

CRUISE REPORT

MF-07-11 Leg 2

Vessel: NOAA Ship Miller Freeman

Area of Operation: Bering Sea, Dutch Harbor to St. Lawrence Island.

Itinerary: Depart Dutch Harbor, AK. 17 Sept. 2007
Arrive Dutch Harbor, AK. 30 Sept. 2007

Participating Organizations: NOAA/PMEL/OERD-2 Univ. of Alaska Fairbanks

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Cruise Objectives:

Recovery and deployment of the moorings at the 4 Bering Sea sites were the primary objectives for this cruise. Collecting physical oceanographic data with CTD casts and U-Tow operations and installing a real time data transmitting SeaCat in St. George harbor were important secondary objectives.

Summary of Operations:

Surface mooring recovery 1
Sub-surface mooring recovery 8
Sub-surface mooring deployments 8
CTD casts 20
Miles of U-Tow trackline 891

Narrative:

A portion of the equipment for this cruise was loaded on the vessel during their August Seattle import. The remainder of the equipment was shipped to Dutch Harbor via Horizon shipping. FTS staged the container in Dutch Harbor, transferred the equipment to a flatbed truck and delivered it to the Crowley Pier where we were tied.

The Miller Freeman was scheduled to depart Dutch Harbor at 1500 on Sept. 17th. The forecast for Dutch Harbor and points north predicted 50 knot winds and 25 foot seas, the decision was made to delay sailing one day. We departed Dutch at 1800 Sept. 18th steaming north to mooring site BS-8. Seas were on the beam and the wind was still over 30 knots. The rolling of the ship broke a number of dishes in the galley, tossed lunch on

deck and tore a refrigerator off its wall mountings. It was our intention to deploy the U-Tow just north of Dutch Harbor to collect CTD and fluorometer data along the 70 meter isobath to BS-8. The wind and seas were such that we were unable to safely deploy the U-Tow until the second day out of Dutch at approximate position 58 degrees 14.9 N and 168 degrees 34.7 W. A CTD cast was completed prior to deploying the U-Tow. We followed the 70 meter isobath about 30 miles north of mooring site BS-8, made a slow turn and towed back to the mooring site arriving at 0730 Sept. 21st.

Sub-surface moorings 06-BS-8A and 06-BSP-8A were successfully recovered and replaced with 07-BS-8A and 07-BSP-8A. A CTD cast was completed prior to recovery and following deployment. The U-Tow was deployed for the transit from mooring site BS-8 to BS-5.

We arrived at mooring site BS-5 the morning of Sept. 22nd with another storm coming our way. Sub-surface moorings 07-BSP-7A and 07-BS-4A were recovered. 07-BSP-4B was successfully deployed as was mooring 07-BS-4B. CTD casts were completed prior to recovery and following the mooring deployments. We deployed the U-Tow and steamed south to mooring site BS-4, arriving the morning of Sept. 23rd.

Sub-Surface moorings 07-BS-5A and 07-BSP-5A were successfully recovered.

Moorings 05-BSP-5B and 07-BS-5B were deployed. There was a couple hour delay deploying 07-BS-5B trouble shooting a shorted battery to NAS power cable. CTD casts were completed prior to recovery and following the mooring deployments.

With the impending storm already blowing 35 knots we pounded our way west to a lee on the north side of St. George Island. The Dyson, Freeman and 3 large commercial fishing vessels jogged back and forth in the lee of St. George. Just after dinner on Sept. 24th the Freeman dropped anchor for the night. We were in contact with Max Malavansky, the St. George contact person for the installation of a SeaCat in the protected harbor. He was reporting 20 foot seas on the south harbor side of the island and 6-8 foot seas breaking along the shore on the north side of the island.

Tuesday Sept. 25th with 10 foot breakers at the inlet to the breakwater and no place on the north side to safely land a small boat any possibility of a getting to St. George Island is on hold for another day. I contacted the Thompson to continue with arrangements for the personnel transfer; they were delaying their departure from Dutch Harbor one day due to weather.

The best weather analysis available indicated that Sept. 26th may be the only opportunity we would have to recover the surface mooring at BS-2. We prepared to get underway from our anchoring in the lee of St. George at noon on Sept. 25th. The main engine was started and then we lost all electrical power to the ship. Later it was determined that the cause of the failure was the inadvertent shut off of the fuel to the generators. During the shut down a couple weaknesses in the computer system backup systems were highlighted. The battery back up power (UPS) for the SCS computer system in Data Plot is not sufficient to provide more than 4-5 minutes of power before the computers grind to a halt. This is not enough time to shut the computers down in an orderly fashion. Also when power was restored the 110 wall circuit in Data Plot has so many items plugged into it that the breaker tripped off repeatedly until all the printers, Xerox machine and a couple computers were unplugged. After power was restored it took about 3 hours to get the two SCS computers back up and recording the necessary sensors and to get the bridge computer back on line running the event MOA. The U-Tow was deployed for the transit

from St. George to site BS-2. We arrived on station the morning of Sept. 26th. The wind was still blowing near 30 knots and the seas were 12-15 feet. During the recovery of the U-Tow it caught a wave and hit the stern of the vessel damaging one of the SeaBird FastCats. Some ideas are being considered to attach a drogue onto the U-Tow wire for added stability during deployments and recoveries.

Trusting that the wind and seas would diminish as the day went on we recovered the 2 sub-surface moorings at site BS-2 first (07-BST-2A and 07-BSP-2A). Still waiting on the seas we deployed the two replacement moorings (07-BSP-2B and 07-BS-2C). Under marginal conditions we launched the Miller Freeman rescue boat to remove equipment from the top of the surface mooring tower and to attach a recovery line to the mooring. The recovery line was passed to the stern of the Freeman, the rescue boat was put back on deck and the surface mooring was recovered. A CTD cast was completed prior to recovery and following the deployment of moorings at site BS-2.

There was some damage to equipment on the recovered surface mooring. The protective cage surrounding UAF ISUS nitrate meter was ripped off. The protective cage on one of the SBE39s was bent and there was damage to the RCM9 current meter. The only possible explanation for this damage is a conflict with fishing gear.

With the surface mooring aboard we headed west to the north side of St. Paul Island to effect the personnel transfer with the T. Thompson. Peter Proctor was taken to the Thompson in the Freeman rescue boat around 4pm Thursday Sept. 27th. We took advantage of the lee on the north side of St. Paul to dismantle the surface mooring and secure the equipment on deck before getting underway for one more attempt to get personnel onto St. George Island for the installation of the SeaBird equipment in the inner harbor. At first light Friday Sept. 28th it was apparent that we could not get a boat into the breakwater on the south side of the island and we could not safely conduct a beach landing on the north side of the island. We completed a CTD line of stations south of St. George. Near the last two CTD stations the wind was back up to 40 knots and the seas were building. We completed the CTD line and steamed south to Dutch Harbor arriving at 1700 hours Sept. 29th, approximately 15 hours early due to weather.

The ship tied up at Crowley pier in Captains Bay. FTS transported the majority of the mooring equipment to their warehouse and loaded the 40 foot Horizon container for transport to Seattle. A few mooring items remained on the Freeman to avoid contracting a second shipping container. END.

Cruise Summary:

A considerable amount of cruise time was lost due to poor weather, our attempts to get ashore at St. George Island and the arrangement to transfer personnel to the Tommy Thompson. A conservative estimate of time lost due to weather would be 75 hours. Time lost to mechanical/computer downtime is 3 hours.

Acknowledgments:

PMEL mooring cruises are common place on the Miller Freeman but this one was particularly challenging due to the frequency and intensity of the storms encountered during the cruise. The Officers and Crew adapted well to scheduling changes and

performed there operational duties well in marginal working conditions. The same can be said for the participating science staff.

Attachments:

Table 1: Station locations and times.

Station ID	Latitude N	Logitude W	Date/Time
Depart Dutch Hbr			18 Sept/1800 Local
CTD001	58 16.375	168 32.371	20 Sept/0342 GMT
Start U-Tow 1	58 14.897	168 34.731	20 Sept/0425 GMT
End U-Tow 1	58 14.897	168 34.731	20 Sept/1555 GMT
CTD002	62 11.537	174 38.439	21 Sept/1636 GMT
Recover 06-BSP-8A	62 11.727	174 39.591	21 Sept/1730 GMT
Recover 06-BS-8A	62 11.663	174 40.059	21 Sept/1809 GMT
Deploy 07-BS-8A	62 11.624	174 40.058	21 Sept/2055 GMT
Deploy 07-BSP-8A	62 11.624	174 40.058	21 Sept/2157 GMT
CTD003	62 11.726	174 39.986	21 Sept/2218 GMT
Start U-Tow 2	62 10.486	174 38.890	21 Sept/2253 GMT
End U-Tow 2	59 52.927	171 40.880	22 Sept/1342 GMT
CTD004	59 54.580	171 43.447	22 Sept/1413 GMT
CTD005	59 54.644	171 43.514	22 Sept/1449 GMT
Recover 07-BSP-5A	59 54.28	171 42.28	22 Sept/1606 GMT
Recover 07-BS-5A	59 54.58	171 42.46	22 Sept/1636 GMT
Deploy 07-BS-5B	59 54.578	171 42.472	22 Sept/1857 GMT
Deploy 07-BSP-5B	59 54.278	171 42.290	22 Sept/1932 GMT
CTD006	59 54.525	171 42.648	22 Sept/2012 GMT
Start U-Tow 3	59 54.009	171 42.425	22 Sept/2036 GMT
End U-Tow 3	57 50.036	168 48.528	23 Sept/1012 GMT
CTD007	57 51.678	168 51.890	23 Sept/1051 GMT
CTD008	57 51.556	168 51.925	23 Sept/1118 GMT
Recover 07-BS-4A	57 51.429	168 52.432	23 Sept/1655 GMT
Recover 07-BSP-4A	57 51.650	168 52.617	23 Sept/1932 GMT
Deploy 07-BS-4B	57 51.427	168 52.440	23 Sept/2204 GMT
Deploy 07-BSP-4B	57 51.660	168 52.598	23 Sept/2303 GMT
CTD009	57 51.671	168 51.891	23 Sept/2321 GMT
Anchored St. George Island			24-Sep
CTD010	56 40.401	169 04.785	25 Sept/2338 GMT
Start U-Tow 4	56 40.687	169 04.129	25 Sept/2359 GMT
End U-Tow 4	56 52.584	164 02.736	26 Sept/1500 GMT
CTD011	56 52.528	164 02.559	26 Sept/1529 GMT
CTD012	56 52.584	164 02.736	26 Sept/1607 GMT
Recover 07-BSP-2A	56 52.009	164 02.960	26 Sept/1736 GMT
Recover 07-BST-2A	56 51.490	164 04.364	26 Sept/1902 GMT
Deploy 07-BSP-2B	56 51.937	164 03.201	26 Sept/2117 GMT
Deploy 07-BS-2C	56 51.989	164 03.002	26 Sept/2339 GMT
CTD013	56 52.210	164 02.694	27 Sept/0007 GMT
Recover 07-BSM-2A	56 52.116	164 01.712	27 Sept/0330 GMT
Personnel Transfer to R/V T.Thompson St. Paul Island			28 Sept/0015 GMT
CTD014	56 23.298	169 37.727	28 Sept/1816 GMT
CTD015	56 19.426	169 44.406	28 Sept/1915 GMT

CTD016	56 15.576	196 51.825	28 Sept/2012 GMT
CTD017	56 11.469	169 57.783	28 Sept/2104 GMT
CTD018	56 07.613	170 05.818	28 Sept/2206 GMT
CTD019	56 03.671	170 12.466	28 Sept/2302 GMT
CTD020	55 59.705	170 19.206	29 Sept/0014 GMT
Arrive Dutch Harbor			29 Sept/1700 GMT

Figure 1: Station Map, Mooring Locations

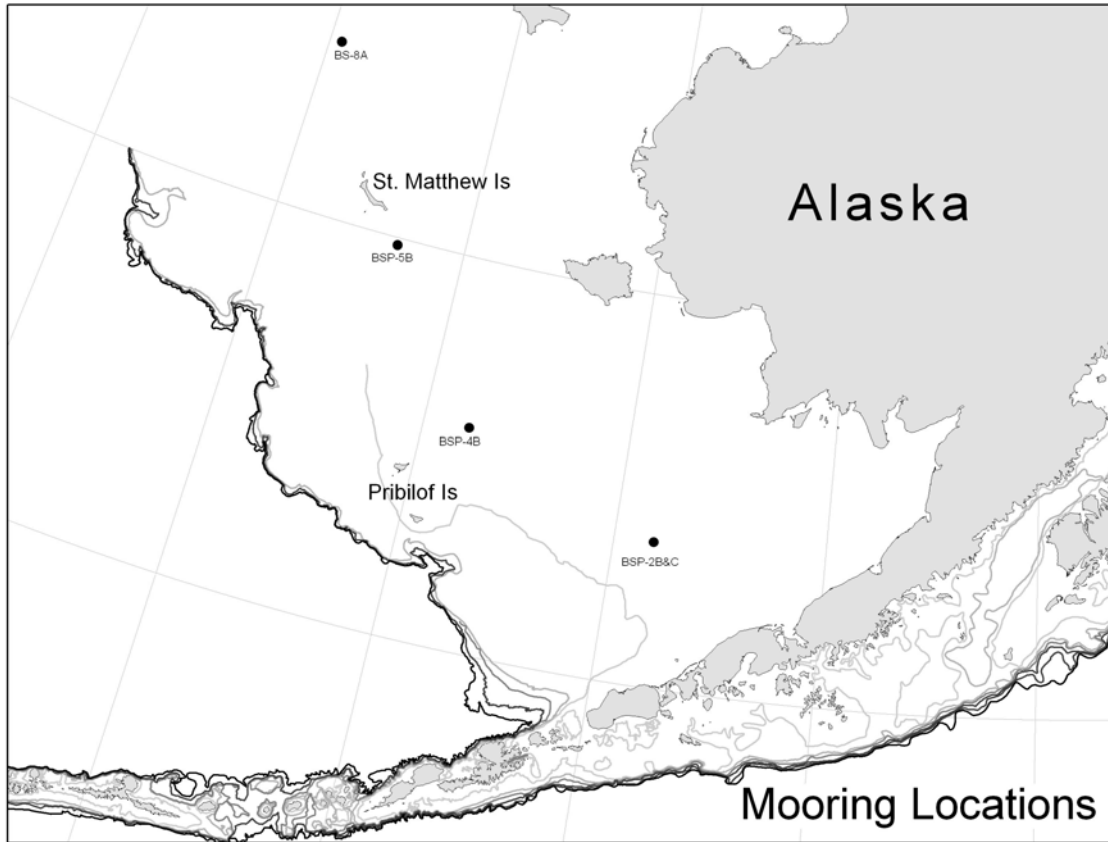


Figure 2: Station Map, CTD Locations

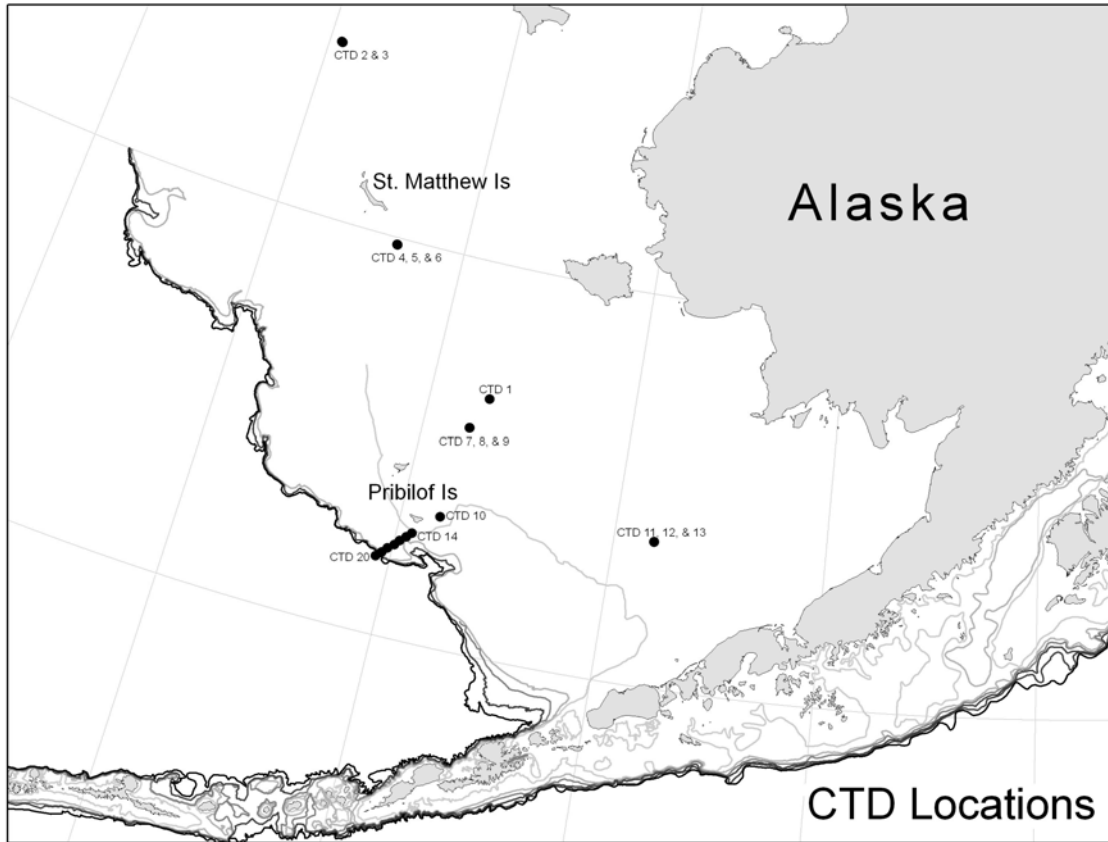


Figure 3: Station Map, U-Tow Locations

