

Halifax Harbour Water Quality Monitoring Project Survey Summary #163

Survey Date: 26 August 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report163_080826.doc
Data File: HHWQMP_data163_080826.xls

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

Sample Notes:

Connection of sewers to Dartmouth STP is completed (see data file cover sheet).

A supplementary CTD cast was taken at the LOBO buoy location (44.6291° N, 63.5915° W) at 08:10 local time.

A sample was taken at 1 m depth in Dartmouth Cove (DC) and analyzed for the full suite of parameters. This data is included in the data file.

To match the collected reference data the presented DO values should be scaled by a factor of 1.30 (see comparison in data file).

The CTD profile at BYC failed QA/QC due to a probable airlock, the data has been deleted from the data file. The DO profile at DYC had a minor spike that has been edited out.

QA/QC samples:

Chemical Analysis

Detectable Parameter	Units	F2 – 1m	
		Reference Sample	QA/QC
Ammonia (as N)	mg/L	0.08	0.09
Total Suspended Solids	mg/L	4	5
Copper	ug/L	1.9	1.8
Iron	ug/L	18	15
Lead	ug/L	0.1	0.1
Manganese	ug/L	5	4
Nickel	ug/L	0.5	0.6
Zinc	ug/L	5	6

Fecal Coliform (CFU/100ml)

Site	BYC-10m	H3-1m	H1-10m	F2-1m
Reference	0	2	0	0
QA/QC	8	0	1	1

Comments:

General: The Harbour is colder (by 5-10°C), saltier and more uniformly stratified than in the previous survey. The Basin is somewhat less stratified, but the remainder of the Harbour is much more stratified. The Harbour bottom water has cooled and increased in salinity much more than the surface water. This implies an intrusion of denser shelf water. The intruding water is less dense (warmer) than the water in the deep Basin and hydrographic conditions there have not changed significantly. The fecal coliform levels are remarkably low with most values below the 14 CFU/100 mL shellfishing limit. This is consistent with the flushing associated with an intrusion. The existing Harbour water is displaced upward and out of the Harbour in the surface water. The only samples above the swimming limit are at HP3, in the vicinity of the Hospital Point outfall, and an unexplained high value at SYC (10 m).

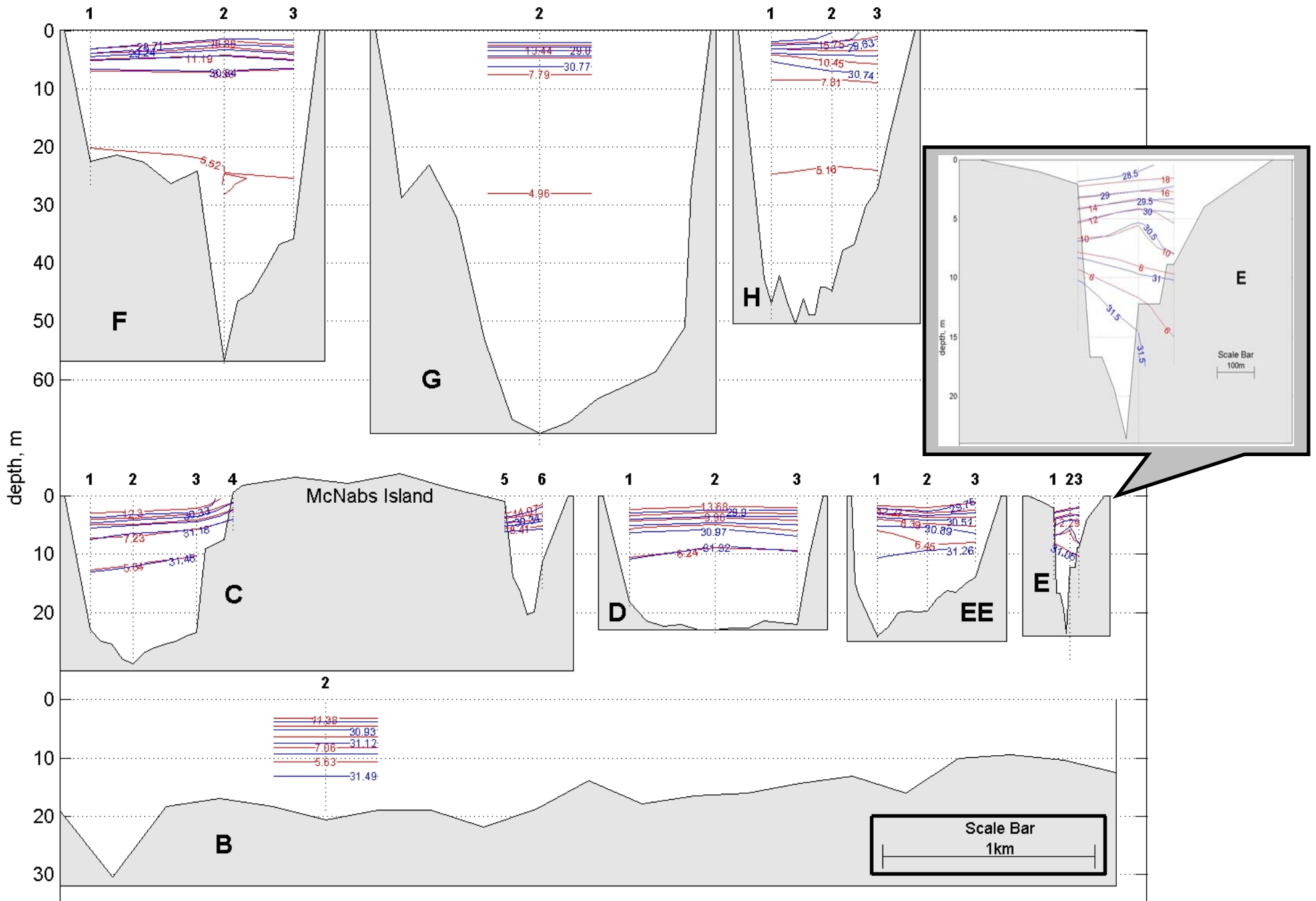
Fluorescence: The fluorescence levels are somewhat elevated throughout the Harbour. The profile maximums vary from 20-30 mg/m³ in the Basin to 6-8 mg/m³ in the Outer Harbour.

TSS: The TSS levels are relatively low, and very uniform with all values in regular samples between 3 and 5 mg/L (mean 3.7 mg/L). The DC sample has the highest concentration at 7.0 mg/L.

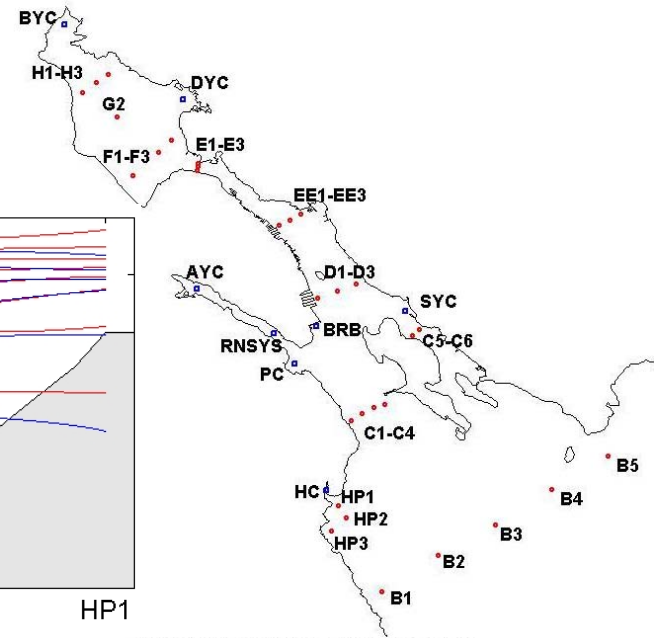
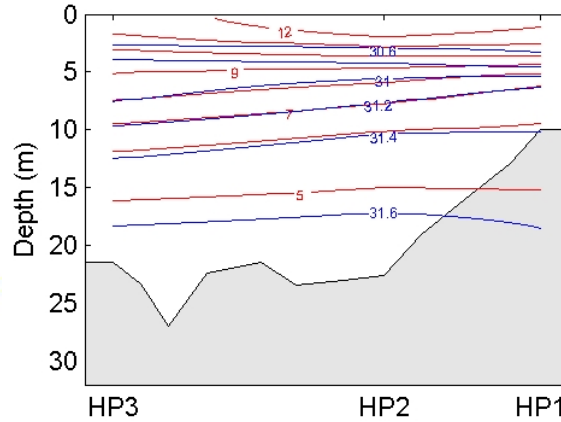
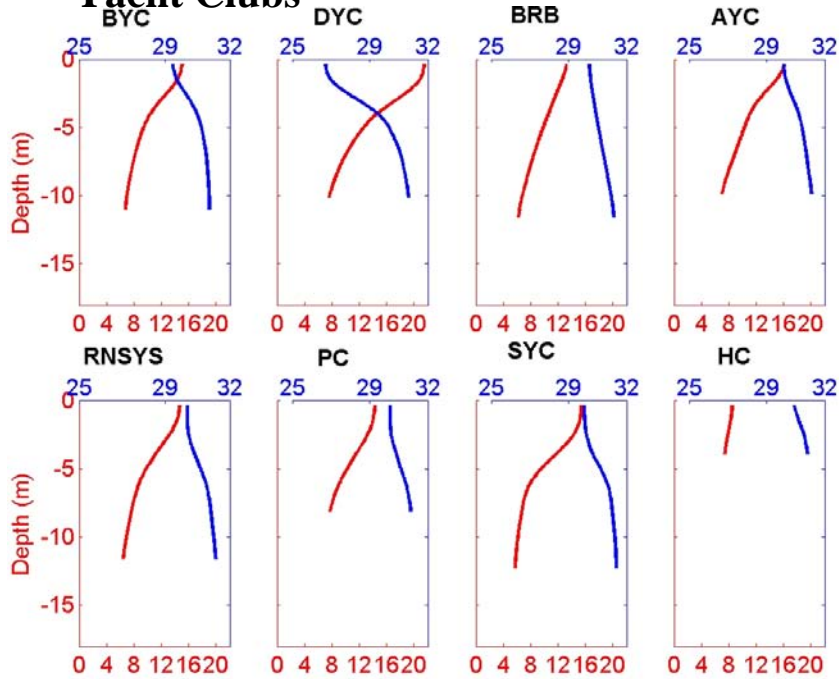
Ammonia: The ammonia levels are relatively high, and uniform with all regular samples having levels between 0.08 and .12 mg/L. The overall average is 0.10 mg/L. The DC sample has the highest concentration at 0.20 mg/L.

Metals: There are no guideline exceedences. The closest to exceedence is copper with a maximum concentration of about 70% of the guideline. The highest observed values for five metals occurred in the F2-1 m sample.

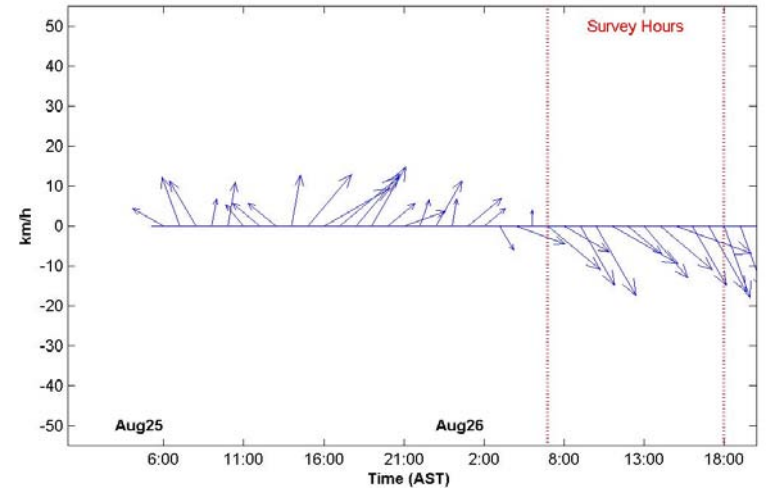
Dissolved Oxygen: The dissolved oxygen data, scaled appropriately by a factor of 1.30, indicates that the DO in the Harbour in general, and surface water of the Basin is between 8.0-9.0 mg/L. The only guideline exceedence is in the deep water of the Basin, that continues to drop and is now < 3 mg/L.



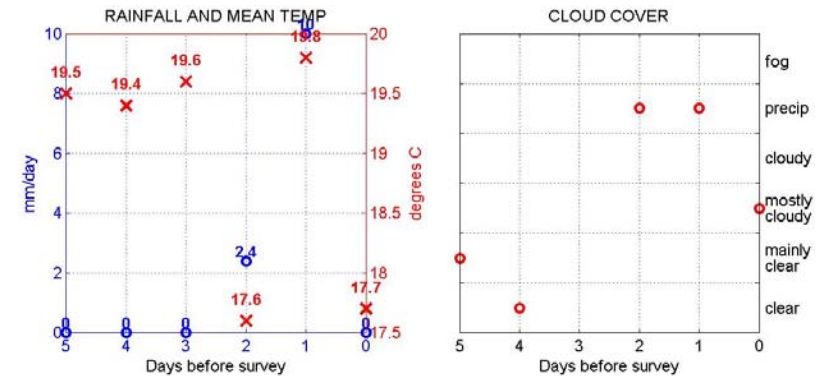
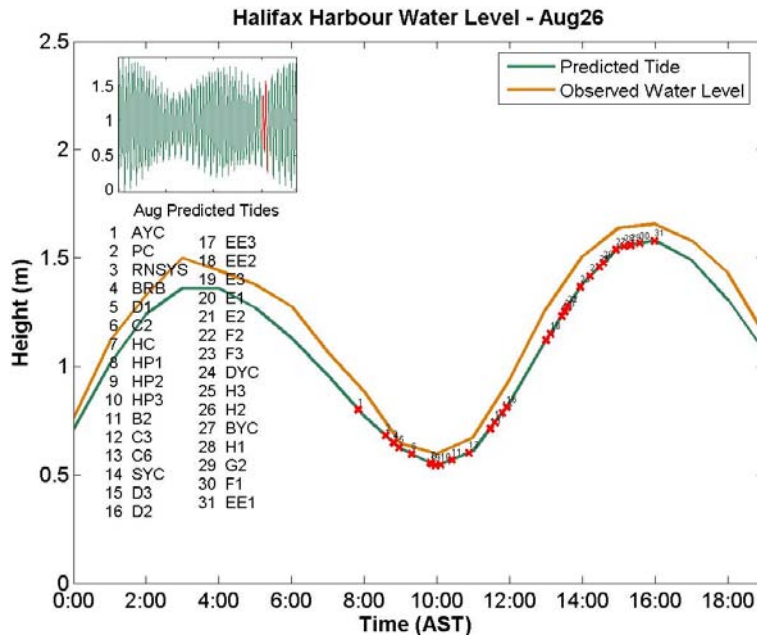
Yacht Clubs



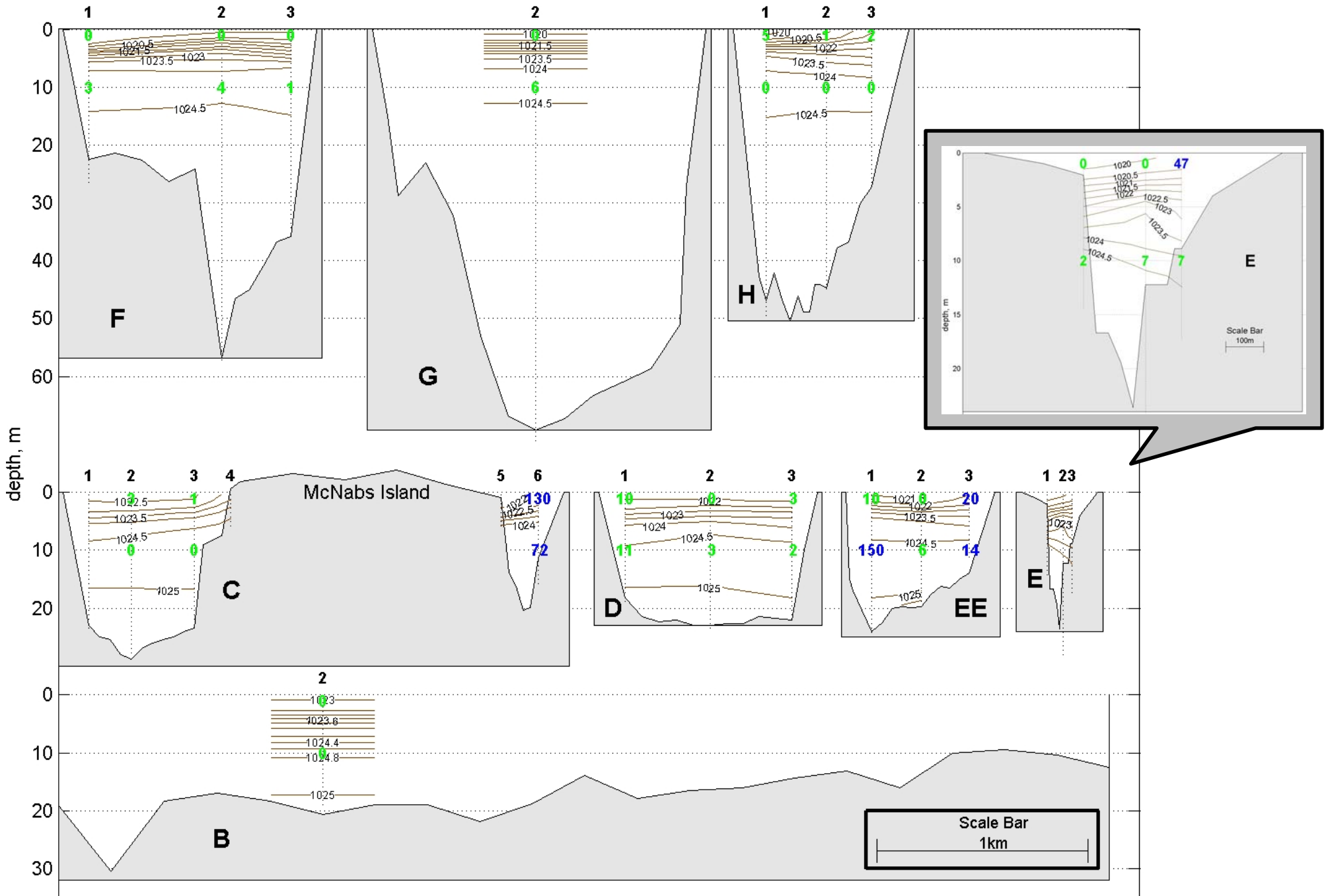
Wind Speed and Direction at Shearwater Jetty



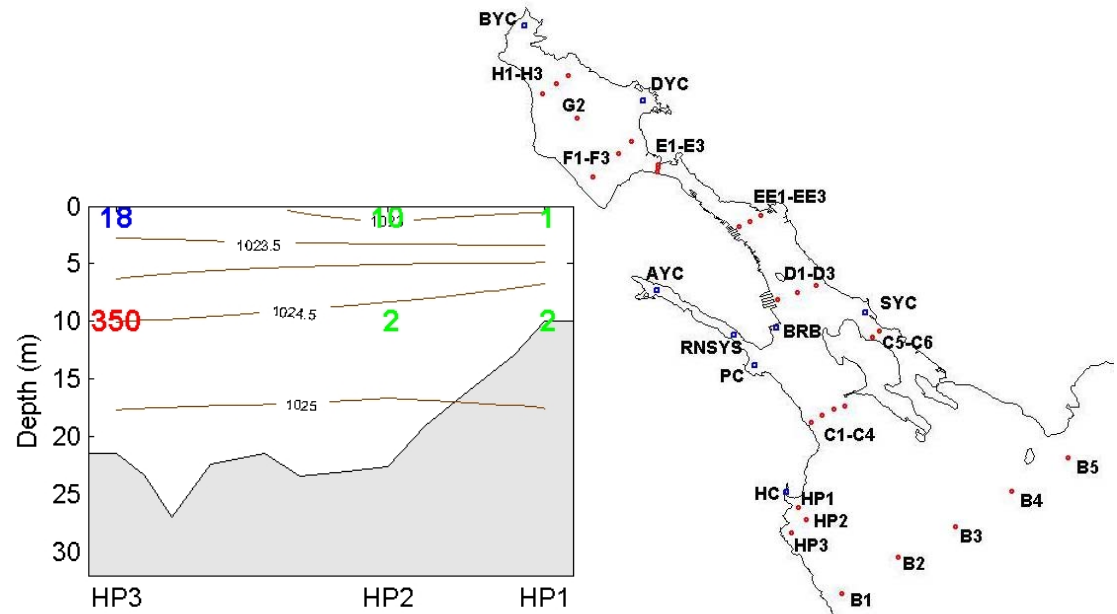
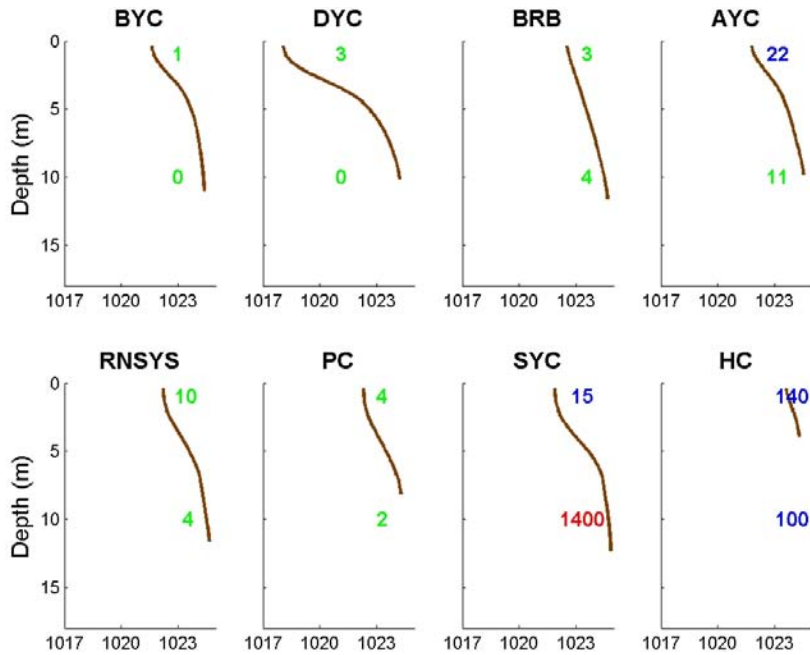
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



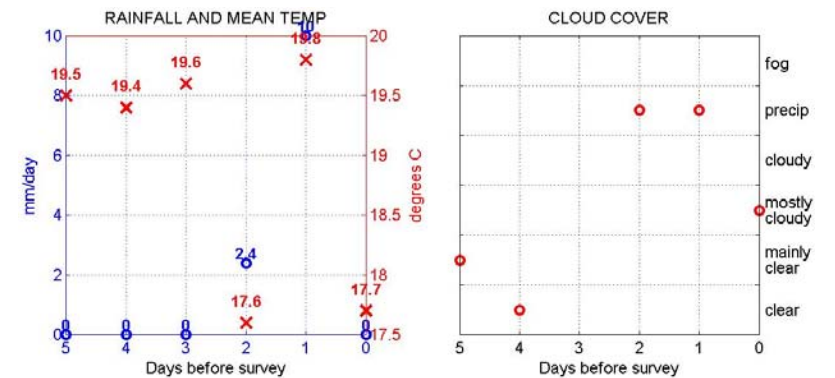
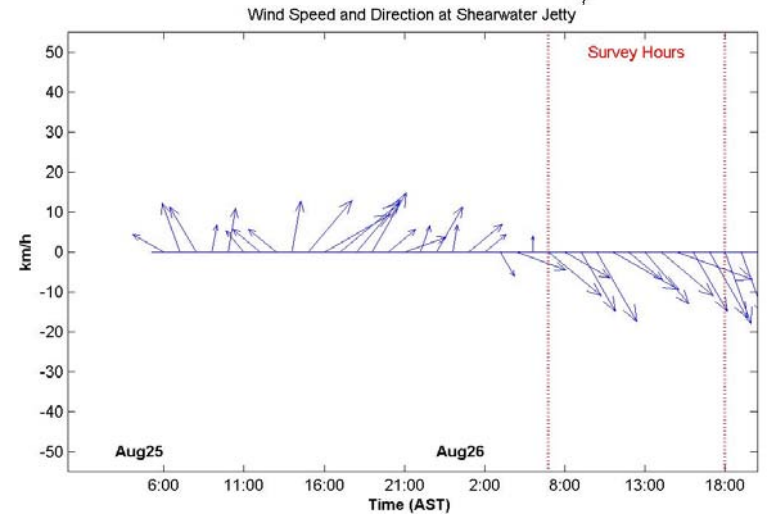
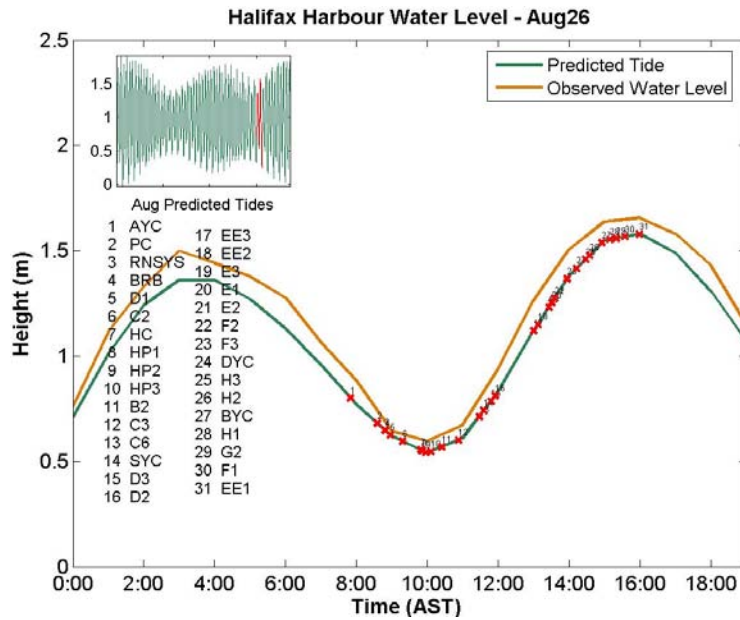
Salinity in PSU Temperature in °C



Yacht Clubs

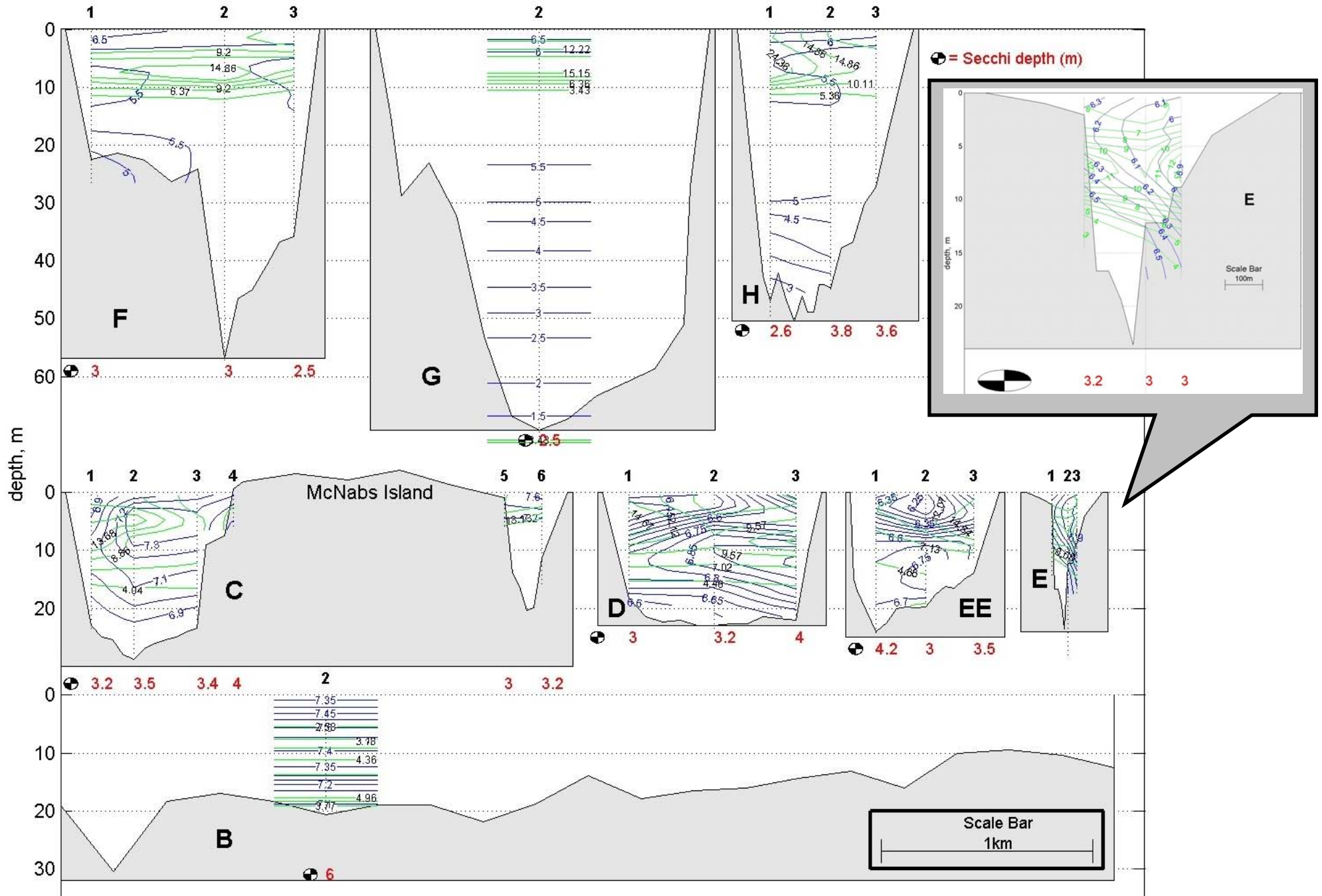


Rainfall and temperature data collected at Shearwater Autoport.
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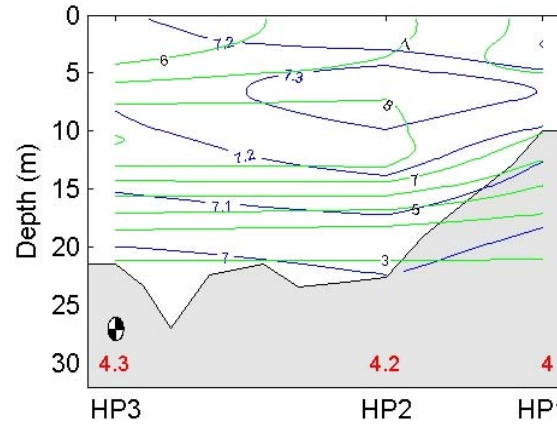
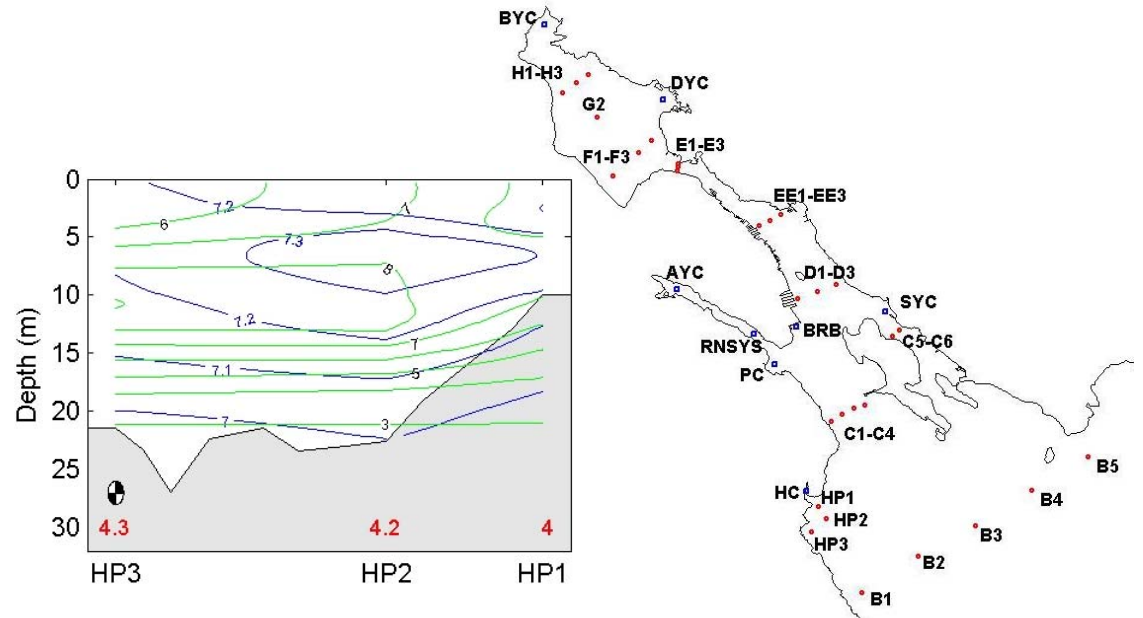
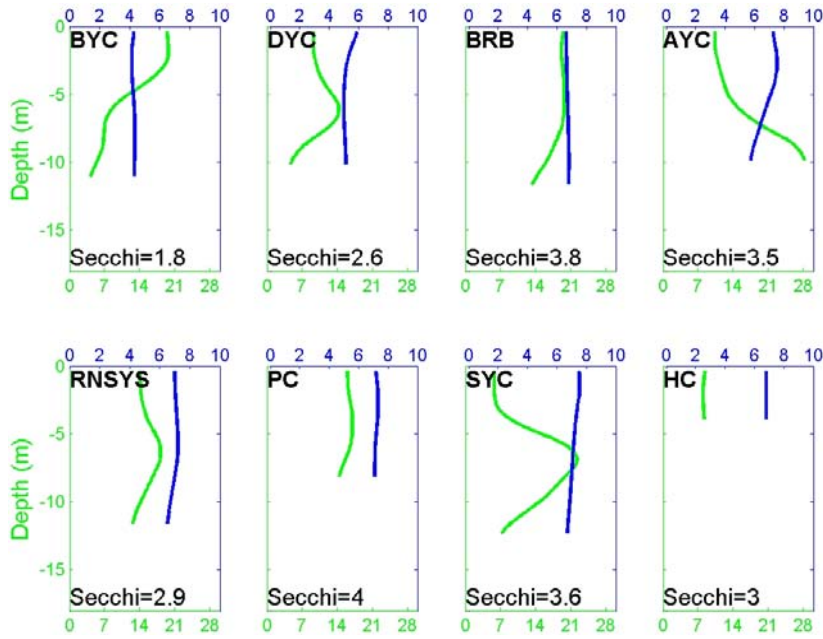


Potential Density in kg/m^3

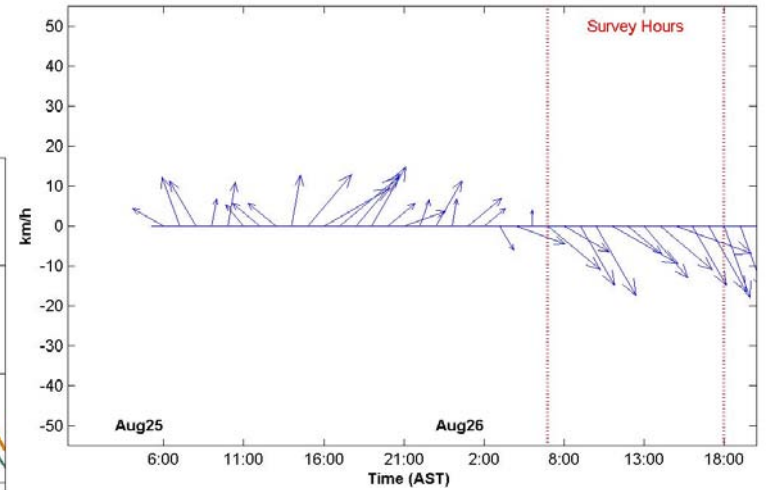
Fecal coliform: above swimming limit (200 cfu/100mL)
above shellfish limit (14 cfu/100mL)
below limits



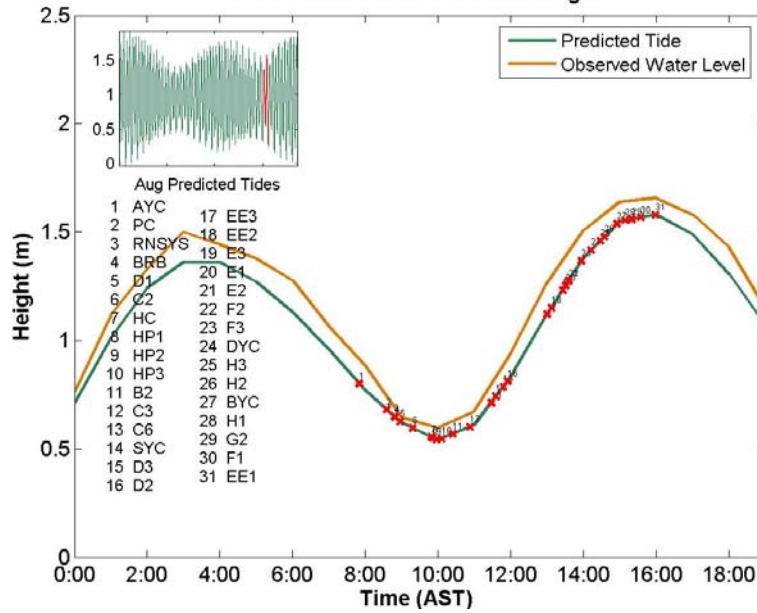
Yacht Clubs



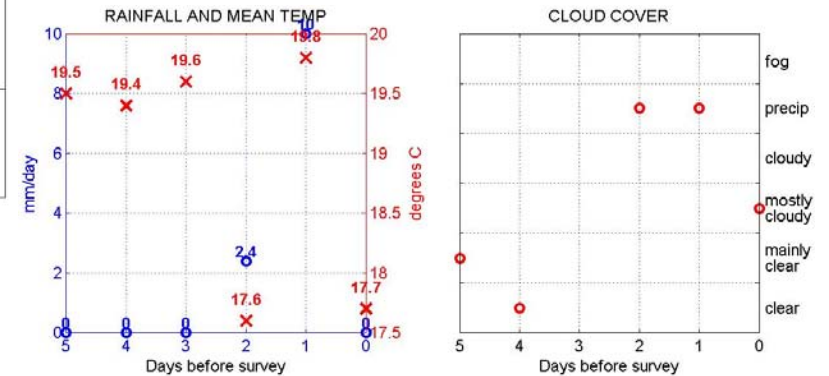
Wind Speed and Direction at Shearwater Jetty



Halifax Harbour Water Level - Aug26



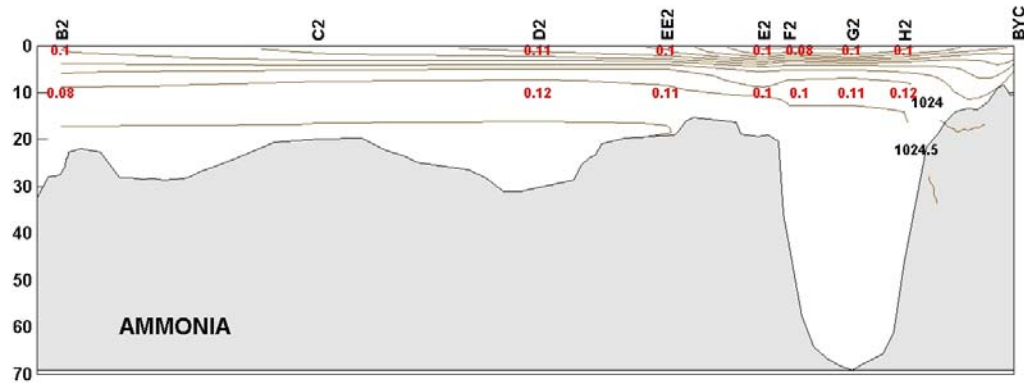
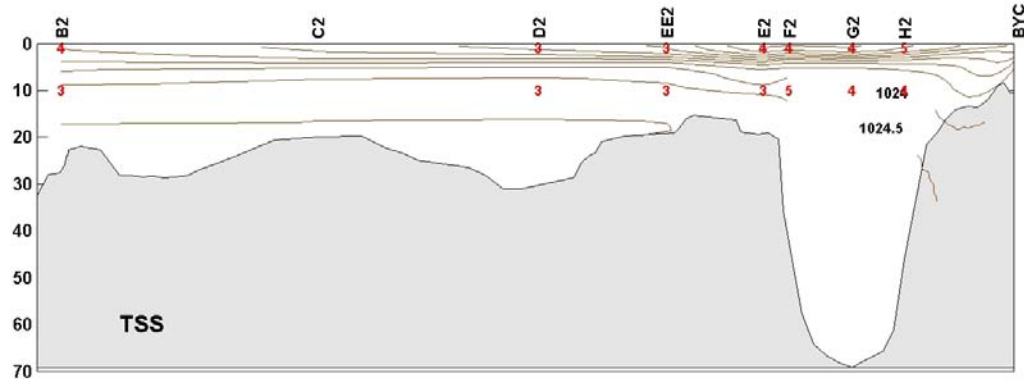
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



DO in mg/L

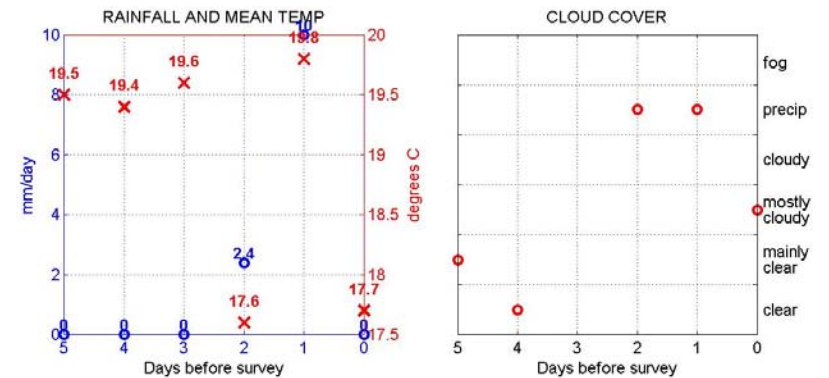
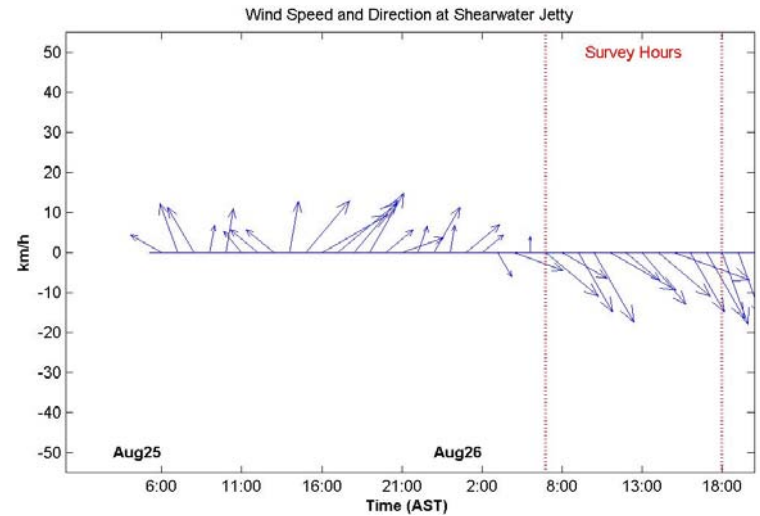
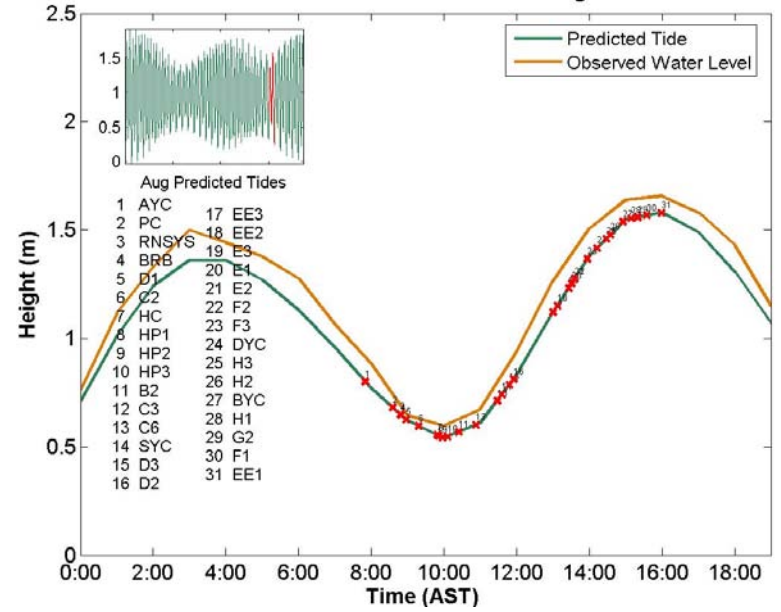
Chlorophyll in mg/m³

CHEMISTRY



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

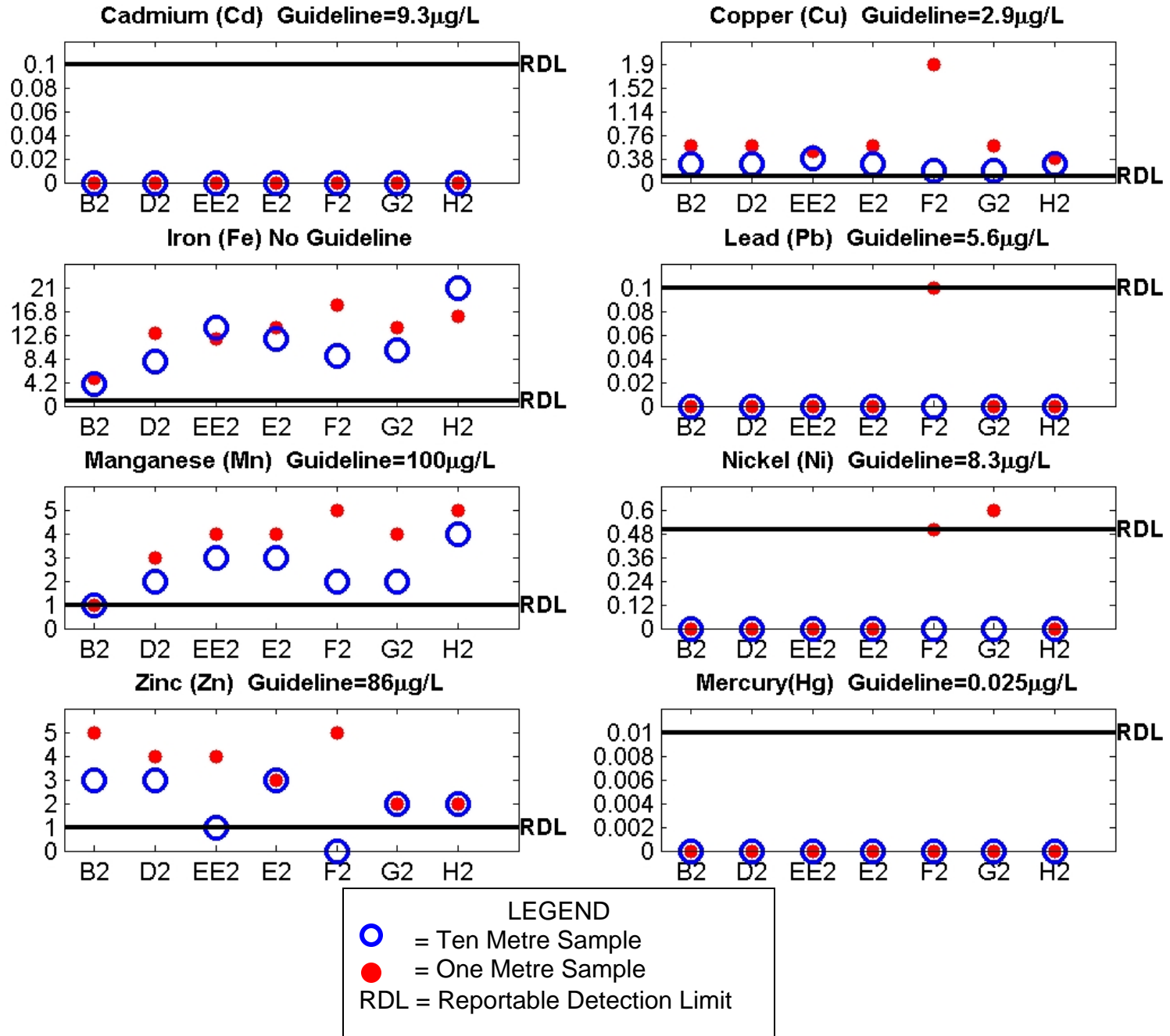
Halifax Harbour Water Level - Aug26



Potential Density in kg/m^3

Ammonia in mg/L

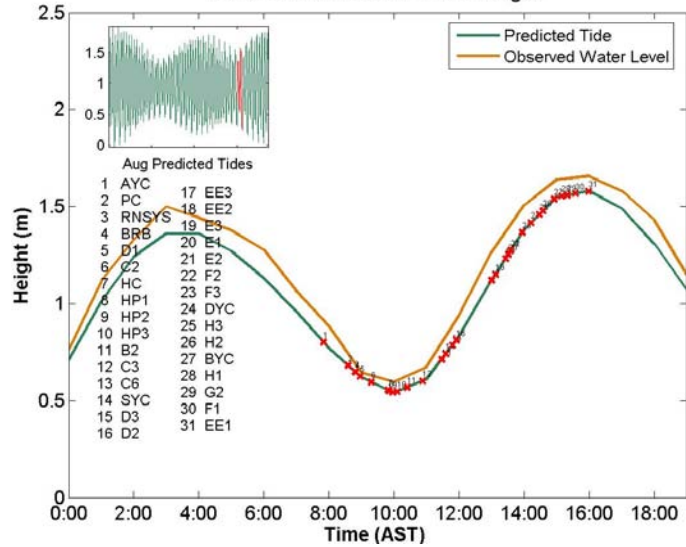
TSS in mg/L



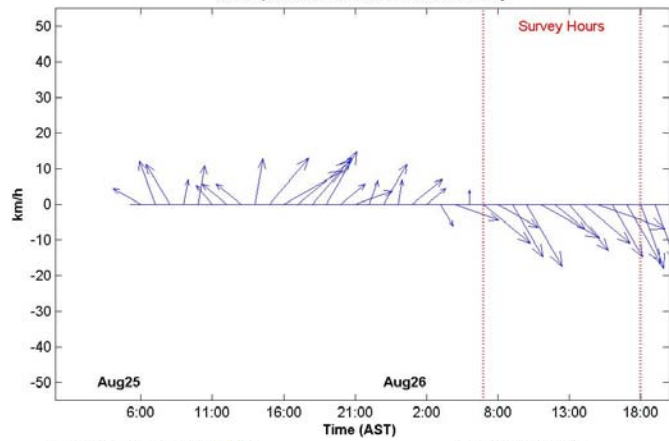
HRM Water Quality Monitoring

Fecal Coliform Summary – August 26, 2008

Halifax Harbour Water Level - Aug26



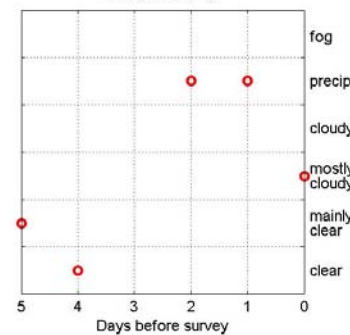
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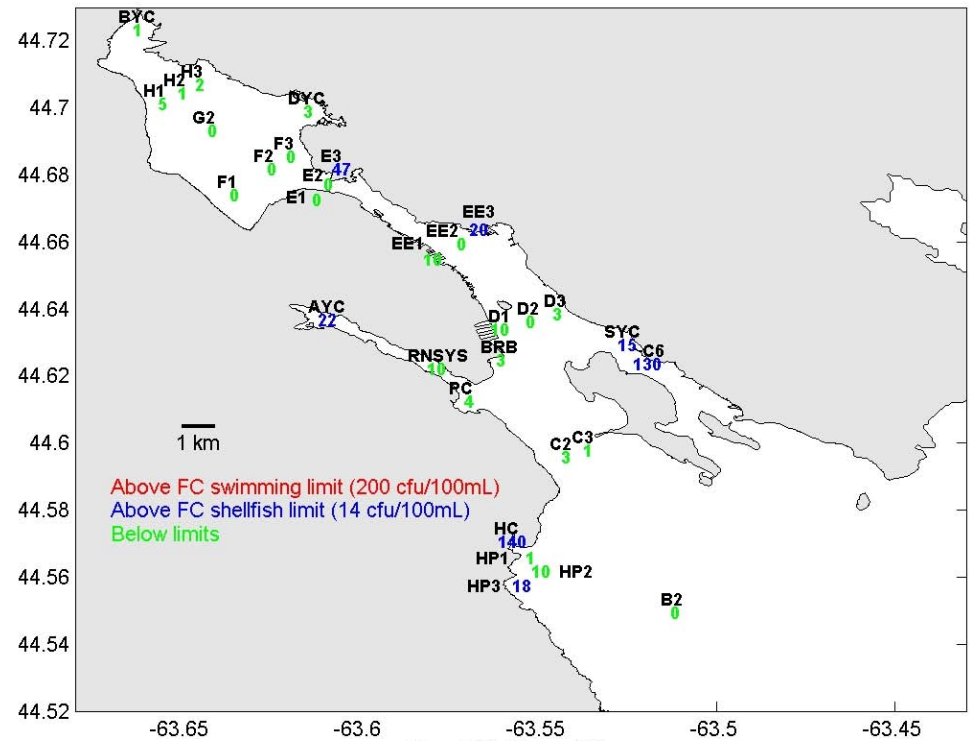
RAINFALL AND MEAN TEMP



CLOUD COVER



Fecal Coliform 1 m



Fecal Coliform 10 m

