CCE-P1908 DAILY ACTIVITY SCHEDULE

(5 August – 6 September 2019) ***R/V Atlantis***

Listed are intended times; consult Event Log for actual times.

5 August (Mon.)

1400 Depart MARFAC (departure delayed for high tide)

1700 TEST STATION (32° 51.3', 117° 39.3' W)
- CTD test cast
- Trace Metal rosette test
- Bongo test
- MOCNESS test

~2300 Transit to EK60 pole deployment location

6 August (Tues.)

1300 MVP (Moving Vessel Profiler) test

1600 EK60 pole deployment (34° 02' N, 120° 40' W); ship speed tests

1700 Transit to waypoint (34° 13.7' N, 120° 49.5' W) for start of Seasoar

1800 Calibration casts for Seasoar
- CTD cast to 1,000 m (wdp)
- Trace Metal cast to 1,000m (wdp)

2000 Deploy Seasoar
- (Seasoar survey will continue without stopping for ~ 3 days)

7 August (Wed.)

Seasoar survey (~ 507 nm)

(w/ continuous measurements of EK60, pH/pCO_2, O_2:Ar, ALFA, meteorological and standard ocean variables, w/ point samples for Thorium, HPLC, Chl-a, POC/PON, nutrients)

waypoint		
1	34° 13.7' N	120° 49.5' W
2	36° 34.7' N	122° 16.1' W
3	36° 27.3' N	122° 34.4' W
4	34° 06.3' N	121° 07.3' W
5	33° 58.8' N	121° 25.1' W
6	36° 19.8' N	122° 52.7' W

8 August (Thurs.) Seasoar survey

9 August (Fri.) Complete Seasoar Survey

1430 - Recover Seasoar

1630 - CTD calibration cast
- Trace Metal cast (bottle conditioning)

1830 - MVP trials 2

2130 - Recover MVP and steam toward Pt. Sur

10 August (Sat.)

0700 - Start MVP Pt. Sur survey (~ 75 nm)

Waypoints:

001	36° 03.2' N	122° 03.6' W
002	36° 11.8' N	121° 45.1' W
003	36° 14.4' N	121° 51.4' W
004	36° 07.3' N	122° 06.6' W
005	36° 11.5' N	122° 09.5' W
006	36° 17.8' N	121° 55.8' W
007	36° 23.1' N	121° 56.3' W
008	36° 15.7' N	122° 12.3' W

1900 - Recover MVP and steam to first transect location

2100 - **TRANSECT 1 (CTD-TM-Bongo)**:

1	36° 10.5' N	122° 12.3' W - CTD, Trace Metal, bongo
2	36° 10.6' N	122° 06.9' W - CTD
3	36° 10.8' N	122° 01.5' W - CTD, Trace Metal
4	36° 11.0' N	121° 56.1' W - CTD
5	36° 11.2' N	121° 50.8' W - CTD, Trace Metal
6	36° 11.4' N	121° 45.4' W - CTD, Trace Metal

11 August (Sun.)

0800 Complete TRANSECT 1 **(CTD-TM-Bongo)**

0900 (or just after completion of Transect 1) – Steam outside 12 nm for water generation and pump tanks, if needed

1300 Benthic Boundary Layer stations (N = 3), w/ CTD and Trace Metal rosette

BBL1	36° 19.2' N	121° 56.3' W
BBL2	36° 16.3' N	121° 54.7' W
BBL3	36° 13.7' N	121° 49.7' W

1900 MVP survey – Bowtie 1

2100 Steam beyond 12 nm to generate freshwater

12 August (Mon.)

1600 Steam to location for MVP survey

1800 MVP Transect 2

2200 Deploy sediment trap, **Begin Cycle 1** (position depends on MVP survey)

13 August (Tues.) – Cycle 1, Day 1

0200 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Deploy Driftarray #1
0500 CTD, for Thorium
0600 Trace Metal cast
0830 Bongo live tows, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
1100 CTD, for microbiology, dissolved organics
1230 MOCNESS – Day #1 (start 2 nm downwind of Driftarray)
1500 Steam to location for Zooglider deployment (position tbd; inshore of Driftarray)
1600 Zooglider deployment
1700 Return to Driftarray location
1800 CTD, viral dilution experiments
2000 CTD, full dilution experiments (shallow CTD)
2130 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #1 (start 2 nm downwind of Driftarray)

14 August (Wed.) – Cycle 1, Day 2

0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Recover Driftarray #1/Deploy Driftarray #2
0600 Trace Metal cast
0700 Dispose galley waste; pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1230 MOCNESS – Day #2 (start 2 nm downwind of Driftarray)
1615 MVP tests
1900 CTD, experiments
2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #2 (start 2 nm downwind of Driftarray)

15 August (Thurs.) – Cycle 1, Day 3

0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Recover Driftarray #2/Deploy Driftarray #3
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 Deep MOCNESS (start 2 nm downwind of Driftarray)
1900 CTD, experiments

2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #3 (start 2 nm downwind of Driftarray)

16 August (Fri.) – Cycle 1, Day 4

0130 CTD, sampling & *in situ* experiments
0430 Recover Driftarray #3/ Deploy Driftarray #4
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 MacLane pump (Stukel)
1600 MIMS pump profile (Stukel)
1730 Deep CTD (2,000 m); remove PAR and ISUS
2100 Deep MOCNESS (start 4 nm downwind of Driftarray)

17 August (Sat.) – END Cycle 1

0230 CTD
0430 Recover Driftarray #4
0500 Deploy Drifter at Driftarray recovery location
0530 Steam to Sediment trap location
0700 Recover sediment trap, **END CYCLE 1**
0930 Underway survey; Last part w/ MVP: Pre-Cycle 2 survey @ 8 kts SOG

36° 15.7' N	122° 37.1' W	
36° 15.5' N	122° 27.2' W	
36° 11.9' N	122° 27.2' W	
36° 12.2' N	122° 51.1' W	
36° 08.6' N	122° 51.2' W	
36° 08.4' N	122° 27.4' W	(3 nm before next waypoint, slow to 3 kts and deploy MVP)
36° 04.8' N	122° 27.4' W	
36° 05.0' N	122° 51.2' W	+ **MVP** TRANSECT 3 (1530-1910)

1930 **TRANSECT 2 (CTD-TM-Bongo)** Across Filament (approximately 9 hr)
(7 stations sampled rapidly with CTD, Trace Metal, Bongo)

St1	36° 05.0' N	122° 51.2' W	- CTD, Trace Metal rosette, Bongo
St2	36° 05.0' N	122° 46.1' W	- CTD, Bongo, Trace metal pole
St3	36° 04.9' N	122° 42.2' W	- CTD, Bongo, Trace metal pole
St4	36° 04.9' N	122° 38.2' W	- CTD, Bongo, Trace metal pole
St5	36° 04.8' N	122° 34.2' W	- CTD, Trace Metal rosette, Bongo
St6	36° 04.8' N	122° 30.3' W	- CTD, Bongo, Trace metal pole
St7	36° 04.7' N	122° 26.3' W	- CTD, Trace Metal rosette, Bongo

18 August (Sun.)

0500 End **TRANSECT 2**

0700 Underway Survey @ 8 kts SOG (can pump tanks once underway)
75 and 300 kHz ADCPs need to be active

Begin	1	35° 57.6' N	122° 20.1' W
	2	35° 57.7' N	122° 59.3' W
	3	36° 01.4' N	122° 59.3' W
End	4	36° 01.4' N	122° 20.5' W

1900 Steam to location of Drifter
1930 Recover Drifter
2000 Deploy Sediment Trap, Begin **CYCLE 2**
2130 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Sediment Trap)
2230 MOCNESS – Night #1 (start 2 nm downwind of Sediment Trap)

19 August (Mon.) – Cycle 2, Day 1

0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Deploy Driftarray #1
0500 CTD, for Thorium
0600 Trace Metal cast
0830 Bongo live tows, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
1030 CTD, for microbiology, dissolved organics
1300 MOCNESS – Day #1 (start 2 nm downwind of Driftarray)
1700 Bongo (Gastauer)
1800 CTD, viral dilution experiments
2000 CTD, full dilution experiments (shallow CTD)
2130 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #2 (start 2 nm downwind of Driftarray)

20 August (Tues.) – Cycle 2, Day 2

0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Recover Driftarray #1/Deploy Driftarray #2
0600 Trace Metal cast
0700 Dispose galley waste; pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 MOCNESS – Day #2 (start 2 nm downwind of Driftarray)
1800 CTD, experiments
2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)

21 August (Wed.) – Cycle 2, Day 3

0130 CTD, sampling & *in situ* experiments
0430 Recover Driftarray #2/Deploy Driftarray #3
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 Deep CTD (2,000 m); remove ISUS and PAR, microbiology, dissolved organics
1330 MacLane pump (Stukel)
1600 MacLane profile (Stukel)
1900 CTD, experiments
2100 Deep MOCNESS – Night #3 (start 4 nm downwind of Driftarray) – Rhizaria and metabolic enzymes

22 August (Thurs.) – Cycle 2, Day 4

0130 CTD, sampling & *in situ* experiments
0430 Recover Driftarray #3/ Deploy Driftarray #4
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 Deep MOCNESS – Day #3 (start 4 nm downwind of Driftarray)
1830 Deep CTD (2,000 m); remove ISUS and PAR
2200 Deep MOCNESS – Night #4 (start 4 nm downwind of Driftarray)

23 August (Fri.) – END Cycle 2

0230 CTD
0430 Recover Driftarray #4
0500 Steam to Sediment trap location
0530 Recover sediment trap, **END CYCLE 2**
0730 Underway survey (latter portion incl. MVP) to Cycle 3 location
(can pump tanks when we begin steaming)

Underway survey at 8.5 kts SOG

S0	36° 00.3' N	122° 45.9' W	
S1	36° 00.1' N	122° 54.5' W	
S2	35° 36.8' N	122° 54.6' W	
S3	35° 36.9' N	122° 23.9' W	
S4	35° 33.3' N	122° 23.7' W	(slow to 3 kts to deploy MVP, 1.5 nm before S4)
S5	35° 33.2' N	122° 54.5' W	
S6	35° 33.2' N	122° 54.5' W	(continue to beginning of Bowtie survey without stopping)

1800 **Bowtie 2 survey (MVP) at 8 kts SOG**

001	35° 34.7' N	122° 45.7' W	
002	35° 34.7' N	122° 38.8' W	
003	35° 37.5' N	122° 42.4' W	
004	35° 31.9' N	122° 42.4' W	
001	35° 34.7' N	122° 45.7' W	(end Bowtie 2 Survey at initial station)

2100 Steam to Cycle 3 position (tbd, in vicinity of Bowtie Survey)
2130 ~~Bongo tow~~ (cancelled, to pump tanks outside Davidson Seamount zone)
2230 Deploy sediment trap – **BEGIN CYCLE 3**

24 August (Sat.) – Cycle 3, Day 1, BEGIN CYCLE 3
0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Deploy Driftarray #1
0500 CTD, for Thorium
0600 Trace Metal cast
0700 Pump tanks (outside Davidson Seamount zone)
0830 Bongo live tows, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
1030 Deep CTD (2,000 m); remove ISUS and PAR; for microbiology, dissolved organics
1330 MOCNESS – Day #1 (start 2 nm downwind of Driftarray)
1600 Pump tanks (outside Davidson Seamount zone)
1800 CTD, viral dilution experiments
2000 CTD, full dilution experiments (shallow CTD)
2130 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #1 (start 2 nm downwind of Driftarray)

25 August (Sun.) – Cycle 3, Day 2
0130 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Recover Driftarray #1/Deploy Driftarray #2
0600 Trace Metal cast
0700 Dispose galley waste; pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1230 Deep MOCNESS – Day #2 (start 4 nm downwind of Driftarray)
1630 Dispose galley waste; pump tanks (> 1.5 nm downwind of Driftarray)
2000 CTD, experiments
2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
2230 Deep MOCNESS – Night #2 (start 4 nm downwind of Driftarray)

26 August (Mon.) – Cycle 3, END

0230 CTD

0430 Recover Driftarray #2

0530 Recover Sediment trap – **End CYCLE 3**

0730 Steam south (outside Davidson Seamount zone) to pump tanks, then complete Pre-Transect 3 survey, 8 kts SOG

1	35° 35.5' N	122° 39.2' W	(or latest position of sediment trap)
2	35° 26.5' N	122° 39.2' W	
3	35° 26.5' N	123° 03.9' W	(slow to 3 kts to deploy MVP 1.5 nm before WP4)
4	35° 38.0' N	123° 03.9' W	
5	35° 38.0' N	122° 23.8' W	

1730 Start **TRANSECT 3 (CTD-TM-Bongo)** (9 stations from east to west)

Sequence: CTD-rosette, Trace Metal rosette or pole sampling, Vertical Bongo.

Important to complete each station and move to next as expeditiously as possible.

Station positions tbd after pre-Transect 3 survey is completed.

TRANSECT 3 - P1908

1	35° 38.0' N	122° 27.7' W	- CTD, TM Rosette, Vert. Bongo
2	35° 38.0' N	122° 31.1' W	- CTD, Vert. Bongo, TM pole
3	35° 38.0' N	122° 34.7' W	- CTD, Vert. Bongo, TM pole
4	35° 38.0' N	122° 38.4' W	- CTD, TM Rosette, Vert. Bongo
5	35° 38.0' N	122° 42.4' W	- CTD, TM Rosette (?) OR TM pole, Vert. Bongo
6	35° 38.0' N	122° 46.5' W	- CTD, Vert. Bongo, TM pole
7	35° 38.0' N	122° 50.7' W	- CTD, Vert. Bongo, TM pole
8	35° 38.0' N	122° 55.3' W	- CTD, TM Rosette, Vert. Bongo
9	35° 38.0' N	122° 59.9' W	- CTD, TM Rosette, Vert. Bongo

27 August (Tues.)

0600 End TRANSECT 3

0715 Steam to Zooglider location

0930 2 CTD casts

1030 Small boat deployment to recover Zooglider

1100 Annular survey around ZG

1315 Deploy **SEASOAR** 2 (approx. 48 hour survey; waypoints tbd)

001	35° 40.0' N	123° 04.3' W
002	35° 39.9' N	122° 20.6' W
003	35° 35.3' N	122° 20.6' W
004	35° 35.3' N	123° 04.3' W
005	35° 30.5' N	123° 04.3' W
006	35° 30.5' N	122° 20.5' W
007	35° 25.7' N	122° 20.5' W
008	35° 25.7' N	123° 24.9' W
009	35° 21.2' N	123° 24.9' W
010	35° 20.9' N	122° 20.5' W
011	35° 16.2' N	122° 20.5' W
012	35° 16.2' N	123° 24.9' W
013	35° 11.5' N	123° 24.9' W
014	35° 11.5' N	122° 20.5' W
015	35° 06.7' N	122° 20.5' W
016	35° 06.7' N	123° 24.9' W

28 August (Wed.)
SEASOAR 2

29 August (Thurs.)
1330 Recover SEASOAR 2
1500 Steam to CYCLE 4 location (approx. 35° 01' N, 124° 31.1' W)
2230 MVP survey – BOWTIE 3
Total distance 13.7 NMi

001	34° 54.8' N	124° 42.9' W
002	34° 54.2' N	124° 47.9' W
003	34° 52.6' N	124° 45.1' W
004	34° 56.4' N	124° 45.8' W
005	34° 54.8' N	124° 42.9' W

2400 Deploy sediment trap – **BEGIN CYCLE 4**

30 August (Fri.) – Cycle 4, DAY 1
0200 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Deploy Driftarray #1
0500 CTD, for Thorium
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tows, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
1030 Deep CTD (2,000 m); remove ISUS and PAR
1300 MOCNESS – Day #1 (start 2 nm downwind of Driftarray)
1600 Trace Metal cast
1700 MVP pyrosome survey
1800 CTD, viral dilution experiments
2000 CTD, full dilution experiments (shallow CTD)
2130 Bongo, zooplankton net tow, gut fluor. (start 0.5 nm downwind of Driftarray)
2230 MOCNESS – Night #1 (start 2 nm downwind of Driftarray)

31 August (Sat.) – Cycle 4, DAY 2
0200 CTD, sampling & *in situ* experiments
0300 Trace Metal cast
0430 Recover Driftarray #1/Deploy Driftarray #2
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 MOCNESS – Day #2 (start 2 nm downwind of Driftarray)
1800 CTD, experiments
2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
2220 Ring net, pyrosomes
2230 MOCNESS – Night #2 (start 2 nm downwind of Driftarray)

1 September (Sun.) – Cycle 4, Day 3

0230 CTD, sampling & *in situ* experiments
0430 Recover Driftarray #2/Deploy Driftarray #3
0600 Trace Metal cast
0700 Pump tanks (> 1.5 nm downwind of Driftarray)
0830 Bongo live tow, zooplankton experiments (start 0.5 nm downwind of Driftarray)
0930 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
1030 CTD, microbiology, dissolved organics
1300 Deep MOCNESS - Day #3 (start 4 nm downwind of Driftarray)
1700 MacLane pump (Stukel)
2000 CTD, experiments
2115 Ring net, pyrosomes
2130 Bongo, zooplankton net tow, gut fluor (start 0.5 nm downwind of Driftarray)
2230 Deep MOCNESS – Night #3 (start 4 nm downwind of Driftarray)

2 September (Mon.) – Cycle 4, Day 3

0300 CTD
0430 Recover Driftarray #3
0530 Recover Sediment Trap, **END CYCLE 4**
0730 Raise acoustic pole
0830 Steam to start of SEASOAR 3 (36° 34.7' N, 122° 16.1' W) @ 12 kts SOG
2200 Arrive start of SEASOAR; lower pole
2300 Deploy SEASOAR 3

3 September (Tues.)

1930 End SEASOAR #3 and recover SEASOAR
2100 Steam to CCE2 mooring (34° 18.60' N, 120° 48.86' W – position will be updated)
2200 Circular survey around CCE2 mooring, ~300 m radius (calibration for pH/pCO2)
2300 CTD cast ~300 m downwind of CCE2 mooring
2400 CTD cast ~300 m upwind of CCE2 mooring

4 September (Wed.)

0100 Raise acoustic pole
0200 Steam to BBL Sta. 1
0800 **Benthic Boundary Layer (BBL)** study - CTD rosette, followed by Go-Flo casts

0800	BBL sta. 1	Cambria	35º	34.728’	121º	10.096’
0945	BBL sta. 2	Pt. Estero	35º	28.507’	121º	03.411’
1130	BBL sta. 3	Morro Bay	35º	21.621’	120º	55.541’
1515	BBL sta. 4	Shell Beach	35º	05.090’	120º	46.250’
1700	BBL sta. 5	Vandenberg	34º	52.860’	120º	44.170’
1845	BBL sta. 6	Santa Ynez	34º	41.530’	120º	42.560’
2030	BBL sta. 7	Pt Arguello	34º	33.857’	120º	41.065’
2215	BBL sta. 8	Line 80 sta. 51	34º	27.735’	120º	31.250’
2400	BBL sta. 9	Gato	34º	25.351’	120º	24.443’

1330-1345 MVP casts, > 400 m water

5 September (Thurs.)

0100 Transit to Santa Barbara Basin (34º 16.49' N, 120º 1.5' W)
0300 CTD cast
0400 Trace Metal cast
0500 Transit to Pt. Loma

6 September (Fri.)

0630 Meet pilot at sea buoy
0730 Arrive MarFac