

# Halifax Harbour Water Quality Monitoring Project

## Weekly Summary #117

**Survey Date:** 21 November 2006  
**Nature of Survey:** Complete Survey  
**Report File (this document):** HHWQMP\_report117\_061121.doc  
**Data File:** HHWQMP\_data117\_061121.xls

**Data Return:**  
 Profile: 97%  
 Bacteria: 97%  
 Chemical: 100%  
**Overall: 98%**

### Sample Notes:

CBOD<sub>5</sub> samples were taken at F1-1m, F1-10m, F2-1m and F2-10m.

Site D3 was not sampled, the reason was not recorded.

### QA/QC samples:

#### Chemical Analysis

Detectable Parameter	units	F2 - 1m	
		reference sample	QA/QC
Ammonia (as N)	mg/L	0.1	0.1
Total Suspended Solids	mg/L	2.2	1.4
Copper (Cu)	ug/L	0.4	0.3
Iron (Fe)	ug/L	7	8
Manganese (Mn)	ug/L	5	4
Zinc (Zn)	ug/L	2	2

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

Site	DYC-1M	F3-10M	C3-10M	F2-1M
Reference	7	12	8	130
QA/QC	6	22	3	130

### Comments:

**General:** There is significantly more fresh water in the harbour than there was two weeks ago, when there was a recent intrusion of saline shelf water. Though there has not been significant rainfall in the days before the survey, Sackville river water level data indicate that the river level has increased from a seasonal low (< 0.5 m) throughout the month of September and halfway through October to 1.0-1.5 m in the weeks prior to the survey. There is a lens of fresher water roughly centered on the Narrows, possibly an artifact of local freshwater input from outfalls in the Narrows and Southern Basin (Duffus St./Fairview Cove diversion). The FC values are not particularly high anywhere. The distribution is quite dispersed and appears to be displaced down harbour in the surface water. This seems consistent with the strong down harbour wind. There are elevated, though not particularly high, fc values in the Basin, likely affected by the Fairview Cove source.

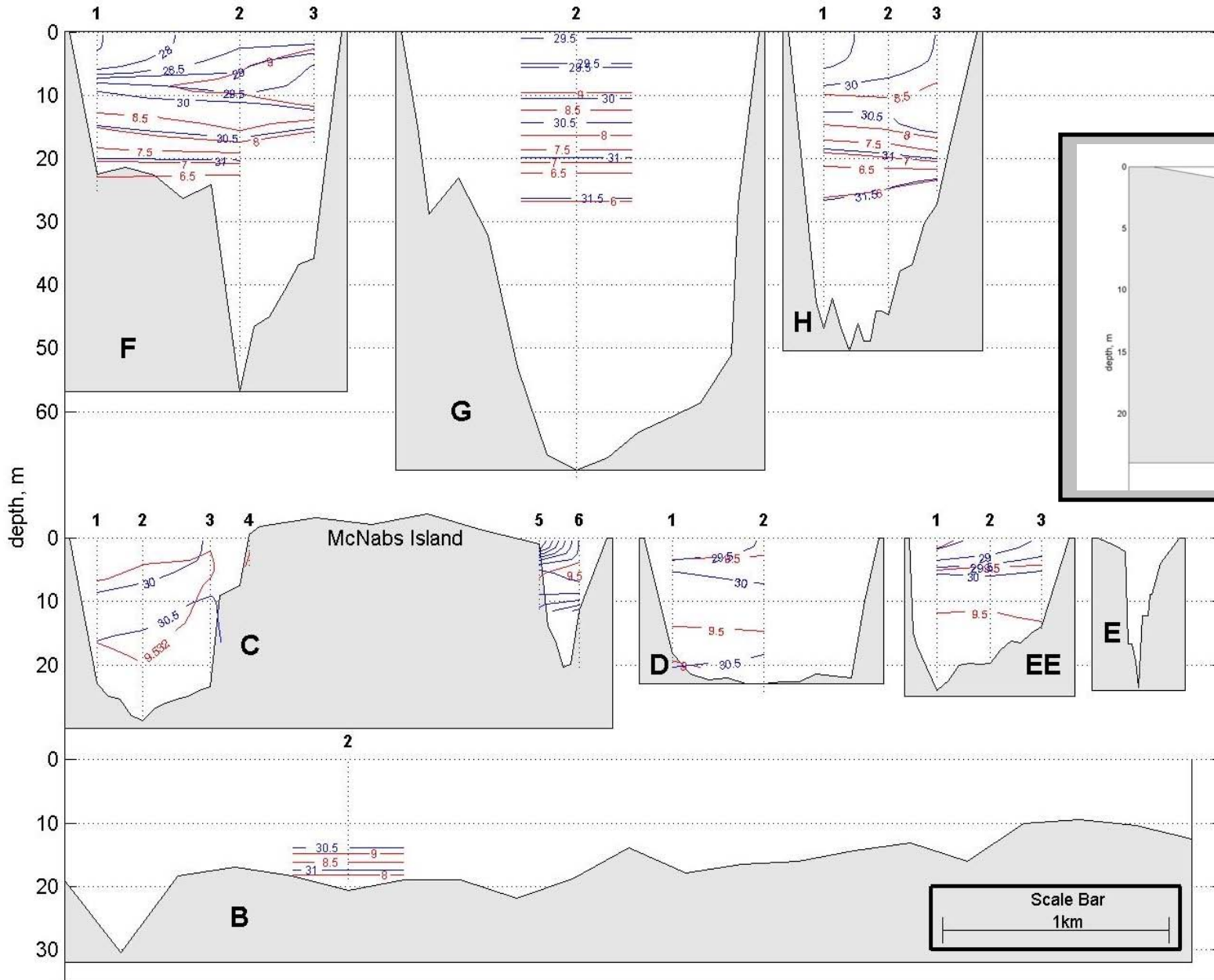
**Fluorescence:** Overall the fluorescence values are low. The highest values (profile max 3.5-5 mg/m<sup>3</sup>) are in the Narrows and southern Basin. Other values are mostly 2 or less. Secchi depths are commensurately high (6.5 – 7.5m) in the northern Basin and Outer Harbour, but reduced in the southern Basin and Inner Harbour.

**Ammonia:** Ammonia values are highest in the 1 m samples in the Narrows with values decreasing monotonically in all directions from there.

**TSS:** TSS values are relatively low (1.1-3.1 mg/L). All values > 2.0 mg/L are between the EE and F sections in the northern Inner Harbour/Narrows and southern Basin. The maximum value 3.1 mg/L occurs in the 10m sample in the Narrows.

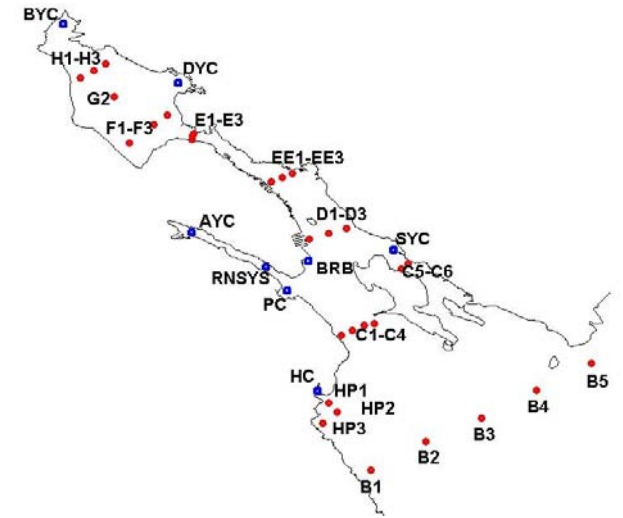
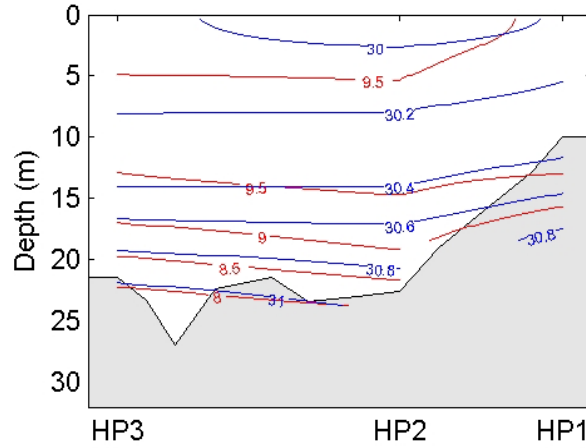
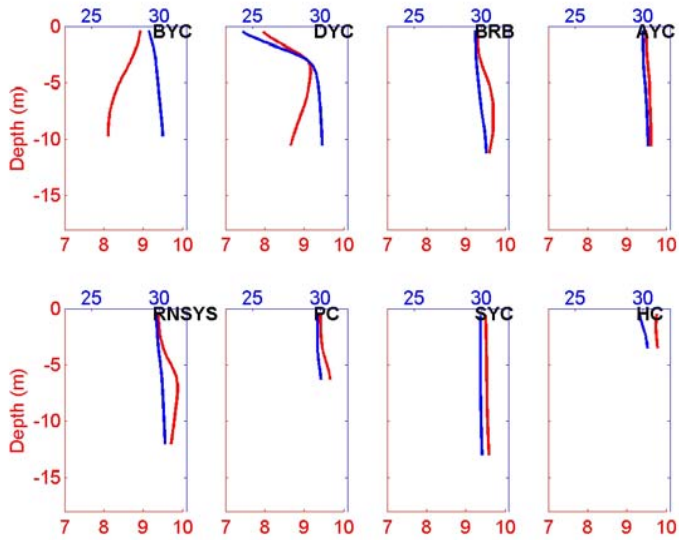
**Dissolved Oxygen:** The data indicate that the dissolved oxygen (DO) in the Basin bottom water has dropped from about 5 mg/L to about 4.5mg/L everywhere below 22-23 m. This drop is probably due, at least in part, to mixing of displaced remnant low oxygen bottom water that was present in mid-water in the previous survey. The DO is below the use specific guidelines nearly everywhere in the Basin and Outer Harbour. In the Inner Harbour the DO is, for the most part, greater than the 6.0 mg/L class SC guideline, except in a thin layer at the bottom. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).

**CBOD<sub>5</sub>:** The samples taken at F1 and F2 had non-detectable levels (< 5 mg/L).

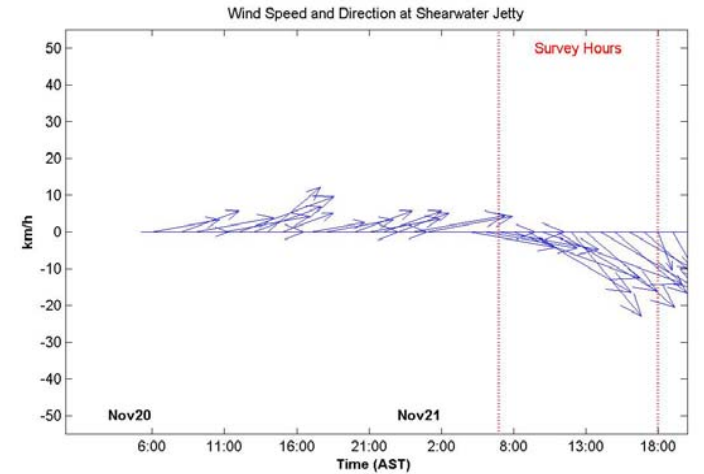
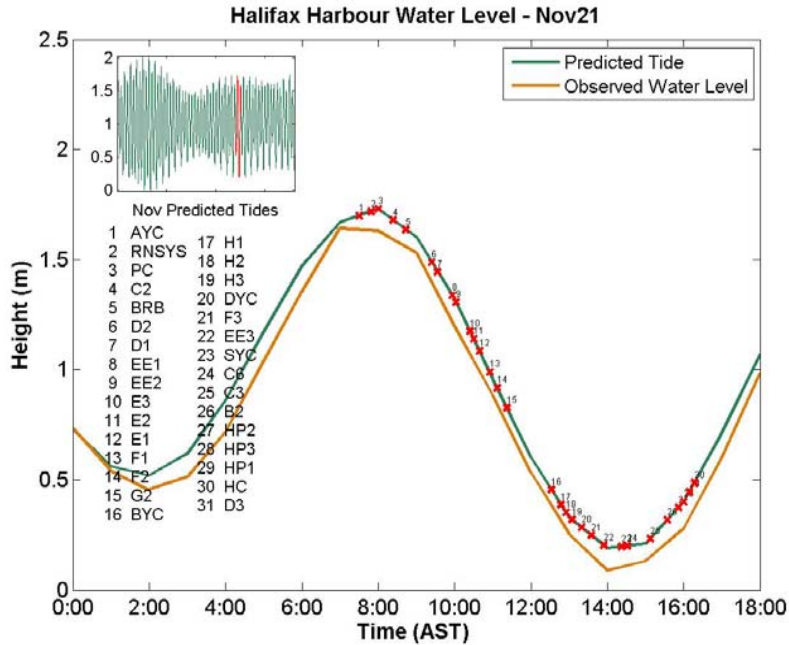


Unless otherwise labeled:  
 - salinity contour interval is 0.5 PSU  
 - temperature contour interval is 0.5°C.

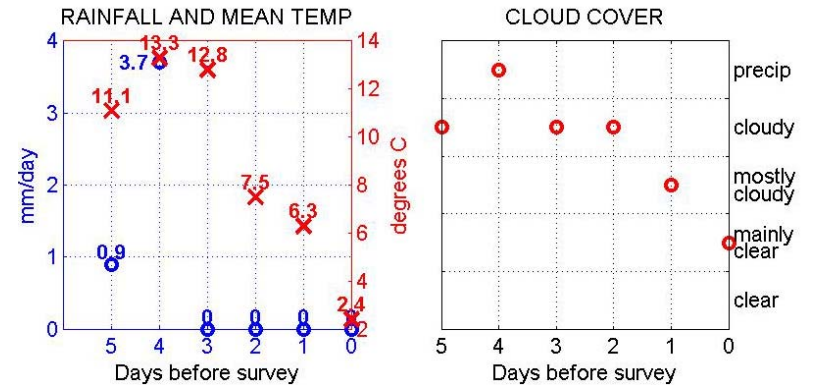
# Yacht Clubs

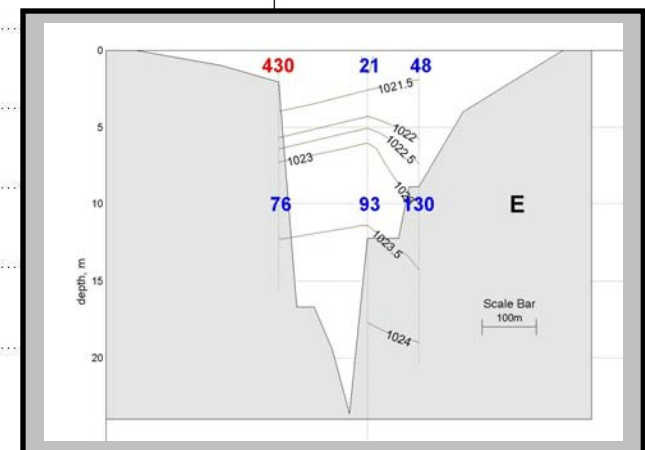
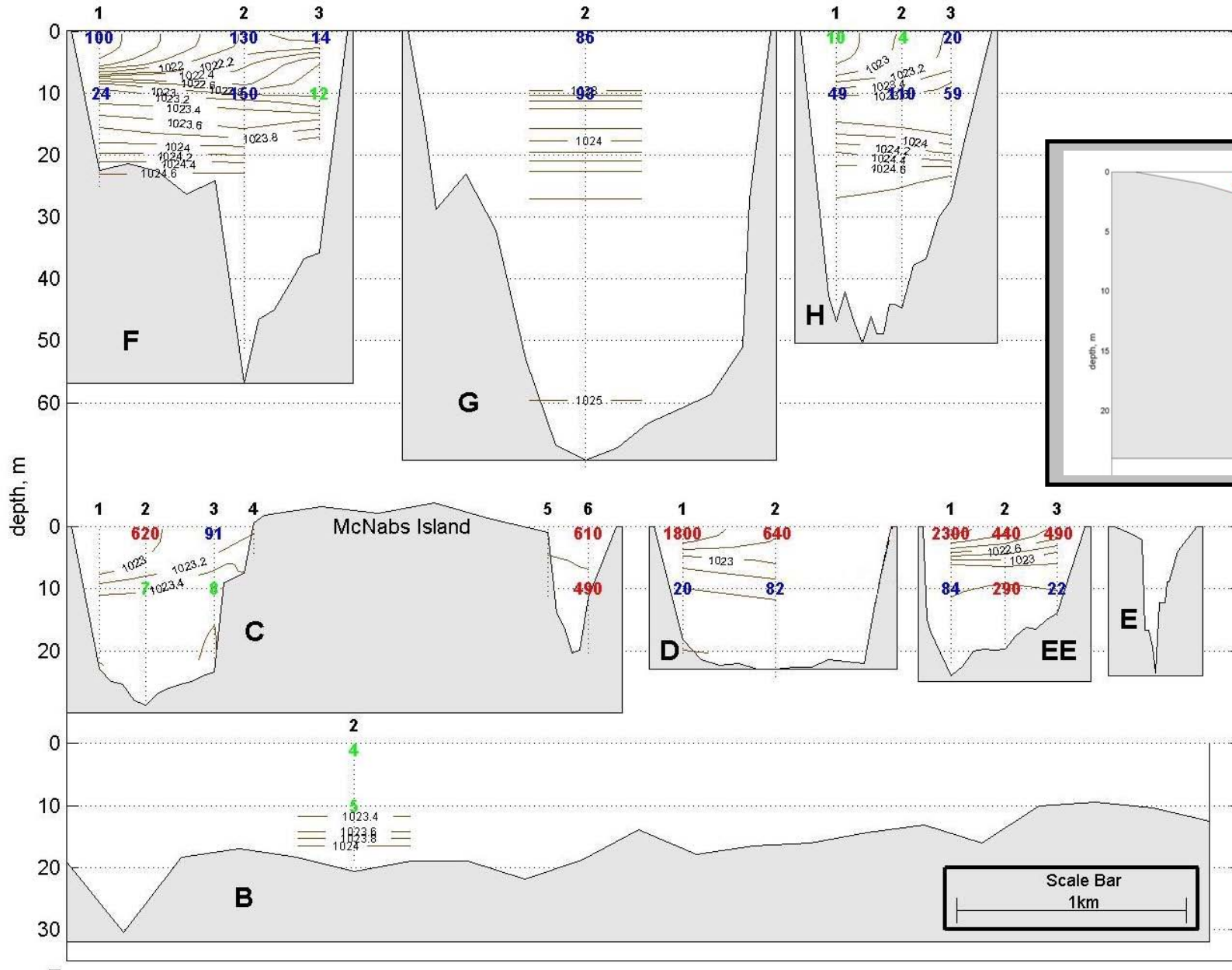


Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



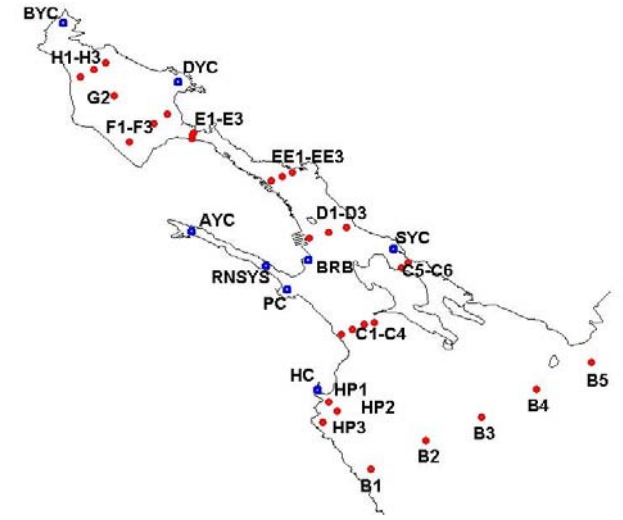
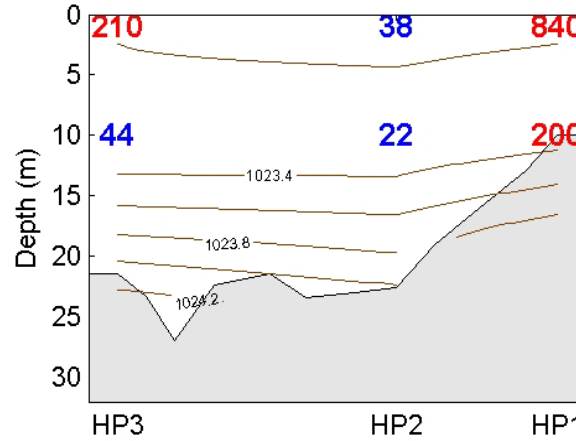
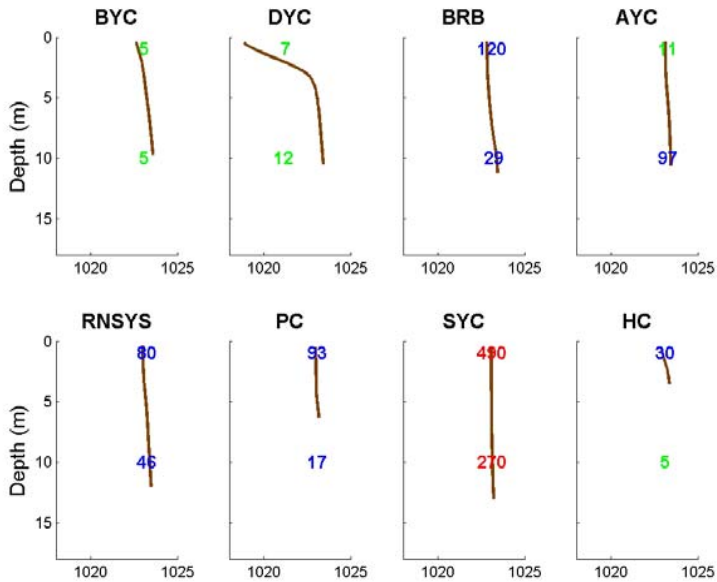
Salinity in PSU      Temperature in °C



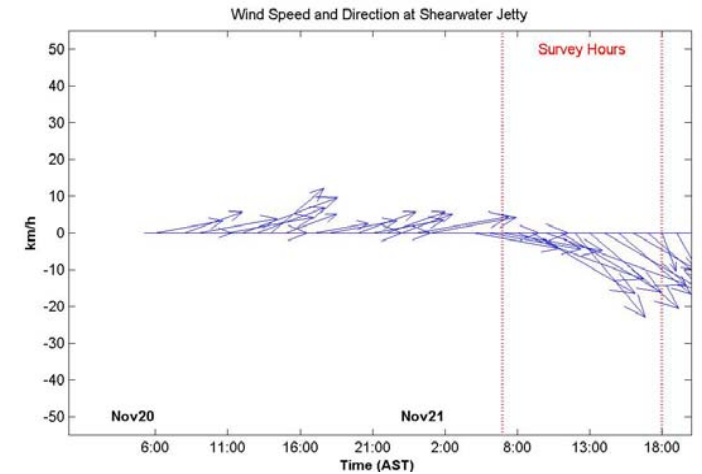
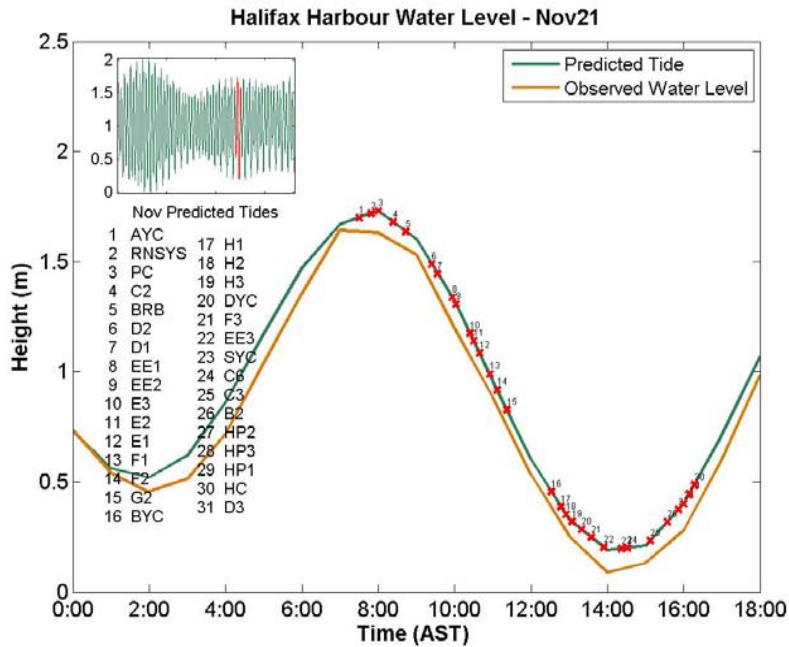


Unless otherwise labeled:  
 - **density** contour  
 interval is 0.2 kg/m<sup>3</sup>

# Yacht Clubs

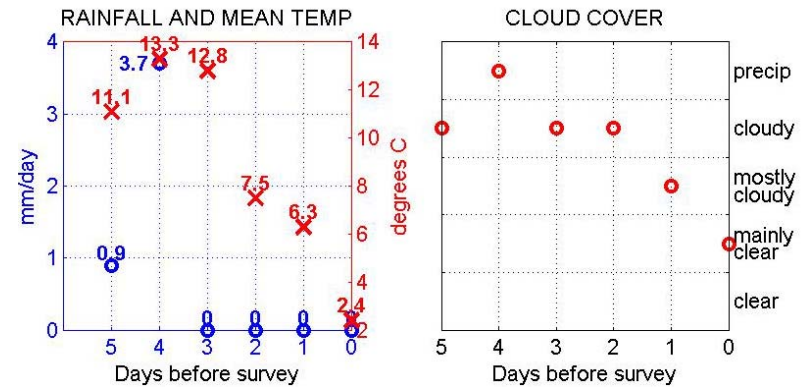


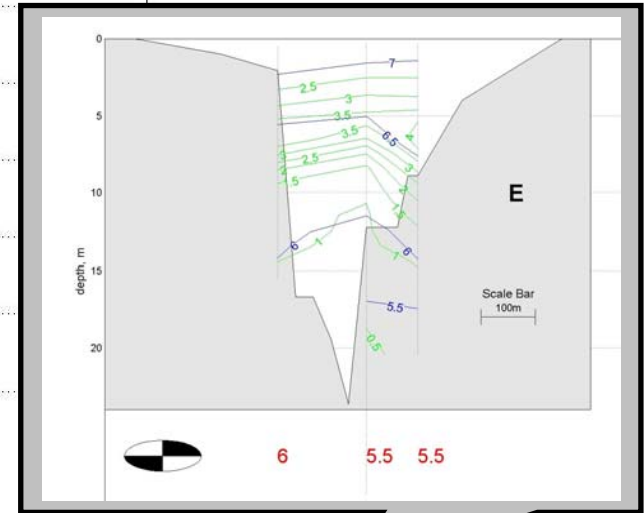
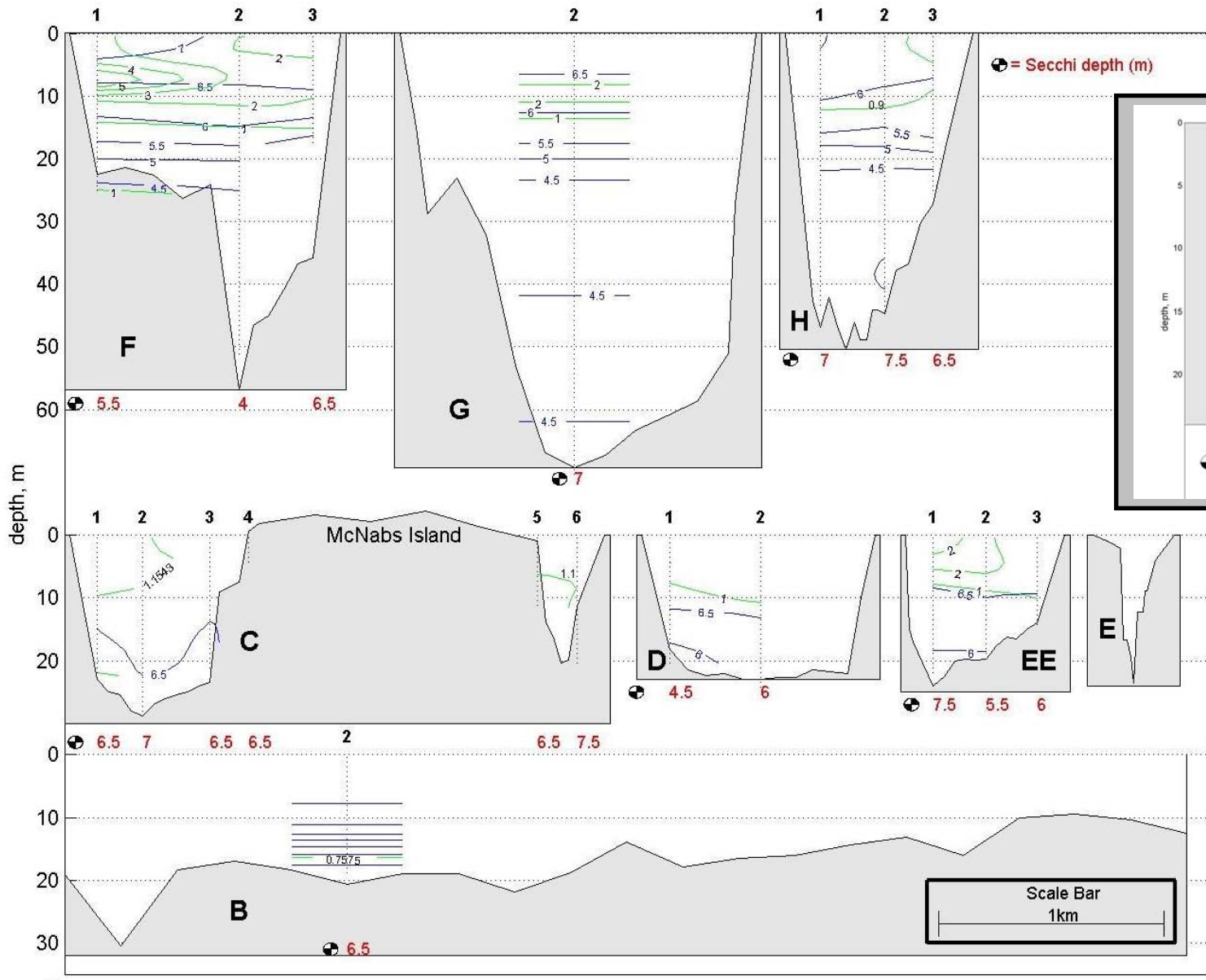
Rainfall and temperature data collected at Shearwater Autoport.  
Cloud cover data collected at Shearwater Airport



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

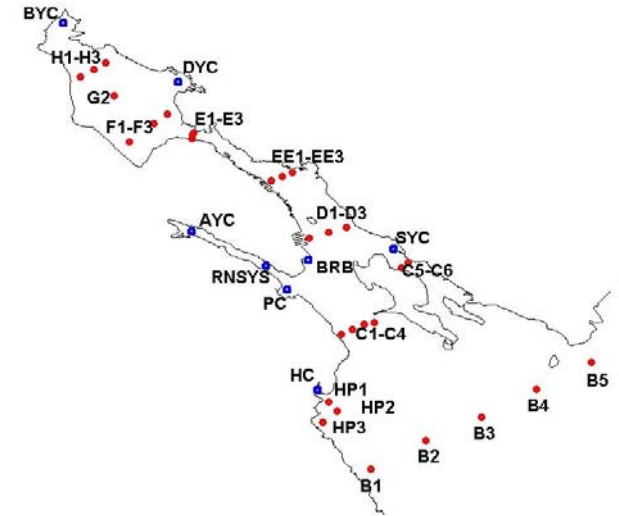
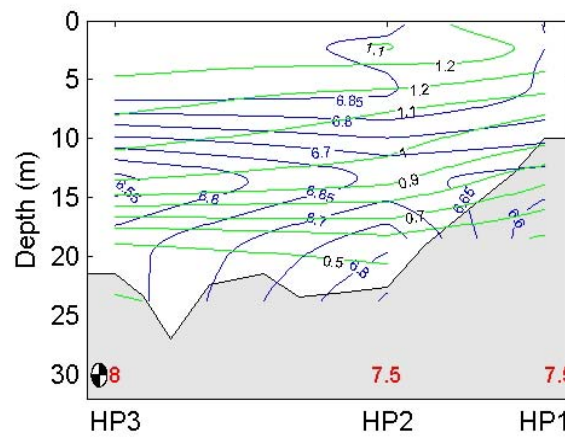
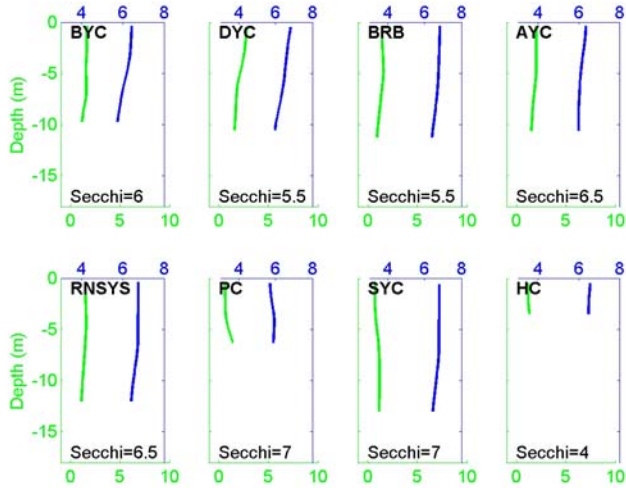
Fecal coliform: **above swimming limit (200 cfu/100mL)**  
**above shellfish limit (14 cfu/100mL)**  
below limits



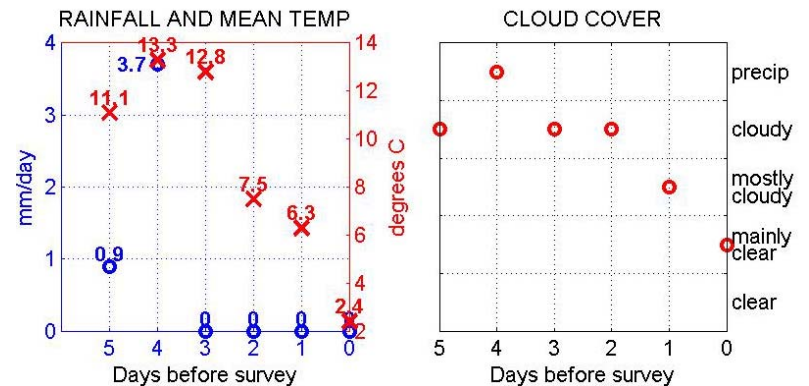
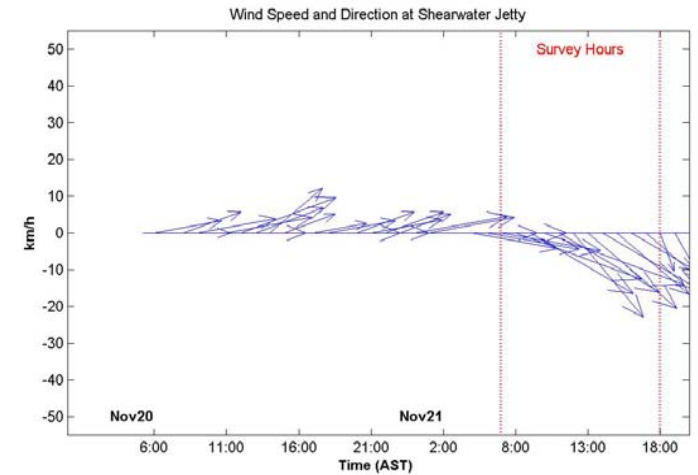
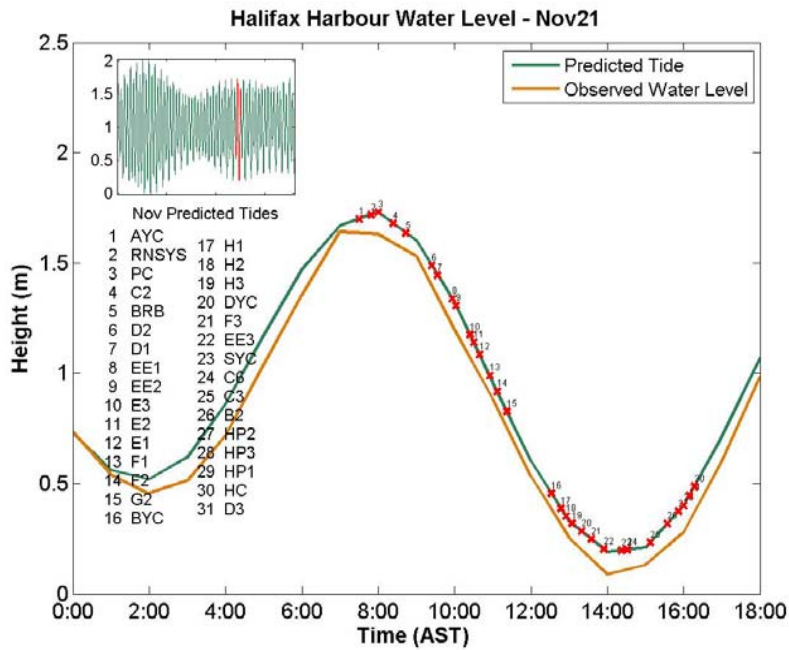


Unless otherwise labeled:  
 - **dissolved oxygen** contour interval is 0.5 mg/L  
 - **chlorophyll** contour interval is 1 mg/m<sup>3</sup>.

# Yacht Clubs

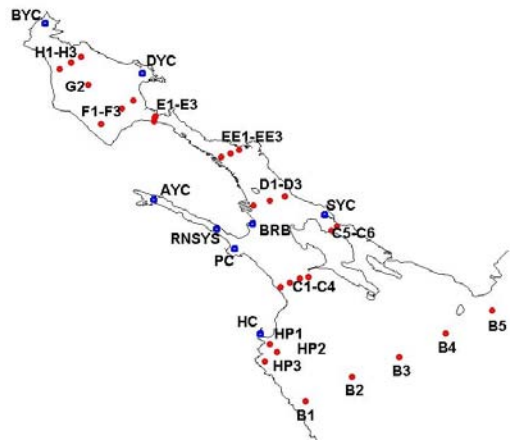
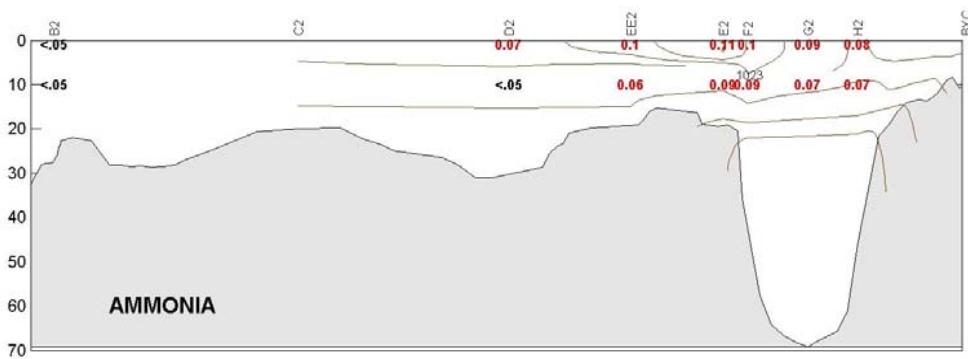
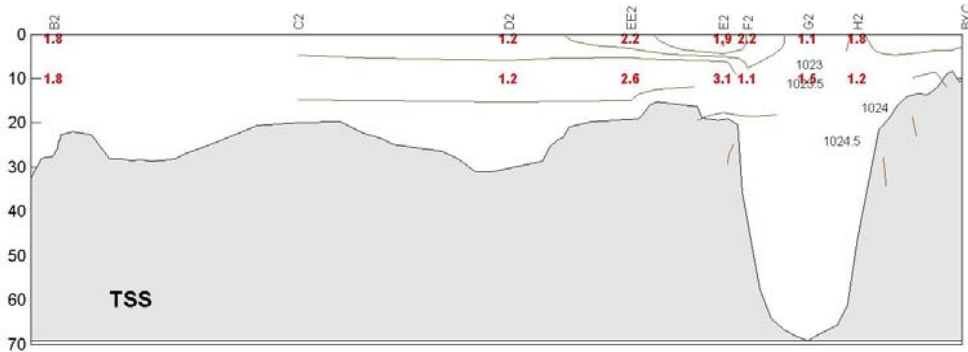


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DO in mg/L

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



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

Ammonia in  $\text{mg/L}$

TSS in  $\text{mg/L}$

Halifax Harbour Water Level - Nov21

