Halifax Harbour Water Quality Monitoring Project
Survey Summary #132

Survey Date: 19 June 2007
Nature of Survey: Complete Survey
Report File (this document): HHWQMP_report132_070619_revApr2008.doc
Data File: HHWQMP_data132_070619_revApr2008.xls

Data Return:

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

Sample Notes:
A 1m sample was taken at Dartmouth Cove:

Fecal Coliform	820 /100 mL	**Iron**	12 µg/L
Ammonia	0.17 mg/L	**Manganese**	5 µg/L
TSS	3.4 mg/L	**Zinc**	68 µg/L
Copper	0.8 µg/L	**Mercury**	0.4 µg/L

QA/QC samples:

Chemical Analysis		**H2 – 1m**	
Detectable Parameter	**Units**	**reference sample**	**QA/QC**
Ammonia (as N)	mg/L	0.16	0.17
Total Suspended Solids	mg/L	2.4	4.9
Copper	ug/L	1.9	1.9
Iron	ug/L	10	10
Manganese	ug/L	4	5
Nickel	ug/L	0.6	0.6
Zinc	ug/L	5	4

Fecal Coliform (CFU/100ml)

Site	F3-10m	BRB-1m	HP2-1m	H2-10m
Reference	34	130	3	8
QA/QC	27	76	5	5

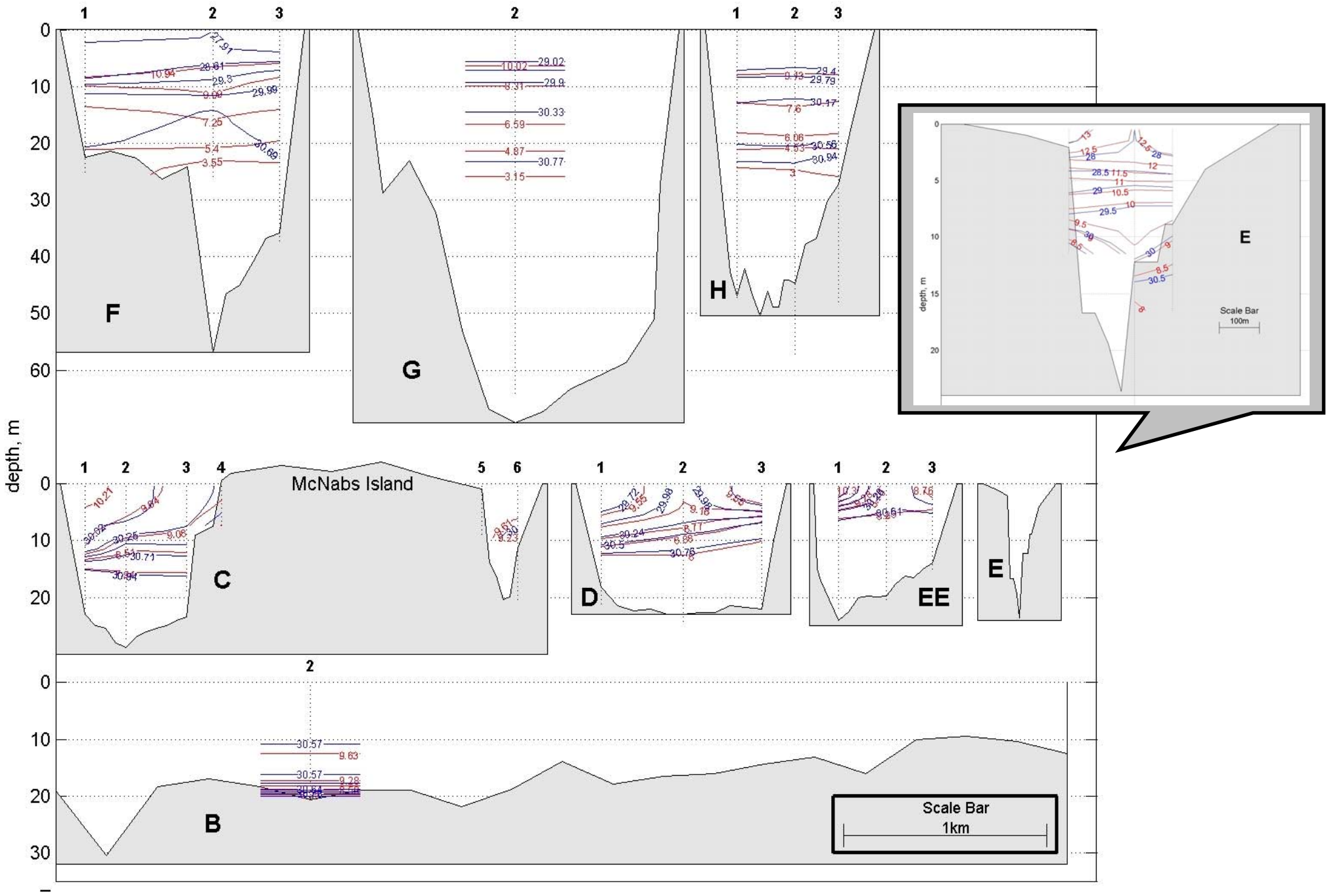
Comments:
General: There has been no appreciable precipitation in the previous five days and Sackville river water levels are relatively low (0.8 m). There has been a persistent, brisk (>30 kph) down-harbour wind on the previous day continuing through the sampling day. The water structure is very complex. There appears to be an intrusion of slightly saltier, cooler and more oxygenated bottom water into the Inner Harbour. This bottom water appears to be upwelling in the center of the Inner Harbour. North of this, in the Narrows and southern Basin, is a surface lens of the warmest, freshest water in the Harbour. North of this lens, the surface water becomes colder and saltier all the way to Bedford Bay (BYC), near the mouth of the Sackville River. This structure is reflected in the other profile data sets and is corroborated in much of the other data. The fecal coliform values are relatively low everywhere, perhaps due to relatively high flushing. The only high values are in the near shore/near surface stations in the Inner Harbour and the 10 m samples in the Narrows. The fecal coliform levels in the freshwater lens are very low, suggesting that the source may be the Sackville River, rather than the nearby large sewage outfalls (Fairview Cove and Tuft's Cove). This water may have been displaced from Bedford Bay by wind/upwelling. There are elevated coliform values in the 10m samples everywhere in the Basin decreasing northward and the 1 m values north of the freshwater lens are higher than those in the lens itself.

Fluorescence: The values are quite low everywhere, between 2-4.5 mg/m^3. Unusually, the highest values are at about 6-10 m at Sections E and F. There are similar values at the mouth of NW Arm (RNSYS and PC).

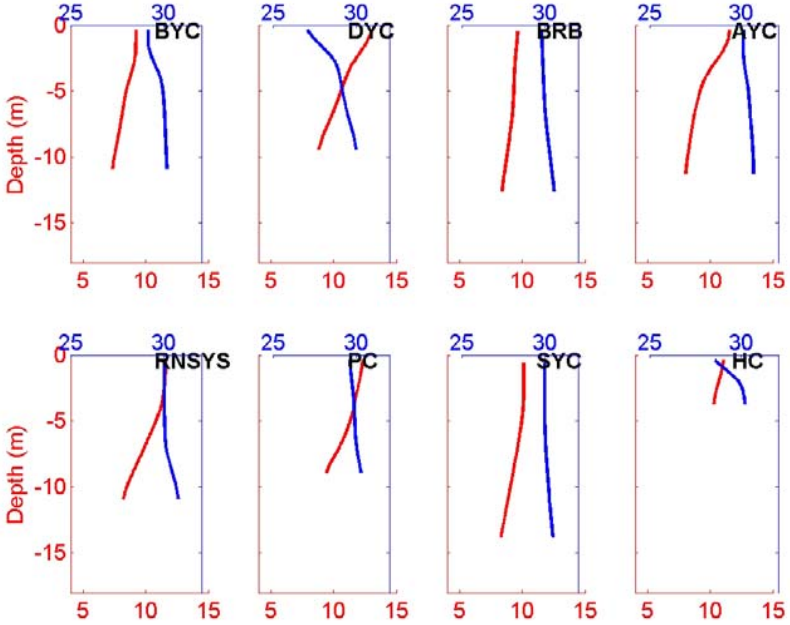
Ammonia: The ammonia nitrogen levels are relatively high everywhere, particularly in the Basin where the levels, typically around the detection limit of 0.05 mg/L are about three times that value.

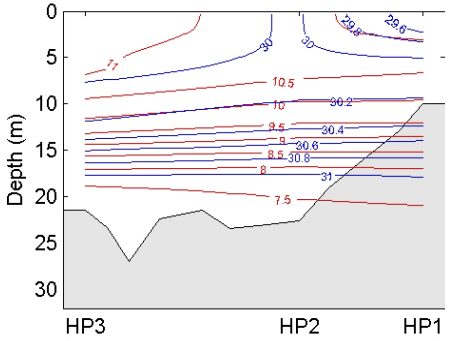
TSS: The TSS values are relatively low with a total range 1.3 – 3.8 mg/L. The lowest values are in 1m samples in the EE and E sections.

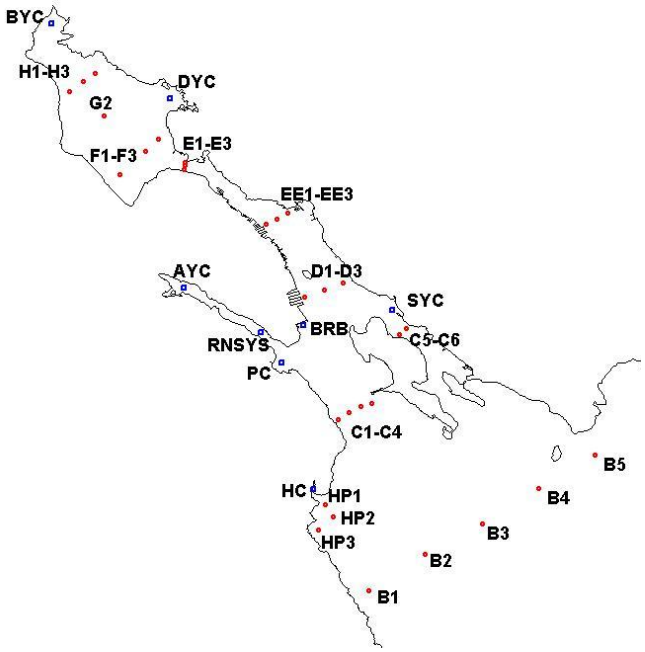
Dissolved Oxygen: The dissolved oxygen (DO) data indicate that the levels are quite uniform and relatively low, ranging only from about 6.0 to 6.9 mg/L, in water <20 m in depth. The values in the deep Basin have dropped slightly to about 5.8 mg/L. The only values meeting the applicable guidelines are in the Inner Harbour, where values are above the 6 mg/L class SC guideline. The DO data is not ground-truthed and absolute values are questionable (see DO discussion in QR#1).

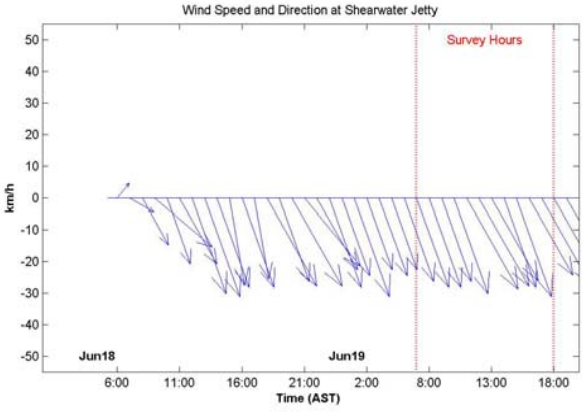

depth, m
F
G
H
C
D
EE
E
B
McNabs Island
Scale Bar
1km
Scale Bar
100m

Yacht Clubs



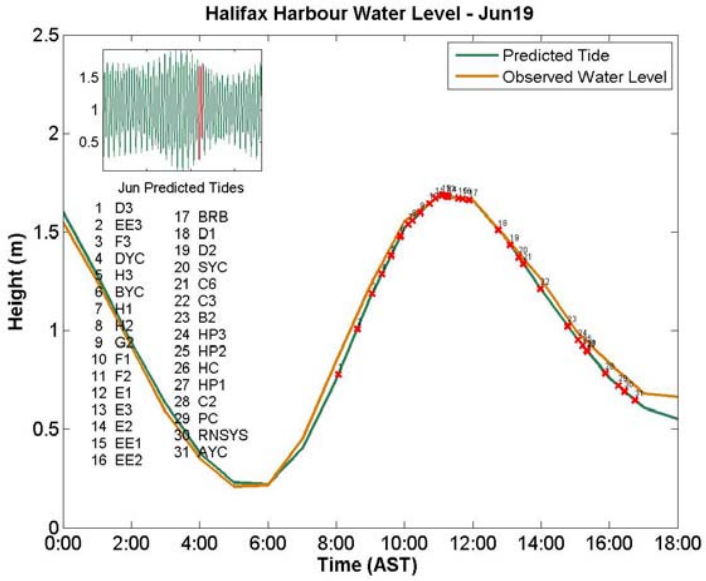


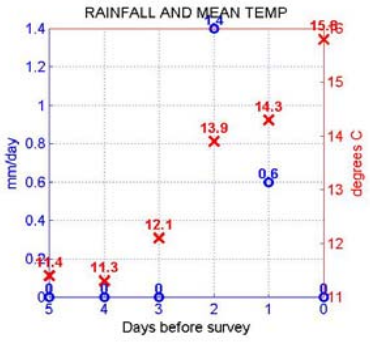


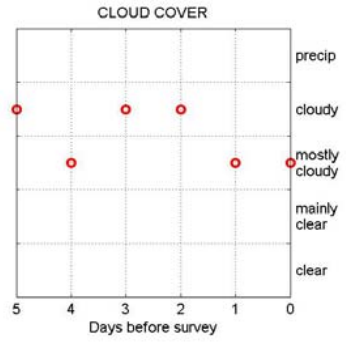


Rainfall and temperature data collected at Shearwater Autoport.

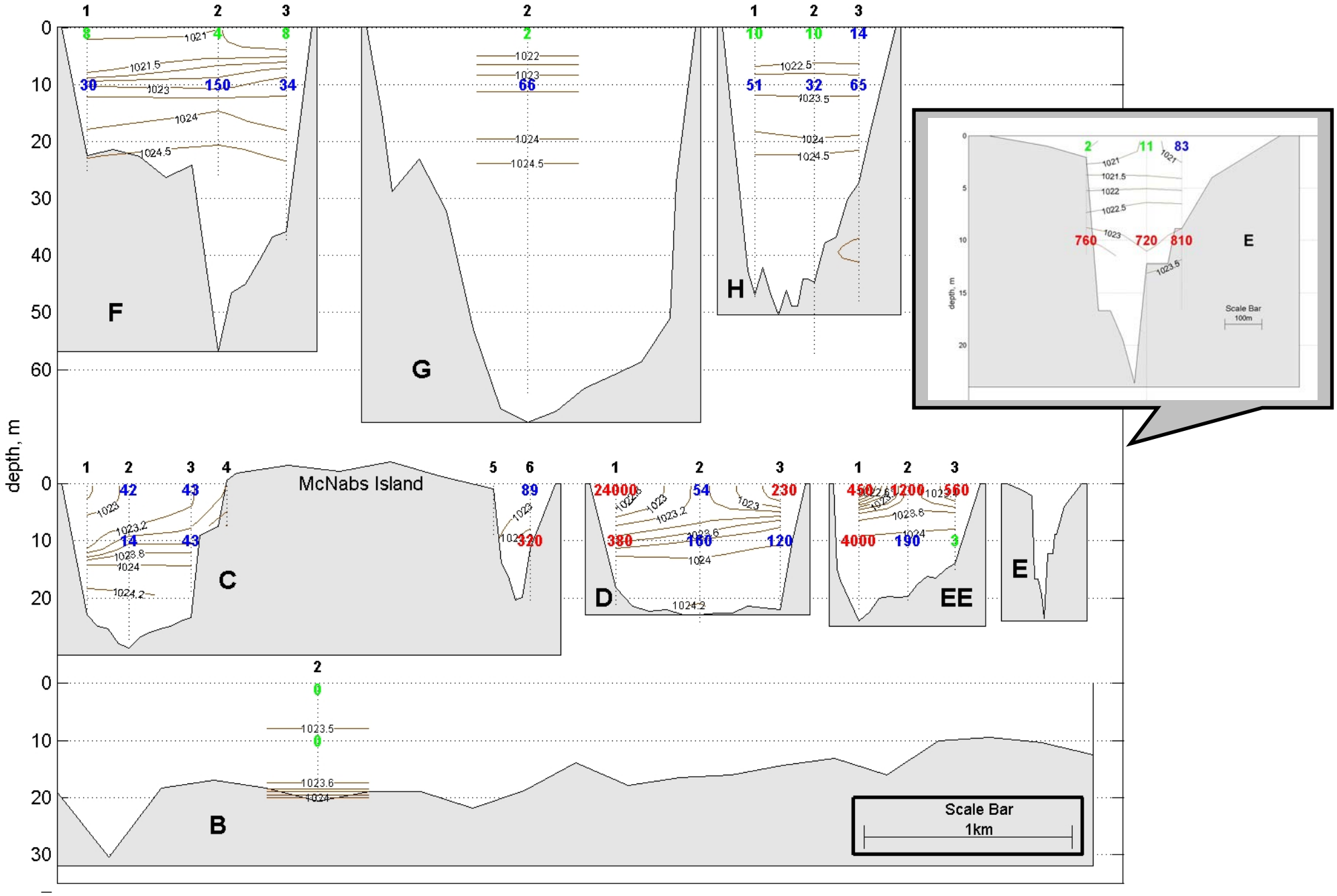
Cloud cover data collected at Shearwater Airport



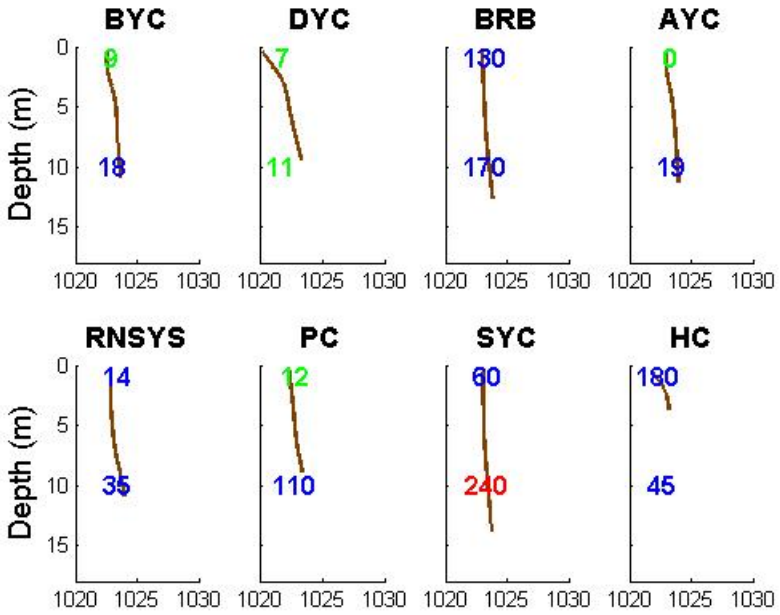


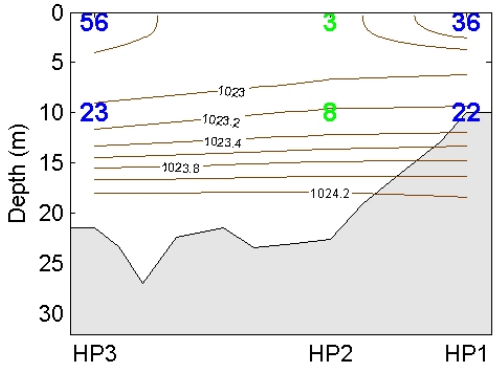


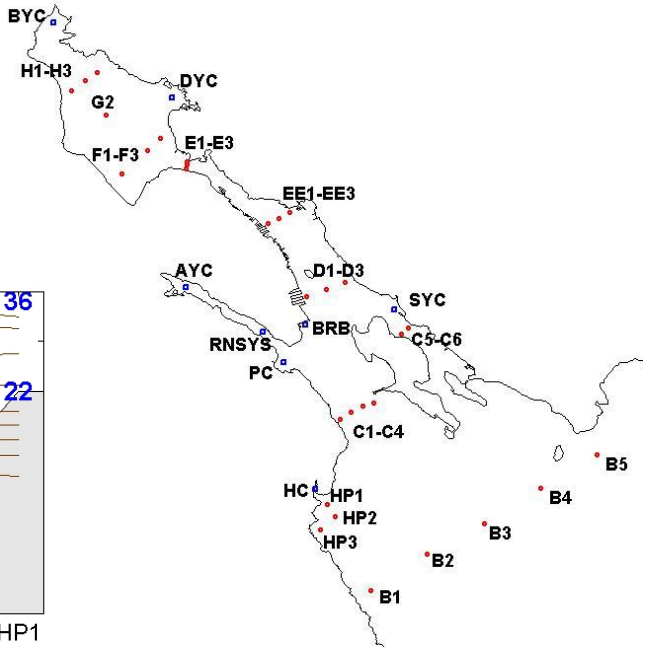
Salinity in PSU **Temperature in ^{o}C**

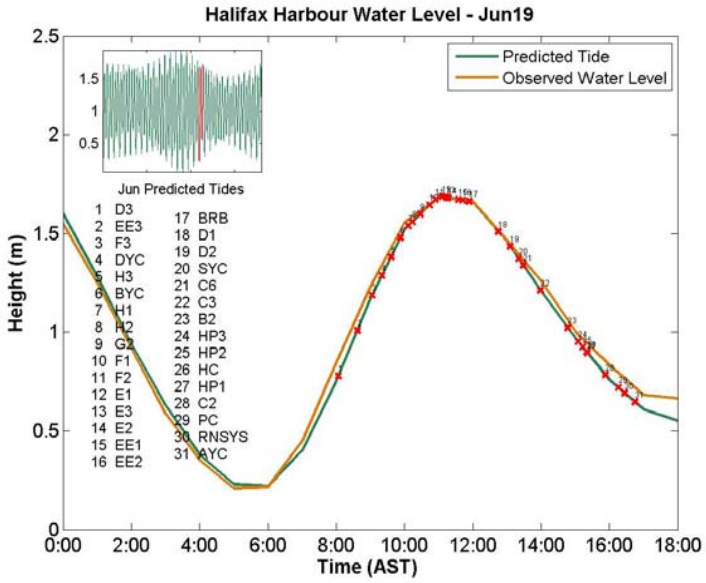

depth, m
F
G
H
E
C
McNabs Island
D
EE
E
B
Scale Bar
1km
Scale Bar
100m

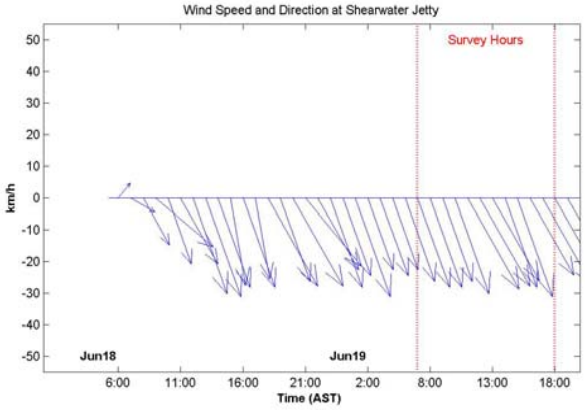
Yacht Clubs





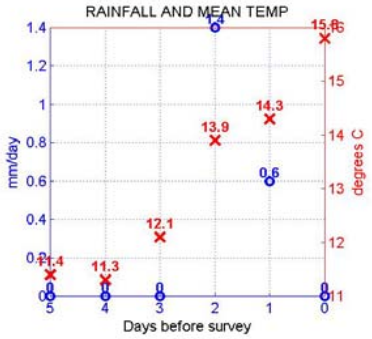


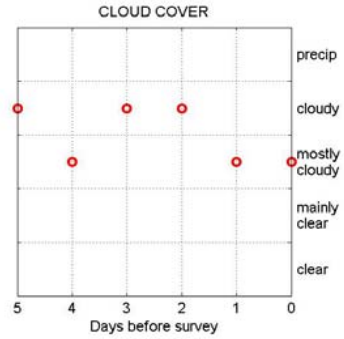




Rainfall and temperature data collected at Shearwater Autoport.

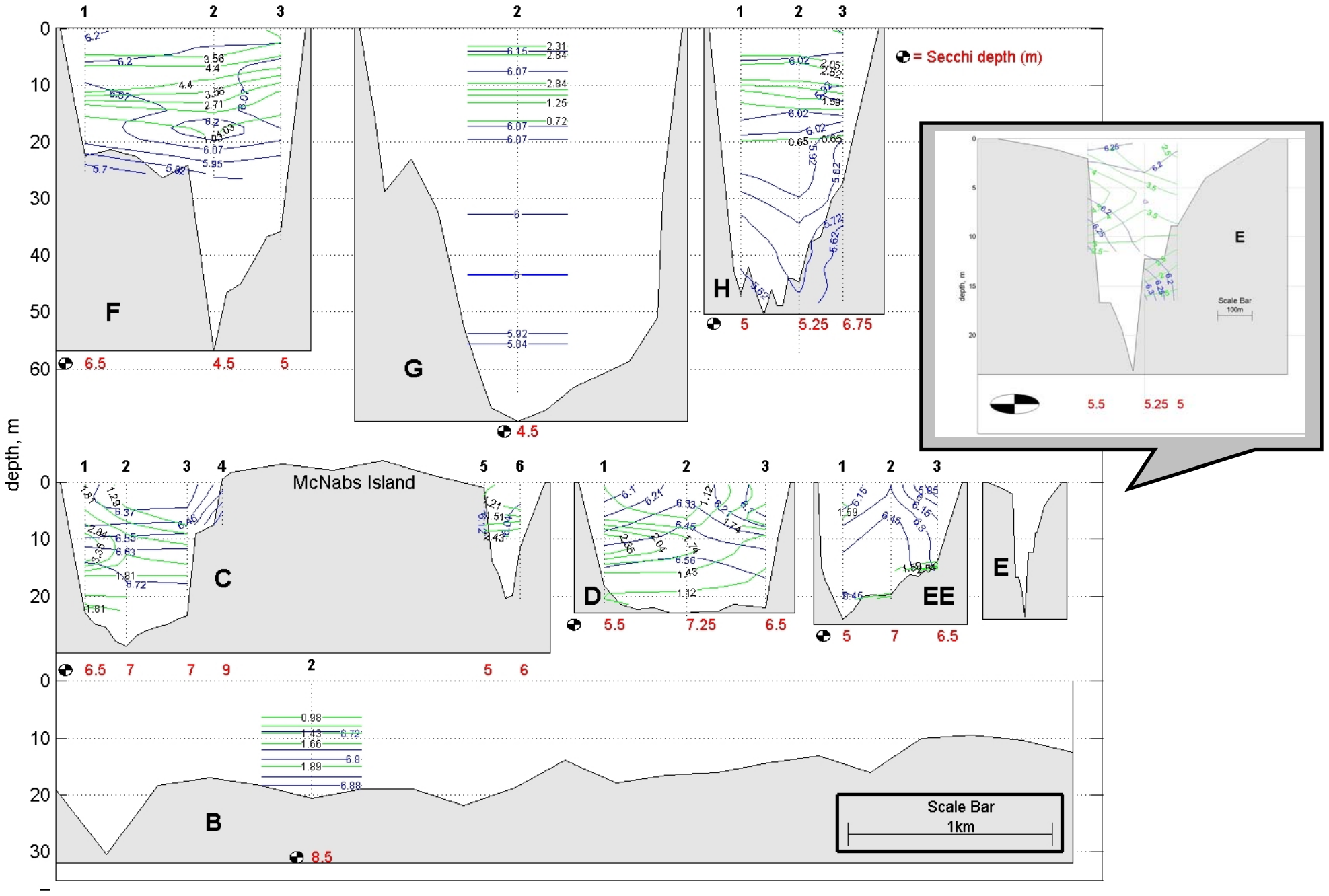
Cloud cover data collected at Shearwater Airport



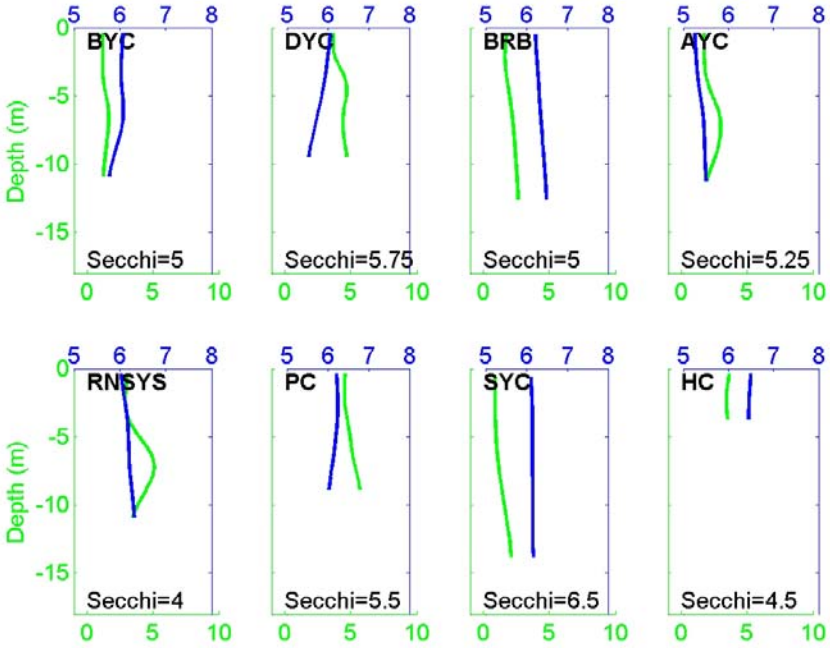


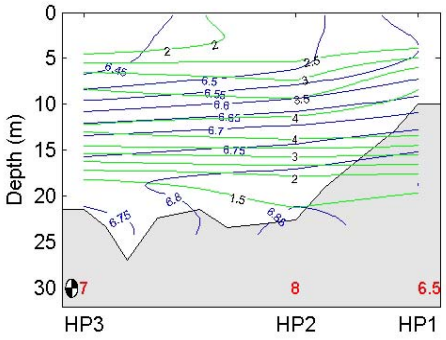
Potential Density in kg/m^3

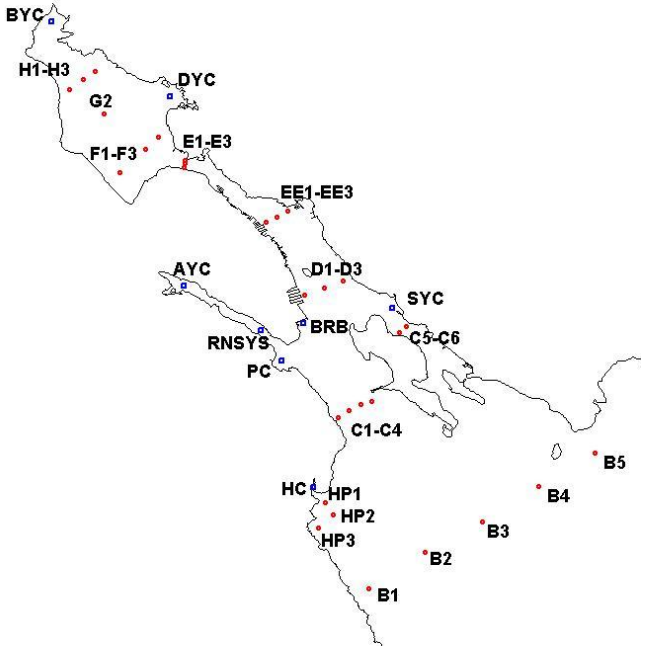
Fecal coliform: **above swimming limit (200 cfu/100mL)**
above shellfish limit (14 cfu/100mL)
below limits


depth, m
= Secchi depth (m)
F
G
H
E
C
D
EE
E
B
McNabs Island
Scale Bar
1km

Yacht Clubs

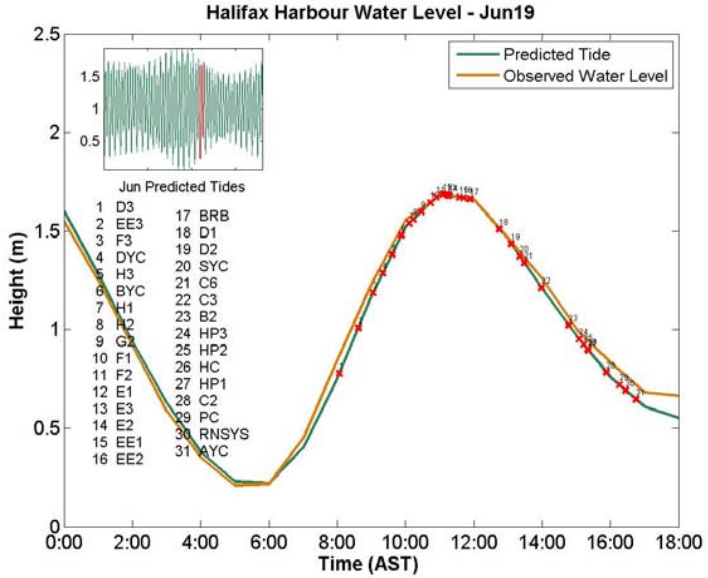


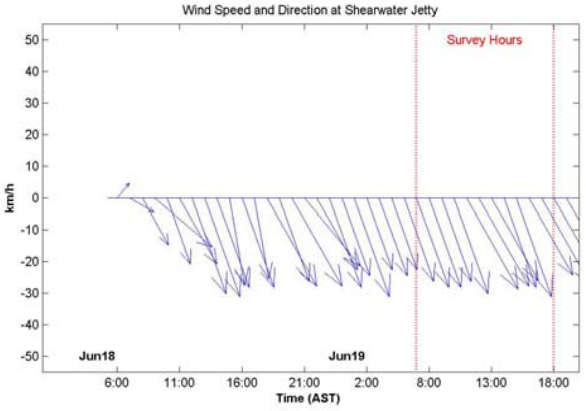


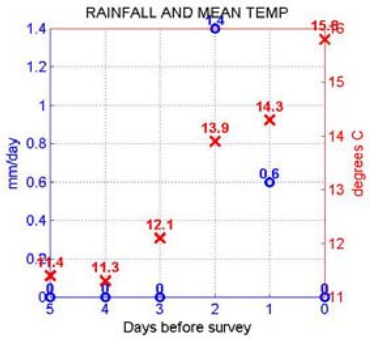


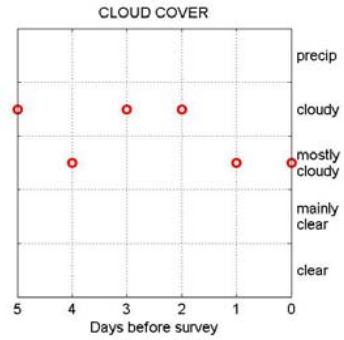
Rainfall and temperature data
collected at
Shearwater Autoport.

Cloud cover data collected at
Shearwater Airport

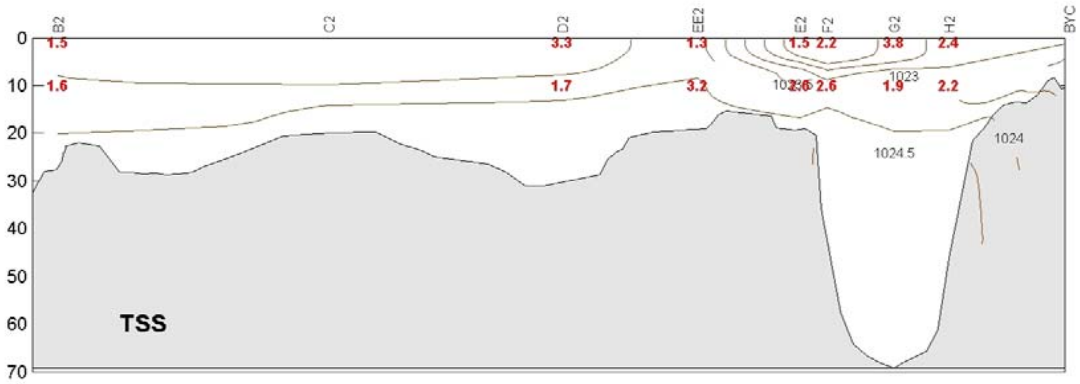


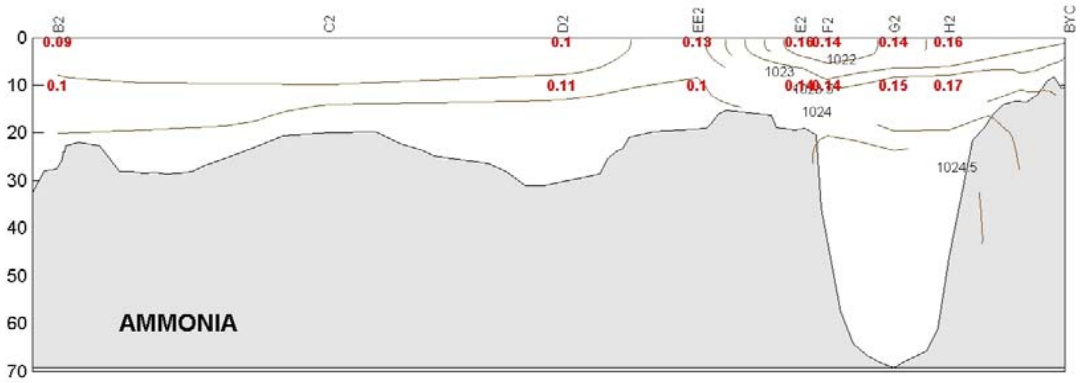


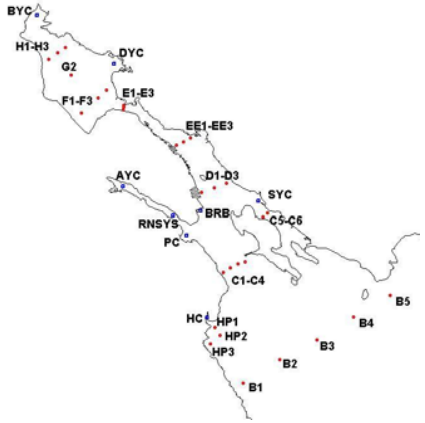




DO in mg/L **Chlorophyll in mg/m^3**

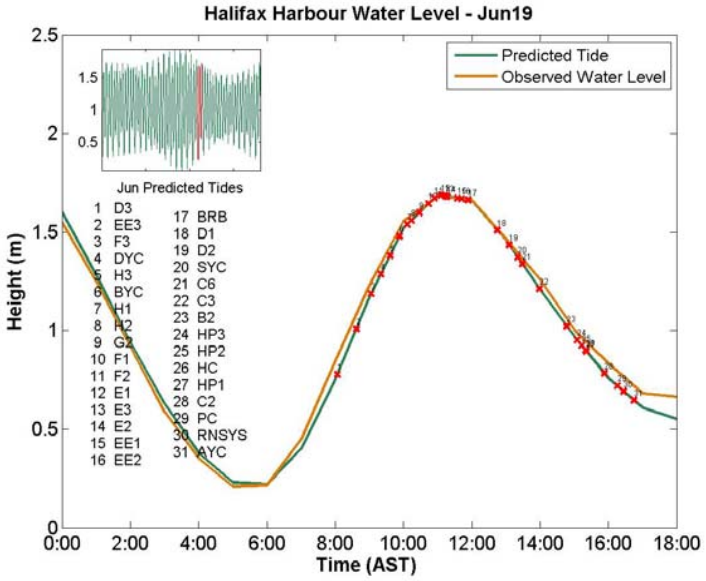


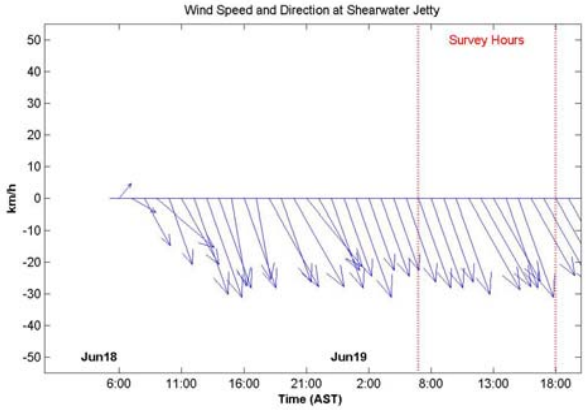


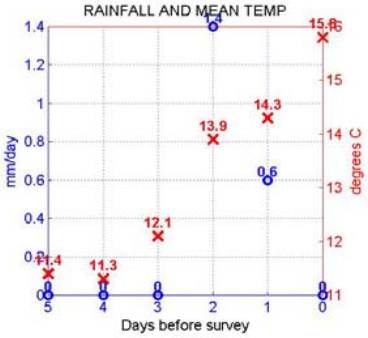


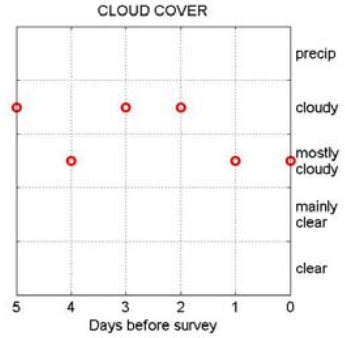
Rainfall and temperature data collected at Shearwater Autoport.

Cloud cover data collected at Shearwater Airport

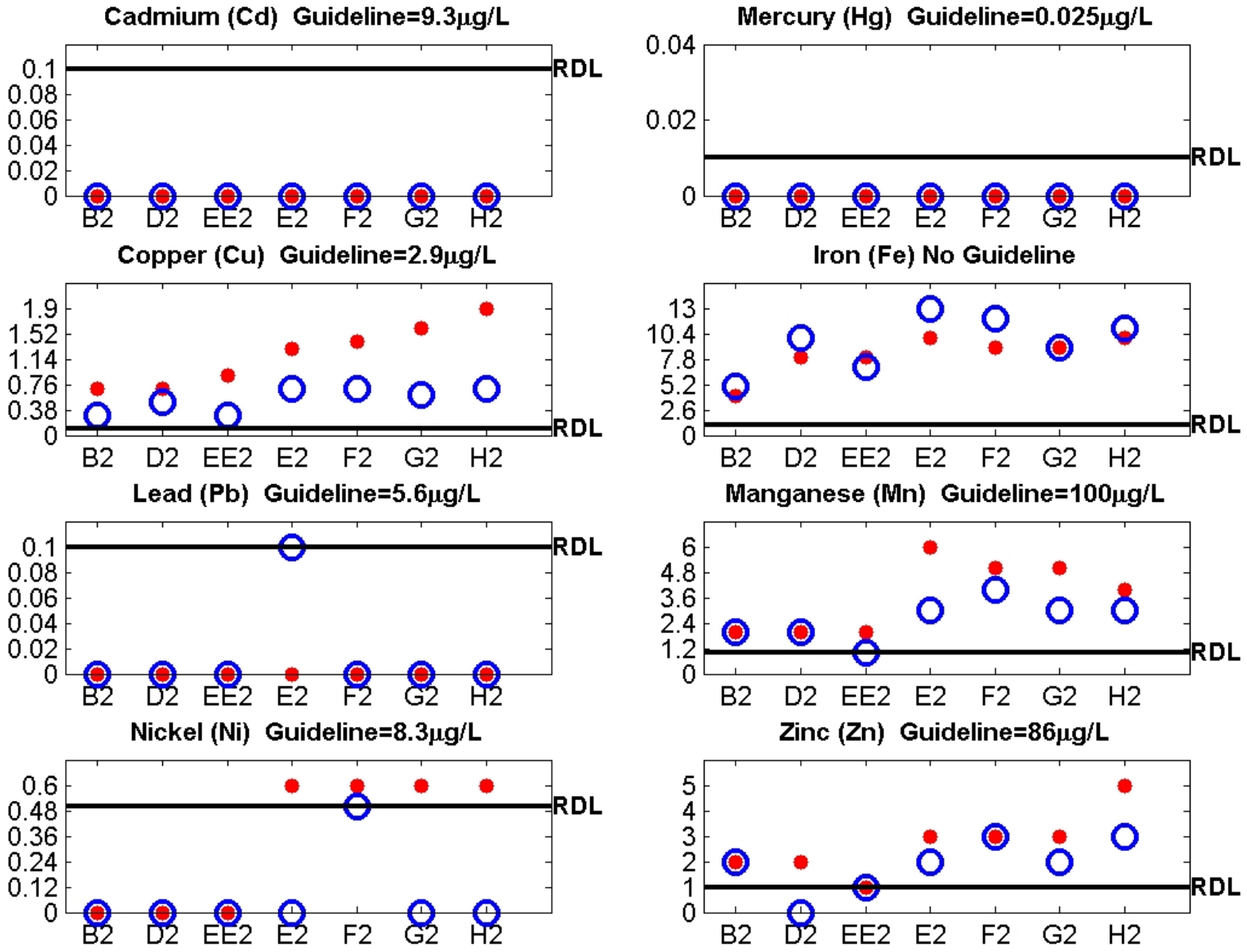








Potential Density in kg/m^3 **Ammonia in mg/L** **TSS in mg/L**


Cadmium (Cd) Guideline=9.3µg/L
0.1
0.08
0.06
0.04
0.02
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Mercury (Hg) Guideline=0.025µg/L
0.04
0.02
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Copper (Cu) Guideline=2.9µg/L
1.9
1.52
1.14
0.76
0.38
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Iron (Fe) No Guideline
13
10.4
7.8
5.2
2.6
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Lead (Pb) Guideline=5.6µg/L
0.1
0.08
0.06
0.04
0.02
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Manganese (Mn) Guideline=100µg/L
6
4.8
3.6
2.4
1.2
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Nickel (Ni) Guideline=8.3µg/L
0.6
0.48
0.36
0.24
0.12
0
RDL
B2 D2 EE2 E2 F2 G2 H2
Zinc (Zn) Guideline=86µg/L
5
4
3
2
1
0
RDL
B2 D2 EE2 E2 F2 G2 H2
LEGEND
= Ten Metre Sample
= One Metre Sample
RDL = Reportable Detection Limit