TROPICAL ATMOSPHERE-OCEAN (TAO) PROGRAM

FINAL CRUISE REPORT

KA-08-04

Area: Equatorial Pacific between 8N and 8S latitude along 95W longitude and 8S to 8N latitude along 110W longitude.

Itinerary:

KA-08-04	*Manzanillo, Mexico*	DEP	*June 6, 2008*
	Honolulu, HI	ARR	July 14*, 2008*

CRUISE DESCRIPTION

The Tropical Atmosphere Ocean (TAO) array (renamed the TAO/TRITON array on January 1, 2000) consists of 70 moorings in the Topical Pacific Ocean, telemetering oceanographic and meteorological data to shore in real time. Fifteen buoys are serviced by JAMSTEC and National Data Buoy Center (NDBC) services the remaining 55 buoys from 95W longitude to 165E longitude. Repair and maintenance of the buoys is performed by NDBC contracted personnel on an annual basis utilizing the NOAA Ship KA'IMIMOANA and NOAA Ship RONALD H. BROWN. The buoy deployment lifecycles are up to 18 months to ensure at least one year of data collection can be completed.

TAO Project Points of Contact:

TAO Program Manager:
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TAO Operations Manager:
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TAO Cruise Objective and Plan:

The objective of this cruise was the maintenance of the TAO Array along the 95W and 110W meridians. The scientific complement for the cruise embarked at ***Manzanillo, Mexico*** on ***June 5, 2008***. The ship departed on ***June 6, 2008*** and conducted operations on the 95W and 110W lines as listed in Section 2.1. Due to a medical evacuation, the ship arrived ***Honolulu, HI*** on July 14, 2008 – 6 days later than scheduled.

1.0 PERSONNEL

1.1 *CHIEF SCIENTIST AND PARTICIPATING SCIENTISTS*:

Chief Scientist: Robert Harris

Participating Scientists:

Name	Gender	Nationality	Affiliation
Robert Harris	M	US	NOAA/NDBC/TAO
William Thompson	M	US	NOAA/NDBC/TAO
Alan Lossett	M	US	NOAA/NDBC/TAO

2.0 OPERATIONS

2.1 *TAO Data Recovery Summary*

Mooring Operations conducted are shown in the table below. Operations were scheduled to be conducted from *8N 95W* to *8S 95W* and *8S 110W* to *8N 110W*). Due to a medical evacuation, all scheduled work was not completed. 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):

8N 95W

Buoy ID: PM671B		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3651 m	
Deployed Location: 8 3.6N 94 56.4W		**Recovery Location:** 8 3.7N 94 56.5W	
Buoy Start Date: 4/23/07		**Buoy End Date: 6/10/08**	
Service Description: Recovery/Deployment. Rain gauge fouled with 2 dead birds. Temperature sensor at 180 m lost.			
Site Sensor	**Date Sensors**	**Why sensors were**	**Field Service**

Failures	Failed	Failed	Observations

5N 95W

Buoy ID: PM717		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3512 m	
Deployed Location: 4 56.5N 95 0.4W		**Repair Location:** 4 56.8N 95 0.2W	
Buoy Start Date: 11/18/07		**Buoy End Date:** Still deployed	
Service Description: Repair. Exchanged rain gauge and anemometer, downloaded tube.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

2N 95W

Buoy ID: PM716		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3107 m	
Deployed Location: 1 58.64N 95 17.6W		**Repair Location:** 1 59.6N 95 20.6W	
Buoy Start Date: 11/17/07		**Buoy End Date:** Still deployed	
Service Description: Repair. Exchanged SSC sensor. Fishing gear fouled bridle and SSC sensor.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

0 95W

Buoy ID: PM714		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3324 m	
Deployed Location: 0 0.775N 95 1.01W		**Recovered Location:** None, buoy lost at sea	
Buoy Start Date: NA		**Buoy End Date:** NA	
Service Description: Recovery/Deployment. No Recovery, buoy lost at sea.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

2S 95W

Buoy ID: PM712		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3440 m	
Deployed Location: 1 59.4S 95 9,6W		**Repair Location:** 1 59.7S 95 2.6W	
Buoy Start Date: 11/15/07		**Buoy End Date:** Still deployed	
Service Description: Repair. Exchanged anemometer and rain gauge. Downloaded tube data.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were failed**	**Field Service Observations**

5S 95W

Buoy ID: PM681		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3840 m	
Deployed Location: 5 4.791S 95 3.991W		**Repair Location:** 5 1.75S 95 18.75W	
Buoy Start Date: 11/14/07		**Buoy End Date:** 6/15/08	
Service Description: Repair. Exchanged anemometer, rain gauge and SSC. Fishing gear on torroid.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were failed**	**Field Service Observations**

8S 95W

Buoy ID: PM668		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3971 m	
Deployed Location: 8 1.356N 95 15.021W		**Recovery Location:** 8 0.567S 95 15.44W	
Buoy Start Date: 4/16/07		**Buoy End Date:** 6/16/08	
Service Description: Recovery/Deployment. All instruments recovered in working order.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

2S 110W

Buoy ID: PM667B		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 3950 m	
Deployed Location: 1 58.62S 109 58.63W		**Recovery Location:** 1 54.065S 110 2.359W	
Buoy Start Date: 4/12/08		**Buoy End Date:** 6/30/08	
Service Description: Recovery/Deployment. Anemometer damaged. Hawser tied to buoy.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

0 110W

Buoy ID: PM666		**Buoy Configuration:** Flux	
Buoy Type: ATLAS		**Water Depth:** 3810 m	
Deployed Location: 0 1.89N 109 54.58W		**Recovery Location:** None, buoy lost at sea	
Buoy Start Date: 4/12/07		**Buoy End Date:** NA	
Service Description: Recovery/Deployment. No Recovery, buoy lost at sea			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

2N 125W

Buoy ID: PM673		**Buoy Configuration:** Standard	
Buoy Type: ATLAS		**Water Depth:** 4715 m	
Deployed Location: 1 55.9N 125 36.1W		**Recovery Location:** 6 28.86N 123 58.99W	
Buoy Start Date: 5/14/07		**Buoy End Date:** 7/5/08	
Service Description: Recovery, buoy adrift. Tail broken off anemometer. SSC missing upper poison puck. Temperature/Pressure sensor at 500 m missing. Large raft tied to the buoy.			
Site Sensor Failures	**Date Sensors Failed**	**Why sensors were Failed**	**Field Service Observations**

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		
Site	**Date**	**Comments**
8N 95W	6/10/2008	3000m
7N 95W	6/11/2008	1000m
6N 95W	6/11/2008	1000m
5N 95W	6/11/2008	1000m
4N 95W	6/12/2008	1000m
3N 95W	6/12/2008	1000m
2N 95W	6/12/2008	1000m
0 95W	6/13/2008	3000m
1S 95W	6/14/2008	1000m
2S 95W	6/14/2008	1000m
3S 95W	6/14/2008	1000m
4S 95W	6/15/2008	1000m
5S 95W	6/15/2008	1000m
6S 95W	6/15/2008	1000m
7S 95W	6/16/2008	1000m
8S 95W	6/16/2008	3000m
7S 105W	6/19/2008	1000m
2S 110W	6/30/2008	1000m
1S 110W	7/1/2008	1000m
0 110W	7/1/2008	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 or Elizabeth Steffen, NOAA/PMEL

Tel: (206) 526-6806
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Tel: (206) 526-6747
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The following outlines the Argo floats deployed during the cruise:

Argo Float Deployments		
Site	**Date**	**Comments**
0 0.4S 94 59.97W	6/13/2008	SN: 78912
1 0.0 S 109 58.74W	7/1/2008	SN: 3585
0 1.62N 109 53.62W	7/1/2008	SN: 3586

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

AOML Floats		
Site	**Date**	**Comments**
0455.374N 09500.287W	6/11/2008	SN: 78913
0200.863N 09521.396W	6/12/2008	SN: 78916
0212.155S 09504.926W	6/14/2008	SN: 78909
0502.075S 09518.453W	6/15/2008	SN: 78914
0128.824S 09800.162W	6/26/2008	SN: 78911
0134.735S 10055.429W	6/27/2008	SN: 71246
0140.959S 10359.940W	6/28/2008	SN: 71242
0147.069S 10700.012W	6/29/2008	SN: 71244
0201.729S 10957.974W	6/30/2008	SN: 71245
0001.219N 10953.440W	7/1/2008	SN: 71279
0057.855N 11200.067W	7/2/2008	SN: 71278
0220.612N 11459.539W	7/3/2008	SN: 71281

PCO2 and Nitrate Mapping System and Nutrient Samples

Twenty 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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