

Halifax Harbour Water Quality Monitoring Project Survey Summary #149

Survey Date: 12 February 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report149_080212.doc
Data File: HHWQMP_data149_080212.xls

Data Return:
 Profile: 61%
 Bacteria: 100%
 Chemical: 100%
Overall: 82%

Sample Notes:

The CTD dissolved oxygen sensor was removed for repair. A YSI handheld DO probe was used for DO measurements at 1m. These are reported in the data file.

Sites BYC was not accessible due to ice, samples were relocated (44° 43.124' N, 63° 39.889' W).

The CTD files for H2 was missing from the instrument. Probable operator error.

The CTD prematurely shut down at E2 and HP1, low battery indication, the data has been deleted from the data file.

QA/QC samples:

Chemical Analysis

Detectable Parameter	Units	H2 - 10m	
		Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.13	0.08
Total Suspended Solids	mg/L	5.9	1.9
Copper	ug/L	0.2	0.2
Iron	ug/L	21	21
Manganese	ug/L	3.0	<1.0
Nickel	ug/L	0.5	<0.5
Zinc	ug/L	2	2.0
Mercury	ug/L	0.01	0.01

Fecal Coliform (CFU/100ml)

Site	D1-10m	H2-10m	C3-1m	F1-1m
Reference	270	53	110	60
QA/QC	290	93	37	83

Comments:

General: There has been some precipitation, likely snow, the day before the survey and moderate to strong easterly winds the day before, and the day of, the survey. The harbour remains relatively weakly stratified. Again, there is water denser than Basin Bottom water in the Inner Harbour bottom water as far in as section D, though there is no large scale intrusion. The BBPMP dissolved oxygen data at 60 m in the Basin indicates no change in the previous two weeks.

The commissioning of the Halifax sewage treatment plant is continuing. The sewage source location and level of treatment are quite variable as sewersheds are connected and equipment is brought on-line and tested. Overall the bacteria levels are high in the Inner Harbour, with an anomalous below detection level (<10 cfu/100mL) at the D1-1m sample. The vertical distribution is unusual in that at many of the Inner Harbour sites the counts in the 10m sample are higher than the 1m sample. The vertical distribution may be affected by the STP diffuser, that may introduce more bacteria into the deeper waters. In the Basin, bacteria levels are somewhat elevated, and the vertical distribution is more "normal with the 10m samples uniformly higher than the 1m samples.

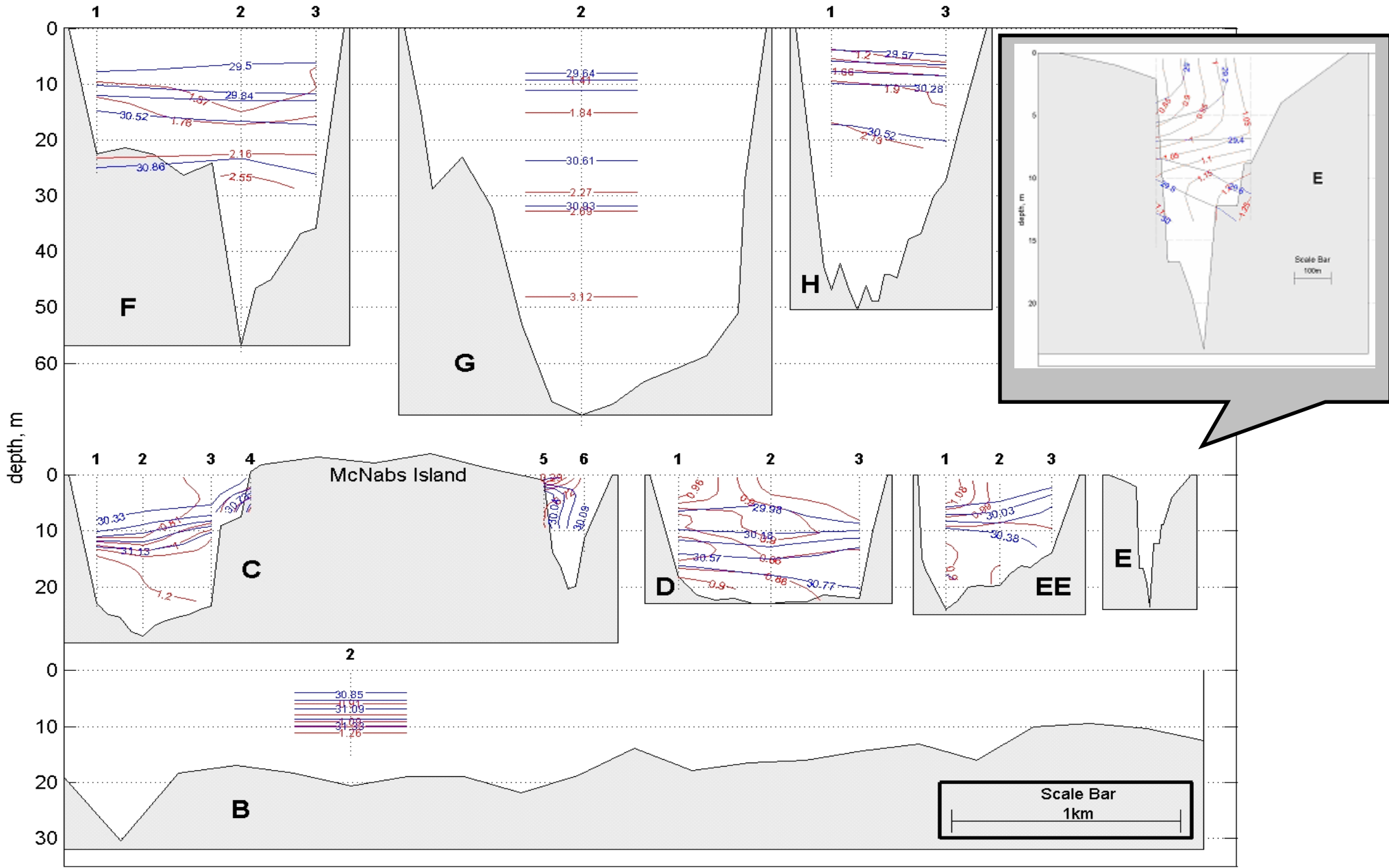
Fluorescence: The fluorescence values are low, generally below 2 mg/m³. The exception is that values in the Basin are slightly elevated at about 3 mg/m³ at 9 m.

TSS: TSS values are low (mean 3.2 mg/L) and relatively uniform (max value 5.9 mg/L). There is no coherent spatial distribution.

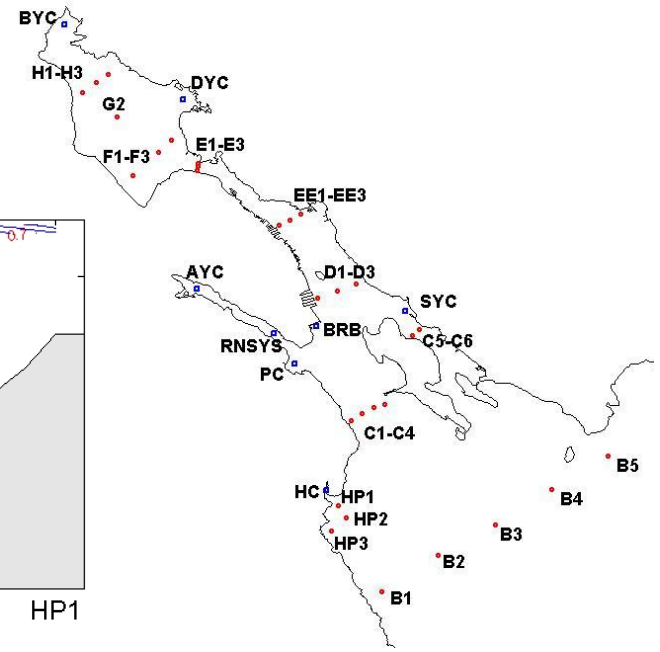
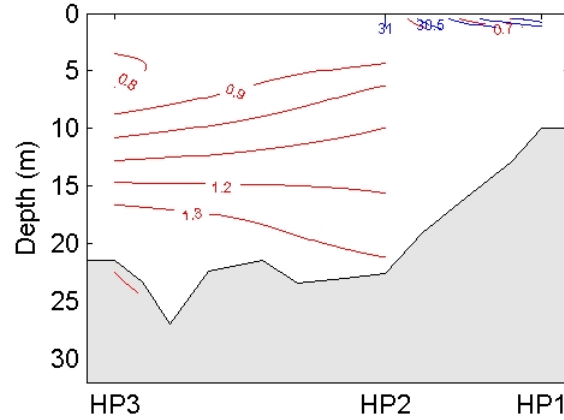
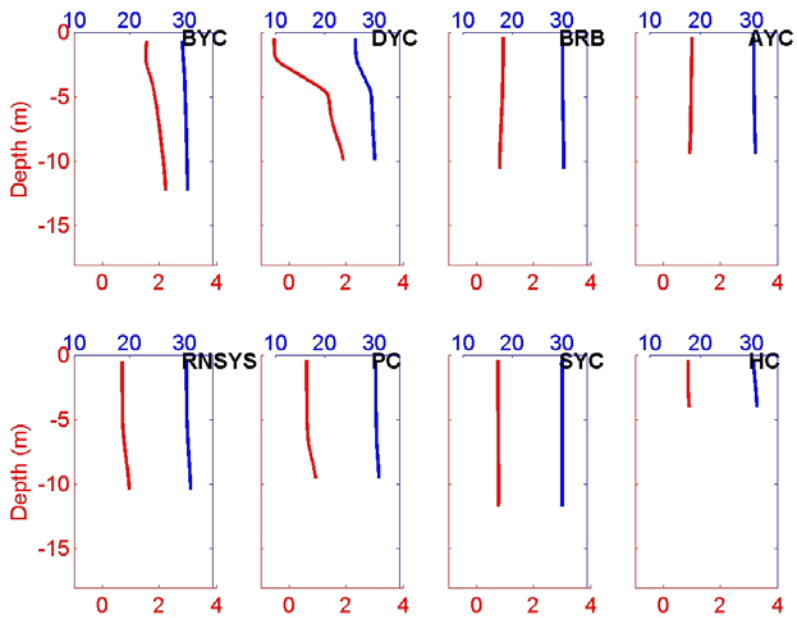
Ammonia: The ammonia values in the harbour are slightly elevated above the detection limit of 0.05 mg/L. The mean value is 0.6 mg/L, with 4 of 14 measurements below the detection limit. The highest value (0.13 mg/L) is at H2-10, however the duplicate QA analysis for this sample yields 0.08 mg/L.

Metals: The mercury guideline of 0.025 ug/L is exceeded in two samples (E2-10m and F2-1m), with concentrations of 0.03 ug/L. Unusually 13 of 14 samples had detectable levels (> 0.01 ug/L) of mercury.

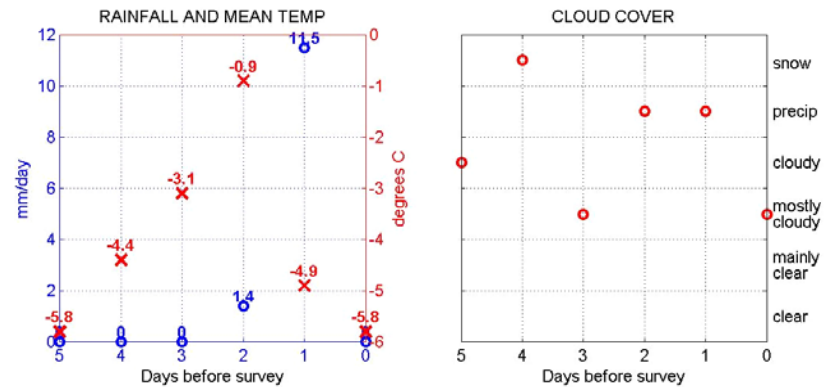
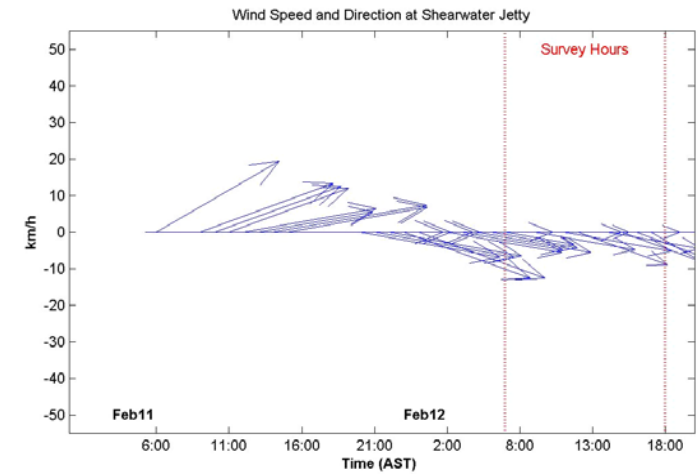
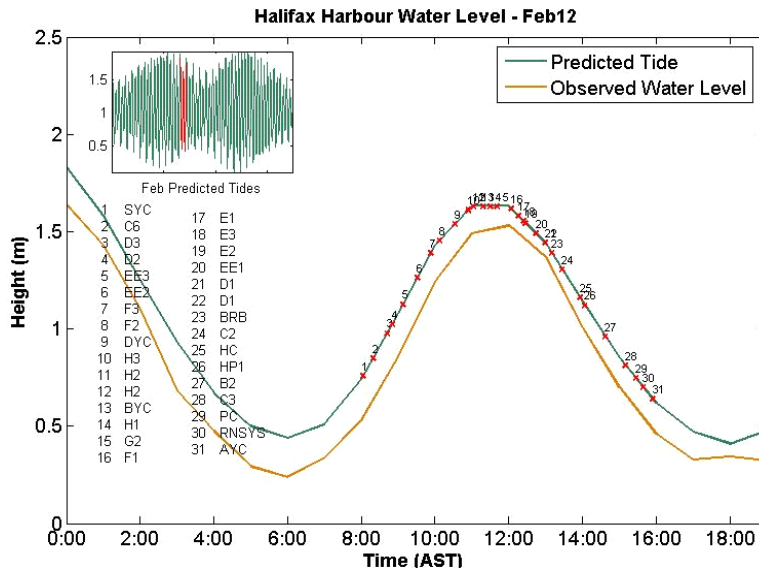
Dissolved Oxygen: There was no DO sensor on the CTD. The limited number of 1m YSI measurements indicate uniform values generally between 9.5-10.0 mg/L, suggesting no guideline exceedences in the surface waters. Consistently, the DO levels measured by the LOBO buoy in the Northwest Arm was about 10.0 mg/L and the levels from the BBPMP taken two days later near Station G2 were approximately 11.4 mg/L at 1m, and 6.4 mg/L at 60 m.



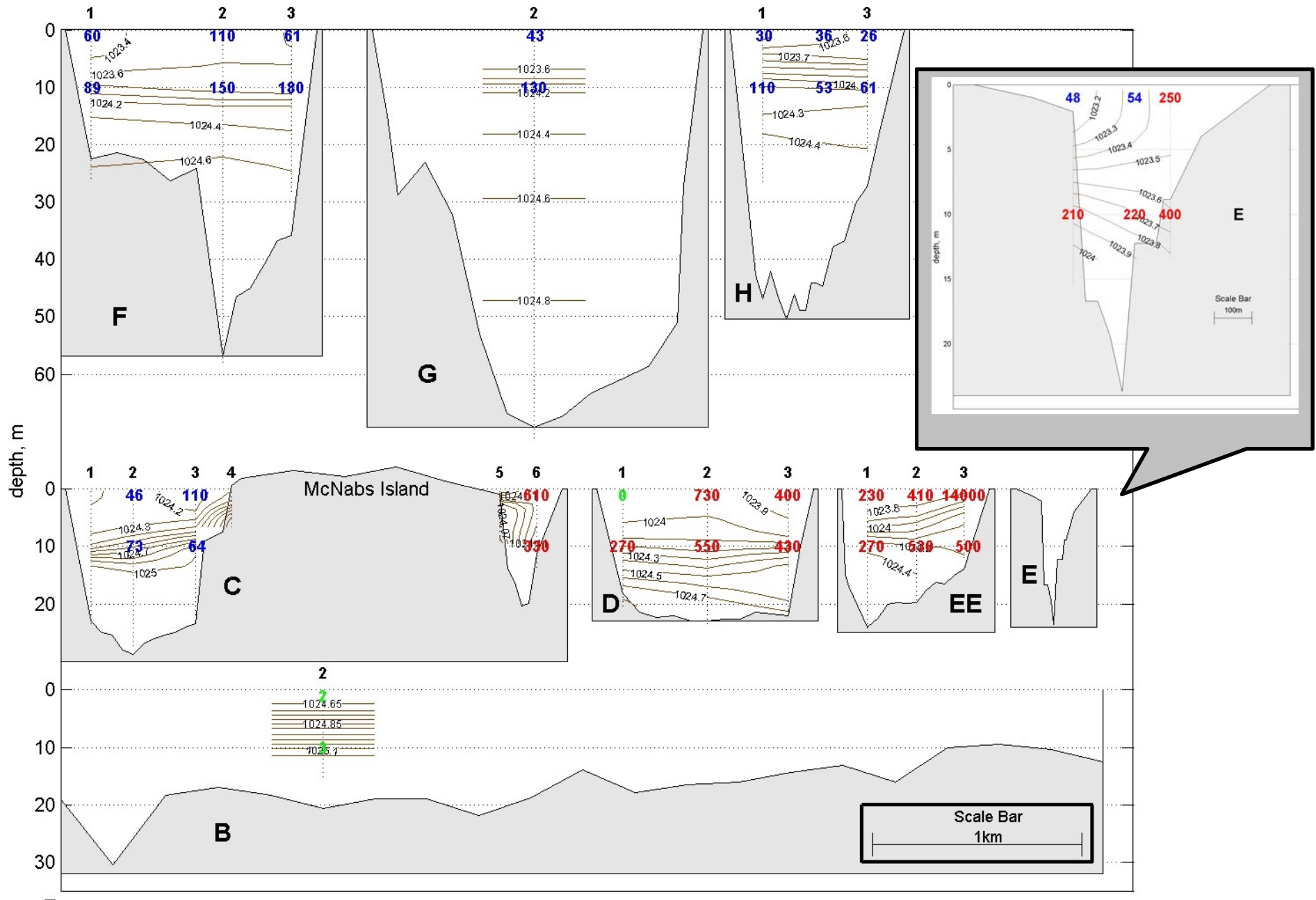
Yacht Clubs



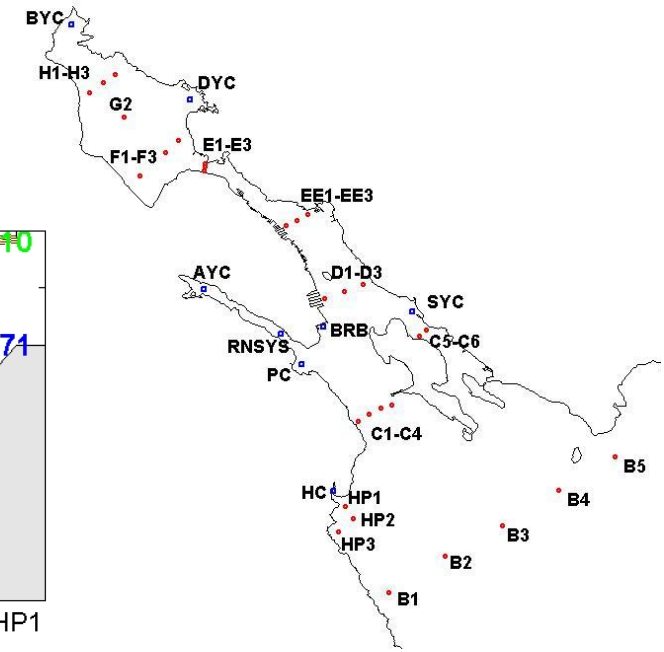
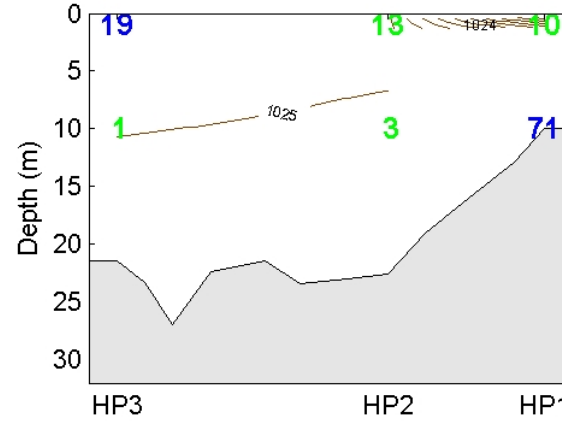
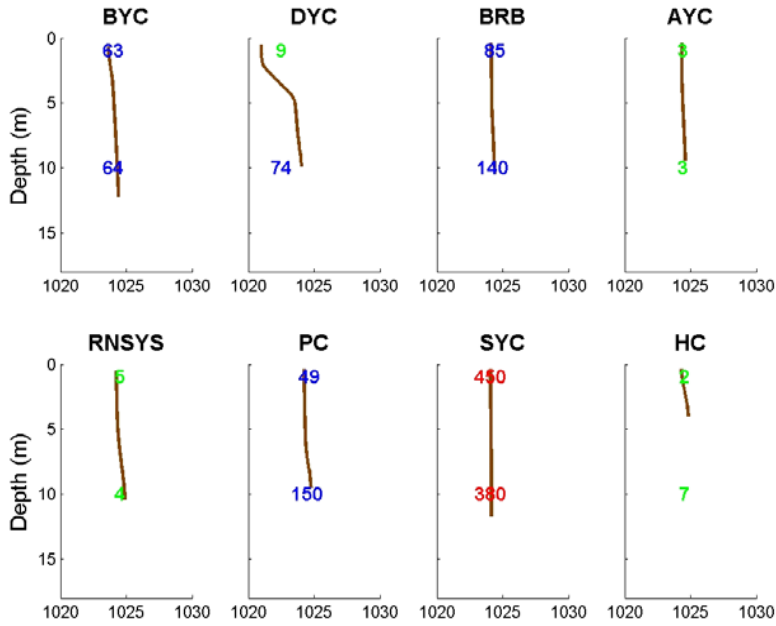
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



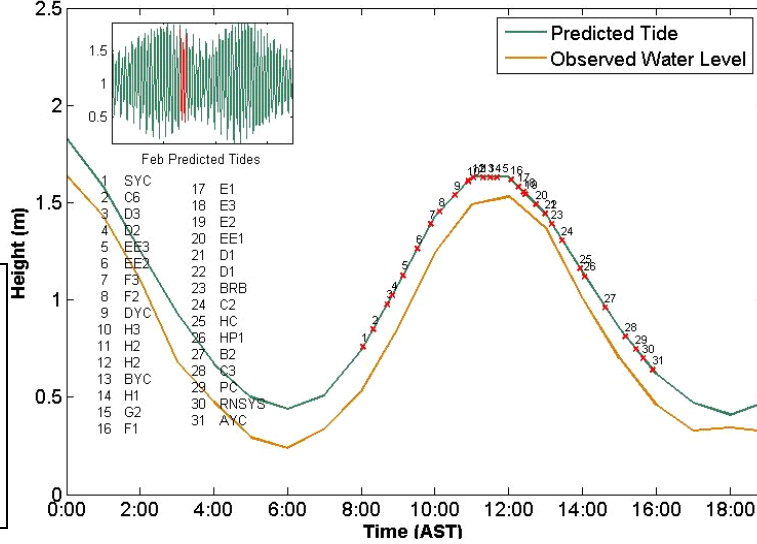
Salinity in PSU Temperature in °C



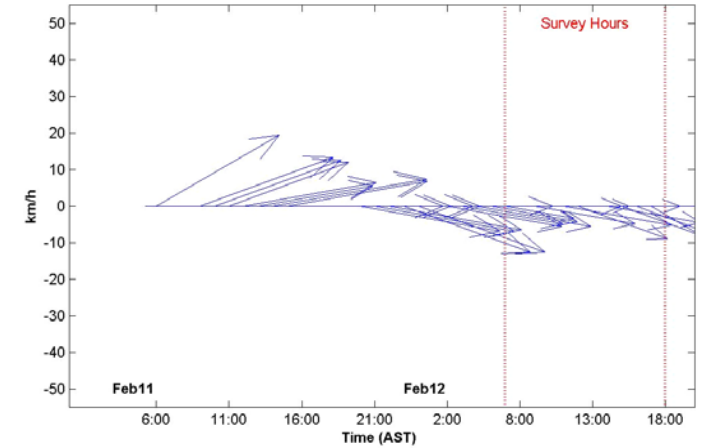
Yacht Clubs



Halifax Harbour Water Level - Feb12

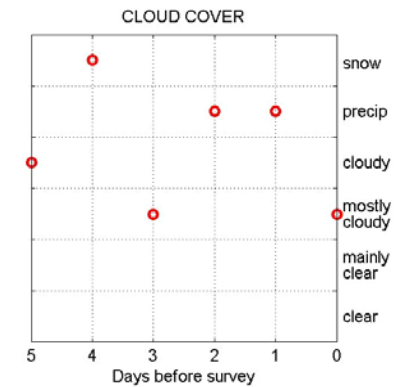
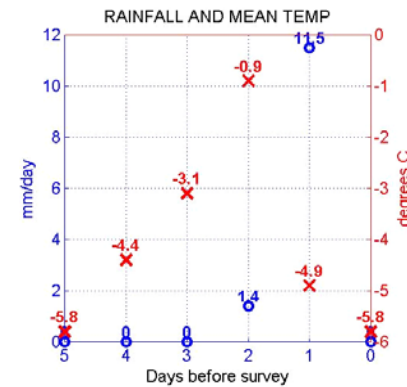


Wind Speed and Direction at Shearwater Jetty



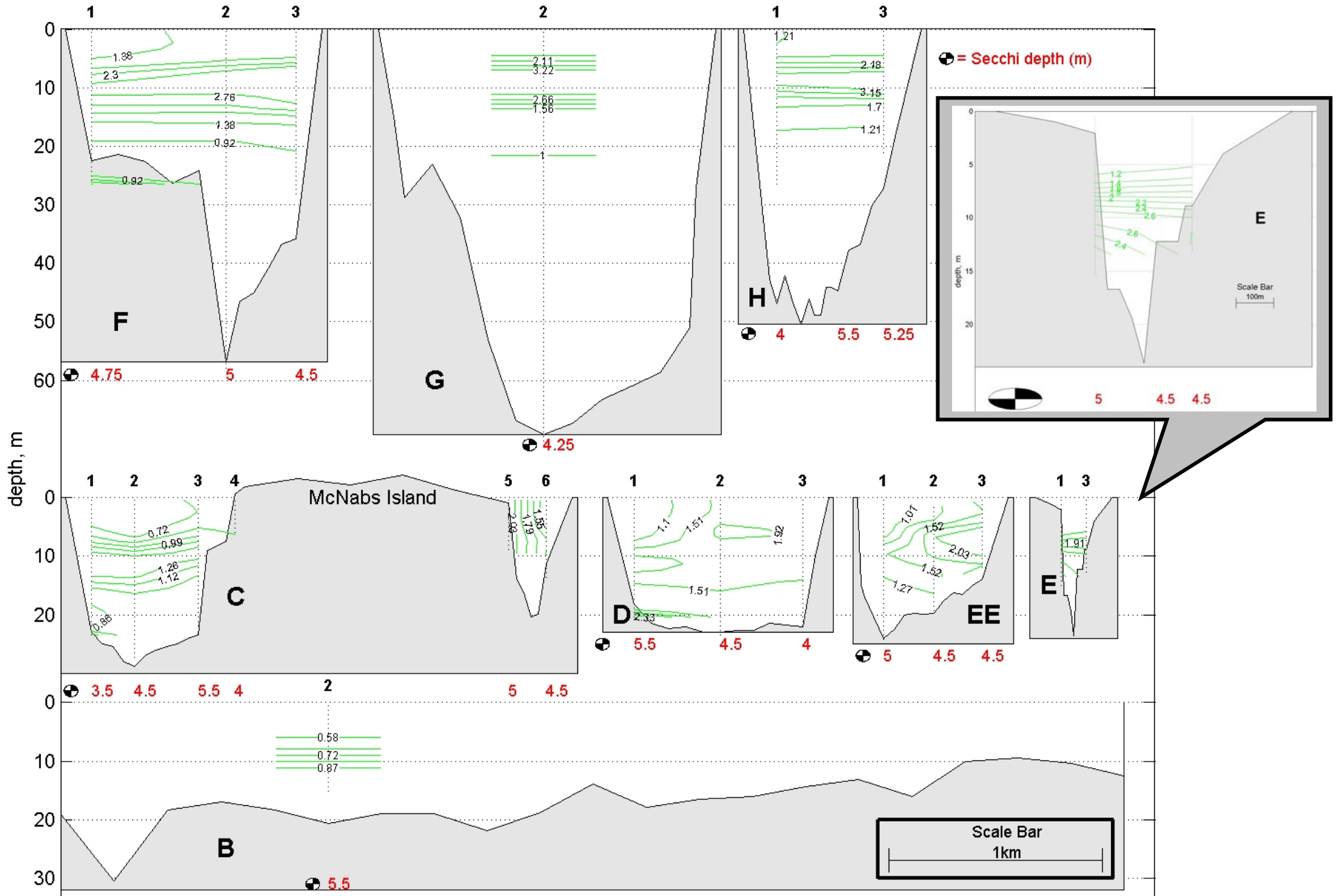
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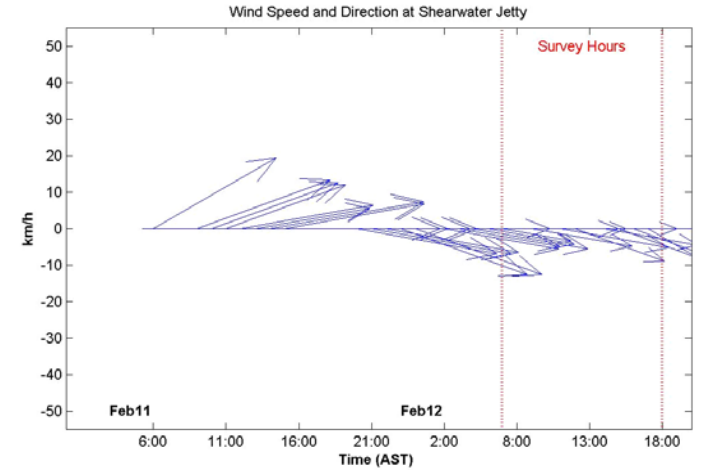
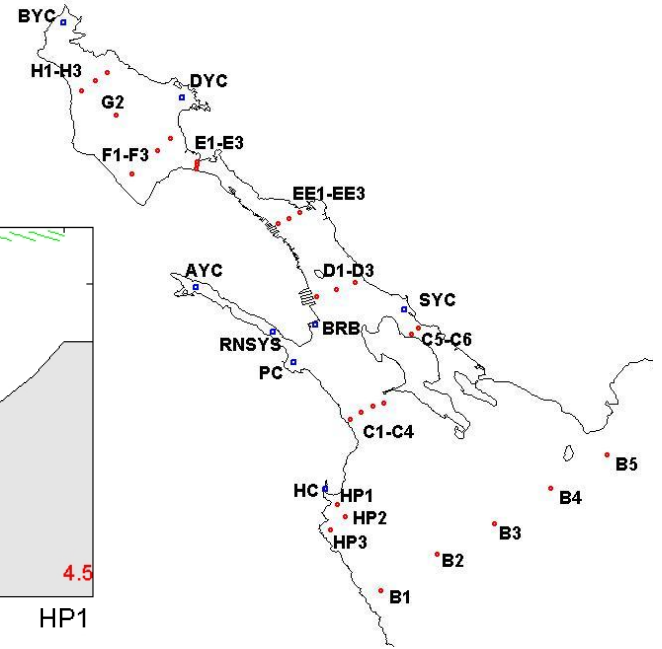
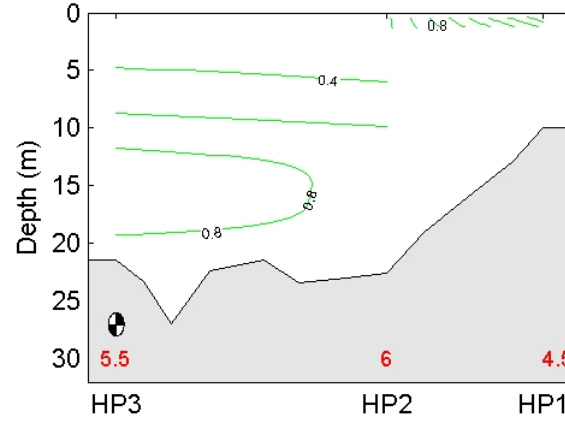
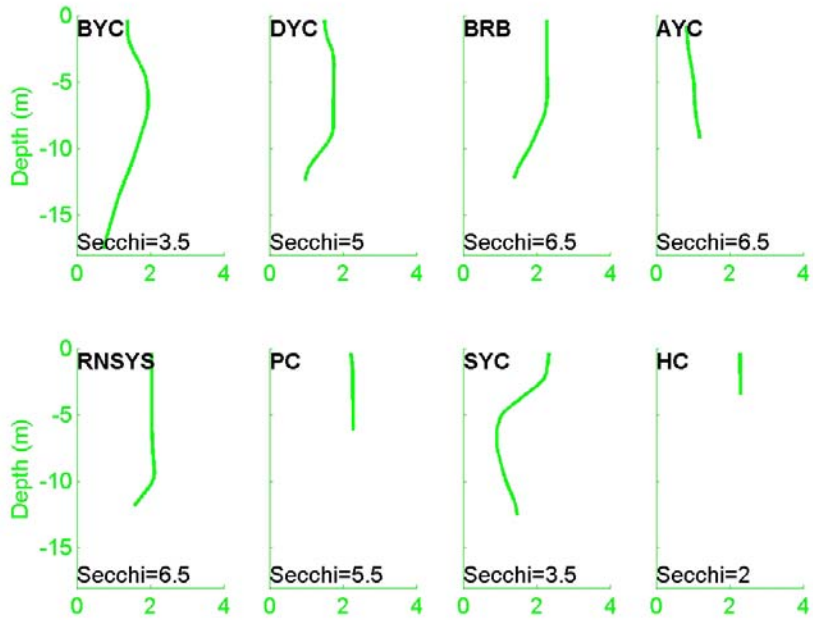


Potential Density in kg/m³

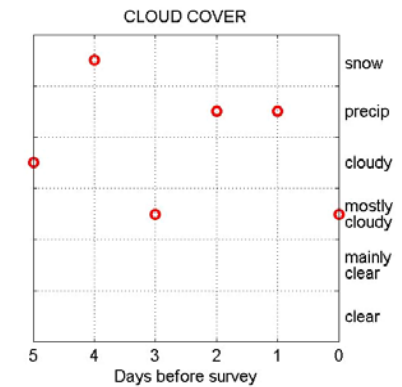
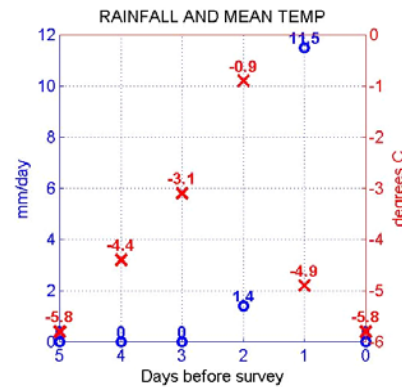
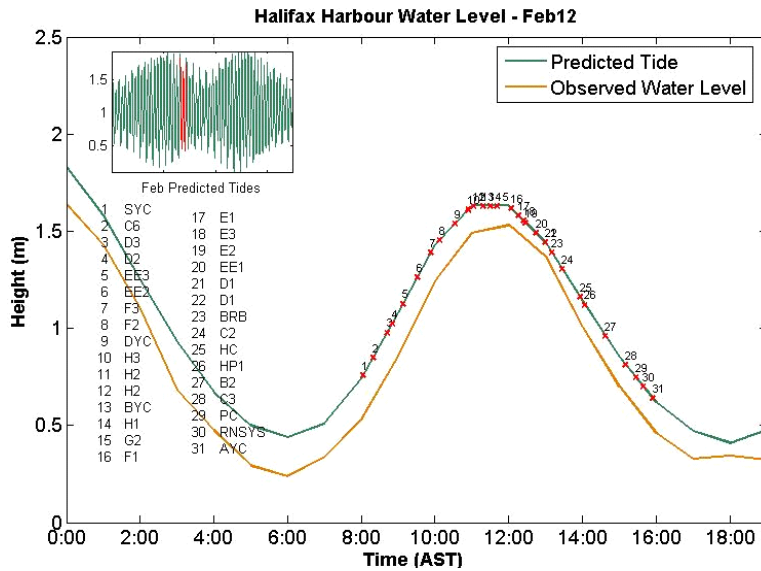
Fecal coliform: **above swimming limit (200 cfu/100mL)**
above shellfish limit (14 cfu/100mL)
 below limits



Yacht Clubs



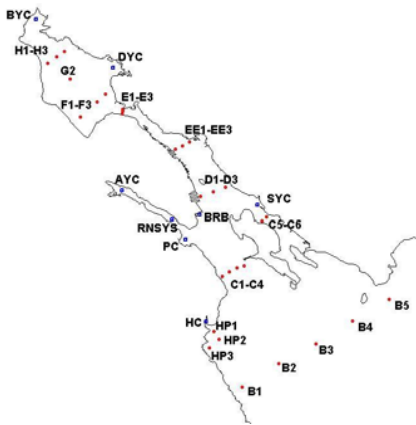
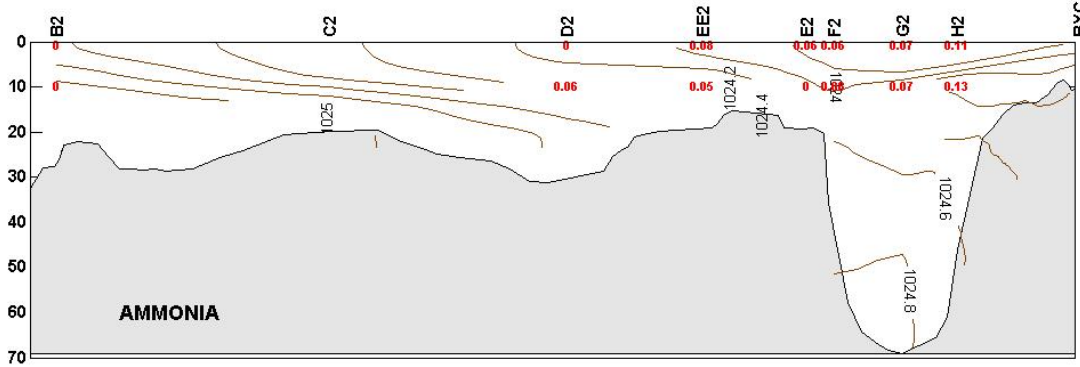
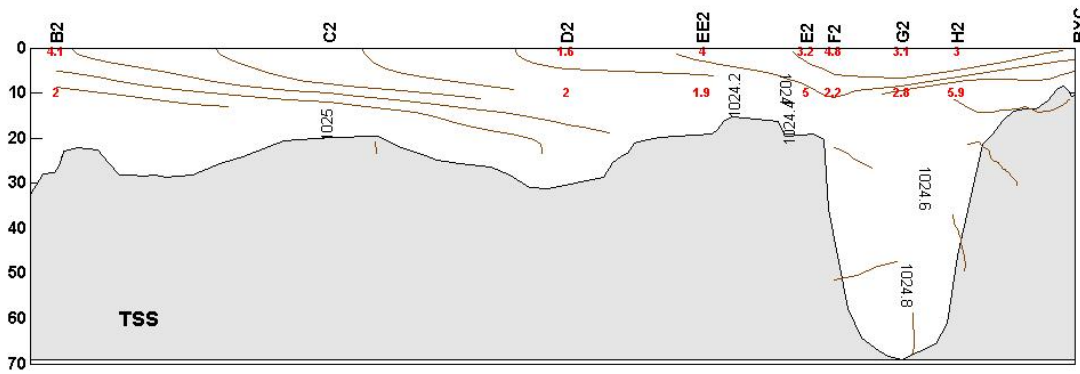
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



DO in mg/L

Chlorophyll in mg/m³

CHEMISTRY



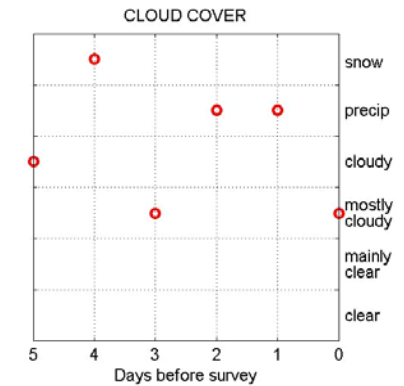
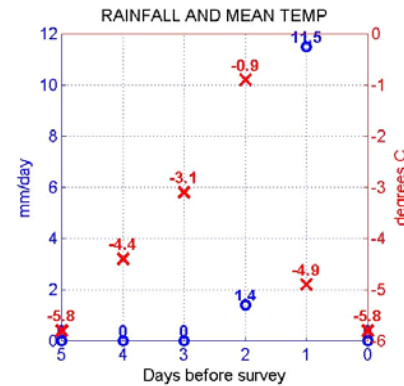
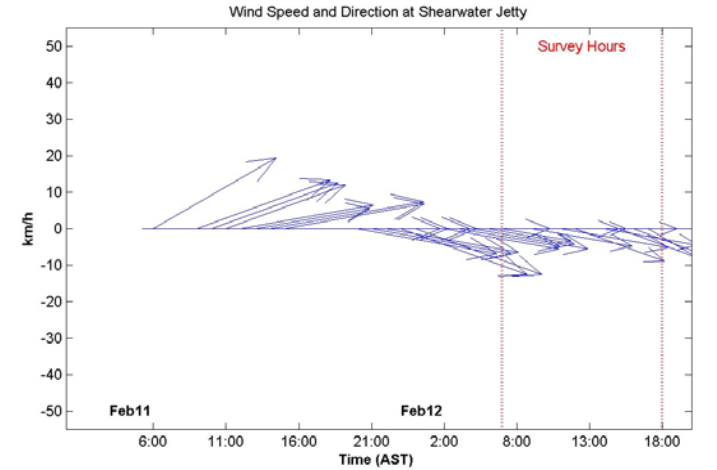
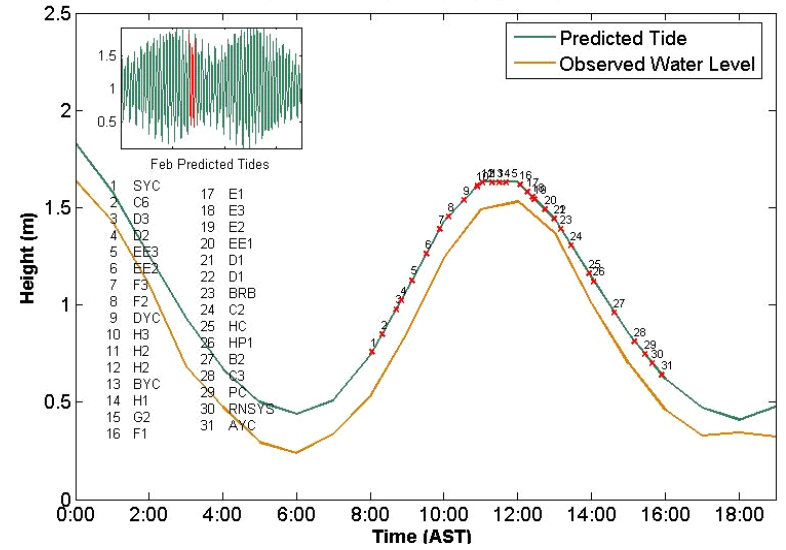
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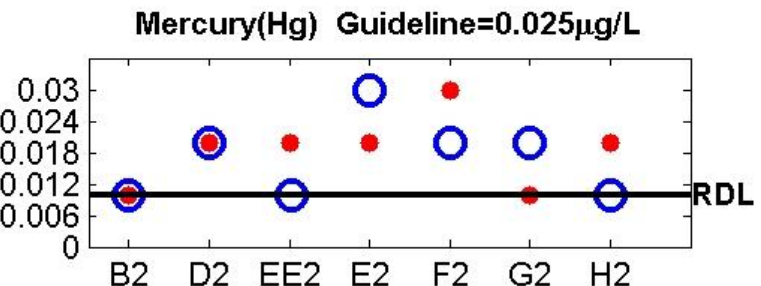
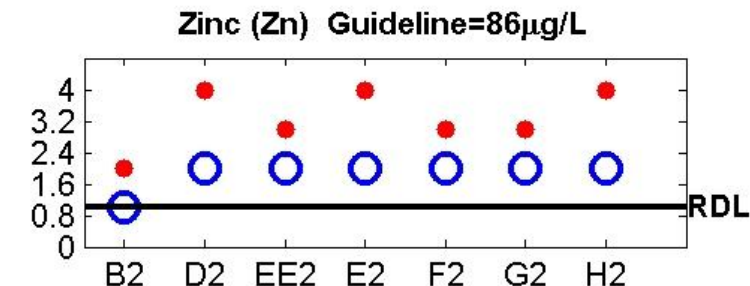
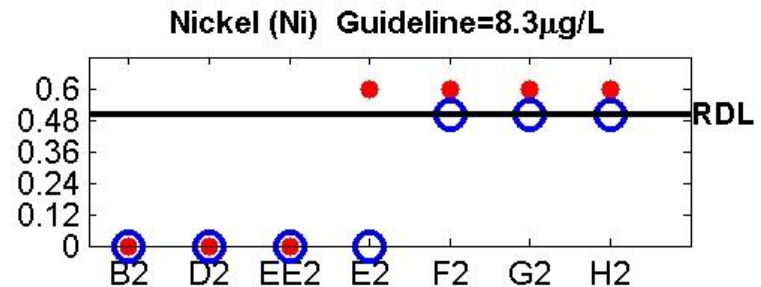
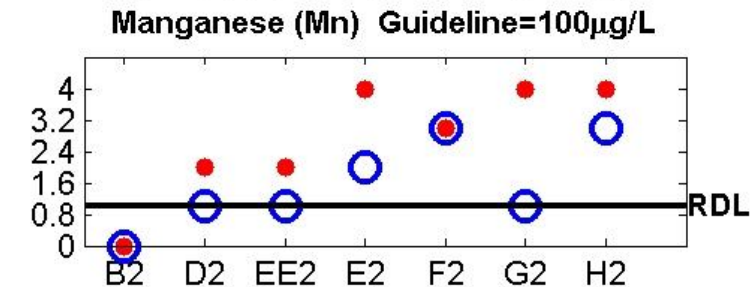
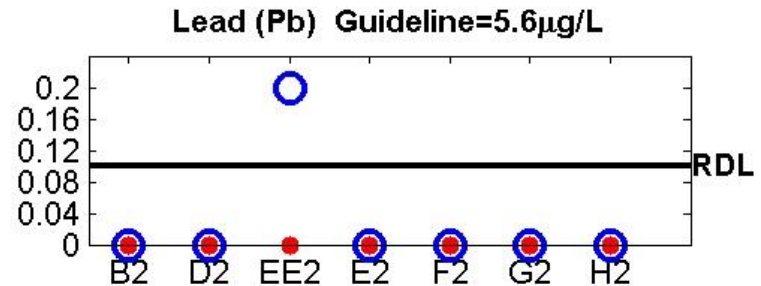
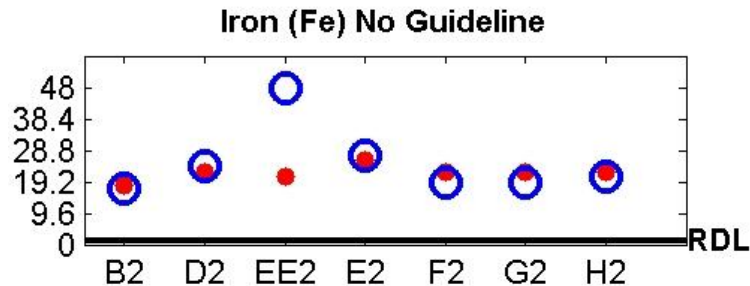
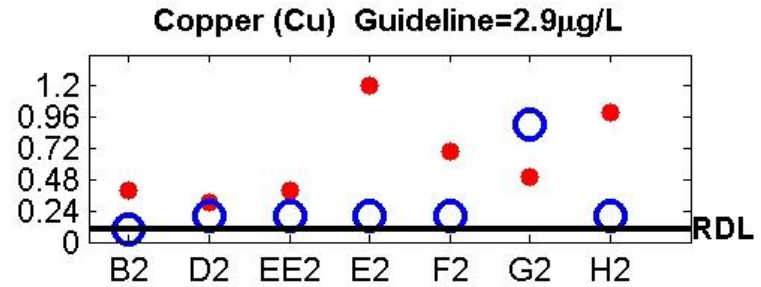
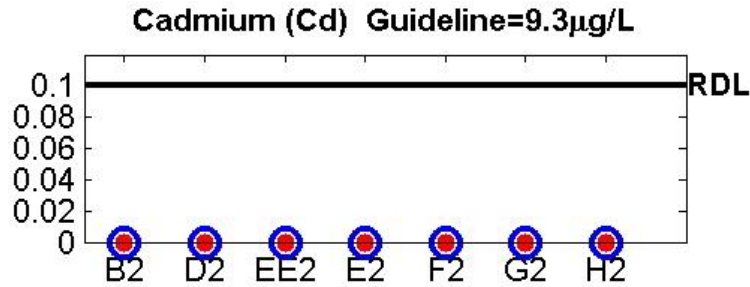
Potential Density in kg/m^3

Ammonia in mg/L

TSS in mg/L

Halifax Harbour Water Level - Feb12





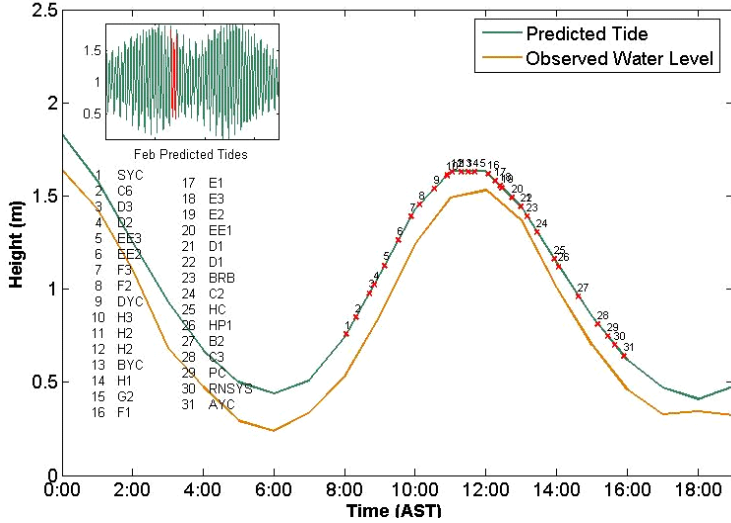
LEGEND

- = Ten Metre Sample
- = One Metre Sample
- RDL = Reportable Detection Limit

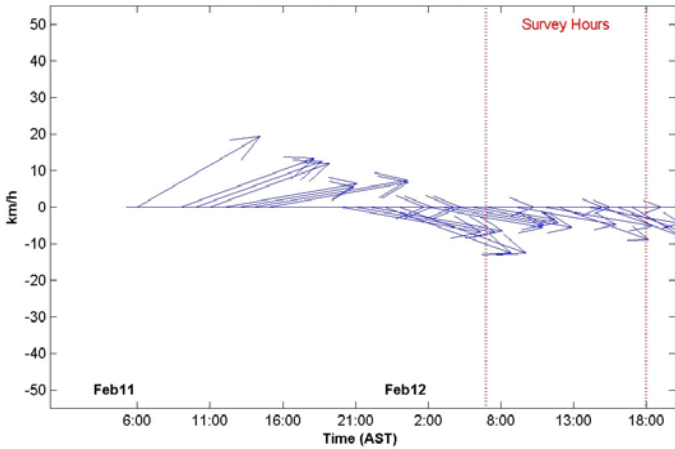
HRM Water Quality Monitoring

Fecal Coliform Summary – February 12, 2008

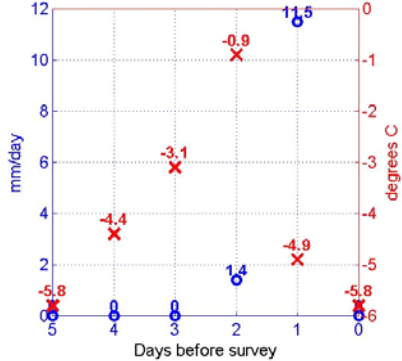
Halifax Harbour Water Level - Feb12



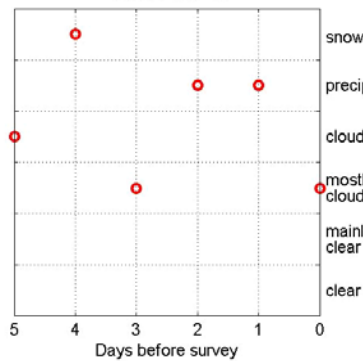
Wind Speed and Direction at Shearwater Jetty



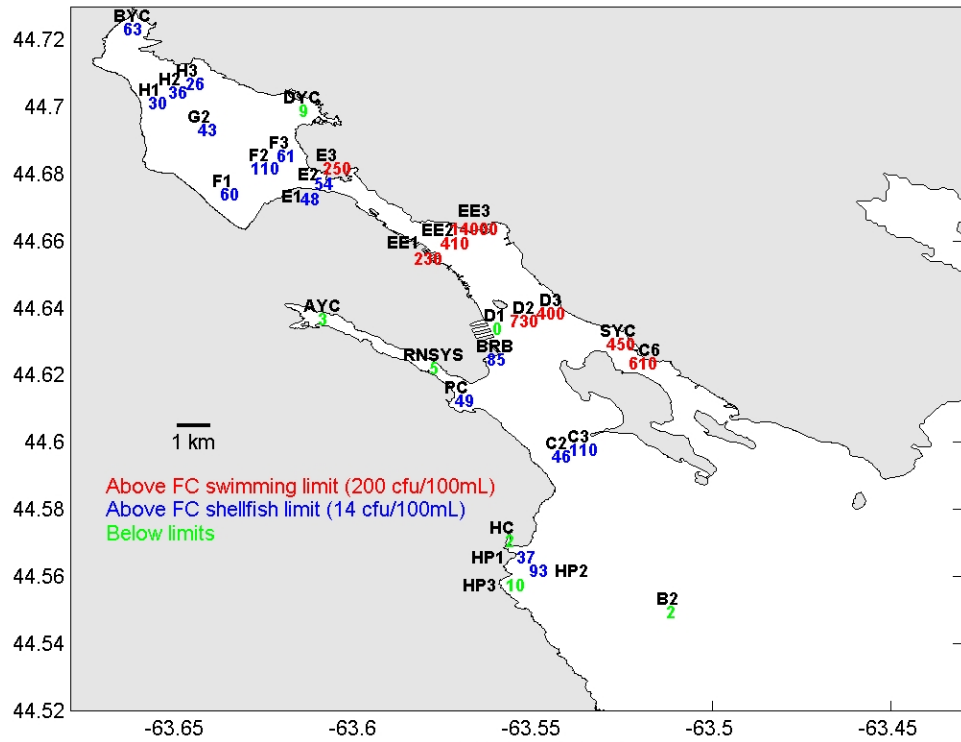
RAINFALL AND MEAN TEMP



CLOUD COVER



Fecal Coliform 1 m



Fecal Coliform 10 m

