

**London Air Quality Network:
Ratification Report for January to June 1998**

**A M Woolley, B P Sweeney and D M Butterfield
Centre for Optical and Environmental Metrology**

© Crown copyright 1998
Reproduced by permission of the Controller of HMSO

ISSN 1369-6807

National Physical Laboratory
Queens Road, Teddington, Middlesex, TW11 0LW

Extracts from this report may be reproduced provided the source is acknowledged

Approved on behalf of Managing Director, NPL
by D H Nettleton, Head of Centre for Optical and Environmental Metrology

CONTENTS

	Page
1. INTRODUCTION	1
2. RATIFICATION PROCEDURE	1
3. DATA CAPTURE.....	2
4. SITE SUMMARIES	2
5. RATIFIED TIME SERIES DATA	3

**London Air Quality Network
Ratification Report for January to June 1998**

by

A M Woolley, B P Sweeney and D M Butterfield

1. INTRODUCTION

This report has been prepared for the Department of the Environment, Transport and the Regions by NPL under contract EPG 1/3/106. It covers the ratification of data in the London Air Quality Network relating to the period January to June 1998. During this period there was a change in the QA/QC unit from AEA-NETCEN to the National Physical Laboratory, on 1 April. The South East Institute of Public Health are the CMCU.

The ratified data capture percentages, specific problems at sites and time series data are presented.

2. RATIFICATION PROCEDURE

The data received by NPL from the CMCU was processed and scaled according to calibrations carried out by the Local Site Operators every two weeks, and by NPL on a three monthly basis. The results of these NPL field calibrations are reported to the Department separately as NPLRS198 (13th July 1998) and NPLRS298/A (23rd September 1998).

During an NPL intercomparison ozone analyser accuracy is quantified with a transfer standard photometer, NO_x, CO and SO₂ analyser calibration responses are measured with gas mixtures - certified against primary standard gases at NPL. Analyser linearities are determined by multi-point dilution of a high concentration mixture with zero air. Particulate analysers are calibrated with traceable pre-weighed masses, and sample and bypass flow rates are measured.

The data ratification process takes account of all relevant data from LSOs, NPL and Equipment Service Unit calibrations. The optimum time varying set of analyser response functions are determined and then applied to raw data to produce the ratified data set. The causes of gaps in the new data set are identified and periods for which analyser responses are seen to be unstable or changing rapidly are deleted.

3. DATA CAPTURE

The percentage data capture at each site for each pollutant is given in Table 1

Table 1: Data capture for January to June 1998

Site Name	Percentage Data Capture by Pollutant					
	O ₃	NO _x	SO ₂	CO	PM ₁₀	Mean
Bromley		76		95		86
Camden		98			64	81
Eltham	97	97	99		98	98
Hackney	98	98		98		98
Haringey 1		99			92	96
Haringey 2	97					97
Hounslow		72		64		68
Kensington and Chelsea	97	98	99	91	99	97
Lewisham		90	98			94
		98	89	98	98	96
South				93		90
				97		88
Sutton 1				99	97	98
	99	99				99
		98		98		98
Wandsworth 2	97	99				98
Mean	97	92	96	93	91	

4. SITE SUMMARIES

The sites with data capture of less than 90% for any pollutant are listed here and reasons are given for the absence of the data.

Bromley: (NO_x 76% data capture)

NO_x data were deleted between the 27th and 31st of January (113 hours) because the analyser was going off-scale. Analyser malfunction caused the deletion of NO_x data from the 12th of February to the 2nd of March (444 hours). The NO_x analyser was not sampling ambient air between the 7th and 16th of April which necessitated the deletion of 216 hours of data. Between the 15th and 22nd of May there was a malfunction with the NO_x analyser, so 154 hours of data were removed.

Camden: (PM₁₀ 64% data capture)

The QA/QC unit received no PM₁₀ data following a routine service on the 15th of January until the 21st, totalling 123 hours. PM₁₀ data were also deleted from the 22nd of April until the

20th of June because the auxiliary flow pipe was not reconnected following a calibration. This resulted in the removal of 1416 hours of data.

Hounslow: (NO_x 72% data capture, CO 64% data capture)

Due to highly inconsistent LSO calibration data, CO data were deleted from the start of the ratification period (1 January) until the 3rd of March, totalling 1547 hours of data. Since then there has been no problem with CO data, and the LSO was audited by NPL satisfactorily in July. NO_x data were deleted between the 23rd of January and the 5th of February due to a large unexplained change in sensitivity. In addition auto-calibration data were unreliable resulting in 315 hours of data being deleted. From the 5th of May the NO_x analyser developed a fault and was replaced. NO_x data became available again on the 10th of June after the new analyser had had adequate time to stabilise and therefore a total of 851 hours of NO_x data have been lost from the dataset.

Marylebone Road: (SO₂ 89% data capture)

SO₂ data were deleted between the 2nd and 18th of June as there was a significant change in auto-calibration and manual calibration span results and therefore the factor for this period could not be determined. A total of 384 hours of data were removed.

Southwark 1: (Ozone 83% data capture)

Invalid ozone data were removed by CMCU as the ozone analyser had not been sampling ambient air between the 1st and 21st of April (481 hours).

Southwark 2: (NO_x 73% data capture)

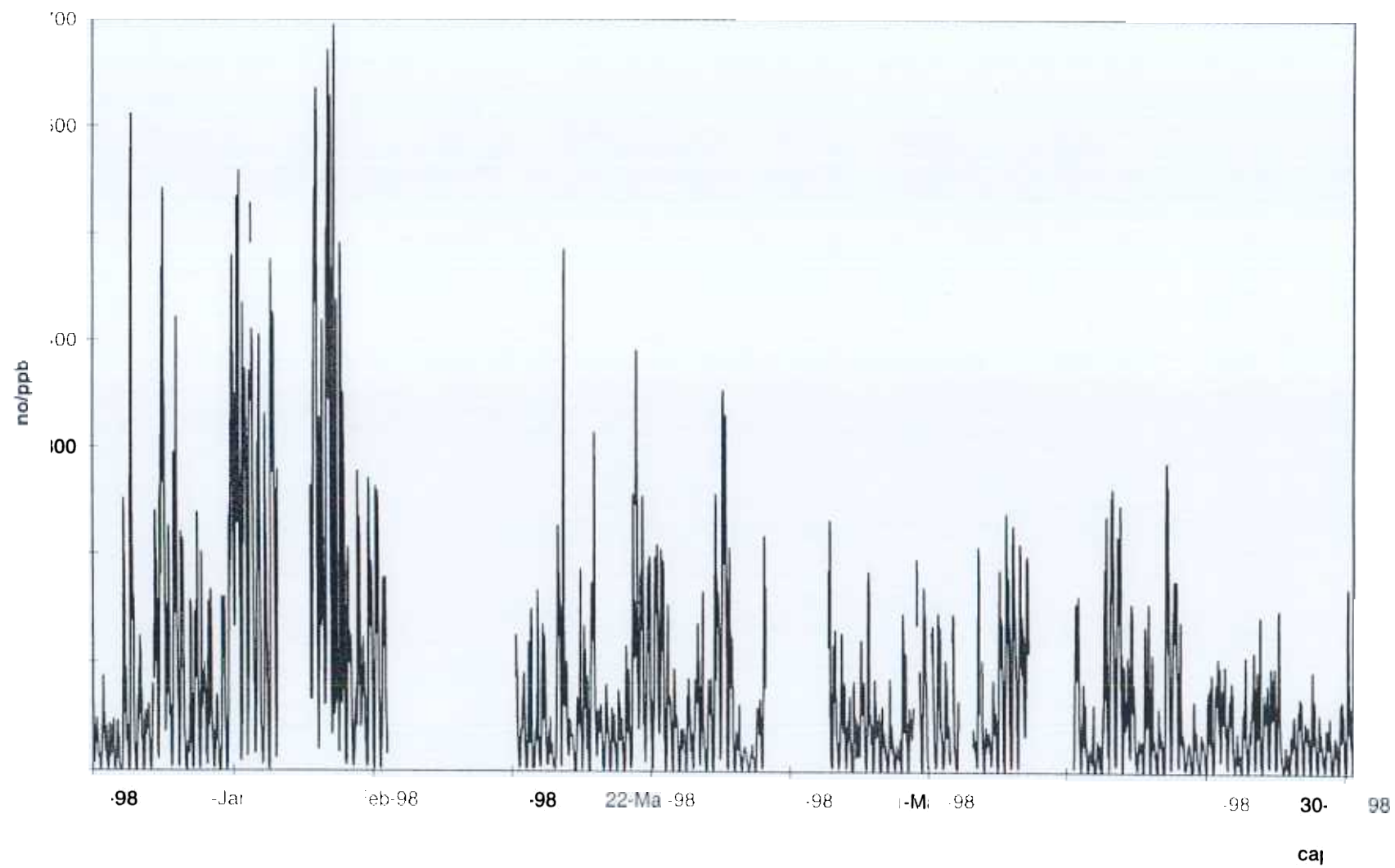
NO_x data were deleted from the 15th to the 26th of May due to a significant unexplained change in the analyser zero point. The NO_x photomultiplier tube failed on the 26th of May and data for the remainder of the ratification period (until the 30th of June, totalling 1115 hours) were removed as the analyser awaited repair.

5. RATIFIED TIME SERIES DATA

The following pages contain hourly average data for each pollutant at each site for the period 1/1/98 to 30/6/98. They are in the order:

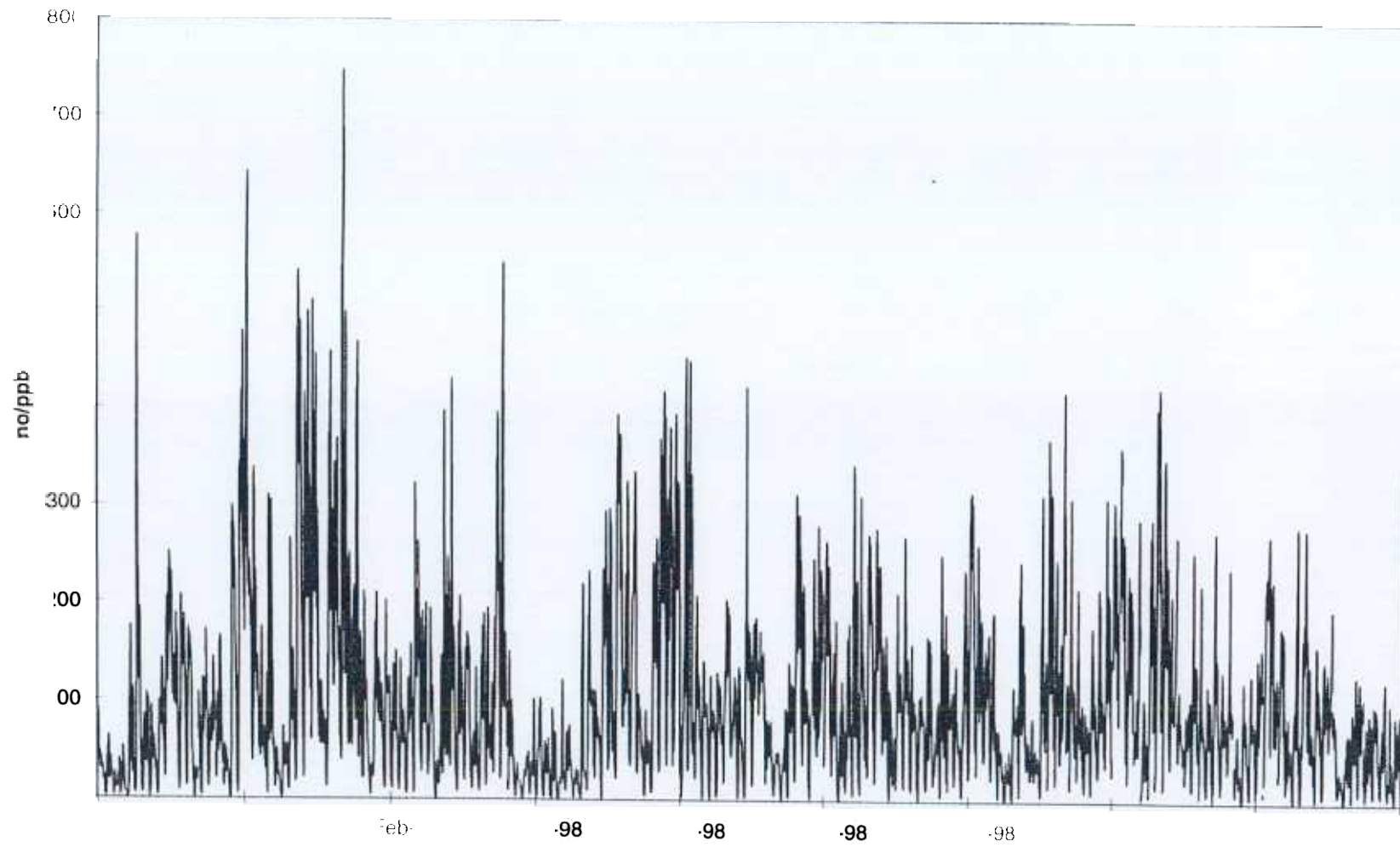
- Ozone (blue pages)
- Nitric Oxide (yellow pages)
- Nitrogen Dioxide (green pages)
- Sulphur Dioxide (orange pages)
- Carbon Monoxide (pink pages)
- PM10 (mauve pages)

m 98

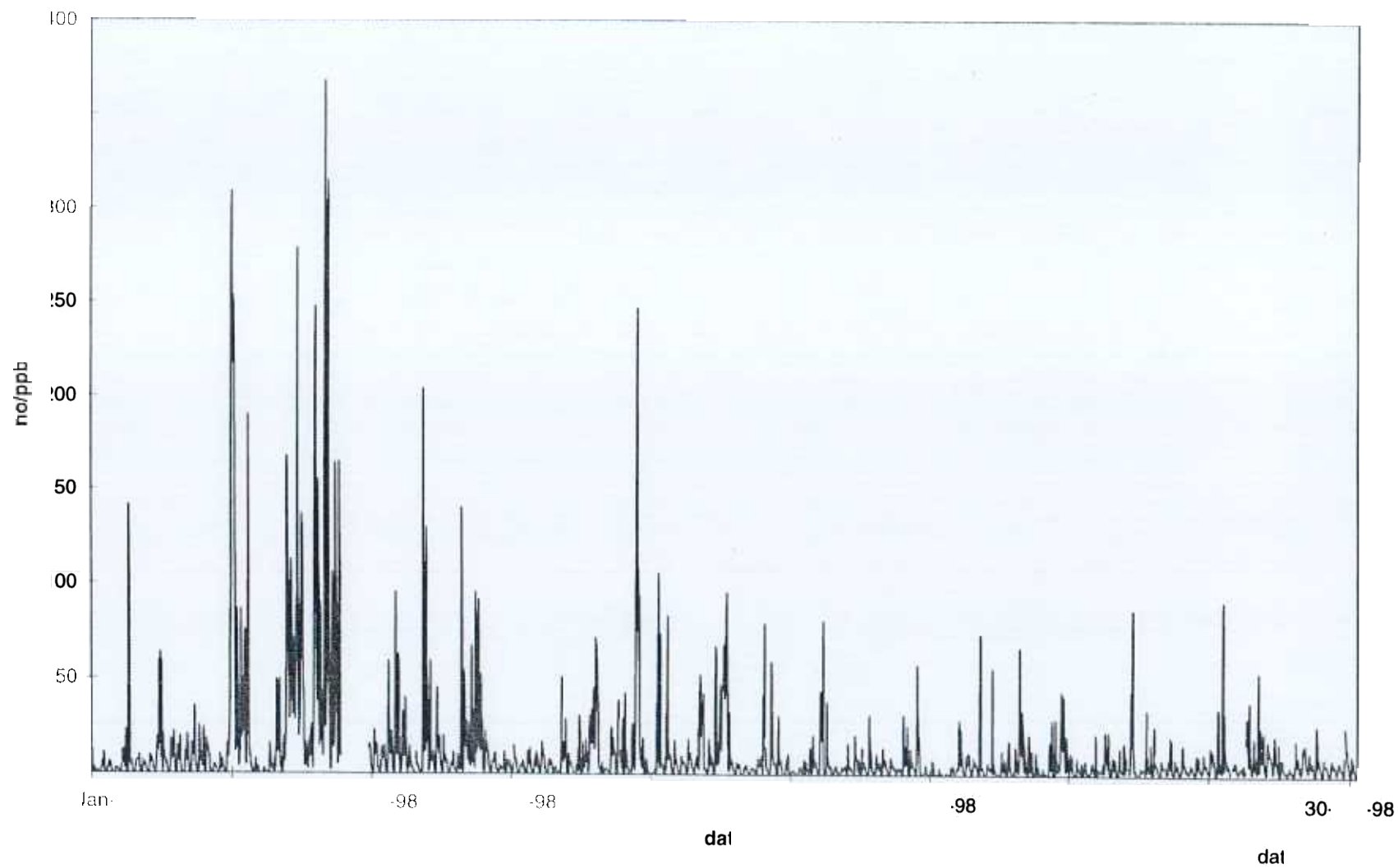


ipl

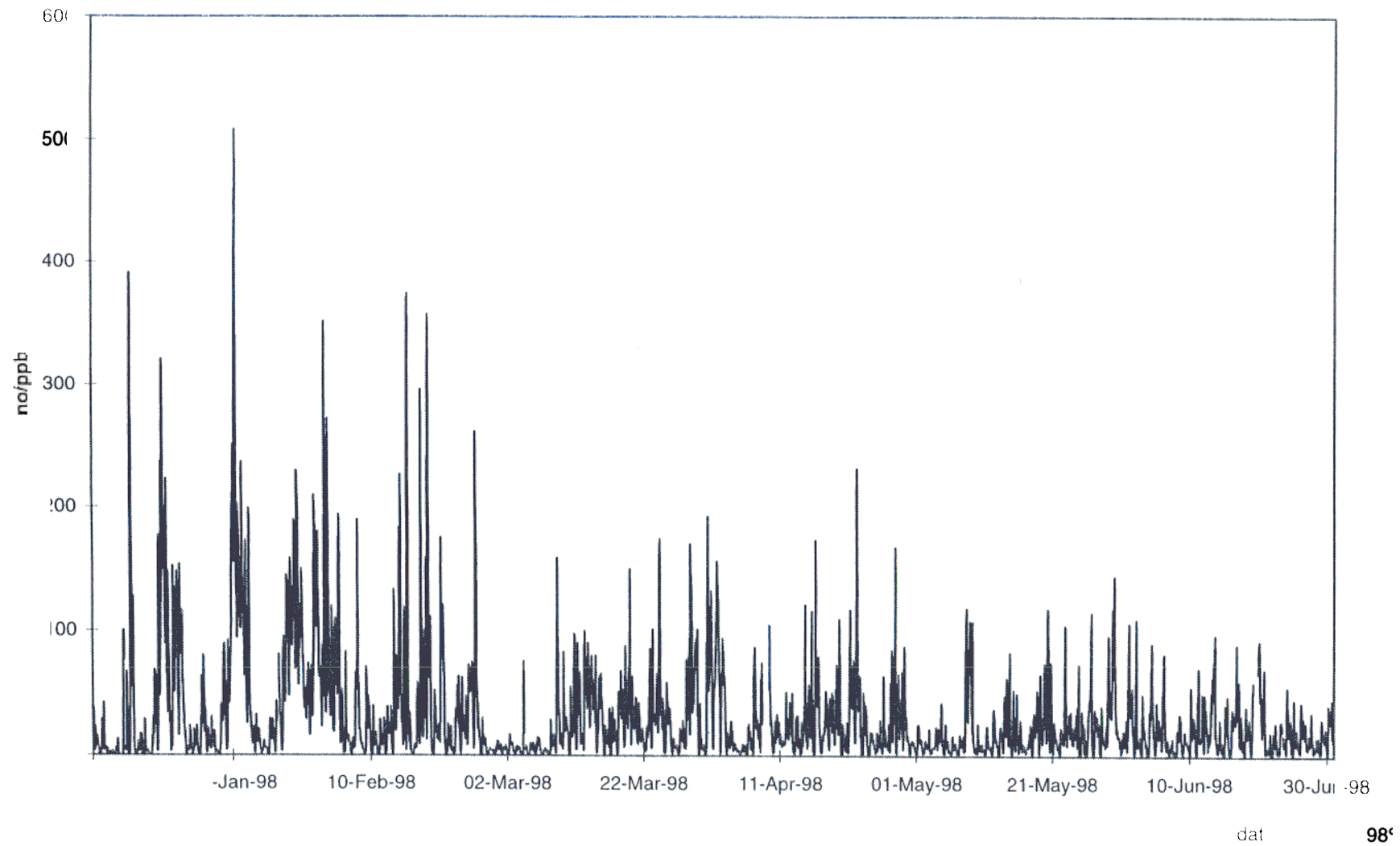
C: mde 99



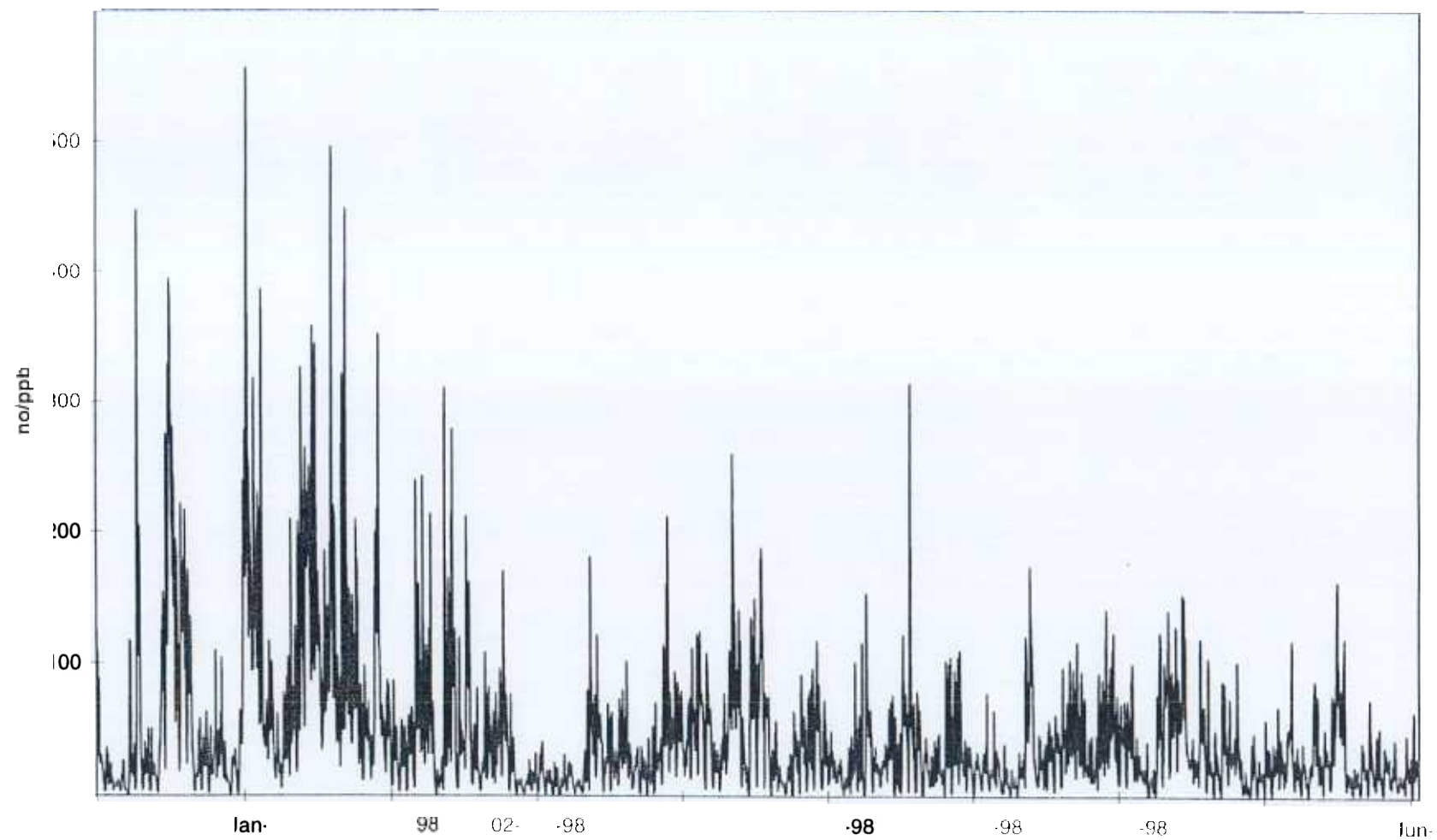
im 99



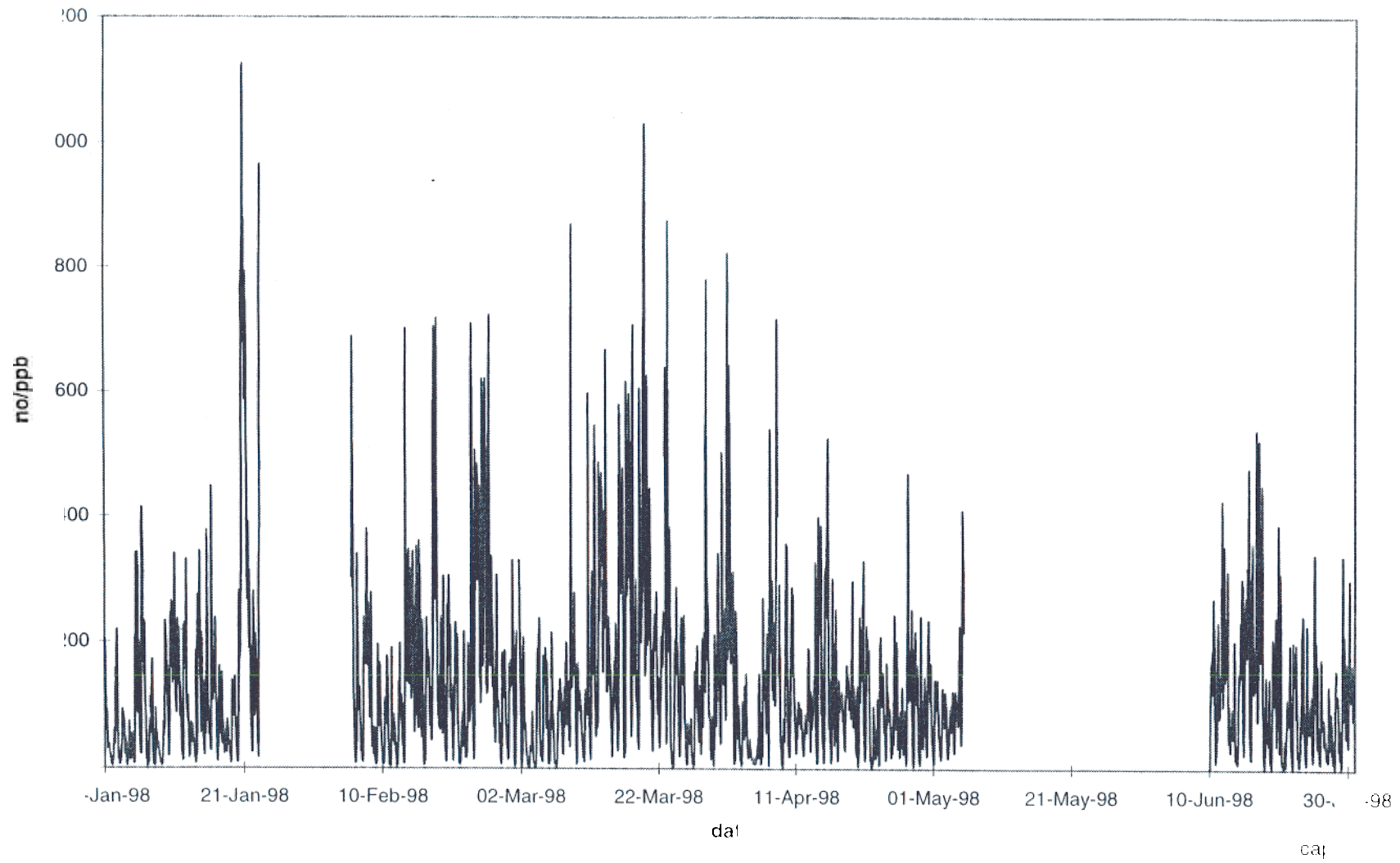
Ha 99



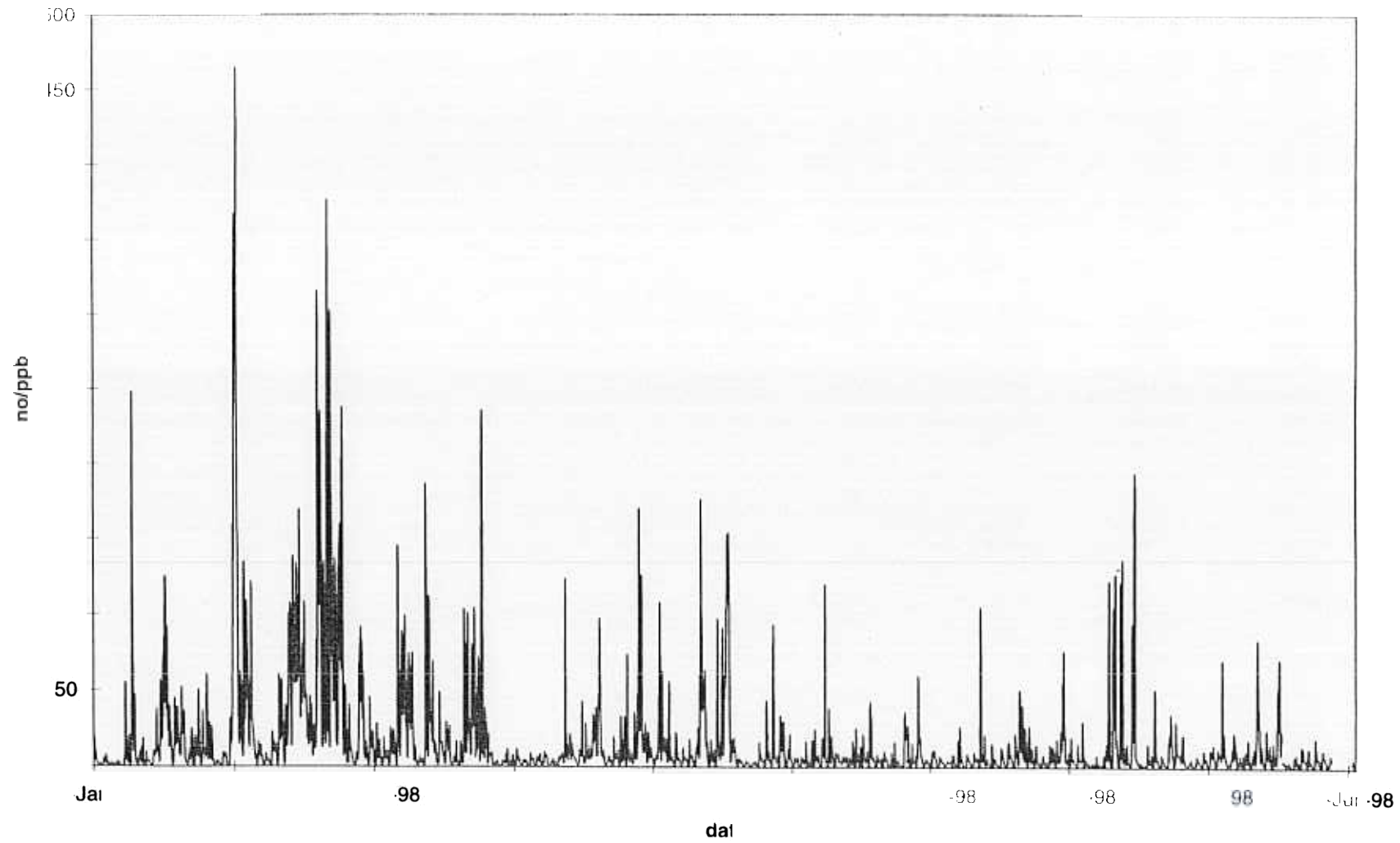
Hi ge



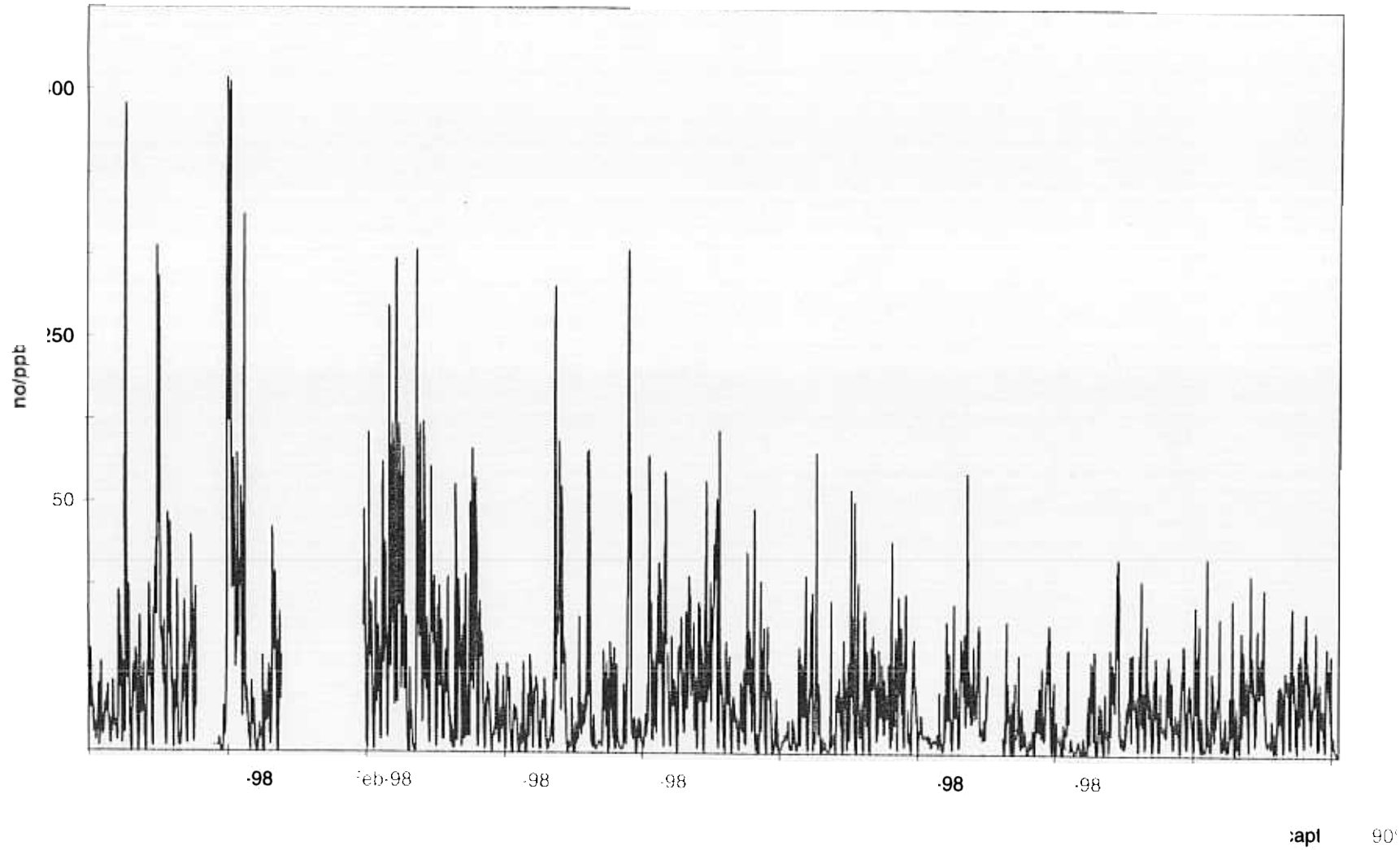
10 99



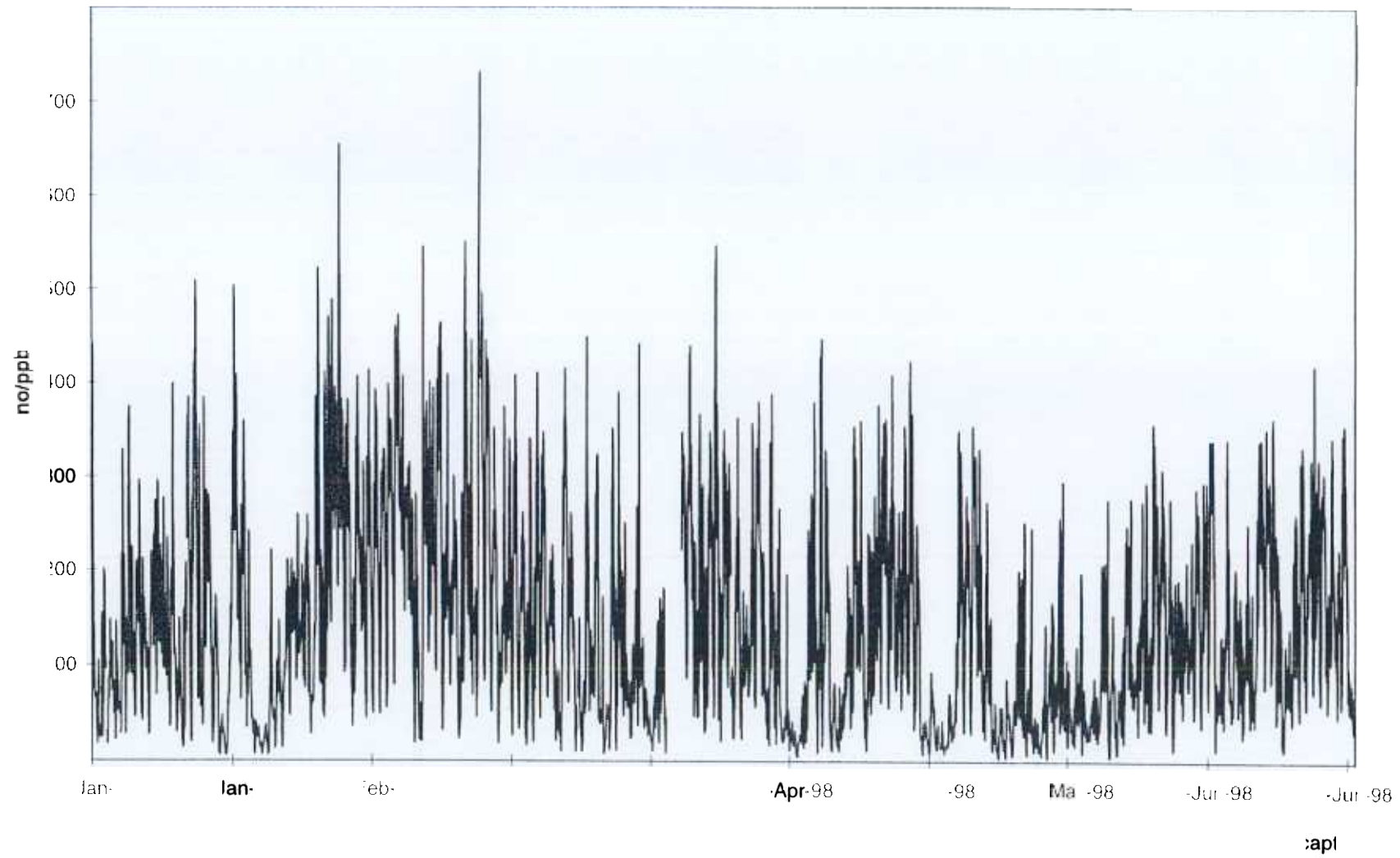
Ki ngto Che 99

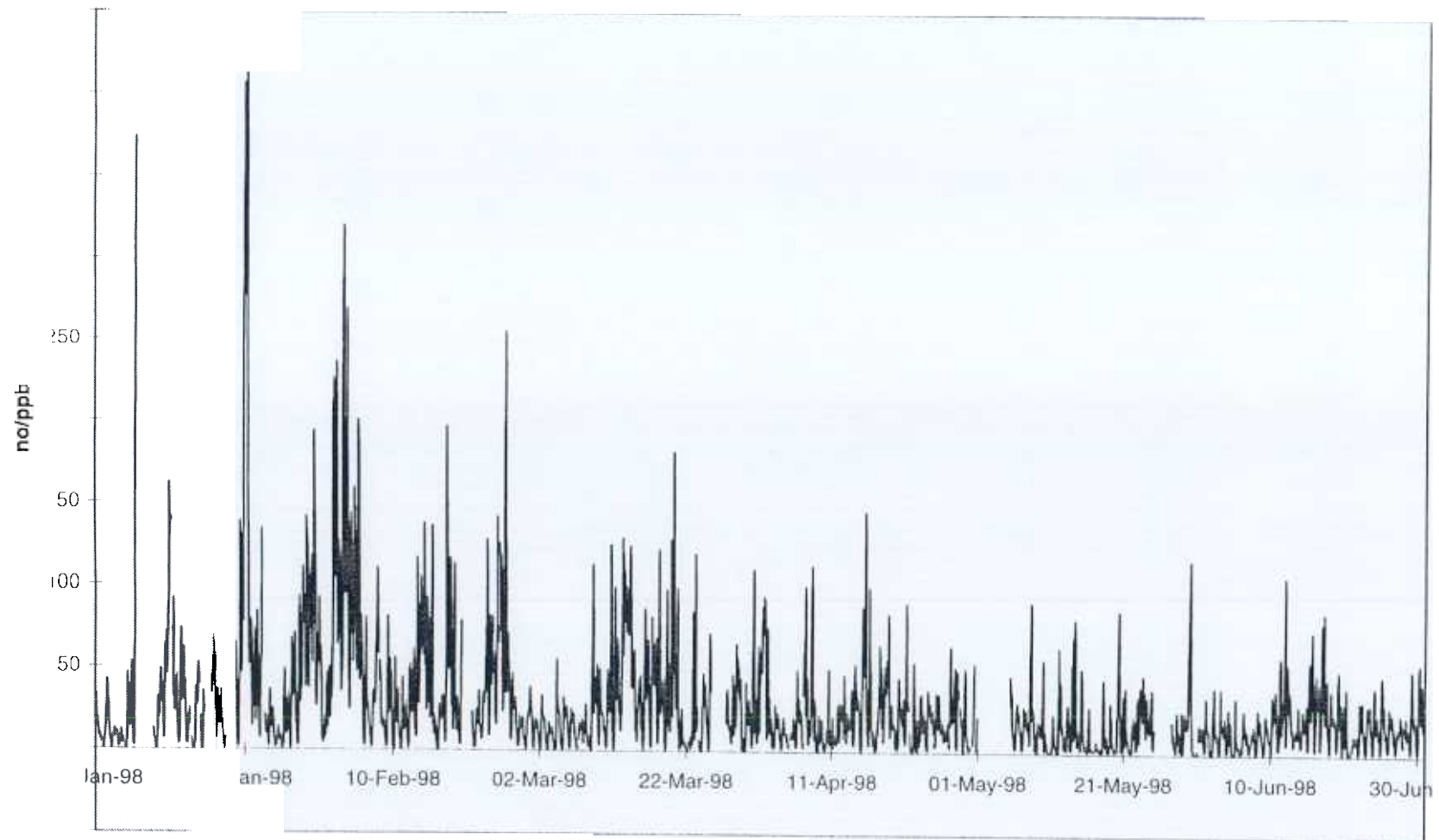


im wi

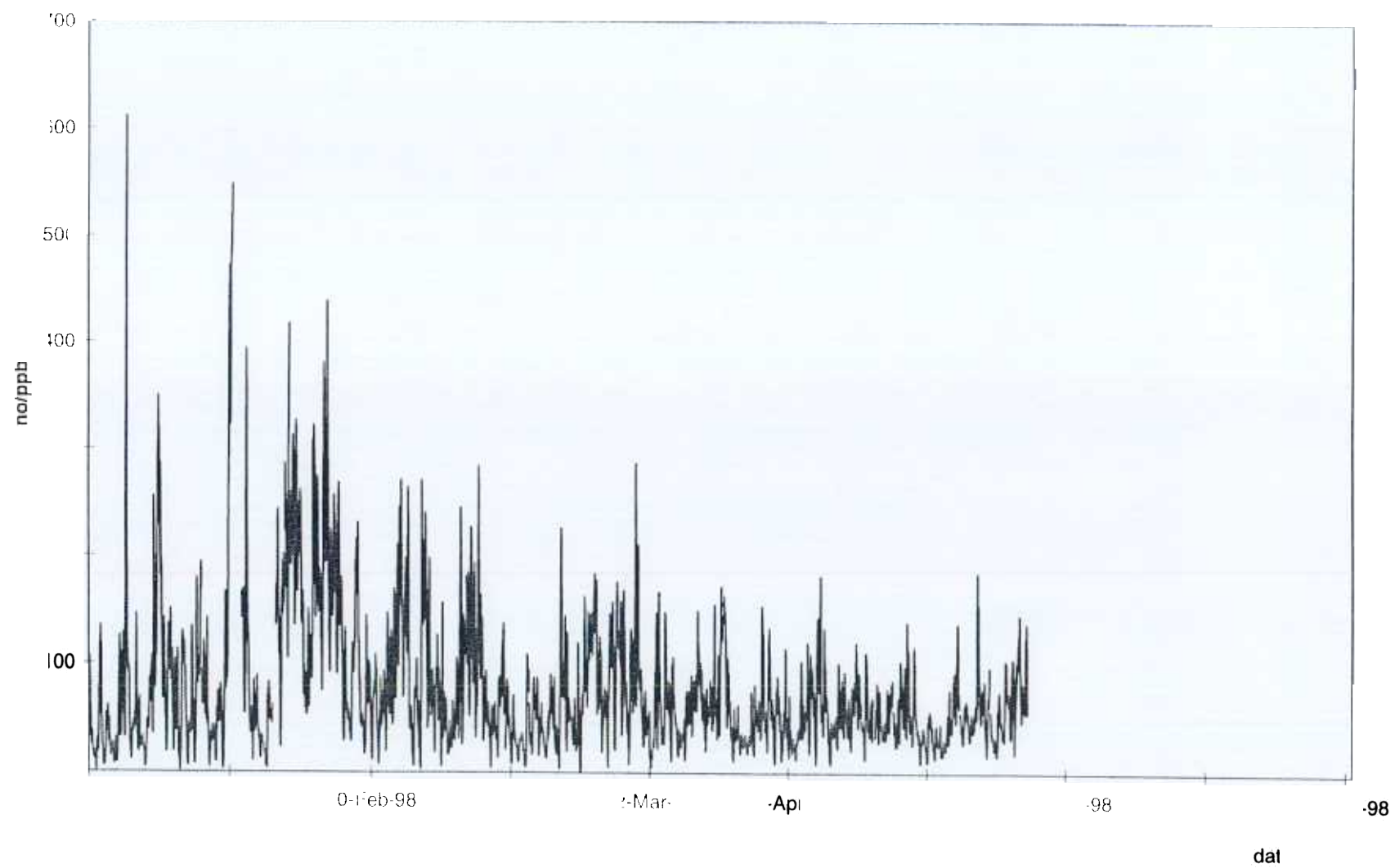


Maryle Road

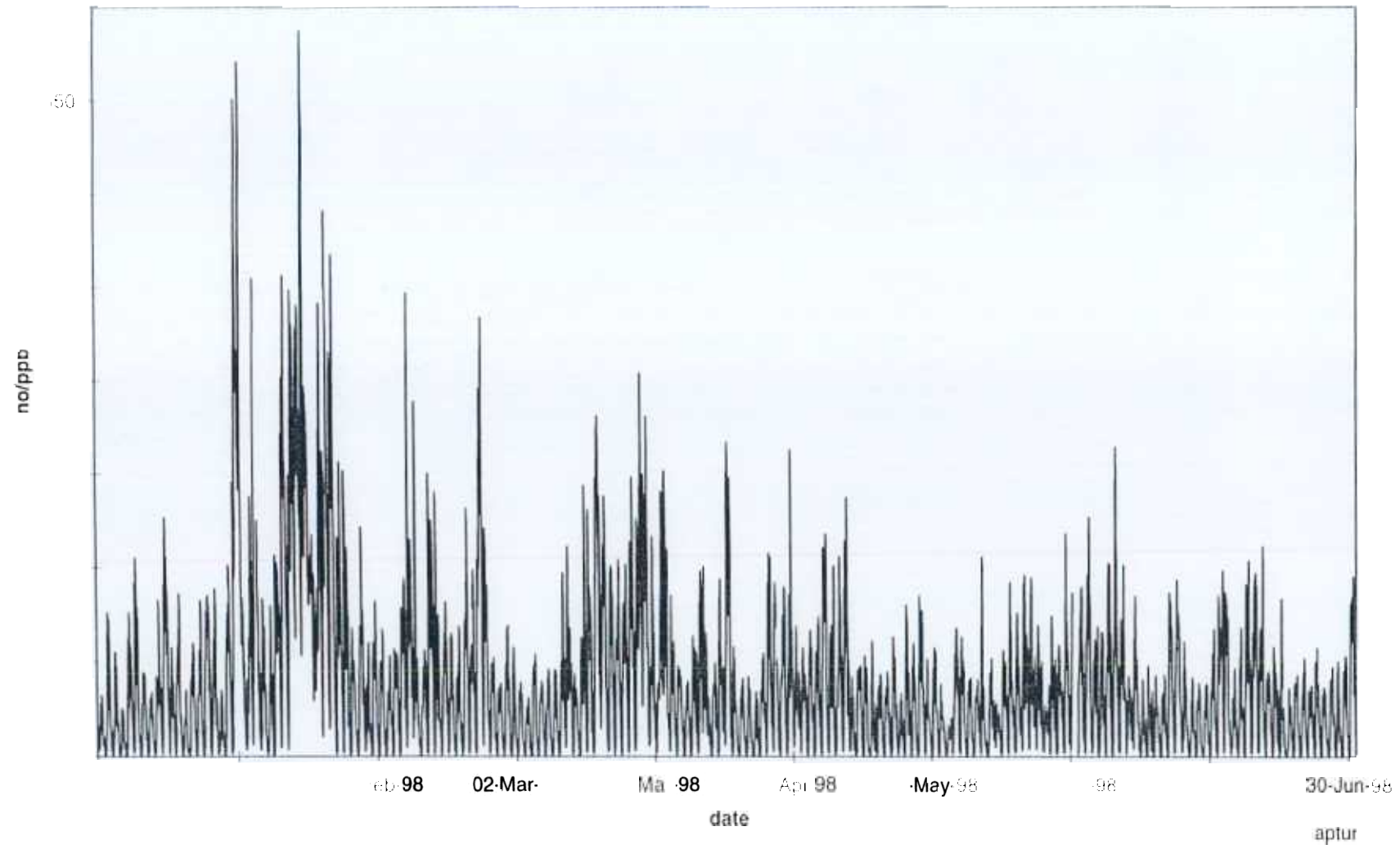




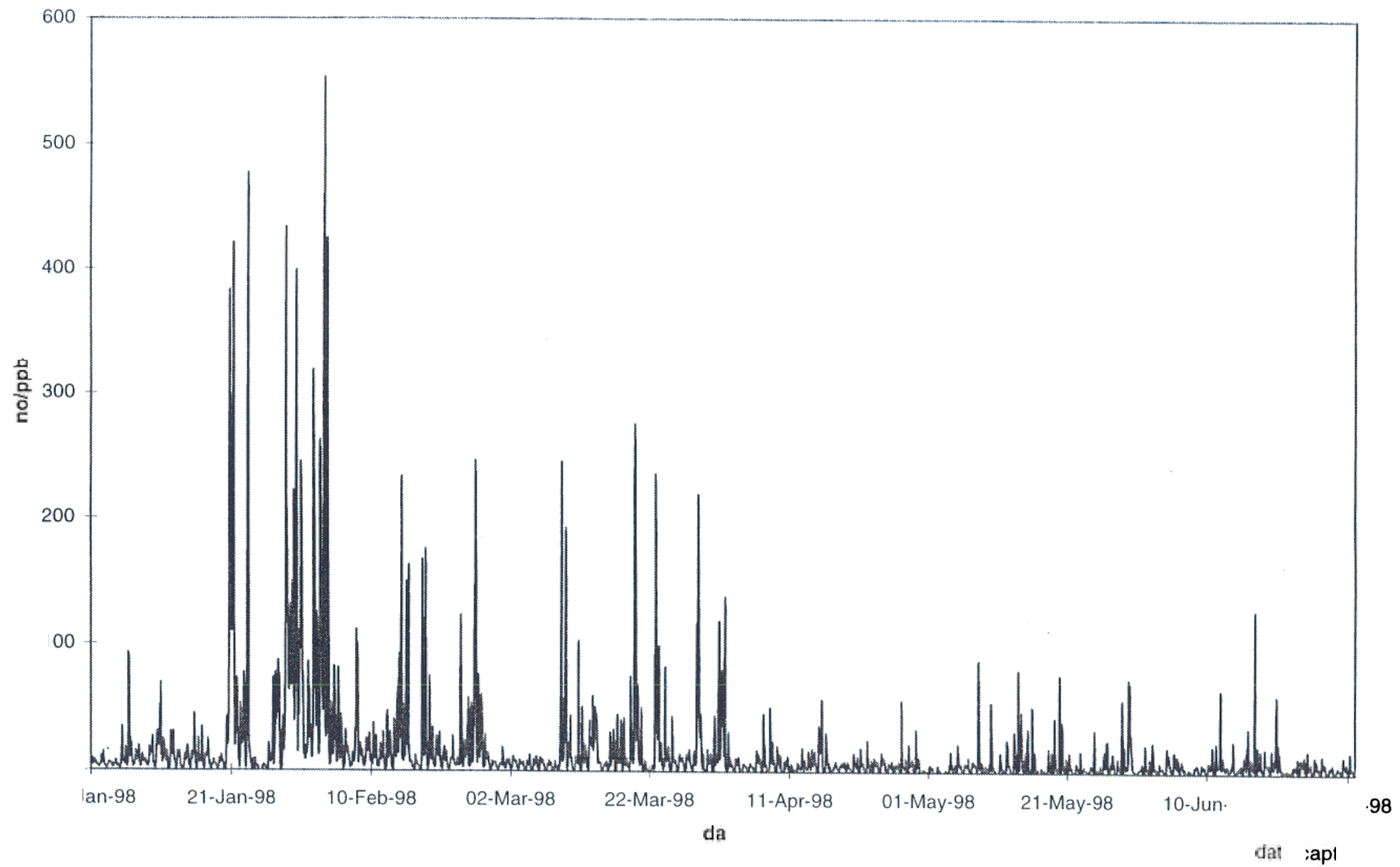
So 99



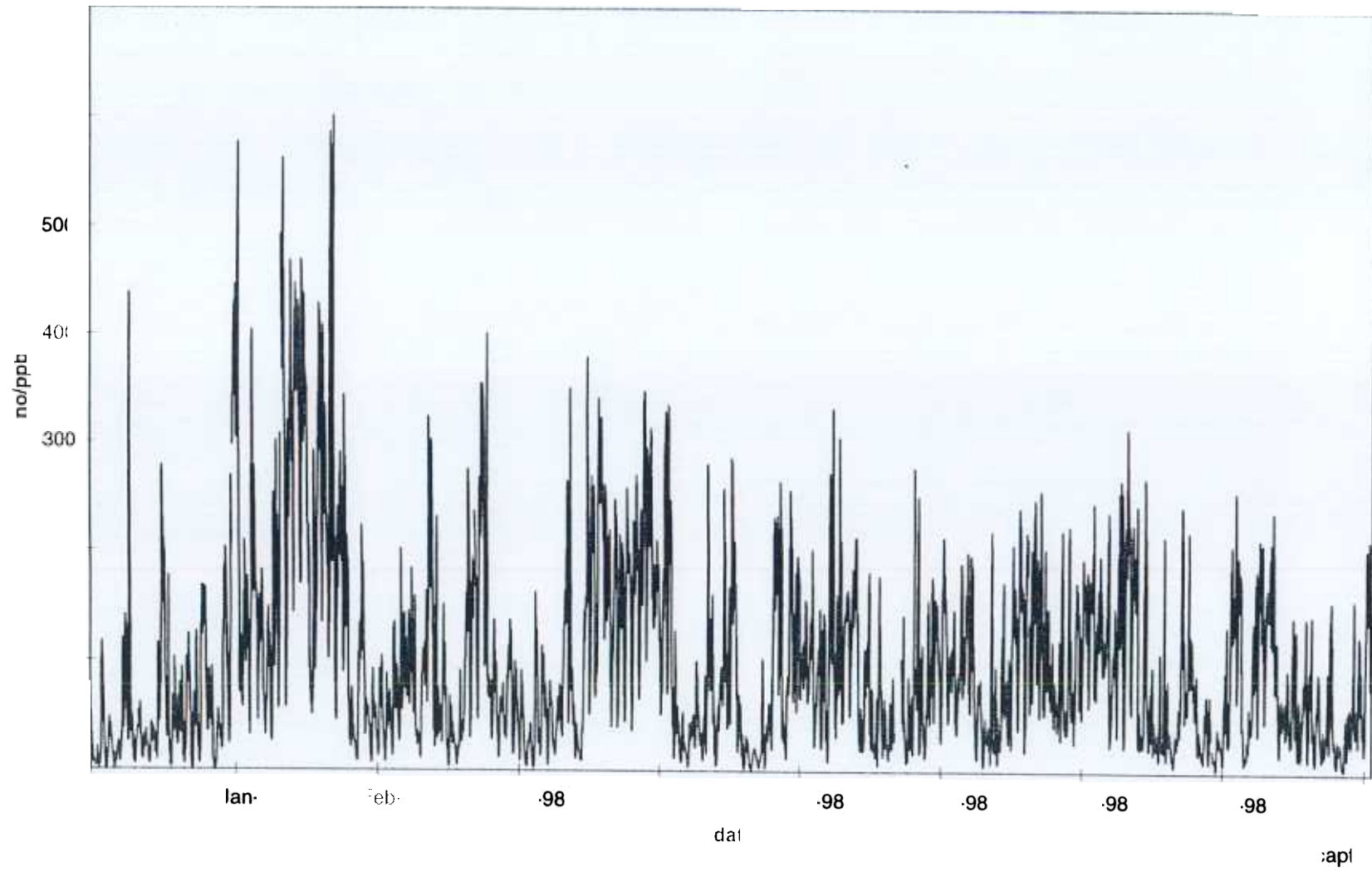
98



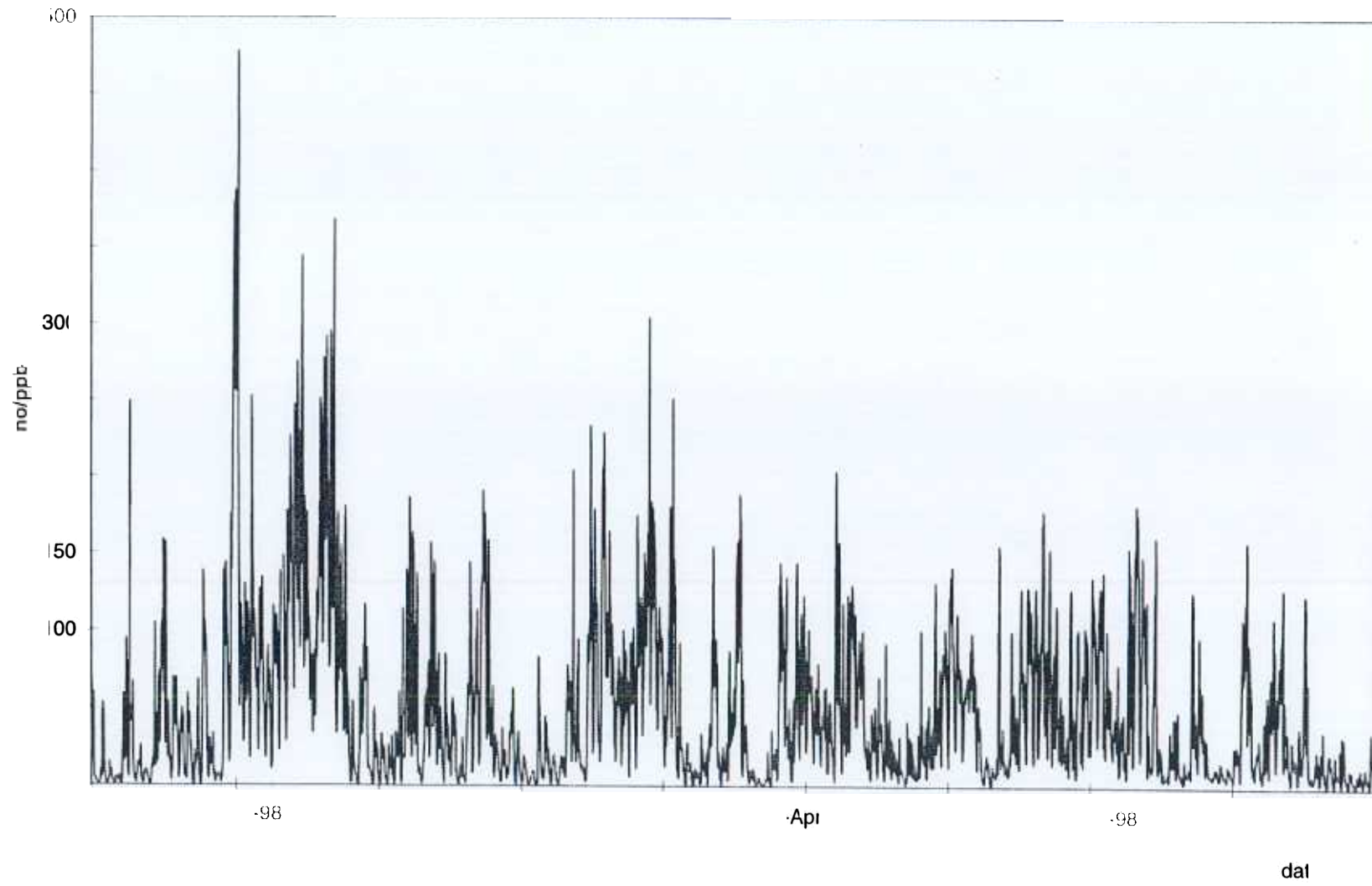
utton 98



H: mle

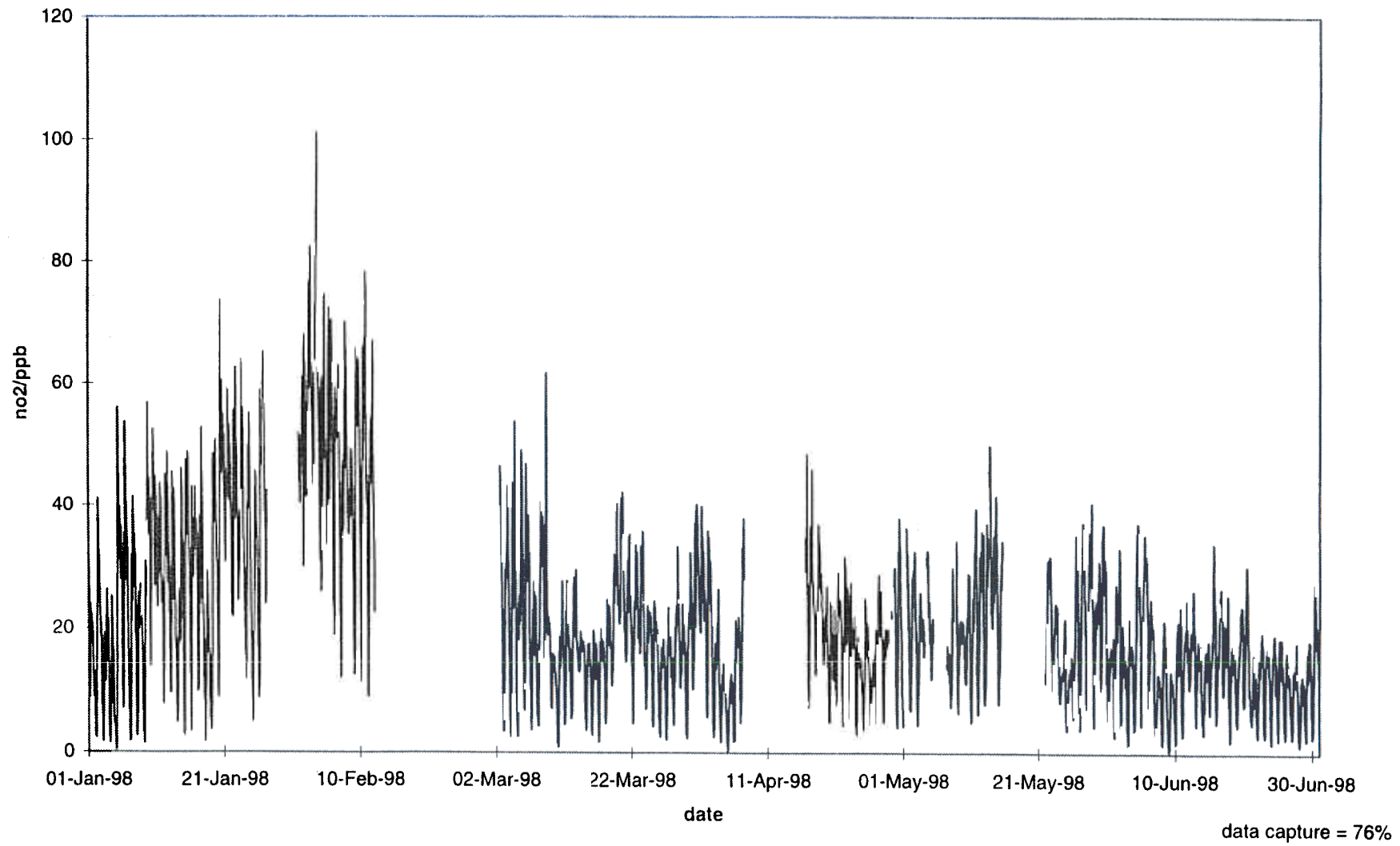


W

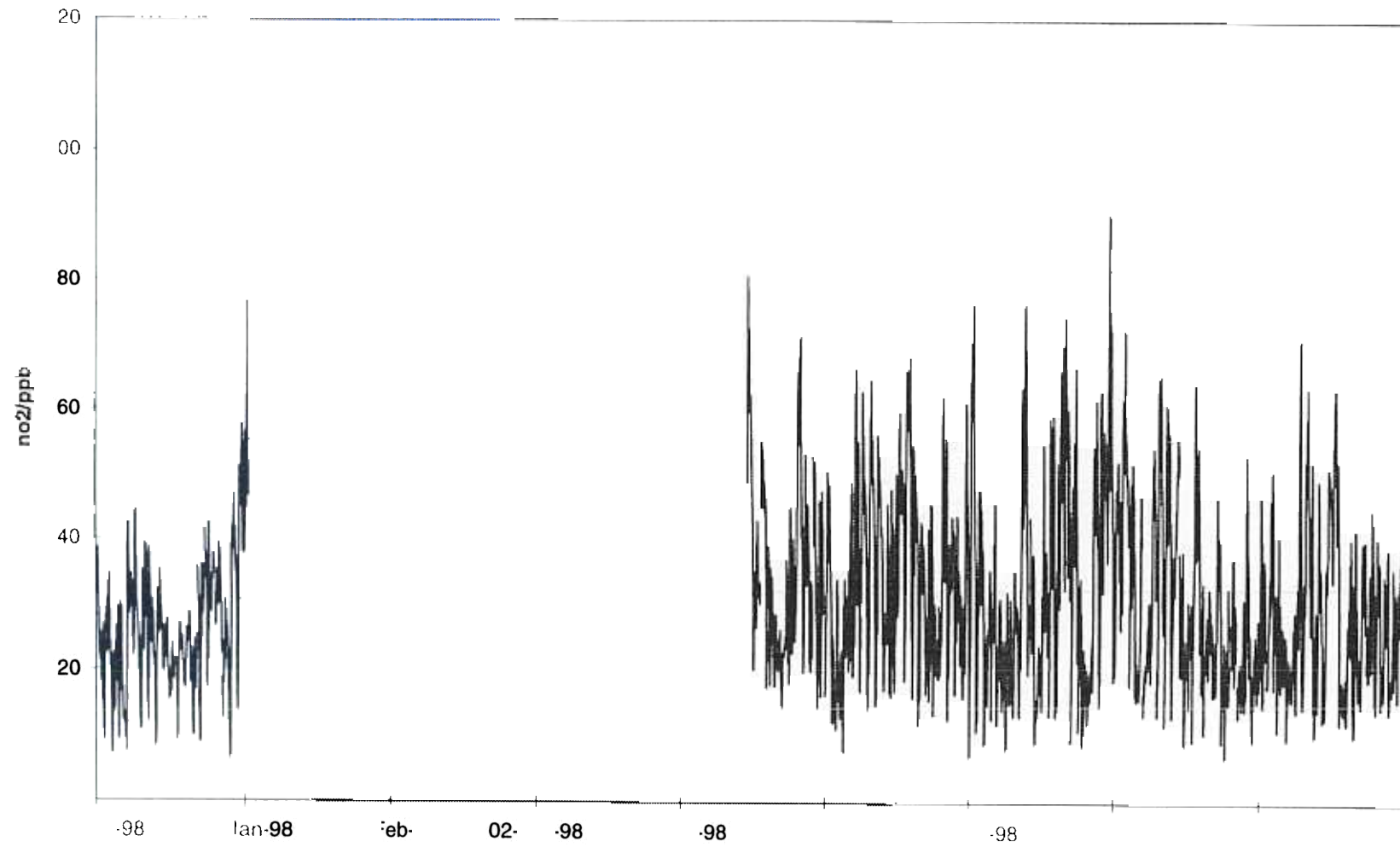


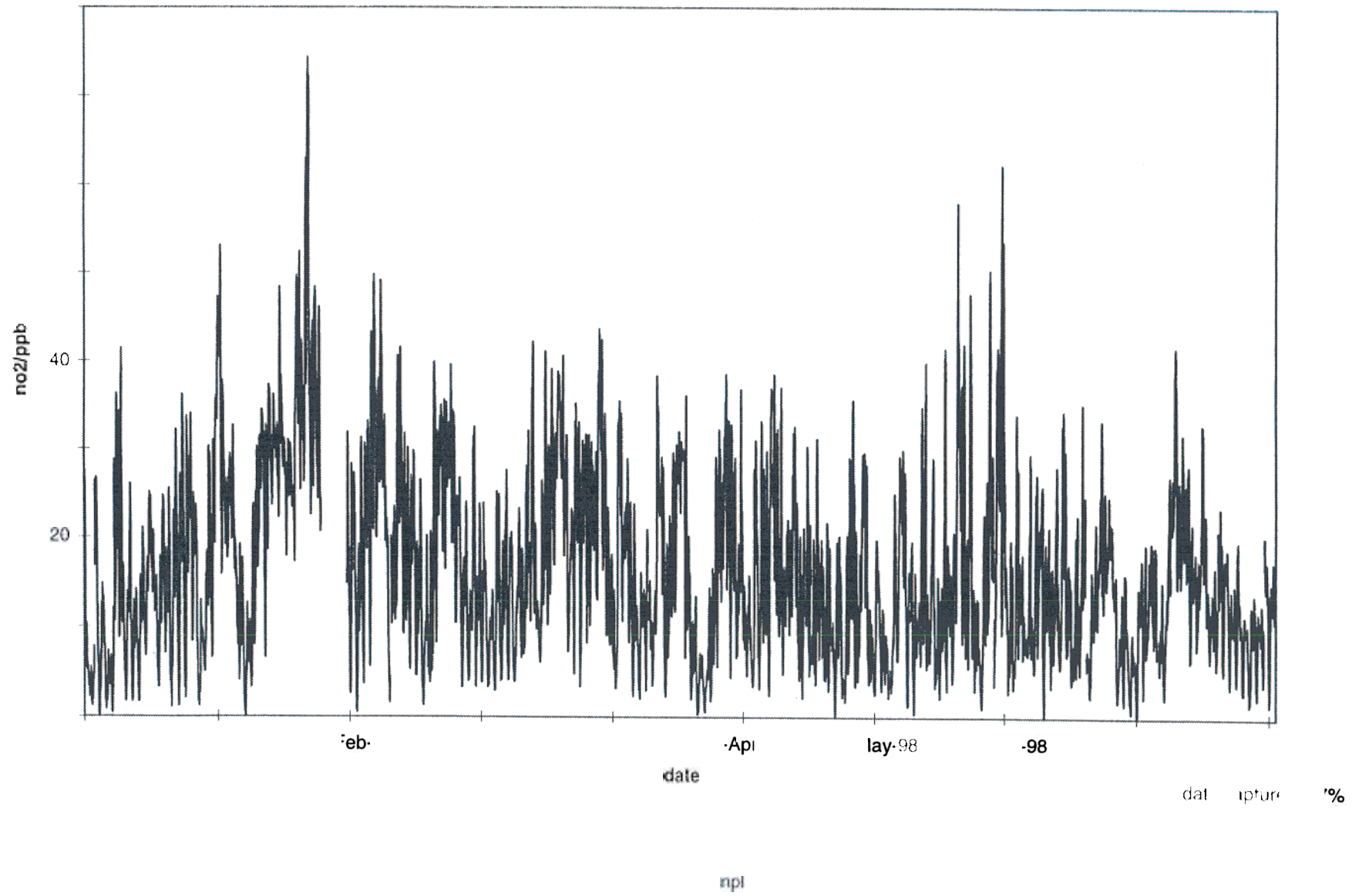
npl

Bromley 1998

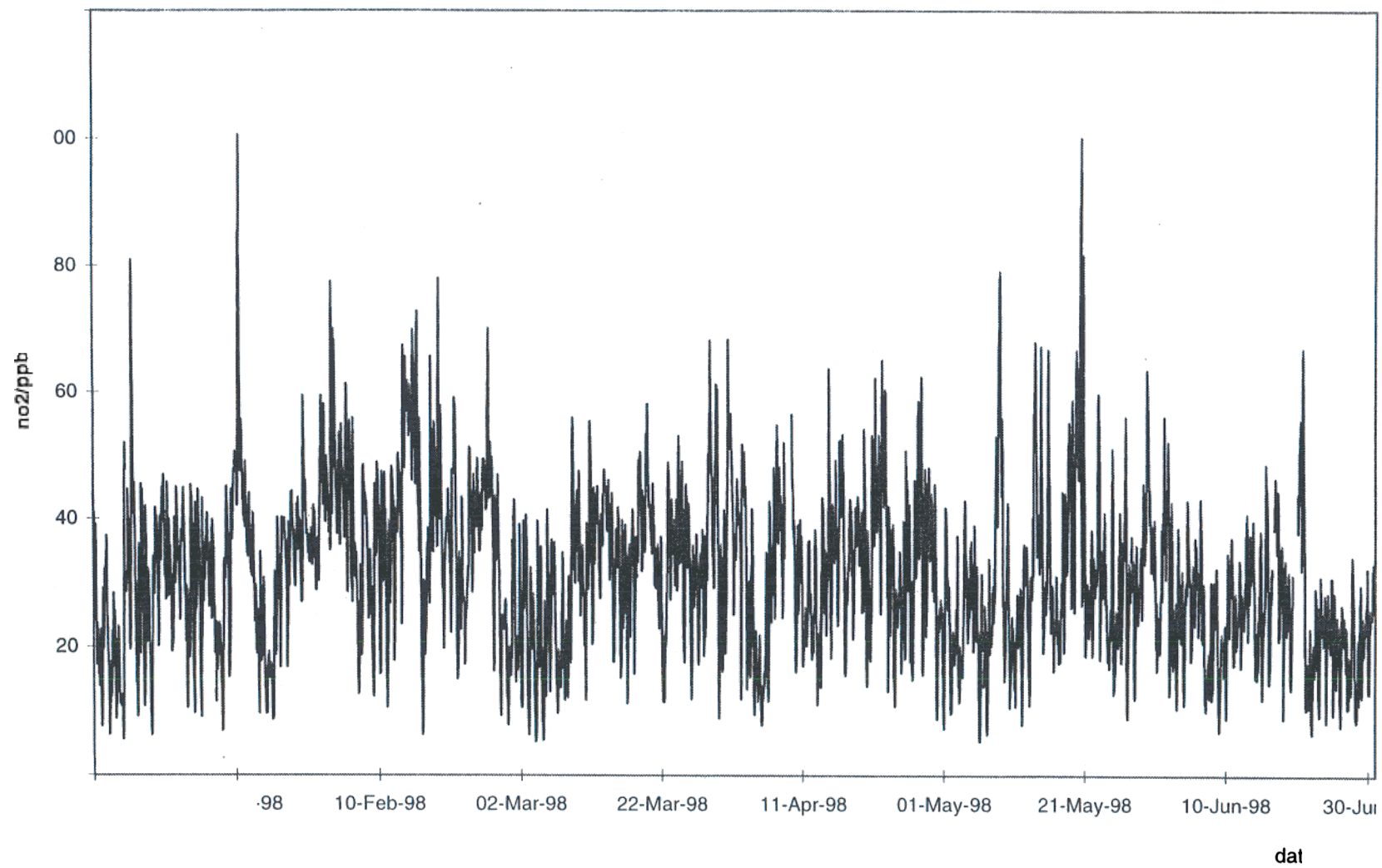


de 98

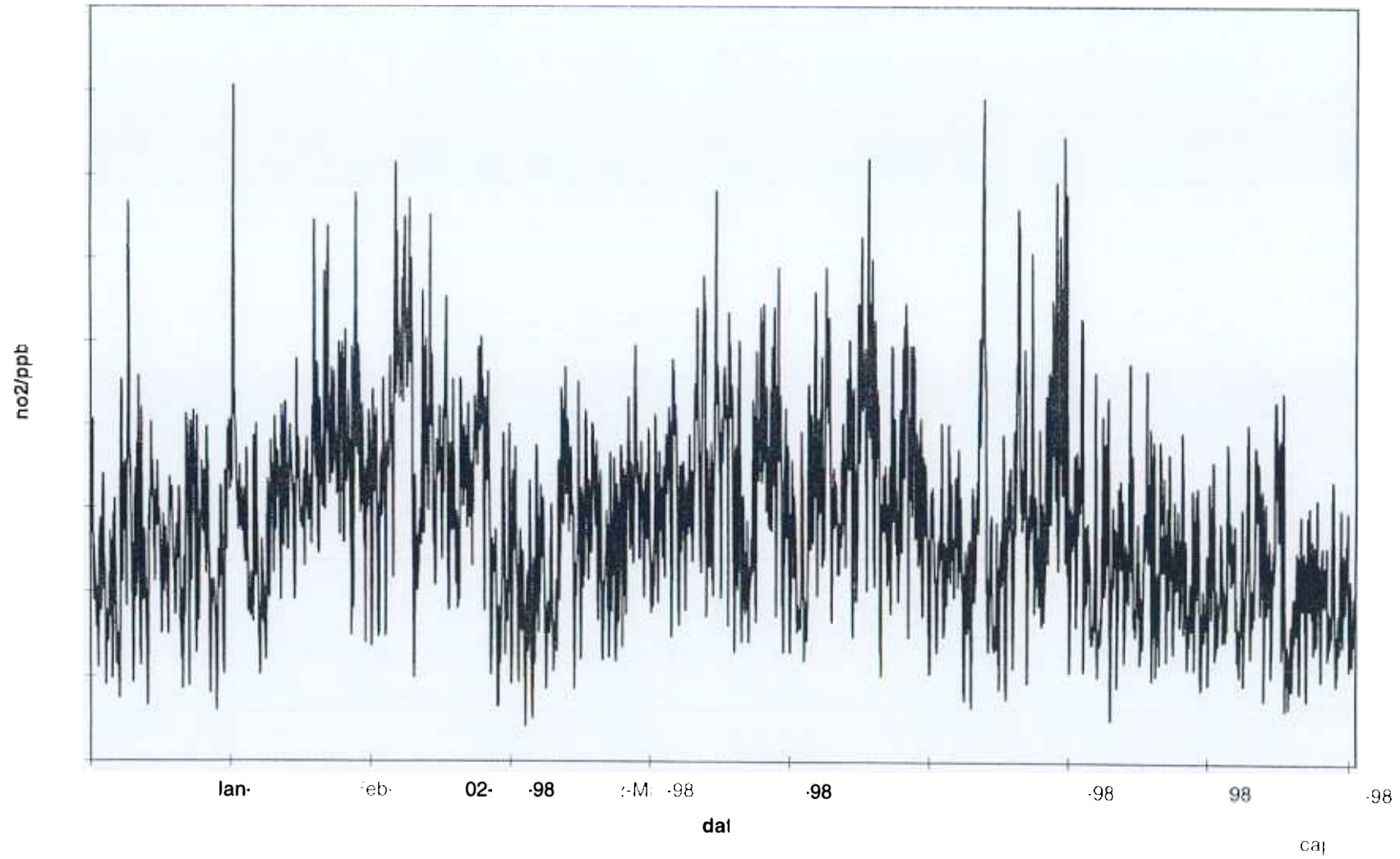


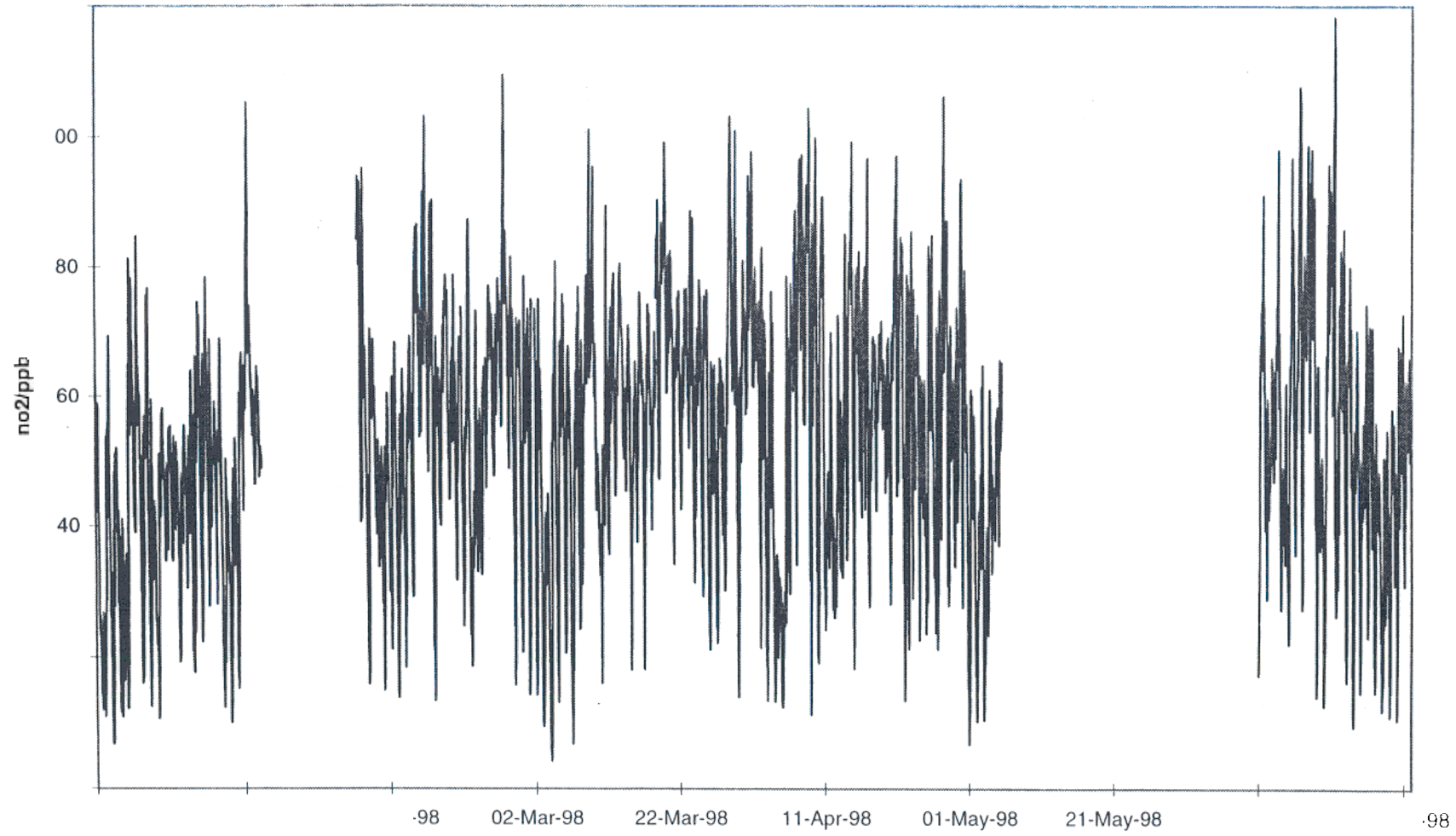


kn 99

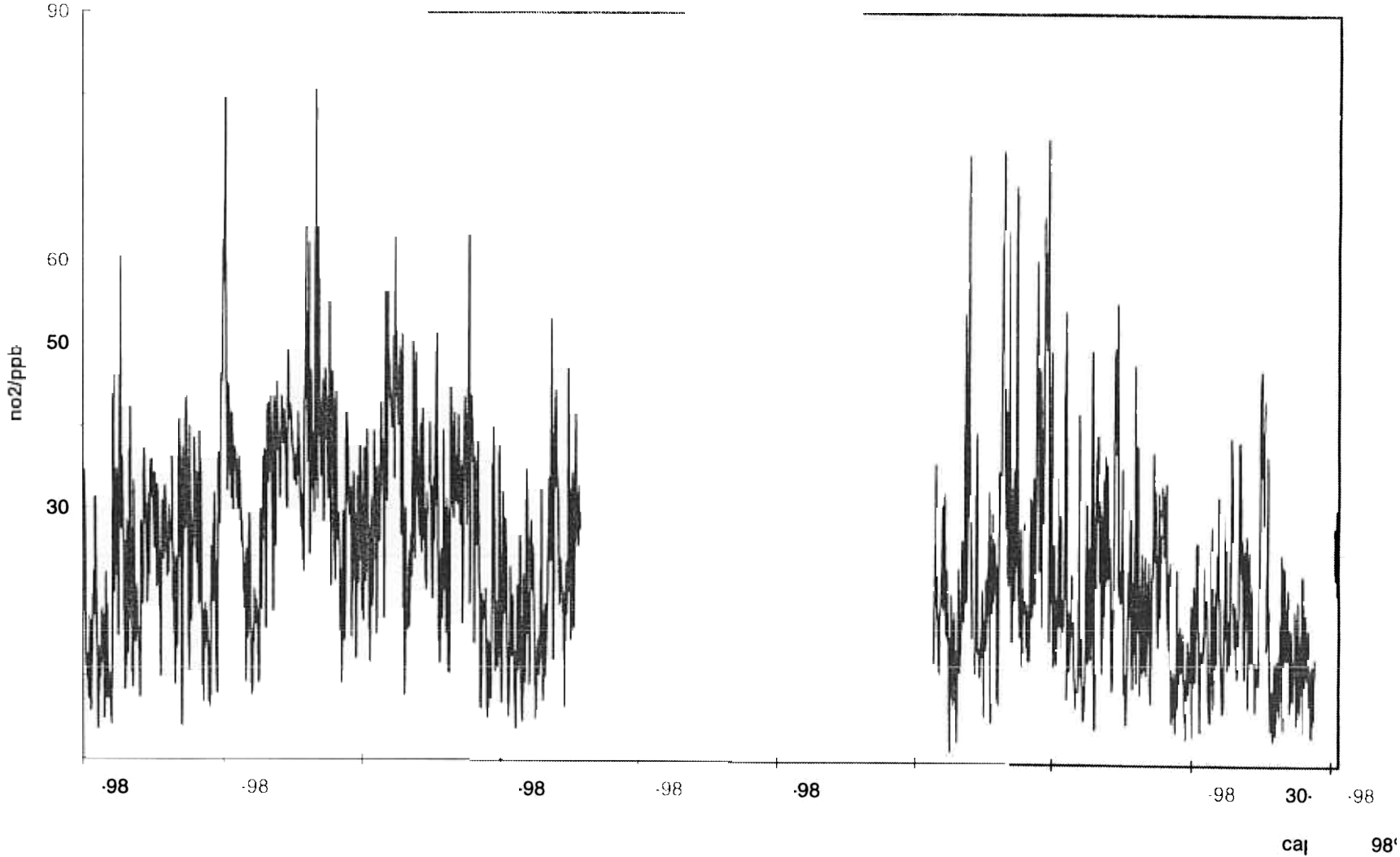


ge 99

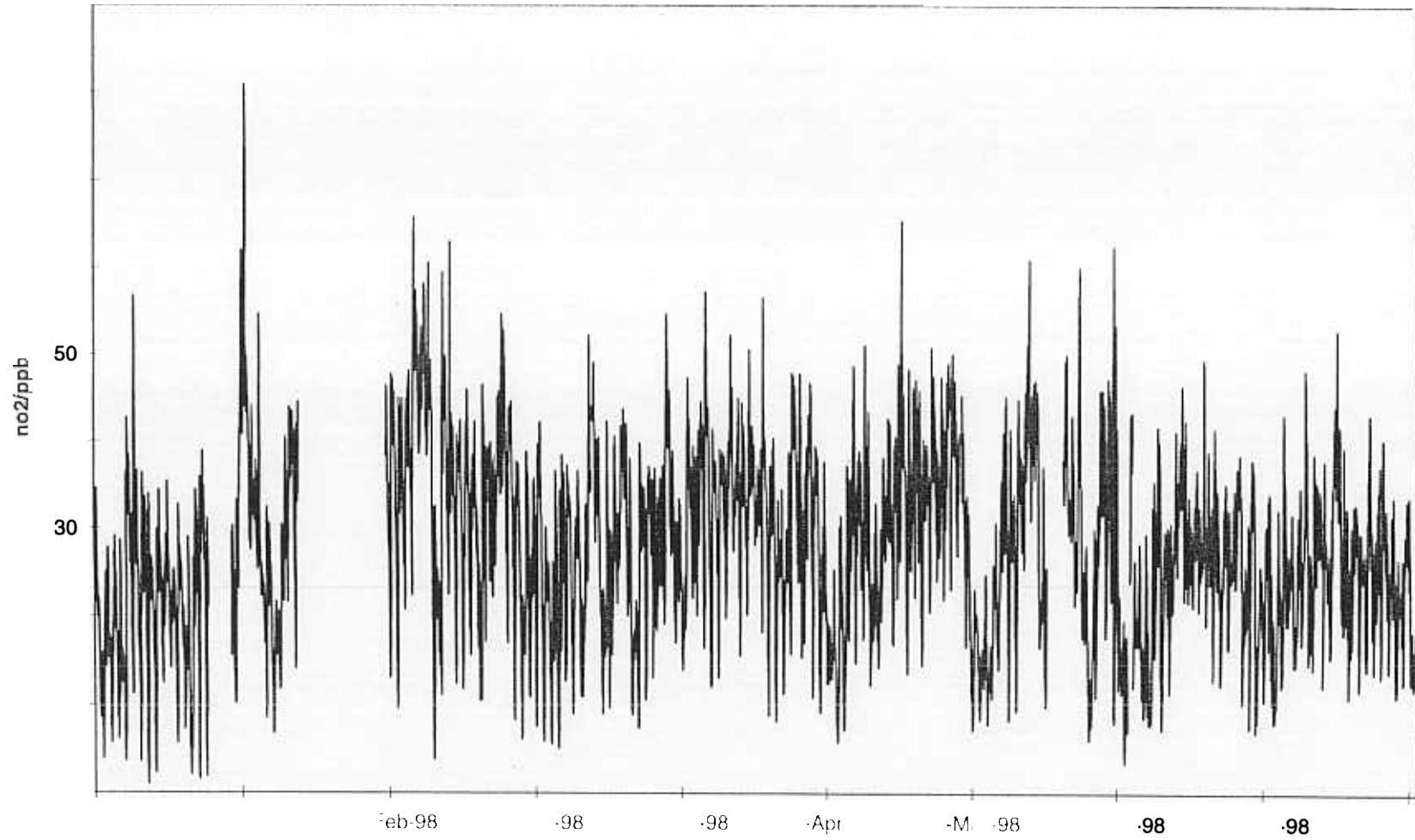




C

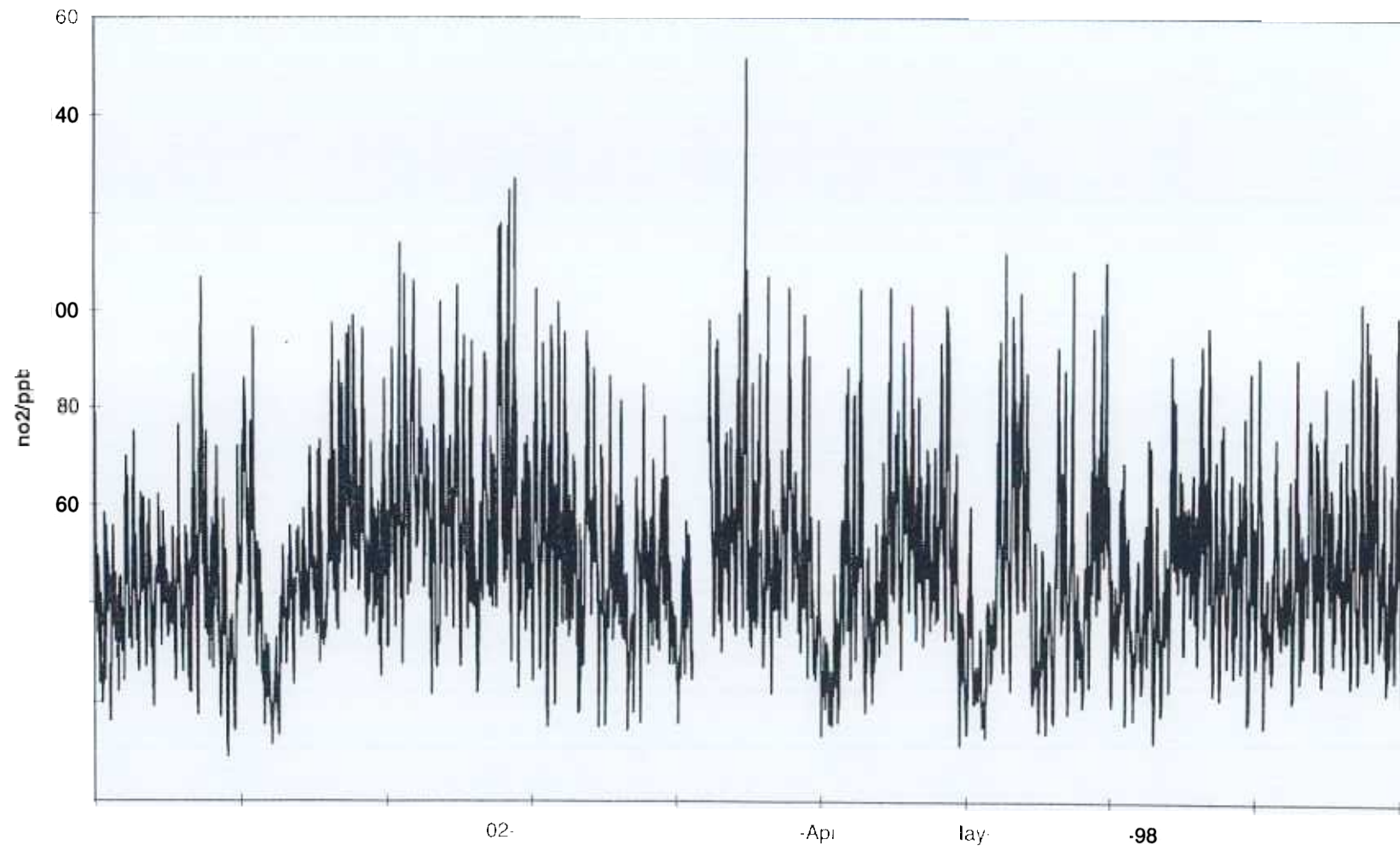


Wi

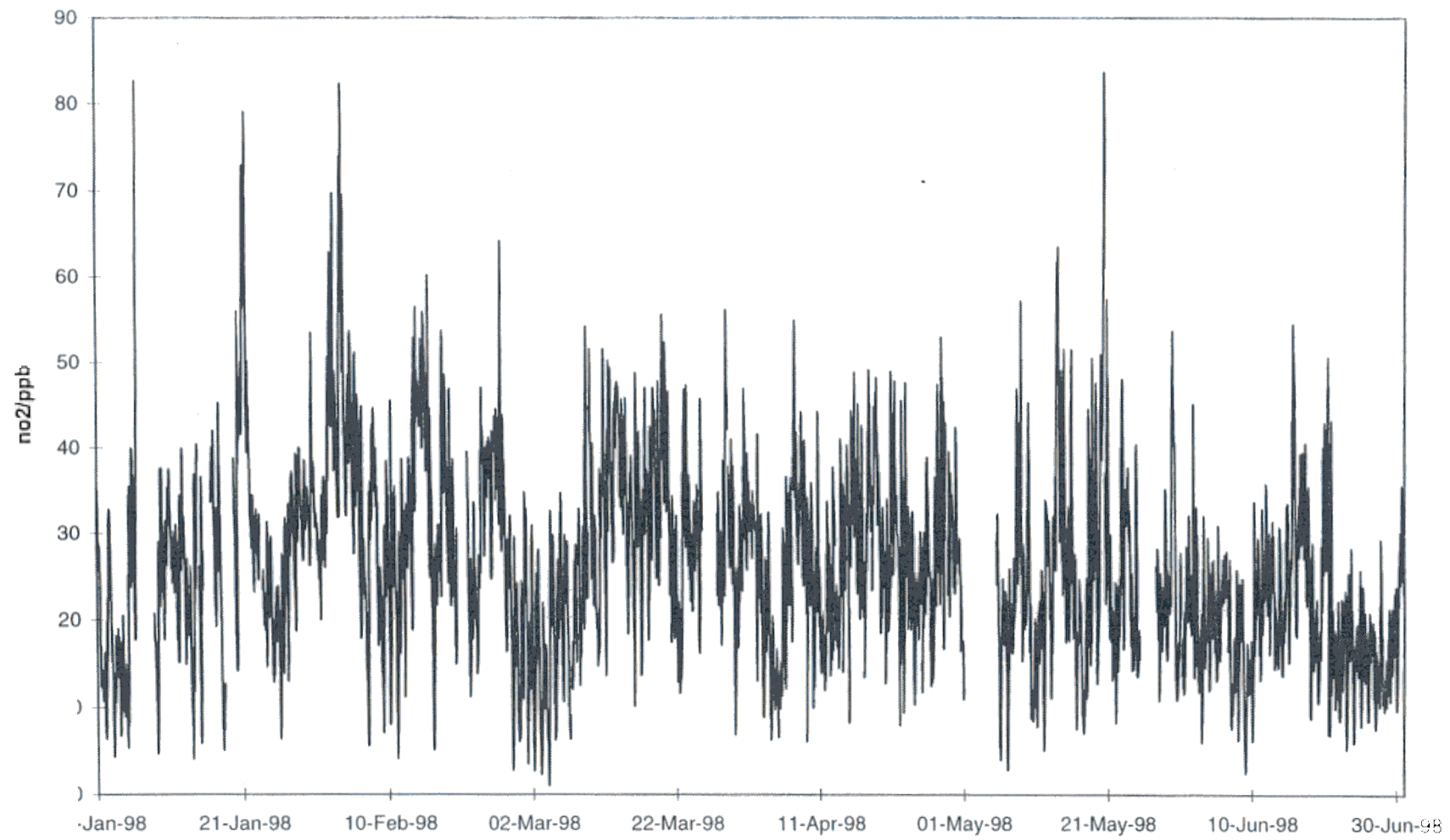


caj 90'

M: ry da 98

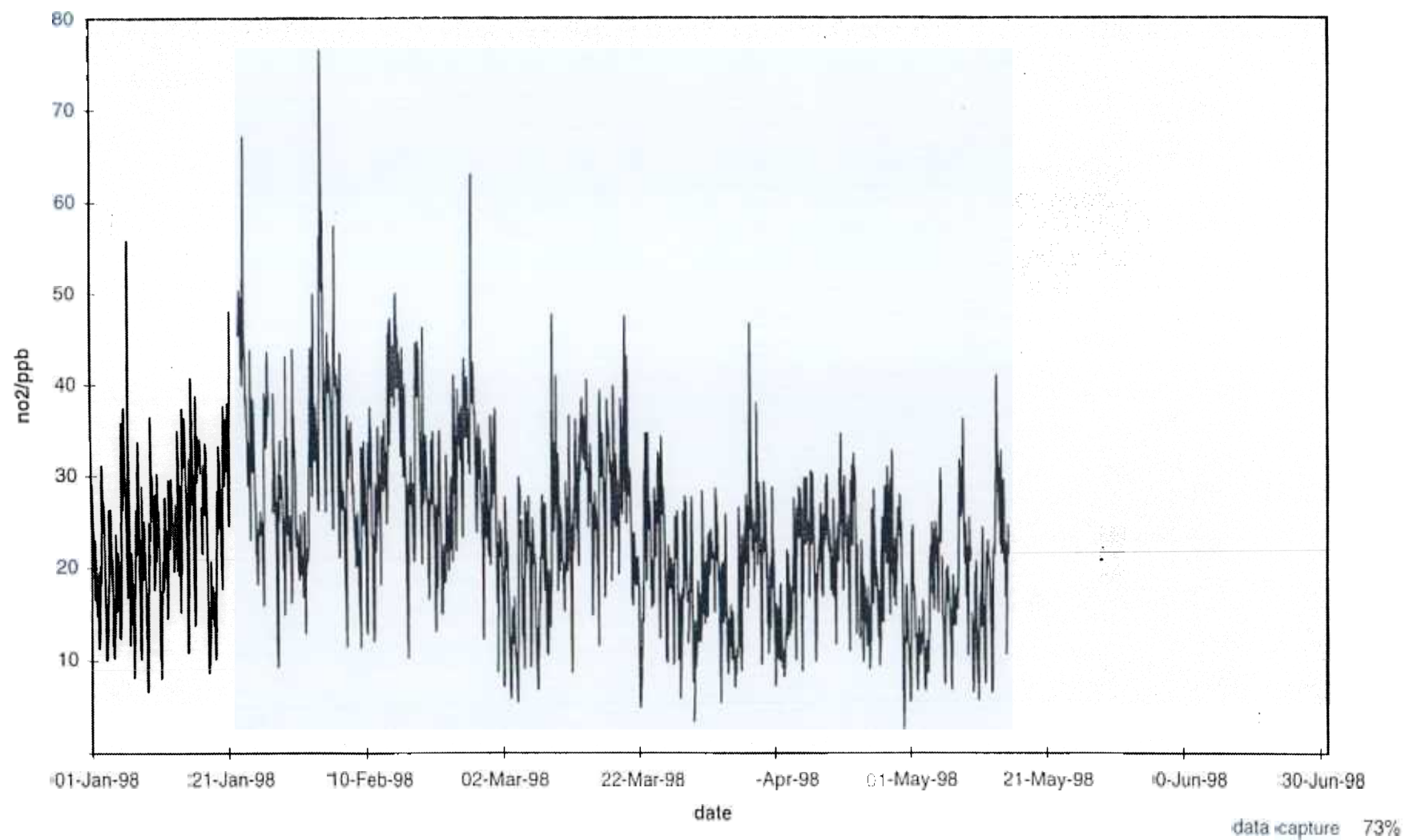


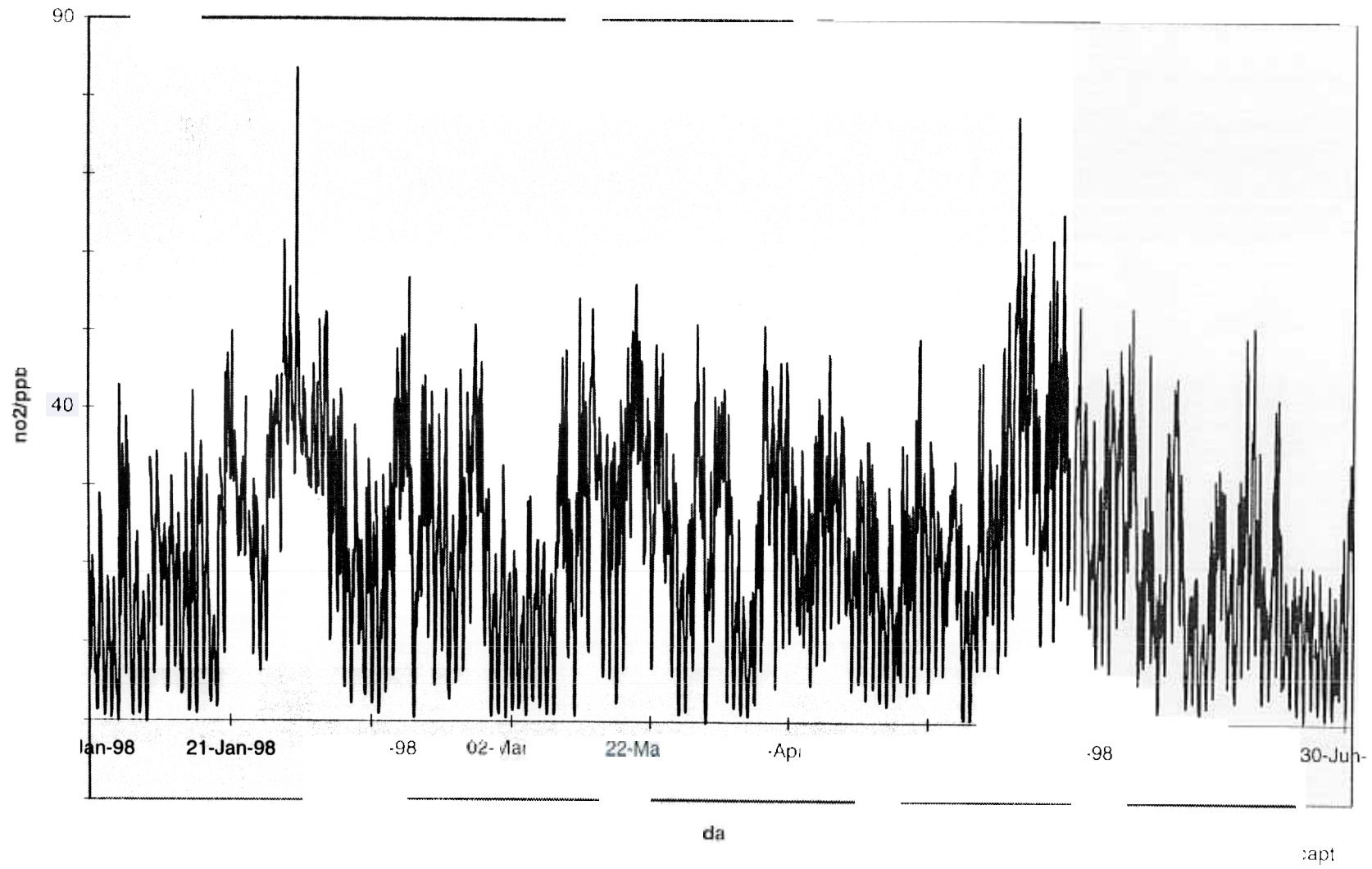
Southwark 998



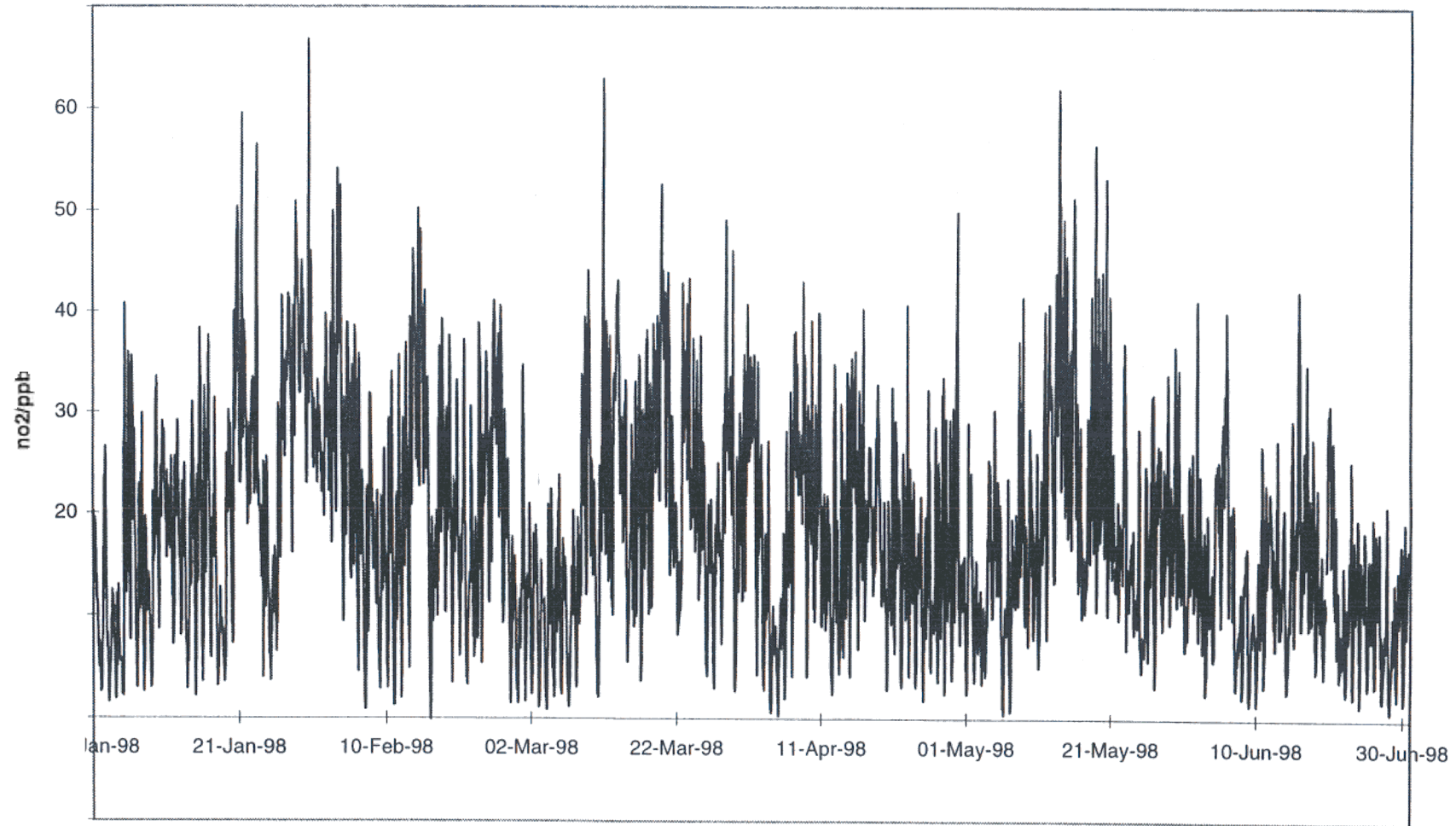
data capture = 90%

Southwark 1998



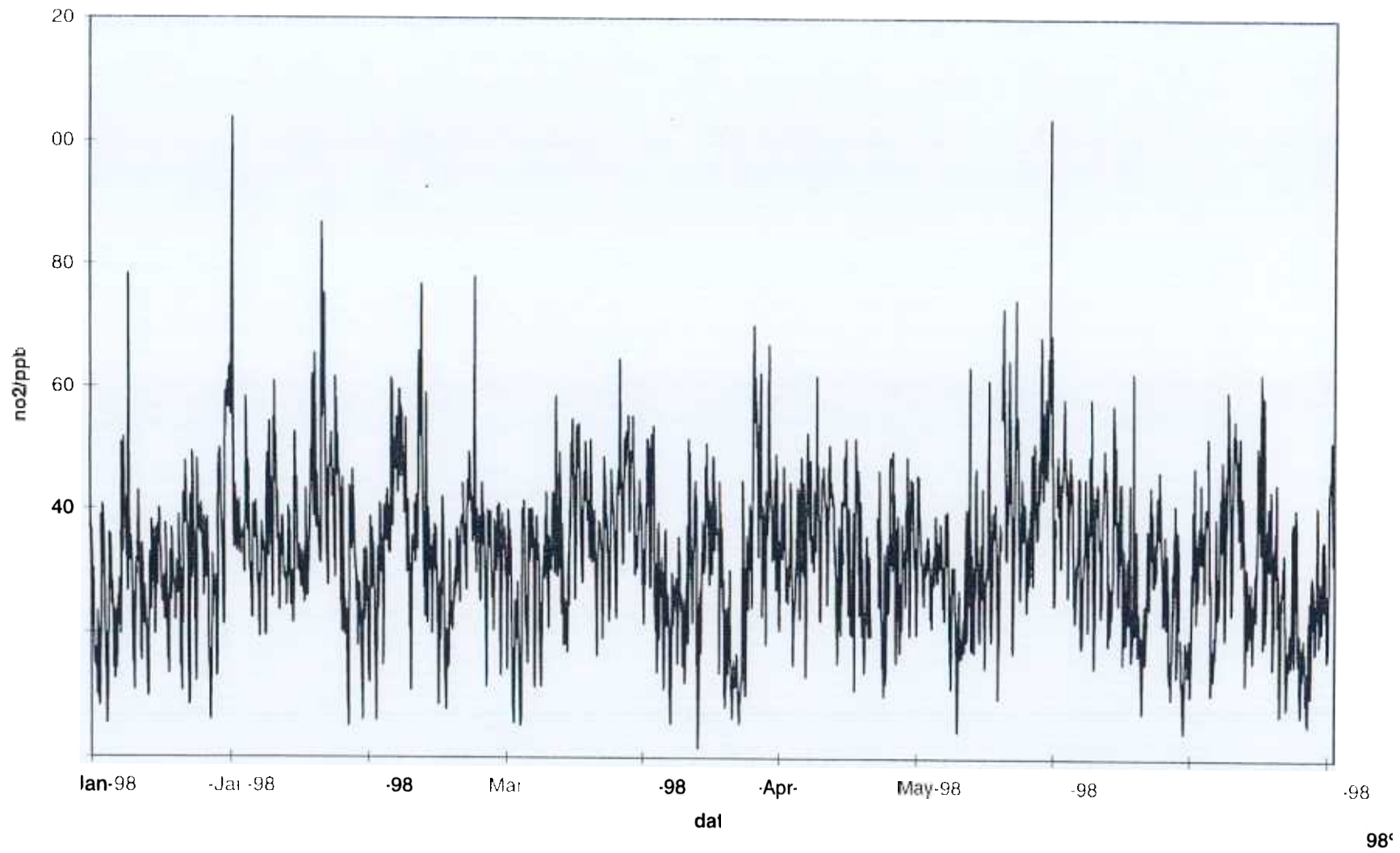


utton 98

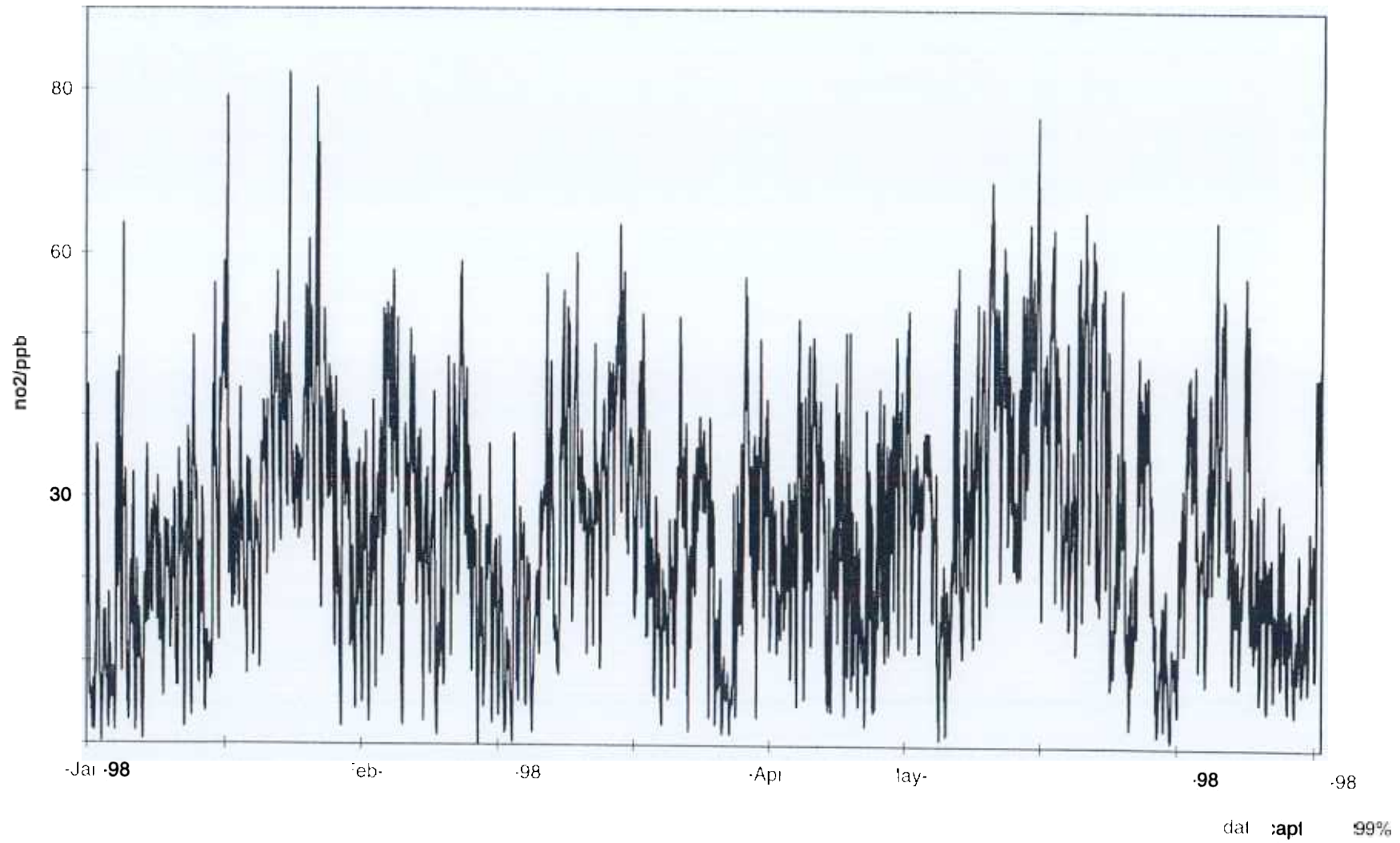


dal

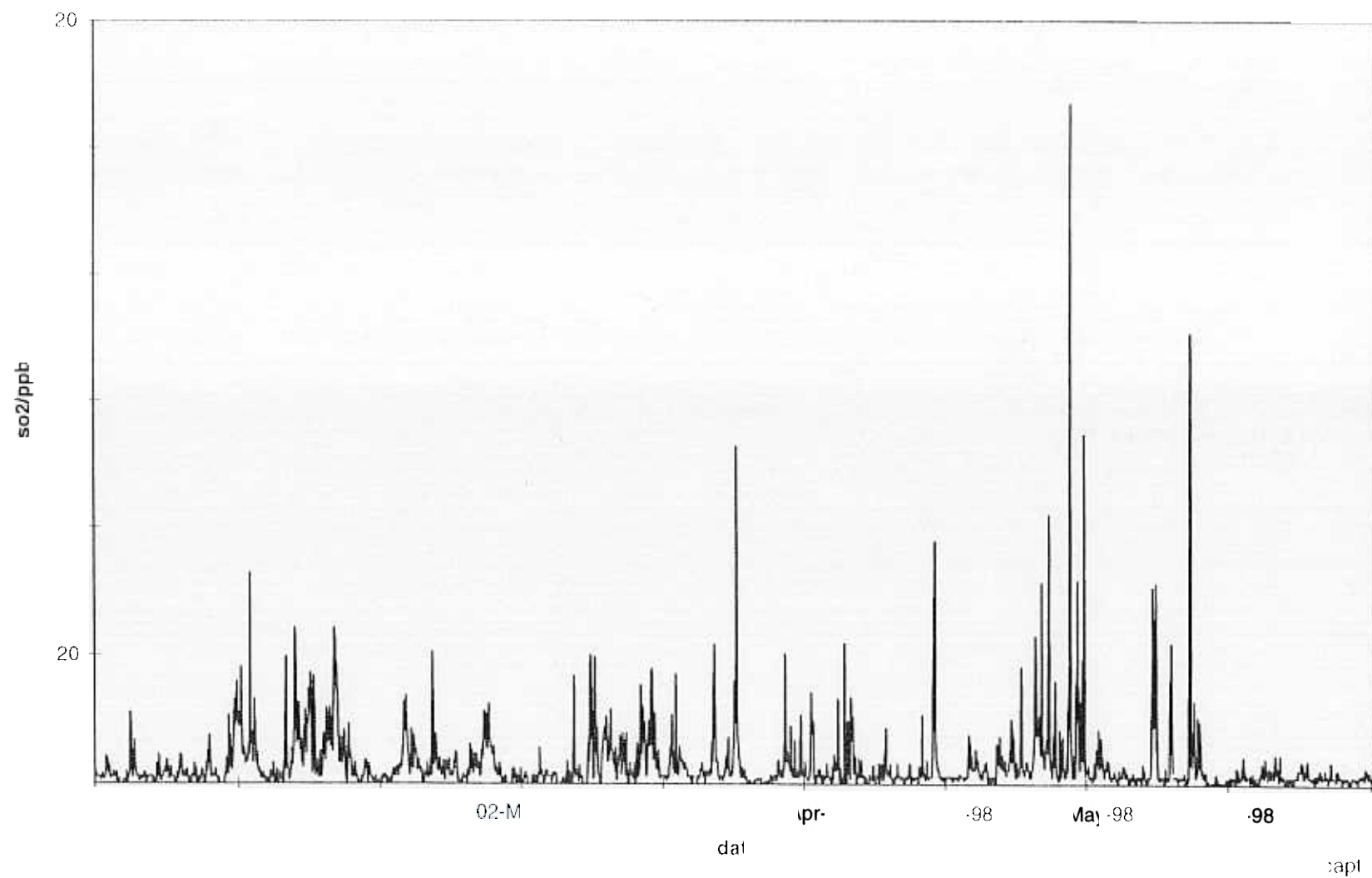
er 98



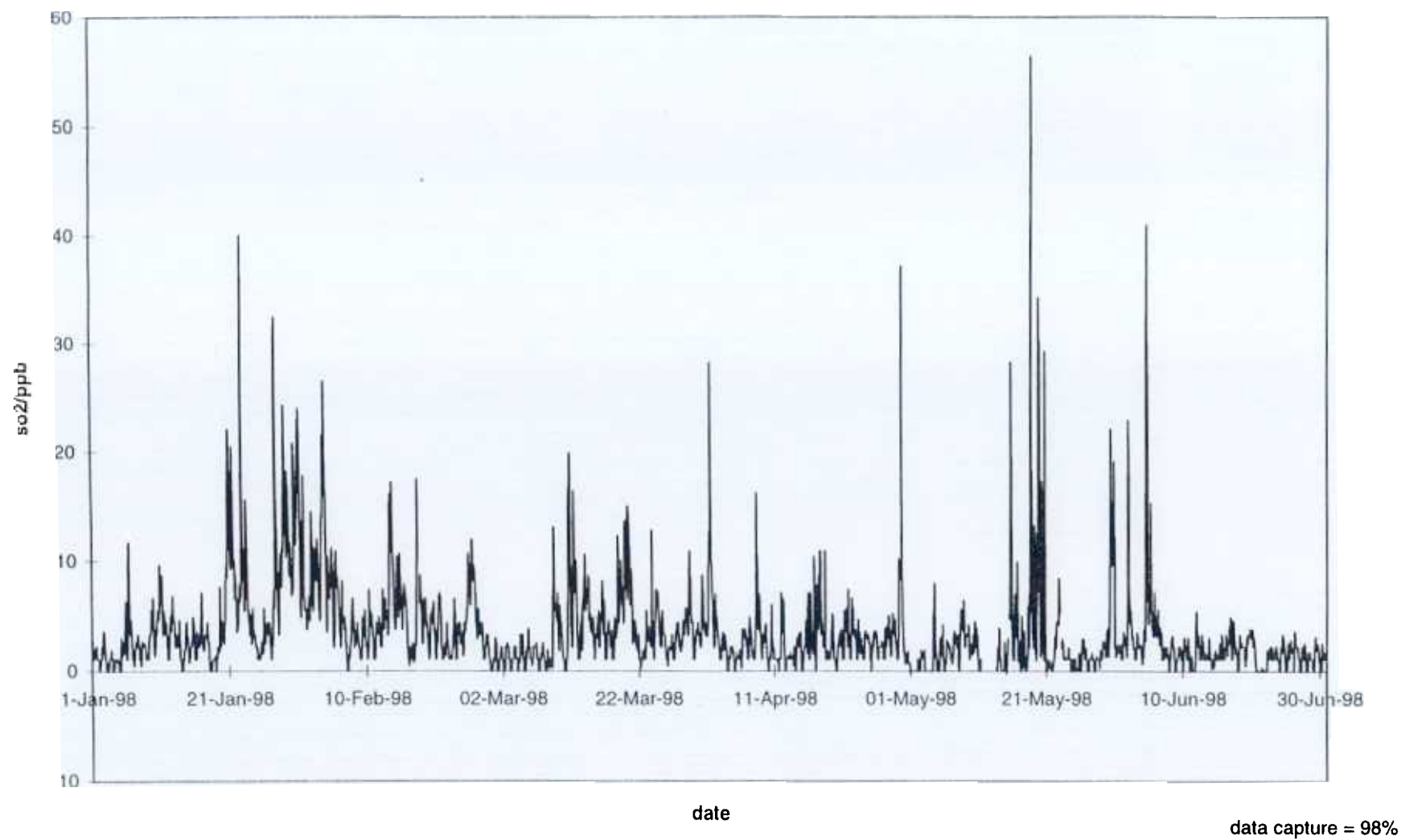
Wind 99



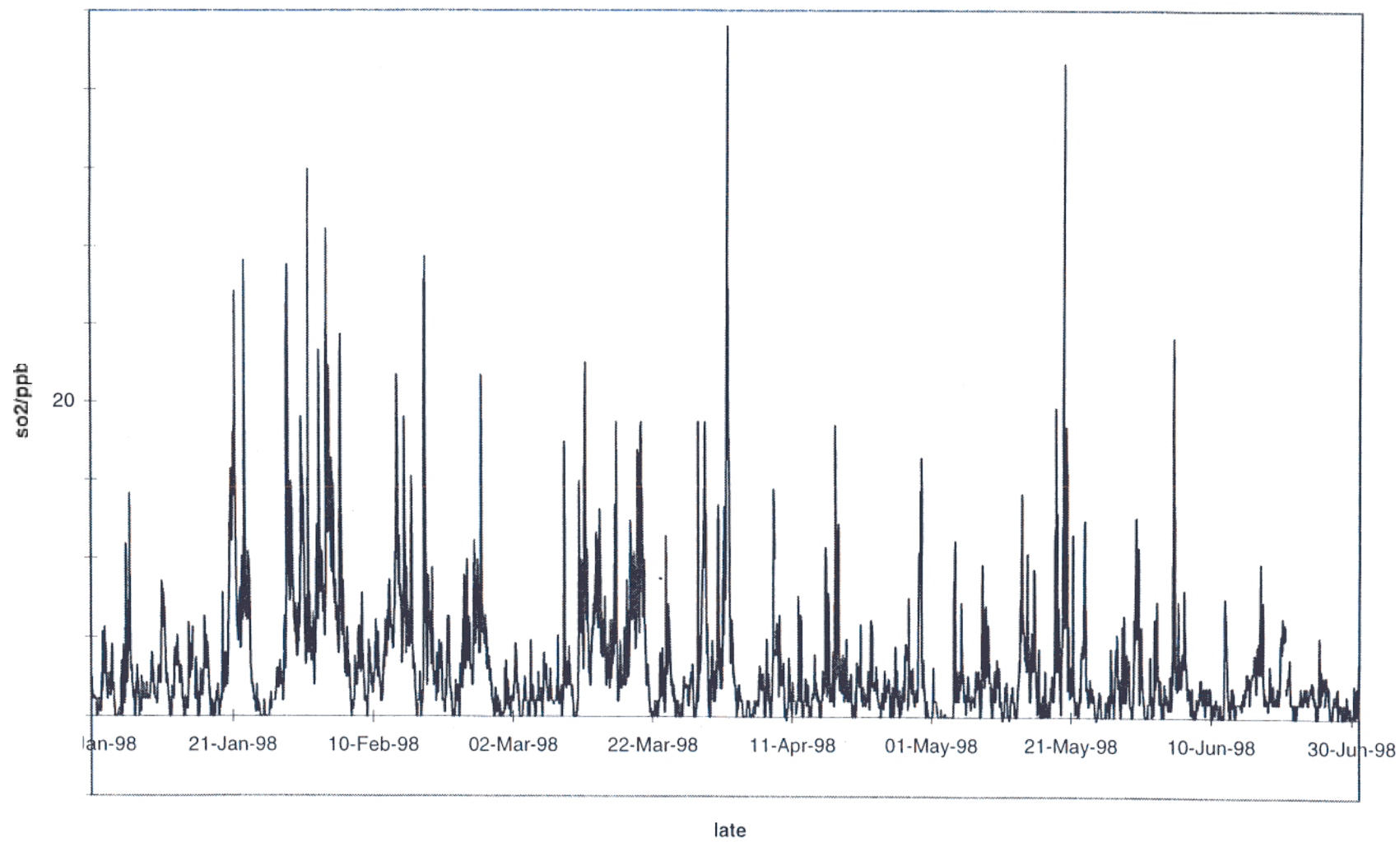
th im 99



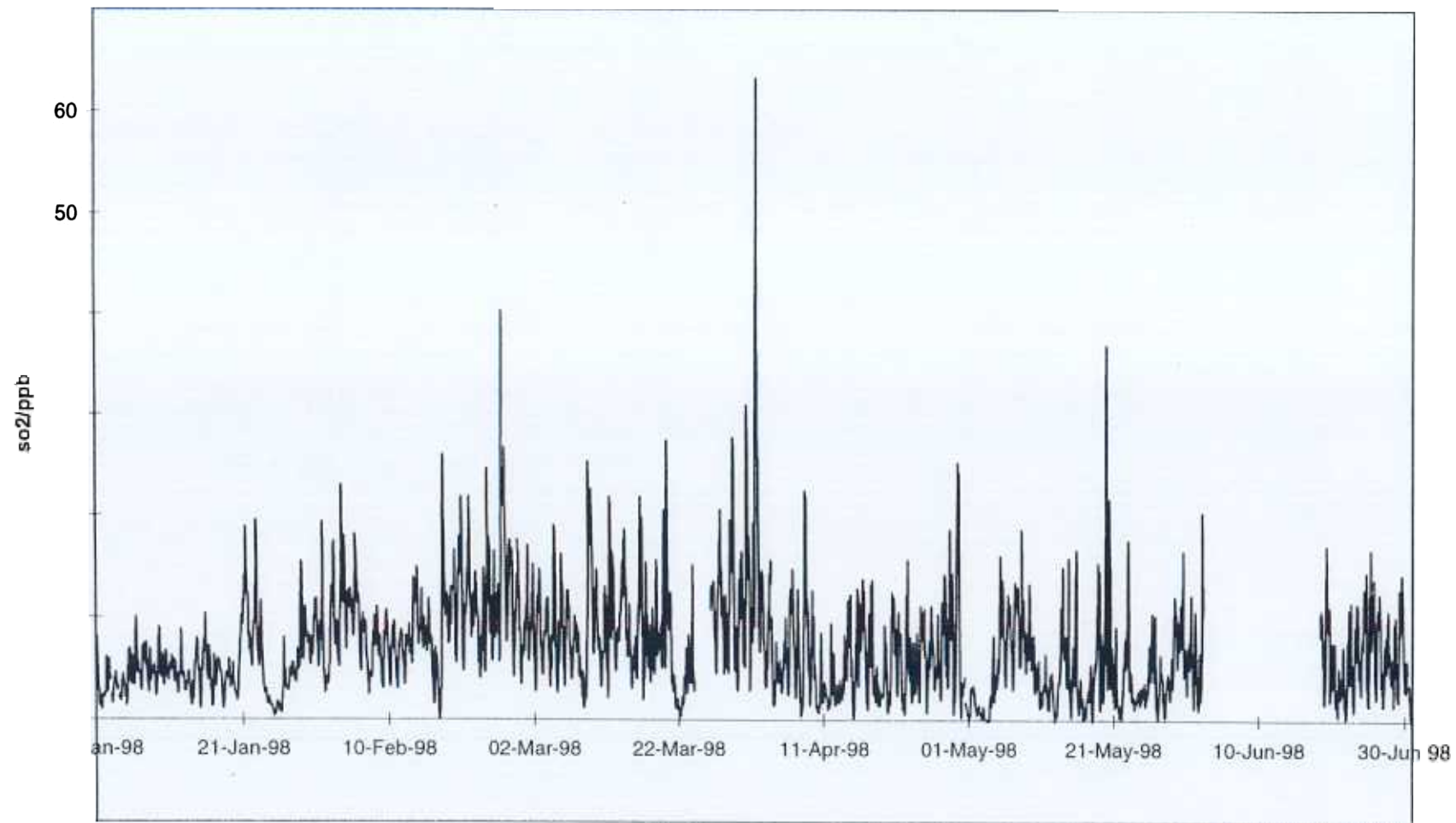
Lewisham 1998



Che 98

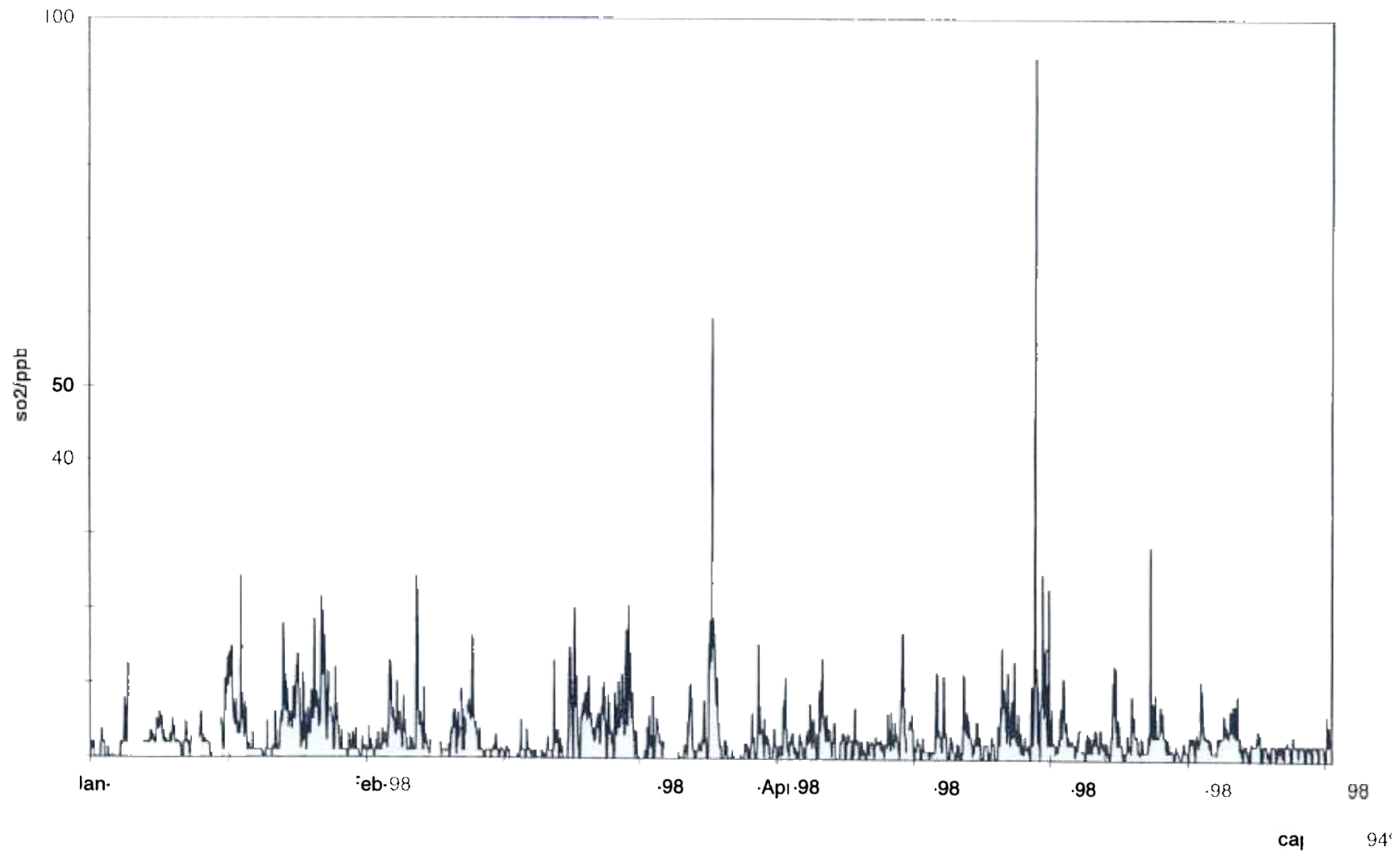


Maryle Roa 98

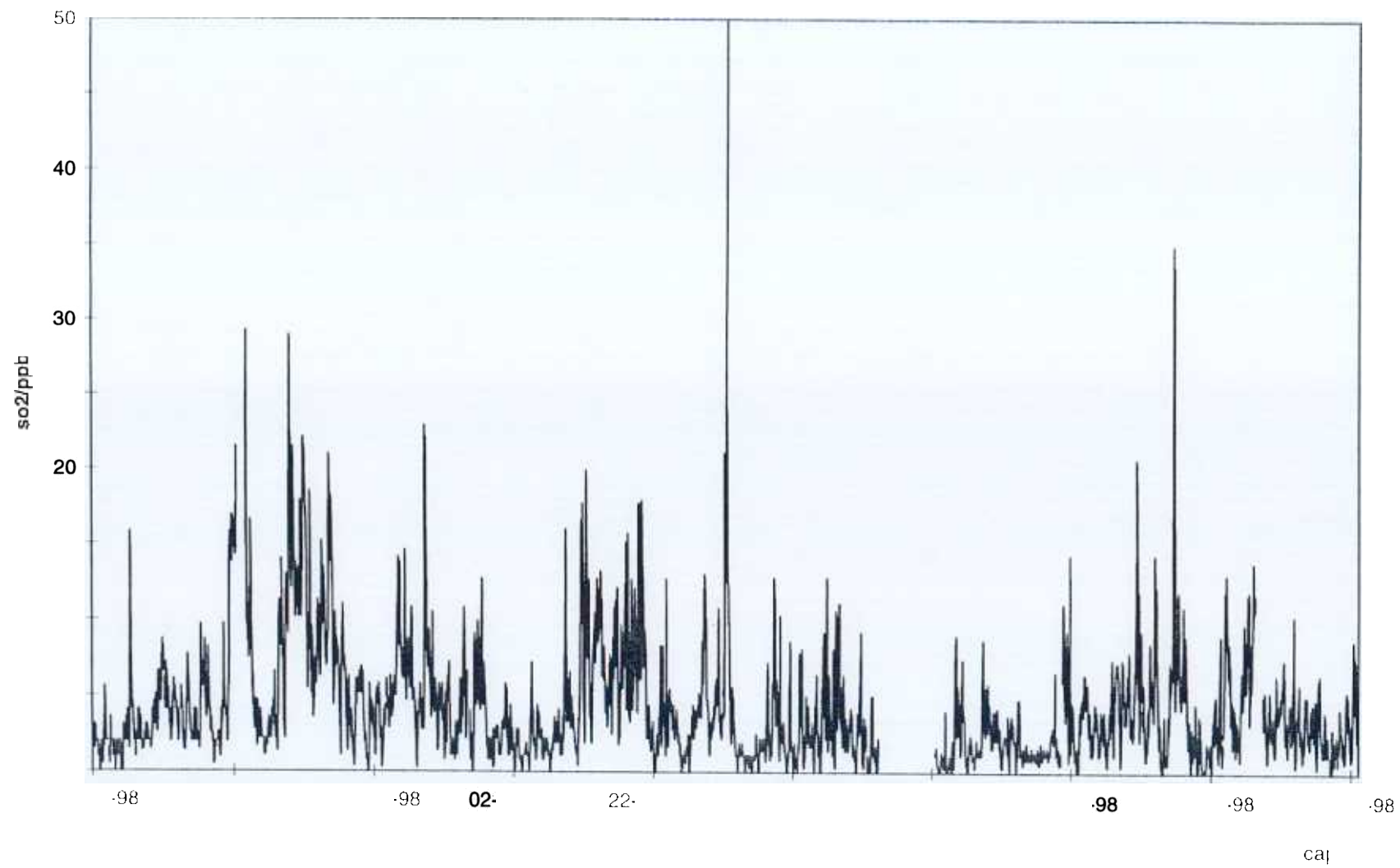


89'

ut rk 998

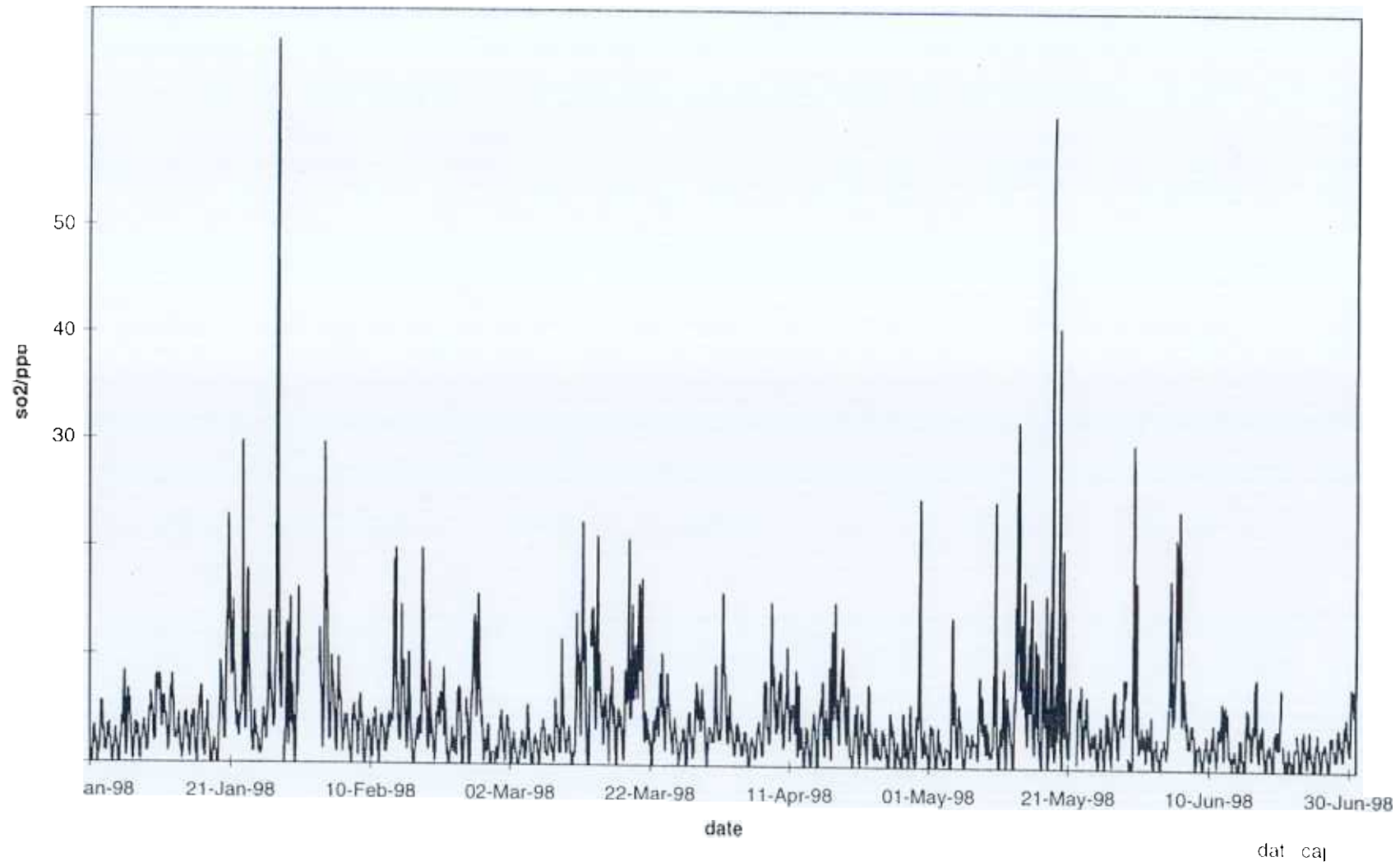


Sou

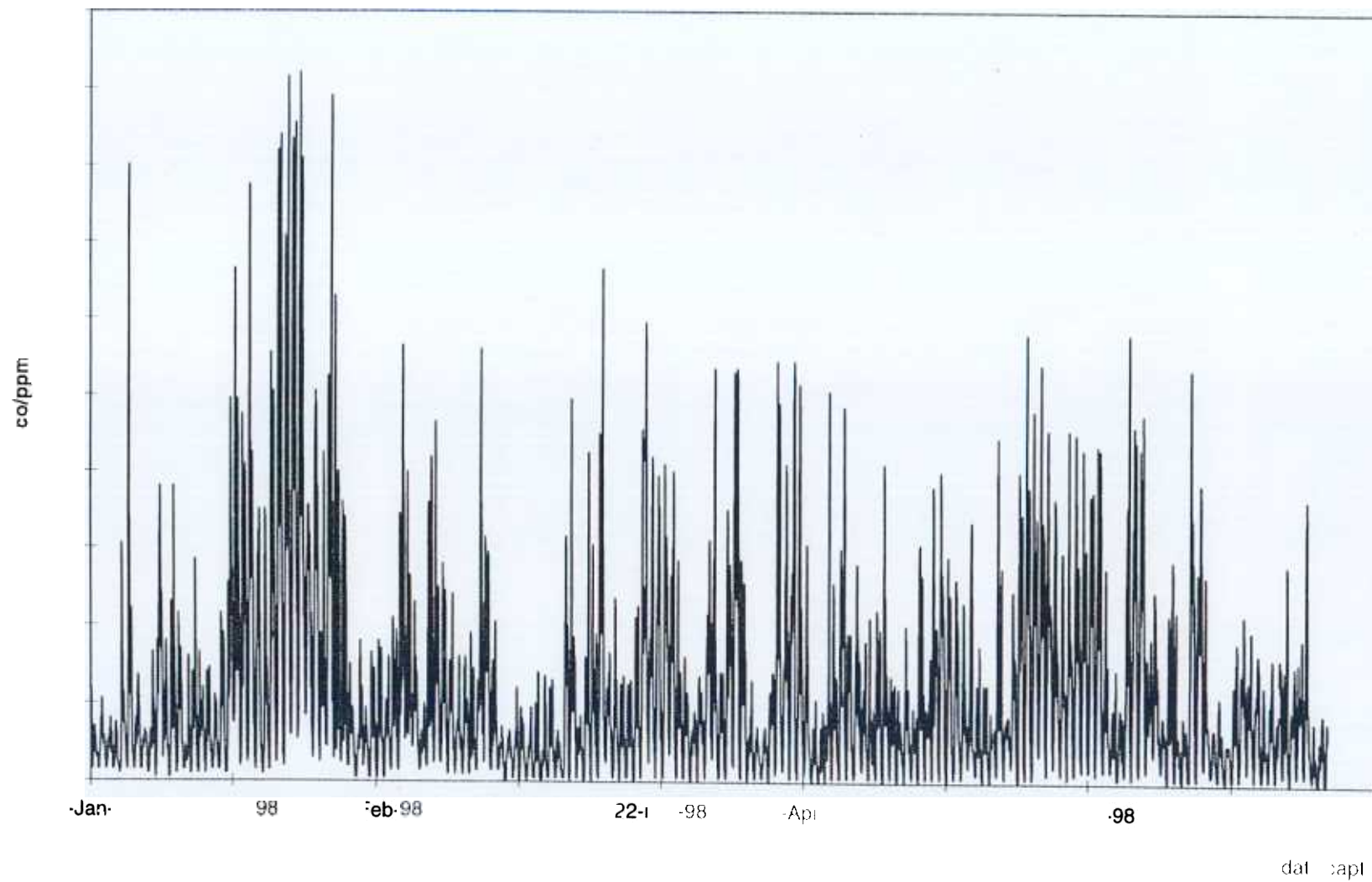


npl

Sutto 98

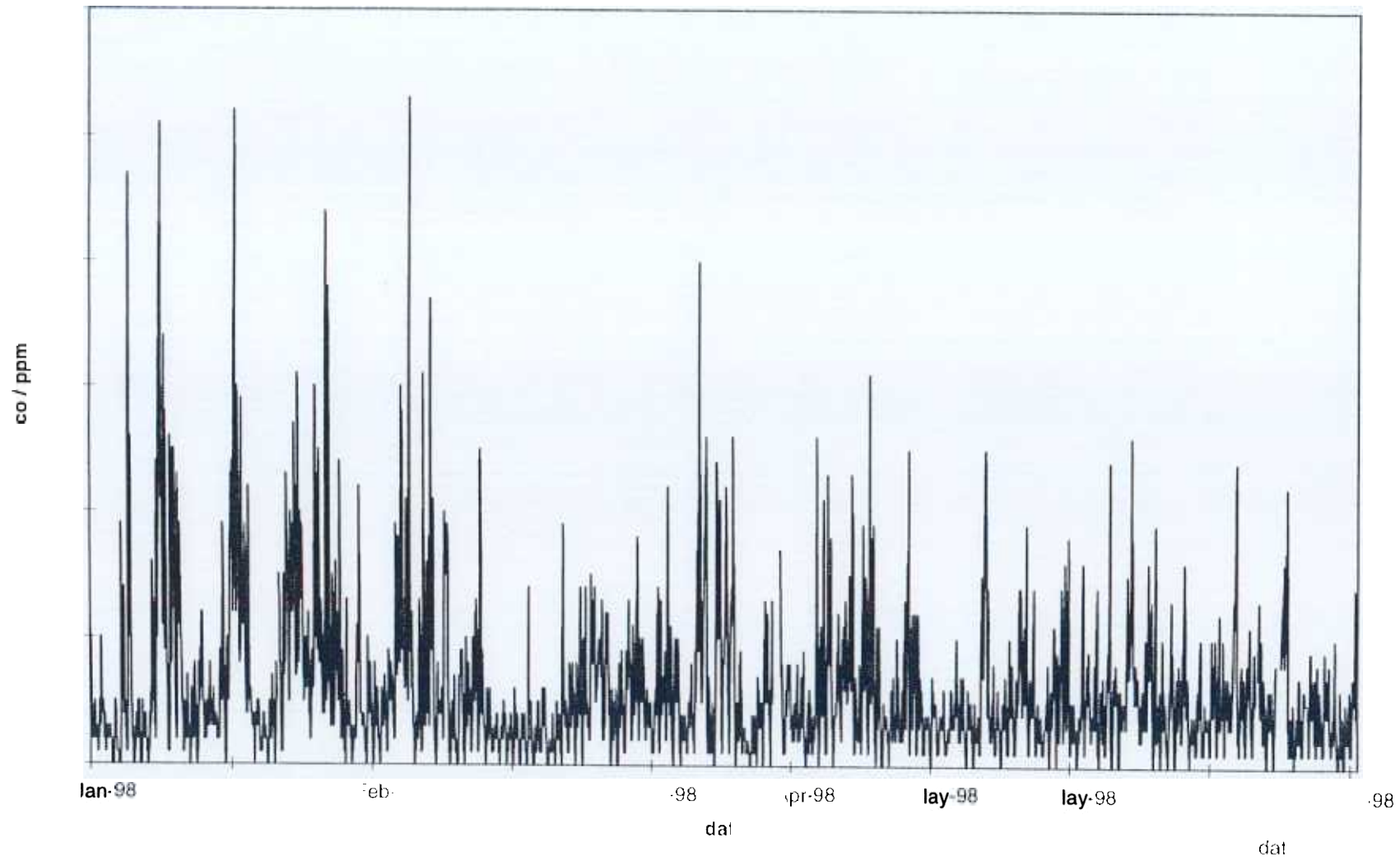


romle 98

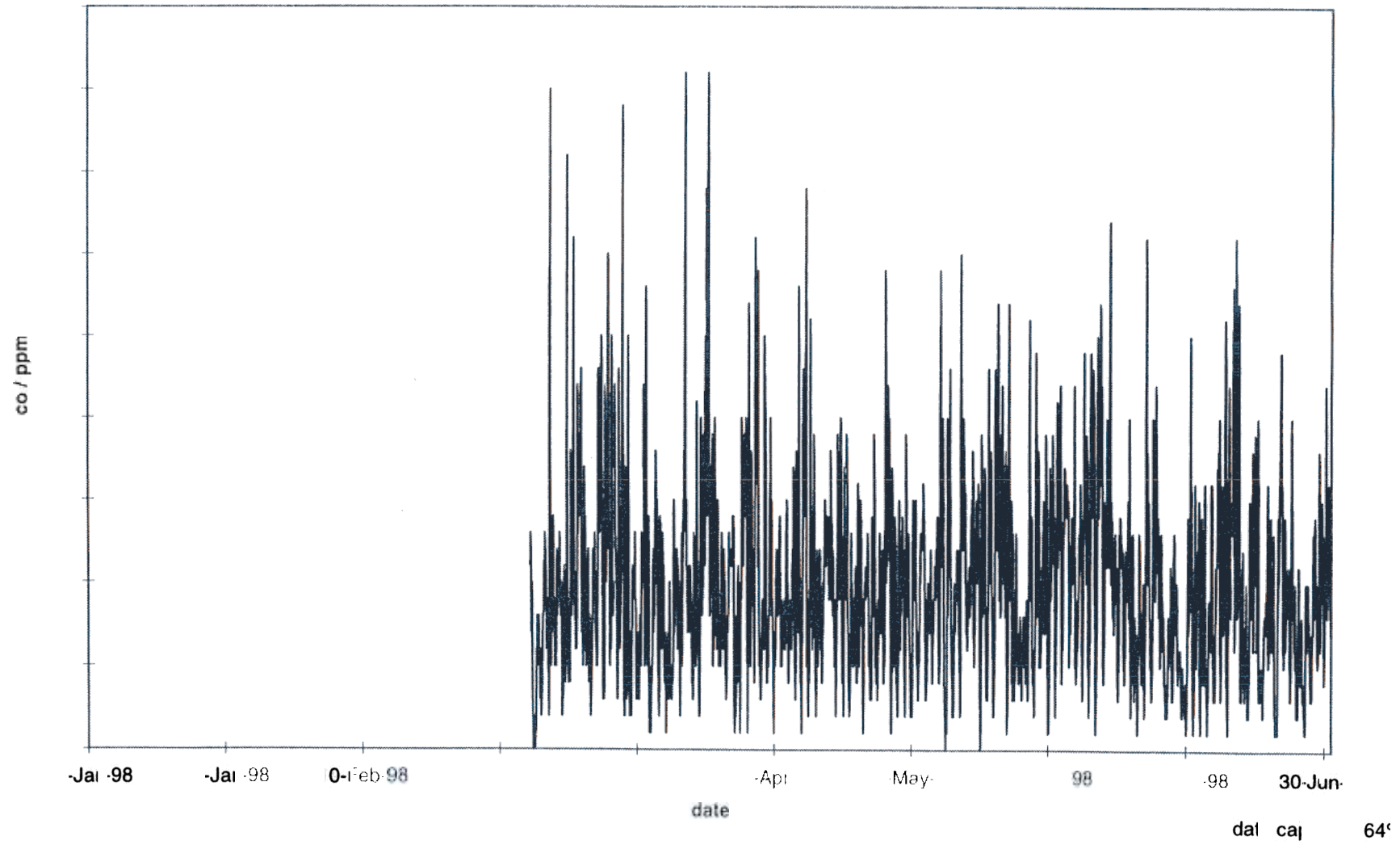


ipl

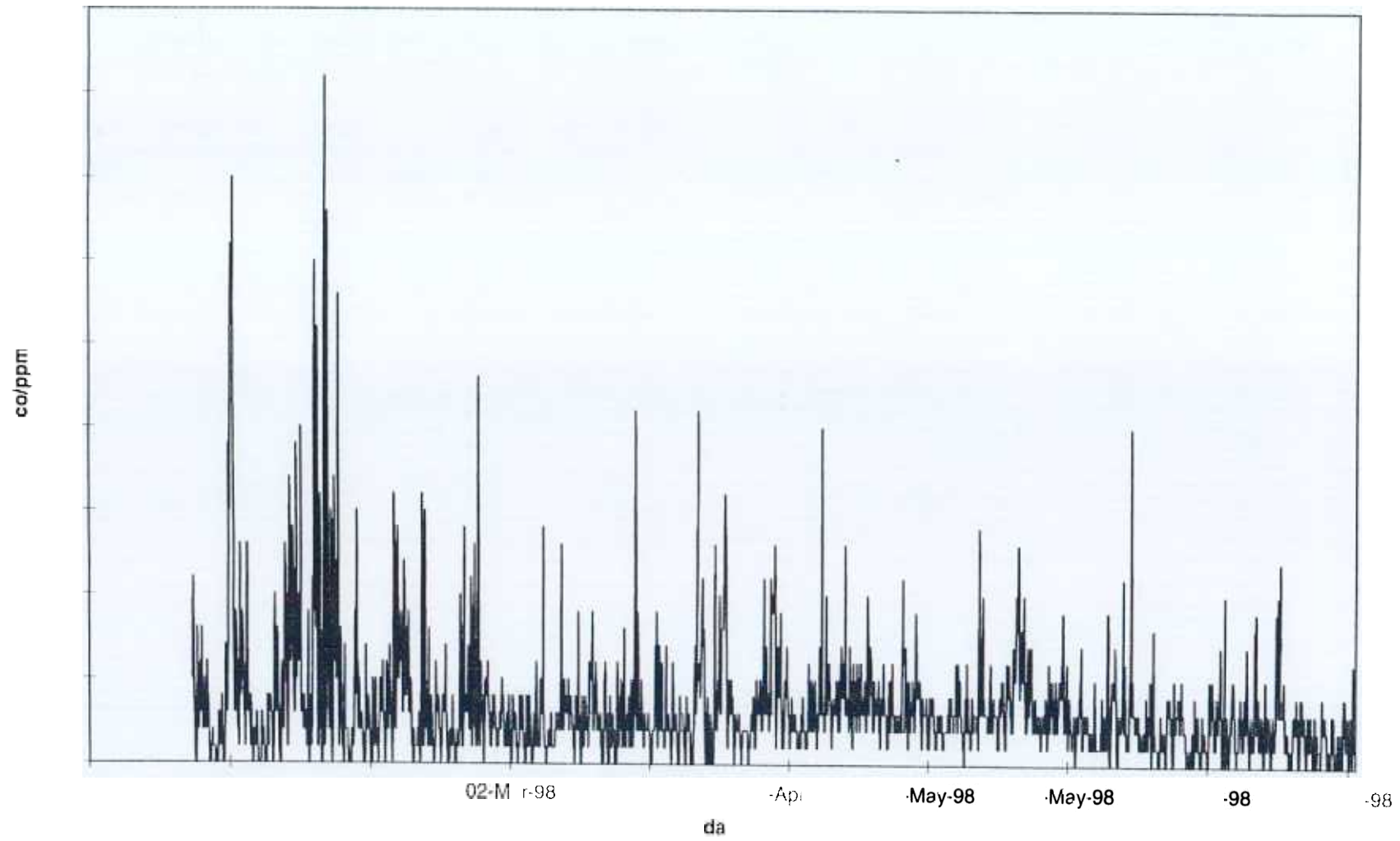
H: 98



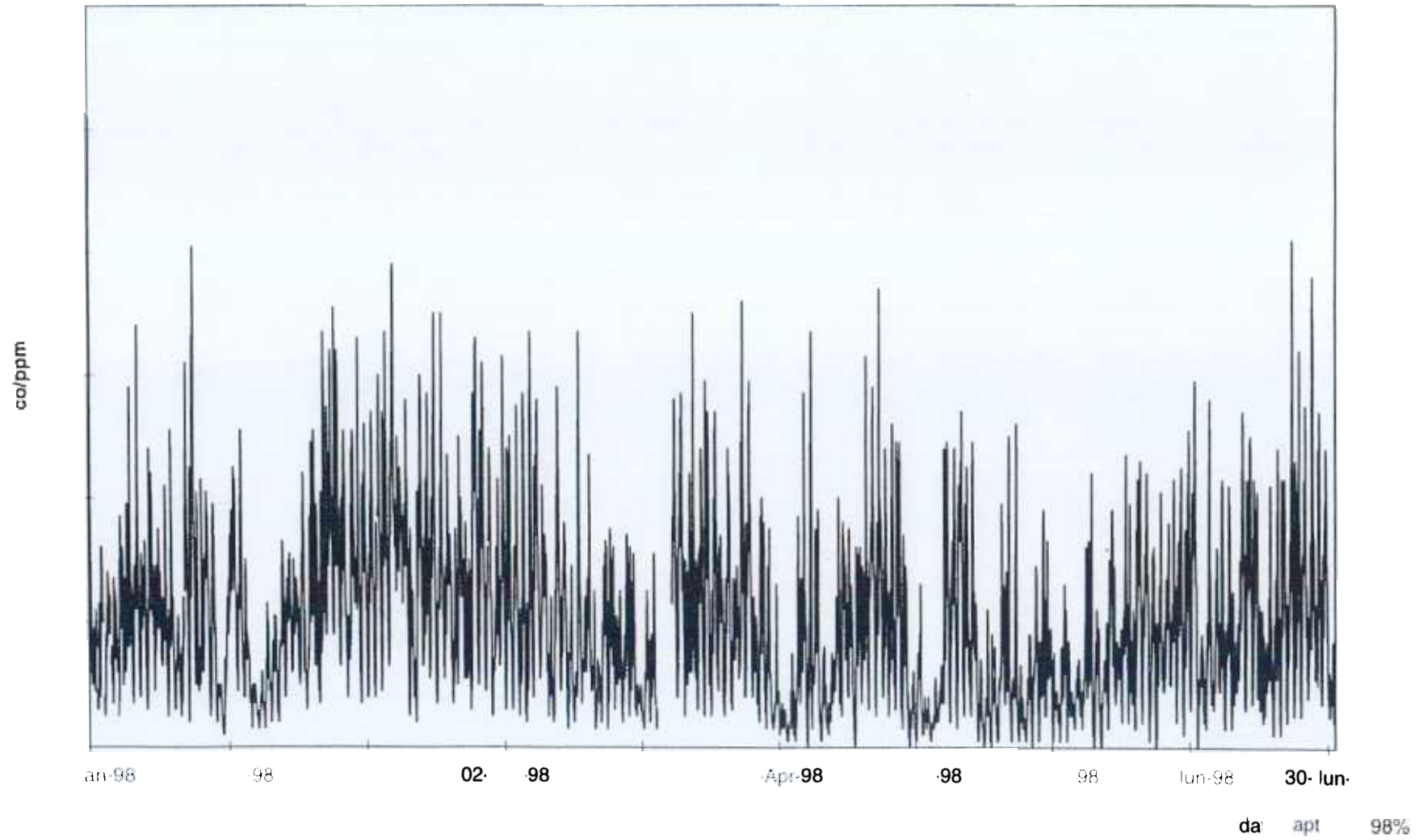
H₂O is 998



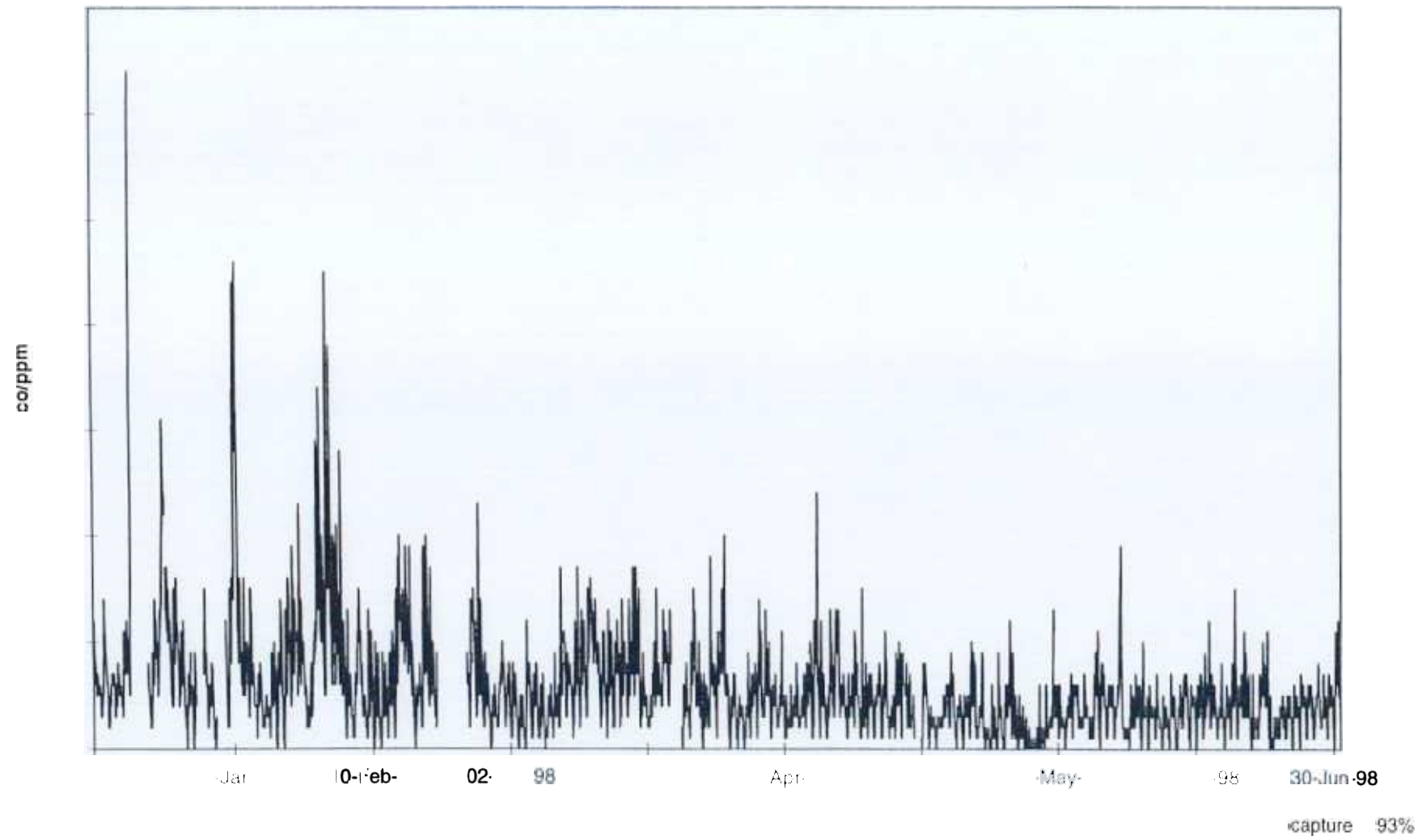
Ke ingto 99



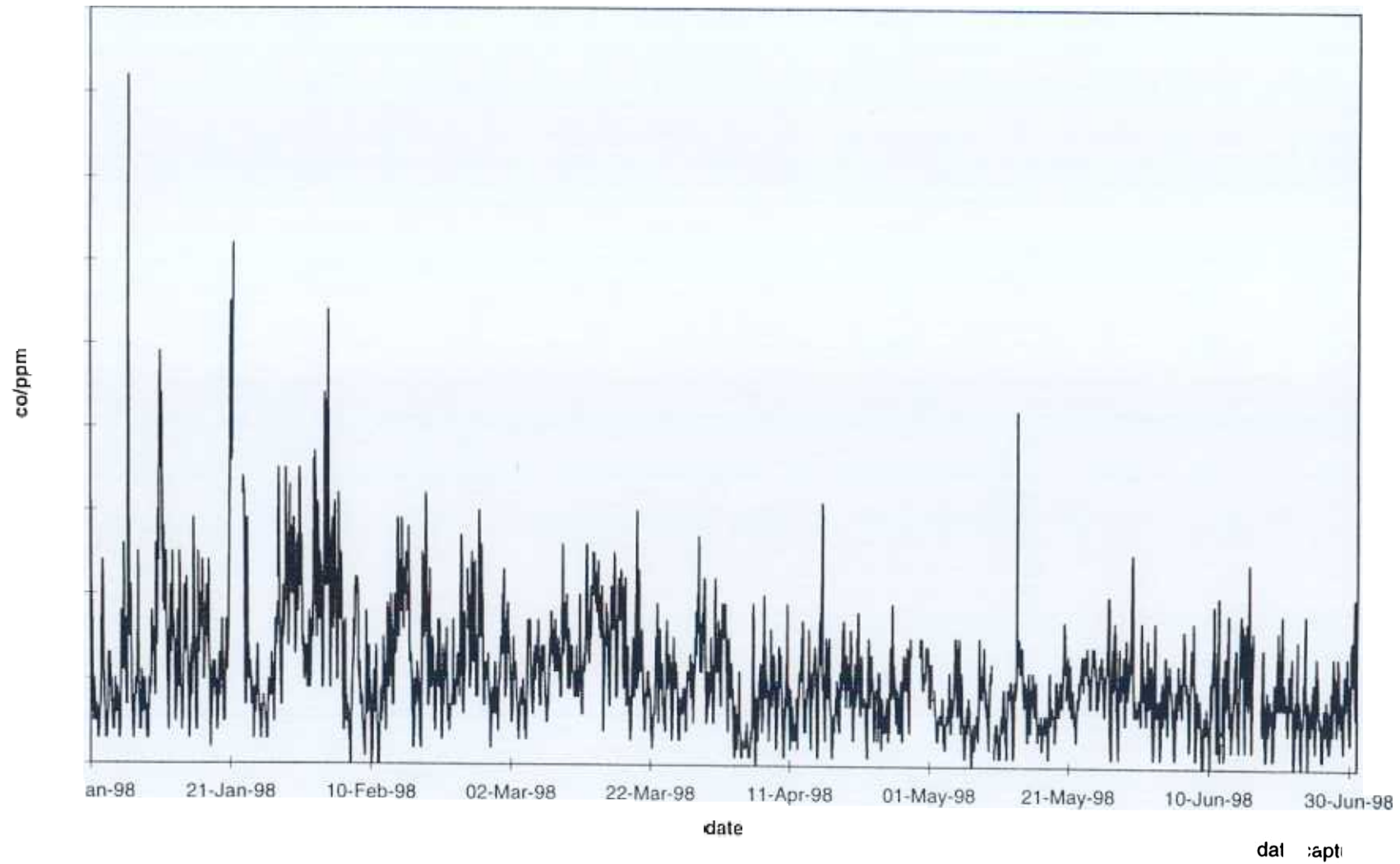
Maryl bo ad 98



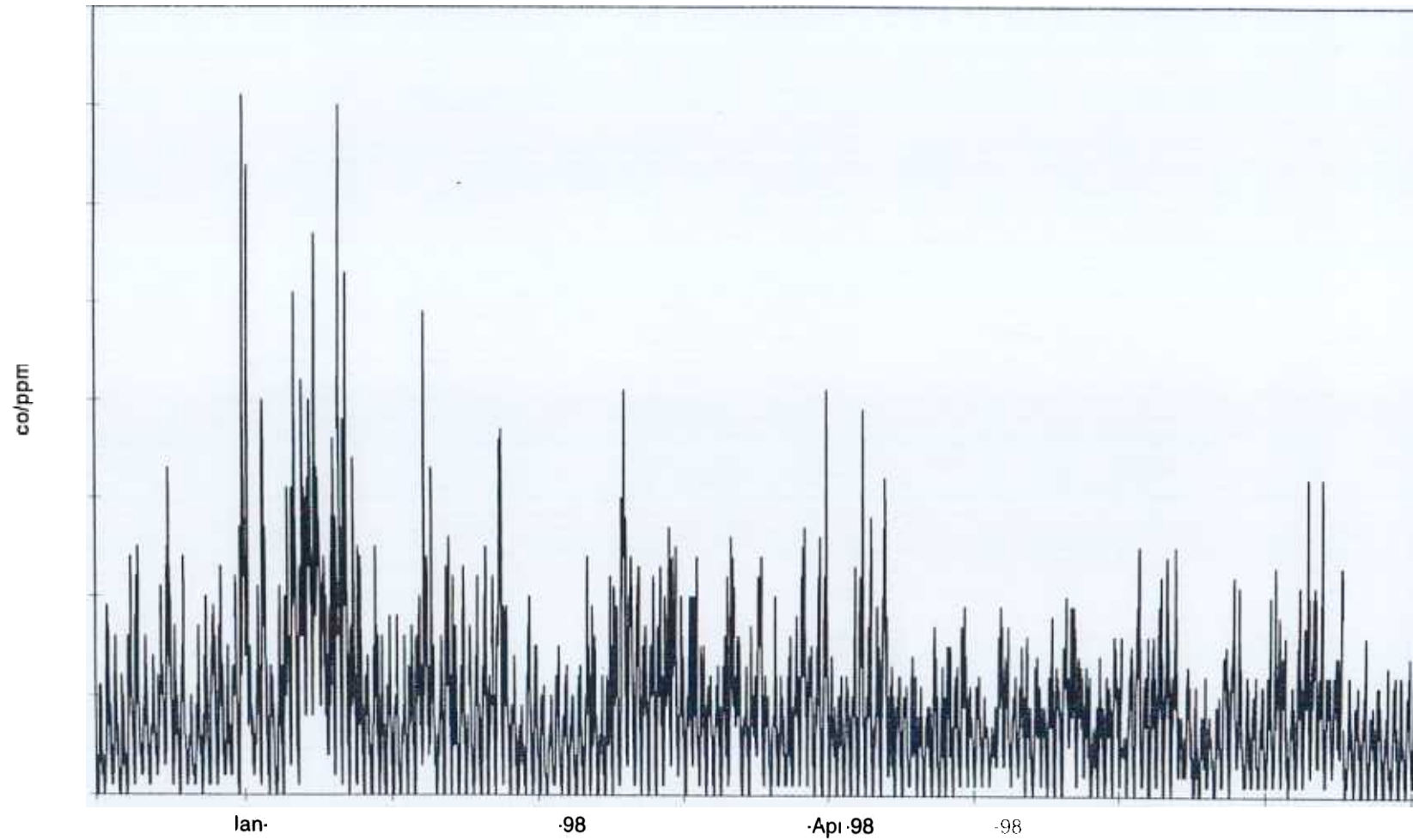
98th 998



South 98



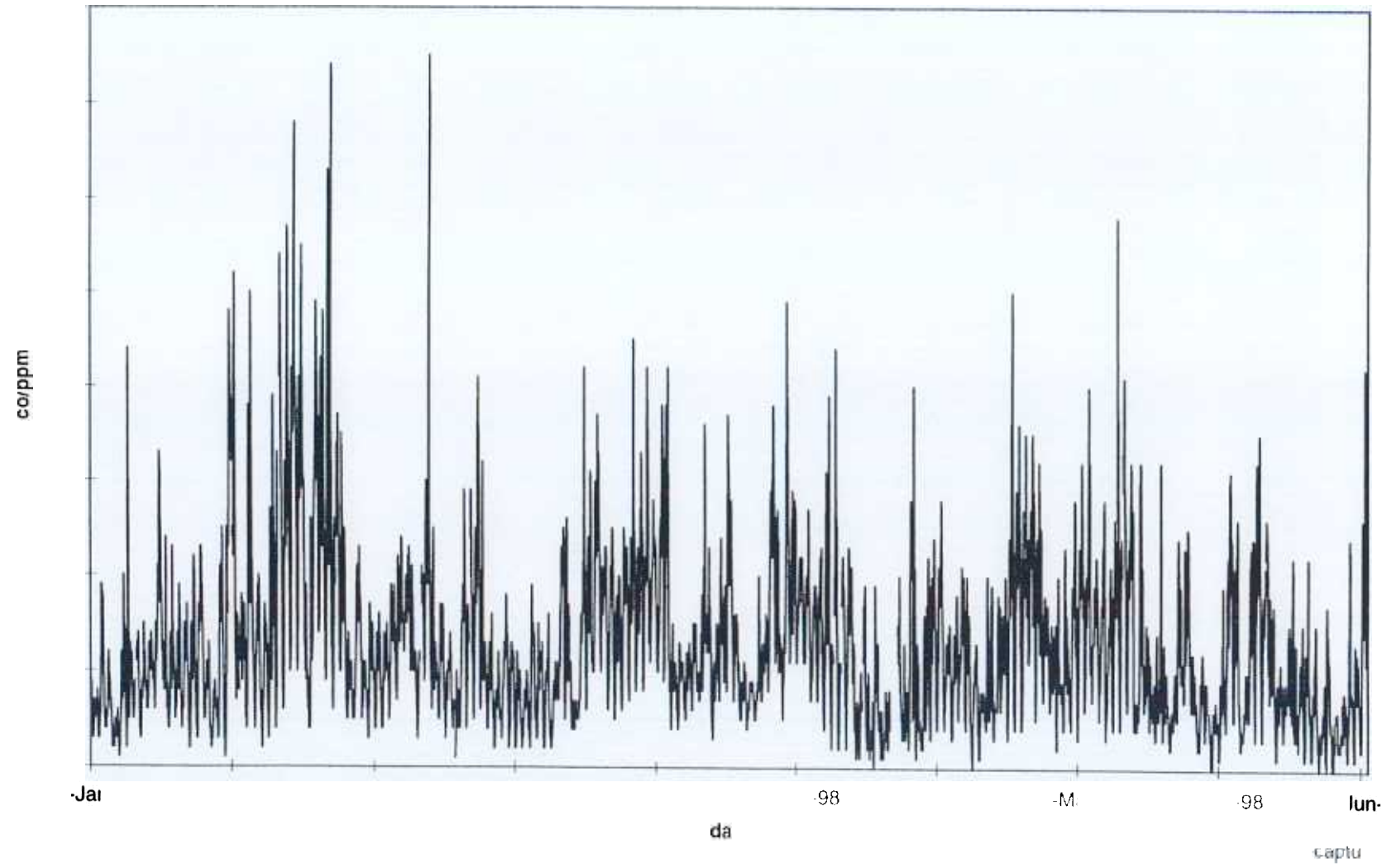
utto 998



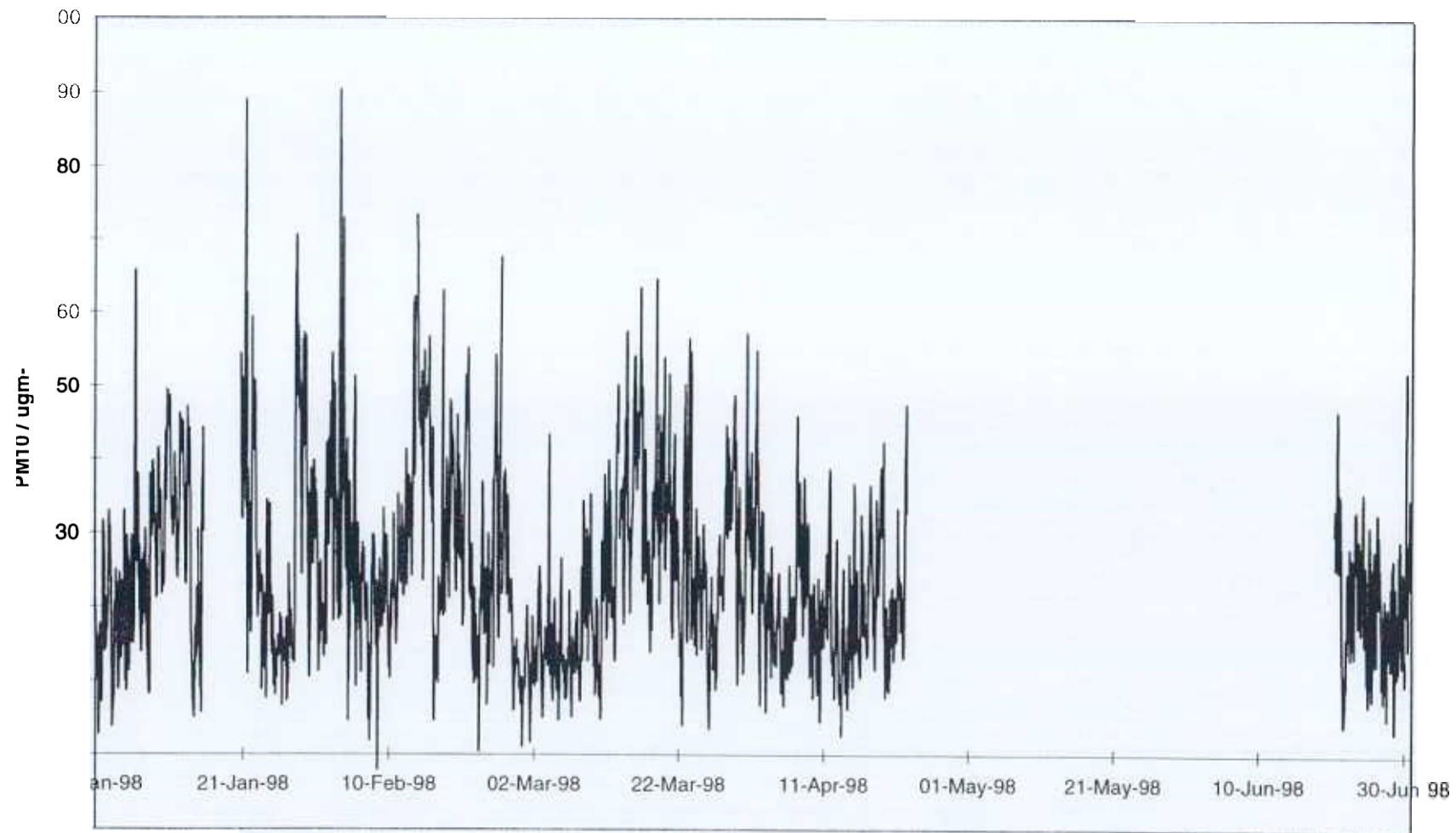
:apl 99'

npl

T: Huml 98



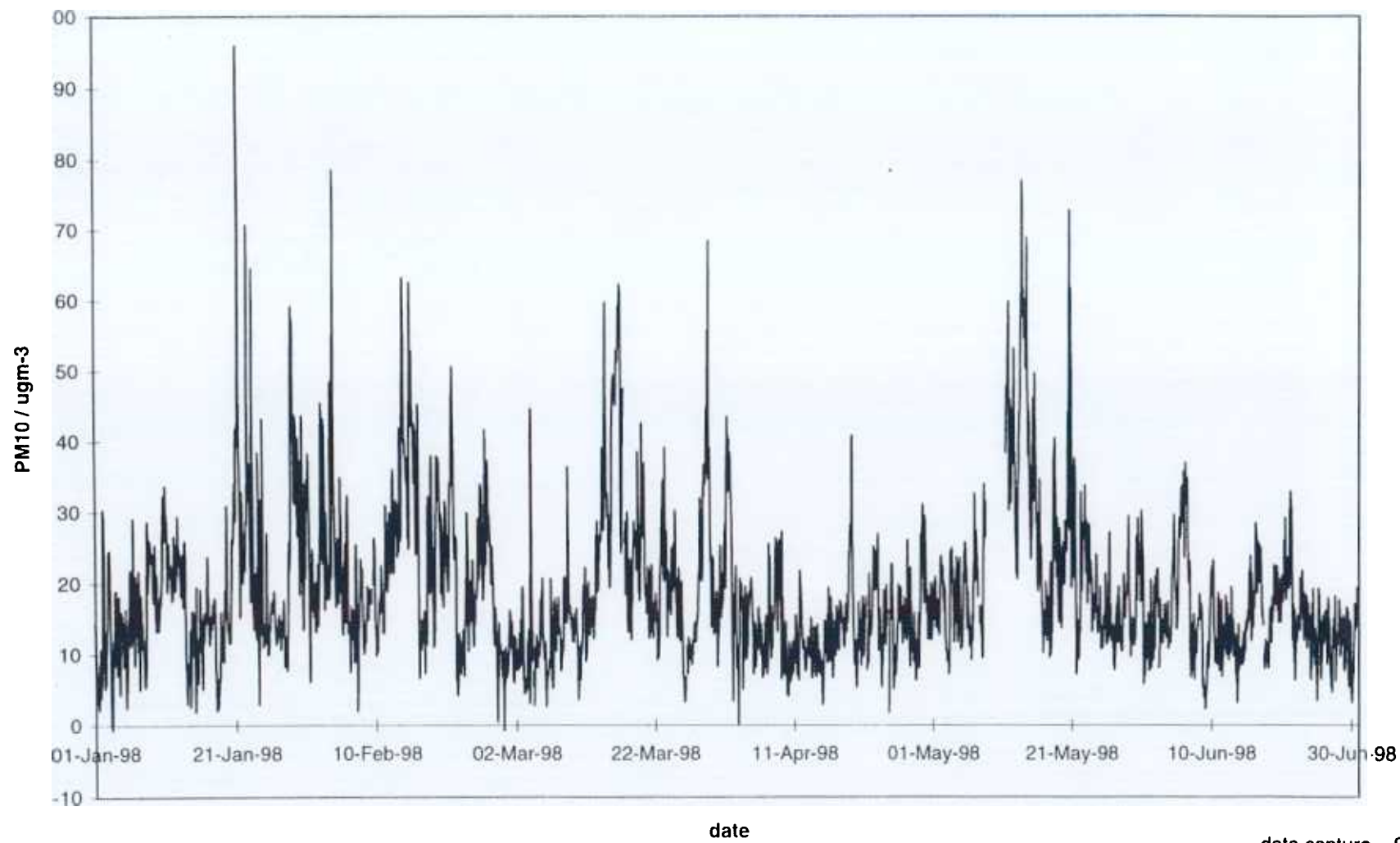
Cam 98



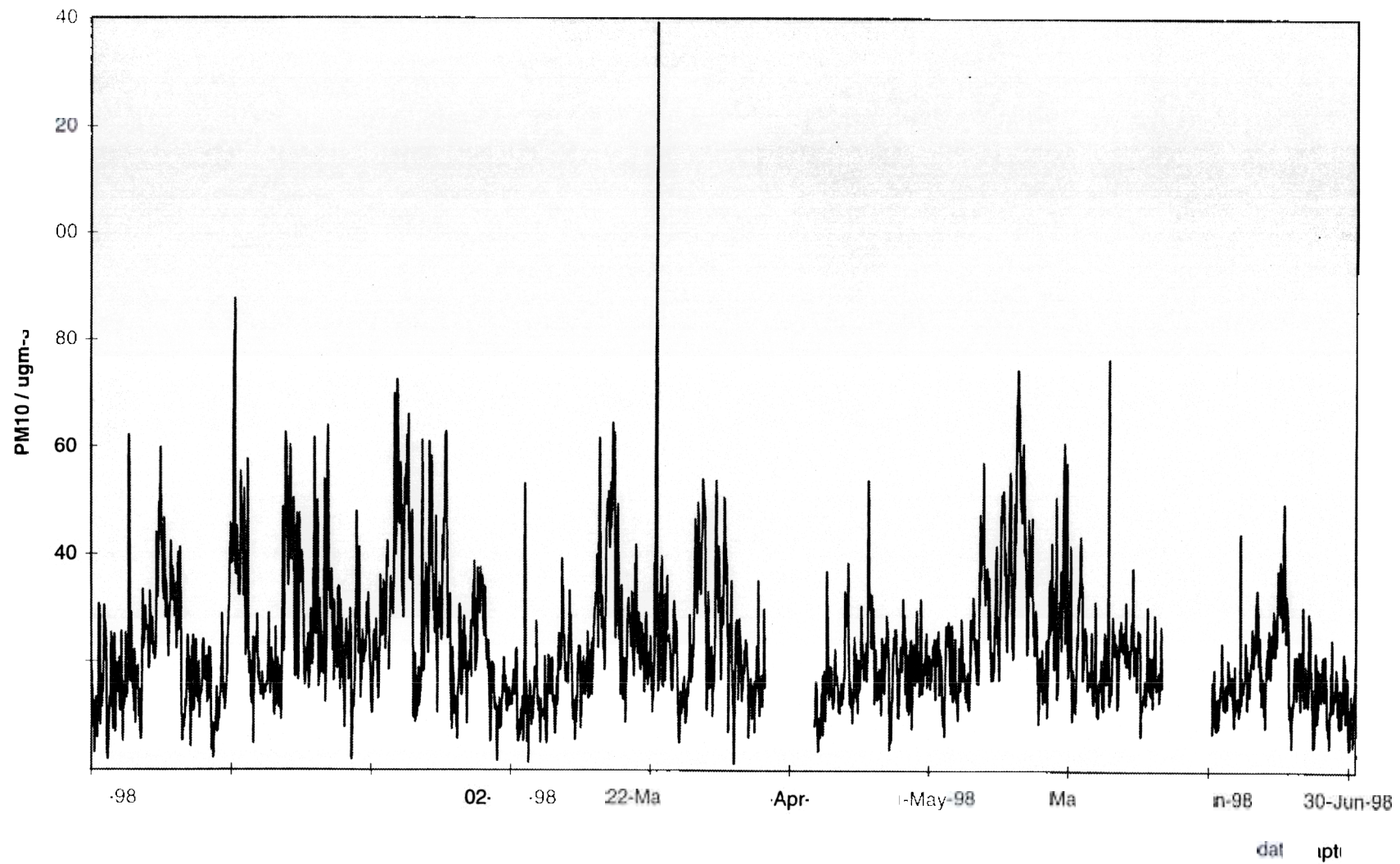
dal

64'

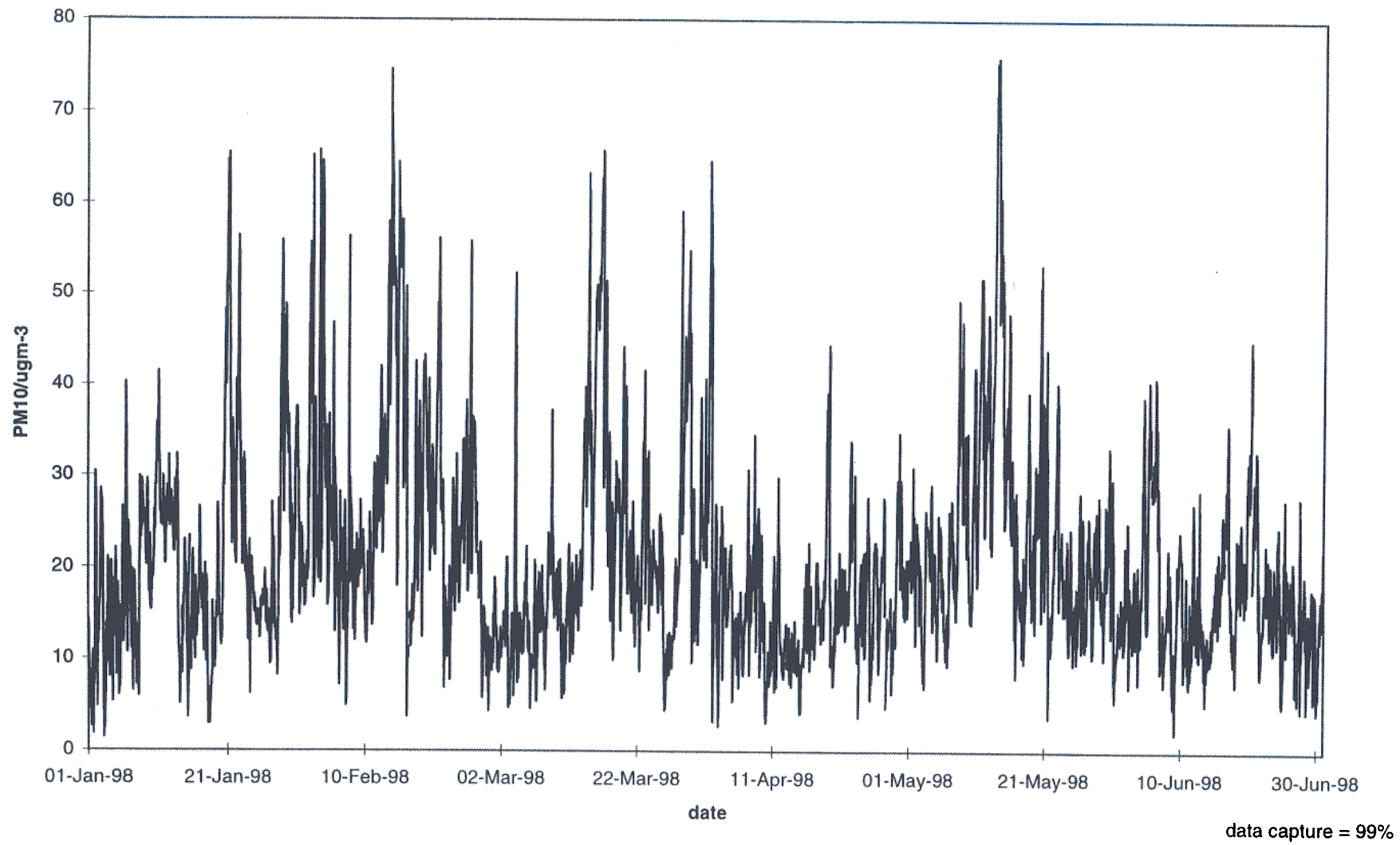
Eltham 1998



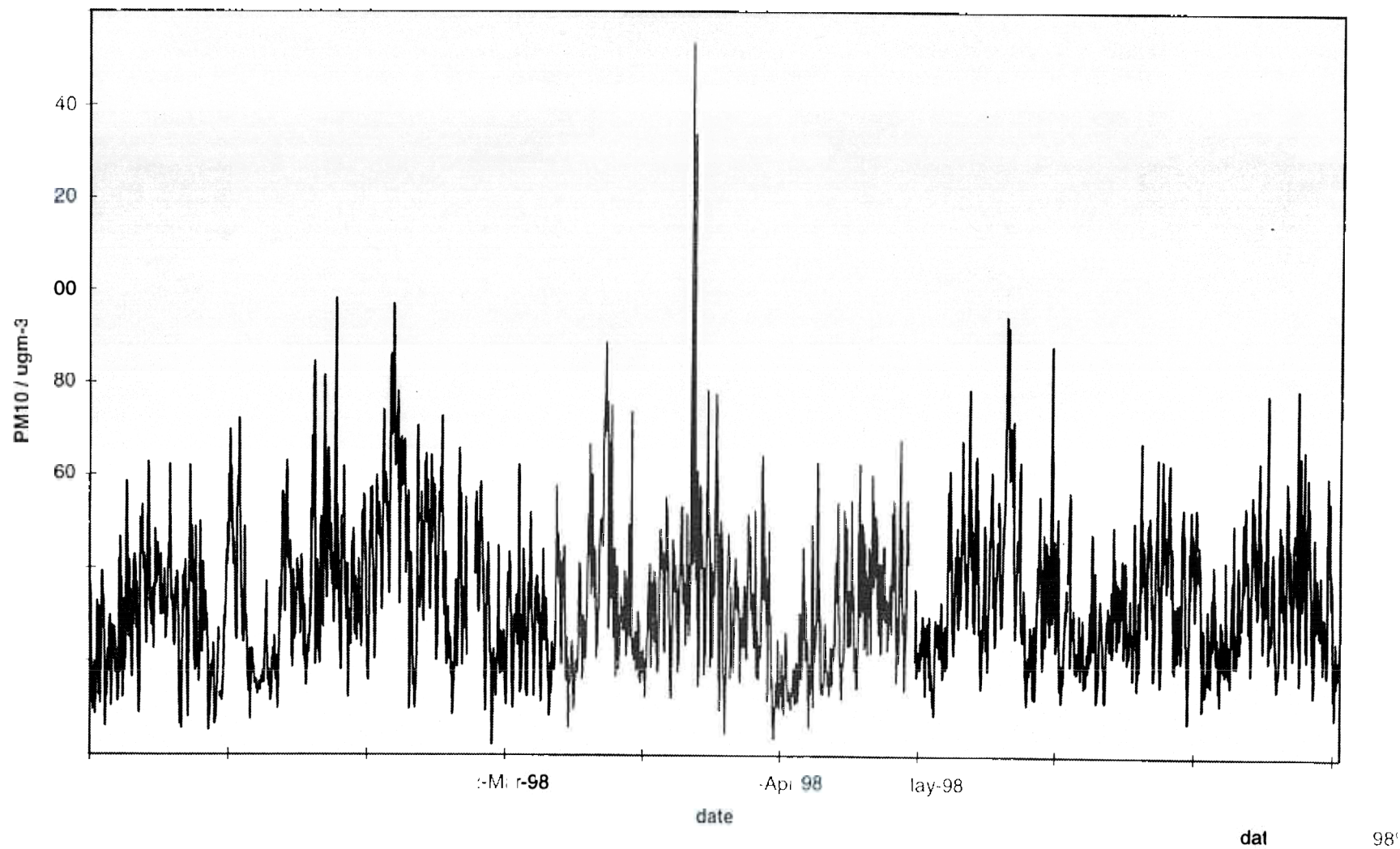
Haringe 99



Kensington and Chelsea 1998



Marylebone oad 998



Sutton 1 1998

