

GDSO

GEORGI DOBROVOLSKI SOLAR OBSERVATORY

ANNUAL REPORT FOR 1996

COMPILED BY HOWARD BARNES

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TIMES USED (AND NOT USED) IN THIS PUBLICATION .

The term “Greenwich Mean Time” (GMT) is *not* used in this publication since it is ambiguous and is used, both mistakenly and *wrongly*, in the sense of the Greenwich civil atomic scale, Co-ordinated Universal Time (UTC). From 1675, until the beginning of 1925, Greenwich Mean Time was measured by the Royal Observatory, from GREENWICH MEAN MID-DAY, 12 hours **BEHIND** Universal Time (UT).

For the purposes of lengthy solar observations, the GDSO considers all seven Universal Times (UT0, UT1, UT2, UT0R, UT1R, UT2R and UTC) as being the same. Times in this loose sense are labelled UT. If a stated time in this publication is not labelled at all, then it is to be considered as being UT. In Sections A & B, UT is given to the nearest fifth minute; in Section D, it is given to the nearest minute.

For ‘central meridian’ purposes, the GDSO also considers Terrestrial [Dynamical] Time (TT) as being the same as UT. From January 1996 to June 1997 (inclusive), $TT-UTC = +62,1840$ seconds, an approximate equivalent to the amount of time the Earth has lost, as a ‘clock’, since 1900.

As this publication has an international distribution, both New Zealand Standard Time (NZST) [UTC + 12 hours] and New Zealand Daylight Time (NZDT) [UTC + 13 hours] are ignored.

BILLION.

If the word ‘billion’ is ever used in any GDSO reports, it is to be taken in its literal sense of ‘million to the power of two’, that is 1 million million. The value of 1000 million may be occasionally referred to, in the GDSO reports, as the ‘sesquillion’, literally ‘million to the power of one and a half’.

THE DECIMAL POINT.

Throughout this report, the comma (,) is used as the decimal point, keeping to the European, Asian and Latin American tradition.

PREFACE.

The Sun was observed 194 times throughout 1996, with sunspot activity still going downward. Activity did get to zero in October (as far as GDSO observations were concerned), but then rose significantly the following month. The actual observed number of sunspots reached its highest in November with a total of 37, however, August was the month with the highest mean Wolf Number for 1996 (20,35), having no spotless discs. The annual mean Wolf Number for 1996 was 9,78. The corrected Wolf Number (R^{GD}) for 1996 is *provisionally* 8,20.

Activity was so low that spotless discs accounted for 50,5% of all 1996's observations.

Minimum cannot be ascertained yet (April 1997), but it appears that it could happen in May 1996 \pm 2 months, even though activity did hit zero in October. The active months of August and November 1996 would appear to cancel that 'option', especially if one employs the Waldmeier equation. The corrected Wolf Number values remained under 12,5 (last minimum's international value) from November 1995 to July 1996 inclusive, a point lending weight to a May 1996 minimum forecast.

Group complexity ranged from 2,3 in September (excepting October with its non-existent GCI) to 13,4 in November. The latter value was obtained because two regions, one D-class and one E-class, appeared in that month. The E-class region was the first of its type since June 1995.

The number of penumbrae per region has kept falling, from 1,56 in 1993, 1,12 in 1994, 1,01 in 1995 and finally 0,97 in 1996. This last figure means that the 'average' sunspot region for 1996 was B class. The number of spots per region also fell in 1996, 4,8 versus 5,1 (1995).

X-ray flare events $>1,0 \times 10^{-6} \text{ W m}^{-2}$ only numbered 86 in 1996 (cf. 159 for 1995). The most productive months were July and November with 23 and 29 events respectively. July's events averaged $14,6 \mu\text{W m}^{-2}$ each, and November's 2,5. April 1996 had only 5 events, but their mean was 9,3. July 1996 was the highest for 'mean daily output' with $10,8 \mu\text{W m}^{-2}$. The MDO minimum for the year was 0 for September and October.

As this report was prepared on a different computer system, there are a few changes in this report. The most notable change is the layout of Section B. The observation-date/time-central meridian line has been shifted to form the first part of the first line of each observation. Each region still has its own line, but all observations are ruled off from each other. Total lines are dispensed with.

Also, the extreme graphs have been temporarily left out as I wasn't very pleased with the original presentation the computer programme came up with. I hope that this will be remedied before the next issue.

The Annual Report for 1997 will be published in April 1998.

HOWARD BARNES.

THE GEORGI DOBROVOLSKI
SOLAR OBSERVATORY.

SOLNECHNAYA OBSERVATORIYA IMENI GEORGIYA DOBROVOLSKOGO.

100% Amateur.

100% Privately Owned & Funded.

Observatory's Telescope:

76mm f12 refractor

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ERRATA.

(in addition to any other errata)

1995's Report;

page F34 (Table Q5) QC(S^{B13}) column January-June 1994 inclusive
should read as follows;

8,4064

8,0087

7,5446

7,0835

6,6556

6,2846

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LIST OF DEFINITIONS IN THIS PUBLICATION.

WN (Wolf Number):

$$R_{GD} = k(10g + f)$$

where f = number of sunspots,
g = number of sunspot regions
& k = up- or downgrading figure
to bring observatories to a
world standard.

WN = observed Wolf Number,
same as above, but k = 1.

BX (Beckindex):

$$BX_{GD} = k \left(\sum_{i=1}^g G_i f_i \right)$$

where g = number of regions,
f = number of sunspots,
G = region constant,
& k = up- or downgrading figure
to bring observatories to a
world standard.

BX = observed Beckindex, same as
above, but k = 1.

QC (Quality Count):

$$QC = \sum_{i=1}^g Z_i$$

where g = number of regions,
Z = region constant based on
Zurich classes.

Micro-hemisphere (μh):

This unit of area, equal to 1 000 000th of the visible hemisphere of the Sun, is used in Section C of the report. It is approximately equal to 3 000 000 square kilometres. A small spot's area would be in the vicinity of 5 or 10 μh , while a large region's area would be greater than 1000 μh . A very large region would have an area greater than 2000 μh .

SN (Pettisindex):

$$PX_{GD} = k(10p + s)$$

where s = number of penumbral-free
sunspots,
p = number of penumbrae,
& k = up- or downgrading figure
to bring observatories to a
world standard.

SN = observed Pettisindex, same as
above, but k = 1.

CV (Classification Value):

$$CV_{GD} = k \left(\sum_{i=1}^g M_i \right)$$

where g = number of regions,
M = region constant based on
McIntosh classes,
k = up- or downgrading figure
to bring observatories to a
world standard.

CV = observed Classification Value,
same as above, but k = 1.

IS = Inter-Sol Index:

$$IS_{GD} = k(gr + f)$$

where gr = number of multi-spot regions,
f = number of sunspots,
& k = up- or downgrading figure
to bring observatories to a
world standard.

IS = observed Inter-Sol Index, same as
above, but k = 1.

x.

FORMULÆ.

The following are three formulæ used in the analysis of sunspot data etc.

σ (sample standard deviation) is computed as:

$$\sqrt{(\sum x^2 - (\sum x)^2/n) / (n - 1)}$$

The annual σ result is computed from total pool of k values.

σ 'SIDC' (annual standard deviation based on the SIDC's formula) is computed as:

$$(\sum (\sigma \times \text{NOBS})) / \sum \text{NOBS}$$

$E\sigma$ (estimate of standard deviation) is computed as:

$$\sqrt{\sum (\sigma^2 \times \text{NOBS}) / \sum \text{NOBS}}$$

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SMOOTHING FORMULÆ.

The following are the three formulæ used in the smoothing of GDSO sunspot data. All are based on monthly means (\bar{x}).

Data suffixed (S^{HBm}) are computed as:

$$\left((\bar{x}_{+3} + \bar{x}_{-3}) + 2(\bar{x}_{+2} + \bar{x}_{-2}) + 3(\bar{x}_{+1} + \bar{x}_{-1}) + 4\bar{x}_0 \right) / 16$$

Data suffixed (S^{W}) are computed as:

$$\left(\sum_{-5}^{+5} \bar{x} + (\bar{x}_{+6} + \bar{x}_{-6})/2 \right) / 12$$

Data suffixed (S^{B13}) are computed as:

$$\left(0,75(\bar{x}_{+6} + \bar{x}_{-6}) + 2(\bar{x}_{+5} + \bar{x}_{-5}) + 3(\bar{x}_{+4} + \bar{x}_{-4}) + 4(\bar{x}_{+3} + \bar{x}_{-3}) + 5(\bar{x}_{+2} + \bar{x}_{-2}) + 6(\bar{x}_{+1} + \bar{x}_{-1}) + 6,5\bar{x}_0 \right) / 48$$

SMOOTHING.

Data from January 1997 onwards will be rounded *prior* to smoothing. Stated observed data (rounded to 1, 2 or 4 decimal places) after this date, will be considered as exact. Stated data prior to 1997 will still be considered as rounded, and smoothed pre-1997 data will be obtained from lengthy 'true' values.

The change from one system to the other, will take 12 months (July 1996 to June 1997) to fully complete. A change of about $\pm 3\%$ is expected in smoothed values.

SECTION A

SOLAR OBSERVATIONAL DATA for **1996** obtained using the 76 mm refractor.

ALL TIMES IN UNIVERSAL TIME (UT).

g = Active Area or group count for WHOLE solar disc .

f = Sunspot count for WHOLE solar disc .

WN = Wolf Number (k in formula neglected) .

TWN = Truncated Wolf Number (Wolf Number minus A and B class regions) .

p = Penumbra count for WHOLE solar disc .

s = Penumbra-free spot count for WHOLE solar disc .

SN = Pettisindex .

BX = Beckindex .

CV = Classification Value .

QC = Quality Count .

IS = Inter-Sol Index

See page ix for all definitions .

Q = Quietness [steadiness] of image (on the Kiepenheuer scale),

1 = steady , 5 = heavy boiling .

S = Sharpness [clarity] of image (on the Kiepenheuer scale),

1 = fine features visible , 5 = umbrae & penumbrae indistinguishable from each other.

T = Transparency of the Earth's atmosphere, where 1 = excellent , 5 = worthless.

If any of Q, S or T is greater (worse) than 4, the observation will be abandoned.

CR = Carrington Rotation Number, with fraction of rotation stated.

Rotation 1 commenced at 1853/11/09;1144 UT (approximately).

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
JANUARY 1996																
01	2050	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,5	1904,4443
02	2120	1	1	11	0	0	1	1	4	1	1	1	2,0	2,5	2,5	,4817
05	2020	3	26	56	45	4	17	57	334	41	8	28	2,0	2,5	2,5	,5899
07	2010	2	17	37	37	2	11	31	136	18	6	19	2,0	2,0	2,0	,6628
08	2000	2	10	30	17	1	7	17	68	12	5	12	2,0	2,0	2,5	,6991
13	1955	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,8819
15	1955	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	,9551
16	2100	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,9933
17	1940	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	1905,0278
18	2020	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	,0654
20	1955	1	1	11	0	0	1	1	4	1	1	1	2,0	2,5	2,5	,1379
21	2015	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,1750
22	2045	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	,2124

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
JANUARY 1996 continued.																
23	1955	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	1905,2476
24	2000	1	1	11	0	0	1	1	4	1	1	1	2,5	3,0	2,5	,2843
25	1955	1	1	11	0	0	1	1	4	1	1	1	2,5	2,5	2,5	,3208
26	1955	1	1	11	0	0	1	1	4	1	1	1	2,0	2,5	2,5	,3574
27	2005	1	1	11	0	0	1	1	4	1	1	1	2,5	2,5	2,5	,3942
28	2010	1	1	11	0	0	1	1	4	1	1	1	2,0	2,0	2,5	,4309
29	2030	1	1	11	0	0	1	1	4	1	1	1	2,0	2,5	2,5	,4680
30	2105	1	1	11	0	0	1	1	4	1	1	1	1,5	1,5	2,0	,5054
31	2205	1	3	13	13	1	2	12	24	12	3	4	2,0	2,5	2,5	,5435
FEBRUARY 1996																
04	1955	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	1905,6865
06	2030	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,7606
22	2030	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	1906,3458
23	2010	2	5	25	0	0	5	5	20	4	3	6	1,5	3,0	3,0	,3819
25	1950	2	9	29	18	1	8	18	68	13	4	10	1,5	2,5	2,5	,4545
27	1945	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,5276
28	1950	1	3	13	0	0	3	3	12	3	2	4	1,5	2,0	2,5	,5643
29	1950	1	1	11	0	0	1	1	4	1	1	1	1,5	3,0	3,0	,6009
MARCH 1996																
02	2030	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	1906,6751
04	2015	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,7479
05	2000	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	,7841
06	1945	1	2	12	0	0	2	2	8	2	2	3	2,5	2,5	2,5	,8203
07	2015	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,8577
08	2020	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,8944
09	1955	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,9304
10	1955	0	0	0	0	0	0	0	0	0	0	0	2,5	3,0	2,5	,9670
11	2010	1	7	17	17	1	6	16	56	9	3	8	2,5	2,5	2,5	1907,0040
13	2035	2	13	33	22	2	9	29	220	23	5	14	1,5	2,0	2,0	,0778
14	2010	1	8	18	18	1	6	16	64	9	3	9	1,5	2,0	2,5	,1138
15	2015	1	4	14	14	1	3	13	32	12	3	5	2,0	2,5	2,5	,1506
17	2035	1	3	13	13	1	2	12	24	12	3	4	2,0	2,0	2,5	,2243
20	2040	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,5	,3343
22	2045	1	7	17	17	2	4	24	126	22	4	8	1,5	2,0	2,5	,4077
23	2040	1	4	14	14	1	3	13	32	9	3	5	2,0	2,5	2,5	,4442
25	2035	2	7	27	15	1	5	15	48	11	5	9	1,5	2,0	2,5	,5173
27	2125	2	6	26	13	1	4	14	36	11	5	8	2,0	3,0	3,0	,5918
29	2025	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	,6636

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
APRIL 1996																
01	2020	1	3	13	13	1	2	12	24	12	3	4	2,0	2,0	2,5	1907,7734
02	2030	1	1	11	0	0	1	1	4	1	1	1	2,0	2,0	2,5	,8103
03	2045	1	2	12	0	0	2	2	8	2	2	3	1,5	2,0	2,5	,8473
04	2035	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	3,0	,8838
05	2055	0	0	0	0	0	0	0	0	0	0	0	1,0	1,5	2,5	,9209
06	2230	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,9600
07	2050	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,9941
13	2135	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	1908,2153
15	2115	0	0	0	0	0	0	0	0	0	0	0	2,0	3,5	3,5	,2881
16	2130	0	0	0	0	0	0	0	0	0	0	0	1,0	2,0	2,5	,3252
21	2030	1	7	17	17	2	5	25	126	28	4	8	2,0	2,5	2,0	,5071
22	2110	1	3	13	13	2	1	21	54	28	4	4	2,0	2,0	2,5	,5448
23	2120	1	1	11	0	0	1	1	4	1	1	1	1,5	1,5	2,5	,5817
24	2050	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,6177
25	2055	0	0	0	0	0	0	0	0	0	0	0	1,0	1,5	2,0	,6545
27	2155	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,7294
29	2255	0	0	0	0	0	0	0	0	0	0	0	1,0	2,5	2,5	,8044
30	2125	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,8388
MAY 1996																
01	2105	0	0	0	0	0	0	0	0	0	0	0	3,0	3,0	2,5	1908,8750
02	2140	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	,9126
03	2055	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	,9482
05	2050	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	1909,0215
07	2120	1	5	15	15	2	3	23	90	28	4	6	1,5	2,0	2,5	,0957
09	2035	1	4	14	14	2	2	22	72	28	4	5	2,0	3,0	2,5	,1680
10	2110	1	10	20	20	3	6	36	180	34	4	11	2,0	2,5	2,5	,2056
11	2140	1	11	21	21	2	8	28	198	22	4	12	2,0	2,5	3,0	,2431
12	2125	1	7	17	17	2	4	24	126	22	4	8	2,0	2,0	2,5	,2795
14	2115	1	6	16	16	1	5	15	48	12	3	7	1,5	2,0	2,5	,3527
16	2110	1	2	12	0	0	2	2	8	2	2	3	2,5	2,0	2,0	,4261
17	2055	1	2	12	0	0	2	2	8	2	2	3	2,5	2,0	2,0	,4624
22	2125	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,6469
23	2055	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,6829
25	2135	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,7574
27	2050	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	,8298
30	2220	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,9424
31	2115	0	0	0	0	0	0	0	0	0	0	0	3,0	3,0	3,0	,9775

A4

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
JUNE 1996																
01	2110	0	0	0	0	0	0	0	0	0	0	0	2,5	2,5	2,5	1910,0141
02	2105	0	0	0	0	0	0	0	0	0	0	0	2,5	3,0	3,0	,0507
03	2315	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,0908
07	2105	1	14	24	24	2	10	30	252	22	4	15	2,0	2,5	2,5	,2346
09	2120	2	8	28	17	1	6	16	60	10	4	9	1,0	2,0	2,5	,3085
12	2050	0	0	0	0	0	0	0	0	0	0	0	2,5	2,0	2,0	,4180
13	2105	1	1	11	0	0	1	1	4	1	1	1	1,5	2,0	2,0	,4551
14	2130	0	0	0	0	0	0	0	0	0	0	0	1,0	1,5	2,0	,4926
17	2145	0	0	0	0	0	0	0	0	0	0	0	1,0	2,0	2,0	,6032
18	2125	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,6395
20	2130	1	1	11	11	1	0	10	37	10	2	1	2,0	2,5	2,5	,7132
23	2140	3	4	34	11	1	3	13	49	13	5	5	2,0	2,5	2,5	,8237
25	2155	2	5	25	13	1	4	14	32	14	5	7	2,0	2,5	2,5	,8976
28	2150	2	4	24	24	2	2	22	32	16	6	6	2,0	2,0	2,0	1911,0078

JULY 1996

02	2120	1	2	12	0	0	2	2	8	2	2	3	2,0	1,5	1,5	1911,1541
06	2145	1	3	13	0	0	3	3	12	3	2	4	1,5	1,5	2,0	,3018
07	2155	1	13	23	23	3	6	36	234	31	4	14	1,5	2,0	2,5	,3389
11	2050	1	9	19	19	2	5	25	162	52	4	10	2,0	2,0	2,0	,4842
12	2115	2	5	25	14	2	3	23	76	23	5	6	1,5	2,0	2,0	,5216
15	2150	1	1	11	0	0	1	1	4	1	1	1	2,5	2,5	2,5	,6328
19	2240	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,7811
21	2125	1	1	11	0	0	1	1	4	1	1	1	1,5	2,0	2,5	,8527
25	2050	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,9988
26	2115	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	1912,0362
27	2130	1	3	13	13	1	2	12	24	12	3	4	2,5	2,5	2,5	,0733
29	2200	1	9	19	19	2	3	23	162	52	4	10	2,0	1,5	2,0	,1475
30	2050	1	12	22	22	4	2	42	216	58	4	13	2,0	1,5	1,5	,1825

																A5
DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
AUGUST 1996																
02	2140	2	15	35	24	4	8	48	256	55	5	16	2,0	2,0	2,5	1912,2940
03	2115	1	14	24	24	2	11	31	252	52	4	15	1,5	1,5	2,5	,3301
04	2110	1	10	20	20	1	9	19	80	42	3	11	2,5	2,5	2,5	,3667
06	2145	2	4	24	13	1	3	13	28	43	4	5	2,0	2,0	2,5	,4411
08	2110	2	3	23	0	0	3	3	12	3	3	4	2,5	2,0	2,5	,5136
09	2040	2	8	28	0	0	8	8	32	4	3	9	2,0	2,0	2,5	,5496
10	2110	1	10	20	20	2	5	25	180	22	4	11	1,5	2,0	2,5	,5871
11	2100	2	15	35	24	2	6	26	256	23	5	16	1,5	2,0	2,5	,6235
13	2135	1	3	13	0	0	3	3	12	3	2	4	1,5	2,0	2,0	,6979
16	2145	1	4	14	0	0	4	4	16	3	2	5	2,0	2,0	2,5	,8083
20	2050	2	3	23	0	0	3	3	12	3	3	4	2,0	2,5	2,5	,9537
21	2120	1	1	11	0	0	1	1	4	1	1	1	2,0	2,0	2,0	,9912
25	2310	1	4	14	14	1	2	12	32	12	3	5	2,5	3,0	3,0	1913,1408
26	2045	1	2	12	12	1	0	10	74	10	2	3	1,5	2,5	2,5	,1738
27	2210	1	3	13	13	1	2	12	24	12	3	4	1,5	2,0	2,0	,2127
29	2135	2	5	25	13	1	4	14	32	14	5	7	1,5	2,0	2,5	,2852
30	2300	1	2	12	12	1	1	11	16	11	3	3	2,0	2,5	2,5	,3241

SEPTEMBER 1996

04	2255	1	1	11	0	0	1	1	4	1	1	1	1,5	2,5	2,5	1913,5074
05	2105	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,5413
06	2120	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,5783
07	2045	2	6	26	0	0	6	6	24	5	4	8	2,0	2,5	2,5	,6141
15	2115	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,5	,9083
16	2005	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,9432
17	2010	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,9800
19	2155	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	1914,0560
20	2220	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,0933
21	2205	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,1296
28	2025	0	0	0	0	0	0	0	0	0	0	0	3,0	3,0	3,0	,3836
29	2020	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,4202
30	2025	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,4570

A6

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
OCTOBER 1996																
02	2255	0	0	0	0	0	0	0	0	0	0	0	2,5	3,0	3,0	1914,5341
03	2210	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,5696
04	2205	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,6061
05	2050	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,6409
06	1940	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,6757
09	2020	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,7867
11	1940	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,8589
13	2045	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,9339
15	1955	0	0	0	0	0	0	0	0	0	0	0	2,0	3,0	3,0	1915,0059
16	2025	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,0433
17	2010	0	0	0	0	0	0	0	0	0	0	0	2,0	3,0	3,0	,0796
18	1935	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	3,0	,1153
19	2005	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	1,5	,1527
22	2125	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,2646
23	1935	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,2985
24	2240	0	0	0	0	0	0	0	0	0	0	0	1,5	2,5	2,5	,3398
29	2155	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,5218
30	1940	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,5551
31	1930	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,5914

NOVEMBER 1996

02	1950	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	1915,6652
03	2005	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	1,5	,7022
04	1945	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,7383
05	2000	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,7753
07	2125	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,5	,8507
08	2225	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,8889
13	1930	1	2	12	0	0	2	2	8	2	2	3	2,0	2,0	2,5	1916,0675
15	2040	2	4	24	0	0	4	4	16	4	4	6	1,5	2,0	2,5	,1425
19	1945	1	1	11	0	0	1	1	4	1	1	1	1,0	2,0	2,5	,2876
20	2005	1	1	11	0	0	1	1	4	1	1	1	2,0	2,5	2,5	,3247
22	2010	2	17	37	37	3	11	41	256	34	7	19	2,0	1,5	2,0	,3981
23	2135	2	29	49	49	7	13	83	522	59	8	31	2,0	2,5	2,5	,4368
26	2310	2	25	45	45	4	11	51	430	66	7	27	2,5	3,0	3,0	,5491
27	1950	1	37	47	47	4	21	61	925	56	5	38	1,5	2,5	2,5	,5806
28	2145	1	24	34	34	5	12	62	600	59	5	25	2,0	2,0	2,5	,6202
29	2005	1	19	29	29	5	8	58	342	58	4	20	2,0	1,5	2,0	,6542

DATE	UT	g	f	WN	TWN	p	s	SN	BX	CV	QC	IS	Q	S	T	CR
DECEMBER 1996																
01	1955	1	5	15	15	3	1	31	90	58	4	6	2,5	2,5	2,5	1916,7272
04	2045	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,8383
05	2040	0	0	0	0	0	0	0	0	0	0	0	2,5	3,0	3,0	,8748
06	2015	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,9107
07	2020	0	0	0	0	0	0	0	0	0	0	0	2,0	2,5	2,5	,9475
08	2010	1	3	13	13	1	2	12	24	6	3	4	2,5	2,5	2,5	,9838
09	1950	1	8	18	18	1	6	16	64	9	3	9	2,0	2,0	2,0	1917,0199
11	1955	2	6	26	26	2	4	24	77	22	5	7	2,0	3,0	3,5	,0932
14	2145	2	4	24	24	3	1	31	91	32	6	5	1,0	2,0	2,0	,2058
15	2005	2	5	25	25	2	3	23	69	22	5	6	1,5	2,0	2,5	,2399
17	1950	2	6	26	13	1	5	15	36	15	5	8	1,5	1,5	2,0	,3127
20	2005	1	2	12	12	1	1	11	16	11	3	3	1,5	2,0	2,0	,4228
21	2000	2	4	24	11	1	3	13	49	13	4	5	1,5	1,5	2,0	,4593
24	2015	0	0	0	0	0	0	0	0	0	0	0	2,0	2,0	2,0	,5695
25	2025	0	0	0	0	0	0	0	0	0	0	0	1,5	2,0	2,0	,6063
26	2005	0	0	0	0	0	0	0	0	0	0	0	1,0	1,5	2,0	,6424
31	2035	0	0	0	0	0	0	0	0	0	0	0	1,5	1,5	2,0	,8261

SECTION B

SUNSPOT REGIONAL BREAKDOWNS.

This section states all regions observed by the GDSO in the format of ;

- * NOAA / SEC region number (if known);
- * co-ordinates of regions in degrees of heliographic latitude (B) [+ if NORTH , - if SOUTH] , and in degrees of heliographic longitude (CMD) in respect to the central meridian [+ if WEST , - if EAST] . CMD increases with time .
- * f (spots) , p (penumbrae) , s (outlying spots) and five columns which state the distribution of umbræ within penumbrae (see page B2) ;
- * GDSO's determination of the McIntosh classifications of each observed region .

The central meridian value (CM) is based on the Carrington system of heliographic longitude.

All regions observed are listed in increasing longitudinal order. East is to the LEFT of North when it comes to co-ordinates on the Sun.

Observations during 1996 are numbered 2987 to 3180 inclusive.

B3

OBS	DATE	UT	CM	REG. No	B	CMD	f	p	s	gr	grfp	grf	efp	ef	Class	Rem.
3001	1996 / 01 / 24	2000	257,63	7943	+12	-65	1	0	1	0	0	0	0	1	AXX	—
3002	1996 / 01 / 25	1955	244,52	7943	+12	-52	1	0	1	0	0	0	0	1	AXX	—
3003	1996 / 01 / 26	1955	231,35	7943	+12	-39	1	0	1	0	0	0	0	1	AXX	—
3004	1996 / 01 / 27	2005	218,09	7943	+11	-26	1	0	1	0	0	0	0	1	AXX	—
3005	1996 / 01 / 28	2010	204,88	7943	+11	-13	1	0	1	0	0	0	0	1	AXX	—
3006	1996 / 01 / 29	2030	191,53	7943	+10	+00	1	0	1	0	0	0	0	1	AXX	—
3007	1996 / 01 / 30	2105	178,04	7944	+08	+40	1	0	1	0	0	0	0	1	AXX	—
3008	1996 / 01 / 31	2205	164,33	7944	+08	+55	3	1	2	1	1	2	0	0	CSI	—
3009	1996 / 02 / 04	1955	112,85	—	—	—	0	0	0	0	0	0	0	0	—	—
3010	1996 / 02 / 06	2030	86,20	—	—	—	0	0	0	0	0	0	0	0	—	—
3011	1996 / 02 / 22	2030	235,51	—	—	—	0	0	0	0	0	0	0	0	—	—
3012	1996 / 02 / 23	2010	222,52	7946	+08	-18	1	0	1	0	0	0	0	1	AXX	very small
				7948	+09	+11	4	0	4	1	0	4	0	0	BXI	—
3013	1996 / 02 / 25	1950	196,37	7946	+10	+11	1	0	1	0	0	0	0	1	AXX	very small
				7948	+09	+37	8	1	7	1	1	7	0	0	CSI	—
3014	1996 / 02 / 27	1945	170,07	—	—	—	0	0	0	0	0	0	0	0	—	—
3015	1996 / 02 / 28	1950	156,86	7949	-11	-08	3	0	3	1	0	3	0	0	BXI	—
3016	1996 / 02 / 29	1950	143,68	7949	-11	+04	1	0	1	0	0	0	0	1	AXX	very small
3017	1996 / 03 / 02	2030	116,97	—	—	—	0	0	0	0	0	0	0	0	—	—
3018	1996 / 03 / 04	2015	90,76	—	—	—	0	0	0	0	0	0	0	0	—	—
3019	1996 / 03 / 05	2000	77,72	—	—	—	0	0	0	0	0	0	0	0	—	—
3020	1996 / 03 / 06	1945	64,68	7951	-02	-05	2	0	2	1	0	2	0	0	BXO	—
3021	1996 / 03 / 07	2015	51,23	—	—	—	0	0	0	0	0	0	0	0	—	—
3022	1996 / 03 / 08	2020	38,00	—	—	—	0	0	0	0	0	0	0	0	—	—
3023	1996 / 03 / 09	1955	25,05	—	—	—	0	0	0	0	0	0	0	0	—	—
3024	1996 / 03 / 10	1955	11,88	—	—	—	0	0	0	0	0	0	0	0	—	—
3025	1996 / 03 / 11	2010	358,57	7952	-04	-39	7	1	6	1	1	6	0	0	CAI	—
3026	1996 / 03 / 13	2035	331,98	7952	-04	-12	12	2	8	1	4	8	0	0	DAI	—
				?	-10	-03	1	0	1	0	0	0	0	1	AXX	—
3027	1996 / 03 / 14	2010	319,03	7952	-04	+01	8	1	6	1	2	6	0	0	CAI	—
3028	1996 / 03 / 15	2015	305,80	7952	-05	+14	4	1	3	1	1	3	0	0	CSI	—
3029	1996 / 03 / 17	2035	279,26	7952	-04	+44	3	1	2	1	1	2	0	0	CSI	—
3030	1996 / 03 / 20	2040	239,66	—	—	—	0	0	0	0	0	0	0	0	—	—
3031	1996 / 03 / 22	2045	213,24	7953	+08	-12	7	2	4	1	3	4	0	0	DAI	—
3032	1996 / 03 / 23	2040	200,10	7953	+08	+01	4	1	3	1	1	3	0	0	CAI	—

B4

OBS	DATE	UT	CM	REG. No	B	CMD	f	p	s	gr	grfp	grf	efp	ef	Class	Rem.
3033	1996 / 03 / 25	2035	173,78	7954	+02	+10	2	0	2	1	0	2	0	0	BXO	—
				7953	+07	+28	5	1	3	1	2	3	0	0	CAI	—
3034	1996 / 03 / 27	2125	146,94	7954	+02	+37	3	0	3	1	0	3	0	0	BXI	—
				7953	+08	+55	3	1	1	1	2	1	0	0	CAO	—
3035	1996 / 03 / 29	2025	121,11	—	—	—	0	0	0	0	0	0	0	0	—	—
3036	1996 / 04 / 01	2020	81,58	7955	+02	+41	3	1	2	1	1	2	0	0	CSI	—
3037	1996 / 04 / 02	2030	68,29	7955	+01	+55	1	0	1	0	0	0	0	1	AXX	—
3038	1996 / 04 / 03	2045	54,96	7955	+01	+69	2	0	2	1	0	2	0	0	BXO	—
3039	1996 / 04 / 04	2035	41,85	—	—	—	0	0	0	0	0	0	0	0	—	—
3040	1996 / 04 / 05	2055	28,47	—	—	—	0	0	0	0	0	0	0	0	—	—
3041	1996 / 04 / 06	2230	14,40	—	—	—	0	0	0	0	0	0	0	0	—	—
3042	1996 / 04 / 07	2050	2,12	—	—	—	0	0	0	0	0	0	0	0	—	—
3043	1996 / 04 / 13	2135	282,51	—	—	—	0	0	0	0	0	0	0	0	—	—
3044	1996 / 04 / 15	2115	256,28	—	—	—	0	0	0	0	0	0	0	0	—	—
3045	1996 / 04 / 16	2130	242,94	—	—	—	0	0	0	0	0	0	0	0	—	—
3046	1996 / 04 / 21	2030	177,46	7958	-07	+68	7	2	5	1	2	5	0	0	DSI	—
3047	1996 / 04 / 22	2110	163,88	7958	-06	+81	3	2	1	1	2	1	0	0	DSI	—
3048	1996 / 04 / 23	2120	150,58	?	-17	+06	1	0	1	0	0	0	0	1	AXX	very small
3049	1996 / 04 / 24	2050	137,64	—	—	—	0	0	0	0	0	0	0	0	—	—
3050	1996 / 04 / 25	2055	124,38	—	—	—	0	0	0	0	0	0	0	0	—	—
3051	1996 / 04 / 27	2155	97,41	—	—	—	0	0	0	0	0	0	0	0	—	—
3052	1996 / 04 / 29	2255	70,43	—	—	—	0	0	0	0	0	0	0	0	—	—
3053	1996 / 04 / 30	2125	58,03	—	—	—	0	0	0	0	0	0	0	0	—	—
3054	1996 / 05 / 01	2105	45,00	—	—	—	0	0	0	0	0	0	0	0	—	—
3055	1996 / 05 / 02	2140	31,46	—	—	—	0	0	0	0	0	0	0	0	—	—
3056	1996 / 05 / 03	2055	18,66	—	—	—	0	0	0	0	0	0	0	0	—	—
3057	1996 / 05 / 05	2050	352,26	—	—	—	0	0	0	0	0	0	0	0	—	—
3058	1996 / 05 / 07	2120	325,54	7962	-06	-68	5	2	3	1	2	3	0	0	DSI	—
3059	1996 / 05 / 09	2035	299,51	7962	-07	-42	4	2	2	1	2	2	0	0	DSI	—
3060	1996 / 05 / 10	2110	285,97	7962	-06	-29	10	3	6	1	4	6	0	0	DSC	—
3061	1996 / 05 / 11	2140	272,47	7962	-07	-15	11	2	8	1	3	8	0	0	DAI	—
3062	1996 / 05 / 12	2125	259,38	7962	-07	-01	7	2	4	1	3	4	0	0	DAI	—
3063	1996 / 05 / 14	2115	233,02	7962	-07	+26	6	1	5	1	1	5	0	0	CSI	—
3064	1996 / 05 / 16	2110	206,62	7962	-06	+54	2	0	2	1	0	2	0	0	BXO	—
3065	1966 / 05 / 17	2055	193,53	7962	-06	+67	2	0	2	1	0	2	0	0	BXO	—

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OBS	DATE	UT	CM	REG. No	B	CMD	f	p	s	gr	grfp	grf	efp	ef	Class	Rem.
3122	1996 / 09 / 17	2010	7,21	—	—	—	0	0	0	0	0	0	0	0	—	—
3123	1996 / 09 / 19	2155	339,85	—	—	—	0	0	0	0	0	0	0	0	—	—
3124	1996 / 09 / 20	2220	326,42	—	—	—	0	0	0	0	0	0	0	0	—	—
3125	1996 / 09 / 21	2205	313,35	—	—	—	0	0	0	0	0	0	0	0	—	—
3126	1996 / 09 / 28	2025	221,89	—	—	—	0	0	0	0	0	0	0	0	—	—
3127	1996 / 09 / 29	2020	208,74	—	—	—	0	0	0	0	0	0	0	0	—	—
3128	1996 / 09 / 30	2025	195,49	—	—	—	0	0	0	0	0	0	0	0	—	—
3129	1996 / 10 / 02	2255	167,73	—	—	—	0	0	0	0	0	0	0	0	—	—
3130	1996 / 10 / 03	2210	154,95	—	—	—	0	0	0	0	0	0	0	0	—	—
3131	1996 / 10 / 04	2205	141,79	—	—	—	0	0	0	0	0	0	0	0	—	—
3132	1996 / 10 / 05	2050	129,29	—	—	—	0	0	0	0	0	0	0	0	—	—
3133	1996 / 10 / 06	1940	116,74	—	—	—	0	0	0	0	0	0	0	0	—	—
3134	1996 / 10 / 09	2020	76,80	—	—	—	0	0	0	0	0	0	0	0	—	—
3135	1996 / 10 / 11	1940	50,78	—	—	—	0	0	0	0	0	0	0	0	—	—
3136	1996 / 10 / 13	2045	23,80	—	—	—	0	0	0	0	0	0	0	0	—	—
3137	1996 / 10 / 15	1955	357,87	—	—	—	0	0	0	0	0	0	0	0	—	—
3138	1996 / 10 / 16	2025	344,41	—	—	—	0	0	0	0	0	0	0	0	—	—
3139	1996 / 10 / 17	2010	331,36	—	—	—	0	0	0	0	0	0	0	0	—	—
3140	1996 / 10 / 18	1935	318,49	—	—	—	0	0	0	0	0	0	0	0	—	—
3141	1996 / 10 / 19	2005	305,02	—	—	—	0	0	0	0	0	0	0	0	—	—
3142	1996 / 10 / 22	2125	264,73	—	—	—	0	0	0	0	0	0	0	0	—	—
3143	1996 / 10 / 23	1935	252,55	—	—	—	0	0	0	0	0	0	0	0	—	—
3144	1996 / 10 / 24	2240	237,66	—	—	—	0	0	0	0	0	0	0	0	—	—
3145	1996 / 10 / 29	2155	172,13	—	—	—	0	0	0	0	0	0	0	0	—	—
3146	1996 / 10 / 30	1940	160,18	—	—	—	0	0	0	0	0	0	0	0	—	—
3147	1996 / 10 / 31	1930	147,09	—	—	—	0	0	0	0	0	0	0	0	—	—
3148	1996 / 11 / 02	1950	120,54	—	—	—	0	0	0	0	0	0	0	0	—	—
3149	1996 / 11 / 03	2005	107,21	—	—	—	0	0	0	0	0	0	0	0	—	—
3150	1996 / 11 / 04	1945	94,21	—	—	—	0	0	0	0	0	0	0	0	—	—
3151	1996 / 11 / 05	2000	80,89	—	—	—	0	0	0	0	0	0	0	0	—	—
3152	1996 / 11 / 07	2125	53,74	—	—	—	0	0	0	0	0	0	0	0	—	—
3153	1996 / 11 / 08	2225	40,01	—	—	—	0	0	0	0	0	0	0	0	—	—
3154	1996 / 11 / 13	1930	335,69	7995	+01	-051	2	0	2	1	0	2	0	0	BXO	—

SECTION C

DAILY SUNSPOT AREA TOTALS - 1996.

All data obtained from United States observatories through the US NOAA.

Data in this section may have accumulated errors of up to 50 units or micro-hemispheres.

All dates are UT dates.

Unit used is 1 000 000th of the visible solar hemisphere, or micro-hemisphere.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	10	80	0	10	0	0	50	300	30	0	0	450	01
02	0	30	0	10	0	0	10	320	30	0	0	100	02
03	110	0	0	20	0	0	10	290	20	0	0	0	03
04	220	0	0	10	0	10	10	220	0	0	0	0	04
05	410	0	0	0	0	30	10	220	0	0	0	—	05
06	390	0	20	0	50	60	0	140	0	0	0	0	06
07	220	0	0	0	110	90	30	140	20	0	0	10	07
08	180	0	0	0	120	90	250	120	10	0	0	10	08
09	50	0	0	0	130	100	450	20	0	0	0	50	09
10	0	0	0	0	130	60	420	40	0	0	10	40	10
11	0	0	30	0	140	40	390	90	0	0	20	270	11
12	0	0	80	10	110	0	300	80	0	0	30	170	12
13	0	0	80	10	100	0	20	50	0	0	20	210	13
14	0	0	60	0	90	0	0	20	0	0	10	210	14
15	0	0	60	0	30	0	0	20	0	0	20	260	15
16	0	0	40	0	30	0	0	20	0	0	40	60	16
17	0	0	20	10	20	0	0	20	0	0	20	90	17
18	0	0	0	20	0	0	0	10	0	0	10	190	18
19	0	0	10	20	0	80	10	10	0	0	10	110	19
20	0	20	0	40	0	100	0	10	0	0	0	50	20
21	10	20	10	140	0	90	0	0	0	0	20	60	21
22	0	20	60	140	0	100	0	20	0	0	120	60	22
23	0	10	110	30	0	110	0	70	0	0	340	50	23
24	0	40	100	0	0	100	0	100	0	0	520	0	24
25	0	60	90	0	0	90	0	100	0	10	1110	0	25
26	0	40	120	0	0	80	0	230	0	20	950	0	26
27	0	20	100	0	0	90	200	60	0	10	860	0	27
28	0	0	70	10	0	230	340	50	0	0	690	0	28
29	0	20	30	0	0	80	360	100	0	0	580	0	29
30	10	—	0	0	0	80	400	60	0	0	570	0	30
31	30	—	0	—	0	—	410	50	—	0	—	0	31
MEAN	52,90	12,41	35,16	16,00	34,19	57,00	118,39	96,13	3,67	1,29	198,33	81,67	MEAN

Quarterly Means:

First: 33,96

Second: 35,71

Third: 73,48

Fourth: 92,75

Yearly Mean : 59,01

SMOOTHED NOAA AREA MONTHLY VALUES.

Data based upon NOAA monthly mean values.

Unit used in observed values is 1 000 000th of the visible solar hemisphere.

Smoothing methods used are the Waldmeier and the 'Barnes 13' methods.

MONTH	Observed	ς^W	ς^{B13}	MONTH	Observed	ς^W	ς^{B13}	MONTH	Observed	ς^W	ς^{B13}
1989 Jan	2079,35	1564,13	1620,16	1992 Jan	1686,13	1317,28	1414,31	1995 Jan	132,90	179,43	182,37
Feb	1782,86	1582,70	1668,39	Feb	1982,59	1234,93	1305,57	Feb	168,21	171,06	170,53
Mar	2137,42	1679,76	1719,01	Mar	835,48	1166,64	1182,91	Mar	225,16	157,06	155,58
Apr	1342,00	1737,96	1747,03	Apr	936,67	1104,07	1060,09	Apr	105,52	139,51	139,57
May	1274,84	1761,96	1764,04	May	498,39	1067,26	959,54	May	135,48	131,25	128,24
Jun	2594,67	1784,67	1773,20	Jun	515,67	1006,95	878,13	Jun	97,67	122,45	117,81
Jul	997,10	1756,19	1761,72	Jul	858,06	893,08	809,54	Jul	106,13	111,01	106,88
Aug	2131,94	1700,94	1743,11	Aug	811,29	804,63	768,76	Aug	58,71	101,19	96,88
Sep	2254,33	1634,98	1709,44	Sep	524,17	763,15	759,76	Sep	39,00	86,78	87,21
Oct	1384,84	1587,66	1659,76	Oct	1008,06	739,60	765,05	Oct	192,58	75,13	79,09
Nov	1726,33	1579,00	1605,93	Nov	993,33	717,29	761,52	Nov	64,33	67,18	70,31
Dec	1679,68	1511,03	1527,38	Dec	690,97	709,78	745,08	Dec	46,45	61,27	61,41
1990 Jan	1457,10	1459,84	1447,69	1993 Jan	438,39	684,60	715,70	1996 Jan	52,90	60,08	55,17
Feb	1079,29	1486,09	1395,16	Feb	1107,50	641,55	677,16	Feb	12,41	62,15	51,98
Mar	1257,74	1446,84	1352,14	Mar	715,16	607,36	627,39	Mar	35,16	62,24	50,12
Apr	1086,00	1397,79	1330,49	Apr	491,67	576,55	568,65	Apr	16,00	52,80	47,11
May	1323,23	1399,05	1336,24	May	408,06	536,41	513,58	May	34,19	50,41	48,42
Jun	915,00	1397,33	1360,66	Jun	425,67	506,04	472,47	Jun	57,00	57,46	55,03
Jul	1448,06	1423,16	1415,21	Jul	343,87	509,95	449,23	Jul	118,39	57,05	60,02
Aug	2310,97	1501,82	1491,35	Aug	292,26	489,23	430,96	Aug	96,13	55,78	62,23
Sep	1133,33	1579,25	1562,42	Sep	222,67	431,42	416,70	Sep	3,67	56,45	62,76
Oct	1328,71	1606,24	1621,17	Oct	570,00	389,84	412,00	Oct	1,29	—	—
Nov	1812,67	1619,14	1672,53	Nov	468,00	363,45	405,48	Nov	198,33	—	—
Dec	1551,94	1677,50	1724,80	Dec	487,42	342,04	391,53	Dec	81,67	—	—
1991 Jan	2294,84	1733,70	1764,60	1994 Jan	735,81	324,62	367,72	1997 Jan	—	—	—
Feb	2219,29	1728,98	1774,15	Feb	312,86	313,35	332,85	Feb	—	—	—
Mar	1976,13	1709,40	1762,20	Mar	122,26	309,96	294,64	Mar	—	—	—
Apr	1015,33	1733,23	1748,30	Apr	86,67	304,13	261,59	Apr	—	—	—
May	1703,55	1722,53	1726,30	May	179,68	279,85	234,28	May	—	—	—
Jun	1935,33	1712,83	1703,53	Jun	140,33	253,46	214,76	Jun	—	—	—
Jul	1776,45	1717,23	1681,24	Jul	210,97	218,07	200,97	Jul	—	—	—
Aug	1869,35	1685,73	1655,18	Aug	154,84	186,92	196,12	Aug	—	—	—
Sep	1105,00	1628,36	1632,35	Sep	278,67	185,18	201,64	Sep	—	—	—
Oct	1929,03	1577,56	1609,92	Oct	374,19	190,25	204,67	Oct	—	—	—
Nov	955,67	1524,07	1571,61	Nov	81,00	189,20	200,08	Nov	—	—	—
Dec	2176,13	1414,70	1502,53	Dec	240,97	185,58	192,28	Dec	—	—	—

SECTION D

MAJOR SOLAR FLARE TIMINGS .

In this section, data on flares are given in the format of beginning, maximum and ending times, along with the flares' x-ray strengths (in microWatts per square metre). This report deals with 1996's flares.

Flares with a strength of less than 1 microWatt per square metre are not stated.

Analysis of these flare data appears on pages D5 and D6 of this report.

MAJOR SOLAR FLARES for 1996.

ALL TIMES IN UNIVERSAL TIME (UT).

Times are as at the Earth, the flares actually occurred 8 minutes earlier than the stated times. Data were collected through the US NOAA from a 24-hour satellite watch over the year concerned.

Strength of the flares are stated in microWatts per square metre ($\mu\text{W}/\text{m}^2$).

If any flares are not $\geq 1 \mu\text{W}/\text{m}^2$ in strength, then they are not listed. If the strength of a flare is not known (by the GDSO), or if the strength is questionable, it is also not listed.

If no major flares ($\geq 1 \mu\text{W}/\text{m}^2$) are observed on any particular day, then the date is left out of the list.

- ◆ A in time columns means the flare continued *after* the end of the observation.
- ◆ B in time columns means the flare started *before* the observation began.
- ◆ OA after maximum time column means the maximum was that time *or after*. This occurs only when the ending time is suffixed with an A and that that time is the same as the maximum time.
- ◆ OB after the maximum time column means the maximum was that time *or before*. This occurs only when the beginning time is suffixed with a B and that that time is the same as the maximum time.
- ◆ U in time columns means 'uncertain'.

If times go beyond 24 hours UT, then 0015 is stated as 2415, etc.

UNIVERSAL TIME					UNIVERSAL TIME				
DATE	BEGIN.	MAX.	END.	STR.	DATE	BEGIN.	MAX.	END	STR.
1996/01/03	1707	1707OB	1715	1,0	1996/05/05	1822	1838	1853	3,1
01/05	0356	0356OB	0401	1,3	05/06	1512	1521	1531	2,5
NO MAJOR FLARES OBSERVED FROM 1996/01/06 TO 1996/03/15 INCLUSIVE.					05/07	0346	0419	0429	2,3
NO DATA OBTAINED FOR 1996/03/16 AND 1996/03/17.					05/08	1549	1551	1557	1,0
NO MAJOR FLARES OBSERVED FROM 1996/03/18 TO 1996/03/22 INCLUSIVE.						2135	2145	2208	1,9
1996/03/23	1943	1943OB	1957	1,5	05/11	2108	2122	2140	1,4
NO MAJOR FLARES OBSERVED FROM 1996/03/24 TO 1996/04/21 INCLUSIVE.					NO MAJOR FLARES OBSERVED FROM 1996/05/12 TO 1996/06/22 INCLUSIVE.				
1996/04/22	0233	0234	0241	1,6	1996/06/23	2211	2217	2221	1,2
	0301	0301	0316	1,2	NO MAJOR FLARES OBSERVED FROM 1996/06/24 TO 1996/07/06 INCLUSIVE.				
	0327	0340	0351	6,1	1996/07/07	2221	2224	2233	1,7
	0442	0443	0450	36,0	07/08	0431	0502	0508	1,0
	1812	1813	1819	1,8		0609	0616	0625	1,6
NO MAJOR FLARES OBSERVED FROM 1996/04/23 TO 1996/05/04 INCLUSIVE.						0858	0900	0909	1,8
						2134	2159	2221	4,8

MAJOR SOLAR FLARES for 1996 continued.

DATE	UNIVERSAL TIME				DATE	UNIVERSAL TIME			
	BEGIN.	MAX.	END.	STR.		BEGIN.	MAX.	END.	STR.
1996/07/09	0018	0051	0104	3,7	NO DATA OBTAINED FOR 1996/11/04 TO 1996/11/10.				
	0149	0204	0221	14,0	NO MAJOR FLARES OBSERVED FROM 1996/11/11 TO 1996/11/22 INCLUSIVE.				
	0503	0513	0553	3,8	1996/11/23	0631	0636	0639	1,0
	0751	0758	0853	2,6		1536	1546	1555	1,0
	0901	0912	0949	260,0	1996/11/24	0540	0610	0617	1,0
	1849	1901	1935	1,7		0657	0719	0724	2,0
	2229	2246	2254	5,0		1629	1647	1702	3,3
1996/07/10	0330	0331	0334	10,0		1734	1754	1801	2,8
	0544	0547	0604	2,7		1933	1934	1952	1,3
	1057	1058	1114	1,2		2004	2004OB	2009	1,8
	1804	1816	1826	3,1		2111	2113	2121	1,0
	1848	1856	1905A	2,2		2219	2222	2226	1,5
	2243	2247	2258	1,5		0017B	0022	0052	8,0
07/11	0808	0826U	0840	2,6	11/25	0057	0057OB	0102	1,2
	1656	1659	1710	2,8		0240	0246	0250	1,8
	2218	2228	2234	1,2		0405	0410	0413	1,2
07/12	1513	1530	1631	4,9		0512	0519	0525	2,4
07/14	1330	1500	1507	1,6		0707	0713	0720	1,3
NO MAJOR FLARES OBSERVED FROM 1996/07/15 TO 1996/08/05 INCLUSIVE.						0817	0825	0829	1,1
1996/08/06	1910	2201	2243	1,5		0904	0911	0923	1,3
1996/08/07	2316	2320	2324	1,0		1109	1113	1119	1,6
NO MAJOR FLARES OBSERVED FROM 1996/08/08 TO 1996/08/15 INCLUSIVE.						1225	1225	1238A	1,8
NO DATA OBTAINED FOR 1996/08/16 TO 1996/08/18.						1241	1313	1353A	4,6
1996/08/22	0734	0750	0756	1,5		1346	1404	1408	1,0
	0805	0845	0852	3,6	11/26	1825	1832	1931	5,8
	0850	1003	1106	4,5	11/28	1307B	1309U	1427	1,6
08/23	0714	0721	0730	1,2		1235	1242	1347	1,1
08/25	1228	1235	1237A	1,0		1535	1732	1902	1,3
08/28	0800	0806	0810	1,3	11/29	2036B	2043U	2109A	10,0
NO MAJOR FLARES OBSERVED FROM 1996/08/29 TO 1996/09/02 INCLUSIVE.					11/30	1716	1716	1720	1,0
NO DATA OBTAINED FOR 1996/09/03 TO 1996/09/08.						2049	2101	2259	8,6
NO MAJOR FLARES OBSERVED FROM 1996/09/09 TO 1996/11/03 INCLUSIVE.					1996/12/01	2021	2023	2045	1,6
						2049	2052	2126	5,2

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MAJOR SOLAR FLARES for 1996 continued.

DATE	UNIVERSAL TIME			STR.
	BEGIN	MAX.	END.	
1996/12/02	0105	0113	0119	1,2
	0132	0137	0141	1,6
	1423	1433	1442	2,7
	1736	1740	1806	1,6
	2348	2354	2359	1,2

NO MAJOR FLARES OBSERVED
FROM 1996/12/03 TO 1996/12/10 INCLUSIVE.

1996/12/11	1813	1821	1827	1,1
12/16	1222	1229	1236	2,9
12/19	1538	1610	1745	2,3
12/24	1303	1311	1323	2,1

NO MAJOR FLARES OBSERVED
FROM 1996/12/25 TO 1996/12/31 INCLUSIVE.

-oOo-

X-RAY FLARE ANALYSIS, 1995 - 1996.

The following is an analysis of solar x-ray flares showing monthly values of 'mean daily output' (MDO), 'mean x-ray strength' (MXS), and 'mean daily mean' (MDM), all expressed in microWatts / square metre.

All data are based on US NOAA satellite data.

d = number of days of data.

n = number of events.

	DATE	MDO	MXS	MDM	d	n
1995	January	3,2074	2,3405	1,2042	27	37
	February	6,0214	5,2688	2,0869	28	32
	March	2,0867	2,8455	1,1600	30	22
	April	4,2033	7,8812	1,0697	30	16
	May	0,9968	1,9312	0,3294	31	16
	June	0,0900	1,3500	0,0900	30	2
	July	0,3129	9,7000	0,3129	31	1
	August	0,1065	1,6500	0,1065	31	2
	September	0,1400	2,1000	0,1400	30	2
	October	4,4581	5,1185	1,5588	31	27
	November	0,4000	5,4000	0,4000	27	2
	December	0,0000	—	0,0000	29	0
1995	Means	1,8132	4,0484	0,6960	355	159
1996	January	0,0742	1,1500	0,0742	31	2
	February	0,0000	—	0,0000	29	0
	March	0,0517	1,5000	0,0517	29	1
	April	1,5567	9,3400	0,3113	30	5
	May	0,3935	2,0333	0,3468	31	6
	June	0,0400	1,2000	0,0400	30	1
	July	10,8226	14,5870	1,8611	31	23
	August	0,5778	1,9500	0,3407	27	8
	September	0,0000	—	0,0000	23	0
	October	0,0000	—	0,0000	31	0
	November	2,4467	2,5310	0,7661	30	29
	December	0,7581	2,1364	0,4342	31	11
1996	Means	1,4501	5,9523	0,3638	353	86

SMOOTHED NOAA X-RAY FLARE MONTHLY VALUES.

Data based upon NOAA monthly mean values of MEAN DAILY OUTPUT.

Unit used in observed values is 1 microWatt per square metre.

Smoothing methods used are the Waldmeier and the 'Barnes 13' methods.

MONTH	Observed	σ_W	σ_{B13}	MONTH	Observed	σ_W	σ_{B13}	MONTH	Observed	σ_W	σ_{B13}
1989 Jan	135,6936	79,28	89,60	1992 Jan	54,6903	58,17	63,67	1995 Jan	3,2074	2,63	2,77
Feb	79,2464	85,54	97,21	Feb	89,1345	54,76	56,50	Feb	6,0214	2,28	2,62
Mar	243,1742	96,00	103,18	Mar	17,6419	52,65	49,04	Mar	2,0867	1,91	2,36
Apr	32,0867	103,41	105,54	Apr	20,7900	48,72	41,95	Apr	4,2033	1,93	2,16
May	73,3710	109,71	107,23	May	8,6903	45,07	36,91	May	0,9968	2,02	1,93
Jun	134,3300	112,36	108,38	Jun	29,5033	39,88	33,41	Jun	0,0900	1,93	1,65
Jul	30,4839	107,57	107,22	Jul	32,8677	32,92	30,76	Jul	0,3129	1,70	1,36
Aug	161,2613	101,08	105,03	Aug	22,4097	28,60	29,57	Aug	0,1065	1,32	1,11
Sep	126,6900	90,73	100,38	Sep	46,5033	26,86	29,57	Sep	0,1400	0,99	0,95
Oct	124,2936	83,59	94,95	Oct	36,5387	26,98	29,77	Oct	4,4581	0,79	0,85
Nov	132,0633	86,83	90,31	Nov	48,0033	26,69	28,81	Nov	0,4000	0,66	0,76
Dec	68,2710	84,92	83,05	Dec	13,1419	26,50	27,00	Dec	0,0000	0,63	0,68
1990 Jan	35,4710	80,44	75,07	1993 Jan	4,9903	25,02	24,87	1996 Jan	0,0742	1,07	0,77
Feb	23,5786	75,46	67,80	Feb	35,1929	22,98	22,79	Feb	0,0000	1,52	0,99
Mar	50,5194	66,48	61,39	Mar	29,7258	20,41	20,19	Mar	0,0517	1,54	1,17
Apr	53,3733	58,31	56,79	Apr	11,5833	17,45	17,29	Apr	1,5567	1,35	1,30
May	129,9839	50,96	52,76	May	11,0258	14,47	14,72	May	0,3935	1,24	1,48
Jun	31,7767	48,24	49,79	Jun	22,5900	12,88	12,85	Jun	0,0400	1,36	1,75
Jul	25,4194	50,28	48,81	Jul	4,1323	13,66	11,68	Jul	10,8226	—	—
Aug	46,9516	53,84	49,26	Aug	2,1548	12,97	19,41	Aug	0,5778	—	—
Sep	25,3100	66,92	54,04	Sep	5,0633	10,51	9,26	Sep	0,0000	—	—
Oct	29,6032	78,00	61,88	Oct	6,9581	8,91	8,72	Oct	0,0000	—	—
Nov	50,3567	75,54	68,99	Nov	6,1400	7,99	8,44	Nov	2,4467	—	—
Dec	84,7516	84,67	81,19	Dec	16,8774	6,64	7,98	Dec	0,7581	—	—
1991 Jan	68,0935	98,65	96,78	1994 Jan	20,0742	5,62	7,31	1997 Jan	—	—	—
Feb	76,2179	101,35	109,88	Feb	3,4821	5,72	6,52	Feb	—	—	—
Mar	311,9323	103,22	119,35	Mar	2,3968	5,81	5,58	Mar	—	—	—
Apr	57,7133	108,43	123,92	Apr	0,4333	5,47	4,62	Apr	—	—	—
May	66,6355	112,27	125,54	May	0,0516	5,04	3,76	May	—	—	—
Jun	314,3200	114,38	124,46	Jun	1,2467	4,19	3,00	Jun	—	—	—
Jul	78,4839	115,72	118,55	Jul	1,0323	2,88	2,43	Jul	—	—	—
Aug	58,6742	115,70	110,04	Aug	7,6323	2,28	2,33	Aug	—	—	—
Sep	60,8567	103,98	100,04	Sep	1,6600	2,37	2,45	Sep	—	—	—
Oct	116,6613	90,18	91,07	Oct	2,3194	2,52	2,57	Oct	—	—	—
Nov	55,4533	86,22	83,88	Nov	0,4500	2,71	2,71	Nov	—	—	—
Dec	130,3129	71,94	73,36	Dec	2,1677	2,70	2,78	Dec	—	—	—

SECTION E

2800 MHz (107 mm) SOLAR FLUX.

Daily readings on the wavelength of 107 mm are obtained at Penticton BC, Canada, at approximately 2000 UT (local apparent mid-day) .

These figures are on an approximate scale of 60 to 500; the actual lowest observed value is 63,0 on 1954/06/27, adjusted to 65,1. The highest observed value being 457,0 was obtained on 1947/04/07, being adjusted to 457,9.

The lowest adjusted value is 61,8 on 1953/02/24, observed as 63,1. The highest adjusted value is the 1947/04/07 value of 457,9.

The most recent maximum observed value is 324,3 in June 1989 (adjusted to 334,7), and the most recent minimum observed value is 66,1 in June 1986 (adjusted to 68,3). As the current minimum is still in progress, a minimum value of this cycle will not be declarable until well into 1997.

The values for 1996 are on pages E2 and E3 of this report. The first of these two tables contains the observed values, some of which are corrected for the occasional burst. The second table contains values adjusted to the distance of 1AU (149 597 870 km).

$$\begin{aligned} 1 \text{ Flux Unit} &= 0,0001 \text{ attoWatt / square metre / Hertz} \\ &= 1 \times 10^{-22} \text{ Watt / square metre / Hertz.} \end{aligned}$$

All flux data, courtesy of the Herzberg Institute of Astrophysics, National Research Council, Canada.

DAILY 2800 MHz SOLAR RADIO FLUX OBSERVED INDICES 1996.

All data obtained from the Dominion Radio Astrophysical Observatory, Penticton, British Columbia, Canada.

All observations carried out at local apparent mid-day, approximately 2000 UT.

Unit used is $1 \times 10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	75,1	75,1	71,9	68,2	67,9	68,5	70,0	80,4	73,5	69,5	69,6	83,1	01
02	74,8	76,4	71,1	70,7	67,9	68,2	70,4	79,6	72,3	69,7	69,0	78,0	02
03	80,8	74,0	70,2	71,1	68,3	69,1	69,0	79,3	71,2	69,6	69,5	72,8	03
04	85,9	73,5	69,2	70,2	69,4	69,2	69,1	77,6	70,8	69,4	69,0	70,7	04
05	84,9	71,4	69,1	69,9	70,8	70,7	68,6	74,1	70,3	68,5	68,3	69,6	05
06	82,7	71,2	69,4	68,7	74,6	71,6	68,2	73,0	69,7	68,8	69,2	69,7	06
07	82,5	70,1	67,8	68,4	74,9	73,2	71,9	71,6	69,5	68,3	68,5	69,2	07
08	79,3	67,5	69,8	68,4	76,1	70,2	81,6	69,8	68,2	67,9	69,1	68,6	08
09	75,9	70,0	67,5	69,0	76,2	69,8	83,6	70,2	67,9	67,9	70,2	73,7	09
10	73,8	69,8	69,1	68,8	77,5	68,9	79,8	71,6	68,0	67,6	71,0	72,4	10
11	71,5	70,0	71,8	68,5	76,5	68,0	77,0	72,9	67,6	66,7	71,5	77,6	11
12	69,5	69,1	73,2	68,3	73,6	67,4	73,7	70,1	67,8	67,2	72,2	81,1	12
13	69,0	68,7	71,3	68,8	72,7	68,1	70,2	69,6	67,3	67,6	73,1	81,7	13
14	69,7	68,9	70,8	68,7	71,8	67,7	67,8	68,8	67,1	68,6	73,7	82,5	14
15	70,2	69,0	70,4	68,0	70,9	67,3	67,0	67,6	66,4	69,0	73,6	85,0	15
16	69,9	70,1	71,0	68,3	71,0	66,9	66,9	67,6	68,0	68,6	73,9	86,2	16
17	70,4	70,7	70,6	69,3	71,2	67,4	66,8	67,8	69,0	68,5	72,0	86,4	17
18	71,0	70,2	70,6	70,1	70,3	67,7	64,9	66,7	68,9	69,6	74,1	88,4	18
19	70,8	71,0	69,9	70,5	68,8	68,5	66,1	67,7	69,2	71,0	74,4	87,4	19
20	71,4	72,2	69,3	71,5	68,0	69,7	65,4	68,5	69,2	71,3	74,5	83,0	20
21	71,8	71,9	70,4	74,0	66,9	70,3	65,1	69,7	69,8	69,7	74,4	83,7	21
22	72,3	71,6	73,8	72,4	66,4	69,7	66,0	72,8	68,6	69,8	82,6	81,5	22
23	73,3	73,9	72,1	71,1	67,2	68,6	66,7	74,2	69,9	67,8	91,0	79,5	23
24	73,0	75,7	71,2	68,6	67,2	72,3	66,2	74,6	70,0	69,9	99,8	79,0	24
25	73,9	73,3	72,5	67,8	66,9	71,9	68,3	74,7	70,8	69,9	104,4	77,3	25
26	73,8	72,4	71,9	68,2	66,9	71,8	70,2	74,2	70,0	71,1	103,6	75,5	26
27	73,8	72,1	71,8	68,2	66,6	71,4	73,3	74,3	69,8	72,1	102,7	74,6	27
28	73,6	72,2	71,9	67,7	66,0	71,4	75,5	73,3	71,0	68,4	98,1	74,2	28
29	74,0	72,2	70,5	68,4	66,5	70,9	77,9	73,5	70,1	70,4	91,0	73,8	29
30	74,7	—	70,2	68,5	66,5	70,7	79,9	73,3	69,5	70,7	87,5	72,5	30
31	76,7	—	70,1	—	68,0	—	80,2	76,2	—	69,7	—	72,2	31
MEAN	74,5	71,5	70,7	69,3	70,1	69,6	71,2	72,4	69,4	69,2	78,7	77,8	MEAN

1996 Yearly Mean : 72,04

DAILY 2800 MHz SOLAR RADIO FLUX INDICES - **1996** — **ADJUSTED TO 1 AU.**
 All data obtained from the Dominion Radio Astrophysical Observatory, Penticton, British Columbia, Canada.

All observations carried out at local apparent mid-day, approximately 2000 UT.

Unit used is $1 \times 10^{-22} \text{ W m}^{-2} \text{ Hz}^{-1}$.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	72,6	72,9	70,6	68,1	68,9	70,4	72,4	82,8	74,8	69,6	68,5	80,8	01
02	72,3	74,2	69,8	70,6	69,0	70,2	72,8	81,9	73,6	69,8	67,9	75,7	02
03	78,2	71,9	69,0	71,1	69,5	71,2	71,3	81,6	72,4	69,6	68,3	70,7	03
04	83,1	71,4	68,1	70,2	70,6	71,2	71,5	79,9	72,0	69,4	67,8	68,6	04
05	82,1	69,4	68,0	70,0	72,0	72,8	71,0	76,2	71,4	68,5	67,1	67,6	05
06	79,9	69,2	68,4	68,8	76,0	73,8	70,5	75,1	70,8	68,8	68,0	67,6	06
07	79,8	68,2	66,8	68,6	76,3	75,4	74,3	73,7	70,5	68,2	67,3	67,1	07
08	76,7	65,7	68,8	68,6	77,5	72,4	84,3	71,7	69,2	67,7	67,8	66,6	08
09	73,4	68,1	66,6	69,3	77,7	72,0	86,3	72,1	68,8	67,7	68,9	71,5	09
10	71,4	68,0	68,2	69,1	79,1	71,1	82,5	73,6	68,9	67,4	69,6	70,2	10
11	69,1	68,2	70,9	68,8	78,0	70,2	79,6	74,8	68,5	66,4	70,0	75,2	11
12	67,2	67,3	72,4	68,7	75,1	69,5	76,2	72,0	68,6	66,9	70,7	78,6	12
13	66,7	67,0	70,5	69,2	74,3	70,3	72,5	71,4	68,1	67,3	71,5	79,2	13
14	67,4	67,2	70,0	69,1	73,4	69,8	70,0	70,5	67,9	68,2	72,1	80,0	14
15	67,9	67,4	69,6	68,5	72,5	69,5	69,3	69,3	67,1	68,6	71,9	82,3	15
16	67,6	68,5	70,3	68,8	72,6	69,0	69,1	69,3	68,7	68,1	72,2	83,5	16
17	68,2	69,0	70,0	69,9	72,9	69,6	69,0	69,5	69,6	68,0	70,4	83,6	17
18	68,7	68,6	70,0	70,8	72,0	69,9	67,0	68,4	69,6	69,0	72,4	85,6	18
19	68,5	69,4	69,4	71,2	70,4	70,7	68,3	69,3	69,8	70,4	72,6	84,6	19
20	69,1	70,6	68,8	72,3	69,6	71,9	67,5	70,1	69,7	70,6	72,7	80,3	20
21	69,5	70,4	69,9	74,8	68,5	72,6	67,2	71,3	70,3	69,0	72,6	80,9	21
22	70,0	70,1	73,4	73,2	68,1	72,0	68,2	74,5	69,1	69,1	80,6	78,9	22
23	71,0	72,3	71,6	71,9	68,9	70,9	68,9	75,8	70,4	67,1	88,7	76,9	23
24	70,7	74,1	70,9	69,5	69,0	74,7	68,3	76,2	70,4	69,1	97,3	76,4	24
25	71,7	71,8	72,1	68,6	68,7	74,3	70,4	76,3	71,2	69,1	101,7	74,7	25
26	71,5	70,9	71,6	69,1	68,7	74,2	72,4	75,8	70,4	70,3	100,8	73,0	26
27	71,6	70,7	71,6	69,2	68,4	73,8	75,6	75,9	70,1	71,2	100,0	72,2	27
28	71,4	70,8	71,7	68,6	67,8	73,8	77,8	74,7	71,2	67,5	95,4	71,8	28
29	71,8	70,9	70,3	69,4	68,3	73,3	80,3	75,0	70,3	69,4	88,5	71,4	29
30	72,5	—	70,1	69,6	68,4	73,1	82,3	74,7	69,7	69,7	85,1	70,1	30
31	74,5	—	70,0	—	69,9	—	82,7	77,6	—	68,6	—	69,8	31

MEAN	72,1	69,8	70,0	69,9	71,7	71,8	73,5	74,2	70,1	68,7	76,9	75,3	MEAN
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1996 Yearly Mean : 72,02

SMOOTHED NRCC 2800MHz SOLAR FLUX MONTHLY VALUES.

Data based upon NRCC monthly mean values ADJUSTED TO THE DISTANCE OF 1 AU.

Unit used in observed values is 1×10^{-22} Watt m^{-2} Hz $^{-1}$.

Smoothing methods used are the Waldmeier and the 'Barnes 13' methods.

MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}	MONTH	Adjusted	S ^W	S ^{B13}
1989 Jan	227,8	190,0	193,3	1992 Jan	210,6	181,3	188,1	1995 Jan	80,0	80,5	81,1
Feb	217,0	194,0	198,4	Feb	226,5	174,1	180,8	Feb	83,5	80,2	80,7
Mar	203,0	199,7	202,7	Mar	169,6	167,7	171,9	Mar	84,2	79,8	80,2
Apr	190,9	204,4	206,3	Apr	159,7	162,1	162,4	Apr	78,2	79,1	79,3
May	194,4	209,3	209,6	May	128,2	158,1	153,4	May	77,1	78,4	78,5
Jun	247,2	213,0	212,1	Jun	120,4	153,5	145,5	Jun	78,1	77,7	77,7
Jul	187,8	212,5	212,8	Jul	136,5	146,2	138,6	Jul	76,3	76,9	76,7
Aug	222,5	209,7	212,7	Aug	125,1	138,7	133,4	Aug	75,7	76,0	75,8
Sep	228,4	207,3	212,1	Sep	118,0	133,6	130,7	Sep	72,8	74,8	74,8
Oct	207,4	206,4	210,8	Oct	129,9	130,4	129,8	Oct	77,5	73,9	73,9
Nov	230,0	206,2	208,5	Nov	142,0	128,0	129,5	Nov	72,6	73,3	73,2
Dec	206,3	203,3	204,6	Dec	134,7	127,1	129,0	Dec	70,3	72,8	72,5
1990 Jan	203,4	200,3	200,4	1993 Jan	117,2	125,4	127,7	1996 Jan	72,1	72,4	71,9
Feb	174,1	200,4	197,0	Feb	139,1	122,7	125,7	Feb	69,8	72,2	71,6
Mar	187,0	198,6	194,2	Mar	135,0	120,3	122,9	Mar	70,0	72,1	71,4
Apr	186,6	195,5	192,2	Apr	116,7	117,8	119,1	Apr	69,9	71,6	71,3
May	194,0	192,3	190,5	May	114,9	114,5	114,8	May	71,7	71,4	71,4
Jun	176,3	189,9	189,7	Jun	112,8	111,1	110,5	Jun	71,8	71,8	71,7
Jul	186,6	190,4	190,5	Jul	102,2	109,5	107,0	Jul	73,5	72,0	72,0
Aug	228,1	193,8	192,6	Aug	96,0	107,5	103,9	Aug	74,2	72,0	72,2
Sep	179,3	198,1	195,0	Sep	87,9	103,9	101,2	Sep	70,1	72,3	72,4
Oct	180,9	200,4	197,4	Oct	99,7	100,4	99,3	Oct	68,7	—	—
Nov	180,3	200,9	200,1	Nov	93,8	97,5	97,8	Nov	76,9	—	—
Dec	198,5	202,5	203,4	Dec	101,5	94,7	96,3	Dec	75,3	—	—
1991 Jan	222,1	205,4	206,9	1994 Jan	111,3	92,6	94,8	1997 Jan	—	—	—
Feb	237,2	206,2	209,2	Feb	97,2	91,0	92,8	Feb	—	—	—
Mar	227,6	205,8	210,3	Mar	89,5	89,9	90,5	Mar	—	—	—
Apr	200,1	206,7	210,5	Apr	79,7	89,1	88,2	Apr	—	—	—
May	194,5	207,0	209,6	May	81,7	87,9	86,1	May	—	—	—
Jun	213,3	207,3	208,1	Jun	79,7	86,5	84,3	Jun	—	—	—
Jul	218,9	207,6	206,3	Jul	83,2	84,4	82,7	Jul	—	—	—
Aug	215,5	206,7	204,2	Aug	78,0	82,5	81,7	Aug	—	—	—
Sep	182,5	203,8	202,1	Sep	79,9	81,7	81,4	Sep	—	—	—
Oct	200,0	199,7	200,1	Oct	87,1	81,4	81,5	Oct	—	—	—
Nov	168,3	195,3	197,6	Nov	79,1	81,2	81,4	Nov	—	—	—
Dec	217,0	188,6	193,6	Dec	81,5	80,9	81,3	Dec	—	—	—

SECTION F

ANALYSES AND GRAPHS .

INTRODUCTION OF ALTERED INTERNATIONAL RATIOS.

Up to, and including, the Annual Report for 1995, corrected data (in Tables W3-4, G3-4, P3-4, B3-4, C3-4 and I3-4) have been shown with ratios, designated I/GDSO, being corrected international means (of days observed by the GDSO) divided by GDSO means. While these ratios do indicate when the GDSO fails to observe some sunspots (their intended purpose), it can be said that these ratios are not necessarily correct throughout minimum when spotless discs occur.

In order to give a fuller picture of corrected data, it has been decided to introduce an altered ratio, labelled I/GDSO_A, from this issue of the GDSO Annual Report. Throughout maximum I/GDSO and I/GDSO_A are equal, and only one column will be stated. The altered column will reappear, beside I/GDSO ratios, when the first spotless disc occurs. Data in the above-mentioned tables are backdated to 1993 for monthly data and Carrington Rotation 1870 for rotational data.

Below is an imaginary example of how the above values are obtained:

Observation	Sources			k		
	International	GDSO				
1	15	12		1,2500		
2	23	19		1,2105		
3	36	34		1,0588		
4	42	35		1,2000		
5	26	22		1,1818	k for the period	= 1,1835
6	18	13		1,3846	σ	= 0,1438
7	14	11		1,2727	I/GDSO [ie 19,3 / 16,8]	= 1,1488
8	9	0	—		I/GDSO _A [ie (193-9) / (168-11)]	= 1,1720
9	10	11	0,9091		R _{GD} [ie 16,80 x 1,1835]	= 19,8828
10	0	11	—			
Means	19,30	16,80		1,1835		

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TABLE W1:

MONTHLY **WOLF NUMBER** MEANS OF GDSO DATA for **1996**.

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).

n = total number of observations.

w = mean weight.

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	TWN	n	w	Q	S	T	C
Jan	0,77	2,95	10,68	5,09	22	0,4425	1,89	2,39	2,57	2,2803
Feb	0,75	2,25	9,75	2,25	8	0,4641	1,50	2,44	2,62	2,1875
Mar	0,68	3,21	10,05	7,53	19	0,4521	1,95	2,29	2,50	2,2456
Apr	0,33	0,94	4,28	2,39	18	0,5039	1,56	2,11	2,42	2,0278
May	0,44	2,61	7,06	5,72	18	0,4251	2,19	2,39	2,56	2,3796
Jun	0,86	2,64	11,21	7,14	14	0,4820	1,82	2,25	2,32	2,1310
Jul	0,85	4,46	12,92	8,46	13	0,5204	1,85	1,92	2,12	1,9615
Aug	1,41	6,24	20,35	11,12	17	0,4696	1,88	2,15	2,44	2,1569
Sep	0,23	0,54	2,85	0,00	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	0,00	0,00	0,00	19	0,4879	1,82	2,21	2,32	2,1140
Nov	0,88	9,94	18,69	15,06	16	0,4883	1,81	2,12	2,31	2,0833
Dec	0,82	2,53	10,76	9,24	17	0,5113	1,76	2,06	2,26	2,0294
Year	0,66	3,19	9,78	6,27	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE W2:

ROTATIONAL **WOLF NUMBER** MEANS OF GDSO DATA.

Abbreviations as above.

ROT	start date, UT	g	f	WN	TWN	n	w	Q	S	T	C
1904	1995/12/20,72	1,08	4,92	15,69	8,62	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	0,56	0,69	6,31	0,81	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	0,50	1,43	6,43	1,29	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	0,83	3,61	11,94	8,67	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	0,21	0,79	2,93	2,14	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	0,53	3,13	8,47	6,87	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	0,77	2,54	10,23	5,85	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	1,00	3,80	13,80	8,00	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	1,31	7,12	20,25	11,19	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	0,75	1,92	9,42	5,33	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	0,00	0,00	0,00	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	0,00	0,00	0,00	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	1,00	10,44	20,44	16,81	16	0,4633	1,97	2,22	2,44	2,2083

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TABLE W3:
CORRECTED **WOLF NUMBERS** for **1993 - 1996**.

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 Sunspot Index Data 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 1993 - 1996. 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.

$E\sigma$ = annual estimate of standard deviation.

		WN	k	R_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	R_I
1993	Jan	64,23	0,9845	63,24	0,1967	0,9509	0,9509	13	13	59,3
	Feb	98,83	0,8638	85,37	0,1007	0,8609	0,8609	12	12	91,0
	Mar	83,47	0,8584	71,65	0,1101	0,8457	0,8457	17	17	69,8
	Apr	65,33	0,9902	64,70	0,2097	0,9510	0,9510	15	15	62,2
	May	47,60	1,0061	47,89	0,3157	0,9552	0,9552	15	15	61,3
	Jun	50,87	0,9799	49,85	0,1623	1,0026	0,9817	15	14	49,8
	Jul	51,64	1,0445	53,93	0,1237	1,0317	1,0317	11	11	57,9
	Aug	45,81	0,9066	41,53	0,1593	0,8971	0,8971	21	21	42,2
	Sep	24,59	0,8672	21,32	0,3789	0,8445	0,7656	17	14	22,4
	Oct	48,87	1,3148	64,25	0,5153	1,1583	1,1583	15	15	56,4
	Nov	41,88	0,9660	40,46	0,1905	0,9073	0,9073	17	17	35,6
	Dec	59,31	0,9466	56,15	0,2796	0,9262	0,9020	16	15	48,9
1993	Means	55,65	0,9745	54,23	—	0,9347	0,9276	—	—	54,6
		$\sigma = 0,2754$		σ 'SIDC' = 0,2288			$E\sigma = 0,0192$			

TABLE W3 continued — CORRECTED WOLF NUMBERS for 1993 - 1996.

	WN	k	R _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	R _I
1994 Jan	63,29	0,9175	58,07	0,1379	0,9210	0,9210	17	17	57,8
Feb	51,36	0,6386	32,80	0,1595	0,6372	0,6372	11	11	35,5
Mar	44,88	0,7161	32,13	0,2115	0,7038	0,7038	24	24	31,7
Apr	24,18	0,7999	19,34	0,3066	0,6934	0,7345	17	13	16,1
May	25,15	0,6728	16,92	0,1430	0,6660	0,6626	20	13	17,8
Jun	20,76	0,9590	19,91	0,2963	0,9915	0,9122	17	11	28,0
Jul	38,71	1,0192	39,45	0,3427	0,9574	0,9392	17	16	35,1
Aug	28,95	0,8003	23,17	0,2549	0,7598	0,7598	22	22	22,5
Sep	26,79	0,8739	23,41	0,3086	0,8527	0,8094	19	16	25,7
Oct	56,53	0,7839	44,32	0,0751	0,7818	0,7818	15	15	44,0
Nov	21,86	0,8339	18,23	0,2047	0,9272	0,8274	22	18	18,0
Dec	27,50	0,9665	26,58	0,2366	0,9673	0,9509	20	19	26,2
1994 Means	34,70	0,8335	28,92	—	0,8174	0,8043	—	—	29,9
	$\sigma = 0,2545$		σ 'SIDC' = 0,2237						$E\sigma = 0,0169$
1995 Jan	14,33	1,0467	15,00	0,4280	1,2597	0,9806	18	11	24,2
Feb	40,00	0,8888	35,55	0,1383	0,8625	0,8625	12	12	29,9
Mar	34,85	0,9136	31,84	0,2354	0,9128	0,8775	26	23	31,1
Apr	21,94	0,6805	14,93	0,1118	0,7507	0,7024	17	10	14,0
May	19,00	0,7669	14,57	0,0835	0,7982	0,7427	18	13	14,5
Jun	20,00	0,8593	17,19	0,2050	0,8150	0,8041	20	18	15,6
Jul	15,61	0,9443	14,75	0,2778	0,9822	0,9296	18	13	14,5
Aug	13,94	0,7819	10,90	0,1779	1,0084	0,7553	17	8	14,3
Sep	8,31	0,8182	6,80	0,1277	1,1579	0,8421	16	7	11,8
Oct	27,85	0,7706	21,46	0,1683	0,7928	0,7680	13	9	21,1
Nov	13,67	0,7634	10,43	0,3075	0,6748	0,7411	18	13	9,0
Dec	11,85	0,9275	10,99	0,2762	0,9091	0,8442	13	9	10,0
1995 Means	20,25	0,8555	17,33	—	0,8885	0,8253	—	—	17,5
	$\sigma = 0,2445$		σ 'SIDC' = 0,2165						$E\sigma = 0,0194$
1996 Jan	10,68	0,9754	10,42	0,1981	0,9745	0,9821	22	12	11,5
Feb	9,75	0,5505	5,37	0,2156	0,6795	0,4872	8	4	4,4
Mar	10,05	0,8238	8,28	0,2376	0,9110	0,7644	19	10	9,2
Apr	4,28	0,8364	3,57	0,1098	1,0000	0,8281	18	5	4,8
May	7,06	0,8059	5,69	0,0942	0,8110	0,8110	18	8	5,5
Jun	11,21	0,7306	8,19	0,1364	0,9427	0,7192	14	7	11,8
Jul	12,92	0,7657	9,90	0,1768	0,6429	0,7519	13	7	8,2
Aug	20,35	0,7527	15,32	0,2515	0,6965	0,6965	17	17	14,4
Sep	2,85	0,4615	1,31	—	0,3243	0,4615	13	1	1,6
Oct	0,00	—	0,00	—	infin.	infin.	19	0	1,8p
Nov	18,69	0,9538p	17,81p	0,1683p	0,9799p	0,9799p	16	10	18,6p
Dec	10,76	1,0463p	11,26p	0,2247p	1,0929p	1,0273p	17	9	12,7p
1996 Means	9,78			—			—	—	
	$\sigma =$		σ 'SIDC' =						$E\sigma =$

p = provisional data.

TABLE W4:

CORRECTED **WOLF NUMBERS** for Rotations 1870 - 1916.

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} .

$$R_{GD} = WN \times k.$$

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	WN	k	R_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k
1870	1993/06/06,48	47,67	0,9796	46,69	0,1623	1,0042	0,9818	15	14
1871	1993/07/03,67	50,80	1,0523	53,46	0,1275	1,0394	1,0394	10	10
1872	1993/07/30,88	46,39	0,9047	41,97	0,1539	0,8946	0,8946	18	18
1873	1993/08/27,12	19,80	0,9367	18,55	0,3981	0,9529	0,8418	15	12
1874	1993/09/23,38	54,17	0,9962	53,96	0,3817	0,9785	0,9785	12	12
1875	1993/10/20,66	32,75	1,2285	40,23	0,4842	1,1336	1,1336	16	16
1876	1993/11/16,97	57,82	0,9159	52,96	0,2133	0,8911	0,8678	17	16
1877	1993/12/14,28	74,62	0,9774	72,93	0,2374	0,9608	0,9608	13	13
1878	1994/01/10,61	48,40	0,8566	41,46	0,1408	0,8444	0,8444	15	15
1879	1994/02/06,96	59,67	0,6612	39,45	0,1695	0,6732	0,6732	12	12
1880	1994/03/06,29	39,55	0,7026	27,79	0,2272	0,6776	0,6776	20	20
1881	1994/04/02,60	24,33	0,8623	20,98	0,2900	0,7233	0,7719	15	11
1882	1994/04/29,86	31,65	0,6440	20,38	0,1547	0,6617	0,6450	17	15
1883	1994/05/27,08	16,35	0,9173	15,00	0,3331	0,8597	0,8951	17	7
1884	1994/06/23,28	40,50	0,9970	40,38	0,2990	0,9769	0,9336	16	15
1885	1994/07/20,48	22,41	0,8644	19,37	0,3136	0,8346	0,8031	17	16
1886	1994/08/16,71	36,06	0,8833	31,85	0,2934	0,8243	0,8243	18	18
1887	1994/09/12,96	24,38	0,8066	19,66	0,2690	0,8051	0,7487	16	13
1888	1994/10/10,24	54,44	0,8270	45,02	0,1278	0,8129	0,8129	16	16
1889	1994/11/06,53	16,47	0,7994	13,17	0,2104	0,9286	0,7571	17	13
1890	1994/12/03,84	28,95	0,9665	27,98	0,2366	0,9509	0,9509	19	19
1891	1994/12/31,17	11,27	0,9135	10,29	0,2660	1,4024	0,9231	15	7
1892	1995/01/27,51	32,64	1,0466	34,16	0,3857	0,9415	0,9415	11	11
1893	1995/02/23,85	33,78	0,9502	32,10	0,2463	0,9434	0,9022	23	20
1894	1995/03/23,17	34,05	0,7224	24,60	0,1120	0,7548	0,7401	20	17
1895	1995/04/19,45	12,77	0,7252	9,26	0,0803	0,8012	0,6988	13	7
1896	1995/05/16,69	23,17	0,7951	18,42	0,1103	0,7914	0,7674	18	15
1897	1995/06/12,89	19,22	0,9239	17,76	0,1887	0,9017	0,8922	18	16
1898	1995/07/10,09	12,29	0,9054	11,12	0,3575	0,9535	0,8634	14	9
1899	1995/08/06,30	12,67	0,8066	10,22	0,1708	1,0947	0,7789	15	6

TABLE W4 continued:

CORRECTED **WOLF NUMBERS** for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	WN	k	R _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1900	1995/09/02,54	8,87	0,8182	7,25	0,1277	1,0977	0,8421	15	7
1901	1995/09/29,81	30,17	0,7706	23,25	0,1683	0,7901	0,7680	12	9
1902	1995/10/27,10	14,36	0,7798	11,20	0,3522	0,7114	0,7486	14	10
1903	1995/11/23,40	9,21	0,9133	8,42	0,2616	0,8915	0,8915	14	9
1904	1995/12/20,72	15,69	0,9252	14,52	0,2356	0,9461	0,8971	13	7
1905	1996/01/17,06	6,31	0,9353	5,90	0,2195	0,9208	0,9333	16	8
1906	1996/02/13,40	6,43	0,6737	4,33	0,3329	0,9444	0,5778	14	5
1907	1996/03/11,73	11,94	0,8088	9,66	0,2010	0,7953	0,7574	18	11
1908	1996/04/08,03	2,93	0,7854	2,30	0,1197	1,1707	0,7805	14	3
1909	1996/05/05,28	8,47	0,8059	6,82	0,0942	0,8110	0,8110	15	8
1910	1996/06/01,50	10,23	0,7267	7,43	0,1521	0,9774	0,7131	13	5
1911	1996/06/28,70	13,80	0,7529	10,39	0,2070	0,5435	0,7282	10	5
1912	1996/07/25,90	20,25	0,7158	14,50	0,2014	0,7130	0,6883	16	15
1913	1996/08/22,13	9,42	0,8110	7,64	0,3180	0,6460	0,7157	12	6
1914	1996/09/18,39	0,00	—	0,00	—	infin.	infin.	14	0
1915	1996/10/15,67	0,00	—	0,00	—	infin.	infin.	17	0
1916	1996/11/11,97	20,44	DATA UNOBTAINABLE AT TIME OF PRINT.					16	

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TABLE W5:
SMOOTHED **WOLF NUMBERS** for **1995 - 1996**.

The following are smoothed Wolf Numbers in three different systems. See page xi for all smoothing formulæ.

YEAR	MONTH	WN	WN(S ^{HBm})	WN(S ^W)	WN(S ^{B13})	R _{GD}	R _{GD} (S ^W)	R _{GD} (S ^{B13})
1995	Jan	14,33	28,23	28,24	28,58	15,00	24,32	24,85
	Feb	40,00	27,96	26,66	27,34	35,55	22,78	23,69
	Mar	34,85	27,46	25,26	25,72	31,84	21,58	22,18
	Apr	21,94	24,95	23,29	23,61	14,93	19,94	20,21
	May	19,00	22,29	21,76	21,84	14,57	18,66	18,52
	Jun	20,00	18,67	20,76	20,39	17,19	17,68	17,11
	Jul	15,61	16,79	19,96	18,93	14,75	16,84	15,74
	Aug	13,94	15,99	18,55	17,37	10,90	15,39	14,30
	Sep	8,31	15,56	16,25	15,93	6,80	13,15	12,97
	Oct	27,85	15,95	14,48	14,88	21,46	11,70	12,09
	Nov	13,67	14,71	13,25	13,79	10,43	10,86	11,24
	Dec	11,85	13,37	12,39	12,67	10,99	10,11	10,30
1996	Jan	10,68	11,69	11,91	11,75	10,42	9,54	9,45
	Feb	9,75	9,64	12,06	11,18	5,37	9,52	8,88
	Mar	10,05	8,80	12,10	10,73	8,28	9,47	8,45
	Apr	4,28	8,37	10,72	10,00	3,58	8,35	7,80
	May	7,06	9,42	9,76	9,64	5,69	—	—
	Jun	11,21	10,43	9,93	9,84	8,19	—	—
	Jul	12,92	10,65	9,67	9,99	9,90	—	—
	Aug	20,35	11,06	9,36	9,90	15,32	—	—
	Sep	2,85	9,85	9,36	9,68	1,31	—	—
	Oct	0,00	9,08	—	—	0,00	—	—
	Nov	18,69	9,48	—	—	—	—	—
	Dec	10,76	9,11	—	—	—	—	—

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TABLE W6:
 QUARTERLY AND YEARLY **WOLF NUMBER** MEANS for 1992 - 1996.

YEAR/ QUARTER	WN	WN(S ^{HBm})	WN(S ^W)	WN(S ^{B13})	R _{GD}	g	f
1992 / 1	154,22	137,56	123,86	128,38	149,11	8,22	72,00
2	84,95	91,12	107,19	100,93	85,33	5,50	29,95
3	70,25	78,31	89,77	84,72	69,12	4,68	23,50
4	99,79	88,03	79,80	83,08	91,36	6,53	34,53
1992	97,68	98,75	100,15	99,28	94,60	6,05	37,20
1993 / 1	81,90	80,42	73,28	76,53	73,63	5,12	30,71
2	54,60	59,48	62,35	61,10	54,18	3,24	22,16
3	39,76	44,49	54,29	50,08	36,88	2,90	10,78
4	49,88	48,08	45,41	46,65	53,42	2,88	21,12
1993	55,65	58,12	58,83	58,59	54,23	3,48	20,81
1994 / 1	52,27	47,06	40,24	42,74	40,01	3,35	18,81
2	23,46	31,01	38,77	35,96	18,75	1,72	6,24
3	31,10	31,99	31,82	31,50	27,59	2,22	8,86
4	32,96	31,29	29,55	30,43	28,61	2,23	10,68
1994	34,70	35,34	35,09	35,16	28,92	2,37	11,03
1995 / 1	29,36	27,88	26,72	27,21	27,57	1,93	10,07
2	20,27	21,97	21,94	21,95	15,94	1,13	9,00
3	12,76	16,12	18,25	17,41	11,06	0,92	3,55
4	17,32	14,68	13,37	13,78	14,08	1,34	3,91
1995	20,25	20,16	20,07	20,09	17,33	1,34	6,85
1996 / 1	10,29	10,04	12,03	11,22	8,76	0,73	2,94
2	7,22	9,41	10,14	9,83	5,70	0,52	2,02
3	12,81	10,52	9,46	9,86	—	0,88	3,98
4	9,27	9,23	—	—	—	0,54	3,88
1996	9,78	9,80	—	—	—	0,66	3,19

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.

TABLE G3:
CORRECTED ACTIVE AREA (g) VALUES for 1993 - 1996.

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 1993 - 1996. 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.

$E\sigma$ = annual estimate of standard deviation.

		g	k	g_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	g_B
1993	Jan	4,69	0,9185	4,31	0,1824	0,8852	0,8852	13	13	4,22
	Feb	6,00	0,9476	5,69	0,1798	0,9306	0,9306	12	12	5,39
	Mar	4,82	0,8304	4,01	0,2326	0,8049	0,8049	17	17	4,03
	Apr	3,67	0,8611	3,16	0,2392	0,8727	0,8727	15	15	3,50
	May	3,00	0,8611	2,58	0,2009	0,8444	0,8444	15	15	3,16
	Jun	3,07	0,9440	2,90	0,2573	0,9783	0,9565	15	14	2,86
	Jul	3,91	1,0712	4,19	0,1542	1,0698	1,0698	11	11	4,32
	Aug	3,43	1,0516	3,61	0,2973	1,0278	1,0278	21	21	3,41
	Sep	1,59	0,9621	1,53	0,4431	0,8148	0,8696	17	11	1,53
	Oct	3,20	1,1311	3,62	0,2321	1,0833	1,0833	15	15	3,25
	Nov	2,41	1,1824	2,85	0,4770	1,0244	1,0244	17	17	2,26
	Dec	3,06	0,9556	2,93	0,3725	0,8980	0,8776	16	15	2,51
1993	Means	3,48	0,9791	3,41	—	0,9329	0,9325	—	—	3,36
		$\sigma = 0,3051$			σ 'SIDC' = 0,2766					$E\sigma = 0,0221$

TABLE G3 continued — CORRECTED **ACTIVE AREA (g)** VALUES - 1993 - 1996.

	g	k	g _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	g _B
1994 Jan	3,29	1,0520	3,47	0,3091	1,0000	1,0000	17	17	3,19
Feb	3,82	0,7439	2,84	0,2638	0,7381	0,7381	11	11	2,89
Mar	3,17	0,9014	2,85	0,2939	0,8947	0,8947	24	24	2,80
Apr	1,94	0,9244	1,79	0,3829	0,7879	0,8387	17	13	1,46
May	1,80	0,8859	1,59	0,2760	0,8611	0,8571	20	13	1,48
Jun	1,41	1,1000	1,55	0,4243	1,0833	1,0000	17	11	2,16
Jul	2,71	1,2122	3,28	0,5189	1,0435	1,0444	17	15	2,70
Aug	2,05	0,9394	1,92	0,3012	0,8889	0,8889	22	22	1,83
Sep	2,00	1,0521	2,10	0,4302	1,0000	0,9474	19	16	2,13
Oct	3,60	0,9556	3,44	0,1806	0,9444	0,9444	15	15	3,38
Nov	1,68	0,9722	1,64	0,1179	1,0541	0,9459	22	18	1,63
Dec	1,80	1,0965	1,97	0,4094	1,0278	1,0278	20	19	1,70
1994 Means	2,37	0,9881	2,34	—	0,9388	0,9268	—	—	2,27
	$\sigma = 0,3467$		σ 'SIDC' =	0,3214		$E\sigma = 0,0243$			
1995 Jan	1,00	1,4333	1,43	0,6858	1,4444	1,3529	18	10	1,64
Feb	2,75	1,0903	3,00	0,2693	1,0606	1,0606	12	12	2,60
Mar	2,19	1,0471	2,30	0,2259	1,0702	1,0175	26	23	2,29
Apr	1,12	0,9167	1,02	0,1800	1,0000	0,8947	17	10	0,86
May	1,06	0,9722	1,03	0,0962	0,9474	0,9444	18	12	0,96
Jun	1,20	0,9510	1,14	0,1415	0,8750	0,9091	20	17	1,00
Jul	1,11	1,0833	1,20	0,2887	1,0500	1,0556	18	12	1,16
Aug	0,94	0,9375	0,88	0,1768	1,1875	0,8750	17	8	1,09
Sep	0,69	1,0714	0,74	0,1890	1,6364	1,0909	16	7	1,33
Oct	2,00	0,8148	1,63	0,1899	0,8077	0,8077	13	9	1,61
Nov	1,11	1,1389	1,27	0,6270	0,9000	1,0588	18	12	0,93
Dec	1,00	1,2083	1,21	0,5020	1,0769	1,0833	13	8	0,96
1995 Means	1,34	1,0512	1,41	—	1,0543	1,0038	—	—	1,37
	$\sigma = 0,3539$		σ 'SIDC' =	0,2864		$E\sigma = 0,0286$			
1996 Jan	0,77	1,0556	0,82	0,3125	0,9412	1,0000	22	12	0,77
Feb	0,75	0,7500	0,56	0,2887	1,0000	0,6667	8	4	0,41
Mar	0,68	0,9000	0,62	0,2108	1,0000	0,8462	19	10	0,74
Apr	0,33	1,0000	0,33	0,0000	1,3333	1,0000	18	5	0,43
May	0,44	1,0000	0,44	0,0000	1,0000	1,0000	18	8	0,41
Jun	0,86	0,9444	0,81	0,1361	1,0000	0,9091	14	6	1,16
Jul	0,85	0,9286	0,79	0,1890	0,7273	0,8750	13	7	0,54
Aug	1,41	0,8529	1,20	0,3859	0,7500	0,7500	17	17	1,03
Sep	0,23	0,7500	0,17	0,3536	0,6667	0,6667	13	2	0,16
Oct	0,00	—	0,00	—	infin.	infin.	19	0	0,09
Nov	0,88	1,1500	1,01	0,3375	1,1429	1,1429	16	10	0,67
Dec	0,82	1,0000	0,82	0,0000	1,0000	1,0000	17	9	0,90
1996 Means	0,66	0,9593	0,63	—	0,9453	0,9098	—	—	0,64
	$\sigma = 0,2718$		σ 'SIDC' =	0,2199		$E\sigma = 0,0277$			

TABLE G4:

CORRECTED **ACTIVE AREA (g)** VALUES for Rotations 1870 - 1916.

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
1870	1993/06/06,48	2,93	0,9298	2,73	0,2474	0,9545	0,9318	15	14
1871	1993/07/03,67	4,00	1,0783	4,31	0,1606	1,0750	1,0750	10	10
1872	1993/07/30,88	3,44	1,0370	3,57	0,2984	1,0161	1,0161	18	18
1873	1993/08/27,12	1,60	1,0833	1,73	0,4564	0,9167	1,0000	15	9
1874	1993/09/23,38	3,08	1,0042	3,10	0,3125	0,9730	0,9730	12	12
1875	1993/10/20,66	2,25	1,2604	2,84	0,3989	1,1944	1,1944	16	16
1876	1993/11/16,97	3,29	0,9906	3,26	0,3308	0,9286	0,9107	17	16
1877	1993/12/14,28	3,23	0,9679	3,13	0,3561	0,9048	0,9048	13	13
1878	1994/01/10,61	3,07	1,0589	3,25	0,3298	1,0000	1,0000	15	15
1879	1994/02/06,96	4,17	0,7653	3,19	0,2621	0,7800	0,7800	12	12
1880	1994/03/06,29	2,90	0,8817	2,56	0,3196	0,8621	0,8621	20	20
1881	1994/04/02,60	1,93	1,0015	1,94	0,3652	0,8276	0,8889	15	11
1882	1994/04/29,86	2,29	0,8344	1,91	0,2894	0,8462	0,8205	17	15
1883	1994/05/27,08	1,18	0,9429	1,11	0,3259	0,8500	0,8947	17	7
1884	1994/06/23,28	2,69	1,1789	3,17	0,4792	1,0930	1,0465	16	15
1885	1994/07/20,48	1,59	1,0444	1,66	0,4294	0,9630	0,9615	17	15
1886	1994/08/16,71	2,61	1,0556	2,76	0,3792	0,9787	0,9787	18	18
1887	1994/09/12,96	1,88	0,9872	1,85	0,3755	0,9667	0,9333	16	13
1888	1994/10/10,24	3,56	0,9583	3,41	0,1748	0,9474	0,9474	16	16
1889	1994/11/06,53	1,24	0,9615	1,19	0,1388	1,0952	0,9048	17	13
1890	1994/12/03,84	1,89	1,0965	2,08	0,4094	1,0278	1,0278	19	19
1891	1994/12/31,17	0,73	1,1667	0,86	0,4082	1,3636	1,2000	15	6
1892	1995/01/27,51	2,27	1,4091	3,20	0,6118	1,2800	1,2800	11	11
1893	1995/02/23,85	2,22	1,0625	2,36	0,2769	1,0784	1,0196	23	20
1894	1995/03/23,17	1,90	0,9657	1,83	0,0980	1,0000	0,9474	20	17
1895	1995/04/19,45	0,85	0,8611	0,73	0,2215	0,7273	0,8000	13	6
1896	1995/05/16,69	1,17	0,9643	1,12	0,1336	0,9524	0,9500	18	14
1897	1995/06/12,89	1,33	0,9792	1,31	0,0833	0,9583	0,9565	18	16
1898	1995/07/10,09	0,86	1,1250	0,96	0,3536	1,0833	1,1000	14	8
1899	1995/08/06,30	0,87	0,9167	0,79	0,2041	1,2308	0,8462	15	6

TABLE G4 continued:

CORRECTED **ACTIVE AREAS (g)** VALUES for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	SN	k	PX _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1900	1995/09/02,54	0,73	1,0714	0,79	0,1890	1,5455	1,0909	15	7
1901	1995/09/29,81	2,17	0,8148	1,77	0,1899	0,8462	0,8077	12	9
1902	1995/10/27,10	1,21	1,1852	1,44	0,7286	0,8824	1,0714	14	9
1903	1995/11/23,40	0,71	1,2222	0,87	0,4410	1,2000	1,2000	14	9
1904	1995/12/20,72	1,08	0,8889	0,96	0,1721	0,8571	0,8462	13	6
1905	1996/01/17,06	0,56	1,1250	0,63	0,3536	1,0000	1,1250	16	8
1906	1996/02/13,40	0,50	0,8000	0,40	0,2739	1,0000	0,7143	14	5
1907	1996/03/11,73	0,83	0,9091	0,76	0,2023	1,0000	0,8571	18	11
1908	1996/04/08,03	0,21	1,0000	0,21	0,0000	1,6667	1,0000	14	3
1909	1996/05/05,28	0,53	1,0000	0,53	0,0000	1,0000	1,0000	15	5
1910	1996/06/01,50	0,77	0,9333	0,72	0,1491	1,0000	0,8889	13	5
1911	1996/06/28,70	1,00	0,9000	0,90	0,2236	0,6000	0,8571	10	5
1912	1996/07/25,90	1,31	0,8000	1,05	0,2535	0,7619	0,7143	16	15
1913	1996/08/22,13	0,75	1,0000	0,75	0,5000	0,8889	0,8889	12	7
1914	1996/09/18,39	0,00	—	0,00	—	infin.	infin.	14	0
1915	1996/10/15,67	0,00	—	0,00	—	infin.	infin.	17	0
1916	1996/11/11,97	1,00	1,1250	1,12	0,3108	1,1250	1,1250	16	12

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TABLE G5:
SMOOTHED ACTIVE AREA (g) VALUES for 1995 - 1996.

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

YEAR	MONTH	g	$g(S^{HBm})$	$g(S^W)$	$g(S^{B13})$	g_{GD}	$g_{GD}(S^W)$	$g_{GD}(S^{B13})$
1995	Jan	1,00	1,8822	1,8626	1,8867	1,43	1,9363	1,9904
	Feb	2,75	1,8218	1,7501	1,7798	3,00	1,8065	1,8742
	Mar	2,19	1,7177	1,6494	1,6502	2,30	1,7062	1,7314
	Apr	1,12	1,5141	1,5281	1,5023	1,02	1,5738	1,5614
	May	1,06	1,3421	1,4376	1,3918	1,03	1,4829	1,4287
	Jun	1,20	1,1436	1,3805	1,3164	1,14	1,4357	1,3360
	Jul	1,11	1,0920	1,3377	1,2499	1,20	1,3780	1,2537
	Aug	0,94	1,1080	1,2449	1,1767	0,88	1,2508	1,1664
	Sep	0,69	1,1386	1,0988	1,1126	0,74	1,0793	1,0935
	Oct	2,00	1,1976	1,0032	1,0719	1,63	0,9805	1,0531
	Nov	1,11	1,1285	0,9451	1,0180	1,27	0,9275	1,0063
	Dec	1,00	1,0327	0,9053	0,9483	1,21	0,8894	0,9399
1996	Jan	0,77	0,8916	0,8800	0,8811	0,82	0,8582	0,8667
	Feb	0,75	0,7246	0,8886	0,8314	0,56	0,8542	0,8067
	Mar	0,68	0,6424	0,8892	0,7885	0,62	0,8441	0,7553
	Apr	0,33	0,5970	0,7868	0,7264	0,33	0,7527	0,6902
	May	0,44	0,6607	0,6936	0,6840	0,44	—	—
	Jun	0,86	0,7316	0,6764	0,6794	0,81	—	—
	Jul	0,85	0,7422	0,6544	0,6780	0,79	—	—
	Aug	1,41	0,7445	0,6293	0,6629	1,20	—	—
	Sep	0,23	0,6426	0,6262	0,6399	0,17	—	—
	Oct	0,00	0,5659	—	—	0,00	—	—
	Nov	0,88	0,5740	—	—	—	—	—
	Dec	0,82	0,5794	—	—	0,82	—	—

TABLE G6:
 QUARTERLY & YEARLY **ACTIVE AREA (g)** MEANS for 1992 - 1996.

YEAR/ QUARTER	g	$g(S^{HBm})$	$g(S^W)$	$g(S^{B13})$	g_{GD}
1992 / 1	8,22	7,27	7,01	7,04	8,46
2	5,50	5,51	6,20	5,92	5,36
3	4,68	5,15	5,63	5,43	4,54
4	6,53	5,81	5,15	5,41	6,24
1992	6,05	5,93	6,00	5,95	5,92
1993 / 1	5,12	5,10	4,73	4,90	4,56
2	3,24	3,70	4,03	3,90	2,88
3	2,90	3,01	3,36	3,19	3,00
4	2,88	2,89	2,94	2,94	3,14
1993	3,48	3,67	3,77	3,73	3,41
1994 / 1	3,35	2,99	2,62	2,74	3,07
2	1,72	2,21	2,55	2,44	1,66
3	2,22	2,23	2,22	2,20	2,34
4	2,23	2,14	1,99	2,06	2,26
1994	2,37	2,39	2,34	2,36	2,34
1995 / 1	1,93	1,81	1,75	1,77	2,21
2	1,13	1,33	1,45	1,40	1,07
3	0,92	1,11	1,23	1,18	0,96
4	1,34	1,12	0,95	1,01	1,42
1995	1,34	1,34	1,35	1,34	1,41
1996 / 1	0,73	0,75	0,89	0,83	0,70
2	0,52	0,66			0,51
3	0,88				0,76
4	0,54				
1996	0,66				

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.

TABLE P1:

MONTHLY **PETTISINDEX** MEANS OF GDSO DATA for **1996**.

p = mean of penumbrae on the solar disc.

s = mean of penumbral-free sunspots on the solar disc.

SN = mean Pettisindex (k neglected; see list of definitions).

n = total number of observations.

w = mean weight.

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	n	w	Q	S	T	C
Jan	0,36	2,09	5,73	22	0,4425	1,89	2,39	2,57	2,2803
Feb	0,12	2,12	3,38	8	0,4641	1,50	2,44	2,62	2,1875
Mar	0,58	2,32	8,11	19	0,4521	1,95	2,29	2,50	2,2456
Apr	0,28	0,67	3,44	18	0,5039	1,56	2,11	2,42	2,0278
May	0,67	1,78	8,44	18	0,4251	2,19	2,39	2,56	2,3796
Jun	0,57	1,86	7,57	14	0,4820	1,82	2,25	2,32	2,1310
Jul	1,08	2,15	12,92	13	0,5204	1,85	1,92	2,12	1,9615
Aug	1,00	4,29	14,29	17	0,4696	1,88	2,15	2,44	2,1569
Sep	0,00	0,54	0,54	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	0,00	0,00	19	0,4879	1,82	2,21	2,32	2,1140
Nov	1,75	5,25	22,75	16	0,4883	1,81	2,12	2,31	2,0833
Dec	0,88	1,53	10,35	17	0,5113	1,76	2,06	2,26	2,0294
Year	0,61	2,03	8,16	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE P2:

ROTATIONAL **PETTISINDEX** MEANS OF GDSO DATA.

Abbreviations as above.

ROT.	start date, UT	p	s	SN	n	w	Q	S	T	C
1904	1995/12/20,72	0,62	3,46	9,62	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	0,06	0,62	1,25	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	0,07	1,36	2,07	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	0,67	2,61	9,28	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	0,29	0,50	3,36	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	0,80	2,13	10,13	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	0,46	1,85	6,46	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	0,90	2,30	11,30	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	1,19	4,44	16,31	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	0,42	1,33	5,50	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	0,00	0,00	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	0,00	0,00	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	2,00	5,44	25,44	16	0,4633	1,97	2,22	2,44	2,2083

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TABLE P3:
CORRECTED **PETTISINDICES** for **1993 - 1996**.

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 Siegfried Gonzi, St Paul, Austria, on behalf of Sonne, Germany.

Below are the 'observed' Pettisindices along with the monthly k co-efficients and the corrected values (PX_{GD}) for 1993 - 1996. 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.

$E\sigma$ = annual estimate of standard deviation.

	SN	k	PX_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	PX_I
1993 Jan	74,23	1,0608	78,75	0,2499	0,9824	0,9824	13	13	72,4
Feb	113,08	1,0963	123,98	0,1881	1,0818	1,0818	12	12	121,1
Mar	94,35	1,1163	105,33	0,2310	1,0761	1,0761	17	17	97,0
Apr	92,47	1,3472	124,57	0,7019	1,1305	1,1305	15	15	97,9
May	49,73	1,7797	88,51	1,7927	1,1796	1,1796	15	15	85,7
Jun	60,13	1,2327	74,13	0,2095	1,2627	1,2550	15	14	73,8
Jul	47,73	1,3273	63,35	0,4425	1,1543	1,1543	11	11	61,7
Aug	44,33	1,2040	53,38	0,2392	1,1493	1,1493	21	21	51,0
Sep	22,18	2,0236	44,88	2,5400	1,0663	1,0451	17	14	27,3
Oct	54,60	2,3863	130,29	3,1525	1,2405	1,2405	15	15	71,7
Nov	45,88	1,3257	60,83	0,4269	1,1487	1,1487	17	17	49,2
Dec	83,88	1,1229	94,18	0,3168	1,0700	1,0596	16	15	78,5
1993 Means	63,78	1,4161	90,31	—	1,1210	1,1185	—	—	74,8
	$\sigma = 1,3272$		σ 'SIDC' = 0,8633				$E\sigma = 0,0977$		

TABLE P3 continued — CORRECTED **PETTISINDICES** — 1993 - 1996.

	SN	k	PX _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	PX _I
1994 Jan	81,53	1,2597	102,71	0,2984	1,1457	1,1457	17	17	91,9
Feb	45,18	0,9099	41,11	0,2139	0,9135	0,9135	11	11	41,4
Mar	39,88	0,9465	37,74	0,2827	0,8903	0,8903	24	24	36,3
Apr	17,88	1,3112	23,45	0,8277	1,0132	1,0099	17	15	16,8
May	18,50	1,2323	22,80	0,6319	1,0459	1,0270	20	14	20,9
Jun	18,29	1,6160	29,56	1,5231	1,1093	1,0675	17	11	27,9
Jul	30,82	2,0505	63,20	2,4151	1,3492	1,3416	17	16	39,2
Aug	25,86	1,3572	35,10	0,4973	1,2109	1,2109	22	22	32,6
Sep	25,00	1,2099	30,25	0,4850	1,1305	1,1116	19	16	34,0
Oct	57,27	1,1181	64,03	0,1711	1,1222	1,1222	15	15	61,5
Nov	17,05	1,3582	23,15	0,7622	1,2853	1,2513	22	17	19,1
Dec	26,55	1,7717	47,04	1,4729	1,2335	1,2316	20	19	32,3
1994 Means	32,39	1,3420	43,47	—	1,1132	1,1065	—	—	37,8
	$\sigma = 1,0256$		σ 'SIDC' = 0,7771				$E\sigma = 0,0717$		
1995 Jan	12,17						18		
Feb	33,67						12		
Mar	32,23			DATA			26		
Apr	24,59			UNOBTAINABLE			17		
May	20,67						18	NO	
Jun	17,40			AT			20		
Jul	12,56						18	DATA	
Aug	12,18			TIME			17		
Sep	5,31						16		
Oct	23,00			OF			13		
Nov	9,00						18		
Dec	7,38			PRINT.			13		
1995 Means	17,83			—			—	—	
	$\sigma =$		σ 'SIDC' =				$E\sigma =$		
1996 Jan	5,73						22		
Feb	3,38						8		
Mar	8,11			DATA			19		
Apr	3,44			UNOBTAINABLE			18		
May	8,44						18	NO	
Jun	7,57			AT			14		
Jul	12,92						13	DATA	
Aug	14,29			TIME			17		
Sep	0,54						13		
Oct	0,00			OF			19		
Nov	22,75						16		
Dec	10,35			PRINT.			17		
1996 Means	8,16			—			—	—	
	$\sigma =$		σ 'SIDC' =				$E\sigma =$		

TABLE P4:
CORRECTED **PETTISINDICES** for Rotations 1870 - 1916.

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} .

$$PX_{GD} = SN \times k.$$

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	SN	k	PX_{GD}	σ	I/GDSO	I/GDSO _A	n	n_k
1870	1993/06/06,48	55,67	1,2224	68,04	0,2157	1,2551	1,2467	15	14
1871	1993/07/03,67	44,30	1,3564	60,09	0,4553	1,1761	1,1761	10	10
1872	1993/07/30,88	45,22	1,2138	54,89	0,2377	1,1499	1,1499	18	18
1873	1993/08/27,12	12,07	2,2593	27,26	2,6888	1,2707	1,2265	15	12
1874	1993/09/23,38	66,83	1,1250	75,19	0,2914	1,1359	1,1359	12	12
1875	1993/10/20,66	31,94	2,4157	77,15	3,0287	1,3151	1,3151	16	16
1876	1993/11/16,97	72,41	1,1081	80,24	0,3825	1,0032	0,9919	17	16
1877	1993/12/14,28	117,15	1,1896	139,37	0,3396	1,1149	1,1149	13	13
1878	1994/01/10,61	46,80	1,2412	58,09	0,3064	1,2023	1,2023	15	15
1879	1994/02/06,96	56,08	0,9432	52,90	0,2523	0,9302	0,9302	12	12
1880	1994/03/06,29	32,60	0,9343	30,46	0,2836	0,8620	0,8620	20	20
1881	1994/04/02,60	19,27	1,3847	26,68	0,8665	1,0277	1,0242	15	13
1882	1994/04/29,86	22,59	1,1946	26,98	0,6261	1,0286	1,0156	17	15
1883	1994/05/27,08	14,12	1,5093	21,31	1,7263	1,0625	1,0333	17	8
1884	1994/06/23,28	34,56	1,5339	53,02	0,5697	1,3056	1,2911	16	15
1885	1994/07/20,48	16,47	2,0594	33,92	2,4257	1,4607	1,4464	17	16
1886	1994/08/16,71	35,39	1,3020	46,08	0,4768	1,1444	1,1444	18	18
1887	1994/09/12,96	21,62	1,0441	22,58	0,3366	1,0173	0,9913	16	13
1888	1994/10/10,24	53,44	1,2670	67,71	0,2917	1,2035	1,2035	16	16
1889	1994/11/06,53	11,94	1,2787	15,27	0,8862	1,1379	1,0743	17	12
1890	1994/12/03,84	27,95	1,7717	49,52	1,4729	1,2316	1,2316	19	19
1891	1994/12/31,17	10,40						15	
1892	1995/01/27,51	26,55						11	
1893	1995/02/23,85	31,35						23	N
1894	1995/03/23,17	34,75						20	O
1895	1995/04/19,45	11,38						13	
1896	1995/05/16,69	24,39						18	D
1897	1995/06/12,89	15,61						18	A
1898	1995/07/10,09	9,36						14	T
1899	1995/08/06,30	11,27						15	A

TABLE P4 continued:
 CORRECTED **PETTISINDICES** for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	SN	k	PX _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1900	1995/09/02,54	5,67						15	
1901	1995/09/29,81	24,92						12	
1902	1995/10/27,10	8,57						14	
1903	1995/11/23,40	8,50						14	
1904	1995/12/20,72	9,62						13	
1905	1996/01/17,06	1,25						16	
1906	1996/02/13,40	2,07						14	
1907	1996/03/11,73	9,28						18	
1908	1996/04/08,03	3,36						14	
1909	1996/05/05,28	10,13						15	
1910	1996/06/01,50	6,46						13	
1911	1996/06/28,70	11,30						10	
1912	1996/07/25,90	16,31						16	
1913	1996/08/22,13	5,50						12	
1914	1996/09/18,39	0,00	—	0,00	—	infin.	infin.	14	0
1915	1996/10/15,67	0,00	—	0,00	—	infin.	infin.	17	0
1916	1996/11/11,97	25,44						16	

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TABLE P5:
SMOOTHED **PETTISINDICES** for **1995 - 1996**.

The following are smoothed Pettisindices in three different systems. See page xi 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})
1994	Jan	81,53	59,83	42,62	48,52	102,71	58,68	63,56
	Feb	45,18	50,80	41,14	45,12	41,11	57,92	58,22
	Mar	39,88	40,68	40,49	41,10	37,74	56,54	52,38
	Apr	17,88	30,37	40,72	37,25	23,45	53,17	46,84
	May	18,50	24,69	39,63	33,83	22,80	48,84	42,79
	Jun	18,29	23,34	36,04	30,84	29,56	45,31	40,54
	Jul	30,82	26,12	30,76	28,50	63,20	—	—
	Aug	25,86	28,60	27,39	27,49	35,10	—	—
	Sep	25,00	30,62	26,59	27,69	30,25	—	—
	Oct	57,27	31,44	26,55	28,08	64,03	—	—
	Nov	17,05	28,34	26,92	27,96	23,15	—	—
	Dec	26,55	27,06	26,98	27,34	47,04	—	—
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1995	Jan	12,17	25,61	26,18	26,46			
	Feb	33,67	25,49	24,85	25,40			
	Mar	32,23	25,83	23,46	23,95		DATA	
	Apr	24,59	23,99	21,21	21,93			
	May	20,67	21,50	19,44	20,10			
	Jun	17,40	17,52	18,31	18,42			
	Jul	12,56	14,91	17,24	16,64		UNOBTAINABLE	
	Aug	12,18	13,30	15,71	14,72			
	Sep	5,31	12,17	13,45	12,87			
	Oct	23,00	12,02	11,56	11,40			
	Nov	9,00	10,30	10,17	10,08		AT	
	Dec	7,38	8,74	9,25	8,95			
<hr/>								
1996	Jan	5,73	7,24	8,86	8,19			
	Feb	3,38	5,88	8,96	7,85		TIME	
	Mar	8,11	6,01	8,85	7,69			
	Apr	3,44	6,50	7,69	7,34			
	May	8,44	7,91	7,31	7,38			
	Jun	7,57	8,66	8,00	7,94		OF	
	Jul	12,92	8,67	8,02	8,35			
	Aug	14,29	8,99	8,13	8,53			
	Sep	0,54	8,39	8,35	8,55		PRINT.	
	Oct	0,00	8,45	—	—			
	Nov	22,75	9,52	—	—			
	Dec	10,35	9,07	—	—			

TABLE P6:
 QUARTERLY AND YEARLY **PETTISINDEX** MEANS for 1992 - 1996.

YEAR/ QUARTER	SN	SN(S ^{HBm})	SN(S ^W)	SN(S ^{B13})	PX _{GD}	p	s
1992 / 1	192,04	168,54	142,92	152,19	203,97	16,56	26,48
2	90,42	101,87	124,05	115,64	101,74	7,65	13,92
3	73,88	82,87	100,58	92,67	91,18	6,40	9,88
4	110,34	97,82	88,72	92,35	116,78	9,50	15,34
1992	110,00	112,77	114,07	113,21	123,86	9,45	15,52
1993 / 1	93,48	93,38	82,24	87,32	102,21	8,00	13,48
2	67,44	68,58	70,22	69,22	98,35	5,76	9,89
3	37,41	46,33	62,14	55,77	55,47	3,18	5,57
4	61,27	55,91	48,56	51,46	98,00	5,25	8,77
1993	63,78	66,05	65,79	65,94	90,31	5,45	9,27
1994 / 1	54,62	50,44	41,42	44,92	56,86	4,58	8,85
2	18,24	26,13	38,80	33,98	24,94	1,44	3,80
3	27,03	28,45	28,25	27,89	41,06	2,19	5,14
4	30,96	28,95	26,82	27,79	44,64	2,47	6,23
1994	32,39	33,49	33,82	33,64	43,47	2,64	5,96
1995 / 1	26,09	25,64	24,83	25,27	—	2,00	6,09
2	20,69	21,01	19,65	20,15	—	1,51	5,60
3	10,16	13,46	15,47	14,74	—	0,78	2,31
4	12,66	10,35	10,33	10,14	—	1,02	2,43
1995	17,83	17,62	17,57	17,58	—	1,36	4,24
1996 / 1	6,27	6,38	8,89	7,91	—	0,41	2,18
2	6,40	7,69	7,67	7,55	—	0,50	1,40
3	9,72	8,69	8,17	8,47	—	0,72	2,51
4	10,38	9,01	—	—	—	0,83	2,12
1996	8,16	7,94	—	—	—	0,61	2,03

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.

TABLE B1:

MONTHLY **BECKINDEX** MEANS OF GDSO DATA for **1996**.

BX = mean Beckindex (k neglected; see list of definitions).

n = total number of observations.

w = mean weight.

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	n	w	Q	S	T	C
Jan	27,18	22	0,4425	1,89	2,39	2,57	2,2803
Feb	13,00	8	0,4641	1,50	2,44	2,62	2,1875
Mar	34,00	19	0,4521	1,95	2,29	2,50	2,2456
Apr	12,22	18	0,5039	1,56	2,11	2,42	2,0278
May	40,56	18	0,4251	2,19	2,39	2,56	2,3796
Jun	33,29	14	0,4820	1,82	2,25	2,32	2,1310
Jul	69,38	13	0,5204	1,85	1,92	2,12	1,9615
Aug	77,53	17	0,4696	1,88	2,15	2,44	2,1569
Sep	2,15	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	19	0,4879	1,82	2,21	2,32	2,1140
Nov	194,19	16	0,4883	1,81	2,12	2,31	2,0833
Dec	30,35	17	0,5113	1,76	2,06	2,26	2,0294
Year	44,51	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE B2:

ROTATIONAL **BECKINDEX** MEANS OF GDSO DATA.

Abbreviations as above.

ROT.	start date, UT	BX	n	w	Q	S	T	C
1904	1995/12/20,72	45,69	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	3,50	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	8,00	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	37,44	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	13,14	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	48,67	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	33,38	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	53,20	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	96,38	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	17,17	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	201,31	16	0,4633	1,97	2,22	2,44	2,2083

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TABLE B3:
CORRECTED **BECKINDICES** for **1993 - 1996**.

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 1993 - 1996. 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.

$E\sigma$ = annual estimate of standard deviation.

		BX	k	BX_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	BX_I
1993	Jan	320,15	1,7789	569,51	0,6323	1,4880	1,4880	13	13	478
	Feb	960,17	1,2271	1178,27	0,3331	1,1744	1,1744	12	12	1353
	Mar	855,06	1,2438	1063,51	0,3476	1,1346	1,1346	17	17	966
	Apr	659,53	1,3844	1051,52	0,3880	1,2025	1,2025	15	15	838
	May	415,93	2,6613	1106,93	2,1427	1,2129	1,2129	15	15	806
	Jun	436,40	1,6812	733,66	0,3568	1,6781	1,6717	15	14	713
	Jul	216,27	2,1525	465,52	0,6595	1,7869	1,7869	11	11	437
	Aug	178,52	2,1445	382,84	0,6786	1,8597	1,8597	21	21	331
	Sep	180,00	2,0378	366,81	2,3695	1,2121	1,2046	17	14	224
	Oct	369,87	2,1979	812,92	1,0674	1,6548	1,6548	15	15	734
	Nov	326,47	1,7737	579,05	1,1898	1,4031	1,4031	17	17	445
	Dec	722,81	1,4313	1034,58	1,3562	1,0225	1,0179	16	15	634
1993	Means	468,74	1,8159	851,20	—	1,3008	1,2994	—	—	659
		$\sigma = 1,2063$		σ 'SIDC' = 0,9628			$E\sigma = 0,0871$			

TABLE B3 continued — CORRECTED BECKINDICES — 1993 - 1996.

		BX	k	BX _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	BX _I
1994	Jan	833,94	1,4950	1246,76	0,6278	1,2558	1,2558	17	17	1047
	Feb	199,73	1,5051	300,61	0,3618	1,4606	1,4606	11	11	321
	Mar	177,12	1,6331	289,25	0,8327	1,2458	1,2458	24	24	228
	Apr	68,00	2,1840	148,51	1,9479	1,3798	1,3894	17	14	88
	May	82,00	1,7987	147,49	0,6780	1,7567	1,7579	20	13	151
	Jun	75,76	2,0687	156,73	1,3371	1,7135	1,6801	17	11	170
	Jul	143,59	3,1964	458,97	3,1568	1,8218	1,8189	17	16	273
	Aug	132,73	1,8399	244,21	1,0010	1,4856	1,4856	22	22	208
	Sep	126,11	1,9374	244,31	1,3946	1,8097	1,8097	19	16	297
	Oct	353,13	2,0026	707,19	1,0065	1,6421	1,6421	15	15	539
	Nov	90,05	2,6845	241,72	2,8621	1,7254	1,6925	22	17	133
	Dec	191,25	2,2143	423,48	1,4939	1,4392	1,4390	20	19	289
1994	Means	197,14	2,0423	402,62	—	1,4628	1,4604	—	—	313
	$\sigma =$	1,6446		σ 'SIDC' =	1,3970		$E\sigma =$	0,1162		
1995	Jan	51,17	2,5300	129,45	1,4300	1,9739	1,9001	18	11	177
	Feb	167,83	2,5218	423,24	1,5533	1,8689	1,8689	12	12	276
	Mar	171,23	2,8642	490,44	2,1501	2,1438	2,1289	26	23	364
	Apr	187,06	2,3742	444,11	1,6533	1,2453	1,2412	17	10	207
	May	138,94	2,0490	284,69	1,6515	1,4026	1,3711	18	13	194
	Jun	112,05	2,8384	318,05	3,0237	1,6725	1,6671	20	19	184
	Jul	50,17	2,9126	146,12	1,7775	2,7398	2,7141	18	13	134
	Aug	57,65	1,8991	109,48	1,1498	1,6673	1,5918	17	8	95
	Sep	17,00	2,1162	35,98	0,8117	2,4963	2,4191	16	7	60
	Oct	90,92	2,9966	272,46	0,9109	2,6184	2,6142	13	9	223
	Nov	27,06	1,6678	45,12	0,9646	1,7885	1,7864	18	14	51
	Dec	20,62	3,1548	65,04	2,1436	2,4776	2,4291	13	9	51
1995	Means	94,18	2,5328	238,54	—	1,8432	1,8236	—	—	168
	$\sigma =$	1,8572		σ 'SIDC' =	1,7450		$E\sigma =$	0,1529		
1996	Jan	27,18	3,2408	88,09	1,5620	2,2174	2,2256	22	12	83
	Feb	13,00	1,2034	15,64	1,3228	1,1442	1,0962	8	4	15
	Mar	34,00	2,3341	79,36	1,0404	1,9396	1,8498	19	10	66
	Apr	12,22	3,5916	43,90	2,5276	1,9318	1,9000	18	6	20
	May	40,56	2,2007	89,25	1,1725	1,6082	1,6068	18	8	52
	Jun	33,29	2,4140	80,35	1,2448	1,9077	1,8528	14	6	74
	Jul	69,38	1,7096	118,62	1,0367	1,5698	1,5805	13	8	132
	Aug	77,53	2,8193	218,58	1,9829	1,9302	1,9302	17	17	124
	Sep	2,15	0,6667	1,4359	—	0,5714	0,6667	13	1	6
	Oct	0,00	—	0,00	—	infin.	infin.	19	0	
	Nov	194,19						16		
	Dec	30,35						17		
1996	Means	44,51	—	—	—	—	—	—	—	—
	$\sigma =$	—		σ 'SIDC' =	—		$E\sigma =$	—		

TABLE B4:

CORRECTED **BECKINDICES** for Rotations 1870 - 1916.

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} .

$$BX_{GD} = BX \times k.$$

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	BX	k	BX_{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1870	1993/06/06,48	382,33	1,6747	640,28	0,3633	1,7071	1,6997	15	14
1871	1993/07/03,67	165,20	2,2376	369,65	0,6282	2,0006	2,0006	10	10
1872	1993/07/30,88	191,44	2,1147	404,85	0,6448	1,8334	1,8334	18	18
1873	1993/08/27,12	33,33	2,4893	82,98	2,4870	2,2340	2,1880	15	12
1874	1993/09/23,38	581,08	1,6587	963,85	0,6718	1,4502	1,4502	12	12
1875	1993/10/20,66	179,75	2,3281	418,48	1,4190	1,7045	1,7045	16	16
1876	1993/11/16,97	456,76	1,2261	560,03	0,4042	1,1481	1,1413	17	16
1877	1993/12/14,28	1252,54	1,5031	1882,66	1,4469	1,1088	1,1088	13	13
1878	1994/01/10,61	422,80	1,6097	680,59	0,6193	1,3655	1,3655	15	15
1879	1994/02/06,96	271,58	1,3581	368,84	0,3722	1,2924	1,2924	12	12
1880	1994/03/06,29	132,65	1,7314	229,67	0,8797	1,3159	1,3159	20	20
1881	1994/04/02,60	73,27	2,3243	170,30	2,0745	1,3940	1,4042	15	12
1882	1994/04/29,86	99,59	1,7377	173,06	0,6661	1,7389	1,7360	17	15
1883	1994/05/27,08	59,53	1,6575	98,67	1,5605	1,3715	1,3690	17	7
1884	1994/06/23,28	161,31	2,7082	436,87	1,4741	1,8900	1,8764	16	15
1885	1994/07/20,48	83,18	2,7647	229,95	3,0028	1,7808	1,7758	17	16
1886	1994/08/16,71	182,67	2,0251	369,91	1,4343	1,7412	1,7412	18	18
1887	1994/09/12,96	91,25	1,5357	140,13	0,7291	1,4103	1,4103	16	13
1888	1994/10/10,24	336,06	2,6263	882,60	2,0321	1,7670	1,7670	16	16
1889	1994/11/06,53	70,29	2,1795	153,20	2,7570	1,1506	1,0940	17	12
1890	1994/12/03,84	201,32	2,2143	445,77	1,4939	1,4390	1,4390	19	19
1891	1994/12/31,17	51,20	2,0376	104,33	0,7453	1,7305	1,6406	15	7
1892	1995/01/27,51	123,27	2,7398	337,75	1,3602	1,9786	1,9786	11	11
1893	1995/02/23,85	163,26	2,6555	433,53	2,3186	1,9939	1,9763	23	20
1894	1995/03/23,17	230,40	2,7397	631,23	1,7264	1,5838	1,5809	20	17
1895	1995/04/19,45	62,31	2,6292	163,82	1,9950	1,7000	1,6988	13	7
1896	1995/05/16,69	195,50	1,6164	316,01	0,9674	1,3592	1,3370	18	15
1897	1995/06/12,89	50,83	3,8369	195,04	2,9808	3,2284	3,2153	18	17
1898	1995/07/10,09	50,21	1,7835	89,56	1,7080	1,4794	1,4392	14	9
1899	1995/08/06,30	50,53	2,2201	112,19	1,0846	1,9789	1,8813	15	8

TABLE B4 continued:

CORRECTED **BECKINDICES** for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	BX	k	BX _{GD}	σ	I/GDSO	I/GDSO _A	n	n_k	
1900	1995/09/02,54	18,13	2,1162	38,37	0,8117	2,4926	2,4191	15	7	
1901	1995/09/29,81	98,50	2,9966	295,16	0,9109	2,6168	2,6142	12	9	
1902	1995/10/27,10	26,21	1,7558	46,03	1,0226	1,9074	1,8965	14	11	
1903	1995/11/23,40	24,00	2,7432	65,84	2,0038	2,0536	2,0536	14	9	
1904	1995/12/20,72	45,69	2,2268	101,75	1,7748	2,1970	2,1751	13	7	
1905	1996/01/17,06	3,50	3,8802	13,58	1,3077	3,0179	3,1731	16	8	
1906	1996/02/13,40	8,00	1,1627	9,30	1,1491	1,1429	1,0893	14	5	
1907	1996/03/11,73	37,44	2,7472	102,87	1,5554	1,9525	1,8635	18	12	
1908	1996/04/08,03	13,14	3,6415	47,86	2,7935	1,9185	1,8967	14	3	
1909	1996/05/05,28	48,67	2,2007	107,10	1,1725	1,6082	1,6068	15	8	
1910	1996/06/01,50	33,38	2,1218	70,84	1,1387	1,7627	1,7023	13	5	
1911	1996/06/28,70	53,20	1,8072	96,14	1,4066	1,4925	1,5153	10	6	
1912	1996/07/25,90	96,38	2,1728	209,40	1,1354	1,7477	1,7458	16	15	
1913	1996/08/22,13	17,17	3,7852	64,98	2,8313	2,9757	3,0248	12	6	
1914	1996/09/18,39	0,00							14	
1915	1996/10/15,67	0,00	DATA UNOBTAINABLE AT TIME OF PRINT.						17	
1916	1996/11/11,97	201,31							16	

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TABLE B5:
SMOOTHED **BECKINDICES** for **1994 - 1996**.

The following are smoothed Beckindices in three different systems. See page xi 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})
1994	Jan	833,9	471,8	282,8	349,8	1246,8	494,0	575,4
	Feb	199,7	363,9	277,9	316,0	300,6	487,9	521,3
	Mar	177,1	258,9	273,8	274,5	289,3	477,1	458,3
	Apr	68,0	161,1	270,8	235,4	148,5	467,5	402,5
	May	82,0	108,3	260,3	201,5	147,5	449,1	360,1
	Jun	75,8	105,3	228,3	172,0	156,7	409,6	330,2
	Jul	143,6	127,3	173,5	149,1	459,0	337,5	309,3
	Aug	132,7	148,1	139,6	142,2	244,2	296,1	307,9
	Sep	126,1	168,5	138,0	148,0	244,3	309,6	326,7
	Oct	353,1	181,5	142,7	154,6	707,2	330,3	347,2
	Nov	90,0	165,5	150,0	157,8	241,7	348,3	359,7
	Dec	191,2	158,0	153,9	157,3	423,5	360,8	364,2
1995	Jan	51,2	146,5	151,5	153,8	129,5	354,5	361,5
	Feb	167,8	145,3	144,5	148,4	423,2	335,8	354,9
	Mar	171,2	152,1	136,8	140,7	490,4	321,5	342,4
	Apr	187,1	146,2	121,4	128,7	444,1	294,7	317,4
	May	138,9	132,6	107,8	115,9	284,7	268,4	288,3
	Jun	112,0	105,8	98,1	102,7	318,0	245,3	256,8
	Jul	50,2	81,2	90,0	88,9	146,1	228,6	223,6
	Aug	57,6	62,8	82,5	75,3	109,5	209,9	189,4
	Sep	17,0	50,1	70,4	61,9	36,0	175,8	155,8
	Oct	90,0	45,6	57,4	50,6	272,5	142,0	128,4
	Nov	27,1	37,6	46,0	41,3	45,1	117,2	106,7
	Dec	20,6	31,5	38,6	35,1	65,0	99,1	90,7
1996	Jan	27,2	27,2	36,1	32,1	88,1	88,1	81,2
	Feb	13,0	23,1	37,7	31,9	15,6	91,5	79,2
	Mar	34,0	25,1	37,9	32,7	79,4	94,6	80,1
	Apr	12,2	28,9	33,5	32,6	43,9	—	—
	May	40,6	37,3	36,7	35,6	89,3	—	—
	Jun	33,3	42,4	44,1	41,4	80,4	—	—
	Jul	69,4	44,2	43,7	45,4	118,6	—	—
	Aug	77,5	51,6	43,9	47,7	218,6	—	—
	Sep	2,2	52,0	44,7	48,8	1,4	—	—
	Oct	0,0	55,2	—	—	—	—	—
	Nov	194,2	62,6	—	—	—	—	—
	Dec	30,4	52,2	—	—	—	—	—

TABLE B6:
 QUARTERLY AND YEARLY **BECKINDEX** MEANS for 1992 - 1996.

YEAR/ QUARTER	BX	BX(S ^{HBm})	BX(S ^W)	BX(S ^{B13})	BX _{GD}	n
1992 / 1	2015,85	1804,60	1428,12	1582,52	2818,26	27
2	653,12	900,99	1196,81	1080,37	1273,57	40
3	569,18	645,05	823,41	729,08	1100,40	40
4	835,08	703,06	673,37	688,11	1222,13	38
1992	931,40	1013,42	1030,43	1020,02	1597,46	145
1993 / 1	719,52	697,68	606,54	651,69	1010,68	42
2	537,29	526,39	499,38	504,95	1028,45	45
3	187,51	289,56	473,01	397,96	396,38	49
4	472,15	431,47	334,44	372,20	849,77	48
1993	468,74	486,28	478,34	481,70	851,20	184
1994 / 1	396,63	364,85	278,17	313,45	619,09	52
2	75,63	124,91	253,11	202,96	152,68	54
3	133,74	147,99	150,35	146,41	303,69	58
4	194,79	168,33	148,88	156,57	449,72	57
1994	197,14	201,52	207,63	204,85	402,62	221
1995 / 1	131,91	147,96	144,30	147,66	355,50	56
2	144,04	128,22	109,09	115,76	357,72	55
3	42,25	64,68	80,95	75,34	102,42	51
4	44,02	38,24	47,30	42,32	108,28	44
1995	94,18	94,77	95,41	95,27	238,54	206
1996 / 1	27,51	25,10	37,26	32,23	70,94	49
2	28,32	36,17	38,11	36,57	75,95	50
3	52,28	49,28	44,10	47,28	125,21	43
4	69,67	56,67	—	—	—	52
1996	44,51	41,81	—	—	—	194

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.

TABLE C1:

MONTHLY CLASSIFICATION VALUE MEANS OF GDSO DATA for 1996.

CV = mean Classification Value (k neglected; see list of definitions).

n = total number of observations.

w = mean weight.

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	n	w	Q	S	T	C
Jan	4,18	22	0,4425	1,89	2,39	2,57	2,2803
Feb	2,62	8	0,4641	1,50	2,44	2,62	2,1875
Mar	6,32	19	0,4521	1,95	2,29	2,50	2,2456
Apr	4,00	18	0,5039	1,56	2,11	2,42	2,0278
May	8,33	18	0,4251	2,19	2,39	2,56	2,3796
Jun	6,14	14	0,4820	1,82	2,25	2,32	2,1310
Jul	18,08	13	0,5204	1,85	1,92	2,12	1,9615
Aug	18,41	17	0,4696	1,88	2,15	2,44	2,1569
Sep	0,46	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	19	0,4879	1,82	2,21	2,32	2,1140
Nov	21,25	16	0,4883	1,81	2,12	2,31	2,0833
Dec	11,06	17	0,5113	1,76	2,06	2,26	2,0294
Year	8,37	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE C2:

ROTATIONAL CLASSIFICATION VALUE MEANS OF GDSO DATA.

Abbreviations as above.

ROT.	start date, UT	CV	n	w	Q	S	T	C
1904	1995/12/20,72	7,00	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	1,25	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	1,64	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	7,39	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	4,07	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	10,00	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	5,38	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	12,90	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	23,50	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	5,42	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	25,25	16	0,4633	1,97	2,22	2,44	2,2083

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TABLE C3:
CORRECTED CLASSIFICATION VALUES for 1993 - 1996.

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, Norway.

Below are the 'observed' Classification Values along with the monthly k co-efficients and the corrected values (CV_{GD}) for 1993 - 1996. 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.

$E\sigma$ = annual estimate of standard deviation.

IGNORE ALL CORRECTED CLASSIFICATION VALUE DATA PUBLISHED PRIOR TO THE ANNUAL REPORT FOR 1995 (TABLES C3 & C4).

		CV	k	CV_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	CV_I
1993	Jan	105,15	0,9345	98,26	0,2382	0,8628	0,8628	13	13	80,21
	Feb	150,08	0,7593	113,96	0,1184	0,7449	0,7449	12	12	103,26
	Mar	97,82	0,9518	93,11	0,2168	0,9354	0,9354	17	17	89,14
	Apr	77,93	1,8834	146,78	3,3611	1,0128	1,0128	15	15	83,37
	May	55,80	2,1734	121,27	2,3965	1,1174	1,1174	15	15	73,56
	Jun	77,47	0,8404	65,10	0,1530	0,8449	0,8368	15	14	62,35
	Jul	71,55	1,0429	74,61	0,1825	1,0126	1,0126	11	11	71,83
	Aug	70,10	0,9736	68,24	0,2723	0,9330	0,9330	21	21	63,64
	Sep	24,06	1,3665	32,88	0,9682	0,9949	0,9880	17	14	25,36
	Oct	61,80	1,1398	70,44	0,6874	0,9099	0,9099	15	15	62,92
	Nov	53,41	1,0482	55,99	0,3761	0,9240	0,9240	17	17	47,88
	Dec	76,31	1,2089	92,26	0,4648	1,0243	1,0243	16	15	75,03
1993	Means	74,58	1,1964	89,23	—	0,9246	0,9237	—	—	69,79
		$\sigma = 1,2892$		σ 'SIDC' = 0,7914						$E\sigma = 0,0944$

TABLE C3 continued — CORRECTED CLASSIFICATION VALUES 1993 - 1996.

	CV	k	CV _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	CV _I
1994 Jan	82,29	1,0877	89,51	0,1948	1,0336	1,0336	17	17	83,60
Feb	43,64	0,9965	43,48	0,4144	0,9733	0,9733	11	11	50,97
Mar	34,92	0,8407	29,35	0,2876	0,7786	0,7786	24	24	28,11
Apr	36,06	0,8428	30,39	0,3886	0,6635	0,6615	17	15	21,58
May	25,30	1,1665	29,51	0,7102	0,9245	0,9089	20	14	24,13
Jun	15,71	2,2350	35,10	2,4430	1,2712	1,2345	17	11	27,41
Jul	38,12	1,5903	60,62	3,1155	0,8298	0,8264	17	16	29,70
Aug	29,59	0,7459	22,07	0,4085	0,5939	0,5939	22	22	17,70
Sep	41,63	0,9631	40,09	0,5151	0,8719	0,8465	19	16	40,88
Oct	62,27	1,1592	72,18	0,3976	1,0590	1,0590	15	15	60,31
Nov	20,73	1,0966	22,73	0,8950	0,9776	0,9529	22	18	17,65
Dec	28,70	1,3399	38,45	0,6783	0,9502	0,9483	20	19	26,54
1994 Means	36,91	1,1264	41,58	—	0,9040	0,8974	—	—	35,69
$\sigma =$	1,1807		σ 'SIDC' =	0,8053		$E\sigma =$	0,0827		
1995 Jan	9,17	1,3775	12,63	0,3148	1,4588	1,4067	18	11	21,95
Feb	27,75	1,4033	38,94	0,5149	1,2468	1,2468	12	12	34,16
Mar	27,31	1,5658	42,76	0,7387	1,3499	1,3345	26	23	36,66
Apr	19,00	1,5062	28,62	1,1730	1,1006	1,0613	17	10	18,36
May	31,00	0,9470	29,36	0,7037	0,7228	0,6860	18	13	22,10
Jun	13,05	1,5507	20,24	0,9529	1,2636	1,2563	20	18	16,06
Jul	21,06	1,3691	28,83	0,9666	1,0319	1,0021	18	13	20,03
Aug	10,29	1,3060	14,29	0,6078	1,3269	1,1866	17	8	13,21
Sep	4,94	1,4097	6,96	0,3632	1,3418	1,2253	16	7	10,49
Oct	41,69	0,8302	34,61	0,1900	0,7876	0,7775	13	9	30,16
Nov	14,39	0,9961	14,33	0,5685	0,8251	0,8251	18	14	12,40
Dec	7,77	1,5246	11,85	1,1469	1,2772	1,2663	13	9	9,10
1995 Means	18,91	1,3387	25,32	—	1,0822	1,0546	—	—	20,39
$\sigma =$	0,7825		σ 'SIDC' =	1,3370		$E\sigma =$	0,1121		
1996 Jan	4,18						22		
Feb	2,62				DATA		8		
Mar	6,32						19		
Apr	4,00				UNOBTAINABLE		18		
May	8,33						18		
Jun	6,14				AT		14		
Jul	18,08				TIME		13		
Aug	18,41						17		
Sep	0,46				OF		13		
Oct	0,00						19		
Nov	21,25				PRINT.		16		
Dec	11,06						17		
1996 Means	8,37			—			—	—	
$\sigma =$			σ 'SIDC' =			$E\sigma =$			

TABLE C4:
CORRECTED **CLASSIFICATION VALUES** for Rotations 1870 - 1916.

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} .

$$CV_{GD} = CV \times k.$$

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.

PLEASE SEE ITALICISED NOTE AT BEGINNING OF TABLE C3.

ROTA- TION	START DATE, UT	CV	k	CV_{GD}	σ	I/GDSO	$I/GDSO_A$	n	n_k
1870	1993/06/06,48	74,67	0,8372	62,51	0,1505	0,8371	0,8287	15	14
1871	1993/07/03,67	71,00	1,0543	74,86	0,1882	1,0217	1,0217	10	10
1872	1993/07/30,88	75,56	0,9415	71,14	0,2684	0,9149	0,9149	18	18
1873	1993/08/27,12	11,27	1,5121	17,04	0,9892	1,2053	1,1886	15	12
1874	1993/09/23,38	78,17	0,8902	69,59	0,2156	0,9155	0,9155	12	12
1875	1993/10/20,66	40,19	1,2966	52,11	0,6872	1,0058	1,0058	16	16
1876	1993/11/16,97	67,29	0,9171	61,72	0,2345	0,8914	0,8914	17	16
1877	1993/12/14,28	108,15	1,2496	135,14	0,4582	1,0113	1,0113	13	13
1878	1994/01/10,61	52,73	1,0848	57,20	0,2859	1,0910	1,0910	15	15
1879	1994/02/06,96	51,25	0,9704	49,73	0,3429	0,9184	0,9184	12	12
1880	1994/03/06,29	29,40	0,8448	24,84	0,3057	0,7760	0,7760	20	20
1881	1994/04/02,60	39,87	0,8462	33,74	0,3844	0,6657	0,6637	15	13
1882	1994/04/29,86	30,59	1,0982	33,59	0,7048	0,9075	0,8981	17	15
1883	1994/05/27,08	14,06	1,9545	27,48	2,8664	1,0795	1,0431	17	8
1884	1994/06/23,28	34,19	1,3698	46,83	0,8982	0,9746	0,9671	16	15
1885	1994/07/20,48	20,18	1,5852	31,98	3,1219	0,7286	0,7222	17	16
1886	1994/08/16,71	57,72	0,7171	41,39	0,3384	0,7047	0,7047	18	18
1887	1994/09/12,96	23,50	1,0968	25,78	0,6256	1,0963	1,0434	16	13
1888	1994/10/10,24	64,62	1,1100	71,73	0,4833	0,9967	0,9967	16	16
1889	1994/11/06,53	10,00	1,0770	10,77	0,9741	1,0400	0,9735	17	13
1890	1994/12/03,84	30,21	1,3399	40,48	0,6783	0,9483	0,9483	19	19
1891	1994/12/31,17	7,33	1,2464	9,14	0,2331	1,3973	1,3100	15	7
1892	1995/01/27,51	21,55	1,4776	31,84	0,5453	1,2810	1,2810	11	11
1893	1995/02/23,85	26,43	1,4388	38,03	0,5195	1,3533	1,3354	23	20
1894	1995/03/23,17	26,60	1,6732	44,51	1,0842	1,2207	1,2026	20	17
1895	1995/04/19,45	21,85	0,5844	12,77	0,2394	0,5947	0,5782	13	7
1896	1995/05/16,69	26,22	1,2666	33,21	0,6210	0,9362	0,8962	18	15
1897	1995/06/12,89	20,44	1,5945	32,60	1,1086	1,1111	1,1060	18	17
1898	1995/07/10,09	10,71	1,3141	14,08	0,9485	1,0880	1,0127	14	10
1899	1995/08/06,30	10,27	1,4867	15,26	0,5092	1,4896	1,3201	15	6

TABLE C4 continued:

CORRECTED **CLASSIFICATION VALUES** for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	CV	k	CV _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1900	1995/09/02,54	5,27	1,4097	7,42	0,5120	1,3253	1,2253	15	7
1901	1995/09/29,81	45,17	0,8302	37,50	0,1900	0,7882	0,7775	12	9
1902	1995/10/27,10	16,57	0,9476	15,70	0,6060	0,7888	0,7845	14	11
1903	1995/11/23,40	7,79	1,3019	10,14	0,3912	1,2468	1,2468	14	9
1904	1995/12/20,72	7,00						13	
1905	1996/01/17,06	1,25				DATA		16	
1906	1996/02/13,40	1,64						14	
1907	1996/03/11,73	7,39				UNOBTAINABLE		18	
1908	1996/04/08,03	4,07						14	
1909	1996/05/05,28	10,00				AT		15	
1910	1996/06/01,50	6,14						13	
1911	1996/06/28,70	12,90				TIME		10	
1912	1996/07/25,90	23,50						16	
1913	1996/08/22,13	5,42				OF		12	
1914	1996/09/18,39	0,00						14	
1915	1996/10/15,67	0,00				PRINT.		17	
1916	1996/11/11,97	25,25						16	

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TABLE C5:
SMOOTHED CLASSIFICATION VALUES for 1995 - 1996.

The following are smoothed Classification Values in three different systems.
See page xi 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})
1994	Jan	82,29	60,22	48,20	51,87	89,69	53,79	56,68
	Feb	43,64	51,85	45,12	47,82	43,58	51,39	52,58
	Mar	34,92	42,87	44,17	44,12	29,42	49,76	48,56
	Apr	36,06	35,25	44,92	41,14	28,40	50,12	45,65
	May	25,30	29,74	43,58	38,28	30,54	48,80	43,37
	Jun	15,71	28,81	40,23	35,82	35,16	45,16	41,46
	Jul	38,12	32,53	35,20	33,91	63,21	39,70	39,68
	Aug	29,59	34,97	31,49	32,93	22,08	36,30	38,68
	Sep	41,63	37,76	30,51	32,74	39,76	36,66	38,86
	Oct	62,27	37,50	29,48	32,01	72,25	37,23	38,76
	Nov	20,73	32,17	29,01	30,66	22,42	37,19	37,64
	Dec	28,70	28,34	29,14	29,11	38,48	36,52	35,94
1995	Jan	9,17	23,96	28,31	27,31	12,63	34,46	34,10
	Feb	27,75	22,97	26,83	25,55	38,94	32,70	32,71
	Mar	27,31	23,22	24,52	23,59	42,76	31,01	31,04
	Apr	19,00	22,67	22,13	21,80	28,62	28,08	28,70
	May	31,00	22,22	21,01	20,83	29,36	26,17	26,82
	Jun	13,05	18,78	19,88	19,97	20,24	24,73	25,13
	Jul	21,06	18,05	18,80	18,95	28,83	—	—
	Aug	10,94	17,29	17,54	17,68	14,29	—	—
	Sep	4,94	16,83	15,62	16,30	6,96	—	—
	Oct	41,69	17,96	14,12	15,01	34,61	—	—
	Nov	14,39	14,86	12,55	13,25	14,33	—	—
	Dec	7,77	11,67	11,32	11,39	11,85	—	—
1996	Jan	4,18	8,44	10,91	9,98	—	—	—
	Feb	2,62	5,52	11,10	9,19	—	—	—
	Mar	6,32	5,26	11,22	8,76	—	—	—
	Apr	4,00	6,23	9,30	8,05	—	—	—
	May	8,33	8,35	7,84	7,86	—	—	—
	Jun	6,14	9,71	8,27	8,55	—	—	—
	Jul	18,08	10,47	8,34	9,17	—	—	—
	Aug	18,41	10,70	8,51	9,40	—	—	—
	Sep	0,46	9,56	8,73	9,28	—	—	—
	Oct	0,00	9,05	—	—	—	—	—
	Nov	21,25	9,44	—	—	—	—	—
	Dec	11,06	8,67	—	—	—	—	—

TABLE C6:
 QUARTERLY & YEARLY **CLASSIFICATION VALUE** MEANS for 1992 - 1996.

YEAR/ QUARTER	CV	CV(S ^{HBm})	CV(S ^W)	CV(S ^{B13})	CV _{GD}
1992 / 1	205,30	182,18	161,63	168,70	204,80
2	114,12	114,53	143,02	131,49	116,81
3	92,72	104,66	122,71	115,07	91,00
4	147,55	131,51	110,24	118,79	134,21
1992	133,96	133,22	134,40	133,51	130,91
1993 / 1	115,02	114,27	104,09	108,88	102,54
2	70,40	78,39	86,65	83,26	116,19
3	54,45	59,98	69,89	65,49	60,42
4	63,67	59,64	55,74	57,43	71,86
1993	74,58	78,07	79,09	78,76	89,23
1994 / 1	52,25	51,65	45,83	47,94	49,87
2	25,67	31,26	42,91	38,42	34,37
3	36,03	35,09	32,40	33,19	38,21
4	34,46	32,67	29,21	30,59	46,17
1994	36,91	37,67	37,59	37,53	41,58
1995 / 1	21,57	23,38	26,55	25,49	31,89
2	20,76	21,23	21,01	20,87	28,00
3	12,63	17,39	17,32	17,64	17,19
4	20,50	14,83	12,66	13,21	22,51
1995	18,91	19,21	19,39	19,30	25,32
1996 / 1	3,80	6,40	11,07	9,31	—
2	6,16	8,10	8,47	8,15	—
3	12,88	10,24	8,53	9,28	—
4	10,15	9,05	—	—	—
1996	8,37	8,45	—	—	—

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.

TABLE Q1:

MONTHLY QUALITY COUNT MEANS OF GDSO DATA for 1996.

QC = mean Quality Count (see list of definitions).

n = total number of observations.

w = mean weight.

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	Σg	n	w	Q	S	T	C
Jan	1,41	17	22	0,4425	1,89	2,39	2,57	2,2803
Feb	1,25	6	8	0,4641	1,50	2,44	2,62	2,1875
Mar	1,89	13	19	0,4521	1,95	2,29	2,50	2,2456
Apr	0,83	6	18	0,5039	1,56	2,11	2,42	2,0278
May	1,50	8	18	0,4251	2,19	2,39	2,56	2,3796
Jun	1,93	12	14	0,4820	1,82	2,25	2,32	2,1310
Jul	2,31	11	13	0,5204	1,85	1,92	2,12	1,9615
Aug	3,24	24	17	0,4696	1,88	2,15	2,44	2,1569
Sep	0,38	3	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	0	19	0,4879	1,82	2,21	2,32	2,1140
Nov	2,75	14	16	0,4883	1,81	2,12	2,31	2,0833
Dec	2,24	14	17	0,5113	1,76	2,06	2,26	2,0294
Year	1,64	128	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE Q2:

ROTATIONAL QUALITY COUNT MEANS OF GDSO DATA.

Abbreviations as above.

ROT	start date, UT	QC	Σg	n	w	Q	S	T	C
1904	1995/12/20,72	2,31	14	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	0,69	9	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	0,86	7	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	2,22	15	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	0,64	3	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	1,80	8	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	1,62	10	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	2,50	10	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	3,12	21	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	1,75	9	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	0	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	0	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	3,19	16	16	0,4633	1,97	2,22	2,44	2,2083

TABLE Q3:
COMPARED **QUALITY COUNTS** for **1995 - 1996**.

Data unobtainable.

TABLE Q5:
SMOOTHED **QUALITY COUNT** VALUES for **1995 - 1996**.

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

YEAR	MONTH	QC	QC(S ^{HBm})	QC(S ^W)	QC(S ^{B13})
1995	Jan	2,61	4,9617	5,0326	5,0633
	Feb	6,83	4,8189	4,7511	4,7978
	Mar	6,12	4,6783	4,4647	4,4690
	Apr	3,41	4,2107	4,0739	4,0720
	May	3,17	3,7784	3,7800	3,7590
	Jun	3,30	3,2033	3,6073	3,5237
	Jul	3,00	2,9457	3,4469	3,2858
	Aug	2,59	2,8515	3,1642	3,0136
	Sep	1,44	2,7817	2,7557	2,7567
	Oct	4,85	2,8181	2,4724	2,5714
	Nov	2,50	2,5332	2,2955	2,3810
	Dec	2,15	2,2417	2,1689	2,1760
1996	Jan	1,41	1,8948	2,0829	2,0021
	Feb	1,25	1,5554	2,0811	1,8972
	Mar	1,89	1,4831	2,0641	1,8259
	Apr	0,83	1,4745	1,8184	1,7108
	May	1,50	1,6985	1,6268	1,6438
	Jun	1,93	1,8471	1,6407	1,6709
	Jul	2,31	1,8328	1,6291	1,6977
	Aug	3,24	1,8203	1,6245	1,6872
	Sep	0,38	1,5952	1,6393	1,6478
	Oct	0,00	1,4814	—	—
	Nov	2,75	1,5819	—	—
	Dec	2,24	1,6079	—	—

TABLE Q6:
 QUARTERLY AND YEARLY **QUALITY COUNT** MEANS for 1992 - 1996.

YEAR/ QUARTER	QC	QC(S ^{HBm})	QC(S ^W)	QC(S ^{B13})
1992 / 1	29,81	26,31	23,76	24,60
2	17,08	17,51	20,84	19,52
3	13,88	15,56	17,91	16,90
4	20,53	18,34	16,16	17,04
1992	19,47	19,43	19,67	19,52
1993 / 1	16,83	16,59	14,91	15,66
2	10,47	11,67	12,55	12,19
3	7,86	8,63	10,49	9,66
4	9,17	9,00	8,63	8,82
1993	10,89	11,47	11,65	11,59
1994 / 1	10,00	8,84	7,51	7,99
2	4,30	5,71	7,21	6,67
3	5,83	5,90	5,85	5,80
4	5,96	5,71	5,28	5,49
1994	6,47	6,54	6,46	6,49
1995 / 1	5,14	4,82	4,75	4,78
2	3,29	3,73	3,82	3,78
3	2,37	2,86	3,12	3,02
4	3,09	2,53	2,31	2,38
1995	3,52	3,49	3,50	3,49
1996 / 1	1,57	1,64	2,08	1,91
2	1,38	1,67	1,70	1,68
3	2,09	1,75	1,63	1,68
4	1,58	1,56	—	—
1996	1,64	1,66	—	—

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.

TABLE I-1S:
DAILY **INTER-SOL** INDICES - **1994**.

The Inter-Sol Index (IS) is calculated as $IS = f + gr$
where gr is the number of multi-spot groups
and f is the number of sunspots.

All dates are UT dates.

* = no observation.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	51	10	*	*	*	0	24	*	18	*	18	*	01
02	*	9	37	3	*	0	*	6	*	5	14	*	02
03	72	*	36	1	7	0	19	*	*	*	10	*	03
04	*	*	22	0	6	0	*	9	*	7	5	5	04
05	75	*	27	*	*	0	11	9	30	*	4	6	05
06	58	22	36	*	8	6	*	7	*	*	*	6	06
07	48	*	*	0	*	*	*	7	27	27	*	6	07
08	*	*	25	1	8	*	28	8	*	*	4	5	08
09	*	23	*	1	*	*	33	10	11	17	3	18	09
10	*	*	11	*	5	26	35	6	8	22	6	*	10
11	*	*	13	*	8	*	*	3	3	*	4	*	11
12	*	*	18	*	*	*	23	21	3	24	0	26	12
13	27	*	*	*	12	18	12	*	3	*	0	*	13
14	10	*	*	*	19	*	*	*	*	37	*	25	14
15	*	*	11	6	18	24	*	21	0	31	*	23	15
16	12	*	14	*	19	*	*	*	*	34	0	*	16
17	15	*	7	3	21	*	11	17	*	*	*	13	17
18	17	*	9	3	18	5	6	21	4	*	2	12	18
19	*	*	4	*	*	*	8	13	0	32	0	8	19
20	30	17	1	11	19	*	10	6	0	*	1	8	20
21	*	13	9	14	*	6	6	4	*	20	*	*	21
22	*	14	14	17	*	7	*	3	6	18	1	14	22
23	*	*	7	15	*	*	*	*	7	*	1	12	23
24	42	13	4	*	0	*	*	5	*	*	*	10	24
25	*	*	13	*	*	0	*	7	11	13	8	*	25
26	37	14	11	11	0	1	1	*	12	26	19	10	26
27	24	11	*	6	0	*	*	4	*	*	17	*	27
28	20	23	*	*	0	7	1	*	4	*	8	6	28
29	12	—	11	4	0	14	1	*	1	*	4	1	29
30	*	—	21	4	0	17	0	11	2	*	*	*	30
31	12	—	14	—	1	—	*	18	—	33	—	0	31
MEAN	33,06	15,36	15,62	5,88	8,45	7,71	13,47	9,82	7,89	23,07	5,86	10,70	MEAN

Quarterly Means: First: 21,27 Second: 7,41 Third: 10,26 Fourth: 12,09

Yearly Mean : 12,62

TABLE I-1T:
DAILY INTER-SOL INDICES - 1995.

The Inter-Sol Index (IS) is calculated as $IS = f + gr$
where gr is the number of multi-spot groups
and f is the number of sunspots.

All dates are UT dates.

* = no observation.

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	DATE
01	0	*	23	9	0	*	*	*	*	*	2	*	01
02	*	14	*	10	0	3	7	8	1	*	3	3	02
03	0	16	*	3	*	3	6	*	*	0	*	*	03
04	3	*	32	0	*	9	*	*	*	*	0	1	04
05	0	12	17	0	*	16	7	11	*	*	*	*	05
06	0	12	11	*	1	15	*	*	1	0	1	3	06
07	0	7	13	*	1	*	12	*	0	*	3	3	07
08	*	*	3	*	*	*	15	*	0	*	*	*	08
09	*	*	0	0	5	32	7	0	0	9	*	*	09
10	0	*	*	*	6	*	5	0	0	*	*	2	10
11	1	*	*	7	*	17	*	0	0	28	4	6	11
12	0	*	0	18	19	14	*	0	0	26	1	*	12
13	3	*	0	25	*	4	4	0	0	*	*	*	13
14	5	*	1	*	19	*	8	0	*	*	3	*	14
15	6	*	6	39	*	3	*	*	1	10	7	*	15
16	*	*	8	45	33	*	10	0	3	*	*	*	16
17	*	*	10	*	38	*	7	*	*	14	5	0	17
18	*	12	19	30	35	*	*	0	*	*	5	0	18
19	*	29	14	*	*	5	*	0	*	8	*	*	19
20	*	*	24	13	*	4	4	*	*	6	*	*	20
21	*	*	26	*	*	12	0	*	7	*	*	*	21
22	33	*	27	*	0	11	0	1	8	*	4	*	22
23	*	14	32	*	*	7	*	*	*	*	*	*	23
24	*	10	22	*	0	9	0	19	*	*	0	*	24
25	17	8	19	*	0	7	1	21	7	9	0	3	25
26	*	*	18	0	*	*	3	12	*	8	0	*	26
27	5	17	18	0	*	1	*	*	*	*	*	6	27
28	4	22	*	0	1	*	0	10	0	*	5	4	28
29	7	—	11	0	4	0	*	7	*	0	6	*	29
30	9	—	15	*	3	7	*	*	0	0	7	0	30
31	*	—	11	—	1	—	*	*	—	*	—	0	31
MEAN	5,17	14,42	14,62	11,71	9,22	8,95	5,33	5,24	1,75	9,08	3,11	2,38	MEAN

Quarterly Means: First: 11,54 Second: 9,89 Third: 4,18 Fourth: 4,66
Yearly Mean : 7,81

TABLE I-1:

MONTHLY INTER-SOL INDEX MEANS OF GDSO DATA for 1996.

IS = mean Inter-Sol Index (k neglected; see list of definitions).

n = total number of observations.

w = mean weight.

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	n	w	Q	S	T	C
Jan	3,27	22	0,4425	1,89	2,39	2,57	2,2803
Feb	2,62	8	0,4641	1,50	2,44	2,62	2,1875
Mar	3,84	19	0,4521	1,95	2,29	2,50	2,2456
Apr	1,17	18	0,5039	1,56	2,11	2,42	2,0278
May	3,06	18	0,4251	2,19	2,39	2,56	2,3796
Jun	3,14	14	0,4820	1,82	2,25	2,32	2,1310
Jul	5,08	13	0,5204	1,85	1,92	2,12	1,9615
Aug	7,24	17	0,4696	1,88	2,15	2,44	2,1569
Sep	0,69	13	0,4614	1,92	2,23	2,46	2,2051
Oct	0,00	19	0,4879	1,82	2,21	2,32	2,1140
Nov	10,69	16	0,4883	1,81	2,12	2,31	2,0833
Dec	3,12	17	0,5113	1,76	2,06	2,26	2,0294
Year	3,65	194	0,4744	1,85	2,21	2,41	2,1564

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TABLE I-2:

ROTATIONAL INTER-SOL INDEX MEANS OF GDSO DATA.

Abbreviations as above.

ROT.	start date, UT	IS	n	w	Q	S	T	C
1877	1993/12/14,28	44,92	13	0,4450	1,88	2,42	2,58	2,2949
1878	1994/01/10,61	19,93	15	0,4377	1,87	2,57	2,53	2,3222
1879	1994/02/06,96	20,83	12	0,4652	1,79	2,21	2,58	2,1944
1880	1994/03/06,29	12,65	20	0,4343	1,95	2,52	2,55	2,3417
1881	1994/04/02,60	6,13	15	0,4226	1,90	2,60	2,70	2,4000
1882	1994/04/29,86	10,35	17	0,4462	1,91	2,35	2,56	2,2745
1883	1994/05/27,08	5,47	17	0,4189	2,06	2,56	2,71	2,4412
1884	1994/06/23,28	15,56	16	0,4432	1,84	2,47	2,59	2,3021
1885	1994/07/20,48	7,41	17	0,4630	1,82	2,26	2,47	2,1863
1886	1994/08/16,71	11,61	18	0,4339	1,94	2,44	2,61	2,3333
1887	1994/09/12,96	6,62	16	0,4529	1,84	2,44	2,56	2,2812
1888	1994/10/10,24	21,31	16	0,4451	1,97	2,34	2,56	2,2917
1889	1994/11/06,53	4,59	17	0,4252	2,12	2,50	2,53	2,3824

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TABLE I-2 continued:

ROTATIONAL INTER-SOL INDEX MEANS OF GDSO DATA.

Abbreviations same as previous page.

ROT.	start date, UT	IS	n	w	Q	S	T	C
1890	1994/12/03,84	11,26	19	0,4211	2,00	2,63	2,66	2,4298
1891	1994/12/31,17	4,53	15	0,4489	1,73	2,47	2,67	2,2889
1892	1995/01/27,51	11,55	11	0,4224	2,00	2,45	2,73	2,3939
1893	1995/02/23,85	13,26	23	0,4506	1,76	2,46	2,61	2,2754
1894	1995/03/23,17	16,60	20	0,4468	1,62	2,42	2,75	2,2667
1895	1995/04/19,45	4,92	13	0,4382	2,08	2,42	2,46	2,3205
1896	1995/05/16,69	12,44	18	0,4342	1,83	2,50	2,69	2,3426
1897	1995/06/12,89	6,89	18	0,4331	1,97	2,44	2,61	2,3426
1898	1995/07/10,09	4,36	14	0,4325	2,14	2,43	2,46	2,3452
1899	1995/08/06,30	4,67	15	0,4665	1,77	2,33	2,40	2,1667
1900	1995/09/02,54	1,87	15	0,4655	1,80	2,40	2,40	2,2000
1901	1995/09/29,81	9,83	12	0,4350	1,96	2,50	2,62	2,3611
1902	1995/10/27,10	2,71	14	0,4757	1,71	2,36	2,43	2,1667
1903	1995/11/23,40	2,57	14	0,4213	1,82	2,68	2,71	2,4048
1904	1995/12/20,72	5,62	13	0,4679	1,77	2,27	2,46	2,1667
1905	1996/01/17,06	0,75	16	0,4406	1,88	2,44	2,56	2,2917
1906	1996/02/13,40	1,71	14	0,4497	1,82	2,39	2,57	2,2619
1907	1996/03/11,73	4,33	18	0,4793	1,75	2,14	2,47	2,1204
1908	1996/04/08,03	0,93	14	0,4772	1,79	2,29	2,43	2,1667
1909	1996/05/05,28	3,67	15	0,4332	2,10	2,33	2,57	2,3333
1910	1996/06/01,50	2,92	13	0,4806	1,81	2,27	2,35	2,1410
1911	1996/06/28,70	4,50	10	0,5174	1,80	1,95	2,15	1,9667
1912	1996/07/25,90	8,00	16	0,4866	1,94	2,00	2,31	2,0833
1913	1996/08/22,13	2,58	12	0,4668	1,79	2,25	2,50	2,1806
1914	1996/09/18,39	0,00	14	0,4645	1,96	2,29	2,36	2,2024
1915	1996/10/15,67	0,00	17	0,5020	1,76	2,15	2,24	2,0490
1916	1996/11/11,97	11,31	16	0,4633	1,97	2,22	2,44	2,2083

TABLE I-3:
CORRECTED INTER-SOL INDICES for 1993 - 1996.

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 1993 - 1996. 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 σ computed on the SIDC formula.

$E\sigma$ = annual estimate of standard deviation.

		IS	k	IS_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k	IS_I
1993	Jan	20,38	1,3238	26,98	0,7470	1,1188	1,1188	13	13	20,06
	Feb	43,50	0,9590	41,72	0,2710	0,9325	0,9325	12	12	44,68
	Mar	38,94	1,0686	41,61	0,3236	0,9859	0,9859	17	17	37,67
	Apr	31,73	1,1206	35,56	0,4681	1,1835	1,1835	15	15	37,43
	May	19,53	1,2163	23,76	0,2746	1,3011	1,3011	15	15	32,64
	Jun	22,13	1,3401	29,66	0,3677	1,2275	1,2265	15	14	26,77
	Jul	14,82	1,3647	20,22	0,5101	1,2167	1,2167	11	11	22,77
	Aug	13,48	1,1470	15,46	0,3460	1,0565	1,0565	21	21	14,92
	Sep	9,82	1,0921	10,73	0,8227	0,9534	0,9071	17	14	9,26
	Oct	18,93	1,2308	23,30	0,3584	1,0779	1,0779	15	15	22,43
	Nov	19,59	0,9230	18,08	0,2342	0,9119	0,9119	17	17	17,04
	Dec	30,88	0,9880	30,50	0,2566	0,9251	0,9187	16	15	25,15
1993	Means	23,23	1,1400	26,48	—	1,0555	1,0529	—	—	25,90
		$\sigma = 0,4490$		σ 'SIDC' = 0,4042			$E\sigma = 0,0330$			

TABLE I-3 continued — CORRECTED INTER-SOL INDICES — 1993 - 1996.

	IS	k	IS _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k	IS _I
1994 Jan	33,06	1,1932	39,45	0,3906	1,1299	1,1299	17	17	37,29
Feb	15,36	1,0648	16,36	0,3492	1,0522	1,0522	11	11	15,77
Mar	15,52	1,0462	16,35	0,4823	0,9819	0,9819	24	24	15,89
Apr	5,88	1,6233	9,55	0,7559	1,2881	1,2820	17	15	7,23
May	8,45	1,2631	10,67	0,8912	1,0520	1,0118	20	14	10,26
Jun	7,71	1,3281	10,23	0,5671	1,3080	1,1407	17	11	12,85
Jul	13,47	1,4369	19,36	0,6146	1,1817	1,1630	17	16	15,57
Aug	9,82	1,3062	12,82	0,5229	1,1885	1,1885	22	22	11,76
Sep	7,89	1,3519	10,67	0,4023	1,2515	1,2217	19	16	12,46
Oct	23,07	0,9533	21,99	0,2082	0,9421	0,9421	15	15	20,76
Nov	5,86	1,5085	8,85	0,7388	1,3947	1,3537	22	18	6,88
Dec	10,70	1,2676	13,56	1,3568	0,9607	0,9521	20	19	10,19
1994 Means	12,62	1,2760	16,11	—	1,1059	1,0897	—	—	14,80
	$\sigma = 0,6915$		σ 'SIDC' = 0,6166				$E\sigma = 0,0487$		
1995 Jan	5,17	1,3088	6,76	0,4733	1,3625	1,2478	18	11	11,80
Feb	14,42	1,1946	17,22	0,2551	1,1364	1,1364	12	12	15,18
Mar	14,62	1,2882	18,83	0,7080	1,1232	1,1000	26	23	16,30
Apr	11,71	1,0495	12,29	0,4663	0,9385	0,9286	17	10	9,32
May	9,22	1,3068	12,05	0,8244	1,0906	1,0739	18	13	9,49
Jun	8,95	1,2847	11,50	0,8707	1,1135	1,0963	20	19	9,15
Jul	5,33	1,3028	6,95	0,5404	1,4116	1,3126	18	14	7,35
Aug	5,24	1,1582	6,06	0,3159	1,2978	1,0674	17	8	7,20
Sep	1,75	1,5140	2,65	0,4376	1,8443	1,5300	16	7	4,21
Oct	9,08	1,1088	10,06	0,2373	1,1173	1,0899	13	9	9,56
Nov	3,11	1,3299	4,14	1,2669	1,1505	1,1346	18	14	3,04
Dec	2,38	1,3684	3,26	0,7397	1,1942	1,1548	13	9	3,14
1995 Means	7,81	1,2703	9,92	—	1,1525	1,1080	—	—	8,81
	$\sigma = 0,6906$		σ 'SIDC' = 0,6454				$E\sigma = 0,0579$		
1996 Jan	3,27	1,3135	4,30	1,2004	1,2839	1,2764	22	13	5,51
Feb	2,62	1,7188	4,51	2,4604	0,9176	0,8133	8	4	1,77
Mar	3,84						19		
Apr	1,17						18		
May	3,06						18		
Jun	3,14						14		
Jul	5,08						13		
Aug	7,24						17		
Sep	0,69						13		
Oct	0,00						19		
Nov	10,69						16		
Dec	3,12						17		
1996 Means	3,65			—			—	—	
	$\sigma =$		σ 'SIDC' =				$E\sigma =$		

TABLE I-4:

CORRECTED INTER-SOL INDICES for Rotations 1870 - 1916.

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} .

$$IS_{GD} = IS \times k.$$

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	IS	k	IS_{GD}	σ	$I/GDSO$	$I/GDSO_A$	n	n_k
1870	1993/06/06,48	20,07	1,3073	26,23	0,3806	1,1592	1,1581	15	14
1871	1993/07/03,67	13,10	1,4054	18,41	0,5185	1,2802	1,2802	10	10
1872	1993/07/30,88	13,83	1,1607	16,06	0,3727	1,0549	1,0549	18	18
1873	1993/08/27,12	4,87	1,1513	5,60	0,8815	1,0514	0,9455	15	12
1874	1993/09/23,38	25,42	1,0700	27,20	0,2885	1,0034	1,0034	12	12
1875	1993/10/20,66	11,75	1,0719	12,60	0,3854	0,9869	0,9869	16	16
1876	1993/11/16,97	27,41	0,9523	26,11	0,2179	0,9099	0,9032	17	16
1877	1993/12/14,28	44,92	1,0032	45,06	0,2317	0,9429	0,9429	13	13
1878	1994/01/10,61	19,93	1,2577	25,07	0,3845	1,3355	1,3355	15	15
1879	1994/02/06,96	20,83	1,0499	21,87	0,3467	1,0160	1,0160	12	12
1880	1994/03/06,29	12,65	1,0506	13,29	0,5238	0,9765	0,9765	20	20
1881	1994/04/02,60	6,13	1,6866	10,34	0,7961	1,2947	1,2880	15	13
1882	1994/04/29,86	10,35	1,0539	10,91	0,1805	1,0074	1,0022	17	15
1883	1994/05/27,08	5,47	1,6327	8,93	1,1750	1,4256	1,1939	17	8
1884	1994/06/23,28	15,56	1,2778	19,89	0,4075	1,1559	1,1309	16	15
1885	1994/07/20,48	7,41	1,4696	10,89	0,7776	1,2014	1,1673	17	16
1886	1994/08/16,71	11,61	1,3634	15,83	0,3443	1,2536	1,2536	18	18
1887	1994/09/12,96	6,62	1,2228	8,10	0,4727	1,1081	1,0660	16	13
1888	1994/10/10,24	21,31	1,2469	26,57	0,5525	1,0438	1,0438	16	16
1889	1994/11/06,53	4,59	1,3530	6,21	0,7614	1,2212	1,1535	17	13
1890	1994/12/03,84	11,26	1,2676	14,28	1,3568	0,9521	0,9521	19	19
1891	1994/12/31,17	4,53	1,2869	5,83	0,5839	1,3874	1,2035	15	7
1892	1995/01/27,51	11,55	1,2936	14,93	0,2836	1,2037	1,2037	11	11
1893	1995/02/23,85	13,26	1,3621	18,06	0,7187	1,1779	1,1490	23	20
1894	1995/03/23,17	16,60	1,0082	16,74	0,3962	0,9523	0,9464	20	17
1895	1995/04/19,45	4,92	1,0641	5,24	0,4960	0,8972	0,8962	13	7
1896	1995/05/16,69	12,44	1,2374	15,40	0,7924	1,0995	1,0874	18	15
1897	1995/06/12,89	6,89	1,4438	9,95	0,8543	1,3028	1,2780	18	17
1898	1995/07/10,09	4,36	1,2416	5,41	0,5839	1,4079	1,2521	14	10
1899	1995/08/06,30	4,67	1,1948	5,58	0,3327	1,3756	1,0827	15	6

TABLE I-4 continued:

CORRECTED **INTER-SOL INDEX** VALUES for Rotations 1870 - 1916.

ROTA- TION	START DATE, UT	IS	k	IS _{GD}	σ	I/GDSO	I/GDSO _A	n	n _k
1900	1995/09/02,54	1,87	1,5140	2,83	0,4376	1,8104	1,5300	15	7
1901	1995/09/29,81	9,83	1,1088	10,90	0,2373	1,1155	1,0899	12	9
1902	1995/10/27,10	2,71	1,3795	3,74	1,4389	1,1637	1,1229	14	9
1903	1995/11/23,40	2,57	1,4688	3,78	0,6532	1,2606	1,2467	14	9
1904	1995/12/20,72	5,62	0,9524	5,35	0,4109	1,2108	1,1941	13	7
1905	1996/01/17,06	0,75	1,4389	1,08	1,4193	1,4217	1,3767	16	9
1906	1996/02/13,40	1,71						14	
1907	1996/03/11,73	4,33						18	
1908	1996/04/08,03	0,93						14	
1909	1996/05/05,28	3,67						15	
1910	1996/06/01,50	2,92						13	
1911	1996/06/28,70	4,50						10	
1912	1996/07/25,90	8,00						16	
1913	1996/08/22,13	2,58						12	
1914	1996/09/18,39	0,00						14	
1915	1996/10/15,67	0,00						17	
1916	1996/11/11,97	11,31						16	

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TABLE I-5:
SMOOTHED INTER-SOL INDICES for 1995 - 1996.

The following are smoothed Inter-Sol Indices in three different systems. See page xi 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})
1994	Jan	33,06	22,89	16,08	18,46	39,45	18,37	20,55
	Feb	15,36	19,32	15,87	17,33	16,36	18,23	19,55
	Mar	15,52	15,49	15,64	15,85	16,35	18,11	18,25
	Apr	5,88	11,78	15,73	14,43	9,55	18,06	16,95
	May	8,45	9,87	15,33	13,18	10,67	17,62	15,81
	Jun	7,71	9,47	13,92	12,05	10,23	16,53	14,82
	Jul	13,47	10,51	11,91	11,16	19,36	14,46	13,90
	Aug	9,82	11,20	10,71	10,77	12,82	13,13	13,41
	Sep	7,89	11,71	10,63	10,90	10,67	13,27	13,47
	Oct	23,07	12,08	10,83	11,15	21,99	13,49	13,63
	Nov	5,86	10,94	11,11	11,24	8,85	13,66	13,64
	Dec	10,70	10,84	11,19	11,16	13,56	13,77	13,55
1995	Jan	5,17	10,73	10,90	11,02	6,76	13,31	13,35
	Feb	14,42	11,06	10,37	10,80	17,22	12,51	13,09
	Mar	14,62	11,58	9,92	10,41	18,38	11,89	12,65
	Apr	11,71	10,97	9,09	9,69	12,29	11,06	11,86
	May	9,22	9,90	8,39	8,94	12,05	10,37	11,01
	Jun	8,95	8,11	7,93	8,18	11,50	9,74	10,06
	Jul	5,33	6,66	7,50	7,31	6,95	9,21	8,99
	Aug	5,24	5,66	6,93	6,39	6,06	8,58	7,89
	Sep	1,75	4,89	5,99	5,52	2,65	—	—
	Oct	9,08	4,67	5,10	4,82	10,06	—	—
	Nov	3,11	4,05	4,41	4,22	4,14	—	—
	Dec	2,38	3,61	3,91	3,74	3,26	—	—
1996	Jan	3,27	3,27	3,66	3,46	4,30	—	—
	Feb	2,62	2,82	3,73	3,37	4,51	—	—
	Mar	3,84	2,81	3,77	3,34	—	—	—
	Apr	1,17	2,83	3,35	3,22	—	—	—
	May	3,06	3,30	3,28	3,27	—	—	—
	Jun	3,14	3,64	3,63	3,53	—	—	—
	Jul	5,08	3,76	3,60	3,70	—	—	—
	Aug	7,24	4,14	3,55	3,76	—	—	—
	Sep	0,69	3,89	3,58	3,76	—	—	—
	Oct	0,00	3,85	—	—	—	—	—
	Nov	10,69	4,20	—	—	—	—	—
	Dec	3,12	3,79	—	—	—	—	—

TABLE I-6:
 QUARTERLY & YEARLY **INTER-SOL INDEX** MEANS for 1992 - 1996.

YEAR/ QUARTER	IS	IS(S ^{HBm})	IS(S ^W)	IS(S ^{B13})	IS _{GD}
1992 / 1	78,41	70,51	58,88	63,20	—
2	33,65	39,84	49,63	45,93	—
3	26,42	30,17	37,36	34,06	—
4	38,89	33,91	31,80	32,64	—
1992	41,37	43,61	44,42	43,96	—
1993 / 1	34,50	33,10	29,19	30,97	38,51
2	24,47	25,08	24,86	24,80	29,91
3	12,51	16,31	23,03	20,36	14,79
4	23,15	21,22	17,96	19,20	24,12
1993	23,23	23,93	23,76	23,84	26,48
1994 / 1	21,27	19,23	15,86	17,21	23,36
2	7,41	10,37	14,99	13,22	10,49
3	10,26	11,14	11,08	10,94	13,94
4	12,09	11,29	11,04	11,18	15,23
1994	12,62	13,01	13,24	13,14	16,11
1995 / 1	11,54	11,12	10,40	10,74	14,64
2	9,89	9,66	8,47	8,94	12,22
3	4,18	5,74	6,81	6,41	5,49
4	4,66	4,11	4,47	4,26	5,96
1995	7,81	7,66	7,54	7,59	9,92
1996 / 1	3,39	2,96	3,72	3,39	—
2	2,40	3,26	3,42	3,34	—
3	4,60	3,93	3,57	3,74	—
4	4,31	3,95	—	—	—
1996	3,65	3,53	—	—	—

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.

MISCELLANEOUS DATA.

TABLE M7:

REGION CLASSIFICATION PERCENTAGES 1994 - 1996.

		A	B	C	D	E	F	G	H	J	Σg	NOBS
1994	Jan	12,5	7,1	14,3	28,6	7,1	25,0	0,0	0,0	5,4	56	17
	Feb	26,2	4,8	26,2	23,8	0,0	0,0	0,0	0,0	19,0	42	11
	Mar	14,5	17,1	35,5	21,1	1,3	0,0	0,0	0,0	10,5	76	24
	Apr	15,2	18,2	30,3	9,1	0,0	0,0	0,0	15,2	12,1	33	17
	May	27,8	25,0	25,0	22,2	0,0	0,0	0,0	0,0	0,0	36	20
	Jun	16,7	12,5	41,7	16,7	0,0	0,0	0,0	4,2	8,3	24	17
	Jul	21,7	17,4	34,8	15,2	0,0	0,0	0,0	4,3	6,5	46	17
	Aug	15,6	11,1	31,1	13,3	8,9	0,0	0,0	6,7	13,3	45	22
	Sep	13,2	5,3	26,3	10,5	5,3	0,0	0,0	13,2	26,3	38	19
	Oct	9,3	7,4	38,9	9,3	11,1	0,0	0,0	7,4	16,7	54	15
	Nov	29,7	2,7	27,0	8,1	5,4	0,0	0,0	8,1	18,9	37	22
	Dec	25,0	13,9	27,8	8,3	2,8	8,3	0,0	5,6	8,3	36	20
1994		18,2	11,9	29,8	16,3	3,8	3,3	0,0	4,8	12,0	523	221
1995	Jan	11,1	22,2	50,0	11,1	0,0	0,0	0,0	0,0	5,6	18	18
	Feb	21,2	18,2	30,3	15,2	3,0	0,0	0,0	0,0	12,1	33	12
	Mar	15,8	12,3	35,1	29,8	0,0	0,0	0,0	0,0	7,0	57	26
	Apr	15,8	15,8	31,6	21,1	15,8	0,0	0,0	0,0	0,0	19	17
	May	10,5	15,8	15,8	42,1	0,0	0,0	0,0	10,5	5,3	19	18
	Jun	16,7	16,7	41,7	12,5	8,3	0,0	0,0	0,0	4,2	24	20
	Jul	10,0	20,0	40,0	15,0	0,0	0,0	0,0	10,0	5,0	20	18
	Aug	12,5	12,5	37,5	25,0	0,0	0,0	0,0	0,0	12,5	16	17
	Sep	18,2	18,2	27,3	0,0	0,0	0,0	0,0	0,0	36,4	11	16
	Oct	26,9	7,7	42,3	11,5	0,0	0,0	0,0	3,8	7,7	26	13
	Nov	25,0	10,0	40,0	0,0	0,0	0,0	0,0	10,0	15,0	20	18
	Dec	30,8	15,4	30,8	7,7	0,0	0,0	0,0	0,0	15,4	13	13
1995		17,8	14,9	35,5	18,1	2,2	0,0	0,0	2,5	9,1	276	206
1996	Jan	58,8	5,9	29,4	5,9	0,0	0,0	0,0	0,0	0,0	17	22
	Feb	50,0	33,3	16,7	0,0	0,0	0,0	0,0	0,0	0,0	6	8
	Mar	7,7	23,1	53,8	15,4	0,0	0,0	0,0	0,0	0,0	13	19
	Apr	33,3	16,7	16,7	33,3	0,0	0,0	0,0	0,0	0,0	6	18
	May	0,0	25,0	12,5	62,5	0,0	0,0	0,0	0,0	0,0	8	18
	Jun	25,0	16,7	33,3	8,3	0,0	0,0	0,0	0,0	16,7	12	14
	Jul	27,3	18,2	9,1	45,5	0,0	0,0	0,0	0,0	0,0	11	13
	Aug	29,2	25,0	25,0	16,7	0,0	0,0	0,0	0,0	4,2	24	17
	Sep	33,3	66,7	0,0	0,0	0,0	0,0	0,0	0,0	0,0	3	13
	Oct	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0	19
	Nov	14,3	21,4	14,3	35,7	14,3	0,0	0,0	0,0	0,0	14	16
	Dec	0,0	14,3	42,9	14,3	0,0	0,0	0,0	0,0	28,6	14	17
1996		25,0	20,3	26,6	21,1	1,6	0,0	0,0	0,0	5,5	128	194

MISCELLANEOUS DATA continued.

TABLE M8:
REGION CLASSIFICATION MEANS 1994 - 1996.

YEAR	MONTH	A	B	C	D	E	F	G	H	J	Σg	NOBS
1994	Jan	0,41	0,24	0,47	0,94	0,24	0,82	0,00	0,00	0,18	56	17
	Feb	1,00	0,18	1,00	0,91	0,00	0,00	0,00	0,00	0,73	42	11
	Mar	0,46	0,54	1,12	0,67	0,04	0,00	0,00	0,00	0,33	76	24
	Apr	0,29	0,35	0,59	0,18	0,00	0,00	0,00	0,29	0,24	33	17
	May	0,50	0,45	0,45	0,40	0,00	0,00	0,00	0,00	0,00	36	20
	Jun	0,24	0,18	0,59	0,24	0,00	0,00	0,00	0,06	0,12	24	17
	Jul	0,59	0,47	0,94	0,41	0,00	0,00	0,00	0,12	0,18	46	17
	Aug	0,32	0,23	0,64	0,27	0,18	0,00	0,00	0,14	0,27	45	22
	Sep	0,26	0,11	0,53	0,21	0,11	0,00	0,00	0,26	0,53	38	19
	Oct	0,33	0,27	1,40	0,33	0,40	0,00	0,00	0,27	0,60	54	15
	Nov	0,50	0,05	0,45	0,14	0,09	0,00	0,00	0,14	0,32	37	22
	Dec	0,45	0,25	0,50	0,15	0,05	0,15	0,00	0,10	0,15	36	20
1994		0,43	0,28	0,71	0,38	0,09	0,08	0,00	0,11	0,29	523	221
1995	Jan	0,11	0,22	0,50	0,11	0,00	0,00	0,00	0,00	0,06	18	18
	Feb	0,58	0,50	0,83	0,42	0,08	0,00	0,00	0,00	0,33	33	12
	Mar	0,35	0,27	0,77	0,65	0,00	0,00	0,00	0,00	0,15	57	26
	Apr	0,18	0,18	0,35	0,24	0,18	0,00	0,00	0,00	0,00	19	17
	May	0,11	0,17	0,17	0,44	0,00	0,00	0,00	0,11	0,06	19	18
	Jun	0,20	0,20	0,50	0,15	0,10	0,00	0,00	0,00	0,05	24	20
	Jul	0,11	0,22	0,44	0,17	0,00	0,00	0,00	0,11	0,06	20	18
	Aug	0,12	0,12	0,35	0,24	0,00	0,00	0,00	0,00	0,12	16	17
	Sep	0,12	0,12	0,19	0,00	0,00	0,00	0,00	0,00	0,25	11	16
	Oct	0,54	0,15	0,85	0,23	0,00	0,00	0,00	0,08	0,15	26	13
	Nov	0,28	0,11	0,44	0,00	0,00	0,00	0,00	0,11	0,17	20	18
	Dec	0,31	0,15	0,31	0,08	0,00	0,00	0,00	0,00	0,15	13	13
1995		0,24	0,20	0,48	0,24	0,03	0,00	0,00	0,03	0,12	276	206
1996	Jan	0,45	0,05	0,23	0,05	0,00	0,00	0,00	0,00	0,00	17	22
	Feb	0,38	0,25	0,12	0,00	0,00	0,00	0,00	0,00	0,00	6	8
	Mar	0,05	0,16	0,37	0,11	0,00	0,00	0,00	0,00	0,00	13	19
	Apr	0,11	0,06	0,06	0,11	0,00	0,00	0,00	0,00	0,00	6	18
	May	0,00	0,11	0,06	0,28	0,00	0,00	0,00	0,00	0,00	8	18
	Jun	0,21	0,14	0,29	0,07	0,00	0,00	0,00	0,00	0,14	12	14
	Jul	0,23	0,15	0,08	0,38	0,00	0,00	0,00	0,00	0,00	11	13
	Aug	0,41	0,35	0,35	0,24	0,00	0,00	0,00	0,00	0,06	24	17
	Sep	0,08	0,15	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3	13
	Oct	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0	19
	Nov	0,12	0,19	0,12	0,31	0,12	0,00	0,00	0,00	0,00	14	16
	Dec	0,00	0,12	0,35	0,12	0,00	0,00	0,00	0,00	0,24	14	17
1996		0,16	0,13	0,18	0,14	0,01	0,00	0,00	0,00	0,04	128	194

MISCELLANEOUS DATA continued.

TABLE M9A:
PENUMBRA/GROUP MEANS 1995 - 1996.

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 penumbrae per group per observation.

The $\overline{p/g}$ data are obtained by dividing the total number of penumbrae by the total number of groups within the period concerned, ie. the number of penumbrae 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	$\overline{p/g(S^W)}$	$\overline{p/g(S^{B13})}$	$\overline{p/g}$	$\overline{p/g(S^W)}$	$\overline{p/g(S^{B13})}$	n	OWS
1995	Jan	0,9015	0,7461	1,1293	1,1398	0,9444	1,1122	1,1071	18	11
	Feb	0,9653	0,6004	1,1232	1,1481	0,9091	1,1104	1,1231	12	12
	Mar	1,2703	0,7656	1,0985	1,1471	1,1404	1,0901	1,1329	26	23
	Apr	1,6500	1,4539	1,0630	1,1284	1,6316	1,0577	1,1293	17	10
	May	1,2692	1,1294	1,0377	1,0912	1,5263	1,0358	1,1060	18	13
	Jun	0,9825	0,8201	1,0048	1,0376	0,9583	1,0051	1,0578	20	19
	Jul	0,8571	0,7449	0,9556	0,9738	0,8500	0,9623	0,9956	18	14
	Aug	0,9167	0,4714	0,8953	0,8987	1,0000	0,9117	0,9229	17	8
	Sep	0,5952	0,4499	0,8449	0,8208	0,6364	0,8685	0,8447	16	7
	Oct	0,8889	0,5086	0,7954	0,7530	0,9231	0,8230	0,7718	13	9
	Nov	0,7143	0,4308	0,7710	0,7110	0,6500	0,7886	0,7208	18	14
	Dec	0,7593	0,6298	0,7714	0,6940	0,6154	0,7754	0,6984	13	9
1995		1,0115	0,8084	—	—	1,0145	—	—	206	149
1996	Jan	0,2949	0,4914	0,7807	0,6967	0,4706	0,7808	0,6998	22	13
	Feb	0,1250	0,2500	0,7928	0,7251	0,1667	0,7863	0,7228	8	4
	Mar	0,9000	0,5164	0,7617	0,7595	0,8462	0,7476	0,7498	19	10
	Apr	0,8333	0,9832	0,6998	0,7770	0,8333	0,6826	0,7624	18	6
	May	1,5000	1,0690	0,7205	0,7999	1,5000	0,7004	0,7807	18	8
	Jun	0,7619	0,6516	0,7952	0,8323	0,6667	0,7757	0,8077	14	7
	Jul	1,3000	1,4181	0,8208	0,8463	1,2727	0,7959	0,8146	13	10
	Aug	0,7647	0,7314	0,8727	0,8489	0,7083	0,8485	0,8157	17	17
	Sep	0,0000	0,0000	0,9070	0,8435	0,0000	0,8924	0,8160	13	2
	Oct	—	—	—	—	—	—	—	19	0
	Nov	2,1000	2,1187	—	—	2,0000	—	—	16	10
	Dec	1,1667	0,7500	—	—	1,0714	—	—	17	14
1996		0,9705	1,1273	—	—	0,9297	—	—	194	96

MISCELLANEOUS DATA continued.

TABLE M9B:
SUNSPOT/GROUP MEANS 1995 - 1996.

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 penumbrae per group per observation.

The f/g data are obtained by dividing the total number of penumbrae by the total number of groups within the period concerned, ie. the number of penumbrae per group, the true arithmetical mean.

σ values are sample standard deviations.

Σg = number of regions observed.

n = number of observations.

YEAR	MTH	$\overline{f/g}$	σ	$\overline{f/g(S^W)}$	$\overline{f/g(S^{B13})}$	$\overline{f/g}$	$\overline{f/g(S^W)}$	$\overline{f/g(S^{B13})}$	Σg	n	OWS
1995	Jan	3,7273	2,1836	5,5027	5,4493	4,3333	5,3984	5,3128	18	18	11
	Feb	4,6042	1,7200	5,4968	5,6696	4,5455	5,4152	5,5872	33	12	12
	Mar	5,8703	2,5256	5,4614	5,8568	5,8947	5,3882	5,8150	57	26	23
	Apr	10,2500	7,2005	5,3347	5,8935	9,6316	5,2597	5,9008	19	17	10
	May	6,3205	6,3214	5,2001	5,7465	8,0000	5,1563	5,8041	19	18	13
	Jun	7,1316	6,9259	4,9589	5,4233	6,6667	4,9842	5,4961	24	20	19
	Jul	4,1786	2,2838	4,7311	5,0014	4,0500	4,8200	5,0700	20	18	14
	Aug	4,9167	2,3060	4,6081	4,5413	4,8125	4,7343	4,6209	16	17	8
	Sep	1,8333	0,8333	4,4862	4,0818	2,0909	4,6198	4,1767	11	16	7
	Oct	3,8056	1,4554	4,1326	3,6529	3,9231	4,2865	3,7576	26	13	9
	Nov	2,6667	1,6225	3,8050	3,3597	2,3000	3,9147	3,4588	20	18	14
	Dec	2,0185	1,1915	3,6431	3,2432	1,8462	3,6768	3,3456	13	13	9
1995		5,0460	4,4052	—	—	5,1159	—	—	276	206	149
1996	Jan	2,6282	2,8949	3,5568	3,2754	3,8235	3,5785	3,3875	17	22	13
	Feb	2,7500	1,4434	3,6040	3,4442	3,0000	3,6129	3,5283	6	8	4
	Mar	4,8000	2,1108	3,6009	3,6363	4,6923	3,6065	3,6755	13	19	10
	Apr	2,8333	2,2286	3,4493	3,7428	2,8333	3,4532	3,7421	6	18	6
	May	5,8750	3,3568	3,6859	3,9129	5,8750	3,6671	3,8663	8	18	8
	Jun	3,6905	4,6671	4,1381	4,1489	3,0833	4,0955	4,0485	12	14	7
	Jul	5,5500	4,6812	4,2159	4,2589	5,2727	4,1174	4,1073	11	13	10
	Aug	4,6765	3,7622	4,3095	4,2959	4,4167	4,1800	4,1289	24	17	17
	Sep	2,0000	1,4142	4,3624	4,2996	2,3333	4,2463	4,1476	3	13	2
	Oct	—	—	—	—	—	—	—	0	19	0
	Nov	12,1500	11,9188	—	—	11,3571	—	—	14	16	10
	Dec	3,3889	1,9650	—	—	3,0714	—	—	14	17	9
1996		4,9375	5,4421	—	—	4,8281	—	—	128	194	96

MISCELLANEOUS DATA continued.

TABLE M9C:

GROUP COMPLEXITY INDICES 1995 - 1996.

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.

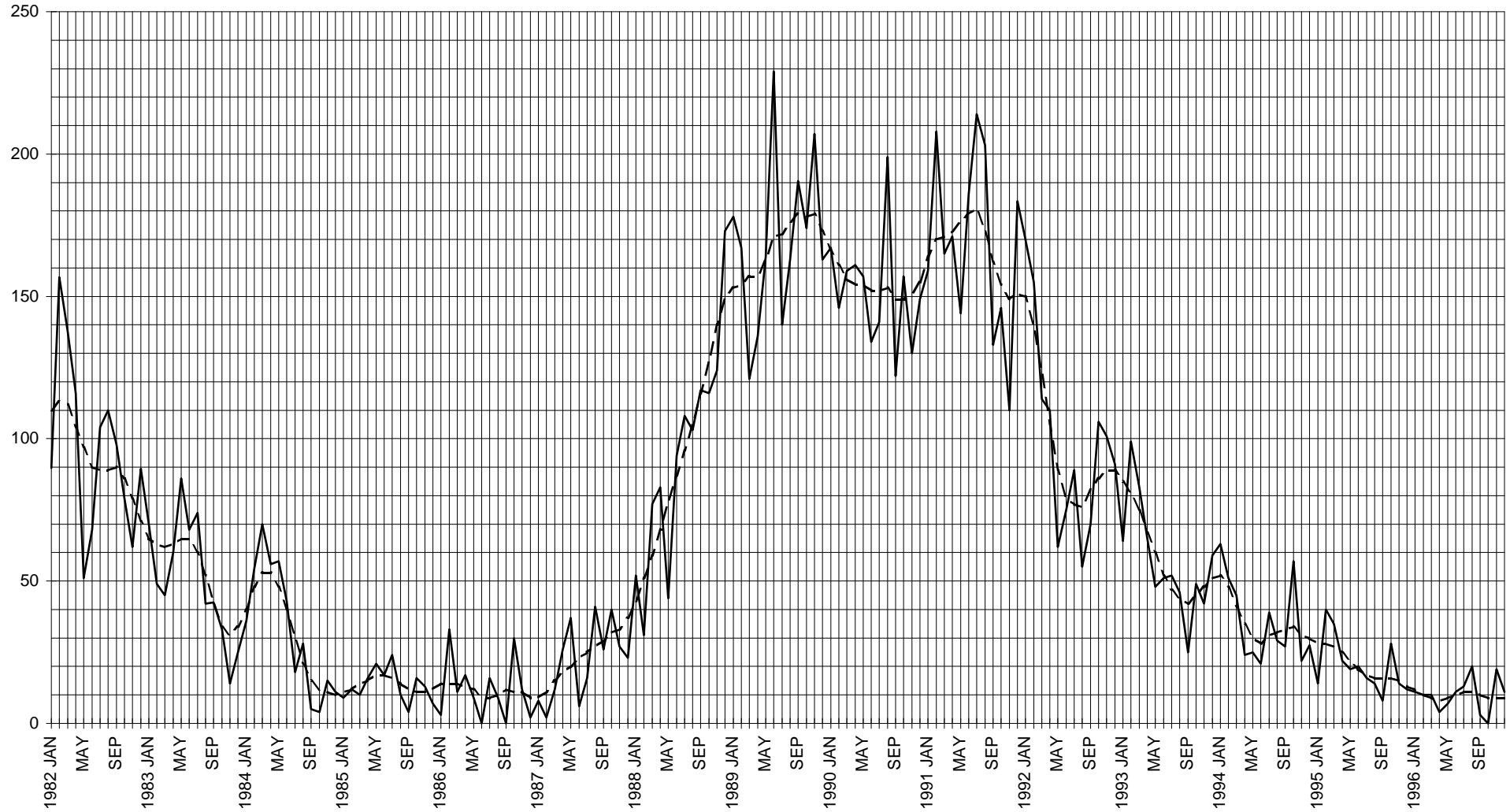
Σg = number of regions observed.

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
1995	Jan	0,9444	4,3333	5,2778	6,5106	6,4199	18	18	11
	Feb	0,9091	4,5455	5,4545	6,5256	6,7104	33	12	12
	Mar	1,1404	5,8947	7,0351	6,4783	6,9479	57	26	23
	Apr	1,6316	9,6316	11,2632	6,3174	7,0301	19	17	10
	May	1,5263	8,0000	9,5263	9,1922	6,9100	19	18	13
	Jun	0,9583	6,6667	7,6250	5,9892	6,5539	24	20	19
	Jul	0,8500	4,0500	4,9000	5,7823	6,0656	20	18	14
	Aug	1,0000	4,8125	5,8125	5,6460	5,5438	16	17	8
	Sep	0,6364	2,0909	2,7273	5,4883	5,0214	11	16	7
	Oct	0,9231	3,9231	4,8462	5,1094	4,5294	26	13	9
	Nov	0,6500	2,3000	2,9500	4,7033	4,1796	20	18	14
	Dec	0,6154	1,8462	2,4615	4,4522	4,0440	13	13	9
1995		1,0145	5,1159	6,1304	—	—	276	206	149
1996	Jan	0,4706	3,8235	4,2941	4,3593	4,0873	17	22	13
	Feb	0,1667	3,0000	3,1667	4,3992	4,2512	6	8	4
	Mar	0,8462	4,6923	5,5385	4,3541	4,4253	13	19	10
	Apr	0,8333	2,8333	3,6667	4,1358	4,5045	6	18	6
	May	1,5000	5,8750	7,3750	4,3675	4,6471	8	18	8
	Jun	0,6667	3,0833	3,7500	4,8712	4,8562	12	14	7
	Jul	1,2727	5,2727	6,5455	4,9134	4,9219	11	13	10
	Aug	0,7083	4,4167	5,1250	5,0285	4,9447	24	17	17
	Sep	0,0000	2,3333	2,3333	5,1387	4,9636	3	13	2
	Oct	—	—	—	—	—	0	19	0
	Nov	2,0000	11,3571	13,3571	—	—	14	16	10
	Dec	1,0714	3,0714	4,1429	—	—	14	17	9
1996		0,9297	4,8281	5,7578	—	—	128	194	96

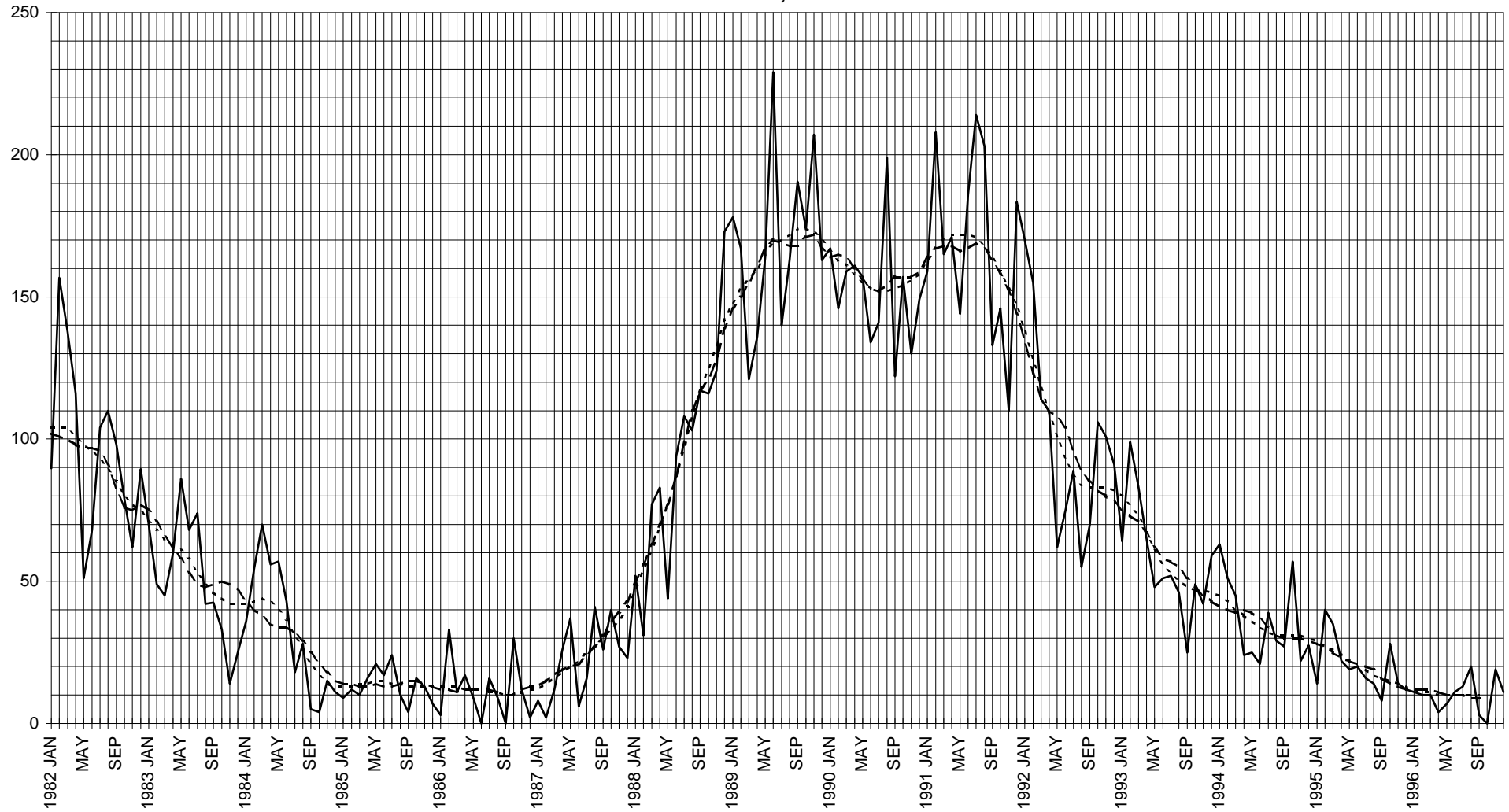
OBSERVED and SMOOTHED GDSO WOLF NUMBERS (WN and WN[SHBm]) 1982-1996
SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE W5



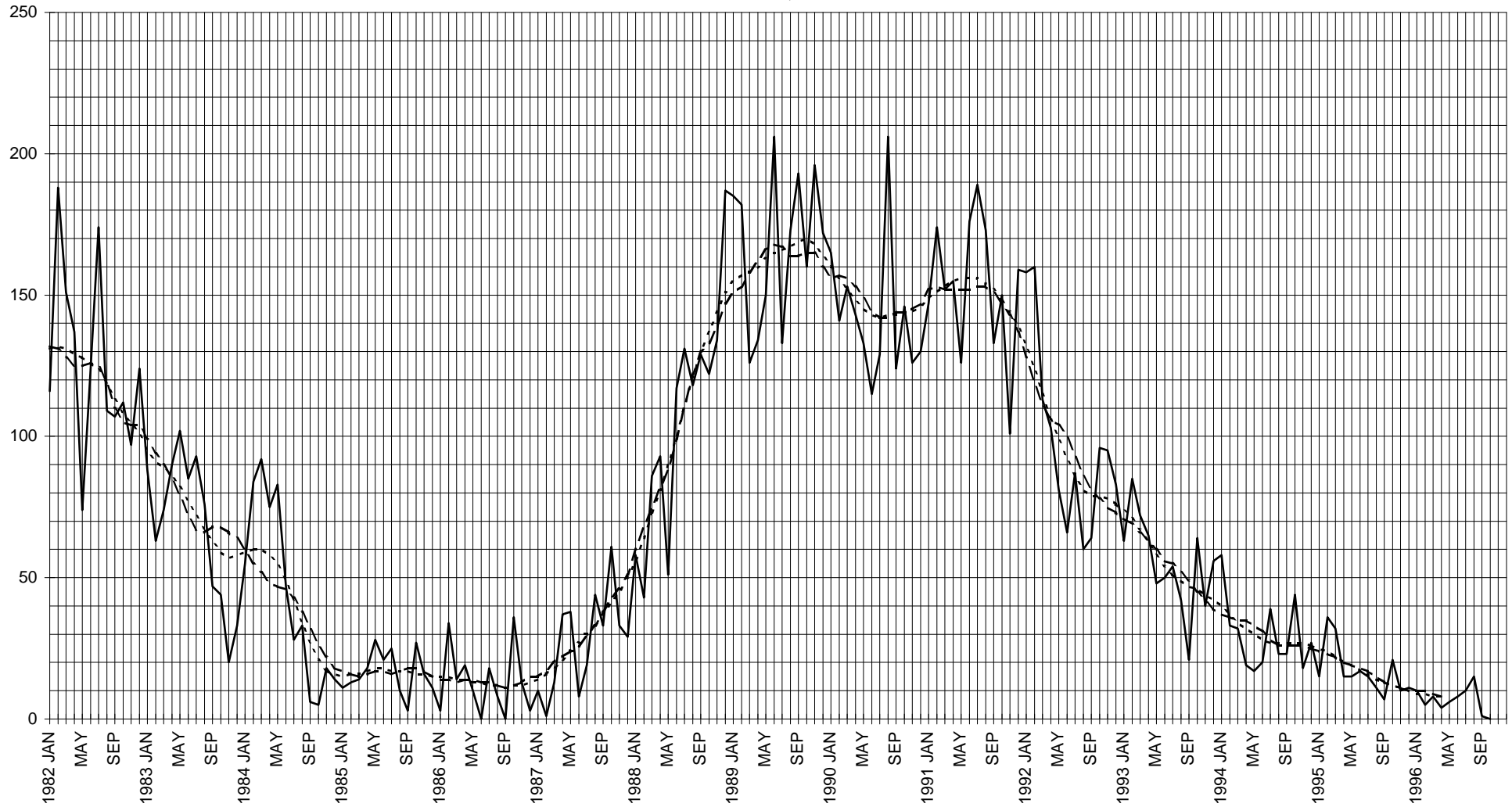
OBSERVED and SMOOTHED GDSO WOLF NUMBERS (WN, WN[SW] and WN[SB13]) 1982-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE W5



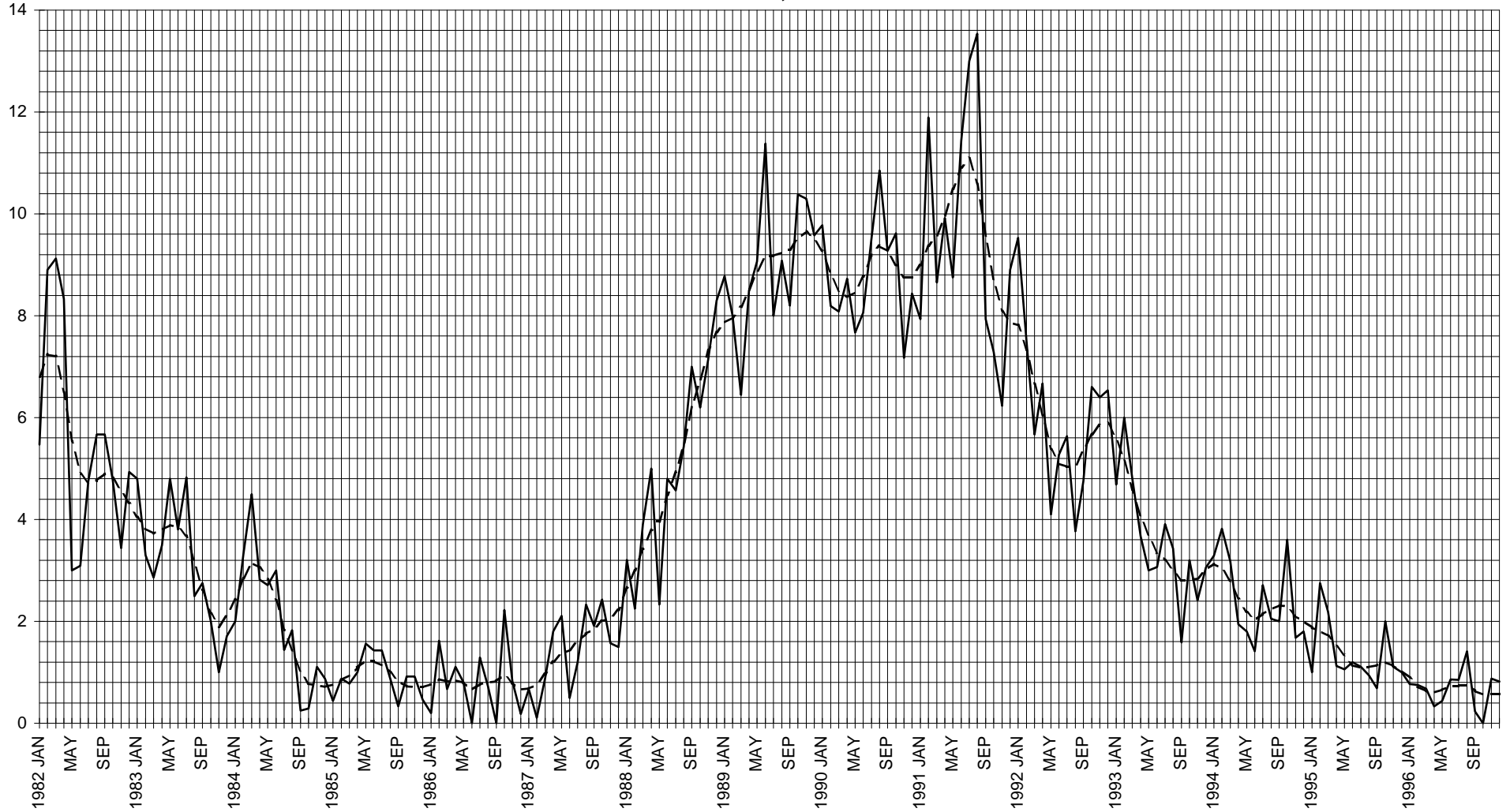
CORRECTED and SMOOTHED GDSO WOLF NUMBERS (RGD, RGD[SW] and RGD[SB13]) 1982-1996
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE W5



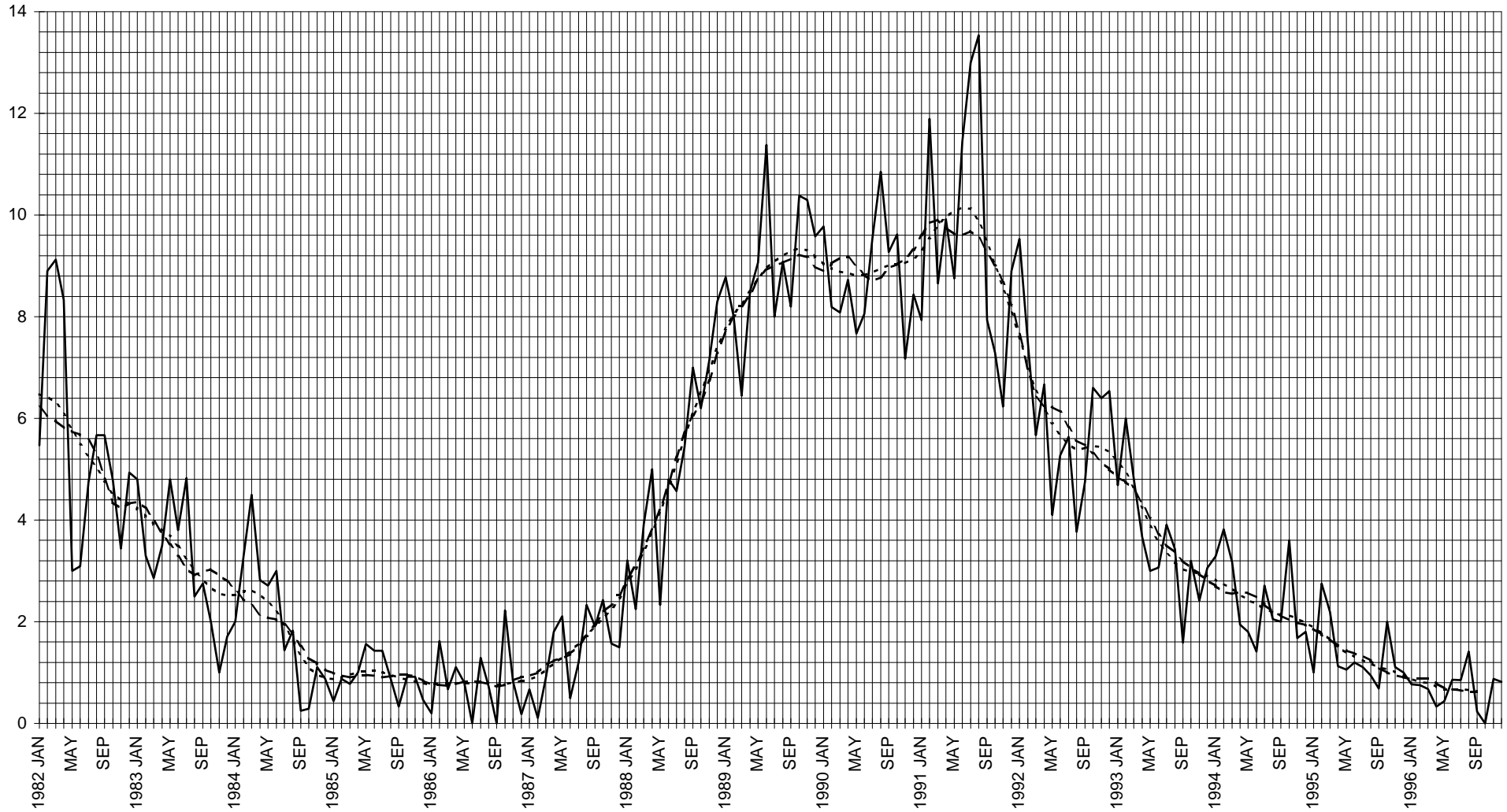
OBSERVED and SMOOTHED GDSO ACTIVE AREAS (g and g[SHBm]) 1982-1996

SOLID = OBSERVED, DASHED = SHBm

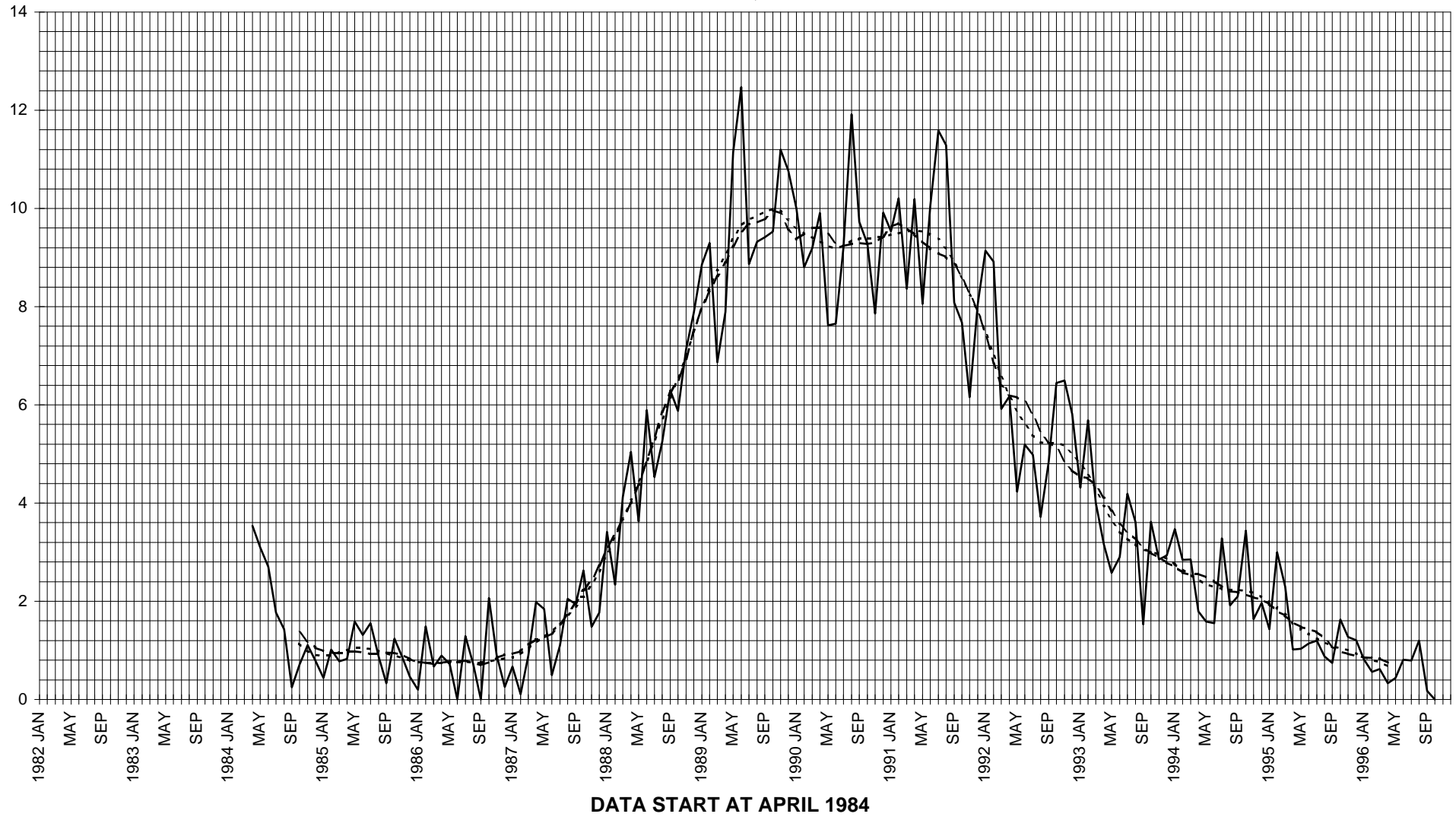
FOR EXACT VALUES, SEE TABLE G5



OBSERVED and SMOOTHED GDSO ACTIVE AREAS (g, g[SW] and g[SB13]) 1982-1996
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE G5



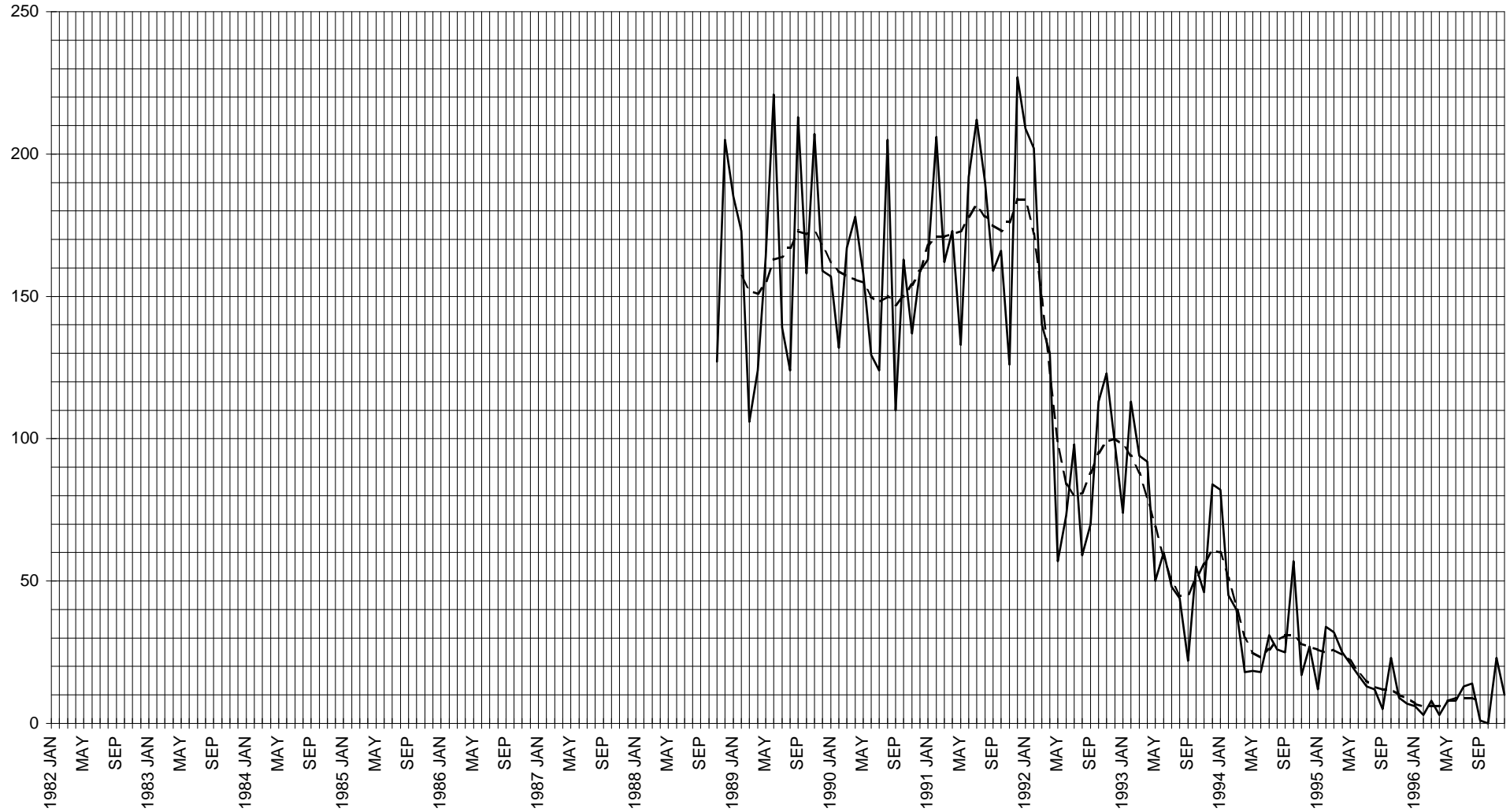
CORRECTED and SMOOTHED GDSO ACTIVE AREAS (gGD, gGD[SW] and gGD[SB13]) 1984-1996
SOLID = CORRECTED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE G5



OBSERVED and SMOOTHED GDSO PETTISINDICES (SN and SN[SHBm]) 1988-1996

SOLID = OBSERVED, DASHED = SHBm

FOR EXACT VALUES, SEE TABLE P5

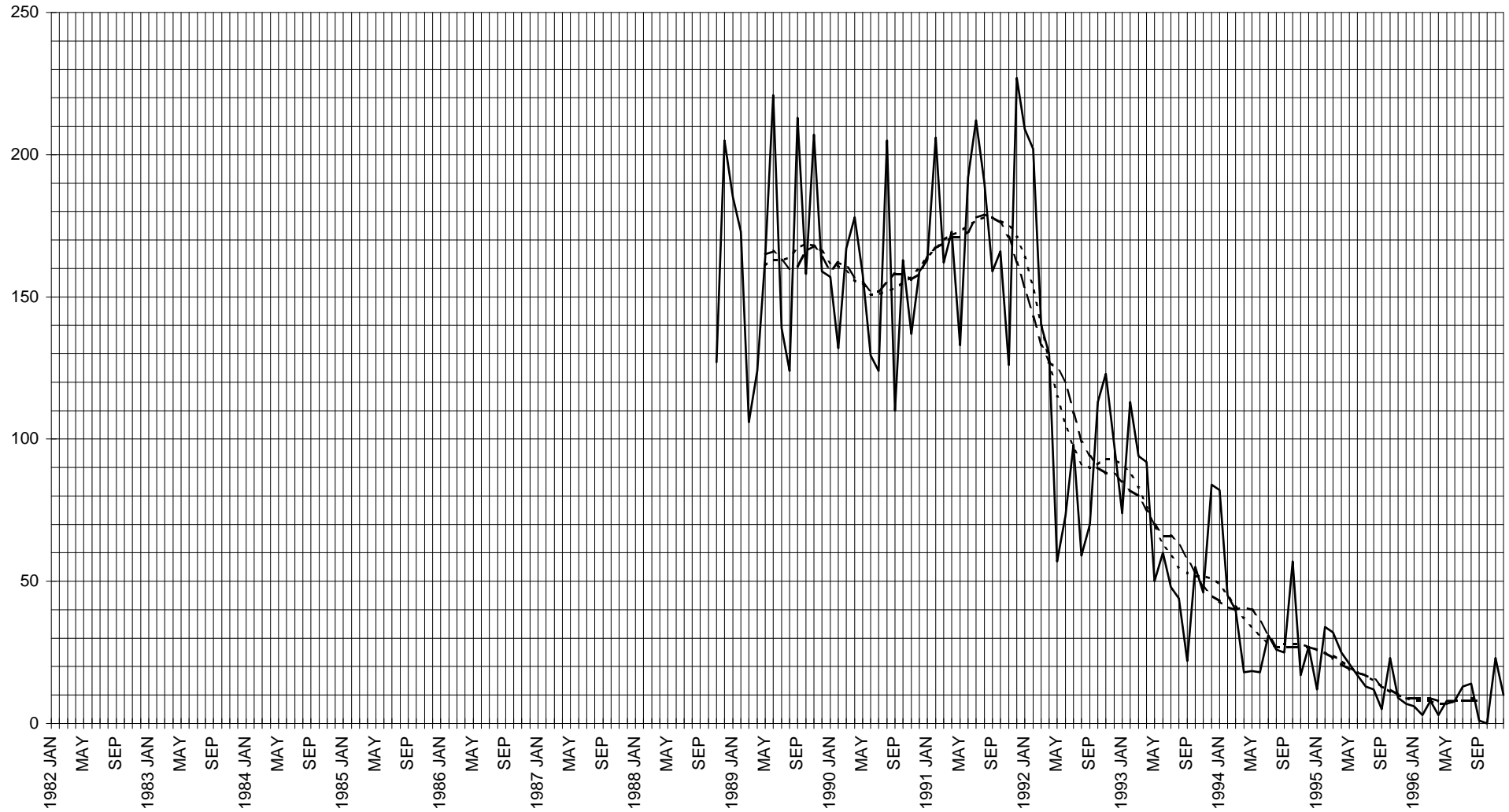


DATA START AT NOVEMBER 1988

OBSERVED and SMOOTHED GDSO PETTISINDICES (SN, SN[SW] and SN[SB13]) 1988-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE P5

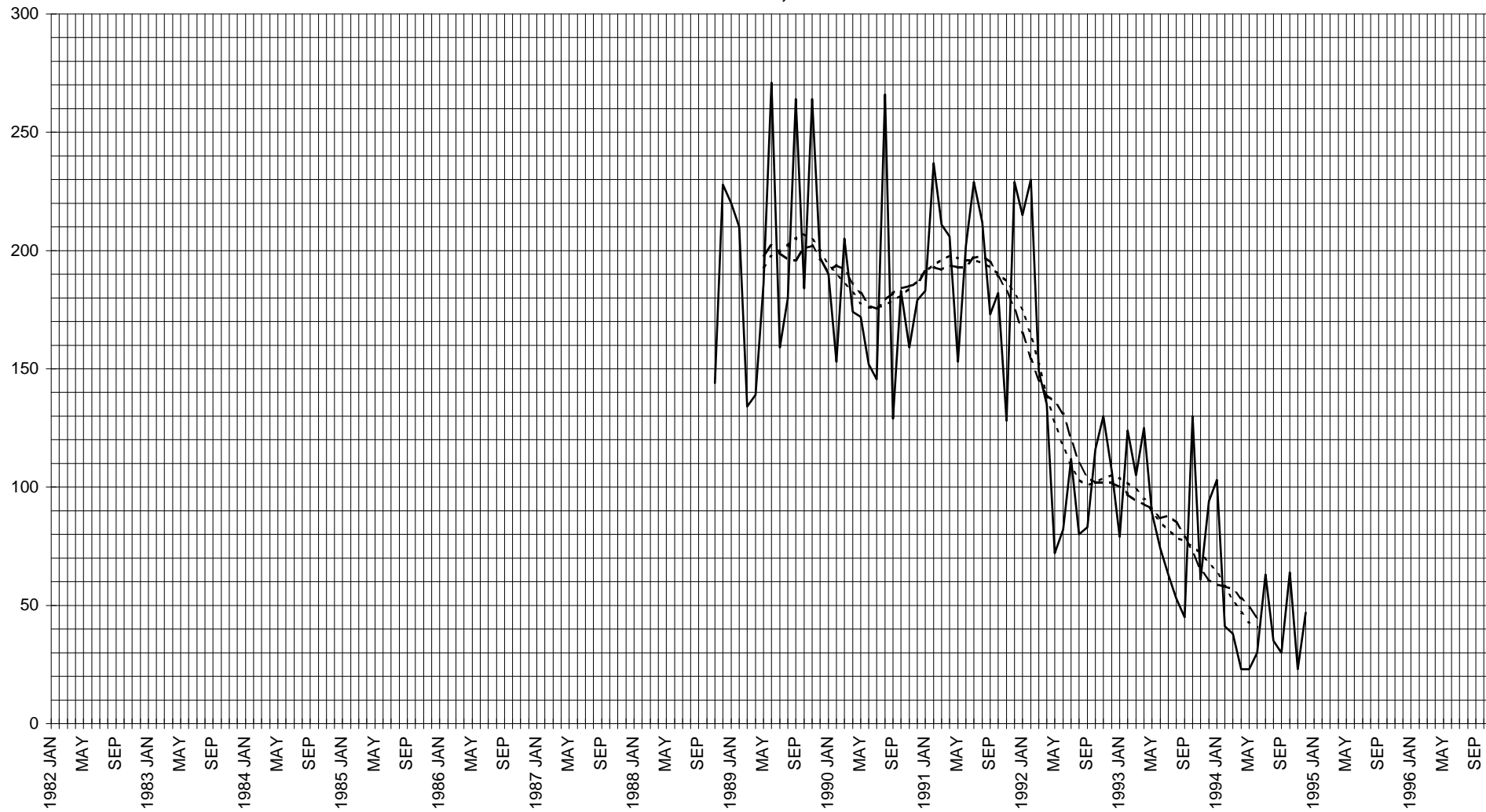


DATA START AT NOVEMBER 1988

CORRECTED and SMOOTHED GDSO PETTISINDICES (PXGD, PXGD[SW] and PXGD[SB13]) 1988-1996

SOLID = CORRECTED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE P5

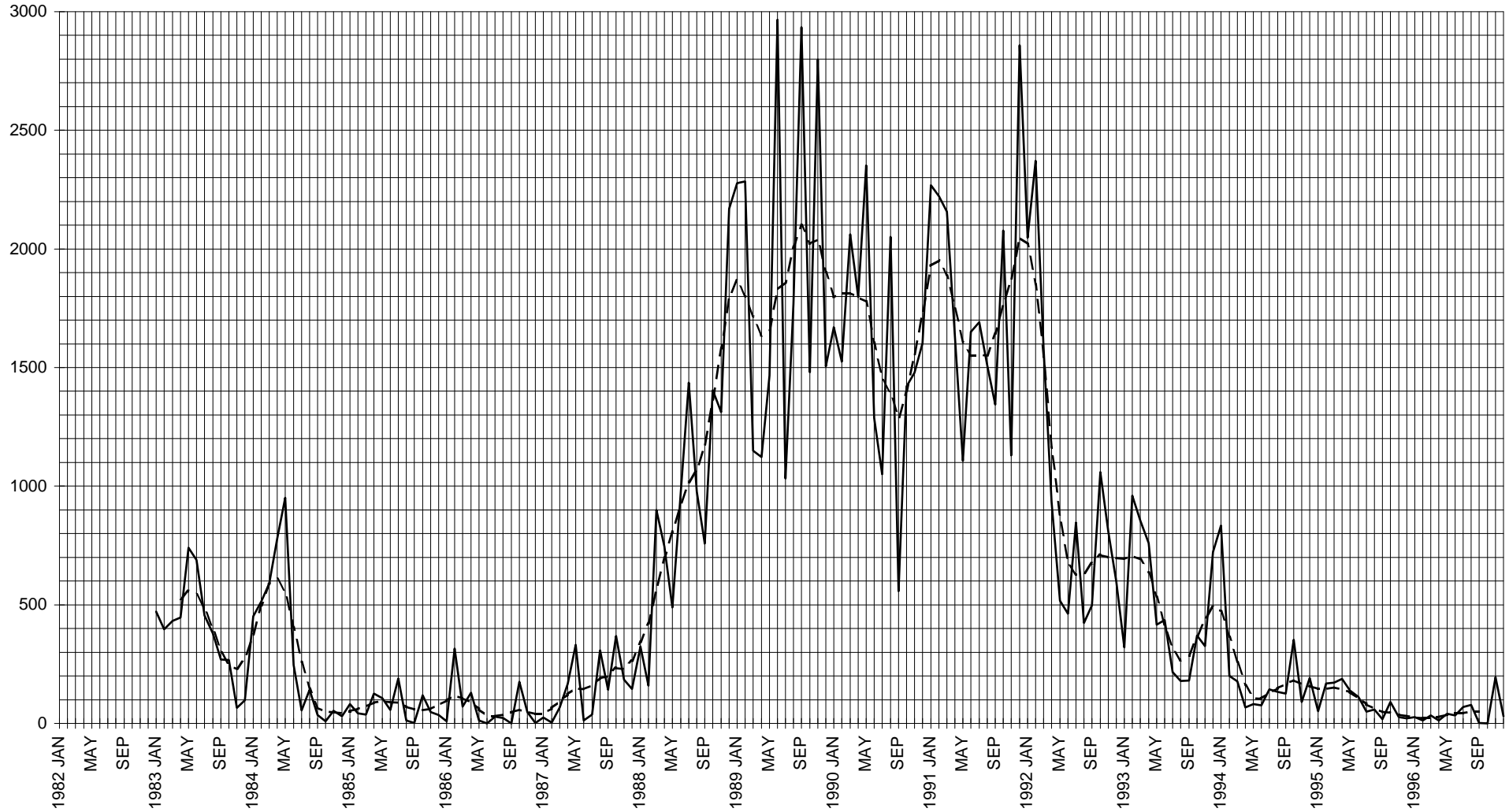


DATA START AT NOVEMBER 1988

OBSERVED and SMOOTHED GDSO BECKINDICES (BX and BX[SHBm]) 1983-1996

SOLID = OBSERVED, DASHED = SHBm

FOR EXACT VALUES, SEE TABLE B5

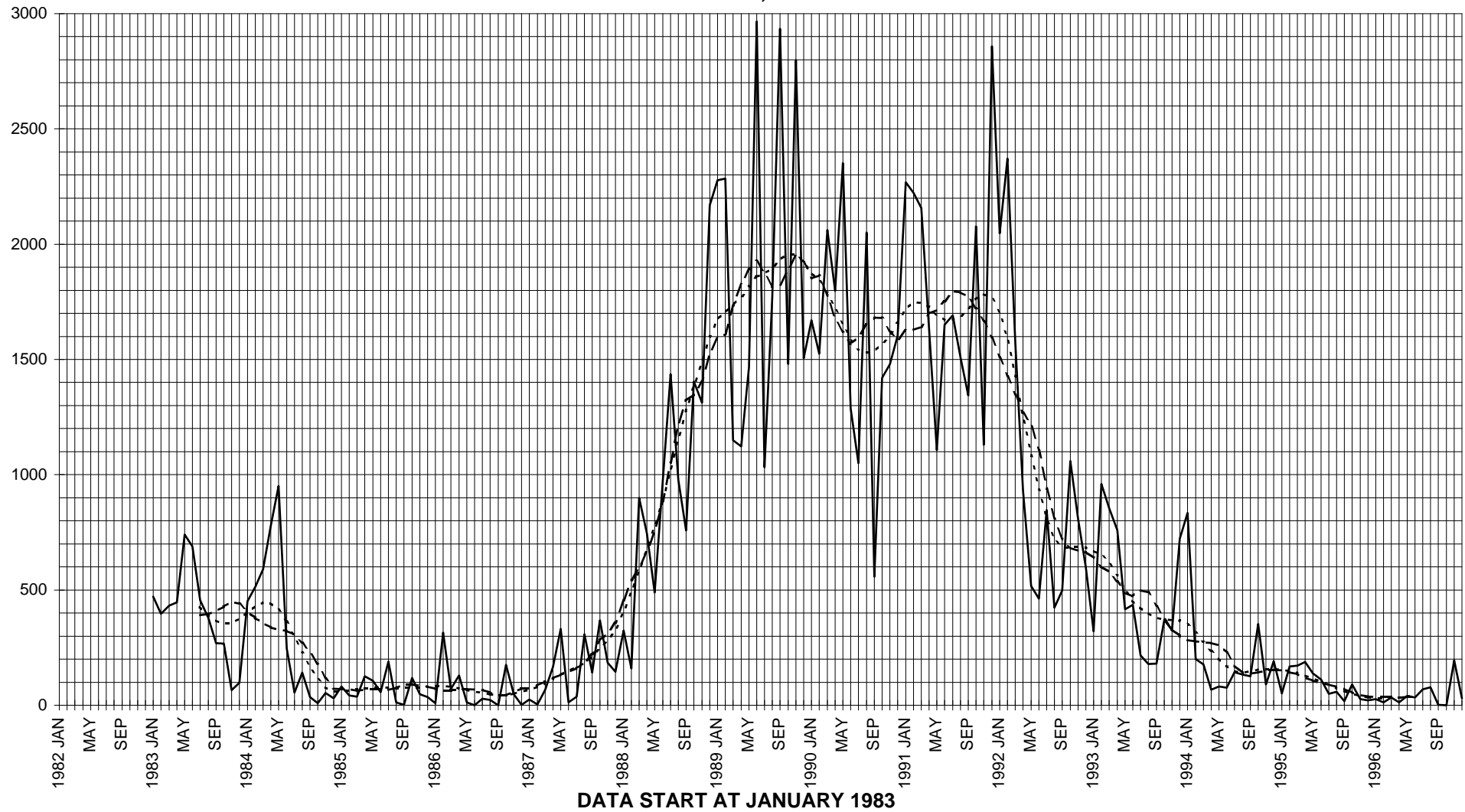


DATA START AT JANUARY 1983

OBSERVED and SMOOTHED GDSO BECKINDICES (BX, BX[SW] and BX[SB13]) 1983-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

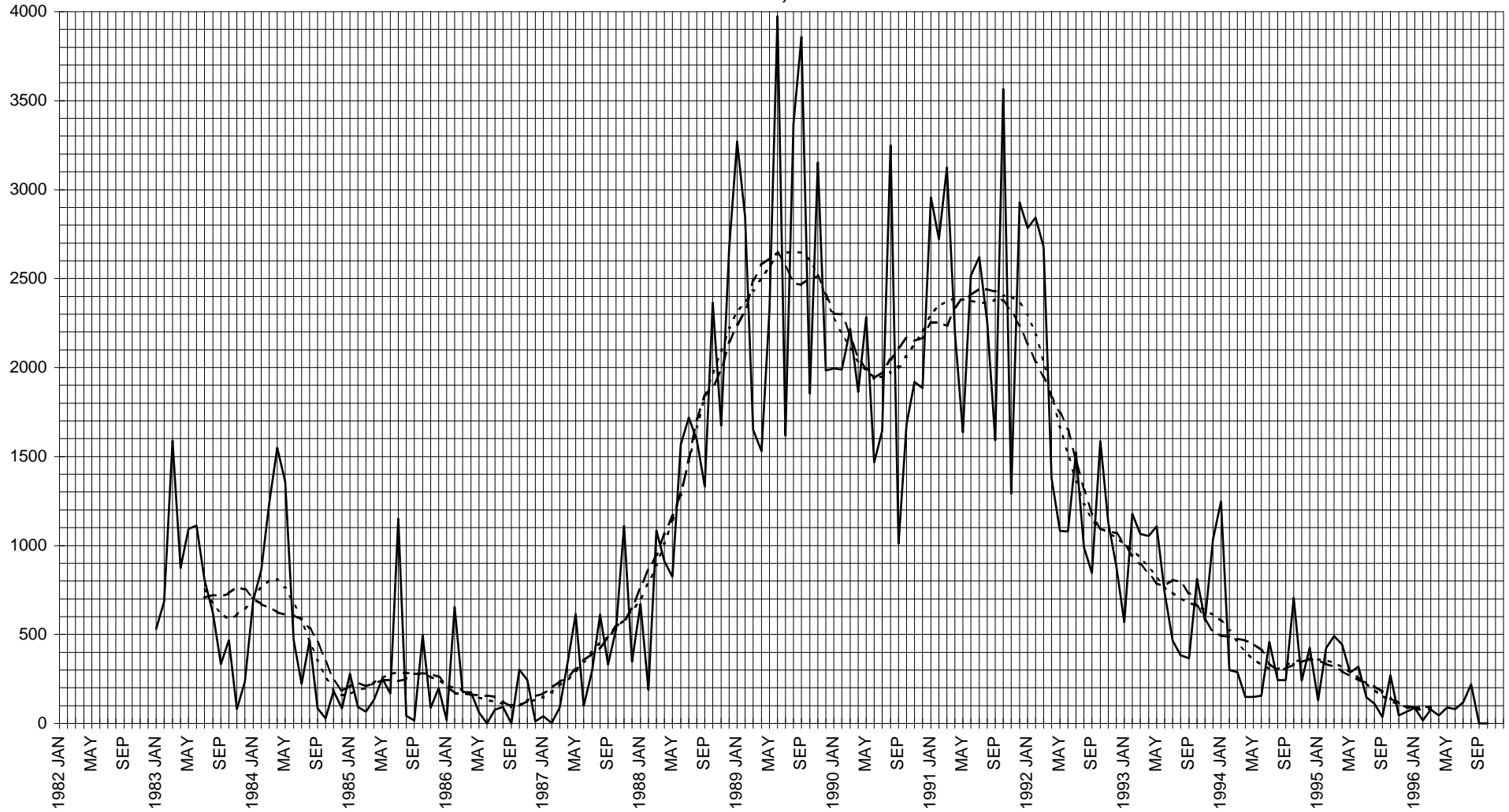
FOR EXACT VALUES, SEE TABLE B5



CORRECTED and SMOOTHED GDSO BECKINDICES (BXGD, BXGD[SW] and BXGD[SB13]) 1983-1996

SOLID = CORRECTED, DASHED = SW, DOTTED = SB13

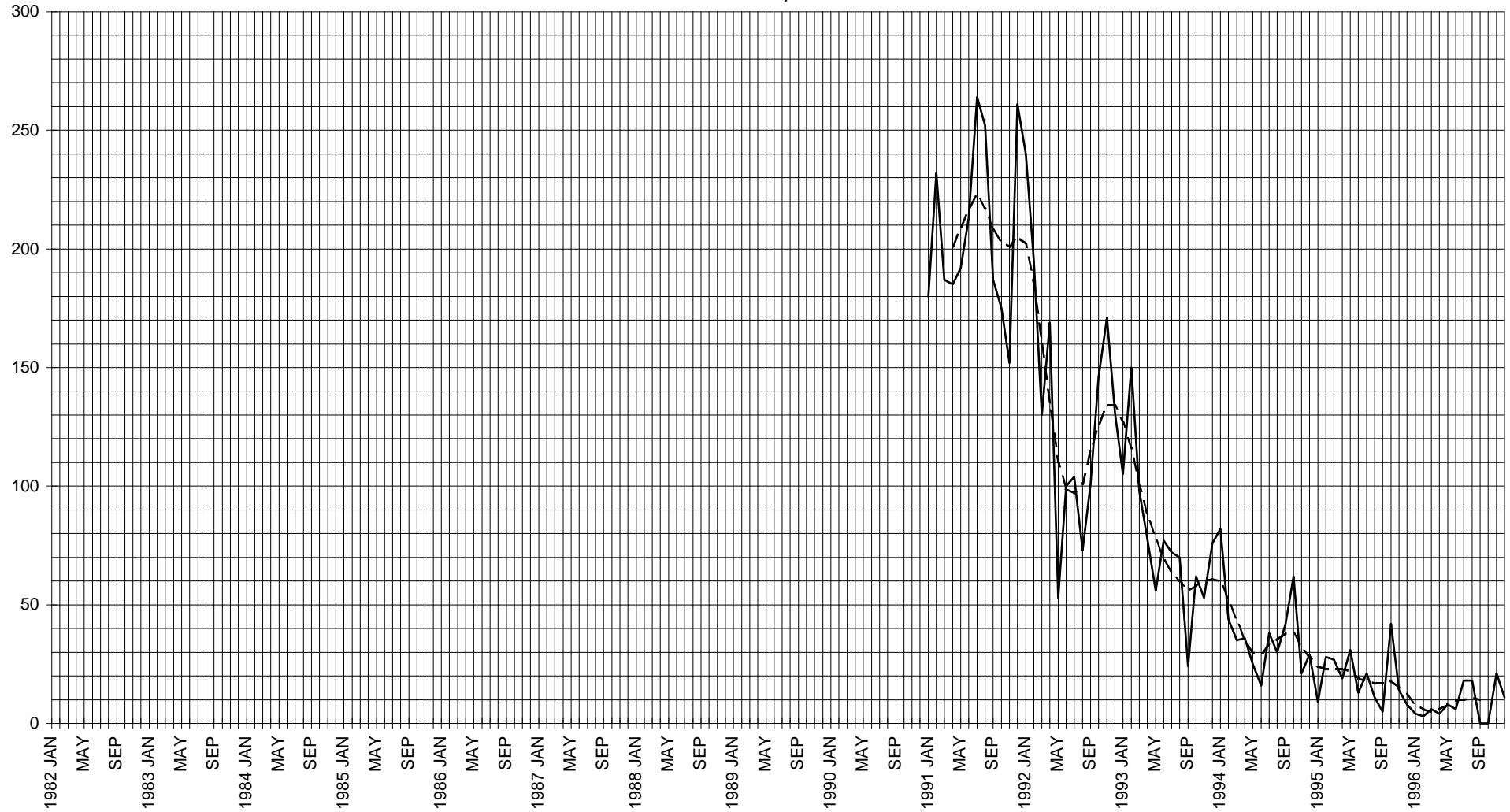
FOR EXACT VALUES, SEE TABLE B5



DATA START AT JANUARY 1983

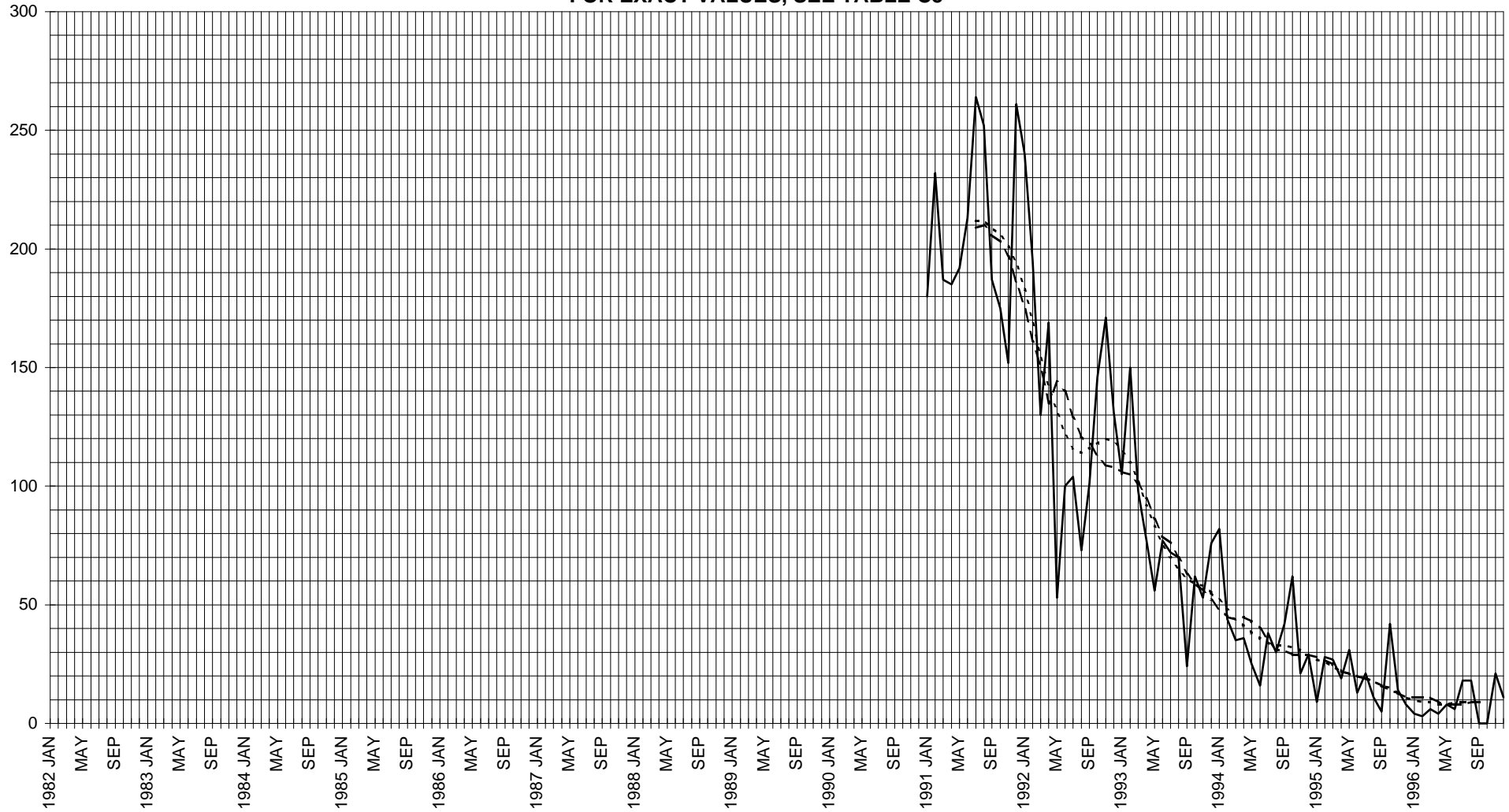
OBSERVED and SMOOTHED GDSO CLASSIFICATION VALUES (CV and CV[SHBm]) 1991-1996

**SOLID = OBSERVED, DASHED = SHBm
FOR EXACT VALUES, SEE TABLE C5**



DATA START AT JANUARY 1991

OBSERVED and SMOOTHED GDSO CLASSIFICATION VALUES (CV, CV[SW] and CV[SB13]) 1991-1996
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE TABLE C5

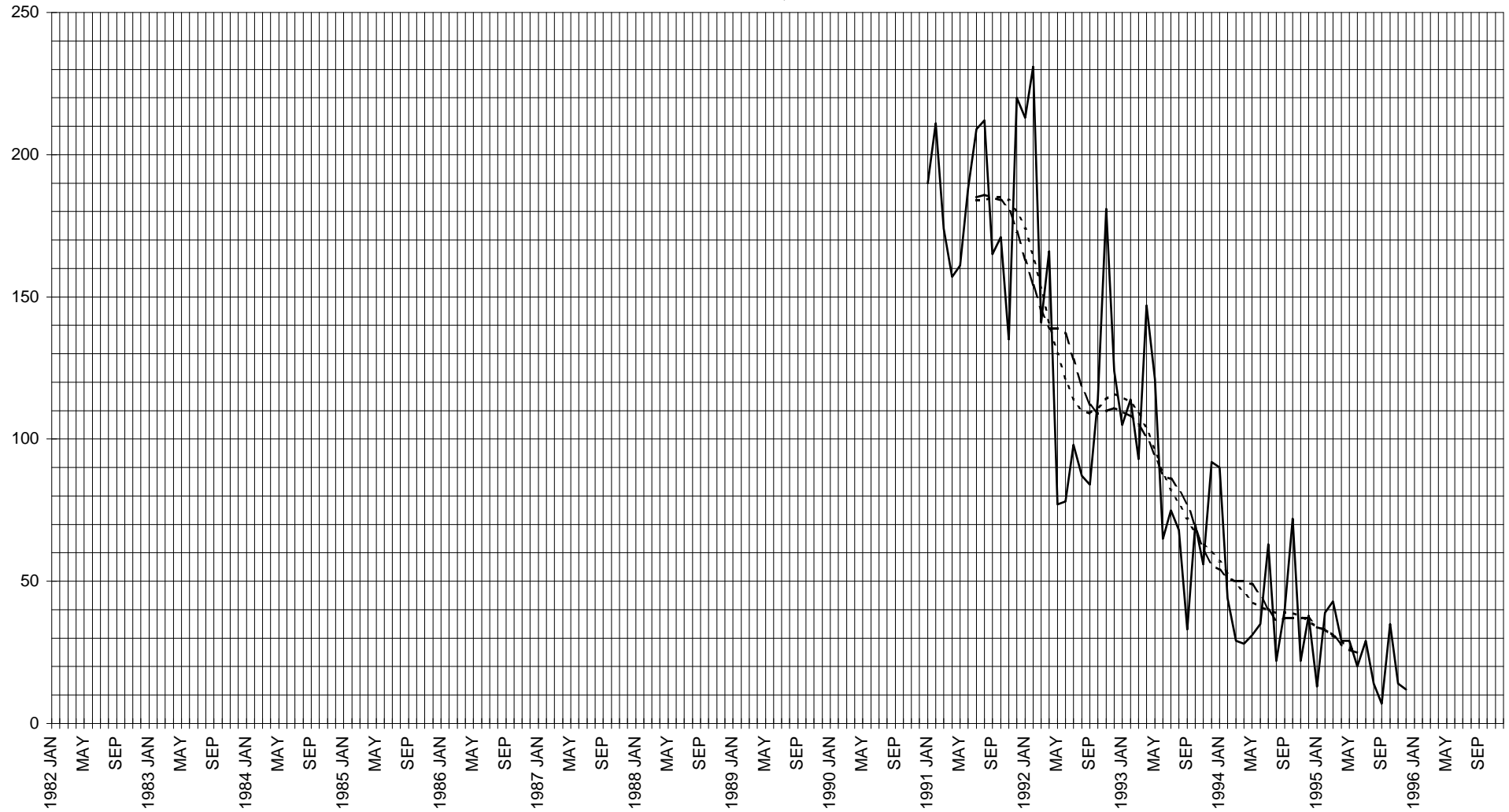


DATA START AT JANUARY 1991

CORRECTED and SMOOTHED GDSO CLASSIFICATION VALUES (CVGD, CVGD[SW] and CVGD[SB13]) 1991-1996

SOLID = CORRECTED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE C5

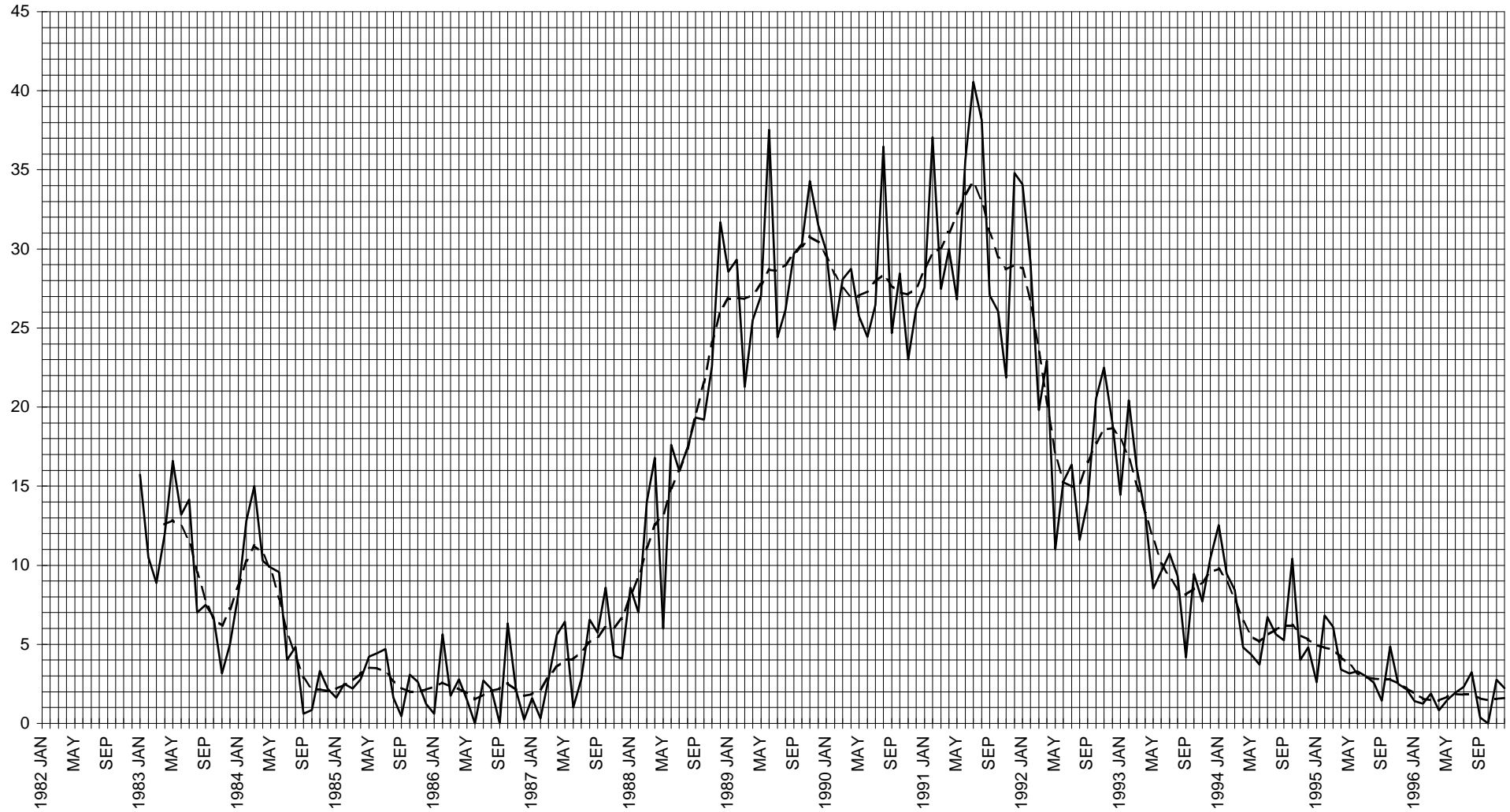


DATA START AT JANUARY 1991

OBSERVED and SMOOTHED GDSO QUALITY COUNTS (QC and QC[SHBm]) 1983-1996

SOLID = OBSERVED, DASHED = SHBm

FOR EXACT VALUES, SEE TABLE Q5

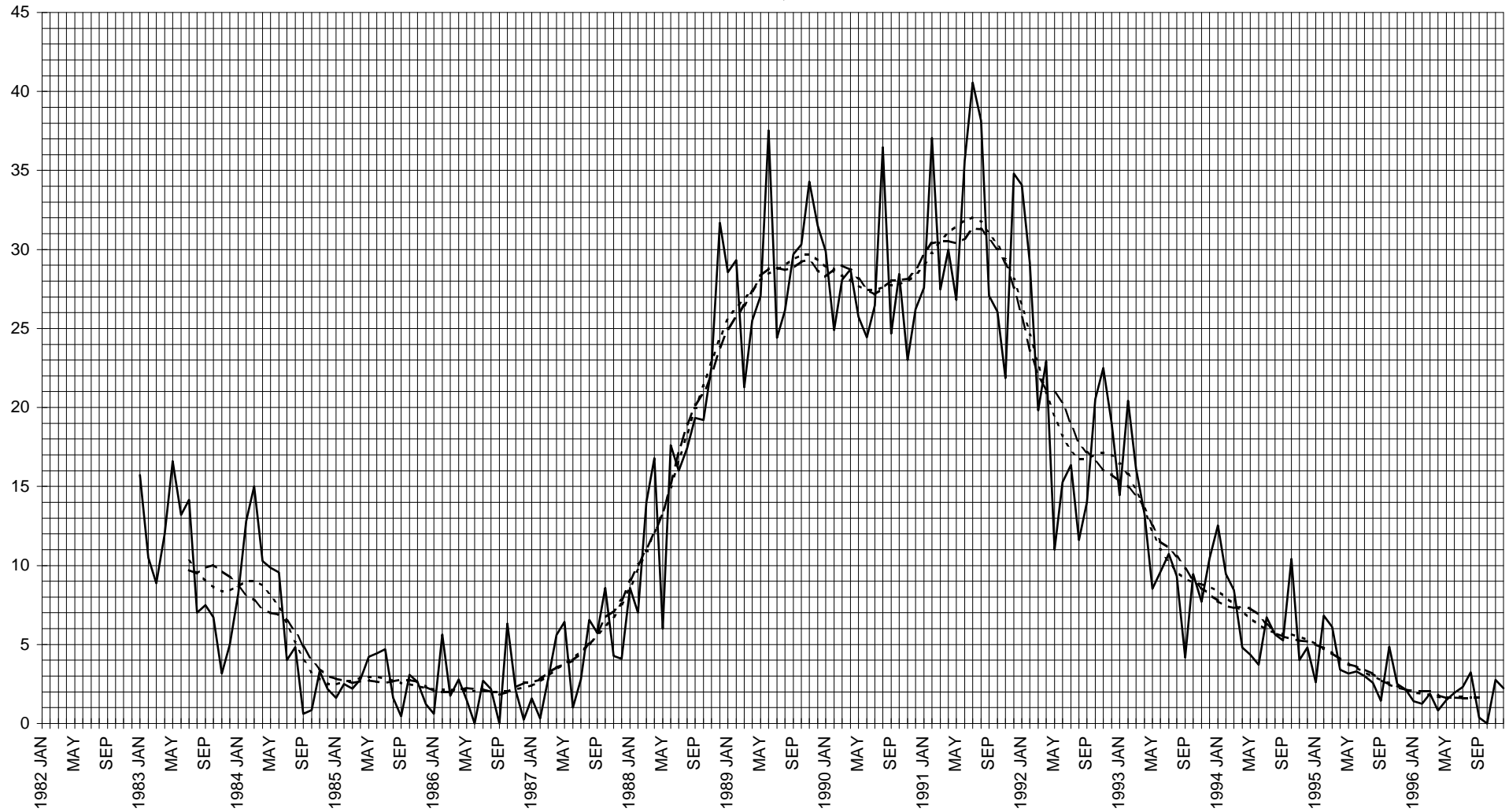


DATA START AT JANUARY 1983

OBSERVED and SMOOTHED GDSO QUALITY COUNTS (QC, QC[SW] and QC[SB13]) 1983-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE Q5

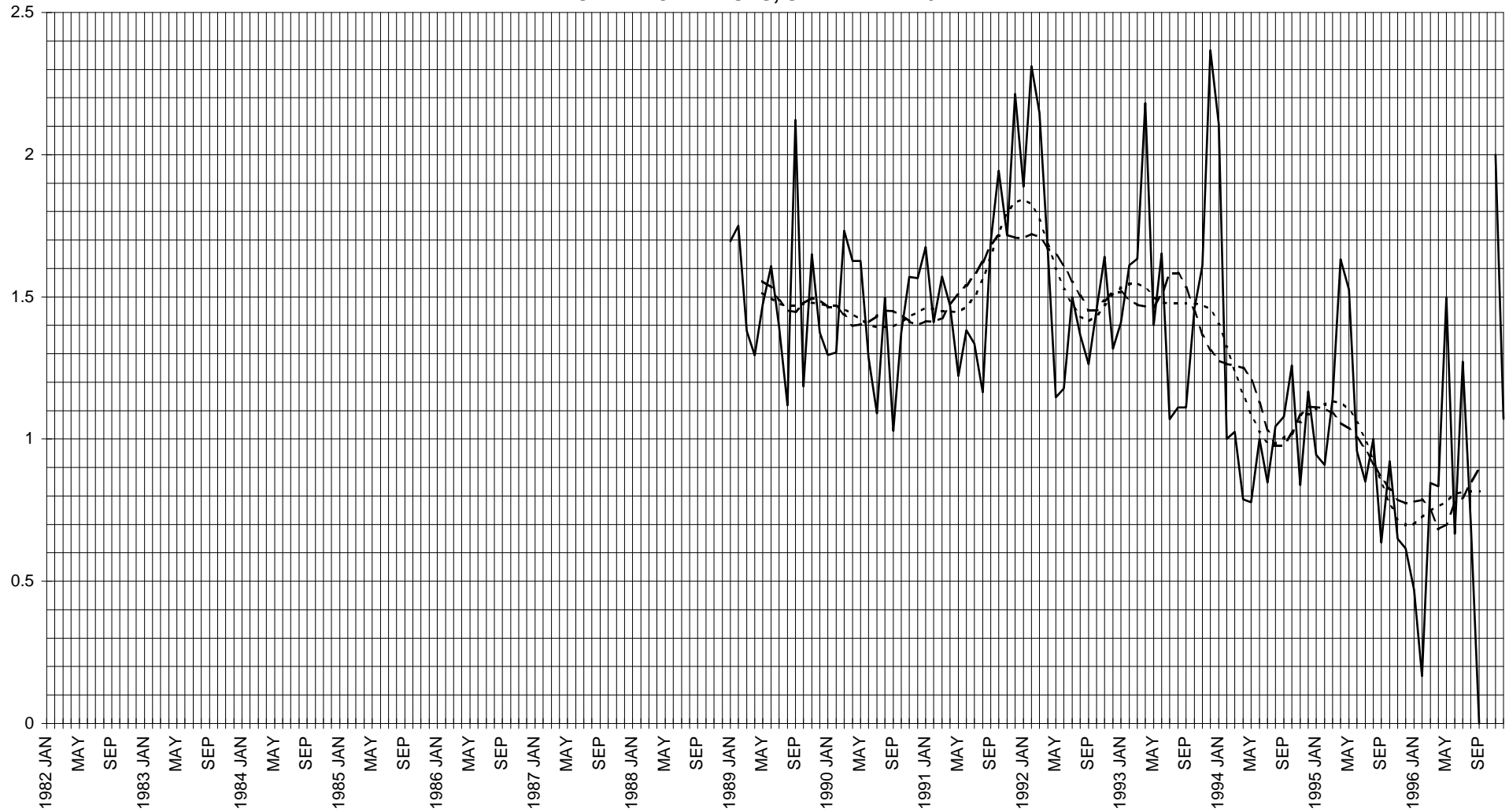


DATA START AT JANUARY 1983

OBSERVED and SMOOTHED GDSO PENUMBRAE PER SUNSPOT GROUP (p/g, p/g[SW] and p/g[SB13]) 1989-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE M9A



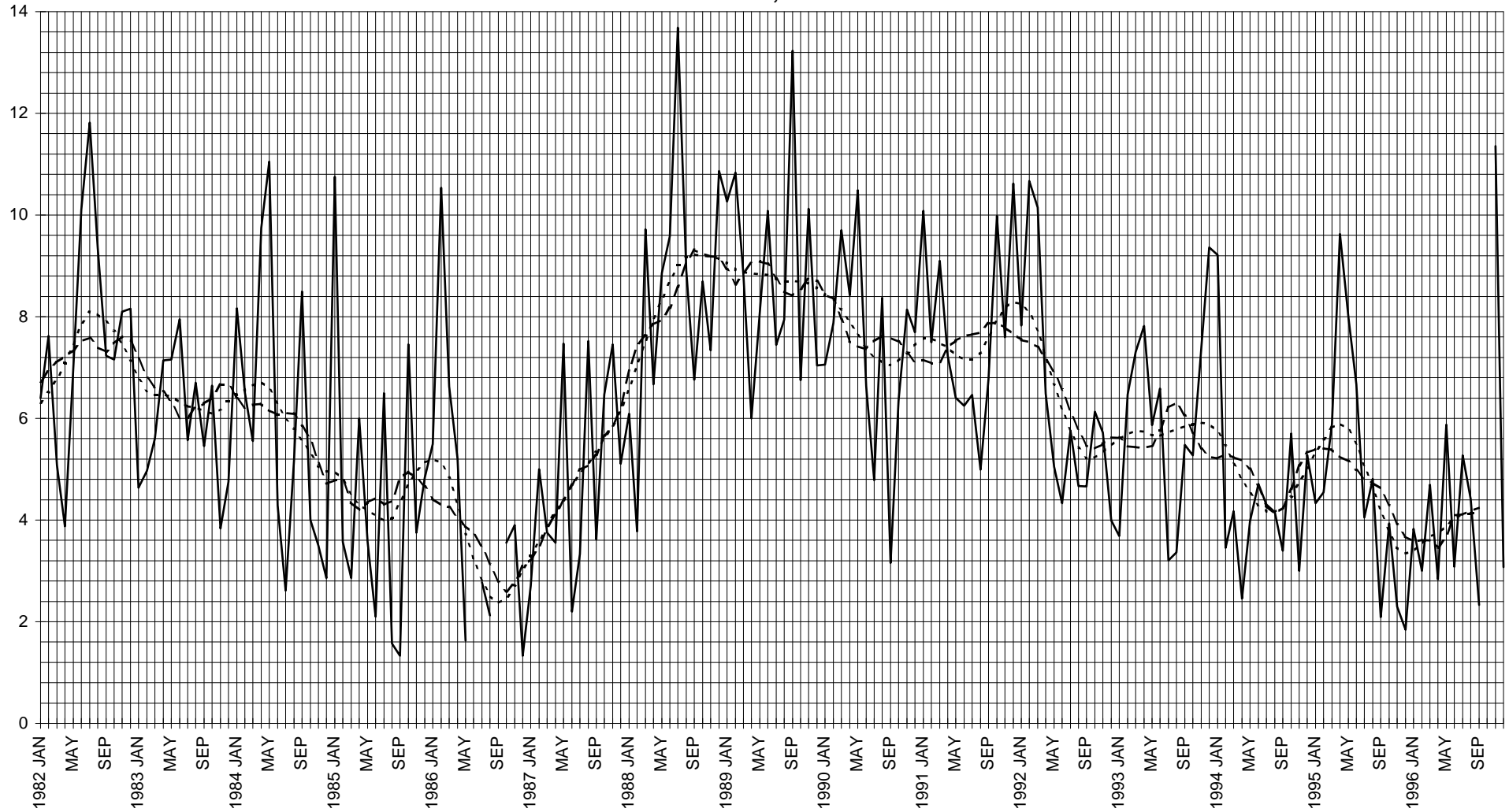
DATA START AT JANUARY 1989.

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]) 1982-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE M9B

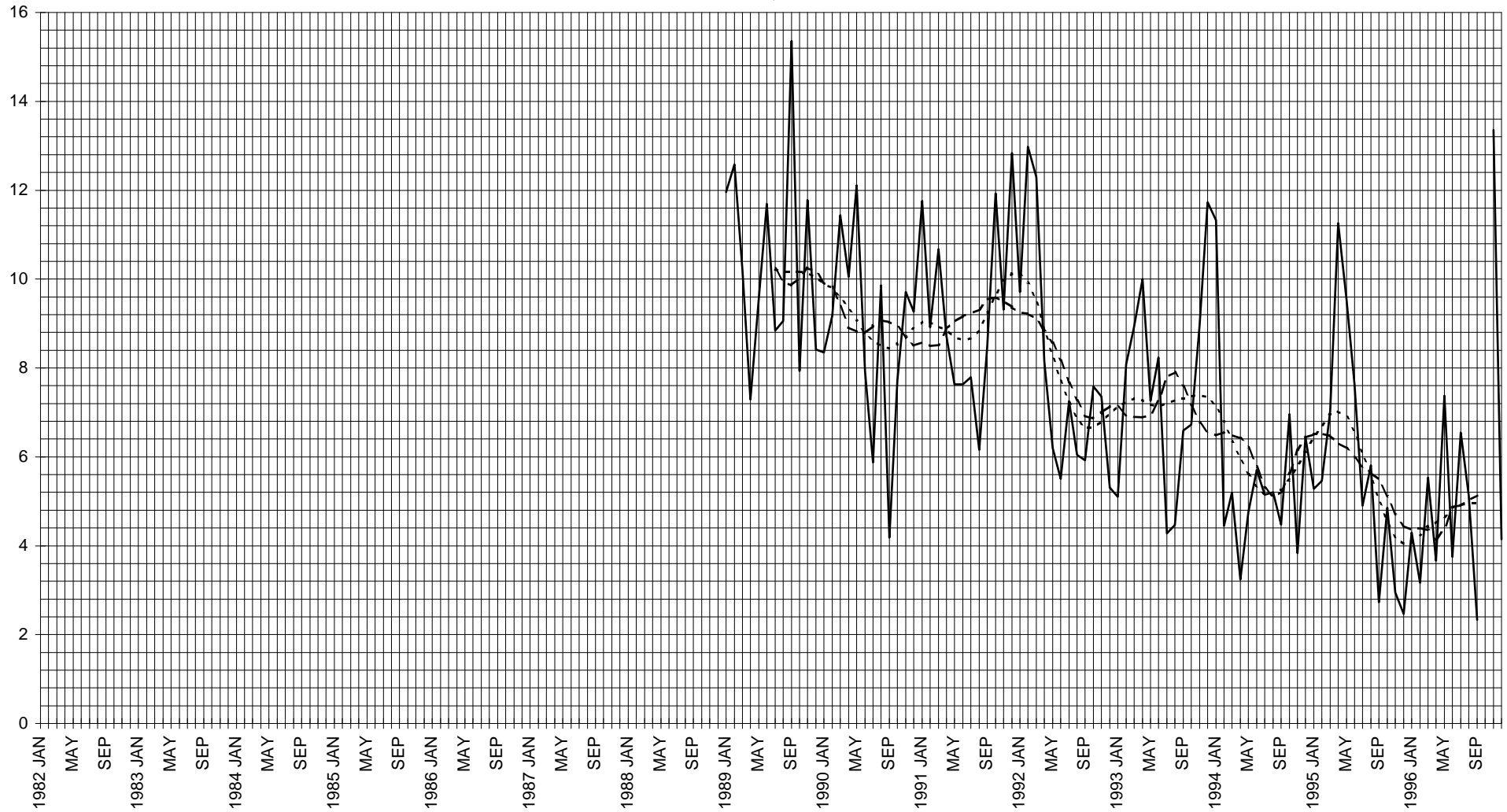


AS THERE WERE NO GROUPS IN JUNE 1986, SEPTEMBER 1986 AND OCTOBER 1996, f/g IS NON-EXISTENT FOR THOSE MONTHS

OBSERVED and SMOOTHED GDSO GROUP COMPLEXITY INDICES (GCI, GCI[SW] and GCI[SB13]) 1989-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE TABLE M9C



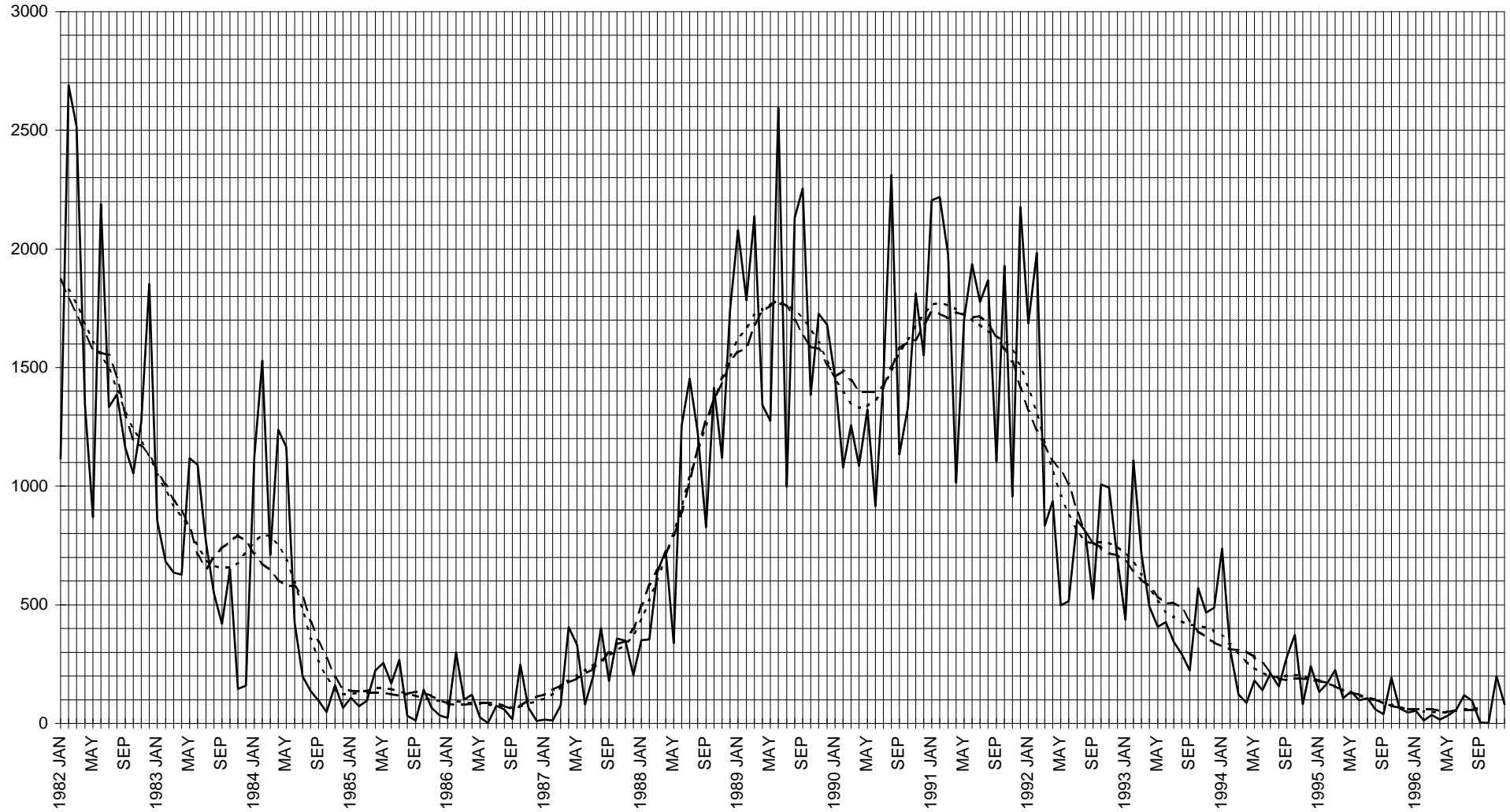
DATA START AT JANUARY 1989.

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

OBSERVED and SMOOTHED NOAA SUNSPOT AREA VALUES (in MICRO-HEMISPHERES) 1982-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

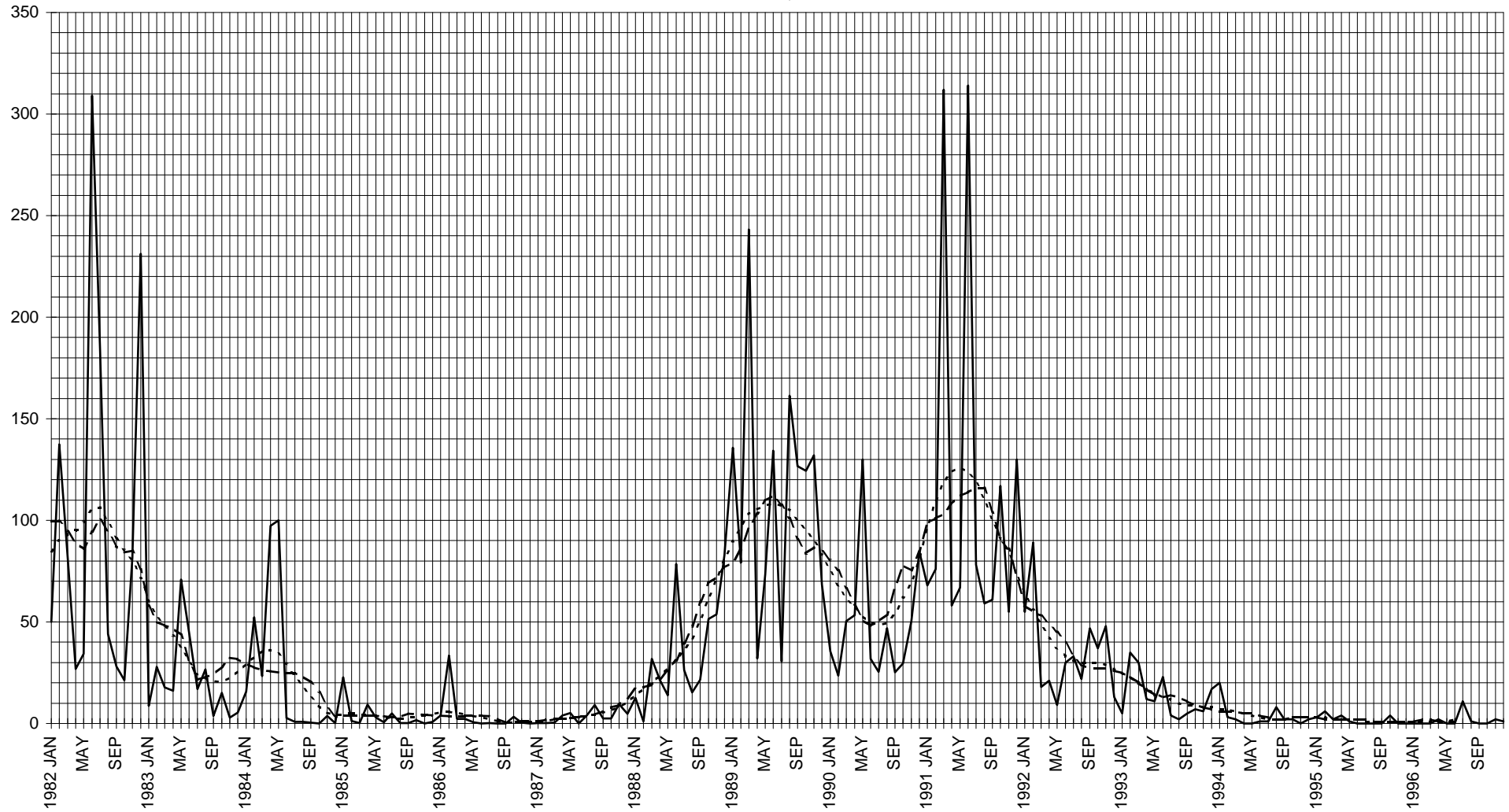
FOR EXACT VALUES, SEE PAGE C2



OBSERVED and SMOOTHED NOAA X-RAY FLARE OUTPUT VALUES (IN MICROWATTS PER SQUARE METRE) 1982-1996

SOLID = OBSERVED, DASHED = SW, DOTTED = SB13

FOR EXACT VALUES, SEE PAGE D6



ADJUSTED and SMOOTHED NRCC 2800 MHz SOLAR FLUX (IN 10-22 WATTS/SQUARE METRE/HERTZ) 1982-1996
SOLID = OBSERVED, DASHED = SW, DOTTED = SB13
FOR EXACT VALUES, SEE PAGE E4

