Analysis of Physical Oceanographic Data from Trinity Bay, May – August 2001

Derek P. Tittensor, Richard Naud, Brad deYoung and Jack Foley

Abstract

Trinity Bay is a northward facing embayment of the Avalon peninsula, Newfoundland. A cruise was carried out in this region during May 2001 with the intention of quantifying local physical oceanographic features. Sixteen moorings were deployed to record current velocity and temperature from May to August 2001. All of the moorings included thermistors to measure water temperature. Ten moorings contained S4 and RCM current meters, and three had Acoustic Doppler Current Profilers (ADCP's). A seventeenth mooring was placed in the region for July and August, containing two RCM current meters. We present plots of the raw data, statistical analyses, and information on quality control processes.

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Introduction

Knowledge of the circulation patterns and temperature of a bay can be important

for determining a number of processes – residence time of pollutants or passively drifting

organisms, or temperature dependent growth rates of organisms for example. We are

interested in the distribution of fish eggs and how to sample them in Trinity Bay. In

particular, we would like to understand the role of the circulation in altering the egg

distribution. The deployment of seventeen moorings in 2001 provided data on physical

processes in the bay. This work follows on from preliminary efforts in the summer of

2000 (Schillinger *et al*., 2000).

Sixteen of the moorings were deployed from late May (21-23rd) 2001, and

retrieved in late August (21-22nd) 2001, for a total residence time of around 90 days (all

times in GMT). One mooring was deployed from the July 7th to August 31st, 2001. The

data that were gathered from these locations were cleaned up with a quality control

process, statistically analyzed, and plottted. The results of this study are presented in the

following pages. Moorings M1 and M2, and M5 to M12 had both RCM and S4 current

meters attached, along with thermistors. M3, M4 and M13 had Acoustic Doppler Current

Profiles (ADCP's) and thermistors. Mooring M14 had two RCM current meters. T1 to T3

were chains of thermistors. The location of the moorings are shown in Figure 1, with

further details in Table 1.

Data processing

S4 and RCM current meter data were first processed by visual observation and removal of large peaks or 'spikes' that were obviously artifacts (due to readings during assembly or descent/ascent into position, or instrumentation problems). Any missing data within the time series were linearly interpolated from surrounding points. Velocity data were then separated into u and v components and plotted, along with salinity and temperature. The RCM data from mooring M1 were lost, along with S4 data from mooring M6 and M9 due to power failure. Moorings M5, M8, M9 and M11 had flawed readings from the salinity sensors. Moorings M2 - M4, M7, M10, M12, M13 and M14 had all instrumentation working without problems. ADCP data followed a similar procedure with any artifacts removed and interpolated where identified. Peaks were removed by visual analysis, or if backscatter intensity was low. Velocity was then decomposed into u and v components and plotted, along with the backscatter. Statistical data for temperature, salinity and component velocities were calculated and tabulated (mean, minimum, maximum and variance). Data from the ADCPs had a sample period of one hour; the sampling period was 20 minutes for the S4, RCM and temperature meters.

The mean current speed and direction were calculated for weekly intervals, beginning on day 142. The weekly and overall mean current flows at (nominal) depths of 20 and 50 metres were plotted as vector arrows.

The raw temperature data were plotted as horizontal contour maps for (nominal) depths of 15, 30, 50 and 100 metres, utilising linear interpolation for locations between the moorings. The data were then processed using a 5th order forward-and-reverse Butterworth low pass digital filter with a cut-off frequency of 30 hours in order to remove high-frequency variability. These filtered data were linearly interpolated into 1 metre depth bins between the minimum and maximum vertical extent, and isotherms were plotted over the time-span of the moorings.

Current meter data from M1 to M4 was plotted along a transect to determine inflow/outflow for the region. The bottom topography was calculated from Canadian Hydrographic Service charts numbers L/C 4850 and 4851, by visually identifying forty-eight points along the transect, deriving their approximate depths from the chart, and then interpolating using the cubic spline method. The u and v velocity components were then converted to a coordinate system with the u component orthogonal to the transect line, and outward flow from the bay being positive. This velocity component was then linearly interpolated on the transect between the current meters and ADCP depth bins and plotted. M02 and M03 did not lie exactly on the transect; they were considered to be located at the nearest point on the line.

Wind data for 2001 were analysed and plotted (as wind stress) for three locations: Gander, St. John's and Bonavista. The data had a sample period of one hour. Wind stress was calculated following the formulae of and Large & Pond (1982). Missing data were linearly interpolated, and the hourly wind stress was plotted together with Butterworth

filtered (30 hour cut-off) data. After comparing the three locations, the wind data from Bonavista was selected for plotting (as wind velocity) on the current velocity plots. The wind stress at Bonavista, where the observation site is on the coast, is much greater than at either St. John's or Gander.

Empirical Orthogonal Function (EOF) analysis was performed on current velocity data in the spatial domain for moorings M1 to M13 at 20 and 50 metres. Moorings with ADCP instruments used the average velocity of 18 and 22 metres for the 20 metre analysis. The first four EOF components accounted for 72.4% of the variance at 20 metres, and 68.5% of the variance at 50 metres. The eigenmode time-series were filtered using a fifth order forward-and-reverse Butterworth low pass digital filter, with a cut-off period of 30 hours, and plotted.

References

Large, W. G., and Pond, S., 1981. Open ocean momentum flux measurements in moderate to strong winds. *J. Phys. Oceanogr.*, **11**: 324-336.

Schillinger, D. J., deYoung, B., and Foley, J., 2000. Physical and biological tow-yo data from Trinity Bay, July 2000. *Physics and physical oceanography data report 2000-4*. Department of Physics and Physical Oceanography, Memorial University of Newfoundland.

Table 1: Location of 2001 Trinity Bay moorings

Mooring	Latitude (ºN)	Longitude (ºW)	Depth of current meters	Water depth	Date in (2001)	Date out (2001)
M1	48 06.067	53 31.625	S4 – 21.5m RCM – 51.5m	202m	23 May	22 August
M2	48 05.178	53 28.061	S4 – 23m RCM – 53m	144m	23 May	22 August
M3	48 04.830	53 24.530	ADCP – 105m	240m	21 May	22 August
M4	48 03.590	53 17.980	ADCP – 101m	244m	21 May	22 August
M5	48 03.870	53 35.102	S4 – 21m RCM – 51m	251m	23 May	22 August
M6	48 02.777	53 30.135	RCM – 50m	324m	23 May	22 August
M7	48 02.230	53 27.010	S4 – 33m RCM – 63m	211m	21 May	22 August
M8	47 59.369	53 36.731	S4 – 20m RCM – 50m	120m	23 May	22 August
M9	47 58.389	53 32.426	RCM – 50m	110m	23 May	22 August
M10	47 57.670	53 28.939	S4 – 19m RCM – 49m	219m	23 May	22 August
M11	47 56.396	53 38.294	S4 – 20m RCM – 50m	132m	22 May	22 August
M12	47 55.605	53 35.948	S4 – 21m RCM – 51m	135m	22 May	22 August
M13	47 54.680	53 31.740	ADCP – 100m	301m	21 May	21 August
M14	47 40.392	53 46.018	RCM – 10m RCM – 20m	65m	7 July	31 August
T1	47 53.658	53 40.351		145m	22 May	22 August
T2	47 53.014	53 36.879		207m	22 May	22 August
T3	47 51.124	53 40.807		129m	22 May	22 August

Table 2: Summary of current velocities from S4 and RCM meters

Mooring	Depth (m)	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})
M1	21.5	u	-1.92	4.46
		v	-5.37	7.78
M1	51.5	u	-0.40	1.16
		v	-0.19	1.16
M2	23	u	-1.30	5.33
		v	-4.84	6.61
M2	53	u	-0.20	3.29
		v	-1.86	3.81
M5	21	u	-2.56	8.32
		v	0.01	4.46
	51	u	-0.31	4.76
		v	-0.06	2.32
M6	50	u	-0.32	1.10
		v	-0.51	1.33
M7	33	u	-1.40	3.65
		v	-2.10	3.89
	63	u	-1.21	3.09
		v	-0.77	2.69
M8	20	u	-3.65	5.52
		v	-7.03	10.23
	50	u	-1.03	2.81
		v	-1.68	4.09
M9	49	u	-0.39	3.43
		v	-0.53	4.67
M10	19	u	1.14	5.57
		v	-0.07	6.40
	49	u	0.83	2.94
		v	0.14	2.75
M11	20	u	-3.37	5.73
		v	-7.55	9.67
	50	u	-0.54	2.17
		v	-2.19	4.31
M12	21	u	-1.91	7.39
		v	-4.89	10.67
	51	u	-1.18	2.75
		v	-1.89	4.44
M14	10	u	0.29	4.83
		v	-1.62	3.37
	20	u	-0.27	6.62
		v	-2.55	5.53

Table 3: Summary of current velocities from ADCP instrument on mooring M3

Depth (m)	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})
18	u	-0.94	9.79	v	-2.66	9.03
22	u	-1.67	6.98	v	-2.18	7.01
26	u	-1.45	5.80	v	-2.37	5.80
30	u	-0.95	5.06	v	-2.41	5.05
34	u	-0.53	4.46	v	-2.33	4.45
38	u	-0.12	4.03	v	-2.13	4.04
42	u	0.16	3.73	v	-2.04	3.87
46	u	0.32	3.65	v	-2.08	3.95
50	u	0.53	3.62	v	-2.17	4.09
54	u	0.77	3.82	v	-2.45	4.42
58	u	0.88	3.96	v	-2.59	4.56
62	u	0.96	3.92	v	-2.51	4.55
66	u	0.97	3.86	v	-2.36	4.48
70	u	1.04	3.81	v	-2.17	4.38
74	u	1.22	3.81	v	-2.07	4.35
78	u	1.38	3.82	v	-1.98	4.36
82	u	1.44	3.83	v	-1.85	4.35
86	u	1.51	3.81	v	-1.72	4.27
90	u	1.64	3.75	v	-1.51	4.19
94	u	1.74	3.66	v	-1.33	4.11

Table 4: Summary of current velocities from ADCP instrument on mooring M4

Depth (m)	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})
14	u	7.53	10.14	v	8.20	10.57
18	u	5.67	9.25	v	7.88	9.07
22	u	4.62	7.51	v	7.43	10.75
26	u	4.24	6.80	v	6.04	8.41
30	u	3.84	6.27	v	5.03	7.26
34	u	3.33	5.64	v	4.05	6.60
38	u	2.88	5.31	v	3.33	5.92
42	u	2.55	5.10	v	2.75	5.54
46	u	2.37	5.07	v	2.37	5.29
50	u	2.18	5.07	v	2.13	5.11
54	u	2.16	5.35	v	2.06	5.41
58	u	2.13	5.41	v	1.97	5.59
62	u	2.03	5.36	v	1.90	5.53
66	u	1.91	5.33	v	1.86	5.50
70	u	1.81	5.26	v	1.85	5.53
74	u	1.74	5.21	v	1.85	5.58
78	u	1.73	5.15	v	1.89	5.59
82	u	1.72	5.11	v	1.93	5.62
86	u	1.71	5.05	v	1.96	5.63
90	u	1.62	4.99	v	2.01	5.67
94	u	1.54	4.92	v	2.08	5.68

Table 5: Summary of current velocities from ADCP instrument on mooring M13

Depth (m)	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})	Component	Mean (cm s^{-1})	Std. dev. (cm s^{-1})
14	u	1.34	9.14	v	1.48	7.76
18	u	0.11	7.85	v	0.79	6.82
22	u	-1.16	6.63	v	0.66	6.14
26	u	-1.60	5.86	v	0.72	5.54
30	u	-2.02	5.86	v	0.59	5.15
34	u	-2.21	5.69	v	0.71	4.77
38	u	-2.22	5.45	v	0.63	4.31
42	u	-2.25	5.40	v	0.65	4.04
46	u	-2.31	5.45	v	0.66	3.88
50	u	-2.35	5.48	v	0.61	3.85
54	u	-2.60	5.63	v	0.60	3.95
58	u	-2.72	5.54	v	0.64	3.88
62	u	-2.67	5.42	v	0.63	3.69
66	u	-2.59	5.29	v	0.68	3.51
70	u	-2.45	5.21	v	0.77	3.43
74	u	-2.27	5.20	v	0.79	3.39
78	u	-2.13	5.10	v	0.76	3.38
82	u	-2.06	5.03	v	0.77	3.42
86	u	-1.99	4.92	v	0.79	3.49
90	u	-1.96	4.81	v	0.84	3.50
94	u	1.54	4.92	v	2.08	5.68

Table 6: Weekly mean current heading and magnitude at mooring M1. All velocity components are in cm s^{-1}.

Week	Days	21.5m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.93	10.53	0.03	11.60	13.40	271.65
2	149-155	-0.19	3.48	-0.21	3.47	4.34	222.03
3	156-162	-0.41	4.47	0.20	4.49	5.11	295.75
4	163-169	0.36	7.12	-0.03	7.91	8.57	94.74
5	170-176	-0.02	4.25	0.00	4.31	4.95	273.64
6	177-183	-0.18	13.91	-0.50	12.93	16.07	199.44
7	184-190	0.05	2.78	0.01	2.73	3.28	73.62
8	191-197	-0.29	6.30	0.12	6.29	7.52	291.80
9	198-204	0.36	6.40	0.24	7.17	8.19	55.68
10	205-211	0.07	5.72	-0.14	6.04	6.85	152.89
11	212-218	0.20	5.40	-0.05	5.76	6.93	102.76
12	219-225	-0.19	10.48	-0.58	10.21	11.63	198.35
13	226-232	-0.41	8.17	0.43	8.29	9.65	316.37
Mean		-0.11	7.46	-0.04	7.57	8.15	248.69

Table 7: Weekly mean current heading and magnitude at mooring M2. All velocity components are in cm s^{-1}.

Week	Days	21.5m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.16	16.16	-0.39	14.20	19.53	156.92
2	149-155	-0.12	7.36	0.34	6.95	9.42	340.73
3	156-162	-0.11	4.53	-0.09	4.23	5.48	232.13
4	163-169	0.34	4.07	0.17	4.15	4.94	63.24
5	170-176	0.16	4.21	-0.13	4.18	5.19	129.20
6	177-183	0.15	6.80	0.21	6.46	8.09	35.47
7	184-190	0.06	2.67	-0.17	2.63	3.28	160.96
8	191-197	0.11	2.85	0.20	2.72	3.20	27.62
9	198-204	0.23	3.41	0.00	3.50	4.13	88.97
10	205-211	-0.01	5.54	-0.14	5.52	7.42	185.93
11	212-218	-0.02	6.46	0.04	6.14	7.97	337.68
12	219-225	-0.19	5.20	-0.06	4.91	6.18	253.63
13	226-232	0.30	11.98	0.12	11.73	16.11	68.62
Mean		0.08	7.18	0.02	6.76	7.72	74.57

Week	Days	51.5m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.10	7.77	-0.25	7.54	9.54	202.02
2	149-155	0.06	5.35	0.07	5.29	6.43	38.75
3	156-162	0.07	2.72	0.04	2.61	3.21	62.44
4	163-169	-0.08	3.82	0.34	3.89	4.65	346.27
5	170-176	-0.12	2.89	0.26	2.95	3.54	335.51
6	177-183	0.01	1.71	0.03	1.66	2.23	15.25
7	184-190	-0.03	2.63	-0.02	2.57	2.97	244.00
8	191-197	-0.02	1.69	0.00	1.61	2.24	283.15
9	198-204	-0.19	3.34	-0.11	3.30	3.74	240.45
10	205-211	-0.44	4.41	-0.14	4.49	5.76	252.16
11	212-218	-0.06	3.75	-0.19	3.63	4.74	198.85
12	219-225	-0.09	3.19	0.02	3.25	4.00	280.77
13	226-232	-0.18	2.69	0.14	2.85	3.25	308.08
Mean		-0.09	3.81	0.02	3.77	4.28	279.93

Table 8: Weekly mean current heading and magnitude at mooring M3. All velocity components are in cm s^{-1}.

Week	Days	22m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.31	7.27	0.63	6.19	8.52	334.20
2	149-155	2.54	8.52	-5.50	5.61	10.25	155.22
3	156-162	-3.21	6.88	2.74	7.64	9.65	310.57
4	163-169	-0.29	4.50	0.37	5.37	6.30	321.83
5	170-176	2.57	6.65	-2.58	5.90	8.54	135.09
6	177-183	-6.35	5.47	-5.71	6.01	10.24	228.02
7	184-190	2.60	5.77	1.97	4.69	7.42	52.91
8	191-197	-6.31	7.47	-1.17	7.99	11.32	259.50
9	198-204	-2.19	6.61	-0.52	6.09	8.13	256.67
10	205-211	-1.62	5.77	-4.52	4.90	8.28	199.74
11	212-218	-0.92	5.84	-3.84	6.88	9.00	193.44
12	219-225	-2.25	5.63	-1.46	6.17	7.44	237.00
13	226-232	-5.51	5.03	-9.77	5.66	12.35	209.44
Mean		-1.67	6.98	-2.18	7.01	9.00	217.55

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.78	3.22	-4.13	4.38	6.00	190.76
2	149-155	2.06	3.46	-4.77	4.72	6.87	156.64
3	156-162	0.70	3.65	-0.08	3.78	4.48	96.58
4	163-169	1.29	4.92	-4.76	5.94	7.37	164.81
5	170-176	4.40	4.07	-6.62	3.61	8.91	146.36
6	177-183	0.37	2.57	-1.30	2.58	3.31	164.10
7	184-190	1.23	2.07	-0.22	2.26	2.95	100.07
8	191-197	0.31	2.22	-0.04	1.98	2.60	97.23
9	198-204	-1.02	2.83	-1.91	2.82	3.98	208.20
10	205-211	1.80	2.05	-4.06	2.79	5.18	156.10
11	212-218	0.94	2.51	-0.76	1.92	3.01	129.02
12	219-225	-2.21	2.90	0.06	2.44	3.60	271.57
13	226-232	-1.33	3.96	-0.54	2.97	4.10	247.92
Mean		0.53	3.62	-2.17	4.09	4.79	166.34

Table 9: Weekly mean current heading and magnitude at mooring M4. All velocity components are in cm s^{-1}.

Week	Days	22m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	9.43	6.29	16.28	6.14	19.43	30.08
2	149-155	6.69	9.02	7.85	11.03	14.06	40.43
3	156-162	3.84	8.47	6.62	7.34	11.11	30.10
4	163-169	2.45	8.01	5.15	7.79	11.54	25.39
5	170-176	6.41	5.06	4.96	5.15	9.76	52.30
6	177-183	4.04	4.73	5.30	5.41	8.40	37.29
7	184-190	-0.23	7.26	3.46	9.13	10.93	356.16
8	191-197	-0.56	6.42	2.95	7.69	8.85	349.32
9	198-204	1.71	9.18	1.83	9.85	11.72	43.14
10	205-211	3.11	4.97	10.95	24.43	14.76	15.88
11	212-218	8.32	4.86	9.11	4.23	12.77	42.42
12	219-225	2.94	5.24	5.28	5.09	7.83	29.14
13	226-232	11.36	4.95	14.84	7.74	19.09	37.43
Mean		4.62	7.51	7.43	10.75	12.43	31.85

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	3.60	2.95	5.49	3.93	7.10	33.22
2	149-155	0.38	3.37	0.78	3.79	4.61	25.64
3	156-162	-0.68	5.33	-2.14	5.27	6.92	197.51
4	163-169	0.20	6.51	1.52	6.83	8.35	7.36
5	170-176	6.75	4.22	3.86	3.62	8.40	60.23
6	177-183	5.43	3.44	4.32	4.01	8.15	51.54
7	184-190	-2.68	3.02	-4.29	3.95	6.51	212.02
8	191-197	0.83	3.13	0.88	3.44	4.00	43.15
9	198-204	0.17	3.15	-0.93	2.60	3.66	169.43
10	205-211	4.98	3.27	3.66	3.78	7.32	53.64
11	212-218	3.40	4.50	3.69	3.81	7.21	42.65
12	219-225	0.13	6.15	3.11	3.25	6.95	2.36
13	226-232	5.92	4.04	7.58	3.50	10.18	37.98
Mean		2.18	5.07	2.13	5.11	6.82	45.75

Table 10: Weekly mean current heading and magnitude at mooring M5. All velocity components are in cm s^{-1}.

		21m					
Week	Days	Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.16	5.74	0.26	6.04	6.79	31.91
2	149-155	-0.04	4.64	0.16	4.59	5.48	347.41
3	156-162	0.16	4.93	0.19	4.83	5.77	39.79
4	163-169	0.02	5.10	-0.16	5.31	6.32	173.90
5	170-176	-0.08	5.33	0.17	5.19	6.23	334.32
6	177-183	-0.27	10.27	0.49	10.97	11.36	331.38
7	184-190	-0.06	4.97	0.04	4.66	5.90	302.00
8	191-197	-0.61	9.11	1.27	8.71	9.84	334.30
9	198-204	-0.12	6.55	-0.49	6.54	7.24	194.25
10	205-211	-0.09	6.75	0.23	7.19	8.10	338.96
11	212-218	0.35	5.95	0.44	5.90	7.14	38.49
12	219-225	-0.82	9.87	-1.02	9.68	10.78	218.70
13	226-232	-0.26	6.83	-0.06	7.17	8.42	256.31
Mean		-0.14	6.87	0.11	6.95	7.63	309.95

		51m					
Week	Days	Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.40	6.20	0.58	6.19	7.24	34.88
2	149-155	0.06	3.33	0.00	3.29	4.24	92.06
3	156-162	0.05	3.73	0.07	3.54	4.41	38.22
4	163-169	0.09	3.82	-0.25	3.90	4.98	159.64
5	170-176	-0.01	2.18	0.05	2.11	2.84	346.30
6	177-183	0.08	4.08	0.00	4.13	5.07	87.90
7	184-190	-0.01	2.03	0.07	1.97	2.49	349.89
8	191-197	0.22	3.13	0.07	2.80	3.93	71.13
9	198-204	0.23	2.89	0.36	3.30	3.73	32.92
10	205-211	-0.04	3.47	0.20	3.63	3.87	349.57
11	212-218	-0.07	4.94	-0.31	4.88	5.88	193.04
12	219-225	-0.26	4.47	-0.01	4.83	5.08	266.88
13	226-232	0.18	2.51	-0.06	2.40	3.02	108.53
Mean		0.07	3.73	0.05	3.77	4.34	50.98

Table 11: Weekly mean current heading and magnitude at mooring M6. All velocity components are in cm s^{-1}.

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.00	2.73	-0.08	2.95	3.23	183.61
2	149-155	-0.03	1.15	0.00	1.13	1.50	263.73
3	156-162	0.09	1.35	0.04	1.28	1.80	68.28
4	163-169	-0.01	1.42	0.08	1.50	1.89	351.35
5	170-176	0.03	1.08	-0.05	1.05	1.44	154.72
6	177-183	0.00	1.30	-0.14	1.32	1.76	179.98
7	184-190	0.02	0.83	0.04	0.83	1.16	29.21
8	191-197	-0.06	1.26	0.09	1.23	1.71	324.99
9	198-204	-0.04	1.04	0.05	1.04	1.41	318.42
10	205-211	-0.03	0.80	-0.03	0.80	1.13	223.17
11	212-218	-0.03	0.79	-0.01	0.81	1.13	254.42
12	219-225	0.02	0.79	-0.04	0.80	1.12	155.73
13	226-232	0.03	1.10	0.07	0.97	1.35	22.96
Mean		0.00	1.28	0.00	1.30	1.57	290.70

Table 12: Weekly mean current heading and magnitude at mooring M7. All velocity components are in cm s^{-1}.

Week	Days	**33m** Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.85	6.43	-0.32	6.83	7.98	110.63
2	149-155	0.15	6.81	-0.42	7.42	9.14	160.61
3	156-162	0.20	4.71	0.19	4.79	5.82	46.93
4	163-169	0.06	4.40	-0.57	4.21	5.65	173.76
5	170-176	-0.03	3.69	-0.09	3.50	4.23	195.29
6	177-183	0.07	2.95	-0.13	2.97	3.71	150.20
7	184-190	-0.01	2.10	-0.05	2.15	2.52	193.04
8	191-197	0.00	1.86	0.06	1.98	2.40	357.84
9	198-204	-0.27	2.49	0.02	2.44	3.06	274.63
10	205-211	0.20	4.10	0.27	4.07	5.09	36.85
11	212-218	-0.22	2.70	-0.09	2.77	3.35	248.85
12	219-225	-0.10	2.96	0.03	2.72	3.60	287.43
13	226-232	-0.15	4.67	-0.06	4.87	6.41	248.54
Mean		0.06	4.11	-0.09	4.23	4.83	146.67

Week	Days	**63m** Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.14	4.47	0.26	4.72	5.94	27.67
2	149-155	-0.05	3.52	0.16	3.53	4.04	343.31
3	156-162	-0.01	2.29	0.08	2.44	2.91	353.43
4	163-169	0.46	5.18	0.10	5.49	6.67	77.73
5	170-176	-0.01	3.08	0.04	2.94	3.64	342.24
6	177-183	0.00	2.31	-0.17	2.22	2.99	180.88
7	184-190	0.21	2.57	0.24	2.36	2.98	40.87
8	191-197	0.04	1.75	0.04	1.76	2.23	41.31
9	198-204	-0.11	1.38	-0.02	1.52	1.90	258.89
10	205-211	-0.07	3.24	0.04	3.08	3.87	299.71
11	212-218	0.00	2.39	0.22	2.34	2.86	359.10
12	219-225	0.03	2.42	0.11	2.33	2.80	13.55
13	226-232	0.18	2.96	-0.13	3.09	3.87	127.00
Mean		0.06	3.04	0.08	3.09	3.58	38.39

Table 13: Weekly mean current heading and magnitude at mooring M8. All velocity components are in cm s^{-1}.

Week	Days	20m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.08	12.43	0.07	12.12	15.35	50.79
2	149-155	-0.29	7.58	0.23	7.62	9.33	308.94
3	156-162	-0.71	7.69	0.01	7.46	8.84	271.16
4	163-169	-0.02	7.46	0.11	7.31	8.42	352.02
5	170-176	-0.18	4.08	0.04	3.93	4.99	283.34
6	177-183	0.70	17.70	1.09	17.95	23.18	32.78
7	184-190	-0.10	3.97	0.22	4.09	5.03	334.97
8	191-197	0.35	10.01	-0.56	10.07	11.94	147.78
9	198-204	0.18	5.34	-0.06	5.10	6.52	108.95
10	205-211	1.07	9.91	0.09	9.39	12.36	85.40
11	212-218	0.52	11.91	-1.19	12.49	15.74	156.30
12	219-225	0.48	12.48	0.85	12.38	13.27	29.71
13	226-232	-0.71	9.66	0.36	9.59	10.40	296.67
Mean		0.10	9.94	0.06	9.94	11.18	58.15

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.00	7.56	-0.56	7.88	9.33	180.07
2	149-155	0.02	3.71	0.02	3.88	4.97	44.03
3	156-162	-0.01	4.15	-0.06	4.06	5.23	186.32
4	163-169	-0.02	3.54	0.03	3.71	4.69	328.58
5	170-176	-0.01	2.09	0.08	2.21	2.92	350.37
6	177-183	-0.13	3.51	0.20	3.60	4.72	327.58
7	184-190	-0.01	2.53	-0.16	2.40	2.97	183.63
8	191-197	0.08	2.78	0.19	2.74	3.72	23.52
9	198-204	-0.04	2.96	0.10	2.86	3.83	339.59
10	205-211	0.03	3.32	0.08	3.26	4.37	20.04
11	212-218	0.05	1.90	0.09	1.92	2.56	27.46
12	219-225	0.27	4.47	-0.12	4.33	5.37	113.67
13	226-232	-0.13	3.62	0.01	3.62	4.64	275.03
Mean		0.01	3.75	0.00	3.80	4.52	102.96

Table 14: Weekly mean current heading and magnitude at mooring M9. All velocity components are in cm s^{-1}.

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.20	7.48	-0.07	7.60	9.58	251.32
2	149-155	-0.09	6.22	0.35	5.33	6.08	345.58
3	156-162	-0.08	3.13	0.04	3.13	3.96	297.34
4	163-169	-0.23	3.18	0.10	3.21	4.21	293.54
5	170-176	-0.06	2.37	0.19	2.16	2.98	342.28
6	177-183	-0.12	2.63	0.06	2.76	3.61	297.81
7	184-190	0.66	5.57	-0.18	5.49	7.12	105.25
8	191-197	0.33	3.79	0.01	3.62	4.87	87.68
9	198-204	0.02	3.20	-0.26	3.27	3.90	175.94
10	205-211	-0.01	2.64	0.00	2.78	3.45	272.88
11	212-218	-0.09	2.78	0.02	2.79	3.47	285.32
12	219-225	-0.05	3.29	0.09	3.43	4.08	327.96
13	226-232	0.11	4.26	0.08	4.36	5.60	55.13
Mean		0.01	4.16	0.03	4.08	4.82	24.10

Table 15: Weekly mean current heading and magnitude at mooring M10. All velocity components are in cm s^{-1}.

Week	Days	19m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.03	7.22	0.62	7.23	9.48	3.08
2	149-155	0.09	6.65	0.54	6.99	8.49	9.96
3	156-162	-0.19	5.39	0.02	5.39	6.66	275.51
4	163-169	0.45	9.08	-0.21	8.98	11.05	114.64
5	170-176	-0.17	5.56	0.34	5.78	6.87	332.61
6	177-183	1.75	4.11	-1.13	4.21	5.57	122.84
7	184-190	-0.29	4.15	-0.12	4.11	5.02	247.38
8	191-197	-0.04	4.56	0.12	4.53	5.55	340.57
9	198-204	0.35	3.48	-0.36	3.98	4.85	135.41
10	205-211	1.59	6.18	-3.97	6.59	9.23	158.13
11	212-218	0.89	4.51	-1.24	5.09	6.08	144.39
12	219-225	0.85	5.91	-0.94	5.81	7.68	138.03
13	226-232	-0.08	7.93	0.60	7.65	9.15	352.03
Mean		0.40	5.98	-0.44	6.15	7.34	137.93

Week	Days	49m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.27	2.93	-0.12	2.84	3.92	246.73
2	149-155	-0.06	2.39	0.05	2.34	3.06	313.06
3	156-162	0.01	2.02	0.14	2.13	2.75	3.52
4	163-169	0.11	2.19	0.10	2.13	2.90	50.02
5	170-176	0.04	2.10	-0.23	2.05	2.74	170.62
6	177-183	-0.05	2.71	0.01	2.78	3.59	281.53
7	184-190	-0.02	2.88	-0.06	3.07	3.76	200.95
8	191-197	0.12	4.13	-0.20	4.24	5.42	148.53
9	198-204	0.04	3.85	0.00	4.04	5.13	87.57
10	205-211	0.24	2.32	0.14	2.42	3.10	59.91
11	212-218	0.15	3.46	0.21	3.59	4.61	35.95
12	219-225	0.09	2.26	-0.08	2.32	2.86	133.60
13	226-232	0.11	3.15	0.23	3.21	4.16	24.80
Mean		0.04	2.87	0.01	2.94	3.69	72.27

Table 16: Weekly mean current heading and magnitude at mooring M11. All velocity components are in cm s^{-1}.

Week	Days	20m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	0.09	14.20	0.39	14.54	18.11	12.42
2	149-155	-0.29	6.63	0.24	6.49	7.91	309.33
3	156-162	0.53	7.15	0.45	7.64	8.87	49.51
4	163-169	-0.45	6.05	-0.40	5.85	6.79	228.13
5	170-176	0.02	3.98	0.26	4.01	4.82	3.31
6	177-183	-1.07	18.15	-0.15	18.06	23.71	261.94
7	184-190	-0.19	4.24	0.10	4.27	5.17	298.40
8	191-197	0.43	8.36	-0.06	8.20	9.71	98.14
9	198-204	-0.10	4.65	-0.02	4.50	5.72	257.12
10	205-211	-0.09	8.72	0.09	9.17	10.69	312.89
11	212-218	0.60	13.22	-0.52	12.53	16.47	131.11
12	219-225	0.08	12.18	-0.57	11.93	12.19	171.54
13	226-232	-0.17	9.85	0.23	9.82	12.46	322.43
Mean		-0.05	9.89	0.00	9.84	10.91	272.34

Week	Days	50m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.25	7.17	0.23	7.01	8.85	312.80
2	149-155	-0.17	3.63	-0.02	3.53	4.50	263.41
3	156-162	0.30	3.57	-0.01	3.58	4.42	92.40
4	163-169	0.16	3.83	-0.12	3.98	4.95	127.96
5	170-176	-0.02	2.20	-0.13	2.17	2.89	186.56
6	177-183	-0.14	4.35	0.23	4.24	5.62	328.09
7	184-190	0.04	2.08	0.01	2.00	2.55	71.39
8	191-197	-0.06	2.51	-0.25	2.45	3.36	193.88
9	198-204	0.12	2.22	0.02	2.28	2.92	79.04
10	205-211	0.14	4.00	-0.21	3.87	5.02	145.38
11	212-218	-0.15	3.12	-0.05	3.27	3.86	251.86
12	219-225	0.14	4.06	-0.31	4.26	4.97	155.94
13	226-232	-0.07	2.74	0.15	2.82	3.32	333.52
Mean		0.00	3.78	-0.04	3.76	4.43	179.21

Table 17: Weekly mean current heading and magnitude at mooring M12. All velocity components are in cm s^{-1}.

Week	Days	21m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.82	18.09	0.46	18.25	22.92	299.22
2	149-155	-0.02	8.26	-0.24	7.98	9.61	184.29
3	156-162	0.15	7.10	-0.29	6.89	9.35	152.60
4	163-169	0.39	7.71	0.13	8.07	9.77	71.50
5	170-176	0.00	6.16	0.83	5.97	7.62	359.79
6	177-183	0.30	12.11	-1.38	12.47	15.22	167.70
7	184-190	0.30	7.83	-0.05	7.40	9.97	99.92
8	191-197	-0.11	5.68	0.13	5.53	6.88	321.18
9	198-204	0.11	4.95	-0.27	4.88	6.04	157.72
10	205-211	0.10	5.12	0.10	5.00	6.19	45.10
11	212-218	1.32	11.67	-0.41	11.65	14.93	107.40
12	219-225	-0.22	7.41	-0.27	7.32	8.96	219.01
13	226-232	-0.40	15.84	0.84	15.50	21.22	334.44
Mean		0.10	9.92	-0.03	9.88	11.47	106.89

Week	Days	51m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1	142-148	-0.81	8.44	-0.61	8.62	10.14	233.35
2	149-155	0.13	5.32	-0.03	5.37	6.04	100.75
3	156-162	-0.12	2.73	-0.16	2.51	3.40	216.75
4	163-169	0.06	3.08	0.15	2.86	3.89	20.16
5	170-176	0.21	2.73	0.15	2.56	3.46	55.06
6	177-183	-0.26	4.51	-0.05	4.70	6.18	259.92
7	184-190	0.26	2.48	0.04	2.57	3.16	80.94
8	191-197	-0.04	2.34	0.01	2.53	3.34	284.29
9	198-204	-0.02	1.96	0.02	1.94	2.61	322.24
10	205-211	0.04	2.85	0.28	2.55	3.64	7.07
11	212-218	0.25	4.59	-0.29	4.54	5.94	139.95
12	219-225	-0.01	2.33	-0.05	2.24	2.99	197.75
13	226-232	-0.07	3.88	-0.11	3.94	5.18	210.95
Mean		-0.03	4.01	-0.05	4.02	4.61	210.53

Table 18: Weekly mean current heading and magnitude at mooring M13. All velocity components are in cm s^{-1}.

		22m					
Week	**Days**	**Mean u**	**Std. dev. u**	**Mean v**	**Std. dev. v**	**Mean speed**	**Mean direction**
1	142-148	-0.27	3.81	0.42	5.15	5.73	327.06
2	149-155	7.93	9.14	-3.41	6.90	11.76	113.25
3	156-162	3.58	5.03	2.73	6.97	8.93	52.71
4	163-169	5.69	8.63	5.95	6.35	11.44	43.71
5	170-176	0.95	6.00	5.85	5.72	9.43	9.22
6	177-183	-0.65	5.79	1.52	6.68	7.59	336.82
7	184-190	3.71	6.67	0.42	4.34	7.30	83.49
8	191-197	-1.22	11.72	3.19	4.24	10.39	339.04
9	198-204	-4.04	4.48	2.14	3.98	7.01	297.90
10	205-211	-0.45	5.39	-2.14	3.49	6.02	191.91
11	212-218	-5.35	5.16	2.08	5.12	8.25	291.27
12	219-225	-1.98	6.71	1.61	6.75	8.95	309.09
13	226-232	-4.31	4.70	-9.18	5.96	10.93	205.14
Mean		0.11	7.85	0.79	6.82	8.79	8.10

		50m					
Week	**Days**	**Mean u**	**Std. dev. u**	**Mean v**	**Std. dev. v**	**Mean speed**	**Mean direction**
1	142-148	0.65	1.60	-1.68	2.38	3.05	158.94
2	149-155	6.51	6.58	-3.01	4.74	8.70	114.78
3	156-162	0.75	2.69	1.24	2.97	3.83	31.10
4	163-169	1.33	3.98	1.73	4.29	5.87	37.55
5	170-176	-1.00	3.17	0.25	3.19	4.27	284.19
6	177-183	-5.41	4.38	2.28	3.11	7.18	292.88
7	184-190	-7.15	3.56	2.33	2.74	8.03	288.02
8	191-197	-7.04	2.03	3.71	1.82	8.16	297.81
9	198-204	-3.94	2.34	1.90	3.22	5.48	295.71
10	205-211	-0.76	3.11	0.39	3.90	4.46	296.96
11	212-218	-8.79	2.40	2.33	3.33	9.72	284.83
12	219-225	-5.14	4.24	-1.28	4.49	7.78	255.96
13	226-232	0.31	2.98	-2.09	1.92	3.46	171.61
Mean		-2.31	5.45	0.66	3.88	6.13	285.94

Table 19: Weekly mean current heading and magnitude at mooring M14. All velocity components are in cm s^{-1}.

Week	Days	10m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1							
2							
3							
4							
5							
6							
7	184-190	-2.68	3.55	-1.64	2.53	4.53	238.48
8	191-197	2.86	4.91	0.12	3.65	5.72	87.60
9	198-204	-1.06	4.43	-1.77	3.35	4.71	210.91
10	205-211	2.41	4.57	-1.24	3.25	5.10	117.25
11	212-218	-0.14	4.85	-0.81	3.56	4.81	189.87
12	219-225	-0.91	5.13	-3.01	3.84	5.69	196.74
13	226-232	0.68	4.22	-3.15	2.85	5.12	167.76
Mean		0.29	4.83	-1.62	3.37	5.01	169.69

Week	Days	20m Mean u	Std. dev. u	Mean v	Std. dev. v	Mean speed	Mean direction
1							
2							
3							
4							
5							
6							
7	184-190	-5.29	8.13	-2.76	6.54	10.20	242.46
8	191-197	2.18	7.03	-3.88	6.04	8.72	150.64
9	198-204	-3.69	5.94	-3.61	5.14	7.73	225.66
10	205-211	1.12	5.61	-0.92	4.35	5.36	129.37
11	212-218	-1.39	6.97	-0.48	6.43	8.19	250.74
12	219-225	0.19	7.96	-1.21	6.60	8.46	171.27
13	226-232	1.29	3.80	-6.34	3.54	7.47	168.48
Mean		-0.27	6.62	-2.55	5.53	7.41	186.00

Table 20: Summary of temperatures for mooring M1

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
16.5	3.90	14.40	-0.50	2.89
21.5	2.80	9.91	-0.80	2.35
31.5	1.06	6.70	-1.00	1.33
51.5	-0.53	1.46	-1.26	0.57
101.5	-1.08	0.80	-1.40	0.28
150.5	-0.96	-0.50	-1.20	0.11
195.5	-0.16	0.70	-0.90	0.28

Table 21: Summary of temperatures for mooring M2

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
18	1.93	8.40	-0.70	1.92
23	0.83	6.33	-0.98	1.27
33	-0.08	2.90	-1.10	0.67
53	-0.89	1.12	-1.29	0.44
103	-1.22	-1.00	-1.50	0.06
138	-0.85	-0.30	-1.00	0.11

Table 22: Summary of temperatures for mooring M3

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
55	-0.57	1.10	-1.20	0.48
105	-1.21	-1.04	-1.41	0.07
155	-1.15	-0.70	-1.50	0.15
200	-0.39	0.40	-1.00	0.26
233	0.47	1.00	-0.60	0.23

Table 23: Summary of temperatures for mooring M4

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
51	-0.75	1.60	-1.30	0.44
101	-1.32	-0.98	-1.56	0.06
151	-1.08	-0.60	-1.50	0.17
201	-1.03	0.50	-0.90	0.25
238	0.65	1.10	-0.10	0.20

Table 24: Summary of temperatures for mooring M5

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
16	5.20	14.80	0.00	3.26
21	4.25	14.24	-0.53	3.02
31	1.77	8.60	-1.00	1.98
51	-0.31	2.08	-1.23	0.70
101	-1.11	-0.90	-1.30	0.06
151	-0.90	-0.50	-1.20	0.09
245	0.97	1.30	0.50	0.14

Table 25: Summary of temperatures for mooring M6

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
15	6.02	15.10	0.00	3.53
30	0.96	6.80	-1.00	1.41
50	-0.57	1.21	-1.22	0.60
100	-1.23	-1.00	-1.50	0.07
150	-1.11	-0.60	-1.50	0.14
204	-0.77	-0.10	-1.20	0.20
318	1.07	1.40	0.70	0.18

Table 26: Summary of temperatures for mooring M7

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
28	0.41	5.00	-1.10	0.53
33	-0.11	2.98	-1.08	0.59
43	-0.69	1.30	-1.20	0.52
63	-1.07	-0.34	-1.29	0.10
113	-1.07	-0.70	-1.30	0.09
163	-1.07	-0.40	-1.40	0.14
217	0.08	0.80	-0.90	0.32

Table 27: Summary of temperatures for mooring M8

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
15	5.69	15.00	0.10	3.48
20	3.94	14.74	-0.33	2.93
30	1.74	8.90	-1.00	2.05
50	-0.32	2.80	-1.21	0.75
100	-1.15	-0.70	-1.30	0.06
114	-1.04	-1.00	-1.20	0.08

Table 28: Summary of temperatures for mooring M9

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
15	5.72	15.40	0.60	3.30
30	0.80	6.40	-1.20	1.33
50	-0.83	1.21	-1.21	0.33
104	-1.12	-0.90	-1.40	0.10

Table 29: Summary of temperatures for mooring M10

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
14	4.44	13.30	0.20	2.37
19	2.65	8.65	-0.47	1.70
29	0.03	4.90	-1.00	0.66
49	-1.00	-0.24	-1.23	0.14
99	-1.09	-0.90	-1.40	0.08
149	-1.06	-0.70	-1.40	0.12
213	0.33	0.80	-0.40	0.22

Table 30: Summary of temperatures for mooring M11

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
15	4.32	14.70	-0.70	3.10
20	2.99	14.14	-0.77	2.83
30	1.10	8.40	-1.20	1.77
50	-0.53	1.80	-1.20	0.63
100	-1.02	-0.90	-1.20	0.07
130	-1.03	-0.90	-1.20	0.09

Table 31: Summary of temperatures for mooring M12

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
16	5.39	15.00	0.80	3.33
21	3.13	11.58	-0.51	2.32
31	0.77	7.30	-1.10	1.43
51	-0.72	1.39	-1.22	0.50
130	-1.13	-0.70	-1.40	0.11

Table 32: Summary of temperatures for mooring M13

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
50	-0.70	1.10	-1.10	0.34
100	-1.22	-1.01	-1.47	0.08
150	-0.17	0.40	-1.00	0.20
200	-0.99	-0.70	-1.40	0.14
294	1.14	1.60	0.70	0.17

Table 33: Summary of temperatures for mooring M14

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
10	4.40	14.23	-0.63	3.79
20	7.57	14.67	0.26	4.10

Table 34: Summary of temperatures for mooring T1

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
1	6.88	15.60	0.60	3.72
10	4.56	14.70	-0.80	3.28
20	2.09	10.90	-1.20	2.29
30	0.74	8.40	-1.10	1.53
40	-0.14	2.90	-1.20	0.84
50	-0.59	1.50	-1.20	0.56
100	-0.95	-0.70	-1.10	0.06

Table 35: Summary of temperatures for mooring T2

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
1	7.54	15.50	1.40	3.60
10	5.23	14.70	0.80	2.78
20	1.93	8.60	-1.00	1.72
30	0.27	5.20	-1.20	0.97
40	-0.48	1.90	-1.20	0.64
50	-0.78	1.20	-1.20	0.47
100	-1.12	-0.80	-1.40	0.10

Table 36: Summary of temperatures for mooring T3

Depth (m)	Mean temperature (ºC)	Maximum temperature (ºC)	Minimum temperature (ºC)	Standard deviation (ºC)
1	7.14	15.80	1.40	3.63
10	4.93	14.60	-0.30	2.98
20	2.30	9.70	-0.80	2.07
30	0.71	7.70	-1.20	1.52
40	-0.17	3.10	-1.20	0.86
50	-0.56	1.50	-1.20	0.55
100	-1.08	-0.80	-1.30	0.08
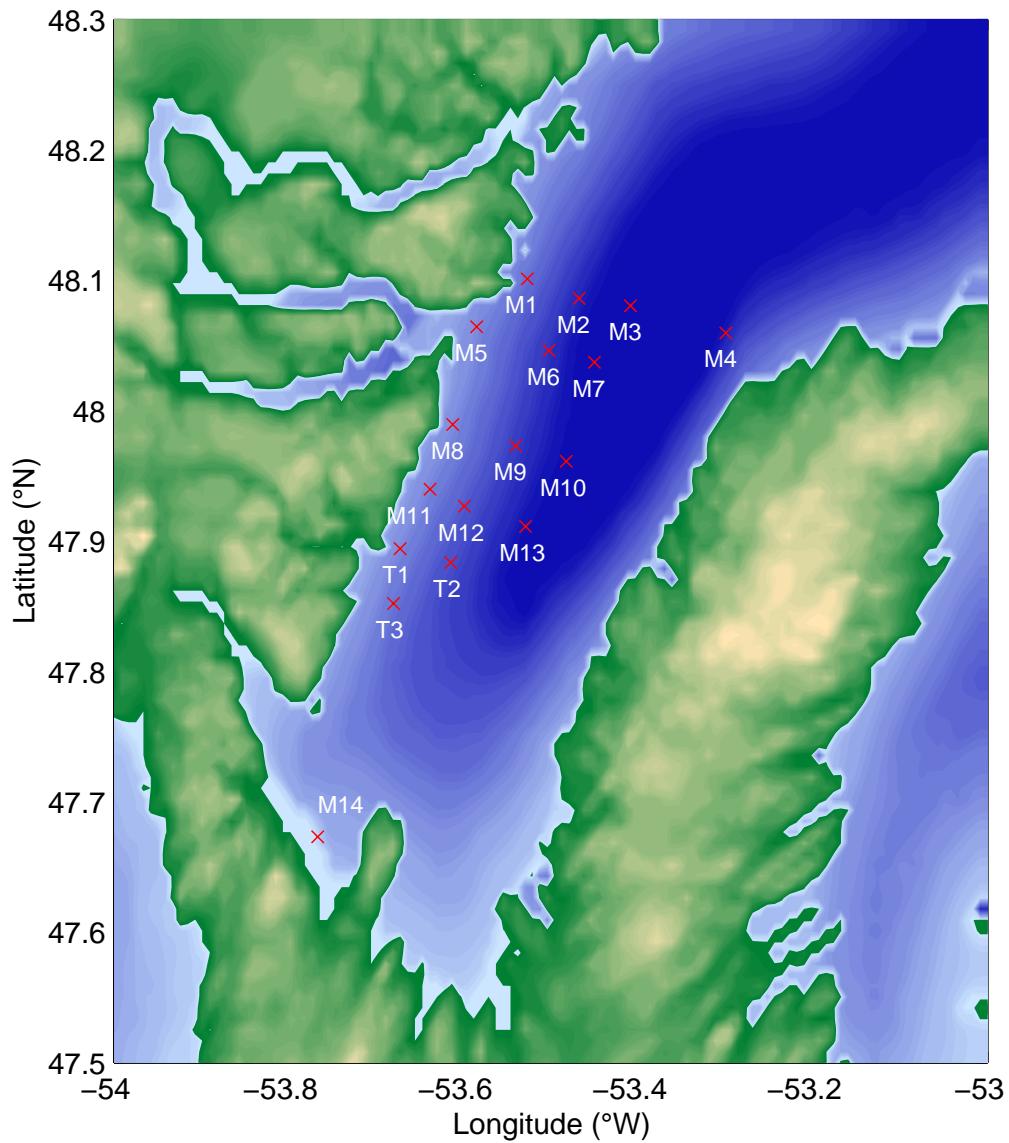
Figure 1: Mooring locations for the 2001 Trinity Bay cruise.
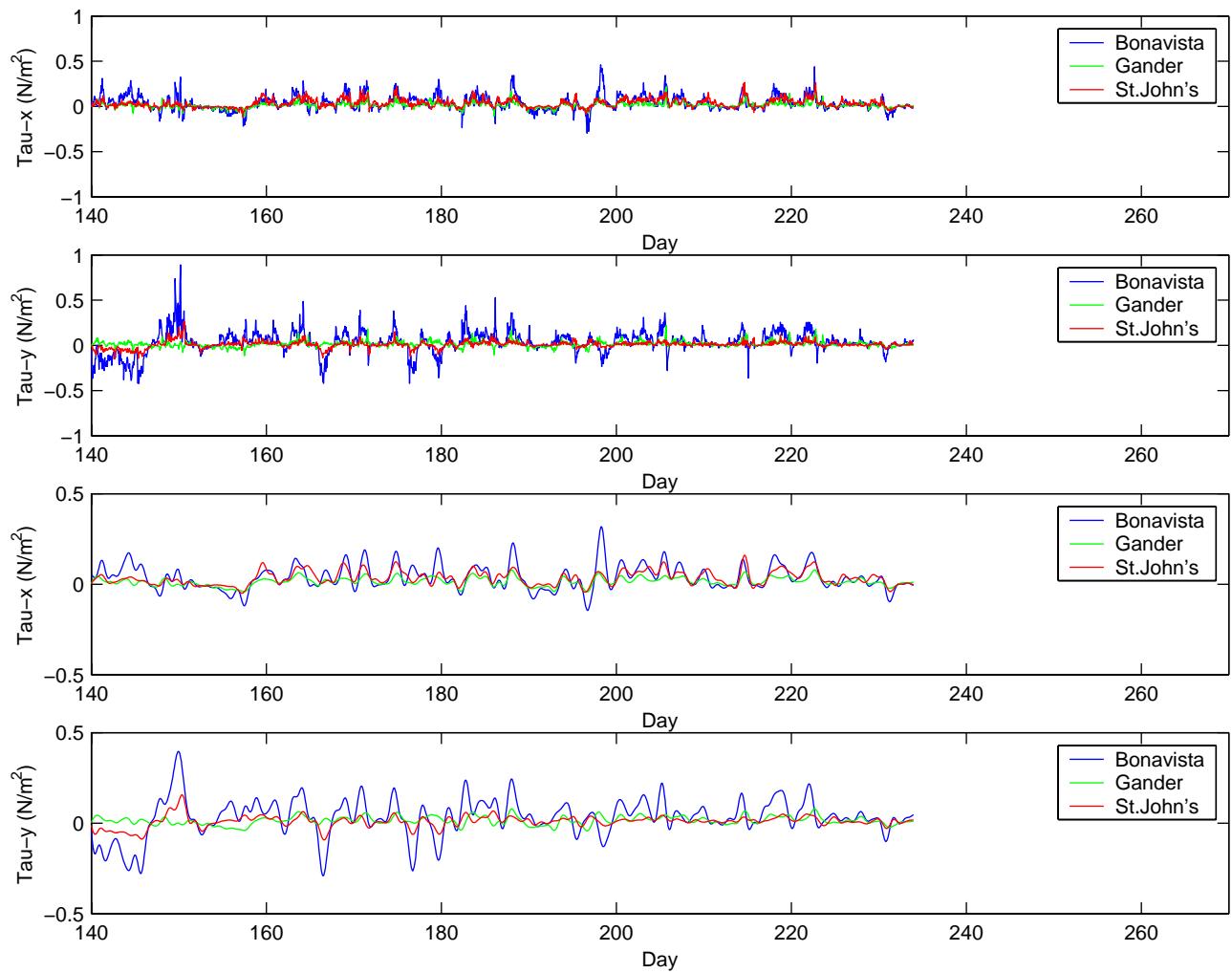
Figure 2: Wind stress at Gander, Bonavista, and St. John's. Upper two panels: hourly data. Lower two panels: filtered data, cutoff 30 hours.
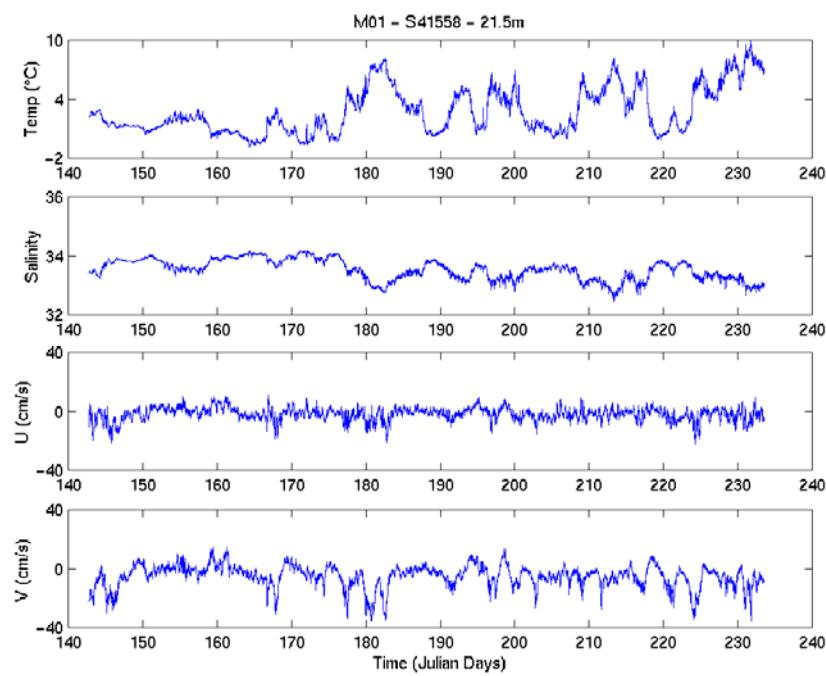
Figure 3: The temperature, salinity, and component velocities at a depth of 51.5 metres, mooring M1.
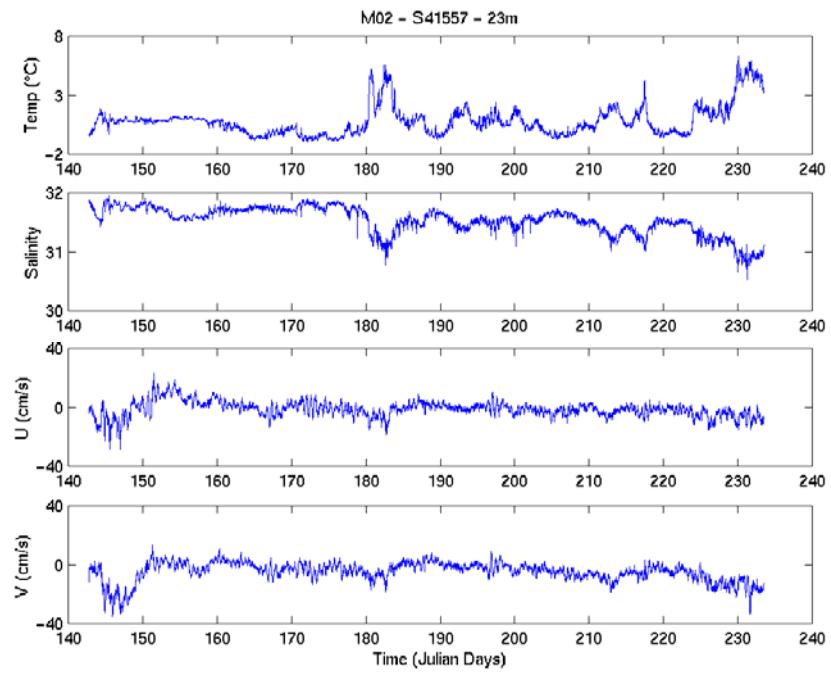
Figure 4: The temperature, salinity, and component velocities at a depth of 23 metres, mooring M2.
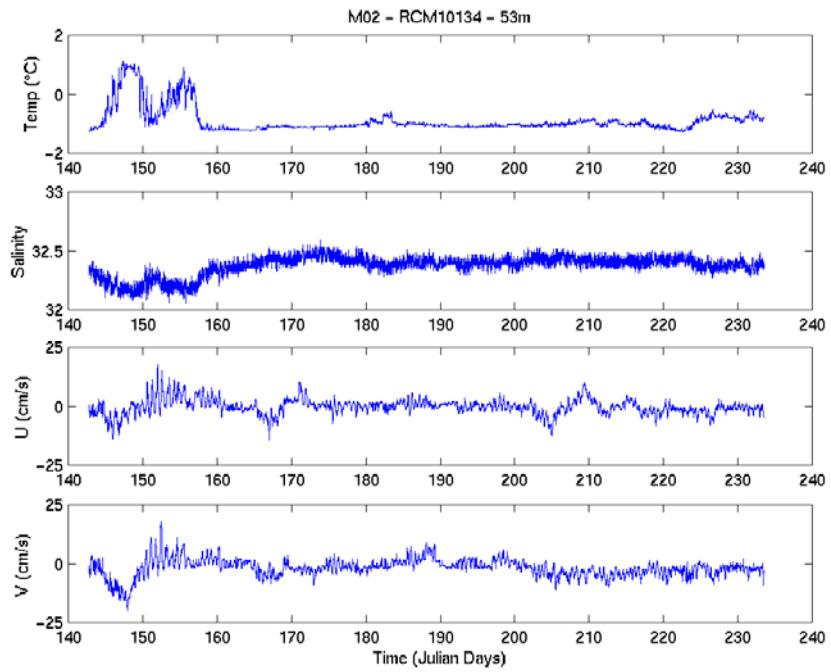
Figure 5: The temperature, salinity, and component velocities at a depth of 53 metres, mooring M2.
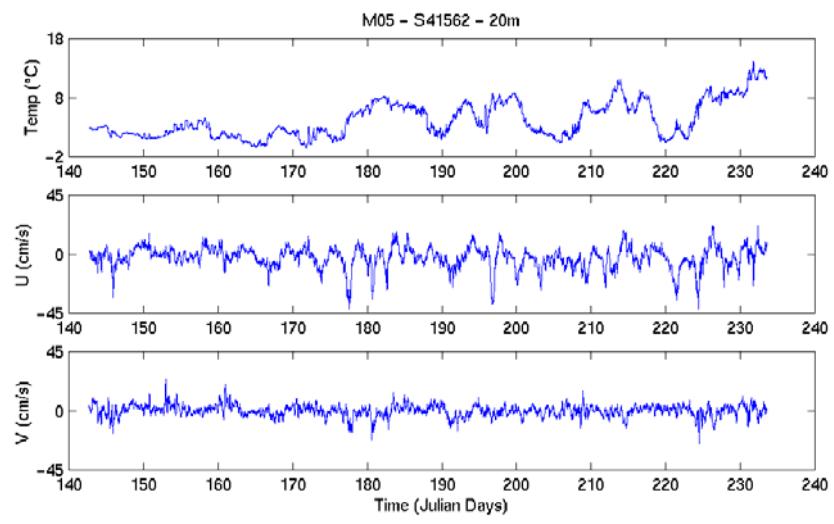
Figure 6: The temperature and component velocities at a depth of 21 metres, mooring M5.
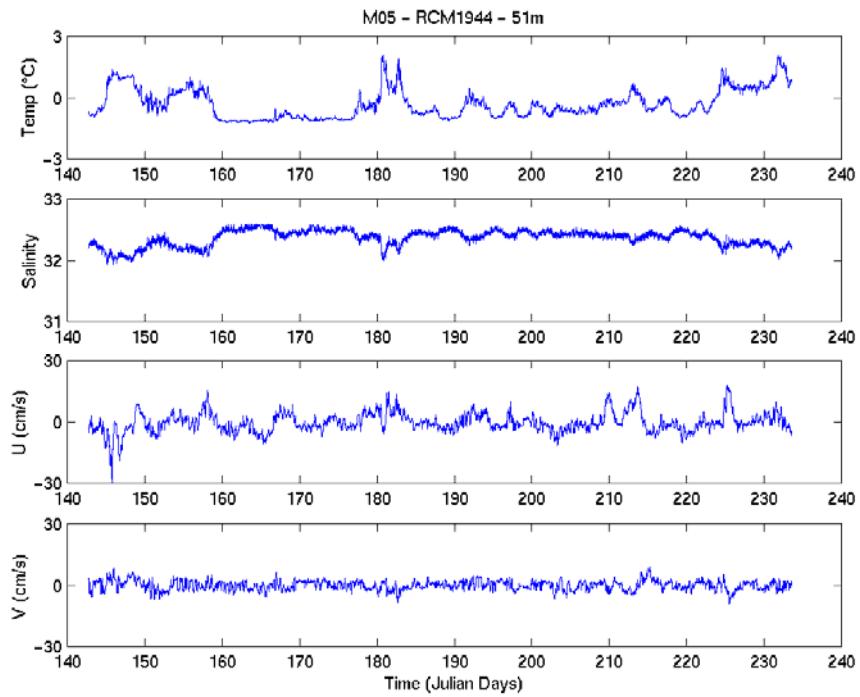
Figure 7: The temperature, salinity, and component velocities at a depth of 51 metres, mooring M5.
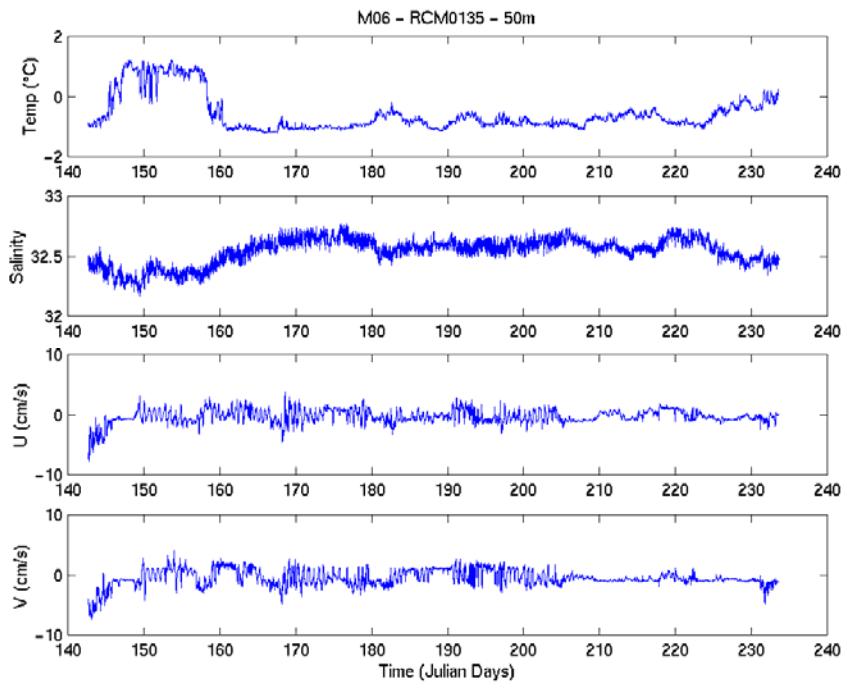
Figure 8: The temperature, salinity, and component velocities at a depth of 50 metres, mooring M6.
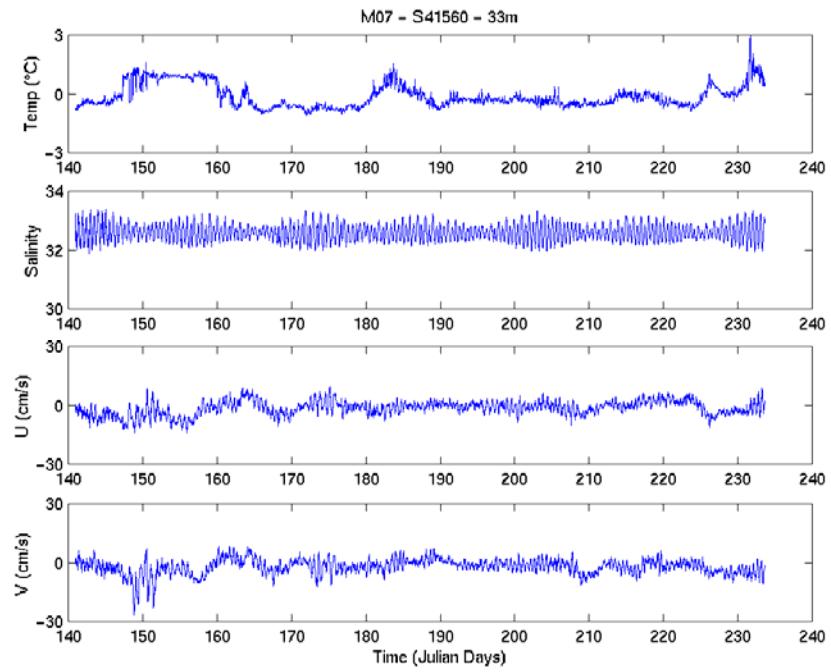
Figure 9: The temperature, salinity, and component velocities at a depth of 33 metres, mooring M7.
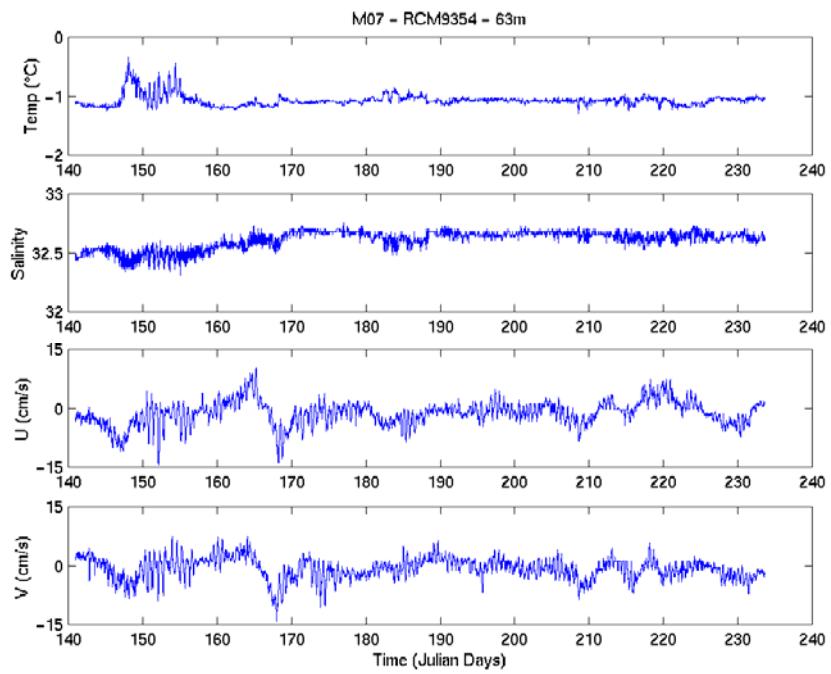
Figure 10: The temperature, salinity, and component velocities at a depth of 63 metres, mooring M7.
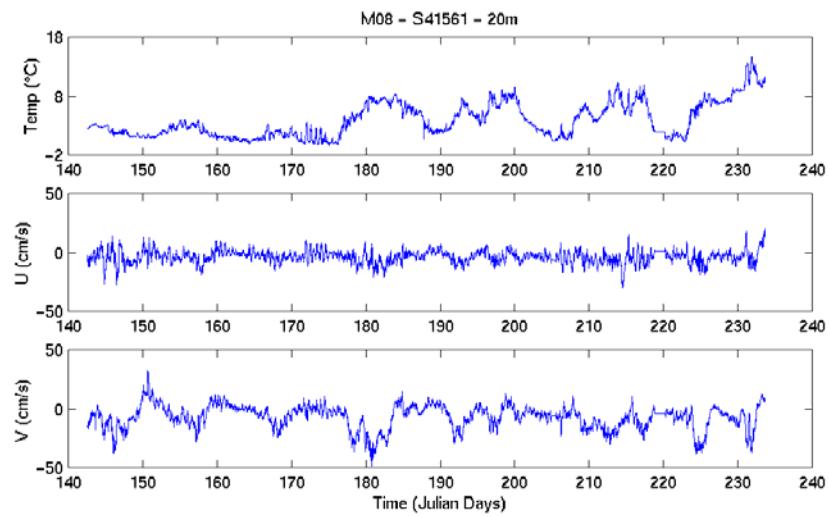
Figure 11: The temperature and component velocities at a depth of 20 metres, mooring M8.
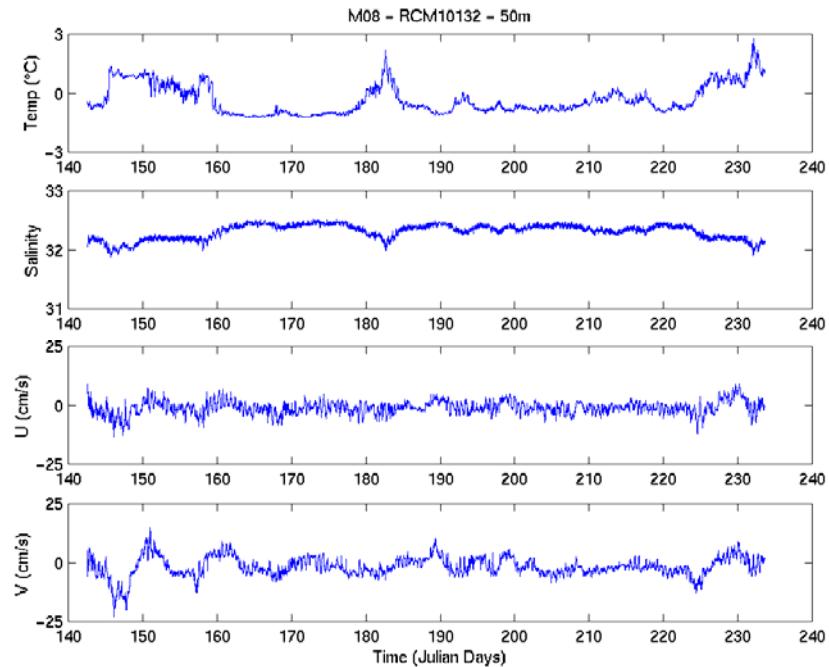
Figure 12: The temperature, salinity, and component velocities at a depth of 50 metres, mooring M8.
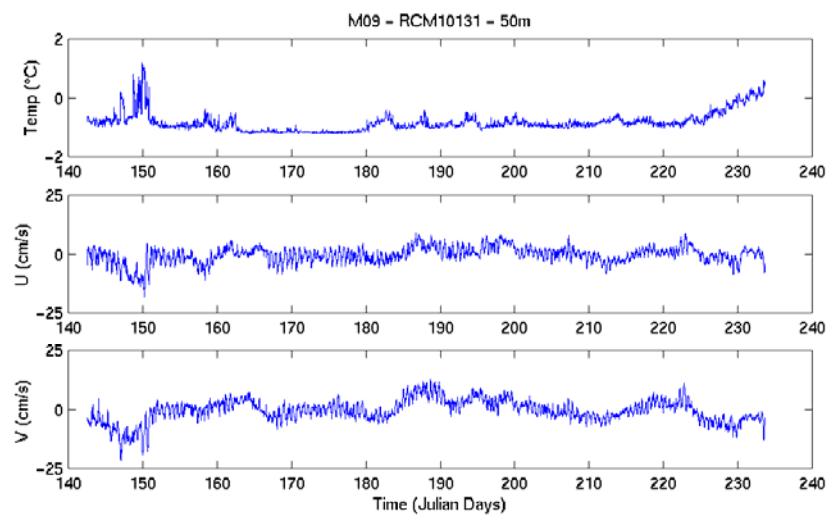
Figure 13: The temperature and component velocities at a depth of 50 metres, mooring M9.
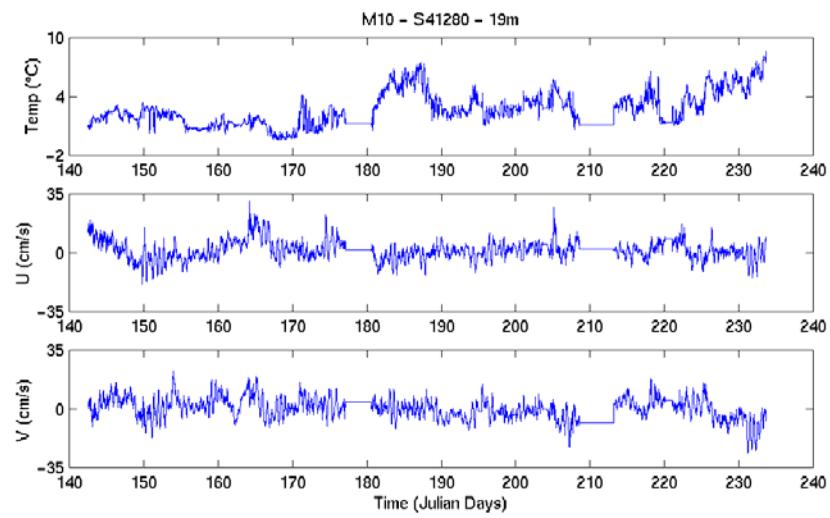
Figure 14: The temperature and component velocities at a depth of 19 metres, mooring M10.
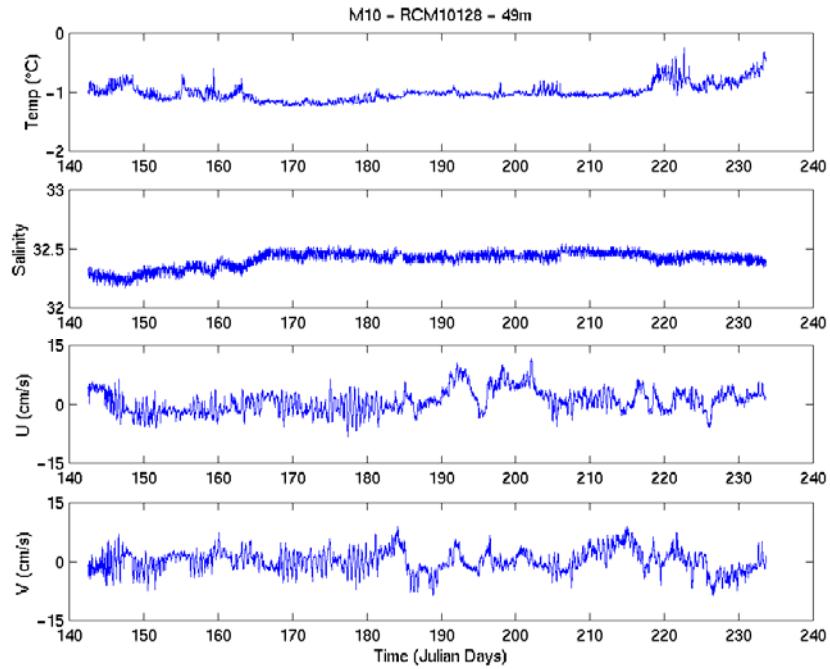
Figure 15: The temperature, salinity, and component velocities at a depth of 49 metres, mooring M10.
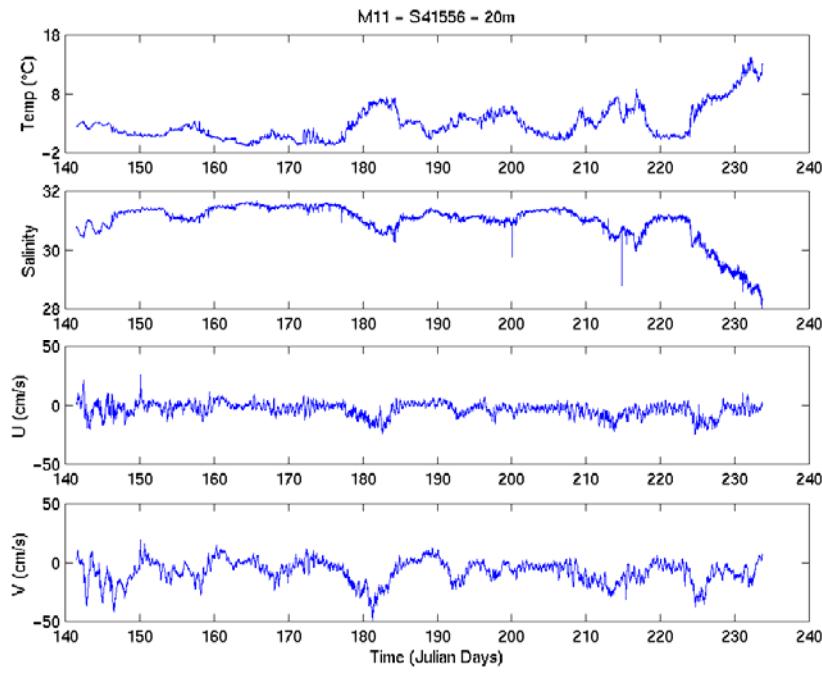
Figure 16: The temperature, salinity, and component velocities at a depth of 20 metres, mooring M11.
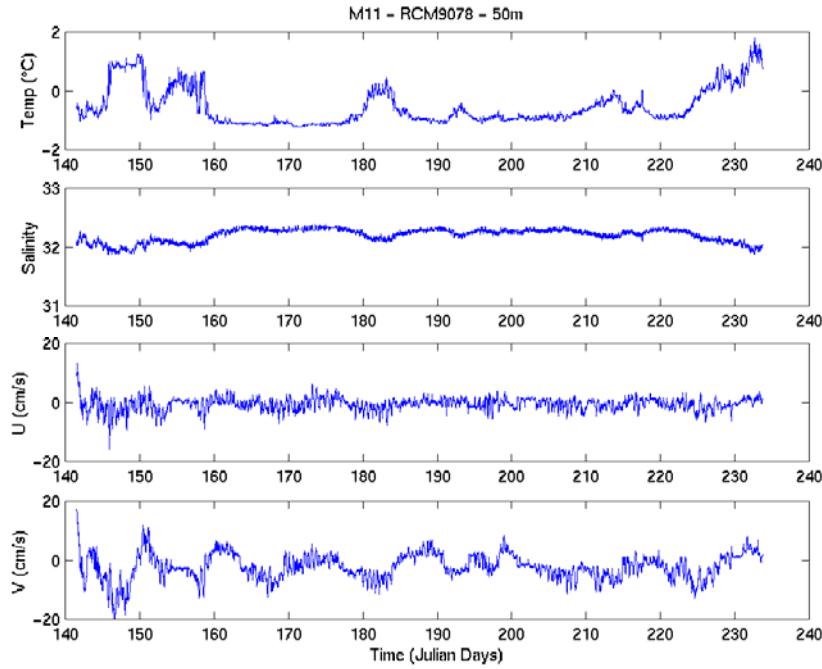
Figure 17: The temperature, salinity, and component velocities at a depth of 50 metres, mooring M11.
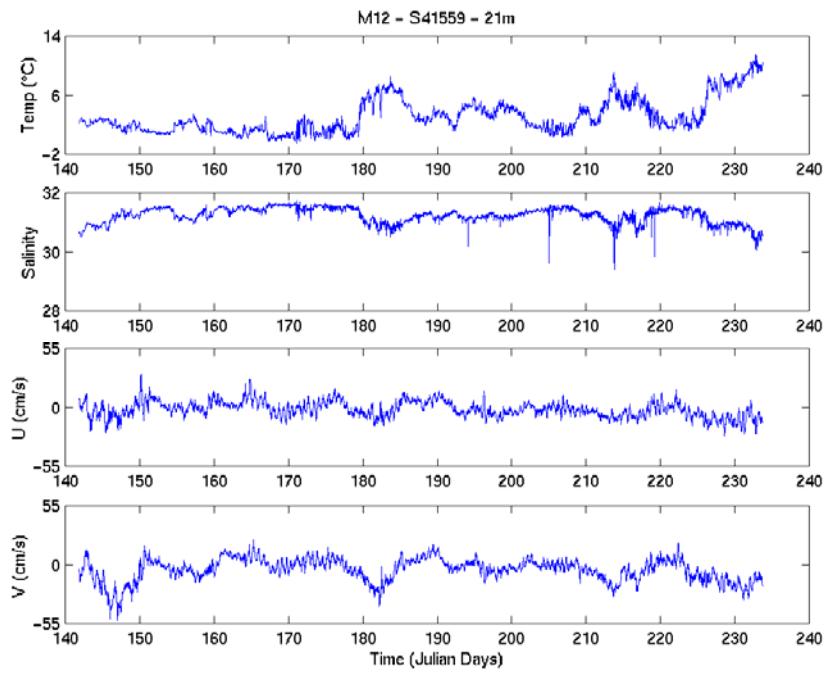
Figure 18: The temperature, salinity, and component velocities at a depth of 21 metres, mooring M12.
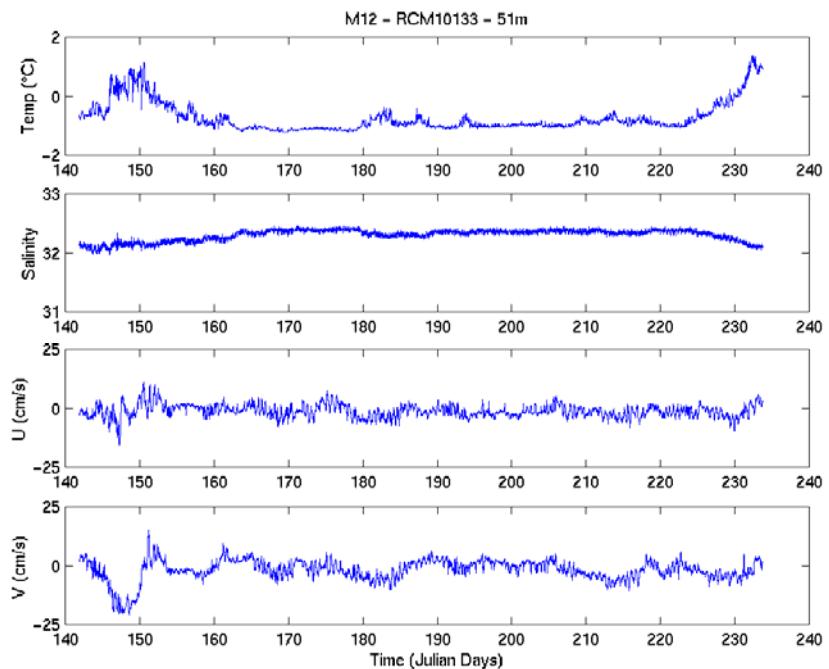
Figure 19: The temperature, salinity, and component velocities at a depth of 51 metres, mooring M12.
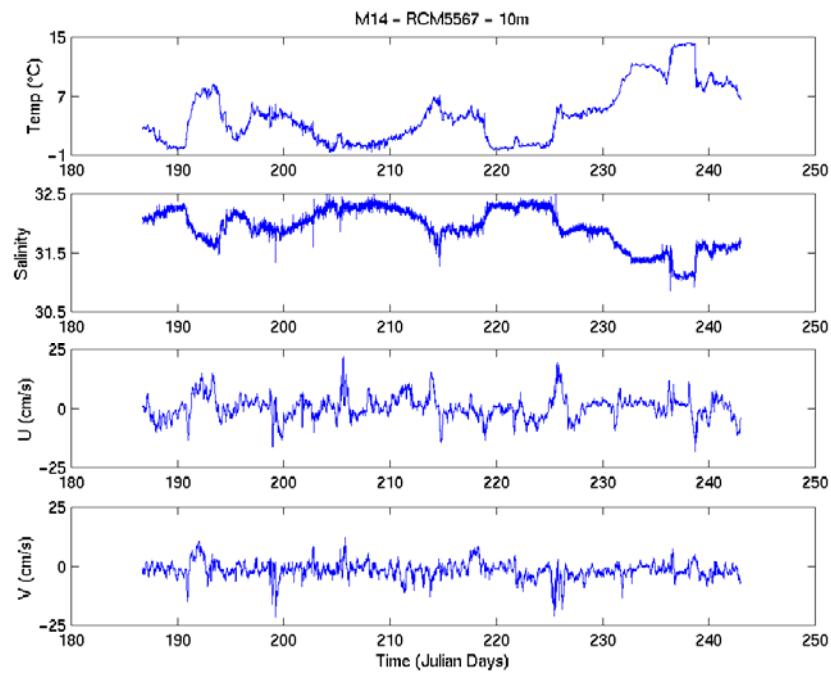
Figure 20: The temperature, salinity, and component velocities at a depth of 10 metres, mooring M14.
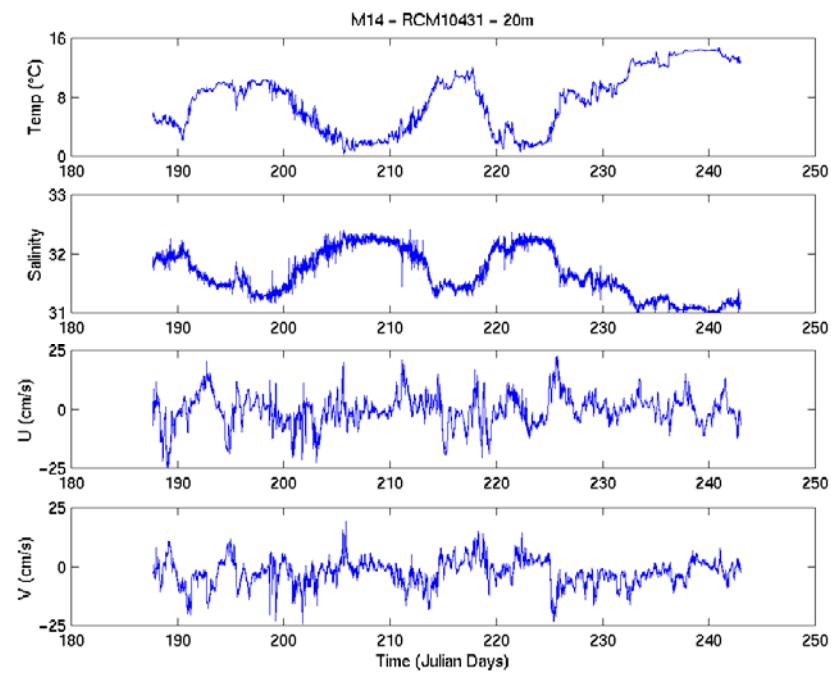
Figure 21: The temperature, salinity, and component velocities at a depth of 20 metres, mooring M14.
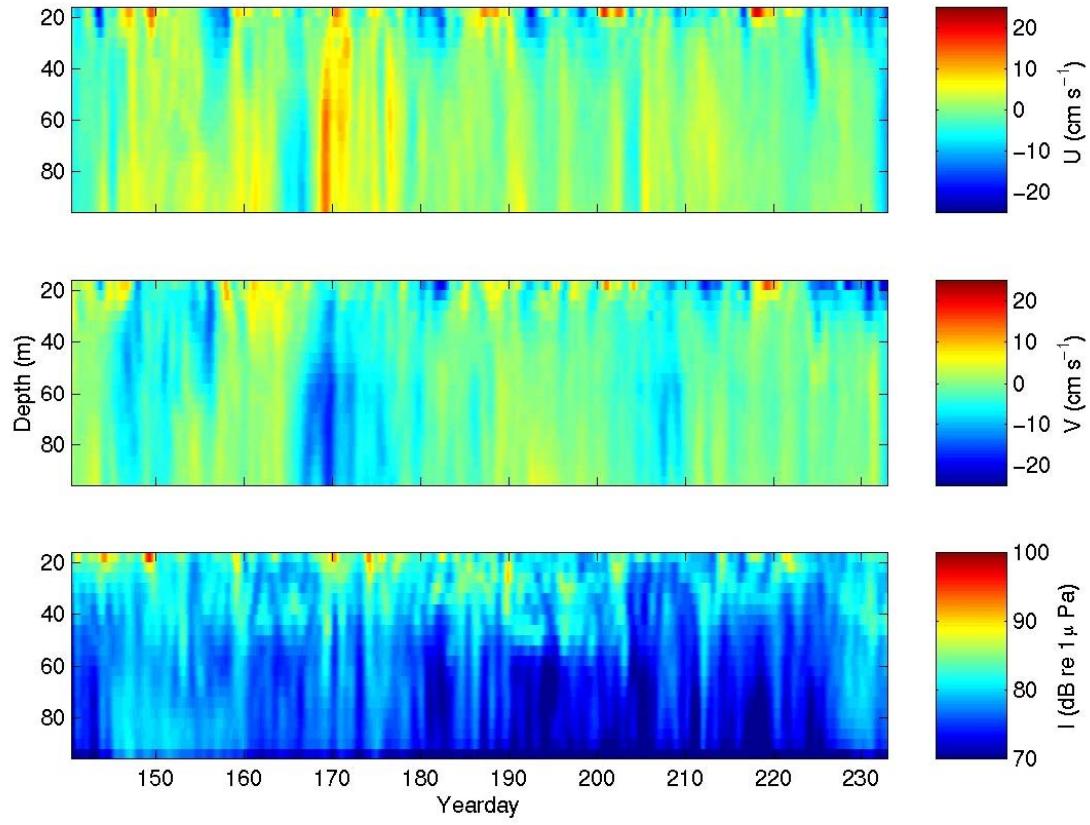
Figure 22: Low pass filtered ADCP data from mooring M3. Cutoff is 30 hours. Top: *u* speed. Middle: *v* speed. Bottom: backscatter intensity.
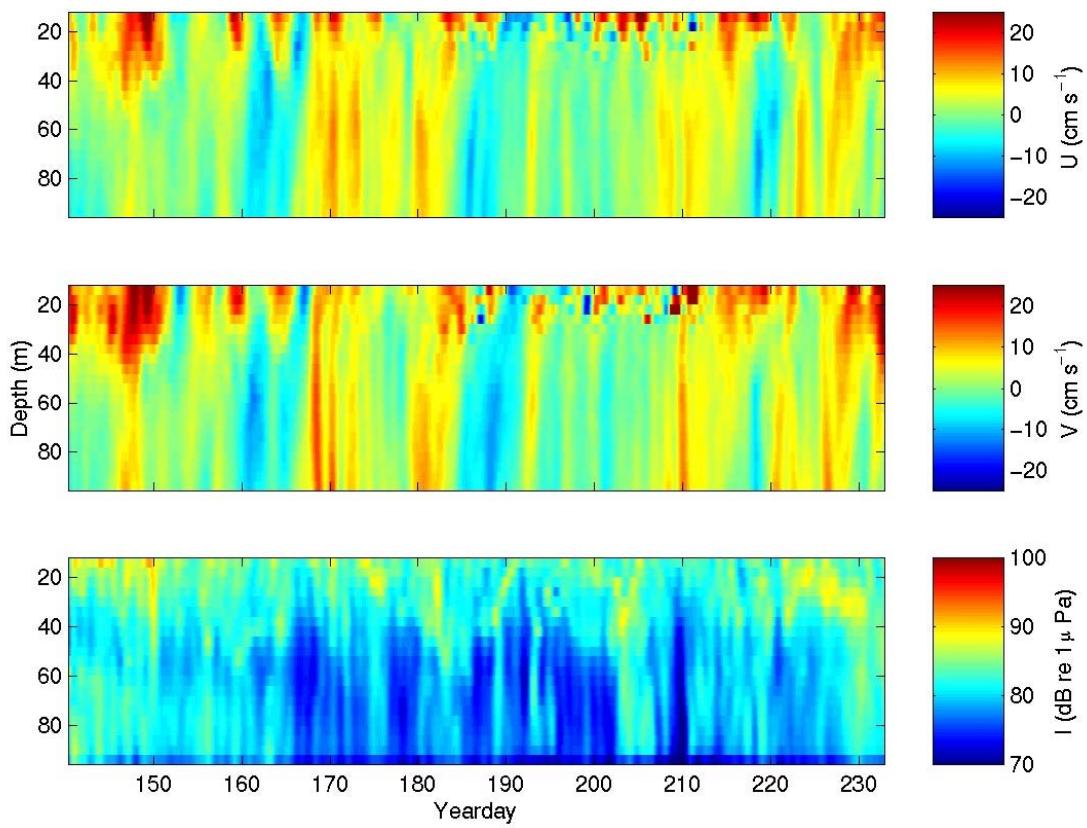
Figure 23: Low pass filtered ADCP data from mooring M4. Cutoff is 30 hours. Top: *u* speed. Middle: *v* speed. Bottom: backscatter intensity.
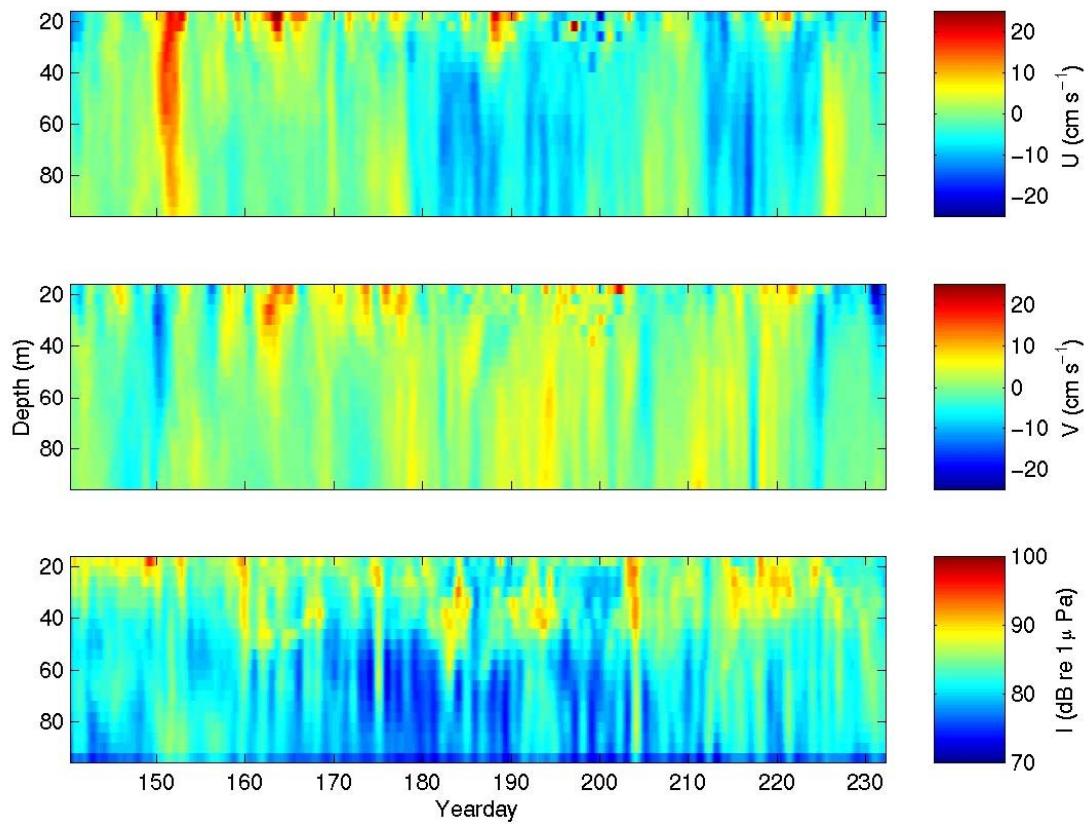
Figure 24: Low pass filtered ADCP data from mooring M13. Cutoff is 30 hours. Top: *u* speed. Middle: *v* speed. Bottom: backscatter intensity.
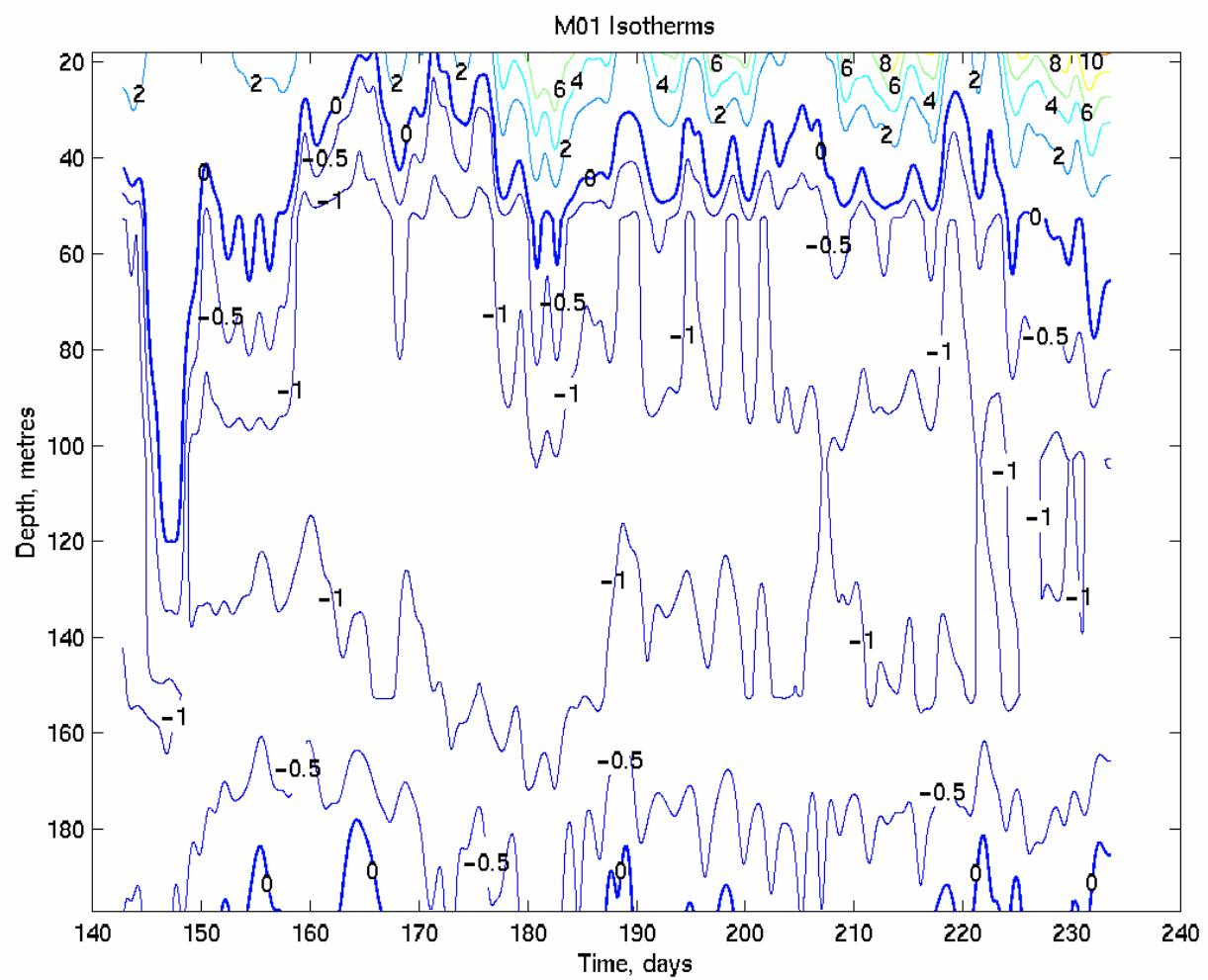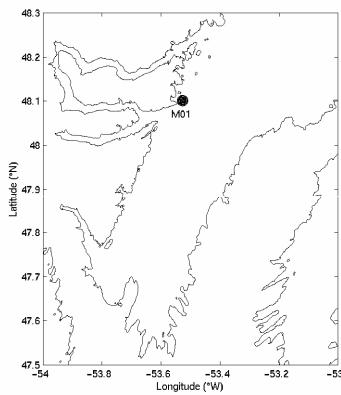
Figure 25: Isotherms at M1. From interpolated and filtered temperature data.
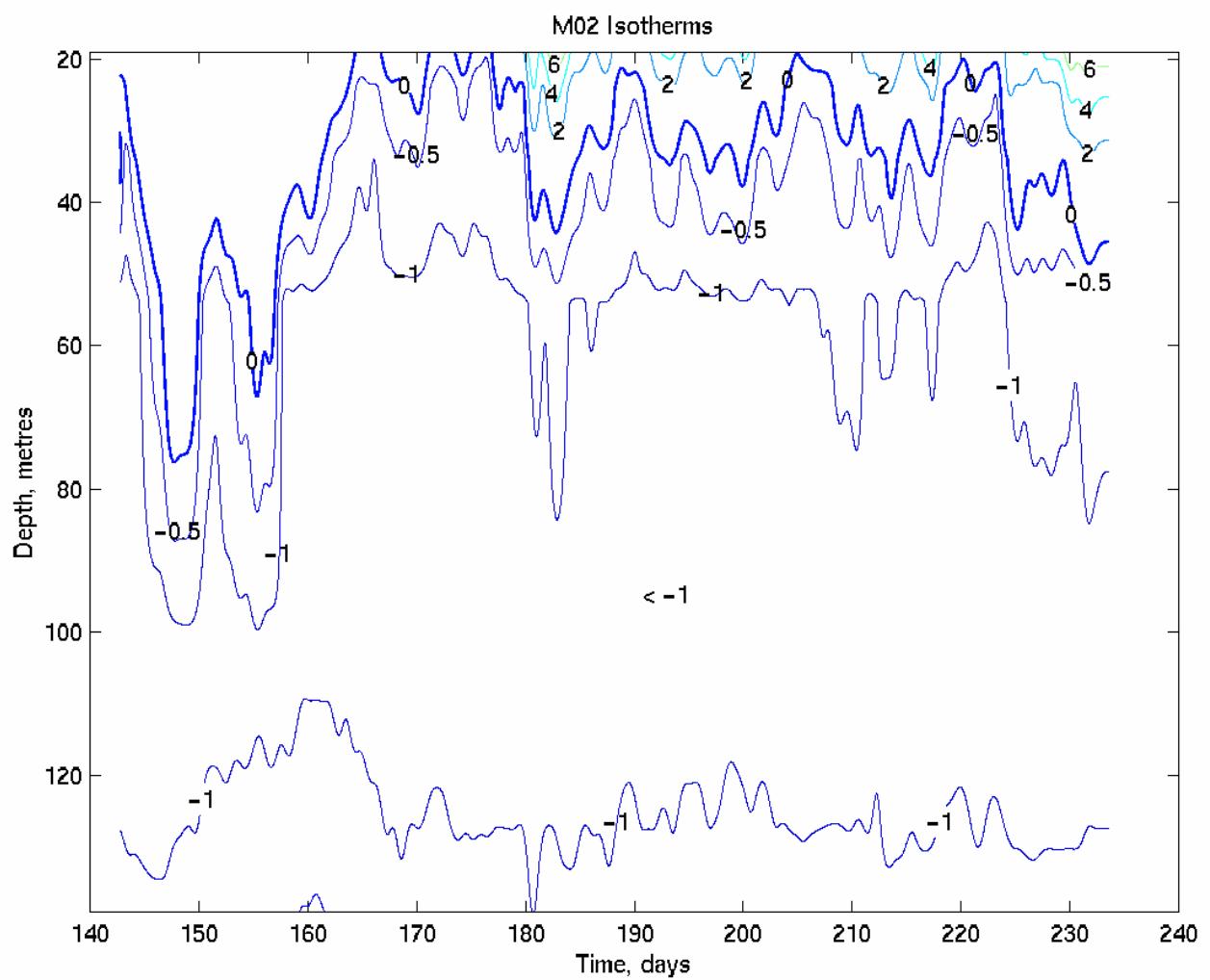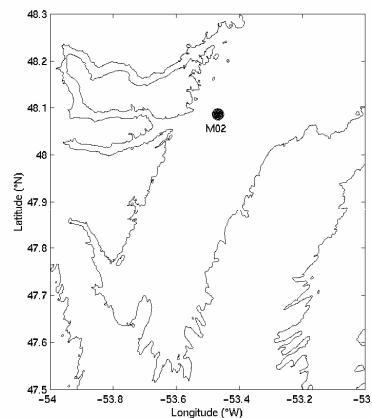
Figure 26: Isotherms at M2. From interpolated and filtered temperature data.

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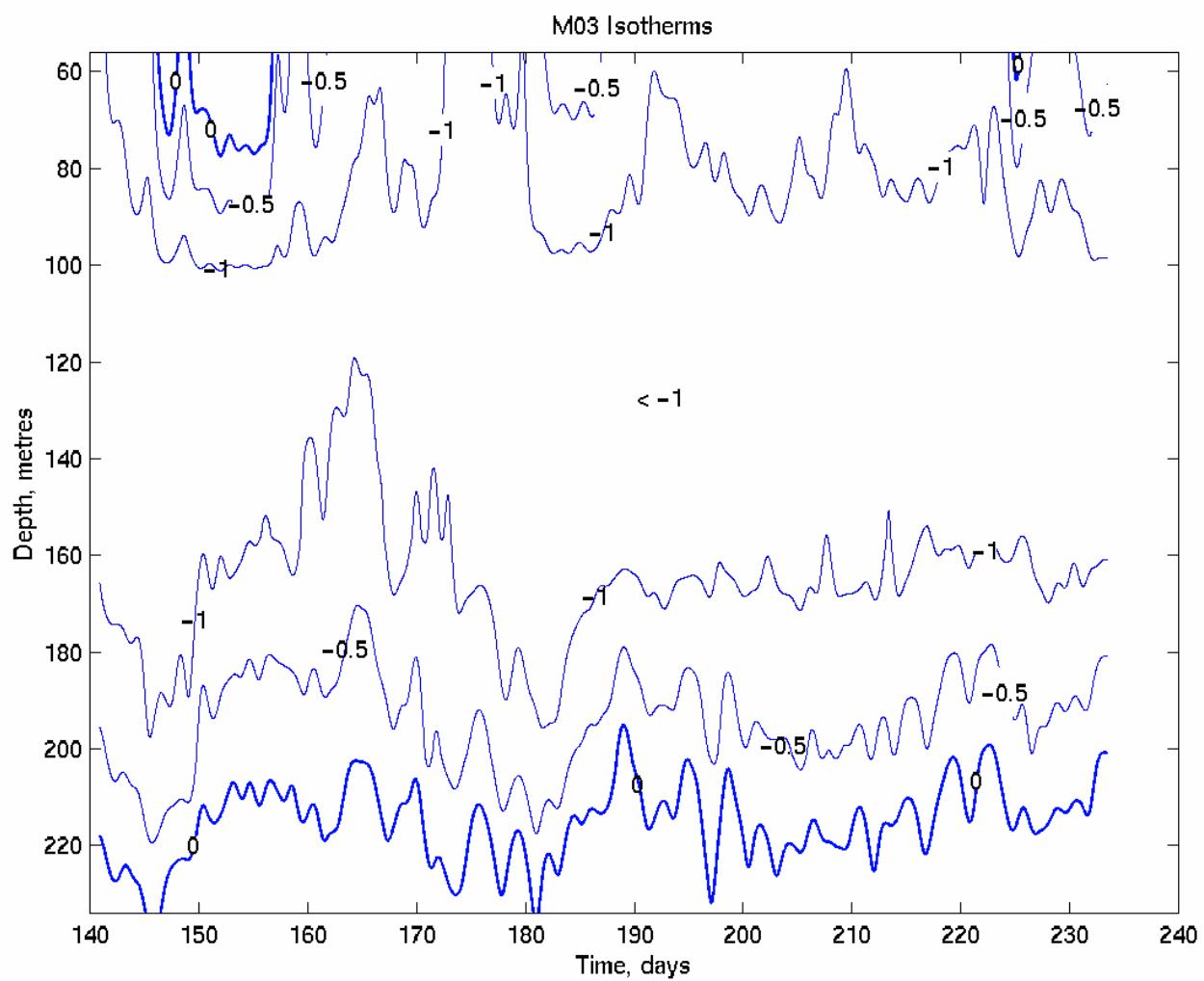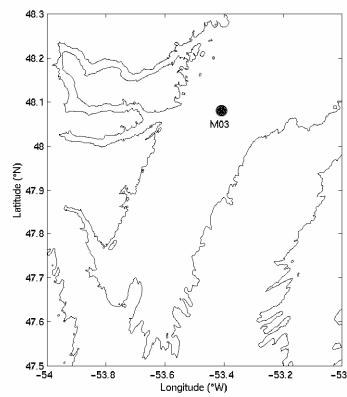
Figure 27: Isotherms at M3. From interpolated and filtered temperature data.
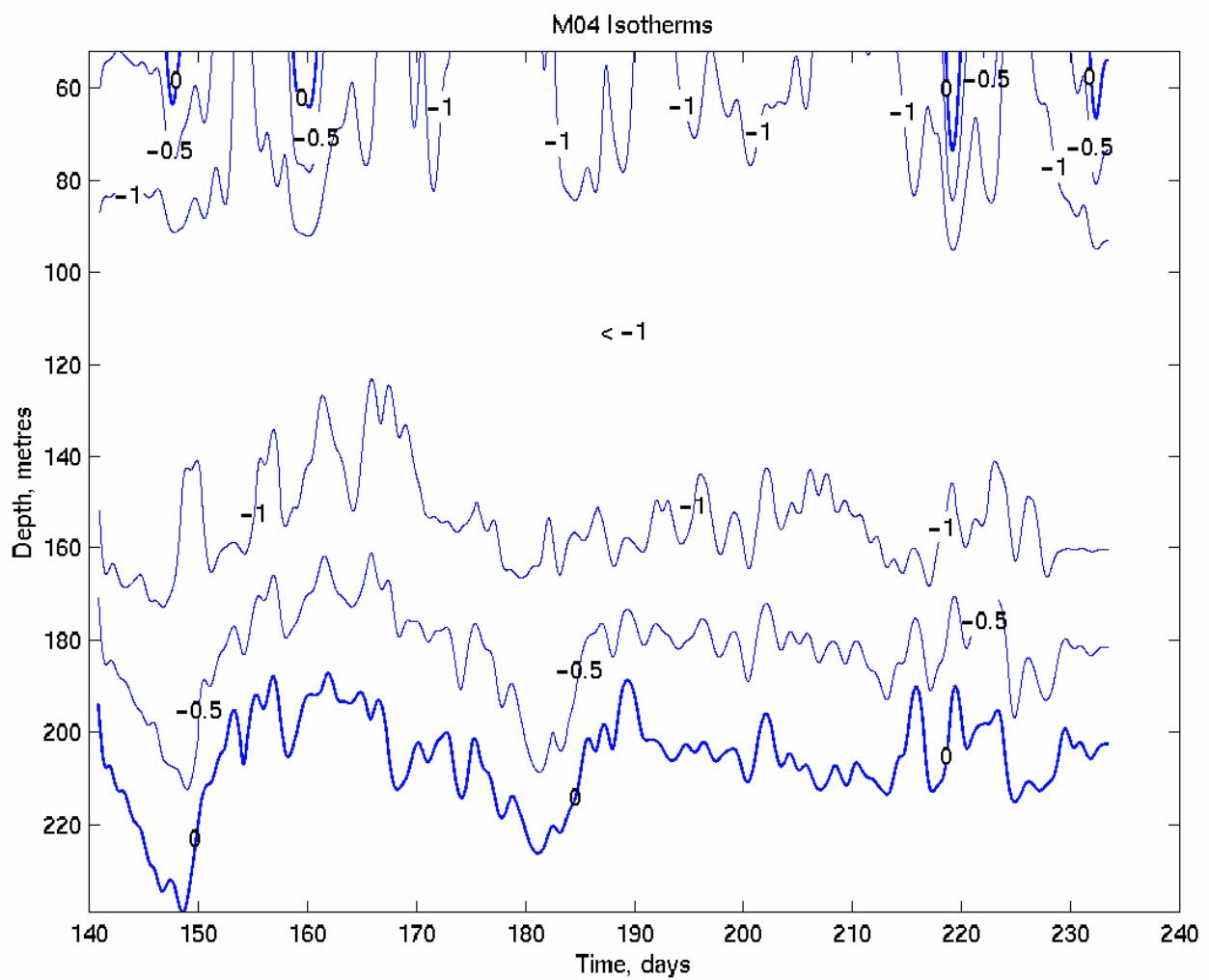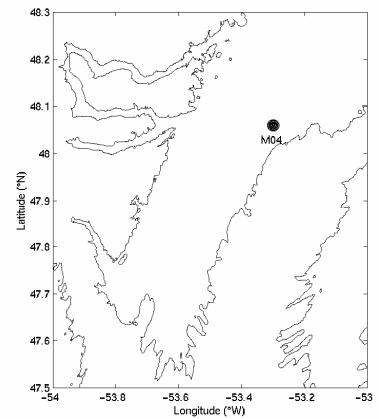
Figure 28: Isotherms at M4. From interpolated and filtered temperature data.
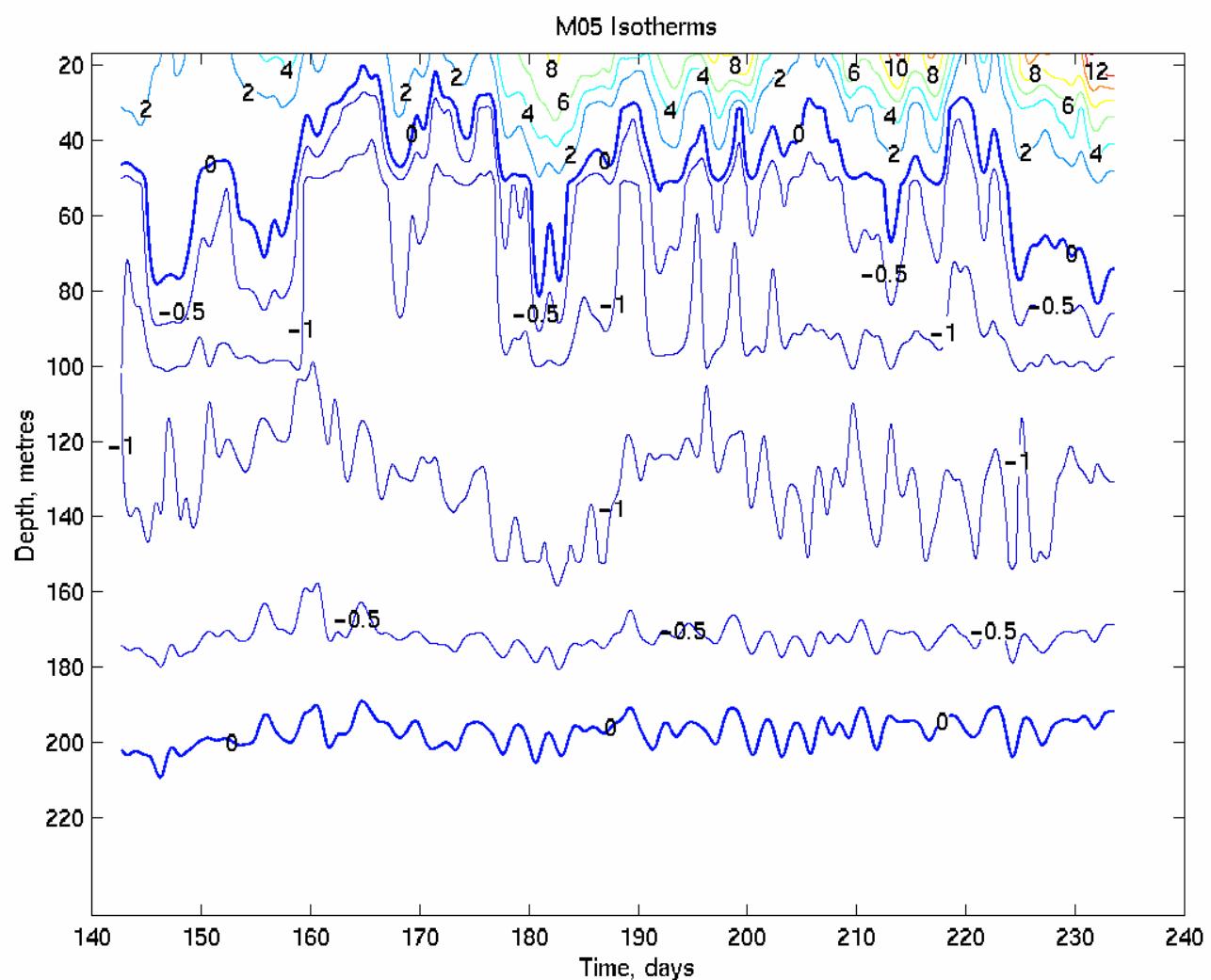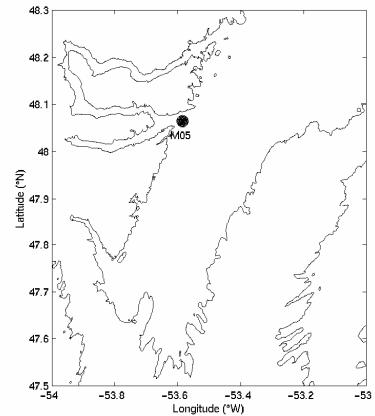
Figure 29: Isotherms at M5. From interpolated and filtered temperature data.
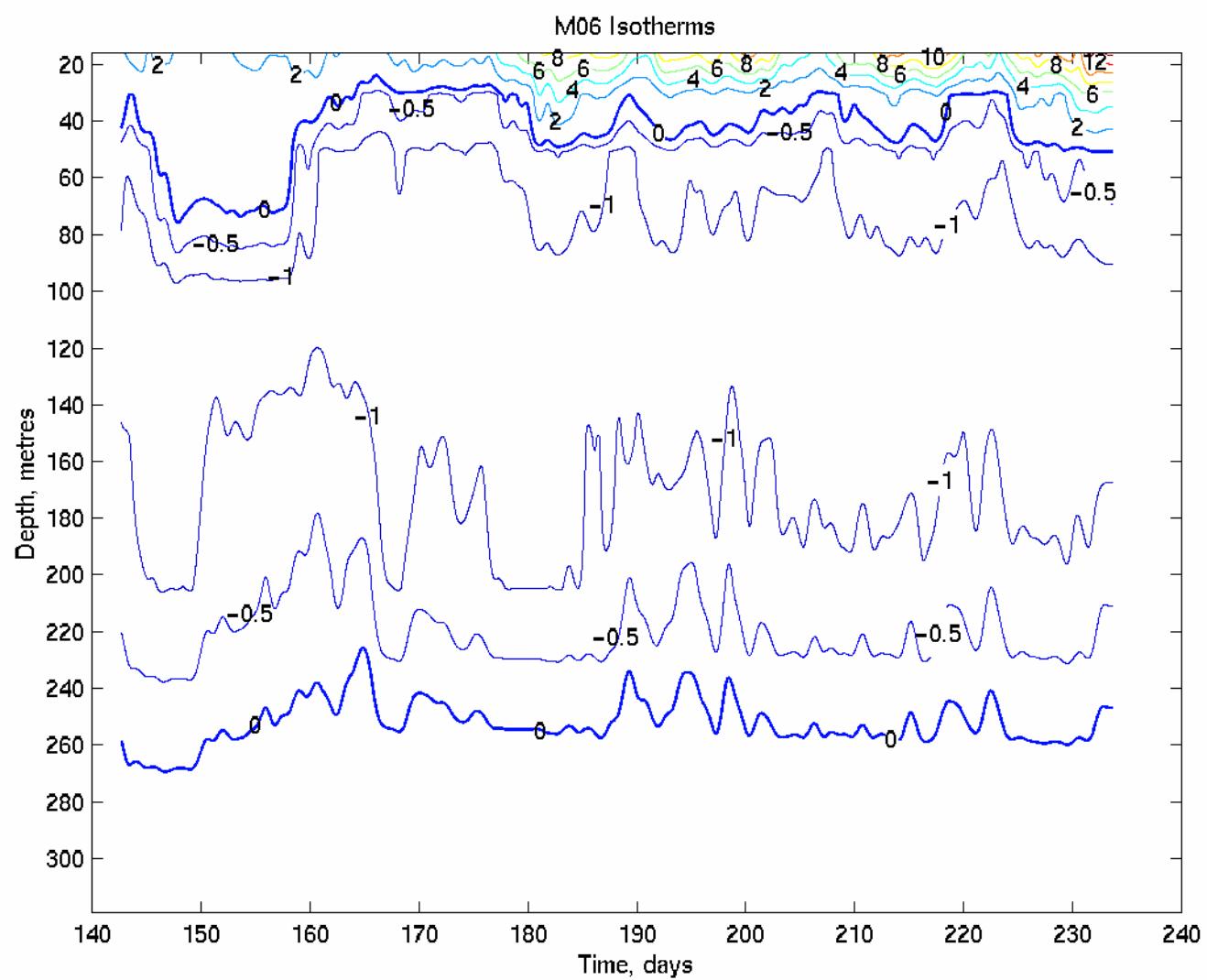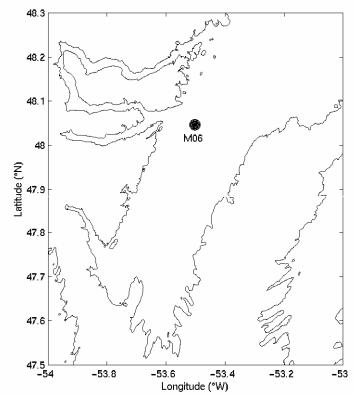
Figure 30: Isotherms at M6. From interpolated and filtered temperature data.
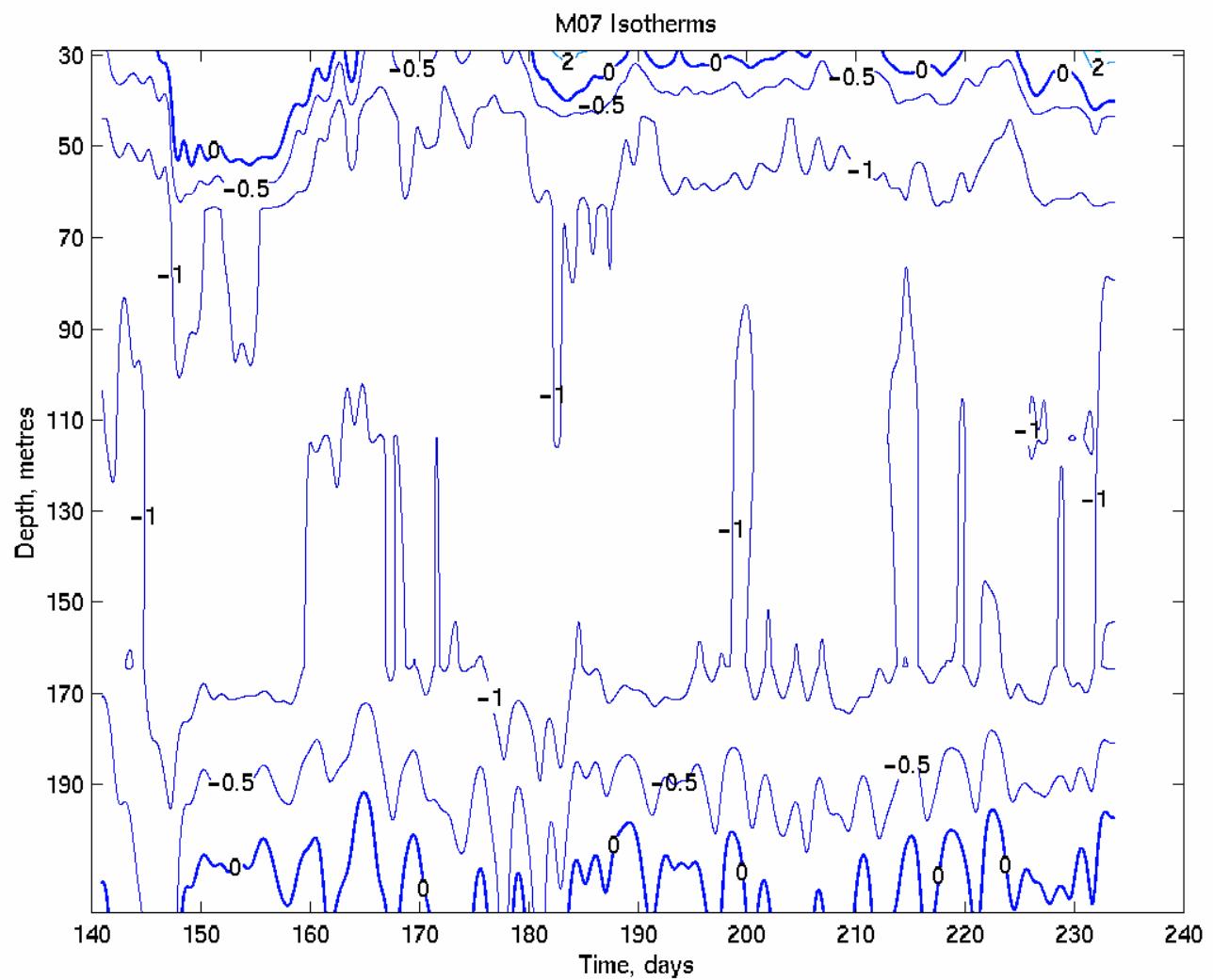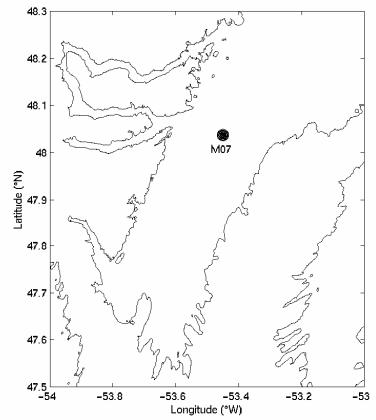
Figure 31: Isotherms at M7. From interpolated and filtered temperature data.
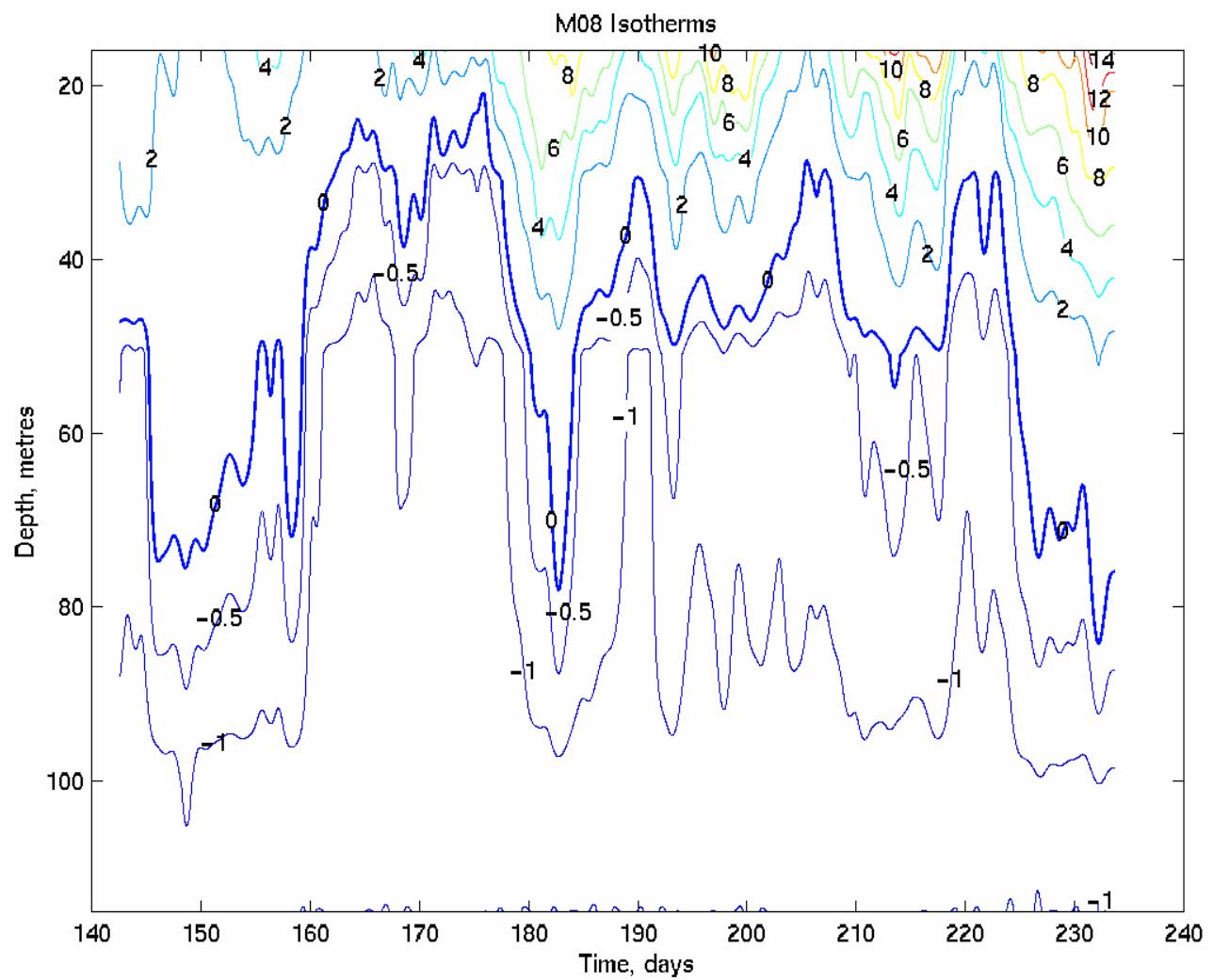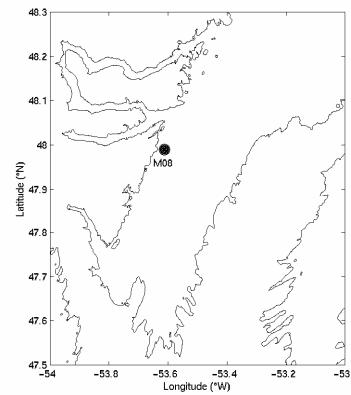
Figure 32: Isotherms at M8. From interpolated and filtered temperature data.
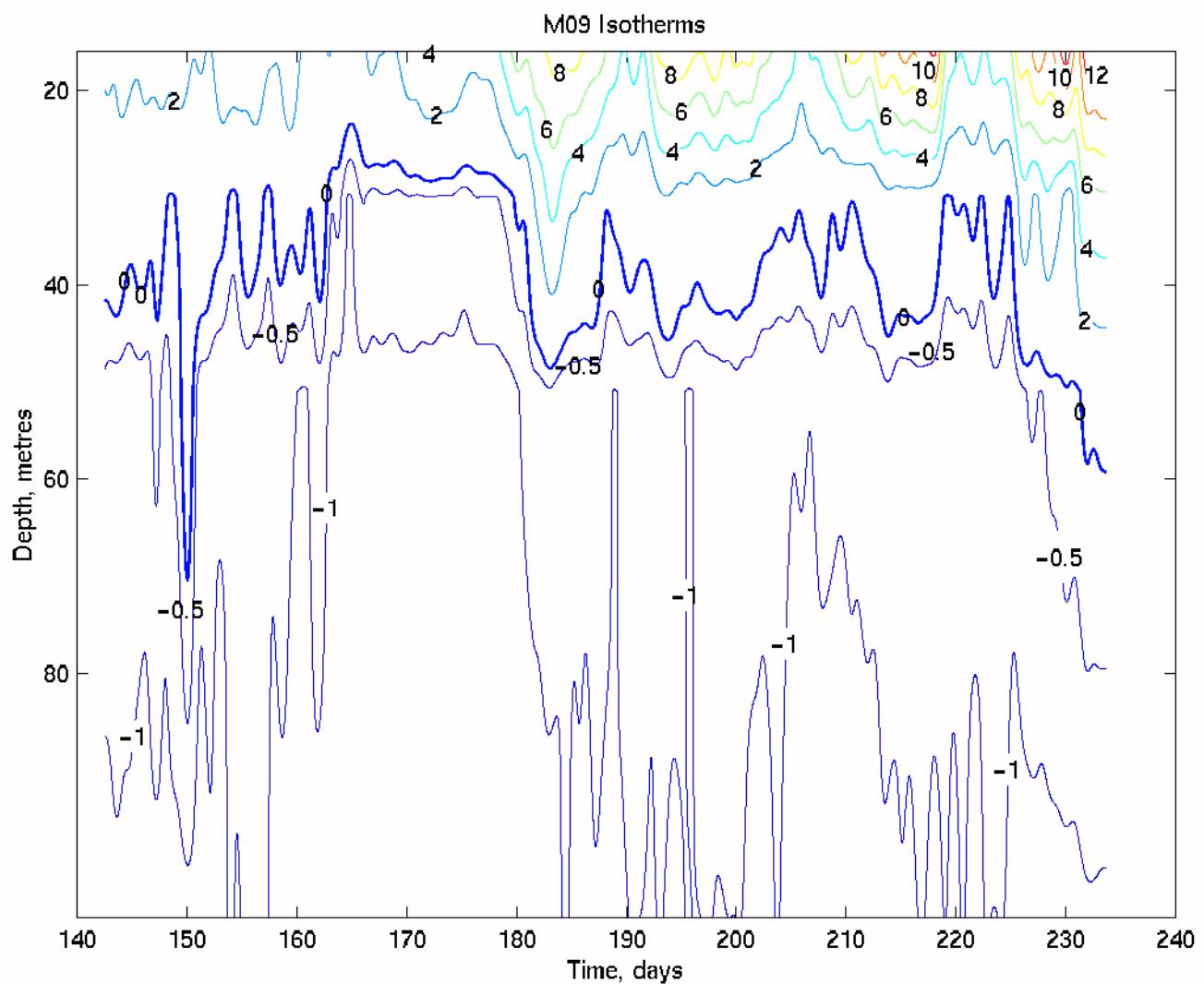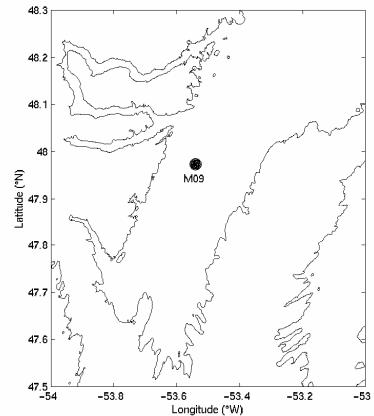
Figure 33: Isotherms at M9. From interpolated and filtered temperature data.
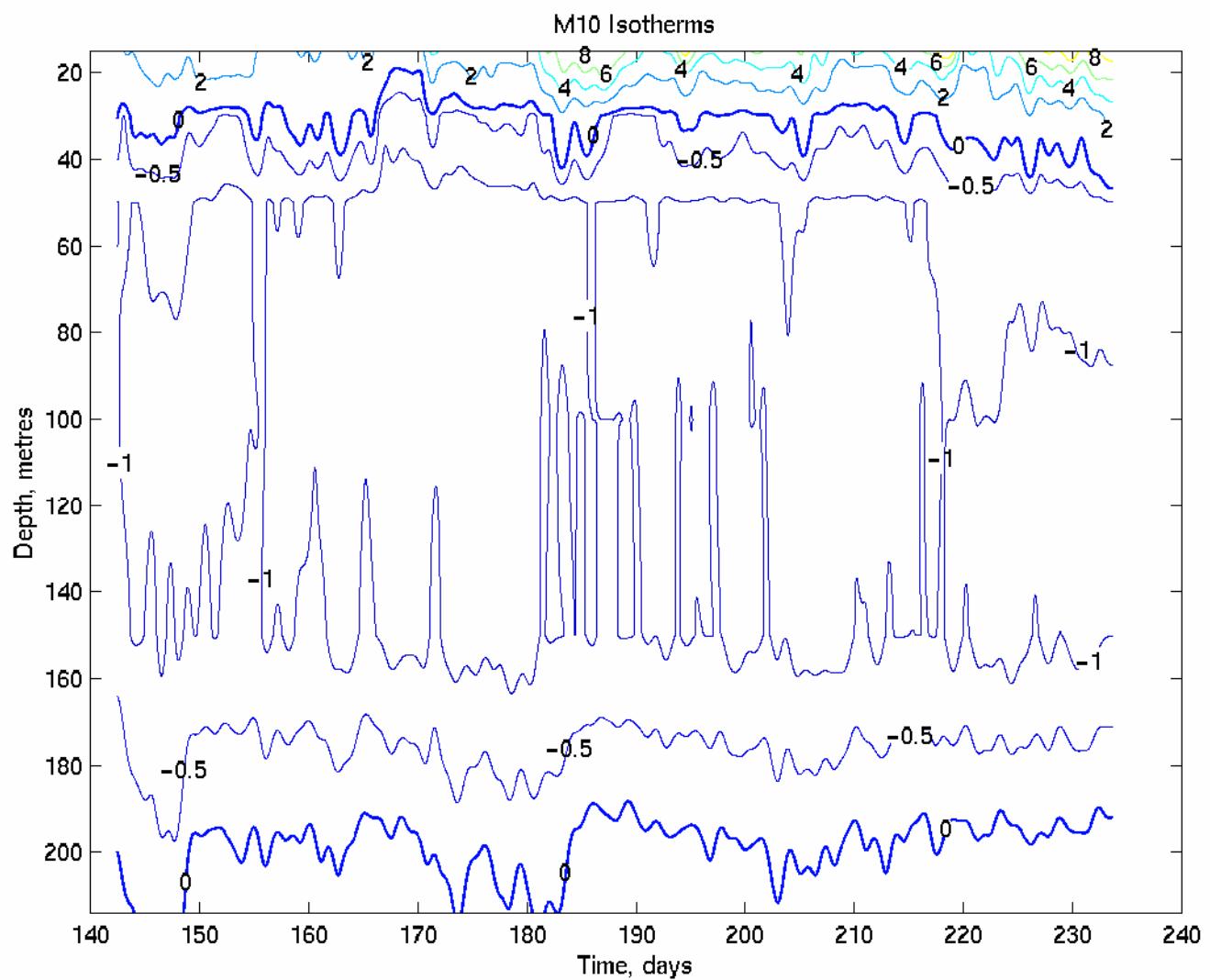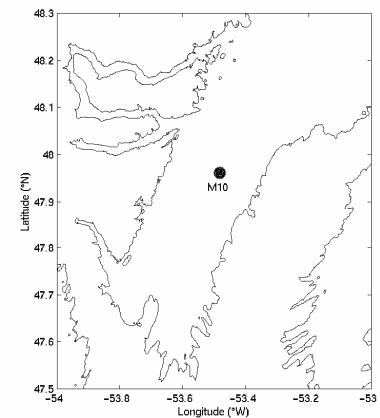
Figure 34: Isotherms at M10. From interpolated and filtered temperature data.
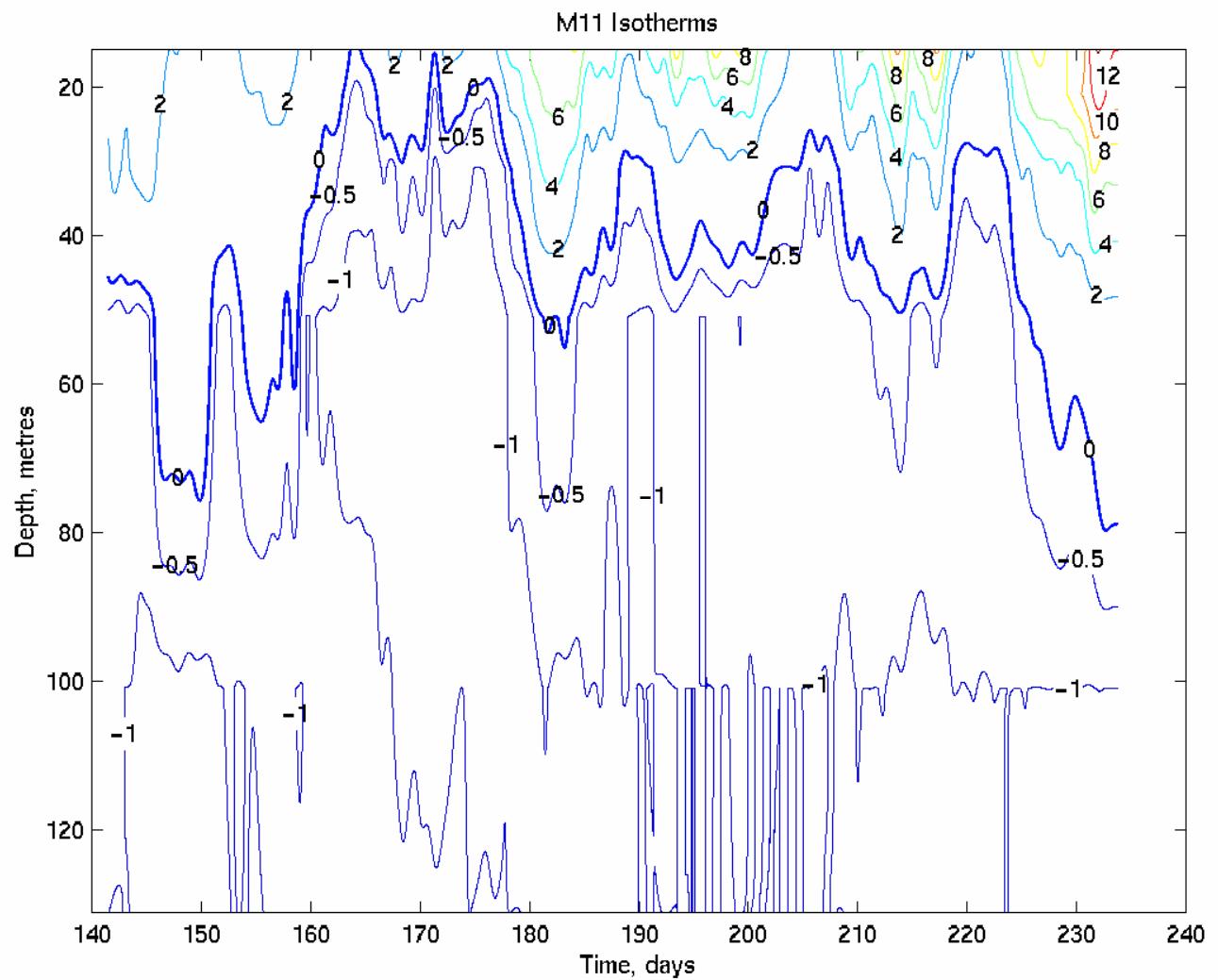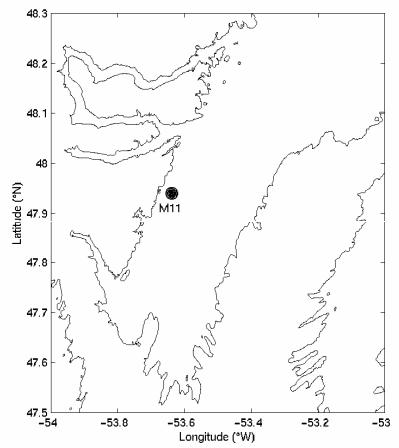
Figure 35: Isotherms at M11. From interpolated and filtered temperature data.
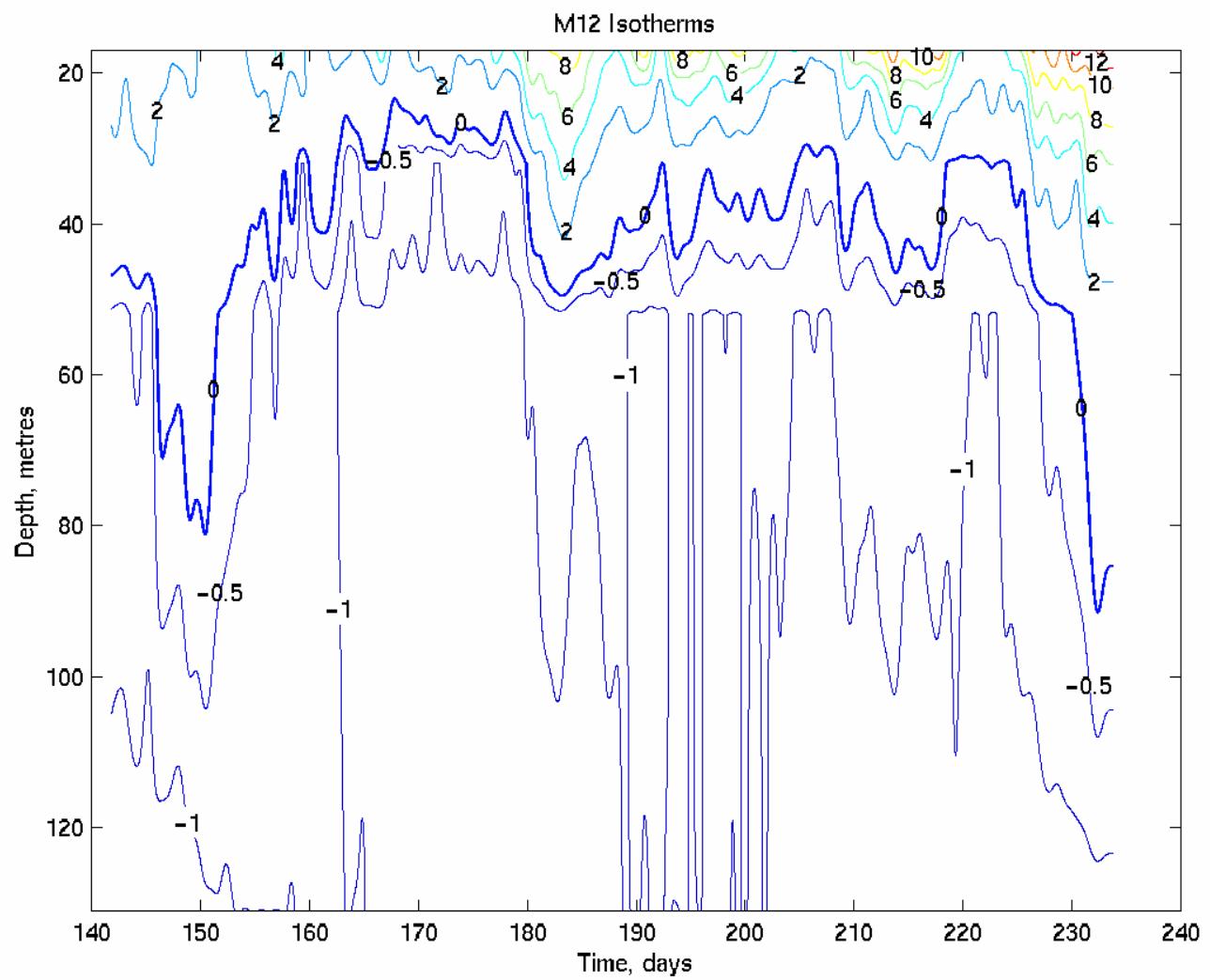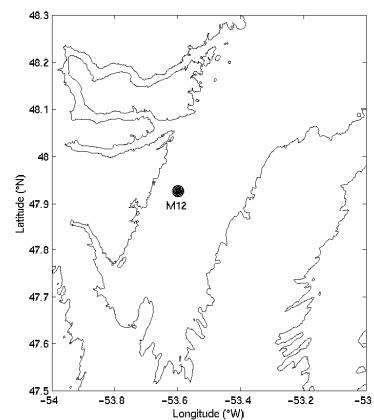
Figure 36: Isotherms at M12. From interpolated and filtered temperature data.
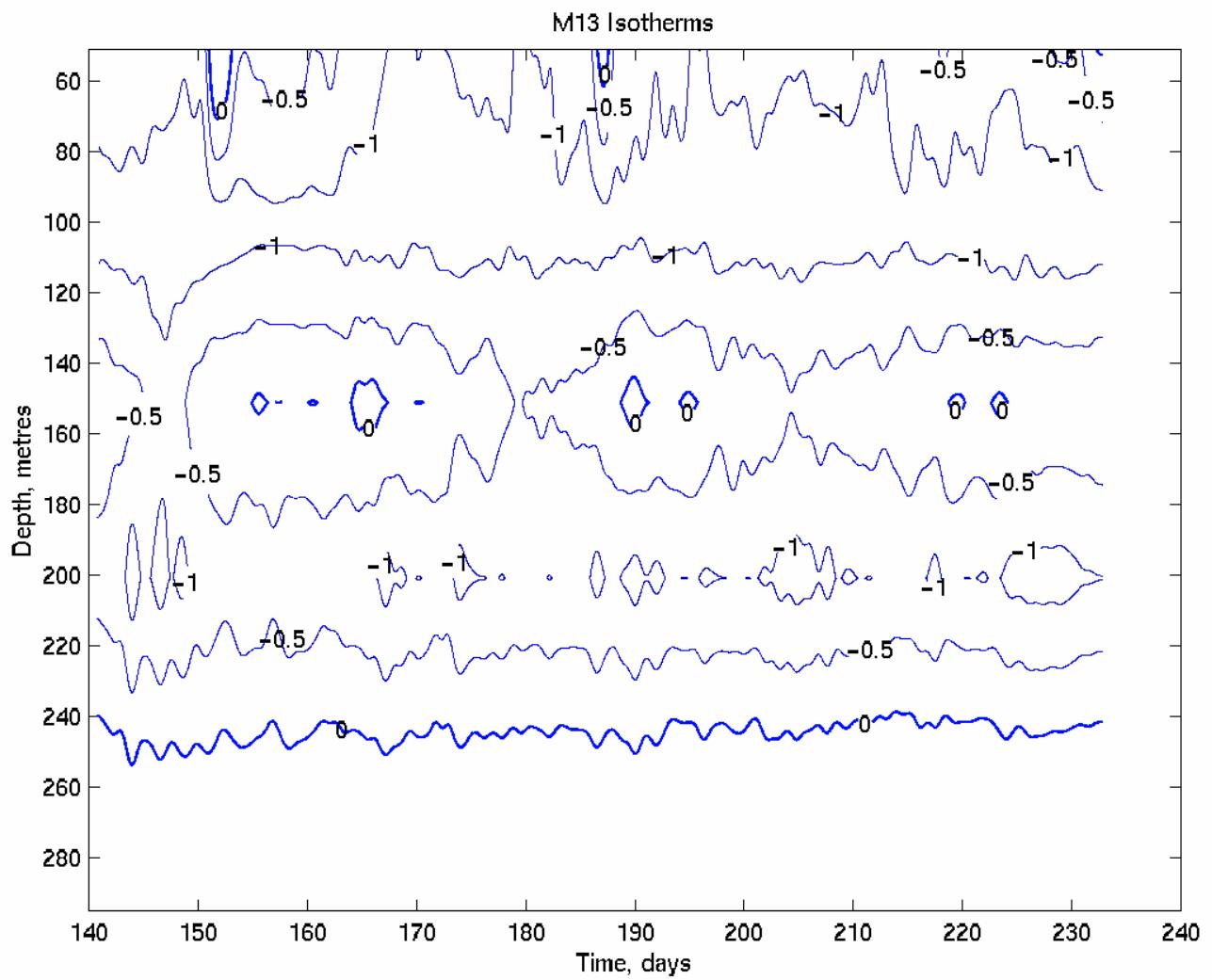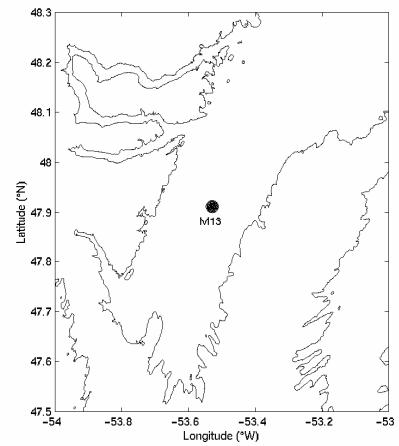
Figure 37: Isotherms at M13. From interpolated and filtered temperature data.
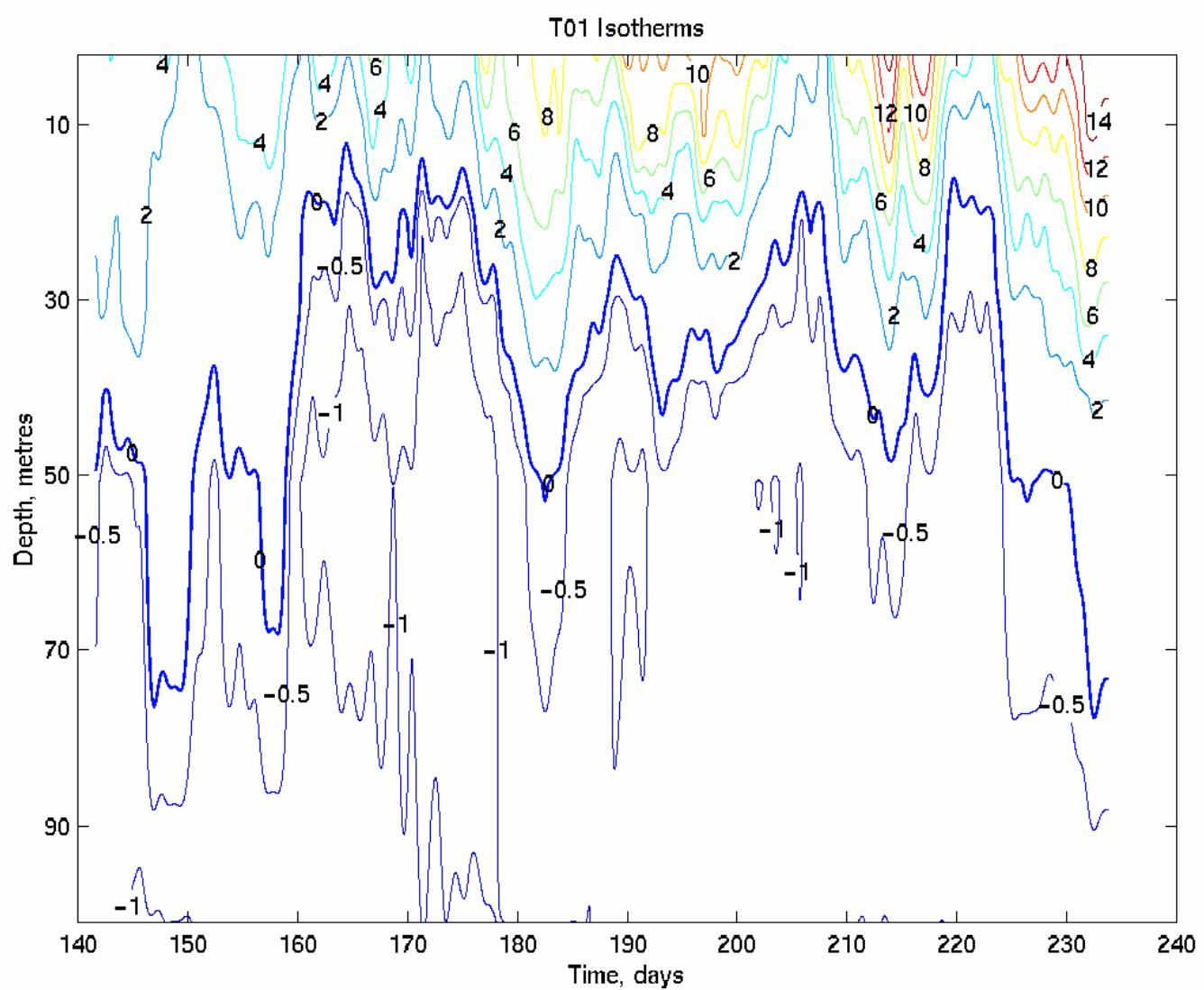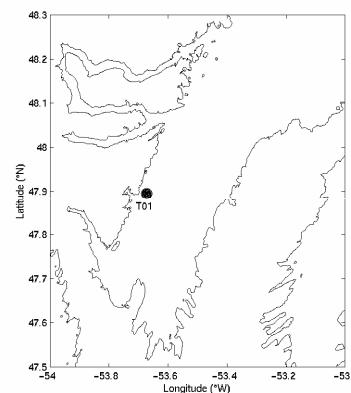
Figure 38: Isotherms at T1. From interpolated and filtered temperature data.
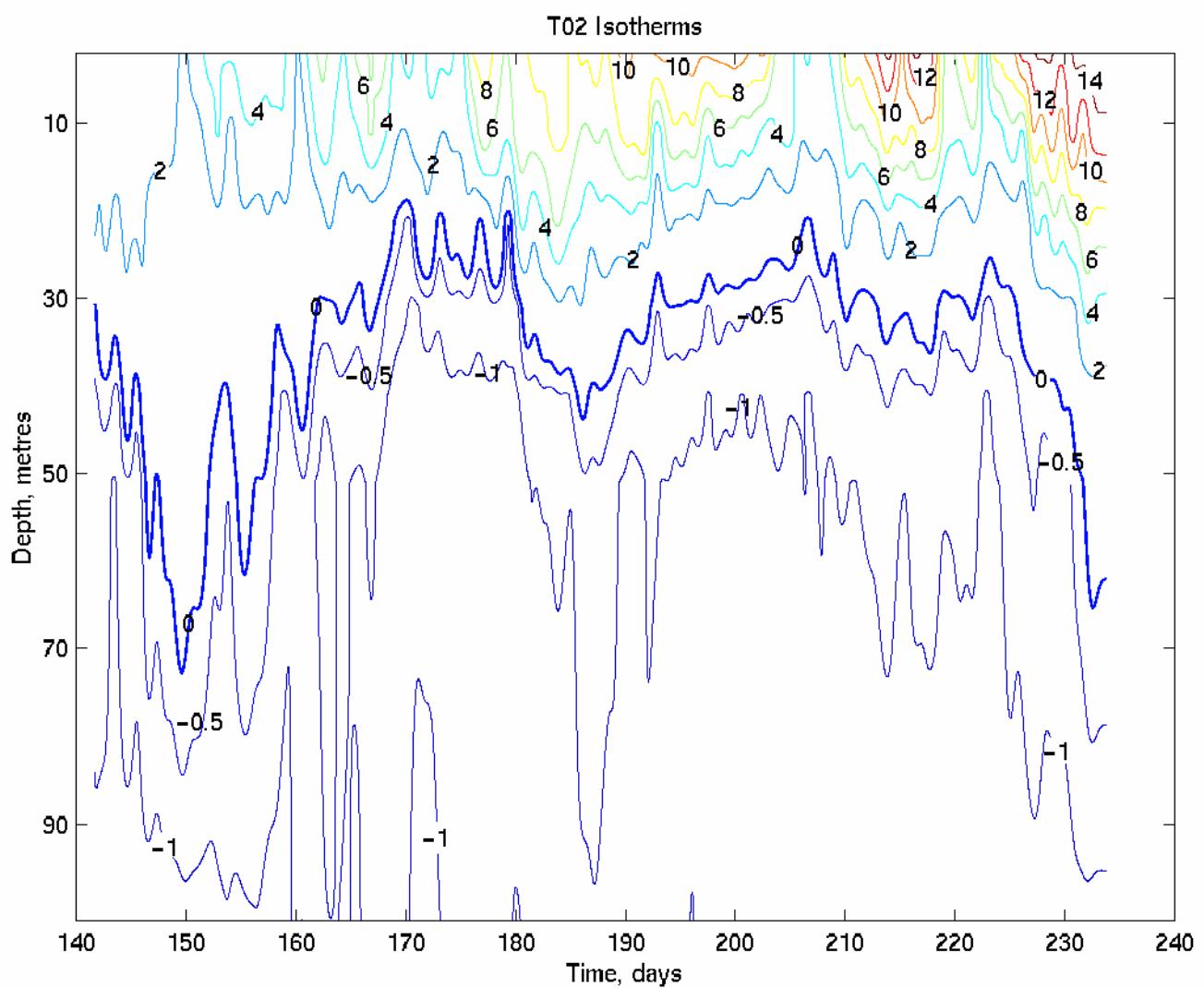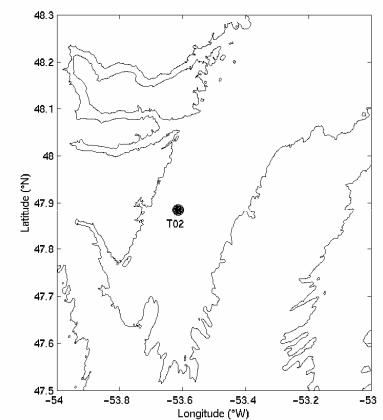
Figure 39: Isotherms at T2. From interpolated and filtered temperature data.
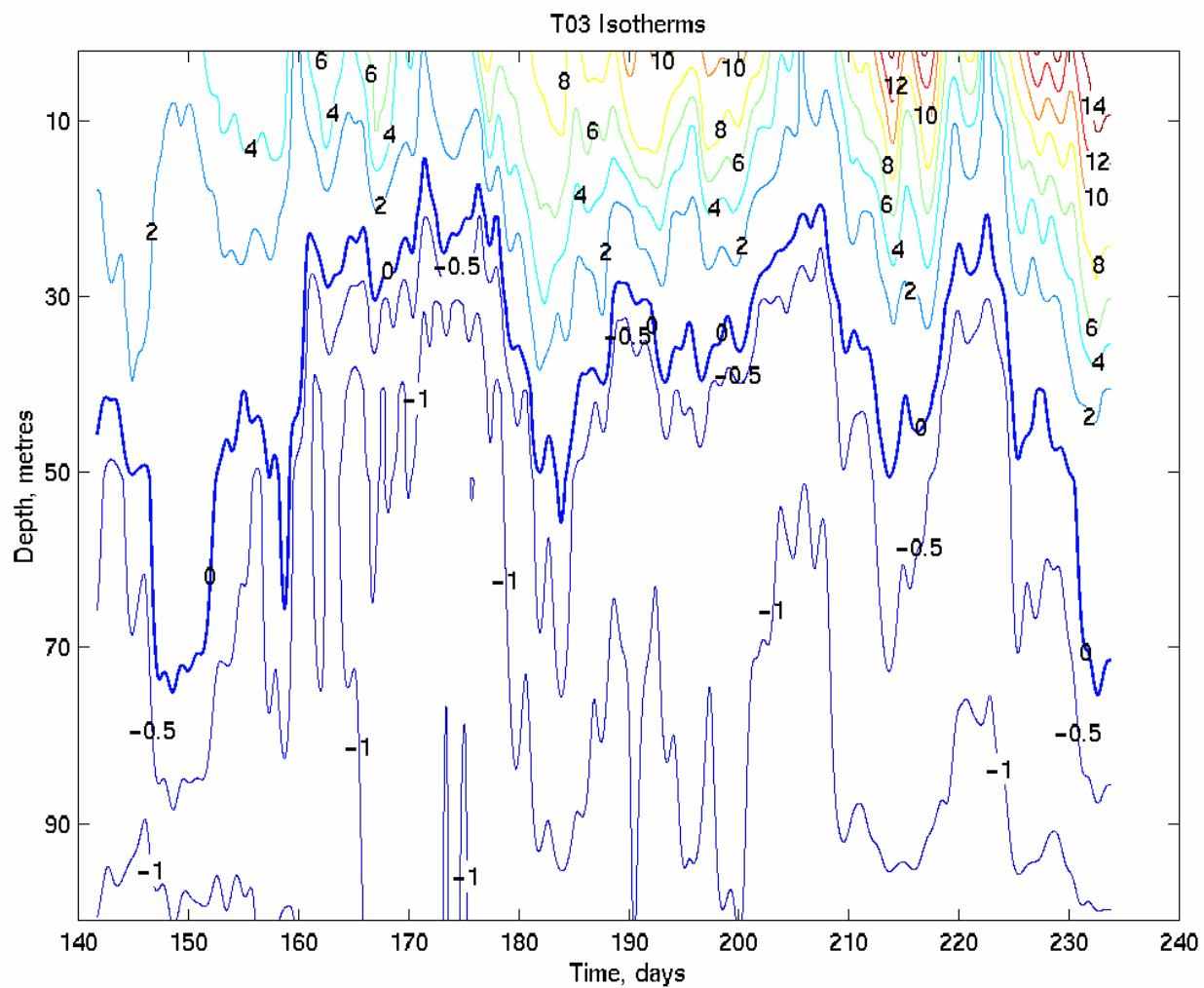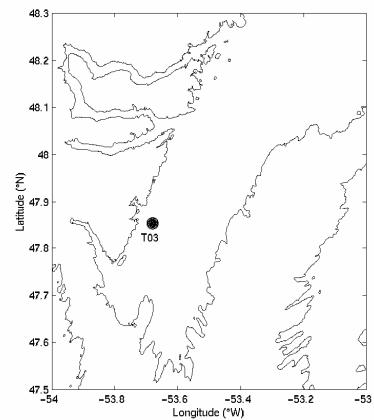
Figure 40: Isotherms at T3. From interpolated and filtered temperature data.
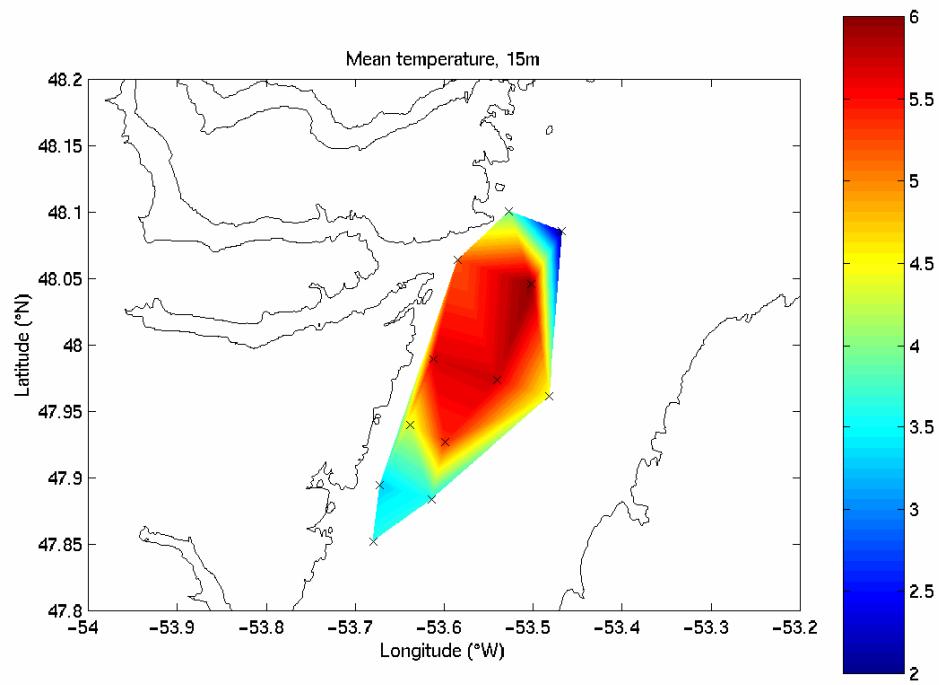
Figure 41: Mean temperature, 15 metres. Linearly interpolated from moorings.
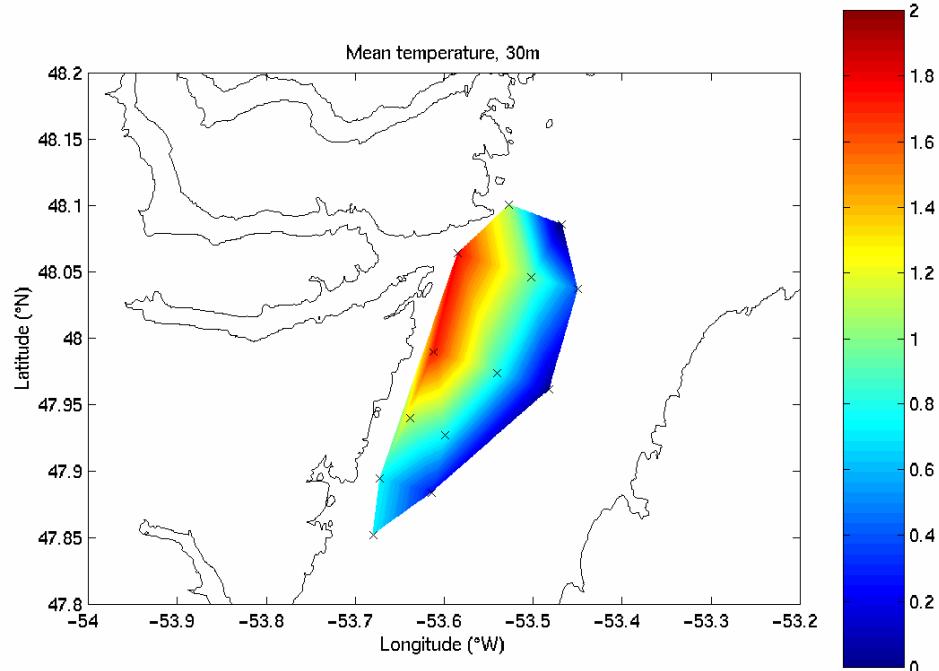
Figure 42: Mean temperature, 30 metres. Linearly interpolated from moorings.
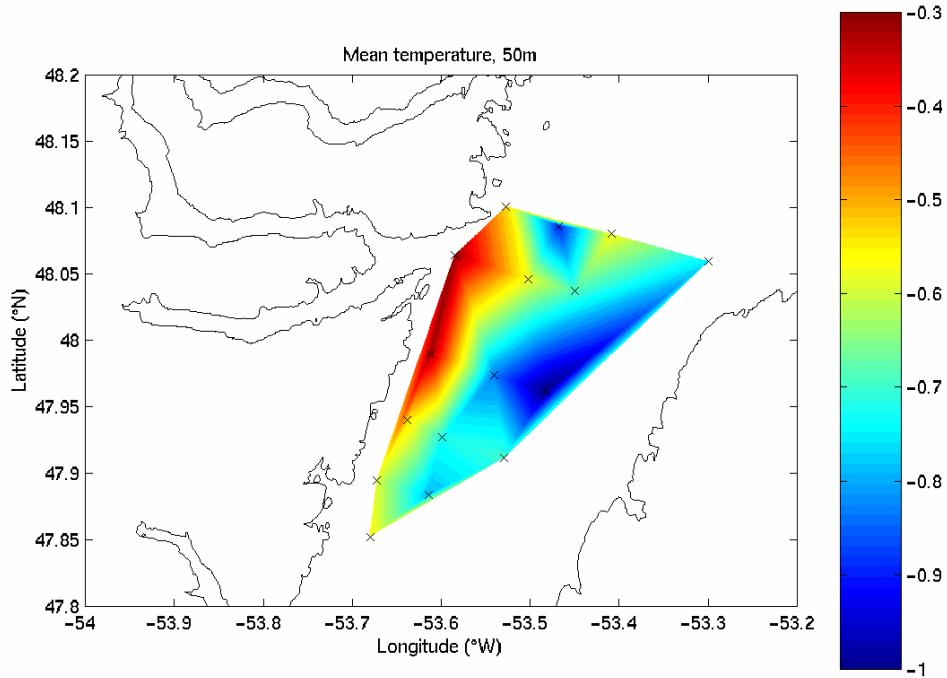
Figure 43: Mean temperature, 50 metres. Linearly interpolated from moorings.
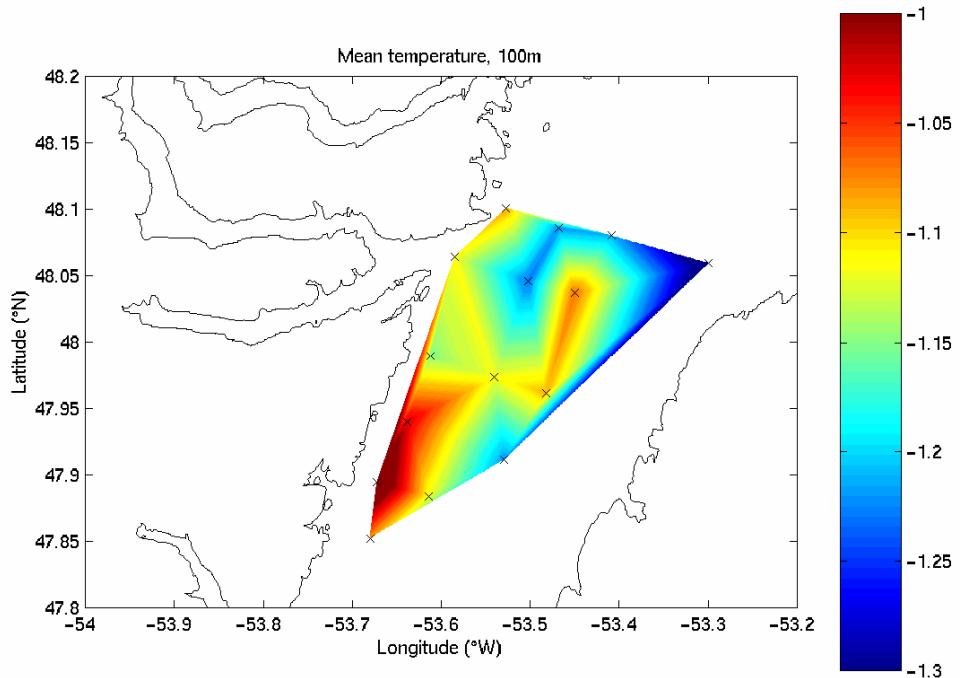
Figure 44: Mean temperature, 100 metres. Linearly interpolated from moorings.
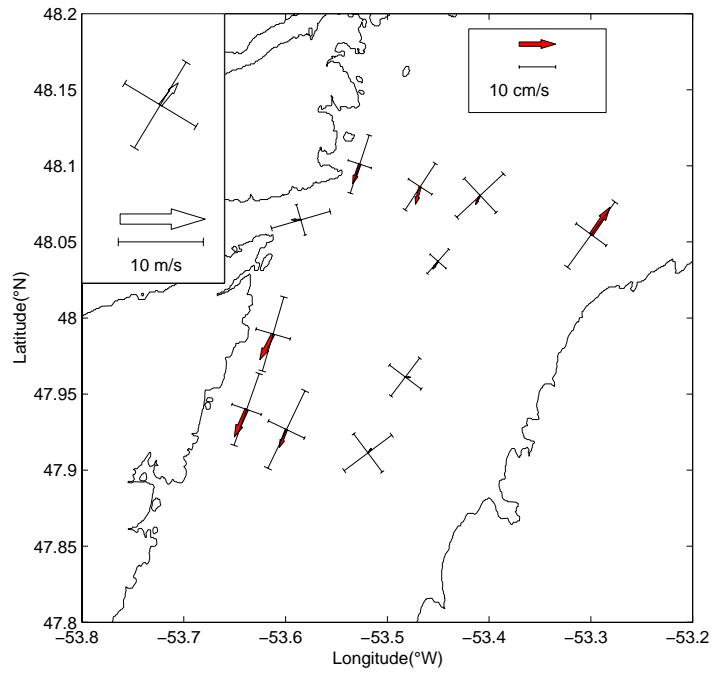
Figure 45: Mean currents at 20m. The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
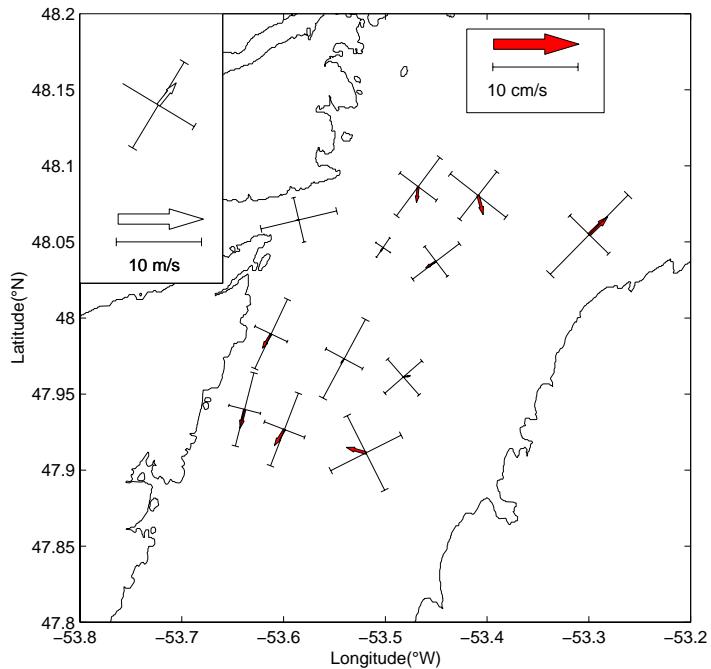

Figure 46: Mean currents at 50m. The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity
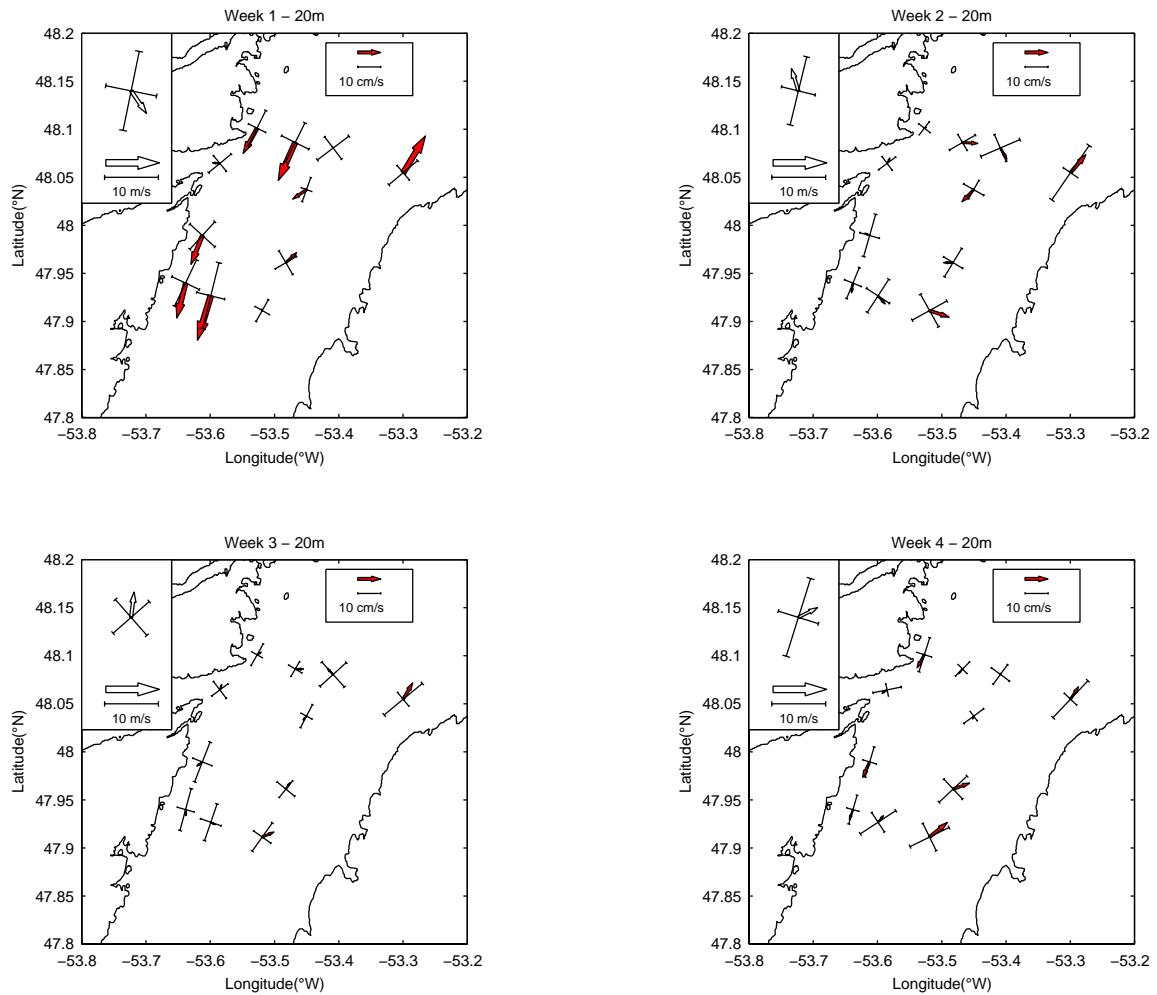
Figure 47: Weekly mean currents at 20m. Upper left: Week 1 (days 142-148). Upper right: Week 2 (days 149-155). Lower left: Week 3 (days 156-162). Lower right: Week 4 (days 163 – 169). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
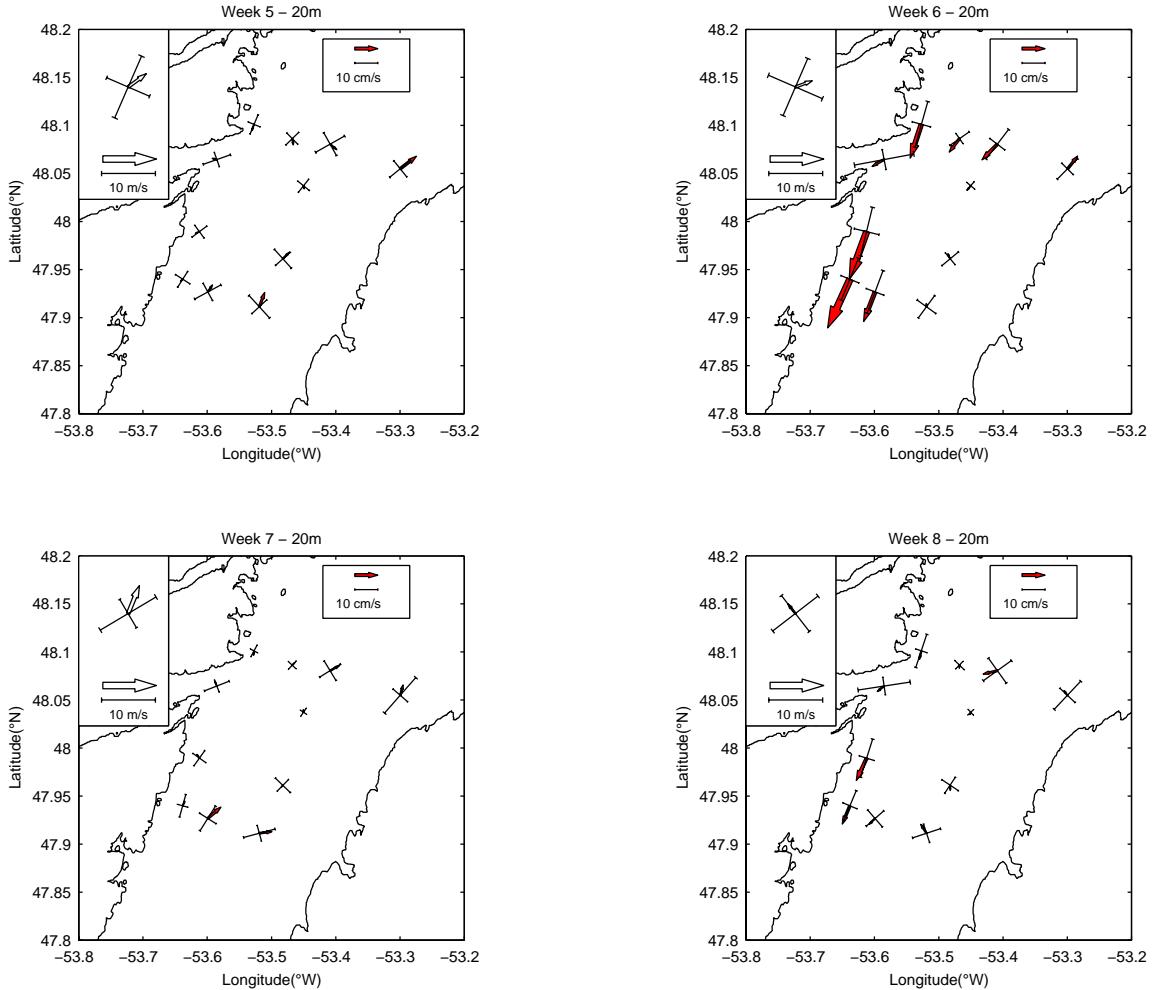
Figure 48: Weekly mean currents at 20m. Upper left: Week 5 (days 170-176). Upper right: Week 6 (days 177-183). Lower left: Week 7 (days 184-190). Lower right: Week 8 (days 191-197). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
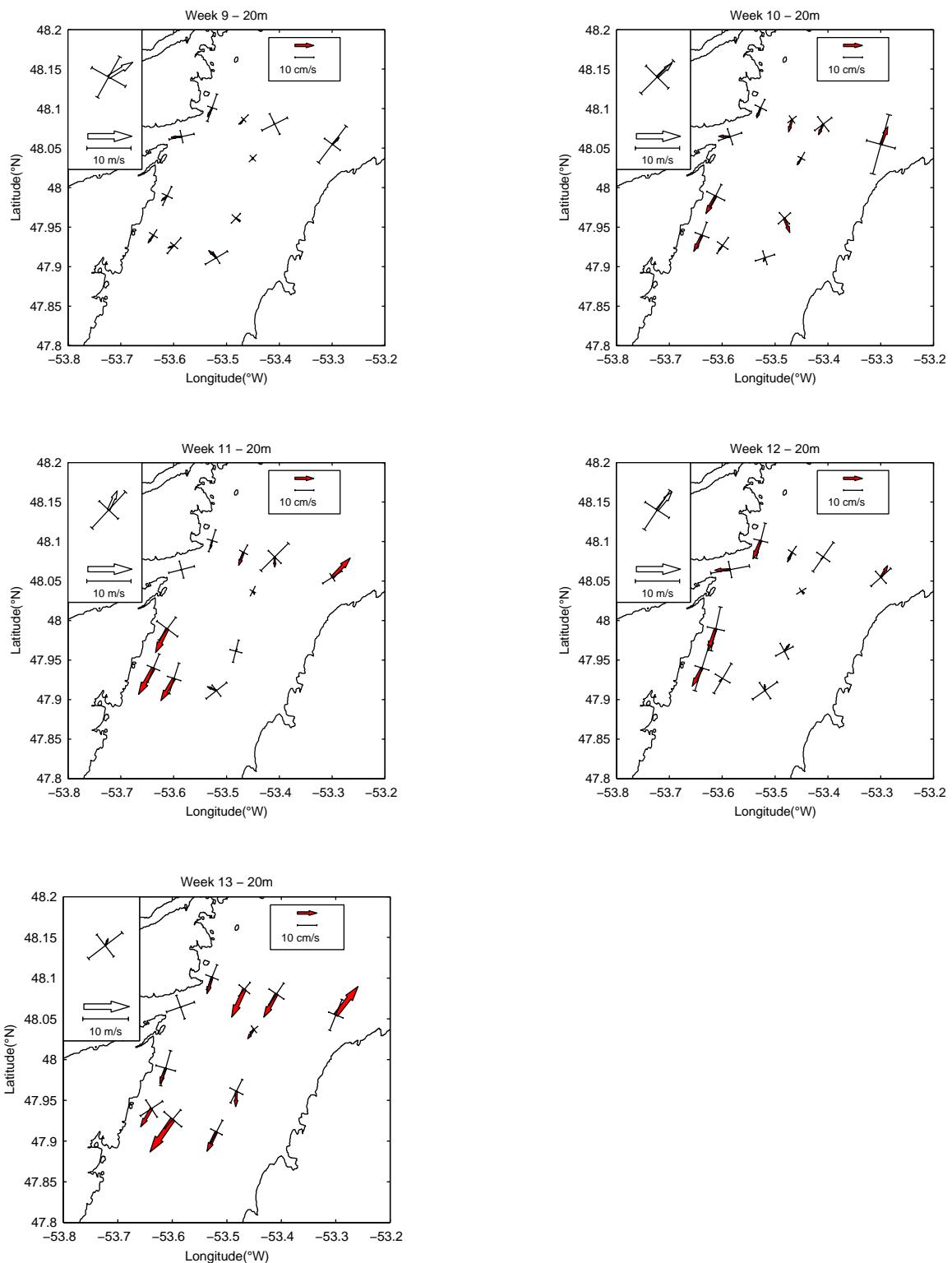
Figure 49: Weekly mean currents at 20m. Upper left: Week 9 (days 198-204). Upper right: Week 10 (days 205-211). Middle left: Week 11 (days 212-218). Lower right: Week 12 (days 219-225). Lower left: Week 13 (days 226-232). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
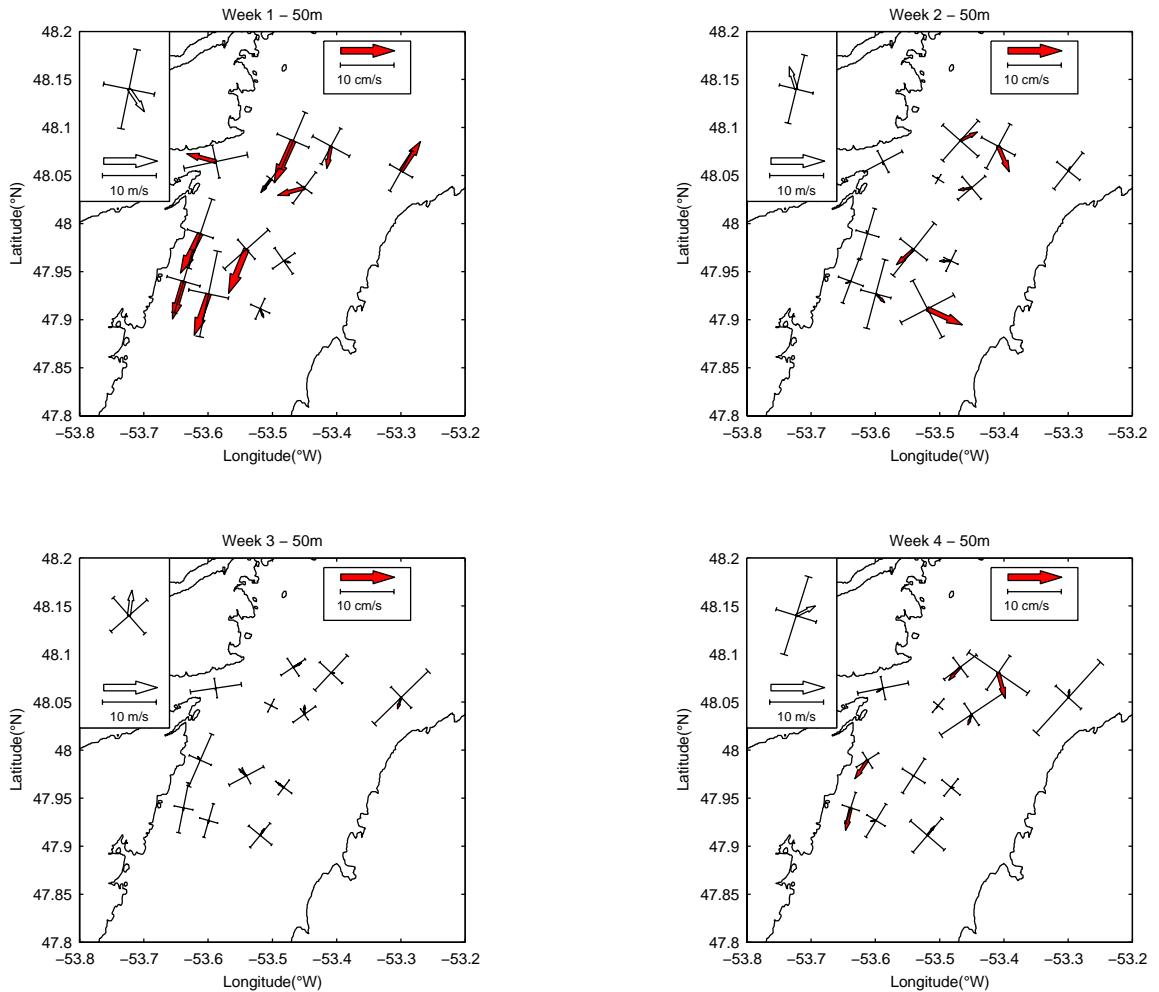
Figure 50: Mean currents at 50m. Upper left: Week 1 (days 142-148). Upper right: Week 2 (days 149-155). Lower left: Week 3 (days 156-162). Lower right: Week 4 (days 163 – 169). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
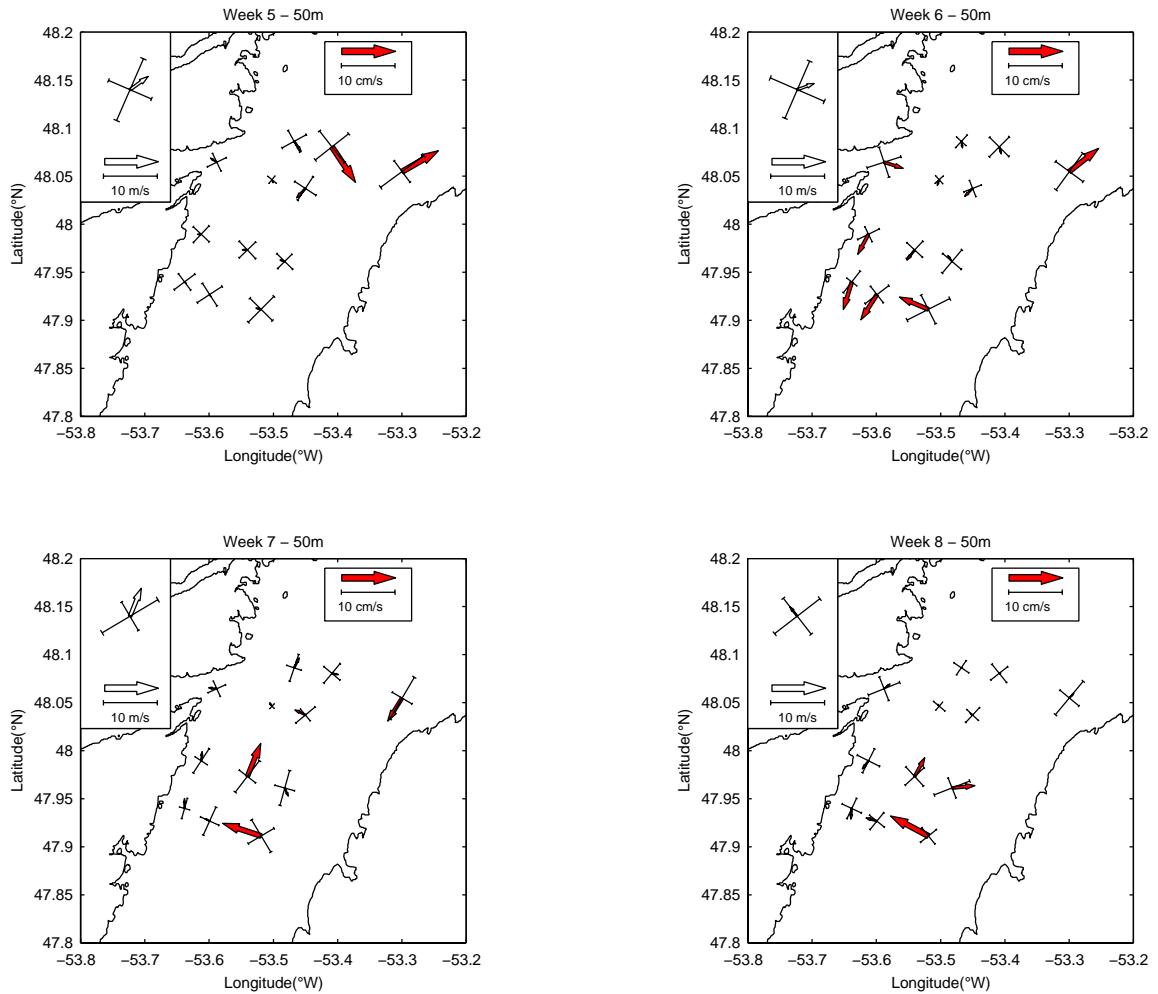
Figure 51: Mean currents at 50m. Upper left: Week 5 (days 170-176). Upper right: Week 6 (days 177-183). Lower left: Week 7 (days 184-190). Lower right: Week 8 (days 191-197). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
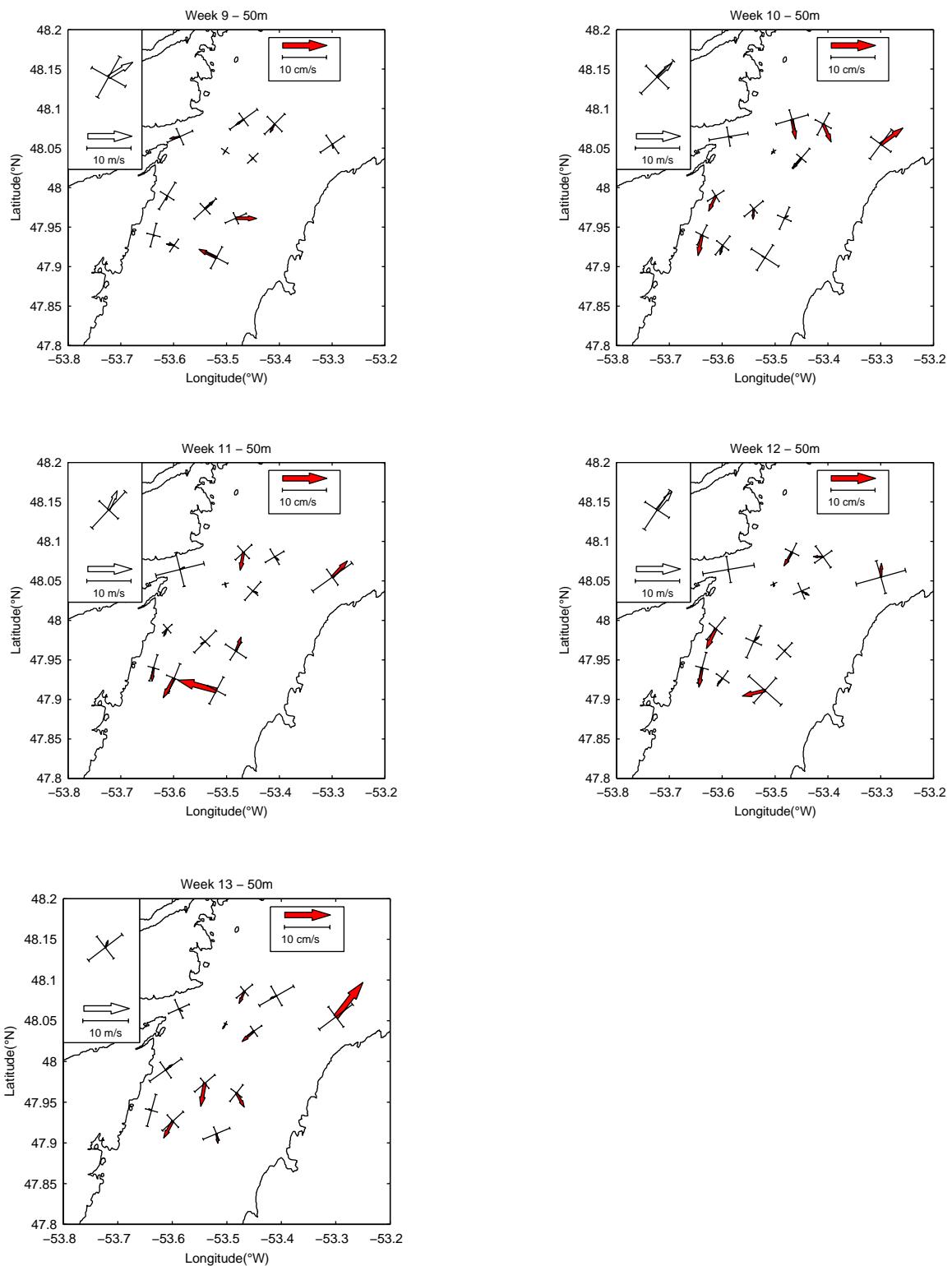
Figure 52: Weekly mean currents at 50m. Upper left: Week 9 (days 198-204). Upper right: Week 10 (days 205-211). Middle left: Week 11 (days 212-218). Lower right: Week 12 (days 219-225). Lower left: Week 13 (days 226-232). The solid axes represent standard deviation of the flow along the direction of maximum and minimum variance. The hollow arrow represents wind velocity.
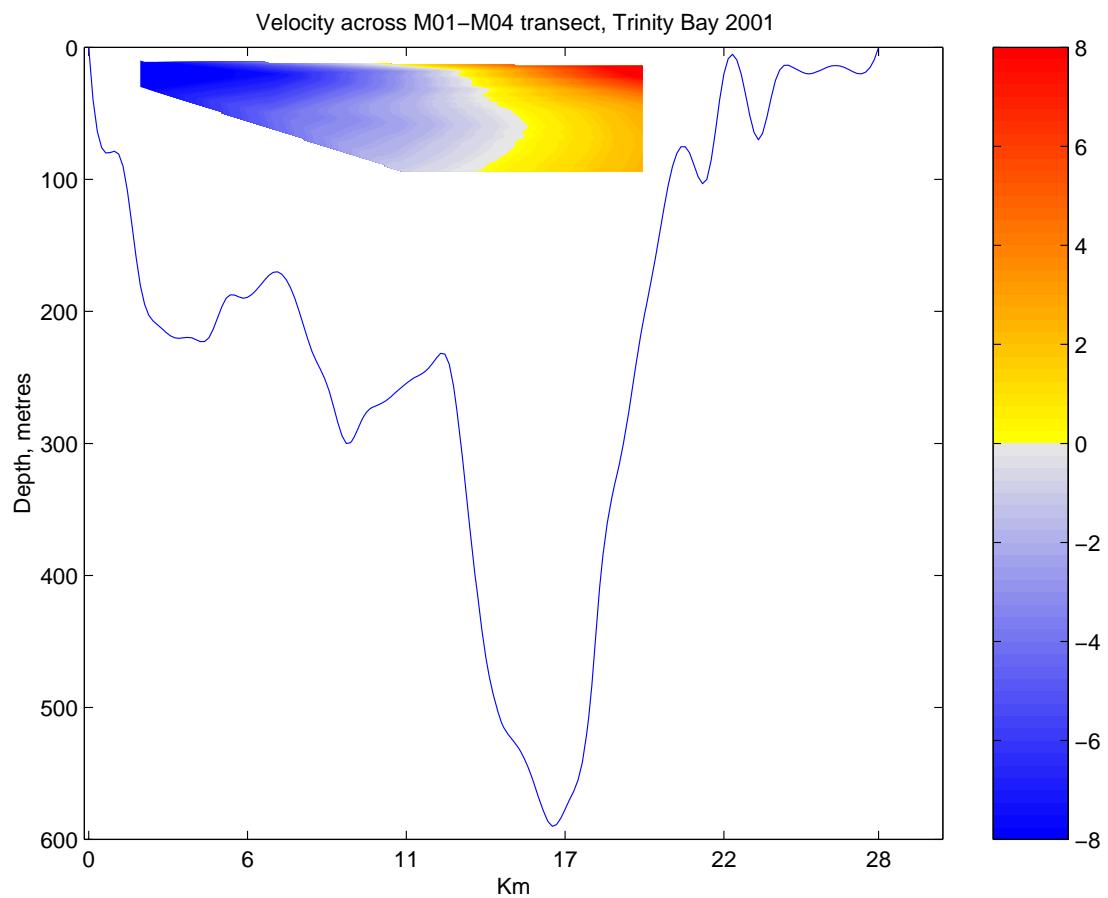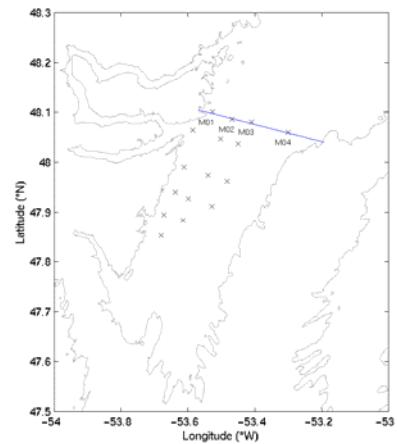
Figure 53: Velocity transect from M1 to M4, *u* component plotted where *u* is orthogonal to transect. Positive values represent flow out of the bay.
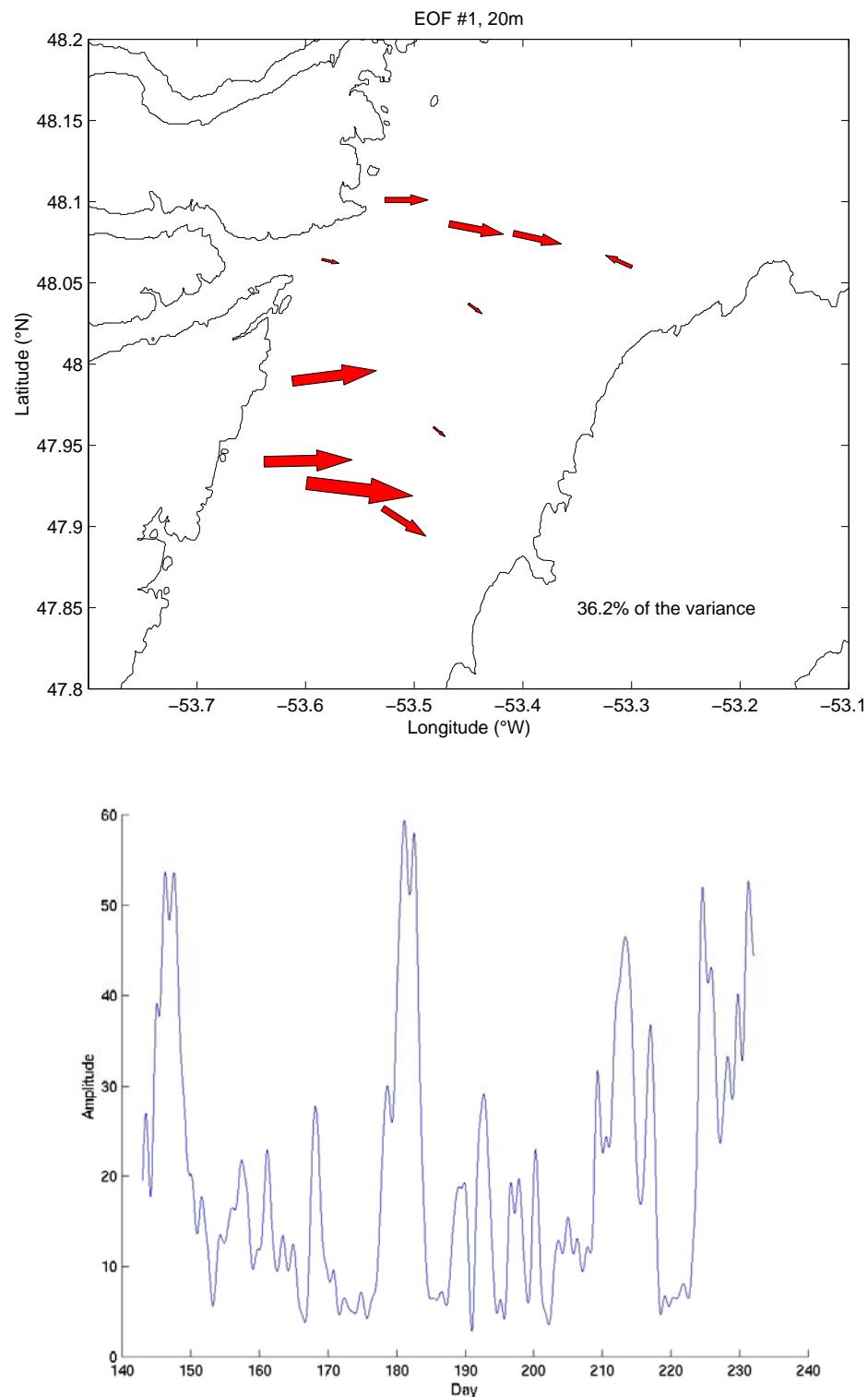
Figure 54: EOF number 1, 20 metres (upper panel), and a time-series plot of the amplitude of the first eigenmode (lower panel).
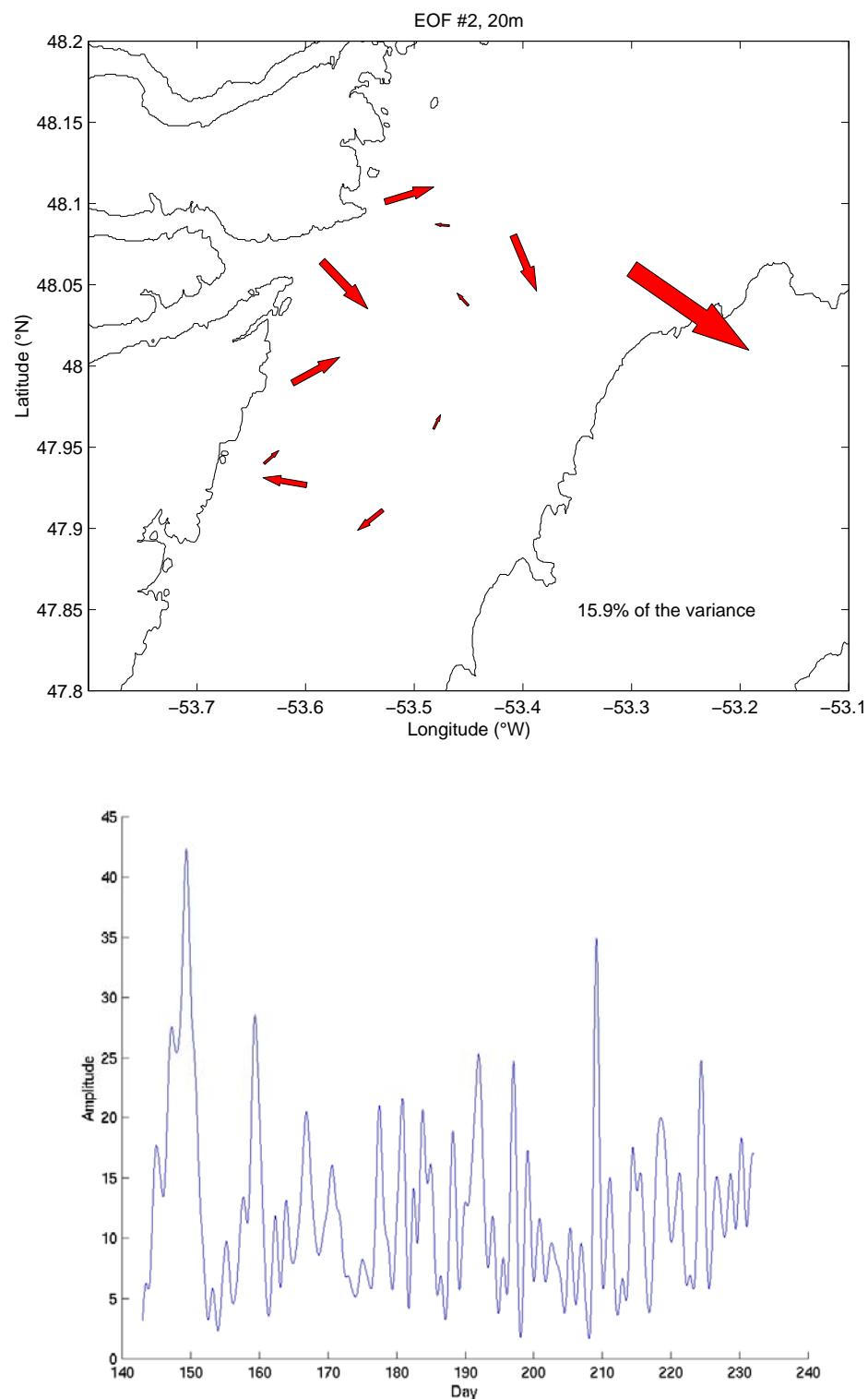
Figure 55: EOF number 2, 20 metres (upper panel), and a time-series plot of the amplitude of the second eigenmode (lower panel).
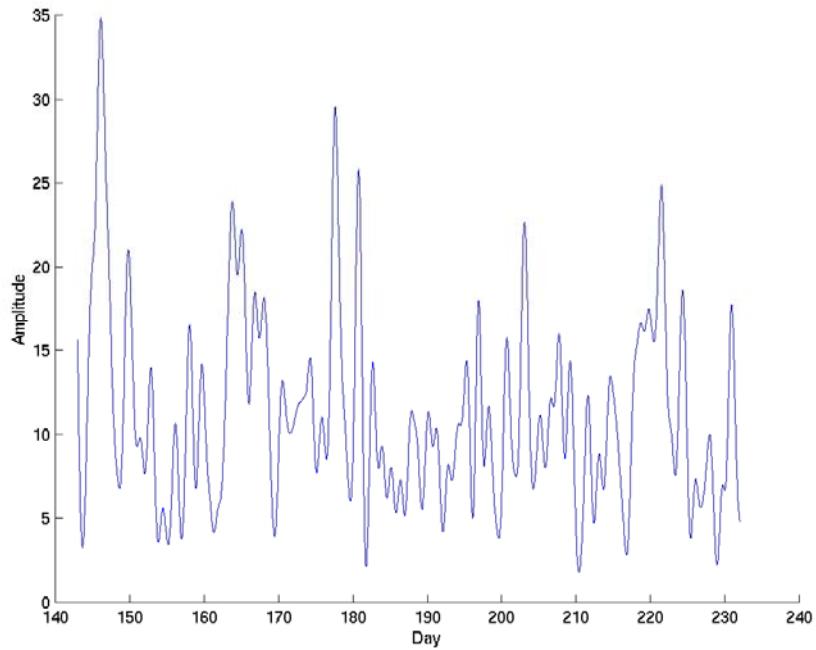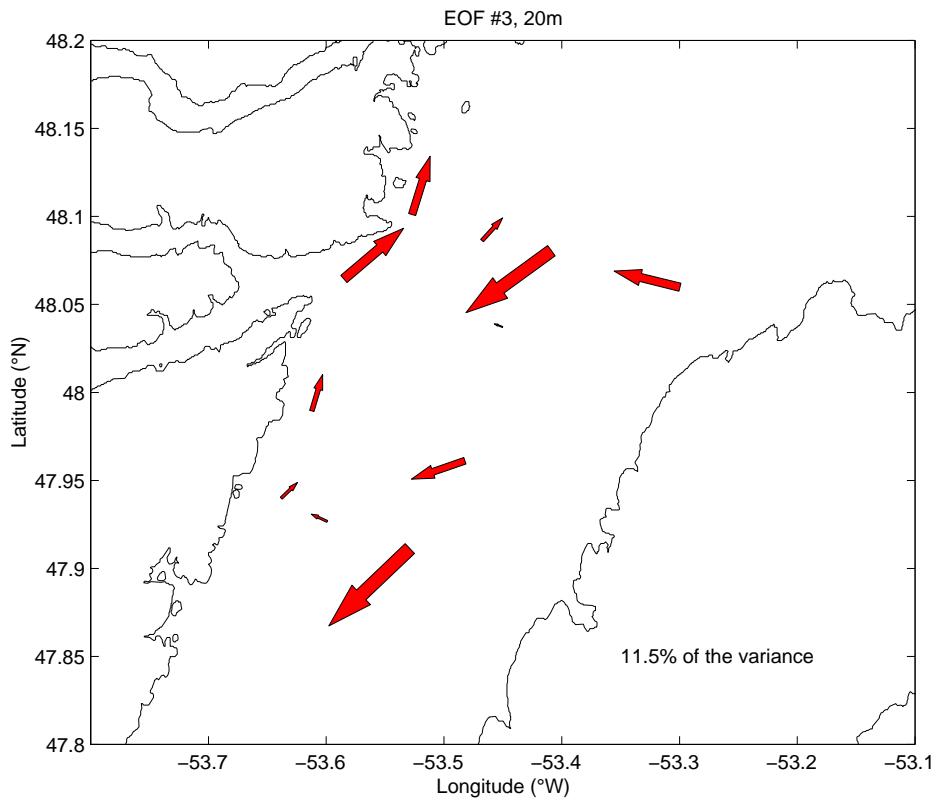
Figure 56: EOF number 3, 20 metres (upper panel), and a time-series plot of the amplitude of the third eigenmode (lower panel).
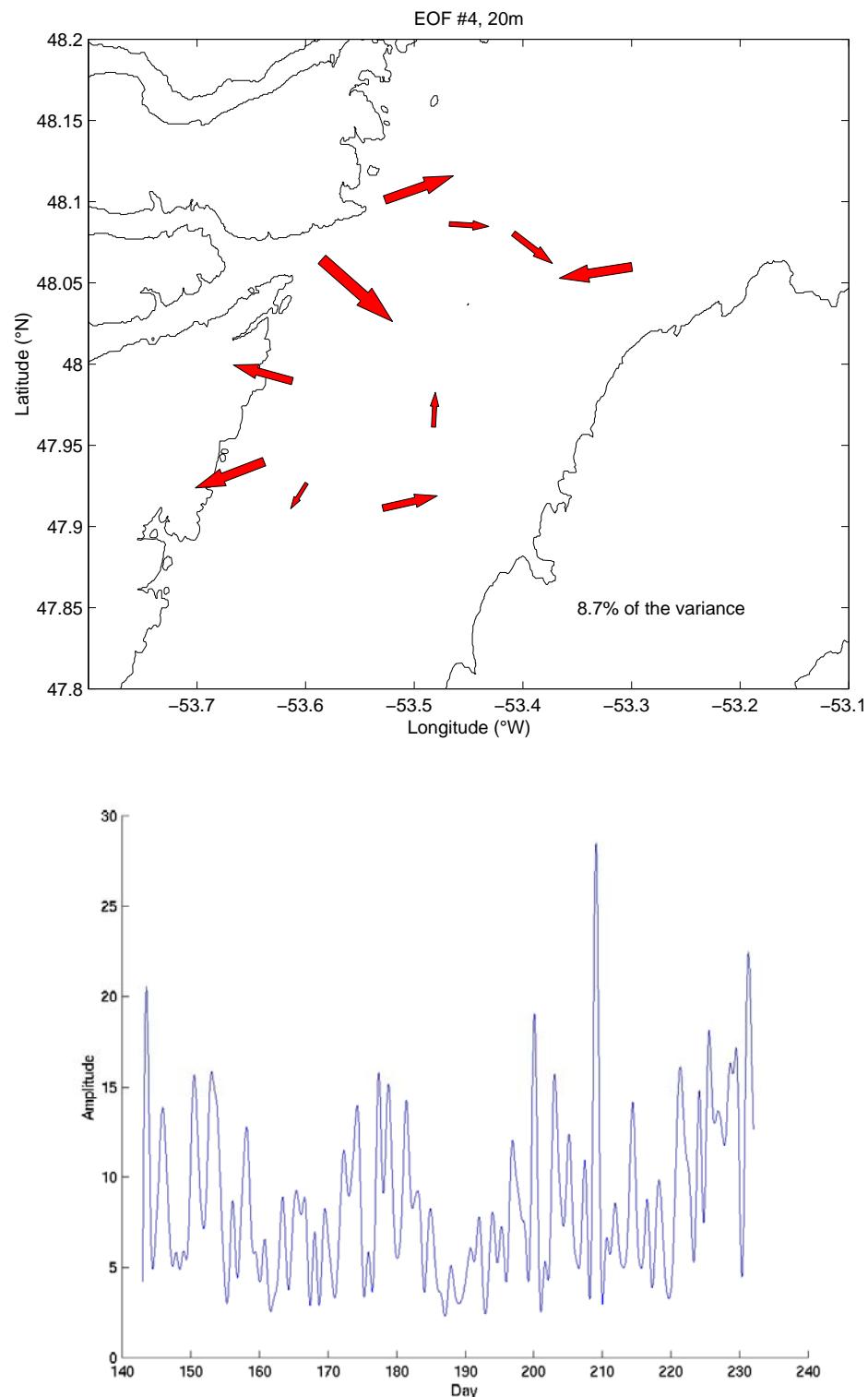
Figure 57: EOF number 4, 20 metres (upper panel), and a time-series plot of the amplitude of the fourth eigenmode (lower panel).
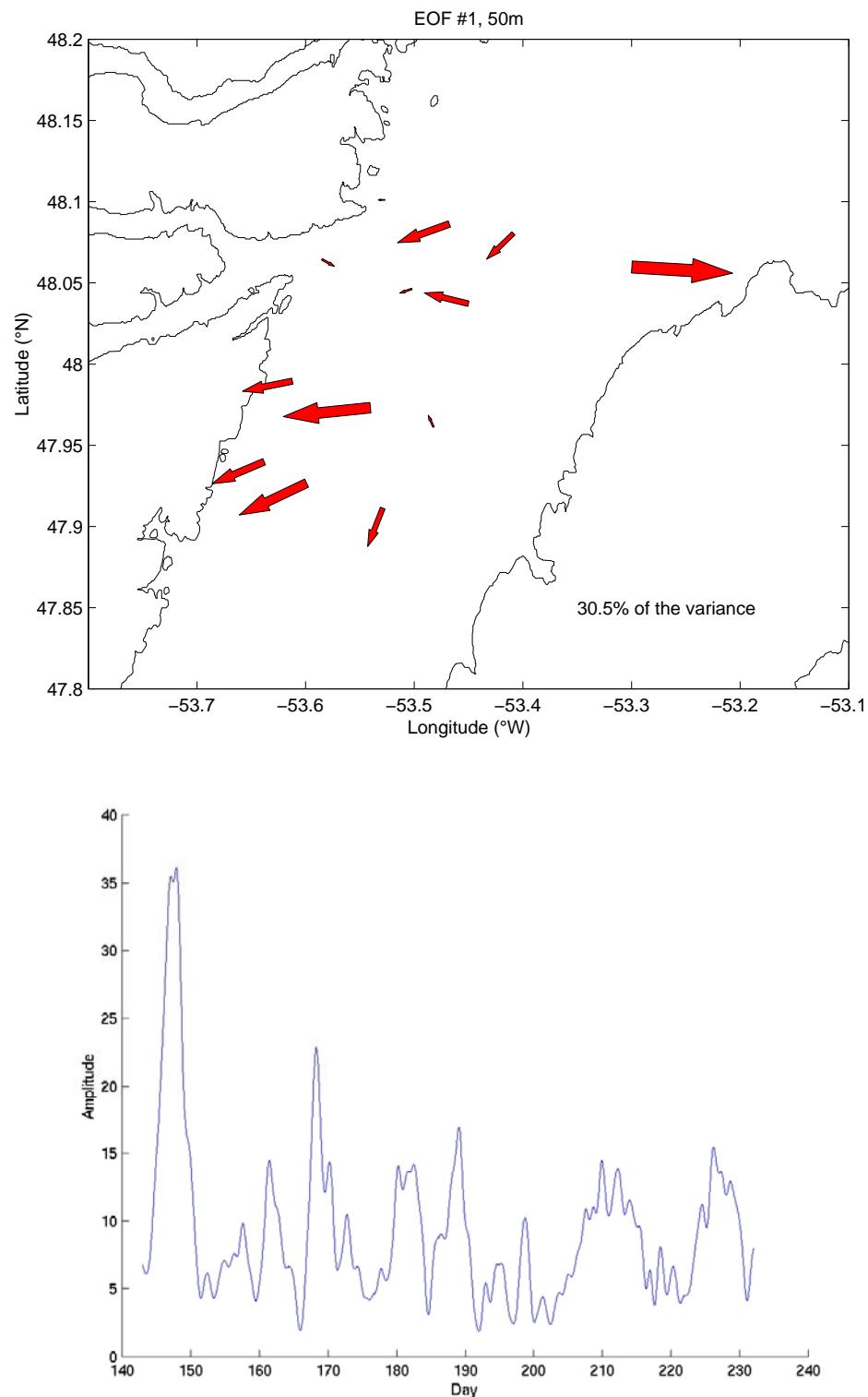
Figure 58: EOF number 1, 50 metres (upper panel), and a time-series plot of the amplitude of the first eigenmode (lower panel).
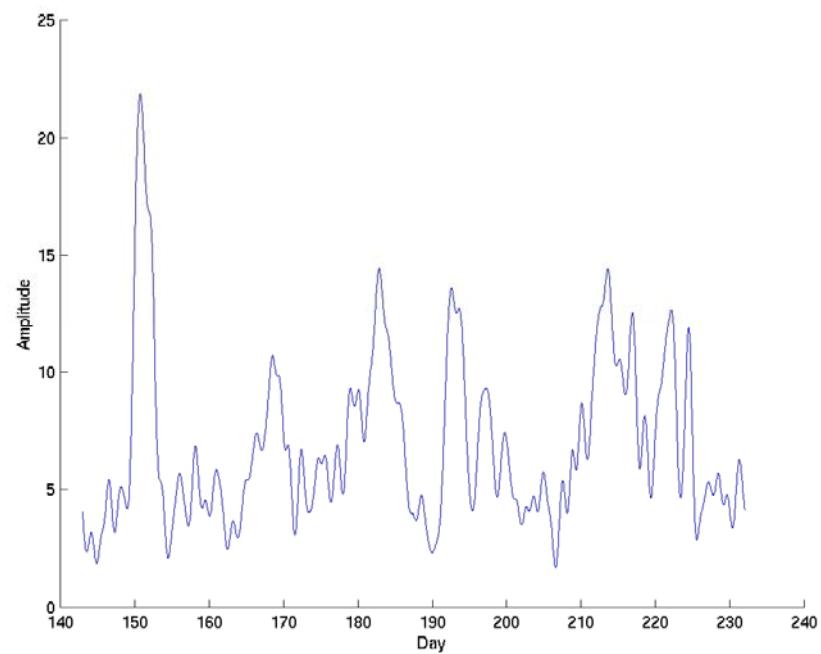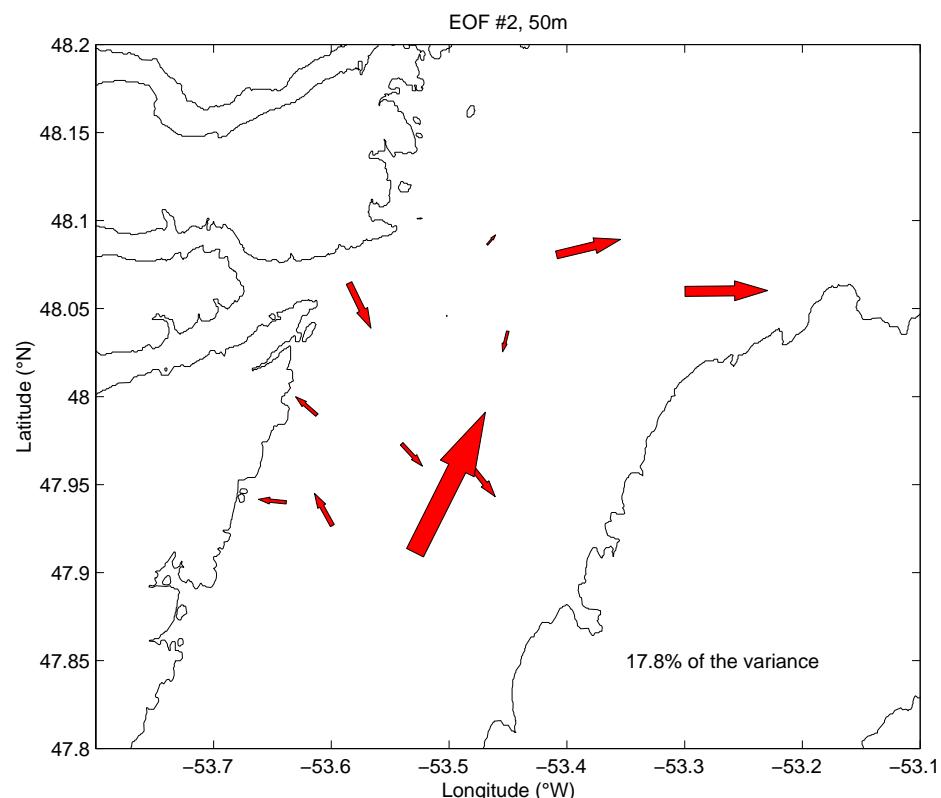
Figure 59: EOF number 2, 50 metres (upper panel), and a time-series plot of the amplitude of the second eigenmode (lower panel).
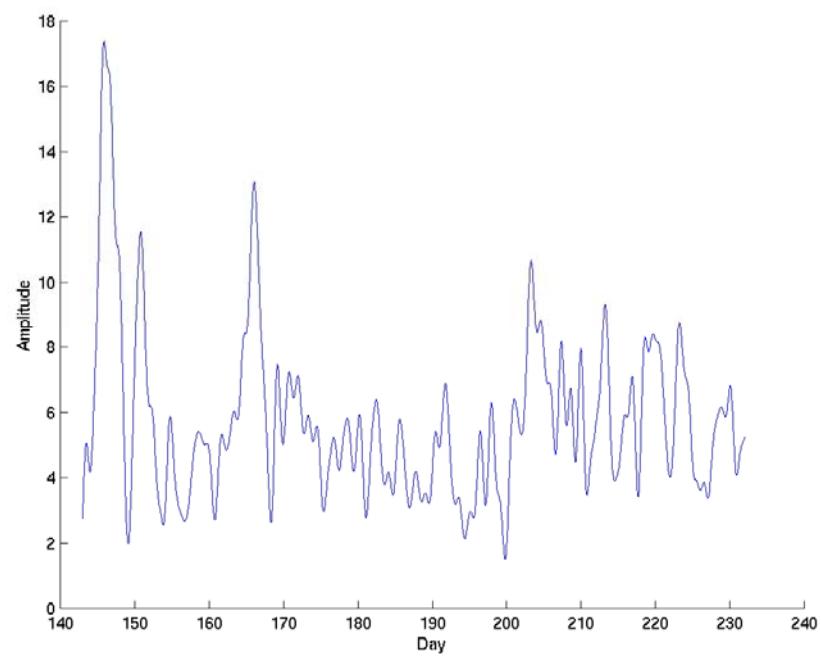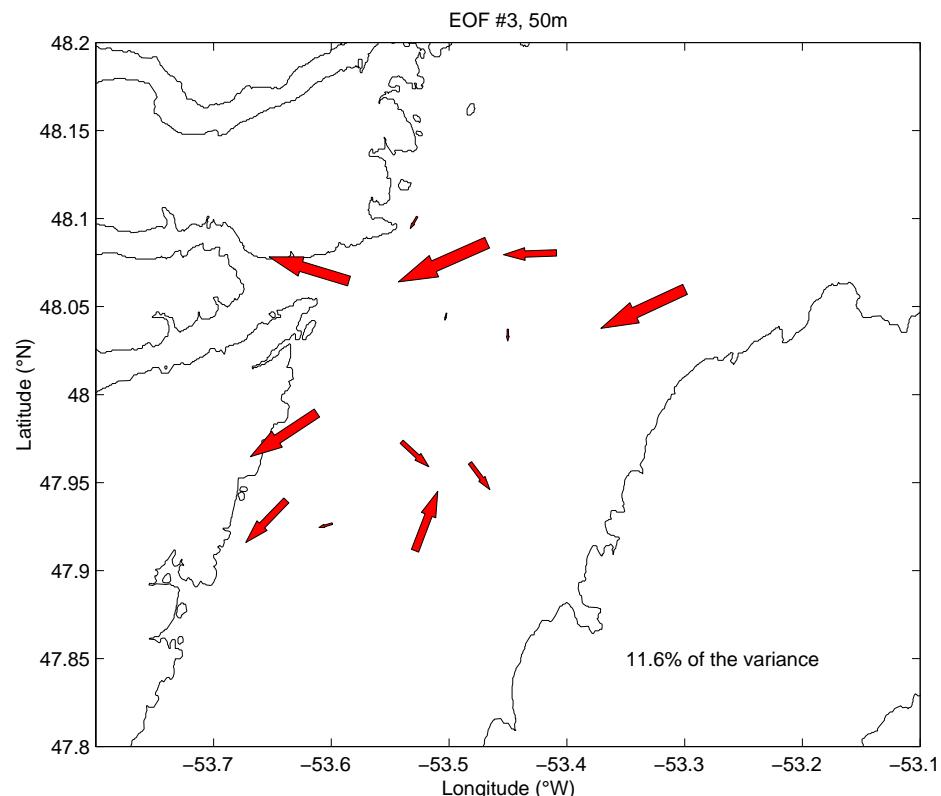
Figure 60: EOF number 3, 50 metres (upper panel), and a time-series plot of the amplitude of the third eigenmode (lower panel).
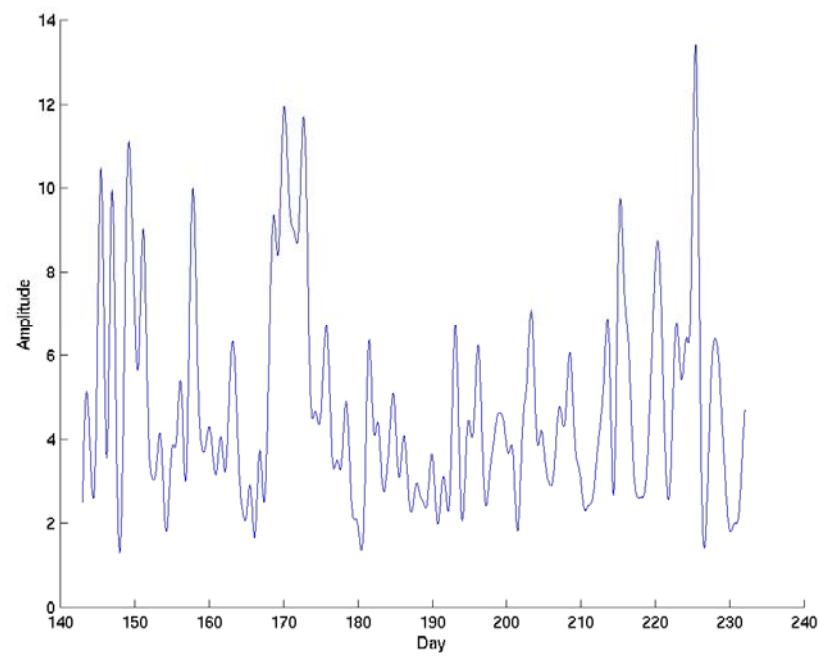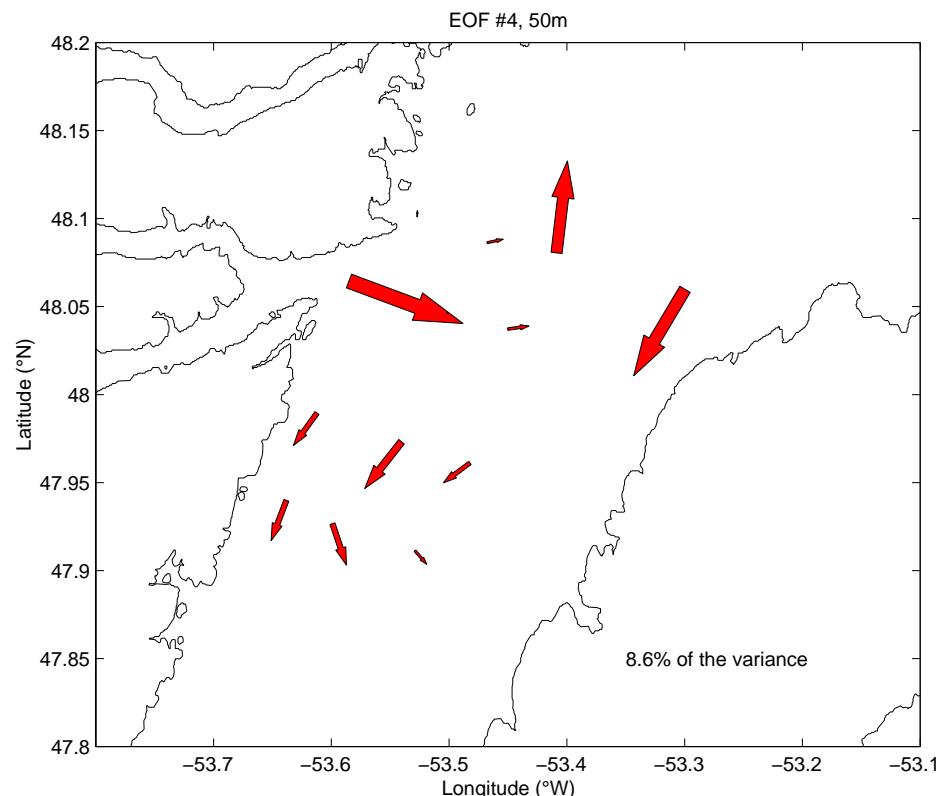
Figure 61: EOF number 4, 50 metres (upper panel), and a time-series plot of the amplitude of the fourth eigenmode (lower panel).