

TROPICAL ATMOSPHERE-OCEAN (TAO)
PROGRAM FINAL CRUISE REPORT
TA-17-04-BLFN

Area: Equatorial Pacific: 8°S 155°W to 8°N 155°W and 8°S 170°W to 8°N 1740°W

Itinerary:

TA-17-04-BLFN DEP August 28, 2017, Apia, Samoa

ARR October 5, 2017, Honolulu, Hawaii

CRUISE DESCRIPTION

The Tropical Atmosphere Ocean (TAO) array consists of 55 buoys utilizing a taut line mooring configuration used to mount data collection sensors for climate research purposes. Repair and maintenance of the buoys is performed by NDBC contracted personnel on an annual basis utilizing the NOAA Ships and other contract vessels; this cruise utilized the commercial vessel *M/V Bluefin*. The buoys' deployment lifecycles are up to 18 months to ensure at least one year of data collection can be completed.

TAO Cruise Objective and Plan:

The objective of this cruise was the maintenance of the TAO Array along the 155°W and 170°W meridians.

The scientific complement for the cruise embarked at Apia, Samoa on August 27, 2017. The ship departed on August 28, 2017 and conducted operations as listed in Section 2.1. The ship arrived at Honolulu, HI, on October 5, 2017.

1.0 PERSONNEL

1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: James Lenoir

Participating Scientists:

Name	Gender	Nationality	Affiliation
James Lenoir	M	US	NOAA/NDBC
Adam Herrin	M	US	NOAA/NDBC
Ronnie Watkins	M	US	NOAA/NDBC
Daniel Rutledge	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 170W	
Mooring Operation: Recovery	Mooring ID#: DM210A
Deployed Location: 04 58.114'S 170 02.354'W	Deployed Date: 09/03/2016
Recovered Location: 04 57.68'S 109 59.00'W	Recovered Date: 09/06/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NO	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 8S 170W	Mooring Depth: 5378 M
Mooring Operation: Deployment	Mooring ID#: DM257A
Deployed Location: 07 58.4'S 170 02.5'W	Deployed Date: 09/07/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 5S 170W	
Mooring Operation: Recovery	Mooring ID#: DM209A
Deployed Location: 04 59 .535'S 170 00 .19'W	Deployed Date: 09/01/2016
Recovered Location: 04 59.736'S 170 00.468W	Recovered Date: 09/08/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NO	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 5S 170W	Mooring Depth: 5415
Mooring Operation: Deployment	Mooring ID#: DM258A
Deployed Location: 04 58.9'S 169 59.2'W	Deployed Date: 09/08/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 2S 170W	
Mooring Operation: Recovery	Mooring ID#: DM208A
Deployed Location: 02 09.8'S 170 01.2'W	Deployed Date: 08/31/2016

Recovered Location: 02 09.138'S 170 01.404'W	Recovered Date: 09/09/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NO	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 2S 170W	Mooring Depth: 4959
Mooring Operation: Deployment	Mooring ID#: DM233A
Deployed Location: 02 9.456'S 170 0.824'W	Deployed Date: 09/09/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments:	

Buoy Site: 0 170W Co2	
Mooring Operation: Recovery	Mooring ID#: DM207A
Deployed Location: 0 00.9 170 01.9'W	Deployed Date: 08/29/2016
Recovered Location: 00 01.932 170 00.552'W	Recovered Date: 6/11/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NO	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 0 170W Co2	Mooring Depth: 5630M
Mooring Operation: Deployment	Mooring ID#: DM260A
Deployed Location: 00 03.51N 109 53.90W	Deployed Date: 09/10/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Both Sontek and SBE 44 sensors at address 20 were swapped by mistake with the Sontek and SBE 44 sensors at address 22. MCC was notified post deployment and the corrections were made before the team was released from station.	

Buoy Site: 0 170W ADCP	
Mooring Operation: Recovery	Mooring ID#: KA020
Deployed Location: 0 00.19N 169 43.049W	Deployed Date: 08/30/2016
Recovered Location: 0 00.19N 169 43.049W	Recovered Date: 08/30/2016
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 170W ADCP	Mooring Depth: 5443M
Mooring Operation: Deployment	Mooring ID#: KA021
Deployed Location: 00 00.53N 109 55.27W	Deployed Date: 09/11/2017
Pre-Deployment On Deck Instrument Failures: NONE	

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

Buoy Site: 2N 170W	
Mooring Operation: Recovery	Mooring ID#: Dm206A
Deployed Location: 02 02.2'N 169 59.9'W	Deployed Date: 08/28/2016
Recovered Location: 02 02.2'N 169 59.9'W	Recovered Date: 09/12/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled:	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 2N 170W	Mooring Depth: 5398M
Mooring Operation: Deployment	Mooring ID#: DM261A
Deployed Location: 02 00.093'N 169 59.311W	Deployed Date: 09/12/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: There was some concern with the acoustic release's release, enable, and disable codes. The fields that auto populated when the serial number was entered in the log did not match the codes on the release itself, they were as follows,	

Buoy Site: 5N 170W	
Mooring Operation: Recovery	Mooring ID#: DM205A
Deployed Location: 04 59.512'N 169 59.30'W	Deployed Date: 08/27/2016
Recovered Location: 05 01.68'N 169 58.83'W	Recovered Date: 09/13/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: T25 T50 (slipped Mount) T250 TP500(Fouled)	
Fishing/Vandalism: YES	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Ships sea temp was down.	

Buoy Site: 5N 170W	Mooring Depth: 5775M
Mooring Operation: Deployment	Mooring ID#: DM262A
Deployed Location: 05 00.603'N 169 58.803'W	Deployed Date: 09/13/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Ships sea temp was not working.	

Buoy Site: 8N 170W	
Mooring Operation: Recovery	Mooring ID#: DM204A
Deployed Location: 07 59.7'N 170 04.7'W	Deployed Date: 08/25/2016
Recovered Location: 07 59.7'N 170 04.7'W	Recovered Date: 09/14/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: SSC damaged	
Fishing/Vandalism: Yes	

Sensors/Tubes Downloaded: Sent to Lab for download
General Comments: Top Section severed and cable pulled off of SSC.

Buoy Site: 8N 170W	Mooring Depth: 5534M
Mooring Operation: Deployment	Mooring ID#: DM263A
Deployed Location: 07 59.4'N 170 02.2'W	Deployed Date: 09/14/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments:	

Buoy Site: 8S 155W	Mooring ID#: DM211A
Mooring Operation: Recovery	Mooring ID#: DM211A
Deployed Location: 08 16.788'S 155 02.831'W	Deployed Date: 10/01/2016
Recovered Location: 08 16.512'S 155 02.784W	Recovered Date: 09/20/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: T 125 slipped mount	
Fishing/Vandalism: YES	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Top section was severed where it connects to Nilspin.	

Buoy Site: 8S 155W	Mooring Depth: 5333M
Mooring Operation: Deployment	Mooring ID#: DM238A
Deployed Location: 08 17.3'N 155 02.5'W	Deployed Date: 09/20/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: None	

Buoy Site: 5S 155W	
Mooring Operation: Recovery	Mooring ID#: DM177B
Deployed Location: 04 58.3'S 154 57.2'W	Deployed Date: 10/02/2016
Recovered Location: 04 59.454'S 154 57.366W	Recovered Date: 09/21/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: T50 slipped mount	
Fishing/Vandalism: Long line around gear	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: None	

Buoy Site: 5S 155W	Mooring Depth: 5021M
Mooring Operation: Deployment	Mooring ID#: DM265A
Deployed Location: 05 05.21N 94 57.08W	Deployed Date: 09/22/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE.	

Buoy Site: 2S 155W

Mooring Operation: Recovery	Mooring ID#: DM213A
Deployed Location: 01 58.4'S 154 59.5'W	Deployed Date: 10/3/2016
Recovered Location: 1 58.4'S 155 01.2'W	Recovered Date: 609/23/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: TP 500 Fouled	
Fishing/Vandalism: YES. Long line gear was wrapped around sensor 9 @ 500m and the first three spools. Nylon still looked in great shape.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 2S 155W	Mooring Depth: 4985M
Mooring Operation: Deployment	Mooring ID#: DM266A
Deployed Location: 01 58.3'S 154 59.4'W	Deployed Date: 09/23/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 0 155W	Mooring ID#: DM179A
Mooring Operation: Recovery	Mooring ID#: DM179A
Deployed Location: 00 00.1 154 56.2'W	Deployed Date: 10/04/2016
Recovered Location: 00 00.396 154 54.192'W	Recovered Date: 09/23/2017
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: YES,	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Wind monitor stanchion broke at the hose clamps. Stanchion was laid over still connected.	

Buoy Site: 0 155W	Mooring Depth: 4635M
Mooring Operation: Deployment	Mooring ID#: DM267A
Deployed Location: 00 05.70N 95 26.56W	Deployed Date: 09/24/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments:	

Buoy Site: 2N 155W	Mooring ID#: DM215A
Mooring Operation: Recovery	Mooring ID#: DM215A
Deployed Location: 01 59.5N 154 59.3W	Deployed Date: 10/05/2016
Recovered Location:	Recovered Date:
Sensors/Equipment Lost at Sea: All, adrift	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: Yes	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Buoy Adrift	

Buoy Site: 2N 155W	Mooring Depth: 4662M
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Mooring Operation: Deployment	Mooring ID#: DM268A
Deployed Location: 01 58.52S 95 08.82W	Deployed Date: 09/25/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments .	

Buoy Site: 5N 155W	
Mooring Operation: Recovery	Mooring ID#: DM216A
Deployed Location: 5 00 108'N 155 56.989'W	Deployed Date: 10/07/2016
Recovered Location: 04 57.972'N 154 56.802'W	Recovered Date: 09/26/2017
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: SSC cable broken off.	
Fishing/Vandalism: YES,	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 5N 155W	
Mooring Operation: Deployment	Mooring Depth: 4584M
Deployed Location: 04 58.162'N 154 56.679'W	Mooring ID#: DM243A
	Deployed Date: 09/26/2017
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 8N 155W	
Mooring Operation: Recovery	Mooring ID#: DM217A
Deployed Location: 07 57.2N 154 58.9'W	Deployed Date: 10/08/2016
Recovered Location:	Recovered Date: 09/27/2017
Sensors/Equipment Lost at Sea: Payload, Anemometer, AT/RH, tower was missing.	
Sensors Damaged/Fouled: SSC, T20-T60	
Fishing/Vandalism: Buoy was off station and missing the tower. Appears that it was drug about a mile away. The tower and all top side sensors were missing and appears all three bolts were removed.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Buoy was off station and missing the tower. Appears that it was drug about a mile away. The tower and all top side sensors were missing and appears all three bolts were removed.	

Buoy Site: 8N 155W	
Mooring Operation: Deployment	Mooring Depth: 5219M
Deployed Location: 07 57.024N 155 00.069W	Mooring ID#: DM270A
	Deployed Date: 09/27/2017
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

No CTD casts were taken on this cruise

2.3 Ancillary Science Projects Supported by the Cruise

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

Atlantic Oceanographic and Meteorological Laboratory (AMOL) Surface Drifting Floats

Twenty (20) 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
0.00.064°N	169.57.647°W	09/10/2017	64826290	
0.00.060°N	169.57.605°W	09/10/2017	64826100	
0.00.050°N	169.57.586°W	09/10/2017	64826400	
2.00.113°N	169.59.597°W	09/12/2017	64826400	
2.00.152°N	169.59.619°W	09/12/2017	64826010	
4.59.879°W	154.58.056°W	09/22/2017	64826020	
1.58.04°W	154.59.05°W	09/22/2017	64825550	
1.58.04°S	154.59.05°W	09/22/2017	64826000	
0.00.02°N	154.55.09°W	09/23/2017	64827500	
0.00.02°N	154.55.09°W	09/23/2017	64827060	
0.00.02°N	154.55.09°W	09/23/2017	64827290	
2.00.227°N	154.58.775°W	09/25/2017	64826550	
2.00.259°N	154.58.775°W	09/25/2017	64827040	

Pacific Marine Environmental Laboratory (PMEL) Argo Profiling CTD Floats

Fill in with number (XX) 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				
Latitude	Longitude	Date & Time	SN#	Comments
2.03.151'N	170.02.881'W	09/12/2017 03:57Z	819	
5.00.587'S	155.00.729'W	09/22/2017 01:00Z	815	
03.29.702'S	155.04.817'W	09/22/2017 14:30Z	818	
1.58.390'S	155.02.937'W	09/23/2017 05:50Z	793	
0.00.4325	154.59.691'W	09/24/2017 02:10Z	817	
02.00.956'N	155.03.768'W	09/24/2017 22:47Z	770	
02.07.455'S	170.04.00'W	09/09/2017 10:20Z	788	
0.02.763'W	170.05.538'W	09/10/2017 09:54Z	816	