

TROPICAL ATMOSPHERE-OCEAN (TAO)
PROGRAM FINAL CRUISE REPORT
TA-17-01-BLFN

Area: Equatorial Pacific: 8°S 125°W to 8°N 125°W and 8°S 140°W to 8°N 140°W

Itinerary:

TA-17-01 DEP *January 18, 2017, Colon, Panama*
 ARR *March 1, 2017, Panama City, Panama*

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. 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 125°W and 140°W meridians.

The scientific complement for the cruise embarked at San Diego, CA on January 8, 2017. The ship departed on Colon, Panama on January 18, 2017 and conducted operations as listed in Section 2.1. The ship arrived at Panama City, Panama on March 1, 2017.

1.0 PERSONNEL

1.1 CRUISE LEAD AND PARTICIPATING SCIENTISTS:

Cruise Lead: Stefan Becerra.

Participating Scientists:

Name	Gender	Nationality	Affiliation
Stefan Becerra	M	US	NOAA/NDBC

James Lenoir	M	US	NOAA/NDBC
Kenion Lewis	M	US	NOAA/NDBC
Eddie Kendricks	M	US	NOAA/NDBC
Darren Kennedy	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: 9N 140W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM163A
Deployed Location: 08 57.73' N 140 09.97' W	Deployed Date: 2/22/16
Recovered Location: 08 56.95'N/140 09.12'W	Recovered Date: 01/22/17
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: None	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 9N 140W Refresh	Mooring Depth: 5153m
Mooring Operation: Deployment	Mooring ID#: DM218a
Deployed Location: 08 58.9'N/140 09.7'W	Deployed Date: 01/22/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 5N 140W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM164A
Deployed Location: 05 00.83'N 139 59.62'W	Deployed Date: 02/24/16
Recovered Location: 05 0'00"N/139 58'44"W	Recovered Date: 01/24/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: None	
Sensors/Tubes Downloaded: Sent to Lab for download.	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 5N 140W Refresh	Mooring Depth: 4455m
Mooring Operation: Deployment	Mooring ID#: DM219A
Deployed Location: 04 59.7'N/139 58.6'W	Deployed Date: 01/24/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	

Sensors Damaged During Deployment: NONE
General Comments: No shipboard SSC for comparison.

Buoy Site: 2N 140W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM165A
Deployed Location: 01 58.42'N 140 01.97' W	Deployed Date: 02/25/16
Recovered Location: 01 58'26"N/140 02'17"W	Recovered Date: 01/25/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: None	
Sensors/Tubes Downloaded: Sent to Lab for download.	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 2N 140W Refresh	Mooring Depth: 4417m
Mooring Operation: Deployment	Mooring ID#: DM220A
Deployed Location: 01 58.0'N 140 02.4'W	Deployed Date: 01/25/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 0 140W Refresh Flux	
Mooring Operation: Recovery	Mooring ID#: DM166A
Deployed Location: 00 01.88'N 139.58.2'W	Deployed Date: 02/27/16
Recovered Location: 00 02'24"N 139 56'13"W	Recovered Date: 01/26/17
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: Wind monitor broke at stanchion and was hanging on by the wire.	
Fishing/Vandalism: Yes. Long line fishing gear was found on 49m Chipod and on 119m Chipod.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 0 140W Refresh Flux	Mooring Depth: 4360m
Mooring Operation: Deployment	Mooring ID#: DM221A
Deployed Location: 00 01.809'N 139 56.01'W	Deployed Date: 01/27/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 0 140W ADCP	
Mooring Operation: Recovery	Mooring ID#: CA020
Deployed Location: 00 02.09'N 140 01.91'W	Deployed Date: 02/28/16
Recovered Location: 00 01.9'N 140 02.1'W	Recovered Date: 01/27/17
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 140W ADCP	Mooring Depth: 4319m
Mooring Operation: Deployment	Mooring ID#: CA021
Deployed Location: 00 01.49°N 140 02.34°W	Deployed Date: 01/27/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: None	

Buoy Site: 2S 140W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM167A
Deployed Location: 02 02.66°S 140 01.52°W	Deployed Date: 02/28/16
Recovered Location: 02 02°03'S 104 01°12'W	Recovered Date: 01/28/17
Sensors/Equipment Lost at Sea: None	
Sensors Damaged/Fouled: None	
Fishing/Vandalism: Yes, fishing line was cut away from 120m and 500m.	
Sensors/Tubes Downloaded: Sent to Lab for download.	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 2S 140W Refresh	Mooring Depth: 4331m
Mooring Operation: Deployment	Mooring ID#: DM222A
Deployed Location: 02 02.87°S 140 01.18°W	Deployed Date: 01/29/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: Wind monitor and top section damaged during deployment due to ship taking a swell. Buoy was not yet released into water therefore, it was brought back onboard and repaired. Buoy was allowed to transmit onboard which resulted in confirmed data from the wind monitor, IM line, and the TPOS components.	
General Comments: ADCP Profiler mounting bracket hardware seized and was not reusable. Mounting bracket was heavily secured with zip ties and electrical tape. No shipboard SSC for comparison.	

Buoy Site: 5S 140W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM168A
Deployed Location: 05 00.13°S 139 54.95°W	Deployed Date: 03/01/17
Recovered Location: 05 00°13'S 139 55°12'W	Recovered Date: 01/30/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download.	

General Comments: No shipboard SSC for comparison.

Buoy Site: 5S 140W Refresh	Mooring Depth: 4361m
Mooring Operation: Deployment	Mooring ID#: DM223A
Deployed Location: 05 00.057'S 139 54.187'W	Deployed Date: 01/30/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC for comparison.	

Buoy Site: 8S 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM169A
Deployed Location: 07 58.58'S 124 58.77'W	Deployed Date: 03/04/16
Recovered Location: 07 58'23"S 124 58'41"W	Recovered Date: 02/03/17
Sensors/Equipment Lost at Sea: Acoustic Release	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Yes, fishing line was cut away at 100m.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No comms with acoustic release. Attempts to communicate were made multiple times before and during recovery of subsurface sensors. All subsurface sensors were pulled off through 500m and shortly after line cutters were sent down. The line was cut successfully in the middle of spool #3 (T10001). No shipboard SSC available for comparison.	

Buoy Site: 8S 125W Refresh	Mooring Depth: 4514m
Mooring Operation: Deployment	Mooring ID#: DM224A
Deployed Location: 07 59.2'S 124 58.2'W	Deployed Date: 02/03/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SST or SSC available for comparison.	

Buoy Site: 5S 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM170A
Deployed Location: 04 59.2'S 124 57.2'W	Deployed Date: 03/05/16
Recovered Location: 04 58'34"S 124 57'4"W	Recovered Date: 02/04/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 5S 125W Refresh	Mooring Depth: 4544m
Mooring Operation: Deployment	Mooring ID#: DM225A
Deployed Location: 04 59.8'S 124 57.1'W	Deployed Date: 02/05/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 2S 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM171A
Deployed Location: 02 05.35'S 124 57.7'W	Deployed Date: 03/07/16
Recovered Location: 02 04'51"S 124 57"18"W	Recovered Date: 02/05/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: Wind stanchion broke off at split hose clamps and was hanging on by the wire. Top of wind monitor missing. Top section severed at the head connection of Nilspin.	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 2S 125W Refresh	Mooring Depth: 4667m
Mooring Operation: Deployment	Mooring ID#: DM226A
Deployed Location: 02 05.4'S 124 56.0'W	Deployed Date: 02/06/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SST or SSC available for comparison.	

Buoy Site: 0 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM172A
Deployed Location: 00 10.75'S 124 32.48'W	Deployed Date: 03/07/16
Recovered Location: 00 11'29"S 124 31'48"W	Recovered Date: 02/06/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 0 125W Refresh	Mooring Depth: 4434m
Mooring Operation: Deployment	Mooring ID#: DM227A
Deployed Location: 00 11.4'S 124 30.8'W	Deployed Date: 02/07/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 2N 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM173A
Deployed Location: 01 58.08'N 125 04.5'W	Deployed Date: 03/08/16
Recovered Location: 01 58'37"N 125 04'44"W	Recovered Date: 02/08/17
Sensors/Equipment Lost at Sea: Humidity probe and housing missing. Battery box missing.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 2N 125W Refresh	Mooring Depth: 4724m
Mooring Operation: Deployment	Mooring ID#: DM228A
Deployed Location: 01 57.4'N 125 05.1'W	Deployed Date: 02/08/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 5N 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM174A
Deployed Location: 05 04.6'N 124 58.4'W	Deployed Date: 03/10/17
Recovered Location: 05 05.0'N 124 58.0'W	Recovered Date: 02/09/17
Sensors/Equipment Lost at Sea: Tower was missing upon arrival on station. Payload, battery box, Wind Monitor, AT/RH missing.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Tower discovered to be unbolted from hull resulting in vandalism.	
Sensors/Tubes Downloaded: Sent to Lab for download.	
General Comments: No comms with acoustic release. Commands were sent throughout recovery and once last subsurface sensor was recovered, still had no response. Mooring had little to no strain upon recovery, resulting in an unconfirmed release. Acoustic release was recovered! All topside LRUs lost at sea. SSC and subsurface all recovered successfully. No shipboard SSC available for comparison.	

Buoy Site: 5N 125W Refresh	Mooring Depth: 4404m
Mooring Operation: Deployment	Mooring ID#: DM229A
Deployed Location: 05 04.9'N 124 56.9'W	Deployed Date: 02/09/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 8N 125W Refresh	
Mooring Operation: Recovery	Mooring ID#: DM175A
Deployed Location: 08 01.7'N 125 00.67'W	Deployed Date: 03/11/16
Recovered Location: 08 00'57"N 124 59'53"W	Recovered Date: 02/10/17
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: No shipboard SSC available for comparison.	

Buoy Site: 8N 125W Refresh	Mooring Depth: 4669m
Mooring Operation: Deployment	Mooring ID#: DM230A
Deployed Location: 08 02.25'N 125 00.1'W	Deployed Date: 02/11/17
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	

General Comments: No shipboard SSC available for comparison.

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

Sixteen (16) 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/Time	SN#	Comments
03 00.1'N	03 00.1'N	25 JAN 17 03:06	820500	
03 00.1'N	03 00.1'N	25 JAN 17 03:06	820510	
00 08.3'N	140 04.2'W	27 JAN 17 12:29	820450	
00 08.3'N	140 04.2'W	27 JAN 17 12:29	820470	
03 00.1'S	139 58.6'W	29 JAN 17 10:15	820180	
03 00.2'S	139 58.6'W	29 JAN 17 10:17	999560	
05 00.5'S	139 55.3'W	30 JAN 17 05:32	820170	
05 00.52'S	139 55.6'W	30 JAN 17 05:26	820200	
04 59.77'S	124 57.0'W	4 FEB 17 02:21	821500	
02 59.6'S	124 56.6'W	5 FEB 17 15:50	821510	
01 01.9'S	124 57.8'W	6 FEB 17 14:30	821480	
00 00.01'S	125 00.0'W	7 FEB 17 12:13	821470	
00 00.01'N	125.00.0'W	7 FEB 17 12:14	821450	
01 00.04'N	125 00.6'W	7 FEB 17 19:05	821080	
03 00.1'N	125 00.1'W	8 FEB 17 17:58	821020	

05 02.9'N	125 00.0'W	9 FEB 17 23:50	821030	
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Eight (8) 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
08 59.0'N	140 09.7'W	22 JAN 17 23:13	734	
04 59.402'N	139 58.647'W	24 JAN 17 13:54	735	
01 58.000'N	140 03.752'W	26 JAN 17 02:28	731	
00 08.8'N	140 04.8'W	27 JAN 17 12:22	732	
05 00.338' S	139 55.0'W	30 JAN 17 05:23	736	
06 27.0'S	132 35.6'W	1 FEB 17 09:42	741	
02 48.77'S	124 56.6'W	5 FEB 17 17:05	743	
12 00.0'N	116 06.0'W	14 FEB 17 00:46	745	