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Annual Report for 2002

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30 Years of Solar Observing 1973 - 2003

Section F

ANALYSES OF GDSO DATA AND GRAPHS.

INTERNATIONAL GROUP COMPLEXITY INDICES (GCI_I).

In the 1999 issue (pp F43-44), publication of International Group Complexity Indices (GCI_I), started. These data are obtained from Sonne's g, Re [WN] and p results.

It must be pointed out that, as these data were obtained [by Sonne] with GCI not being-in-mind, we get the occasional situation of g = 0.1, and Re = 1 (a sunspot region having no sunspots) throughout minimum. One cause of this, is rounding. It has been decided to let these data stand as they are. Because of this decision, the GCI_I can drop to 0, which, strictly speaking, is an impossibility. This situation, of g = 0.1, and Re = 1, occurs rarely and has only occurred about 10 times during the 1986 minimum, creating only one monthly value of 0 [June 1986].

It was hoped that this issue would deal with data from 1997-2001, however, these data might appear in the GDSO Annual Report for 2003. This situation is out of the GDSO's control.

In this issue, mean deviation (denoted as δ in this report) is introduced in observed mean data. It is computed as:

$$\frac{\sum | x - \bar{x} |}{\sum n}$$

Values are stated to one decimal place.

TABLE W1:
MONTHLY **WOLF NUMBER** MEANS OF GDSO DATA for **2002**.
g = mean of Active Areas or groups on the solar disc.
f = mean of sunspots on the solar disc.
WN = mean Wolf Number (k neglected; see list of definitions).
TWN = mean Truncated Wolf Number (Wolf Number without A and B class regions).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	g	f	WN	δ	*TWN*	*δ*	n	w	Q	S	T	C
Jan	9.58	59.42	155.21	20.4	*139.47*	*20.6*	19	0.4743	1.82	2.24	2.37	2.1404
Feb	9.43	58.86	153.14	32.3	*133.86*	*34.6*	14	0.4446	1.93	2.36	2.54	2.2738
Mar	8.00	46.69	126.69	10.0	*110.08*	*12.7*	13	0.4534	1.92	2.31	2.54	2.2564
Apr	9.57	64.29	160.00	33.0	*140.07*	*32.2*	14	0.5099	1.79	2.07	2.21	2.0238
May	10.91	57.64	166.73	19.7	*147.27*	*19.0*	11	0.4112	2.00	2.59	2.82	2.4697
Jun	8.38	41.23	125.08	42.9	*105.31*	*37.9*	13	0.4778	1.73	2.19	2.42	2.1154
Jul	7.61	82.61	158.72	58.6	*141.67*	*60.5*	18	0.4719	1.78	2.31	2.50	2.1944
Aug	9.06	75.67	166.22	51.4	*147.89*	*47.1*	18	0.4563	1.86	2.44	2.50	2.2685
Sep	9.58	76.42	172.25	24.2	*151.25*	*28.7*	12	0.4466	1.92	2.38	2.54	2.2778
Oct	8.11	52.94	134.06	29.5	*116.11*	*22.0*	18	0.4511	1.94	2.39	2.39	2.2407
Nov	7.07	48.53	119.20	32.8	*106.80*	*28.2*	15	0.4395	2.03	2.50	2.43	2.3222
Dec	5.55	21.45	76.91	38.3	*65.64*	*34.0*	11	0.4779	1.73	2.36	2.27	2.1212
Year	8.57	58.60	144.34	39.2	*126.97*	*36.9*	—	0.4604	1.87	2.34	2.45	2.2216

TABLE W2:
ROTATIONAL **WOLF NUMBER** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	g	f	WN	δ	*TWN*	*md*	n	w	Q	S	T	C
1984	2001/12/10.73	9.69	61.92	158.85	27.1	*145.38*	*29.8*	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	9.40	61.87	155.87	20.0	*139.93*	*18.9*	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	9.31	56.77	149.85	31.7	*129.08*	*32.5*	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	8.00	46.69	126.69	10.0	*110.08*	*12.7*	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	10.00	74.18	174.18	22.5	*154.09*	*23.4*	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	9.83	38.33	136.67	32.6	*115.67*	*31.7*	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	10.53	58.00	163.33	18.9	*142.00*	*17.2*	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	5.93	35.00	94.33	20.4	*78.20*	*14.6*	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	8.77	101.08	188.77	47.3	*172.00*	*51.1*	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	9.65	83.76	180.24	47.2	*163.65*	*46.9*	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	8.08	64.54	145.31	38.6	*125.00*	*35.8*	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	9.31	54.88	148.00	25.6	*126.25*	*20.0*	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	6.42	49.92	114.08	26.3	*103.50*	*26.2*	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	6.75	27.75	95.25	29.7	*83.88*	*26.6*	8	0.4406	1.94	2.50	2.44	2.2917

TABLE W3:
CORRECTED **WOLF NUMBERS** for **2001 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Wolf Numbers have to be upgraded to give reflections of international results. International Wolf Number results are computed by the Solar Influences Data Analysis Centre, at the Observatoire Royal de Belgique, Bruxelles, Belgium.

Below are the 'observed' Wolf Numbers along with the monthly k co-efficients and the corrected values (R_{GD}) for 2001 - 2002. The SIDC's final values (R_I) are also stated.

I/GDSO = SIDC's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.
$I/GDSO_A$ = SIDC's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.
σ = sample standard deviation of k values.
σ'SIDC' = annual σ computed on the SIDC formula.

		WN	k	R_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	R_I
2001	Jan	134.71	0.7440	100.22	0.0886	0.7336	0.7336	17	17	95.6
	Feb	107.92	0.7350	79.32	0.0763	0.7213	0.7213	13	13	80.6
	Mar	142.75	0.8033	114.67	0.0995	0.8116	0.8116	20	20	113.5
	Apr	130.67	0.8345	109.04	0.1394	0.8151	0.8151	12	12	107.7
	May	103.73	0.8972	93.06	0.1121	0.8782	0.8782	11	11	96.6
	Jun	172.38	0.7924	136.60	0.0902	0.7857	0.7857	16	16	134.0
	Jul	92.65	0.8366	77.51	0.1201	0.8311	0.8311	17	17	81.8
	Aug	148.40	0.7276	107.97	0.0671	0.7215	0.7215	15	15	106.4
	Sep	203.53	0.8052	163.87	0.0759	0.8029	0.8029	17	17	150.7
	Oct	156.83	0.7784	122.09	0.0834	0.7731	0.7731	12	12	125.5
	Nov	139.91	0.7535	105.43	0.0745	0.7511	0.7511	11	11	106.5
	Dec	171.00	0.7815	133.64	0.1342	0.7581	0.7581	11	11	132.2
2001	Means	142.90	0.7900	112.89	—	0.7806	0.7806	—	—	111.0
		σ = 0.1051			σ 'SIDC' = 0.0958			Eσ = 0.0075		
2002	Jan	155.21	0.7662	118.92	0.0787	0.7582	0.7582	19	19	114.1
	Feb	153.14	0.7166	109.74	0.0941	0.6992	0.6992	14	14	107.4
	Mar	126.69	0.7500	95.02	0.0821	0.7468	0.7468	13	13	98.4
	Apr	160.00	0.7412	118.59	0.0697	0.7321	0.7321	14	14	120.7
	May	166.73	0.7021	117.06	0.0710	0.7017	0.7017	11	11	120.8
	Jun	125.08	0.7844	98.11	0.0843	0.7724	0.7724	13	13	88.3
	Jul	158.72	0.6961	110.49	0.1188	0.6692	0.6692	18	18	99.6
	Aug	166.22	0.7507	124.78	0.0822	0.7366	0.7366	18	18	116.4
	Sep	172.25	0.6511	112.15	0.0695	0.6434	0.6434	12	12	109.6
	Oct	134.06	0.7267	97.42	0.0850	0.7203	0.7203	18	18	97.5
	Nov	119.20	0.7724	92.07	0.1103	0.7522	0.7522	15	15	95.5
	Dec	76.91	0.8323	64.01	0.1901	0.7920	0.7920	11	11	80.8
2002	Means	144.34	0.7404	106.87	—	0.7222	0.7222	—	—	104.1
		σ = 0.1035			σ 'SIDC' = 0.0935			Eσ = 0.0074		

TABLE W4:
CORRECTED **WOLF NUMBERS** for Rotations 1971 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled R_{GD}.

R_{GD} = WN x k.
σ = sample standard deviation of k values.
I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.
$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.

ROTATION	START DATE, UT	WN	k	R_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1971	2000/12/21.17	140.62	0.7524	105.80	0.1043	0.7385	0.7385	13	13
1972	2001/01/17.50	132.36	0.7418	98.18	0.0869	0.7321	0.7321	11	11
1973	2001/02/13.84	94.50	0.7630	72.10	0.1074	0.7520	0.7520	16	16
1974	2001/03/13.17	161.56	0.8156	131.76	0.0734	0.8229	0.8229	18	18
1975	2001/04/09.47	118.25	0.8447	99.89	0.1685	0.8129	0.8129	8	8
1976	2001/05/06.72	104.36	0.8813	91.97	0.1280	0.8563	0.8563	11	11
1977	2001/06/02.94	179.93	0.8078	145.35	0.0856	0.7952	0.7952	14	14
1978	2001/06/30.13	97.93	0.8349	81.77	0.1311	0.8278	0.8278	15	15
1979	2001/07/27.34	131.86	0.7401	97.59	0.0763	0.7259	0.7259	14	14
1980	2001/08/23.57	165.64	0.7837	129.81	0.0855	0.7854	0.7854	11	11
1981	2001/09/19.83	193.12	0.7931	153.17	0.0846	0.7909	0.7909	16	16
1982	2001/10/17.11	166.70	0.7662	127.73	0.0466	0.7630	0.7630	10	10
1983	2001/11/13.41	150.70	0.7372	111.10	0.0897	0.7279	0.7279	10	10
1984	2001/12/10.73	158.85	0.8122	129.02	0.1149	0.7952	0.7952	13	13
1985	2002/01/07.06	155.87	0.7456	116.22	0.0743	0.7374	0.7374	15	15
1986	2002/02/03.40	149.85	0.7187	107.70	0.0975	0.7002	0.7002	13	13
1987	2002/03/02.73	126.69	0.7500	95.02	0.0821	0.7468	0.7468	13	13
1988	2002/03/30.04	174.18	0.7342	127.88	0.0600	0.7291	0.7291	11	11
1989	2002/04/26.31	136.67	0.6997	95.62	0.1040	0.6817	0.6817	6	6
1990	2002/05/23.54	163.33	0.7515	122.75	0.0719	0.7441	0.7441	15	15
1991	2002/06/19.74	94.33	0.7690	72.54	0.1143	0.7456	0.7456	15	15
1992	2002/07/16.94	188.77	0.6822	128.78	0.1179	0.6687	0.6687	13	13
1993	2002/08/13.16	180.24	0.7303	131.62	0.0662	0.7210	0.7210	17	17
1994	2002/09/09.41	145.31	0.6664	96.83	0.1057	0.6448	0.6448	13	13
1995	2002/10/06.68	148.00	0.7246	107.24	0.0638	0.7196	0.7196	16	16
1996	2002/11/02.98	114.08	0.7792	88.89	0.1129	0.7633	0.7633	12	12
1997	2002/11/30.29	95.25	0.8317	79.22	0.1258	0.8018	0.8018	8	8

TABLE W5:
SMOOTHED **WOLF NUMBERS** for **2000 - 2002**.

The following are smoothed Wolf Numbers in three different systems. See page xii for all smoothing formulæ. ***ITALICISED DATA PROVISIONAL.***

YEAR	MONTH	WN	WN(S^{HBm})	WN(S^{W})	WN(S^{B13})	R_{GD}	$R_{GD}(S^{W})$	$R_{GD}(S^{B13})$
2000	Jan	113.31	130.96	137.71	134.68	92.24	118.12	115.73
	Feb	128.38	141.83	143.82	143.47	114.24	122.72	121.24
	Mar	182.19	154.13	147.85	151.55	140.37	126.00	126.54
	Apr	186.33	167.40	149.39	156.55	141.15	126.82	129.84
	May	156.80	173.03	147.98	158.32	134.84	124.28	130.96
	Jun	159.90	173.36	147.41	158.60	126.59	122.52	131.28
	Jul	226.23	169.24	149.15	157.01	188.00	123.10	130.31
	Aug	157.37	155.70	149.18	151.85	137.43	121.98	126.20
	Sep	115.54	141.21	146.69	144.68	104.99	119.45	120.18
	Oct	120.14	130.50	142.73	138.10	104.32	117.04	114.44
	Nov	119.50	121.52	138.20	132.78	95.69	113.96	109.40
	Dec	113.36	120.66	136.50	129.35	93.34	112.64	105.79
2001	Jan	134.71	123.62	131.46	126.55	100.22	108.45	102.79
	Feb	107.92	123.46	125.52	125.05	79.32	102.62	100.91
	Mar	142.75	128.09	128.81	127.24	114.67	103.85	102.24
	Apr	130.67	128.13	134.01	130.80	109.04	107.04	104.97
	May	103.73	128.20	136.39	134.26	93.06	108.19	107.56
	Jun	172.38	136.44	139.64	138.25	136.60	110.27	110.34
	Jul	92.65	139.68	142.89	142.43	77.51	112.73	113.15
	Aug	148.40	149.01	145.63	147.06	107.97	114.78	116.14
	Sep	203.53	158.64	146.85	150.77	163.87	115.23	118.17
	Oct	156.83	159.02	147.40	152.58	122.09	114.81	118.52
	Nov	139.91	160.13	151.25	154.21	105.43	116.20	118.54
	Dec	171.00	157.47	151.90	154.58	133.64	115.60	117.80
2002	Jan	155.21	152.71	152.68	154.17	118.92	115.37	116.55
	Feb	153.14	151.68	156.18	153.64	109.74	117.44	115.25
	Mar	126.69	149.13	155.62	152.50	95.02	115.99	113.40
	Apr	160.00	149.41	153.37	152.11	118.59	112.81	111.98
	May	166.73	150.77	151.55	151.78	117.06	111.22	111.05
	Jun	125.08	151.75	146.77	149.77	98.11	107.76	109.17
	Jul	158.72	155.05	141.03	146.84	110.49	***103.07***	***106.68***
	Aug	166.22	153.88	135.98	143.01	124.78	***98.93***	***103.61***
	Sep	172.25	146.73	130.68	137.03	112.15	***94.99***	***99.17***
	Oct	134.06	135.45	—	—	97.42	—	—
	Nov	119.20	119.94	—	—	92.07	—	—
	Dec	76.91	104.28	—	—	64.01	—	—

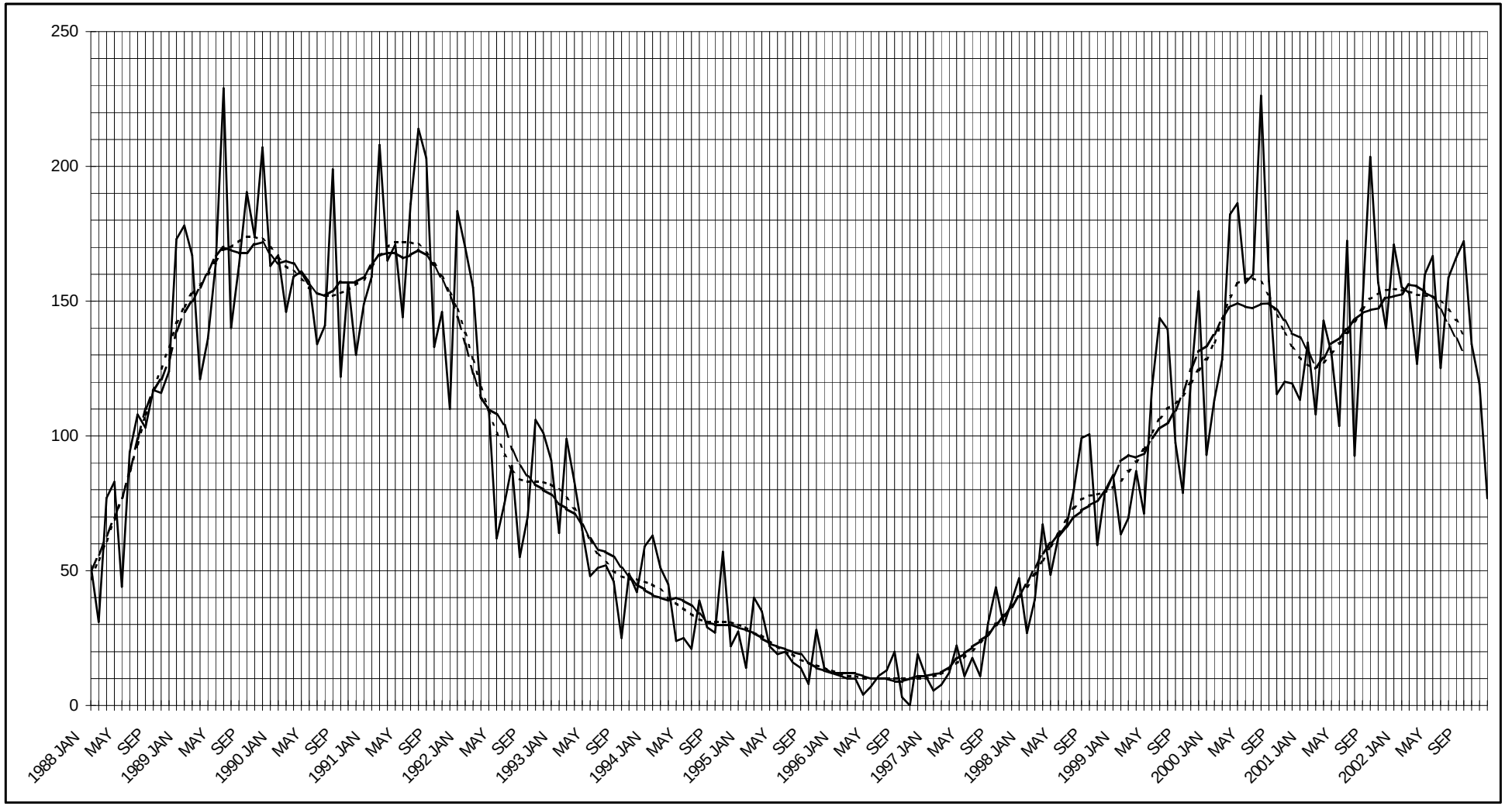
TABLE W6:
QUARTERLY AND YEARLY **WOLF NUMBER** MEANS for 1998 - 2002.

YEAR/ QUARTER	WN	WN(S^{HBm})	WN(S^{W})	WN(S^{B13})	R_{GD}	g	f
1998 / 1	44.92	46.11	51.05	48.87	42.60	2.73	17.57
2	59.27	64.22	63.13	63.91	61.38	3.57	23.59
3	95.38	81.89	71.99	75.88	90.68	6.08	34.62
4	75.41	78.33	80.06	79.36	71.04	4.83	27.12
1998	67.67	67.64	66.56	67.01	65.44	4.23	25.34
1999 / 1	74.74	78.82	91.82	86.83	69.62	4.59	28.85
2	114.24	106.46	98.43	101.05	105.59	7.21	42.10
3	104.58	114.54	110.11	112.41	95.74	6.40	40.58
4	121.13	116.75	129.73	124.17	115.47	6.68	54.29
1999	104.70	104.14	107.52	106.11	97.36	6.30	41.71
2000 / 1	144.21	142.31	143.13	143.23	118.39	8.79	56.36
2	167.03	171.26	148.26	157.82	134.40	9.45	72.55
3	165.18	155.38	148.34	151.18	143.92	9.56	69.62
4	117.83	124.23	139.14	133.41	98.37	7.20	45.83
2000	148.73	148.30	144.72	146.41	124.34	8.77	60.98
2001 / 1	130.96	125.06	128.60	126.28	100.23	7.84	52.56
2	140.18	130.92	136.68	134.44	117.04	9.03	49.92
3	148.18	149.11	145.12	146.75	117.41	8.96	58.59
4	155.94	158.87	150.18	153.79	120.29	9.53	60.65
2001	142.90	140.99	140.15	140.32	112.89	8.76	55.28
2002 / 1	146.52	151.17	154.83	153.44	109.38	9.09	55.65
2	150.00	150.64	150.56	151.22	111.70	9.55	54.47
3	164.92	151.89	135.90	142.29	116.32	8.65	78.46
4	114.70	119.89	—	—	88.17	7.11	43.57
2002	144.34	143.40	—	—	106.87	8.57	58.60

NB: WN(S^{HBm}), WN(S^{W}) & WN(S^{B13}) quarterly values are means of 3 monthly values.
WN(S^{HBm}), WN(S^{W}) & WN(S^{B13}) yearly values are means of 12 monthly values.
R_{GD} quarterly values are computed as quarterly WN means multiplied by quarterly k means.
Annual values of R_{GD} are annual Wolf Number means multiplied by annual k means.

OBSERVED and SMOOTHED GDSO WOLF NUMBERS (WN and WN[SHBm] 1988-2002
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE W5 (IN THIS AND PREVIOUS REPORTS)

OBSERVED and SMOOTHED GDSO WOLF NUMBERS (WN,WN[SW] and WN[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE W5 (IN THIS AND PREVIOUS REPORTS)



CORRECTED and SMOOTHED GDSO WOLF NUMBERS (R_{GD}, R_{GD}[SW] and R_{GD}[SB13]) 1988-2002
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE W5 (IN THIS AND PREVIOUS REPORTS)

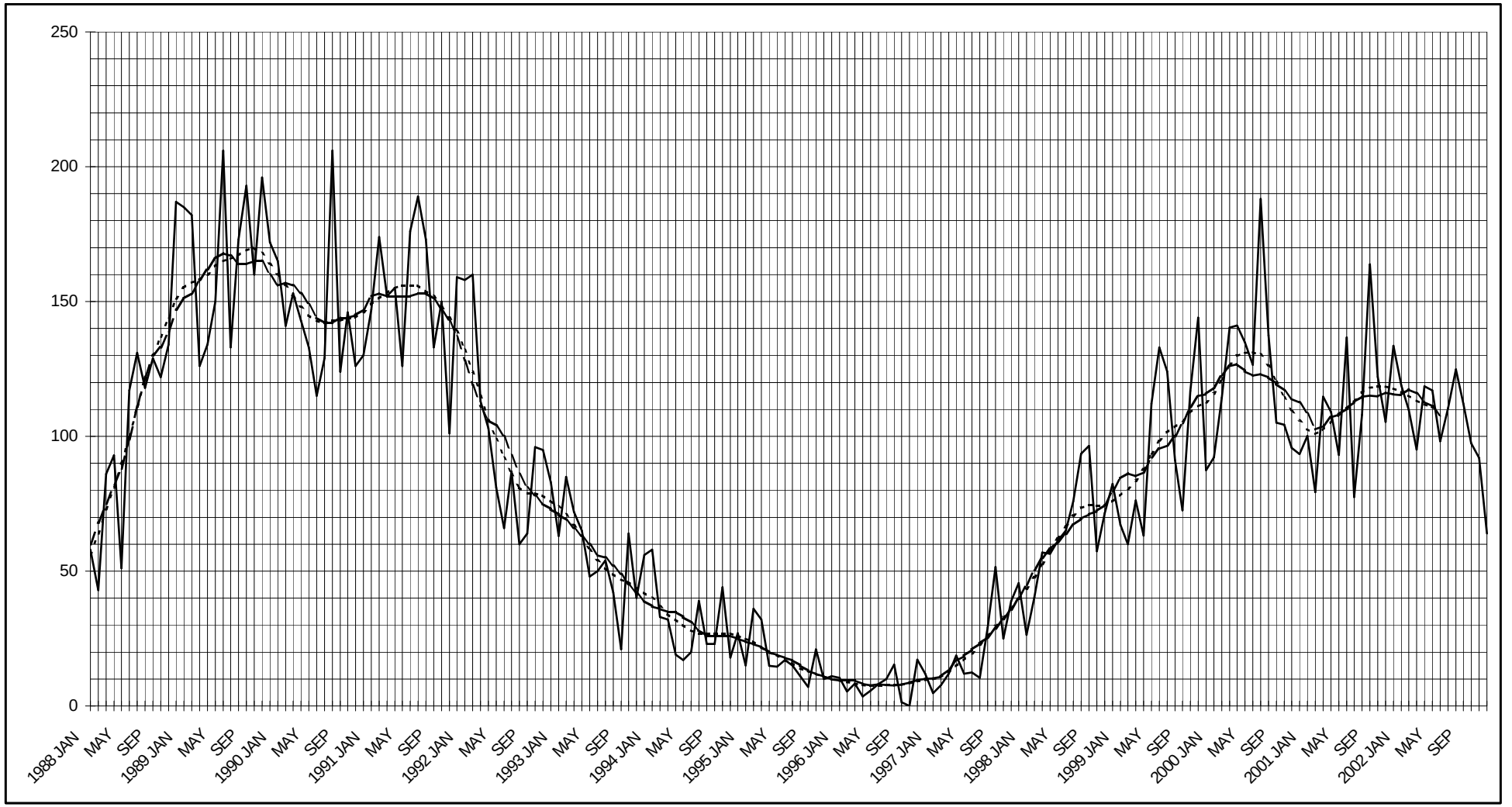


TABLE G1:
MONTHLY **ACTIVE AREA (g)** MEANS OF GDSO DATA for **2002**.
g = mean of Active Areas or groups on the solar disc.
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	g	δ	n	w	Q	S	T	C
Jan	9.58	1.2	19	0.4743	1.82	2.24	2.37	2.1404
Feb	9.43	2.3	14	0.4446	1.93	2.36	2.54	2.2738
Mar	8.00	1.2	13	0.4534	1.92	2.31	2.54	2.2564
Apr	9.57	1.5	14	0.5099	1.79	2.07	2.21	2.0238
May	10.91	1.2	11	0.4112	2.00	2.59	2.82	2.4697
Jun	8.38	2.6	13	0.4778	1.73	2.19	2.42	2.1154
Jul	7.61	2.3	18	0.4719	1.78	2.31	2.50	2.1944
Aug	9.06	2.3	18	0.4563	1.86	2.44	2.50	2.2685
Sep	9.58	1.8	12	0.4466	1.92	2.38	2.54	2.2778
Oct	8.11	2.3	18	0.4511	1.94	2.39	2.39	2.2407
Nov	7.07	1.7	15	0.4395	2.03	2.50	2.43	2.3222
Dec	5.55	2.4	11	0.4779	1.73	2.36	2.27	2.1212
Year	8.57	2.3	—	0.4604	1.87	2.34	2.45	2.2216

TABLE G2:
ROTATIONAL **ACTIVE AREA (g)** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	g	δ	n	w	Q	S	T	C
1984	2001/12/10.73	9.69	1.6	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	9.40	1.1	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	9.31	2.3	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	8.00	1.2	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	10.00	1.3	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	9.83	2.4	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	10.53	1.2	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	5.93	1.4	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	8.77	1.7	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	9.65	2.3	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	8.08	2.2	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	9.31	2.0	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	6.42	1.0	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	6.75	2.2	8	0.4406	1.94	2.50	2.44	2.2917

TABLE G3:
CORRECTED **ACTIVE AREA (g)** VALUES for **2001 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Active Area means have to be upgraded to give reflections of international results. International Active Area results are computed by the Solar Section of the British Astronomical Association. Below are the 'observed' Active Area (g) means along with the monthly k co-efficients and the corrected values (g_{GD}) for 2001 - 2002. The BAA's final values (g_B) are also stated.

I/GDSO = BAA's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.

$I/GDSO_A$ = BAA's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.

n = number of GDSO observations.

n_k = number of k values.

σ = sample standard deviation of k values.

σ'SIDC' = annual σ computed on the SIDC formula.

Eσ = annual estimate of standard deviation.

		g	k	g_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	g_B
2001	Jan	8.47	0.8777	7.43	0.1209	0.8681	0.8681	17	17	7.01
	Feb	7.00	0.8647	6.05	0.1333	0.8352	0.8352	13	13	6.09
	Mar	7.85	0.8759	6.88	0.1547	0.8917	0.8917	20	20	6.95
	Apr	8.17	0.9561	7.81	0.1128	0.9490	0.9490	12	12	7.51
	May	6.91	1.0385	7.18	0.1493	1.0132	1.0132	11	11	6.85
	Jun	11.12	0.8617	9.59	0.1212	0.8483	0.8483	16	16	9.40
	Jul	6.53	0.9009	5.88	0.1263	0.9009	0.9009	17	17	6.24
	Aug	9.47	0.8599	8.14	0.1350	0.8380	0.8380	15	15	7.56
	Sep	10.94	0.9635	10.54	0.0824	0.9570	0.9570	17	17	9.74
	Oct	9.92	0.8740	8.67	0.1105	0.8655	0.8655	12	12	9.14
	Nov	8.18	0.9143	7.48	0.1080	0.9111	0.9111	11	11	7.72
	Dec	10.45	0.9307	9.73	0.2224	0.8957	0.8957	11	11	9.54
2001	Means	8.76	0.9055	7.93	—	0.8938	0.8938	—	—	7.81
	σ = 0.1382			σ 'SIDC' = 0.1299			Eσ = 0.0102			
2002	Jan	9.58	0.9389	8.99	0.1417	0.9286	0.9286	19	19	8.78
	Feb	9.43	0.8277	7.80	0.0932	0.8106	0.8106	14	14	7.67
	Mar	8.00	0.8762	7.01	0.2153	0.8462	0.8462	13	13	7.02
	Apr	9.57	0.8317	7.96	0.1164	0.8209	0.8209	14	14	8.39
	May	10.91	0.7957	8.68	0.0527	0.7917	0.7917	11	11	9.13
	Jun	8.38	0.8509	7.13	0.1506	0.8349	0.8349	13	13	6.57
	Jul	7.61	0.8600	6.55	0.2030	0.8175	0.8175	18	18	6.04
	Aug	9.06	0.8741	7.92	0.1146	0.8650	0.8650	18	18	7.58
	Sep	9.58	0.8028	7.69	0.1081	0.7913	0.7913	12	12	7.90
	Oct	8.11	0.8888	7.21	0.1338	0.8699	0.8699	18	18	7.31
	Nov	7.07	0.9928	7.02	0.1432	0.9623	0.9623	15	15	6.82
	Dec	5.55	1.0022	5.56	0.2311	0.9508	0.9508	11	11	6.39
2002	Means	8.57	0.8809	7.55	—	0.8555	0.8555	—	—	7.47
	σ = 0.1576			σ 'SIDC' = 0.1425			Eσ = 0.0113			

TABLE G4:
CORRECTED **ACTIVE AREA (g)** VALUES for Rotations 1971 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled g_{GD}.

$g_{GD} = g \times k$.
σ = sample standard deviation of k values.
I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.
$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.

ROTA-TION	START DATE, UT	g	k	g_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1971	2000/12/21.17	8.92	0.8914	7.95	0.1828	0.8621	0.8621	13	13
1972	2001/01/17.50	8.27	0.8405	6.95	0.0966	0.8242	0.8242	11	11
1973	2001/02/13.84	5.94	0.8549	5.08	0.1555	0.8316	0.8316	16	16
1974	2001/03/13.17	9.11	0.9216	8.40	0.1356	0.9329	0.9329	18	18
1975	2001/04/09.47	7.12	0.9549	6.80	0.1088	0.9474	0.9474	8	8
1976	2001/05/06.72	7.09	1.0113	7.17	0.1811	0.9744	0.9744	11	11
1977	2001/06/02.94	11.43	0.8813	10.07	0.1164	0.8625	0.8625	14	14
1978	2001/06/30.13	7.00	0.8988	6.29	0.1311	0.8952	0.8952	15	15
1979	2001/07/27.34	8.57	0.8591	7.36	0.1280	0.8417	0.8417	14	14
1980	2001/08/23.57	8.82	0.9343	8.24	0.1215	0.9175	0.9175	11	11
1981	2001/09/19.83	11.62	0.9018	10.48	0.1160	0.9032	0.9032	16	16
1982	2001/10/17.11	9.10	0.9247	8.42	0.0710	0.9231	0.9231	10	10
1983	2001/11/13.41	9.80	0.8779	8.60	0.1262	0.8571	0.8571	10	10
1984	2001/12/10.73	9.69	0.9912	9.61	0.2064	0.9683	0.9683	13	13
1985	2002/01/07.06	9.40	0.9105	8.56	0.1301	0.9007	0.9007	15	15
1986	2002/02/03.40	9.31	0.8284	7.71	0.0970	0.8099	0.8099	13	13
1987	2002/03/02.73	8.00	0.8762	7.01	0.2153	0.8462	0.8462	13	13
1988	2002/03/30.04	10.00	0.8333	8.33	0.1129	0.8273	0.8273	11	11
1989	2002/04/26.31	9.83	0.7899	7.77	0.1093	0.7627	0.7627	6	6
1990	2002/05/23.54	10.53	0.8289	8.73	0.0967	0.8228	0.8228	15	15
1991	2002/06/19.74	5.93	0.9029	5.36	0.2310	0.8539	0.8539	15	15
1992	2002/07/16.94	8.77	0.8151	7.15	0.0869	0.8070	0.8070	13	13
1993	2002/08/13.16	9.65	0.8711	8.40	0.1124	0.8659	0.8659	17	17
1994	2002/09/09.41	8.08	0.7998	6.46	0.1335	0.7714	0.7714	13	13
1995	2002/10/06.68	9.31	0.8935	8.32	0.1195	0.8725	0.8725	16	16
1996	2002/11/02.98	6.31	1.0165	6.41	0.1363	1.0000	1.0000	13	13
1997	2002/11/30.29	6.75	0.9967	6.73	0.1934	0.9630	0.9630	8	8

TABLE G5:
SMOOTHED **ACTIVE AREA (g)** VALUES for **2000 - 2002**.

The following are smoothed Active Area (g) values in three different systems. See page xii for all smoothing formulæ.

YEAR	MONTH	g	$g(S^{HBm})$	$g(S^{W})$	$g(S^{B13})$	g_{GD}	$g_{GD}(S^{W})$	$g_{GD}(S^{B13})$
2000	Jan	7.54	7.7506	7.9562	7.8393	7.19	7.7067†	7.6369†
	Feb	8.46	8.3531	8.3046	8.3170	8.11	7.9679†	8.0193†
	Mar	10.06	8.9275	8.5379	8.7381	9.45	8.1304	8.3451
	Apr	9.67	9.4744	8.5708	8.9822	9.68	8.1362	8.5045
	May	9.10	9.8131	8.5596	9.0970	7.93	8.1108	8.5478
	Jun	9.60	9.8412	8.6075	9.1328	8.99	8.1125	8.5319
	Jul	11.77	9.6488	8.7196	9.0592	11.22	8.1417	8.4207
	Aug	10.68	9.0700	8.6975	8.8076	9.16	8.0658	8.1512
	Sep	5.69	8.2038	8.5446	8.4566	5.33	7.8729	7.7980
	Oct	7.21	7.7244	8.3900	8.1603	6.69	7.6879	7.5055
	Nov	7.30	7.3812	8.2362	7.9412	7.39	7.5788	7.3060
	Dec	7.09	7.3519	8.2083	7.8201	6.44	7.5725	7.1868
2001	Jan	8.47	7.6144	8.0533	7.7498	7.43	7.3750	7.0925
	Feb	7.00	7.6056	7.7846	7.7313	6.05	7.1100	7.0615
	Mar	7.85	7.8675	7.9529	7.8981	6.88	7.2846	7.2171
	Apr	8.17	8.0125	8.2846	8.1515	7.81	7.5842	7.4518
	May	6.91	8.1712	8.4342	8.3811	7.18	7.6704	7.6440
	Jun	11.12	8.6794	8.6108	8.6145	9.59	7.7362	7.8101
	Jul	6.53	8.8550	8.7971	8.8359	5.88	7.8633	7.9682
	Aug	9.47	9.2162	8.9446	9.0620	8.14	8.0012	8.1399
	Sep	10.94	9.5575	9.0521	9.2466	10.54	8.0796	8.2583
	Oct	9.92	9.5619	9.1167	9.3336	8.67	8.0912	8.2642
	Nov	8.18	9.6106	9.3417	9.4151	7.48	8.1600	8.2353
	Dec	10.45	9.5450	9.3942	9.4504	7.93	8.1200	8.1849
2002	Jan	9.58	9.3631	9.3250	9.4222	8.99	8.0454	8.1106
	Feb	9.43	9.3494	9.3529	9.3569	7.80	8.0642	8.0086
	Mar	8.00	9.3006	9.2792	9.2602	7.01	7.9362	7.8679
	Apr	9.57	9.2388	9.1471	9.1885	7.96	7.7567	7.7602
	May	10.91	9.2000	9.0254	9.0971	8.68	7.6767	7.6841
	Jun	8.38	8.9950	8.7750	8.8954	7.13	7.5588	7.5644
	Jul	7.61	8.8388	8.4921	8.6541	6.55	7.3550	7.4127
	Aug	9.06	8.6731	8.2567	8.4264	7.92	7.1292	7.2597
	Sep	9.58	8.3200	7.9700	8.1323	7.69	—	—
	Oct	8.11	7.9319	—	—	7.21	—	—
	Nov	7.07	7.4081	—	—	7.02	—	—
	Dec	5.55	6.7812	—	—	5.56	—	—

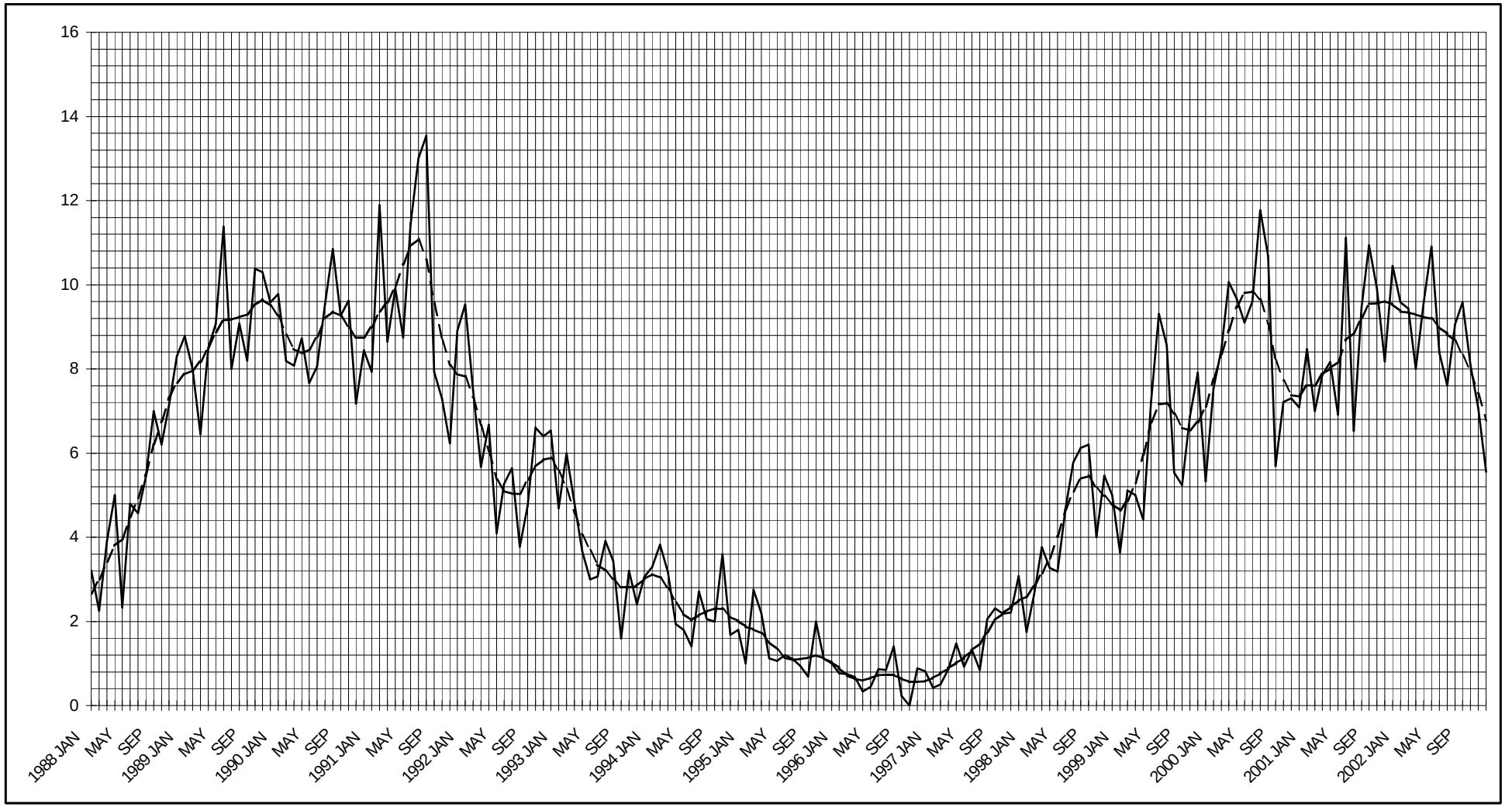
† = smoothed data based on interpolated data.

TABLE G6:
QUARTERLY & YEARLY **ACTIVE AREA (g)** MEANS for 1998 - 2002

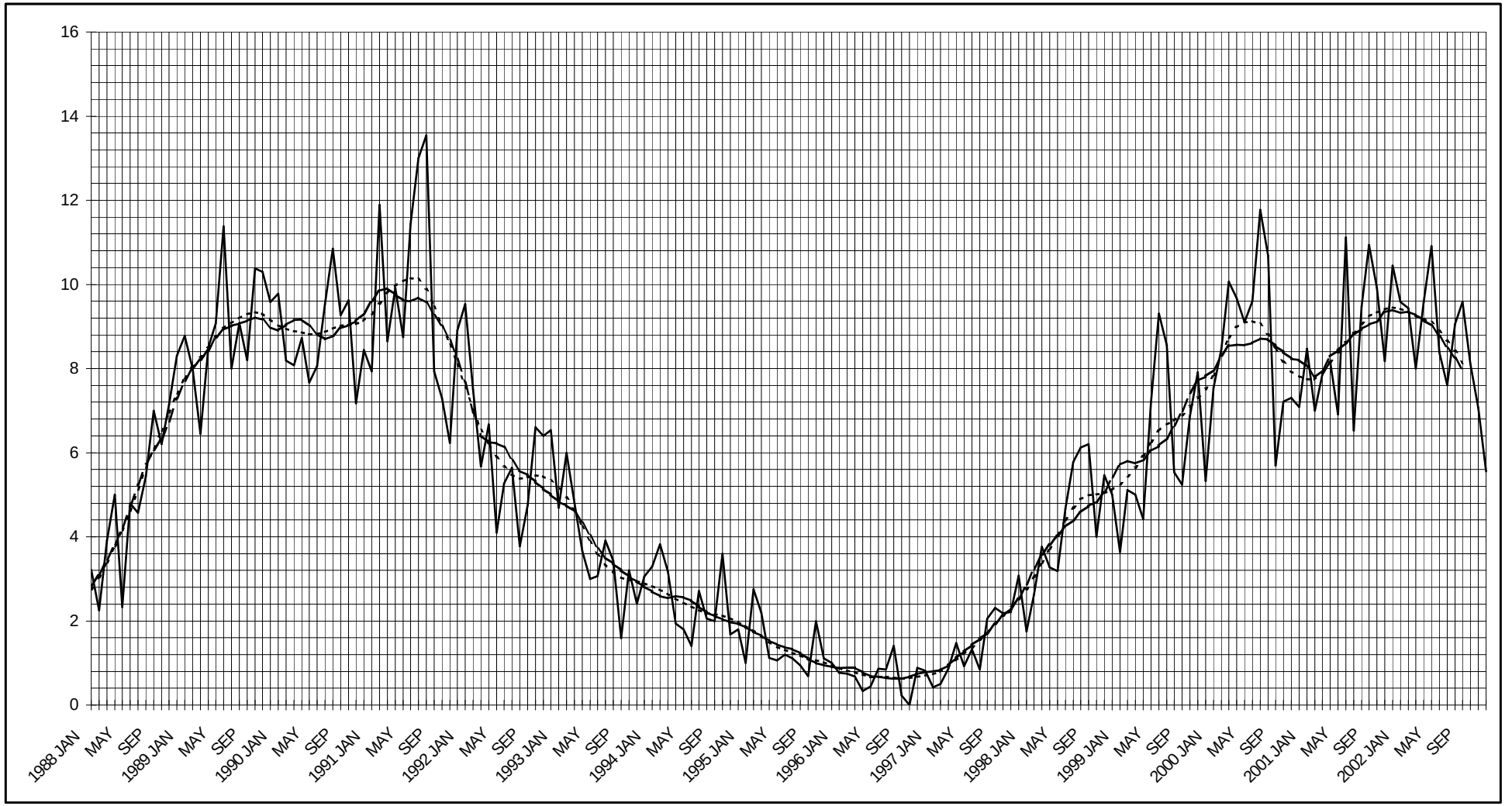
YEAR/ QUARTER	g	$g(S^{HBm})$	$g(S^{W})$	$g(S^{B13})$	g_{GD}
1998 / 1	2.73	2.85	3.23	3.06	2.98
2	3.57	4.06	4.02	4.06	4.06
3	6.08	5.32	4.57	4.86	6.39
4	4.83	4.98	5.10	5.06	5.04
1998	4.23	4.30	4.23	4.26	4.57
1999 / 1	4.59	4.93	5.76	5.44	4.46
2	7.21	6.62	6.01	6.23	—
3	6.40	6.91	6.66	6.77	—
4	6.68	6.80	7.65	7.30	6.92
1999	6.30	6.31	6.52	6.44	—
2000 / 1	8.79	8.34	8.27	8.30	8.34
2	9.45	9.71	8.58	9.07	8.83
3	9.56	8.97	8.65	8.77	8.68
4	7.20	7.49	8.28	7.97	6.80
2000	8.77	8.63	8.44	8.53	8.19
2001 / 1	7.84	7.70	7.93	7.79	6.85
2	9.03	8.29	8.44	8.38	8.49
3	8.96	9.21	8.93	9.05	8.15
4	9.53	9.57	9.28	9.40	8.63
2001	8.76	8.69	8.65	8.66	7.93
2002 / 1	9.09	9.34	9.32	9.35	8.06
2	9.55	9.14	8.98	9.06	7.91
3	8.65	8.61	8.24	8.40	7.36
4	7.11	7.37	—	—	6.78
2002	8.57	8.62	—	—	7.55

NB: $g(S^{HBm})$, $g(S^{W})$ & $g(S^{B13})$ quarterly values are means of 3 monthly values.
$g(S^{HBm})$, $g(S^{W})$ & $g(S^{B13})$ yearly values are means of 12 monthly values.
g_{GD} quarterly values are computed as quarterly g means multiplied by quarterly k means.
Annual values of g_{GD} are annual Active Area means multiplied by annual k means.

OBSERVED and SMOOTHED GDSO ACTIVE AREA (g and g[SHBm]) 1988-2002
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE G5 (IN THIS AND PREVIOUS REPORTS)



OBSERVED and SMOOTHED GDSO ACTIVE AREAS (g and g[SW] and g[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUE, SEE TABLE G5 (IN THIS AND PREVIOUS REPORTS)



CORRECTED and SMOOTHED GDSO ACTIVE AREAS (gGD, gGD[SW] and gGD[SB13]) 1988-2002
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE G5 (IN THIS AND PREVIOUS REPORTS)

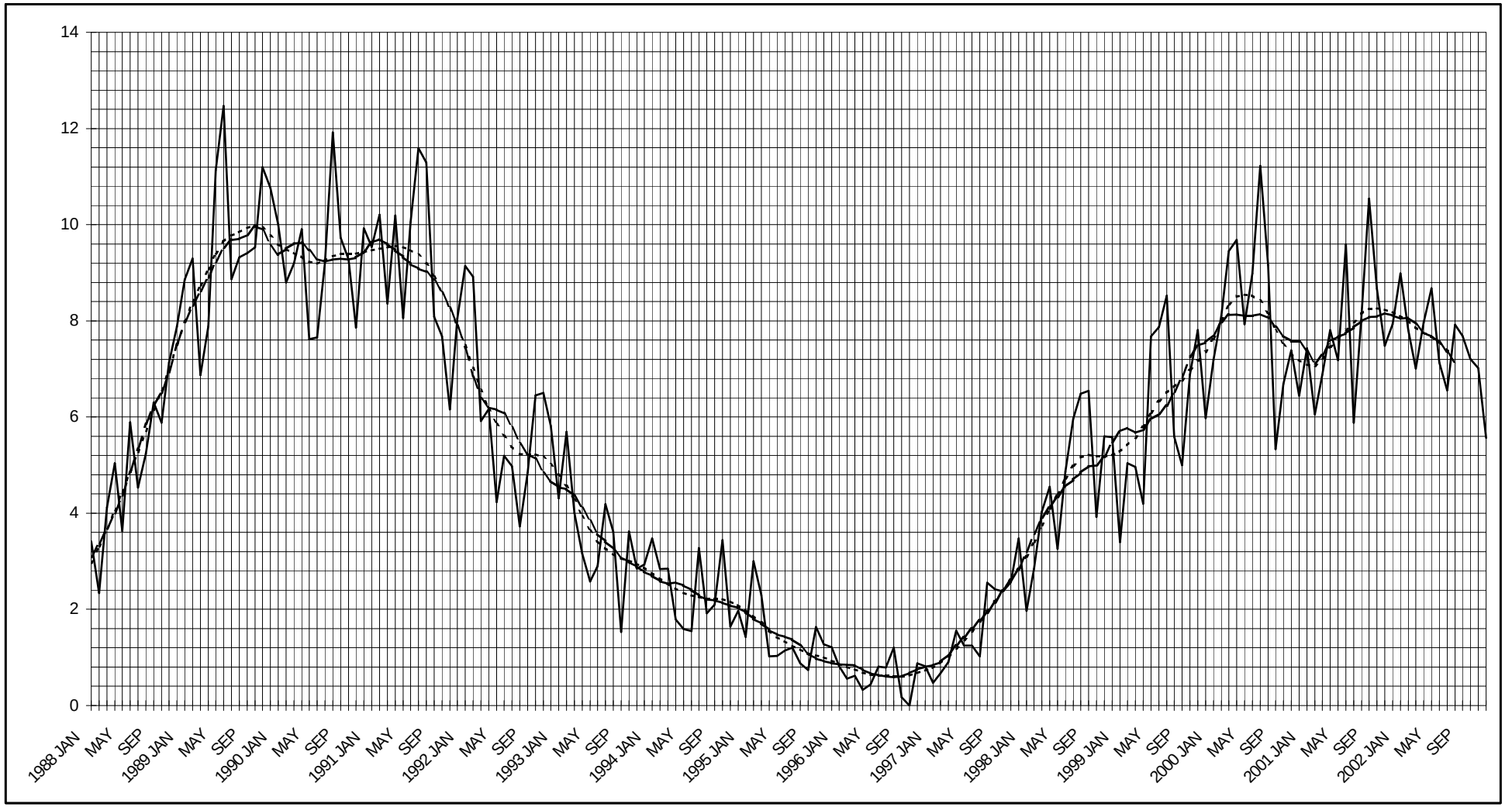


TABLE P1:
MONTHLY **PETTISINDEX** MEANS OF GDSO DATA for **2002**.
p = mean of penumbræ on the solar disc.
s = mean of penumbral-free sunspots on the solar disc.
SN = mean Pettisindex (k neglected; see list of definitions).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	p	s	SN	δ	n	w	Q	S	T	C
Jan	17.53	25.11	200.37	33.0	19	0.4743	1.82	2.24	2.37	2.1404
Feb	17.64	23.93	200.36	53.2	14	0.4446	1.93	2.36	2.54	2.2738
Mar	14.15	19.38	160.92	25.9	13	0.4534	1.92	2.31	2.54	2.2564
Apr	17.64	27.36	203.79	66.4	14	0.5099	1.79	2.07	2.21	2.0238
May	18.64	20.73	207.09	31.4	11	0.4112	2.00	2.59	2.82	2.4697
Jun	14.15	16.54	158.08	60.4	13	0.4778	1.73	2.19	2.42	2.1154
Jul	19.67	26.33	223.00	84.2	18	0.4719	1.78	2.31	2.50	2.1944
Aug	18.33	27.11	210.44	66.6	18	0.4563	1.86	2.44	2.50	2.2685
Sep	20.25	29.83	232.33	47.6	12	0.4466	1.92	2.38	2.54	2.2778
Oct	14.00	21.00	161.00	34.0	18	0.4511	1.94	2.39	2.39	2.2407
Nov	14.13	20.67	162.00	53.7	15	0.4395	2.03	2.50	2.43	2.3222
Dec	7.91	9.36	88.45	52.0	11	0.4779	1.73	2.36	2.27	2.1212
Year	16.35	22.73	186.26	57.4	—	0.4604	1.87	2.34	2.45	2.2216

TABLE P2:
ROTATIONAL **PETTISINDEX** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	p	s	SN	δ	n	w	Q	S	T	C
1984	2001/12/10.73	19.15	25.08	216.62	48.3	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	17.87	25.07	203.73	36.0	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	16.77	23.85	191.54	45.0	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	14.15	19.38	160.92	25.9	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	20.00	31.09	231.09	47.0	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	12.33	14.67	138.00	34.3	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	19.07	22.07	212.73	30.5	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	11.20	13.13	125.13	31.6	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	23.31	32.69	265.77	72.9	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	20.29	30.00	232.94	70.3	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	16.38	24.15	188.00	51.7	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	15.06	23.25	173.88	31.8	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	14.00	20.42	160.42	55.2	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	10.50	11.50	116.50	36.4	8	0.4406	1.94	2.50	2.44	2.2917

TABLE P3:
CORRECTED **PETTISINDICES** for **1998 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Pettisindices have to be upgraded to give reflections of international results. International Pettisindex results are computed by Thomas Wichary, Germany, on behalf of Sonne, Germany.

Below are the 'observed' Pettisindices along with the monthly k co-efficients and the corrected values (PX_{GD}) for 1998 - 2002. Sonne's final values (PX_I) are also stated.

I/GDSO = Sonne's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.

$I/GDSO_A$ = Sonne's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.

n = number of GDSO observations.

n_k = number of k values.

σ = sample standard deviation of k values.

σ'SIDC' = annual σ computed on the SIDC formula.

Eσ = annual estimate of standard deviation.

		SN	k	PX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	PX_I
1998	Jan	22.31						16		
	Feb	33.81						16		
	Mar	79.35						17		
	Apr	46.45						11		
	May	72.41						17		
	Jun	57.89						9		
	Jul	65.44						9		
	Aug	108.25						16		
	Sep	98.93						15		
	Oct	55.62						13		
	Nov	75.92						13		
	Dec	106.33						15		
1998	Means	69.58			—			—	—	
	σ =			σ 'SIDC' =			Eσ =			
1999	Jan	71.91						11		
	Feb	67.33						9		
	Mar	100.71						14		
	Apr	82.42						12		
	May	126.79						14		
	Jun	149.94						16		
	Jul	156.69						16		
	Aug	113.82						17		
	Sep	81.88						17		
	Oct	146.53						15		
	Nov	190.18						11		
	Dec	101.17						12		
1999	Means	117.73			—			—	—	
	σ =			σ 'SIDC' =			Eσ =			

DATA UNOBTAINABLE AT TIME OF PRINT.

TABLE P3 continued:
CORRECTED **PETTISINDICES** for **1998 - 2002**.

		SN	k	PX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	PX_I
2000	Jan	111.85						13		
	Feb	135.23						13		
	Mar	213.94			DATA			16		
	Apr	208.11						9		
	May	160.70			UNOBTAINABLE			10		
	Jun	183.90						10		
	Jul	283.00			AT			13		
	Aug	167.42						19		
	Sep	143.08			TIME			13		
	Oct	145.86						14		
	Nov	138.10			OF			10		
	Dec	128.18						11		
2000	Means	168.92			PRINT.			—	—	
	σ =				σ 'SIDC' =		Eσ =			
2001	Jan	154.35						17		
	Feb	122.38						13		
	Mar	186.10			DATA			20		
	Apr	148.08						12		
	May	132.27			UNOBTAINABLE			11		
	Jun	211.31						16		
	Jul	104.53			AT			17		
	Aug	179.07						15		
	Sep	284.12			TIME			17		
	Oct	174.17						12		
	Nov	165.55			OF			11		
	Dec	222.73						11		
2001	Means	175.60			PRINT.			—	—	
	σ =				σ 'SIDC' =		Eσ =			
2002	Jan	200.37						19		
	Feb	200.36						14		
	Mar	160.92			DATA			13		
	Apr	203.79						14		
	May	207.09			UNOBTAINABLE			11		
	Jun	158.08						13		
	Jul	223.00			AT			18		
	Aug	210.44						18		
	Sep	232.33			TIME			12		
	Oct	161.00						18		
	Nov	162.00			OF			15		
	Dec	88.45						11		
2002	Means	186.26			PRINT.			—	—	
	σ =				σ 'SIDC' =		Eσ =			

TABLE P4:
CORRECTED **PETTISINDICES** for Rotations 1930 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled PX_{GD}.

PX_{GD} = SN x k.
σ = sample standard deviation of k values.
I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.
$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.

ROTA-TION	START DATE, UT	SN	k	PX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1930	1997/11/28.84	47.50	1.3140	62.41	0.3424	1.2042	1.2042	10	10
1931	1997/12/26.17	26.50						16	
1932	1998/01/22.50	29.57						14	
1933	1988/02/18.85	60.15						13	
1934	1998/03/18.17	81.33						15	
1935	1998/04/14.46	57.25			DATA			12	
1936	1998/05/11.70	63.08						12	
1937	1998/06/07.91	67.67						9	
1938	1998/07/05.11	53.14						7	
1939	1998/08/01.32	102.62			UNOBTAINABLE			13	
1940	1998/08/28.56	110.41						17	
1941	1998/09/24.82	63.78						9	
1942	1998/10/22.10	60.71			AT			14	
1943	1998/11/18.41	102.70						10	
1944	1998/12/15.72	79.38						13	
1945	1999/01/12.06	66.40			TIME			10	
1946	1999/02/08.40	98.14						7	
1947	1999/03/07.73	97.14						14	
1948	1999/04/04.04	82.91			OF			11	
1949	1999/05/01.30	126.79						14	
1950	1999/05/28.52	131.00						13	
1951	1999/06/24.72	160.07						14	
1952	1999/07/21.92	127.14			PRINT.			14	
1953	1999/08/18.15	120.57						14	
1954	1999/09/14.40	71.40						15	
1955	1999/10/11.68	172.75						12	
1956	1999/11/07.97	183.82						11	

TABLE P4 continued:
CORRECTED **PETTISINDICES** for Rotations 1930 - 1997.

ROTA-TION	START DATE, UT	SN	k	PX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1957	1999/12/05.28	105.36						11	
1958	2000/01/01.61	116.83						12	
1959	2000/01/28.95	115.25						12	
1960	2000/02/25.29	182.75						12	
1961	2000/03/23.61	241.67						9	
1962	2000/04/19.89	179.55						11	
1963	2000/05/17.12	179.50						10	
1964	2000/06/13.33	229.62						8	
1965	2000/07/10.53	253.08						13	
1966	2000/08/06.74	172.75			DATA			16	
1967	2000/09/02.98	143.08						13	
1968	2000/09/30.25	146.33						12	
1969	2000/10/27.54	133.89						9	
1970	2000/11/23.85	131.36						11	
1971	2000/12/21.17	154.69			UNOBTAINABLE			13	
1972	2001/01/17.50	162.36						11	
1973	2001/02/13.84	106.12						16	
1974	2001/03/13.17	204.94						18	
1975	2001/04/09.47	142.50						8	
1976	2001/05/06.72	131.18			AT			11	
1977	2001/06/02.94	224.36						14	
1978	2001/06/30.13	107.07						15	
1979	2001/07/27.34	163.14						14	
1980	2001/08/23.57	228.73						11	
1981	2001/09/19.83	246.69			TIME			16	
1982	2001/10/17.11	199.40						10	
1983	2001/11/13.41	162.60						10	
1984	2001/12/10.73	216.62						13	
1985	2002/01/07.06	203.73						15	
1986	2002/02/03.40	191.54			OF			13	
1987	2002/03/02.73	160.92						13	
1988	2002/03/30.04	231.09						11	
1989	2002/04/26.31	138.00						6	
1990	2002/05/23.54	212.73						15	
1991	2002/06/19.74	125.13			PRINT.			15	
1992	2002/07/16.94	265.77						13	
1993	2002/08/13.16	232.94						17	
1994	2002/09/09.41	188.00						13	
1995	2002/10/06.68	173.88						16	
1996	2002/11/02.98	160.42						12	
1997	2002/11/30.29	116.50						8	

TABLE P5:
SMOOTHED **PETTISINDICES** for **1997 - 2002**.

The following are smoothed Pettisindices in three different systems. See page xii for all smoothing formulæ.

YEAR	MONTH	SN	SN(S^{HBm})	SN(S^{W})	SN(S^{B13})	PX_{GD}	$PX_{GD}(S^{W})$	$PX_{GD}(S^{B13})$
1997	Jan	3.16	9.47	9.37	9.39	6.10	19.93	20.11
	Feb	8.60	9.91	9.53	9.62	29.00	20.69	21.47
	Mar	8.21	9.84	12.17	10.96	21.53	24.55	23.98
	Apr	20.05	10.49	15.24	12.81	38.17	29.27	26.88
	May	6.54	10.89	16.90	14.57	21.36	31.80	29.39
	Jun	8.89	13.95	19.28	17.17	20.10	34.99	32.82
	Jul	5.30	17.79	21.70	20.55	21.27	—	—
	Aug	25.67	24.04	23.55	24.11	38.52	—	—
	Sep	52.44	31.42	27.57	28.11	78.15	—	—
	Oct	21.76	34.04	31.63	32.02	35.54	—	—
	Nov	40.93	36.62	35.47	36.00	71.73	—	—
	Dec	49.31	39.37	40.26	40.14	64.08	—	—
1998	Jan	22.31	40.46	44.81	44.01	—	—	—
	Feb	33.81	46.57	50.76	48.69	—	—	—
	Mar	79.35	53.43	56.13	54.01	—	—	—
	Apr	46.45	57.01	59.48	59.01	—	—	—
	May	72.41	64.64	62.35	63.54	—	—	—
	Jun	57.89	70.80	66.18	68.16	—	—	—
	Jul	65.44	75.31	70.63	73.00	—	—	—
	Aug	108.25	81.34	74.09	76.82	—	—	—
	Sep	98.93	83.39	76.38	78.86	—	—	—
	Oct	55.62	82.10	78.76	80.24	—	—	—
	Nov	75.92	81.67	82.53	82.30	—	—	—
	Dec	106.33	82.15	88.63	85.50	—	—	—
1999	Jan	71.91	81.24	96.27	89.68	—	—	—
	Feb	67.33	85.46	100.30	94.22	—	—	—
	Mar	100.71	94.11	99.82	98.83	—	—	—
	Apr	82.42	104.71	102.90	104.77	—	—	—
	May	126.79	118.76	111.45	112.43	—	—	—
	Jun	149.94	126.58	116.00	118.93	—	—	—
	Jul	156.69	129.02	117.44	123.08	—	—	—
	Aug	113.82	130.06	121.94	126.03	—	—	—
	Sep	81.88	128.34	129.49	129.59	—	—	—
	Oct	146.53	131.30	139.44	135.18	—	—	—
	Nov	190.18	133.77	146.09	140.23	—	—	—
	Dec	101.17	135.63	148.92	144.02	—	—	—

TABLE P5 continued:
SMOOTHED **PETTISINDICES** for **1997 - 2002**.

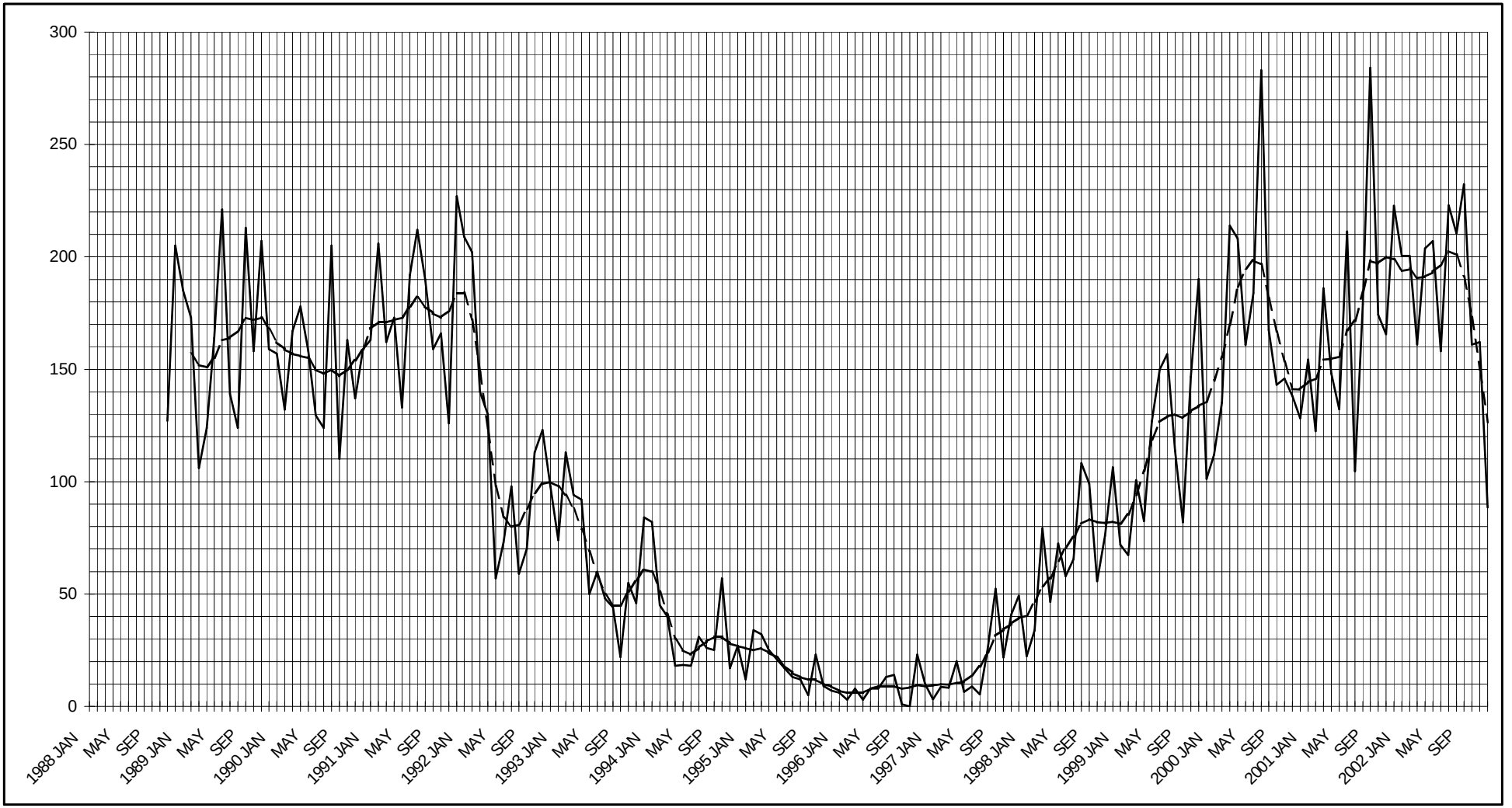
YEAR	MONTH	SN	SN(S^{HBm})	SN(S^{W})	SN(S^{B13})	PX_{GD}	$PX_{GD}(S^{W})$	$PX_{GD}(S^{B13})$
2000	Jan	111.85	144.97	155.60	150.78	—	—	—
	Feb	135.23	155.48	163.09	160.74	—	—	—
	Mar	213.94	169.75	167.88	170.20	—	—	—
	Apr	208.11	186.84	170.40	176.40	—	—	—
	May	160.70	194.71	168.20	179.10	—	—	—
	Jun	183.90	198.42	167.16	180.80	—	—	—
	Jul	283.00	196.72	170.05	180.52	—	—	—
	Aug	167.42	181.64	171.29	175.57	—	—	—
	Sep	143.08	166.65	169.59	168.12	—	—	—
	Oct	145.86	153.47	165.93	161.29	—	—	—
	Nov	138.10	141.20	162.24	155.82	—	—	—
	Dec	128.18	140.98	162.20	152.48	—	—	—
2001	Jan	154.35	144.46	155.91	149.53	—	—	—
	Feb	122.38	145.86	148.96	148.49	—	—	—
	Mar	186.10	154.28	155.32	152.53	—	—	—
	Apr	148.08	154.61	162.38	157.98	—	—	—
	May	132.27	155.62	164.70	162.98	—	—	—
	Jun	211.31	167.51	169.78	168.82	—	—	—
	Jul	104.53	171.52	175.64	175.08	—	—	—
	Aug	179.07	184.44	180.81	182.12	—	—	—
	Sep	284.12	198.15	183.01	187.66	—	—	—
	Oct	174.17	197.14	184.28	190.50	—	—	—
	Nov	165.55	200.08	189.72	193.31	—	—	—
	Dec	222.73	198.92	190.62	194.69	—	—	—
2002	Jan	200.37	193.85	193.33	195.39	—	—	—
	Feb	200.36	194.44	199.58	195.76	—	—	—
	Mar	160.92	190.74	198.73	194.87	—	—	—
	Apr	203.79	191.22	196.02	195.10	—	—	—
	May	207.09	193.29	195.32	195.65	—	—	—
	Jun	158.08	196.52	189.58	193.63	—	—	—
	Jul	223.00	202.57	180.68	189.67	—	—	—
	Aug	210.44	200.94	172.48	183.85	—	—	—
	Sep	232.33	191.26	165.10	175.09	—	—	—
	Oct	161.00	173.05	—	—	—	—	—
	Nov	162.00	149.78	—	—	—	—	—
	Dec	88.45	126.52	—	—	—	—	—

TABLE P6:
QUARTERLY AND YEARLY **PETTISINDEX** MEANS for 1998 - 2002.

YEAR/ QUARTER	SN	SN(S^{HBm})	SN(S^{W})	SN(S^{B13})	PX_{GD}	p	s
1998 / 1	45.86	46.82	50.57	48.90	—	3.69	8.92
2	61.16	64.15	62.67	63.57	—	4.86	12.51
3	95.12	80.01	73.70	76.23	—	8.00	15.12
4	80.61	81.97	83.31	82.68	—	6.78	12.80
1998	69.58	68.24	67.56	67.84	—	5.75	12.16
1999 / 1	82.56	86.94	98.80	94.24	—	6.85	14.03
2	122.93	116.68	110.12	112.04	—	10.43	18.64
3	116.68	129.14	122.96	126.23	—	9.80	18.68
4	144.84	133.57	144.82	139.81	—	12.32	21.68
1999	117.73	116.58	119.17	118.08	—	9.93	18.40
2000 / 1	157.98	156.73	162.19	160.57	—	13.38	24.17
2	183.41	193.32	168.59	178.77	—	15.76	25.83
3	193.78	181.67	170.31	174.74	—	16.78	26.00
4	138.09	145.22	163.46	156.53	—	11.89	19.23
2000	168.92	169.24	166.14	167.65	—	14.50	23.89
2001 / 1	158.74	148.20	153.40	150.18	—	13.86	21.14
2	169.56	159.25	165.62	163.26	—	15.10	18.54
3	189.65	184.70	179.82	181.62	—	16.90	20.67
4	187.09	198.71	188.21	192.83	—	16.59	21.21
2001	175.60	172.72	171.76	171.97	—	15.52	20.43
2002 / 1	189.22	193.01	197.21	195.34	—	16.61	23.13
2	189.11	193.68	193.64	194.79	—	16.74	21.74
3	220.62	198.26	172.75	182.87	—	19.31	27.50
4	143.20	149.78	—	—	—	12.52	17.98
2002	186.26	183.68	—	—	—	16.35	22.73

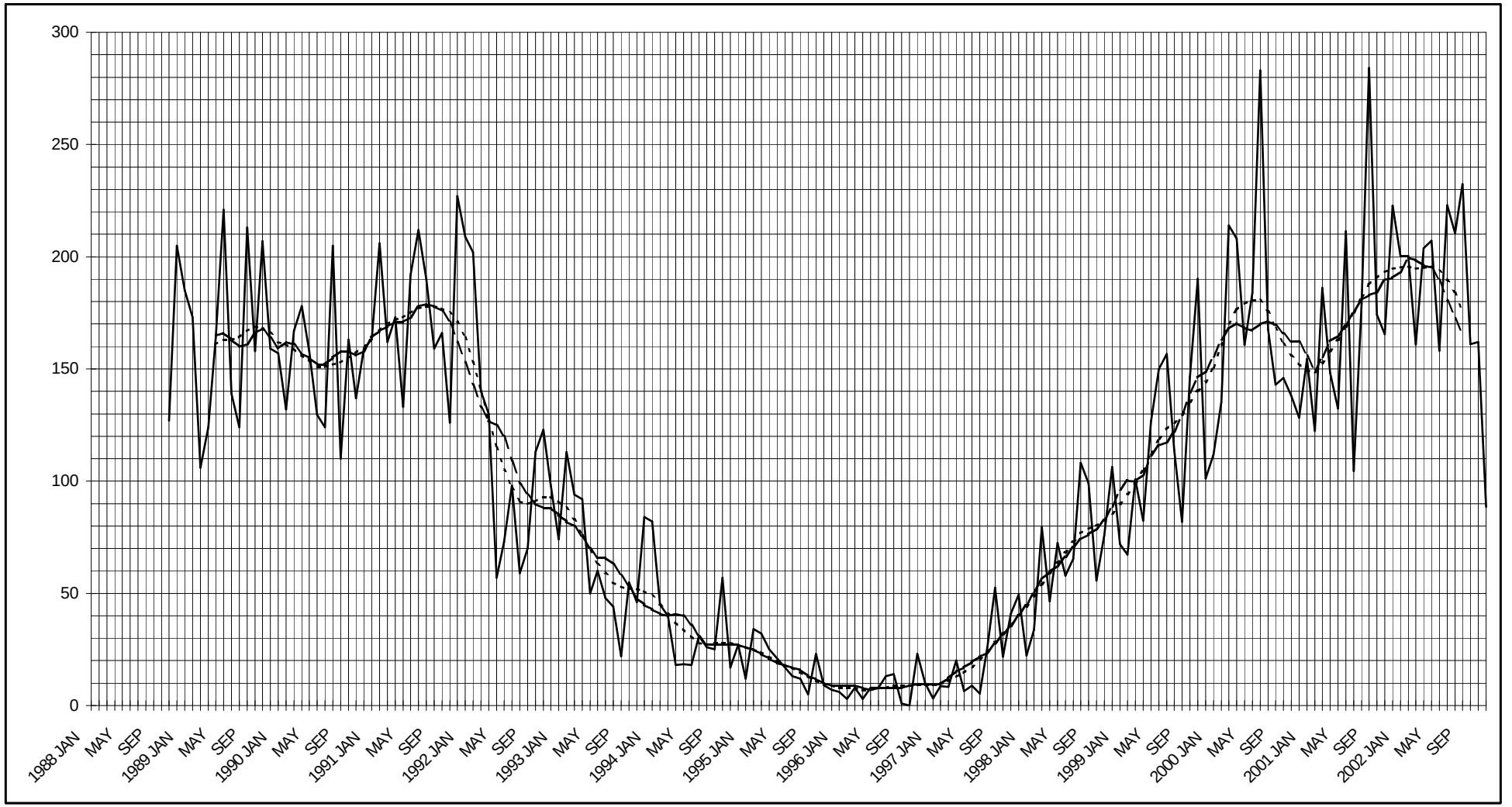
NB: SN(S^{HBm}), SN(S^{W}) & SN(S^{B13}) quarterly values are means of 3 monthly values.
SN(S^{HBm}), SN(S^{W}) & SN(S^{B13}) yearly values are means of 12 monthly values.
PX_{GD} quarterly values are computed as quarterly SN means multiplied by quarterly k means.
Annual values of PX_{GD} are annual Pettisindex means multiplied by annual k means.

OBSERVED and SMOOTHED GDSO PETTISINDICES (SN and SN[SHBm]) 1988-2002
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE P5 (IN THIS AND PREVIOUS REPORTS)



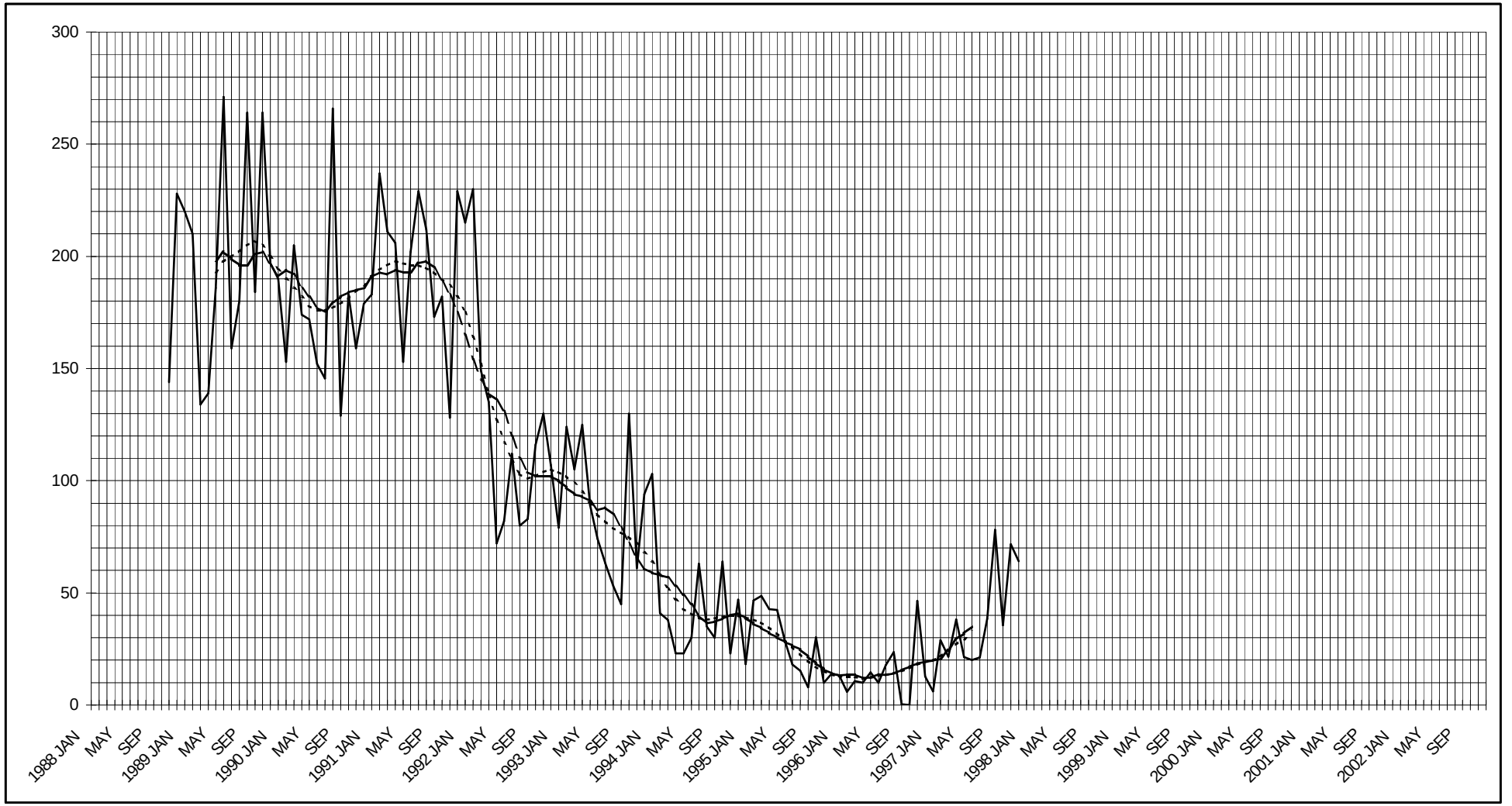
DATA START AT NOVEMBER 1988

OBSERVED and SMOOTHED GDSO PETTISINDICES (SN, SN[SW] and SN[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE P5 (IN THIS AND PREVIOUS REPORTS)



DATA START AT NOVEMBER 1988

CORRECTED and SMOOTHED GDSO PETTISINDICES (PXGD, PXGD[SW] and PXGD [SB13]) 1988-2002
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE P5 (IN THIS AND PREVIOUS REPORTS)



DATA START AT NOVEMBER 1988

TABLE B1:
MONTHLY **BECKINDEX** MEANS OF GDSO DATA for **2002**.
BX = mean Beckindex (k neglected; see list of definitions).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	BX	δ	n	w	Q	S	T	C
Jan	1442.42	430.5	19	0.4743	1.82	2.24	2.37	2.1404
Feb	1446.64	336.0	14	0.4446	1.93	2.36	2.54	2.2738
Mar	1024.62	160.0	13	0.4534	1.92	2.31	2.54	2.2564
Apr	1434.21	619.8	14	0.5099	1.79	2.07	2.21	2.0238
May	1465.36	400.4	11	0.4112	2.00	2.59	2.82	2.4697
Jun	833.46	415.4	13	0.4778	1.73	2.19	2.42	2.1154
Jul	2458.94	1358.5	18	0.4719	1.78	2.31	2.50	2.1944
Aug	1690.89	721.5	18	0.4563	1.86	2.44	2.50	2.2685
Sep	1829.42	623.9	12	0.4466	1.92	2.38	2.54	2.2778
Oct	1109.33	329.6	18	0.4511	1.94	2.39	2.39	2.2407
Nov	1376.20	635.8	15	0.4395	2.03	2.50	2.43	2.3222
Dec	401.55	304.0	11	0.4779	1.73	2.36	2.27	2.1212
Year	1418.69	674.0	—	0.4604	1.87	2.34	2.45	2.2216

TABLE B2:
ROTATIONAL **BECKINDEX** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	BX	δ	n	w	Q	S	T	C
1984	2001/12/10.73	1438.54	384.5	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	1517.40	521.9	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	1380.77	311.2	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	1024.62	160.0	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	1723.00	429.3	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	724.67	393.9	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	1399.73	371.6	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	842.67	489.7	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	3022.15	1122.0	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	1888.06	688.3	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	1432.38	630.0	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	1172.31	321.9	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	1511.33	659.7	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	550.12	263.1	8	0.4406	1.94	2.50	2.44	2.2917

TABLE B3:
CORRECTED **BECKINDICES** for **2001 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Beckindices have to be upgraded to give reflections of international results. International Beckindex results are computed by Sonne, Germany.

Below are the 'observed' Beckindices along with the monthly k co-efficients and the corrected values (BX_{GD}) for 2001 - 2002. Sonne's final values (BX_I) are also stated.

I/GDSO = Sonne's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.

$I/GDSO_A$ = Sonne's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.

n = number of GDSO observations.

n_k = number of k values.

σ = sample standard deviation of k values.

σ'SIDC' = annual σ computed on the SIDC formula.

Eσ = annual estimate of standard deviation.

		BX	k	BX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	BX_I
2001	Jan	1073.35	1.0757	1154.60	0.1643	1.0644	1.0644	17	17	1127
	Feb	794.23	1.1414	906.55	0.3876	0.9870	0.9870	13	13	743
	Mar	1731.30	1.1100	1921.82	0.2702	1.1284	1.1284	20	20	1900
	Apr	1186.92	1.5089	1790.91	0.5859	1.3435	1.3435	12	12	1756
	May	827.09	1.6018	1324.80	0.4237	1.5257	1.5257	11	11	1379
	Jun	1251.56	1.7525	2193.42	0.5353	1.6177	1.6177	16	16	1934
	Jul	545.24	1.4674	800.07	0.4566	1.4134	1.4134	17	17	805
	Aug	1164.13	1.4538	1692.37	0.3254	1.4018	1.4018	15	15	1599
	Sep	2414.00	1.5036	3629.75	0.3241	1.4555	1.4555	17	17	3087
	Oct	1229.17	1.5001	1843.85	0.3798	1.4138	1.4138	12	12	1798
	Nov	1465.09	1.4224	2083.97	0.1920	1.3936	1.3936	11	11	2093
	Dec	1458.27	1.3473	1964.76	0.2116	1.2898	1.2898	11	11	2009
2001	Means	1286.28	1.3946	1793.87	—	1.3352	1.3352	—	—	1688
	σ =	0.4172		σ 'SIDC' =		0.3526		Eσ =		0.0285
2002	Jan	1442.42	1.1914	1718.50	0.2928	1.1226	1.1226	19	19	1528
	Feb	1446.64	1.0699	1547.81	0.1733	1.0592	1.0592	14	14	1640
	Mar	1024.62	1.2549	1285.83	0.2134	1.2354	1.2354	13	13	1219
	Apr	1434.21	1.5890	2278.92	0.3297	1.4503	1.4503	14	14	2008
	May	1465.36	1.1996	1757.82	0.2101	1.1838	1.1838	11	11	1725
	Jun	833.46	1.4267	1189.08	0.5680	1.2570	1.2570	13	13	880
	Jul	2458.94	1.1371	2796.01	0.2372	1.0705	1.0705	18	18	2364
	Aug	1690.89	1.5296	2586.34	0.5056	1.3878	1.3878	18	18	2135
	Sep	1829.42	1.2751	2332.75	0.1615	1.2718	1.2718	12	12	2231
	Oct	1109.33						18	18	
	Nov	1376.20		DATA UNOBTAINABLE				15	15	
	Dec	401.55		AT TIME				11	11	
2002	Means	1418.69		OF PRINT.				—	—	
	σ =			σ 'SIDC' =				Eσ =		

TABLE B4:
CORRECTED **BECKINDICES** for Rotations 1971 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled BX_{GD}.

BX_{GD} = BX x k.
σ = sample standard deviation of k values.
I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.
$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.

ROTA-TION	START DATE, UT	BX	k	BX_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1971	2000/12/21.17	1133.00	1.1029	1249.62	0.1838	1.0967	1.0967	13	13
1972	2001/01/17.50	1119.09	0.9875	1105.07	0.2424	0.9299	0.9299	11	11
1973	2001/02/13.84	728.06	1.1664	849.19	0.3368	1.0706	1.0706	16	16
1974	2001/03/13.17	1849.67	1.2386	2291.08	0.2617	1.2140	1.2140	18	18
1975	2001/04/09.47	1252.38	1.5523	1944.00	0.7227	1.3221	1.3221	8	8
1976	2001/05/06.72	753.91	1.5499	1168.50	0.4822	1.4845	1.4845	11	11
1977	2001/06/02.94	1359.71	1.7728	2410.44	0.4820	1.6418	1.6418	14	14
1978	2001/06/30.13	544.87	1.5832	862.61	0.5041	1.4751	1.4751	15	15
1979	2001/07/27.34	904.07	1.4499	1310.81	0.3414	1.4601	1.4601	14	14
1980	2001/08/23.57	2070.45	1.3734	2843.49	0.4033	1.2911	1.2911	11	11
1981	2001/09/19.83	1812.38	1.5885	2879.00	0.3173	1.5541	1.5541	16	16
1982	2001/10/17.11	1889.90	1.3687	2586.76	0.1936	1.3411	1.3411	10	10
1983	2001/11/13.41	1162.80	1.4179	1648.76	0.1696	1.4248	1.4248	10	10
1984	2001/12/10.73	1438.54	1.2851	1848.70	0.3066	1.2068	1.2068	13	13
1985	2002/01/07.06	1517.40	1.1905	1806.47	0.2505	1.1343	1.1343	15	15
1986	2002/02/03.40	1380.77	1.0610	1465.02	0.1770	1.0430	1.0430	13	13
1987	2002/03/02.73	1024.62	1.2549	1285.83	0.2134	1.2354	1.2354	13	13
1988	2002/03/30.04	1723.00	1.5018	2587.63	0.3080	1.4246	1.4246	11	11
1989	2002/04/26.31	724.67	1.6106	1167.14	0.4299	1.4179	1.4179	6	6
1990	2002/05/23.54	1399.73	1.1592	1622.59	0.1833	1.1516	1.1516	15	15
1991	2002/06/19.74	842.67	1.4422	1215.27	0.5125	1.2687	1.2687	15	15
1992	2002/07/16.94	3022.15	1.0785	3259.53	0.2081	1.0668	1.0668	13	13
1993	2002/08/13.16	1888.06	1.5746	2972.93	0.4937	1.3990	1.3990	17	17
1994	2002/09/09.41	1432.38						13	13
1995	2002/10/06.68	1172.31		DATA UNOBTAINABLE AT TIME OF PRINT.				16	16
1996	2002/11/02.98	1511.33						12	12
1997	2002/11/30.29	550.12						8	8

TABLE B5:
SMOOTHED **BECKINDICES** for **2000 - 2002**.

The following are smoothed Beckindices in three different systems. See page xii for all smoothing formulæ.

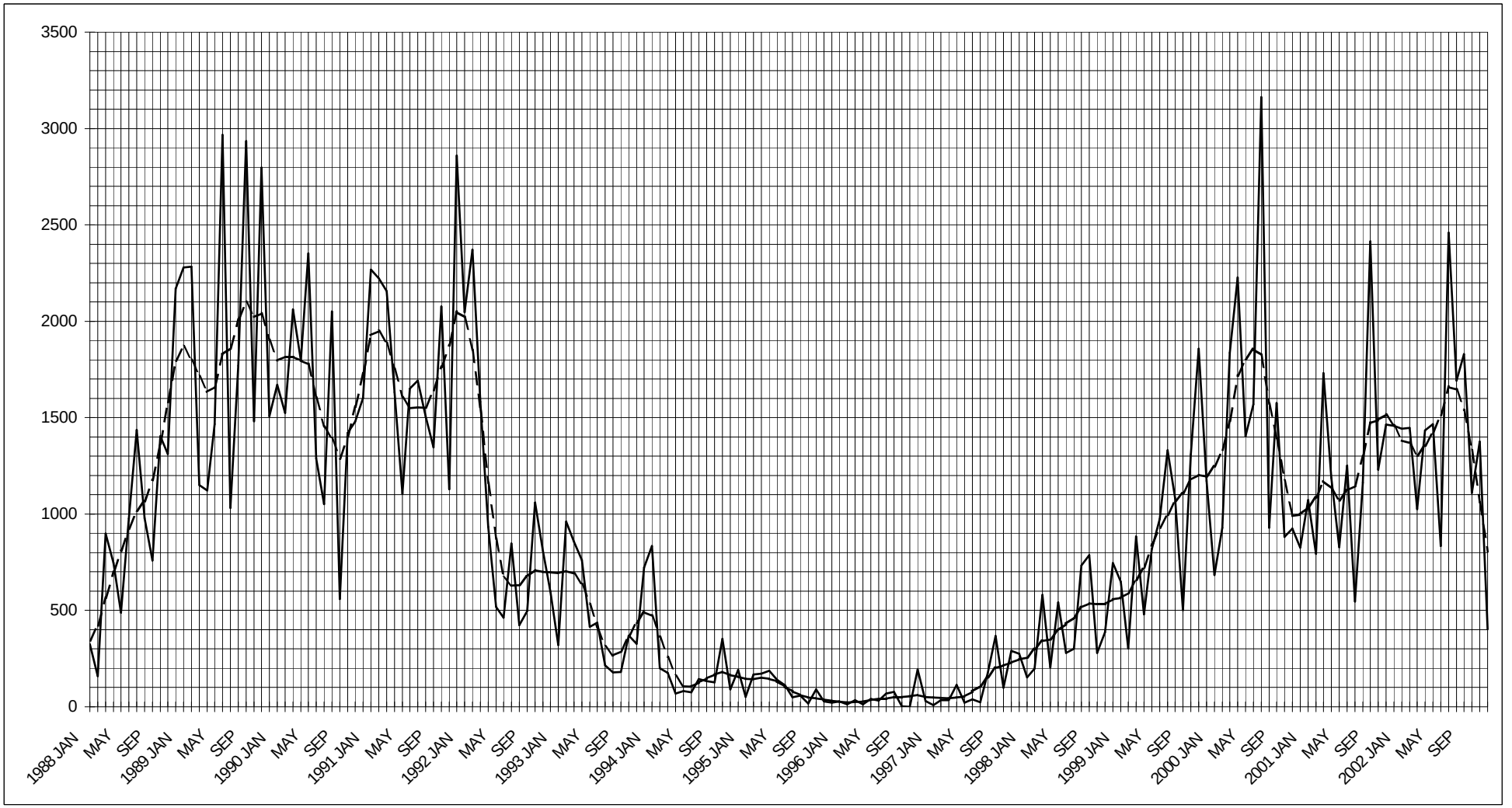
YEAR	MONTH	BX	BX(S^{HBm})	BX(S^{W})	BX(S^{B13})	BX_{GD}	BX_{GD}(S^{W})	BX_{GD}(S^{B13})
2000	Jan	684.38	1247.9	1401.8	1334.7	1024.41	1954.5	1846.8
	Feb	928.38	1333.6	1471.6	1430.8	1215.35	2003.4	1935.5
	Mar	1836.88	1483.2	1509.9	1528.6	2481.58	2029.5	2037.6
	Apr	2227.00	1717.0	1536.9	1596.0	2774.23	2045.4	2109.8
	May	1403.70	1803.7	1480.2	1610.4	2215.73	1949.2	2116.5
	Jun	1569.50	1856.2	1426.8	1607.8	1917.00	1872.8	2102.6
	Jul	3161.54	1825.7	1428.6	1583.1	3747.92	1860.0	2058.7
	Aug	929.05	1572.5	1439.2	1506.4	1370.47	1852.5	1949.7
	Sep	1576.23	1394.1	1429.2	1401.5	2175.59	1816.3	1799.6
	Oct	881.79	1173.4	1381.5	1299.4	1117.16	1752.0	1651.9
	Nov	924.40	990.2	1314.1	1213.8	1269.87	1674.0	1530.6
	Dec	826.09	997.3	1276.9	1154.3	945.25	1648.3	1456.5
2001	Jan	1073.35	1033.4	1154.6	1095.9	1154.60	1537.0	1401.0
	Feb	794.23	1085.5	1055.4	1068.2	906.55	1427.6	1387.3
	Mar	1731.30	1171.7	1100.1	1092.6	1921.82	1501.6	1454.4
	Apr	1186.92	1133.3	1149.5	1125.0	1790.91	1592.5	1549.4
	May	827.09	1071.0	1186.5	1158.1	1324.80	1656.7	1645.2
	Jun	1251.56	1123.2	1235.4	1199.3	2193.42	1733.1	1740.4
	Jul	545.24	1145.4	1277.1	1247.7	800.07	1799.1	1828.0
	Aug	1164.13	1299.2	1319.6	1309.5	1692.37	1849.3	1912.3
	Sep	2414.00	1472.9	1317.4	1355.9	3629.75	1849.5	1959.9
	Oct	1229.17	1486.7	1298.2	1376.9	1843.85	1843.3	1960.9
	Nov	1465.09	1515.4	1335.1	1399.4	2083.97	1881.7	1950.3
	Dec	1458.27	1459.1	1344.3	1404.9	1964.76	1857.9	1911.9
2002	Jan	1442.42	1383.0	1406.6	1412.4	1718.50	1899.2	1879.3
	Feb	1446.64	1368.9	1508.3	1426.3	1547.81	2019.6	1871.5
	Mar	1024.62	1303.0	1505.9	1426.0	1285.83	2002.8	1860.2
	Apr	1434.21	1354.3	1476.5	1438.7	2278.92	—	—
	May	1465.36	1423.1	1467.9	1462.1	1757.82	—	—
	Jun	833.46	1513.2	1420.1	1473.0	1189.08	—	—
	Jul	2458.94	1658.9	1341.4	1462.8	2796.01	—	—
	Aug	1690.89	1647.2	1261.2	1415.2	2586.34	—	—
	Sep	1829.42	1539.0	1197.0	1329.4	2332.75	—	—
	Oct	1109.33	1331.8	—	—	—	—	—
	Nov	1376.20	1060.1	—	—	—	—	—
	Dec	401.55	806.1	—	—	—	—	—

TABLE B6:
QUARTERLY AND YEARLY **BECKINDEX** MEANS for 1998 - 2002.

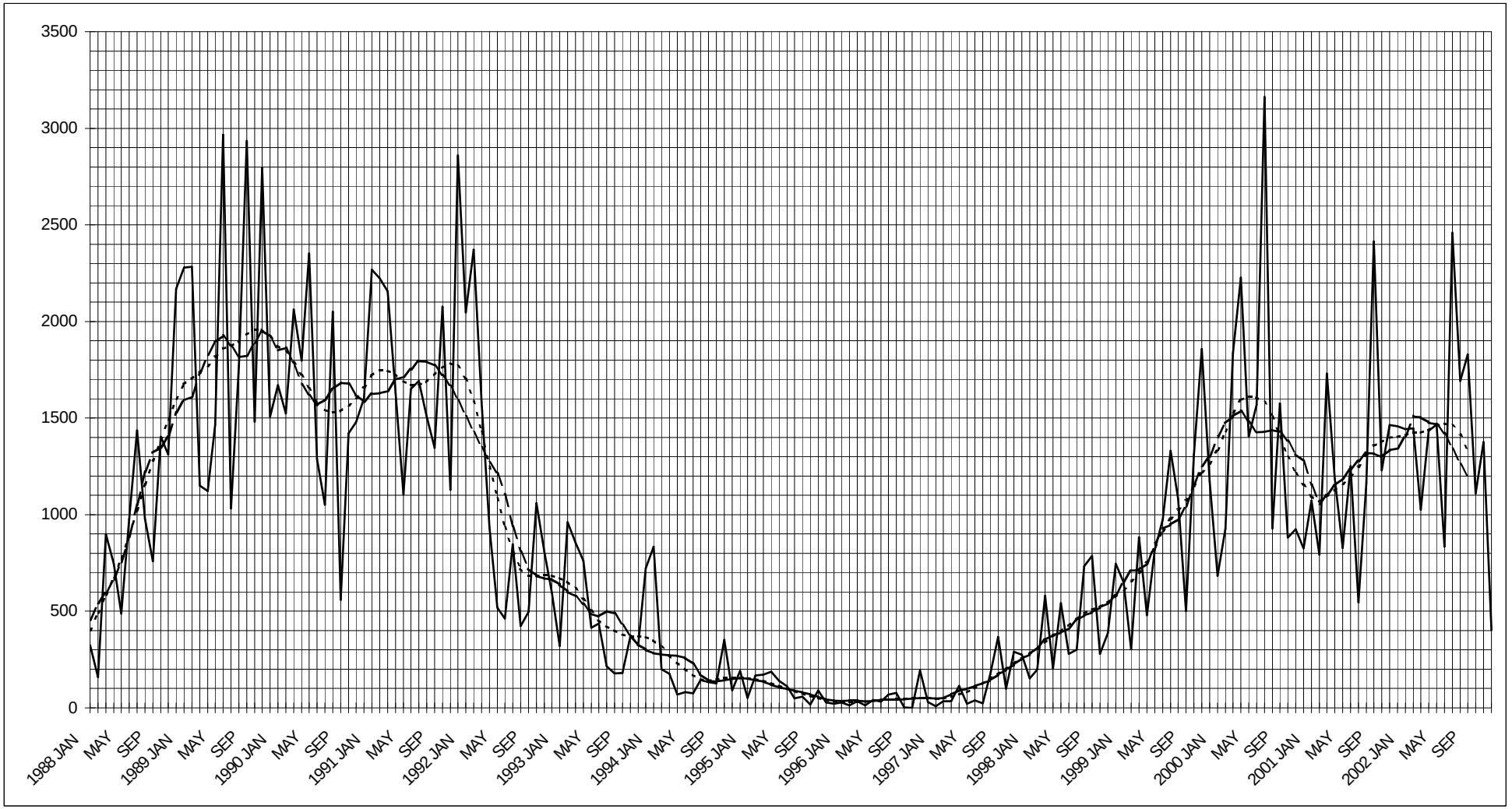
YEAR/ QUARTER	BX	$BX(S^{HBm})$	$BX(S^{W})$	$BX(S^{B13})$	BX_{GD}	n
1998 / 1	316.20	298.87	314.10	305.97	663.86	49
2	378.30	391.87	393.47	396.27	865.56	37
3	656.02	504.43	475.73	485.57	1331.66	40
4	484.39	541.87	548.13	546.70	938.20	41
1998	452.65	434.26	432.86	433.62	943.49	167
1999 / 1	653.59	604.97	693.83	654.97	1122.39	34
2	780.86	830.33	841.70	832.33	1323.13	42
3	964.70	1056.50	988.63	1025.10	1636.23	50
4	1425.03	1192.43	1235.50	1210.40	1994.66	38
1999	959.78	921.06	939.92	930.70	1565.79	164
2000 / 1	1198.95	1354.90	1461.10	1431.37	1658.35	42
2	1716.38	1792.30	1481.30	1604.73	2320.70	29
3	1760.96	1597.43	1432.33	1497.00	2402.01	45
4	876.46	1053.63	1324.17	1222.50	1103.36	35
2000	1391.06	1449.57	1424.72	1438.90	1867.76	151
2001 / 1	1263.96	1096.87	1103.37	1085.57	1398.60	50
2	1111.95	1109.17	1190.47	1160.80	1818.08	39
3	1383.04	1305.83	1304.70	1304.37	2041.07	49
4	1379.62	1487.07	1325.87	1393.73	1966.69	34
2001	1286.28	1249.73	1231.10	1236.12	1793.87	172
2002 / 1	1325.63	1351.63	1473.60	1421.57	1554.15	46
2	1237.71	1430.20	1454.83	1457.93	1758.45	38
3	2013.54	1615.03	1266.53	1402.47	2655.41	48
4	1023.36	1066.00	—	—		44
2002	1418.69	1365.72	—	—		176

NB: $BX(S^{HBm})$, $BX(S^{W})$ & $BX(S^{B13})$ quarterly values are means of 3 monthly values.
$BX(S^{HBm})$, $BX(S^{W})$ & $BX(S^{B13})$ yearly values are means of 12 monthly values.
BX_{GD} quarterly values are computed as quarterly BX means multiplied by quarterly k means.
Annual values of BX_{GD} are annual Beckindex means multiplied by annual k means.

OBSERVED and SMOOTHED GDSO BECKINDICES (BX and BX[SHBm]) 1988-2002
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE B5 (IN THIS AND PREVIOUS REPORTS)



OBSERVED and SMOOTHED GDSO BECKINDICES (BX, BX[SW] and BX[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE B5 (IN THIS AND PREVIOUS REPORTS)



CORRECTED and SMOOTHED GDSO BECKINDICES (BXGD, BXGD[SW], BXGD[SB13]) 1988-2002
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE B5 (IN THIS AND PREVIOUS REPORTS)

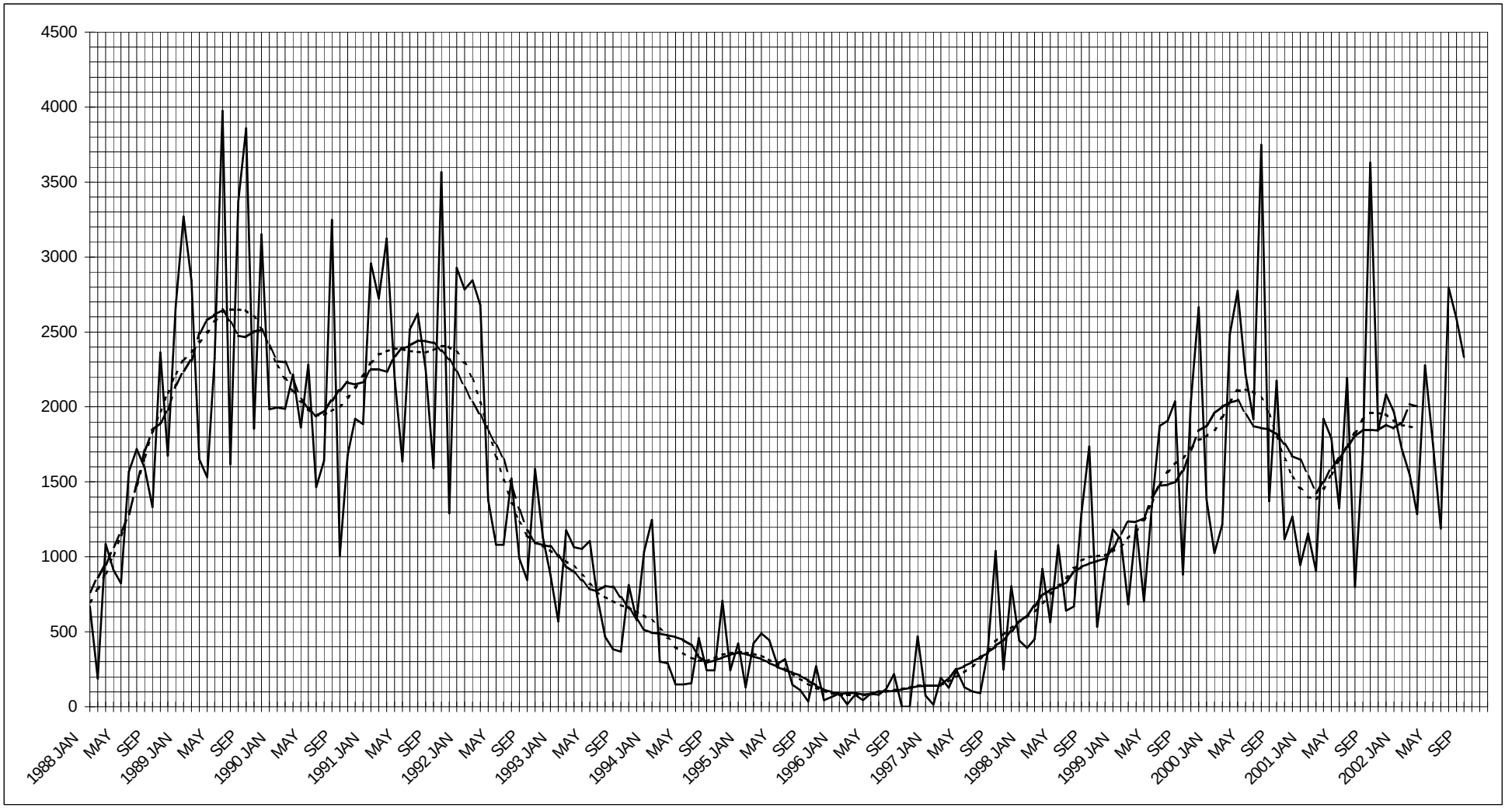


TABLE C1:
MONTHLY **CLASSIFICATION VALUE** MEANS OF GDSO DATA for **2002**.
CV = mean Classification Value (k neglected; see list of definitions).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	CV	δ	n	w	Q	S	T	C
Jan	188.84	41.4	19	0.4743	1.82	2.24	2.37	2.1404
Feb	163.50	48.2	14	0.4446	1.93	2.36	2.54	2.2738
Mar	142.23	24.5	13	0.4534	1.92	2.31	2.54	2.2564
Apr	188.00	60.4	14	0.5099	1.79	2.07	2.21	2.0238
May	206.91	24.1	11	0.4112	2.00	2.59	2.82	2.4697
Jun	172.00	46.2	13	0.4778	1.73	2.19	2.42	2.1154
Jul	169.94	66.9	18	0.4719	1.78	2.31	2.50	2.1944
Aug	199.06	51.5	18	0.4563	1.86	2.44	2.50	2.2685
Sep	186.92	40.3	12	0.4466	1.92	2.38	2.54	2.2778
Oct	155.94	28.2	18	0.4511	1.94	2.39	2.39	2.2407
Nov	173.53	51.1	15	0.4395	2.03	2.50	2.43	2.3222
Dec	83.82	47.8	11	0.4779	1.73	2.36	2.27	2.1212
Year	170.95	51.0	—	0.4604	1.87	2.34	2.45	2.2216

TABLE C2:
ROTATIONAL **CLASSIFICATION VALUE** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	CV	δ	n	w	Q	S	T	C
1984	2001/12/10.73	184.08	52.1	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	191.47	38.1	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	157.08	45.0	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	142.23	24.5	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	212.82	41.1	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	142.33	45.4	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	210.80	27.5	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	117.40	25.0	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	207.15	54.6	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	212.18	45.1	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	160.85	47.2	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	173.56	28.6	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	170.83	49.0	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	111.75	33.5	8	0.4406	1.94	2.50	2.44	2.2917

TABLE C3:
CORRECTED **CLASSIFICATION VALUES** for **2001 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Classification Values have to be upgraded to give reflections of international results. International Classification Value results are computed by Kjell Inge Malde, of Norway.

Below are the 'observed' Classification Values along with the monthly k co-efficients and the corrected values (CV_{GD}) for 2001 - 2002. Norway's final values (CV_I) are also stated.

I/GDSO = Norway's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.
$I/GDSO_A$ = Norway's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.
σ = sample standard deviation of k values.
σ'SIDC' = annual σ computed on the SIDC formula.
Eσ = annual estimate of standard deviation.

		CV	k	CV_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	CV_I
2001	Jan	148.00	0.7925	117.29	0.0834	0.7806	0.7806	17	17	106.5
	Feb	104.00	0.8037	83.59	0.1575	0.7788	0.7788	13	13	83.7
	Mar	156.40	0.8579	134.17	0.1974	0.8811	0.8811	20	20	131.4
	Apr	158.67	1.0365	164.46	0.3703	0.9422	0.9422	12	12	147.4
	May	114.00	1.0589	120.71	0.3596	0.9841	0.9841	11	11	115.6
	Jun	199.56	0.9180	183.19	0.1494	0.8988	0.8988	16	16	177.8
	Jul	95.65	0.8799	84.16	0.1848	0.8653	0.8653	17	17	93.5
	Aug	171.07	0.9222	157.75	0.1729	0.9111	0.9111	15	15	148.0
	Sep	245.24	1.0137	248.60	0.1137	1.0072	1.0072	17	17	230.4
	Oct	194.83	0.8698	169.47	0.1443	0.8550	0.8550	12	12	171.1
	Nov	186.09	0.8838	164.47	0.1774	0.8407	0.8407	11	11	159.2
	Dec	195.18	0.9752	190.33	0.1229	0.9511	0.9511	11	11	190.4
2001	Means	164.19	0.9114	149.64	—	0.8986	0.8986	—	—	146.4
	σ =	0.2066		σ 'SIDC' =	0.1797			Eσ =	0.0150	
2002	Jan	188.84	0.9195	173.63	0.1609	0.8843	0.8843	19	19	160.3
	Feb	163.50	0.9073	148.34	0.1672	0.8729	0.8729	14	14	141.5
	Mar	142.23	0.8427	119.86	0.1315	0.8221	0.8221	13	13	115.2
	Apr	188.00	0.9176	172.52	0.2190	0.8625	0.8625	14	14	167.2
	May	206.91	0.7962	164.73	0.1172	0.7830	0.7830	11	11	169.4
	Jun	172.00	0.7176	123.43	0.0964	0.7044	0.7044	13	13	109.2
	Jul	169.94	0.8571	145.66	0.1412	0.8235	0.8235	18	18	135.2
	Aug	199.06	0.8023	159.70	0.1185	0.7882	0.7882	18	18	151.7
	Sep	186.92	0.8899	166.34	0.1779	0.8462	0.8462	12	12	154.1
	Oct	155.94	0.9227	143.89	0.2043	0.8906	0.8906	18	18	140.8
	Nov	173.53	0.8745	151.75	0.1097	0.8552	0.8552	15	15	145.9
	Dec	83.82	2.3337	195.61	1.9720	1.4121	1.4121	11	11	101.6
2002	Means	170.95	0.9546	163.18	—	0.8504	0.8504	—	—	141.0
	σ =	0.6119		σ 'SIDC' =	0.2644			Eσ =	0.0388	

TABLE C4:
CORRECTED **CLASSIFICATION VALUES** for Rotations 1971 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled CV_{GD}.

CV_{GD} = CV x k.

σ = sample standard deviation of k values.

I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.

$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.

n = number of GDSO observations.

n_k = number of k values.

ROTA-TION	START DATE, UT	CV	k	CV_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1971	2000/12/21.17	157.15	0.8291	130.29	0.1106	0.8101	0.8101	13	13
1972	2001/01/17.50	139.91	0.7408	103.65	0.0967	0.7303	0.7303	11	11
1973	2001/02/13.84	94.31	0.7870	74.23	0.1625	0.7853	0.7853	16	16
1974	2001/03/13.17	182.67	0.9423	172.12	0.1568	0.9364	0.9364	18	18
1975	2001/04/09.47	131.75	1.1262	148.38	0.4523	0.9810	0.9810	8	8
1976	2001/05/06.72	118.73	1.0086	119.75	0.3611	0.9280	0.9280	11	11
1977	2001/06/02.94	211.93	0.9087	192.58	0.1283	0.9002	0.9002	14	14
1978	2001/06/30.13	98.13	0.9229	90.57	0.1972	0.8927	0.8927	15	15
1979	2001/07/27.34	151.14	0.8793	132.90	0.1739	0.8913	0.8913	14	14
1980	2001/08/23.57	194.82	1.0116	197.07	0.1398	1.0009	1.0009	11	11
1981	2001/09/19.83	230.56	0.9340	215.35	0.1549	0.9442	0.9442	16	16
1982	2001/10/17.11	219.50	0.8863	194.54	0.1043	0.8724	0.8724	10	10
1983	2001/11/13.41	191.20	0.9166	175.25	0.1931	0.8713	0.8713	10	10
1984	2001/12/10.73	184.08	0.9655	177.72	0.1560	0.9298	0.9298	13	13
1985	2002/01/07.06	191.47	0.9096	174.16	0.1473	0.8820	0.8820	15	15
1986	2002/02/03.40	157.08	0.9117	143.20	0.1732	0.8756	0.8756	13	13
1987	2002/03/02.73	142.23	0.8427	119.86	0.1315	0.8221	0.8221	13	13
1988	2002/03/30.04	212.82	0.8765	186.54	0.1592	0.8424	0.8424	11	11
1989	2002/04/26.31	142.33	0.9645	137.28	0.2903	0.9028	0.9028	6	6
1990	2002/05/23.54	210.80	0.7433	156.69	0.0940	0.7343	0.7343	15	15
1991	2002/06/19.74	117.40	0.8234	96.67	0.1568	0.7956	0.7956	15	15
1992	2002/07/16.94	207.15	0.8435	174.73	0.1291	0.8180	0.8180	13	13
1993	2002/08/13.16	212.18	0.7875	167.10	0.1029	0.7790	0.7790	17	17
1994	2002/09/09.41	160.85	0.9249	148.77	0.2580	0.8556	0.8556	13	13
1995	2002/10/06.68	173.56	0.8887	154.25	0.1400	0.8722	0.8722	16	16
1996	2002/11/02.98	170.83	0.8869	151.51	0.0839	0.8766	0.8766	12	12
1997	2002/11/30.29	111.75	1.2851	143.60	0.7881	1.0694	1.0694	8	8

TABLE C5:
SMOOTHED **CLASSIFICATION VALUES** for **2000 - 2002**.

The following are smoothed Classification Values in three different systems. See page xii for all smoothing formulæ.

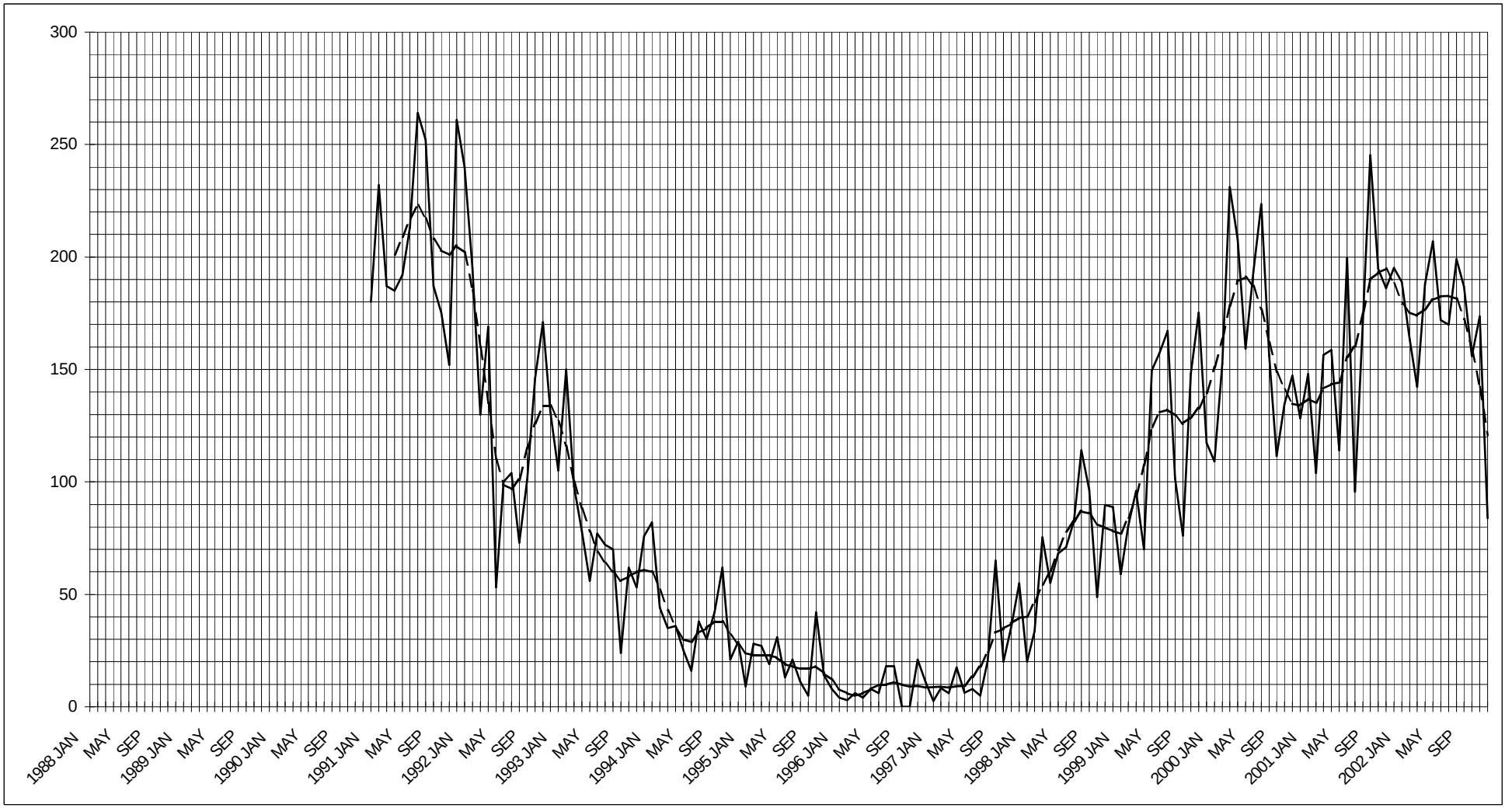
YEAR	MONTH	CV	$CV(S^{HBm})$	$CV(S^{W})$	$CV(S^{B13})$	CV_{GD}	$CV_{GD}(S^{W})$	$CV_{GD}(S^{B13})$
2000	Jan	109.08	150.90	155.56	153.59	108.45	142.05	139.97
	Feb	152.54	163.46	160.19	162.77	133.22	145.87	147.25
	Mar	231.00	178.29	163.94	170.71	191.16	148.56	153.72
	Apr	207.89	189.16	164.86	174.14	188.16	149.31	156.80
	May	159.20	191.15	163.14	174.12	148.16	147.41	156.71
	Jun	193.40	187.03	162.43	172.97	168.02	145.50	155.25
	Jul	223.46	176.68	164.50	170.08	212.11	145.26	151.93
	Aug	156.32	162.05	164.10	163.56	135.42	143.56	145.30
	Sep	111.46	148.88	158.97	155.14	110.56	139.12	136.93
	Oct	134.71	140.97	153.81	148.64	110.08	135.76	130.32
	Nov	147.30	134.82	149.88	144.21	130.88	133.63	125.98
	Dec	128.18	133.99	148.25	141.35	102.50	133.11	123.57
2001	Jan	148.00	136.83	143.18	139.05	117.29	128.42	121.99
	Feb	104.00	135.26	138.47	138.43	83.59	124.01	122.55
	Mar	156.40	141.58	144.66	142.11	134.17	130.70	127.99
	Apr	158.67	143.54	152.74	147.42	164.46	138.92	135.15
	May	114.00	144.37	156.86	152.64	120.71	142.80	141.47
	Jun	199.56	155.52	161.27	158.70	183.19	147.86	148.01
	Jul	95.65	160.40	165.76	165.30	84.16	153.86	154.94
	Aug	171.07	174.74	169.94	172.55	157.75	158.91	162.08
	Sep	245.24	189.80	171.83	178.21	248.60	161.01	166.99
	Oct	194.83	193.14	172.46	180.94	169.47	160.75	168.33
	Nov	186.09	194.82	177.55	183.08	164.47	162.92	168.77
	Dec	195.18	188.10	180.28	183.77	190.33	162.26	167.65
2002	Jan	188.84	179.43	182.22	183.21	173.63	162.34	165.10
	Feb	163.50	175.41	186.49	182.20	148.34	164.98	161.70
	Mar	142.23	173.88	185.22	180.44	119.86	161.63	157.31
	Apr	188.00	176.82	181.17	179.61	172.52	157.14	154.41
	May	206.91	180.91	179.03	179.48	164.73	155.54	152.74
	Jun	172.00	182.61	173.86	177.57	123.43	155.24	151.82
	Jul	169.94	182.78	165.59	173.66	145.66	—	—
	Aug	199.06	181.45	158.58	168.42	159.70	—	—
	Sep	186.92	172.22	153.84	161.27	166.34	—	—
	Oct	155.94	158.91	—	—	143.89	—	—
	Nov	173.53	142.00	—	—	151.75	—	—
	Dec	83.82	120.88	—	—	195.61	—	—

TABLE C6:
QUARTERLY & YEARLY **CLASSIFICATION VALUE** MEANS for 1998 - 2002.

YEAR/ QUARTER	CV	$CV(S^{HBm})$	$CV(S^{W})$	$CV(S^{B13})$	CV_{GD}
1998 / 1	43.67	47.04	53.44	50.72	54.73
2	64.97	69.24	65.29	67.21	65.69
3	100.32	85.14	75.24	79.17	122.44
4	76.44	79.78	84.78	82.68	82.05
1998	70.01	70.30	69.69	69.94	80.20
1999 / 1	79.85	84.90	99.47	94.01	75.11
2	129.90	120.91	109.57	113.27	128.57
3	113.88	129.17	124.86	127.37	112.40
4	146.24	133.60	148.41	141.98	133.81
1999	118.43	117.15	120.58	119.16	113.86
2000 / 1	168.98	164.22	159.90	162.36	150.95
2	186.10	189.11	163.48	173.74	167.75
3	162.76	162.54	162.52	162.93	150.80
4	136.26	136.59	150.65	144.73	113.37
2000	162.83	163.12	159.14	160.94	145.01
2001 / 1	139.92	137.89	142.10	139.86	114.95
2	162.85	147.81	156.96	152.92	161.90
3	170.63	174.98	169.18	172.02	160.27
4	192.12	192.02	176.76	182.60	174.52
2001	164.19	163.18	161.25	161.85	149.64
2002 / 1	167.96	176.24	184.64	181.95	150.16
2	188.00	180.11	178.02	178.89	153.04
3	185.10	178.82	159.34	167.78	156.37
4	143.91	140.60	—	—	181.18
2002	170.95	168.94	—	—	163.18

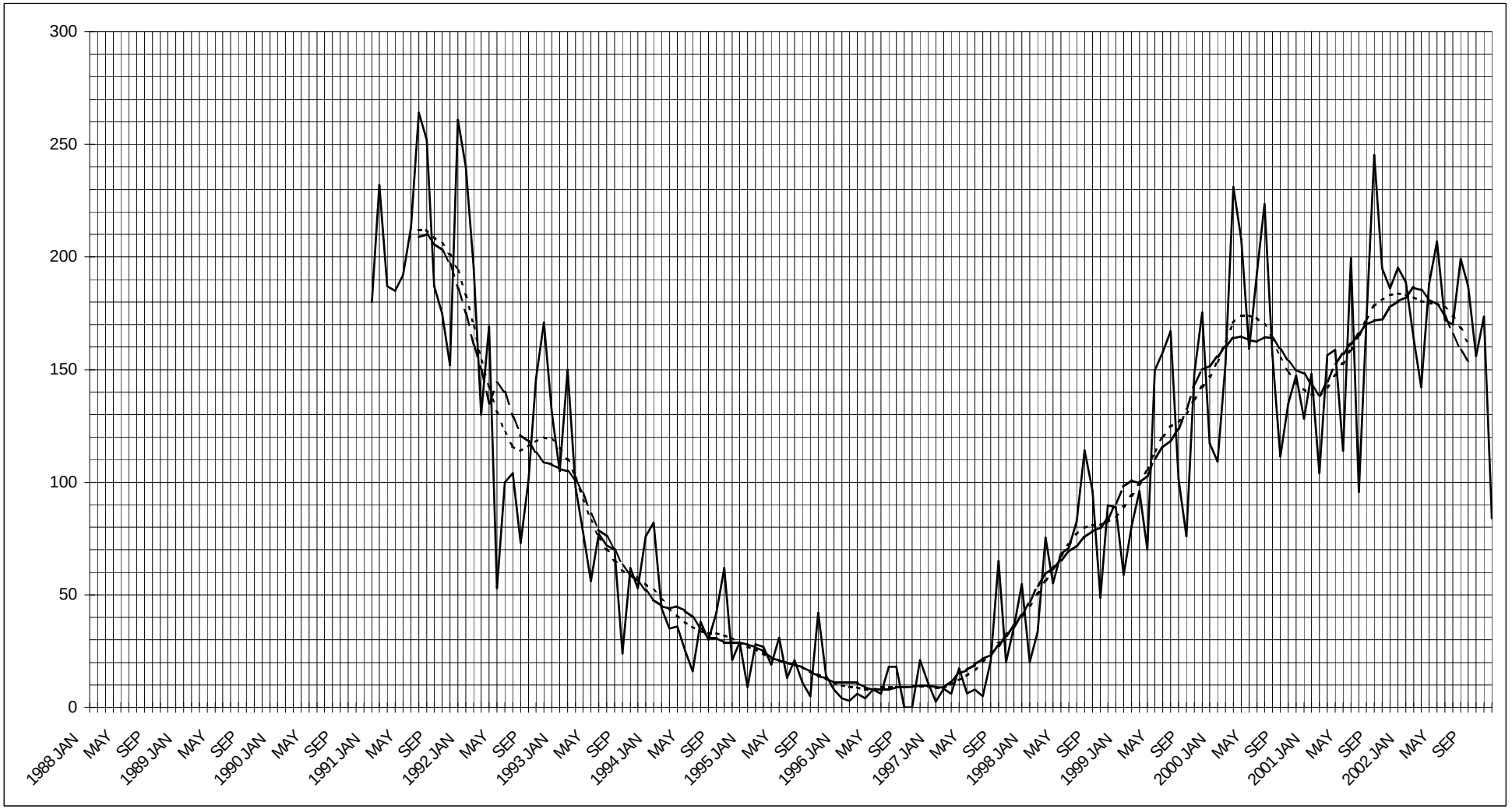
NB: $CV(S^{HBm})$, $CV(S^{W})$ & $CV(S^{B13})$ quarterly values are means of 3 monthly values.
$CV(S^{HBm})$, $CV(S^{W})$ & $CV(S^{B13})$ yearly values are means of 12 monthly values.
CV_{GD} quarterly values are computed as quarterly CV means multiplied by quarterly k means.
Annual values of CV_{GD} are annual Classification Value means multiplied by annual k means.

OBSERVED and SMOOTHED GDSO CLASSIFICATION VALUES (CV and CV[SHBm]) 1991-2002
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE C5 (IN THIS AND PREVIOUS REPORTS)



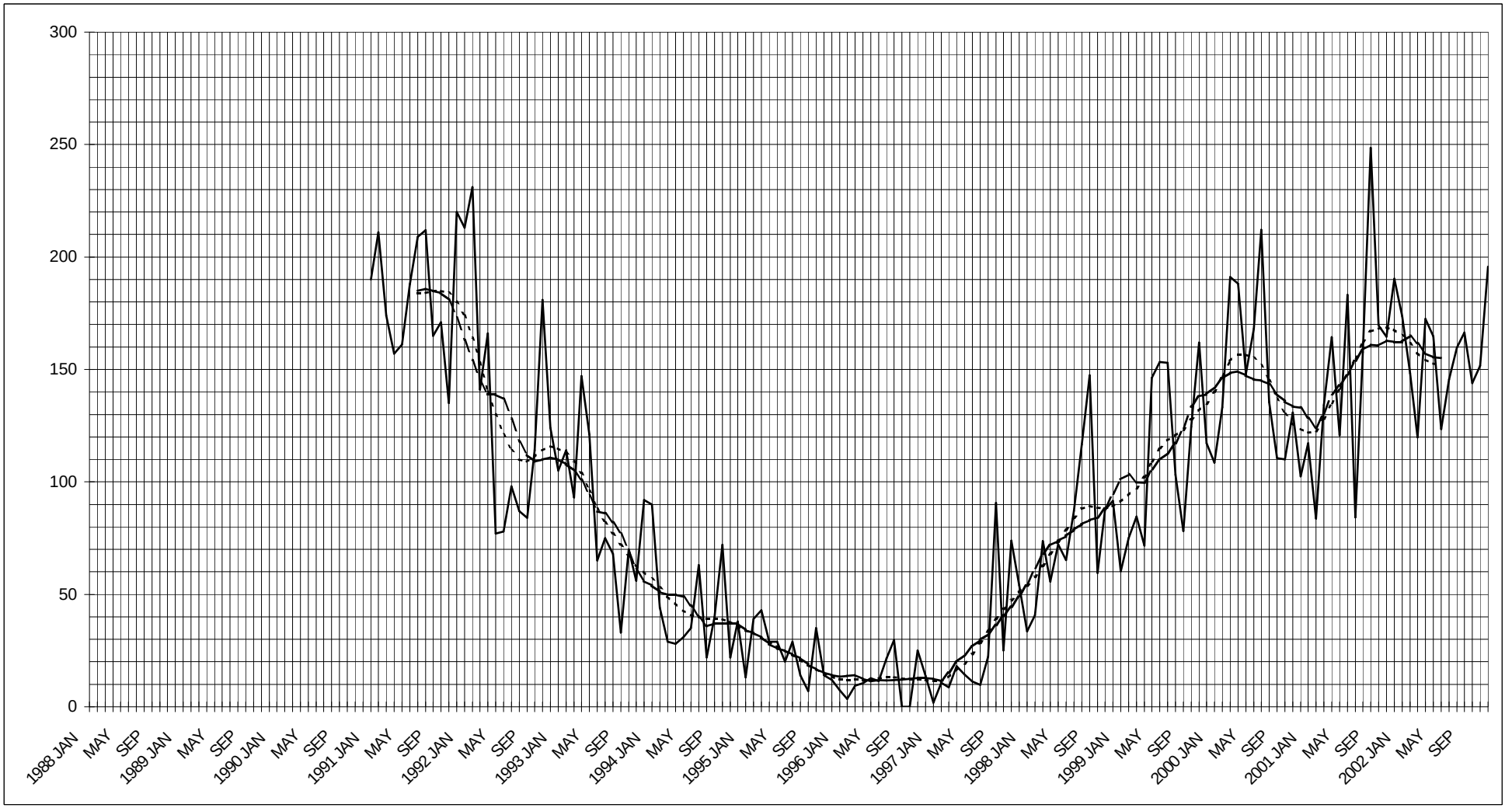
DATA START AT JANUARY 1991

OBSERVED and SMOOTHED GDSO CLASSIFICATION VALUES (CV, CV[SW] and CV[SB13]) 1991-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE C5 (IN THIS AND PREVIOUS REPORTS)



DATA START AT JANUARY 1991

CORRECTED and SMOOTHED GDSO CLASSIFICATION VALUES (CV_{GD}, CV_{GD}[SW] and CV_{GD}[SB13]) 1991-2002
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE C5 (IN THIS AND PREVIOUS REPORTS)



DATA START AT JANUARY 1991.

TABLE Q1:
MONTHLY **QUALITY COUNT** MEANS OF GDSO DATA for **2002**.
QC = mean Quality Count (see list of definitions).
QC^2 = mean Squared Quality Count (see list of definitions and constants, pp. ix-x).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	QC	δ	QC^2	δ	Σg	n	w	Q	S	T	C
Jan	31.00	4.1	118.37	20.0	182	19	0.4743	1.82	2.24	2.37	2.1404
Feb	30.36	7.6	116.64	27.2	132	14	0.4446	1.93	2.36	2.54	2.2738
Mar	26.08	2.4	100.23	8.5	104	13	0.4534	1.92	2.31	2.54	2.2564
Apr	31.36	6.9	121.64	36.7	134	14	0.5099	1.79	2.07	2.21	2.0238
May	33.82	3.7	127.27	18.5	120	11	0.4112	2.00	2.59	2.82	2.4697
Jun	25.38	7.8	88.92	29.1	109	13	0.4778	1.73	2.19	2.42	2.1154
Jul	25.61	9.6	106.61	46.7	137	18	0.4719	1.78	2.31	2.50	2.1944
Aug	30.28	8.1	117.72	33.5	163	18	0.4563	1.86	2.44	2.50	2.2685
Sep	30.50	5.2	115.33	17.8	115	12	0.4466	1.92	2.38	2.54	2.2778
Oct	24.11	5.9	83.78	19.1	146	18	0.4511	1.94	2.39	2.39	2.2407
Nov	24.53	5.0	101.60	22.1	106	15	0.4395	2.03	2.50	2.43	2.3222
Dec	16.00	8.2	54.36	31.9	61	11	0.4779	1.73	2.36	2.27	2.1212
Year	27.52	7.1	105.09	30.1	—	—	0.4604	1.87	2.34	2.45	2.2216

TABLE Q2:
ROTATIONAL **QUALITY COUNT** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	QC	δ	QC^2	δ	Σg	n	w	Q	S	T	C
1984	2001/12/10.73	31.31	5.9	117.31	26.6	126	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	30.73	3.6	118.87	18.7	141	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	29.54	7.3	112.62	24.5	121	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	26.08	2.4	100.23	8.5	104	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	33.91	5.9	136.27	29.9	110	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	26.83	5.4	84.83	16.8	59	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	33.20	3.4	125.33	16.8	158	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	17.93	3.0	64.47	12.1	89	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	31.31	7.5	135.62	36.9	114	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	32.00	8.2	122.82	32.2	164	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	25.31	6.7	93.62	26.6	105	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	27.19	5.4	93.44	17.7	149	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	23.42	3.9	102.08	22.7	77	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	20.50	6.2	72.50	22.8	54	8	0.4406	1.94	2.50	2.44	2.2917

TABLE Q3:
COMPARED **QUALITY COUNTS** for **2001 - 2002**.

Data unobtainable.

TABLE Q5:
SMOOTHED **QUALITY COUNT** VALUES for **2001 - 2002**.

The following are smoothed Quality Count values in three different systems. See page xii for all smoothing formulæ.

YEAR	MONTH	QC	$QC(S^{HBm})$	$QC(S^{W})$	$QC(S^{B13})$	QC^2	$QC^2(S^{HBm})$	$QC^2(S^{W})$	$QC^2(S^{B13})$
2001	Jan	26.06	23.78	25.02	24.16	93.24	87.04	91.74	88.63
	Feb	21.00	23.69	24.10	24.05	76.54	87.55	87.62	88.02
	Mar	26.80	24.62	24.81	24.56	109.50	91.63	90.67	89.95
	Apr	24.75	24.80	25.88	25.31	88.92	91.14	94.57	92.52
	May	20.45	25.05	26.32	26.01	72.64	90.69	96.17	94.91
	Jun	34.69	26.72	26.92	26.79	123.56	96.37	98.73	97.76
	Jul	18.65	27.26	27.58	27.57	62.76	97.96	101.52	100.78
	Aug	28.73	28.82	28.18	28.43	101.93	104.99	104.24	104.35
	Sep	37.65	30.37	28.54	29.16	150.24	112.22	105.52	107.42
	Oct	30.42	30.43	28.78	29.57	105.25	112.61	106.50	109.42
	Nov	26.64	30.76	29.61	29.96	102.82	114.85	110.14	111.59
	Dec	32.64	30.55	29.78	30.15	118.27	114.43	110.97	112.86
2002	Jan	31.00	30.01	29.68	30.13	118.37	113.20	111.36	113.39
	Feb	30.36	30.07	30.04	30.00	116.64	114.52	113.84	113.55
	Mar	26.08	29.82	29.81	29.69	100.23	113.39	113.04	112.74
	Apr	31.36	29.58	29.24	29.42	121.64	112.82	110.69	111.86
	May	33.82	29.34	28.89	29.12	127.27	111.80	109.75	110.85
	Jun	25.38	28.73	28.11	28.48	88.92	109.48	107.04	108.56
	Jul	25.61	28.35	27.02	27.66	106.61	108.56	102.26	105.30
	Aug	30.28	27.92	25.99	26.78	117.72	106.94	97.44	101.37
	Sep	30.50	26.68	24.94	25.65	115.33	101.60	92.96	96.31
	Oct	24.11	25.06	—	—	83.78	94.02	—	—
	Nov	24.53	22.99	—	—	101.60	84.76	—	—
	Dec	16.00	20.44	—	—	54.36	73.08	—	—

TABLE Q6:
QUARTERLY AND YEARLY **QUALITY COUNT** MEANS for 1998 - 2002.

YEAR/ QUARTER	QC	QC(S^{HBm})	QC(S^{W})	QC(S^{B13})
1998 / 1	7.37	8.12	9.11	8.69
2	10.22	11.21	11.25	11.29
3	17.10	14.65	12.73	13.48
4	13.59	13.99	14.44	14.25
1998	11.86	11.99	11.88	11.93
1999 / 1	13.21	14.31	16.84	15.88
2	21.52	19.98	18.17	18.78
3	19.68	21.35	20.52	20.94
4	22.03	21.58	24.11	23.06
1999	19.35	19.30	19.91	19.67
2000 / 1	27.50	26.55	26.31	26.45
2	30.45	31.18	27.26	28.91
3	29.56	28.28	27.46	27.79
4	22.83	23.49	26.00	25.03
2000	27.60	27.38	26.76	27.04
2001 / 1	25.04	24.03	24.64	24.26
2	27.62	25.52	26.37	26.04
3	28.33	28.82	28.10	28.39
4	29.91	30.58	29.39	29.89
2001	27.52	27.24	27.13	27.14
2002 / 1	29.41	29.97	29.84	29.94
2	30.03	29.22	28.75	29.01
3	28.58	27.65	25.98	26.70
4	22.23	22.83	—	—
2002	27.52	27.42	—	—

NB: QC(S^{HBm}), QC(S^{W}) & QC(S^{B13}) quarterly values are means of 3 monthly values.
QC(S^{HBm}), QC(S^{W}) & QC(S^{B13}) yearly values are means of 12 monthly values.

OBSERVED and SMOOTHED GDSO QUALITY COUNTS (QC and QC[S^{HBm}]) 1988-2002

SOLID = OBSERVED, DASHED = S^{HBm}

FOR EXACT VALUES, SEE TABLE Q5 (IN THIS AND PREVIOUS REPORTS)

OBSERVED and SMOOTHED GDSO QUALITY COUNTS (QC, QC[SW] and QC[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE Q5 (IN THIS AND PREVIOUS REPORTS)

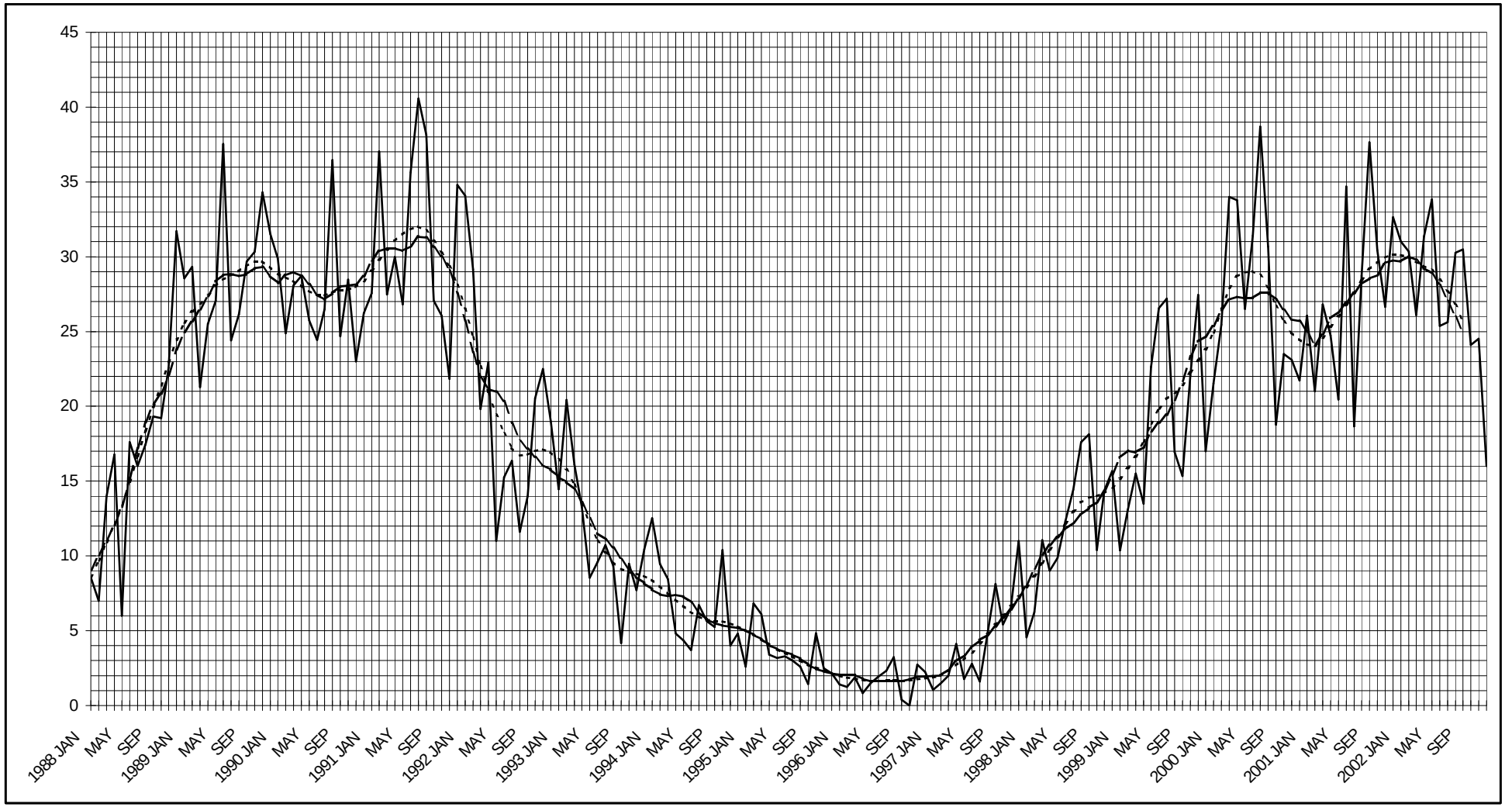


TABLE I-1:
MONTHLY **INTER-SOL INDEX** MEANS OF GDSO DATA for **2002**.
IS = mean Inter-Sol Index (k neglected; see list of definitions).
δ = mean deviation from the mean (the value immediately to its left).
n = total number of observations.
w = mean weight, 1 = excellent, 0.2 = very poor.
Q = mean quietness [steadiness] of image (on the Kiepenheuer scale).
S = mean sharpness [clarity] of image (on the Kiepenheuer scale).
T = mean transparency of the atmosphere (1 = excellent, 5 = opaque).
C = mean condition [(Q+S+T)/3].

MONTH	IS	δ	n	w	Q	S	T	C
Jan	66.16	13.2	19	0.4743	1.82	2.24	2.37	2.1404
Feb	65.43	15.5	14	0.4446	1.93	2.36	2.54	2.2738
Mar	52.92	6.2	13	0.4534	1.92	2.31	2.54	2.2564
Apr	71.57	22.3	14	0.5099	1.79	2.07	2.21	2.0238
May	64.55	10.4	11	0.4112	2.00	2.59	2.82	2.4697
Jun	46.77	18.5	13	0.4778	1.73	2.19	2.42	2.1154
Jul	88.00	42.8	18	0.4719	1.78	2.31	2.50	2.1944
Aug	82.50	30.1	18	0.4563	1.86	2.44	2.50	2.2685
Sep	83.17	19.0	12	0.4466	1.92	2.38	2.54	2.2778
Oct	58.44	10.7	18	0.4511	1.94	2.39	2.39	2.2407
Nov	53.27	20.2	15	0.4395	2.03	2.50	2.43	2.3222
Dec	25.00	16.0	11	0.4779	1.73	2.36	2.27	2.1212
Year	64.62	22.8	—	0.4604	1.87	2.34	2.45	2.2216

TABLE I-2:
ROTATIONAL **INTER-SOL INDEX** MEANS OF GDSO DATA.
Abbreviations as above.

ROT.	start date, UT	IS	δ	n	w	Q	S	T	C
1984	2001/12/10.73	68.92	13.2	13	0.4304	1.96	2.46	2.73	2.3846
1985	2002/01/07.06	68.40	14.8	15	0.4695	1.87	2.27	2.37	2.1667
1986	2002/02/03.40	63.23	14.0	13	0.4459	1.92	2.35	2.54	2.2692
1987	2002/03/02.73	52.92	6.2	13	0.4534	1.92	2.31	2.54	2.2564
1988	2002/03/30.04	81.91	13.7	11	0.5251	1.68	2.00	2.14	1.9394
1989	2002/04/26.31	44.33	11.8	6	0.4296	1.92	2.58	2.83	2.4444
1990	2002/05/23.54	64.87	10.1	15	0.4440	1.90	2.37	2.60	2.2889
1991	2002/06/19.74	39.13	12.0	15	0.4535	1.80	2.33	2.60	2.2444
1992	2002/07/16.94	107.69	32.5	13	0.4858	1.85	2.23	2.31	2.1282
1993	2002/08/13.16	90.88	26.6	17	0.4560	1.82	2.47	2.53	2.2745
1994	2002/09/09.41	70.15	20.9	13	0.4489	1.92	2.35	2.50	2.2564
1995	2002/10/06.68	61.06	10.4	16	0.4524	2.00	2.38	2.34	2.2396
1996	2002/11/02.98	54.25	21.8	12	0.4431	2.00	2.50	2.42	2.3056
1997	2002/11/30.29	32.25	13.5	8	0.4406	1.94	2.50	2.44	2.2917

TABLE I-3:
CORRECTED **INTER-SOL INDICES** for **2001 - 2002**.

As the GDSO is in suburban Auckland, it can suffer terrible atmospheric conditions, hence the 'observed' Inter-Sol Indices have to be upgraded to give reflections of international results. International Inter-Sol Index results are computed by Paderborn Public Observatory, Germany.

Below are the 'observed' Inter-Sol Indices along with the monthly k co-efficients and the corrected values (IS_{GD}) for 2001 - 2002. Paderborn's final values (IS_I) are also stated.

I/GDSO = Paderborn's mean (of days observed by the GDSO) divided by the GDSO's monthly mean.

$I/GDSO_A$ = Paderborn's mean (of days with GDSO k values) divided by the GDSO's observed mean for the *same* days.

n = number of GDSO observations.

n_k = number of k values.

σ = sample standard deviation of k values.

σ'SIDC' = annual *s* computed on the SIDC formula.

Eσ = annual estimate of standard deviation.

		IS	k	IS_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k	IS_I
2001	Jan	56.18	1.2488	70.15	0.2318	1.2277	1.2277	17	17	68.39
	Feb	42.46	1.2091	51.34	0.1655	1.1964	1.1964	13	13	49.02
	Mar	70.10	1.2047	84.45	0.1908	1.2140	1.2140	20	20	87.83
	Apr	54.33	1.3831	75.15	0.1784	1.3561	1.3561	12	12	81.64
	May	39.09	1.5013	58.69	0.2330	1.4491	1.4491	11	11	66.98
	Jun	69.44	1.5054	104.53	0.2831	1.4887	1.4887	16	16	96.69
	Jul	31.35	1.3986	43.85	0.3082	1.3565	1.3565	17	17	45.67
	Aug	60.33	1.3002	78.45	0.1612	1.2777	1.2777	15	15	75.46
	Sep	102.35	1.4810	151.59	0.1974	1.4695	1.4695	17	17	132.79
	Oct	64.92	1.3987	90.80	0.2313	1.3810	1.3810	12	12	97.17
	Nov	63.73	1.4328	91.31	0.2121	1.4388	1.4388	11	11	96.31
	Dec	73.91	1.4208	105.01	0.2145	1.3780	1.3780	11	11	107.62
2001	Means	61.47	1.3655	83.94	—	1.3560	1.3560	—	—	83.80
		σ = 0.2415		σ 'SIDC' = 0.2187			Eσ = 0.0170			
2002	Jan	66.16	1.3515	89.41	0.2273	1.3142	1.3142	19	19	83.00
	Feb	65.43	1.3065	85.48	0.1258	1.2904	1.2904	14	14	87.53
	Mar	52.92	1.4293	75.64	0.2377	1.4251	1.4251	13	13	71.03
	Apr	71.57	1.3803	98.79	0.2010	1.3278	1.3278	14	14	97.42
	May	64.55	1.2752	82.31	0.2038	1.2929	1.2929	11	11	86.15
	Jun	46.77	1.3081	61.18	0.2535	1.2806	1.2806	13	13	50.05
	Jul	88.00	1.0833	95.33	0.1455	1.0473	1.0473	18	18	87.49
	Aug	82.50	1.2570	103.71	0.1994	1.2394	1.2394	18	18	93.74
	Sep	83.17	1.0983	91.34	0.1682	1.0712	1.0712	12	12	92.54
	Oct	58.44	1.2480	72.94	0.2036	1.2279	1.2279	18	18	71.79
	Nov	53.27	1.2094	64.42	0.2434	1.1364	1.1364	15	15	68.70
	Dec	25.00	1.9606	49.02	0.5953	1.7968	1.7968	11	11	63.58
2002	Means	64.62	1.3090	84.59	—	1.2400	1.2400	—	—	79.42
		σ = 0.3084		σ 'SIDC' = 0.2251			Eσ = 0.0186			

TABLE I-4:
CORRECTED **INTER-SOL INDICES** for Rotations 1971 - 1997.

As a k value is attributed to each spotted observation, the k value for any specific rotation is the mean of all the k values for the rotation concerned.

The corrected values are labelled IS_{GD}.

IS_{GD} = IS x k.
σ = sample standard deviation of k values.
I/GDSO = International mean (of days observed by the GDSO) divided by the GDSO's rotation mean.
$I/GDSO_A$ = International mean (of days observed by the GDSO) divided by the GDSO's observed mean for the *same* days.
n = number of GDSO observations.
n_k = number of k values.

ROTATION	START DATE, UT	IS	k	IS_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1971	2000/12/21.17	57.77	1.1744	67.85	0.2365	1.1690	1.1690	13	13
1972	2001/01/17.50	55.73	1.2648	70.48	0.2042	1.2347	1.2347	11	11
1973	2001/02/13.84	39.06	1.1712	45.75	0.1399	1.1537	1.1537	16	16
1974	2001/03/13.17	76.89	1.2603	96.91	0.2007	1.2526	1.2526	18	18
1975	2001/04/09.47	51.88	1.4207	73.70	0.1609	1.3896	1.3896	8	8
1976	2001/05/06.72	38.09	1.4794	56.35	0.2673	1.4255	1.4255	11	11
1977	2001/06/02.94	74.43	1.5502	115.38	0.2652	1.5137	1.5137	14	14
1978	2001/06/30.13	32.13	1.3797	44.34	0.2604	1.3550	1.3550	15	15
1979	2001/07/27.34	52.07	1.2690	66.08	0.1500	1.2415	1.2415	14	14
1980	2001/08/23.57	84.09	1.4303	120.28	0.2164	1.4164	1.4164	11	11
1981	2001/09/19.83	85.12	1.5020	127.86	0.2068	1.5015	1.5015	16	16
1982	2001/10/17.11	82.50	1.3910	114.76	0.2403	1.3790	1.3790	10	10
1983	2001/11/13.41	59.60	1.3432	80.06	0.1034	1.3324	1.3324	10	10
1984	2001/12/10.73	68.92	1.4364	99.00	0.1918	1.4018	1.4018	13	13
1985	2002/01/07.06	68.40	1.3262	90.71	0.2557	1.2801	1.2801	15	15
1986	2002/02/03.40	63.23	1.3207	83.51	0.1187	1.3097	1.3097	13	13
1987	2002/03/02.73	52.92	1.4293	75.64	0.2377	1.4251	1.4251	13	13
1988	2002/03/30.04	81.91	1.3398	109.74	0.1902	1.3050	1.3050	11	11
1989	2002/04/26.31	44.33	1.3487	59.79	0.2409	1.3154	1.3154	6	6
1990	2002/05/23.54	64.87	1.2901	83.69	0.1853	1.2993	1.2993	15	15
1991	2002/06/19.74	39.13	1.2411	48.57	0.2519	1.1936	1.1936	15	15
1992	2002/07/16.94	107.69	1.0780	116.09	0.1817	1.0530	1.0530	13	13
1993	2002/08/13.16	90.88	1.2419	112.87	0.1927	1.2208	1.2208	17	17
1994	2002/09/09.41	70.15	1.0889	76.39	0.1734	1.0557	1.0557	13	13
1995	2002/10/06.68	61.06	1.2658	77.29	0.2029	1.2361	1.2361	16	16
1996	2002/11/02.98	54.25	1.1909	64.61	0.2330	1.1232	1.1232	12	12
1997	2002/11/30.29	32.25	1.9661	63.41	0.5984	1.7948	1.7948	8	8

TABLE I-5:
SMOOTHED **INTER-SOL INDICES** for **2000 - 2002**.

The following are smoothed Inter-Sol Indices in three different systems.
See page xii for all smoothing formulæ.

YEAR	MONTH	IS	IS(S^{HBm})	IS(S^{W})	IS(S^{B13})	IS_{GD}	IS_{GD}(S^{W})	IS_{GD}(S^{B13})
2000	Jan	43.08	58.93	63.72	61.82	55.00	84.37	81.48
	Feb	49.62	64.26	66.58	66.17	69.84	87.55	85.90
	Mar	89.12	71.27	68.45	70.35	107.29	89.76	90.31
	Apr	96.89	79.44	69.76	73.08	107.64	90.40	93.20
	May	72.30	81.82	68.48	73.78	104.29	87.36	93.89
	Jun	70.40	81.78	67.47	73.73	86.97	85.28	93.72
	Jul	116.15	79.42	68.21	72.84	149.71	85.66	92.37
	Aug	57.89	71.35	68.46	70.06	73.30	85.52	88.61
	Sep	62.85	65.09	67.36	66.17	91.49	83.80	83.33
	Oct	54.00	59.00	64.80	62.37	61.94	81.49	78.17
	Nov	52.00	53.21	61.64	59.09	60.83	78.24	73.64
	Dec	47.64	52.56	60.22	56.77	52.02	77.07	70.83
2001	Jan	56.18	52.97	56.64	54.60	70.15	73.39	68.80
	Feb	42.46	52.73	53.21	53.23	51.34	69.19	67.90
	Mar	70.10	54.90	54.96	53.83	84.45	71.91	69.90
	Apr	54.33	53.51	57.06	54.99	75.15	75.62	73.20
	May	39.09	52.08	58.00	56.30	58.69	78.09	76.77
	Jun	69.44	55.68	59.59	58.13	104.53	81.57	80.71
	Jul	31.35	57.30	61.10	60.26	43.85	84.58	84.54
	Aug	60.33	63.37	62.47	62.82	78.45	86.80	88.54
	Sep	102.35	69.92	62.71	64.86	151.59	87.86	91.68
	Oct	64.92	70.24	62.72	65.89	90.80	88.48	93.06
	Nov	63.73	70.89	64.49	66.78	91.31	90.45	93.75
	Dec	73.91	68.83	64.61	66.82	105.01	89.62	93.03
2002	Jan	66.16	65.78	66.03	66.66	89.41	89.96	91.72
	Feb	65.43	64.89	69.31	66.73	85.48	93.16	90.54
	Mar	52.92	62.80	69.44	66.49	75.64	91.70	88.58
	Apr	71.57	63.58	68.37	66.73	98.79	88.45	87.01
	May	64.55	65.19	67.66	67.22	82.31	86.58	85.86
	Jun	46.77	68.06	65.19	67.06	61.18	83.13	84.22
	Jul	88.00	72.83	62.07	66.36	95.33	79.11	82.44
	Aug	82.50	73.23	59.16	64.62	103.71	75.25	79.86
	Sep	83.17	69.36	56.48	61.34	91.34	—	—
	Oct	58.44	61.64	—	—	72.94	—	—
	Nov	53.27	50.90	—	—	64.42	—	—
	Dec	25.00	41.02	—	—	49.02	—	—

TABLE I-6:
QUARTERLY & YEARLY **INTER-SOL INDEX** MEANS for 1998 - 2002.

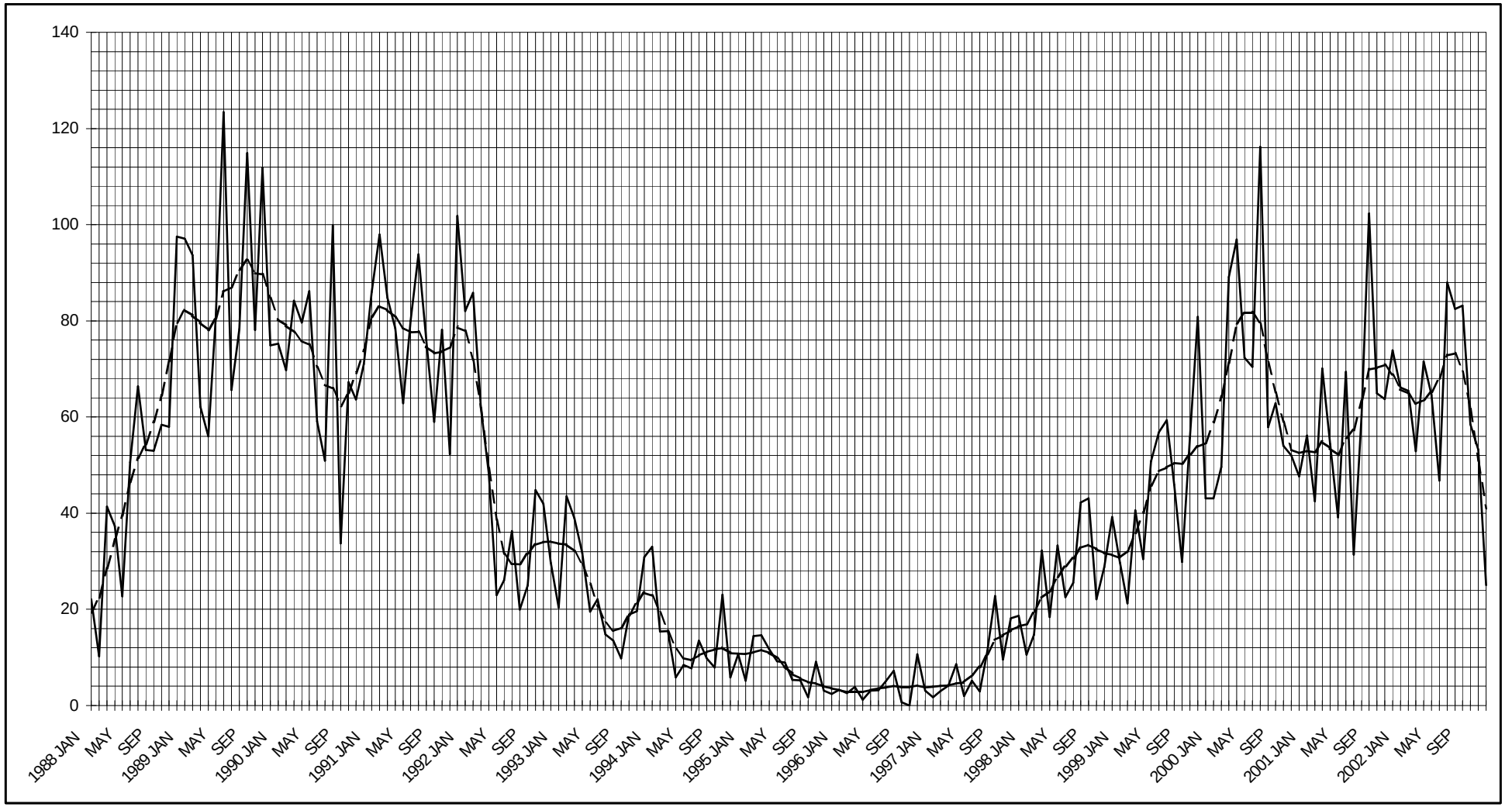
YEAR/ QUARTER	IS	IS(S^{HBm})	IS(S^{W})	IS(S^{B13})	IS_{GD}
1998 / 1	19.47	19.62	21.06	20.44	20.40
2	26.22	26.50	25.68	26.14	34.30
3	38.78	32.31	29.43	30.60	48.16
4	30.46	31.91	32.58	32.25	41.46
1998	28.29	27.58	27.19	27.36	34.86
1999 / 1	31.91	32.90	38.18	36.13	41.68
2	47.26	44.86	42.45	43.07	59.69
3	44.76	50.12	48.14	49.34	65.10
4	59.00	53.55	58.58	56.24	85.33
1999	46.04	45.36	46.84	46.20	63.19
2000 / 1	62.64	64.82	66.25	66.11	80.78
2	79.28	81.01	68.57	73.53	100.53
3	76.16	71.95	68.01	69.69	101.09
4	51.43	54.92	62.22	59.41	58.44
2000	67.26	68.18	66.26	67.19	84.83
2001 / 1	58.18	53.53	54.94	53.89	71.03
2	56.23	53.76	58.22	56.47	82.47
3	64.86	63.53	62.09	62.65	90.61
4	67.44	69.99	63.94	66.50	95.56
2001	61.47	60.20	59.80	59.88	83.94
2002 / 1	62.20	64.49	68.26	66.63	84.57
2	61.05	65.61	67.07	67.00	80.91
3	84.73	71.81	59.24	64.11	97.63
4	48.32	51.19	—	—	68.27
2002	64.62	63.27	—	—	84.59

NB: IS(S^{HBm}), IS(S^{W}) & IS(S^{B13}) quarterly values are means of 3 monthly values.
IS(S^{HBm}), IS(S^{W}) & IS(S^{B13}) yearly values are means of 12 monthly values.
IS_{GD} quarterly values are computed as quarterly IS means multiplied by quarterly k means.
Annual values of IS_{GD} are annual Inter-Sol means multiplied by annual k means.

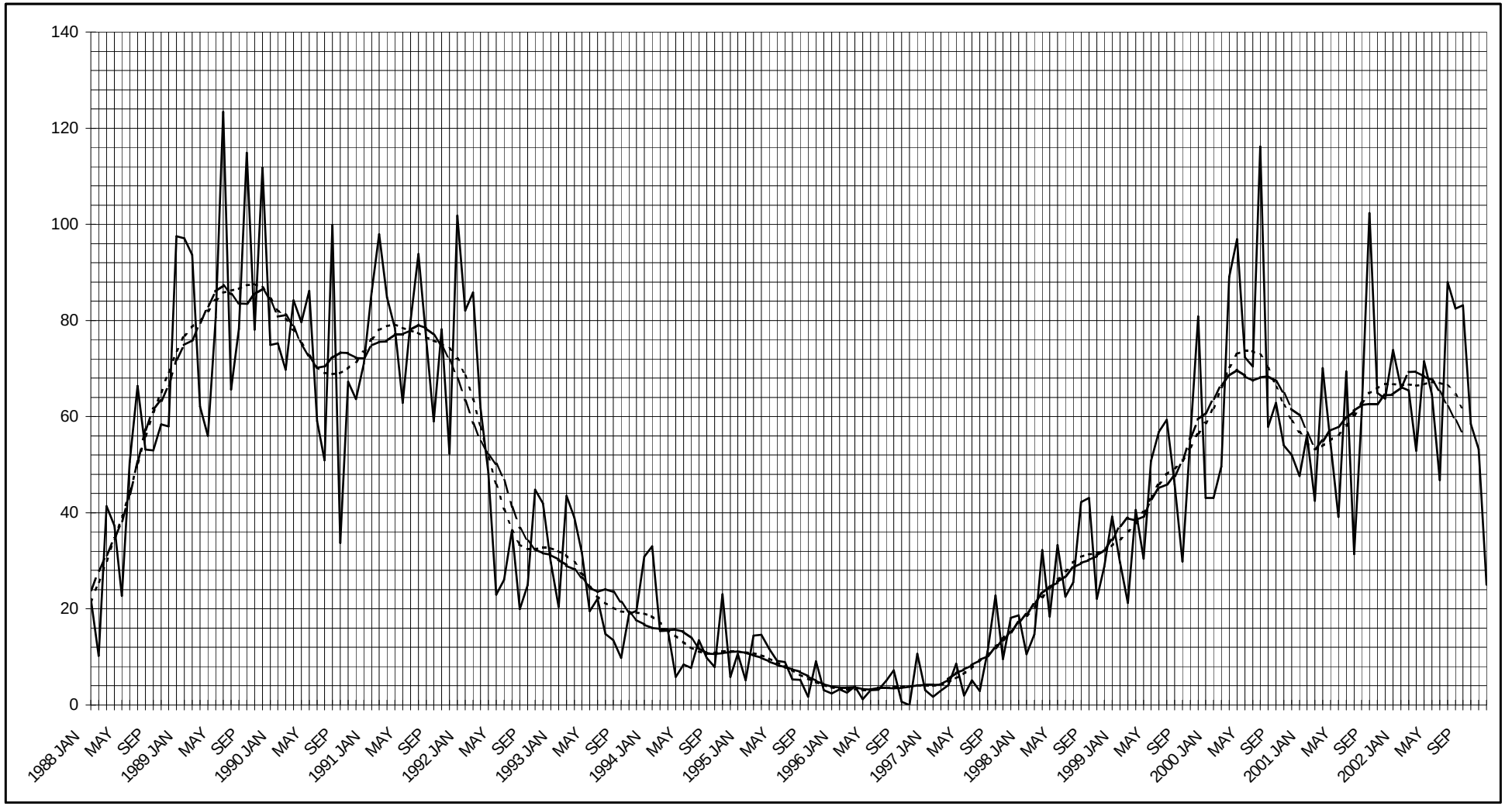
OBSERVED and SMOOTHED GDSO INTER-SOL INDICES (IS and IS[SHBm]) 1988-2002

SOLID = OBSERVED, DASHED = SHBm

FOR EXACT VALUES, SEE TABLE I-5 (IN THIS AND PREVIOUS REPORTS)



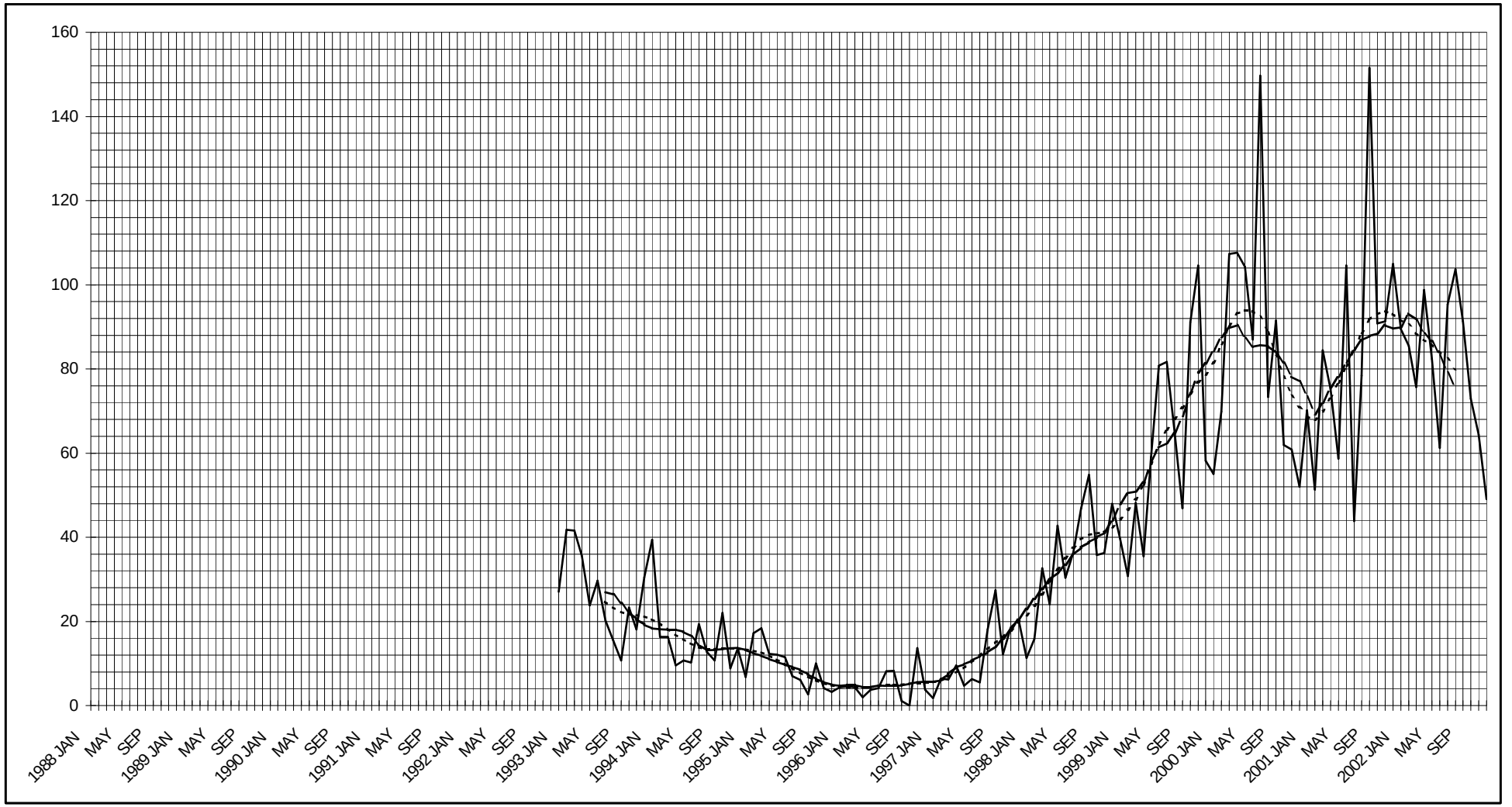
OBSERVED and SMOOTHED GDSO INTER-SOL INDICES (IS, IS[SW] and IS[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE I-5 (IN THIS AND PREVIOUS REPORTS)



CORRECTED and SMOOTHED GDSO INTER-SOL INDICES (IS_{GD}, IS_{GD}[SW] and IS_{GD}[SB13]) 1993-2002

SOLID = CORRECTED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE I-5 (IN THIS AND PREVIOUS REPORTS)



DATA START AT JANUARY 1993

MISCELLANEOUS DATA.
TABLE M7:
REGION CLASSIFICATION **PERCENTAGES** 2000 - 2002.

		A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**J**	**Σg**	**NOBS**
2000	Jan	15.3	8.2	25.5	20.4	10.2	1.0	0.0	0.0	19.4	98	13
	Feb	10.0	10.9	16.4	24.5	8.2	2.7	1.8	6.4	19.1	110	13
	Mar	10.6	9.3	19.3	19.9	16.8	8.7	0.0	4.3	11.2	161	16
	Apr	10.3	4.6	12.6	28.7	13.8	11.5	1.1	0.0	17.2	87	9
	May	17.6	9.9	20.9	18.7	13.2	2.2	0.0	2.2	15.4	91	10
	Jun	12.5	6.2	15.6	20.8	13.5	9.4	0.0	4.2	17.7	96	10
	Jul	11.1	6.5	15.0	13.7	9.8	17.0	0.0	0.0	26.8	153	13
	Aug	14.3	7.9	26.1	24.6	5.4	2.0	0.5	1.0	18.2	203	19
	Sep	14.9	4.1	21.6	18.9	10.8	12.2	1.4	1.4	14.9	74	13
	Oct	8.9	7.9	25.7	35.6	9.9	2.0	0.0	0.0	9.9	101	14
	Nov	8.2	4.1	27.4	28.8	8.2	2.7	0.0	4.1	16.4	73	10
	Dec	7.7	14.1	20.5	26.9	10.3	1.3	0.0	3.8	15.4	78	11
	2000	11.9	7.9	20.6	22.9	10.6	6.3	0.4	2.2	17.1	1325	151
2001	Jan	12.5	2.8	26.4	26.4	9.7	2.1	0.7	2.1	17.4	144	17
	Feb	16.5	5.5	19.8	25.3	6.6	5.5	2.2	0.0	18.7	91	13
	Mar	8.9	5.7	21.0	21.7	8.3	14.6	0.6	1.3	17.8	157	20
	Apr	9.2	7.1	17.3	24.5	7.1	5.1	1.0	2.0	26.5	98	12
	May	11.8	2.6	21.1	18.4	6.6	5.3	3.9	1.3	28.9	76	11
	Jun	9.6	5.1	20.8	33.1	6.2	2.2	1.1	4.5	17.4	178	16
	Jul	10.8	5.4	18.9	26.1	4.5	2.7	0.0	0.9	30.6	111	17
	Aug	8.5	5.6	14.8	34.5	3.5	4.2	0.0	1.4	27.5	142	15
	Sep	7.5	2.7	12.4	39.8	7.0	9.7	0.0	0.0	21.0	186	17
	Oct	9.2	3.4	26.1	31.9	5.0	0.8	2.5	2.5	18.5	119	12
	Nov	7.8	4.4	13.3	30.0	5.6	10.0	0.0	3.3	25.6	90	11
	Dec	8.7	5.2	20.9	26.1	13.0	1.7	0.9	0.0	23.5	115	11
	2001	9.8	4.6	19.3	29.1	7.0	5.5	0.9	1.7	22.1	1507	172
2002	Jan	8.8	5.5	17.6	26.9	10.4	6.6	1.6	0.5	22.0	182	19
	Feb	11.4	6.8	15.9	31.1	5.3	9.1	0.8	1.5	18.2	132	14
	Mar	12.5	5.8	17.3	27.9	15.4	3.8	1.9	0.0	15.4	104	13
	Apr	11.2	6.7	22.4	23.9	13.4	6.7	0.7	0.0	14.9	134	14
	May	11.7	4.2	17.5	22.5	5.8	9.2	1.7	1.7	25.8	120	11
	Jun	11.0	9.2	11.9	37.6	4.6	1.8	0.0	5.5	18.3	109	13
	Jul	16.1	3.6	18.2	22.6	6.6	16.8	0.0	2.2	13.9	137	18
	Aug	11.7	6.1	14.7	30.7	15.3	3.7	3.7	1.8	12.3	163	18
	Sep	13.0	6.1	15.7	30.4	10.4	5.2	0.0	2.6	16.5	115	12
	Oct	11.6	7.5	18.5	32.2	2.7	3.4	0.7	2.7	20.5	146	18
	Nov	6.6	8.5	11.3	18.9	11.3	15.1	0.9	8.5	18.9	106	15
	Dec	13.1	4.9	23.0	26.2	6.6	1.6	0.0	0.0	24.6	61	11
	2002	11.5	6.2	16.9	27.7	9.1	7.1	1.1	2.2	18.2	1509	176

MISCELLANEOUS DATA continued.

TABLE M8:
REGION CLASSIFICATION **MEANS** 2000 - 2002.

YEAR	MONTH	A	B	C	D	E	F	G	H	J	Σg	NOBS
2000	Jan	1.15	0.62	1.92	1.54	0.77	0.08	0.00	0.00	1.46	98	13
	Feb	0.85	0.92	1.38	2.08	0.69	0.23	0.15	0.54	1.62	110	13
	Mar	1.06	0.94	1.94	2.00	1.69	0.88	0.00	0.44	1.12	161	16
	Apr	1.00	0.44	1.22	2.78	1.33	1.11	0.11	0.00	1.67	87	9
	May	1.60	0.90	1.90	1.70	1.20	0.20	0.00	0.20	1.40	91	10
	Jun	1.20	0.60	1.50	2.00	1.30	0.90	0.00	0.40	1.70	96	10
	Jul	1.31	0.77	1.77	1.62	1.15	2.00	0.00	0.00	3.15	153	13
	Aug	1.53	0.84	2.79	2.63	0.58	0.21	0.05	0.11	1.95	203	19
	Sep	0.85	0.23	1.23	1.08	0.62	0.69	0.08	0.08	0.85	74	13
	Oct	0.64	0.57	1.86	2.57	0.71	0.14	0.00	0.00	0.71	101	14
	Nov	0.60	0.30	2.00	2.10	0.60	0.20	0.00	0.30	1.20	73	10
	Dec	0.55	1.00	1.45	1.91	0.73	0.09	0.00	0.27	1.09	78	11
	2000	1.05	0.70	1.81	2.01	0.93	0.55	0.03	0.19	1.50	1325	151
2001	Jan	0.74	0.16	1.55	1.55	0.57	0.12	0.04	0.12	1.02	144	17
	Feb	1.27	0.42	1.52	1.95	0.51	0.42	0.17	0.00	1.44	91	13
	Mar	0.44	0.28	1.05	1.08	0.42	0.73	0.03	0.06	0.89	157	20
	Apr	0.77	0.59	1.44	2.04	0.59	0.42	0.08	0.17	2.21	98	12
	May	0.82	0.18	1.45	1.27	0.45	0.36	0.27	0.09	2.00	76	11
	Jun	1.06	0.56	2.31	3.69	0.69	0.25	0.12	0.50	1.94	178	16
	Jul	0.71	0.35	1.24	1.71	0.29	0.18	0.00	0.06	2.00	111	17
	Aug	0.80	0.53	1.40	3.27	0.33	0.40	0.00	0.13	2.60	142	15
	Sep	0.82	0.29	1.35	4.35	0.76	1.06	0.00	0.00	2.29	186	17
	Oct	0.92	0.33	2.58	3.17	0.50	0.08	0.25	0.25	1.83	119	12
	Nov	0.64	0.36	1.09	2.45	0.45	0.82	0.00	0.27	2.09	90	11
	Dec	0.91	0.55	2.18	2.73	1.36	0.18	0.09	0.00	2.45	115	11
	2001	0.86	0.40	1.69	2.55	0.61	0.48	0.08	0.15	1.94	1507	172
2002	Jan	0.84	0.53	1.68	2.58	1.00	0.63	0.16	0.05	2.11	182	19
	Feb	1.07	0.64	1.50	2.93	0.50	0.86	0.07	0.14	1.71	132	14
	Mar	1.00	0.46	1.38	2.23	1.23	0.31	0.15	0.00	1.23	104	13
	Apr	1.07	0.64	2.14	2.29	1.29	0.64	0.07	0.00	1.43	134	14
	May	1.27	0.45	1.91	2.45	0.64	1.00	0.18	0.18	2.82	120	11
	Jun	0.92	0.77	1.00	3.15	0.38	0.15	0.00	0.46	1.54	109	13
	Jul	1.22	0.28	1.39	1.72	0.50	1.28	0.00	0.17	1.06	137	18
	Aug	1.06	0.56	1.33	2.78	1.39	0.33	0.33	0.17	1.11	163	18
	Sep	1.25	0.58	1.50	2.92	1.00	0.50	0.00	0.25	1.58	115	12
	Oct	0.94	0.61	1.50	2.61	0.22	0.28	0.06	0.22	1.67	146	18
	Nov	0.47	0.60	0.80	1.33	0.80	1.10	0.10	0.60	1.33	106	15
	Dec	0.73	0.27	1.27	1.45	0.36	0.09	0.00	0.00	1.36	61	11
	2002	0.98	0.53	1.45	2.38	0.78	0.61	0.10	0.19	1.56	1509	176

MISCELLANEOUS DATA continued.

TABLE M9A:
GDSO PENUMBRA/GROUP MEANS **2001 - 2002**.

The following $\overline{p/g}$ data are obtained by averaging each p/g value from every observation within the period concerned, ie. the number of penumbræ per group per observation.

The $\overline{p}/\overline{g}$ data are obtained by dividing the total number of penumbræ by the total number of groups within the period concerned, ie. the number of penumbræ per group, the true arithmetical mean.

σ values are sample standard deviations.
n = number of observations.
OWS = observations *with* sunspots.

YEAR	MTH	$\overline{p/g}$	σ	$\overline{p/g}(S^{W})$	$\overline{p/g}(S^{B13})$	$\overline{p}/\overline{g}$	$\overline{p}/\overline{g}(S^{W})$	$\overline{p}/\overline{g}(S^{B13})$	Σg	n	OWS
2001	Jan	1.6325	0.3989	1.7021	1.6934	1.5764	1.6979	1.6852	144	17	17
	Feb	1.4962	0.3616	1.6941	1.6886	1.4945	1.6851	1.6797	91	13	13
	Mar	2.0646	0.4339	1.7188	1.6970	2.0701	1.7045	1.6865	157	20	20
	Apr	1.5962	0.4875	1.7209	1.7052	1.6122	1.7018	1.6921	98	12	12
	May	1.6926	0.4760	1.7222	1.7163	1.7105	1.7010	1.7007	76	11	11
	Jun	1.6946	0.3965	1.7436	1.7342	1.6910	1.7214	1.7153	178	16	16
	Jul	1.4694	0.3148	1.7656	1.7569	1.4234	1.7458	1.7346	111	17	17
	Aug	1.7685	0.4824	1.7936	1.7870	1.7042	1.7720	1.7604	142	15	15
	Sep	2.3638	0.5645	1.8035	1.8103	2.3011	1.7752	1.7789	186	17	17
	Oct	1.5614	0.2442	1.8028	1.8233	1.5546	1.7723	1.7895	119	12	12
	Nov	1.8119	0.5620	1.8135	1.8368	1.7889	1.7818	1.8020	90	11	11
	Dec	1.9334	0.5128	1.8150	1.8450	1.8957	1.7816	1.8101	115	11	11
	2001	1.7733	0.5028	—	—	1.7711	—	—	1507	172	172
2002	Jan	1.8365	0.3041	1.8631	1.8609	1.8297	1.8298	1.8270	182	19	19
	Feb	1.9635	0.6549	1.9219	1.8807	1.8712	1.8915	1.8486	132	14	14
	Mar	1.8354	0.5476	1.9230	1.8912	1.7692	1.8970	1.8625	104	13	13
	Apr	1.8079	0.4587	1.9247	1.9086	1.8433	1.8963	1.8817	134	14	14
	May	1.7390	0.3328	1.9471	1.9353	1.7083	1.9123	1.9074	120	11	11
	Jun	1.6837	0.4227	1.9361	1.9566	1.6881	1.9015	1.9278	109	13	13
	Jul	2.6345	0.7943	1.8963	1.9620	2.5839	1.8628	1.9324	137	18	18
	Aug	2.0150	0.4788	1.8547	1.9423	2.0245	1.8204	1.9108	163	18	18
	Sep	2.1432	0.5626	1.8275	1.9050	2.1130	1.8004	1.8724	115	12	12
	Oct	1.8239	0.4566	—	—	1.7260	—	—	146	18	18
	Nov	2.0864	0.8024	—	—	2.0000	—	—	106	15	15
	Dec	1.3944	0.5240	—	—	1.4262	—	—	61	11	11
	2002	1.9400	0.6106	—	—	1.9072	—	—	1509	176	176

MISCELLANEOUS DATA continued.

TABLE M9B:
GDSO SUNSPOT/GROUP MEANS **2001 - 2002**.

The following $\overline{f/g}$ data are obtained by averaging each $\overline{f/g}$ value from every observation within the period concerned, ie. the number of sunspots per group per observation.

The $\overline{f/g}$ data are obtained by dividing the total number of sunspots by the total number of groups within the period concerned, ie. the number of sunspots per group, the true arithmetical mean.

σ values are sample standard deviations.

Σg = number of regions observed.

n = number of observations.

OWS = observations *with* sunspots.

YEAR	MTH	$\overline{f/g}$	σ	$\overline{f/g}(S^W)$	$\overline{f/g}(S^{B13})$	$\overline{f}/\overline{g}$	$\overline{f}/\overline{g}(S^W)$	$\overline{f}/\overline{g}(S^{B13})$	Σg	n	OWS
2001	Jan	6.1333	1.8790	6.4377	6.4636	5.9028	6.3963	6.3879	144	17	17
	Feb	5.7942	2.2964	6.2968	6.2962	5.4176	6.2260	6.2173	91	13	13
	Mar	7.8820	2.4555	6.2908	6.1771	8.1847	6.1949	6.0984	157	20	20
	Apr	5.9758	2.5798	6.2164	6.0766	6.0000	6.0893	5.9875	98	12	12
	May	4.9654	1.5554	6.2361	6.0447	5.0132	6.0848	5.9379	76	11	11
	Jun	5.5865	1.9038	6.2816	6.0693	5.4944	6.1306	5.9462	178	16	16
	Jul	4.3332	1.4053	6.2940	6.1413	4.1892	6.1585	6.0015	111	17	17
	Aug	5.9762	2.0075	6.3316	6.2692	5.6761	6.2054	6.1090	142	15	15
	Sep	8.9431	2.6176	6.2914	6.3812	8.6022	6.1419	6.1950	186	17	17
	Oct	6.1467	2.7796	6.2501	6.4570	5.8151	6.0739	6.2540	119	12	12
	Nov	7.2218	2.5120	6.2977	6.5177	7.1000	6.1150	6.3146	90	11	11
	Dec	6.5015	1.5072	6.2831	6.5086	6.3565	6.1022	6.3148	115	11	11
	2001	6.3547	2.4579	—	—	6.3092	—	—	1507	172	172
2002	Jan	6.2710	1.8310	6.5172	6.5264	6.2033	6.3559	6.3510	182	19	19
	Feb	6.5585	1.8282	6.8747	6.5931	6.2424	6.7453	6.4447	132	14	14
	Mar	6.1515	1.9654	6.9406	6.6365	5.8365	6.8307	6.5178	104	13	13
	Apr	6.7152	2.2254	6.9547	6.7231	6.7164	6.8342	6.6239	134	14	14
	May	5.3687	1.2226	6.9878	6.8570	5.2833	6.8542	6.7659	120	11	11
	Jun	4.8339	1.2770	6.8679	6.9918	4.9174	6.7409	6.9065	109	13	13
	Jul	10.7029	4.5480	6.6926	7.0837	10.8540	6.5667	6.9963	137	18	18
	Aug	8.1865	2.1774	6.5005	7.0336	8.3558	6.3733	6.9315	163	18	18
	Sep	8.3157	3.4922	6.3249	6.8390	7.9739	6.2519	6.7305	115	12	12
	Oct	7.1111	2.2099	—	—	6.5274	—	—	146	18	18
	Nov	7.0534	3.3114	—	—	6.8679	—	—	106	15	15
	Dec	3.7922	1.9408	—	—	3.8689	—	—	61	11	11
	2002	6.9441	3.0323	—	—	6.8343	—	—	1509	176	176

MISCELLANEOUS DATA continued.

TABLE M9C:

GDSO GROUP COMPLEXITY INDICES **2001 - 2002**.

The Group Complexity Index (GCI) is an index for showing how complex sunspot groups can get throughout the sunspot cycle. It is not an activity index like the Wolf Number etc.

The GCI is computed as $(\bar{p}+\bar{f})/\bar{g}$ as long as there is the same number of observations for each component, as well as the same observations for each component, whatever period is concerned. If the three components are not common to all observations, then incomplete observations are ignored.

The minimum GCI value is 1 (spotless observations do not count), and the approximate maximum value is about 20.

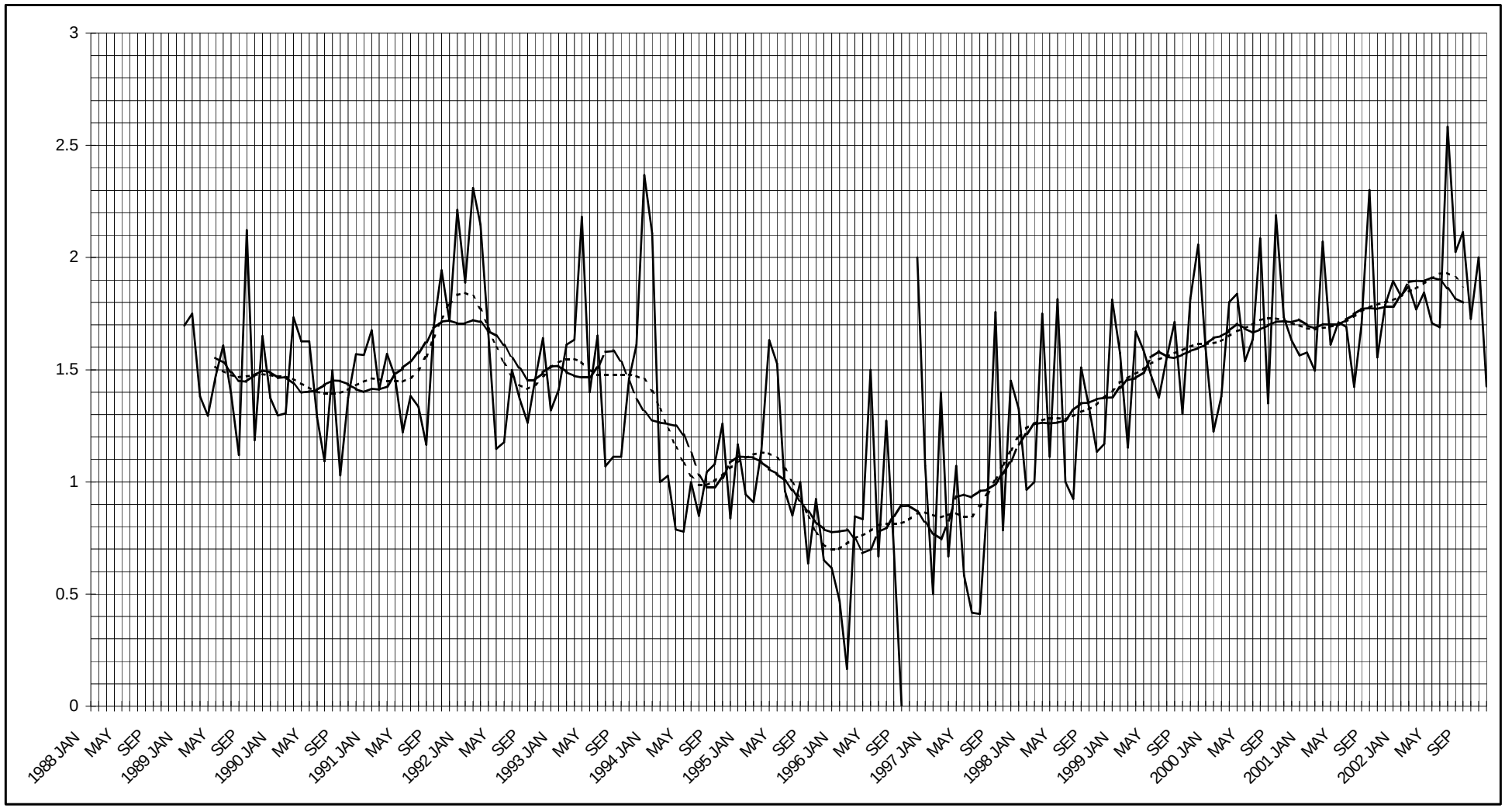
Σg = number of regions observed.

n = number of observations.

OWS = observations *with* sunspots.

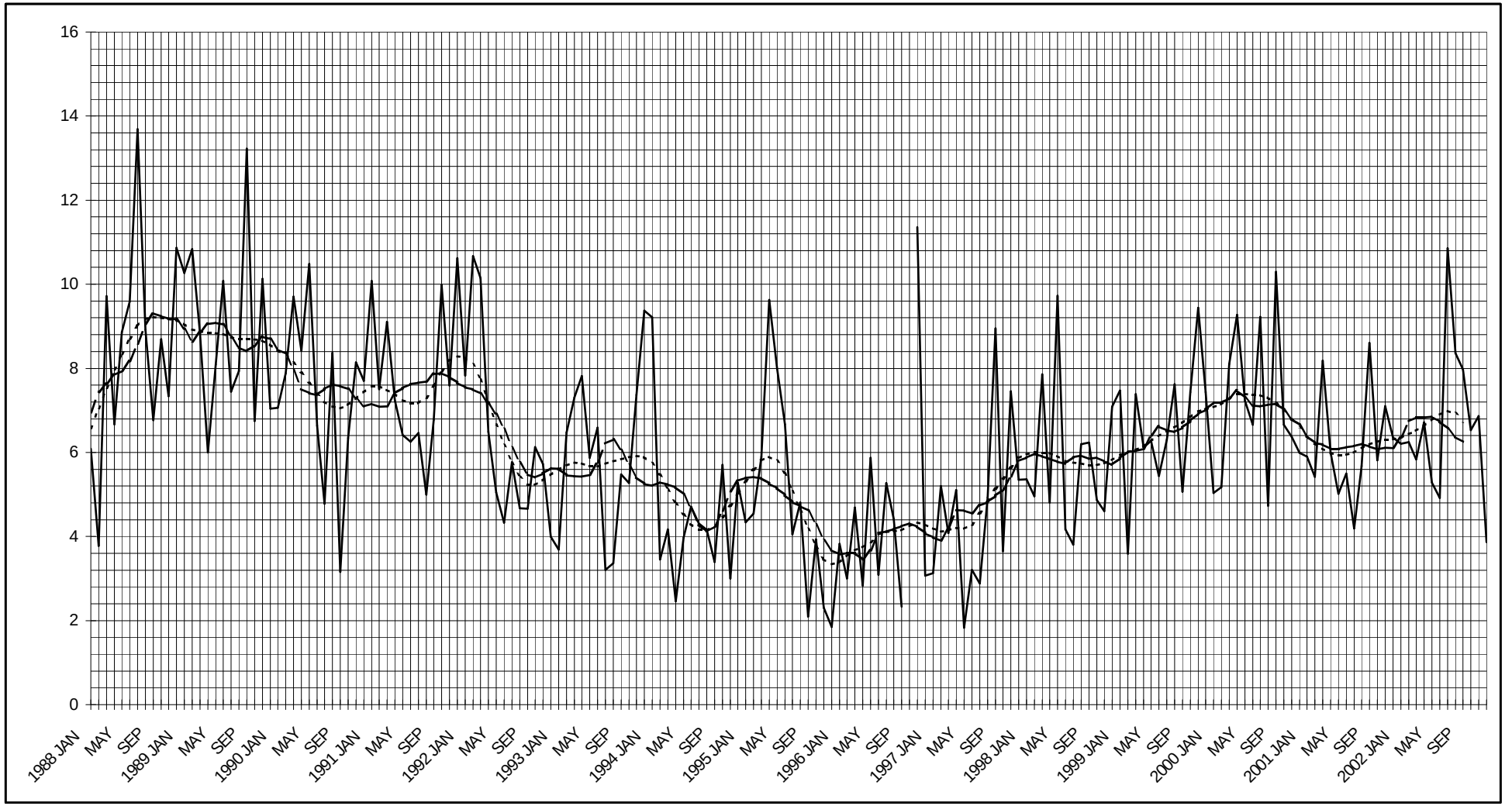
YEAR	MTH	$\bar{p}/\bar{g}$	$\bar{f}/\bar{g}$	GCI	GCI(S^W)	GCI(S^{B13})	Σg	n	OWS
2001	Jan	1.5764	5.9028	7.4792	8.0942	8.0732	144	17	17
	Feb	1.4945	5.4176	6.9121	7.9111	7.8969	91	13	13
	Mar	2.0701	8.1847	10.2548	7.8994	7.7849	157	20	20
	Apr	1.6122	6.0000	7.6122	7.7911	7.6796	98	12	12
	May	1.7105	5.0132	6.7237	7.7857	7.6386	76	11	11
	Jun	1.6910	5.4944	7.1854	7.8520	7.6615	178	16	16
	Jul	1.4234	4.1892	5.6126	7.9043	7.7361	111	17	17
	Aug	1.7042	5.6761	7.3803	7.9774	7.8694	142	15	15
	Sep	2.3011	8.6022	10.9032	7.9171	7.9739	186	17	17
	Oct	1.5546	5.8151	7.3697	7.8462	8.0434	119	12	12
	Nov	1.7889	7.1000	8.8889	7.8968	8.1166	90	11	11
	Dec	1.8957	6.3565	8.2522	7.8838	8.1249	115	11	11
	2001	1.7711	6.3092	8.0803	—	—	1507	172	172
2002	Jan	1.8297	6.2033	8.0330	8.1857	8.1780	182	19	19
	Feb	1.8712	6.2424	8.1136	8.6368	8.2934	132	14	14
	Mar	1.7692	5.8365	7.6058	8.7278	8.3803	104	13	13
	Apr	1.8433	6.7164	8.5597	8.7306	8.5056	134	14	14
	May	1.7083	5.2833	6.9917	8.7666	8.6734	120	11	11
	Jun	1.6881	4.9174	6.6055	8.6425	8.8344	109	13	13
	Jul	2.5839	10.8540	13.4380	8.4296	8.9288	137	18	18
	Aug	2.0245	8.3558	10.3804	8.1938	8.8423	163	18	18
	Sep	2.1130	7.9739	10.0870	8.0524	8.6030	115	12	12
	Oct	1.7260	6.5274	8.2534	—	—	146	18	18
	Nov	2.0000	6.8679	8.8679	—	—	106	15	15
	Dec	1.4262	3.8689	5.2951	—	—	61	11	11
	2002	1.9072	6.8343	8.7416	—	—	1509	176	176

OBSERVED and SMOOTHED GDSO PENUMBRAE PER SUNSPOT GROUP (p/g, p/g[SW] and p/g[SB13] 1989-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE M9A (IN THIS AND PREVIOUS REPORTS)



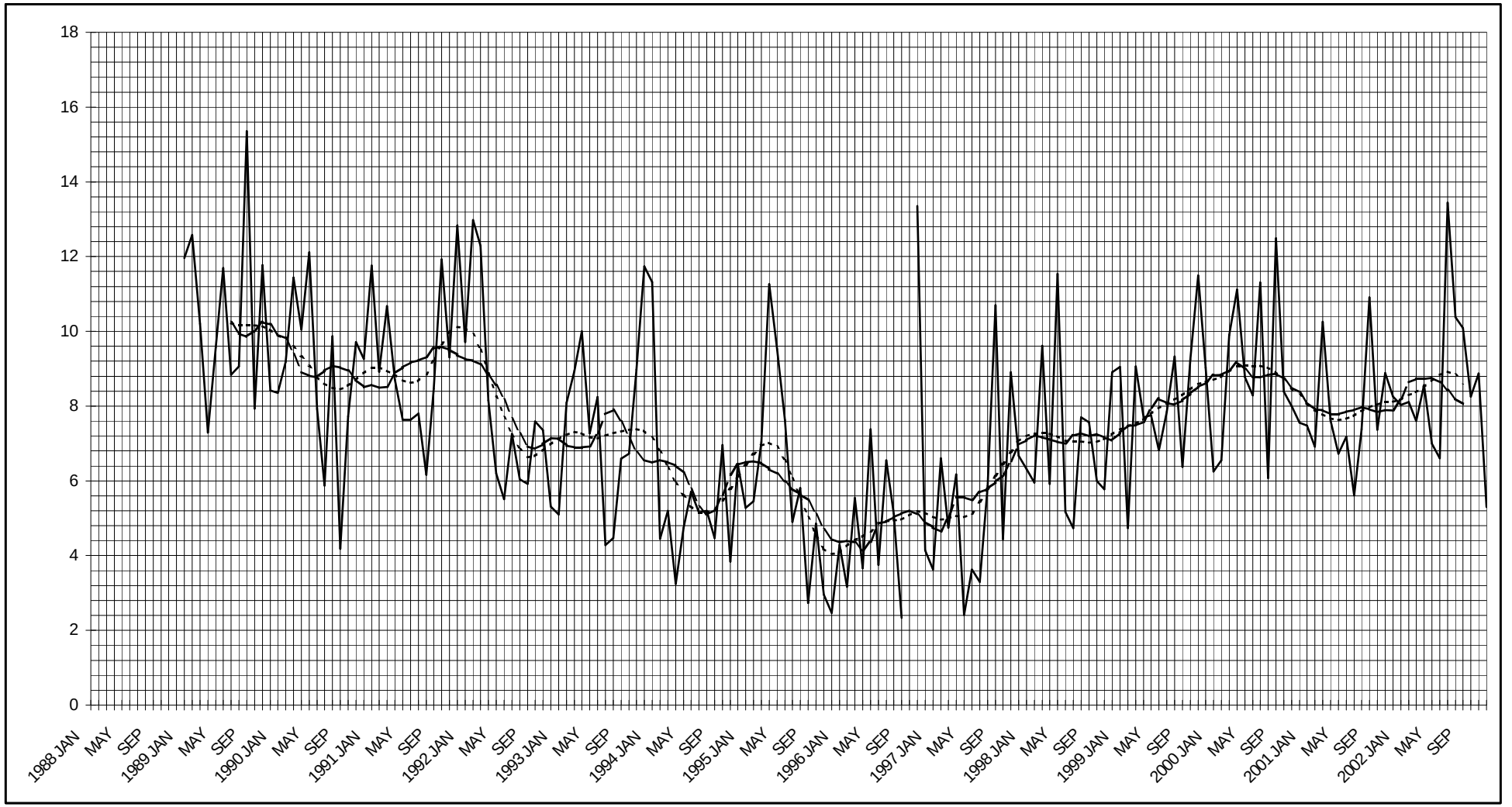
DATA START AT JANUARY 1989
AS THERE WERE NO GROUPS IN OCTOBER 1996, p/g IS NON-EXISTENT FOR THAT MONTH

OBSERVED and SMOOTHED GDSO SPOTS PER SUNSPOT GROUP (f/g, f/g[SW] and f/g[SB13]) 1988-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE M9B (IN THIS AND PREVIOUS REPORTS)



AS THERE WERE NO GROUPS IN OCTOBER 1996, f/g IS NON-EXISTENT FOR THAT MONTH

OBSERVED and SMOOTHED GDSO GROUP COMPLEXITY INDICES (GCI, GCI[SW] and GCI[SB13]) 1989-2002
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE M9C (IN THIS AND PREVIOUS REPORTS)



DATA START AT JANUARY 1989.
AS THERE WERE NO GROUPS IN OCTOBER 1996, GCI IS NON-EXISTENT FOR THAT MONTH

MISCELLANEOUS DATA continued.

TABLE M10A:

INTERNATIONAL PENUMBRA/GROUP MEANS **1997 - 2001**.

The following $\overline{p/g}$ data are obtained by averaging each p/g value from every observation within the period concerned, ie. the number of penumbræ per group per observation.International data below are gleaned from Sonne, Germany.

The $\overline{p}/\overline{g}$ data are obtained by dividing the total number of penumbræ by the total number of groups within the period concerned, ie. the number of penumbræ per group, the true arithmetical mean.

σ values are sample standard deviations.

n = number of observations.

DCC = days with common components.

YEAR	MTH	$\overline{p/g}_I$	σ	$\overline{p/g}_I(S^W)$	$\overline{p/g}_I(S^{B13})$	$\overline{p}/\overline{g}_I$	$\overline{p}/\overline{g}_I(S^W)$	$\overline{p}/\overline{g}_I(S^{B13})$	DCC
1997	Jan	0.3033	0.6440	1.1404	1.1197	0.6494	1.4399	1.4266	19
	Feb	0.7967	1.4276	1.0381	1.0944	1.6279	1.3056	1.3976	17
	Mar	1.5300	1.4447	1.1404	1.1490	1.7532	1.3931	1.4418	19
	Apr	1.4894	1.0137	1.2900	1.2144	1.7778	1.5425	1.4905	26
	May	1.3576	0.7478	1.3571	1.2531	1.4363	1.6022	1.5069	28
	Jun	0.8815	1.1003	1.4085	1.3145	1.0566	1.6234	1.5365	30
	Jul	0.2691	0.5665	—	—	0.7051	—	—	23
	Aug	1.6306	0.9538	—	—	1.6453	—	—	29
	Sep	2.6636	0.8354	—	—	2.7932	—	—	30
	Oct	1.3039	0.7401	—	—	1.4815	—	—	31
	Nov	2.6181	1.1866	—	—	2.5479	—	—	30
	Dec	2.5220	1.1976	—	—	2.2866	—	—	30
	1997	1.5371	1.2650	—	—	1.9219	—	—	312
1998	Jan								
	Feb								
	Mar				DATA				
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul				TIME				
	Aug								
	Sep				OF				
	Oct				PRINT.				
	Nov								
	Dec								
	1998			—	—		—	—	

MISCELLANEOUS DATA continued.

TABLE M10A continued:

INTERNATIONAL PENUMBRA/GROUP MEANS **1997 - 2001.**

YEAR	MTH	$\overline{p/g_I}$	σ	$\overline{p/g_I}(S^W)$	$\overline{p/g_I}(S^{B13})$	$\overline{p}/\overline{g}_I$	$\overline{p}/\overline{g}_I(S^W)$	$\overline{p}/\overline{g}_I(S^{B13})$	DCC
1999	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
	1999			—	—		—	—	
2000	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
	2000			—	—		—	—	
2001	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
	2001			—	—		—	—	

MISCELLANEOUS DATA continued.

TABLE M10B:
INTERNATIONAL SPOTS/GROUP MEANS **1997 - 2001**.

The following $\overline{f/g}$ data are obtained by averaging each f/g value from every observation within the period concerned, ie. the number of spots per group per observation.International data below are gleaned from Sonne, Germany.

The $\overline{f}/\overline{g}$ data are obtained by dividing the total number of spots by the total number of groups within the period concerned, ie. the number of spots per group, the true arithmetical mean.

σ values are sample standard deviations.
n = number of observations.
DCC = days with common components.

YEAR	MTH	$\overline{f/g}_I$	σ	$\overline{f/g}_I(S^W)$	$\overline{f/g}_I(S^{B13})$	$\overline{f}/\overline{g}_I$	$\overline{f}/\overline{g}_I(S^W)$	$\overline{f}/\overline{g}_I(S^{B13})$	DCC
1997	Jan	2.4891	2.8075	4.1487	4.0750	3.1169	4.8530	4.7781	19
	Feb	3.6114	3.1812	3.9081	4.0607	5.3488	4.5621	4.7648	17
	Mar	5.3633	2.6230	4.1686	4.2352	5.5195	4.8214	4.9386	19
	Apr	5.2027	2.7646	4.6127	4.4361	6.0000	5.2884	5.1307	26
	May	3.6888	2.4982	4.8353	4.5668	4.2005	5.4735	5.2288	28
	Jun	4.3627	2.8847	5.0169	4.7737	4.7170	5.5414	5.3700	30
	Jul	2.7207	2.7766	—	—	4.1667	—	—	23
	Aug	5.1352	4.2248	—	—	5.2778	—	—	29
	Sep	8.4137	3.3270	—	—	8.9815	—	—	30
	Oct	4.1613	2.3896	—	—	4.6405	—	—	31
	Nov	9.2933	4.7072	—	—	9.0230	—	—	30
	Dec	7.3496	5.6597	—	—	6.4177	—	—	30
	1997	5.3597	4.0750	—	—	6.2761	—	—	312
1998	Jan								
	Feb								
	Mar				DATA				
	Apr								
	May				UNOBTAINABLE				
	Jun								
	Jul				AT				
	Aug								
	Sep				TIME				
	Oct								
	Nov				OF				
	Dec								
	1998			—	PRINT.		—	—	

MISCELLANEOUS DATA continued.

TABLE M10B continued:

INTERNATIONAL SPOT/GROUP MEANS **1997 - 2001.**

YEAR	MTH	$\overline{f/g_I}$	σ	$\overline{f/g_I}(S^W)$	$\overline{f/g_I}(S^{B13})$	$\overline{f}/\overline{g}_I$	$\overline{f}/\overline{g}_I(S^W)$	$\overline{f}/\overline{g}_I(S^{B13})$	DCC
1999	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
1999				—	—		—	—	
2000	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
2000				—	—		—	—	
2001	Jan								
	Feb				DATA				
	Mar								
	Apr				UNOBTAINABLE				
	May								
	Jun				AT				
	Jul								
	Aug				TIME				
	Sep								
	Oct				OF				
	Nov								
	Dec				PRINT.				
2001				—	—		—	—	

MISCELLANEOUS DATA continued.

TABLE M10C:

INTERNATIONAL GROUP COMPLEXITY INDICES (GCI_I) **1997 - 2001**.

The Group Complexity Index (GCI_I) is an index for showing how complex sunspot groups can get throughout the sunspot cycle. It is not an activity index like the Wolf Number etc. International data below are gleaned from Sonne, Germany.

The GCI is computed as $(\bar{p}+\bar{f})/\bar{g}$ as long as there is the same number of observations for each component, as well as the same observations for each component, whatever period is concerned. If the three components are not common to all observations, then incomplete observations are ignored.

The minimum GCI value is, theoretically, 1 (spotless observations do not count), and the approximate maximum value is about 20.

DCC = days with common components.

YEAR	MTH	$\bar{p}/\bar{g}_I$	$\bar{f}/\bar{g}_I$	GCI_I	$GCI_I(S^W)$	$GCI_I(S^{B13})$	DCC
1997	Jan	0.6494	3.1169	3.7662	6.2929	6.2047	19
	Feb	1.6279	5.3488	6.9767	5.8676	6.1625	17
	Mar	1.7532	5.5195	7.2727	6.2145	6.3804	19
	Apr	1.7778	6.0000	7.7778	6.8309	6.6212	26
	May	1.4363	4.2005	5.6369	7.0757	6.7357	28
	Jun	1.0566	4.7170	5.7736	7.1648	6.9065	30
	Jul	0.7051	4.1667	4.8718	—	—	23
	Aug	1.6453	5.2778	6.9231	—	—	29
	Sep	2.7932	8.9815	11.7747	—	—	30
	Oct	1.4815	4.6405	6.1220	—	—	31
	Nov	2.5479	9.0230	11.5709	—	—	30
	Dec	2.2866	6.4177	8.7043	—	—	30
1997		1.9219	6.2761	8.1979	—	—	312
1998	Jan						
	Feb						
	Mar			DATA			
	Apr						
	May			UNOBTAINABLE			
	Jun			AT			
	Jul						
	Aug			TIME			
	Sep			OF			
	Oct						
	Nov			PRINT.			
	Dec						
1998					—	—	

MISCELLANEOUS DATA continued.

TABLE M10C continued:

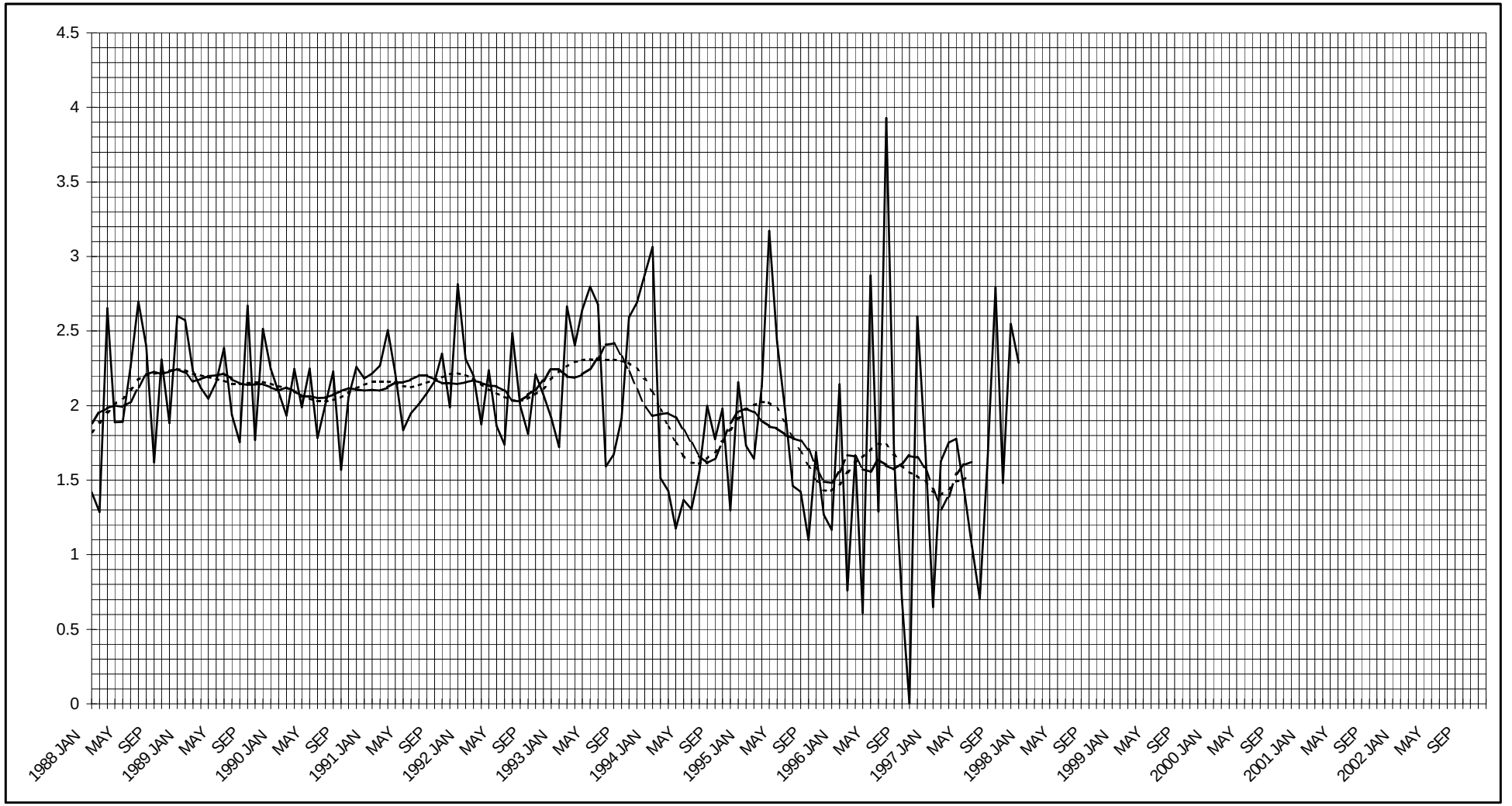
INTERNATIONAL GROUP COMPLEXITY INDICES (GCI_I) **1997 - 2001**.

YEAR	MTH	$\bar{p}/\bar{g}_I$	$\bar{f}/\bar{g}_I$	GCI_I	$GCI_I(S^W)$	$GCI_I(S^{B13})$	DCC
1999	Jan						
	Feb			DATA			
	Mar						
	Apr			UNOBTAINABLE			
	May						
	Jun			AT			
	Jul						
	Aug			TIME			
	Sep						
	Oct			OF			
	Nov						
	Dec			PRINT.			
	1999				—	—	
2000	Jan						
	Feb			DATA			
	Mar						
	Apr			UNOBTAINABLE			
	May						
	Jun			AT			
	Jul						
	Aug			TIME			
	Sep						
	Oct			OF			
	Nov						
	Dec			PRINT.			
	2000				—	—	
2001	Jan						
	Feb			DATA			
	Mar						
	Apr			UNOBTAINABLE			
	May						
	Jun			AT			
	Jul						
	Aug			TIME			
	Sep						
	Oct			OF			
	Nov						
	Dec			PRINT.			
	2001				—	—	

OBSERVED and SMOOTHED INTERNATIONAL PENUMBRAE PER SUNSPOT GROUP (p/g_l, p/g_l[SW] and p/g_l[SB13]) 1988-2002

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

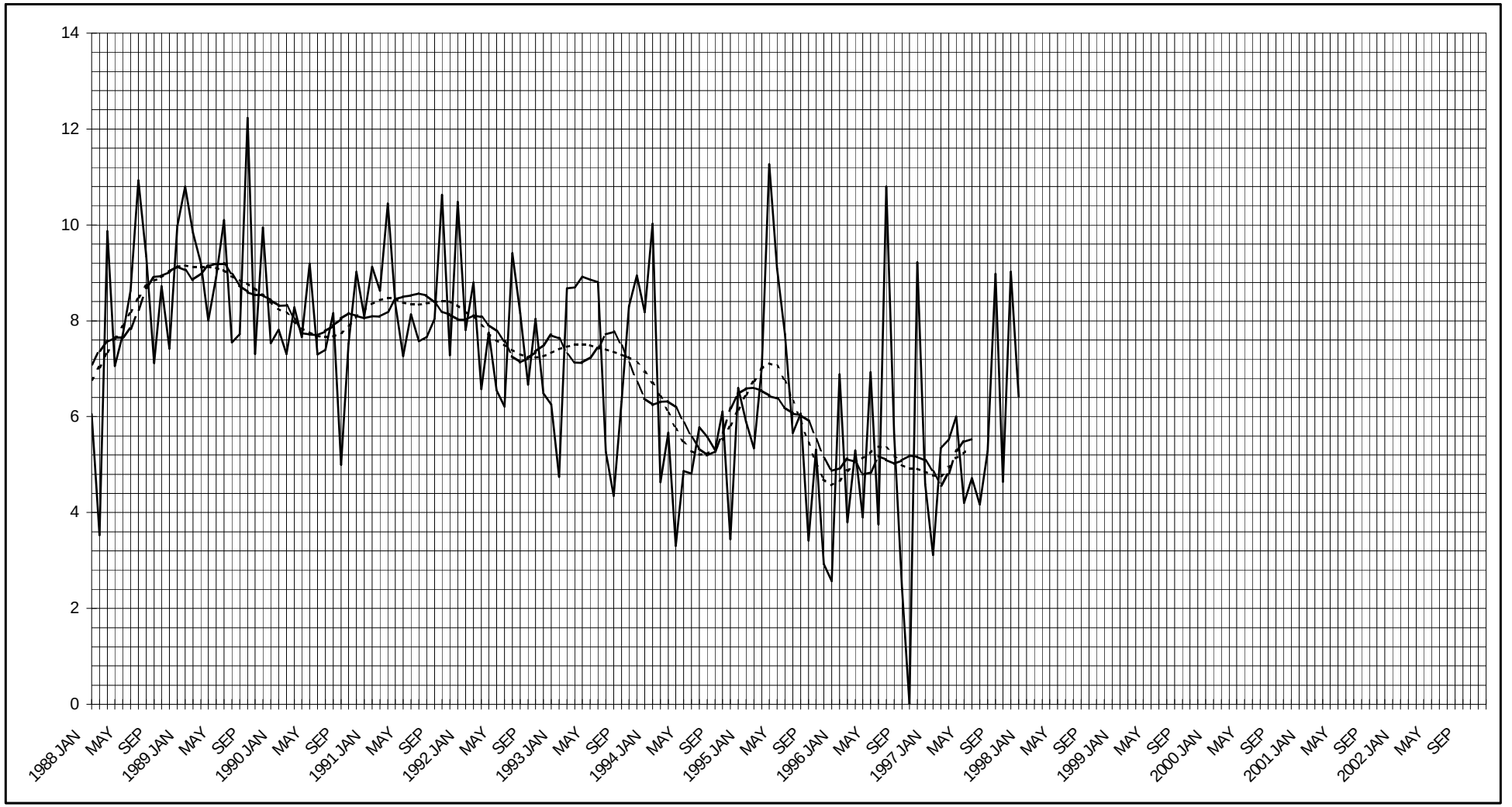
FOR EXACT VALUES, SEE TABLE M10A



OBSERVED and SMOOTHED INTERNATIONAL SPOTS PER SUNSPOT GROUP (f/g_I, f/g_I[SW] and f/g_I[SB13]) 1988-2002

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE M10B



OBSERVED and SMOOTHED INTERNATIONAL GROUP COMPLEXITY INDEX (GCI_I , GCI_I[SW] and GCI_I[SB13]) 1988-2002

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE M10C