

Halifax Harbour Water Quality Monitoring Project Survey Summary #167

Survey Date: 22 October 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report167_081022.doc
Data File: HHWQMP_data167_081022.xls

Data Return:
 Profile: 91%
 Bacteria: 90%
 Chemical: 86%
Overall: 88%

Sample Notes:

Dalhousie University sediment sampling team on board.

Sites HP2, HP3 and B2 were missed due to weather

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 08:01 local time.

At several sites (C3, C4 and E1) the DO profiles had a minor spike. These have been edited out and documented in the data file.

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

QA/QC samples:

Chemical Analysis		D2 - 1m	
		Reference Sample	QA/QC
Detectable Parameter	Units		
Ammonia (as N)	mg/L	0.10	0.06
Total Suspended Solids	mg/L	1	3
Copper	ug/L	0.6	0.4
Iron	ug/L	7	7
Manganese	ug/L	2	1
Mercury	ug/L	0.01	<0.01
Nickel	ug/L	0.6	<0.05
Zinc	ug/L	1	1

Fecal Coliform (CFU/100ml)

Site	EE1-10m	DYC-1m	EE3-1m	D2-1m
Reference	25	1	80	1
QA/QC	50	2	140	0

Comments:

General: The Harbour is remarkably well mixed with relatively small vertical differences in salinity, temperature and hence density. This includes Bedford Basin where the deeper water is quite uniform following the recent intrusion. Unusually, the water decreases in salinity and increases in temperature going out of the Harbour. The freshest and warmest water measured in this survey is at sections C and at HP1 in the Outer Harbour. This is obviously a complex result of preceding events, but part of the picture is probably persistent brisk down Harbour winds preceding the survey. The fecal coliform concentrations are low with no values in the Inner Harbour exceeding the swimming guideline. There exceedences of the swimming guideline both samples at HP1 in the vicinity of the Tribune Head outfall.

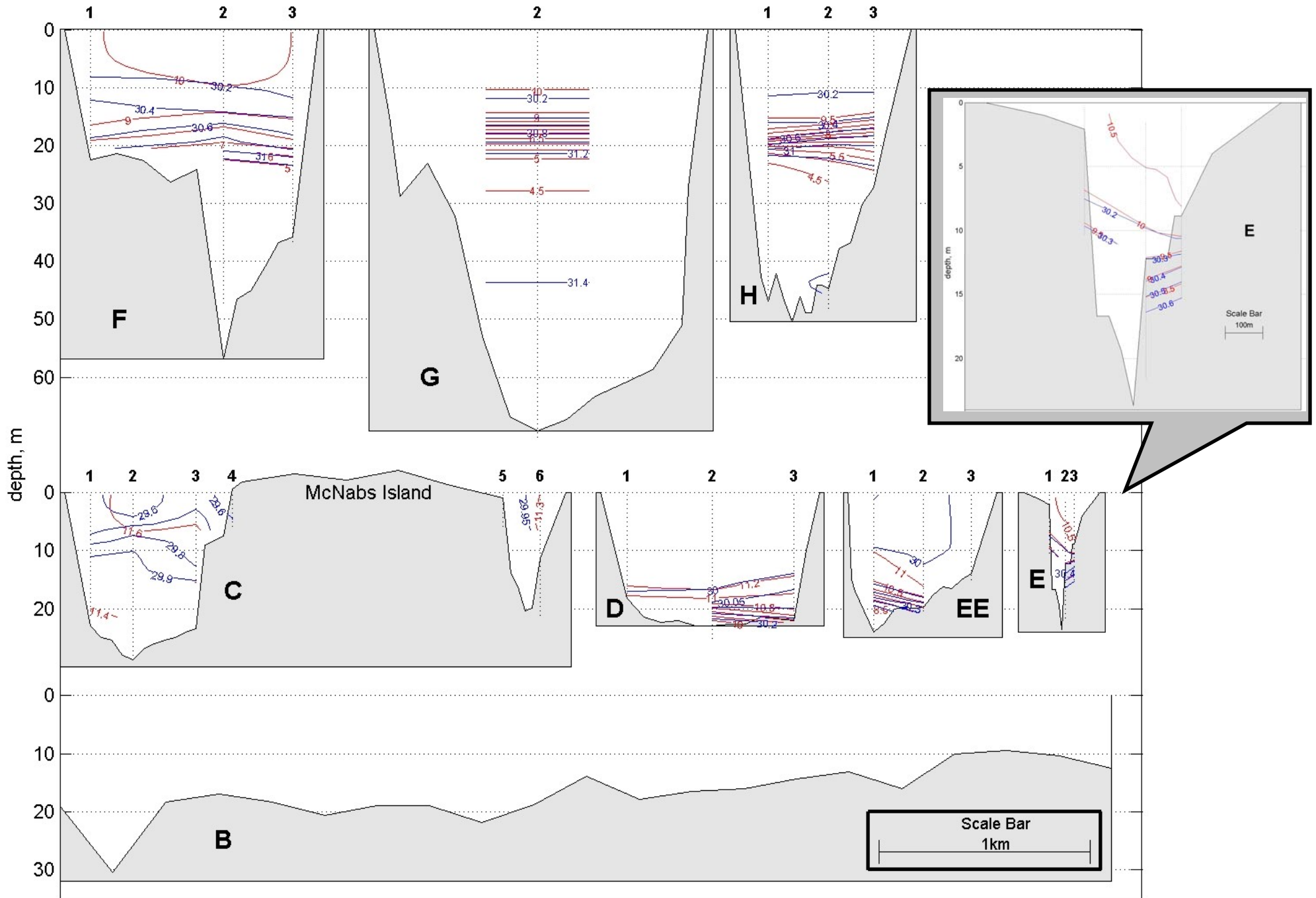
Fluorescence: The fluorescence profile maximums are quite low and uniform but do decrease somewhat from the head of the Basin (about 15 mg/m³) to about 5 mg/m³ in the Outer Harbour.

TSS: The TSS levels are relatively low with all values less than 5 mg/L (mean 2.6 mg/L). The highest values are in the Basin.

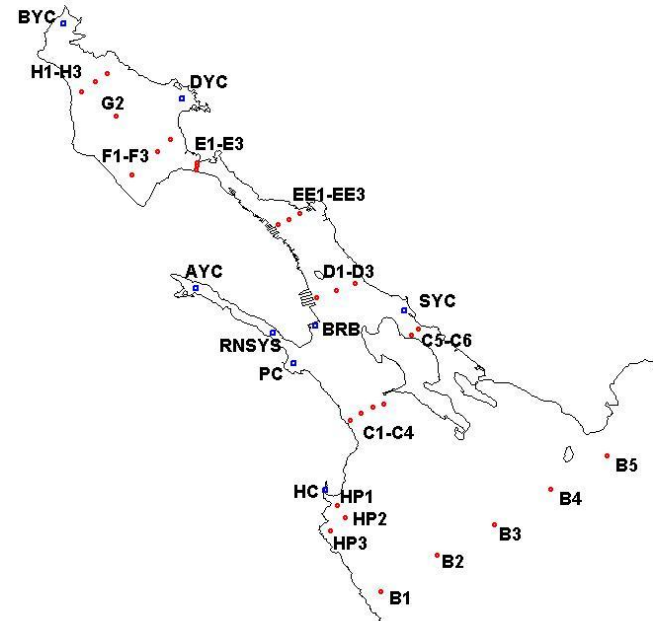
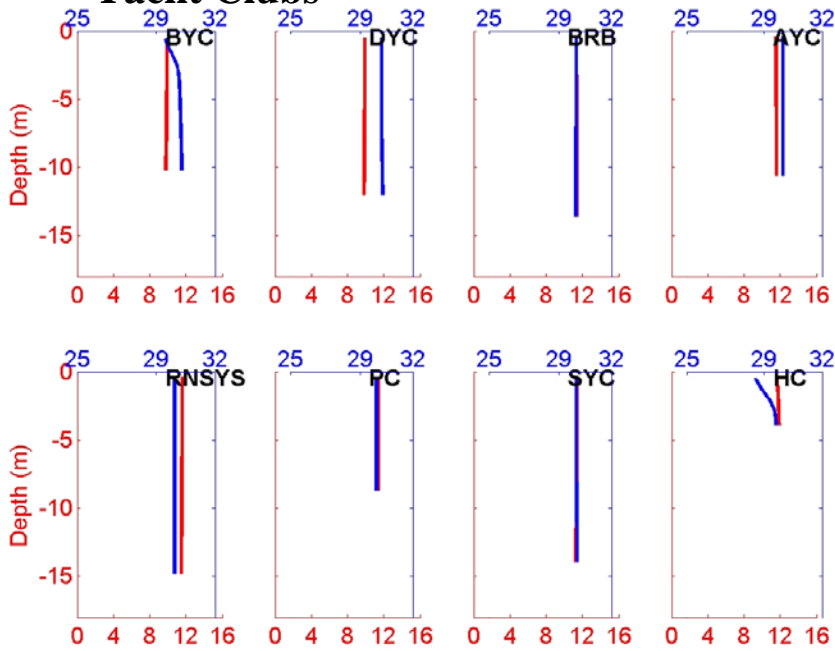
Ammonia: The ammonia levels are relatively high and all samples have detectable concentrations between 0.08 and 0.13 mg/L (mean 0.10 mg/L). There is no obvious coherent spatial distribution.

Metals: There are no guideline exceedences. The closest to exceedence is copper with a maximum concentration of about 50% of the guideline in the 1 m samples at site E2 and the 10 m sample at H2.

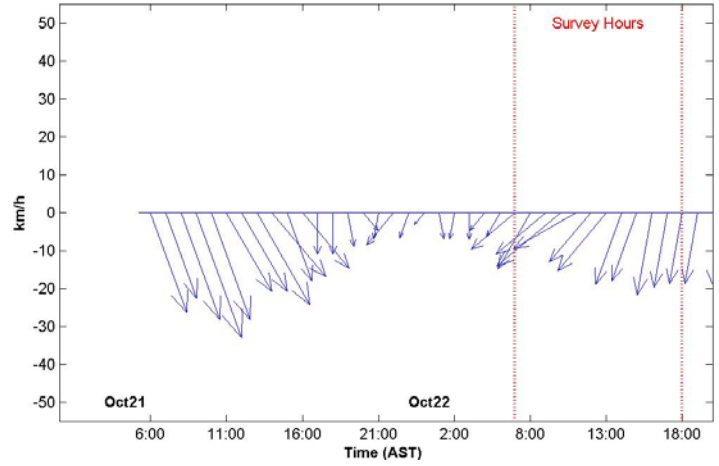
Dissolved Oxygen: The dissolved oxygen data, scaled appropriately by a factor of 1.4, indicates that the surface DO in the Harbour is generally quite uniform at about 8.5 - 9.0 mg/L. The levels are systematically higher in the Basin. The levels decrease everywhere with depth. In the Basin the bottom levels remain relatively high (> 6.0 mg/L) following the recent renewal/intrusion. In the remainder of the Harbour the bottom levels are about 7.7 - 7.8 mg/L. These levels represent a guideline exceedence in the Basin and in the Class SA area in the Outer Harbour.



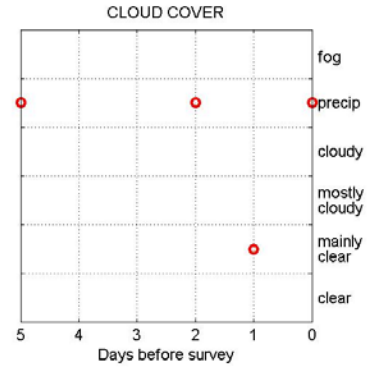
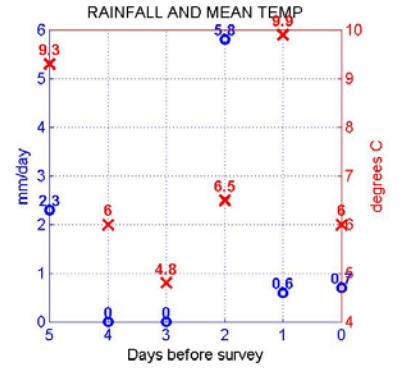
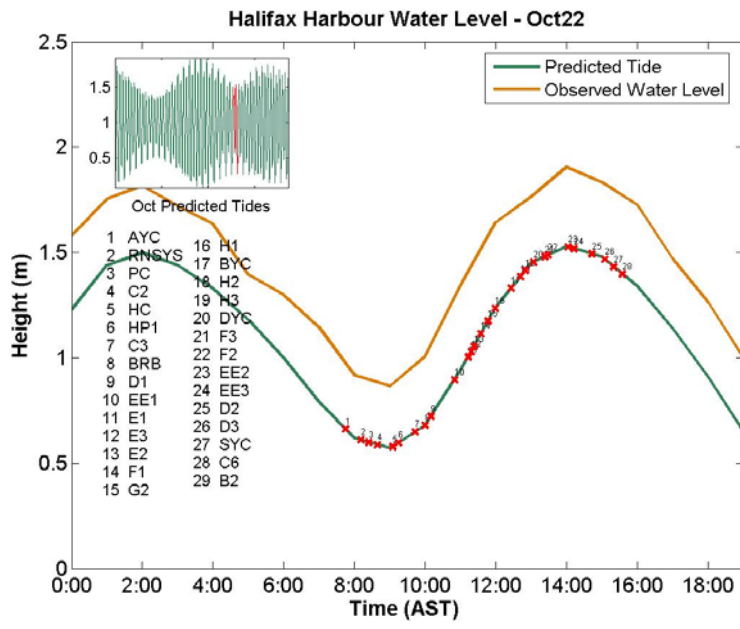
Yacht Clubs



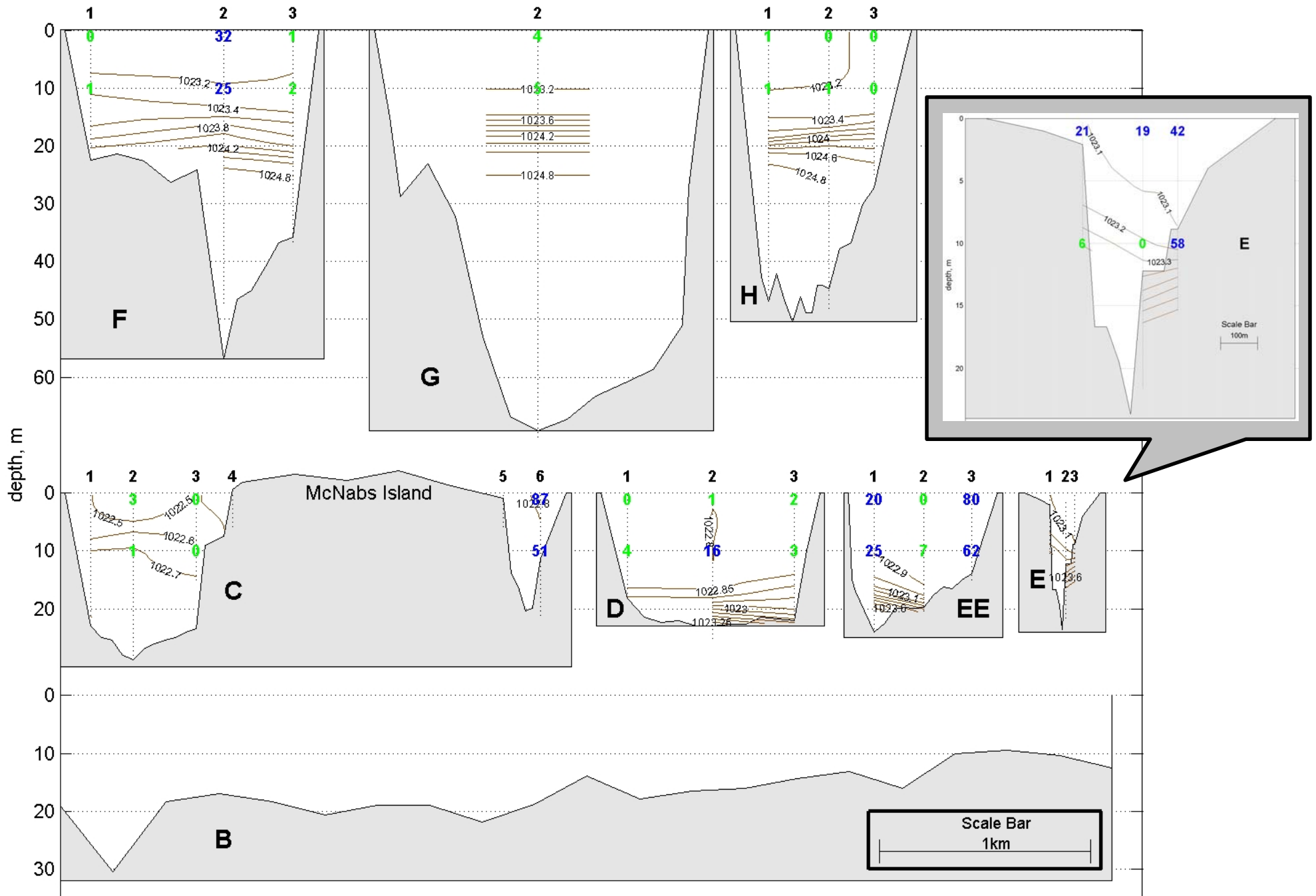
Wind Speed and Direction at Shearwater Jetty



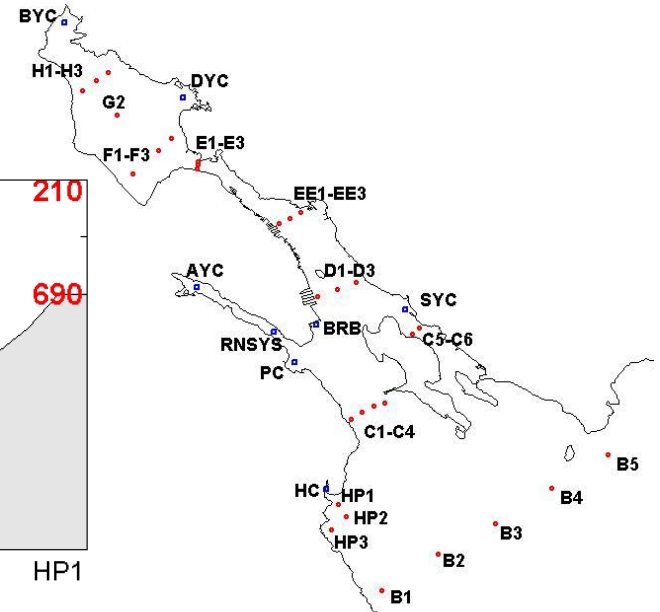
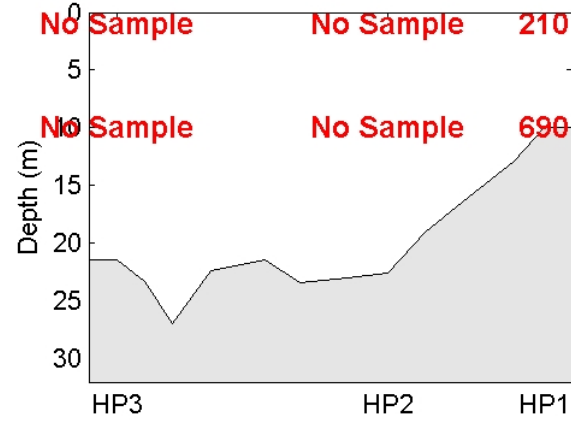
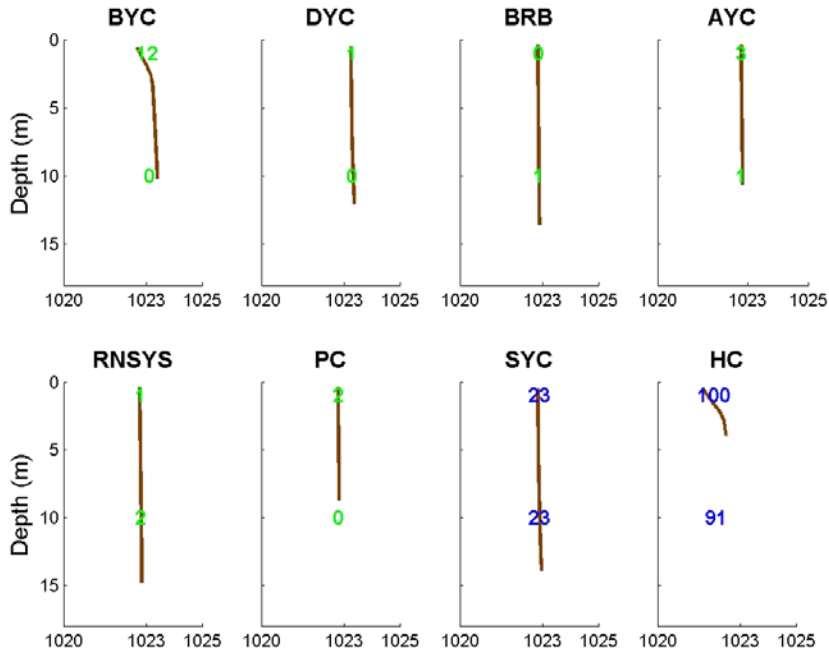
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



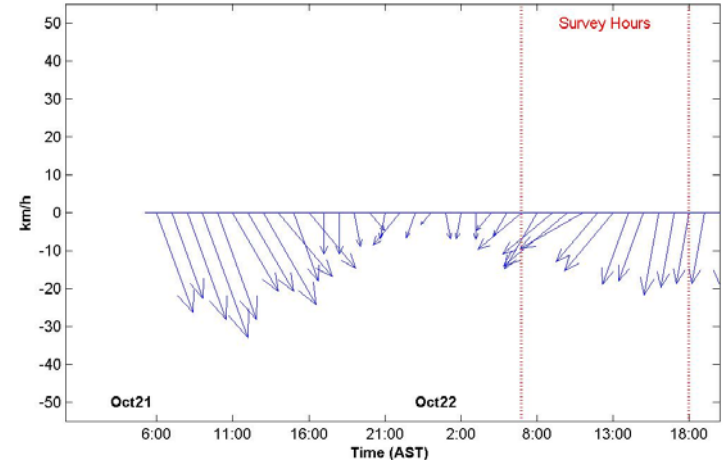
Salinity in PSU Temperature in °C



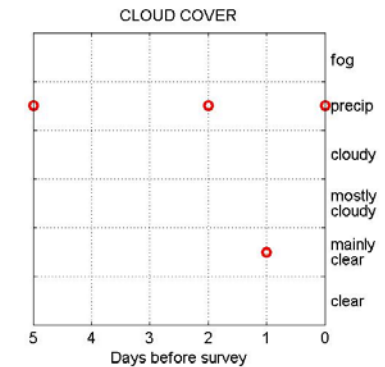
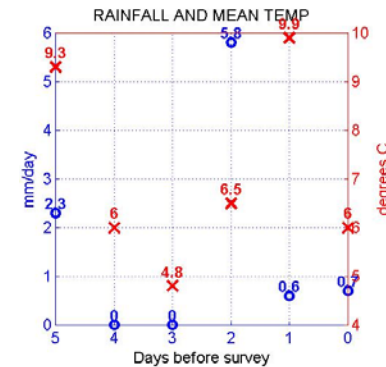
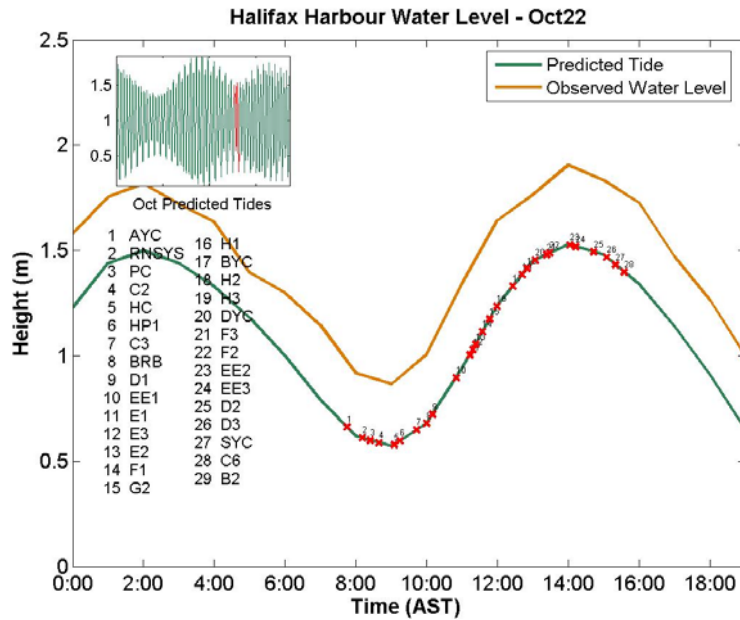
Yacht Clubs



Wind Speed and Direction at Shearwater Jetty

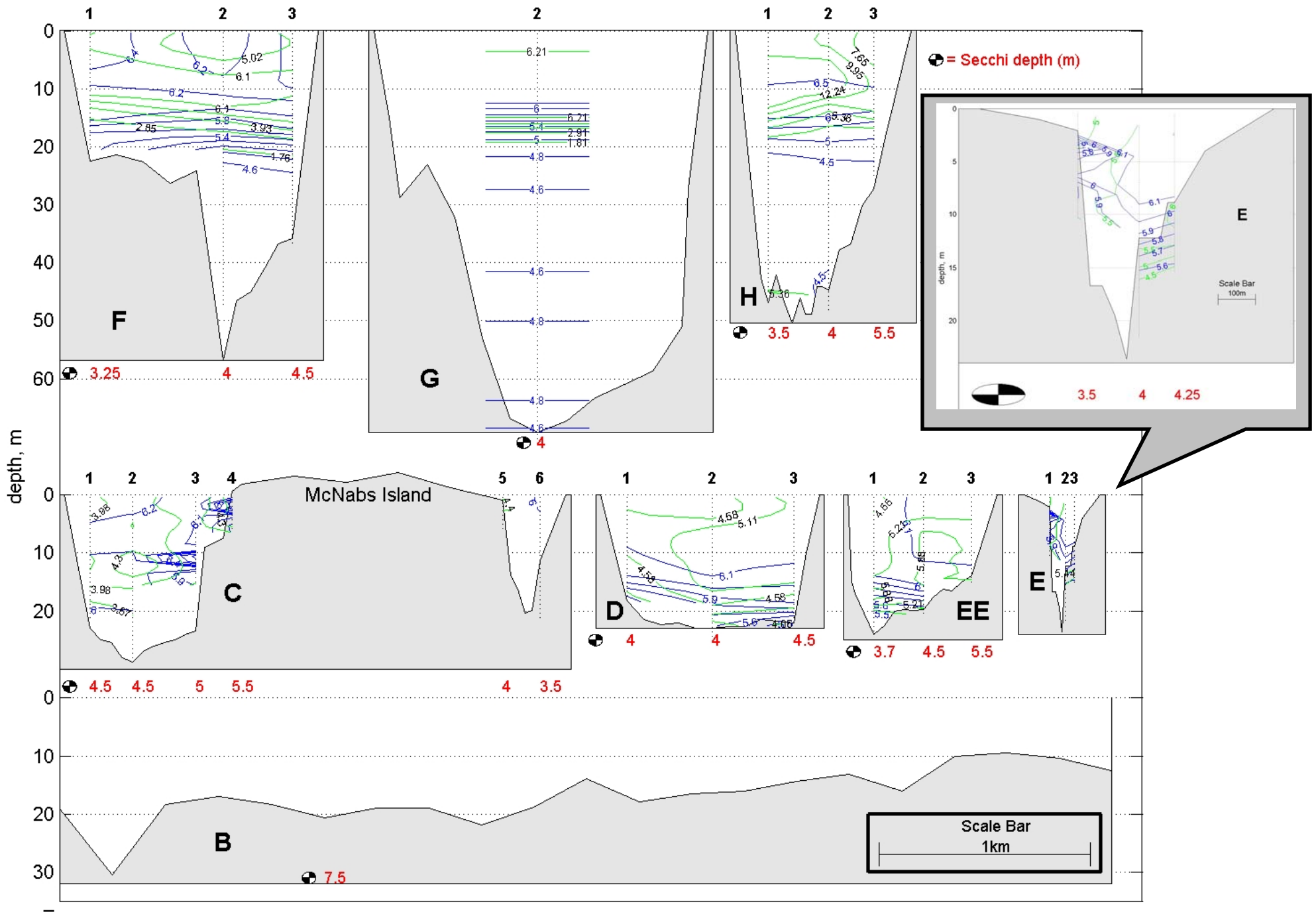


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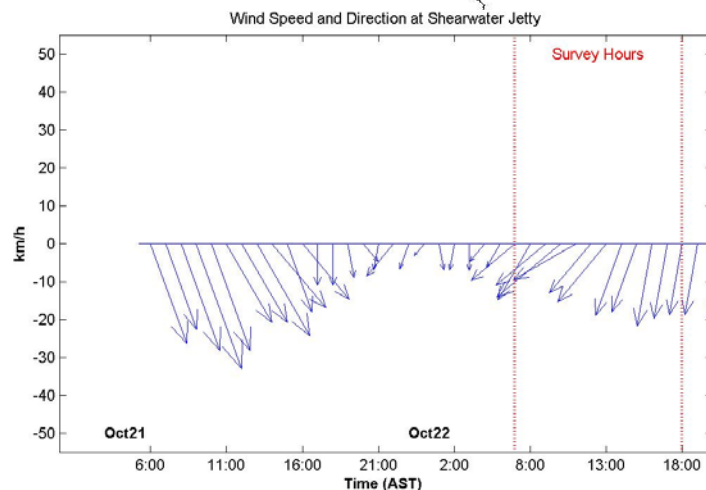
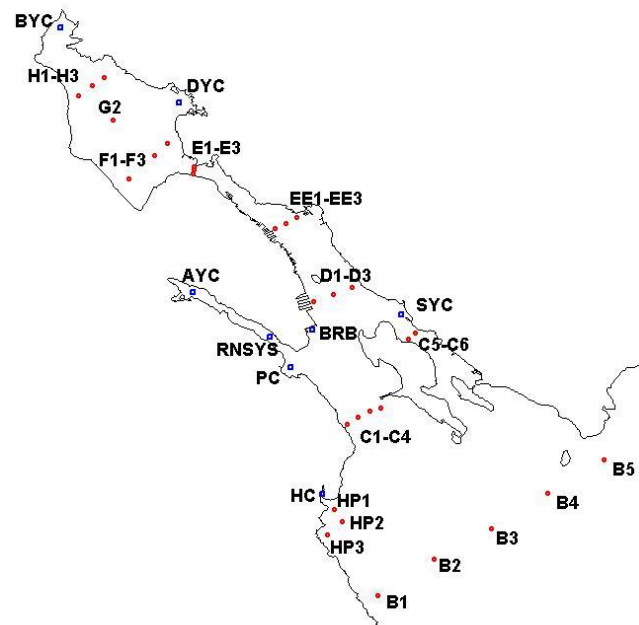
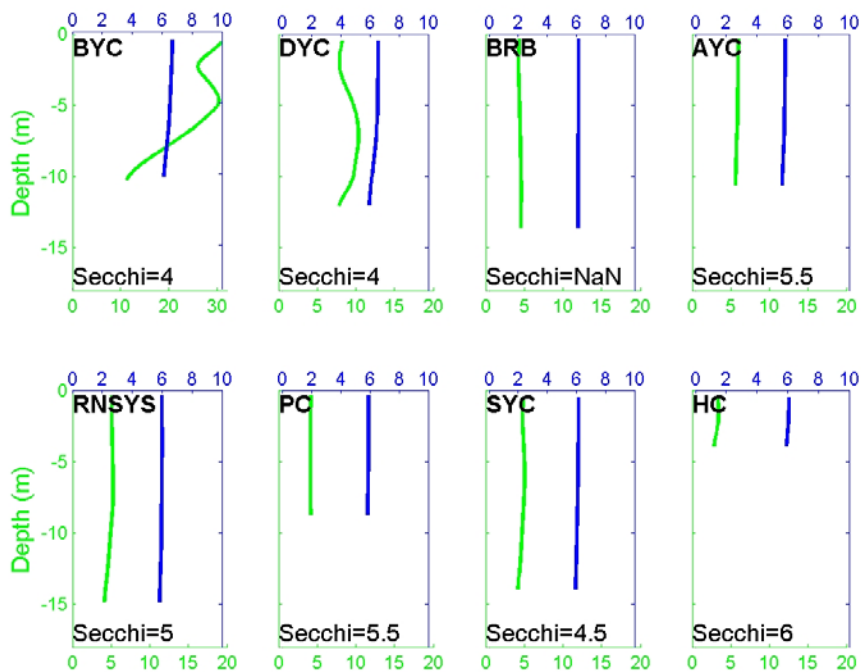


Potential Density in kg/m^3

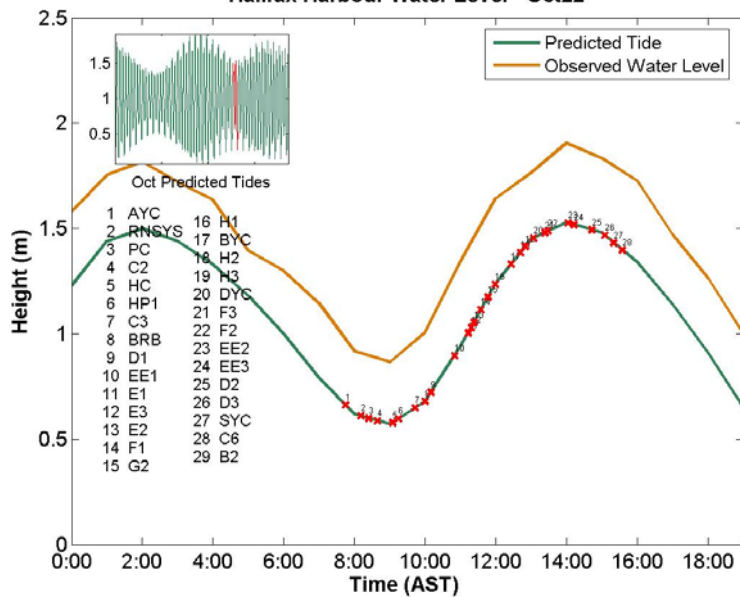
Fecal coliform: **above swimming limit (200 cfu/100mL)**
above shellfish limit (14 cfu/100mL)
below limits



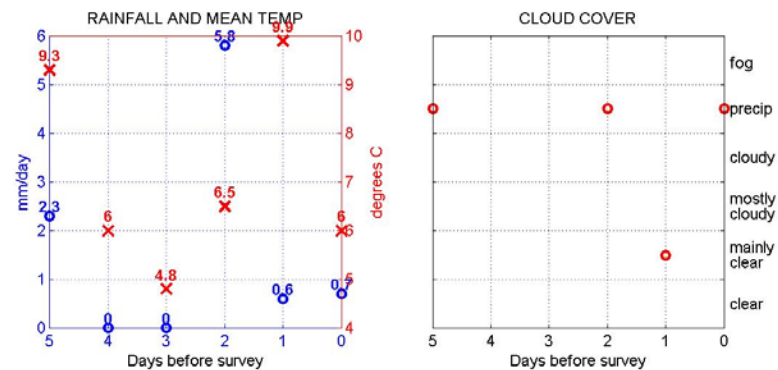
Yacht Clubs



Halifax Harbour Water Level - Oct22



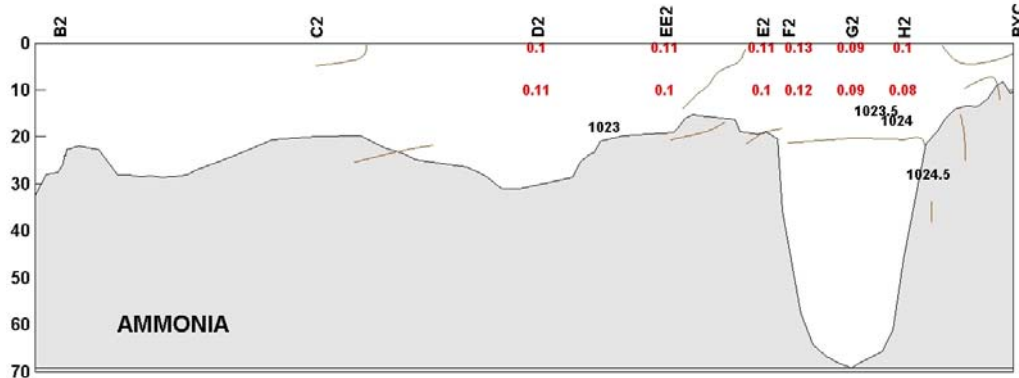
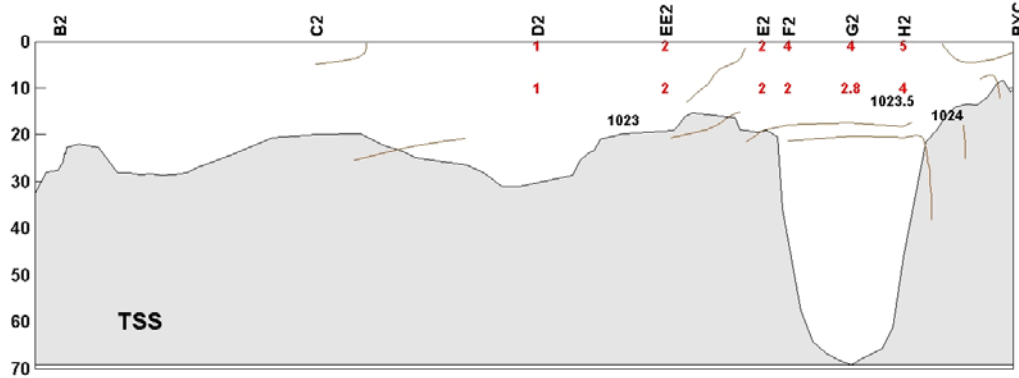
Rainfall and temperature data collected at Shearwater Autoport.
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DO in mg/L

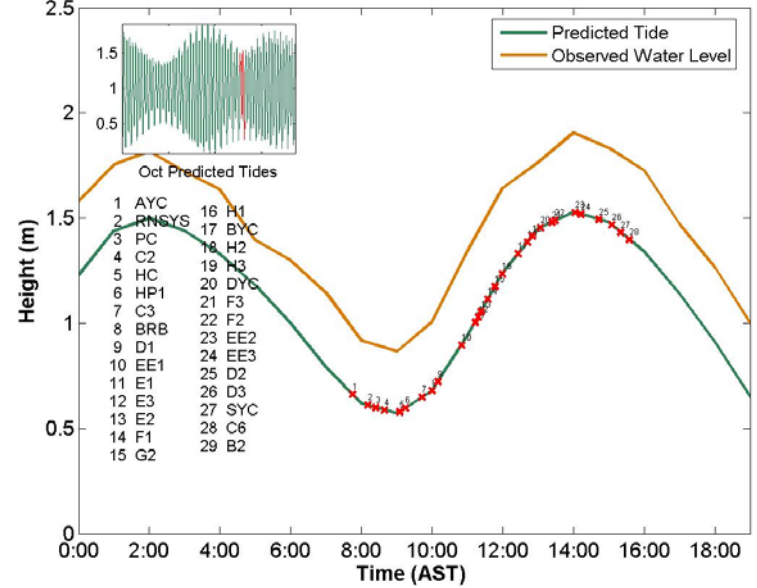
Chlorophyll in mg/m³

CHEMISTRY

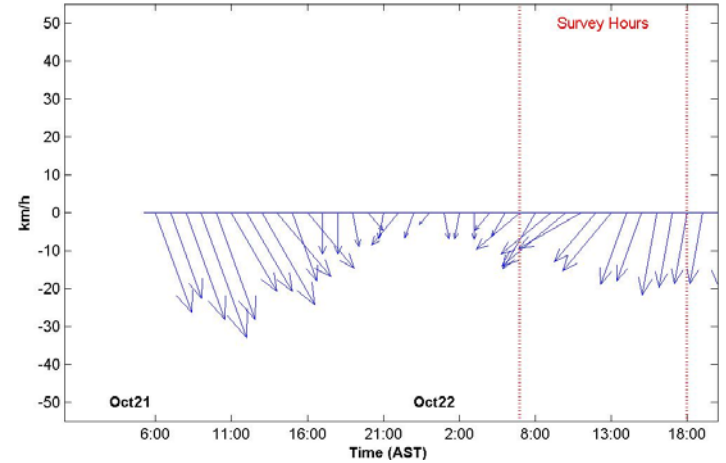


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Cloud cover data collected at Shearwater Airport

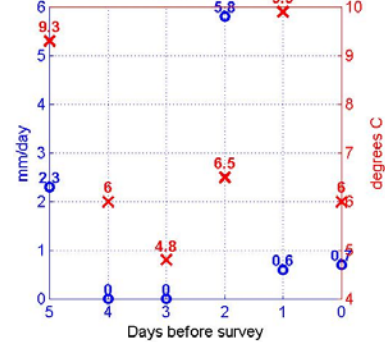
Halifax Harbour Water Level - Oct22



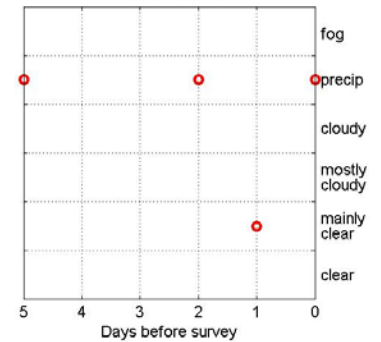
Wind Speed and Direction at Shearwater Jetty



RAINFALL AND MEAN TEMP



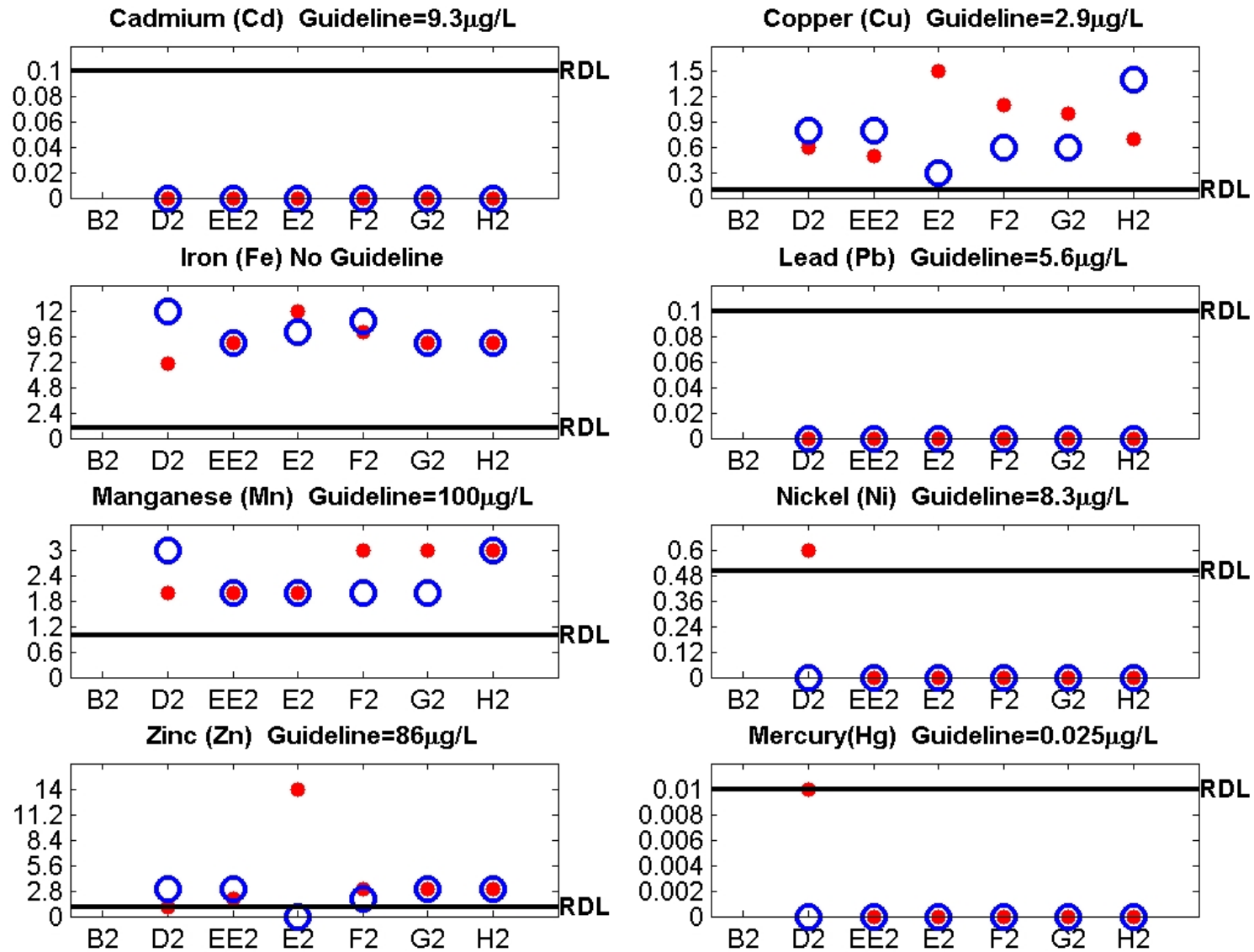
CLOUD COVER



Potential Density in kg/m^3

Ammonia in mg/L

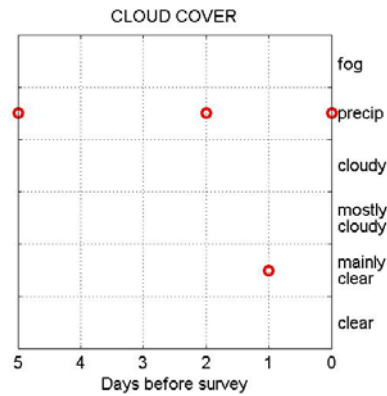
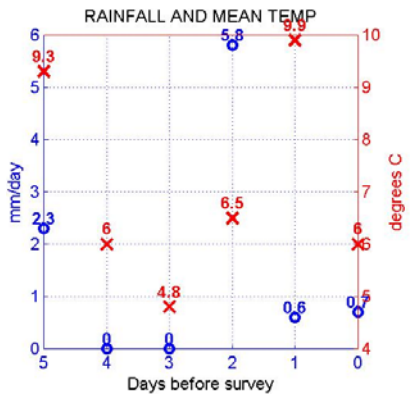
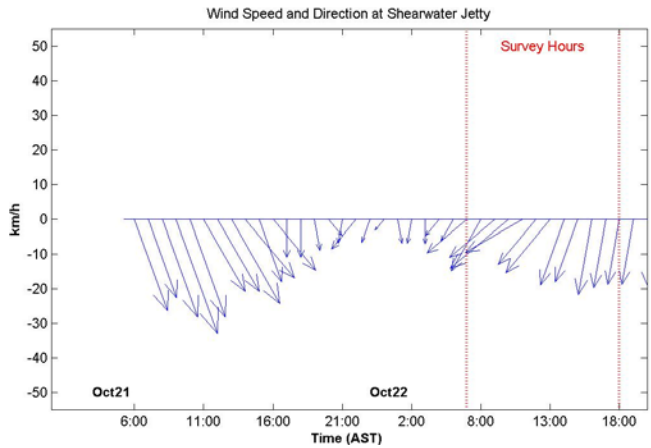
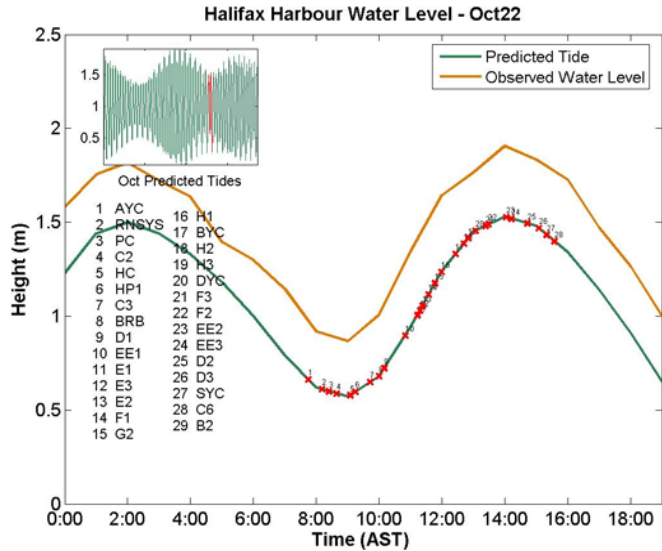
TSS in mg/L



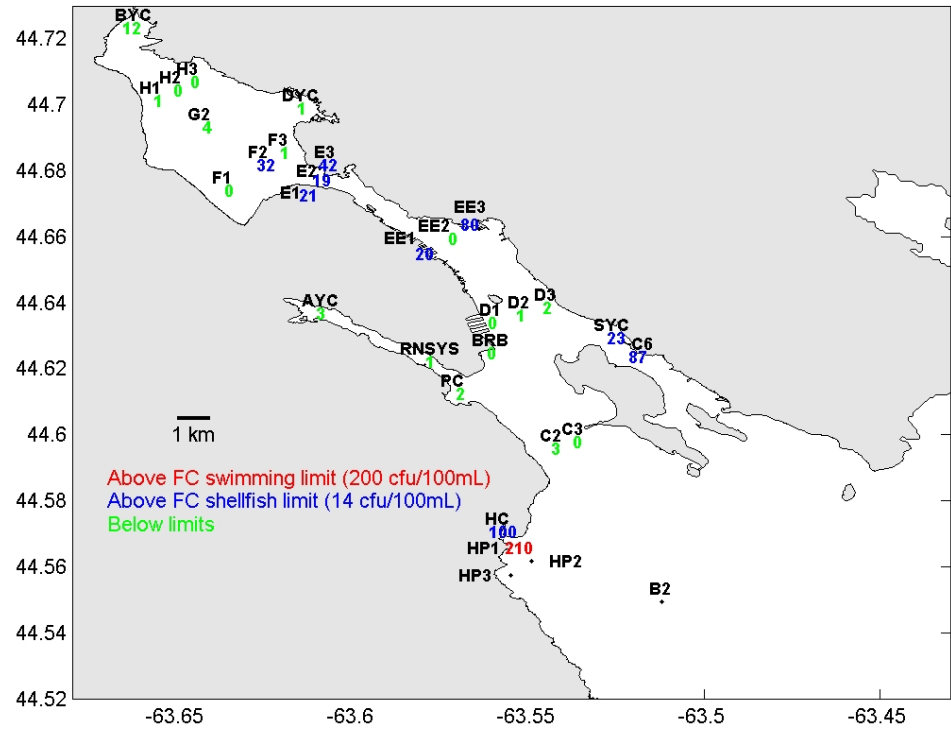
LEGEND
 ○ = Ten Metre Sample
 ● = One Metre Sample
 RDL = Reportable Detection Limit

HRM Water Quality Monitoring

Fecal Coliform Summary – October 22, 2008



Fecal Coliform 1 m



Fecal Coliform 10 m

