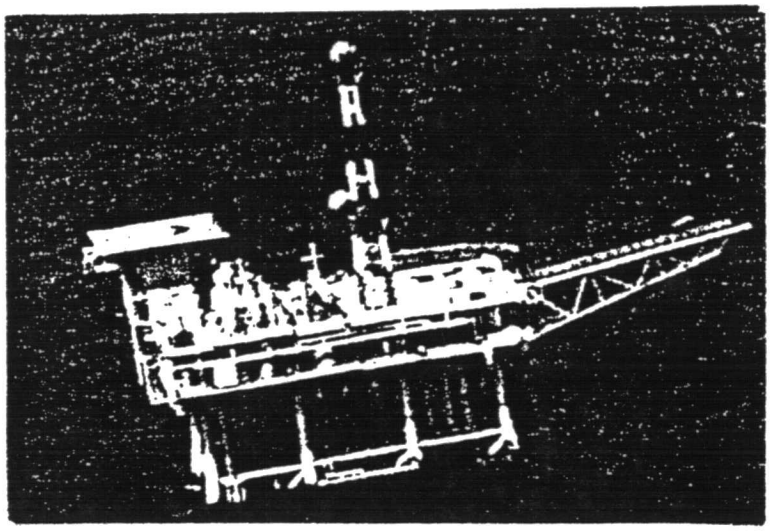
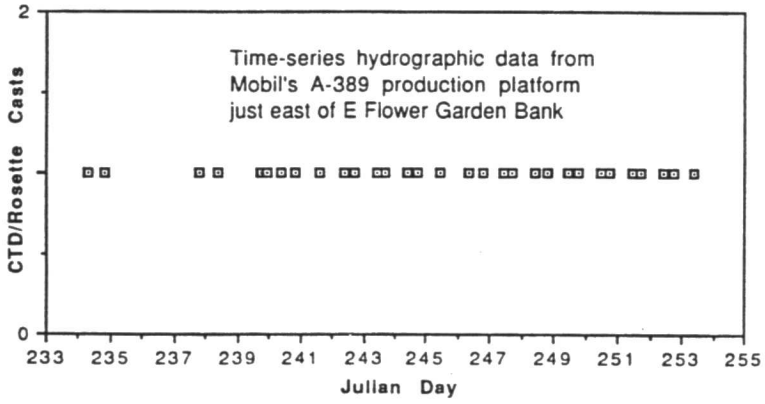
HYDROGRAPHIC OBSERVATIONS FROM A GAS PRODUCTION PLATFORM: HIGH ISLAND ADDITION MOBIL 389 (22 AUG - 10 SEP 91)





Technical Report 91-06-T of the Department of Oceanography
of Texas A&M University, College Station, TX 77843

1 April 1992

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D.C. Biggs, Principal Investigator

CONTENTS

SUMMARY OF PROGRAM

During summer 1991, TAMU personnel carried out three weeks of CTD-rosette hydrocasts from a gas production platform that is located in lease block High Island Addition 389. This platform, operated by Mobil Exploration and Production US (MEPUS), is located at 27° 54.2'N and 93° 34.4'W, in a water depth of 135 m about one mile to the east of the East Flower Gardens (EFG) Bank. From 19 August to 10 September 1990, TAMU personnel were on-platform to demonstrate the feasibility of using it as a base to carry out hydrographic monitoring work with a CTD + 6 bottle rosette-multisampler instrument package.

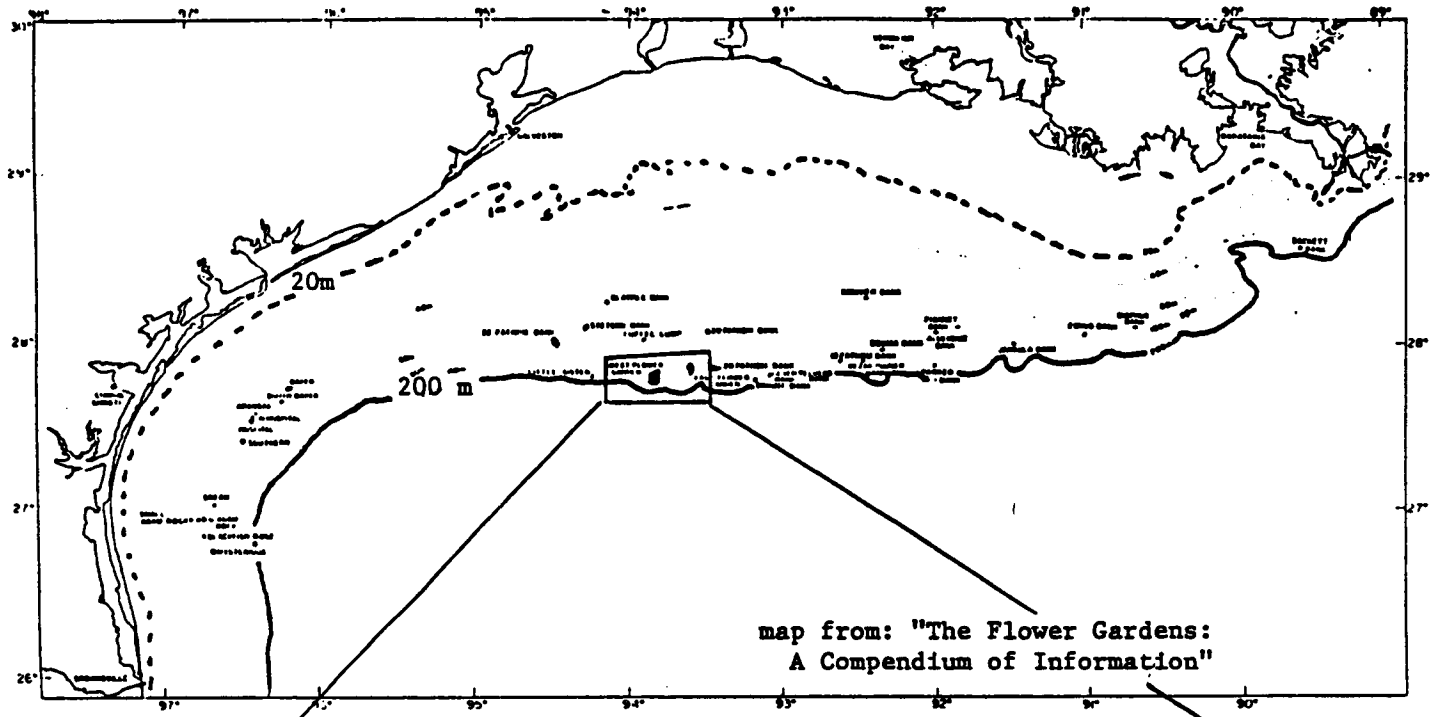
This work afforded a better basic-science understanding of late summer hydrographic conditions near the shelf-slope break in the NW Gulf of Mexico, and in particular of the amount of day-to-day variability in the hydrographic regime of the upper ocean at this outer shelf site. The hydrographic measurements were also coordinated with the applied-science monitoring of the coral reef communities at the Flower Gardens that is being carried out by Dr. Steve Gittings and his team of divers ("Long-term monitoring of coral spawning"). It was pre-planned that the CTD/rosette casts would begin on 22 August 91, one week before divers would arrive to survey the EFG Bank, and that hydrocasts would continue through the 30 August - 2 September window of diving operations. Then, after the divers had departed the EFG area, the hydrographic work was continued for an additional week, through 10 September 91.

Because we had excellent cooperation from MEPUS, who coordinated the logistics of getting a TAMU hydrographic winch and support equipment out to the platform and who arranged transfers of our personnel by helicopter, we were able to make 32 CTD/rosette multisampler casts during the 3-week period 22 August - 10 September.

Collaboration with other Programs: 200-ml aliquots were saved every other day from 3 bottles (10m, 20m and bottom of the cast) and fixed in Lugols preservative, at the request of researchers at the University of Texas Marine Science Institute who plan to enumerate the phytoplankton + microzooplankton fraction.

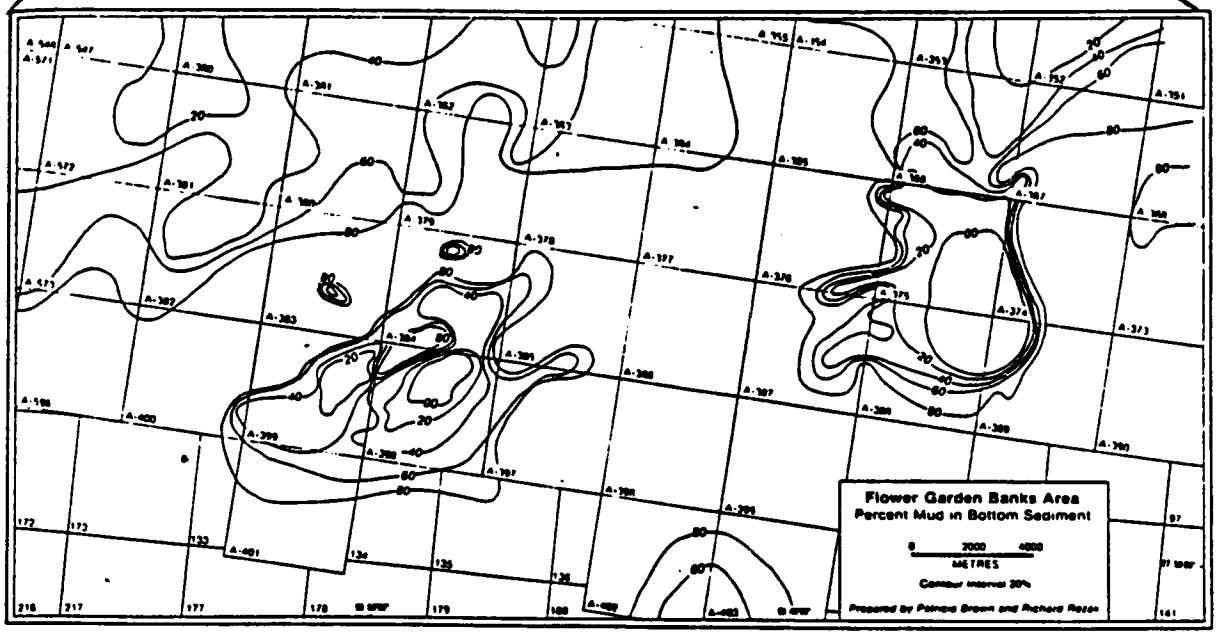
Problems: The biggest problem we faced in trying to do hydrographic work from a production platform was how to get our instruments far enough away from the platform itself so that gear could be lowered and retrieved without contacting the massive submerged support jacket. From elevation views and deck plans of the A-389 platform that were furnished us by T.P. Fischer and B.L. Critz of MEPUS just before we began our time-series work, we learned that the submerged part of the jacket had a 1:7 slope and that its interior was cross-tied with structural members. Even utilizing a 20-foot travelling boom that we had fabricated to get our instrument package away from the side of the platform, we saw that we could not lower our CTD-rosette to even 100m without the risk of dragging it against a submerged leg or cross-brace. However, after siting our hydrographic winch on the east side of the platform some 15 feet outboard of the nearest leg, we calculated that we could safely fish our instrument to about 65m before it might encounter any subsurface obstructions. On 21 August, we raised and lowered a test payload several times to a depth of 65m without incident. So, the next day, 22 August, scientific work was begun, the CTD-rosette instrument package was fished to 60m without incident, both at 7AM and again at 7PM. Unfortunately, during a cast the next morning, the CTD-rosette package contacted a submerged part of the platform jacket at a depth of about 57m. This "hit" tore loose 2 of the 6 sampling bottles from the CTD-rosette package and resulted in loss of the transmissometer.

After that contact with the platform jacket, it was clear that subsequent casts would have to be restricted to a maximum depth well above 57 m. We did not have another transmissometer to replace the one that was torn off, but the two lost water-sampling bottles were replaced with spares that had been brought along so that 6 bottle samples could continue to be taken per cast. Hydrographic casts to a maximum depth of 40 m were begun again on 26 August and these continued without further incident through 10 September.



map from: "The Flower Gardens:
A Compendium of Information"

Figure IV-1. Outer continental shelf fishing banks, northwestern Gulf of Mexico.



map from: "Reefs and Banks of the NW Gulf of Mexico"

hydrocast log

CTD cast	Date	Local Time	Julian Day	Comments?	Trip Depths for bottle samples
1	Thu 22 Aug	7 AM	234.3		10; 22; 32; 44; 48; 48 m
2	Thu 22 Aug	7:30 PM	234.8		6; 18; 49; 49; 54; 54 m
	Fri 23 Aug	8 AM	235.4	lost Xmiss	(no samples)
3	Sun 25 Aug	7:30 PM	237.8		12; 20; 25; 30; 35; 40 m
4	Mon 26 Aug	11 AM	238.4		5; 5; 5; 22; 22 m
5	Tue 27 Aug	4:30 PM	239.7		5; 7; 15; 26; 34 m
6	Tue 27 Aug	9:15 PM	239.9		5; 10; 20; 25; 30; 35 m
7	Wed 28 Aug	9 AM	240.4		5; 10; 20; 25; 33; 37 m
8	Wed 28 Aug	8 PM	240.8		-; 10; 15; 20; 30; 37 m
9	Thu 29 Aug	3 PM	241.6		5; 10; 20; 25; 34; 38 m
10	Fri 30 Aug	9:30 AM	242.4		5; 10; 20; 25; 30; 36 m
11	Fri 30 Aug	4:30 PM	242.7		5; 10; 20; 25; 30; 38 m
12	Sat 31 Aug	10 AM	243.4		5; 10; 20; 25; 30; 35 m
13	Sat 31 Aug	4:30 PM	243.7		5; 10; 20; 25; 30; 35 m
14	Sun 1 Sept	10 AM	244.4		5; 10; 20; 25; 30; 35 m
15	Sun 1 Sept	5 PM	244.7		5; 10; 20; 25; 30; 35 m
16	Mon 2 Sept	10 AM	245.4		5; 10; 20; 25; 30; 35 m
17	Mon 2 Sept	5 PM	245.7	winch problem	(no samples)
18	Tue 3 Sept	8:30 AM	246.3		5; 10; 20; 25; 30; 35 m
19	Tue 3 Sept	7 PM	246.8		5; 12; 20; 30; 30; 39 m
20	Wed 4 Sept	10 AM	247.4		5; 10; - ; 20; 25; 25 m
21	Wed 4 Sept	5 PM	247.7		5; 10; 15; 25; 35; 37 m
22	Thu 5 Sept	10 AM	248.4		5; 10; 20; 25; 30; 37 m
23	Thu 5 Sept	7:30 PM	248.8		5; 10; 20; 25; 30; 37 m
24	Fri 6 Sept	10:20 AM	249.4		5; 10; 20; 25; 30; 39 m
25	Fri 6 Sept	6 PM	249.8		5; 10; 20; 25; 30; 39 m
26	Sat 7 Sept	11 AM	250.5		5; 10; 20; 25; 33; 38 m
27	Sat 7 Sept	5:30 PM	250.7		5; 10; 20; 25; 30; 39 m
28	Sun 8 Sept	11 AM	251.5		5; 10; 20; 25; 34; 38 m
29	Sun 8 Sept	5:30 PM	251.7		10; 20; 25; 35; 38; 38 m
30	Mon 9 Sept	10 AM	252.4		5; 10; - ; 25; 30; 38 m
31	Mon 9 Sept	5:30 PM	252.7		5; 10; 25; 35; 39; 39 m
32	Tue 10 Sept	9 AM	253.4		10; 20; 25; 35; 39; 39 m

CTD DATA

A Seabird model SBE-19 "Seacat" CTD with internal recording capability was used to profile temperature and salinity. After each cast, the raw data files were dumped to a Zenith laptop computer and archived on floppy disks. However, because the operating environment on the platform had high humidity, we experienced major problems when attempting to playback some of the floppy disks after the field program had ended. We succeeded in recovering all 14 of the final series of CTD casts 19-32 (these had remained in the internal memory of the instrument), but we were able to read just 9 of the first 18 casts that had been recorded on floppy disks.

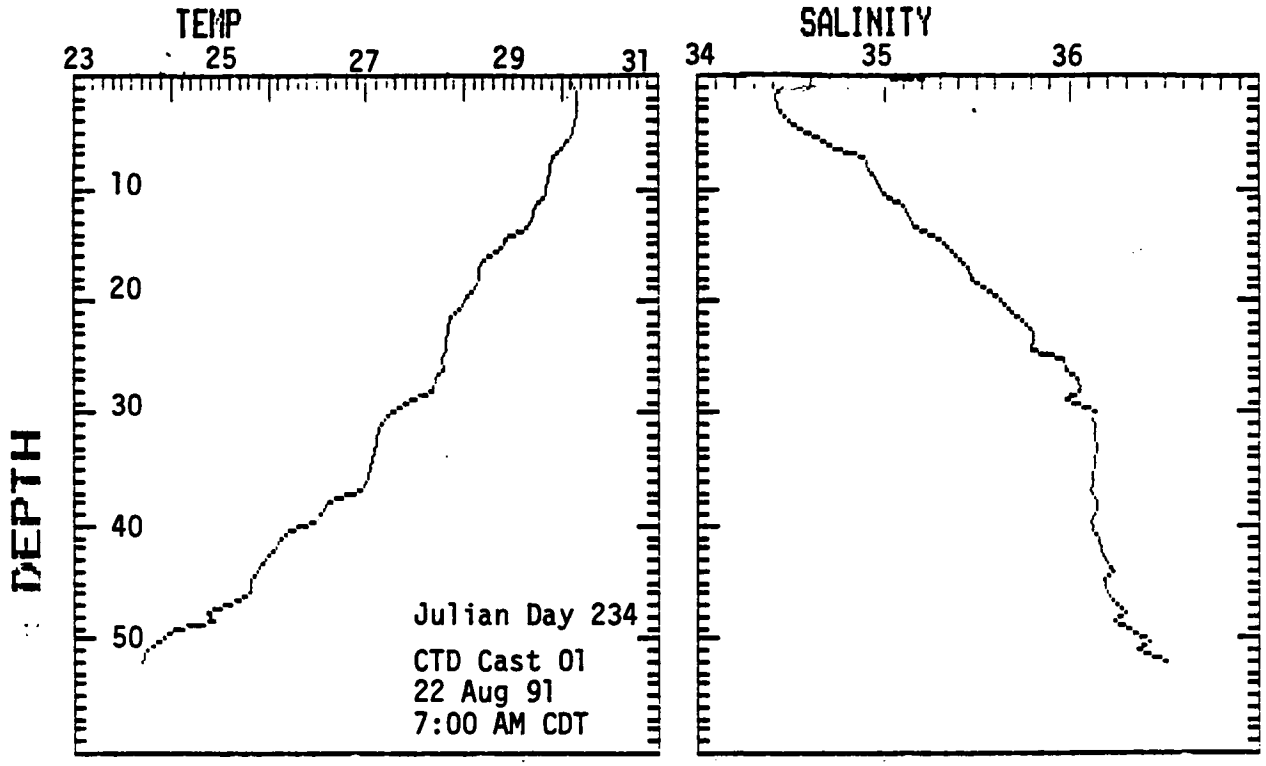
As a result, this section presents data for 23 of the 32 CTD casts that were completed during the 3 weeks of field work from Mobil A-389. The section concludes with a summary plot of a) salinity and b) temperature of the upper 40 m versus Julian Day (page 39) and with summary plots of temperature and salinity at 10m, 20m, and 40m (pages 40-43). Property-property plots (pages 44-45) illustrate that temperature at 20 m was but weakly correlated with temperature at 10 m, and that temperature at 40 m was but weakly correlated with temperature at 20 m. Similarly, salinity at 20 m was but weakly correlated with salinity at 10 m, and salinity at 40 m was uncorrelated with salinity at 20 m.

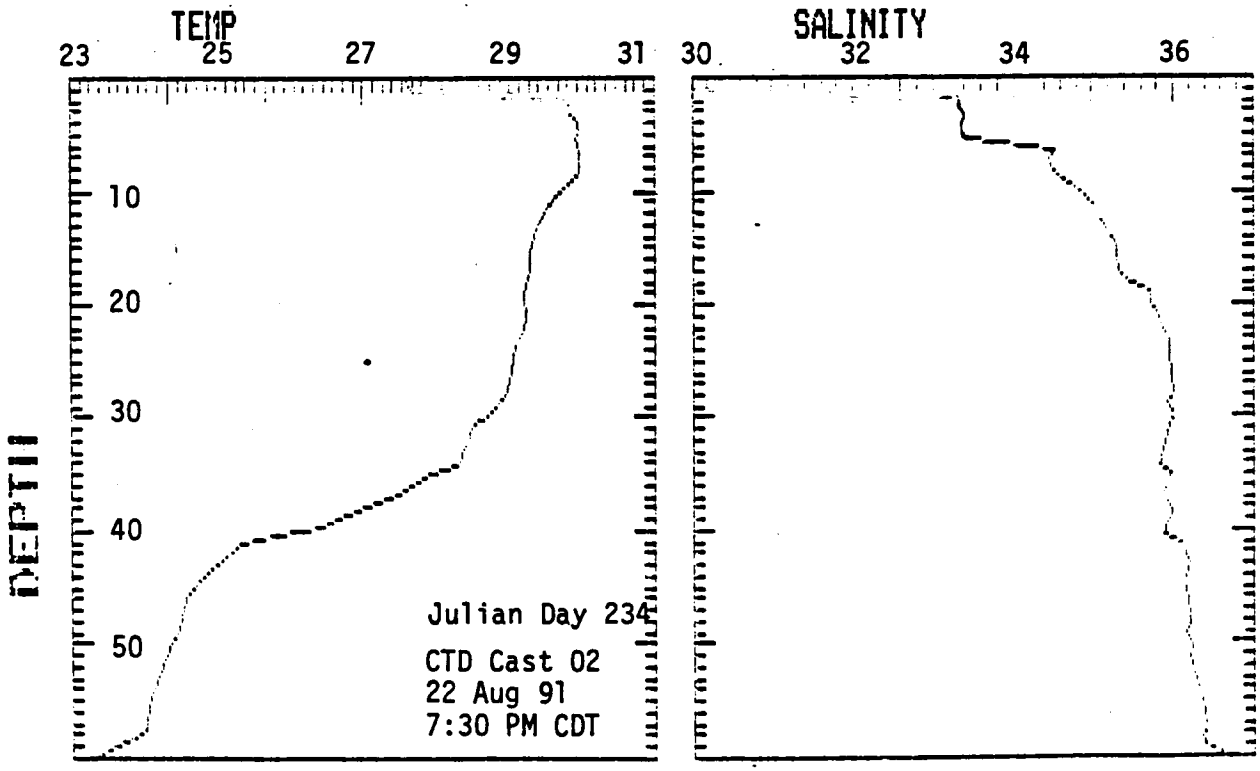
CTD cast 01 **22 Aug 91 7:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.8621	34.5066	21.3386
2	29.87	34.509	21.3375
3	29.8744	34.52	21.3444
4	29.853	34.5702	21.3894
5	29.8019	34.673	21.4839
6	29.6984	34.7981	21.6129
7	29.5704	34.9374	21.7607
8	29.5261	34.9801	21.8078
9	29.4804	35.037	21.8661
10	29.4436	35.0798	21.9107
11	29.3746	35.1432	21.9816
12	29.272	35.2106	22.0668
13	29.1757	35.2577	22.1346
14	29.0531	35.3051	22.2113
15	28.8348	35.3995	22.3552
16	28.6388	35.4755	22.4775
17	28.5401	35.5304	22.5516
18	28.4922	35.5796	22.6045
19	28.4458	35.6429	22.6675
20	28.2703	35.7617	22.8149
21	28.275	35.7615	22.8133
22	28.087	35.8277	22.925
23	28.08	35.8928	22.9763
24	28.0658	35.906	22.991
25	28.0207	36.0325	23.101
26	28.0123	36.0921	23.1486
27	27.9302	36.1459	23.2161
28	27.8434	36.1516	23.2489
29	27.547	36.0561	23.2737
30	27.2607	36.2974	23.5481
31	27.2109	36.2214	23.5069
32	27.1464	36.2291	23.5335
33	27.1009	36.2341	23.5519
34	27.0642	36.2238	23.5561
35	26.9985	36.22	23.5744
36	26.982	36.2196	23.5794
37	26.6905	36.2095	23.665
38	26.3709	36.2421	23.7911
39	26.2322	36.2265	23.8229
40	25.9838	36.2237	23.8987
41	25.8372	36.2429	23.9591
42	25.7143	36.2624	24.0122
43	25.5955	36.2901	24.0625
44	25.4714	36.3271	24.1303
45	25.4221	36.2587	24.0998
46	25.3796	36.3037	24.1472
47	25.0266	36.3143	24.2639
48	24.7723	36.3621	24.3773
49	24.4282	36.4202	24.5206
50	24.1574	36.4196	24.6821
51	23.9957	36.4526	24.6796
52	24.0479	36.4509	24.8143

CTD cast 02 **22 Aug 91 7:30 PM CDT**

meters	temp	salinity	sigmatheta
1	29.5696	31.6277	19.2924
2	29.7609	32.456	20.5869
3	29.884	33.4199	20.5167
4	29.9241	33.5435	20.5945
5	29.9194	33.5221	20.5897
6	30.0444	34.4493	21.2337
7	29.9548	34.4378	21.2558
8	29.9183	34.639	21.4191
10	29.6015	35.0292	21.8193
11	29.5784	35.0578	21.8467
12	29.4594	35.1653	21.97
13	29.3896	35.2274	22.0399
14	29.3201	35.3165	22.1302
15	29.2942	35.3654	22.1758
16	29.282	35.387	22.1961
17	29.2468	35.4936	22.2881
18	29.1958	35.6409	22.4159
19	29.1885	35.8008	22.5385
20	29.1966	35.8283	22.5565
21	29.2078	35.9095	22.6138
22	29.2074	35.9384	22.6358
23	29.1354	36.0072	22.7118
24	29.0701	36.0247	22.7469
25	29.0067	36.0546	22.7908
27	28.9307	36.0846	22.8389
28	28.9249	36.0869	22.8426
29	28.8271	36.0016	22.8113
30	28.6295	36.1526	22.9908
31	28.4004	35.9799	22.937
34	28.2773	35.8965	22.915
35	27.9047	36.0695	23.1676
36	27.486	35.9537	23.2161
37	27.4389	35.9399	23.2218
38	26.8853	36.0681	23.4966
39	26.6224	36.0253	23.5478
40	26.0225	35.9818	23.7036
41	25.3901	36.132	24.0137
43	24.9501	36.2361	24.2277
44	24.7075	36.2263	24.2941
45	24.5842	36.2251	24.3004
46	24.5302	36.2613	24.3743
47	24.5084	36.294	24.4057
48	24.4952	36.2975	24.4123
49	24.4635	36.2491	24.3853
50	24.4715	36.2929	24.4462
51	24.5245	36.2839	24.4536
52	24.2653	36.3419	24.5392
53	24.1746	36.3466	24.546
54	24.1112	36.3991	24.6049
55	24.0688	36.4493	24.6564
56	24.0446	36.4728	24.6807
57	24.0006	36.4892	24.7063
58	23.9754	36.4891	24.7431
59	23.9311	36.4778	25.007
60	23.2649	36.7466	25.1131


TEMP
23
25
27
29
31
SALINITY
34
35
36
DEPTH
10
20
30
40
50
Julian Day 234
CTD Cast 01
22 Aug 91
7:00 AM CDT

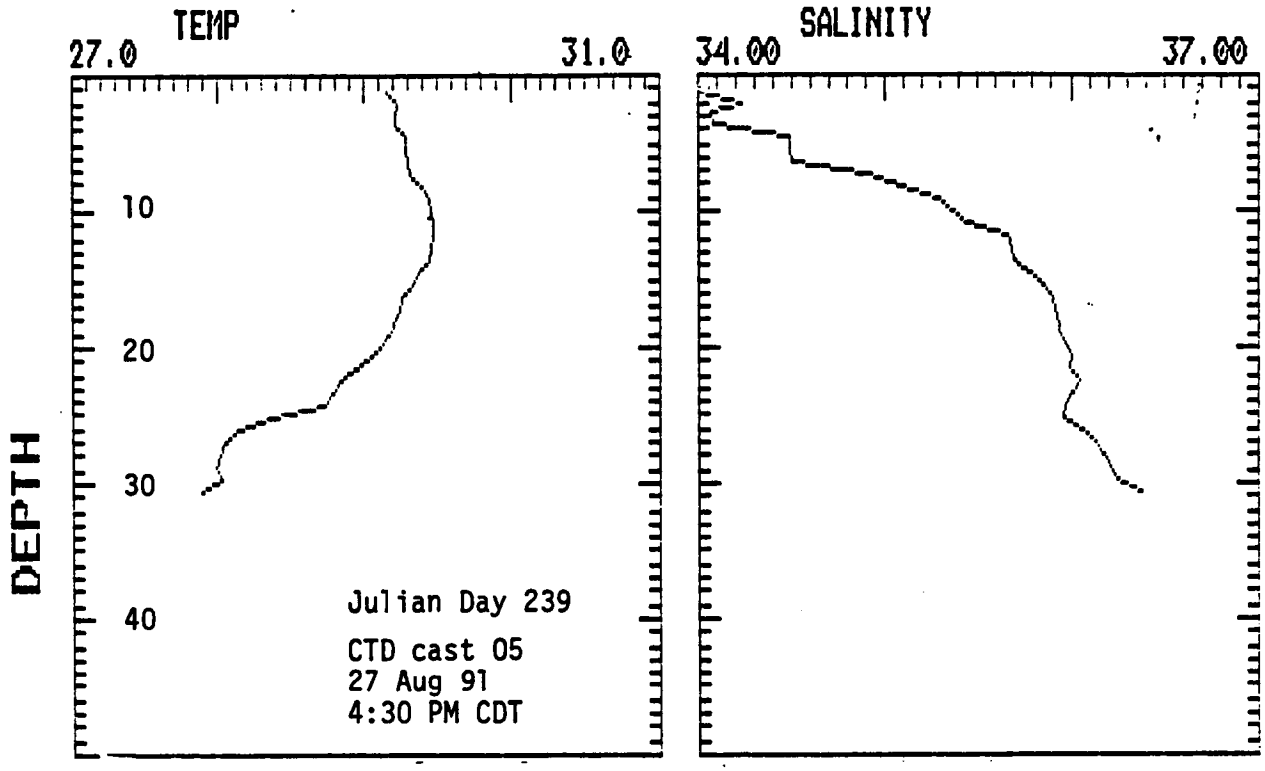

TEMP
23
25
27
29
31
SALINITY
30
32
34
36
DEPTH
10
20
30
40
50
Julian Day 234
CTD Cast 02
22 Aug 91
7:30 PM CDT

CTD cast 05 27 Aug 91 4:30 PM CDT

meters	temp	salinity	sigmatheta
1	29.2007	34.2169	21.3448
2	29.2268	34.3174	21.4108
3	29.2059	34.1848	21.3185
4	29.2578	34.5221	21.554
5	29.2845	34.5868	21.5939
6	29.2873	34.5834	21.5905
7	29.3094	34.9136	21.8309
8	29.3738	35.1393	21.9786
9	29.4343	35.358	22.1224
10	29.4637	35.5332	22.2442
11	29.4651	35.6116	22.3025
12	29.4714	35.7876	22.4325
13	29.4401	35.7877	22.4434
14	29.3956	35.8434	22.5003
15	29.339	35.9199	22.577
16	29.2735	35.9811	22.645
17	29.2413	36.0018	22.6715
18	29.1998	36.0275	22.7049
19	29.1824	36.0331	22.715
20	29.1013	36.0786	22.7766
21	29.0294	36.0825	22.8038
22	28.6969	36.0916	22.855
23	28.7508	36.1688	22.9619
24	28.7434	36.0731	22.8925
25	28.4308	36.0521	22.9805
26	28.1591	36.1432	23.1389
27	28.0292	36.2293	23.2464
28	27.9887	36.3041	23.3162
29	27.9994	36.3209	23.3253
30	27.8846	36.4663	23.4725

CTD cast 06 27 Aug 91 9:15 PM CDT

meters	temp	salinity	sigmatheta
1	29.167	34.7959	21.7897
2	29.1722	34.7251	21.7351
3	29.2183	34.6684	21.6771
4	29.3937	35.0659	21.9166
5	29.4183	35.1044	21.9373
6	29.4372	35.1412	21.9585
8	29.4889	35.2932	22.0553
9	29.5194	35.413	22.135
10	29.5651	35.5274	22.2054
11	29.6364	35.7244	22.3292
12	29.6374	35.7392	22.34
13	29.6391	35.8302	22.4079
14	29.6179	35.8328	22.4171
16	29.5649	35.8567	22.4531
17	29.4296	35.9227	22.5485
18	29.3136	36.0002	22.646
19	29.2799	36.0237	22.6752
20	29.254	36.0347	22.6923
21	29.2015	36.063	22.7312
22	29.1863	36.071	22.7424
23	29.1633	36.0817	22.7583
24	29.1095	36.1067	22.7953
26	28.9111	36.214	22.9426
27	28.6723	36.3276	23.1077
28	28.601	36.3928	23.1806
29	28.5965	36.3802	23.1727
30	28.5488	36.3786	23.1874
31	28.517	36.387	23.2044
32	28.4825	36.4147	23.2367
33	28.4813	36.423	23.2434
34	28.4016	36.6017	23.4044
35	28.3664	36.6505	23.4528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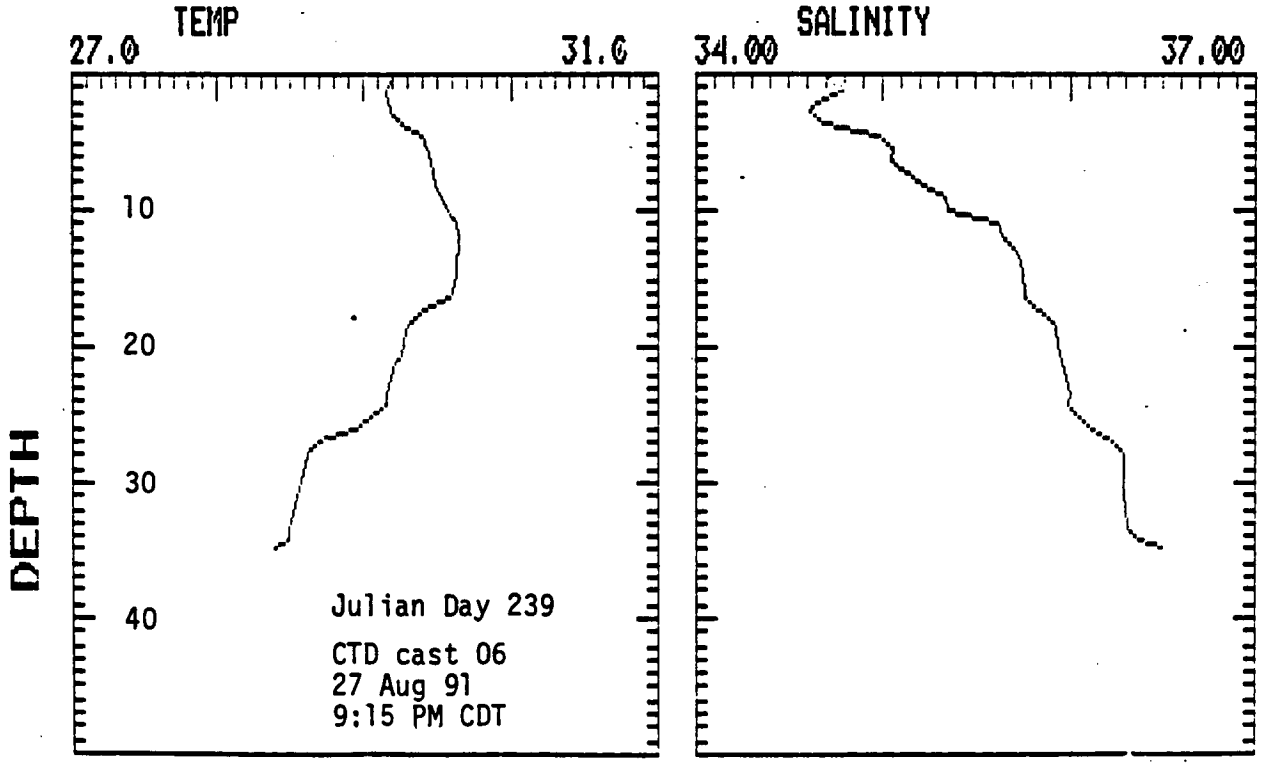
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 239
CTD cast 05
27 Aug 91
4:30 PM CDT


TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 239
CTD cast 06
27 Aug 91
9:15 PM CDT

CTD cast 08 28 Aug 91 8:00 PM CDT

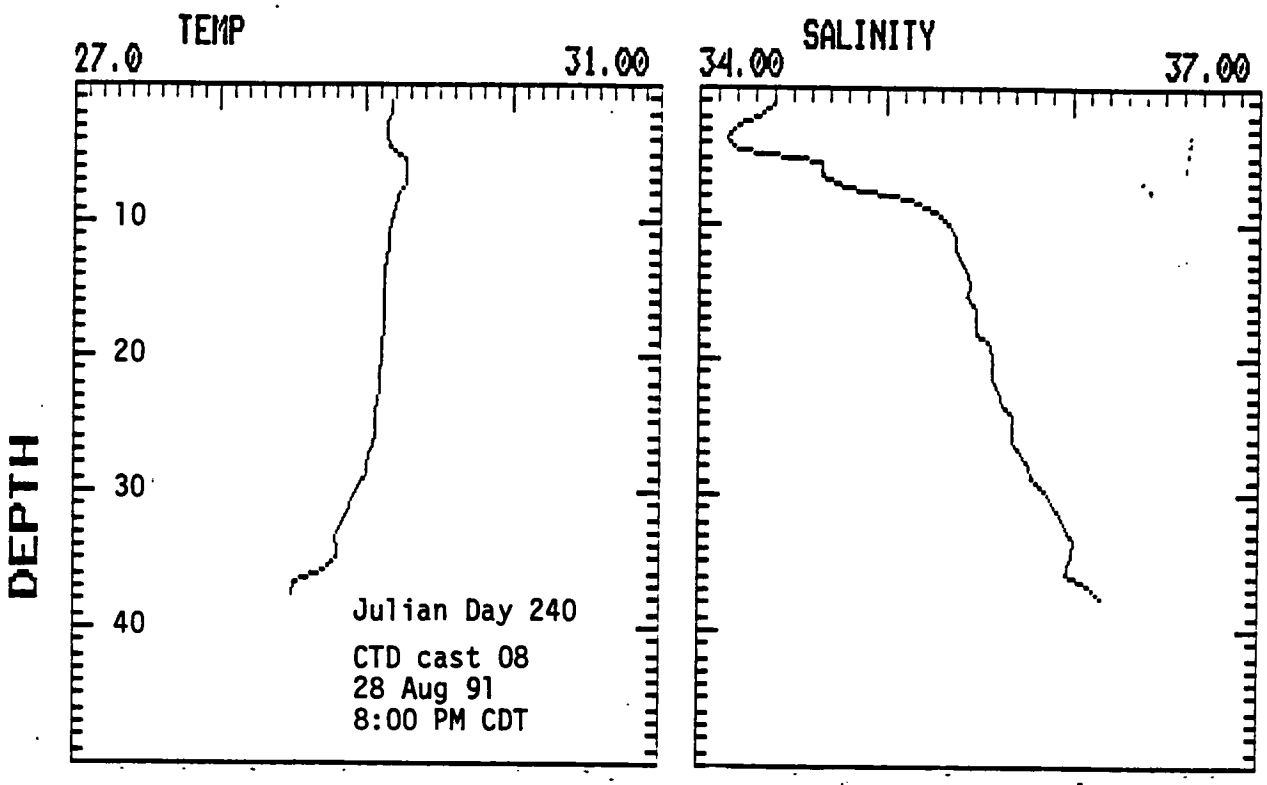
meters	temp	salinity	sigmatheta
1	29.1712	34.4763	21.54[illegible]
2	29.1523	34.3366	21.4501
3	29.15	34.2728	21.4032
4	29.1741	34.2369	21.3682
5	29.2679	34.7511	21.7228
6	29.2659	34.7208	21.7007
7	29.2619	34.9307	21.8597
8	29.2246	35.1673	22.0499
9	29.2001	35.3411	22.1886
10	29.1697	35.4317	22.267
11	29.1533	35.4687	22.3003
12	29.1464	35.4639	22.2991
13	29.1387	35.5163	22.3411
14	29.1284	35.5332	22.3573
15	29.1265	35.5343	22.3589
16	29.1238	35.564	22.3822
17	29.1201	35.5783	22.3943
18	29.1182	35.5899	22.4037
19	29.1076	35.6487	22.4515
20	29.1017	35.671	22.4703
21	29.1	35.6631	22.465
22	29.0982	35.673	22.4732
23	29.0857	35.7243	22.5159
24	29.0707	35.7617	22.5491
26	29.0595	35.7914	22.5754
27	29.0371	35.8279	22.6104
28	29.0121	35.8652	22.6468
29	28.9938	35.8999	22.6791
30	28.9414	35.9704	22.7497
32	28.8373	36.0692	22.8589
33	28.8052	36.0981	22.8914
34	28.8027	36.0967	22.8913
35	28.803	36.0953	22.8827
36	28.8908	36.1182	22.9782
37	28.4923	36.2562	23.1148

CTD cast 09 29 Aug 91 3:00 PM CDT

meters	temp	salinity	sigmatheta
1	29.5007	35.0350	21.9245
2	29.4677	35.1107	21.9248

CTD cast 10 **30 Aug 91 9:30 AM CDT**

meters	temp	salinity	sigmatheta
1	29.6897	35.7051	22.2957
2	29.5734	35.7248	22.3502
3	29.5997	35.7041	22.3258
4	29.5793	35.667	22.3049
5	29.5679	35.7006	22.334
6	29.532	35.5915	22.2644
7	29.5228	35.5929	22.2687
8	29.507	35.5938	22.2748
9	29.4961	35.5954	22.2798
10	29.4844	35.5966	22.2847
11	29.4635	35.5889	22.2861
12	29.4172	35.5825	22.297
13	29.387	35.597	22.3182
14	29.3703	35.5925	22.3205
15	29.3264	35.6364	22.3683
16	29.2875	35.7178	22.4427
17	29.2529	35.7845	22.5045
18	29.2548	35.7943	22.5113
19	29.2418	35.8449	22.5537
20	29.2124	35.919	22.6194
21	29.2092	35.9295	22.6284
22	29.2097	35.933	22.6309
23	29.1813	35.9601	22.6609
24	28.9987	35.9899	22.7447
25	28.8983	36.0171	22.7988
26	28.8539	36.021	22.8166
27	28.9097	36.017	22.7951
28	28.8876	36.0093	22.7968
29	28.7809	36.0203	22.8408
30	28.6557	36.0428	22.8995
31	28.705	36.0241	22.869
32	28.6418	36.0312	22.8955
33	28.5793	36.0254	22.912
34	28.4363	36.0655	22.9696
35	28.5058	36.0227	22.9345
36	28.4468	36.01	22.9445
37	28.2026	36.0173	23.0309
38	28.148	36.0093	23.0428
39	28.0049	36.0126	23.0955
40	28.0066	36.0455	23.1156


TEMP
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31.00
SALINITY
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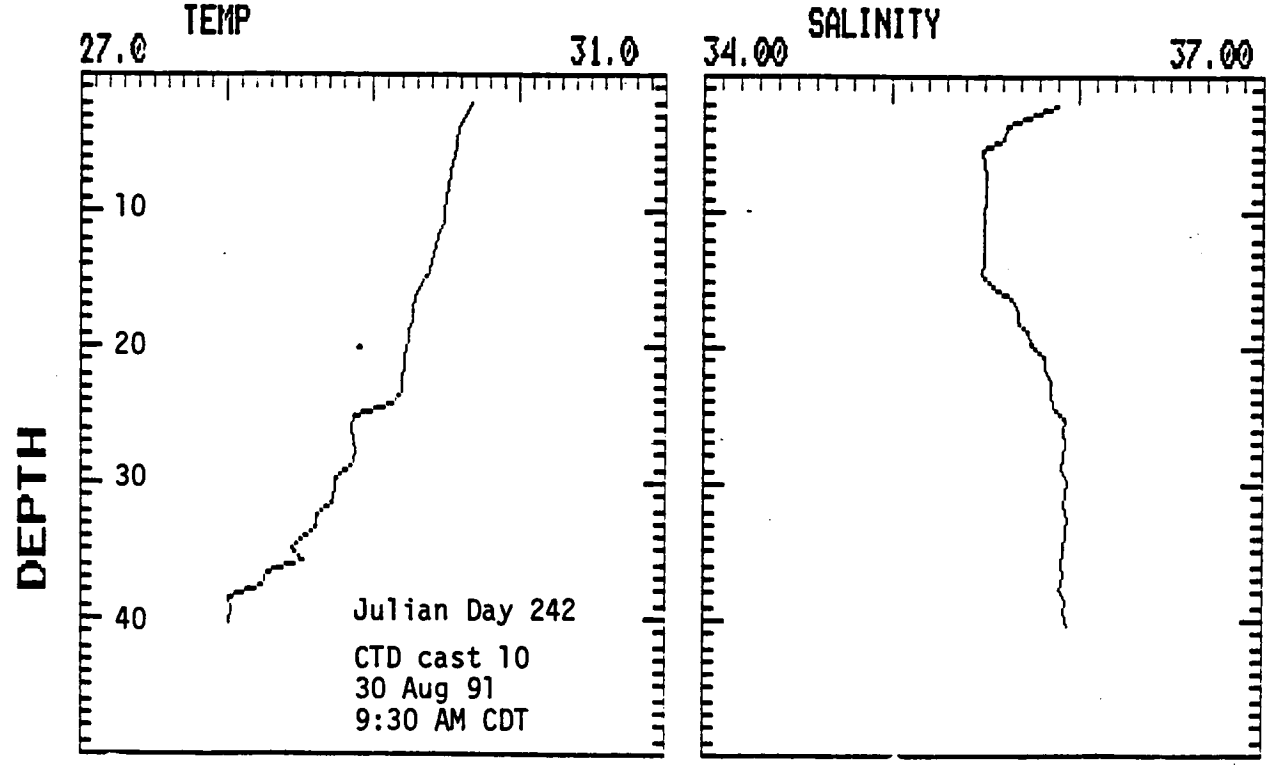
37.00
DEPTH
10
20
30
40
Julian Day 240
CTD cast 08
28 Aug 91
8:00 PM CDT


TEMP
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SALINITY
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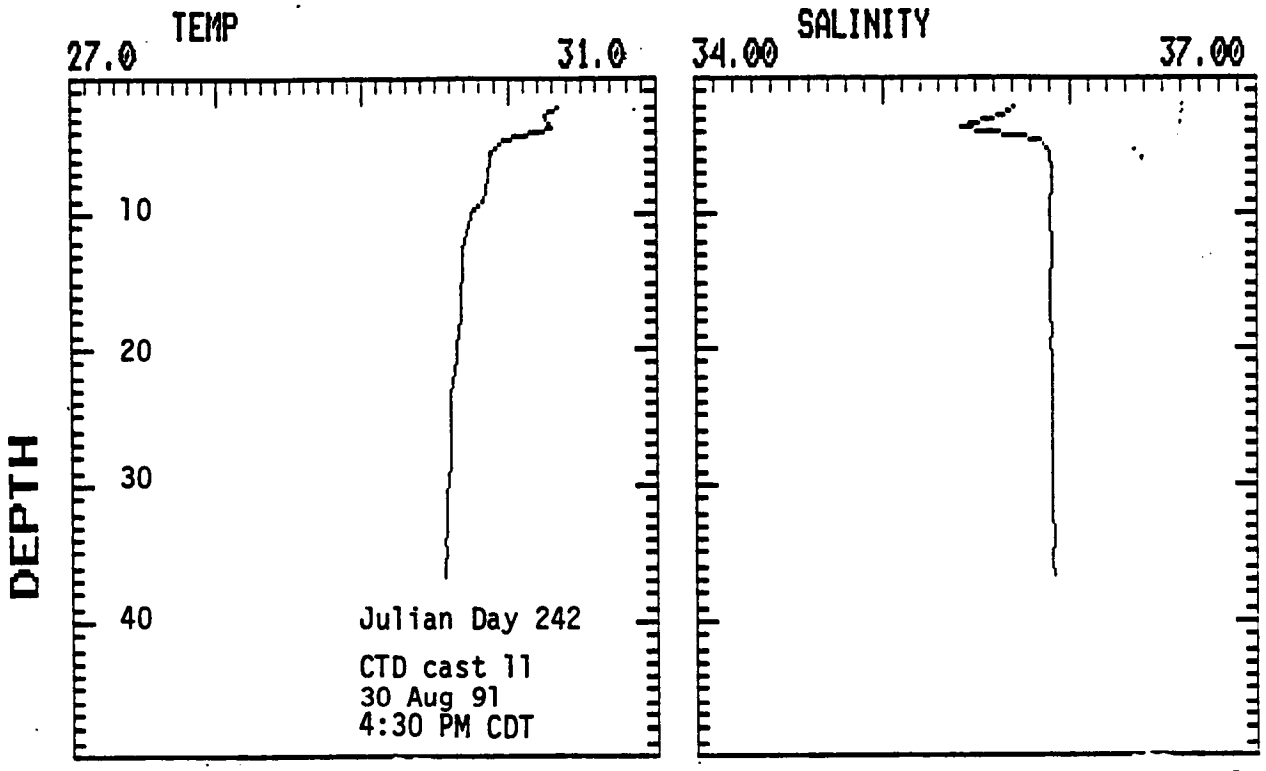
37.00
DEPTH
10
20
30
40
Julian Day 242
CTD cast 10
30 Aug 91
9:30 AM CDT

CTD cast 11 **30 Aug 91 4:30 PM CDT**

meters	temp	salinity	sigmatheta
1	30.3235	35.8131	22.1599
2	30.2477	35.7601	22.1322
3	30.1629	35.6877	22.1213
4	30.3382	36.107	22.3755
5	29.8027	35.98	22.4641
6	29.8371	36.0043	22.4705
7	29.8442	35.9938	22.4603
8	29.8315	35.9921	22.4634
9	29.7969	35.981	22.4669
10	29.7395	35.9841	22.4889
11	29.7055	35.9899	22.5049
12	29.6877	36.0003	22.5189
13	29.6795	35.9923	22.5157
14	29.6731	35.9882	22.515
15	29.6669	35.9881	22.5171
16	29.6615	35.9867	22.5179
17	29.6585	35.987	22.5192
18	29.6526	35.9929	22.5258
19	29.6493	35.9958	22.5291
20	29.6391	35.9915	22.5295
21	29.6341	35.9923	22.5319
22	29.6192	35.9941	22.5383
23	29.6051	35.9961	22.5447
24	29.5983	35.9995	22.5497
25	29.5964	35.9997	22.5505
26	29.5914	35.9988	22.5516
27	29.5881	35.9996	22.5535
28	29.5848	35.9978	22.5533
29	29.5771	35.9997	22.5575
30	29.5724	35.9991	22.5586
31	29.5688	36.001	22.5614
32	29.5673	35.9994	22.5608
33	29.5575	36.0006	22.5651
34	29.5534	36.004	22.5691
35	29.5598	36.0008	22.5647
36	29.5516	36.007	22.5724

CTD cast 12 **31 Aug 91 10:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.4406	35.0219	21.8654
2	29.384	35.0172	21.8831
3	29.3765	35.0445	21.9062
4	29.3575	35.0803	21.9395
5	29.3377	35.0582	21.9297
6	29.3377	35.0795	21.9457
7	29.3182	35.1462	22.0025
8	29.2819	35.2246	22.0736
9	29.2387	35.3122	22.154
10	29.217	35.3545	22.1931
11	29.2034	35.3872	22.2223
12	29.1966	35.3985	22.2332
13	29.1916	35.4118	22.2449
14	29.1963	35.4261	22.2542
15	29.2144	35.4592	22.273
16	29.2244	35.4662	22.275
17	29.2241	35.4962	22.2977
18	29.3266	35.6529	22.3809
19	29.4569	35.8401	22.4775
20	29.5479	35.8714	22.4703
21	29.5689	36.0706	22.6129
22	29.5771	36.1158	22.644
23	29.633	36.2652	22.7372
25	29.4989	36.1734	22.714
26	29.467	36.3124	22.8293
27	29.4569	36.3415	22.8546
28	29.5266	36.4063	22.8793
29	29.5362	36.4153	22.8834
30	29.5866	36.2879	22.7706
31	29.377	36.2897	22.8431
32	29.3471	36.3738	22.9164
33	29.2996	36.414	22.9628
34	29.2851	36.39	22.9498
35	29.1065	36.2866	22.9323
36	28.9142	36.442	23.1137
37	28.8555	36.4598	23.1468
38	28.436	36.4916	23.2832


TEMP
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31.0
SALINITY
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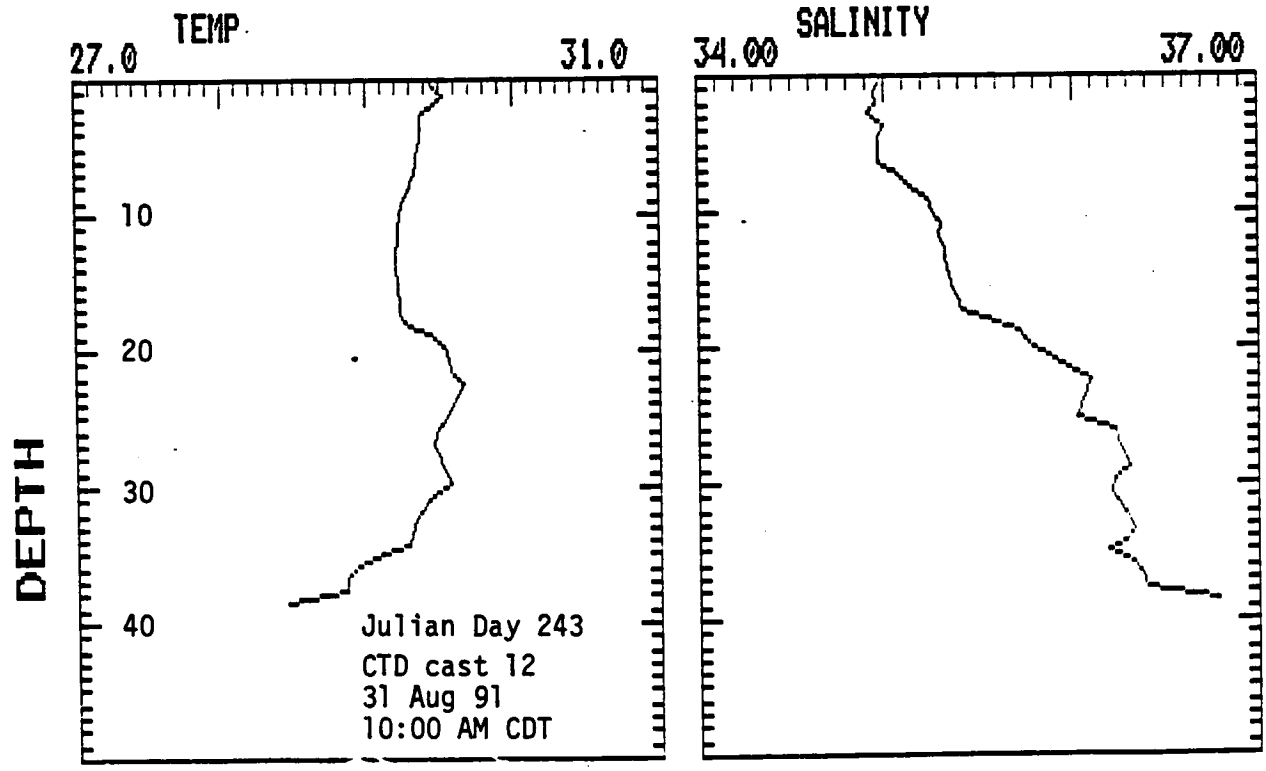
37.00
DEPTH
10
20
30
40
Julian Day 242
CTD cast 11
30 Aug 91
4:30 PM CDT


TEMP
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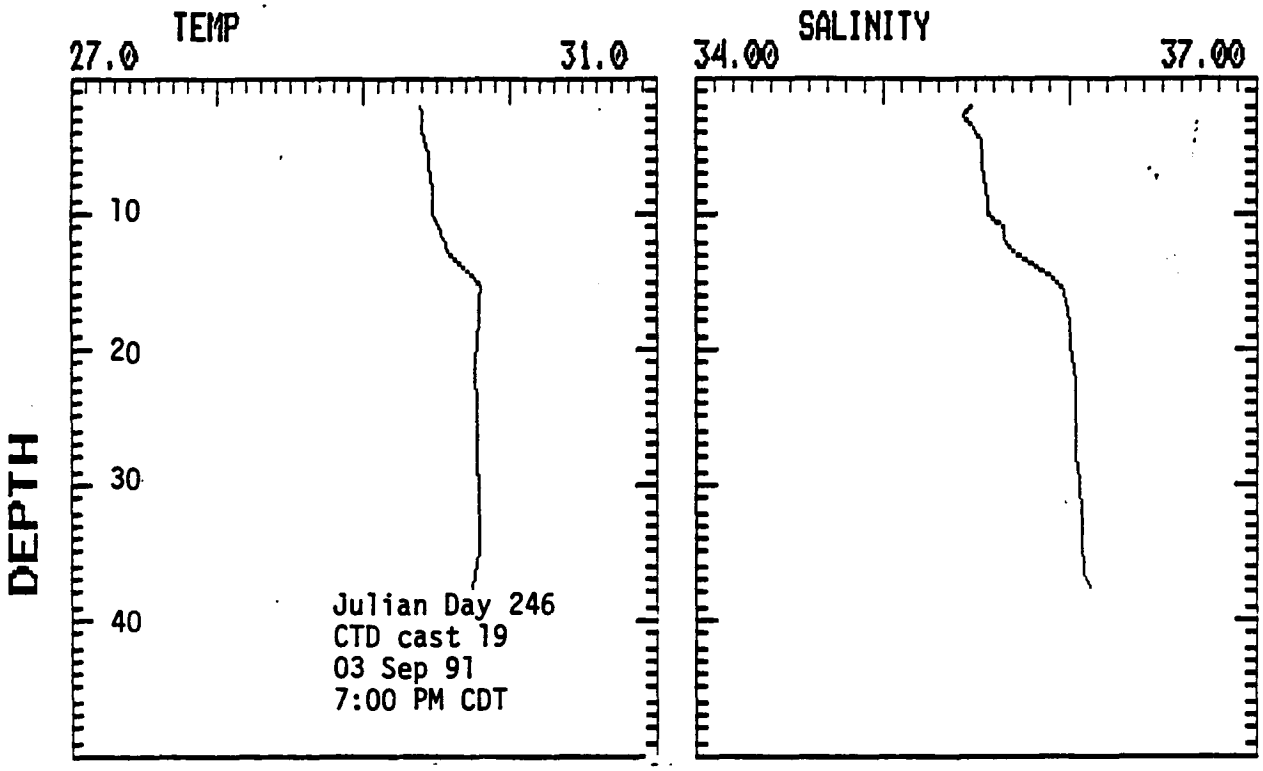
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 243
CTD cast 12
31 Aug 91
10:00 AM CDT

CTD cast 19 **03 Sep 91 7:00 PM CDT**

meters	temp	salinity	sigmatheta
1	29.3776	35.5591	22.2883
2	29.3908	35.5669	22.2952
3	29.4094	35.5892	22.3039
4	29.396	35.5855	22.3057
5	29.4276	35.6356	22.3327
6	29.44	35.6273	22.3224
7	29.4508	35.6397	22.3281
8	29.4597	35.6462	22.3301
9	29.4665	35.6479	22.3292
10	29.4796	35.6807	22.3495
11	29.5284	35.744	22.3805
12	29.5481	35.763	22.3882
13	29.6285	35.8831	22.4512
14	29.7287	35.9873	22.4954
15	29.7822	36.0503	22.5245
16	29.7883	36.0775	22.5429
17	29.7847	36.0873	22.5516
18	29.7734	36.0961	22.5621
19	29.7638	36.0961	22.5655
20	29.7647	36.0985	22.567
21	29.7488	36.121	22.5895
22	29.7585	36.1233	22.588
23	29.761	36.1253	22.5887
24	29.7625	36.1258	22.5886
25	29.7632	36.1257	22.5884
26	29.7631	36.1266	22.5892
27	29.7643	36.1276	22.5896
28	29.7664	36.1344	22.5941
29	29.7683	36.1421	22.5993
30	29.7813	36.1524	22.6027
31	29.7808	36.163	22.6109
32	29.7828	36.1594	22.6076
33	29.7808	36.1566	22.6063
34	29.7798	36.1578	22.6076
35	29.7718	36.1649	22.6153
36	29.7574	36.175	22.6283
37	29.7429	36.1983	22.651
38	29.6866	36.304	22.7494
39	29.6727	36.3388	22.7743

CTD cast 20 **04 Sep 91 10:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.5686	35.5244	22.2013
2	29.6232	36.0686	22.5913
3	29.623	36.0761	22.5953
4	29.6323	36.0777	22.5951
5	29.6335	36.0842	22.5997
6	29.6344	36.0832	22.5987
7	29.6355	36.0841	22.5991
8	29.6356	36.0844	22.5994
9	29.6359	36.0831	22.5984
10	29.6359	36.0836	22.5989
11	29.6355	36.0847	22.5999
12	29.6368	36.0867	22.601
13	29.6356	36.0879	22.6024
14	29.6375	36.0859	22.6004
15	29.6383	36.0863	22.6005
16	29.6392	36.0859	22.6
17	29.6394	36.0862	22.6002
18	29.64	36.0892	22.6023
19	29.6438	36.0902	22.6019
20	29.6443	36.0903	22.6019
21	29.6505	36.1102	22.6148
22	29.6615	36.0931	22.5983
23	29.6566	36.1011	22.606
24	29.6605	36.1033	22.6064
25	29.6659	36.1159	22.6142
26	29.6702	36.1699	22.6533
27	29.6999	36.1585	22.6348
28	29.7141	36.2155	22.6728
29	29.7206	36.1931	22.6511
30	29.7319	36.1901	22.6478
31	29.7423	36.1984	22.6506
32	29.7492	36.2166	22.662
34	29.7591	36.2109	22.6545
35	29.7577	36.2086	22.6534
36	29.753	36.2098	22.6559
37	29.7362	36.2285	22.6759
38	29.7271	36.2332	22.6825


TEMP
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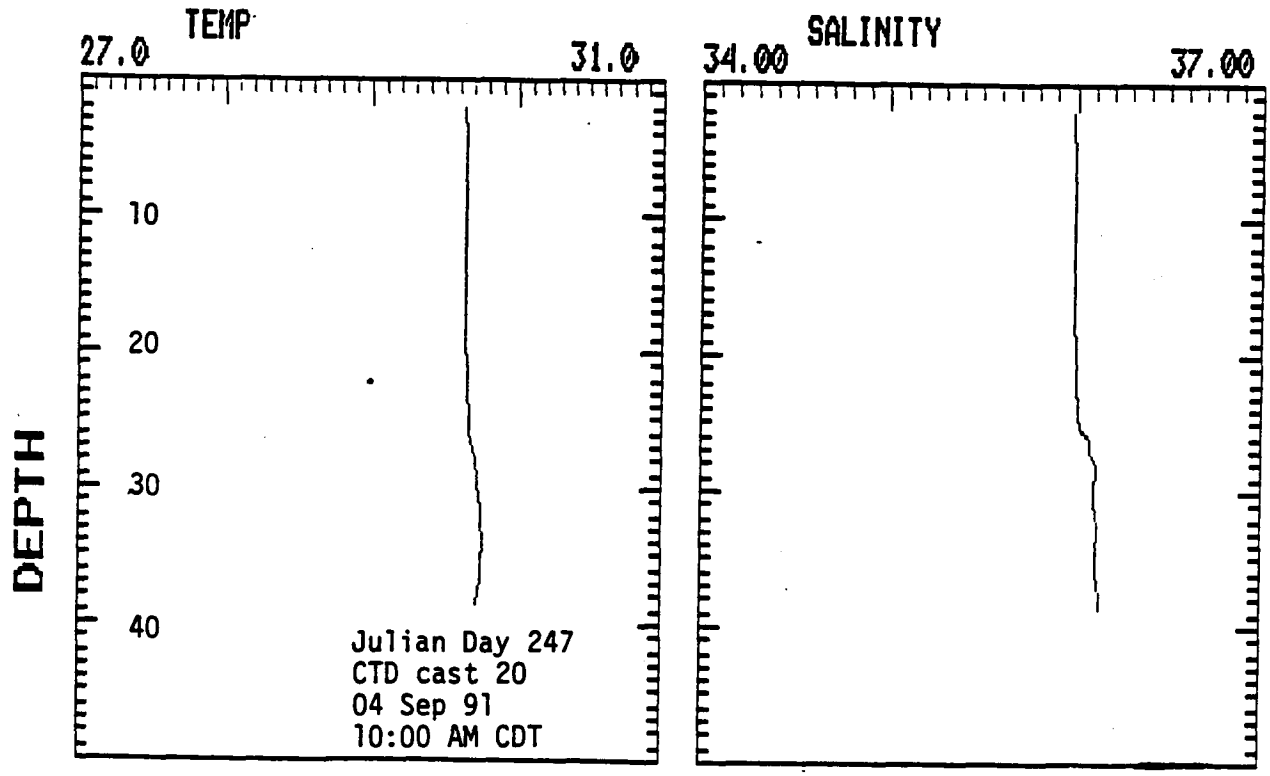
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 246
CTD cast 19
03 Sep 91
7:00 PM CDT

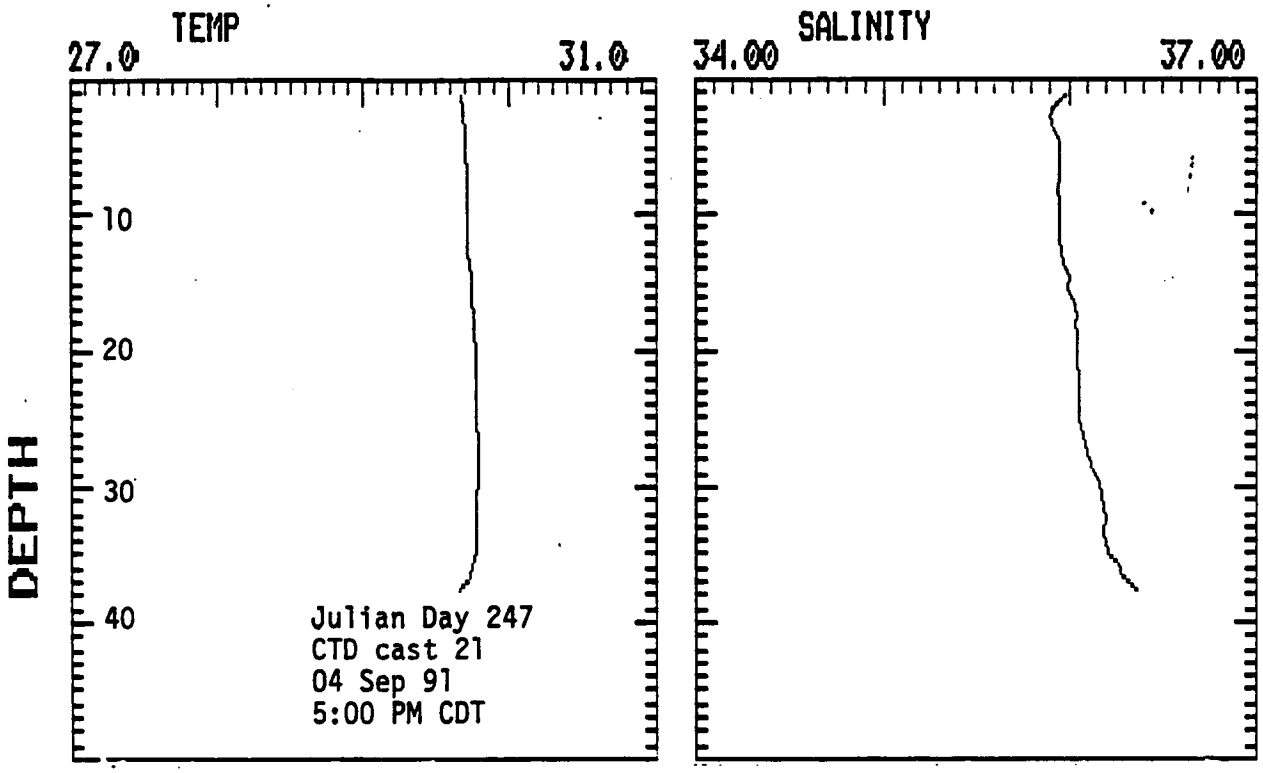

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 247
CTD cast 20
04 Sep 91
10:00 AM CDT

CTD cast 21 **04 Sep 91 5:00 PM CDT**

meters	temp	salinity	sigmatheta
1	29.6612	36.0777	22.585
2	29.6841	36.0297	22.5414
3	29.6882	36.0304	22.5406
4	29.6951	36.0338	22.5408
5	29.6998	36.0353	22.5404
6	29.7036	36.0357	22.5395
7	29.7028	36.0362	22.5402
8	29.7044	36.0355	22.5393
9	29.7061	36.0373	22.5401
10	29.7068	36.0453	22.546
11	29.7103	36.0362	22.5381
12	29.7103	36.0457	22.5453
13	29.72	36.0637	22.5556
14	29.7325	36.0804	22.564
15	29.7362	36.085	22.5662
16	29.7429	36.1086	22.5817
17	29.7506	36.1326	22.5972
18	29.7551	36.1329	22.5959
19	29.7582	36.1407	22.6009
20	29.7605	36.1435	22.6022
21	29.7614	36.1452	22.6033
22	29.7621	36.1512	22.6077
23	29.7625	36.1499	22.6066
25	29.7653	36.1682	22.6196
26	29.7746	36.1888	22.632
27	29.7747	36.1891	22.6322
28	29.7805	36.2166	22.6509
29	29.7811	36.2346	22.6643
30	29.776	36.2668	22.6903
31	29.7671	36.2793	22.7029
32	29.7622	36.2925	22.7145
33	29.7626	36.286	22.7095
34	29.7635	36.2894	22.7119
35	29.7555	36.3318	22.7465
36	29.7276	36.3879	22.7983
37	29.7013	36.4188	22.8385
38	29.6563	36.4553	22.8732

CTD cast 22 **05 Sep 91 10:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.522	35.9893	22.5661
2	29.5276	36.0602	22.6174
3	29.5184	35.9694	22.5524
4	29.5231	35.9555	22.5405
5	29.5293	35.9248	22.5154
6	29.5326	36.0524	22.6182
7	29.535	36.0512	22.6085
8	29.535	36.0536	22.6104
9	29.5351	36.0543	22.611
10	29.5354	36.0539	22.6107
11	29.535	36.0534	22.6105
12	29.5359	36.0536	22.6105
13	29.5354	36.0538	22.6109
14	29.5364	36.055	22.6115
15	29.5362	36.0549	22.6116
16	29.5358	36.0561	22.6127
17	29.5367	36.0575	22.6136
18	29.5359	36.06	22.6158
19	29.5362	36.0593	22.6152
20	29.5369	36.0627	22.6177
21	29.5383	36.0689	22.6219
22	29.5389	36.0674	22.6206
23	29.537	36.0716	22.6245
24	29.5393	36.0702	22.6228
25	29.5391	36.0723	22.6245
26	29.5397	36.0737	22.6255
27	29.5397	36.0751	22.6266
28	29.5404	36.0754	22.6267
29	29.5405	36.0749	22.6263
30	29.5414	36.0745	22.6258
31	29.5416	36.0844	22.6332
32	29.5414	36.0837	22.6328
34	29.5409	36.088	22.6364
35	29.5432	36.0901	22.6373
36	29.5418	36.0953	22.6418
37	29.4301	36.1918	22.7522


TEMP
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31.0
SALINITY
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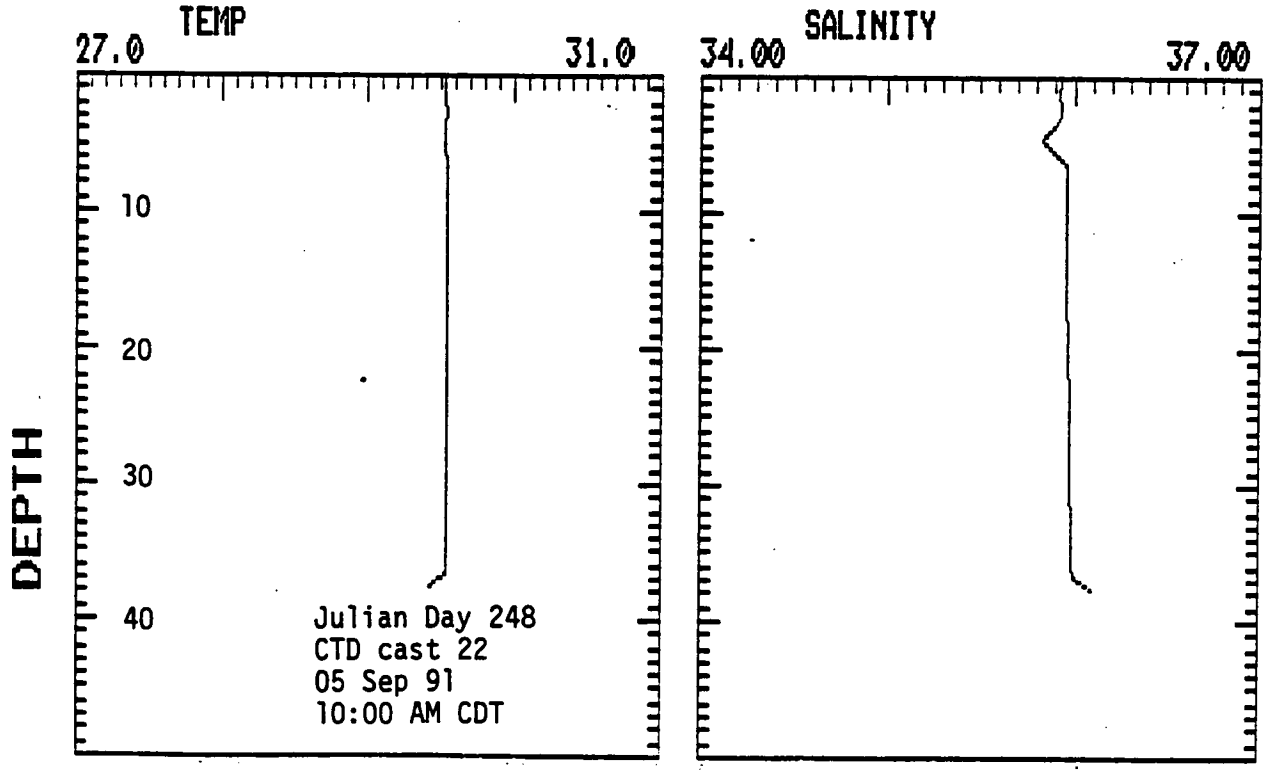
37.00
DEPTH
10
20
30
40
Julian Day 247
CTD cast 21
04 Sep 91
5:00 PM CDT

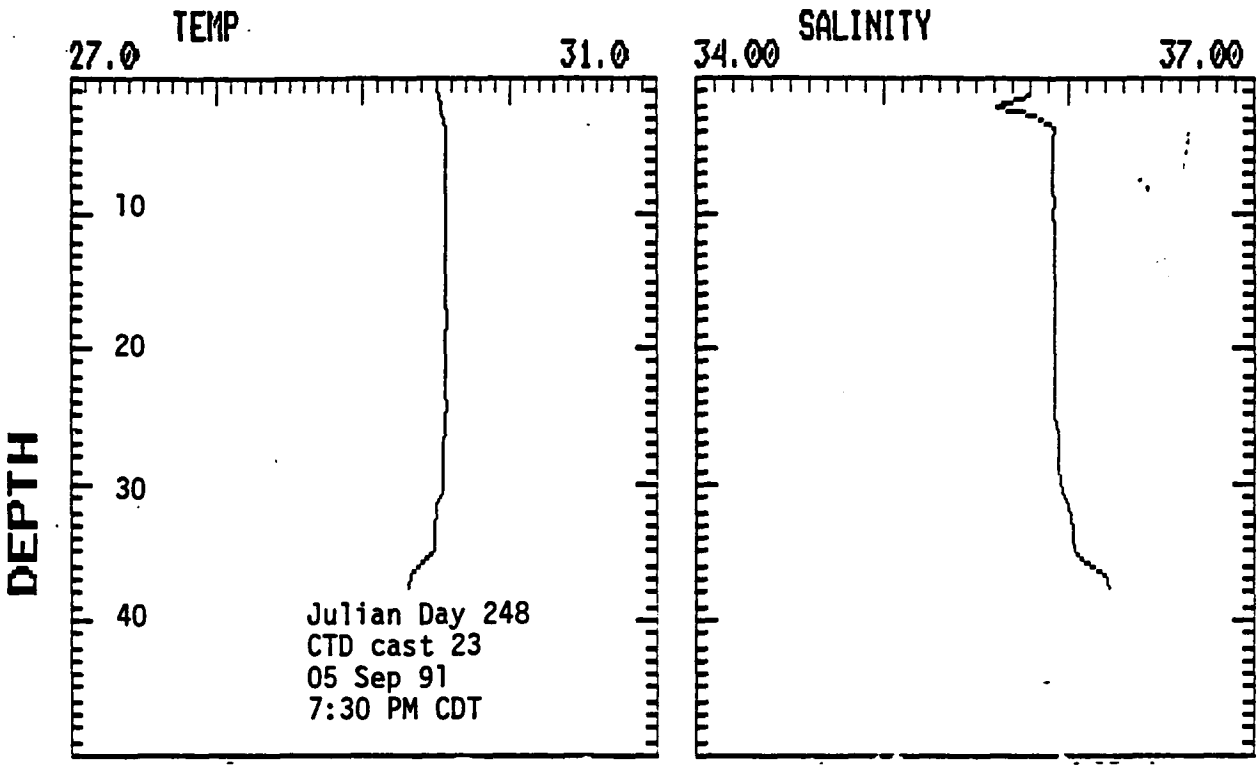

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 248
CTD cast 22
05 Sep 91
10:00 AM CDT

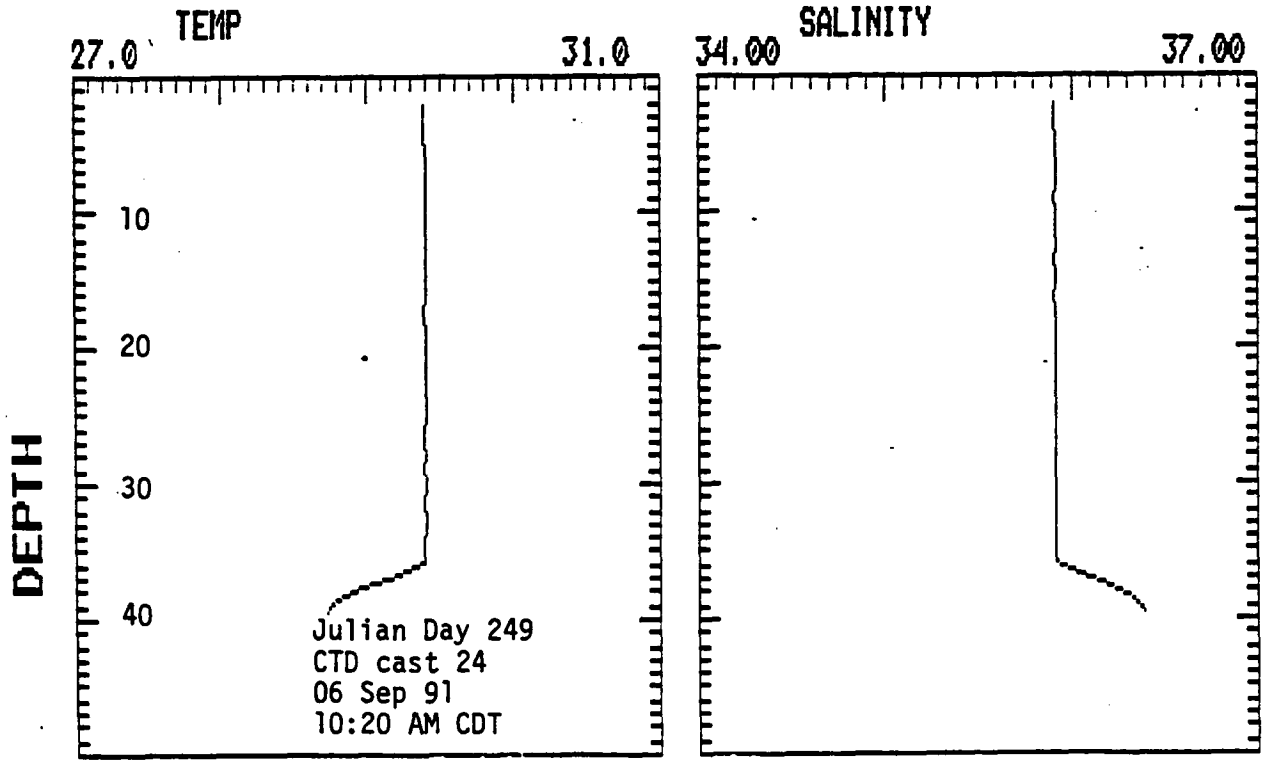
CTD cast 23 **05 Sep 91 7:30 PM CDT**

meters	temp	salinity	sigmatheta
1	29.5146	35.8801	22.4865
2	29.5435	36.0104	22.5746
3	29.5498	36.006	22.5693
4	29.552	36.0123	22.5733
5	29.5523	36.0078	22.5699
6	29.551	36.0103	22.5723
7	29.5538	36.01	22.5713
8	29.5546	36.0127	22.573
9	29.556	36.0125	22.5725
10	29.5591	36.0132	22.572
11	29.5578	36.0161	22.5748
12	29.5578	36.0129	22.5725
13	29.5587	36.0152	22.574
14	29.5584	36.0169	22.5754
15	29.5589	36.0184	22.5766
18	29.5597	36.0183	22.5764
19	29.5586	36.0193	22.5776
20	29.5589	36.021	22.5788
21	29.5587	36.0205	22.5787
22	29.5587	36.0202	22.5785
23	29.5589	36.0198	22.5782
24	29.5593	36.0199	22.5783
25	29.5577	36.0251	22.5827
26	29.5497	36.0373	22.5947
27	29.5439	36.0419	22.6002
28	29.5413	36.043	22.602
29	29.5413	36.0446	22.6033
30	29.5375	36.048	22.6072
31	29.516	36.0839	22.6416
33	29.4822	36.1154	22.6768
34	29.4768	36.1275	22.6878
35	29.4461	36.1586	22.7216
36	29.3233	36.2997	22.8693
37	29.315	36.3133	22.8823

CTD cast 24 **06 Sep 91 10:20 AM CDT**

meters	temp	salinity	sigmatheta
1	29.2738	36.0066	22.6628
2	29.3795	36.0014	22.6234
3	29.3795	35.9919	22.6163
4	29.3833	36.0033	22.6237
5	29.3908	36.0026	22.6207
6	29.3898	36.0026	22.6211
7	29.39	36.0022	22.6208
8	29.39	36.0007	22.6198
9	29.3894	35.9985	22.6184
10	29.389	36.0038	22.6227
11	29.3902	36.0021	22.6211
12	29.3896	36.0017	22.621
13	29.3887	36.0053	22.6241
14	29.3902	36.0031	22.622
15	29.3889	36.0034	22.6227
16	29.3886	36.0019	22.6218
17	29.3875	36.0023	22.6226
18	29.3877	36.0027	22.6229
19	29.3887	36.0023	22.6224
20	29.3895	36.0021	22.622
21	29.3893	36.0047	22.6241
22	29.3903	36.0023	22.622
23	29.3893	36.0029	22.623
24	29.3893	36.003	22.6231
25	29.3882	36.0044	22.6246
26	29.386	36.0067	22.6272
27	29.3865	36.0061	22.6266
28	29.3881	36.0046	22.625
29	29.3861	36.0059	22.6267
30	29.3894	36.0031	22.6236
31	29.3875	36.0035	22.6246
32	29.3881	36.0031	22.6243
33	29.3886	36.0021	22.6234
34	29.3849	36.0051	22.627
35	29.3796	36.0068	22.6302
36	29.3417	36.0363	22.6651
37	29.0871	36.2317	22.8978
38	28.7839	36.4243	23.1442
39	28.7208	36.4854	23.2112


TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 248
CTD cast 23
05 Sep 91
7:30 PM CDT

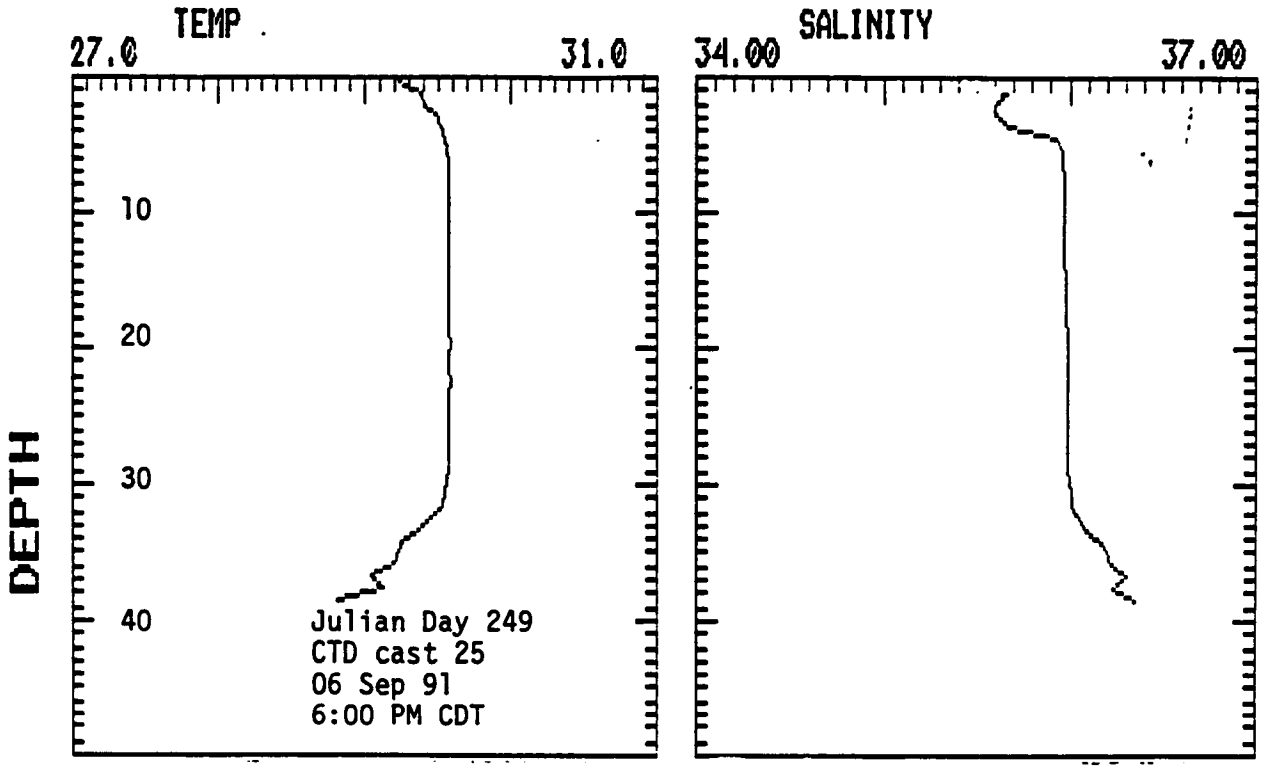

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 249
CTD cast 24
06 Sep 91
10:20 AM CDT

CTD cast 25 **06 Sep 91 6:00 PM CDT**

meters	temp	salinity	sigmatheta
1	29.4012	35.8001	22.4647
2	29.4697	35.6464	22.3263
3	29.5278	36.0276	22.5917
4	29.5124	36.0109	22.5857
5	29.5523	36.0453	22.5981
6	29.5619	36.0545	22.6018
7	29.5645	36.0613	22.6061
8	29.5648	36.0625	22.607
9	29.5662	36.0637	22.6075
10	29.5659	36.0648	22.6085
11	29.5652	36.0637	22.608
12	29.5652	36.0642	22.6085
13	29.5664	36.067	22.6102
14	29.569	36.0701	22.6118
15	29.5696	36.0706	22.612
16	29.5703	36.0729	22.6136
17	29.5706	36.0752	22.6153
18	29.5712	36.0795	22.6184
19	29.5723	36.0806	22.619
20	29.5728	36.0809	22.6191
21	29.573	36.0815	22.6196
22	29.573	36.0819	22.6199
23	29.5721	36.0848	22.6225
24	29.5727	36.0861	22.6234
25	29.5713	36.0856	22.6236
26	29.5669	36.087	22.6262
27	29.5632	36.0897	22.6296
28	29.5641	36.0898	22.6294
29	29.5622	36.0903	22.6305
30	29.552	36.097	22.6391
31	29.5172	36.1122	22.6624
32	29.4548	36.1483	22.7107
33	29.36	36.1914	22.7752
34	29.2461	36.2684	22.8715
35	29.2168	36.2938	22.9006
36	29.0494	36.4166	23.0493
37	29.062	36.3815	23.0187
38	29.1227	36.3314	22.9668
39	28.8153	36.4446	23.1489

CTD cast 26 07 Sep 91 11:00 AM CDT

meters	temp	salinity	sigmatheta
1	29.5459	36.0785	22.6249
2	29.546	36.0505	22.6039
3	29.5464	36.048	22.6019
4	29.5473	36.0349	22.5919
5	29.5429	36.0439	22.6002
6	29.5462	36.0487	22.5967
7	29.5538	36.0555	22.6054
8	29.5541	36.0566	22.6062
9	29.5522	36.0577	22.6078
10	29.5512	36.0584	22.6087
11	29.5494	36.0581	22.6092
12	29.547	36.0592	22.6109
13	29.5461	36.0584	22.6107
14	29.5447	36.0597	22.6122
15	29.5442	36.06	22.6127
16	29.5435	36.0603	22.6132
17	29.5433	36.0593	22.6127
18	29.5447	36.0588	22.6119
19	29.5445	36.0613	22.6139
20	29.5443	36.0619	22.6145
21	29.5447	36.0652	22.6178
22	29.5447	36.0659	22.6175
23	29.5471	36.0647	22.6159
24	29.5473	36.065	22.6162
25	29.5475	36.0645	22.6158
26	29.5475	36.068	22.6185
27	29.5503	36.0952	22.6381
28	29.5574	36.0945	22.6352
29	29.5573	36.0804	22.6247
30	29.5567	36.0809	22.6254
31	29.5631	36.1131	22.6475
32	29.5663	36.1113	22.6451
33	29.5586	36.1292	22.6613
34	29.5521	36.1438	22.6745
35	29.5516	36.1471	22.6773
36	29.5479	36.1397	22.673
37	29.582	36.1571	22.6746
38	29.5288	36.1891	22.717
39	29.6119	36.188	22.6878


TEMP
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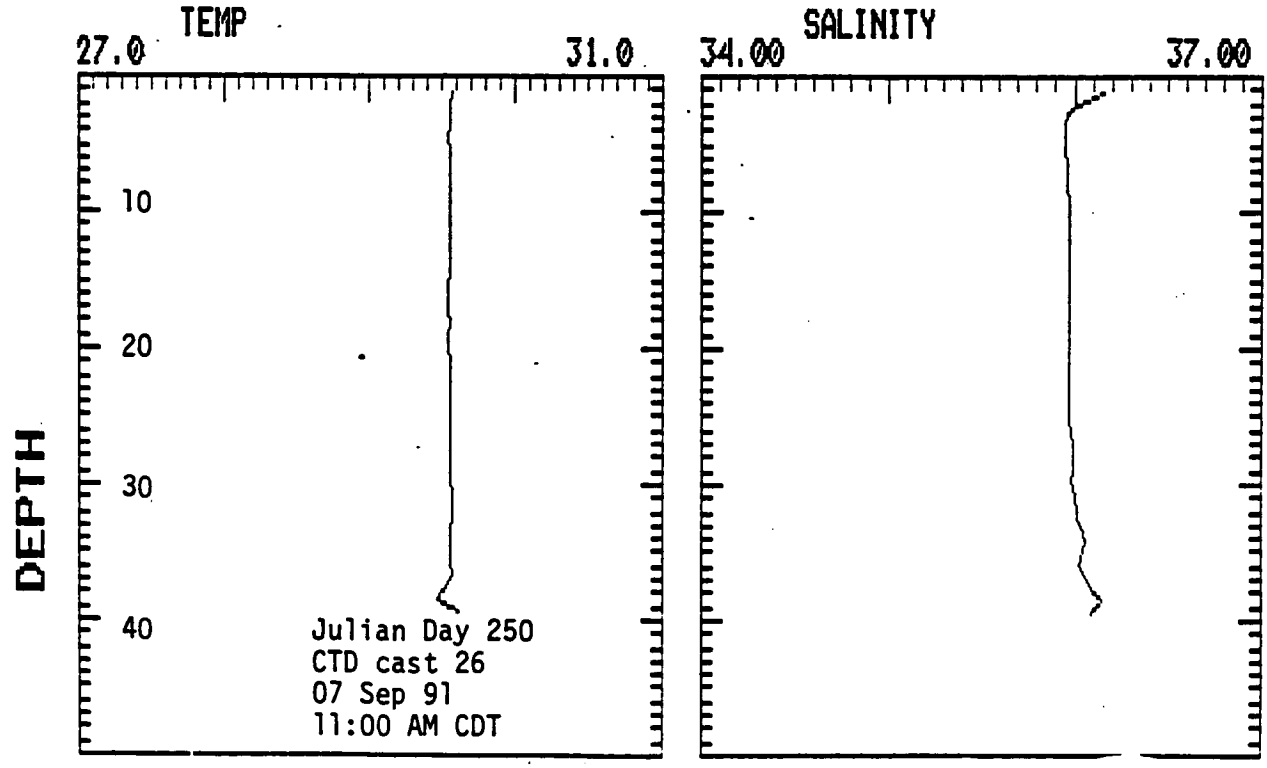
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 249
CTD cast 25
06 Sep 91
6:00 PM CDT

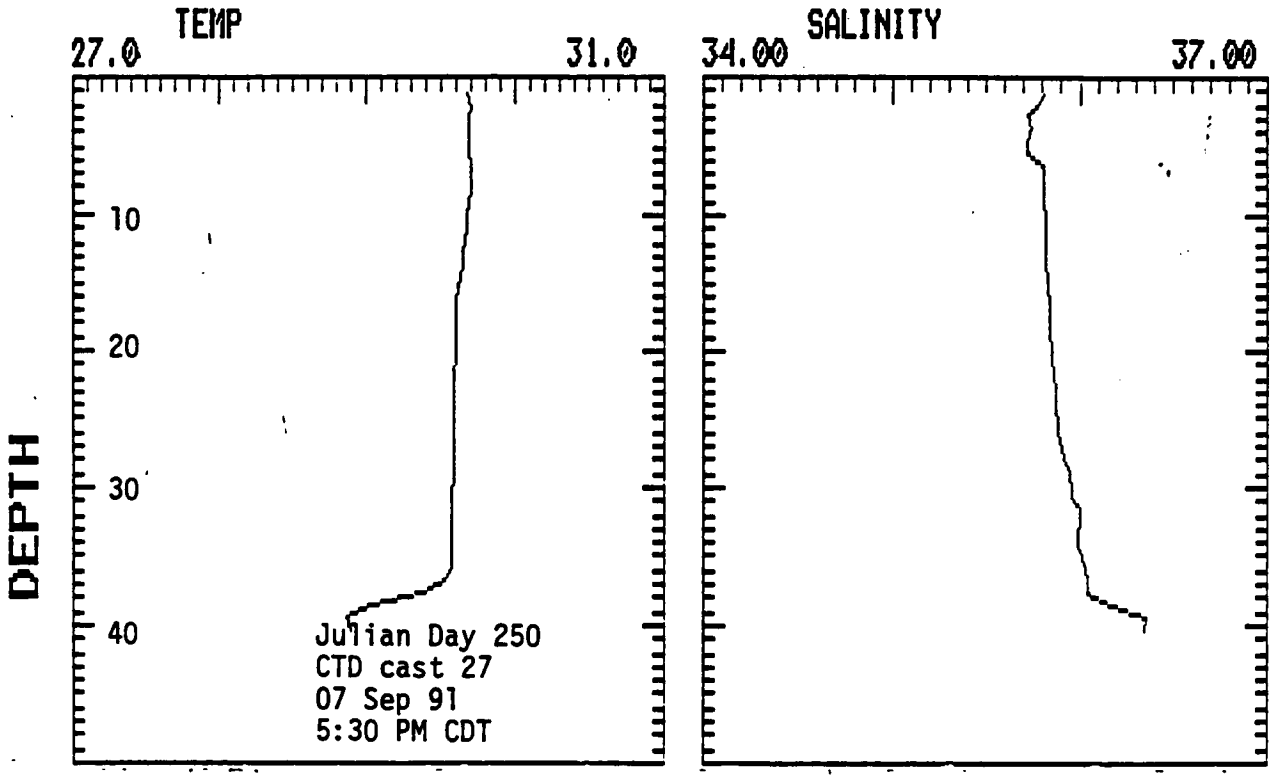

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 250
CTD cast 26
07 Sep 91
11:00 AM CDT

CTD cast 27 **07 Sep 91 5:30 PM CDT**

meters	temp	salinity	sigmatheta
1	29.6769	35.8618	22.4174
2	29.6894	35.8458	22.4015
3	29.6758	35.8257	22.3912
4	29.6796	35.8042	22.3738
5	29.6847	35.7696	22.3462
6	29.7013	35.9	22.4385
8	29.6885	35.8995	22.4426
9	29.6781	35.8983	22.4454
10	29.6634	35.906	22.4562
11	29.6585	35.908	22.4595
12	29.657	35.9044	22.4573
13	29.637	35.9098	22.4683
14	29.6284	35.914	22.4744
15	29.6107	35.9231	22.4873
16	29.6003	35.9288	22.4953
17	29.5993	35.9291	22.4959
18	29.5982	35.9297	22.4968
19	29.5953	35.9334	22.5007
20	29.5897	35.9412	22.5085
21	29.5869	35.9453	22.5126
22	29.5852	35.9536	22.5195
23	29.5841	35.9568	22.5224
24	29.584	35.958	22.5234
25	29.582	35.9638	22.5323
26	29.5808	35.9718	22.535
27	29.5793	35.9919	22.5507
28	29.5762	36.0073	22.5634
29	29.5722	36.0584	22.6032
30	29.569	36.0555	22.6022
31	29.5683	36.0732	22.6158
34	29.5636	36.1053	22.6417
35	29.5669	36.1335	22.6619
36	29.5671	36.1351	22.6631
37	29.464	36.169	22.7235
38	29.2306	36.1554	22.7923
39	28.8735	36.449	23.1328
40	28.8902	36.4359	23.1175

CTD cast 28 **08 Sep 91 11:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.6108	36.158	22.6641
2	29.5411	36.0828	22.6298
3	29.5704	36.0842	22.6209
4	29.573	36.1032	22.6344
5	29.5431	35.9986	22.5662
6	29.5131	35.9372	22.5304
7	29.5043	35.9329	22.5302
8	29.4971	35.9307	22.531
9	29.4921	35.9335	22.5349
10	29.4916	35.9337	22.5353
11	29.4911	35.9351	22.5366
12	29.4903	35.9399	22.5405
13	29.492	35.9408	22.5407
14	29.4944	35.9419	22.5408
15	29.4945	35.9434	22.542
16	29.4954	35.9504	22.547
17	29.5016	35.9577	22.5505
18	29.505	35.9544	22.5469
19	29.5199	35.9975	22.5744
20	29.5416	36.0049	22.5726
21	29.5408	36.0103	22.577
22	29.5411	36.0114	22.5779
23	29.5494	36.0419	22.598
24	29.5548	36.0478	22.6007
25	29.5629	36.0535	22.6023
26	29.5657	36.0724	22.6156
27	29.5682	36.0723	22.6148
28	29.5682	36.0711	22.6139
29	29.5801	36.0949	22.6279
30	29.5946	36.1644	22.6752
32	29.6137	36.2187	22.7096
33	29.6308	36.2537	22.7302
34	29.643	36.2486	22.7223
35	29.6508	36.2801	22.7434
36	29.6621	36.2991	22.7539
37	29.669	36.3332	22.7772
38	29.6527	36.3506	22.7961
39	29.481	36.4288	22.9131
40	29.2691	36.4939	23.0038


TEMP
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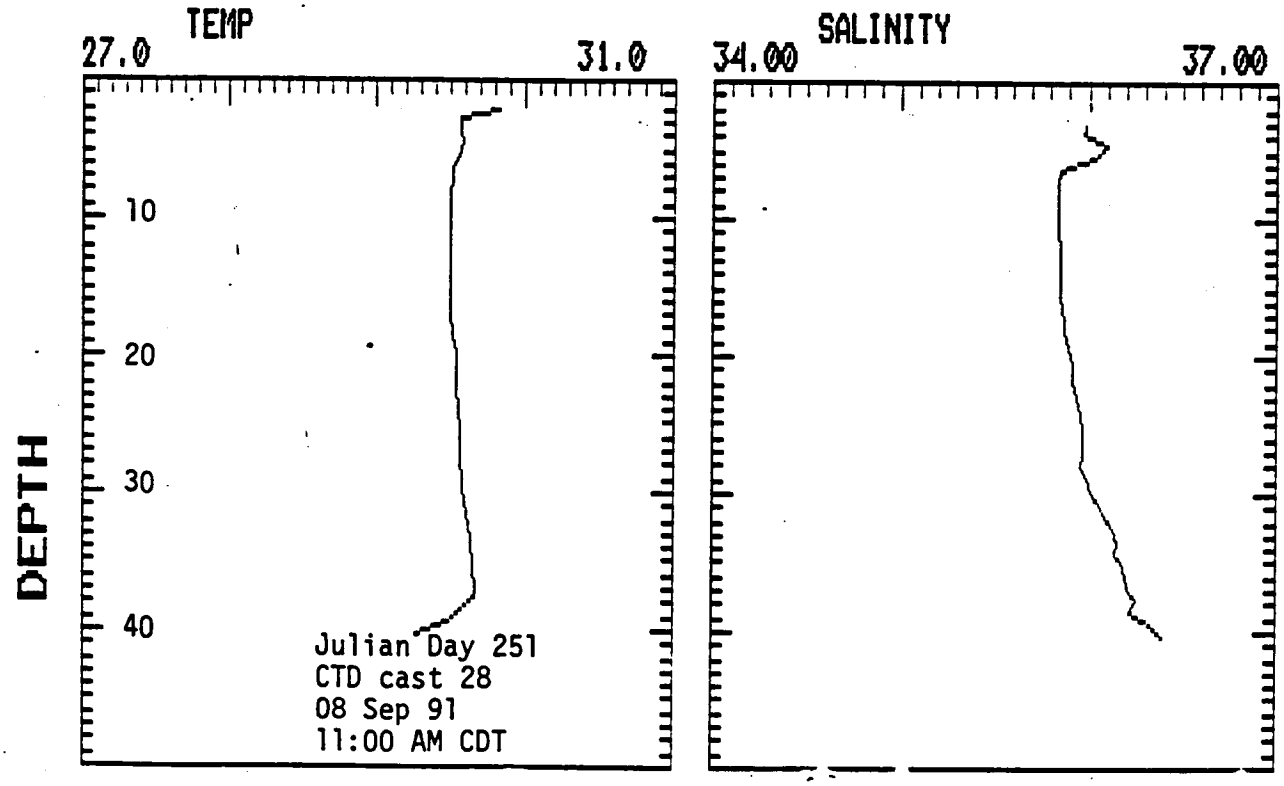
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 250
CTD cast 27
07 Sep 91
5:30 PM CDT


TEMP
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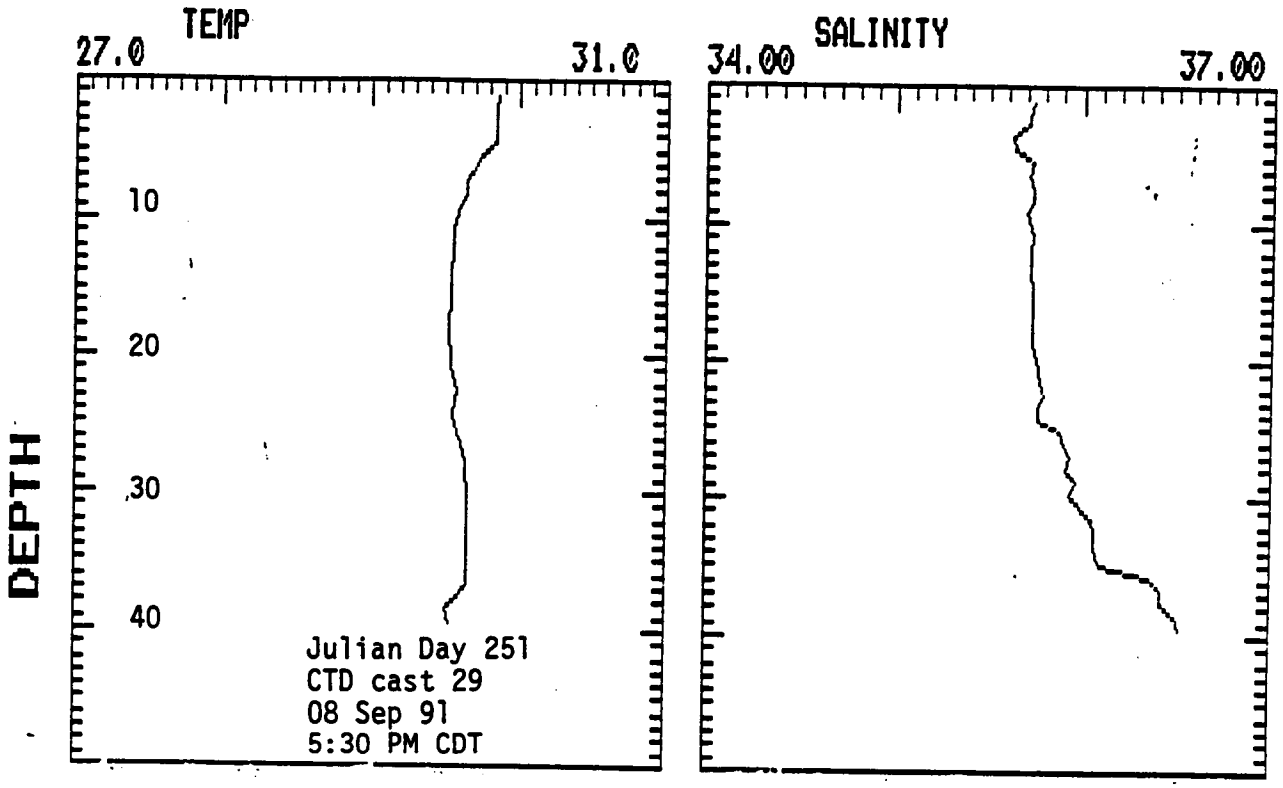
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 251
CTD cast 28
08 Sep 91
11:00 AM CDT

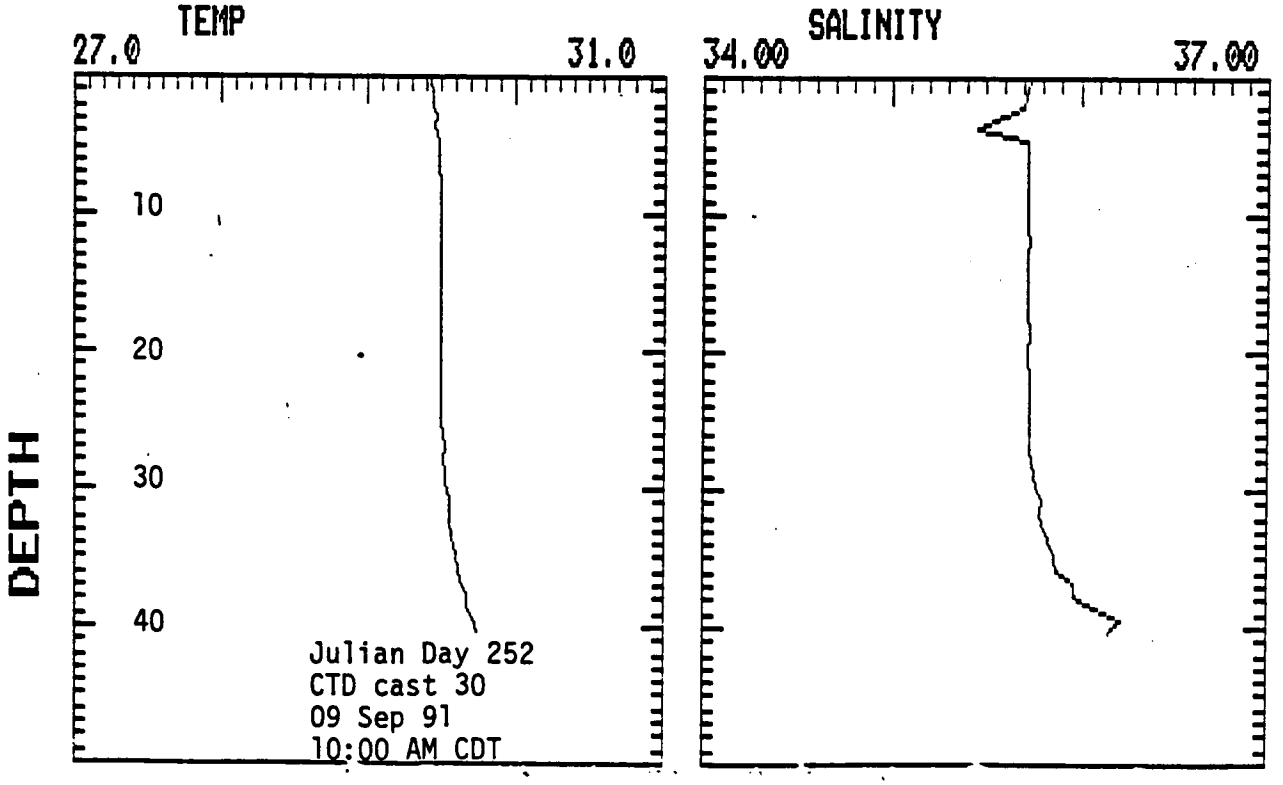
CTD cast 29 **08 Sep 91 5:30 PM CDT**

meters	temp	salinity	sigmatheta
1	29.8504	35.8063	22.3173
2	29.8359	35.7955	22.3139
3	29.8495	35.7796	22.2974
4	29.8413	35.7443	22.2738
5	29.7315	35.8169	22.3658
6	29.6898	35.8078	22.3732
7	29.6466	35.8194	22.3967
8	29.6264	35.8134	22.3991
9	29.5968	35.7906	22.3921
10	29.5647	35.8078	22.416
11	29.5499	35.8164	22.4275
12	29.5506	35.8112	22.4235
13	29.5427	35.8131	22.4277
14	29.5393	35.8146	22.4301
15	29.5353	35.8154	22.4321
16	29.5316	35.8175	22.435
17	29.5301	35.8192	22.4369
18	29.527	35.8214	22.4397
19	29.5273	35.8336	22.4488
20	29.5369	35.846	22.4549
21	29.542	35.8614	22.4648
22	29.5638	35.8997	22.4863
23	29.5687	35.8708	22.4631
24	29.5564	35.8822	22.4759
25	29.5691	35.9556	22.5267
26	29.6048	35.9932	22.5429
27	29.6303	36.012	22.5484
28	29.6355	36.0259	22.5572
29	29.6462	36.0736	22.5895
30	29.6504	36.0199	22.5478
31	29.6512	36.142	22.6392
32	29.6534	36.1536	22.6473
33	29.6535	36.1696	22.6594
34	29.6534	36.1768	22.6649
35	29.652	36.3155	22.7696
36	29.6466	36.5025	22.9119
37	29.6293	36.5367	22.9435
38	29.5171	36.5525	22.9936
39	29.4649	36.6078	23.053
40	29.5003	36.6311	23.0585

CTD cast 30 **09 Sep 91 10:00 AM CDT**

meters	temp	salinity	sigmatheta
1	29.4391	35.7214	22.3928
2	29.4449	35.651	22.3383
3	29.4618	35.5806	22.2797
4	29.4828	35.8101	22.4449
5	29.4864	35.8161	22.4484
6	29.4874	35.812	22.445
8	29.4905	35.8112	22.4435
9	29.4902	35.8108	22.4434
10	29.4898	35.8121	22.4446
11	29.4898	35.8114	22.4442
12	29.4906	35.8151	22.4468
13	29.4942	35.814	22.4448
14	29.4915	35.8105	22.4432
15	29.4905	35.8111	22.444
16	29.4899	35.812	22.445
17	29.4903	35.8133	22.4459
18	29.4911	35.8145	22.4466
19	29.4918	35.8147	22.4467
20	29.4925	35.8128	22.4451
21	29.4964	35.8183	22.448
22	29.5005	35.8191	22.4473
23	29.4986	35.8178	22.447
24	29.4977	35.8161	22.4461
25	29.4977	35.8266	22.4541
26	29.5168	35.8235	22.4455
27	29.5172	35.8234	22.4453
28	29.5163	35.8419	22.4595
29	29.5205	35.8431	22.4591
30	29.5303	35.8891	22.4904
31	29.5501	35.8759	22.4738
32	29.558	35.9007	22.4899
34	29.5804	35.942	22.5134
35	29.5952	35.9538	22.5179
36	29.6103	35.9758	22.5288
37	29.662	36.092	22.5985
38	29.6785	36.0368	22.5516
39	29.706	36.3208	22.7556
40	29.7427	36.2467	22.6875


TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 251
CTD cast 29
08 Sep 91
5:30 PM CDT

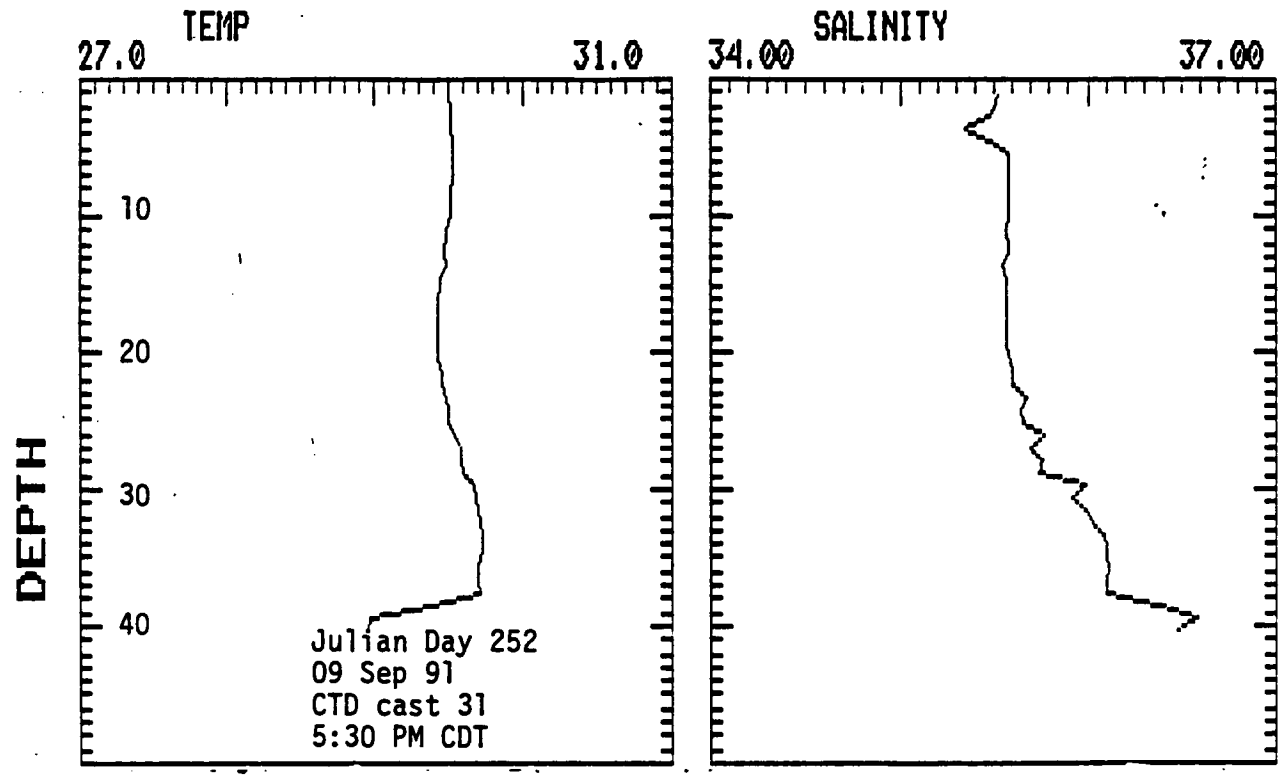

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 252
CTD cast 30
09 Sep 91
10:00 AM CDT

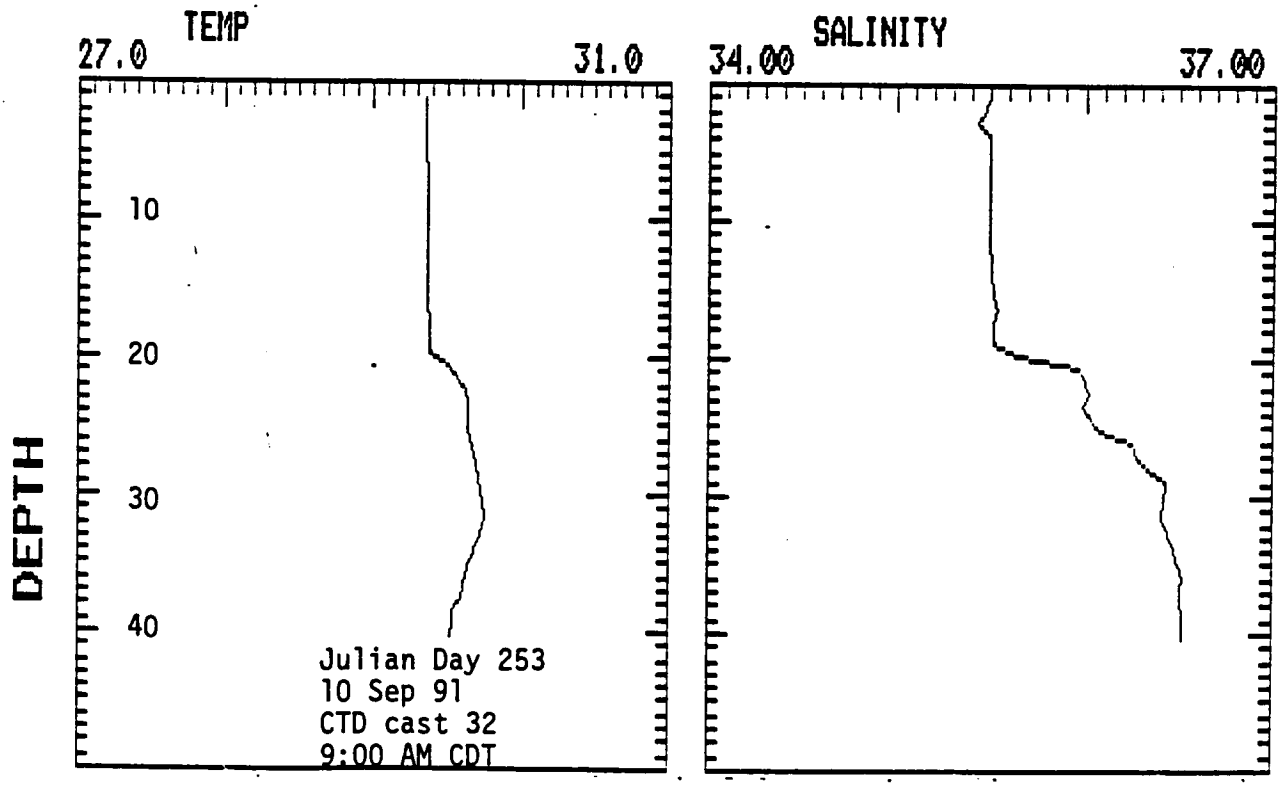
CTD cast 31 09 Sep 91 5:30 PM CDT

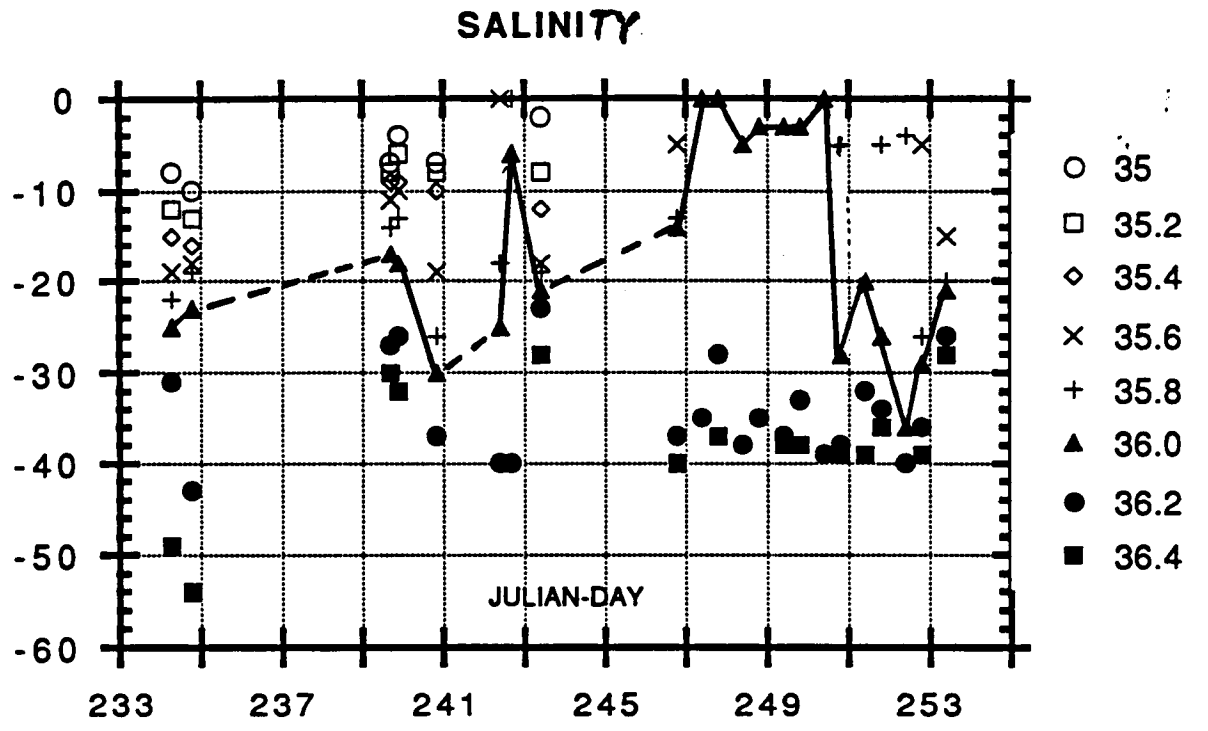
meters	temp	salinity	sigmatneta
1	29.4943	35.6105	22.2902
2	29.5287	35.5706	22.2495
3	29.4956	35.4065	22.1377
4	29.5244	35.4479	22.1591
5	29.5256	35.6671	22.3233
6	29.5252	35.665	22.3219
7	29.5202	35.6656	22.3241
8	29.5144	35.6604	22.3222
9	29.5075	35.6612	22.3253
10	29.4979	35.6571	22.3255
11	29.4738	35.6528	22.3305
13	29.4774	35.6654	22.3389
14	29.4482	35.647	22.3351
16	29.4268	35.6506	22.3452
18	29.4189	35.654	22.3507
19	29.4199	35.6558	22.3516
20	29.4241	35.6616	22.3547
21	29.4394	35.6884	22.3697
22	29.4566	35.6943	22.3684
23	29.4698	35.7279	22.3892
24	29.4887	35.728	22.383
25	29.4989	35.7543	22.3994
26	29.5517	35.8273	22.4364
27	29.5772	35.7896	22.3996
28	29.5821	35.8565	22.4482
29	29.6199	36.0203	22.5584
30	29.6941	36.1264	22.6129
31	29.6883	36.0459	22.5545
32	29.7194	36.1517	22.6234
33	29.718	36.1723	22.6394
34	29.7169	36.1886	22.6521
35	29.7019	36.1952	22.6623
36	29.6887	36.2002	22.6706
37	29.6931	36.196	22.6661
38	29.57	36.3705	22.839
39	28.9705	36.6866	23.2789
40	28.7184	36.6159	23.3102

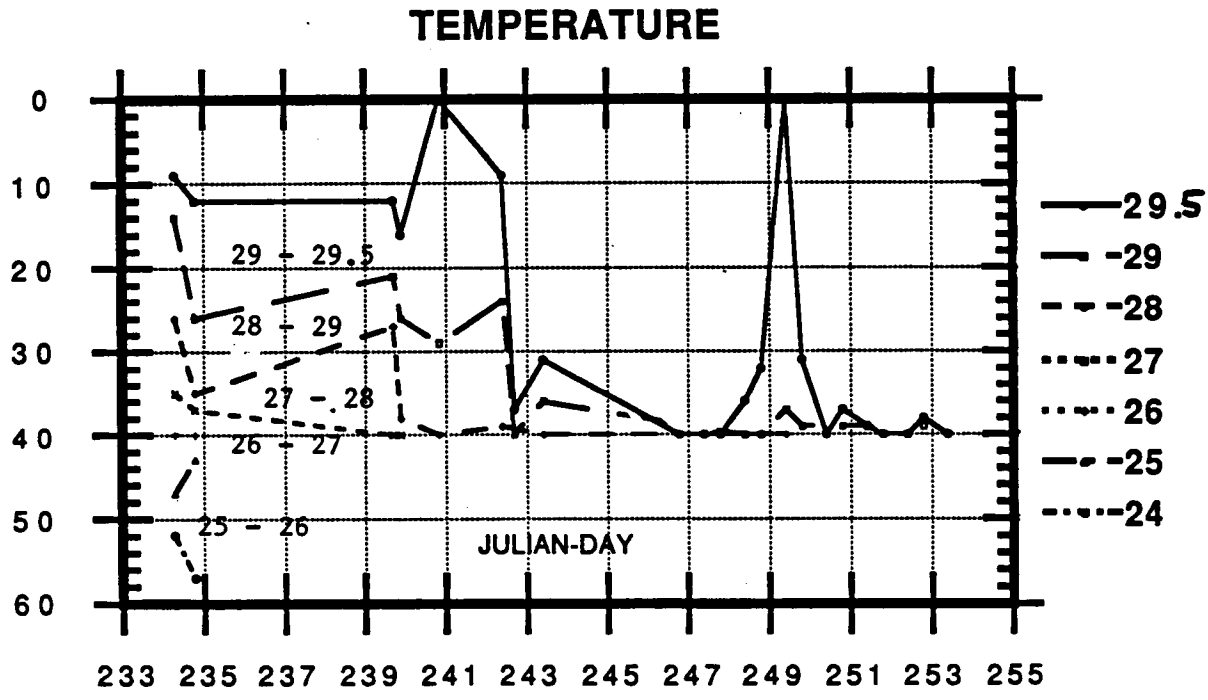
CTD cast 32 **10 Sep 91 9:00 AM CDT**

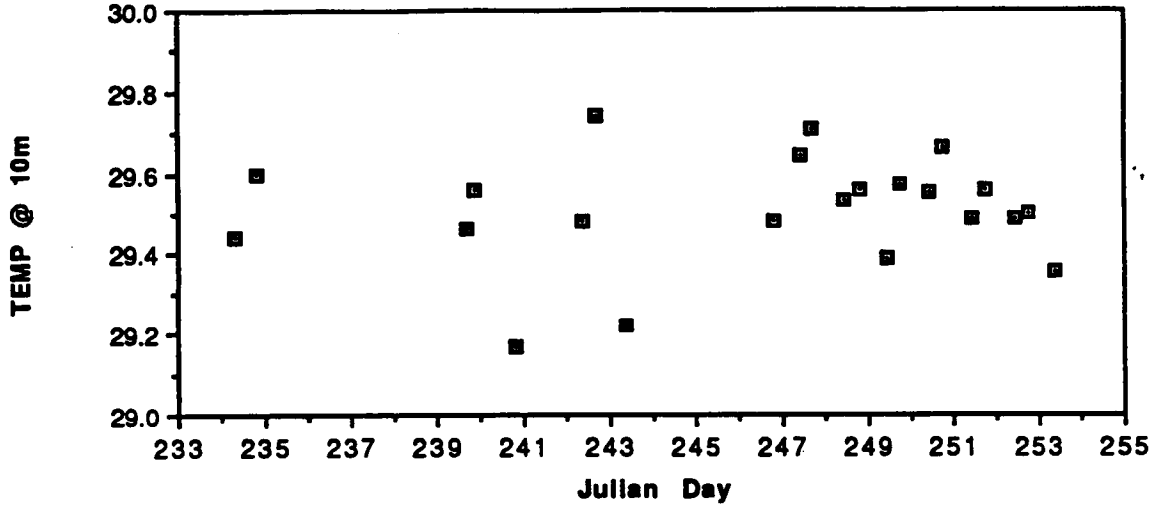
meters	temp	salinity	sigmatheta
1	29.3505	35.5458	22.291
2	29.3547	35.5341	22.2809
3	29.3564	35.5903	22.3226
4	29.3571	35.5912	22.3231
5	29.3602	35.5865	22.3187
6	29.3579	35.5906	22.3226
7	29.3602	35.589	22.3207
8	29.3604	35.5887	22.3205
9	29.36	35.59	22.3216
10	29.3606	35.5917	22.3228
11	29.3638	35.5922	22.3222
12	29.366	35.59	22.3199
13	29.3665	35.5965	22.3247
14	29.3678	35.5952	22.3234
15	29.3698	35.6021	22.328
16	29.3719	35.623	22.343
17	29.3812	35.6129	22.3323
18	29.3822	35.6142	22.3331
19	29.3811	35.6164	22.3352
20	29.4128	35.9273	22.558
21	29.5909	36.1284	22.6488
22	29.616	36.1146	22.6299
23	29.6318	36.1012	22.6145
25	29.6432	36.1811	22.6708
26	29.6558	36.3335	22.781
27	29.677	36.3688	22.8004
28	29.6939	36.4328	22.8428
29	29.7361	36.5418	22.9103
31	29.7464	36.5141	22.8861
33	29.7096	36.5566	22.9308
35	29.6542	36.596	22.9794
36	29.6185	36.6176	23.0078
37	29.6026	36.6012	23.001
38	29.5587	36.6022	23.0168
39	29.5315	36.6161	23.0366
40	29.5183	36.6148	23.0401

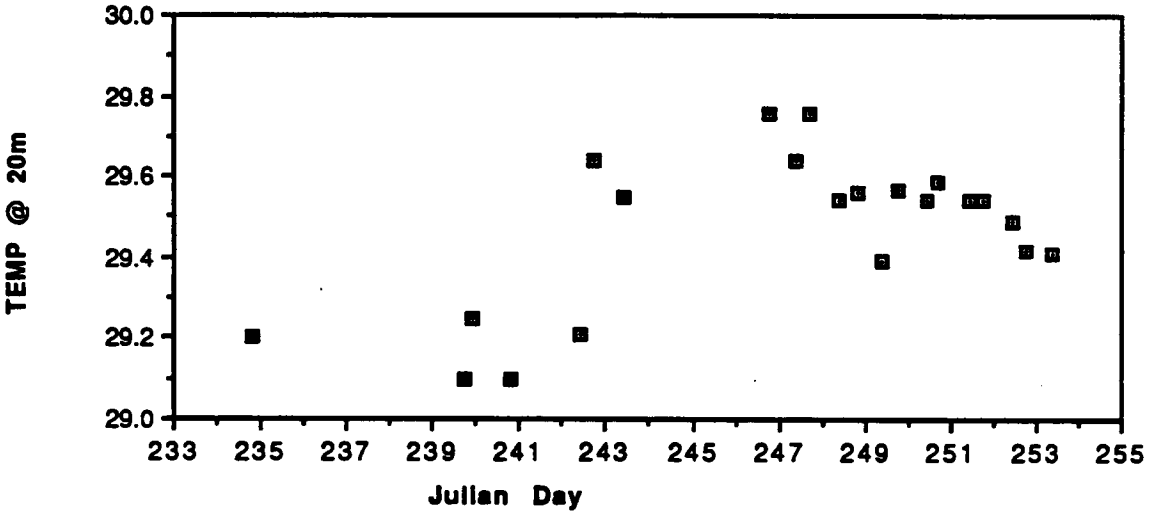

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 252
09 Sep 91
CTD cast 31
5:30 PM CDT

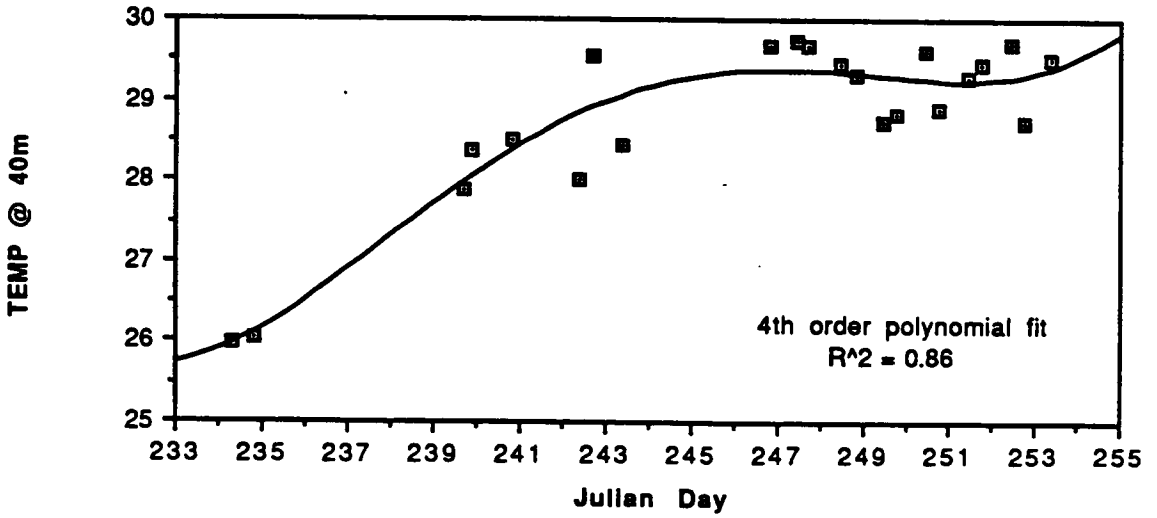

TEMP
27.0
31.0
SALINITY
34.00
37.00
DEPTH
10
20
30
40
Julian Day 253
10 Sep 91
CTD cast 32
9:00 AM CDT

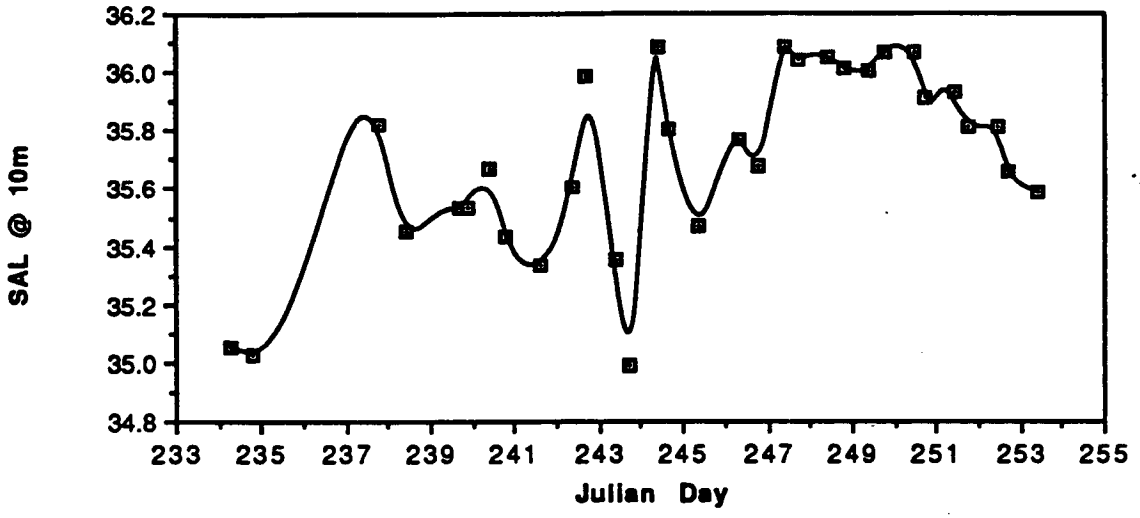

SALINITY
0
-10
-20
-30
-40
-50
-60
233
237
241
245
249
253
JULIAN-DAY
35
35.2
35.4
35.6
35.8
36.0
36.2
36.4

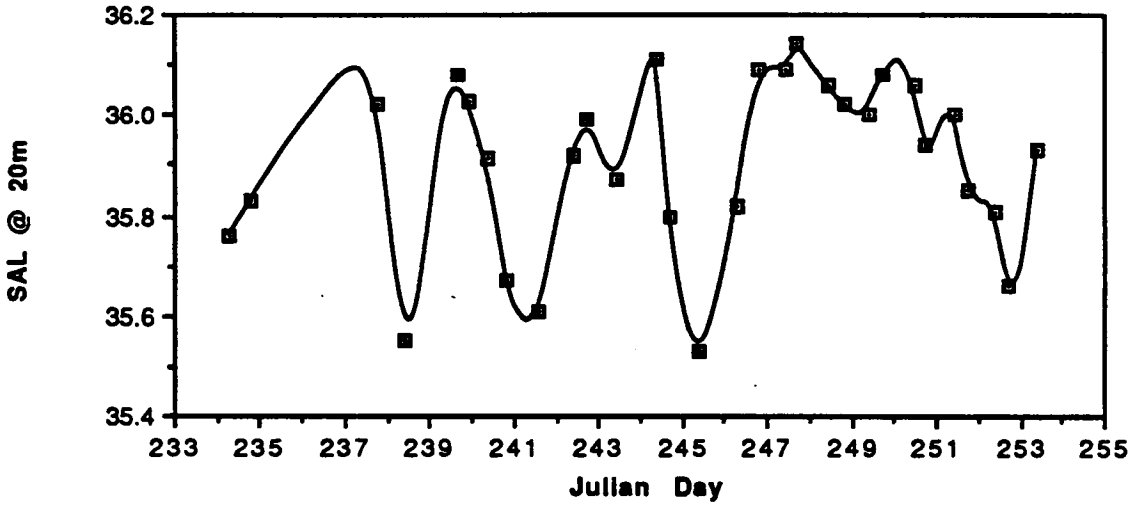

TEMPERATURE
0
10
20
30
40
50
60
233 235 237 239 241 243 245 247 249 251 253 255
JULIAN-DAY
29 - 29.5
28 - 29
27 - 28
26 - 27
25 - 26
29.5
29
28
27
26
25
24

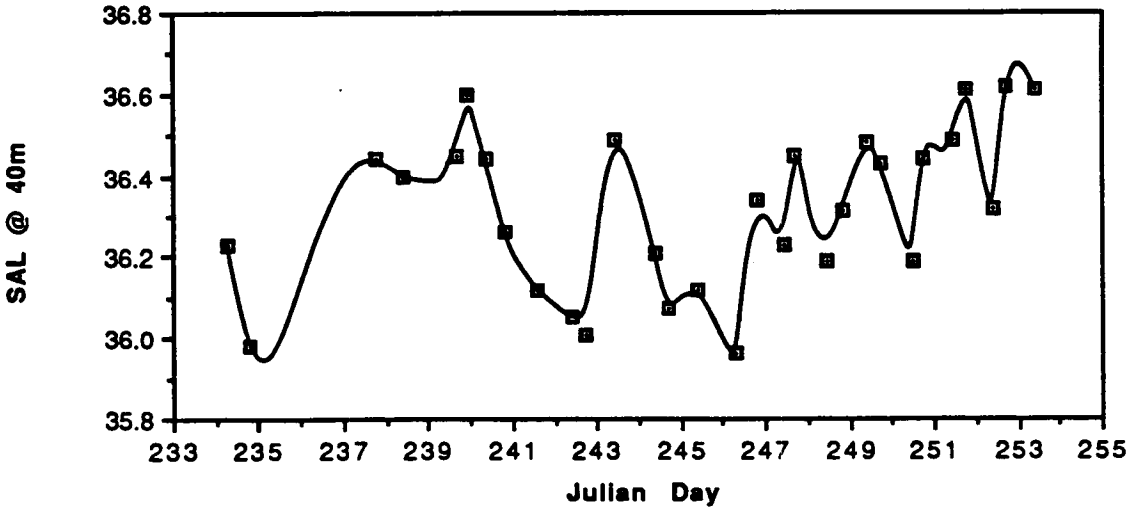

TEMP @ 10m
30.0
29.8
29.6
29.4
29.2
29.0
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day

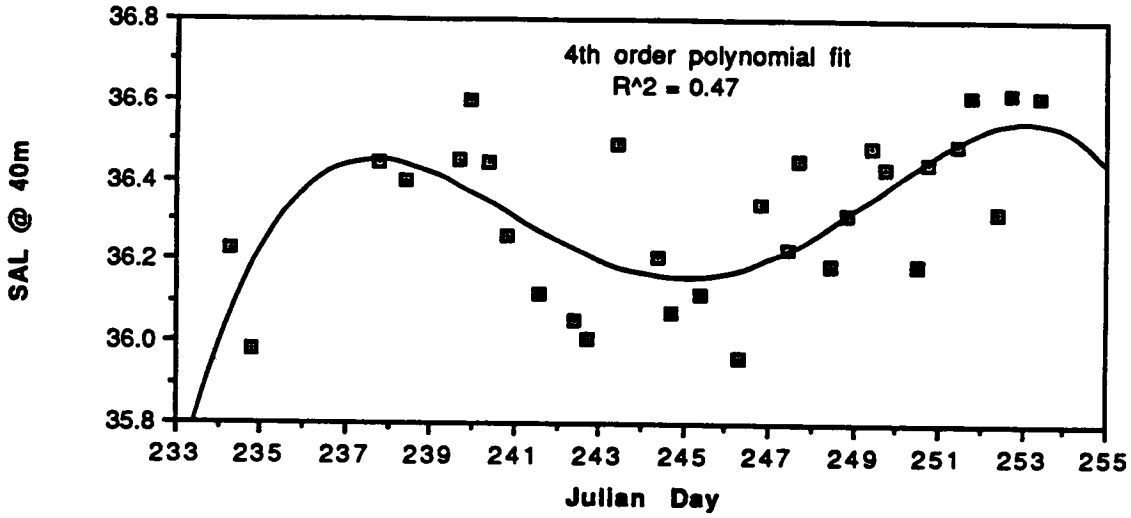

TEMP @ 20m
30.0
29.8
29.6
29.4
29.2
29.0
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


TEMP @ 40m
30
29
28
27
26
25
4th order polynomial fit
R^2 = 0.86
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


SAL @ 10m
36.2
36.0
35.8
35.6
35.4
35.2
35.0
34.8
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


SAL @ 20m
36.2
36.0
35.8
35.6
35.4
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day

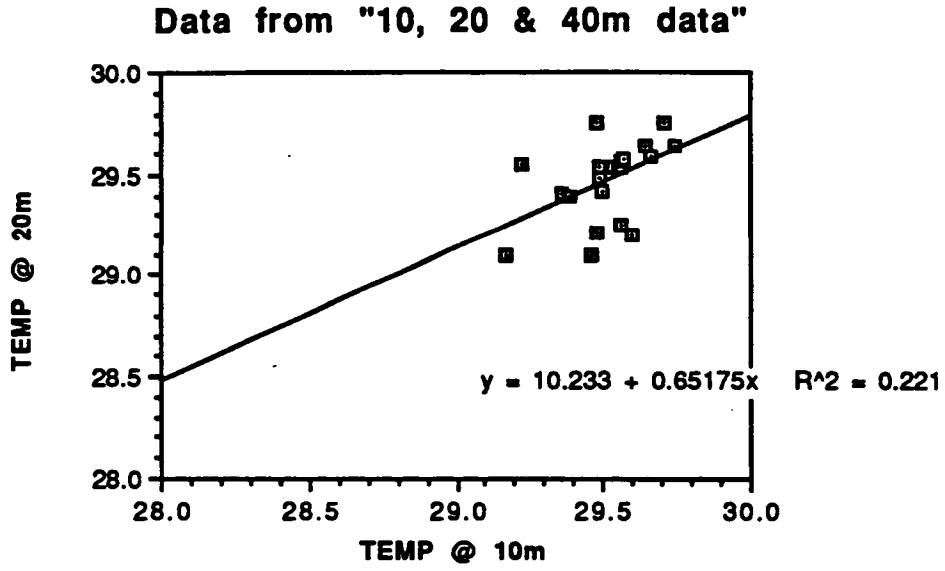

SAL @ 40m
36.8
36.6
36.4
36.2
36.0
35.8
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day

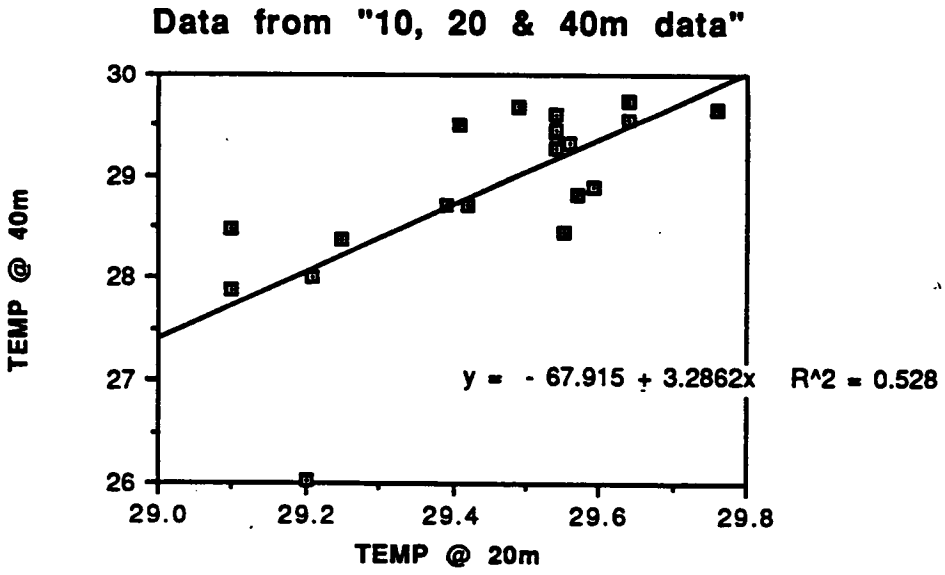

4th order polynomial fit
R^2 = 0.47
SAL @ 40m
36.8
36.6
36.4
36.2
36.0
35.8
233
235
237
239
241
243
245
247
249
251
253
255
Julian Day

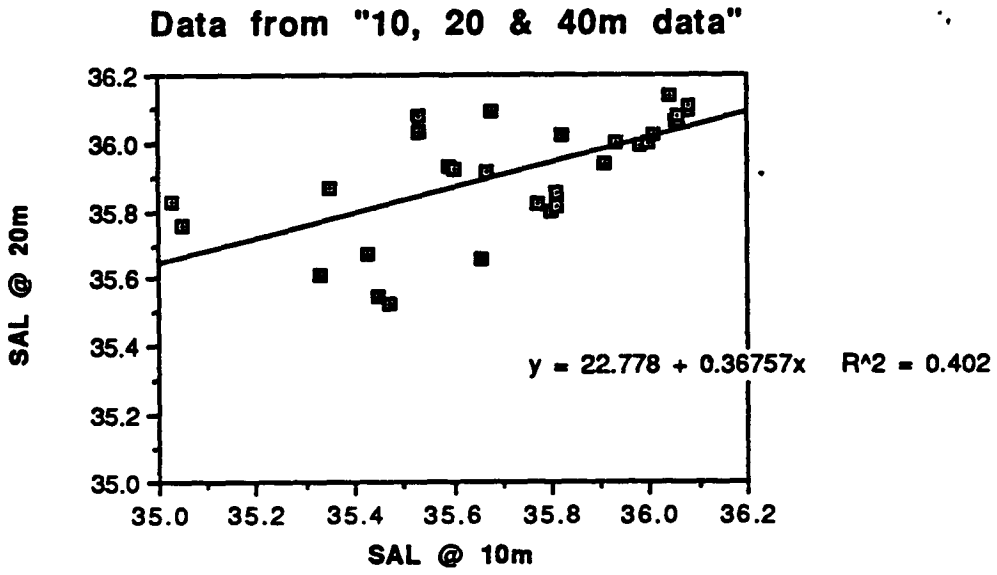
SUMMARY OF DEPTH OF ISOHALINES: 36.0 PSU AND 36.2 PSU

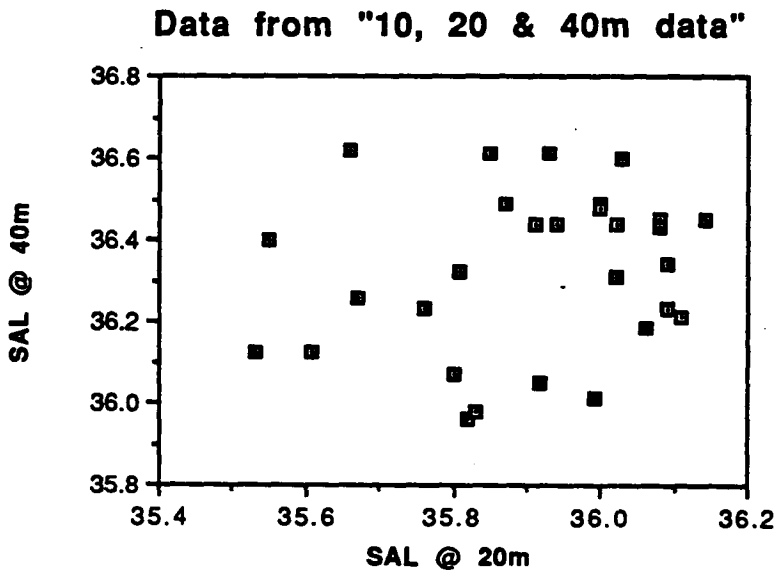
T, S series data

Julian Day	TEMP 20m	sfc SALIN	36.0 PSU depth	36.2 PSU depth
234.3	28.27	34.52	-25	-30
234.8	29.20	33.46	-24	-43
239.7	29.10	34.52	-17	-27
239.9	29.24	34.70	-18	-26
240.8	29.10	34.50	-31	-37
242.4	29.22	35.59	-25	-40
242.7	29.64	35.70	-5	-40
243.4	29.55	35.00	-21	-26
246.8	29.76	35.59	-15	-37
247.4	29.64	36.06	0	-32
247.7	29.76	36.02	0	-28
248.4	29.54	36.04	0	-40
248.8	29.56	36.01	0	-39
249.4	29.39	36.00	0	-37
249.8	29.57	36.02	0	-33
250.5	29.54	36.03	0	-38
250.7	29.59	35.89	-28	-40
251.5	29.54	35.90	-20	-32
251.7	29.54	35.80	-27	-34
252.4	29.49	35.77	-37	-40
252.7	29.42	35.65	-29	-35
253.4	29.41	35.59	-21	-26


Data from "10, 20 & 40m data"
TEMP @ 20m
30.0
29.5
29.0
28.5
28.0
28.0
28.5
29.0
29.5
30.0
TEMP @ 10m
y = 10.233 + 0.65175x
R^2 = 0.221


Data from "10, 20 & 40m data"
TEMP @ 40m
30
29
28
27
26
29.0
29.2
29.4
29.6
29.8
TEMP @ 20m
y = - 67.915 + 3.2862x
R^2 = 0.528


Data from "10, 20 & 40m data"
SAL @ 20m
SAL @ 10m
y = 22.778 + 0.36757x
R^2 = 0.402
36.2
36.0
35.8
35.6
35.4
35.2
35.0
35.0
35.2
35.4
35.6
35.8
36.0
36.2

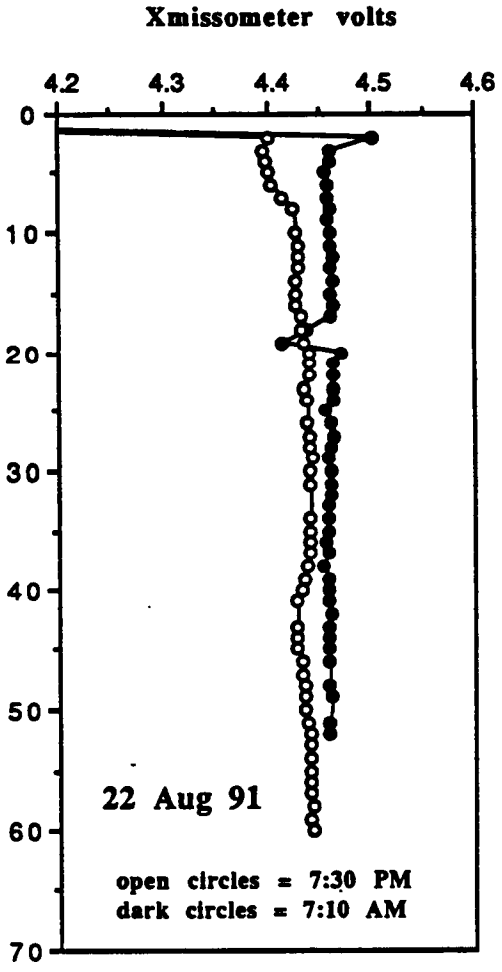

Data from "10, 20 & 40m data"
SAL @ 40m
SAL @ 20m
36.8
36.6
36.4
36.2
36.0
35.8
35.4
35.6
35.8
36.0
36.2

TRANSMISSOMETER DATA

We have transmissometer profiles from only the pair of CTD casts done on 22 August, for on the first cast attempted on 23 August, the rosette hung up on a submerged part of the platform and the SeaTech 25 cm pathlength transmissometer was torn off and lost.

Although on the basis of just 2 casts it is dangerous to draw anything but tentative conclusions, it appears that the suspended particulate load of the near-surface zone increased between the first cast (7:10 AM on 22 Aug) and the second cast (7:30 PM on the same day). This is not an artifact created by instrument calibration drift, since the "on deck" voltage that was checked at the start of both casts was the same (4.894 volts). Because the difference in output voltage of the instrument between Cast 2 and Cast 1 is greatest in the upper 10m, it suggests that the instrument may have recorded net phytoplankton growth. Unfortunately, the chlorophyll content for the uppermost bottles tripped on both of these casts cannot confirm this, since on cast 1 the two uppermost bottles were tripped at 22 m and at 10 m, whereas on cast they were tripped at 17 m and at 5 m (see next section). Nevertheless, these two transmissometer casts made 22 August indicate that transmissometer data should be collected in any future hydrographic work that is done from offshore platforms.

Depth	Xmiss voltage: CTD 1	CTD 2
1	4.049	3.876
2	4.502	4.401
3	4.460	4.396
4	4.461	4.399
5	4.455	4.402
6	4.457	4.403
7	4.458	4.415
8	4.460	4.424
9	4.457	
10	4.460	4.428
11	4.460	4.429
12	4.463	4.429
13	4.461	4.430
14	4.462	4.428
15	4.460	4.428
16	4.462	4.428
17	4.461	4.432
18	4.438	4.433
19	4.415	4.436
20	4.470	4.439
21	4.462	4.440
22	4.462	4.440
23	4.462	4.436
24	4.462	4.438
25	4.455	
26	4.460	4.437
27	4.462	4.440
28	4.461	4.440
29	4.459	4.443
30	4.461	4.439
31	4.461	4.441
32	4.460	
33	4.459	
34	4.459	4.441
35	4.459	4.441
36	4.455	4.440
37	4.459	4.439
38	4.454	4.438
39	4.458	4.434
40	4.458	4.431
41	4.459	4.428
42	4.460	
43	4.458	4.427
44	4.459	4.427
45	4.458	4.427
46	4.459	4.431
47		4.432
48	4.457	4.434
49	4.460	4.435
50		4.436
51	4.459	4.438
52	4.458	4.440
53		4.440
54		4.440
55		4.440
56		4.440
57		4.441
58		4.442
59		4.440
60		4.442



BOTTLE DATA

Up to six Niskin bottles were tripped at various depths on the upcast of each CTD deployment. On 22 August, when the CTD was deployed to 50-60 m, some bottles were tripped as deep as 55 m. However, for subsequent casts when the CTD was deployed to only 35-40 m, the first bottle was generally tripped at the bottom of the cast, and then at depth horizons of 30m, 25m, 20m, 10m, and 5m.

The tables which follow present chlorophyll (CHL), salinity (Salin), and dissolved oxygen (DO) that was determined on platform by processing bottle samples after each cast. Chlorophyll was measured by the "Turner" fluorometric method, using a Turner Designs model 10 fluorometer and filtering sample volumes of 700-1000 ml. Data are reported as $\mu g\ L^{-1}$. Salinity was measured by the inductive method, using a Grundy model 6230N salinometer. Data are reported as PSU. Dissolved oxygen was measured by manometric titration, using a TAMU-fabricated titration system. Data are reported as $ml\ L^{-1}$.

Comparison of CTD salinity with bottle salinity indicated that the former was consistently lower, by 0.09 ± 0.03 PSU. Accordingly, all CTD salinity data presented in the previous section of this report were corrected by adding 0.09 PSU to the raw data files.

Some of the water that was filtered for chlorophyll analysis was frozen for subsequent determination of nitrate, nitrite, phosphate, and silicate concentrations. These analyses were done using a Technicon Autoanalyzer-II, within one month after field work had ended. All analyses were carried out in theTechnical Support Services Group laboratories ashore in College Station. We will not report these data individually in this section, since all nitrogen-nutrient concentrations were consistently below the limit of analytical detection for frozen samples ($\leq$ 0.3 uM for nitrate, and $<$ 0.2 uM for nitrite. Phosphate and silicate were also low ($<$ 0.3 uM and $<$ 2.5 uM, respectively).

CTD-01 Depth	CTD-01 CHL	CTD-01 Salin	CTD-01 DO
10	0.06	35.05	5.60
22	0.06	35.84	
32	0.09	36.23	5.42
44	0.11	36.27	5.36
48	0.17	36.34	5.78
48	0.16	36.34	5.46

CTD-02 Depth	CTD-02 CHL	CTD-02 Salin	CTD-02 DO
6	0.07	33.62	4.99
18	0.06	35.56	4.99
49	0.14	36.28	5.21
49	0.15	36.29	5.35
54	0.15	36.37	5.72
54	0.15	36.38	5.32

CTD-03 Depth	CTD-03 CHL	CTD-03 Salin	CTD-03 DO
12	0.06	35.82	4.90
20	0.06	36.02	4.87
25	0.06	36.28	5.05
30	0.07	36.27	5.14
35	0.09	36.43	5.17
40	0.10	36.44	5.25

CTD-04 Depth	CTD-04 CHL	CTD-04 Salin	CTD-04 DO
10	0.05	35.45	4.88
20	0.05	35.55	4.94
25	0.08	36.39	4.87
30	0.09	36.40	5.10
35	0.13	36.41	5.01
35	0.13	36.43	5.25

CTD-05 Depth	CTD-05 CHL	CTD-05 Salin	CTD-05 DO
5	0.10	34.57	4.82
5	0.13	34.58	4.98
5	0.12	34.65	4.97
27	0.18	36.26	5.24
27	0.17	36.22	5.14

CTD-06 Depth	CTD-06 CHL	CTD-06 Salin	CTD-06 DO
5	0.11	35.22	4.80
7	0.11	35.23	4.97
15	0.12	35.85	4.91
26	0.14	36.27	5.24
34	0.14	36.42	5.24

CTD-07 Depth	CTD-07 CHL	CTD-07 Salin	CTD-07 DO
5	0.08	35.60	5.16
10	0.09	35.67	4.93
20	0.10	35.91	5.28
25	0.09	36.18	5.15
30		36.37	5.24
35	0.14	36.44	5.43

CTD-08 Depth	CTD-08 CHL	CTD-08 Salin	CTD-08 DO
5	0.04	34.65	4.98
10	0.08	35.53	5.03
20	0.12	35.80	5.02
25	0.12	35.91	4.86
33	0.13	36.19	4.98
37	0.11	36.23	5.00

CTD-09 Depth	CTD-09 CHL	CTD-09 Salin	CTD-09 DO
10	0.04	35.33	
15	0.05	35.20	
20	0.07	35.60	not available
30	0.06	35.85	
37	0.06	36.12	

CTD-10 Depth	CTD-10 CHL	CTD-10 Salin	CTD-10 DO
5	0.04	35.59	5.21
10	0.04	35.66	5.22
20	0.05	35.72	5.23
25	0.05	36.03	5.03
34	0.07	36.05	5.15
38	0.08	36.03	5.07

CTD-11 Depth	CTD-11 CHL	CTD-11 Salin	CTD-11 DO
5	0.03	36.01	4.82
10	0.04	36.00	5.10
20	0.06	36.02	5.21
25	0.04	36.03	4.94
30	0.05	36.04	4.98
36	0.05	36.03	4.76

CTD-12 Depth	CTD-12 CHL	CTD-12 Salin	CTD-12 DO
5	0.04		4.81
10	0.04	not	4.82
20	0.05	available	5.02
25	0.05		5.01
30	0.06		5.08
38	0.06		5.19

CTD-13 Depth	CTD-13 CHL	CTD-13 Salin	CTD-13 DO
5	0.04	34.95	4.73
10	0.05	34.99	4.73
20	0.05		4.93
25	0.07		4.89
30	0.07		4.95
35	0.09		4.80

CTD-14 Depth	CTD-14 CHL	CTD-14 Salin	CTD-14 DO
5	0.04	36.03	5.23
10	0.04	36.08	5.31
20	0.05	36.11	5.32
25	0.05	36.14	4.84
30	0.05	36.14	5.23
35	0.06	36.21	

CTD-15 Depth	CTD-15 CHL	CTD-15 Salin	CTD-15 DO
5	0.03	35.00	5.07
10	0.04	35.80	4.99
20	0.04	35.80	5.17
25	0.04		5.26
30	0.04	36.07	4.66
35	0.05	36.07	4.87

CTD-16 Depth	CTD-16 CHL	CTD-16 Salin	CTD-16 DO
5	0.05	35.47	4.69
10	0.04	35.53	4.81
20	0.04	35.80	4.75
25	0.04	35.96	5.00
30	0.05	36.05	4.80
35	0.07	36.12	

CTD-18 Depth	CTD-18 CHL	CTD-18 Salin	CTD-18 DO
5	0.05	35.65	
10	0.05	35.77	4.63
20	0.05	35.76	4.65
25	0.06	35.82	4.85
30	0.07	35.88	4.71
35	0.07	35.96	4.68

CTD-19 Depth	CTD-19 CHL	CTD-19 Salin	CTD-19 DO
5	0.08	35.63	4.90
12	0.07	35.81	5.08
23	0.10	36.17	5.16
30	0.07	36.15	5.06
30	0.08		5.04
39	0.08	36.29	4.87

CTD-20 Depth	CTD-20 CHL	CTD-20 Salin	CTD-20 DO
2	0.05	36.06	4.79
19	0.05	36.09	5.00
22	0.05	36.09	4.73
25	0.05	36.10	4.87
25	0.06	36.10	4.82

CTD-21 Depth	CTD-21 CHL	CTD-21 Salin	CTD-21 DO
3	0.06	36.02	4.79
7	0.06	36.03	4.68
11	0.06	36.05	4.90
25	0.07	36.17	5.04
35	0.09	36.34	
37	0.10	36.45	4.98

CTD-22 Depth	CTD-22 CHL	CTD-22 Salin	CTD-22 DO
2	0.07	36.04	
6	0.07	36.04	4.71
10	0.07	36.05	4.79
13	0.06	36.05	4.69
26	0.07	36.07	4.64
37	0.08		4.94

CTD-23 Depth	CTD-23 CHL	CTD-23 Salin	CTD-23 DO
4	0.06	36.01	4.79
10	0.06	36.02	5.01
20	0.06	36.02	4.96
24	0.07	36.01	4.96
33	0.08	36.12	4.97
37	0.09	36.24	4.81

CTD-24 Depth	CTD-24 CHL	CTD-24 Salin	CTD-24 DO
5	0.07		4.59
10	0.07		4.64
20	0.07	35.92	4.89
25	0.07		4.78
33	0.08	35.98	4.85
39	0.13	36.31	5.05

CTD-25 Depth	CTD-25 CHL	CTD-25 Salin	CTD-25 DO
2	0.05	35.92	4.56
5	0.08	36.02	4.74
18	0.09	36.05	4.74
22	0.08	36.05	4.62
29	0.10	36.08	4.66
39	0.19	36.37	4.93

CTD-26 Depth	CTD-26 CHL	CTD-26 Salin	CTD-26 DO
4	0.06	36.03	4.73
10	0.06	36.03	
18	0.04	36.04	4.72
25	0.04	36.04	4.73
33	0.09	36.13	4.75
38	0.11	36.26	4.91

CTD-27 Depth	CTD-27 CHL	CTD-27 Salin	CTD-27 DO
5	0.05		4.78
10	0.05		5.05
20	0.06		5.13
25	0.07		5.07
28	0.07	36.01	5.10
39	0.17		

CTD-28 Depth	CTD-28 CHL	CTD-28 Salin	CTD-28 DO
5	0.05	35.90	4.69
10	0.05	35.99	4.65
20	0.06	35.99	4.88
25	0.06	36.20	4.85
34	0.05	36.26	4.78
38	0.08	36.37	5.04

CTD-29 Depth	CTD-29 CHL	CTD-29 Salin	CTD-29 DO
10	0.05	35.83	4.71
20	0.07	35.84	4.82
25	0.05	35.96	4.85
35	0.04	36.26	4.80
38	0.04	36.58	4.95
38	0.07	36.58	4.97

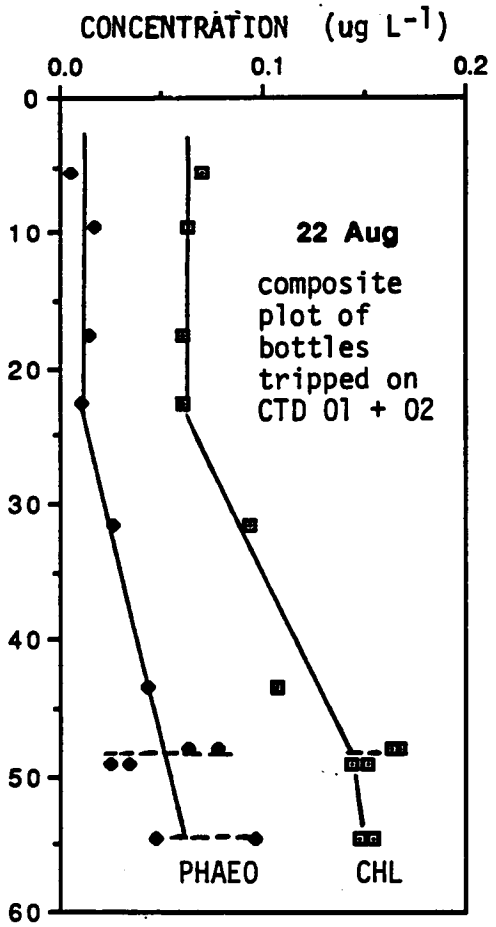
CTD-30 Depth	CTD-30 CHL	CTD-30 Salin	CTD-30 DO
5		35.77	4.62
10	0.04	35.77	4.54
25	0.05	35.99	4.70
30	0.05	36.04	4.73
38	0.05	36.08	4.56

CTD-31 Depth	CTD-31 CHL	CTD-31 Salin	CTD-31 DO
5	0.04	35.65	5.51
10	0.05	35.64	5.79
25	0.05	35.71	5.77
35	0.05	36.19	5.80
39	0.10	36.52	5.97
39	0.08	36.52	5.88

CTD-32 Depth	CTD-32 CHL	CTD-32 Salin	CTD-32 DO
10	0.04	35.59	5.04
20	0.05	35.78	4.82
25	0.06	36.28	5.82
35	0.07	36.61	5.12
39	0.07	36.60	5.04
39	0.07	36.60	5.56

VERTICAL DISTRIBUTION OF CHLOROPHYLL + PHAEOPIGMENT:

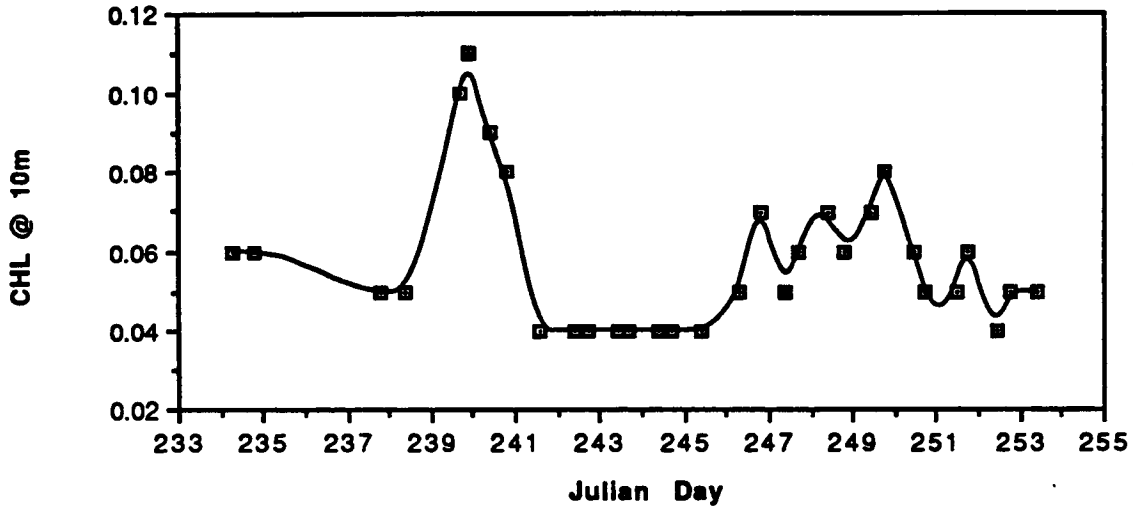
In general, CHL was low in the upper 20 m, but it increased to 0.1 - 0.2 ug L^{-1} between 25 - 60 m

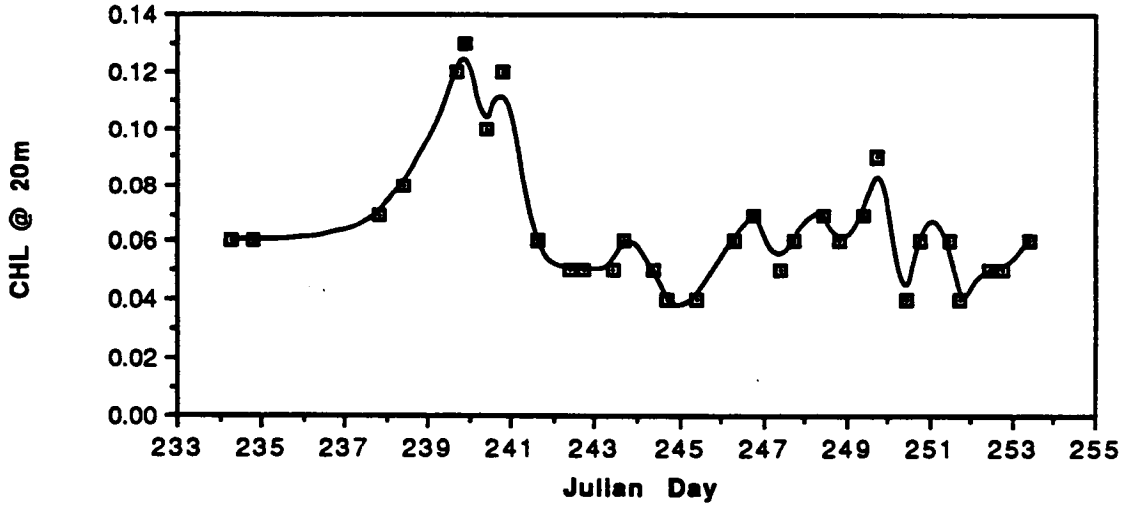


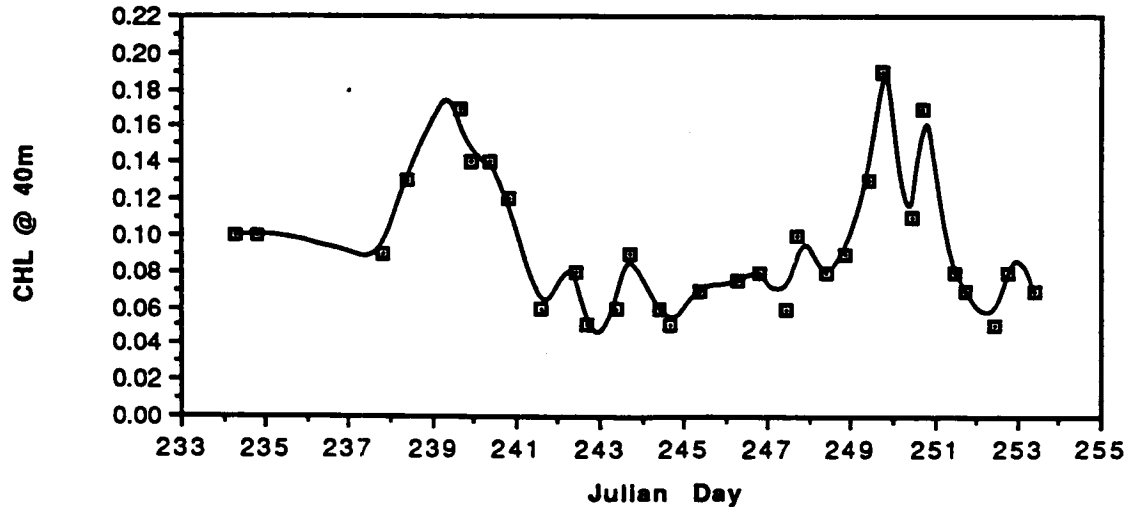
DEPTH	CHL	PHAEO
10	0.06	0.02
22	0.06	0.01
32	0.09	0.03
44	0.11	0.04
48	0.16	0.08
48	0.17	0.06
6	0.07	0.01
18	0.06	0.01
49	0.14	0.03
49	0.15	0.03
54	0.15	0.05
54	0.15	0.10

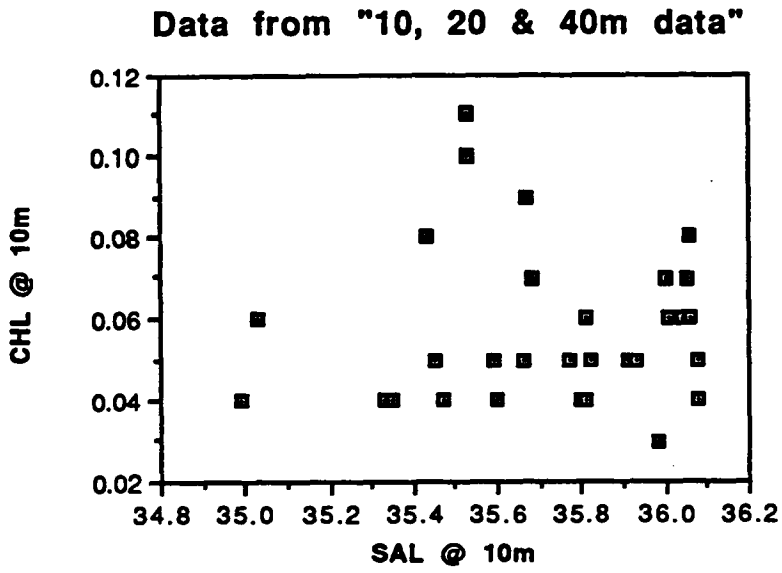
T, S & CHL series

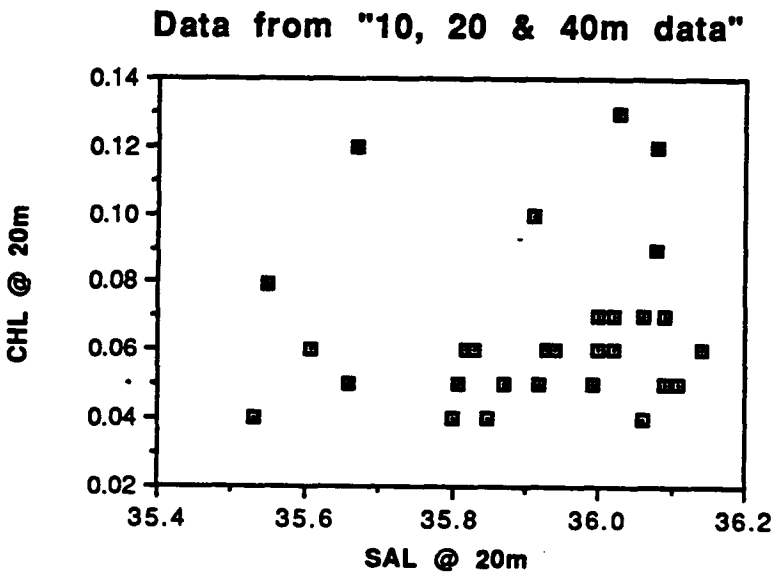
JULIAN DAY	TEMP 20m	SALIN 20m	TEMP ML	SALIN ML	CHL ML	MLD
246.8	29.76	36.10	29.45	35.63	0.07	10
247.4	29.64	36.09	29.64	36.08	0.05	25
247.7	29.76	36.14	29.71	36.08	0.06	18
248.4	29.54	36.06	29.53	36.05	0.07	38
248.8	29.56	36.02	29.55	36.02	0.06	30
249.4	29.39	36.00	29.39	36.00	0.07	35
249.8	29.57	36.08	29.56	36.08	0.08	32
250.5	29.54	36.06	29.54	36.06	0.05	30
250.7	29.59	35.94	29.63	35.91	0.05	25
251.5	29.54	36.00	29.49	35.94	0.05	18
251.7	29.54	35.85	29.54	35.81	0.05	20
252.4	29.49	35.81	29.50	35.81	0.04	29
252.7	29.42	35.66	29.42	35.67	0.05	23
253.4	29.41	35.61	29.37	35.60	0.04	19


CHL @ 10m
0.12
0.10
0.08
0.06
0.04
0.02
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


CHL @ 20m
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


CHL @ 40m
0.22
0.20
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
233 235 237 239 241 243 245 247 249 251 253 255
Julian Day


Data from "10, 20 & 40m data"
CHL @ 10m
0.12
0.10
0.08
0.06
0.04
0.02
34.8
35.0
35.2
35.4
35.6
35.8
36.0
36.2
SAL @ 10m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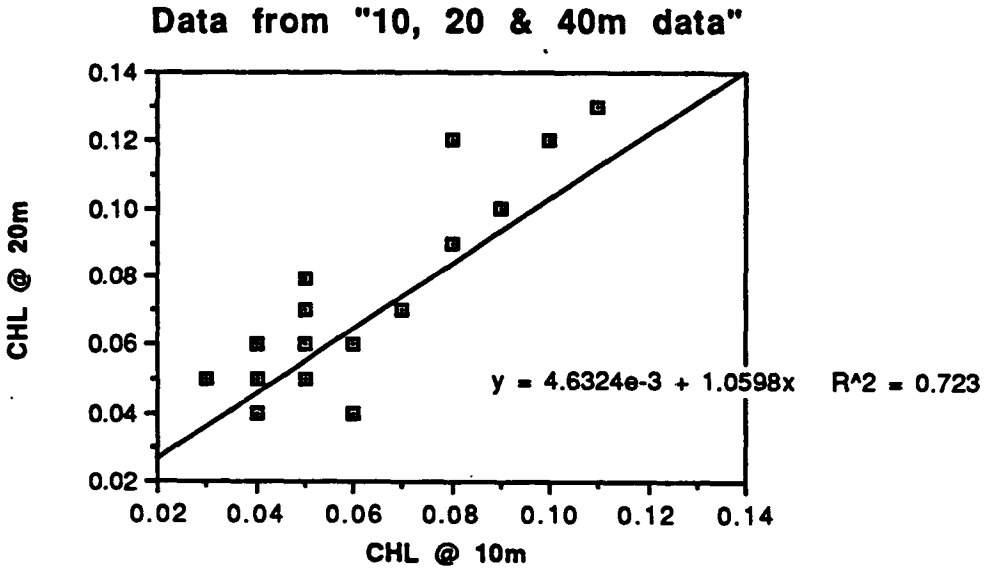
0.10
0.08
0.06
0.04
0.02
35.4
35.6
35.8
36.0
36.2
SAL @ 20m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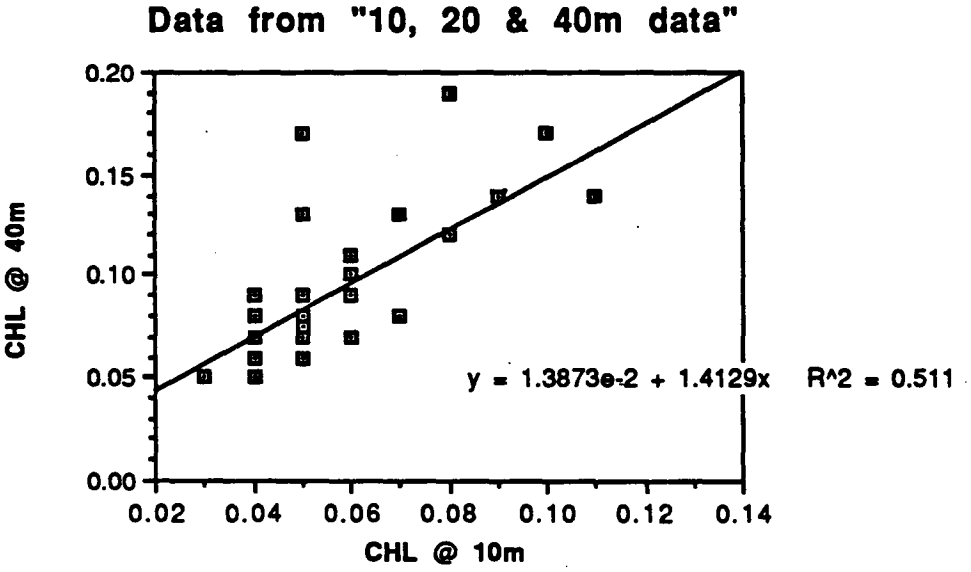
CHL @ 20m
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.02 0.04 0.06 0.08 0.10 0.12 0.14
CHL @ 10m
y = 4.6324e-3 + 1.0598x R^2 = 0.723


Data from "10, 20 & 40m data"
CHL @ 40m
0.20
0.15
0.10
0.05
0.00
0.02 0.04 0.06 0.08 0.10 0.12 0.14
CHL @ 10m
y = 1.3873e-2 + 1.4129x R^2 = 0.511

CONCLUSIONS

1) T/S signature of water in the upper 40m shows that the source of the near-surface water at EFG Bank was variable: (cool/fresh) shelf-water source dominated in the period 22 - 30 Aug, but (warm/salty) oceanic origin is indicated for 4-7 Sept.

   During the scuba survey, on 31 Aug and on the morning of 1 Sep the water was oceanic, but by afternoon on 1 Sep through 2 Sep, a continental shelf influence is evident.

2) Regardless of source regime, the temperature in the upper 20m was very warm (> 29°C) throughout the 3 week field period.

3) Nutrients in these very warm surface waters were low: N-nutrients were below the limit of analytical detection, and P and Si were also low.

4) Except for the 2-day period 27-28 August, CHL in the upper 20m was very low: the usual range was 0.04 - 0.06 μg L-1. Near-surface CHL showed poor correlation with either T or S; the highest CHL concentrations (DCM) were deeper than 40m.

5) The limited amount of transmissometer data show that diel changes in suspended particle load were most pronounced from 0-10m.

FUTURE WORK FROM MOBIL A389

We plan to keep our TAMU hydrographic winch on platform through August 1992, in anticipation that we (or others) may continue/extend hydrographic work there. However, the length of the presently available travelling boom (which was fabricated by TAMU) needs to be extended to at least 35 feet, in order to allow instruments to be safely lowered to depths of more than 40m.

ACKNOWLEDGMENTS

The Texas Sea Grant Program provided a modest grant to the TAMU Technical Support Services Group (D.C. Biggs, PI) to meet some of the costs of staging this fieldwork, and a cooperative agreement for ship-of-opportunity hydrographic data collection between TAMU and the US Minerals Management Service met the cost of SeaPay/OT for personnel involved in setting up, sampling, and packing up after the fieldwork. Mobil Exploration and Production U.S. made their offshore helicopter shuttle service available to get TAMU personnel out and back, and they got our oceanographic equipment out and back in their supply boat.

The on-platform analytical work was carried out by TAMU Marine Technician Greg Warr, with set-up and other logistics help from TAMU Electronics Technicians Eddie Webb and David Voegele, from TAMU Marine Technician Ken Bottom, and from TAMU Port Engineer Desmond Rolf. Steve Truax and Barry Critz of MEPUS were especially helpful in coordinating logistics of personnel transfer, and in providing engineering blueprints of the platform.

Preparation of this technical report was supported by the US Minerals Management Service and the Texas Sea Grant Program. The CTD data have been shared with the National Oceanographic Data Center, as per terms of the ongoing MMS-TAMU Cooperative Agreement for Ship-of-Opportunity Hydrographic Data Collection. Although the fieldwork was completed in September 1991, delays occasioned by commitments of TAMU technical staff to cruises 92G-02 and 92G-03 forced a postponement of the release date of this report until April 1992.

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The Minerals Management Service Mission

As a bureau of the Department of the Interior, the Minerals Management Service's (MMS) primary responsibilities are to manage the mineral resources located on the Nation's Outer Continental Shelf (OCS), collect revenue from the Federal OCS and onshore Federal and Indian lands, and distribute those revenues.

Moreover, in working to meet its responsibilities, the **Offshore Minerals Management Program** administers the OCS competitive leasing program and oversees the safe and environmentally sound exploration and production of our Nation's offshore natural gas, oil and other mineral resources. The MMS **Minerals Revenue Management** meets its responsibilities by ensuring the efficient, timely and accurate collection and disbursement of revenue from mineral leasing and production due to Indian tribes and allottees, States and the U.S. Treasury.

The MMS strives to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending MMS assistance and expertise to economic development and environmental protection.