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**PARTICLE SIZE DISTRIBUTION AND CONCENTRATION OF TOTAL SUSPENDED
MATTER IN SOUTHERN LAKE MICHIGAN: JANUARY 28 - FEBRUARY 10, 1998**

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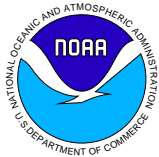
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Each figure in Appendix A has the sampling location in the title, for example Gary 15 m represents the 15 m deep station on the Gary transect (see Figure 1). The data for each station are presented in two parts:

- (1) Temperature and transmissometry profiles, with measured TSM shown as filled circles, and
- (2) 3-5 panel profiles of the fractional mass in the GSM versus grain size., TSM, depth, and sample dilution are shown in each panel. Error bars represent 1 standard deviation for triplicate measurements of the same sample.

Table 1.--Particle size data tables for all stations 23

PARTICLE SIZE DISTRIBUTION AND CONCENTRATION OF TOTAL SUSPENDED MATTER IN SOUTHERN LAKE MICHIGAN: JANUARY 28 - FEBRUARY 10, 1998

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ABSTRACT. Profiles of grain size distributions of suspended matter in the water column of southern Lake Michigan are presented from a cruise from January 28 through February 10, 1998. This cruise was prior to the very large sediment resuspension event that began on March 10, 1998. The majority of samples had less than 1 mg/L of Total Suspended Material (TSM), although concentrations were higher off Racine, WI and Saugatuk, MI. An inverse thermal stratification was observed at Racine, all other stations were well-mixed. Although the error was large, the distribution of particle sizes throughout the coastal region of the southern basin were remarkably consistent, with the peak of the mass distribution generally between 20 and 40 μm .

1. INTRODUCTION

The Impact of Episodic Events on the Nearshore-Offshore Transport and Transformation of Biogeochemically Important Materials in the Great Lakes Program (EEGLE) was developed to focus on a critical theme that was common to two workshops (NOAA, 1992; Klump et al., 1995). In August 1997 the NOAA-Coastal Ocean Program (COP) and National Science Foundation-Coastal Oceanography Program (CoOP) began a jointly funded program to study the impact of this episodic plume event on sediment and constituent transport and subsequent ecological effects in Lake Michigan. This program, Episodic Events: Great Lakes Experiment (EEGLE), is being coordinated by GLERL and is scheduled to include three field years and two years of subsequent interpretation and product development.

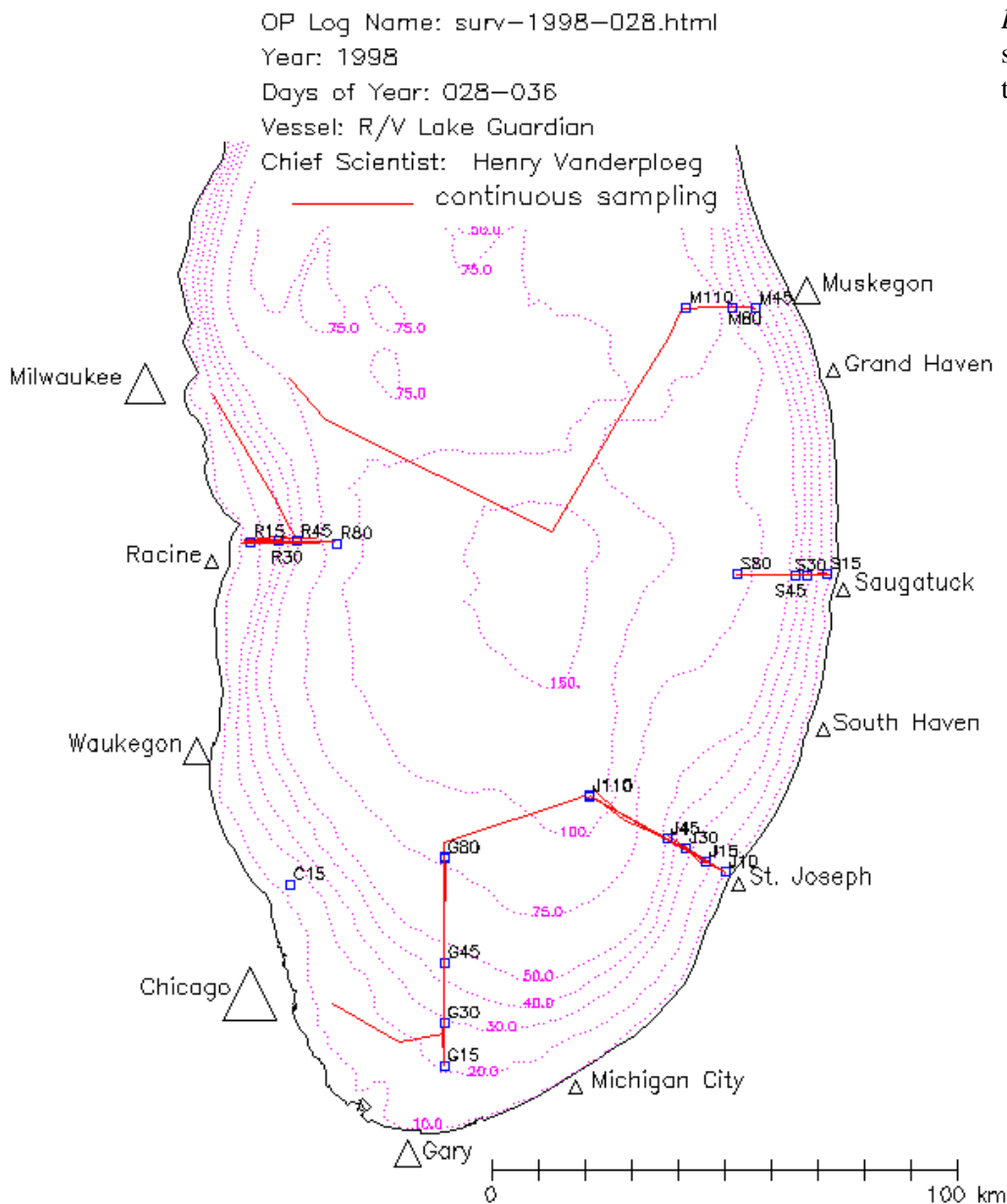
EEGLE presently involves 4 funding sources and 17 participating research institutions. Program components include a retrospective analysis of satellite imagery, water intakes, and other data, process and survey cruises, moored current meters, traps and data acquisition instruments, and coupled hydrodynamic-sediment transport-ecological modeling. Our goal is to characterize the materials in the plume, infer their sources, and assess their potential impact on the cycling and transport of nutrients and contaminants. Further program information is available on the web at HYPERLINK <http://www.glerl.noaa.gov/eeGLE>.

A tight coupling between contaminated sediments and overlying water exists in lakes and coastal ecosystems through the process of sediment resuspension. Satellite imagery of suspended sedimentary material in southern Lake Michigan from winter-spring, 1996 (Eadie et al., 1996, 1998) illustrate a unique opportunity to investigate an annually recurrent major episode of nearshore-offshore transport, a 10 km wide plume of resuspended material extending over 300 km along the southern shores of the lake. The annual plume appears to be initiated by a major late winter storm after the melting of surface ice, and it eventually veers offshore along the eastern shore of the lake, coincident with the area of highest measured sediment accumulation in the lake.

Attempts to mass balance nutrients and contaminants in the Great Lakes have implied that resuspension of contaminated sediments contributes many times the sum of all external inputs. We are evaluating this annual winter-spring resuspension event in order to estimate its impact on internal cycling of constituents, such as nutrients and contaminants, and subsequent effects on lake ecology. Results will improve our understanding of critical processes that affect the ecosystem, and will support the development of a resource management-oriented information and modeling system.

The program was fortunate during its first year to examine a very large plume event. To place it in context, only once before, in its 37 years of intake turbidity records, did the St. Joseph water treatment plant experience an

Figure 1.--Cruise track of the RV *Lake Guardian*. Hydrocast stations are identified on each transect.



event of similar magnitude. Five transects were established and sampled during many of the individual cruises. Cruise foci included moorings, survey, process, and Lagrangian.

Preliminary evidence indicates that this episodic event may be the major mechanism for cross-margin sediment transport in Lake Michigan. We believe this type of event is ideal for studying internal recycling of biogeochemically important materials (BIMS), ecosystem responses, and one of the major processes controlling cross-isobath transport in the Great Lakes. While we are focusing on a particular episodic process in southern Lake Michigan, the program results will be applicable to similar events in many coastal areas.

This report presents suspended matter data collected on the first integrated cruise aboard the EPA GLNPO's research vessel *Lake Guardian*, from January 28 through February 10, 1998. This first EEGLE cruise of 1998 was conducted prior to the large subsequent plume event that began on March 10, 1998. The cruise was designed to collect samples and data from transects normal to shore (Figure 1), crossing the historical plume region. Information collected during this cruise is providing winter background conditions, rare data in Lake Michigan. This report documents cruise data on the concentration of suspended particulate matter and measurements of the grain size distribution of these materials.

2. METHODS

On each transect, stations were established at water depths of 15, 30, and 45 m. At each station, a CTD profile was taken, and water samples collected at 3, 4, and 5 depths respectively. Each station had a sample from approximately 1 m below the surface and 1 m above the bottom. The latter was collected using a Niskin equipped with a tripping mechanism that closed the bottle when the weight touched bottom. Water samples were collected in 8 L Niskin bottles that were cleaned with soap and water prior to the beginning of the cruise. Subsequently, the bottles were flushed with lake water while on the wire by moving them up and down prior to closing. Water was transferred via a tygon tube into pre-cleaned sampling bottles.

Total Suspended Matter (TSM): water samples were vacuum filtered through, distilled water cleaned, preweighed, Whatman GFF glass fiber filters. Filtering was continued until it slowed appreciably, or 4 L had passed through the filter. The volume filtered was measured in a plastic 2 L graduated cylinder. The filter was sucked dry on the filter holder then transferred to its plastic Petri dish. The filters were stored in refrigeration. After returning to the lab, the filters were oven dried at 70°C for several hours, then weighed on a 5 place analytical balance. Several blank filters were processed as controls in order to correct for balance drift, humidity, etc. The blanks averaged less than 0.1 mg and were not included in subsequent calculations.

Transmissometry: A 25 cm path length Sea Bird (SBE 25) transmissometer was used to collect CTD profiles at each station. Calibration with TSM was estimated using a regression of measured beam attenuation and TSM for 17 common points (Figure 2).

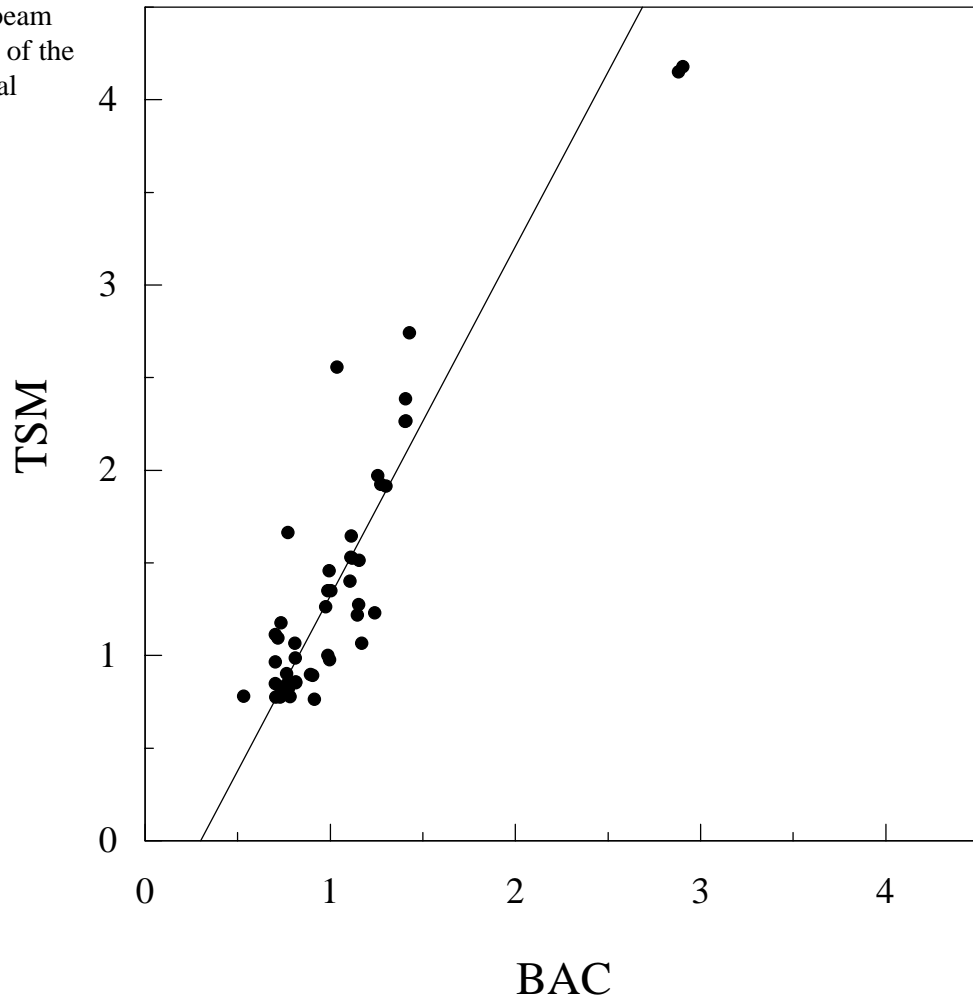
Particle size distribution was measured on the suspended matter using a Spectrex Laser Particle Counter (Model ILI 1000, Spectrex Corp, Redwood, CA). This instrument had several shortcomings, but was available and was used to acquire very rare data on this pilot cruise. Water samples were collected directly from the Niskin bottles into Spectrex glass sample bottles. The instrument uses a He-Ne laser (632.8 nm) and estimates particle concentration and calculates size distribution over the range of 1 to 100 μm from near-forward scattered light. The instrument is calibrated by regularly analyzing a set of three sealed bottles with a known size distribution of styrene spheres supplied by Spectrex. Background and offsets are adjusted to assure that the readings are within $\pm 15\%$ of the values provided by the manufacturer. During the cruise, the 5 μm standard read high by an average of 35%, outside the range recommended by the manufacturer. Thus the small particle size counts should be considered high. Background counts were subtracted and percent mass was calculated for each bin.

A serious problem with this instrument is its restriction to less than 1000 particles per ml; greater concentrations result in coincidence counting. Based on the ambient concentrations encountered, all samples had to be diluted with distilled, filtered water from between 20:1 to 150:1 (DW:Lake Water). This results in a bias against rare, large particles.

There is very little particle size data available for the suspended matter of the Great Lakes, thus we decided to publish these values. However, because of the limitations of the instrument, users should consider the precision (below) and bias when evaluating the results. Samples were analyzed from each station and depth sampled on the cruise; results are presented in Table 1 and in accompanying figures. Samples were shaken prior to analysis, however experiments prior to the cruise clearly showed that the size spectrum of lake samples began to drift into larger aggregates approximately 4 hours after collection. The frequency of water sample collection restricted replication to three separate scans for each sample, in order to complete analyses in less than 4 hours. A total of 48 samples were collected and analyzed on the cruise and the average coefficient of variation for all size categories was approximately equal at 104%. The size distribution data are all plotted with one standard deviation.

BAC vs. TSM EEGLE Feb. 1998

Figure 2. Comparison of the beam attenuation coefficient (BAC) of the 25 cm CTD and measured total suspended matter (TSM).
 $TSM = (1.58 * BAC - .24)$
 $N = 48$ $r^2 = .915$.



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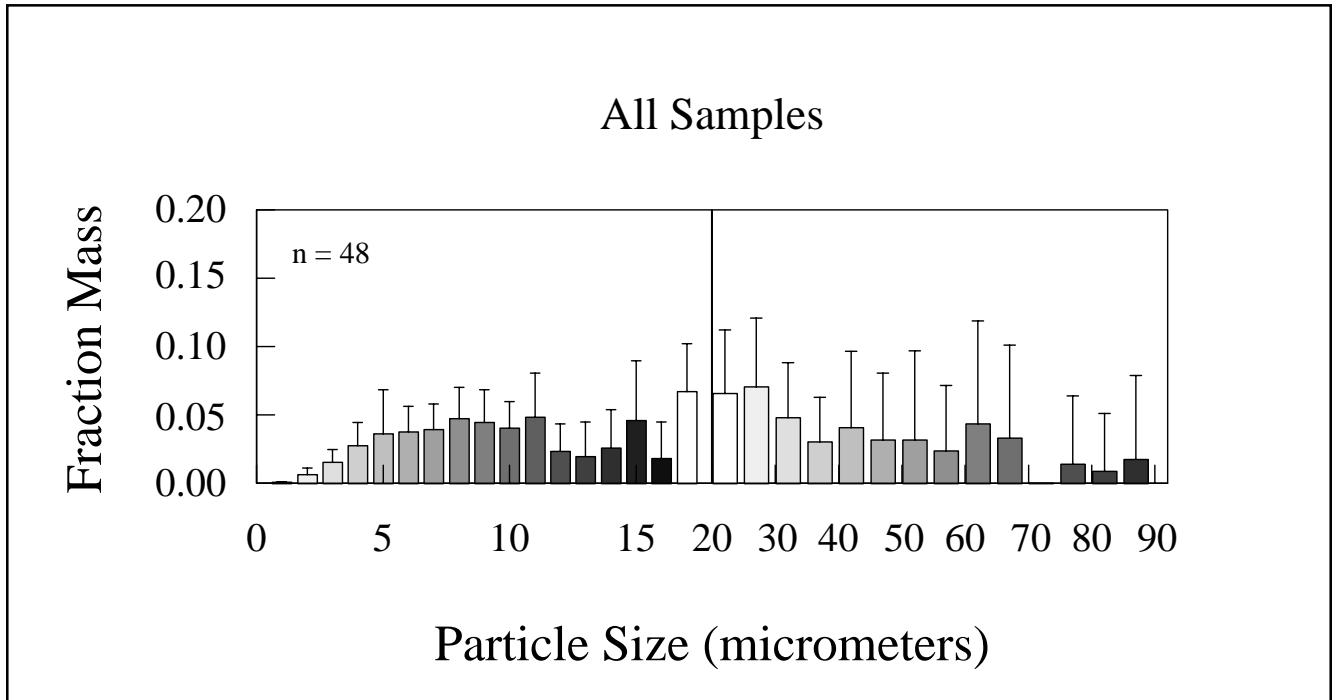


Figure 3.--The average fraction of total TSM mass versus particle size distribution for all 48 samples collected on the cruise. The size scale is in 1 μm increments from 1 to 16 μm , then 5 μm increments to 90 μm ; the vertical line identifies the scale break. Only station averages were used; individual sample errors were not propagated. Error bars represent one standard deviation.

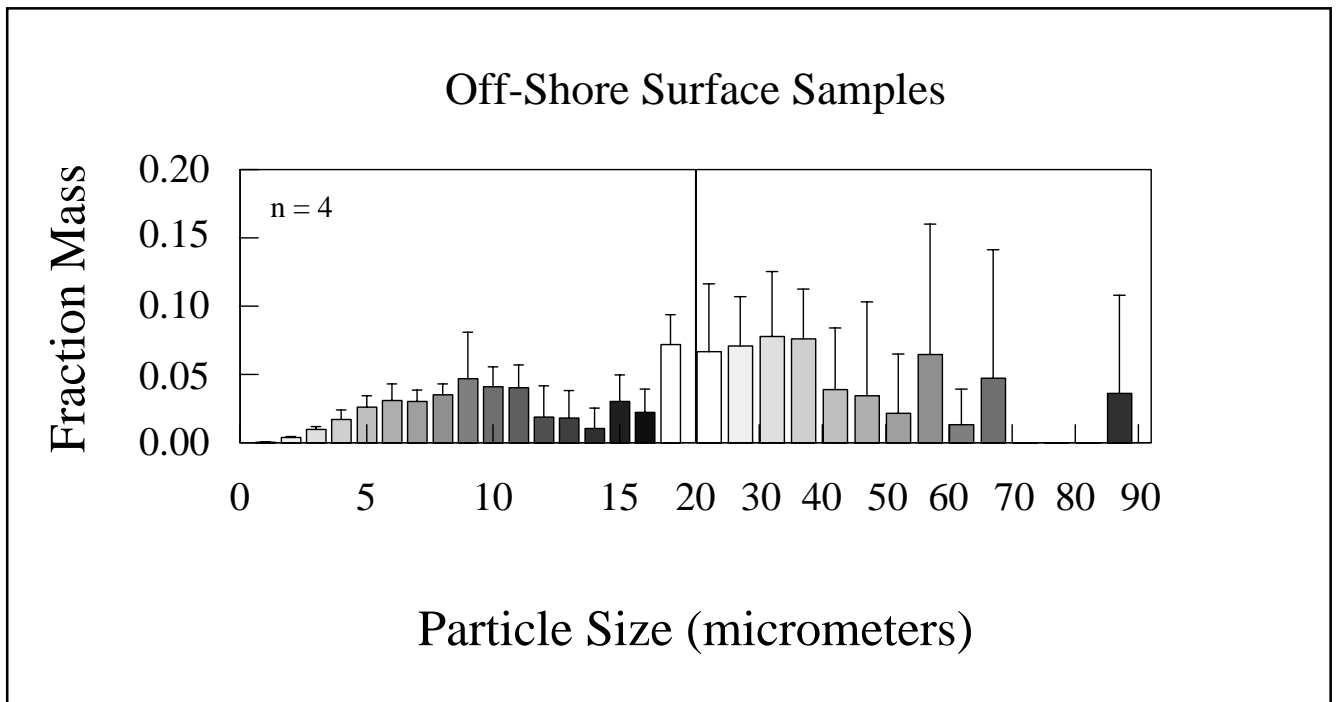


Figure 4.--The average fraction of total TSM mass versus particle size distribution for the 4 offshore surface samples.

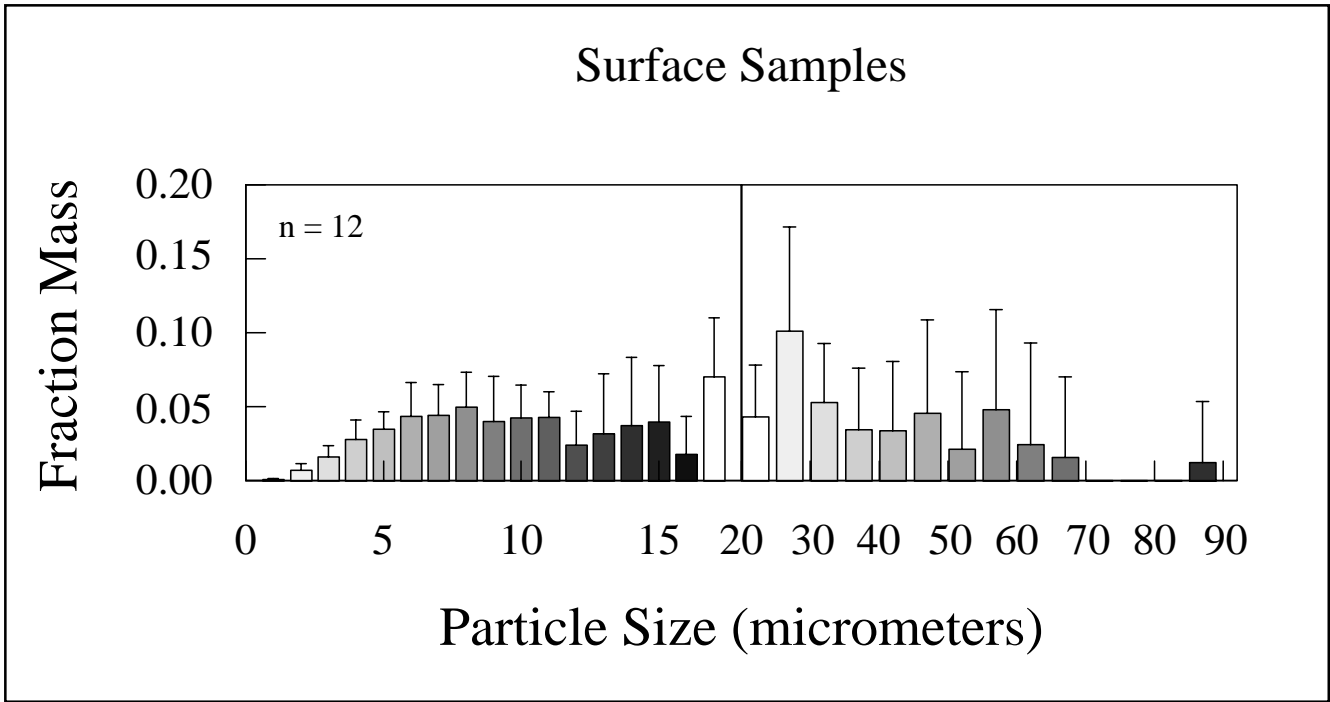


Figure 5.--The average fraction of total TSM mass versus particle size distribution for all 12 surface samples.

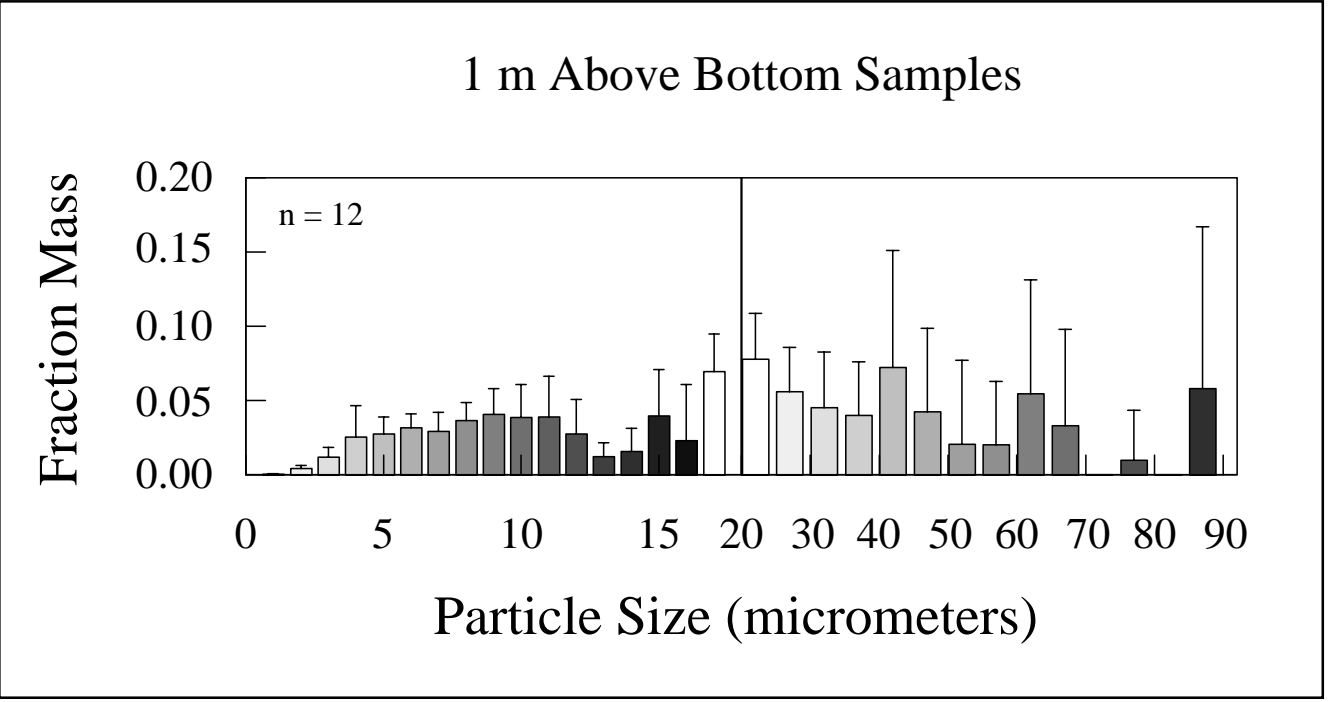


Figure 6.--The average fraction of total TSM mass versus particle size distribution for samples collected at 1 m above the bottom at the 12 stations.

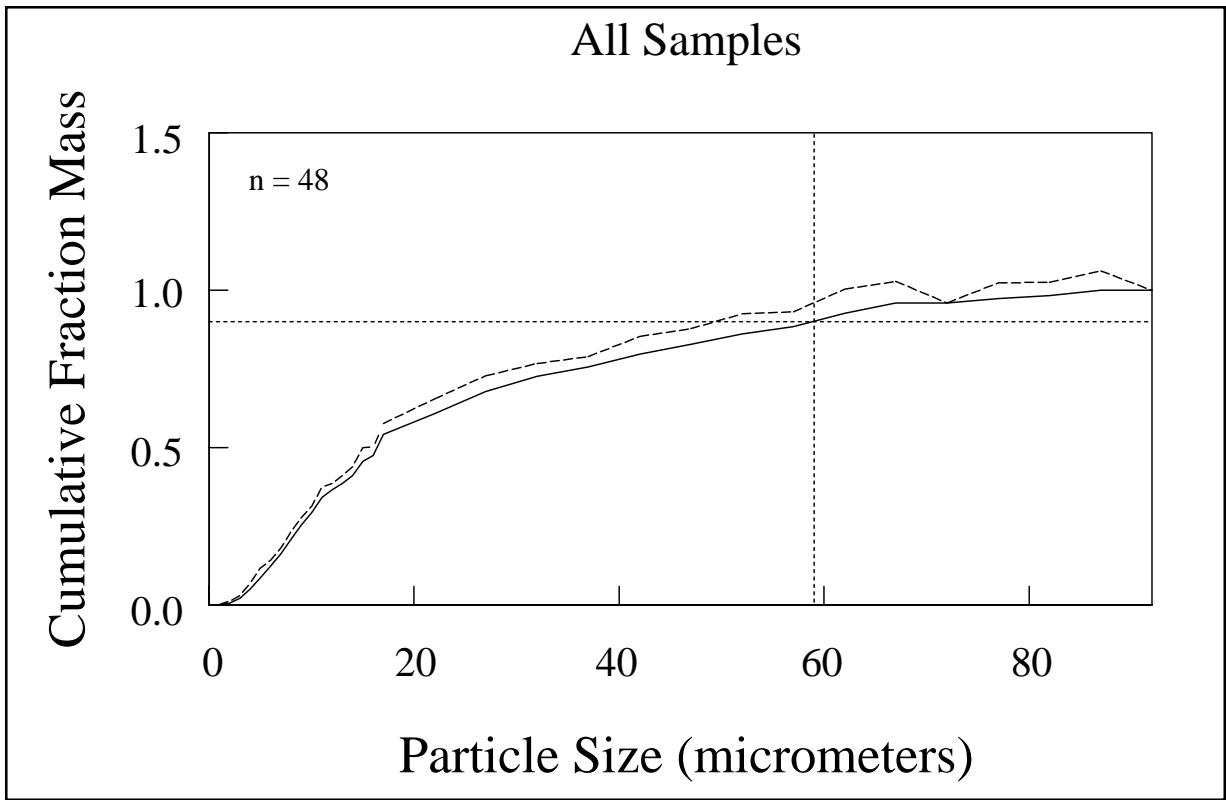


Figure 7.--The cumulative fraction of total TSM mass versus particle size distribution for all 48 samples collected on the cruise. Only station averages were used; individual sample errors were not propagated. the horizontal dashed line represented 90% of the cumulative fraction mass. The vertical dashed line represents the particle size at which 90% of the cumulative fraction mass is less than or equal to.

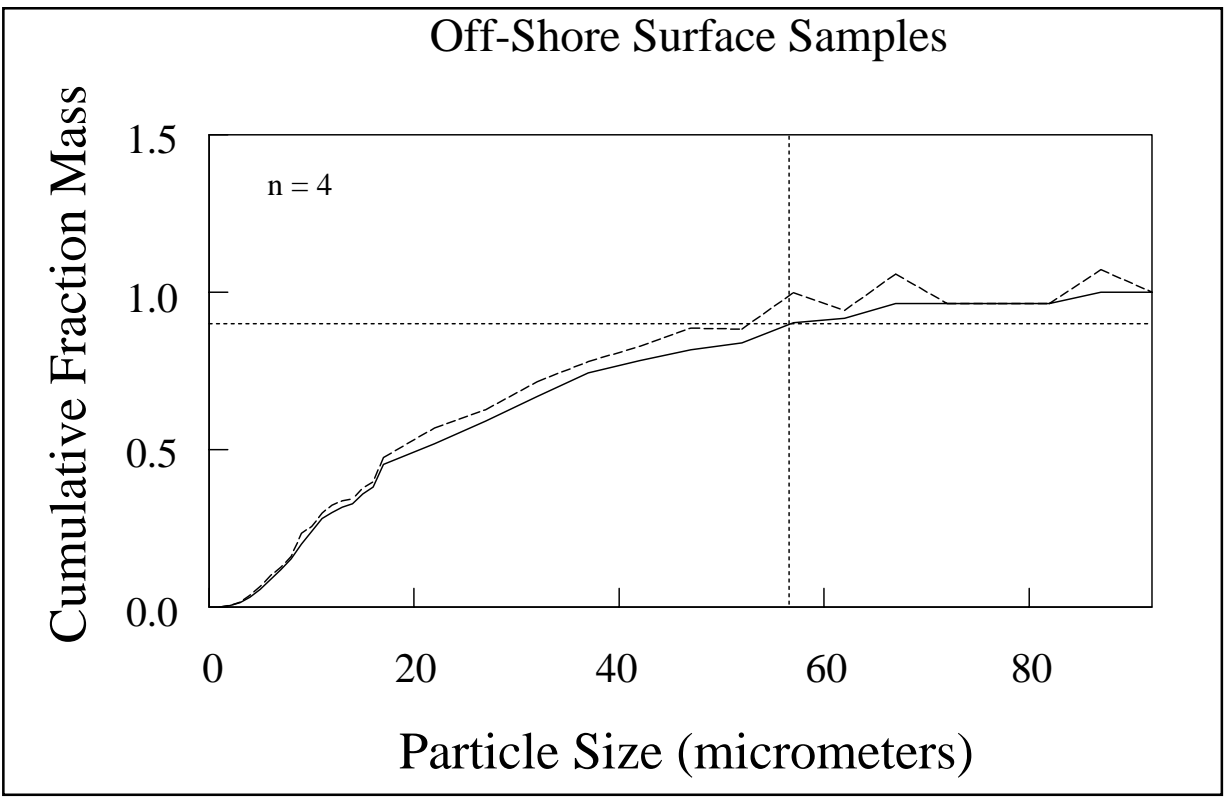
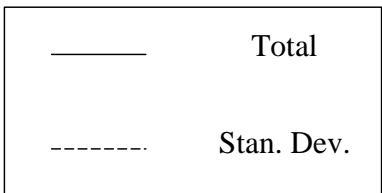


Figure 8.-- The cumulative fraction of total TSM mass versus particle size distribution for the four offshore surface samples.

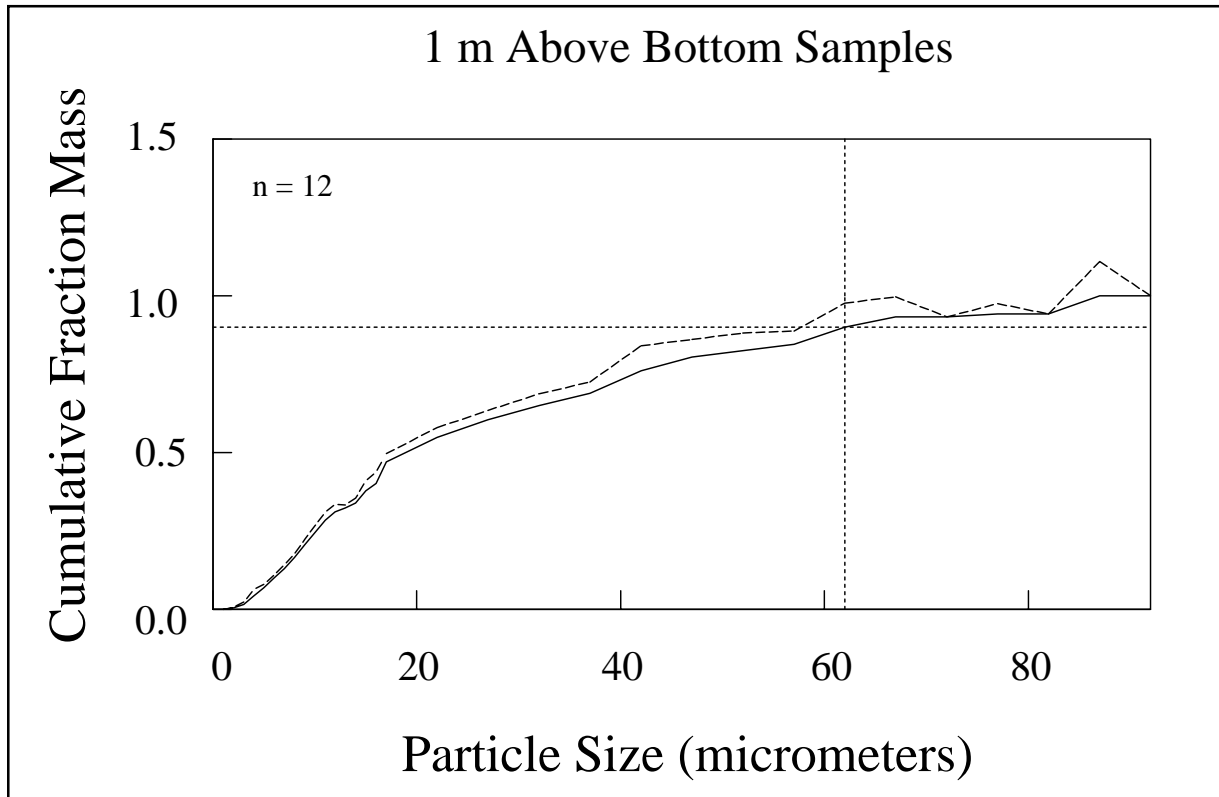


Figure 9.--The cumulative fraction of total TSM mass versus particle size distribution for all 12 surface samples.

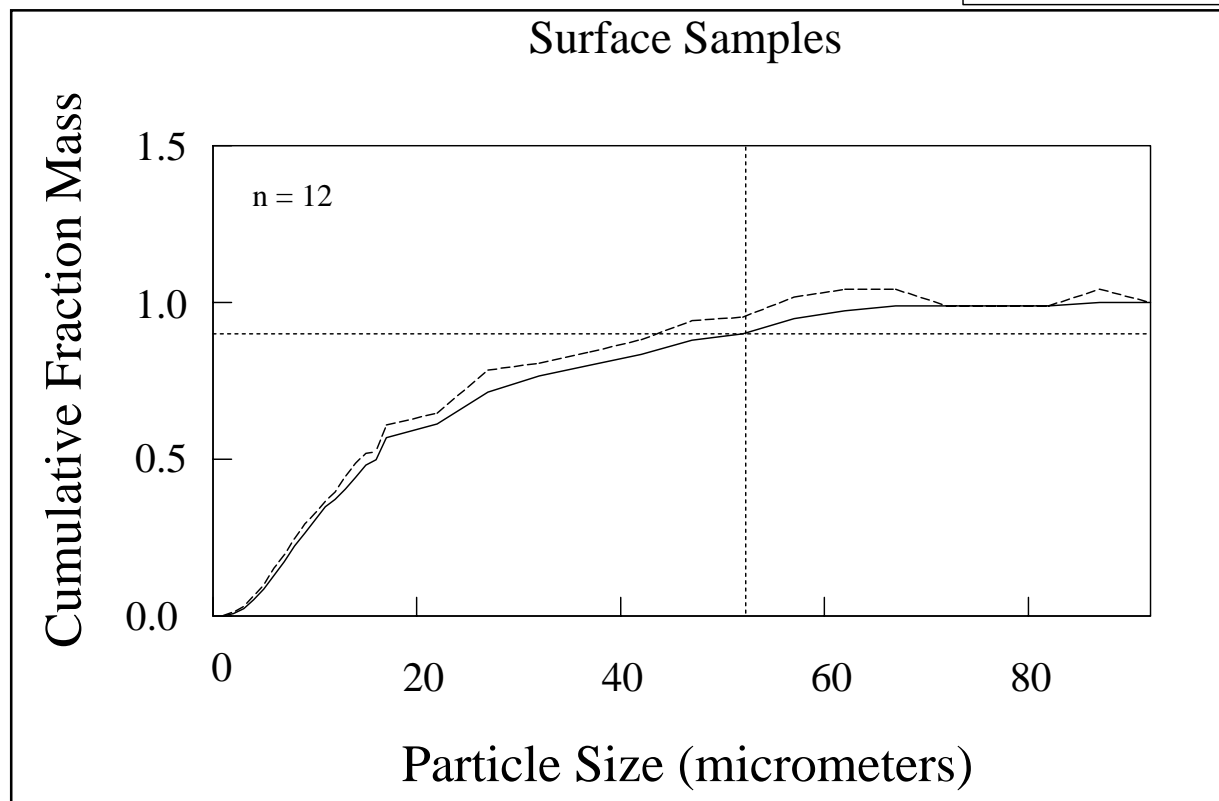
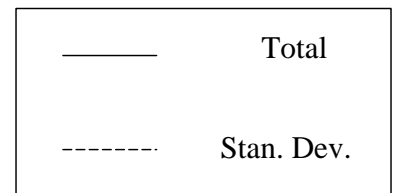


Figure 10.--The cumulative fraction of total TSM mass versus particle size distribution for samples collected at 1 m above the bottom at 12 stations.

Appendix A.

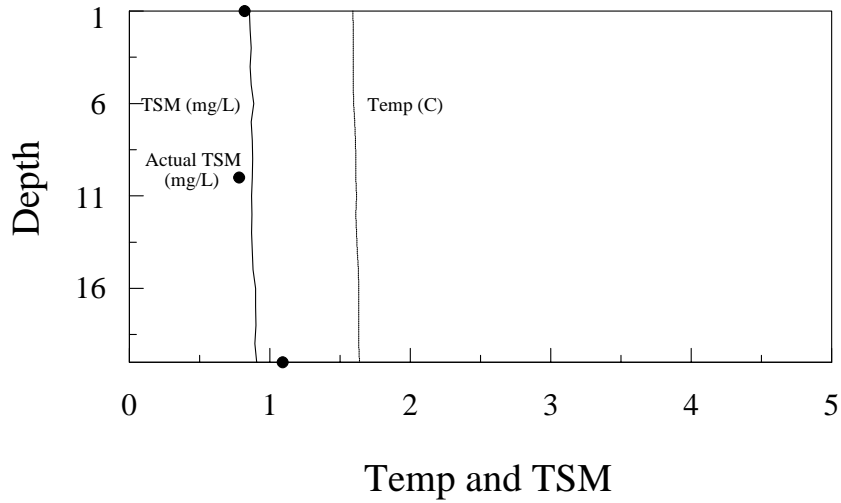
Each figure is presented in two parts:

- First, a temperature and transmissometry profile (with measured TSM shown as filled circles).
- Second, a 3-5 panel profile of the fractional mass in the TSM versus grain size (μm). TSM, depth, and dilution factors are shown in each panel.

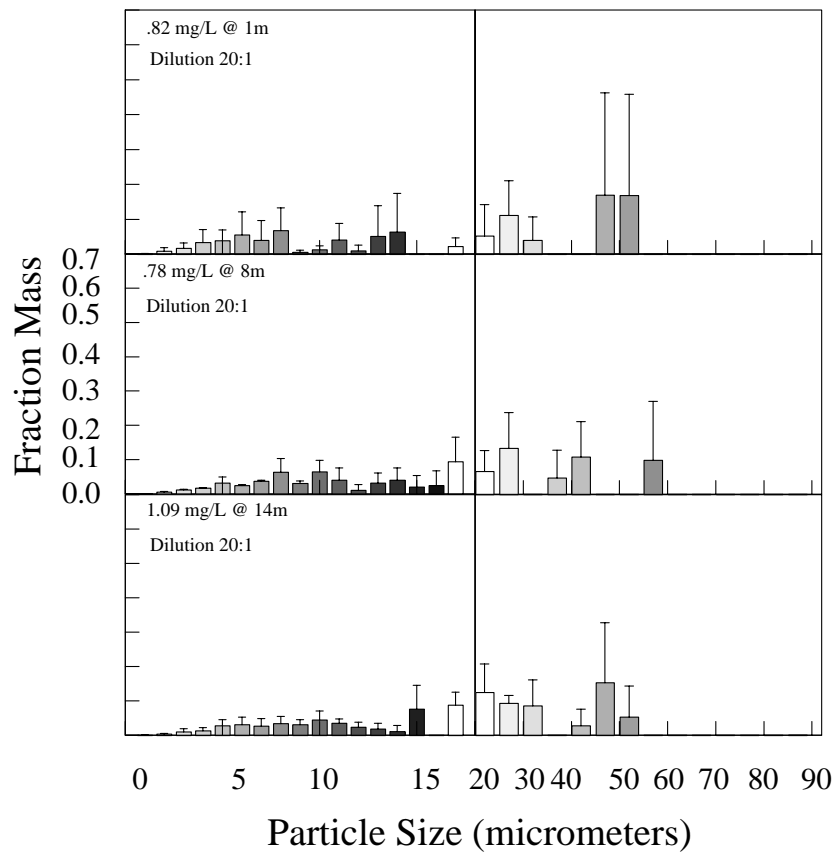
Sampling locations are indicated in the title, for example, Gary 15 m represents the 15 m deep station on the Gary transect (see Figure 1).

Tables contain particle size data for all stations.

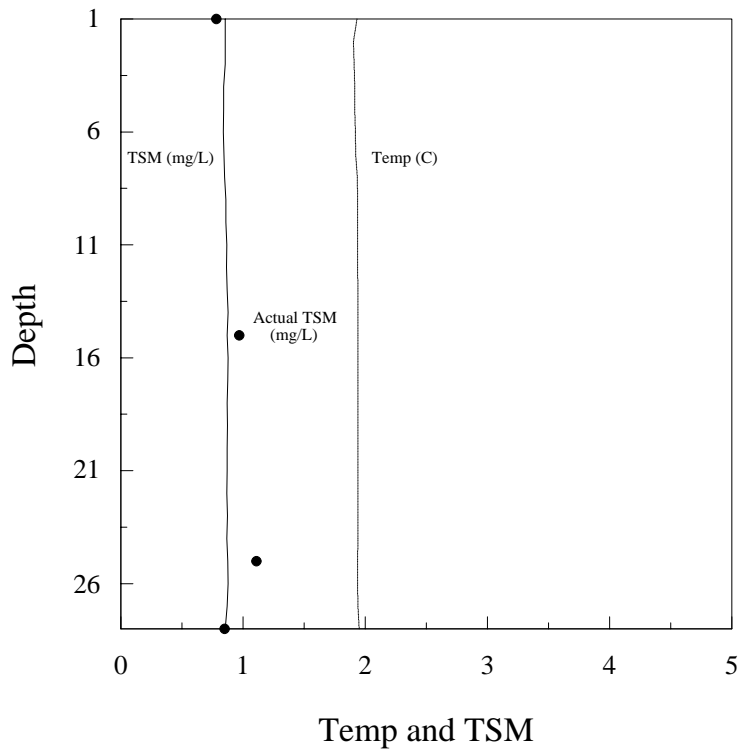
Gary 15m Profile CTD Data



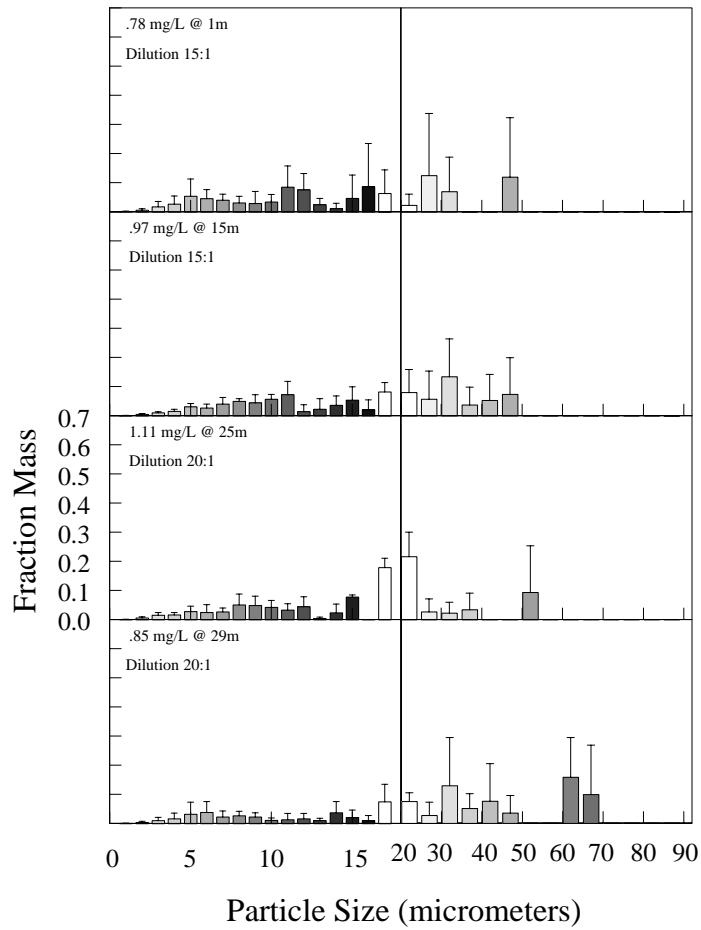
Fraction Mass Gary 15m Profile



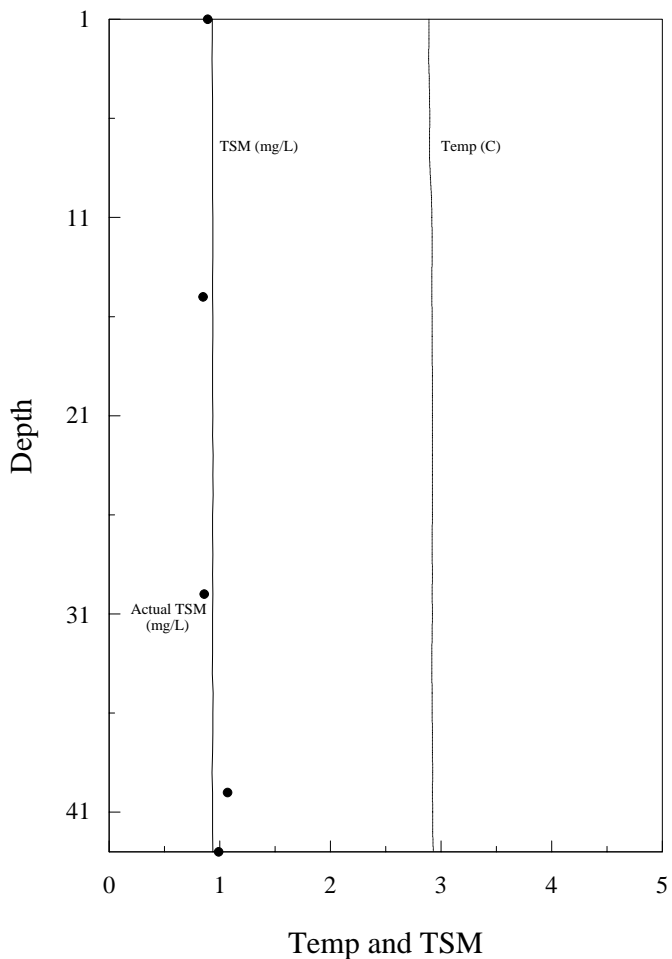
Gary 30m Profile CTD Data



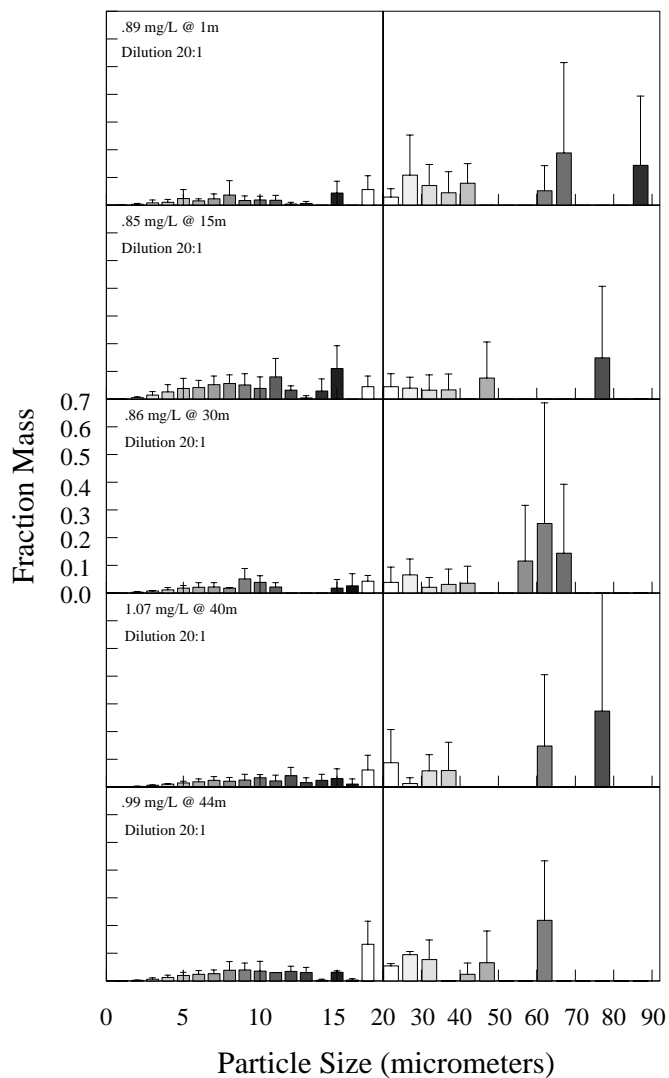
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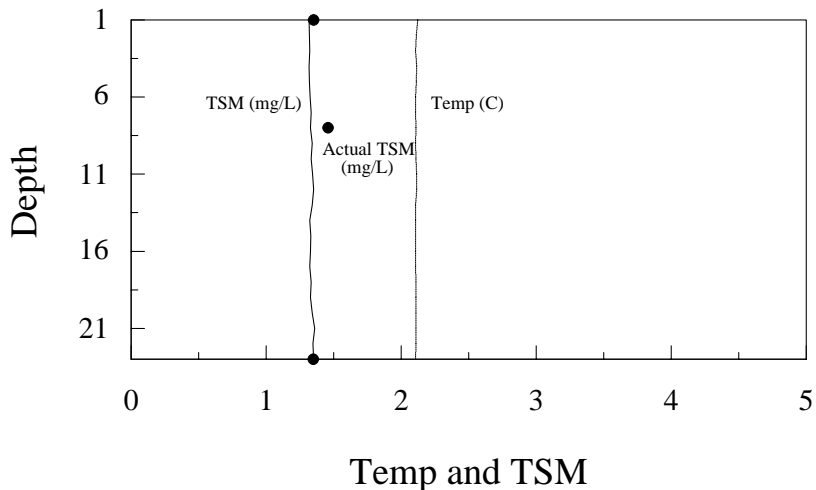
Gary 45m Profile CTD Data



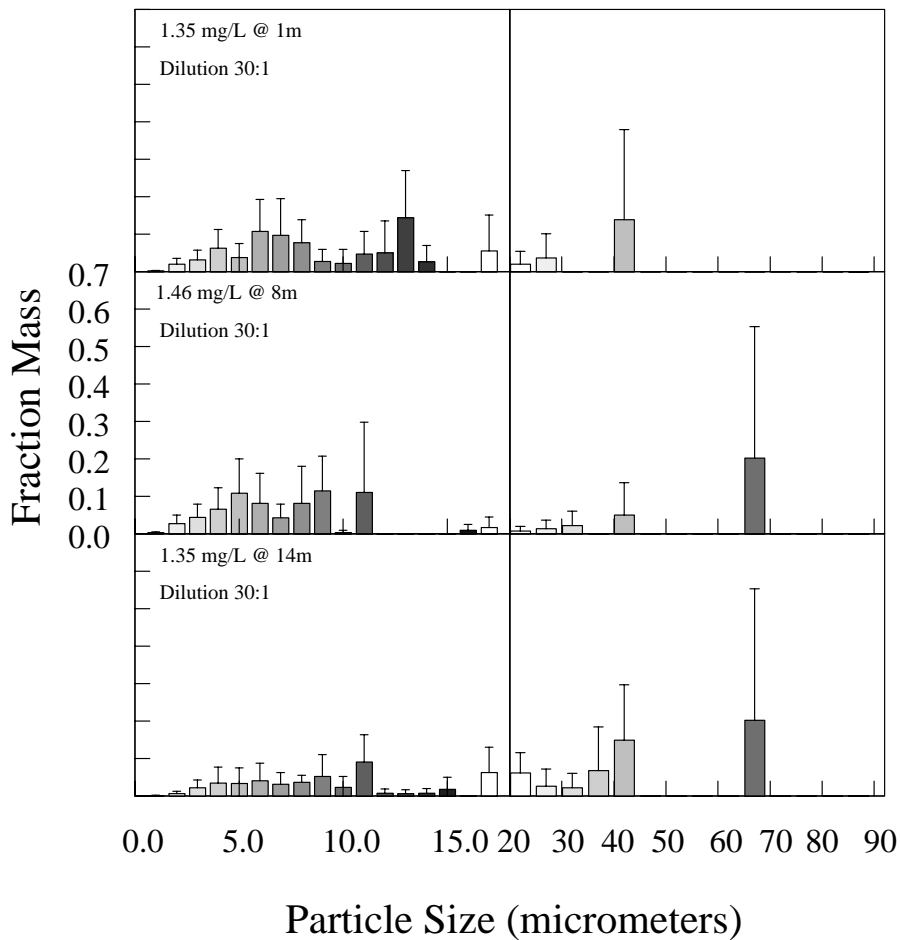
Fraction Mass Gary 45m Profile



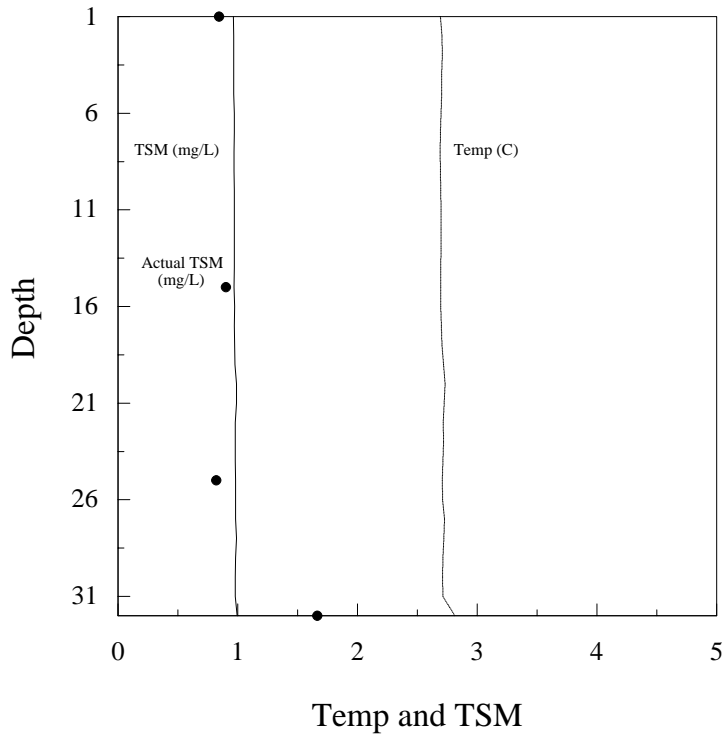
St. Joseph 15m Profile CTD Data



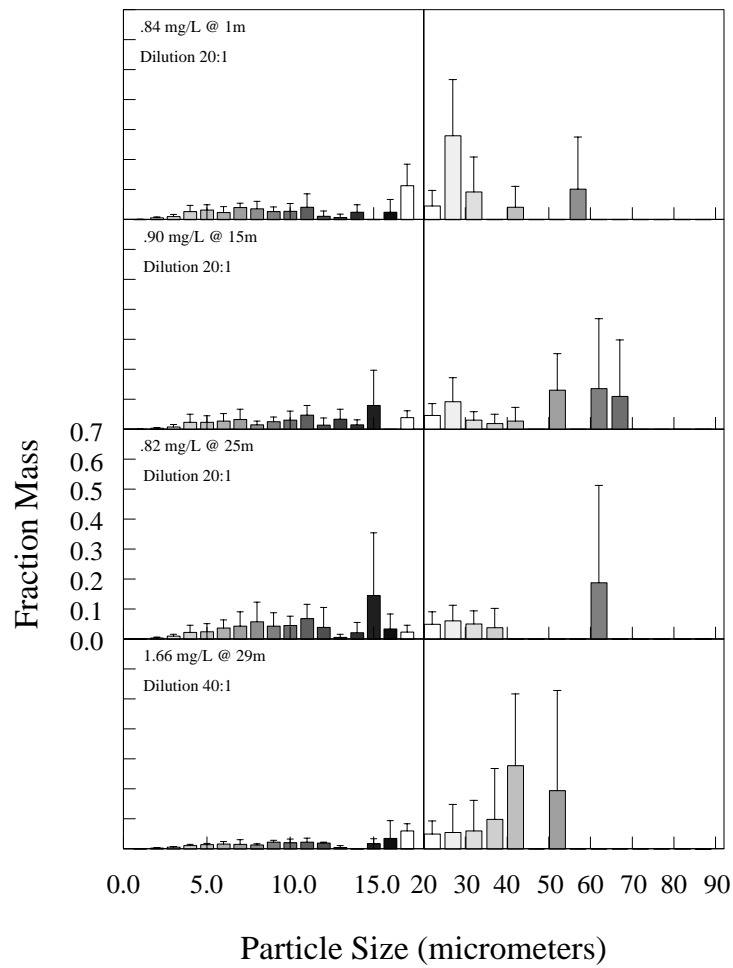
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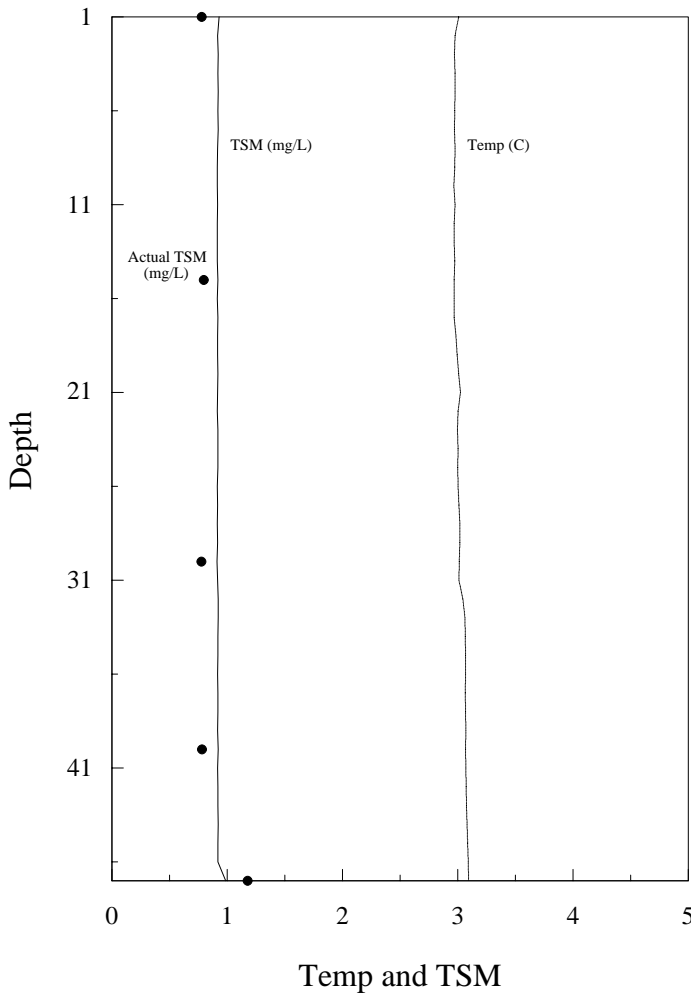
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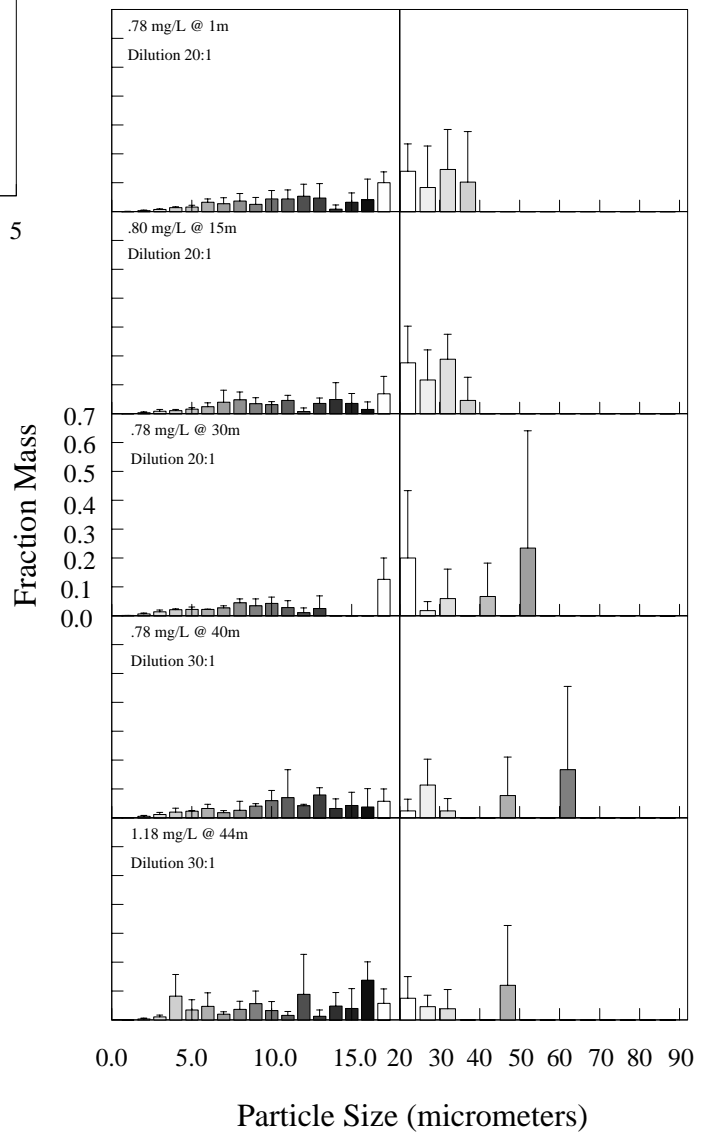
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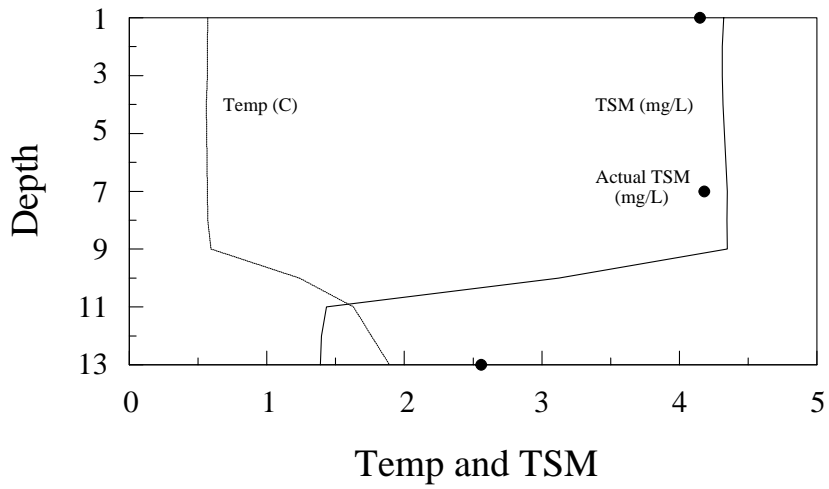
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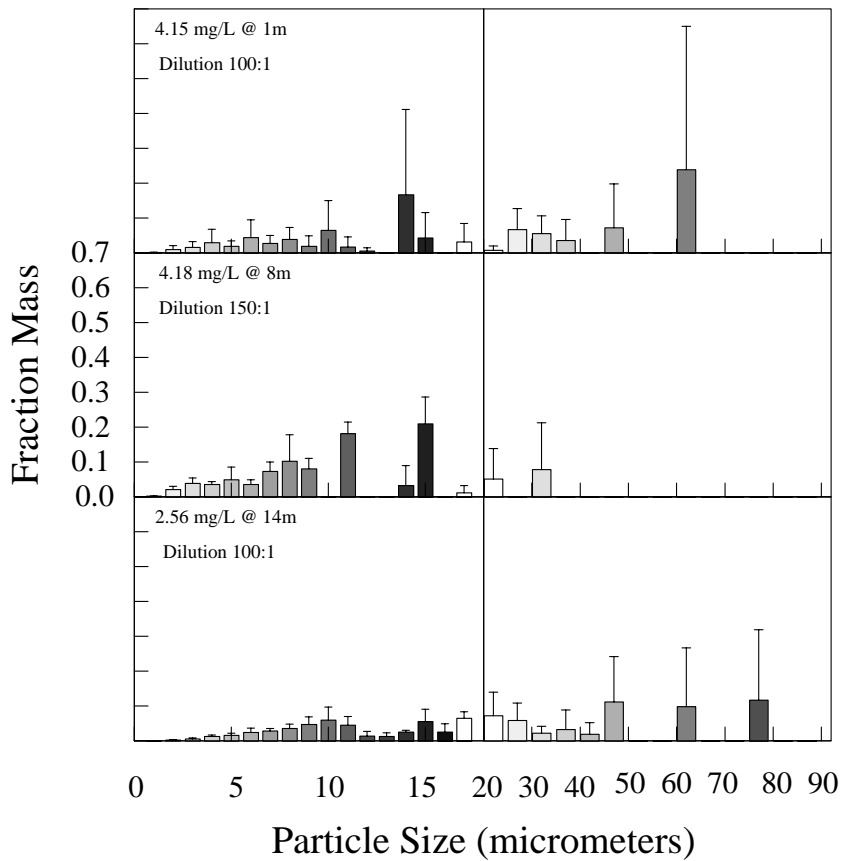
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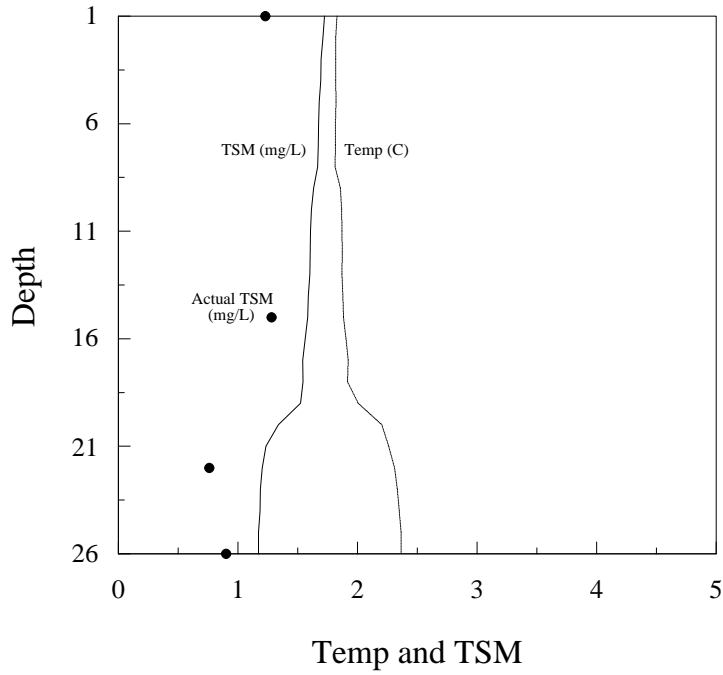
Racine 15m Profile CTD Data



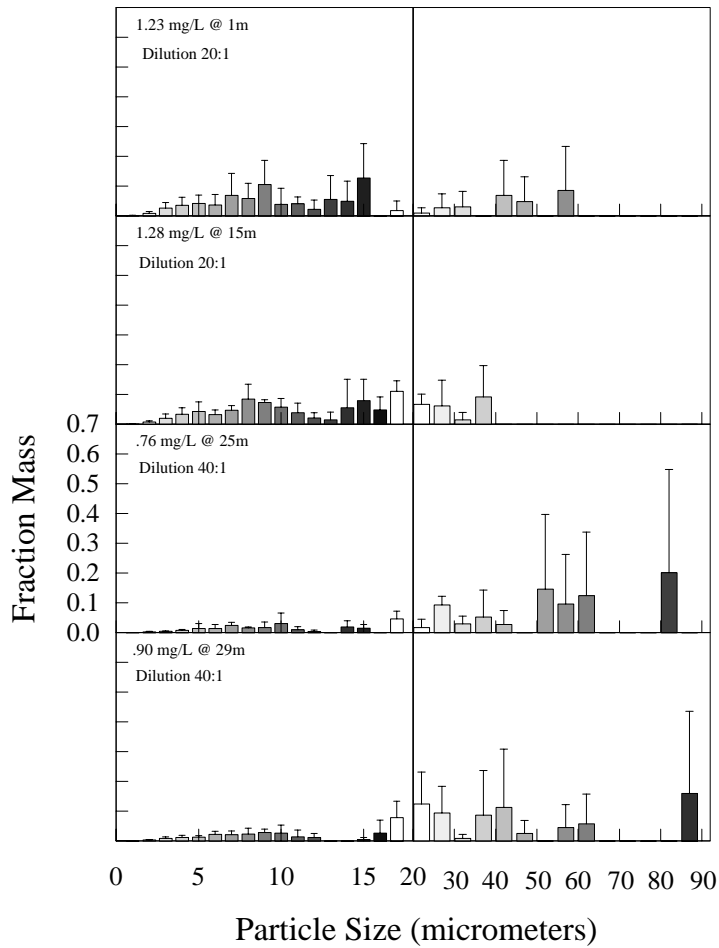
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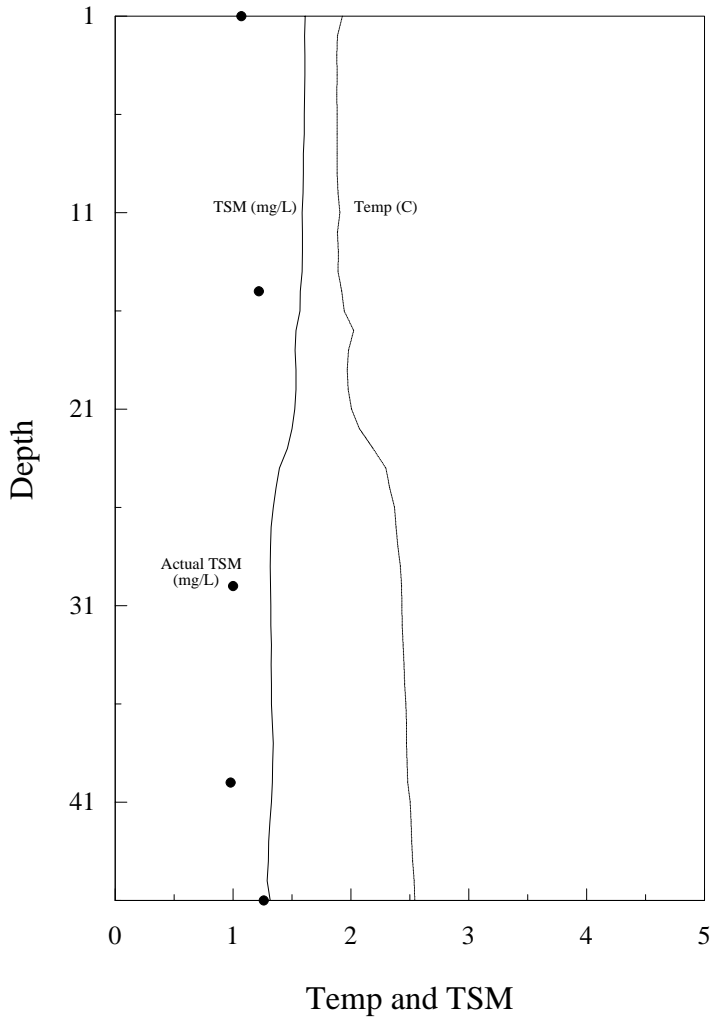
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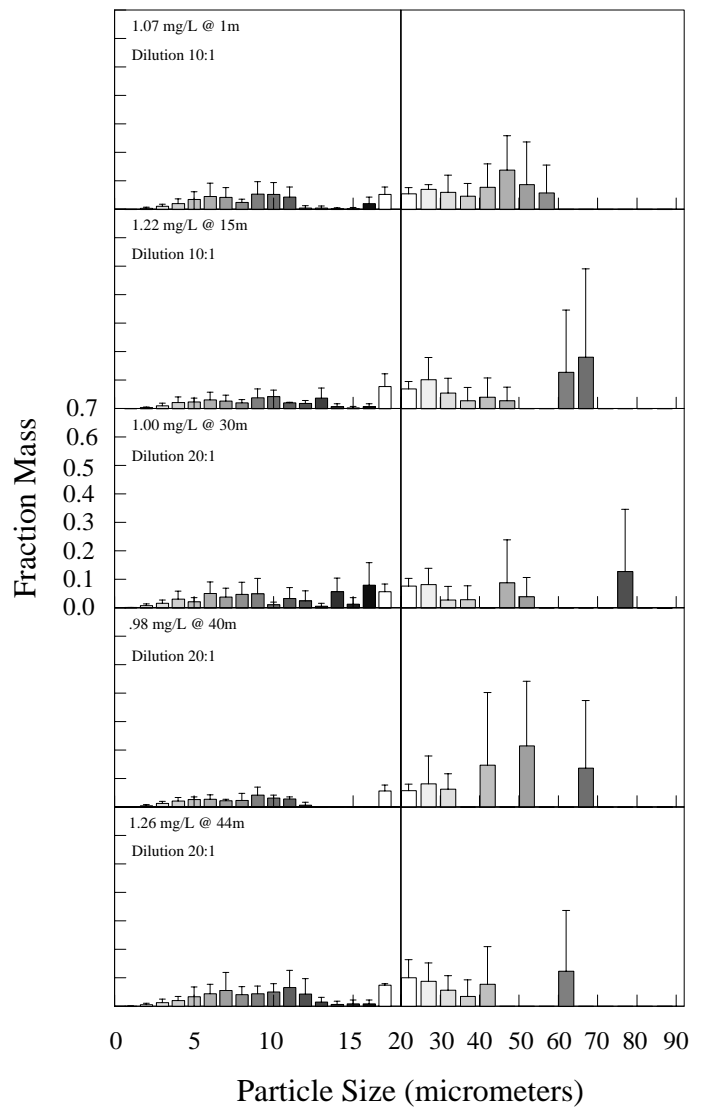
Fraction Mass Racine 30m Profile



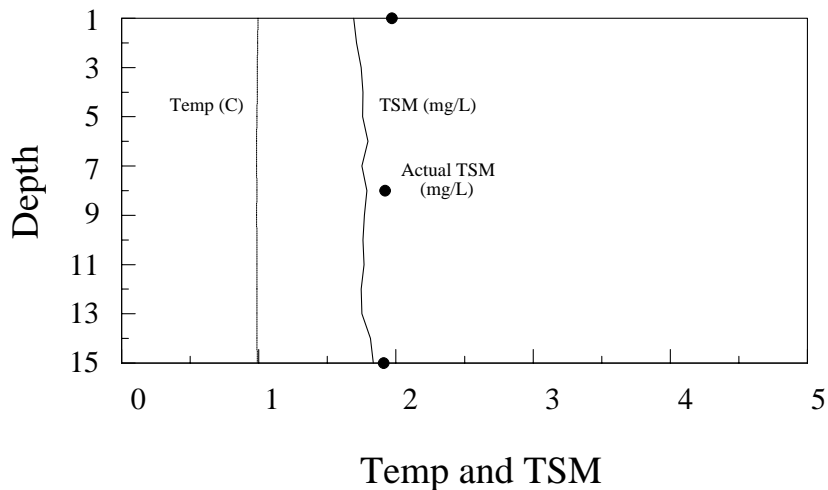
Racine 45m Profile CTD Data



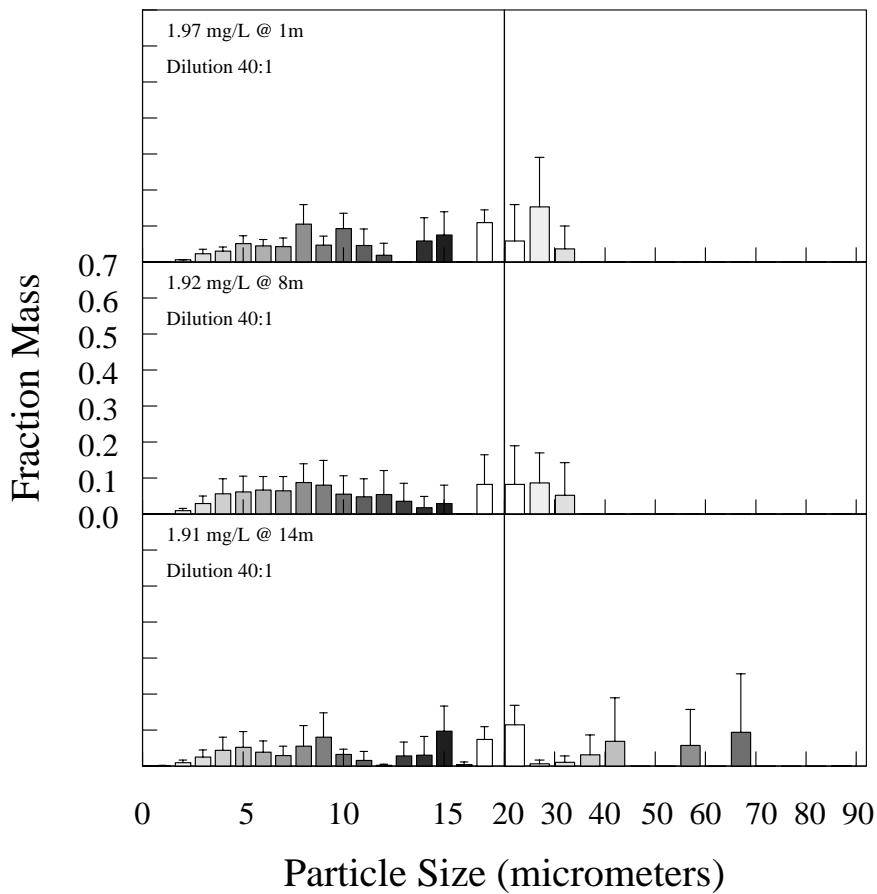
Fraction Mass Racine 45m Profile



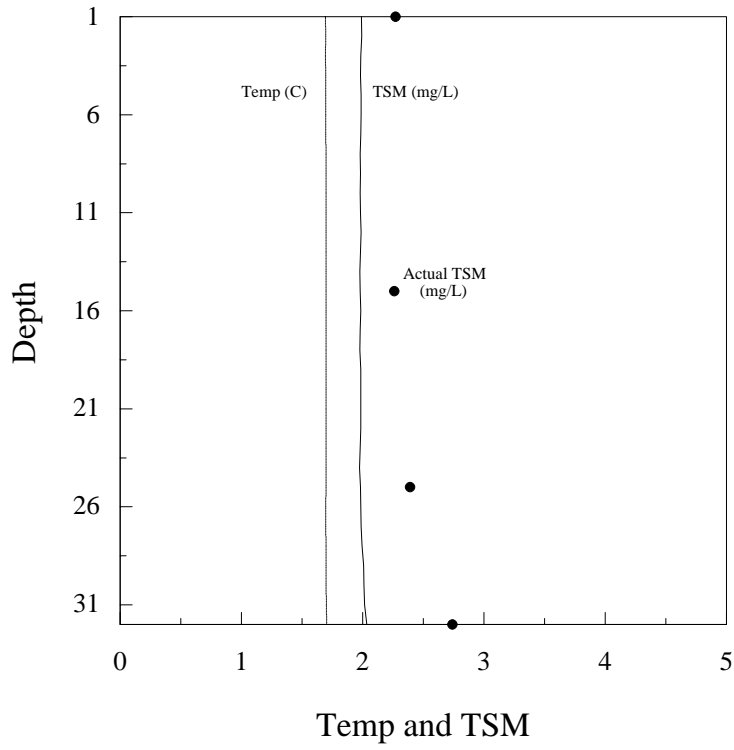
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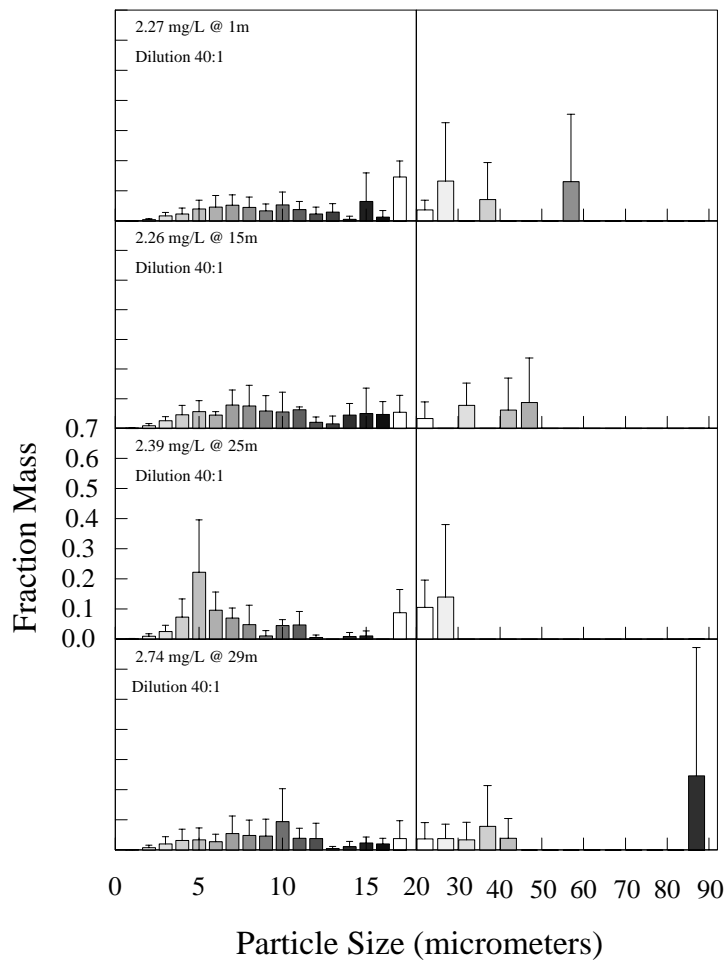
Fraction Mass Saugatuk 15m Profile



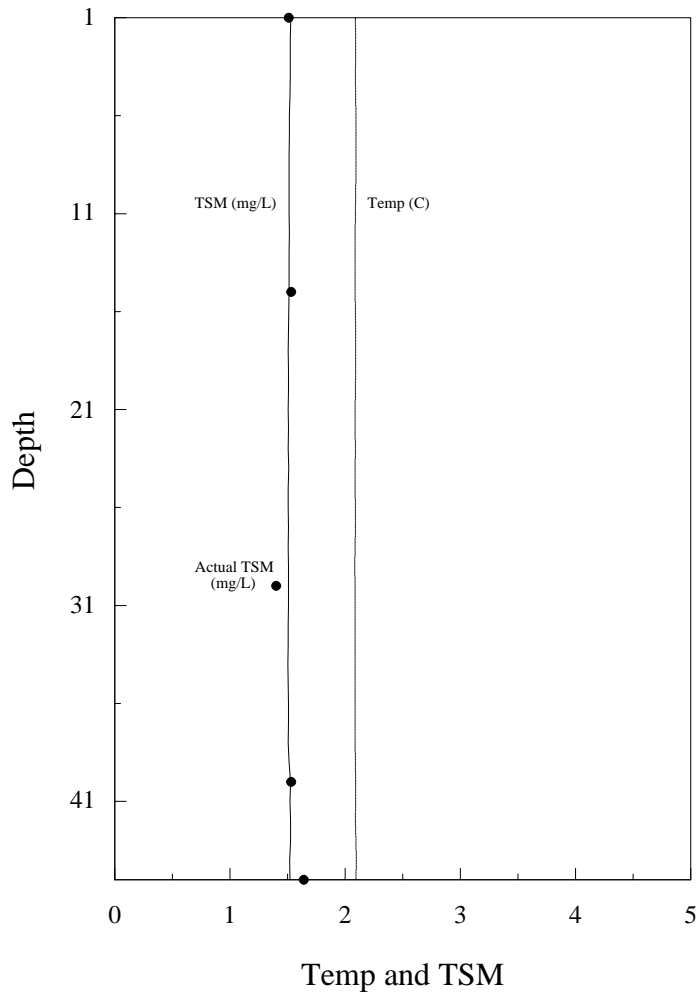
Saugatuk 30m Profile CTD Data



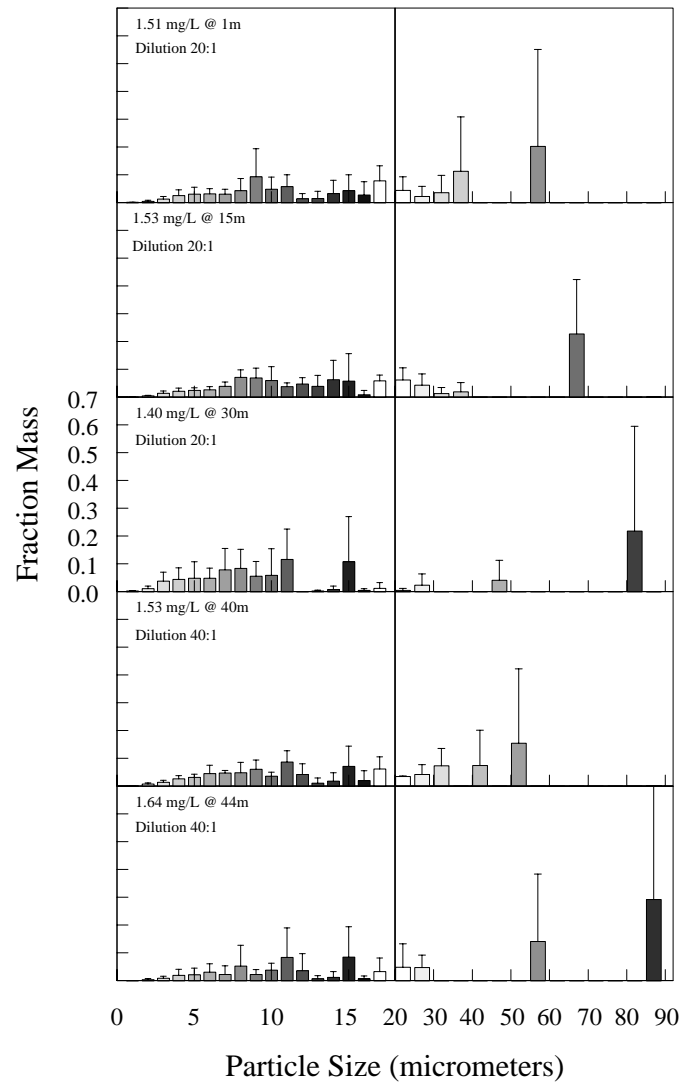
Fraction Mass Saugatuk 30m Profile



Saugatuk 45m Profile CTD Data



Fraction Mass Saugatuk 45m Profile



* Particle Size Data From Mich S15

* Sample Taken on Feb 1 at 1705 GMT

* Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 8 m	Std. Dev. 8 m	Avg. 14 m	Std. Dev. 14 m
1	0.0007	0.0003	0.0007	0.0006	0.0009	0.0008
2	0.0061	0.0006	0.0091	0.0065	0.0091	0.008
3	0.0227	0.0128	0.0295	0.0207	0.0249	0.0202
4	0.0302	0.0112	0.056	0.0414	0.0435	0.0372
5	0.0515	0.0211	0.0611	0.0437	0.0519	0.0436
6	0.0453	0.0167	0.0669	0.0376	0.0381	0.0316
7	0.0431	0.0239	0.065	0.039	0.0296	0.0252
8	0.1052	0.054	0.0874	0.0521	0.0552	0.0568
9	0.0471	0.025	0.08	0.0686	0.0797	0.0686
10	0.093	0.0429	0.0557	0.0509	0.0326	0.0148
11	0.0456	0.0466	0.0476	0.0498	0.016	0.0242
12	0.0189	0.0328	0.0543	0.0669	0.0018	0.0032
13	0	0	0.0356	0.0498	0.0276	0.0391
14	0.058	0.0648	0.0179	0.031	0.0301	0.0521
15	0.0748	0.0648	0.0293	0.0508	0.0973	0.0698
16	0	0	0	0	0.0044	0.0076
17	0.1092	0.0354	0.0823	0.0822	0.0739	0.0356
22	0.0583	0.1009	0.0828	0.107	0.1146	0.0539
27	0.1536	0.1368	0.0866	0.0831	0.0061	0.0106
32	0.0368	0.0637	0.0522	0.0904	0.0102	0.0177
37	0	0	0	0	0.0316	0.0547
42	0	0	0	0	0.0692	0.1199
47	0	0	0	0	0	0
52	0	0	0	0	0	0
57	0	0	0	0	0.0577	0.0999
62	0	0	0	0	0	0
67	0	0	0	0	0.0937	0.1623
72	0	0	0	0	0	0
77	0	0	0	0	0	0
82	0	0	0	0	0	0
87	0	0	0	0	0	0
92	0	0	0	0	0	0

Table 1.--Particle size data for Station Mich S15.

* Particle Size Data From Mich S30
 * Sample Taken on Feb 1 at 2210 GMT
 * OP No. G1998032.19 Lat= Lon=
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 25 m	Std. Dev. 25 m	Avg. 29 m	Std Dev. 29 m
1	0.0003	0.0004	0.0006	0.0003	0.0009	0.0007	0.0006	0.0007
2	0.0044	0.0033	0.0089	0.007	0.0093	0.0079	0.0072	0.0088
3	0.0164	0.0123	0.0259	0.0133	0.0245	0.0215	0.0197	0.0245
4	0.0231	0.0201	0.0453	0.0321	0.0733	0.0598	0.031	0.0378
5	0.0396	0.0291	0.0566	0.0368	0.222	0.1734	0.0331	0.0393
6	0.0454	0.0394	0.0447	0.0115	0.0956	0.0604	0.0266	0.0253
7	0.0518	0.0343	0.0781	0.051	0.0702	0.0331	0.0537	0.0592
8	0.0452	0.0339	0.0756	0.0693	0.0475	0.0645	0.0479	0.0507
9	0.0328	0.0238	0.0582	0.0523	0.0102	0.0177	0.0455	0.0571
10	0.0532	0.0431	0.0554	0.0663	0.0443	0.0198	0.0939	0.1094
11	0.0375	0.0271	0.0623	0.0097	0.0473	0.0441	0.0387	0.0329
12	0.0232	0.0223	0.0199	0.0182	0.0051	0.0088	0.038	0.0501
13	0.0294	0.0284	0.0152	0.0262	0	0	0.0041	0.007
14	0.0056	0.0098	0.0441	0.0394	0.0081	0.014	0.0102	0.0176
15	0.0649	0.0949	0.0495	0.0857	0.0099	0.0172	0.0226	0.0199
16	0.0126	0.0219	0.0471	0.0431	0	0	0.0198	0.0185
17	0.1454	0.054	0.0541	0.0566	0.088	0.0762	0.0372	0.0597
22	0.0363	0.0329	0.0326	0.0565	0.1047	0.0915	0.0368	0.0538
27	0.1322	0.1943	0	0	0.1391	0.2409	0.0377	0.0475
32	0	0	0.0776	0.0754	0	0	0.0337	0.0583
37	0.071	0.1229	0	0	0	0	0.0781	0.1353
42	0	0	0.0619	0.1071	0	0	0.0381	0.066
47	0	0	0.0867	0.1501	0	0	0	0
52	0	0	0	0	0	0	0	0
57	0.1297	0.2247	0	0	0	0	0	0
62	0	0	0	0	0	0	0	0
67	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0.2459	0.426
92	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich S30.

* Particle Size Data From Mich S45
 * Sample Taken on Feb 2 at 0015 GMT
 * OP No. G1998033.02 Lat= Lon=
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 30 m	Std. Dev. 30 m	Avg. 40 m	Std Dev. 40 m	Avg 44 m	Std. Dev. 44 m
1	0.0007	0.0006	0.0004	0.0002	0.0018	0.0015	0.0009	0.0006	0.0003	0.0003
2	0.0046	0.0038	0.0041	0.0024	0.0106	0.009	0.0069	0.0042	0.0033	0.0039
3	0.0127	0.0091	0.0139	0.0083	0.0378	0.0318	0.0139	0.0068	0.0079	0.008
4	0.0254	0.0207	0.0205	0.0115	0.0442	0.0417	0.0255	0.0123	0.0183	0.0223
5	0.0298	0.0258	0.0245	0.0091	0.048	0.0588	0.0316	0.011	0.0211	0.0234
6	0.0308	0.0194	0.0261	0.0111	0.0477	0.0369	0.0444	0.0305	0.0302	0.0298
7	0.0306	0.0177	0.0389	0.0156	0.0786	0.077	0.0467	0.0097	0.0221	0.0305
8	0.0428	0.0441	0.0705	0.0271	0.0832	0.0688	0.0483	0.0375	0.0523	0.0749
9	0.0923	0.1011	0.0687	0.0357	0.0555	0.0526	0.0608	0.033	0.0215	0.0185
10	0.0483	0.0432	0.0594	0.05	0.0581	0.096	0.0358	0.0142	0.0372	0.0256
11	0.0577	0.0425	0.0375	0.0136	0.1161	0.1088	0.0861	0.0408	0.0828	0.1064
12	0.0134	0.0186	0.0473	0.0221	0	0	0.0421	0.0384	0.0355	0.0616
13	0.0147	0.0255	0.0386	0.0396	0.002	0.0034	0.0109	0.0188	0.0064	0.011
14	0.032	0.0478	0.0623	0.0696	0.0074	0.0129	0.0177	0.0307	0.0119	0.0207
15	0.043	0.0565	0.0573	0.0992	0.1074	0.1628	0.0707	0.0735	0.0841	0.1098
16	0.0274	0.0475	0.0087	0.015	0.0037	0.0064	0.0203	0.0351	0.0059	0.0103
17	0.078	0.0546	0.0588	0.0203	0.0116	0.0202	0.0614	0.0433	0.0319	0.0497
22	0.0437	0.0488	0.0618	0.0432	0.0042	0.0073	0.0341	0.0021	0.0484	0.0837
27	0.0214	0.0371	0.0423	0.0411	0.0233	0.0404	0.0415	0.0361	0.0472	0.0449
32	0.0357	0.0618	0.0124	0.0215	0	0	0.0725	0.0628	0	0
37	0.1129	0.1956	0.019	0.033	0	0	0	0	0	0
42	0	0	0	0	0	0	0.0736	0.1274	0	0
47	0	0	0	0	0.041	0.071	0	0	0	0
52	0	0	0	0	0	0	0.1545	0.2677	0	0
57	0.2018	0.3495	0	0	0	0	0	0	0.1402	0.2428
62	0	0	0	0	0	0	0	0	0	0
67	0	0	0.2269	0.1965	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0
82	0	0	0	0	0.2178	0.3773	0	0	0	0
87	0	0	0	0	0	0	0	0	0.2915	0.5049
92	0	0	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich S45.

* Particle Size Data From Mich G15
 * Sample Taken on Jan 31 at 0950 GMT
 * OP No. G1998031.13 Lat= 41 48.05 Lon= 87 13.50
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 8 m	Std. Dev. 8 m	Avg. 14 m	Std. Dev. 14 m
1	0.0013	0.0012	0.0006	0.0001	0.0003	0.0003
2	0.0088	0.0096	0.0055	0.0021	0.0028	0.0024
3	0.017	0.0153	0.012	0.0012	0.0094	0.0095
4	0.0328	0.0379	0.017	0.0012	0.0131	0.0087
5	0.0388	0.0305	0.0316	0.0183	0.027	0.0183
6	0.0545	0.0665	0.0245	0.0025	0.0302	0.0222
7	0.0397	0.0564	0.0369	0.0031	0.026	0.0227
8	0.067	0.0655	0.0628	0.0401	0.0332	0.0215
9	0.0056	0.0061	0.0308	0.0071	0.0302	0.0151
10	0.0127	0.0113	0.0638	0.0344	0.0437	0.0273
11	0.0404	0.0474	0.0395	0.036	0.0352	0.0125
12	0.0097	0.0167	0.0102	0.0176	0.0231	0.0148
13	0.0509	0.0882	0.032	0.0289	0.0179	0.0169
14	0.0636	0.1101	0.0396	0.0359	0.0105	0.0181
15	0	0	0.0199	0.0344	0.0754	0.0703
16	0	0	0.0247	0.0427	0	0
17	0.0219	0.0243	0.0941	0.0719	0.087	0.0386
22	0.052	0.0901	0.0667	0.0603	0.1245	0.0826
27	0.1111	0.0996	0.1338	0.1042	0.0922	0.024
32	0.0391	0.0677	0	0	0.085	0.0761
37	0	0	0.0469	0.0813	0	0
42	0	0	0.1083	0.1034	0.0277	0.0479
47	0.1691	0.293	0	0	0.1531	0.1745
52	0.1678	0.2906	0	0	0.0525	0.0909
57	0	0	0.0991	0.1716	0	0
62	0	0	0	0	0	0
67	0	0	0	0	0	0
72	0	0	0	0	0	0
77	0	0	0	0	0	0
82	0	0	0	0	0	0
87	0	0	0	0	0	0
92	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich G15.

* Particle Size Data From Mich G30
 * Sample Taken on Jan 31 at 0625 GMT
 * OP No. G1998031.09 Lat= 41 49.99 Lon= 87 13.45
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 25 m	Std. Dev. 25 m	Avg. 29 m	Std Dev. 29 m
1	0.0007	0.0008	0.0004	0.0003	0.0005	0.0004	0.0003	0.0003
2	0.0057	0.0051	0.0044	0.0024	0.0054	0.0042	0.0034	0.0042
3	0.0168	0.0185	0.0091	0.0042	0.0146	0.0099	0.0096	0.0114
4	0.0264	0.0277	0.0148	0.0071	0.016	0.0084	0.0161	0.019
5	0.0535	0.059	0.0297	0.0124	0.0268	0.0192	0.0314	0.041
6	0.0445	0.0319	0.0265	0.0134	0.0243	0.0265	0.037	0.0379
7	0.0394	0.0214	0.0397	0.0231	0.0256	0.0145	0.0219	0.0203
8	0.0299	0.0234	0.0492	0.009	0.0502	0.0369	0.0255	0.0159
9	0.0283	0.0414	0.0443	0.0277	0.0483	0.0316	0.0223	0.0137
10	0.0336	0.0254	0.0558	0.0174	0.0419	0.0233	0.0102	0.0088
11	0.0843	0.073	0.0718	0.0454	0.0325	0.0221	0.0127	0.0221
12	0.075	0.0563	0.0137	0.0238	0.0438	0.0345	0.0155	0.0194
13	0.0235	0.0226	0.0214	0.0371	0.003	0.0052	0.0092	0.0082
14	0.0106	0.0184	0.0352	0.033	0.0227	0.03	0.0366	0.0382
15	0.0462	0.08	0.0531	0.0463	0.0775	0.0069	0.0202	0.0252
16	0.0859	0.1488	0.02	0.0346	0	0	0.0098	0.017
17	0.0626	0.0811	0.0817	0.032	0.1783	0.0318	0.0739	0.0607
22	0.0223	0.0386	0.079	0.079	0.2153	0.0843	0.0736	0.0311
27	0.1236	0.2142	0.056	0.097	0.0259	0.0449	0.0265	0.0458
32	0.0686	0.1188	0.1334	0.1304	0.0216	0.0373	0.1282	0.1657
37	0	0	0.036	0.0624	0.0333	0.0577	0.0506	0.0511
42	0	0	0.0519	0.09	0	0	0.0747	0.1294
47	0.1184	0.205	0.0728	0.1261	0	0	0.0349	0.0605
52	0	0	0	0	0.0925	0.1602	0	0
57	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0.1578	0.1367
67	0	0	0	0	0	0	0.0981	0.1699
72	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich G30.

* Particle Size Data From Mich G45
 * Sample Taken on Jan 31 at 0140 GMT
 * OP No. G1998031.02 Lat= 41 56.96 Lon= 87 13.44
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 30 m	Std. Dev. 30 m	Avg. 40 m	Std Dev. 40 m	Avg 44 m	Std. Dev. 44 m
1	0.0003	0.0002	0.0003	0.0002	0.0003	0.0001	0.0002	0	0.0001	0.0001
2	0.0029	0.0034	0.0048	0.004	0.0028	0.002	0.002	0.0007	0.0018	0.0012
3	0.0084	0.0099	0.0151	0.0121	0.0068	0.0018	0.0057	0.0011	0.0065	0.005
4	0.0104	0.01	0.0263	0.0257	0.0112	0.0081	0.0104	0.0013	0.0126	0.0079
5	0.0244	0.0313	0.0388	0.0366	0.0182	0.0094	0.0144	0.0063	0.0201	0.0116
6	0.0152	0.0082	0.0413	0.0264	0.021	0.0165	0.019	0.01	0.0239	0.014
7	0.0226	0.0183	0.0519	0.031	0.0219	0.0161	0.0235	0.0139	0.0258	0.0138
8	0.0368	0.0514	0.056	0.031	0.0175	0.0027	0.0207	0.0132	0.0381	0.0312
9	0.0162	0.0172	0.0507	0.0409	0.0508	0.038	0.0254	0.0204	0.0397	0.0245
10	0.0191	0.0127	0.0383	0.0422	0.0383	0.0238	0.033	0.0122	0.035	0.0356
11	0.0173	0.0185	0.0801	0.0668	0.022	0.015	0.0222	0.0209	0.0299	0.0009
12	0.0039	0.0067	0.0327	0.0153	0	0	0.0408	0.0301	0.0341	0.0195
13	0.0062	0.007	0.0046	0.0079	0	0	0.016	0.0172	0.0303	0.019
14	0	0	0.0294	0.0437	0	0	0.0237	0.0217	0.0021	0.0036
15	0.0433	0.0435	0.1102	0.0823	0.0177	0.0307	0.0302	0.0355	0.031	0.0056
16	0	0	0	0	0.0256	0.0444	0.0106	0.0184	0.0031	0.0054
17	0.0565	0.0499	0.0443	0.0394	0.0431	0.0207	0.0614	0.0531	0.132	0.0835
22	0.0294	0.0301	0.045	0.0466	0.0388	0.0545	0.0879	0.1195	0.0544	0.0083
27	0.108	0.1446	0.0401	0.0387	0.0652	0.0579	0.0123	0.0212	0.0943	0.0116
32	0.0709	0.076	0.0321	0.0556	0.0205	0.0355	0.0587	0.0575	0.0773	0.0706
37	0.0444	0.0769	0.0331	0.0573	0.0317	0.0549	0.0592	0.1025	0	0
42	0.0789	0.0715	0	0	0.0354	0.0614	0	0	0.0235	0.0407
47	0	0	0.0757	0.1311	0	0	0	0	0.0658	0.114
52	0	0	0	0	0	0	0	0	0	0
57	0	0	0	0	0.1159	0.2007	0	0	0	0
62	0.0522	0.0904	0	0	0.2514	0.4354	0.1484	0.2571	0.2185	0.2145
67	0.1885	0.3266	0	0	0.1438	0.2491	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
77	0	0	0.1492	0.2584	0	0	0.2743	0.475	0	0
82	0	0	0	0	0	0	0	0	0	0
87	0.1442	0.2498	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich G45.

* Particle Size Data From Mich J15
 * Sample Taken on Feb 4 at 1735 GMT
 * OP No. G1998035.20 Lat= 42 08.52 Lon= 86 33.08
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 8 m	Std. Dev. 8 m	Avg. 14 m	Std. Dev. 14 m
1	0.0019	0.0017	0.0026	0.0022	0.0009	0.001
2	0.0196	0.0159	0.027	0.0229	0.0061	0.0059
3	0.0316	0.026	0.0435	0.0362	0.0214	0.0218
4	0.0629	0.0497	0.066	0.057	0.0348	0.0428
5	0.0373	0.0378	0.1079	0.0927	0.0336	0.0411
6	0.107	0.0859	0.0812	0.08	0.0402	0.0471
7	0.0971	0.0976	0.0428	0.0368	0.0311	0.0309
8	0.0774	0.0607	0.0815	0.0984	0.0364	0.0186
9	0.0273	0.0323	0.1142	0.0933	0.0519	0.0587
10	0.0218	0.0378	0.0034	0.0058	0.0228	0.0297
11	0.0465	0.0603	0.1106	0.1877	0.091	0.0721
12	0.0496	0.086	0	0	0.0069	0.012
13	0.1434	0.1268	0	0	0.0059	0.0102
14	0.0257	0.0445	0	0	0.0074	0.0128
15	0	0	0	0	0.0182	0.0315
16	0	0	0.0092	0.0159	0	0
17	0.0552	0.0956	0.0165	0.0286	0.0627	0.0675
22	0.0199	0.0345	0.0072	0.0124	0.0618	0.0541
27	0.0369	0.0638	0.0132	0.0229	0.0263	0.0455
32	0	0	0.022	0.0382	0.022	0.0382
37	0	0	0	0	0.0676	0.1171
42	0.1388	0.2403	0.0498	0.0863	0.1487	0.1483
47	0	0	0	0	0	0
52	0	0	0	0	0	0
57	0	0	0	0	0	0
62	0	0	0	0	0	0
67	0	0	0.2023	0.3504	0.2023	0.3504
72	0	0	0	0	0	0
77	0	0	0	0	0	0
82	0	0	0	0	0	0
87	0	0	0	0	0	0
92	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich J15.

* Particle Size Data From Mich J30
 * Sample Taken on Feb 4 at 1000 GMT
 * OP No. G1998035.14 Lat= 42 10.03 Lon= 86 36.05
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 25 m	Std. Dev. 25 m	Avg. 29 m	Std Dev. 29 m
1	0.0004	0.0003	0.0004	0.0004	0.0004	0.0003	0.0002	0.0001
2	0.0057	0.0029	0.0027	0.0026	0.0035	0.0029	0.0018	0.0011
3	0.0094	0.0071	0.0073	0.0083	0.009	0.0071	0.0047	0.0023
4	0.0259	0.0209	0.0225	0.0272	0.0215	0.0247	0.0101	0.0047
5	0.0311	0.0181	0.0232	0.0214	0.0245	0.0266	0.0134	0.0041
6	0.0228	0.0195	0.0268	0.025	0.0363	0.0273	0.016	0.0077
7	0.0395	0.0151	0.0328	0.0343	0.0427	0.0483	0.0148	0.015
8	0.0355	0.0254	0.015	0.0124	0.0571	0.066	0.0122	0.0049
9	0.026	0.0161	0.0246	0.0164	0.0428	0.0445	0.0217	0.0067
10	0.0267	0.0269	0.0305	0.0301	0.0444	0.0316	0.0198	0.0128
11	0.0411	0.0445	0.0465	0.033	0.0678	0.0474	0.0221	0.0137
12	0.0103	0.0179	0.0137	0.0238	0.0384	0.0665	0.0188	0.0027
13	0.0064	0.0111	0.033	0.0337	0.0056	0.0097	0.0038	0.0065
14	0.0244	0.0246	0.0149	0.0165	0.0203	0.0352	0	0
15	0	0	0.0796	0.117	0.1453	0.2086	0.0167	0.0163
16	0.0245	0.0424	0	0	0.0338	0.0498	0.0345	0.0597
17	0.1129	0.0713	0.0388	0.0228	0.0227	0.0232	0.0597	0.0232
22	0.0452	0.0513	0.0457	0.0396	0.0488	0.0423	0.0485	0.0446
27	0.2795	0.187	0.0915	0.0803	0.0601	0.0521	0.0542	0.0938
32	0.092	0.1163	0.0305	0.0282	0.0501	0.0434	0.0591	0.1024
37	0	0	0.0184	0.0318	0.0375	0.065	0.0979	0.1696
42	0.0402	0.0697	0.0269	0.0465	0	0	0.2768	0.2401
47	0	0	0	0	0	0	0	0
52	0	0	0.1307	0.1211	0	0	0.1934	0.3351
57	0.1006	0.1742	0	0	0	0	0	0
62	0	0	0.1351	0.234	0.1875	0.3248	0	0
67	0	0	0.1091	0.1889	0	0	0	0
72	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich J30.

* Particle Size Data From Mich J45
 * Sample Taken on Feb 4 at 0715 GMT
 * OP No. G1998035.09 Lat= 42 11.13 Lon= 86 38.96
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 30 m	Std. Dev. 30 m	Avg. 40 m	Std Dev. 40 m	Avg 44 m	Std. Dev. 44 m
1	0.0004	0.0002	0.0003	0.0001	0.0007	0.0001	0.0006	0.0002	0.0003	0.0003
2	0.0036	0.002	0.003	0.0028	0.0062	0.0031	0.0056	0.003	0.0034	0.0032
3	0.0074	0.002	0.0079	0.0065	0.0137	0.0059	0.0117	0.0071	0.01	0.0068
4	0.0132	0.004	0.0108	0.004	0.0206	0.0038	0.0198	0.0137	0.0827	0.0749
5	0.0157	0.0064	0.0152	0.0057	0.0219	0.0085	0.0228	0.0026	0.0348	0.0346
6	0.0323	0.0111	0.0242	0.013	0.0219	0.001	0.0324	0.0144	0.0468	0.0469
7	0.0267	0.0214	0.04	0.0415	0.0271	0.0069	0.0174	0.0081	0.0198	0.0084
8	0.0368	0.0256	0.0482	0.0267	0.0449	0.0132	0.0258	0.0318	0.0366	0.0277
9	0.0252	0.0236	0.0342	0.0214	0.0345	0.0241	0.0406	0.0079	0.0565	0.0439
10	0.0441	0.0289	0.0316	0.0097	0.0422	0.0219	0.0593	0.036	0.0321	0.031
11	0.0434	0.0318	0.046	0.0177	0.0278	0.0244	0.0696	0.0974	0.0155	0.0134
12	0.0527	0.0418	0.0074	0.0128	0.0101	0.0175	0.0419	0.0054	0.0881	0.1395
13	0.0473	0.0497	0.0356	0.0187	0.0251	0.0434	0.0789	0.0255	0.0127	0.0219
14	0.0083	0.0143	0.0493	0.0577	0	0	0.032	0.0338	0.0478	0.0474
15	0.0321	0.0329	0.0353	0.0347	0	0	0.0424	0.0463	0.0397	0.0688
16	0.0411	0.0712	0.0148	0.0256	0	0	0.0371	0.0643	0.1374	0.0633
17	0.1001	0.0377	0.069	0.0599	0.1256	0.0739	0.0569	0.0433	0.0572	0.0496
22	0.1397	0.0942	0.1759	0.1271	0.1999	0.233	0.0238	0.0411	0.0747	0.0752
27	0.0831	0.144	0.1171	0.1041	0.0177	0.0307	0.1135	0.0892	0.0458	0.0397
32	0.1454	0.1389	0.1881	0.0866	0.059	0.1022	0.0244	0.0422	0.0386	0.0668
37	0.1016	0.176	0.0462	0.0801	0	0	0	0	0	0
42	0	0	0	0	0.0667	0.1156	0	0	0	0
47	0	0	0	0	0	0	0.0772	0.1337	0.1196	0.2072
52	0	0	0	0	0.2343	0.4058	0	0	0	0
57	0	0	0	0	0	0	0	0	0	0
62	0	0	0	0	0	0	0.1666	0.2885	0	0
67	0	0	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich J45.

* Particle Size Data From Mich R15
 * Sample Taken on Jan 29 at 0035 GMT
 * OP No. G1998029.02 Lat= 42 44.99 Lon= 87 43.52
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 8 m	Std. Dev. 8 m	Avg. 14 m	Std. Dev. 14 m
1	0.001	0.0012	0.0019	0.0005	0.0002	0.0001
2	0.0093	0.0118	0.0212	0.0086	0.0021	0.0011
3	0.0152	0.0168	0.0386	0.0156	0.0054	0.0027
4	0.0287	0.0394	0.0351	0.0082	0.0122	0.0044
5	0.0183	0.0165	0.049	0.0368	0.0157	0.0062
6	0.0437	0.0508	0.0356	0.0138	0.0237	0.0126
7	0.0275	0.0221	0.0729	0.0269	0.0283	0.007
8	0.0385	0.0343	0.1019	0.0759	0.035	0.0127
9	0.0189	0.0299	0.0806	0.0298	0.0474	0.0215
10	0.0647	0.0854	0	0	0.0597	0.0368
11	0.0167	0.0289	0.181	0.0335	0.0443	0.0251
12	0.0054	0.0094	0	0	0.0139	0.0133
13	0	0	0	0	0.012	0.0105
14	0.1664	0.245	0.0326	0.0565	0.0251	0.0047
15	0.0423	0.0732	0.2094	0.0772	0.0556	0.0353
16	0	0	0	0	0.0255	0.0231
17	0.0308	0.0533	0.0117	0.0202	0.0646	0.0183
22	0.0074	0.0128	0.0506	0.0877	0.0721	0.0675
27	0.0667	0.0605	0	0	0.0588	0.0498
32	0.0555	0.0504	0.0779	0.1349	0.0218	0.0203
37	0.0353	0.0611	0	0	0.0323	0.056
42	0	0	0	0	0.0189	0.0328
47	0.0723	0.1252	0	0	0.1114	0.1304
52	0	0	0	0	0	0
57	0	0	0	0	0	0
62	0.2381	0.4124	0	0	0.0975	0.1689
67	0	0	0	0	0	0
72	0	0	0	0	0	0
77	0	0	0	0	0.1165	0.2019
82	0	0	0	0	0	0
87	0	0	0	0	0	0
92	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich R15.

* Particle Size Data From Mich R30
 * Sample Taken on Jan 28 at 2230 GMT
 * OP No. G1998028.07 Lat= 42 45.06 Lon= 87 39.00
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (µm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 25 m	Std. Dev. 25 m	Avg. 29 m	Std Dev. 29 m
1	0.0011	0.0009	0.0009	0.0004	0.0003	0.0002	0.0003	0.0003
2	0.008	0.0064	0.0072	0.0044	0.0025	0.0017	0.0028	0.0017
3	0.0257	0.0191	0.0201	0.014	0.0044	0.0009	0.0083	0.005
4	0.0354	0.0274	0.0334	0.0215	0.0073	0.0032	0.0113	0.0074
5	0.0417	0.0282	0.043	0.0318	0.0136	0.0161	0.0121	0.0061
6	0.0363	0.0355	0.0324	0.0156	0.0131	0.014	0.0218	0.0107
7	0.0687	0.0743	0.0473	0.0156	0.0237	0.0103	0.0212	0.0119
8	0.0583	0.0509	0.084	0.0505	0.0154	0.0031	0.0232	0.0195
9	0.1056	0.0805	0.0725	0.0097	0.0162	0.0189	0.0283	0.011
10	0.0387	0.0542	0.0574	0.0288	0.0299	0.036	0.0265	0.0262
11	0.0405	0.0233	0.0381	0.0332	0.009	0.0104	0.0135	0.0234
12	0.0215	0.0317	0.0204	0.0182	0.0029	0.005	0.011	0.0137
13	0.0547	0.0806	0.0149	0.0257	0	0	0	0
14	0.0492	0.0678	0.0552	0.0957	0.0185	0.0214	0	0
15	0.1274	0.1158	0.0796	0.0712	0.0142	0.0131	0.0044	0.0075
16	0	0	0.0483	0.0432	0	0	0.0257	0.0445
17	0.0181	0.0314	0.1104	0.0358	0.0463	0.0259	0.0779	0.0551
22	0.0098	0.017	0.0672	0.034	0.0166	0.0287	0.124	0.1071
27	0.0272	0.0472	0.0619	0.0858	0.0928	0.0288	0.0936	0.0901
32	0.0302	0.0523	0.0143	0.0248	0.0289	0.0262	0.0079	0.0137
37	0	0	0.0912	0.1058	0.0524	0.0907	0.0866	0.15
42	0.0683	0.1184	0	0	0.0269	0.0467	0.1128	0.1954
47	0.0479	0.0829	0	0	0	0	0.0251	0.0435
52	0	0	0	0	0.1454	0.2518	0	0
57	0.0854	0.1479	0	0	0.096	0.1662	0.0448	0.0776
62	0	0	0	0	0.1235	0.2139	0.0576	0.0998
67	0	0	0	0	0	0	0	0
72	0	0	0	0	0	0	0	0
77	0	0	0	0	0	0	0	0
82	0	0	0	0	0.2006	0.3474	0	0
87	0	0	0	0	0	0	0.1592	0.2758
92	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich R30.

* Particle Size Data From Mich R45
 * Sample Taken on Jan 28 at 2120 GMT
 * OP No. G1998028.05 Lat= 42 45.05 Lon= 87 36.33
 * Averaged Data from three trials, represented as Fraction Mass

Bin size (μm)	Avg. 1 m	Std. Dev. 1 m	Avg. 15 m	Std. Dev. 15 m	Avg. 30 m	Std. Dev. 30 m	Avg. 40 m	Std Dev. 40 m	Avg 44 m	Std. Dev. 44 m
1	0.0002	0.0002	0.0002	0.0002	0.0007	0.0007	0.0004	0.0003	0.0004	0.0005
2	0.0036	0.0033	0.0029	0.0028	0.0071	0.006	0.0046	0.0038	0.0048	0.0057
3	0.0101	0.008	0.0089	0.0098	0.0152	0.0124	0.0127	0.0076	0.0128	0.0123
4	0.0197	0.0173	0.0212	0.0196	0.0301	0.028	0.0212	0.0118	0.0194	0.0152
5	0.0346	0.0268	0.0231	0.013	0.021	0.0141	0.0257	0.0096	0.0334	0.0347
6	0.045	0.0463	0.0306	0.0269	0.0503	0.0406	0.0266	0.0158	0.0433	0.0337
7	0.0415	0.0342	0.0257	0.0214	0.0376	0.0317	0.0223	0.0052	0.0556	0.0627
8	0.0244	0.0105	0.0195	0.0122	0.0472	0.0419	0.023	0.0252	0.0404	0.0285
9	0.0536	0.0435	0.0371	0.0313	0.0494	0.0535	0.0417	0.0283	0.0433	0.0272
10	0.0518	0.0423	0.042	0.0229	0.0101	0.0095	0.031	0.0105	0.05	0.0288
11	0.0423	0.0363	0.0194	0.0027	0.032	0.039	0.0283	0.0075	0.0655	0.0605
12	0.0044	0.0077	0.0175	0.0103	0.024	0.0359	0.0062	0.0107	0.0428	0.0538
13	0.0042	0.0073	0.0364	0.0354	0.0056	0.0098	0	0	0.015	0.0161
14	0.0018	0.0031	0.0062	0.0107	0.0564	0.0483	0	0	0.0067	0.0115
15	0.0022	0.0038	0.0025	0.0043	0.013	0.0225	0	0	0.0082	0.0142
16	0.0203	0.0229	0.0061	0.0106	0.0789	0.0797	0	0	0.0081	0.0139
17	0.0524	0.0256	0.077	0.0453	0.0558	0.028	0.0566	0.0206	0.0736	0.0051
22	0.0544	0.0215	0.0686	0.0265	0.0763	0.0271	0.0576	0.0225	0.1	0.0632
27	0.0703	0.0161	0.1006	0.0788	0.0811	0.0578	0.0812	0.0978	0.0873	0.0648
32	0.0597	0.0605	0.0544	0.0523	0.0273	0.0472	0.0623	0.0541	0.0558	0.0516
37	0.0455	0.0448	0.0269	0.0466	0.0281	0.0487	0	0	0.0339	0.0587
42	0.0771	0.0819	0.0394	0.0682	0	0	0.1471	0.2547	0.0767	0.1328
47	0.1374	0.1211	0.0276	0.0478	0.0871	0.1509	0	0	0	0
52	0.0866	0.1499	0	0	0.039	0.0676	0.2147	0.2269	0	0
57	0.057	0.0987	0	0	0	0	0	0	0	0
62	0	0	0.1266	0.2193	0	0	0	0	0.1233	0.2135
67	0	0	0.1798	0.3113	0	0	0.1369	0.2371	0	0
72	0	0	0	0	0	0	0	0	0	0
77	0	0	0	0	0.1266	0.2193	0	0	0	0
82	0	0	0	0	0	0	0	0	0	0
87	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	0	0

Table 1 (cont).--Particle size data for Station Mich R45.