

Halifax Harbour Water Quality Monitoring Project Survey Summary #146

Survey Date: 03 January 2008
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report146_080103.doc
Data File: HHWQMP_data146_080103.xls

Data Return:

Profile: 100%
 Bacteria: 100%
 Chemical: 100%
Overall: 100%

Sample Notes:

A CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 17:05.

DO reference levels were taken with a YSI DO meter. See "Dissolved Oxygen" sheet in data file.

The profile data at HP3 was incorrectly truncated in processing. The data plotted here is incorrect, but the data file has been corrected.

QA/QC samples:

| Chemical Analysis | | B2 – 10m | |
|------------------------|-------|------------------|-------|
| Detectable Parameter | Units | reference sample | QA/QC |
| Ammonia (as N) | mg/L | <0.05 | <0.05 |
| Total Suspended Solids | mg/L | 2 | 3 |
| Copper | ug/L | 1.3 | 0.8 |
| Iron | ug/L | 8 | 7 |
| Lead | ug/L | 0.2 | <0.1 |
| Manganese | ug/L | 2 | 1 |
| Nickel | ug/L | 0.8 | <0.5 |
| Zinc | ug/L | 13 | 2 |

Fecal Coliform (MPN/100ml)

| Site | C2-10m | F1-1m | D2-1m | B2-10m |
|-----------|--------|-------|-------|--------|
| Reference | 160 | 43 | 130 | 17 |
| QA/QC | 130 | 27 | 210 | 22 |

Comments:

General: There has been significant precipitation in the days leading up to this survey. Earlier on, the mean daily air temperatures were just below freezing suggesting some mix of rain and snow. The harbour is more stratified than the very uniform conditions of the previous survey but still relatively un-stratified. There has been a persistent moderately strong (20-40 km/hr) down harbour wind starting in the early afternoon the day before the survey. The salinity (and density) data indicate that less saline (dense) surface water is displaced to the western side everywhere in the harbour; likely a response to the wind. In spite of this the fecal coliform levels are relatively low on the Halifax side, probably due to the ongoing commissioning of the Halifax treatment Plant. Everywhere the bacteria levels are unusually uniform vertically. The highest values seem displaced up harbour slightly to the Narrows, however at the same time there are detectable values all the way out to B2.

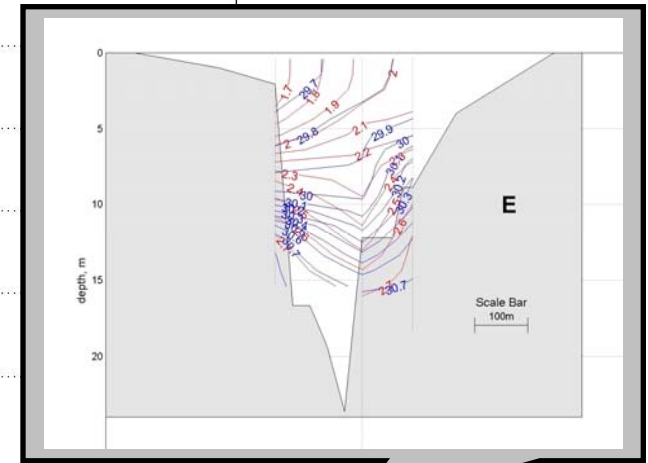
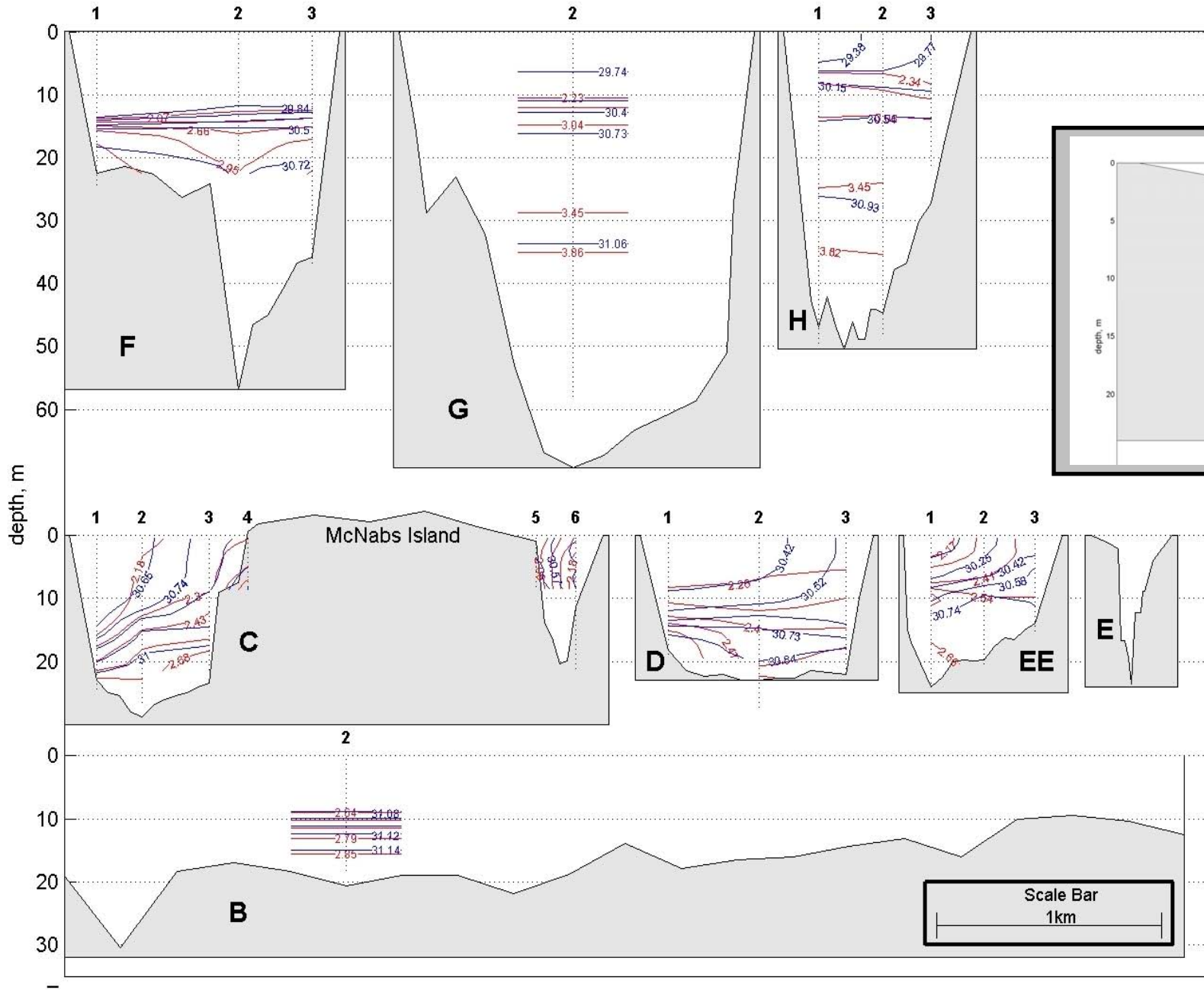
Fluorescence: The fluorescence values are low and vertically uniform with maximums of less than 1.5 mg/m³ everywhere.

TSS: TSS values are relatively low (mean 3.8) with values as high as 7.2 mg/L. There is no coherent spatial distribution.

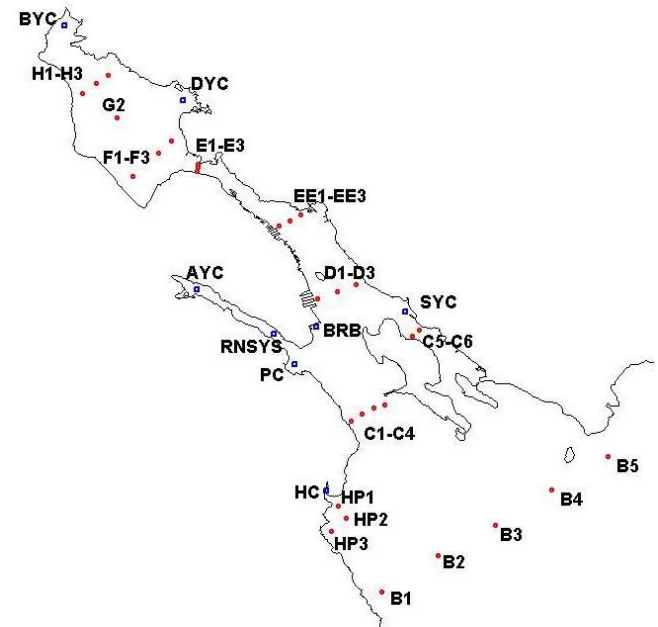
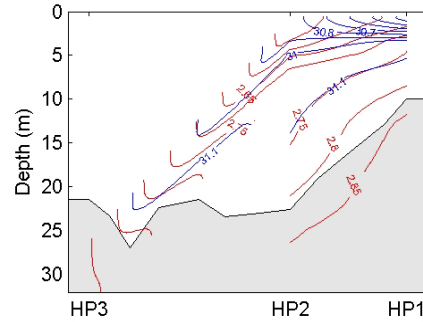
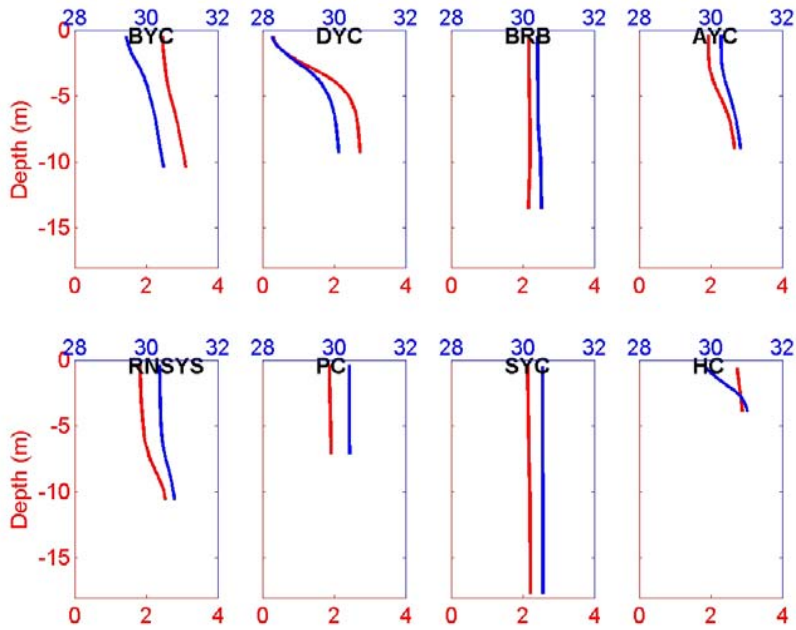
Ammonia: The ammonia values are mostly just above the 0.05 mg/L detection limit everywhere (mean .064 mg/L, max value 0.8 mg/L). The levels are below detection at site B2, in the Outer Harbour.

Metals: There is a single copper concentration of 6.6 ug/L (H2-1m) that exceeds the 2.9 ug/L guideline. The remainder of the copper concentrations are about 1/3 to 1/2 the guideline value, the closest to exceedence of any metal.

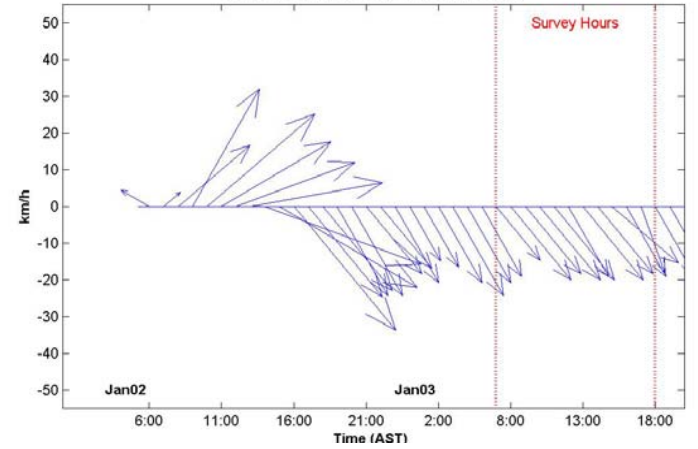
Dissolved Oxygen: The DO sensor showed none of the erratic behaviour experienced last week, however, the values measured were extremely low. A YSI hand held probe was used to collect verification data. The YSI data was consistently about 1.47 times higher than the Seabird data. This was also consistent with other comparison data sets the BBPMP data collected the same day (factor 1.4) and the LOBO buoy (factor 1.2). Using the 1.47 scale factor the DO levels are universally high (approximately 11.0 mg/L), with no guideline exceedences. The exception is as usual the bottom water in the Basin that is lower than the 7.0 mg/L guideline, but is relatively high at over 6 mg/L.



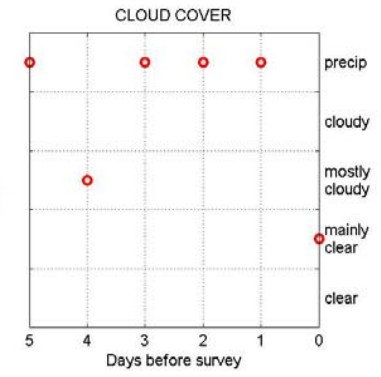
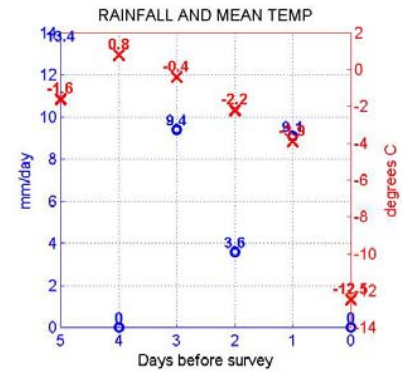
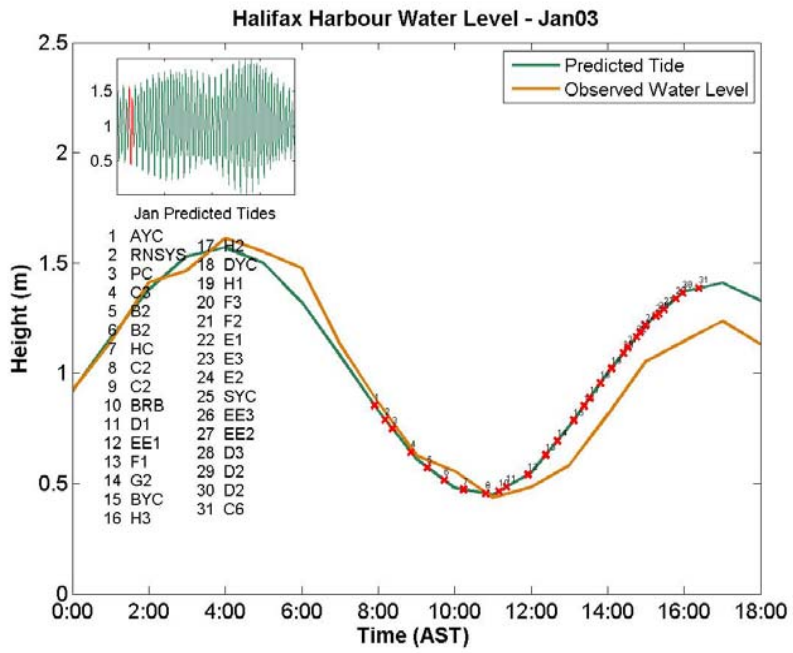
Yacht Clubs



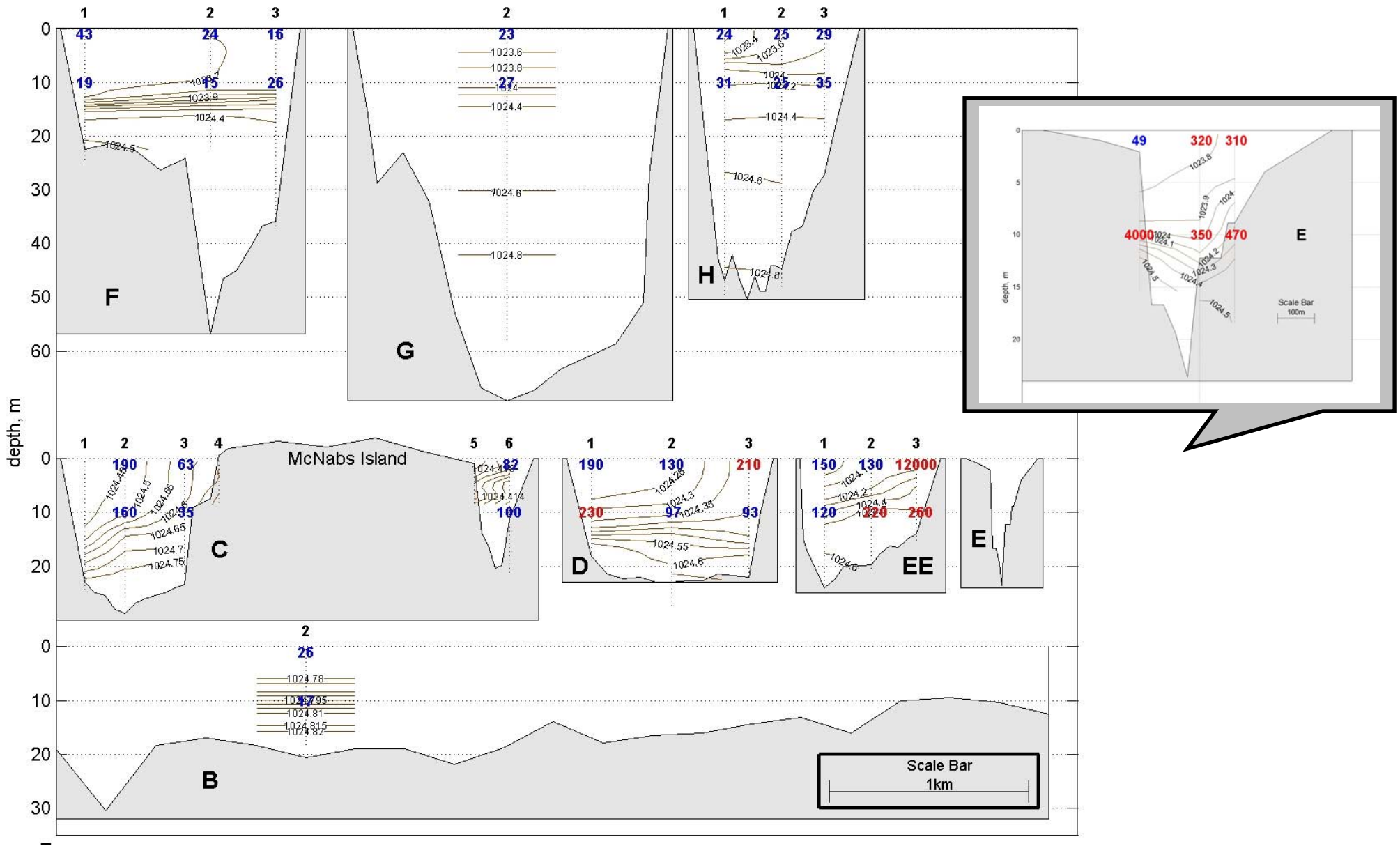
Wind Speed and Direction at Shearwater Jetty



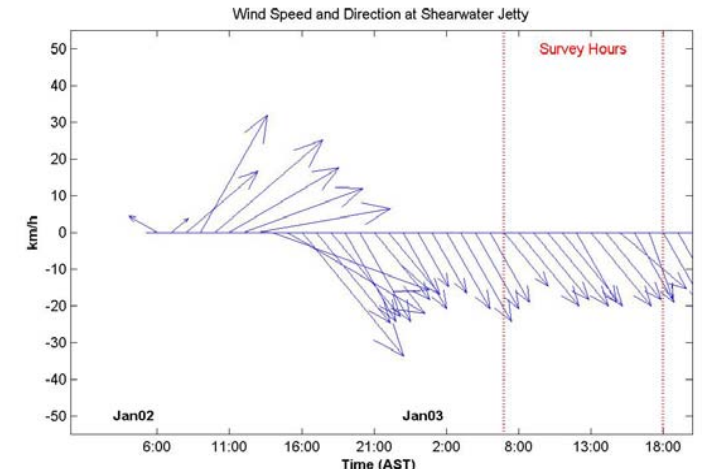
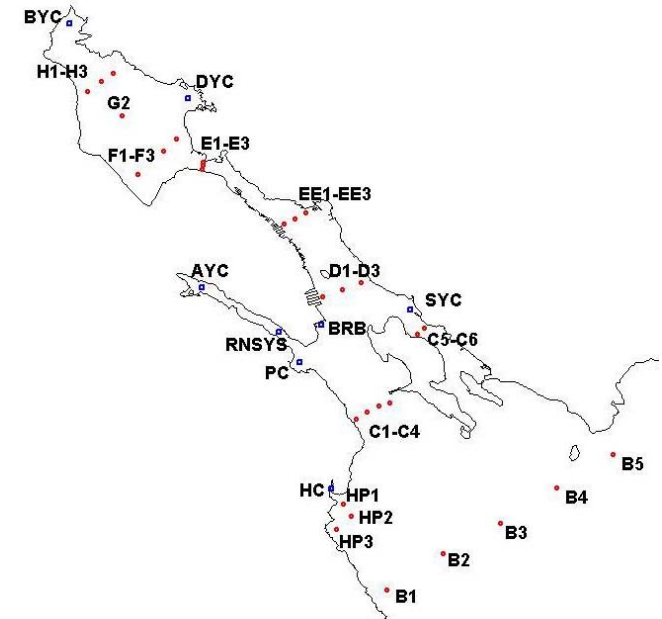
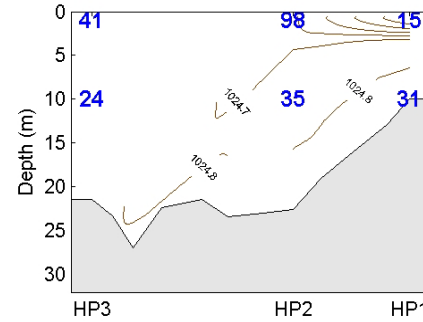
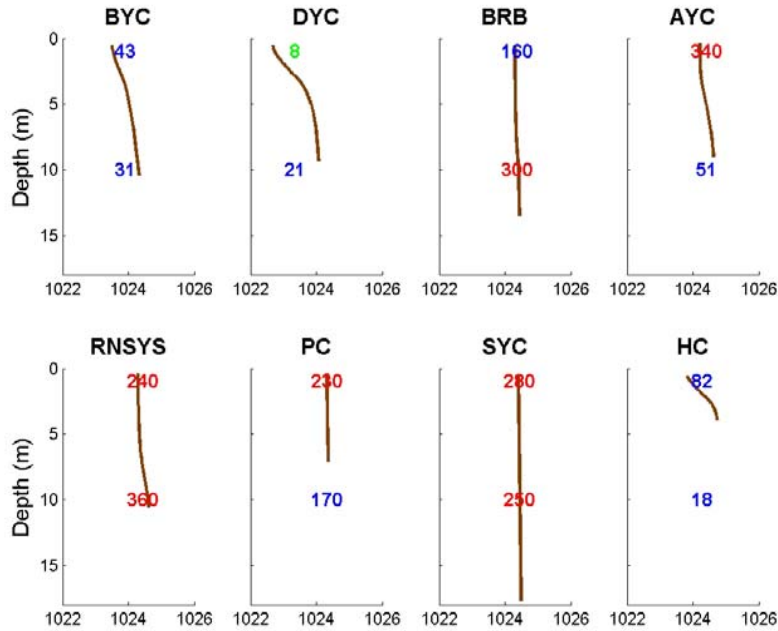
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport



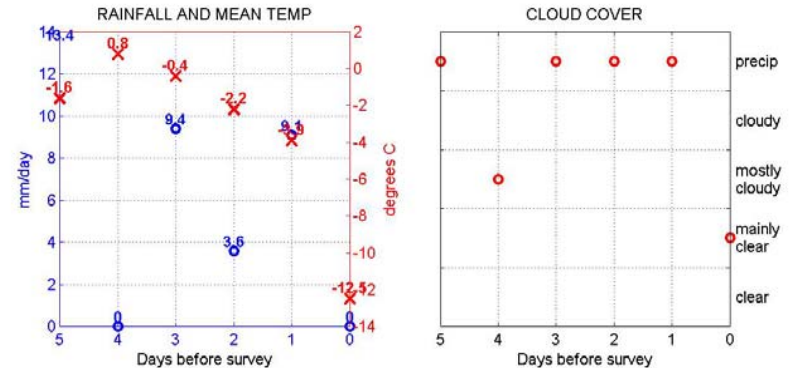
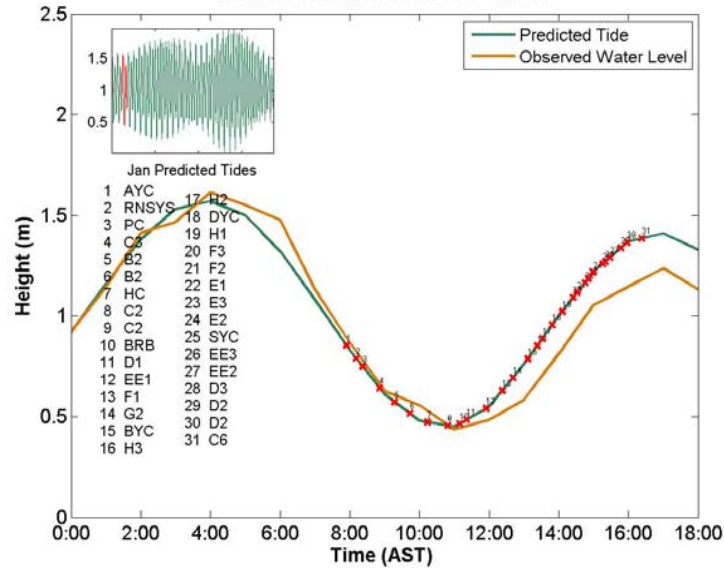
Salinity in PSU Temperature in °C



Yacht Clubs



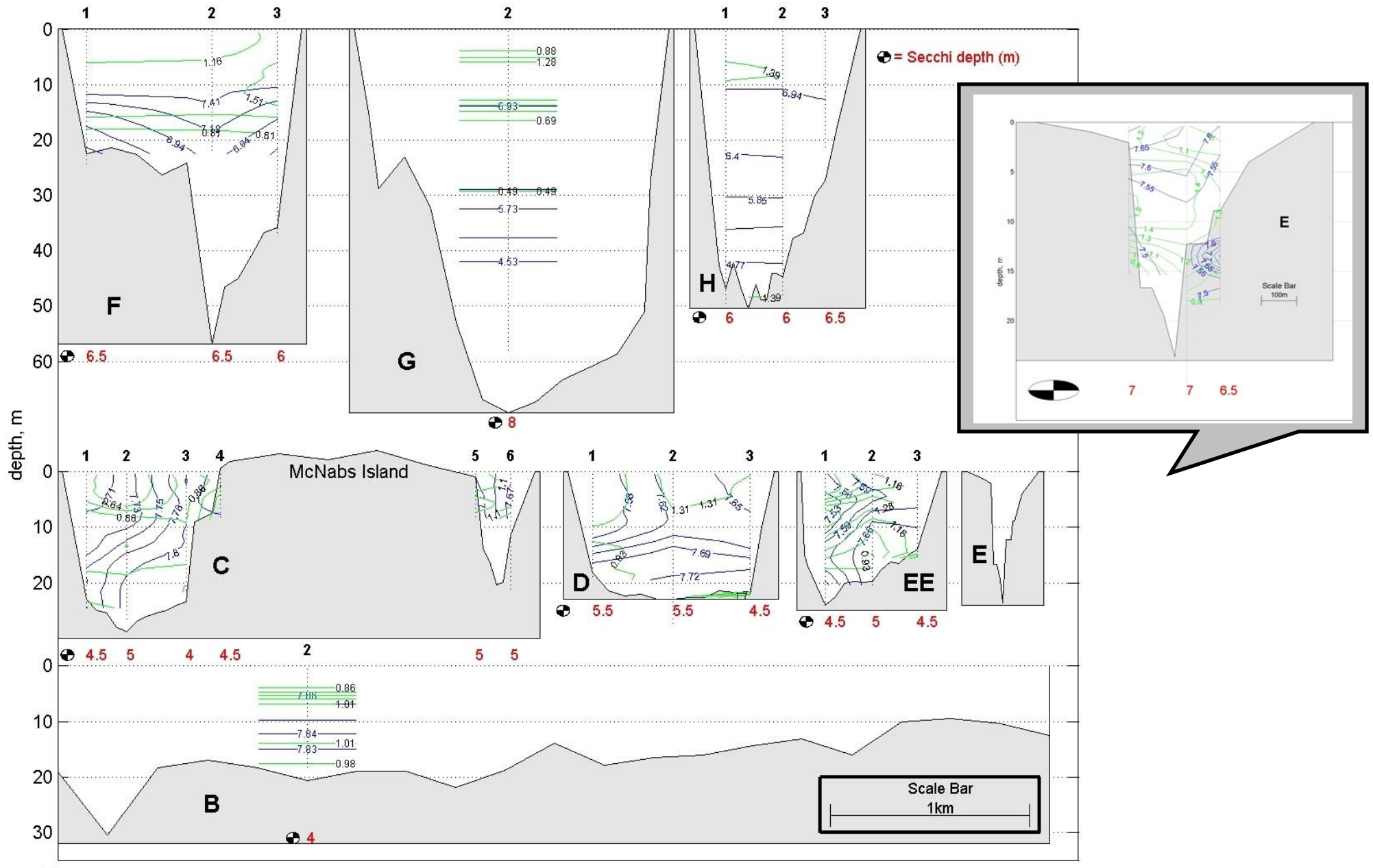
Halifax Harbour Water Level - Jan03



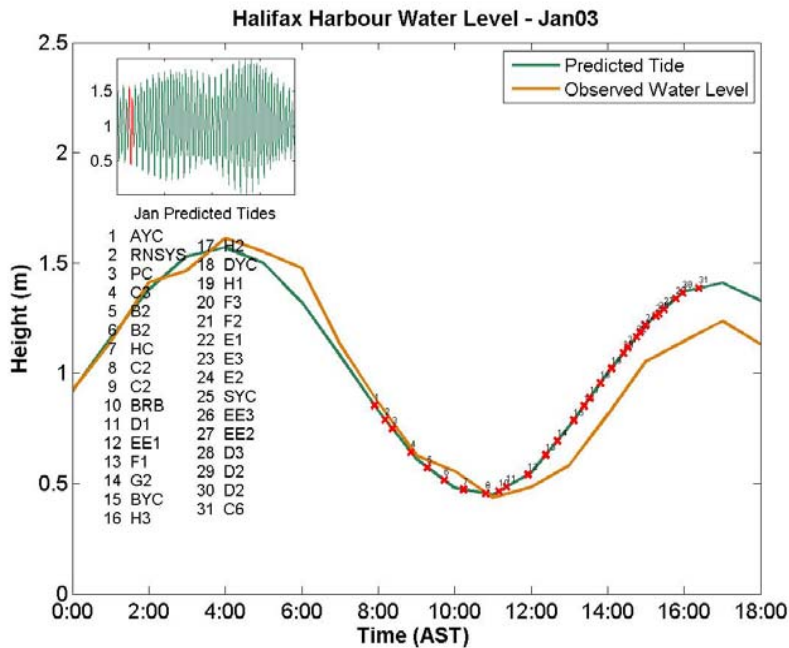
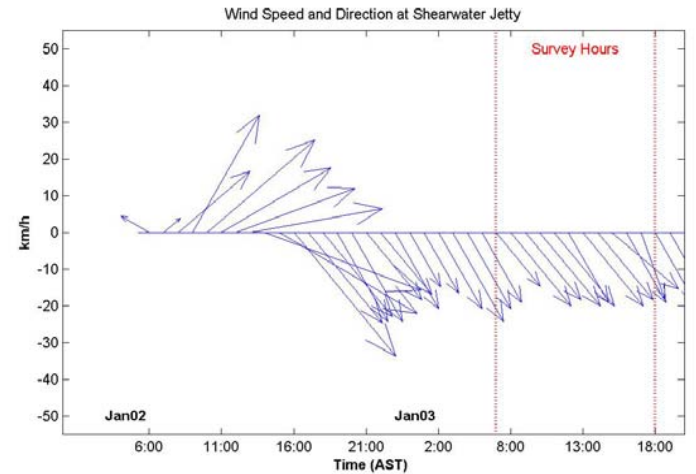
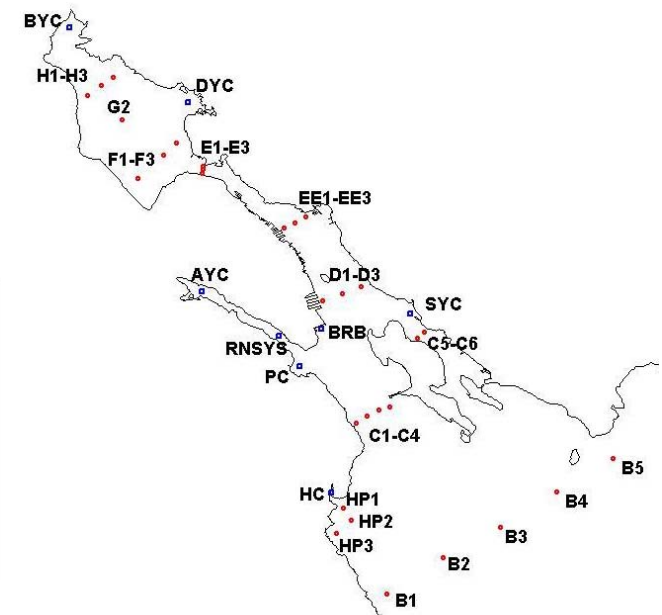
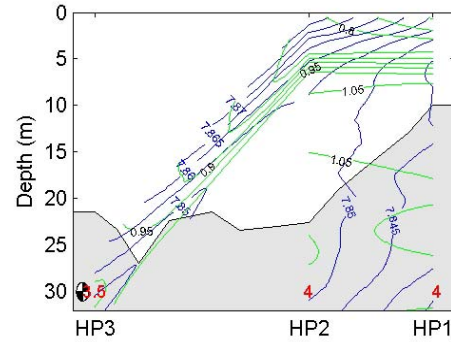
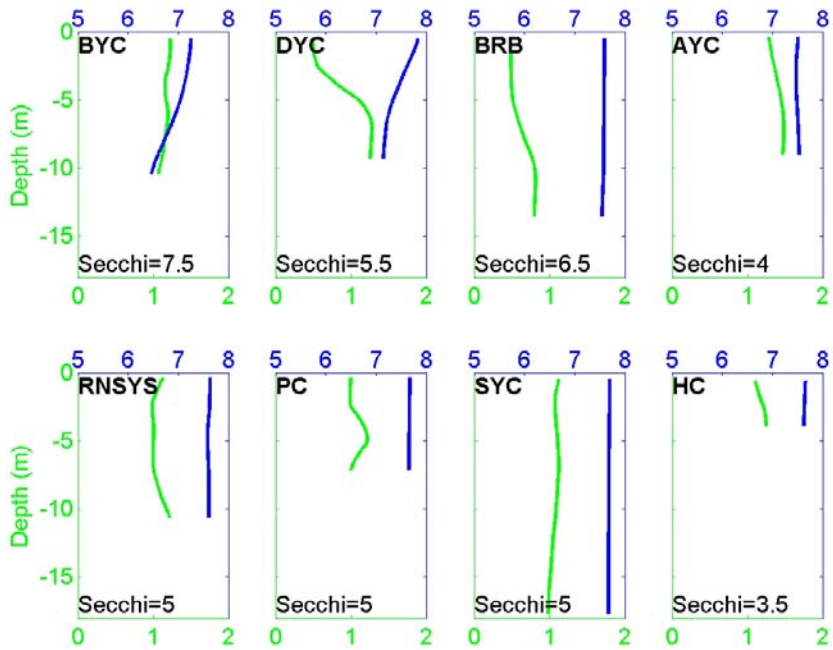
Rainfall and temperature data collected at Shearwater Autoport.
Cloud cover data collected at Shearwater Airport

Potential Density in kg/m^3

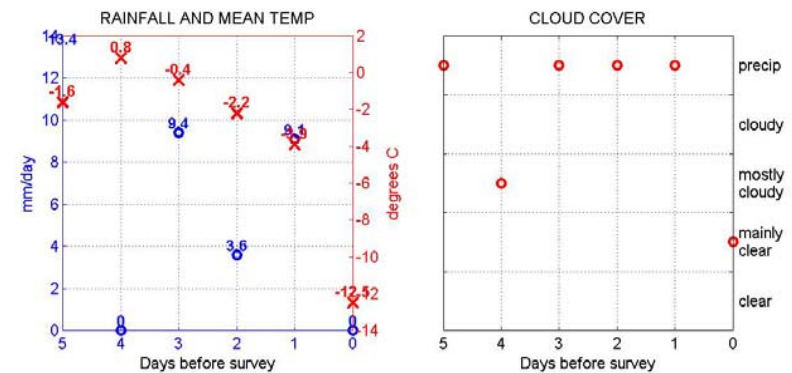
Fecal coliform: **above swimming limit (200 mpn/100mL)**
above shellfish limit (14 mpn/100mL)
below limits



Yacht Clubs



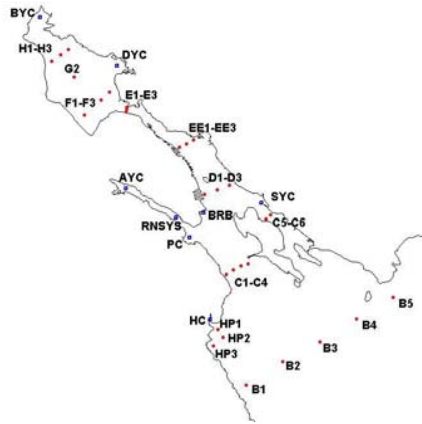
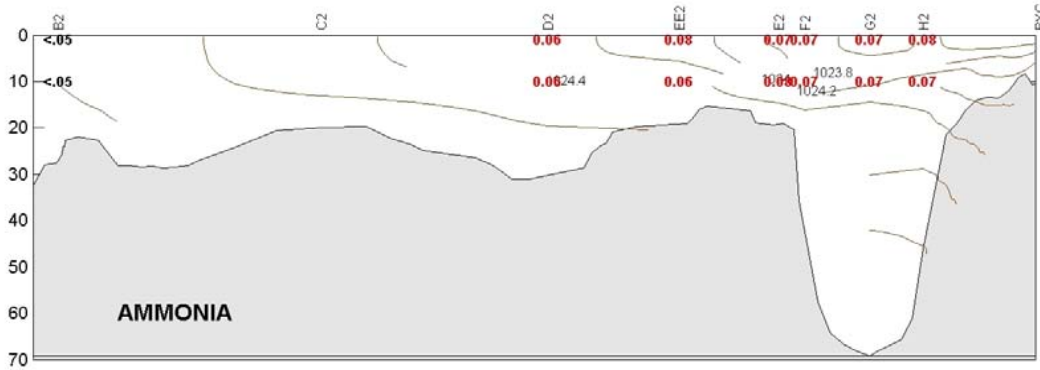
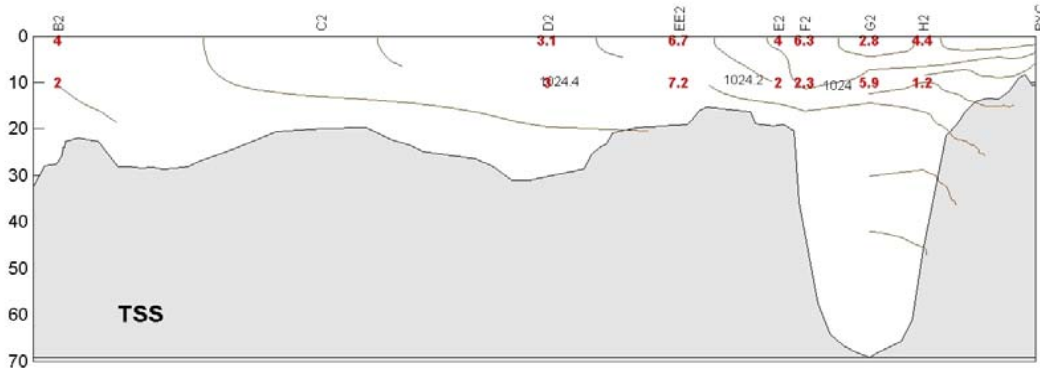
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Cloud cover data collected at Shearwater Airport



DO in mg/L

Chlorophyll in mg/m³

CHEMISTRY



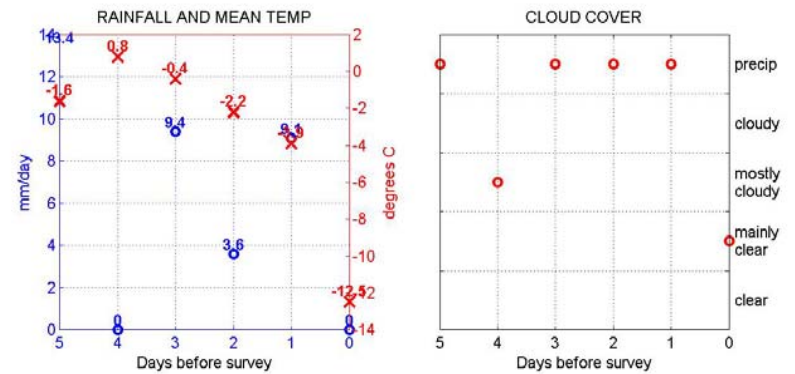
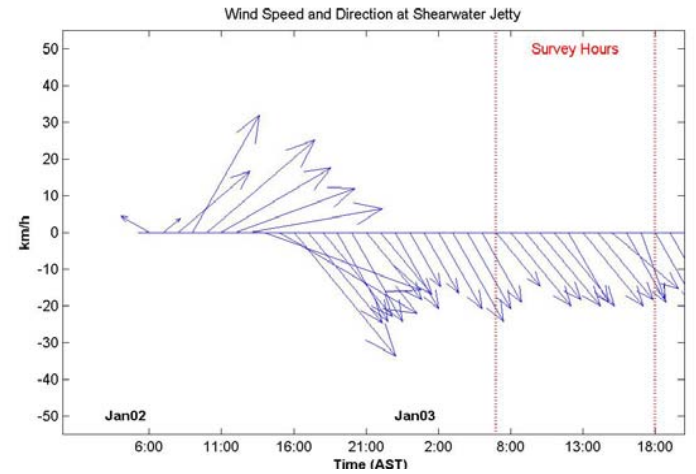
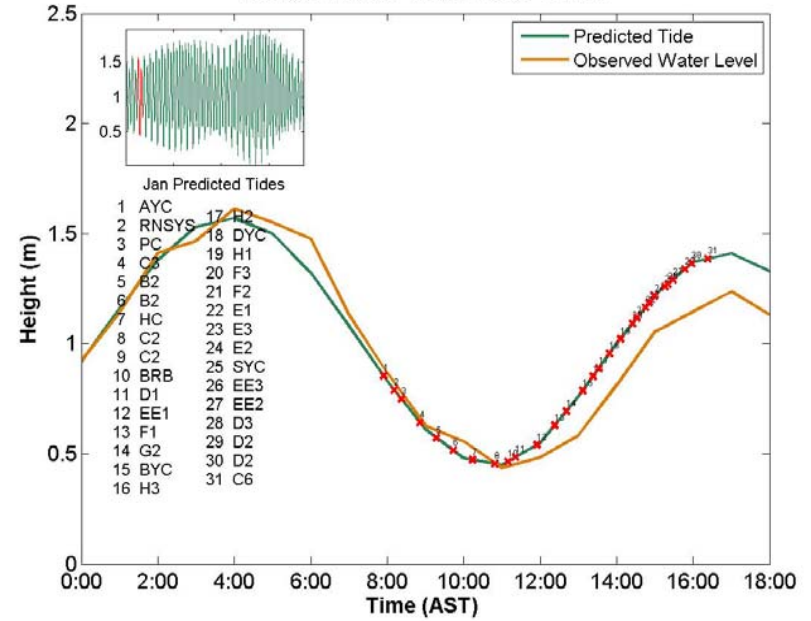
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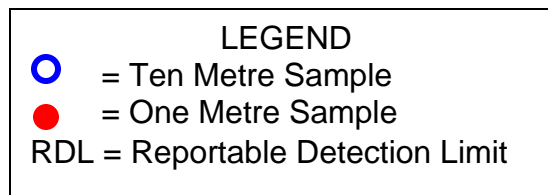
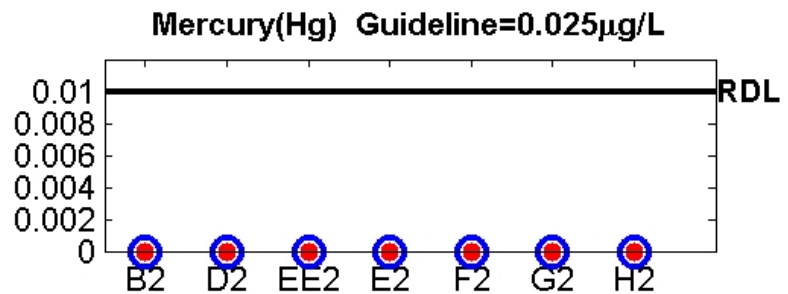
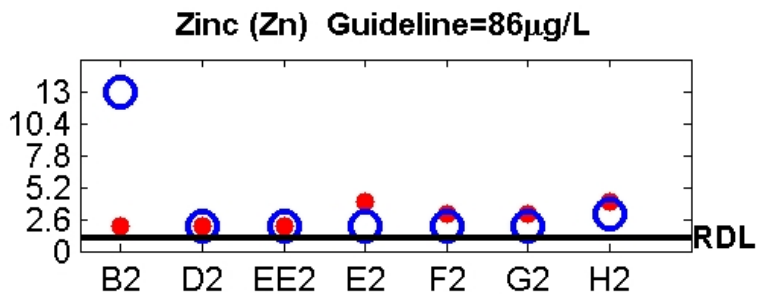
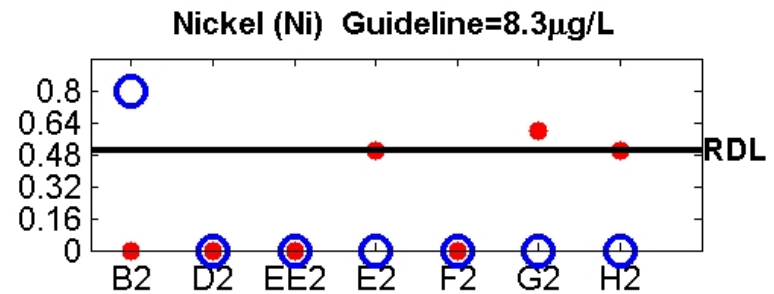
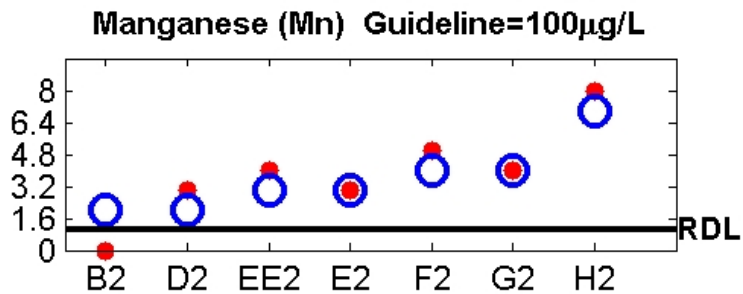
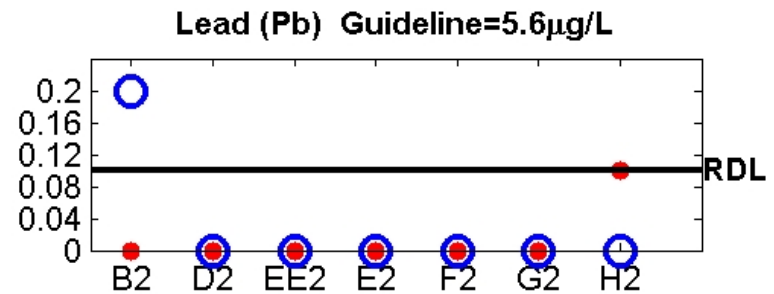
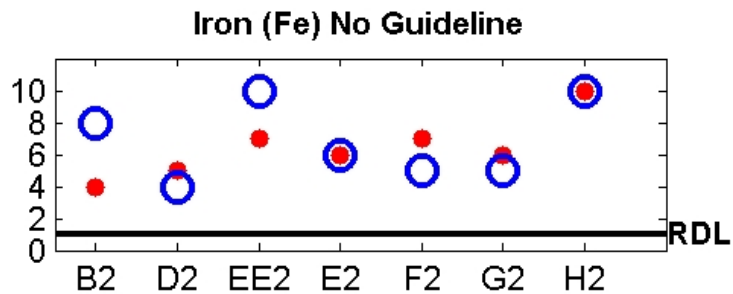
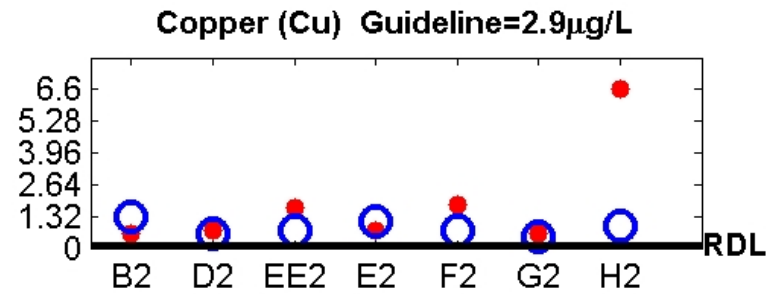
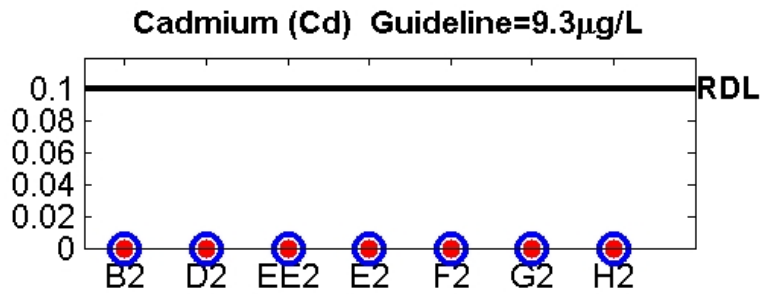
Potential Density in kg/m^3

Ammonia in mg/L

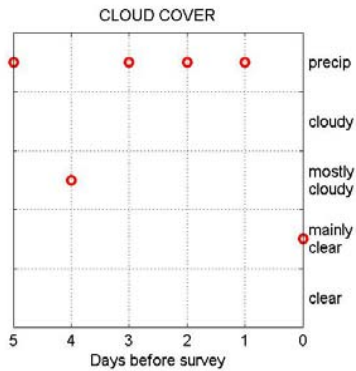
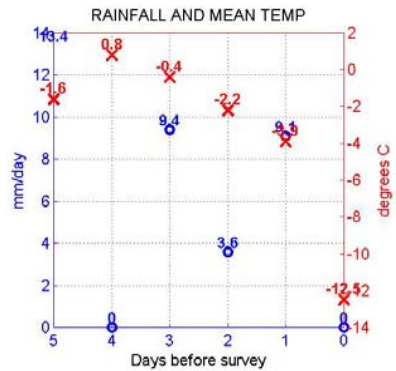
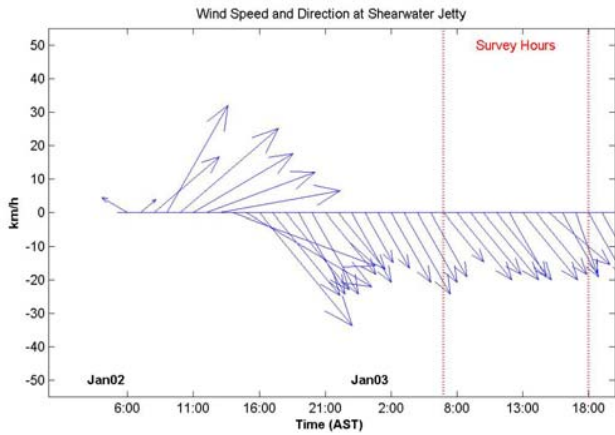
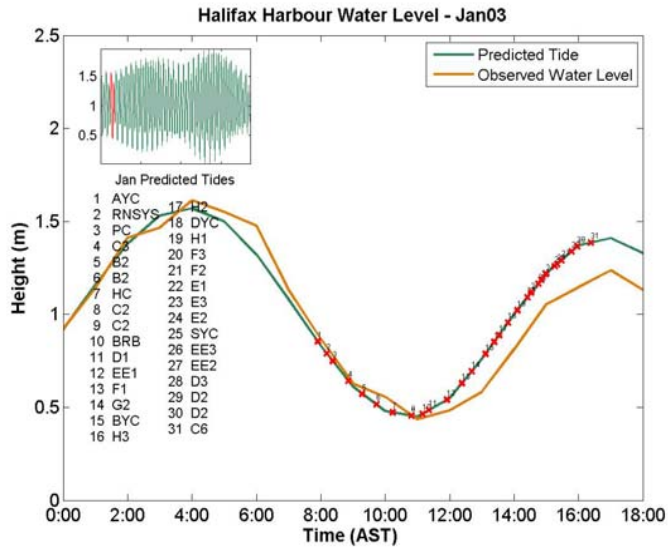
TSS in mg/L

Halifax Harbour Water Level - Jan03

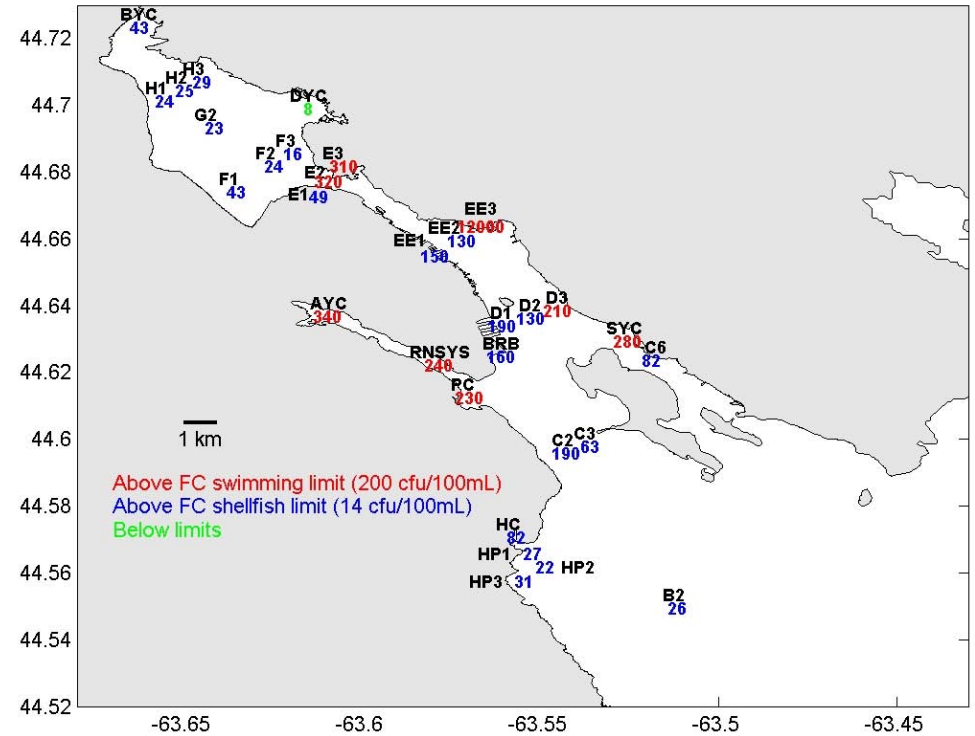




**FECAL COLIFORM
SUMMARY**



Fecal Coliform 1 m



Fecal Coliform 10 m

