

# Halifax Harbour Water Quality Monitoring Project

## Survey Summary #162

**Survey Date:** 12 August 2008  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report162\_080812.doc  
**Data File:** HHWQMP\_data162\_080812.xls

**Data Return:**  
 Chemical: 100%  
 Bacteria: 100%  
 Profile: 100%  
**Overall: 100%**

**Sample Notes:**

Connection of sewers to Dartmouth STP is ongoing (see data file cover sheet).

A supplementary CTD cast was taken at the LOBO buoy location (44.6291° N, 63.5915° W) at 15:35 local time.

To match the collected reference data the presented DO values should be scaled by a factor of 1.26 (see comparison in data file).

**QA/QC samples:**

Chemical Analysis		H2 – 10m	
Detectable Parameter	Units	Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.09	0.07
Total Suspended Solids	mg/L	8	3.9
Copper	ug/L	0.3	0.9
Iron	ug/L	22	14
Manganese	ug/L	3.0	6.0
Nickel	ug/L	<0.5	0.5
Zinc	ug/L	2	2

**Fecal Coliform (CFU/100ml)**

Site	F1-1m	DYC-10m	PC-1m	H2-1m
Reference	9	9	4	5
QA/QC	1	3	2	0

**Comments:**

**General:** The Harbour water is very warm with surface temperatures of > 21°C in the Northern Basin, dropping slightly to 19°C in the Outer Harbour. There is a vertical temperature difference of only about 5°C in the top 20 m everywhere except station B2, where the difference is less than two degrees. In the Basin, there is a strong thermocline just above 20 m. Despite the recent dry weather, the Harbour inside of section EE remains quite salinity stratified. This is perhaps a remnant of the major rainfall/runoff event noted in the previous survey. There are fc concentrations > 200 cfu/100 mL at sites scattered throughout the Inner Harbour, in both 1 and 10 m samples. The highest values are in the 1 m samples in the Narrows (section E). The reason is not obvious except perhaps as a response to the steady up-harbour wind the day before the survey. Outside of the Inner Harbour, the only swimming guideline exceedence is in the 1 m sample at HP1, in the vicinity of the Hospital Point outfall.

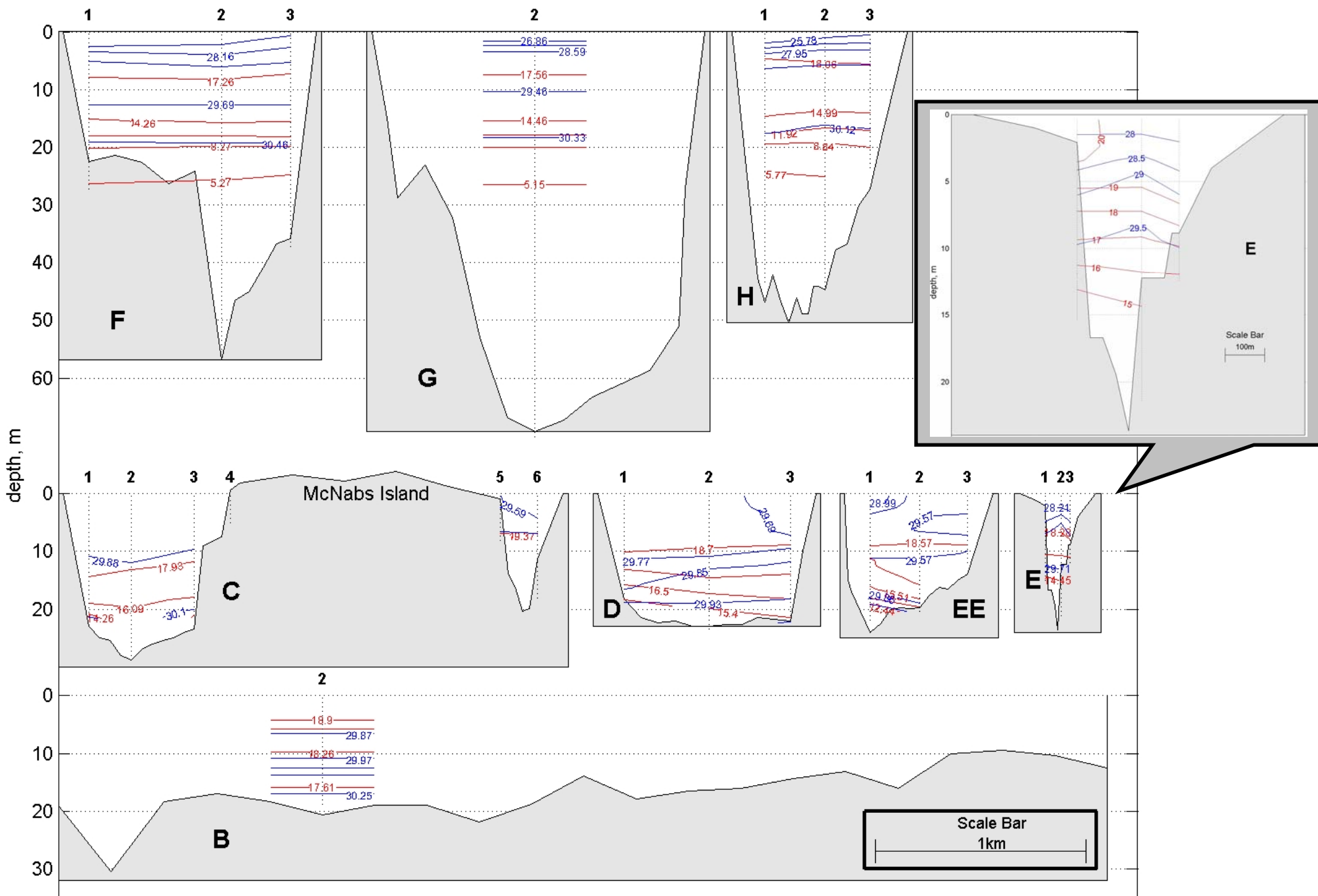
**Fluorescence:** The fluorescence levels are moderately elevated throughout the Harbour. At the EE section and north, the profile peaks are quite broad extending over the top 6-7 m, with maximum values about 20 mg/m<sup>3</sup>. Further out of the Harbour the maximum values drop to approximately 5 mg/L at B2 at a depth of about 9 m.

**TSS:** The TSS levels are moderate to low, with an average value of 4.6 mg/L. The highest values occur in the southern Basin.

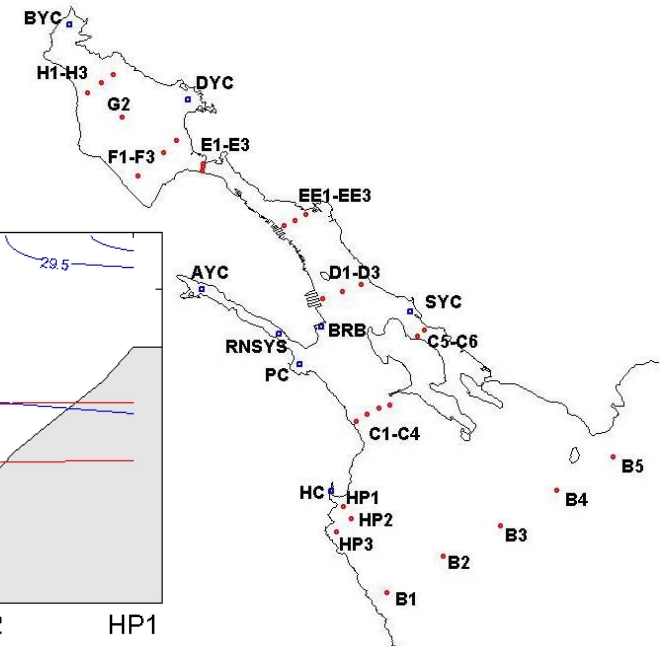
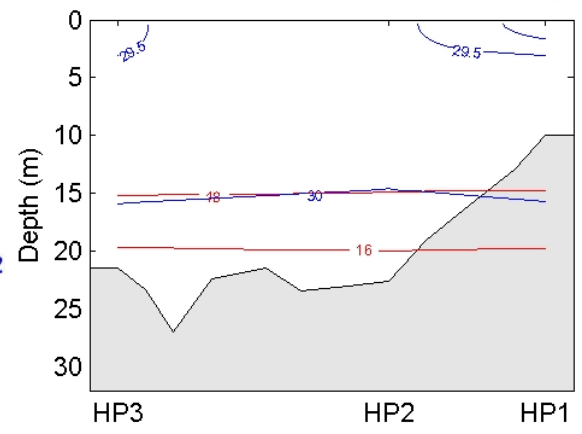
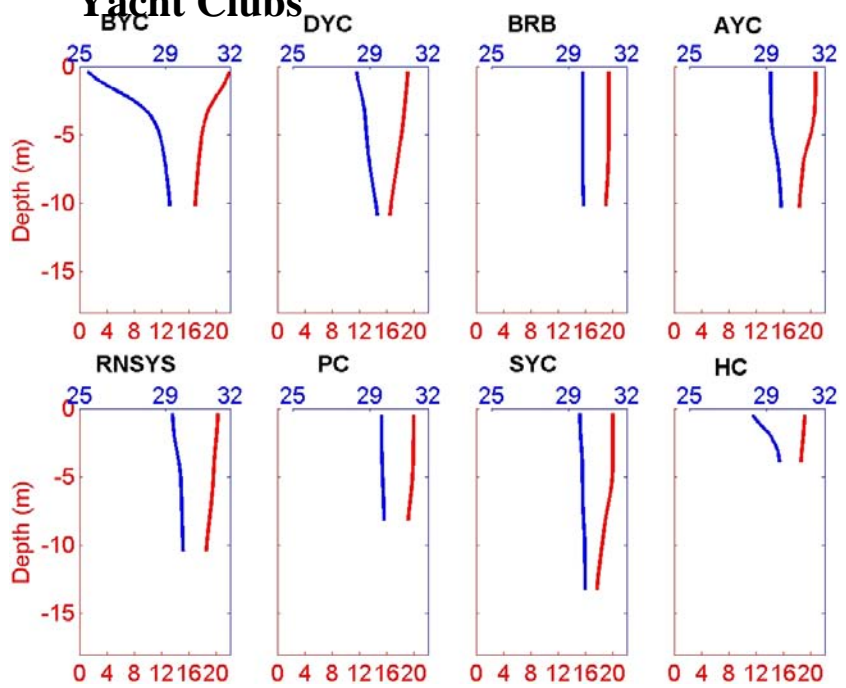
**Ammonia:** The ammonia levels were relatively high, with all samples having detectable levels (>0.05 mg/L), with an overall average of 0.08 mg/L. The highest concentration (0.22 mg/L) is in the southern Basin (F2).

**Metals:** There are no guideline exceedences. The closest to exceedence is the 1 m sample at B2 in the Outer Harbour. This sample had levels of copper and mercury that were both about 40% of the guideline.

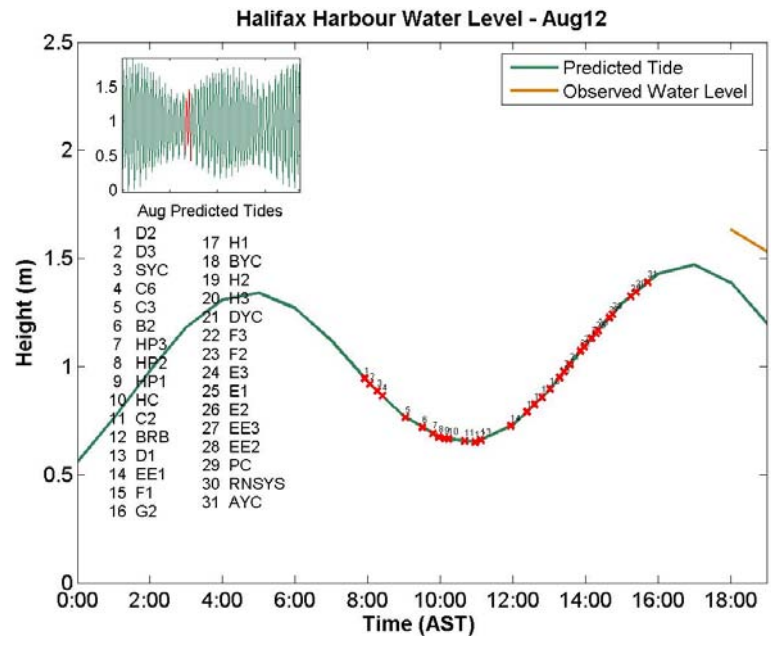
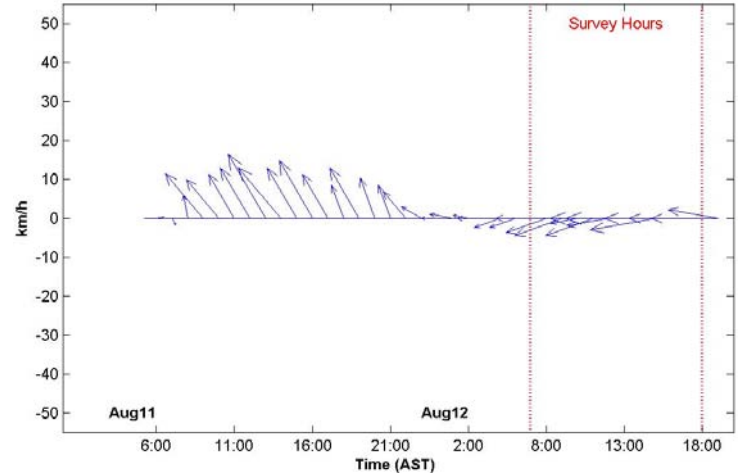
**Dissolved Oxygen:** The dissolved oxygen data, scaled appropriately by a factor of 1.26, indicates that the DO in the surface water decreases monotonically from about 9.5 mg/L at the head of the Basin to about 7.6 mg/L (98% saturation at 19.2°C) at B2. This represents a guideline (8.0 mg/L) exceedence in the class SA areas of the Outer Harbour, an inevitability given the water temperature. The DO at 20 m throughout the Inner Harbour and Basin is about 6 mg/L. This represents an exceedence of the class SB guideline (7.0 mg/L) applicable to the Middle Harbour and Basin and approaches the 6 mg/L guideline applicable to the Inner Harbour. The DO in the Basin bottom water continues to drop and is now about 3.0 mg/L.



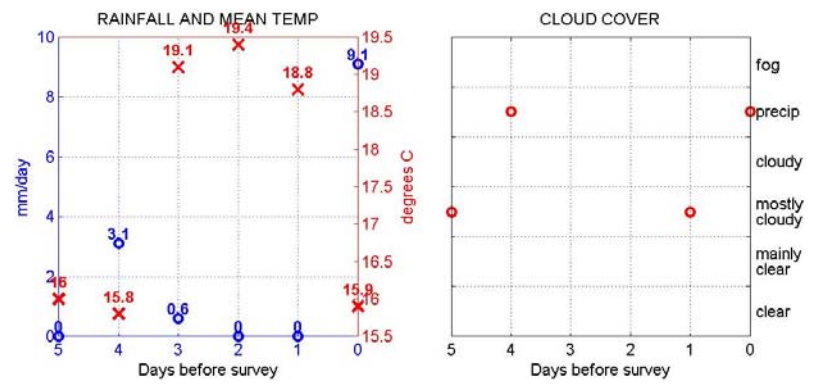
# Yacht Clubs



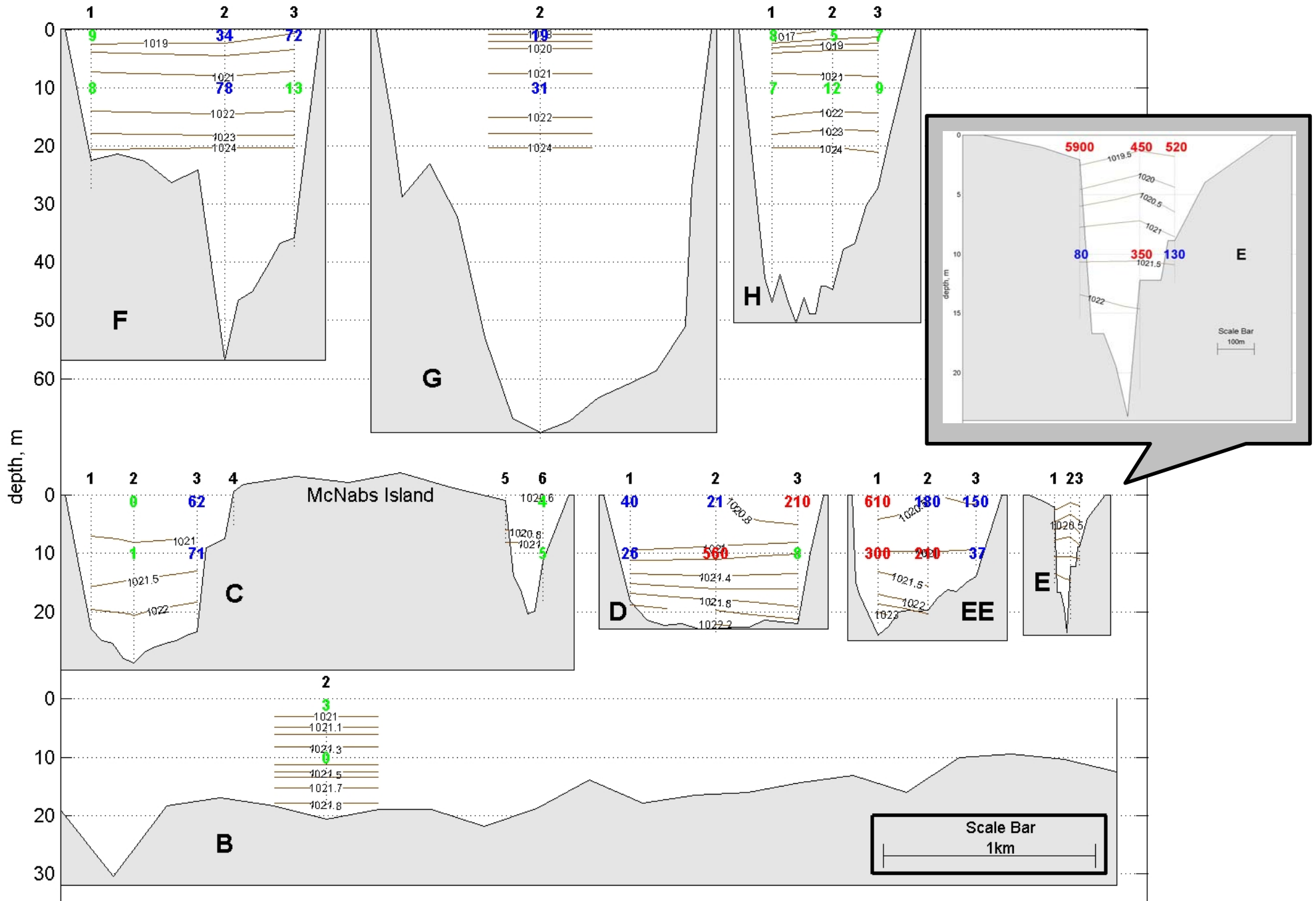
Wind Speed and Direction at Shearwater Jetty



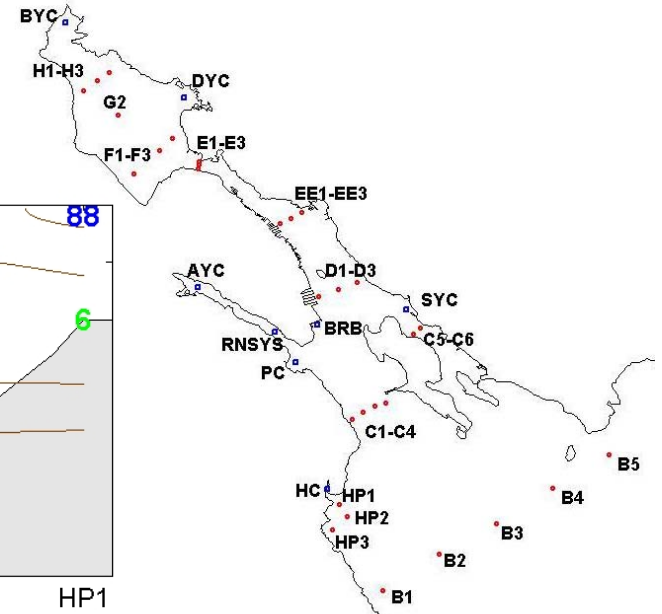
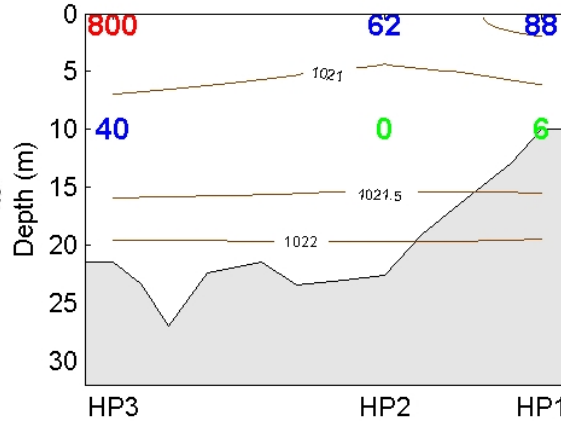
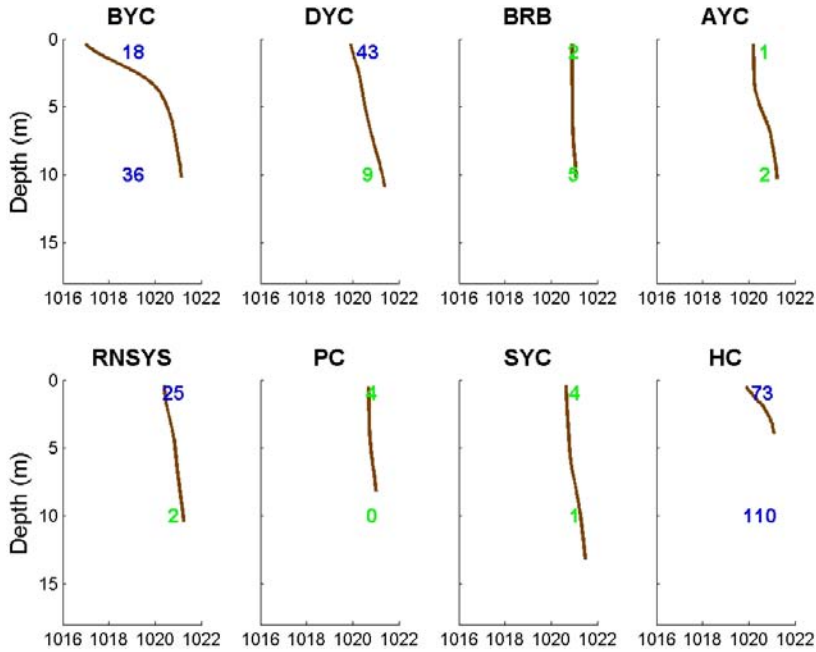
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



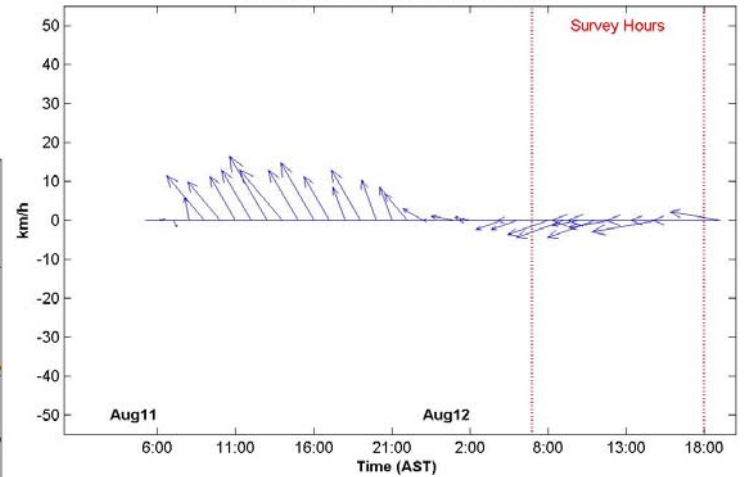
Salinity in PSU      Temperature in °C



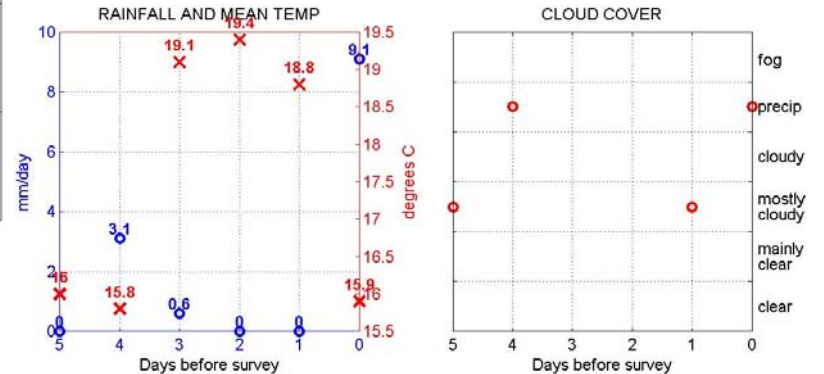
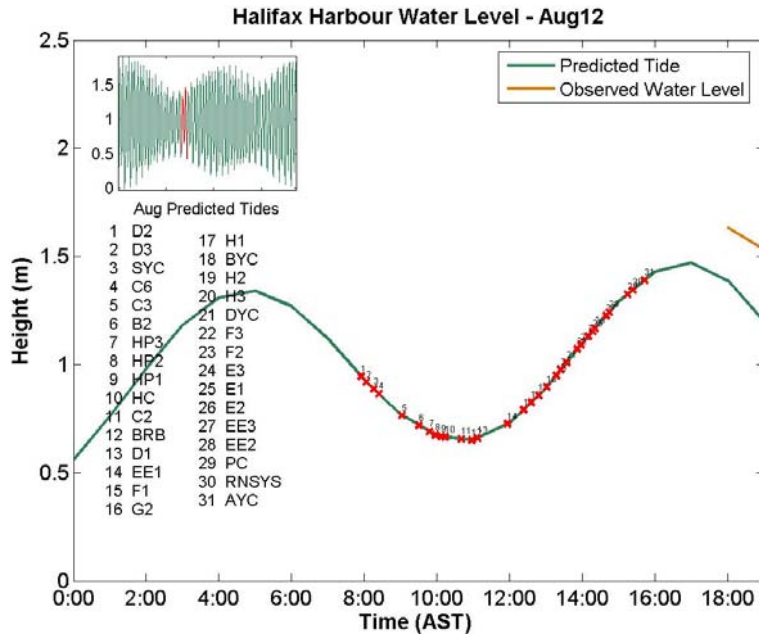
# Yacht Clubs



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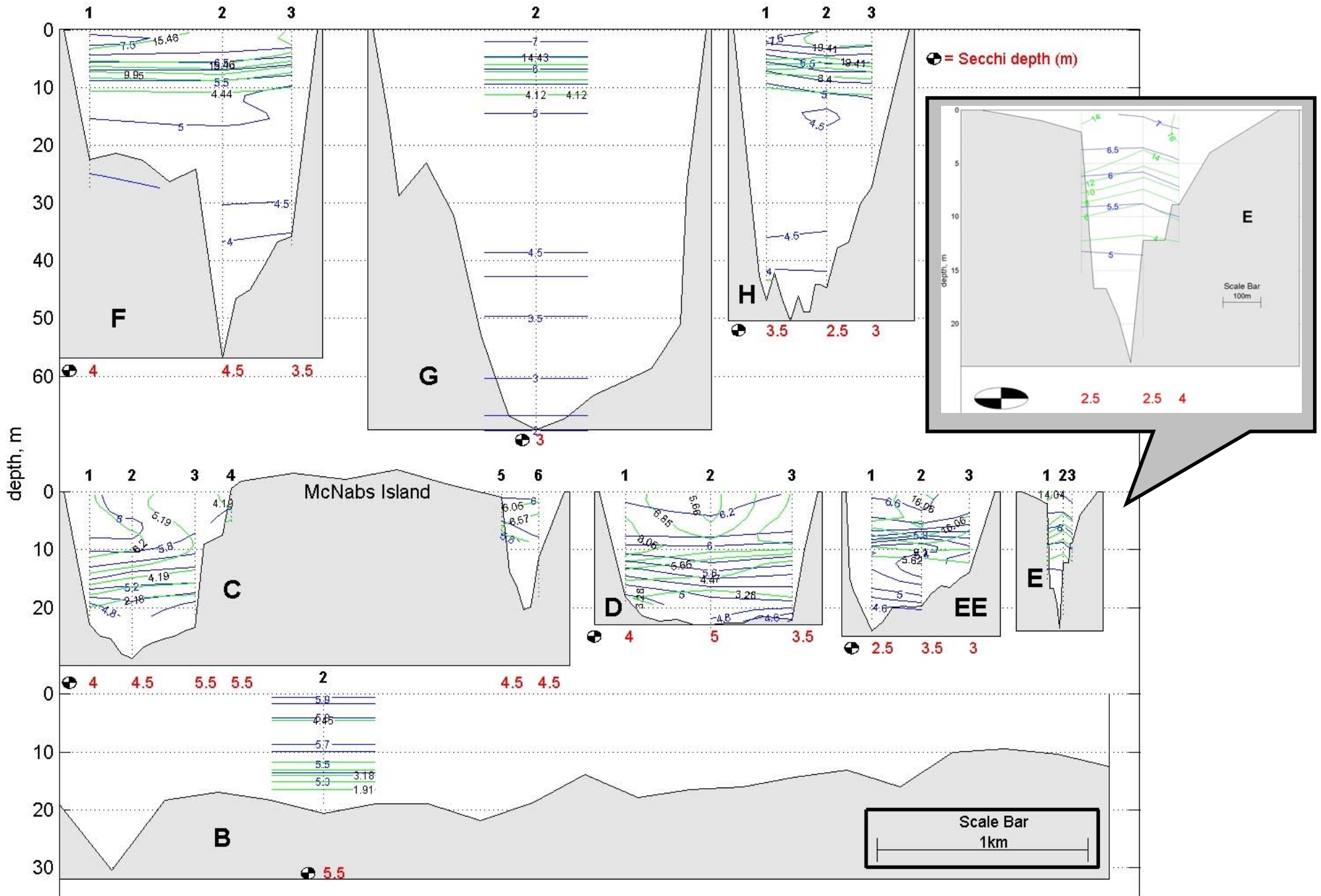
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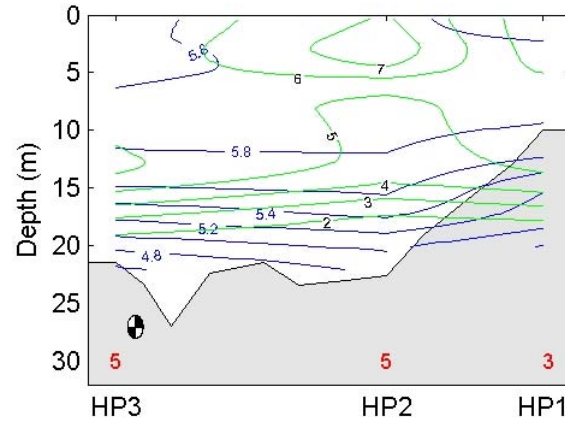
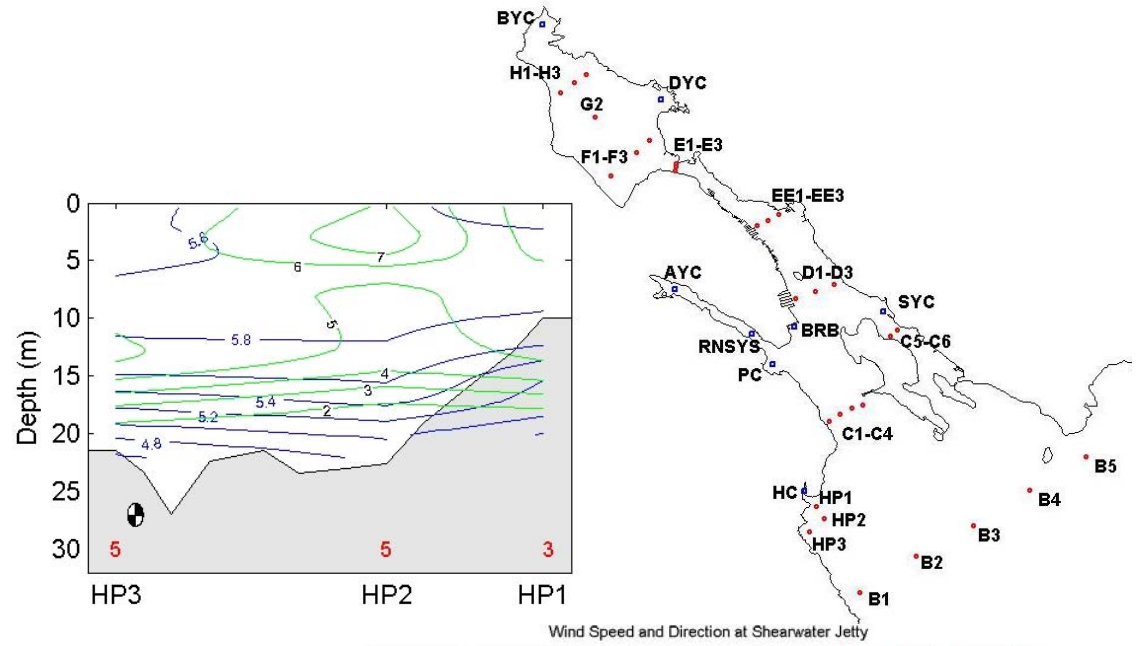
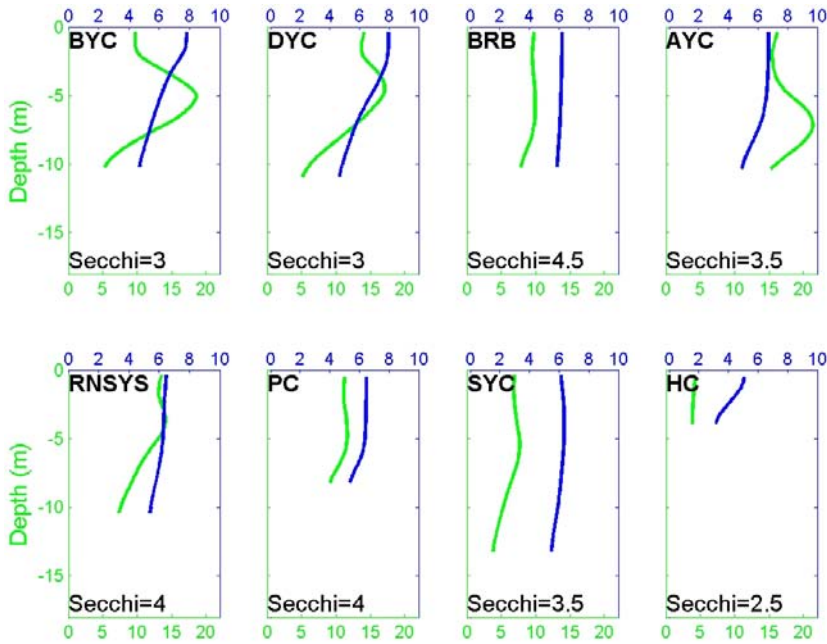
Potential Density in  $\text{kg/m}^3$

**Fecal coliform: above swimming limit (200 cfu/100mL)**  
**above shellfish limit (14 cfu /100mL)**  
**below limits**

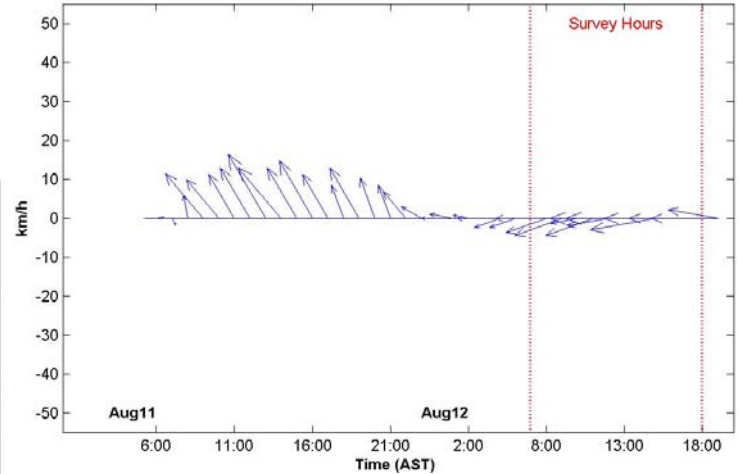




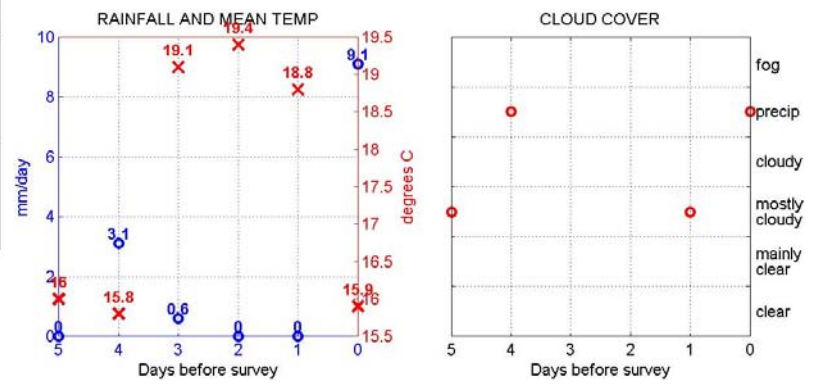
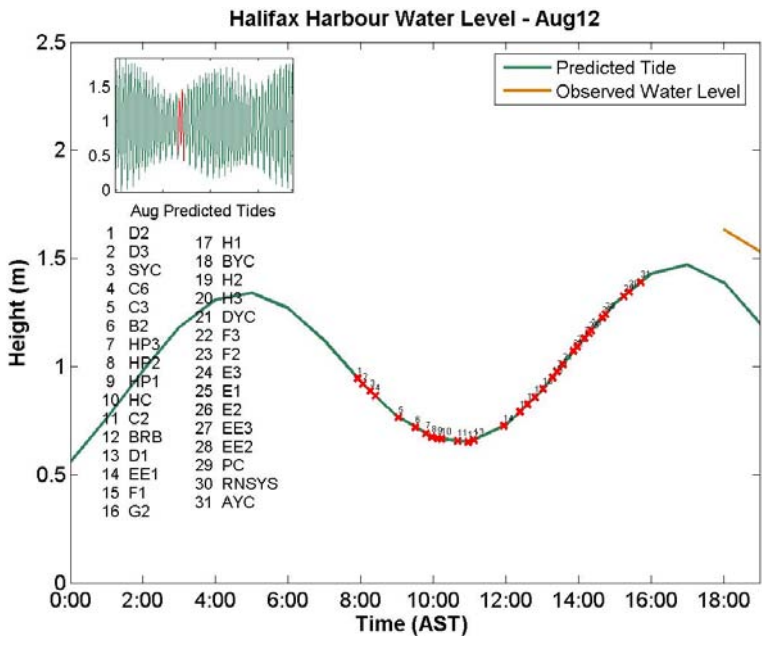
# Yacht Clubs



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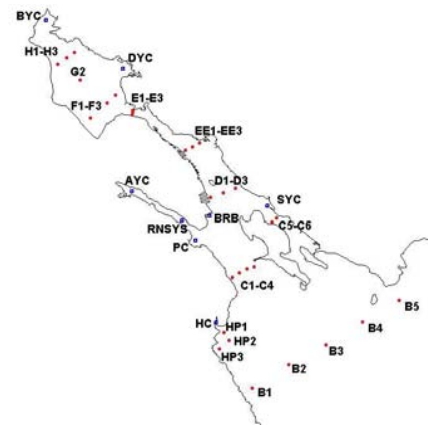
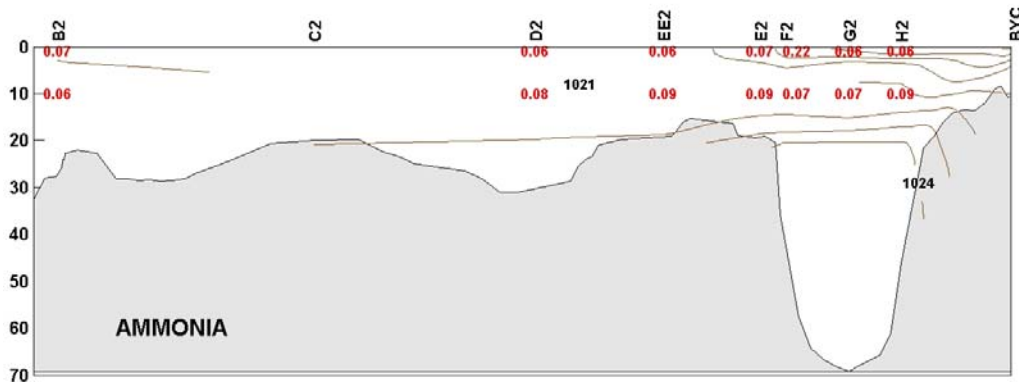
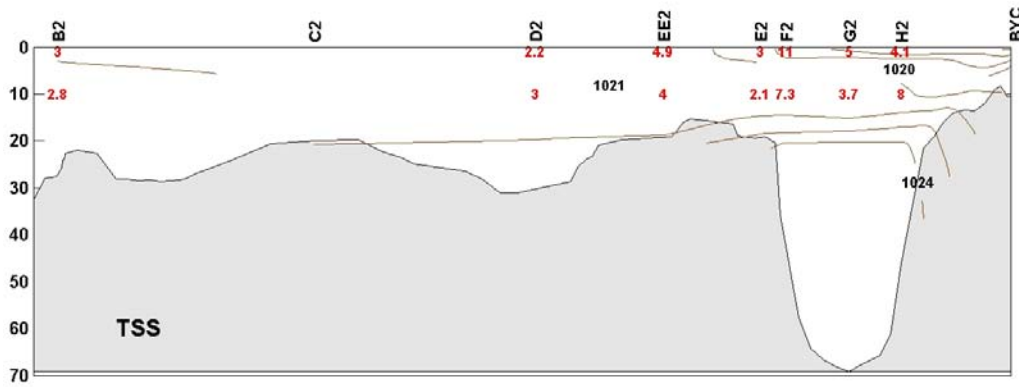


Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



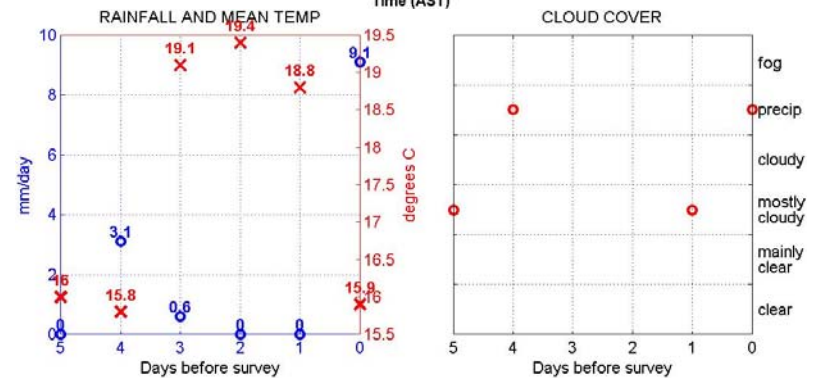
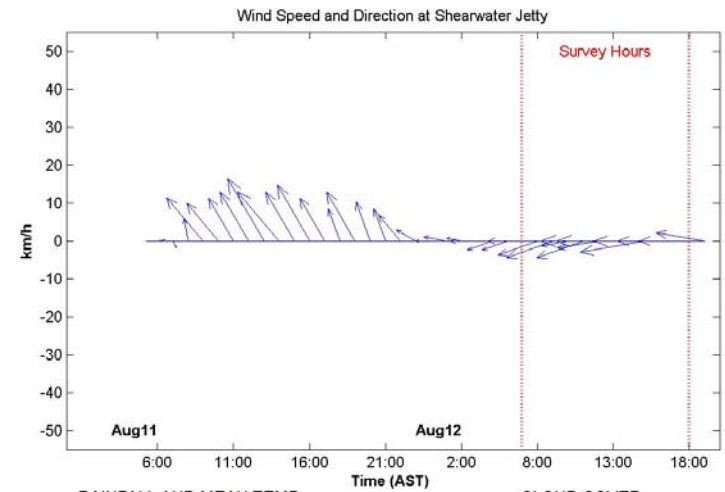
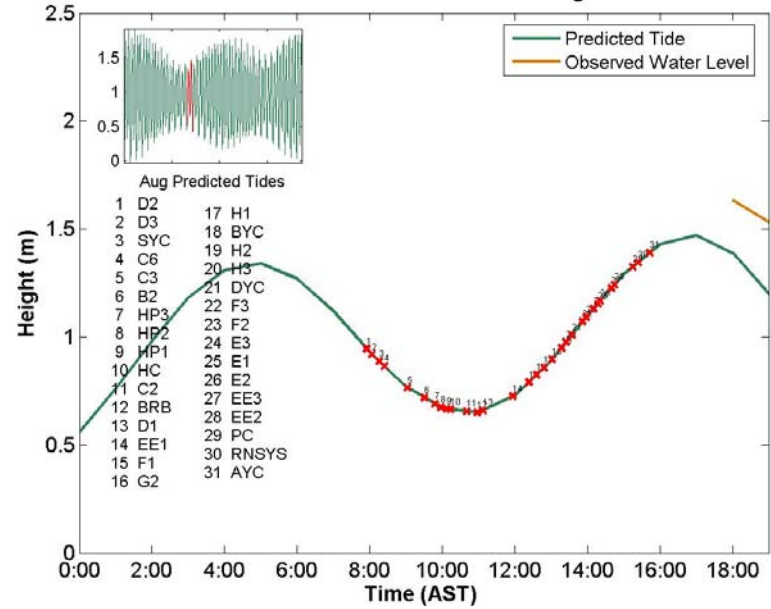
DO in mg/L      Chlorophyll in mg/m<sup>3</sup>

**CHEMISTRY**



Rainfall and temperature data collected at Shearwater Autoport.  
 Cloud cover data collected at Shearwater Airport

**Halifax Harbour Water Level - Aug12**

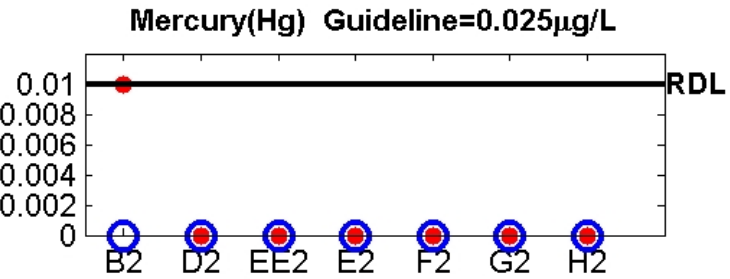
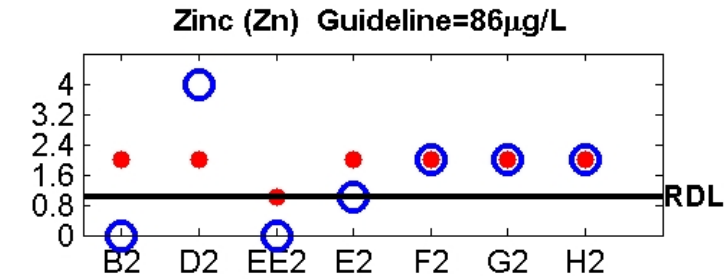
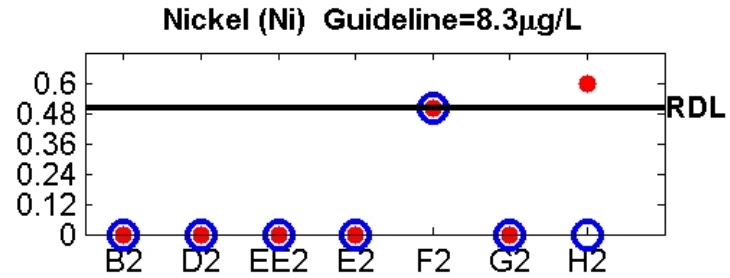
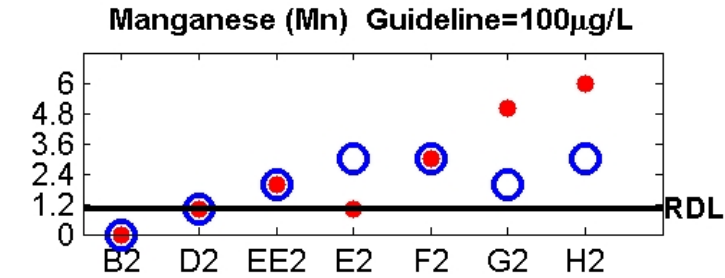
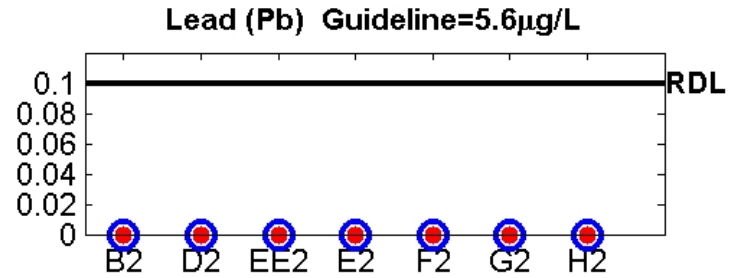
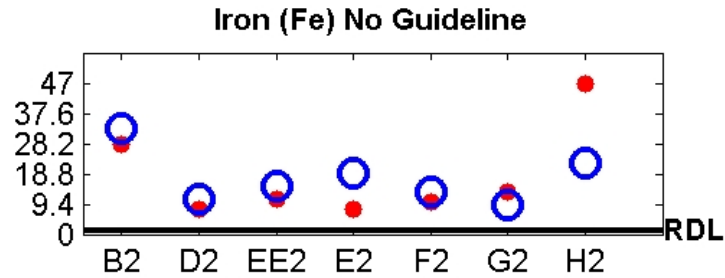
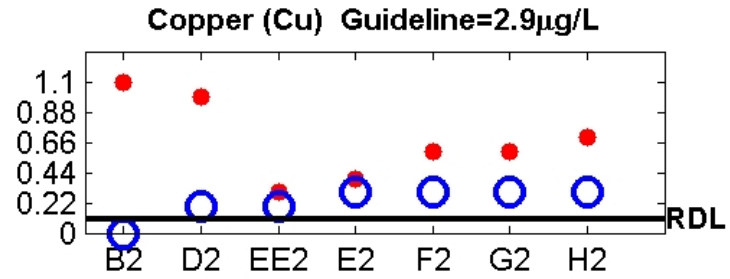
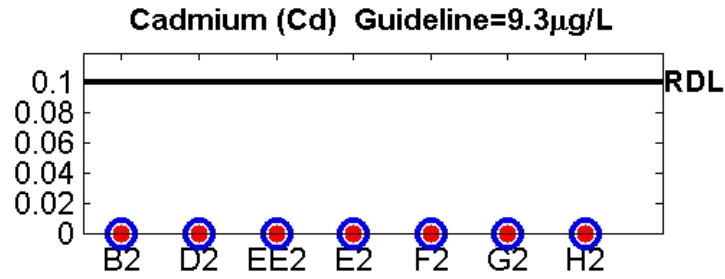


Potential Density in  $kg/m^3$

Ammonia in mg/L

TSS in mg/L

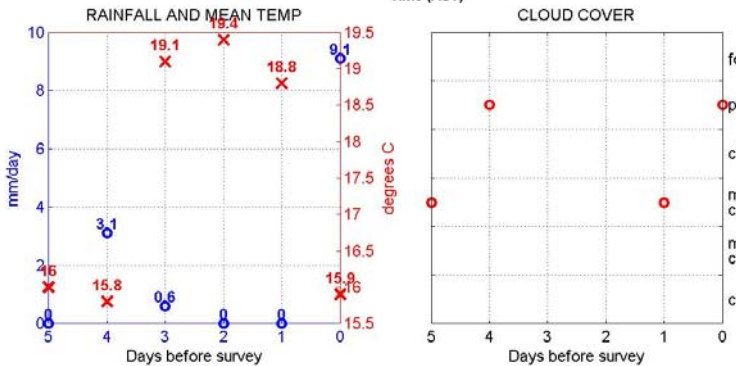
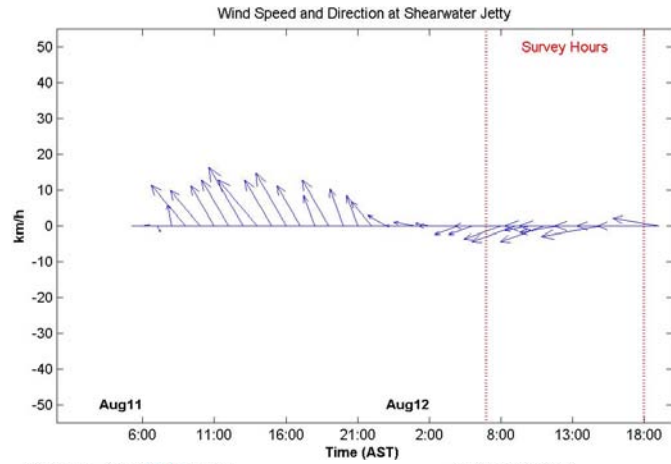
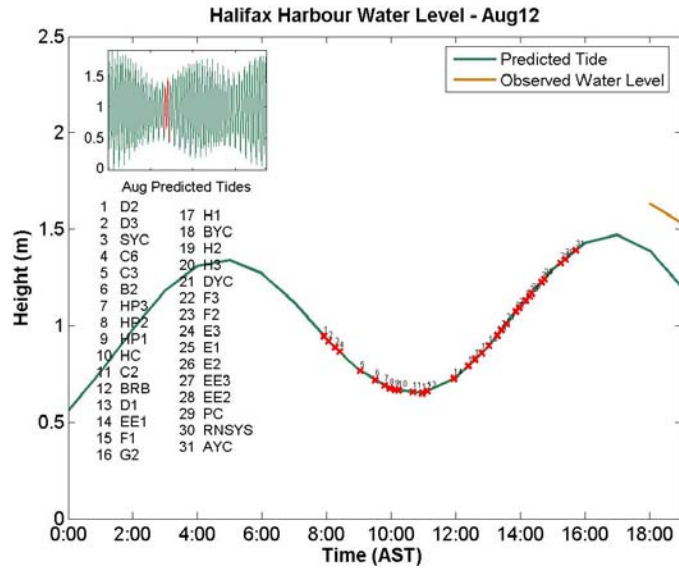




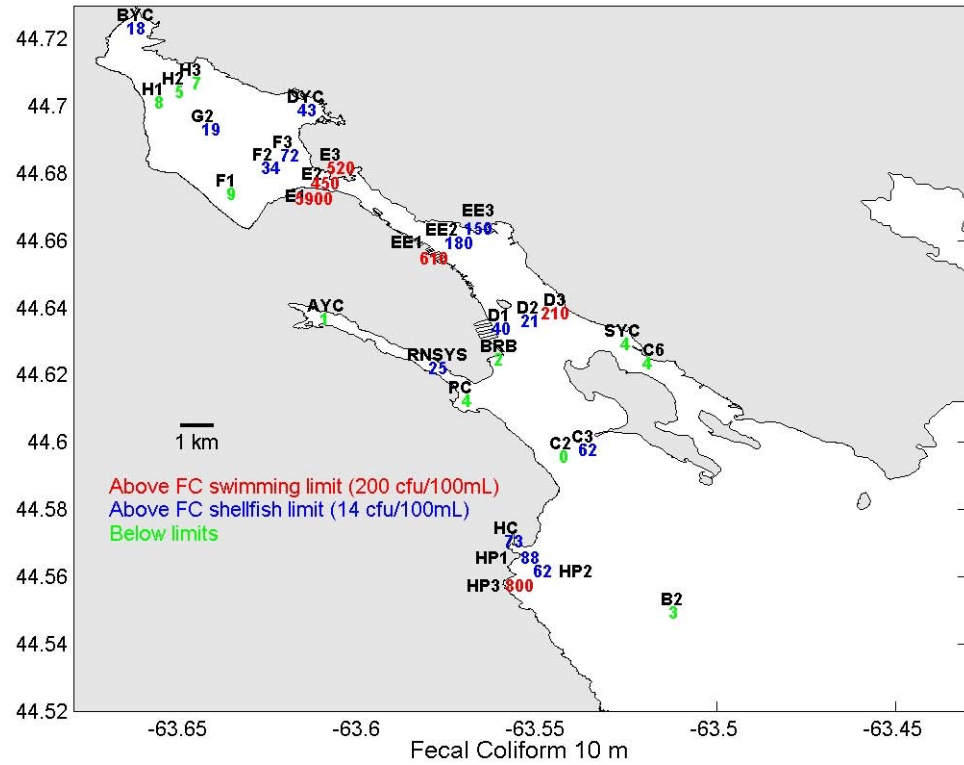
**LEGEND**  
 ○ = Ten Metre Sample  
 ● = One Metre Sample  
 RDL = Reportable Detection Limit

# HRM Water Quality Monitoring

## Fecal Coliform Summary – August 12, 2008



Fecal Coliform 1 m



Fecal Coliform 10 m

