

TROPICAL ATMOSPHERE-OCEAN (TAO) PROGRAM
FINAL CRUISE REPORT
KA-10-02

Area: Equatorial Pacific between 8°N and 8°S latitude along 165°E Longitude and 8°S to 8°N Latitude along 180° Longitude.

Itinerary:

KA-10-02 DEP *February 13, 2010, Kwajalein, RMI*
ARR *February 15, 2010, Kosrae, FSM*
DEP *February 19, 2010, Kosrae, FSM*
ARR *March 18, 2010, 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 165°E and 180° meridians. The scientific complement for the cruise embarked at *Kwajalein, RMI* on *February 12, 2010*. The ship departed on *February 13, 2010* and conducted operations as listed in Section 2.1. A short port call was made at *Kosrae, FSM* was made *February 15-19, 2010*. The ship arrived in *Honolulu, HI* on *March 18, 2010*.

1.0 PERSONNEL

1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: Raymond Beets

Participating Scientists:

Name	Gender	Nationality	Affiliation
William Thompson	M	US	NOAA/NDBC
Robert Koller	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):

Cruise Summary

Buoy Site: 8N 165E	Mooring Depth: 5219m
Mooring Operation: Recovery	Mooring ID#: PM768B
Deployed Location: 08 02.9N 165 08.5E	Deployed Date: 9/7/2008
Recovered Location: 08 03.41N 165 7.78E	Recovered Date: 2/14/10
Previous Repair Date: 6/15/2009	
Sensors/Equipment Lost at Sea: T75 SN# 14547	
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#12802, 25m T SN#14545, 50m T	

SN#14467, and SSC SN# 13518.			
Fishing/Vandalism: None			
Sensors/Tubes Downloaded: All sensors downloaded successfully except failed SSC SN#13518.			
General Comments: SSC SN#12802 was attached via pickle fork.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Buoy	11/27/09	No transmissions	Ship's Argos receiver picked up buoy transmissions
SSC	5/25/09	No data	Fouled, no communications

Buoy Site: 8N 165E	Mooring Depth: 5218m
Mooring Operation: Deployment	Mooring ID#: PM873A
Deployed Location: 08 2.98N 165 8.82E	Deployed Date: 2/15/10
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None	

Buoy Site: 5N 165E Refresh	Mooring Depth: 4773m		
Mooring Operation: Repair	Mooring ID#: DM003B		
Deployed Location: 05 02.2N 165 03.1E	Deployed Date: 6/16/09		
Repair Location: 05 01.7N 165 02.3E	Repaired Date: 2/21/2010		
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: None.			
Fishing Vandalism: None.			
Sensors/Tubes Not Downloaded: N/A			
General Comments: Hopped buoy a second time to repair RH. Repair started 2/20/10, ended 2/21/10. New GPS Antenna, Iridium Ant, Wind, AT/RH, and Payload installed.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Tube	10/10/09	No transmissions	Looked standard
AT/RH	After 10/10/09 and before 2/21/10	RH supersaturated	Looked standard

Buoy Site: 5N 165E	Mooring Depth: 4787m
Mooring Operation: Recovery	Mooring ID#: PM820A

Deployed Location: 05 01.9N 165 0.46E		Deployed Date: 6/17/2009	
Recovered Location: 05 01.83N 164 59.575E		Recovered Date: 2/20/10	
Previous Repair Date: None.			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#13569, 25m T SN#13933, 50m T SN#13944, 75m T SN# 13945, 100m T SN# 13946.			
Fishing/Vandalism: None			
Sensors/Tubes Downloaded: All sensors downloaded successfully.			
General Comments: None.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
None			

Buoy Site: 5N 165E		Mooring Depth: 4782m	
Mooring Operation: Deployment		Mooring ID#: PM874A	
Deployed Location: 05 2.07N 165 0.71E		Deployed Date: 2/21/10	
Pre-Deployment On Deck Instrument Failures: None			
Sensors/Equipment Lost at Sea: None			
Sensors Damaged During Deployment: None			
General Comments: Top section was not stamped.			

Buoy Site: 2N 165E		Mooring Depth: 4175m	
Mooring Operation: Repair		Mooring ID#: PM821B	
Deployed Location: 01 59.9N 165 0.9E		Deployed Date: 6/18/09	
Repair Location: 01 59.874N 164 59.487E		Repaired Date: 2/22/2010	
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Rain gauge mount slightly bent, Wind Bird reseated.			
Fishing Vandalism: Evidence of impact with passing Blue ship. No major damage.			
Sensors/Tubes Not Downloaded: All sensors downloaded successfully except recovered 25m T SN# 14361 –Dead Battery			
General Comments: Dive Op			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
T25	7/29/09	No Data	Dead battery

Buoy Site: 0 165E		Mooring Depth: 4417m	
Mooring Operation: Recovery		Mooring ID#: PM769B	
Deployed Location: 0 01.546N 165 02.579E		Deployed Date: 9/10/2008	

Recovered Location: 0 01.823N 165 0.823E		Recovered Date: 2/22/10	
Previous Repair Date: 6/18/09			
Sensors/Equipment Lost at Sea: 10m TC SN# 14000,			
Sensors Damaged/Fouled: Damaged Sensors were: Rain Gauge SN# 1564, Solar Radiation SN#s 32416 & 34452, T400 SN# 14224. Fouled sensors were: SSC SN#12871, 5m TC SN#14058, 12m Sontek SN# D106, 13m TV SN# 12714, 25m T SN# 14504, 30m T SN# 13502, 50m TC SN# 14505, 52m Sontek SN# D357, 53m TV SN# 14108, 75m TC SN# 14506, 100m TC SN# 14507, 102m Sontek SN# D403, 103m TV SN# 14109, 125m TC SN# 14508.			
Fishing/Vandalism: Top of Rain gauge missing from impact, spikes missing; Solar radiation dish bent; ¾" line attached to buoy; T400 bottom of module chipped.			
Sensors/Tubes Downloaded: All recovered sensors/tubes download successful.			
General Comments: Helicopter visit during initial recovery operations, performed stunt maneuvers very close to the ship and then took off.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
TC10	9/10/08	No data	Lost at Sea
50m Salinity	10/30/08	Data too high	Fouled, missing poison puck
125m Salinity	12/10/09	Data too high	Fouled, missing poison puck
52m Sontek	9/07/09	No data	Fouled, Dead battery

Buoy Site: 0 165E	Mooring Depth: 4404m
Mooring Operation: Deployment	Mooring ID#: PM875A
Deployed Location: 0 0.3N 164 59.6E	Deployed Date: 2/23/10
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: SSC & SST values for ship not available.	

Buoy Site: 2S 165E Refresh	Mooring Depth: 4463m
Mooring Operation: Deployment	Mooring ID#: DM008A
Deployed Location: 1 59.990S 164 57.899E	Deployed Date: 2/24/10
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: Had to circle ship with partial mooring in order to regain track line due to unexpected current.	

Buoy Site: 2S 165E	Mooring Depth: 4468m
Mooring Operation: Visit	Mooring ID#: PM823A

Deployed Location: 02 0.267S 165 0.73E	Deployed Date: 6/20/09
Visit Location: 02 0.7S 164 59.8E	Visit Date: 2/23/10
Sensors/Equipment Lost at Sea: None.	
Sensors Damaged/Fouled: None.	
Fishing Vandalism: None.	
Sensors/Tubes Not Downloaded: Visit Only	
General Comments: T5 out.	

Buoy Site: 5S 165E	Mooring Depth: 2505m		
Mooring Operation: Recovery	Mooring ID#: PM770A		
Deployed Location: 04 59.0S 165 09.3E	Deployed Date: 9/12/2008		
Recovered Location: 04 59.473S 165 09.849E	Recovered Date: 2/24/10		
Previous Repair Date: None.			
Sensors/Equipment Lost at Sea: T25 SN# 14474, T100 SN# 14477, T150 SN# 14479, T200 SN# 14480.			
Sensors Damaged/Fouled: Damaged sensors were: T75 SN# 14476, T250 SN# 14481, and TP500 SN # 13173. Fouled sensors were: SSC SN#12742.			
Fishing/Vandalism: Several miles of long liner gear, 4 ball floats, abrasions in the nil-spin, line cocooned in areas with lost sensors and wrapped around nylon halfway down the 3 rd spool.			
Sensors/Tubes Downloaded: All recovered sensors/Tube download successful.			
General Comments: Long liner gear was caught in the port side propeller during recovery operations. Subsequent operations were delayed due to dive ops to clear the large amounts of line resulting in current induced drift.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
T25	6/10/09	No data	Lost at sea
T100	12/24/09	No data	Lost at sea
T150	3/29/09	No data	Lost at sea
T200	2/09/10	No data	Lost at sea

Buoy Site: 5S 165E	Mooring Depth: 2497m
Mooring Operation: Deployment	Mooring ID#: PM876A
Deployed Location: 5 0.405S 165 10.427E	Deployed Date: 2/25/10
Pre-Deployment On Deck Instrument Failures: Replaced T1 SN# 14539 due to failure on deck, dead battery.	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: Night deployment.	

Buoy Site: 52406 BPR DART	Mooring Depth: 1850m
Mooring Operation: BPR Recovery	

Deployed Location: 05 00.0S 165 4.40E	Deployed Date: 8/25/09
Recovered Location: N/A	Recovered Date: N/A
Sensors/Equipment Lost at Sea: DART Team declared BPR lost at sea 3/10/10	
General Comments: We arrived on station 2/25/10, tried to communicate with the acoustic release with no success. Fired numerous release commands, waited 65 minutes, nothing was spotted, so we departed.	

Buoy Site: 8S 165E Refresh		Mooring Depth: 3895m	
Mooring Operation: Repair		Mooring ID#: DM004B	
Deployed Location: 08 02.496S 164 44.5E		Deployed Date: 6/21/09	
Repair Location: 08 03.597S 164 45.845E		Repaired Date: 2/26/10	
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: None.			
Fishing Vandalism: None.			
Sensors/Tubes Not Downloaded: N/A			
General Comments: Second shelf rotten, needs replacement.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
AT/RH	9/19/09	RH supersaturated	Looked standard.

Buoy Site: 8S 165E		Mooring Depth: 3895m	
Mooring Operation: Visit		Mooring ID#: PM824A	
Deployed Location: 08 02.653S 164 46.709E		Deployed Date: 6/22/09	
Visit Location: 08 02.8S 164 47.6E		Visit Date: 2/26/10	
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: None.			
Fishing Vandalism: None.			
Sensors/Tubes Not Downloaded: Visit Only			
General Comments: T8 out.			

Buoy Site: 52406 DART		Mooring Depth: 1850m	
Mooring Operation: Adrift Buoy Recovery			
Deployed Location: 05 19.9S 165 4.8E		Deployed Date: 8/25/2009	
Recovered Location: 5 22.35 S 175 32.5 E		Recovered Date: 3/1/2010	
Sensors/Equipment Lost at Sea: Mooring			
General Comments: Nilspin severed.			

Buoy Site: 8S 180W		Mooring Depth: 5538m	
Mooring Operation: Recovery		Mooring ID#: PM826A	

Deployed Location: 07 59.0S 179 50.8W		Deployed Date: 6/27/2009	
Recovered Location: 07 58.930S 179 50.497W		Recovered Date: 3/2/10	
Previous Repair Date: None.			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#14419, 25m T SN#13726, 50m T SN#13727, 100m T SN#13729.			
Fishing/Vandalism: None.			
Sensors/Tubes Downloaded: All sensors downloaded successfully.			
General Comments: None.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
None			

Buoy Site: 8S 180W		Mooring Depth: 5541m	
Mooring Operation: Deployment		Mooring ID#: PM877A	
Deployed Location: 7 58.8S 179 51.0W		Deployed Date: 3/3/10	
Pre-Deployment On Deck Instrument Failures: None.			
Sensors/Equipment Lost at Sea: None			
Sensors Damaged During Deployment: T2 went out after deployment.			
General Comments: None.			

Buoy Site: 5S 180W		Mooring Depth: 5662m	
Mooring Operation: Recovery		Mooring ID#: PM773A	
Deployed Location: 04 57.05S 179 48.76W		Deployed Date: 9/18/2008	
Recovered Location: 04 57.30S 179 53.2W		Recovered Date: 3/4/10	
Previous Repair Date: None.			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#12976, 25m T SN#14529, 50m T SN#14530, 75m T SN#14531.			
Fishing/Vandalism: Long line gear wrapped around about 100m of Nilspin.			
Sensors/Tubes Downloaded: All sensors downloaded successfully.			
General Comments: None.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
None			

Buoy Site: 5S 180W		Mooring Depth: 5647m	
Mooring Operation: Deployment		Mooring ID#: PM878A	
Deployed Location: 4 58.119S 179 54.507W		Deployed Date: 3/4/10	

Pre-Deployment On Deck Instrument Failures: None.
Sensors/Equipment Lost at Sea: None.
Sensors Damaged During Deployment: None.
General Comments: Top section number unknown.

Buoy Site: 0 180W (old)		Mooring Depth: 5393m	
Mooring Operation: Adrift Buoy Recovery		Mooring ID#: PM775B	
Deployed Location: 00 01.1N 179 54.2W		Deployed Date: 9/20/2008	
Recovered Location: 04 21.012S 179 43.354W		Recovered Date: 3/5/10	
Previous Repair Date: 6/29/09			
Sensors/Equipment Lost at Sea: 25m T SN# 14513, 50m T SN# 14514, 75m T SN# 14515, 100m T SN# 14516, 125m T SN# 14517, 150m T SN# 14518, 200m T SN# 14519, 250m T SN# 14546, 300m TP SN# 12991, 500m TP SN# 12992, Acoustic Release SN# 30639, Nylon SN#s: T07011, T07014, Y374, T07001, Y338, Y208, T07008.			
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#12743			
Fishing/Vandalism: Nilspin cleanly cut about 1 foot below Nilspin head.			
Sensors/Tubes Downloaded: All recovered downloaded successfully.			
General Comments: Antenna and birdcage struck KA upon recovery. The buoy was much more unstable due to lack of a mooring holding tension.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
All Inductive	7/08/09	No data	Nilspin severed, all inductive lost at sea

Buoy Site: 2S 180W		Mooring Depth: 5367m	
Mooring Operation: Repair		Mooring ID#: PM865B	
Deployed Location: 02 00.1S 179 55.0W		Deployed Date: 11/19/09	
Repair Location: 01 59.2S 179 55.488W		Repaired Date: 3/5/2010	
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: None.			
Fishing Vandalism: None.			
Sensors/Tubes Not Downloaded: Recovered Tube downloaded successfully.			
General Comments: Tube Swap.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
None			

Buoy Site: 2S 180W Refresh		Mooring Depth: 5345m	
Mooring Operation: Deployment		Mooring ID#: DM009A	
Deployed Location: 1 59. 0S 179 52.6W		Deployed Date: 3/6/10	

Pre-Deployment On Deck Instrument Failures: None
Sensors/Equipment Lost at Sea: None
Sensors Damaged During Deployment: None
General Comments: The plastic upper tower fastening ring holes did not fit without augmentation.

Buoy Site: 0 180W		Mooring Depth: 5393m	
Mooring Operation: Repair		Mooring ID#: PM864B	
Deployed Location: 00 01.375N 179 54.41W		Deployed Date: 11/18/09	
Repair Location: 0 01.62N 179 56.61W		Repaired Date: 3/6/2010	
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: None.			
Fishing Vandalism: None.			
Sensors/Tubes Not Downloaded: Tube download successful.			
General Comments: None.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
Rain Gauge	2/2/10	Low rain rate, high % time raining	Looked standard.

Buoy Site: 2N 180W		Mooring Depth: 5485m	
Mooring Operation: Recovery		Mooring ID#: PM776B	
Deployed Location: 02 0.93N 179 47.61W		Deployed Date: 9/21/2008	
Recovered Location: 02 01.4N 179 49.1W		Recovered Date: 3/7/10	
Previous Repair Date: 6/30/09			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Fouled sensors were: SSC SN#14241, 25m T SN#14521, 50m T SN#14522, 75m T SN#14523, SSC SN# 12744 (first).			
Fishing/Vandalism: None.			
Sensors/Tubes Not Downloaded: All sensors downloaded successfully except 100m T SN# 14524 – Dead Battery; Tube download contains 1665 records in 0 bytes, similar problem during previous repair download attempt.			
General Comments: Tube requires evaluation upon return.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
T100	5/18/09	No data	Dead Battery

Buoy Site: 2N 180W		Mooring Depth: 5485m	
Mooring Operation: Deployment		Mooring ID#: PM879A	
Deployed Location: 2 00.6N 179 48.9W		Deployed Date: 3/8/10	

Pre-Deployment On Deck Instrument Failures: None.
Sensors/Equipment Lost at Sea: None.
Sensors Damaged During Deployment: None.
General Comments: Fathometer unresponsive during flyby.

Buoy Site: 5N 180W		Mooring Depth: 5682m	
Mooring Operation: Recovery		Mooring ID#: PM778B	
Deployed Location: 04 59.0N 179 53.7W		Deployed Date: 9/23/2008	
Recovered Location: 04 58.988N 179 55.514W		Recovered Date: 3/9/10	
Previous Repair Date: 11/17/09			
Sensors/Equipment Lost at Sea: 50m T SN# 14538, 150m T SN# 14542			
Sensors Damaged/Fouled: Damaged sensors were: 300m TP SN# 13441. Fouled sensors were: SSC SN#12975, 25m T SN#14537, 75m T SN#14554, 100m T SN# 14540.			
Fishing/Vandalism: One fishing float attached to buoy, long liner gear wrapped around several sensors including one sensor location lost at sea.			
Sensors/Tubes Not Downloaded: All recovered sensors/Tube downloaded successfully.			
General Comments: Low battery on the acoustic release, would only respond to release commands.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
None			

Buoy Site: 5N 180W		Mooring Depth: 5681m	
Mooring Operation: Deployment		Mooring ID#: PM880A	
Deployed Location: 4 59.2N 179 53.5W		Deployed Date: 3/10/10	
Pre-Deployment On Deck Instrument Failures: T8 SN# 13062, Anemometer SN# 34362			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged During Deployment: None.			
General Comments: None.			

Buoy Site: 8N 170W		Mooring Depth: 5542m	
Mooring Operation: Recovery		Mooring ID#: PM766A	
Deployed Location: 08 00.2N 170 0.4W		Deployed Date: 8/27/2008	
Recovered Location: 07 59.480N 170 04.398W		Recovered Date: 3/13/10	
Previous Repair Date: None.			
Sensors/Equipment Lost at Sea: None.			
Sensors Damaged/Fouled: Damaged sensors were: 25m T SN# 14458.			
Fishing/Vandalism: None.			
Sensors/Tubes Not Downloaded: All sensors downloaded successfully except 25m T SN#			

14458, dead battery.			
General Comments: Low battery on the acoustic release, would only respond to release commands.			
Site Sensor Failures	Date Sensors Failed	Why Sensors Failed	Field Service Observations
T25	12/28/08	No data	Dead Battery

Buoy Site: 8N 170W	Mooring Depth: 5547m
Mooring Operation: Deployment	Mooring ID#: PM883A
Deployed Location: 8 0.305N 170 02.320W	Deployed Date: 3/14/10
Pre-Deployment On Deck Instrument Failures: TP9 SN# 13883	
Sensors/Equipment Lost at Sea: None.	
Sensors Damaged During Deployment: None.	
General Comments: T8 out on deployment.	

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.

The following outlines the CTD casts completed during the cruise:

CTD Operations				
Coordinates		Date	Cast #	Comments
0800.308N	16510.693E	2/14/2010	KA20011	3000m
0700.570N	16418.891E	2/15/2010	KA20021	1000m
0600.287N	16327.811E	2/15/2010	KA20031	1000m
0504.504N	16501.220E	2/20/2010	KA20041	1000m
0300.779N	16458.957E	2/21/2010	KA20051	1000m
0201.094N	16457.424E	2/22/2010	KA20061	1000m
0101.017N	16500.218E	2/22/2010	KA20071	1000m
0004.028N	16502.157E	2/22/2010	KA20081	3000m
0100.867S	16501.551E	2/23/2010	KA20091	1000m
0159.600S	16457.566E	2/23/2010	KA20101	1000m
0259.731S	16503.481E	2/24/2010	KA20111	1000m
0359.515S	16506.692E	2/24/2010	KA20121	1000m
0500.668S	16512.219E	2/25/2010	KA20131	1000m

0600.054S	16459.861E	2/25/2010	KA20141	1000m
0700.403S	16452.573E	2/26/2010	KA20151	1000m
0802.785S	16451.011E	2/26/2010	KA20161	3000m
0801.256S	17950.575W	3/2/2010	KA20171	3000m
0700.018S	17951.133W	3/3/2010	KA20181	1000m
0600.018S	17952.153W	3/3/2010	KA20191	1000m
0459.986S	17959.800W	3/4/2010	KA20201	1000m
0400.430S	17945.218W	3/5/2010	KA20211	1000m
0300.442S	17950.502W	3/5/2010	KA20221	1000m
0158.398S	17952.392W	3/6/2010	KA20231	1000m
0100.578S	17956.394W	3/6/2010	KA20241	1000m
0002.742N	17959.115W	3/7/2010	KA20251	3000m
0100.506N	17953.524W	3/7/2010	KA20261	1000m
0159.787N	17950.272W	3/7/2010	KA20271	1000m
0300.503N	17952.326W	3/8/2010	KA20281	1000m
0400.136N	17954.000W	3/8/2010	KA20291	1000m
0459.072N	17953.478W	3/9/2010	KA20301	1000m
0759.100N	17005.749W	3/13/2010	KA20311	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:

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 E-mail: pmel_floats@noaa.gov

or

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 Tel: (206) 526-6747
 E-mail: pmel_floats@noaa.gov

The following outlines the Argo floats deployed during the cruise:

ARGO Floats			
Coordinates	Date	SN#	Comments
00 00.319S 164 59.904E	2/23/2010	4659	

00 02.991N 179 59.305W	3/7/2010	4654	
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Atlantic Oceanographic and Meteorological Laboratory (AMOL) 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

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

AOML Floats			
Coordinates	Date	SN#	Comments
05 02.007N 165 00.278E	2/21/2010	90412	
03 00.767N 164 58.674E	2/21/2010	90414	
00 00.497S 165 00.010E	2/23/2010	90401	
02 59.653S 165 03.101E	2/24/2010	90405	
05 00.969S 165 12.611E	2/25/2010	90410	
04 38.561S 179 49.425W	3/5/2010	90403	
03 00.996S 179 50.755W	3/5/2010	90397	
00 03.027N 179 59.264W	3/7/2010	90408	
03 00.842N 179 52.996W	3/8/2010	90411	
04 59.414N 179 53.426W	3/10/2010	90398	

PCO2 and Nitrate Mapping System and Nutrient Samples

Thirty-one (31) 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:

Cathy Cosca

NOAA/PMEL

7600 Sand Point Way NE
Seattle, Washington 98115
Tel: (206) 526-6183
E-mail: cathy.cosca@noaa.gov