

Halifax Harbour Water Quality Monitoring Project Survey Summary #182

Survey Date: 22 April 2009
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report182_090422.doc
Data File: HHWQMP_data182_090422.xls

Data Return:
 Chemical: 86%
 Bacteria: 23%
 Profile: 71%
Overall: 61%

Sample Notes:

There was no YSI calibration data collected this survey.

There was a spike in the DO data at E3, it is included in the plots but has been edited out of the data file.

The top of the profile at RNSYS was missing. The gap is shown in the plots, but the data file has been fixed.

The Outer Harbour was not sampled due to sea state (sites C1-4, HP1-3, HC and B2).

SYC was not sampled due to exclusion for military exercises.

A cooler with bacteria samples was accidentally washed off the deck, all bottles were lost. This included samples for AYC, BRB, BYC, D1, EE1-2.E1-3, F1-2, G2, H1-3 and RNSYS.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 1306 local time (AST).

QA/QC samples:

Chemical Analysis		E2-1m	
Detectable Parameter	Units	Reference Sample	QA/QC
Ammonia (as N)	mg/L	<0.05	0.06
Total Suspended Solids	mg/L	3.0	6.6
Copper	ug/L	0.6	0.5
Iron	ug/L	9.0	8.0
Manganese	ug/L	2.0	2.0
Zinc	ug/L	2.0	2.0

Fecal Coliform (CFU/100ml)

Site	C6-10m	DYC-1m
Reference	3	77
QA/QC	10	31

Comments:

General: The survey occurred during a storm with strong southerly winds and rain. The strong stratification of the previous survey has dissipated and the harbour is relatively well mixed, particularly in the top 7-10m. The exception is at BYC where there is a relatively strong freshwater signal. Overall the salinity is quite high with salinities greater than 31 PSU at the bottom everywhere in the main Harbour channel. The very limited coliform data indicates relatively low levels with higher levels at F3, potentially a function of strong up harbour winds.

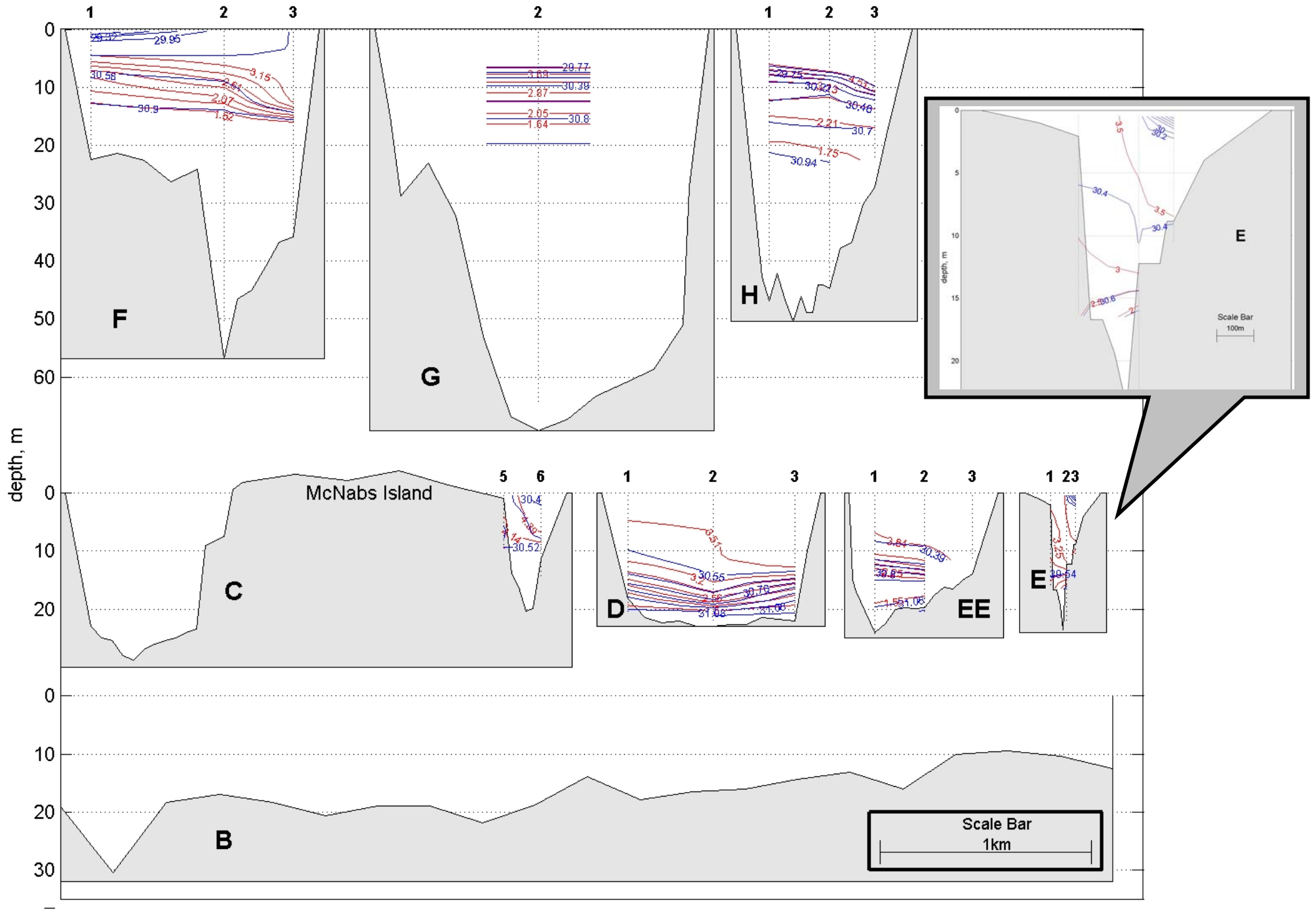
Fluorescence: There continues to be elevated fluorescence levels. In the northern Basin the levels are approximately 20 mg/m³ and are almost uniform over the top 20m. Further out of the Harbour, the levels drop somewhat but remain relatively uniform over the top 10m out to section D. At section D the max values are about 10 mg/m³, but occur near bottom at 15-20 m depth.

TSS: The average TSS level is low (3.1 mg/L). There is no obvious spatial pattern.

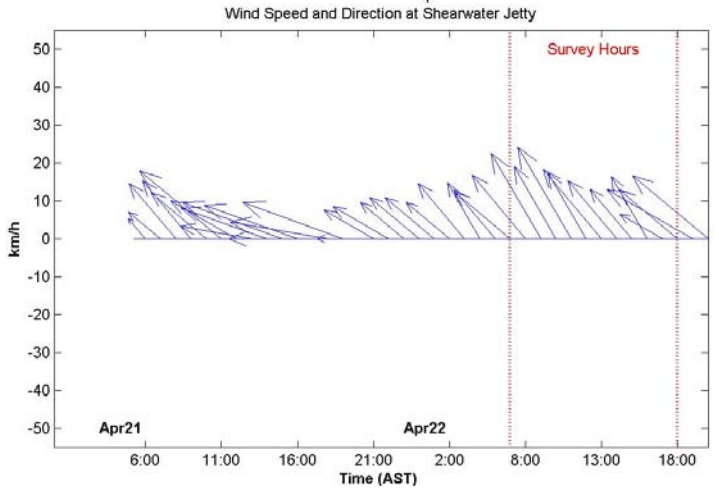
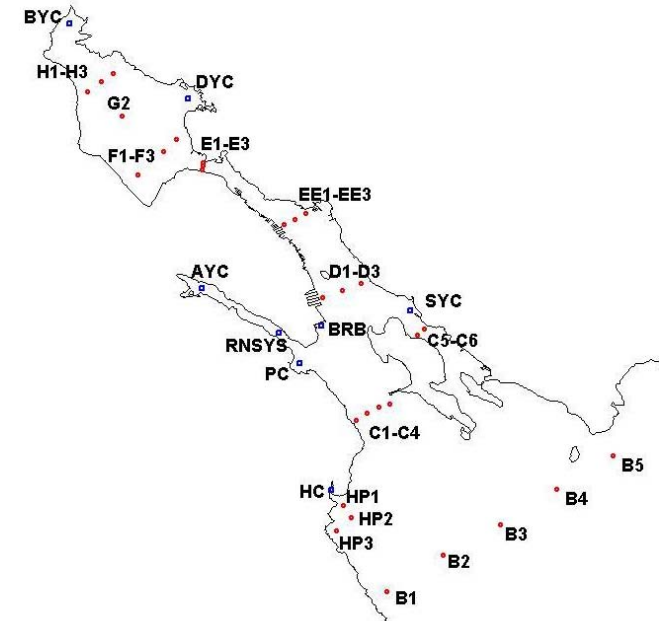
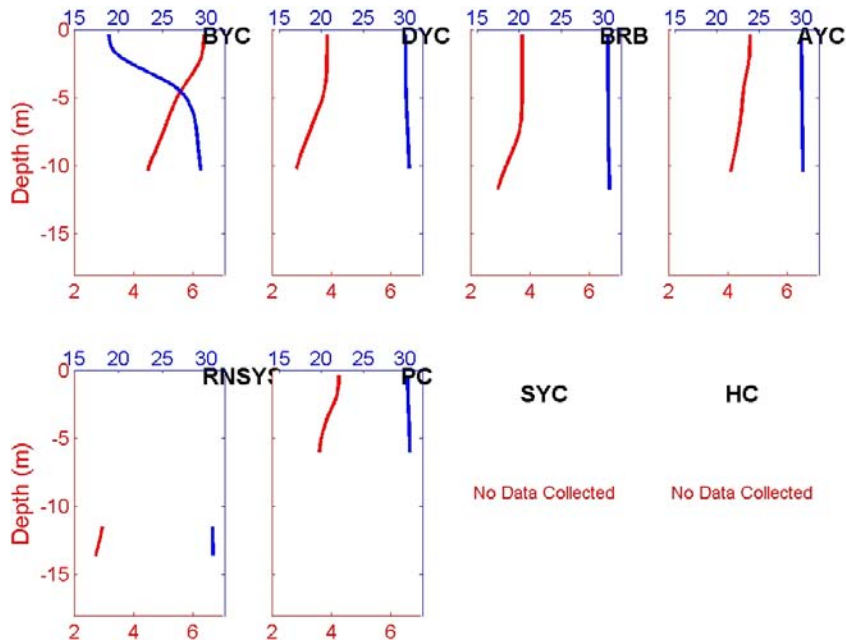
Ammonia: The ammonia levels are low, with only four of twelve values slightly above the detection limit (>0.05 mg/L).

Metals: There are no guideline exceedences. The closest metal to guideline exceedence levels is copper, with two 1 m values at about 30% of the 2.9 µg/L guideline.

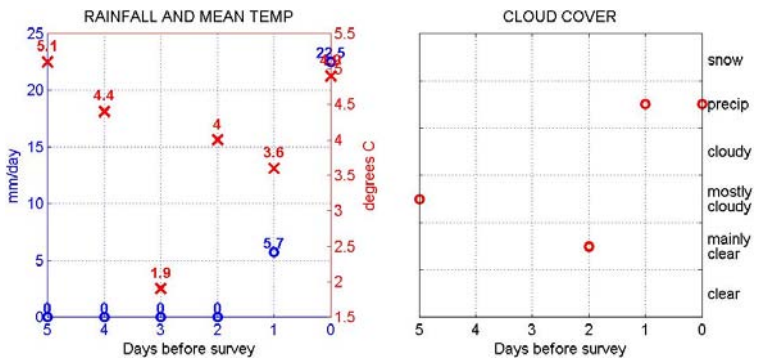
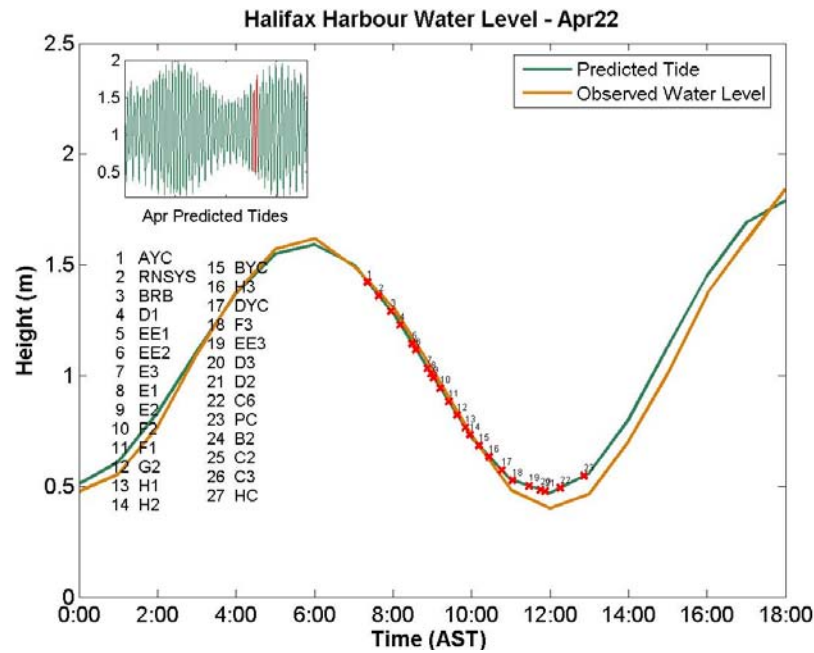
Dissolved Oxygen: There was no ground truth data collected. The data scaled similarly to recent surveys (factor of 1.40) indicate very high oxygen levels everywhere. The near surface values are everywhere greater than 11 mg/L and the lowest values, in the deepest water of the Basin, are approximately 9 mg/L. There were no guideline exceedences observed.



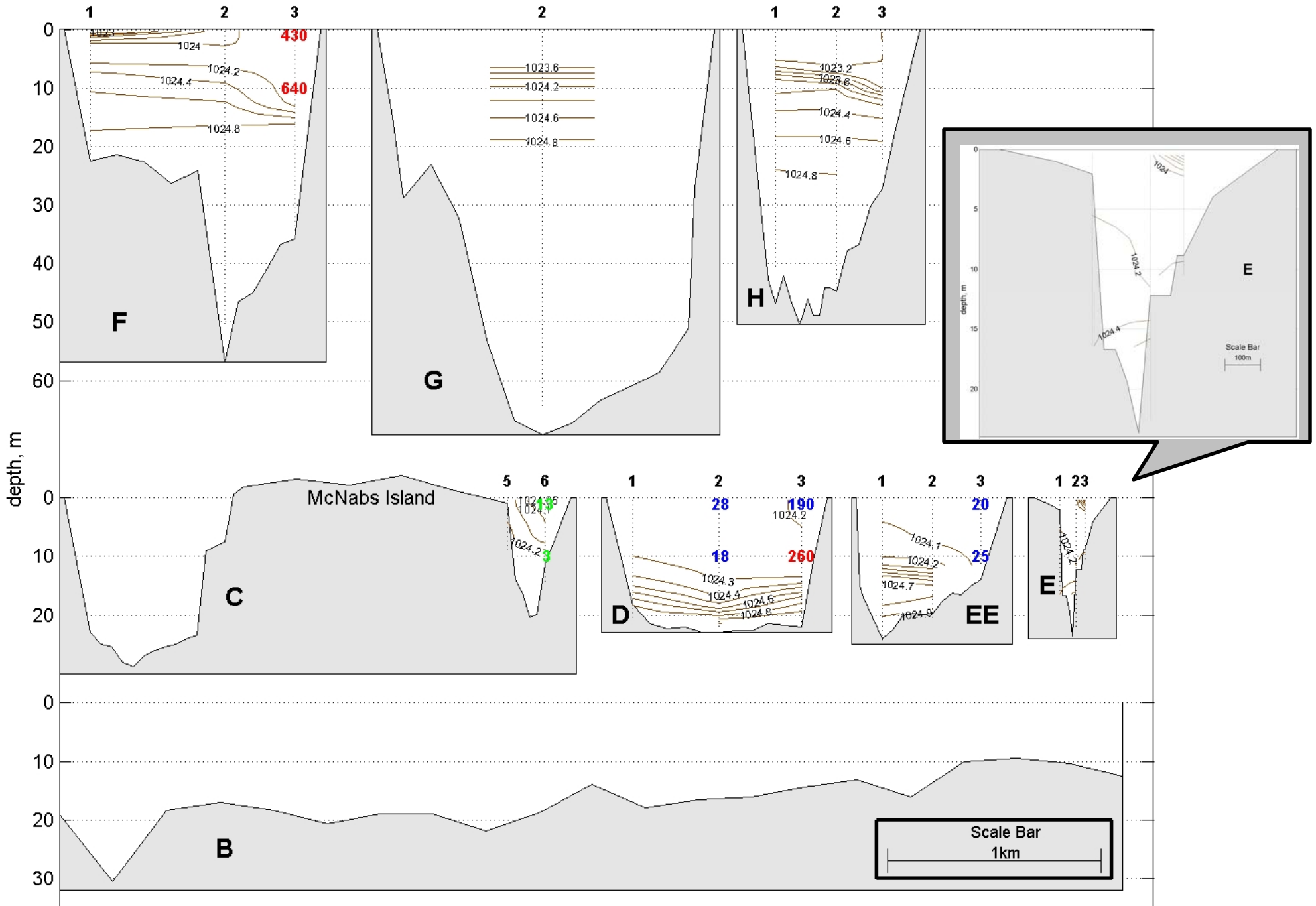
Yacht Clubs



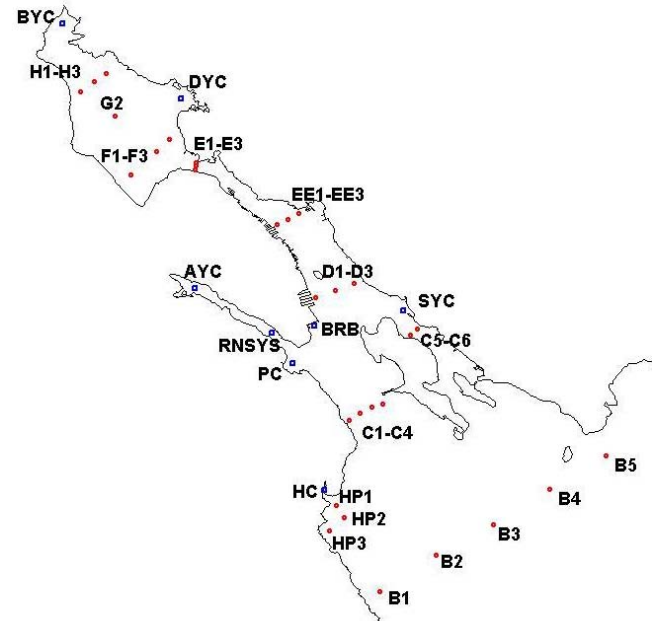
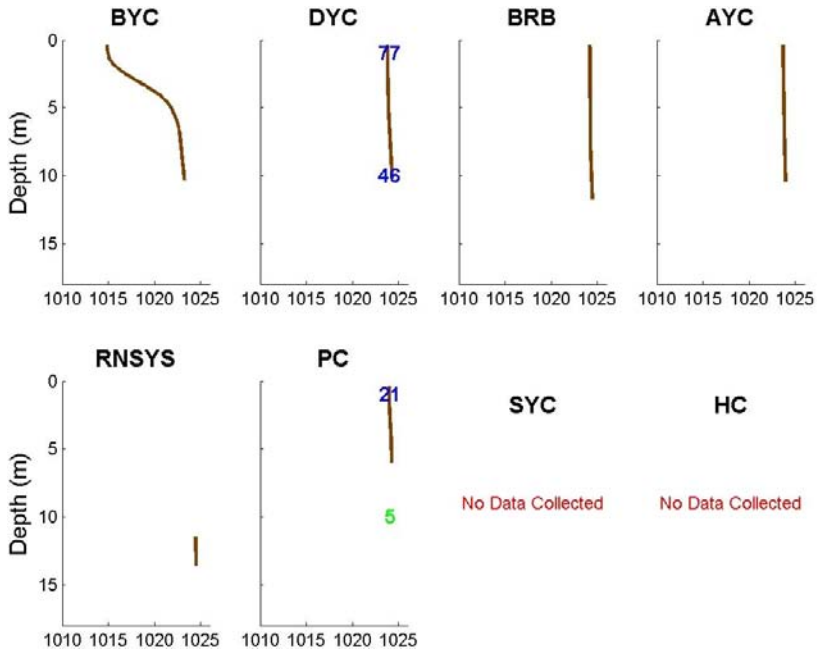
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



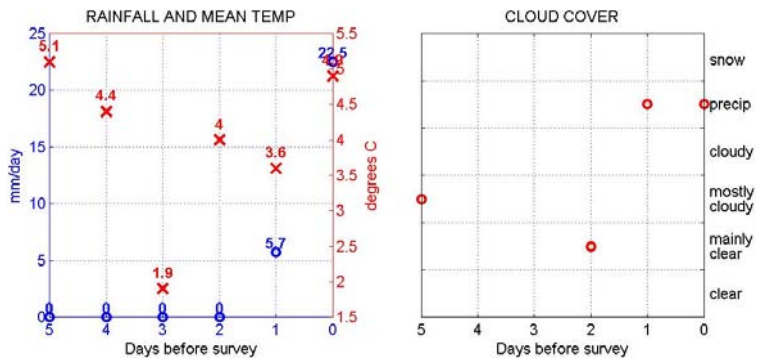
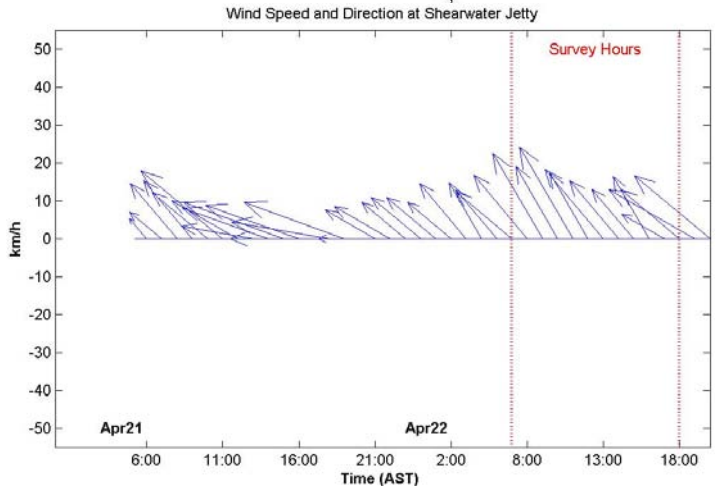
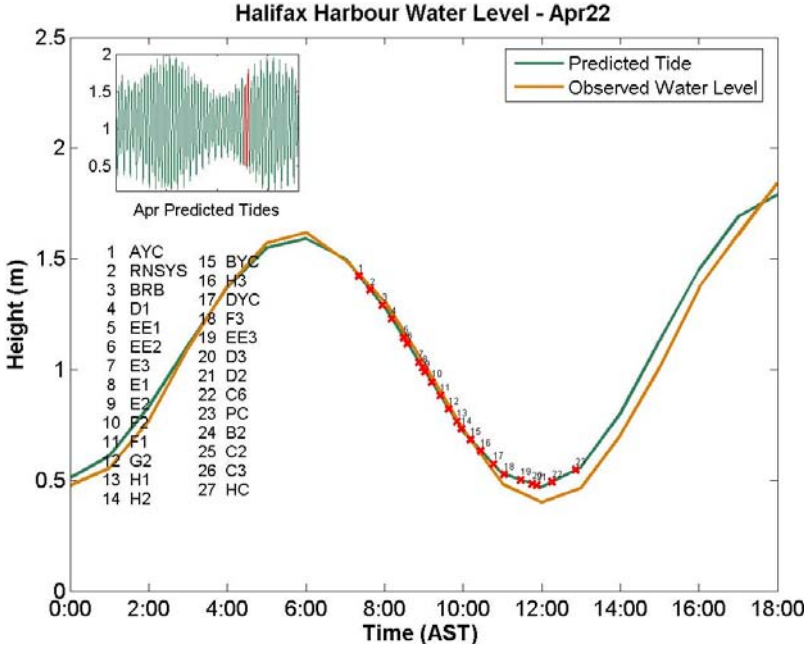
Salinity in PSU Temperature in °C



Yacht Clubs



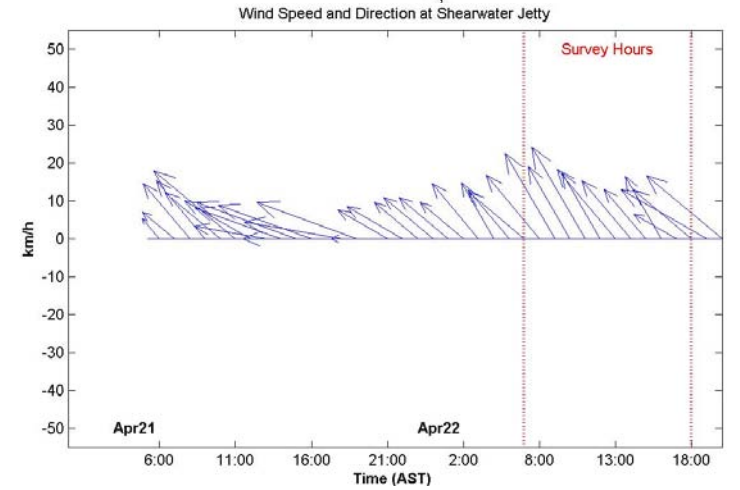
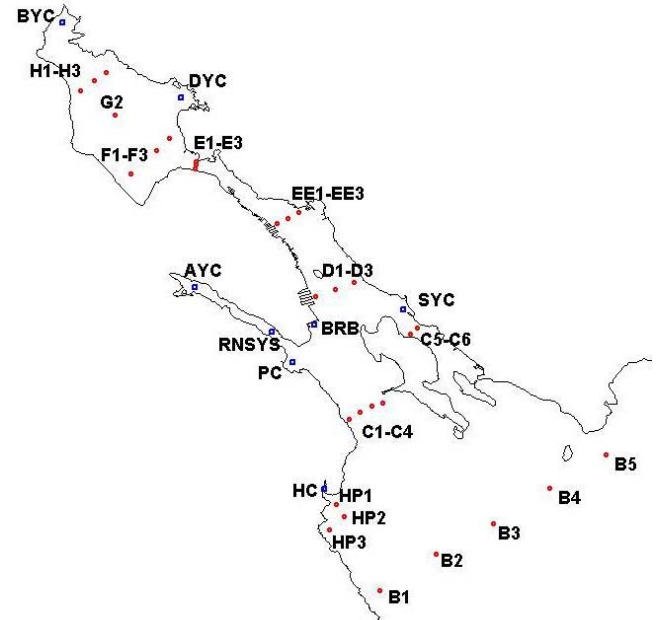
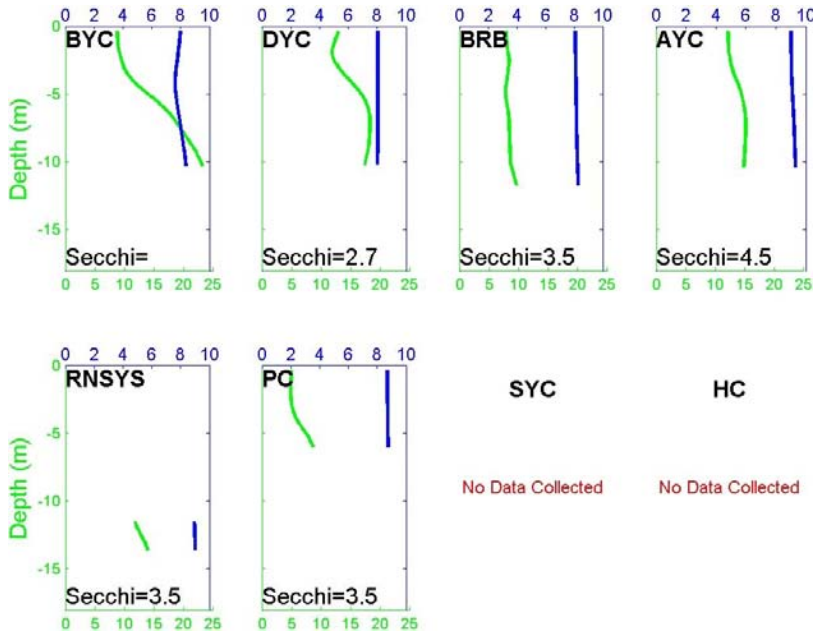
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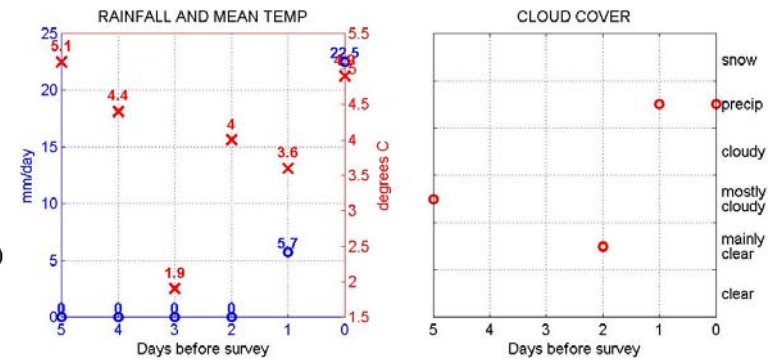
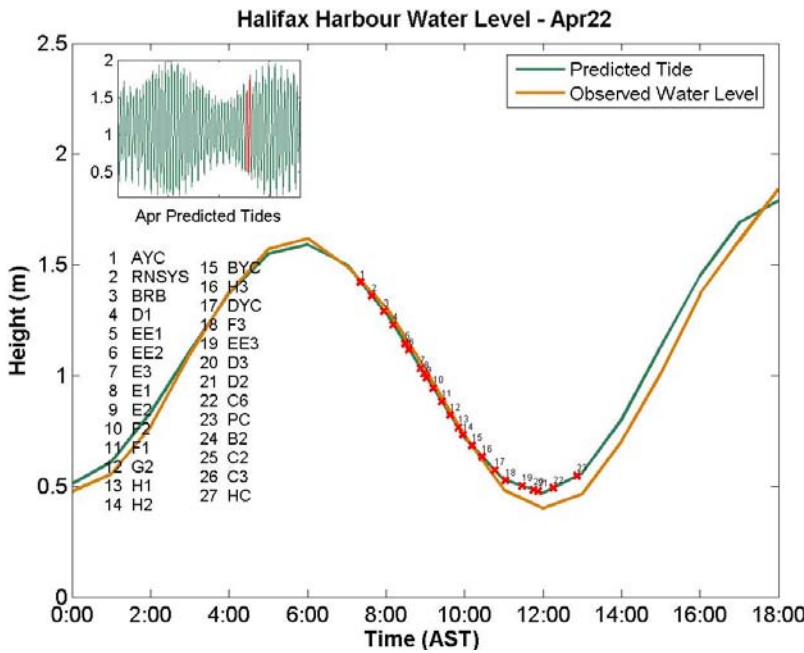
Potential Density in kg/m³

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

Yacht Clubs

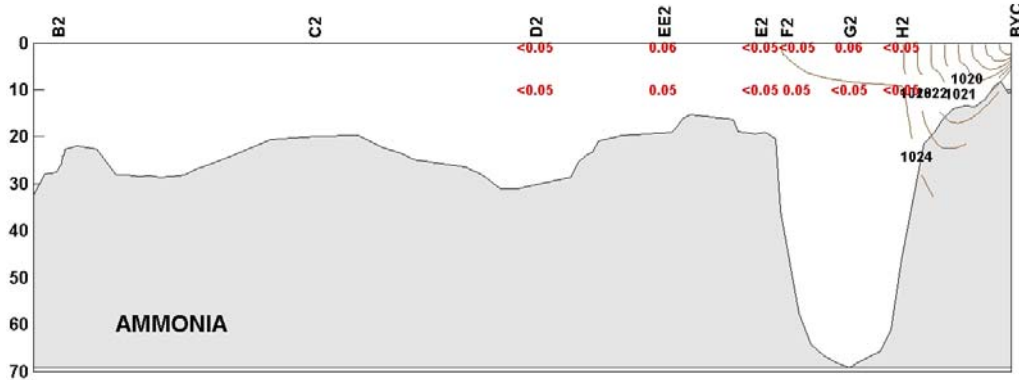
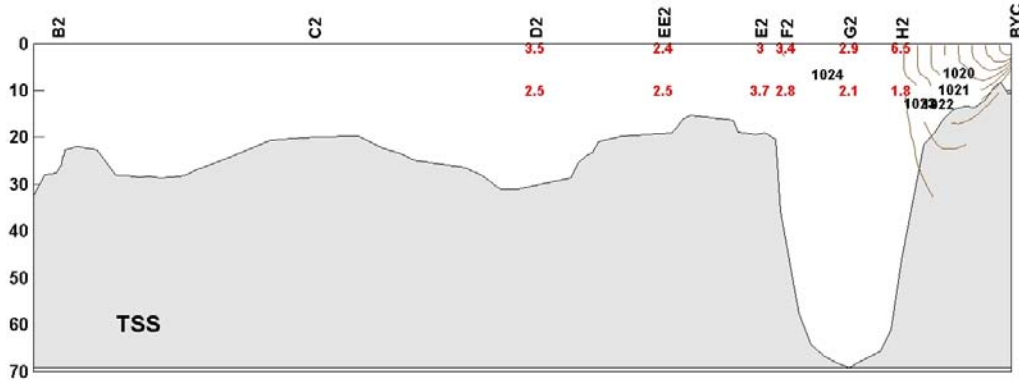


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Cloud cover data collected at Shearwater Airport



DO in mg/L Chlorophyll in mg/m³

CHEMISTRY



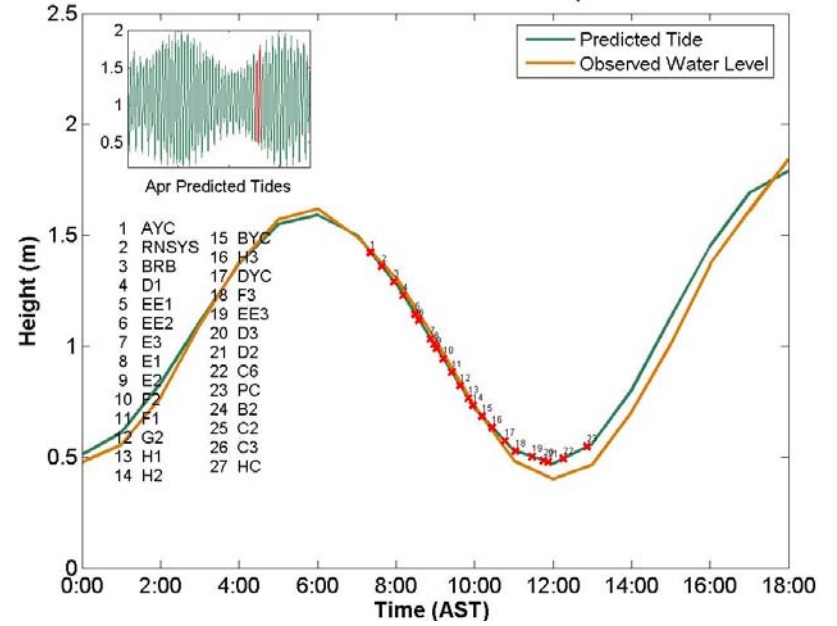
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Potential Density in kg/m^3

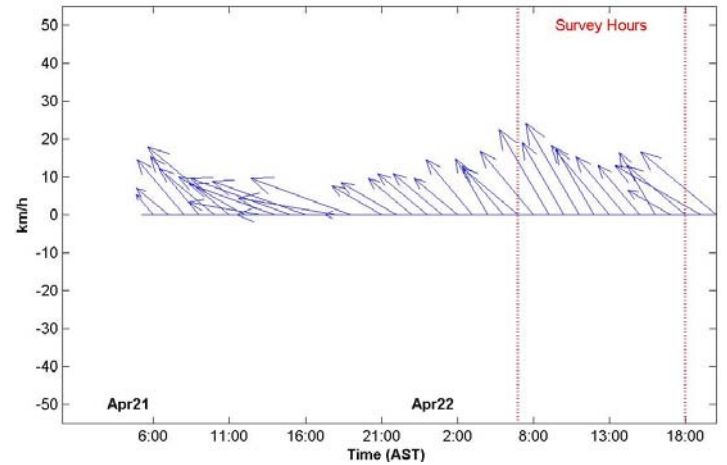
Ammonia in mg/L

TSS in mg/L

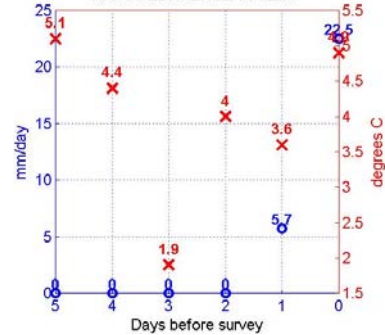
Halifax Harbour Water Level - Apr22



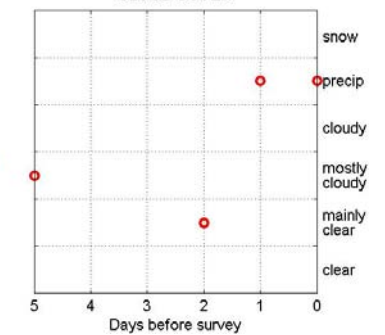
Wind Speed and Direction at Shearwater Jetty

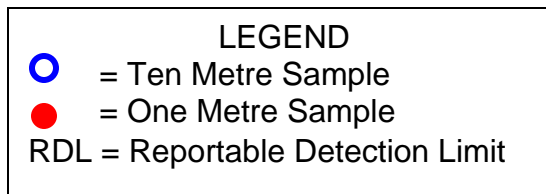
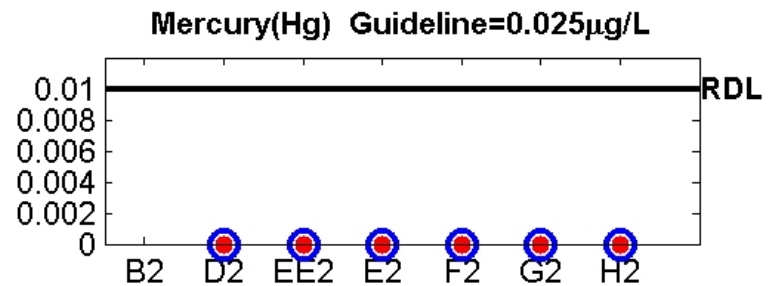
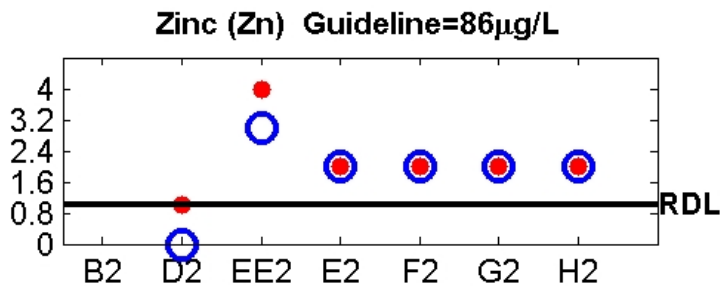
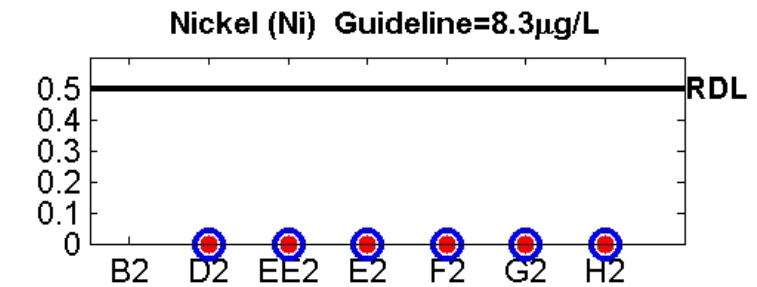
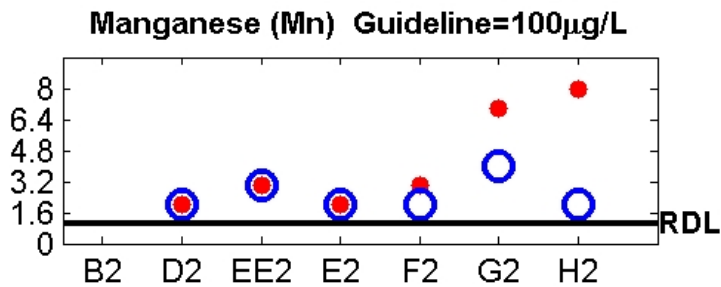
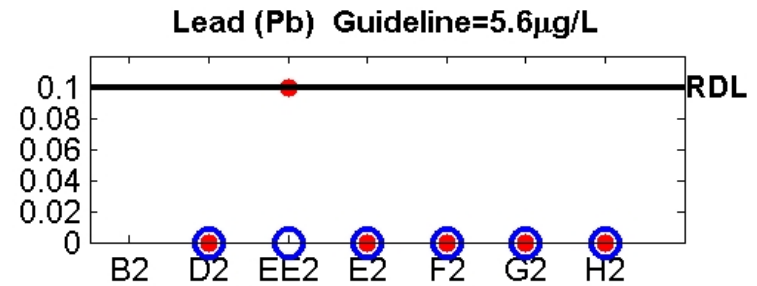
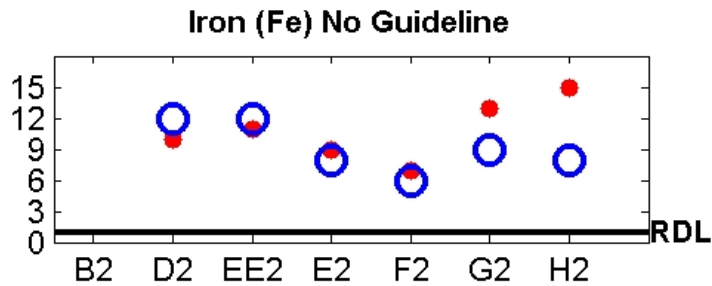
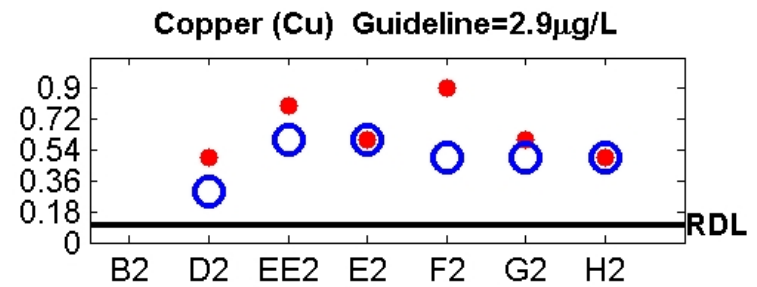
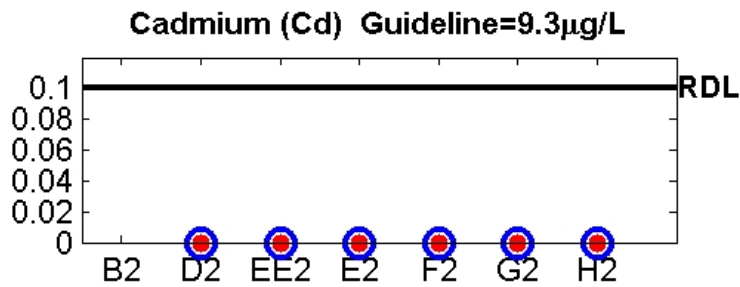


RAINFALL AND MEAN TEMP



CLOUD COVER

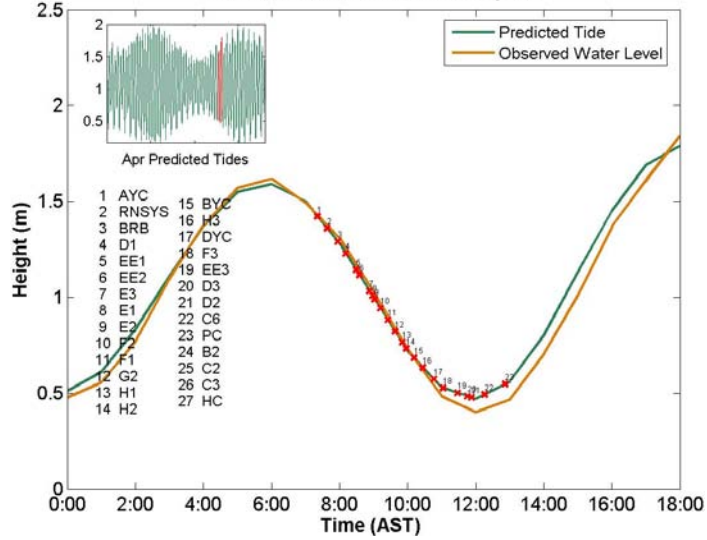




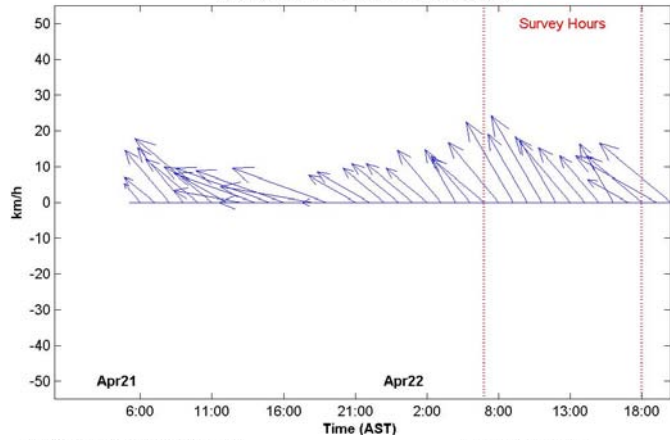
HRM Water Quality Monitoring

Fecal Coliform Summary – April 22, 2009

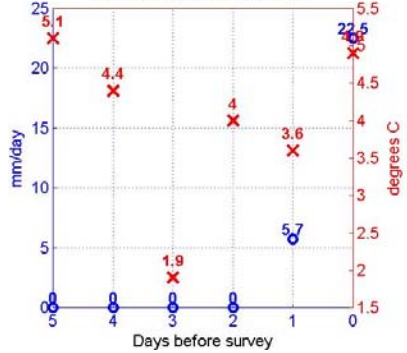
Halifax Harbour Water Level - Apr22



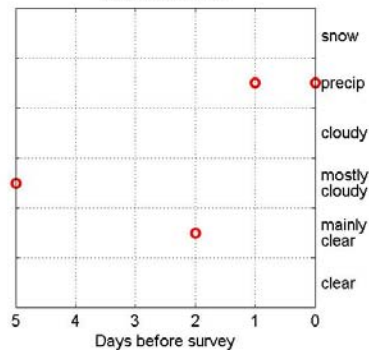
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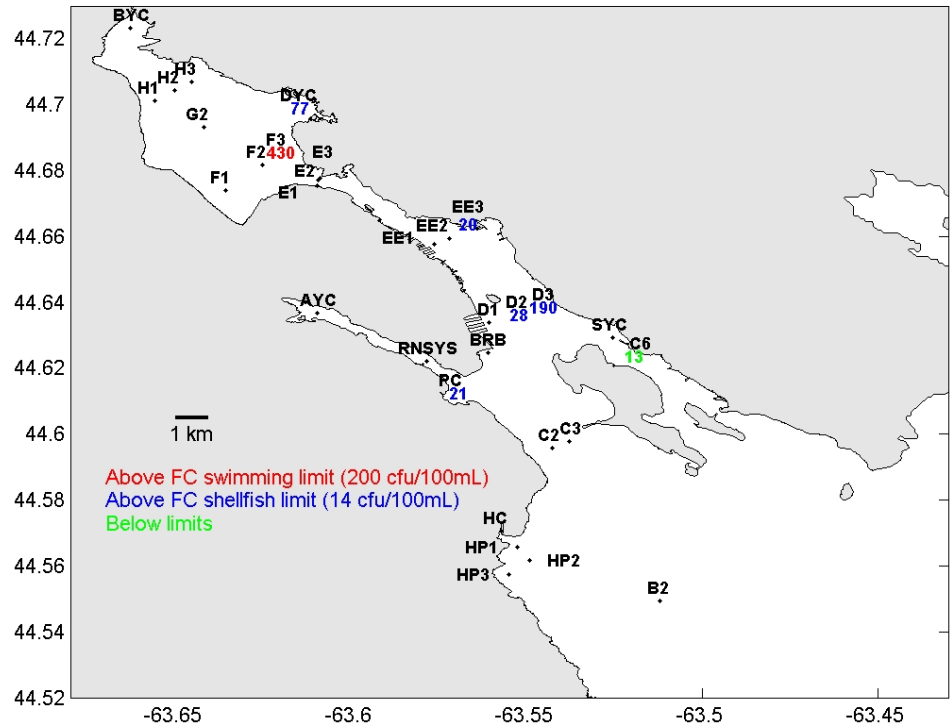
RAINFALL AND MEAN TEMP



CLOUD COVER



Fecal Coliform 1 m



Fecal Coliform 10 m

