

Halifax Harbour Water Quality Monitoring Project

Survey Summary #142

Survey Date: 06 November 2007
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report142_071106.doc
Data File: HHWQMP_data142_071106.xls

Data Return: Profile: 97%
 Bacteria: 100%
 Chemical: 100%
Overall: 99%

Sample Notes:

CTD data at E3 did not pass QAQC (pump lost prime during stabilization) the data is plotted here but has been deleted from the data file.

A CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 1606 local time.

QAQC sample at B2 the ammonia values are very high.

QA/QC samples:

Chemical Analysis		B2 - 10m	
Detectable Parameter	Units	reference sample	QA/QC
Ammonia (as N)	mg/L	<0.05	0.24
Total Suspended Solids	mg/L	1.5	3.8
Copper	ug/L	0.3	0.3
Iron	ug/L	7	10

Fecal Coliform (CFU/100ml)

Site	AYC-10m	DYC-1m	C6-1m	B2-10m
Reference	120	61	1200	1
QA/QC	140	93	1600	0

Comments:

General: The commissioning of the Halifax STP has begun. This will proceed in a stepwise manner, periodic starts and stops are anticipated. This will result in changing/unpredictable sewage loading conditions until the plant is fully functional, planned for Spring 2008. The Duffus St. pumping station was brought on line the

day before the survey. This eliminates the temporary diversion to the Fairview Cove CSO and the long-term, regular discharge through the Duffus St. outfall.

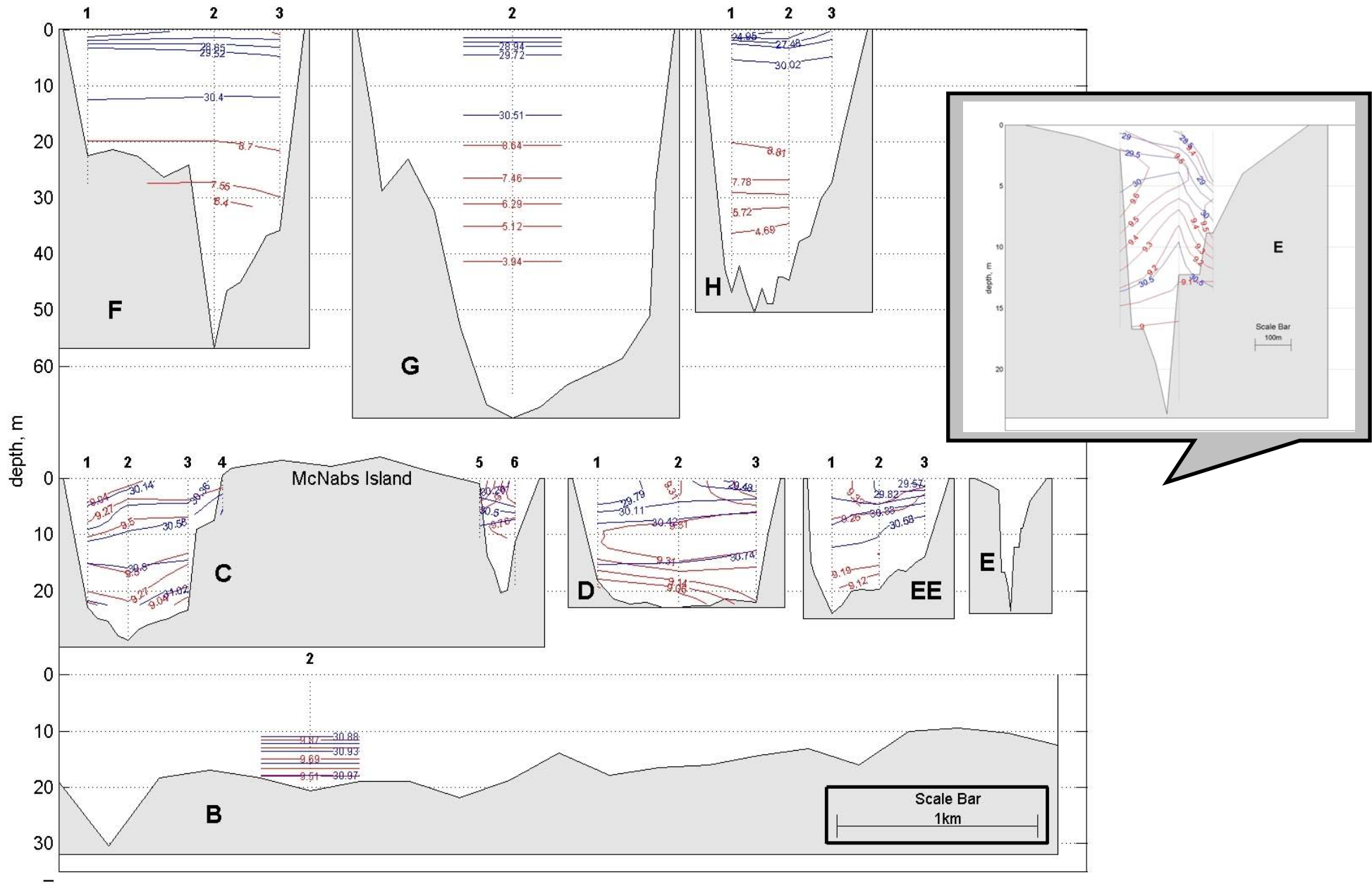
The relatively wet weather has continued. The effect is most evident in the fresher surface water in the northern half of the Basin. The influence of major stream inflows is visually obvious. Dark brown water is noted at HP2 (MacIntosh Run) and brown/reddish water is noted at BYC, and the H section (Sackville River). These last observations are accompanied by the lowest clarity (Secchi) of the survey. Not atypically, and in spite of the Duffus St. pumping station operation, there is a lens of fresher surface water in southern Basin/Narrows. The surface water has cooled overall and the top 20m is at 9-10° C throughout the Harbour. The fecal coliform levels are not extraordinarily high, but values greater than 200 cfu/100 mL are very widespread, occurring in virtually all 1m samples (except B2) and in most of the 10m samples in the Inner Harbour, Northwest Arm and Southern Basin. This may be due in part to the changes in the sewage system as well as a period of relatively high mixing, high source strengths, (CSO's and potential treatment plant bypasses) and reduced decay (cloudy days and cooler water).

Fluorescence: Fluorescence has increased significantly, indicative of a phytoplankton bloom. The levels in the northern and eastern Basin are very high, 60+ mg/m³ at a depth of 5-6 m. The profile maximums drop to about 20 mg/m³ in the Inner Harbour and drop to 2.6 mg/m³, in the Outer Harbour.

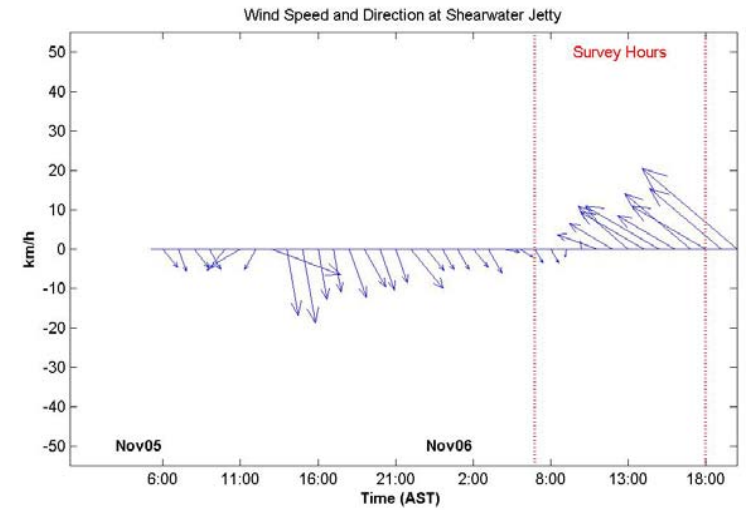
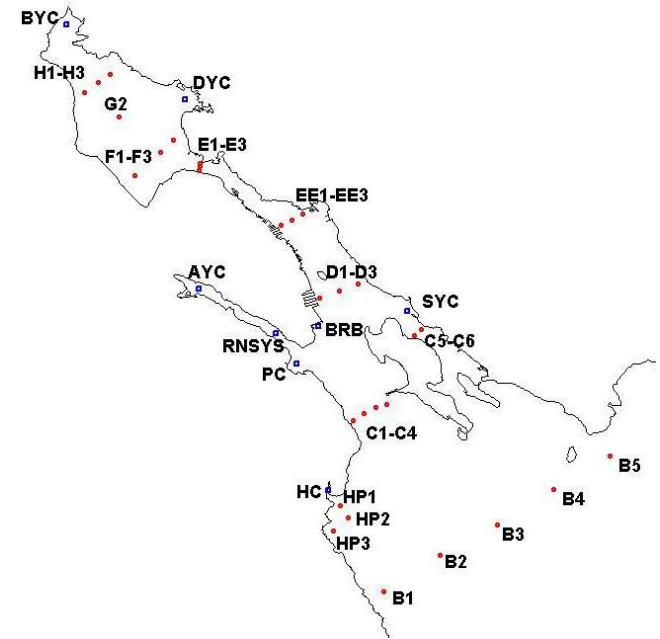
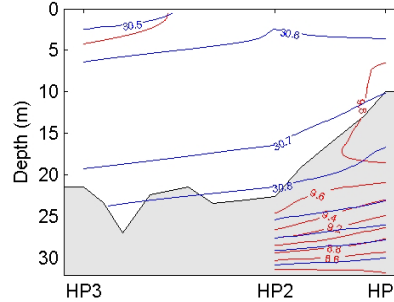
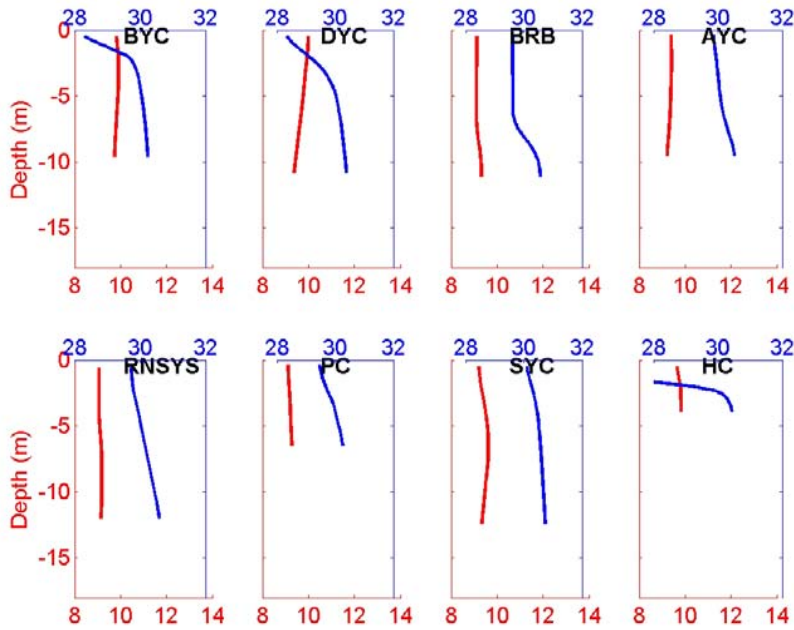
TSS: TSS values are relatively typical (a mean of approximately 3.8 mg/L). The highest values are in the centre of the Basin and the lowest in the Outer Harbour.

Ammonia: The ammonia values are elevated everywhere with only one value in the Outer Harbour below the 0.05 mg/L detection limit. Values average about 0.10 mg/L or twice the more typical values that are near the detection limit.

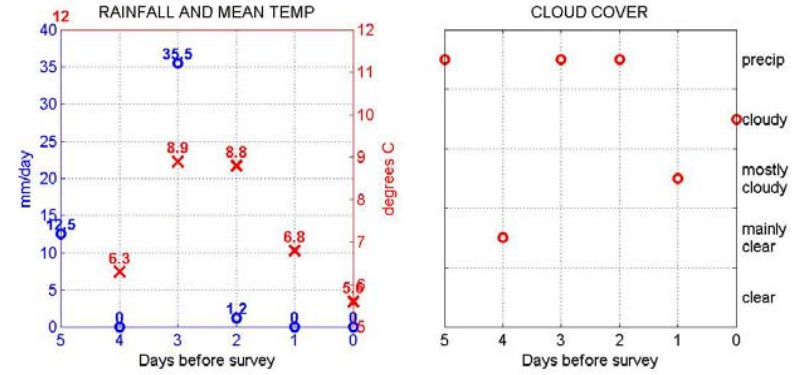
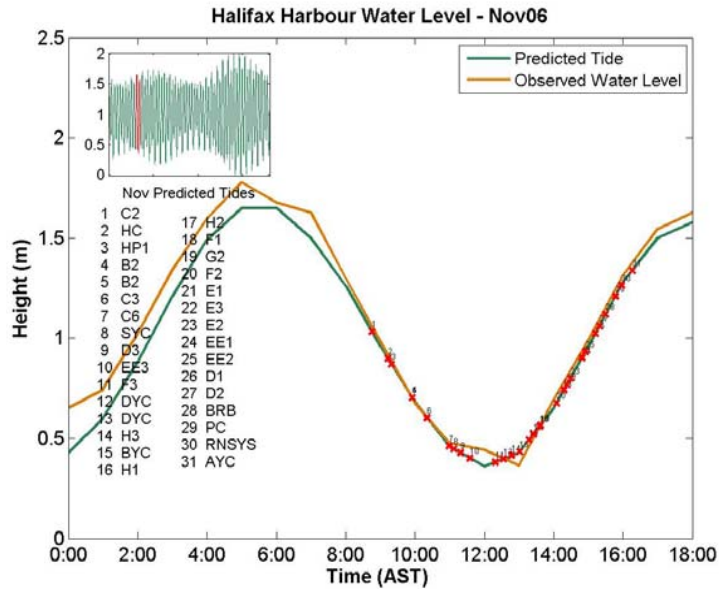
Dissolved Oxygen: The DO levels have increased since the previous survey. The surface values in the Basin are at about 10 mg/L but drop rapidly with depth to around 7 mg/L at approximately 20m. In the Inner Harbour, the DO levels are more uniform (slightly higher at surface) and are generally between 8 and 9 mg/L. In the Outer Harbour (HP, B2) DO levels are generally between 9.0 and 9.5, only slightly lower at >30 m). The only levels below the use specific guidelines are in the Basin bottom water (below 20 m) with a minimum of about 1.8 mg/L. The DO data is not ground-truthed, however this data was obtained with a recently factory calibrated instrument. (see DO discussion in Quarterly Reports). LOBO DO = 8.3 mg/L, CTD DO = 9.1 mg/L



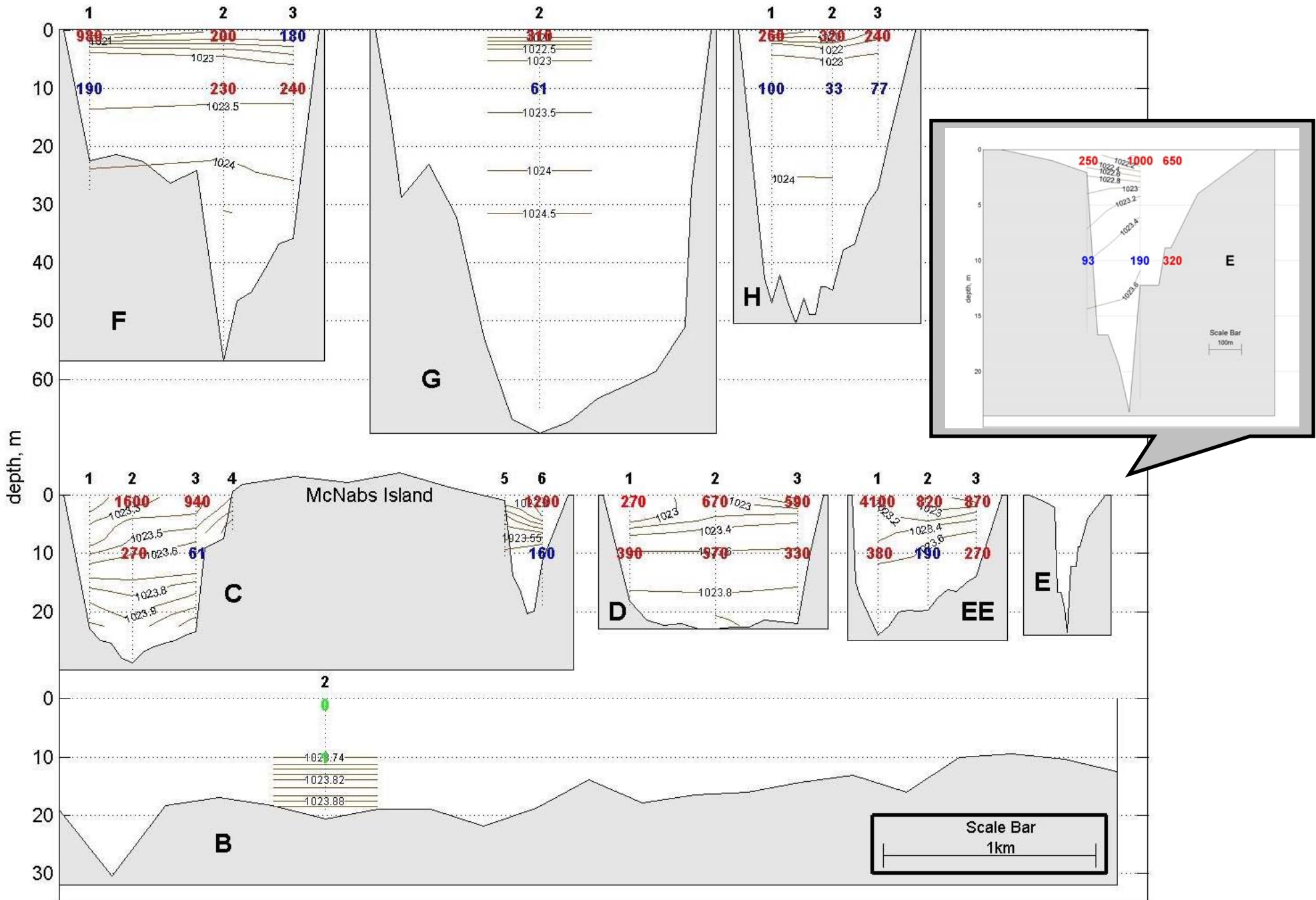
Yacht Clubs



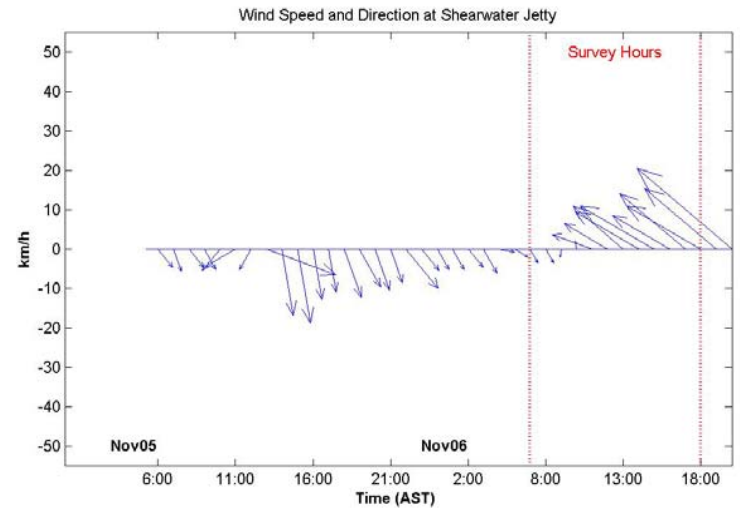
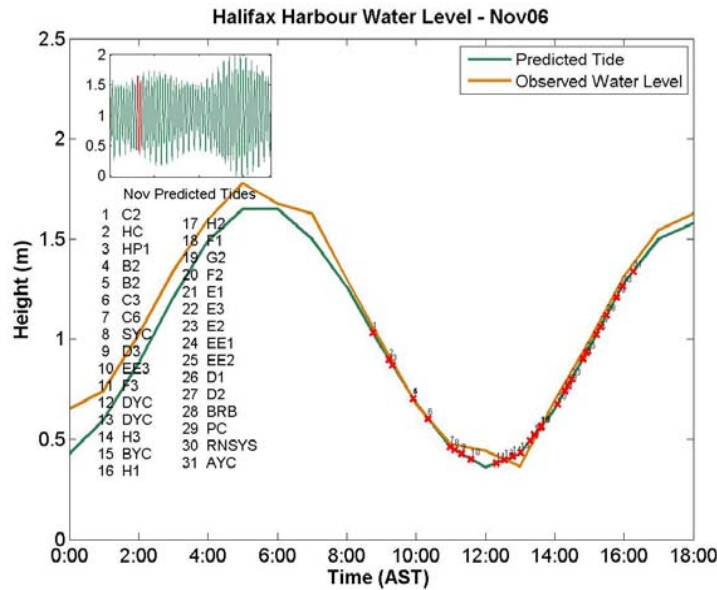
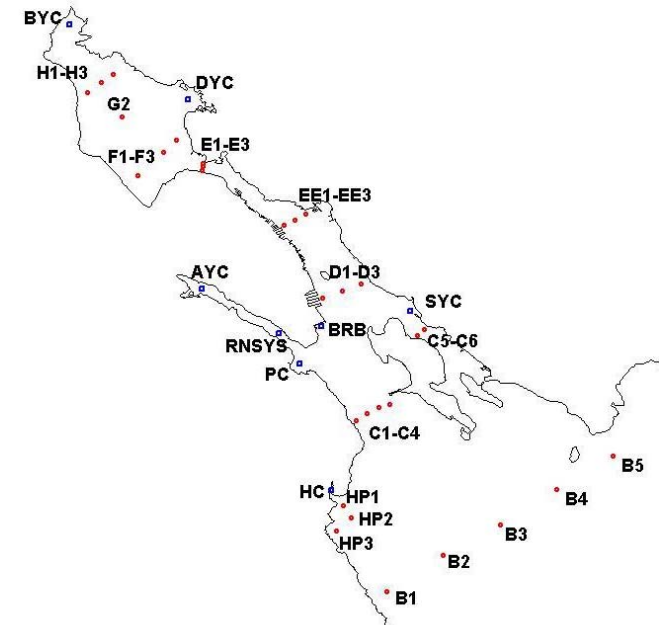
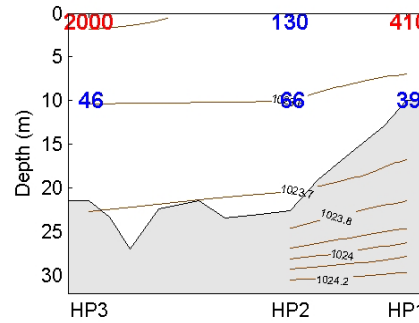
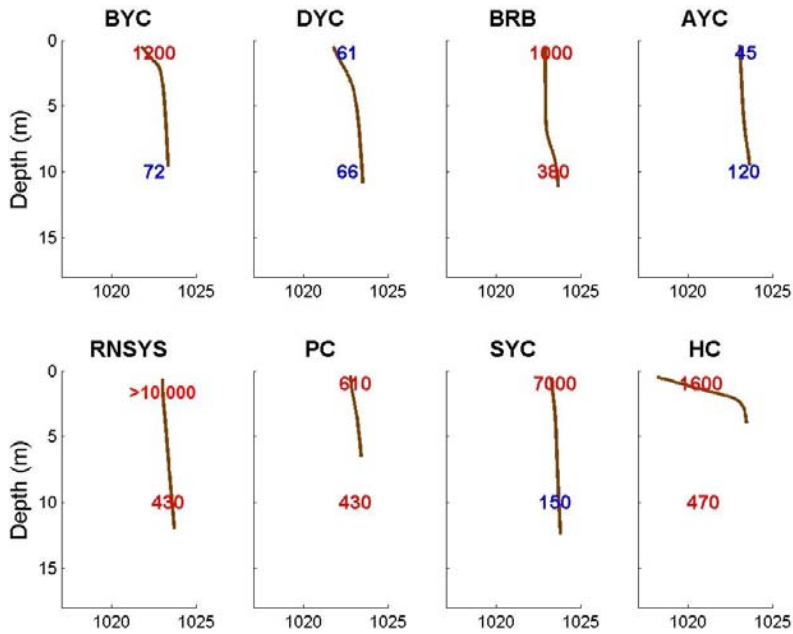
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



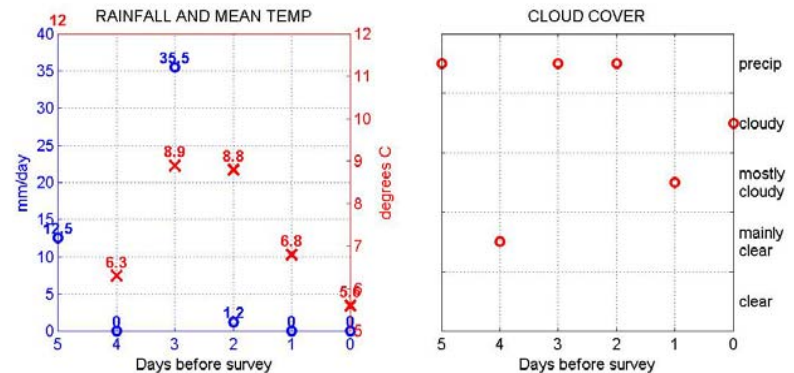
Salinity in PSU Temperature in °C



Yacht Clubs



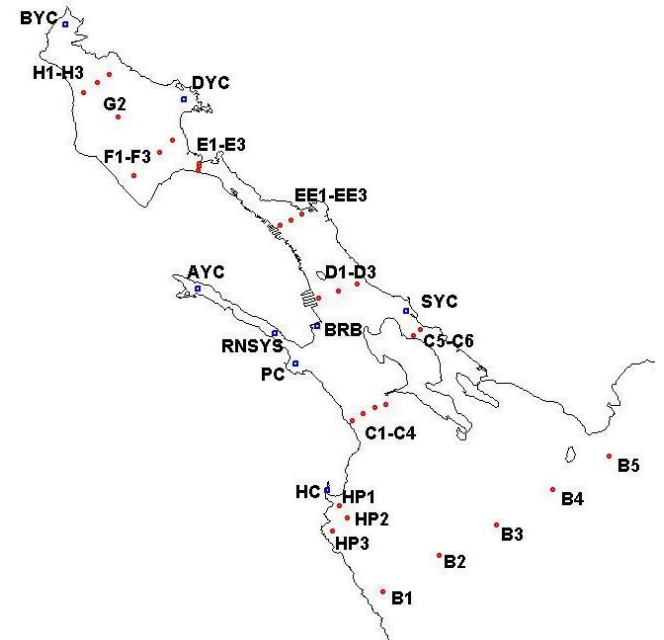
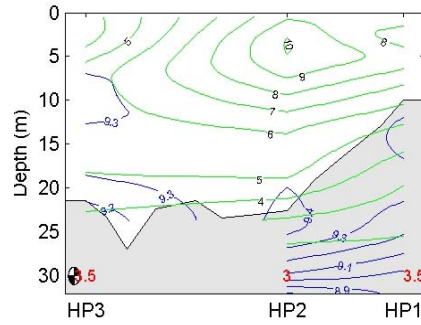
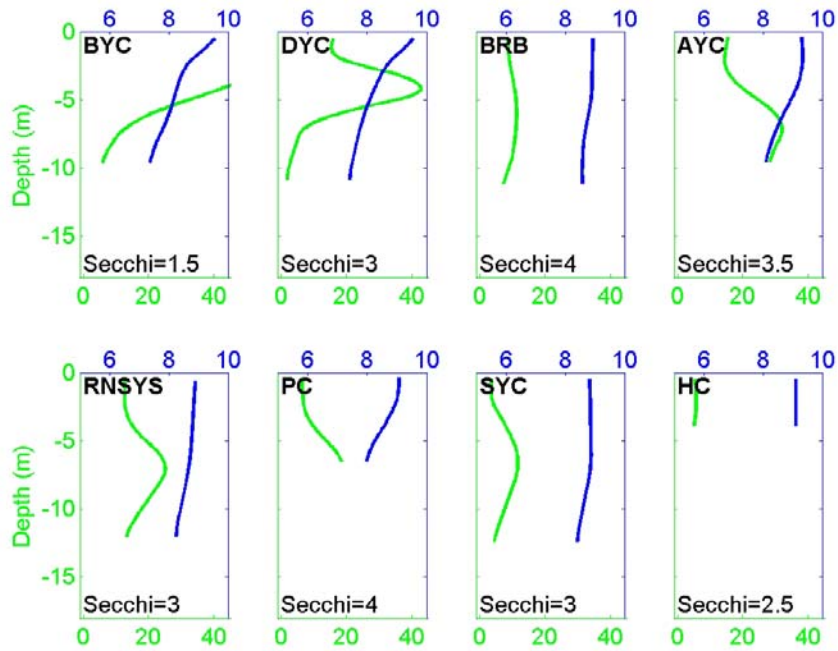
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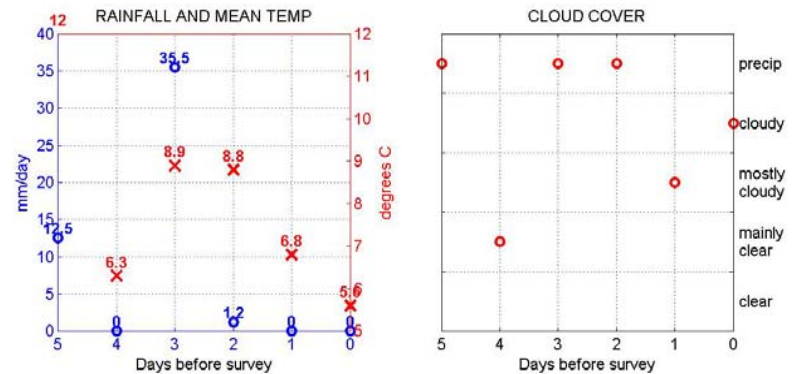
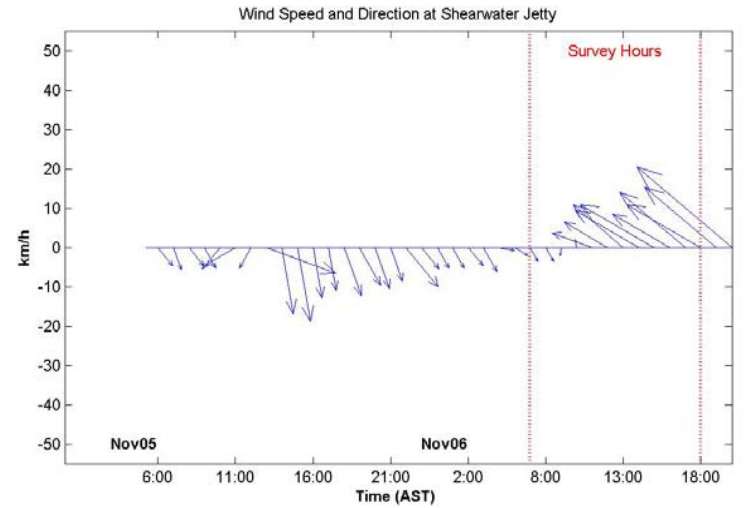
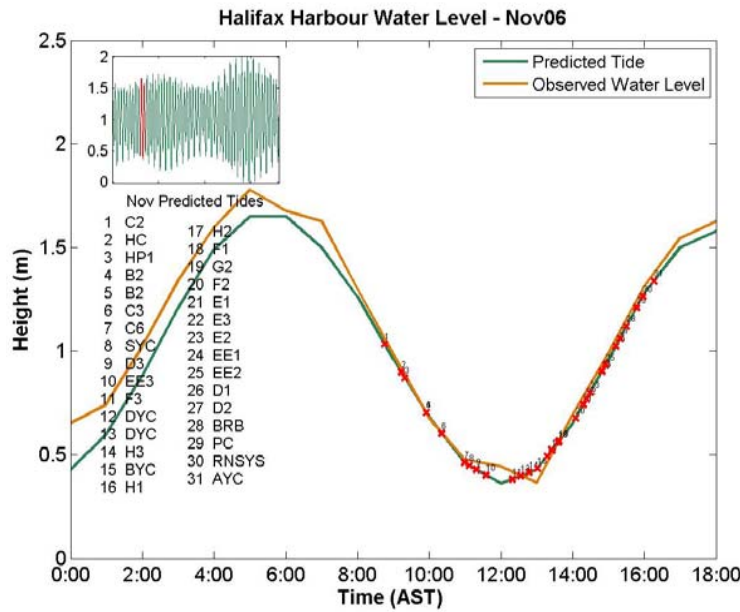
Potential Density in kg/m^3

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

Yacht Clubs

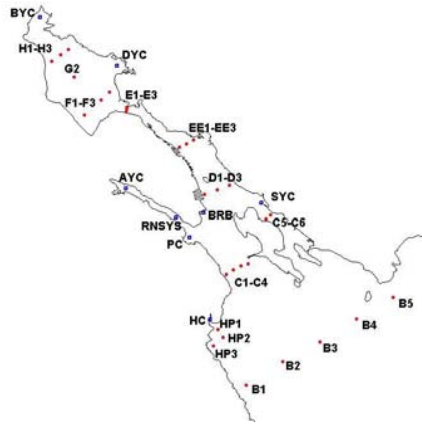
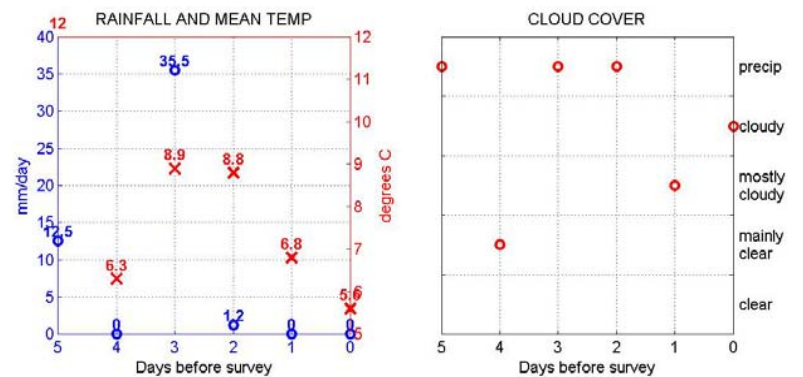
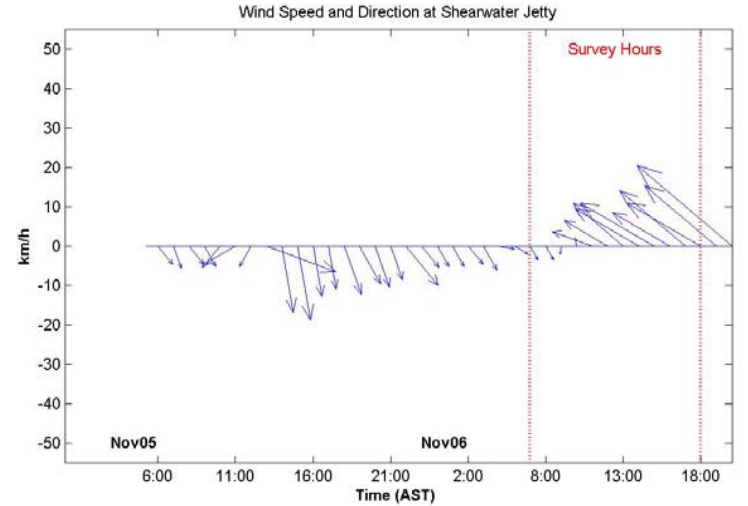
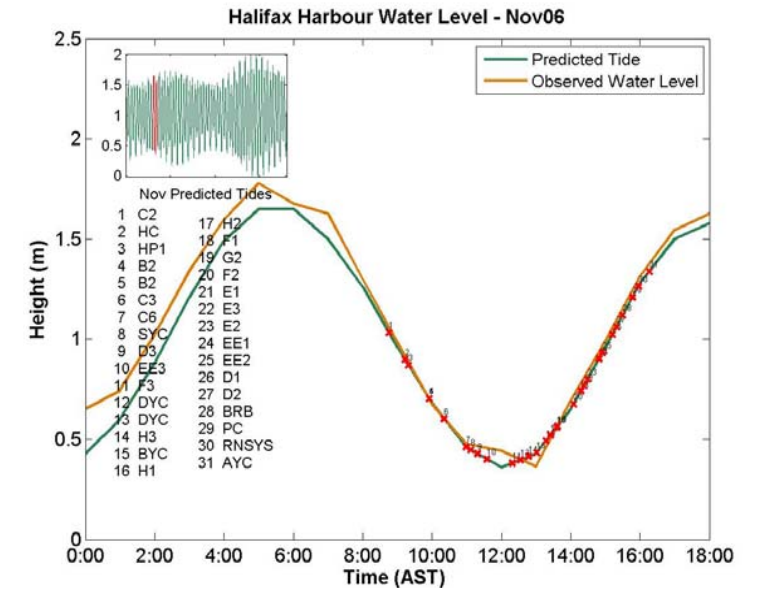
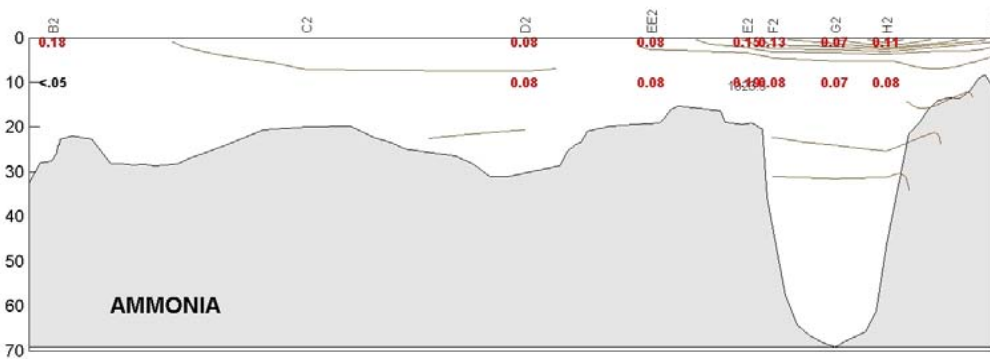
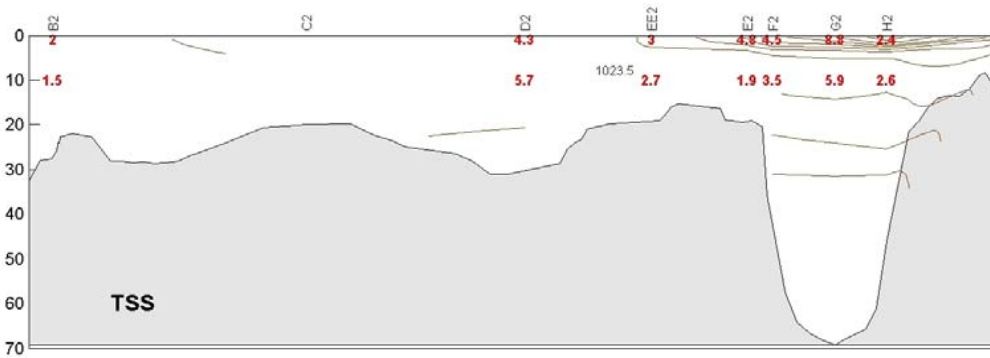


Rainfall and temperature data collected at Shearwater Autoport.
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DO in mg/L

Chlorophyll in mg/m³



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Potential Density in kg/m^3

Ammonia in mg/L

TSS in mg/L

