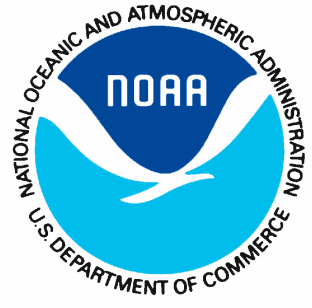
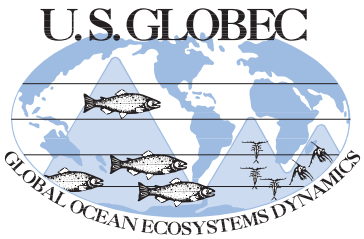
GLOBEC Northeast Pacific, Coastal Gulf of Alaska

Cruise Report, R/V *Alpha Helix* (HX 244)

17 May – 31 May 2001





GLOBEC Northeast Pacific, Coastal Gulf of Alaska

Cruise Report, R/V *Alpha Helix* (HX 244)

17 May – 31 May 2001

Chief Scientist:
Suzanne Strom
Shannon Point Marine Center
Western Washington University
1900 Shannon Point Road
Anacortes, WA 98221
360-293-2188
E-mail: stroms@cc.wwu.edu

Port of Departure: Seward, Alaska
Port of Return: Seward, Alaska

Cruise Goals / Scientific Purpose

The GLOBEC Northeast Pacific program seeks to understand the relationship between climate variability and the success of marine fish, bird and mammal populations. In the coastal Gulf of Alaska, the program focuses on the mechanisms by which climate and weather can influence the physical - chemical structure of the coastal zone, how this in turn affects the coastal planktonic food web, and how food web variations influence distribution and recruitment success of pink salmon. The process cruises specifically will be conducted 3 times in 2001 and 3 times in 2003. On each cruise the aim is to visit four sites representing a diversity of physical - chemical conditions in the coastal Gulf of Alaska. At each of these core sites, rates of phytoplankton growth, zooplankton grazing and zooplankton egg production will be measured, as well as aspects of phytoplankton and zooplankton community structure. These measurements will be related to the physical - chemical environment by means of vertical profiling at the process stations themselves, sampling of a "fine-scale" grid around each of the core process stations, and use of data collected on LTOP cruises. Data collected will ultimately be compared to related data from the Oregon coastal upwelling system.

The May cruise focused on spring phytoplankton bloom processes, and the responses of the zooplankton community to mid and late bloom conditions.

Cruise Objectives

1. Determine phytoplankton growth rates and rates of microzooplankton herbivory.
2. Determine rates of grazing on phyto- and microzooplankton by dominant copepod taxa including *Neocalanus* and smaller calanoids. Live net collections are summarized in Table 2.
3. Measure rates of egg production by copepods *Calanus*, *Pseudocalanus*, *Metridia* and others
4. Assess vertical distribution of temperature, salinity, light, nutrients, chlorophyll and microzooplankton at core process stations and fine-scale grid stations (Table 3).
5. Conduct net tows (CalVET, MOCNESS) for distribution and abundance of zooplankton at core process stations. MOCNESS tows are summarized in Table 4; CalVET and CalVET53 net tows in Tables 5 and 6.

Summaries of each of the GLOBEC projects may be found at the web site: http://globec.coas.oregonstate.edu/groups/nep/projs.html.

Table 1. GLOBEC Cruise Participants

Christine Baier	Copepod grazing/egg prod., AFSC (F), Christine.Baier@noaa.gov
Jennifer Lanksbury	Copepod grazing/egg prod., AFSC (F)
Hongbin Liu	Neocalanus grazing, LUMCON (M), hliu@lumcon.edu
David Lawrence	Neocalanus grazing, LUMCON (M), Dlawrence@lumcon.edu
Brady Olson	Microzoo grazing, WWU (M), olsonm@cc.wwu.edu
Deborah Kast	Microzoo grazing, WWU (F), debkast@hotmail.com
Erin Macri	Chlorophyll/nutrients, WWU (F), macrie@hotmail.com
Kelley Bright	Chlorophyll/nutrients, WWU (F)
Moon Sookmi	CTD/ADCP, UAF (F)
Steve Hartz	Marine tech, UAF (M)
Dave Aldrich	Marine tech, UAF (M)

AFSC = Alaska Fisheries Science Center (NOAA); LUMCON = Louisiana Universities Marine Consortium; WWU = Western Washington University.

Summary of Cruise

See Appendix 1 (Event Log).

Daily Cruise Summary (Narrative)

17 May. Departed Seward 0921 ADT. Proceeded directly to our outer shelf core station OS-C (GAK-10). Immediately following initial CTD profiling, commenced grazing experiments. Continued day/night cycle of work as outlined above, completing daytime grid station survey on 18 May and night MOCNESS/CalVET sampling on nights of 17-18 May, 18-19 May, and 19-20 May. Additional Seward Line stations GAK-11, -12, -13, -9, –8i, and 8 were profiled while working in this vicinity. Three sets of grazing experiments (microzooplankton, *Neocalanus*, other calanoids) were run at OS-C.

20 May. Proceeded to the mid-shelf core station MS-C (GAK-6). Conducted CalVET tows for copepod egg ratios, established one microzooplankton grazing experiment, and conducted a deep CTD cast with full suite of samples taken. Then left due to rough weather. Transited to inner shelf but high winds and seas precluded work there. Proceeded to Prince William Sound.

21 - 23 May. Work in PWS included 3 sets of grazing experiments, 3 night CalVET / MOCNESS tow series, and several egg production experiments all initiated at core sampling station PWS-2. Fine-scale grid survey around PWS-2 was conducted on 21 May. Additional CTD sections at Montague Strait (23 May) and a CTD / FlowCAM survey of Port Nellie Juan and Blue Fjords (22 May) were also undertaken.

23 – 24 May. Returned to inner shelf and conducted CTD casts in a transect across the Alaska Coastal Current region (GAK4 to GAK 1i, with additional stations ACC-1 and ACC-2 added on either side of GAK-2) to determine location of current. High surface fluorescence at GAK-4 indicated a phytoplankton bloom in progress, also suggested for the region by a SeaWiFS image from 20 May. Decided to shift mid-shelf focus to GAK-4 to examine rate processes in this potentially large mid-shelf feature.

24 – 27 May. Conducted 4 sets of grazing experiments (2 in bloom, 2 outside of bloom), 4 night CalVET / MOCNESS tow series (ditto), and several egg production experiments.

25 - 26 May. Conducted fine-scale grid sampling. Several additional CTD and seachest transects were run to establish the location of the bloom, which was changeable on an hourly basis. Oh, for a mesoscale survey component to this program.

28 May. Conducted CTD transect of inner shelf (GAK3 to GAK1i). Selected station ACC1 as most representative of the core of the Alaska Coastal Current. This region was also dominated by a diatom bloom variable in intensity but consistently associated with the lower salinity, higher temperature surface waters of the ACC. Conducted 3 sets of grazing experiments, several egg production experiments, and 3 rounds of night CalVET / MOCNESS tow series all centered on core station ACC1.

29 May. Fine-scale grid survey of the region surrounding ACC1 was undertaken. CTD transects across the coastal current (GAK3 to GAK 1i or 1) were conducted an additional 3 times while working in this region, to define variability in the location of the current.

31 May. CTD survey of the Cape Fairfield line was completed en route to Seward. The Helix returned to the dock at Seward at 1853.

The cooperative attitude and hard work of Captain Bill Rook and the crew of the R.V. *Alpha Helix* are much appreciated, and contributed in large part to the success of this cruise.

Summary of Sampling Operations

Daytime Activities:

1. Collected ADCP, sea surface salinity, temperature and fluorescence data using sensors in the seachest, both while underway and while on station.

2. Occupied core process stations on the outer shelf (GAK-10), mid-shelf (GAK-6; GAK-4 and vicinity), inner shelf (ACC-1) and Prince William Sound (PWS-2) and conducted vertical CTD profiles (to near bottom, as for LTOP cruises) for determination of T, S, light (PAR) and in situ fluorescence distribution.

3. Collected discrete water samples from CTD cast (8 to 10 depths per cast) for measurement of nutrients (frozen for analysis by C. Mordy), size-fractionated chlorophyll (<5 µm, 5 – 20 µm, >20 µm, analyzed on board), algal pigments (frozen for HPLC analysis by S. Strom) and microzooplankton abundance (acid Lugol's-fixed samples for inverted microscopy, gluataraldehyde-fixed samples for epifluorescence microscopy). (Activities 2 and 3 were conducted upon arrival and at approx. local noon each day on station, with a reduced set of sample types taken during all but first cast on station.)

4. Conducted net tows (CalVET, Ring net) for preserved samples (zooplankton abundance, copepod egg abundance) and live animals (grazing and egg production experiment set-up).

5. Used CTD to collect water from upper mixed layer for set-up of dilution experiments (phytoplankton growth and microzooplankton grazing rates), copepod grazing experiments, and microplankton size-fractionation experiments.

6. Occupied fine-scale grid stations (generally 8) surrounding each core station (see attached charts) and conducted vertical profiling (as in #2) and water bottle sampling (as in #3, but with only 5 depths per cast, water samples collected for nutrient and size-fractionated chlorophyll analysis).

Nighttime Activities:

1. Conducted MOCNESS and CalVET tows once each night while on core process stations.

2. Conduct night CTD/water sample profiling at core process station (see above).

Summary of Process Studies

Microplankton Studies (Strom, Olson, Macri, Kast, Bright)

Vertical profiles for phyto- and microzooplankton abundance and species composition were taken at all core stations. A total of 14 seawater dilution experiments were conducted on board, with all experiments sampled for size-fractionated chlorophyll, phytoplankton pigments (HPLC) and microplankton community composition. Intrinsic growth rates up to 1 per d were observed in diatom bloom waters. Enrichment of dilution series with nutrients, in comparison with unenriched controls, indicated that post-bloom waters in PWS and most bloom waters in the GAK4 region and in the ACC were nutrient limited. Large cells (>20 um) typically showed the highest degree of nutrient limitation.

Preliminary results indicate that microzooplankton grazing rates were usually highest on the small (<5 um) and mid-sized (5 – 20 um) phytoplankton cells. Moderate grazing on large diatoms by microzooplankton was observed in all bloom waters.

The FlowCAM was used extensively to characterize the microplankton at each station and to analyze the shifts in particle size spectrum and community composition during copepod grazing experiments. Low chlorophyll waters near GAK-4 were dominated by chloroplast-retaining ciliates including *Laboea*, while diatom bloom waters on the mid-shelf and in the ACC contained a mixture of *Chaetoceros*, *Skeletonema*, and other large chain-forming genera.

Egg Production and Diet Studies (Baier and Lanksbury)

We conducted a total of 6 grazing, 18 egg production, and 11 egg viability experiments. At stations where egg production experiments were collected, samples were collected for CHN (32) and RNA/DNA (18) analyses. Triplicate CALVET tows were made the first and last morning at each station, when possible, to determine the ratio of females to eggs.

At the OS station, *Eucalanus* females were collected for a grazing experiment, egg production, and CHN samples. At IS, PWS, MS blue water stations (GAK4 and 4GC), and MS bloom stations (4IW, 4GJ, and EXP11), *Pseudocalanus* females were used for all experiments and samples collected. In addition, *Calanus marshallae* females were used at PWS, and *Metridia* females at EXP11. Only one egg production and grazing experiment was completed with *Metridia*. We returned to this station 3 days later in an attempt to collect more, but though the water column structure did not appear to have changed, no *Metridia* females were found. At the original MS station, none of our target species were found in sufficient numbers to conduct experiments.

Neocalanus *Grazing Experiments (Liu And Lawrence)*

During cruise HX244 (May 17 – May 31), we conducted 13 *Neocalanus* grazing experiments. *Neocalanus* was most abundant at the out-shelf station with all three species occurring. *Neocalanus* abundance was low at the inner-shelf station and in the Prince William Sound. Various numbers of *Neocalanus* copepodids were added to each experimental bottle, usually duplicates of 4 different treatments plus a control. Chlorophyll-a concentrations in 3 size fractions (< 5, 5 – 20 and > 20 μm) were measured at the beginning and end of the experiment. Water samples were taken at the beginning and end of the incubation for FlowCam analysis of phytoplankton and microzoograzer compositions. In addition, samples from each incubation bottle were preserved in Lugol's solution and gluteraldehyde (for making slides on board) for additional identification of microzooplankton. Similar to the results of the last cruise (HX242), we found that, in most cases, *Neocalanus* feed mainly on the phytoplankton cells larger than 20 μm. We saw very little grazing and sometimes a positive cascading effect on the < 5 μm fraction. It is possible that grazing pressure of microzooplankton on the < 5 μm cells were released as a result of *Neocalanus* feeding on protozoan grazers.

Additionally, *Neocalanus* samples were frozen in liquid nitrogen for future analyses of dry weight, element composition and lipid content at each core station. Water samples were also taken at each core station and from selected experiments for flow cytometric analysis of picophytoplankton and bacteria abundance.

Table 2: Collection of Live Animals for Shipboard Experiments

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX13701.02	LiveNet	1	1	GAK10	17	5	2015	58.5406	-148.2138	1464	50	Dagg	ev#002; live animals
HX13701.03	LiveNet	2	1	GAK10	17	5	2029	58.5400	-148.2198	1464	100	Dagg	ev#003; live animals
HX13701.04	LiveNet	3	1	GAK10	17	5	2048	58.5391	-148.2287	1404	100	Dagg	ev#004; live animals
HX13801.02	LiveNet	4	1	GAK10	18	5	0720	58.5387	-148.2180	1465	50	Napp	ev#011
HX13801.03	LiveNet	5	1	GAK10	18	5	0734	58.5408	-148.2113	1465	100	Napp	ev#012
HX13901.04	LiveNet	6	11	GAK10	19	5	0704	58.5397	-148.2125	1470	50	Dagg	ev#028
HX13901.05	LiveNet	7	11	GAK10	19	5	0713	58.5393	-148.2123	1470	100	Dagg	ev#029
HX14001.11	LiveNet	8	19	GAK6	20	5	0857	59.1173	-148.7723	150	nd	nd	ev#048
HX14001.12	LiveNet	9	19	GAK6	20	5	0915	59.1162	-148.7700	150	nd	nd	ev#049
HX14101.08	LiveNet	10	20	PWS2	21	5	0727	60.5348	-147.8033	743	100	nd	ev#058
HX14101.09	LiveNet	11	20	PWS2	21	5	0738	60.5352	-147.8083	743	100	nd	ev#059
HX14101.10	LiveNet	12	20	PWS2	21	5	0753	60.5347	-147.8028	747	40	Strom	ev#060; live animal tow
HX14101.14	LiveNet	13	20	PWS2	21	5	1326	60.5350	-147.8048	747	100	nd	ev#064
HX14101.15	LiveNet	14	20	PWS2	21	5	1339	60.5372	-147.8116	747	100	napp	ev#065
HX14101.16	LiveNet	15	20	PWS2	21	5	1351	60.5395	-147.8167	724	100	Napp	ev#066
HX14101.30	LiveNet	16	34	PWS2	21	5	2306	60.5357	-147.8018	740	40	nd	ev#080
HX14101.31	LiveNet	17	34	PWS2	21	5	2313	60.5357	-147.8033	740	40	nd	ev#081
HX14201.04	LiveNet	18	34	PWS2	22	5	0732	60.5352	-147.8036	735	50	Dagg	ev#086; live animal tow
HX14201.05	LiveNet	19	34	PWS2	22	5	0743	60.5350	-147.8024	735	75	Dagg	ev#087; live animal tow
HX14201.08	LiveNet	20	34	PWS2	22	5	1304	60.5353	-147.8030	735	100	Napp	ev#090; egg production
HX14201.09	LiveNet	21	34	PWS2	22	5	1318	60.5373	-147.8045	735	100	Napp	ev#091
HX14201.10	LiveNet	22	34	PWS2	22	5	1332	60.5380	-147.8005	735	50	Dagg	ev#092; copepod dry wt.
HX14301.06	LiveNet	23	44	PWS2	23	5	0809	60.5347	-147.8017	740	100	Napp	ev#110; live animals
HX14301.07	LiveNet	24	44	PWS2	23	5	0826	60.5325	-147.8024	735	100	Napp	ev#111; live animals
HX14301.08	LiveNet	25	44	PWS2	23	5	0831	60.5318	-147.8026	735	50	Dagg	ev#112; live animals
HX14301.09	LiveNet	26	44	PWS2	23	5	0840	60.5306	-147.8029	735	100	Dagg	ev#113
HX14401.11	LiveNet	27	58	GAK4	24	5	0739	59.4063	-149.0483	199	100	Napp	ev#132; egg production
HX14401.12	LiveNet	28	58	GAK4	24	5	0752	59.4057	-149.0477	199	100	Napp	ev#133; egg production
HX14401.13	LiveNet	29	58	GAK4	24	5	0803	59.4055	-149.0472	199	75	Dagg	ev#134; Neocalanus
HX14401.24	LiveNet	30	66	4IW	24	5	1913	59.2637	-149.2730	200	100	Strom	ev#145; egg production
HX14501.07	LiveNet	31	69	4IW	25	5	0729	59.2637	-149.2718	139	100	Napp	ev#154
HX14501.08	LiveNet	32	69	4IW	25	5	0739	59.2637	-149.2742	139	100	Napp	ev#155
HX14501.09	LiveNet	33	69	4IW	25	5	0751	59.2637	-149.2768	139	50	Napp	ev#156
HX14501.10	LiveNet	34	69	4IW	25	5	0815	59.2653	-149.2772	139	100	Napp	ev#157
HX14501.18	LiveNet	35	72	4GC	25	5	1557	59.4103	-149.2416	172	100	Napp	ev#165; egg production
HX14501.19	LiveNet	36	72	4GC	25	5	1606	59.4095	-149.2449	172	60	Napp	ev#166; egg production
HX14601.04	LiveNet	37	79	GAK4	26	5	0810	59.4072	-149.0479	200	100	Napp	ev#178
HX14601.05	LiveNet	38	79	GAK4	26	5	0826	59.4094	-149.0516	200	100	Napp	ev#179
HX14601.06	LiveNet	39	79	GAK4	26	5	0837	59.4095	-149.0517	200	50	Napp	ev#180
HX14701.01	LiveNet	40	86	4IW	27	5	0636	59.2635	-149.2778	145	100	Dagg	ev#193; bloom gone!
HX14801.11	LiveNet	41	100	ACC1	28	5	0826	59.7188	-149.3647	242	50	Dagg	ev#221; Neocalanus
HX14801.12	LiveNet	42	100	ACC1	28	5	0839	59.7282	-149.3625	242	100	Napp	ev#222; egg production
HX14801.13	LiveNet	43	100	ACC1	28	5	0850	59.7245	-149.3642	242	100	Napp	ev#223; egg production
HX14901.02	LiveNet	44	107	ACC1	29	5	0700	59.7270	-149.3632	242	100	Napp	ev#236
HX14901.03	LiveNet	45	107	ACC1	29	5	0716	59.7260	-149.3662	242	100	Napp	ev#237
HX14901.04	LiveNet	46	107	ACC1	29	5	0730	59.7252	-149.3698	242	76	Dagg	ev#238; Neocalanus
HX14901.08	LiveNet	47	107	ACC1	29	5	1300	59.7287	-149.3612	243	100	Napp	ev#242; egg production
HX14901.09	LiveNet	48	107	ACC1	29	5	1315	59.7252	-149.3658	243	100	Napp	ev#243; egg production

Table 2: Collection of Live Animals for Shipboard Experiments (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX15001.05	LiveNet	49	120	ACC1	30	5	0725	59.7288	-149.3720	247	nd	Dagg	ev#263
HX15001.06	LiveNet	50	120	ACC1	30	5	0738	59.7282	-149.3795	247	nd	Dagg	ev#264
HX15001.08	LiveNet	51	120	ACC1	30	5	0830	59.7278	-149.3707	243	nd	Dagg	ev#266
HX15101.02	LiveNet	52	129	EXP11	31	5	0530	59.1423	-149.2140	145	100	Napp	ev#280; egg production
HX15101.04	LiveNet	53	130	CF15	31	5	0815	59.5177	-148.8657	173	75	Dagg	ev#282; Neocalanus

Table 3: CTD Casts

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX13701.01	CTD1	1	1	GAK10	17	5	1930	58.5404	-148.2135	1464	562	Strom	ev#001;
HX13701.05	CTD1	2	1	GAK10	17	5	2113	58.5422	-148.2132	1458	50	Strom	ev#005;water for fsw
HX13701.06	CTD1	3	1	GAK10	17	5	2149	58.5394	-148.2213	1446	50	Strom	ev#006;grazing expt #1
HX13701.08	CTD1	4	1	GAK10	17	5	2322	58.5409	-148.2141	1461	500	Strom	ev#008;
HX13801.04	CTD1	5	1	GAK10	18	5	0803	58.5418	-148.2120	1450	50	Strom	ev#013;water for fsw
HX13801.05	CTD2	6	1	GAK10	18	5	0854	58.5407	-148.2118	1465	50	Strom	ev#014;grazing expt #2 6.5m
HX13801.06	CTD1	7	1	GAK10	18	5	1209	58.5401	-148.2137	1465	1460	Strom	ev#015;
HX13801.07	CTD1	8	1	GAK10	18	5	1417	58.5406	-148.2070	1486	1479	Strom	ev#016;reterminated and sliprings checked
HX13801.08	CTD1	9	2	OSGA	18	5	1625	58.5909	-148.4385	233	230	Strom	ev#017;OS grid survey
HX13801.09	CTD1	10	3	GAK9I	18	5	1719	58.6097	-148.2789	690	701	Strom	ev#018;
HX13801.10	CTD1	11	4	OSGC	18	5	1841	58.6615	-148.1196	815	507	Strom	ev#019;
HX13801.11	CTD1	12	5	OSGE	18	5	1939	58.5765	-148.0539	815	500	Strom	ev#020;
HX13801.12	CTD1	13	6	OSGH	18	5	2036	58.4993	-147.9835	2154	500	Strom	ev#021;
HX13801.13	CTD1	14	7	GAK10I	18	5	2137	58.4634	-148.1413	1723	1503	Strom	ev#022;
HX13801.15	CTD1	15	8	GAK10	18	5	2338	58.5412	-148.2090	1471	500	Strom	ev#024;
HX13901.02	CTD1	16	9	OSGD	19	5	0127	58.5039	-148.3694	646	500	Strom	ev#026;
HX13901.03	CTD1	17	10	OSGF	19	5	0237	58.4280	-148.2983	1340	500	Strom	ev#027;
HX13901.06	CTD1	18	11	GAK10	19	5	0733	58.5412	-148.2107	1470	50	Strom	ev#030;water for fsw
HX13901.07	CTD1	19	11	GAK10	19	5	0819	58.5407	-148.2155	1470	50	Strom	ev#031;grazing expt #3
HX13901.08	CTD1	20	11	GAK10	19	5	1159	58.5420	-148.2116	1462	1460	Strom	ev#032;
HX13901.09	CTD1	21	12	GAK11	19	5	1421	58.3878	-148.0705	1436	1436	Strom	ev#033;Seward Line survey
HX13901.10	CTD1	22	13	GAK12	19	5	1628	58.2436	-147.9323	2168	2168	Strom	ev#034;
HX13901.11	CTD1	23	14	GAK13	19	5	1839	58.0987	-147.7914	2095	2095	Strom	ev#035;
HX13901.13	CTD1	24	15	GAK10	19	5	2305	58.5424	-148.2122	1470	500	Strom	ev#037;
HX14001.03	CTD1	25	16	GAK9	20	5	0333	58.6804	-148.3514	278	278	Strom	ev#040;Seward Line survey
HX14001.04	CTD1	26	17	GAK8I	20	5	0421	58.7435	-148.4208	289	289	Strom	ev#041;
HX14001.05	CTD1	27	18	GAK8	20	5	0505	58.7919	-148.4910	290	290	Strom	ev#042;
HX14001.10	CTD1	28	19	GAK6	20	5	0829	59.1174	-148.7702	151	50	Strom	ev#047;grazing exp. #4
HX14001.13	CTD1	29	19	GAK6	20	5	1204	59.1167	-148.7721	151	150	Strom	ev#050;
HX14101.01	CTD1	30	20	PWS2	21	5	0056	60.5346	-147.8057	749	200	Strom	ev#051;
HX14101.11	CTD1	31	20	PWS2	21	5	0808	60.5369	-147.8046	747	747	Strom	ev#061;
HX14101.12	CTD1	32	20	PWS2	21	5	1007	60.5362	-147.8046	747	50	Strom	ev#062;water for fsw
HX14101.13	CTD1	33	20	PWS2	21	5	1046	60.5341	-147.7979	747	50	Strom	ev#063;grazing exp # 5
HX14101.17	CTD1	34	21	PWSGA	21	5	1424	60.5956	-147.8284	392	200	Strom	ev#067;PWS grid survey
HX14101.18	CTD1	35	22	PWSGB	21	5	1507	60.5820	-147.7634	770	200	Strom	ev#068;
HX14101.19	CTD1	36	23	PWSGC	21	5	1543	60.5626	-147.6785	770	200	Strom	ev#069;
HX14101.20	CTD1	37	24	PWGD	21	5	1635	60.5515	-147.8721	493	200	Strom	ev#070;
HX14101.21	CTD1	38	25	PWGE	21	5	1707	60.5144	-147.8978	225	200	Strom	ev#071;
HX14101.22	CTD1	39	26	PWGF	21	5	1742	60.4997	-147.8330	529	200	Strom	ev#072;
HX14101.23	CTD1	40	27	PWGG	21	5	1812	60.4905	-147.7918	212	200	Strom	ev#073;
HX14101.24	CTD1	41	28	PWGH	21	5	1852	60.4417	-147.8862	338	200	Strom	ev#074;
HX14101.25	CTD1	42	29	PWSP1	21	5	1926	60.4368	-147.9267	238	221	Strom	ev#075;Knight Is. Passage survey
HX14101.26	CTD1	43	30	PWSP2	21	5	1947	60.4328	-147.9075	292	295	Strom	ev#076;
HX14101.27	CTD1	44	31	PWSP3	21	5	2018	60.4285	-147.8819	292	386	Strom	ev#077;
HX14101.28	CTD1	45	32	PWSP4	21	5	2048	60.4241	-147.8625	280	242	Strom	ev#078;
HX14101.29	CTD1	46	33	PWSP5	21	5	2111	60.4206	-147.8469	145	130	Strom	ev#079;
HX14201.01	CTD1	47	34	PWS2	22	5	0002	60.5345	-147.8098	740	200	Strom	ev#083;
HX14201.03	CTD1	48	34	PWS2	22	5	0705	60.5339	-147.8042	735	50	Strom	ev#085;water for fsw

Table 3: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX14201.06	CTD2	49	34	PWS2	22	5	0833	60.5335	-147.8043	735	50	Strom	ev#088;grazing exp # 6
HX14201.07	CTD2	50	34	PWS2	22	5	1108	60.5358	-147.8040	735	735	nd	ev#089;
HX14201.11	CTD1	51	34	PWS2	22	5	1414	60.5352	-147.8028	735	295	nd	ev#093;
HX14201.12	CTD1	52	35	PNJ1	22	5	1600	60.5934	-148.1701	505	154	Strom	ev#094;Fjord survey: Port Nellie Juan
HX14201.13	CTD1	53	36	PNJ2	22	5	1708	60.5767	-148.2065	623	150	nd	ev#095;
HX14201.14	CTD1	54	37	PNJ3	22	5	1739	60.5547	-148.2410	553	155	Strom	ev#096;CTD problems
HX14201.15	CTD1	55	38	PNJ4	22	5	1816	60.5331	-148.2683	525	154	Strom	ev#098;
HX14201.16	CTD1	56	39	PNJ5	22	5	1848	60.5049	-148.2752	283	156	Strom	ev#099;
HX14201.17	CTD1	57	40	BF1	22	5	1910	60.4918	-148.2587	154	100	nd	ev#100;Fjord survey: Blue Fjord
HX14201.18	CTD1	58	41	BF2	22	5	1931	60.4663	-148.2492	189	151	nd	ev#101;
HX14201.19	CTD1	59	42	BF3	22	5	2000	60.4348	-148.2812	101	101	nd	ev#102;toe of Ultramarine Glacier
HX14201.21	CTD1	60	43	PWS2	22	5	2341	60.5360	-147.8037	742	200	Strom	ev#104;
HX14301.05	CTD1	61	44	PWS2	23	5	0726	60.5330	-147.8047	740	50	Strom	ev#109;water for fsw
HX14301.10	CTD1	62	44	PWS2	23	5	0857	60.5348	-147.8055	735	50	Napp	ev#114;grazing exp. # 7
HX14301.11	CTD1	63	44	PWS2	23	5	1201	60.5349	-147.8035	737	729	Strom	ev#115;Montague Strait survey
HX14301.12	CTD1	64	45	MS1	23	5	1632	59.9531	-147.9285	168	161	Strom	ev#116;
HX14301.13	CTD1	65	46	MS2	23	5	1653	59.9434	-147.8945	195	161	Strom	ev#117;
HX14301.14	CTD1	66	47	MS3	23	5	1715	59.9310	-147.8568	165	162	nd	ev#118;
HX14301.15	CTD1	67	48	MS4	23	5	1743	59.9204	-147.8288	110	105	Strom	ev#119;
HX14301.16	CTD1	68	49	GAK4	23	5	2244	59.4077	-149.0471	200	197	Strom	ev#120;ACC survey
HX14301.17	CTD1	69	50	GAK3I	23	5	2327	59.4820	-149.1172	205	202	Strom	ev#121;
HX14401.01	CTD1	70	51	GAK3	24	5	0011	59.5534	-149.1893	214	211	Strom	ev#122;
HX14401.02	CTD1	71	52	GAK2I	24	5	0057	59.6273	-149.2591	215	210	Strom	ev#123;
HX14401.03	CTD1	72	53	GAK2	24	5	0141	59.6925	-149.3291	230	226	Strom	ev#124;
HX14401.04	CTD1	73	54	ACC1	24	5	0209	59.7303	-149.3634	240	238	Strom	ev#125;
HX14401.05	CTD1	74	55	GAK1I	24	5	0240	59.7675	-149.3974	262	263	Strom	ev#126;
HX14401.06	CTD1	75	56	GAK1	24	5	0326	59.8455	-149.4669	274	268	Strom	ev#127;
HX14401.07	CTD1	76	57	ACC2	24	5	0459	59.6587	-149.2931	221	214	Strom	ev#128;
HX14401.14	CTD1	77	58	GAK4	24	5	0820	59.4052	-149.0469	189	50	Strom	ev#135;water for fsw
HX14401.15	CTD1	78	58	GAK4	24	5	0937	59.4079	-149.0480	195	50	Strom	ev#136;grazing exp. # 8
HX14401.16	CTD1	79	58	GAK4	24	5	1200	59.4087	-149.0475	200	200	Strom	ev#137;
HX14401.17	CTD1	80	59	GAK4I	24	5	1253	59.3353	-148.9773	197	190	Strom	ev#138;Seward Line survey
HX14401.18	CTD1	81	60	GAK5	24	5	1338	59.2618	-148.9077	170	165	Strom	ev#139;
HX14401.19	CTD1	82	61	GAK5I	24	5	1423	59.1905	-148.8377	170	160	Strom	ev#140;
HX14401.20	CTD1	83	62	GAK6	24	5	1511	59.1140	-148.7660	152	146	Strom	ev#141;
HX14401.21	CTD1	84	63	5W	24	5	1722	59.1910	-149.1994	165	51	nd	ev#142;Searching for the bloom
HX14401.22	CTD1	85	64	4IW	24	5	1756	59.2640	-149.2750	142	50	nd	ev#143;
HX14401.23	CTD1	86	65	4W	24	5	1834	59.3345	-149.3452	165	50	Napp	ev#144;
HX14401.26	CTD1	87	67	GAK4	24	5	2340	59.4092	-149.0507	200	200	nd	ev#147;
HX14501.03	CTD1	88	68	HP7	25	5	0535	59.1841	-149.5023	147	100	Strom	ev#150;
HX14501.11	CTD1	89	69	4IW	25	5	0842	59.2640	-149.2735	139	50	Strom	ev#158;water for fsw
HX14501.12	CTD1	90	69	4IW	25	5	0947	59.2645	-149.2739	139	50	Strom	ev#159;grazing exp. # 9
HX14501.13	CTD1	91	69	4IW	25	5	1202	59.2659	-149.2817	139	139	Strom	ev#160;wrong depths sampled
HX14501.14	CTD1	92	69	4IW	25	5	1225	59.2659	-149.2817	139	80	Strom	ev#161;
HX14501.15	CTD1	93	70	4GA	25	5	1359	59.2692	-149.4624	146	141	Strom	ev#162;4iW grid survey
HX14501.16	CTD1	94	71	4GB	25	5	1447	59.3401	-149.3457	146	142	Strom	ev#163;
HX14501.17	CTD1	95	72	4GC	25	5	1538	59.4109	-149.2328	172	169	Strom	ev#164;
HX14501.20	CTD1	96	73	4GG	25	5	1645	59.3370	-149.1617	172	193	Strom	ev#167;

Table 3: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX14501.21	CTD1	97	74	4GK	25	5	1732	59.2629	-149.0891	165	161	Strom	ev#168;
HX14501.22	CTD1	98	75	4GJ	25	5	1822	59.1919	-149.2008	167	163	Strom	ev#169;
HX14501.23	CTD1	99	76	4GI	25	5	1918	59.1194	-149.3163	132	133	Strom	ev#170;
HX14501.24	CTD1	100	77	4GF	25	5	2006	59.1941	-149.3808	137	134	Strom	ev#171;
HX14501.26	CTD1	101	78	4IW	25	5	2338	59.2628	-149.2752	147	137	Strom	ev#173;
HX14601.07	CTD1	102	79	GAK4	26	5	0848	59.4089	-149.0477	200	50	Strom	ev#181;water for fsw
HX14601.08	CTD2	103	79	GAK4	26	5	0946	59.4083	-149.0467	198	50	Strom	ev#182;grazing experiment # 10
HX14601.09	CTD1	104	79	GAK4	26	5	1201	59.4091	-149.0511	200	200	Strom	ev#183;
HX14601.10	CTD1	105	79	GAK4	26	5	1236	59.4090	-149.0488	200	196	Strom	ev#184;
HX14601.11	CTD1	106	80	4GD	26	5	1426	59.4819	-149.1172	204	199	Strom	ev#185;GAK4 grid survey
HX14601.12	CTD1	107	81	4GE	26	5	1519	59.5526	-149.0031	183	176	Strom	ev#186;
HX14601.13	CTD1	108	82	4GH	26	5	1600	59.4787	-148.9324	184	181	Strom	ev#187;
HX14601.14	CTD1	109	83	4GM	26	5	1647	59.4049	-148.8623	169	165	Strom	ev#188;
HX14601.15	CTD1	110	84	4GL	26	5	1738	59.3355	-148.9808	199	194	Strom	ev#189;
HX14601.17	CTD1	111	85	GAK4	26	5	2339	59.4111	-149.0481	200	196	Strom	ev#191;
HX14701.02	CTD1	112	87	4GJ	27	5	0847	59.1900	-149.2012	162	50	Strom	ev#200;water for fsw
HX14701.03	CTD2	113	87	4GJ	27	5	1013	59.1905	-149.2025	165	50	Strom	ev#201;bloom gone!
HX14701.04	CTD2	114	88	EXP11	27	5	1047	59.1410	-149.2135	144	50	Strom	ev#202;grazing experiment # 11
HX14701.05	CTD1	115	88	EXP11	27	5	1205	59.1420	-149.2153	144	144	Strom	ev#203;
HX14701.06	CTD1	116	89	GAK6	27	5	1506	59.0793	-148.7341	150	147	Strom	ev#204;Seward Line survey
HX14701.07	CTD1	117	90	GAK6I	27	5	1523	59.0461	-148.7002	192	184	Strom	ev#205;
HX14701.08	CTD1	118	91	GAK7	27	5	1612	58.9712	-148.6320	245	235	Strom	ev#206;
HX14701.09	CTD1	119	92	GAK7I	27	5	1708	58.8821	-148.5605	303	290	Strom	ev#207;
HX14701.10	CTD1	120	93	EXP11	27	5	2334	59.1423	-149.2160	145	142	Strom	ev#208;
HX14801.01	CTD1	121	94	GAK3	28	5	0258	59.5533	-149.1891	225	209	Strom	ev#211;ACC survey
HX14801.02	CTD1	122	95	GAK2I	28	5	0343	59.6274	-149.2569	225	212	Strom	ev#212;
HX14801.03	CTD1	123	96	ACC2	28	5	0413	59.6595	-149.2909	219	218	Strom	ev#213;
HX14801.04	CTD1	124	97	GAK2	28	5	0444	59.6912	-149.3278	228	227	Strom	ev#214;
HX14801.05	CTD1	125	98	ACC1	28	5	0516	59.7283	-149.3609	242	29	Strom	ev#215;
HX14801.06	CTD1	126	98	ACC1	28	5	0637	59.7290	-149.3630	242	240	Strom	ev#216;
HX14801.07	CTD1	127	99	GAK1I	28	5	0719	59.7660	-149.4013	263	258	Strom	ev#217;
HX14801.14	CTD1	128	100	ACC1	28	5	1000	59.7212	-149.3618	242	75	Strom	ev#224;water for fsw
HX14801.15	CTD1	129	100	ACC1	28	5	1016	59.7286	-149.3618	242	75	Strom	ev#225;grazing exp. # 12
HX14801.16	CTD1	130	100	ACC1	28	5	1407	59.7247	-149.3630	242	238	Strom	ev#226;
HX14801.17	CTD1	131	101	GAK1I	28	5	1459	59.7660	-149.3969	255	256	Strom	ev#227;ACC survey
HX14801.18	CTD1	132	102	ACC1	28	5	1533	59.7285	-149.3617	242	236	Strom	ev#228;
HX14801.19	CTD1	133	103	GAK2	28	5	1605	59.6919	-149.3262	227	222	Strom	ev#229;
HX14801.20	CTD1	134	104	ACC2	28	5	1652	59.6584	-149.2894	220	216	Strom	ev#230;
HX14801.21	CTD1	135	105	GAK2I	28	5	1708	59.5532	-149.1877	215	210	Strom	ev#231;
HX14801.22	CTD1	136	106	GAK3	28	5	1749	59.5532	-149.1870	215	212	Strom	ev#232;
HX14801.24	CTD1	137	107	ACC1	28	5	2341	59.7259	-149.3676	242	242	Strom	ev#234;
HX14901.05	CTD1	138	107	ACC1	29	5	0800	59.7282	-149.3620	242	75	Strom	ev#239;water for fsw
HX14901.06	CTD2	139	107	ACC1	29	5	0856	59.7277	-149.3615	243	75	Strom	ev#240;grazing exp. # 13
HX14901.07	CTD1	140	107	ACC1	29	5	1208	59.7257	-149.3631	243	240	Strom	ev#241;
HX14901.10	CTD1	141	107	ACC1	29	5	1333	59.7287	-149.3620	242	77	Strom	ev#244;for sz #4
HX14901.11	CTD1	142	108	ISGA	29	5	1429	59.6835	-149.4882	222	221	Strom	ev#245;Inner shelf grid survey
HX14901.12	CTD1	143	109	ISGD	29	5	1457	59.6492	-149.4521	276	261	Strom	ev#246;
HX14901.13	CTD1	144	110	ISGF	29	5	1531	59.6077	-149.4145	217	213	Strom	ev#247;

Table 3: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX14901.14	CTD1	145	111	GAK3	29	5	1632	59.5538	-149.1875	214	213	Strom	ev#248;
HX14901.15	CTD1	146	112	GAK2I	29	5	1714	59.6268	-149.2582	215	212	Strom	ev#249;
HX14901.16	CTD1	147	113	ACC2	29	5	1748	59.6585	-149.2956	220	220	Strom	ev#250;
HX14901.17	CTD1	148	114	GAK2	29	5	1816	59.6908	-149.3292	227	224	Strom	ev#251;
HX14901.18	CTD1	149	115	ACC1	29	5	1850	59.7276	-149.3647	243	236	Strom	ev#252;
HX14901.19	CTD1	150	116	GAK1I	29	5	1920	59.7658	-149.3985	262	258	Strom	ev#253;
HX14901.20	CTD1	151	117	ISGC	29	5	2011	59.8421	-149.3052	101	96	Strom	ev#254;
HX14901.21	CTD1	152	118	ISGF	29	5	2037	59.8070	-149.2697	119	117	Strom	ev#255;
HX14901.22	CTD1	153	119	ISGH	29	5	2102	59.7698	-149.2374	269	266	Strom	ev#256;
HX14901.24	CTD1	154	120	ACC1	29	5	2338	59.7247	-149.3660	247	239	Strom	ev#258;
HX15001.07	CTD1	155	120	ACC1	30	5	0814	59.7295	-149.3635	243	75	Strom	ev#265;water for fsw
HX15001.09	CTD2	156	120	ACC1	30	5	0919	59.7285	-149.3617	243	75	Strom	ev#267;grazing exp. #14
HX15001.10	CTD1	157	120	ACC1	30	5	1305	59.7281	-149.3658	243	240	Strom	ev#268;
HX15001.11	CTD1	158	121	GAK3	30	5	1426	59.5511	-149.1848	213	206	Strom	ev#269;ACC survey
HX15001.12	CTD1	159	122	GAK2I	30	5	1512	59.6272	-149.2581	213	206	Strom	ev#270;
HX15001.13	CTD1	160	123	ACC2	30	5	1542	59.6594	-149.2947	218	214	Strom	ev#271;
HX15001.14	CTD1	161	124	GAK2	30	5	1612	59.6921	-149.3271	227	218	Strom	ev#272;
HX15001.15	CTD1	162	125	ACC1	30	5	1644	59.7292	-149.3631	242	236	Strom	ev#273;
HX15001.16	CTD1	163	126	GAK1I	30	5	1722	59.7672	-149.3970	262	256	Strom	ev#274;
HX15001.17	CTD1	164	127	GAK1	30	5	1808	59.8453	-149.4647	272	264	Strom	ev#275;
HX15001.19	CTD1	165	128	ACC1	30	5	2340	59.7280	-149.3626	243	240	Strom	ev#277;
HX15101.01	CTD1	166	129	EXP11	31	5	0342	59.1415	-149.2138	145	145	Strom	ev#279;
HX15101.03	CTD1	167	130	CF15	31	5	0759	59.4509	-148.8640	180	180	Strom	ev#281;Cape Fairfield survey
HX15101.05	CTD1	168	131	CF14	31	5	0836	59.4836	-148.8683	170	170	Strom	ev#283;
HX15101.06	CTD1	169	132	CF13	31	5	0901	59.5179	-148.8656	173	173	Strom	ev#284;
HX15101.07	CTD1	170	133	CF12	31	5	0927	59.5507	-148.8679	185	185	Strom	ev#285;
HX15101.08	CTD1	171	134	CF11	31	5	0955	59.5840	-148.8660	178	178	Strom	ev#286;
HX15101.09	CTD1	172	135	CF10	31	5	1020	59.6181	-148.8692	178	178	Strom	ev#287;
HX15101.11	CTD1	174	137	CF8	31	5	1112	59.6845	-148.8684	181	181	Strom	ev#289;
HX15101.12	CTD1	175	138	CF7	31	5	1136	59.7174	-148.8672	183	183	Strom	ev#290;
HX15101.13	CTD1	176	139	CF6	31	5	1205	59.7499	-148.8678	191	191	Strom	ev#291;
HX15101.14	CTD1	177	140	CF5	31	5	1229	59.7839	-148.8673	193	193	Strom	ev#292;
HX15101.15	CTD1	178	141	CF4	31	5	1255	59.8170	-148.8667	184	184	Strom	ev#293;
HX15101.16	CTD1	179	142	CF3	31	5	1321	59.8506	-148.8672	162	162	Strom	ev#294;
HX15101.17	CTD1	180	143	CF2	31	5	1346	59.8841	-148.8675	113	113	Strom	ev#295;
HX15101.18	CTD1	181	144	CF1	31	5	1405	59.9092	-148.8690	83	83	Strom	ev#296;
HX15101.19	CTD1	182	145	GAK1I	31	5	1609	59.7657	-148.3975	265	75	Strom	ev#297;cell settling experiment
HX15101.20	CTD1	183	146	GAK1	31	5	1650	59.8449	-149.4672	272	272	Strom	ev#298;

Table 4: MOCNESS Sampling

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX13701.09	MOC	1	1	GAK10	17	5	2358	58.5351	-148.2163	1483	100	Napp	ev#009; moc_1
HX13901.01	MOC	2	8	GAK10	19	5	0012	58.5395	-148.2081	1486	100	Strom	ev#025
HX14001.01	MOC	3	15	GAK10	20	5	0015	58.5418	-148.2051	1470	100	Strom	ev#038; failed
HX14001.02	MOC	4	15	GAK10	20	5	0151	58.5416	-148.2005	1470	100	Napp	ev#039
HX14101.02	MOC	5	20	PWS2	21	5	0122	60.5382	-147.8078	743	nd	Napp	ev#052; failed
HX14101.04	MOC	6	20	PWS2	21	5	0255	60.5342	-147.8062	743	100	Napp	ev#054
HX14201.02	MOC	7	34	PWS2	22	5	0019	60.5370	-147.8084	750	100	Napp	ev#084
HX14301.01	MOC	8	43	PWS2	23	5	0001	60.5380	-147.8001	740	100	Napp	ev#105
HX14501.01	MOC	9	67	GAK4	25	5	0003	59.4117	-149.0421	200	nd	Napp	ev#148; failed
HX14501.02	MOC	10	67	GAK4	25	5	0043	59.4123	-149.0013	195	100	Napp	ev#149
HX14501.27	MOC	11	78	4IW	25	5	2354	59.2618	-149.2745	147	100	Napp	ev#174
HX14601.18	MOC	12	85	GAK4	26	5	2355	59.4110	-149.0527	200	100	Napp	ev#192
HX14701.12	MOC	13	93	EXP11	27	5	2350	59.1417	-149.2128	145	100	Napp	ev#210
HX14901.01	MOC	14	107	ACC1	29	5	0000	59.7177	-149.3730	242	100	Napp	ev#235
HX15001.01	MOC	15	120	ACC1	30	5	0002	59.7171	-149.3806	247	100	Strom	ev#259
HX15001.20	MOC	16	128	ACC1	30	5	2357	59.7234	-149.3678	243	100	Strom	ev#278

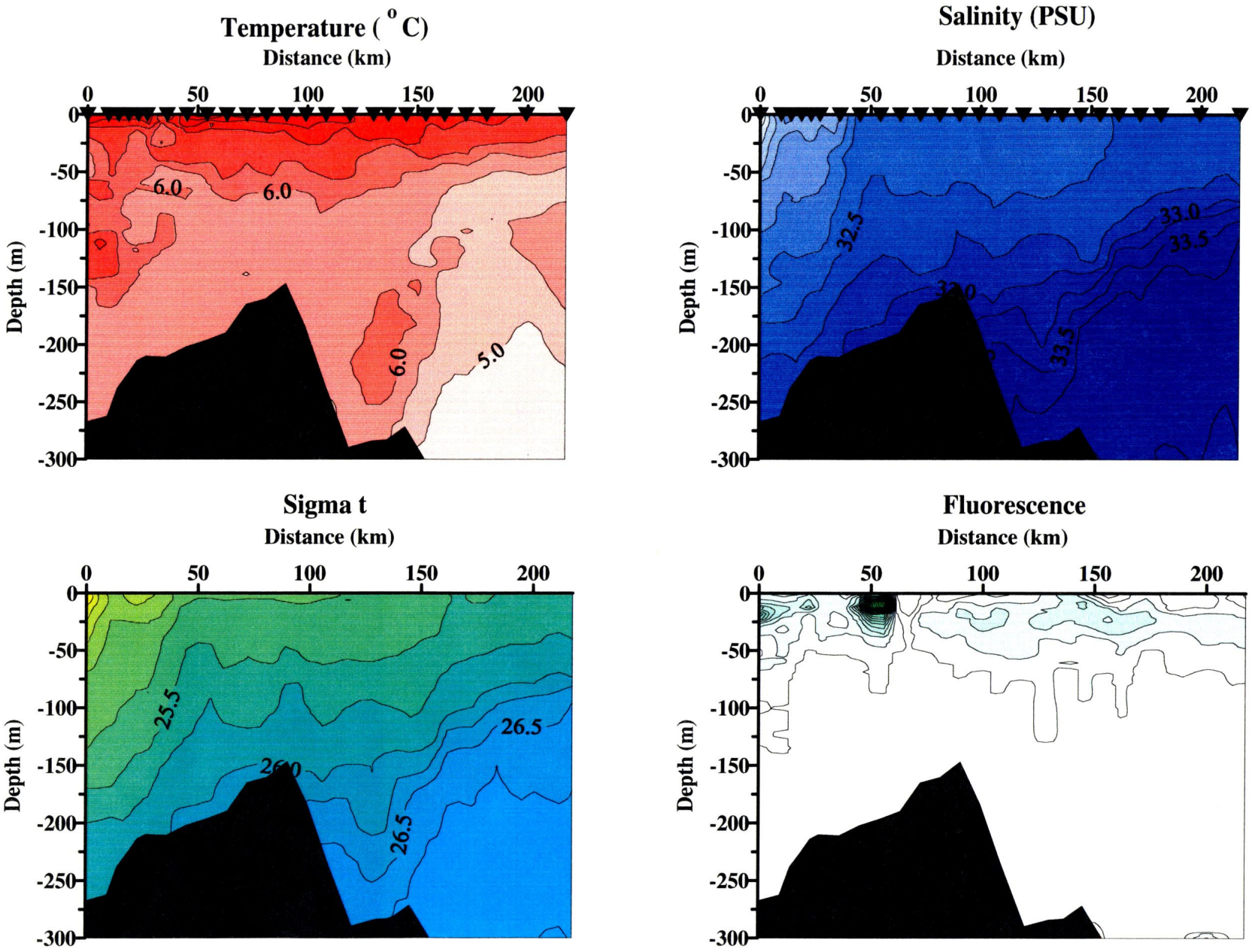
Table 5: Small CalVET Net Tows

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX13801.14	CalVET	1	8	GAK10	18	5	2328	58.5412	-148.2099	1471	100	Napp	ev#023
HX13901.12	CalVET	2	15	GAK10	19	5	2245	58.0980	-147.7914	1460	100	Strom	ev#036
HX14101.03	CalVET	3	20	PWS2	21	5	0232	60.5310	-147.8073	743	100	Napp	ev#053
HX14101.32	CalVET	4	34	PWS2	21	5	2336	60.5342	-147.8043	740	100	Napp	ev#082
HX14201.20	CalVET	5	43	PWS2	22	5	2330	60.5347	-147.8038	740	100	Napp	ev#103
HX14401.25	CalVET	6	67	GAK4	24	5	2331	59.4085	-149.0495	200	100	nd	ev#146
HX14501.25	CalVET	7	78	4IW	25	5	2331	59.2631	-149.2735	147	100	Strom	ev#172
HX14601.16	CalVET	8	85	GAK4	26	5	2329	59.4103	-149.0475	200	100	Napp	ev#190
HX14701.11	CalVET	9	93	EXP11	27	5	2340	59.1423	-149.2148	145	100	Strom	ev#209
HX14801.23	CalVET	10	107	ACC1	28	5	2334	59.7280	-149.3655	242	100	Strom	ev#233
HX14901.23	CalVET	11	120	ACC1	29	5	2331	59.7257	-149.3646	247	100	Strom	ev#257
HX15001.18	CalVET	12	128	ACC1	30	5	2329	59.7288	-149.3633	243	100	Strom	ev#276

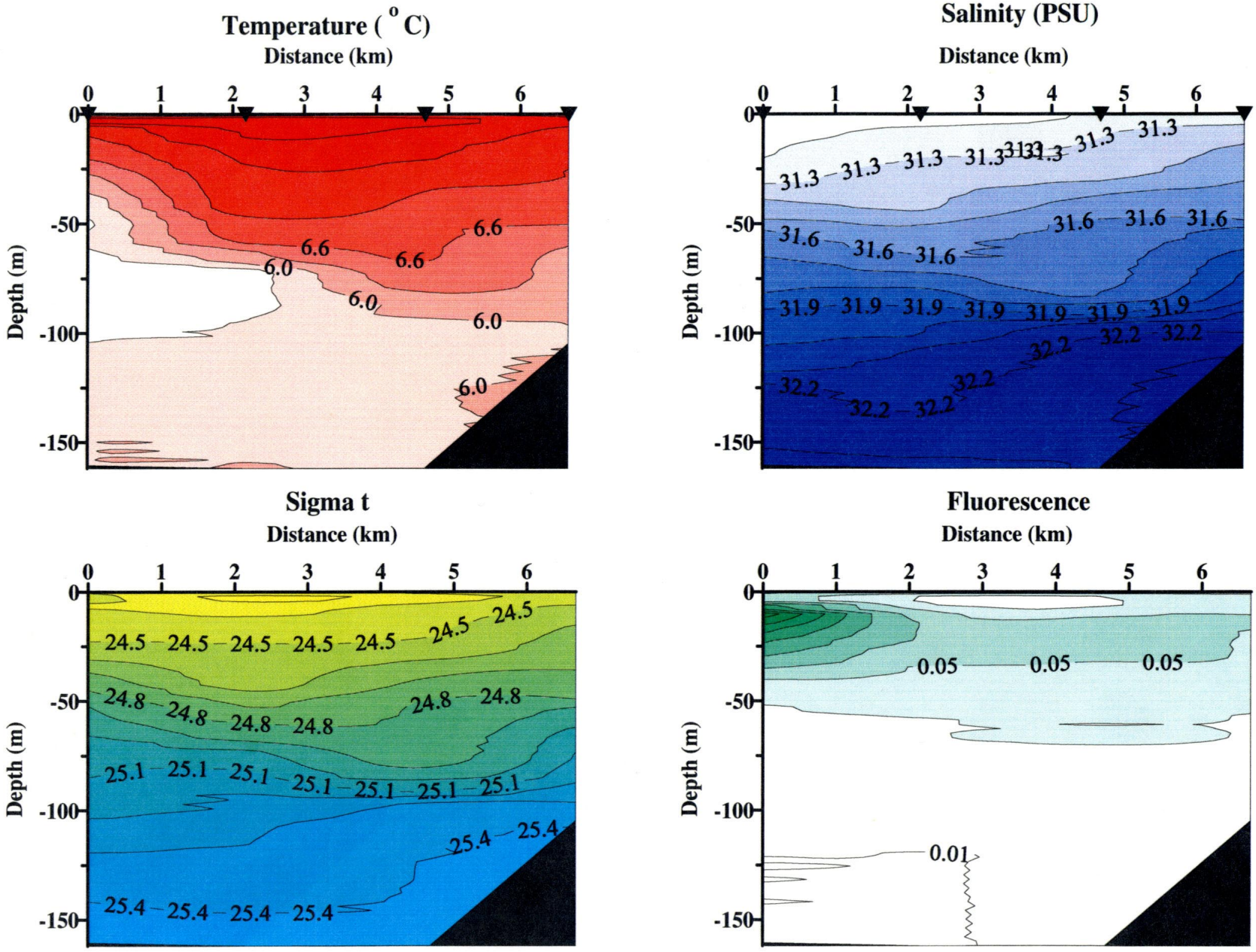
Table 6: CalVET53 Net Tows

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Comments
HX13801.01	CalVET53	1	1	GAK10	18	5	0634	58.5410	-148.2100	1465	100	Napp	ev#010;egg ratio tow
HX14001.06	CalVET53	2	19	GAK6	20	5	0725	59.1173	-148.7708	150	100	nd	ev#043;egg ratio tow
HX14001.07	CalVET53	3	19	GAK6	20	5	0740	59.1183	-148.7812	150	100	nd	ev#044;failed
HX14001.08	CalVET53	4	19	GAK6	20	5	0756	59.1162	-148.7708	150	100	nd	ev#045;egg ratio tow
HX14001.09	CalVET53	5	19	GAK6	20	5	0813	59.1163	-148.7730	150	100	nd	ev#046;egg ratio tow
HX14101.05	CalVET53	6	20	PWS2	21	5	0637	60.5347	-147.8050	743	100	nd	ev#055;egg ratio
HX14101.06	CalVET53	7	20	PWS2	21	5	0652	60.5353	-147.8125	743	100	nd	ev#056;egg ratio
HX14101.07	CalVET53	8	20	PWS2	21	5	0706	60.5345	-147.8030	743	100	nd	ev#057;egg ratio
HX14301.02	CalVET53	9	43	PWS2	23	5	0634	60.5348	-147.8027	740	100	nd	ev#106;egg ratio
HX14301.03	CalVET53	10	43	PWS2	23	5	0646	60.5343	-147.8012	740	100	nd	ev#107;egg ratio
HX14301.04	CalVET53	11	43	PWS2	23	5	0658	60.5325	-147.8003	740	100	nd	ev#108;egg ratio
HX14401.08	CalVET53	12	58	GAK4	24	5	0700	59.4073	-149.0484	199	100	Napp	ev#129;egg ratio
HX14401.09	CalVET53	13	58	GAK4	24	5	0711	59.4072	-149.0482	199	100	Napp	ev#130;egg ratio
HX14401.10	CalVET53	14	58	GAK4	24	5	0722	59.4072	-149.0483	199	100	Napp	ev#131;egg ratio
HX14501.04	CalVET53	15	69	4IW	25	5	0639	59.2627	-149.2735	139	100	Napp	ev#151;egg ratio
HX14501.05	CalVET53	16	69	4IW	25	5	0652	59.2627	-149.2753	139	100	Napp	ev#152;egg ratio
HX14501.06	CalVET53	17	69	4IW	25	5	0705	59.2627	-149.2778	139	100	Napp	ev#153;egg ratio
HX14601.01	CalVET53	18	79	GAK4	26	5	0734	59.4080	-149.0480	147	100	Napp	ev#175;egg ratio
HX14601.02	CalVET53	19	79	GAK4	26	5	0745	59.4083	-149.0507	147	100	Napp	ev#176;egg ratio
HX14601.03	CalVET53	20	79	GAK4	26	5	0756	59.4093	-149.0528	147	100	Napp	ev#177;egg ratio
HX14801.08	CalVET53	21	100	ACC1	28	5	0747	59.7283	-149.3618	242	100	Napp	ev#218;egg ratio
HX14801.09	CalVET53	22	100	ACC1	28	5	0800	59.7258	-149.3632	242	100	Napp	ev#219;egg ratio
HX14801.10	CalVET53	23	100	ACC1	28	5	0812	59.7222	-149.3638	242	100	Napp	ev#220;egg ratio
HX15001.02	CalVET53	24	120	ACC1	30	5	0630	59.7282	-149.3658	247	100	Napp	ev#260;egg ratio
HX15001.03	CalVET53	25	120	ACC1	30	5	0642	59.7278	-149.3735	247	100	Napp	ev#261;egg ratio
HX15001.04	CalVET53	26	120	ACC1	30	5	0653	59.7278	-149.3782	247	100	Napp	ev#262;egg ratio

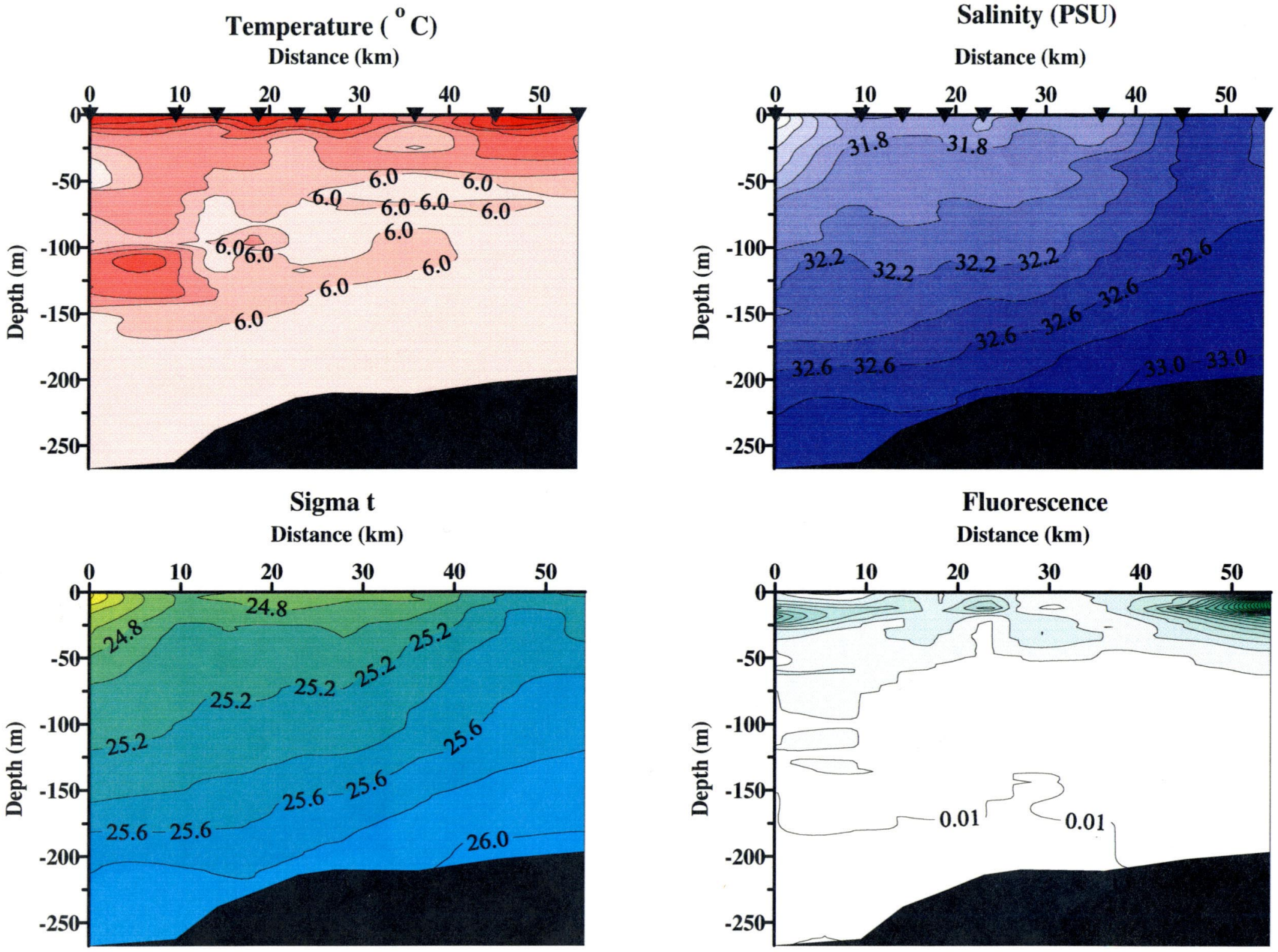
Seward Line 5/18 to 5/27/01



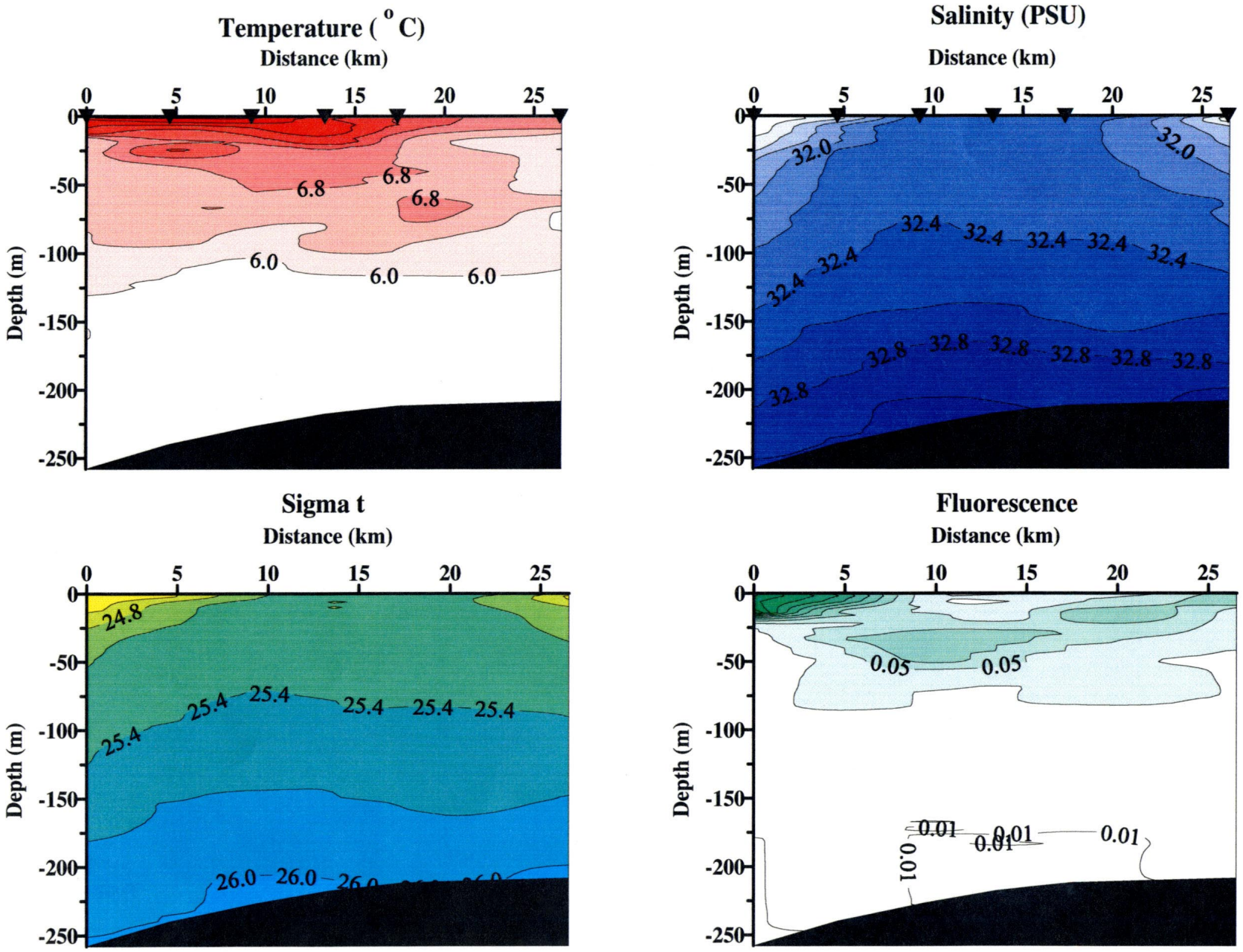
Montague Strait 5/23/01



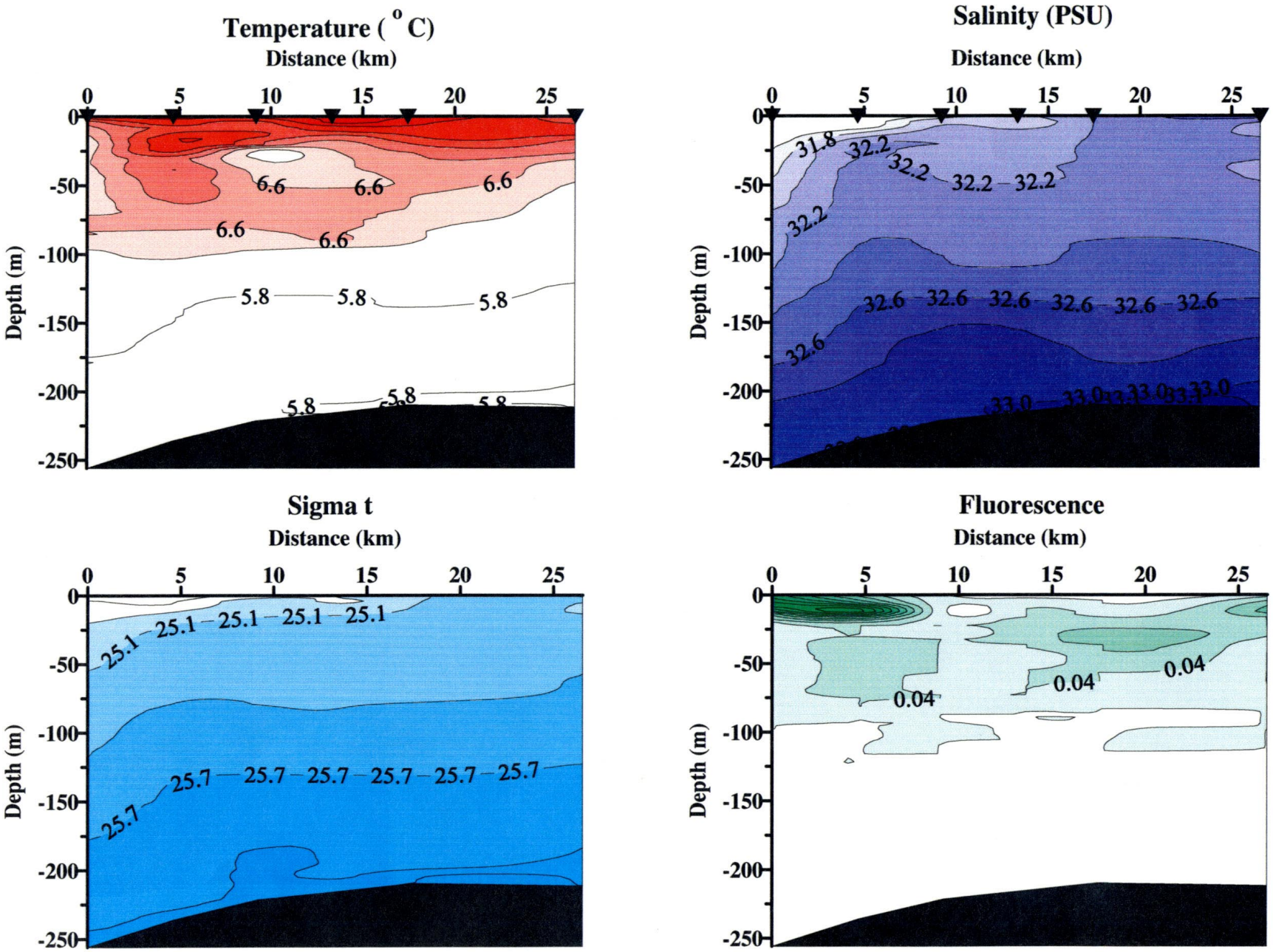
ACC transect 1: 2300 5/23 - 0500 5/24/01



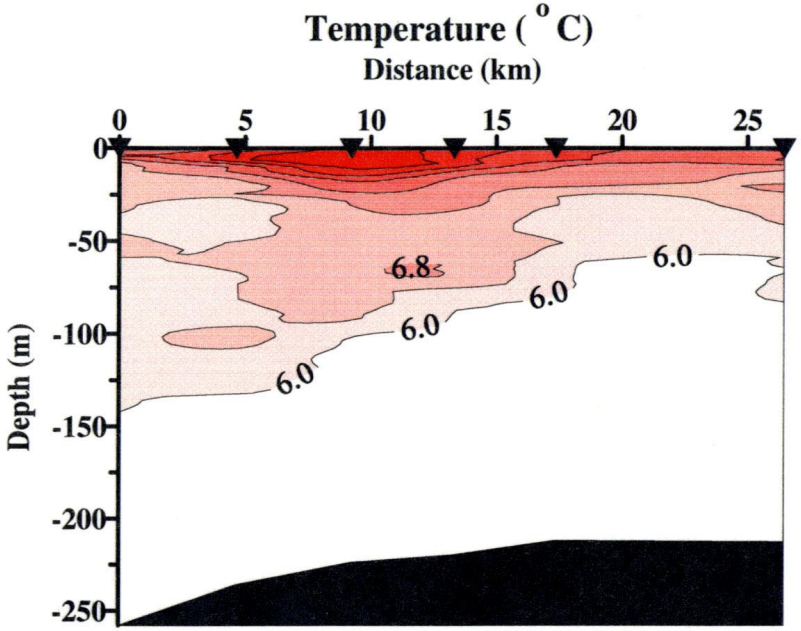
ACC transect 2: 0300 - 0730 5/28/01

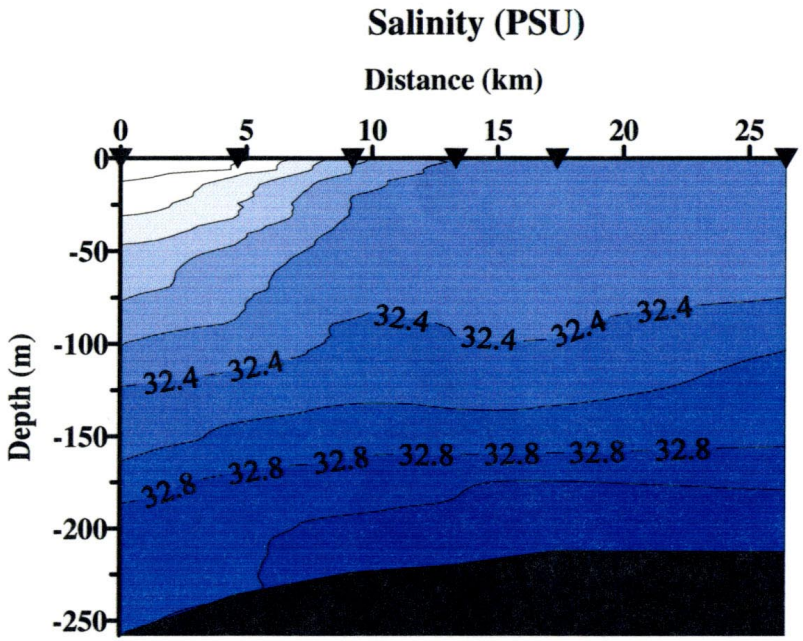


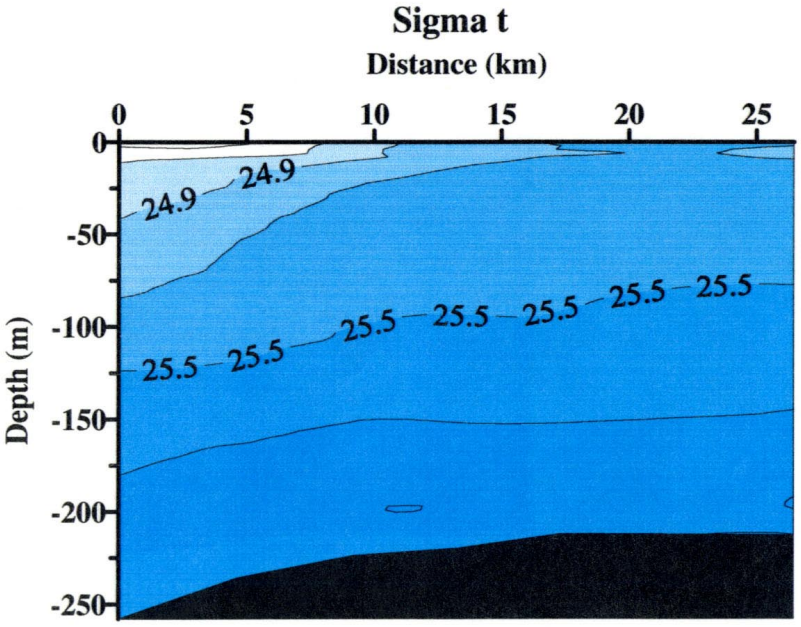
ACC transect 3: 1500 - 1800 5/28/01

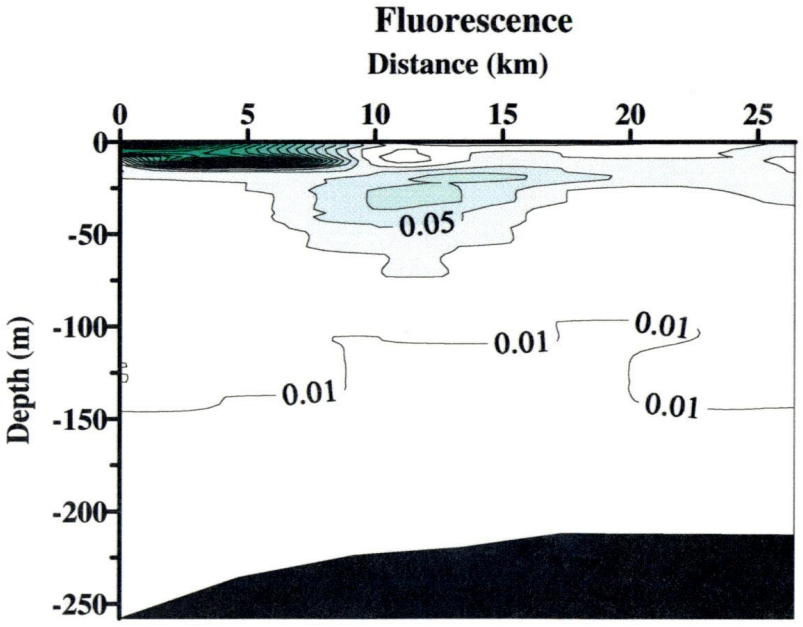


ACC transect 4: 1630 - 1920 5/29/01

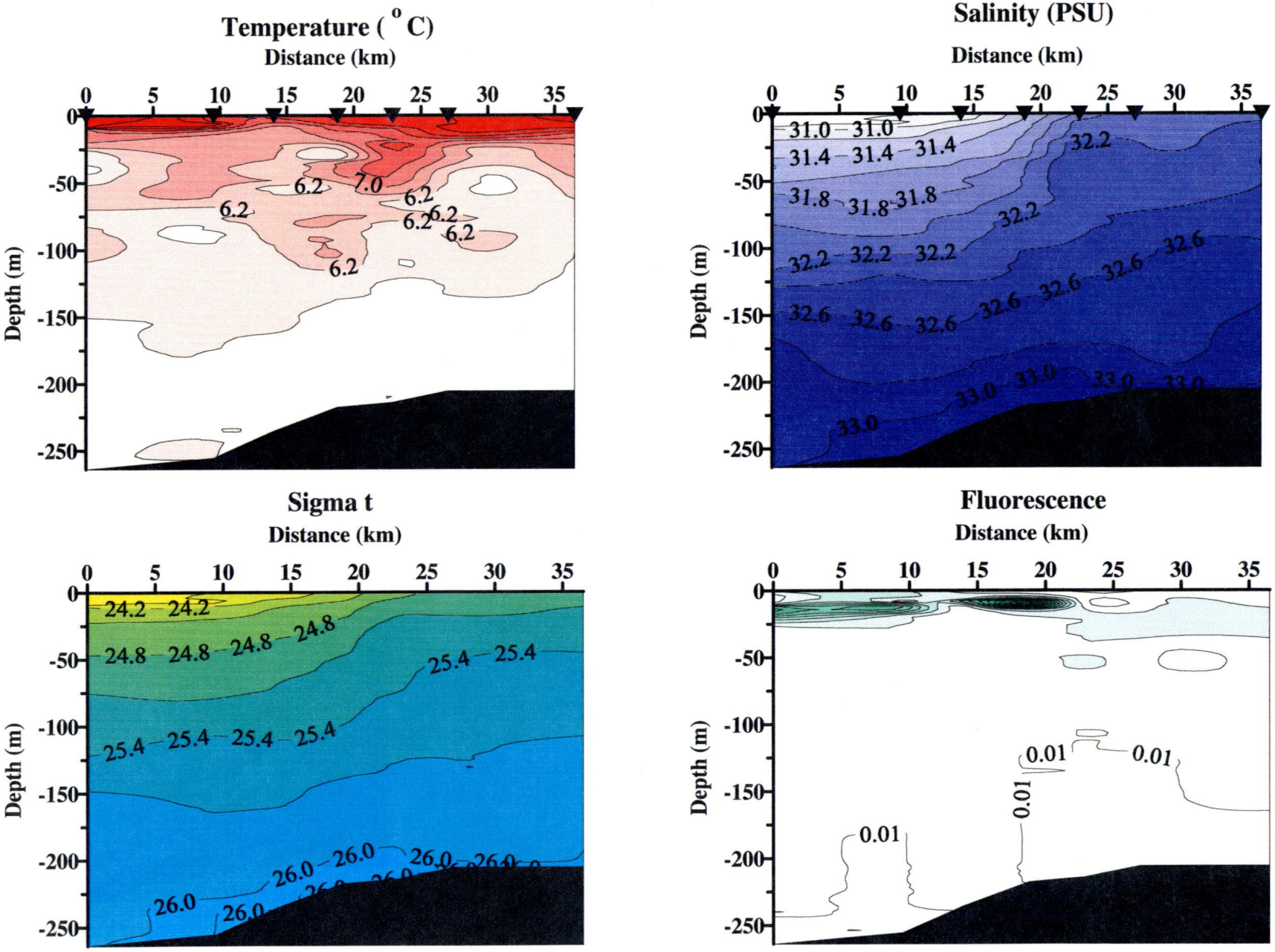




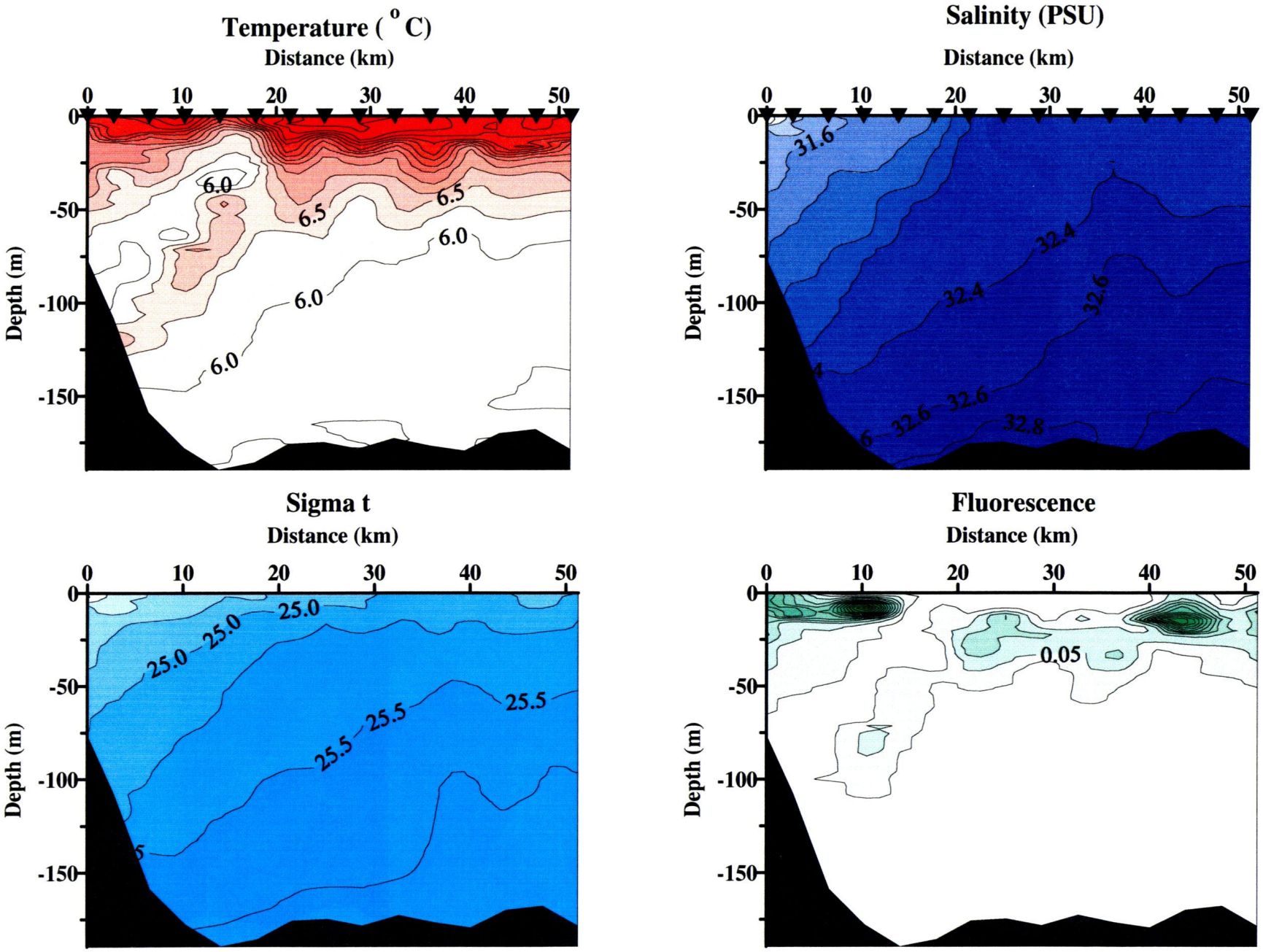




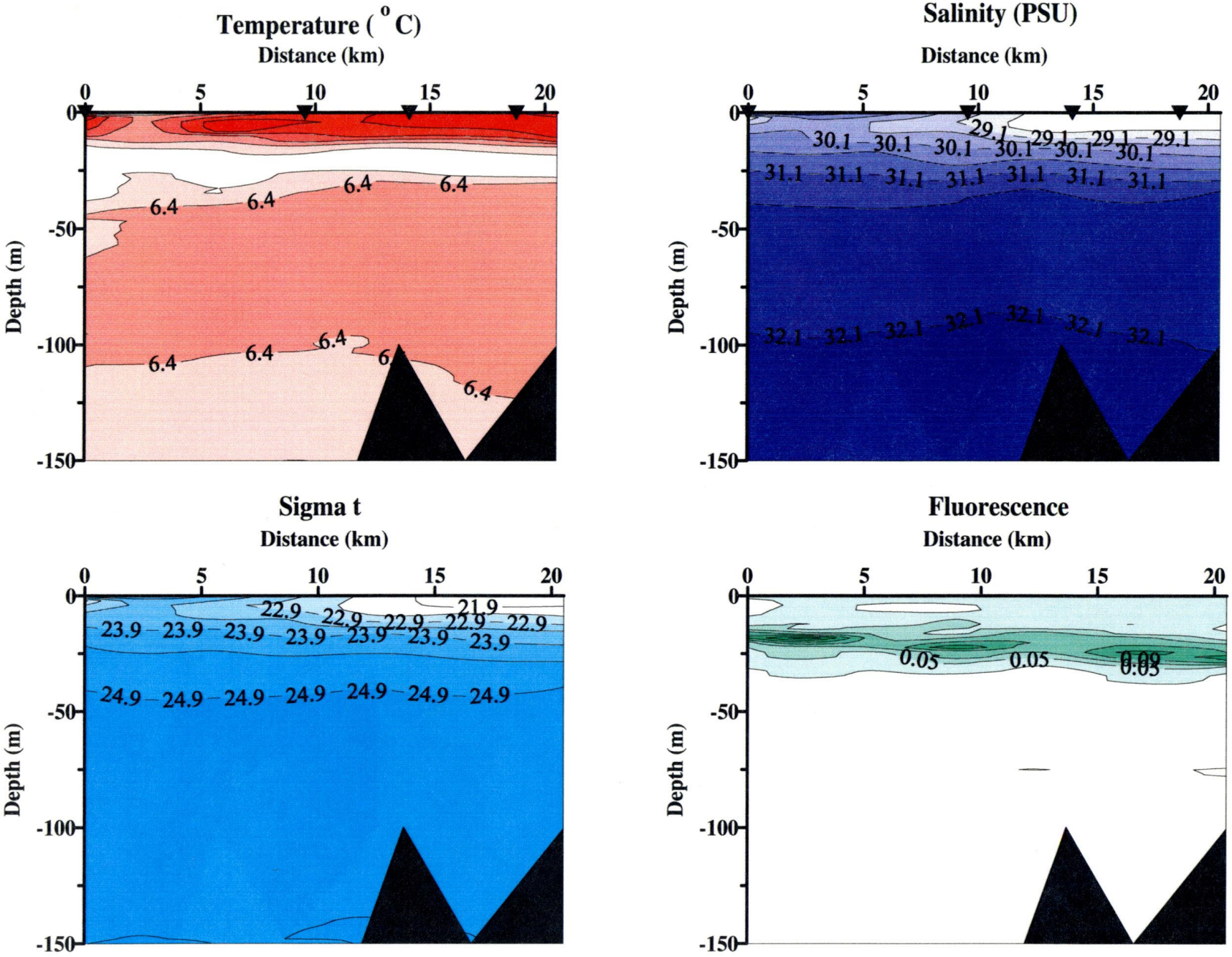
ACC transect 5: 1430 - 1800 5/30/01



Cape Fairfield Line 5/31/01



Port Nellie Juan / Blue Fjord 5/22/01



APPENDIX I

HX244 EVENT LOG

EVENT LOG CONTENTS

Column Label	Description
Event#	Unique identifier for each line of event log
Instrument (Instr)	CTD1: Conductivity Temperature Depth profile collected with Seabird SBE with 5 liter rosette, fluorescence; CTD2: Conductivity Temperature Depth profile collected with Seabird SBE with 10 liter rosette, no fluorescence; MOC: 1m^2 MOCNESs with 0.505 mm mesh; LiveNet: 0.75 m diameter ring net with 0.200 mm mesh for collecting animals for experiments; CalVET: quantitative zooplankton sampling with 25 cm diameter CalVET net, equipped with 0.150 mm mesh; CalVET53: zooplankton sampling with a 25 cm diameter CalVET net, equipped with 0.053 mm mesh; CalVETQ: a quad (4 nets) CalVET — lost after 1 cast.
Cast	Sequence # for a particular instrument
Station (Sta)	
Station Standard (Sta std)	
Day	Local time basis
Month (Mos)	Local time basis
Time	Local time
Latitude (Lat)	Decimal degrees; north is positive
Longitude (Long)	Decimal degrees; east is positive
Water Depth	Depth of bottom
Cast Depth	Maximum depth of deployment
Scientific Investigator (SI)	
Comments	

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX13701.01	CTD1	1	1	GAK10	17	5	1930	58.5404	-148.2135	1464	562	Strom	ev#001	ev#001
HX13701.02	LiveNet	1	1	GAK10	17	5	2015	58.5406	-148.2138	1464	50	Dagg	ev#002; live	ev#002; live animals
HX13701.03	LiveNet	2	1	GAK10	17	5	2029	58.5400	-148.2198	1464	100	Dagg	ev#003; live	ev#003; live animals
HX13701.04	LiveNet	3	1	GAK10	17	5	2048	58.5391	-148.2287	1404	100	Dagg	ev#004; live	ev#004; live animals
HX13701.05	CTD1	2	1	GAK10	17	5	2113	58.5422	-148.2132	1458	50	Strom	ev#005; water	ev#005; water for fsw
HX13701.06	CTD1	3	1	GAK10	17	5	2149	58.5394	-148.2213	1446	50	Strom	ev#006; grazing	ev#006; grazing expt #1
HX13701.07	CalVETQ	1	1	GAK10	17	5	2310	58.5405	-148.2142	1461	100	Napp	ev#007; quad	ev#007; quad net
HX13701.08	CTD1	4	1	GAK10	17	5	2322	58.5409	-148.2141	1461	500	Strom	ev#008	ev#008
HX13701.09	MOC	1	1	GAK10	17	5	2358	58.5351	-148.2163	1483	100	Napp	ev#009; moc	ev#009; moc 1
HX13801.01	CalVET53	1	1	GAK10	18	5	0634	58.5410	-148.2100	1465	100	Napp	ev#010; egg	ev#010; egg ratio tow
HX13801.02	LiveNet	4	1	GAK10	18	5	0720	58.5387	-148.2180	1465	50	Napp	ev#011	ev#011
HX13801.03	LiveNet	5	1	GAK10	18	5	0734	58.5408	-148.2113	1465	100	Napp	ev#012	ev#012
HX13801.04	CTD1	5	1	GAK10	18	5	0803	58.5418	-148.2120	1450	50	Strom	ev#013; water	ev#013; water for fsw
HX13801.05	CTD2	6	1	GAK10	18	5	0854	58.5407	-148.2118	1465	50	Strom	ev#014; grazing	ev#014; grazing expt #2 6.5m
HX13801.06	CTD1	7	1	GAK10	18	5	1209	58.5401	-148.2137	1465	1460	Strom	ev#015	ev#015
HX13801.07	CTD1	8	1	GAK10	18	5	1417	58.5406	-148.2070	1486	1479	Strom	ev#016; retermin.	ev#016; reterminated and sliprings checked
HX13801.08	CTD1	9	2	OSGA	18	5	1625	58.5909	-148.4385	233	230	Strom	ev#017; OS	ev#017; OS grid survey
HX13801.09	CTD1	10	3	GAK9I	18	5	1719	58.6097	-148.2789	690	701	Strom	ev#018	ev#018
HX13801.10	CTD1	11	4	OSGC	18	5	1841	58.6615	-148.1196	815	507	Strom	ev#019	ev#019
HX13801.11	CTD1	12	5	OSGE	18	5	1939	58.5765	-148.0539	815	500	Strom	ev#020	ev#020
HX13801.12	CTD1	13	6	OSGH	18	5	2036	58.4993	-147.9835	2154	500	Strom	ev#021	ev#021
HX13801.13	CTD1	14	7	GAK10I	18	5	2137	58.4634	-148.1413	1723	1503	Strom	ev#022	ev#022
HX13801.14	CalVET	1	8	GAK10	18	5	2328	58.5412	-148.2099	1471	100	Napp	ev#023	ev#023
HX13801.15	CTD1	15	8	GAK10	18	5	2338	58.5412	-148.2090	1471	500	Strom	ev#024	ev#024
HX13901.01	MOC	2	8	GAK10	19	5	0012	58.5395	-148.2081	1486	100	Strom	ev#025	ev#025
HX13901.02	CTD1	16	9	OSGD	19	5	0127	58.5039	-148.3694	646	500	Strom	ev#026	ev#026
HX13901.03	CTD1	17	10	OSGF	19	5	0237	58.4280	-148.2983	1340	500	Strom	ev#027	ev#027
HX13901.04	LiveNet	6	11	GAK10	19	5	0704	58.5397	-148.2125	1470	50	Dagg	ev#028	ev#028
HX13901.05	LiveNet	7	11	GAK10	19	5	0713	58.5393	-148.2123	1470	100	Dagg	ev#029	ev#029
HX13901.06	CTD1	18	11	GAK10	19	5	0733	58.5412	-148.2107	1470	50	Strom	ev#030; water	ev#030; water for fsw
HX13901.07	CTD1	19	11	GAK10	19	5	0819	58.5407	-148.2155	1470	50	Strom	ev#031; grazing	ev#031; grazing expt #3
HX13901.08	CTD1	20	11	GAK10	19	5	1159	58.5420	-148.2116	1462	1460	Strom	ev#032	ev#032
HX13901.09	CTD1	21	12	GAK11	19	5	1421	58.3878	-148.0705	1436	1436	Strom	ev#033; Seward	ev#033; Seward Line survey
HX13901.10	CTD1	22	13	GAK12	19	5	1628	58.2436	-147.9323	2168	2168	Strom	ev#034	ev#034
HX13901.11	CTD1	23	14	GAK13	19	5	1839	58.0987	-147.7914	2095	2095	Strom	ev#035	ev#035
HX13901.12	CalVET	2	15	GAK10	19	5	2245	58.0980	-147.7914	1460	100	Strom	ev#036	ev#036
HX13901.13	CTD1	24	15	GAK10	19	5	2305	58.5424	-148.2122	1470	500	Strom	ev#037	ev#037
HX14001.01	MOC	3	15	GAK10	20	5	0015	58.5418	-148.2051	1470	100	Strom	ev#038; failed	ev#038; failed
HX14001.02	MOC	4	15	GAK10	20	5	0151	58.5416	-148.2005	1470	100	Napp	ev#039	ev#039
HX14001.03	CTD1	25	16	GAK9	20	5	0333	58.6804	-148.3514	278	278	Strom	ev#040; Seward	ev#040; Seward Line survey
HX14001.04	CTD1	26	17	GAK8I	20	5	0421	58.7435	-148.4208	289	289	Strom	ev#041	ev#041
HX14001.05	CTD1	27	18	GAK8	20	5	0505	58.7919	-148.4910	290	290	Strom	ev#042	ev#042
HX14001.06	CalVET53	2	19	GAK6	20	5	0725	59.1173	-148.7708	150	100	nd	ev#043; egg	ev#043; egg ratio tow
HX14001.07	CalVET53	3	19	GAK6	20	5	0740	59.1183	-148.7812	150	100	nd	ev#044; failed	ev#044; failed
HX14001.08	CalVET53	4	19	GAK6	20	5	0756	59.1162	-148.7708	150	100	nd	ev#045; egg	ev#045; egg ratio tow
HX14001.09	CalVET53	5	19	GAK6	20	5	0813	59.1163	-148.7730	150	100	nd	ev#046; egg	ev#046; egg ratio tow
HX14001.10	CTD1	28	19	GAK6	20	5	0829	59.1174	-148.7702	151	50	Strom	ev#047; grazing	ev#047; grazing exp. #4

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX14001.11	LiveNet	8	19	GAK6	20	5	0857	59.1173	-148.7723	150	nd	nd	ev#048	ev#048
HX14001.12	LiveNet	9	19	GAK6	20	5	0915	59.1162	-148.7700	150	nd	nd	ev#049	ev#049
HX14001.13	CTD1	29	19	GAK6	20	5	1204	59.1167	-148.7721	151	150	Strom	ev#050	ev#050
HX14101.01	CTD1	30	20	PWS2	21	5	0056	60.5346	-147.8057	749	200	Strom	ev#051	ev#051
HX14101.02	MOC	5	20	PWS2	21	5	0122	60.5382	-147.8078	743	nd	Napp	ev#052; failed	ev#052; failed
HX14101.03	CalVET	3	20	PWS2	21	5	0232	60.5310	-147.8073	743	100	Napp	ev#053	ev#053
HX14101.04	MOC	6	20	PWS2	21	5	0255	60.5342	-147.8062	743	100	Napp	ev#054	ev#054
HX14101.05	CalVET53	6	20	PWS2	21	5	0637	60.5347	-147.8050	743	100	nd	ev#055; egg	ev#055; egg ratio
HX14101.06	CalVET53	7	20	PWS2	21	5	0652	60.5353	-147.8125	743	100	nd	ev#056; egg	ev#056; egg ratio
HX14101.07	CalVET53	8	20	PWS2	21	5	0706	60.5345	-147.8030	743	100	nd	ev#057; egg	ev#057; egg ratio
HX14101.08	LiveNet	10	20	PWS2	21	5	0727	60.5348	-147.8033	743	100	nd	ev#058	ev#058
HX14101.09	LiveNet	11	20	PWS2	21	5	0738	60.5352	-147.8083	743	100	nd	ev#059	ev#059
HX14101.10	LiveNet	12	20	PWS2	21	5	0753	60.5347	-147.8028	747	40	Strom	ev#060; Live	ev#060; Live animal tow
HX14101.11	CTD1	31	20	PWS2	21	5	0808	60.5369	-147.8046	747	747	Strom	ev#061	ev#061
HX14101.12	CTD1	32	20	PWS2	21	5	1007	60.5362	-147.8046	747	50	Strom	ev#062; water	ev#062; water for fsw
HX14101.13	CTD1	33	20	PWS2	21	5	1046	60.5341	-147.7979	747	50	Strom	ev#063; grazing	ev#063; grazing exp # 5
HX14101.14	LiveNet	13	20	PWS2	21	5	1326	60.5350	-147.8048	747	100	nd	ev#064	ev#064
HX14101.15	LiveNet	14	20	PWS2	21	5	1339	60.5372	-147.8116	747	100	napp	ev#065	ev#065
HX14101.16	LiveNet	15	20	PWS2	21	5	1351	60.5395	-147.8167	724	100	Napp	ev#066	ev#066
HX14101.17	CTD1	34	21	PWSGA	21	5	1424	60.5956	-147.8284	392	200	Strom	ev#067; PWS	ev#067; PWS grid survey
HX14101.18	CTD1	35	22	PWSGB	21	5	1507	60.5820	-147.7634	770	200	Strom	ev#068	ev#068
HX14101.19	CTD1	36	23	PWSGC	21	5	1543	60.5626	-147.6785	770	200	Strom	ev#069	ev#069
HX14101.20	CTD1	37	24	PWGD	21	5	1635	60.5515	-147.8721	493	200	Strom	ev#070	ev#070
HX14101.21	CTD1	38	25	PWGE	21	5	1707	60.5144	-147.8978	225	200	Strom	ev#071	ev#071
HX14101.22	CTD1	39	26	PWGF	21	5	1742	60.4997	-147.8330	529	200	Strom	ev#072	ev#072
HX14101.23	CTD1	40	27	PWGG	21	5	1812	60.4905	-147.7918	212	200	Strom	ev#073	ev#073
HX14101.24	CTD1	41	28	PWGH	21	5	1852	60.4417	-147.8862	338	200	Strom	ev#074	ev#074
HX14101.25	CTD1	42	29	PWSP1	21	5	1926	60.4368	-147.9267	238	221	Strom	ev#075; Knight	ev#075; Knight Is. Passage survey
HX14101.26	CTD1	43	30	PWSP2	21	5	1947	60.4328	-147.9075	292	295	Strom	ev#076	ev#076
HX14101.27	CTD1	44	31	PWSP3	21	5	2018	60.4285	-147.8819	292	386	Strom	ev#077	ev#077
HX14101.28	CTD1	45	32	PWSP4	21	5	2048	60.4241	-147.8625	280	242	Strom	ev#078	ev#078
HX14101.29	CTD1	46	33	PWSP5	21	5	2111	60.4206	-147.8469	145	130	Strom	ev#079	ev#079
HX14101.30	LiveNet	16	34	PWS2	21	5	2306	60.5357	-147.8018	740	40	nd	ev#080	ev#080
HX14101.31	LiveNet	17	34	PWS2	21	5	2313	60.5357	-147.8033	740	40	nd	ev#081	ev#081
HX14101.32	CalVET	4	34	PWS2	21	5	2336	60.5342	-147.8043	740	100	Napp	ev#082	ev#082
HX14201.01	CTD1	47	34	PWS2	22	5	0002	60.5345	-147.8098	740	200	Strom	ev#083	ev#083
HX14201.02	MOC	7	34	PWS2	22	5	0019	60.5370	-147.8084	750	100	Napp	ev#084	ev#084
HX14201.03	CTD1	48	34	PWS2	22	5	0705	60.5339	-147.8042	735	50	Strom	ev#085; water	ev#085; water for fsw
HX14201.04	LiveNet	18	34	PWS2	22	5	0732	60.5352	-147.8036	735	50	Dagg	ev#086; Live	ev#086; Live animal tow
HX14201.05	LiveNet	19	34	PWS2	22	5	0743	60.5350	-147.8024	735	75	Dagg	ev#087; Live	ev#087; Live animal tow
HX14201.06	CTD2	49	34	PWS2	22	5	0833	60.5335	-147.8043	735	50	Strom	ev#088; grazing	ev#088; grazing exp # 6
HX14201.07	CTD2	50	34	PWS2	22	5	1108	60.5358	-147.8040	735	735	nd	ev#089	ev#089
HX14201.08	LiveNet	20	34	PWS2	22	5	1304	60.5353	-147.8030	735	100	Napp	ev#090; egg	ev#090; egg production
HX14201.09	LiveNet	21	34	PWS2	22	5	1318	60.5373	-147.8045	735	100	Napp	ev#091	ev#091
HX14201.10	LiveNet	22	34	PWS2	22	5	1332	60.5380	-147.8005	735	50	Dagg	ev#092; copepod	ev#092; copepod dry wt.
HX14201.11	CTD1	51	34	PWS2	22	5	1414	60.5352	-147.8028	735	295	nd	ev#093	ev#093
HX14201.12	CTD1	52	35	PNJ1	22	5	1600	60.5934	-148.1701	505	154	Strom	ev#094; Fjord	ev#094; Fjord survey: Port Nellie

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
														Juan
HX14201.13	CTD1	53	36	PNJ2	22	5	1708	60.5767	-148.2065	623	150	nd	ev#095	ev#095
HX14201.14	CTD1	54	37	PNJ3	22	5	1739	60.5547	-148.2410	553	155	Strom	ev#096; CTD	ev#096; CTD problems
HX14201.15	CTD1	55	38	PNJ4	22	5	1816	60.5331	-148.2683	525	154	Strom	ev#098	ev#098
HX14201.16	CTD1	56	39	PNJ5	22	5	1848	60.5049	-148.2752	283	156	Strom	ev#099	ev#099
HX14201.17	CTD1	57	40	BF1	22	5	1910	60.4918	-148.2587	154	100	nd	ev#100; Fjord	ev#100; Fjord survey: Blue Fjord
HX14201.18	CTD1	58	41	BF2	22	5	1931	60.4663	-148.2492	189	151	nd	ev#101	ev#101
HX14201.19	CTD1	59	42	BF3	22	5	2000	60.4348	-148.2812	101	101	nd	ev#102; toe	ev#102; toe of Ultramarine Glacier
HX14201.20	CalVET	5	43	PWS2	22	5	2330	60.5347	-147.8038	740	100	Napp	ev#103	ev#103
HX14201.21	CTD1	60	43	PWS2	22	5	2341	60.5360	-147.8037	742	200	Strom	ev#104	ev#104
HX14301.01	MOC	8	43	PWS2	23	5	0001	60.5380	-147.8001	740	100	Napp	ev#105	ev#105
HX14301.02	CalVET53	9	43	PWS2	23	5	0634	60.5348	-147.8027	740	100	nd	ev#106; egg	ev#106; egg ratio
HX14301.03	CalVET53	10	43	PWS2	23	5	0646	60.5343	-147.8012	740	100	nd	ev#107; egg	ev#107; egg ratio
HX14301.04	CalVET53	11	43	PWS2	23	5	0658	60.5325	-147.8003	740	100	nd	ev#108; egg	ev#108; egg ratio
HX14301.05	CTD1	61	44	PWS2	23	5	0726	60.5330	-147.8047	740	50	Strom	ev#109; water	ev#109; water for fsw
HX14301.06	LiveNet	23	44	PWS2	23	5	0809	60.5347	-147.8017	740	100	Napp	ev#110; live	ev#110; live animals
HX14301.07	LiveNet	24	44	PWS2	23	5	0826	60.5325	-147.8024	735	100	Napp	ev#111; live	ev#111; live animals
HX14301.08	LiveNet	25	44	PWS2	23	5	0831	60.5318	-147.8026	735	50	Dagg	ev#112; live	ev#112; live animals
HX14301.09	LiveNet	26	44	PWS2	23	5	0840	60.5306	-147.8029	735	100	Dagg	ev#113	ev#113
HX14301.10	CTD1	62	44	PWS2	23	5	0857	60.5348	-147.8055	735	50	Napp	ev#114; grazing	ev#114; grazing exp. # 7
HX14301.11	CTD1	63	44	PWS2	23	5	1201	60.5349	-147.8035	737	729	Strom	ev#115; Montague	ev#115; Montague Strait survey
HX14301.12	CTD1	64	45	MS1	23	5	1632	59.9531	-147.9285	168	161	Strom	ev#116	ev#116
HX14301.13	CTD1	65	46	MS2	23	5	1653	59.9434	-147.8945	195	161	Strom	ev#117	ev#117
HX14301.14	CTD1	66	47	MS3	23	5	1715	59.9310	-147.8568	165	162	nd	ev#118	ev#118
HX14301.15	CTD1	67	48	MS4	23	5	1743	59.9204	-147.8288	110	105	Strom	ev#119	ev#119
HX14301.16	CTD1	68	49	GAK4	23	5	2244	59.4077	-149.0471	200	197	Strom	ev#120; ACC	ev#120; ACC survey
HX14301.17	CTD1	69	50	GAK3I	23	5	2327	59.4820	-149.1172	205	202	Strom	ev#121	ev#121
HX14401.01	CTD1	70	51	GAK3	24	5	0011	59.5534	-149.1893	214	211	Strom	ev#122	ev#122
HX14401.02	CTD1	71	52	GAK2I	24	5	0057	59.6273	-149.2591	215	210	Strom	ev#123	ev#123
HX14401.03	CTD1	72	53	GAK2	24	5	0141	59.6925	-149.3291	230	226	Strom	ev#124	ev#124
HX14401.04	CTD1	73	54	ACC1	24	5	0209	59.7303	-149.3634	240	238	Strom	ev#125	ev#125
HX14401.05	CTD1	74	55	GAK1I	24	5	0240	59.7675	-149.3974	262	263	Strom	ev#126	ev#126
HX14401.06	CTD1	75	56	GAK1	24	5	0326	59.8455	-149.4669	274	268	Strom	ev#127	ev#127
HX14401.07	CTD1	76	57	ACC2	24	5	0459	59.6587	-149.2931	221	214	Strom	ev#128	ev#128
HX14401.08	CalVET53	12	58	GAK4	24	5	0700	59.4073	-149.0484	199	100	Napp	ev#129; egg	ev#129; egg ratio
HX14401.09	CalVET53	13	58	GAK4	24	5	0711	59.4072	-149.0482	199	100	Napp	ev#130; egg	ev#130; egg ratio
HX14401.10	CalVET53	14	58	GAK4	24	5	0722	59.4072	-149.0483	199	100	Napp	ev#131; egg	ev#131; egg ratio
HX14401.11	LiveNet	27	58	GAK4	24	5	0739	59.4063	-149.0483	199	100	Napp	ev#132; egg	ev#132; egg production
HX14401.12	LiveNet	28	58	GAK4	24	5	0752	59.4057	-149.0477	199	100	Napp	ev#133; egg	ev#133; egg production
HX14401.13	LiveNet	29	58	GAK4	24	5	0803	59.4055	-149.0472	199	75	Dagg	ev#134; Neocalanus	ev#134; Neocalanus
HX14401.14	CTD1	77	58	GAK4	24	5	0820	59.4052	-149.0469	189	50	Strom	ev#135; water	ev#135; water for fsw
HX14401.15	CTD1	78	58	GAK4	24	5	0937	59.4079	-149.0480	195	50	Strom	ev#136; grazing	ev#136; grazing exp. # 8
HX14401.16	CTD1	79	58	GAK4	24	5	1200	59.4087	-149.0475	200	200	Strom	ev#137	ev#137
HX14401.17	CTD1	80	59	GAK4I	24	5	1253	59.3353	-148.9773	197	190	Strom	ev#138; Seward	ev#138; Seward Line survey
HX14401.18	CTD1	81	60	GAK5	24	5	1338	59.2618	-148.9077	170	165	Strom	ev#139	ev#139
HX14401.19	CTD1	82	61	GAK5I	24	5	1423	59.1905	-148.8377	170	160	Strom	ev#140	ev#140
HX14401.20	CTD1	83	62	GAK6	24	5	1511	59.1140	-148.7660	152	146	Strom	ev#141	ev#141
HX14401.21	CTD1	84	63	5W	24	5	1722	59.1910	-149.1994	165	51	nd	ev#142; Searching	ev#142; Searching for the bloom

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX14401.22	CTD1	85	64	4IW	24	5	1756	59.2640	-149.2750	142	50	nd	ev#143	ev#143
HX14401.23	CTD1	86	65	4W	24	5	1834	59.3345	-149.3452	165	50	Napp	ev#144	ev#144
HX14401.24	LiveNet	30	66	4IW	24	5	1913	59.2637	-149.2730	200	100	Strom	ev#145; egg	ev#145; egg production
HX14401.25	CalVET	6	67	GAK4	24	5	2331	59.4085	-149.0495	200	100	nd	ev#146	ev#146
HX14401.26	CTD1	87	67	GAK4	24	5	2340	59.4092	-149.0507	200	200	nd	ev#147	ev#147
HX14501.01	MOC	9	67	GAK4	25	5	0003	59.4117	-149.0421	200	nd	Napp	ev#148; failed	ev#148; failed
HX14501.02	MOC	10	67	GAK4	25	5	0043	59.4123	-149.0013	195	100	Napp	ev#149	ev#149
HX14501.03	CTD1	88	68	HP7	25	5	0535	59.1841	-149.5023	147	100	Strom	ev#150	ev#150
HX14501.04	CalVET53	15	69	4IW	25	5	0639	59.2627	-149.2735	139	100	Napp	ev#151; egg	ev#151; egg ratio
HX14501.05	CalVET53	16	69	4IW	25	5	0652	59.2627	-149.2753	139	100	Napp	ev#152; egg	ev#152; egg ratio
HX14501.06	CalVET53	17	69	4IW	25	5	0705	59.2627	-149.2778	139	100	Napp	ev#153; egg	ev#153; egg ratio
HX14501.07	LiveNet	31	69	4IW	25	5	0729	59.2637	-149.2718	139	100	Napp	ev#154	ev#154
HX14501.08	LiveNet	32	69	4IW	25	5	0739	59.2637	-149.2742	139	100	Napp	ev#155	ev#155
HX14501.09	LiveNet	33	69	4IW	25	5	0751	59.2637	-149.2768	139	50	Napp	ev#156	ev#156
HX14501.10	LiveNet	34	69	4IW	25	5	0815	59.2653	-149.2772	139	100	Napp	ev#157	ev#157
HX14501.11	CTD1	89	69	4IW	25	5	0842	59.2640	-149.2735	139	50	Strom	ev#158; water	ev#158; water for fsw
HX14501.12	CTD1	90	69	4IW	25	5	0947	59.2645	-149.2739	139	50	Strom	ev#159; grazing	ev#159; grazing exp. # 9
HX14501.13	CTD1	91	69	4IW	25	5	1202	59.2659	-149.2817	139	139	Strom	ev#160; wrong	ev#160; wrong depths sampled
HX14501.14	CTD1	92	69	4IW	25	5	1225	59.2659	-149.2817	139	80	Strom	ev#161	ev#161
HX14501.15	CTD1	93	70	4GA	25	5	1359	59.2692	-149.4624	146	141	Strom	ev#162; 4iW	ev#162; 4iW grid survey
HX14501.16	CTD1	94	71	4GB	25	5	1447	59.3401	-149.3457	146	142	Strom	ev#163	ev#163
HX14501.17	CTD1	95	72	4GC	25	5	1538	59.4109	-149.2328	172	169	Strom	ev#164	ev#164
HX14501.18	LiveNet	35	72	4GC	25	5	1557	59.4103	-149.2416	172	100	Napp	ev#165; egg	ev#165; egg production
HX14501.19	LiveNet	36	72	4GC	25	5	1606	59.4095	-149.2449	172	60	Napp	ev#166; egg	ev#166; egg production
HX14501.20	CTD1	96	73	4GG	25	5	1645	59.3370	-149.1617	172	193	Strom	ev#167	ev#167
HX14501.21	CTD1	97	74	4GK	25	5	1732	59.2629	-149.0891	165	161	Strom	ev#168	ev#168
HX14501.22	CTD1	98	75	4GJ	25	5	1822	59.1919	-149.2008	167	163	Strom	ev#169	ev#169
HX14501.23	CTD1	99	76	4GI	25	5	1918	59.1194	-149.3163	132	133	Strom	ev#170	ev#170
HX14501.24	CTD1	100	77	4GF	25	5	2006	59.1941	-149.3808	137	134	Strom	ev#171	ev#171
HX14501.25	CalVET	7	78	4IW	25	5	2331	59.2631	-149.2735	147	100	Strom	ev#172	ev#172
HX14501.26	CTD1	101	78	4IW	25	5	2338	59.2628	-149.2752	147	137	Strom	ev#173	ev#173
HX14501.27	MOC	11	78	4IW	25	5	2354	59.2618	-149.2745	147	100	Napp	ev#174	ev#174
HX14601.01	CalVET53	18	79	GAK4	26	5	0734	59.4080	-149.0480	147	100	Napp	ev#175; egg	ev#175; egg ratio
HX14601.02	CalVET53	19	79	GAK4	26	5	0745	59.4083	-149.0507	147	100	Napp	ev#176; egg	ev#176; egg ratio
HX14601.03	CalVET53	20	79	GAK4	26	5	0756	59.4093	-149.0528	147	100	Napp	ev#177; egg	ev#177; egg ratio
HX14601.04	LiveNet	37	79	GAK4	26	5	0810	59.4072	-149.0479	200	100	Napp	ev#178	ev#178
HX14601.05	LiveNet	38	79	GAK4	26	5	0826	59.4094	-149.0516	200	100	Napp	ev#179	ev#179
HX14601.06	LiveNet	39	79	GAK4	26	5	0837	59.4095	-149.0517	200	50	Napp	ev#180	ev#180
HX14601.07	CTD1	102	79	GAK4	26	5	0848	59.4089	-149.0477	200	50	Strom	ev#181; water	ev#181; water for fsw
HX14601.08	CTD2	103	79	GAK4	26	5	0946	59.4083	-149.0467	198	50	Strom	ev#182; grazing	ev#182; grazing experiment # 10
HX14601.09	CTD1	104	79	GAK4	26	5	1201	59.4091	-149.0511	200	200	Strom	ev#183	ev#183
HX14601.10	CTD1	105	79	GAK4	26	5	1236	59.4090	-149.0488	200	196	Strom	ev#184	ev#184
HX14601.11	CTD1	106	80	4GD	26	5	1426	59.4819	-149.1172	204	199	Strom	ev#185; GAK4	ev#185; GAK4 grid survey
HX14601.12	CTD1	107	81	4GE	26	5	1519	59.5526	-149.0031	183	176	Strom	ev#186	ev#186
HX14601.13	CTD1	108	82	4GH	26	5	1600	59.4787	-148.9324	184	181	Strom	ev#187	ev#187
HX14601.14	CTD1	109	83	4GM	26	5	1647	59.4049	-148.8623	169	165	Strom	ev#188	ev#188
HX14601.15	CTD1	110	84	4GL	26	5	1738	59.3355	-148.9808	199	194	Strom	ev#189	ev#189
HX14601.16	CalVET	8	85	GAK4	26	5	2329	59.4103	-149.0475	200	100	Napp	ev#190	ev#190

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX14601.17	CTD1	111	85	GAK4	26	5	2339	59.4111	-149.0481	200	196	Strom	ev#191	ev#191
HX14601.18	MOC	12	85	GAK4	26	5	2355	59.4110	-149.0527	200	100	Napp	ev#192	ev#192
HX14701.01	LiveNet	40	86	4IW	27	5	0636	59.2635	-149.2778	145	100	Dagg	ev#193; bloom	ev#193; bloom gone!
HX14701.02	CTD1	112	87	4GJ	27	5	0847	59.1900	-149.2012	162	50	Strom	ev#200; water	ev#200; water for fsw
HX14701.03	CTD2	113	87	4GJ	27	5	1013	59.1905	-149.2025	165	50	Strom	ev#201; bloom	ev#201; bloom gone!
HX14701.04	CTD2	114	88	EXP11	27	5	1047	59.1410	-149.2135	144	50	Strom	ev#202; grazing	ev#202; grazing experiment # 11
HX14701.05	CTD1	115	88	EXP11	27	5	1205	59.1420	-149.2153	144	144	Strom	ev#203	ev#203
HX14701.06	CTD1	116	89	GAK6	27	5	1506	59.0793	-148.7341	150	147	Strom	ev#204; Seward	ev#204; Seward Line survey
HX14701.07	CTD1	117	90	GAK6I	27	5	1523	59.0461	-148.7002	192	184	Strom	ev#205	ev#205
HX14701.08	CTD1	118	91	GAK7	27	5	1612	58.9712	-148.6320	245	235	Strom	ev#206	ev#206
HX14701.09	CTD1	119	92	GAK7I	27	5	1708	58.8821	-148.5605	303	290	Strom	ev#207	ev#207
HX14701.10	CTD1	120	93	EXP11	27	5	2334	59.1423	-149.2160	145	142	Strom	ev#208	ev#208
HX14701.11	CalVET	9	93	EXP11	27	5	2340	59.1423	-149.2148	145	100	Strom	ev#209	ev#209
HX14701.12	MOC	13	93	EXP11	27	5	2350	59.1417	-149.2128	145	100	Napp	ev#210	ev#210
HX14801.01	CTD1	121	94	GAK3	28	5	0258	59.5533	-149.1891	225	209	Strom	ev#211; ACC	ev#211; ACC survey
HX14801.02	CTD1	122	95	GAK2I	28	5	0343	59.6274	-149.2569	225	212	Strom	ev#212	ev#212
HX14801.03	CTD1	123	96	ACC2	28	5	0413	59.6595	-149.2909	219	218	Strom	ev#213	ev#213
HX14801.04	CTD1	124	97	GAK2	28	5	0444	59.6912	-149.3278	228	227	Strom	ev#214	ev#214
HX14801.05	CTD1	125	98	ACC1	28	5	0516	59.7283	-149.3609	242	29	Strom	ev#215	ev#215
HX14801.06	CTD1	126	98	ACC1	28	5	0637	59.7290	-149.3630	242	240	Strom	ev#216	ev#216
HX14801.07	CTD1	127	99	GAK1I	28	5	0719	59.7660	-149.4013	263	258	Strom	ev#217	ev#217
HX14801.08	CalVET53	21	100	ACC1	28	5	0747	59.7283	-149.3618	242	100	Napp	ev#218; egg	ev#218; egg ratio
HX14801.09	CalVET53	22	100	ACC1	28	5	0800	59.7258	-149.3632	242	100	Napp	ev#219; egg	ev#219; egg ratio
HX14801.10	CalVET53	23	100	ACC1	28	5	0812	59.7222	-149.3638	242	100	Napp	ev#220; egg	ev#220; egg ratio
HX14801.11	LiveNet	41	100	ACC1	28	5	0826	59.7188	-149.3647	242	50	Dagg	ev#221; Neocalanus	ev#221; Neocalanus
HX14801.12	LiveNet	42	100	ACC1	28	5	0839	59.7282	-149.3625	242	100	Napp	ev#222; egg	ev#222; egg production
HX14801.13	LiveNet	43	100	ACC1	28	5	0850	59.7245	-149.3642	242	100	Napp	ev#223; egg	ev#223; egg production
HX14801.14	CTD1	128	100	ACC1	28	5	1000	59.7212	-149.3618	242	75	Strom	ev#224; water	ev#224; water for fsw
HX14801.15	CTD1	129	100	ACC1	28	5	1016	59.7286	-149.3618	242	75	Strom	ev#225; grazing	ev#225; grazing exp. # 12
HX14801.16	CTD1	130	100	ACC1	28	5	1407	59.7247	-149.3630	242	238	Strom	ev#226	ev#226
HX14801.17	CTD1	131	101	GAK1I	28	5	1459	59.7660	-149.3969	255	256	Strom	ev#227; ACC	ev#227; ACC survey
HX14801.18	CTD1	132	102	ACC1	28	5	1533	59.7285	-149.3617	242	236	Strom	ev#228	ev#228
HX14801.19	CTD1	133	103	GAK2	28	5	1605	59.6919	-149.3262	227	222	Strom	ev#229	ev#229
HX14801.20	CTD1	134	104	ACC2	28	5	1652	59.6584	-149.2894	220	216	Strom	ev#230	ev#230
HX14801.21	CTD1	135	105	GAK2I	28	5	1708	59.5532	-149.1877	215	210	Strom	ev#231	ev#231
HX14801.22	CTD1	136	106	GAK3	28	5	1749	59.5532	-149.1870	215	212	Strom	ev#232	ev#232
HX14801.23	CalVET	10	107	ACC1	28	5	2334	59.7280	-149.3655	242	100	Strom	ev#233	ev#233
HX14801.24	CTD1	137	107	ACC1	28	5	2341	59.7259	-149.3676	242	242	Strom	ev#234	ev#234
HX14901.01	MOC	14	107	ACC1	29	5	0000	59.7177	-149.3730	242	100	Napp	ev#235	ev#235
HX14901.02	LiveNet	44	107	ACC1	29	5	0700	59.7270	-149.3632	242	100	Napp	ev#236	ev#236
HX14901.03	LiveNet	45	107	ACC1	29	5	0716	59.7260	-149.3662	242	100	Napp	ev#237	ev#237
HX14901.04	LiveNet	46	107	ACC1	29	5	0730	59.7252	-149.3698	242	76	Dagg	ev#238; Neocalanus	ev#238; Neocalanus
HX14901.05	CTD1	138	107	ACC1	29	5	0800	59.7282	-149.3620	242	75	Strom	ev#239; water	ev#239; water for fsw
HX14901.06	CTD2	139	107	ACC1	29	5	0856	59.7277	-149.3615	243	75	Strom	ev#240; grazing	ev#240; grazing exp. # 13
HX14901.07	CTD1	140	107	ACC1	29	5	1208	59.7257	-149.3631	243	240	Strom	ev#241	ev#241
HX14901.08	LiveNet	47	107	ACC1	29	5	1300	59.7287	-149.3612	243	100	Napp	ev#242; egg	ev#242; egg production

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX14901.09	LiveNet	48	107	ACC1	29	5	1315	59.7252	-149.3658	243	100	Napp	ev#243; egg	ev#243; egg production
HX14901.10	CTD1	141	107	ACC1	29	5	1333	59.7287	-149.3620	242	77	Strom	ev#244; for	ev#244; for sz #4
HX14901.11	CTD1	142	108	ISGA	29	5	1429	59.6835	-149.4882	222	221	Strom	ev#245; Inner	ev#245; Inner shelf grid survey
HX14901.12	CTD1	143	109	ISGD	29	5	1457	59.6492	-149.4521	276	261	Strom	ev#246	ev#246
HX14901.13	CTD1	144	110	ISGF	29	5	1531	59.6077	-149.4145	217	213	Strom	ev#247	ev#247
HX14901.14	CTD1	145	111	GAK3	29	5	1632	59.5538	-149.1875	214	213	Strom	ev#248	ev#248
HX14901.15	CTD1	146	112	GAK2I	29	5	1714	59.6268	-149.2582	215	212	Strom	ev#249	ev#249
HX14901.16	CTD1	147	113	ACC2	29	5	1748	59.6585	-149.2956	220	220	Strom	ev#250	ev#250
HX14901.17	CTD1	148	114	GAK2	29	5	1816	59.6908	-149.3292	227	224	Strom	ev#251	ev#251
HX14901.18	CTD1	149	115	ACC1	29	5	1850	59.7276	-149.3647	243	236	Strom	ev#252	ev#252
HX14901.19	CTD1	150	116	GAK1I	29	5	1920	59.7658	-149.3985	262	258	Strom	ev#253	ev#253
HX14901.20	CTD1	151	117	ISGC	29	5	2011	59.8421	-149.3052	101	96	Strom	ev#254	ev#254
HX14901.21	CTD1	152	118	ISGF	29	5	2037	59.8070	-149.2697	119	117	Strom	ev#255	ev#255
HX14901.22	CTD1	153	119	ISGH	29	5	2102	59.7698	-149.2374	269	266	Strom	ev#256	ev#256
HX14901.23	CalVET	11	120	ACC1	29	5	2331	59.7257	-149.3646	247	100	Strom	ev#257	ev#257
HX14901.24	CTD1	154	120	ACC1	29	5	2338	59.7247	-149.3660	247	239	Strom	ev#258	ev#258
HX15001.01	MOC	15	120	ACC1	30	5	0002	59.7171	-149.3806	247	100	Strom	ev#259	ev#259
HX15001.02	CalVET53	24	120	ACC1	30	5	0630	59.7282	-149.3658	247	100	Napp	ev#260; egg	ev#260; egg ratio
HX15001.03	CalVET53	25	120	ACC1	30	5	0642	59.7278	-149.3735	247	100	Napp	ev#261; egg	ev#261; egg ratio
HX15001.04	CalVET53	26	120	ACC1	30	5	0653	59.7278	-149.3782	247	100	Napp	ev#262; egg	ev#262; egg ratio
HX15001.05	LiveNet	49	120	ACC1	30	5	0725	59.7288	-149.3720	247	nd	Dagg	ev#263	ev#263
HX15001.06	LiveNet	50	120	ACC1	30	5	0738	59.7282	-149.3795	247	nd	Dagg	ev#264	ev#264
HX15001.07	CTD1	155	120	ACC1	30	5	0814	59.7295	-149.3635	243	75	Strom	ev#265; water	ev#265; water for fsw
HX15001.08	LiveNet	51	120	ACC1	30	5	0830	59.7278	-149.3707	243	nd	Dagg	ev#266	ev#266
HX15001.09	CTD2	156	120	ACC1	30	5	0919	59.7285	-149.3617	243	75	Strom	ev#267; grazing	ev#267; grazing exp. #14
HX15001.10	CTD1	157	120	ACC1	30	5	1305	59.7281	-149.3658	243	240	Strom	ev#268	ev#268
HX15001.11	CTD1	158	121	GAK3	30	5	1426	59.5511	-149.1848	213	206	Strom	ev#269; ACC	ev#269; ACC survey
HX15001.12	CTD1	159	122	GAK2I	30	5	1512	59.6272	-149.2581	213	206	Strom	ev#270	ev#270
HX15001.13	CTD1	160	123	ACC2	30	5	1542	59.6594	-149.2947	218	214	Strom	ev#271	ev#271
HX15001.14	CTD1	161	124	GAK2	30	5	1612	59.6921	-149.3271	227	218	Strom	ev#272	ev#272
HX15001.15	CTD1	162	125	ACC1	30	5	1644	59.7292	-149.3631	242	236	Strom	ev#273	ev#273
HX15001.16	CTD1	163	126	GAK1I	30	5	1722	59.7672	-149.3970	262	256	Strom	ev#274	ev#274
HX15001.17	CTD1	164	127	GAK1	30	5	1808	59.8453	-149.4647	272	264	Strom	ev#275	ev#275
HX15001.18	CalVET	12	128	ACC1	30	5	2329	59.7288	-149.3633	243	100	Strom	ev#276	ev#276
HX15001.19	CTD1	165	128	ACC1	30	5	2340	59.7280	-149.3626	243	240	Strom	ev#277	ev#277
HX15001.20	MOC	16	128	ACC1	30	5	2357	59.7234	-149.3678	243	100	Strom	ev#278	ev#278
HX15101.01	CTD1	166	129	EXP11	31	5	0342	59.1415	-149.2138	145	145	Strom	ev#279	ev#279
HX15101.02	LiveNet	52	129	EXP11	31	5	0530	59.1423	-149.2140	145	100	Napp	ev#280; egg	ev#280; egg production
HX15101.03	CTD1	167	130	CF15	31	5	0759	59.4509	-148.8640	180	180	Strom	ev#281; Cape	ev#281; Cape Fairfield survey
HX15101.04	LiveNet	53	130	CF15	31	5	0815	59.5177	-148.8657	173	75	Dagg	ev#282; Neocalanus	ev#282; Neocalanus
HX15101.05	CTD1	168	131	CF14	31	5	0836	59.4836	-148.8683	170	170	Strom	ev#283	ev#283
HX15101.06	CTD1	169	132	CF13	31	5	0901	59.5179	-148.8656	173	173	Strom	ev#284	ev#284
HX15101.07	CTD1	170	133	CF12	31	5	0927	59.5507	-148.8679	185	185	Strom	ev#285	ev#285
HX15101.08	CTD1	171	134	CF11	31	5	0955	59.5840	-148.8660	178	178	Strom	ev#286	ev#286
HX15101.09	CTD1	172	135	CF10	31	5	1020	59.6181	-148.8692	178	178	Strom	ev#287	ev#287
HX15101.11	CTD1	174	137	CF8	31	5	1112	59.6845	-148.8684	181	181	Strom	ev#289	ev#289
HX15101.12	CTD1	175	138	CF7	31	5	1136	59.7174	-148.8672	183	183	Strom	ev#290	ev#290

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	Lat	Long	Water Depth	Cast Depth	SI	Reg	Comments
HX15101.13	CTD1	176	139	CF6	31	5	1205	59.7499	-148.8678	191	191	Strom	ev#291	ev#291
HX15101.14	CTD1	177	140	CF5	31	5	1229	59.7839	-148.8673	193	193	Strom	ev#292	ev#292
HX15101.15	CTD1	178	141	CF4	31	5	1255	59.8170	-148.8667	184	184	Strom	ev#293	ev#293
HX15101.16	CTD1	179	142	CF3	31	5	1321	59.8506	-148.8672	162	162	Strom	ev#294	ev#294
HX15101.17	CTD1	180	143	CF2	31	5	1346	59.8841	-148.8675	113	113	Strom	ev#295	ev#295
HX15101.18	CTD1	181	144	CF1	31	5	1405	59.9092	-148.8690	83	83	Strom	ev#296	ev#296
HX15101.19	CTD1	182	145	GAK1I	31	5	1609	59.7657	-148.3975	265	75	Strom	ev#297; cell	ev#297; cell settling experiment
HX15101.20	CTD1	183	146	GAK1	31	5	1650	59.8449	-149.4672	272	272	Strom	ev#298	ev#298
nd	Return	nd	nd	nd	31	5	1853	nd	nd	nd	nd	nd	nd	