GLOBEC Northeast Pacific, Coastal Gulf of Alaska

Cruise Report

R/V *Wecoma* (Cruise ID W0307B)

July 21 – August 12, 2003

Sponsored by:
National Science Foundation
National Oceanic and Atmospheric Administration

Cruise Report R/V *Wecoma* (W0307B)

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Port of Departure/Return: Seward, AK

Cruise Participants:

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Rachel Potter	Technician, University of Alaska, Fairbanks
Melanie Rohr	Technician, University of Alaska, Fairbanks
Hank Statscewich	Technician, 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 and Eco-VSF 3-angle scattering meter were placed in the ship's flow-through water system. 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

Late afternoon on July 22, 2003, the SeaSoar began flying erratically. Despite modifications in wing angle, cable length, and ship speed, the SeaSoar was staying on the surface and not achieving the depth range that it had been on prior downcasts. Cable was hauled in to determine if the fairing that was fixed around the cable to make the SeaSoar dive deeper was actually twisted and causing the opposite effect. The fairing was removed, and subsequent downcast depths were monitored and shown to be approximately 120 m.

On August 5, 2003, we performed a routine SeaSoar recovery and inspection. It was found that the tow cable for the SeaSoar was damaged (Figure 1) and could not be temporarily repaired, so that portion of the cable had to be removed. This required completely disassembling the SeaSoar in order to remove the cable connected to the instrument, and reattaching a good section of cable. Nothing was wrong with the fiber optics in the wires, and the optics termination just had to be detached to replace the damaged cable.

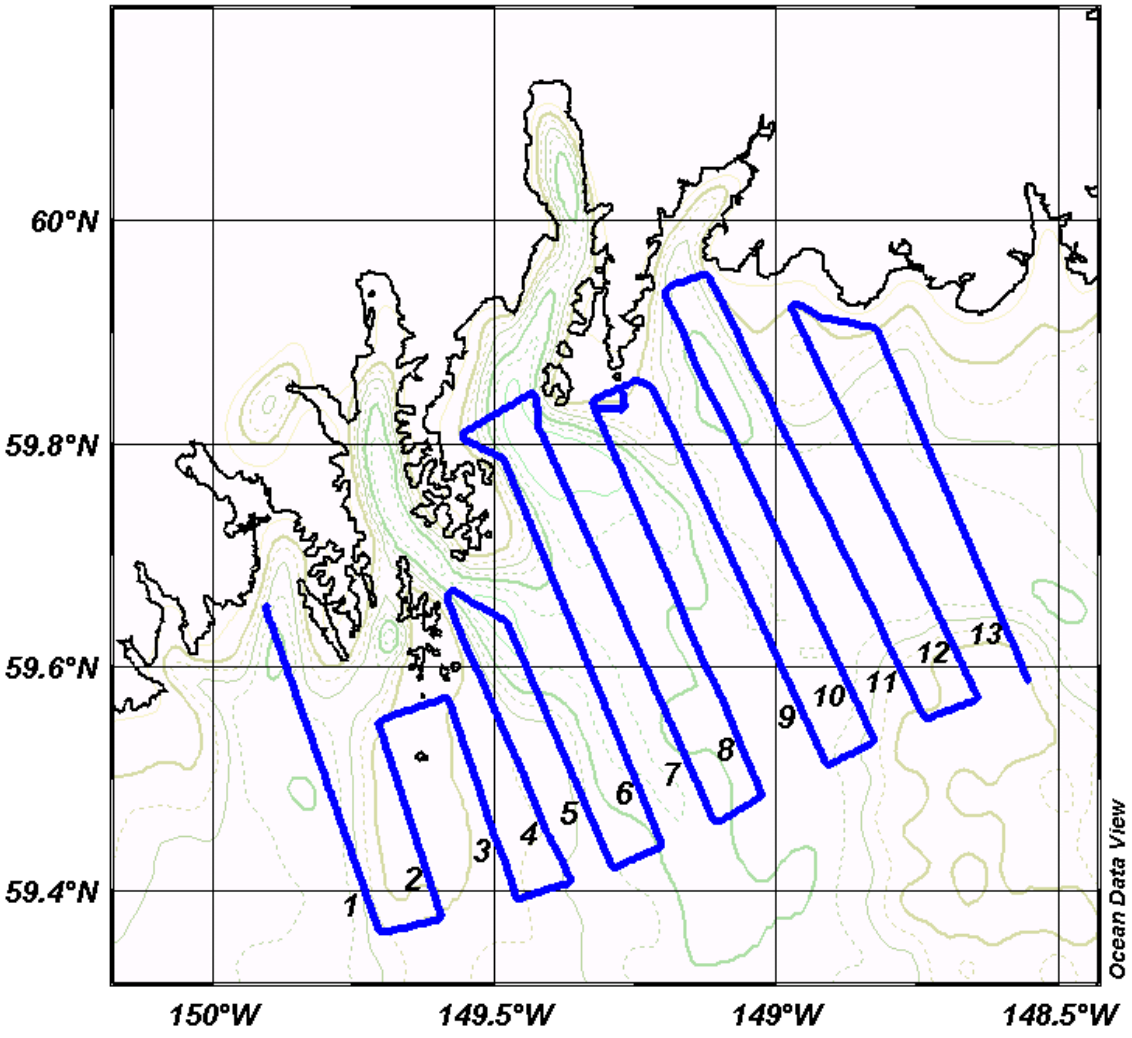
Figure 1. Damaged Tow Cable

Once the cable was replaced and the unit was reassembled, we deployed the SeaSoar. Unfortunately, the initial readings were not correct, and again we had to recover the SeaSoar. It was determined that the bulkhead connector to the underwater fiber optics telemetry unit (UFO) was broken. The UFO contains a 300-volt to 15-volt DC converter to power the ISUS and the pump to the AC-9. The damaged connector destroyed the watertight seal into the unit (Figure 2), allowing seawater to enter and short out the power source. To fix the problem, technicians had to take apart the SeaSoar and disassemble the UFO completely. Once the UFO was apart, everything was rinsed to clean off the salt water and then thoroughly dried. The next step was separating damaged parts from functioning ones. The 300-volt to 15-volt DC converters had burned from the shortage and needed to be replaced. We replaced the DC-to-DC converter and reassembled the electronics of the UFO. Once that was completed, the SeaSoar was successfully re-deployed around 2:00 pm on August 6, 2003.

Figure 2. The back of the UFO has a broken connector, which destroys the water-tight seal protecting the power unit.

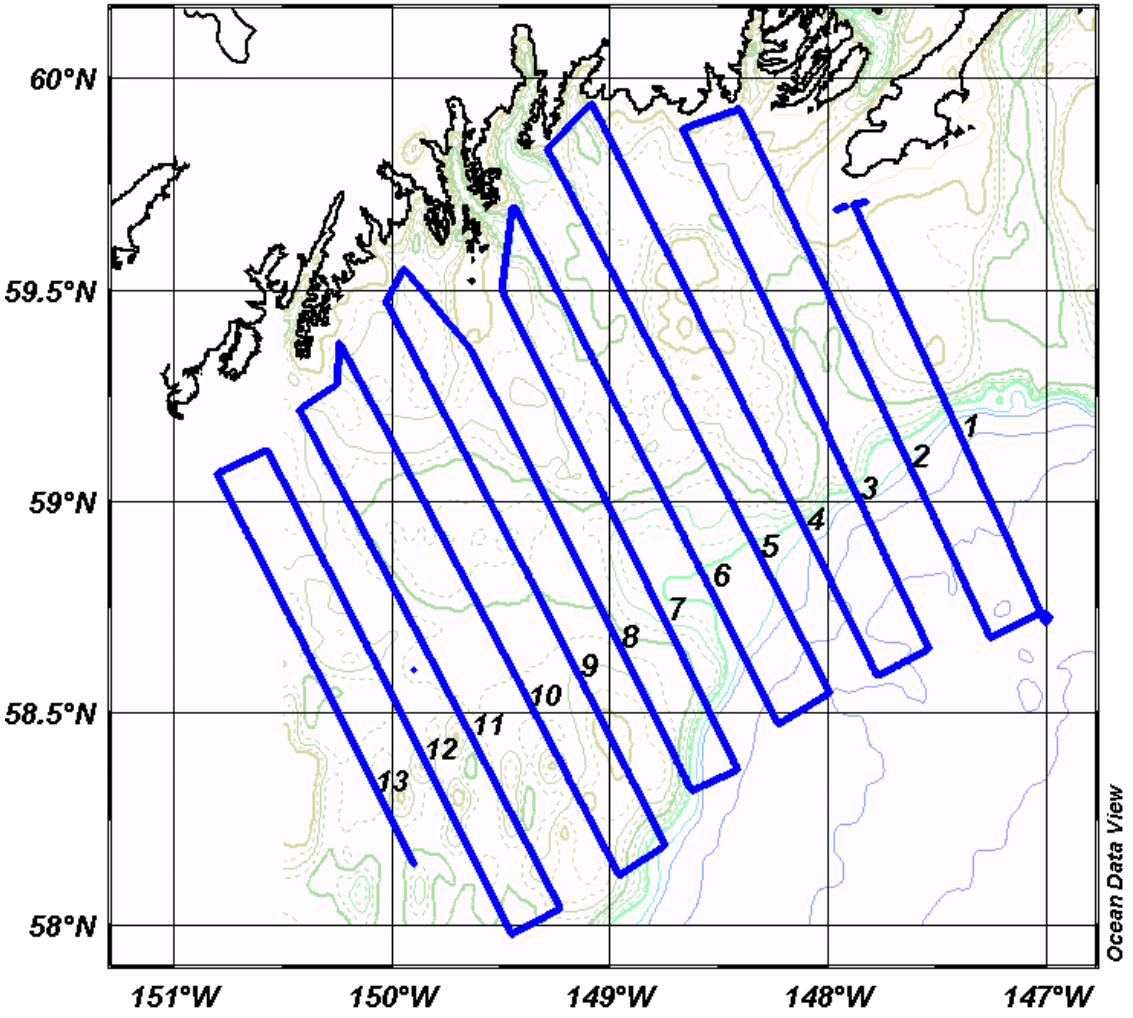
Cruise Study Regions

Figure 3. Fine Scale A – Survey I: July 22 – 23, 2003



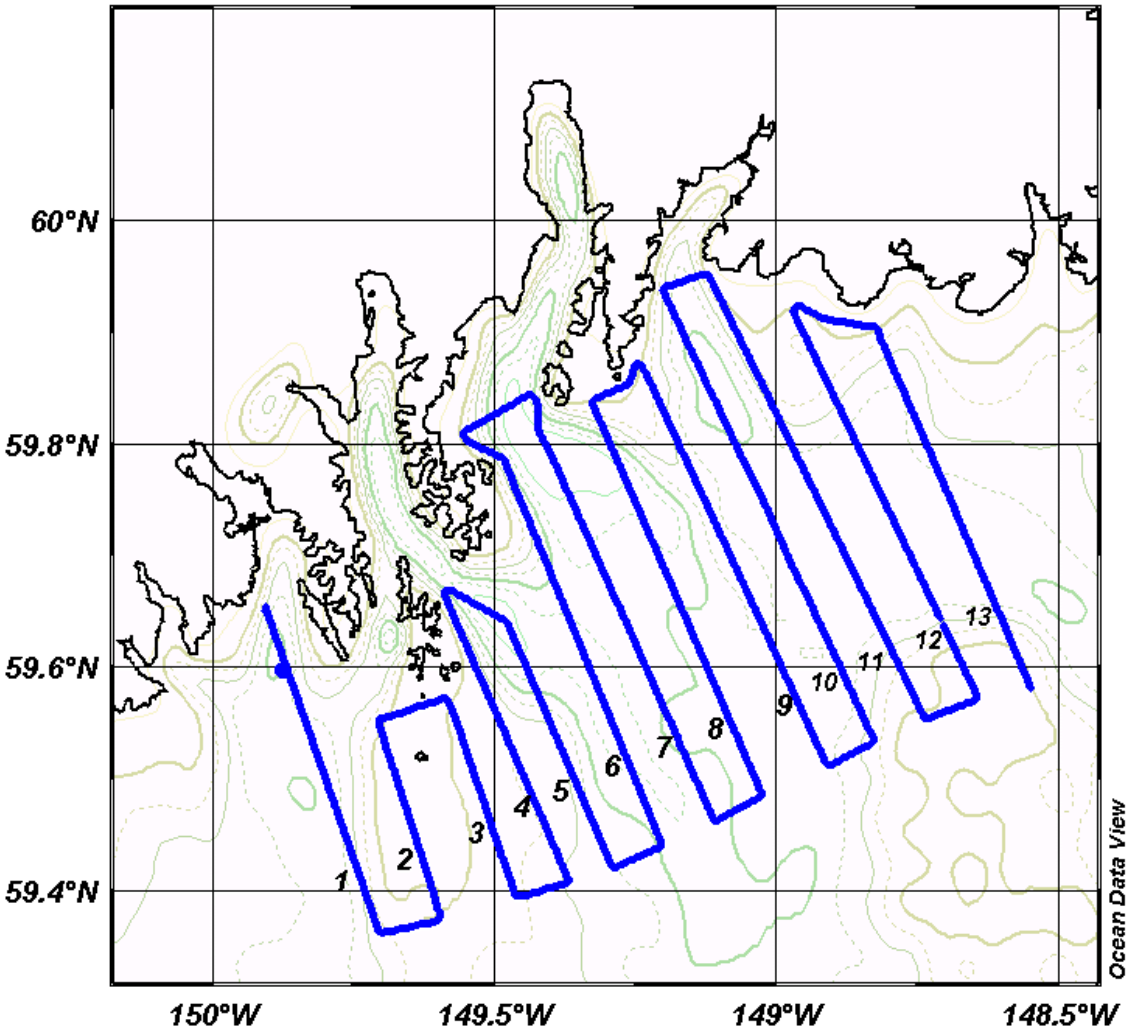
Leg	Start waypoint	End waypoint
1	59° 39.360´ N, 149° 54.491´ W	59° 21.713´ N, 149° 42.211´ W
2	59° 22.487´ N, 149° 54.491´ W	59° 33.140´ N, 149° 42.447´ W
3	59° 34.422´ N, 149° 34.965´ W	59° 23.622´ N, 149° 27.888´ W
4	59° 24.481´ N, 149° 22.024´ W	59° 40.464´ N, 149° 35.878´ W
5	59° 40.464´ N, 149° 35.878´ W	59° 25.212´ N, 149° 17.466´ W
6	59° 26.414´ N, 149° 12.141´ W	59° 48.433´ N, 149° 34.004´ W
7	59° 50.876´ N, 149° 25.547´ W	59° 27.716´ N, 149° 06.648´ W
8	59° 29.140´ N, 149° 01.458´ W	59° 50.373´ N, 149° 19.744´ W
9	59° 52.764´ N, 149° 14.823´ W	59° 30.734´ N, 149° 54.617´ W
10	59° 32.005´ N, 148° 49.489´ W	59° 56.364´ N, 149° 12.220´ W
11	59° 57.196´ N, 149° 07.332´ W	59° 33.210´ N, 148° 44.170´ W
12	59° 34.300´ N, 148° 38.480´ W	59° 55.966´ N, 148° 59.031´ W
13	59° 54.217´ N, 148° 49.354´ W	59° 35.200´ N, 148° 33.150´ W

Figure 4. Mesoscale: July 24 – 30, 2003



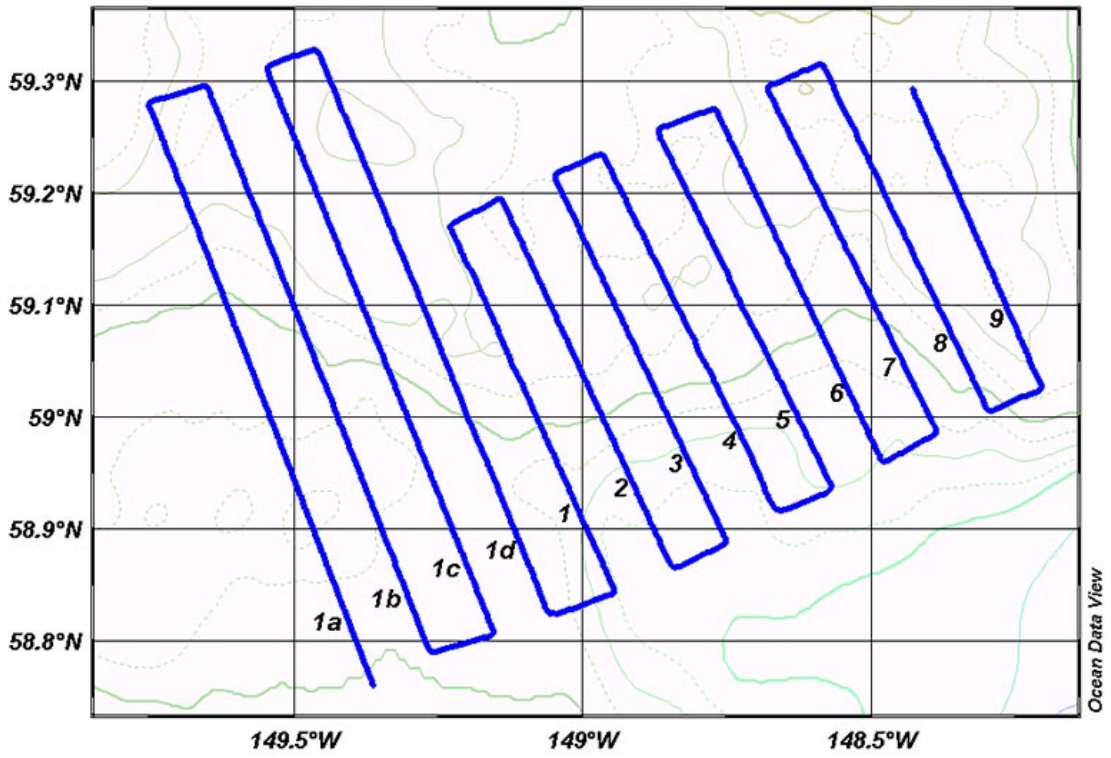
Leg	Start waypoint	End waypoint
1	59° 42.320´ N, 147° 53.070´ W	58° 44.310´ N, 147° 01.530´ W
2	58° 40.710´ N, 147° 15.370´ W	59° 55.683´ N, 148° 24.337´ W
3	59° 52.847´ N, 148° 40.081´ W	58° 39.110´ N, 147° 32.270´ W
4	58° 35.300´ N, 147° 46.490´ W	59° 56.590´ N, 149° 05.190´ W
5	59° 50.003´ N, 149° 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
12	57° 58.671´ N, 149° 27.172´ W	59° 07.359´ N, 150° 34.419´ W
13	59° 03.997´ N, 150° 48.253´ W	58° 08.651´ N, 149° 54.071´ W

Figure 5. Fine Scale A – Survey II: July 31 – August 1, 2003



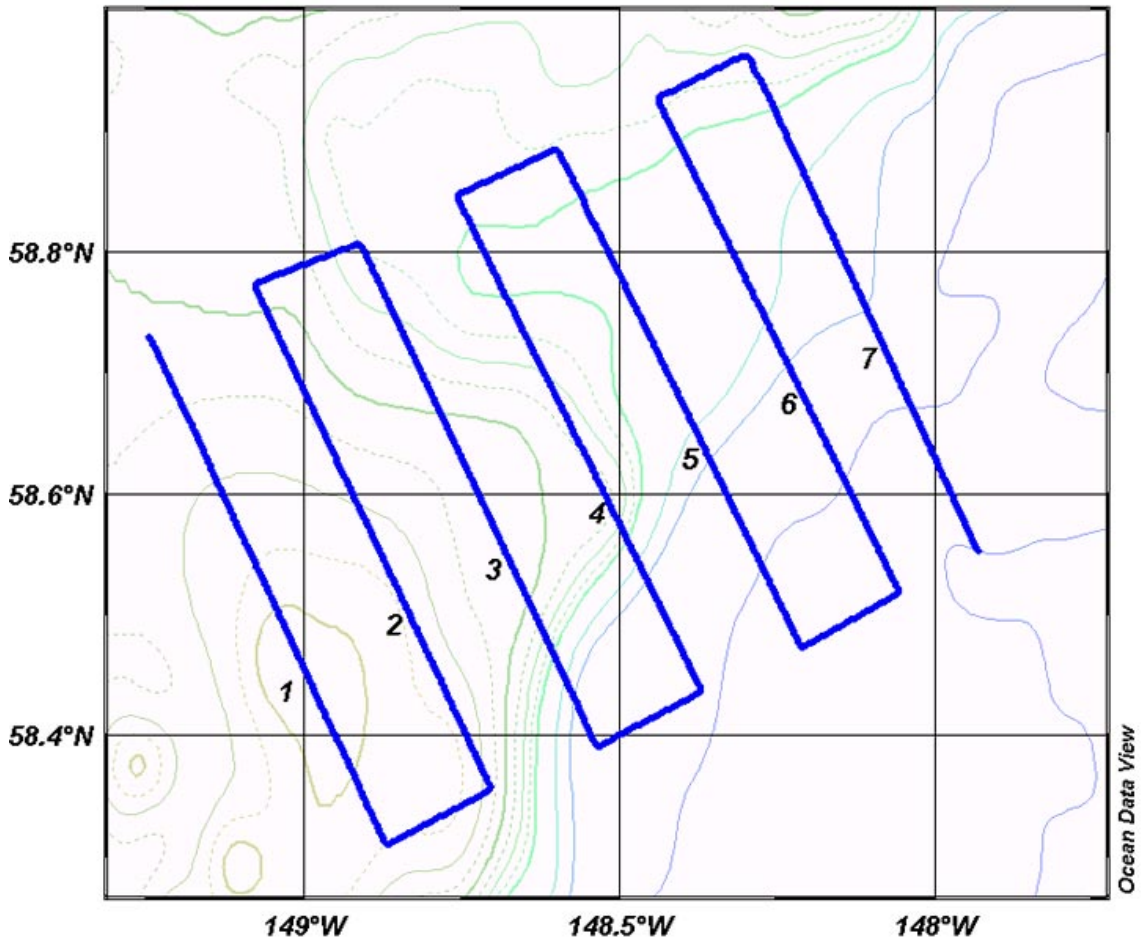
Leg	Start waypoint	End waypoint
1	59° 39.360´ N, 149° 54.491´ W	59° 21.713´ N, 149° 42.211´ W
2	59° 22.487´ N, 149° 35.605´ W	59° 33.140´ N, 149° 42.447´ W
3	59° 34.422´ N, 149° 34.965´ W	59° 23.622´ N, 149° 27.888´ W
4	59° 24.481´ N, 149° 22.024´ W	59° 40.464´ N, 149° 35.878´ W
5	59° 40.464´ N, 149° 35.878´ W	59° 25.212´ N, 149° 17.466´ W
6	59° 26.414´ N, 149° 12.141´ W	59° 48.433´ N, 149° 34.004´ W
7	59° 50.876´ N, 149° 25.547´ W	59° 27.716´ N, 149° 06.648´ W
8	59° 29.140´ N, 149° 01.458´ W	59° 50.373´ N, 149° 19.744´ W
9	59° 52.764´ N, 149° 14.823´ W	59° 30.734´ N, 149° 54.617´ W
10	59° 32.005´ N, 148° 19.489´ W	59° 56.364´ N, 149° 12.220´ W
11	59° 57.196´ N, 149° 07.332´ W	59° 33.210´ N, 148° 44.170´ W
12	59° 34.300´ N, 148° 38.480´ W	59° 55.966´ N, 148° 59.031´ W
13	59° 54.217´ N, 148° 49.354´ W	59° 35.200´ N, 148° 33.150´ W

Figure 6. Fine Scale B: August 2 – 3, 2003



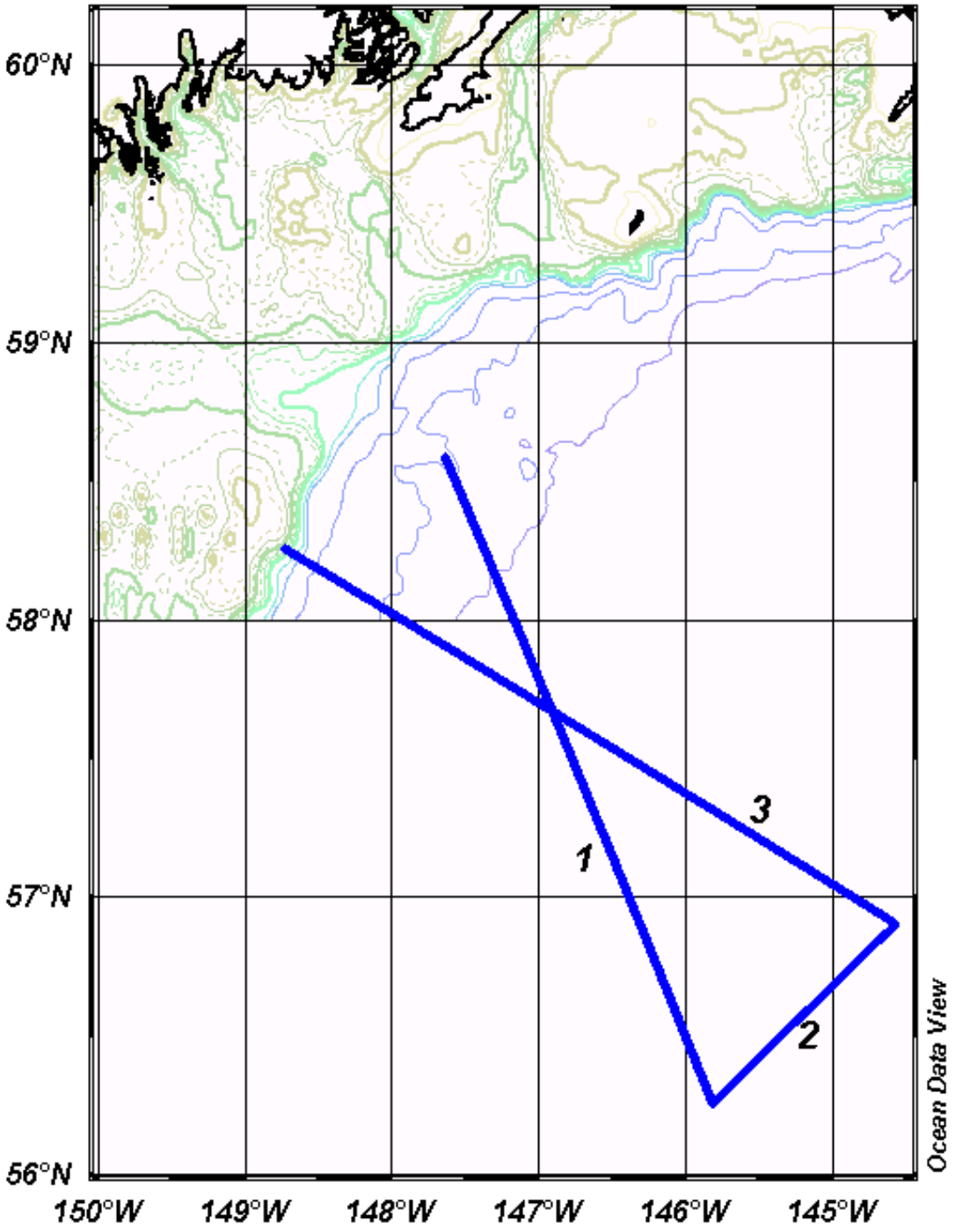
Leg	Start waypoint	End waypoint
1a	59° 16.856´ N, 149° 45.174´ W	58° 46.113´ N, 149° 22.149´ W
1b	58° 47.339´ N, 149° 15.853´ W	59° 17.762´ N, 149° 39.073´ W
1c	59° 18.769´ N, 149° 32.973´ W	58° 48.360´ N, 149° 09.161´ W
1d	58° 49.381´ N, 149° 03.454´ W	59° 19.775´ N, 149° 27.659´ W
1	59° 10.300´ N, 149° 13.884´ W	58° 50.605´ N, 148° 56.566´ W
2	58° 51.829´ N, 148° 50.663´ W	59° 11.710´ N, 149° 08.470´ W
3	59° 12.980´ N, 149° 03.060´ W	58° 53.256´ N, 148° 44.956´ W
4	58° 54.885´ N, 148° 39.643´ W	59° 14.135´ N, 148° 57.944´ W
5	59° 15.400´ N, 148° 52.340´ W	58° 56.103´ N, 148° 33.936´ W
6	58° 57.530´ N, 148° 28.819´ W	59° 16.550´ N, 148° 46.240´ W
7	59° 17.660´ N, 148° 40.920´ W	58° 59.156´ N, 148° 23.122´ W
8	59° 00.273´ N, 148° 17.799´ W	59° 18.970´ N, 148° 35.116´ W
9	59° 20.258´ N, 148° 27.994´ W	59° 01.522´ N, 148° 12.239´ W

Figure 7. Fine Scale C: August 4 – 5, 2003



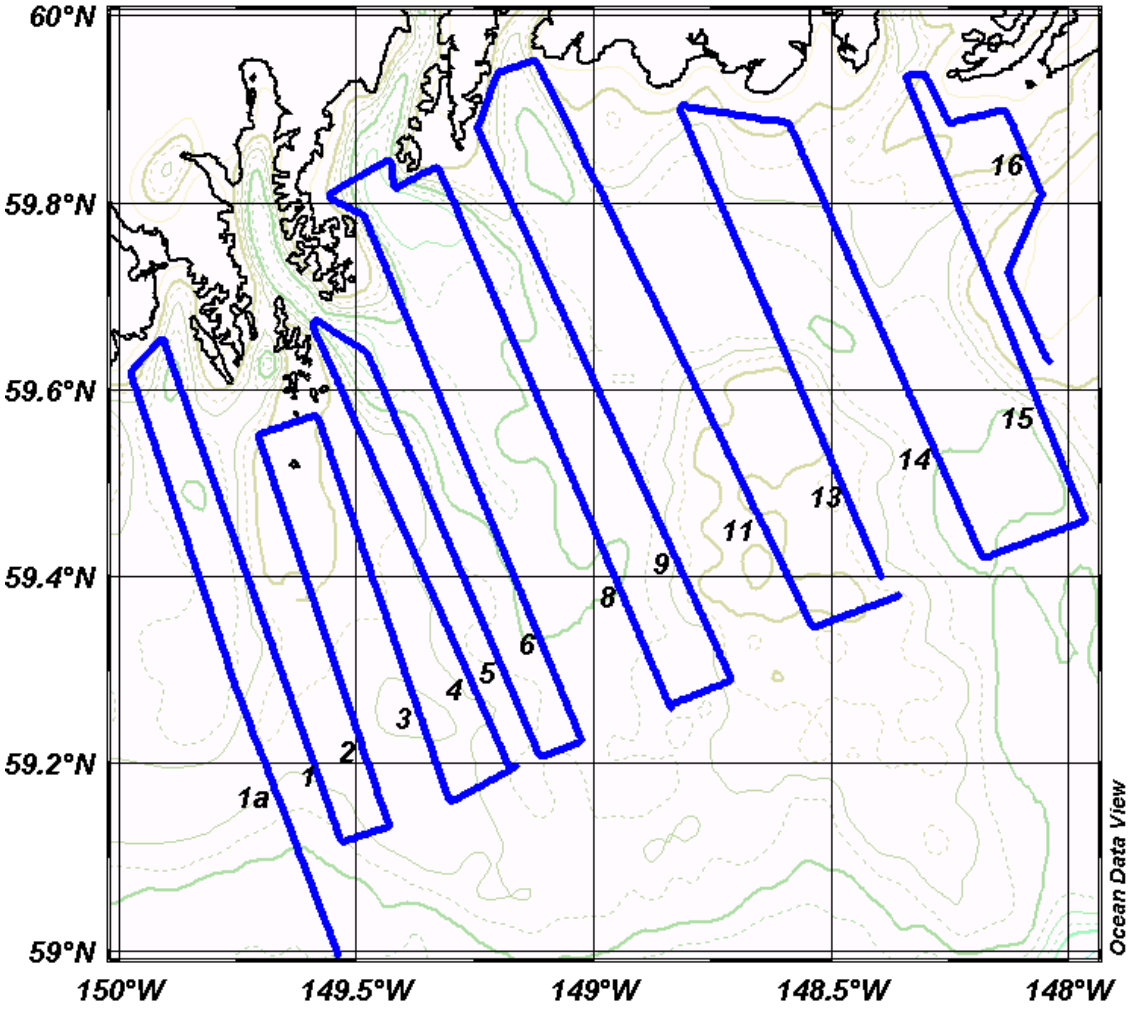
Leg	Start waypoint	End waypoint
1	58° 43.965´ N, 149° 14.868´ W	58° 18.535´ N, 148° 52.237´ W
2	58° 21.330´ N, 148° 42.201´ W	58° 46.419´ N, 149° 04.832´ W
3	58° 48.462´ N, 148° 54.697´ W	58° 23.449´ N, 148° 32.164´ W
4	58° 26.186´ N, 148° 22.128´ W	58° 50.813´ N, 148° 45.546´ W
5	58° 53.154´ N, 148° 35.903´ W	58° 28.352´ N, 148° 12.683´ W
6	58° 31.083´ N, 148° 03.335´ W	58° 55.648´ N, 148° 26.458´ W
7	58° 57.835´ N, 148° 17.700´ W	58° 33.089´ N, 147° 55.856´ W

Figure 8. Eddy: August 6 – 8, 2003



Leg	Start waypoint	End waypoint
1	58° 37.271´ N, 147° 39.986´ W	56° 00.342´ N, 145° 37.873´ W
2	56° 00.342´ N, 145° 37.873´ W	56° 58.172´ N, 144° 46.414´ W
3	56° 58.172´ N, 144° 46.414´ W	58° 14.629´ N, 148° 41.437´ W

Figure 9. Fine Scale A – Survey III: August 9 – 12, 2003



Leg*	Start waypoint	End waypoint
1a	58° 59.700´ N, 149° 32.280´ W	59° 37.139´ N, 149° 58.565´ W
1	59° 39.363´ N, 149° 54.513´ W	59° 06.963´ N, 149° 31.891´ W
2	59° 07.975´ N, 149° 25.889´ W	59° 33.126´ N, 149° 42.451´ W
3	59° 34.407´ N, 149° 34.990´ W	59° 09.491´ N, 149° 18.214´ W
4	59° 11.613´ N, 149° 10.539´ W	59° 40.451´ N, 149° 35.847´ W
5	59° 40.451´ N, 149° 35.847´ W	59° 12.420´ N, 149° 06.800´ W
6	59° 13.429´ N, 149° 01.486´ W	59° 48.418´ N, 149° 33.955´ W
8	59° 50.700´ N, 149° 26.160´ W	59° 15.748´ N, 148° 50.466´ W
9	59° 17.360´ N, 148° 42.595´ W	59° 52.777´ N, 149° 14.772´ W
11	59° 22.589´ N, 148° 22.521´ W	59° 54.216´ N, 148° 49.354´ W
13	59° 56.160´ N, 148° 35.460´ W	59° 25.198´ N, 148° 10.911´ W
14	59° 27.604´ N, 147° 57.923´ W	59° 56.266´ N, 148° 20.765´ W
15	59° 56.266´ N, 148° 18.254´ W	59° 53.123´ N, 148° 15.163´ W
16	59° 54.000´ N, 148° 08.057´ W	59° 48.535´ N, 148° 03.410´ W

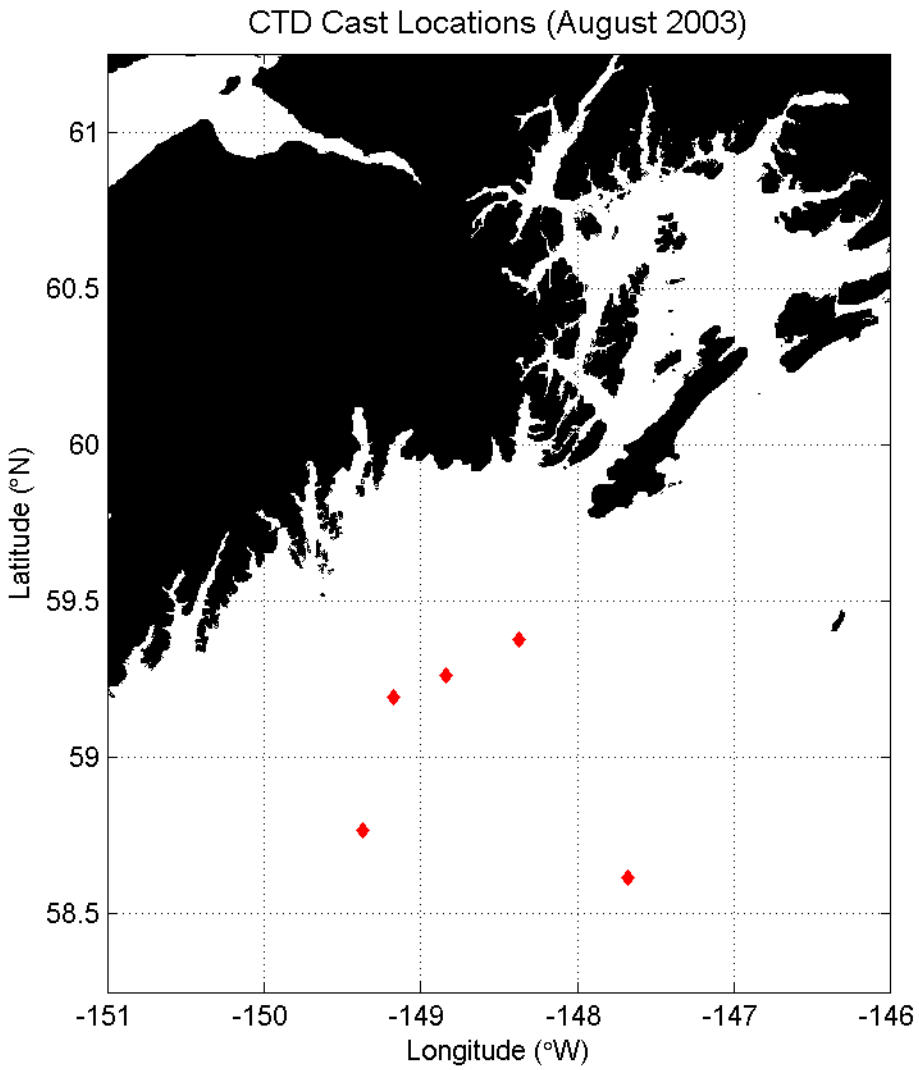


Figure 10. CTD Locations

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/cruise2/prelim_main.htm

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

Further details on specific times and locations for SeaSoar and CTD operations can be found in Tables 1 and 2, respectively, while the entire cruise event log can be found in Appendix I.

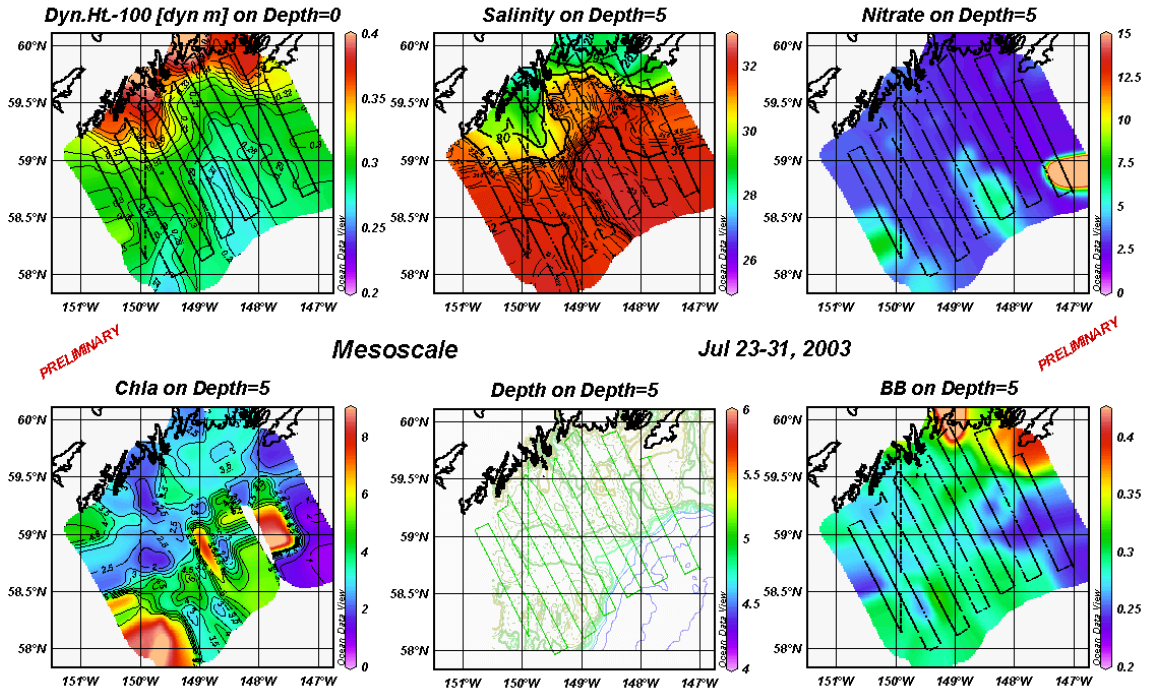


Figure 11. Example of data surface plots.

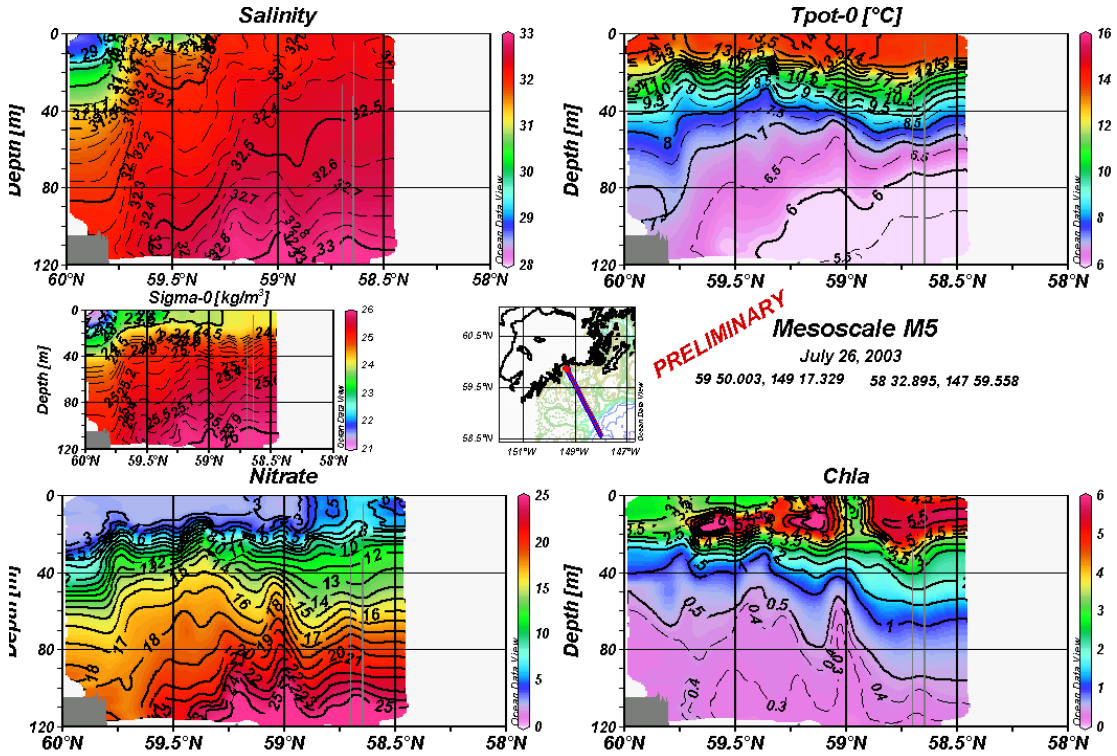


Figure 12. Example of data cross section plots.

Table 1: SeaSoar Deployments and Recoveries

Event #		Tow		Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth	Comments
W0307B20203.01	Deploy SeaSoar	1	P1	7/21/2003	7/21/2003	1915	60° 05.857' N	149° 23.692' W	156	Initial SeaSoar Deployment
W0307B20403.01	SeaSoar	1	FSA-18	7/22/2003	7/23/2003	0114	nd	nd	nd	Flying erratically, hauling in cable for an inspection
W0307B20403.02	SeaSoar	1	nd	7/22/2003	7/23/2003	0136	nd	nd	nd	Remove Twisted Fairing
W0307B20403.03	Recover SeaSoar	1	FSA-30	7/23/2003	7/23/2003	2310	59° 41.933' N	147° 54.982' W	53	
W0307B20503.01	Deploy SeaSoar	2	M1	7/23/2003	7/24/2003	0219	59° 42.594' N	147° 49.420' W	80	
W0307B20503.02	Recover SeaSoar	2	nd	7/24/2003	7/24/2003	1139	58° 42.765' N	147° 00.113' W	nd	Recovery to Clean ISUS
W0307B20503.03	Deploy SeaSoar	3	nd	7/24/2003	7/24/2003	1146	58° 42.885' N	146° 59.702' W	nd	
W0307B20503.04	Recover SeaSoar	3	nd	7/24/2003	7/24/2003	2205	59° 41.184' N	148° 10.716' W	83.5	Recovery to Clean ISUS
W0307B20503.05	Deploy SeaSoar	4	nd	7/24/2003	7/24/2003	2230	59° 39.845' N	148° 09.333' W	76	
W0307B20603.01	Recover SeaSoar	4	nd	7/24/2003	7/25/2003	0436	59° 36.836' N	148° 25.114' W	nd	Recovery to Clean AC-9
W0307B20603.02	Deploy SeaSoar	5	nd	7/24/2003	7/25/2003	0504	59° 37.997' N	148° 26.224' W	nd	
W0307B20703.01	Recover SeaSoar	5	M8	7/25/2003	7/26/2003	0304	59° 56.441' N	149° 05.457' W	nd	Recovery for Routine Cleaning and Calibration
W0307B20703.02	Deploy SeaSoar	6	nd	7/25/2003	7/26/2003	0429	59° 56.260' N	149° 05.705' W	73	
W0307B20803.01	Recover SeaSoar	6	nd	7/26/2003	7/27/2003	0255	59° 25.545' N	149° 10.001' W	228	AC-9 Problems
W0307B20803.02	Deploy SeaSoar	7	nd	7/26/2003	7/27/2003	0352	59° 24.550' N	149° 09.059' W	220	
W0307B21003.01	Recover SeaSoar	7	M21	7/28/2003	7/29/2003	0534	59° 22.769' N	150° 14.717' W	111	Recovery for Routine Cleaning and Calibration
W0307B21003.02	Deploy SeaSoar	8	nd	7/28/2003	7/29/2003	0622	59° 22.521' N	150° 14.534' W	115	
W0307B21203.01	Recover SeaSoar	8	nd	7/30/2003	7/31/2003	0338	59° 39.094' N	149° 54.496' W	nd	Recovery for Routine Cleaning and Calibration
W0307B21203.02	Deploy SeaSoar	9	FSA-1	7/30/2003	7/31/2003	0543	59° 39.478' N	149° 54.605' W	110	
W0307B21303.01	Recover SeaSoar	9	FSA-30	8/1/2003	8/1/2003	2353	59° 34.638' N	148° 32.870' W	95	Recovery for Routine Cleaning and Calibration
W0307B21403.01	Deploy SeaSoar	10	B1	8/1/2003	8/2/2003	0559	59° 21.093' N	148° 28.660' W	95	
W0307B21603.01	Recover SeaSoar	10	B26	8/3/2003	8/4/2003	0617	58° 45.546' N	149° 21.732' W	187	Recovery for Routine Cleaning and Calibration
W0307B21603.03	Deploy SeaSoar	11	FSC-1	8/3/2003	8/4/2003	0754	58° 43.912' N	149° 14.876' W	154	
W0307B21703.01	Recover SeaSoar	11	nd	8/5/2003	8/5/2003	2341	58° 36.664' N	147° 39.873' W	1906	Recovery for Routine Cleaning and Calibration Found Bad Section of Cable; Need to Remove and Reterminate
W0307B21803.02	Deploy SeaSoar	12	EH-1	8/6/2003	8/6/2003	2127	58° 37.238' N	147° 39.937' W	1934	
W0307B21903.01	Recover SeaSoar	12	nd	8/7/2003	8/7/2003	1611	56° 31.527' N	146° 01.561' W	nd	Recovery to Clean CTD Sensors
W0307B21903.02	Deploy SeaSoar	13	nd	8/7/2003	8/7/2003	1639	56° 33.309' N	146° 02.862' W	nd	
W0307B22103.01	Recover SeaSoar	13	nd	8/8/2003	8/9/2003	0004	58° 14.759' N	148° 41.755' W	386	Recovery for Routine Cleaning and Calibration
W0307B22103.02	Deploy SeaSoar	14	T-01	8/8/2003	8/9/2003	0105	58° 14.651' N	148° 41.460' W	399	
W0307B22103.03	Recover SeaSoar	14	nd	8/8/2003	8/9/2003	0405	58° 31.756' N	149° 03.950' W	110	Recovery for Loose Hose on AC-9
W0307B22103.04	Deploy SeaSoar	15	nd	8/8/2003	8/9/2003	0421	58° 30.507' N	149° 02.810' W	112	
W0307B22203.01	Recover SeaSoar	15	A2-07	8/9/2003	8/10/2003	0426	59° 11.970' N	149° 09.217' W	nd	Recovery for CTD Cast, Routine Clean and Cal
W0307B22203.03	Deploy SeaSoar	16	A2-07	8/9/2003	8/10/2003	0510	59° 11.620' N	149° 10.522' W	nd	
W0307B22303.01	Recover SeaSoar	16	A2-17	8/10/2003	8/11/2003	0219	59° 14.963' N	148° 49.830' W	152	Recovery for Routine Cleaning and Calibration
W0307B22303.03	Deploy SeaSoar	17	A2-17	8/10/2003	8/11/2003	0258	59° 15.762' N	148° 50.414' W	152	
W0307B22303.04	Recover SeaSoar	17	nd	8/11/2003	8/11/2003	1612	59° 22.801' N	148° 21.453' W	nd	Recovery for CTD Cast
W0307B22303.06	Deploy SeaSoar	18	nd	8/11/2003	8/11/2003	1654	59° 22.602' N	148° 22.631' W	nd	
W0307B22303.07	Recover SeaSoar	18	nd	8/11/2003	8/11/2003	1958	59° 41.553' N	148° 38.542' W	195	Recovery to Clean AC-9
W0307B22303.08	Deploy SeaSoar	19	nd	8/11/2003	8/11/2003	2018	59° 40.950' N	148° 37.942' W	196	
W0307B22403.01	Recover SeaSoar	19	nd	8/12/2003	8/12/2003	1159	59° 37.777' N	148° 02.484' W	65	Final Recovery

Table 2: CTD Casts

Event #	Description	Cast	Station	Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth	Comments
W0307B21603.02	CTD Cast	1	B26	8/3/2003	8/4/2003	0636	58° 46.117' N	149° 22.173' W	189	
W0307B21803.01	CTD Cast	2	C18	8/5/2003	8/6/2003	0001	58° 36.975' N	147° 40.483' W	1890	
W0307B22203.02	CTD Cast	3	A2-07	8/9/2003	8/10/2003	0440	59° 11.622' N	149° 10.513' W	185	
W0307B22303.02	CTD Cast	4	A2-17	8/10/2003	8/11/2003	0235	59° 15.739' N	148° 50.476' W	52	
W0307B22303.05	CTD Cast	5	A2-39	8/11/2003	8/11/2003	1631	59° 22.597' N	148° 22.589' W	106	

APPENDIX I:

EVENT LOG

Appendix I: Event Log

Event #		Tow/Cast	Station	Local Date	GMT Date	GMT Time	Latitude	Longitude	Water Depth	Comments
W0307B20203.01	Deploy SeaSoar	1	P1	7/21/2003	7/21/2003	1915	60° 05.857' N	149° 23.692' W	156	Initial SeaSoar Deployment
W0307B20403.01	SeaSoar	1	FSA-18	7/22/2003	7/23/2003	0114	nd	nd	nd	Flying erratically, hauling in cable for an inspection
W0307B20403.02	SeaSoar	1	nd	7/22/2003	7/23/2003	0136	nd	nd	nd	Remove Twisted Fairing
W0307B20403.03	Recover SeaSoar	1	FSA-30	7/23/2003	7/23/2003	2310	59° 41.933' N	147° 54.982' W	53	
W0307B20503.01	Deploy SeaSoar	2	M1	7/23/2003	7/24/2003	0219	59° 42.594' N	147° 49.420' W	80	
W0307B20503.02	Recover SeaSoar	2	nd	7/24/2003	7/24/2003	1139	58° 42.765' N	147° 00.113' W	nd	Recovery to Clean ISUS
W0307B20503.03	Deploy SeaSoar	3	nd	7/24/2003	7/24/2003	1146	58° 42.885' N	146° 59.702' W	nd	
W0307B20503.04	Recover SeaSoar	3	nd	7/24/2003	7/24/2003	2205	59° 41.184' N	148° 10.716' W	83.5	Recovery to Clean ISUS
W0307B20503.05	Deploy SeaSoar	4	nd	7/24/2003	7/24/2003	2230	59° 39.845' N	148° 09.333' W	76	
W0307B20603.01	Recover SeaSoar	4	nd	7/24/2003	7/25/2003	0436	59° 36.836' N	148° 25.114' W	nd	Recovery to Clean AC-9
W0307B20603.02	Deploy SeaSoar	5	nd	7/24/2003	7/25/2003	0504	59° 37.997' N	148° 26.224' W	nd	
W0307B20703.01	Recover SeaSoar	5	M8	7/25/2003	7/26/2003	0304	59° 56.441' N	149° 05.457' W	nd	Recovery for Routine Cleaning and Calibration
W0307B20703.02	Deploy SeaSoar	6	nd	7/25/2003	7/26/2003	0429	59° 56.260' N	149° 05.705' W	73	
W0307B20803.01	Recover SeaSoar	6	nd	7/26/2003	7/27/2003	0255	59° 25.545' N	149° 10.001' W	228	AC-9 Problems
W0307B20803.02	Deploy SeaSoar	7	nd	7/26/2003	7/27/2003	0352	59° 24.550' N	149° 09.059' W	220	
W0307B21003.01	Recover SeaSoar	7	M21	7/28/2003	7/29/2003	0534	59° 22.769' N	150° 14.717' W	111	Recovery for Routine Cleaning and Calibration
W0307B21003.02	Deploy SeaSoar	8	nd	7/28/2003	7/29/2003	0622	59° 22.521' N	150° 14.534' W	115	
W0307B21203.01	Recover SeaSoar	8	nd	7/30/2003	7/31/2003	0338	59° 39.094' N	149° 54.496' W	nd	Recovery for Routine Cleaning and Calibration
W0307B21203.02	Deploy SeaSoar	9	FSA-1	7/30/2003	7/31/2003	0543	59° 39.478' N	149° 54.605' W	110	
W0307B21303.01	Recover SeaSoar	9	FSA-30	8/1/2003	8/1/2003	2353	59° 34.638' N	148° 32.870' W	95	Recovery for Routine Cleaning and Calibration
W0307B21403.01	Deploy SeaSoar	10	B1	8/1/2003	8/2/2003	0559	59° 21.093' N	148° 28.660' W	95	
W0307B21603.01	Recover SeaSoar	10	B26	8/3/2003	8/4/2003	0617	58° 45.546' N	149° 21.732' W	187	Recovery for Routine Cleaning and Calibration
W0307B21603.02	CTD Cast	1	B26	8/3/2003	8/4/2003	0636	58° 46.117' N	149° 22.173' W	189	
W0307B21603.03	Deploy SeaSoar	11	FSC-1	8/3/2003	8/4/2003	0754	58° 43.912' N	149° 14.876' W	154	
W0307B21703.01	Recover SeaSoar	11	nd	8/5/2003	8/5/2003	2341	58° 36.664' N	147° 39.873' W	1906	Recovery for Routine Cleaning and Calibration Found Bad Section of Cable; Need to Remove and Reterminate
W0307B21803.01	CTD Cast	2	C18	8/5/2003	8/6/2003	0001	58° 36.975' N	147° 40.483' W	1890	
W0307B21803.02	Deploy SeaSoar	12	EH-1	8/6/2003	8/6/2003	2127	58° 37.238' N	147° 39.937' W	1934	
W0307B21903.01	Recover SeaSoar	12	nd	8/7/2003	8/7/2003	1611	56° 31.527' N	146° 01.561' W	nd	Recovery to Clean CTD Sensors
W0307B21903.02	Deploy SeaSoar	13	nd	8/7/2003	8/7/2003	1639	56° 33.309' N	146° 02.862' W	nd	
W0307B22103.01	Recover SeaSoar	13	nd	8/8/2003	8/9/2003	0004	58° 14.759' N	148° 41.755' W	386	Recovery for Routine Cleaning and Calibration
W0307B22103.02	Deploy SeaSoar	14	T-01	8/8/2003	8/9/2003	0105	58° 14.651' N	148° 41.460' W	399	
W0307B22103.03	Recover SeaSoar	14	nd	8/8/2003	8/9/2003	0405	58° 31.756' N	149° 03.950' W	110	Recovery for Loose Hose on AC-9
W0307B22103.04	Deploy SeaSoar	15	nd	8/8/2003	8/9/2003	0421	58° 30.507' N	149° 02.810' W	112	
W0307B22203.01	Recover SeaSoar	15	A2-07	8/9/2003	8/10/2003	0426	59° 11.970' N	149° 09.217' W	nd	Recovery for CTD Cast, Routine Clean and Cal
W0307B22203.02	CTD Cast	3	A2-07	8/9/2003	8/10/2003	0440	59° 11.622' N	149° 10.513' W	185	
W0307B22203.03	Deploy SeaSoar	16	A2-07	8/9/2003	8/10/2003	0510	59° 11.620' N	149° 10.522' W	nd	
W0307B22303.01	Recover SeaSoar	16	A2-17	8/10/2003	8/11/2003	0219	59° 14.963' N	148° 49.830' W	152	Recovery for Routine Cleaning and Calibration
W0307B22303.02	CTD Cast	4	A2-17	8/10/2003	8/11/2003	0235	59° 15.739' N	148° 50.476' W	52	
W0307B22303.03	Deploy SeaSoar	17	A2-17	8/10/2003	8/11/2003	0258	59° 15.762' N	148° 50.414' W	152	
W0307B22303.04	Recover SeaSoar	17	nd	8/11/2003	8/11/2003	1612	59° 22.801' N	148° 21.453' W	nd	Recovery for CTD Cast
W0307B22303.05	CTD Cast	5	A2-39	8/11/2003	8/11/2003	1631	59° 22.597' N	148° 22.589' W	106	
W0307B22303.06	Deploy SeaSoar	18	nd	8/11/2003	8/11/2003	1654	59° 22.602' N	148° 22.631' W	nd	
W0307B22303.07	Recover SeaSoar	18	nd	8/11/2003	8/11/2003	1958	59° 41.553' N	148° 38.542' W	195	Recovery to Clean AC-9
W0307B22303.08	Deploy SeaSoar	19	nd	8/11/2003	8/11/2003	2018	59° 40.950' N	148° 37.942' W	196	
W0307B22403.01	Recover SeaSoar	19	nd	8/12/2003	8/12/2003	1159	59° 37.777' N	148° 02.484' W	65	Final Recovery