Halifax Harbour Water Quality Monitoring Project
Weekly Summary #107

Survey Date: 4 July 2006
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report107_060704.doc
Data File: HHWQMP_data107_060704.xls

Data Return:

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

Sample Notes:

There is a relatively strong vertical temperature gradient in the Harbour. The data processing procedure determines an optimal alignment of sensor data based on the weeks temperature regime (refer to procedures section of the report binder). In this case, the strong gradient results in an offset which may cause some loss in some of the near surface data in all parameters, but the most severely affected is the surface DO data in the Basin. The magnitude can be evaluated using the data obtained during instrument stabilization at 1m. The worst case is a deficit of 2 mg/L at F1 and varies to negligible in the D and EE sections. A procedure to deal with these high gradient conditions is under consideration.

QA/QC samples:

Chemical Analysis

		EE2- 10m		
Detectable Parameter	**units**	**reference sample**	**QA/QC**	**QA/QC dup**
Ammonia (as N)	mg/L	<0.05	<0.05	n/a
Total Suspended Solids	mg/L	7	5	4

Fecal Coliform (CFU/100ml)

Site	HC-1m	F2-1m	D1-10m	EE2-10m
Reference	670	1	32	240
QA/QC	450	5	34	22

Comments:

General: There has been 54 mm of rain in the 5 days leading up to this survey, including 26 mm on sampling day. The result is continued stratification, almost as strong as last week, in the Basin. In the Inner Harbour, stratification is much less than last week. More saline and colder (>32 PSU, < 5°C) water (density approx 25σ) has intruded in as far as the bottom of section D. Water that is of potential density similar to that of Basin bottom water occurs at the bottom of the Narrows, indicating ongoing or potential intrusion of this water into the Basin bottom waters

The field notes document a generally turbid condition in the harbour surface water. This appeared to be a brown/green brown tint (phytoplankton/tannin?) in the Basin and Inner Harbour. In the Narrows, in the vicinity of Duffus street, the water was milky coffee coloured. Additionally, many areas had floating/ near surface detritus of various descriptions. Also noted was a green brown tint to the water of the southern NW Arm (RNSYs and PC) and adjacent Harbour (section C). This condition seems to be reflected in the secchi disk data which indicate poor water transparency. Interestingly, the visibly unusual conditions are not clearly evident in the remaining data.

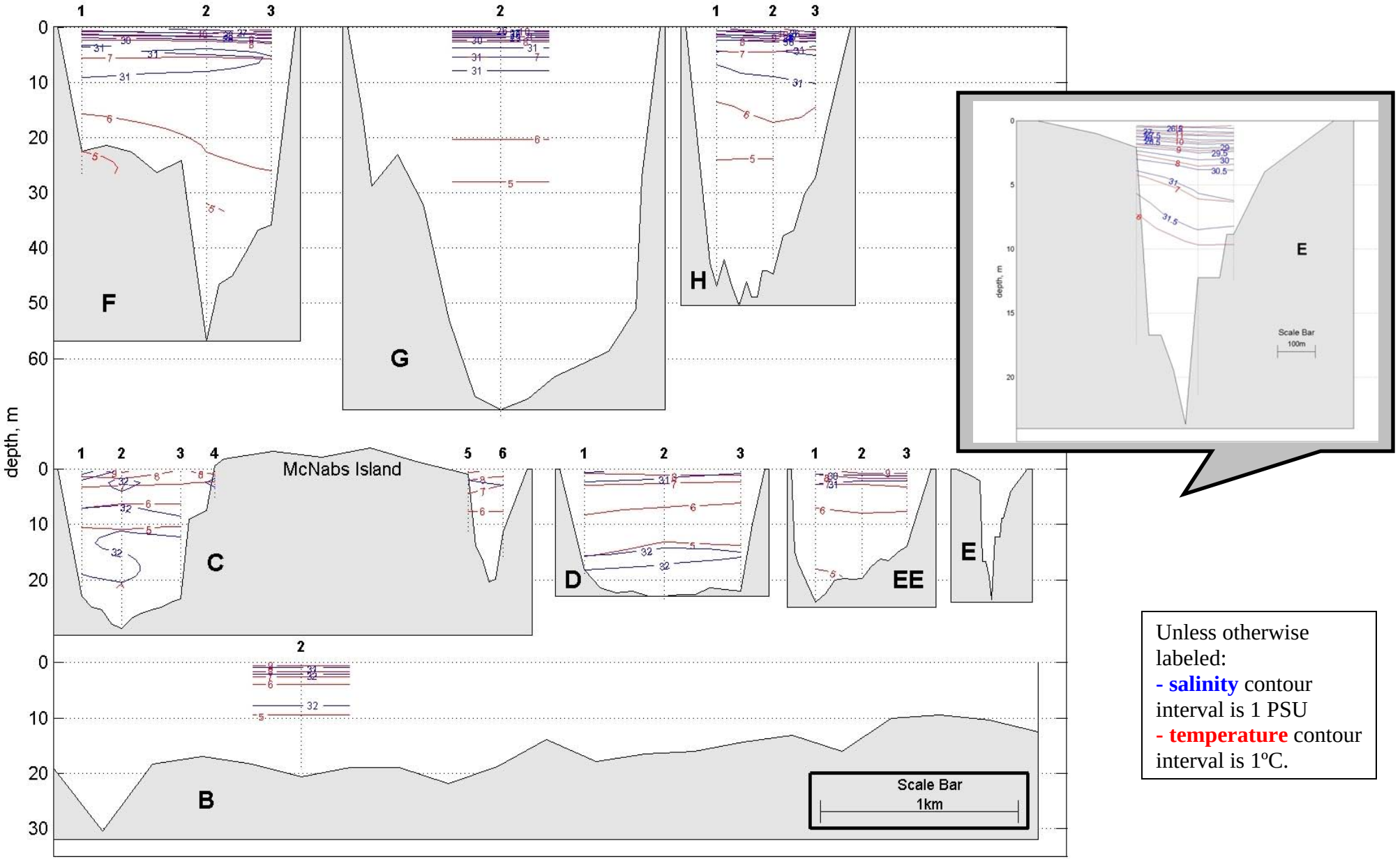
Fecal coliform (fc) values are not particularly high, though there are unusually high values at 10m at E3 and H3. There is no indication in the fc data that sewage was being diverted to the Fairview Cove outfall.

Fluorescence: The fluorescence values are highest (> 30 mg/m^3) at the head of the Basin at a depth of about 5 m and remain >20mg/m^3 throughout the Basin. This drops to 10-12 mg/m^3, at the surface, in the Inner Harbour and further to low but slightly elevated values of 2-4 mg/m^3 in the Outer Harbour.

Dissolved Oxygen: The reported surface DO levels are artificially low as reported in the sample notes. The data indicate that the Basin bottom water and the bottom water at the head of the NW Arm (AYC) are below the applicable class SB guideline (7.0 mg/L). The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).

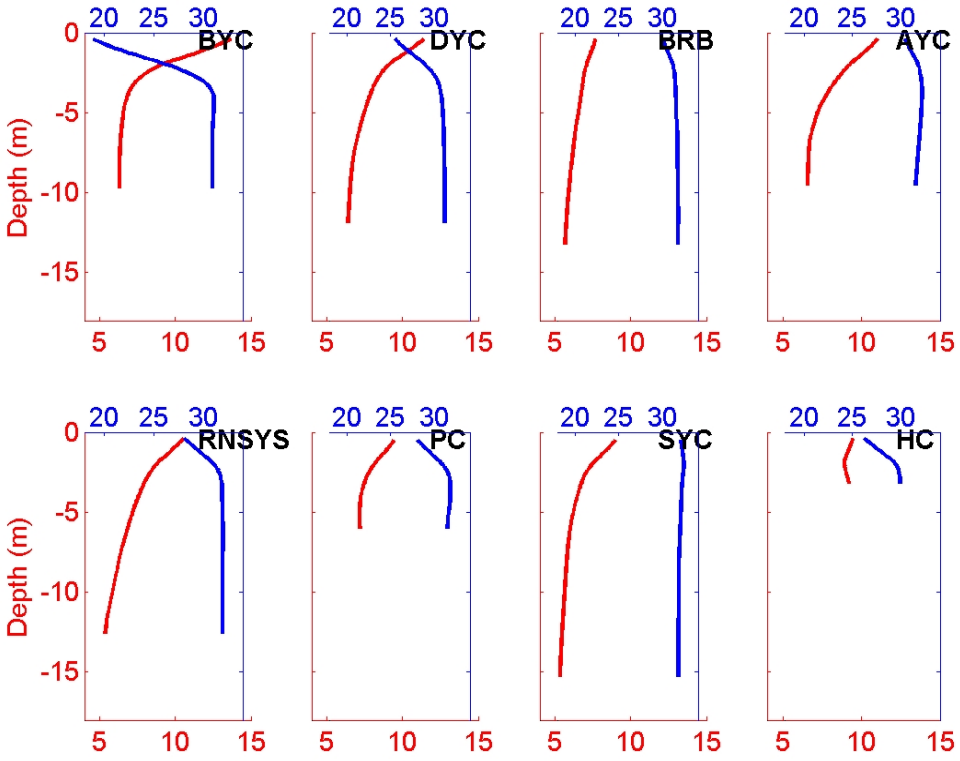
TSS: The TSS values seem slightly elevated, varying from 3-15 mg/L with the two values > 10 mg/L occurring in 10m samples in the Basin.

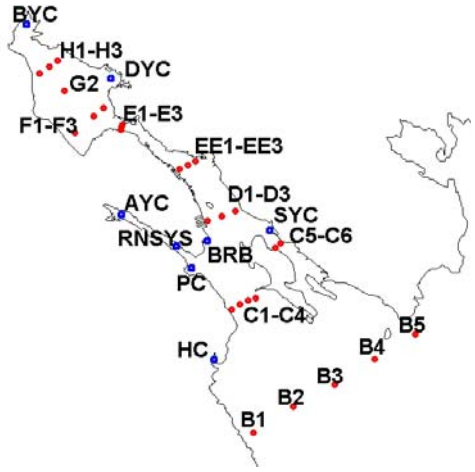
Ammonia: The ammonia nitrogen values are relatively low. Nine of fourteen values are below detection (0.05 μg/L) and the remaining values are all < 0.1 μg/L.



Unless otherwise labeled:
- **salinity** contour interval is 1 PSU
- **temperature** contour interval is 1ºC.

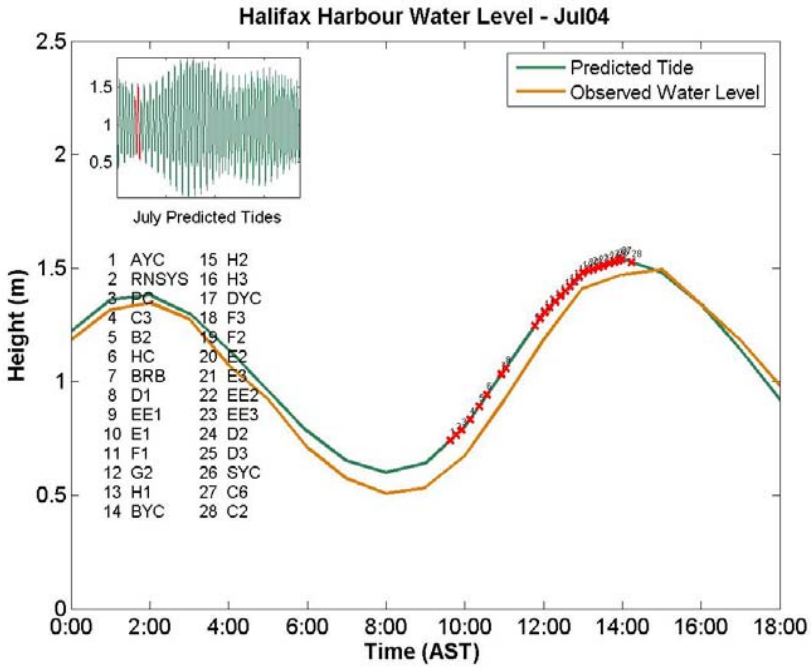
Yacht Clubs

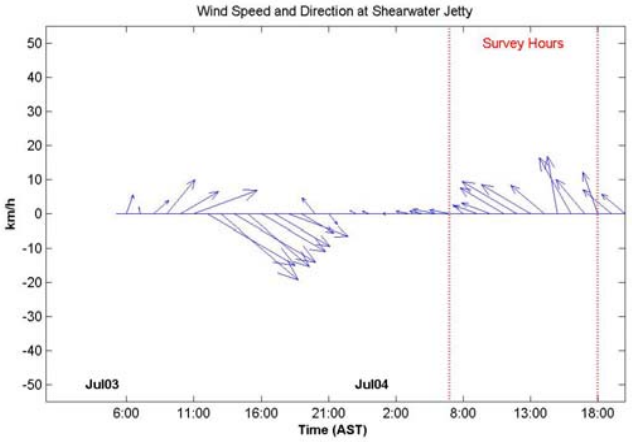


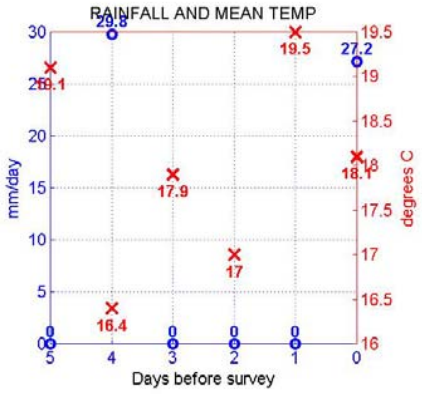


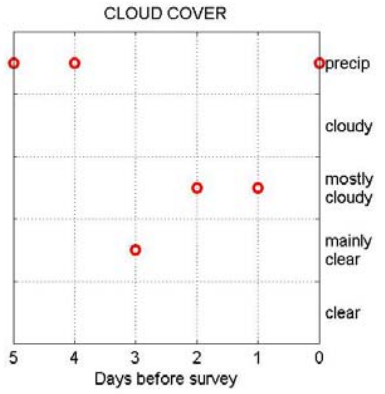
Weather data collected at the Shearwater Airport

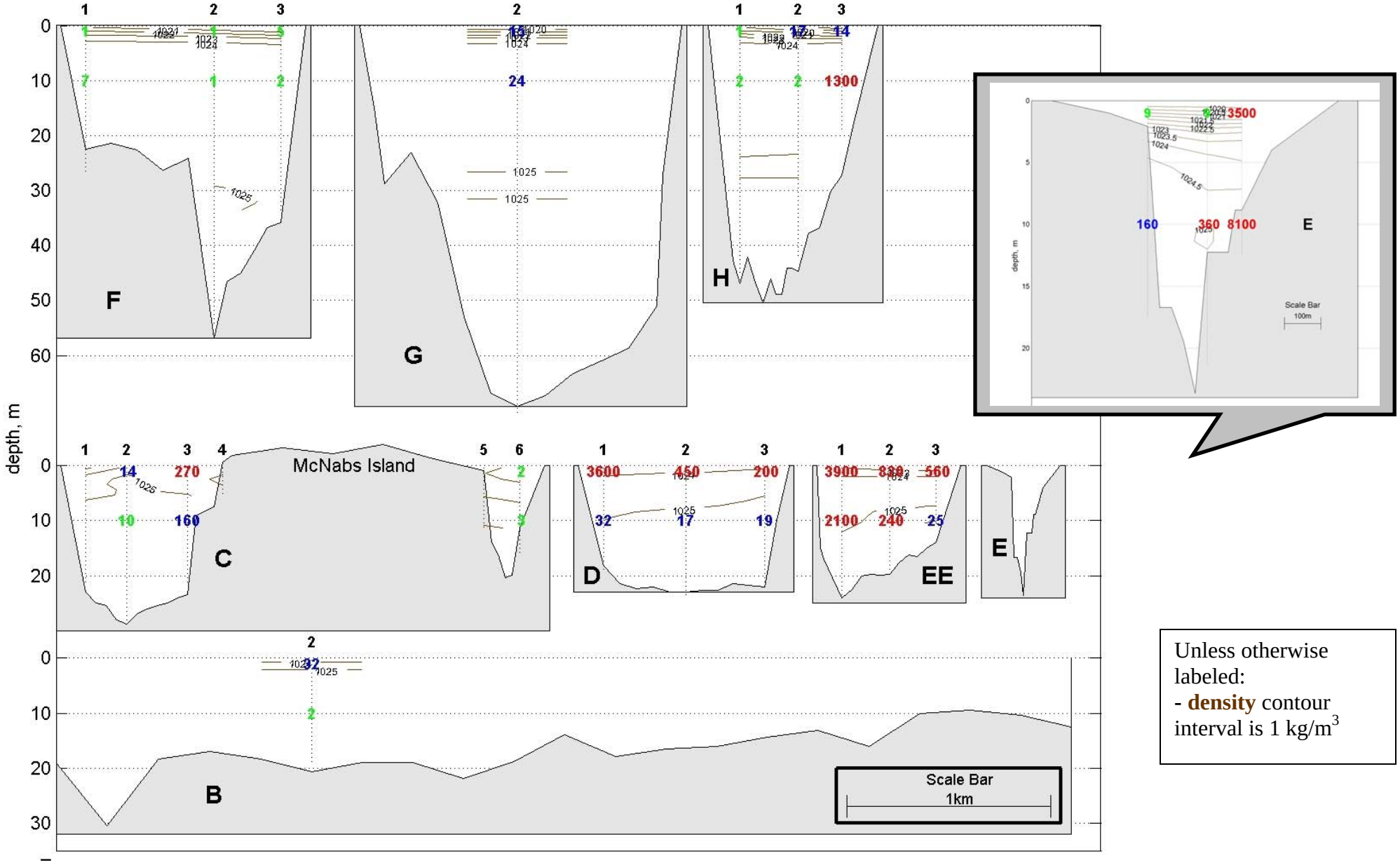
Salinity in PSU **Temperature in ^{o}C**





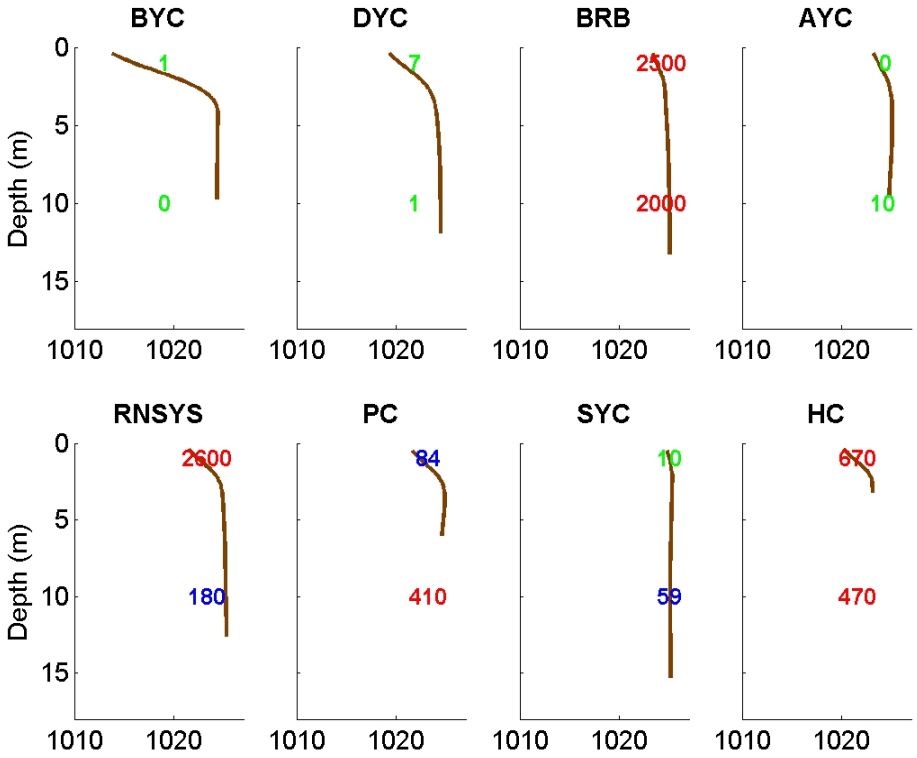


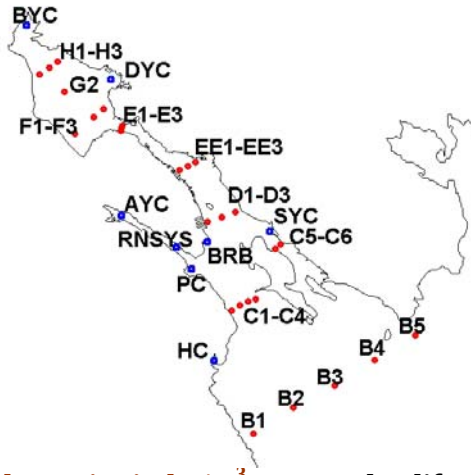




Unless otherwise labeled:
- **density** contour interval is 1 kg/m^3

Yacht Clubs

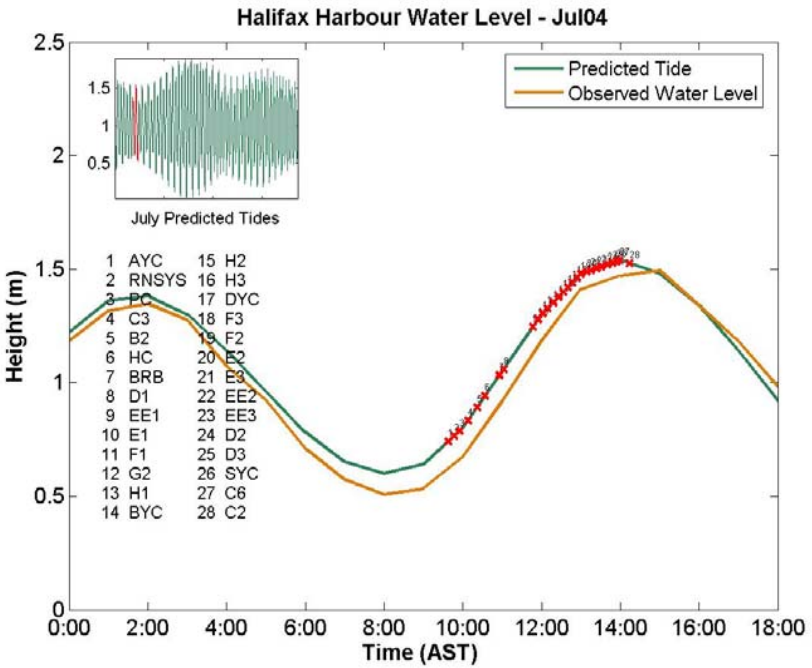


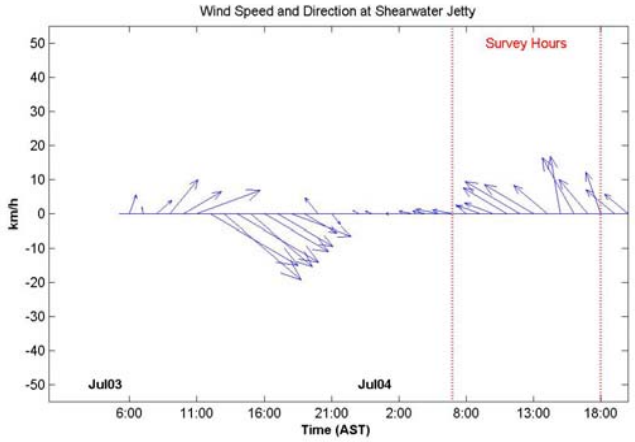


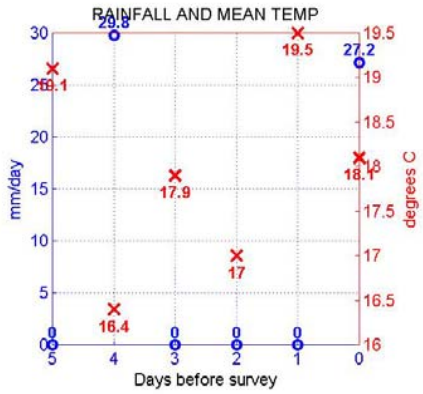
Weather data collected at the Shearwater Airport

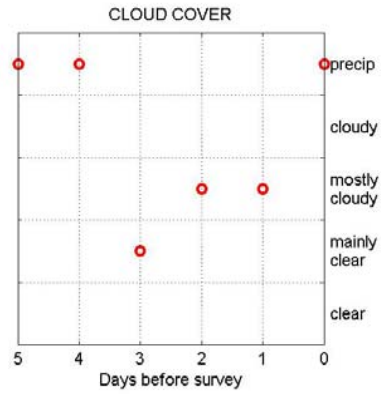
Potential Density in kg/m^3

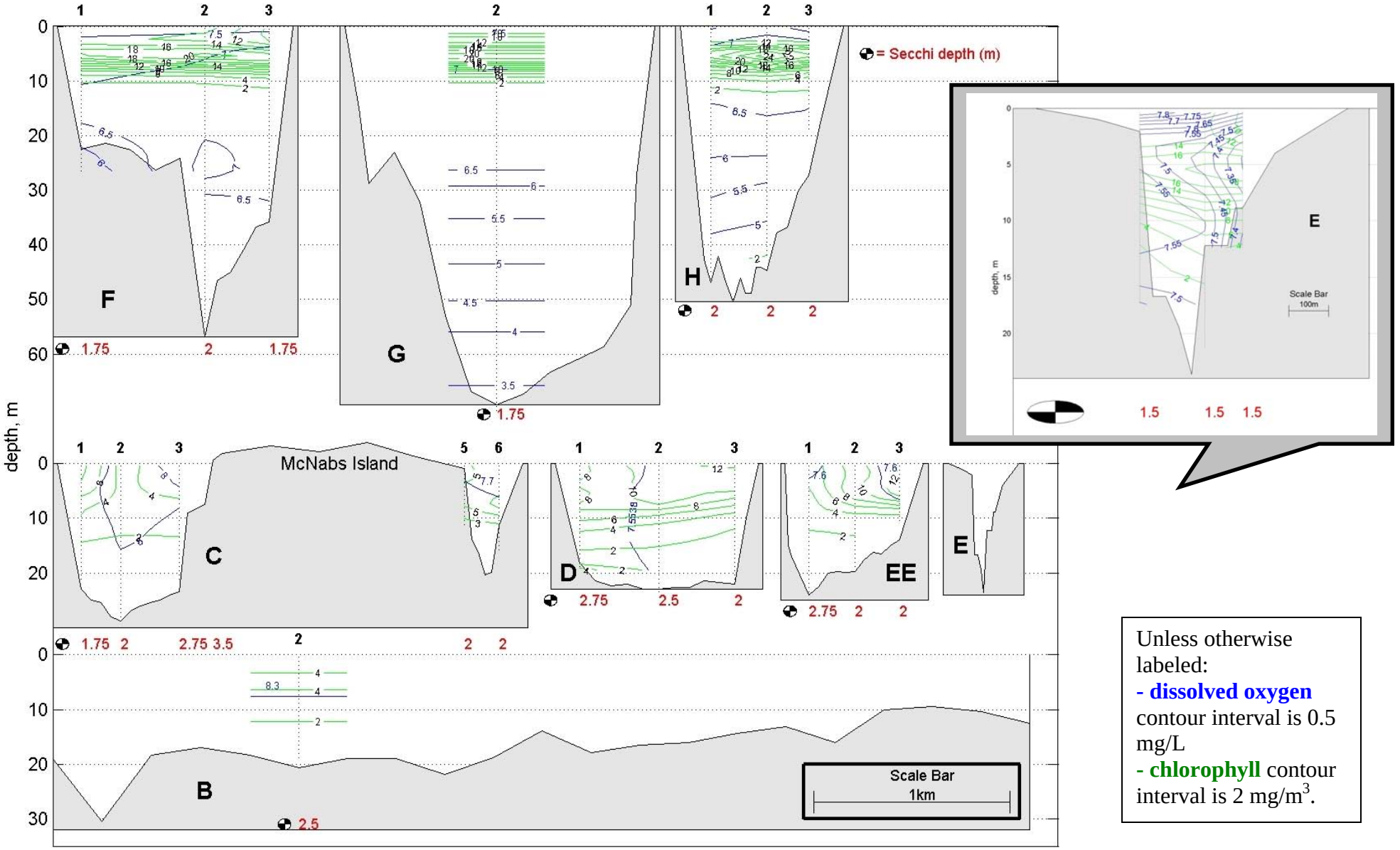
Fecal coliform: above swimming limit (200 cfu/100mL)
above shellfish limit (14 cfu/100mL)
below limits





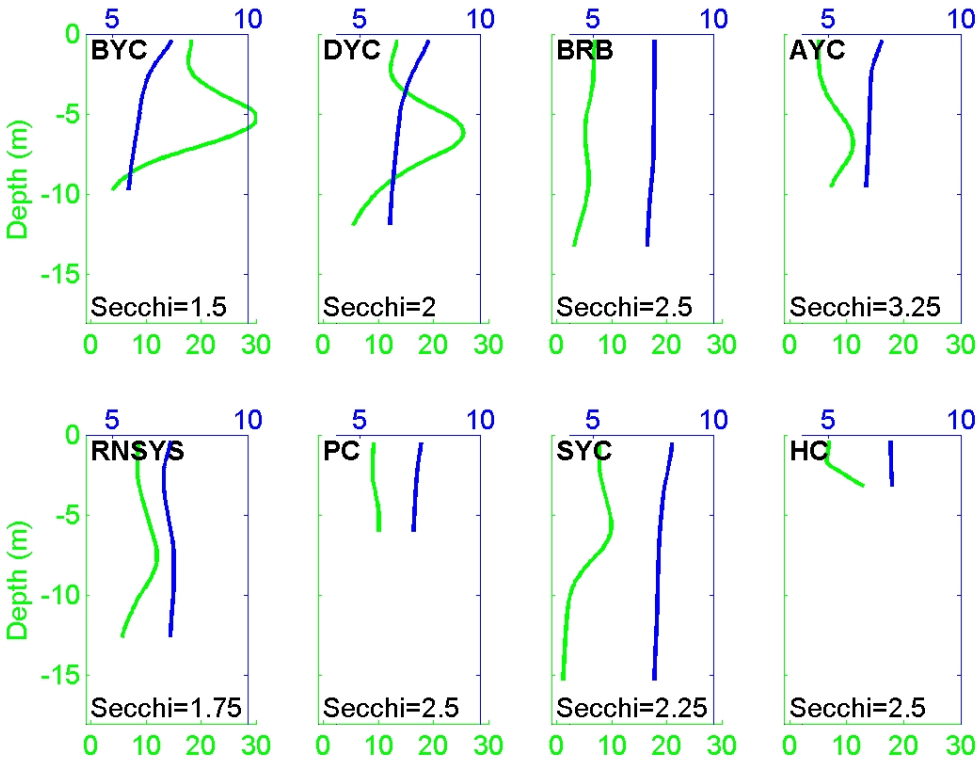


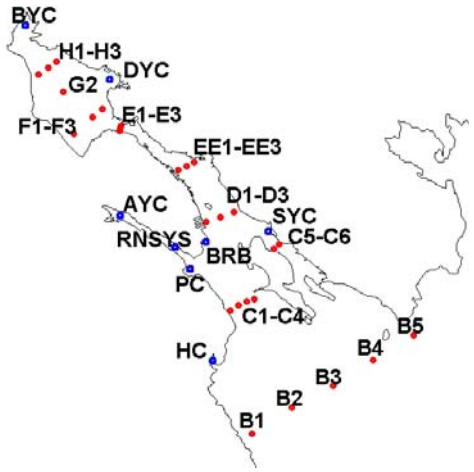




Unless otherwise labeled:
- **dissolved oxygen** contour interval is 0.5 mg/L
- **chlorophyll** contour interval is 2 mg/m^3.

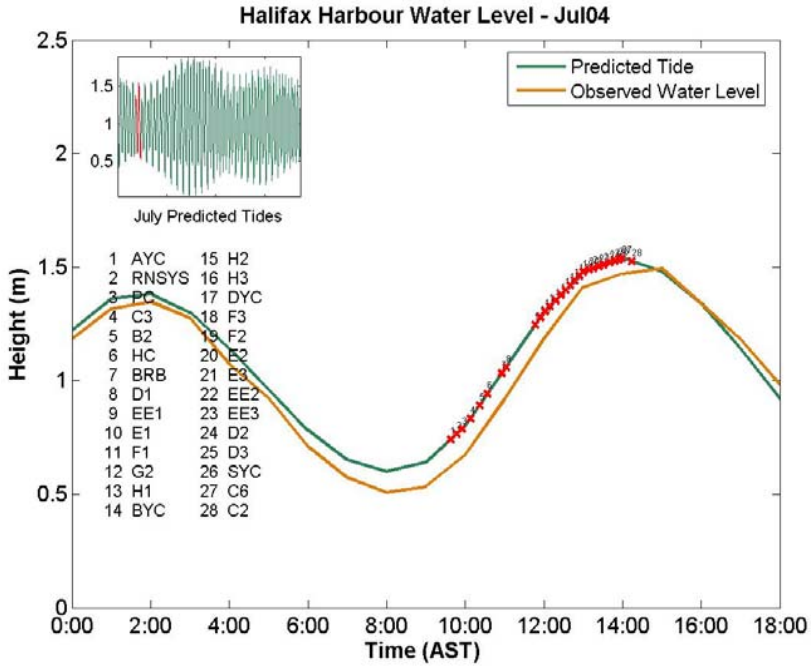
Yacht Clubs

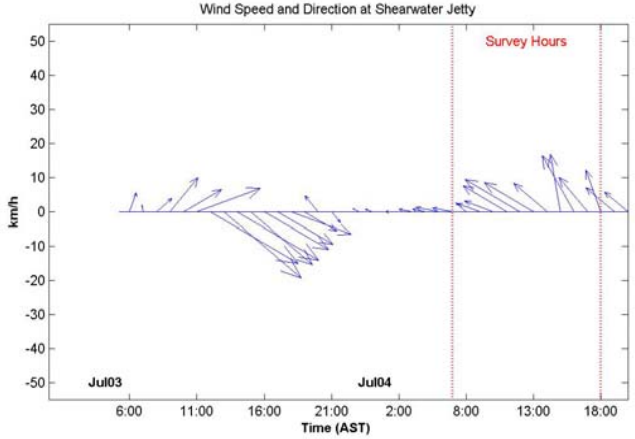


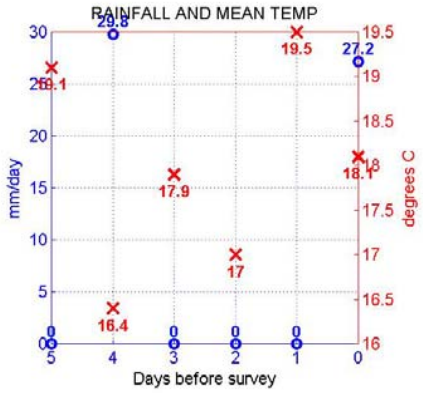


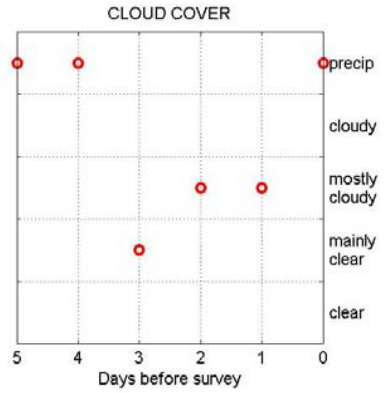
Weather data collected at the Shearwater Airport

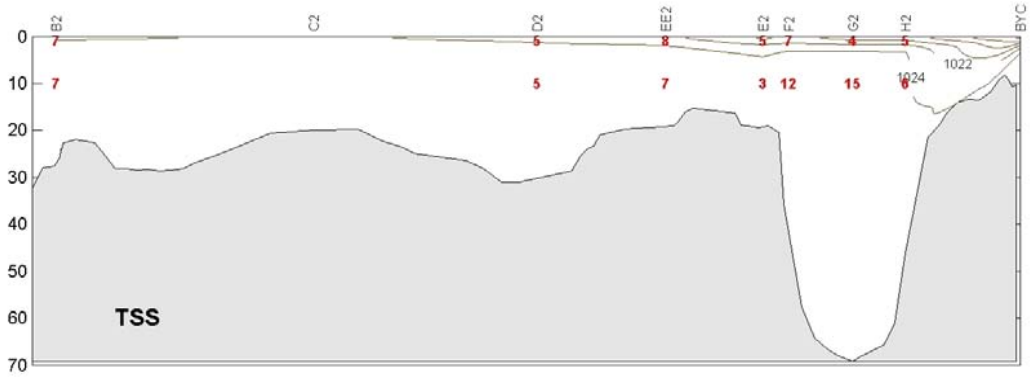
DO in mg/L **Chlorophyll in mg/m^3**

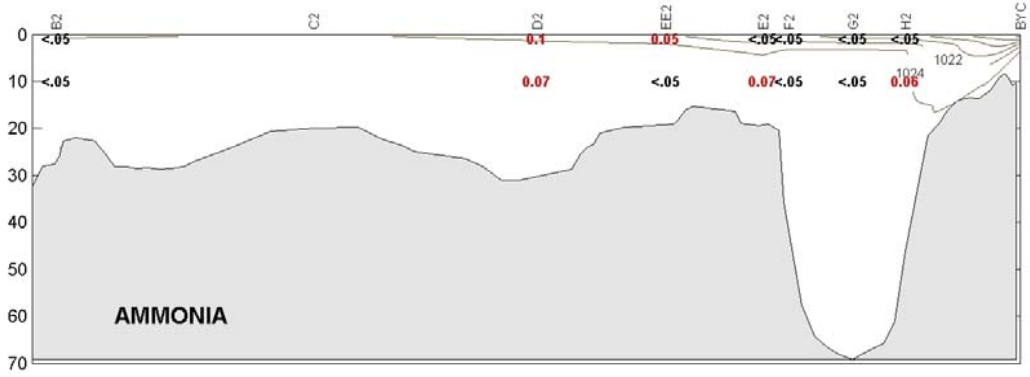


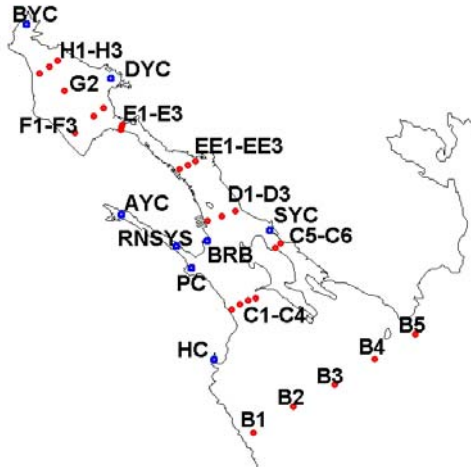












Potential Density in kg/m^3 **Ammonia in mg/L** **TSS in mg/L**

Weather data collected at the Shearwater Airport