

Halifax Harbour Water Quality Monitoring Project Survey Summary #151

Survey Date: 11 March 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report151_080311.doc
Data File: HHWQMP_data151_080311.xls

Data Return:
 Chemical: 100%
 Bacteria: 87%
 Profile: 80%
Overall: 87%

Sample Notes:

A Dalhousie Univ. sediment sampling team was on board. The normal sampling program was truncated due to time constraints. Stations H1 and the Eastern Passage sites (SYC, C5 and C6) were not sampled.

Station C2 was not sampled due to exclusion zone around a crippled ship.

The DO sensor on the CTD was recently serviced and is experiencing stability problems (see notes in data file). The other sensors are unaffected. Six DO profiles (BRB, C4, HP1, E1, F1 and H3) did not pass quality control and though plotted here, were deleted from the data file. The bottom 5 m of the B2 DO profile was deleted. The rest of the DO data is retained but should be considered of low quality and interpreted with circumspection. The measured DO values are also very low compared to auxiliary measurements (see data file cover sheet) and should be scaled by a factor of 1.4.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 16:08 local time.

QA/QC samples:

Chemical Analysis		B2 – 10m	
		Reference Sample	QA/QC
Detectable Parameter	Units		
Ammonia (as N)	mg/L	<0.05	<0.05
Total Suspended Solids	mg/L	3	6.6
Copper	ug/L	1.5	0.3
Iron	ug/L	9	7
Manganese	ug/L	1	<1
Zinc	ug/L	6	<1

Fecal Coliform (CFU/100ml)

Site	D3-10m	HC-1m	BRB-1m	B2-10m
Reference	18	380	290	3
QA/QC	22	200	310	6

Comments:

General: A significant rainfall and potential melt-water input a few days before the survey have left the harbour quite stratified with a strong freshwater signature throughout. The freshest water is in the Southern Basin and Narrows. The uniform hydrographic conditions and the high dissolved oxygen in the Basin bottom water, as well as the existence of dense bottom water in the rest of the harbour suggest a recent intrusion. The commissioning of the Halifax sewage treatment plant is continuing. The sub-sewershed connections have been completed but “debugging” of the treatment process, including disinfection, is ongoing. Overall the bacteria levels are quite low. The only values above swimming limits on the Halifax side are at the site nearest the STP outfall (EE1). On the Dartmouth side there are relatively high values near the ferry terminal (EE3) and D3. Anomalously there are relatively high values at C3 (450 cfu/100 mL) and B2 (82).

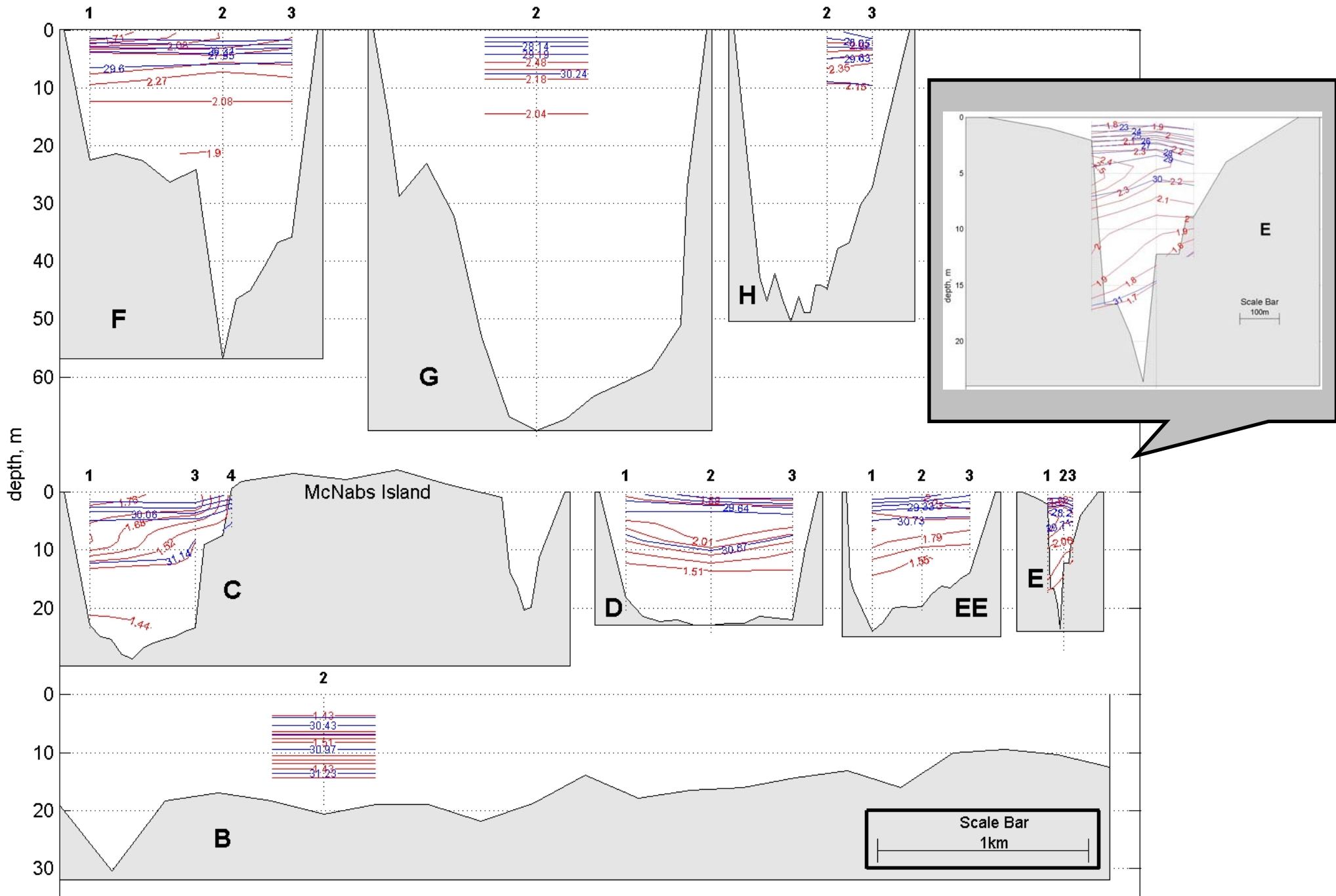
Fluorescence: The spring bloom continues. In the north-eastern part of the Basin (BYC and H3) levels are as high as 65 mg/m³ in the near surface. The max levels decrease and occur deeper in the water column further out the harbour, until in the Outer Harbour (B2) a the maximum of about 3 mg/m³ occurs at about 10m.

TSS: TSS values are relatively low (mean 4.0 mg/L). The highest values (about 6 mg/L) are in the 1 m samples in the northern Basin. This corresponds to visible brown/red colour observed throughout the Basin but particularly at H3.

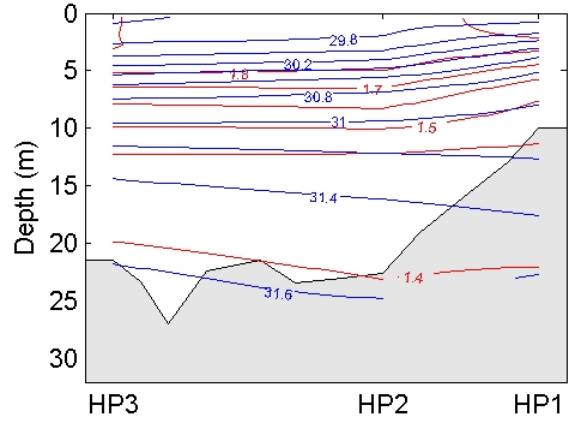
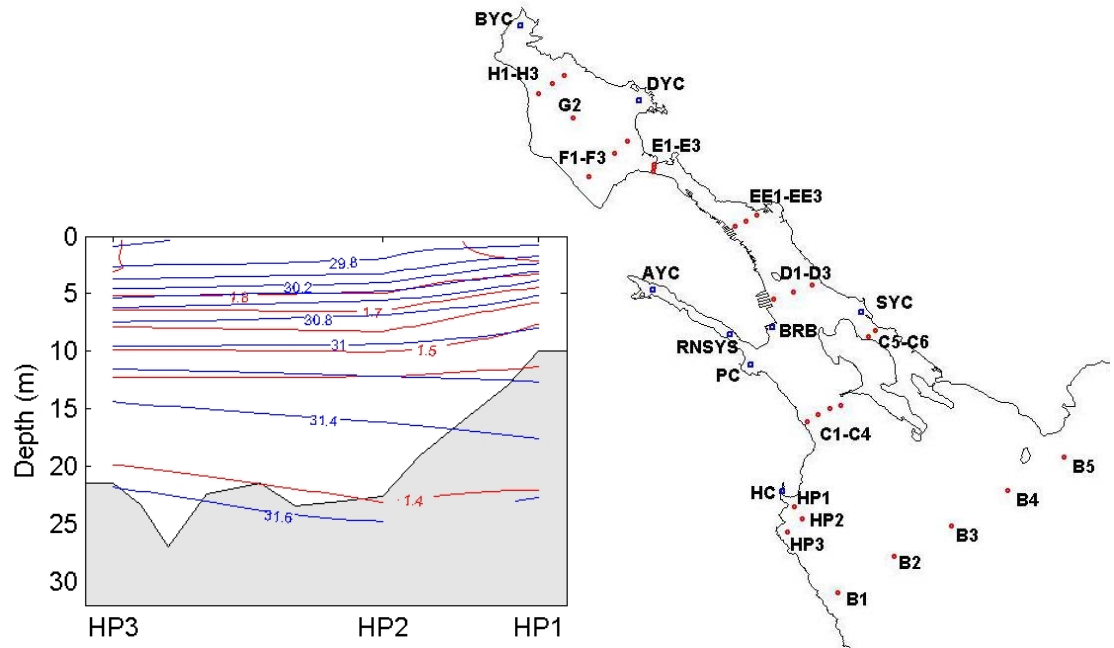
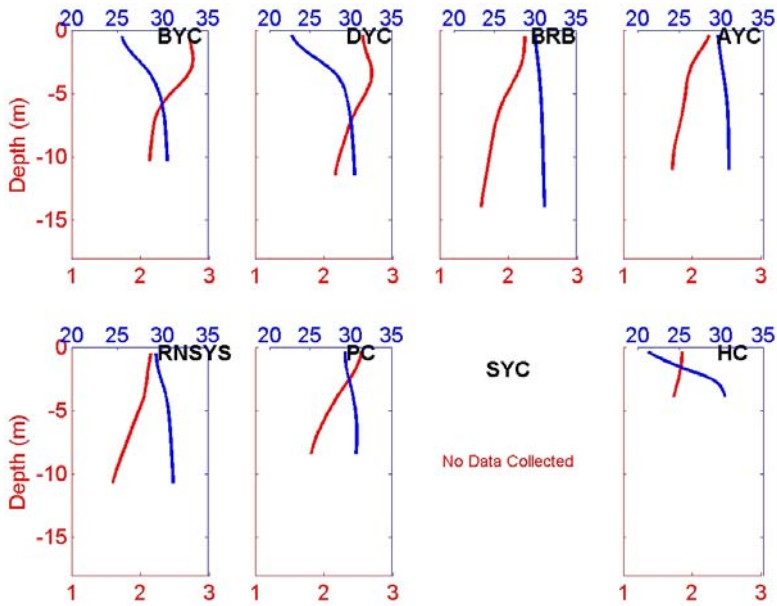
Ammonia: The ammonia concentrations are very low with only two of fourteen samples having levels slightly above the detection limit (0.05 mg/L).

Metals: There are no guideline exceedences. Notably, there are relatively high (below guidelines) concentrations of Iron, Lead and, Manganese in the 1 m samples in the Inner Harbour and Basin.

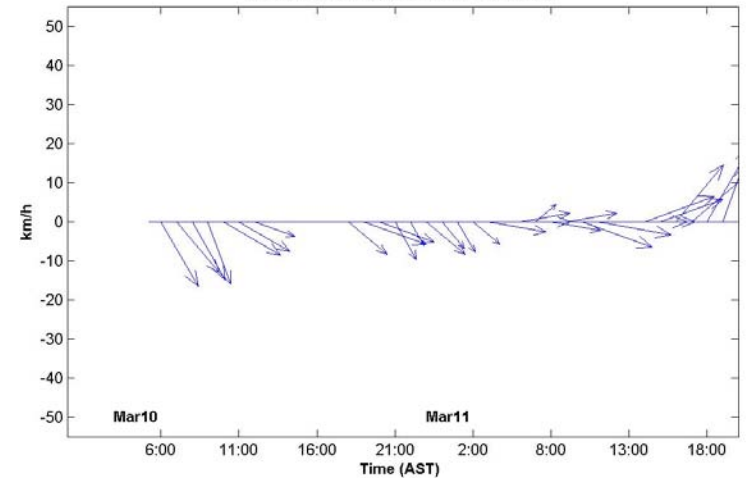
Dissolved Oxygen: The dissolved oxygen is high everywhere with surface values of about 11.0 mg/L. The profile data is questionable (see sample notes) but when scaled appropriately indicates well oxygenated water everywhere including the bottom of Bedford Basin where the levels are unusually in excess of 9 mg/L. There are no guideline exceedences anywhere.



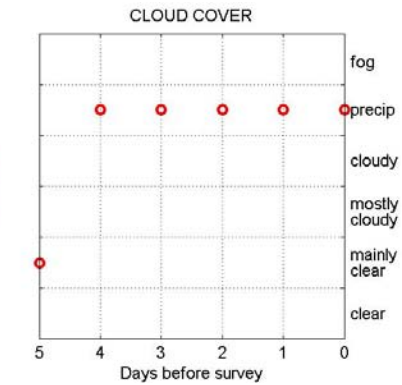
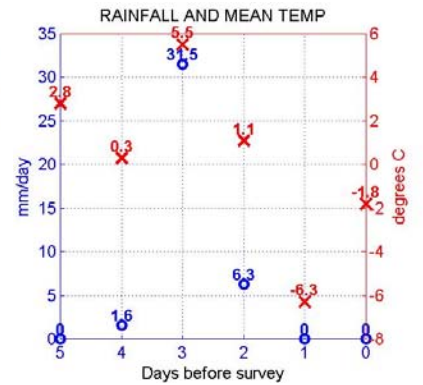
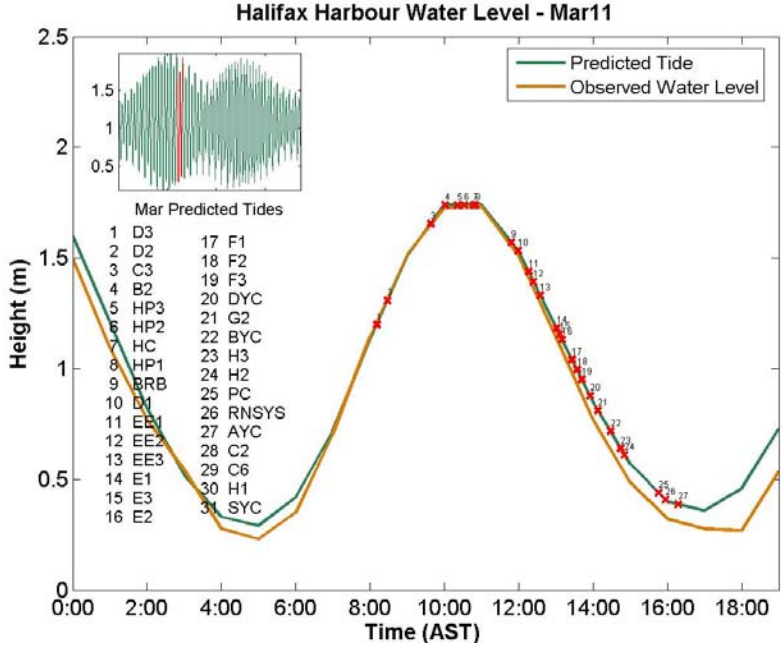
Yacht Clubs



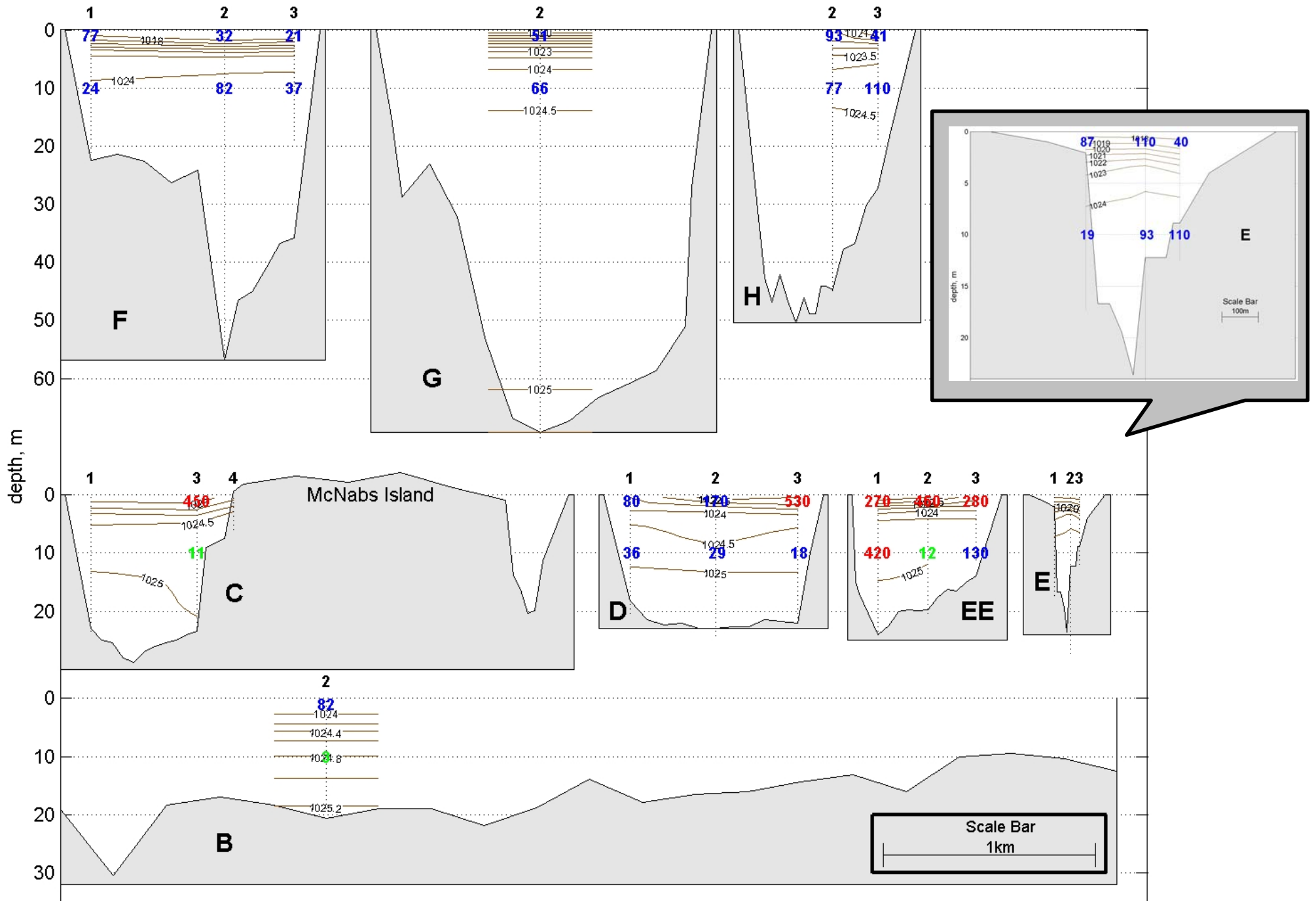
Wind Speed and Direction at Shearwater Jetty



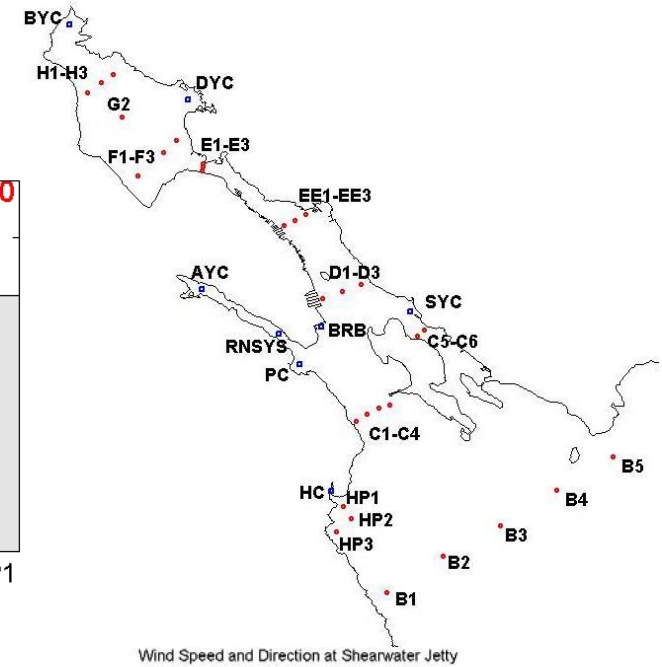
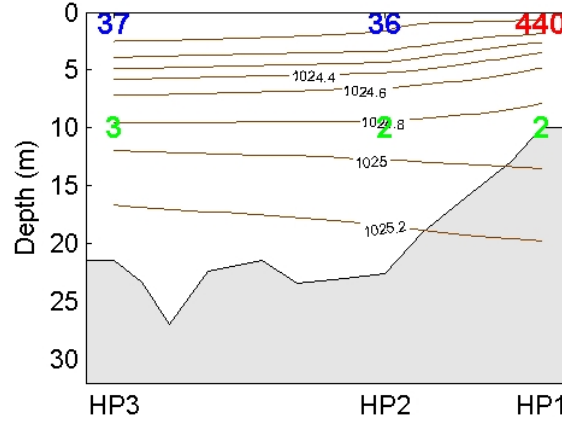
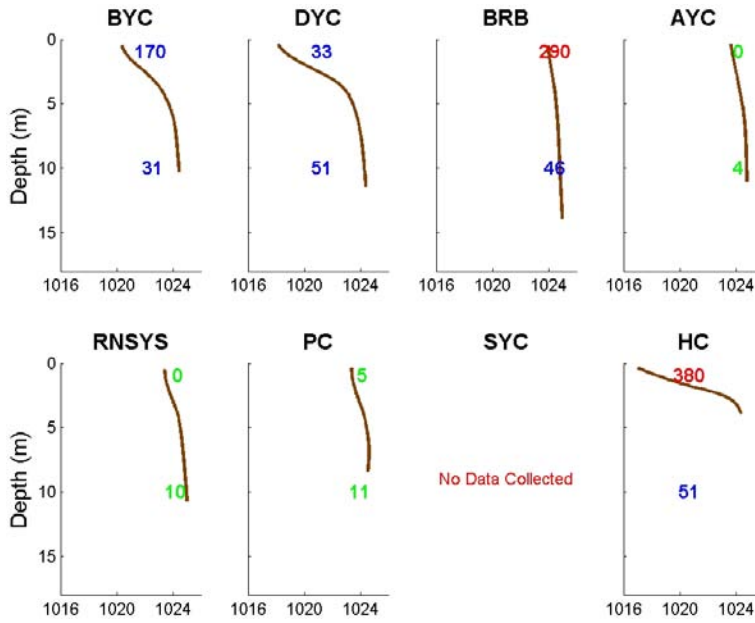
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



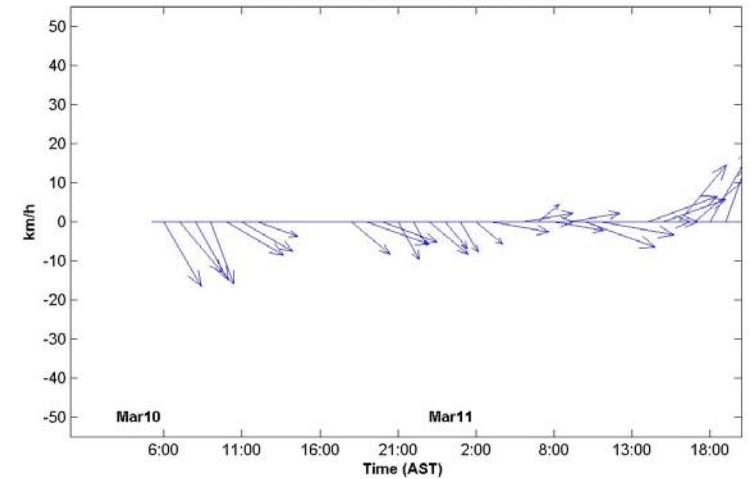
Salinity in PSU Temperature in °C



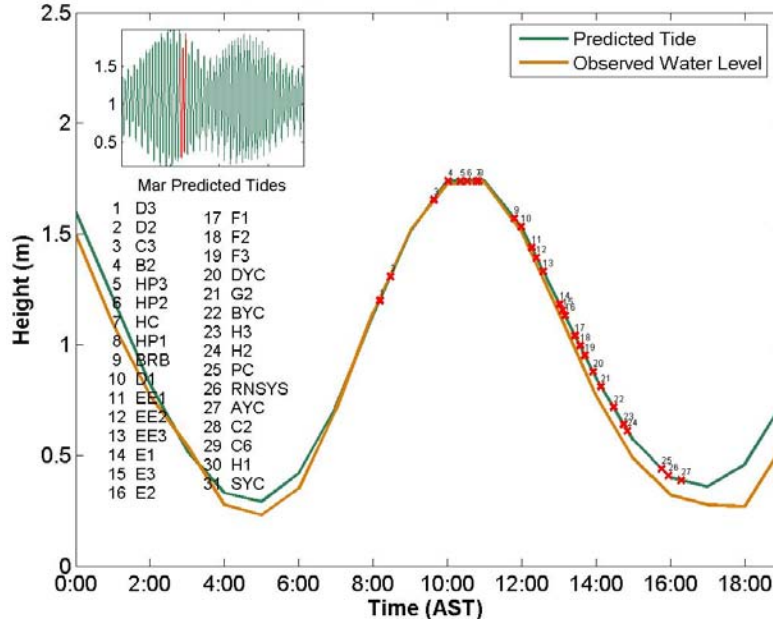
Yacht Clubs



Wind Speed and Direction at Shearwater Jetty



Halifax Harbour Water Level - Mar11

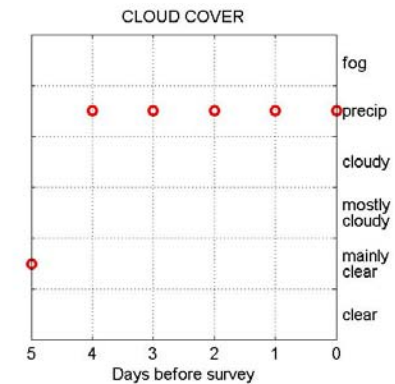
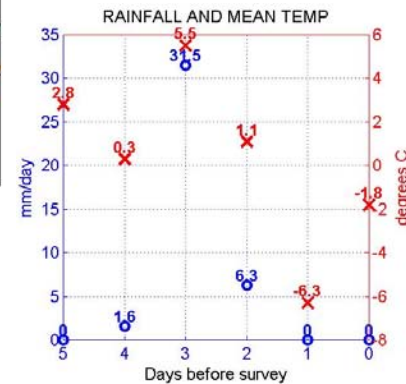


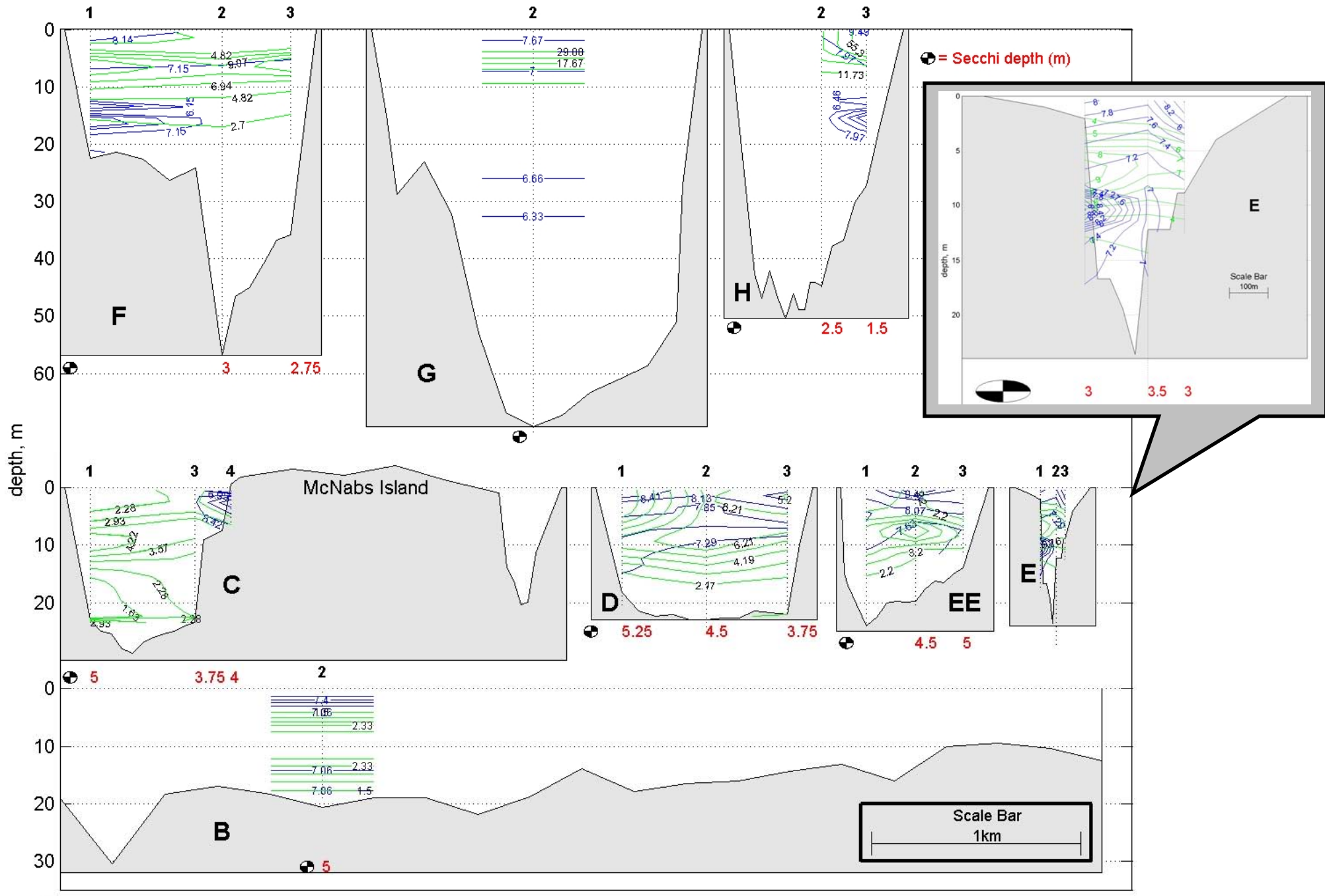
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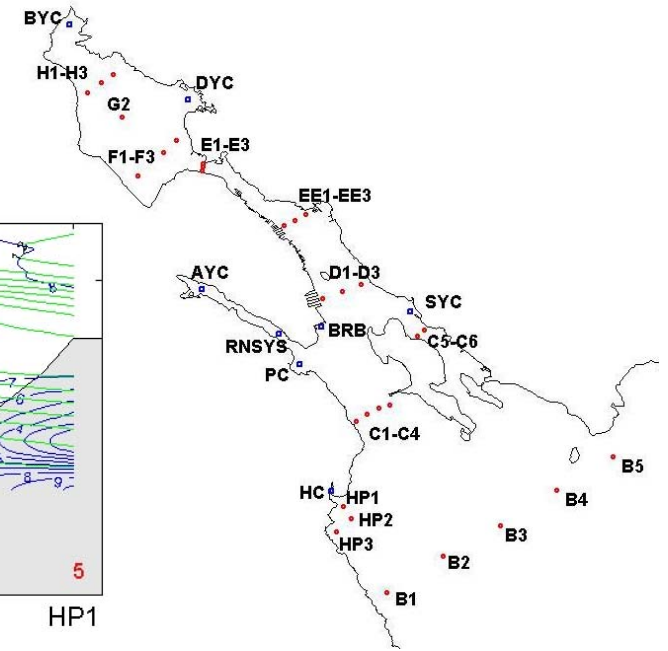
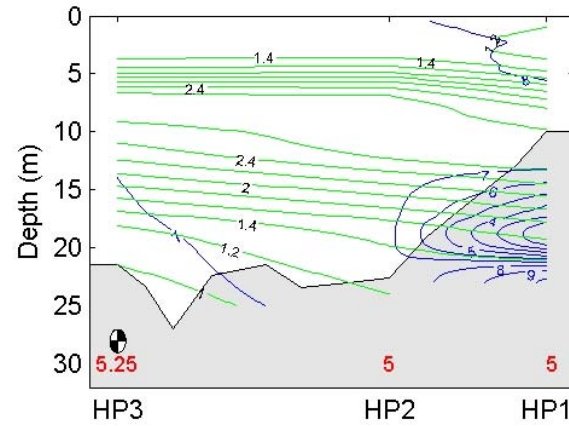
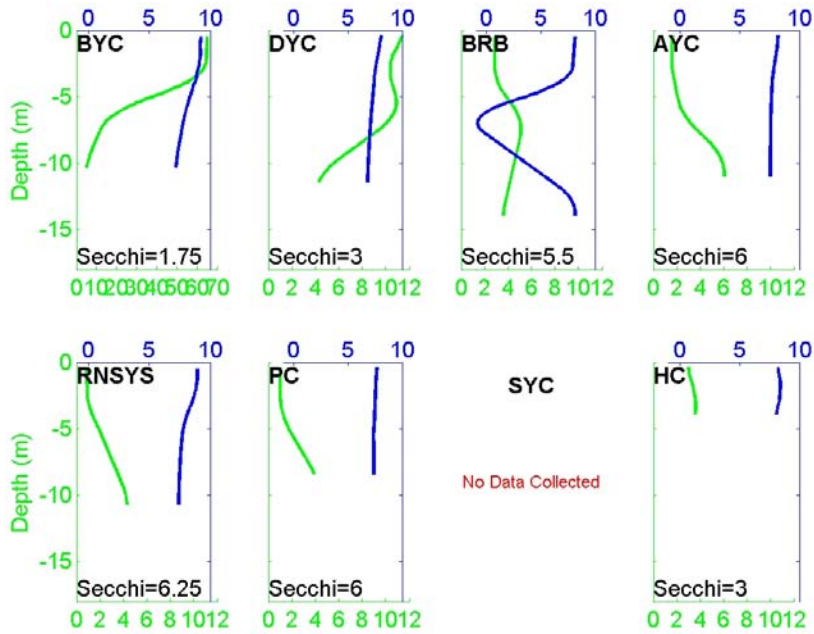
Potential Density in kg/m^3

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

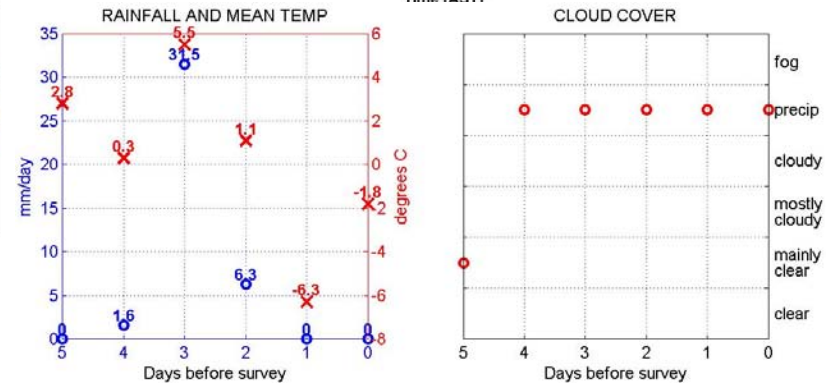
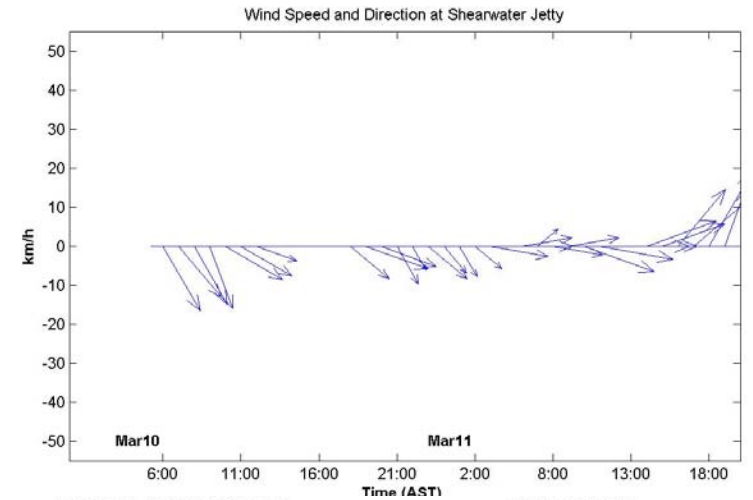
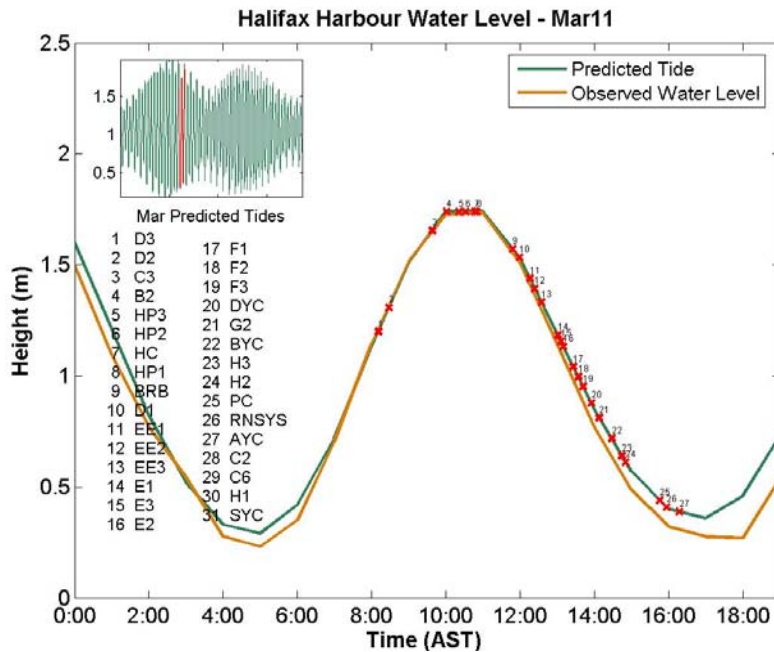




Yacht Clubs



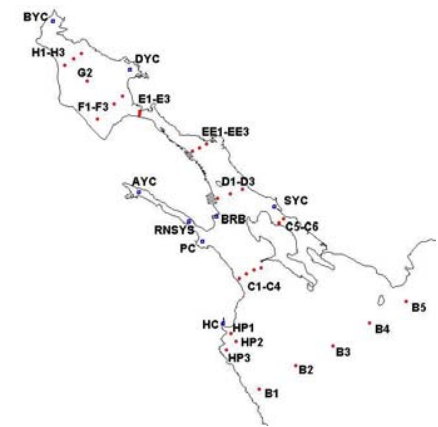
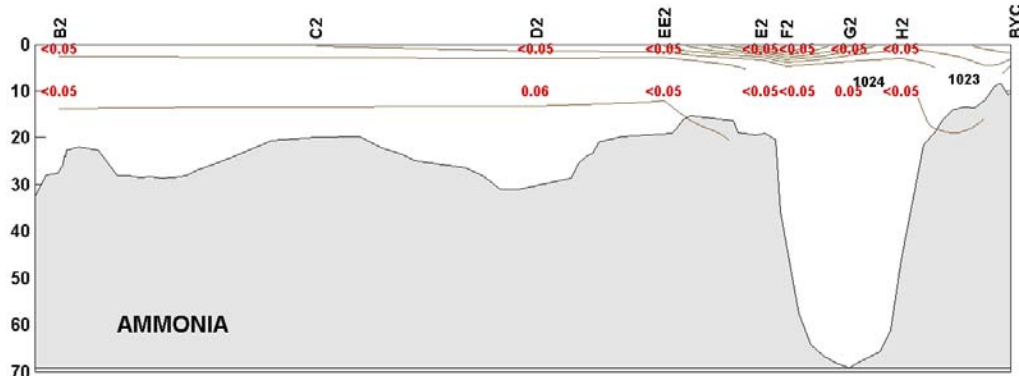
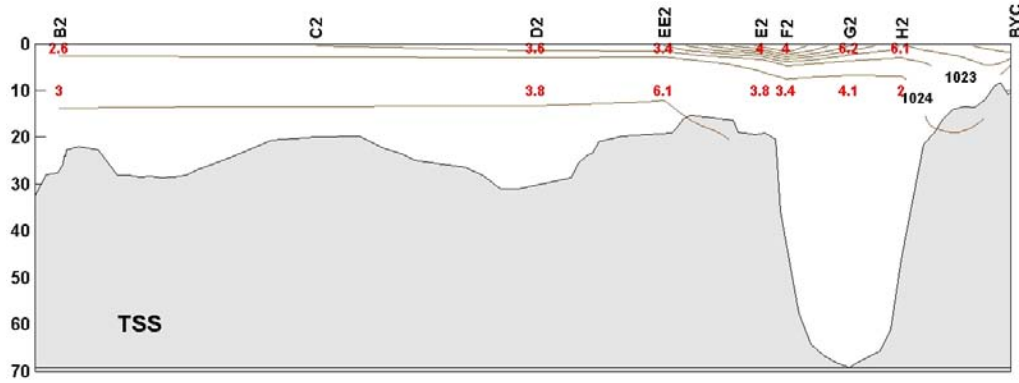
Rainfall and temperature data collected at Shearwater Autoport.
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DO in mg/L

Chlorophyll in mg/m³

CHEMISTRY



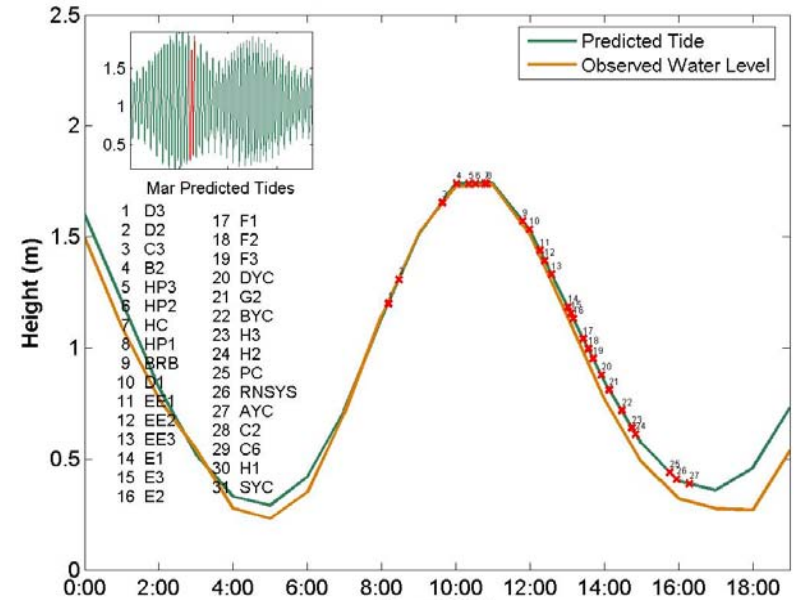
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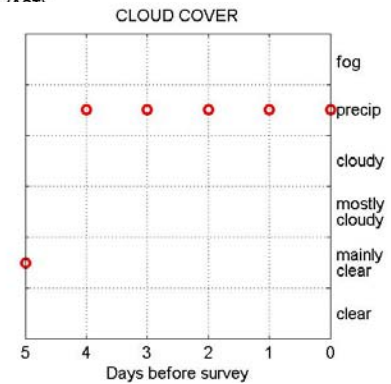
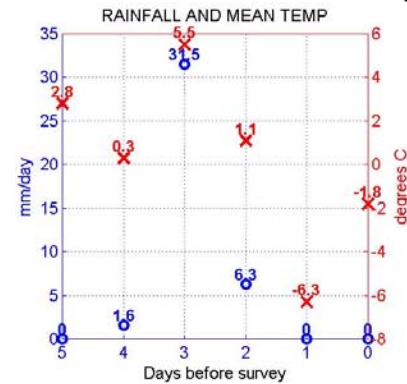
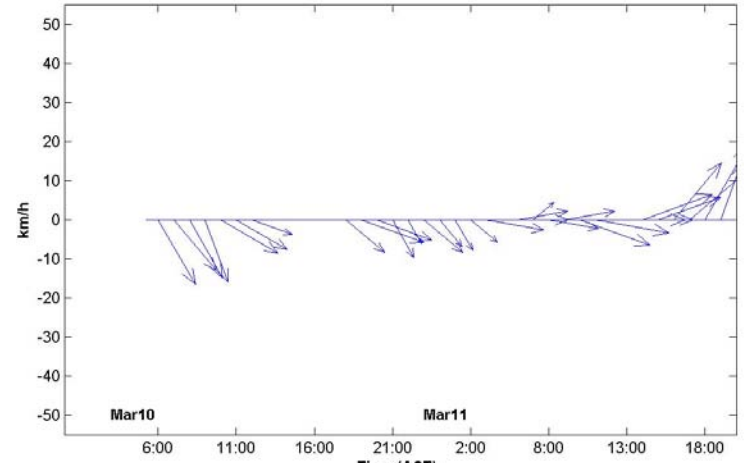
Ammonia in mg/L

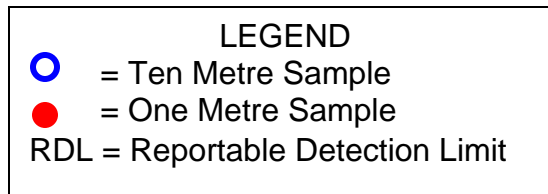
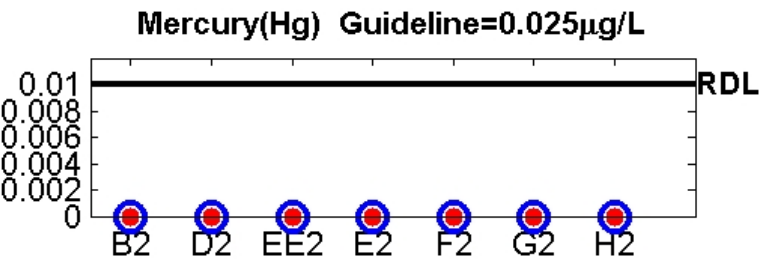
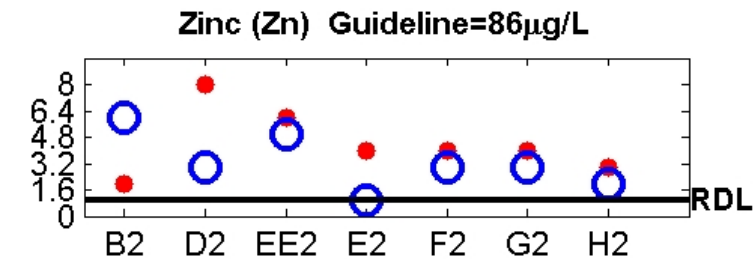
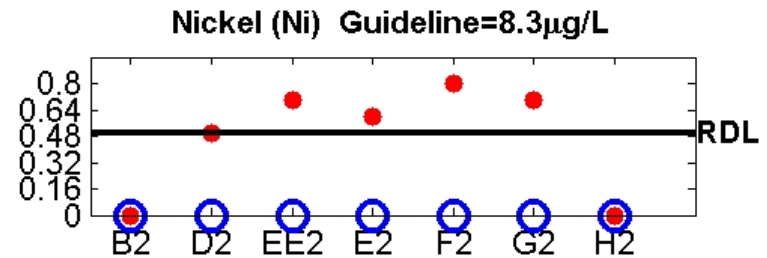
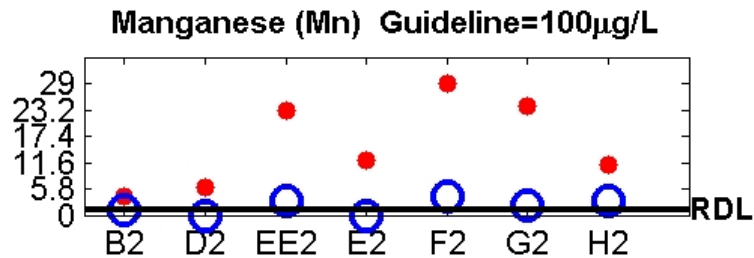
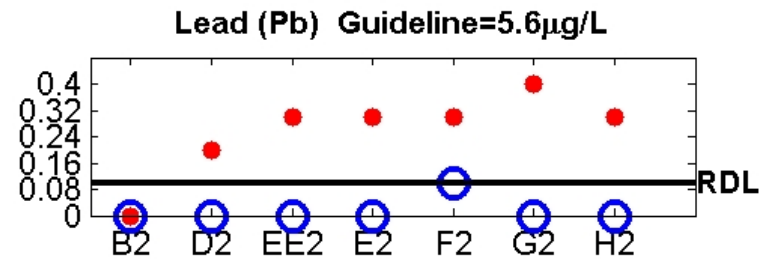
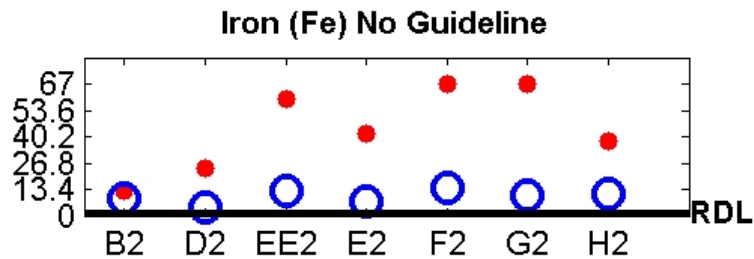
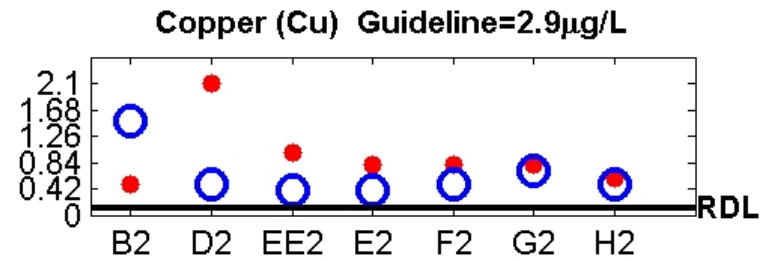
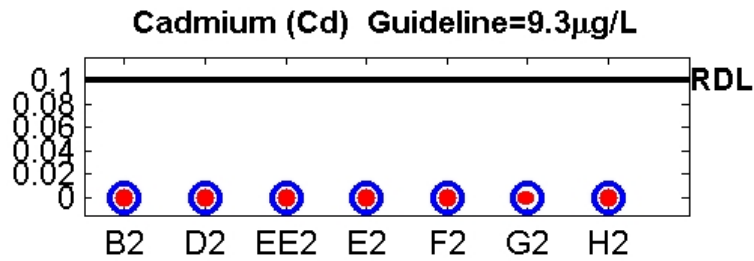
TSS in mg/L

Halifax Harbour Water Level - Mar11



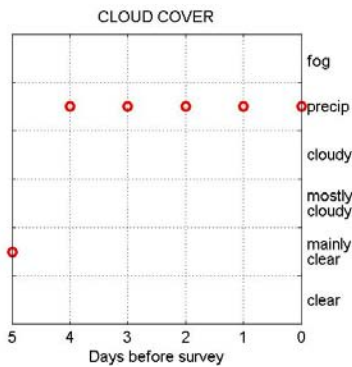
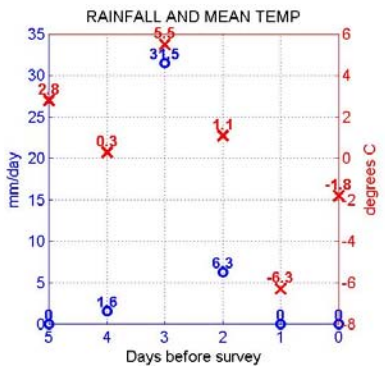
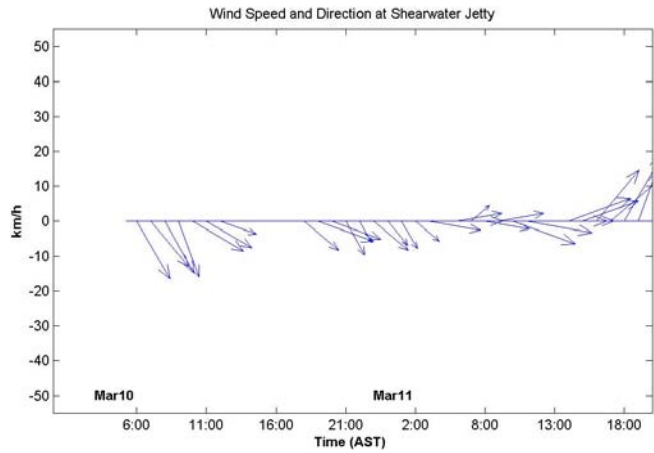
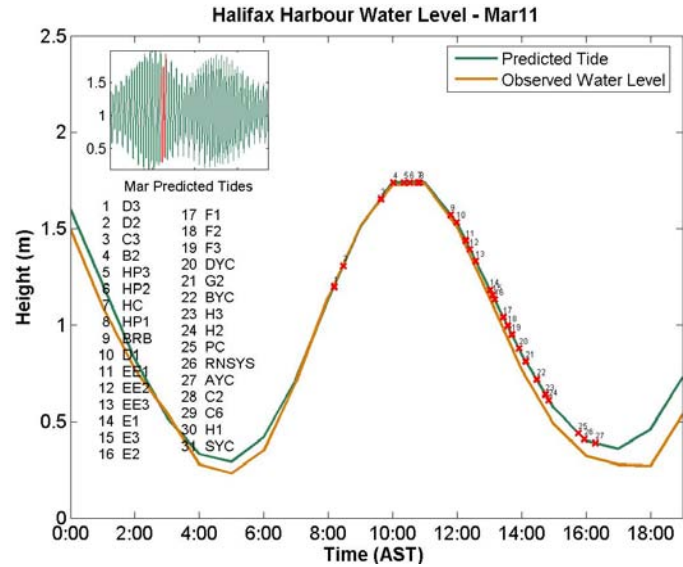
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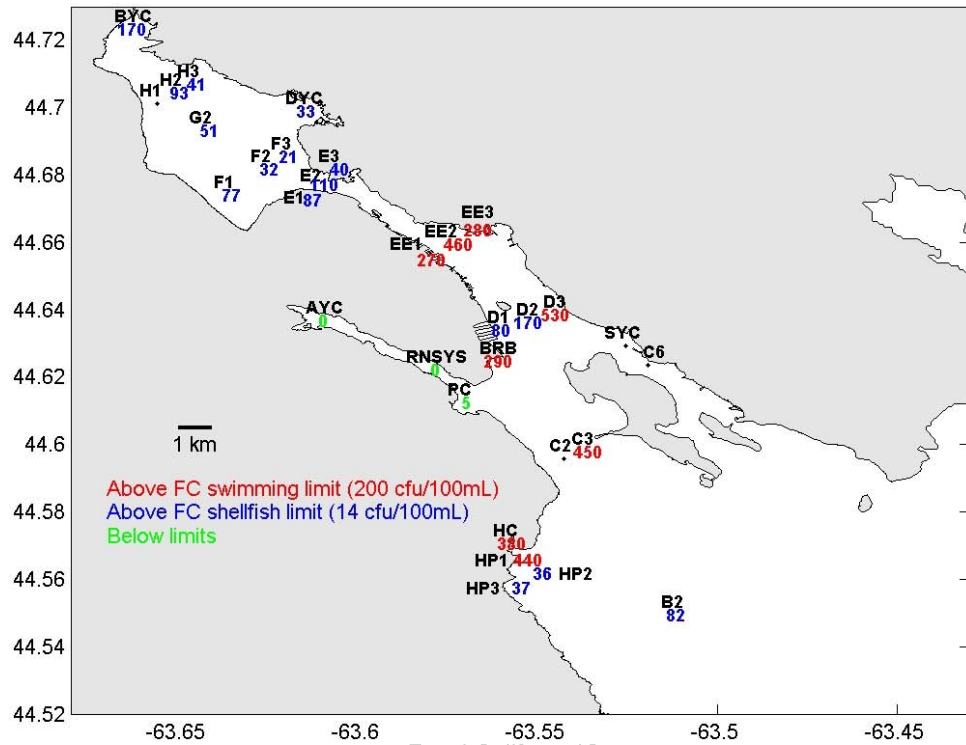


HRM Water Quality Monitoring

Fecal Coliform Summary – March 11, 2008



Fecal Coliform 1 m



Fecal Coliform 10 m

