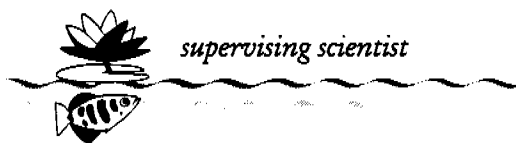




**Aerosol size
distribution
measurements in Jabiru
Town and Gimbat:
July 1998**

Stephen Thomas
Frank Quintarelli
Riaz Akber
Paul Martin
Steve Tims
Bruce Ryan

February 1999

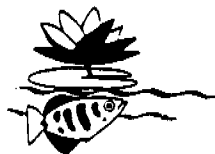


AEROSOL SIZE DISTRIBUTION MEASUREMENTS IN

JABIRU TOWN AND GIMBAT: JULY 1998



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Centre for Medical and Health Physics
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PMB 2 Jabiru NT 0886

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Particle Counter

The TSI Model 3394 scanning Mobility Particle Sizer (SMPS) is able to collect particle size spectra for particle diameters ranging from 5 to 1000 nm. The operation of the SMPS consists of two stages - a particle classification stage and a particle counting stage. The classification stage uses a bipolar charger to charge the particles to a known charge distribution. The particles are then classified according to their ability to traverse a volume of air under the influence of an electric field. The counting stage utilises condensation particle counter to count the number of particles in the airstream issuing from the classifier using standard optical particle counting techniques.

For this study the instrument settings were

Inlet nozzle diameter	0.0457 cm
Monodisperse air flow rate	0.8 L/min
Particle size range	8.06 to 385 nm
Sampling height	1.3 m above ground
Scan time	300 s
Scans per sample	6

Calibration of the SMPS is performed routinely by measurement of aerosols of known distribution. Various aerosols can be generated for this purpose using a TSI Model 3475 Condensation Monodisperse Aerosol generator. Aerosols include NaCl salt seeded DEHS and autocoagulated DEHS.

Sampling Sites - The Jabiru Town Site

The sampling site in Jabiru Town was located in the verandah of one of the houses in the outer parts of the town, about 50 m from the shore of Lake Jabiru. The immediate environs of the site comprised built-up areas to the east and south. Parklands were located to the west and the lake to the north. The shore of the lake extends in an east-west direction, consequently the sector to the north of the site is a 300 m wide body of water (approx).

The house was unoccupied for the major part of the observation period and little aerosol generating activity is believed to have taken place when the dwelling was occupied, consequently, the particle size spectra observed at this site were not influenced by any intense aerosol sources generated in that dwelling. Being in suburbia, anthropogenic aerosol sources such as petrol and diesel internal combustion engine emissions and aerosols generated by cooking, as well as those generated by bushfires and evaporation of natural oils from vegetation (eg eucalyptus), may also be present.

During the observation period, both odours from cooking (specifically food frying) and on one occasion, a thick layer of smoke blanketing the site were observed by personnel conducting the study.

Sampling Sites - The Gimbat Site

The sampling site in Gimbat is under a covered area adjacent to Fisher Airstrip. The sampling position faces to the south, away from the airstrip. In this direction the vegetation is principally dried grass for approximately 30 m, reverting to open woodland beyond. To the west, at a distance of approximately 300 m, is a recently burnt area of bushland, however, no smouldering embers were observed in this region. The airstrip and a large cleared tract of land surrounding it lay to the north.

Fisher Airstrip (see Figure 1) is located approximately 25 km to the east of the nearest sealed road and may only be accessed by 4 wheel drive vehicle. Furthermore, the site is located within the boundaries of Aboriginal land and may only be accessed by permit. Vehicular activity is therefore negligible and the possible anthropogenic sources of aerosol in the region are expected to be either a result of the controlled burning-off or a result of the diesel generator that was used for the powering of the instrumentation. Aside from the recently burnt off region 300 m to the west, no bush fires were observed in the Gimbat region during the study period. Also, during the observation period, a high pressure system situated over central Australia gave rise to a steady 5 to 10 knot easterly wind during the day and calm conditions at night. The diesel generator was situated 50 m to the west, downwind of the instrumentation.

Results

The results are presented as tables and figures. The data for the Jabiru Town measurements is presented in Part A and the data for Gimbat in Part B. In each instance, Table 1 is a diary of some visual observations which may provide some

clues regarding the nature of the aerosol. Table 2 is a statistical summary of various measured and calculated parameters - they are averages for a half hourly period ending at the recorded time. Table 3 is a summarised description of peaks observed during the recording time. Figures 2, 3 and 4 combine the concentration and median diameters for the number, surface area and volumes of the particles, respectively. The aerosol size distribution spectra are shown in Figure 5 and the spectra for the time periods when the peaks occur are shown in Figure 6.

PART A: JABIRU TOWN

Inspection of the Jabiru Town data reveals that the particle concentrations were similar to data recorded for typical urban areas. For much of the study period the concentrations of the particles are low, of the order of 2000 particles cm^{-3} , however the average particle number concentration is 7717 (standard error 1268) particles cm^{-3} . This high average value is caused by several observations exceeding 20000 particles cm^{-3} .

Increased particle concentrations are observed in four separate periods: around 17:00 8/7/98 and 2:00, 8:00 and 16:00 9/7/98 (see Figure 2). The particle concentrations at 17:00, 8/7/98, exceeds 60000 particles cm^{-3} , indicating that a major aerosol event had occurred at this time. The rapid increase in the particle concentration followed by an equally rapid decrease suggest that the event is characterised by a very strong single source of highly intermittent nature. The particle size spectra for this event (see Figures 5.9 and 5.10) reveal similar distributions, although of varied intensity, with a broad peak at approximately 80 nm. While the exact nature of the aerosol source is uncertain, cooking odours from a neighbouring house were observed during this period.

The other major increase in particle concentration occurs at around 16:00 9/7/98. This increase is a much more gradual rise than the increase at 17:00 8/7/98 and may be indicative of either a slow introduction of the aerosol source to the region or a change in meteorological conditions. The spectra in this instance are more varied than the previous spectra (compare Figures 5.19 - 5.20) with peak values ranging from approximately 60 to 120 nm. Smoke from controlled burning-off was observed at the site during this time.

In a number of the other spectra (Figures 5.2 - 5.5) there is evidence of an aerosol source influence in the ultra-fine nuclei region (particle diameter < 15 nm). This source may, in fact, be present in most particle size spectra but may often be masked by the influence of the much more intense sources.

Many of the remaining particle size spectra for this study period are characterised by a much broader peak of low intensity. This type of distribution is most likely due to contributions from several aerosol source types.

PART B: GIMBAT

The average particle number concentration at the Fisher Airstrip measurement site is 3786 (standard error 555) particles cm^{-3} . While most of the number concentrations

were of the order of $1500 \text{ particles cm}^{-3}$, several incidences of increased particle concentrations were observed. These incidences were of an abrupt nature (high concentration and short duration) rather than a slow increase in the particle concentration at the sampling site. It is interesting to note that the high particle numbers were often characterised by a lower than usual number median diameter (Figure 2) possibly illustrating the change in aerosol source at these times.

The majority of the particle size spectra are characterised by broad peaks in the distribution in the region of the 80 nm particle diameter range. The spectra for the measurements at the higher particle number concentrations, however, contain sharper peaks at lower particle diameters (approximately 50 nm). This peak is probably source related. Aside from the recently burnt bushland there were no observed sources of aerosols in the Gimbat region during the study period. Therefore, the nature of this aerosol is unknown.

Acknowledgments

Support from the Environmental Research Institute of the Supervising Scientist is gratefully acknowledged.

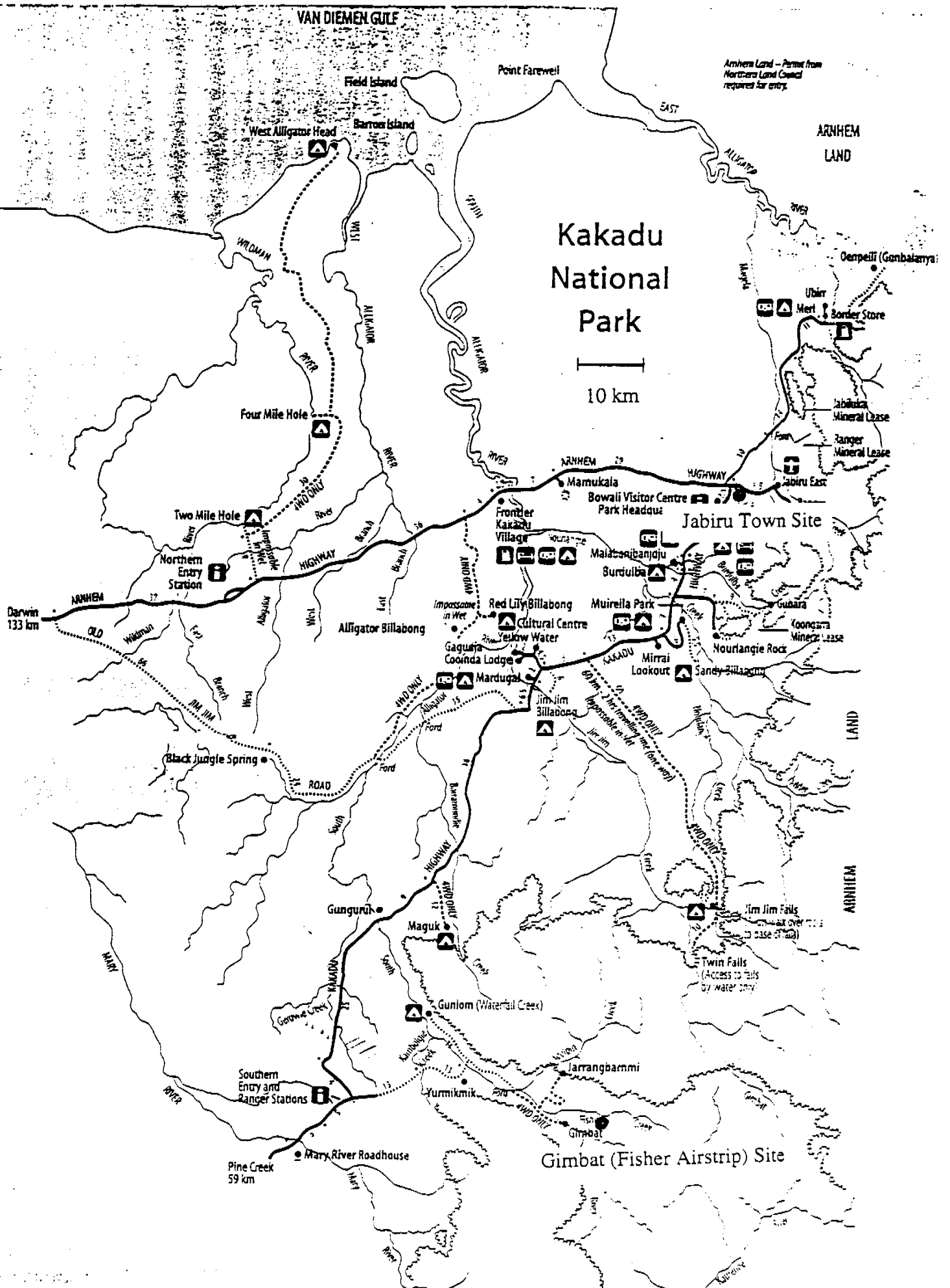


Figure 1. A locality map.

PART A: JABIRU TOWN DATA

Figure 2

Condensation Nuclei (CN) number concentration and number median diameter for Jabiru Town, 7 – 10 July 1998.

Note the change in scale in CN number concentration between the figures.

NUMBER CONCENTRATION AND NUMBER MEDIAN DIAMETER
DATA, JABIRU TOWN 8/7/98 - 10/7/98

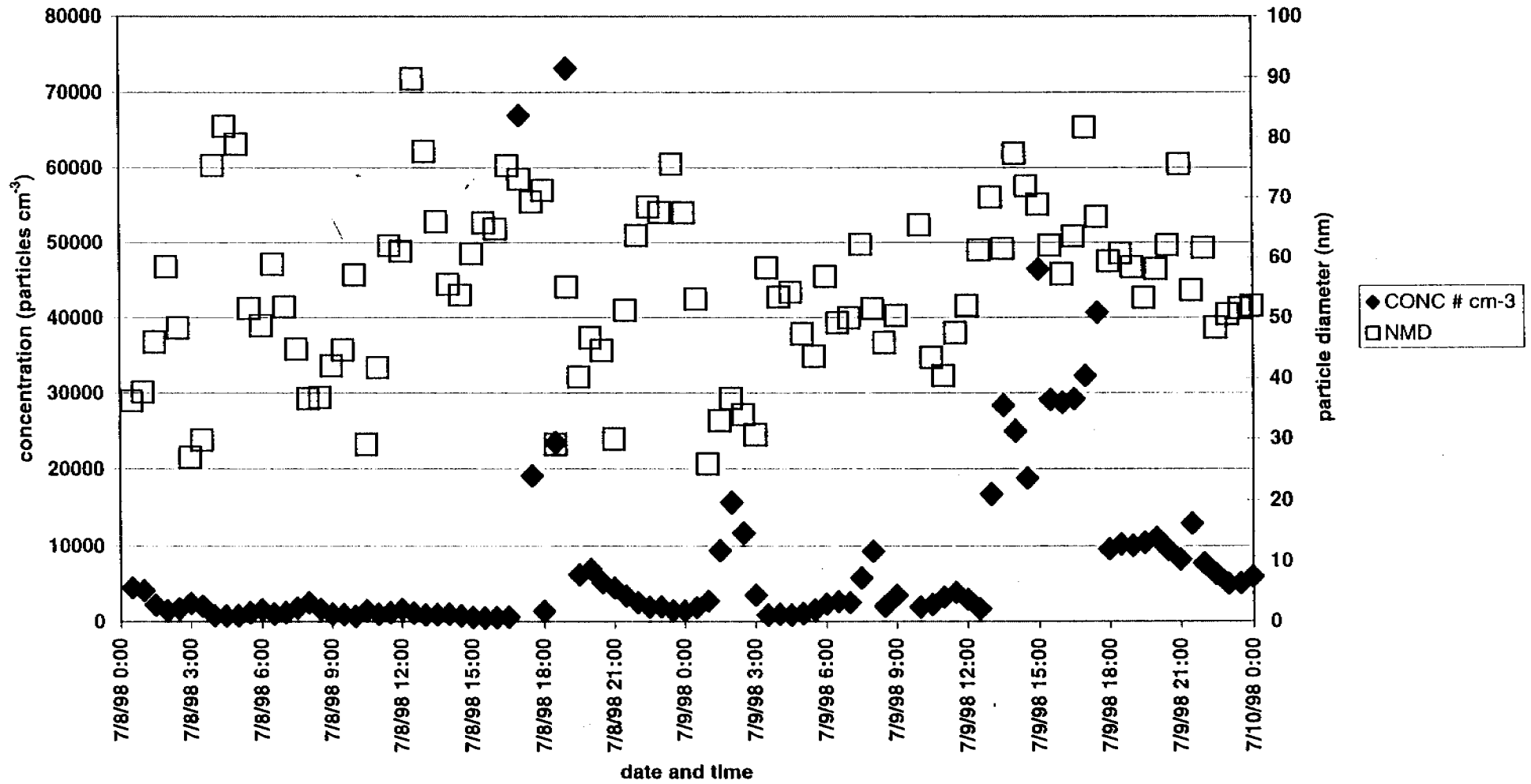


Figure 3

Surface area concentration and surface area median diameter of CN for Jabiru Town, 7 – 10 July 1998.

Note the change in scale in CN surface area concentration between the figures.

**SURFACE AREA CONCENTRATION AND SURFACE AREA MEDIAN DIAMETER
DATA, JABIRU TOWN 8/7/98 - 10/7/98**

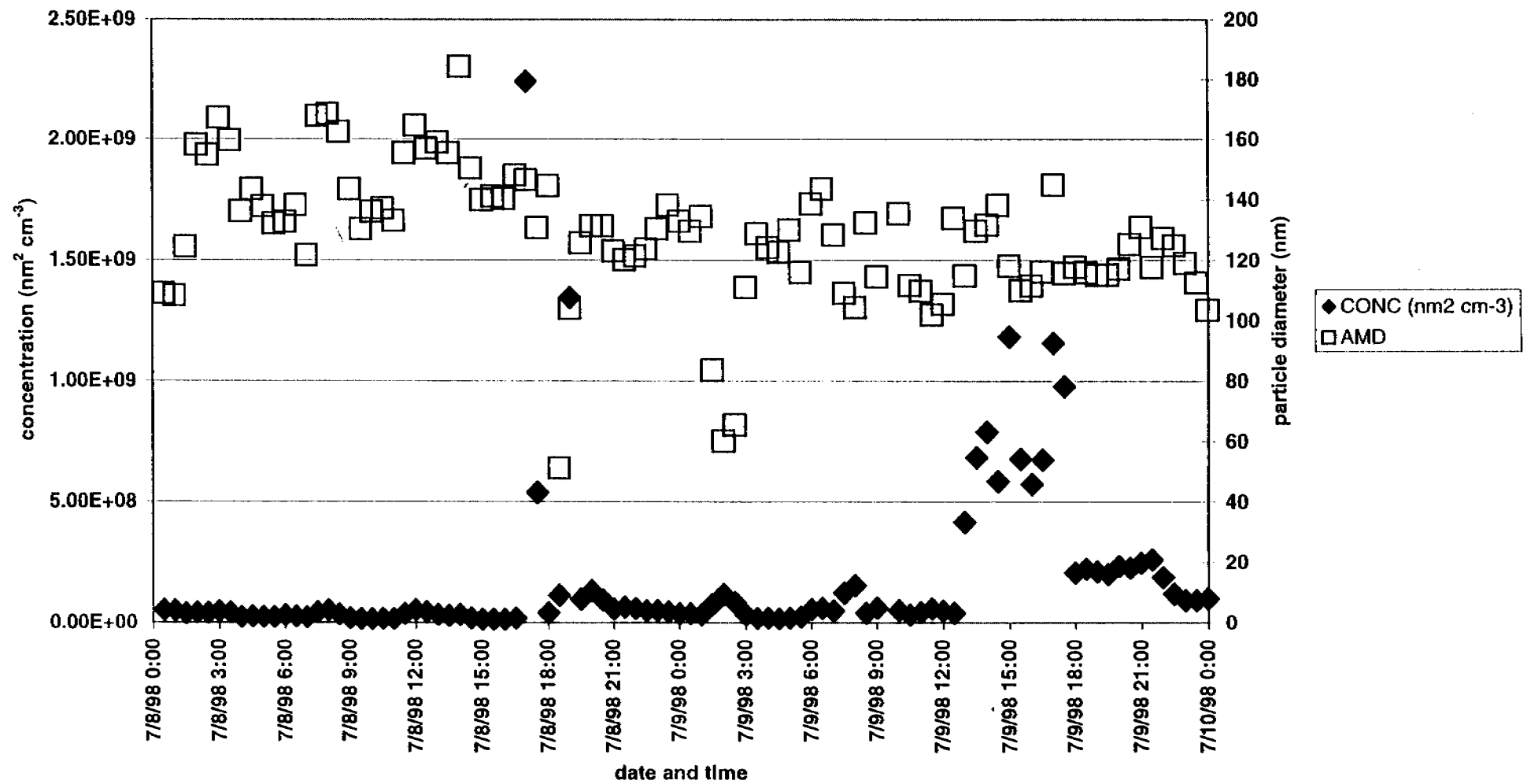
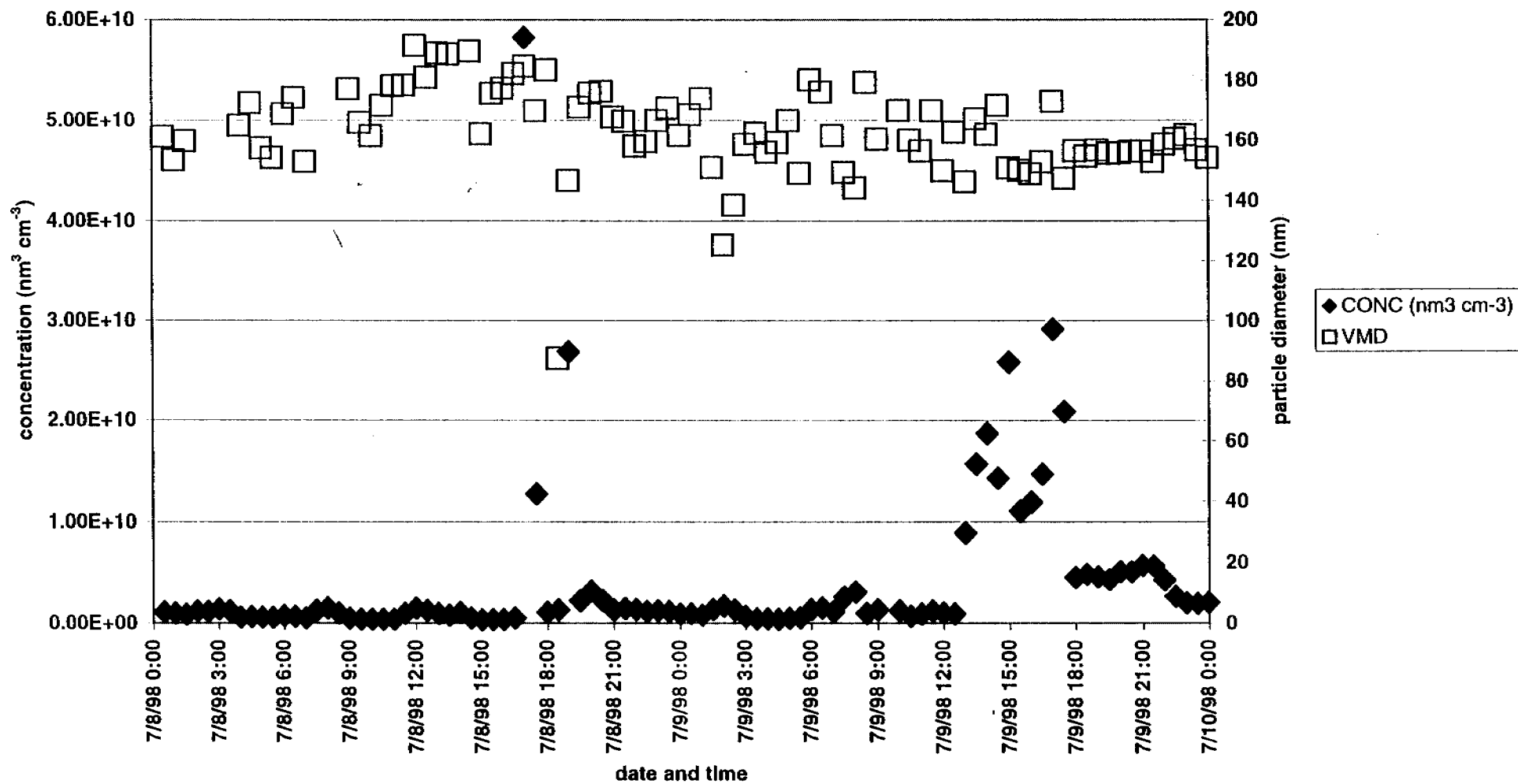


Figure 4

Volume and volume median diameter of CN for Jabiru Town, 7 – 10 July 1998.

Note the change in scale in CN volume concentration between the figures.

VOLUME CONCENTRATION AND VOLUME MEDIAN DIAMETER
DATA, JABIRU TOWN 8/7/98 - 10/7/98



Figures 5.1 – 5.24
The number size spectra of condensation nuclei; half hour averages.

number size distributions - 980708 (00:00 - 02:00)

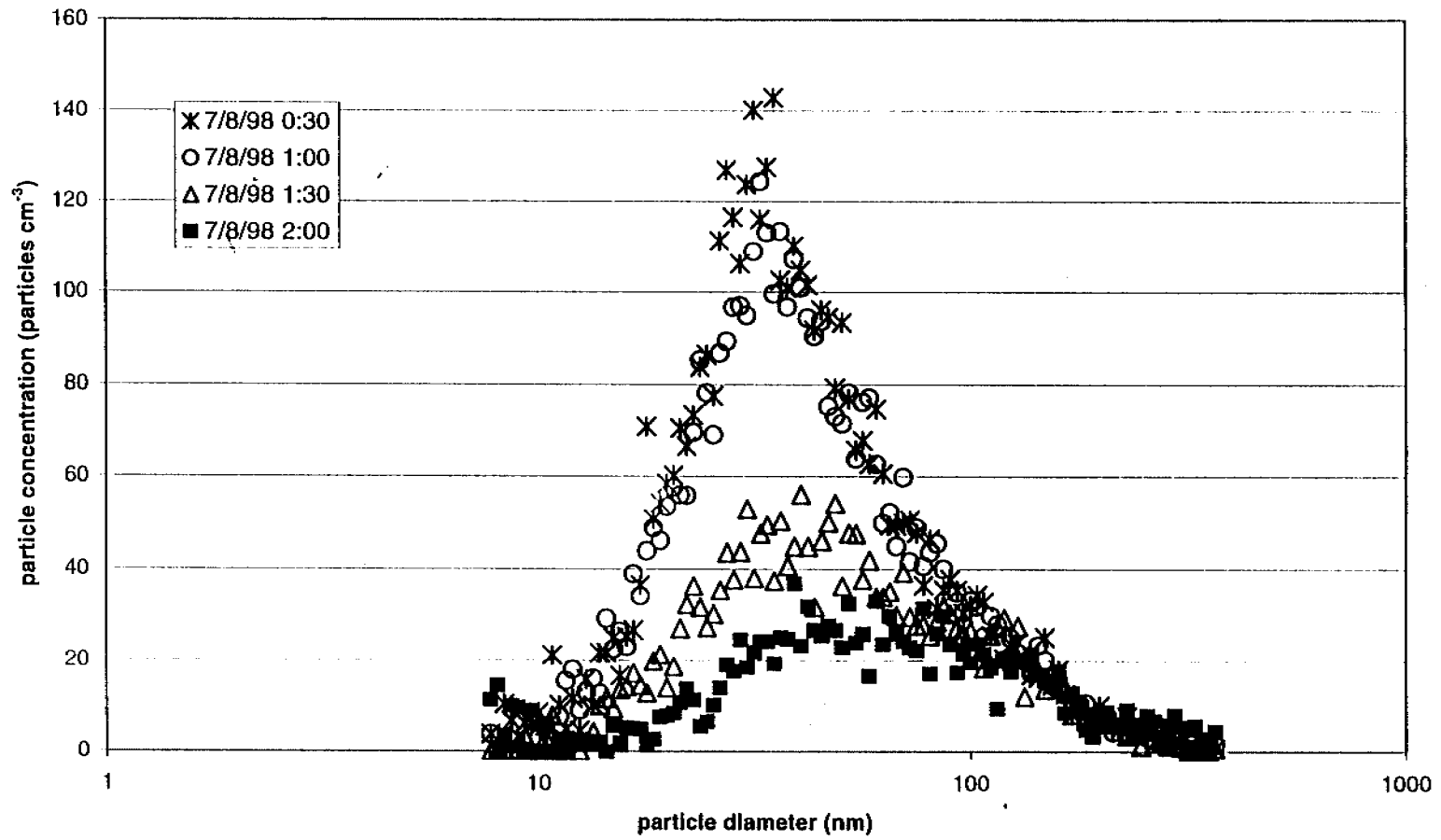


Figure 5.1

number size distributions - 980708 (02:00 - 04:00)

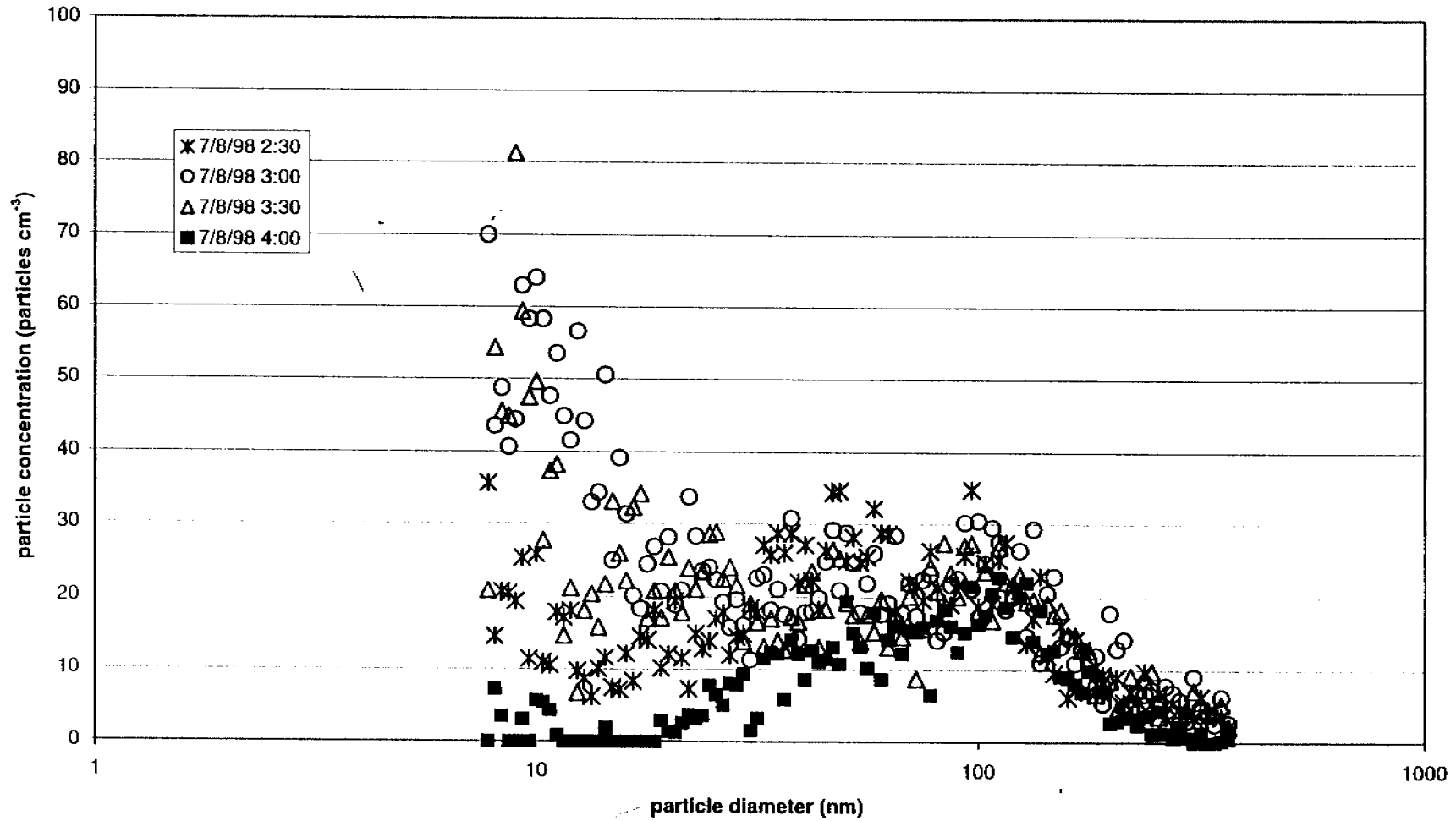


Figure 5.2

number size distributions - 980708 (04:00- 06:00)

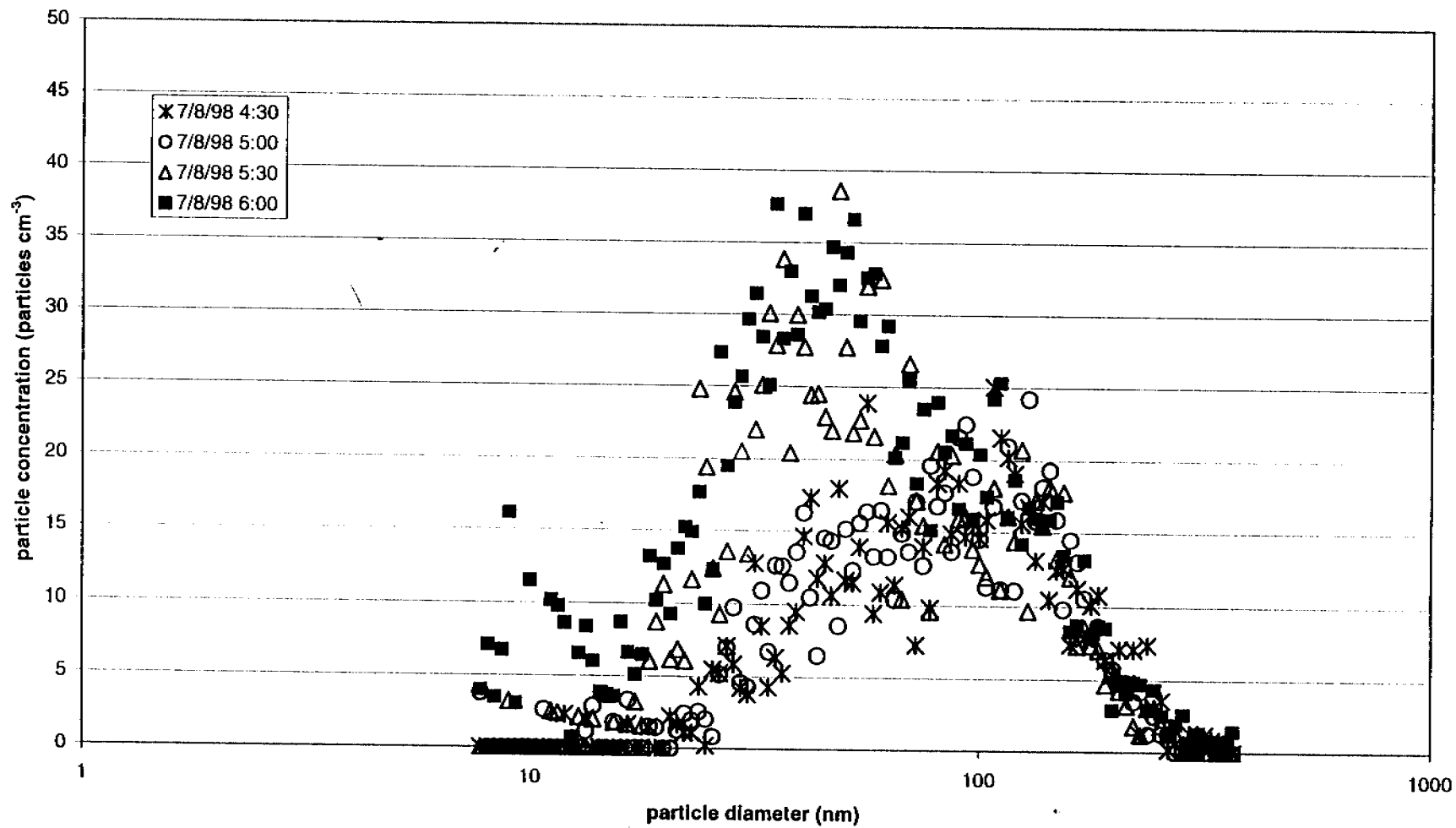


Figure 5.3

number size distributions - 980708 (06:00 - 08:00)

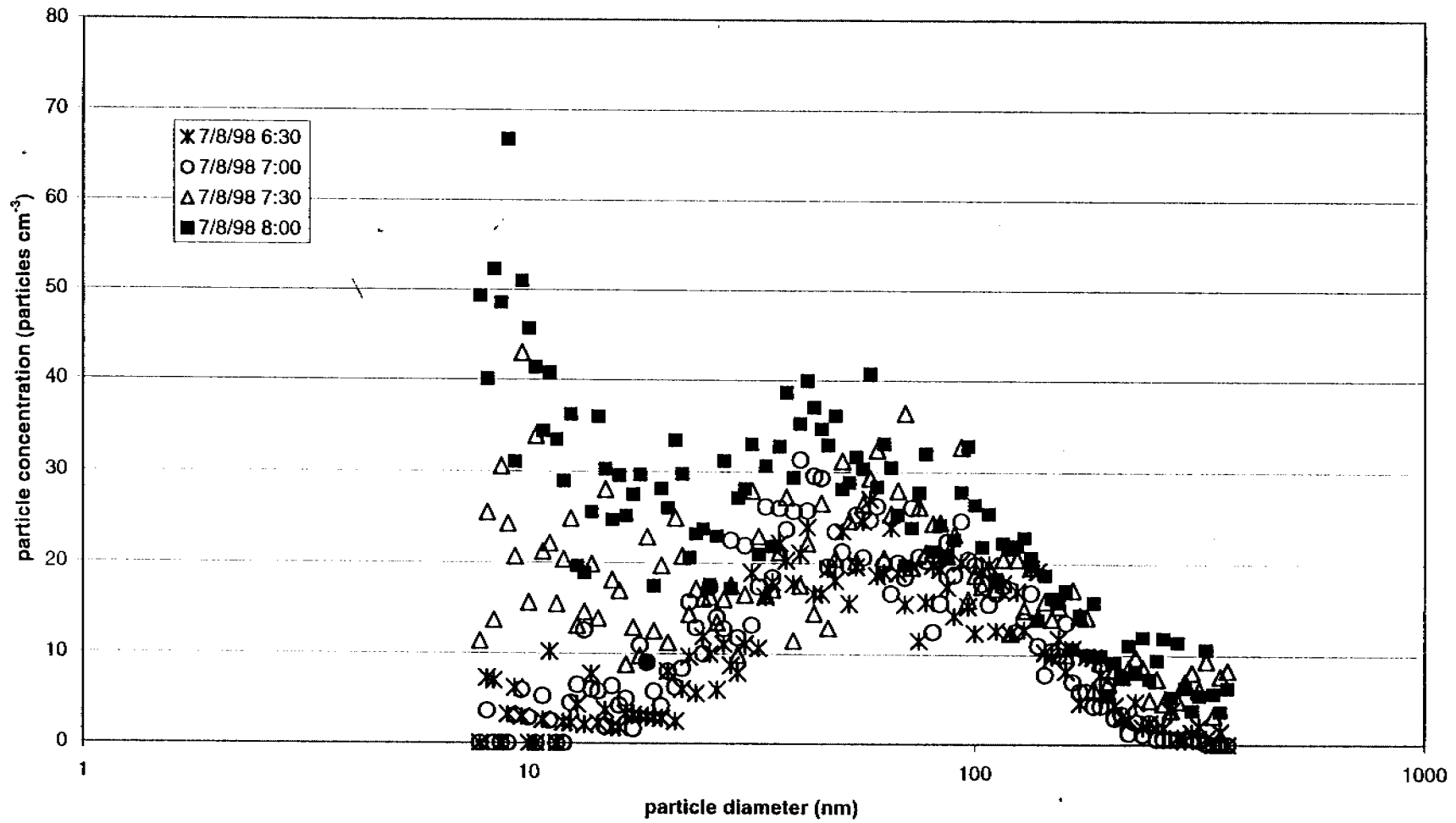


Figure 5.4

number size distributions - 980708 (08:00 - 10:00)

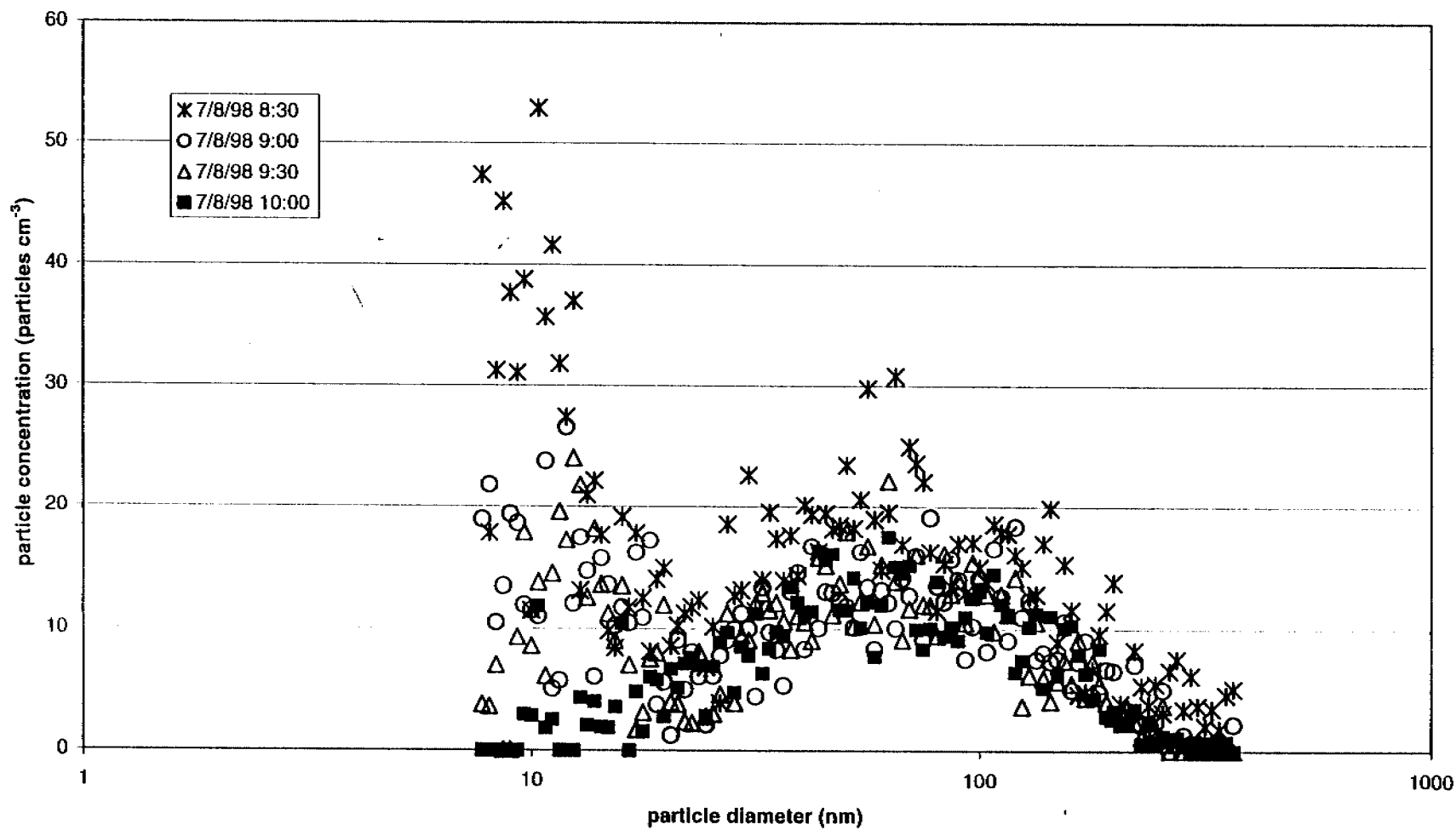


Figure 5.5

number size distributions - 980708 (10:00 - 12:00)

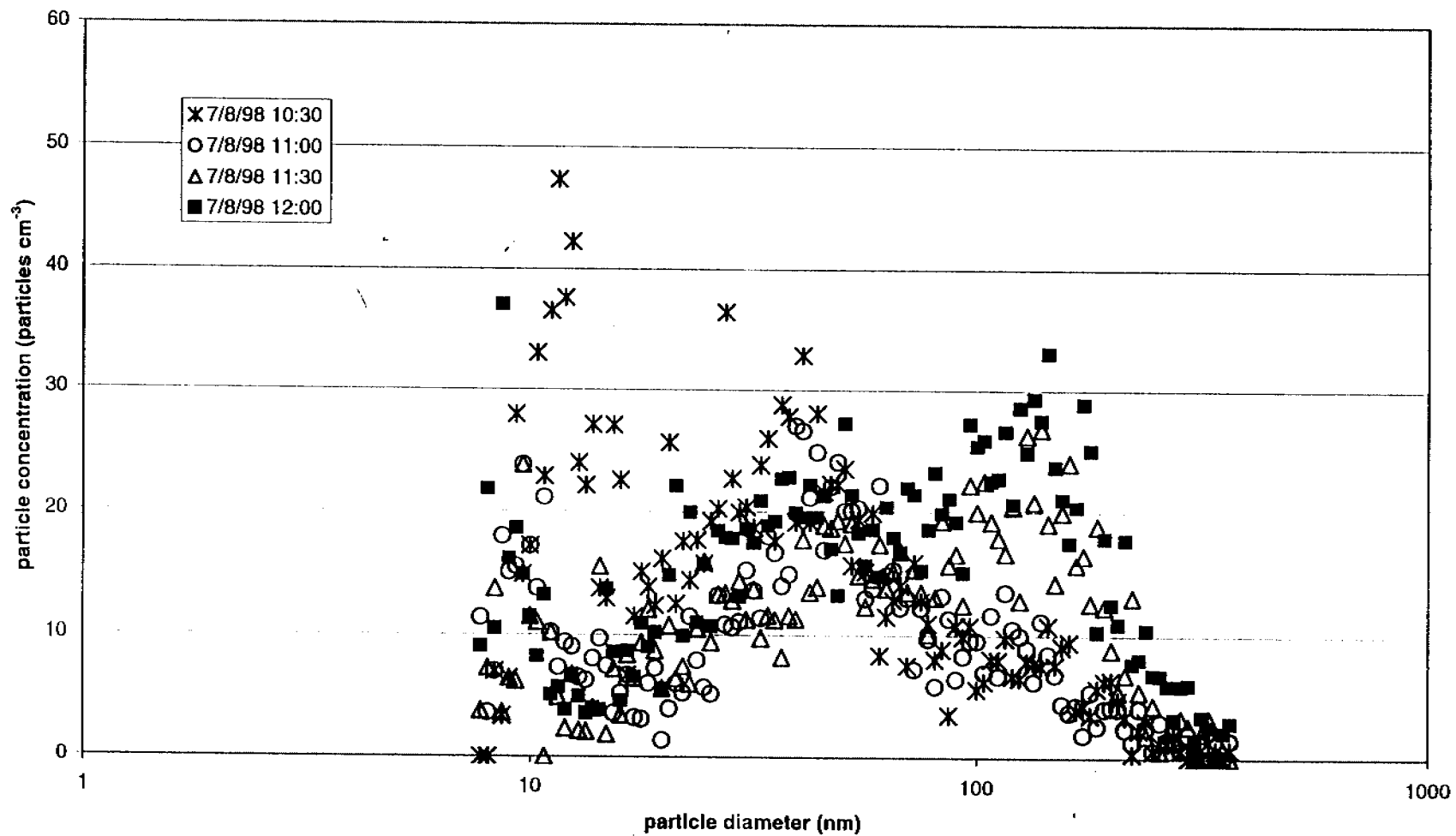


Figure 5.6

number size distributions - 980708 (12:00 - 14:00)

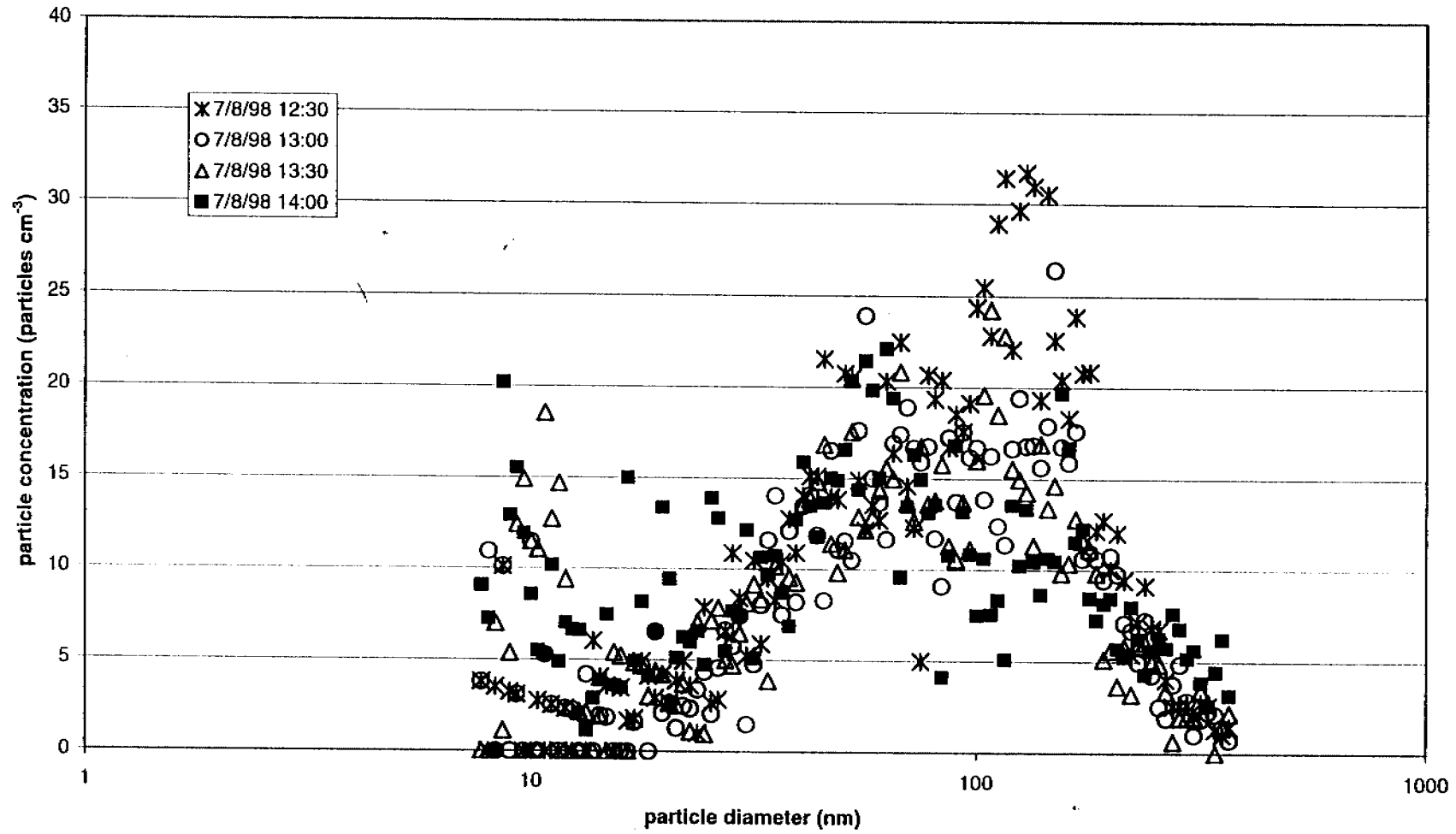


Figure 5.7

number size distributions - 980708 (14:00- 16:00)

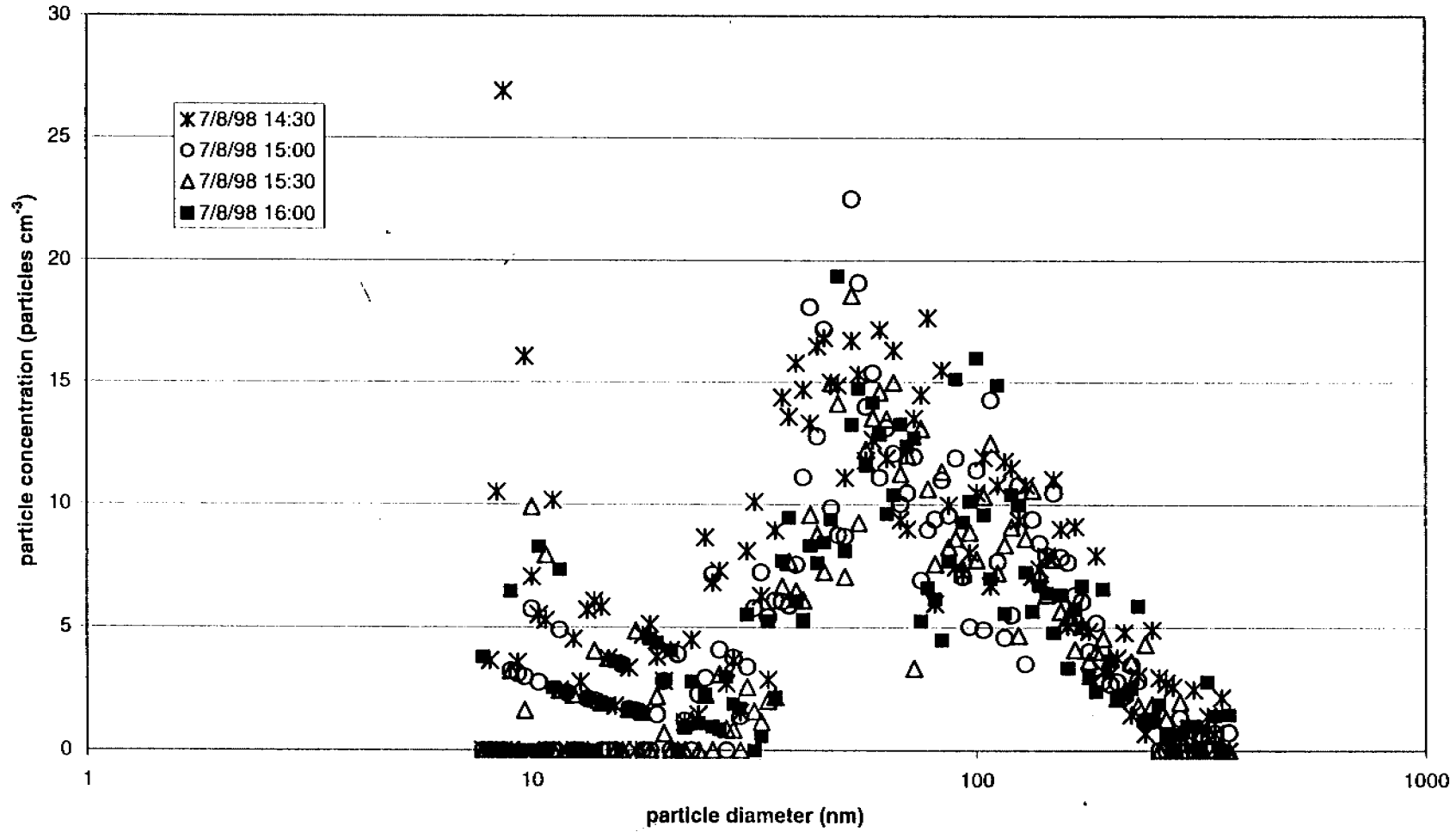


Figure 5.8

number size distributions - 980708 (16:00 -18:00)

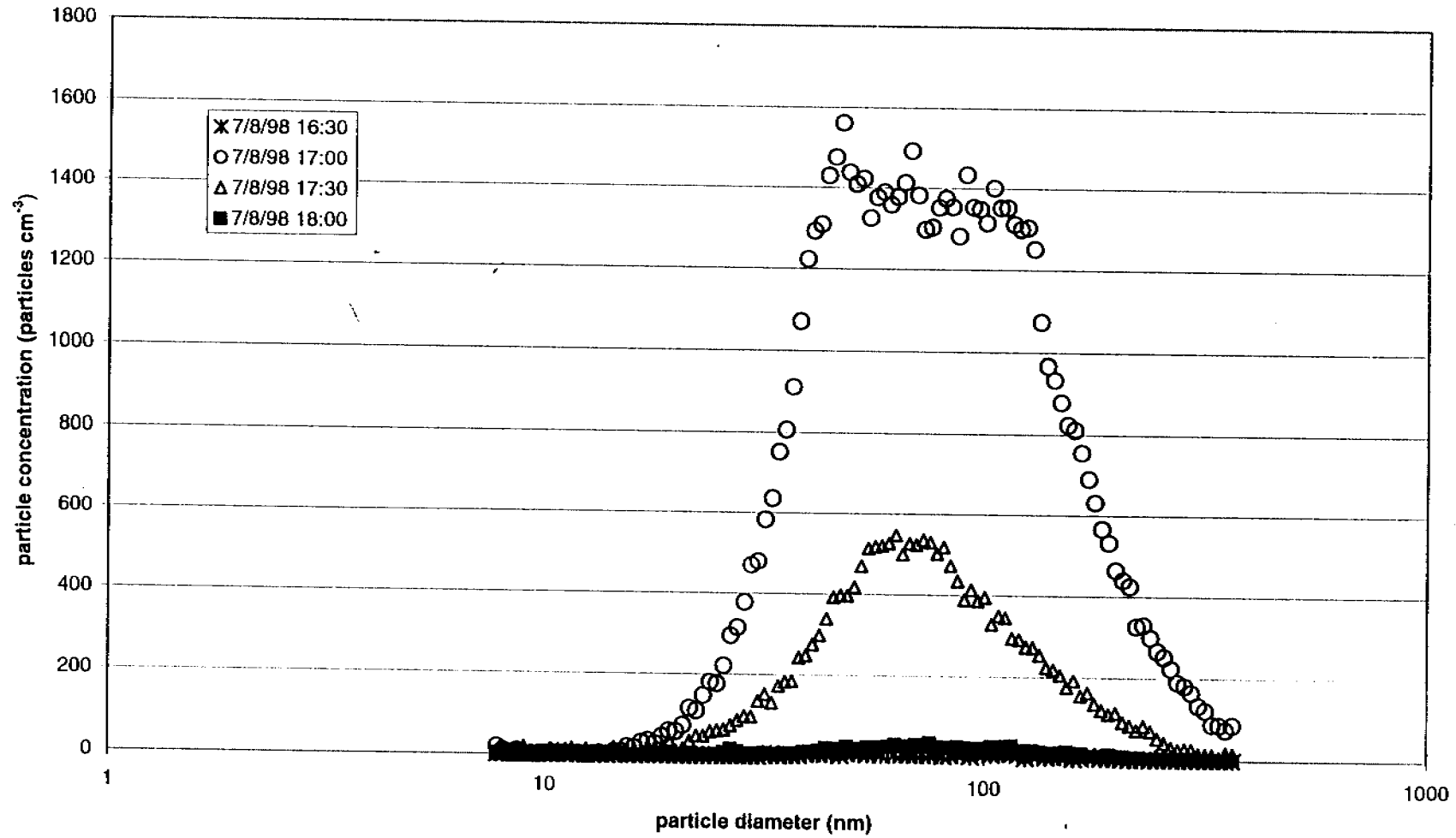


Figure 5.9

number size distributions - 980708 (18:00 - 20:00)

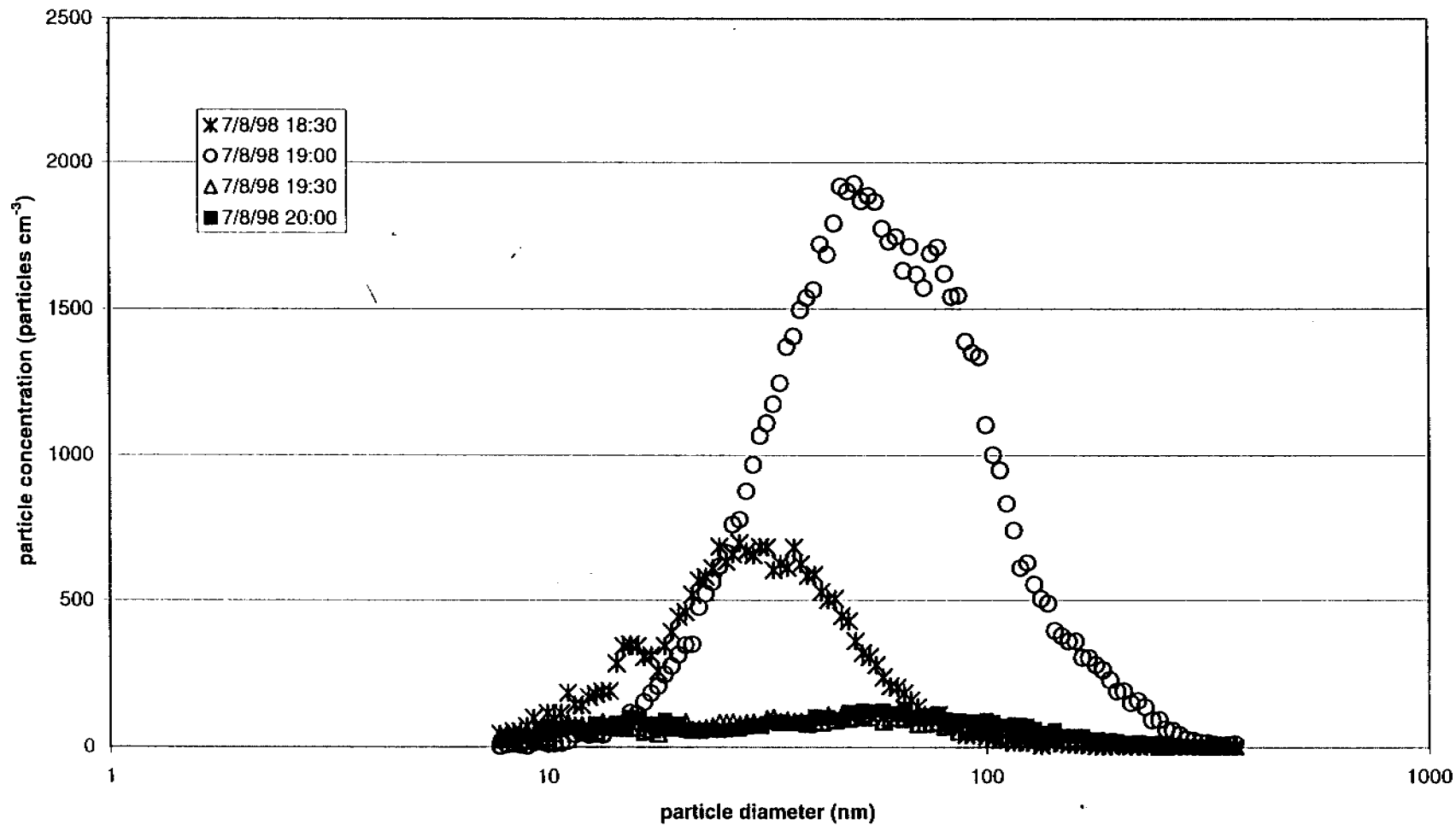


Figure 5.10

number size distributions - 980708 (20:00 - 22:00)

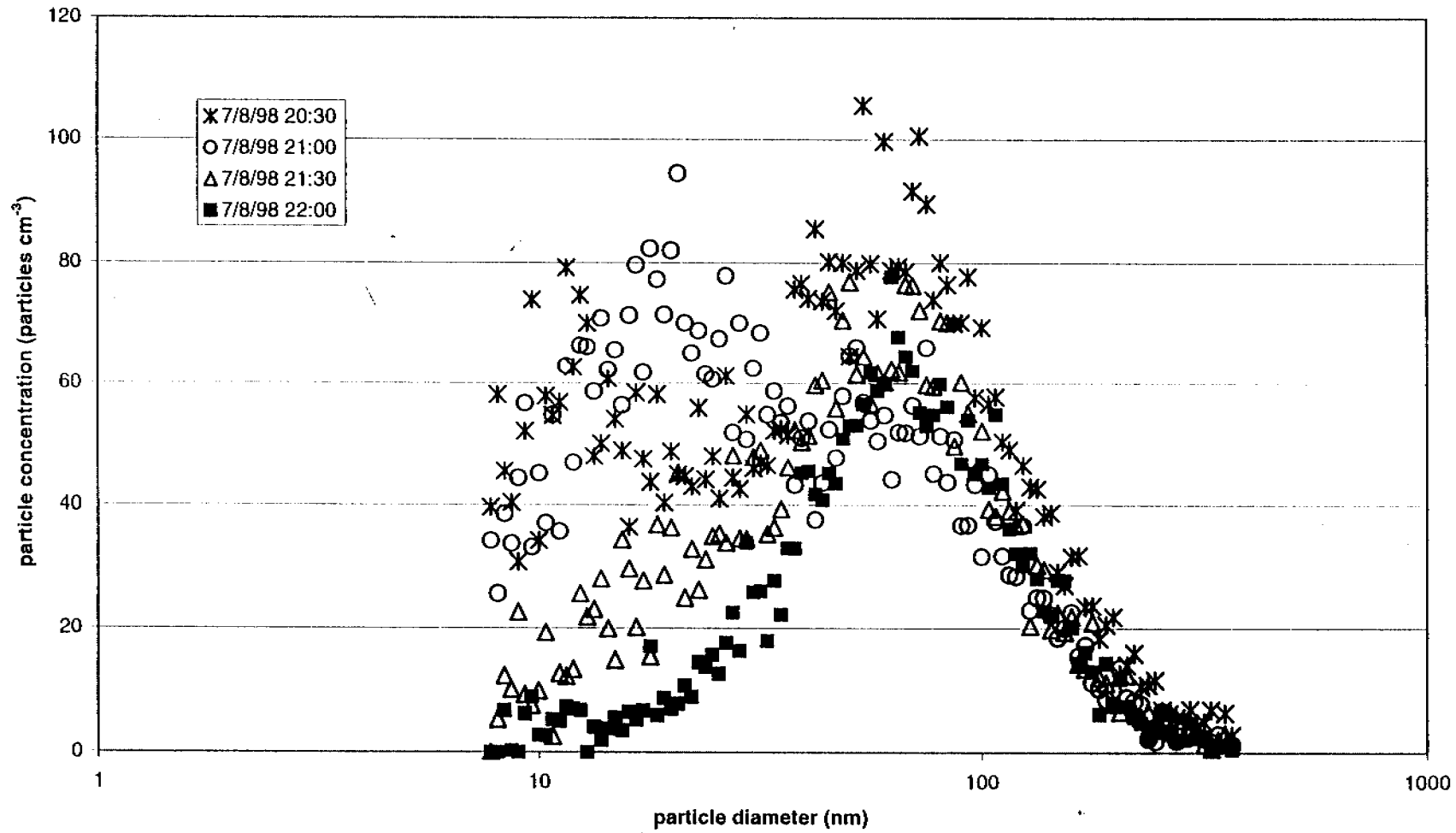


Figure 5.11

number size distributions - 980708 (22:00 - 24:00)

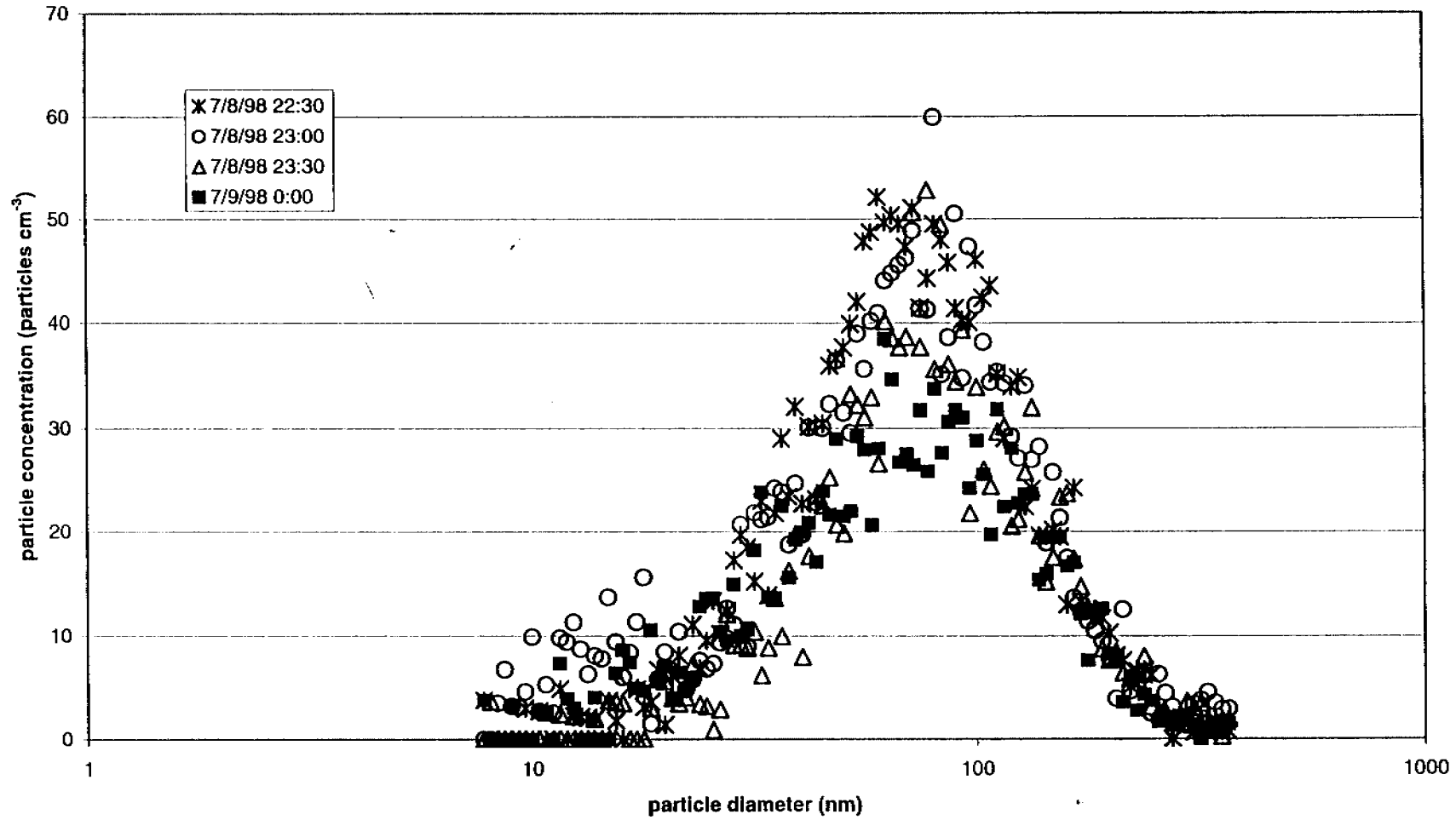


Figure 5.12

number size distributions - 980709 (00:00 - 02:00)

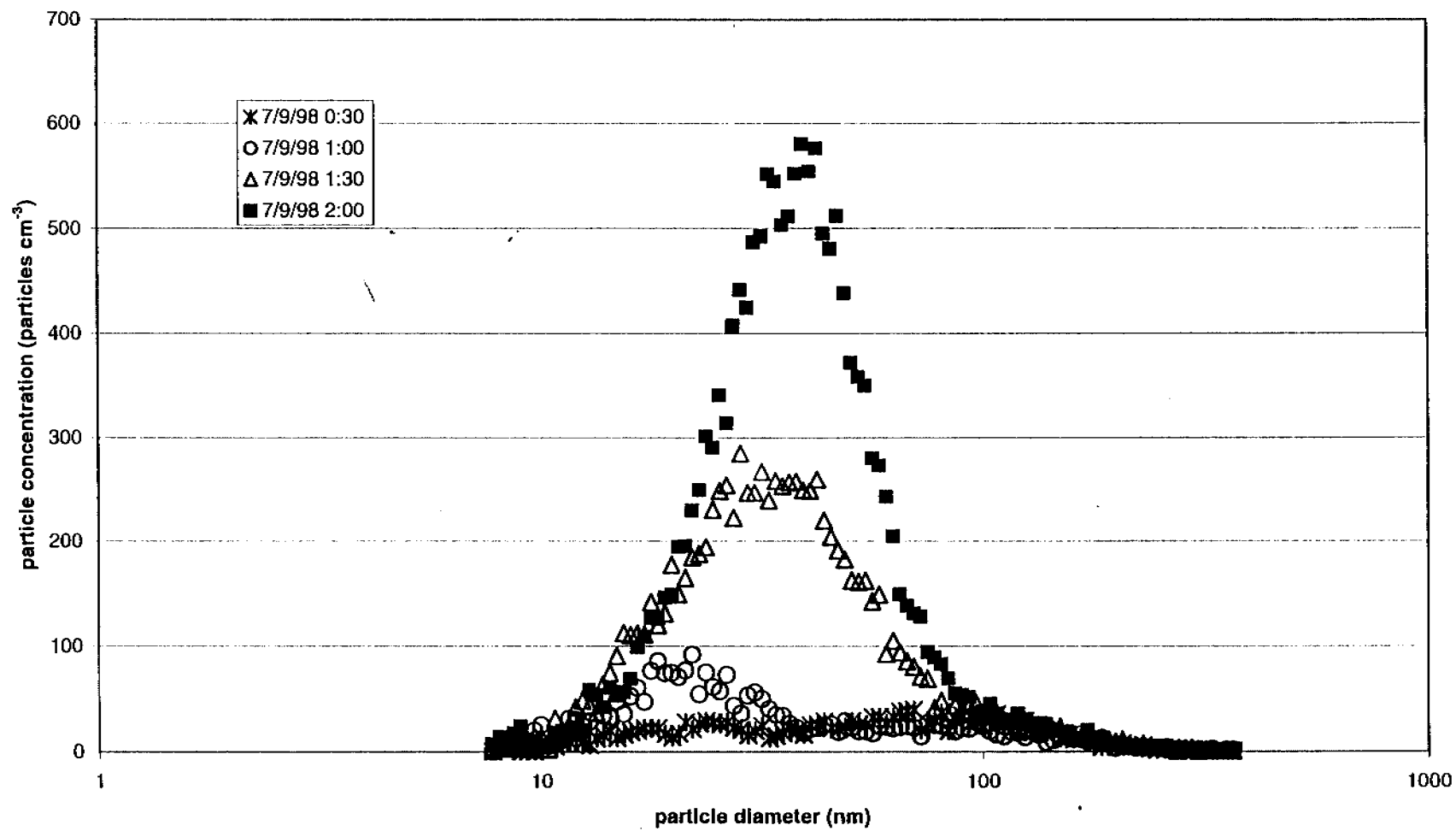


Figure 5.13

number size distributions - 980709 (02:00 - 04:00)

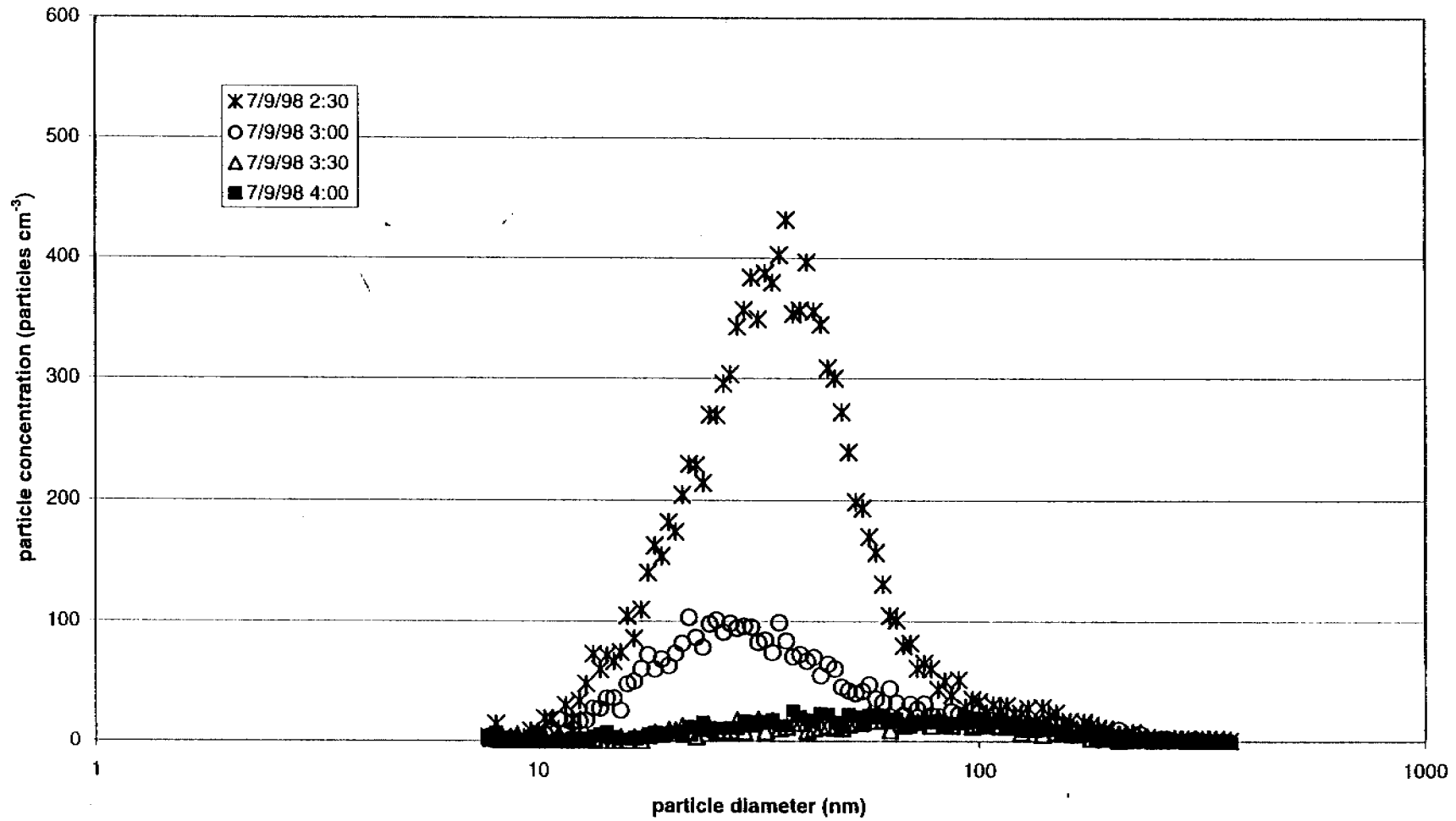


Figure 5.14

number size distributions - 980709 (04:00 - 06:00)

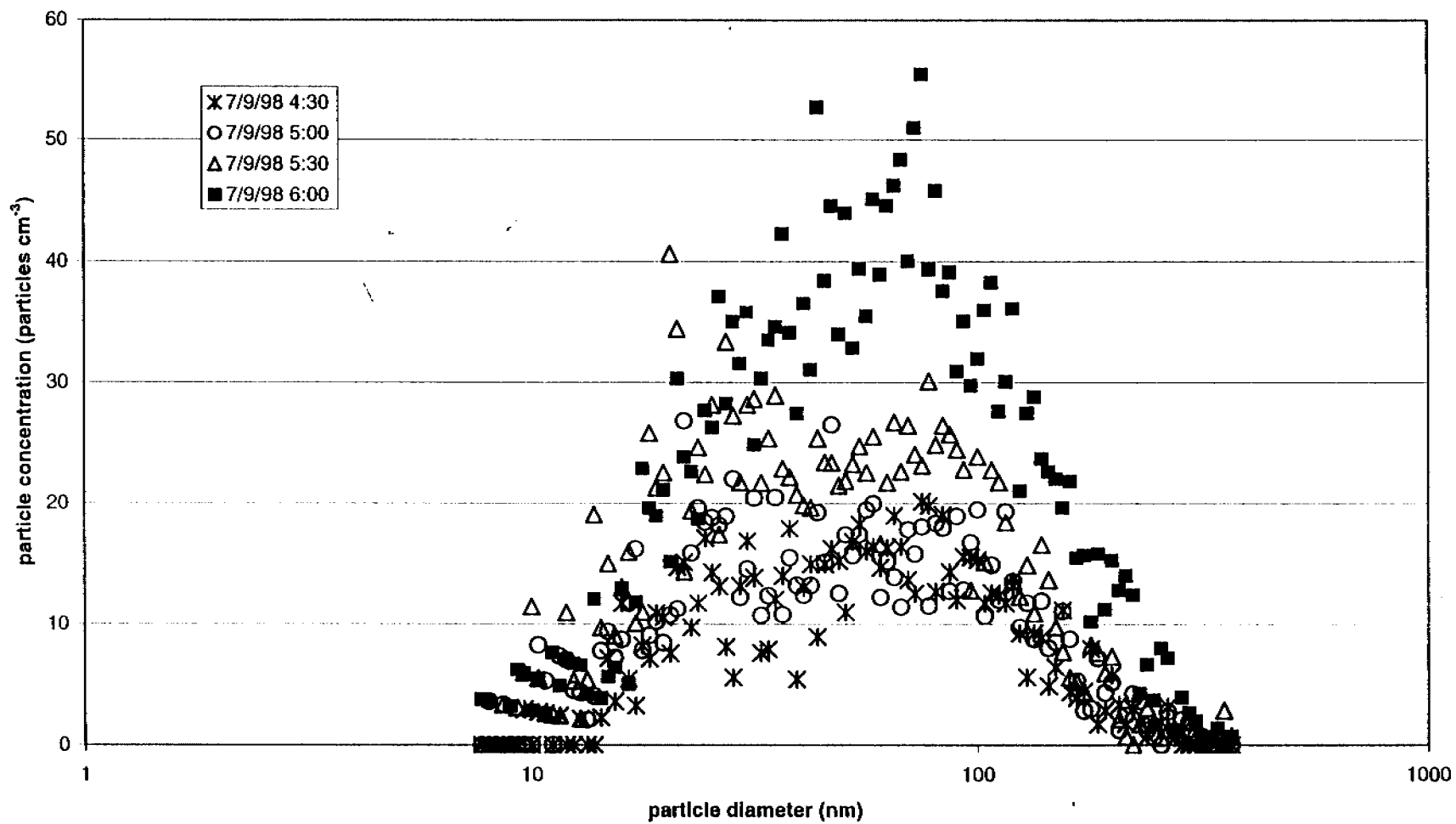


Figure 5.15

number size distributions - 980709 (06:00 - 08:00)

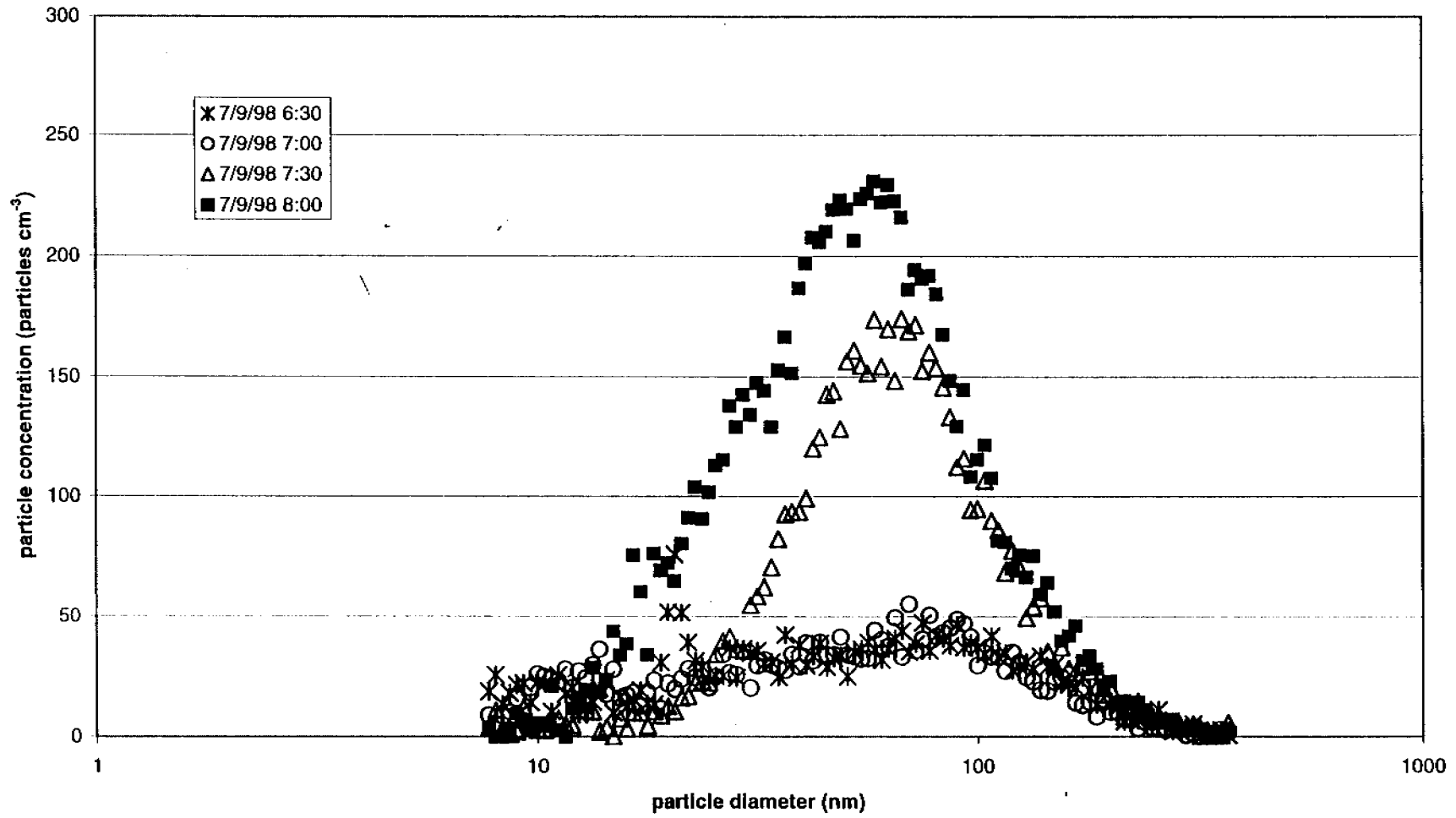


Figure 5.16

number size distributions - 980709 (08:00 - 10:00)

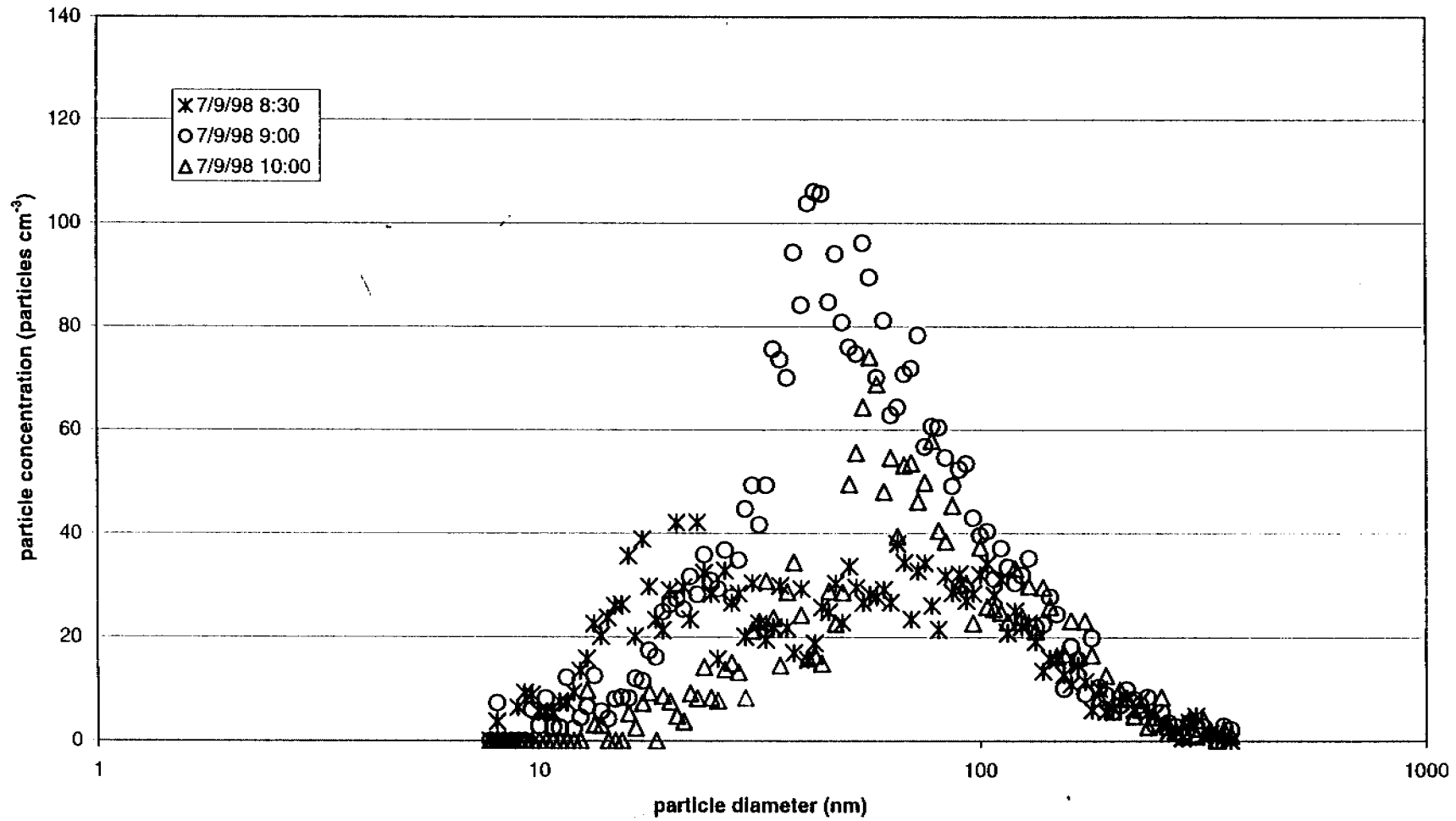


Figure 5.17

number size distributions - 980709(10:00 - 12:00)

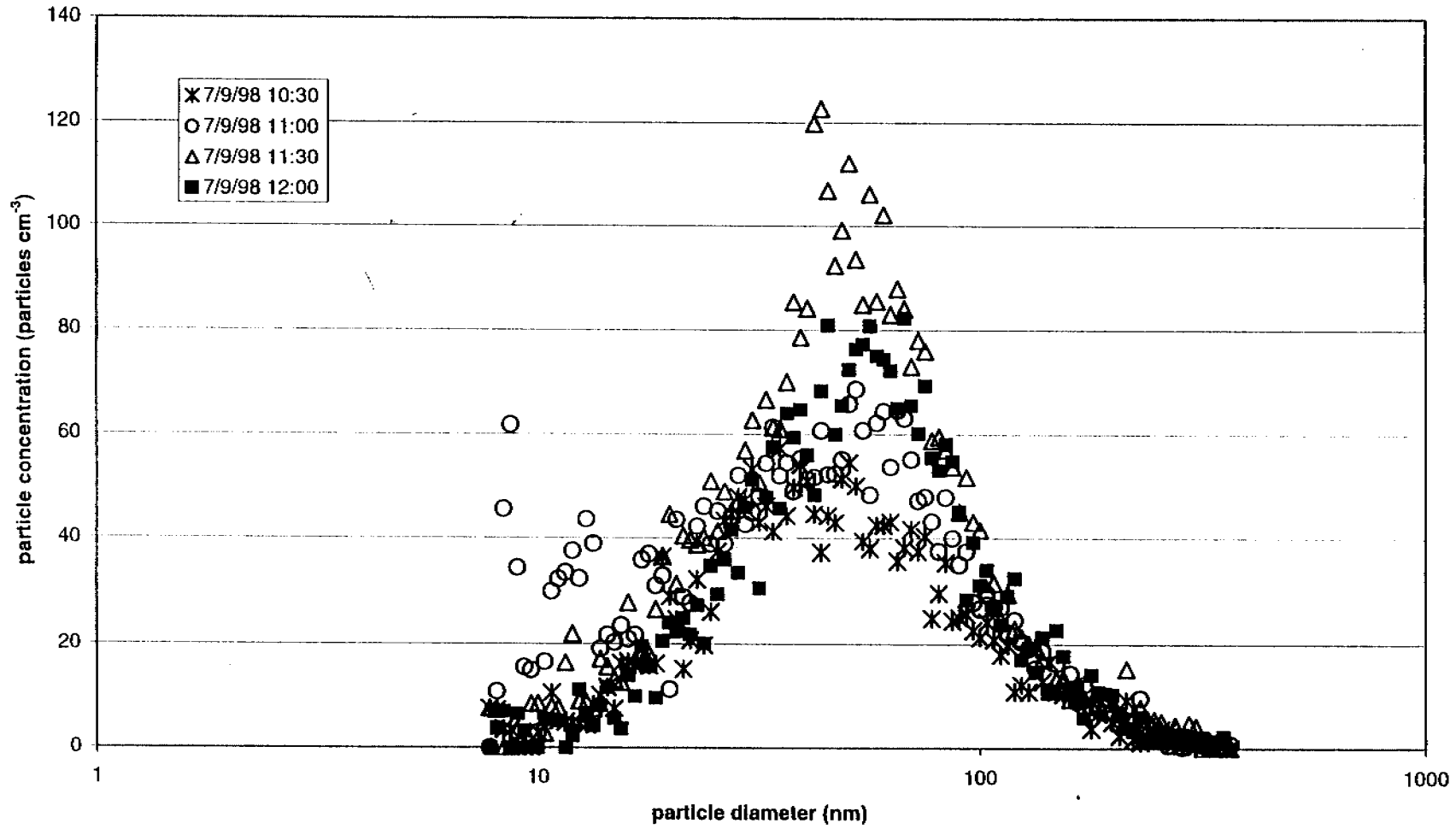


Figure 5.18

number size distributions - 980709 (12:00 - 14:00)

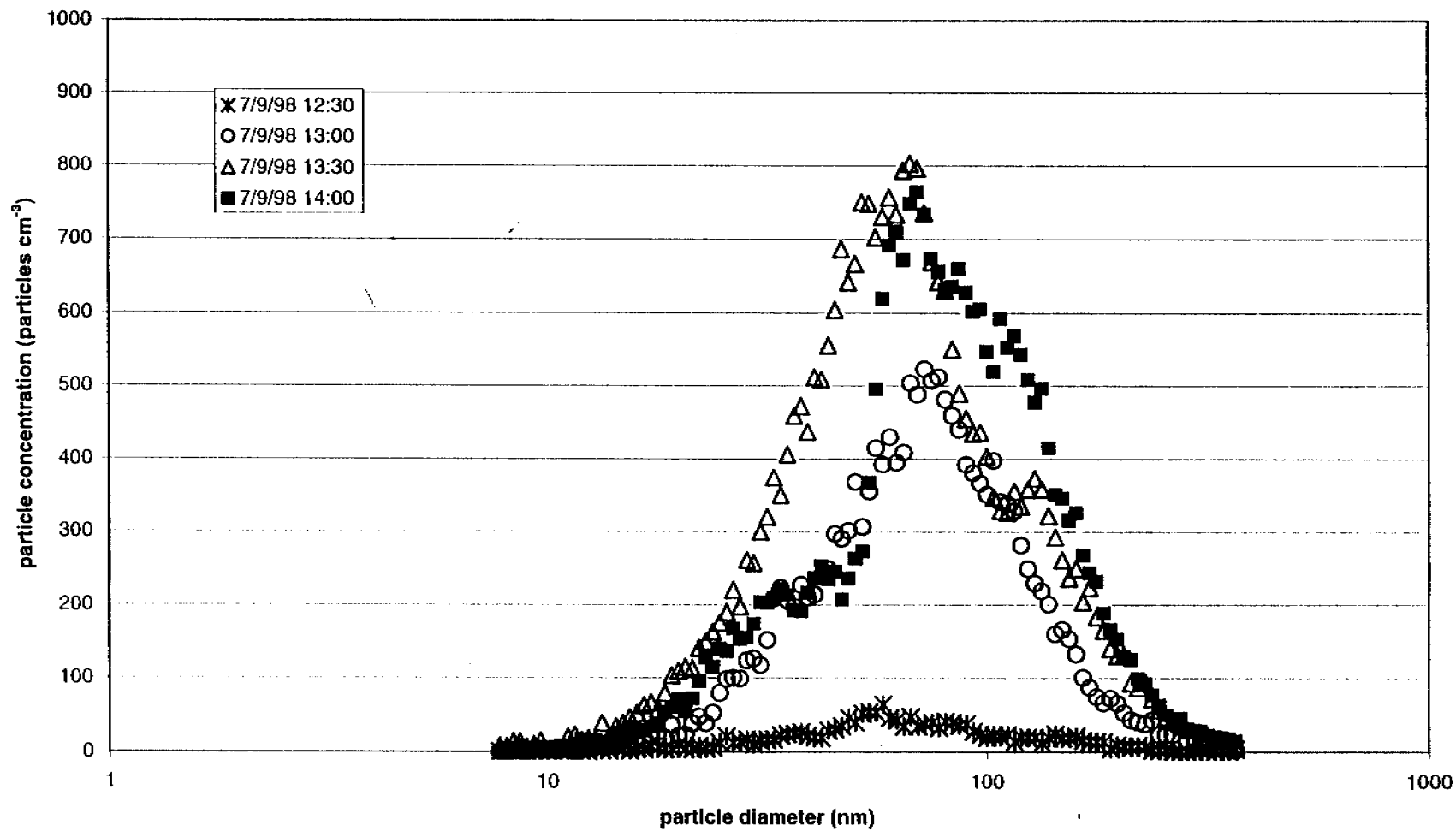


Figure 5.19

number size distributions - 980709 (14:00 - 16:00)

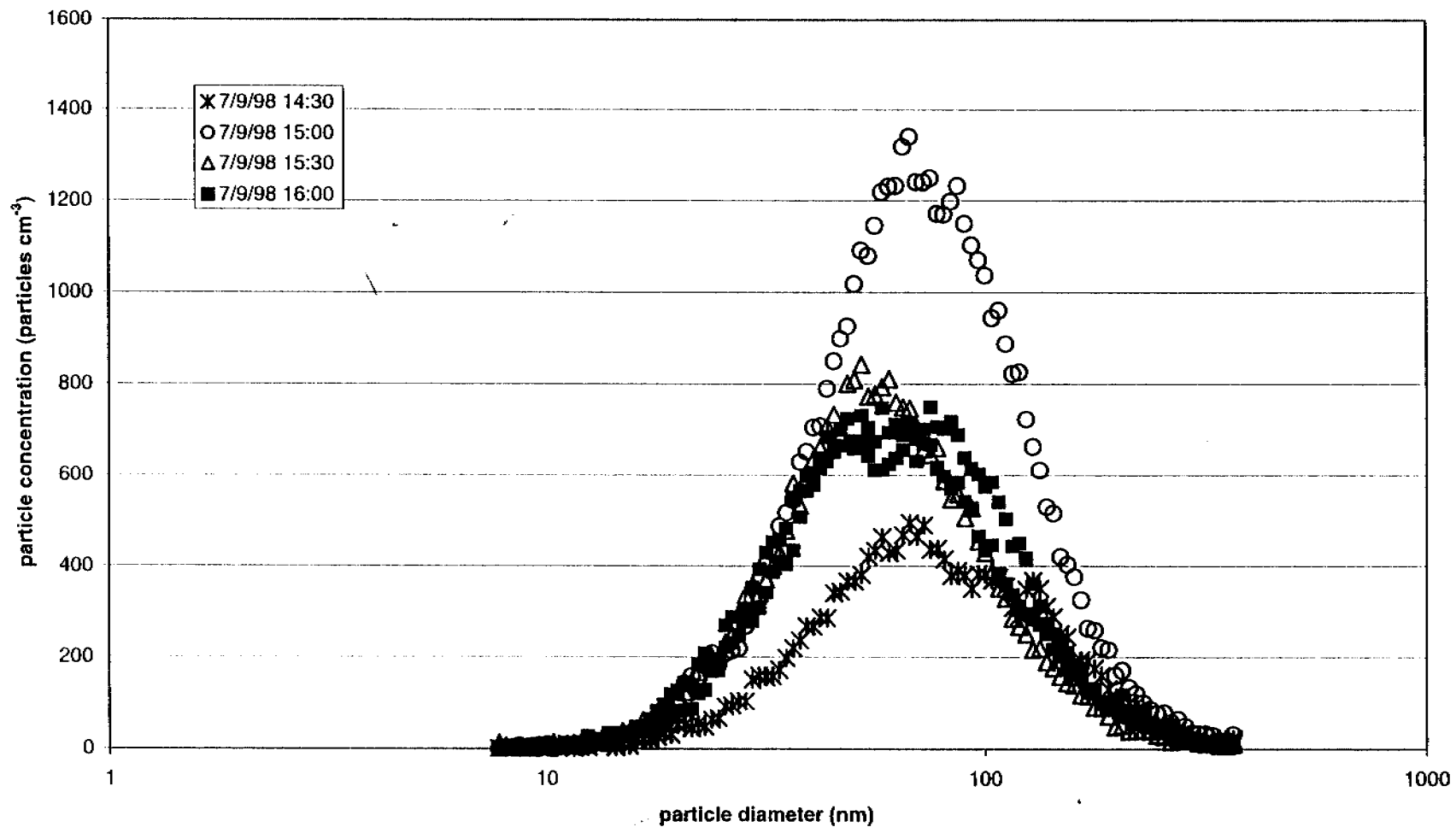


Figure 5.20

number size distributions - 980709(16:00 - 18:00)

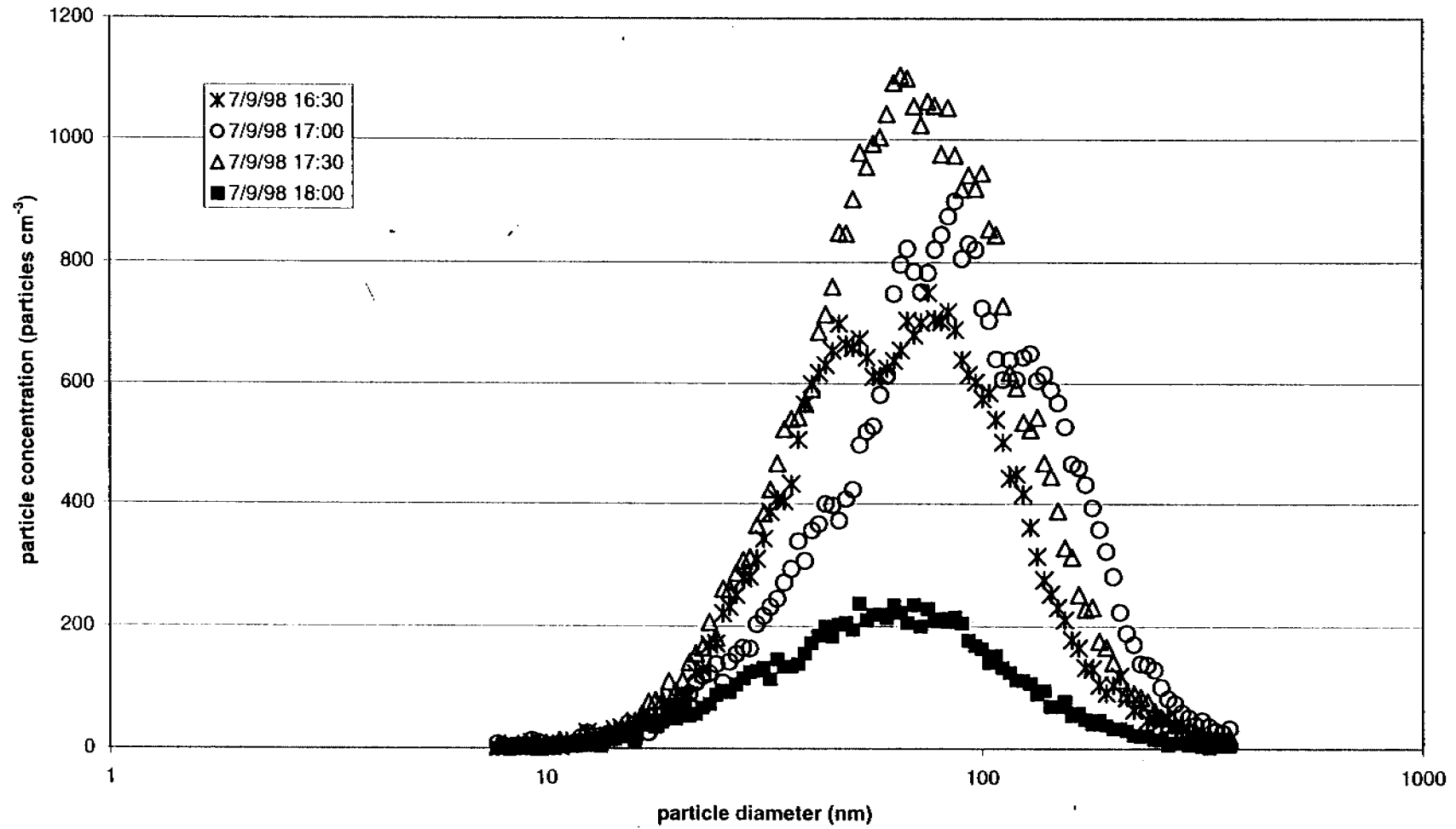


Figure 5.21

number size distributions - 980709 (18:00 - 20:00)

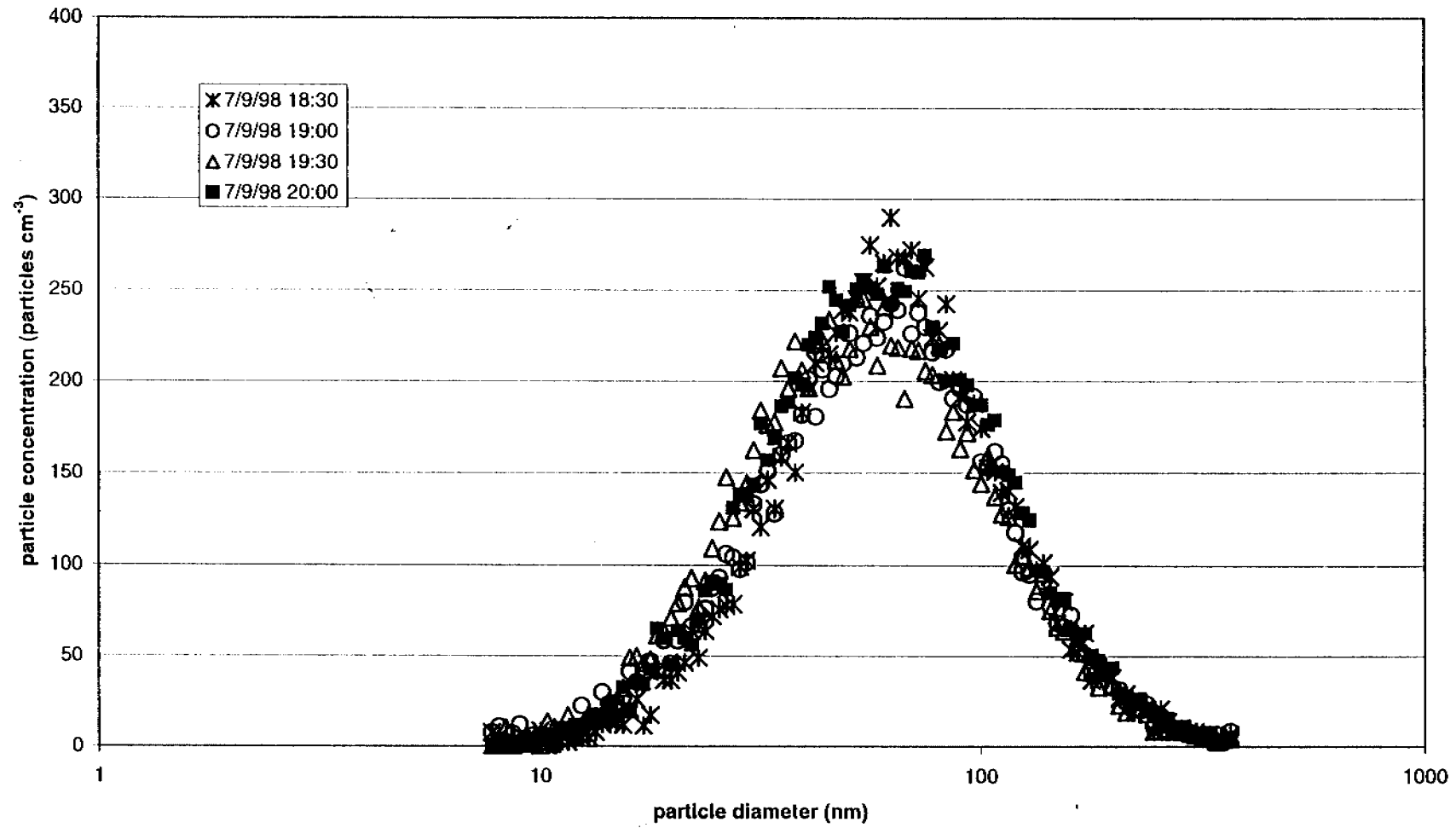


Figure 5.22

number size distributions - 980709 (20:00 - 22:00)

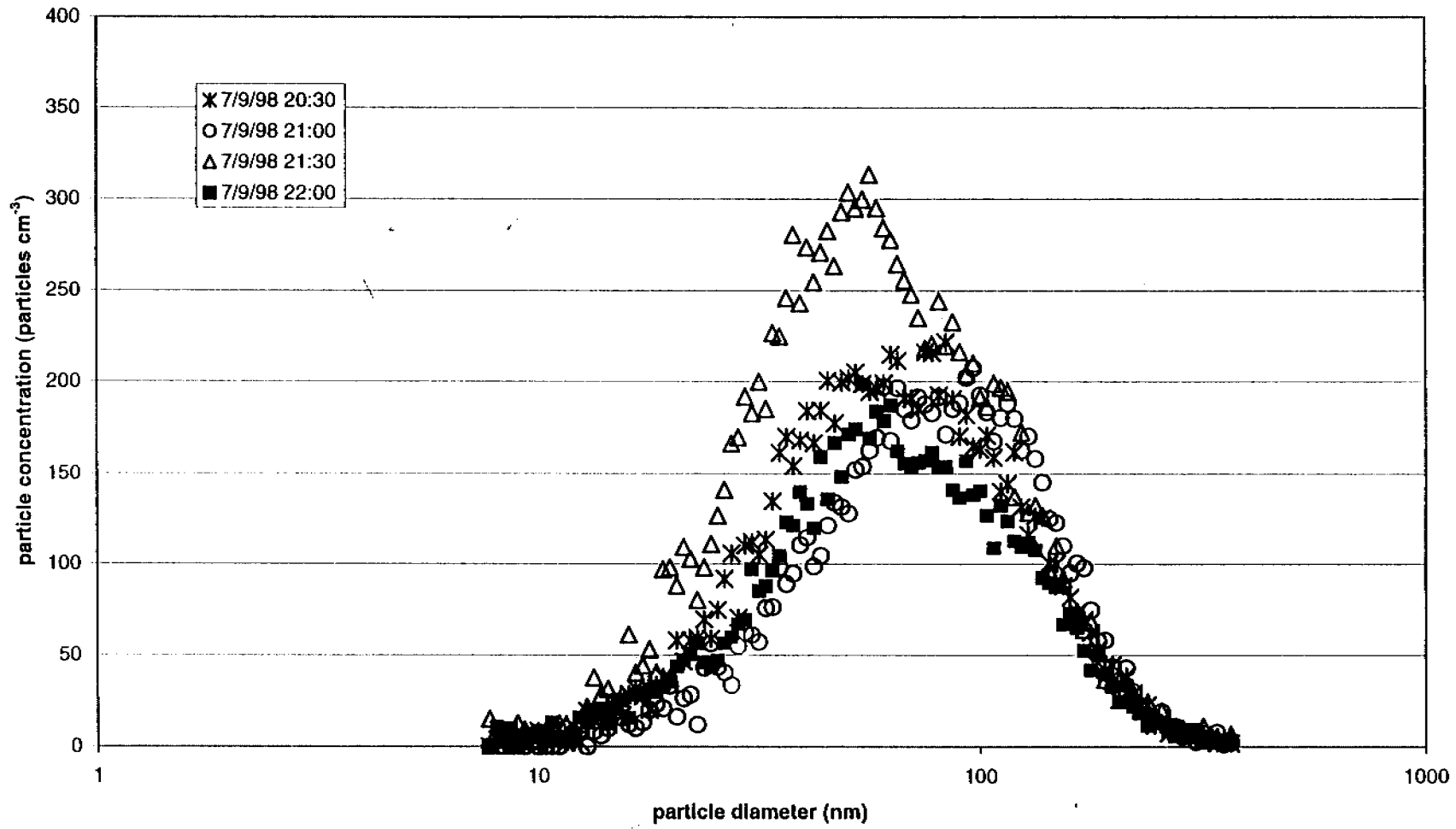


Figure 5.23

number size distributions - 980709 (22:00 - 24:00)

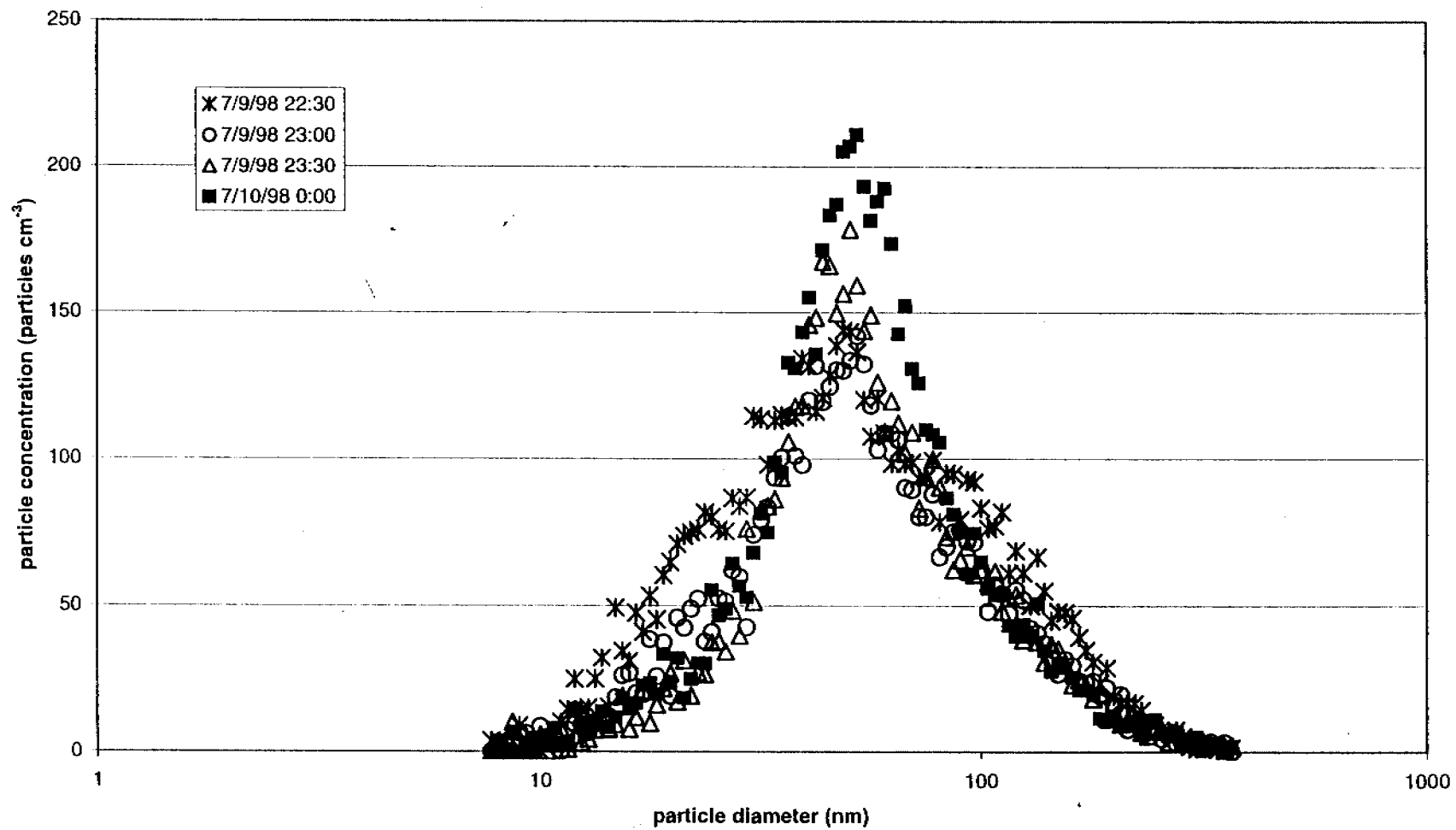


Figure 5.24

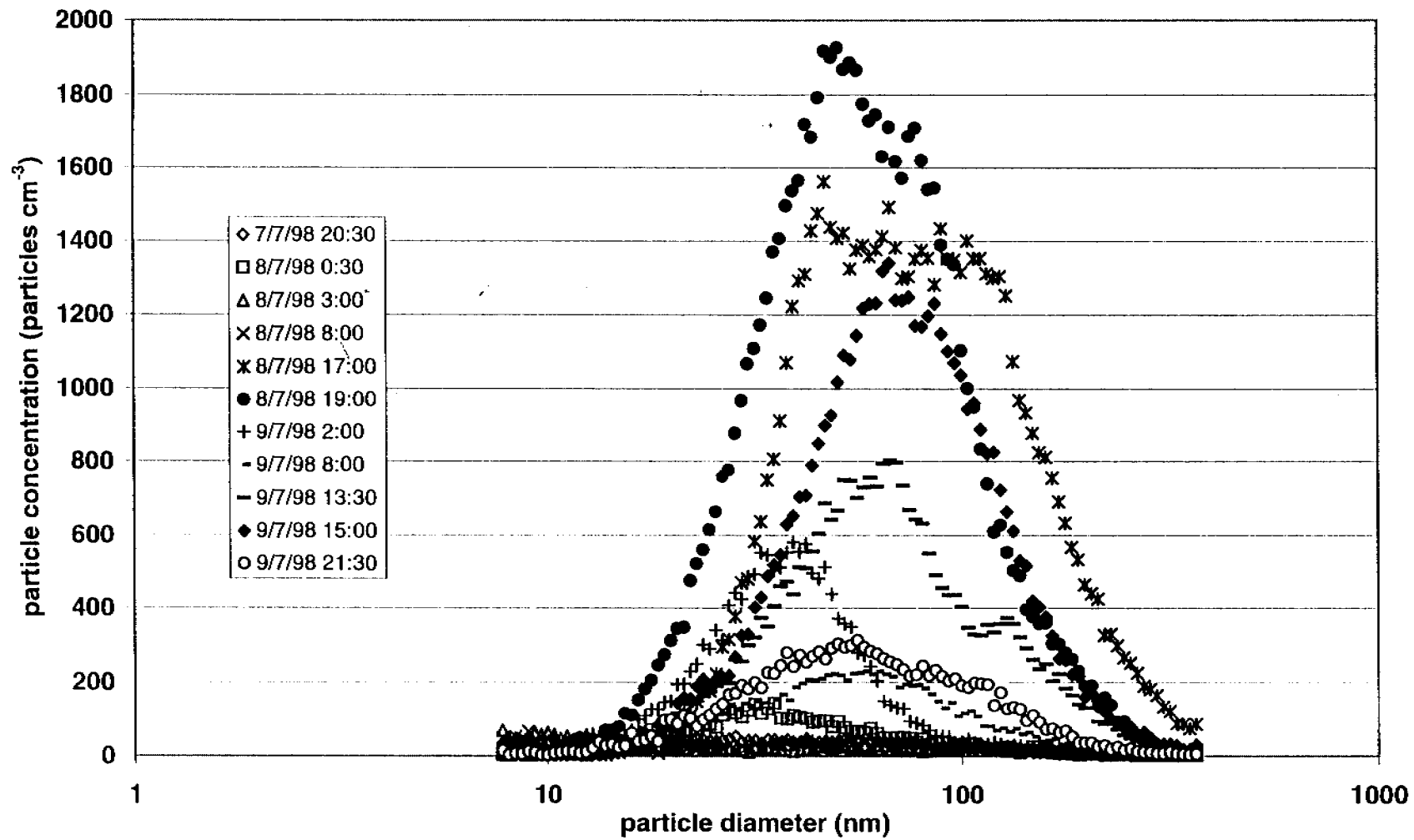


Figure 6 Number size spectra at the peak number CN concentrations

Table 1: Some visual observations relative to aerosol measurements in Jabiru Town

<i>Date</i>	<i>Time</i>	<i>Event</i>
7/7/98	4:30 PM	Cooking by a neighbour
8/7/98	9:00 AM	Light winds, clear
	6:30 PM	Cooking by a neighbour
9/7/98	9:30 AM	Stronger winds than previous days, light smoke cover over Jabiru observed
	4:00 PM	Considerable smoke observed over sampling site, bush fire 200 m from site
	6:30 PM	

Table 2: Statistical summary of half hourly average measurements in Jabiru Town

PARTICLE SIZE DATA: 8 - 365 nm: JABIRU TOWN (7/7/98 - 10/7/98)

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/7/98 19:30	@980707b.s01	58	71	56	2.1	994	132	142	124	1.7	2.32E+07	168	176	160	1.6	5.48E+08
7/7/98 20:00	@980707b.s02	49	61	47	2.1	1561	120	135	116	1.8	2.88E+07	169	173	155	1.6	6.49E+08
7/7/98 20:30	@980707b.s03	35	51	36	2.3	2897	126	138	116	1.9	4.24E+07	175	178	160	1.6	9.77E+08
7/7/98 23:00	@98077b.s04	56	67	56	1.8	1733	111	123	108	1.7	3.35E+07	151	153	139	1.6	6.86E+08
7/7/98 23:30	@980707c.000	64	76	64	1.8	961	127	134	119	1.7	2.38E+07	159	162	149	1.5	5.32E+08
8/7/98 0:00	@980707c.001	42	57	45	2.0	2159	117	130	111	1.8	3.51E+07	158	165	149	1.6	7.58E+08
8/7/98 0:30	@980707c.002	36	49	39	1.9	4480	109	123	101	2.0	5.41E+07	161	167	147	1.7	1.11E+09
8/7/98 1:00	@980707c.003	38	50	41	1.9	4117	108	120	99	1.9	5.12E+07	153	159	141	1.7	1.02E+09
8/7/98 1:30	@980707c.004	46	61	48	2.0	2212	124	132	114	1.8	3.99E+07	160	165	150	1.6	8.78E+08
8/7/98 2:00	@980707c.005	58	77	59	2.1	1449	158	169	148	1.8	4.31E+07	219	207	191	1.6	1.22E+09
8/7/98 2:30	@980707c.006	48	67	46	2.5	1716	155	165	143	1.8	4.22E+07	208	202	185	1.6	1.16E+09
8/7/98 3:00	@980707c.007	27	54	32	2.8	2434	167	172	150	1.8	4.91E+07	210	207	192	1.5	1.41E+09

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/8/98 3:30	@980707c.008	30	56	34	2.8	2061	160	170	149	1.8	4.35E+07	213	206	190	1.5	1.23E+09
7/8/98 4:00	@980707c.009	75	86	70	2.0	811	136	146	132	1.6	2.55E+07	165	172	159	1.5	6.21E+08
7/8/98 4:30	@980707c.010	82	91	77	1.8	774	143	149	136	1.6	2.70E+07	172	173	162	1.5	6.71E+08
7/8/98 5:00	@980707c.011	79	88	75	1.8	802	138	140	129	1.5	2.58E+07	157	159	150	1.4	6.01E+08
7/8/98 5:30	@980707c.012	52	68	55	1.9	1217	132	133	117	1.7	2.59E+07	154	159	147	1.5	5.72E+08
7/8/98 6:00	@980707c.013	49	64	50	2.1	1587	133	140	121	1.8	3.23E+07	169	173	158	1.6	7.52E+08
7/8/98 6:30	@980707c.014	59	74	58	2.1	1063	138	147	130	1.7	2.75E+07	174	179	164	1.6	6.74E+08
7/8/98 7:00	@980707c.015	52	65	52	2.0	1226	122	129	114	1.7	2.44E+07	153	159	145	1.6	5.27E+08
7/8/98 7:30	@980707c.016	45	64	42	2.6	1825	168	174	151	1.8	4.50E+07	220	211	195	1.5	1.30E+09
7/8/98 8:00	@980707c.017	37	57	36	2.6	2548	168	172	148	1.8	5.31E+07	223	209	194	1.5	1.52E+09
7/8/98 8:30	@980707c.018	37	57	35	2.8	1669	162	169	147	1.8	3.55E+07	210	205	190	1.5	1.00E+09
7/8/98 9:00	@980707c.019	42	60	39	2.6	1007	144	148	131	1.7	2.06E+07	177	176	163	1.5	5.06E+08
7/8/98 9:30	@980707c.020	45	58	40	2.5	933	130	137	121	1.7	1.73E+07	166	165	152	1.5	3.96E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/8/98 10:00	@980707c.021	57	71	55	2.1	721	136	139	124	1.7	1.72E+07	161	165	153	1.5	3.99E+08
7/8/98 10:30	@980707c.022	29	44	30	2.3	1475	137	135	114	1.9	1.79E+07	172	168	155	1.6	4.03E+08
7/8/98 11:00	@980707c.023	42	55	39	2.4	1015	133	141	121	1.8	1.71E+07	178	176	160	1.6	4.02E+08
7/8/98 11:30	@980707c.024	62	79	56	2.5	1210	155	158	144	1.6	3.77E+07	178	183	172	1.5	9.96E+08
7/8/98 12:00	@980707c.025	61	80	55	2.5	1628	165	167	152	1.6	5.35E+07	192	194	182	1.5	1.49E+09
7/8/98 12:30	@980707c.026	90	97	77	2.1	1140	157	163	150	1.6	4.66E+07	181	187	176	1.4	1.27E+09
7/8/98 13:00	@980707c.027	78	93	73	2.2	901	159	165	151	1.6	3.50E+07	189	191	180	1.5	9.65E+08
7/8/98 13:30	@980707c.028	66	80	57	2.5	946	155	163	147	1.6	3.02E+07	189	193	180	1.5	8.21E+08
7/8/98 14:00	@980707c.029	56	78	52	2.6	1010	184	187	166	1.7	3.45E+07	230	218	205	1.5	1.07E+09
7/8/98 14:30	@980707c.030	54	70	50	2.4	778	150	159	139	1.7	2.01E+07	190	192	177	1.5	5.30E+08
7/8/98 15:00	@980707c.031	61	76	61	2.0	568	140	140	125	1.6	1.48E+07	162	166	154	1.5	3.46E+08
7/8/98 15:30	@980707c.032	66	81	64	2.1	511	141	148	132	1.6	1.50E+07	176	176	163	1.5	3.71E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
date & time	filename	NMD	mean	GM	GM sd	CONC	AMD	mean	GM	GM sd	CONC	VMD	mean	GM	GM sd	CONC
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/8/98 16:00	@980707c.033	65	79	62	2.1	532	140	148	133	1.7	1.52E+07	177	177	164	1.5	3.76E+08
7/8/98 16:30	@980707c.034	75	88	70	2.0	602	148	157	141	1.6	2.04E+07	182	187	173	1.5	5.33E+08
7/8/98 17:00	@980707c.035	73	88	74	1.8	66977	147	156	139	1.7	2.24E+09	185	187	173	1.5	5.83E+10
7/8/98 17:30	@980707c.036	69	82	70	1.8	19114	131	142	126	1.7	5.39E+08	170	173	158	1.6	1.27E+10
7/8/98 18:00	@980707c.037	71	83	66	2.1	1373	145	153	137	1.6	4.27E+07	183	183	169	1.5	1.09E+09
7/8/98 18:30	@980707c.038	29	33	29	1.7	23468	51	71	56	1.9	1.14E+08	87	116	91	2.0	1.35E+09
7/8/98 19:00	@980707c.039	55	65	56	1.7	73175	104	120	104	1.7	1.35E+09	147	153	137	1.6	2.69E+10
7/8/98 19:30	@980707c.040	40	54	39	2.3	6205	126	137	116	1.8	9.79E+07	171	175	158	1.6	2.23E+09
7/8/98 20:00	@980707c.041	47	60	43	2.3	6926	131	143	124	1.8	1.32E+08	176	180	163	1.6	3.16E+09
7/8/98 20:30	@980707c.042	45	58	41	2.4	5171	131	143	123	1.8	9.45E+07	176	179	163	1.6	2.25E+09
7/8/98 21:00	@980707c.043	30	47	33	2.3	4457	123	135	113	1.9	5.86E+07	168	173	156	1.6	1.32E+09
7/8/98 21:30	@980707c.044	51	63	48	2.1	3409	120	135	117	1.8	6.52E+07	166	172	155	1.6	1.47E+09
7/8/98 22:00	@980707c.045	64	74	61	1.9	2522	121	135	119	1.7	6.03E+07	158	168	152	1.6	1.36E+09

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
date & time	filename	NMD	mean	GM	GM sd	CONC	AMD	mean	GM	GM sd	CONC	VMD	mean	GM	GM sd	CONC
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/8/98 22:00	@980707c.045	64	74	61	1.9	2522	121	135	119	1.7	6.03E+07	158	168	152	1.6	1.36E+09
7/8/98 22:30	@980707c.046	68	79	67	1.8	1932	124	136	121	1.6	5.11E+07	160	164	151	1.5	1.16E+09
7/8/98 23:00	@980707c.047	68	77	61	2.1	1957	130	144	127	1.7	5.23E+07	167	176	161	1.6	1.25E+09
7/8/98 23:30	@980707c.048	76	87	74	1.8	1469	138	148	132	1.6	4.68E+07	171	179	164	1.5	1.15E+09
7/9/98 0:00	@980707c.049	67	79	64	2.0	1421	133	141	126	1.6	3.90E+07	162	167	155	1.5	9.14E+08
7/9/98 0:30	@980707c.050	53	65	49	2.2	1850	130	142	124	1.7	3.96E+07	169	176	160	1.6	9.37E+08
7/9/98 1:00	@980707c.051	26	45	32	2.2	2742	135	140	118	1.9	3.48E+07	174	177	161	1.6	8.13E+08
7/9/98 1:30	@980707c.052	33	41	34	1.8	9401	84	105	83	2.1	7.76E+07	151	154	131	1.9	1.36E+09
7/9/98 2:00	@980707c.053	37	42	37	1.6	15708	60	88	70	1.9	1.17E+08	125	136	111	2.0	1.73E+09
7/9/98 2:30	@980707c.054	34	40	34	1.7	11759	65	93	73	2.0	8.53E+07	139	142	118	1.9	1.33E+09
7/9/98 3:00	@980707c.055	31	43	34	1.9	3537	111	120	96	2.0	3.46E+07	159	165	145	1.7	6.93E+08
7/9/98 3:30	@980707c.056	58	71	56	2.0	866	129	139	123	1.7	2.01E+07	162	172	157	1.6	4.68E+08
7/9/98 4:00	@980707c.057	53	67	54	2.0	993	124	133	117	1.7	2.10E+07	156	163	149	1.6	4.64E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/9/98 4:30	@980707c.058	54	66	52	2.0	875	123	133	117	1.7	1.80E+07	159	162	149	1.6	4.00E+08
7/9/98 5:00	@980707c.059	47	63	47	2.1	1076	130	141	122	1.8	2.15E+07	167	176	160	1.6	5.05E+08
7/9/98 5:30	@980707c.060	44	58	44	2.1	1558	116	127	110	1.8	2.58E+07	149	159	144	1.6	5.47E+08
7/9/98 6:00	@980707c.061	57	71	55	2.1	2332	139	146	128	1.7	5.61E+07	180	178	164	1.6	1.37E+09
7/9/98 6:30	@980707c.062	49	66	47	2.4	2683	144	150	132	1.7	6.14E+07	176	180	166	1.5	1.53E+09
7/9/98 7:00	@980707c.063	50	63	45	2.3	2547	128	137	121	1.7	5.12E+07	162	166	153	1.5	1.17E+09
7/9/98 7:30	@980707c.064	62	71	62	1.7	5810	109	126	110	1.7	1.24E+08	149	160	143	1.6	2.60E+09
7/9/98 8:00	@980707c.065	51	61	51	1.9	9315	104	119	102	1.8	1.55E+08	144	152	136	1.6	3.06E+09
7/9/98 8:30	@980707c.066	46	61	44	2.3	2040	132	146	127	1.8	4.10E+07	179	182	165	1.6	9.99E+08
7/9/98 9:00	@980707c.067	50	63	52	1.8	3476	115	129	110	1.8	6.25E+07	160	167	149	1.7	1.34E+09
7/9/98 10:00	@980707c.068	65	79	66	1.8	1915	135	144	127	1.7	5.18E+07	170	176	161	1.6	1.24E+09
7/9/98 10:30	@980709.000	43	56	45	1.9	2256	112	125	106	1.8	3.42E+07	160	162	145	1.7	7.12E+08
7/9/98 11:00	@980709.001	40	51	38	2.2	3259	110	123	105	1.8	4.46E+07	157	160	143	1.7	9.18E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i># cm⁻³</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>(nm² cm⁻³)</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>(nm³ cm⁻³)</i>
7/9/98 11:30	@980709.002	48	57	47	1.9	3856	102	125	104	1.9	5.88E+07	170	169	148	1.7	1.23E+09
7/9/98 12:00	@980709.003	52	61	51	1.8	2954	105	121	104	1.8	4.98E+07	150	157	139	1.7	1.00E+09
7/9/98 12:30	@980709.004	61	75	63	1.8	1694	134	136	120	1.7	4.15E+07	163	165	151	1.6	9.38E+08
7/9/98 13:00	@980709.005	70	78	68	1.7	16757	115	128	115	1.6	4.18E+08	146	157	143	1.6	8.94E+09
7/9/98 13:30	@980709.006	61	74	62	1.8	28383	130	138	121	1.7	6.83E+08	167	170	155	1.6	1.57E+10
7/9/98 14:00	@980709.007	77	88	75	1.8	25043	132	142	129	1.6	7.90E+08	162	169	156	1.5	1.87E+10
7/9/98 14:30	@980709.008	72	86	72	1.8	18833	138	147	132	1.6	5.85E+08	172	176	162	1.5	1.43E+10
7/9/98 15:00	@980709.009	69	79	68	1.7	46462	118	131	117	1.6	1.18E+09	151	161	147	1.6	2.59E+10
7/9/98 15:30	@980709.010	62	38	33	1.6	29184	110	98	75	2.1	6.78E+08	150	146	123	1.9	1.10E+10
7/9/98 16:00	@980709.011	57	68	58	1.8	28764	111	125	109	1.7	5.72E+08	149	157	141	1.6	1.19E+10
7/9/98 16:30	@980709.012	64	74	63	1.8	29275	116	131	115	1.7	6.75E+08	153	164	148	1.6	1.47E+10
7/9/98 17:00	@980709.013	82	93	79	1.8	32375	145	151	137	1.6	1.16E+09	173	178	165	1.5	2.91E+10
7/9/98 17:30	@980709.014	67	76	66	1.7	40682	116	128	114	1.6	9.78E+08	147	158	143	1.6	2.09E+10

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/9/98 18:00	@980709.015	59	70	58	1.8	9594	118	131	114	1.7	2.07E+08	156	163	148	1.6	4.51E+09
7/9/98 18:30	@980709.016	61	71	60	1.8	10231	116	130	113	1.7	2.22E+08	155	164	147	1.6	4.81E+09
7/9/98 19:00	@980709.017	58	69	57	1.9	10079	115	130	113	1.7	2.11E+08	157	163	147	1.6	4.57E+09
7/9/98 19:30	@980709.018	53	65	53	1.9	10449	115	129	111	1.8	2.01E+08	156	164	147	1.6	4.30E+09
7/9/98 20:00	@980709.019	58	69	58	1.8	11086	117	130	114	1.7	2.35E+08	156	163	147	1.6	5.08E+09
7/9/98 20:30	@980709.020	62	74	61	1.9	9513	125	134	119	1.7	2.27E+08	156	162	149	1.6	5.06E+09
7/9/98 21:00	@980709.021	76	85	72	1.8	8262	131	138	126	1.6	2.48E+08	156	162	151	1.5	5.71E+09
7/9/98 21:30	@980709.022	55	67	55	1.9	12964	118	130	113	1.7	2.62E+08	153	163	147	1.6	5.66E+09
7/9/98 22:00	@980709.023	62	74	61	1.9	7743	127	136	120	1.7	1.88E+08	159	166	152	1.6	4.26E+09
7/9/98 22:30	@980709.024	48	63	50	2.0	6287	125	133	115	1.8	1.19E+08	161	165	150	1.6	2.63E+09
7/9/98 23:00	@980709.025	51	63	52	1.9	5024	119	130	112	1.8	9.31E+07	162	165	148	1.6	2.01E+09
7/9/98 23:30	@980709.026	51	64	54	1.8	5102	113	126	108	1.8	9.28E+07	157	163	146	1.7	1.95E+09
7/10/98 0:00	@980709.027	52	62	53	1.7	5996	104	122	103	1.8	1.01E+08	154	163	143	1.7	2.05E+09

Table 3: Statistical parameters describing the peaks for Jabiru

DATE & TIME	PEAK LOCATION IN NUMBER DISTRIBUTION (nm)	NUMBER (# cm ⁻³)	SURFACE AREA (nm ² cm ⁻³)	VOLUME (nm ³ cm ⁻³)
7/7/98 20:30	60	2.90E+03	2.88E+07	6.49E+08
8/7/98 0:30	40	4.48E+03	5.41E+07	1.11E+09
8/7/98 3:00	40	2.43E+03	4.91E+07	1.41E+09
8/7/98 8:00	40	2.55E+03	5.31E+07	1.52E+09
8/7/98 17:00	50, 90 (small)	6.70E+04	2.24E+09	5.83E+10
8/7/98 19:00	50, 90 (small)	7.30E+04	1.35E+09	2.69E+10
9/7/98 2:00	40	1.52E+04	1.15E+09	3.47E+10
9/7/98 8:00	60, 90 (small)	9.32E+03	1.17E+08	1.73E+09
9/7/98 13:30	70	2.84E+04	6.83E+08	1.57E+10
9/7/98 15:00	70	4.65E+04	1.18E+09	2.59E+10
9/7/98 21:30	50, 110 (small)	1.30E+04	2.62E+08	5.66E+09

PART B: GIMBAT DATA

Figure 2

Condensation Nuclei (CN) number concentration and number median diameter for Fisher Airstrip Gimbat, 10 – 12 July 1998. Note the change in scale in CN number concentration between the figures.

NUMBER CONCENTRATION AND NUMBER MEDIAN DIAMETER
DATA, FISHER AIRSTRIP GIMBAT 10/7/98 - 12/7/98

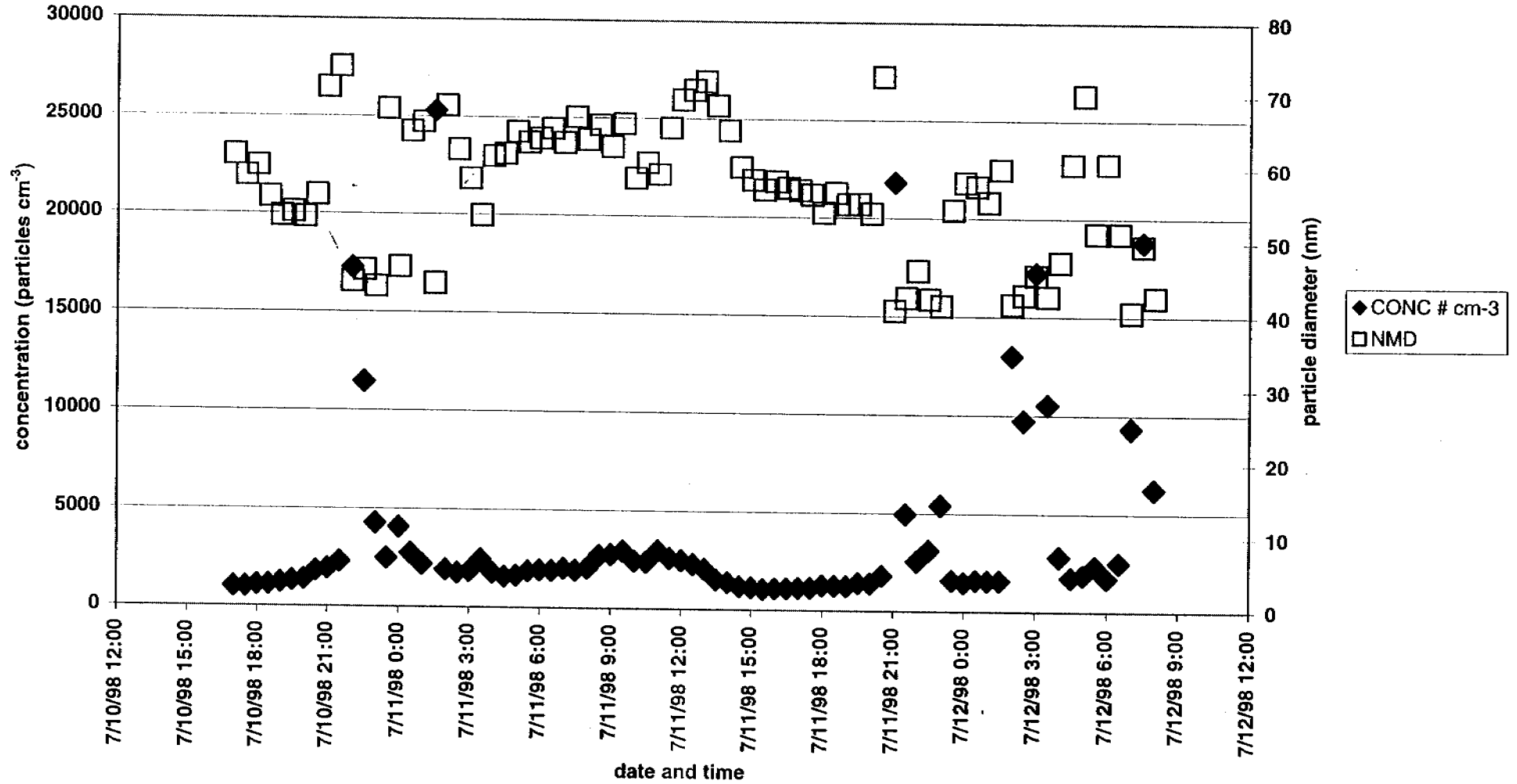


Figure 3

Surface area concentration and surface area median diameter of CN for Fisher Airstrip Gimbat , 10 – 12 July 1998.

Note the change in scale in CN surface area concentration between the figures.

SURFACE AREA CONCENTRATION AND SURFACE AREA MEDIAN DIAMETER
DATA, FISHER AIRSTRIP GIMBAT 10/7/98 - 12/7/98

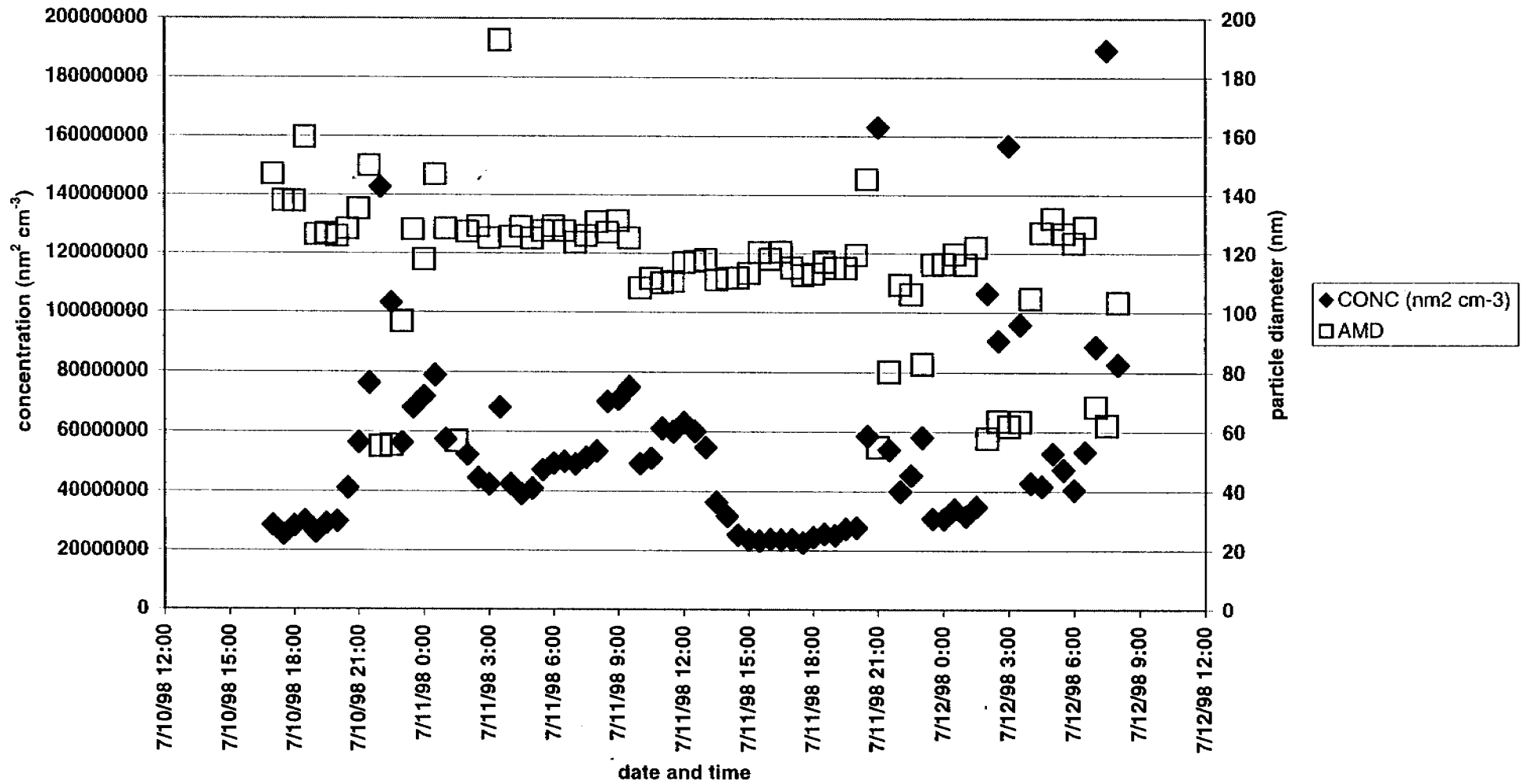
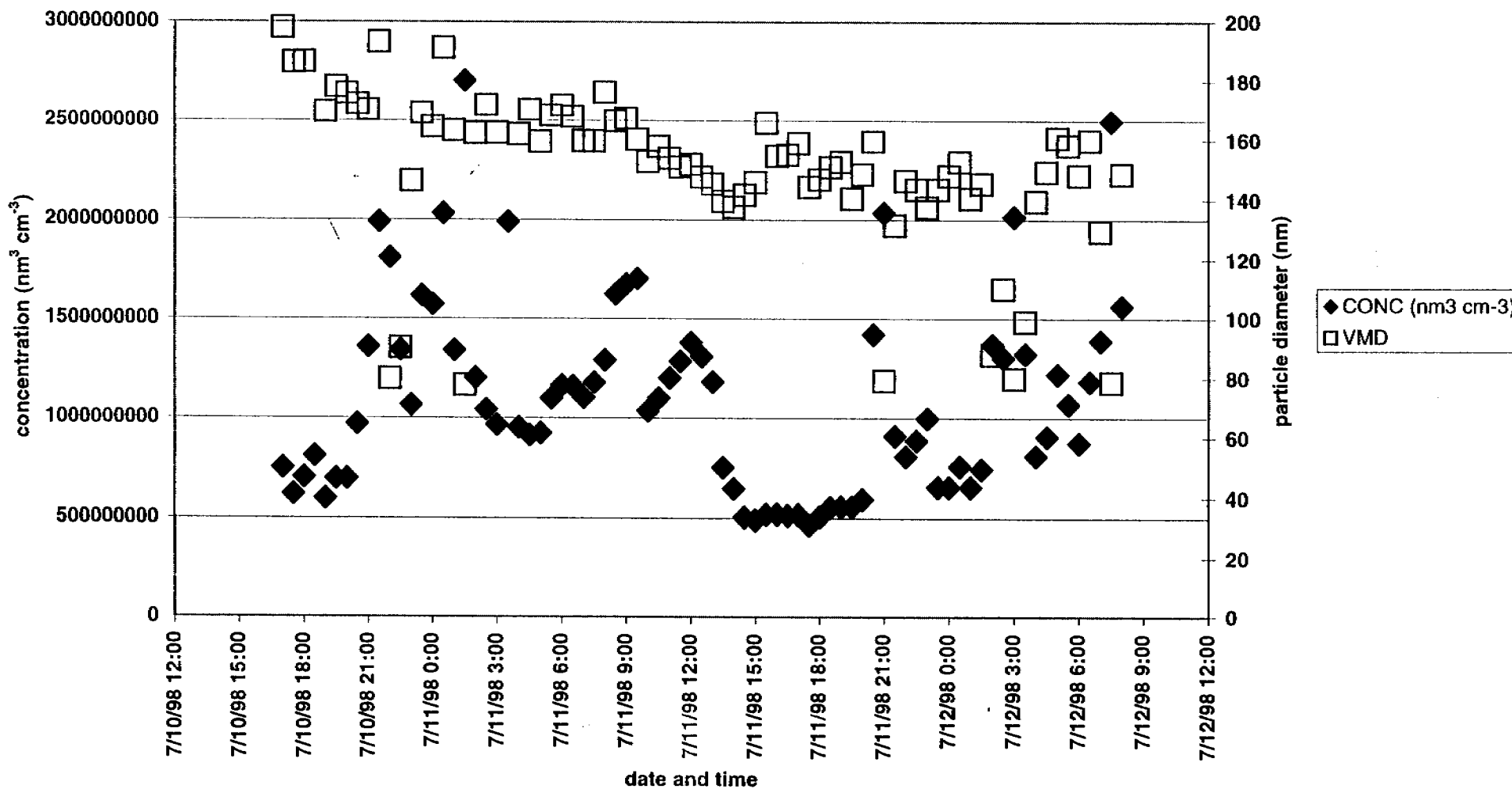


Figure 4

Volume and volume median diameter of CN for Fisher Airstrip Gimbat, 10 – 12 July 1998.

Note the change in scale in CN volume concentration between the figures.

VOLUME CONCENTRATION AND VOLUME MEDIAN DIAMETER
DATA, FISHER AIRSTRIP GIMBAT 10/7/98 - 12/7/98



Figures 5.1 – 5.20
The number size spectra of condensation nuclei; half hour averages.

number size distributions - 980710 (17:00 - 18:00)

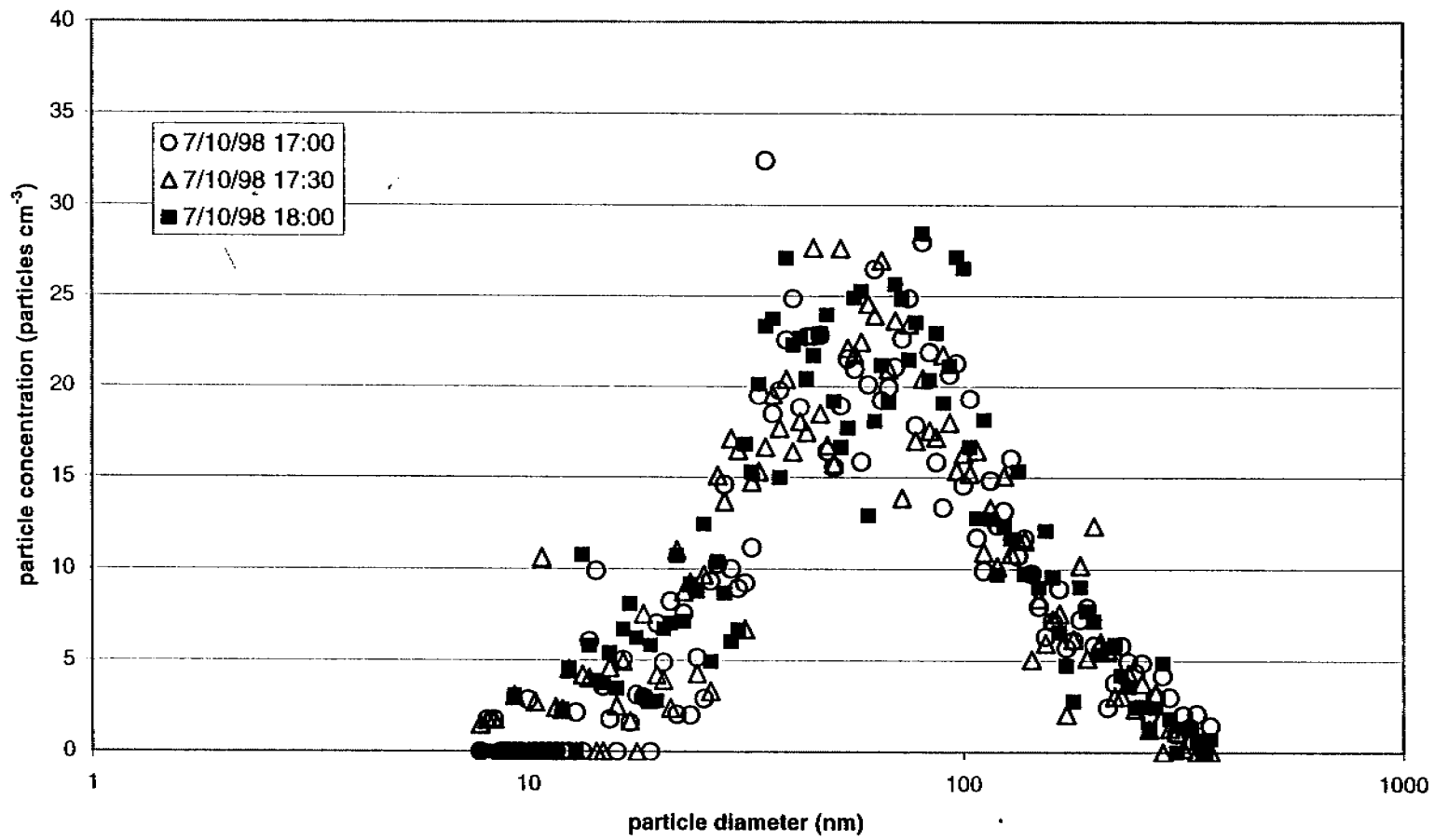


Figure 5.1

number size distributions - 980710 (18:00 - 20:00)

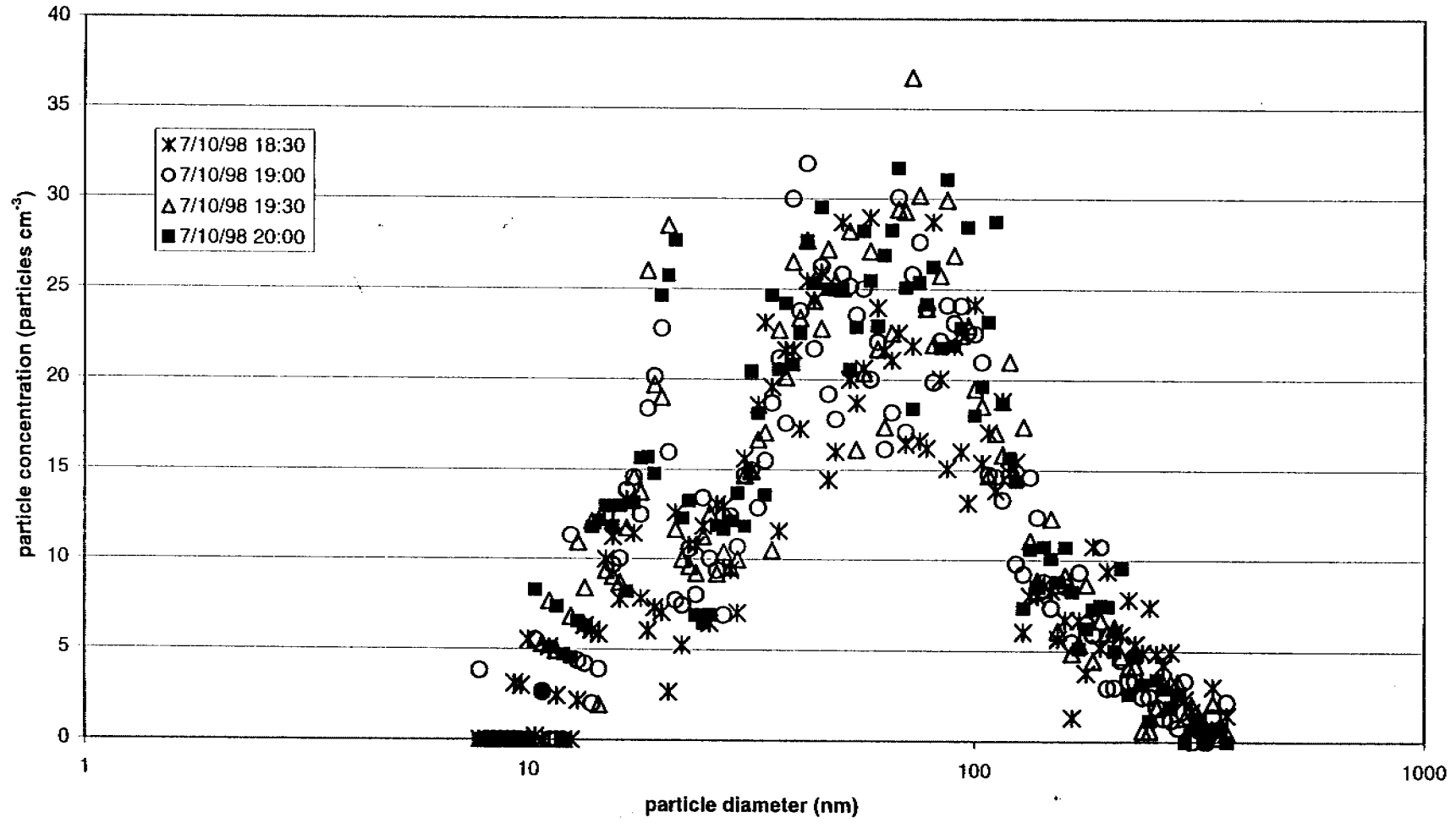


Figure 5.2

number size distributions - 980710 (20:00- 22:00)

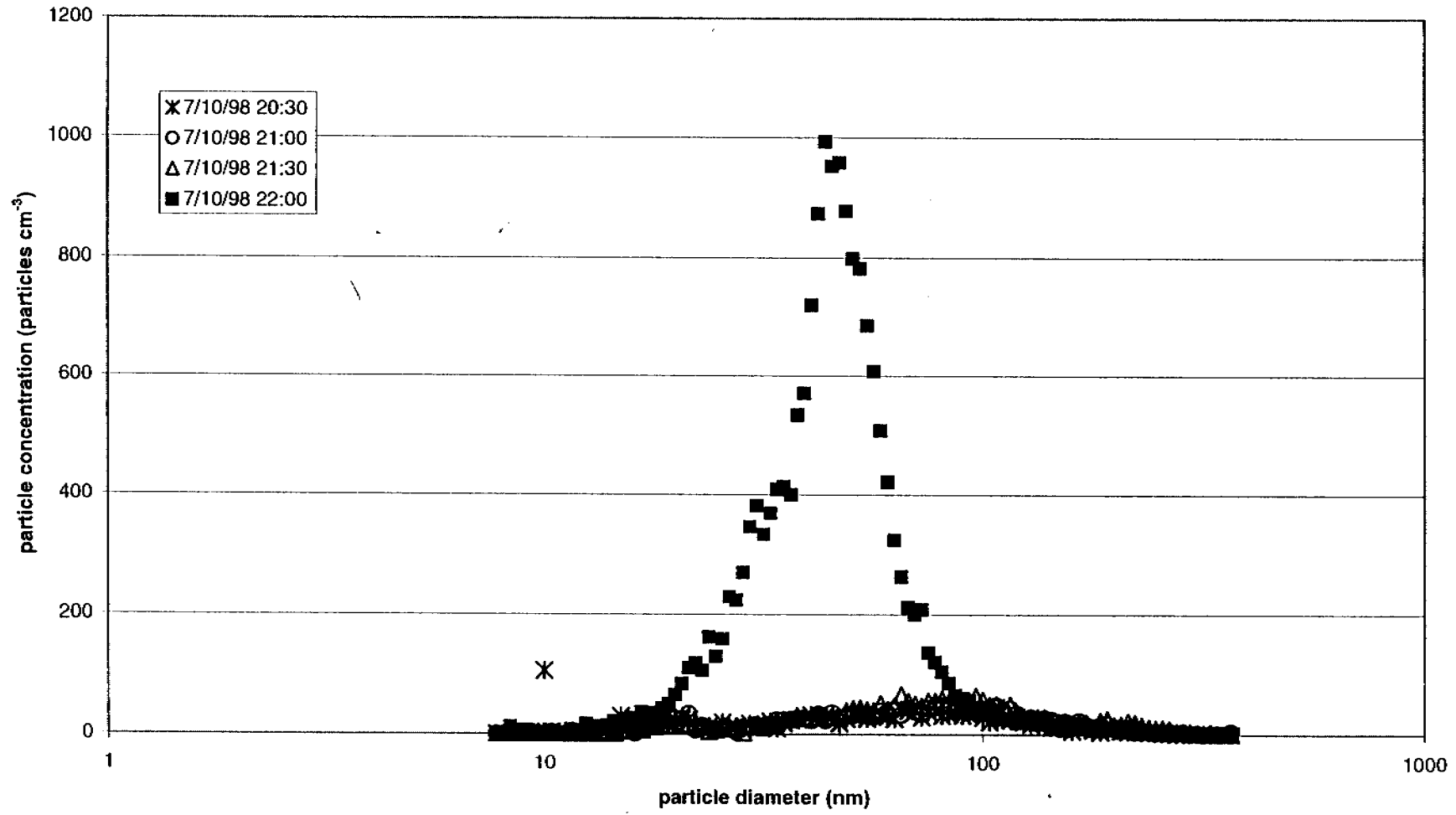


Figure 5.3

number size distributions - 980710 (22:00 - 24:00)

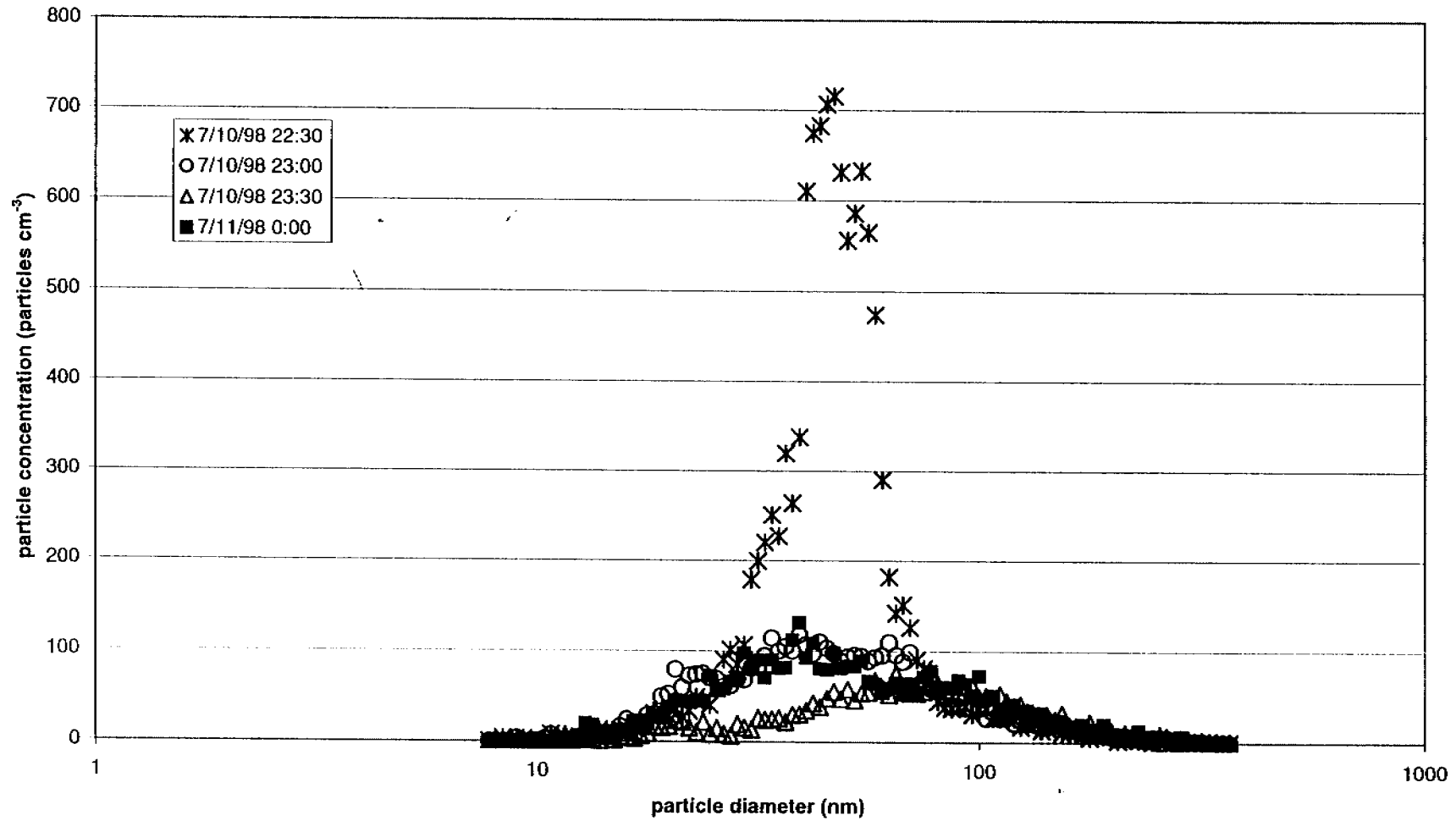


Figure 5.4

number size distributions - 980711 (00:00 - 02:00)

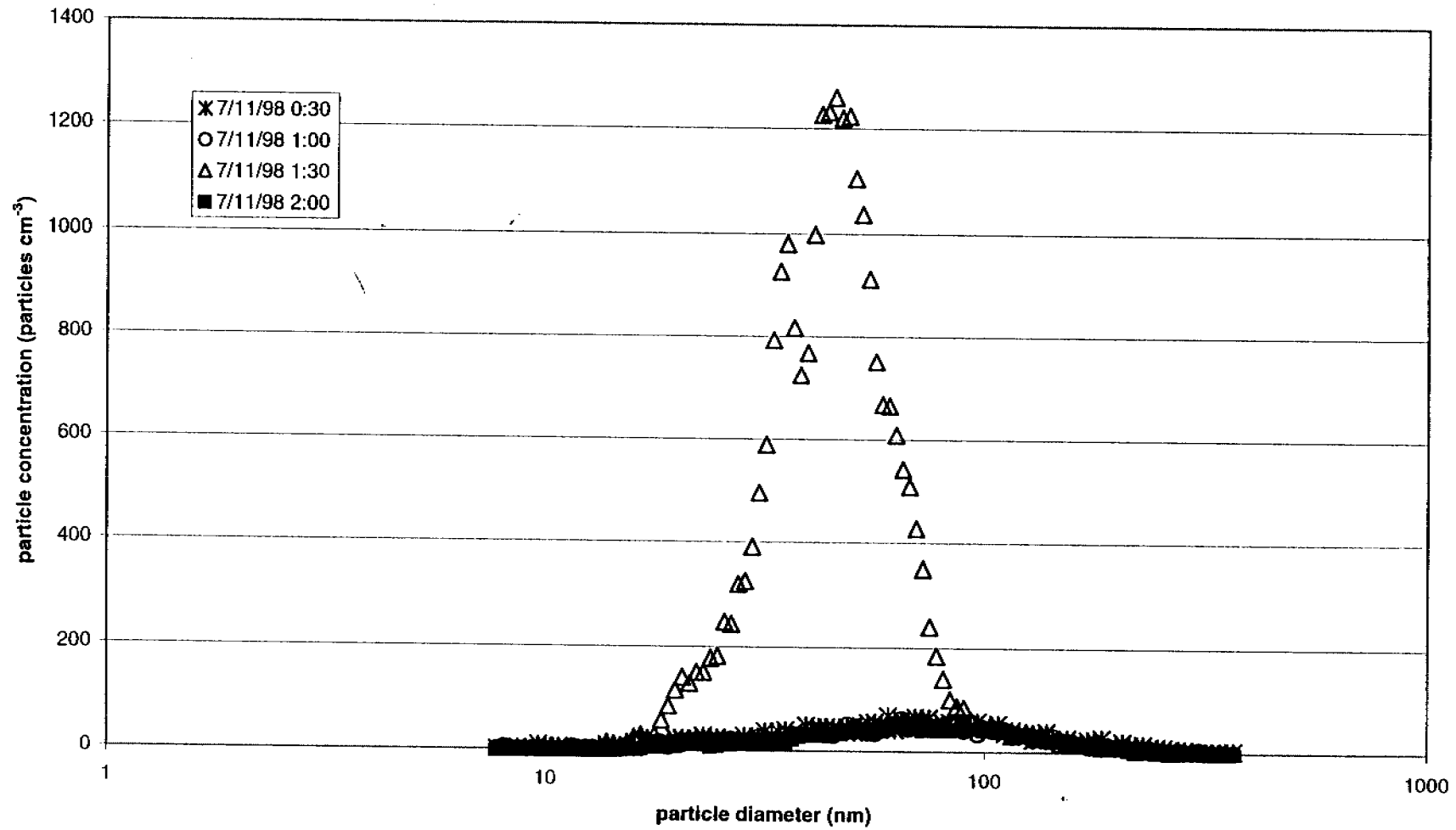


Figure 5.5

number size distributions - 980711 (02:00 - 04:00)

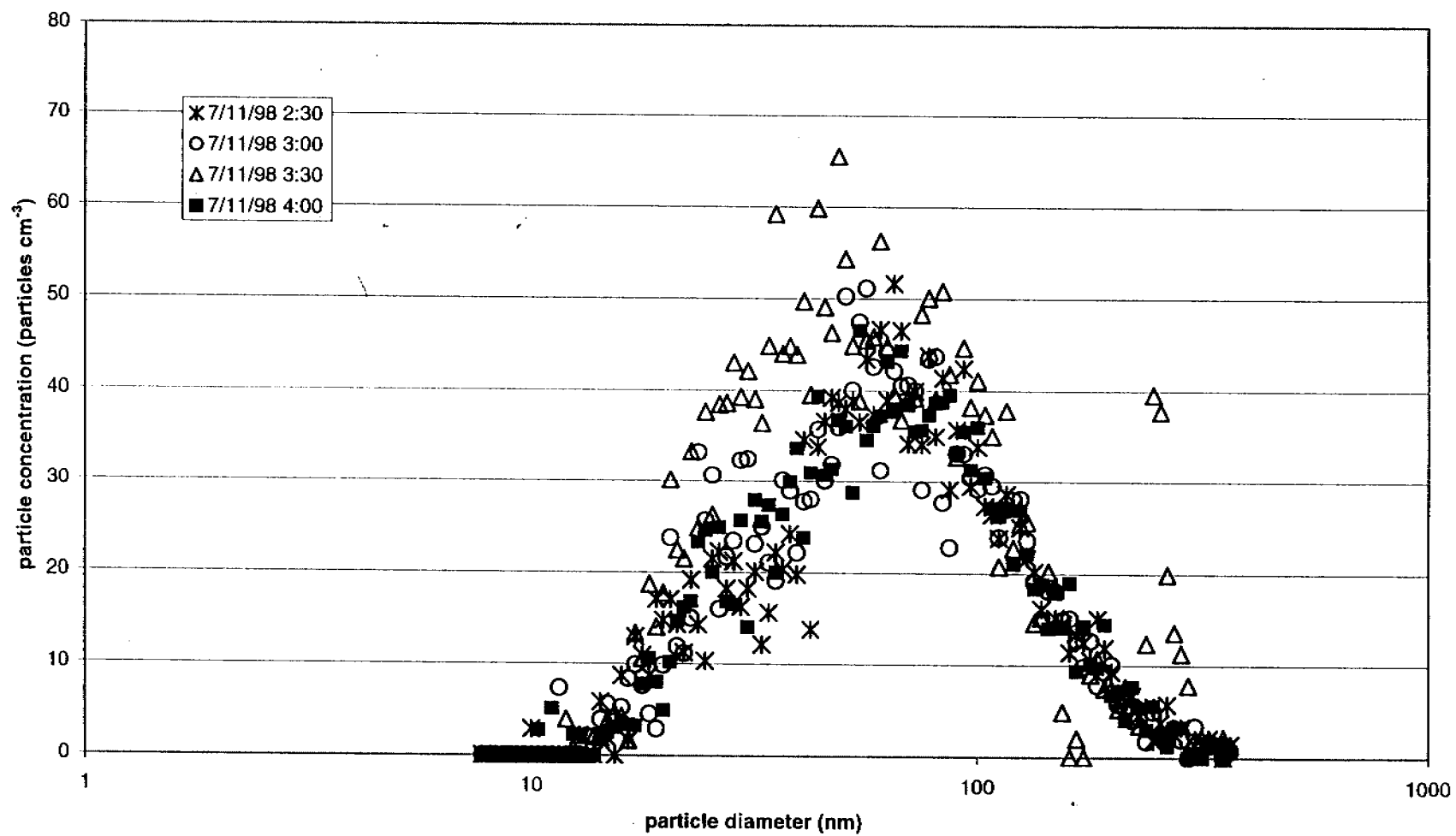


Figure 5.6

number size distributions - 980711 (04:00 - 06:00)

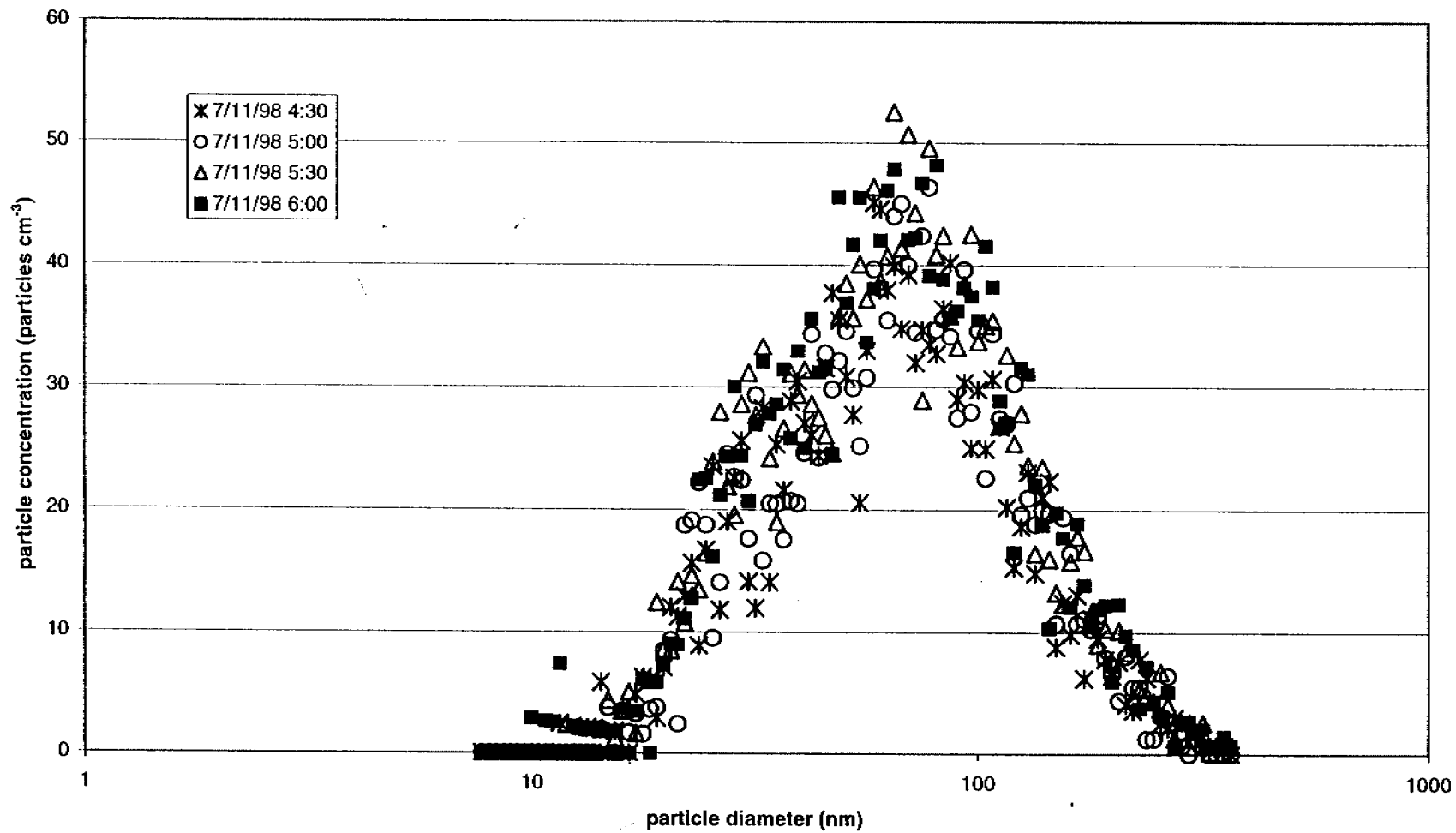


Figure 5.7

number size distributions - 980711 (06:00- 08:00)

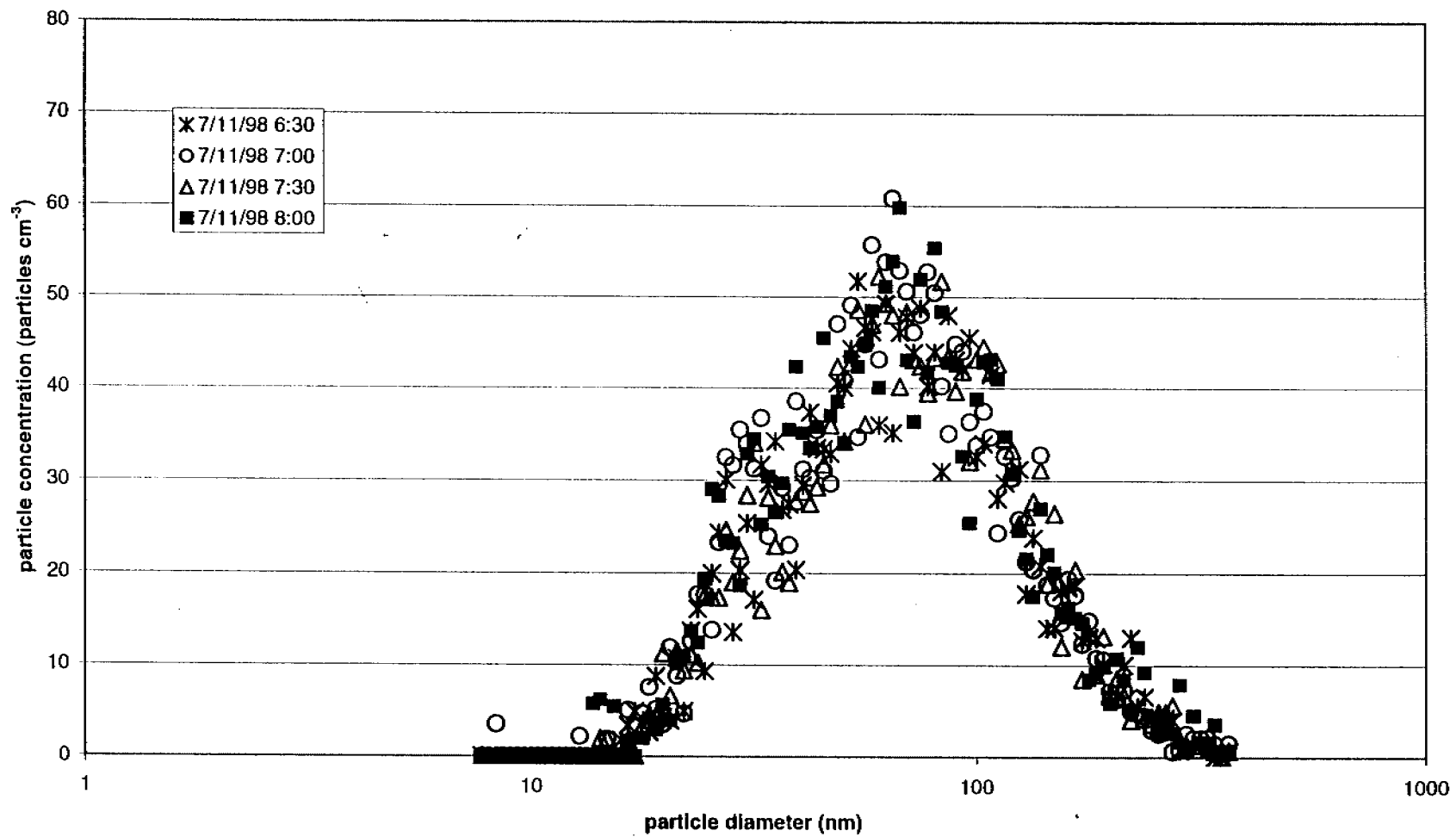


Figure 5.8

number size distributions - 980708 (08:00 -10:00)

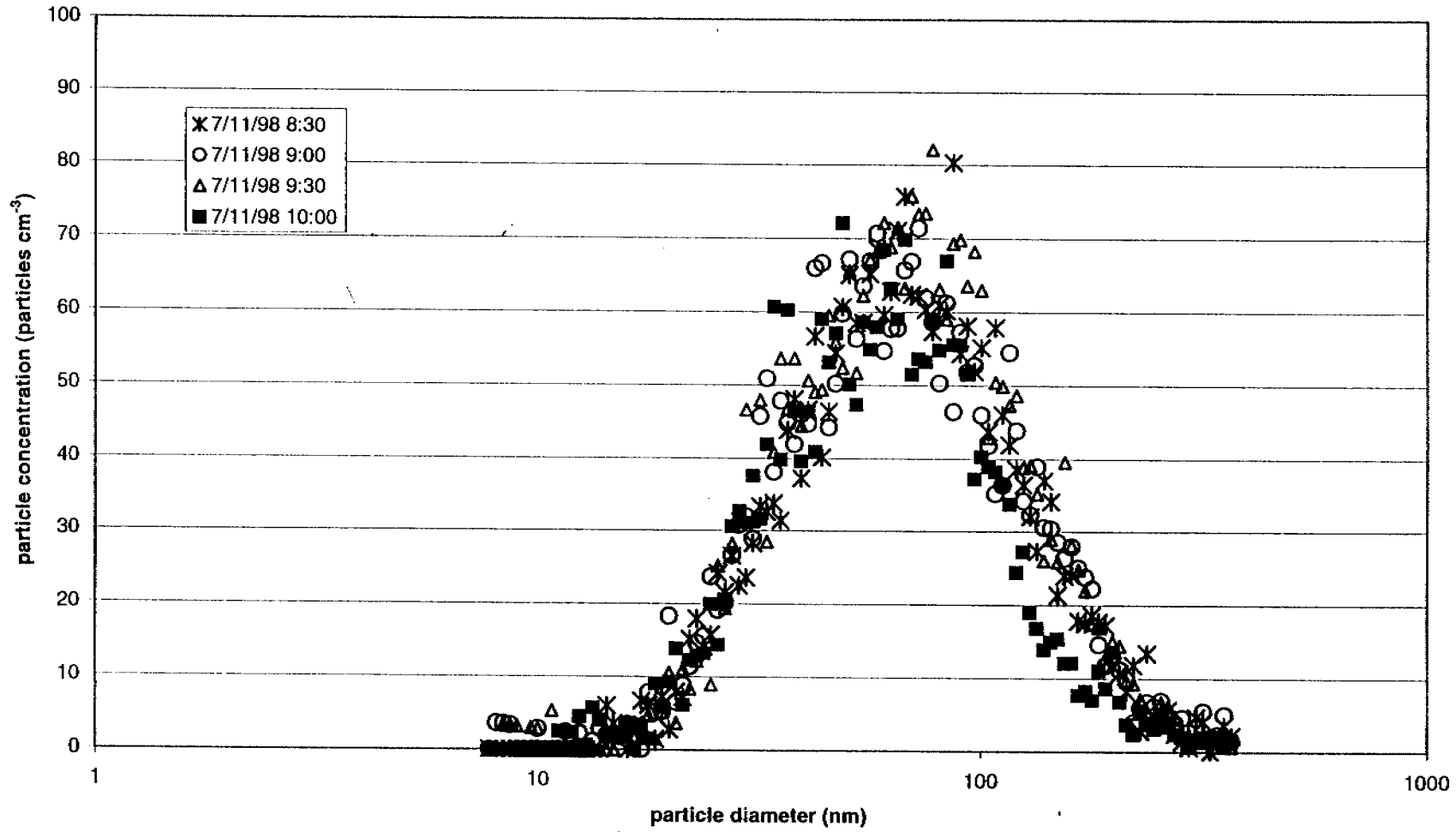


Figure 5.9

number size distributions - 980711 (10:00 - 12:00)

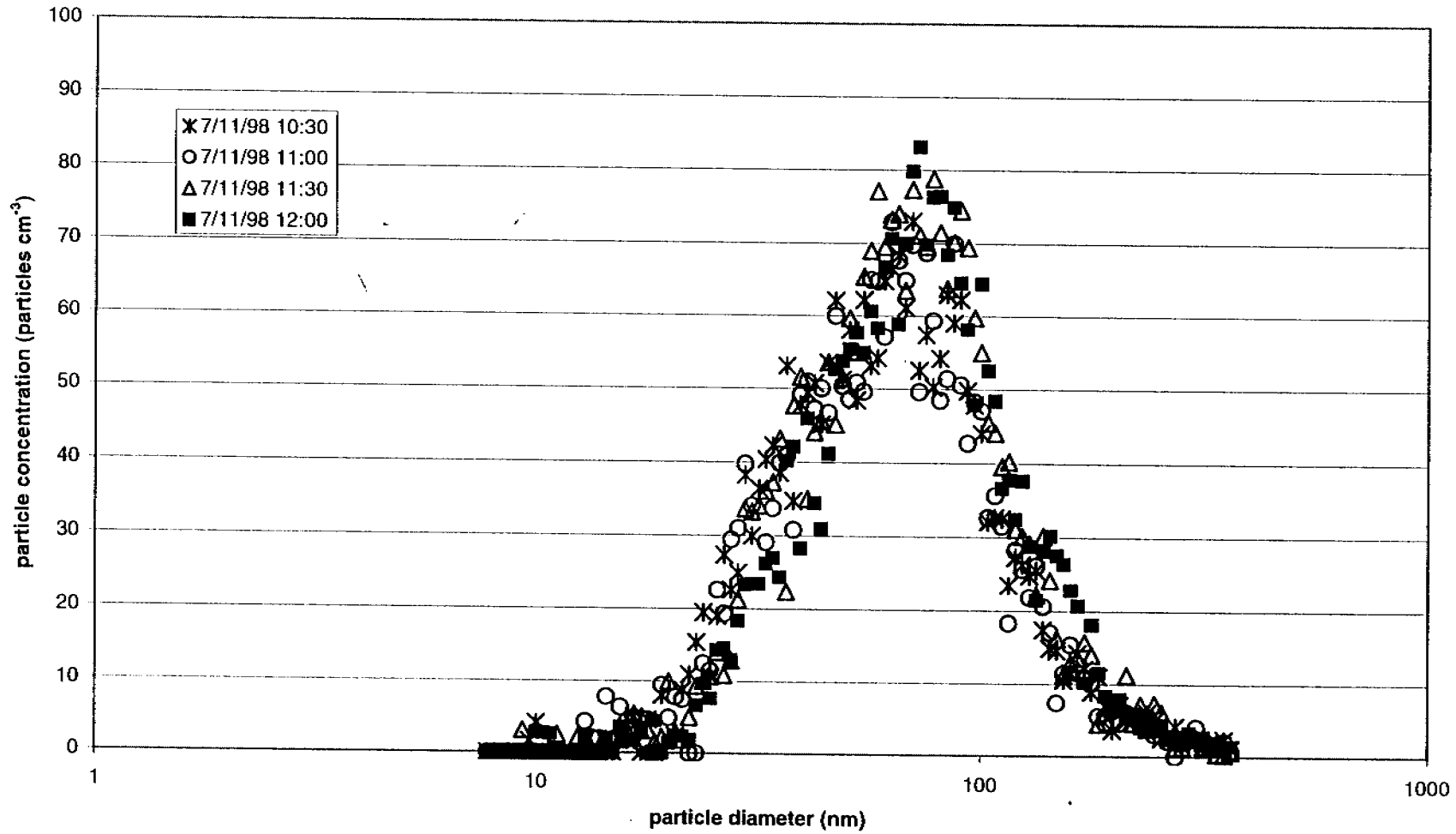


Figure 5.10

number size distributions - 980711 (12:00 - 14:00)

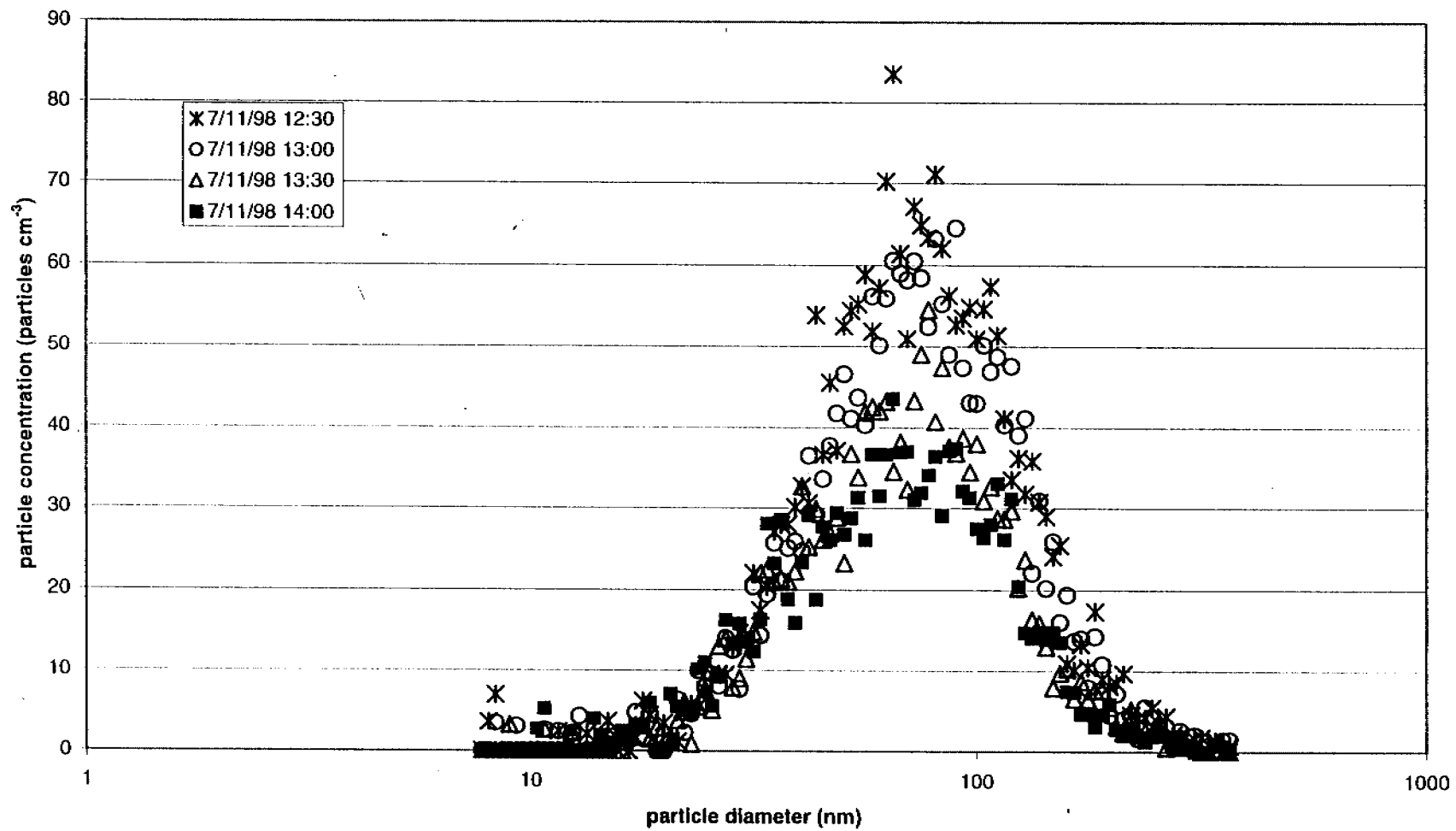


Figure 5.11

number size distributions - 980711 (14:00 - 16:00)

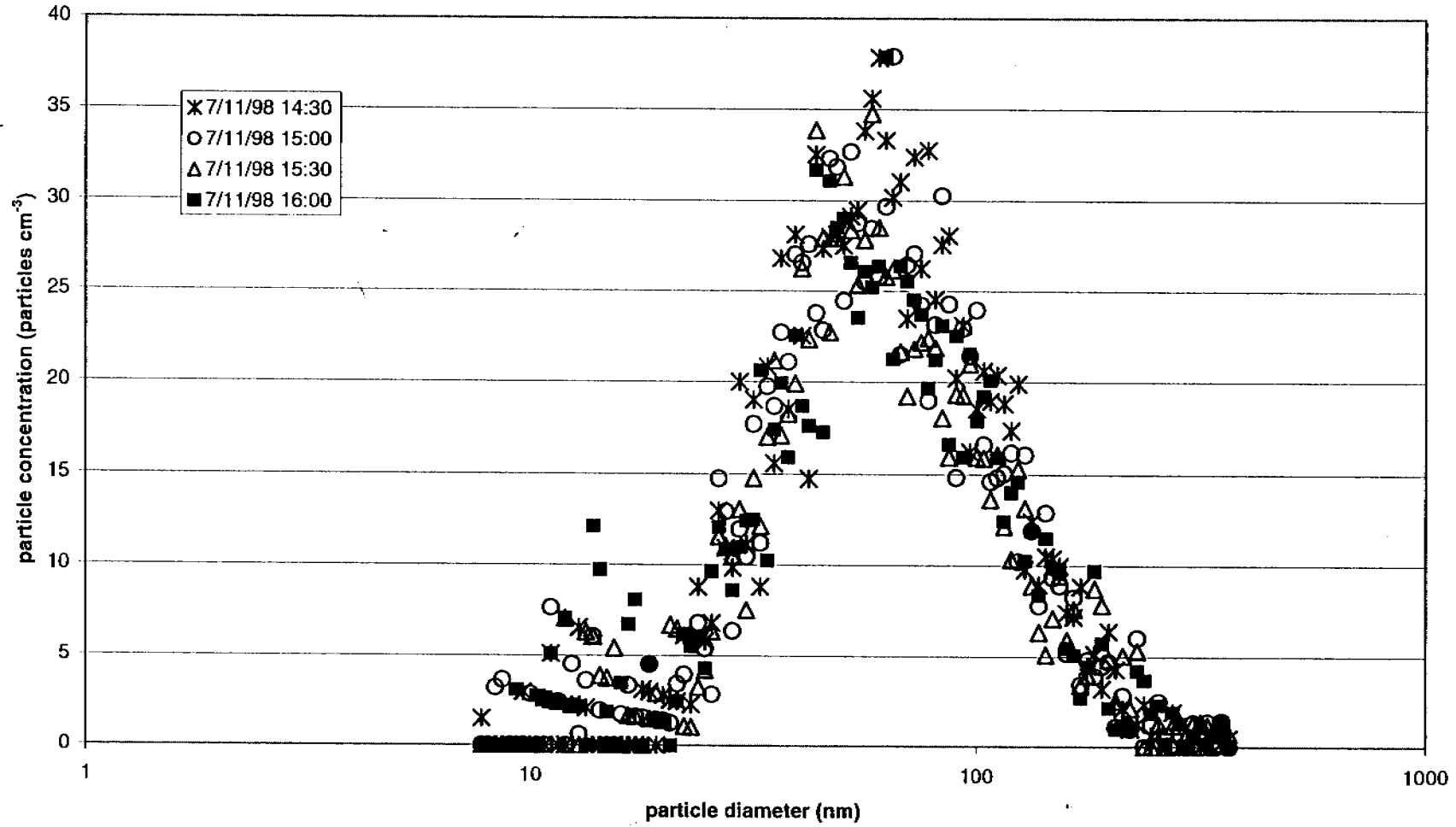


Figure 5.12

number size distributions - 980711 (16:00 - 18:00)

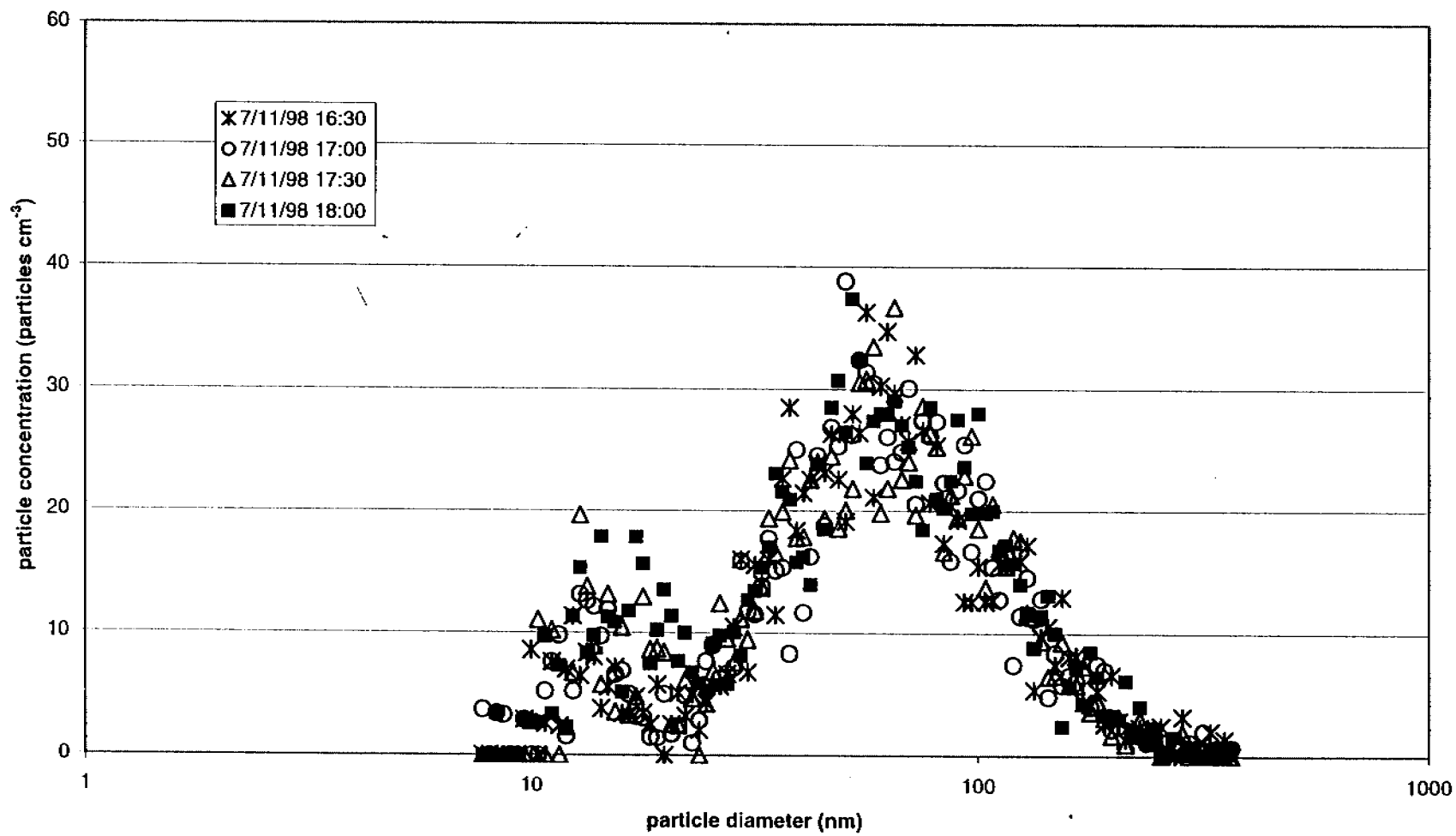


Figure 5.13

number size distributions - 980711 (18:00 - 20:00)

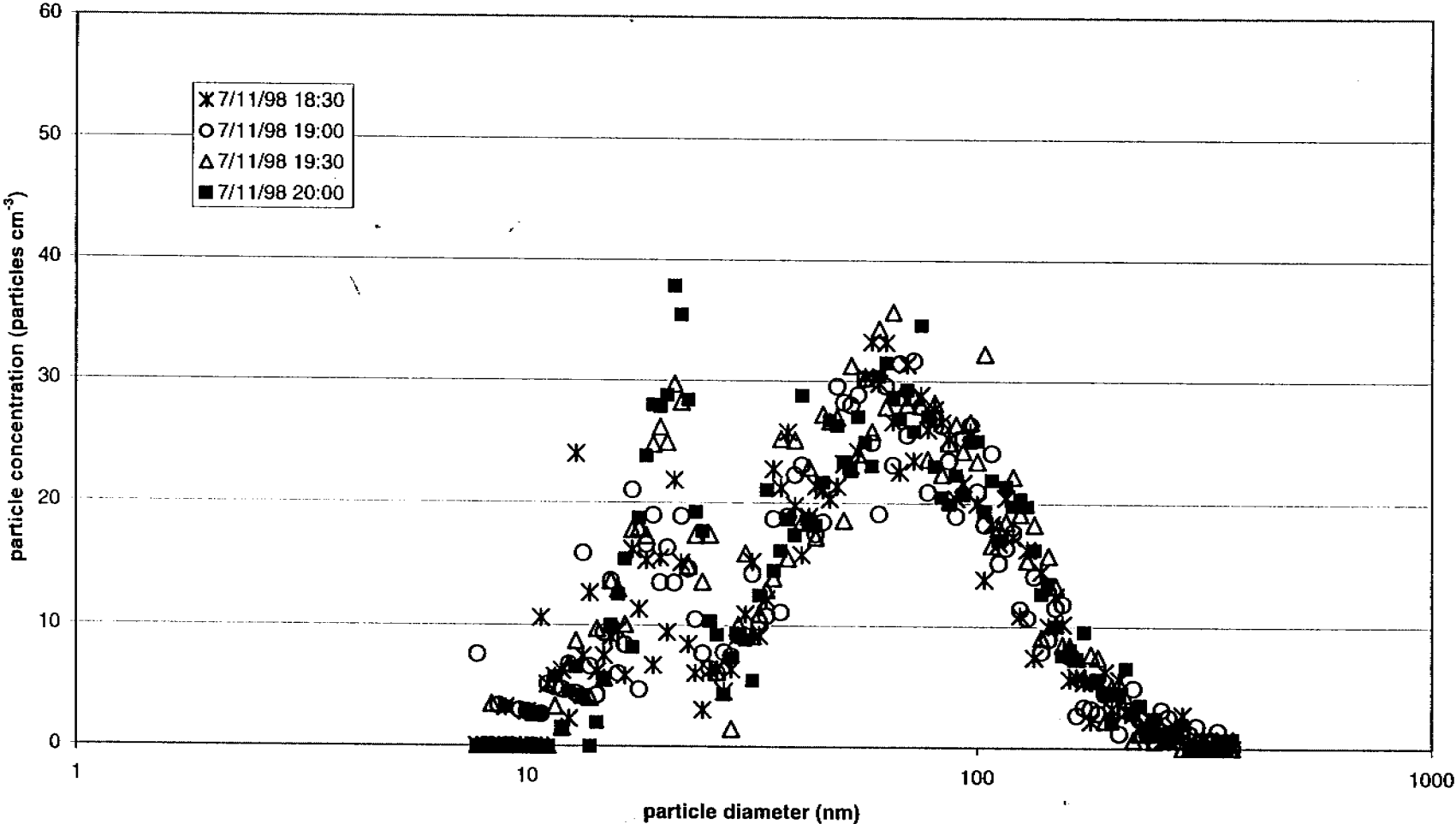


Figure 5.14

number size distributions - 980711 (20:00 - 22:00)

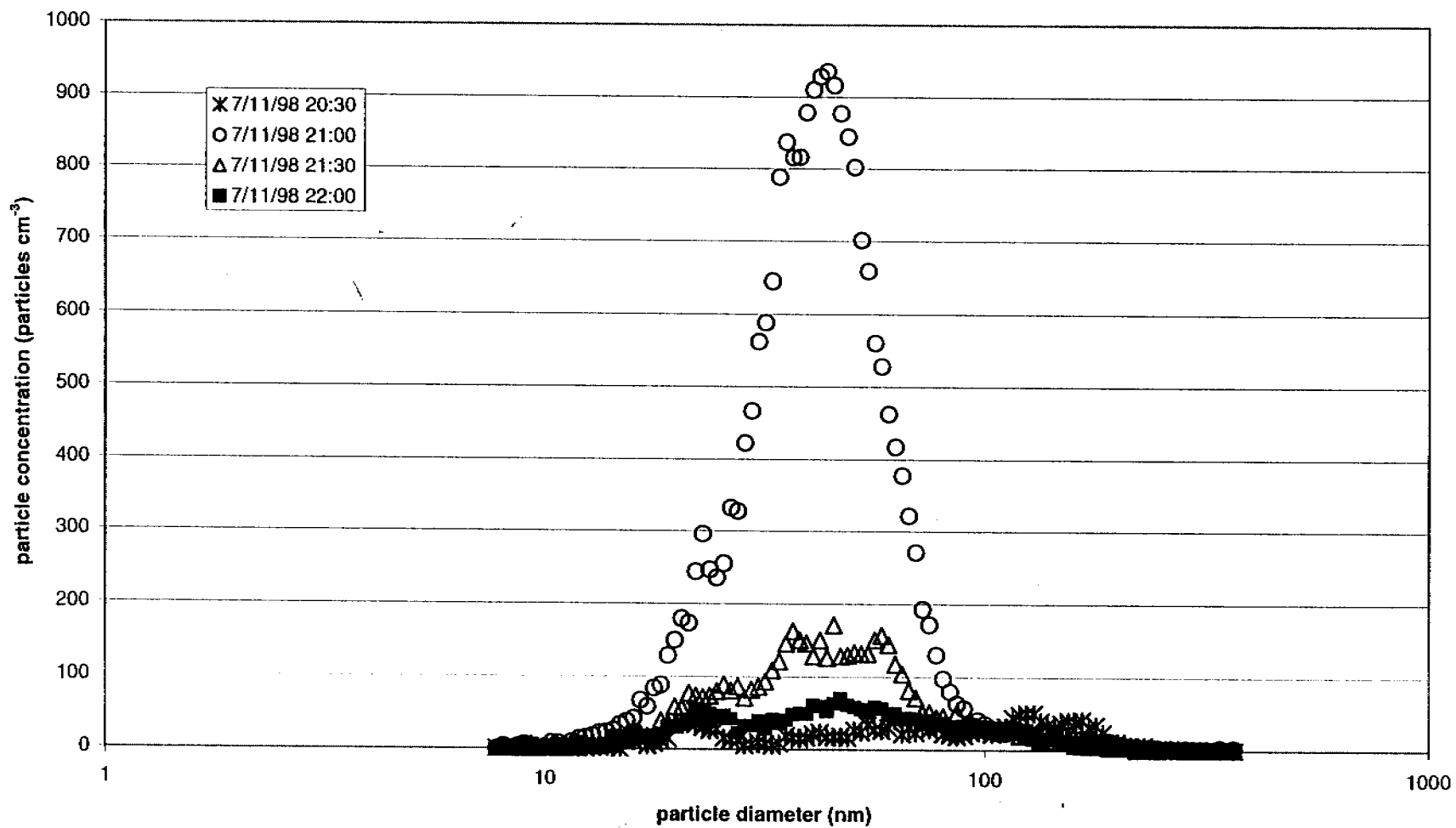


Figure 5.15

number size distributions - 980711 (22:00 - 24:00)

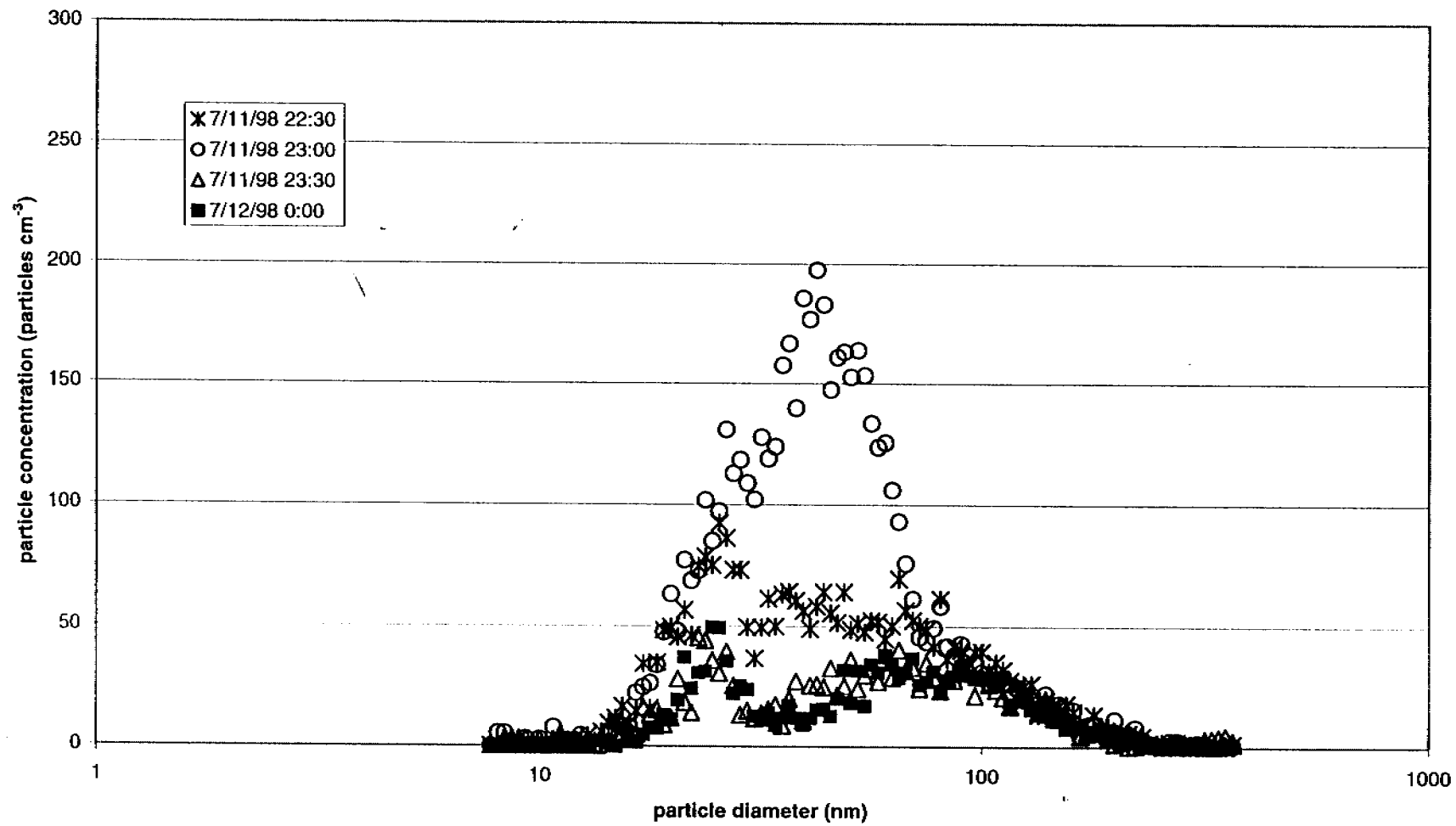


Figure 5.16

number size distributions - 980712 (00:00 - 02:00)

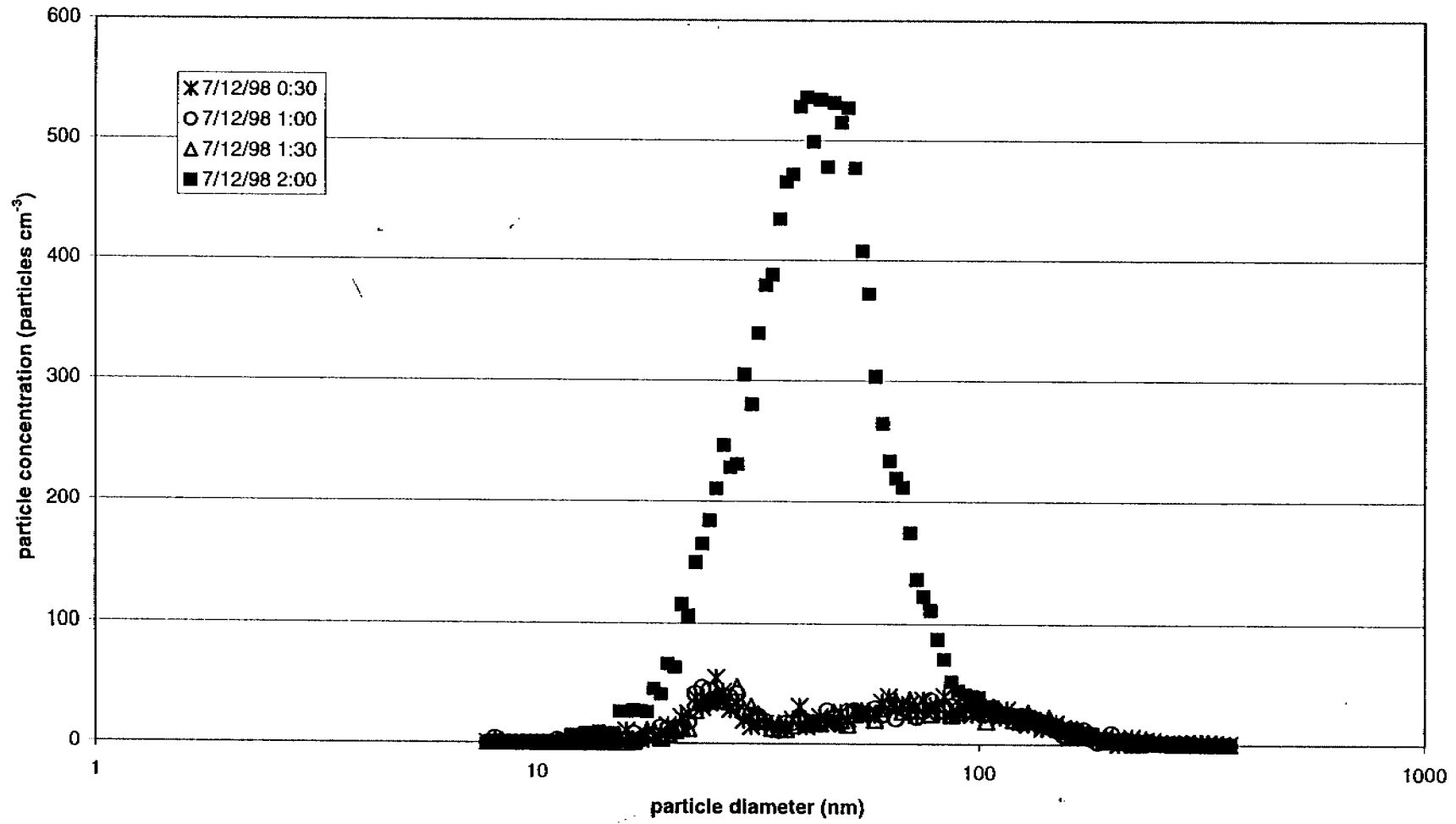


Figure 5.17

number size distributions - 980712(02:00 - 04:00)

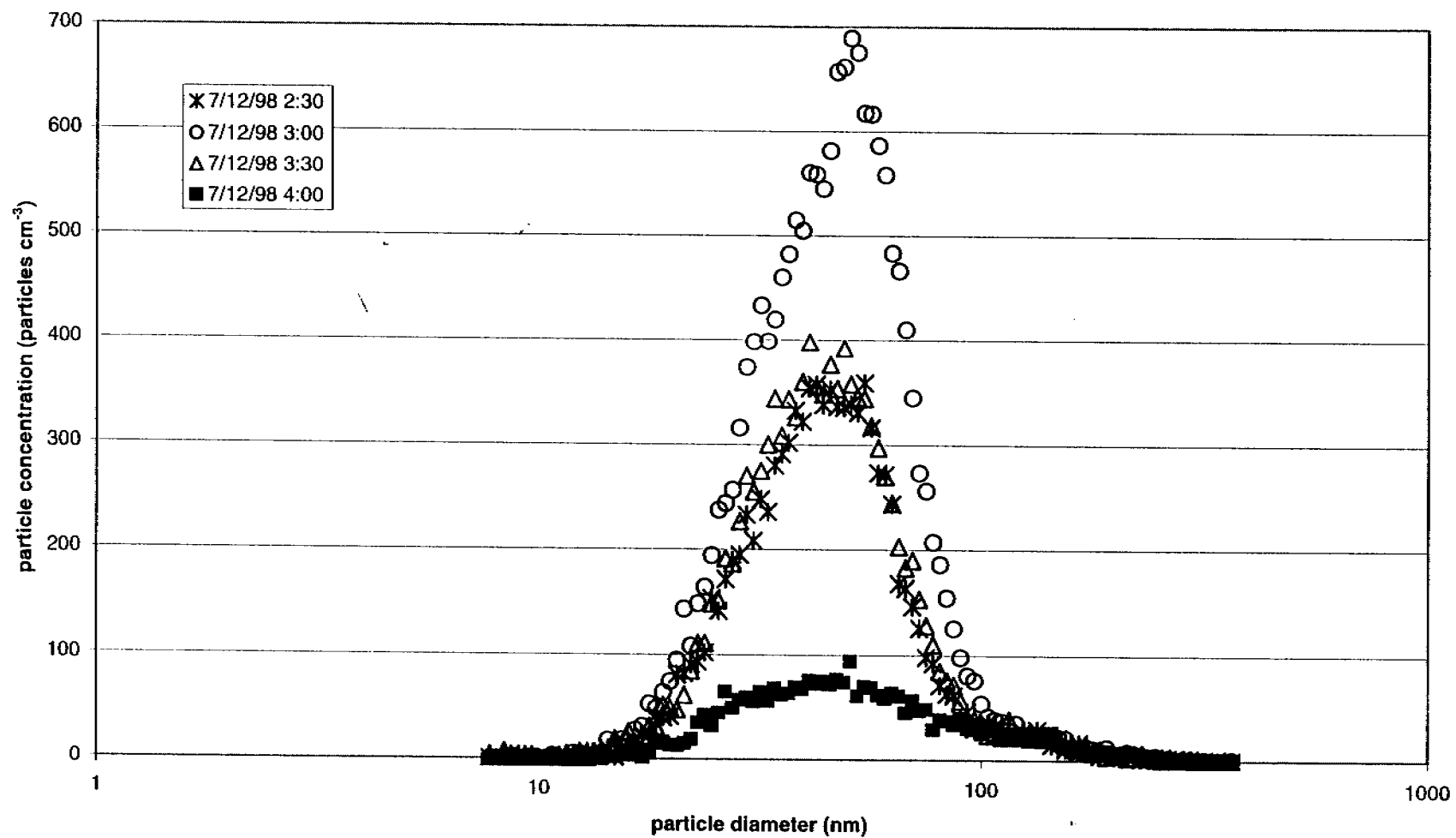


Figure 5.18

number size distributions - 980712 (04:00 - 06:00)

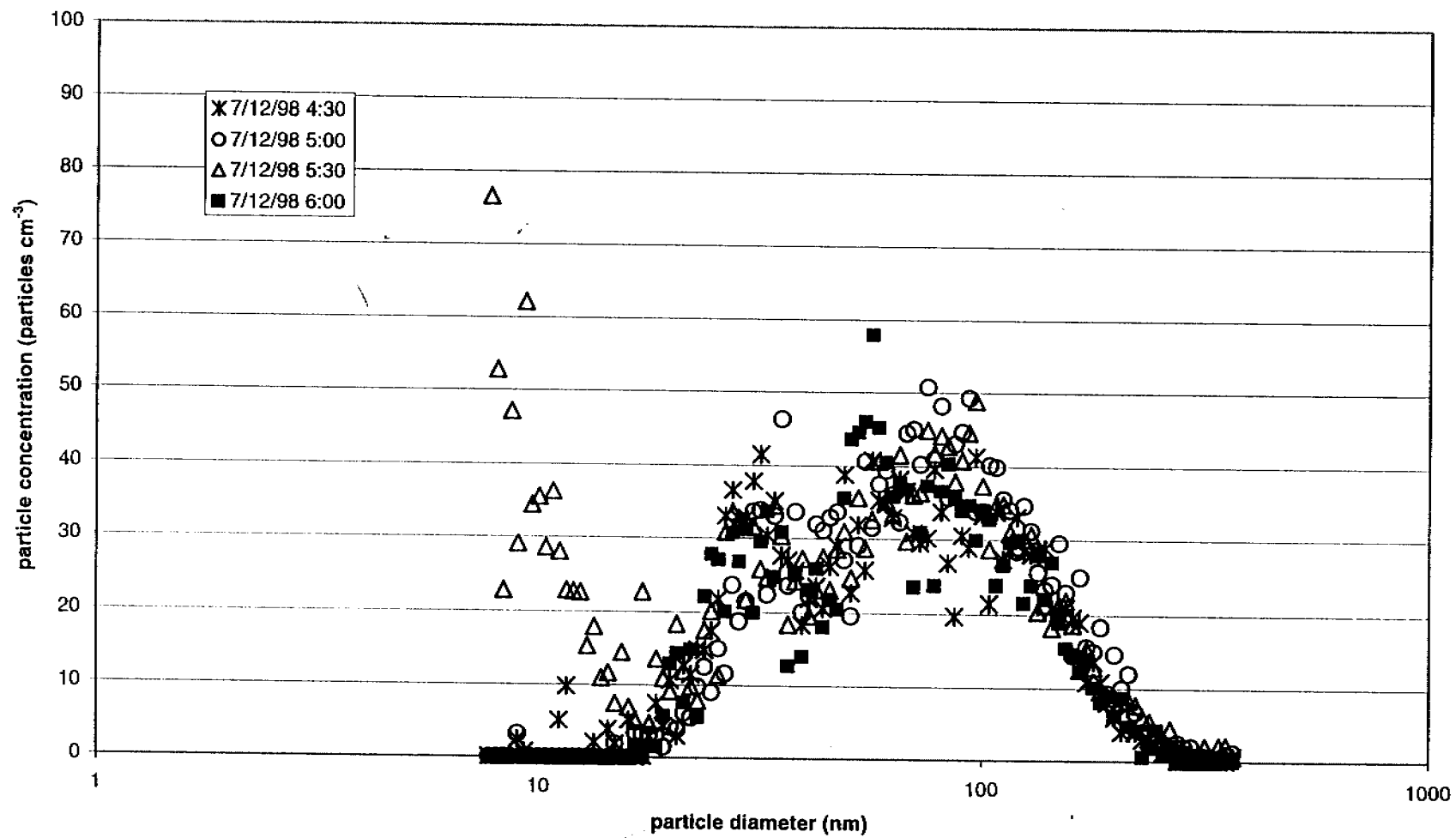


Figure 5.19

number size distributions - 980712(06:00 - 08:00)

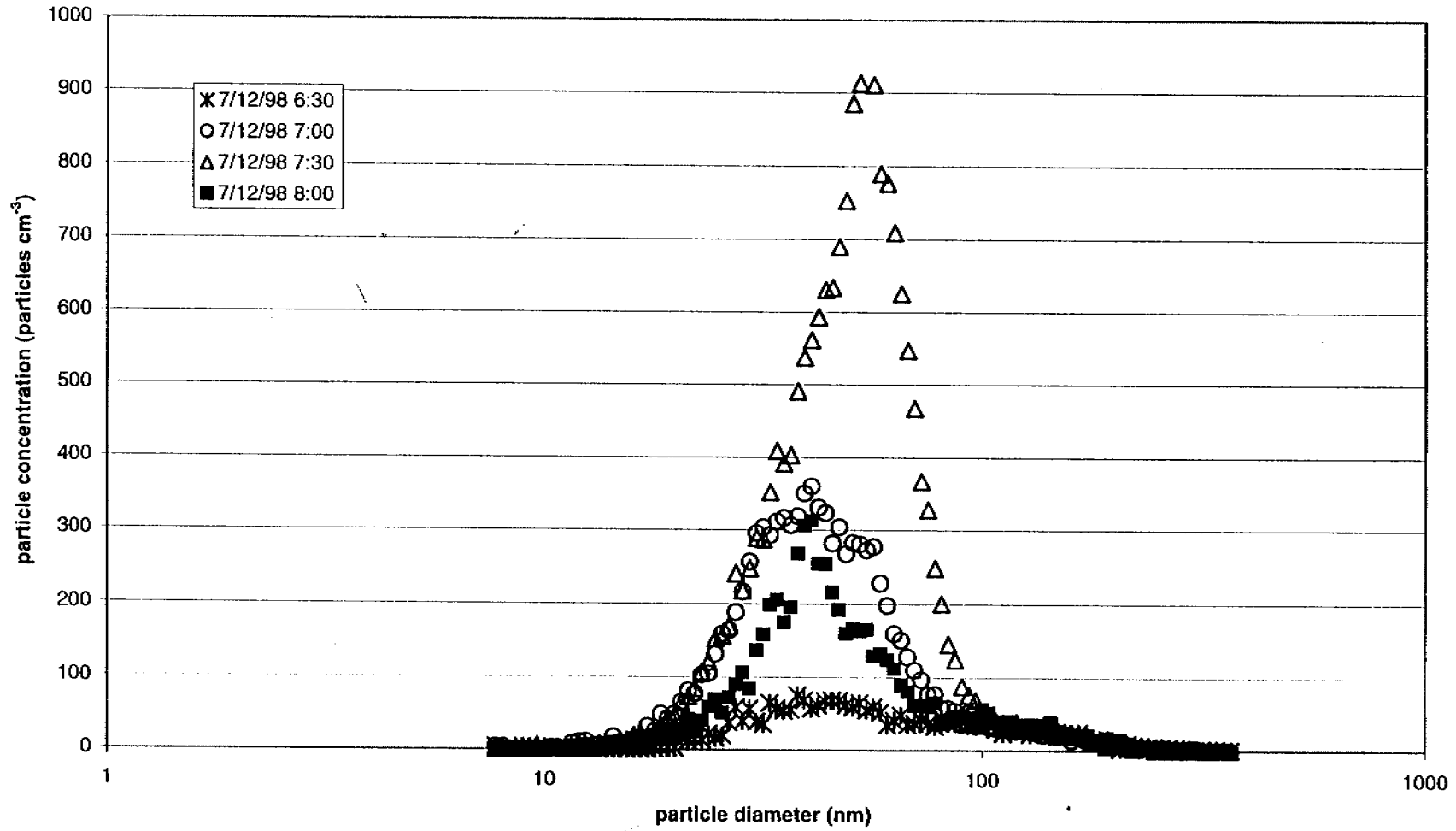


Figure 5.20

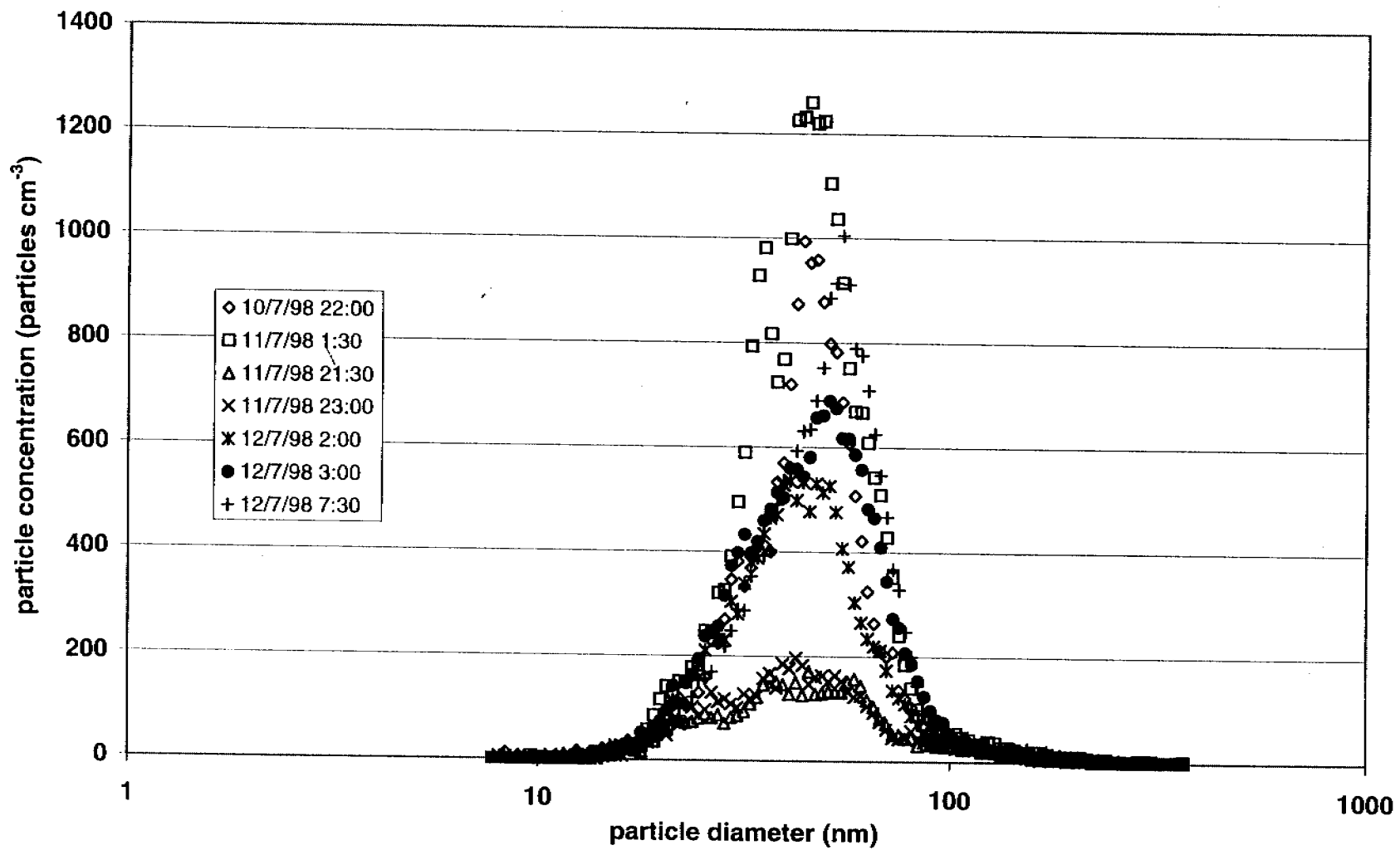


Figure 6 Number size spectra at the peak number CN concentrations

Table 1: Some visual observations relative to aerosol measurements in Gimbat

<i>Date</i>	<i>Time</i>	<i>Event</i>
10/7/98 - 12/7/98		No aerosol sources observed
11/7/98	9:00 PM	Stronger winds observed over sampling site
12/7/98	7:00 AM	Strong winds observed over sampling site

Table 2: Statistical summary of half hourly average measurements in Fisher Airstrip, Gimbat

PARTICLE SIZE DATA: 8 - 365 nm: FISHER AIRSTRIP GIMBAT (10/7/98 - 12/7/98)

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i># cm⁻³</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>(nm² cm⁻³)</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>nm</i>	<i>(nm³ cm⁻³)</i>
7/10/98 17:00	@980710a.000	61	77	62	1.9	1036	147	157	137	1.8	2.86E+07	198	194	178	1.6	7.50E+08
7/10/98 17:30	@980710a.001	58	72	58	2.0	1037	138	146	128	1.7	2.55E+07	186	178	164	1.6	6.19E+08
7/10/98 18:00	@980710a.002	60	73	59	2.0	1125	138	149	130	1.7	2.85E+07	187	183	167	1.6	7.04E+08
7/10/98 18:30	@980710a.003	56	72	55	2.1	1155	160	162	140	1.8	3.01E+07	209	198	182	1.6	8.10E+08
7/10/98 19:00	@980710a.004	53	66	52	2.0	1254	126	137	120	1.7	2.62E+07	170	171	155	1.6	5.99E+08
7/10/98 19:30	@980710a.005	54	66	51	2.1	1362	127	143	123	1.8	2.92E+07	178	181	163	1.6	6.96E+08
7/10/98 20:00	@980710a.006	53	66	50	2.1	1420	126	140	122	1.7	2.99E+07	176	173	158	1.6	6.97E+08
7/10/98 20:30	@980710a.007	56	67	50	2.3	1862	128	142	124	1.7	4.12E+07	172	174	159	1.6	9.72E+08
7/10/98 21:00	@980710a.008	71	80	65	2.0	1982	135	145	129	1.6	5.65E+07	170	174	160	1.5	1.36E+09
7/10/98 21:30	@980710a.009	73	86	70	1.9	2336	150	156	140	1.7	7.64E+07	193	187	173	1.5	1.99E+09
7/10/98 22:00	@980710a.010	44	47	43	1.5	17269	55	76	64	1.7	1.43E+08	80	116	93	1.9	1.81E+09
7/10/98 22:30	@980710a.011	46	49	46	1.4	11485	55	78	66	1.7	1.03E+08	90	115	94	1.9	1.34E+09

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/10/98 23:00	@980710a.012	43	53	45	1.8	4286	97	114	95	1.8	5.64E+07	146	152	134	1.7	1.07E+09
7/10/98 23:30	@980710a.013	68	79	66	1.9	2519	128	142	126	1.7	6.82E+07	169	175	160	1.6	1.62E+09
7/11/98 0:00	@980710a.014	46	61	49	1.9	4090	118	131	112	1.8	7.19E+07	165	169	151	1.6	1.57E+09
7/11/98 0:30	@980710a.015	65	78	62	2.0	2782	147	154	136	1.7	7.90E+07	191	187	173	1.5	2.03E+09
7/11/98 1:00	@980710a.016	66	77	64	1.9	2218	128	140	124	1.7	5.76E+07	163	171	156	1.6	1.34E+09
7/11/98 1:30	@980710a.017	44	47	44	1.4	25327	57	76	64	1.7	2.13E+08	78	115	93	1.9	2.71E+09
7/11/98 2:00	@980710a.018	68	79	67	1.8	1948	127	138	123	1.6	5.24E+07	162	166	153	1.5	1.20E+09
7/11/98 2:30	@980710a.019	62	74	61	1.9	1800	129	141	124	1.7	4.45E+07	172	173	158	1.6	1.04E+09
7/11/98 3:00	@980710a.020	58	71	58	1.9	1868	125	137	120	1.7	4.24E+07	163	170	154	1.6	9.66E+08
7/11/98 3:30	@980710a.021	53	73	57	2.0	2476	193	176	150	1.9	6.81E+07	244	215	199	1.6	1.99E+09
7/11/98 4:00	@980710a.022	61	73	60	1.9	1804	126	135	119	1.7	4.24E+07	162	164	150	1.6	9.53E+08
7/11/98 4:30	@980710a.023	62	74	61	1.9	1611	129	140	123	1.7	3.92E+07	170	174	158	1.6	9.15E+08
7/11/98 5:00	@980710a.024	65	75	63	1.8	1662	125	135	120	1.7	4.10E+07	160	165	151	1.6	9.25E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/11/98 5:30	@980710a.025	63	75	62	1.9	1900	128	140	123	1.7	4.72E+07	168	172	157	1.6	1.10E+09
7/11/98 6:00	@980710a.026	64	75	62	1.9	1957	129	142	124	1.7	4.95E+07	172	174	159	1.6	1.17E+09
7/11/98 6:30	@980710a.027	65	77	65	1.8	1939	128	139	123	1.7	5.00E+07	168	170	156	1.6	1.16E+09
7/11/98 7:00	@980710a.028	63	74	62	1.8	2058	124	135	119	1.7	4.92E+07	160	166	151	1.6	1.10E+09
7/11/98 7:30	@980710a.029	67	78	66	1.8	1962	126	138	122	1.7	5.14E+07	160	169	154	1.6	1.18E+09
7/11/98 8:00	@980710a.030	64	76	63	1.8	2082	131	145	126	1.7	5.36E+07	176	181	164	1.6	1.29E+09
7/11/98 8:30	@980710a.031	66	77	66	1.8	2720	127	139	123	1.7	7.02E+07	167	172	156	1.6	1.63E+09
7/11/98 9:00	@980710a.032	63	76	63	1.8	2787	131	142	125	1.7	7.09E+07	168	176	160	1.6	1.68E+09
7/11/98 9:30	@980710a.033	66	77	65	1.8	2966	125	136	121	1.7	7.51E+07	160	166	152	1.6	1.70E+09
7/11/98 10:00	@980710a.034	58	68	58	1.8	2463	108	126	109	1.7	4.94E+07	153	162	144	1.6	1.04E+09
7/11/98 10:30	@980710a.035	61	70	60	1.7	2418	111	129	112	1.7	5.12E+07	158	166	148	1.6	1.10E+09
7/11/98 11:00	@980710a.036	59	70	60	1.8	3001	110	130	110	1.7	6.12E+07	154	161	148	1.6	1.20E+09
7/11/98 11:30	@980710a.037	65	74	65	1.7	2621	111	128	113	1.7	6.01E+07	151	162	146	1.6	1.29E+09

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/11/98 12:00	@980710a.038	69	78	68	1.7	2516	117	131	116	1.7	6.31E+07	152	164	148	1.6	1.38E+09
7/11/98 12:30	@980710a.039	71	80	70	1.7	2322	117	131	117	1.6	6.02E+07	148	160	146	1.6	1.31E+09
7/11/98 13:00	@980710a.040	72	81	70	1.7	2093	118	130	116	1.6	5.49E+07	145	158	144	1.6	1.18E+09
7/11/98 13:30	@980710a.041	69	76	66	1.7	1552	111	124	111	1.6	3.64E+07	140	152	138	1.6	7.53E+08
7/11/98 14:00	@980710a.042	65	73	63	1.8	1421	112	122	109	1.6	3.17E+07	138	150	136	1.6	6.47E+08
7/11/98 14:30	@980710a.043	60	71	61	1.8	1216	112	120	107	1.6	2.53E+07	142	147	134	1.6	5.06E+08
7/11/98 15:00	@980710a.044	58	69	58	1.8	1161	113	124	109	1.7	2.37E+07	146	155	140	1.6	4.92E+08
7/11/98 15:30	@980710a.045	57	70	58	1.9	1081	120	134	116	1.7	2.33E+07	166	169	153	1.6	5.20E+08
7/11/98 16:00	@980710a.046	58	69	57	1.9	1119	118	131	115	1.7	2.38E+07	155	165	149	1.6	5.22E+08
7/11/98 16:30	@980710a.047	57	68	55	2.0	1140	120	131	114	1.7	2.37E+07	155	164	148	1.6	5.16E+08
7/11/98 17:00	@980710a.048	57	67	54	2.0	1157	115	131	114	1.7	2.37E+07	159	167	150	1.6	5.20E+08
7/11/98 17:30	@980710a.049	56	65	52	2.0	1177	113	124	109	1.7	2.27E+07	144	155	140	1.6	4.69E+08
7/11/98 18:00	@980710a.050	54	64	50	2.1	1302	113	124	110	1.7	2.45E+07	147	152	139	1.6	5.09E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/11/98 18:30	@980710a.051	57	65	51	2.1	1288	117	130	114	1.7	2.56E+07	151	162	146	1.6	5.54E+08
7/11/98 19:00	@980710a.052	55	65	51	2.1	1279	115	132	114	1.7	2.53E+07	153	169	151	1.6	5.56E+08
7/11/98 19:30	@980710a.053	55	64	51	2.0	1441	115	122	109	1.7	2.74E+07	140	148	135	1.5	5.57E+08
7/11/98 20:00	@980710a.054	54	64	50	2.1	1428	119	128	113	1.7	2.78E+07	149	156	143	1.6	5.94E+08
7/11/98 20:30	@980710a.055	73	85	66	2.1	1838	145	145	134	1.5	5.87E+07	160	165	156	1.4	1.42E+09
7/11/98 21:00	@980710a.056	41	44	40	1.5	21819	55	75	62	1.8	1.63E+08	79	115	92	1.9	2.04E+09
7/11/98 21:30	@980710a.057	42	50	43	1.7	4974	80	101	84	1.9	5.40E+07	131	141	121	1.8	9.11E+08
7/11/98 22:00	@980710a.058	46	57	46	1.9	2587	109	121	103	1.8	4.01E+07	146	156	139	1.7	8.08E+08
7/11/98 22:30	@980710a.059	42	55	45	1.9	3145	106	117	101	1.8	4.54E+07	144	150	135	1.6	8.88E+08
7/11/98 23:00	@980710a.060	41	49	43	1.7	5420	83	103	85	1.9	5.82E+07	138	145	124	1.8	1.00E+09
7/11/98 23:30	@980710a.061	54	64	51	2.0	1612	116	128	111	1.7	3.08E+07	144	163	145	1.6	6.55E+08
7/12/98 0:00	@980710a.062	58	67	54	2.0	1501	116	128	113	1.7	3.08E+07	148	156	142	1.6	6.54E+08
7/12/98 0:30	@980710a.063	58	68	54	1.9	1613	120	134	117	1.7	3.41E+07	153	167	151	1.6	7.59E+08

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/12/98 1:00	@980710a.064	56	66	54	1.9	1591	116	124	111	1.7	3.17E+07	140	150	138	1.5	6.55E+08
7/12/98 1:30	@980710a.065	60	70	57	1.9	1604	122	128	115	1.6	3.49E+07	145	154	142	1.5	7.45E+08
7/12/98 2:00	@980710a.066	42	46	42	1.5	13035	58	77	65	1.7	1.06E+08	88	112	93	1.9	1.37E+09
7/12/98 2:30	@980710a.067	43	48	43	1.5	9741	64	86	72	1.8	9.05E+07	110	125	104	1.9	1.30E+09
7/12/98 3:00	@980710a.068	46	49	45	1.5	17238	62	77	67	1.7	1.57E+08	80	107	90	1.8	2.02E+09
7/12/98 3:30	@980710a.069	43	48	43	1.5	10554	63	83	70	1.8	9.60E+07	99	117	99	1.8	1.32E+09
7/12/98 4:00	@980710a.070	47	58	50	1.7	2823	105	114	98	1.8	4.28E+07	140	145	130	1.6	8.11E+08
7/12/98 4:30	@980710a.071	61	73	60	1.9	1775	127	130	117	1.6	4.18E+07	149	154	143	1.5	9.08E+08
7/12/98 5:00	@980710a.072	70	81	68	1.8	1900	132	139	125	1.6	5.28E+07	161	165	152	1.5	1.22E+09
7/12/98 5:30	@980710a.073	51	63	43	2.5	2347	127	135	121	1.7	4.74E+07	158	163	150	1.5	1.07E+09
7/12/98 6:00	@980710a.074	61	73	62	1.8	1744	123	129	116	1.6	4.06E+07	148	155	143	1.5	8.73E+08
7/12/98 6:30	@980710a.075	51	68	56	1.8	2545	129	133	116	1.7	5.34E+07	160	164	150	1.6	1.19E+09
7/12/98 7:00	@980710a.076	41	47	42	1.6	9350	68	94	77	1.9	8.86E+07	129	137	115	1.9	1.39E+09

		<i>Number Distribution</i>					<i>Surface Distribution</i>					<i>Volume Distribution</i>				
<i>date & time</i>	<i>filename</i>	<i>NMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>AMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>	<i>VMD</i>	<i>mean</i>	<i>GM</i>	<i>GM sd</i>	<i>CONC</i>
		nm	nm	nm	nm	# cm ⁻³	nm	nm	nm	nm	(nm ² cm ⁻³)	nm	nm	nm	nm	(nm ³ cm ⁻³)
7/12/98 7:30	@980710a.077	50	52	48	1.5	18816	62	79	69	1.6	1.89E+08	79	110	92	1.8	2.50E+09
7/12/98 8:00	@980710a.078	43	54	47	1.7	6240	103	113	95	1.9	8.27E+07	149	151	134	1.7	1.56E+09

Table 3: Statistical parameters describing the peaks for Fisher Airstrip, Gimbat

DATE & TIME	PEAK LOCATION IN NUMBER DISTRIBUTION (nm)	NUMBER (# cm ⁻³)	SURFACE AREA (nm ² cm ⁻³)	VOLUME (nm ³ cm ⁻³)
10/7/98 22:00	40	1.73E+04	1.43E+08	1.81E+09
11/7/98 1:30	40	2.53E+04	2.13E+08	2.71E+09
11/7/98 21:30	40	2.18E+04	1.63E+08	2.04E+09
11/7/98 23:00	40	5.42E+03	5.83E+07	1.00E+09
12/7/98 2:00	40	1.30E+04	1.06E+08	1.37E+09
12/7/98 3:00	40	1.72E+04	1.57E+08	2.02E+09
12/7/98 7:30	40	1.88E+04	1.89E+08	2.50E+09