

Halifax Harbour Water Quality Monitoring Project

Weekly Summary #66

Survey Date: 20 September 2005
Nature of Survey: Coliform Survey
Report File (this document): HHWQMP_report066_050920.doc
Data File: HHWQMP_data066_050920.xls

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

Sample Notes:

The CTD exhibited unusual behaviour during stabilization at E1. The instruments seemed to be reaching equilibrium before the cast was started, but the data should be used with caution. Interestingly, the DO values are higher than at neighboring sites and almost all instrument/user errors result in reduced DO levels. It is likely that the instrument was exposed to a changing water mass during stabilization. See discussion below.

QA/QC samples:

Fecal Coliform (CFU/100ml)

Site	RNSYS-1m	F1-10m	D3-10m	SYC-1m
Reference	3300	150	6	4
QA/QC	4700	99	6	1

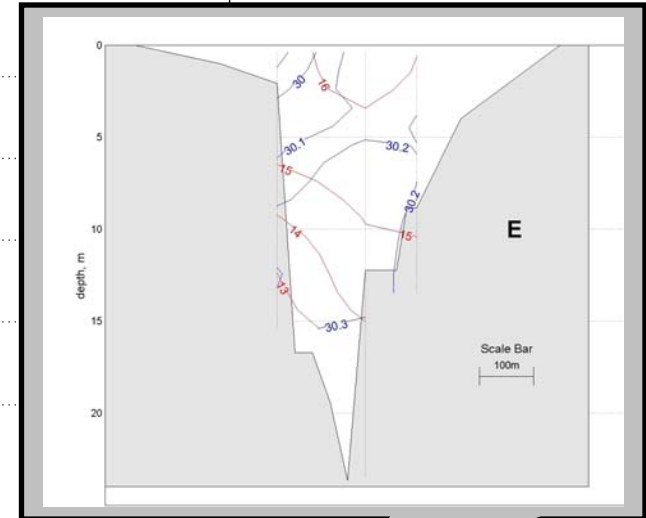
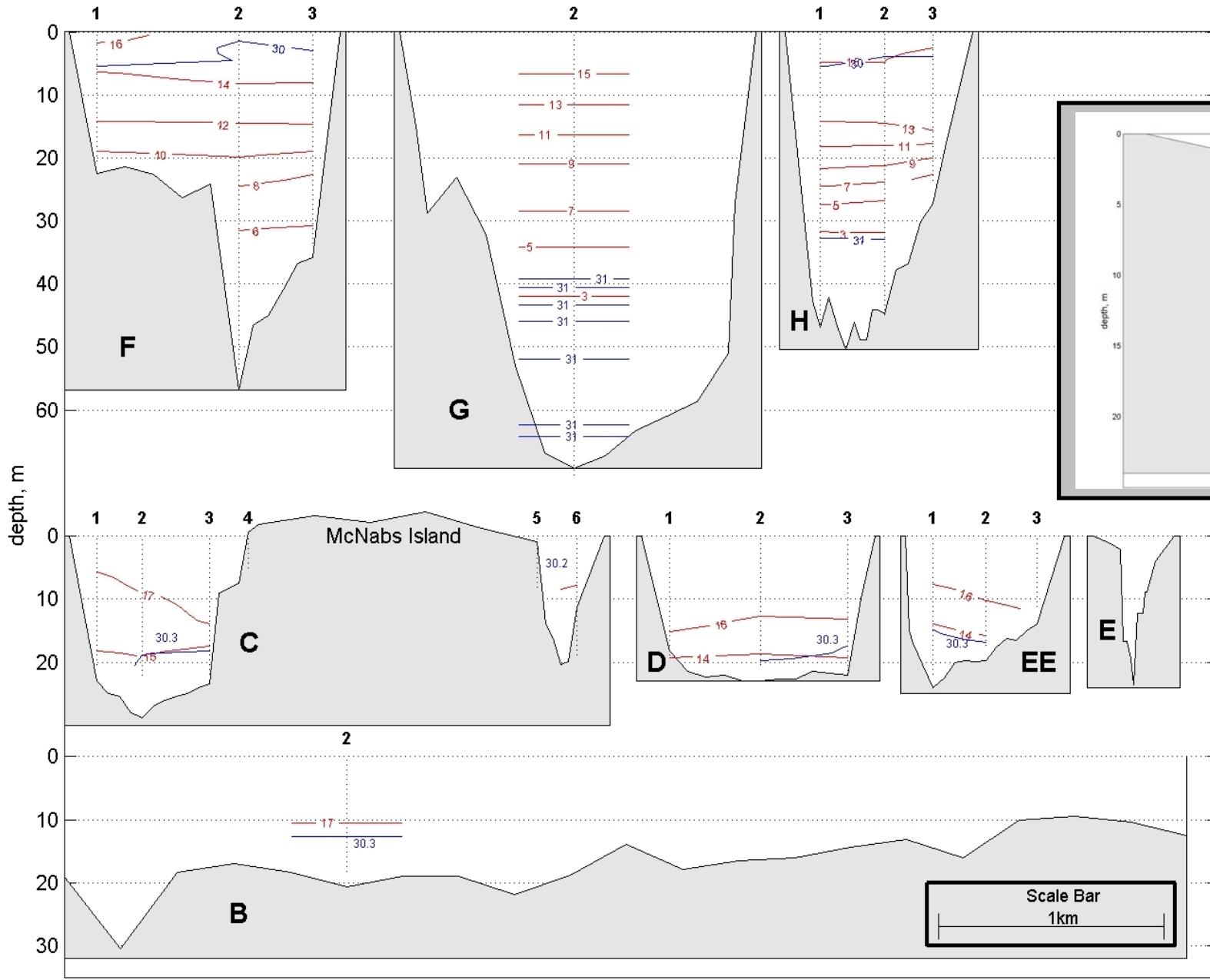
Comments:

Dissolved Oxygen: The dissolved oxygen and fluorescence data are very interesting this week. In general, the data indicate that the dissolved oxygen is low throughout much of the Harbour. There are indications of values below guidelines in the outer Harbour all the way in to the Narrows (section E). However, there is a layer of relatively well oxygenated water over much of the Basin. The highest values are along the edges, particularly on the west side (approaching 10 mg/L at BYC, with values > 9 mg/L in both F and H sections). Oxygenated water extends as far south as the west side of the Narrows (E1). The stations in the centre of the sections (H2, G2 and F2) are slightly lower (<8.0 mg/L). Below this surface layer, the values drop to 6-6.5 mg/L by 20m, which is below the SB (7.0 mg/L) guideline. Below 20 m conditions are relatively unchanged from last week with the deepest water at G2 at 3.1 mg/L. The NW Arm is consistent with the remainder of the Harbour, i.e. below

7.0 mg/L throughout the water column. The DO data is not ground-truthed. (See DO discussions in QR#1, 2, 3).

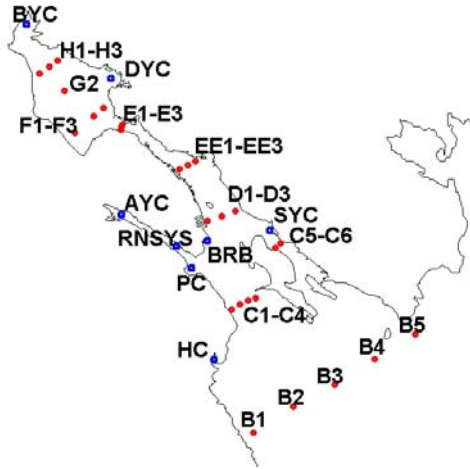
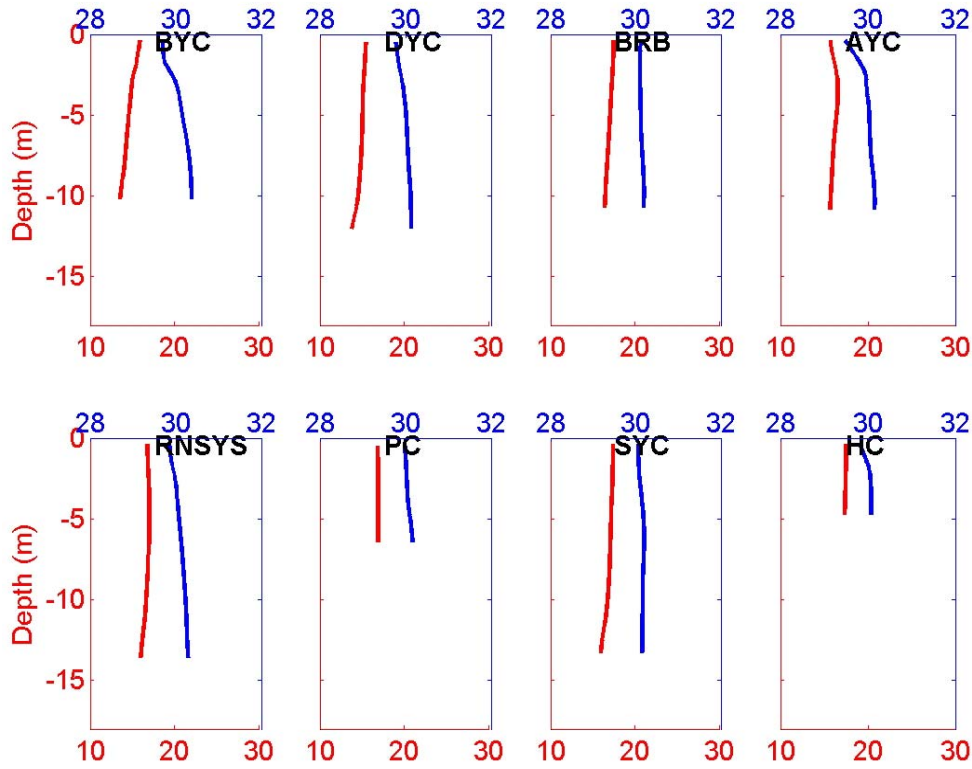
Chlorophyll: The DO values correspond to a local phytoplankton bloom in the Basin. The fluorescence is maximum at the head of the Basin in Bedford Bay (52 mg/m³ at BYC) and high (30 mg/m³ to >40 mg/m³) along the edges of the Basin. These maxima occur at a depth of 5-10 m. As with DO, values are slightly higher along the western side of the Basin. This pattern of fluorescence is reflected in secchi disk readings and was observable as visible colour (both documented in field notes). The maxima of the profiles at the centre stations are less (i.e. approximately 18 mg/m³ at F2, G2, E2 and E3) and are at similar depths. The same pattern (high on edges, higher on west) is evident at the H section. Surface values along this section are 29.2, 0.6 and 16.7 mg/m³ for stations H1 to H3 respectively. However, the profile maximum at H2 is the same as that at H3, but occurs deeper in the water column. At H2 a maximum of >30 mg/m³ extends from about 12 to 20 m. At the southern end of the Basin, in the Narrows, there are sharp cross-channel gradients. There appears to be a lens of water with lower fluorescence in the centre of the channel with higher values on both sides, again, particularly on the west side. At E1 there are values >20 mg/m³ extending from the surface to nearly 15 m. The elevated values on the west side are associated with oxygenated water, whereas on the east side they are not. South of the Narrows, all way out to the C section, values are similar or slightly lower than last week. The profile maximums decrease with distance out of the Harbour and occur deeper in the water column. In the Outer Harbour (B2) the maximum value (3.5 mg/m³) is half of last week's value.

General: The Harbour has warmed significantly since last week, both at the surface and the bottom. South of the Narrows, the deep water has warmed slightly more than the surface, suggesting the effect of shelf water exchange. There has been an increase in freshwater volume in the Harbour, due at least partly to 62 mm of rain two days before the survey. Overall, the Harbour density stratification has increased, but remains modest. The fecal coliform values are similar, if not a bit lower than last week, however the distribution is displaced up the Harbour and there are more values >200 cfu/100mL, particularly in the 10 m samples in the Basin. This suggests an up-Harbour flow of deeper water. The highest fecal coliform value, at station EE3 (1m), is accompanied by field notes documenting visible particles in the water, suggesting the direct effect of the plume from the Peace Pavilion outfall.



Unless otherwise labeled:
 - salinity contour interval is 1 PSU
 - temperature contour interval is 2°C.

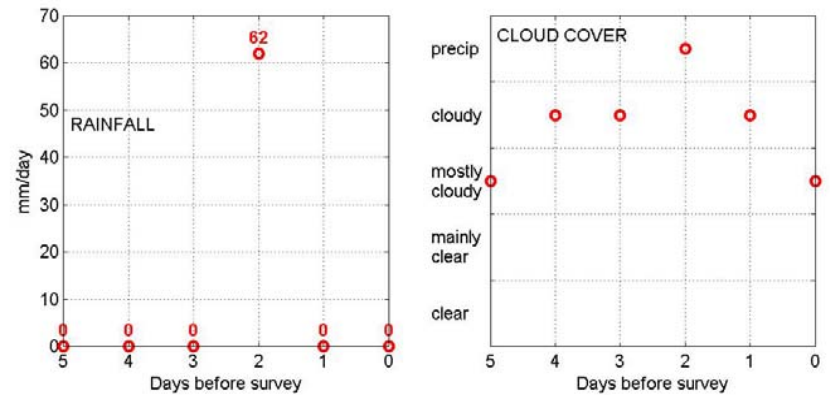
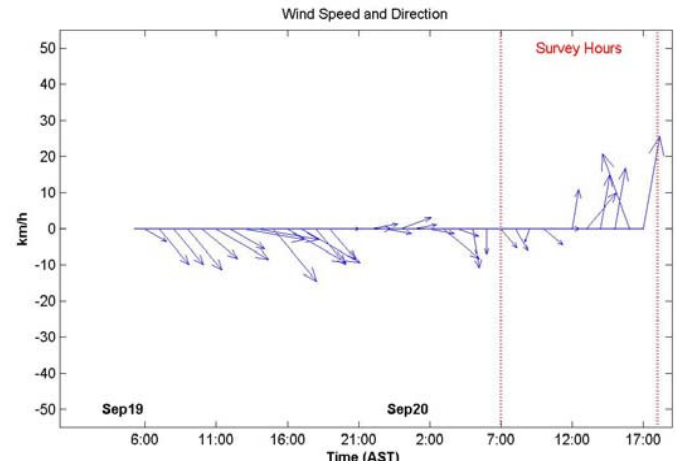
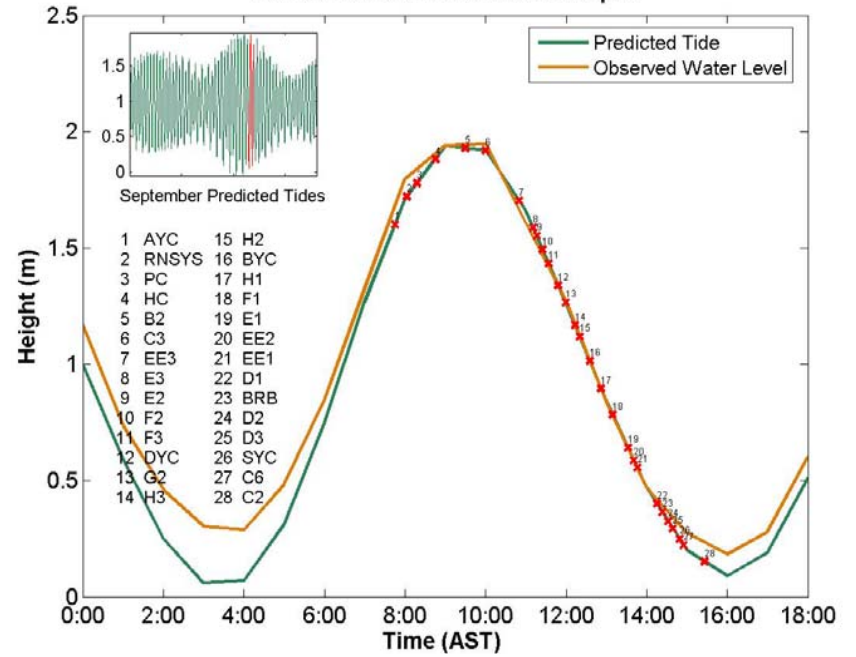
Yacht Clubs

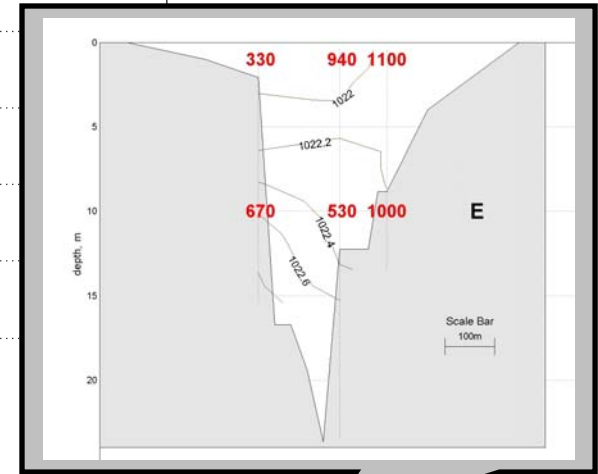
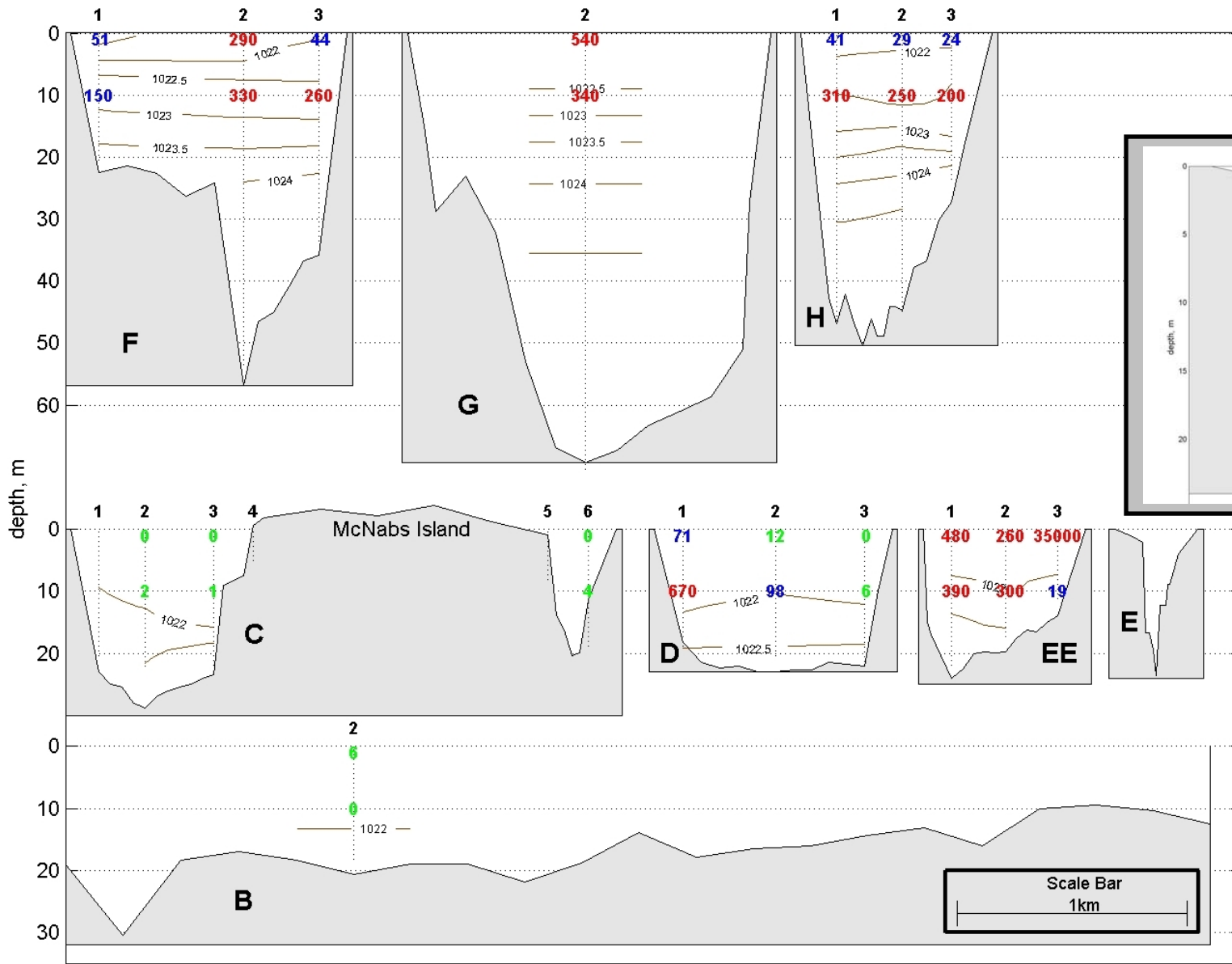


Salinity in PSU Temperature in °C

Weather data collected at the Halifax International Airport

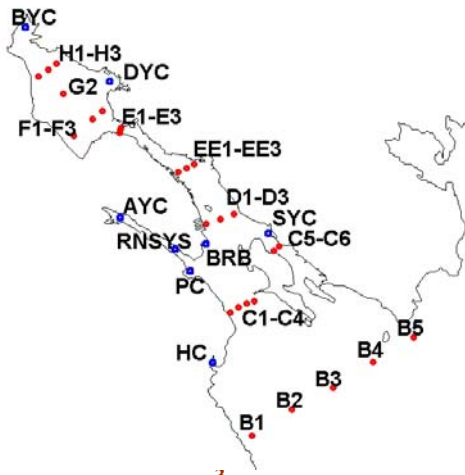
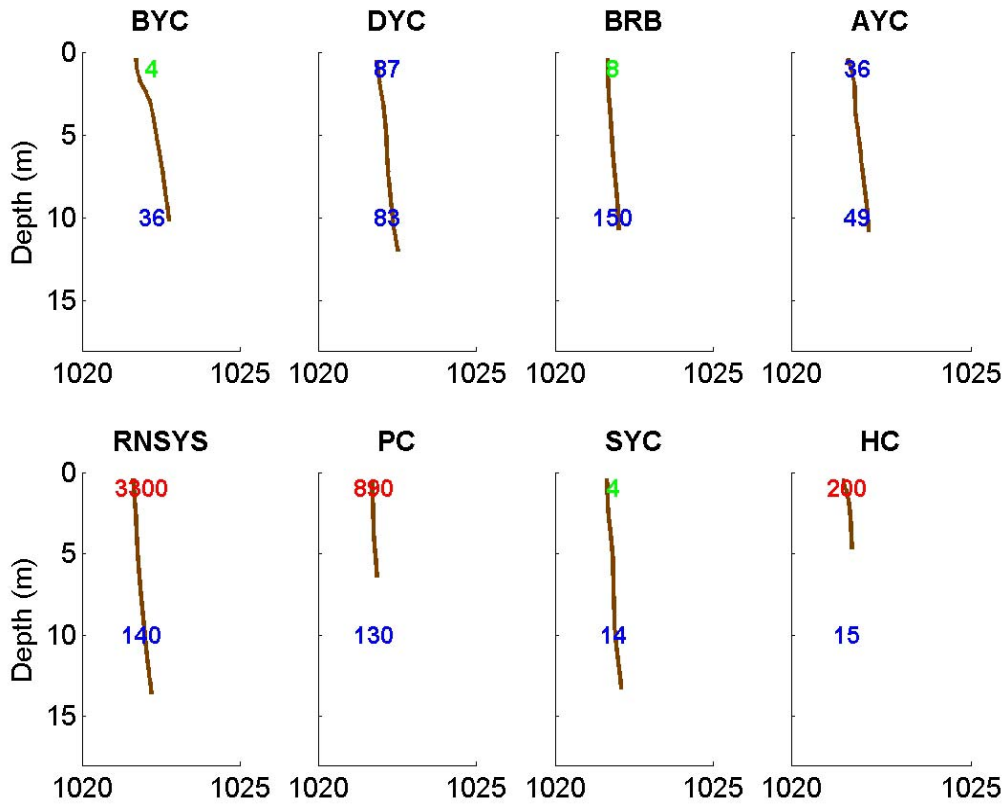
Halifax Harbour Water Level - Sep20





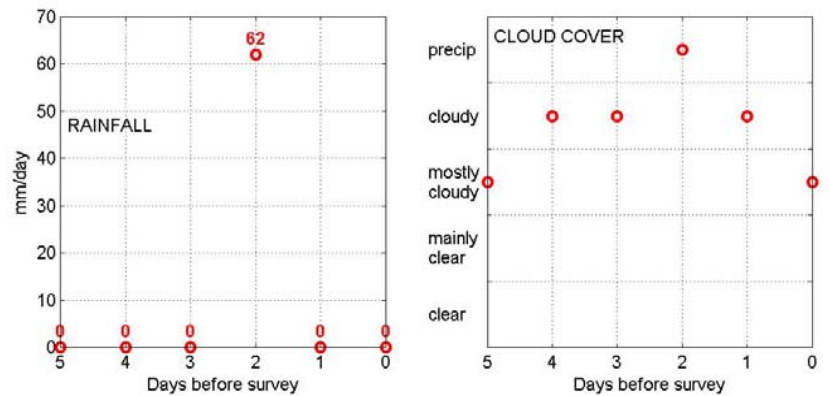
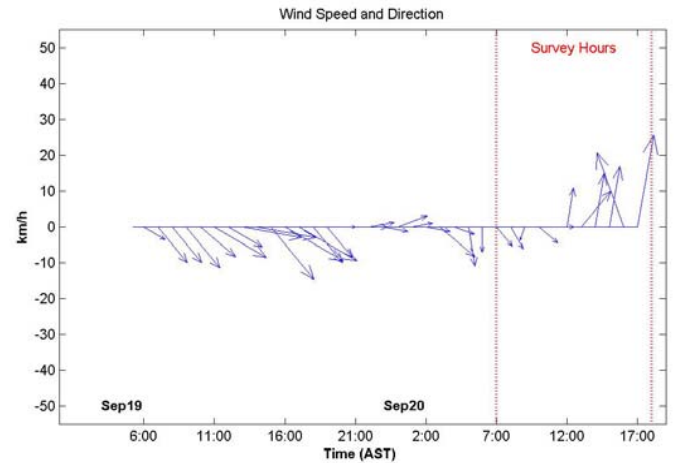
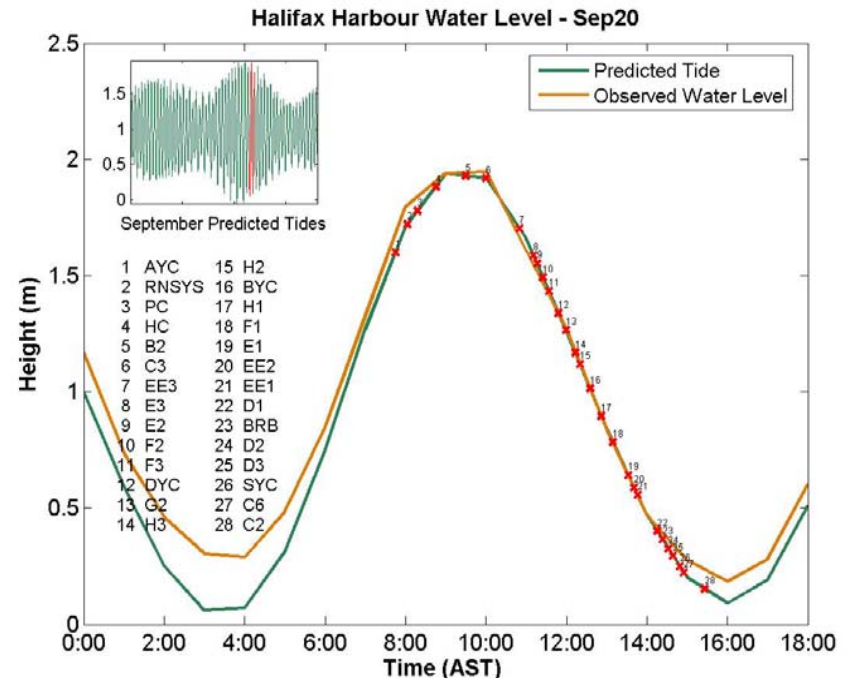
Unless otherwise labeled:
 - **density** contour
 interval is 0.5 kg/m³

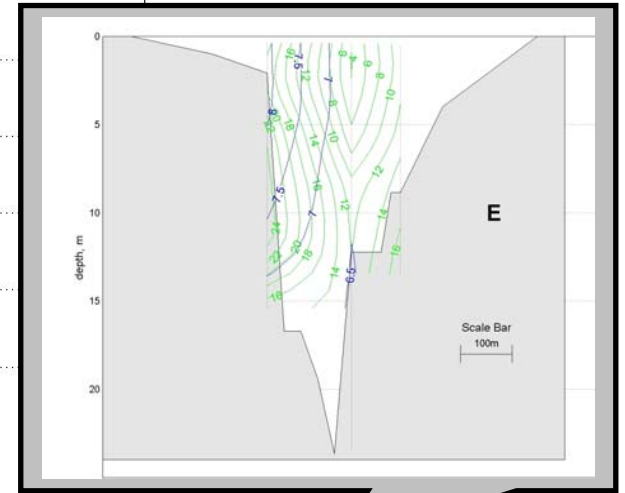
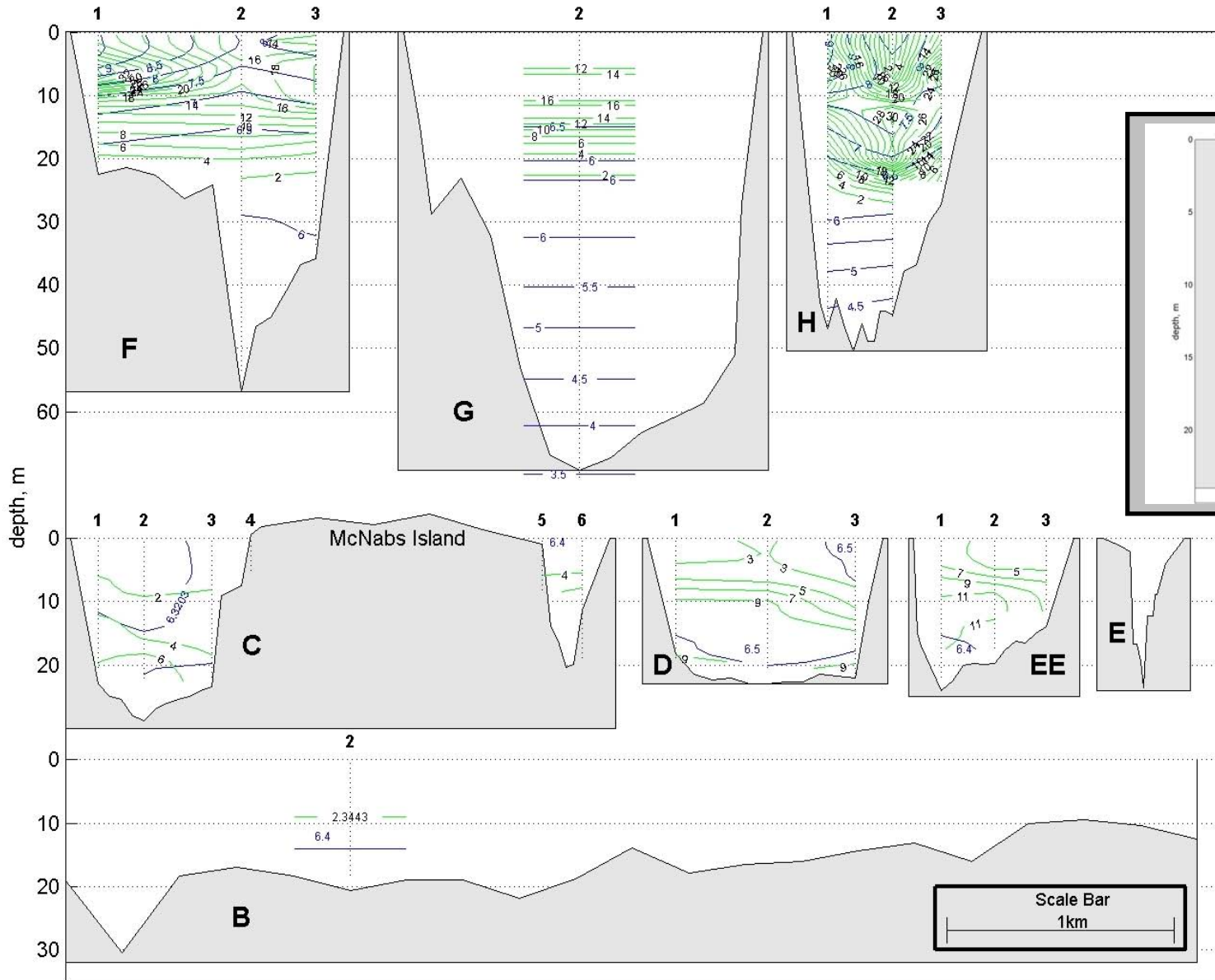
Yacht Clubs



Weather data collected at the Halifax International Airport

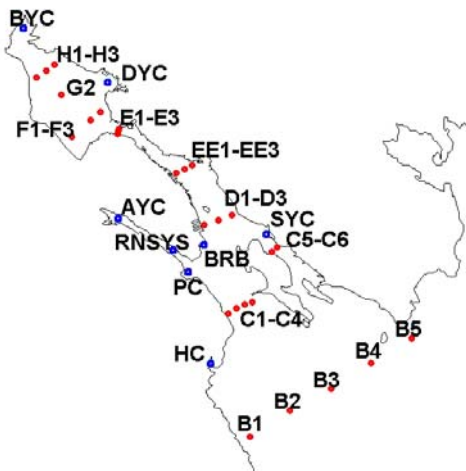
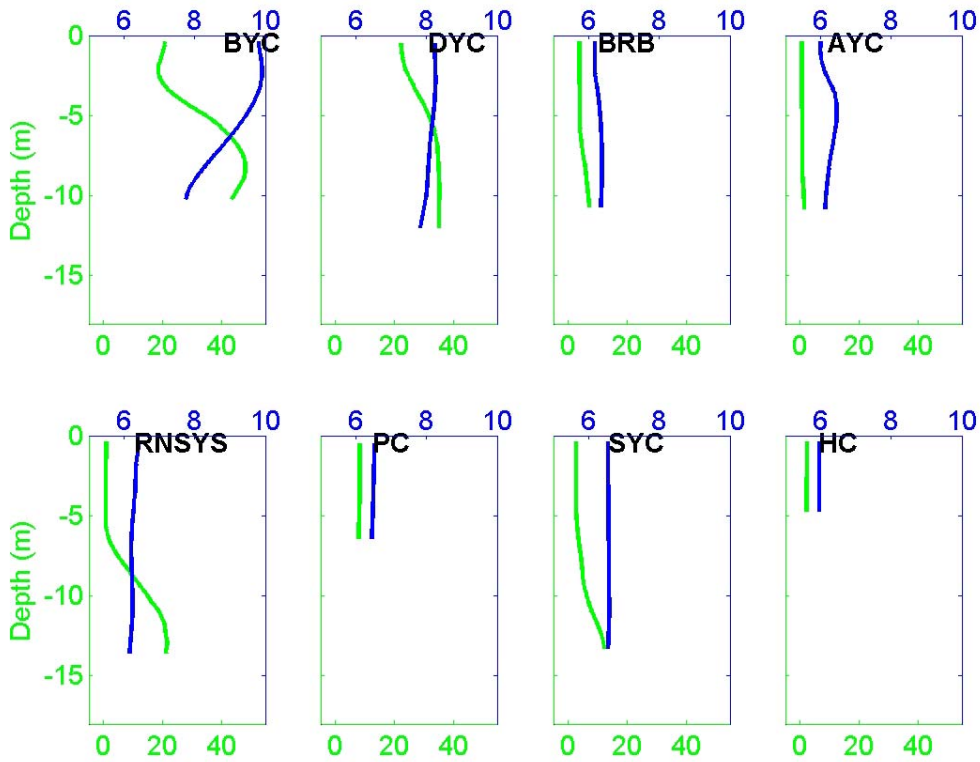
Potential Density in kg/m^3 Fecal coliform: above swimming limit (200 cfu/100mL)
 above shellfish limit (14 cfu/100mL)
 below limits





Unless otherwise labeled:
- **dissolved oxygen** contour interval is 0.5 mg/L
- **chlorophyll** contour interval is 2 mg/m³.

Yacht Clubs



DO in mg/L

Chlorophyll in mg/m³

Weather data collected at the Halifax International Airport

Halifax Harbour Water Level - Sep20

