

Halifax Harbour Water Quality Monitoring Project Survey Summary #183

Survey Date: 5 May 2009
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report183_090505.doc
Data File: HHWQMP_data183_090505.xls

Data Return:
 Chemical: 100%
 Bacteria: 97%
 Profile: 97%
Overall: 98%

Sample Notes:

SYC was missed due to military exercise exclusion.

There was no data on the CTD for the cast at D1, probable user error.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 1340 local time (AST).

To match the collected reference data, the presented DO values should be scaled by a factor of 1.4 (see data file cover sheet).

QA/QC samples:

Chemical Analysis

Detectable Parameter	Units	E2-1m	
		Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.06	<0/05
Total Suspended Solids	mg/L	2.2	2.1
Copper	ug/L	0.3	0.2
Iron	ug/L	4.0	6.0
Manganese	ug/L	1.0	2.0
Zinc	ug/L	2.0	2.0

Fecal Coliform (CFU/100ml)

Site	C6-10m	DYC-1m	PC-10m	E2-1m
Reference	12	6	44	250
QA/QC	1	5	110	180

Comments:

General: There has been moderate rainfall in the days preceding the survey. The surface water is in general slightly fresher and the deeper water more saline than in the previous survey. There has been a recent intrusion of warmer, more saline, water

into the Basin. While there continues to be warmer, more saline (denser) water in the Inner Harbour, based on water properties at the sill in the Narrows it does not appear that the intrusion is ongoing. The intrusion has resulted in a mid-water temperature minimum in the Basin at about 40 m. The fc levels are moderate to low with some (nine) values only slightly above the 200 cfu/100 mL swimming guideline. The exception is in the 1m samples at PC and RNSYS, sites often affected by the chain rock outfall, that have unusually high values (>2000 cfu/ 100 mL).

Fluorescence: The fluorescence levels have increased significantly. Throughout the Basin there are levels > 60 mg/m³. These levels drop progressively going out of the Harbour to about 30 mg/m³ in the Inner Harbour, 18 mg/m³ off McNabs Island (section C) and ultimately to somewhat less than 3 mg/m³ in the Outer Harbour (B2). The depth of the maximums is remarkably uniform at around 11-12 m everywhere.

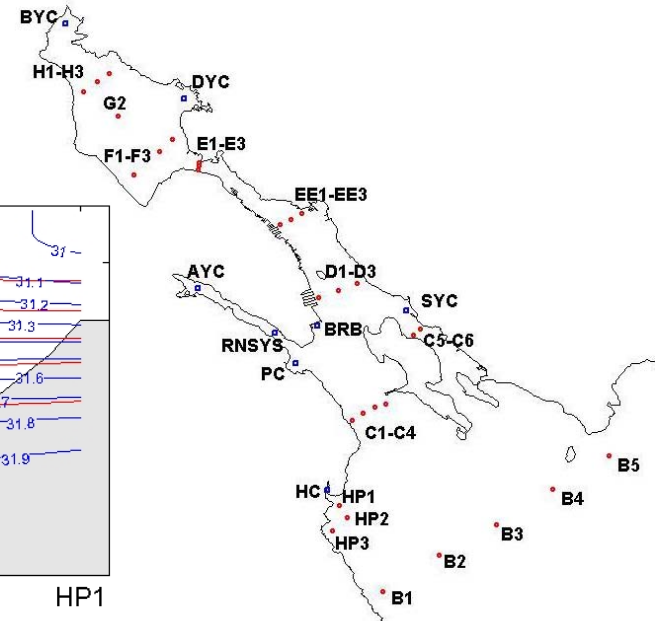
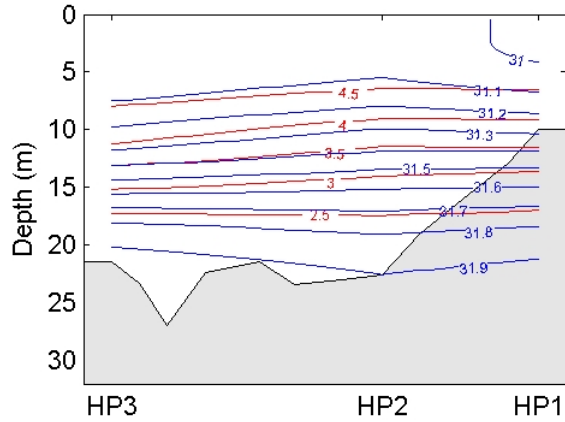
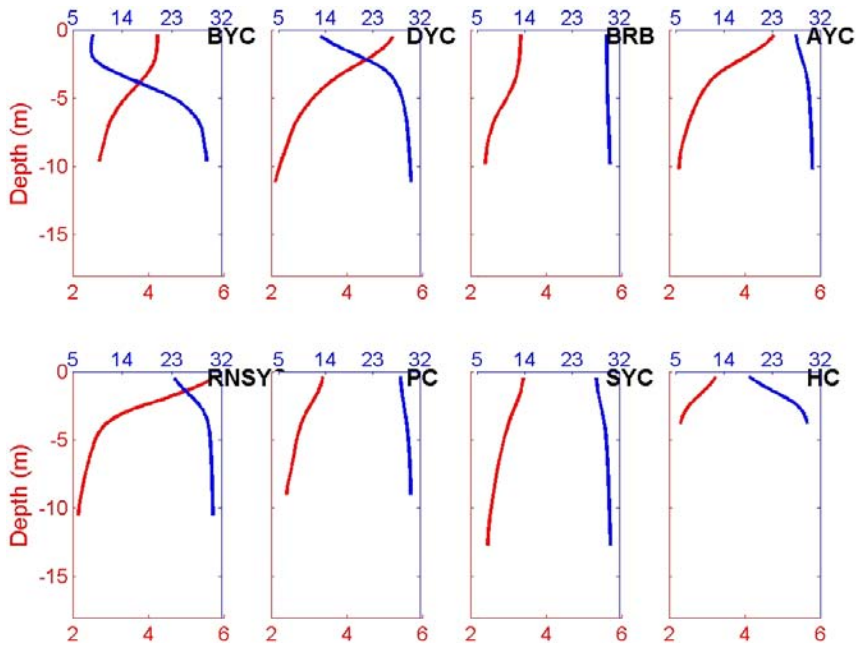
TSS: The average TSS levels are low (2.8 mg/L), with only one value > 4.0 mg/L. There is no obvious spatial pattern.

Ammonia: The ammonia levels are moderate (mean 0.07 mg/L), with detectable levels (>0.05 mg/L) in all but two samples. There is no obvious pattern.

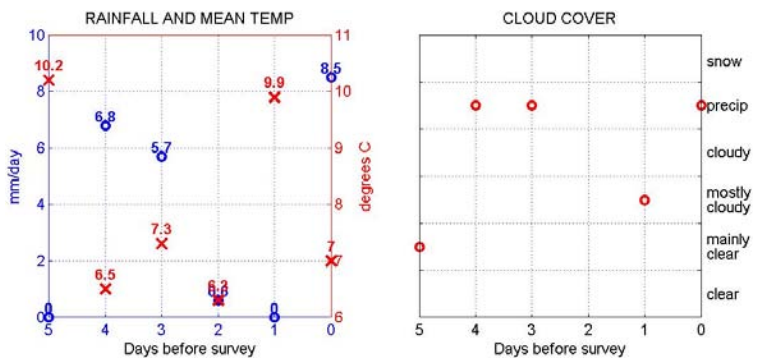
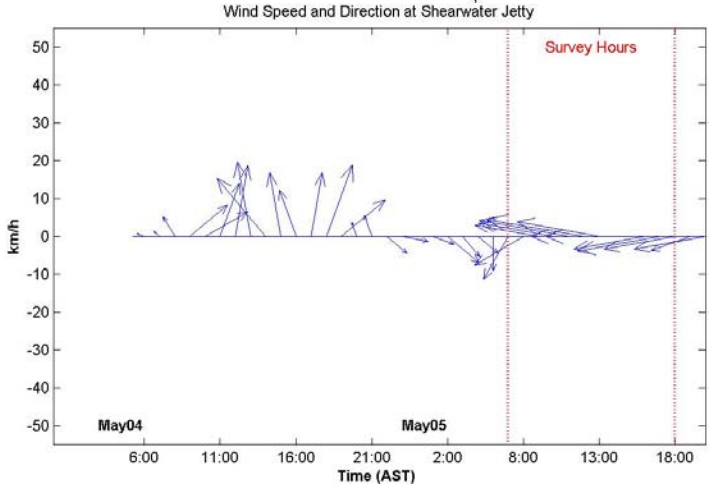
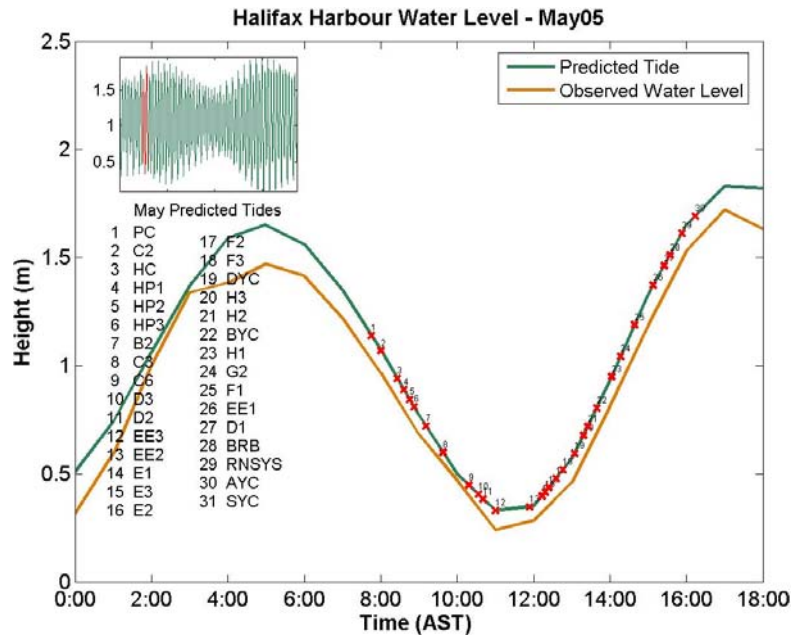
Metals: There are no guideline exceedences. Unusually, the closest metal to guideline exceedence levels is mercury with one value just at the detection limit (0.01 µg/L), 40% of the 0.025 µg/L guideline. Copper has two 1 m values at about 25% of the 2.9 µg/L guideline.

Dissolved Oxygen: The dissolved oxygen data, scaled appropriately by a factor of 1.4, indicates that the DO levels are uniformly high. The distribution is quite unusual. The surface levels are everywhere just over 11 mg/L. Nearly everywhere, including the Basin, the bottom levels are almost 10 mg/L. In the Basin there is a slight maximum at about 2 m and below about 20 m the DO is nearly constant at near 10 mg/L, with a slight minimum (9.5 mg/L) at about 35m. The exception is in the H section in the North of the Basin where both the highest (11.8 mg/L) and lowest (9.0 mg/L) oxygen values occur. This distribution is likely caused by a combination of the high photosynthetic activity near surface and the intrusion of well oxygenated dense water into the Basin. The low values in section H may be due to displaced Basin bottom water. In the Outer Harbour (B2) the levels are more uniform at intermediate values (10.5-11 mg/L). There were no guideline exceedences observed.

Yacht Clubs

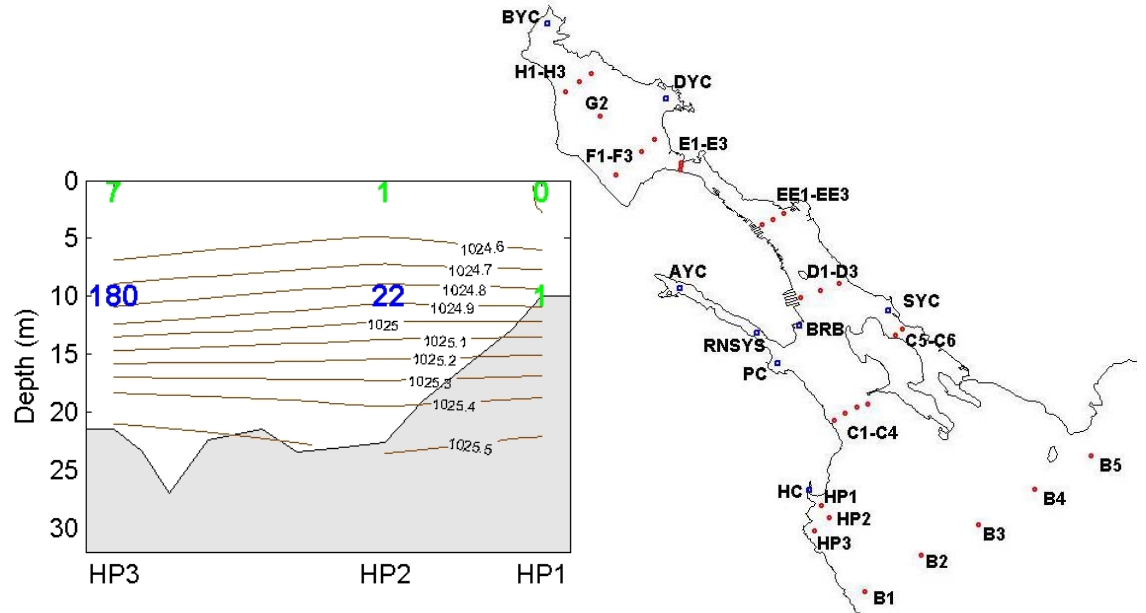
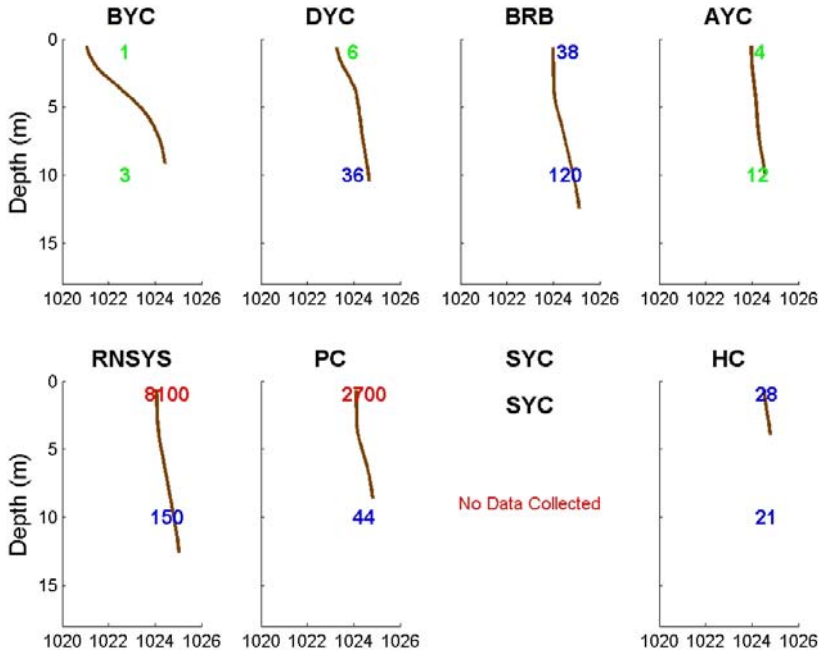


Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport

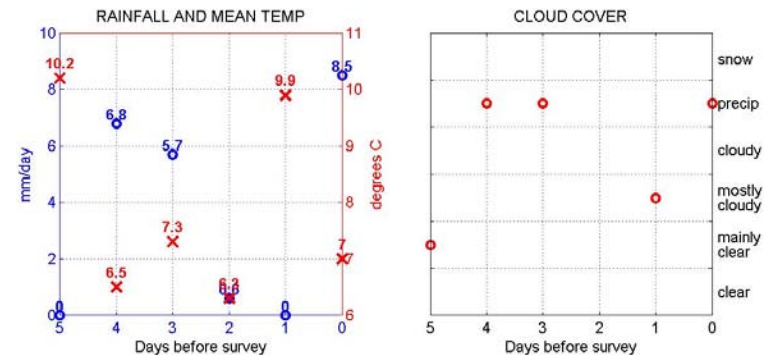
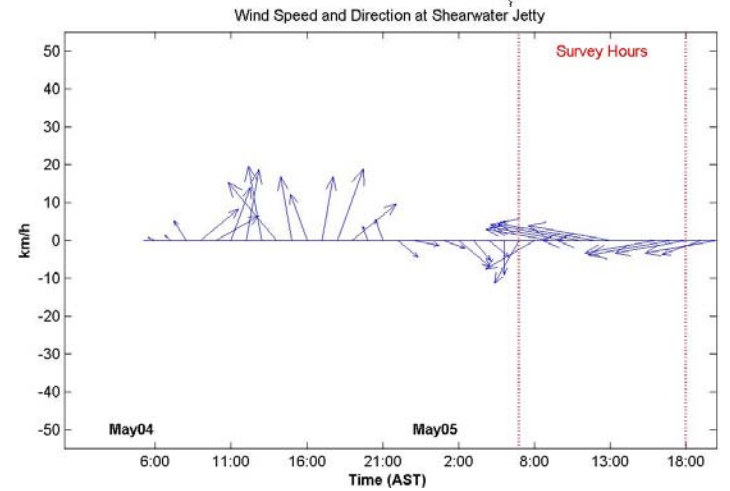
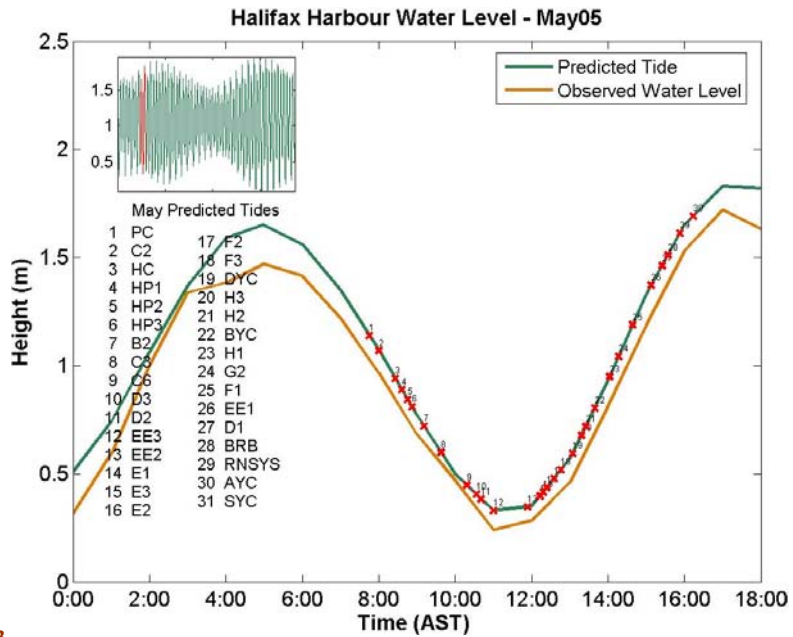


Salinity in PSU Temperature in °C

Yacht Clubs

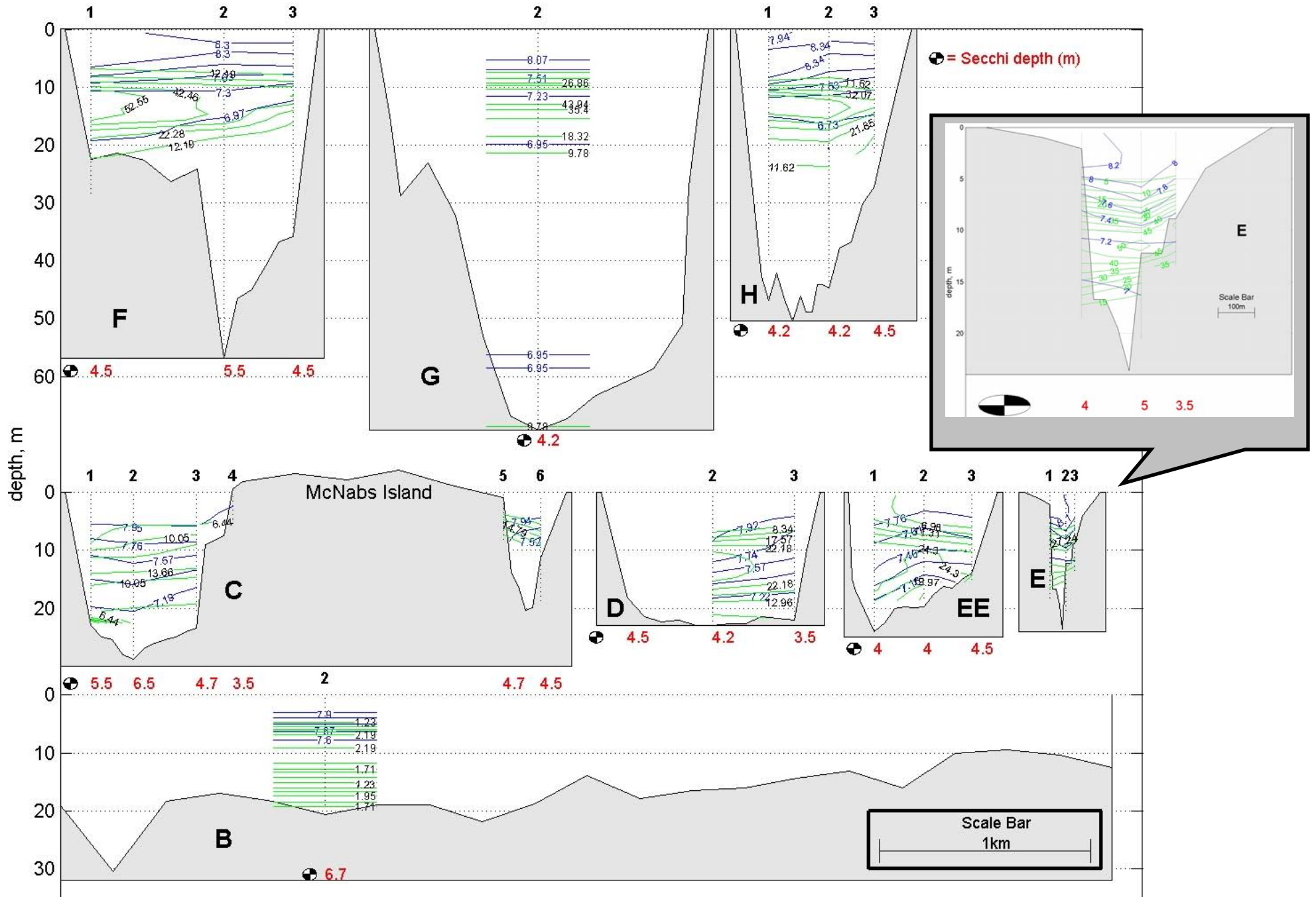


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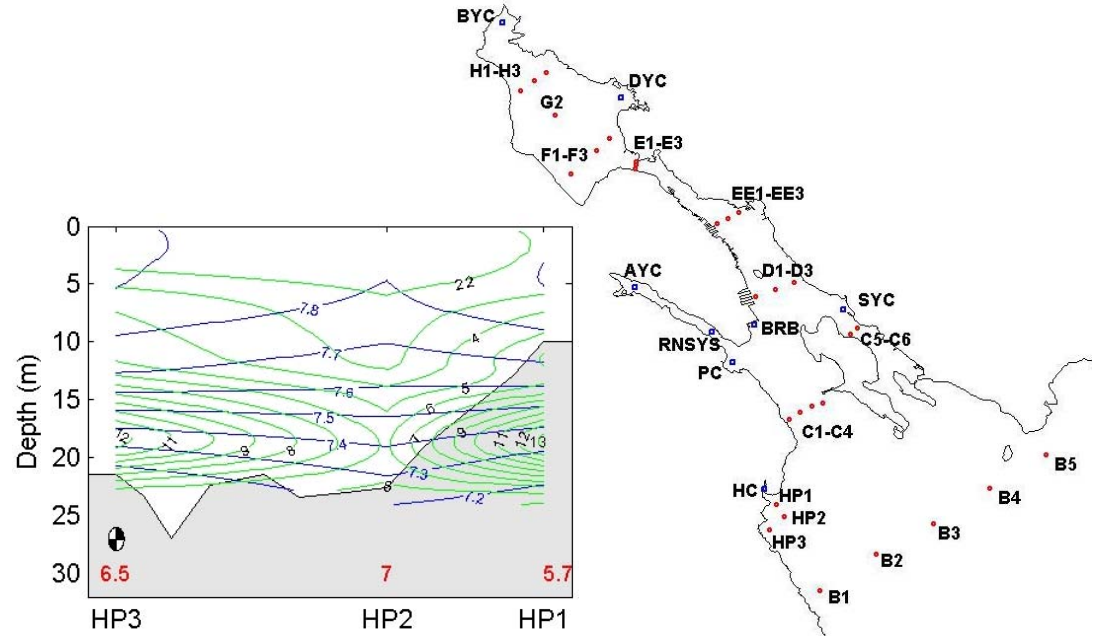
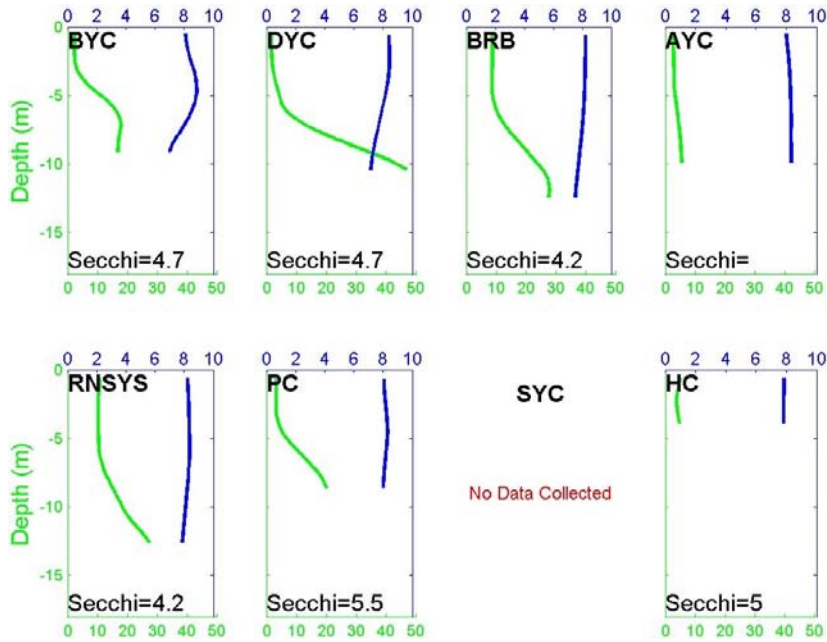


Potential Density in kg/m³

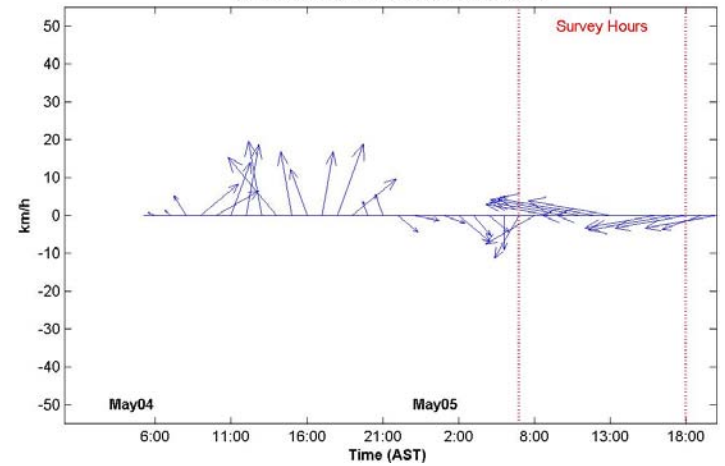
Fecal coliform: above swimming limit (200 CFU/100mL)
above shellfish limit (14 CFU/100mL)
below limits



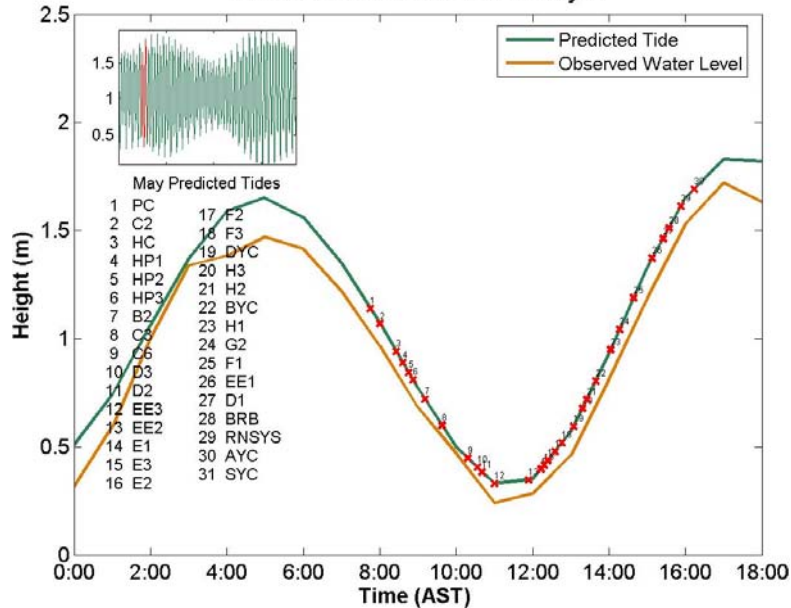
Yacht Clubs



Wind Speed and Direction at Shearwater Jetty

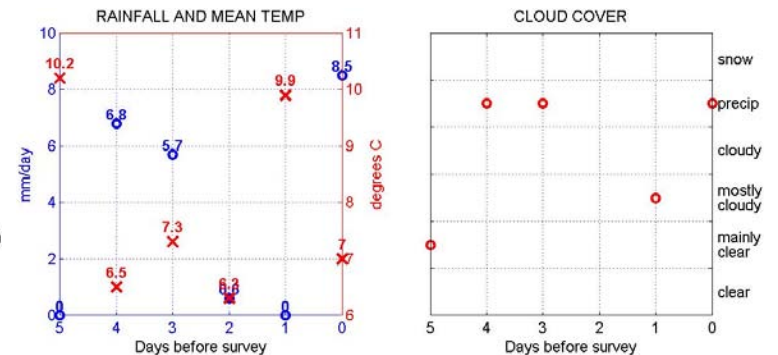


Halifax Harbour Water Level - May05



Rainfall and temperature data collected at Shearwater Autoport.

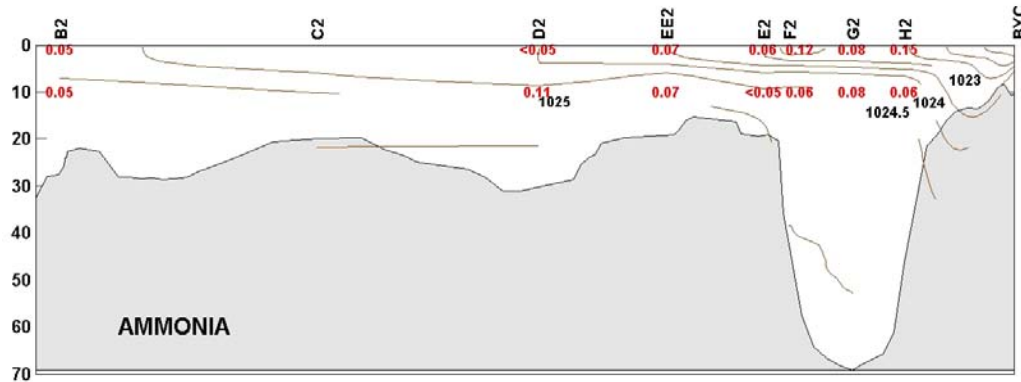
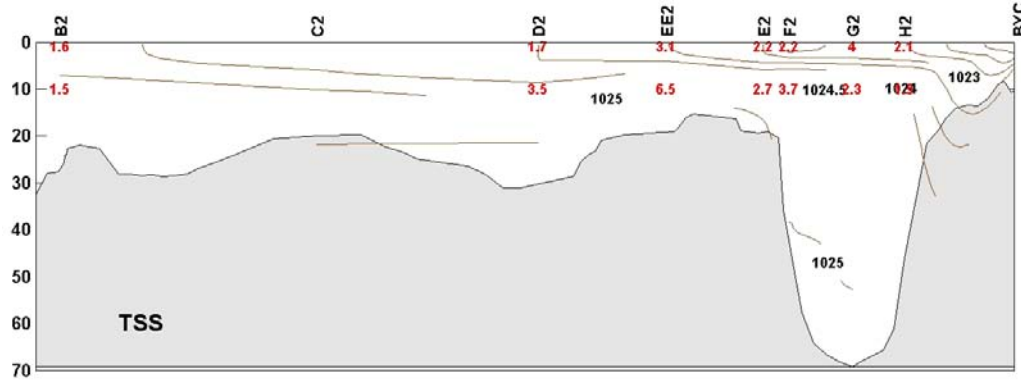
Cloud cover data collected at Shearwater Airport



DO in mg/L

Chlorophyll in mg/m³

CHEMISTRY



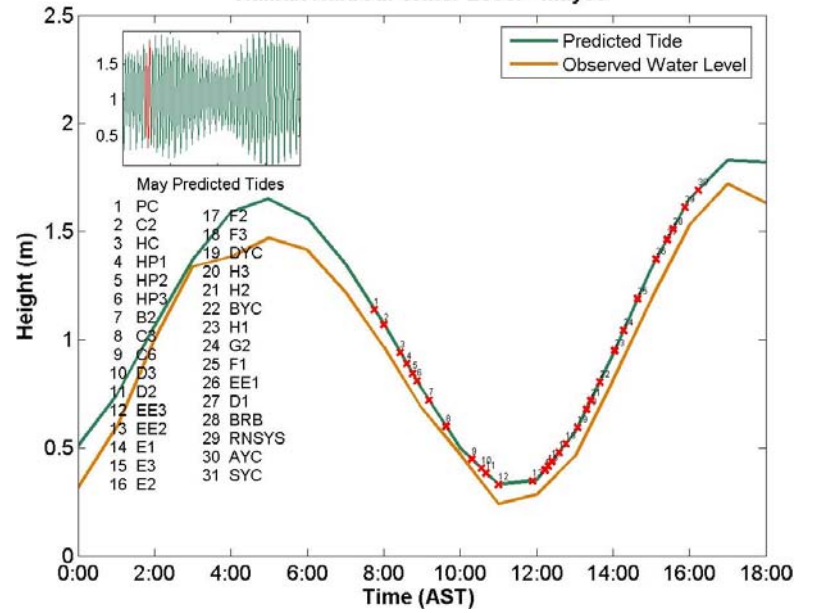
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport

Potential Density in kg/m^3

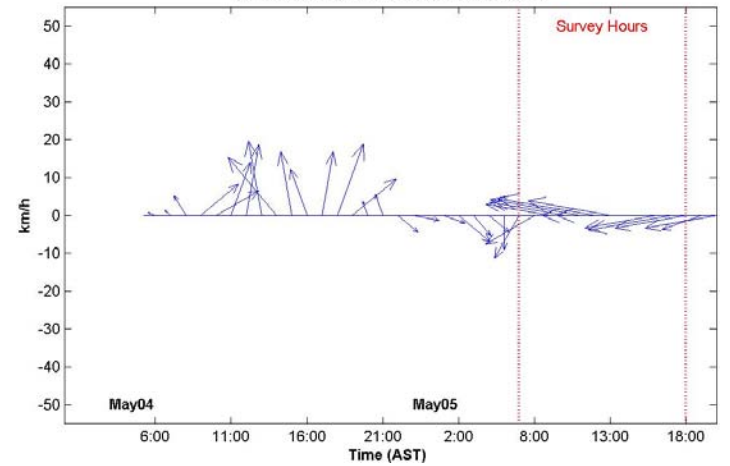
Ammonia in mg/L

TSS in mg/L

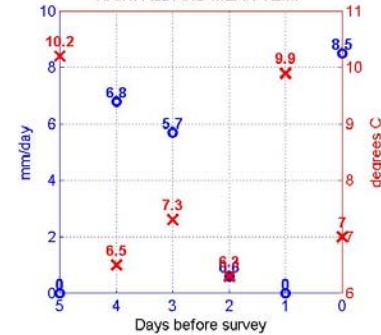
Halifax Harbour Water Level - May05



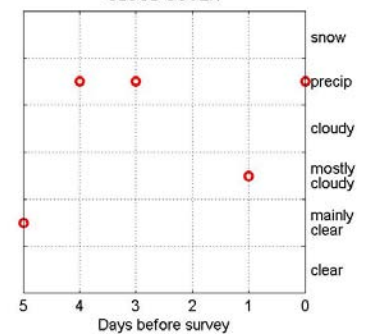
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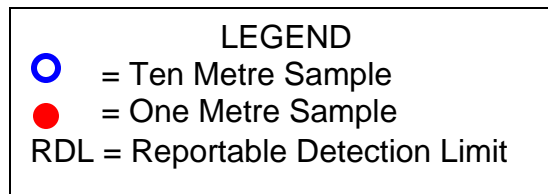
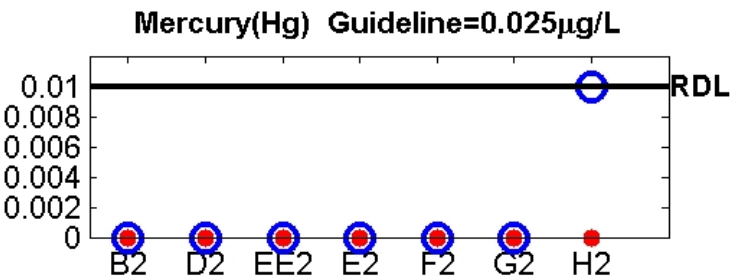
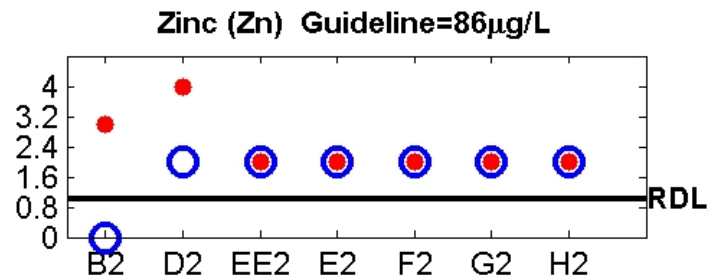
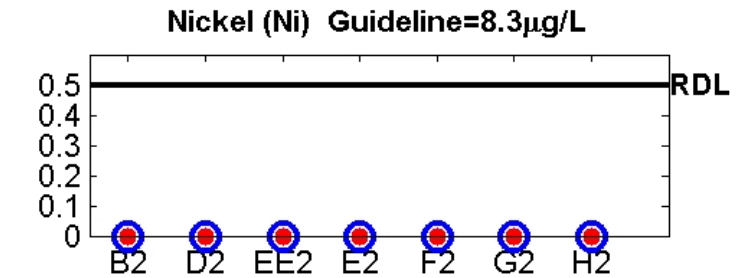
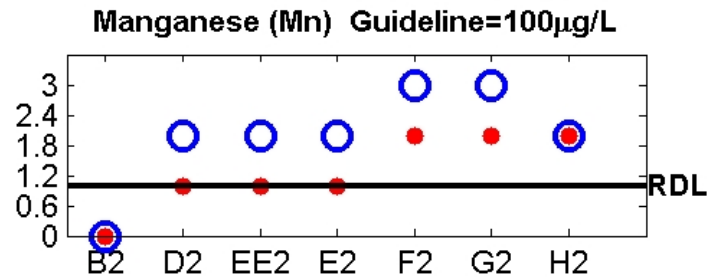
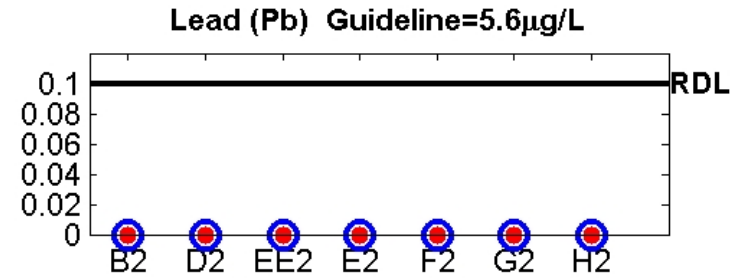
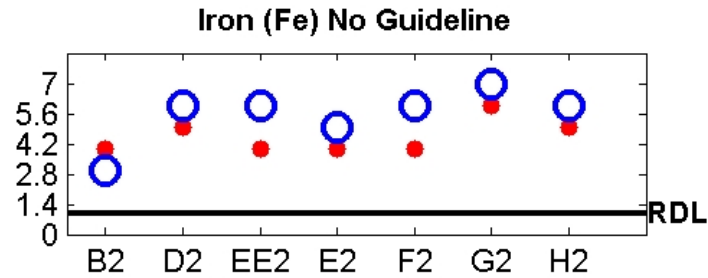
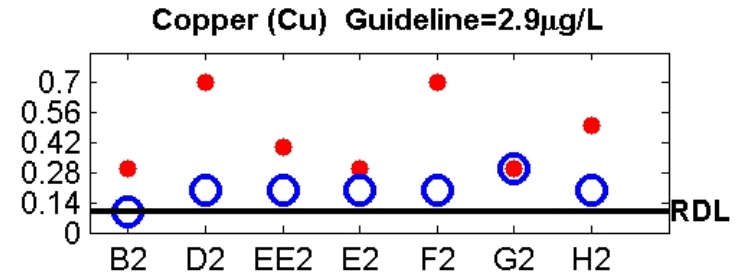
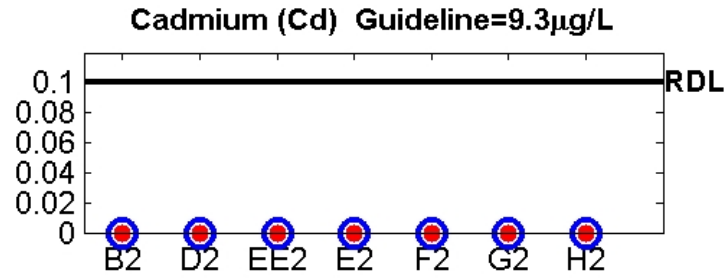


RAINFALL AND MEAN TEMP



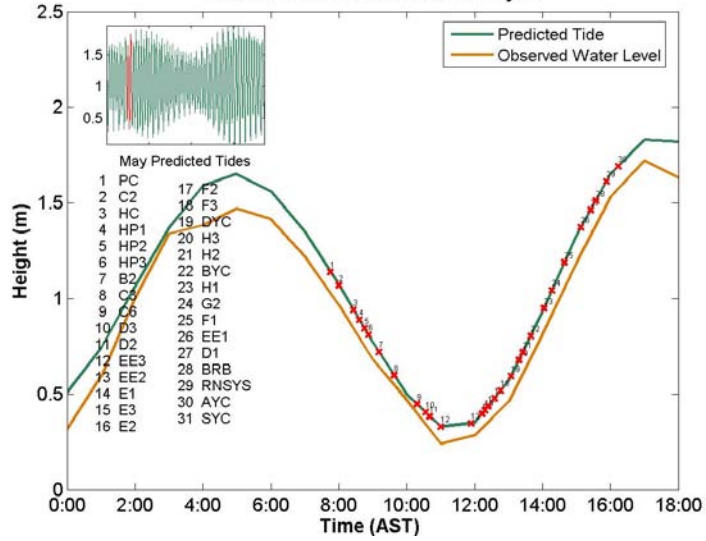
CLOUD COVER



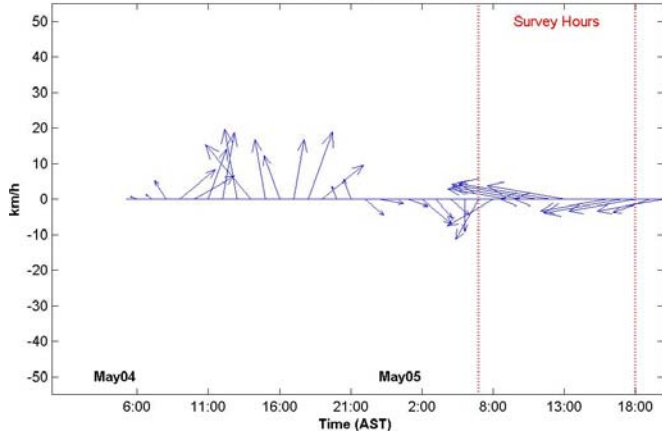


HRM Water Quality Monitoring Fecal Coliform Summary – May 5, 2009

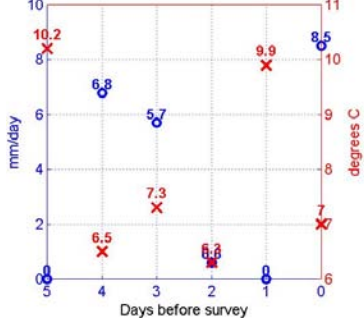
Halifax Harbour Water Level - May05



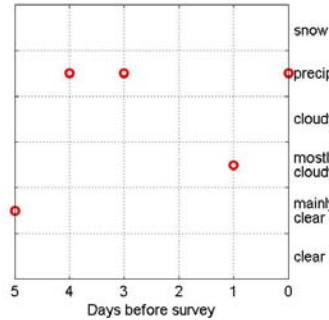
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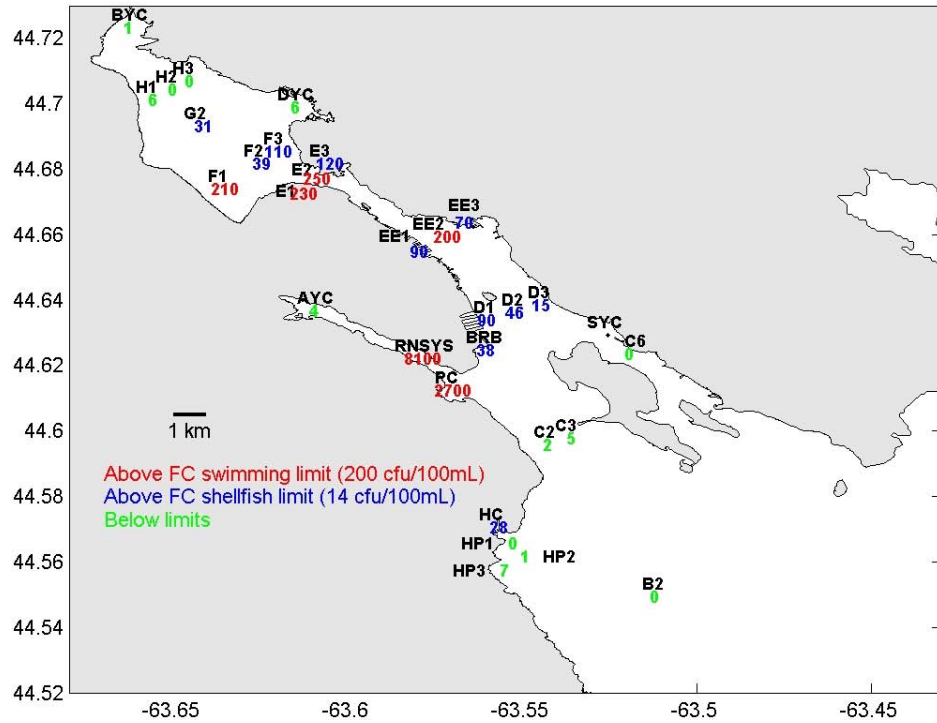
RAINFALL AND MEAN TEMP



CLOUD COVER



Fecal Coliform 1 m



Fecal Coliform 10 m

