

GLOBEC CRUISE REPORT
CRUISE HX241 – April 3-14 2001

Funding Source: NSF-NOAA (NA-67-RJ-0147)

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Scientific Purpose:

The purpose of the NE Pacific GLOBEC program is to develop a mechanistic understanding of the response of this marine ecosystem to climate variability. Toward this end the GLOBEC cruises on the Gulf of Alaska shelf will determine the physical-chemical structure, primary production and the distribution and abundance of zooplankton, yoy salmon and other planktivorous fish. These interdisciplinary cruises will occur over a seven-year period and throughout the year so that seasonal and interannual depictions of the oceanography of this shelf will be available. Some of the data will be compared with historical data sets whereas other data sets will be a product of the first systematic sampling effort from this shelf.

The April 2001 cruise focused on the distribution of physical properties, nutrients, and chlorophyll, zooplankton, and seabird populations over the shelf along the Seward Line, within western Prince William Sound, and on the shelf south of Hinchinbrook Entrance. The purpose was to characterize the along-shore and cross-shore variability in the physical and chemical properties and the biological components of the northern Gulf of Alaska shelf.

Cruise Objectives

Determine thermohaline, velocity, and nutrient structure of the Gulf of Alaska shelf, emphasizing Seward Line, C. Fairfield Lin, Prince William Sound stations, offshore PWS stations and the Cape Cleare Southeast Line (Table 1). Other lines as time permits

Determine primary production and phytoplankton biomass distribution.

Determine the distribution and abundance of zooplankton.

Determine the distribution and abundance of seabirds and marine mammals.

Determine copepod and euphausiid rates of growth and egg production.

SAMPLING

DAYTIME ACTIVITIES

Occupied the various hydrographic transects and collect vertical CTD-chlorophyll-PAR profiles. Station Transect priorities are (in order): Seward, C. Fairfield, W. PWS, Hinchinbrook Entrance. AHC Line; PWSSW Line, and Cape Cleare Line. Collected ADCP, sea surface salinity, temperature (SST) and fluorescence (SSF) using seacrest sensors, collected discrete bottle samples at these stations for nutrients and chlorophyll pigments. Chlorophyll Size Fractionation was done at the whole numbered Seward Line stations and at every other C. Fairfield Line station.

Measured Primary Productivity at Stations GAK 1, 4, 9, and 13, within Prince William Sound and on the Cape Cleare Line.

Observed and documented marine mammal and seabird distributions from the bridge.

2 CalVet Net casts were done (1 before and 1 after the CTD cast) along the Seward Line, at selected PWS stations and along the Cape Cleare Line. The first was a large mesh net and the second was with a fine mesh net.

At 2 Seward Line stations and one PWS station Hopcroft performed 7 casts with the 10-liter Niskins/Rosette to collect water (from ~ 20m) for zooplankton incubations.

One deep MOCNESS tow (to 350 or 500 m) was done near the end of the Seward Line and in PWS.

NIGHTTIME ACTIVITIES

Hydroacoustic samples and MOCNESS discrete samples were done along the Seward Line, in PWS, at Hinchinbrook Entrance and Cape Cleare stations (Table 1).

Chronology:

The cruise departed Seward, Alaska at 1800 (1000 ADT) 3 April 2001 and proceeded to test gear within Resurrection Bay before beginning sampling at GAK 1. Work out the Seward line followed with CTD sampling, CALVET net tows

and HTI and MOCNESS deployments on the inner Seward line. On 4 April we returned to Seward briefly for MOCNESS repairs and then returned to working the inner and middle segments of the Seward line. Casts for primary production measurements were taken at GAK 1, 4, 9 and 13. While waiting for deployment of the HTI and MOCNESS gear, hourly repeat CTD casts were taken at GAK 6 for 6 hours to assess temporal variability of the hydrography at that location for use by the GLOBEC process studies beginning 17 April. The Seward line work was completed on 8 April. The CTD and ADCP transect of the Cape Fairfield line was done on 8 April. The sampling at Hinchinbrook Entrance (CTD, HTI, MOCNESS and CALVET) was carried out on 9 April and the Along Hinchinbrook Entrance line, out to AHC 9 was done while in transit to the Cape Cleare Southeast line. The HTI and MOCNESS work on the CCSE line began in the middle of that line and the CTD sampling and CALVET worked the inner (CCSE1-4) section before the line was abandoned due to high seas and winds and weather forecasts calling for storms and hurricane force winds. We retreated to Prince William Sound on 10 April where the sampling continued on those stations within the sound. That sampling was completed on 12 April and we returned to our work on CCSE beginning at CCSE 7 and the HTI and MOCNESS work on the outer portion of the line before we completed the CTD sampling plus the HTI and MOCNESS work on the inner part of the line on 14 April. With the exception of one MOCNESS tow on the CCSE line, all stations were occupied at least once prior to our return to Seward on 14 April at 1700 (0900ADT).

Results

Hydrography (Royer)

The sampling at GAK 1 revealed that while the water temperature was slightly (but not significantly) above normal, the salinity was more than two standard deviations below normal in the layer from 20 to 150 m and 2 standard deviations above normal at 200 and 250 m. The temperature was more than one s.d. above normal at the 200 and 250 m depths. In general, there appeared to be an intrusion of relatively high salinity water along the bottom from offshore as indicated both by the high salinity and the ADCP measurements. Generally, the surface layer velocities were offshore. This pattern was evident in the vicinity of Hinchinbrook Entrance and Canyon, too. The CCSE line flow was confused with considerable eastward flow seen in the ADCP. Mixed layer depths varied from 20 to more than 100 m. The Seward Line had evidence of a flow reversal or eddy at about GAK 4. Fluorescence was highest at the nearshore Cape Fairfield stations and along the Montague Strait and Knight Island Passage lines, that is, Prince William Sound seems to be a strong source of phytoplankton. The salinity inversion observed in the water column on the Seward Line was believed to be the first ever observed in this region.

Stable isotope samples (Kline)

Zooplankton samples were taken for stable carbon and nitrogen isotope analysis from the contents of net #1 of each MOCNESS tow made during HX241. Because net #1 failed to collect any zooplankton at station GAK10, no stable isotope samples were collected there. Sampling for stable isotope analysis consisted of sorting zooplankton to species and freezing them in vials.

Microzooplankton (Foy)

Samples were taken to determine microzooplankton abundance and biomass, either as discrete vertical samples or as integrated samples. Vertical samples consisted of sampling from depths 0m, 10 or 20m, 30m, 50m, & 100m and were taken at GAK 2,4,6,8,10,11,13 and PWS2. Integrated samples were taken by combining water for an upper layer sample (0m, 10m, 20m, 30m, 40m & 50m) and a lower layer sample (75m & 100m) and were taken at GAK 1,3,5,7,9,12, CF 3,9, HE 2,7,10, CCSE 2,5,8 and KIP 2. Above samples were filtered and prepared for epifluorescent microscopy as well as preserved in acid Lugols.

Distribution of zooplankton and micronekton (Coyle)

MOCNESS and CalVet samples were taken at the thirteen primary stations along the Seward Line, at five stations in Prince William Sound, at four stations in Hinchinbrook Entrance and at five stations along the Cape Clear Southeast Line. Acoustic data were collected during each MOCNESS tow and between stations along the Seward Line and the Cape Clear Line. Supplemental deep MOCNESS tows were taken to 500-600 m at the outer end of the Seward Line (GAK13) and in Prince William Sound (PWS2).

A distinct scattering layer at 70 to 20 m depths was observed along the Seward and Cape Clear Lines for most of their length. Occasionally two layers were observed. Samples from the deeper layer (60-40 m) contained pandalid shrimp. Samples from the shallow layer contained euphausiids. Scattering at 43 kHz, indicative of fish, was elevated near the shelf break along both lines, but was particularly intense on the Cape Clear Line. *Neocalanus cristatus* was common in most of the tow.

Zooplankton Growth (Hopcroft)

Full community artificial cohorts were set at GAK1, GAK13 and PWS2 to estimate copepod growth rates. Specific stages of *Neocalanus* were picked and incubated at GAK1, GAK4, GAK9 and GAK13 to determine molt rates. Egg production experiments were set for *Pseudocalanus* at GAK1, GAK4 and PWS2, for *Gaetanus* at PWS2, and for *Metridia pacifica* and *Metridia okhotensis* at MS2. Molt rate experiments were set for euphausiids at GAK13, CCSE6, and PWS1. Overall a successful cruise.

Bird Sampling:

Seabird identification and abundance were recorded on the Seward, Cape Fairfield, Hinchinbrook Entrance, Hinchinbrook Canyon and Cape Clear Lines, and in Knight Island Passage. Seabirds were identified to species and age when

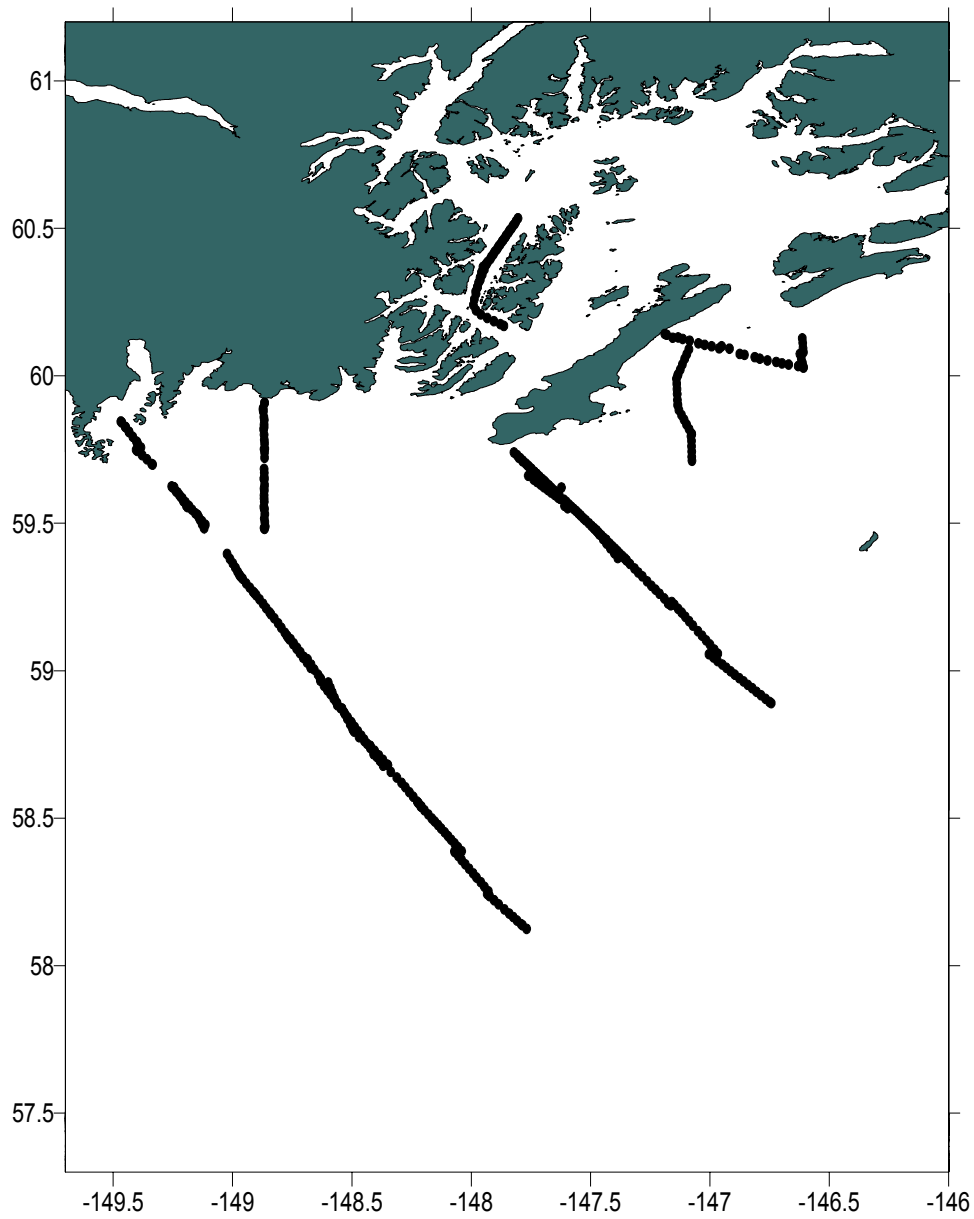
possible, and flock occurrences were recorded as single or multiple species flock. Counts were recorded in 5 min. bins and the locations and time was recorded for each sighting. Sections of the Seward and Cape Clear lines were surveyed twice in order to obtain better abundance estimates (Fig. 1).

Table 1:

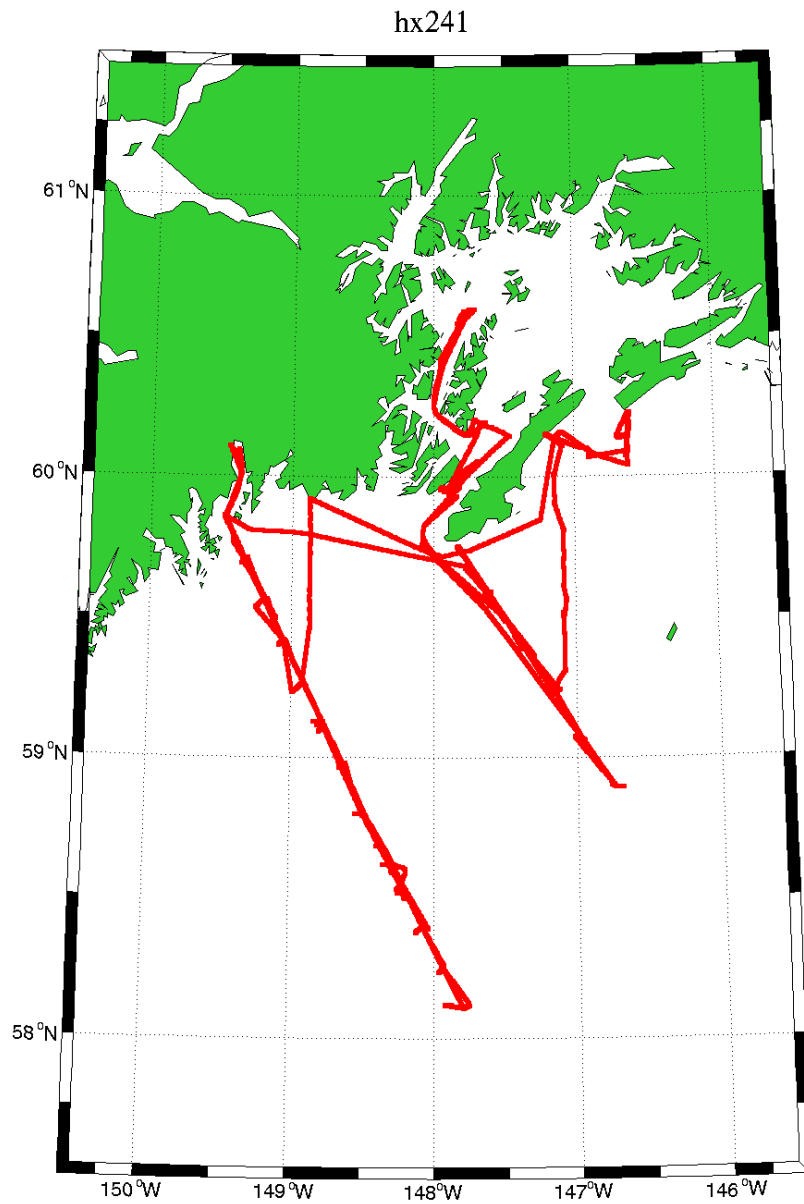
NEP GLOBEC LTOP STANDARD STATIONS				
Latitude N		Longitude W		Station Name
Degrees	Minutes	Degrees	Minutes	
Resurrection Bay Station				
60	1.5	149	21.5	RES2.5
Seward Line				
59	50.7	149	28	GAK1
59	46	149	23.8	GAK1I
59	41.5	149	19.6	GAK2
59	37.6	149	15.5	GAK2I
59	33.2	149	11.3	GAK3
59	28.9	149	7.1	GAK3I
59	24.5	149	2.9	GAK4
59	20.1	148	58.7	GAK4I
59	15.7	148	54.5	GAK5
59	11.4	148	50.3	GAK5I
59	7	148	46.2	GAK6
59	2.7	148	42	GAK6I
58	58.3	148	37.8	GAK7
58	52.9	148	33.6	GAK7I
58	47.5	148	29.4	GAK8
58	44.6	148	25.2	GAK8I
58	40.8	148	21	GAK9
58	36.7	148	16.7	GAK9I
58	32.5	148	12.7	GAK10
58	23.3	148	4.3	GAK11
58	14.6	147	56	GAK12
58	5.9	147	47.6	GAK13
Cape Fairfield Line				
59	54.5	148	52	CF1
59	53	148	52	CF2
59	51	148	52	CF3
59	49	148	52	CF4
59	47	148	52	CF5
59	45	148	52	CF6
59	43	148	52	CF7
59	41	148	52	CF8
59	39	148	52	CF9

59	37	148	52	CF10
59	35	148	52	CF11
59	33	148	52	CF12
59	31	148	52	CF13
59	29	148	52	CF14
59	27	148	52	CF15
Prince William Sound Stations				
60	22.78	147	56.17	PWS1
60	32.1	147	48.2	PWS2
Knight Island Passage Station				
60	16.7	147	59.2	KIP2
Hogan Bay Line				
60	11.57	147	42	HB1
60	10.754	147	38.5	HB2
60	9.855	147	34.508	HB3
60	8.807	147	30.04	HB4
Montague Strait Line				
59	57.465	147	56.225	MS0i
59	57.257	147	55.602	MS1
59	56.982	147	54.761	MS1i
59	56.6	147	53.7	MS2
59	56.282	147	52.633	MS2i
59	55.9	147	51.4	MS3
59	55.56	147	50.611	MS3i
59	55.2	147	49.7	MS4
Hinchinbrook Entrance Line				
60	13	146	36.5	HE1
60	10.8	146	36.5	HE2
60	7.8	146	36.5	HE3
60	4.8	146	36.5	HE4
60	3.126	146	44.19	HE6.5
60	5.6	146	57.7	HE8
60	6.6	147	3	HE9
60	7.8	147	8	HE10
60	8.6	147	11.5	HE11
Cape Cleare Southeast				
59	44.5	147	49	CCSE1
59	40	147	43.6	CCSE2
59	34.25	147	36.5	CCSE3
59	28.5	147	28.5	CCSE4
59	22.5	147	21	CCSE5
59	14	147	9.5	CCSE6
59	3.5	146	58	CCSE7
58	53	146	44	CCSE8

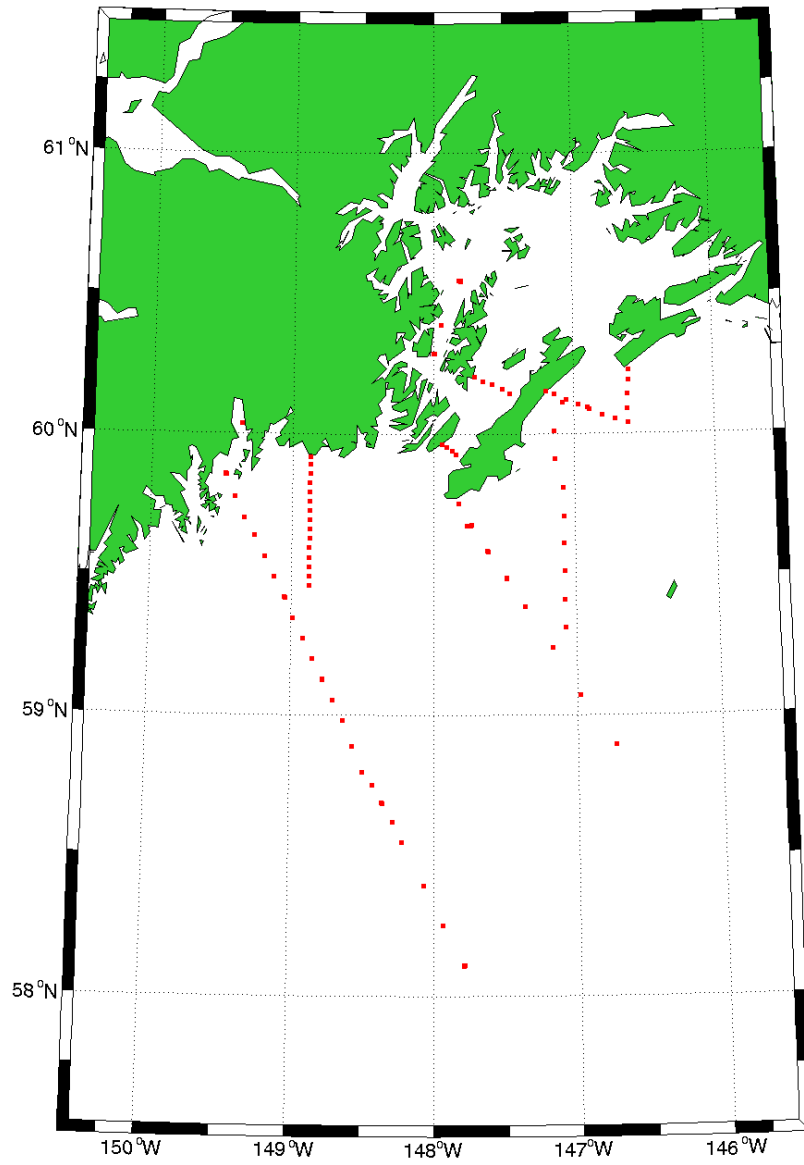
Figure 1: Transects surveyed to estimate seabird abundances



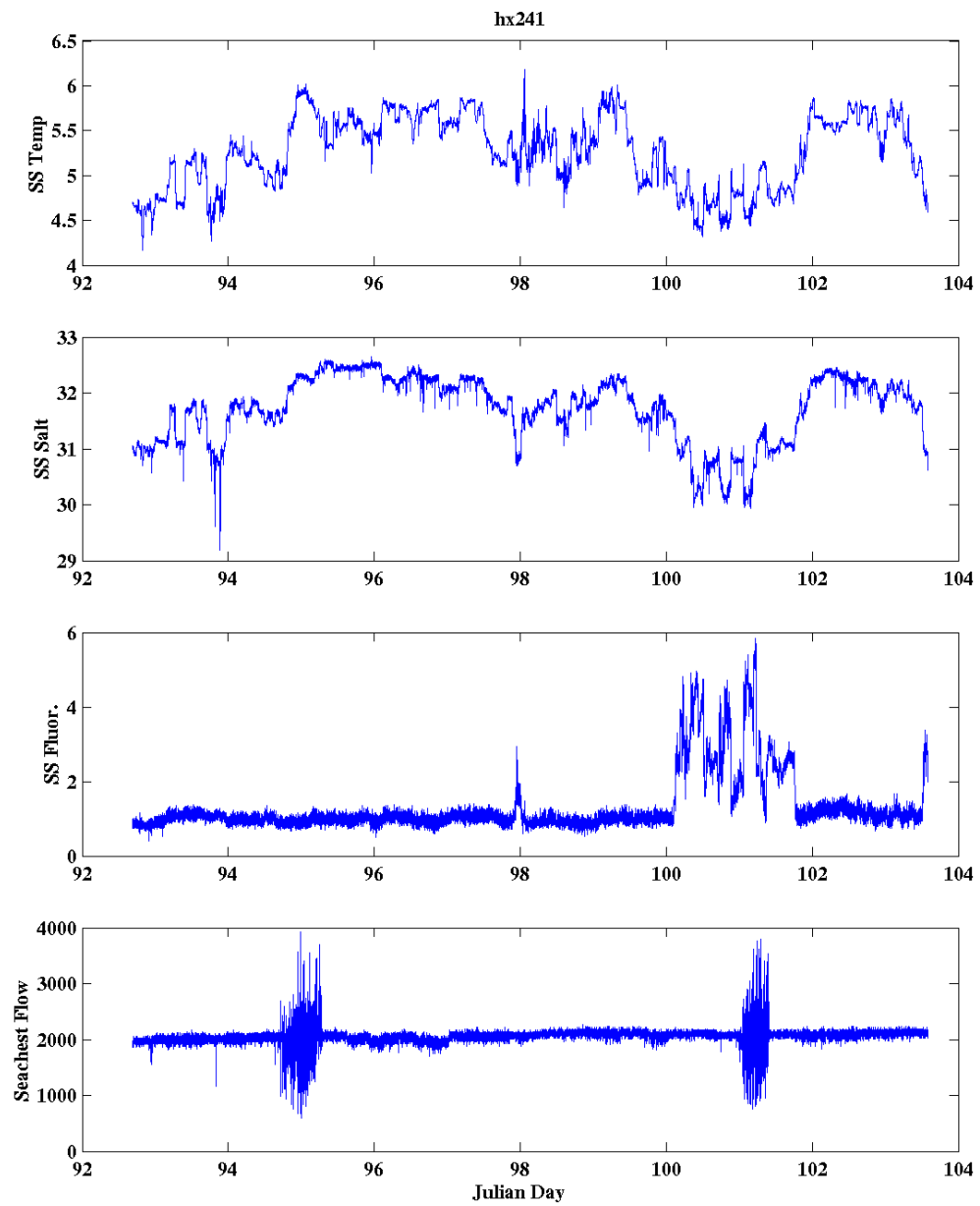
HX241 cruise track:



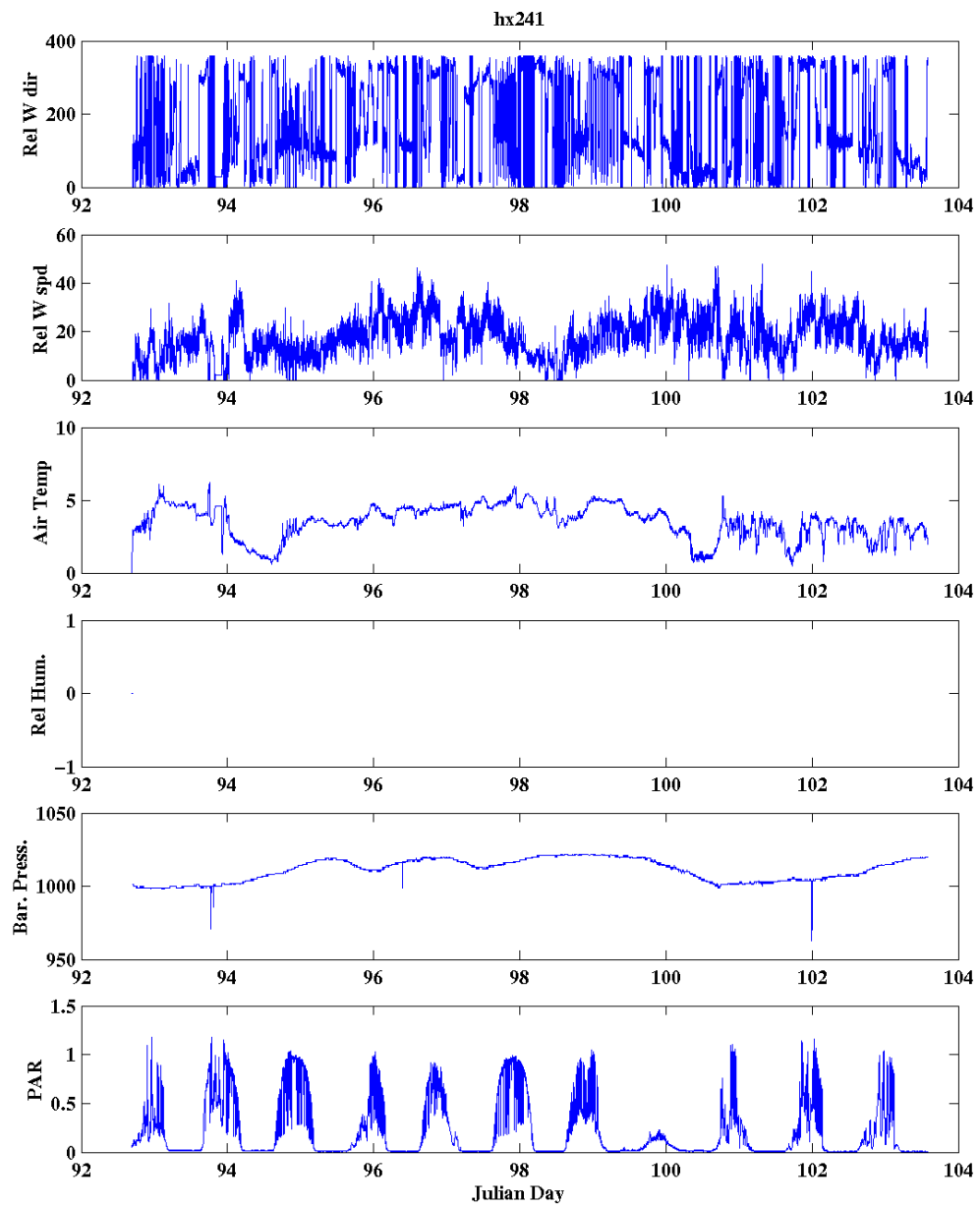
hx241Station Locations



HX241 Sea Surface data collected underway (raw).



HX241 Sea Surface weather data collected underway
(raw).

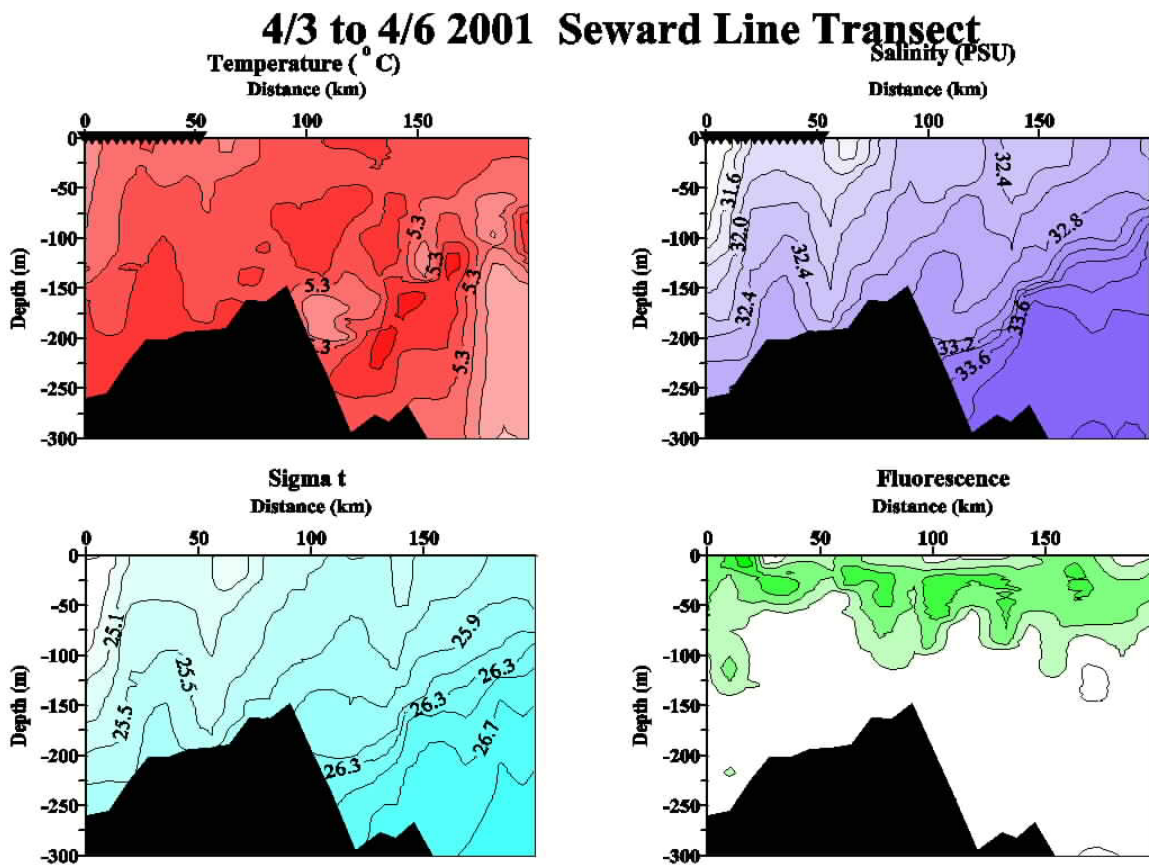


Event Log

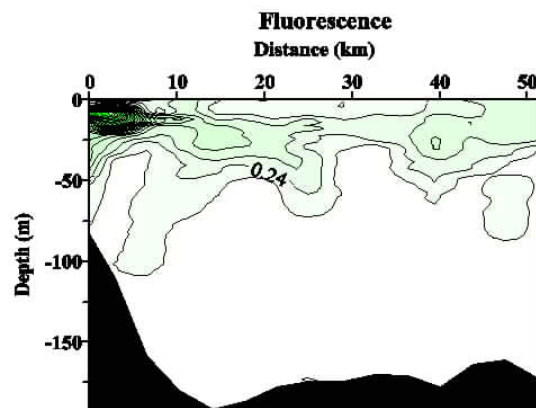
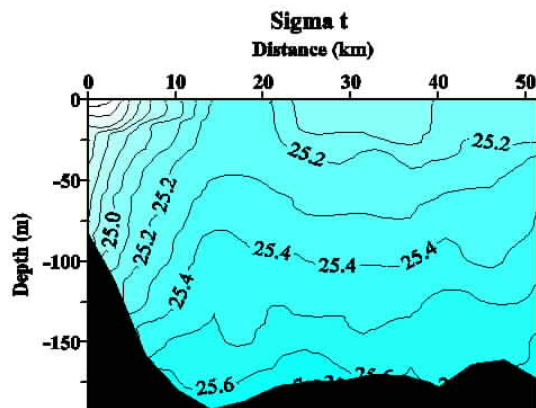
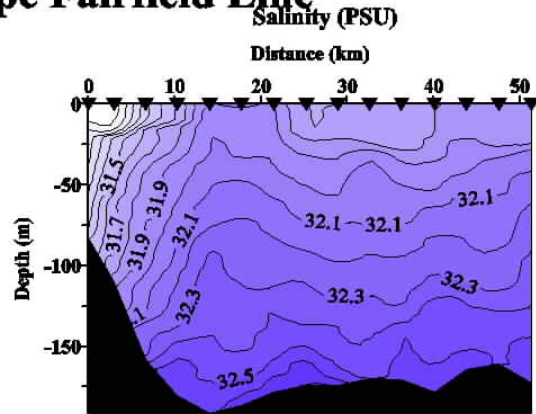
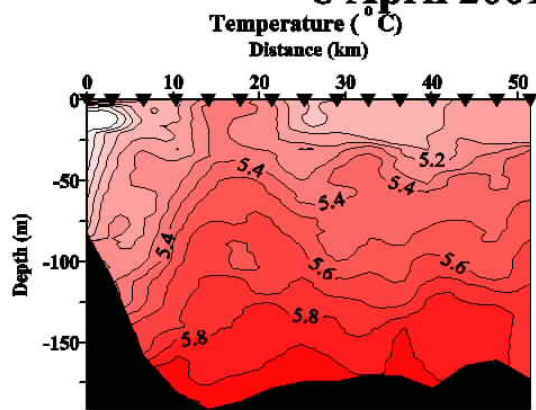
The attached event log records the times of deployments of instruments. For operations that involve towing, the recovery times and positions are recorded. Separate entries and event numbers are used for these operations. For CTD operations, the consecutive CTD cast number is given along with the start time and position (automatically from GPS). The depth given is the estimated bottom depth in meters from the PDR.

Section Plots

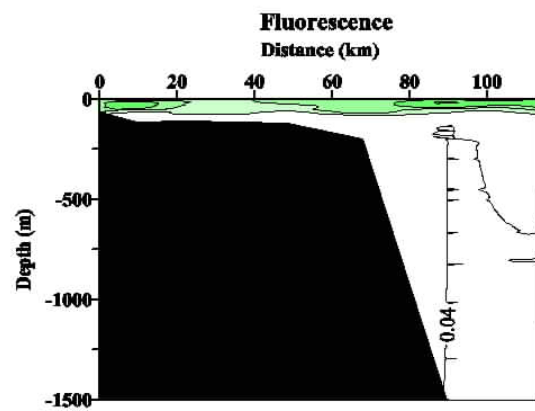
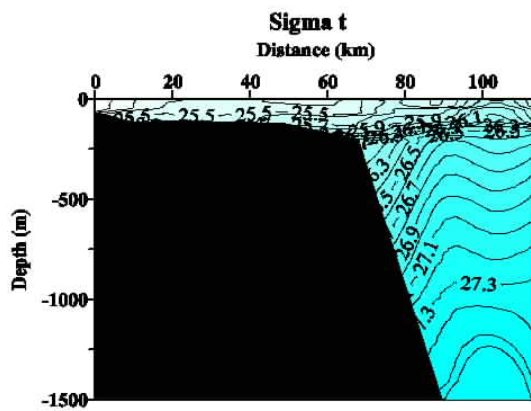
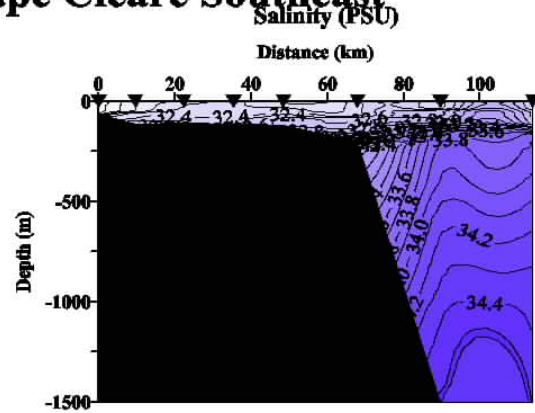
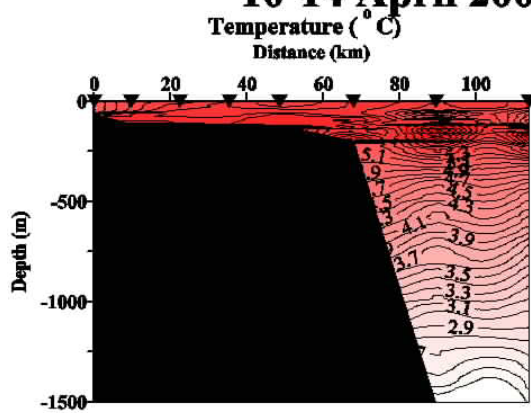
Cross sections of the hydrographic parameters and fluorescence are attached. In addition a time series of hydrography at GAK 6 is displayed.



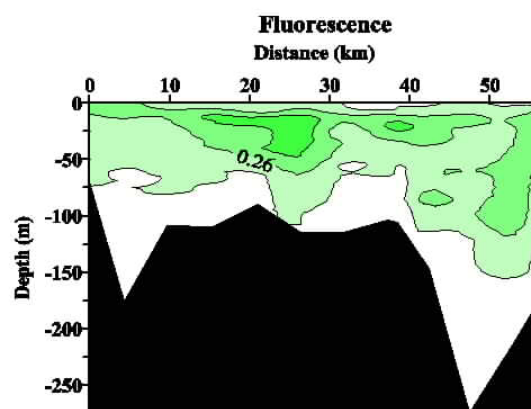
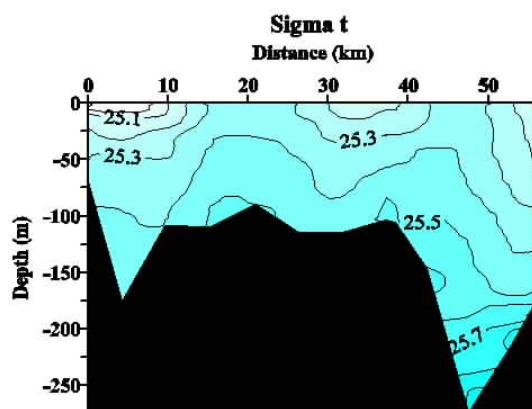
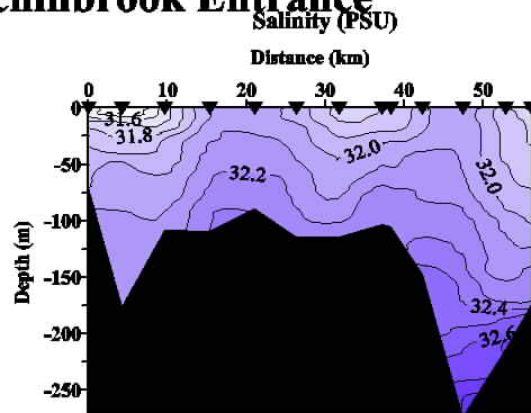
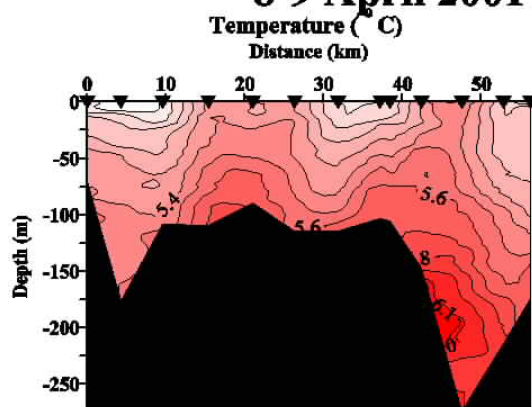
8 April 2001 Cape Fairfield Line



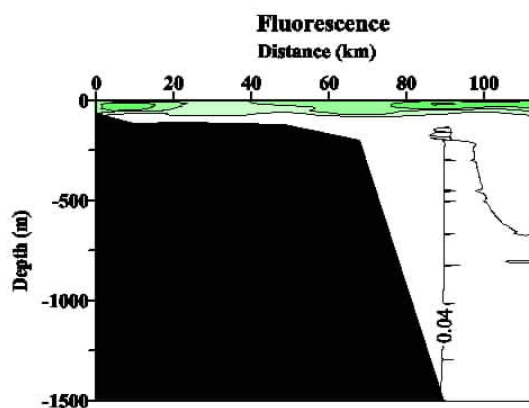
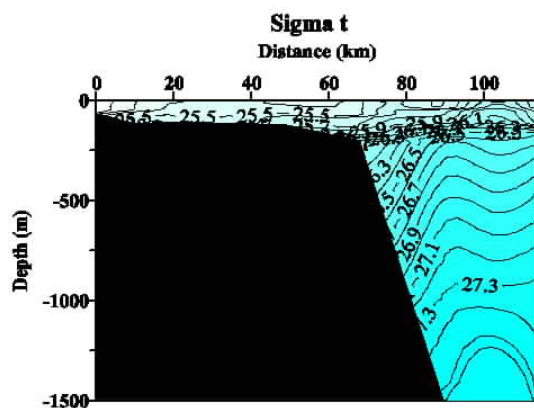
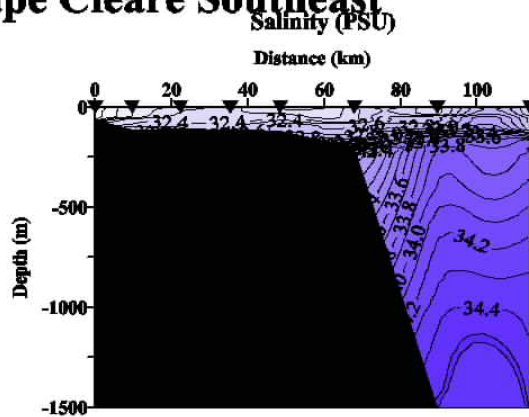
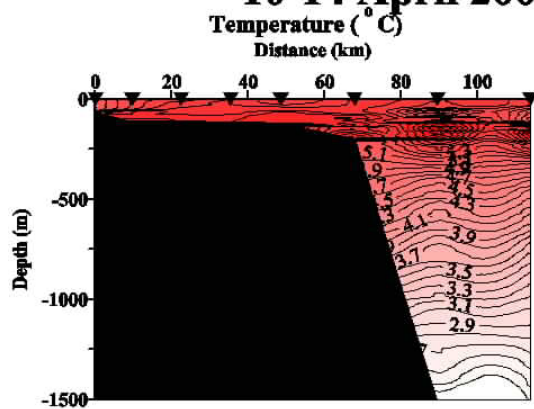
10-14 April 2001 Cape Cleare Southeast



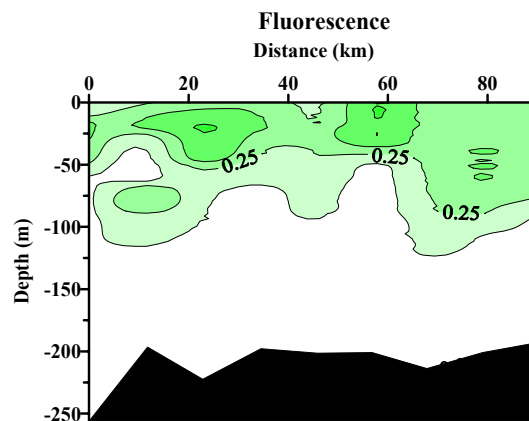
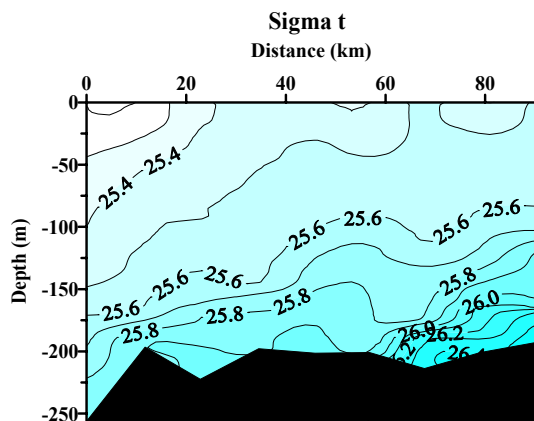
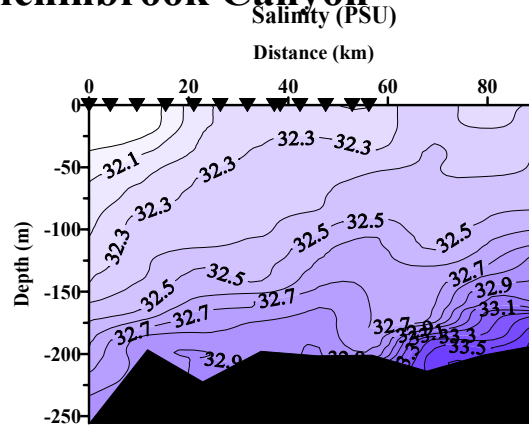
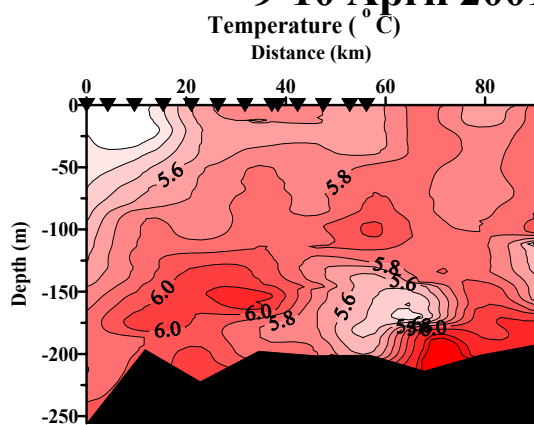
8-9 April 2001 Hinchinbrook Entrance



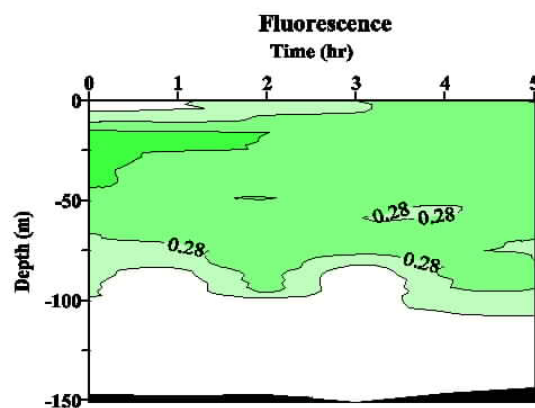
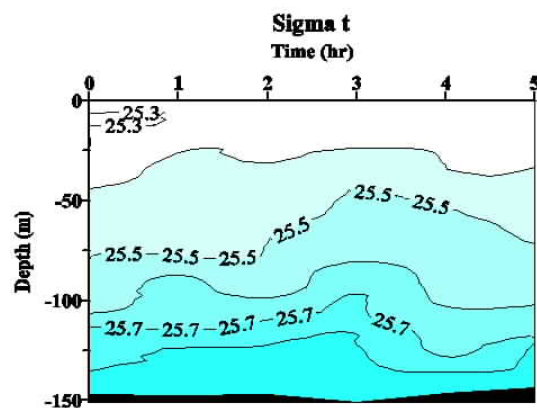
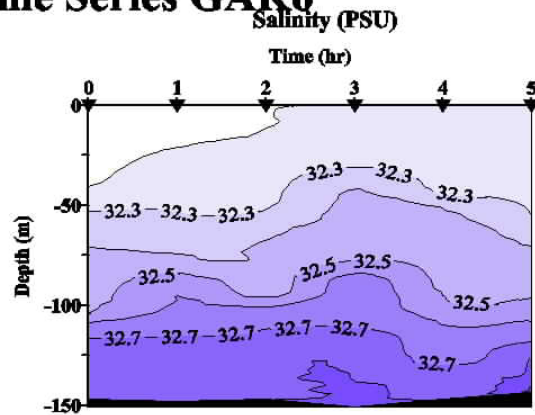
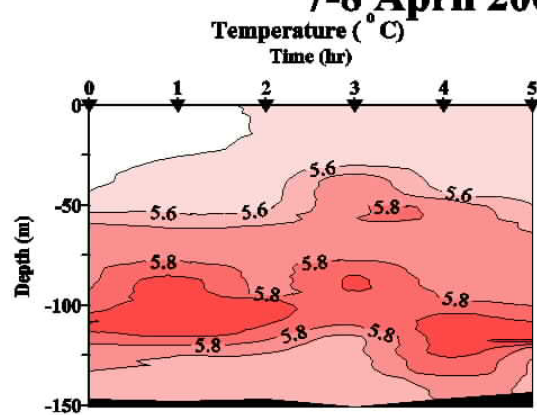
10-14 April 2001 Cape Cleare Southeast



9-10 April 2001 Hinchinbrook Canyon



7-8 April 2001 Time Series GAK6



EVENT LOG:

Unless otherwise noted, CTDs were taken for T. Weingartner and T. Royer.

Water samples taken for T. Whitledge and D. Stockwell Nutrient and Chlorophyll analysis.

CalVet samples were taken for K. Coyle and R. Hopcroft.

HTI and MOCNESS samples were taken for K. Coyle.

Ring Net samples were taken for R. Hopcroft and K. Coyle.

EVENT Number	Description	Station	GMT	Latitude	Longitude	Bottom depth	Comments/Investigator
HX24109301.001	CTD1	RES2.5	4/3/2001 18:51	60.0260	-149.3579	300	
HX24109301.002	End CTD	RES2.5	4/3/2001 19:02	60.0276	-149.3571	300	
HX24109301.003	Deploy HTI	RES2.5	4/3/2001 19:21	60.0290	-149.3590	292	
	Recover						
HX24109301.004	HTI	RES2.5	4/3/2001 19:40	60.0035	-149.3160	292	
	Deploy						
HX24109301.005	MOCNESS		4/3/2001 19:56	60.0023	-149.3597	297	Test
	Recover						
HX24109301.006	MOCNESS		4/3/2001 20:00	60.0042	-149.3600	297	
	Deploy						
HX24109301.007	MOCNESS		4/3/2001 20:03	60.0073	-149.3603		Test
	Recover						
HX24109301.008	MOCNESS		4/3/2001 20:04	60.0100	-149.3600		
	Deploy						
HX24109301.009	MOCNESS		4/3/2001 20:06	60.0108	-149.3610		Test
	Recover						
HX24109301.010	MOCNESS		4/3/2001 20:21	60.0182	-149.3625		
	Deploy						
HX24109301.011	MOCNESS		4/3/2001 22:10	60.0790	-149.3793	174	Test
	Recover						
HX24109301.012	MOCNESS		4/3/2001 22:24	60.0708	-149.3758	174	
	CALVET						
HX24109401.001	Net	GAK1	NA	NA	NA	270	
HX24109401.002	CTD2	GAK1	4/4/2001 0:24	59.8469	-149.4696	270	
HX24109401.003	End CTD	GAK1	4/4/2001 0:33	59.8474	-149.4706	270	
	CALVET						
HX24109401.004	Net	GAK1	4/4/2001 0:03	59.8447	-149.4680	270	
HX24109401.005	CTD3	GAK1	4/4/2001 1:09	59.8450	-149.4646	270	Hopcroft #1
HX24109401.006	End CTD	GAK1	4/4/2001 1:11	59.8447	-149.4648	270	
HX24109401.007	CTD4	GAK1	4/4/2001 1:23	59.8446	-149.4658	270	Hopcroft #2
HX24109401.008	End CTD	GAK1	4/4/2001 1:24	59.8447	-149.4660	270	
HX24109401.009	CTD5	GAK1	4/4/2001 1:36	59.8456	-149.4675	270	Hopcroft #3
HX24109401.010	End CTD	GAK1	4/4/2001 1:37	59.8457	-149.4676	270	
HX24109401.011	CTD6	GAK1	4/4/2001 1:49	59.8463	-149.4683	270	Hopcroft #4
HX24109401.012	End CTD	GAK1	4/4/2001 1:50	59.8465	-149.4685	270	
HX24109401.013	CTD7	GAK1	4/4/2001 2:03	59.8458	-149.4673	270	Hopcroft #5
HX24109401.014	End CTD	GAK1	4/4/2001 2:04	59.8460	-149.4676	270	
HX24109401.015	CTD8	GAK1	4/4/2001 2:15	59.8454	-149.4661	270	Hopcroft #6

HX24109401.016	End CTD	GAK1	4/4/2001 2:16	59.8456	-149.4663	270
HX24109401.017	CTD9	GAK1	4/4/2001 2:28	59.8450	-149.4675	270 Hopcroft #7
HX24109401.018	End CTD	GAK1	4/4/2001 2:29	59.8452	-149.4677	270
HX24109401.019	Ring Net	GAK1	4/4/2001 2:50	59.8450	-149.4663	
HX24109401.020	Ring Net	GAK1	4/4/2001 3:08	59.8470	-149.4683	
HX24109401.021	CTD10	GAK1I	4/4/2001 3:57	59.7660	-149.3984	270
HX24109401.022	End CTD	GAK1I	4/4/2001 4:07	59.7656	-149.4031	270
	CALVET					
HX24109401.023	Net	GAK2	4/4/2001 5:11	59.6905	-149.3292	229
	CALVET					
HX24109401.024	Net	GAK2	4/4/2001 5:29	59.6913	-149.3298	230
HX24109401.025	CTD11	GAK2	4/4/2001 5:50	59.6921	-149.3312	231
HX24109401.026	End CTD	GAK2	4/4/2001 5:57	59.6921	-149.3323	231
HX24109401.027	Deploy HTI	GAK1	4/4/2001 7:19	59.8440	-149.4682	273
	Deploy					
HX24109401.028	MOCNESS	GAK1	4/4/2001 7:24	59.8407	-149.4663	272
	Recover					
HX24109401.029	MOCNESS	GAK1	4/4/2001 8:06	59.8220	-149.4540	279
	Tow HTI					
HX24109401.030	GAK1-2		4/4/2001 8:36	59.8447	-149.4675	279 Tow HTI GAK1->GAK2
	Deploy					
HX24109401.031	MOCNESS	GAK2	4/4/2001 10:29	59.6888	-149.3273	227
	Recover					
HX24109401.032	MOCNESS	GAK2	4/4/2001 10:50	59.6770	-149.3247	226 Flow meter lost
	Tow HTI					
HX24109401.033	GAK2-3-4		4/4/2001 11:11	59.6897	-149.3240	Tow HTI GAK2->3->4
	Recover					
HX24109401.034	HTI	GAK4	4/4/2001 14:30	59.4060	-149.4073	202
HX24109401.035	Ring Net	GAK1	4/4/2001 17:38	59.8453	-149.3343	272
						Primary Production; Rt Seward for MOC repairs
HX24109401.036	CTD12	GAK1	4/4/2001 17:52	59.8459	-149.4684	270 after CTD12
HX24109401.037	End CTD	GAK1	4/4/2001 17:54	59.8459	-149.4685	270
	Bird Obs. From					MOC repairs complete; resume cruise w/ bird obs
HX24109401.038	GAK1-2i		4/4/2001 22:44	59.8422	-149.4650	GAK1->GAK2I
	CALVET					
HX24109401.039	Net	GAK2	4/4/2001 23:43	59.6912	-149.3297	227
						CTD Profile # 13 for
HX24109501.001	CTD13	GAK2	4/5/2001 0:00	59.6893	-149.3287	226 CALVET
HX24109501.002	End CTD	GAK2	4/5/2001 0:08	59.6869	-149.3287	226
	CALVET					
HX24109501.003	Net	GAK2	4/5/2001 0:16	59.6852	-149.3307	227
HX24109501.004	CTD14	GAK2I	4/5/2001 0:54	59.6271	-149.2549	212
HX24109501.005	End CTD	GAK2I	4/5/2001 1:02	59.6275	-149.2551	212
	CALVET					
HX24109501.006	Net	GAK3	4/5/2001 1:58	59.5528	-149.1848	212
HX24109501.007	CTD15	GAK3	4/5/2001 2:11	59.5526	-149.1821	211
HX24109501.008	End CTD	GAK3	4/5/2001 2:19	59.5536	-149.1791	211

CALVET						
HX24109501.009	Net	GAK3	4/5/2001 2:34	59.5553	-149.1710	212
HX24109501.010	CTD16	GAK3I	4/5/2001 3:20	59.4819	-149.1160	203
HX24109501.011	End CTD	GAK3I	4/5/2001 3:28	59.4833	-149.1110	203
HX24109501.012	Deploy HTI	GAK2	4/5/2001 5:38	59.6928	-149.3193	227
Deploy						
HX24109501.013	MOCNESS	GAK2	4/5/2001 5:48	59.6885	-149.3318	230
Recover						
HX24109501.014	MOCNESS	GAK2	4/5/2001 6:00	59.6828	-149.3445	233 Net malfunction
Deploy						
HX24109501.015	MOCNESS	GAK2	4/5/2001 6:10	59.6915	-149.3225	227
Recover						
HX24109501.016	MOCNESS	GAK2	4/5/2001 6:50	59.6915	-149.3225	227
Recover						
HX24109501.017	HTI	GAK2	4/5/2001 7:11	59.6985	-149.3095	221
HX24109501.018	Deploy HTI	GAK3	4/5/2001 8:15	59.5510	-149.1927	219
Deploy						
HX24109501.019	MOCNESS	GAK3	4/5/2001 8:21	59.5490	-149.1972	219
Recover						
HX24109501.020	MOCNESS	GAK3	4/5/2001 8:59	59.5352	-149.2233	232
Recover						
HX24109501.021	HTI	GAK3	4/5/2001 9:21	59.5257	-149.2425	213
HX24109501.022	Deploy HTI	GAK4	4/5/2001 10:25	59.4060	-149.0525	202
Deploy						
HX24109501.023	MOCNESS	GAK4	4/5/2001 10:31	59.4038	-149.0573	202
Recover						
HX24109501.024	MOCNESS	GAK4	4/5/2001 11:07	59.3923	-149.0797	206
Tow HTI						
HX24109501.025	GAK4-5		4/5/2001 11:31	59.4083	-149.0460	202 Tow HTI GAK4->5
Deploy						
HX24109501.026	MOCNESS	GAK5	4/5/2001 13:08	59.2587	-148.9103	167
Recover						
HX24109501.027	MOCNESS	GAK5	4/5/2001 14:01	59.2335	-148.9557	165
CALVET						
HX24109501.028	Net	GAK4	4/5/2001 15:39	59.4088	-149.0472	201
HX24109501.029	CTD17	GAK4	4/5/2001 15:51	59.4092	-149.0442	200
HX24109501.030	End CTD	GAK4	4/5/2001 15:58	59.4086	-149.0427	200
CALVET						
HX24109501.031	Net	GAK4	4/5/2001 16:12	59.4082	-149.0412	200
Primary Production CTD						
HX24109501.032	CTD18	GAK4	4/5/2001 16:29	59.4083	-149.0380	199 cast
HX24109501.033	End CTD	GAK4	4/5/2001 16:32	59.4081	-149.0369	199
HX24109501.034	Ring Net	GAK4	4/5/2001 16:41	59.4078	-149.0350	200
HX24109501.035	CTD19	GAK4I	4/5/2001 17:21	59.3333	-148.9788	197
HX24109501.036	End CTD	GAK4I	4/5/2001 17:28	59.3324	-148.9777	197
CALVET						
HX24109501.037	Net	GAK5	4/5/2001 18:12	59.2627	-148.9072	169
HX24109501.038	CTD20	GAK5	4/5/2001 18:24	59.2622	-148.9067	170
HX24109501.039	End CTD	GAK5	4/5/2001 18:30	59.2618	-148.9060	170

CALVET						
HX24109501.040	Net	GAK5	4/5/2001 19:06	59.2618	-148.9073	169
HX24109501.041	CTD21	GAK5I	4/5/2001 19:46	59.1896	-148.8391	170
HX24109501.042	End CTD	GAK5I	4/5/2001 19:52	59.1897	-148.8380	170
CALVET						
HX24109501.043	Net	GAK6	4/5/2001 20:38	59.1168	-148.7682	158
HX24109501.044	CTD22	GAK6	4/5/2001 20:50	59.1159	-148.7676	153
HX24109501.045	End CTD	GAK6	4/5/2001 20:56	59.1159	-148.7662	153
CALVET						
HX24109501.046	Net	GAK6	4/5/2001 21:06	59.1155	-148.7647	158
HX24109501.047	CTD23	GAK6I	4/5/2001 21:46	59.0444	-148.6980	192
HX24109501.048	End CTD	GAK6I	4/5/2001 21:53	59.0444	-148.6956	192
CALVET						
HX24109501.049	Net	GAK7	NA	NA	NA	244
HX24109501.050	CTD24	GAK7	4/5/2001 22:52	58.9708	-148.6238	242
HX24109501.051	End CTD	GAK7	4/5/2001 23:00	58.9703	-148.6192	242
CALVET						
HX24109501.052	Net	GAK7	4/5/2001 23:14	58.9705	-148.6123	244
HX24109601.001	CTD25	GAK7I	4/6/2001 0:00	58.8803	-148.5578	300
HX24109601.002	End CTD	GAK7I	4/6/2001 0:10	58.8800	-148.5529	300
CALVET						
HX24109601.003	Net	GAK8	4/6/2001 1:10	58.7915	-148.4883	287
HX24109601.004	CTD26	GAK8	4/6/2001 1:11	58.7883	-148.4878	290
HX24109601.005	End CTD	GAK8	4/6/2001 1:21	58.7866	-148.4855	290
CALVET						
HX24109601.006	Net	GAK8	4/6/2001 1:34	58.7847	-148.4845	287
HX24109601.007	CTD27	GAK8I	4/6/2001 2:04	58.7411	-148.4194	287
HX24109601.008	End CTD	GAK8I	4/6/2001 2:14	58.7392	-148.4164	287
CALVET						
HX24109601.009	Net	GAK9	4/6/2001 2:54	58.6797	-148.3473	275
HX24109601.010	CTD28	GAK9	4/6/2001 3:16	58.6770	-148.3467	278
HX24109601.011	End CTD	GAK9	4/6/2001 3:25	58.6743	-148.3463	278
CALVET						
HX24109601.012	Net	GAK9	4/6/2001 3:47	58.6680	-148.3477	
HX24109601.013	CTD29	GAK10	4/6/2001 4:50	58.5397	-148.2116	570 Water for Pinchuk
HX24109601.014	End CTD	GAK10	4/6/2001 4:52	58.5393	-148.2116	570
HX24109601.015	Deploy HTI	GAK10	4/6/2001 5:07	58.5438	-148.2168	towed from GAK10->GAK11
	Deploy					
HX24109601.016	MOCNESS	GAK11	4/6/2001 6:42	58.3870	-148.0743	
	Recover					
HX24109601.017	MOCNESS	GAK11	4/6/2001 7:21	58.3698	-148.1163	
	Deploy					
HX24109601.018	MOCNESS	GAK12	4/6/2001 9:20	58.2377	-147.9383	
	Recover					
HX24109601.019	MOCNESS	GAK12	4/6/2001 9:51	58.2277	-147.9563	
HX24109601.020	Deploy HTI	GAK12	4/6/2001 10:14	58.2433	-147.9322	towed from GAK12-GAK13

	Deploy						
HX24109601.021	MOCNESS	GAK13	4/6/2001 11:52	58.1002	-147.7645		
	Recover						
HX24109601.022	MOCNESS	GAK13	4/6/2001 12:23	58.1012	-147.8198		
	Recover						
HX24109601.023	HTI	GAK13	4/6/2001 12:44	58.1025	-147.8393		
	Deploy						
HX24109601.024	MOCNESS	GAK13	4/6/2001 12:51	58.1028	-147.8470	Deep Tow	
	Recover						
HX24109601.025	MOCNESS	GAK13	4/6/2001 14:09	58.1093	-147.8975		
HX24109601.026	CTD30	GAK13	4/6/2001 15:14	58.0989	-147.7902	2088 Water for Hopcroft #1	
HX24109601.027	End CTD	GAK13	4/6/2001 15:17	58.0997	-147.7885	2088	
HX24109601.028	CTD31	GAK13	4/6/2001 15:32	58.0992	-147.7906	2086 Water for Hopcroft #2	
HX24109601.029	End CTD	GAK13	4/6/2001 15:33	58.0995	-147.7897	2086	
HX24109601.030	CTD32	GAK13	4/6/2001 15:46	58.1004	-147.7841	2100 Water for Hopcroft #3	
HX24109601.031	End CTD	GAK13	4/6/2001 15:47	58.1006	-147.7833	2100	
HX24109601.032	CTD33	GAK13	4/6/2001 15:59	58.0991	-147.7878	2092 Water for Hopcroft #4	
HX24109601.033	End CTD	GAK13	4/6/2001 15:59	58.0993	-147.7872	2092	
HX24109601.034	CTD34	GAK13	4/6/2001 16:11	58.0983	-147.7906	2087 Water for Hopcroft #5	
HX24109601.035	End CTD	GAK13	4/6/2001 16:12	58.0986	-147.7899	2087	
HX24109601.036	CTD35	GAK13	4/6/2001 16:24	58.0992	-147.7910	2087 Water for Hopcroft #6	
HX24109601.037	End CTD	GAK13	4/6/2001 16:25	58.0993	-147.7906	2087	
HX24109601.038	CTD36	GAK13	4/6/2001 16:37	58.0987	-147.7887	2093 Water for Hopcroft #7	
HX24109601.039	End CTD	GAK13	4/6/2001 16:38	58.0989	-147.7882	2093	
						Water for Hopcroft #7	
HX24109601.040	CTD37	GAK13	4/6/2001 16:39	58.0991	-147.7872	2096 Second cast	
HX24109601.041	End CTD	GAK13	4/6/2001 16:39	58.0992	-147.7871	2096	
	CALVET						
HX24109601.042	Net	GAK13	4/6/2001 16:45	58.1010	-147.7763		
HX24109601.043	Ring Net	GAK13	4/6/2001 17:01	58.1048	-147.7688		
	CALVET						
HX24109601.044	Net	GAK13	4/6/2001 17:19	58.0988	-147.7918		
HX24109601.045	CTD38	GAK13	4/6/2001 17:30	58.0997	-147.7889	2094 Primary Production cast	
HX24109601.046	End CTD	GAK13	4/6/2001 17:35	58.1005	-147.7856	2094	
						Lost end point due to	
HX24109601.047	CTD39	GAK13	4/6/2001 18:05	58.0990	-147.7850	2095 program malfunction	
HX24109601.048	Ring Net	GAK13	4/6/2001 19:30	58.1058	-147.7553		
	CALVET						
HX24109601.049	Net	GAK12	4/6/2001 20:47	58.2438	-147.9330		
HX24109601.050	CTD40	GAK12	4/6/2001 21:00	58.2430	-147.9287	2174	
HX24109601.051	End CTD	GAK12	4/6/2001 21:33	58.2452	-147.9273	2174	
	CALVET						
HX24109601.052	Net	GAK12	4/6/2001 22:20	58.2470	-147.9253		
	CALVET						
HX24109601.053	Net	GAK11	4/6/2001 23:49	58.3880	-148.0070	1435	
HX24109701.001	CTD41	GAK11	4/7/2001 0:01	58.3845	-148.0603	2249	
HX24109701.002	End CTD	GAK11	4/7/2001 0:37	58.3836	-148.0518	2249	

	CALVET					
HX24109701.003	Net	GAK11	4/7/2001 1:18	58.3825	-148.0382	
	CALVET					
HX24109701.004	Net	GAK10	4/7/2001 2:55	58.5387	-148.2103	
HX24109701.005	CTD42	GAK10	4/7/2001 3:13	58.5386	-148.2115	1468
HX24109701.006	End CTD	GAK10	4/7/2001 3:47	58.5204	-148.2022	1468
	CALVET					
HX24109701.007	Net	GAK10	4/7/2001 4:36	58.4933	-148.1977	
HX24109701.008	Deploy HTI	GAK8	4/7/2001 7:04	58.7877	-148.4558	285
	Deploy					
HX24109701.009	MOCNESS	GAK8	4/7/2001 7:11	58.7892	-148.4908	205
	Recover					
HX24109701.010	MOCNESS	GAK8	4/7/2001 7:42	58.7900	-148.5302	280
	Tow HTI					
HX24109701.011	GAK8-9		4/7/2001 8:11	58.7885	-148.4852	287 Tow HTI GAK8->GAK9
	Deploy					
HX24109701.012	MOCNESS	GAK9	4/7/2001 9:47	58.6805	-148.3508	278
	Recover					
HX24109701.013	MOCNESS	GAK9	4/7/2001 10:21	58.6760	-148.3865	271
	Deploy					
HX24109701.014	MOCNESS	GAK10	4/7/2001 12:50	58.5407	-148.2113	
	Recover					
HX24109701.015	MOCNESS	GAK10	4/7/2001 13:32	58.5243	-148.2253	
HX24109701.016	CTD43	GAK9I	4/7/2001 16:24	58.6089	-148.2792	681
HX24109701.017	End CTD	GAK9I	4/7/2001 16:56	58.5959	-148.2744	681
						Primary Production plus
HX24109701.018	CTD44	GAK9	4/7/2001 18:19	58.6781	-148.3518	560 repeat of GAK9
HX24109701.019	End CTD	GAK9	4/7/2001 18:30	58.6760	-148.3524	560
HX24109701.020	Ring Net	GAK9	4/7/2001 18:45	58.6732	-148.3527	282
HX24109701.021	CTD45	GAK6	4/7/2001 22:00	59.1171	-148.7701	153 #1 of repeats
HX24109701.022	End CTD	GAK6	4/7/2001 22:06	59.1183	-148.7697	153
HX24109701.023	CTD46	GAK6	4/7/2001 23:06	59.1174	-148.7689	153 #2 of repeats
HX24109701.024	End CTD	GAK6	4/7/2001 23:12	59.1182	-148.7674	153
HX24109801.001	CTD47	GAK6	4/8/2001 0:02	59.1170	-148.7689	153 #3 of repeats
HX24109801.002	End CTD	GAK6	4/8/2001 0:07	59.1176	-148.7677	153
HX24109801.003	CTD48	GAK6	4/8/2001 1:02	59.1163	-148.7675	153 #4 of repeats
HX24109801.004	End CTD	GAK6	4/8/2001 1:07	59.1161	-148.7663	153
HX24109801.005	CTD49	GAK6	4/8/2001 2:04	59.1158	-148.7676	150 #5 of repeats
HX24109801.006	End CTD	GAK6	4/8/2001 2:09	59.1154	-148.7654	150
HX24109801.007	CTD50	GAK6	4/8/2001 3:11	59.1161	-148.7679	148 #6 of repeats
HX24109801.008	End CTD	GAK6	4/8/2001 3:15	59.1165	-148.7677	148
HX24109801.009	Deploy HTI	GAK8	4/8/2001 5:42	58.7860	-148.4890	282 Tow HTI GAK8->GAK7
	Deploy					
HX24109801.010	MOCNESS	GAK7	4/8/2001 7:44	58.9707	-148.6337	242
	Recover					
HX24109801.011	MOCNESS	GAK7	4/8/2001 8:20	58.9562	-148.6503	264
	Tow HTI					
HX24109801.012	GAK7-6		4/8/2001 8:40	58.9723	-148.6310	243 Tow HTI GAK7->GAK6

	Deploy					
HX24109801.013	MOCNESS	GAK6	4/8/2001 10:44	59.1152	-148.7720	159
	Recover					
HX24109801.014	MOCNESS	GAK6	4/8/2001 11:19	59.1005	-148.7788	159
	Tow HTI					
HX24109801.015	GAK6-5		4/8/2001 11:50	59.1267	-148.7788	159
	Recover					
HX24109801.016	HTI	GAK5	4/8/2001 14:10	59.2613	-148.9110	167
HX24109801.017	CTD51	CF15	4/8/2001 15:35	59.4499	-148.8656	181
HX24109801.018	End CTD	CF15	4/8/2001 15:42	59.4499	-148.8632	181
HX24109801.019	CTD52	CF14	4/8/2001 16:13	59.4841	-148.8671	169
HX24109801.020	End CTD	CF14	4/8/2001 16:20	59.4846	-148.8642	169
HX24109801.021	CTD53	CF13	4/8/2001 16:42	59.5174	-148.8677	172
HX24109801.022	End CTD	CF13	4/8/2001 16:48	59.5179	-148.8661	172
HX24109801.023	CTD54	CF12	4/8/2001 17:17	59.5508	-148.8694	183
HX24109801.024	End CTD	CF12	4/8/2001 17:23	59.5517	-148.8697	183
HX24109801.025	CTD55	CF11	4/8/2001 17:44	59.5848	-148.8688	175
HX24109801.026	End CTD	CF11	4/8/2001 17:50	59.5860	-148.8689	175
HX24109801.027	CTD56	CF10	4/8/2001 18:18	59.6178	-148.8674	176
HX24109801.028	End CTD	CF10	4/8/2001 18:24	59.6185	-148.8665	176
HX24109801.029	CTD57	CF9	4/8/2001 18:46	59.6503	-148.8680	179
HX24109801.030	End CTD	CF9	4/8/2001 18:51	59.6509	-148.8679	179
HX24109801.031	CTD58	CF8	4/8/2001 19:22	59.6836	-148.8684	179
HX24109801.032	End CTD	CF8	4/8/2001 19:29	59.6839	-148.8680	179
HX24109801.033	CTD59	CF7	4/8/2001 19:53	59.7173	-148.8684	183
HX24109801.034	End CTD	CF7	4/8/2001 19:59	59.7174	-148.8672	183
HX24109801.035	CTD60	CF6	4/8/2001 20:29	59.7505	-148.8680	192
HX24109801.036	End CTD	CF6	4/8/2001 20:37	59.7497	-148.8657	192
HX24109801.037	CTD61	CF5	4/8/2001 20:59	59.7833	-148.8678	194
HX24109801.038	End CTD	CF5	4/8/2001 21:06	59.7829	-148.8663	194
HX24109801.039	CTD62	CF4	4/8/2001 21:36	59.8172	-148.8687	185
HX24109801.040	End CTD	CF4	4/8/2001 21:43	59.8171	-148.8686	185
HX24109801.041	CTD63	CF3	4/8/2001 22:05	59.8503	-148.8684	162
HX24109801.042	End CTD	CF3	4/8/2001 22:11	59.8502	-148.8679	162
HX24109801.043	CTD64	CF2	4/8/2001 22:42	59.8830	-148.8685	114
HX24109801.044	End CTD	CF2	4/8/2001 22:48	59.8832	-148.8719	114
HX24109801.045	CTD65	CF1	4/8/2001 23:06	59.9089	-148.8669	86
HX24109801.046	End CTD	CF1	4/8/2001 23:10	59.9095	-148.8680	86
HX24109901.001	Deploy HTI	HE11	4/9/2001 6:24	60.1280	-147.1332	216
	Deploy					
HX24109901.002	MOCNESS	HE11	4/9/2001 6:28	60.1297	-147.0903	216
	Recover					
HX24109901.003	MOCNESS	HE11	4/9/2001 7:07	60.1480	-147.0903	
	Deploy					
HX24109901.004	MOCNESS	HE8	4/9/2001 8:28	60.0730	-146.8753	107
	Recover					
HX24109901.005	MOCNESS	HE8	4/9/2001 9:01	60.0650	-146.8880	108

	Deploy					
HX24109901.006	MOCNESS	HE4	4/9/2001 10:49	60.0805	-146.6093	118
	Recover					
HX24109901.007	MOCNESS	HE4	4/9/2001 11:21	60.0678	-146.6220	117
	Recover					
HX24109901.008	HTI	HE4	4/9/2001 11:27	60.0645	-146.6253	117
HX24109901.009	Deploy HTI	HE2	4/9/2001 12:15	60.1788	-146.6093	192
	Deploy					
HX24109901.010	MOCNESS	HE2	4/9/2001 12:53	60.1768	-146.6093	192
	Recover					
HX24109901.011	MOCNESS	HE2	4/9/2001 12:53	60.1612	-146.6028	137
	Recover					
HX24109901.012	HTI	HE2	4/9/2001 13:11	60.1363	-146.6175	137
HX24109901.013	CTD66	HE1	4/9/2001 14:43	60.2170	-146.6044	73
HX24109901.014	End CTD	HE1	4/9/2001 14:46	60.2171	-146.6027	73
	CALVET					
HX24109901.015	Net	HE2	4/9/2001 15:11	60.1787	-146.6058	192
HX24109901.016	CTD67	HE2	4/9/2001 15:22	60.1791	-146.6030	186
HX24109901.017	End CTD	HE2	4/9/2001 15:29	60.1786	-146.6006	186
	CALVET					
HX24109901.018	Net	HE2	4/9/2001 15:41	60.1783	-146.5950	175
HX24109901.019	CTD68	HE3	4/9/2001 16:17	60.1313	-146.6098	112
HX24109901.020	End CTD	HE3	4/9/2001 16:21	60.1314	-146.6116	112
HX24109901.021	CTD69	HE4	4/9/2001 17:00	60.0796	-146.6131	113
	CALVET					
HX24109901.022	Net	HE4	NA	NA	NA	113
HX24109901.023	End CTD	HE4	4/9/2001 17:05	60.0795	-146.6162	113
	CALVET					
HX24109901.024	Net	HE4	4/9/2001 17:11	60.0793	-146.6195	113
HX24109901.025	CTD70	HE5	4/9/2001 17:42	60.0290	-146.6088	88
HX24109901.026	End CTD	HE5	4/9/2001 17:46	60.0295	-146.6110	88
HX24109901.027	CTD71	HE6	4/9/2001 18:11	60.0432	-146.6998	117
HX24109901.028	End CTD	HE6	4/9/2001 18:16	60.0438	-146.7034	117
HX24109901.029	CTD72	HE7	4/9/2001 18:45	60.0584	-146.7926	117
HX24109901.030	End CTD	HE7	4/9/2001 18:49	60.0592	-146.7953	117
	CALVET					
HX24109901.031	Net	HE8	4/9/2001 19:11	60.0742	-146.8758	105
HX24109901.032	CTD73	HE8	4/9/2001 19:22	60.0775	-146.8815	105
HX24109901.033	End CTD	HE8	4/9/2001 19:27	60.0793	-146.8849	105
	CALVET					
HX24109901.034	Net	HE8	4/9/2001 19:35	60.0827	-146.8892	105
						Recast since #7 bottle did
HX24109901.035	CTD74	HE8	4/9/2001 19:45	60.0859	-146.8946	108 not trip
HX24109901.036	End CTD	HE8	4/9/2001 19:49	60.0872	-146.8978	108
HX24109901.037	CTD75	HE9	4/9/2001 20:13	60.0941	-146.9635	149
HX24109901.038	End CTD	HE9	4/9/2001 20:18	60.0952	-146.9658	149
HX24109901.039	CTD76	HE10	4/9/2001 20:50	60.1109	-147.0501	279
HX24109901.040	End CTD	HE10	4/9/2001 20:59	60.1114	-147.0518	279

CALVET						
HX24109901.042	Net	HE11	4/9/2001 21:35	60.1305	-147.1357	217
HX24109901.042	CTD77	HE11	4/9/2001 21:44	60.1310	-147.1368	217
HX24109901.043	End CTD	HE11	4/9/2001 21:52	60.1299	-147.1402	217
CALVET						
HX24109901.044	Net	HE11	4/9/2001 22:03	60.1280	-147.1430	217
HX24109901.045	CTD78	HE12	4/9/2001 22:26	60.1430	-147.1917	178
HX24109901.046	End CTD	HE12	4/9/2001 22:31	60.1417	-147.1939	178
HX24109901.047	CTD79	AHC1	4/9/2001 23:15	60.1007	-147.0749	265
HX24109901.048	End CTD	AHC1	4/9/2001 23:25	60.0998	-147.0775	265
HX24109901.049	CTD80	AHC1	4/9/2001 23:47	60.1007	-147.0761	262 Recast
HX24109901.050	End CTD	AHC1	4/9/2001 23:56	60.1005	-147.0790	262
HX24110001.001	CTD81	AHC2	4/10/2001 0:51	60.0004	-147.1356	205
HX24110001.002	End CTD	AHC2	4/10/2001 0:59	59.9991	-147.1379	205
HX24110001.003	CTD82	AHC3	4/10/2001 1:48	59.9009	-147.1340	227
HX24110001.004	End CTD	AHC3	4/10/2001 1:55	59.8997	-147.1365	227
HX24110001.005	CTD83	AHC4	4/10/2001 2:47	59.8004	-147.0740	202
HX24110001.006	End CTD	AHC4	4/10/2001 2:53	59.8005	-147.0758	202
HX24110001.007	CTD84	ANC5	4/10/2001 3:44	59.6988	-147.0741	206
HX24110001.008	End CTD	ANC5	4/10/2001 3:49	59.6985	-147.0758	206
HX24110001.009	CTD85	AHC6	4/10/2001 4:40	59.6005	-147.0745	205
HX24110001.010	End CTD	AHC6	4/10/2001 4:45	59.6013	-147.0769	205
HX24110001.011	CTD86	AHC7	4/10/2001 5:43	59.5015	-147.0748	219
HX24110001.012	End CTD	AHC7	4/10/2001 5:49	59.5023	-147.0778	219
HX24110001.013	CTD87	AHC8	4/10/2001 6:49	59.4008	-147.0732	203
HX24110001.014	End CTD	AHC8	4/10/2001 6:55	59.4024	-147.0741	203
HX24110001.015	CTD88	AHC9	4/10/2001 7:52	59.3007	-147.0737	195
HX24110001.016	End CTD	AHC9	4/10/2001 7:58	59.3017	-147.0753	195
HX24110001.017	Deploy HTI	CCSE6	4/10/2001 8:49	59.2325	-147.1515	202
Deploy						
HX24110001.018	MOCNESS	CCSE6	4/10/2001 9:00	59.2318	-147.1502	202
Recover						
HX24110001.019	MOCNESS	CCSE6	4/10/2001 9:35	59.2308	-147.1188	213
Tow HTI						
HX24110001.020	CCSE6-5		4/10/2001 9:57	59.2317	-147.1222	210 Tow HTI CCSE6->CCSE5
Deploy						
HX24110001.021	MOCNESS	CCSE5	4/10/2001 11:56	59.3730	-147.3475	134
Recover						
HX24110001.022	MOCNESS	CCSE5	4/10/2001 12:30	59.3622	-147.3138	183
Tow HTI						
HX24110001.023	CCSE5-4		4/10/2001 12:50	59.3550	-147.2927	184 Tow HTI CCSE5->CCSE4
Recover						
HX24110001.024	HTI	CCSE4	4/10/2001 14:35	59.4755	-147.4760	116
Lost end point. See CTD 61 #39.						
HX24110001.025	CTD89	CCSE1	4/10/2001 16:37	59.7417	-147.8197	
CALVET						
HX24110001.026	Net	CCSE1	4/10/2001 16:54	59.7408	-147.8178	62

CALVET						
HX24110001.027	Net	CCSE1	4/10/2001 17:04	59.7403	-147.8270	63
CALVET						
HX24110001.028	Net	CCSE2	4/10/2001 17:52	59.6663	-147.7253	112
HX24110001.029	CTD90	CCSE2	4/10/2001 18:03	59.6654	-147.7333	109 Primary Production
HX24110001.030	End CTD	CCSE2	4/10/2001 18:07	59.6650	-147.7370	109
Primary Production second						
HX24110001.031	CTD91	CCSE2	4/10/2001 18:09	59.6648	-147.7385	110 cast
HX24110001.032	End CTD	CCSE2	4/10/2001 18:11	59.6646	-147.7404	110
CALVET						
HX24110001.033	Net	CCSE2	4/10/2001 18:20	59.6637	-147.7465	111
HX24110001.034	CTD92	CCSE2	4/10/2001 18:35	59.6650	-147.7580	112
HX24110001.035	End CTD	CCSE2	4/10/2001 18:40	59.6652	-147.7624	112
CALVET						
HX24110001.036	Net	CCSE3	4/10/2001 20:02	59.5703	-147.6097	110
HX24110001.037	CTD93	CCSE3	4/10/2001 20:14	59.5736	-147.6182	112
HX24110001.038	End CTD	CCSE3	4/10/2001 20:18	59.5737	-147.6214	112
CALVET						
HX24110001.039	Net	CCSE3	4/10/2001 20:27	59.5732	-147.6283	110
CALVET						
HX24110001.040	Net	CCSE4	4/10/2001 22:05	59.4742	-147.4752	117
Last one in this line for						
HX24110001.041	CTD94	CCSE4	4/10/2001 22:16	59.4778	-147.4824	119 today!!!
HX24110001.042	End CTD	CCSE4	4/10/2001 22:22	59.4781	-147.4845	119
CALVET						
HX24110001.043	Net	CCSE4	4/10/2001 22:32	59.4795	-147.4888	117
HX24110101.001	CTD95	MS4	4/11/2001 2:45	59.9183	-147.8352	92
HX24110101.002	End CTD	MS4	4/11/2001 2:47	59.9175	-147.8366	92
HX24110101.003	CTD96	MS3	4/11/2001 3:07	59.9306	-147.8604	169
HX24110101.004	End CTD	MS3	4/11/2001 3:12	59.9288	-147.8657	169
CALVET						
HX24110101.005	Net	MS2	4/11/2001 3:36	59.9427	-147.8945	195
HX24110101.006	CTD97	MS2	4/11/2001 3:53	59.9433	-147.8982	192
HX24110101.007	End CTD	MS2	4/11/2001 3:59	59.9412	-147.9050	192
CALVET						
HX24110101.008	Net	MS2	4/11/2001 4:20	59.9425	-147.8950	194
HX24110101.009	CTD98	MS1	4/11/2001 4:38	59.9534	-147.9313	165
HX24110101.010	End CTD	MS1	4/11/2001 4:44	59.9506	-147.9376	165
HX24110101.011	Deploy HTI	HB2	4/11/2001 6:52	60.1757	-147.6475	148
Deploy						
HX24110101.012	MOCNESS	HB2	4/11/2001 6:54	60.1755	-147.6453	137
Recover						
HX24110101.013	MOCNESS	HB2	4/11/2001 7:22	60.1822	-147.6283	138
Recover						
HX24110101.014	HTI	HB2	4/11/2001 7:27	60.1837	-147.6252	133
HX24110101.015	Deploy HTI	KIP2	4/11/2001 9:09	60.2815	-147.9870	557
Deploy						
HX24110101.016	MOCNESS	KIP2	4/11/2001 9:11	60.2823	-147.9870	557

	Recover						
HX24110101.017	MOCNESS	KIP2	4/11/2001 9:42	60.2960	-147.9850	525	
	Recover						
HX24110101.018	HTI	KIP2	4/11/2001 9:59	60.3055	-147.9823	531	
HX24110101.019	Deploy HTI	PWS1	4/11/2001 10:35	60.3808	-147.9373	343	
	Deploy						
HX24110101.020	MOCNESS	PWS1	4/11/2001 10:38	60.3817	-147.9375	343	
	Recover						
HX24110101.021	MOCNESS	PWS1	4/11/2001 11:18	60.3955	-147.9458	383	
	Recover						
HX24110101.022	HTI	PWS1	4/11/2001 11:40	60.4042	-147.9457	244	
HX24110101.023	Deploy HTI	PWS2	4/11/2001 12:41	60.5358	-147.8013	737	
	Deploy						
HX24110101.024	MOCNESS	PWS2	4/11/2001 12:45	60.5375	-147.7997	737	
	Recover						
HX24110101.025	MOCNESS	PWS2	4/11/2001 13:16	60.5522	-147.7910	750	
	Recover						
HX24110101.026	HTI	PWS2	4/11/2001 13:35	60.5635	-147.7798	760	
	Deploy						
HX24110101.027	MOCNESS	PWS2	4/11/2001 14:31	60.5510	-147.7995	685 Deep Tow	
	Recover						
HX24110101.028	MOCNESS	PWS2	4/11/2001 16:05	60.5847	-147.7378	757	
HX24110101.029	CTD99	KIP2	4/11/2001 18:40	60.2769	-147.9866	586	
HX24110101.030	End CTD	KIP2	4/11/2001 18:43	60.2766	-147.9872	586	
	CALVET						
HX24110101.031	Net	KIP2	4/11/2001 18:50	60.2757	-147.9887	584	
HX24110101.032	CTD100	KIP2	4/11/2001 19:04	60.2752	-147.9905	575	
HX24110101.033	End CTD	KIP2	4/11/2001 19:22	60.2711	-147.9903	575	
	CALVET						
HX24110101.034	Net	KIP2	4/11/2001 19:47	60.2788	-147.9842	588	
	CALVET						
HX24110101.035	Net	PWS2	4/11/2001 21:37	60.5353	-147.8013	744	
HX24110101.036	CTD101	PWS2	4/11/2001 21:47	60.5367	-147.8046	748	
HX24110101.037	End CTD	PWS2	4/11/2001 22:09	60.5367	-147.8141	748	
	CALVET						
HX24110101.038	Net	PWS2	4/11/2001 22:39	60.5340	-147.8020	745	
HX24110101.039	CTD102	PWS2	4/11/2001 22:56	60.5350	-147.8076	747 Water for Hopcroft #1	
HX24110101.040	End CTD	PWS2	4/11/2001 22:57	60.5350	-147.8081	747	
HX24110101.041	CTD103	PWS2	4/11/2001 23:18	60.5350	-147.8006	747 Water for Hopcroft #2	
HX24110101.042	End CTD	PWS2	4/11/2001 23:19	60.5350	-147.8008	747	
HX24110101.043	CTD104	PWS2	4/11/2001 23:38	60.5374	-147.8127	747 Water for Hopcroft #3	
HX24110101.044	End CTD	PWS2	4/11/2001 23:39	60.5375	-147.8131	747	
HX24110101.045	CTD105	PWS2	4/11/2001 23:54	60.5351	-147.8061	747 Water for Hopcroft #4	
HX24110101.046	End CTD	PWS2	4/11/2001 23:55	60.5351	-147.8064	747	
HX24110201.001	CTD106	PWS2	4/12/2001 0:09	60.5343	-147.8009	747 Water for Hopcroft #5	
HX24110201.002	End CTD	PWS2	4/12/2001 0:10	60.5344	-147.8013	747	
HX24110201.003	CTD107	PWS2	4/12/2001 0:27	60.5371	-147.8113	747 Water for Hopcroft #6	
HX24110201.004	End CTD	PWS2	4/12/2001 0:29	60.5370	-147.8120	747	
HX24110201.005	CTD108	PWS2	4/12/2001 0:43	60.5344	-147.8005	747 Water for Hopcroft #7	

HX24110201.006	End CTD	PWS2	4/12/2001 0:45	60.5343	-147.8010	747
HX24110201.007	Ring Net	PWS2	4/12/2001 0:52	60.5347	-147.8032	747
HX24110201.008	Ring Net	PWS2	4/12/2001 0:59	60.5352	-147.8057	747
	CALVET					
HX24110201.009	Net	PWS1	4/12/2001 2:12	60.3788	-147.9383	352
HX24110201.010	CTD109	PWS1	4/12/2001 2:25	60.3787	-147.9406	352
HX24110201.011	End CTD	PWS1	4/12/2001 2:33	60.3783	-147.9430	352
	CALVET					
HX24110201.012	Net	PWS1	4/12/2001 2:50	60.3770	-147.9462	
HX24110201.013	CTD110	HB1	4/12/2001 5:06	60.1926	-147.7018	244
HX24110201.014	End CTD	HB1	4/12/2001 5:12	60.1918	-147.7052	244
	CALVET					
HX24110201.015	Net	HB2	4/12/2001 5:48	60.1787	-147.6403	171
HX24110201.016	CTD111	HB2	4/12/2001 6:01	60.1778	-147.6431	174
HX24110201.017	End CTD	HB2	4/12/2001 6:08	60.1772	-147.6452	174
	CALVET					
HX24110201.018	Net	HB2	4/12/2001 6:20	60.1762	-147.6472	204
HX24110201.019	CTD112	HB3	4/12/2001 6:46	60.1658	-147.5758	86
HX24110201.020	End CTD	HB3	4/12/2001 6:50	60.1660	-147.5772	86
HX24110201.021	CTD113	HB4	4/12/2001 7:15	60.1492	-147.5035	103 Did not write file at END.
						CTD#114 Failed. Redone
HX24110201.022	CTD115	HB5	4/12/2001 7:51	60.1349	-147.4528	35 as CTD#115.
HX24110201.023	End CTD	HB5	4/12/2001 7:53	60.1350	-147.4537	35
HX24110201.024	Deploy HTI	MS2I	4/12/2001 9:46	59.9370	-147.8843	190
	Deploy					
HX24110201.025	MOCNESS	MS2I	4/12/2001 9:51	59.9397	-147.8827	190
	Recover					
HX24110201.026	MOCNESS	MS2I	4/12/2001 10:18	59.9498	-147.8750	210
	Recover					
HX24110201.027	HTI	MS2I	4/12/2001 10:40	59.9577	-147.8663	222
	CALVET					
HX24110301.001	Net	CCSE7	4/13/2001 1:08	59.0580	-146.9682	
	CALVET					
HX24110301.002	Net	CCSE7	4/13/2001 1:25	59.0603	-146.9740	
HX24110301.003	CTD116	CCSE7	4/13/2001 1:37	59.0617	-146.9777	1874
HX24110301.004	End CTD	CCSE7	4/13/2001 2:14	59.0622	-146.9941	1874
	CALVET					
HX24110301.005	Net	CCSE8	4/13/2001 4:25	58.8833	-146.7348	
HX24110301.006	CTD117	CCSE8	4/13/2001 4:50	58.8841	-146.7333	2771
HX24110301.007	End CTD	CCSE8	4/13/2001 5:30	58.8894	-146.7485	2771
HX24110301.008	Deploy HTI	CCSE8	4/13/2001 6:32	58.8852	-146.7388	
	Deploy					
HX24110301.009	MOCNESS	CCSE8	4/13/2001 6:37	58.8843	-146.7337	
	Recover					
HX24110301.010	MOCNESS	CCSE8	4/13/2001 7:07	58.5517	-146.7100	
	Tow HTI					
HX24110301.011	CCSE7-8		4/13/2001 7:50	58.8860	-146.7385	Tow HTI CCSE7->CCSE8

CALVET						
HX24110301.012	Net	CCSE8	4/13/2001 8:37	58.8870	-146.7397	
Deploy						
HX24110301.013	MOCNESS	CCSE7	4/13/2001 10:17	59.0573	-146.9682	
Recover						
HX24110301.014	MOCNESS	CCSE7	4/13/2001 10:50	59.5150	-146.9482	
Recover						
HX24110301.015	HTI	CCSE6	4/13/2001 13:20	59.2330	-147.1603	
CALVET						
HX24110301.016	Net	CCSE6	4/13/2001 16:30	59.2328	-147.1608	200
CALVET						
HX24110301.017	Net	CCSE6	4/13/2001 16:47	59.2317	-147.1592	200
HX24110301.018	CTD118	CCSE6	4/13/2001 17:06	59.2312	-147.1662	200
HX24110301.019	End CTD	CCSE6	4/13/2001 17:14	59.2300	-147.1694	200
CALVET						
HX24110301.020	Net	CCSE5	4/13/2001 18:40	59.3755	-147.3492	131
HX24110301.021	CTD119	CCSE5	4/13/2001 18:51	59.3758	-147.3556	124
HX24110301.022	End CTD	CCSE5	4/13/2001 18:56	59.3755	-147.3587	124
CALVET						
HX24110301.023	Net	CCSE5	4/13/2001 19:04	59.3752	-147.3657	131
HX24110301.024	Ring Net	CCSE5	4/13/2001 19:16	59.3758	-147.3723	131
HX24110301.025	CTD120	CCSE4	4/13/2001 20:08	59.4754	-147.4797	116
HX24110301.026	End CTD	CCSE4	4/13/2001 20:13	59.4755	-147.4831	116
HX24110301.027	Ring Net	CCSE4	4/13/2001 20:19	59.4758	-147.4867	116
HX24110301.028	CTD121	CCSE3	4/13/2001 21:07	59.5714	-147.6101	110
HX24110301.029	End CTD	CCSE3	4/13/2001 21:12	59.5715	-147.6127	110
HX24110301.030	CTD122	CCSE2	4/13/2001 21:59	59.6685	-147.7286	114
HX24110301.031	End CTD	CCSE2	4/13/2001 22:04	59.6692	-147.7299	114
HX24110301.032	CTD123	CCSE1	4/13/2001 22:49	59.7420	-147.8193	63
HX24110301.033	End CTD	CCSE1	4/13/2001 22:51	59.7422	-147.8211	63
HX24110401.001	Deploy HTI	CCSE4	4/14/2001 5:10	59.4592	-147.4553	115
Tow HTI						
HX24110401.002	CCSE4-3	CCSE4	4/14/2001 5:26	59.4748	-147.4748	115 Tow HTI CCSE4->CCSE3
Deploy						
HX24110401.003	MOCNESS	CCSE3	4/14/2001 6:37	59.5703	-147.6070	110
Recover						
HX24110401.004	MOCNESS	CCSE3	4/14/2001 7:07	59.5800	-147.5932	111
Tow HTI						
HX24110401.005	CCSE3-2	CCSE3	4/14/2001 7:18	59.5700	-147.6107	110 Tow HTI CCSE3->CCSE2
Recover						
HX24110401.006	HTI	CCSE3	4/14/2001 8:25	59.6675	-147.7292	113
HX24110401.007	CTD124	GAK1	4/14/2001 13:33	59.8445	-149.4690	272 THE END....for it is GAK1
HX24110401.008	End CTD	GAK1	4/14/2001 13:39	59.8435	-149.4707	272
THE END II.. the end is						
HX24110401.009	CTD125	RES2.5	4/14/2001 15:02	60.0247	-149.3598	301 back, this time for real
HX24110401.010	End CTD	RES2.5	4/14/2001 15:09	60.0232	-149.3586	301
Seward Dock, Cruise concluded!						
HX24110401.011			4/14/2001 16:00			

