

Halifax Harbour Water Quality Monitoring Project

Survey Summary #190

Survey Date: 25 June 2010
Nature of Survey: Bacteria Survey
Report File (this document): HHWQMP_report190_100625.doc
Data File: HHWQMP_data190_100625.xls

Data Return:
 Chemical: 0%
 Bacteria: 100%
 Profile: 100%
Overall: 80 %

Sample Notes:

UV disinfection at the Halifax plant was back on line on 23 Jun 10

At the client's request, no chemistry data were collected during this survey. This affects the computed data return numbers. The data return for all parameters collected is 100%

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 0758 local time (ADT).

To match the collected reference data, the presented DO values should be scaled by a factor of 1.3 (see data file cover sheet).

QA/QC samples:

Bacteria (cells/100ml)

	Site	C6-10m	DYC-1m	PC-10m	E2-1m
Fecal Coliform	Reference	2	8	4	1
	QA/QC	0	2	6	6
Enterococci	Reference	4	0	4	0
	QA/QC	0	9	0	11

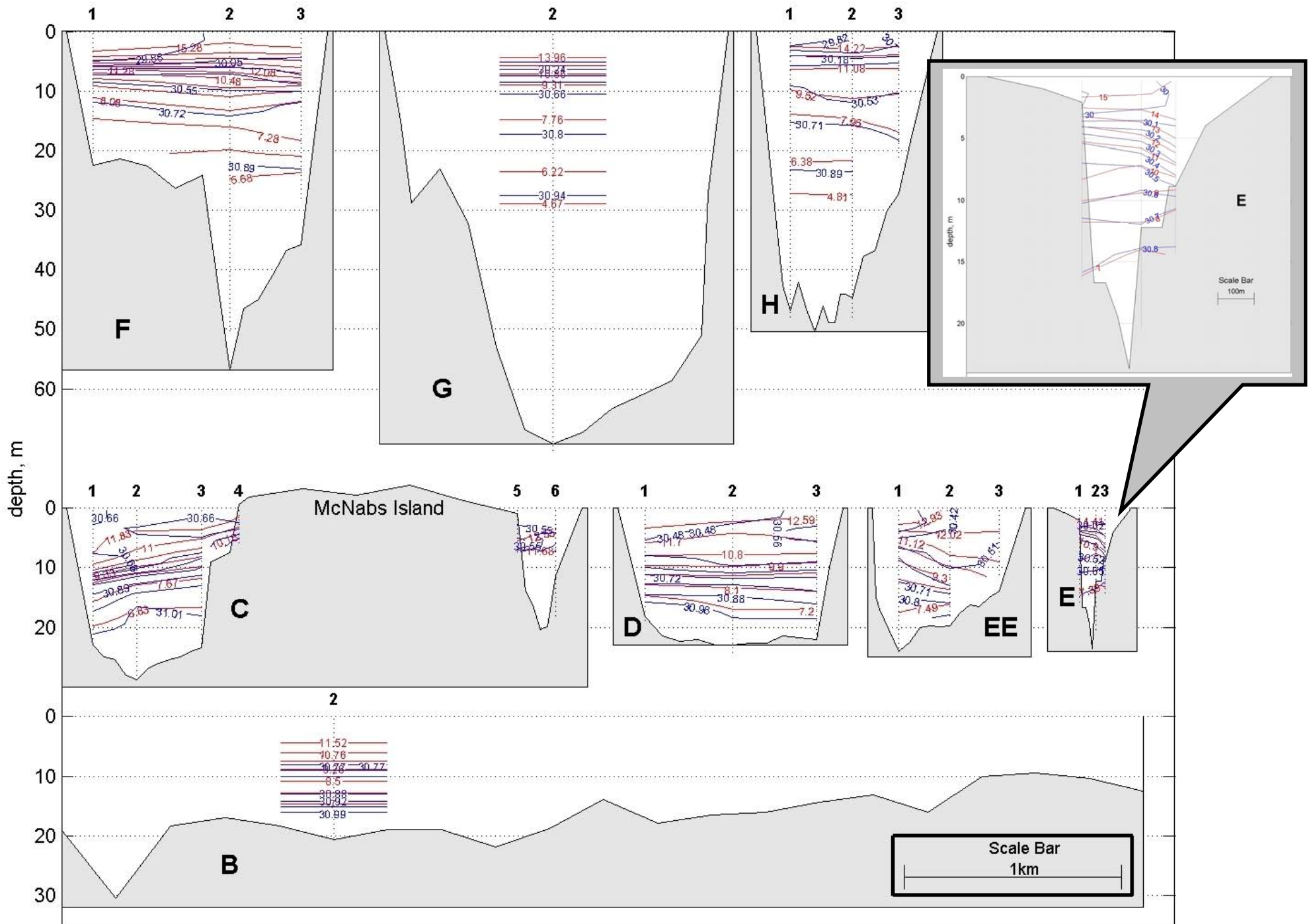
0 = Not Detected

Comments:

General: In spite of moderate rainfall (approx. 11.2 mm) two days before the survey, the salinity distribution is very uniform and the salinity quite high (above 30 PSU, almost everywhere). There is modest temperature stratification. In the Inner Harbour there is a relatively linear top to bottom temperature difference of about 5° C. The result is modest density stratification that is quite linear, without a clear pycnocline, particularly in the Inner Harbour (sections D and EE). With the reinstatement of disinfection at the Halifax plant the bacteria levels are everywhere quite low. There are no exceedances of swimming criteria for fecal coliform and only three for enterococci. The two tracers track quite well with the highest values in the Inner Harbour (centered on section EE) and higher values in the 10m samples most everywhere.

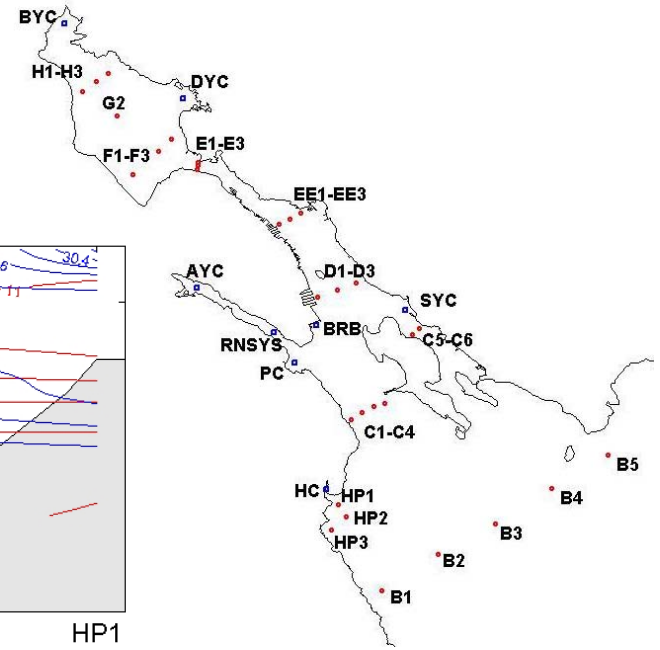
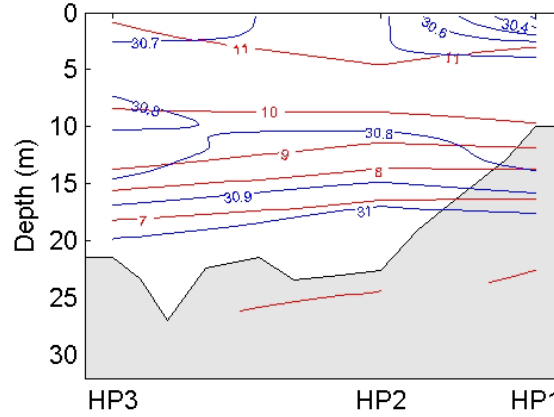
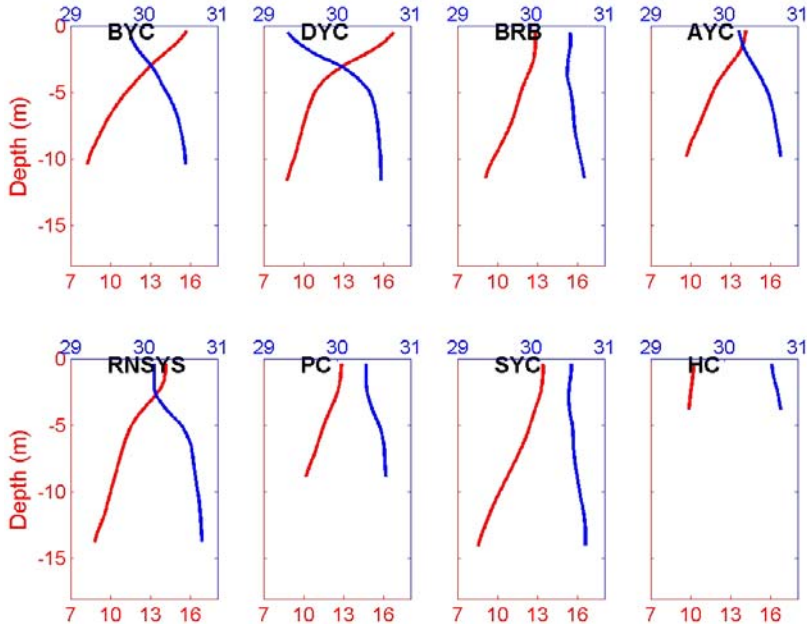
Fluorescence: The fluorescence data indicates that there is a relatively intense phytoplankton bloom occurring in the harbour. The distribution is somewhat unusual in that the maximum values (almost 40 mg/m³) are in the Inner Harbour, centered at the EE section, rather than in the Basin. The profile maximums are relatively shallow (3-6 m) and due to hydrographic conditions a significant signature (20-30 mg/m³) is present at the surface. The field crew noted this turbidity visually. The secchi disk values are relatively low everywhere but particularly in the Inner Harbour where they are about 2m or less.

Dissolved Oxygen: The dissolved oxygen data, scaled appropriately by a factor of 1.3, indicate that over most of the harbour the dissolved oxygen is quite high (around 10 mg/L) and relatively vertically uniform. This includes Bedford Basin where the bottom water is at > 7.0 mg/L. The exception is the Halifax side of the Inner Harbour, from sites EE1 to BRB and the NW Arm. Here the DO measurements indicate that the oxygen levels are relatively depressed. The minimum values on the harbour side are at Black Rock Beach (BRB). In the Arm the levels decrease going into the Arm. The 6.0 mg/L class SC guideline is exceeded at the bottom of site D1 and throughout the water column at BRB. The applicable 7.0 mg/L class SB guideline is exceeded at the bottom at AYC. Suspiciously, the EE1, D1 and BRB sites were the last three sites sampled, raising the question of diaphragm fouling that can cause a sudden decrease in sensitivity of the DO sensor. However, the NW Arm sites were the first sampled and the data is corroborated by the LOBO data. This is being investigated further.

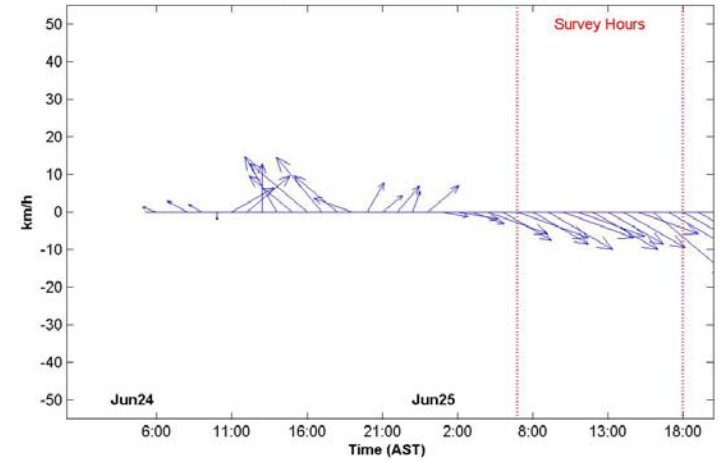


Yacht Clubs

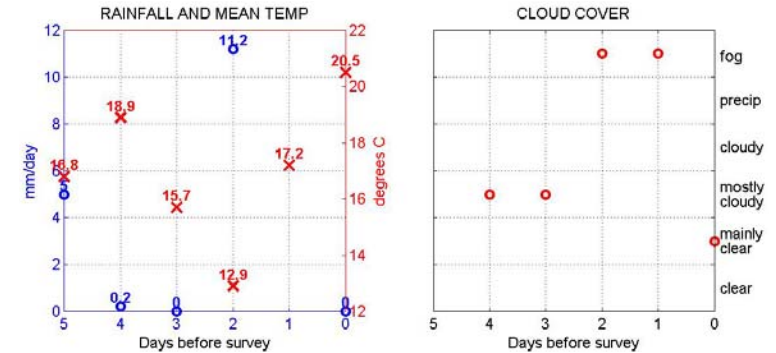
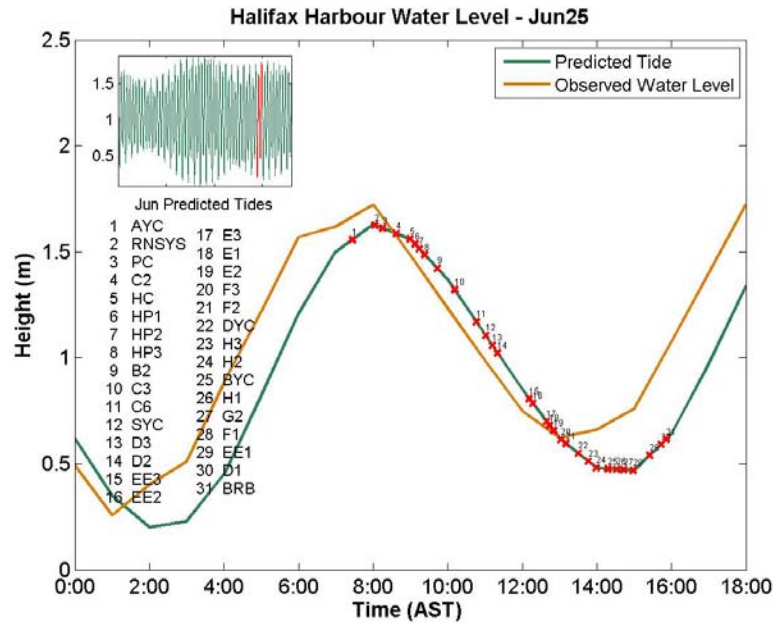
Salinity in PSU Temperature in °C

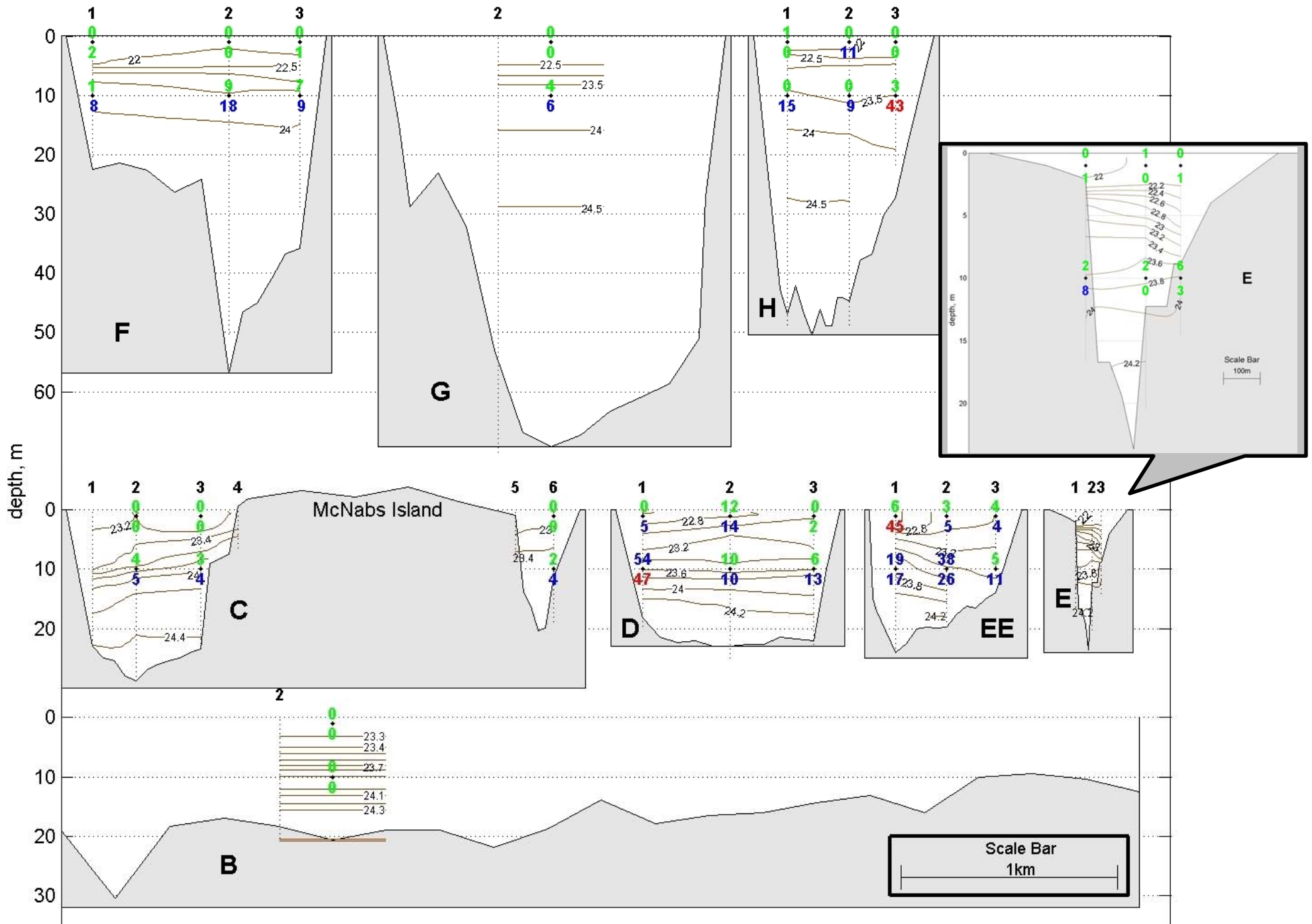


Wind Speed and Direction at Shearwater Jetty

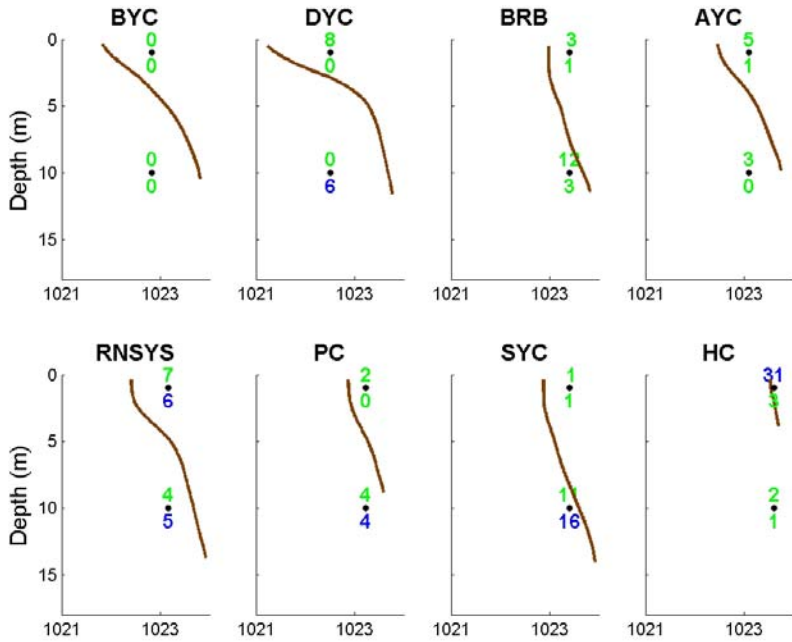


Rainfall and temperature data collected at Shearwater RCS.
Cloud cover data collected at Shearwater Airport

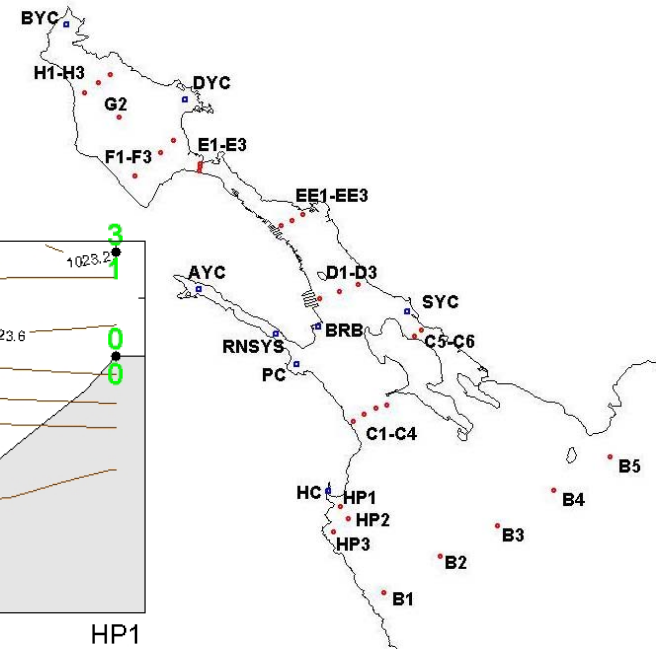
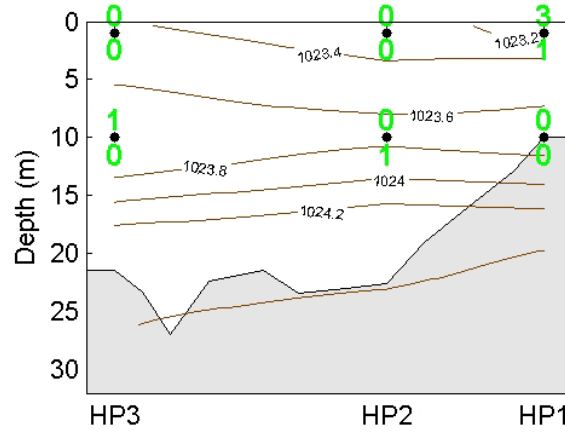




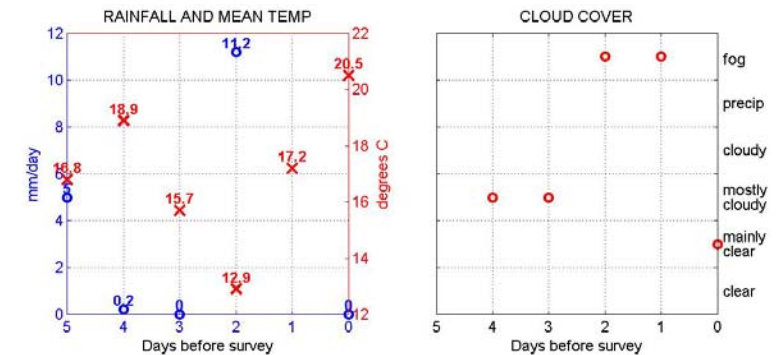
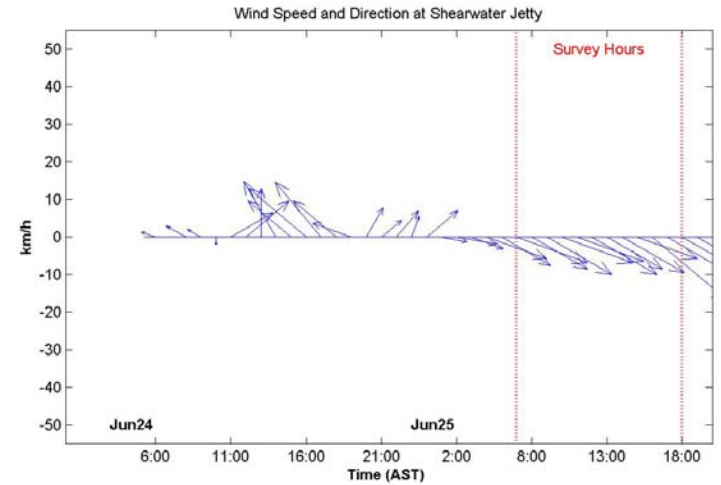
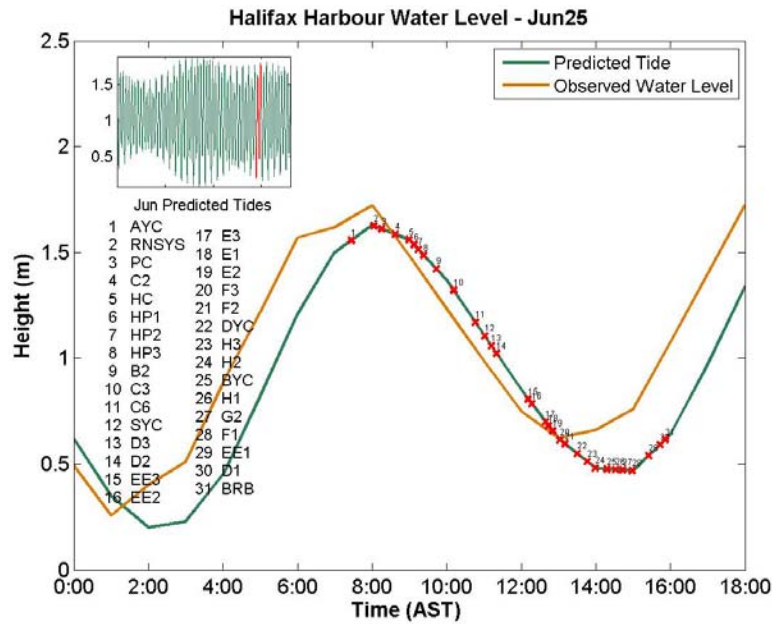
Yacht Clubs



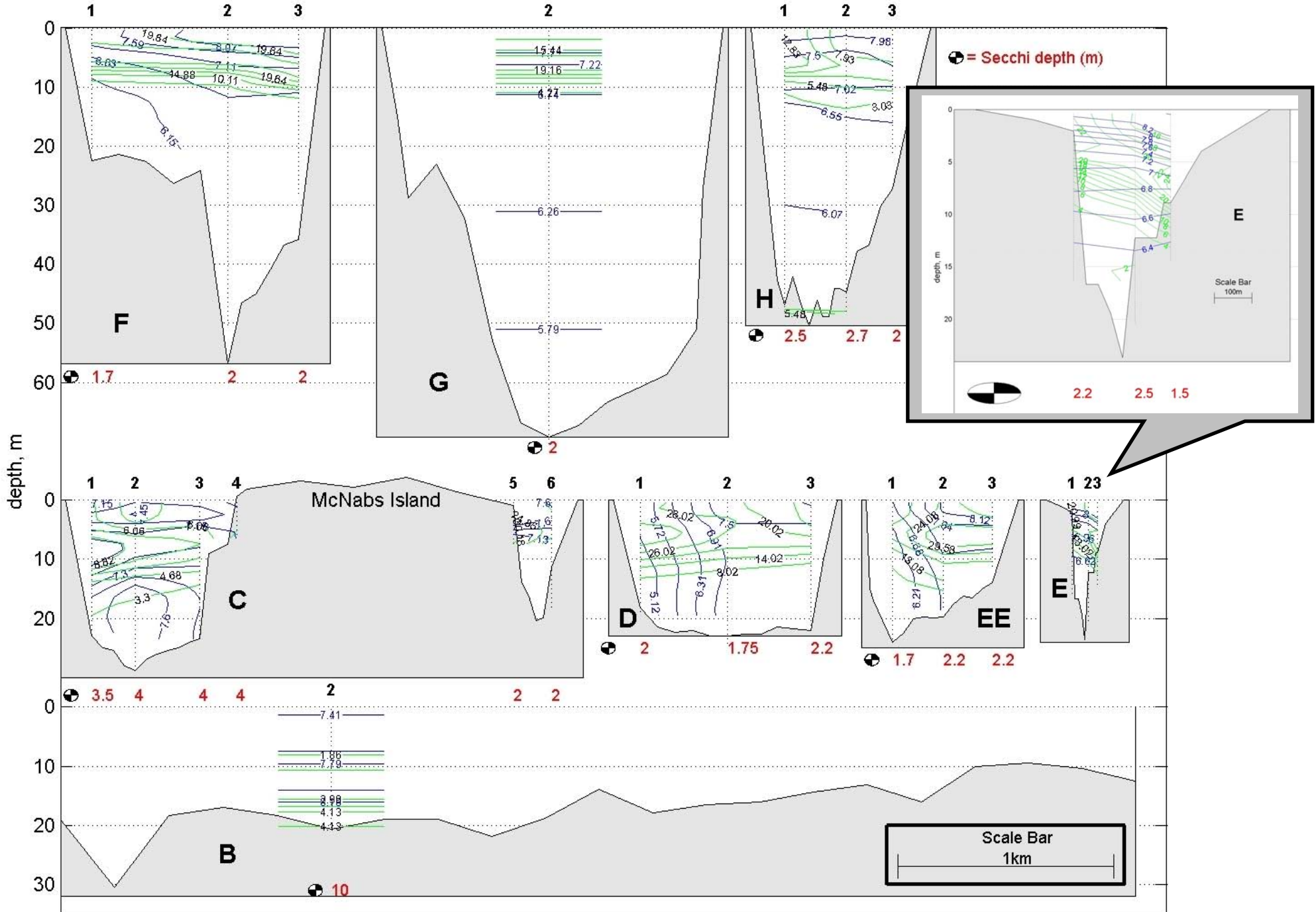
Potential Density in kg/m³



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



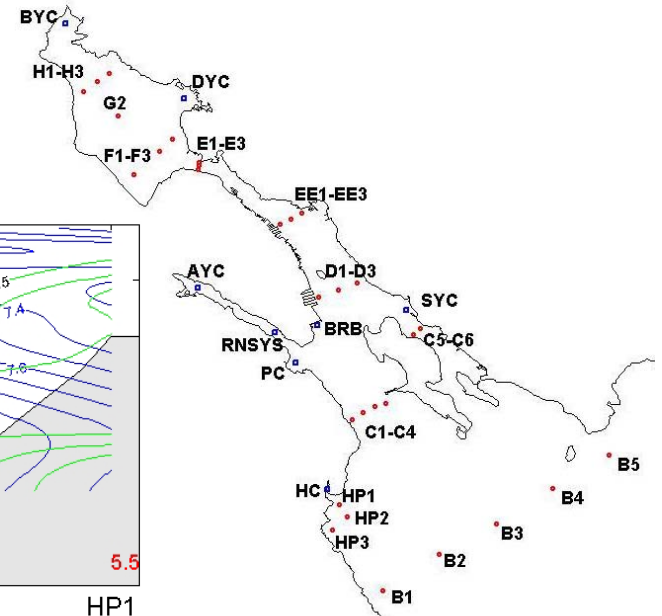
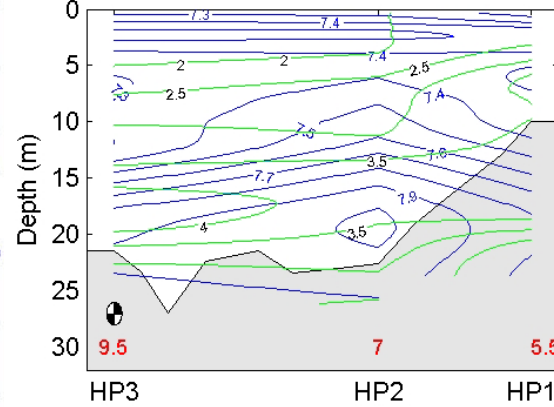
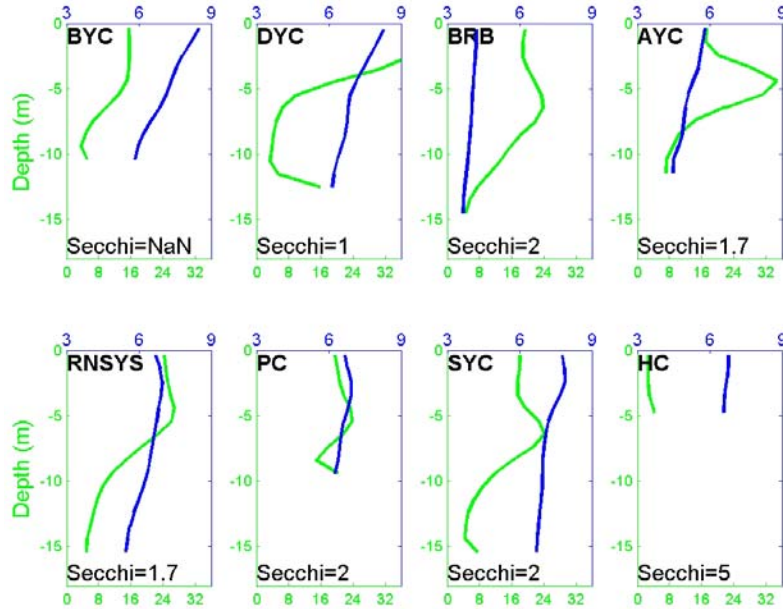
Fecal Coliform ● Above swimming limit 200 MPN/100mL
 Enterococci ● Above shellfish limit 14 MPN/100mL
 ● Below limits 35 CFU/100mL 4 CFU/100mL



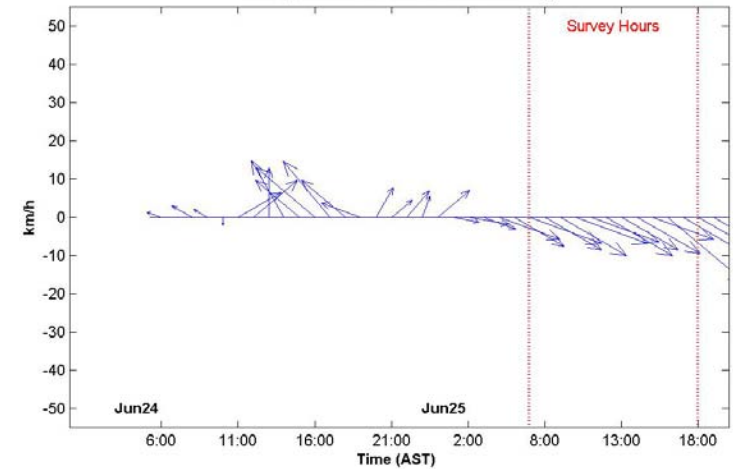
Yacht Clubs

DO in mg/L

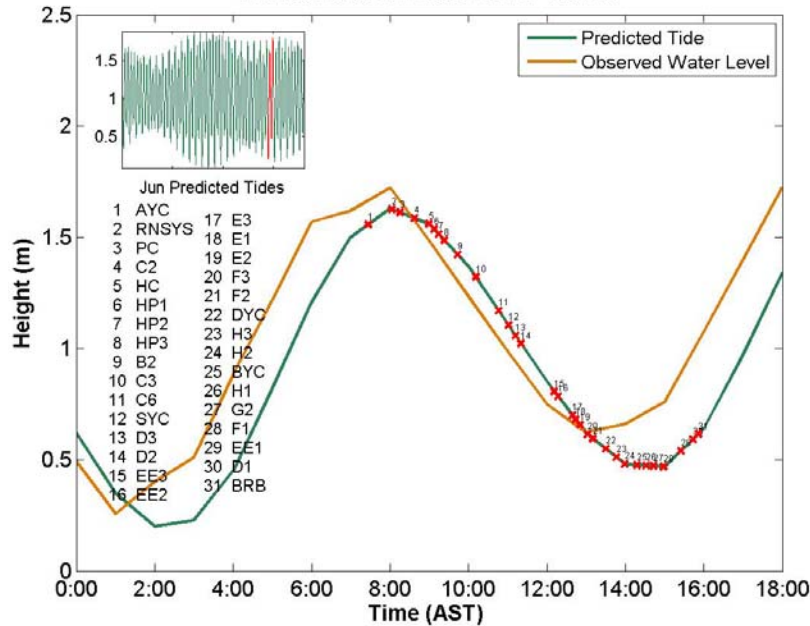
Chlorophyll in mg/m³



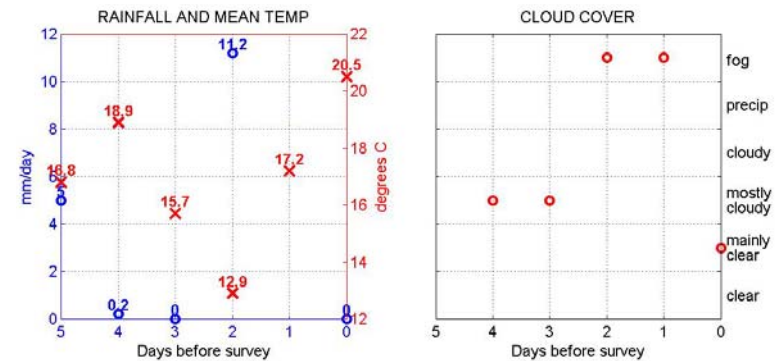
Wind Speed and Direction at Shearwater Jetty



Halifax Harbour Water Level - Jun25



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



HRM Water Quality Monitoring Bacteria Summary – June 25, 2010

