

CMOP AUV-RW Cruise - R/V Forerunner Plan (Draft) – 08/30/2012

Purpose: To investigate the spatial and diel variability of *Mesodinium rubrum* bloom in the lower CRE using AUV and ship sampling.

Personnel:

Chief scientist: Craig McNeil (APL)

Co-CS: Ben Li (OHSU)

Missy Gilbert (OHSU)

Pete Kahn (OHSU)

Rachel Golda (OHSU)

Trina Litchendorf (APL)

Captain: Andrew Reay-Ellers (APL)

Captain: Bert (MERTS)

MERTS students

General Timeline: After the bloom was fully developed in the main channels, preferably during neap tide (Fig. 1, Tidal chart) with tentative dates September 25-26. If the bloom has not developed then we will need to delay the experiment into early October.

----- **Sunday September 23rd** -----

APL's drive down with trailered R/V Inferno (small boat from APL). Launch boat at East/West Bay Marina near Astoria, test drive (fuel?), secure guest moorage for boat, and check into hotel. We generally expect to take shoals (Desdemona or Tylor) to the N channel operating region.

----- **Monday September 24th** -----

R/V Inferno (APL group).

APL group deploy transponders in best location in North Channel. Transponders define the AUV playground and can't be moved easily. Usually deploy near slack, preferable. APL group will also test-run AUVs.

----- **Tuesday September 25th** -----

R/V Forerunner (OHSU group)

6:00-18:00 (12 hrs)

0600: Depart Cooley Science Center

0730-0800: Arrive at MERTS, load ship and secure equipment before departure.

0800: Depart MERTS

0800-1730: Cruise duration (9.5 hours). Sampling coupled with AUV

1730-1800: Unload samples, dock in Warrenton

R/V Inferno (APL group)

8:00-18:00

APL group deploy the AUV in the North Channel. The AUV line will be close to the transect stations of Forerunner. This provides data for in situ calibrations.

----- **Wednesday September 26th** -----

R/V Forerunner

12:00 pm -12:00 am (12 hours)

12:00 pm -13:00 pm: transit to the North Channel from Warrenton

13:00 pm – 10:00 pm: time-series sampling coupled with AUV in the North Channel (NC01, 02 and SAT01)

10:00 pm – 12:00 am: transit back to MERTS

R/V Inferno

The AUV will pass the Forerunner at anchor on a repeat survey and couple the time series on the Forerunner. The AUV will conduct repeat cross channel and along channel surveys. Perhaps even a zig-zag up and down the channel. The transponders will be recovered at the end of day hopefully.

----- **Thursday September 27th** -----

If transponders not recovered, try again (or arrange with Michel Wilkin to get them picked up)

Offload and drive back to Cooley Science Center/APL

Table 1. STATIONS: (Suggested stations in bold)

Station	Lat	Long	Description	Date
SC02	46.208913	W123.77746	South Channel Transect 02	Day 2
SC05	46.192802	W123.85275	South Channel Transect 05	Day 2
YB01	46.17696	W123.87191	Youngs Bay 01	Day 2
SC08	N46.18975	W123.91230	South Channel Transect 08	Day 2
SC11	N46.21378	W123.95654	South Channel Transect 11	Day 2
ML01	N46.23671	W123.99881	Mouth Line 01 (Clatsop spit)	Day 2
ML03	N46.24501	W123.99933	Mouth Line 03	Day 2
ML05	N46.25457	W124.00055	Mouth Line 05	Day 2
NC01	N46.24100	W123.95650	North Channel 01	Day 2
NC02	N46.23500	W123.91230	North Channel 02	Day 2
SAT01	N46.23610	W123.87442	Saturn 01	Day 2
NC01	N46.24100	W123.95650	North Channel 01	Day 3
NC02	N46.23500	W123.91230	North Channel 02	Day 3
SAT01	N46.23610	W123.87442	Saturn 01	Day 3
SAT04	46.203970	W123.757520	Saturn 04	
SAT03	46.200094	W123.939795	Saturn 03	

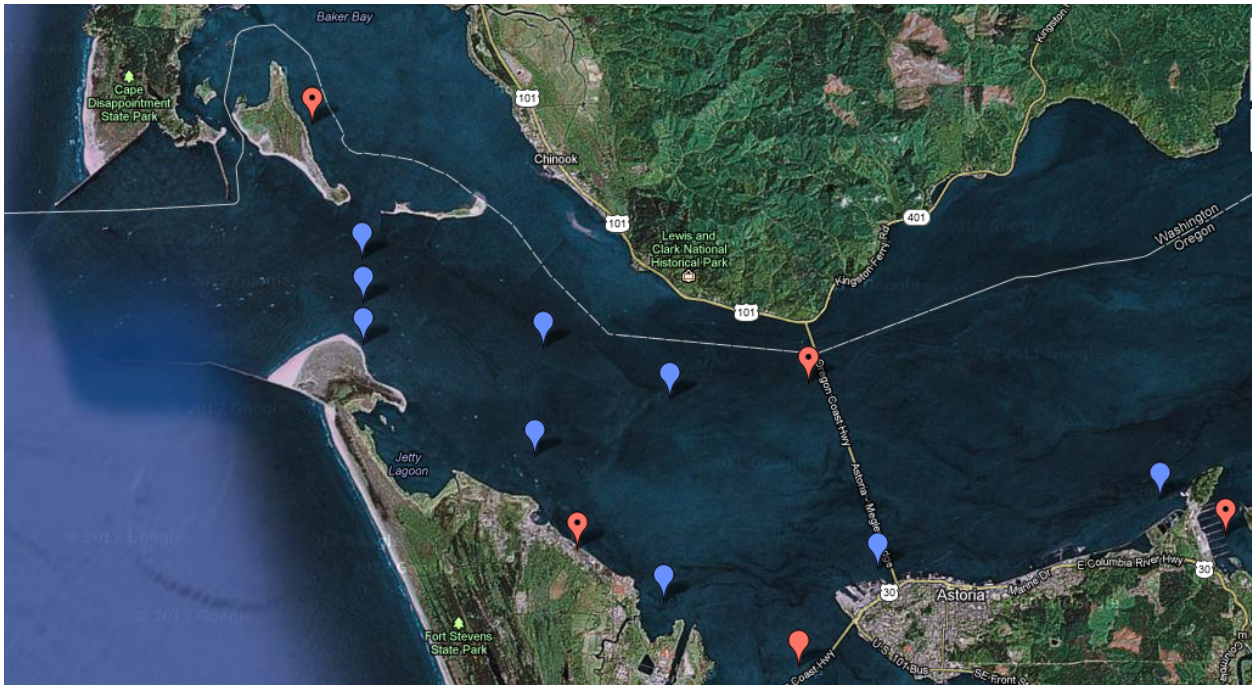


Figure 1. Location of stations listed in Table 1.

Core measurements/Sample Collection:

Standard CTD package: C, T, depth, altimeter, Seabird DO, Wetlabs FLNTU, Turner Cyclops PE, PAR sensor?, ADCP?

Sample Collection:

Hose attached to CMOP heavy CTD cage. Pump located on deck (Pacer S series electric pump)

Samples will be collected from Surface and Bottom.

Number of water samples:

Day 2: 28

Day 3: at least 12 in daytime and 4 in nighttime

Standard Sampling will include:

1. Nutrients: Ammonium, Nitrate + Nitrite, Nitrite, Silicic Acid, Ortho-Phosphate (syringe filtered, 30 ml Nalgene)
2. Total Dissolved Nutrients: Total Dissolved Nitrogen, Total Dissolved Phosphate (syringe filtered, 20 ml plastic vial)
3. Total Nutrients: Total Nitrogen, Total Phosphate (Raw water, 20 ml plastic vial)
4. Chlorophyll (GFF filter) – pump and filtration tower, duplicates
5. POC/PN (combusted GFF filter) – Use Dissolved Nutrient filters, record volume
6. DNA/RNA 4 L (Peristaltic pump filtration, 0.2 um sterivex cartridge filter)
7. Microscopy 100 ml (PFA fixation for FISH and epifluorescent microscopy)
 100 ml (Lugol's fixation)
8. Flow cytometry 5 ml (PFA fixation, liquid nitrogen flash freeze)

HOTEL (four rooms in Comfort Inn)

Room 1: Pete and Ben

Room 2: Missy and Rachel

Room 3: Craig and Andrew

Room 4: Trina

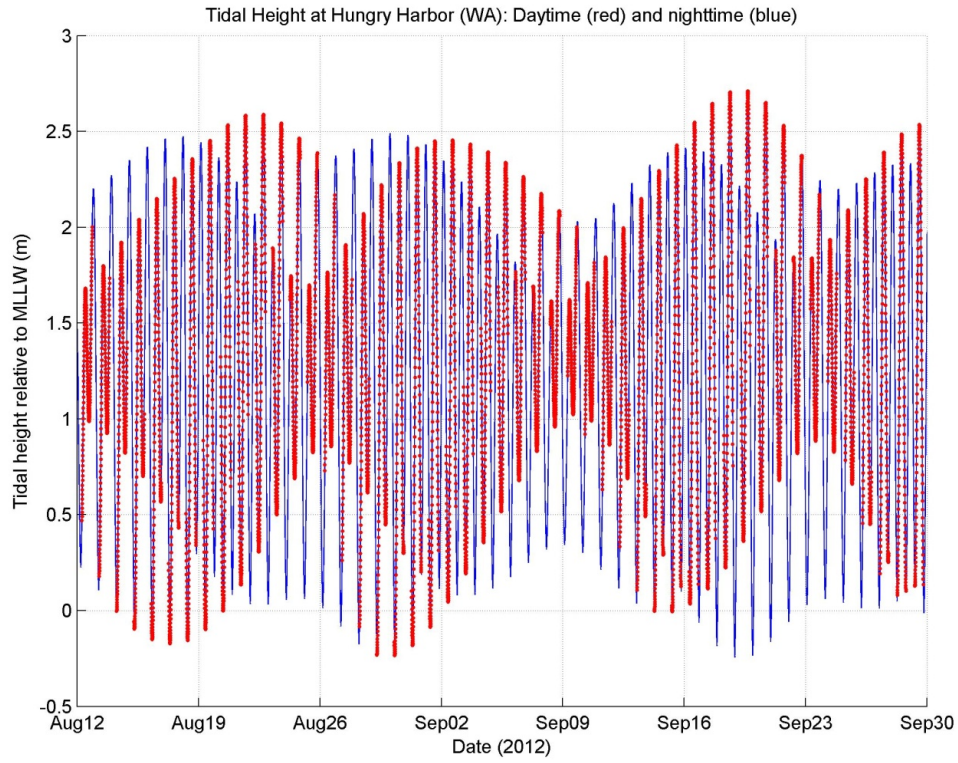


Figure 2. Tidal height at Hungry Harbor, WA with daytime in red and nighttime in blue.

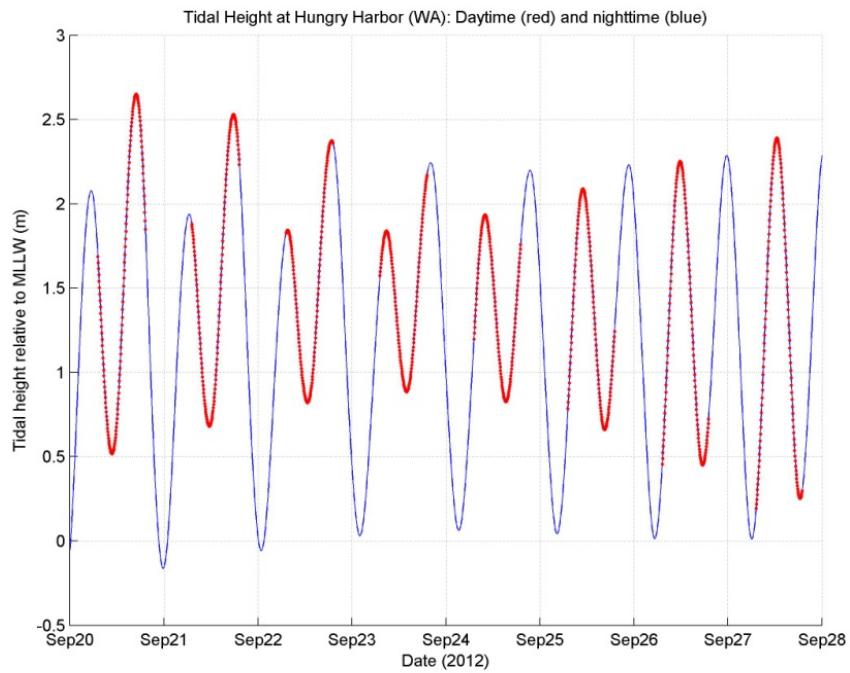


Figure 3. Tidal height at Hungry Harbor, WA with daytime in red and nighttime in blue.

