

TROPICAL ATMOSPHERE-OCEAN (TAO) PROGRAM
FINAL CRUISE REPORT
TA-15-01-BLFN

Area: Equatorial Pacific: 8°S 180° to 8°N 180° and 2°S 165°E

Itinerary:

TA-15-01 DEP *July 12, 2015, Apia, Samoa*
 ARR *August 21, 2015, Apra Harbor, Guam*

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 Ships and other contract vessels.

Four DART buoys were also serviced on this cruise but will not be addressed in this report.

NDBC Points of Contact

NDBC Operations Branch Chief	NDBC Operations Manager
Steve Cucullu	Jeff Jenner
National Data Buoy Center	National Data Buoy Center
Building 3205	Building 3205
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228-688-3804	228-688-2784
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TAO Cruise Objective and Plan:

The objective of this cruise was the maintenance of the TAO Array along the 180° and 165°E meridians. The scientific complement for the cruise embarked at Apia, Samoa on July 11, 2015. The ship departed

on July 12, 2015 and conducted operations as listed in Section 2.1. The ship arrived at Apra Harbor, Guam on August 21, 2015.

1.0 PERSONNEL

1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: William Thompson.

Participating Scientists:

Name	Gender	Nationality	Affiliation
William Thompson	M	US	NOAA/NDBC
Stephan Becerra	M	US	NOAA/NDBC
James Rauch	M	US	NOAA/NDBC
Rodney Watkins	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 times in this summary report are Coordinated Universal Time (UTC):

TAO Cruise Summary

Buoy Site: 8S 180 Refresh	
Mooring Operation: Recovery	Mooring ID#: DM082A
Deployed Location: 07-58.90S/179-50.87W	Deployed Date: 9/2/2014
Recovered Location: 07-57.5S/179-51.3E	Recovered Date: 7/24/2015
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: T25 separated from coupler end.	
Fishing/Vandalism: YES, Long line on Nylon spool #3	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: None	

Buoy Site: 8S 180 Refresh	Mooring Depth: 5511M
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Mooring Operation: Deployment	Mooring ID#: DM141A
Deployed Location: 07-59.2S/179-55.3E	Deployed Date: 7/24/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: Prior to deployment, the primary tube was having issues transmitting and was resetting itself. The payload was replaced with the spare.	

Buoy Site: 5S 180 Refresh	
Mooring Operation: Recovery	Mooring ID#: DM081A
Deployed Location: 04-57.71S/179-53.53W	Deployed Date: 7/29/2014
Recovered Location: 04-57.6S/179-53.1W	Recovered Date: 3/6/2015
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: None	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Buoy hull waterlogged.	

Buoy Site: 5S 180 Refresh	Mooring Depth: 5664M
Mooring Operation: Deployment	Mooring ID#: DM142A
Deployed Location: 04-57.06S/179-52.7W	Deployed Date: 7/26/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None	

Buoy Site: 2S 180 Refresh			
Mooring Operation: Recovery		Mooring ID#: DM080A	
Deployed Location: 01-59.47S/179-52.37W		Deployed Date: 7/28/2014	
Recovered Location: 01-59.4S/179-50.7W		Recovered Date: 7/27/2015	
Sensors/Equipment Lost at Sea: None			
Sensors Damaged/Fouled: T150 damaged by longline.			
Fishing/Vandalism: YES, Long line on Nilspin.			
Sensors/Tubes Downloaded: Sent to Lab for download			
General Comments: None			
Site Sensor Failures	Date Data Flagged	Why Data Flagged	Field Service Observations
SSS	12/3/14	Data too low	None

Buoy Site: 2S 180 Refresh	Mooring Depth: 5339M
Mooring Operation: Deployment	Mooring ID#: DM143A
Deployed Location: 01-59.4S/179-51.1W	Deployed Date: 7/27/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None.	

Buoy Site: 2N 180 Refresh			
Mooring Operation: Recovery		Mooring ID#: DM078A	
Deployed Location: 02-00.96N/179-48.38W		Deployed Date: 7/26/2014	
Recovered Location: 02-01.5N/179-46.3W		Recovered Date: 7/28/2015	
Sensors/Equipment Lost at Sea: None			
Sensors Damaged/Fouled: None			
Fishing/Vandalism: None			
Sensors/Tubes Downloaded: Sent to Lab for download			
General Comments: None			
Site Sensor Failures	Date Data Flagged	Why Data Flagged	Field Service Observations
RH	10/3/14	Near saturation	None

Buoy Site: 2N 180 Refresh	Mooring Depth: 5469M
Mooring Operation: Deployment	Mooring ID#: DM144A
Deployed Location: 02-00.9N/179-48.01W	Deployed Date: 7/29/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None.	

Buoy Site: 5N 180 Refresh	
Mooring Operation: Recovery	Mooring ID#: DM077A
Deployed Location: 04-59.74N/179-53.65W	Deployed Date: 7/25/2014
Recovered Location: 04-53.2N/179-53.5W	Recovered Date: 7/30/2015
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: Tow line wrapped around Nilspin head. Top section hose damaged but the cable was still intact.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: None	

Site Sensor Failures	Date Data Flagged	Why Data Flagged	Field Service Observations
RH	9/27/14	Saturated	None
SST/SSS	8/15/14	Failed synoptic check	None

Buoy Site: 5N 180 Refresh	Mooring Depth: 5630M
Mooring Operation: Deployment	Mooring ID#: DM145A
Deployed Location: 04-59.79N/179-53.48W	Deployed Date: 7/30/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None.	

Buoy Site: 8N 180 Refresh			
Mooring Operation: Recovery		Mooring ID#: DM076A	
Deployed Location: 08-01.12N/179-53.58W		Deployed Date: 7/24/2014	
Recovered Location: 08-01.3N/179 52.5W		Recovered Date: 7/31/2015	
Sensors/Equipment Lost at Sea: WIND			
Sensors Damaged/Fouled: None			
Fishing/Vandalism: Top section was severed along with the cable inside. Upper wind stanchion was broken at the clamp, cotter key still remained. Stanchion was hanging only by the anemometer cable.			
Sensors/Tubes Downloaded: Sent to Lab for download			
General Comments: None			
Site Sensor Failures	Date Data Flagged	Why Data Flagged	Field Service Observations
T20-T500	5/20/15	Data missing	T50 – Missing lower mount T150 – Out of mount T250 – Out of mount
ATMP	2/11/15	Data erratic	None
WSPD	12/23/14	Data zero	Sensor missing
WDIR	11/24/14	Data erratic	Sensor missing
SST/SSS	8/10/14	Data offset	None

Buoy Site: 8N 180 Refresh	Mooring Depth: 5948M
Mooring Operation: Deployment	Mooring ID#: DM146A
Deployed Location: 08-01.10N/179-53.44W	Deployed Date: 7/31/2015
Pre-Deployment On Deck Instrument Failures: None	

Sensors/Equipment Lost at Sea: None
Sensors Damaged During Deployment: None
General Comments: None

Buoy Site: 0 180 Refresh	
Mooring Operation: Recovery	Mooring ID#: DM079A
Deployed Location: 00-01.78N/179-55.19W	Deployed Date: 7/27/2014
Recovered Location: 00-01.2N/179-54.4W	Recovered Date: 8/2/2015
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: None	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: None	

Buoy Site: 0 180 Refresh	Mooring Depth: 5388M
Mooring Operation: Deployment	Mooring ID#: DM147A
Deployed Location: 00-01.9N/179 55.2W	Deployed Date: 8/3/2015
Pre-Deployment On Deck Instrument Failures: None	
Sensors/Equipment Lost at Sea: None	
Sensors Damaged During Deployment: None	
General Comments: None	

Buoy Site: 2S 165E Refresh	
Mooring Operation: Recovery	Mooring ID#: DM055B
Deployed Location: 01-59.94S/165 00.19E	Deployed Date: 8/16/2013
Recovered Location: 02-00.1S/165-01.0E	Recovered Date: 8/7/2015
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: Long line on third spool of nylon.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Old spec steel braided top section corroded and severed. Old spec Nilspin potting coming apart.	

Buoy Site: 2S 165E Refresh	Mooring Depth: 4466M
Mooring Operation: Deployment	Mooring ID#: DM148A
Deployed Location: 01-59.82S/165-00.41E	Deployed Date: 8/7/2015

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

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.

No CTDs were accomplished during this cruise.

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

Five (5) Argo floats were scheduled for deployment on this 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

or

Elizabeth Steffen, NOAA/PMEL
 Tel: (206) 526-6747
 E-mail: pmel_floats@noaa.gov

The following outlines the Argo floats deployed during the cruise:

ARGO Floats				
Coordinates LAT/LONG		Date	SN#	Comments
00 00.108N	129 59.8W	8/3/2015	9F0489	None
04 59.9N	166 47.9E	8/9/2015	10F0455	None
06 59.98N	167 15.0E	8/10/2015	11F0439	None
05 33.2N	151 00.6E	8/15/2015	12F0440	None
04 48.07N	148 00.4E	8/16/2015	13F0441	None

Atlantic Oceanographic and Meteorological Laboratory (AMOL) Surface Drifting Floats

Four (4) 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 LAT/LONG		Date	SN#	Comments
04 58.8S	179 52.4W	7/25/15	139923 & 139922	None
03 00.09S	179 53.3W	7/26/15	139921 & 139920	None
03 00.01N	179 49.62W	7/29/15	139919 & 139918	None
05 00.21N	179 55.00W	7/30/15	139917 & 139747	None