

# Halifax Harbour Water Quality Monitoring Project

## Weekly Summary #81

**Survey Date:** 03 Jan 2006  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report081\_060103.doc  
**Data File:** HHWQMP\_data081\_060103.xls

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

**Sample Notes:**

N/A

**Chemical Analysis QA/QC**

		D2-1m		D2-10m		G2-1m	
Detectable Parameter	units	Ref Samp	Dup	Ref Samp	Dup	Ref Samp	QAQC
Ammonia (as N)	mg/L	0.05		0.08		0.08	0.06
Total Suspended Solids	mg/L	7	7	4	4	9	10

**Fecal Coliform QA/QC (CFU/100ml)**

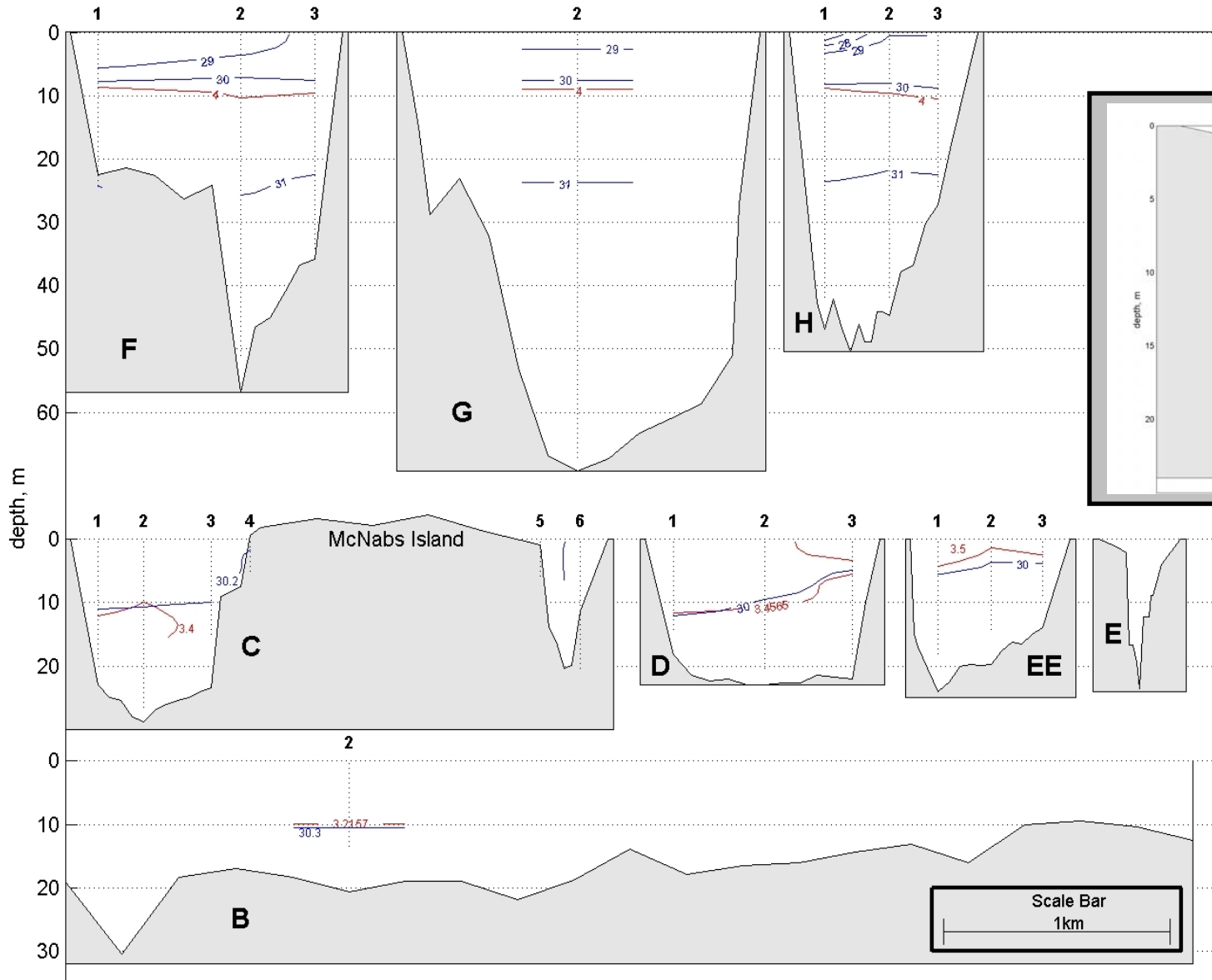
Site	C3-1m	E3-1m	H3-10m	G2-1m
Reference	240	720	360	260
QA/QC	400	810	560	120

**Comments:**

General: Overall the Harbour has a higher freshwater content than last week. There has been 21 mm of precipitation 4 days before the survey, but no precipitation since. A freshwater signal in the Basin extends through the Narrows, though the stratification is still very modest. South of the Narrows the water column remains quite well mixed, but on average is slightly fresher than last week. By B2 salinity is essentially uniform vertically. The temperature is quite uniform everywhere with all temperatures being within about a degree of 3.6 °C. Consistent with seasonal cooling, the surface water is coolest in the Basin and the isolated Basin bottom water is warmer, for an overall vertical difference of almost 2°C. As with the salinity, by B2 the temperature is virtually uniform with depth. The fecal coliform values are relatively high everywhere, with a value greater than the swimming limit at one or both samples at each site except AYC and the “control” site B2, although there are detectable levels at this site as well. The winds during sampling were very light. This looks like a time of relatively low flushing, when bacteria concentrations build up. In addition the water is cold, daylight is short and the skies have been cloudy or mostly cloudy, leading to low bacteria die off rates. The 1024 kg/m<sup>3</sup> density contour occurs at about 10m throughout the entire harbour (1024.1 kg/m<sup>3</sup> top to bottom at B2). This implies that any estuarine circulation in the Basin is occurring above this depth. The observed elevated bacteria levels are virtually all associated with this 1023-1024 kg/m<sup>3</sup> water mass. There is an indication of a layer of less dense (<1023 kg/m<sup>3</sup>), less contaminated water at the western side of the southern Basin (Section F). What appears to be the same layer in the northern Basin has relatively high coliform values, only slightly lower than the underlying water. This might be explained by locally enhanced vertical entrainment in the Sackville River plume. The lower values in this water mass at the F section would then probably have to be explained by bacteria die off.

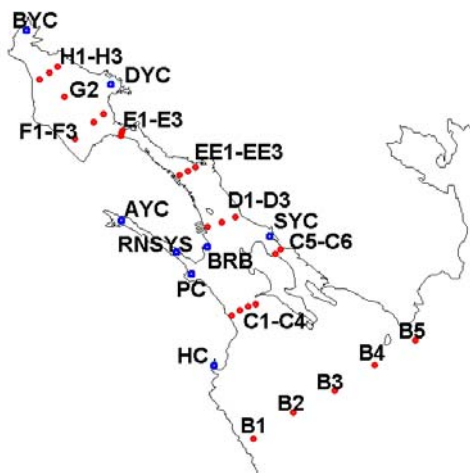
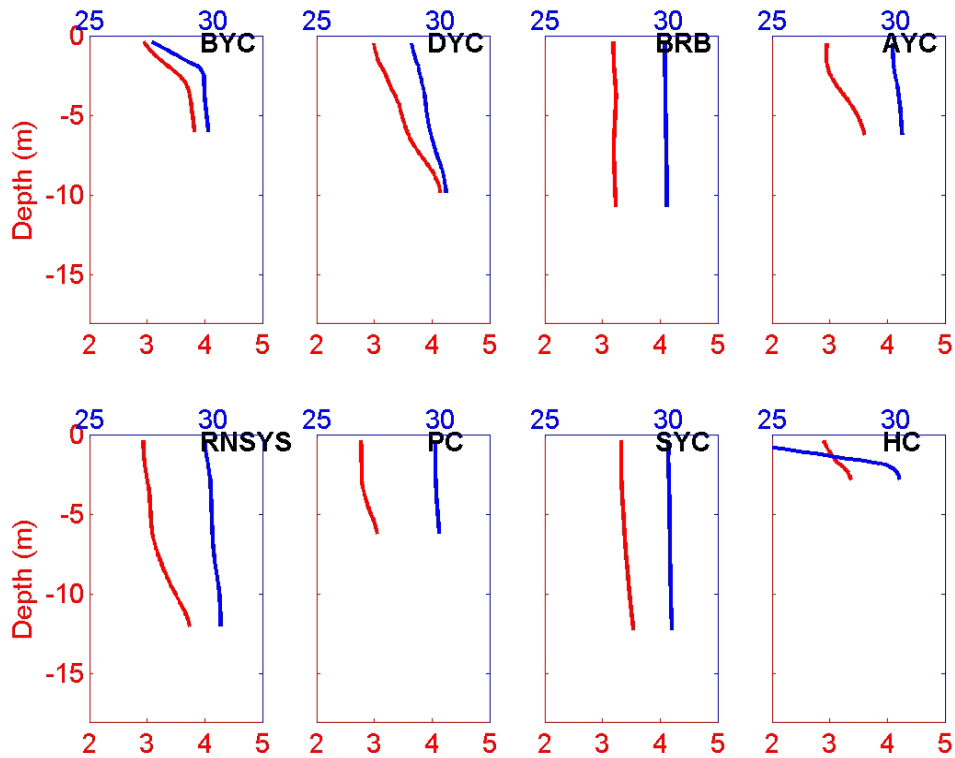
**Chlorophyll:** The profile maximum fluorescence levels vary only slightly, from 1 – 3 mg/m<sup>3</sup> throughout the Harbour. This is somewhat lower and more uniform than last week and is near typical winter “background” levels in the Harbour.

**Dissolved Oxygen:** The dissolved oxygen levels have again, on average, increased slightly everywhere. The exception is the Basin bottom waters which have dropped to just under 5 mg/L. This deep water represents the only values below the applicable use specific guidelines this week. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).



Unless otherwise labeled:  
 - salinity contour interval is 1 PSU  
 - temperature contour interval is 1°C.

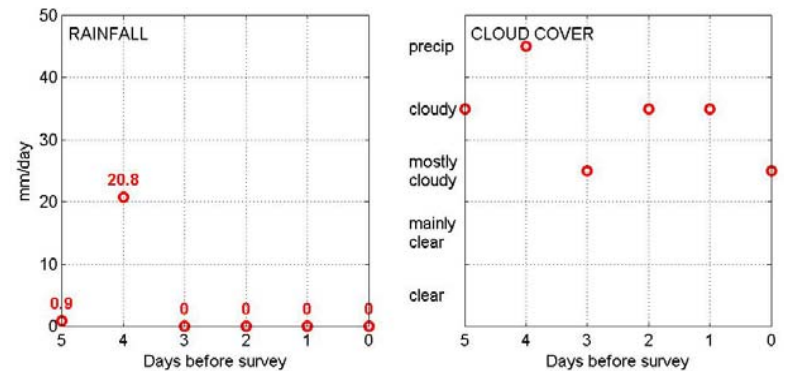
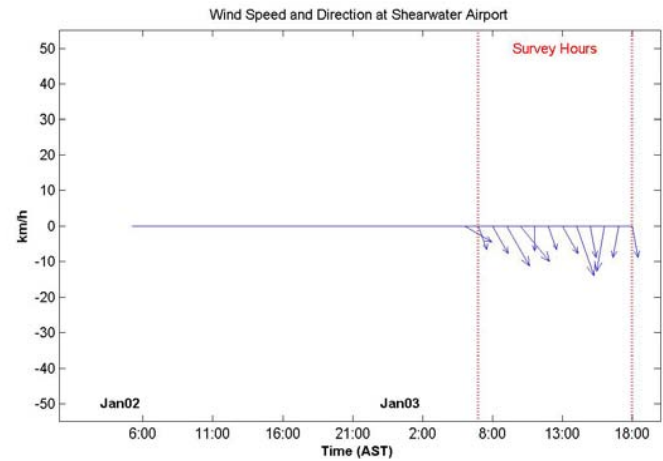
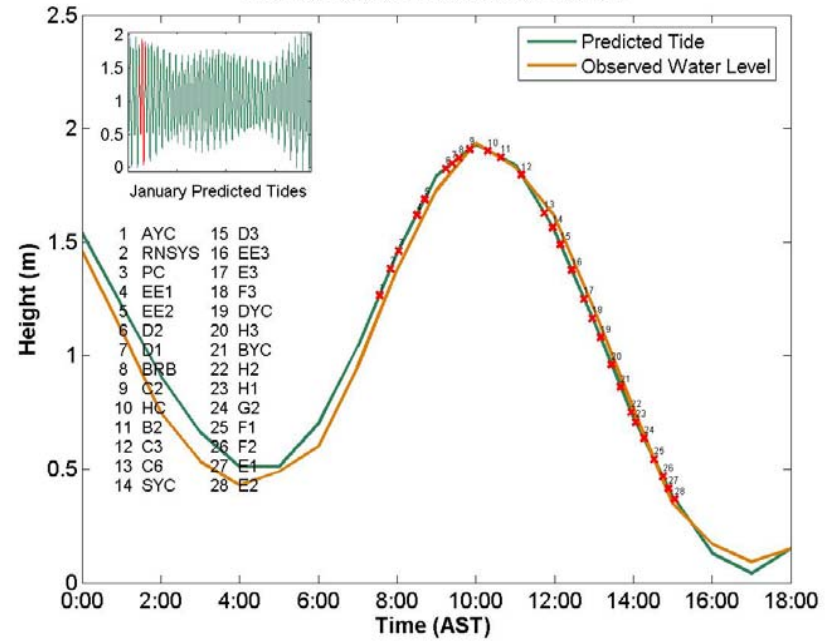
# Yacht Clubs

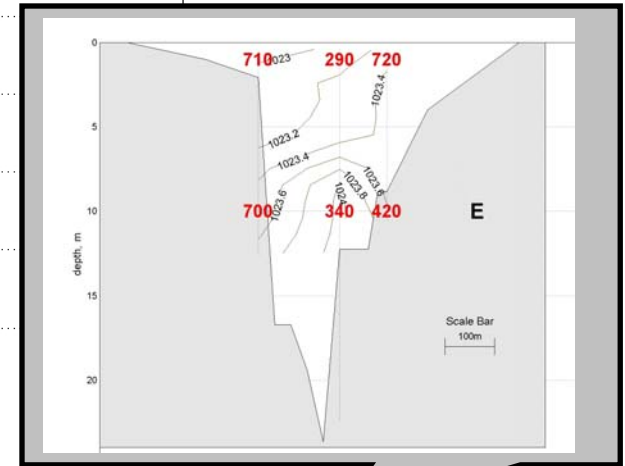
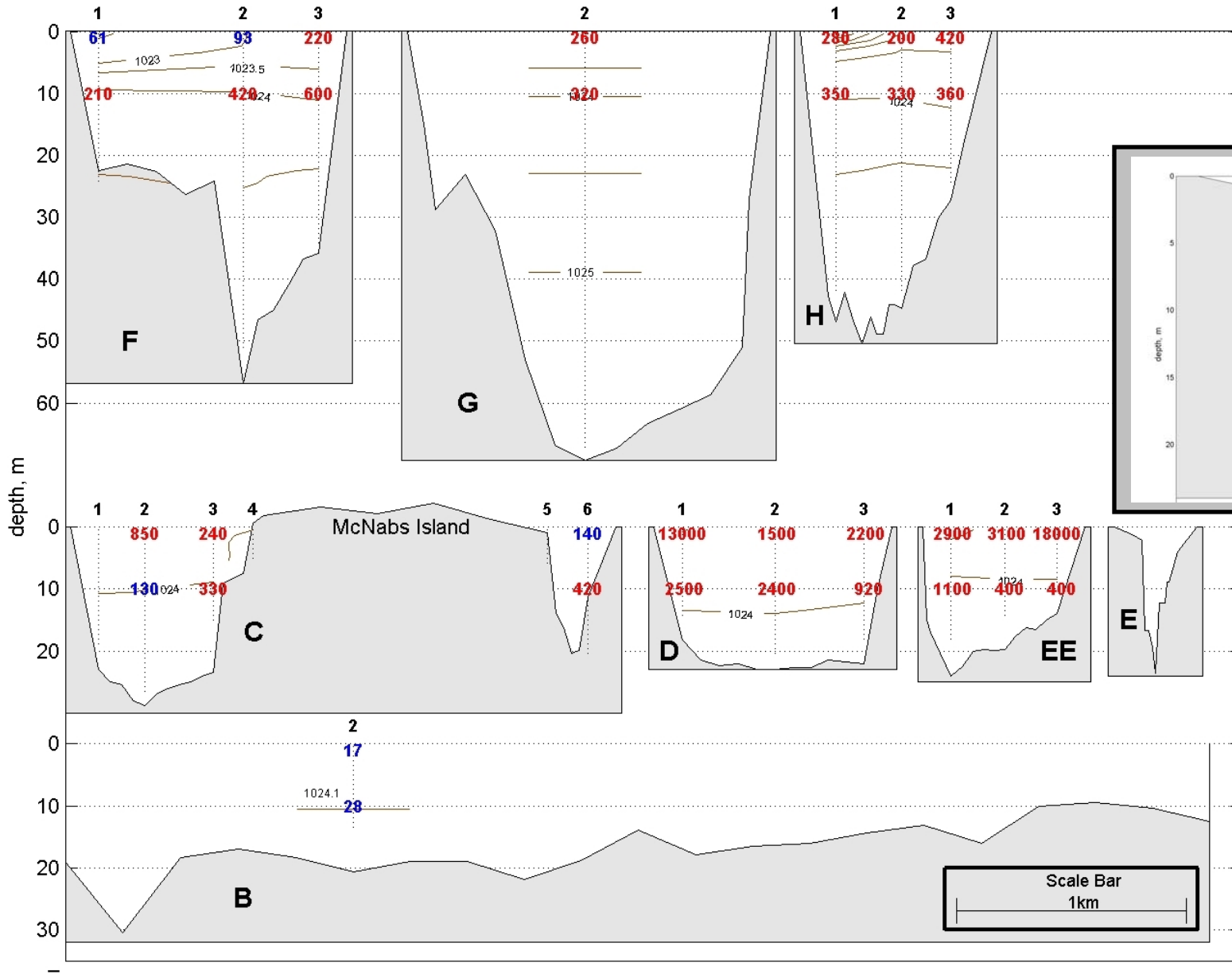


Salinity in PSU      Temperature in °C

Weather data collected at the Shearwater Airport

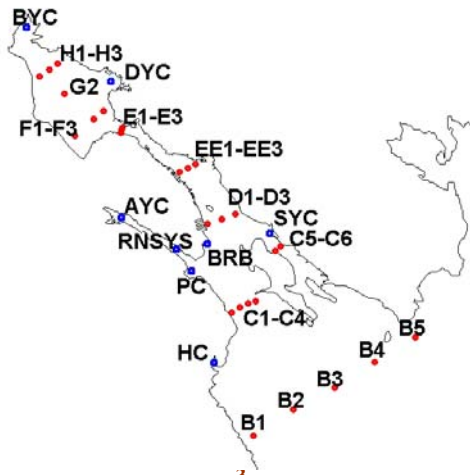
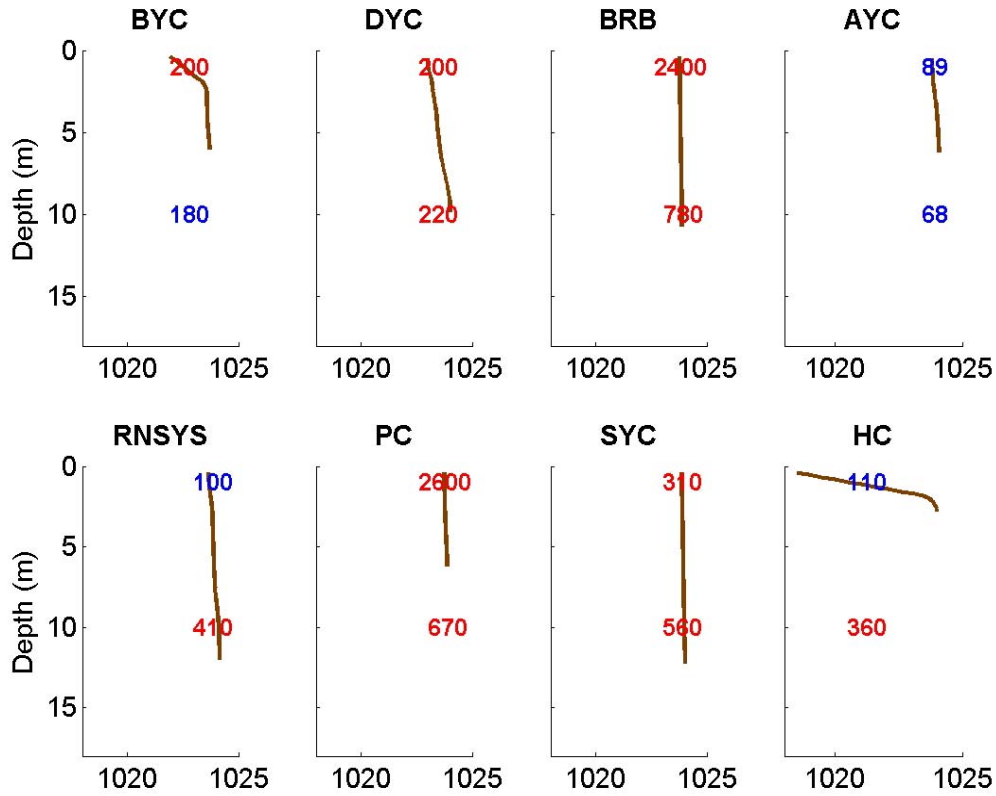
## Halifax Harbour Water Level - Jan03





Unless otherwise labeled:  
 - **density** contour interval is 0.5 kg/m<sup>3</sup>

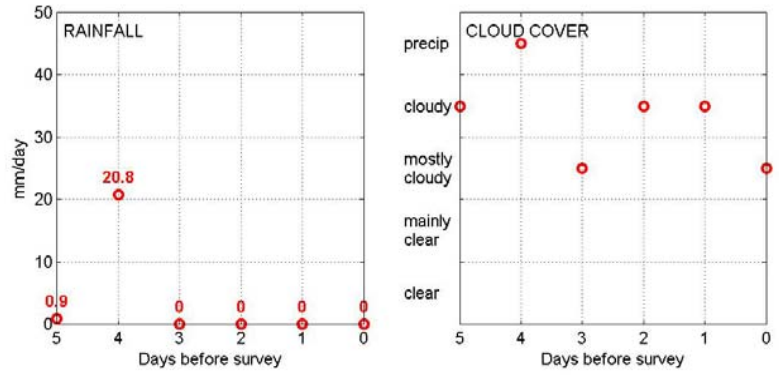
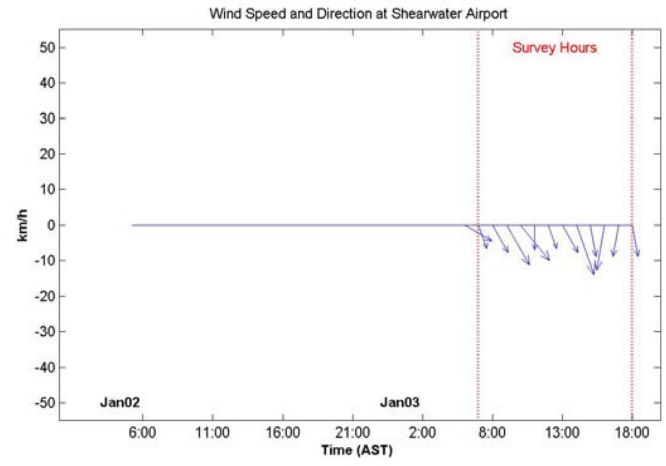
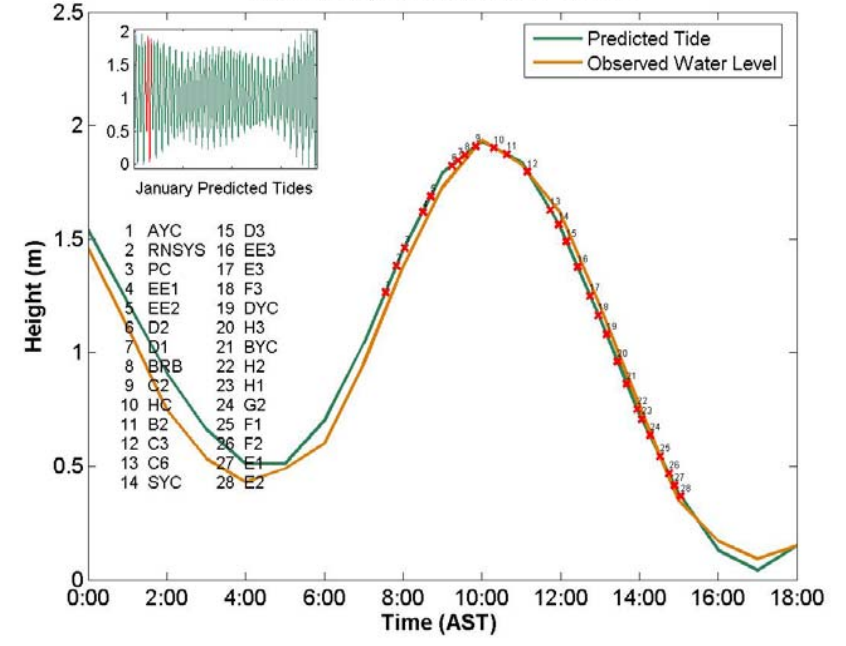
# Yacht Clubs

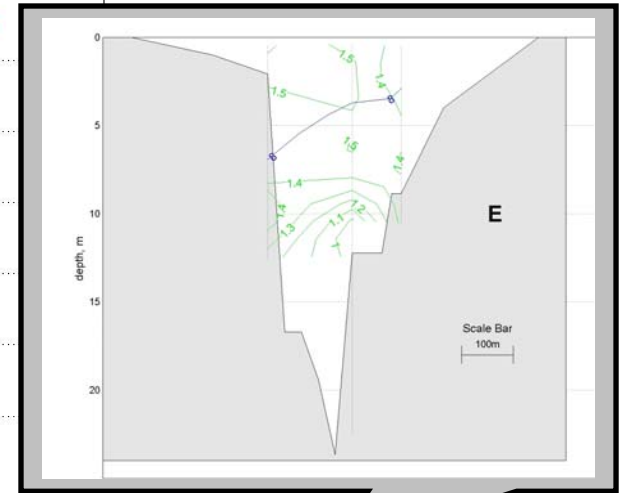
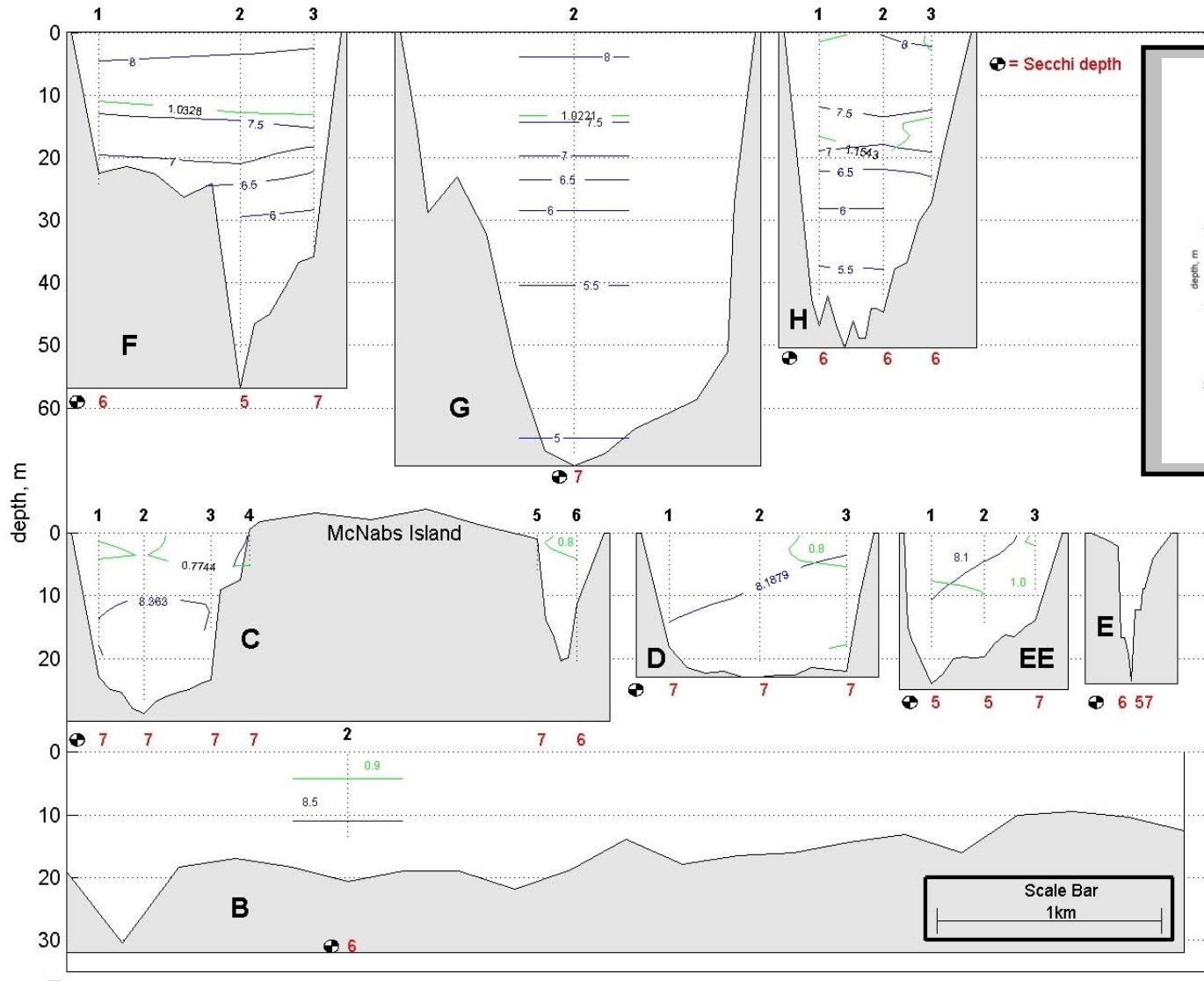


Weather data collected at the Shearwater Airport

Potential Density in  $\text{kg/m}^3$       Fecal coliform: above swimming limit (200 cfu/100mL)  
 above shellfish limit (14 cfu/100mL)  
 below limits

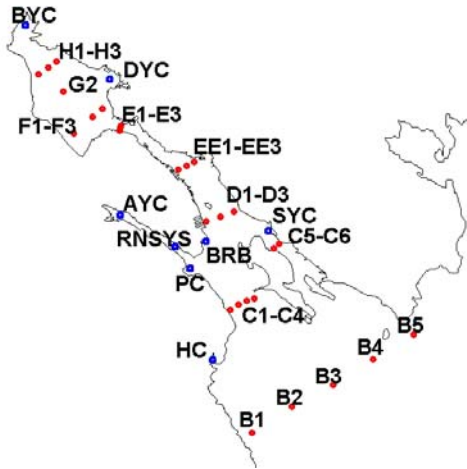
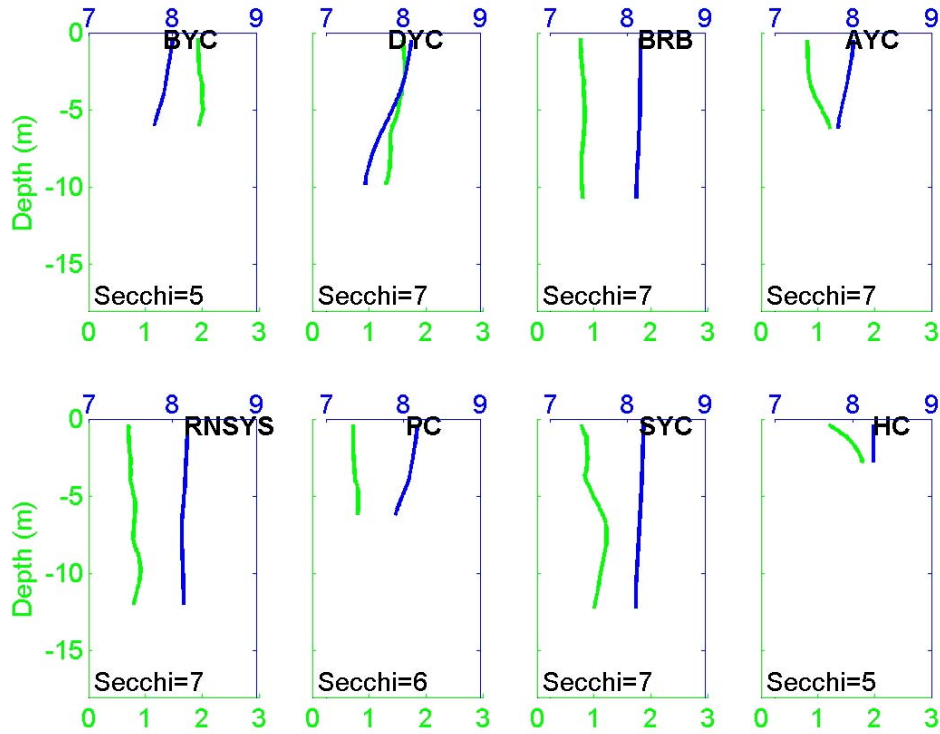
## Halifax Harbour Water Level - Jan03





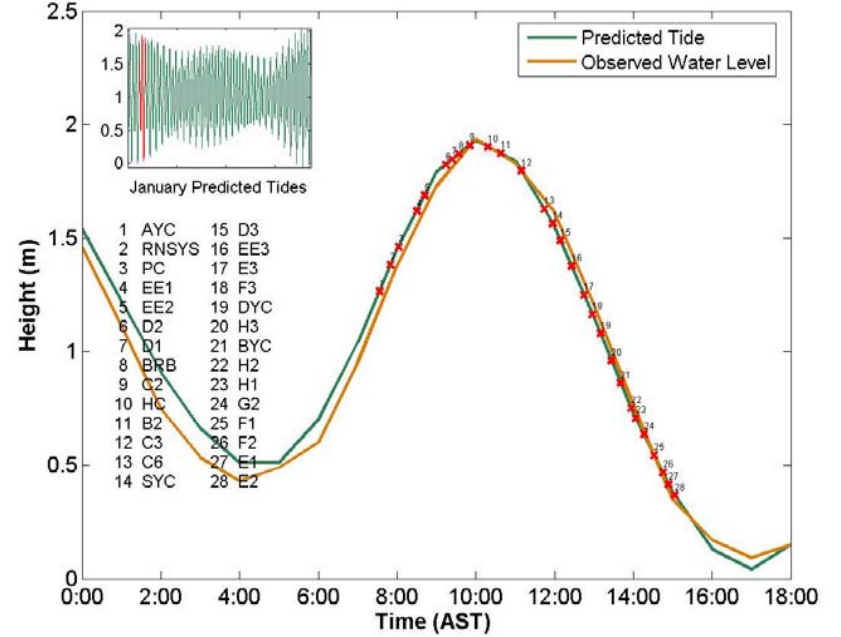
Unless otherwise labeled:  
 - **dissolved oxygen** contour interval is 1 mg/L  
 - **chlorophyll** contour interval is 2 mg/m<sup>3</sup>.

# Yacht Clubs

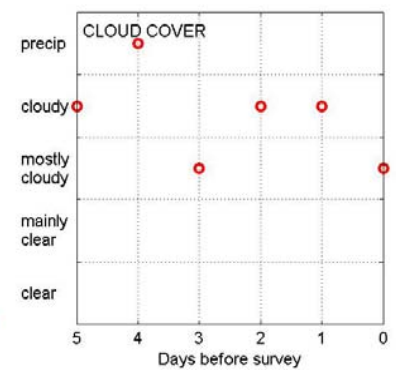
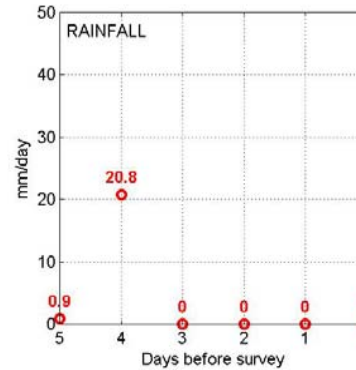
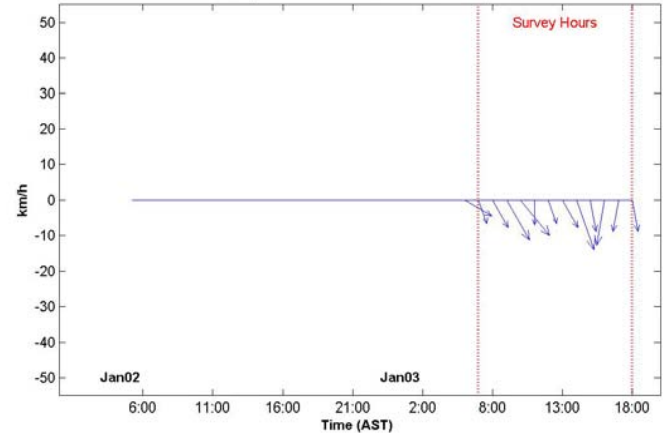


Weather data collected at the Shearwater Airport

# Halifax Harbour Water Level - Jan03



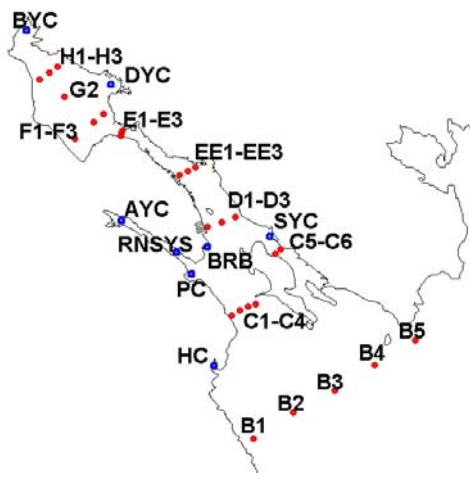
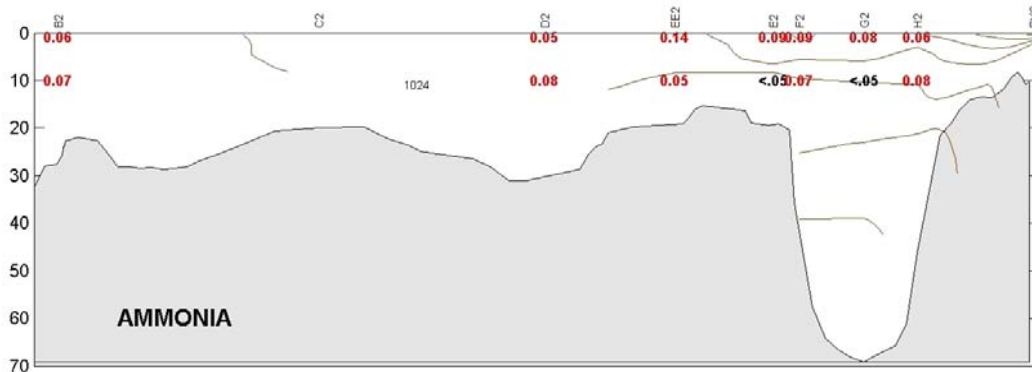
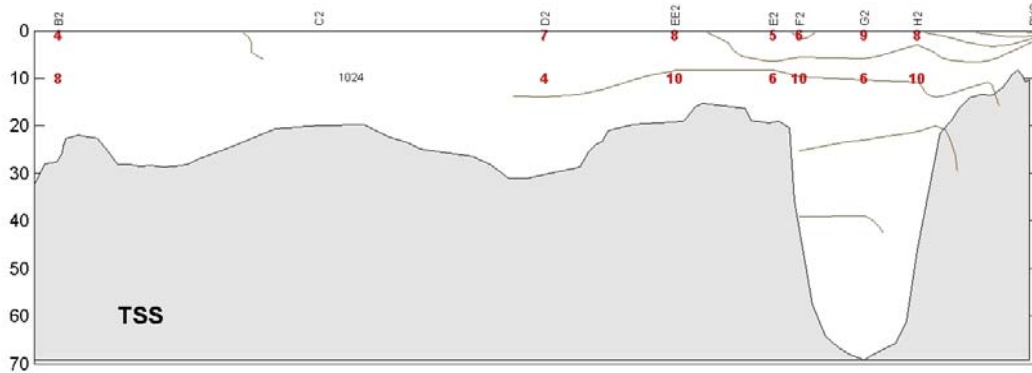
# Wind Speed and Direction at Shearwater Airport



DO in mg/L

Chlorophyll in mg/m<sup>3</sup>

**CHEMISTRY**



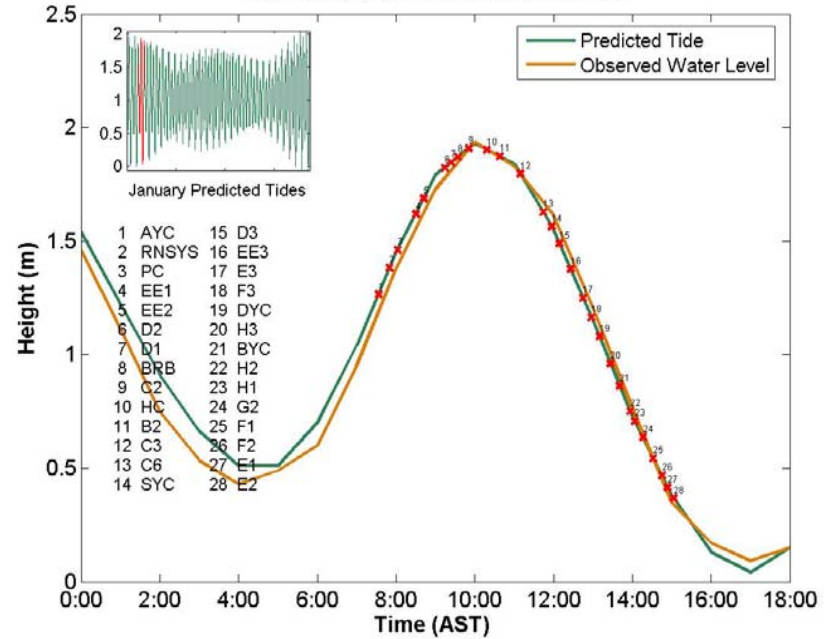
Weather data collected at the Shearwater Airport

Potential Density in  $\text{kg/m}^3$

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

**Halifax Harbour Water Level - Jan03**



**Wind Speed and Direction at Shearwater Airport**

