

Halifax Harbour Water Quality Monitoring Project Survey Summary #160

Survey Date: 16 July 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report160_080716.doc
Data File: HHWQMP_data160_080716.xls

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

Sample Notes:

Dalhousie University sediment sampling team on board.

Dartmouth Cove (DC) was sampled this survey. The samples and were analyzed for a full sweet of parameters.

Connection of sewers to Dartmouth Plant has begun (see data file cover sheet)

Additional bacteria samples were taken in the NW Arm. See data files for details.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291° N, 63.5915° W) at 08:00 local time.

At several sites (B2, H3 and HP1) the DO profiles had small spikes. The data was generally good, and has been left in. the data file. The spikes are annotated in the individual profiles

To match the collected reference data the presented DO values should be scaled by a factor of 1.27 (see comparison in data file).

QA/QC samples:

Chemical Analysis

Detectable Parameter	Units	EE2 - 10m	
		Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.06	0.08
Total Suspended Solids	mg/L	5	13
Copper	ug/L	0.2	0.3
Iron	ug/L	5	8
Zinc	ug/L	2	3

Fecal Coliform (CFU/100ml)

Site	SYC-10m	HP-1m	F3-1m	EE2-10m
Reference	67	0	180	230
QA/QC	100	0	26	130

Comments:

General: The surface water in the Basin has warmed several degrees. Elsewhere, the warming is slight. The intrusion of colder, saltier bottom water has increased harbour stratification. The Halifax STP is fully operational. The UV disinfection system came on line full time on 1 April. There are some elevated fc levels in the Inner Harbour most in the 10 m samples. The distribution seems displaced up harbour in the surface and downstream in the 10 m samples. The highest values were in the extra DC samples (> 10,000 cfu/100 mg/L at 1 m, and 5400 cfu/10 mL at 10 m), reflecting the temporary effluent diversion into the Cove.

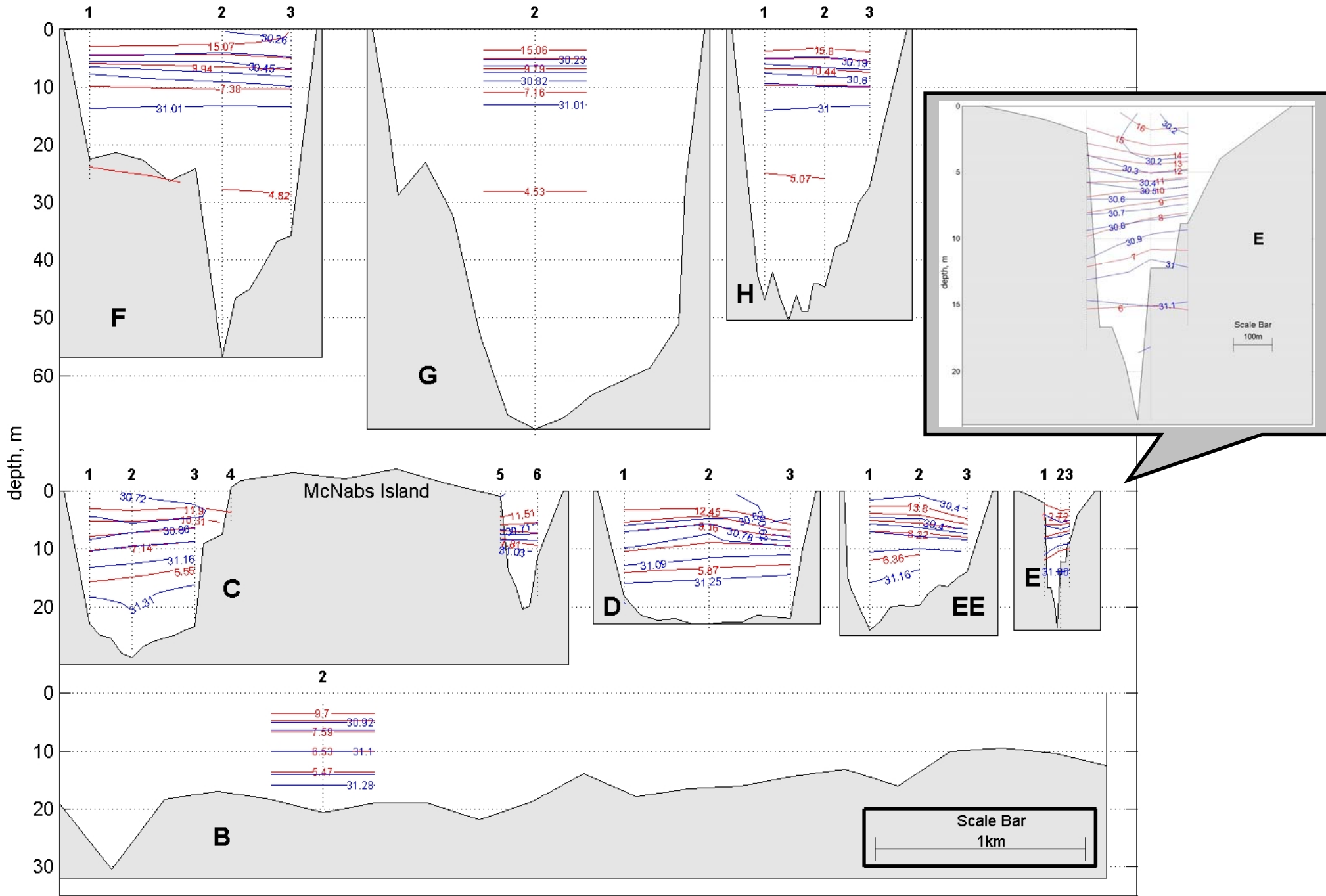
Fluorescence: The fluorescence levels are elevated. The maximum values (>50 mg/m³) occur at the head of the Basin with values in the mid 20's occurring throughout the southern Basin and Inner Harbour.

TSS: The TSS levels are moderate with an average value of 6.4 mg/L. There are two relatively high values (>10 mg/L) in the Basin.

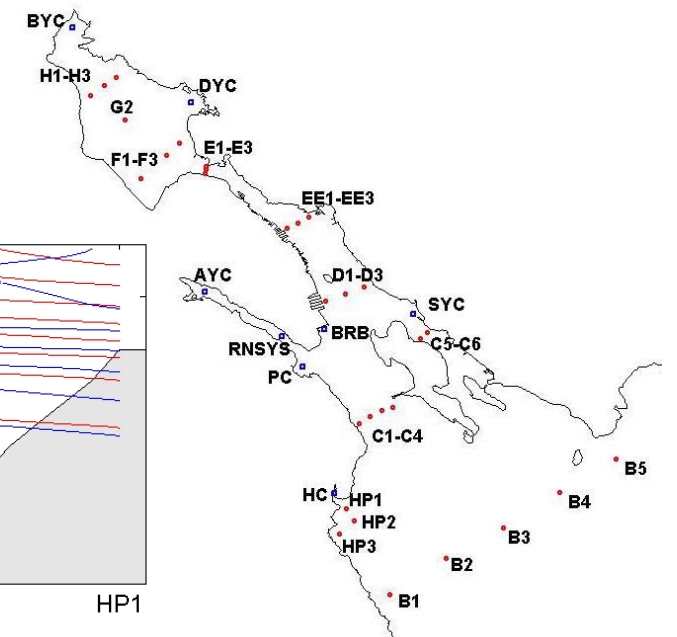
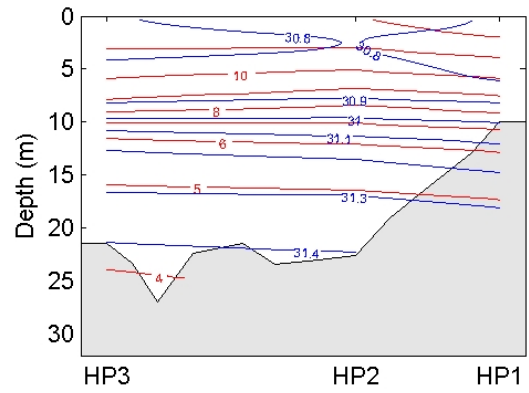
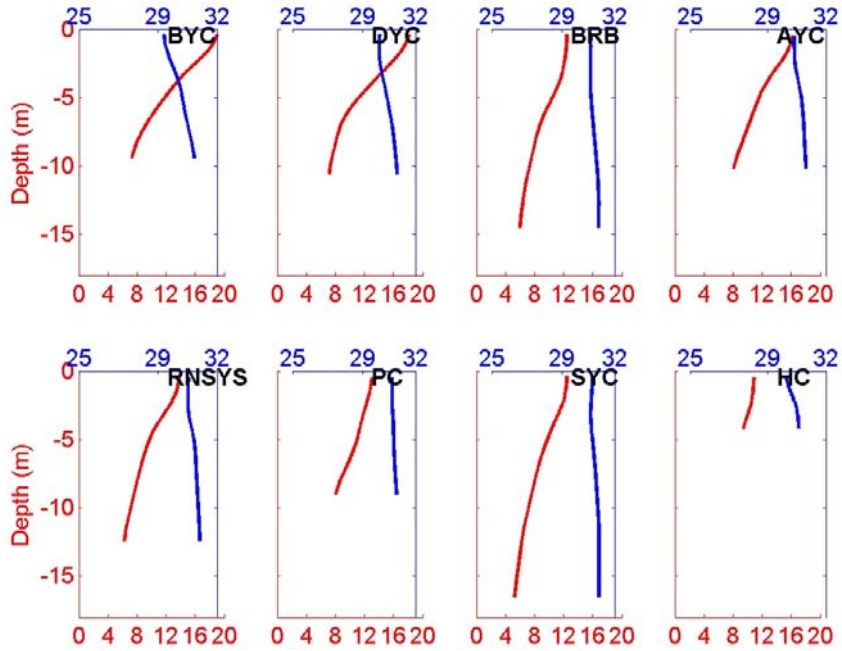
Ammonia: All samples had detectable levels just above the detection limit of (0.05 mg/L). For the regular samples, the average value is 0.07 mg/L with a max value of 0.11 mg/L. The highest value (0.22 mg/L) is in the extra sample at DC-10 m.

Metals: There are no guideline exceedences in regular samples. The samples in Dartmouth Cove, particularly the 10 m sample, were relatively very high for most metals, with two guideline exceedences. The copper concentration (9.6 µg/L) is about 3x the guideline and lead (10.5 µg/L) is nearly 2x the guideline. The iron concentration (402 µg/L) is remarkable in that it is 30 times the next highest values.

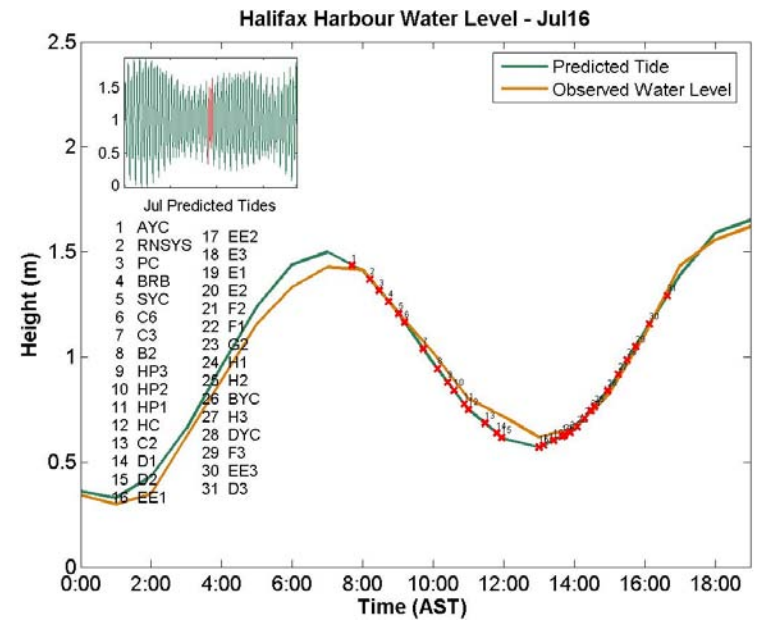
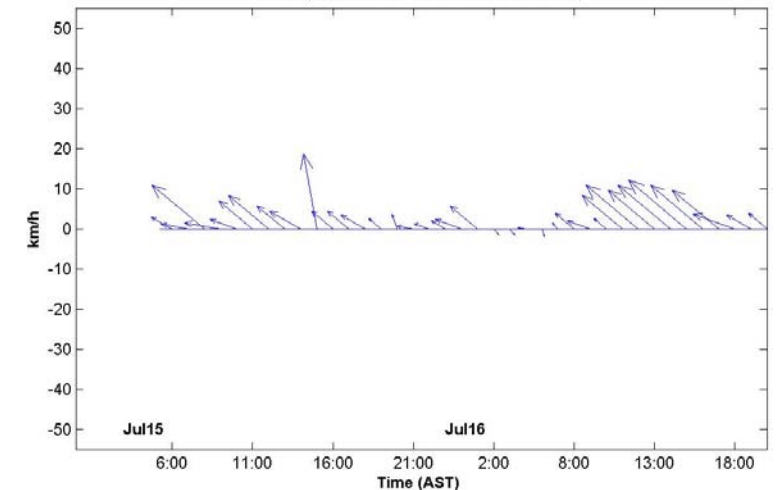
Dissolved Oxygen: The DO data, scaled by a factor of 1.27, indicates a thin layer (ca 2 m) of very highly oxygenated water in the Basin. The surface DO varies from (> 13.0 mg/L) in the northern Basin decreasing to less than 11 mg/L in the Inner Harbour. In the Basin the near surface vertical gradient is quite steep, but this decreases in the Inner Harbour, with minimum values at the bottom of just under 9 mg/L. The only criteria exceedence is in the Basin Bottom water (> 30 m).



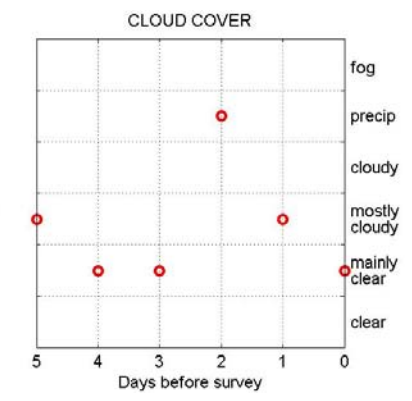
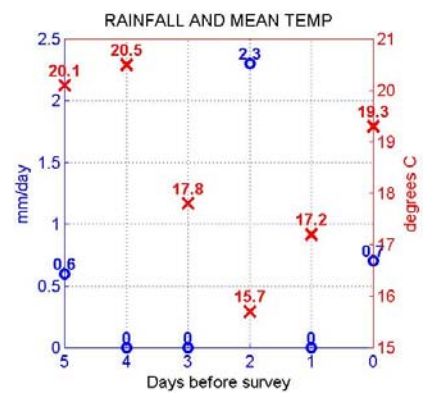
Yacht Clubs



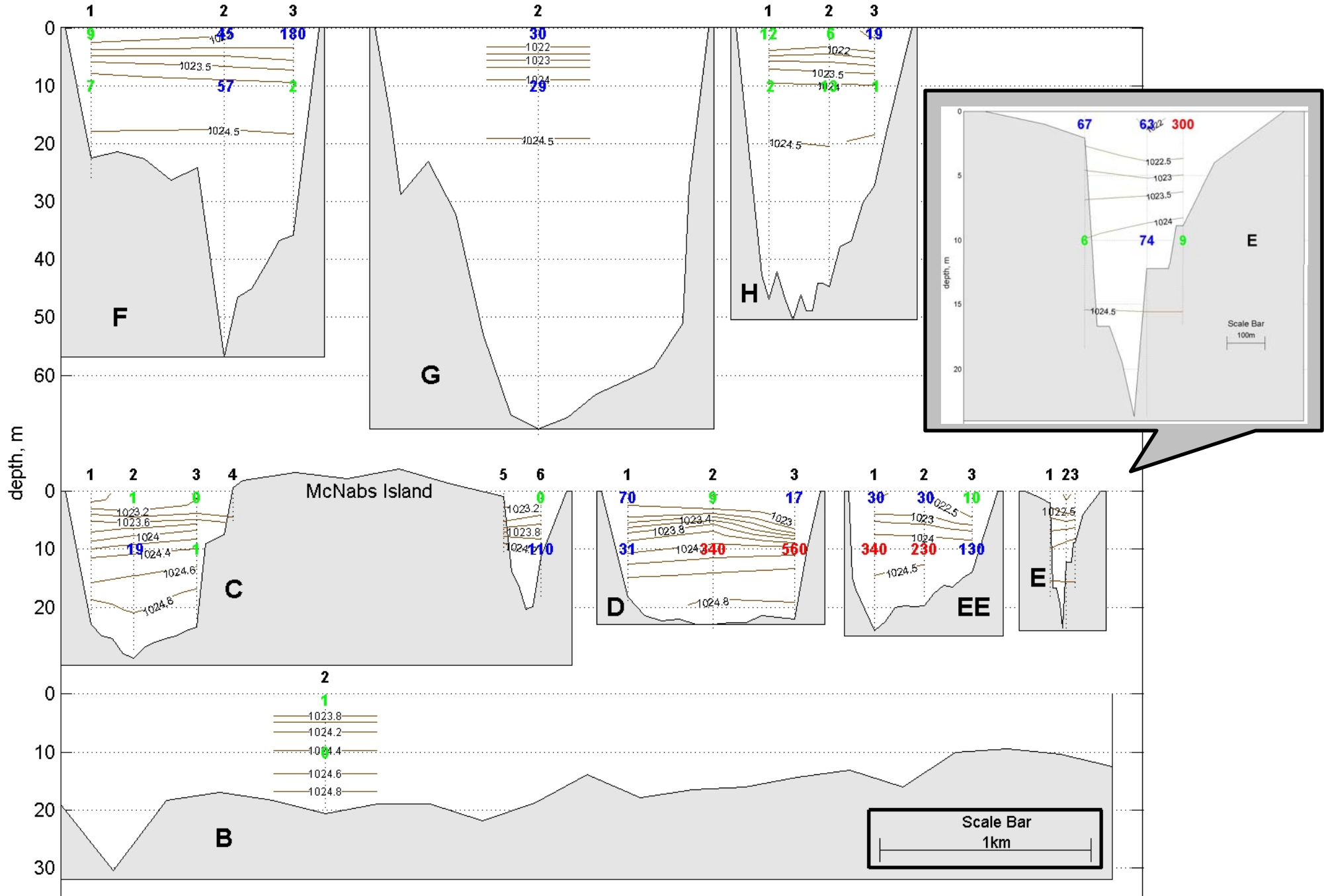
Wind Speed and Direction at Shearwater Jetty



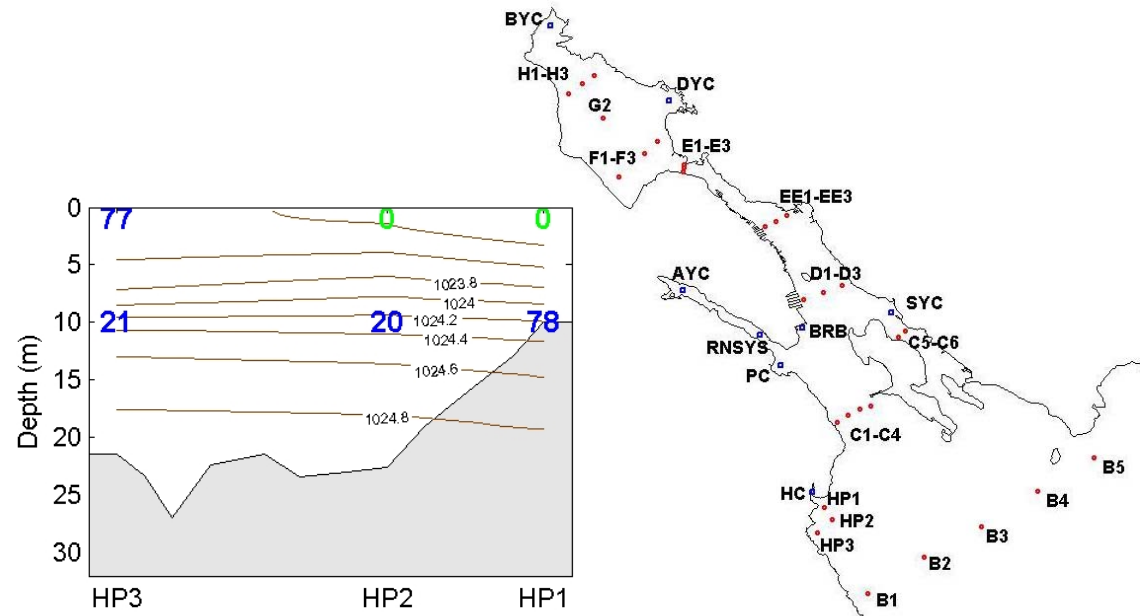
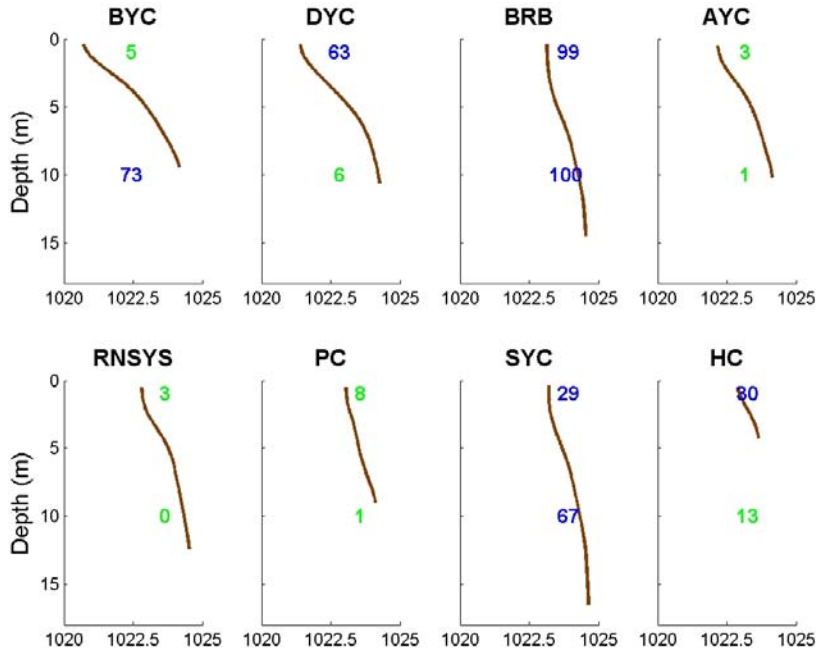
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



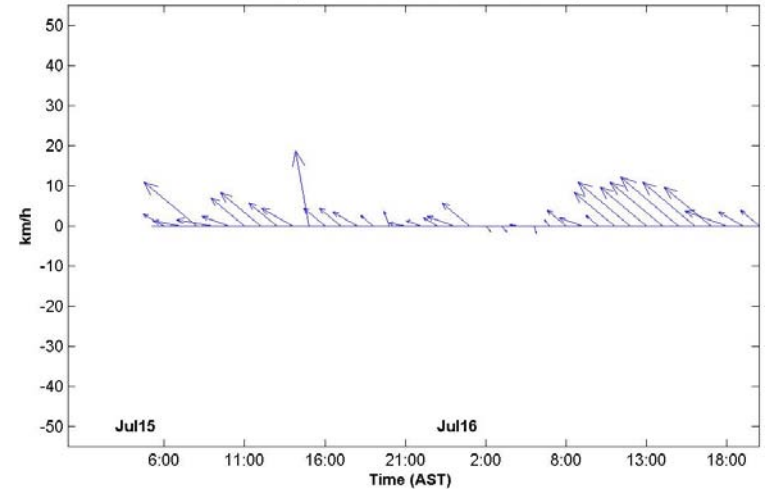
Salinity in PSU Temperature in °C



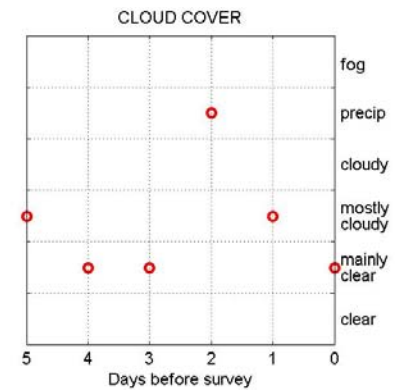
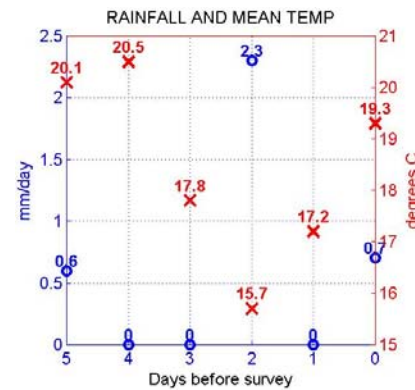
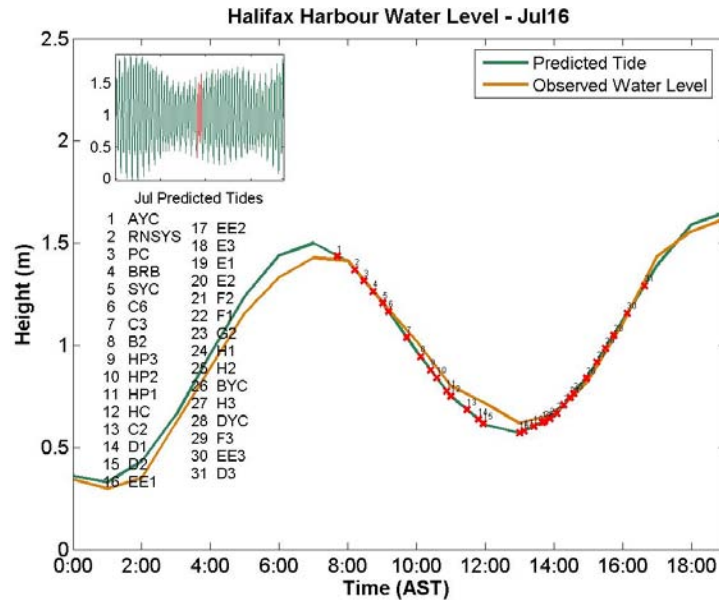
Yacht Clubs



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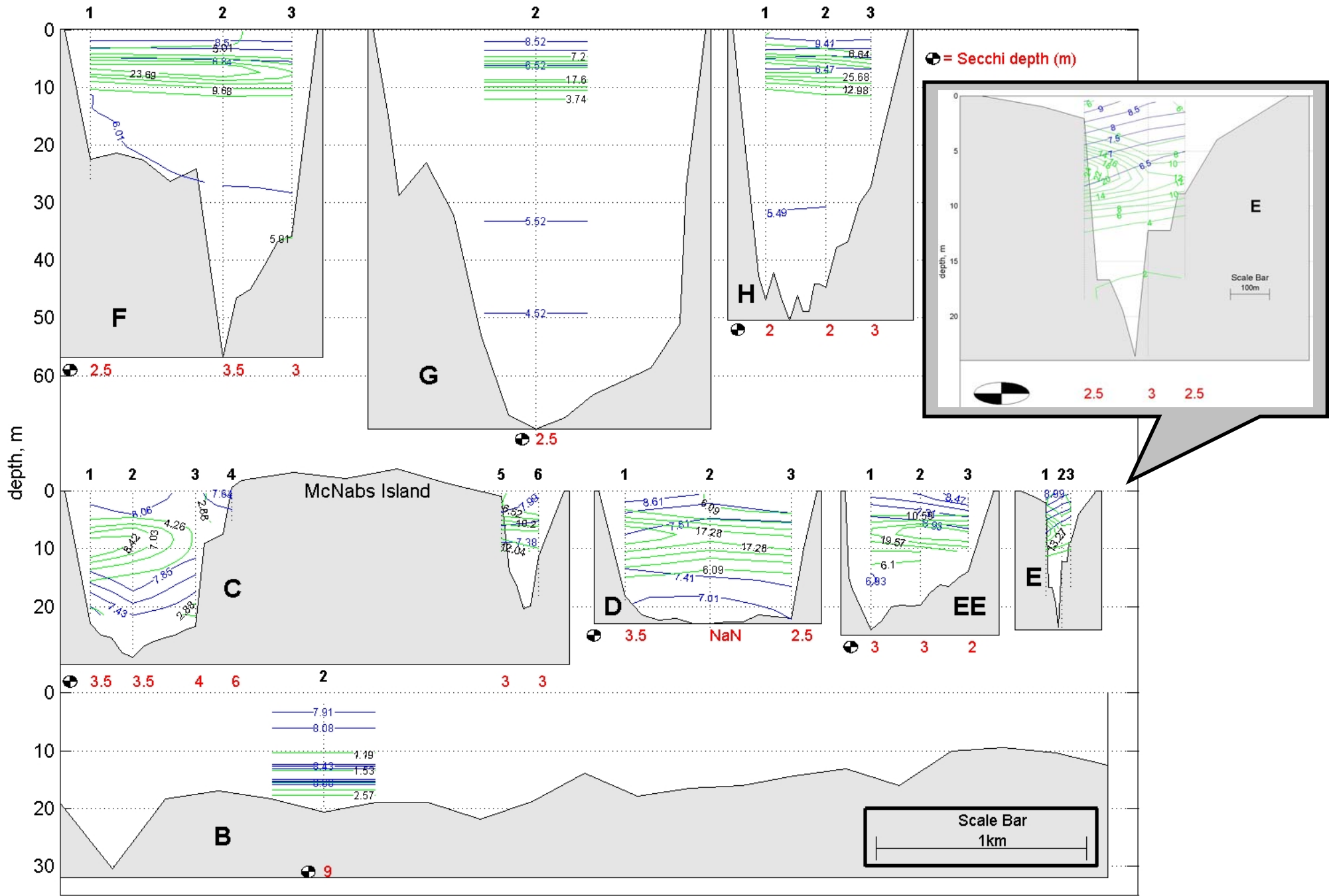


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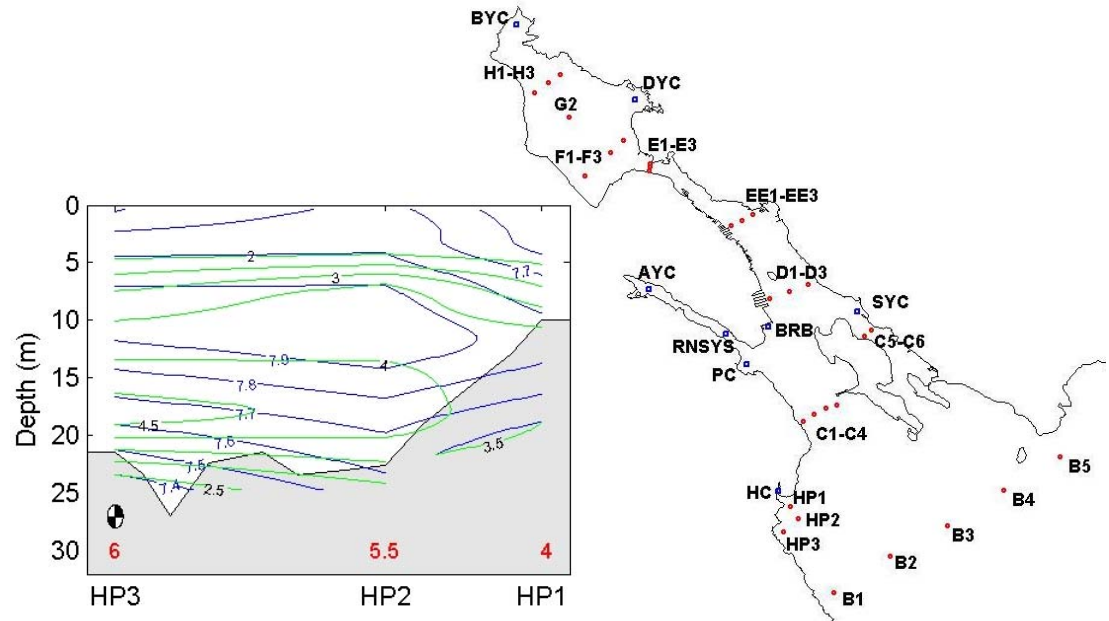
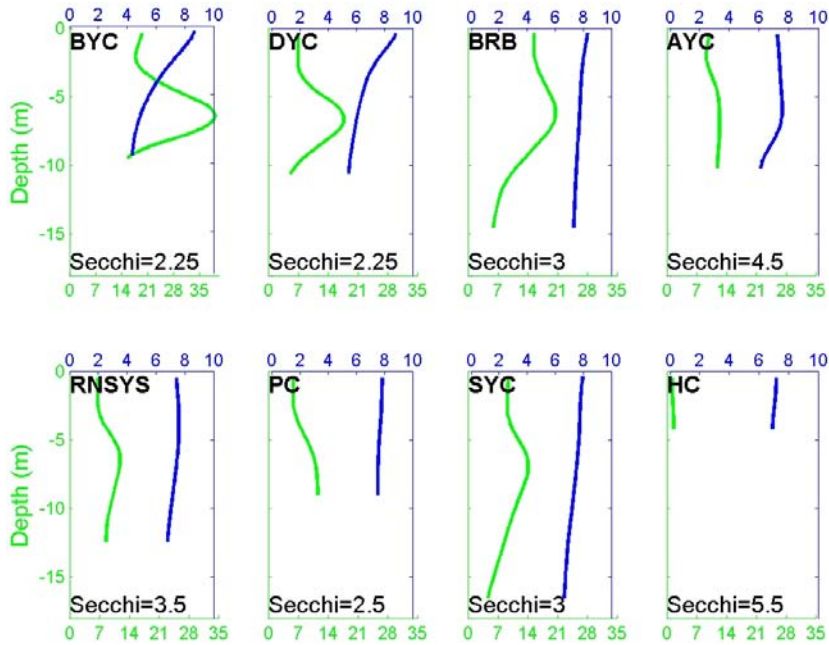


Potential Density in kg/m^3

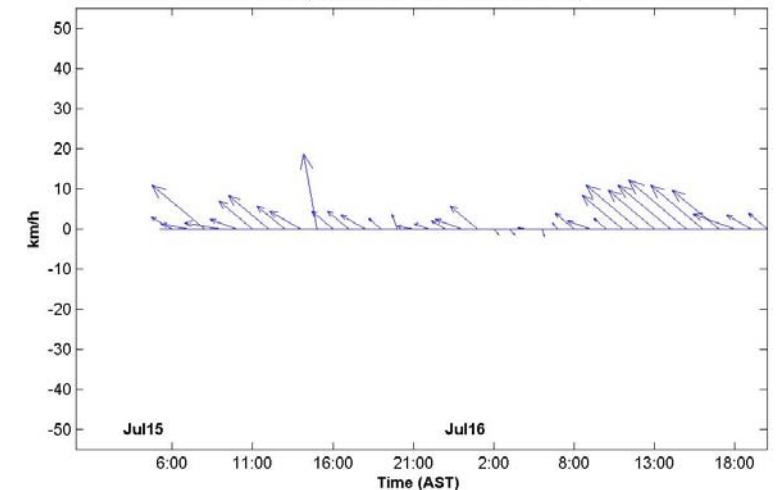
Fecal coliform: **above swimming limit (200 cfu/100mL)**
above shellfish limit (14 cfu/100mL)
 below limits



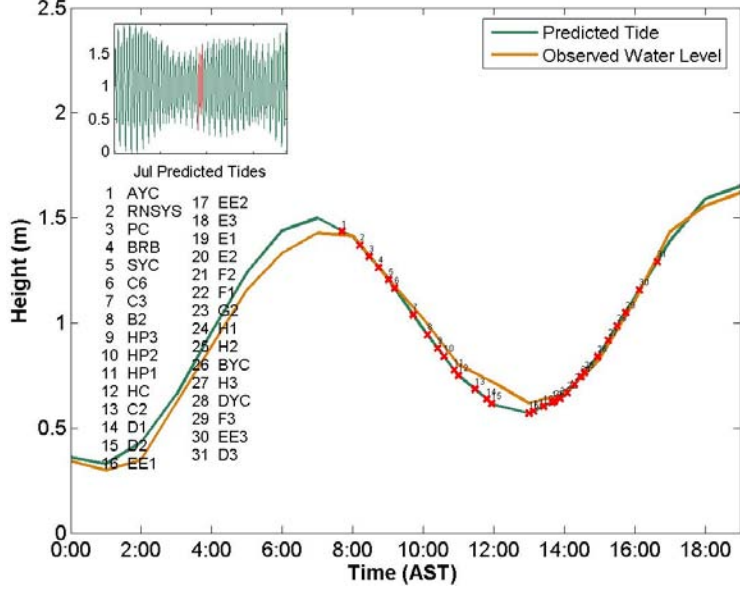
Yacht Clubs



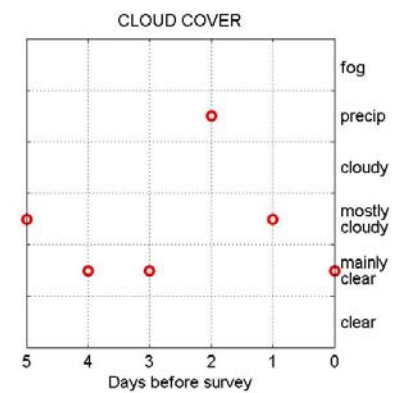
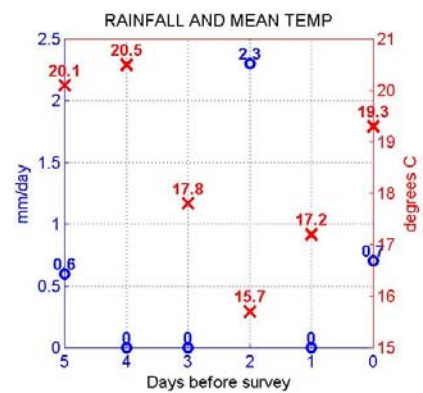
Wind Speed and Direction at Shearwater Jetty



Halifax Harbour Water Level - Jul16

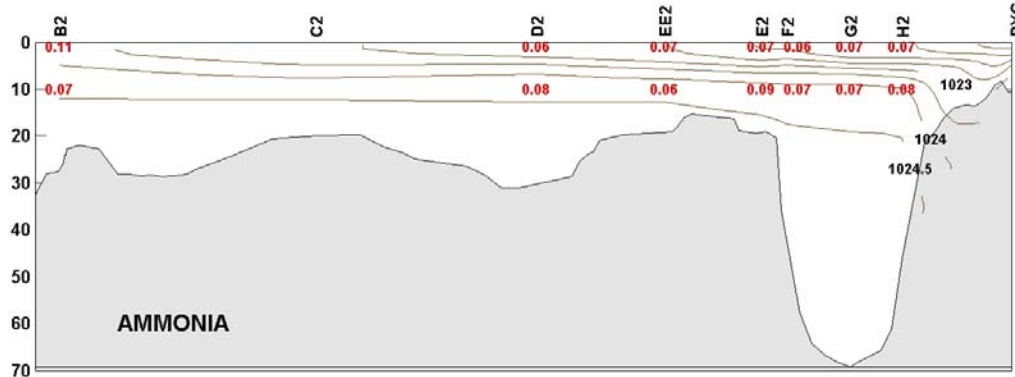
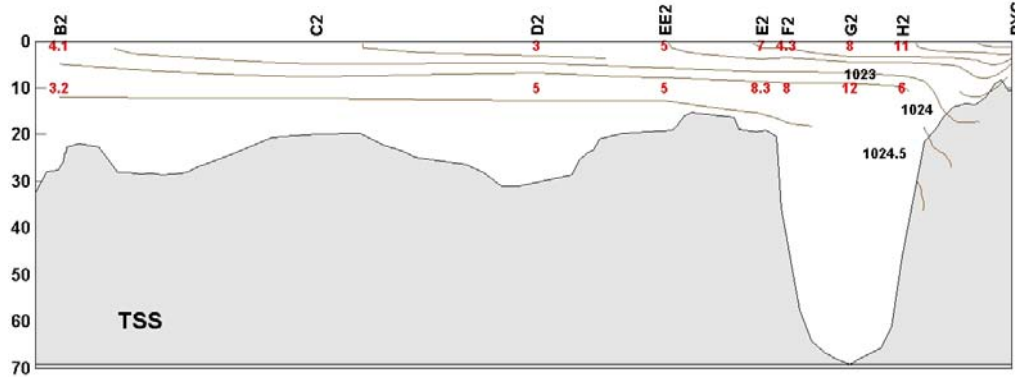


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DO in mg/L Chlorophyll in mg/m³

CHEMISTRY



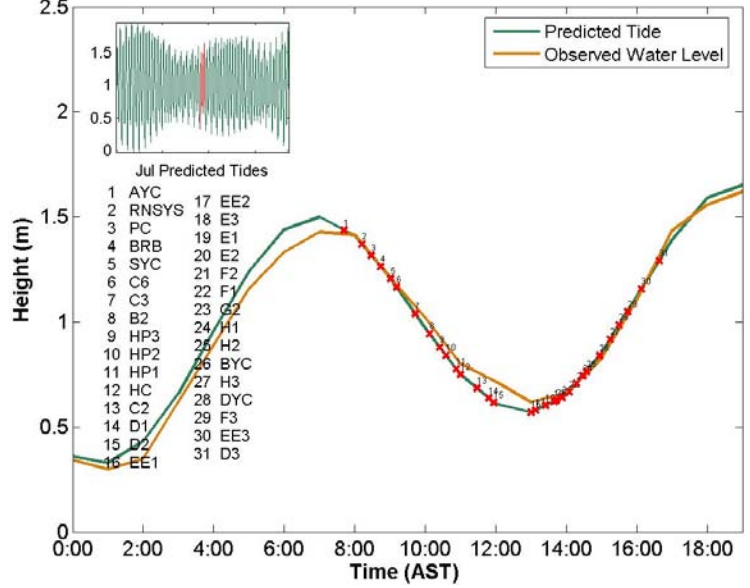
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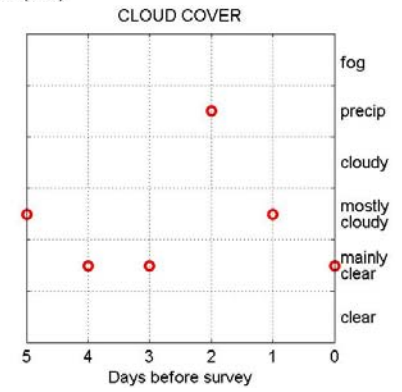
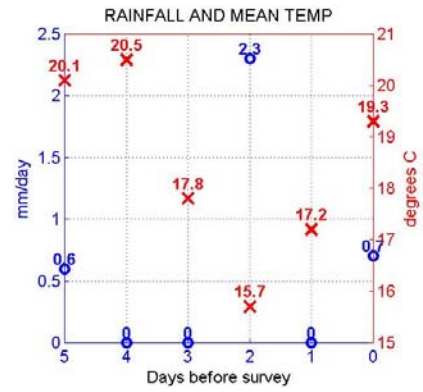
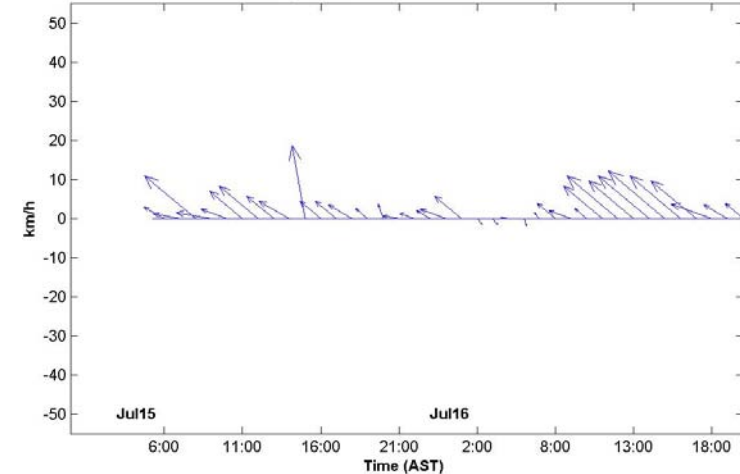
Ammonia in mg/L

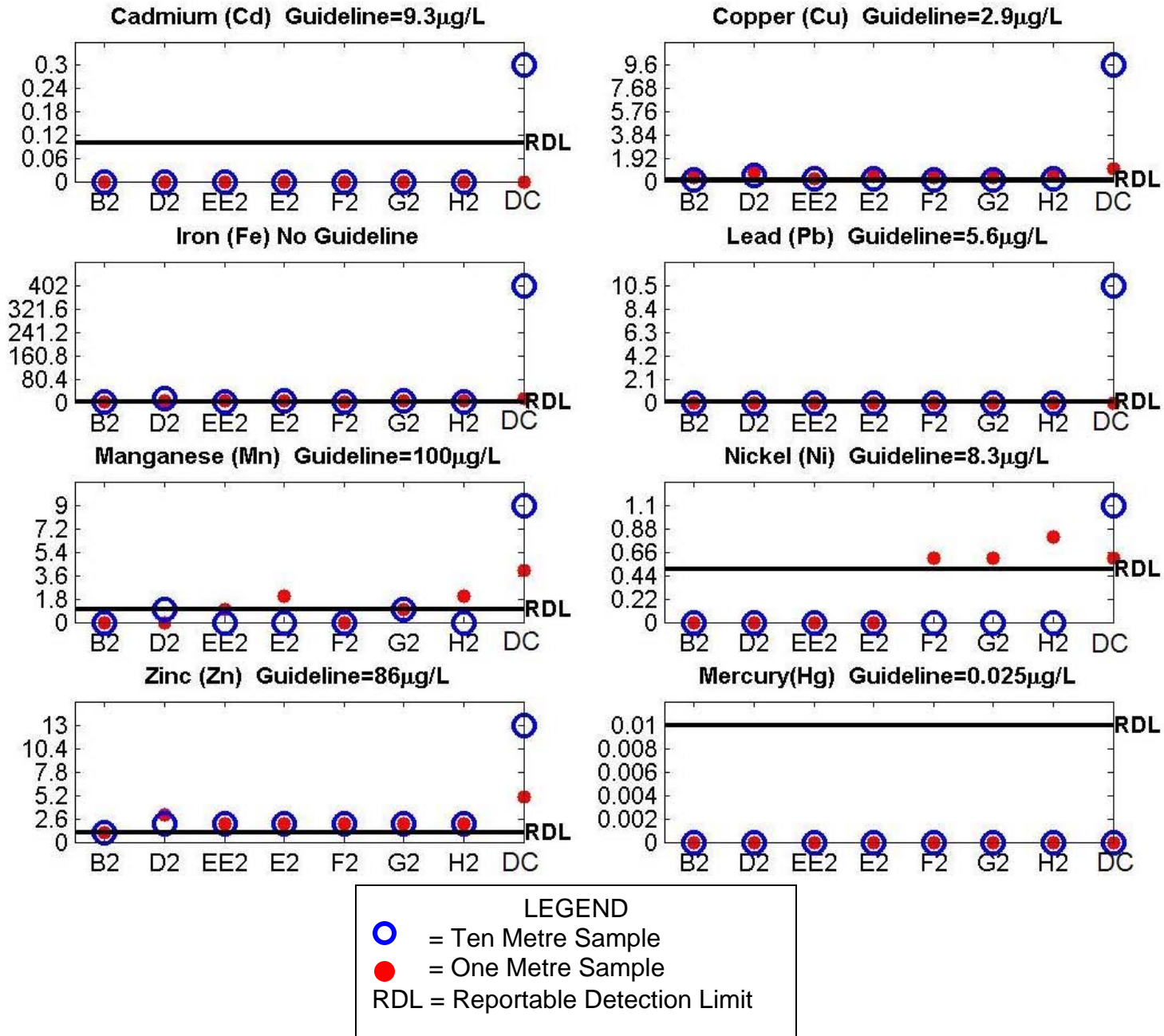
TSS in mg/L

Halifax Harbour Water Level - Jul16



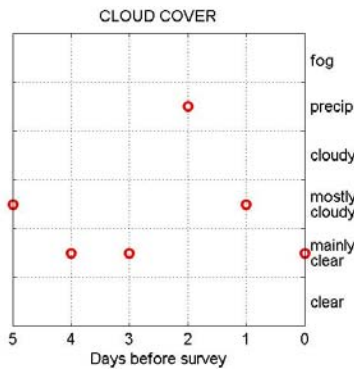
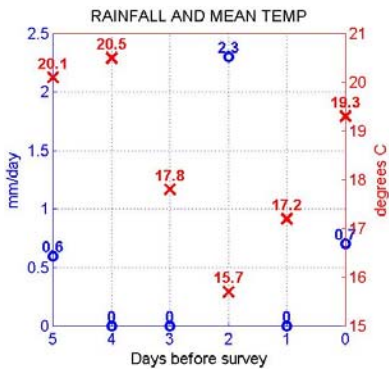
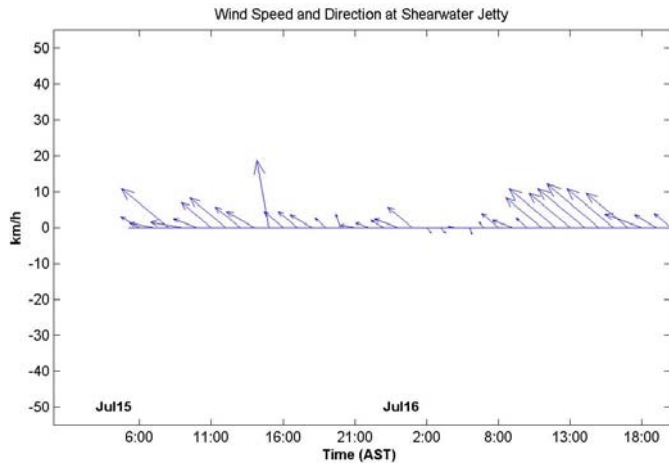
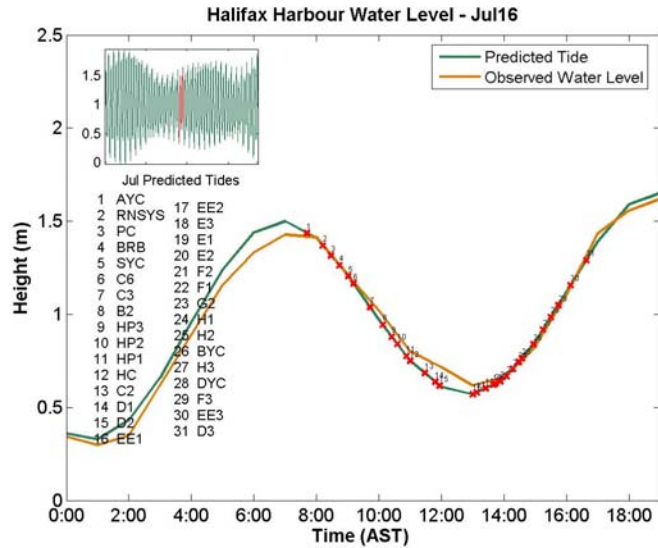
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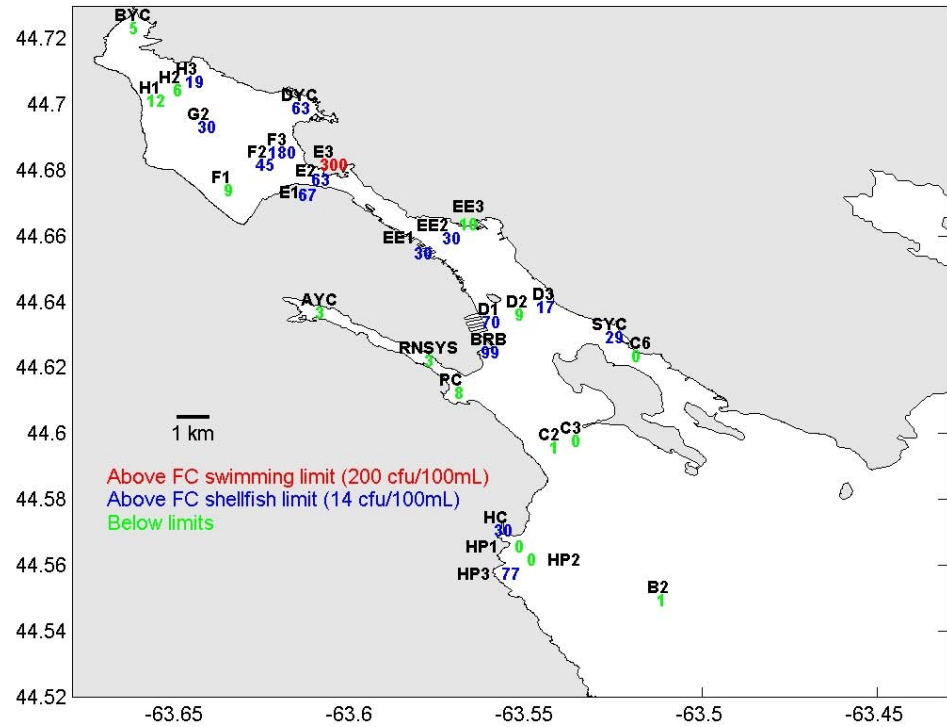


HRM Water Quality Monitoring

Fecal Coliform Summary – July 16, 2008



Fecal Coliform 1 m



Fecal Coliform 10 m

