

TROPICAL ATMOSPHERE-OCEAN (TAO) PROGRAM  
FINAL CRUISE REPORT  
KA-09-03

Area: Equatorial Pacific between 9°N and 5°S latitude along 140°W Longitude and 8°S to 8°N Latitude along 125°W Longitude.

Itinerary:

KA-09-02 DEP *June 14, 2009 Honolulu, HI*  
ARR *July 10, 2009 Honolulu, HI*

**CRUISE DESCRIPTION**

The Tropical Atmosphere Ocean (TAO) array consists of 70 buoys utilizing a taut line mooring configuration used to mount data collection sensors for climate research purposes. Fifteen buoys are serviced by JAMSTEC and the remaining 55 buoys from 95°W longitude to 165°E longitude are serviced by National Data Buoy Center (NDBC). Repair and maintenance of the buoys is performed by NDBC contracted personnel on an annual basis utilizing the NOAA Ship *Ka'imimoana* and other ships. The buoys' deployment lifecycle are up to 18 months to ensure at least one year of data collection can be completed.

TAO Project Points of Contact:

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TAO Cruise Objective and Plan:

The objective of this cruise was the maintenance of the TAO Array along the 140°W and 125° W meridians.

The scientific complement for the cruise embarked at *Honolulu, HI* on *August 23, 2009*. The ship departed on *August 24, 2009* and conducted operations as listed in Section 2.1. The ship arrived in *Honolulu, HI* on *September 24, 2009*.

1.0 PERSONNEL

1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: Leonard Quigley

Participating Scientists:

Name	Gender	Nationality	Affiliation
Leonard Quigley	M	US	NOAA/NDBC
Raymond Beets	M	US	NOAA/NDBC
William Thompson	M	US	NOAA/NDBC

2.0 OPERATIONS

2.1 TAO Data Recovery Summary

Mooring Operations conducted are shown in the tables below. The following provides details on the data recovery efforts for the buoys serviced. All noted time in the summary reports is Coordinated Universal Time (UTC):

**Buoy Site:** 9N 140W  
**Mooring Operation:** Recovery  
**Deployed Location:** 08 59.755N 140 15.669W  
**Recovered Location:** 09 00.31N 140 15.8W  
**Previous Repair Date:** 10/20/2009  
**Sensors/Equipment Lost at Sea:** None  
**Sensors Damaged/Fouled:** Fouled sensors were: SSC SN#12801, 20m T SN#13635, 40m T SN#12635, and 60m T SN# 12637.  
**Fishing/Vandalism:** None  
**Sensors/Tubes Downloaded:** All sensors downloaded successfully.  
**General Comments:** Major sea growth on 20m-temperature sensor.

**Mooring Depth:** 4824m  
**Mooring ID#:** PM742B  
**Deployed Date:** 5/6/2008  
**Recovered Date:** 8/30/09

Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Rain Gauge	2/4/2009	Erratic data.	None

**Buoy Site:** 9N 140W      **Mooring Depth:** 4822m  
**Mooring Operation:** Deployment      **Mooring ID#:** PM838A  
**Deployed Location:** 08 59.4N 140 15.4W      **Deployed Date:** 8/30/09  
**Pre-Deployment On Deck Instrument Failures:** None  
**Sensors/Equipment Lost at Sea:** None  
**Sensors Damaged During Deployment:** None  
**General Comments:** None

**Buoy Site:** 5N 140W      **Repair Date:** 9/1/09      **Mooring Depth:** 4483m  
**Mooring Operation:** Repair      **Mooring ID#:** PM783B  
**Deployed Location:** 04 58.5N 139.57.5W      **Deployed Date:** 10/23/08  
**Sensors/Equipment Lost at Sea:** Anemometer SN# 80476  
**Sensors Damaged/Fouled:** Anemometer  
**Fishing Vandalism:** None.  
**Sensors/Tubes Downloaded:** Tube downloaded  
**General Comments:** Installed new anemometer and an SSC.

Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Anemometer	12/11/2008	Speed went to zero.	Anemometer missing.

**Buoy Site:** 2N 140W      **Repair Date:** 9/2/09      **Mooring Depth:** 4370m  
**Mooring Operation:** Repair      **Mooring ID#:** PM785B  
**Deployed Location:** 01 58.5N 140 00.329W      **Deployed Date:** 10/25/08  
**Repair Location:** 01 59.446N 140 02.353W  
**Sensors/Equipment Lost at Sea:** None.  
**Sensors Damaged/Fouled:** None.  
**Fishing Vandalism:** None.  
**Sensors/Tubes Downloaded:** Tube downloaded  
**General Comments:** Exchanged the AT/RH sensor.

Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
ATRH	2/17/08	data missing	None

<b>Buoy Site:</b> 0N 140W ADCP	<b>Mooring Depth:</b> 4314m
<b>Mooring Operation:</b> Recovery	<b>Mooring ID#:</b> CA014

<b>Deployed Location:</b> 00 03.3710N 140 03.51W	<b>Deployed Date:</b> 10/26/08
<b>Recovered Location:</b> 00 03.3710N 140 03.51W	<b>Recovered Date:</b> 9/2/09
<b>Sensors/Equipment Lost at Sea:</b> None	
<b>Sensors Damaged/Fouled:</b> None	
<b>Fishing/Vandalism:</b> None	
<b>Sensors Downloaded:</b> ADCP not downloaded at sea.	
<b>General Comments:</b> RF transmitter was flooded.	

<b>Buoy Site:</b> 0N 140W ADCP	<b>Mooring Depth:</b> 4317m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> CA015
<b>Deployed Location:</b> 00 02.007N 140 02.554W	<b>Deployed Date:</b> 9/3/09
<b>Pre-Deployment On Deck Instrument Failures:</b> None.	
<b>Sensors/Equipment Lost at Sea:</b> None.	
<b>Sensors Damaged During Deployment:</b> None.	
<b>General Comments:</b> None.	

<b>Buoy Site:</b> 0 140W	<b>Mooring Depth:</b> 4350m		
<b>Mooring Operation:</b> Recovery	<b>Mooring ID#:</b> PM743B		
<b>Deployed Location:</b> 00 00.08N 139 52.31W	<b>Deployed Date:</b> 5/10/08		
<b>Recovered Location:</b> 00 00.15S 139 51.39W	<b>Recovered Date:</b> 9/4/09		
<b>Previous Repair Date:</b> 10/26/08			
<b>Sensors/Equipment Lost at Sea:</b> TP300 SN#12104 and TP500 SN#12112			
<b>Sensors Damaged/Fouled:</b> SSC missing upper poison puck.			
<b>Fishing/Vandalism:</b> Yes, buoy dragged off station			
<b>Sensors/Tubes Not Downloaded:</b> TV12687 No comms, TP300 SN#12104 and TP500 SN#12112 Lost at Sea, all other sensors were successfully downloaded.			
<b>General Comments:</b> TV SN# 12687 was disconnected from Sontek SN# D506			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Buoy	12/28/2008	Buoy moved off station.	None

<b>Buoy Site:</b> 0 140W	<b>Mooring Depth:</b> 4352m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> PM843A
<b>Deployed Location:</b> 00 00.15S 139 51.39W	<b>Deployed Date:</b> 9/4/2009
<b>Pre-Deployment On Deck Instrument Failures:</b> None	
<b>Sensors/Equipment Lost at Sea:</b> None	
<b>Sensors Damaged During Deployment:</b> None	
<b>General Comments:</b> None	

<b>Buoy Site:</b> 2S 140W		<b>Mooring Depth:</b> 4315m	
<b>Mooring Operation:</b> Refresh Recovery		<b>Mooring ID#:</b> KA0803-THS003B	
<b>Deployed Location:</b> 1 58.8S 139 57.3W		<b>Deployed Date:</b> 5/12/2008	
<b>Recovered Location:</b> 0159.096S 13957.675W		<b>Recovered Date:</b> 9/5/2009	
<b>Previous Repair Date:</b> 10/27/2008			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> SSC			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All sensors downloaded successfully.			
<b>General Comments:</b> Heavy sea growth on the SSC sensor.			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Relative Humidity	5/12/2008	Data too low.	None
All subsurface except SSC	5/12/2008	No data from inductive line.	Top section severed
Air Temperature	2/2/2009	Data too low.	None

<b>Buoy Site:</b> 2S 140W		<b>Mooring Depth:</b> 4321m	
<b>Mooring Operation:</b> Visit		<b>Mooring ID#:</b> PM786A	
<b>Deployed Location:</b> 2 02.1S 140 00.3W		<b>Deployed Date:</b> 10/28/2008	
<b>Visit Location:</b> 2 02.1S 140 01.0W		<b>Visit Date:</b> 9/5/2009	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> None.			
<b>Fishing/Vandalism:</b> None			
<b>General Comments:</b> Visit only. Buoy riding well in the water.			

<b>Buoy Site:</b> 5S 140W		<b>Mooring Depth:</b> 4357m	
<b>Mooring Operation:</b> Refresh Deployment		<b>Mooring ID#:</b> DM005	
<b>Deployed Location:</b> 04 57.8S 139 54.2W		<b>Deployed Date:</b> 9/5/2009	
<b>Pre-Deployment On Deck Instrument Failures:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged:</b> None			
<b>General Comments :</b> None			

<b>Buoy Site:</b> 5S 140W		<b>Mooring Depth:</b> 4360m	
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM744A	
<b>Deployed Location:</b> 04 59.9S 139 54.6W		<b>Deployed Date:</b> 5/13/2008	

<b>Recovered Location:</b> 04 58.62S 139.55.75W		<b>Recovered Date:</b> 9/5/09	
<b>Previous Repair Date:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> 180m T SN#12945			
<b>Sensors Damaged/Fouled:</b> None.			
<b>Fishing/Vandalism:</b> Possible			
<b>Sensors/Tubes Downloaded:</b> All sensors except 180m T SN#12945 were downloaded successfully.			
<b>General Comments:</b> Some chaffing on tower mounts, presuming wire rope.			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
None			

<b>Buoy Site:</b> 5S 140W		<b>Mooring Depth:</b> 4360m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> PM845A	
<b>Deployed Location:</b> 05 00.1S 139 54.1W		<b>Deployed Date:</b> 9/6/2009	
<b>Pre-Deployment On Deck Instrument Failures:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged:</b> None			
<b>General Comments:</b> None.			

<b>Buoy Site:</b> 5S 140W		<b>Mooring Depth:</b> 4360m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> PM845A	
<b>Deployed Location:</b> 05 00.1S 139 54.1W		<b>Deployed Date:</b> 9/6/2009	
<b>Pre-Deployment On Deck Instrument Failures:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged:</b> None			
<b>General Comments:</b> None.			

<b>Buoy Site:</b> 5S 125W		<b>Mooring Depth:</b>	
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM746A	
<b>Deployed Location:</b> 04 59.1S 124 56.0W		<b>Deployed Date:</b> 5/21/2008	
<b>Recovered Location:</b> 04 59.203S 124 57.390W		<b>Recovered Date:</b> 9/11/2009	
<b>Previous Repair Date:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> 80m T SN# 13364, 120m T SN# 13366			
<b>Sensors Damaged/Fouled:</b> Fouled sensors are: 1m SSC SN#12808, 20m T SN# 13212 had 20" diameter growth of barnacles, 40m T SN#13213			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> 80m T SN# 13364, 120m T SN# 13366 not downloaded. All other sensors were downloaded successfully.			
<b>General Comments:</b> None			

Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
T60m	6/10/2008	Data erratic and too high.	None

<b>Buoy Site:</b> 5S 125W	<b>Mooring Depth:</b> 4543m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> PM847A
<b>Deployed Location:</b> 04 59.7S 124 55.5W	<b>Deployed Date:</b> 9/11/2009
<b>Pre-Deployment On Deck Instrument Failures:</b> None.	
<b>Sensors/Equipment Lost at Sea:</b> None	
<b>Sensors Damaged:</b> None	
<b>General Comments:</b> None.	

<b>Buoy Site:</b> 2S 125W	<b>Mooring Depth:</b>		
<b>Mooring Operation:</b> Recovery	<b>Mooring ID#:</b> PM747A		
<b>Deployed Location:</b> 02 02.052S 124 53.142W	<b>Deployed Date:</b> 5/22/2008		
<b>Recovered Location:</b> 02 00.429S 124 54.320W	<b>Recovered Date:</b> 9/12/2009		
<b>Previous Repair Date:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> None.			
<b>Sensors Damaged/Fouled:</b> Fouled sensors are: 1m SSC SN#12803, 20m T SN# 12467, and 40m T SN# 124640			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All sensors downloaded successfully.			
<b>General Comments:</b> Terminal dummy plug missing from tube. 60m T SN#12641 was flooded.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Salinity	6/14/2009	Downward drift.	None

<b>Buoy Site:</b> 2S 125W	<b>Mooring Depth:</b> 4757m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> PM848A
<b>Deployed Location:</b> 02 02.3S 124 53.5W	<b>Deployed Date:</b> 9/12/2009
<b>Pre-Deployment On Deck Instrument Failures:</b> 120m T SN#12915	
<b>Sensors/Equipment Lost at Sea:</b> None.	
<b>Sensors Damaged:</b> None.	
<b>General Comments:</b> None.	

<b>Buoy Site:</b> 0 125W	<b>Repair Date:</b> 9/13/2009	<b>Mooring Depth:</b> 4118m
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<b>Mooring Operation:</b> Repair		<b>Mooring ID#:</b> PM790B	
<b>Deployed Location:</b> 00 10.75S 124 23.5W		<b>Deployed Date:</b> 11/12/2008	
<b>Repair Location:</b> 0 09.9S124 23.2W			
<b>Sensors/Equipment Lost at Sea:</b> Anemometer SN#70632			
<b>Sensors Damaged/Fouled:</b> Damaged sensors are: Anemometer SN#70632			
<b>Fishing Vandalism:</b> Possible.			
<b>Sensors/Tubes Downloaded:</b> Tube downloaded.			
<b>General Comments:</b> Replaced PCO2 battery pack installed a new anemometer and swapped the payload tube.			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Anemometer	7/25/2009	Speed went to zero.	Sensor was ripped off the mast.

<b>Buoy Site:</b> 2N 125W		<b>Mooring Depth:</b>	
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM748A	
<b>Deployed Location:</b> 01 57.74N 125 03.11W		<b>Deployed Date:</b> 5/23/2008	
<b>Recovered Location:</b> 1 58.6N 125 02.8W		<b>Recovered Date:</b> 9/14/2009	
<b>Previous Repair Date:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> 1m SSC SN# 12805, 20m T SN#12970, 300m TP SN#13305			
<b>Sensors Damaged/Fouled:</b> None.			
<b>Fishing/Vandalism:</b> Nylon chord wrapped around top section and nilspin socket.			
<b>Sensors/Tubes Downloaded:</b> 1m SSC SN# 12805, 20m T SN#12970, 40m T SN# 13226 300m TP SN#13305 not downloaded. All other sensors downloaded successfully.			
<b>General Comments:</b> None			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Salinity	4/24/2009	Data too high.	Fishing vandalism. Fishing gear found near top of the mooring.

<b>Buoy Site:</b> 2N 125W		<b>Mooring Depth:</b> 4709m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> PM851A	
<b>Deployed Location:</b> 01 57.8N 125 02.9W		<b>Deployed Date:</b> 9/15/2009	
<b>Pre-Deployment On Deck Instrument Failures:</b> T2 module failed on deck, replaced with spare.			
<b>Sensors/Equipment Lost at Sea:</b> None.			
<b>Sensors Damaged:</b> None.			
<b>General Comments:</b> None.			



<b>Buoy Site:</b> 5N 125W		<b>Mooring Depth:</b>	
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM710B	
<b>Deployed Location:</b> 05 04.9N 124 52.8W		<b>Deployed Date:</b> 10/18/2007	
<b>Recovered Location:</b> 5 08.9N 124 52.46W		<b>Recovered Date:</b> 9/15/2009	
<b>Previous Repair Date:</b> 5/24/2008			
<b>Sensors/Equipment Lost at Sea:</b> Anemometer SN# 80492			
<b>Sensors Damaged/Fouled:</b> Anemometer SN# 80492			
<b>Fishing/Vandalism:</b> Yes fishing line found between the 4 <sup>th</sup> and 5 <sup>th</sup> spool of nylon.			
<b>Sensors/Tubes Not Downloaded:</b> 1m SSC SN#12876 (dead battery), 20m T SN#14261 (no comms), 40m T SN#14262 (no comms) not downloaded. All other sensors downloaded successfully.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Anemometer	6/18/2008	Speed went to zero.	Ripped off the mast.

<b>Buoy Site:</b> 5N 125W		<b>Mooring Depth:</b> 4373m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> PM852A	
<b>Deployed Location:</b> 05 04.9N 124 52.7W		<b>Deployed Date:</b> 9/16/2009	
<b>Pre-Deployment On Deck Instrument Failures:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> None.			
<b>Sensors Damaged:</b> None.			
<b>General Comments:</b> None.			

<b>Buoy Site:</b> 8N 125W		<b>Mooring Depth:</b>	
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM749A	
<b>Deployed Location:</b> 8 01.461N 125 01.049W		<b>Deployed Date:</b> 5/25/2008	
<b>Recovered Location:</b> 8 02.078N 125 00.8W		<b>Recovered Date:</b> 9/16/2009	
<b>Previous Repair Date:</b> None.			
<b>Sensors/Equipment Lost at Sea:</b> Anemometer SN# 80497			
<b>Sensors Damaged/Fouled:</b> None.			
<b>Fishing/Vandalism:</b> 15 meters of tow line attached, long line gear on Nilspin socket, one of the tower bolts was missing, and the radar reflector was also missing.			
<b>Sensors/Tubes Not Downloaded:</b> 40m T SN#13949 (dead battery) not downloaded. All other sensors were downloaded successfully.			
<b>General Comments:</b> None			
<b>Site Sensor Failures</b>	<b>Date Sensors Failed</b>	<b>Why Sensors Failed</b>	<b>Field Service Observations</b>
Anemometer	8/2/2008	Speed went to zero.	Ripped off the mast.
Buoy	7/7/2009	Transmission failure.	None

<b>Buoy Site:</b> 8N 125W	<b>Mooring Depth:</b> 4659m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> PM854A
<b>Deployed Location:</b> 8 01.313N 125 00.746W	<b>Deployed Date:</b> 9/17/2009
<b>Pre-Deployment On Deck Instrument Failures:</b> None.	
<b>Sensors/Equipment Lost at Sea:</b> None	
<b>Sensors Damaged:</b> None	
<b>General Comments:</b> None.	

## 2.2 *CTD Casts Completed*

A Sea-Bird 911plus CTD with dual temperature and conductivity sensors was provided by the NMAO. Temperature and conductivity sensors are calibrated yearly at Sea-Bird and sent in for diagnostics as necessary. A Sea-Bird 12-position carousel and twelve 5-liter Niskin bottles were used to collect water samples for the analysis of salinity.

After the eleventh CTD cast, the CTD winch controller had mechanical problems that could not be repaired at sea. Therefore, only 11 CTD casts were performed on this cruise.

The following outlines the CTD casts completed during the cruise:

<b>CTD Operations</b>				
<b>Coordinates</b>	<b>Date</b>	<b>Cast #</b>	<b>Comments</b>	
09 02.145N 140 15.716N	8/30/2009	KA30011	3000 m	
08 00.141N 140 10.833W	8/31/2009	KA30021	1000m	
06 59.996N 140 06.100W	8/31/2009	KA30031	1000m	
06 00.535N 140 01.702W	8/31/2009	KA30041	1000m	
05 02.197N 139 54.959W	9/1/2009	KA30051	1000m	
04 00.929M 139 58.796W	9/1/2009	KA30061	1000m	
03 00.388N 139 59.651W	9/1/2009	KA30071	1000m	
02 00.964N 140 03.170W	9/2/2009	KA30081	1000m	
01 01.356N 140 02.421W	9/2/2009	KA30091	1000m	
00 01.802S 139 52.166W	9/4/2009	KA30101	3000m	
01 00.639S 139 58.329W	9/4/2009	KA30111	1000m	

## 2.3 *Ancillary Science Projects Completed on the Cruise*

The following outlines the ancillary science work performed in conjunction with the TAO operations on

the cruise:

Pacific Marine Environmental Laboratory (PMEL) Argo Profiling CTD Floats

Three Argo floats were scheduled for deployment on this cruise. The chief scientist verified and briefed the Operations Officer on the deployment positions prior to the start of the cruise. All Argo Float deployments were completed as scheduled.

Questions concerning ARGO Floats should be directed to:

Gregory Johnson, NOAA/PMEL  
Tel: (206) 526-6806  
E-mail: [pmel\\_floats@noaa.gov](mailto:pmel_floats@noaa.gov)

or

Elizabeth Steffen, NOAA/PMEL  
Tel: (206) 526-6747  
E-mail: [pmel\\_floats@noaa.gov](mailto:pmel_floats@noaa.gov)

The following outlines the Argo floats deployed during the cruise:

No Argo floats were deployed during this cruise.

Atlantic Oceanographic and Meteorological Laboratory (AOML) Surface Drifting Floats

Twelve AOML Surface Drifters were scheduled for deployment on this cruise. The chief scientist verified and briefed the Operations Officer on the deployment positions prior to the start of the cruise. All AOML Surface Drifter deployments were completed as scheduled.

Questions concerning AOML Surface Drifters should be directed to:

Shaun Dolk, NOAA/AOML  
Global Drifter Center,  
Tel: (305) 361-4546  
Fax: (305) 361-4436  
E-mail: [shaun.dolk@noaa.gov](mailto:shaun.dolk@noaa.gov)

The following outlines the AOML Drifting floats deployed during this cruise:

AOML Floats			
Coordinates	Date	SN#	Comments
04 01.407N 139 58.878W	9/1/2009	78823, 78828	2 Floats were deployed at this location.
02 01.632N 140 03.791W	9/2/2009	78825, 78826	2 Floats were deployed at this location.
00 03.007S 139 52.686W	9/4/2009	78841	
00 03.039S 139 52.705W	9/4/2009	78824	
02 02.618S 140 01.061W	9/5/2009	78844	

02 02.630W 140 01.063W	9/5/2009	78819	
03 59.954S 139 56.126W	9/5/2009	78848	
04 00.015S 139 56.124W	9/5/2009	78842	
03 59.934S 124 55.139W	9/12/2009	78839	
03 59.927S 124 55.139W	9/12/2009	78843	
02 02.287S 124 53.537W	9/13/2009	78840, 78847	2 Floats were deployed at this location.
00 09.040S 124 23.917W	9/15/2009	78827	
00 08.993S 124 23.934W	9/15/2009	78822	
01 58.445N 125 02.784W	9/15/2009	78820	
01 58.456N 125 02.771W	9/15/2009	78821	
03 59.947N 124 56.370W	9/15/2009	78845	
03 59.974N 124 56.367W	9/15/2009	78846	

PCO2 and Nitrate Mapping System and Nutrient Samples

Eleven (11) 30ml water samples were collected on this cruise. The chief scientist verified and briefed the Operations Officer on the specifications of the water samples to be collected during CTD casts prior to the start of the cruise. All water samples were collected as scheduled.

Questions concerning Nutrient Samples should be directed to:

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