

TROPICAL ATMOSPHERE-OCEAN (TAO) PROGRAM  
FINAL CRUISE REPORT  
KA-12-02

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-12-02 DEP *March 21, 2012, San Diego, CA*

ARR *April 21, 2010, Ford Island, 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.

NDBC Points of Contact:

NDBC Program Manager

Steve Cucullu

National Data Buoy Center

Building 3205

Stennis Space Center, MS 39529

228-688-1258

Email: [stephen.cucullu@noaa.gov](mailto:stephen.cucullu@noaa.gov)

NDBC Operations Manager

Jeff Jenner

National Data Buoy Center

Building 3205

Stennis Space Center, MS 39529

228-688-2784

Email: [jeff.jenner@noaa.gov](mailto:jeff.jenner@noaa.gov)

TAO Cruise Objective and Plan:

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

The scientific complement for the cruise embarked at Naval Station San Diego, CA on March 20, 2012.

The ship departed on March 21, 2012 and conducted operations as listed in Section 2.1. The ship arrived in Ford Island, HI on April 21, 2012.

## 1.0 PERSONNEL

### 1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: Aaron Boutwell

Participating Scientists:

Name	Gender	Nationality	Affiliation
Aaron Boutwell	M	US	NOAA/NDBC
William Thompson	M	US	NOAA/NDBC
James Rauch	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

<b>Buoy Site:</b> 8N 125W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM971A	
<b>Deployed Location:</b> 08 01.69N 125 00.53W		<b>Deployed Date:</b> 5/5/2011	
<b>Recovered Location:</b> None		<b>Recovered Date:</b> 3/27/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> All equipment lost at sea.			
<b>Sensors Damaged/Fouled:</b> N/A			
<b>Fishing/Vandalism:</b> N/A			
<b>Sensors/Tubes Downloaded:</b> No Sensors recovered.			
<b>General Comments:</b> No buoy present upon arrival. Entire mooring was lost at sea.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>

Tube	12/8/11	No transmissions	Lost at sea
Wind	8/8/11	WDIR 180° off	Lost at sea
Salinity	11/22/11	Data drifted high	Lost at sea

<b>Buoy Site:</b> 8N 125W	<b>Mooring Depth:</b> 4659 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> QM006A
<b>Deployed Location:</b> 08 1.65N 125 0.78W	<b>Deployed Date:</b> 3/28/2012
<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> Routine deployment.	

<b>Buoy Site:</b> 5N 125W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM970A	
<b>Deployed Location:</b> 05 05.0N 124 56.11W		<b>Deployed Date:</b> 5/4/2011	
<b>Recovered Location:</b> 05 05.217N 124 56.157W		<b>Recovered Date:</b> 3/29/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, and T60 sensors had some bio-fouling present.			
<b>Fishing/Vandalism:</b> There was some long line gear found tangled in the nilspin.			
<b>Sensors/Tubes Downloaded:</b> All sensors and the tube were successfully downloaded.			
<b>General Comments:</b> Routine Recovery.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
T20	11/28/11	Data erratic	Long line gear, fouled

<b>Buoy Site:</b> 5N 125W Legacy		<b>Mooring Depth:</b> 4405 m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> QM007A	
<b>Deployed Location:</b> 05 05.281N 124 56.358W		<b>Deployed Date:</b> 3/30/2012	
<b>Pre-Deployment On Deck Instrument Failures:</b> Tube was not storing data and was replaced.			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged During Deployment:</b> None			
<b>General Comments:</b> Routine deployment.			

<b>Buoy Site:</b> 2N 125W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM948B	
<b>Deployed Location:</b> 01 57.178N 125 01.965W		<b>Deployed Date:</b> 12/9/2010	
<b>Recovered Location:</b> 01 57.210N 125 02.611W		<b>Recovered Date:</b> 3/30/2012	
<b>Previous Repair Date:</b> 5/2/2011			
<b>Sensors/Equipment Lost at Sea:</b> TP300			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60 had sea growth and T40 had a 2" Hawser line around the nilspin.			
<b>Fishing/Vandalism:</b> Towlines found on buoy and nilspin.			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors downloaded successfully except the SSC, T20, and T180 – no communications.			
<b>General Comments:</b> None			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
TP300	11/18/11	Data missing	Lost at sea
SSC	6/27/11	Data too high	No communications, fouled
T20	11/3/11	Data missing	No communications, fouled
T180	1/1/11	Data missing	No communications, fouled
ATMP/RH	10/17/11	Data too low	None
Tube	12/20/11	No transmissions	None

<b>Buoy Site:</b> 2N 125W Refresh		<b>Mooring Depth:</b> 4612 m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> DM033A	
<b>Deployed Location:</b> 01 57.604N 125 1.295W		<b>Deployed Date:</b> 3/31/2012	
<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> Routine deployment.			

<b>Buoy Site:</b> 0 125W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM969A	
<b>Deployed Location:</b> 00 10.56S 124 23.85W		<b>Deployed Date:</b> 5/2/2011	
<b>Recovered Location:</b> 00 11.425S 124 22.057W		<b>Recovered Date:</b> 4/1/2012	
<b>Previous Repair Date:</b> None			

<b>Sensors/Equipment Lost at Sea:</b> TP300			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60 had some sea growth. Tube antenna was bent and the top hat bolt holes for the antenna were damaged on recovery.			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully except T60, T80. Communications could not be established.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
TP300	11/5/11	Data missing	Lost at sea
Wind	11/16/11	WDIR erratic	None
T60	3/7/12	Data missing	Burned lithium battery
T80	3/19/12	Data missing	Dead battery

<b>Buoy Site:</b> 0 125W Legacy	<b>Mooring Depth:</b> 4782 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> QM008A
<b>Deployed Location:</b> 00 11.68S 124 23.61W	<b>Deployed Date:</b> 4/2/2012
<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> Routine deployment.	

<b>Buoy Site:</b> 2S 125W Legacy			
<b>Mooring Operation:</b> Repair		<b>Mooring ID#:</b> PM983B	
<b>Deployed Location:</b> 02 02.154S 124 53.660W		<b>Deployed Date:</b> 8/11/2011	
<b>Repair Location:</b> 02 01.923S 124 54.950W		<b>Repair Date:</b> 4/2/2012	
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> None			
<b>Fishing Vandalism:</b> None			
<b>General Comments:</b> Replace ATRH, and SSC install with pickle fork.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
RH	8/11/11	Data too low	None
Salinity	10/30/11	Data erratic & high	None

<b>Buoy Site:</b> 5S 125W Refresh	
<b>Mooring Operation:</b> Repair	<b>Mooring ID#:</b> DM023B
<b>Deployed Location:</b> 5 02.364S 124 51.293W	<b>Deployed Date:</b> 8/13/2011

<b>Visit Location:</b> 05 02.544S 124 51.610W		<b>Visit Date:</b> 4/3/2012	
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> None			
<b>Fishing Vandalism:</b> None			
<b>General Comments:</b> Replace ATRH			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
RH	11/30/11	Data drifted high	None

<b>Buoy Site:</b> 8S 125W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM968A	
<b>Deployed Location:</b> 07 59.097S 124 58.939W		<b>Deployed Date:</b> 4/28/2011	
<b>Recovered Location:</b> 07 58.600S 125 00.039W		<b>Recovered Date:</b> 4/4/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> T180			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60 had sea growth.			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded, except the Tube.			
<b>General Comments:</b> Tube showed 0 bytes in data.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
T180	12/25/11	Data missing	Lost at sea

<b>Buoy Site:</b> 8S 125W Refresh		<b>Mooring Depth:</b> 4504 m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> DM034A	
<b>Deployed Location:</b> 07 59.250S 124 58.830W		<b>Deployed Date:</b> 4/5/2012	
<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> Routine deployment.			

<b>Buoy Site:</b> 5S 140W Refresh			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> DM024A	
<b>Deployed Location:</b> 05 01.1S 139 54.8W		<b>Deployed Date:</b> 8/30/2011	
<b>Recovered Location:</b> 05 00.911S 139 55.028W		<b>Recovered Date:</b> 4/8/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> Payload Tube, Iridium Modem, Anemometer, AT/RH, and			

GPS/Iridium Antenna.			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, and T60 had sea growth on them.			
<b>Fishing/Vandalism:</b> The Tower had been unbolted and was missing.			
<b>Sensors/Tubes Downloaded:</b> All underwater sensors downloaded successfully. Tube was not downloaded.			
<b>General Comments:</b> The tower was missing. The experimental zipper fairings were difficult to deal with around the brailing winch.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
Tube	8/31/11	No transmissions	No tower attached

<b>Buoy Site:</b> 5S 140W Refresh	<b>Mooring Depth:</b> 4359 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> DM035A
<b>Deployed Location:</b> 05 00.831S 139 53.926W	<b>Deployed Date:</b> 4/9/2012
<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> Routine deployment.	

<b>Buoy Site:</b> 2S 140W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM967A	
<b>Deployed Location:</b> 02 02.5S 139 59.6W		<b>Deployed Date:</b> 4/23/2011	
<b>Recovered Location:</b> 02 02.436S 140 00.692W		<b>Recovered Date:</b> 4/10/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> TP300			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60, T80 had sea growth on them.			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully except T20 – no communications.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
TP300	12/16/11	Data missing	Lost at sea
T20	9/8/11	Data missing	Dead battery
TP500	7/25/11	Data erratic	None

<b>Buoy Site:</b> 2S 140W Legacy	<b>Mooring Depth:</b> 4333 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> QM008A

<b>Deployed Location:</b> 02 02.05S 140 0.282W	<b>Deployed Date:</b> 4/10/2012
<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> Routine deployment.	

<b>Buoy Site:</b> 0 140W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM984A	
<b>Deployed Location:</b> 0 00.60S 139 54.75W		<b>Deployed Date:</b> 9/2/2011	
<b>Recovered Location:</b> 00 00.952W 139 53.047W		<b>Recovered Date:</b> 4/11/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> Shortwave and longwave radiation, 27m Sontek, and TP500			
<b>Sensors Damaged/Fouled:</b> SSC, TC5, TC10, 12m Sontek, TV13, TC20, T25, TV28, TC40, T45, 47m Sontek, TV48, TC60, TC80, 82m Sontek, TV83, and T100 all had sea growth on them.			
<b>Fishing/Vandalism:</b> The buoy has a crack from an impact near the Fat leg. The Fat leg (cable trace leg) has abrasions above the second shelf indicating it was towed with a steel cable			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully except the 12 m Sontek, TV48, TC80, TP300 – no communications could be established with these sensors.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
SWR, LWR	10/21/11	Data missing	Lost at sea
TP500	12/16/11	Data missing	Lost at sea
27m Sontek	9/10/11	Data missing	Lost at sea
TC80	1/1/12	Data missing	No communications
TP300	2/24/12	Data missing	Dead battery

<b>Buoy Site:</b> 0 140W Legacy		<b>Mooring Depth:</b> 4351 m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> QM010A	
<b>Deployed Location:</b> 00 00.8S 135 92.5W		<b>Deployed Date:</b> 4/12/2012	
<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> Upon deployment the 120m Sontek stopped reporting.			

<b>Buoy Site:</b> 0 140W Refresh			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> DM022B	
<b>Deployed Location:</b> 0 01.7S 139 53.3W		<b>Deployed Date:</b> 4/22/2011	
<b>Recovered Location:</b> 02 40.747S 141 04.815W		<b>Recovered Date:</b> 4/9/2012	
<b>Previous Repair Date:</b> 9/1/2011			
<b>Sensors/Equipment Lost at Sea:</b> T60, T100, T120, T140, T180, TP300, TP500			
<b>Sensors Damaged/Fouled:</b> SSC, T5, T10 had sea growth on them. Cable and Fin broken off of Sontek.			
<b>Fishing/Vandalism:</b> Multiple cuts in nilspin and the buoy has several major cracks in the fiberglass. Nilspin severed below the 80m sensor.			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded except T20, T80. No communications could be established with those instruments.			
<b>General Comments:</b> Buoy went adrift 2/23/12.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
T60	6/9/11	Data missing	Lost at sea
T80	5/19/11	Data missing	No communications
T20	11/12/11	Data missing	No communications
T100, T120, T140, T180, TP300, TP500	2/8/12	Data missing	Lost at sea
RH	9/24/11	Data drifted high	None

<b>Buoy Site:</b> 2N 140W Legacy			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> PM966A	
<b>Deployed Location:</b> 2 01.2N 140 00.0W		<b>Deployed Date:</b> 4/21/2011	
<b>Recovered Location:</b> 2 00.55N 139 59.6W		<b>Recovered Date:</b> 4/12/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> T20, T40, TP500			
<b>Sensors Damaged/Fouled:</b> SSC, T60 had sea growth on them.			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
T20	4/21/12	Data missing	Lost at sea
T40	11/20/11	Data missing	Lost at sea
TP500	4/9/12	Data missing	Lost at sea

<b>Buoy Site:</b> 2N 140W Legacy	<b>Mooring Depth:</b> 4373 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> QM011A
<b>Deployed Location:</b> 02 0.09N 139 58.64W	<b>Deployed Date:</b> 4/13/2012
<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> Routine deployment	

<b>Buoy Site:</b> 5N 140W Refresh			
<b>Mooring Operation:</b> Recovery		<b>Mooring ID#:</b> DM021B	
<b>Deployed Location:</b> 05 01.365N 139 57.352W		<b>Deployed Date:</b> 4/19/2011	
<b>Recovered Location:</b> 05 00.912N 139 58.497W		<b>Recovered Date:</b> 4/14/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> None			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60 had sea growth on them.			
<b>Fishing/Vandalism:</b> None			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully except T20 and T40 – unable to establish communications with these sensors.			
<b>General Comments:</b> Operational data configured as Mooring ID# dm021b, experimental data as dm021a. The conversion for experimental to operational took place 9/3/11.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
T20	2/22/12	Data missing	No communications
T40	2/23/12	Data missing	No communications
Salinity	3/16/12	Data drifted low	Fouled

<b>Buoy Site:</b> 5N 140W Refresh	<b>Mooring Depth:</b> 4477 m
<b>Mooring Operation:</b> Deployment	<b>Mooring ID#:</b> DM036A
<b>Deployed Location:</b> 05 01.365N 39 57.352W	<b>Deployed Date:</b> 4/15/2012
<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> Routine deployment	

<b>Buoy Site:</b> 9N 140W Legacy	<b>Mooring ID#:</b> PM985A
<b>Mooring Operation:</b> Recovery	

<b>Deployed Location:</b> 09 00.159N 140 14.44W		<b>Deployed Date:</b> 9/05/2011	
<b>Recovered Location:</b> 09 01.3N 140 15.2W		<b>Recovered Date:</b> 4/16/2012	
<b>Previous Repair Date:</b> None			
<b>Sensors/Equipment Lost at Sea:</b> Tube, AT/RH, Anemometer, Rain Gauge			
<b>Sensors Damaged/Fouled:</b> SSC, T20, T40, T60 had sea growth on them.			
<b>Fishing/Vandalism:</b> Tower unbolted and taken from the buoy, long line on Nilspin.			
<b>Sensors/Tubes Downloaded:</b> All recovered sensors were downloaded successfully.			
<b>General Comments:</b> None.			
<b>Site Sensor Failures</b>	<b>Date Data Flagged</b>	<b>Why Data Flagged</b>	<b>Field Service Observations</b>
Tube	10/31/11	No transmissions	Lost at sea
Rain	10/13/11	High percent time raining with no rain-rate	Lost at sea

<b>Buoy Site:</b> 9N 140W Refresh		<b>Mooring Depth:</b> 4820 m	
<b>Mooring Operation:</b> Deployment		<b>Mooring ID#:</b> DM037A	
<b>Deployed Location:</b> 09 00.198N 140 14.890W		<b>Deployed Date:</b> 4/17/2012	
<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> Routine deployment			

## 2.2 CTD Casts Completed

A Sea-Bird 911plus CTD with dual temperature and conductivity sensors was provided by the OMAO. 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:

<b>CTD Operations</b>				
<b>Coordinates</b>	<b>Date</b>	<b>Cast #</b>	<b>Comments</b>	
08 00.285N 124 59.619W	3/28/2012	KA20011	3000 m	
07 00.579N 124 59.112W	3/28/2012	KA20021	1000 m	
06 00.330N 124 57.330W	3/29/2012	KA20031	1000 m	
05 07.457N 124 56.362W	3/29/2012	KA20041	1000 m	
04 00.529N 124 58.112W	3/30/2012	KA20051	1000 m	

03 00.320N 125 00.050W	3/30/2012	KA20061	1000m
01 58.917N 125 02.345W	3/31/2012	KA20071	1000m
01 00.048N 124 43.851W	4/1/2012	KA20081	1000m
00 09.729S 124 23.737W	4/1/2012	KA20091	3000m
01 00.006S 124 36.429W	4/2/2012	KA20101	1000m
01 59.053S 124 54.216W	4/2/2012	KA20111	1000m
03 00.454S 124 54.437W	4/2/2012	KA20121	1000m
03 59.861S 124 53.217W	4/3/2012	KA20131	1000m
05 00.621S 124 52.220W	4/3/2012	KA20141	1000m
05 59.762S 124 54.351W	4/3/2012	KA20151	1000m
06 59.770S 124 57.082W	4/4/2012	KA20161	1000m
07 56.062S 124 59.146W	4/4/2012	KA20171	3000m
05 00.847S 139 52.959W	4/8/2012	KA20181	3000m
04 00.076S 140 22.308W	4/9/2012	KA20191	1000m
02 59.737S 140 49.284W	4/9/2012	KA20201	1000m
02 04.085S 140 01.643W	4/10/2012	KA20211	1000m
00 59.967S 139 57.174W	4/11/2012	KA20221	1000m
00 03.179S 139 54.229W	4/11/2012	KA20231	3000m
00 59.520N 139 56.645W	4/12/2012	KA20241	1000m
01 58.321N 139 59.975W	4/13/2012	KA20251	1000m
03 00.216N 139 59.822W	4/13/2012	KA20261	1000m
04 00.516N 139 59.248W	4/13/2012	KA20271	1000m
05 01.214N 140 00.998W	4/14/2012	KA20281	1000m
06 00.176N 140 02.940W	4/15/2012	KA20291	1000m
07 00.185N 140 07.058W	4/15/2012	KA20301	1000m
09 00.526N 140 17.049W	4/16/2012	KA20311	3000m

### 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

Thirteen (13) 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:

<b>ARGO Floats</b>			
<b>Coordinates</b>	<b>Date</b>	<b>SN#</b>	<b>Comments</b>
24 00.225N 120 25.684W	3/24/2012	5832	
22 00.062N 121 01.591W	3/24/2012	5833	
20 00.193N 121 36.789W	3/25/2012	5829	
18 00.383N 122 11.415W	3/25/2012	5830	
14 59.991N 123 02.905W	3/26/2012	4954	
13 59.958N 123 19.854W	3/26/2012	7558	
01 58.778N 125 01.932W	3/31/2012	5845	
00 10.917S 124 24.214W	4/1/2012	6323	
02 04.151S 140 01.784W	4/10/2012	F0128	
00 002.470S 139 53.841W	4/11/2012	F0125	
01 58.301N 139 59.641W	4/13/2012	5408	
04 01.337N 139 59.561W	4/14/2012	5846	
11 59.949N 144 57.718W	4/18/2012	5844	