# Halifax Harbour Water Quality Monitoring Project
# Weekly Summary #101

**Survey Date:** May 23, 2006
**Nature of Survey:** Complete Survey
**Report File (this document):** HHWQMP_report101_060523.doc
**Data File:** HHWQMP_data101_060523.xls
**Data Return:**

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

**Sample Notes:** No Secchi disk data taken (broken).

**QA/QC samples:**

**Chemical Analysis**

| | | EE2- 10m | | |
|---|---|---|---|---|
| **Detectable Parameter** | **units** | **reference sample** | **QA/QC** | **Dup** |
| Ammonia (as N) | mg/L | 0.08 | 0.07 | NA |
| Total Suspended Solids | mg/L | 2 | 4 | 4 |

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

| **Site** | E3-10m | F3-1m | RNSYS-10m | EE2-10m |
|---|---|---|---|---|
| **Reference** | 16 | 0 | 14 | 14 |
| **QA/QC** | 11 | 1 | 12 | 20 |

**Comments:**

**General:** There appears to be an intrusion of more saline (>31 PSU), slightly warmer (<5°C), bottom water into the Harbour. There are no obvious anomalies in local forcing to cause this, and it is likely due to a shelf-wide response to larger scale forcing. In the following plots, the surface salinity appears similar to last week. However, the data files indicate that there is a very thin layer, <1m thick, that is 1-2 PSU less saline than is resolved on the plots. In the Inner Harbour, the 31 PSU contour is at about 10 m, where the 30 PSU contour was last week. There is a discontinuity in the salinity data in the Inner Harbour (EE section), where the 30 PSU contour comes right to the surface. North and south of section EE, this contour is overlain by less saline water. This discontinuity is also evident in the density data. It does not appear that the more saline water has intruded all the way to the Basin as it is only barely present in the Narrows. It does appear that less saline water (30-31 PSU) has intruded into the Basin. Here, the depth of the 31 PSU contour has remained relatively unchanged (ca. 35 m) from last week, however the 30 PSU contour has been "uplifted" from 15 to about 5m.

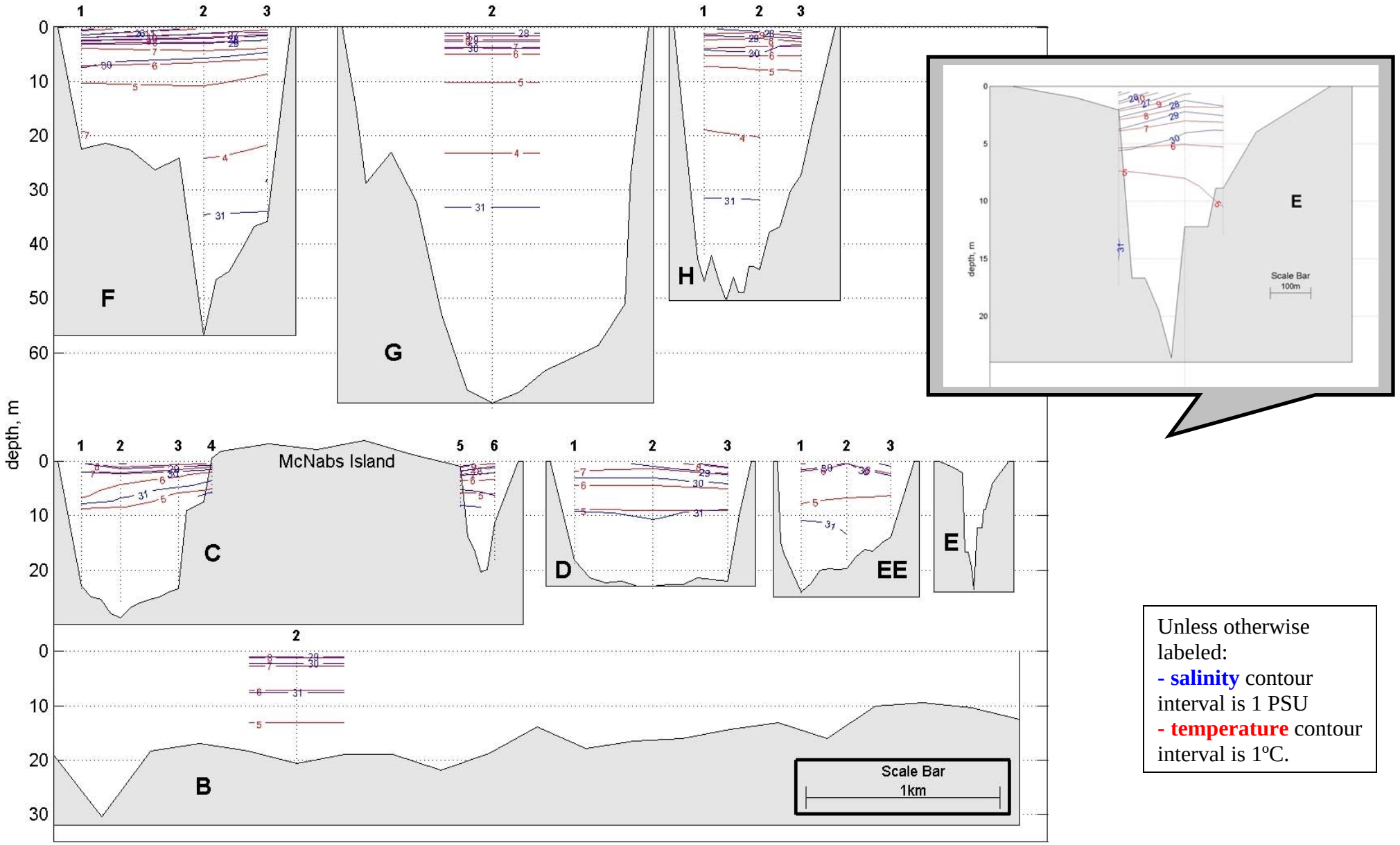
The intrusion would be expected to lead to enhanced currents into the Harbour at the bottom, and out of the Harbour at the surface. This pattern is strongly supported by the fecal coliform (fc) data. The distribution is strongly skewed with respect to the sources in the Inner Harbour. North of the EE section, the highest values (though generally quite low) are in the 10 m samples, while south of this, the highest are quite high and are in the surface water. These high values persist into the Outer Harbour, with a value of 560 cfu/100mL occurring at B2. This is only the second time since the start of the program that FC values this high have been observed at this site. The general pattern is mirrored in the NW Arm.

**Fluorescence:** The levels are similar to last week although more uniformly distributed. There are profile maximums of 8-10 mg/m$^3$, pretty much throughout the Harbour. The exception is the EE section, where the maximum values are about 2 mg/m$^3$. These values are similar to the bottom water in the remainder of the Harbour, consistent with upwelling in this area. The values drop to about 3 mg/m$^3$ at site B2 in the Outer Harbour.

**Dissolved Oxygen:** The data indicate that, the DO values in the surface water remains at about 8 mg/L. South of the Narrows the levels are quite uniform throughout the water column at about 8 mg/L. The Basin deep water values are below the applicable use-specific guidelines, and continue to drop, unaffected by the apparent mid-water intrusion. In addition, this week there is a very limited guideline exceedence at Section C where the bottom water drops below the class SA limit of 8.0 mg/L. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).

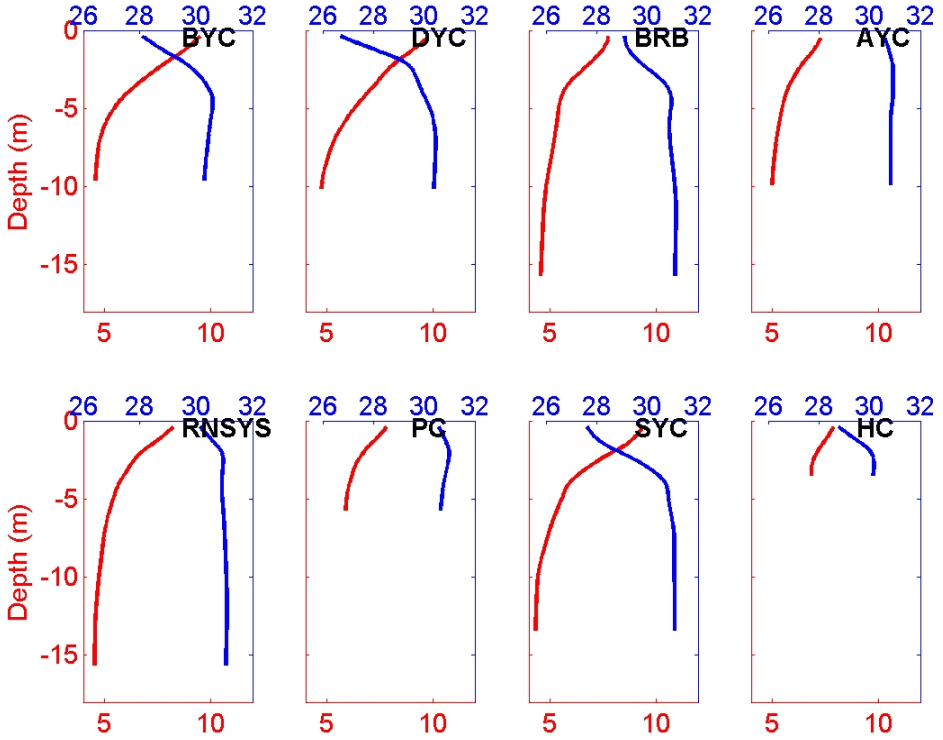
**TSS:** The TSS values are all relatively low, with values above ranging from 1- 4 mg/L. There appears to be no significant pattern.

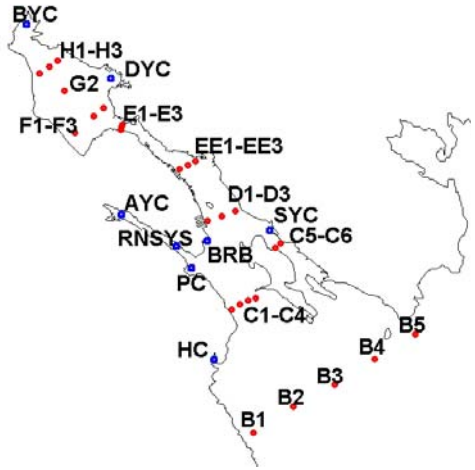
**TN:** The TN is relatively high, perhaps higher in the Basin where the values vary from 0.11- 0.18. There appears to be a decreasing trend going further out of the Harbour, but there is quite a lot of variability.




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

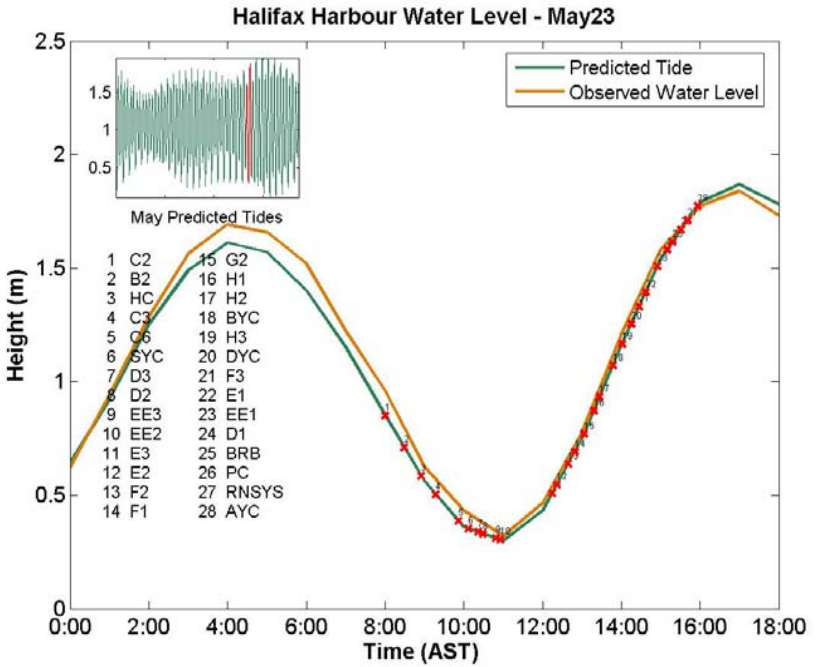
# Yacht Clubs

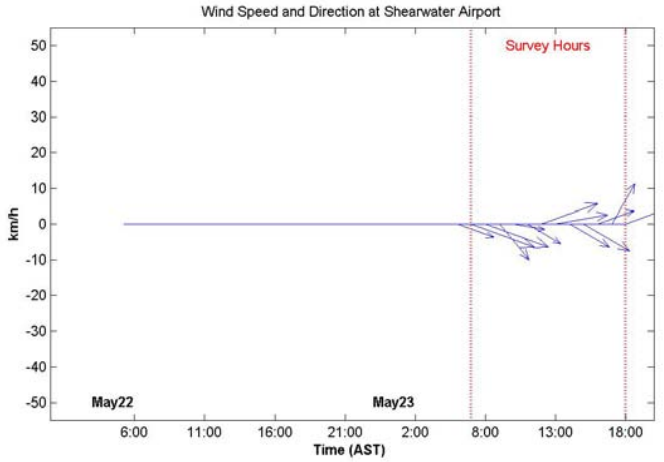


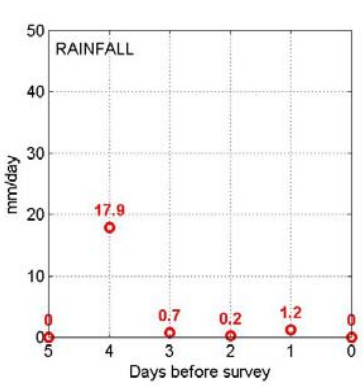



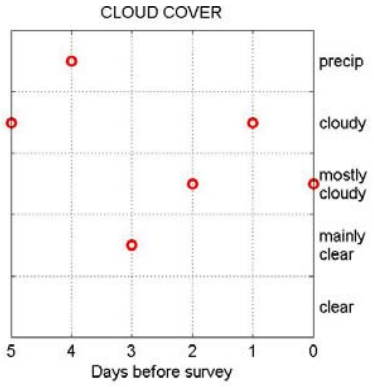

**Salinity in PSU** **Temperature in $^{o}$C**

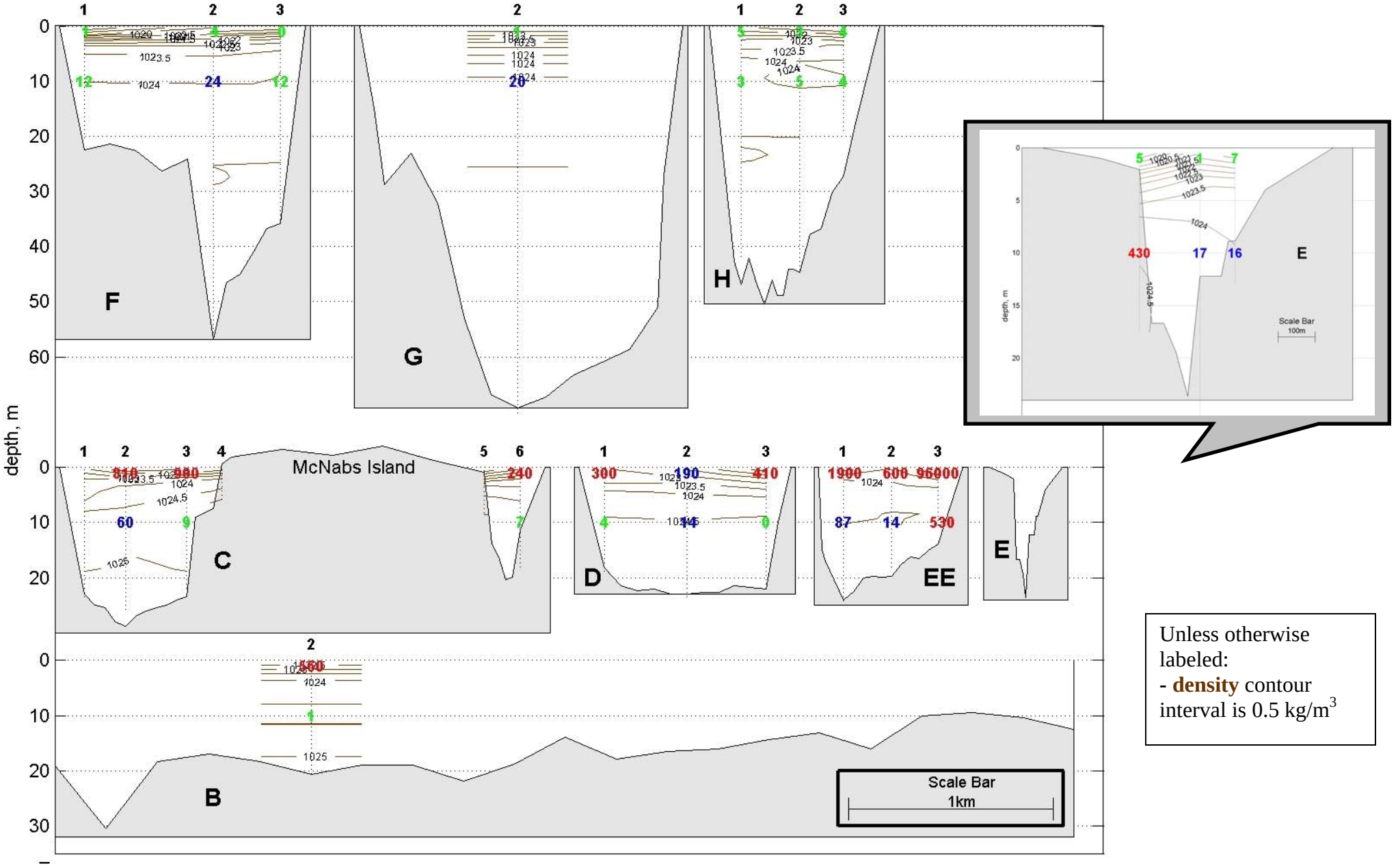
Weather data collected at the Shearwater Airport



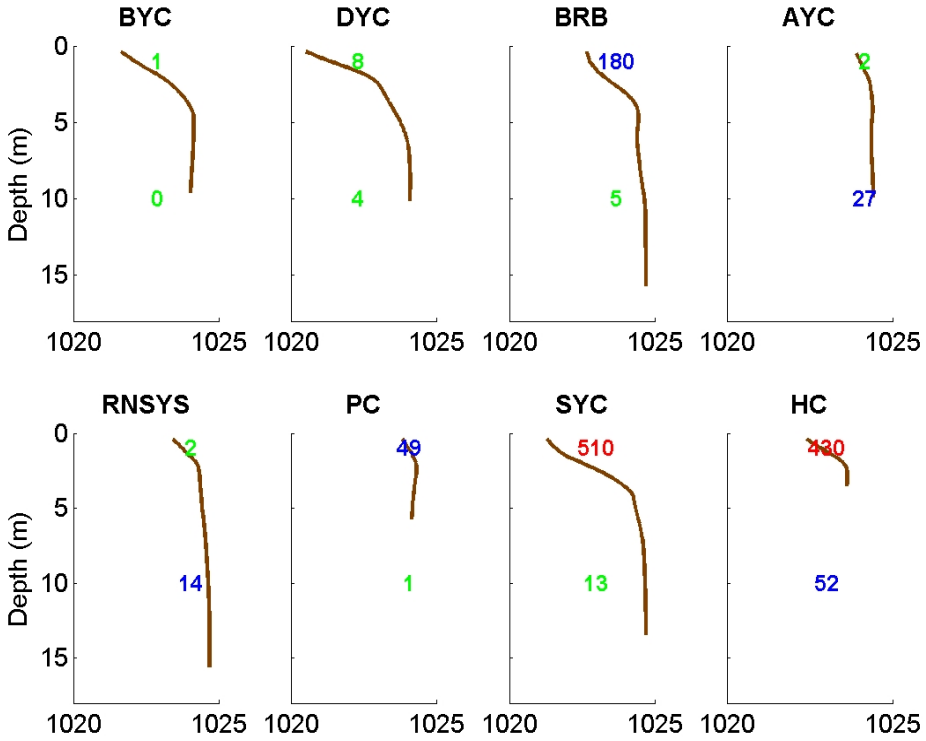



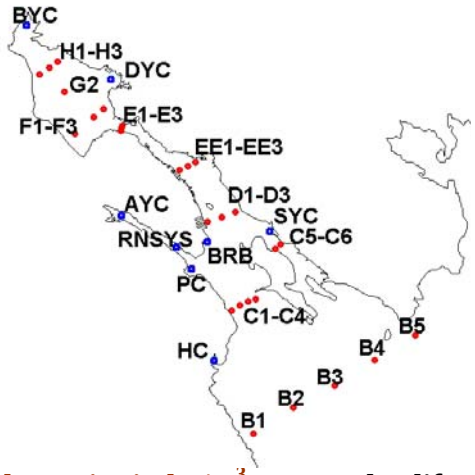






Unless otherwise labeled:
- **density** contour interval is 0.5 kg/m$^3$

# Yacht Clubs

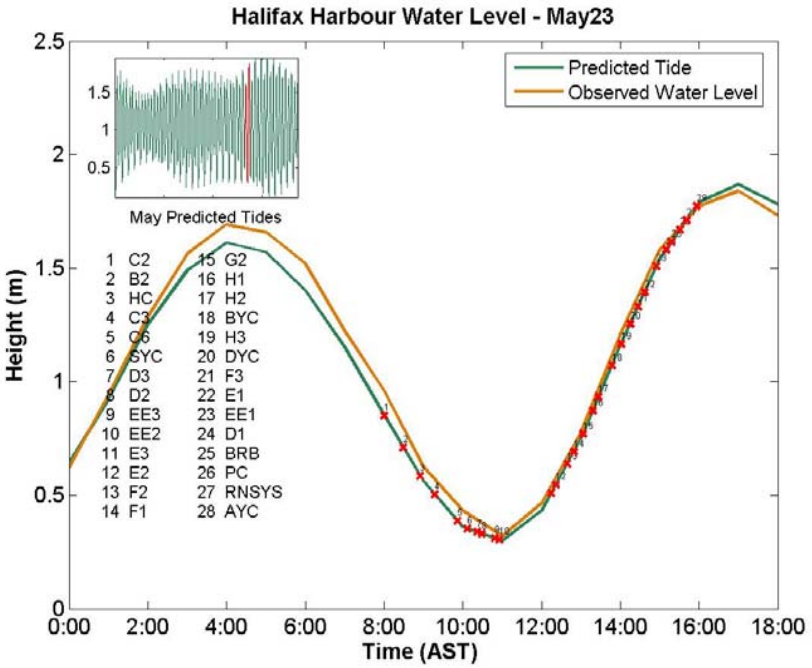


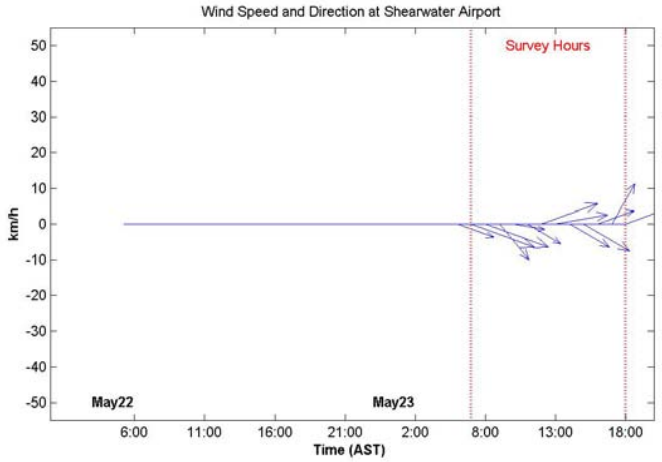



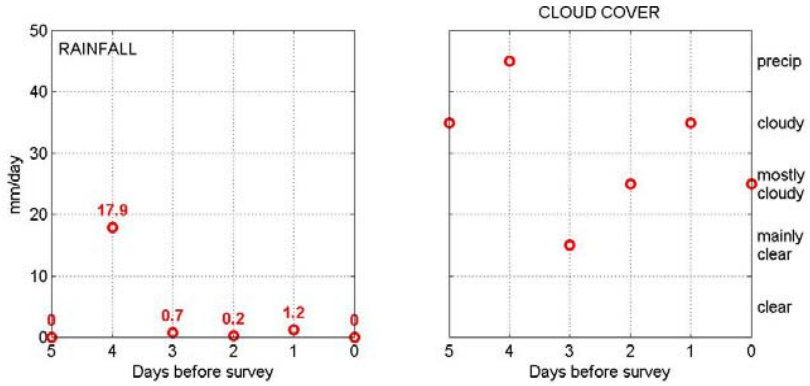

Weather data collected at the Shearwater Airport

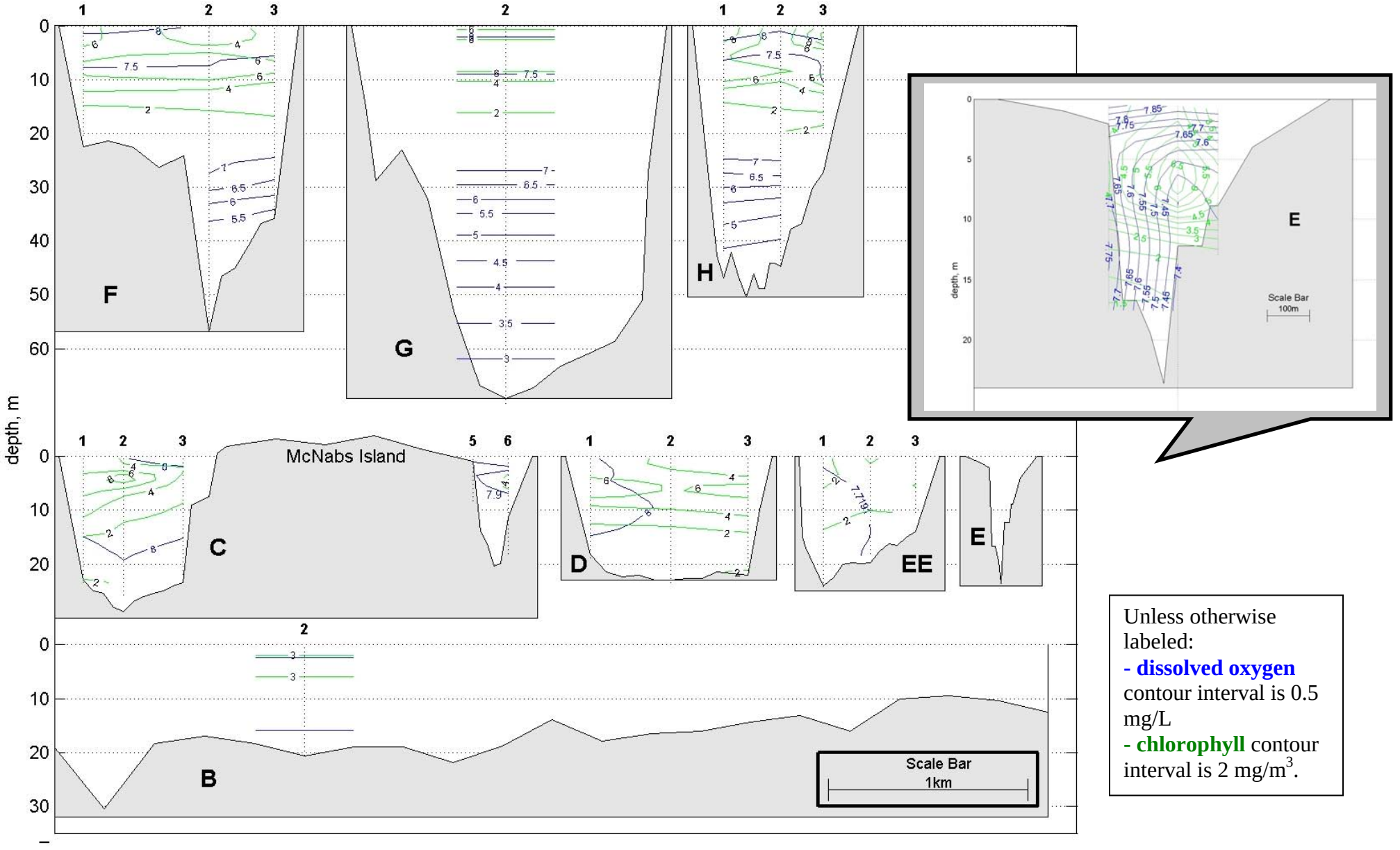
**Potential Density in kg/m$^3$**

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



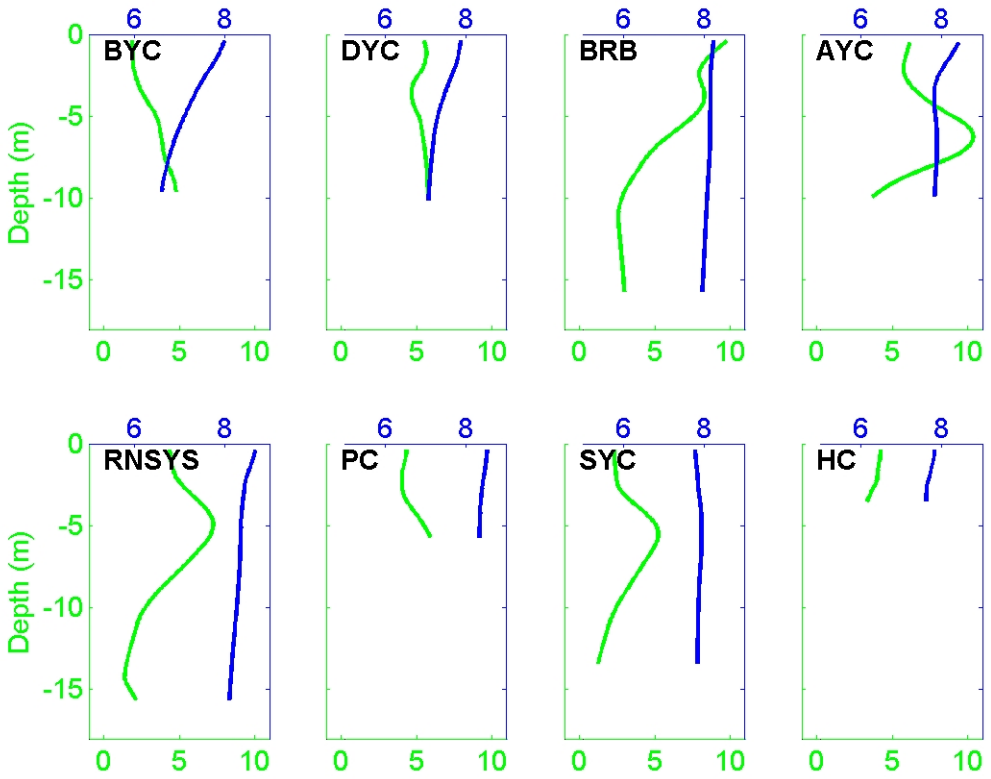



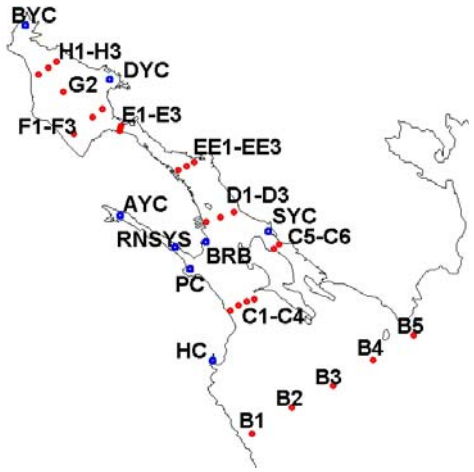






Unless otherwise labeled:
- **dissolved oxygen** contour interval is 0.5 mg/L
- **chlorophyll** contour interval is 2 mg/m$^3$.

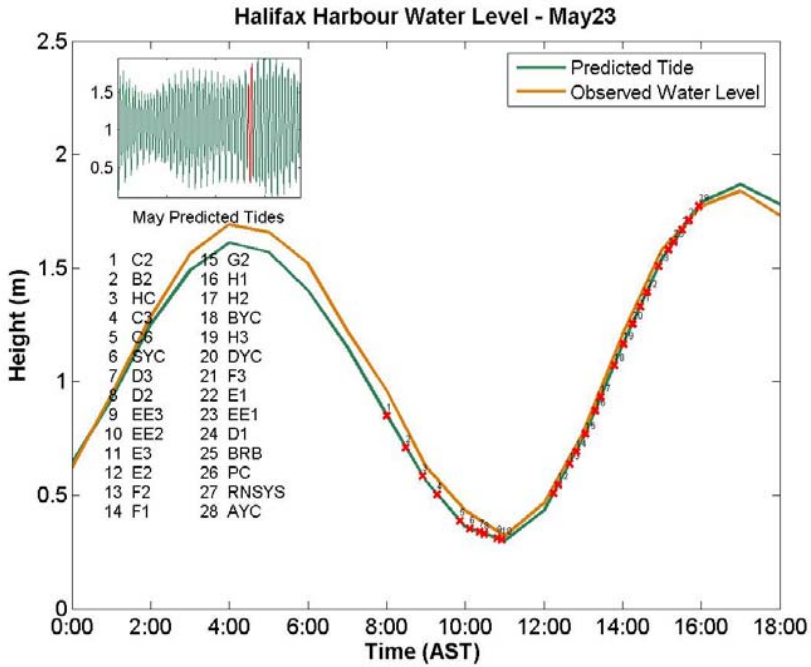
# Yacht Clubs

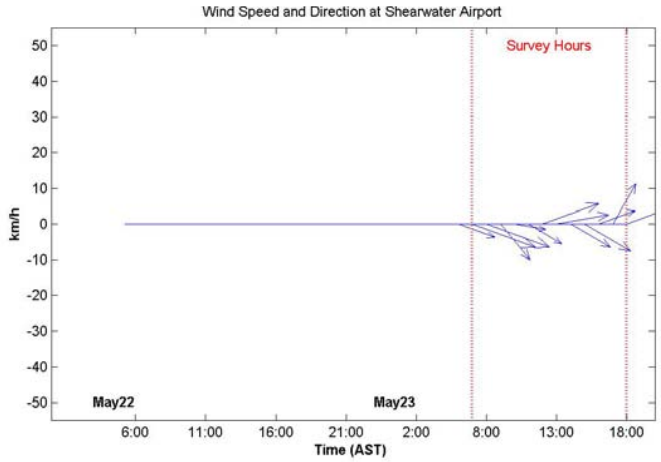


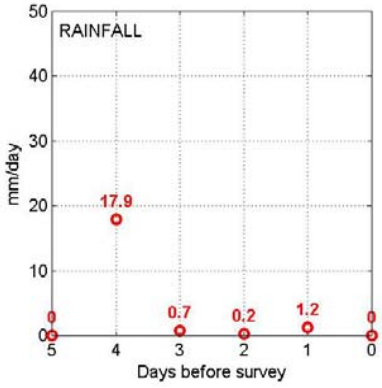



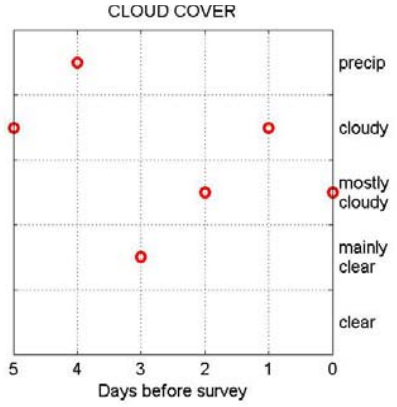

**DO in mg/L** **Chlorophyll in mg/m$^3$**

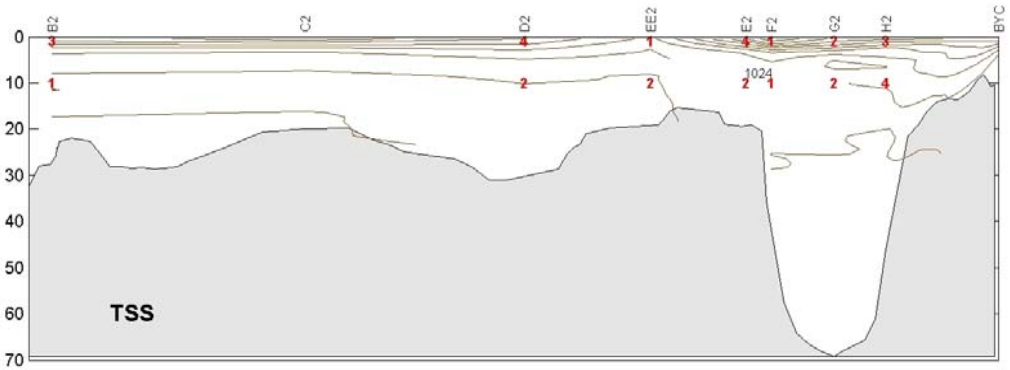
Weather data collected at the Shearwater Airport

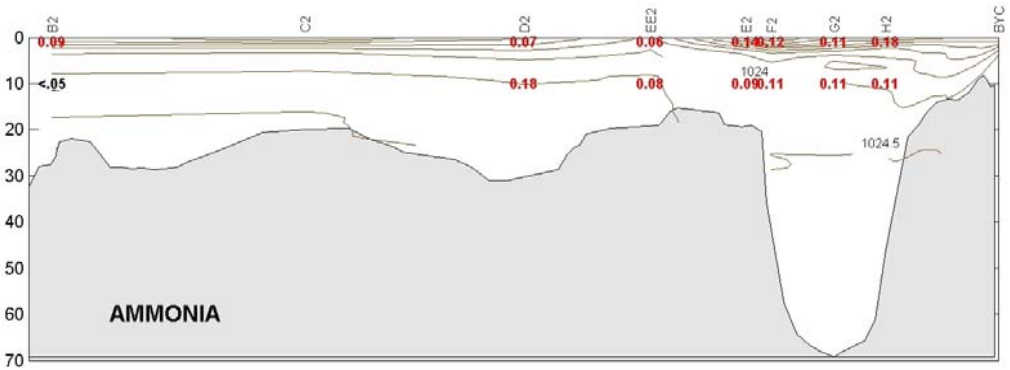


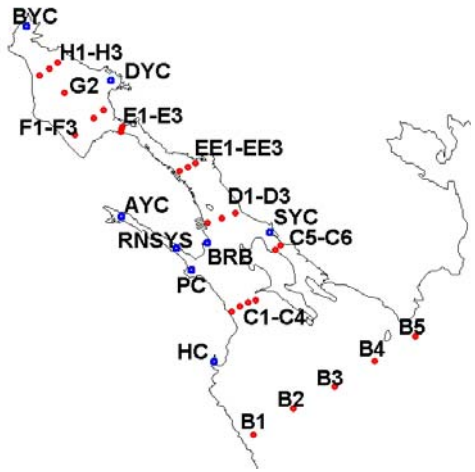






Weather data collected at the Shearwater Airport

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