

Halifax Harbour Water Quality Monitoring Project Survey Summary #192

Survey Date: 27 July 2010
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report192_100727.doc
Data File: HHWQMP_data192_100727.xls

Data Return:
 Chemical: 100%
 Bacteria: 100%
 Profile: 67%
Overall: 88 %

Sample Notes:

The DO sensor on the CTD has failed (see data file cover sheet). The DO data are plotted here but have been deleted from the data file. There are surface measurements at selected sites reported in the data file.

A supplementary CTD cast was taken at the LOBO buoy location (44.6291 N, 63.5915 W) at 1543 local time (ADT).

QA/QC samples:

Chemical Analysis		E2-1m	
Detectable Parameter	Units	Reference Sample	QA/QC
Ammonia Nitrogen	mg/L	0.26	0
Total Suspended Solids	mg/L	2	3
Cobalt	ug/L	0.1	0.1
Copper	ug/L	0.6	0.6
Iron	ug/L	12	12
Manganese	ug/L	4	5
Mercury	ug/L	0.015	0.016
Zinc	ug/L	3	3

0 = Not Detected

Bacteria (cells/100ml)

	Site	C6-10m	DYC-1m	PC-10m	E2-1m
Fecal Coliform	Reference	3	15	2	1
	QA/QC	4	6	0	1
Enterococci	Reference	1	0	0	0
	QA/QC	0	1	0	0

0 = Not Detected

Comments:

General: There has been light rainfall (total 11.6 mm) in the five days before the survey. There is a slight freshwater signal throughout the harbour with the minimum salinity in the Narrows at section E. The maximum surface temperature (almost 16°C) is also in this section. The surface density is therefore minimum in the Narrows with another slight (temperature-induced) minimum in section C. This may be due to wind-induced upwelling in the Inner Harbour (section D). In deeper water the down harbour density gradient is minimal. The bacteria levels are everywhere very low, with only a few values in excess of shellfishing limits.

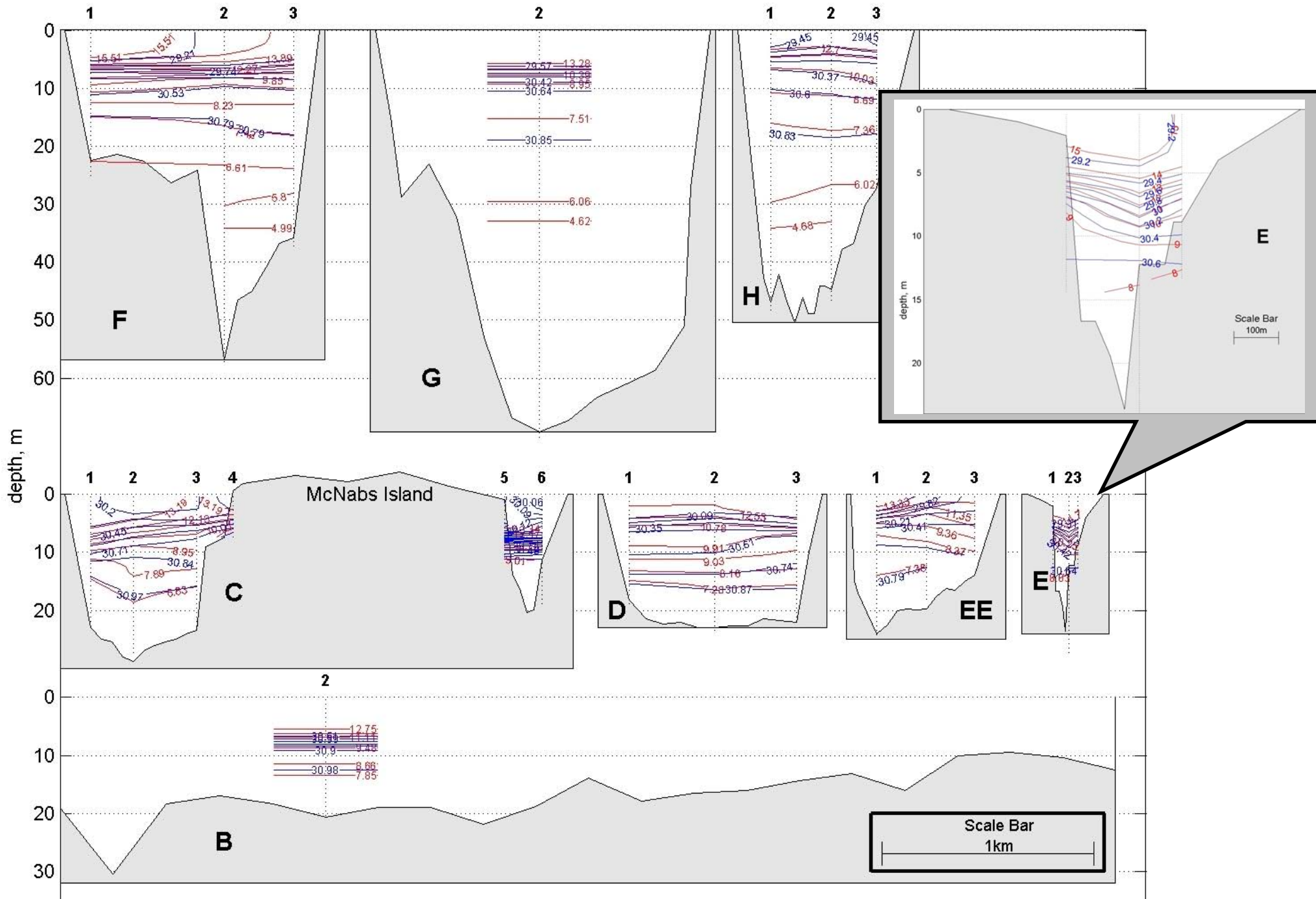
Fluorescence: The fluorescence levels indicate significant phytoplankton activity. The profile maximum values are everywhere at a depth of about 10-15 m and vary from 25-30 mg/m³ in the Basin, to 15-20 mg/m³ in the Inner Harbour and to a minimum of about 4 mg/m³ at B2 in the Outer Harbour.

TSS: The average TSS levels are moderate (3.7 mg/L). The highest value (6.1 mg/L) is near surface in the Inner Harbour (D2- 1m) but there is no clear spatial pattern.

Ammonia: The ammonia nitrogen levels are relatively quite high with an average value of about 0.19 mg/L. The levels are lowest in the Basin (three values below the 0.05 mg/L detection limit) and highest (>0.3 mg/L) in the Inner and Outer Harbour (stations B2 to D2).

Metals: There were guideline exceedances for each copper (1) and mercury (2). The copper exceedance of 4.7 ug/L is in the F2-10m sample. The remainder of the copper levels are typical, at 40% or less of the guideline value (2.9 ug/L). The mercury levels appear somewhat elevated throughout the harbour with many values just below the guideline of 0.025 ug/L. The values are higher from section EE and out towards the Outer Harbour with exceedances occurring in the EE-1m (0.058 ug/L) and B2-10m (0.028 ug/L) samples.

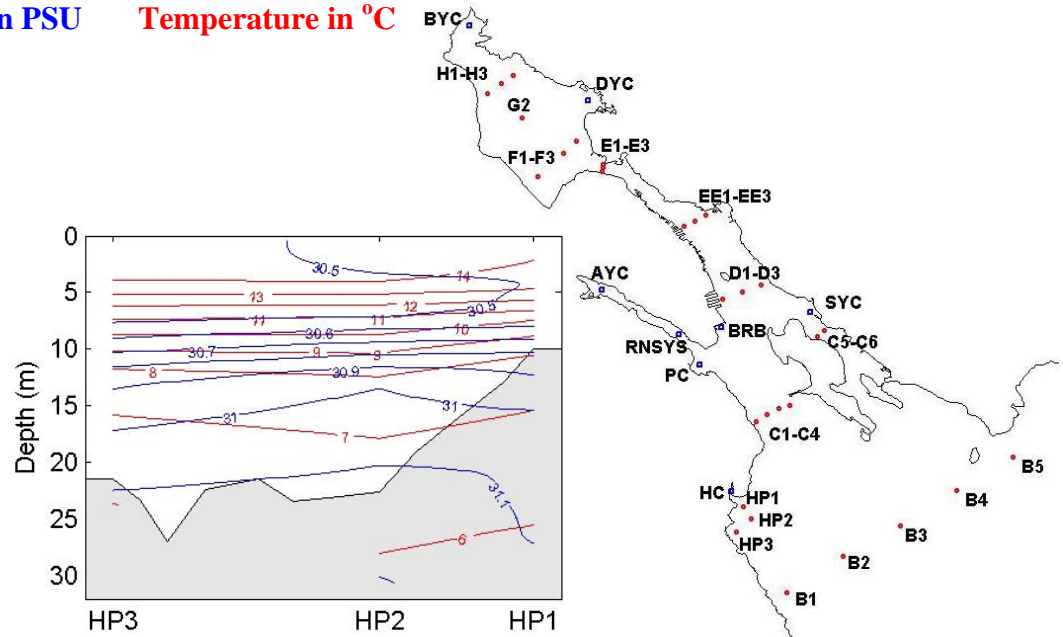
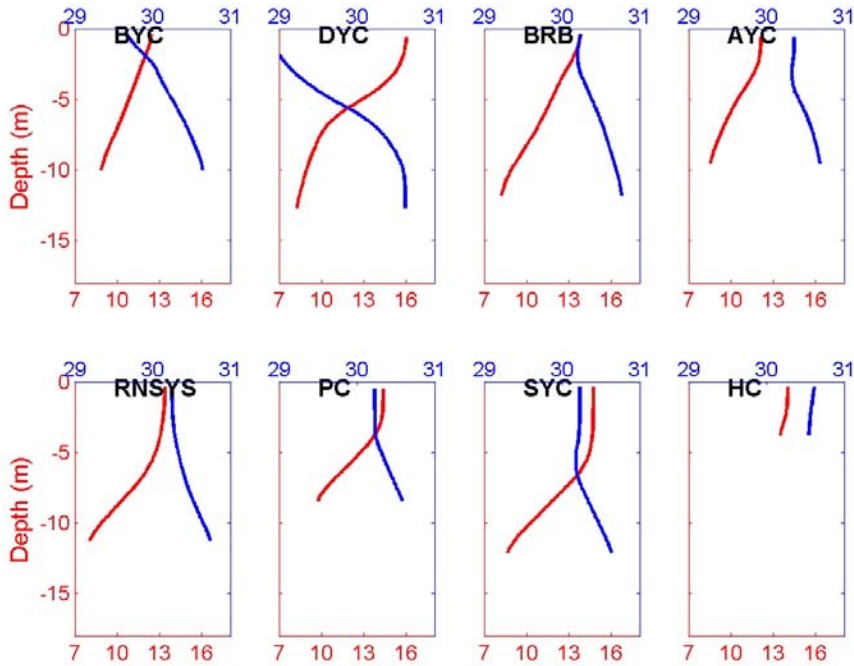
Dissolved Oxygen: There is no CTD dissolved oxygen data for this survey. The surface measurements (see data file) indicate that the dissolved oxygen at the surface (9.7-10.7 mg/L) is above saturation everywhere and above applicable guidelines. There were no data collected by the BBPMP this week. The data collected the week before (21 July) indicate that the DO at the bottom of Bedford Basin has decreased but remains relatively high at 7.0 mg/L.



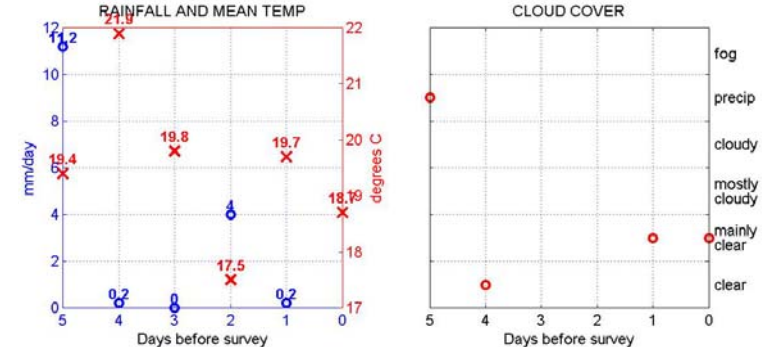
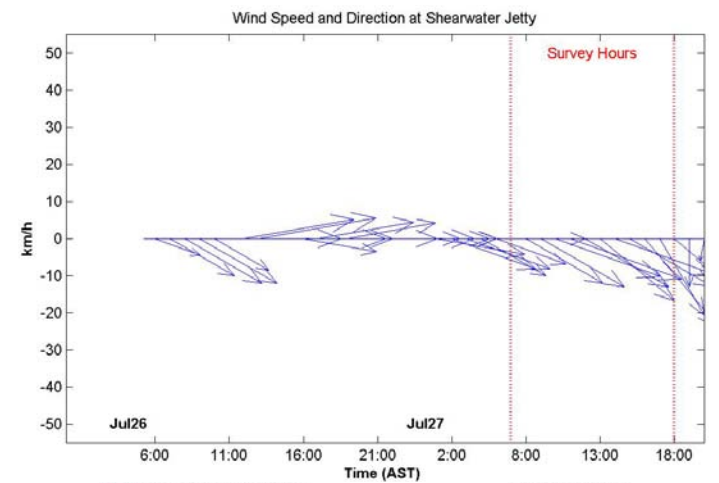
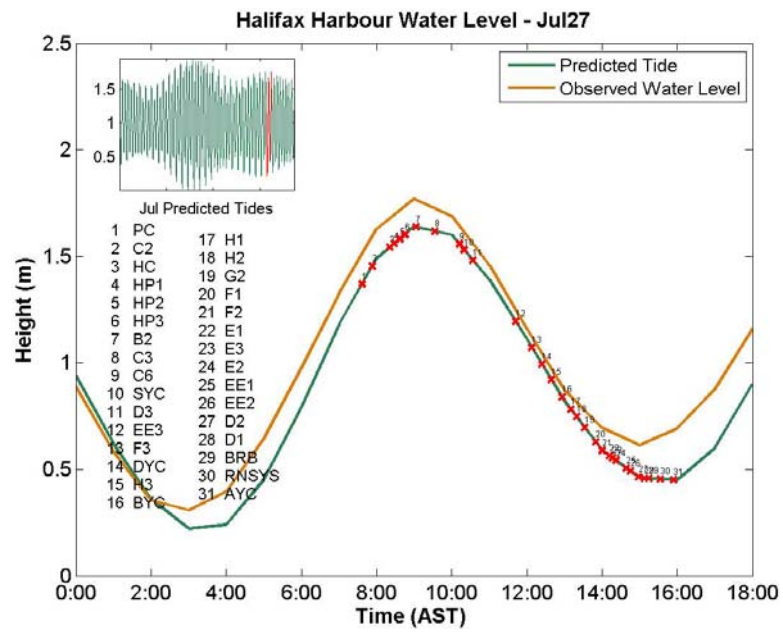
Yacht Clubs

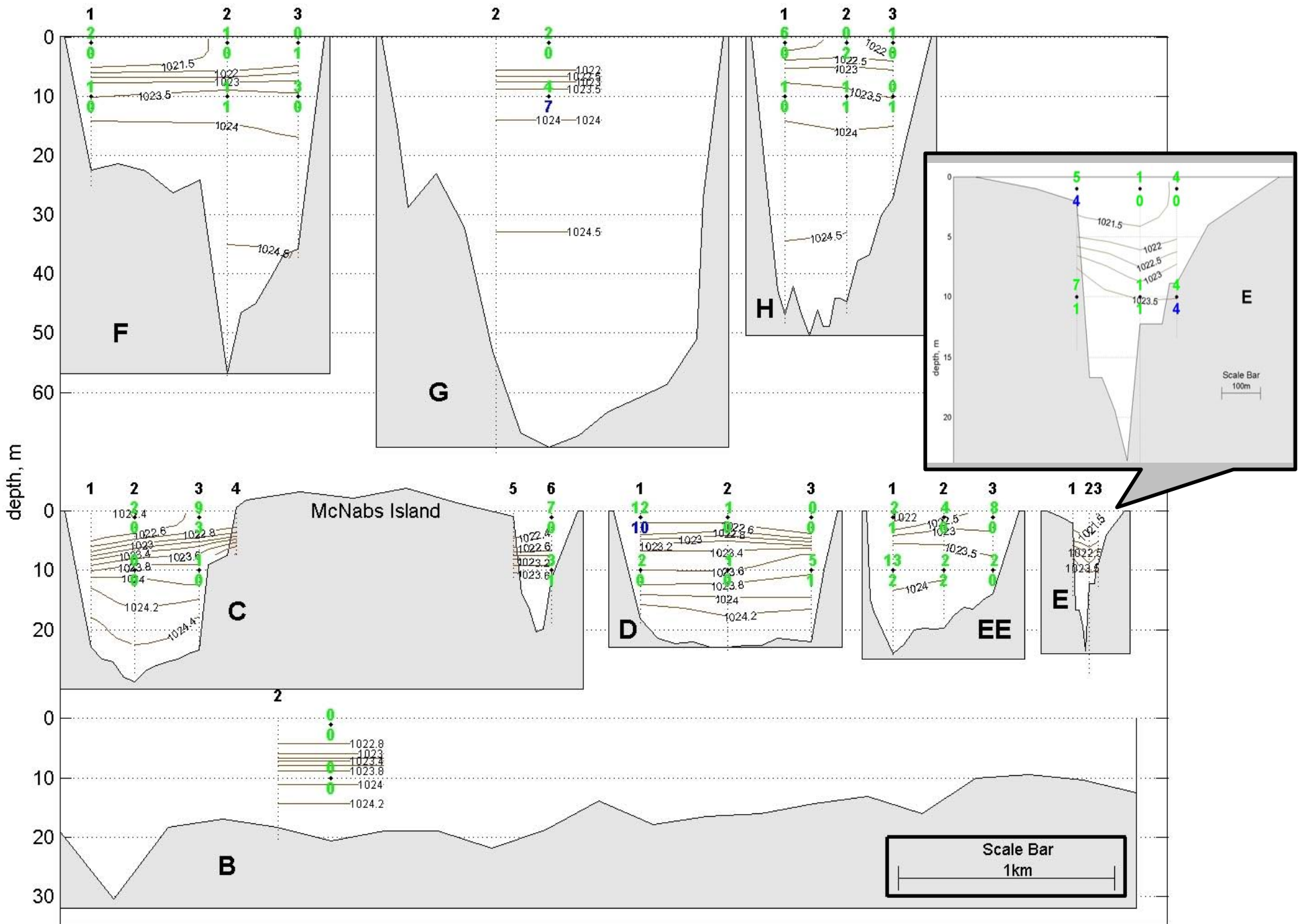
Salinity in PSU

Temperature in °C



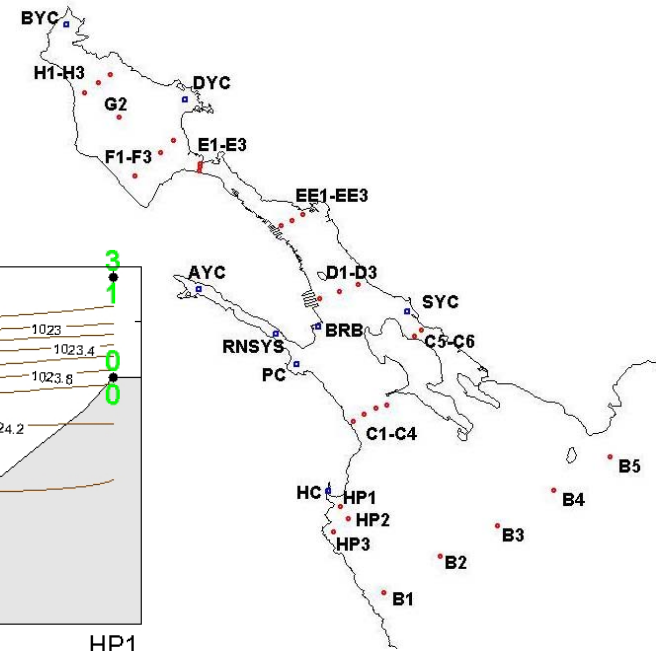
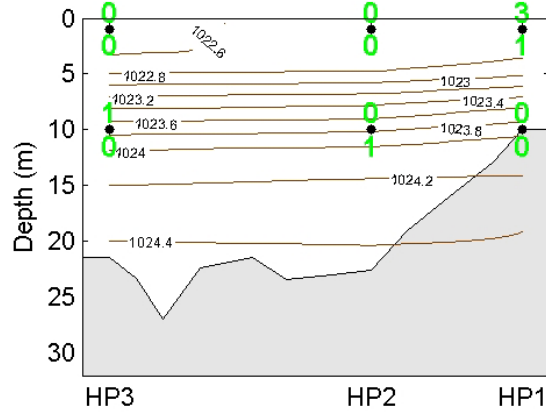
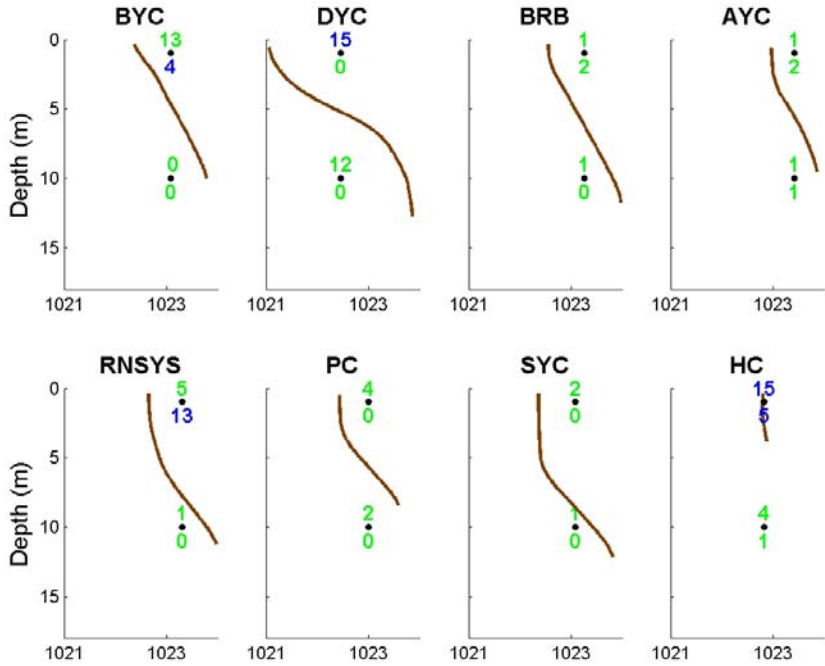
Rainfall and temperature data collected at Shearwater RCS.
Cloud cover data collected at Shearwater Airport



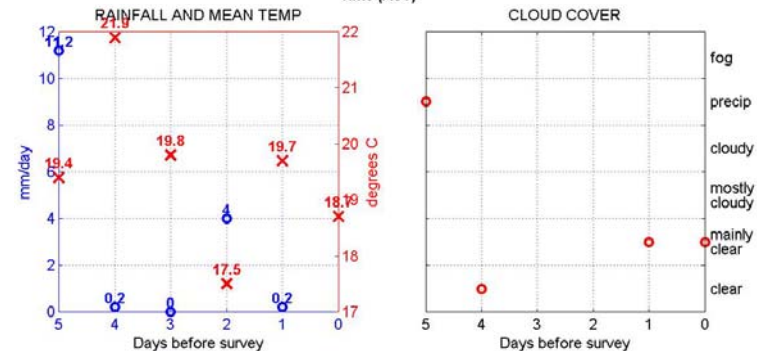
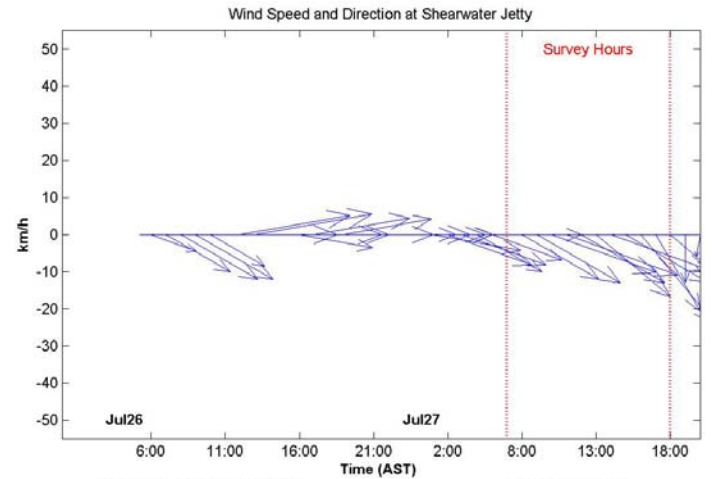
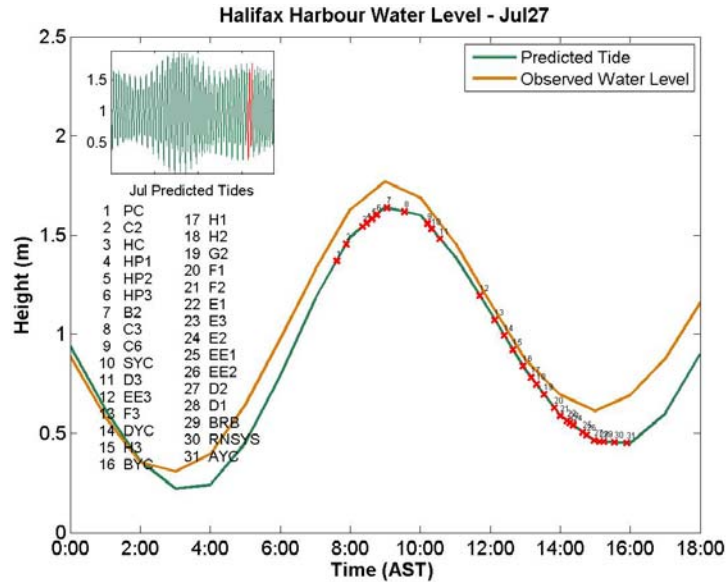


Yacht Clubs

Potential Density in kg/m³



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

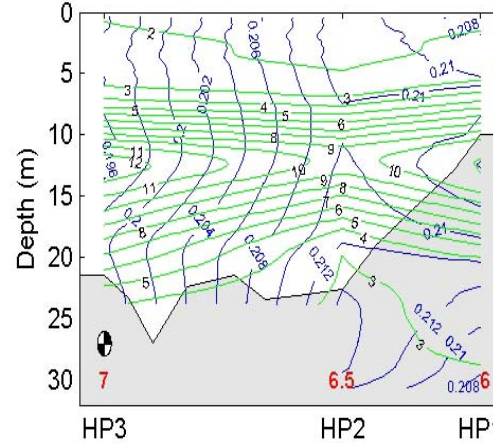
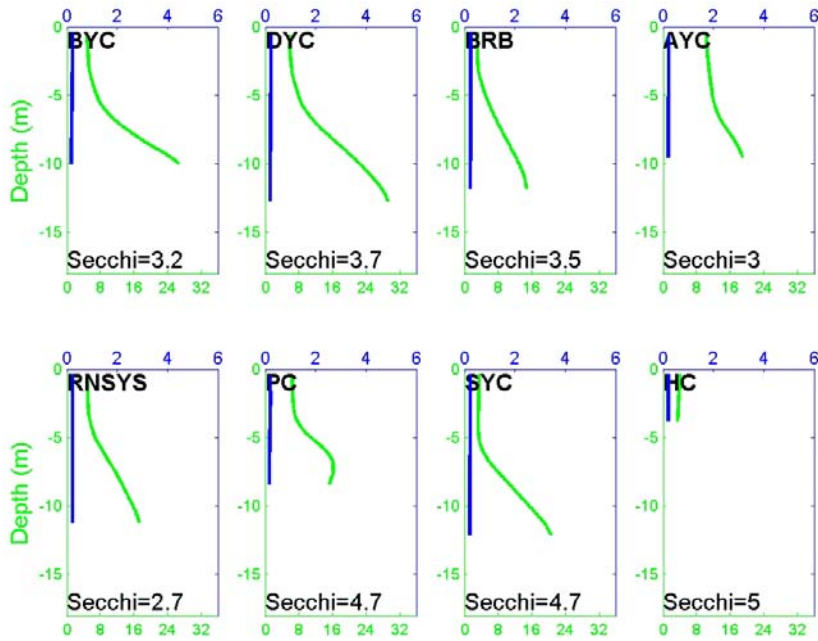


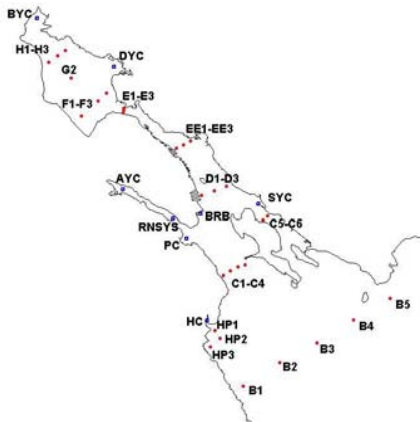
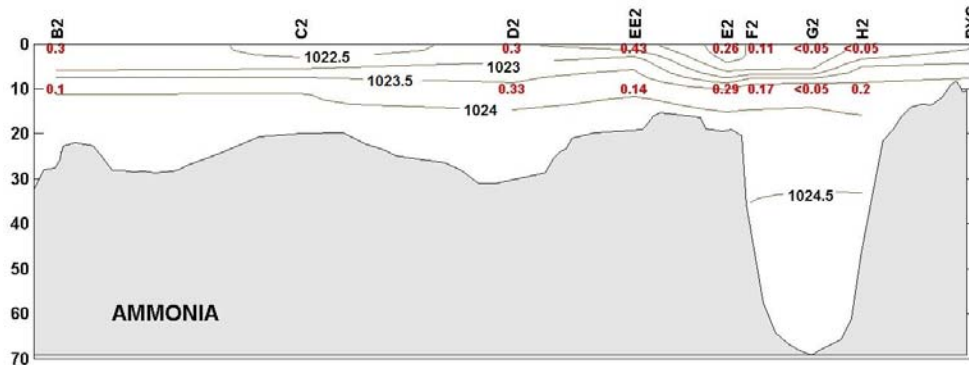
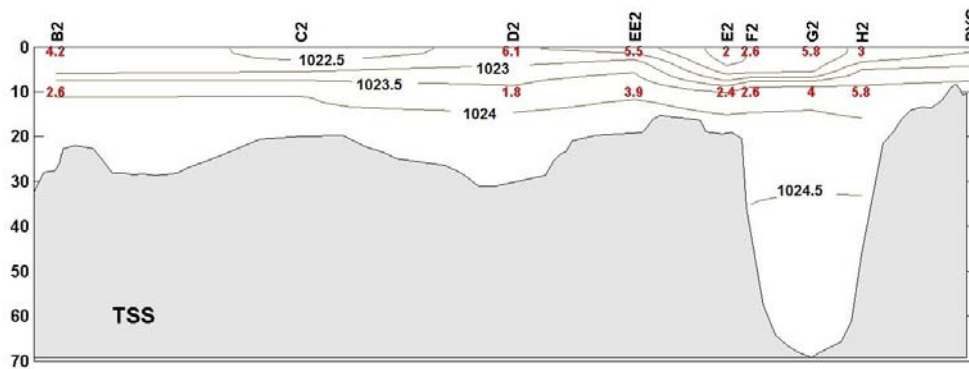
Fecal Coliform ● Above swimming limit 200 MPN/100mL
Enterococci ● Above shellfish limit 14 MPN/100mL
● Below limits 35 CFU/100mL 4 CFU/100mL

Yacht Clubs

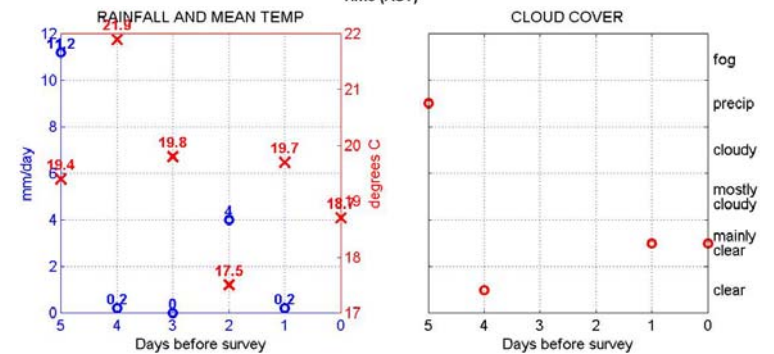
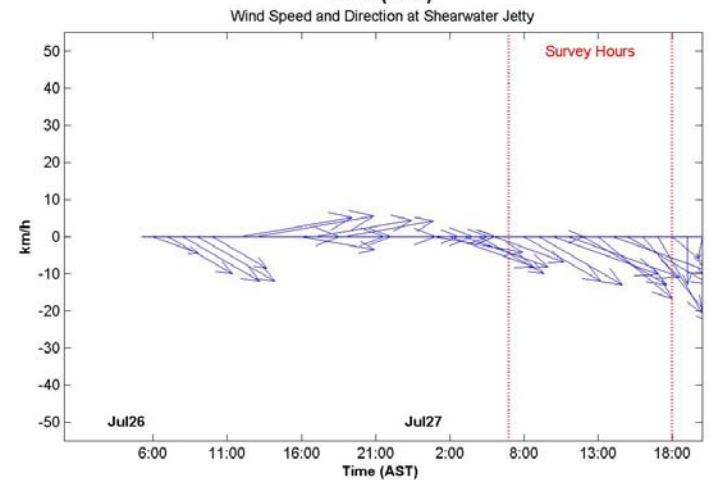
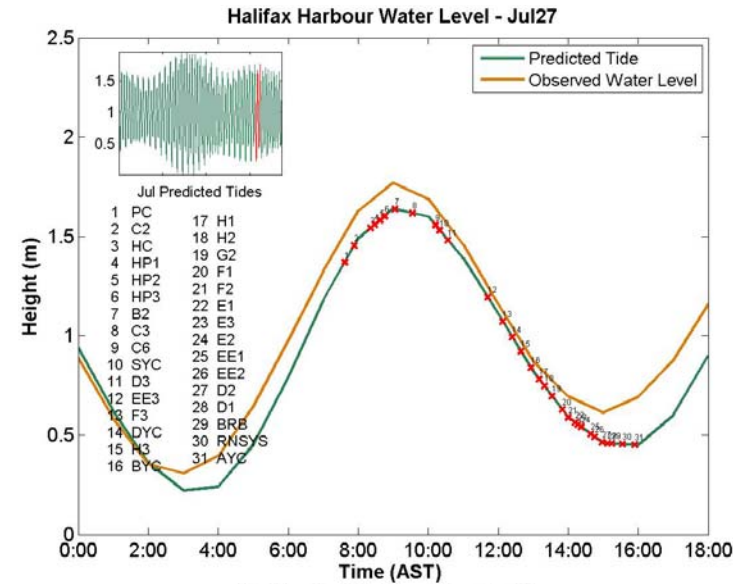
DO in mg/L

Chlorophyll in mg/m³





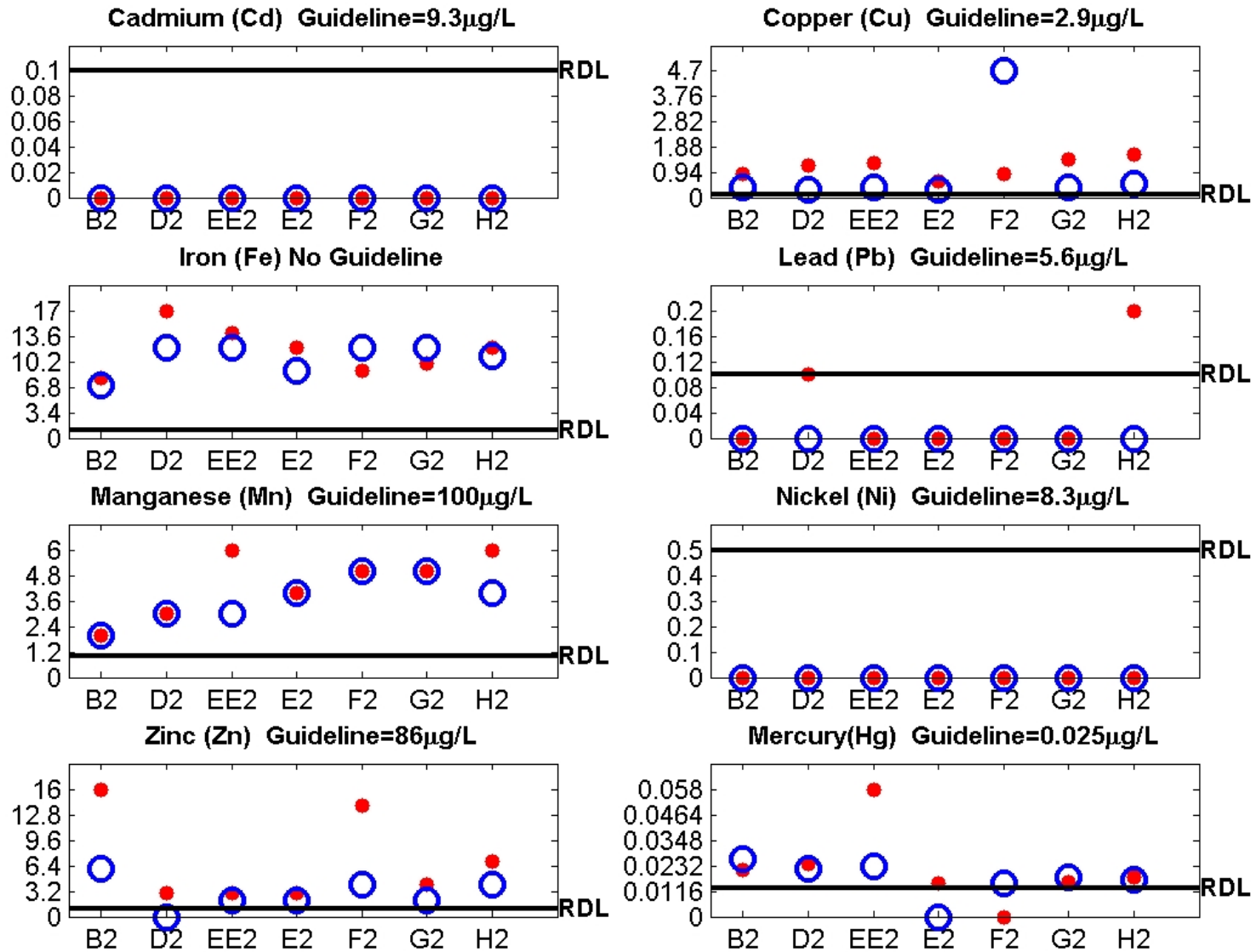
Rainfall and temperature data collected at Shearwater RCS.
Cloud cover data collected at Shearwater Airport



Potential Density Contours in kg/m^3

Ammonia in mg/L

TSS in mg/L



○ = Ten Metre Sample
 ● = One Metre Sample
 RDL = Reportable Detection Limit
 0 = Not Detected

HRM Water Quality Monitoring Bacteria Summary – July 27, 2010

