium).

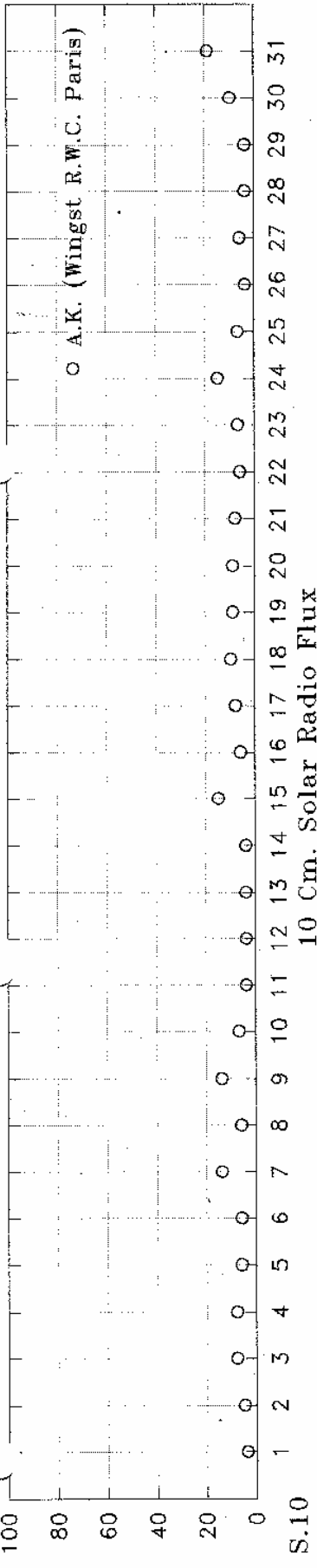
Remarks : sid (sudden ionospheric disturbance); sac (sudden storm commencement); mgs (magnetic storm); sfo (solar flare effect); s-1-2-3-4 (class of flares); II-IV (radio-burst); T (ten cm radio-burst); P (proton flare); p (proton event);

g1e (ground level event); m (neutron event); si (sudden impulse); f (Forbush); SFI Evaluation (1 x 5m-10 x 10<sup>4</sup> x 10<sup>3</sup>).

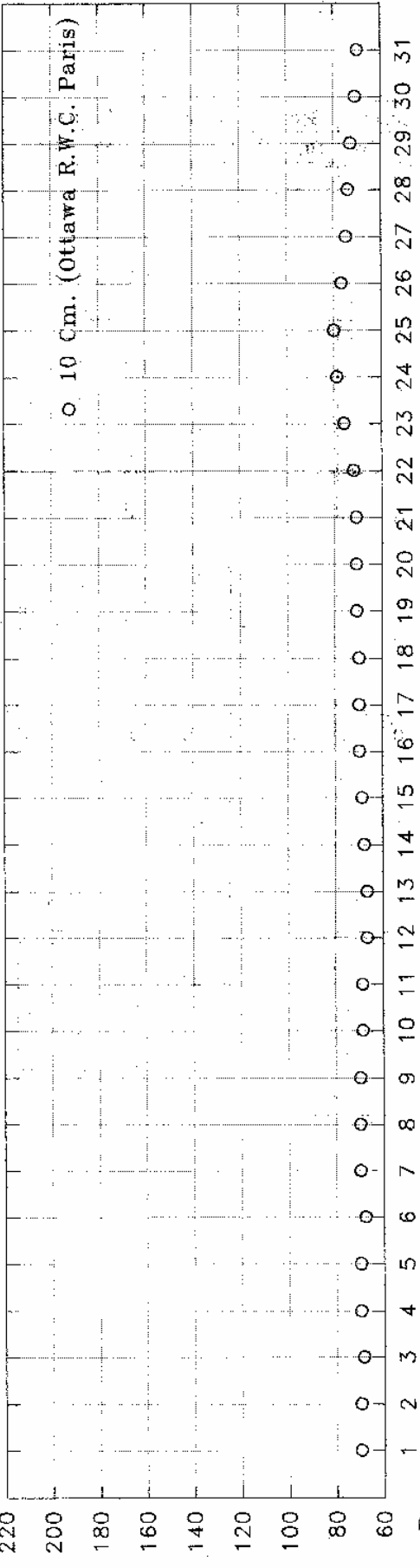




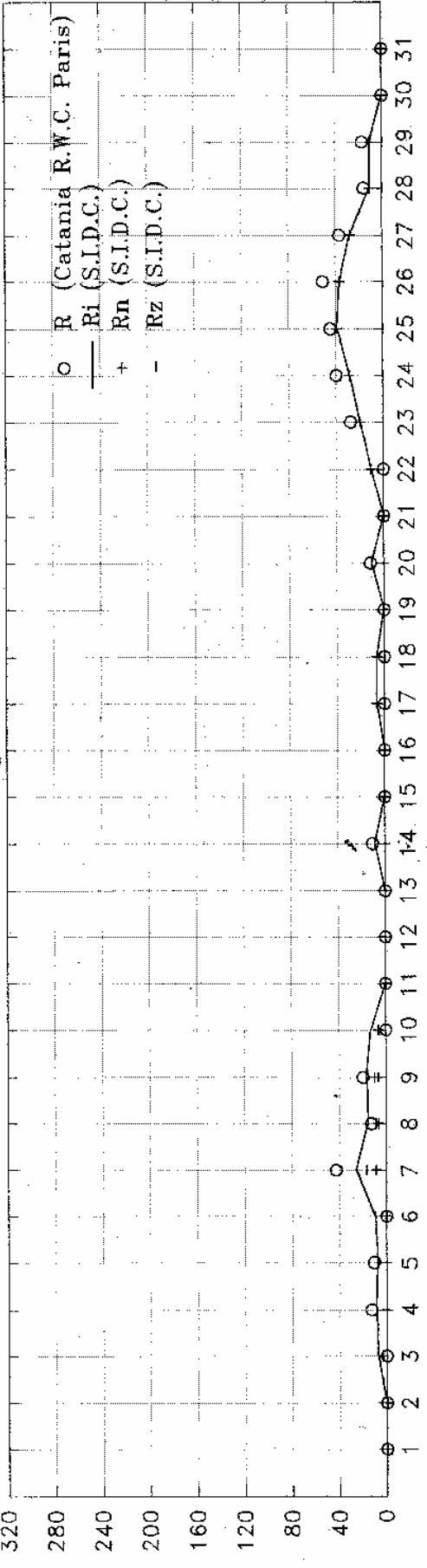
Geomagnetic A.K. Index



S.10  
10 Cm. Solar Radio Flux



R.  
Relative Sunspot Numbers



Rimax 39  
Jul. 25  
Rimin 0  
Jul. 30

Rigem.  
10.5

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

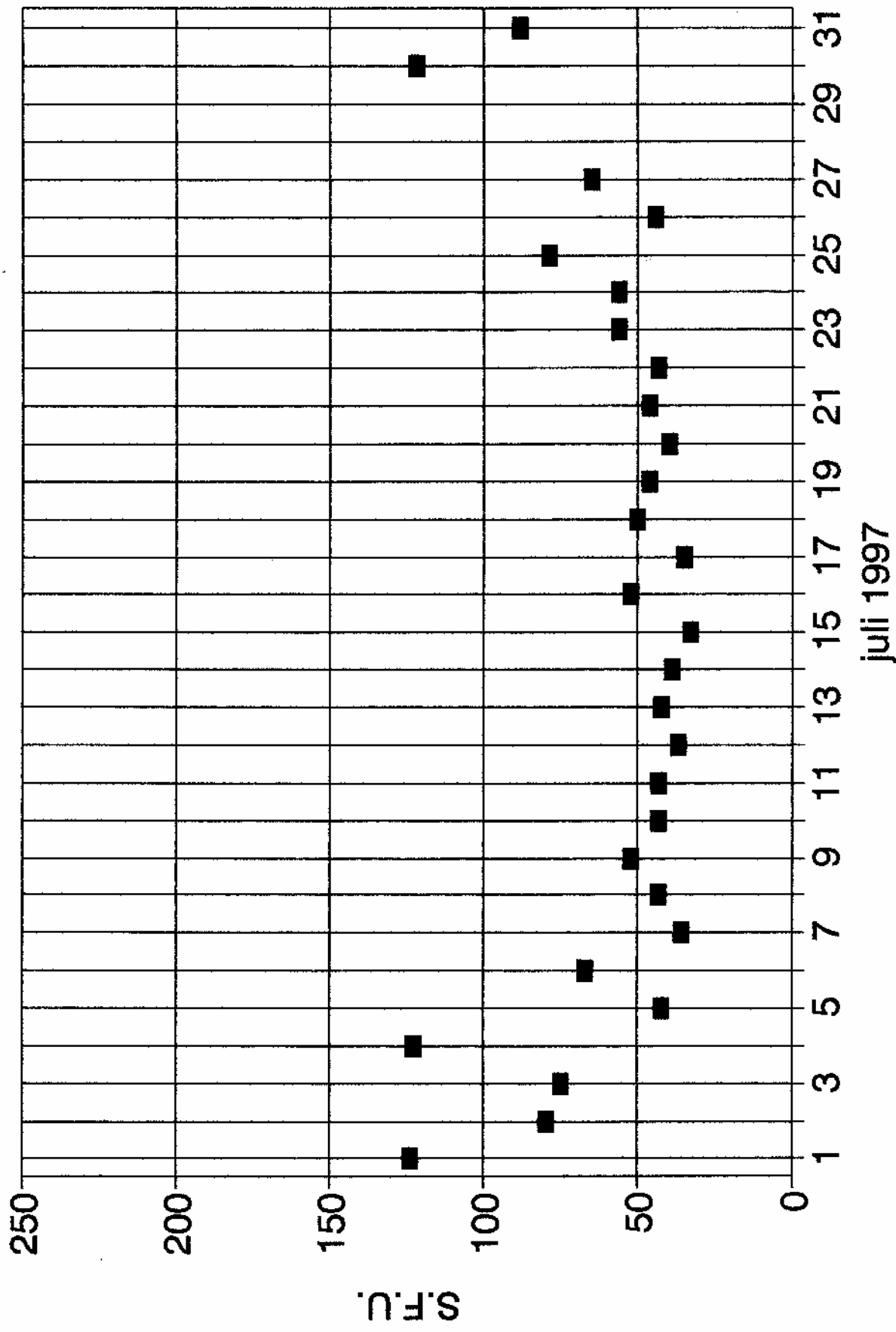
(Hemispheric sunspot numbers)

juli 1997

Day	S.I.D.C.		Baister		Groenew.		Scholten		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0					0	0		
3	4	4	0	0					0	12	0	0
4	0	9	0	11					0	13	0	12
5	0	8	0	11	0	0			0	11	0	0
6	0	10	0	0	0	0			0	0	0	0
7	9	17	11	35					14	33	0	25
8	7	9			0	0			0	14	0	0
9	10	7							20	0		
10	7	6	0	0					0	0	0	0
11	0	0	0	0					0	0	0	0
12	0	0	0	0	0	0			0	0	0	0
13	0	0	0	0					0	0	0	0
14	0	9	0	0	0	0			0	12	0	0
15	0	0	0	0					0	0	0	0
16	0	0	0	0	0	0			0	0		
17	7	0	0	0					0	0		
18	7	0	11	0					0	0		
19	0	0	0	0	0	0			0	0	0	0
20	0	11	0	12					0	13	0	12
21	0	0							0	0		
22	11	0	11	0					22	0		
23	20	0	32	0	29	0			34	0	35	0
24	29	0							49	0		
25	39	0	45	0					47	0		
26	37	0	53	0					45	0	32	0
27	28	0							24	0		
28	11	0	0	0	0	0			0	0	0	0
29	11	0	0	0					0	0	0	0
30	0	0	0	0					0	0	0	0
31	0	0	0	0					0	0		

# RADIOFLUX van de ZON op 1421 MHz

Radio Observatorium Den Helder





# Bulletin Werkgroep Zon Augustus 1997

NVWS Werkgroep Zon, Secretariaat: Veeningenburg 36, 2804 WZ Gouda, Tel: 0182-539082

## Zonnevlekkengetallen (Sunspot numbers)

Day	Bals	Gr 5	Groe	Iden	In 9	In 4	Kroe	Scho	vSio	Sp 7	Vers	Zans	Zijle
1	0				0				0				0
2	11	0			0			0	11	0			16
3	14	15			0			13	16	13			12
4	12	12			11			12	15	11			12
5	35	12			11			12	13	13			12
6	49	45	32		13			42	45	45		27	30
7	65	49	42		12			44	48	49	29	41	41
8	58	34	55		12			54	44	46	27	32	50
9	42	28	40		12			40	27	48	55	29	52
10	24	24	23		11			14	22	28	17	11	28
11	47	51	47		0			23	47	25	48	47	36
12	70	57	67	38	11			51	55	73	52	51	38
13	60	60	51		45	45		50	57	59	52	56	56
14	49	46			22			48	48	49	22	48	
15	37	36	34		22			24	37	47	22		
16	25	24	22		11			22	24	22	22		21
17	24	23	22		11			11	11	23	11	11	11
18	12	12	11		11			11	11	12	11	11	11
19	12	12	11		11			11	11	12	11	11	12
20	11	11	11		11			11	11	11	11	11	11
21	11	12	11		11			11	11	12	11	11	11
22	0	0	0		0			0	0	0	0	0	0
23	0	0	0		0			0	0	0	0	0	0
24	0	0	0		0			0	0	0	0	0	0
25	27				0			26	14				
26		18			0			19					
27	32				12	12		19		19		16	
28		28			12								
29	43				14			36	33	44	24	29	24
30	59				12			51	59	46	22	25	42
31	70	40			14								
observ	28	18	24	8	23	4	17	14	27	26	18	20	21
k	0.80	0.99	0.97	1.33	2.21	1.44	1.17	1.12	0.94	0.94	1.40	1.20	1.01
st.dev.	0.18	0.28	0.24	0.48	1.10	0.60	0.37	0.31	0.25	0.24	0.50	0.38	0.32
std./k	0.23	0.29	0.25	0.36	0.50	0.42	0.32	0.28	0.27	0.26	0.36	0.32	0.32

Observers	[...]	= Reflector, d = ... mm	[f...]	= Reflector, d = ... mm
Bals	= H.A.M. Baister [70]	Jn 9 = D. Jannink [9]	vSio	= B. van Slooten [90]
Gr 5	= Mw G. Gravers [50]	Jn 4 = D. Jannink [40]	Sp 7	= T. Spaninks [75]
Groe	= A. Groenewegen [102]	Kroe = K. Kroesen [102]	Vers	= D. Verschuuren [Rf 80]
Iden	= J.A. Idenburg [70]	Scho = A. Scholten [60]	Zans	= W. Zanstra [Rf 155]
			Zijle	= W.A. Zijlema [90]

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

1997 AUGUST R<sub>IM</sub> = 24.7

Date Rf PPSI 600 2800 COS SFI XI AK SEA MAG

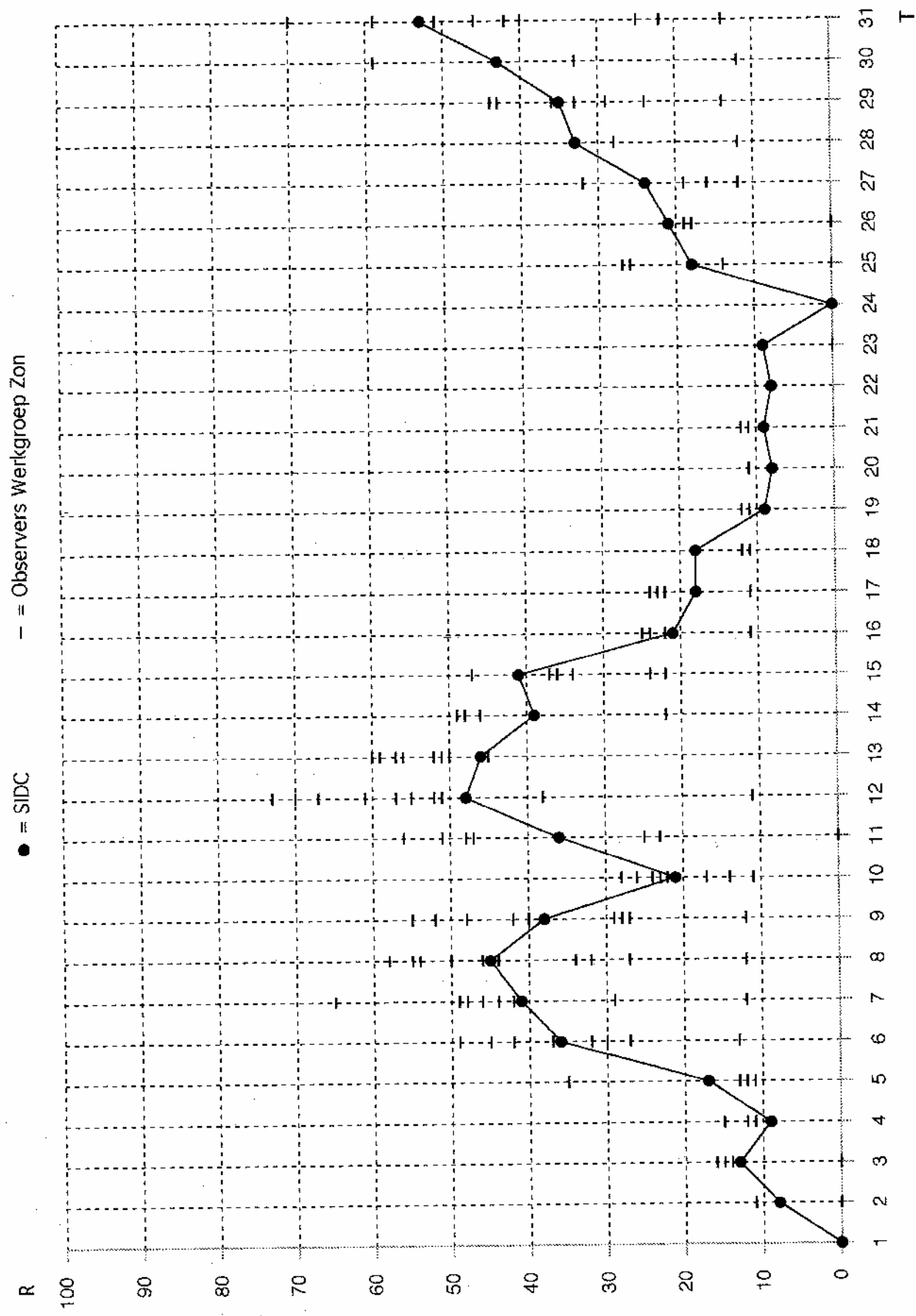
31	0	0	32	070	1022	0	0/0	19				
1	0	0	30	071	1018	0	0/0	8				
2	8	0	31	071	1017	0	0/0	6				
3	13	3	32	072	1011	3	0/0	24				
4	9	4	32	073	1017	0	0/0	8				
5	17	5	32	075	1016	0	0/0	6				
6	36	17	34	077	1023	1	0/0	4				
7	41	17	32	078	1025	8	0/0	8				
8	45	14	-	078	1016	4	0/0	7				
9	38	8	32	078	1013	3	0/0	12				1632
10	21	4	33	078	1013	0	0/0	8				
11	36	18	33	080	1015	0	0/0	8				
12	48	18	34	081	1018	3	0/0	8				
13	46	23	34	082	1022	2	0/0	15				
14	39	20	35	080	1021	1	0/0	15				
15	41	22	36	078	1023	0	0/0	10				
16	21	17	35	078	1022	0	0/0	6				
17	18	16	35	076	1024	0	0/0	14				
18	18	15	35	076	1027	0	0/0	6				
19	9	14	35	074	1025	0	0/0	4				
20	8	10	35	075	1026	0	0/0	7				
21	9	8	34	075	1025	0	0/0	11				
22	8	3	34	076	1025	0	0/0	10				
23	9	0	34	077	1022	0	0/0	5				
24	0	0	34	078	1024	0	0/0	8				
25	18	1	34	082	1029	2	0/0	4				
26	21	8	35	084	1023	4	0/0	2				
27	24	9	35	082	1025	0	0/0	4				
28	33	22	36	091	1028	0	0/0	18				
29	35	46	37	092	1030	4	1/0	14				
30	43	-	38	092	1024	3	0/0	14				
31	53	49	38	096	1020	8	0/0	4				

We are now definitely installed in the ascent phase of cycle 23. Though the monthly sunspot number has reached its maximum value since March 95, the level of the solar activity may be considered as low this month.

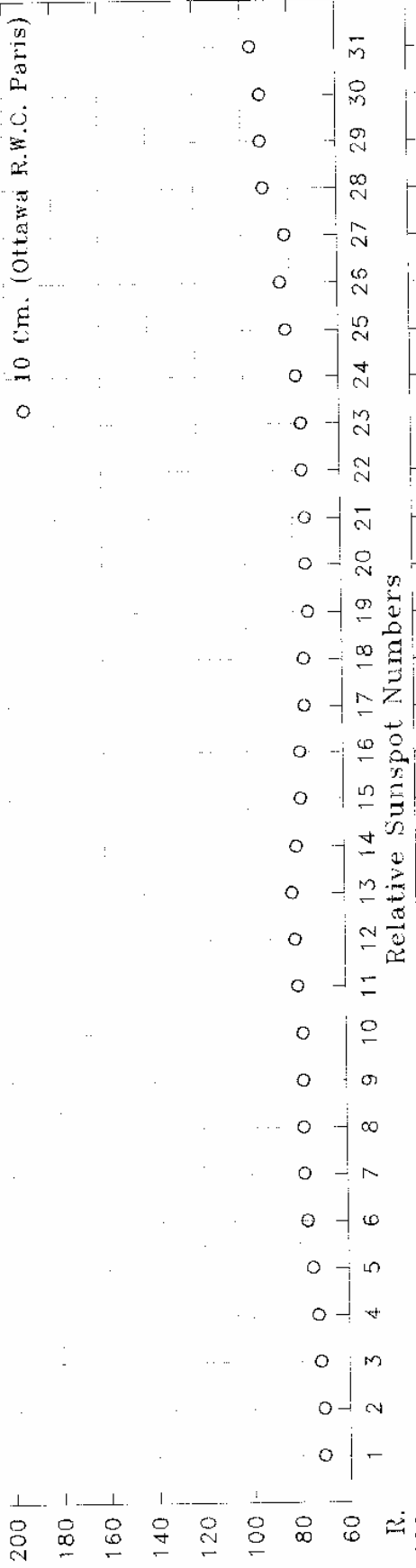
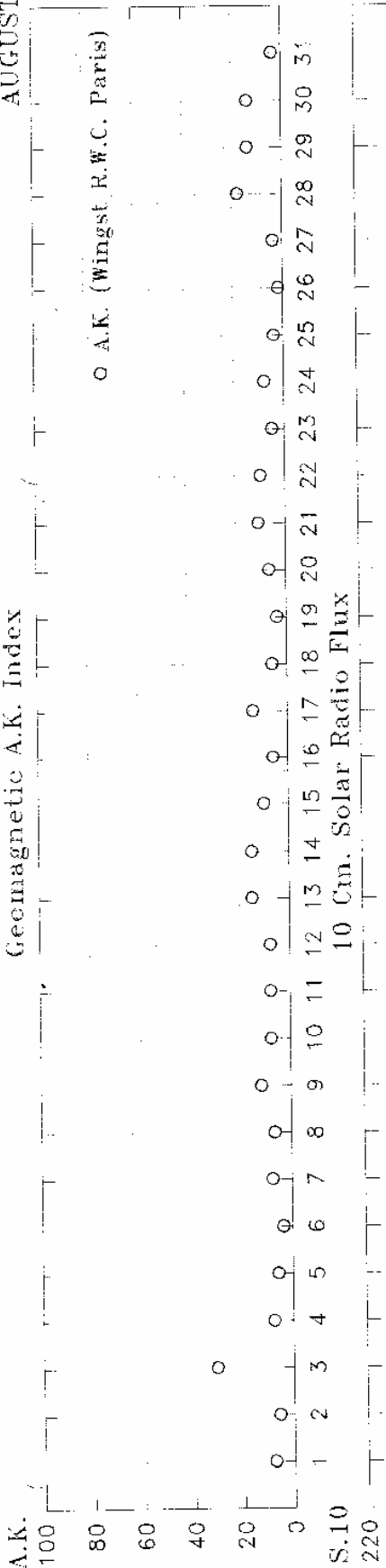
R<sub>f</sub>, R<sub>IM</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10<sup>-5</sup> w/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 MHz solar flux from Aumont station (Belgium).  
 2800: 2800 MHz solar flux from Ottawa (origin: Ursigrams - UESOI group 2). The 10.7cm flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrams - UGOSF Kerguelen).  
 SFI: Solar Flare Index from the S.I.D.C. (origin: Ursigrams - UESOR group 3).  
 XI: X-flares index from the Ursigrams (M-flares/X-flares) (origin: Ursigrams - UESOR group 2); UESOI group 5).  
 AK: planetary geomagnetic index from Uccle & Hainin (Royal Observatory, Belgium).  
 SEA: sudden enhancements of atmospheric pressure from Uccle & Hainin (Royal Meteorological Institute, Belgium).  
 MAG: magnetic events from Bourbes station (Royal Meteorological Institute, Belgium).  
 Remarks: sid (sudden ionospheric disturbance); sac (sudden storm commencement); mgst (magnetic storm); sfc (solar flare effect); s-1-2-3-4 (class of flares); II-IV (radio-burst); I (ten cm radio-burst); p (proton flare); p (proton event); gte (ground level event); neutron event); si (sudden impulse); F (forbush); SFI Evaluation (1 x SFI-10 x 10<sup>-11</sup> x 10<sup>-11</sup>).

● = SIDC

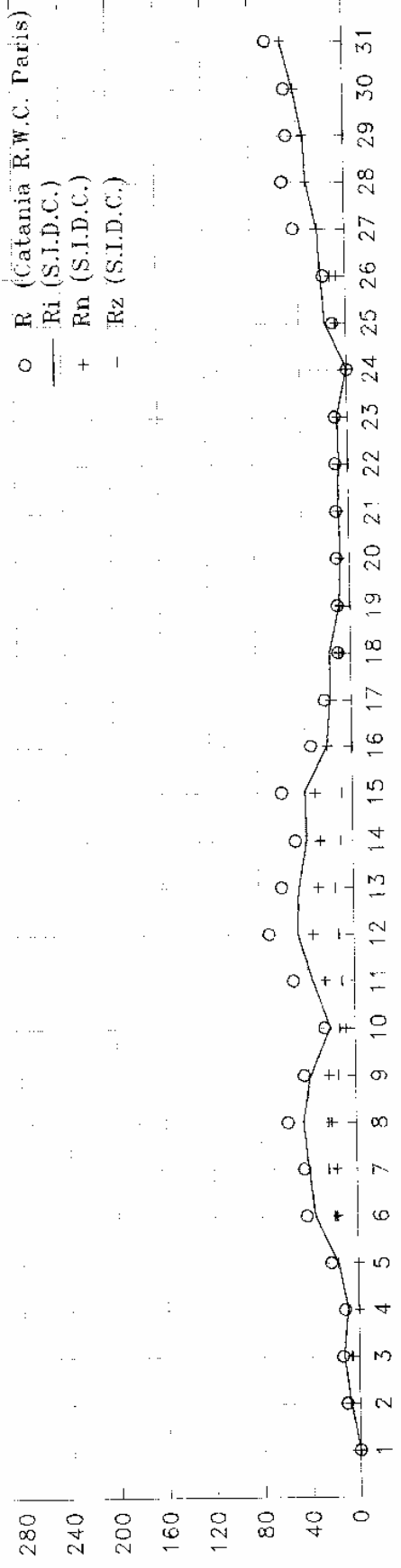
-- = Observers Werkgroep Zon



Geomagnetic A.K. Index



Rimax 53  
Aug. 31  
Rimin 0  
Aug. 1,24



Rigem.  
24,7

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

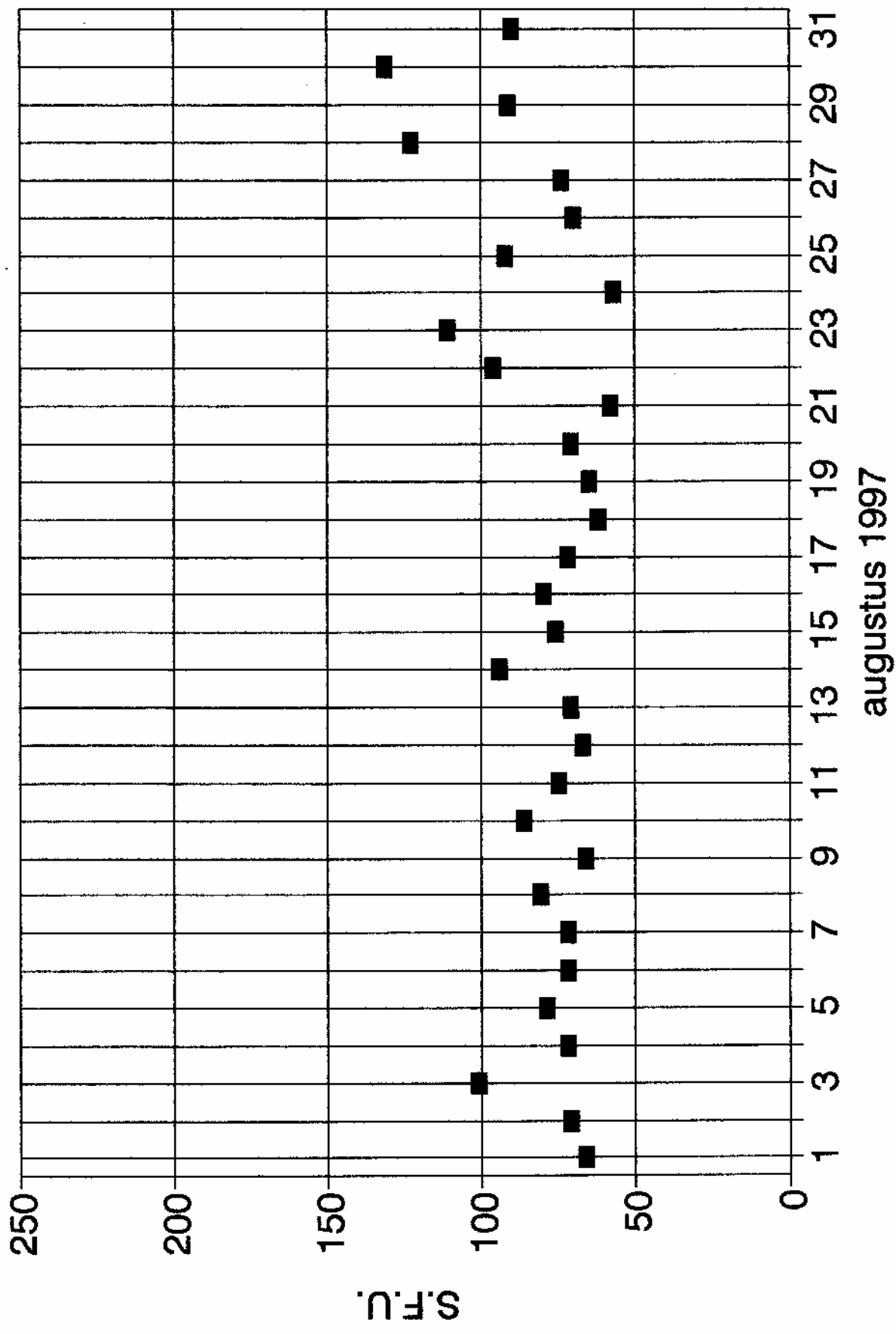
(Hemispheric sunspot numbers)

augustus 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Scholten		v. Slooten		Spaninks		
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	
1	0	0	0	0									0	0			
2	8	0	0	11	0	0						0	0	11	0	0	0
3	6	7	0	14	0	15						0	13	0	16		
4	0	9	0	12	0	12								0	12	0	15
5	0	17	11	24	0	12						0	12	0	13	0	13
6	17	19	24	25	21	11								19	23	22	23
7	17	24	25	40	17	25						19	29	19	27	22	27
8	21	24	28	30	27	28								14	30	29	17
9	23	15	27	15	25	15						13	14	29	19	28	27
10	8	13	11	13	11	12			0	11		11	11	12	16	0	17
11	25	11	36	11	35	12						25	22	14	11	36	12
12	35	13	56	14	52	15	38	0				30	25	55	18	38	14
13	30	16	41	19	34	17			33	12		23	27	38	19	37	22
14	28	11	35	14	34	12								36	12	36	13
15	32	9	37	0	34	0								37	0	47	0
16	21	0	25	0	22	0	11	0						24	0	22	0
17	18	0	24	0	22	0	11	0				11	0	23	0	23	0
18	10	8	12	0	11	0	11	0				11	0	11	0	12	0
19	9	0	12	0	11	0								11	0	12	0
20	8	0	11	0	11	0	11	0						11	0	11	0
21	9	0	11	0	11	0	11	0	11	0				11	0	12	0
22	8	0															
23	9	0	0	0	0	0										0	0
24	0	0	0	0	0	0	0	0				0	0	0	0	0	0
25	9	9	15	12			0	0						15	11	14	0
26	13	8			18	0								19	0		
27	24	0	32	0					12	0				19	0	19	0
28	33	0			28	0											
29	35	0	43	0								36	0	33	0	44	0
30	43	0	59	0													
31	53	0	70	0								51	0	59	0	46	0

# RADIOFLUX van de ZON op 1421 MHz

Radio Observatorium Den Helder







# Bulletin Werkgroep Zon

September 1997

NVWS Werkgroep Zon, Secretariaat: Veenenburg 36, 2804 WZ Gouda, Tel: 0182-530082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr 6	Groel	Iden	Jn 9	Jn 4	Kroe	Scho	vSlo	Sp 7	Vers	Zans	Zijle
1	52		52	14				51				36	
2	53	56					31	53		29	24	30	
3			25	12				55				29	
4			25	23	23			40				27	
5						25						45	58
6	51	59			25	36	49	47	65	56	44	55	
7	78				39			65	66			61	
8			70	51				81			74	60	
9			56	42		78	94	101		97	61		
10			55	44	42			92					
11					44						57		
12			58	43				78	69			56	
13		84	72	51		55	69	80	77	61	62	61	
14	70	72	58	37			65	76	47	48	49		
15	70		53	39			64			49			
16	63	53	57	26		58	45	57		45	48	47	
17	52	40	40	25	11			43	31	30			
18	33	30	30	11	11	26		32		27			
19	14	19	13	12	12	13	15	15	14				
20								14					
21	26		26	13	11	13	14	39	15	12	13	15	
22	54	44	37	0	28			47	47	43	28		
23	36	31	27	23				37	37	42			
24											32		
25	59	36	33	26	26	38		55	55	42	38		
26	23		20	17	14			42	25	17	17		
27		21			12			19	22				
28	17	20			24			15	27			14	13
29	16				11			13					
30					11			24					
Observ	16	8	13	16	29	5	11	8	26	15	15	20	7
k	1.02	0.98	1.23	1.44	2.26	2.10	1.36	1.34	1.03	1.15	1.47	1.47	1.41
sl dev.	0.11	0.20	0.18	0.35	0.95	0.56	0.42	0.40	0.19	0.32	0.35	0.27	0.28
sl d/k	0.11	0.20	0.15	0.24	0.42	0.27	0.31	0.30	0.18	0.28	0.24	0.18	0.20

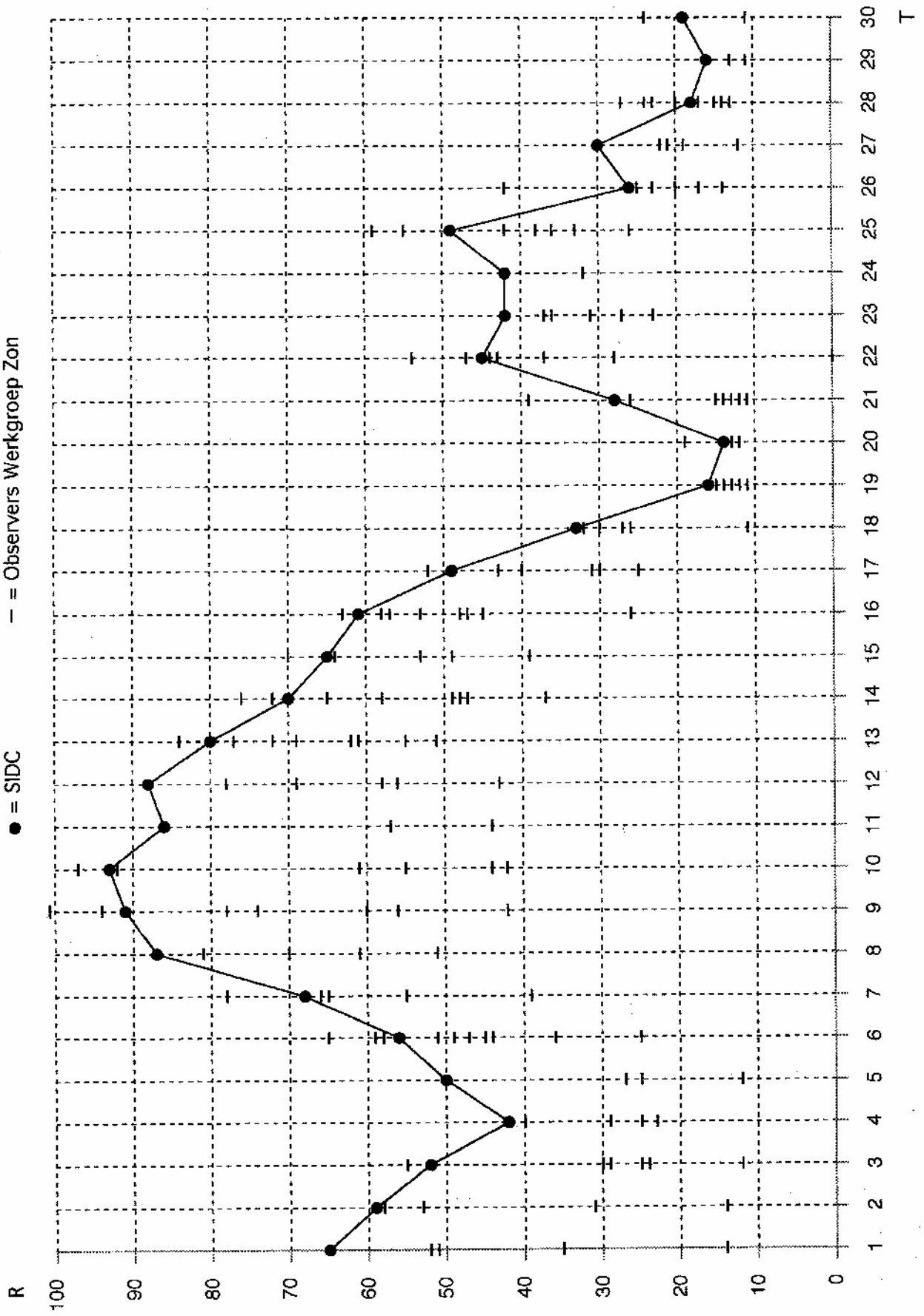
Observers	[...] = Refractor, d = ... mm	[Rf. ] = Reflector, d = ... mm
Bals = H.A.M. Balster [70]	Jn 9 = D. Jannink [9]	vSlo = B. van Slooten [90]
Gr 6 = Mw.G. Gravers [60]	Jn 4 = D. Jannink [40]	Sp 7 = T. Spaninks [75]
Groes = A. Groenewegen [102]	Kroe = K. Kroesen [102]	Vers = D. Verschuuren [Rf 80]
Iden = J.A. Idenburg [70]	Scho = A. Scholten [60]	Zans = W. Zansstra [Rf 155]
		Zijle = W.A. Zijlerna [90]

S.I.D.C. SUMMARY OF THE URSIGRAMS												
1997 SEPTEMBER												R <sub>M</sub> = 51.3
Date	R <sub>f</sub>	PPSI	600	2800	COS	SFI	XI	AK	SEA	MAG		
31	53	49	38	095	1020	8	0/0	4				
1	65	41	38	093	1019	1	0/0	6				
2	59	60	36	092	1025	16	1/0	6				1N(1225)SSC(2300)
3	52	21	37	093	1024	16	0/0	25				
4	42	26	38	093	1014	3	0/0	18				
5	50	39	40	096	1019	5	0/0	18				
6	56	47	40	098	1022	1	0/0	11				
7	68	71	42	102	1020	12	0/0	5				
8	87	94	41	119	1020	8	1/0	16				1N(0945)
9	91	155	40	116	1019	26	0/0	17				
10	93	175	41	115	1022	5	0/0	23				
11	86	169	41	109	1016	4	0/0	10				
12	88	154	42	109	1023	8	0/0	20				
13	80	109	40	108	1018	6	0/0	10				
14	70	99	40	103	1018	16	0/0	16				
15	65	81	40	098	1018	15	0/0	11				
16	61	60	38	095	1016	2	0/0	6				
17	49	32	38	093	1015	3	2/0	11	1413			SN(1143)SF(1803)
18	33	21	37	088	1008	0	0/0	20				
19	16	16	37	088	1012	0	0/0	5				1F(0139)
20	14	9	38	088	1015	1	0/0	7				
21	28	5	38	085	1020	0	0/0	10				
22	45	13	38	089	1030	12	0/0	13				
23	42	28	38	092	1019	8	0/0	6				
24	42	40	40	093	1024	25	2/0	5	1102			1B(0243)SF(1057)
25	49	42	40	089	1023	13	0/0	4				1N(1140)
26	26	38	42	089	1021	1	0/0	6				
27	30	30	41	088	1019	0	0/0	17				
28	18	26	41	087	1016	0	0/0	12				
29	16	14	40	090	1010	2	0/0	7				
30	19	11	40	088	1015	0	0/0	12				mgst(0058)

Moderate solar activity, low to moderate geomagnetic activity. A significant jump in the monthly sunspot number has been observed this month, affecting principally the south hemisphere of the Sun.

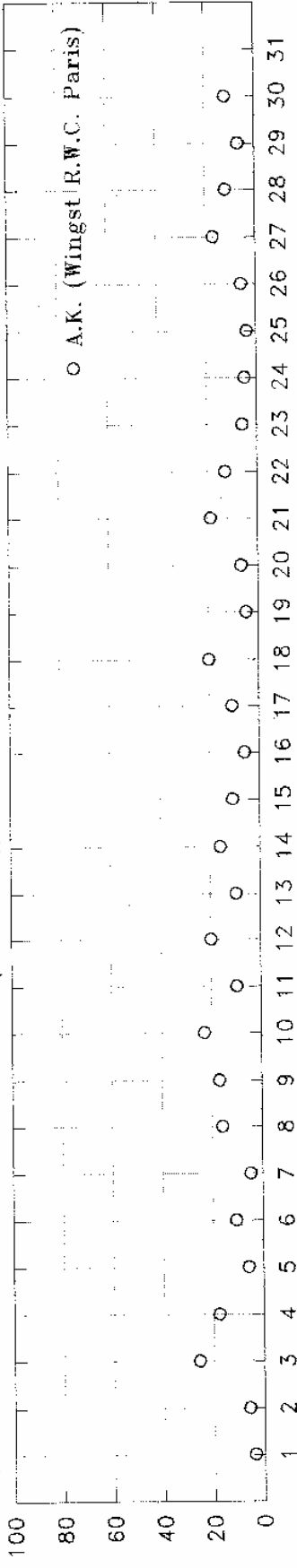
R<sub>f</sub>, R<sub>M</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10.5 μm: the quantity to subtract from the mean solar constant.  
 600: 600-MHz solar flux from Huairun station (Belgium).  
 2800: 2800-MHz solar flux from Uccle (UrSIGRAMS - UGE01 group 2). The 10.7cm Flux data are provided as a service of the National Research Council of Canada (UrSIGRAMS - UG05E (Kerguelen)).  
 COS: thousands of the cosmic ray counts (origin: UrSIGRAMS - UG06E group 3).  
 SFI: from October 1992, Solar Flare Index from the S.I.D.C.  
 XI: X-flares index from the UrSIGRAMS (M-flares/X-flares) (origin: UrSIGRAMS - UGE02 group 3).  
 AK: planetary geomagnetic of atmospheric from Kingst, Germany (origin: UrSIGRAMS - UGE03 group 5).  
 SEA: sudden enhancements of atmospheric from Uccle & Huairun (Royal Observatory, Belgium).  
 MAG: magnetic events from Huairun station (Royal Meteorological Institute, Belgium).  
 Remarks: s:10 (sudden ionospheric disturbance); ssc (sudden storm commencement); mst (magnetic storm); sfo (solar flare effect); s-1-2-3-4 (class of flares); I:1-IV (radio-burst); T (ten min radio-burst); P (proton flare); P (proton event); i:1-10 (ground level event); n: neutron event; ai (sudden impulse); F (forbush); SFI Evaluation (1 x 10<sup>11</sup> x 10<sup>10</sup> x 10<sup>9</sup> x 10<sup>8</sup>).

● = SIDC  
- = Observers Werkgroep Zon



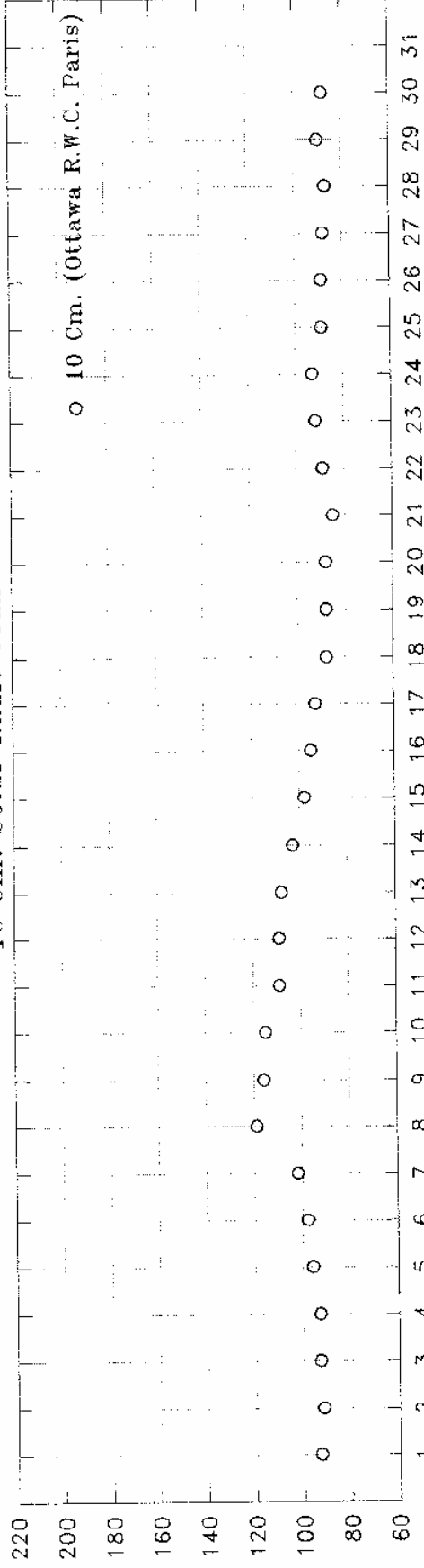
Geomagnetic A.K. Index

A.K.



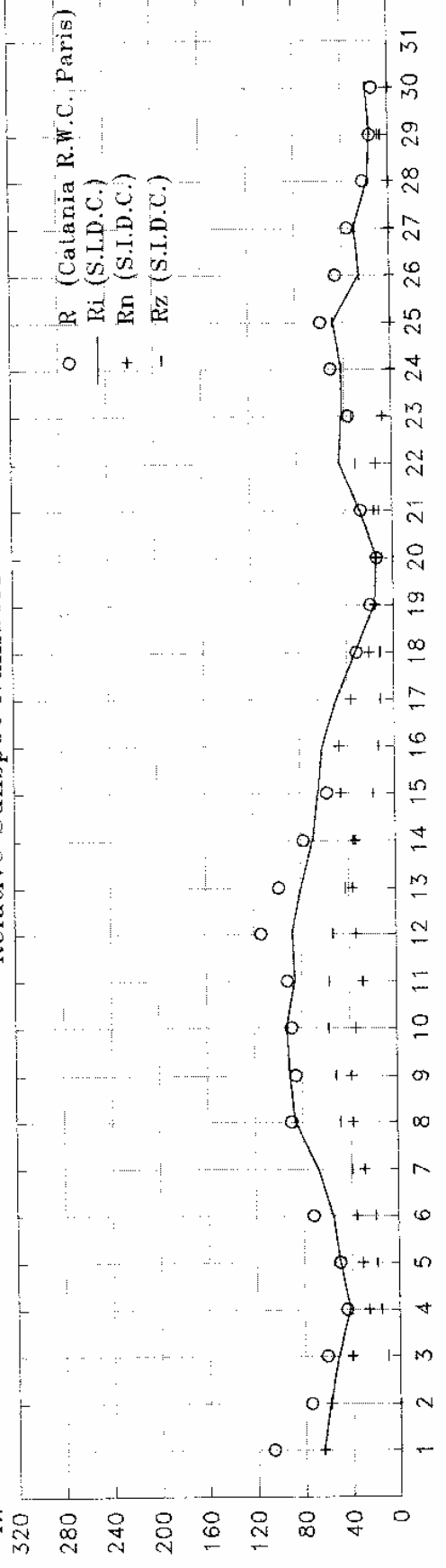
10 Cm. Solar Radio Flux

S.10



Relative Sunspot Numbers

R.



Rimax 93  
Sep. 10  
Rimin 14  
Sep. 20

Rigem.  
51.3

# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

(Hemispheric sunspot numbers)

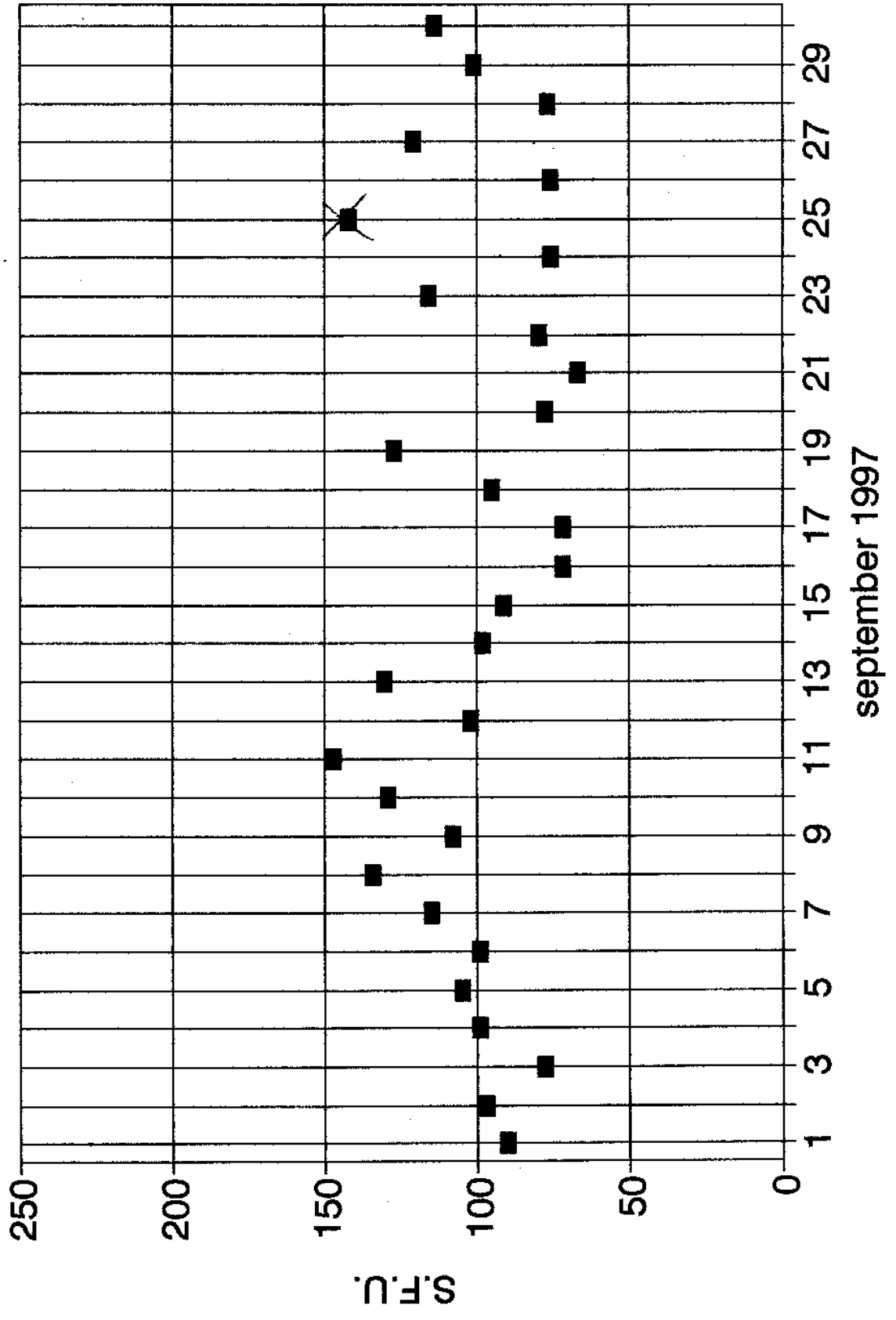
September 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Scholten		v. Slooten		Spaninks	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	65	0	52	0			52	0					51	0		
2	59	0	53	0							31	0	53	0		
3	41	11					25	0					42	13	29	0
4	26	16					11	14	11	12			25	15		
5	31	19														
6	36	20	30	11					23	13	29	18	44	21	30	26
7	29	39									29	36	31	35		
8	38	49					38	32					35	46		
9	39	52					19	37			43	51	46	55		
10	35	58			19	36			14	28			33	59	35	62
11	29	57														
12	34	54					26	32					28	50	19	50
13	37	43			34	38					33	36	38	42	35	42
14	34	36	39	31	30	28							31	34	36	40
15	46	19	51	19			38	15					46	18		
16	47	14	48	15	38	15	44	13			33	12	43	14		
17	37	12	36	16	28	12	27	13							30	13
18	21	12	21	12	16	14			11	0			19	13		
19	16	0			12	0	12	0			15	0	15	0	14	0
20	14	0	14	0	13	0							14	0		
21	16	12	15	11	15	11	13	0			14	0	17	22	15	0
22	14	31	15	39	12	32	12	25					12	35	13	34
23	8	34	0	36	0	31	0	27					0	37	0	37
24	0	42														
25	0	49	0	59	0	36	0	33	0	26			0	55	0	55
26	0	26	0	23	0	20	0	17					0	42	0	25
27	0	30											0	19	0	22
28	0	18	0	17			0	23					0	15	11	16
29	7	9	0	16									0	13		
30	0	19											0	24		



# RADIOFLUX van de ZON op 1421 MHz

Radio Observatorium Den Helder





# Bulletin Werkgroep Zon

Oktober 1997

NVWS Werkgroep Zon, Secretariaat: Veenenburg 36, 2804 WZ Gouda, Tel. 0182 539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr 6	Groe	Iden	Jun 9	Jun 4	Kroe	Scho	vSio	Sp 7	Vers	Zans	Zijle
1													
2	24	24	24	11					27			13	
3	40		36						24				
4			36						25			24	
5													
6	23		23	0					24	23		11	
7	23			0					24				
8													
9			28	14	0		23		27	28		0	
10	26											14	
11	29			16	12				29	30		15	
12	34	24	27	18	13				20	21		17	14
13				14					49	20		17	
14	29			13								16	
15				11			49		44			26	
16	45			49	0				43			40	
17	49								58			39	38
18		38	47	22	22	22	28	23	40	39		34	22
19	25	25							25	25		25	
20	27								26				
21	25	28	23	12	11		13		28	25		25	
22	22								12	12		11	
23									0	0		0	
24	11								11	0		0	
25													
26	38		15						13			11	
27		12	37	11	11		11		13	26		12	11
28	37	27	30	11			65		37		28	31	
29	37			37	13	14			36	35		28	43
30	41			40	12				47	35		36	46
31	40			28	37	13			41	37		33	
observ	19	4	9	14	23	3	6	2	23	16	6	23	4
k	0.80	0.87	1.15	1.01	2.22	2.06	1.28	1.02	0.90	0.95	1.13	1.25	1.69
sl.dav.	0.14	0.17	0.59	0.37	0.58	0.89	1.00	0.93	0.37	0.28	0.32	0.52	0.89
sl.d.v.k.	0.17	0.20	0.51	0.37	0.25	0.43	0.79	0.09	0.41	0.28	0.28	0.42	0.53

Observers	[...]	[...]
Bals = H.A.M. Balster [70]	Jun 9 = D. Jannink [9]	[RF...] = Reflector, d = ... mm
Gr 6 = M.W.G. Grovers [60]	Jun 4 = D. Jannink [40]	vSio = B. van Slooten [90]
Groe = A. Groeneweg [102]	Kroe = K. Kroesen [102]	Sp 7 = T. Spaninks [75]
Iden = J.A. Idenburg [70]	Scho = A. Scholten [60]	Vers = D. Verschuuren [R 80]
		Zans = W. Zansstra [R 155]
		Zijle = W.A. Zijlma [90]

Ucle groups	spots
2	2
2	10
2	5
2	2
2	2
2	2
2	2
2	2
2	2
2	8
2	14
3	12
3	29
3	11
2	5
2	3
1	1
0	0
0	0
1	2
1	5
2	9
2	7
2	27
2	17

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

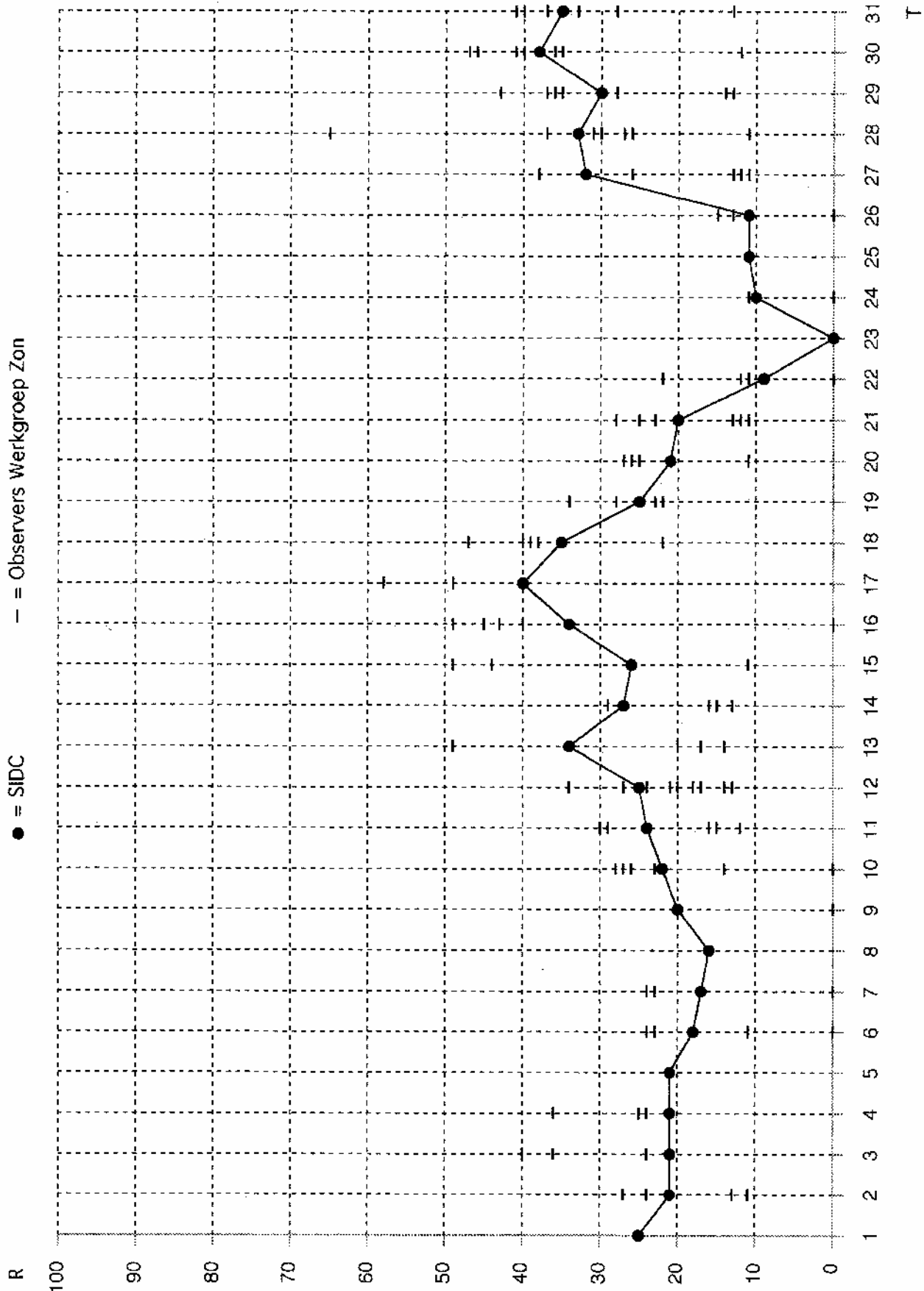
1997 OCTOBER R<sub>IM</sub> = 23.3

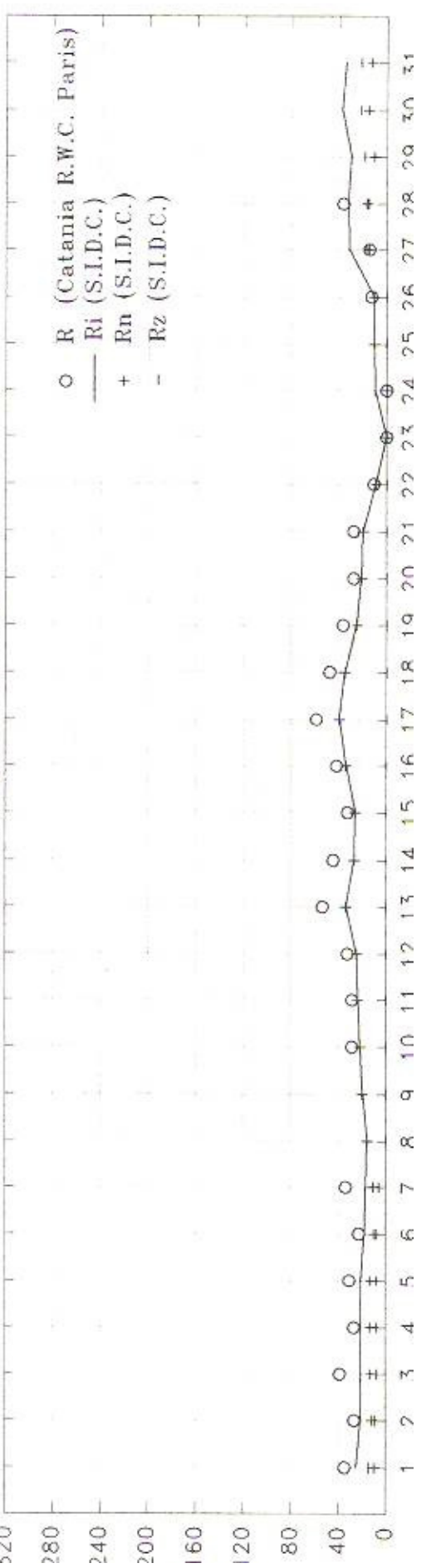
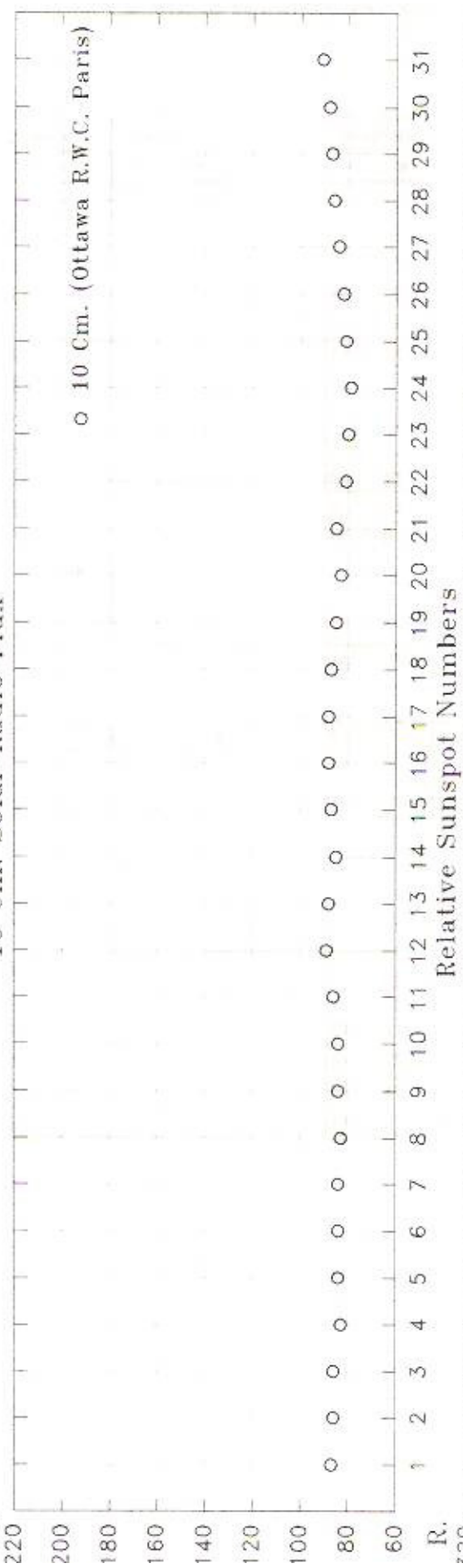
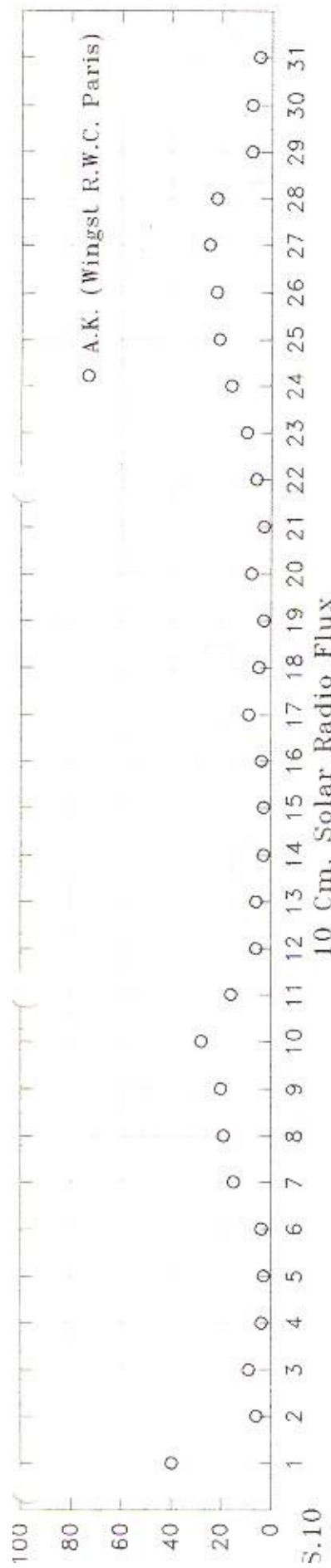
Date	Rj	PSSI	600	2800	COS	SFI	XI	AK	SEA	MAG
30	19	11	40	088	1015	0	0/0	12		
1	25	4	35	087	1004	0	0/0	40		mgst SSC (0058)
2	21	5	34	086	999	2	0/0	6		
3	21	7	34	086	1010	2	0/0	9		mgst (0350)
4	21	9	34	083	1012	0	0/0	4		
5	21	8	34	084	1012	1	0/0	4		
6	18	4	34	084	1014	0	0/0	4		
7	17	2	34	084	1008	0	0/0	15		
8	16	4	-	083	1009	0	0/0	19		
9	20	4	-	084	1013	1	0/0	20		
10	22	7	33	084	1008	1	0/0	28		mgst SSC (1614)
11	24	10	31	086	999	0	0/0	16		
12	25	11	-	089	999	0	0/0	6		
13	34	24	-	088	1012	11	0/0	6		
14	27	19	31	085	1019	1	0/0	3		
15	26	15	33	087	1015	0	0/0	3		
16	34	15	34	088	1025	1	0/0	4		
17	40	17	35	088	1019	3	0/0	9		
18	35	18	35	087	1024	0	0/0	5		
19	25	16	34	085	1021	0	0/0	3		
20	21	15	34	083	1022	0	0/0	8		
21	20	15	34	085	1021	1	0/0	3		
22	9	3	-	081	1017	0	0/0	6		
23	0	0	35	080	1014	0	0/0	10		
24	10	0	35	079	1008	0	0/0	16		
25	11	1	36	081	995	0	0/0	21		mgst (0804)
26	11	3	37	082	996	0	0/0	22		mgst SSC (1050)
27	32	4	35	084	999	1	0/0	25		
28	33	12	34	086	1000	11	0/0	22		
29	30	18	34	087	1005	0	0/0	8		
30	38	32	34	088	1014	2	0/0	8		
31	35	43	34	091	1017	1	0/0	5		

Low solar activity increasing at the end of the month. Geomagnetic activity: low to minor storm conditions.

R<sub>j</sub>: Provisional International Sunspot Numbers from the S.I.D.C.  
PSSI: Proton flux index from the S.I.D.C. in 10<sup>-5</sup> w/m<sup>2</sup> at the quantity to subtract from the mean solar constant.  
600: 600 Mhz solar flux from Human station (Belgium).  
2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrans - URSIGRAMS - UGE01 group 2). The 10.7cm flux data are provided as a service of the National Research Council of Canada.  
COS: thousands of the cosmic ray counts (origin: Ursigrans - UG05E Kerguelen).  
SFI: From October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrans - UGE01 group 3).  
XI: X-ray index from the Ursigrans (M-flares/X-flares) (origin: Ursigrans - UGE01 group 5).  
AK: planetary geomagnetic index from Wingst, Germany (origin: Ursigrans).  
SEA: sudden enhancements of atmospheric from Uccle & Humain (Royal Observatory, Belgium).  
MAG: magnetic events from Observatoire de Bruxelles (Royal Meteorological Institute, Belgium).  
Remarks: sid (sudden ionospheric disturbance); sac (sudden storm commencement); mgst (magnetic storm); ste (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); gte (ground level event); neutron event); si (sudden impulse); F (Forbush); sfi evaluation (1 x Sm-10 x n<sup>3</sup> x 100 x n<sup>2</sup>).

flux gemidd 2162 = 77.1  $\rightarrow F = 0.0 \frac{0.150}{97.1} = 2.51$







# Zonnevlekkengetallen noordelijk- en zuidelijk halfrond

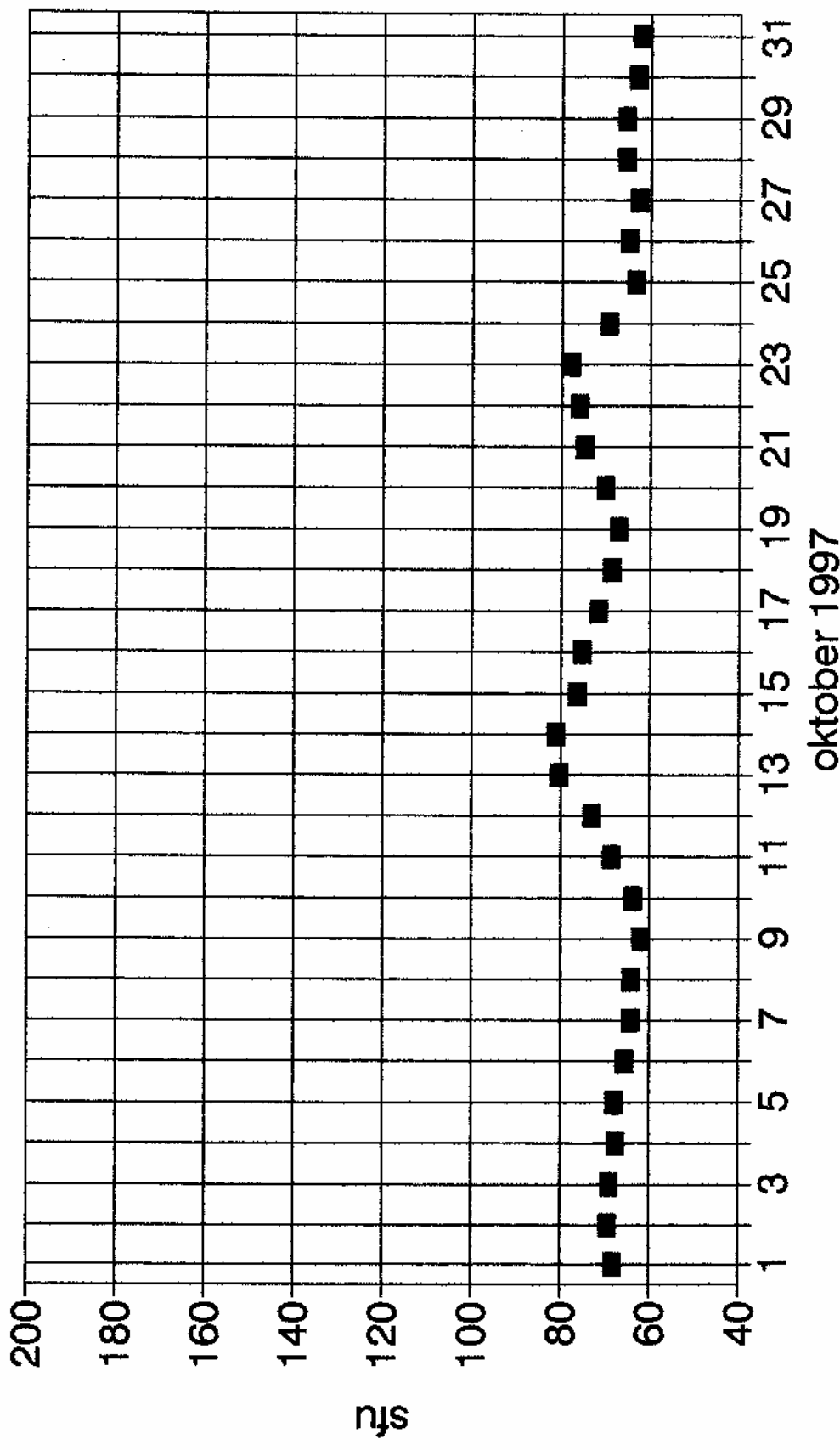
(Hemispheric sunspot numbers)

oktober 1997

Day	S.I.D.C.		Balster		Groenew.		Idenburg		Jannink 4		Schoften		v. Slooten		Spaninks		Zanstra	
	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs	Rn	Rs
1	10	15																
2	12	9			13	11	12	12					16	11			0	13
3	13	8	28	12			24	12					13	11				
4	13	8			13	11	24	12					14	11				
5	13	8																
6	10	8	11	12			12	11					12	12	11	12	0	11
7	11	6	11	12									13	11				
8	16	0																
9	20	0															0	0
10	22	0	26	0	28	0	14	0			23	0	27	0	28	0	14	0
11	24	0	29	0			16	0					29	0	30	0	15	0
12	25	0	34	0	27	0	18	0					20	0	21	0	17	0
13	34	0											49	0	20	0	17	0
14	27	0	29	0													15	0
15	26	0											44	0			26	0
16	34	0	45	0			25	24							43	0	40	0
17	40	0	49	0											58	0		
18	35	0			38	0	47	0					40	0	39	0	39	0
19	25	0	25	0					11	11	23	0	25	0	25	0	34	0
20	21	0	27	0									26	0			25	0
21	20	0	25	0	23	0	12	0					28	0	25	0	25	0
22	9	0	11	11									12	0	12	0	11	0
23	0	0											0	0			0	0
24	0	10	0	11									0	11	0	0	0	0
25	11	0																
26	11	0											13	0			11	0
27	15	17	13	25	12	0			11	0			13	0	14	12	12	0
28	17	16	18	19	14	13	17	13					19	18			16	15
29	11	19	15	22			23	14	0	14			14	22	14	21	24	19
30	16	22	17	24			24	16					20	27	14	21	25	21
31	13	22	13	27	12	16	23	14					16	25	14	23	13	20

# radioflux van de zon op 1421 MHz

Radio Observatorium Den Helder



■ gemidd. 68.0 SFU



# Bulletin Werkgroep Zon November 1997

NVWS Werkgroep Zon, Secretariaat: Veenenburg 36, 2804 WZ Gouda, Tel: 0182-539082

## Zonnelekgetallen (Sunspot numbers)

Day	Base	Grce	Iden	Jh.	Sp.	Kroe	vSlo	Sp.7	Vers	Zens	Zijle
1	17						47				
2											
3	39						43	32	36		
4	66	30	18				72	18	29		
5	65						57	64			
6											
7	27										
8	23						49	54		0	
9	0						37			16	
10	21										
11										33	
12	27						12		12		
13											
14										43	
15											
16									41		29
17	67	35	30	16	15	45	40		33	21	
18	49	30	40	16		28	40		31	37	
19	52						43	42	31	39	
20	41										
21	26										
22	54						56	63			
23											
24	49									14	
25	42						24		11		
26											
27											
28											
29											
30										26	
observ	11	5	4	15	2	4	11	5	7	11	1
k	0.88	1.49	1.40	2.67	2.54	1.41	1.03	0.86	2.00	1.43	1.00
std dev	0.10	0.11	0.39	0.64	1.02	0.46	0.31	0.28	0.65	0.47	-
std rk	0.12	0.07	0.28	0.24	0.40	0.33	0.30	0.32	0.33	0.33	-

Nagekomen: A. Scholten: 17 nov. Rt=41; 19 nov. Rt=89; k=1.15; st.dev.=0.07; st.dev/k=0.06

Observers	[...] = Refractor, d = ... mm	[Rf.] = Reflector, d = ... mm
Bals = H.A.M. Balster [70]	Jn. 9 = D. Jannink [9]	Sp 7 = T. Spaninks [75]
Groe = A. Groenewegen [102]	Jh. 4 = D. Jannink [40]	Vers = D. Verschuuren [Rt 80]
Iden = J.A. Idenburg [70]	Kroe = K. Kroesen [102]	Zans = W. Zanstra [Rt 155]
	vSlo = B. van Slooten [90]	Zijle = W.A. Zijlema [90]

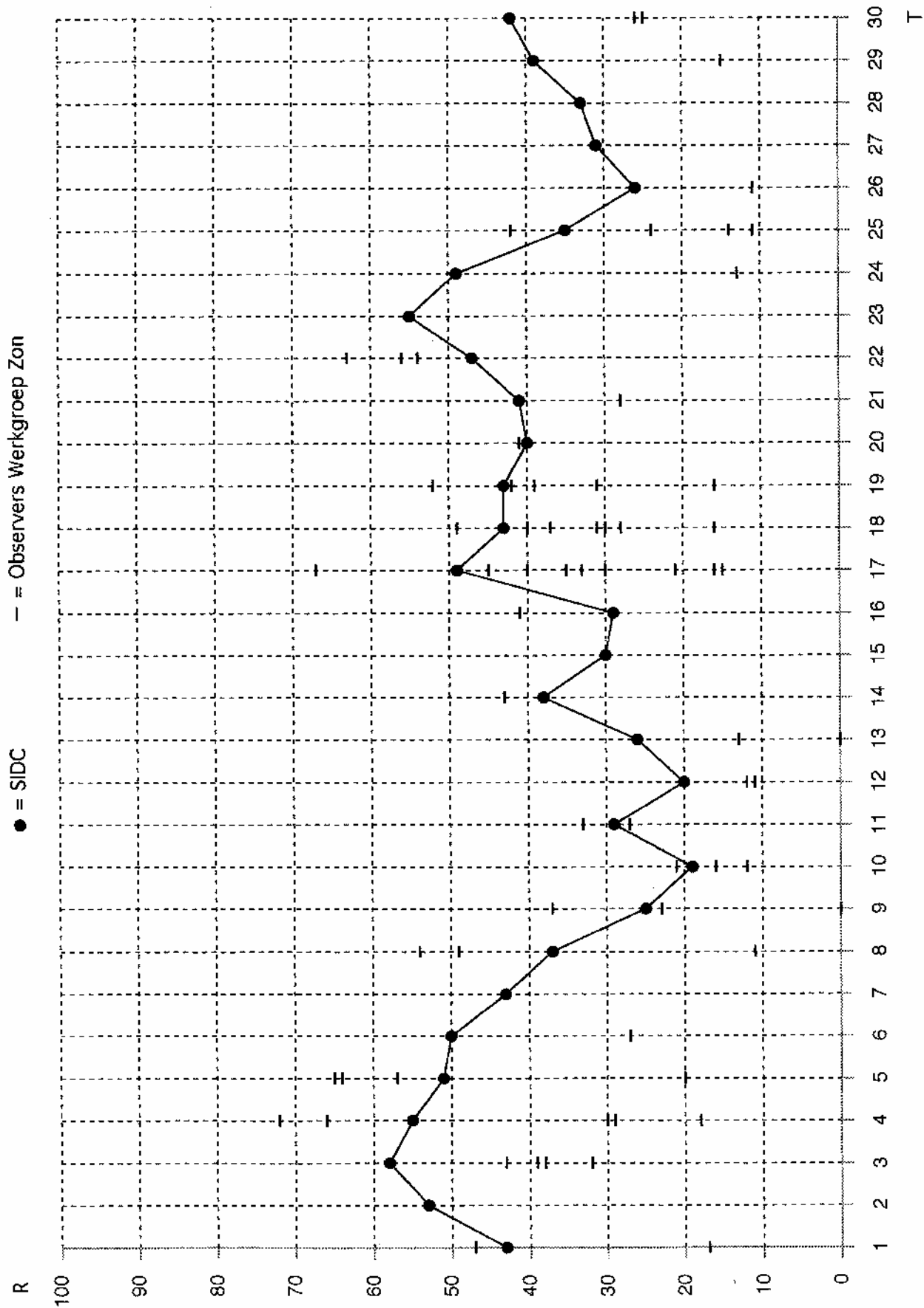
S.I.D.C. SUMMARY OF THE URSIGRAMS											
1997 NOVEMBER R <sub>IM</sub> = 39.3											
Date	R	PPSI	600	2800	COS	SFI	XI	AK	SEA	MAG	
31	35	43	34	091	1017	1	0/0	5			
1	43	46	38	093	1015	2	0/0	10			
2	53	58	38	098	1012	12	0/0	2			
3	58	79	48	110	1008	35	3/0	6	1022		s1B(0903), s(1018)
4	55	90	49	118	1015	137	2/1	10			s1P(0232), s2B, T(0552), P(0640)
5	51	95	45	114	1013	27	0/0	7			
6	50	66	76	105	1035	116	0/1	23	1152		s1d(1152), s2B, T, P(1149), P(1305) mgst ssc(2250)
7	43	-	42	094	1003	2	0/0	36			
8	37	9	40	090	999	0	0/0	6			
9	25	5	40	086	1005	1	0/0	14			
10	19	11	39	089	1013	3	0/0	10			
11	29	8	40	092	1011	7	0/0	6			
12	20	4	39	087	1013	0	0/0	2			
13	26	6	39	090	1018	2	0/0	3			
14	38	17	39	093	1021	8	0/0	18			
15	30	24	39	096	1021	11	1/0	9			
16	29	33	40	096	1018	3	0/0	10			s1N(2231)
17	49	57	40	094	1013	9	0/0	14			
18	43	72	38	092	1002	3	0/0	14			
19	43	57	40	099	996	1	0/0	3			
20	40	57	-	089	995	3	0/0	2			
21	41	57	38	096	996	13	0/0	2			
22	47	58	39	100	991	2	0/0	41			ssc(0949), forbush decrease
23	55	36	42	100	979	5	0/0	49			
24	49	23	43	103	992	12	1/0	11			
25	35	9	43	102	1001	1	0/0	2			s(1936)
26	26	5	45	108	1005	7	1/0	4			
27	31	35	46	111	1007	104	0/1	2	1310		s2B(1259)
28	33	52	48	116	1010	117	2/0	2			s2B(0453)
29	39	85	47	112	1017	105	1/0	1			s2N(2228)
30	42	96	46	112	1016	0	0/0	6			

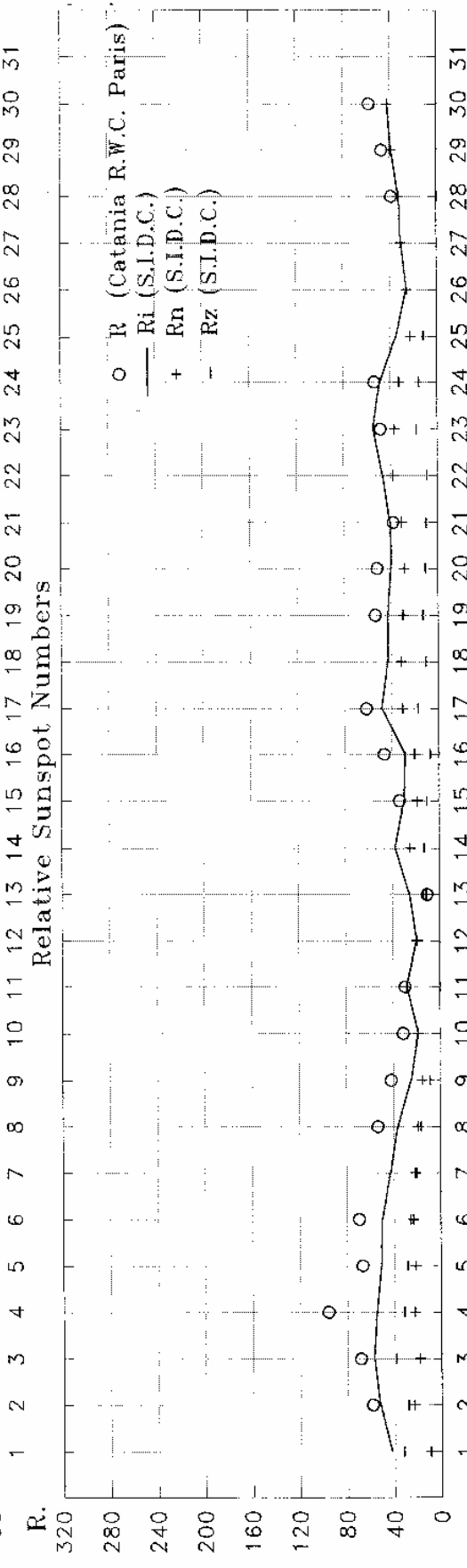
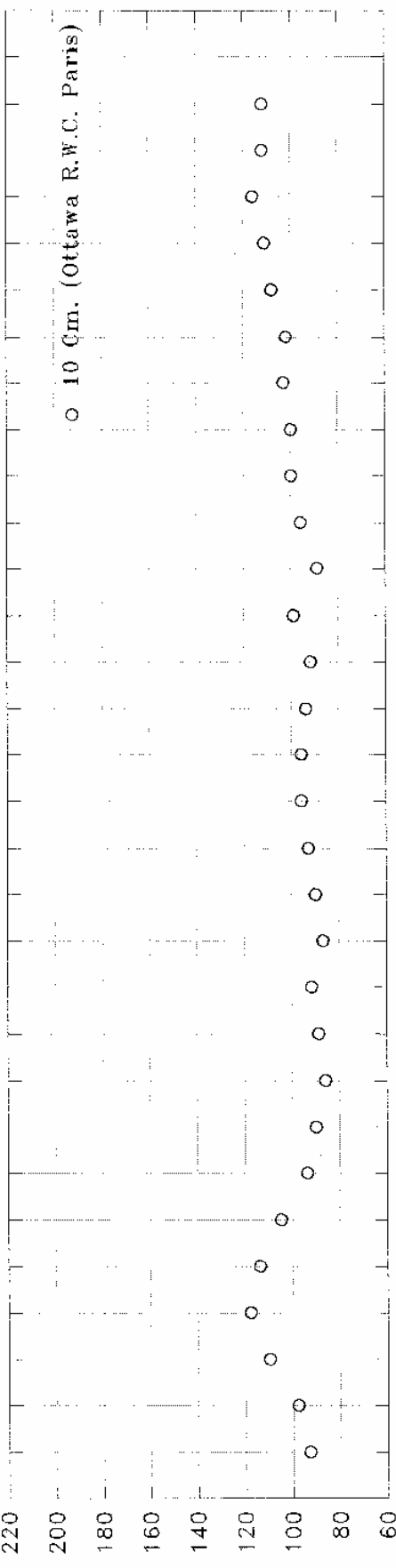
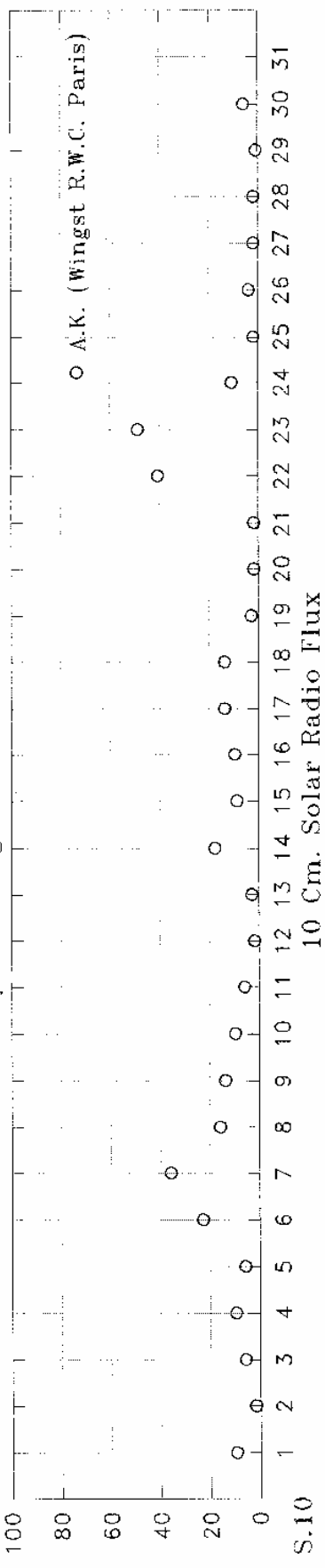
R<sub>I</sub>, R<sub>IM</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PPSI: prompt photometric sunspot index from the S.I.D.C. in 10.5 W/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 Mhz solar flux from Hainin station (Belgium).  
 2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrans - UGEOR group 2). The 10.7cm Flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrans - UCOSE Kerguelen).  
 SFI: From October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrans - UGEOR group 3).  
 XI: X-flares index from the Ursigrans (M-flares/X-flares) (origin: Ursigrans - UGEOR group 2; UGEOR group 5).  
 AK: planetary geomagnetic index from Hingst, Germany (origin: Ursigrans).  
 SEA: sudden enhancements of atmospheres from Uccle & Hainin (Royal Observatory, Belgium).  
 MAG: magnetic events from Bourbes station (Royal Meteorological Institute, Belgium).  
 Remarks: s1d (sudden ionospheric disturbance); ssc (sudden storm commencement); mgst (magnetic storm); sse (solar flare effect); s1-2-3-4 (class of flares); 11-1V radio-burst; Y (ten cm radio-burst); P (proton flare); P (proton event); g1e (ground level event); neutron event; si (sudden impulse); F (forbush); SFI Evaluation (1 x 8x-10 x "10-100 x "10).  
 Very low to high solar activity from 4 to 6 and from 27 to 29. Very low to moderate geomagnetic activity.

enke yendel. nca = 339 → F = 0.0  $\frac{49.5}{339} = 2.35$

— = Observers Werkgroep Zon

● = SIDC

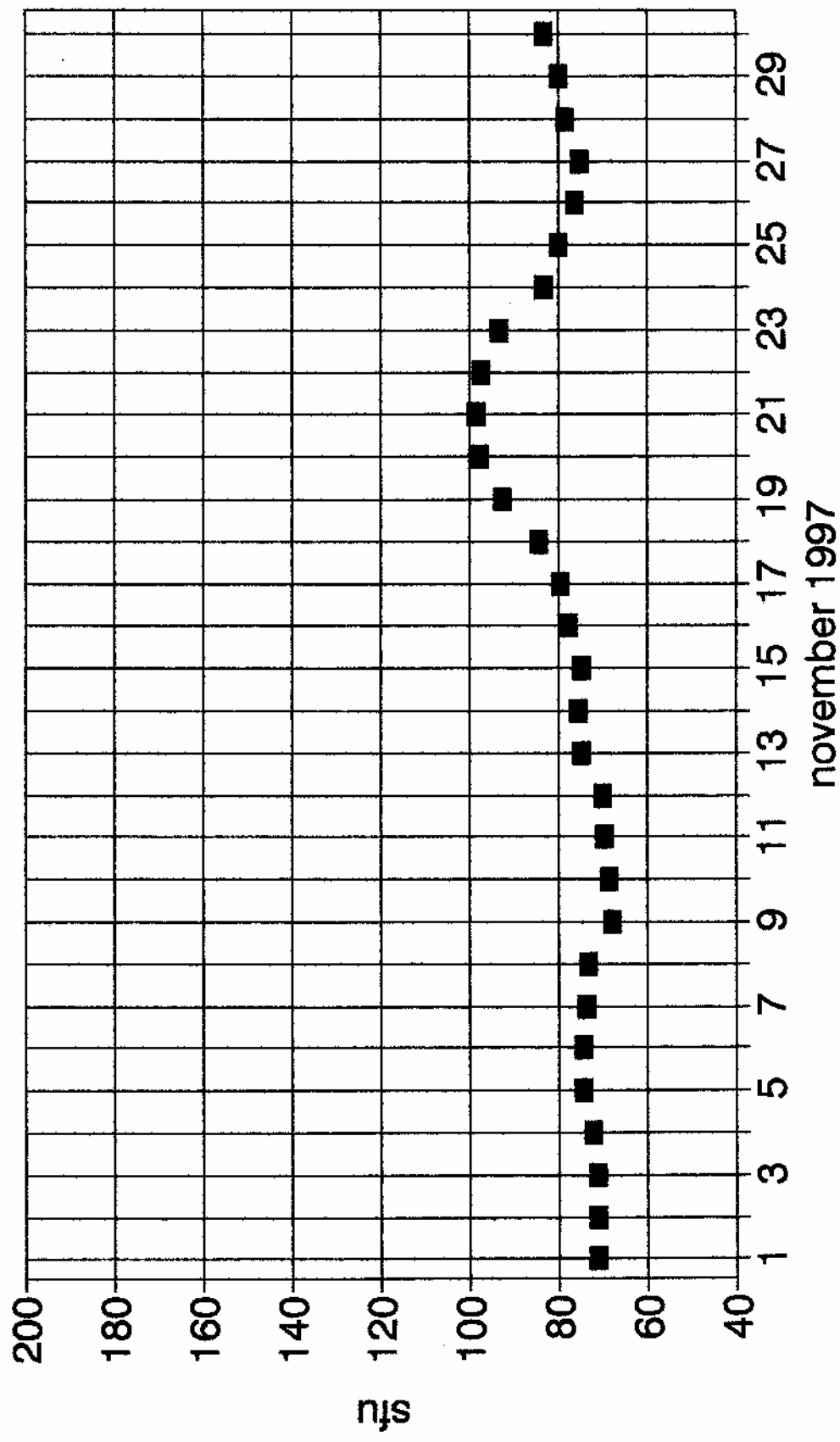






# radioflux van de zon op 1421 MHz

Radio Observatorium Den Helder



■ gemidd. 79.7 SFU



# Bulletin Werkgroep Zon

December 1997

NVWS Werkgroep Zon, Secretariaat: Veenenburg 36, 2804 WZ Gouda, Tel. 0182-539082

## Zonnevlekgetallen (Sunspot numbers)

Day	Bals	Gr 6	Gro	Iden	Jn 9	Jn 4	Kroe	Scho	vSlo	Sp 7	Vers	Zans	Zijle
1	71				20	17	19		64		26	29	
2													
3	42				15		19		32			24	
4												20	
5	34	43			13								
6			22								41		
7													
8			69		34	35			52		34		
9	104										39		
10													
11					23		52		81				
12					35								
13	82	54	48		33			47	56	63	55	48	
14	66	53	39		36			70	67	38	50		
15			36		11								
16	54		38		12	12	38		40	41	28	49	
17			24		12							15	
18					12							15	
19												12	
20	23	25	11				24		23	24		12	11
21													
22			23										
23													
24													
25	33												
26	35		30						44			30	
27			29					30	47		30	30	28
28	45		56					61	34		33	26	
29	60	56			27	27	40						
30	51	61	44		37	37			52		39	50	45
31													
observ	14	6	11	1	14	5	6	3	12	5	8	14	4
k	0.86	0.60	1.21	1.42	2.19	2.12	1.40	1.02	0.92	0.83	1.42	1.36	1.42
st.dev.	0.20	0.10	0.32	—	0.71	0.83	0.73	0.31	0.18	0.11	0.37	0.41	0.32
st.d./k	0.24	0.12	0.26	—	0.33	0.39	0.53	0.30	0.20	0.13	0.26	0.30	0.22

## Observers

Observer	[...] = Refractor, d = ... mm	[Rt...] = Reflector, d = ... mm
Bals	= H.A.M. Baister [70]	= B. van Slooten [90]
Gr 6	= Mw.G. Gravers [60]	= T. Spaninks [75]
Gro	= A. Groenewegen [102]	= D. Verschuuren [Rt 80]
Iden	= J.A. Idenburg [70]	= W. Zanstra [Rt 155]
		= W.A. Zijlema [90]

Uccle	spots
1	52
1	22
2	8
3	12
4	36
3	17
3	15
2	13
2	11
3	13

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

1997 DECEMBER R<sub>fM</sub> = 41.5

Date	R <sub>f</sub>	PFSI	600 2800	COS SFI	XI	AK	SEA	MAG
30	42	96	46	112	1016	0	0/0	6
1	52	86	46	117	1013	19	1/0	5
2	41	122	46	112	1012	2	0/0	5
3	33	95	—	112	1005	8	0/0	6
4	36	77	48	107	1008	0	0/0	9
5	32	42	46	104	1009	0	0/0	10
6	38	32	44	109	1008	0	0/0	3
7	40	26	44	099	1011	0	0/0	2
8	62	20	43	098	1013	0	0/0	0
9	67	30	40	097	1010	0	0/0	2
10	57	32	39	095	1005	0	0/0	17
11	61	25	38	096	992	0	0/0	11
12	68	29	37	093	1001	3	0/0	3
13	53	32	39	089	1014	0	0/0	1
14	45	17	36	090	1021	2	0/0	2
15	41	17	36	089	1020	6	0/0	3
16	35	20	—	085	1023	1	0/0	4
17	34	21	—	086	1018	0	0/0	5
18	22	20	36	086	1008	0	0/0	8
19	15	12	36	090	1006	1	0/0	3
20	19	14	37	090	1004	0	0/0	4
21	19	11	40	092	1009	1	0/0	5
22	32	14	—	097	1004	2	0/0	2
23	45	53	40	104	1009	0	0/0	4
24	52	53	42	108	1011	2	0/0	4
25	42	64	42	105	1014	2	0/0	1
26	37	68	42	105	1016	2	0/0	2
27	41	67	42	096	1015	10	0/0	0
28	38	63	42	102	1019	1	0/0	1
29	41	66	42	104	1016	1	0/0	3
30	45	59	42	101	1010	0	0/0	26
31	45	58	42	105	1002	5	0/0	3

Low solar and geomagnetic activity.

R<sub>f</sub>, R<sub>fM</sub>: provisional international sunspot numbers from the S.I.D.C.  
 PFSI: photometric sunspot index from the S.I.D.C. in 10-5 w/m<sup>2</sup>; the quantity to subtract from the mean solar constant.  
 600: 600 Mhz solar flux from Huain station (Belgium).  
 2800: 2800 Mhz solar flux from Ottawa (origin: Ursigrams - UGEOR group 2). The 10.7cm Flux data are provided as a service of the National Research Council of Canada.  
 COS: thousands of the cosmic ray counts (origin: Ursigrams - UGOSSE Kerquelen).  
 SFI: from October 1992, Solar Flare Index from the S.I.D.C. (origin: Ursigrams - UGEOR group 3).  
 XI: X-flares index from the Ursigrams (M-flares/X-flares) (origin: Ursigrams - UGEOR group 2).  
 AK: planetary geomagnetic index from Witsig, Germany (origin: Ursigrams).  
 SEA: sudden enhancements of atmospheres from Uccle & Huain (Royal Meteorological Institute, Belgium).  
 MAG: magnetic events from Durban station (Royal Meteorological Institute, Belgium).  
 Remarks: s (sudden ionospheric disturbance); ssc (sudden storm commencement); sfc (solar flare effect); s-1-2-3-4 (class of flares); I-I-V (radio-burst); I (ten cm radio-burst); P (proton flare); p (proton event); gte (ground level event); neutron event); sf (sudden impulse); f (Forbush); SFI Evaluation (I x Sp+10 x H+100 x H<sup>2</sup>).

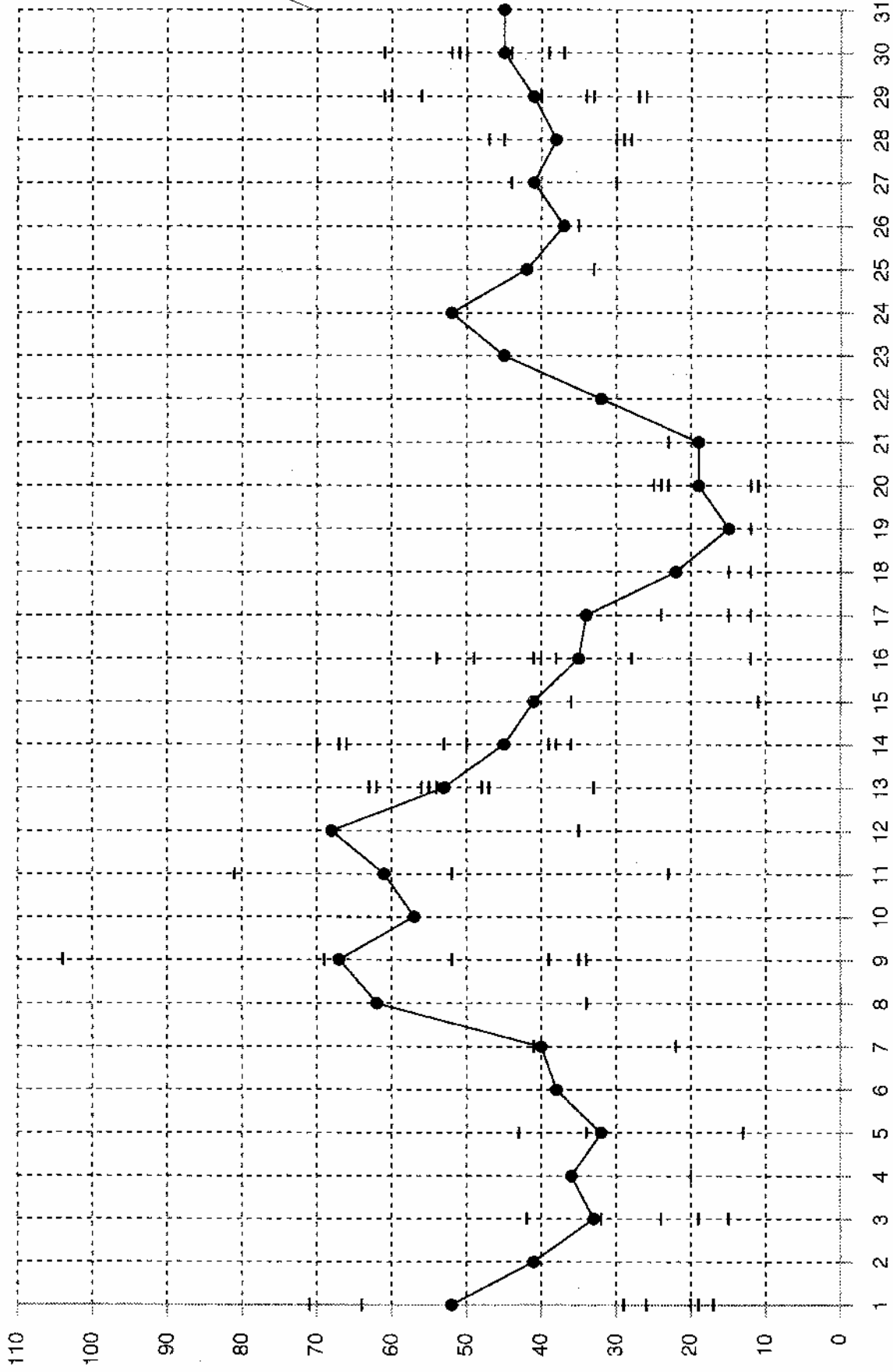
gemidd. opm. 2100 = 40,2 → R = 41,5 = 1,97



● = SIDC

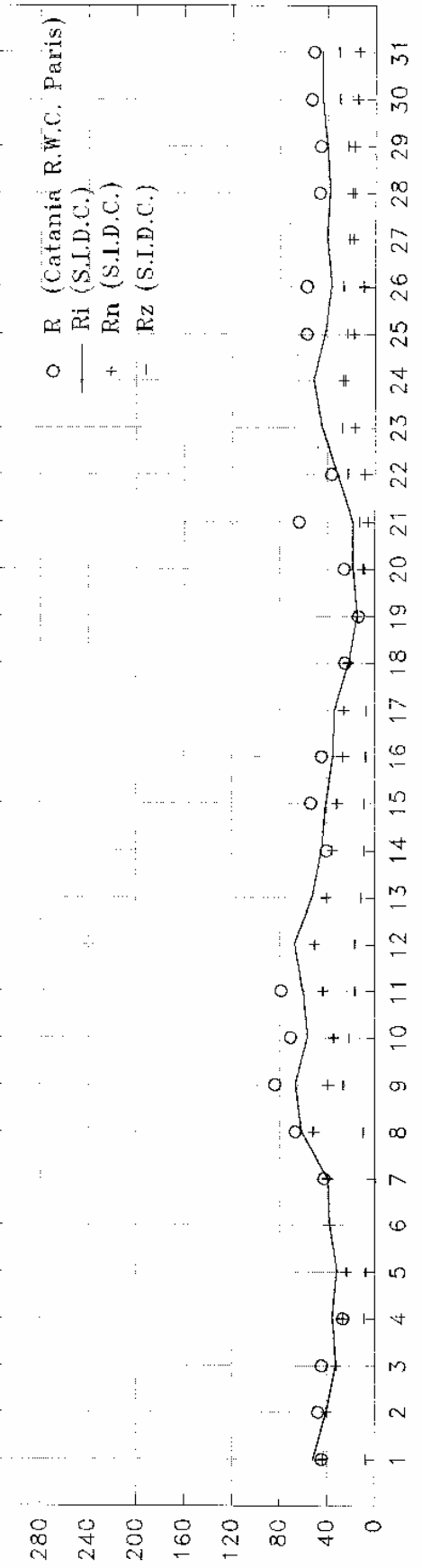
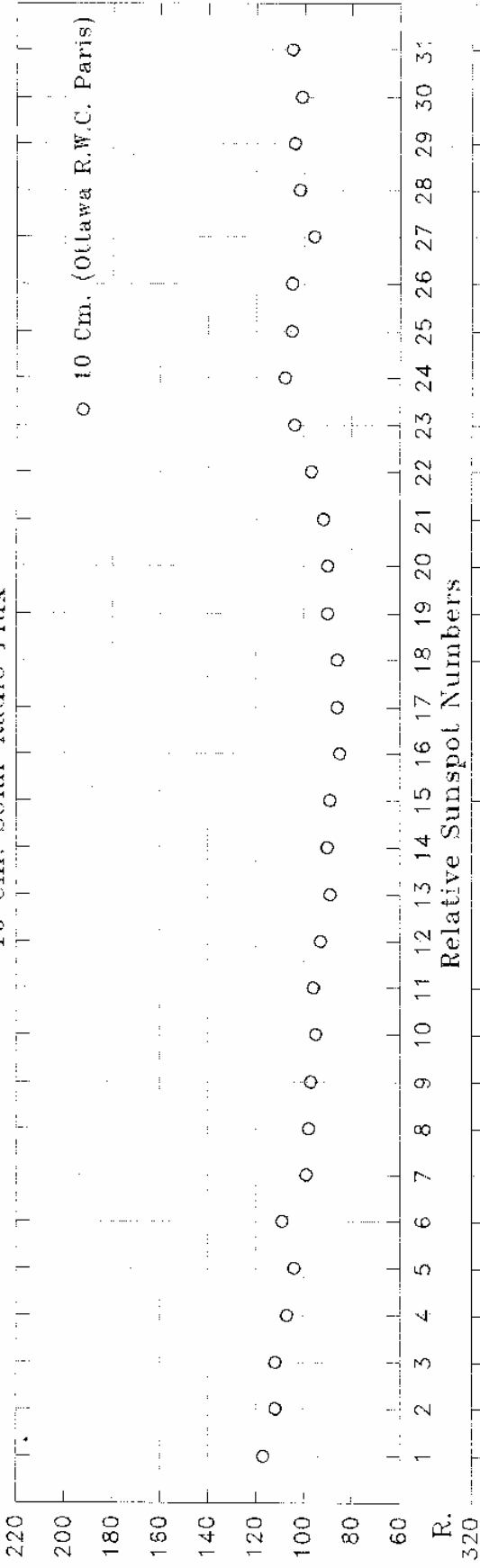
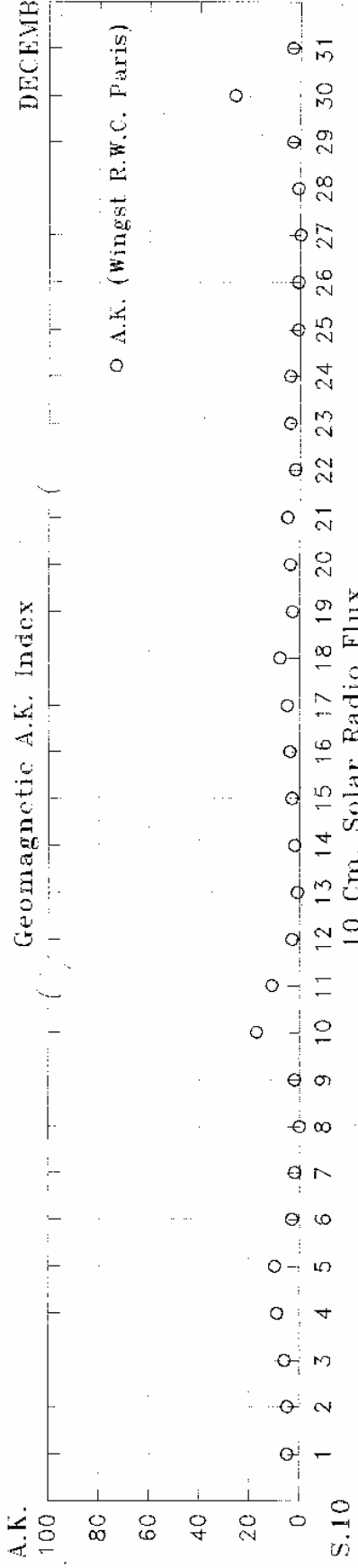
— = Observers Werkgroep Zon

R



T

Geomagnetic A.K. Index



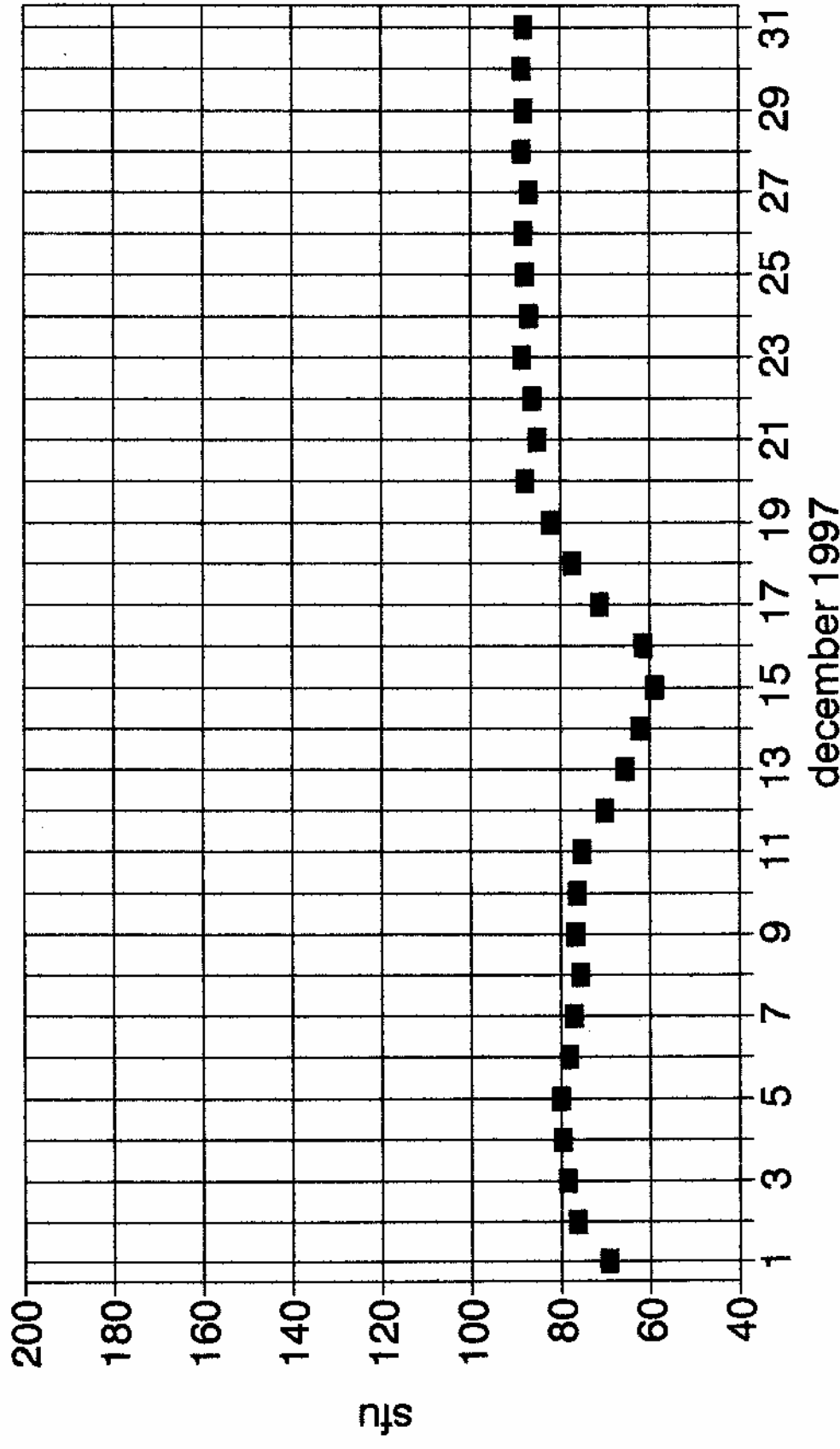
Rimax 68  
 Dec. 12  
 Kimin 15  
 Dec. 19

Rigom.  
 41,5



# radioflux van de zon op 1421 MHz

Radio Observatorium Den Helder



■ gemidd. 79.2 SFU