

CRUISE REPORT

Cruise Number: MF-04-05

FOCI Number: 3MF04

Ship: NOAA Ship *Miller Freeman*

Area of Operations: Bering Sea and Pribolof Island area

Itinerary: Depart Dutch Harbor, AK 24 April 2004
Arrive Dutch Harbor, AK 2 May 2004

Participating Organizations:

NOAA – Pacific Marine Environmental Laboratory (PMEL)
7600 Sand Point Way N.E., Seattle, Washington 98115-6439

NOAA – Alaska Fisheries Science Center (AFSC)
7600 Sand Point Way N.E., Seattle, Washington 98115-0070

University of Alaska – Fairbanks (UAF)
Institute of Marine Science
200 O’Neill, Fairbanks, Alaska 99775-1080

Scripps Institute of Oceanography (SIO)
8602 La Jolla Shores Drive
La Jolla, California 92037

Chief Scientist: William Floering
NOAA/PMEL/FOCI
206-526-6480
William.Floering@noaa.gov

Other Participating Scientists:

Steve Smith (PMEL)
Carol Dewitt (PMEL)
Calvin Mordy (PMEL)
Sara Thornton (Univ. of AK Fairbanks)
Lisa Munger (Scripps)
Kevin Hardy (Scripps)

Cruise Objectives: To recover and deploy oceanographic instrumentation moorings at several Bering Sea locations and sites near the Pribilof Islands. To deploy marine mammal hydrophone moorings and marine mammal sono-buoys. To complete CTD casts with nutrient/chlorophyll samples and to complete bongo plankton tows.

Summary of Operations and Samples Collected:

Bongo plankton tow 60/20cm	13
CalVET plankton tow	6
Chlorophyll Samples	113
CTD casts completed	25
Marine Mammal Sono-buoys deployed	17
Nutrient Samples	97
Plankton samples preserved	35
Salinity Samples	25
Satellite tracked drifter buoys	2
Subsurface moorings deployed	14
Subsurface moorings recovered	6
Surface moorings deployed	1
Underway Fluorometer	1460 nm
Underway Nitrate meter	1460 nm

Cruise Summary:

Due to the unfortunate grounding of NOAA Ship *Miller Freeman* previous to this cruise, we were asked to cut 3-4 days from this cruise to provide time for an unscheduled shipyard repair following MF04-05. Our original cruise objectives were scaled back to compensate for the lost sea time.

During the inport between cruises MF04-04 and MF04-05, we offloaded two 40 foot containers of recovered equipment, and loaded a 40 and a 20 foot container of equipment for this cruise. Loading and shipping was contracted through Horizon Lines.

NOAA Ship *Miller Freeman* left Dutch Harbor at 1500 hrs, April 24th 2004, bound for mooring site 03KC-2 on the Bering Sea side of the Alaska Peninsula. Onboard for this cruise were two representatives of Scripps Institute of Marine Science. Over the course of the cruise and along our track line, we deployed a number of marine mammal radio transmitting hydrophones (noted as sonobuoys in the list of activities). Moorings KC-2 and KC-1 were recovered and redeployed. A CTD cast was completed before recovery and following deployment. We steamed north to the PMEL long term data series site BS-2. Triplicate CalVET tows were completed near the BS-2 mooring site. We were planning to follow up with bongo tows but there was a problem with the bongo/SEACAT system. After some trouble shooting and testing by the ship's ET it was determined that there was a short in a wire leading from the slip rings to the first J-box and a short in the underwater connection. We recovered the ADCP mooring at site 2 (03-BSP-2C) and completed a CTD cast. Next we recovered subsurface mooring 03-BS-2C. The subsurface BS-2 mooring was replaced by a surface mooring, 04-BSM-2A and the ADCP mooring (04-BSP-2A)

was also deployed. An acoustic rain gauge provided by Univ. of Washington was deployed on the surface mooring string of instruments. A marine mammal hydrophone instrument was deployed below the ADCP on mooring 04-BSP-2A. One CTD cast and triplicate bongos completed the work scheduled for site BS-2. The sediment trap mooring often included at this site was not deployed due to budget constraints at Univ. of Alaska Fairbanks.

From BS-2 the ship steamed north along the 70 meter isobath to the FOCI historical mooring site BS-4. During the 70 meter isobath transit we completed 4 CTD casts collecting nutrient and chlorophyll samples. First on the agenda at BS-4 were 3 CalVET tows and 3 Bongo Tows. These were followed by a CTD cast and the recovery of mooring 03-BS-4B. The new 04-BS-4A mooring was deployed and a final CTD cast completed the scheduled work at site BS-4. We continued north along the 70 meter isobath completing a 7 CTD cast series that ended just south of St. Matthew Island. From there the ship steamed south to the first Pribilof Island mooring site.

Eight moorings were deployed near the Pribilof Islands in the following order: 04-PIP-6, 04-PIP-5, 04-PIP-3, 04-PIP-2, 04-PIP-1, 04-PIP-4, 04-PI-8, and 04-PI-7. Each of the deployments was followed by a CTD cast and a bongo tow. Due to 40 knot plus winds, the bongo tow was dropped at one station. A marine mammal hydrophone mooring was deployed near site 04-PIP-2 and 04-PIP-7. Following the deployment of 04-PIP-7 we steamed south to the canyon to deploy the last Scripps marine mammal hydrophone mooring. After successfully completing all mooring operations the vessel set a course for Dutch Harbor. We arrived at the Dutch Harbor City Pier at approximately 0930 April 2nd, 2004.

While along side the City Pier, all PMEL mooring equipment was offloaded to a 40 foot container for shipment to Seattle. Shipping arrangements were contracted through Horizon Lines. NOAA Ship *Miller Freeman* got underway for Ketchikan, AK ship yard at 1300 hours on April 2nd. Kevin Hardy of Scripps remained on board to recover a marine mammal hydrophone located south of Kodiak. This recovery attempt was dropped from Cruise MF-04-04 due to time lost to the grounding and weather. The mooring was successfully recovered on the transit from Dutch Harbor to Ketchikan. The ship also deployed an Argos satellite drifter buoy on the north side of Unimak pass following their departure from Dutch Harbor.

Observations:

On a couple of occasions high winds and seas slowed our transits and operations but with the exclusion of one bongo tow we were able to complete all of our mooring and ancillary objectives. As mentioned earlier, our final list of objectives were scaled back to allow for the vessel repair period.

Having to use an over the side portable transducer adds a good deal of time to mooring communication and mooring search efforts. A new hull mounted transducer has been ordered and is scheduled to be installed during the Ketchikan repair period.

There was a problem with the winch controls on the stbd oceo winch, and too much wire was put on the drum at PMC this winter. I suggested removing several layers of wire and having the

level wind centered on the drum when the gear is on deck. There was so much wire on the drum that there wasn't an appreciable drum lip to keep the wire on the drum. With the new, and uncertain winch controls, the operators were going out too fast, putting slack in the wire and causing it to jump off the drum and wrap around the drum axel. This happened twice during our limited bongo and CalVET operations. In addition, on one occasion the gear was two blocked.

Last year there was some damage caused to the PMEL ADCP equipment upon recovery. The person in charge of the deck was unwilling to try alternative recovery practices. The same issue came up again this year. After a discussion with the deck department and the CO, changes were made and no further damage occurred. The damage was caused by the ADCP floats slamming into the stern ramp upon recovery.

What should have been an orderly and concise record of activities required hours of post cruise time to decipher. The electronic MOA kept by the bridge personnel was riddled with mistakes. Wrong buttons were pushed, events were not annotated at all, multiple buttons were pushed, and notes were not clear or concise. There was some improvement between Cruise MF04-04 and MF04-05, but additional attention should be paid to the record keeping program.

These items were mentioned in the OMAO/MOC customer satisfaction survey.

There was some confusion concerning the number of floats required for Cruise MF04-04 and MF04-05. Sixteen- 30 inch floats were air freighted to Dutch Harbor to complete MF04-05 and a 40 inch float was substituted for two 30 inch floats at mooring 04-PI-7A.

Table of Operations

Event		Date (GMT)	Time (GMT)	ID#	Latitude (N)	Longitude (W)	Depth (M)
Depart Dutch Harbor		4/24/2004	2300				
Sono-buoy	Deployed	4/25/2004	1856	185638	56	19.783 161	17.570 59
Sono-buoy	Deployed	4/25/2004	1921	192147	56	22.837 161	17.570 65
CTD		4/25/2004	2039	1	56	30.038 160	59.205 63
Mooring	Recovered	4/25/2004	2141	03KC2	56	29.936 160	59.985 66
Mooring	Deployed	4/25/2004	2210	04KC1	56	29.896 160	59.932 65
CTD		4/25/2004	2221	2	56	29.975 161	0.412 65
CTD		4/26/2004	153	3	56	25.271 160	12.789 21
Mooring	Recovered	4/26/2004	215	03KC2	56	25.033 160	12.960 21
Mooring	Deployed	4/26/2004	255	04KC1	56	25.033 160	12.968 21
CTD		4/26/2004	304	4	56	25.020 160	13.609 21
CalVET		4/26/2004	1407	1	56	51.671 164	1.230 71
CalVET		4/26/2004	1426	2	56	51.558 164	0.628 72
CalVET		4/26/2004	1450	3	56	51.459 163	59.912 72
Mooring	Recovered	4/26/2004	1738	3BSP-2	56	51.630 164	3.880 72
CTD		4/26/2004	1811	5	56	52.562 164	3.727 72
Mooring	Recovered	4/26/2004	2031	3BS-2C	56	52.198 164	3.880 72
Mooring	Deployed	4/27/2004	20	4BSM2	56	52.529 164	3.348 72
Mooring	Deployed	4/27/2004	140	4BSP-2	56	51.613 164	3.651 72

Event		Date (GMT)	Time (GMT)	ID#	Latitude (N)	Longitude (W)	Depth (M)		
CTD		4/27/2004	157	6	56	52.413	164	3.960	71
Bongo		4/27/2004	218	Bon001	56	52.714	164	3.668	71
Bongo		4/27/2004	249	Bon002	56	52.507	164	3.007	72
Bongo		4/27/2004	314	Bon003	56	52.446	164	3.682	72
Sono-buoy	deployed	4/27/2004	545		57	5.435	164	53.740	70
CTD		4/27/2004	614	7	57	6.897	164	59.974	70
CTD		4/27/2004	912	8	57	25.183	165	51.946	69
CTD		4/27/2004	1201	9	57	32.245	166	44.046	68
CTD		4/27/2004	1456	10	57	38.059	167	36.960	70
Sono-buoy	deployed	4/27/2004	1536		57	39.814	167	47.945	69
Sono-buoy	deployed	4/27/2004	1821		57	49.936	168	44.904	69
CalVET		4/27/2004	1858	4	57	51.067	168	52.228	69
CalVET		4/27/2004	1915	5	57	51.204	168	52.450	69
CalVET		4/27/2004	1929	6	57	51.318	168	52.609	69
Bongo		4/27/2004	2000	4	57	51.236	168	51.286	69
Bongo		4/27/2004	2025	5	57	51.108	168	52.553	69
Bongo		4/27/2004	2046	6	57	50.756	168	53.020	69
CTD		4/27/2004	2115	11	57	51.221	168	52.516	69
Mooring	Recovered	4/27/2004	2223	3BS-4B	57	51.327	168	52.548	70
Mooring	Deployed	4/27/2004	2358	4BS-4A	57	51.179	168	52.196	70
CTD		4/28/2004	13	12	57	51.292	168	52.781	70
Sono-Buoy	Deployed	4/28/2004	316		58	10.864	169	45.210	69
CTD		4/28/2004	344	13	58	12.992	169	51.073	70
Sono-Buoy	Deployed	4/28/2004	414		58	17.302	169	54.111	69
Sono-Buoy	Deployed	4/28/2004	544		58	37.675	170	8.573	70
CTD		4/28/2004	619	14	58	41.001	170	11.181	70
CTD		4/28/2004	936	15	59	19.604	170	23.719	70
CTD		4/28/2004	1319	16	59	54.273	171	9.828	69
Sono-Buoy	Deployed	4/28/2004	1704		60	0.548	172	28.758	70
Sono-Buoy	Deployed	4/28/2004	1732		60	01-472	172	39.508	70
CTD		4/28/2004	1802	17	60	1.994	172	45.977	65
Sono-Buoy	Deployed	4/28/2004	2139		59	26.640	172	5.631	81
Sono-Buoy	Deployed	4/29/2004	202		58	41.961	171	12.654	85
Mooring	Deployed	4/29/2004	1651	4PIP6	57	25.220	169	40.426	68
CTD		4/29/2004	1706	18	57	25.436	169	40.627	67
Bongo		4/29/2004	1727	7	57	25.453	169	40.551	67
Sono-Buoy	Deployed	4/29/2004	1828		57	22.626	170	0.250	62
Sono-Buoy	Deployed	4/29/2004	1834		57	22.261	170	2.626	61
Sono_Buoy	Deployed	4/29/2004	1857		57	20.998	170	11.471	57
Mooring	Deployed	4/29/2004	2055	4PIP5	57	7.994	170	34.271	68
CTD		4/29/2004	2108	19	57	8.236	170	34.059	68
Bongo		4/29/2004	2123	8	57	8.506	170	34.102	68
Sono-Buoy	Deployed	4/29/2004	2208		57	8.079	170	47.557	83
Mooring	Deployed	4/30/2004	16	4PIP3	57	7.093	171	13.168	102
CTD		4/30/2004	32	20	57	7.290	171	12.791	102
Bongo		4/30/2004	48	9	57	7.515	171	12.859	102
Mooring	Deployed	4/30/2004	448	MM1	56	45.553	170	28.837	104
Mooring	Deployed	4/30/2004	804	4PIP2	56	34.606	170	5.986	102

Event		Date (GMT)	Time (GMT)	ID#	Latitude (N)	Longitude (W)	Depth (M)
CTD		4/30/2004	824	21	56	34.957 170	6.662 101
Mooring	Deployed	4/30/2004	1751	4PIP1	56	53.989 169	35.392 99
CTD		4/30/2004	1808	22	56	54.323 169	35.224 99
Bongo		4/30/2004	1830	10	56	54.450 169	35.645 100
Mooring	Deployed	4/30/2004	2223	4PIP4	56	38.049 168	52.645 102
CTD		4/30/2004	2237	23	56	38.246 168	52.646 102
Bongo		4/30/2004	2255	11	56	38.666 168	52.260 102
Mooring	Deployed	5/1/2004	156	4PIP8	56	13.892 168	35.059 200
CTD		5/1/2004	214	24	56	14.069 168	34.920 201
Bongo		5/1/2004	305	12	56	14.251 168	35.787 202
Argos							
Drifter	Deploy	5/1/2004	612	43711	56	26.626 169	29.705 101
Mooring	Deployed	5/1/2004	1650	MM2	56	21.482 169	39.745 125
Mooring	Deployed	5/1/2004	1753	4PIP7	56	17.175 169	41.746 202
CTD		5/1/2004	1809	25	56	17.208 169	41.680 202
Bongo		5/1/2004	1903	13	56	17.816 169	43.112 187
Sono-Buoy	Deployed	5/1/2004	2056		55	56.883 169	44.886 na
Sono-Buoy	Deployed	5/1/2004	2342		55	19.720 169	49.700 na
Mooring	Deployed	5/2/2004	613	MM3	53	59.975 169	59.978 2500
Drifter	Deployed	5/3/2004	246	43712	54	29.060 165	17.130 na
Mooring	Recovered	5/5/2004		MM4	56	57.020 150	59.810 800

Figure 2: Cruise Track (planned)

