

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	
Mooring Operation: Recovery	Mooring ID#: DM340A
Deployed Location: 09 00.194' N 140 16.017' W	Deployed Date: 10/05/2019
Recovered Location: 8° 58.8900' N 140° 17.1306' W	Recovered Date: 03/15/2020
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: 9N 140W	Mooring Depth: 4823M
Mooring Operation: Deployment	Mooring ID#: DM367A
Deployed Location: 9 00.5N 140 14.7W	Deployed Date: 03/15/2020
Pre-Deployment On Deck Instrument Failures: TP500 Failed. Replaced with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Replaced 300m cut with replacement at same length.	

Buoy Site: 5N 140W	
Mooring Operation: Recovery	Mooring ID#: DM341A
Deployed Location: 04 59.2' N 139 56.8' W	Deployed Date: 10/07/2019
Recovered Location: 5° 0.2580' N 139° 56.5080' W	Recovered Date: 03/16/2020
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: 5N 140W	Mooring Depth: 4483M
Mooring Operation: Deployment	Mooring ID#: DM368A
Deployed Location: 04 58.1N 139 57.3W	Deployed Date: 03/16/2020
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	

General Comments: Buoy went adrift after deployment. Returned to station after 2N and re-deployed under DM368B.

Buoy Site: 2N 140W	
Mooring Operation: Recovery	Mooring ID#: DM342A
Deployed Location: 01 58.540' N 140 02.000' W	Deployed Date: 10/09/2019
Recovered Location: 1° 58.5600' N 140° 3.2520' W	Recovered Date: 03/17/2020
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: 2N 140W	Mooring Depth: 4369M
Mooring Operation: Deployment	Mooring ID#: DM369A
Deployed Location: 01 58.3N 140 01.2W	Deployed Date: 03/18/2020
Pre-Deployment On Deck Instrument Failures: Tube failure. Replaced with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 5N 140W	
Mooring Operation: Recovery	Mooring ID#: DM368A
Deployed Location: 04 58.1N 139 57.3W	Deployed Date: 03/16/2020
Recovered Location: 5° 11.7360' N 139° 49.6380' W	Recovered Date: 03/19/2020
Sensors/Equipment Lost at Sea: Acoustic release and bottom 4 spools of nylon lost at sea.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: NONE	
General Comments: Buoy originally deployed on 3/16/20 with new nylon. The center of the 3rd spool broke and buoy went adrift. All remaining nylon and release were lost at sea.	

Buoy Site: 5N 140W	Mooring Depth: 4476M
Mooring Operation: Deployment	Mooring ID#: DM368B
Deployed Location: 05 02.4N 139 57.1W	Deployed Date: 03/19/2020
Pre-Deployment On Deck Instrument Failures: Wind bird replaced after striking A-frame.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 0 140W CO2	
Mooring Operation: Recovery	Mooring ID#: DM343A
Deployed Location: 0 00.200' N 139 53.850' W	Deployed Date: 10/10/2019
Recovered Location: 0° 0.0240' N 139° 53.5146' W	Recovered Date: 03/20/2020
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: Rain gauge missing spikes and top. Remainder was accounted for.	
Fishing/Vandalism: NONE	

Sensors/Tubes Downloaded: Sent to Lab for download
General Comments: Several nylon serial numbers were incorrect. Corrected issue during deployment.

Buoy Site: 0 140W C02	Mooring Depth: 4348M
Mooring Operation: Deployment	Mooring ID#: DM370A
Deployed Location: 00 00.2N 139 52.7W	Deployed Date: 03/21/2020
Pre-Deployment On Deck Instrument Failures: Replaced TP300 with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 0 140W ADCP	Mooring ID#: CA023
Mooring Operation: Recovery	Mooring ID#: CA023
Deployed Location: 00 01.595' N 140 03.506' W	Deployed Date: 10/11/2019
Recovered Location: 00 01.59N 140 03.5W	Recovered Date: 03/20/2020
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: One of the two acoustic releases had a sticker serial of 56005 and a written serial of 56006. NDBC #42878. Both were recovered and returned to SSC.	

Buoy Site: 0 140W ADCP	Mooring Depth: 4330M
Mooring Operation: Deployment	Mooring ID#: CA024
Deployed Location: 00 02.273N 139 58.854W	Deployed Date: 03/21/2020
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	Mooring ID#: DM344A
Mooring Operation: Recovery	Mooring ID#: DM344A
Deployed Location: 02 04.849' S 139 59.922' W	Deployed Date: 10/12/2019
Recovered Location: 2° 5.0940' S 140° 0.4440' W	Recovered Date: 03/22/2020
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Yes, fishing gear on spool #1 and #2 of nylon.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 2S 140W	Mooring Depth: 4331M
Mooring Operation: Deployment	Mooring ID#: DM371A
Deployed Location: 02 02.1S 139 58.7W	Deployed Date: 03/22/2020
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 5S 140W	
Mooring Operation: Recovery	Mooring ID#: DM318A
Deployed Location: 04.59.219 S 139.53.860 W	Deployed Date: 09/23/2018
Recovered Location: 4° 58.9200' S 139° 54.9534' W	Recovered Date: 03/23/2020
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: 5S 140W	Mooring Depth: 4359M
Mooring Operation: Deployment	Mooring ID#: DM372A
Deployed Location: 04 58.7S 139 53.9W	Deployed Date: 03/23/2020
Pre-Deployment On Deck Instrument Failures: Replaced T40 and wind with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Completed deployment and wind stopped reporting. Pulled buoy to stern of boat and replaced wind stanchion and bird. Released buoy back to water.	

Buoy Site: 8S 155W	
Mooring Operation: Recovery	Mooring ID#: DM306A
Deployed Location: 08 17.2'S 155 01.6'W	Deployed Date: 08/29/2018
Recovered Location: 08 17.3'S 155 02.7'W	Recovered Date: 03/28/2020
Sensors/Equipment Lost at Sea: SSC and release were lost at sea.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Yes. Long line gear was wrapped from 75m sensor downward to nylon.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Extensive amounts of fishing gear were wrapped on Nilspin and Nylon. Nilspin had extremely high tension present when recovering. Acoustic release showed signs of release. Nylon severed approximately 50 meters into first spool of nylon. Hull showed signs of contact (Cracked Fiberglass). No EEZ clearance granted for deployment.	

Buoy Site: 2S 155W	
Mooring Operation: Recovery	Mooring ID#: DM308A
Deployed Location: 01 58.5'S 154 58.9'W	Deployed Date: 08/31/2018
Recovered Location: 01 58.65S 155 00.7W	Recovered Date: 03/29/2020
Sensors/Equipment Lost at Sea: Tube, wind, humidity, battery box, and tower.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Tower and all topside equipment missing. Long line in 75m-250m of mooring.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: Tower was not present. All top-side LRU's were lost at sea. EEZ wasn't approved for re-deployment. This station was a recovery only.	

Buoy Site: 0 155W	
Mooring Operation: Recovery	Mooring ID#: DM309A
Deployed Location: 00 00.4'S 154 55.1'W	Deployed Date: 09/01/2018

Recovered Location: 0° 0.3660' S 154° 57.3960' W	Recovered Date: 03/31/2020
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 155W	Mooring Depth: 4772M
Mooring Operation: Deployment	Mooring ID#: DM373A
Deployed Location: 00 00.1N 154 09.1W	Deployed Date: 03/30/2020
Pre-Deployment On Deck Instrument Failures: Tube and wind replaced with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Buoy went adrift after deployment. Returned to station after 2N and re-deployed under DM373B.	

Buoy Site: 2N 155W	
Mooring Operation: Recovery	Mooring ID#: DM310A
Deployed Location: 01 59.3'N 154 57.5'W	Deployed Date: 09/02/2018
Recovered Location: 1° 59.5560' N 154° 58.5120' W	Recovered Date: 03/31/2020
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Fishing gear at 100, 125, and 150m sensors. Broken 125m sensor.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: ASTRA GAMMA equipment removed from tower and returned to SSC.	

Buoy Site: 2N 155W	Mooring Depth: 4763M
Mooring Operation: Deployment	Mooring ID#: DM374A
Deployed Location: 01 57.7N 153 40.7W	Deployed Date: 04/01/2020
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: ASTRA GAMMA equipment installed.	

Buoy Site: 0 155W	
Mooring Operation: Recovery	Mooring ID#: DM373A
Deployed Location: 00 00.1N 154 09.1W	Deployed Date: 03/30/2020
Recovered Location: 0 01.5N 154 17.8W	Recovered Date: 04/02/2020
Sensors/Equipment Lost at Sea: Nylon spool #7 and acoustic release.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: NONE	
Sensors/Tubes Downloaded: NONE	
General Comments: Line severed at the beginning of the 300m cut. Acoustic release was lost at sea. Recovered buoy and redeployed at original position.	

Buoy Site: 0 155W	Mooring Depth: 4778M
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Mooring Operation: Deployment	Mooring ID#: DM373B
Deployed Location: 0 00.0S 154 09.3W	Deployed Date: 04/02/2020
Pre-Deployment On Deck Instrument Failures: NONE	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: Originally deployed under DM373A and the buoy went adrift. We made a new 300m cut and replaced acoustic release then redeployed under 373B.	

Buoy Site: 5N 155W	
Mooring Operation: Recovery	Mooring ID#: DM311A
Deployed Location: 04 57.8'N 154 58.4'W	Deployed Date: 09/04/2018
Recovered Location: 04 58.3N 154 58.6W	Recovered Date: 04/04/2020
Sensors/Equipment Lost at Sea: SSC not present.	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Long line in spool #2-#5 of nylon.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 5N 155W	
Mooring Operation: Deployment	Mooring Depth: 4582M
Mooring ID#: DM375A	
Deployed Location: 04 58.1N 154 55.9W	Deployed Date: 04/04/2020
Pre-Deployment On Deck Instrument Failures: Replaced T150 and wind with spare.	
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged During Deployment: NONE	
General Comments: NONE	

Buoy Site: 8N 155W	
Mooring Operation: Recovery	Mooring ID#: DM312A
Deployed Location: 07 57.2'N 155 00.8'W	Deployed Date: 09/05/2018
Recovered Location: 07 57.5N 155 00.7W	Recovered Date: 04/05/2020
Sensors/Equipment Lost at Sea: NONE	
Sensors Damaged/Fouled: NONE	
Fishing/Vandalism: Yes. Top section was severed. Small amount of fishing gear in nilspin.	
Sensors/Tubes Downloaded: Sent to Lab for download	
General Comments: NONE	

Buoy Site: 8N 155W	
Mooring Operation: Deployment	Mooring Depth: M
Mooring ID#: DM376A	
Deployed Location: 07 57.68N 154 58.54W	Deployed Date: 04/05/2020
Pre-Deployment On Deck Instrument Failures: Replaced T250 with spare.	
Sensors/Equipment Lost at Sea: Tower, tube, wind, humidity, and battery box.	
Sensors Damaged During Deployment: NONE	
General Comments: Buoy deployed in rough seas. On flyby, noticed that the tower was dislocated from the buoy in 2 of 3 mounting points. Tower and electronics were lost at sea during recovery to repair issue. New tower and spare top-side system was installed and buoy redeployed.	

2.0 CTD Casts Completed

No CTD casts were taken on this cruise

2.1 Ancillary Science Projects Supported by the Cruise

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

Pacific Marine Environmental Laboratory (PMEL) Argo Profiling CTD Floats

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:

	<u>Serial #</u>	<u>Date/Time (UTC)</u>	<u>Position</u>
1.	F-1156	03/10/20 @1421	22°43.67 N. X 127°15.00 W.
2.	F-1155	03/11/20 @ 0730	20°38.78 N. X 129°15.02 W.
3.	F-1153	03/20/20 @1636	00°04.95 N. X 139°54.43 W.
4.	F-1150	03/26/20 @0430	06°39.95 S. X 147°30.00 W.
5.	F-1149	03/30/20 @1916	00°00.50 S. X 154°14.60 W
6.	F-1148	03/31/20 @2200	01°59.40 N. X 154°59.10 W.
7.	F-1147	04/04/20 @1947	04°59.11 N. X 154°59.63 W.
8.	F-1103	04/05/20 @2305	07°57.71 N. X 154°59.51 W.

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:

	<u>Serial #</u>	<u>Date/Time (UTC)</u>	<u>Position</u>
1.	7870150	03/16/20 @1931	05°01.68 N. X 139°55.77 W.
2.	7870460	03/16/20 @1931	05°01.68 N. X 139°55.77 W.
3.	7870420	03/17/20 @1228	03°01.18 N X 140°01.36 W.
4.	7773950	03/17/20 @1228	03°01.18 N X 140°01.36 W.
5.	7778930	03/17/20 @1228	03°01.18 N X 140°01.36 W.
6.	7771910	03/12/20 @2044	00°01.84 N. X 139°56.89 W
7.	7773920	03/12/20 @2044	00°01.84 N. X 139°56.89 W
8.	7773910	03/12/20 @2044	00°01.84 N. X 139°56.89 W
9.	7778920	03/22/20 @1837	03°00.0 S X 139°59.9 W.
10.	7772920	03/22/20 @1837	03°00.0 S X 139°59.9 W.
11.	7275360	03/31/20 @ 0015	00°01.47N X 154°12.45W
12.	7275390	03/31/20 @ 0015	00°01.47N X 154°12.45W
13.	7275210	04/01/20 @ 0055	01°59.43N X 154°56.8W
14.	7275370	04/01/20 @ 0055	01°59.43N X 154°56.8W
15.	7275160	04/03/20 @ 2200	02°59.68N X 154°37.70W
16.	7275150	04/03/20 @ 2200	02°59.68N X 154°37.70W
17.	7275190	04/03/20 @ 2200	02°59.68N X 154°37.70W
18.	7275130	04/04/20 @2230	04°58.60 N. X 154°57.17 W
19.	7275140	04/04/20 @2230	04°58.60 N. X 154°57.17 W
20.	7274360	04/04/20 @2230	04°58.60 N. X 154°57.17 W

University of Washington (APFLD) Profiling Bioptode Drifting Floats

Four (4) APFLD Profiling Bioptode Drifting Floats were scheduled for deployment on this cruise. All APFLD Profilers deployments were completed as scheduled.

Questions concerning ARGO Floats should be directed to:

Rick Rupan,
UW, Float Lab
rupan@uw.edu
Tel: (206) 221-6728

APFLD s/n	Date/Time (UTC)	Position
81114	03/15/20 @1149	08°58.50 N. X 140°15.70 W
18709	03/17/20 @1400	01°59.60 N X 140°05.10 W.
18820	03/21/20 @0127	00°02.83 N. X 140°00.43 W
18601	03/31/20 @0024	00°02.45N X 154°12.69 W