

# Halifax Harbour Water Quality Monitoring Project

## Weekly Summary #79

**Survey Date:** 20 December 2005  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report079\_051220.doc  
**Data File:** HHWQMP\_data079\_051220.xls

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

### Sample Notes:

The DO sensor showed erratic behaviour during the stabilization period at BYC and F3. It seemed to recover before the cast began at BYC, but the DO values at F3 are obviously in error. The remaining parameters, while questionable, do not seem to have been affected. The DO data have been plotted here but have been deleted from the data file.

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

Site	PC-10m	C2-1m	C3-1m	C4-1m
Reference	370	150	170	93
QA/QC	300	190	170	87

### Chemical Analysis QA/QC

Detectable Parameter	units	D2 - 1m		D2-10m	
		reference sample	Dup	reference sample	Dup
Ammonia (as N)	mg/L				
Total Suspended Solids	mg/L	6	7	4	4

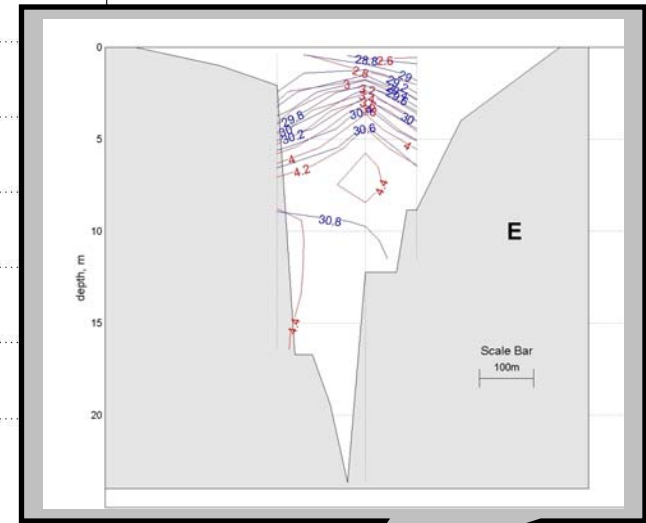
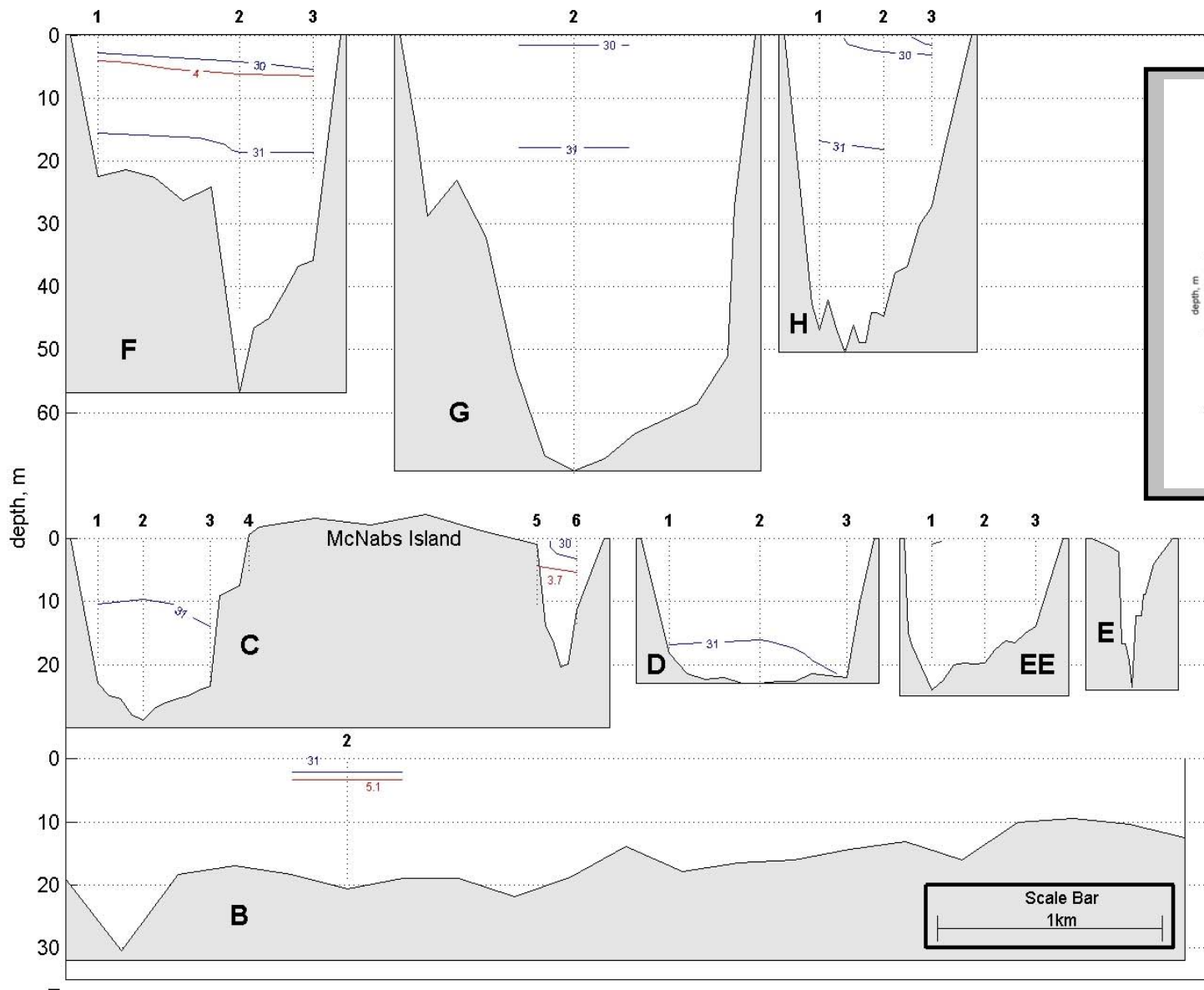
**Note: The site at which chemistry QA/QC sample was taken was not recorded.**

### Comments:

General: Minimal rainfall has led to a reduction in the volume of fresh water in the Harbour and a commensurate reduction in salinity stratification. The Basin shows minimal stratification, with the Narrows being the most stratified. The water column is well mixed south of the Narrows. The water temperature is very uniform and is somewhat lower than last week. The surface temperatures (2.5-3.5 °C) are lower everywhere than the bottom temperatures (4.0 – 5.0°C). The highest temperatures (5° C) top to bottom are in the outer Harbour. This is all consistent with seasonal cooling. The winds have been generally light since the previous day. This all leads to an apparent period of low mixing/flushing in the Harbour. The weather has been cloudy or mostly cloudy for the day of sampling and the previous day. The coliform levels are uncharacteristically low for the apparent conditions. Values >200 cfu/100mL occur only in the 1m samples in the Inner Harbour (D and EE sections). There does not seem to be a simple reason for this situation. Visual/photographic observations that day indicate that there were large surface signatures of the outfalls, particularly the deeper outfall off the Peace Pavilion in Dartmouth. This is consistent with the well mixed conditions. This could result in a very near surface layer which is partially missed by the 1m samples. Near surface values are also more susceptible to disinfection by UV radiation, by whatever ambient sunlight is available.

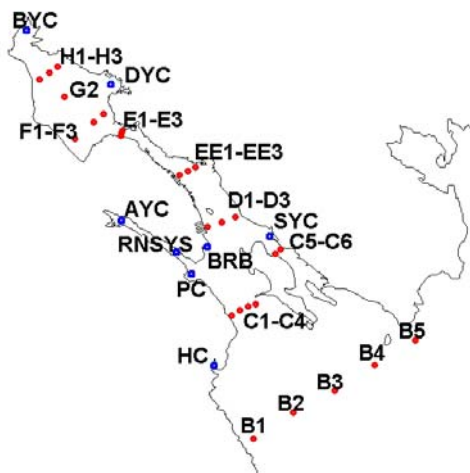
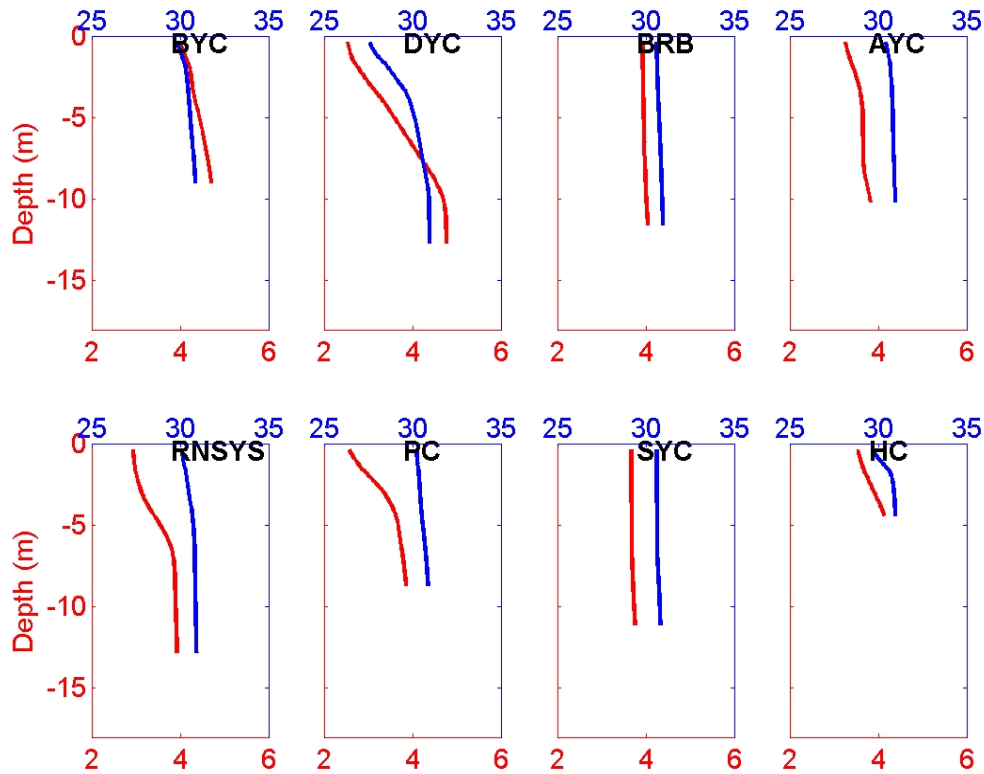
Chlorophyll: There appears to be a small local bloom at the head of the Basin (BYC). Here the fluorescence values are 25 mg/m<sup>3</sup> at the surface. Elsewhere, profile maximum values are relatively low (2-3 mg/m<sup>3</sup> in the Inner Harbour), but about 1 mg/m<sup>3</sup> higher everywhere than last week.

Dissolved Oxygen: Overall, the DO levels this week are somewhat higher than last week, by 0.5 mg/L or more. As a result of last week's intrusion, the bottom 25 m of the Basin is relatively uniform at a value of about 5.5 mg/L. The data indicate that, aside from the bottom water in the Basin, the DO levels in the Harbour are > 7.0 mg/L everywhere (> 8.0 mg/L at B2), so there are no values below the use-specific guidelines. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).



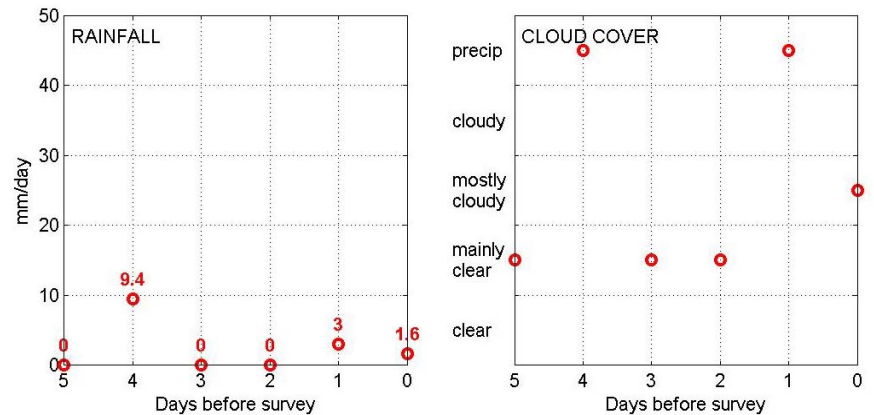
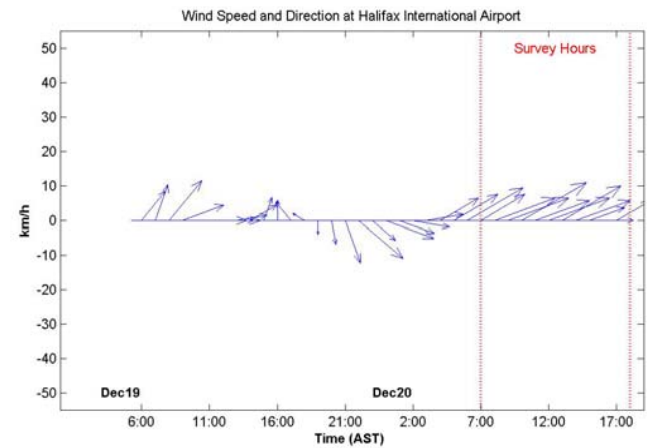
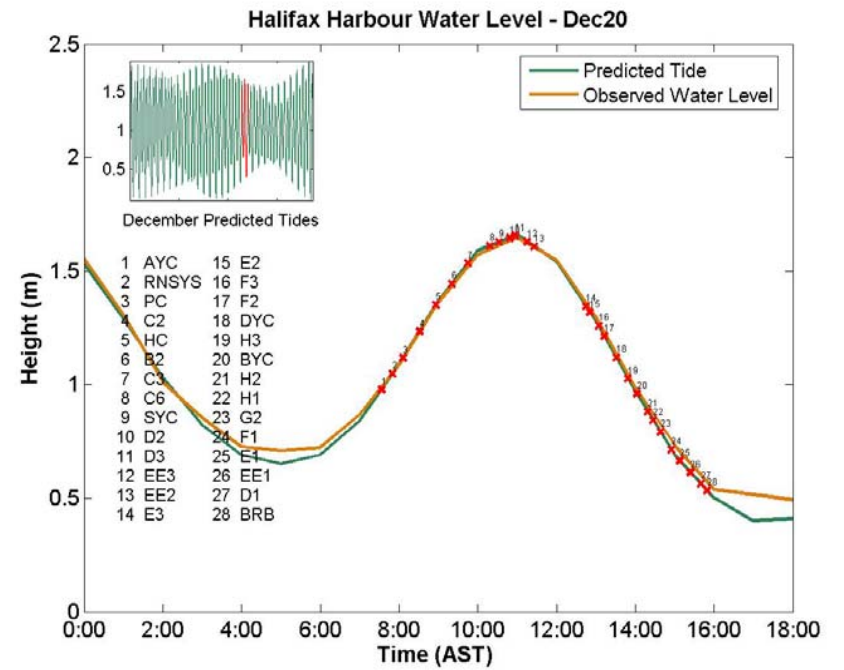
Unless otherwise labeled:  
 - salinity contour interval is 1 PSU  
 - temperature contour interval is 1°C.

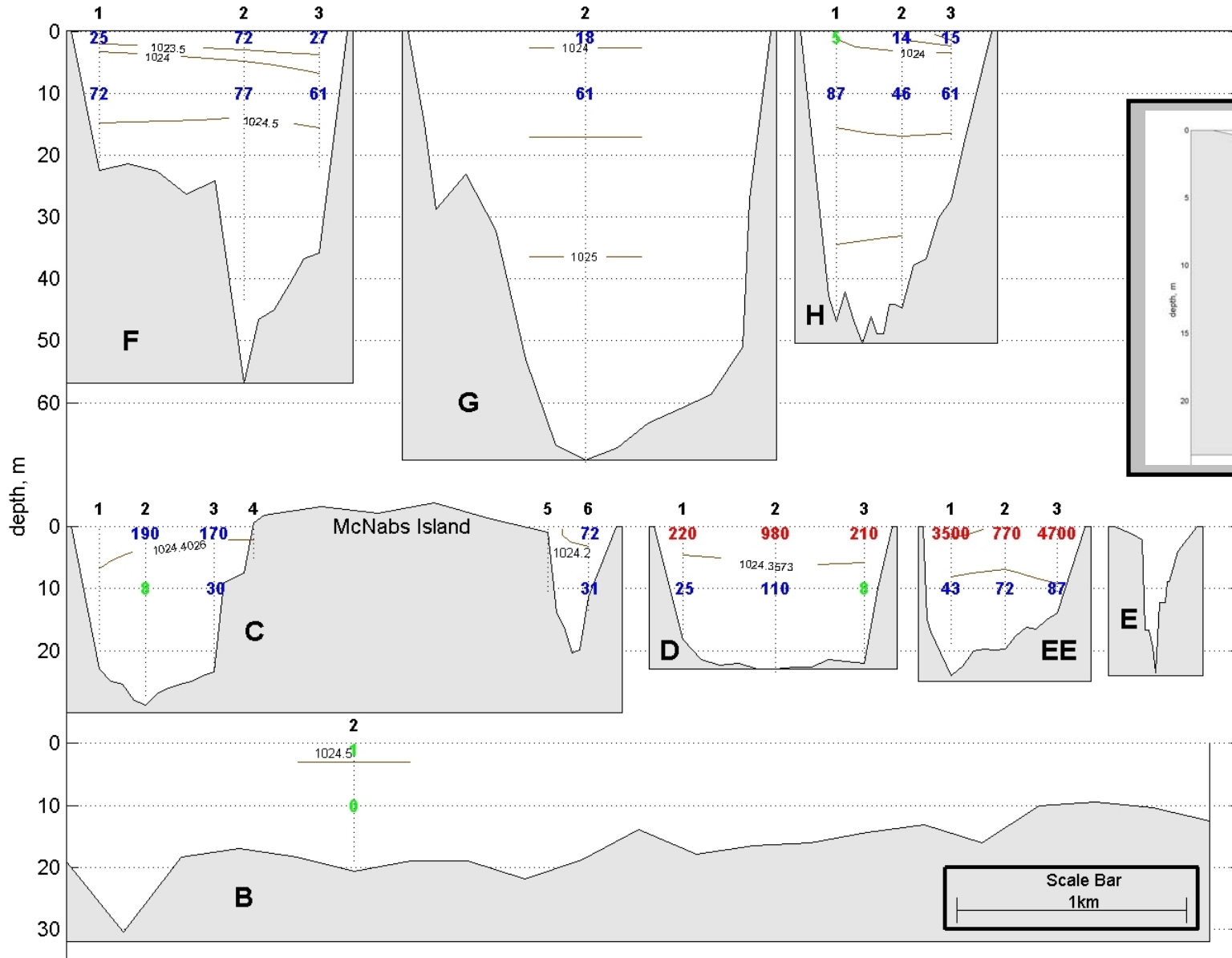
# Yacht Clubs



Salinity in PSU      Temperature in °C

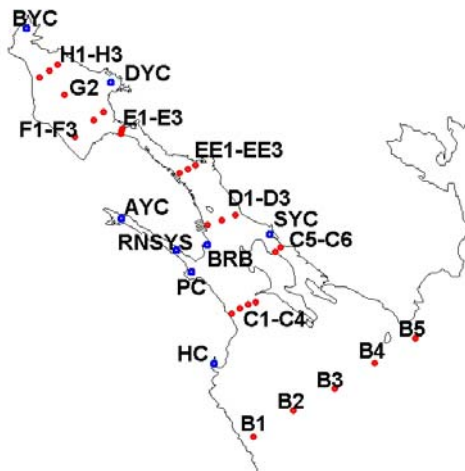
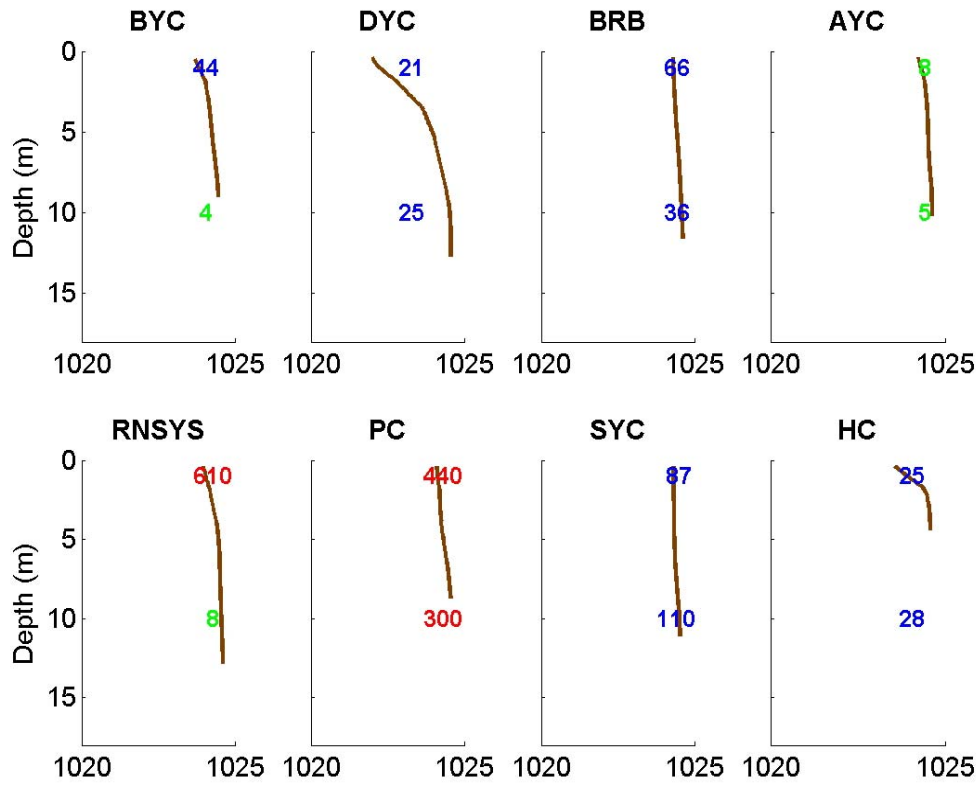
Weather data collected at the Halifax International Airport





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

# Yacht Clubs

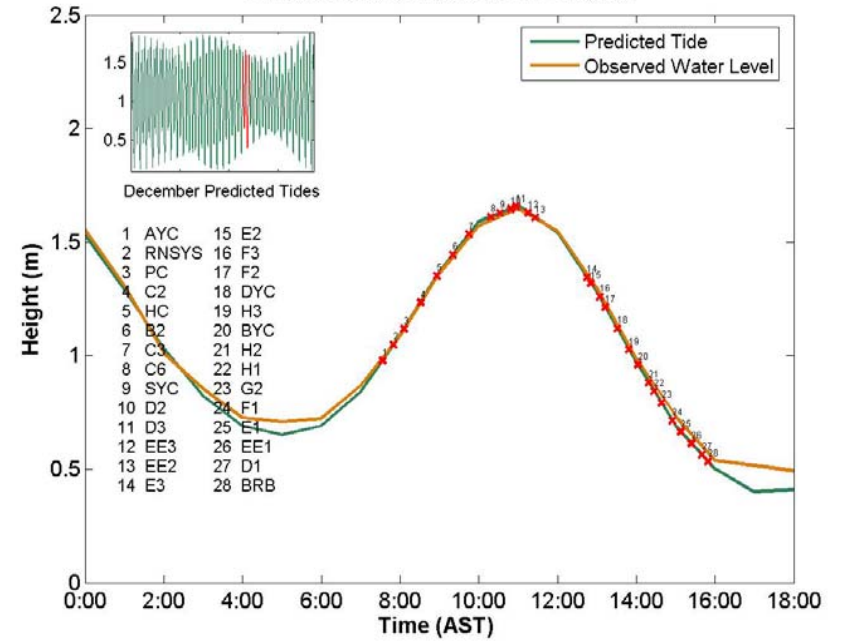


Weather data collected at the Halifax International Airport

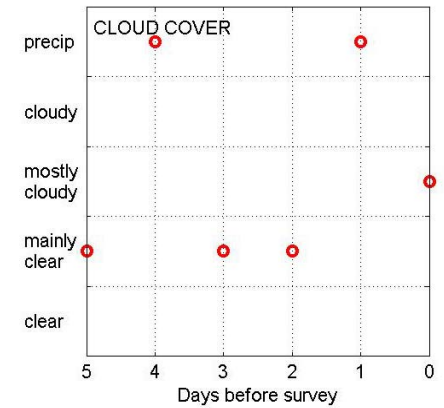
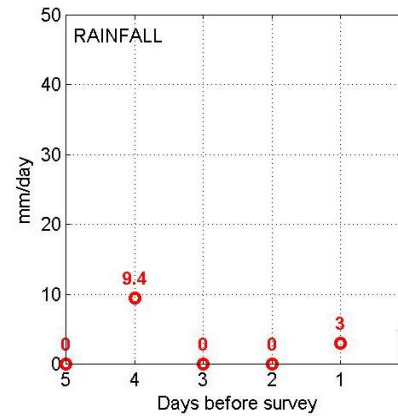
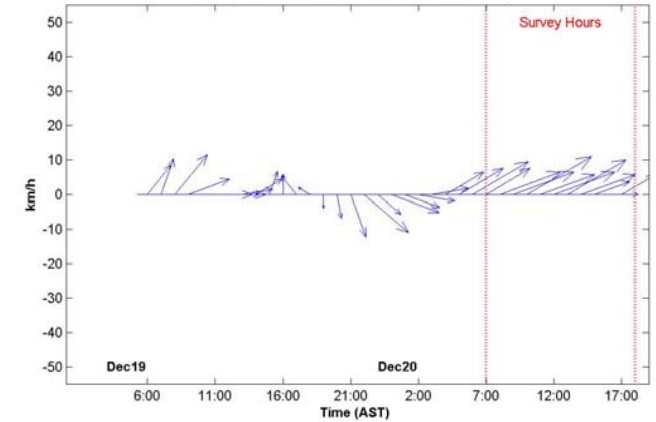
Potential Density in  $\text{kg/m}^3$

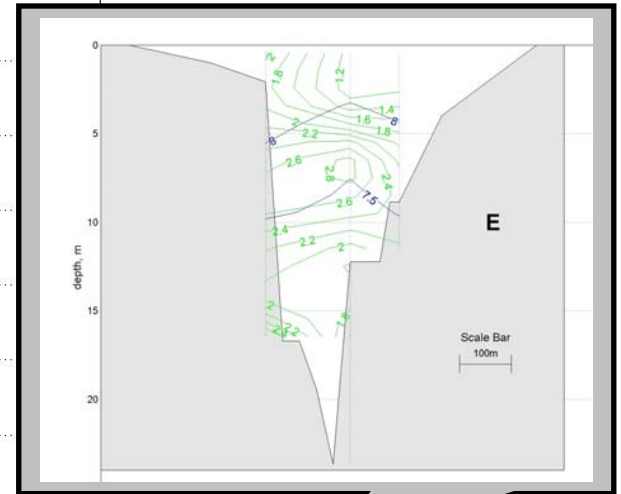
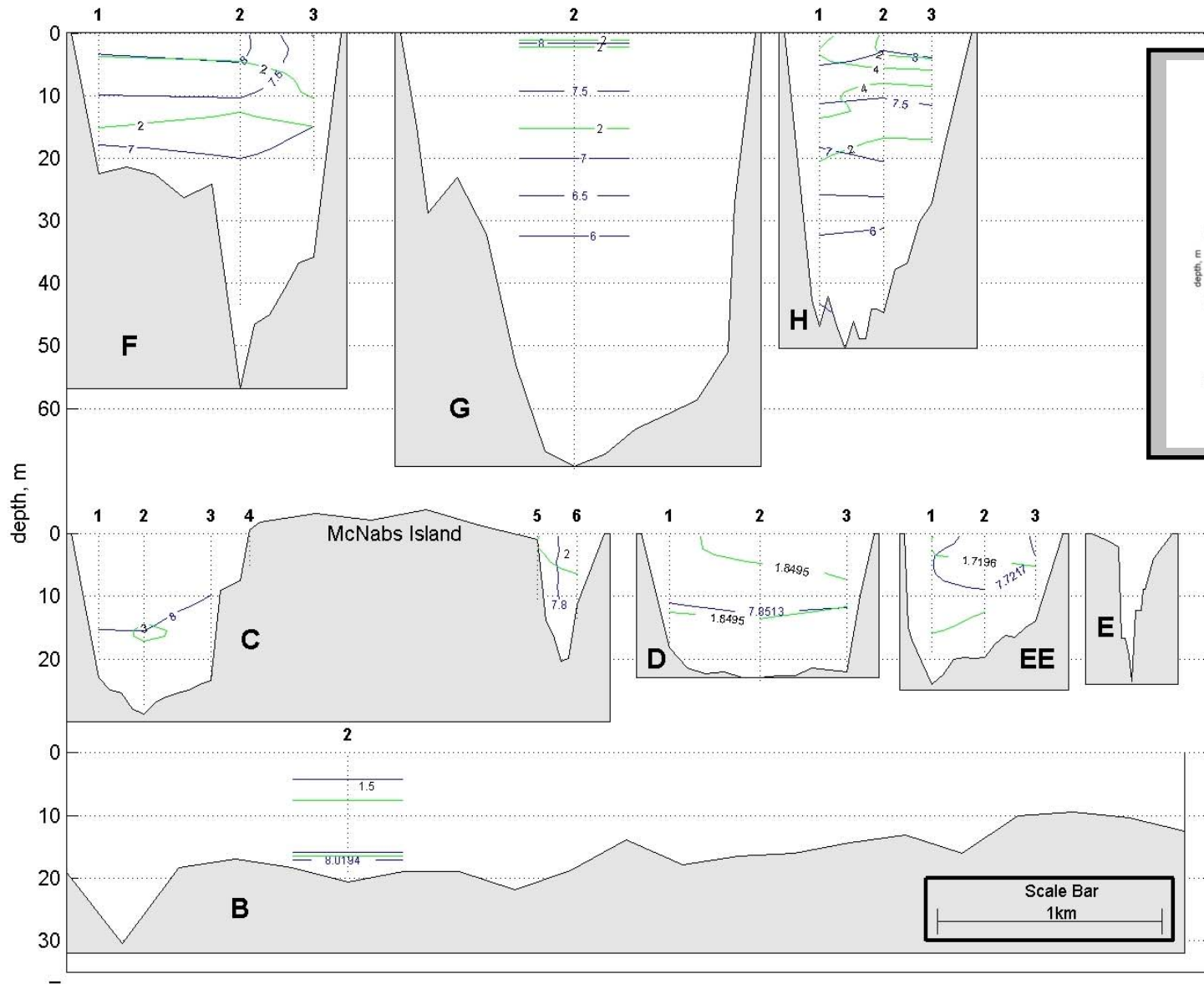
Fecal coliform: **above swimming limit (200 cfu/100mL)**  
**above shellfish limit (14 cfu/100mL)**  
 below limits

## Halifax Harbour Water Level - Dec20



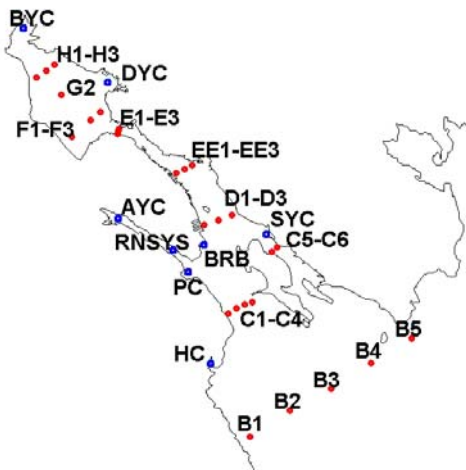
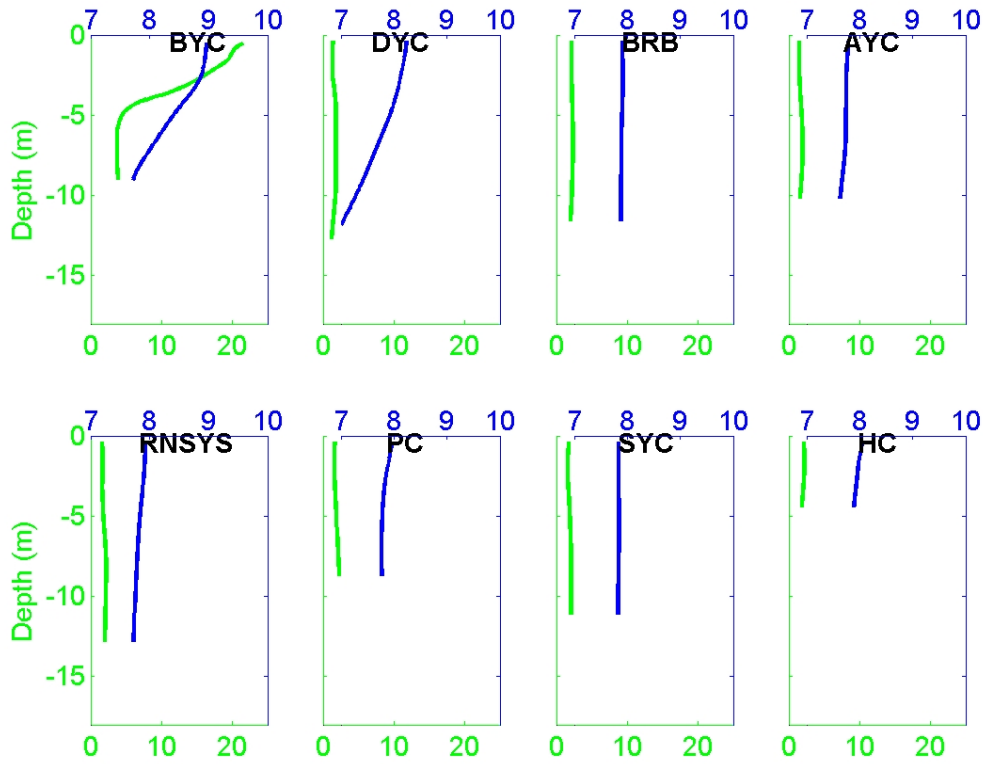
## Wind Speed and Direction at Halifax International Airport





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

# Yacht Clubs

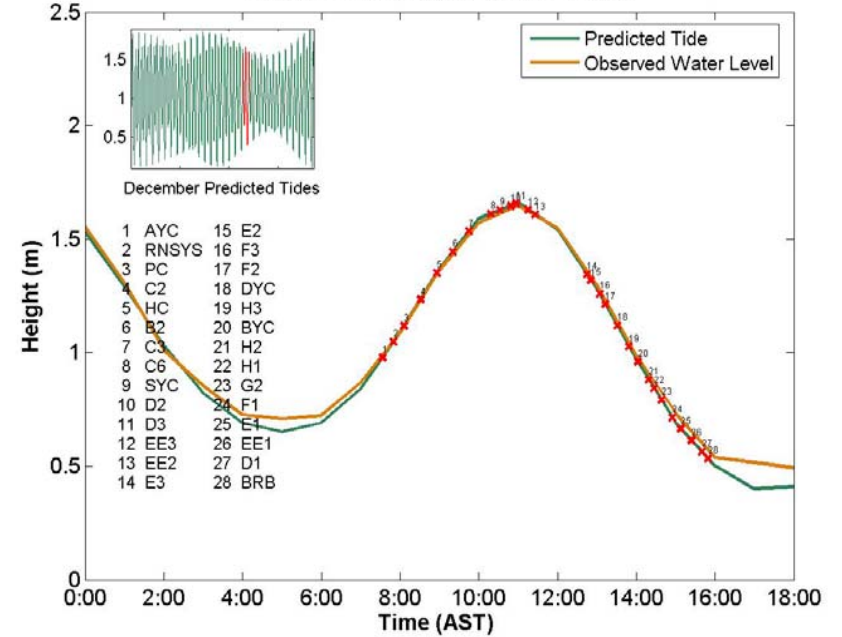


DO in mg/L

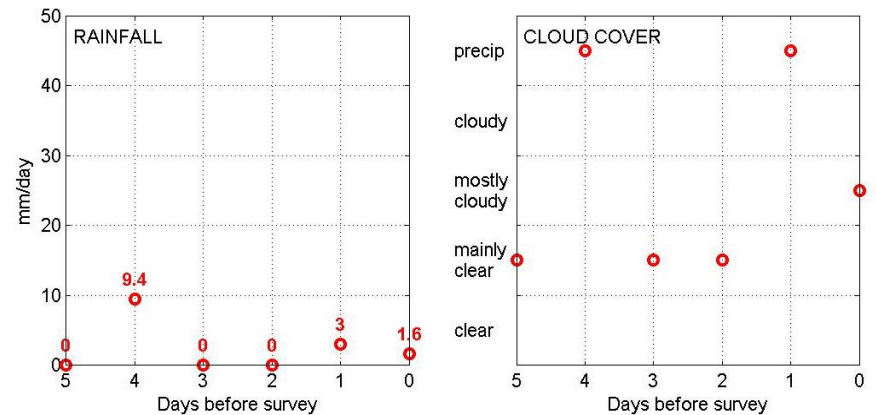
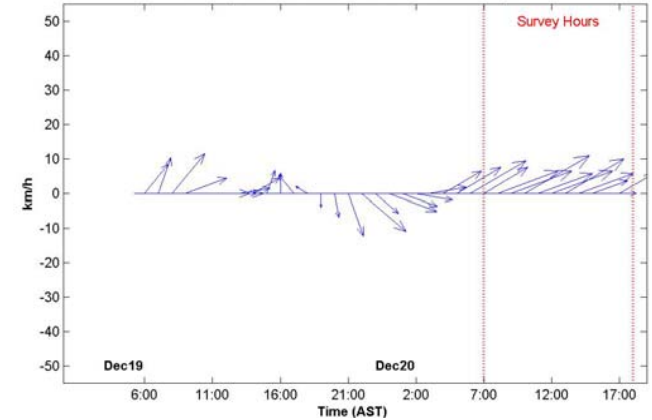
Chlorophyll in mg/m<sup>3</sup>

Weather data collected at the Halifax International Airport

## Halifax Harbour Water Level - Dec20

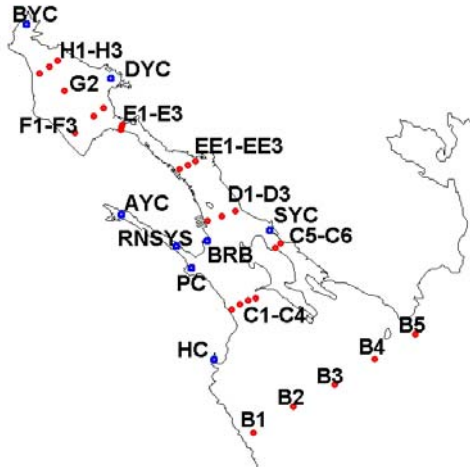
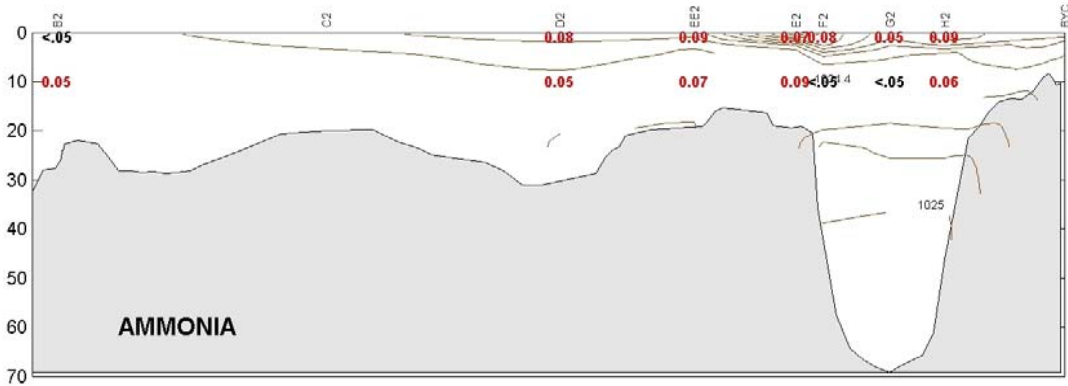
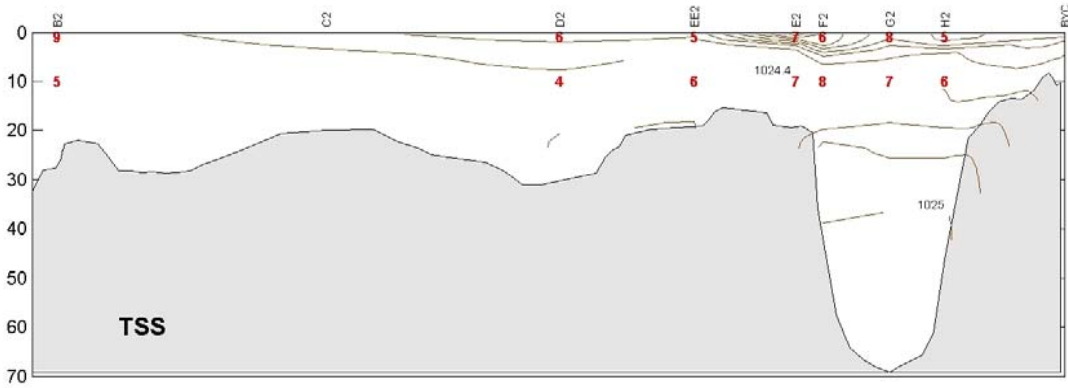


## Wind Speed and Direction at Halifax International Airport



Harbour Water Quality Monitoring Program

CHEMISTRY



Weather data collected at the Halifax International Airport

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

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

Halifax Harbour Water Level - Dec20

