

*Alamitos Generating Station*

## **Appendix A**

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# **Physical Oceanographic Data**

A1. Source Water Currents

A2. Source Water Temperatures from ADCP Instruments



## Appendix A1 Source Water Currents

Physical oceanographic data were collected from the source water body to describe current regimes that can affect larval transport in the vicinity of the AGS. Two Nortek Aquadopp® acoustic Doppler current profilers (ADCPs) were positioned in separate locations in San Pedro Bay, one (CM1) approximately 2.1 km (1.3 mi) from shore off the entrance to Alamitos Bay at a depth of -12.4 m (-40.7 ft) MLLW, and a second unit (CM2) approximately 3.2 km (2.0 mi) from shore off the San Gabriel River mouth at a depth of -16.2 m (-53.1 ft) MLLW (Figure 3.3-2). Both stations were commissioned on January 10, 2006. Station CM2 was decommissioned on January 8, 2007 and Station CM1 was decommissioned on January 11, 2007. Data were downloaded on May 2, 2006 and August 31, 2006. From May 2–5, 2006 Station CM1 did not collect current data due to operational error after the data download. The unit at CM1 had an operating frequency of 1 MHz, while the unit at CM2 had an operating frequency of 600 kHz (Table A1-1). Both units collected data at hourly intervals in a usable range that extended from 0.5 m (1.6 ft) from the ADCP to somewhat less than 90% of the distance to the surface. The half-power full beam-width was 2.4 degrees for both units. Water temperature and water depth (pressure) were also measured concurrently by the units. Water temperatures were calibrated over an approximately four-month period from September 2006 to January 2007 using two calibrated Starr-Oddi thermistors. Pressure measurements were adjusted using barometric pressure data measured at the Los Angeles International Airport and corrected for sea level.

Table A1-1. ADCP deployment parameters for current meters in the vicinity of AGS  
 (Stations CM 1 and CM 2).

Unit	Oper. Freq.	Deploy depth (m)	Cells (#)	Cell size (m)	Max. range (m)	Cell precision (cm/s)	Ping rate	Averaging Interval (s)	Repetition rate (hr)
CM 1	1 MHz	12.4	15	1.0	15	0.8	87%	180	1.0
CM 2	600 kHz	16.2	20	1.0	20	1.4	100%	300	1.0

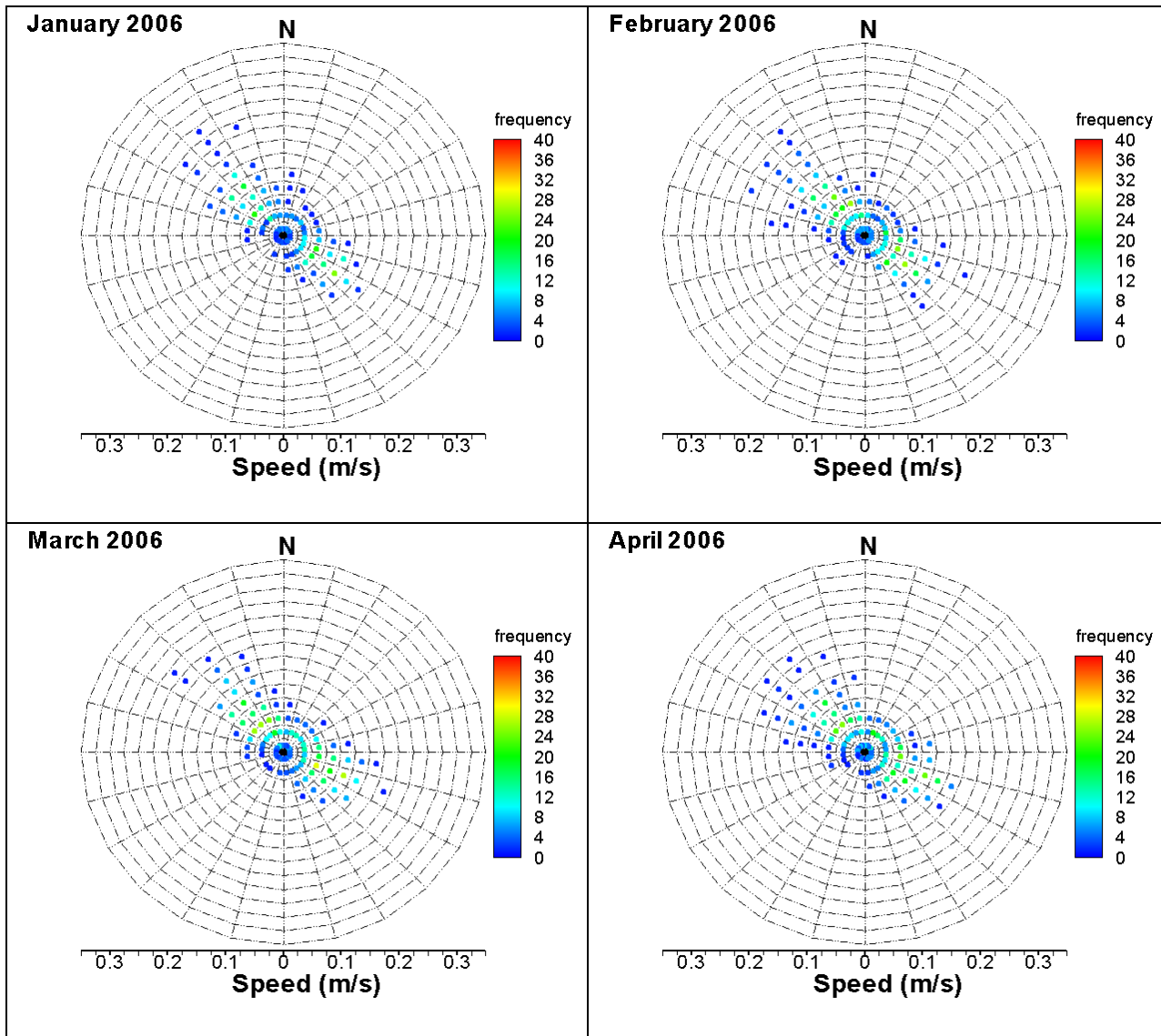


Figure A1-1. Hourly estimates of water column speed and direction at location CM1, January – April, 2006. Frequency is number of hourly observations.

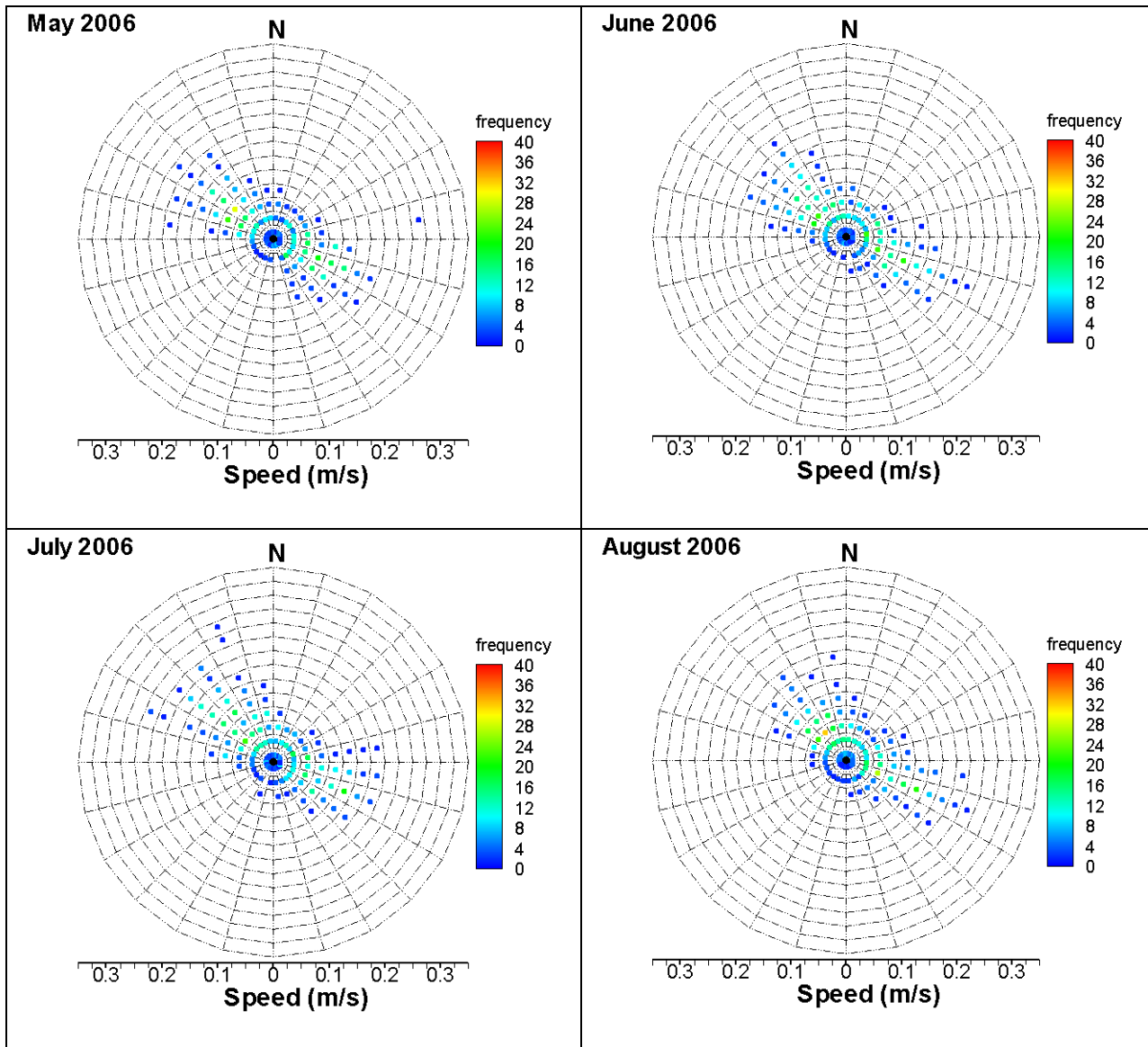


Figure A1-2. Hourly estimates of water column speed and direction at location CM1, May – August 2006. Frequency is number of hourly observations.

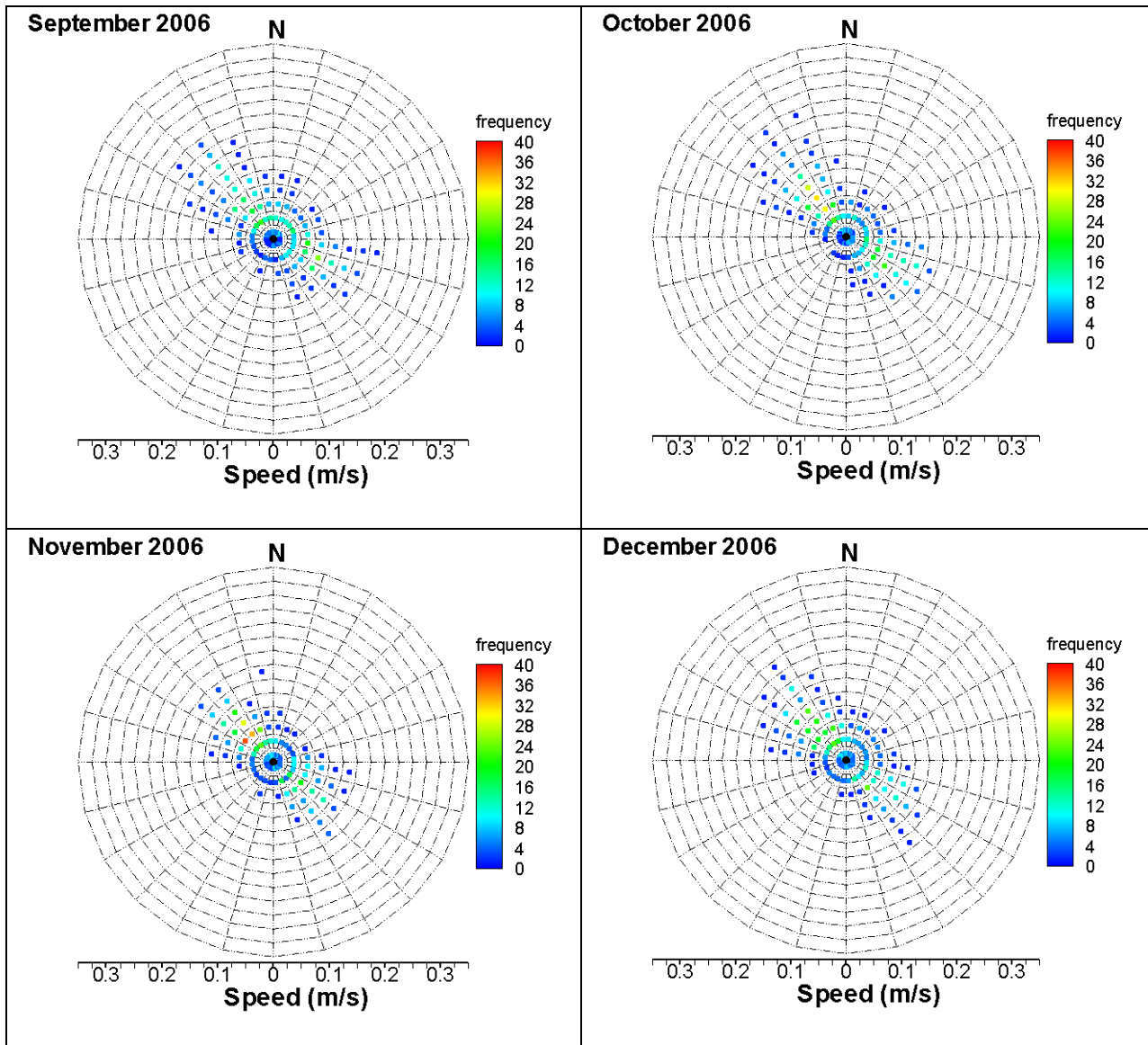
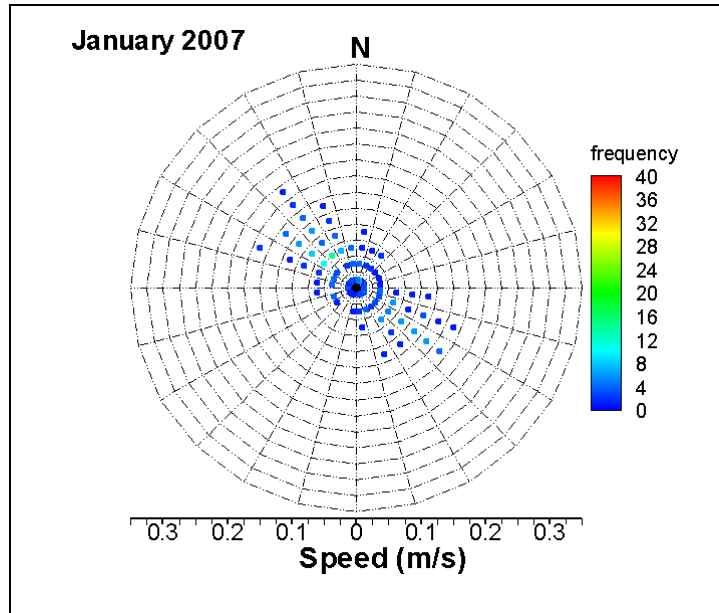


Figure A1-3. Hourly estimates of water column speed and direction at location CM1, September – December 2006. Frequency is number of hourly observations.



**Figure A1-4.** Hourly estimates of water column speed and direction at location CM1, January 2007. Frequency is number of hourly observations.

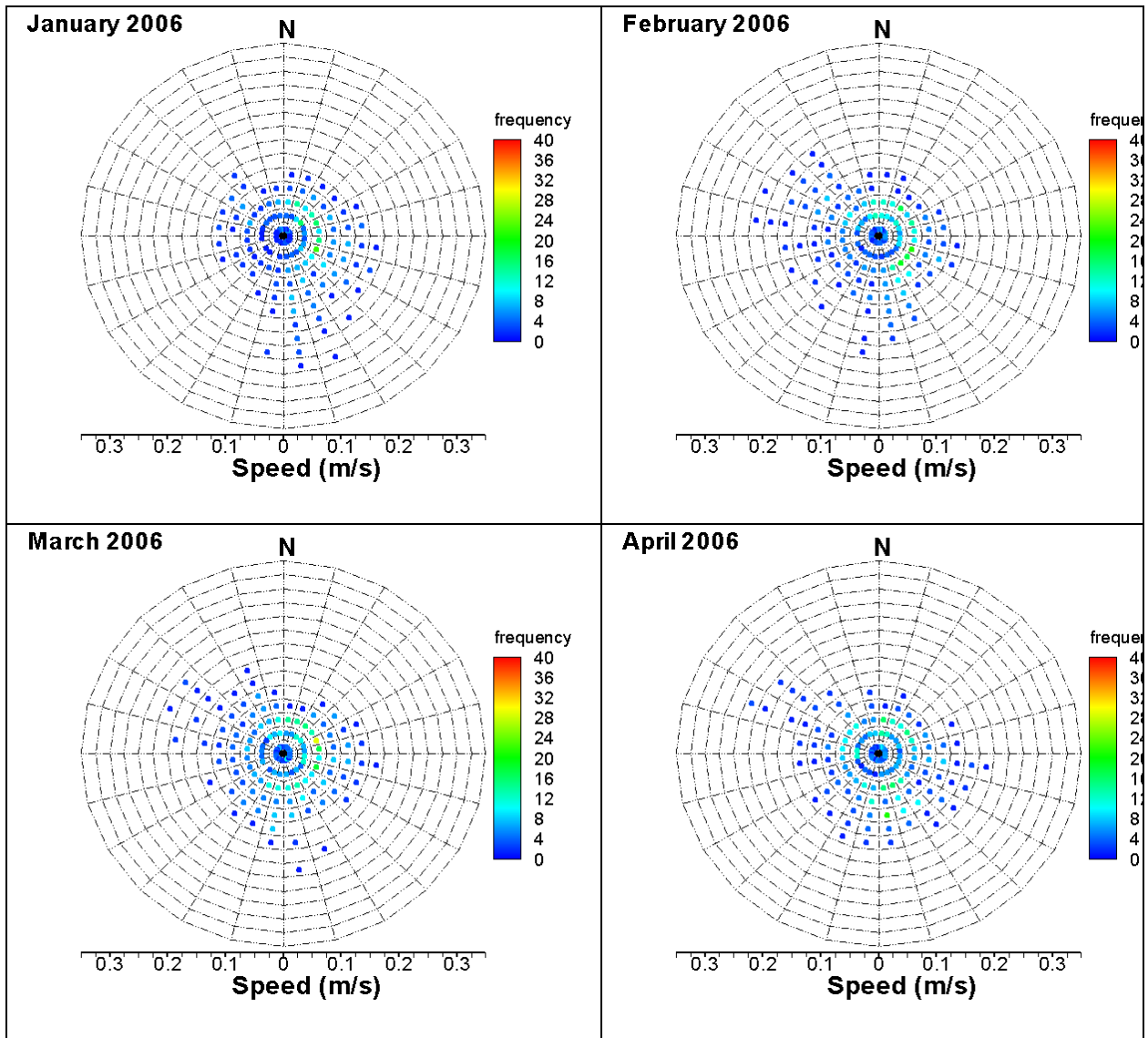


Figure A1-5. Hourly estimates of water column speed and direction at location CM2, January – April, 2006. Frequency is number of hourly observations.



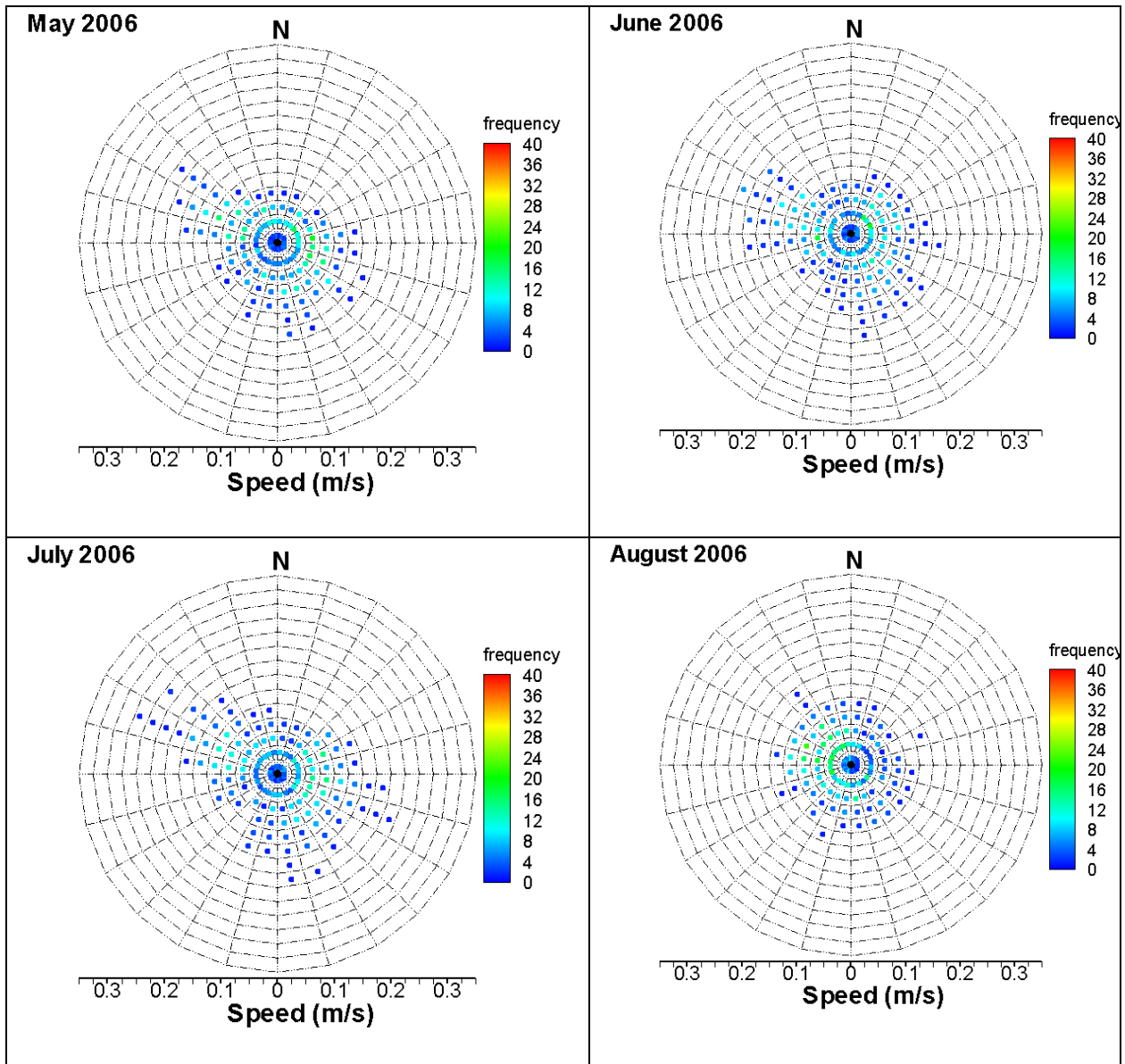


Figure A1-6. Hourly estimates of water column speed and direction at location CM2, May – August 2006. Frequency is number of hourly observations.

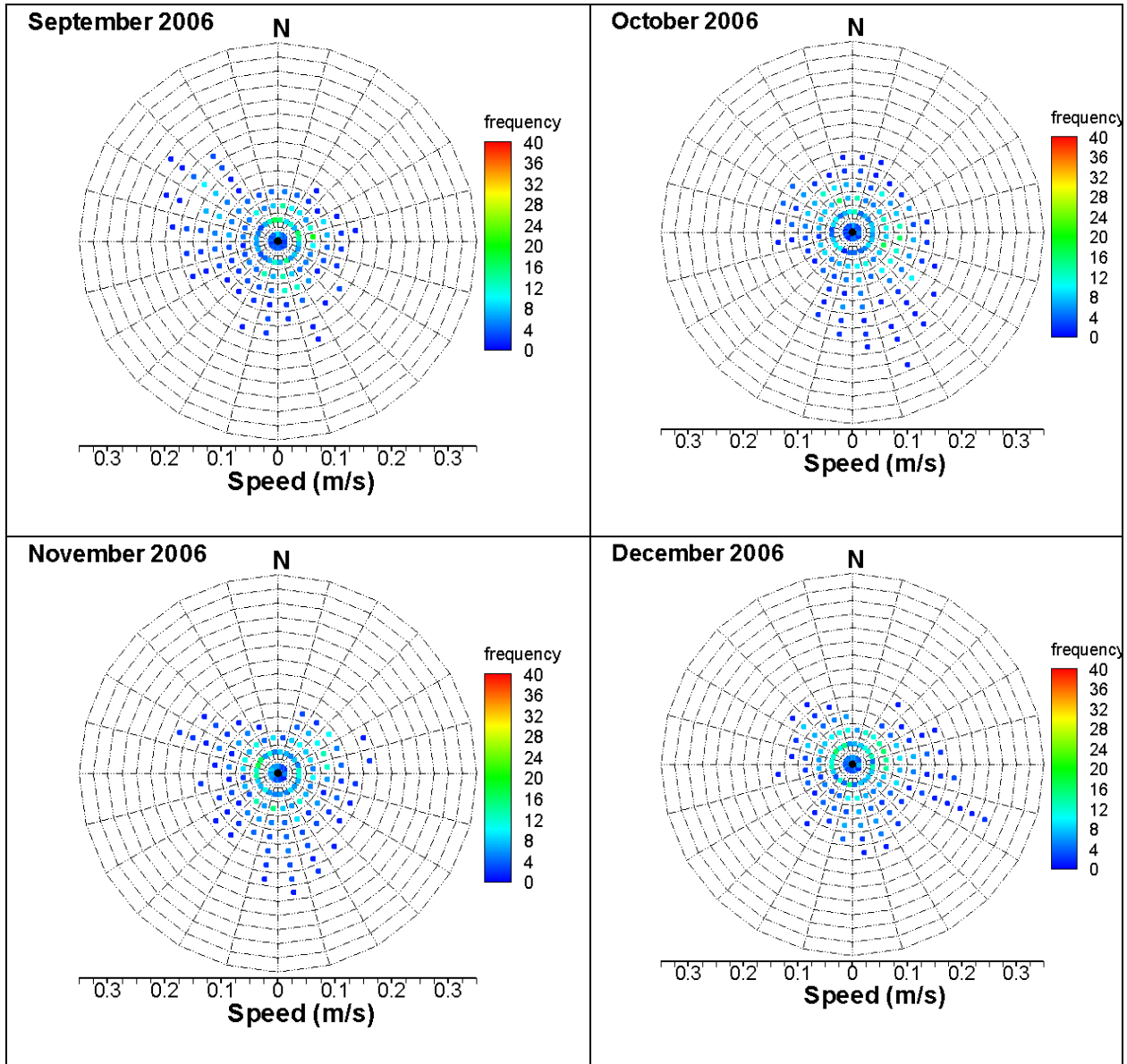
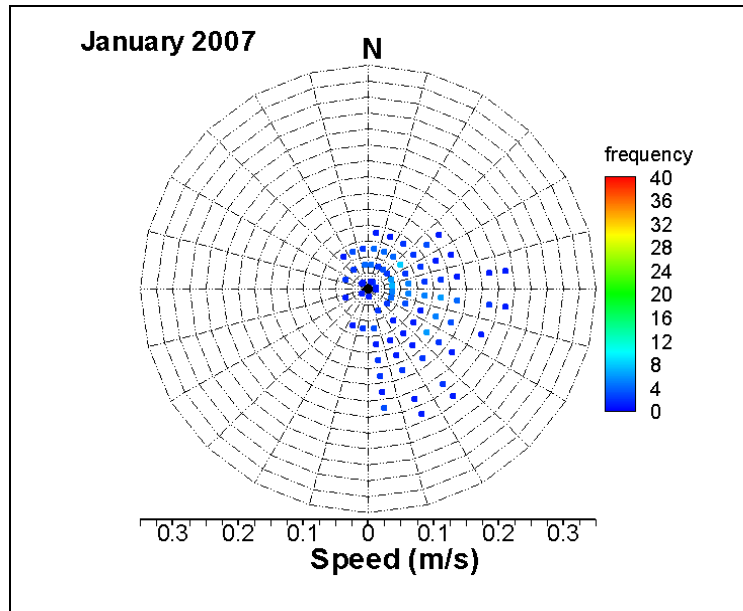
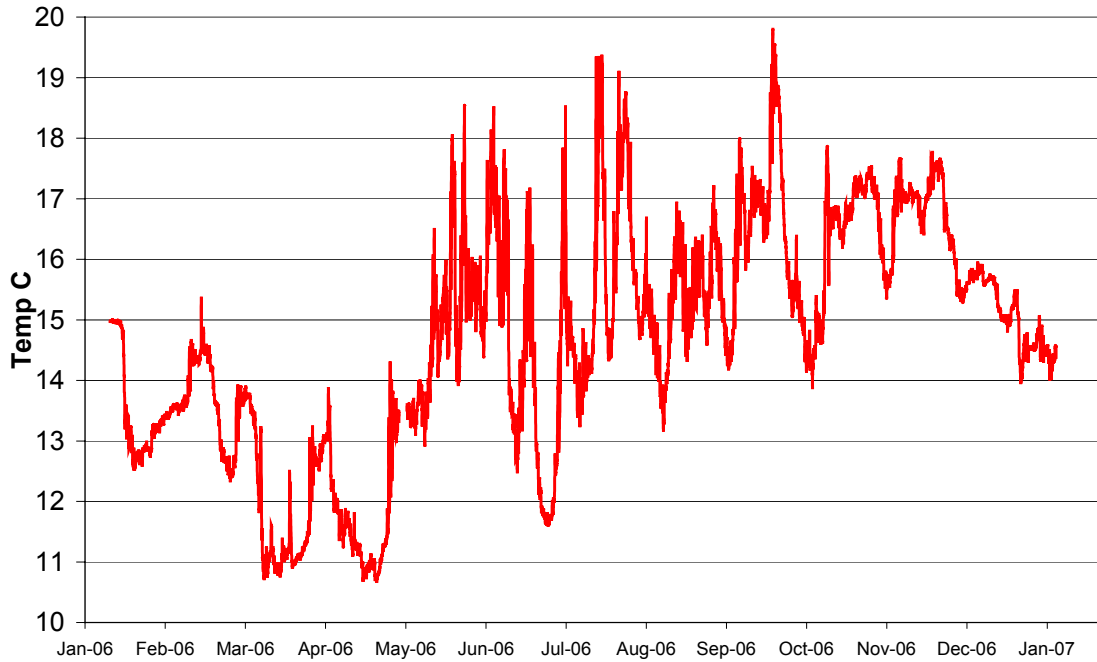


Figure A1-7. Hourly estimates of water column speed and direction at location CM2, September – December 2006. Frequency is number of hourly observations.



**Figure A1.8.** Hourly estimates of water column speed and direction at location CM2, January 2007. Frequency is number of hourly observations.

**Appendix A2**  
**Source Water Temperatures from ADCP Instruments**



**Figure A2-1.** Annual temperature January 2006 through January 2007 at CM1.

**Table A2-1.** Monthly and yearly mean temperatures recorded from January 2006 through January 2007 at CM1.

<b>Month</b>	<b>Mean</b>	<b>Standard Dev</b>	<b>Max</b>	<b>Min</b>
January	13.50	0.86	15.00	12.54
February	13.64	0.67	15.38	12.34
March	11.95	1.09	13.91	10.71
April	11.76	0.86	14.29	10.68
May	14.72	1.20	18.54	12.93
June	14.49	1.83	18.52	11.61
July	15.51	1.74	19.38	12.00
August	15.20	0.77	16.94	13.18
September	16.58	1.23	19.80	14.19
October	16.08	1.09	17.86	13.88
November	16.85	0.57	17.77	15.36
December	15.40	0.51	16.41	13.94
January 07	14.49	0.18	15.07	14.00
<b>Total Year</b>	<b>14.67</b>	<b>1.93</b>	<b>19.80</b>	<b>10.68</b>

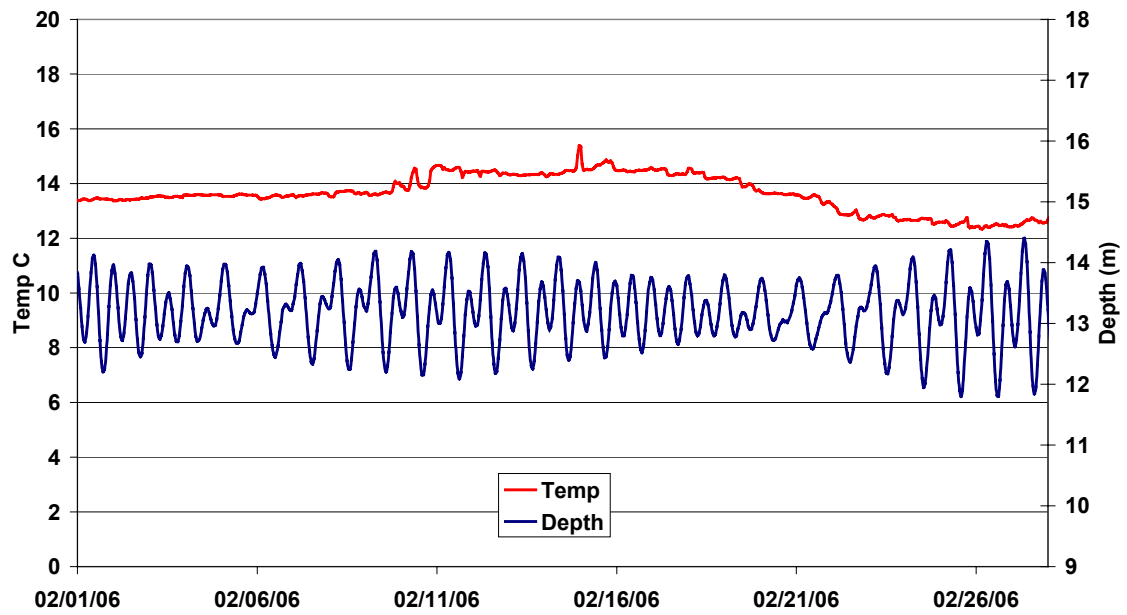
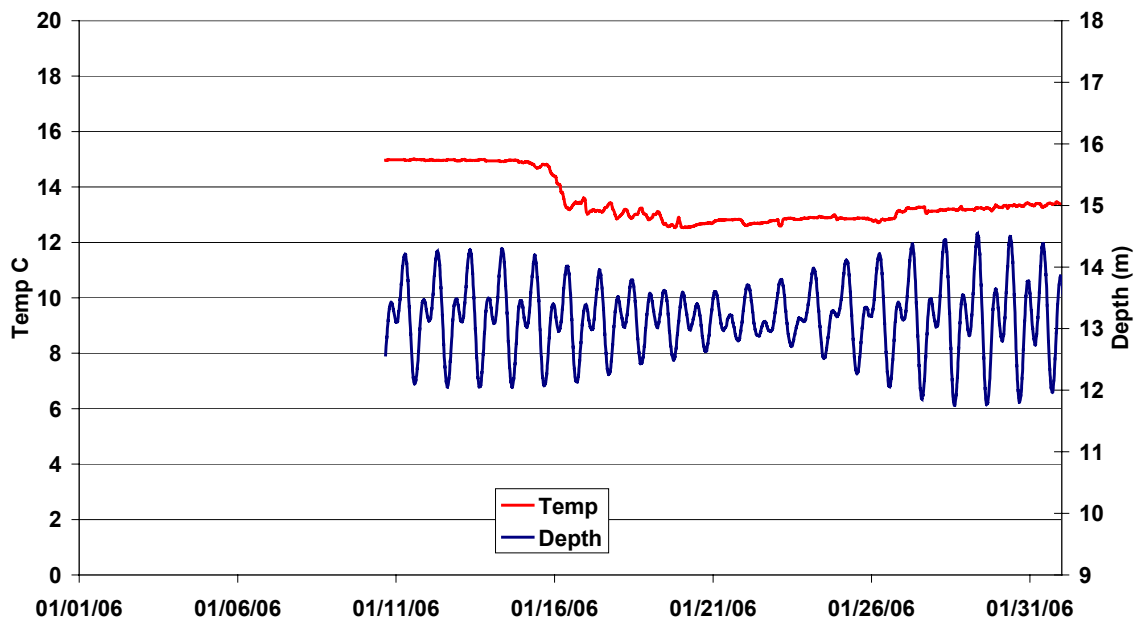


Figure A2-1. Near-bottom temperature and tidal depth from January (top) through February (bottom) 2006 at CM1.

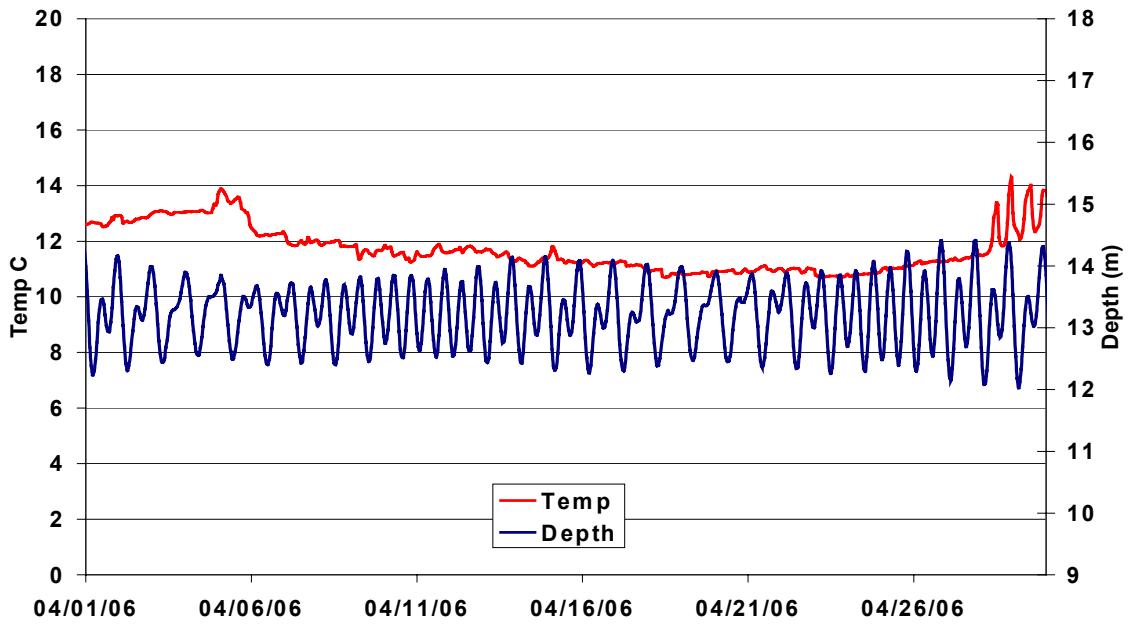
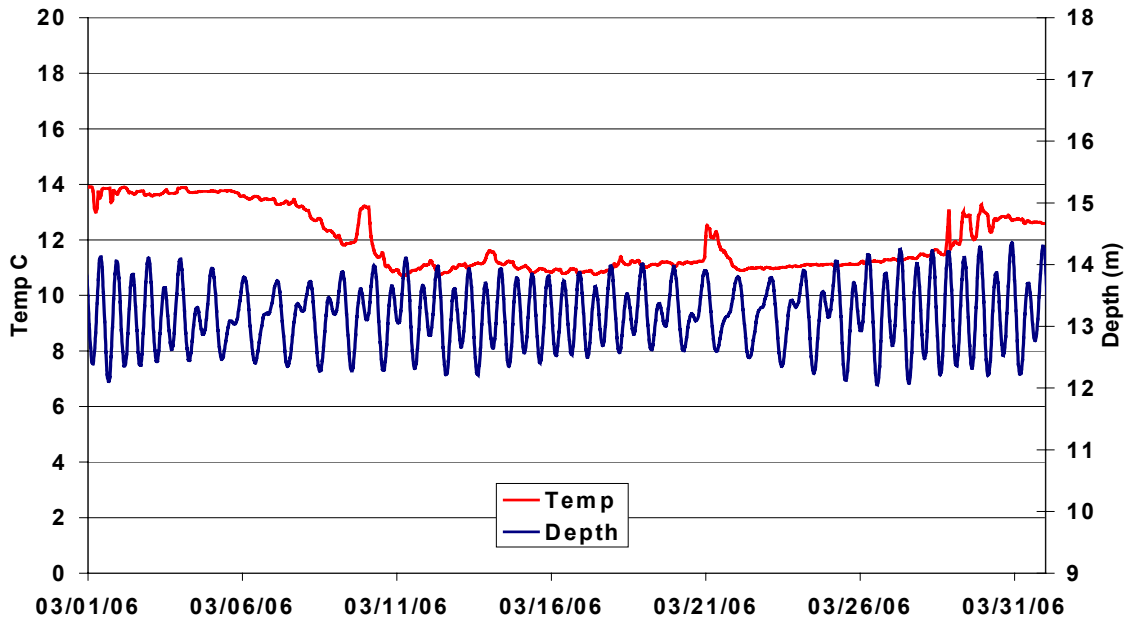


Figure A2-2. Near-bottom temperature and tidal depth from March (top) through April (bottom) 2006 at CM1.

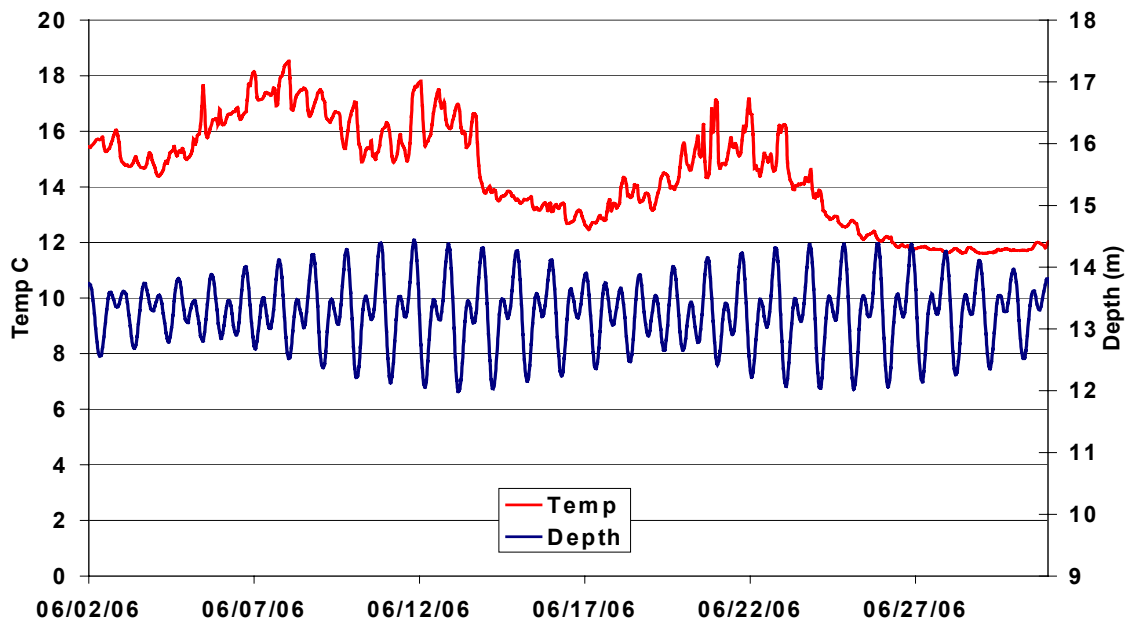
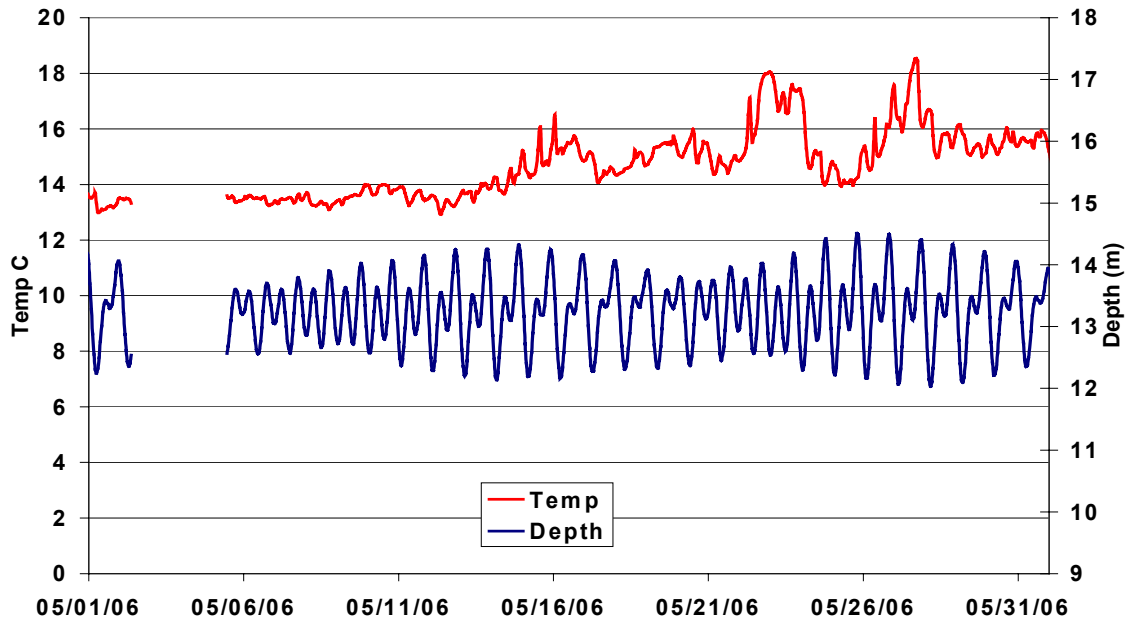


Figure A2-3. Near-bottom temperature and tidal depth from May (top) through June (bottom) 2006 at CM1.



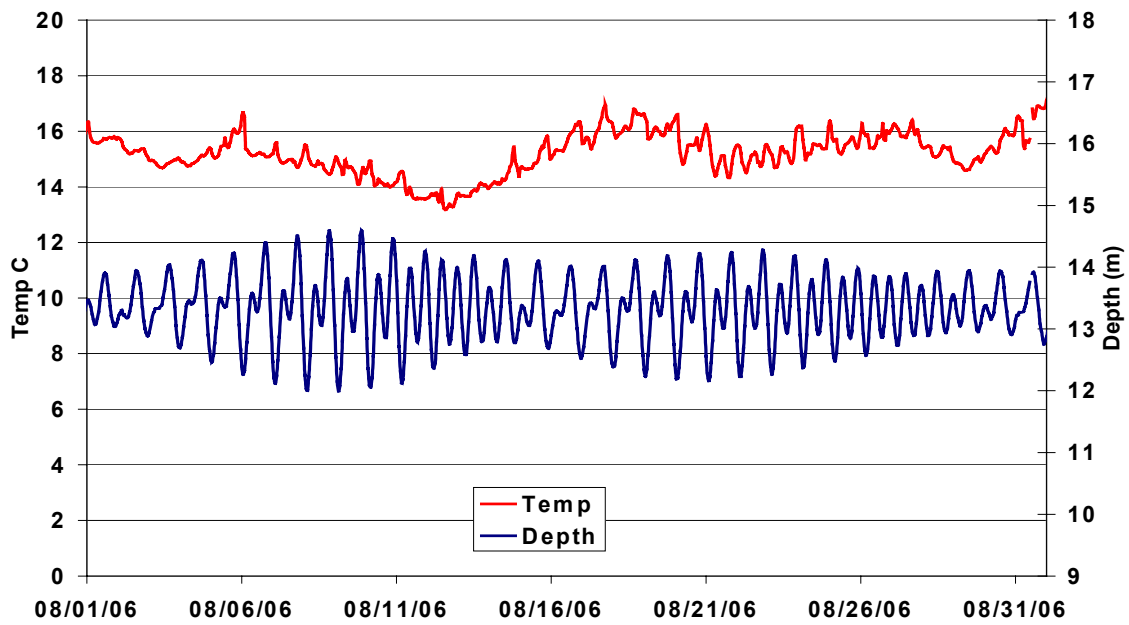
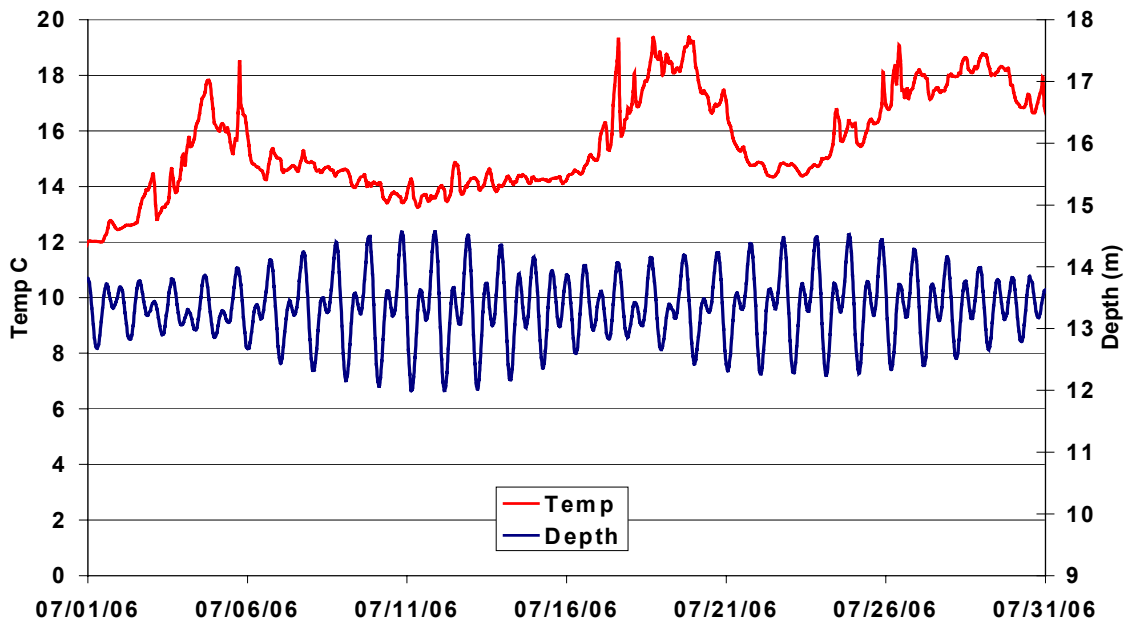


Figure A2-4. Near-bottom temperature and tidal depth from July (top) through August (bottom) 2006 at CM1.

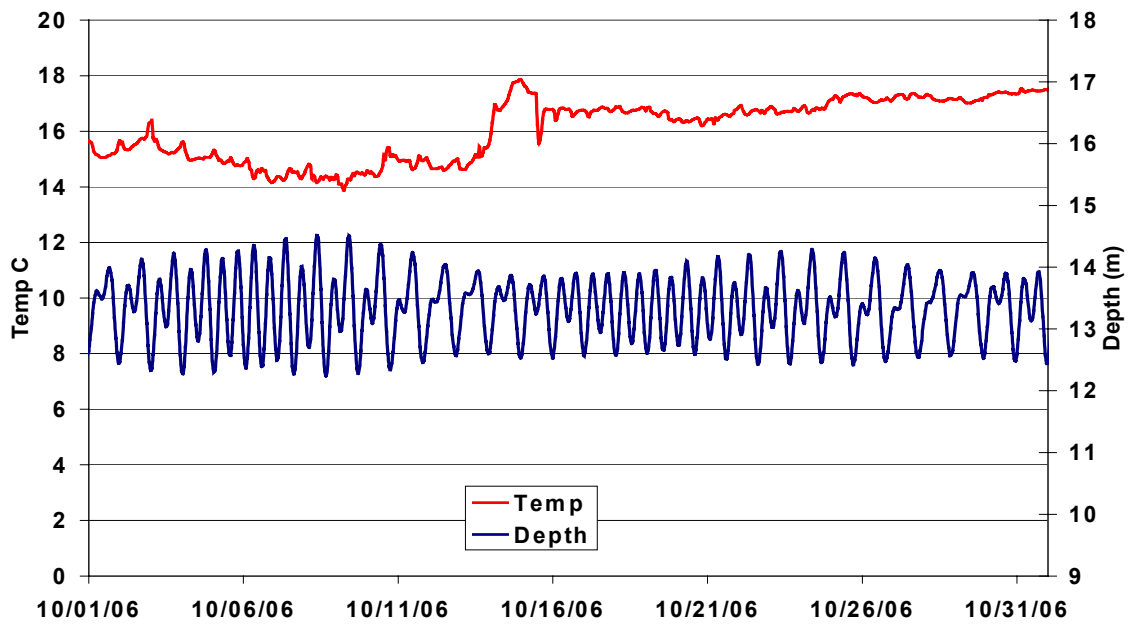
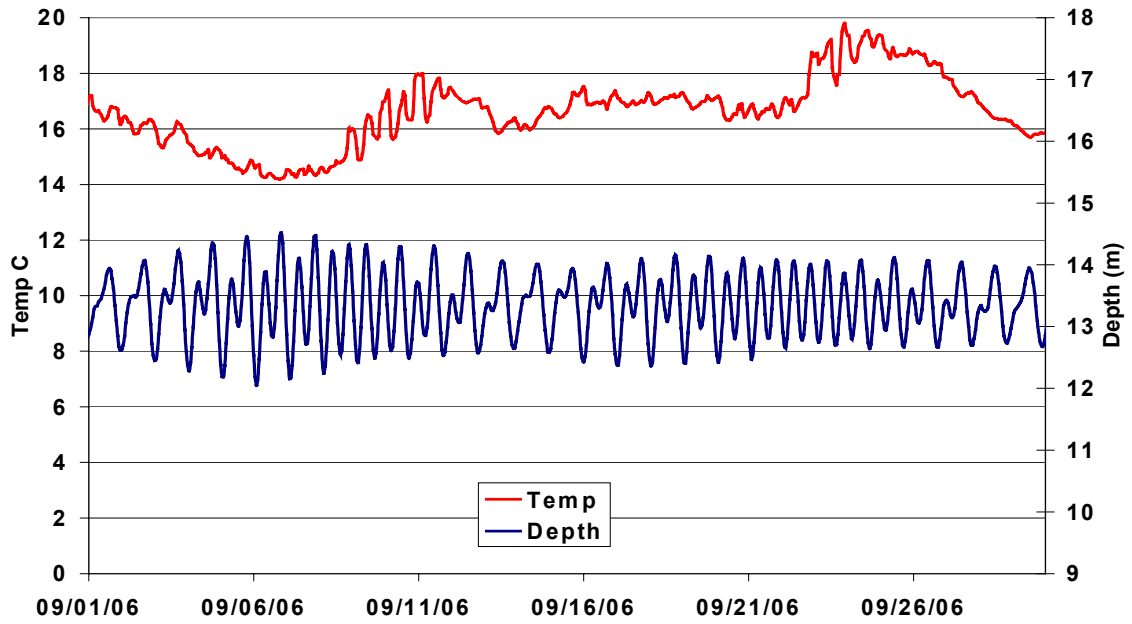


Figure A2-5. Near-bottom temperature and tidal depth from September (top) through October (bottom) 2006 at CM1.

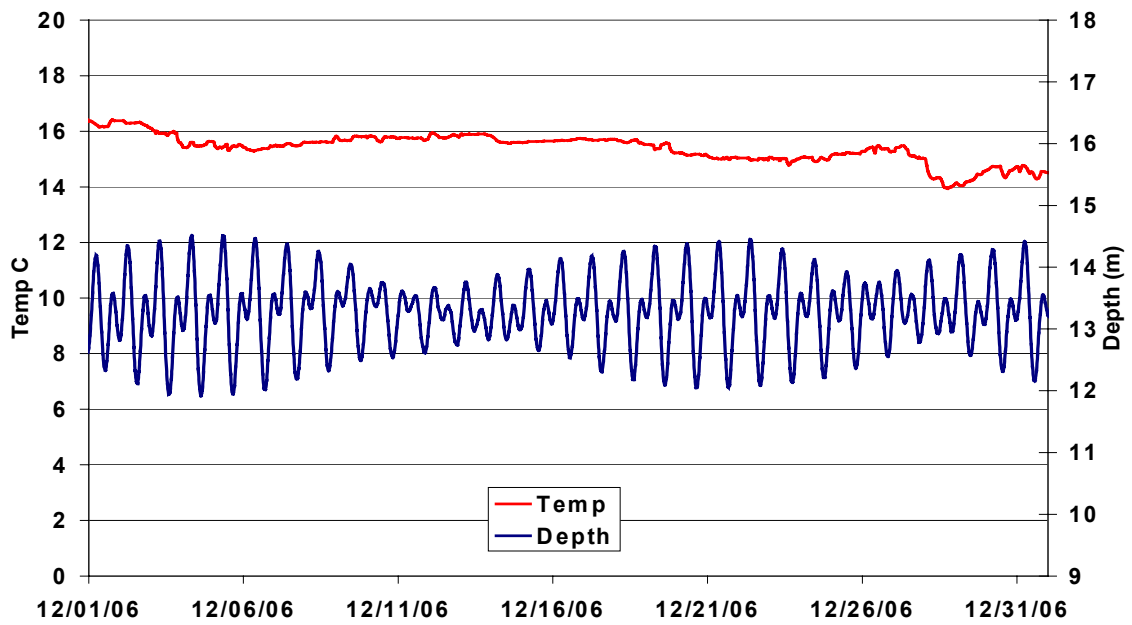
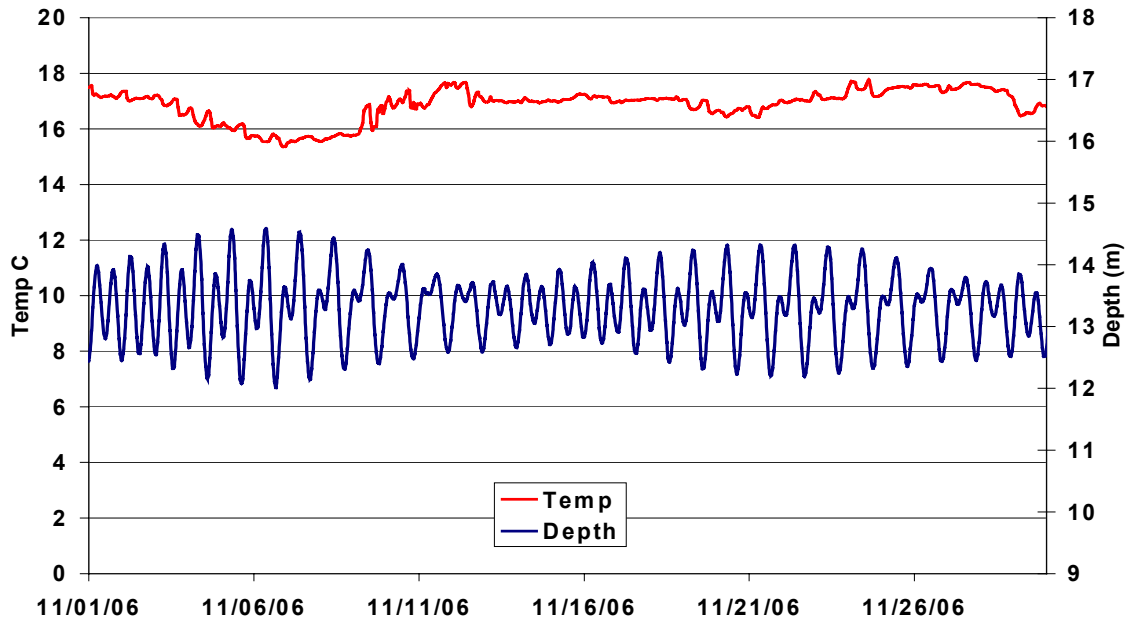


Figure A2-6. Near-bottom temperature and tidal depth from November (top) through December (bottom) 2006 at CM1.

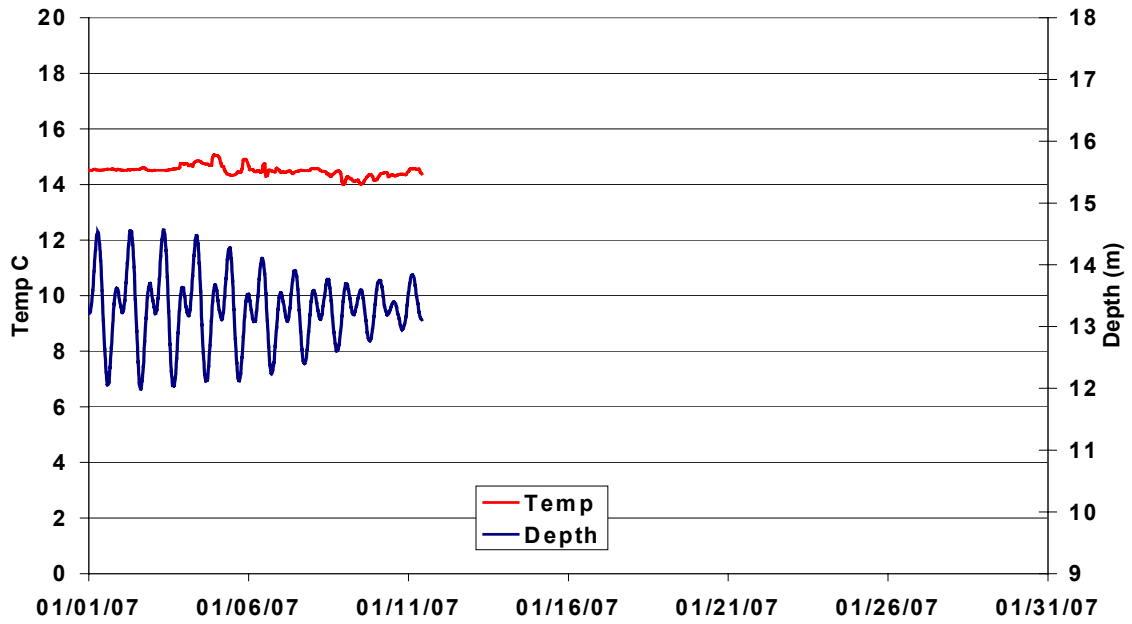


Figure A2-7. Near-bottom temperature and tidal depth during January 2007 at CM1.

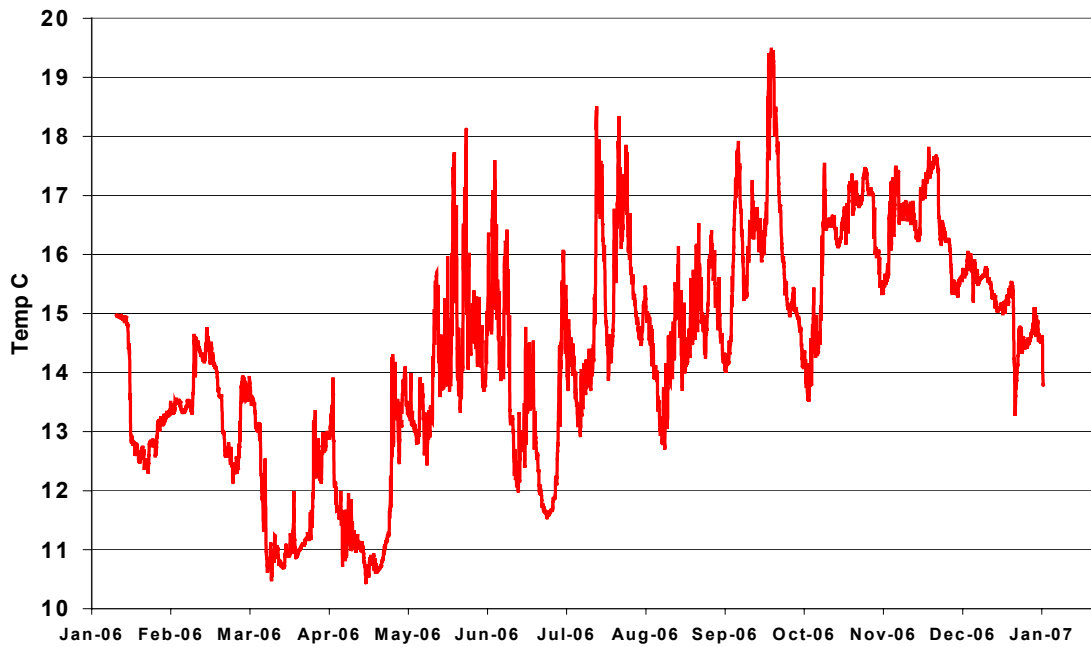


Figure A2-8. Annual temperature January 2006 through January 2007 at CM2.

Table A2-2. Monthly and yearly mean temperatures recorded from January 2006 through January 2007 at CM2.

Month	Mean	Standard Dev	Max	Min
January	13.36	0.90	14.97	12.31
February	13.54	0.68	14.75	12.14
March	11.79	1.07	13.95	10.49
April	11.62	0.97	14.29	10.44
May	14.13	1.10	18.12	12.45
June	13.54	1.38	17.57	11.54
July	14.97	1.48	18.51	11.86
August	14.61	0.76	16.53	12.72
September	16.22	1.31	19.48	14.02
October	15.84	1.16	17.53	13.52
November	16.67	0.61	17.80	15.31
December	15.38	0.54	16.38	13.29
January 07	14.60	0.22	15.08	13.79
<b>Total Year</b>	<b>14.34</b>	<b>1.86</b>	<b>19.48</b>	<b>10.44</b>

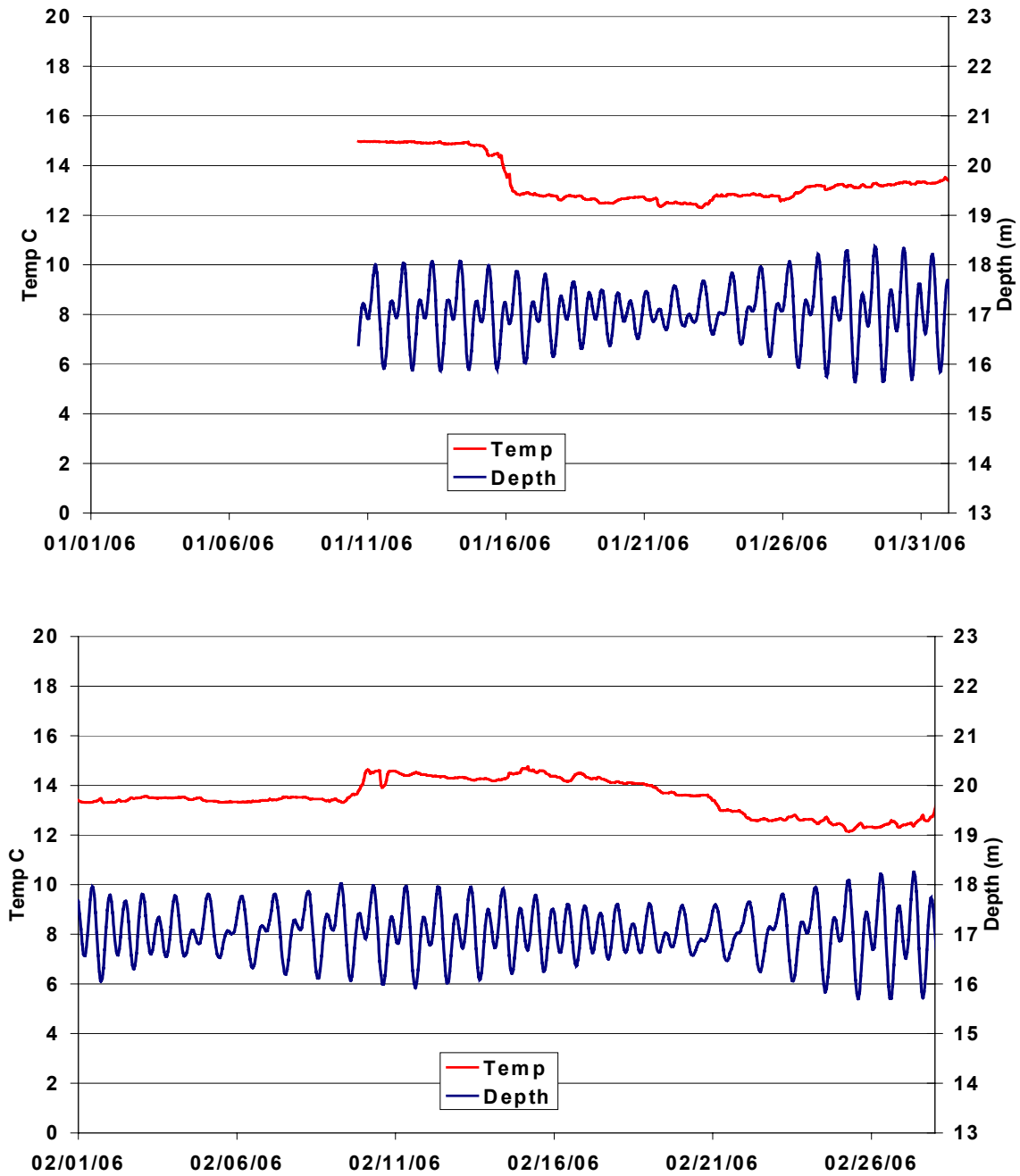


Figure A2-9. Near-bottom temperature and tidal depth from January (top) through February (bottom) 2006 at CM2.

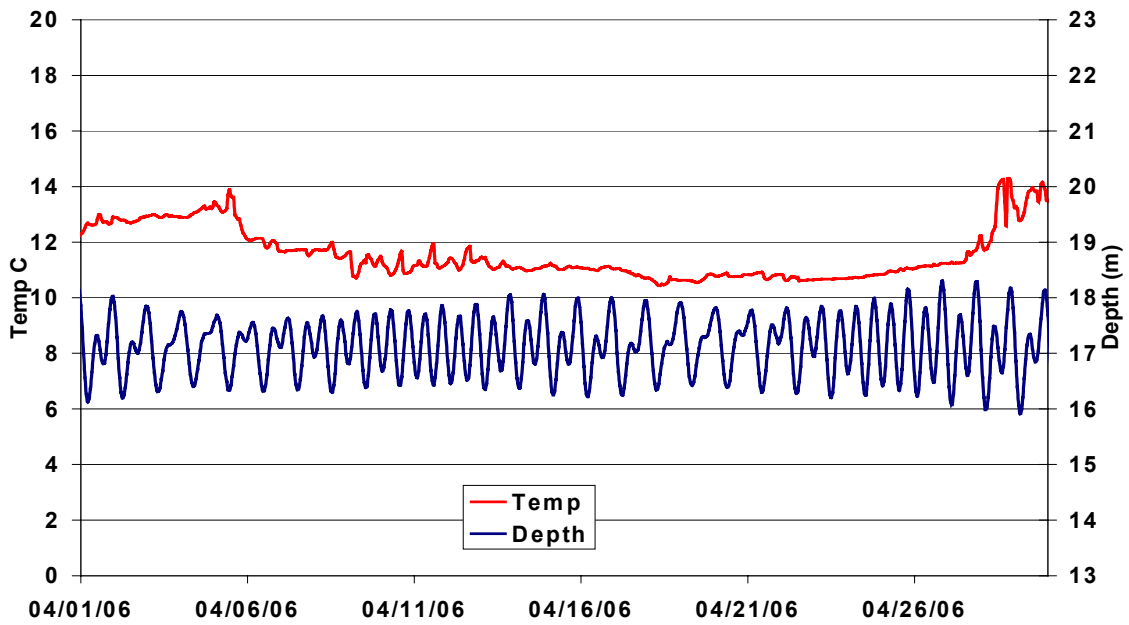
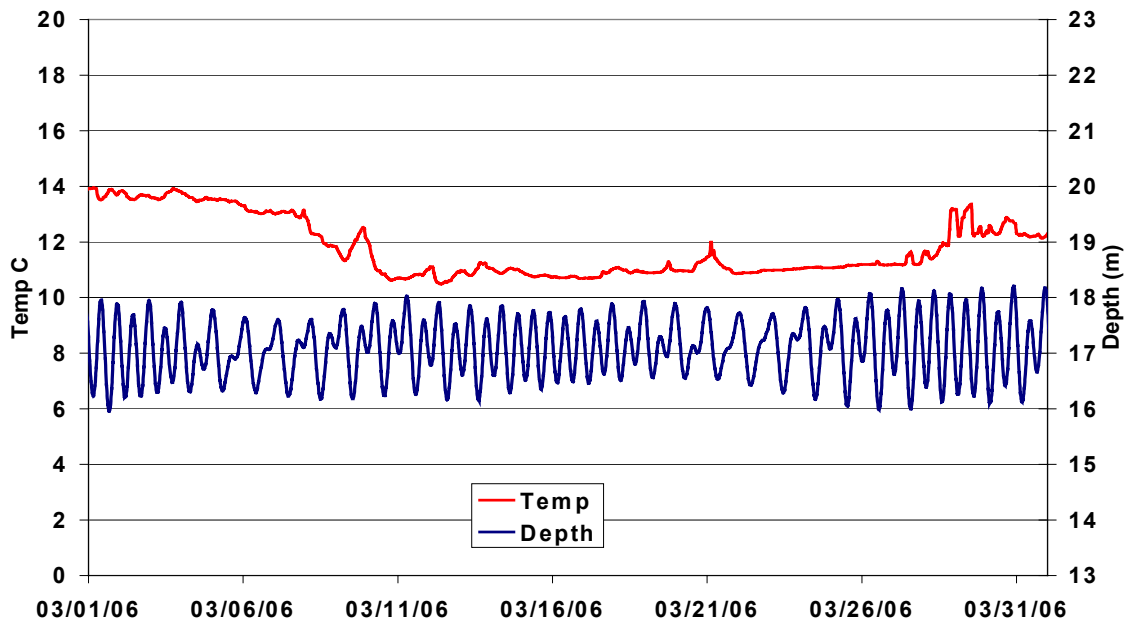


Figure A2-10. Near-bottom temperature and tidal depth from March (top) through April (bottom) 2006 at CM2.

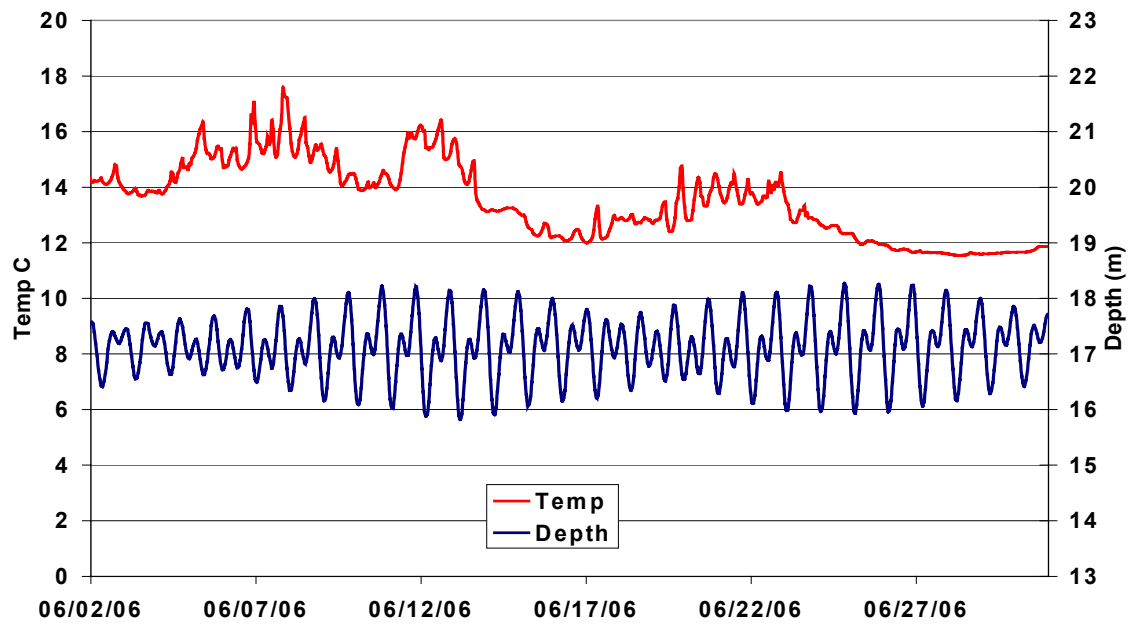
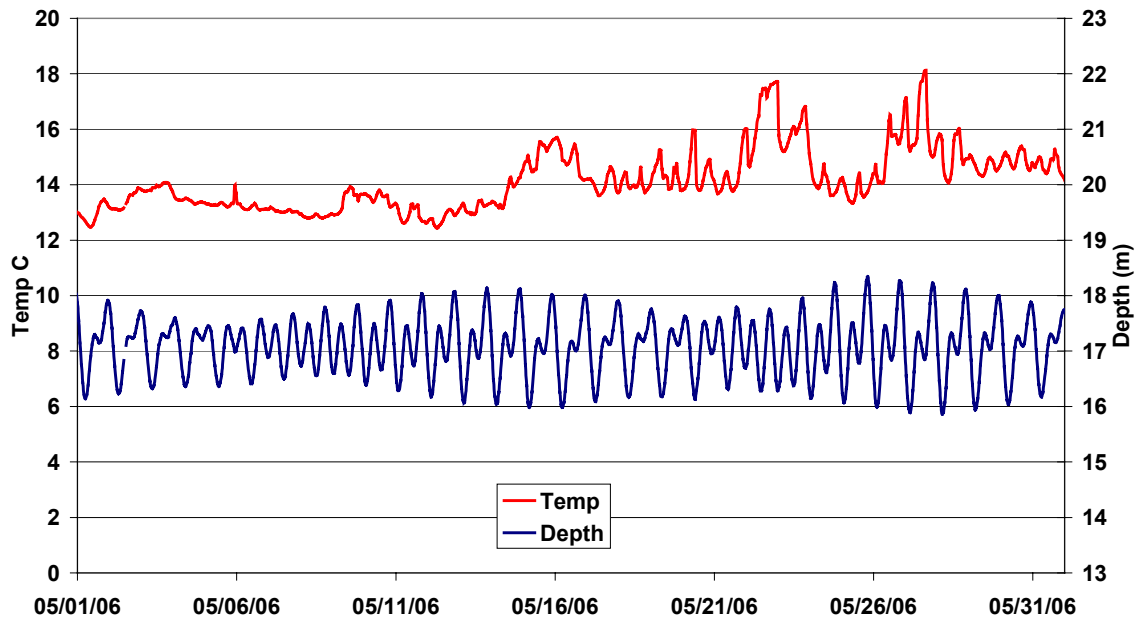


Figure A2-11. Near-bottom temperature and tidal depth from May (top) through June (bottom) 2006 at CM2.



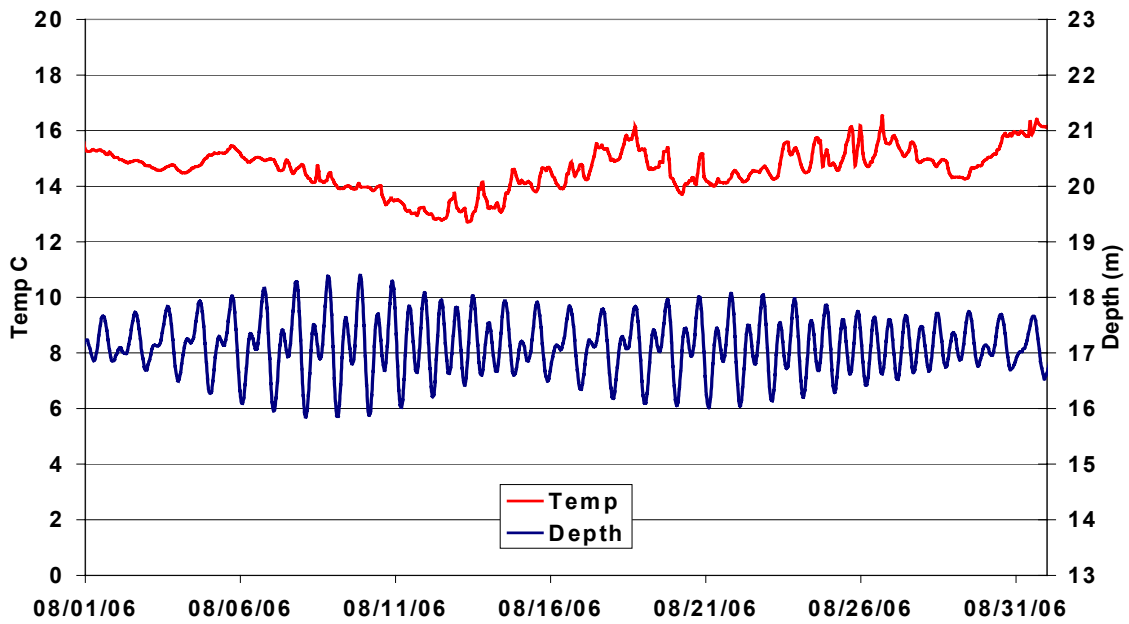
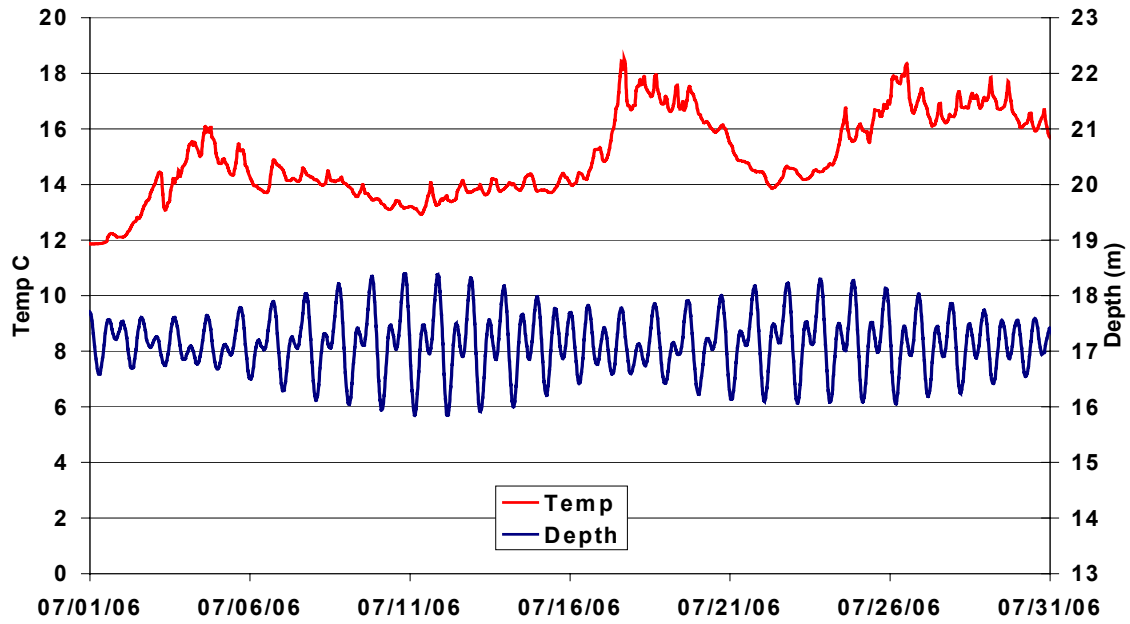


Figure A2-12. Near-bottom temperature and tidal depth from July (top) through August (bottom) 2006 at CM2.

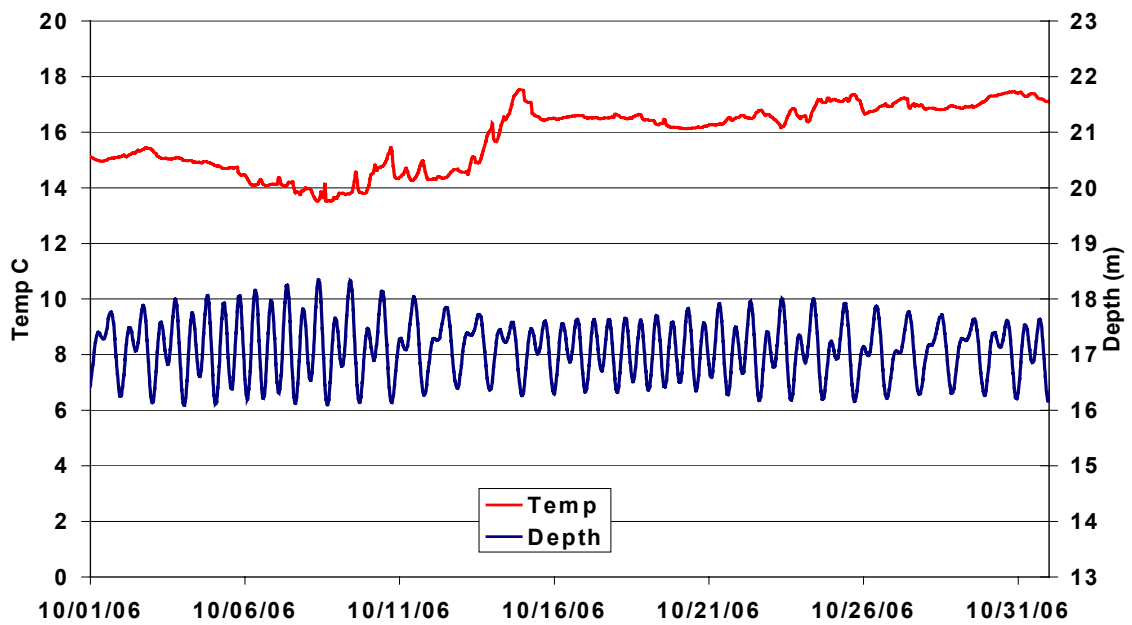
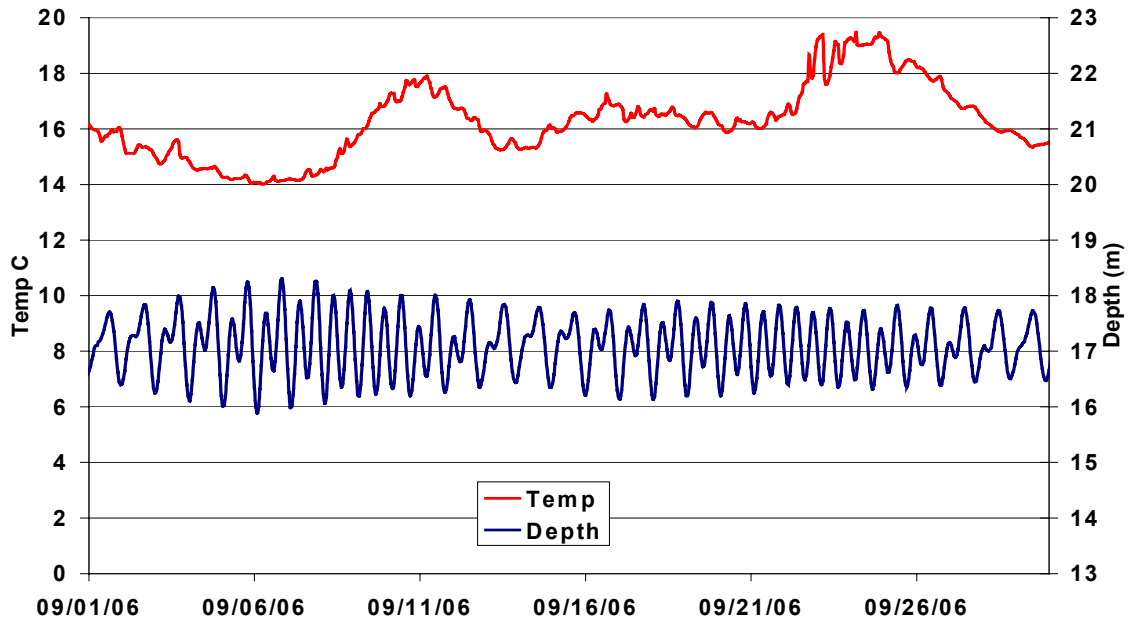


Figure A2-13. Near-bottom temperature and tidal depth from September (top) through October (bottom) 2006 at CM2.

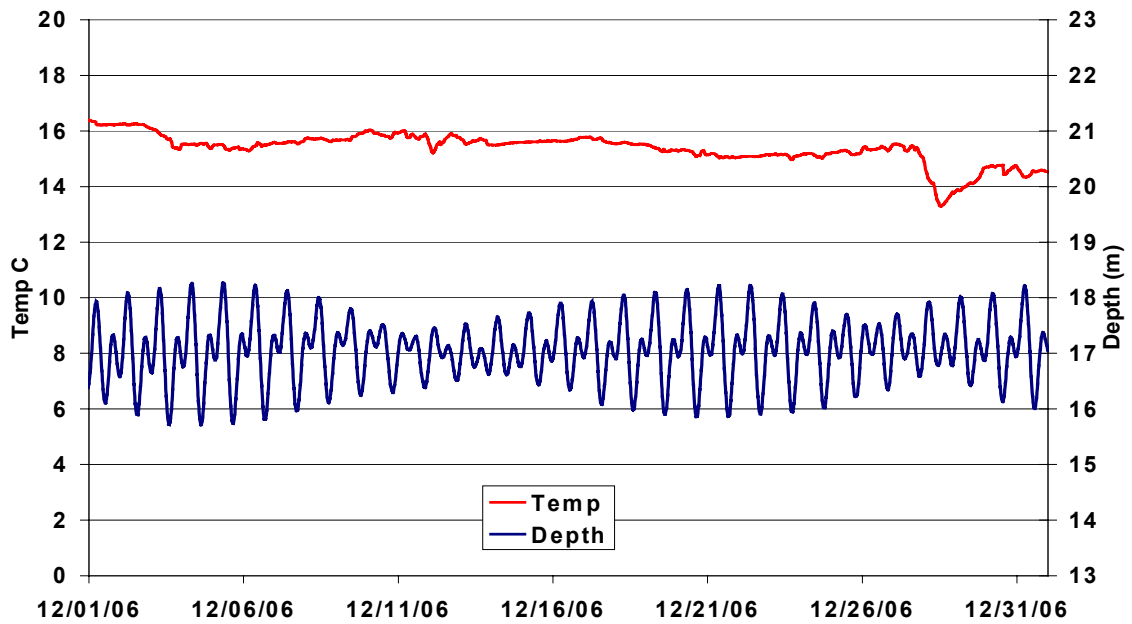
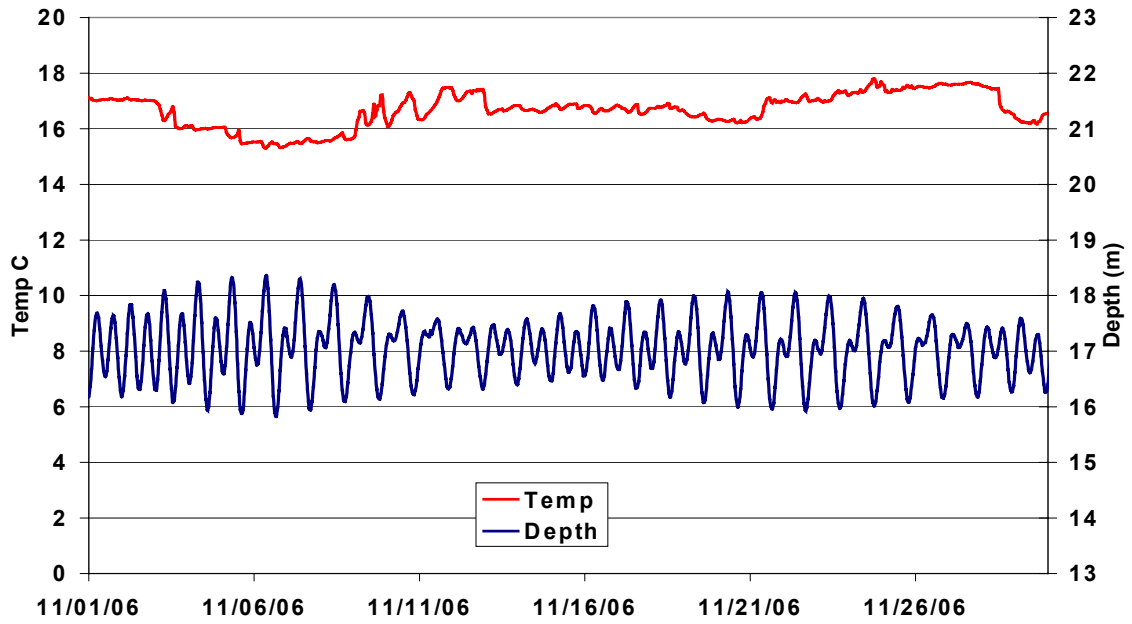


Figure A2-14. Near-bottom temperature and tidal depth from November (top) through December (bottom) 2006 at CM2.

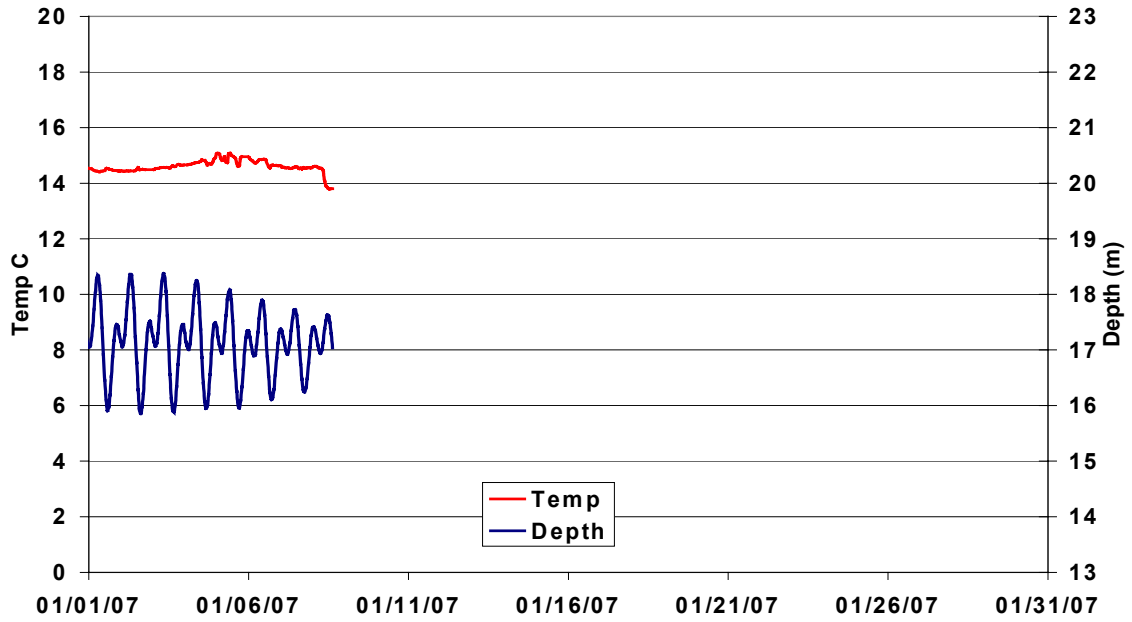


Figure A2-15. Near-bottom temperature and tidal depth during January 2007 at CM2.