

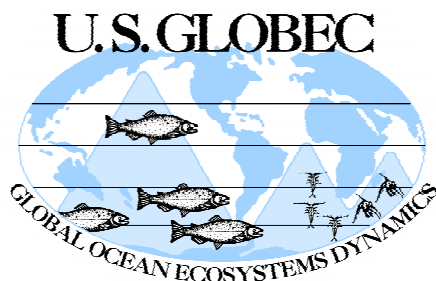
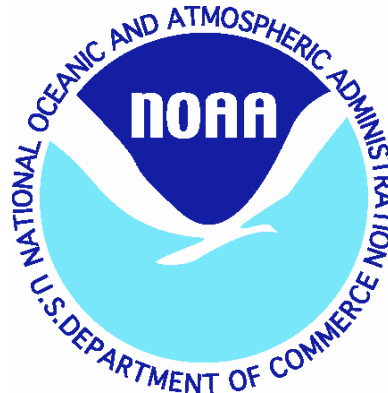
GLOBEC Northeast Pacific, Coastal Gulf of Alaska

Cruise Report

R/V *Wecoma* (Cruise ID W0305A)

May 1 – 21, 2003

Sponsored by:
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The **SALMON** Project



Sea-Air-Land Modeling and Observing Network

Cruise Report R/V *Wecoma* (W0305A)

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Port of Departure/Return: Seward, AK

Cruise Participants:

David L Musgrave	Chief Scientist, University of Alaska, Fairbanks
Linda Fayler	Marine Technician, Oregon State University, Newport
Jeremy Kasper	Graduate Student, University of Alaska, Fairbanks
Sam Laney	Graduate Student, Oregon State University, Corvallis
Toby Martin	Marine Technician, Oregon State University, Newport
Scott Pegau	Co-Chief Scientist, Kachemak Bay Research Reserve, Homer
Rachel Potter	Technician, University of Alaska, Fairbanks
Melanie Rohr	Technician, University of Alaska, Fairbanks
Hank Statscewich	Technician, University of Alaska Fairbanks
Terry Whitledge	Scientist, University of Alaska, Fairbanks
Marc Willis	Marine Technician, Oregon State University, Newport

Cruise Objectives:

Undertake a mesoscale survey to understand and quantify spatial (cross- and along-shelf) variations in the physical, chemical and biological structures of the Gulf of Alaska shelf, including:

- Determine the spatial structure of the Seward Eddy and Counter Eddy and their associated fronts.
- Determine the position and spatial structure of the shelf-break front and slope eddies.
- Determine the flow paths of onshore transport of high salinity/nutrient waters during summer.

- Determine the spatial and temporal structure of nutrients and bio-optical properties in relation to physical structures.

Data Collection Components

SeaSoar: Sensors [conductivity-temperature-depth (CTD), chlorophyll fluorometer, color dissolved organic matter (CDOM) fluorometer, backscattering sensor, *in situ* ultraviolet spectrometer (ISUS) nitrate sensor, and a nine-wavelength absorption and attenuation coefficient meter (AC9)] were mounted on a towed undulating vehicle, SeaSoar. We monitored the data streams from these sensors in real time to detect clogs in tubes or sensors or other problems in general, as well as identify local oceanic features that may be of interest to the sampling scheme. This data will be used to derive estimates of dynamically important quantities and to make estimates of along- and cross-shelf transport.

Nutrients and Primary Productivity: Nitrate measurements were obtained on the SeaSoar with an ISUS manufactured by Satlantic, Inc. Surface samples were also continuously monitored underway utilizing the ship's flow-through system and analyzed on an Alpkem model 300 Rapid Flow Analyzer for nitrate, phosphate, and silicate. The Alpkem system was also used to analyze bottle samples obtained from CTD/rosette up-casts for calibration purposes.

Bio-Optics: In addition to the optical instruments mounted on the SeaSoar, optical measurements were also obtained by utilizing the R/V *Wecoma*'s flow-through system to monitor surface waters. While underway, an additional AC-9 was placed in the ship's flow-through water system. Other instruments in the flow-through system included an Eco-VSF 3-angle scattering meter, a Fast Repetition Rate Fluorometer, and a Pulse Amplitude Modulated Fluorometer. Discrete water samples were collected from the flow-through system for fluorometric chlorophyll, HPLC, and pad absorption analysis. Microtops measurements were collected at possible satellite overpass times.

Acoustic Doppler Current Profiler: A shipboard hull-mounted Acoustic Doppler Current Profiler (ADCP) was used to measure current velocities throughout the water column. This will aid in describing the basic flow structure of the upper water column in the cruise track areas of the Gulf of Alaska.

Ocean Color: A SeaWiFS Airborne Simulator with a KT19 Infrared Temperature Sensor was mounted to the bow of the R/V *Wecoma*. Data from this instrument is used to calibrate satellite images acquired during cruise times.

Cruise Setbacks

While this mesoscale survey went very smoothly and was relatively free of any major incidences, we did encounter a couple of issues with the SeaSoar cable throughout our three weeks at sea. Within the first 24 hours of the SeaSoar entering the water, shortly after midnight (0039) GMT, the SeaSoar was unable to dive after coming to the surface. The SeaSoar was not responding to any commands from the control computer, and it was noted that we had lost all power and communication. Inspection of the cable revealed that the problem was not with the SeaSoar itself, but rather that the cable was caught on the winch drum. Due to the tension, the cable parted at the winch (Figure 1). It took approximately seven hours to reterminate the SeaSoar cable and resume the tow.



Figure 1. The SeaSoar cable parted at the winch.

After reterminating the SeaSoar cable, everything went smoothly for about a week, when on May 10, 2003, the SeaSoar began to lose the depth range that it had been achieving on downcasts during the prior week. It became impossible to dive below 70 m, so the cable was pulled in to determine if the fairing on the SeaSoar cable was twisted and causing undue drag. We found a gap between several sections of fairing and a bunching up of the fairing in other locations. The fairing had become unfastened from the cable and as a result was creating drag in the water, which was hindering the dive depth. These sections of the fairing were removed, and subsequent downcast depths were monitored. Two hours later, we decided to remove more fairing. The SeaSoar was kept at the surface to

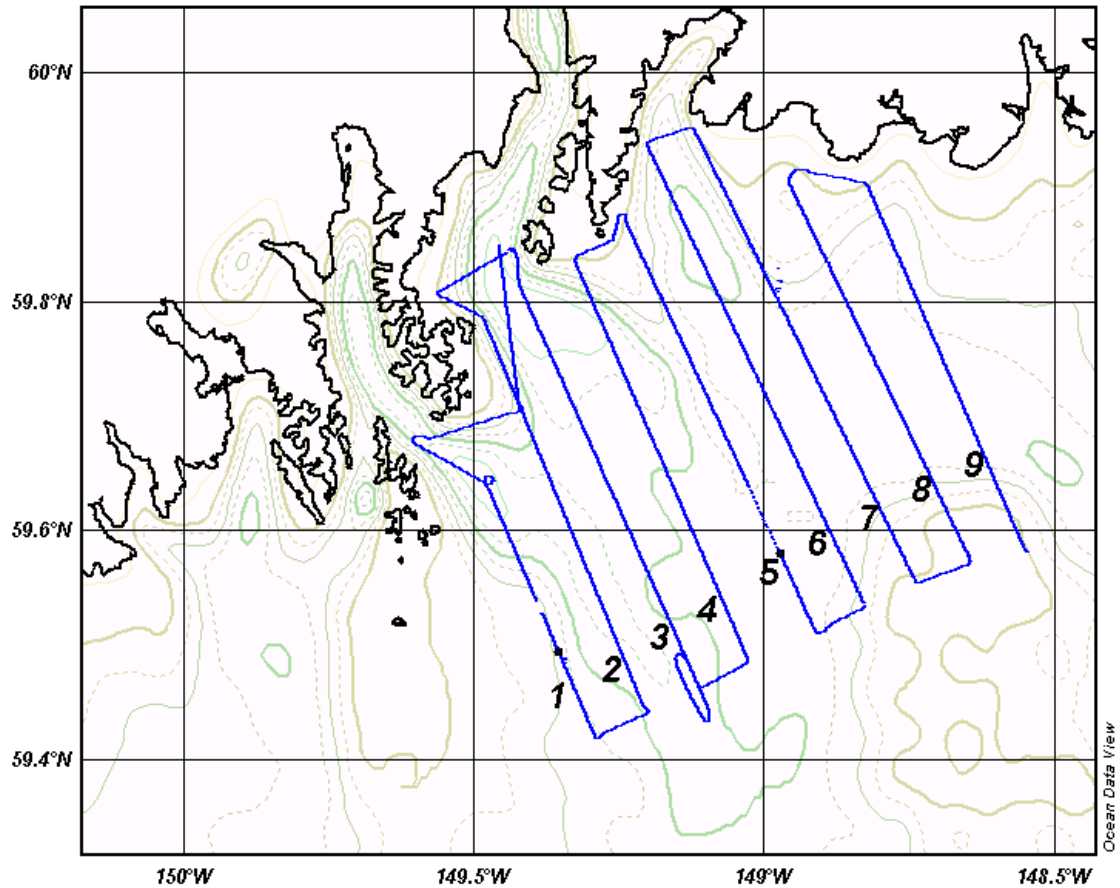
alleviate tension on the cable while the twisted fairing was removed. Removing the fairing took approximately four hours (Figure 2), but it remedied the problem, and we were able to dive the SeaSoar to 100 m for the remainder of the cruise.



Figure 2. Marc Willis, aided by Toby Martin, removing twisted fairing from the SeaSoar cable. The twisted fairing was causing drag in the water and hindering dive depths.

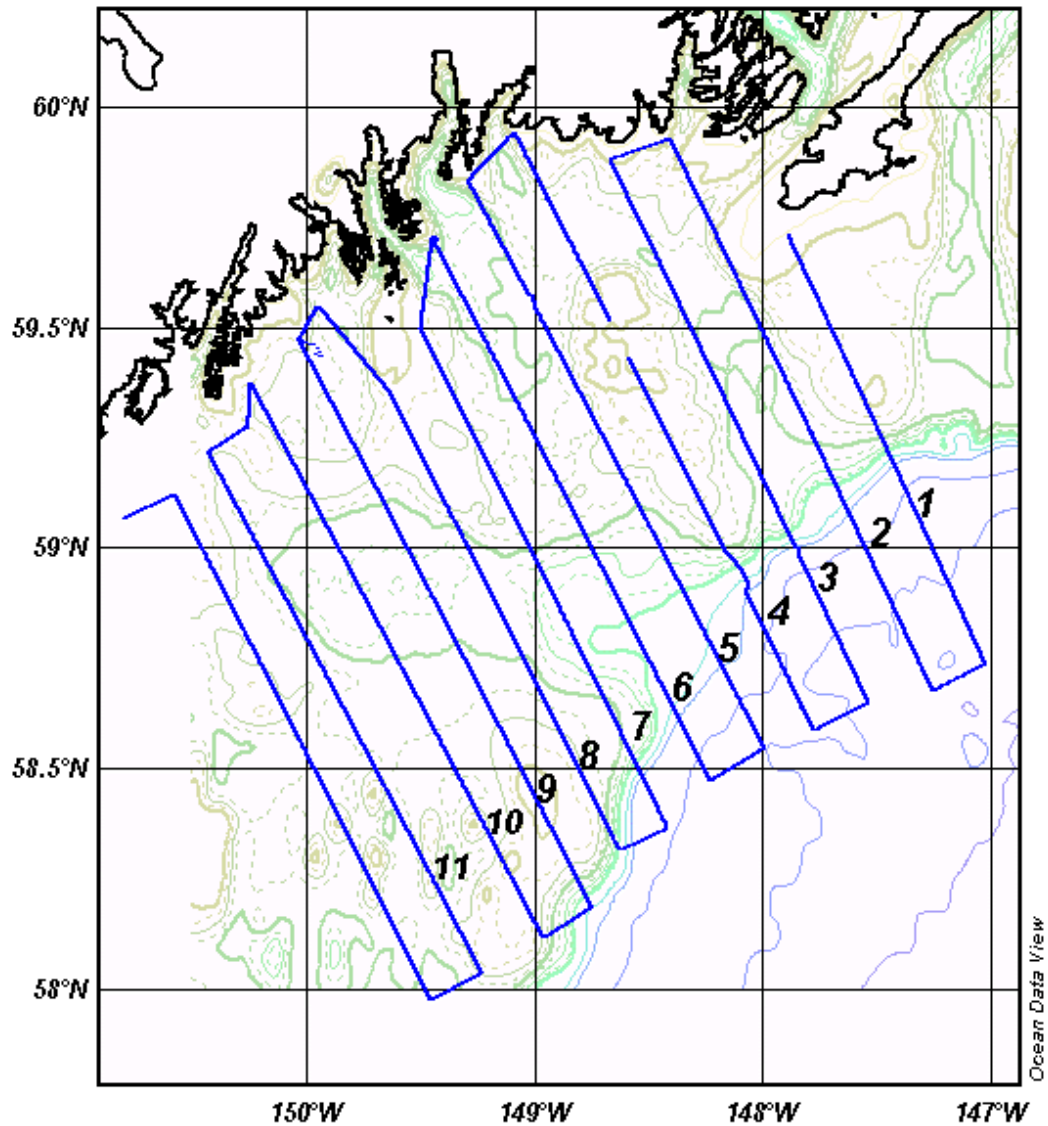
Cruise Study Regions

Figure 3. Fine Scale A: May 1 – 3, 2003



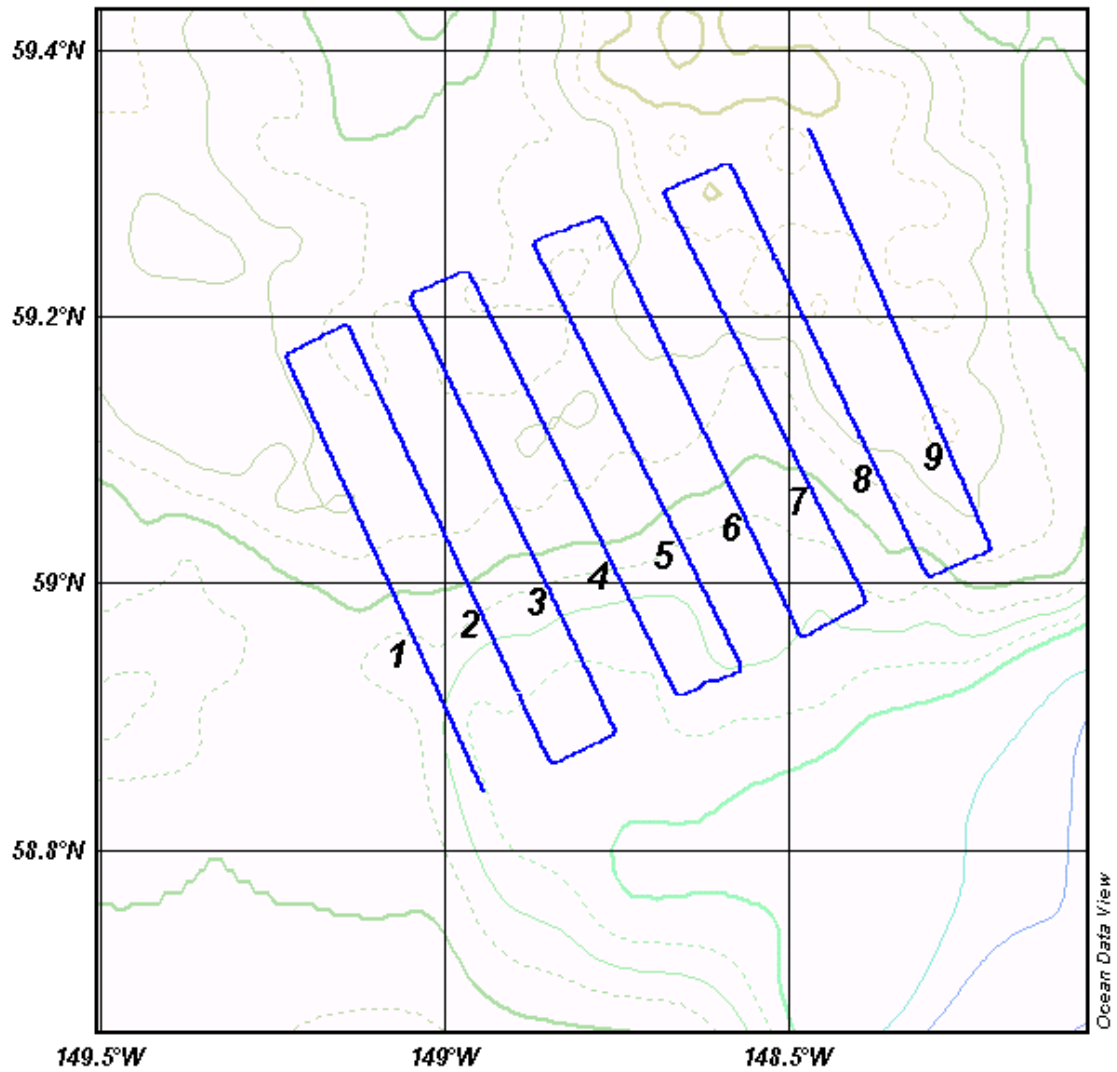
Leg	Start waypoint	End waypoint
1	59° 40.564 ' N 149° 36.076 ' W	59° 25.200 ' N 149° 17.430 ' W
2	59° 26.400 ' N 149° 12.110 ' W	59° 48.419 ' N 149° 33.955 ' W
3	59° 48.918 ' N 149° 25.310 ' W	59° 27.700 ' N 149° 06.600 ' W
4	59° 29.110 ' N 149° 01.490 ' W	59° 50.347 ' N 149° 19.719 ' W
5	59° 52.777 ' N 149° 14.772 ' W	59° 30.710 ' N 148° 54.600 ' W
6	59° 32.010 ' N 148° 49.480 ' W	59° 56.355 ' N 149° 12.191 ' W
7	59° 57.196 ' N 149° 07.332 ' W	59° 33.210 ' N 148° 44.170 ' W
8	59° 34.300 ' N 148° 38.460 ' W	59° 55.966 ' N 148° 59.031 ' W
9	59° 54.217 ' N 148° 49.354 ' W	59° 35.200 ' N 148° 33.150 ' W

Figure 4. Mesoscale: May 3 – 9, 2003



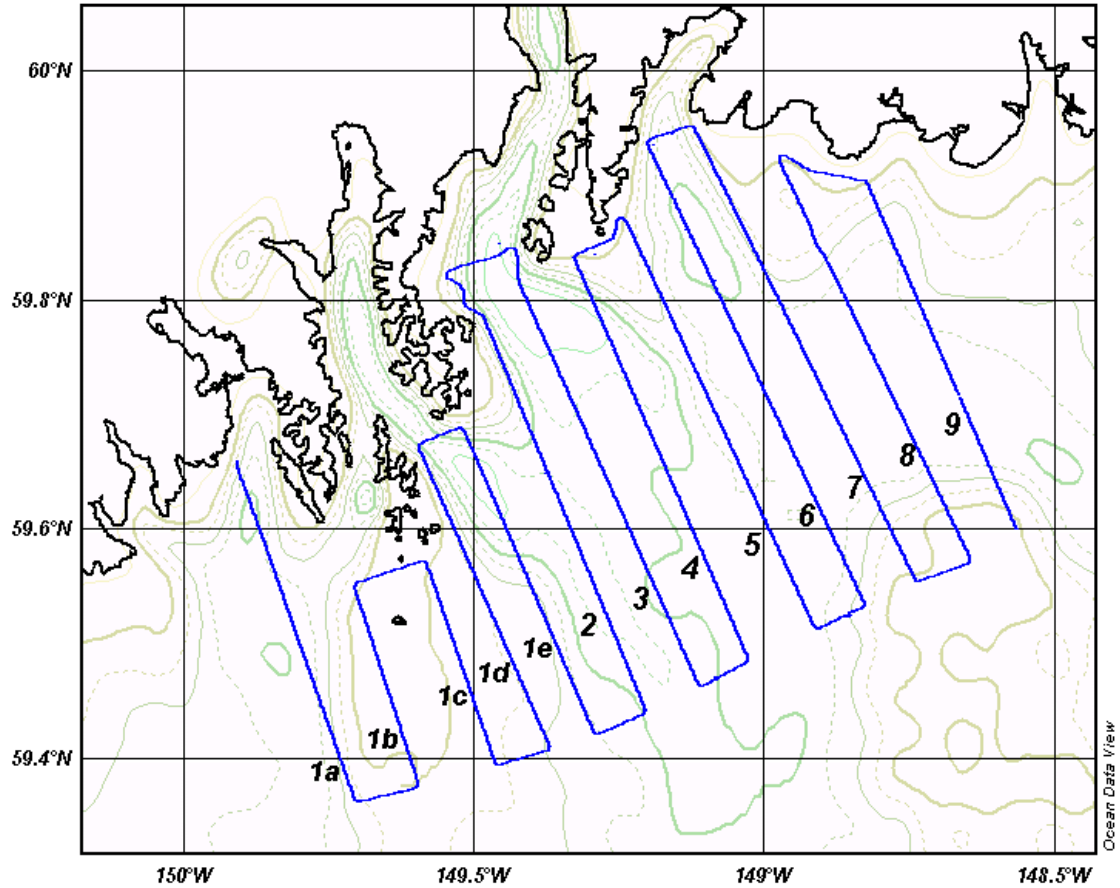
Leg	Start waypoint	End waypoint
1	59° 42.320 ' N 147° 53.070 ' W	58° 44.310 ' N 147° 01.530 ' W
2	58° 40.710 ' N 147° 15.370 ' W	59° 55.683 ' N 148° 24.337 ' W
3	59° 52.847 ' N 148° 40.081 ' W	58° 39.110 ' N 147° 32.270 ' W
4	58° 35.300 ' N 147° 46.490 ' W	59° 56.590 ' N 149° 05.190 ' W
5	59° 50.003 ' N 149° 17.329 ' W	58° 32.895 ' N 147° 59.558 ' W
6	58° 28.471 ' N 148° 13.776 ' W	59° 42.220 ' N 149° 26.790 ' W
7	59° 29.952 ' N 149° 29.861 ' W	58° 22.019 ' N 148° 24.920 ' W
8	58° 18.988 ' N 148° 37.601 ' W	59° 33.076 ' N 149° 56.761 ' W
9	59° 28.389 ' N 150° 01.756 ' W	58° 11.291 ' N 148° 44.902 ' W
10	58° 07.025 ' N 148° 57.583 ' W	59° 22.514 ' N 150° 14.437 ' W
11	59° 13.080 ' N 150° 25.581 ' W	58° 02.342 ' N 149° 13.723 ' W

Figure 5. Fine Scale B: May 10 – 11, 2003



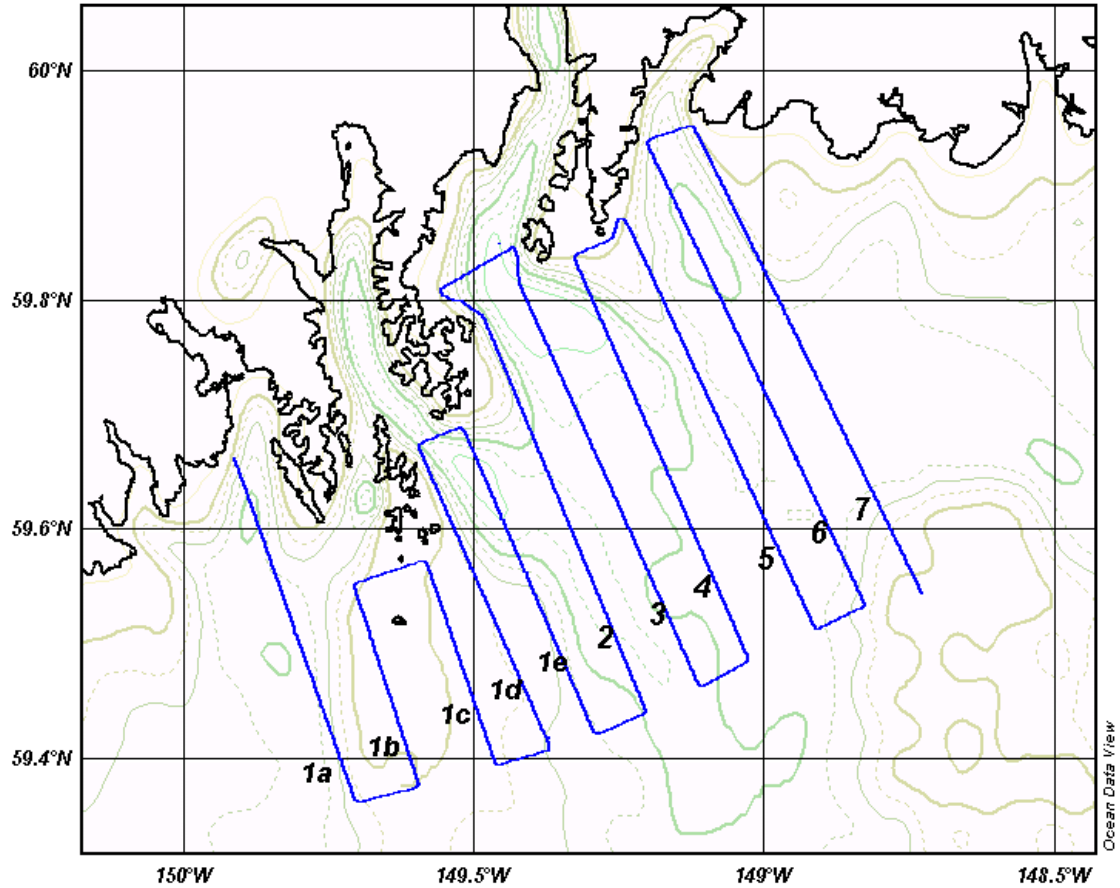
Leg	Start waypoint	End waypoint
1	58° 50.605 ' N 148° 56.566 ' W	59° 10.300 ' N 149° 13.884 ' W
2	59° 11.710 ' N 149° 08.470 ' W	58° 51.829 ' N 148° 50.663 ' W
3	58° 53.256 ' N 148° 44.956 ' W	59° 12.980 ' N 149° 03.060 ' W
4	59° 14.135 ' N 148° 57.944 ' W	58° 54.885 ' N 148° 39.643 ' W
5	58° 56.106 ' N 148° 33.936 ' W	59° 15.400 ' N 148° 52.340 ' W
6	59° 16.550 ' N 148° 46.240 ' W	58° 57.530 ' N 148° 28.819 ' W
7	58° 59.156 ' N 148° 23.112 ' W	59° 17.660 ' N 148° 40.920 ' W
8	59° 18.970 ' N 148° 35.116 ' W	59° 00.273 ' N 148° 17.799 ' W
9	59° 01.522 ' N 148° 12.239 ' W	59° 20.258 ' N 148° 27.994 ' W

Figure 6. Fine Scale AA: May 11 – 13, 2003



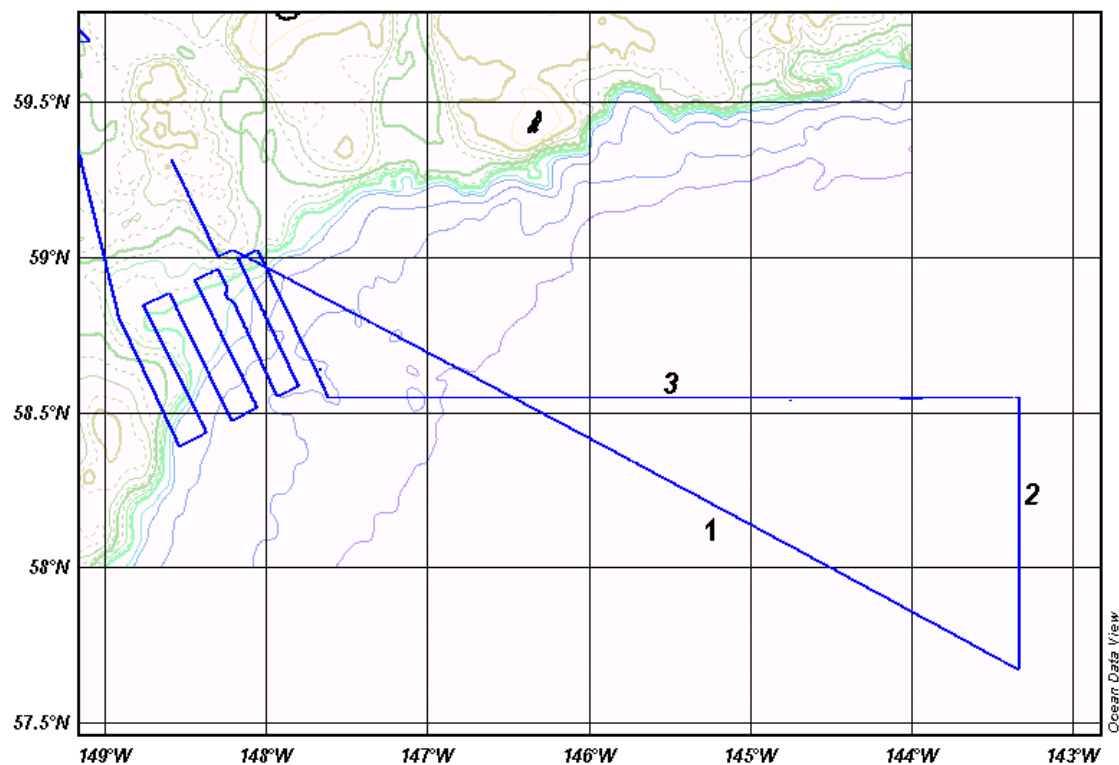
Leg	Start waypoint	End waypoint
1a	59° 39.364 ' N 149° 54.513 ' W	59° 21.702 ' N 149° 42.211 ' W
1b	59° 22.492 ' N 149° 35.588 ' W	59° 33.127 ' N 149° 42.452 ' W
1c	59° 34.407 ' N 149° 34.990 ' W	59° 23.633 ' N 149° 27.674 ' W
1d	59° 24.466 ' N 149° 21.997 ' W	59° 40.452 ' N 149° 35.847 ' W
1e	59° 41.478 ' N 149° 31.316 ' W	59° 25.224 ' N 149° 17.551 ' W
2	59° 26.479 ' N 149° 12.191 ' W	59° 48.461 ' N 149° 33.996 ' W
3	59° 50.905 ' N 149° 25.593 ' W	59° 27.733 ' N 149° 06.685 ' W
4	59° 29.134 ' N 149° 01.614 ' W	59° 50.394 ' N 149° 19.797 ' W
5	59° 52.836 ' N 149° 14.871 ' W	59° 30.755 ' N 148° 54.659 ' W
6	59° 32.080 ' N 148° 49.588 ' W	59° 56.348 ' N 149° 12.353 ' W
7	59° 57.220 ' N 149° 07.427 ' W	59° 33.239 ' N 148° 44.245 ' W
8	59° 34.342 ' N 148° 38.449 ' W	59° 55.984 ' N 148° 59.096 ' W
9	59° 54.238 ' N 148° 49.461 ' W	59° 35.224 ' N 148° 33.233 ' W

Figure 7. Fine Scale AAA: May 14 – 15, 2003



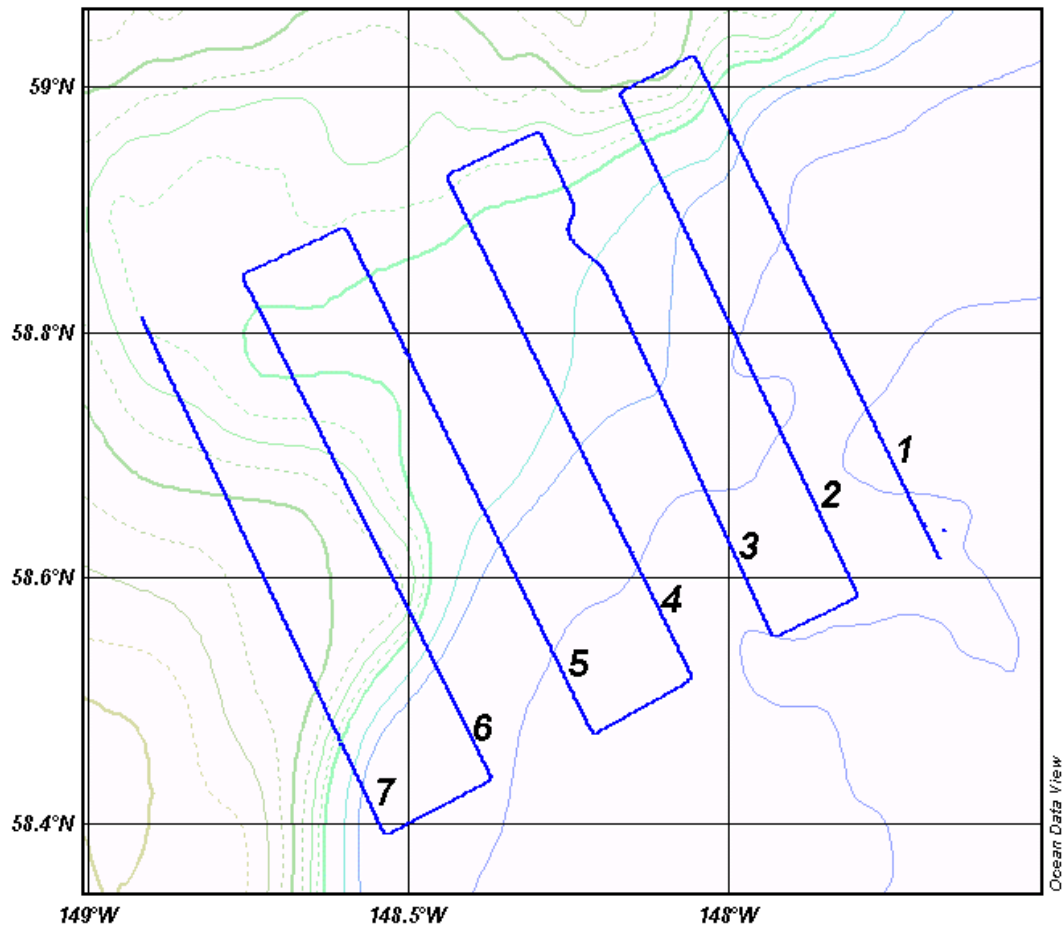
Leg	Start waypoint	End waypoint
1a	59° 39.364 ' N 149° 54.513 ' W	59° 21.702 ' N 149° 42.211 ' W
1b	59° 22.492 ' N 149° 35.588 ' W	59° 33.127 ' N 149° 42.452 ' W
1c	59° 34.407 ' N 149° 34.990 ' W	59° 23.633 ' N 149° 27.674 ' W
1d	59° 24.466 ' N 149° 21.997 ' W	59° 40.452 ' N 149° 35.847 ' W
1e	59° 41.478 ' N 149° 31.316 ' W	59° 25.224 ' N 149° 17.551 ' W
2	59° 26.479 ' N 149° 12.191 ' W	59° 48.461 ' N 149° 33.996 ' W
3	59° 50.905 ' N 149° 25.593 ' W	59° 27.733 ' N 149° 06.685 ' W
4	59° 29.134 ' N 149° 01.614 ' W	59° 50.394 ' N 149° 19.797 ' W
5	59° 52.836 ' N 149° 14.871 ' W	59° 30.755 ' N 148° 54.659 ' W
6	59° 32.080 ' N 148° 49.588 ' W	59° 56.348 ' N 149° 12.353 ' W
7	59° 57.220 ' N 149° 07.427 ' W	59° 33.239 ' N 148° 44.245 ' W

Figure 8. Eddy: May 17 – 19, 2003



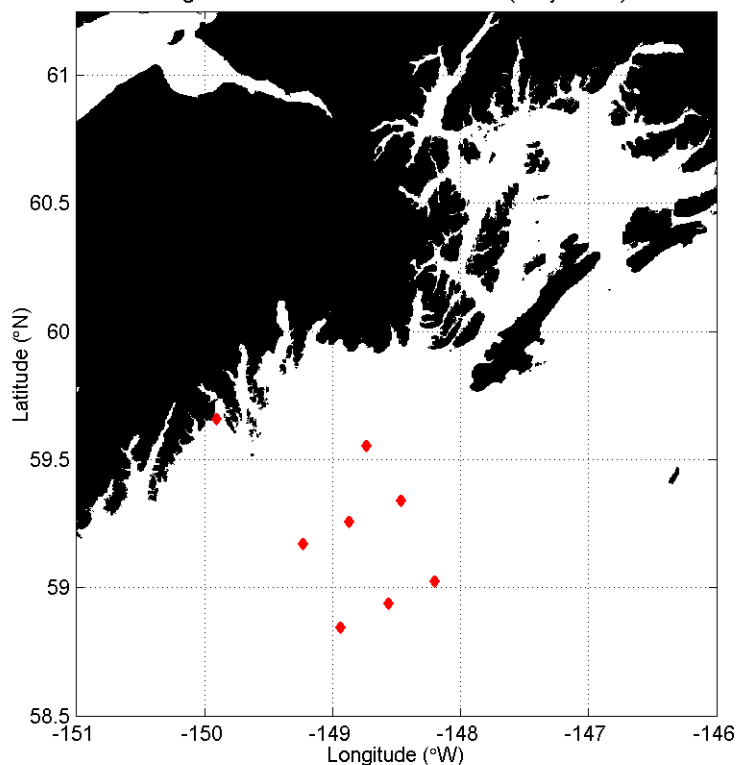
Leg	Start waypoint	End waypoint
1	59° 00.273' N 148° 16.810' W	57° 59.601' N 144° 29.876' W
2	57° 59.601' N 144° 29.876' W	58° 33.785' N 144° 31.917' W
3	58° 33.785' N 144° 31.917' W	58° 33.571' N 147° 36.402' W

Figure 9. Fine Scale C: May 19 – 20, 2003



Leg	Start waypoint	End waypoint
1	58° 37.009 ' N 147° 40.345 ' W	59° 01.542 ' N 148° 03.236 ' W
2	58° 59.715 ' N 148° 10.223 ' W	58° 35.103 ' N 147° 47.838 ' W
3	58° 33.089 ' N 147° 55.856 ' W	58° 57.835 ' N 148° 17.700 ' W
4	58° 55.648 ' N 148° 26.458 ' W	58° 31.083 ' N 148° 03.335 ' W
5	58° 28.352 ' N 148° 12.683 ' W	58° 53.154 ' N 148° 35.903 ' W
6	58° 50.810 ' N 148° 45.546 ' W	58° 26.186 ' N 148° 22.128 ' W
7	58° 23.449 ' N 148° 32.164 ' W	58° 48.462 ' N 148° 54.697 ' W

Figure 10. CTD Cast Locations (May 2003)



Cruise Data

Preliminary data, both as surface plots (Figure 11) and cross sections (Figure 12), for each of the cruise study regions can be viewed on the World Wide Web:

http://www.ims.uaf.edu/salmon/mesoscale/preliminary_main.htm

No quality assurance/control has been applied to the images on the web site.

Event logs for the SeaSoar operations, CTD, and cruise are in Tables 1, 2 and Appendix 1, respectively.

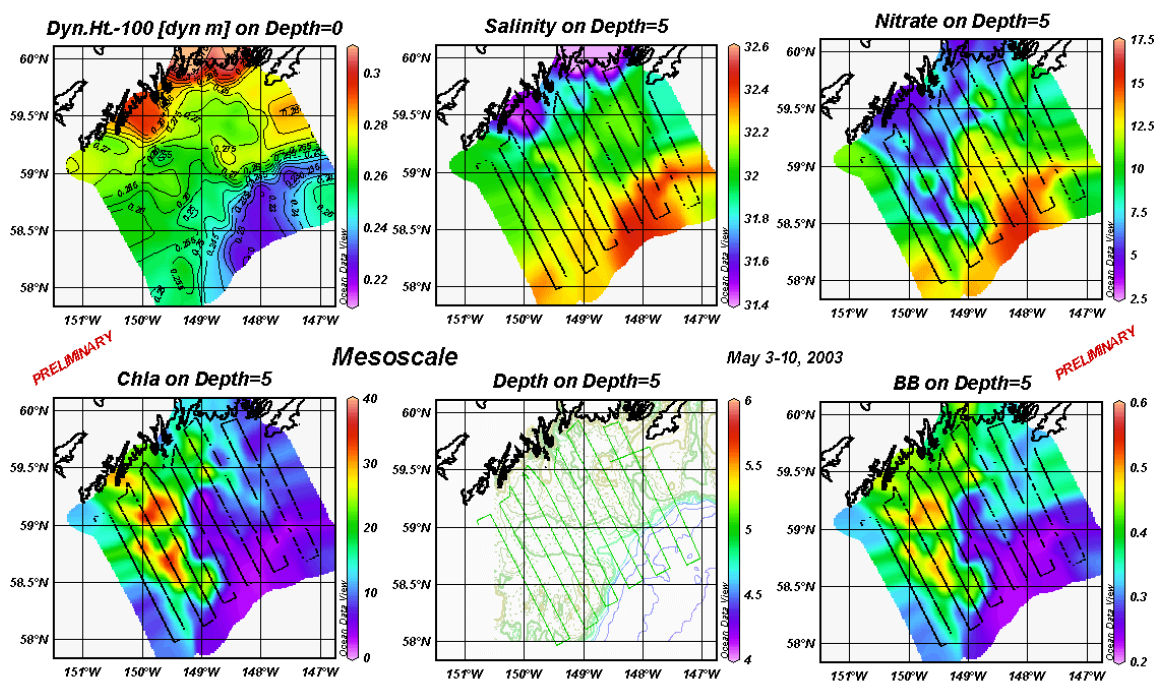


Figure 11. Example of data surface plots.

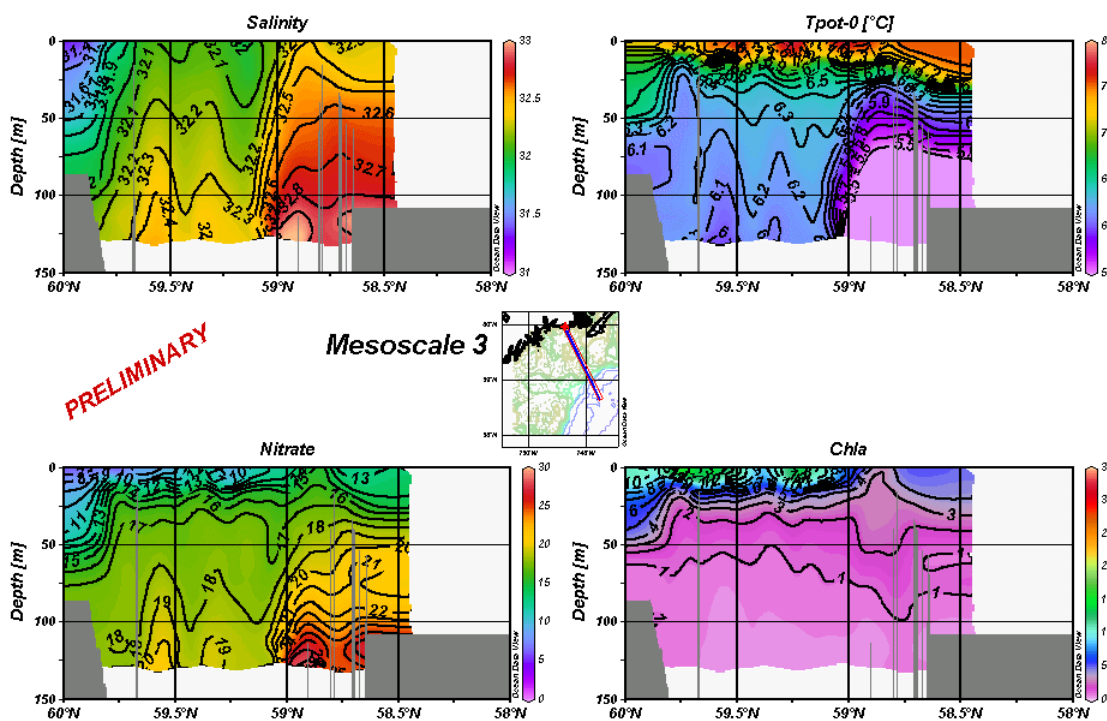


Figure 12. Example of data cross section plots.

Table 1: SeaSoar Deployments and Recoveries

Event #	Description	Tow	Station	Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth	Comments
W0305A12103.01	Deploy SeaSoar	1	nd	5/1/2003	5/1/2003	2015	59° 52.615' N	149° 27.790' W	267	
W0305A12203.01	Recovered SeaSoar	1	nd	5/1/2003	5/2/2003	0018	59° 29.045' N	149° 18.488' W	nd	SeaSoar cable parted at winch, reterminated
W0305A12203.02	Deploy SeaSoar	1b	FSA-1	5/1/2003	5/2/2003	0727	59° 31.806' N	149° 23.038' W	nd	
W0305A12203.03	SeaSoar	1b	~FSA-11	5/2/2003	5/2/2003	1645	nd	nd	nd	~4 nm N of FSA-11, Inspected SeaSoar due to cable tension errors, OK
W0305A12303.01	Recovered SeaSoar	1b	FSA-25	5/3/2003	5/3/2003	1727	59° 34.887' N	148° 31.098' W	nd	Downloaded ISUS Data; Clean and Cal AC-9
W0305A12303.02	Deploy SeaSoar	2	nd	5/3/2003	5/3/2003	2234	59° 42.722' N	147° 53.342' W	54	
W0305A12503.01	Recovered SeaSoar	2	nd	5/5/2003	5/5/2003	1647	59° 28.082' N	148° 35.293' W	nd	Clean and Cal AC-9, Relock AC-9 Tubing Down
W0305A12503.02	Deploy SeaSoar	2a	nd	5/5/2003	5/5/2003	1746	59° 24.056' N	148° 33.219' W	nd	
W0305A12803.01	Recovered SeaSoar	2a	M-19/20	5/8/2003	5/8/2003	2057	58° 42.531' N	149° 33.401' W	nd	Clean and Calibrate AC-9
W0305A12803.02	Deploy SeaSoar	3	M-19/20	5/8/2003	5/8/2003	2151	58° 39.252' N	149° 30.048' W	122	
W0305A13003.01	SeaSoar	3	FSB-1	5/10/2003	5/10/2003	1150	nd	nd	nd	Hauled In Cable to Remove Twisted Failing
W0305A13003.02	SeaSoar	3	FSB-1	5/10/2003	5/10/2003	1820	nd	nd	nd	Twisted failing removed, Ship Back Up To Speed
W0305A13203.01	Recovered SeaSoar	3	FSA2-4	5/11/2003	5/12/2003	0814	59° 33.559' N	148° 30.594' W	116	
W0305A13203.02	Deploy SeaSoar	4	nd	5/12/2003	5/12/2003	0845	59° 39.622' N	149° 54.492' W	120	
W0305A13403.01	Recovered SeaSoar	4	FSA2-36	5/13/2003	5/14/2003	0206	59° 33.756' N	148° 31.154' W	nd	Clean and Calibrate AC-9
W0305A13403.18	Deploy SeaSoar	5	FSA2-7	5/14/2003	5/14/2003	1910	59° 39.778' N	148° 43.449' W	nd	
W0305A13603.01	Recover SeaSoar	5	nd	5/15/2003	5/16/2003	0705	59° 32.383' N	148° 43.449' W	nd	Clean and Calibrate AC-9
W0305A13603.02	Deploy SeaSoar	6	FSB-01	5/16/2003	5/16/2003	1106	58° 50.331' N	148° 56.259' W	258	
W0305A13803.01	Recover SeaSoar	6	nd	5/18/2003	5/18/2003	2237	59° 33.004' N	143° 57.726' W	3603	Retrieval of SeaSoar to Diagnose Bad AC-9 Data
W0305A13803.02	Deploy SeaSoar	7	nd	5/18/2003	5/18/2003	2312	59° 33.000' N	144° 00.492' W	3614	
W0305A14003.01	Recover SeaSoar	7	nd	5/20/2003	5/20/2003	2118	58° 49.874' N	148° 55.442' W	nd	Clean and Calibrate AC-9
W0305A14003.02	Deploy SeaSoar	8	nd	5/20/2003	5/20/2003	2153	58° 49.803' N	148° 55.299' W	nd	
W0305A14203.01	Recover SeaSoar	8	nd	5/22/2003	5/22/2003	1137	60° 05.382' N	149° 22.487' W	nd	End of Cruise

Table 2: CTD Casts

Event #	Description	Cast	Station	Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth	Comments
W0305A13403.02	Begin CTD	1	BS-1/FSA2-31	5/13/2003	5/14/2003	0250	59° 33.202' N	148° 44.181' W	92	
W0305A13403.03	End CTD	1	BS-1/FSA2-31	5/13/2003	5/14/2003	0309	59° 33.210' N	148° 44.193' W	nd	
W0305A13403.04	Begin CTD	2	BS-2/FSB-18	5/13/2003	5/14/2003	0442	59° 20.267' N	148° 28.015' W	90	Fluorometer scale changed from 3x to 1x
W0305A13403.05	End CTD	2	BS-2/FSB-18	5/13/2003	5/14/2003	0457	59° 20.260' N	148° 28.032' W	nd	
W0305A13403.06	Begin CTD	3	BS-3/FSB-17	5/13/2003	5/14/2003	0658	59° 01.504' N	148° 12.252' W	140	
W0305A13403.07	End CTD	3	BS-3/FSB-17	5/13/2003	5/14/2003	0717	59° 01.518' N	148° 12.193' W	nd	
W0305A13403.08	Begin CTD	4	BS-4/FSB-9	5/14/2003	5/14/2003	0842	58° 56.127' N	148° 33.943' W	240	
W0305A13403.09	End CTD	4	BS-4/FSB-9	5/14/2003	5/14/2003	0912	58° 56.127' N	148° 33.840' W	nd	
W0305A13403.10	Begin CTD	5	BS-5/FSB-1	5/14/2003	5/14/2003	1040	58° 50.607' N	148° 56.495' W	248	
W0305A13403.11	End CTD	5	BS-5/FSB-1	5/14/2003	5/14/2003	1111	58° 50.578' N	148° 56.436' W	nd	
W0305A13403.12	Begin CTD	6	BS-6/FSB-2	5/14/2003	5/14/2003	1320	59° 10.256' N	149° 13.832' W	140	
W0305A13403.13	End CTD	6	BS-6/FSB-2	5/14/2003	5/14/2003	1335	59° 10.298' N	149° 13.868' W	nd	
W0305A13403.14	Begin CTD	7	BS-7/FSB-10	5/14/2003	5/14/2003	1446	59° 15.433' N	148° 52.298' W	151	
W0305A13403.15	End CTD	7	BS-7/FSB-10	5/14/2003	5/14/2003	1502	59° 15.377' N	148° 52.349' W	nd	
W0305A13403.16	Begin CTD	8	BS-14/FSA2-7	5/14/2003	5/14/2003	1835	59° 39.369' N	149° 54.474' W	135	Data file needs to be parsed for down/up profiles
W0305A13403.17	End CTD	8	BS-14/FSA2-7	5/14/2003	5/14/2003	1854	59° 39.359' N	148° 54.483' W	nd	

APPENDIX I:

EVENT LOG

Appendix I: Event Log									
Event #	Description	Tow/Cast	Station	Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth
W0305A12103.01	Deploy SeaSoar	1	nd	5/1/2003	5/1/2003	2015	59° 52.615' N	149° 27.790' W	267
W0305A12203.01	Recovered SeaSoar	1	nd	5/1/2003	5/2/2003	0018	59° 29.045' N	149° 18.468' W	nd
W0305A12203.02	Deploy SeaSoar	1b	FSA-1	5/1/2003	5/2/2003	0727	59° 31.806' N	149° 23.038' W	nd
W0305A12203.03	SeaSoar	1b	~FSA-11	5/2/2003	5/2/2003	1645	nd	nd	nd
W0305A12303.01	Recovered SeaSoar	1b	FSA-25	5/3/2003	5/3/2003	1727	59° 34.887' N	148° 31.098' W	nd
W0305A12303.02	Deploy SeaSoar	2	nd	5/3/2003	5/3/2003	2234	59° 42.722' N	147° 53.342' W	54
W0305A12503.01	Recovered SeaSoar	2	nd	5/5/2003	5/5/2003	1647	59° 26.082' N	148° 35.293' W	nd
W0305A12503.02	Deploy SeaSoar	2a	nd	5/5/2003	5/5/2003	1746	59° 24.058' N	148° 33.219' W	nd
W0305A12803.01	Recovered SeaSoar	2a	M-19/20	5/8/2003	5/8/2003	2057	58° 42.531' N	149° 33.401' W	nd
W0305A12803.02	Deploy SeaSoar	3	M-19/20	5/8/2003	5/8/2003	2151	58° 39.252' N	149° 30.048' W	122
W0305A13003.01	SeaSoar	3	FSB-1	5/10/2003	5/10/2003	1150	nd	nd	nd
W0305A13003.02	SeaSoar	3	FSB-1	5/10/2003	5/10/2003	1820	nd	nd	nd
W0305A13203.01	Recovered SeaSoar	3	FSA2-4	5/11/2003	5/12/2003	0614	59° 33.559' N	149° 30.594' W	116
W0305A13203.02	Deploy SeaSoar	4	nd	5/12/2003	5/12/2003	0845	59° 39.622' N	149° 54.492' W	120
W0305A13403.01	Recovered SeaSoar	4	FSA2-36	5/13/2003	5/14/2003	0206	59° 33.756' N	148° 31.154' W	nd
W0305A13403.02	Begin CTD	1	BS-1/FSA2-31	5/13/2003	5/14/2003	0250	59° 33.202' N	148° 44.181' W	92
W0305A13403.03	End CTD	1	BS-1/FSA2-31	5/13/2003	5/14/2003	0309	59° 33.210' N	148° 44.193' W	nd
W0305A13403.04	Begin CTD	2	BS-2/FSB-18	5/13/2003	5/14/2003	0442	59° 20.260' N	148° 28.015' W	90
W0305A13403.05	End CTD	2	BS-2/FSB-18	5/13/2003	5/14/2003	0457	59° 20.260' N	148° 28.032' W	nd
W0305A13403.06	Begin CTD	3	BS-3/FSB-17	5/13/2003	5/14/2003	0658	59° 01.504' N	148° 12.252' W	140
W0305A13403.07	End CTD	3	BS-3/FSB-17	5/13/2003	5/14/2003	0717	59° 01.518' N	148° 12.193' W	nd
W0305A13403.08	Begin CTD	4	BS-4/FSB-9	5/14/2003	5/14/2003	0842	58° 56.127' N	148° 33.943' W	240
W0305A13403.09	End CTD	4	BS-4/FSB-9	5/14/2003	5/14/2003	0912	58° 56.127' N	148° 33.840' W	nd
W0305A13403.10	Begin CTD	5	BS-5/FSB-1	5/14/2003	5/14/2003	1040	58° 50.607' N	148° 56.495' W	248
W0305A13403.11	End CTD	5	BS-5/FSB-1	5/14/2003	5/14/2003	1111	58° 50.578' N	148° 56.436' W	nd
W0305A13403.12	Begin CTD	6	BS-6/FSB-2	5/14/2003	5/14/2003	1320	59° 10.258' N	149° 13.832' W	140
W0305A13403.13	End CTD	6	BS-6/FSB-2	5/14/2003	5/14/2003	1335	59° 10.298' N	149° 13.868' W	nd
W0305A13403.14	Begin CTD	7	BS-7/FSB-10	5/14/2003	5/14/2003	1446	59° 15.433' N	148° 52.288' W	151
W0305A13403.15	End CTD	7	BS-7/FSB-10	5/14/2003	5/14/2003	1502	59° 15.377' N	148° 52.349' W	nd
W0305A13403.16	Begin CTD	8	BS-14/FSA2-7	5/14/2003	5/14/2003	1835	59° 39.369' N	148° 54.474' W	135
W0305A13403.17	End CTD	8	BS-14/FSA2-7	5/14/2003	5/14/2003	1854	59° 39.359' N	148° 54.483' W	nd
W0305A13403.18	Deploy SeaSoar	5	FSA2-7	5/14/2003	5/14/2003	1910	59° 39.778' N	149° 54.932' W	nd
W0305A13603.01	Recover SeaSoar	5	nd	5/15/2003	5/16/2003	0705	59° 32.383' N	148° 43.449' W	nd
W0305A13603.02	Deploy SeaSoar	6	FSB-01	5/16/2003	5/16/2003	1106	58° 50.331' N	148° 56.259' W	258
W0305A13803.01	Recover SeaSoar	6	nd	5/18/2003	5/18/2003	2237	59° 33.004' N	143° 57.726' W	3603
W0305A13803.02	Deploy SeaSoar	7	nd	5/18/2003	5/18/2003	2312	59° 33.000' N	144° 00.492' W	3614
W0305A14003.01	Recover SeaSoar	7	nd	5/20/2003	5/20/2003	2118	58° 49.874' N	148° 55.442' W	nd
W0305A14003.02	Deploy SeaSoar	8	nd	5/20/2003	5/20/2003	2153	58° 49.603' N	148° 55.289' W	nd
W0305A14203.01	Recover SeaSoar	8	nd	5/22/2003	5/22/2003	1137	60° 05.382' N	149° 22.497' W	nd