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Preliminary Water Column profile surveys and sediment grabs of a mixed-sediment mound Cape Fear, North Carolina May 2001

January 2002
Draft report Prepared for
Evans-Hamilton, Inc
By

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Introduction

This work is being conducted in support of an ongoing investigation on sediment dispersal and evolution of a mixed-sediment disposal mound by the US Army Corps of Engineers (USACE). Repetitive water column surveys, suspended sediment concentration samples and bottom sediment grabs are being collected for calibration of Acoustic Doppler Current Profilers (ADCP) and Optical Backscatter Sensors (OBS) deployed by Herman Carl Miller of the USACE on the site of the disposal mound and immediate vicinity. The Virginia Institute of Marine Science (VIMS), College of William and Mary, under the direction of Grace M. Battisto, will be performing the work.

Scope of Work

For each of three surveys in the first year of this study, a water column profile will be conducted at each of eight sites identified by the USACE. These sites will correspond to ADCP or OBS long-term deployment stations and will include profile measurements using a minimum of a CTD (conductivity, temperature and depth sensor) and an OBS. A water sample will be pumped from a minimum of three depths at each site and processed for suspended solids. Bottom sediment grabs will be taken to identify bottom sediment type at each of the sites and the material collected will be used for OBS calibrations in the calibration chamber located at VIMS. Acoustic Doppler Velocimeter (ADV) calibrations will also be conducted using the VIMS flume. Sediment "Catch Basins", provided by VIMS, will be deployed at the long term stations to identify the average suspended grain size distribution for the time of deployment.

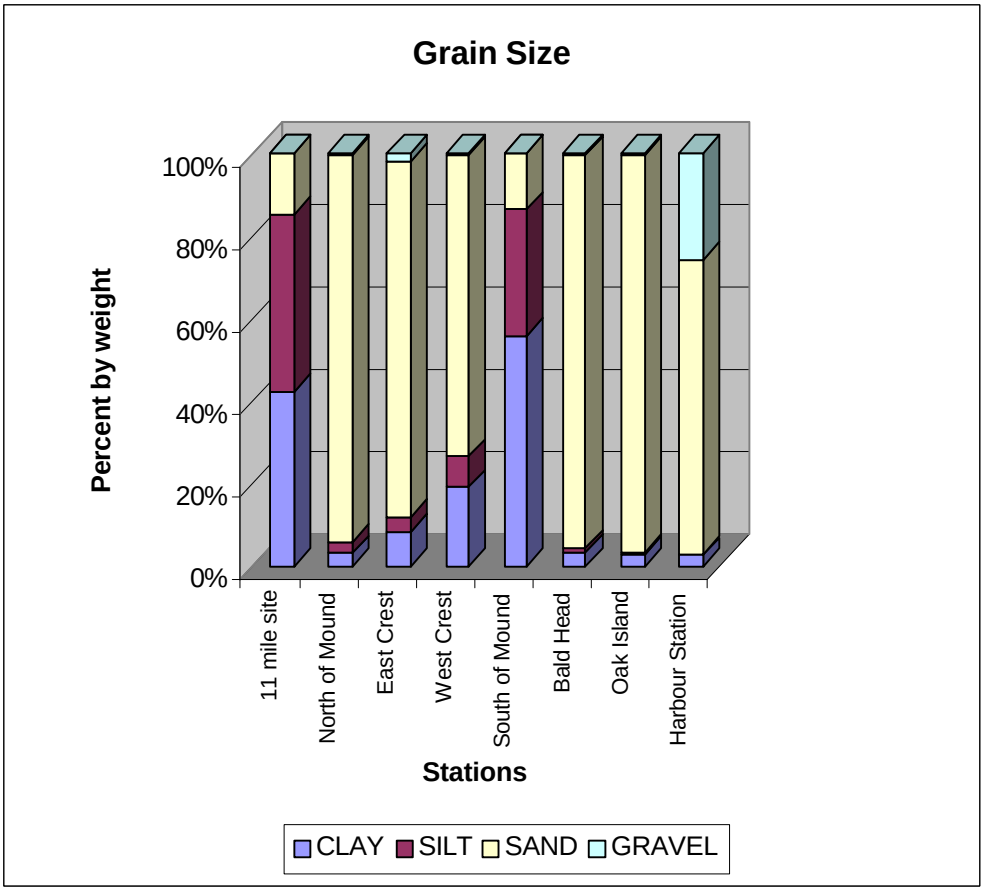
For the first Survey, conducted April/May 2001 at sites corresponding with future locations of ADCP or OBS sensors, a profiler equipped with a CTD, an OBS, a Laser *in-situ* Scattering Transmissometer (LISST), an ADV, a compass and a submersible pump was deployed from the R/V Langley. A water column profile of CTD and OBS response, sediment volume concentration and grain-size distribution from 5-500 micron as measured by the LISST, acoustic backscatter response from the ADV and current velocity and direction measurements were collected. Water samples, pumped from a minimum of three depths at each site, were processed for Suspended Solids in two

fractions: greater and less than 60 micron. The fractions were then muffled to identify the organic portion of the fraction. The sample depths correspond to a near-bottom, a mid-depth and a near-surface ADCP bin.

A Smith-Mac bottom sampler was used to collect eight bottom sediment samples, one for each site. Wet sieve and pipette analyses methods were used to determine the percent fractions of silt, clay and sand. Grain size distribution of the sand fraction (greater than 63 microns) was determined with a Rapid Sand Analyzer (RSA) at VIMS.

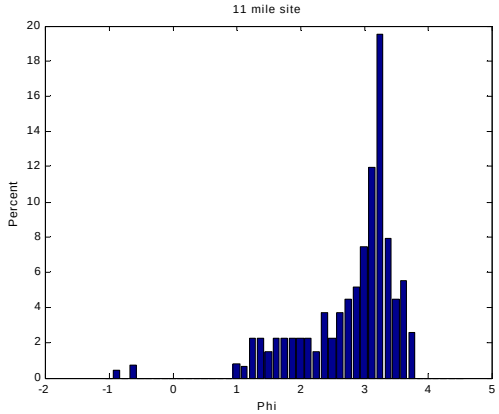
	Latitude	Longitude	Height	Northing	Easting
		SEDIMENT GRAB LOCATIONS			
11 Mile Site	33°49'23.51719"N	78°03'32.63834"W	2.672	8533.641	696723.3
North of Mound	33°48'20.68353"N	78°01'58.27635"W	2.733	6620.743	699169
East Crest	33°48'13.44835"N	78°02'02.22957"W	2.416	6396.799	699069.5
West Crest	33°48'15.43720"N	78°02'08.56112"W	2.709	6456.502	698906
South of Mound	33°48'07.77600"N	78°02'09.23658"W	2.744	6220.252	698890.9
Bald Head Island	33°50'41.59828"N	78°00'42.26574"W	3.118	10982.27	701081.1
Oak Island	33°53'38.46415"N	78°04'56.74797"W	3.896	16369.54	694487.4
Harbor Station	33°53'03.26545"N	78°00'05.10887"W	2.91	15357.25	701992.6
		PROFILE LOCATIONS			
11 Mile Site	33°49'23.51719"N	78°03'32.63834"W	2.672	8533.641	696723.3
North of Mound	33°48'19.50529"N	78°01'57.11031"W	2.888	6584.727	699199.4
East Crest	33°48'11.59394"N	78°02'01.89738"W	2.585	6339.739	699078.6
West Crest	33°48'14.11193"N	78°02'08.62710"W	3.252	6415.647	698904.7
South of Mound	33°48'06.52930"N	78°02'10.21269"W	2.946	6181.591	698866.2
Bald Head Island	33°50'41.39847"N	78°00'41.94348"W	3.195	10976.2	701089.5
Oak Island	33°53'40.15842"N	78°04'56.69000"W	3.912	16421.76	694488.4
Harbor Station	33°53'03.56293"N	78°00'05.24431"W	3.188	15366.38	701989

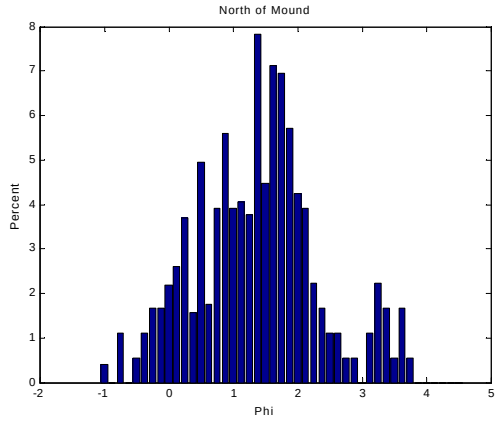
Sediment Grab Sample Results

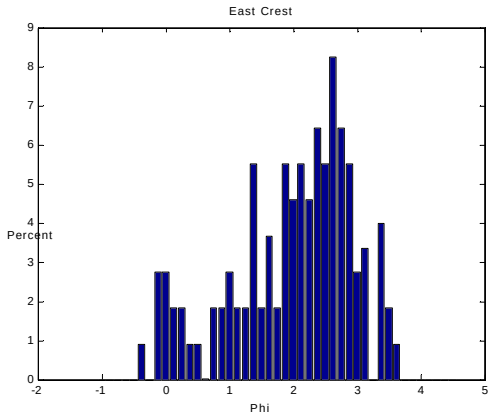


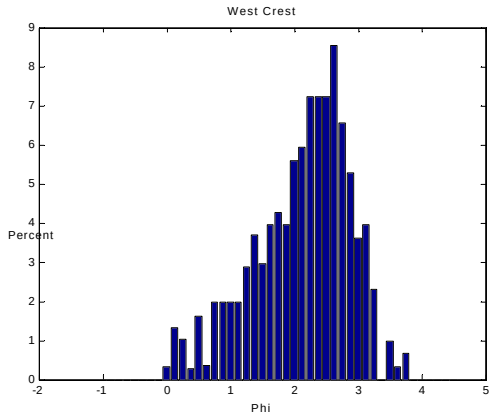
	%CLAY	%SILT	%SAND	%GRAVEL
11 mile site	42.24	42.94	14.82	0
North of Mound	3.17	2.68	93.66	0.5
East Crest	8.17	3.75	86.31	1.77
West Crest	19.08	7.5	72.96	0.46
South of Mound	55.66	30.82	13.52	0
Bald Head	3.25	0.94	95.6	0.22
Oak Island	2.92	0.3	96.55	0.22
Harbor Station	2.53	0.43	71.23	25.82

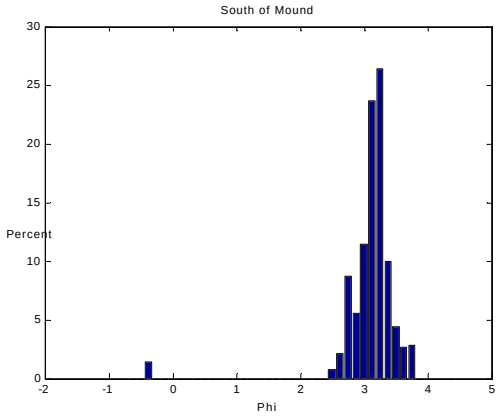
Rapid Sand Size Analysis
For Sediment Grab Samples of >60 microns to < 2 mm

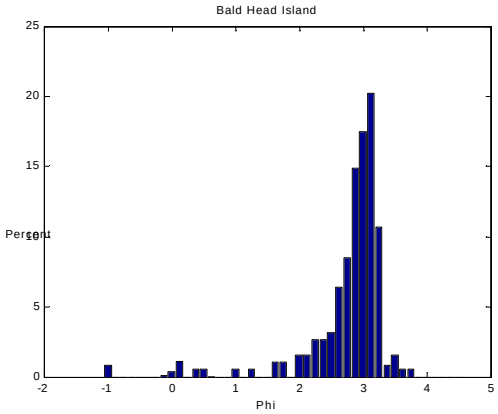


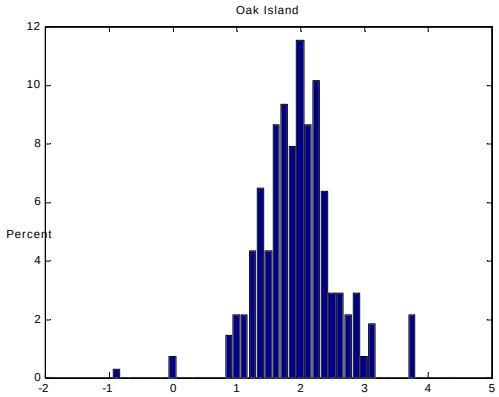


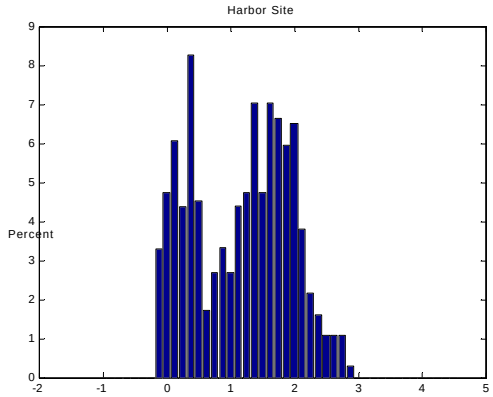












RSA Results for 11 Mile Site Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	1.1299	0.4198	1.1299	0.4198
-0.75	1.6818	17.7631	0	0	1.1299	0.4198
-0.625	1.5422	16.6582	2	0.7431	3.1299	1.163
-0.5	1.4142	15.6003	0	0	3.1299	1.163
-0.375	1.2968	14.5884	0	0	3.1299	1.163
-0.25	1.1892	13.6217	0	0	3.1299	1.163
-0.125	1.0905	12.6995	0	0	3.1299	1.163
0	1	11.8208	0	0	3.1299	1.163
0.125	0.917	10.9848	0	0	3.1299	1.163
0.25	0.8409	10.1905	0	0	3.1299	1.163
0.375	0.7711	9.437	0	0	3.1299	1.163
0.5	0.7071	8.7233	0	0	3.1299	1.163
0.625	0.6484	8.0484	0	0	3.1299	1.163
0.75	0.5946	7.4111	0	0	3.1299	1.163
0.875	0.5453	6.8104	0	0	3.1299	1.163
1	0.5	6.2452	2.1846	0.8117	5.3144	1.9747
1.125	0.4585	5.7143	1.8154	0.6746	7.1299	2.6492
1.25	0.4204	5.2167	6	2.2294	13.1299	4.8786
1.375	0.3856	4.751	6	2.2294	19.1299	7.108
1.5	0.3536	4.3163	4	1.4863	23.1299	8.5943
1.625	0.3242	3.9113	6	2.2294	29.1299	10.8237
1.75	0.2973	3.5349	6	2.2294	35.1299	13.0531
1.875	0.2726	3.186	6	2.2294	41.1299	15.2825
2	0.25	2.8634	6	2.2294	47.1299	17.5119
2.125	0.2293	2.566	6	2.2294	53.1299	19.7413
2.25	0.2102	2.2927	4	1.4863	57.1299	21.2276
2.375	0.1928	2.0423	10	3.7157	67.1299	24.9433
2.5	0.1768	1.8137	6	2.2294	73.1299	27.1727
2.625	0.1621	1.6058	10	3.7157	83.1299	30.8884
2.75	0.1487	1.4175	12	4.4588	95.1299	35.3472
2.875	0.1363	1.2476	14	5.2019	109.1299	40.5491
3	0.125	1.0949	20.0269	7.4414	129.1568	47.9905
3.125	0.1146	0.9582	32.1532	11.9471	161.3101	59.9376
3.25	0.1051	0.8364	52.513	19.5121	213.823	79.4498
3.375	0.0964	0.7282	21.2649	7.9014	235.0879	87.3511
3.5	0.0884	0.6326	12.0419	4.4744	247.1299	91.8255
3.625	0.0811	0.5484	14.9345	5.5492	262.0643	97.3747
3.75	0.0743	0.4744	7.0655	2.6253	269.1299	100
3.875	0.0682	0.4098	0	0	269.1299	100
4	0.0625	0.3533	0	0	269.1299	100
4.125	0.0573	0.3043	0	0	269.1299	100
4.25	0.0526	0.2617	0	0	269.1299	100
4.375	0.0482	0.2248	0	0	269.1299	100
4.5	0.0442	0.193	0	0	269.1299	100

RSA Results for North of Mound Site Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	1.4286	0.3997	1.4286	0.3997
-0.875	1.834	18.9156	0	0	1.4286	0.3997
-0.75	1.6818	17.7631	4	1.1191	5.4286	1.5188
-0.625	1.5422	16.6582	0	0	5.4286	1.5188
-0.5	1.4142	15.6003	2	0.5596	7.4286	2.0783
-0.375	1.2968	14.5884	4	1.1191	11.4286	3.1974
-0.25	1.1892	13.6217	6	1.6787	17.4286	4.8761
-0.125	1.0905	12.6995	6	1.6787	23.4286	6.5548
0	1	11.8208	7.7898	2.1794	31.2184	8.7342
0.125	0.917	10.9848	9.3149	2.6061	40.5333	11.3403
0.25	0.8409	10.1905	13.2863	3.7172	53.8196	15.0574
0.375	0.7711	9.437	5.609	1.5693	59.4286	16.6267
0.5	0.7071	8.7233	17.669	4.9434	77.0976	21.5701
0.625	0.6484	8.0484	6.331	1.7713	83.4286	23.3413
0.75	0.5946	7.4111	14	3.9169	97.4286	27.2582
0.875	0.5453	6.8104	20	5.5955	117.4286	32.8537
1	0.5	6.2452	14	3.9169	131.4286	36.7706
1.125	0.4585	5.7143	14.4978	4.0561	145.9264	40.8267
1.25	0.4204	5.2167	13.5022	3.7776	159.4286	44.6043
1.375	0.3856	4.751	28	7.8337	187.4286	52.438
1.5	0.3536	4.3163	16	4.4764	203.4286	56.9145
1.625	0.3242	3.9113	25.5005	7.1344	228.929	64.0489
1.75	0.2973	3.5349	24.8338	6.9479	253.7628	70.9968
1.875	0.2726	3.186	20.4732	5.7279	274.236	76.7247
2	0.25	2.8634	15.1926	4.2505	289.4286	80.9752
2.125	0.2293	2.566	14	3.9169	303.4286	84.8921
2.25	0.2102	2.2927	8	2.2382	311.4286	87.1303
2.375	0.1928	2.0423	6	1.6787	317.4286	88.809
2.5	0.1768	1.8137	4	1.1191	321.4286	89.9281
2.625	0.1621	1.6058	4	1.1191	325.4286	91.0472
2.75	0.1487	1.4175	2	0.5596	327.4286	91.6067
2.875	0.1363	1.2476	2	0.5596	329.4286	92.1663
3	0.125	1.0949	0	0	329.4286	92.1663
3.125	0.1146	0.9582	4	1.1191	333.4286	93.2854
3.25	0.1051	0.8364	8	2.2382	341.4286	95.5236
3.375	0.0964	0.7282	6	1.6787	347.4286	97.2022
3.5	0.0884	0.6326	2	0.5596	349.4286	97.7618
3.625	0.0811	0.5484	6	1.6787	355.4286	99.4404
3.75	0.0743	0.4744	2	0.5596	357.4286	100
3.875	0.0682	0.4098	0	0	357.4286	100
4	0.0625	0.3533	0	0	357.4286	100
4.125	0.0573	0.3043	0	0	357.4286	100
4.25	0.0526	0.2617	0	0	357.4286	100
4.375	0.0482	0.2248	0	0	357.4286	100
4.5	0.0442	0.193	0	0	357.4286	100

RSA Results for East Crest Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	0	0	0	0
-0.75	1.6818	17.7631	0	0	0	0
-0.625	1.5422	16.6582	0	0	0	0
-0.5	1.4142	15.6003	2	0.304	2	0.304
-0.375	1.2968	14.5884	7.6435	1.1616	9.6435	1.4656
-0.25	1.1892	13.6217	14.5932	2.2178	24.2367	3.6834
-0.125	1.0905	12.6995	14.2237	2.1616	38.4603	5.845
0	1	11.8208	35.7498	5.4331	74.2102	11.2781
0.125	0.917	10.9848	15.7898	2.3997	90	13.6778
0.25	0.8409	10.1905	14.391	2.1871	104.391	15.8649
0.375	0.7711	9.437	35.609	5.4117	140	21.2766
0.5	0.7071	8.7233	25.5745	3.8867	165.5745	25.1633
0.625	0.6484	8.0484	12.4255	1.8884	178	27.0517
0.75	0.5946	7.4111	22	3.3435	200	30.3951
0.875	0.5453	6.8104	22.2512	3.3816	222.2512	33.7768
1	0.5	6.2452	19.7488	3.0013	242	36.7781
1.125	0.4585	5.7143	18.4978	2.8112	260.4978	39.5893
1.25	0.4204	5.2167	11.0421	1.6781	271.5399	41.2675
1.375	0.3856	4.751	28.4601	4.3252	300	45.5927
1.5	0.3536	4.3163	18	2.7356	318	48.3283
1.625	0.3242	3.9113	31.5005	4.7873	349.5005	53.1156
1.75	0.2973	3.5349	28.8338	4.382	378.3343	57.4976
1.875	0.2726	3.186	25.6657	3.9006	404	61.3982
2	0.25	2.8634	39.8516	6.0565	443.8516	67.4547
2.125	0.2293	2.566	40.1484	6.1016	484	73.5562
2.25	0.2102	2.2927	44	6.6869	528	80.2432
2.375	0.1928	2.0423	38	5.7751	566	86.0182
2.5	0.1768	1.8137	24	3.6474	590	89.6657
2.625	0.1621	1.6058	16	2.4316	606	92.0973
2.75	0.1487	1.4175	8	1.2158	614	93.3131
2.875	0.1363	1.2476	12.3218	1.8726	626.3218	95.1857
3	0.125	1.0949	7.6782	1.1669	634	96.3526
3.125	0.1146	0.9582	6	0.9119	640	97.2644
3.25	0.1051	0.8364	8	1.2158	648	98.4802
3.375	0.0964	0.7282	4	0.6079	652	99.0881
3.5	0.0884	0.6326	2	0.304	654	99.3921
3.625	0.0811	0.5484	2	0.304	656	99.696
3.75	0.0743	0.4744	2	0.304	658	100
3.875	0.0682	0.4098	0	0	658	100
4	0.0625	0.3533	0	0	658	100
4.125	0.0573	0.3043	0	0	658	100
4.25	0.0526	0.2617	0	0	658	100
4.375	0.0482	0.2248	0	0	658	100
4.5	0.0442	0.193	0	0	658	100

RSA Results for West Crest Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	0	0	0	0
-0.75	1.6818	17.7631	0	0	0	0
-0.625	1.5422	16.6582	0	0	0	0
-0.5	1.4142	15.6003	0	0	0	0
-0.375	1.2968	14.5884	2	0.9174	2	0.9174
-0.25	1.1892	13.6217	0	0	2	0.9174
-0.125	1.0905	12.6995	6	2.7523	8	3.6697
0	1	11.8208	6	2.7523	14	6.422
0.125	0.917	10.9848	4	1.8349	18	8.2569
0.25	0.8409	10.1905	4	1.8349	22	10.0917
0.375	0.7711	9.437	2	0.9174	24	11.0092
0.5	0.7071	8.7233	1.9527	0.8957	25.9527	11.9049
0.625	0.6484	8.0484	0.0473	0.0217	26	11.9266
0.75	0.5946	7.4111	4	1.8349	30	13.7615
0.875	0.5453	6.8104	4	1.8349	34	15.5963
1	0.5	6.2452	6	2.7523	40	18.3486
1.125	0.4585	5.7143	4	1.8349	44	20.1835
1.25	0.4204	5.2167	4	1.8349	48	22.0183
1.375	0.3856	4.751	12	5.5046	60	27.5229
1.5	0.3536	4.3163	4	1.8349	64	29.3578
1.625	0.3242	3.9113	8	3.6697	72	33.0275
1.75	0.2973	3.5349	4	1.8349	76	34.8624
1.875	0.2726	3.186	12	5.5046	88	40.367
2	0.25	2.8634	10	4.5872	98	44.9541
2.125	0.2293	2.566	12	5.5046	110	50.4587
2.25	0.2102	2.2927	10	4.5872	120	55.0459
2.375	0.1928	2.0423	14	6.422	134	61.4679
2.5	0.1768	1.8137	12	5.5046	146	66.9725
2.625	0.1621	1.6058	18	8.2569	164	75.2294
2.75	0.1487	1.4175	14	6.422	178	81.6514
2.875	0.1363	1.2476	12	5.5046	190	87.156
3	0.125	1.0949	6	2.7523	196	89.9083
3.125	0.1146	0.9582	7.3069	3.3518	203.3069	93.26
3.25	0.1051	0.8364	0	0	203.3069	93.26
3.375	0.0964	0.7282	8.6931	3.9877	212	97.2477
3.5	0.0884	0.6326	4	1.8349	216	99.0826
3.625	0.0811	0.5484	2	0.9174	218	100
3.75	0.0743	0.4744	0	0	218	100
3.875	0.0682	0.4098	0	0	218	100
4	0.0625	0.3533	0	0	218	100
4.125	0.0573	0.3043	0	0	218	100
4.25	0.0526	0.2617	0	0	218	100
4.375	0.0482	0.2248	0	0	218	100
4.5	0.0442	0.193	0	0	218	100

RSA Results for South of Mound Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	0	0	0	0
-0.75	1.6818	17.7631	0	0	0	0
-0.625	1.5422	16.6582	0	0	0	0
-0.5	1.4142	15.6003	0	0	0	0
-0.375	1.2968	14.5884	2	1.4286	2	1.4286
-0.25	1.1892	13.6217	0	0	2	1.4286
-0.125	1.0905	12.6995	0	0	2	1.4286
0	1	11.8208	0	0	2	1.4286
0.125	0.917	10.9848	0	0	2	1.4286
0.25	0.8409	10.1905	0	0	2	1.4286
0.375	0.7711	9.437	0	0	2	1.4286
0.5	0.7071	8.7233	0	0	2	1.4286
0.625	0.6484	8.0484	0	0	2	1.4286
0.75	0.5946	7.4111	0	0	2	1.4286
0.875	0.5453	6.8104	0	0	2	1.4286
1	0.5	6.2452	0	0	2	1.4286
1.125	0.4585	5.7143	0	0	2	1.4286
1.25	0.4204	5.2167	0	0	2	1.4286
1.375	0.3856	4.751	0	0	2	1.4286
1.5	0.3536	4.3163	0	0	2	1.4286
1.625	0.3242	3.9113	0	0	2	1.4286
1.75	0.2973	3.5349	0	0	2	1.4286
1.875	0.2726	3.186	0	0	2	1.4286
2	0.25	2.8634	0	0	2	1.4286
2.125	0.2293	2.566	0	0	2	1.4286
2.25	0.2102	2.2927	0	0	2	1.4286
2.375	0.1928	2.0423	0	0	2	1.4286
2.5	0.1768	1.8137	1.0333	0.7381	3.0333	2.1666
2.625	0.1621	1.6058	2.9667	2.1191	6	4.2857
2.75	0.1487	1.4175	12.1855	8.7039	18.1855	12.9896
2.875	0.1363	1.2476	7.8145	5.5818	26	18.5714
3	0.125	1.0949	16	11.4286	42	30
3.125	0.1146	0.9582	33.0901	23.6358	75.0901	53.6358
3.25	0.1051	0.8364	36.9099	26.3642	112	80
3.375	0.0964	0.7282	14	10	126	90
3.5	0.0884	0.6326	6.2254	4.4467	132.2254	94.4467
3.625	0.0811	0.5484	3.7746	2.6962	136	97.1429
3.75	0.0743	0.4744	4	2.8571	140	100
3.875	0.0682	0.4098	0	0	140	100
4	0.0625	0.3533	0	0	140	100
4.125	0.0573	0.3043	0	0	140	100
4.25	0.0526	0.2617	0	0	140	100
4.375	0.0482	0.2248	0	0	140	100
4.5	0.0442	0.193	0	0	140	100

RSA Results for Bald Head Island Sediment Grab

Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	3.1104	0.8243	3.1104	0.8243
-0.875	1.834	18.9156	0	0	3.1104	0.8243
-0.75	1.6818	17.7631	0	0	3.1104	0.8243
-0.625	1.5422	16.6582	0	0	3.1104	0.8243
-0.5	1.4142	15.6003	0	0	3.1104	0.8243
-0.375	1.2968	14.5884	0	0	3.1104	0.8243
-0.25	1.1892	13.6217	0	0	3.1104	0.8243
-0.125	1.0905	12.6995	0.4669	0.1237	3.5772	0.948
0	1	11.8208	1.5597	0.4133	5.1369	1.3613
0.125	0.917	10.9848	4.2102	1.1157	9.3471	2.477
0.25	0.8409	10.1905	0	0	9.3471	2.477
0.375	0.7711	9.437	2	0.53	11.3471	3.0071
0.5	0.7071	8.7233	1.9527	0.5175	13.2998	3.5245
0.625	0.6484	8.0484	0.0473	0.0125	13.3471	3.5371
0.75	0.5946	7.4111	0	0	13.3471	3.5371
0.875	0.5453	6.8104	0	0	13.3471	3.5371
1	0.5	6.2452	2	0.53	15.3471	4.0671
1.125	0.4585	5.7143	0	0	15.3471	4.0671
1.25	0.4204	5.2167	2	0.53	17.3471	4.5971
1.375	0.3856	4.751	0	0	17.3471	4.5971
1.5	0.3536	4.3163	0	0	17.3471	4.5971
1.625	0.3242	3.9113	4	1.06	21.3471	5.6571
1.75	0.2973	3.5349	4	1.06	25.3471	6.7172
1.875	0.2726	3.186	0	0	25.3471	6.7172
2	0.25	2.8634	6	1.59	31.3471	8.3072
2.125	0.2293	2.566	6	1.59	37.3471	9.8973
2.25	0.2102	2.2927	10	2.6501	47.3471	12.5474
2.375	0.1928	2.0423	10	2.6501	57.3471	15.1974
2.5	0.1768	1.8137	12	3.1801	69.3471	18.3775
2.625	0.1621	1.6058	24	6.3602	93.3471	24.7377
2.75	0.1487	1.4175	32	8.4803	125.3471	33.218
2.875	0.1363	1.2476	56	14.8404	181.3471	48.0584
3	0.125	1.0949	66	17.4905	247.3471	65.549
3.125	0.1146	0.9582	76.1802	20.1884	323.5273	85.7373
3.25	0.1051	0.8364	40.513	10.7363	364.0402	96.4736
3.375	0.0964	0.7282	3.3069	0.8763	367.3471	97.3499
3.5	0.0884	0.6326	6	1.59	373.3471	98.94
3.625	0.0811	0.5484	2	0.53	375.3471	99.47
3.75	0.0743	0.4744	2	0.53	377.3471	100
3.875	0.0682	0.4098	0	0	377.3471	100
4	0.0625	0.3533	0	0	377.3471	100
4.125	0.0573	0.3043	0	0	377.3471	100
4.25	0.0526	0.2617	0	0	377.3471	100
4.375	0.0482	0.2248	0	0	377.3471	100
4.5	0.0442	0.193	0	0	377.3471	100

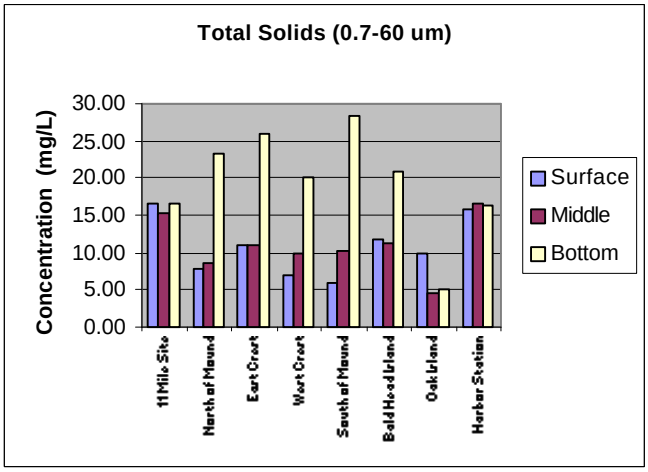
RSA Results for Oak Island Sediment Grab

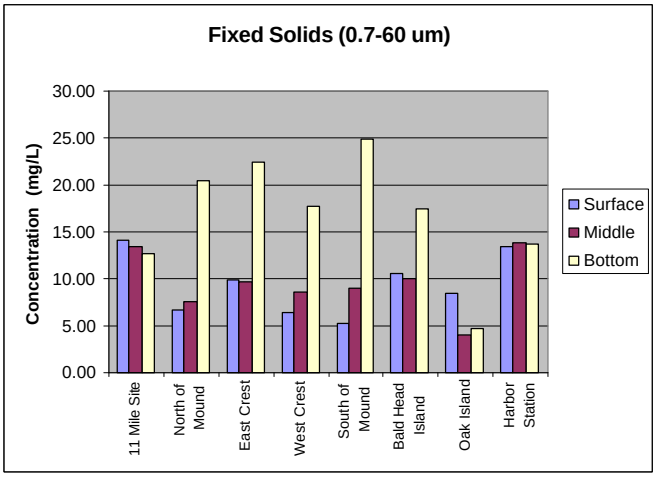
Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	0.8701	0.313	0.8701	0.313
-0.75	1.6818	17.7631	0	0	0.8701	0.313
-0.625	1.5422	16.6582	0	0	0.8701	0.313
-0.5	1.4142	15.6003	0	0	0.8701	0.313
-0.375	1.2968	14.5884	0	0	0.8701	0.313
-0.25	1.1892	13.6217	0	0	0.8701	0.313
-0.125	1.0905	12.6995	0	0	0.8701	0.313
0	1	11.8208	2	0.7195	2.8701	1.0326
0.125	0.917	10.9848	0	0	2.8701	1.0326
0.25	0.8409	10.1905	0	0	2.8701	1.0326
0.375	0.7711	9.437	0	0	2.8701	1.0326
0.5	0.7071	8.7233	0	0	2.8701	1.0326
0.625	0.6484	8.0484	0	0	2.8701	1.0326
0.75	0.5946	7.4111	0	0	2.8701	1.0326
0.875	0.5453	6.8104	4	1.4391	6.8701	2.4716
1	0.5	6.2452	6	2.1586	12.8701	4.6302
1.125	0.4585	5.7143	6	2.1586	18.8701	6.7888
1.25	0.4204	5.2167	12	4.3172	30.8701	11.106
1.375	0.3856	4.751	18	6.4757	48.8701	17.5817
1.5	0.3536	4.3163	12	4.3172	60.8701	21.8989
1.625	0.3242	3.9113	24	8.6343	84.8701	30.5332
1.75	0.2973	3.5349	26	9.3539	110.8701	39.887
1.875	0.2726	3.186	22	7.9148	132.8701	47.8019
2	0.25	2.8634	32	11.5124	164.8701	59.3143
2.125	0.2293	2.566	24	8.6343	188.8701	67.9486
2.25	0.2102	2.2927	28.2628	10.1679	217.1329	78.1166
2.375	0.1928	2.0423	17.7372	6.3812	234.8701	84.4977
2.5	0.1768	1.8137	8	2.8781	242.8701	87.3759
2.625	0.1621	1.6058	8	2.8781	250.8701	90.254
2.75	0.1487	1.4175	6	2.1586	256.8701	92.4125
2.875	0.1363	1.2476	8	2.8781	264.8701	95.2907
3	0.125	1.0949	2	0.7195	266.8701	96.0102
3.125	0.1146	0.9582	5.0901	1.8312	271.9602	97.8414
3.25	0.1051	0.8364	0	0	271.9602	97.8414
3.375	0.0964	0.7282	0	0	271.9602	97.8414
3.5	0.0884	0.6326	0	0	271.9602	97.8414
3.625	0.0811	0.5484	0	0	271.9602	97.8414
3.75	0.0743	0.4744	6	2.1586	277.9602	100
3.875	0.0682	0.4098	0	0	277.9602	100
4	0.0625	0.3533	0	0	277.9602	100
4.125	0.0573	0.3043	0	0	277.9602	100
4.25	0.0526	0.2617	0	0	277.9602	100
4.375	0.0482	0.2248	0	0	277.9602	100
4.5	0.0442	0.193	0	0	277.9602	100

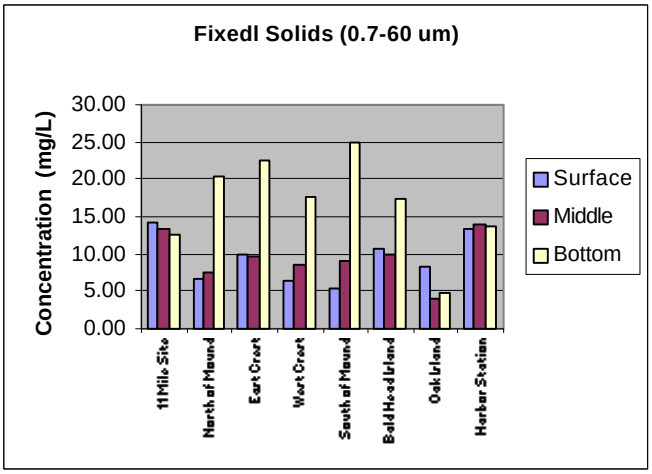
RSA Results for Harbor Station Sediment Grab

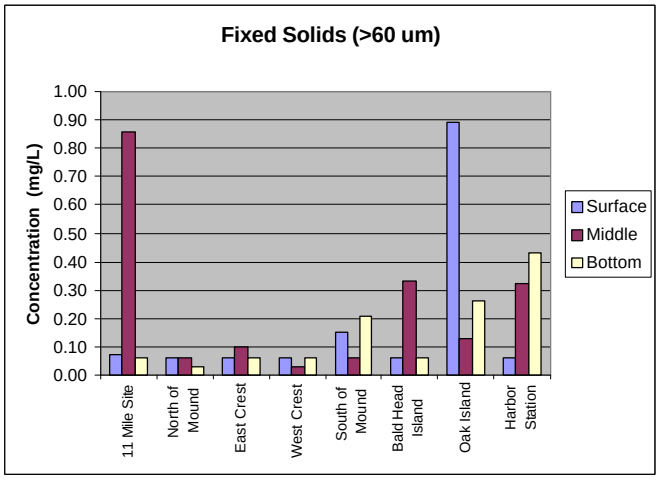
Size(phi)	Size(mm)	Wn(cm/s)*	Im.Wt(mg)	Im.Wt(%)	Cm.Wt(mg)	Cm.Wt(%)
-1	2	20.1167	0	0	0	0
-0.875	1.834	18.9156	0	0	0	0
-0.75	1.6818	17.7631	0	0	0	0
-0.625	1.5422	16.6582	0	0	0	0
-0.5	1.4142	15.6003	0	0	0	0
-0.375	1.2968	14.5884	0	0	0	0
-0.25	1.1892	13.6217	0	0	0	0
-0.125	1.0905	12.6995	12.2302	3.3136	12.2302	3.3136
0	1	11.8208	17.5597	4.7576	29.7898	8.0712
0.125	0.917	10.9848	22.4197	6.0743	52.2095	14.1455
0.25	0.8409	10.1905	16.1816	4.3842	68.391	18.5296
0.375	0.7711	9.437	30.5572	8.2791	98.9482	26.8087
0.5	0.7071	8.7233	16.7208	4.5303	115.669	31.339
0.625	0.6484	8.0484	6.331	1.7153	122	33.0543
0.75	0.5946	7.4111	10	2.7094	132	35.7636
0.875	0.5453	6.8104	12.2512	3.3193	144.2512	39.0829
1	0.5	6.2452	9.9334	2.6913	154.1846	41.7742
1.125	0.4585	5.7143	16.3133	4.4199	170.4978	46.1941
1.25	0.4204	5.2167	17.5022	4.742	188	50.9361
1.375	0.3856	4.751	26	7.0444	214	57.9804
1.5	0.3536	4.3163	17.5181	4.7463	231.5181	62.7267
1.625	0.3242	3.9113	25.9824	7.0396	257.5005	69.7663
1.75	0.2973	3.5349	24.4995	6.6378	282	76.4041
1.875	0.2726	3.186	22	5.9606	304	82.3647
2	0.25	2.8634	24	6.5025	328	88.8672
2.125	0.2293	2.566	14	3.7931	342	92.6603
2.25	0.2102	2.2927	8	2.1675	350	94.8278
2.375	0.1928	2.0423	6	1.6256	356	96.4534
2.5	0.1768	1.8137	4	1.0837	360	97.5372
2.625	0.1621	1.6058	4	1.0837	364	98.6209
2.75	0.1487	1.4175	4	1.0837	368	99.7047
2.875	0.1363	1.2476	1.0901	0.2953	369.0901	100
3	0.125	1.0949	0	0	369.0901	100
3.125	0.1146	0.9582	0	0	369.0901	100
3.25	0.1051	0.8364	0	0	369.0901	100
3.375	0.0964	0.7282	0	0	369.0901	100
3.5	0.0884	0.6326	0	0	369.0901	100
3.625	0.0811	0.5484	0	0	369.0901	100
3.75	0.0743	0.4744	0	0	369.0901	100
3.875	0.0682	0.4098	0	0	369.0901	100
4	0.0625	0.3533	0	0	369.0901	100
4.125	0.0573	0.3043	0	0	369.0901	100
4.25	0.0526	0.2617	0	0	369.0901	100
4.375	0.0482	0.2248	0	0	369.0901	100
4.5	0.0442	0.193	0	0	369.0901	100

Water Column Results





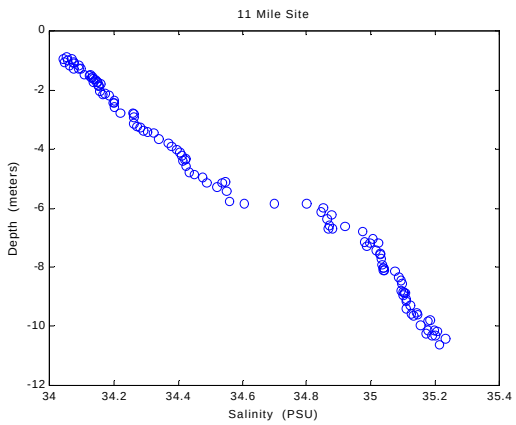


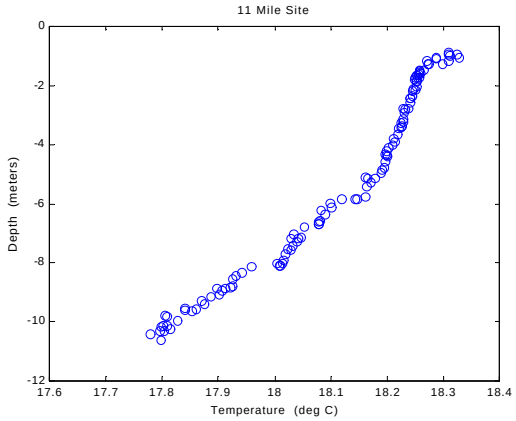


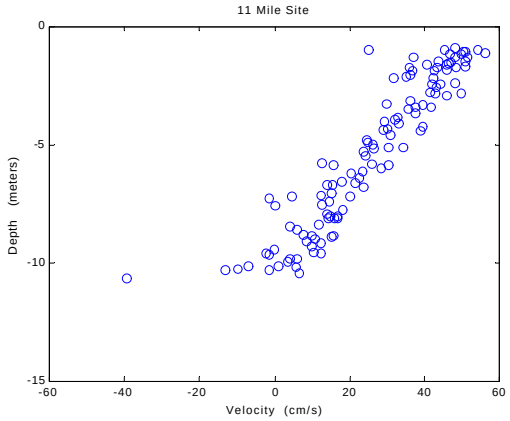
Suspend Solid Concentrations

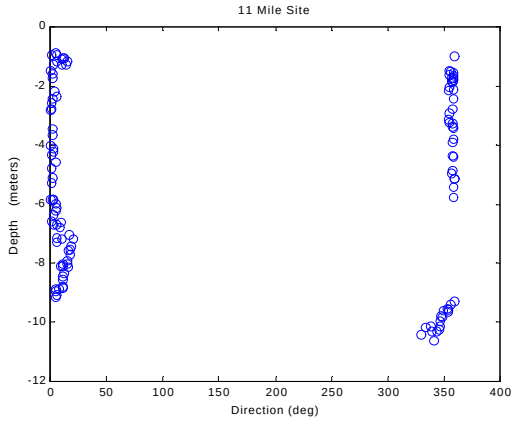
	0.7 - 60 um			>60 um		
	Total mg/L	**Fixed** mg/L	**Volitile** mg/L	**Total** mg/L	**Fixed** mg/L	**Volitile** mg/L
			Surface			
11 Mile Site	16.70	14.10	2.60	0.20	0.07	0.13
North of Mound	7.80	6.70	1.10	<0.06		
East Crest	10.90	9.80	1.10	0.47	<0.06	0.47
West Crest	7.00	6.50	0.50	0.23	<0.06	0.23
South of Mound	5.80	5.30	0.50	0.30	0.15	0.15
Bald Head Island	11.80	10.60	1.20	0.21	<0.06	<0.06
Oak Island	9.90	8.40	1.50	1.38	0.84	0.54
duplicate				1.27	0.93	0.34
Harbor Station	15.80	13.40	2.40	<0.06		
			Middle			
11 Mile Site	15.20	13.40	1.80	0.86	0.86	<0.06
North of Mound	8.50	7.60	0.90	<0.06		
East Crest	11.00	9.70	1.30	0.20	0.10	0.10
West Crest	9.80	8.60	1.20	0.11	0.03	0.08
South of Mound	10.10	9.00	1.10	0.13	<0.06	<0.06
Bald Head Island	11.00	10.00	1.00	0.55	0.33	0.22
duplicate	11.60	10.00	1.60			
Oak Island	5.70	5.10	0.60	0.23	0.13	0.10
duplicate	3.50	2.80	0.70	<0.06		
Harbor Station	16.60	13.90	2.70	0.38	0.32	0.06
			Bottom			
11 Mile Site	16.50	12.70	3.80	0.33	<0.06	0.33
North of Mound	23.40	20.40	3.00	0.06	0.03	0.03
East Crest	26.10	22.50	3.60	<0.06		
West Crest	20.10	17.70	2.40	<0.06		
South of Mound	28.40	24.80	3.60	0.73	0.21	0.52
Bald Head Island	21.20	18.00	3.20	<0.06		
duplicate	20.50	17.00	3.50			
Oak Island	5.20	4.70	0.50			
duplicate				0.39	0.26	0.13
Harbor Station	16.30	13.70	2.60	0.49	0.43	0.06

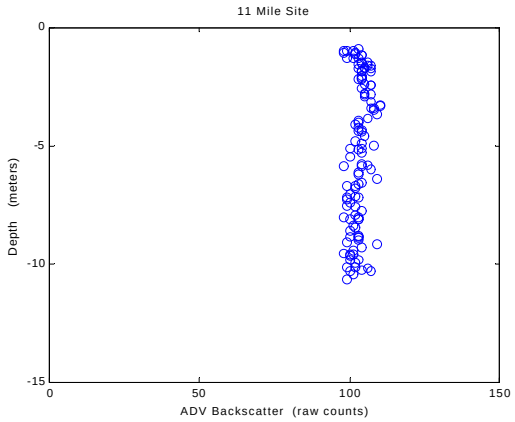
11 Mile Site Profile Results





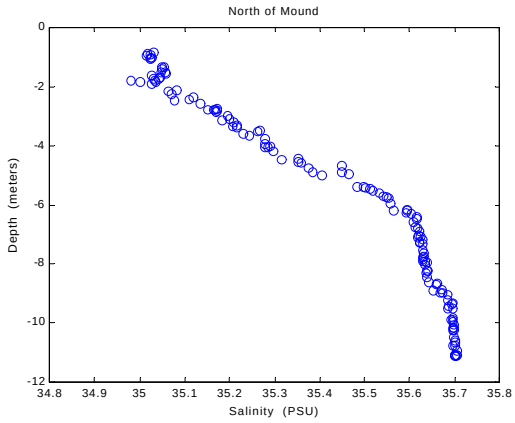


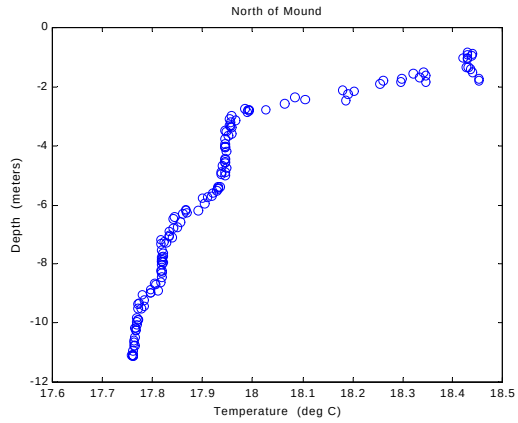


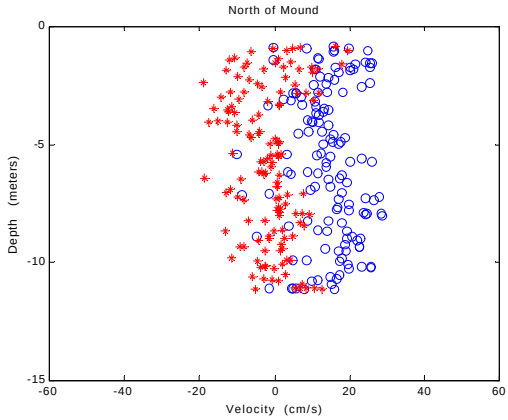


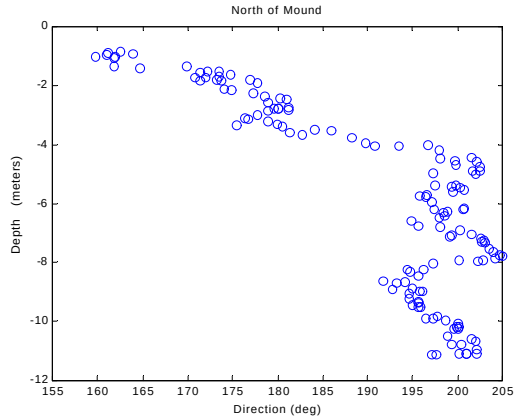
No LISST or OBS Data

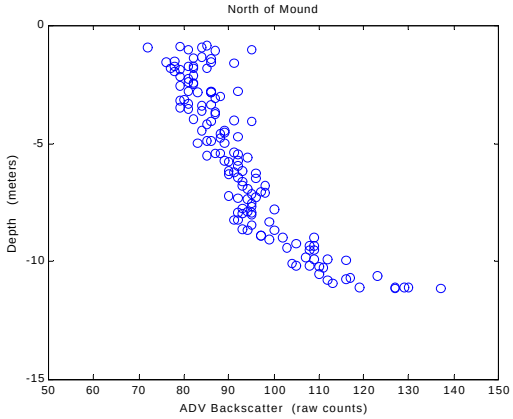
North of Mound Profile Results

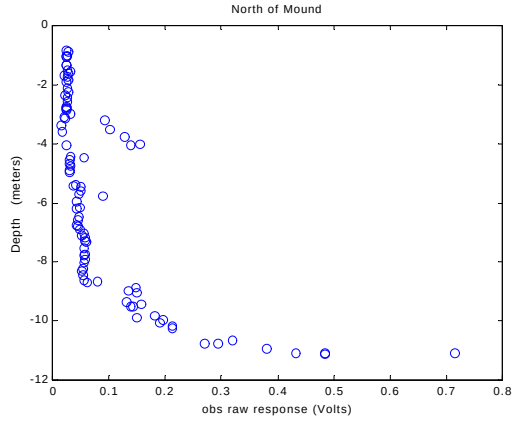


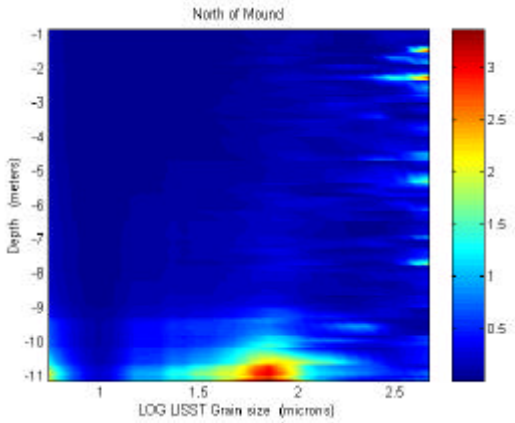


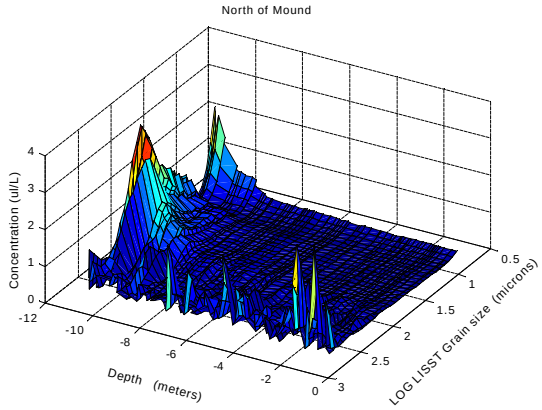




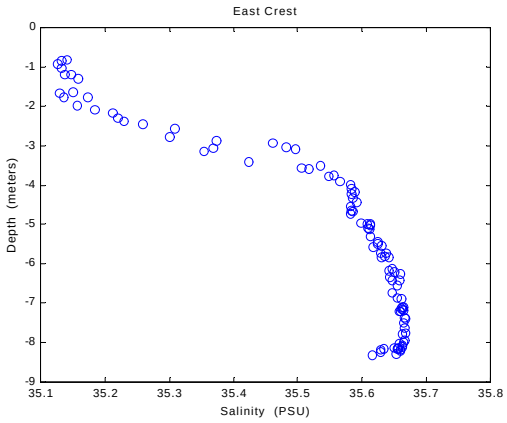


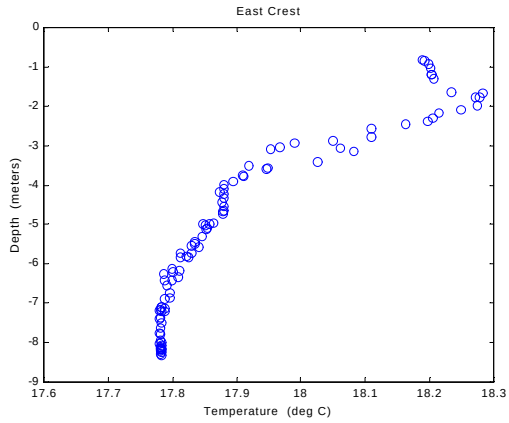


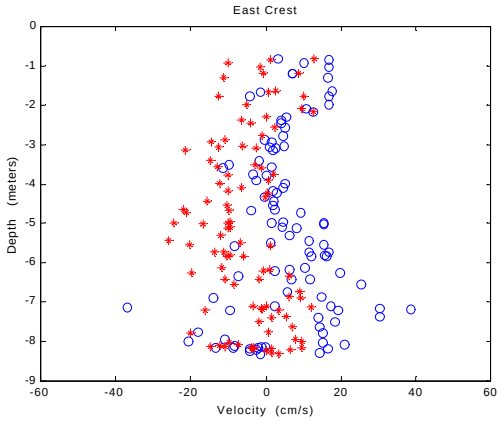


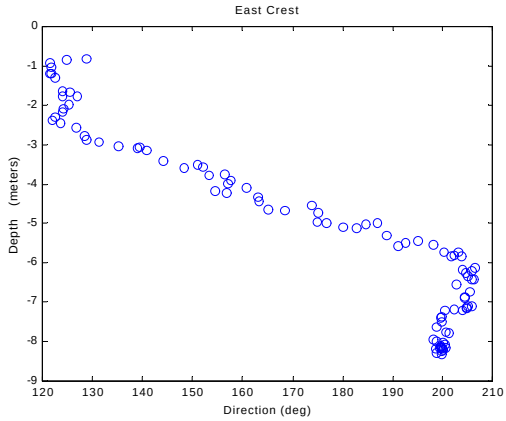


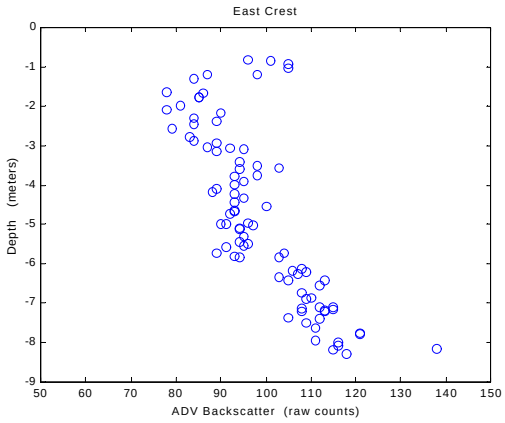
East Crest Profile Results

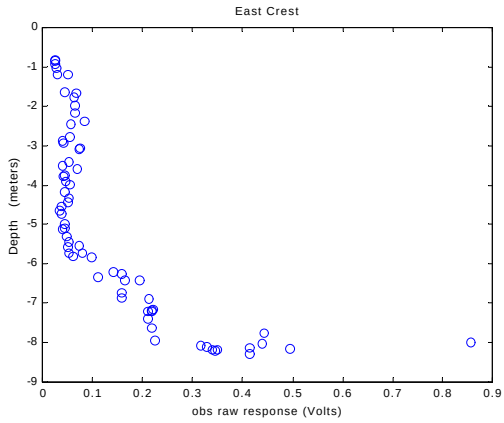


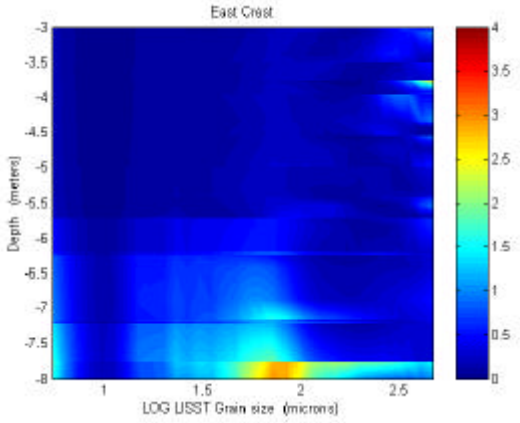


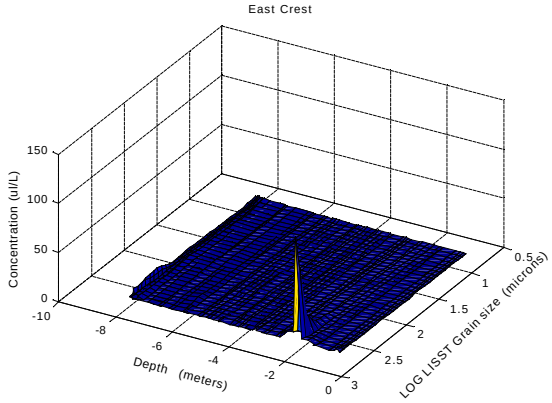




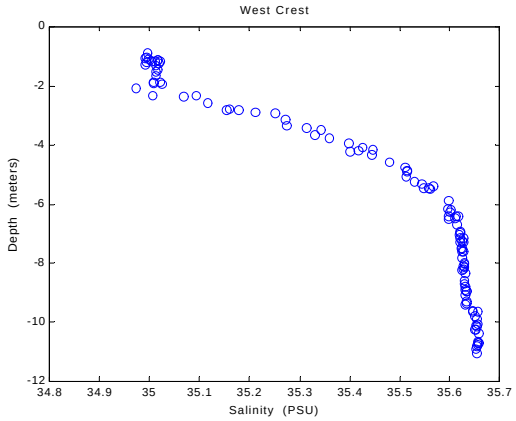


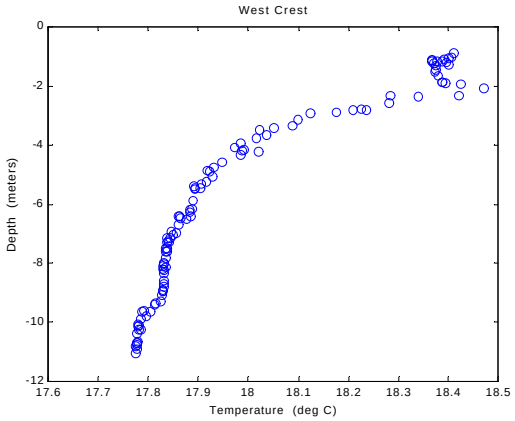


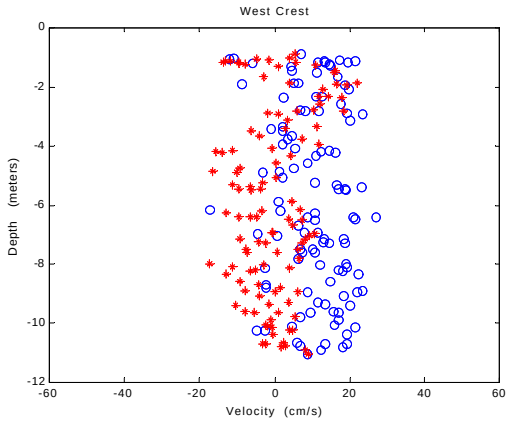


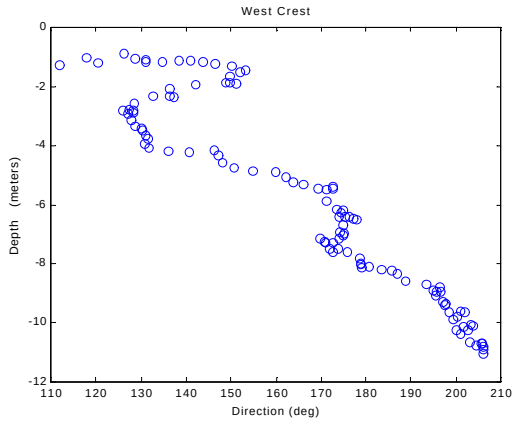


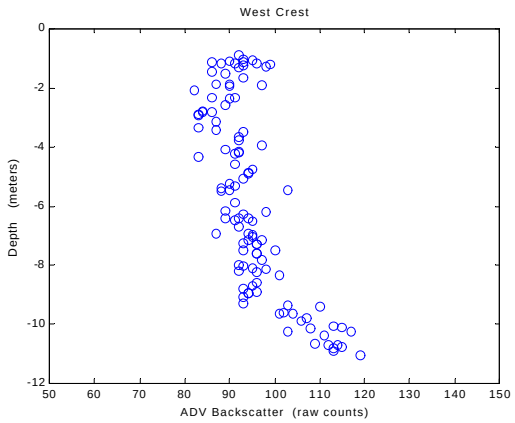
West Crest Profile Results

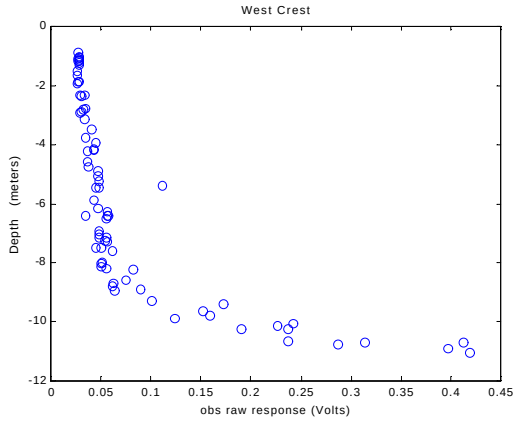


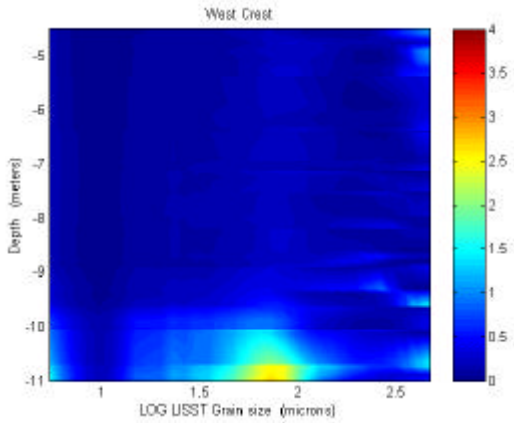


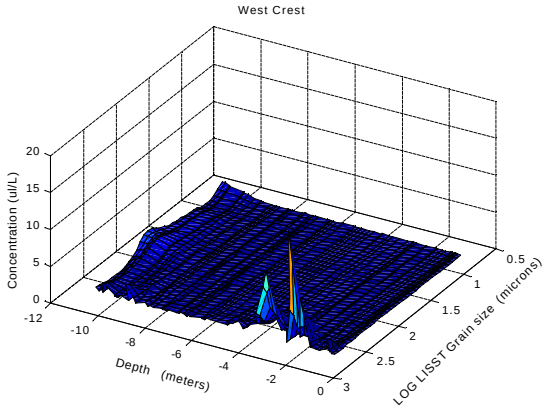




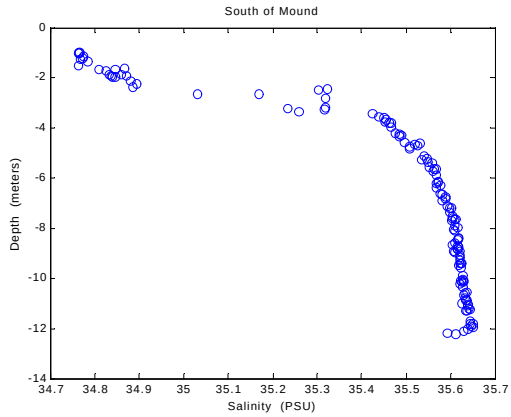


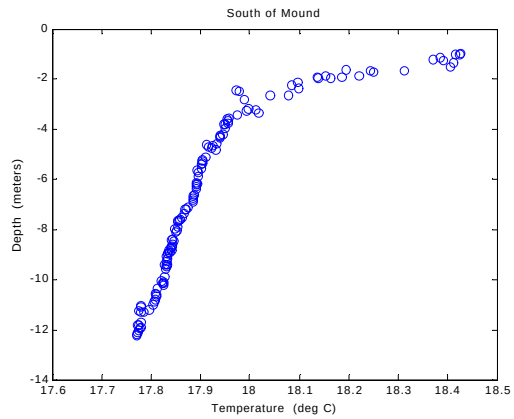


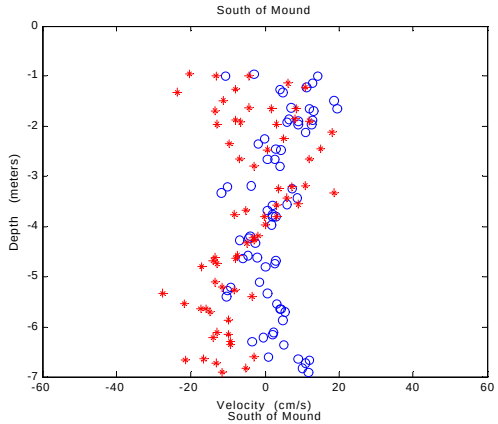


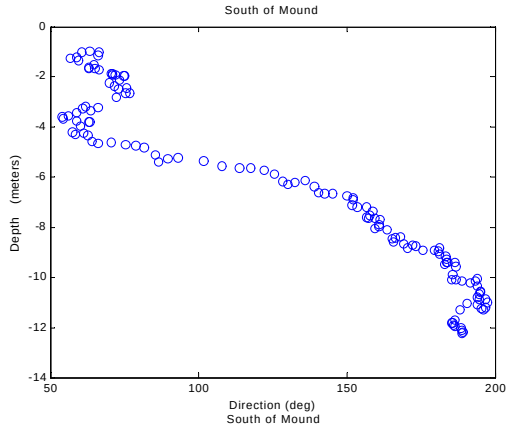


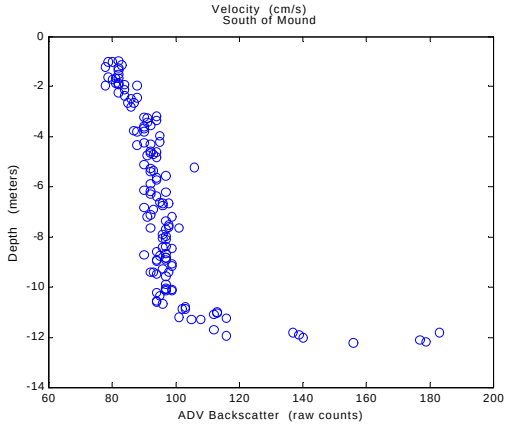
South of Mound Profile Results

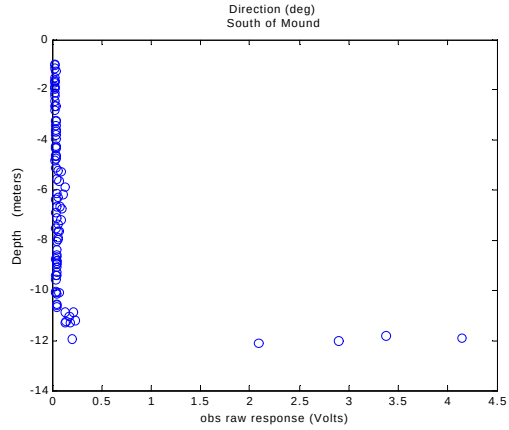


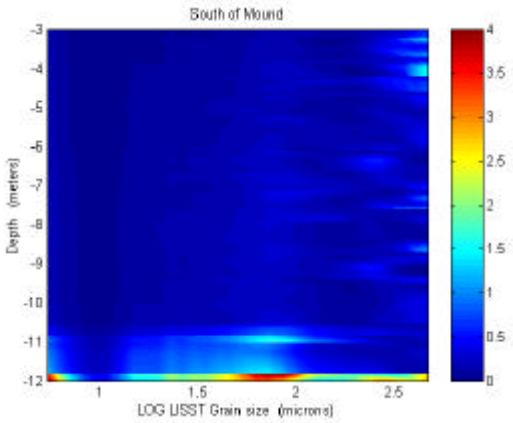


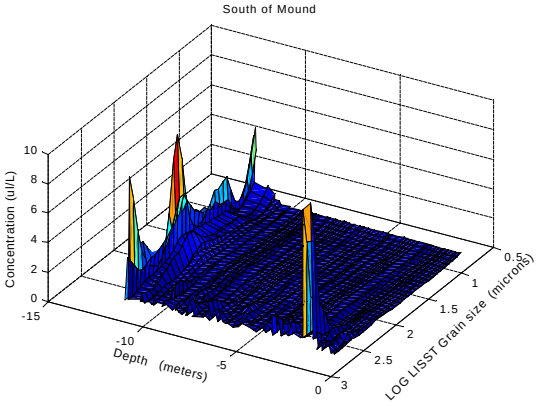




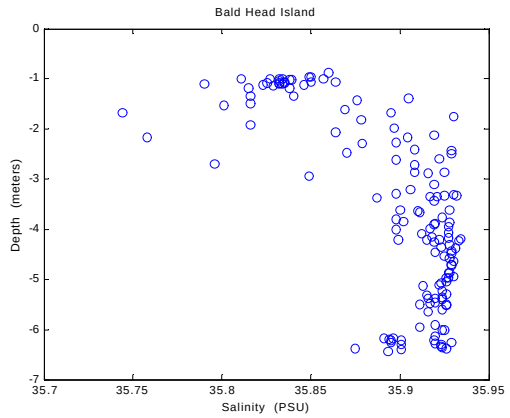


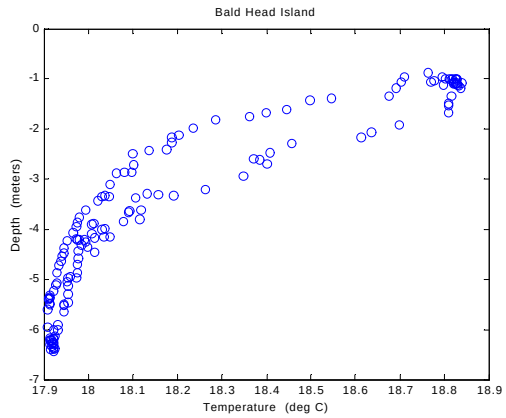


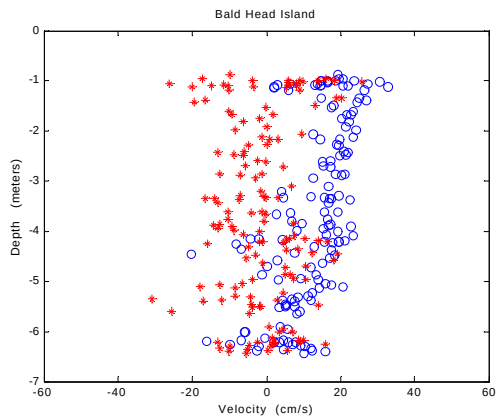


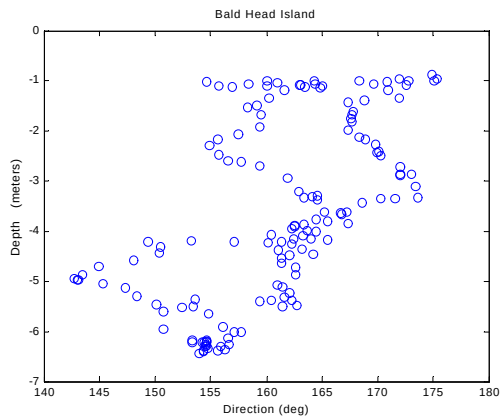


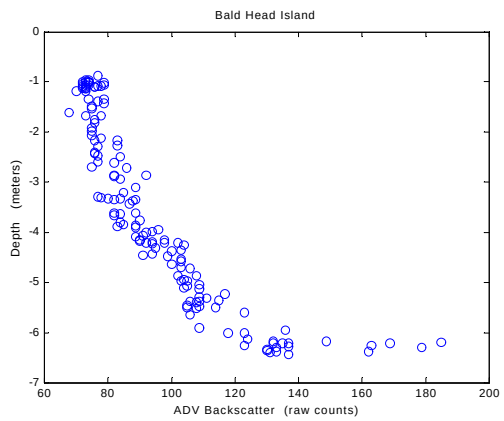
Bald Head Island Profile Results

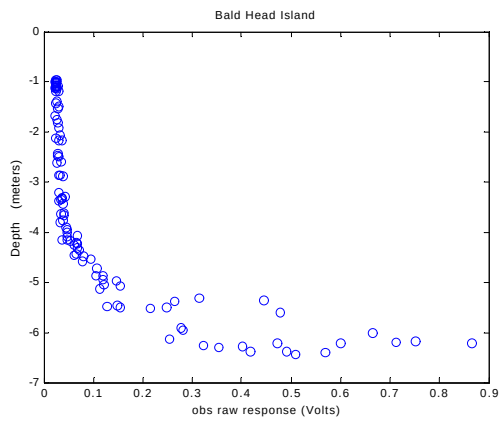


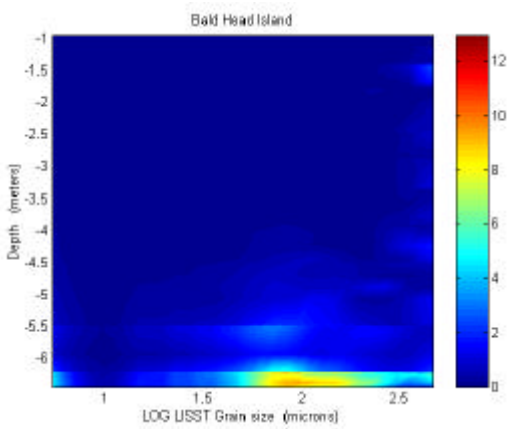


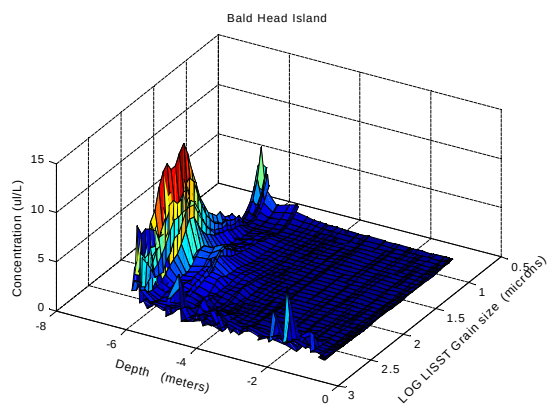




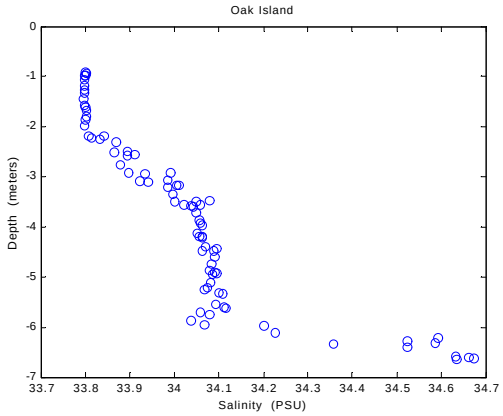


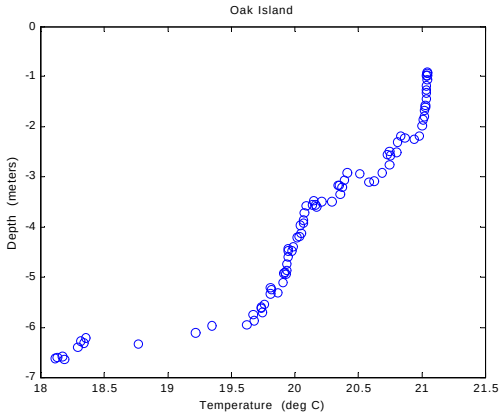


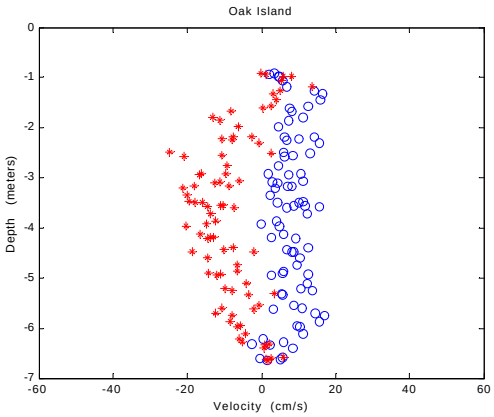


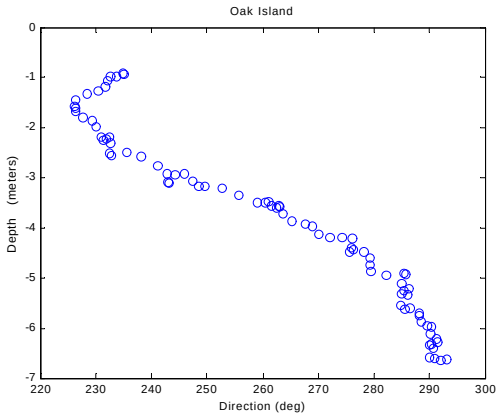


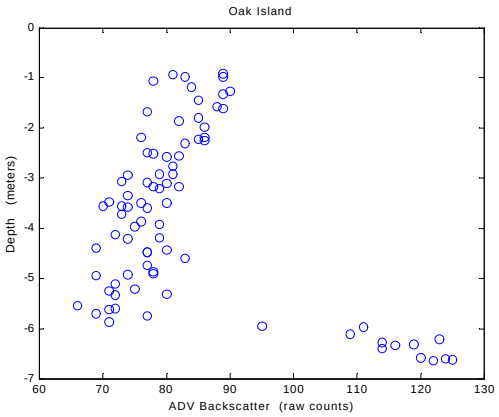
Oak Island Profile Results

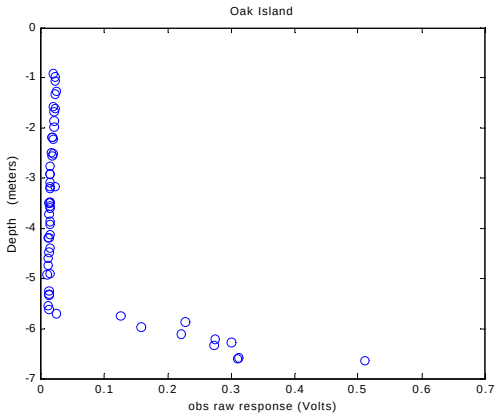


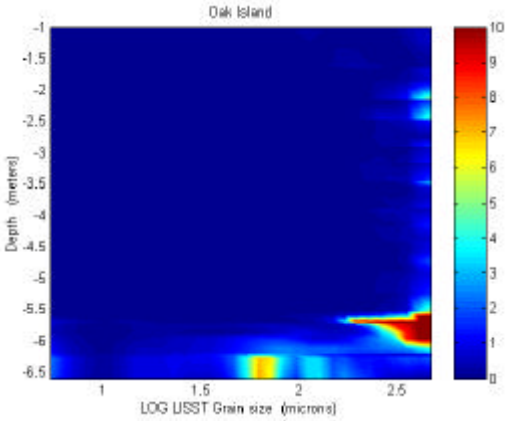


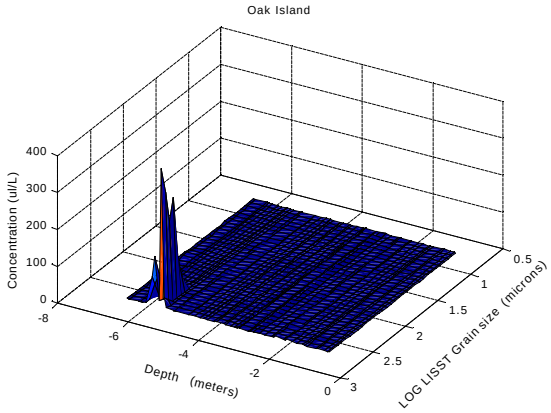




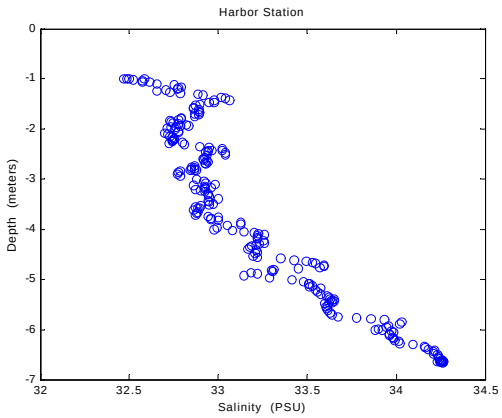


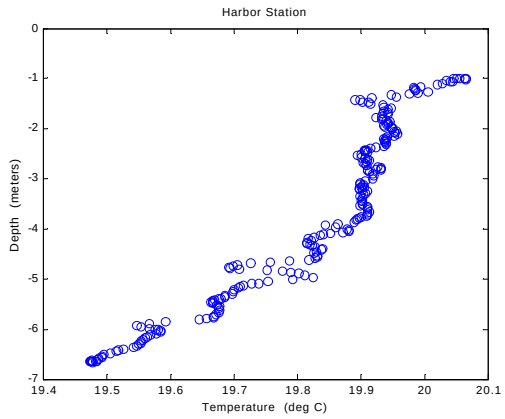
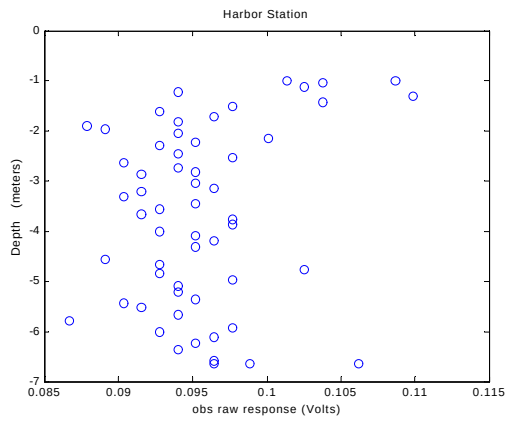
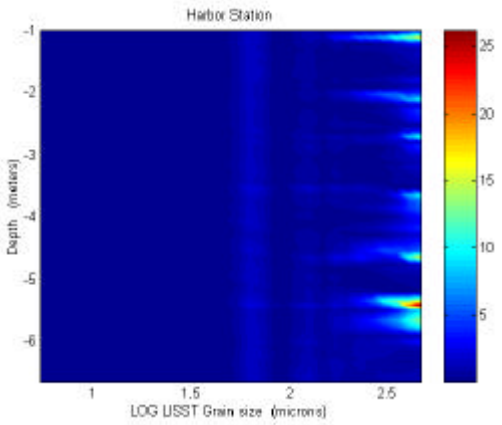
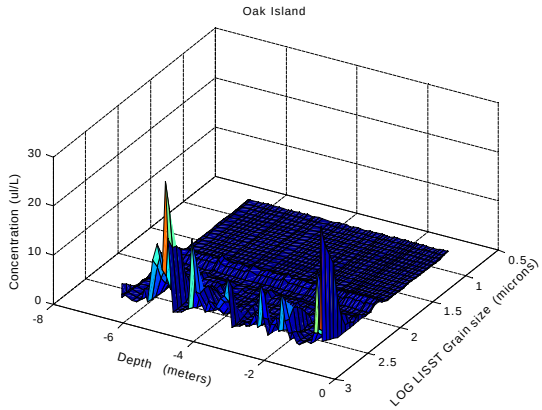






Harbor Station Profile Results

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