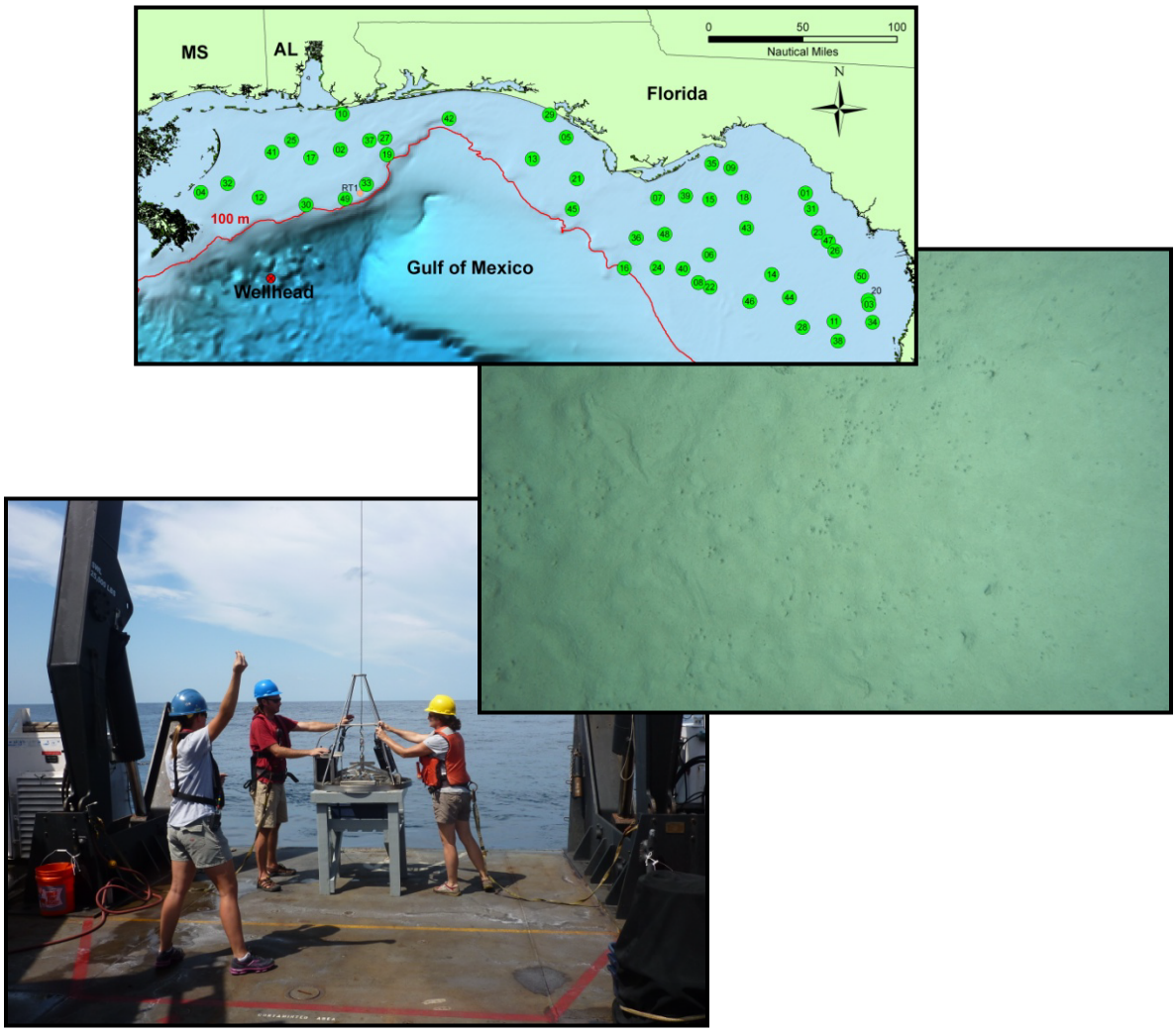
Cruise Report: Regional Assessment of Ecosystem Condition and Stressor Impacts along the Northeastern Gulf of Mexico Shelf

NOAA Ship *Nancy Foster* NF-10-09-RACOW
(August 13-21, 2010)



NOAA Technical Memorandum NOS NCCOS 121

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NOAA Ship Nancy Foster NF-10-09-RACOW
(August 13-21, 2010)

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Summary

This cruise report is a summary of a field survey conducted along the continental shelf of the northeastern Gulf of Mexico (GOM), encompassing 70,062 square kilometers of productive marine habitats located between the Mississippi Delta and Tampa Bay, August 13 – 21, 2010 on NOAA Ship *Nancy Foster* Cruise NF-10-09-RACOW. Synoptic sampling of multiple ecological indicators was conducted at each of 50 stations throughout these waters using a random probabilistic sampling design. At each station samples were collected for the analysis of benthic community structure and composition; concentrations of chemical contaminants (metals, pesticides, TPHs, PAHs, PCBs, PBDEs) in sediments and target demersal biota; sediment toxicity; nutrient and chlorophyll levels in the water column; and other basic habitat characteristics such as depth, salinity, temperature, dissolved oxygen, turbidity, pH, CDOM fluorescence, sediment grain size, and organic carbon content. Discrete water samples were collected just below the sea surface, in addition to any deeper subsurface depths where there was an occurrence of suspicious CDOM fluorescence signals, and analyzed for total BTEX/TPH and carcinogenic PAHs using immunoassay test kits. Other indicators of potential value from a human-dimension perspective were also recorded, including presence of any vessels, oil rigs, surface trash, visual oil sheens in sediments or water, marine mammals, or noxious/oily sediment odors.

The overall purpose of the survey was to collect data to assess the status of ecosystem condition and potential stressor impacts throughout the region, based on these various indicators and corresponding management thresholds, and to provide this information as a baseline for determining how such conditions may be changing with time. In addition to the original project goals, both the scientific scope and general location of this project are relevant to addressing potential ecological impacts of the Deepwater Horizon oil spill. While sample analysis is still ongoing, a few preliminary results and observations are reported here. A final report will be completed once all data have been processed.

This was a multi-disciplinary partnership effort made possible by scientists from the following organizations:

- NOAA, National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS), Center for Coastal Environmental Health and Biomolecular Research (CCEHBR), Charleston, SC.
- U.S. Environmental Protection Agency (EPA), National Health and Environmental Effects Research Laboratory (NHEERL), Gulf Ecology Division (GED), Gulf Breeze, FL.
- U.S. Geological Survey (USGS), National Wetlands Research Center, Gulf Breeze Project Office, Gulf Breeze, FL.
- NOAA, Office of Marine and Aviation Operations (OMAO), NOAA ship Nancy Foster
- Texas A&M University, Geochemical & Environmental Research Group (GERG)
- University of Maryland, Chesapeake Biological Laboratory (CBL), Nutrient

Analytical Services Laboratory
- Barry A. Vittor & Associates, Inc.

Additional copies of this cruise report can be obtained by contacting:
NOAA, Center for Coastal Environmental Health and Biomolecular Research, 219 Fort Johnson Road, Charleston, South Carolina, 29412, Telephone: 843/762-8511. Attention: Cynthia Cooksey.

1.0 Introduction

This survey is part of a continuum of studies being conducted by the National Oceanic and Atmospheric Administration (NOAA), U.S. Environmental Protection Agency (EPA), and partnering states to assess condition of aquatic resources throughout coastal-ocean waters of the U.S., inclusive of several National Marine Sanctuaries, using multiple indicators of ecological condition (Figure 1). The scope and design of these studies are similar to those used in the coastal component of EPA's Environmental Monitoring and Assessment Program (EMAP) and more recent National Coastal Assessment Program, which have focused mostly on estuaries and inland waters. The present work extends these prior efforts to coastal-ocean waters, approximately 1 nautical mile from shore seaward to the shelf break (100 m). Surveys of benthic fauna and other multiple indicators of ecological condition and stressor impacts — including basic habitat characteristics such as depth, salinity, temperature, dissolved oxygen, pH, sediment grain size and organic content; nutrient and chlorophyll levels in the water column; chemical contaminants in sediments and biota — are conducted in these waters over a series of random stations using a probabilistic sampling design. Accordingly, the resulting data can be used to make estimates of the spatial extent of condition with respect to the various measured indicators, and to provide this information as a baseline to determine if environmental conditions have changed in the future. Thus far such efforts have included a survey of shelf waters along the U.S. west coast, from the Straits of Juan de Fuca, WA to Channel Islands, CA (summer 2003, NOAA Ship *McArthur II* Cruise AR-03-01-NC); a survey of shelf waters of the South Atlantic Bight from Cape Hatteras, NC to West Palm Beach, FL (summer 2004, NOAA Ship *Nancy Foster* Cruise NF-04-08-CL); a survey of shelf waters of the mid-Atlantic Bight (MAB) from Cape Hatteras to Cape Cod, MA (spring 2006, NOAA Ship *Nancy Foster* Cruise NF-06-06-NCCOS); and a survey of shelf waters of the West Indian zoogeographic province from Tampa Bay to West Palm Beach, Florida (spring 2007, NOAA Ship *Nancy Foster* Cruise NF-07-08-NCCOS).

The present survey was conducted along the continental shelf of the northeastern Gulf of Mexico (GOM), encompassing 70,062 square kilometers of productive marine habitats, located between the Mississippi Delta and Tampa Bay (Figure 2). Synoptic sampling of multiple ecological indicators was conducted at each of 50 random stations throughout these waters. The consistent and synoptic sampling of the different biological and environmental variables across these stations will provide an opportunity to learn more about the spatial patterns of these resources and processes controlling their distributions. As mentioned above, by incorporating a random probabilistic station design, the resulting data also can used to make unbiased statistical estimates of the spatial extent of the region's health with respect to the various measured indicators and corresponding management thresholds and to provide this information as a baseline for determining how environmental conditions may be changing in the future. This is the first such baseline of its kind for offshore waters of the northeastern Gulf of Mexico shelf. The following report provides a brief summary of the scope and preliminary results of the supporting field work conducted August 13 – 21, 2010 on NOAA Ship *Nancy Foster* Cruise NF-10-09-RACOW.

In addition to the original project goals, both the scientific scope and general location of this project are relevant to addressing potential ecological impacts of the Deepwater Horizon oil spill.

The region-wide distribution of stations, from areas that experienced large or near-continuous surface oil slicks to areas that experienced little or no oiling, provides the opportunity to evaluate oil-spill impacts across a broad spatial gradient of potential impacts. The survey also provides a baseline assessment of ecological condition throughout the region to allow future evaluation of long-term trends.

2.0 Scientific Approach

Samples were collected on NOAA Ship Nancy Foster Cruise NF-10-09-RACOW, August 13-21, 2010, at 50 random stations along the continental shelf of the northeastern GOM, from Mississippi Delta to Tampa Bay (Figure 2, Table 1). At each station, samples were obtained for characterization of the following core indicators: (1) community structure and composition of benthic macroinfauna (> 0.5 mm); (2) concentration of chemical contaminants in sediments (metals, pesticides, TPHs, PCBs, PAHs, PBDEs); (3) sediment toxicity (Microtox); (4) general habitat conditions (water depth, dissolved oxygen, conductivity, temperature, pH, chlorophyll a, total suspended solids, water-column nutrients, % silt-clay versus sand content of sediment, organic-carbon content of sediment); and (5) condition of selected demersal fish species caught by hook-and-line (contaminant body burdens and visual evidence of pathological disorders). Several human-dimension indicators were recorded as well including presence of any vessels, oil rigs, surface trash, visual oil sheens in sediments or water, marine mammals, or noxious/oily sediment odors. A variety of other measurements and samples were also collected to help address potential impacts from the oil spill, including water-column profiles of CDOM fluorescence (WetLabs EC-AFL/FL), screening for total BTEX/TPH and carcinogenic PAHs in the water column using immunoassay test kits (SDI RaPID assay kits), and additional sediment samples for an expanded analysis of hydrocarbons (total petroleum hydrocarbons, aliphatics, and comparison of oil-fingerprinting indicators from the aliphatic scans to Deepwater Horizon oil). Table 2 provides a list of samples collected during the cruise.

Sediment sampling was conducted using a 0.04 m^2 Young-modified Van Veen grab. Samples for benthic macro-infaunal analysis were collected in duplicate, live-sieved onboard through a 0.5 mm screen, and preserved separately in 10% buffered formalin with Rose Bengal stain. Samples for the analysis of sediment toxicity, sediment contaminants, % silt-clay, % water, and % TOC were sub-sampled from composited surface sediment (upper 2-3 cm) taken from additional grabs (typically two) independent of the macro-infaunal grabs. The grab frame also was equipped with a digital camera, strobe, and bottom-triggered shutter release to capture pictures of the undisturbed ocean floor and any epifaunal species present at the sediment surface just prior to the grab's contact with the bottom.

A Seabird SBE 9 CTD was used to acquire continuous profiles of conductivity, temperature, pH, dissolved oxygen, depth, and CDOM fluorescence as it was lowered and raised through the water column. The unit also was equipped with 12 Nisken bottles to acquire discrete water samples at two designated water depths (near surface and near-bottom) for analysis of nutrients, total suspended solids, turbidity (NTU), and chlorophyll. Discrete water samples were also collected just below the sea surface, in addition to any deeper subsurface depths where there was an occurrence of suspicious CDOM fluorescence signals, and analyzed for total BTEX/TPH and carcinogenic PAHs using immunoassay test kits (SDI RaPID assay kits).

3.0 Preliminary Results

A total of 50 stations were sampled for all indicators throughout the study region, with one additional station sampled for benthic infauna and hydrocarbons in support of a NRDA mesophotic coral project at Roughtongue Reef (Figure 1, Table 1). Presented here are preliminary results and observations from the cruise. A final report will be completed once all data have been processed.

Water depths at the 50 stations averaged 31.0 m and ranged from 8.2 – 100.5 m. Bottom-water salinity levels (PSU) were uniform across the region with values falling within a narrow range of 32.7 to 36.4 and averaging 35.3. Other bottom-water physical characteristics were more variable, including DO which ranged from 1.7 mg/L to 6.9 mg/L and averaged 5.4 mg/L. Only one station (04 near the Chandeleur Islands; Figure 2) had DO values in a range (< 2 mg/L) often associated with adverse conditions for benthic fauna (USEPA 2004, Diaz and Rosenberg 1995). Bottom-water temperature had a moderate range of 17.6ºC to 31.3 ºC with warmer temperatures generally occurring at the shallower stations across the region. Turbidity ranged from 0.214 NTU to 2.850 NTU and averaged 0.832 across the region. Turbidity measurements were highest in proximity to the Mississippi River Delta. Bottom water-quality measurements for depth, temperature, salinity, pH and DO at each station are presented in Table 1. Water-column profiles are presented in Appendix A.

Observations of several human-dimension indicators (e.g., presence or absence of vessels, surface trash, surface oil, marine mammals, oily sediment, and noxious sediment odors) also were made at each station (Table 3). Nowhere was surface oil observed or oil sheen detected on sediments. No surface trash was observed at any stations. At 38% (n=19) of the stations, at least one indicator of human use (presence of vessels or oil rigs), was observed. Caution is advised when interpreting these observations, as sampling occurred day and night and nighttime observations were limited.

The addition of a digital camera to the benthic grab allows the capture of pictures of the undisturbed ocean floor, along with any epifaunal species present at the sediment surface, just prior to the grab's contact with the bottom. Appendix A shows the diverse range of bottom types across the region. Based on these images (actual grain-size samples are being processed), sediments ranged from fine, muddy sands close to the Mississippi Delta to a variety of fine and coarse sands across the remainder of the region. One additional notable feature of the photos is the diverse array of marine life associated with the bottom habitat. Numerous fishes and invertebrates are present in the photos, as well as burrows, tracks, and mounds indicating large amounts of biological activity. Photos will be processed to determine species composition of visible biota and percent cover.

A total of 152 fish from 21 species were collected with hook-and-line fishing gear and kept frozen during the cruise as candidates for subsequent tissue contaminant analysis (Table 4, Appendix B). These fish where collected from stations distributed across the entire study region (Figure 3). At this time, the following subset of fish have been targeted for further chemical analysis, based on their commercial/recreational value and/or broad spatial distribution across

stations: *Calamus proridens* (Littlehead Porgy, n=5), *Centropristis philadelphica* (Rock Sea Bass, n=2), *C. striata* (Black Sea Bass, n=2), *Diplectrum formosum* (Sand Perch, n=17), *Haemulon plumieri* (White grunt, n=5), *Micropogonias undulatus* (Atlantic Croaker, n=3), *Pagrus pagrus* (Red Porgy, n=3), *Paralichthys lethostigma* (Southern Flounder, n=6), *Rhombophites aurorubens* (Vermilian Snapper, n=3), *Syacium papillosum* (Dusky Flounder, n=2).

Data for other biological and abiotic environmental variables listed in Table 2 will be available once the processing of these samples has been completed. A final report, inclusive of all results, is expected in FY12. In addition, an interim report on some of the analyses (e.g., including TPHs and aliphatic hydrocarbons in sediments, Microtox toxicity results, estimates of total BTEX/TPH and carcinogenic PAHs in the water column based on immunoassay test kits) is expected sooner (hopefully by December 2010 to January 2011).

4.0 Acknowledgements

Support for this project has been provided through NOAA/NOS/NCCOS/CCEHBR FY10 base funds (field sampling personnel, supplies and equipment; sample processing), NOAA/OMAO (NOAA Ship *Nancy Foster* support), USGS/ NWRC/GBPO (sample design) and EPA/NHEERL/GED (field sampling). All members of the field crew (Figure 4, Table 5) are commended for their high level of technical expertise, teamwork and dedication to getting the required sampling completed. Special appreciation also is extended to the officers and crew of the NOAA ship NANCY FOSTER for the superb job performed on NF-10-09-RACOW.

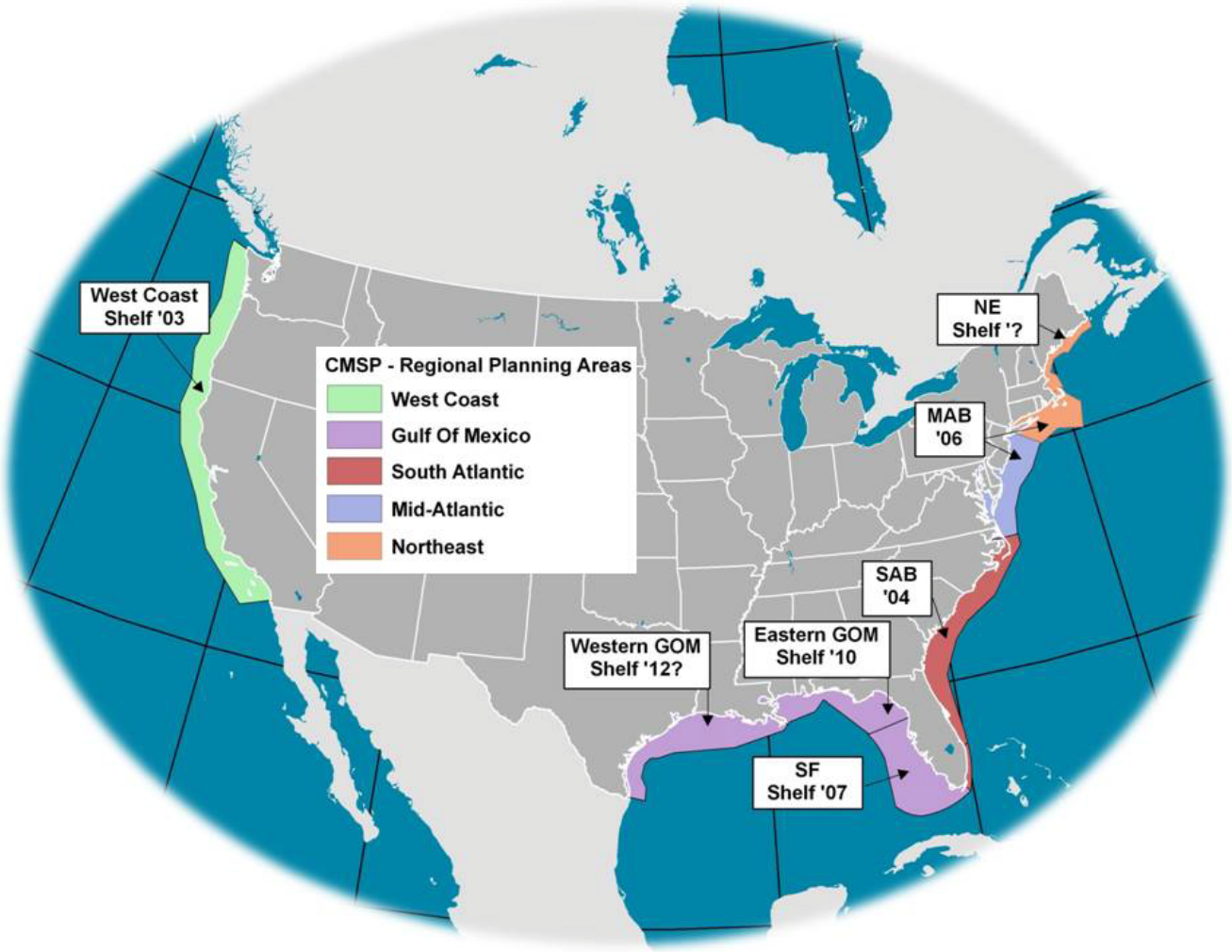


Figure 1. Overview of related series of offshore regional surveys to assess status of ecological condition and stressor impacts throughout various continental shelf planning areas of the United States.

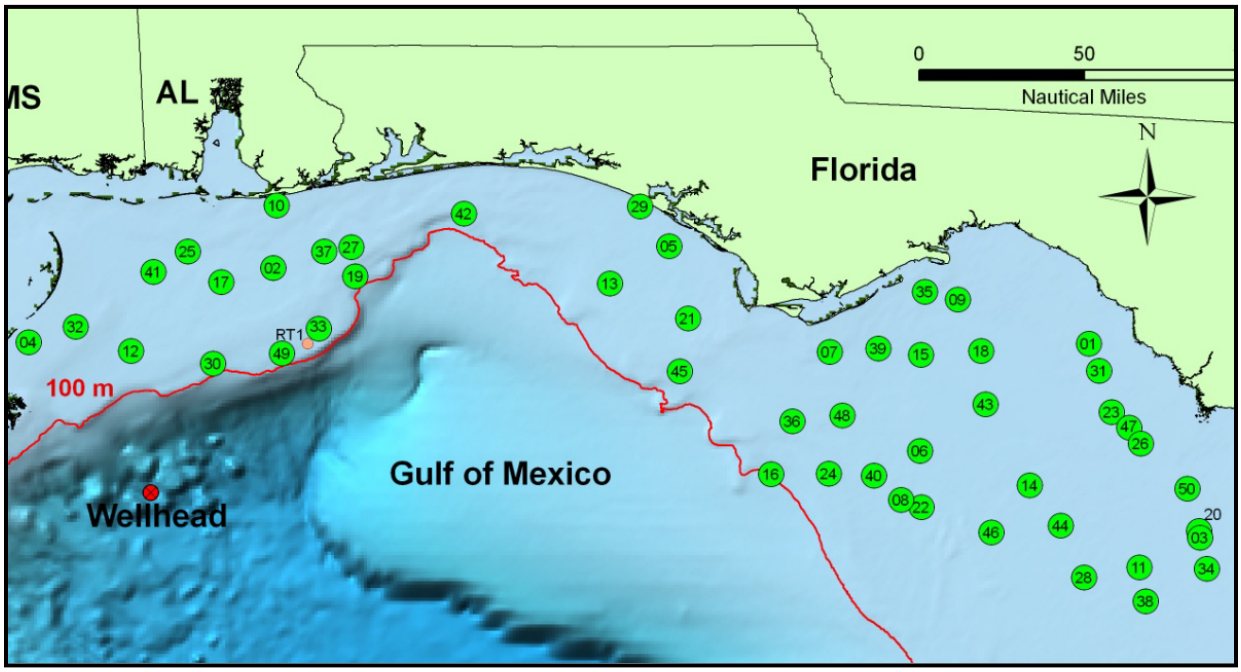


Figure 2. NF-10-09-RACOW station locations (green circles). The orange circle represents a mesophotic coral site (Roughtongue Reef) sampled in support of an earlier NRDA project on the *Nancy Foster*.

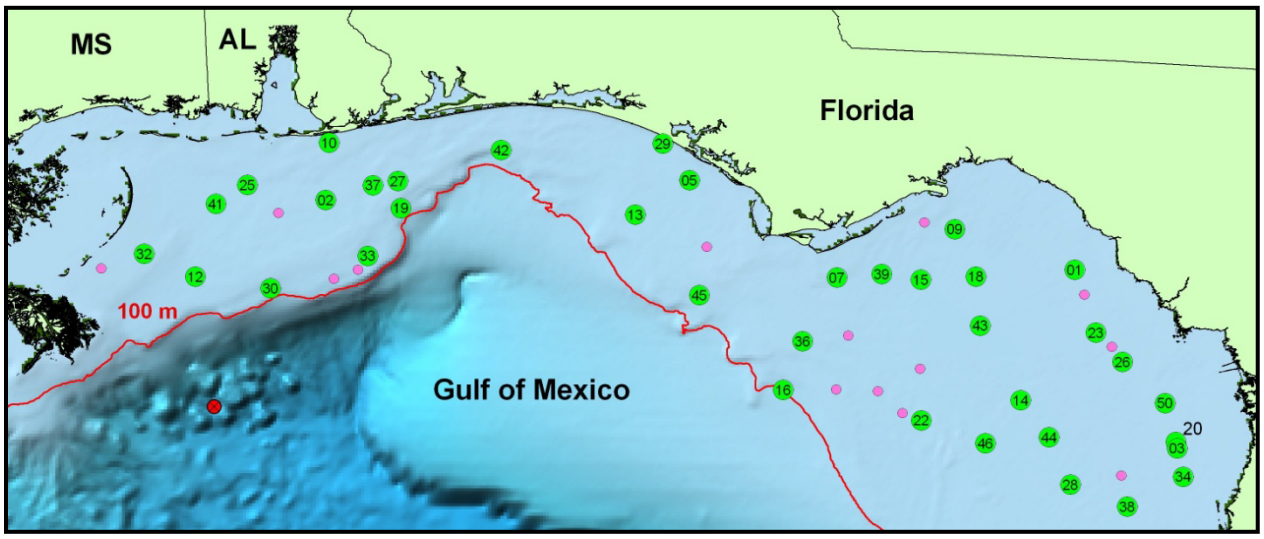


Figure 3. NF-10-09-RACOW station locations (green circles) where fish samples were collected for tissue contaminant analysis. Pink circles indicate stations where fish were not collected.

Figure 4. NF-10-09-RACOW scientific crew from left to right: Travis Washburn, Jeff Hyland, Sherry Vickery, Laura Kracker, James Daugomah (front row); Blaine West, Cindy Cooksey, Stephen Roth, Len Balthis, Samantha Allan (NF Survey Tech) and JD Dubick (back row).

Table 1. Locations, depths, and bottom water characteristics for 50 stations sampled across the northeastern Gulf of Mexico continental shelf, August 13 – 21, 2010.

Station	Date Sampled	Latitude (DD)	Longitude (DD)	Depth (m)	Near-Bottom Water Temp. (C)	DO (mg/L)	pH	Salinty (PSU)	Turbidity (NTU)
1	8/17/2010	29.49128	-83.63225	8.5	30.8	6.0	7.9	32.8	0.9
2	8/15/2010	29.87410	-87.75214	34.0	21.7	4.7	7.8	36.1	0.6
3	8/18/2010	28.51044	-83.06970	9.8	31.2	6.2	7.9	35.1	0.4
4	8/14/2010	29.49790	-88.98726	18.2	27.0	1.7	7.7	33.5	1.8
5	8/16/2010	29.98339	-85.75194	25.0	24.1	5.4	7.9	35.6	0.5
6	8/19/2010	28.94819	-84.48430	31.2	22.8	6.7	7.9	36.0	0.2
7	8/16/2010	29.44795	-84.94101	11.5	28.0	5.8	7.9	34.5	1.1
8	8/19/2010	28.70232	-84.58062	45.9	19.8	5.6	7.8	36.1	0.3
9	8/17/2010	29.71404	-84.29348	18.5	30.3	5.8	7.9	33.5	0.5
10	8/15/2010	30.18839	-87.73329	10.0	28.9	4.6	7.9	32.9	0.9
11	8/19/2010	28.36118	-83.37785	23.0	30.2	6.2	7.9	34.6	0.6
12	8/14/2010	29.45304	-88.46938	55.9	19.5	2.9	7.7	36.3	2.5
13	8/15/2010	29.79354	-86.05026	43.2	20.1	5.2	7.8	36.1	0.6
14	8/19/2010	28.77400	-83.93067	30.0	24.7	6.2	7.8	35.4	0.6
15	8/17/2010	29.43554	-84.48029	26.2	25.4	5.8	7.8	35.2	0.4
16	8/20/2010	28.83039	-85.23642	100.5	17.6	4.3	7.8	36.3	0.5
17	8/14/2010	29.80297	-88.01301	32.7	21.5	3.9	7.8	36.1	0.5
18	8/17/2010	29.45391	-84.17574	23.5	27.7	5.5	7.8	34.7	0.4
19	8/15/2010	29.83053	-87.33820	60.0	19.9	5.3	7.8	36.4	0.7
20	8/18/2010	28.54568	-83.07587	8.2	31.1	6.1	7.9	35.0	0.5
21	8/16/2010	29.61748	-85.65654	27.1	22.1	5.7	7.9	35.9	0.6
22	8/19/2010	28.66376	-84.47650	41.8	20.0	5.7	7.8	36.2	0.4
23	8/18/2010	29.14540	-83.51581	13.8	30.6	6.1	7.9	33.7	0.8
24	8/20/2010	28.83431	-84.94480	48.5	18.3	4.6	7.8	36.3	0.4
25	8/13/2010	29.95691	-88.18370	29.0	25.4	4.5	7.7	35.1	< 1 *
26	8/18/2010	28.98497	-83.36949	13.5	30.6	6.3	7.9	34.0	1.4
27	8/15/2010	29.97831	-87.35599	25.0	22.6	5.2	7.8	35.9	0.9
28	8/19/2010	28.30967	-83.65726	31.8	24.8	6.8	7.9	35.5	0.5
29	8/16/2010	30.18311	-85.89885	21.0	25.6	5.0	7.8	35.2	0.4
30	8/14/2010	29.38904	-88.05488	81.0	18.9	4.9	7.8	36.3	0.6
31	8/17/2010	29.35287	-83.58080	10.0	30.7	6.0	7.9	33.2	0.4
32	8/13/2010	29.57762	-88.75023	14.0	25.2	2.8	7.7	35.3	1.5
33	8/14/2010	29.56787	-87.52010	65.0	19.1	5.0	7.8	36.4	0.0
34	8/18/2010	28.35372	-83.03755	9.4	31.3	6.2	7.9	35.2	0.6

Station	Date Sampled	Latitude (DD)	Longitude (DD)	Depth (m)	Near-Bottom Water Temp. (C)	DO (mg/L)	pH	Salinty (PSU)	Turbidity (NTU)
35	8/17/2010	29.75180	-84.46121	11.5	30.4	5.8	7.9	32.7	0.5
36	8/20/2010	29.09754	-85.13003	33.7	19.4	5.3	7.9	36.3	0.3
37	8/15/2010	29.95572	-87.49335	32.0	22.1	5.1	7.8	35.9	0.3
38	8/18/2010	28.18965	-83.34418	22.6	29.5	6.4	7.9	35.1	0.3
39	8/16/2010	29.46679	-84.69453	21.1	25.0	5.9	7.8	35.3	0.5
40	8/20/2010	28.82441	-84.71659	46.1	19.7	5.4	7.8	36.1	0.7
41	8/13/2010	29.85237	-88.35699	33.0	22.6	2.8	7.6	35.6	< 1*
42	8/15/2010	30.14833	-86.78883	35.7	19.6	5.2	7.8	36.3	0.7
43	8/17/2010	29.18394	-84.15323	24.3	26.2	6.2	7.8	35.1	0.5
44	8/19/2010	28.57090	-83.77377	29.5	26.1	6.9	7.9	35.5	0.6
45	8/20/2010	29.35041	-85.69787	48.2	18.1	4.3	7.8	36.3	0.6
46	8/19/2010	28.53713	-84.12522	35.2	23.6	6.7	7.9	35.8	0.3
47	8/18/2010	29.06686	-83.42851	13.8	30.6	6.6	8.0	33.9	0.7
48	8/20/2010	29.12906	-84.87816	36.1	20.3	5.4	7.8	36.1	0.4
49	8/14/2010	29.44149	-87.70858	69.5	19.8	5.4	7.8	36.4	0.8
50	8/18/2010	28.75888	-83.13470	12.0	30.9	5.8	7.9	34.6	0.5
			Mean	31.0	24.6	5.4	7.8	35.3	0.6
			Min	8.2	17.6	1.7	7.6	32.7	0.0
			Max	100.5	31.3	6.9	8.0	36.4	2.5

* - Range on HACH Turbidity meter set on high.

Table 2. Summary of field samples collected at each NF-10-09-RACOW station.

Parameters	# of Replicates	Container	Sample Size	Preservation
Infauna	2	1000 ml Polypropylene jar	All material retained on 0.5mm sieve	10% Buffered Formalin in the field
Metal Contaminants	1 (composited sediment)	250 ml (8 oz) polypropylene jar	2/3 full	frozen
Organic Contaminants	2 (composited sediment)	250 ml (4 oz) glass jar	2/3 full	frozen
TOC	1 (composited sediment)	125 ml (4 oz) Polypropylene jar	2/3 full	frozen
% Silt/Clay & % Moisture	1 (composited sediment)	500 ml (16 oz) HDPE jar	2/3 full	frozen
Microtox	1 (composited sediment)	125 ml (4 oz) Glass jar	2/3 Full	**Refrigerate**
Water Column (Temp., D.O., pH, Sal.)	1	N/A	Profile	N/A
Total Suspended Solids	2 (water column - surface, bottom)	47 mm preweighed filter pads	TSS retained on filter pad	frozen
Nutrients	2 (water column - surface, bottom)	60 ml HDPE containers	2/3 full	frozen
Chlorophyll a	2 (water column - surface, bottom)	25 mm filter pads	cells retained on pad	frozen
Turbidity	2 (water column - surface, bottom)	60 ml vial	Full	N/A
Oil Assay	1 (water column – surface); 1 (if subsurface oil detected)	60 ml vial	Full	**Refrigerate**
Fish Tissue	--	ziplock bag	5-6 specimens from up to 3 species	frozen

Table 3. Summary by station of human-dimension indicators at 50 stations sampled as part of the NF-10-09-RACOW research cruise. Cautionary Note: The visual range was highly variable – daytime observations were limited to a range of 2-5 nm while nighttime observations were limited to what was immediately adjacent to the vessel or the object being observed had lights that could be seen from a distance.

Station	Surface Trash Present (Y/N)	Surface Oil Present (Y/N)	Other Vessels Present (Y/N)	Oil Rigs Present (Y/N)	Marine Mammals Present (Y/N)	Sediment Oily (Y/N)	Sediment Odor?
1	N	N	N	N	N	N	None
2	N	N	N	Y	N	N	None
3	N	N	Y	N	N	N	None
4	N	N	N	Y	N	N	None
5	N	N	Y	Y	N	N	None
6	N	N	N	N	N	N	None
7	N	N	N	N	N	N	None
8	N	N	N	N	N	N	None
9	N	N	N	N	N	N	None
10	N	N	N	Y	N	N	None
11	N	N	N	N	N	N	None
12	N	N	N	Y	N	N	None
13	N	N	N	N	N	N	None
14	N	N	N	N	N	N	None
15	N	N	N	N	N	N	None
16	N	N	N	N	Y- 100+ Spotted Dolphins	N	None
17	N	N	N	Y	N	N	None
18	N	N	N	N	N	N	None
19	N	N	N	N	N	N	None
20	N	N	N	N	N	N	None
21	N	N	N	N	N	N	None
22	N	N	N	N	N	N	None
23	N	N	N	N	N	N	Sulfur
24	N	N	N	N	Y- 2 Bottlenose Dolphins	N	None
25	N	N	N	Y	N	N	None
26	N	N	N	N	N	N	Sulfur
27	N	N	N	N	N	N	None
28	N	N	Y	N	N	N	None
29	N	N	N	N	N	N	None
30	N	N	Y	Y	N	N	None
31	N	N	N	N	N	N	Sulfur

Station	Surface Trash Present (Y/N)	Surface Oil Present (Y/N)	Other Vessels Present (Y/N)	Oil Rigs Present (Y/N)	Marine Mammals Present (Y/N)	Sediment Oily (Y/N)	Sediment Odor?
32	N	N	Y	Y	N	N	None
33	N	N	N	N	N	N	None
34	N	N	Y	N	N	N	None
35	N	N	Y	N	N	N	None
36	N	N	N	N	N	N	Sulfur
37	N	N	Y	N	N	N	None
38	N	N	N	N	N	N	None
39	N	N	N	N	N	N	None
40	N	N	N	N	N	N	None
41	N	N	Y	Y	N	N	None
42	N	N	Y	N	N	N	None
43	N	N	N	N	N	N	None
44	N	N	Y	N	N	N	None
45	N	N	N	N	N	N	None
46	N	N	Y	N	N	N	None
47	N	N	N	N	N	N	None
48	N	N	N	N	N	N	None
49	N	N	Y	Y	N	N	None
50	N	N	N	N	N	N	Sulfur

Table 4. Summary of fish collections for cruise NF-10-09-RACOW.

Common Name	Scientific Name	Number of Fish Collected	Number of Stations
Sand Perch	*Diplectrum formosum*	45	17
White Grunt	*Haemulon plumieri*	14	5
Littlehead Porgy	*Calamus proridens*	13	5
Red Porgy	*Pagrus pagrus*	12	3
Tomtate	*Haemulon aurolineatum*	11	5
Southern Flounder	*Paralichthys lethostigma*	10	6
Pigfish	*Orthropristis chrysoptera*	9	5
Hardhead Catfish	*Arius felis*	8	2
Croaker	*Micropogonias undulatus*	7	3
Vermilian Snapper	*Rhombophites aurorubens*	5	3
Pearly Razorfish	*Hemipteronotus splendens*	4	2
Ocellated Morey	*Gymnothorax saxicola*	2	2
Black Sea Bass	*Centropristis striata*	2	2
Rock Sea Bass	*Centropristis philadelphica*	2	2
Dusky Flounder	*Syacium papillosum*	2	2
Palespotted Eel	*Ophichthus ocellatus*	1	1
Wenchman	*Pristipomoides aquilonarias*	1	1
Cubera Snapper	*Lutjanus cyanopterus*	1	1
Margintail Conger	*Paraconger caudilimbatus*	1	1
Goldface Tilefish	*Caulolatilus chrysops*	1	1
Shrimp Eel	*Ophichthus gomesii*	1	1

Table 5. NF-10-09-RACOW cruise participants.

Name	Affiliation
Len Balthis	NOAA/NOS/CCEHBR
Cynthia Cooksey*	NOAA/NOS/CCEHBR
James Daugomah	NOAA/NOS/CCEHBR
JD Dubick	NOAA/NOS/CCEHBR
Jeff Hyland	NOAA/NOS/CCEHBR
Laura Kracker	NOAA/NOS/CCEHBR
Steve Roth	NOAA/NOS/CCEHBR
Sherry Vickery	US EPA/Gulf Ecology Division
Blaine West	NOAA/NOS/CCEHBR
Travis Washburn	NOAA/NOS/CCEHBR

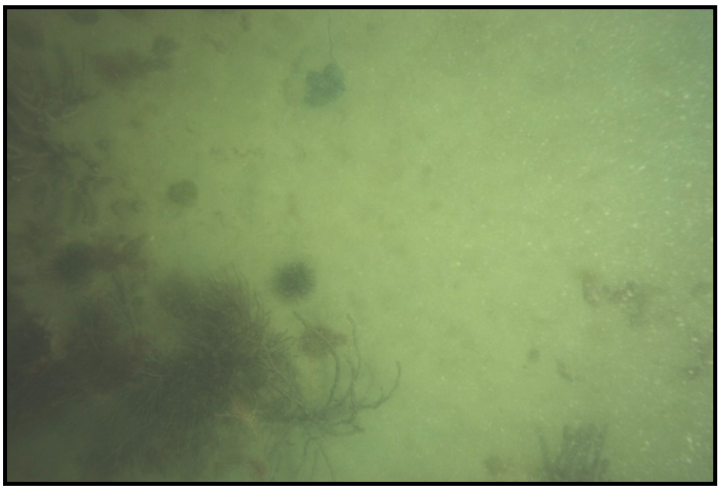
* - Chief Scientist

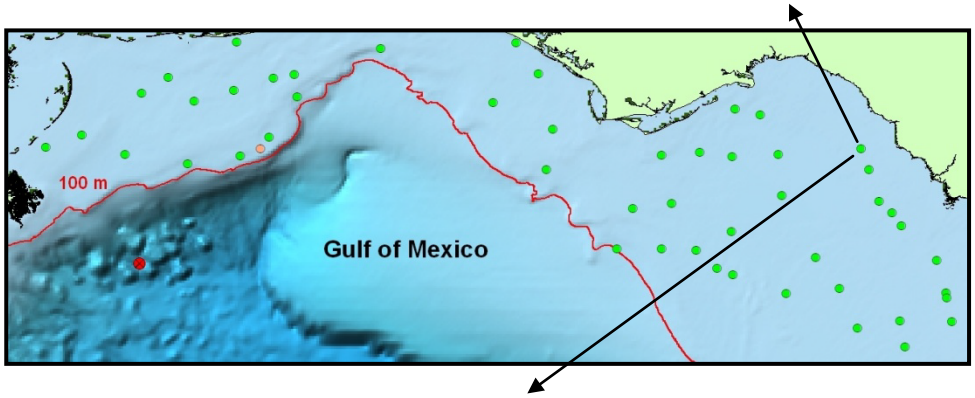
Affiliation Addresses:
NOAA/NOS/CCEHBR: 219 Fort Johnson Rd, Charleston, SC 29412
US EPA/Atlantic Ecology Division: 1 Sabine Island Dr, Gulf Breeze, FL 32561

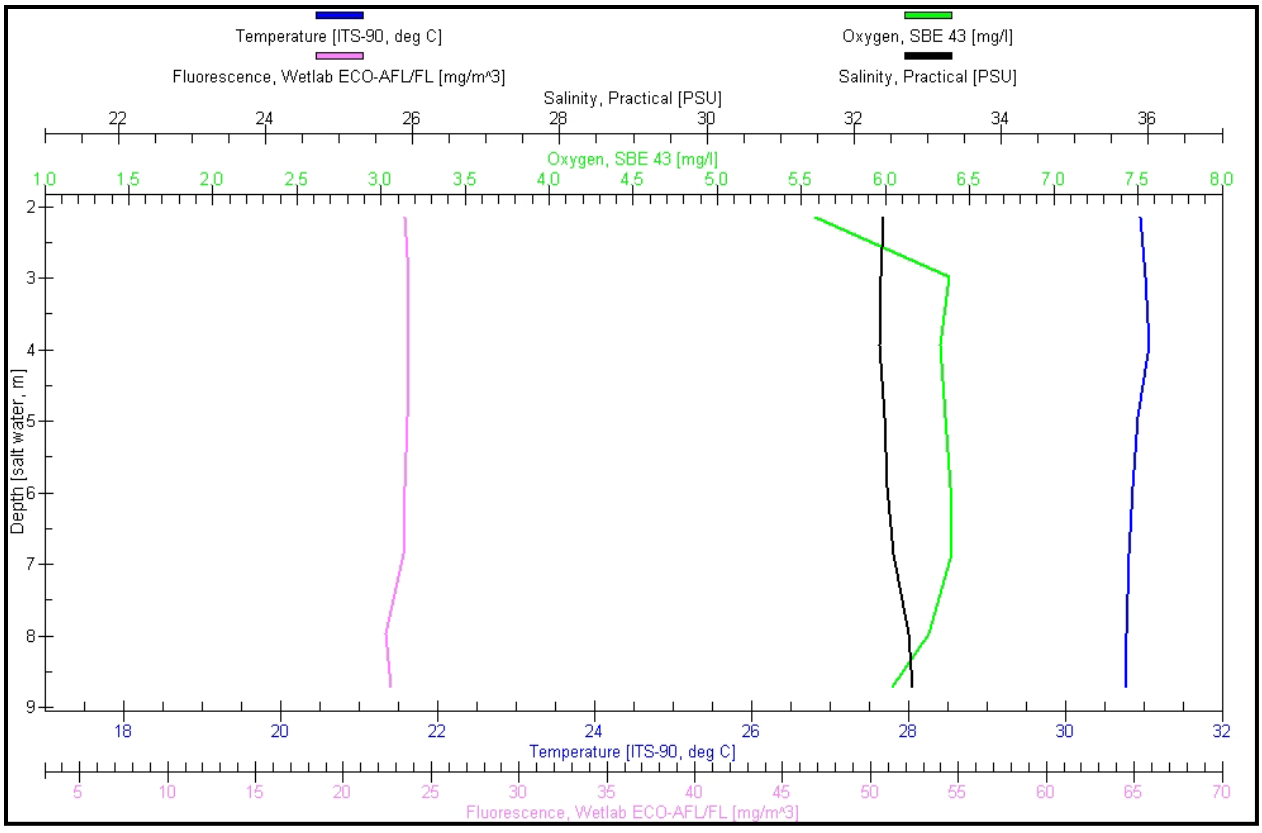
Appendix A

NF-10-09-RACOW benthic photos and CTD profiles
Notes: (1) y-axis (depth) varies by station
(2) Clump of metal seen in all bottom photos are camera trigger weights

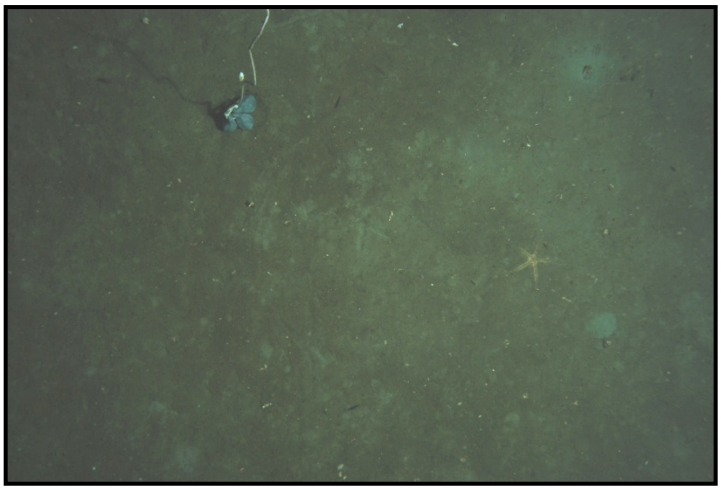
Station 01

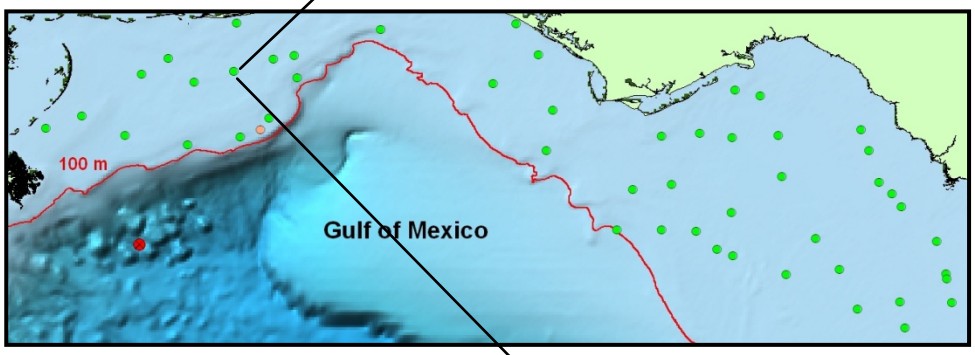


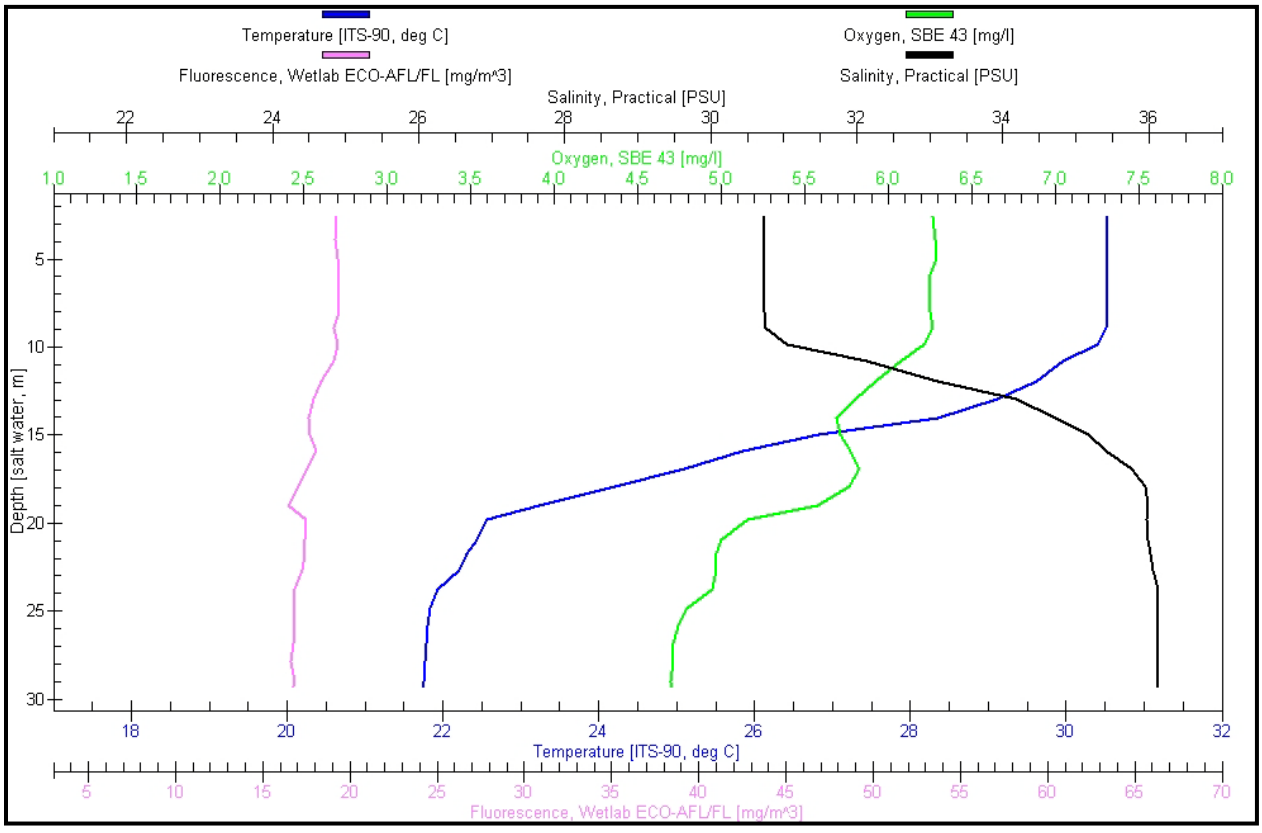

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

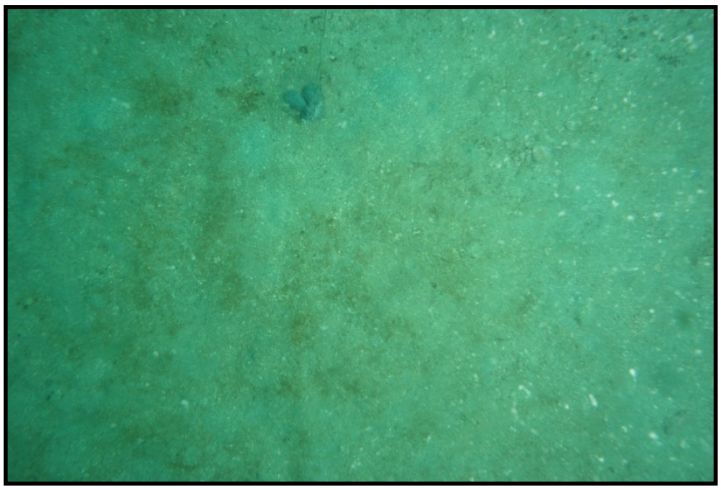
Station 02

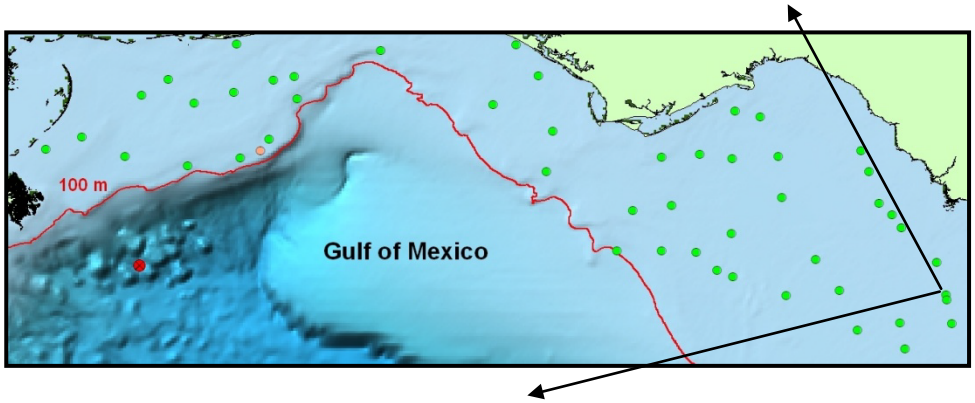


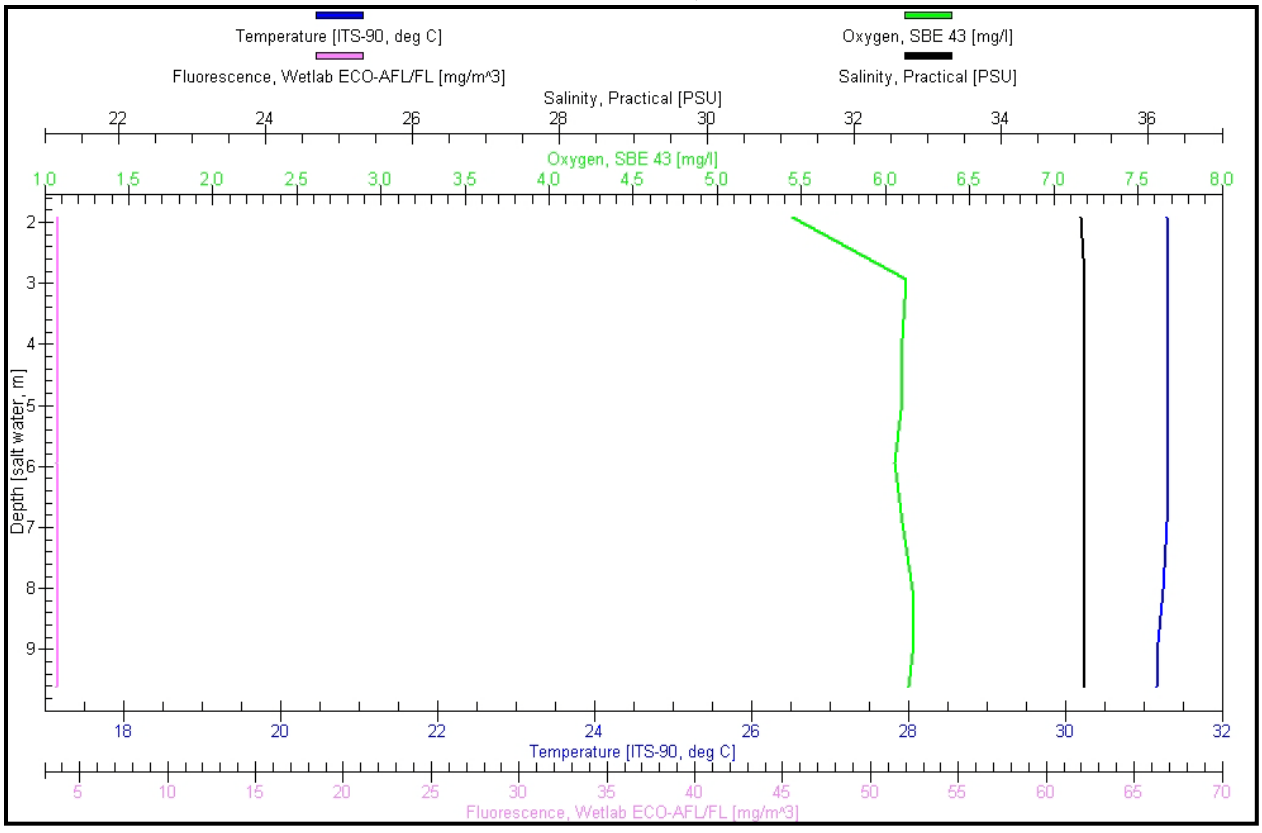

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

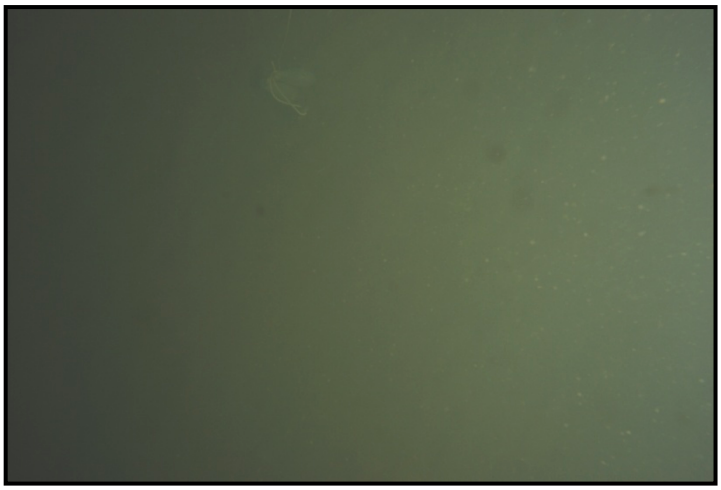
Station 03

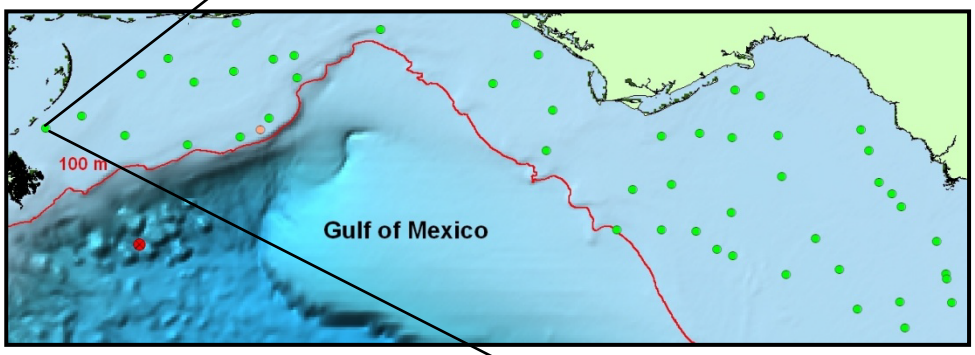


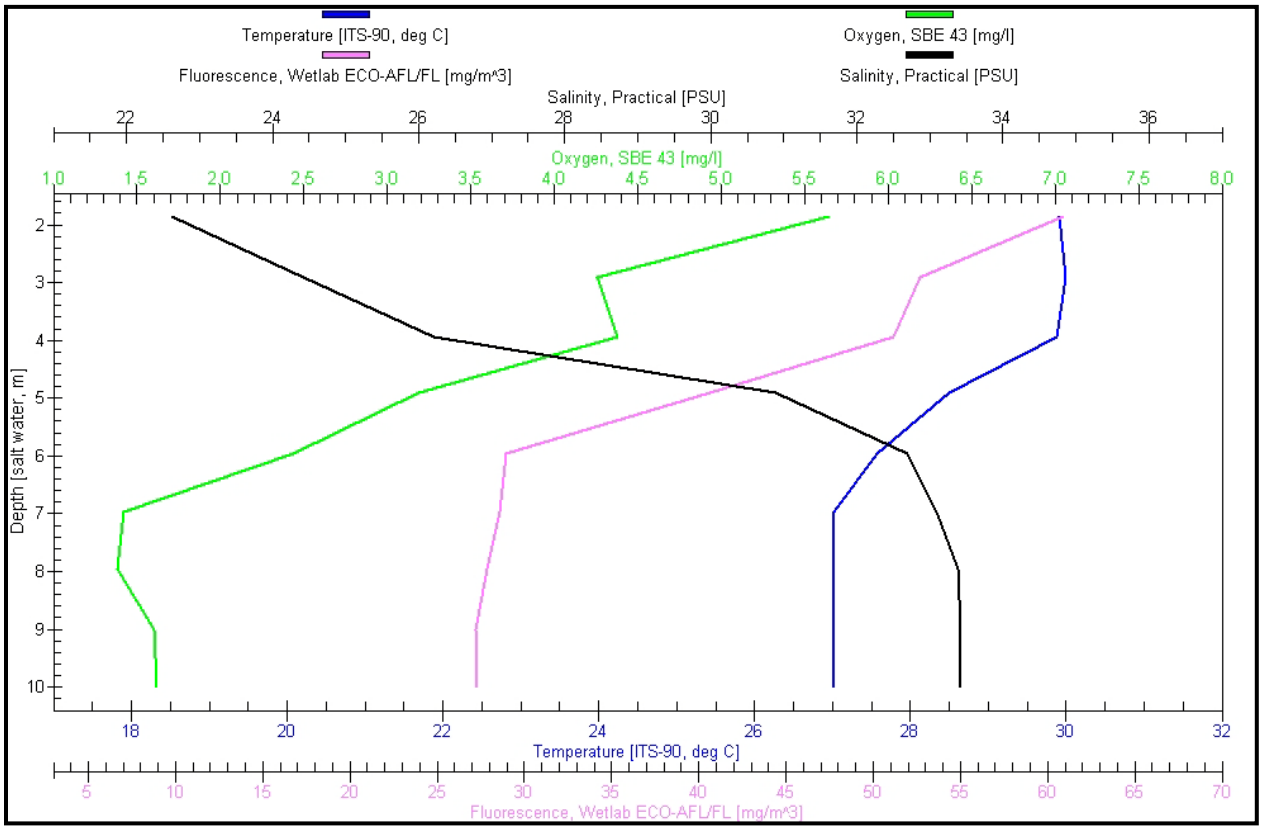

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

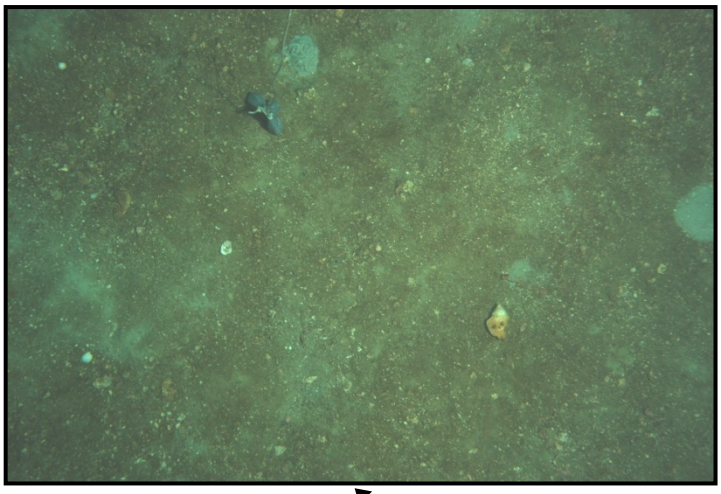
Station 04

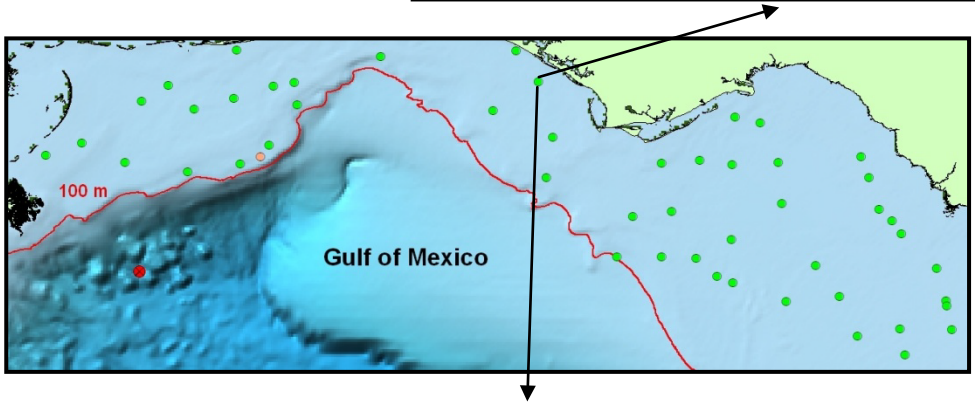


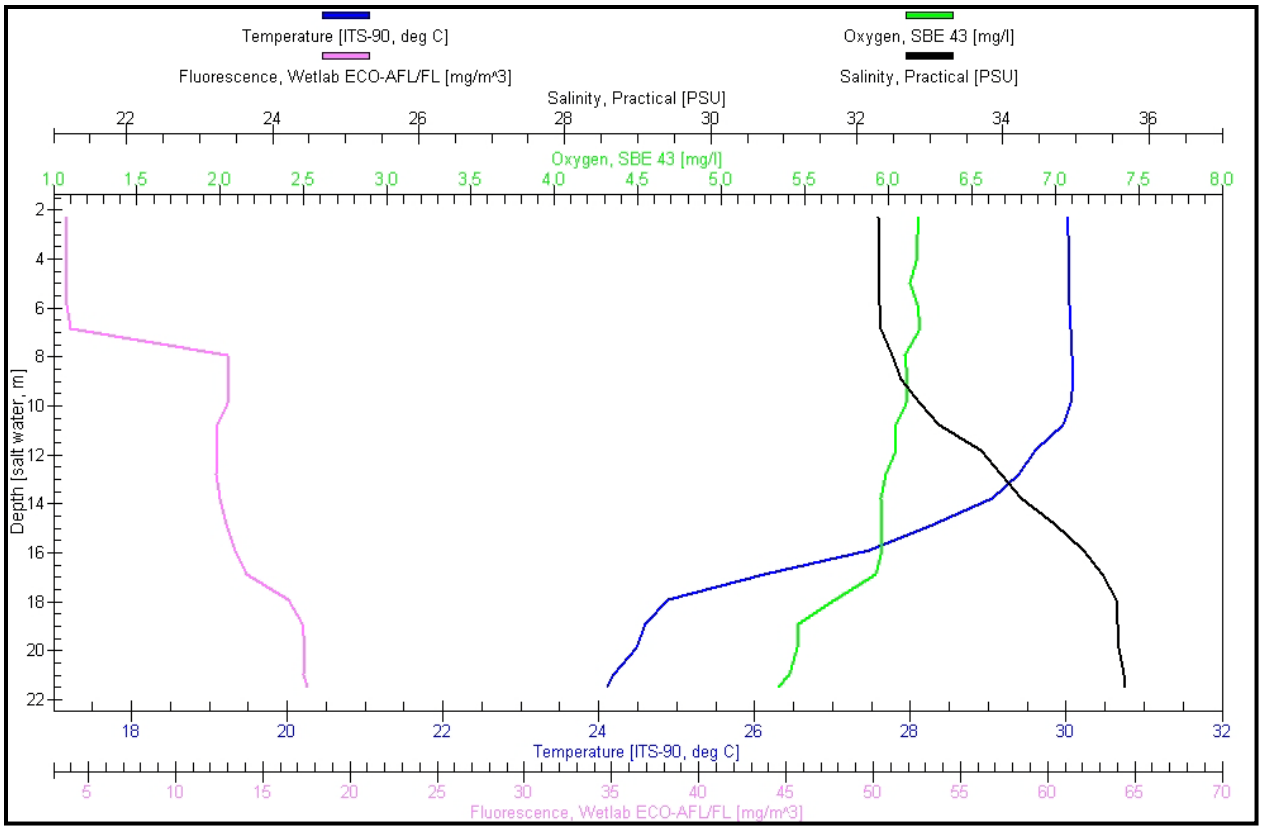

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

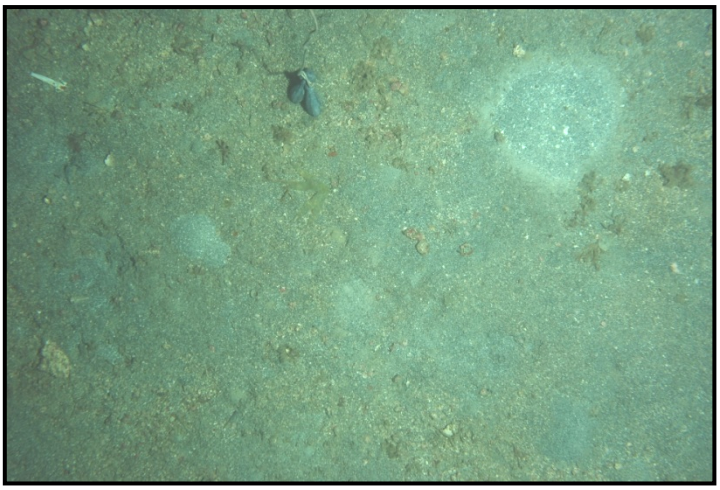
Station 05

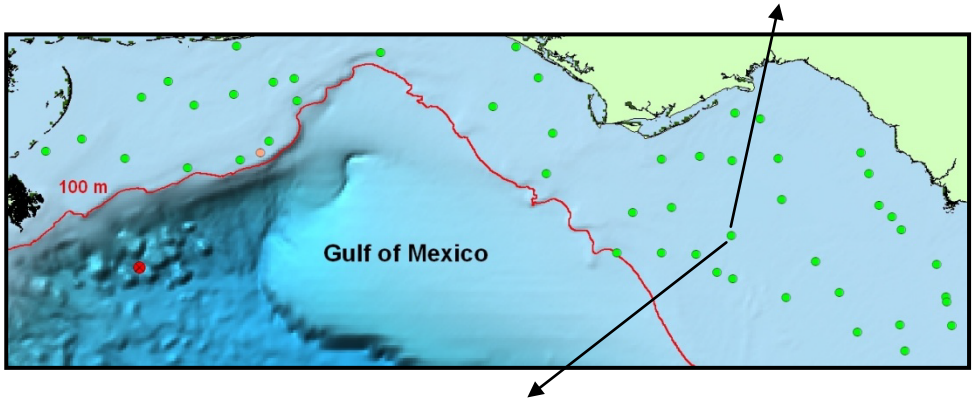


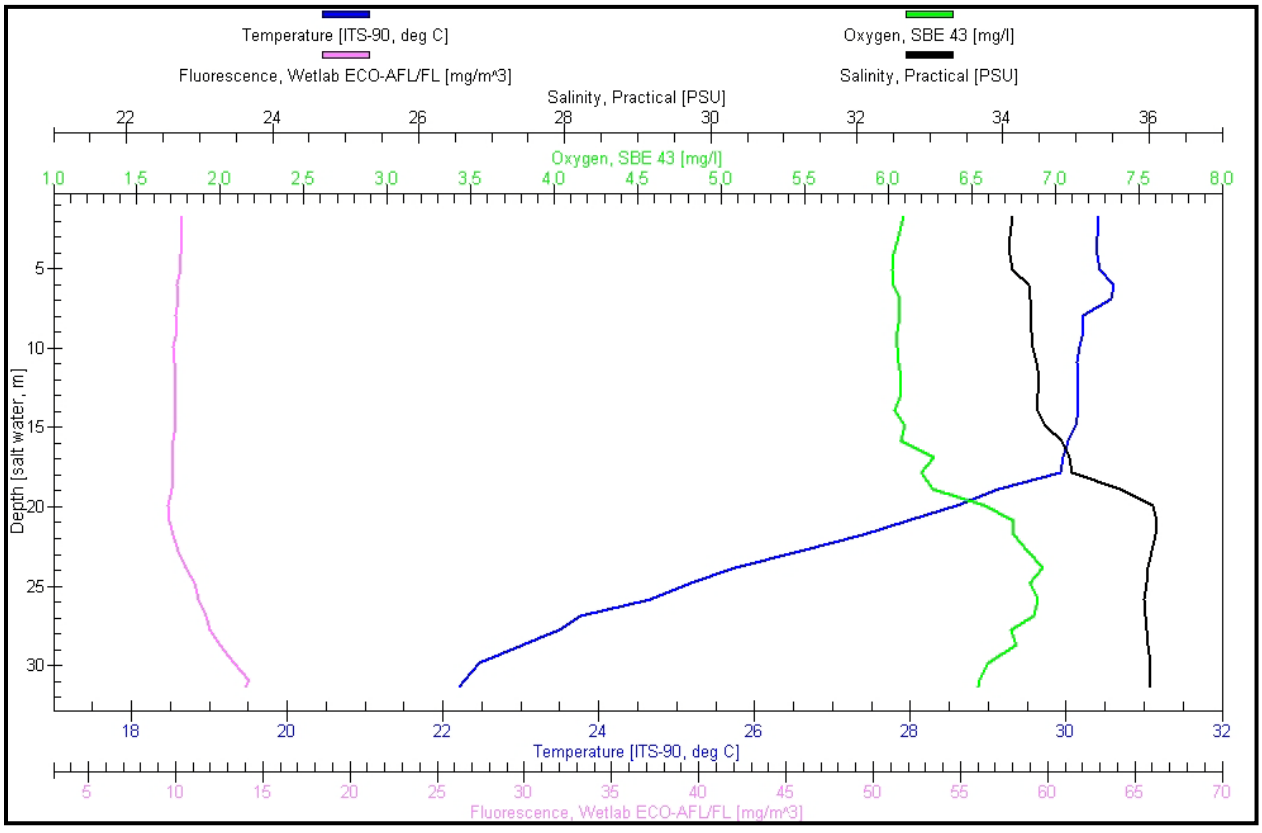

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

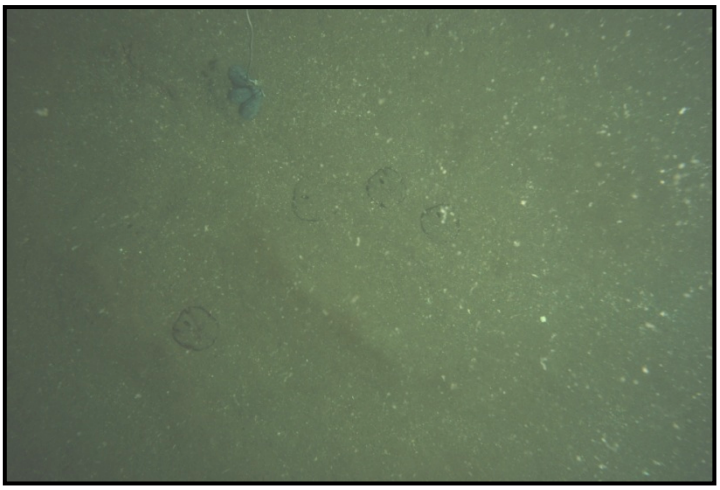
Station 06

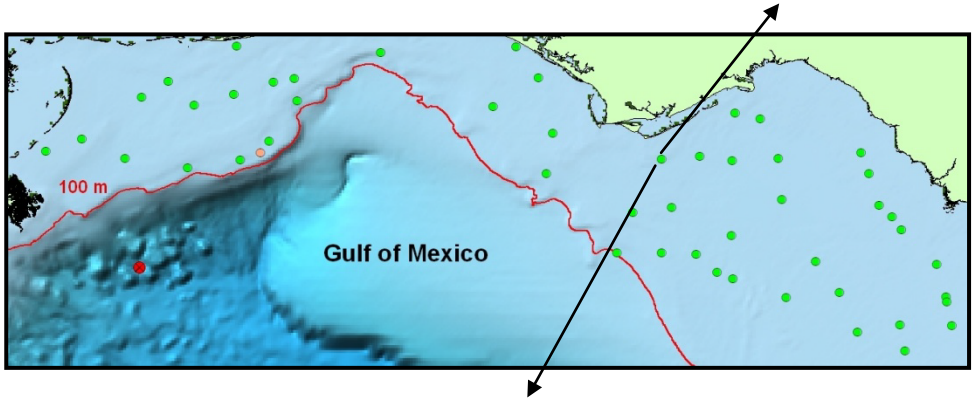


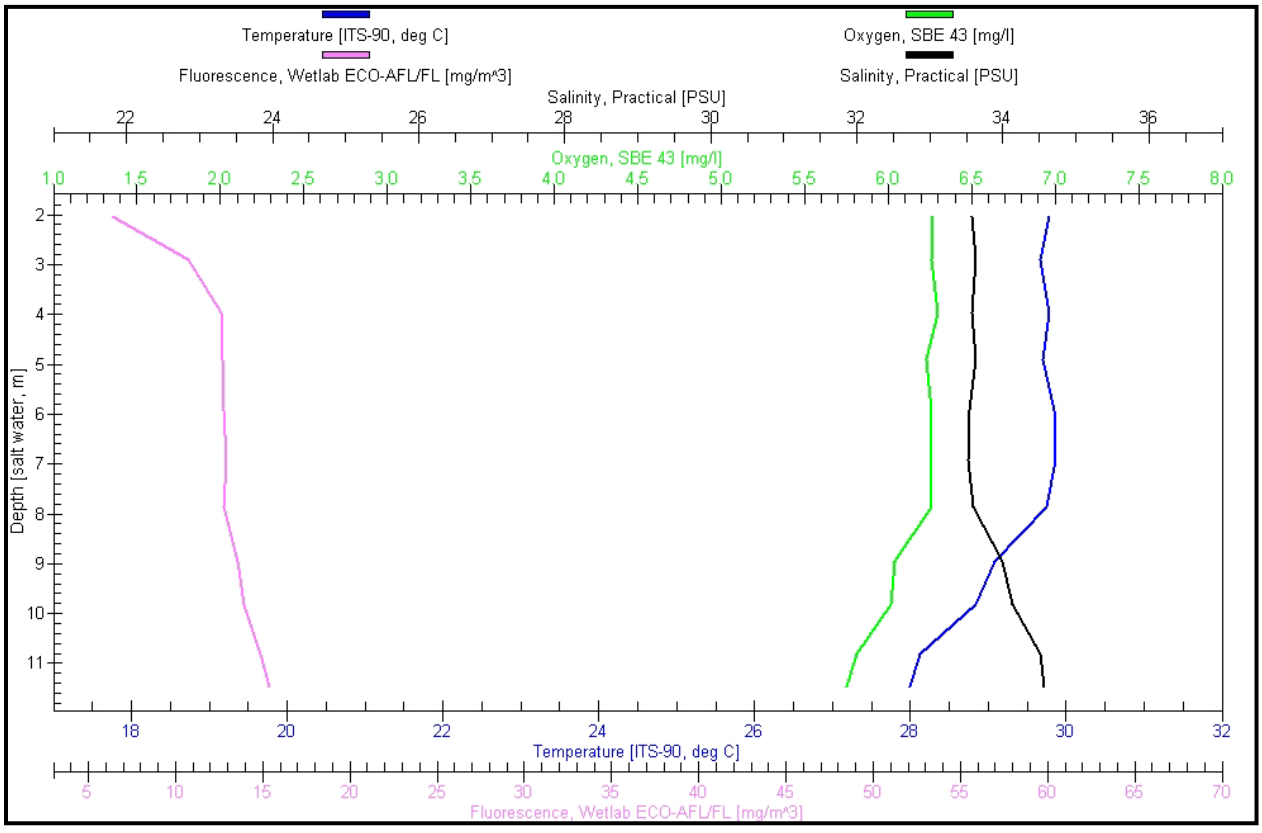

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

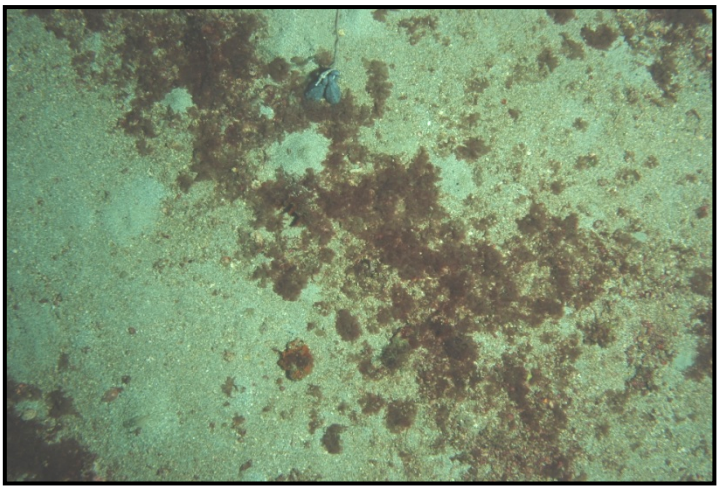
Station 07

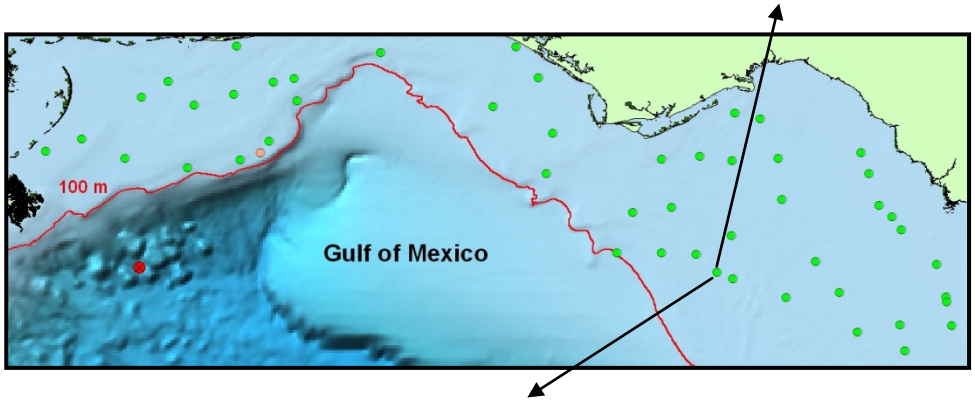


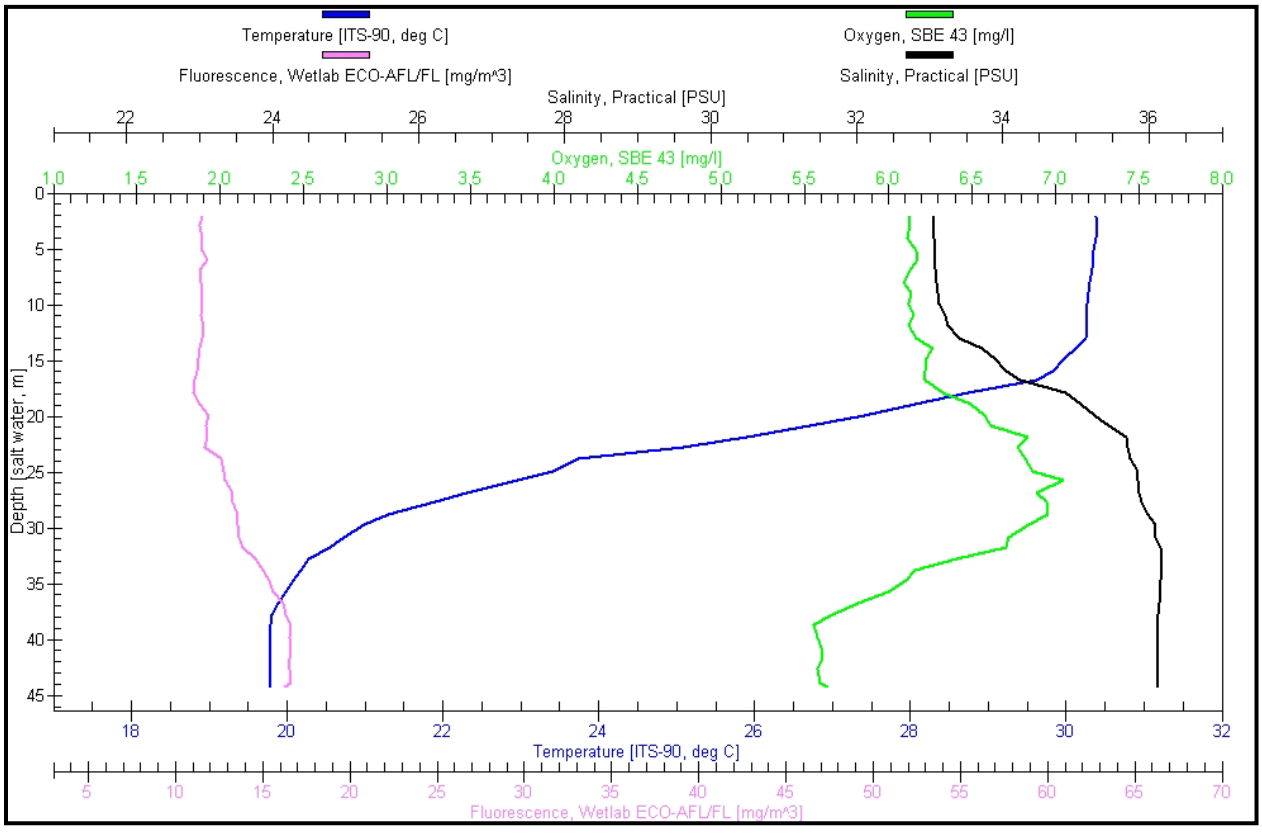

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10 11
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

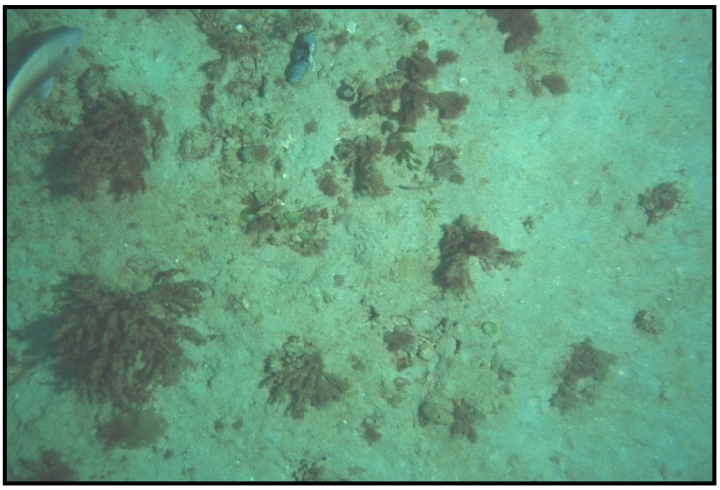
Station 08

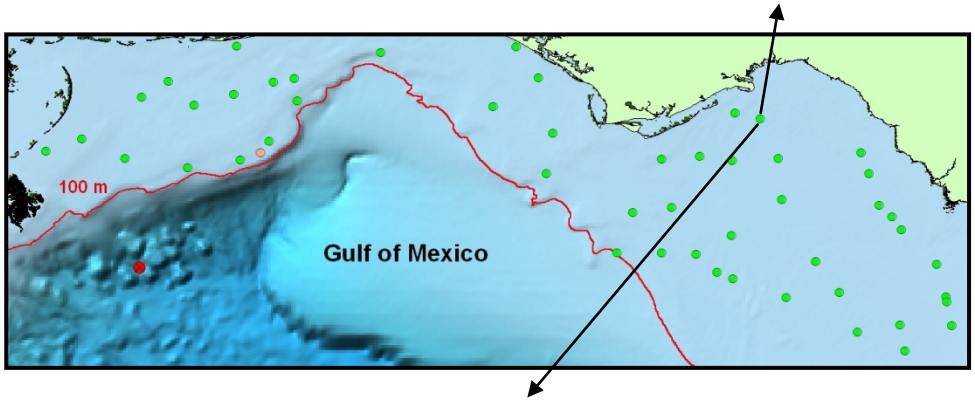


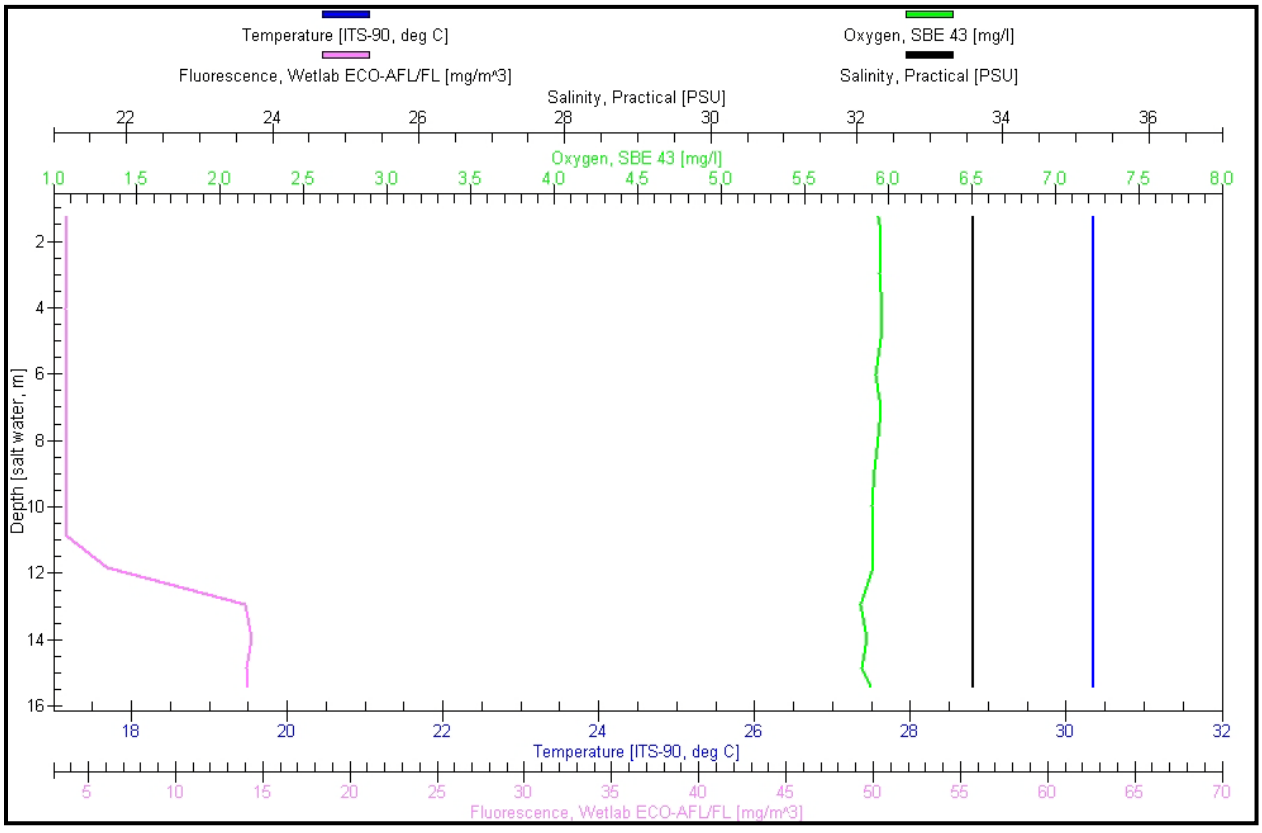

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40 45
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

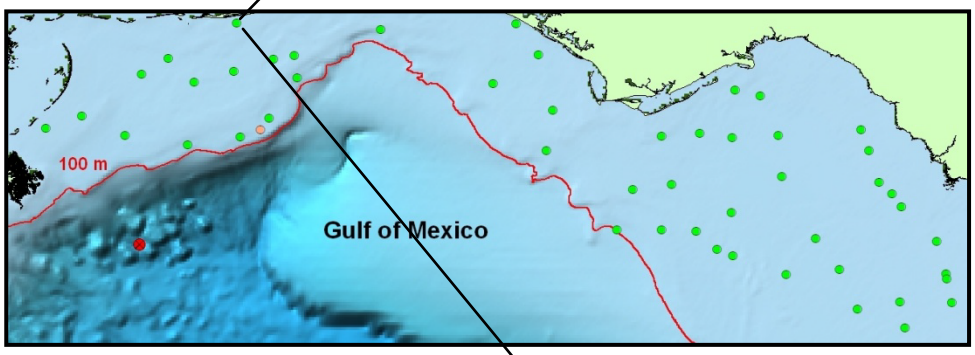
Station 09

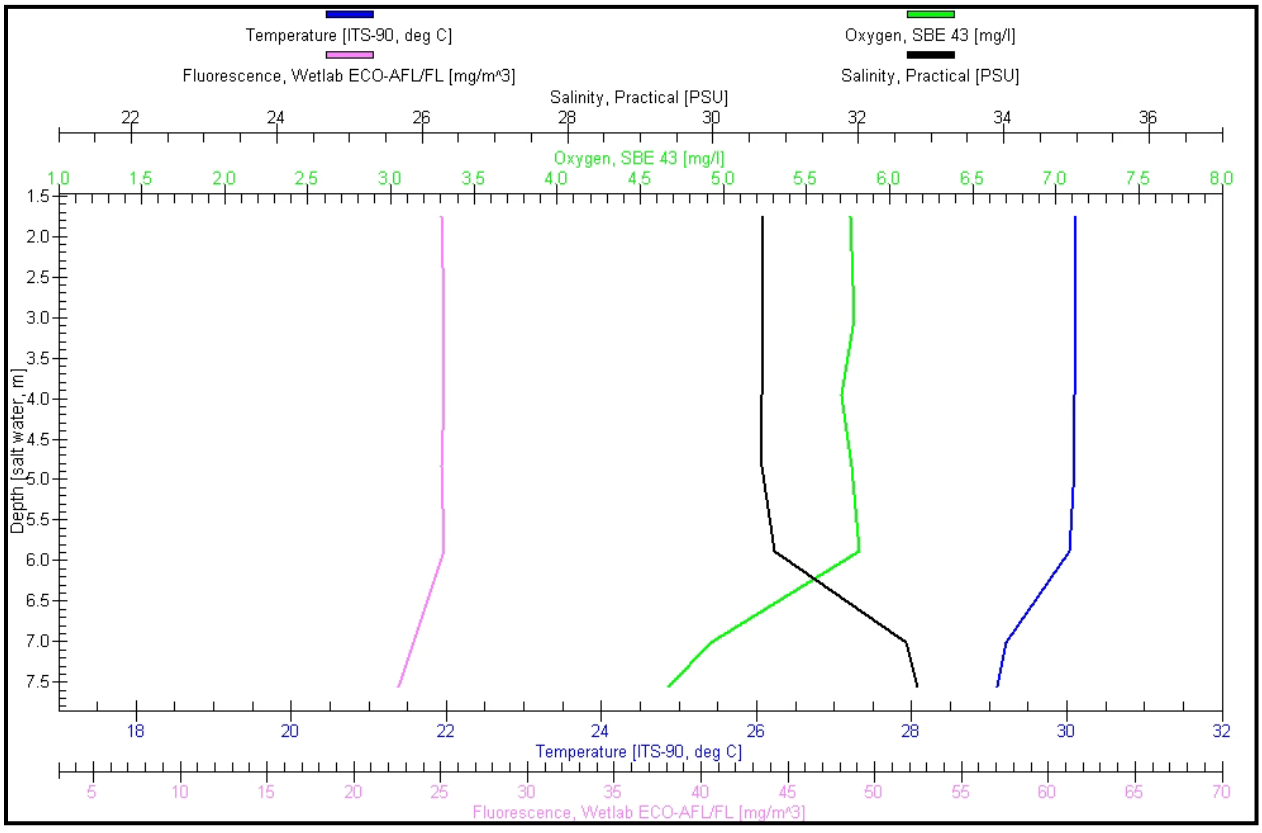



100 m
Gulf of Mexico

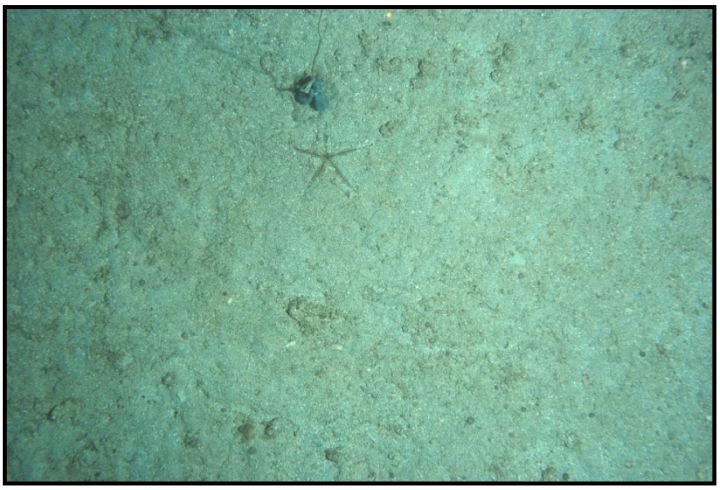

Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

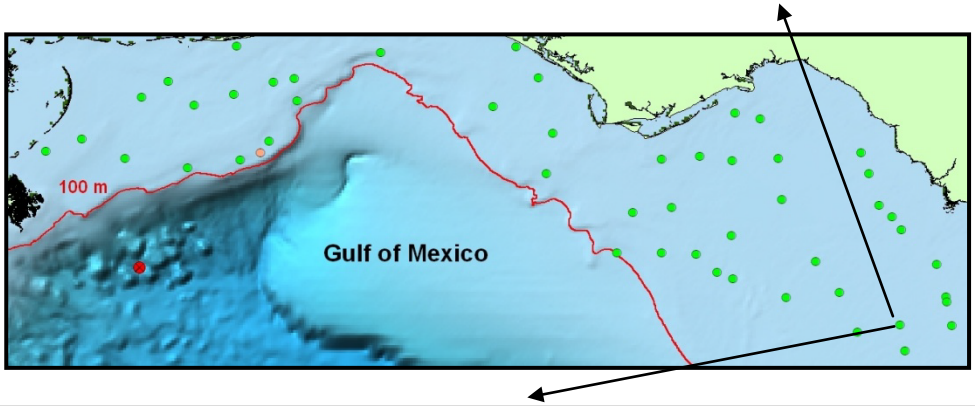
Station 10

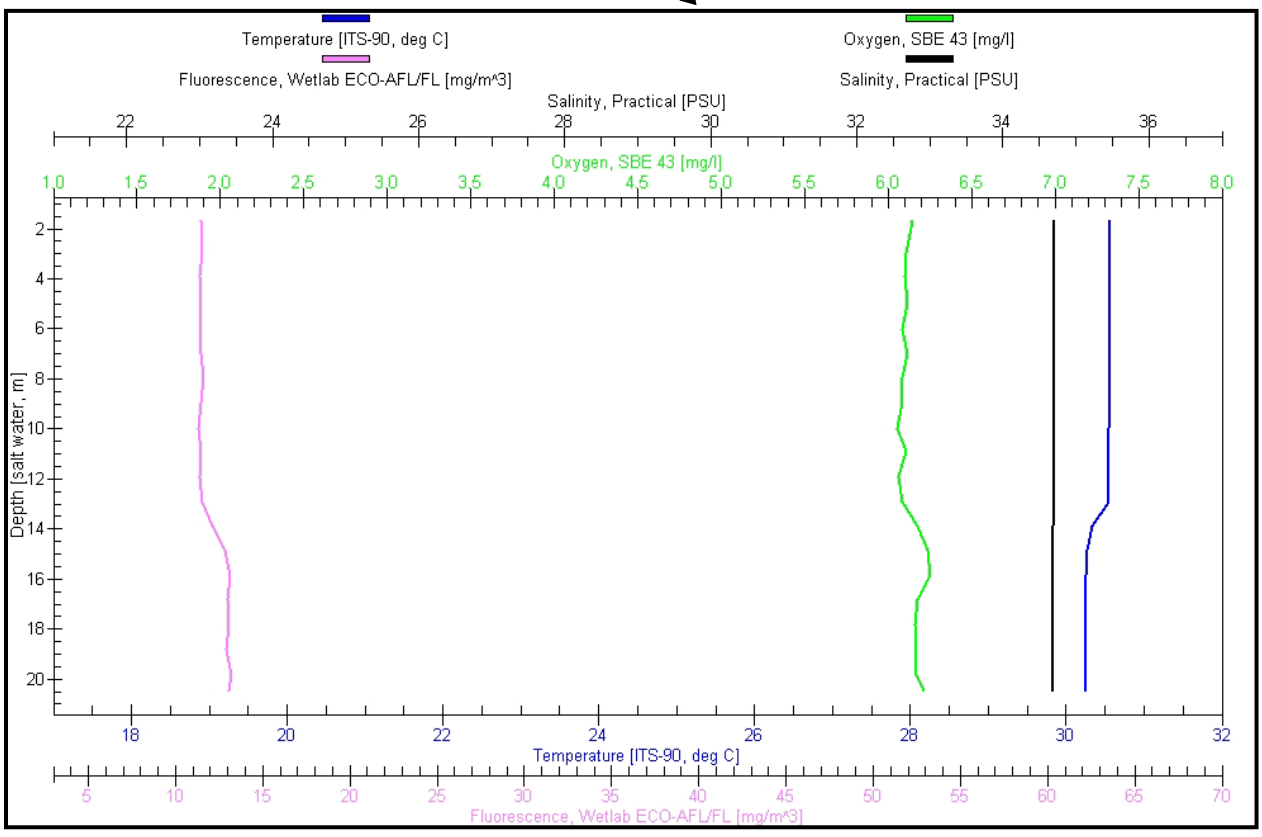

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

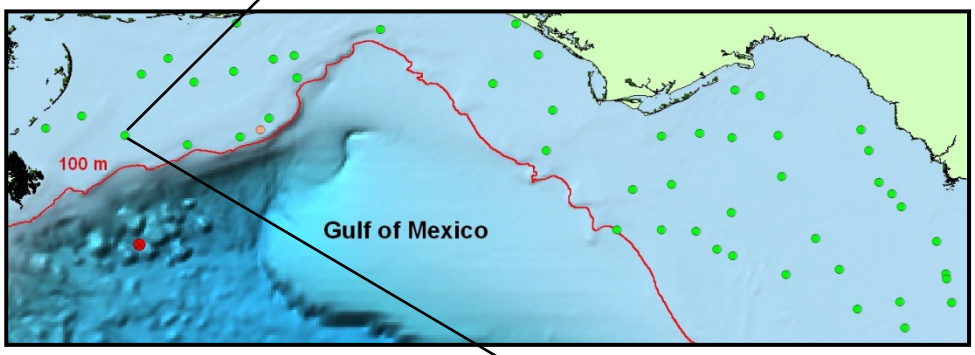
Station 11

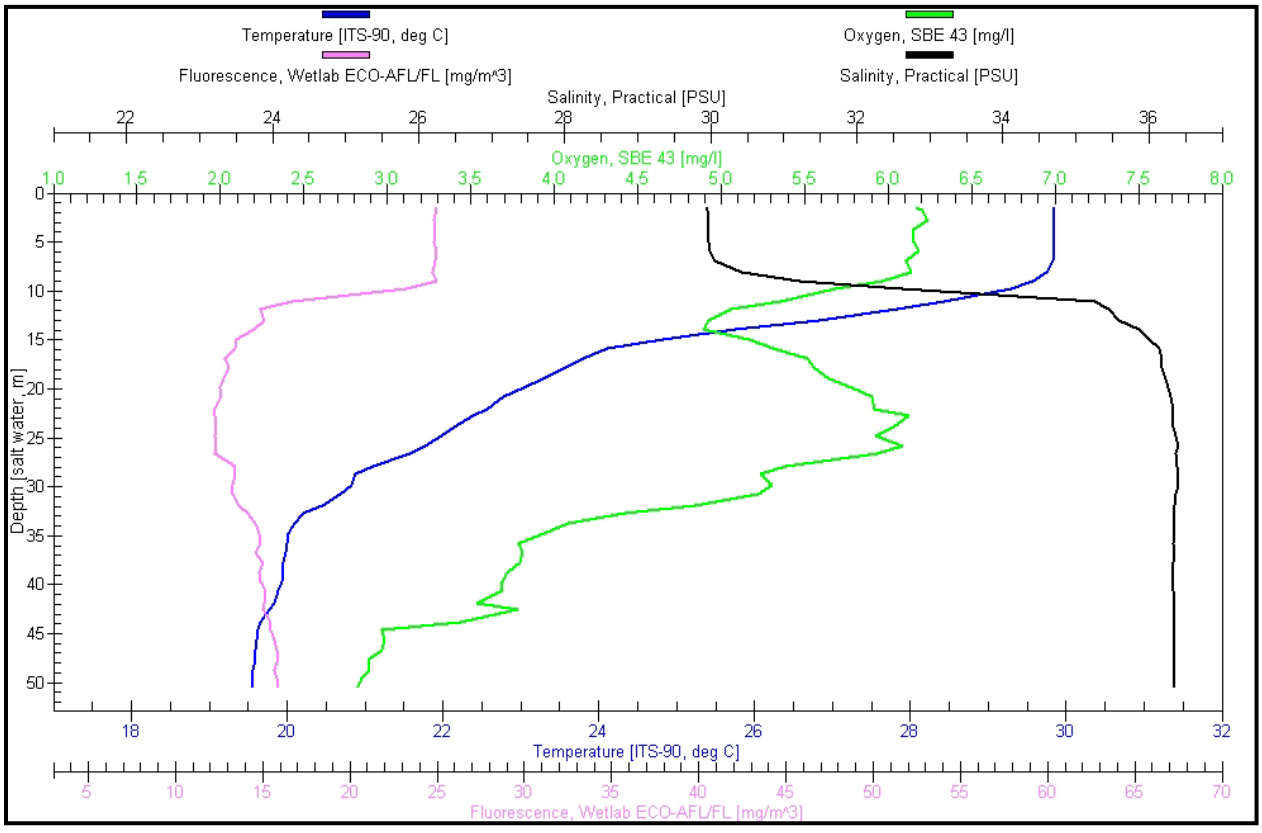



100 m
Gulf of Mexico

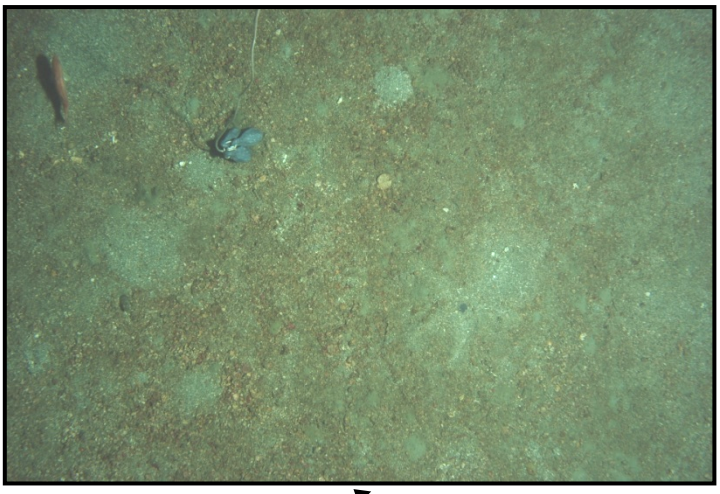

Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

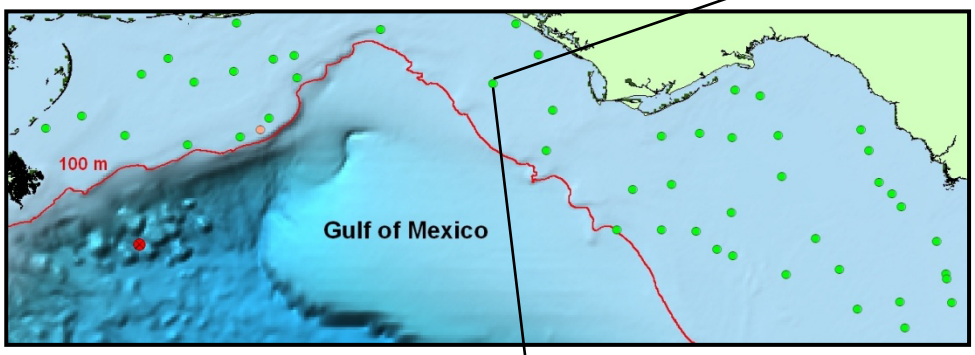
Station 12

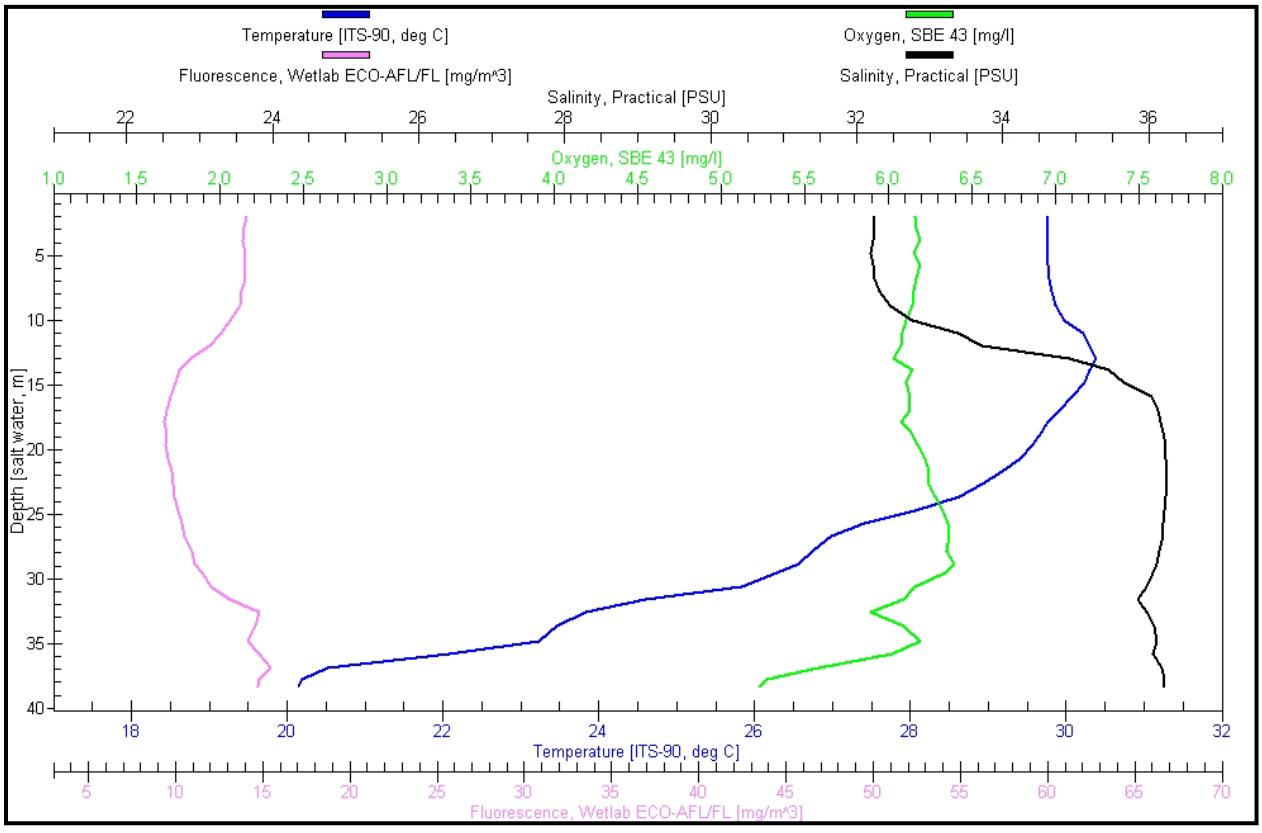

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

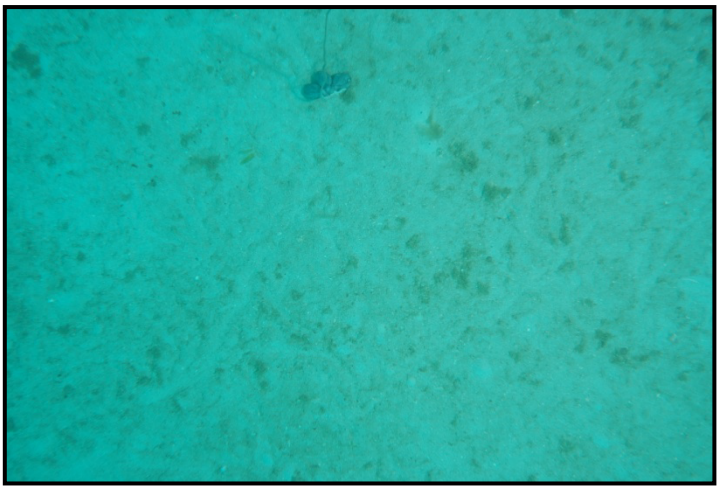
Station 13

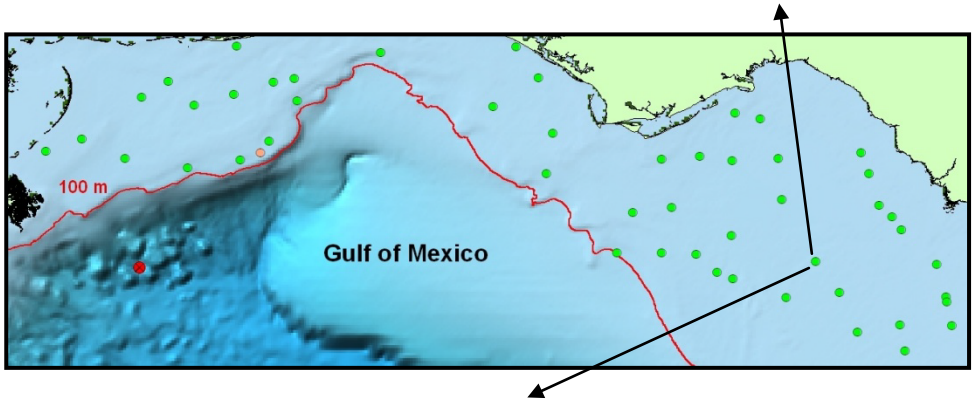


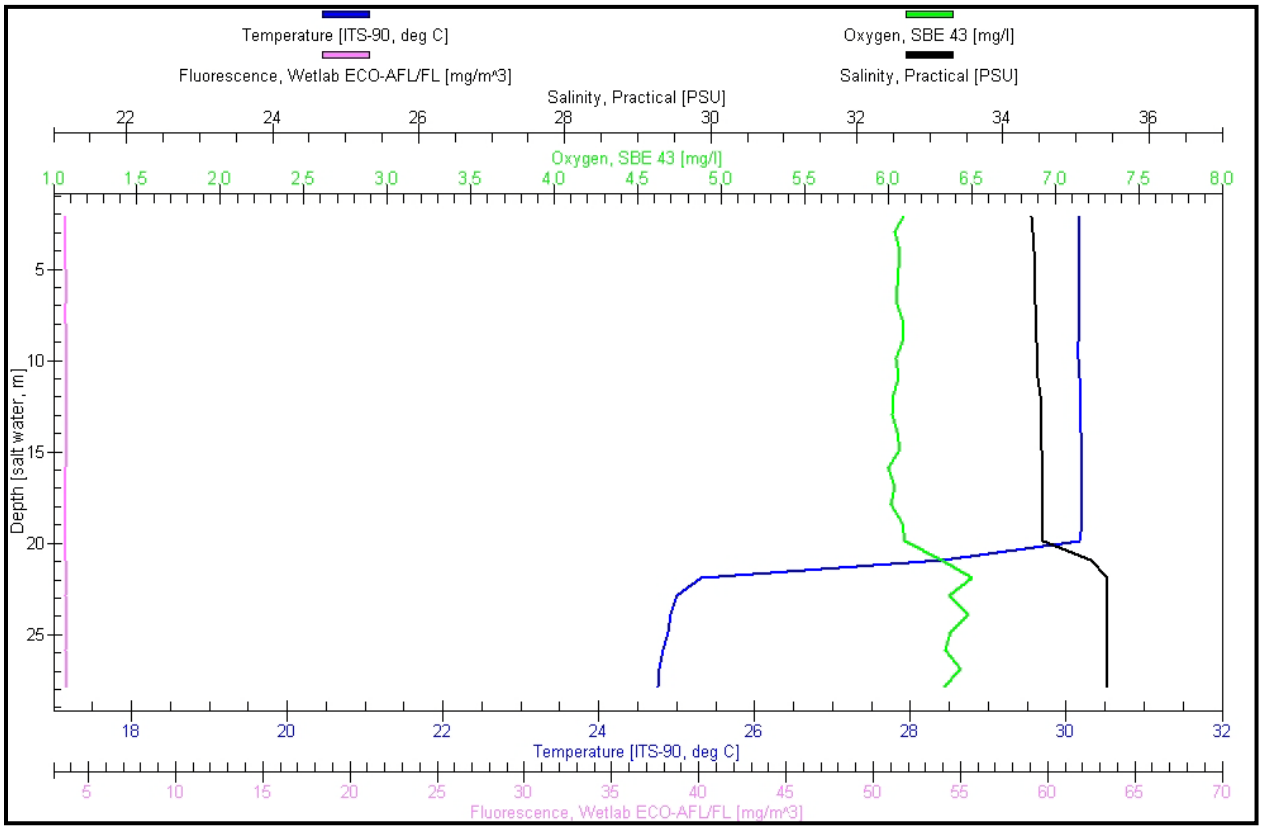

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30 35 40
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

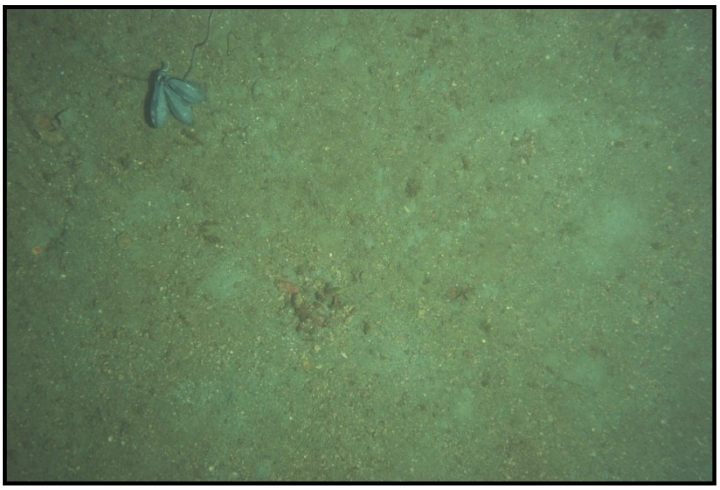
Station 14

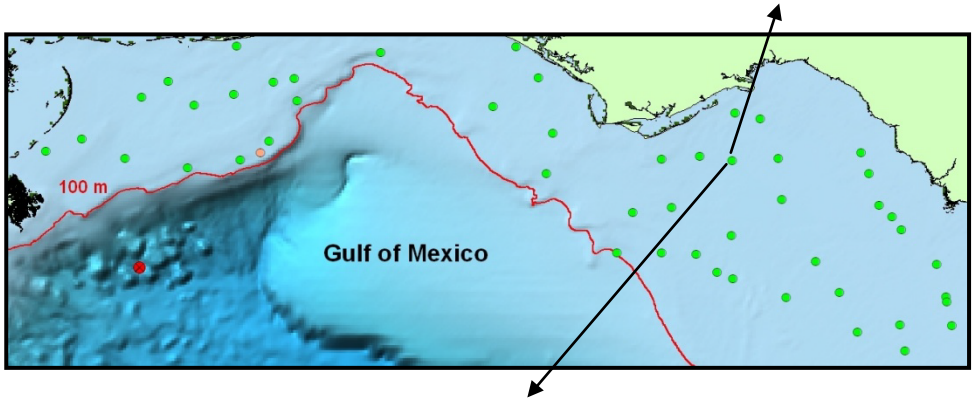


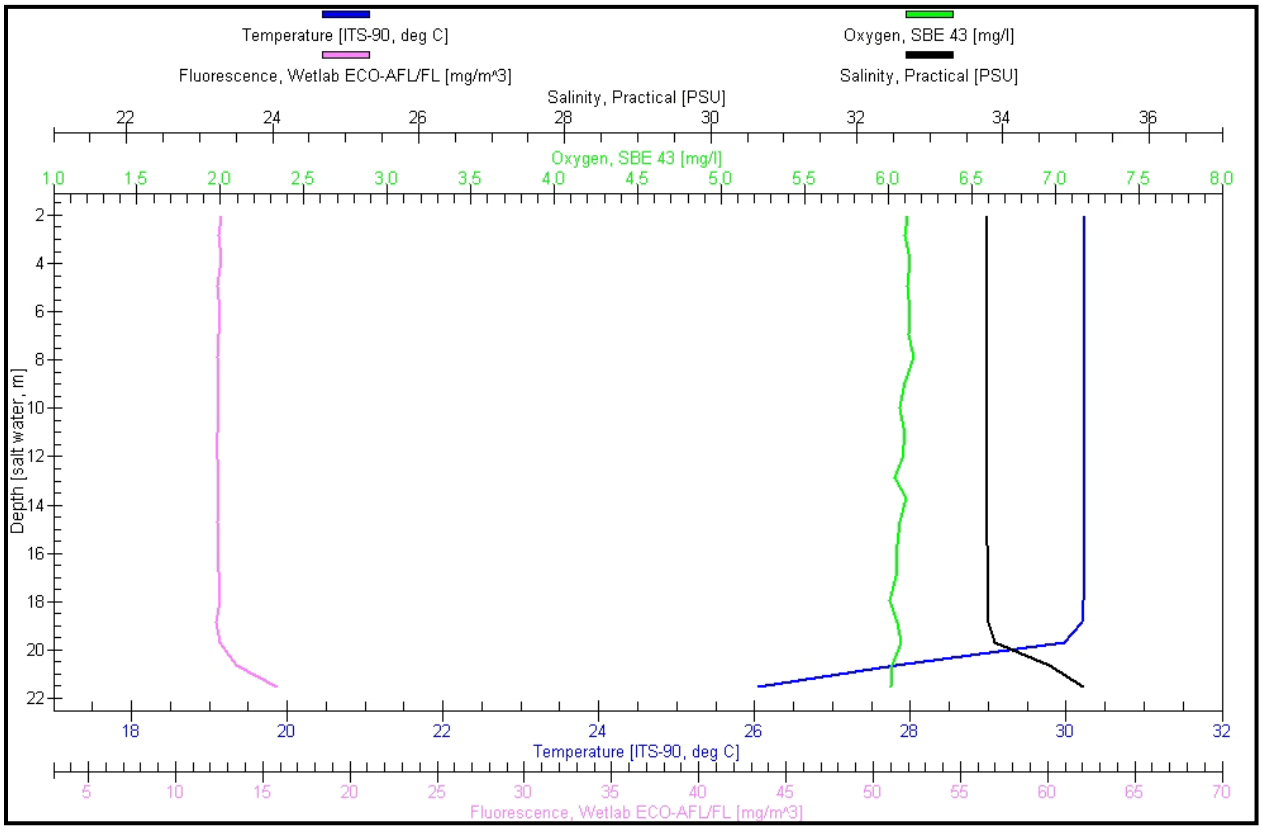

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

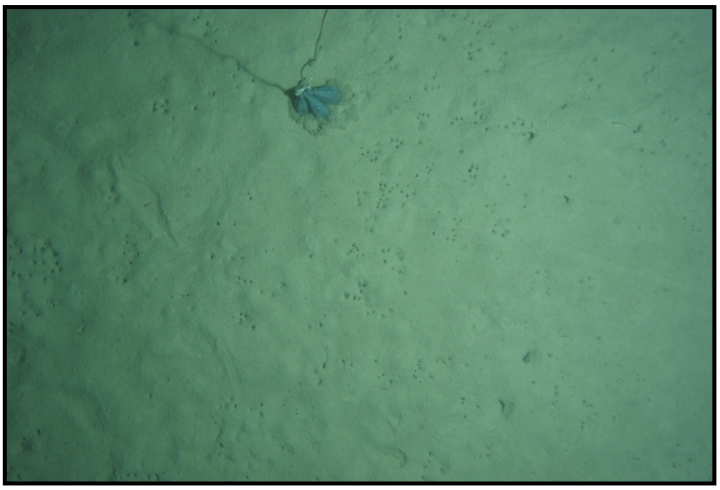
Station 15

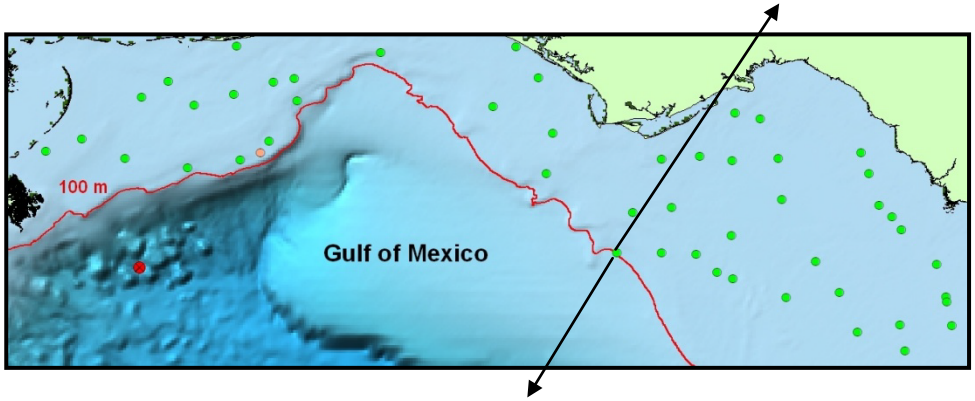


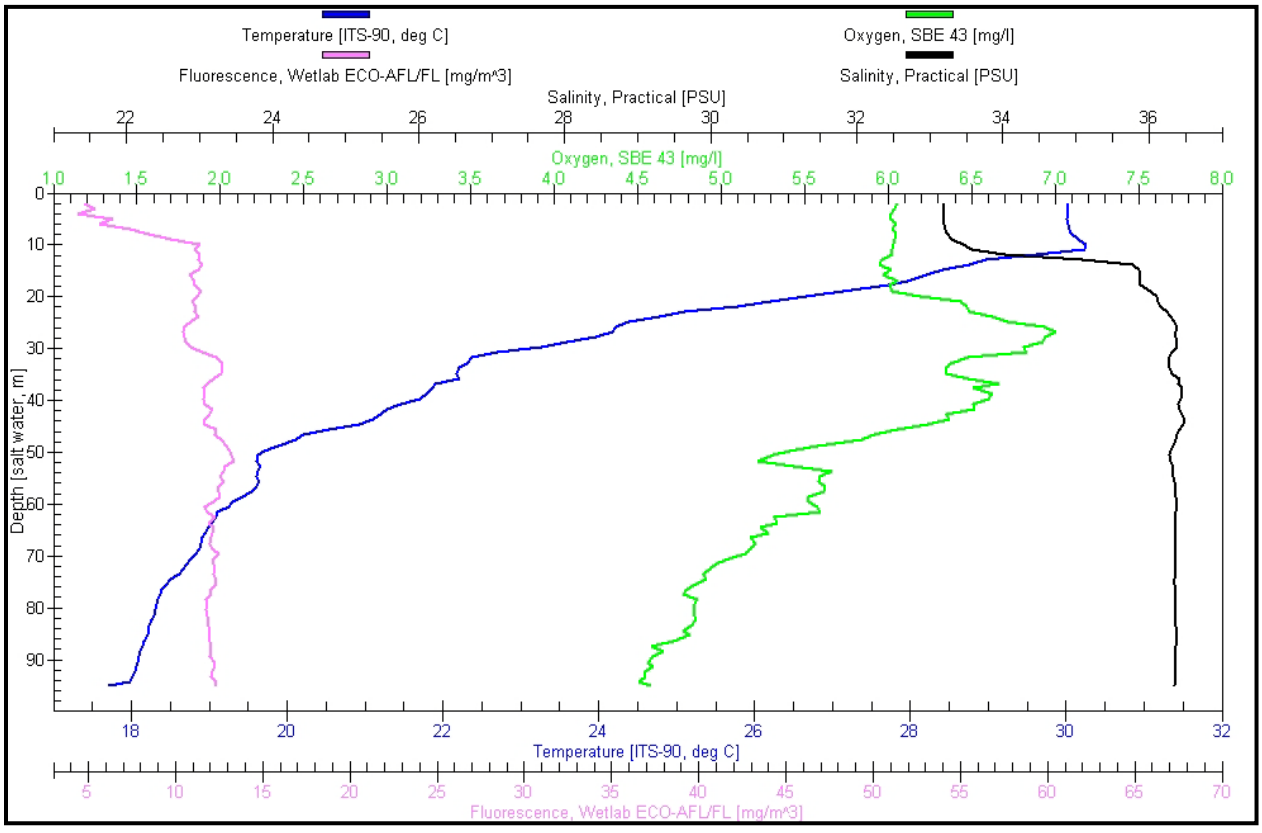

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

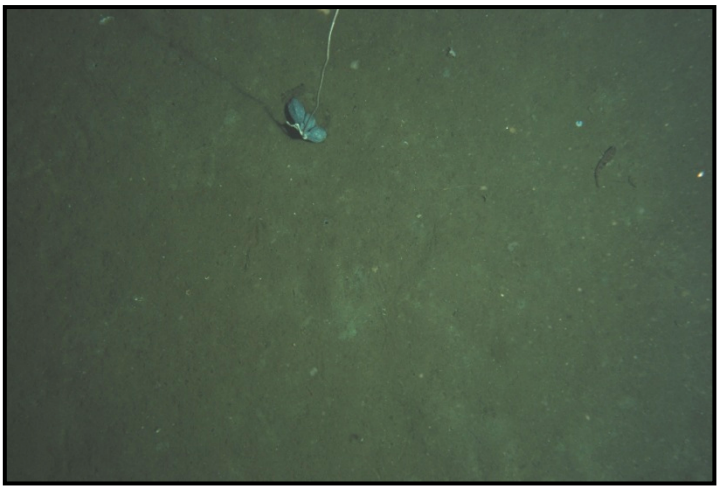
Station 16

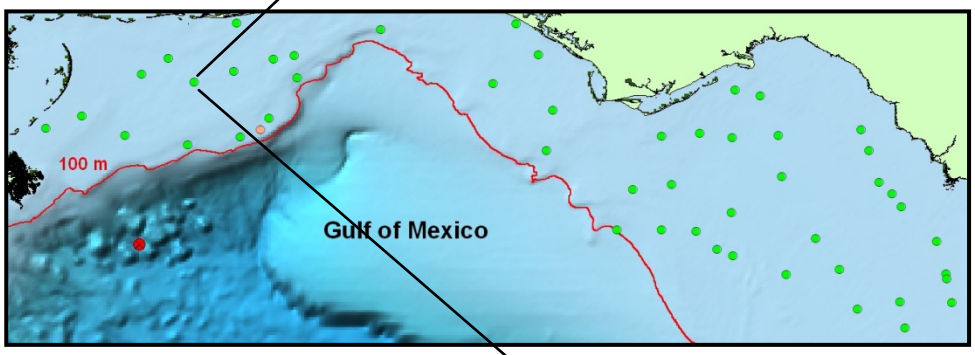


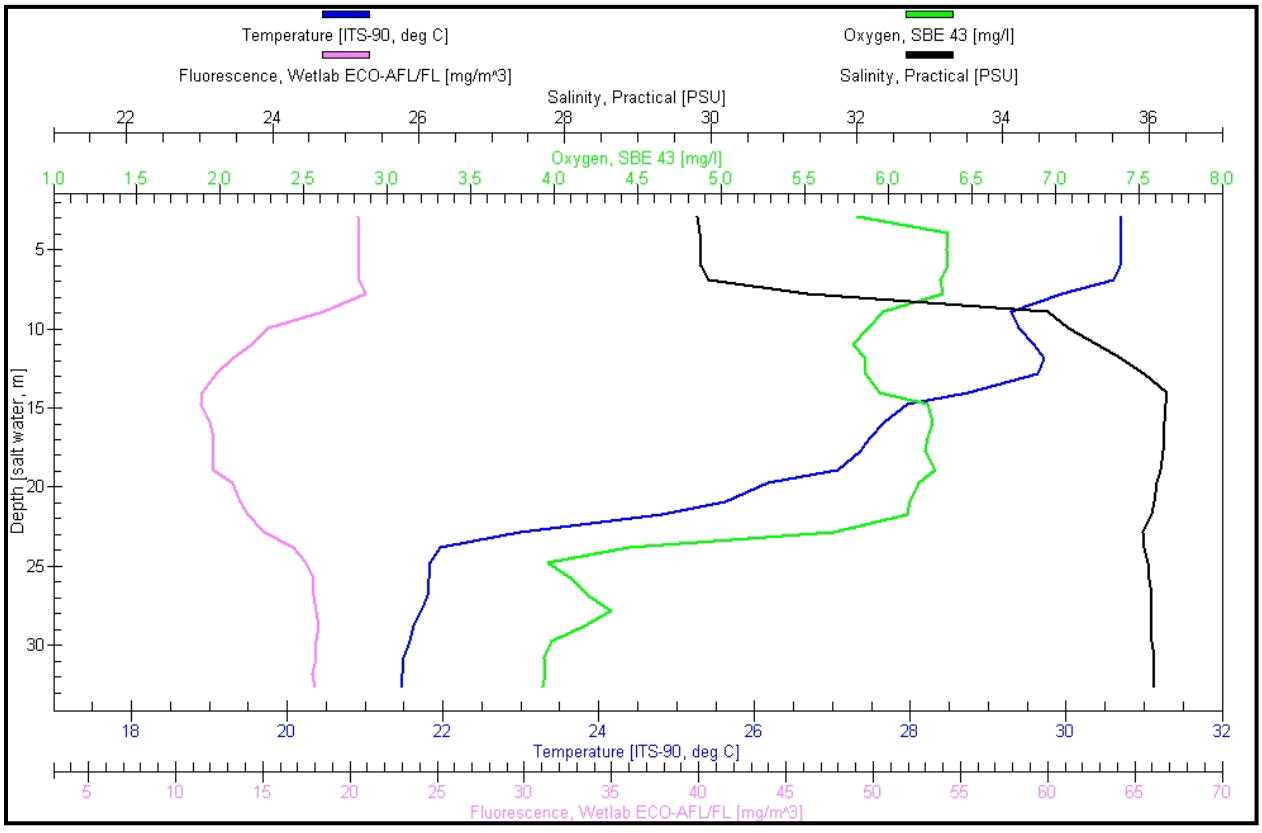

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 10 20 30 40 50 60 70 80 90
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

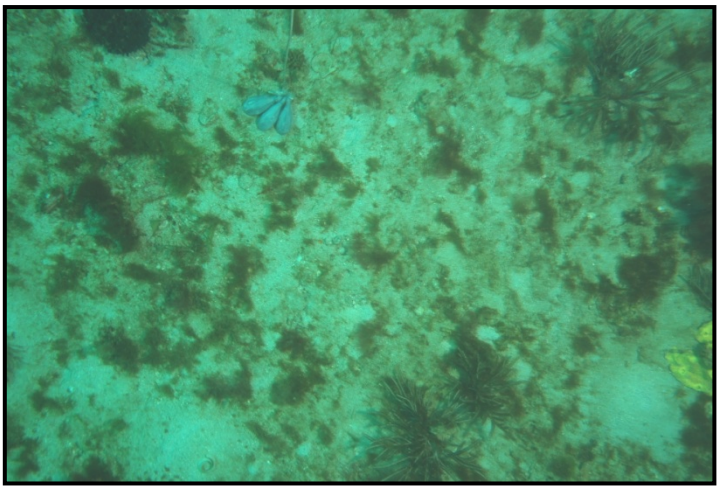
Station 17

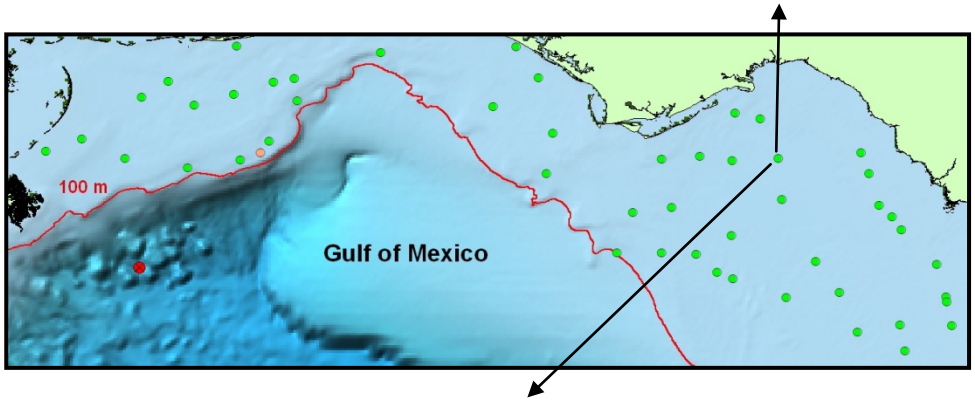


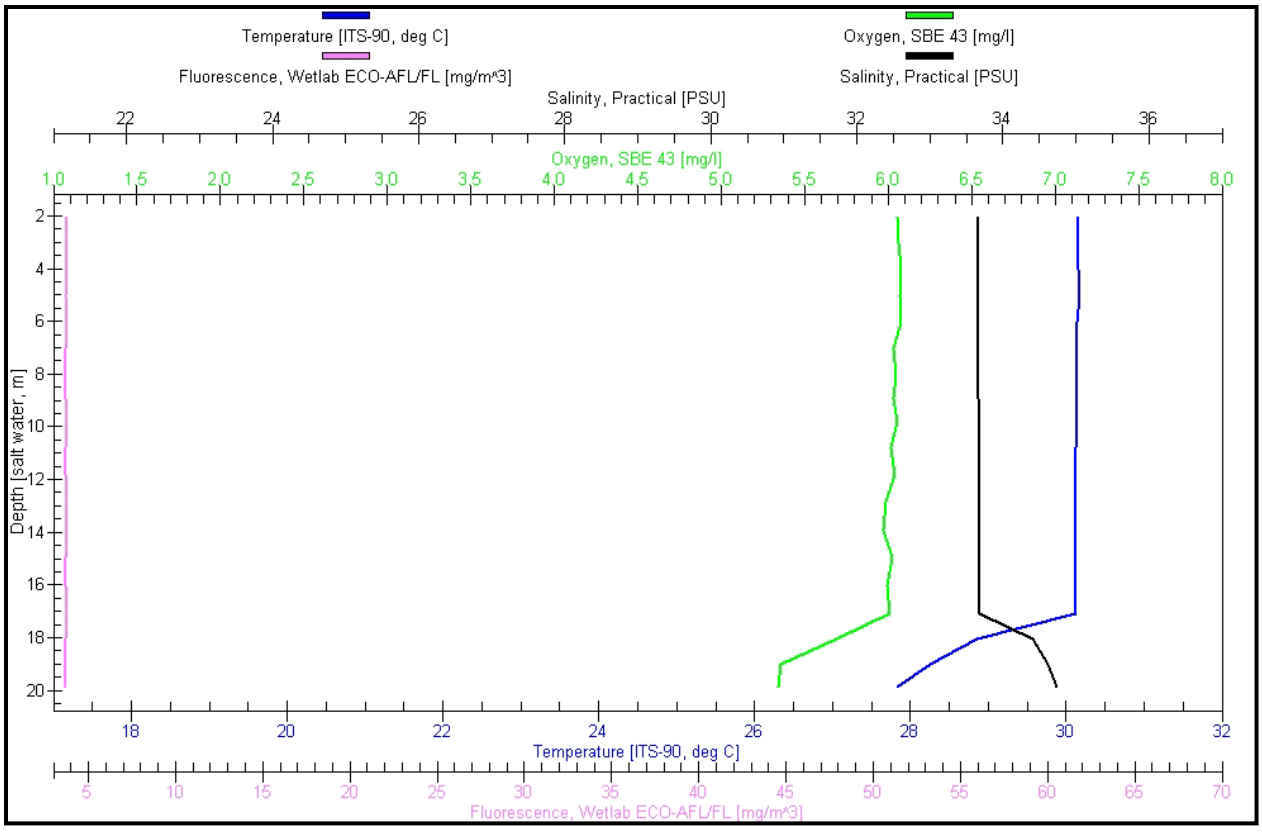

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

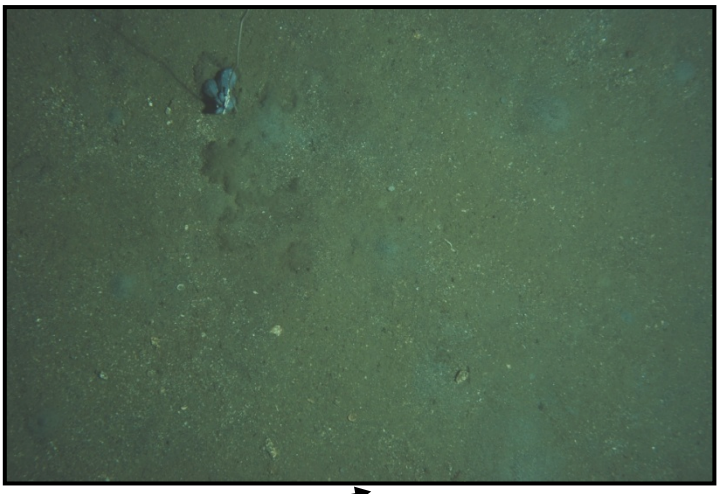
Station 18

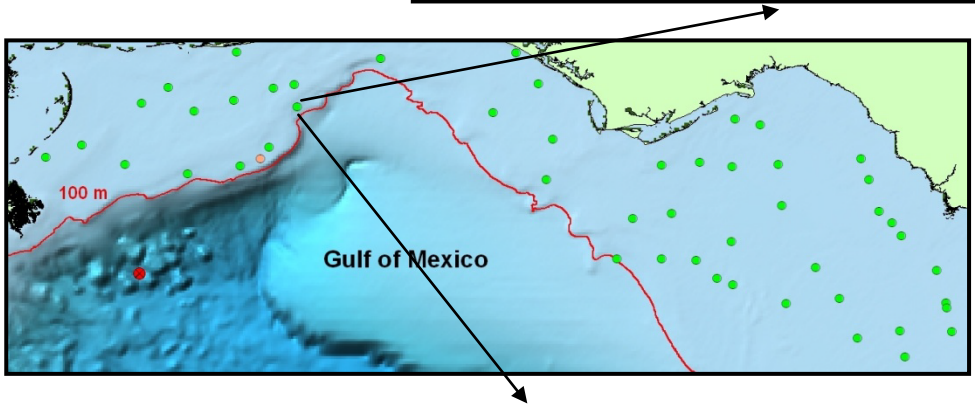


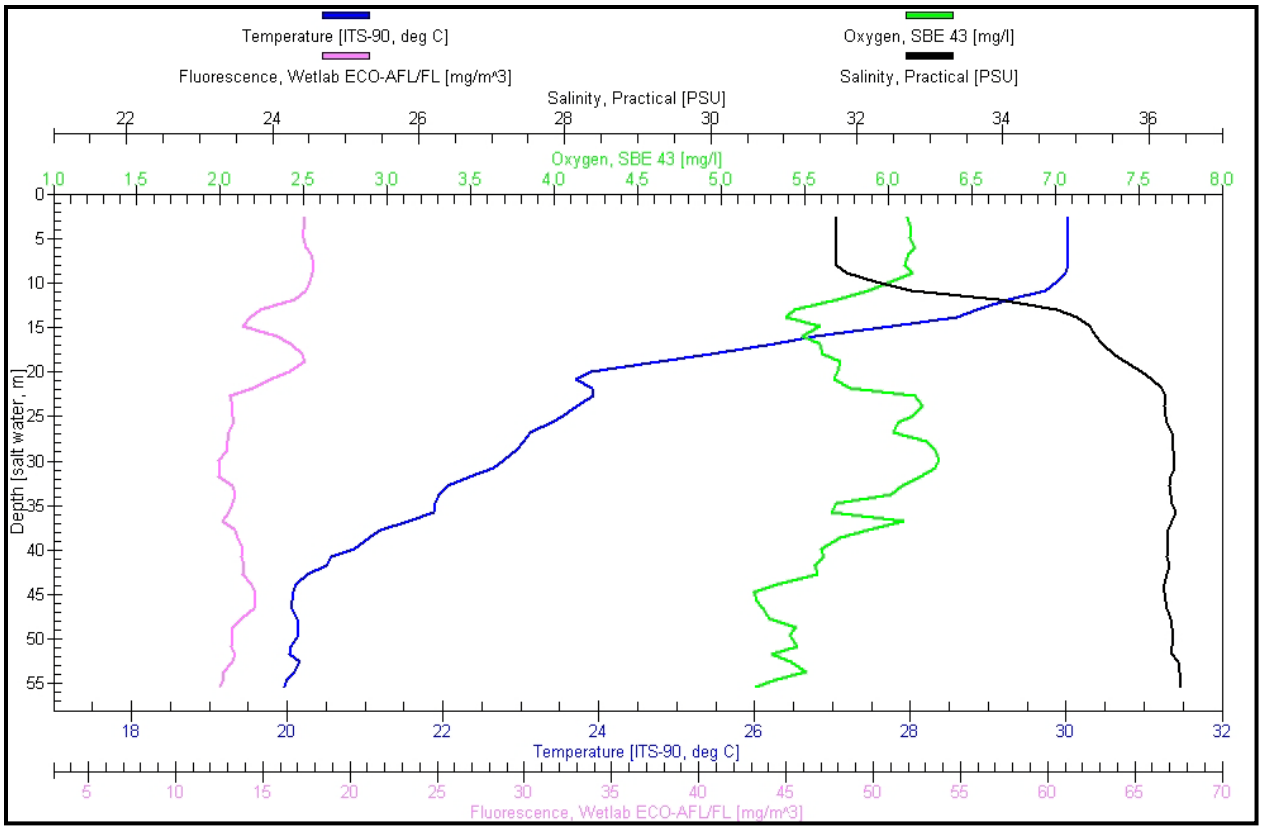

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

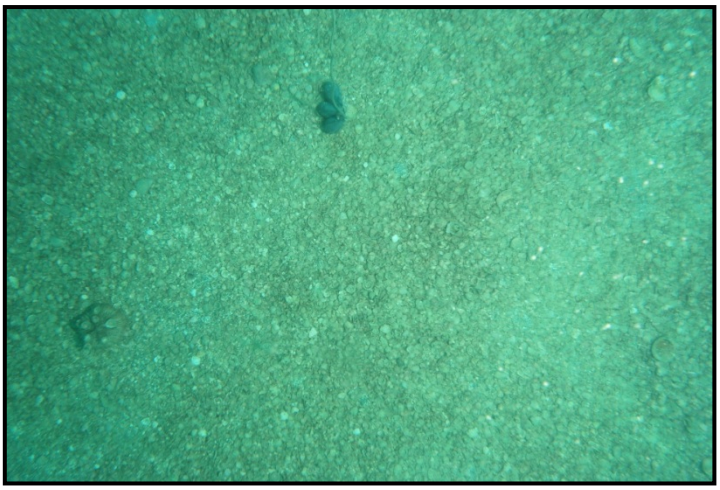
Station 19

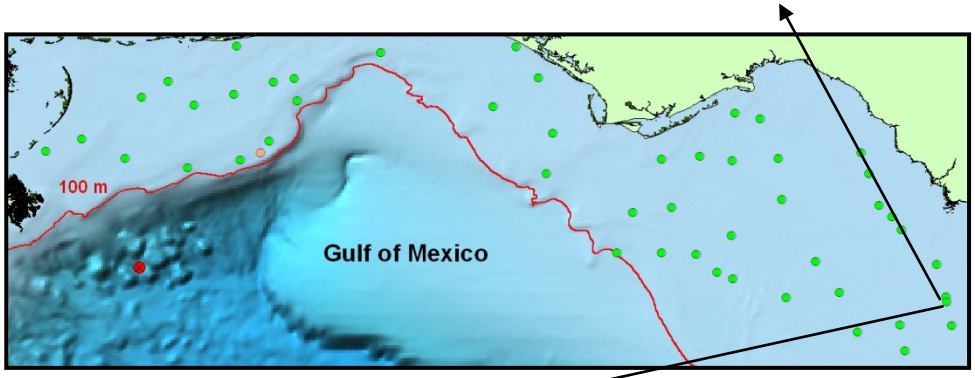


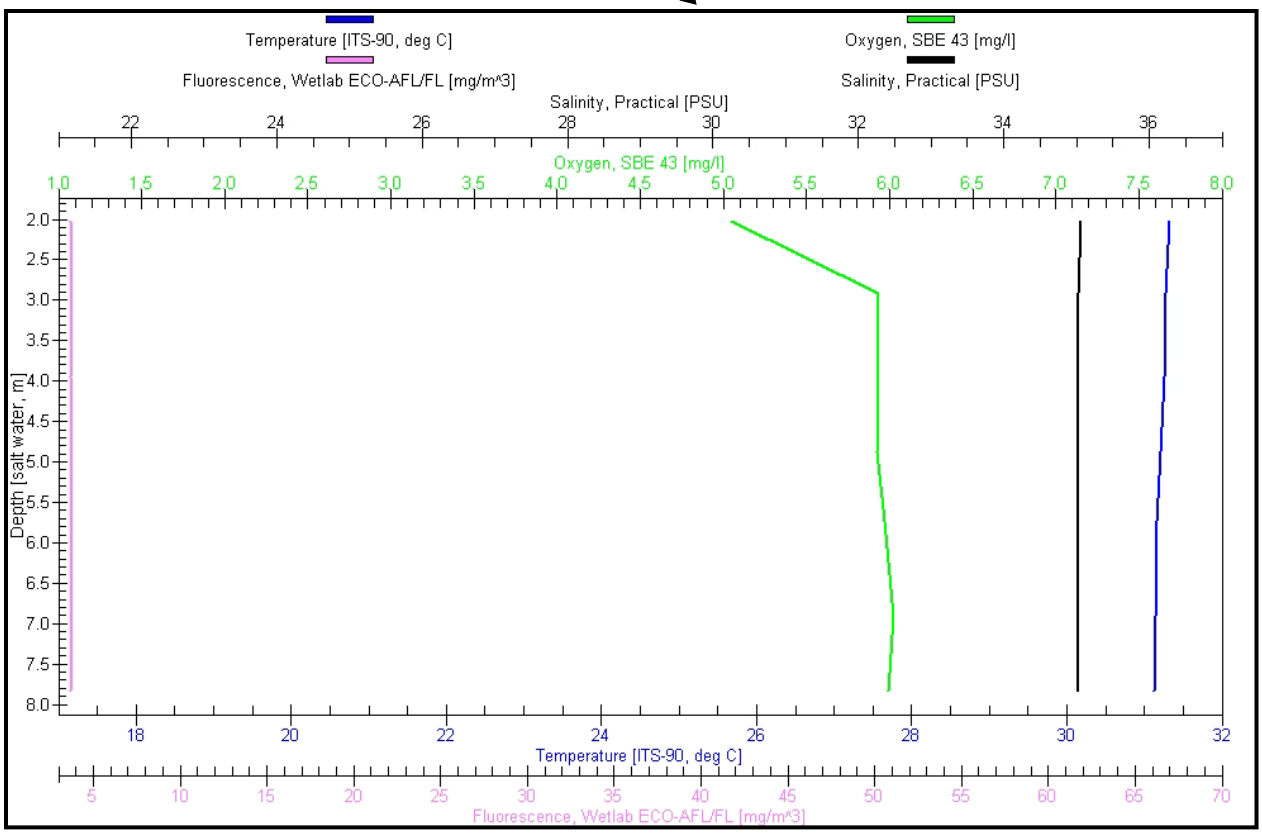

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40 45 50 55
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

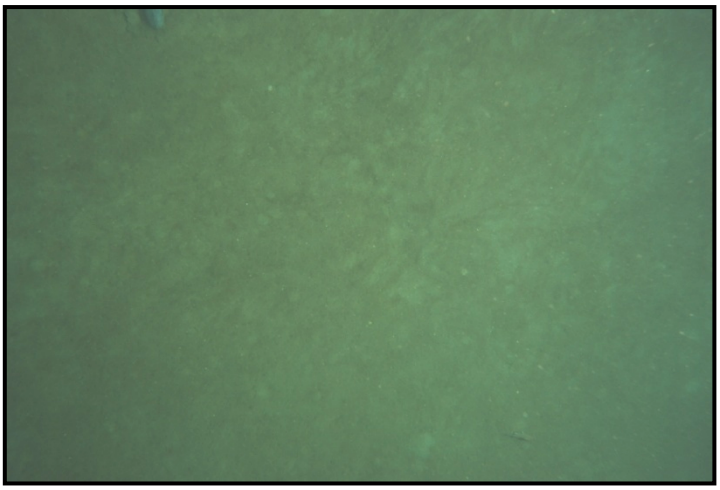
Station 20

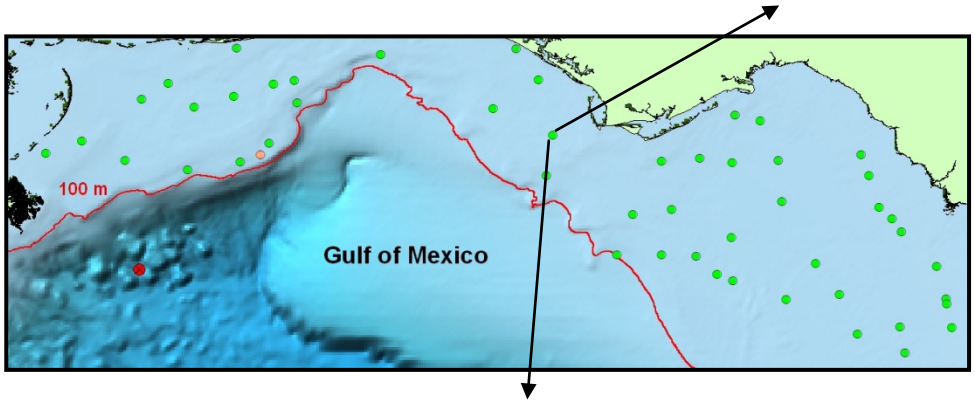


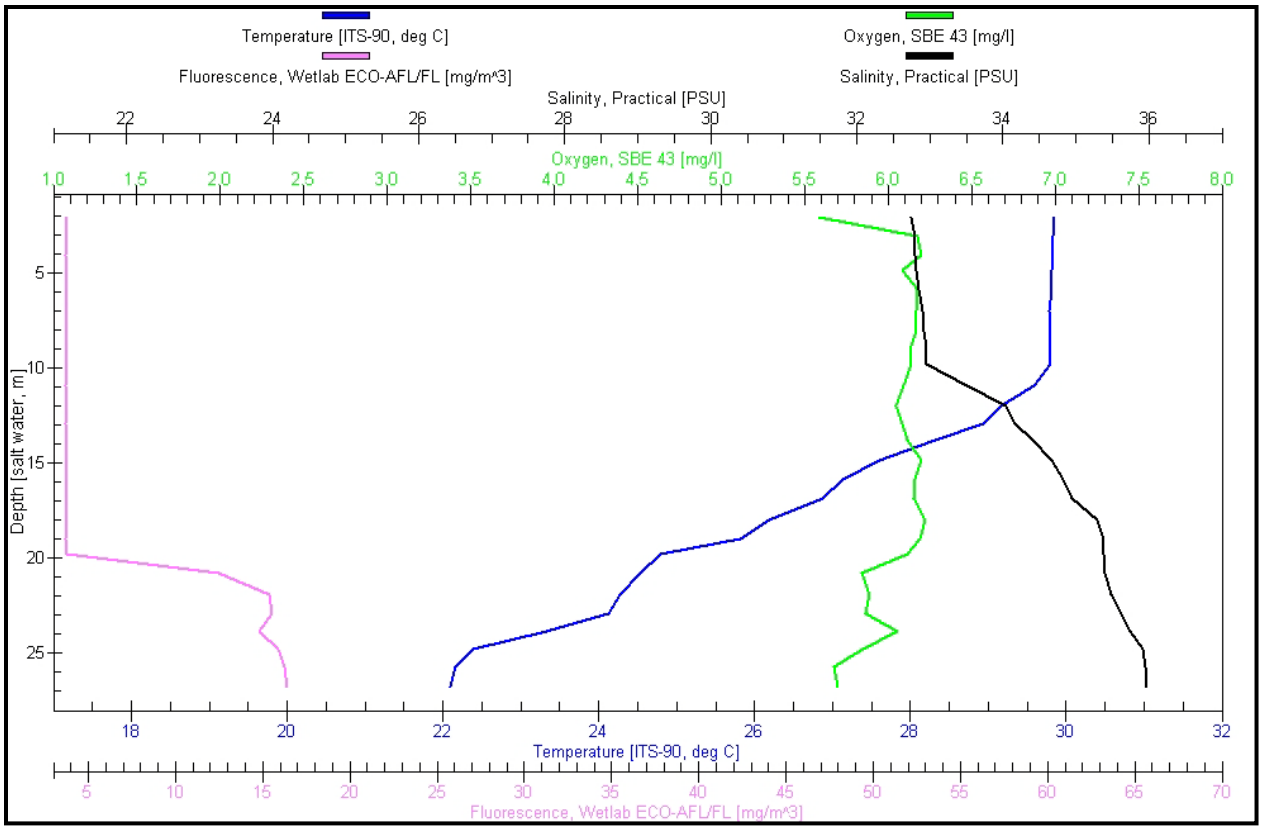

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

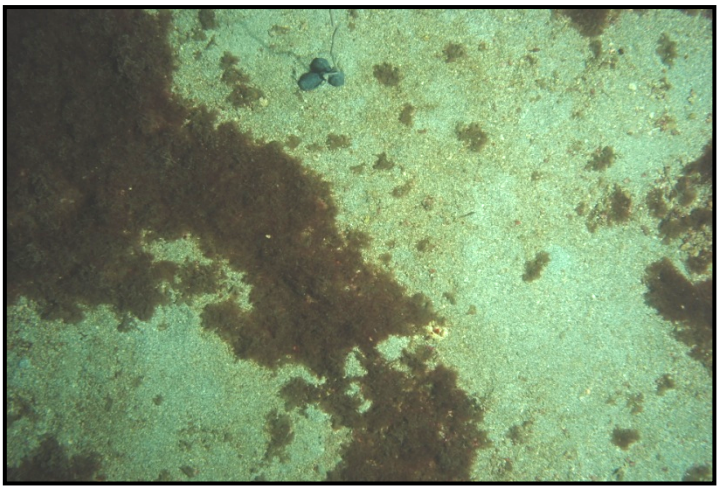
Station 21

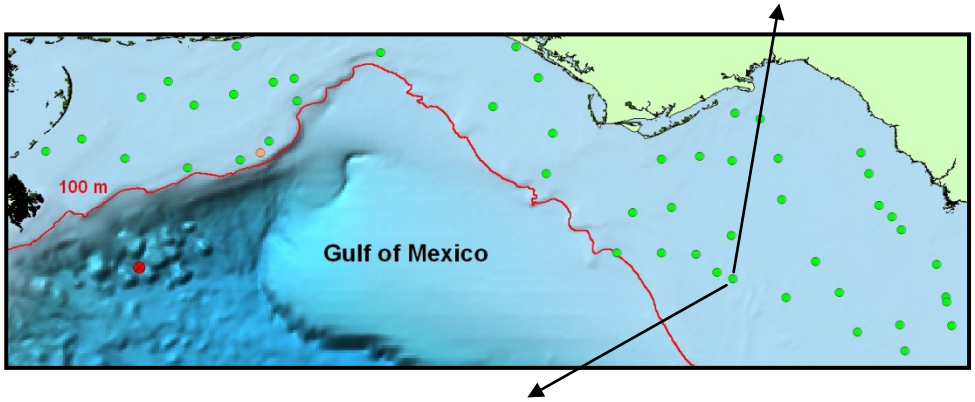


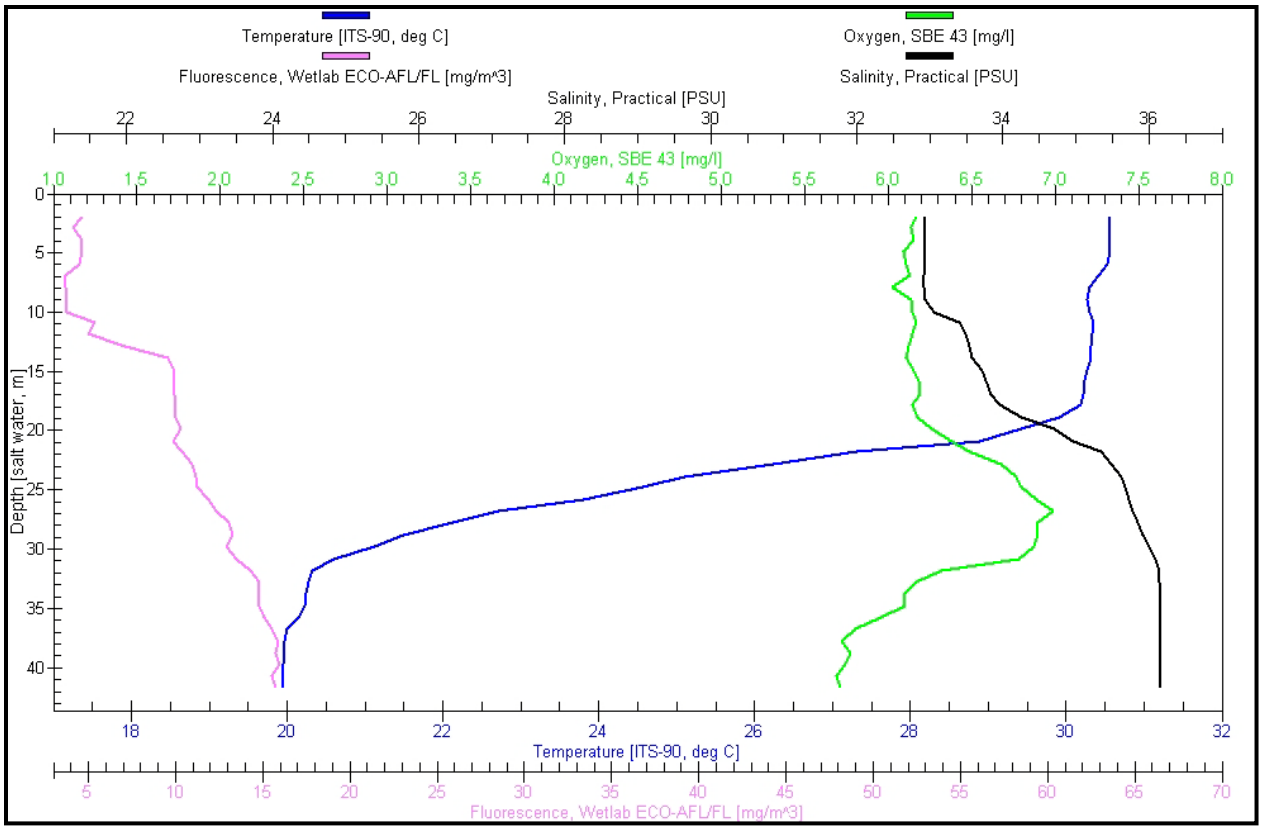

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

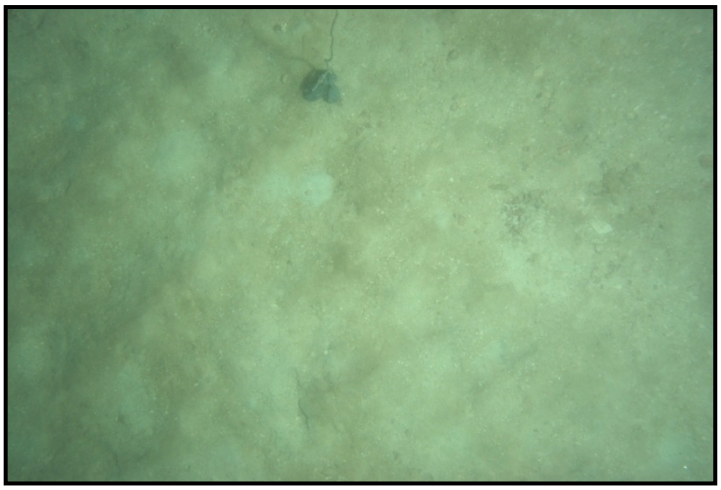
Station 22

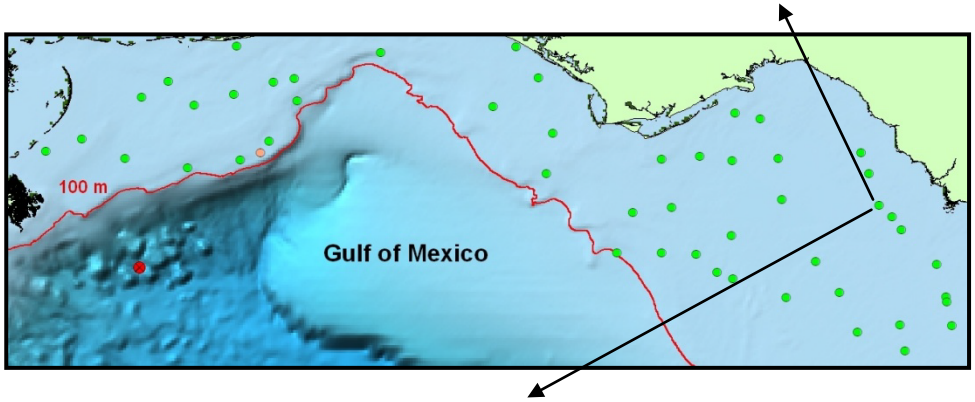


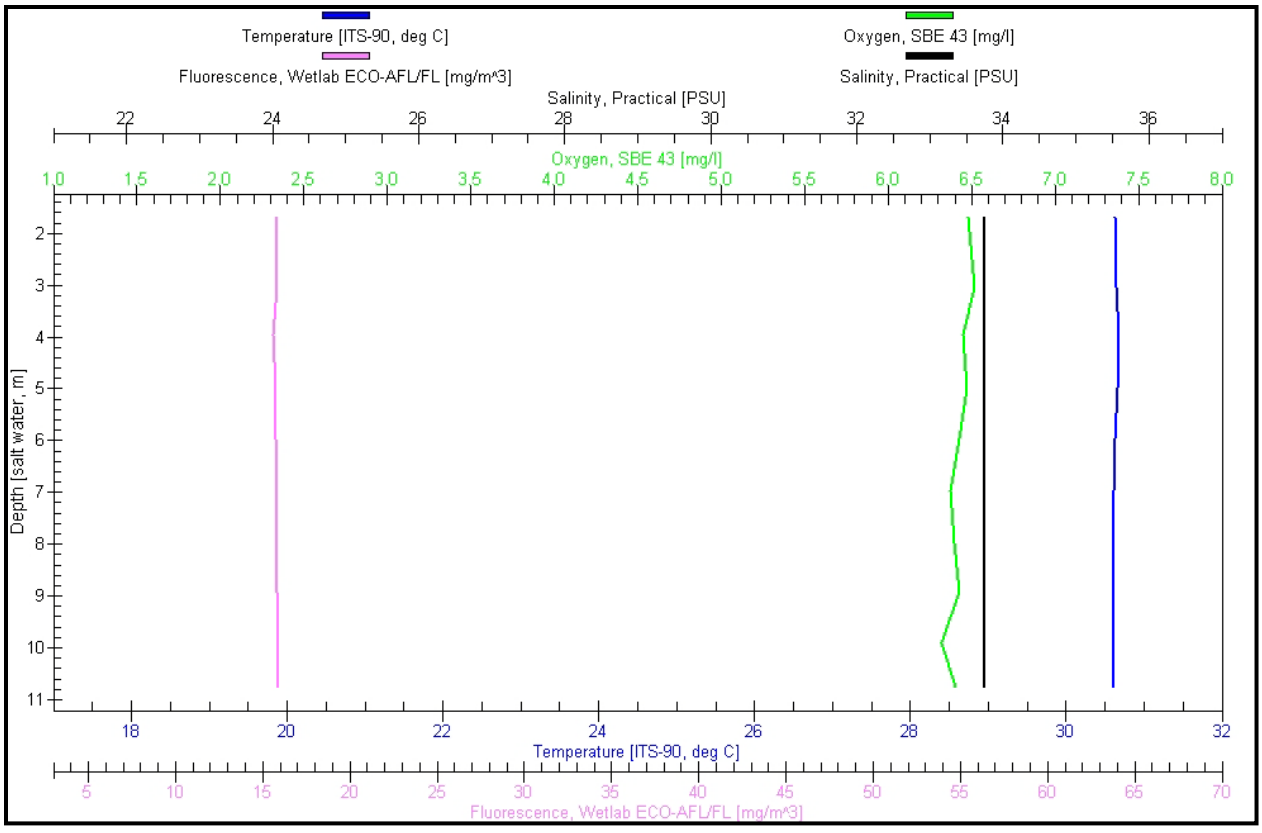

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

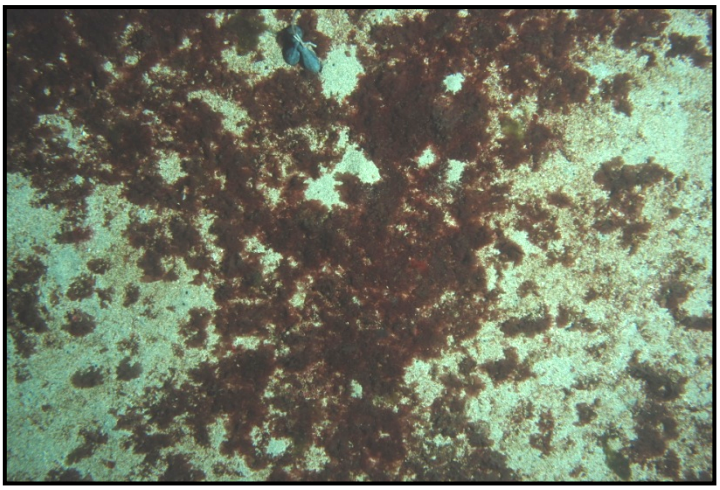
Station 23

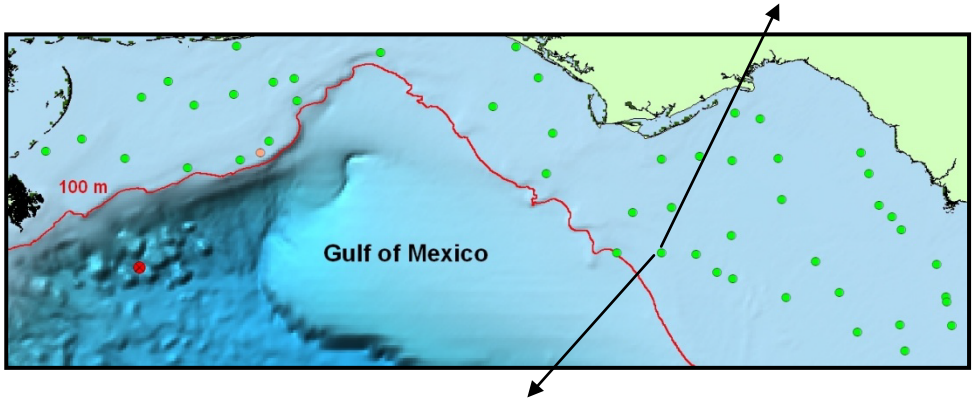


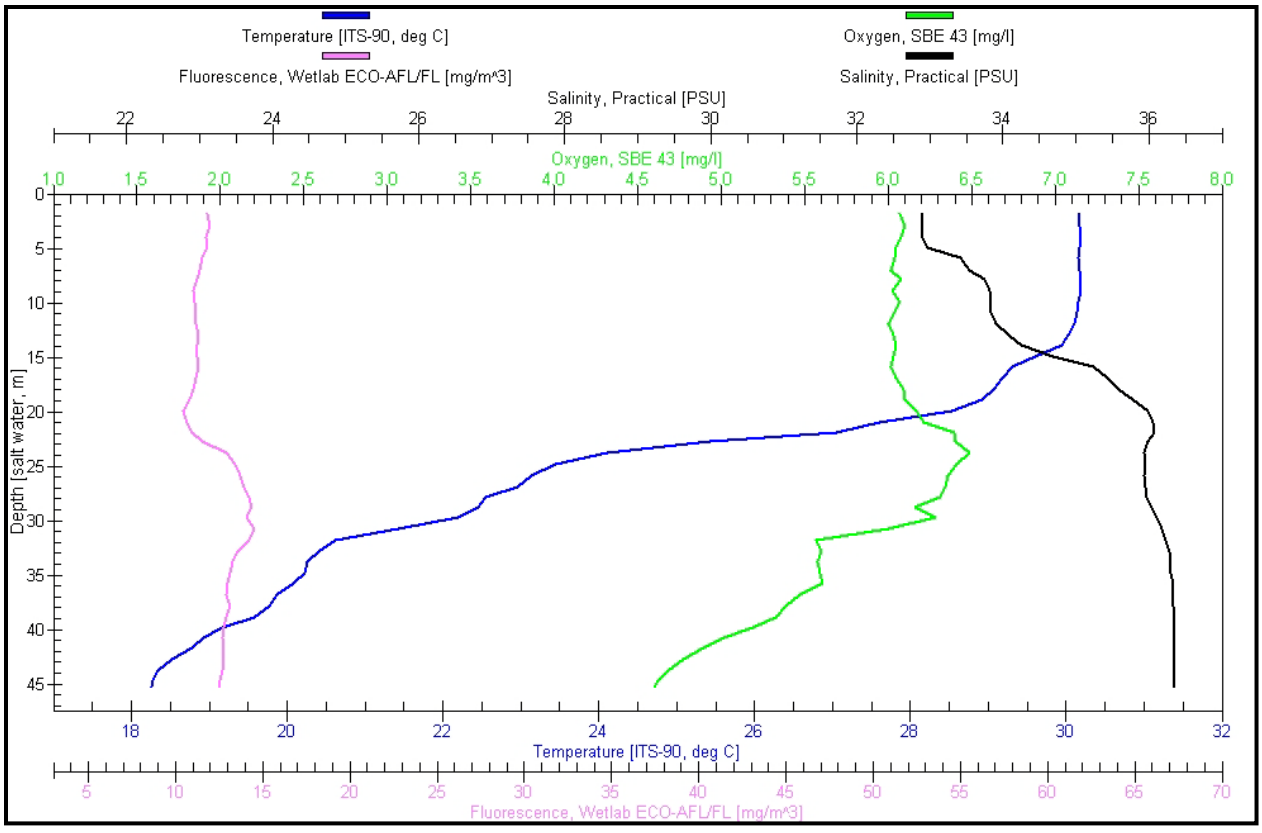

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10 11
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

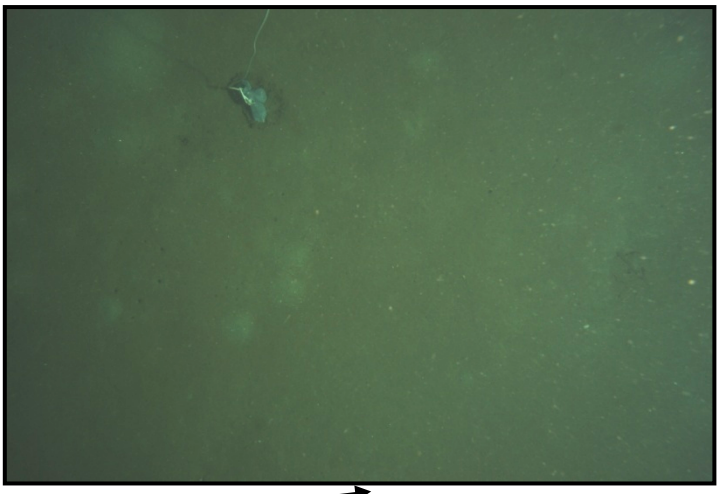
Station 24

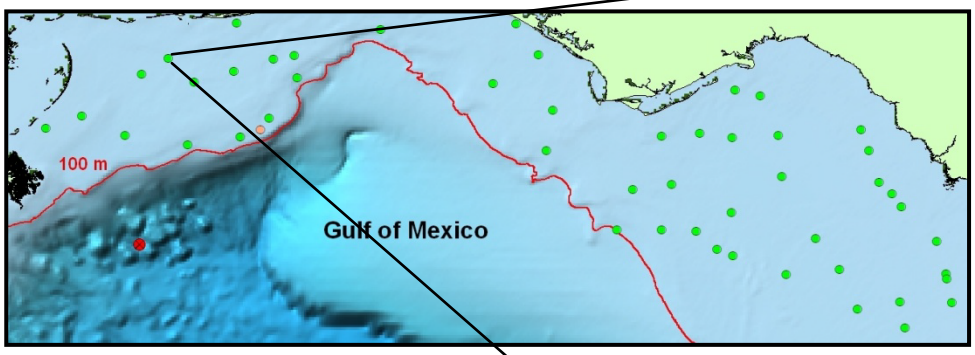


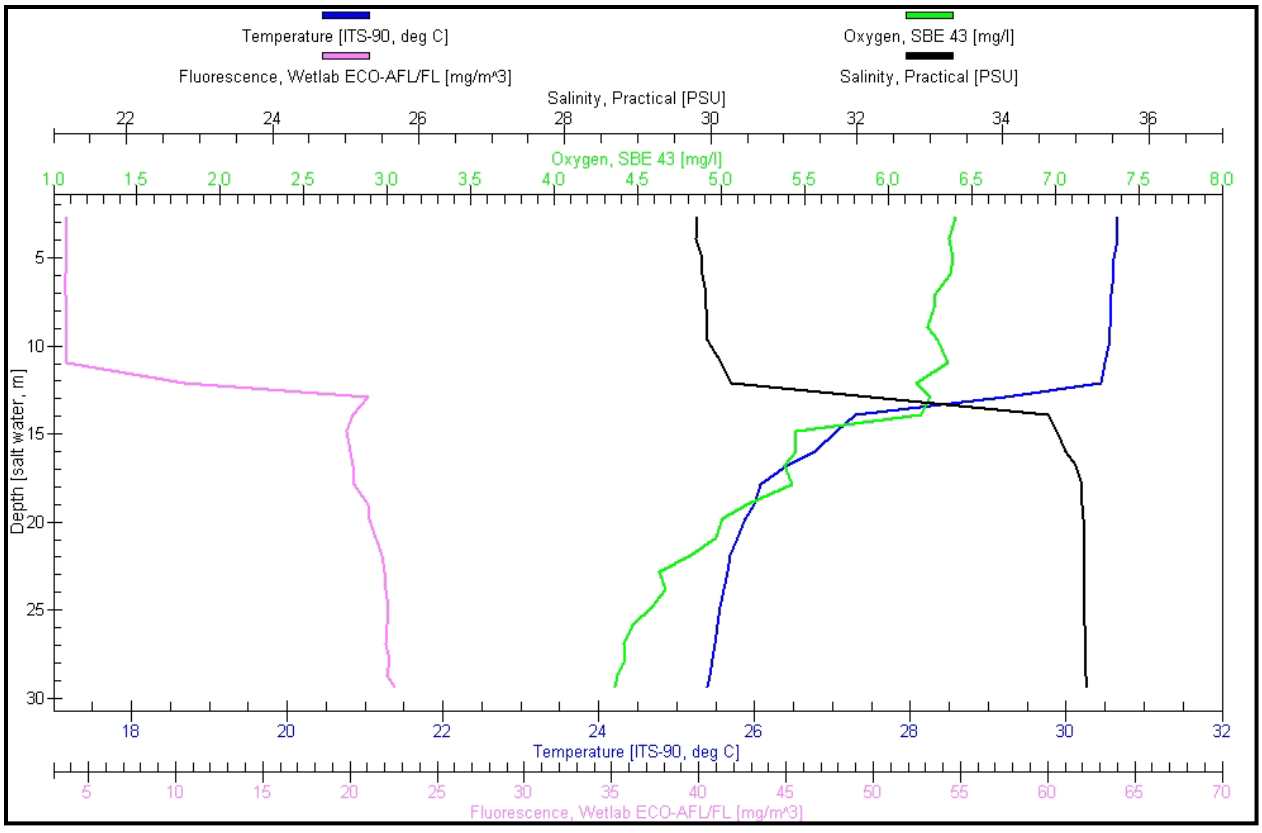

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40 45
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

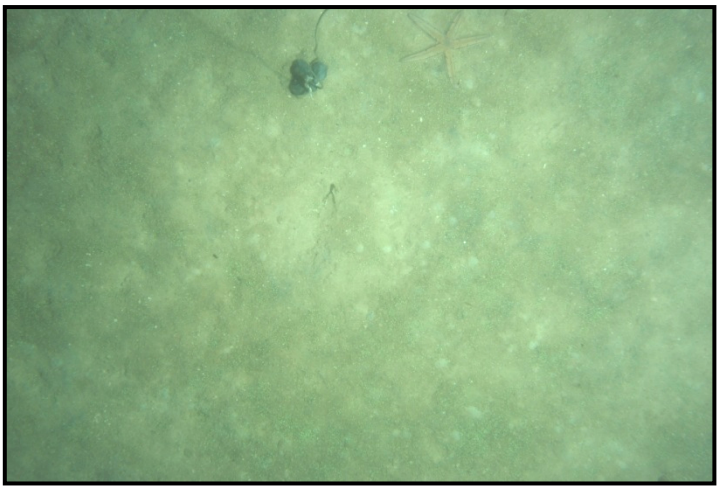
Station 25

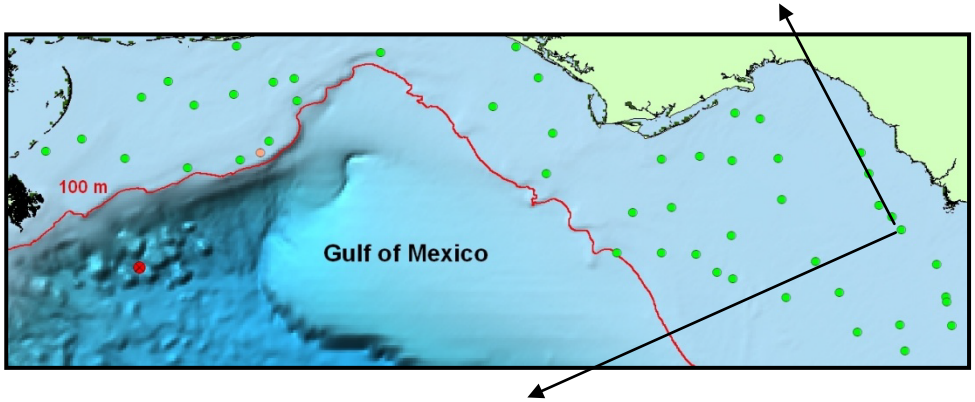


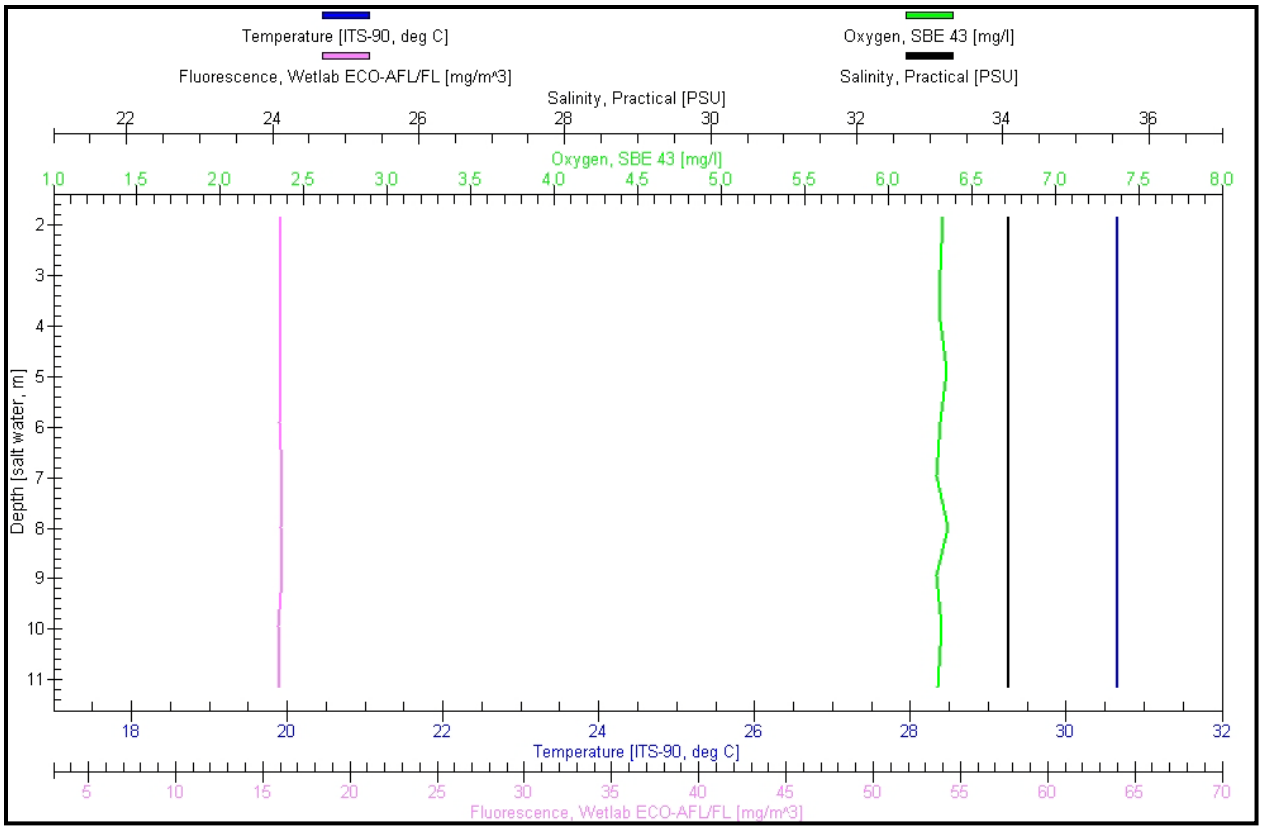

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

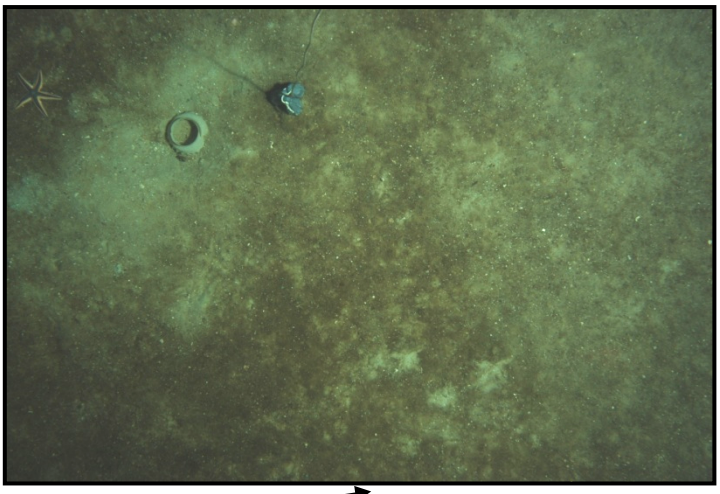
Station 26

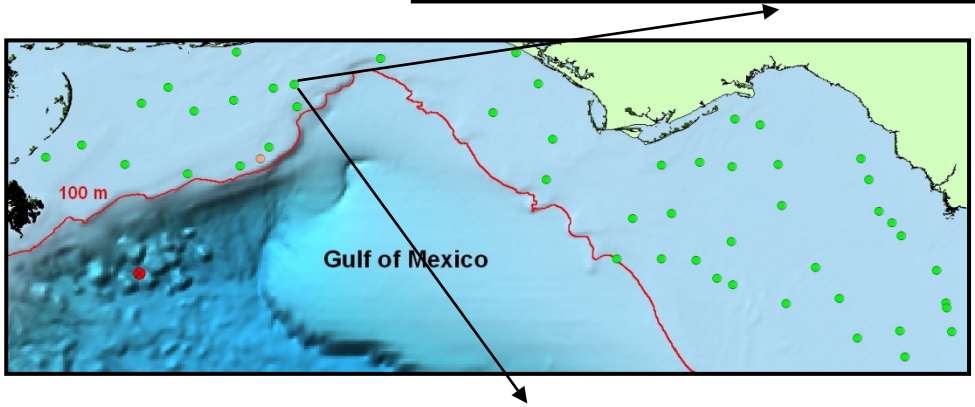


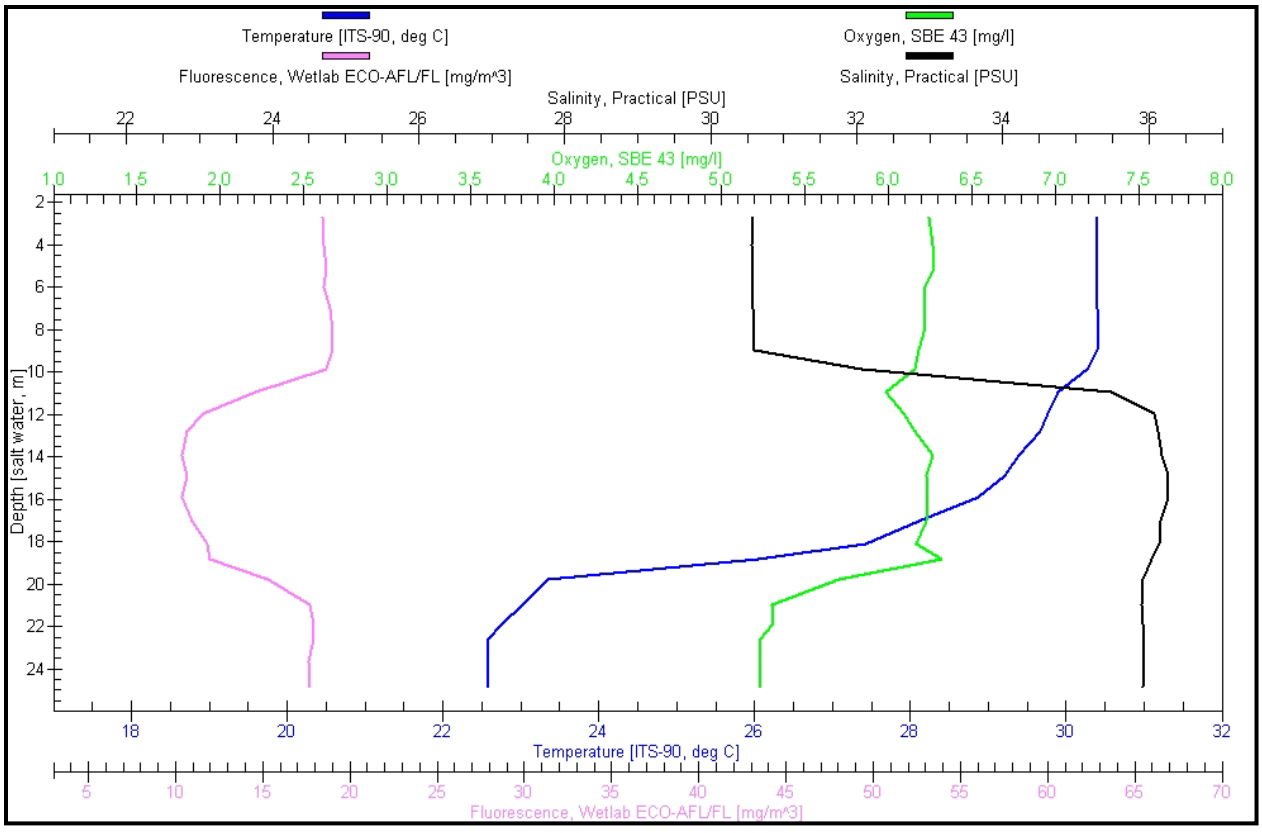

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10 11
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

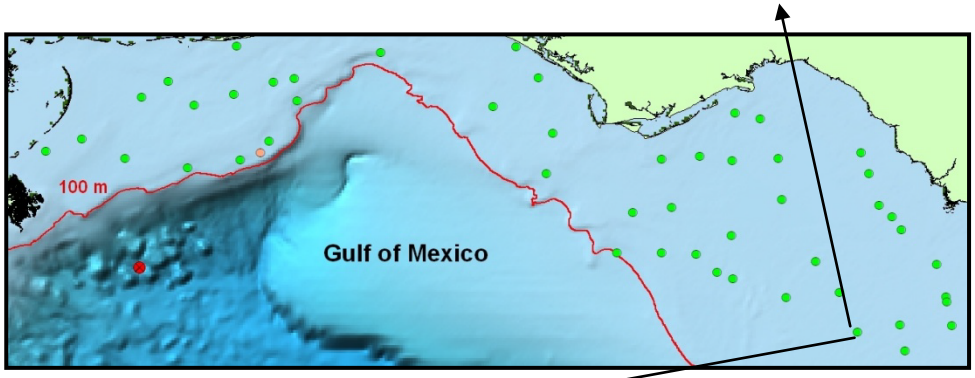
Station 27

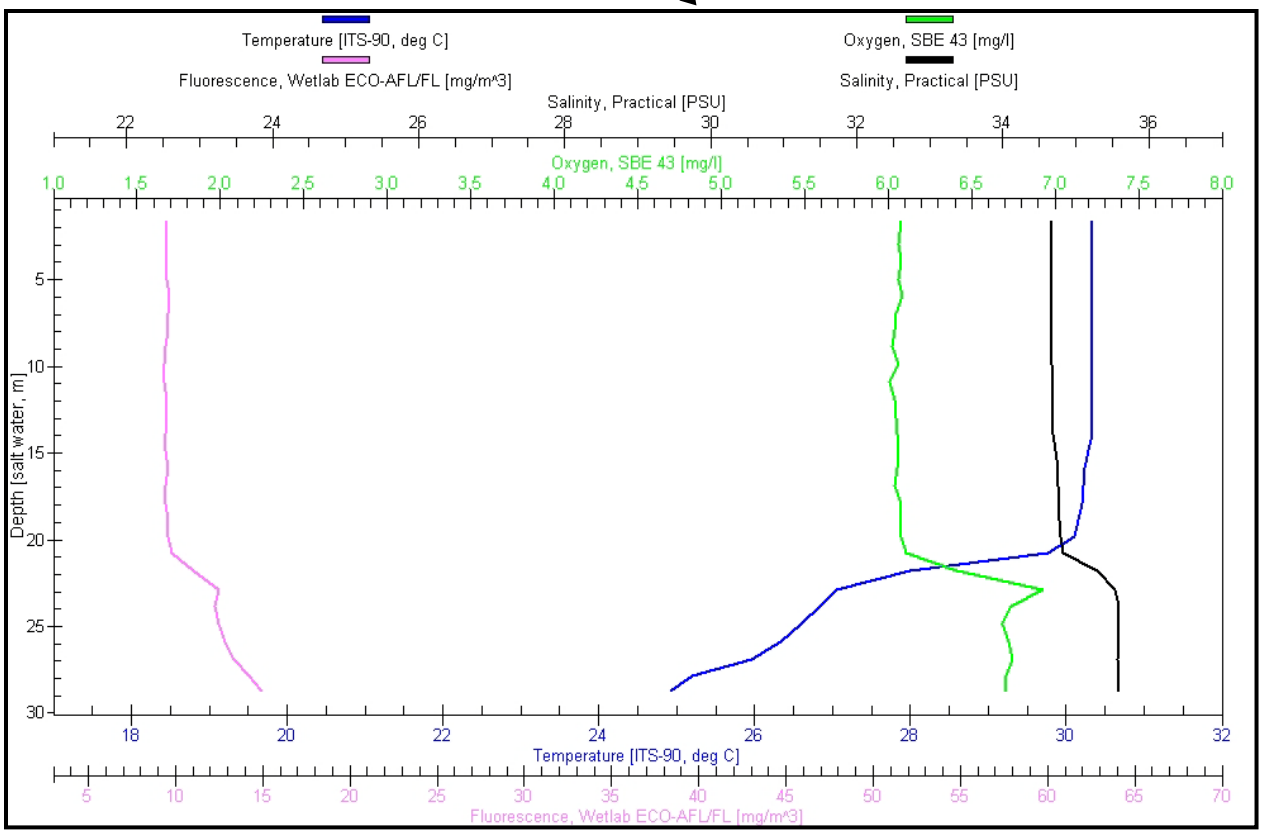



100 m
Gulf of Mexico

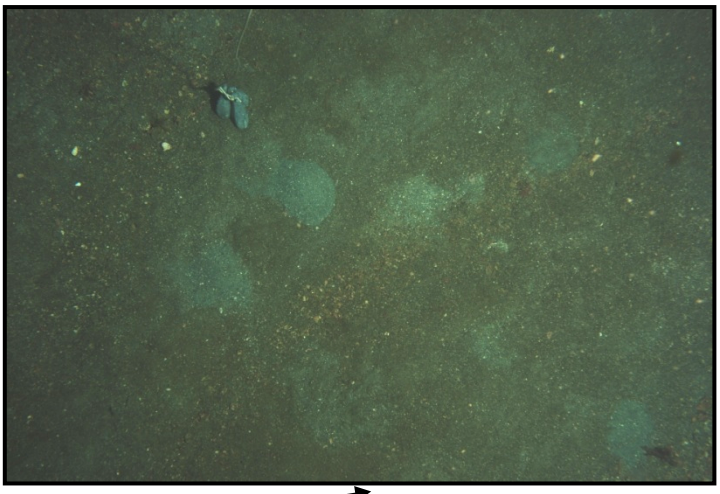

Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20 22 24
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

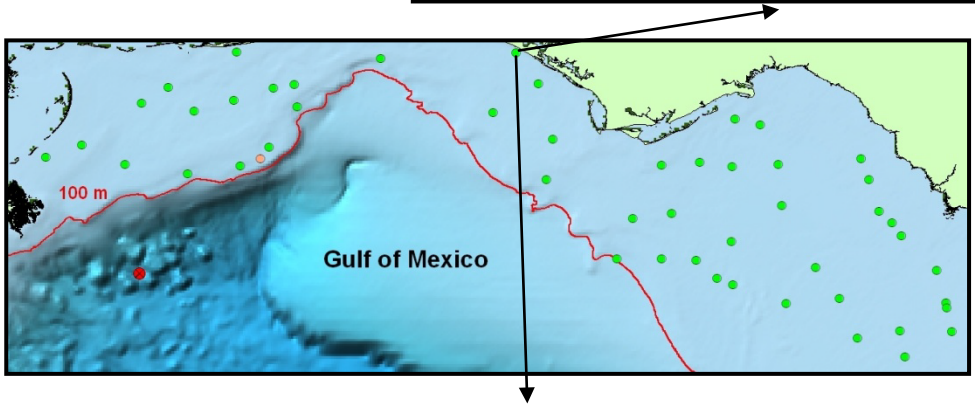
Station 28

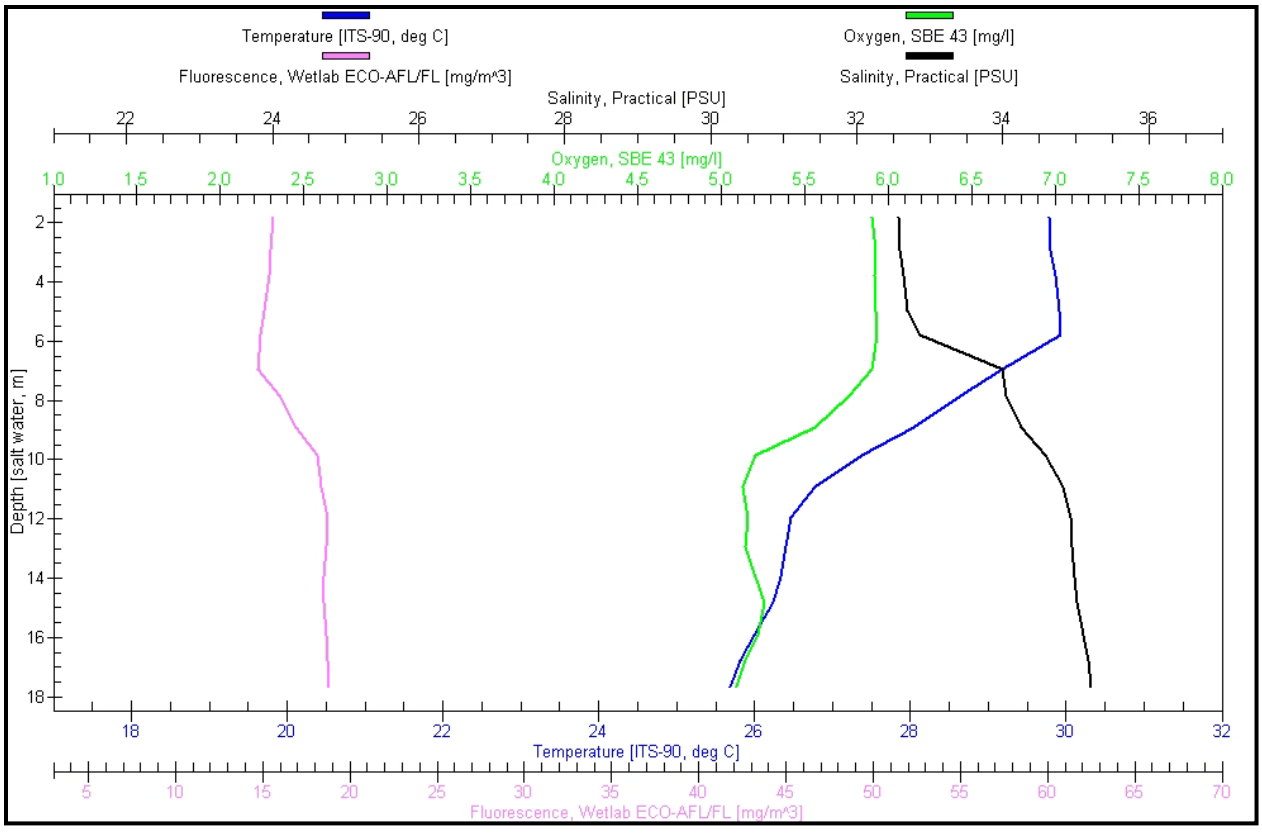

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

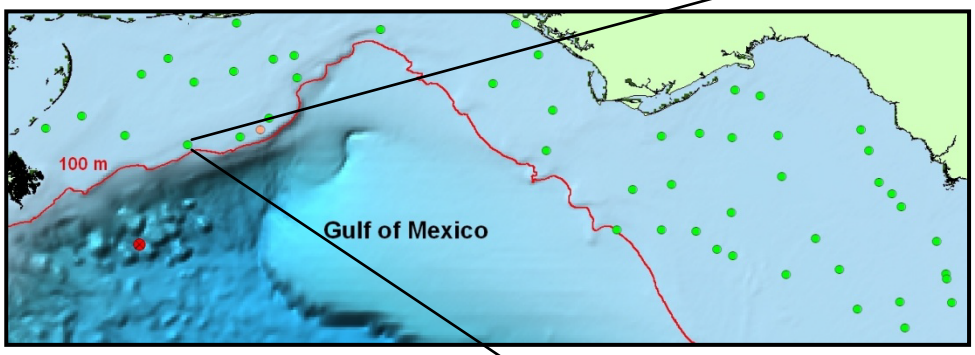
Station 29

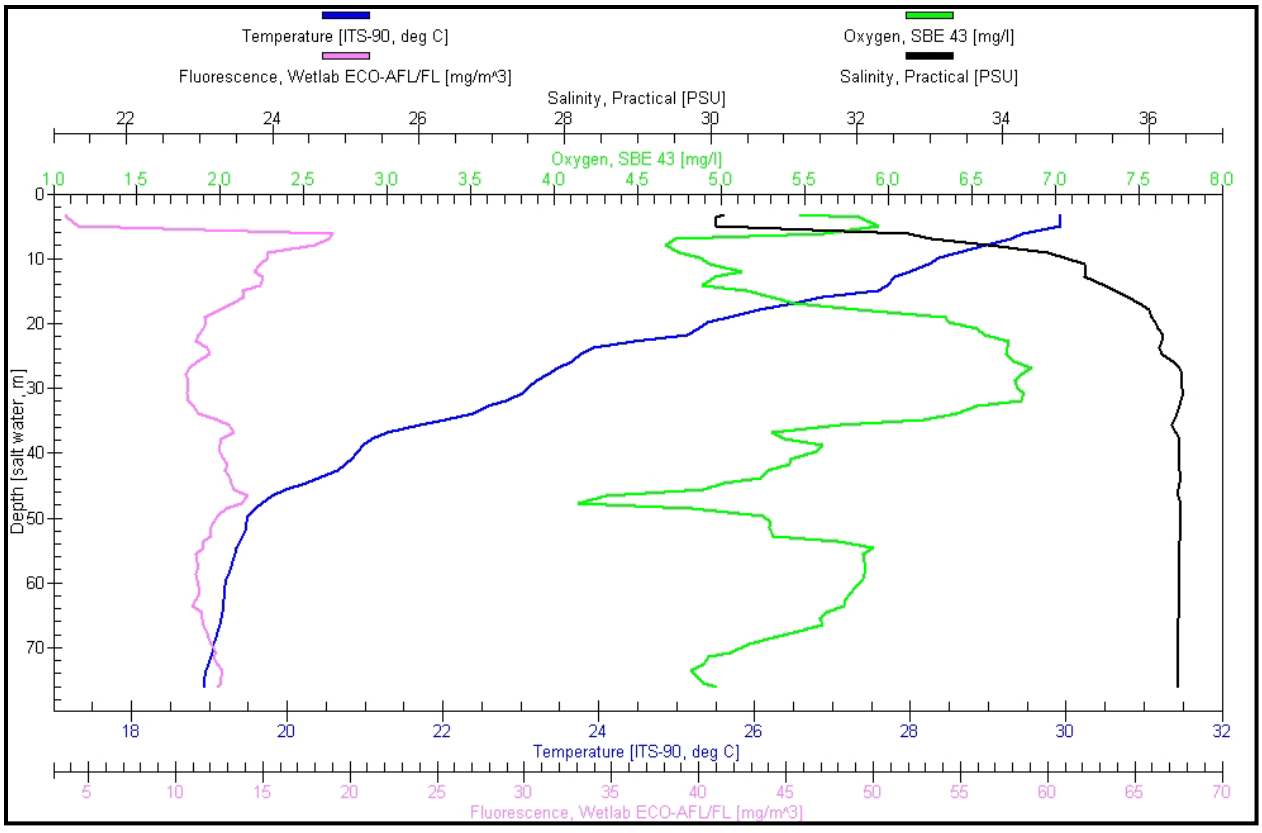



100 m
Gulf of Mexico

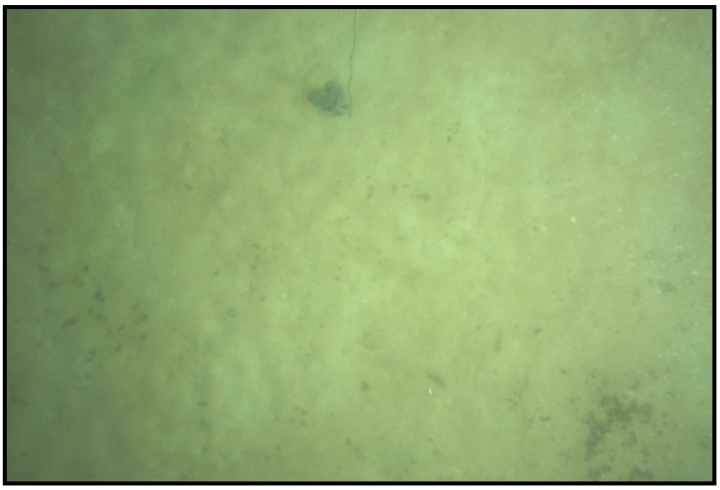

Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

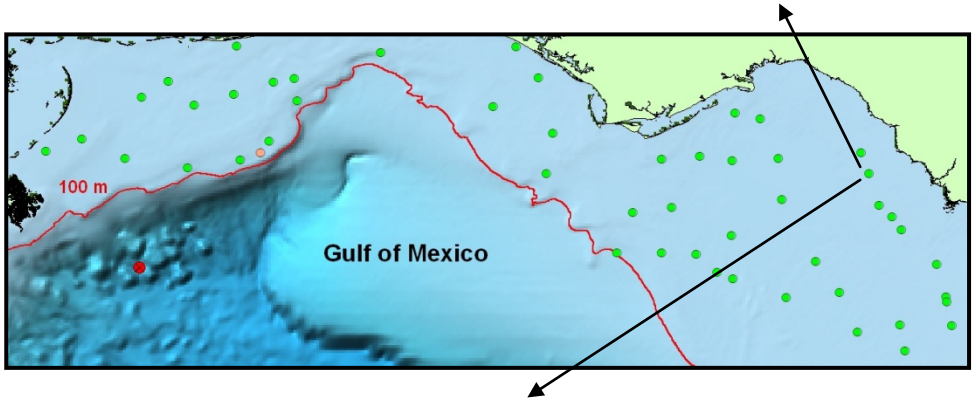
Station 30

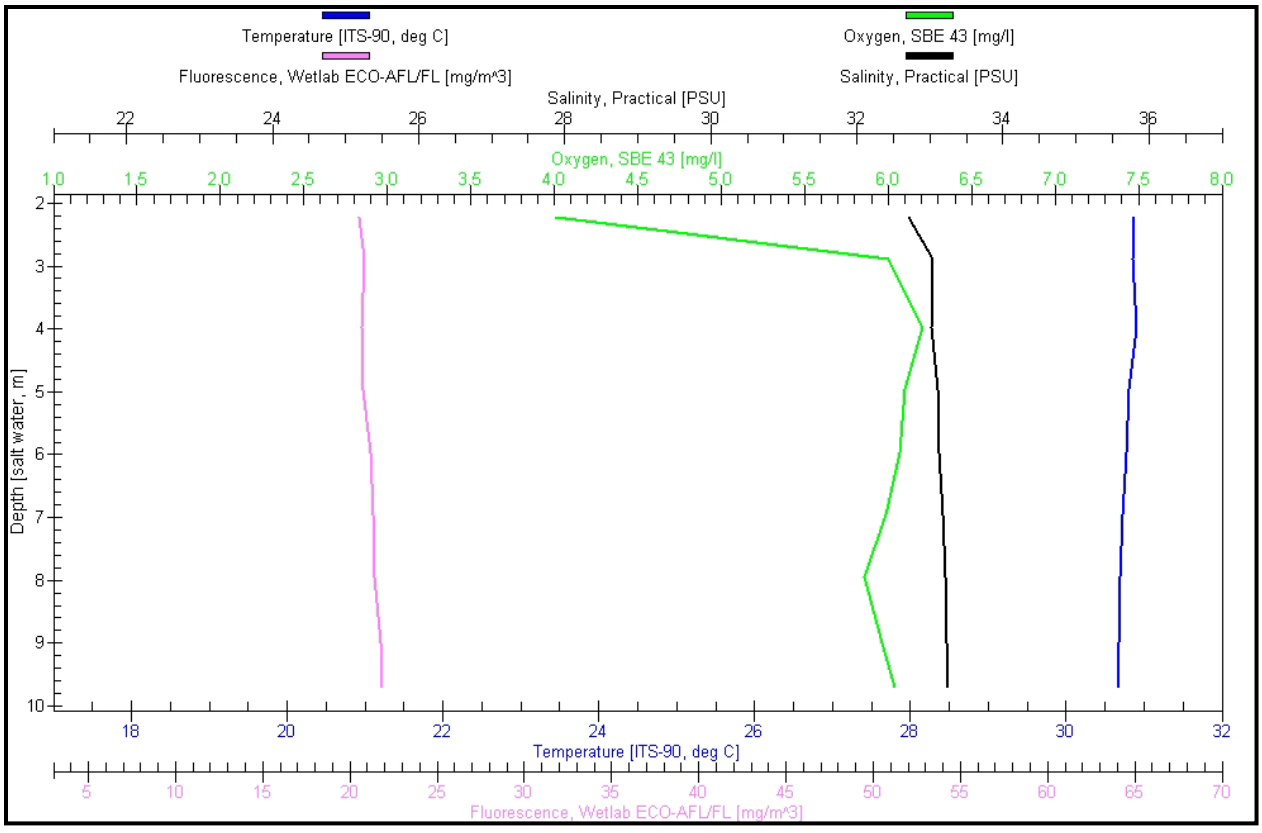

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 10 20 30 40 50 60 70
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

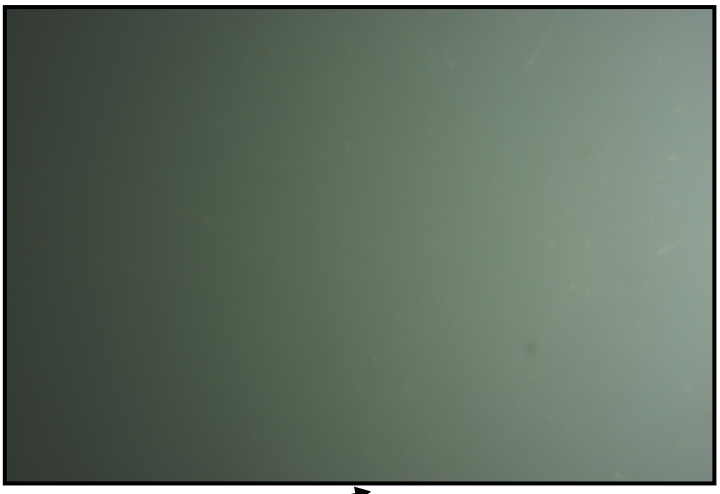
Station 31

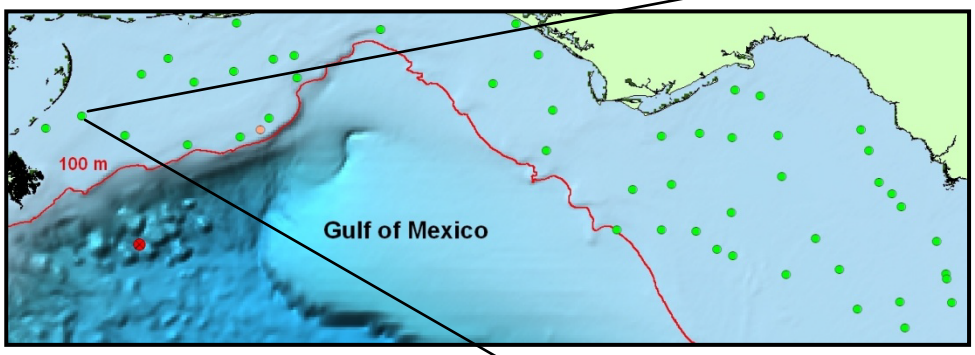


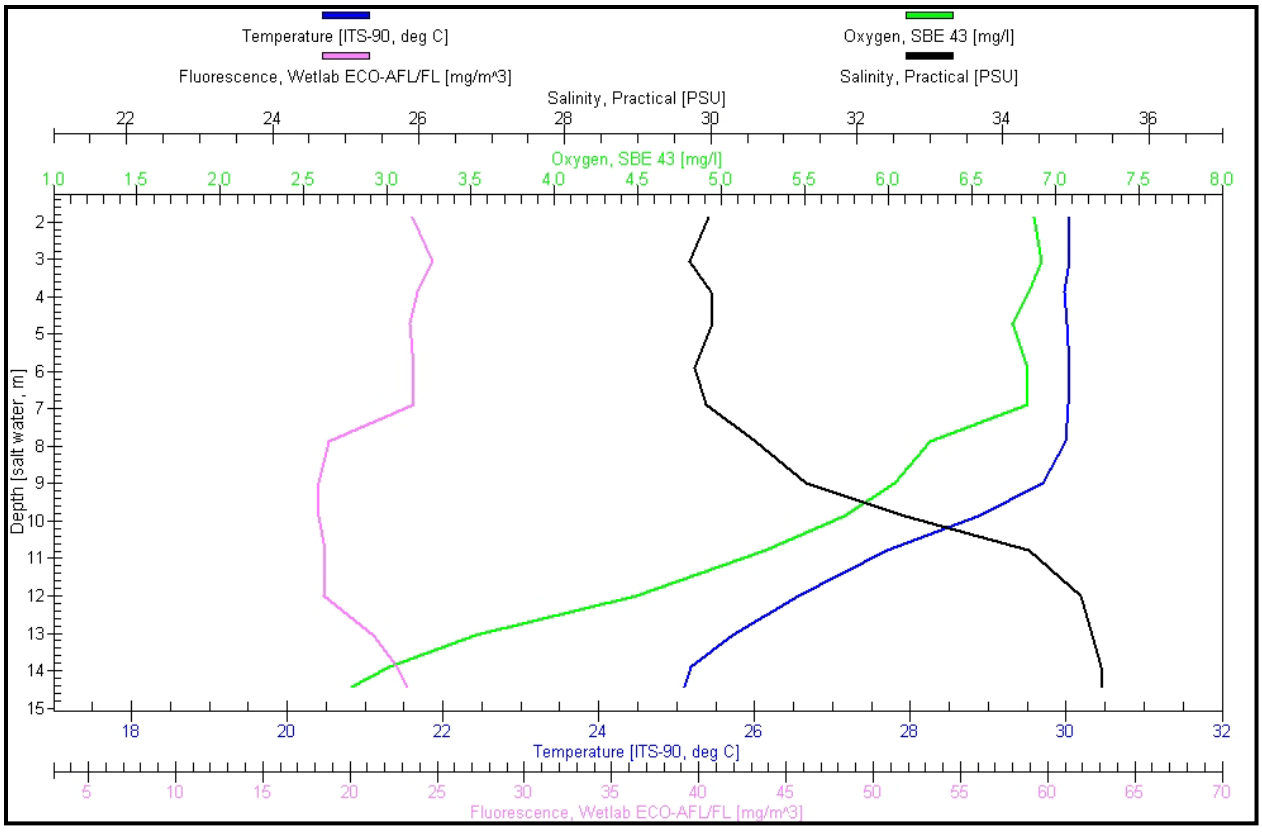

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

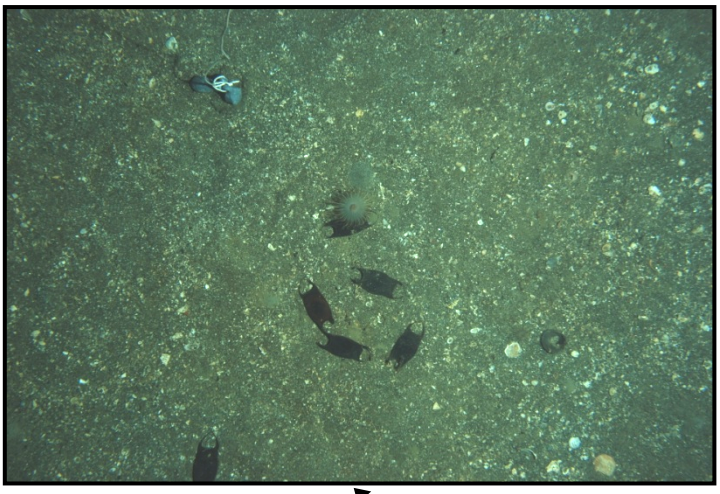
Station 32

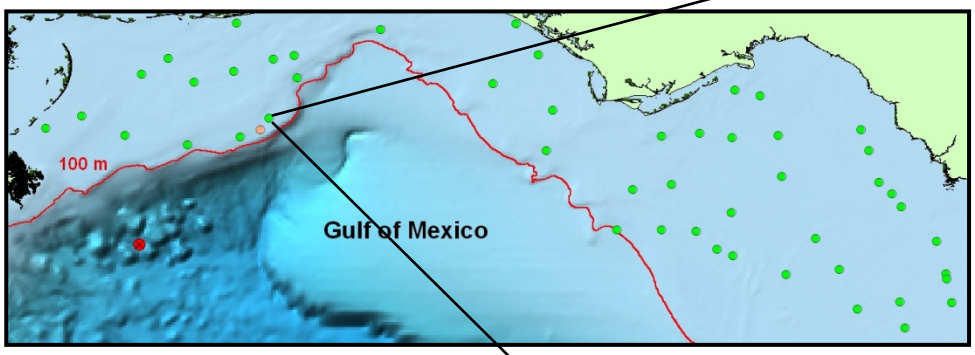


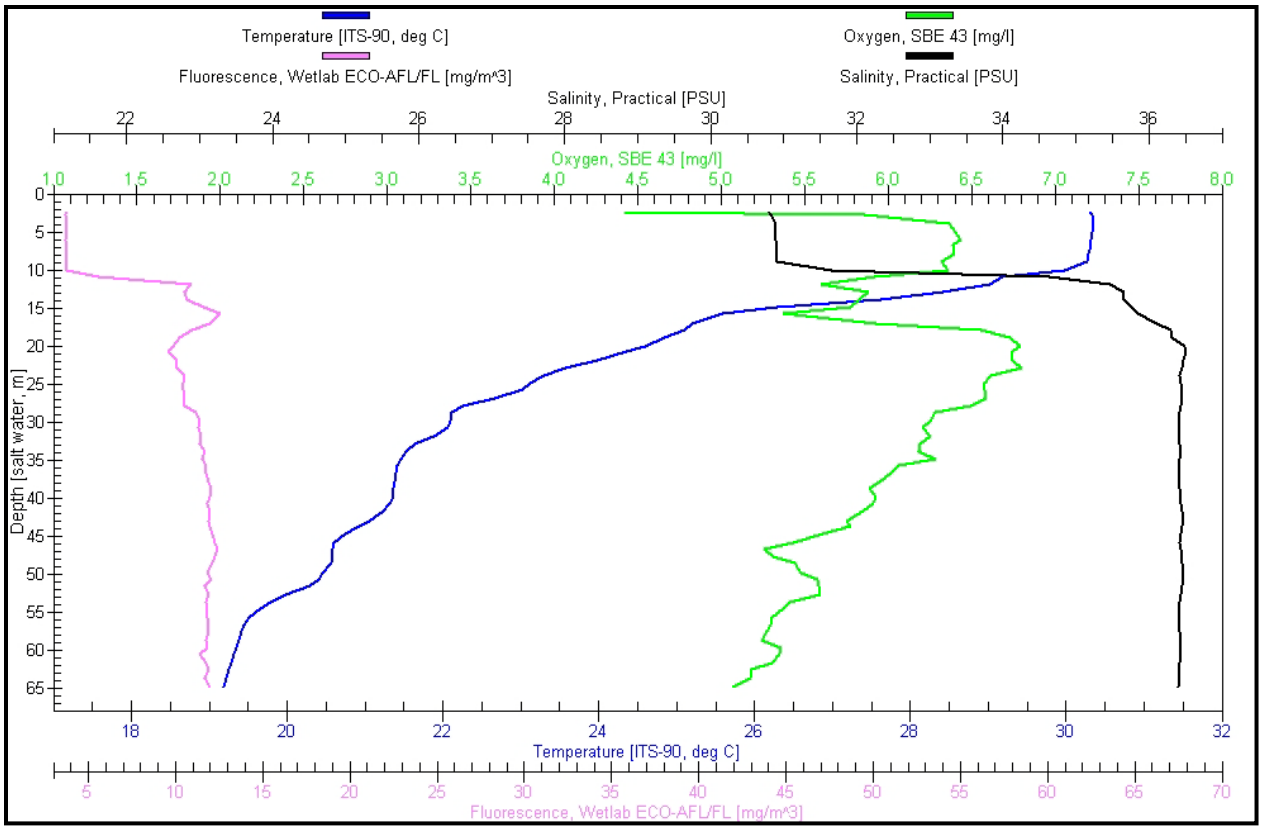

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10 11 12 13 14 15
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

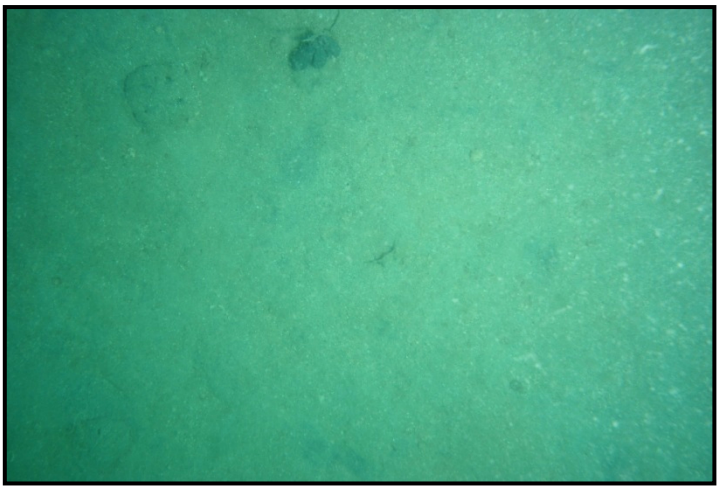
Station 33

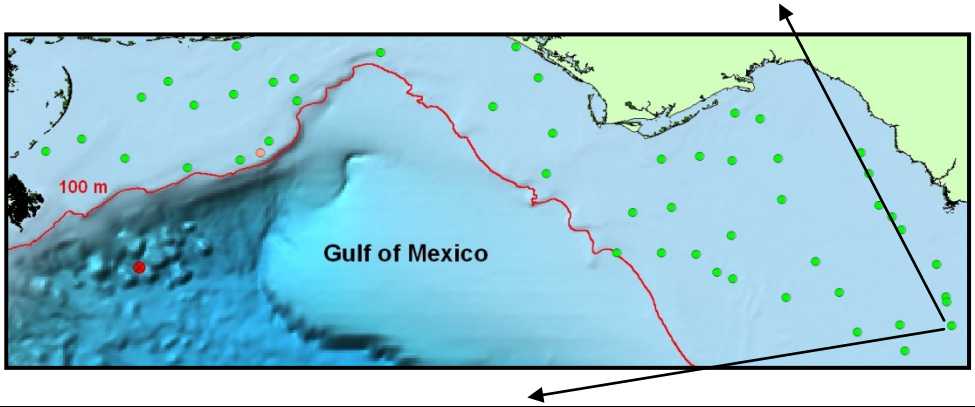


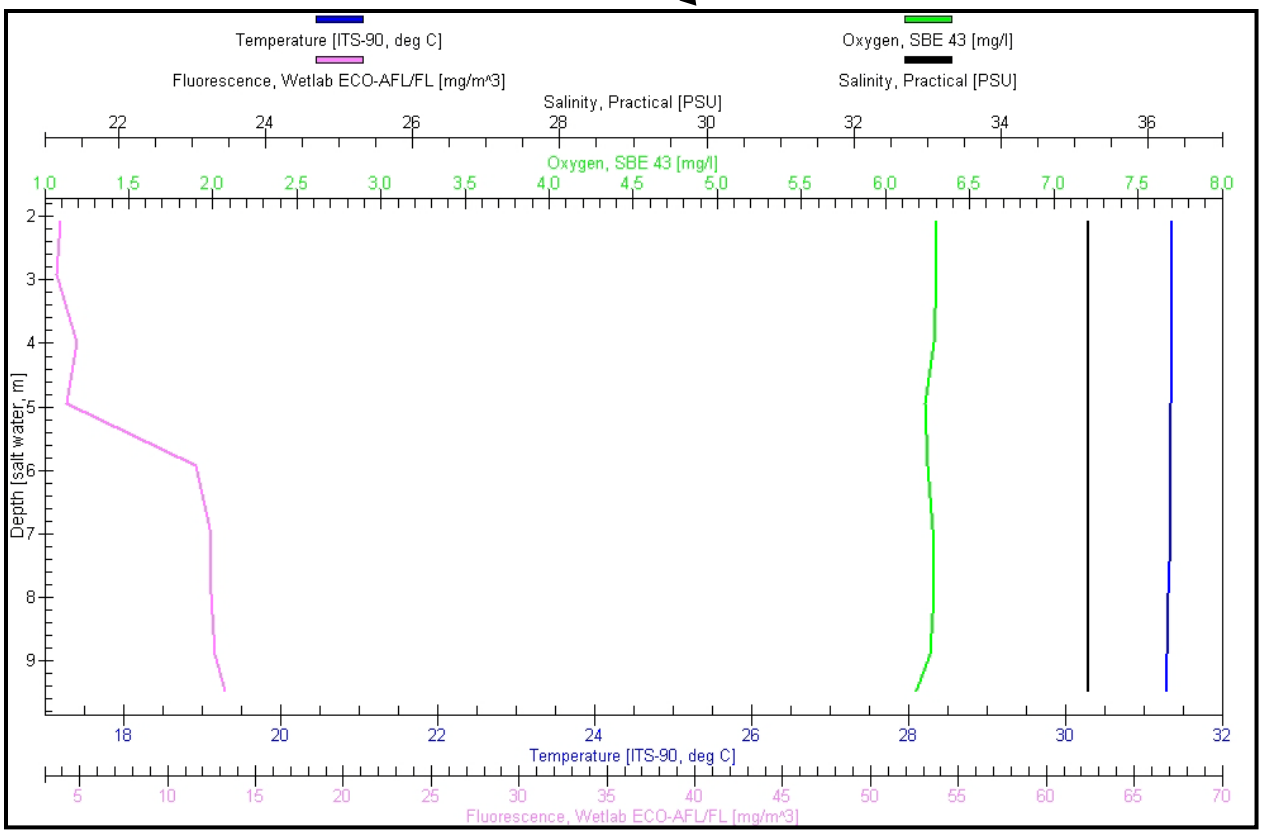

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
Oxygen, SBE 43 [mg/l]
Depth [salt water, m]
Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

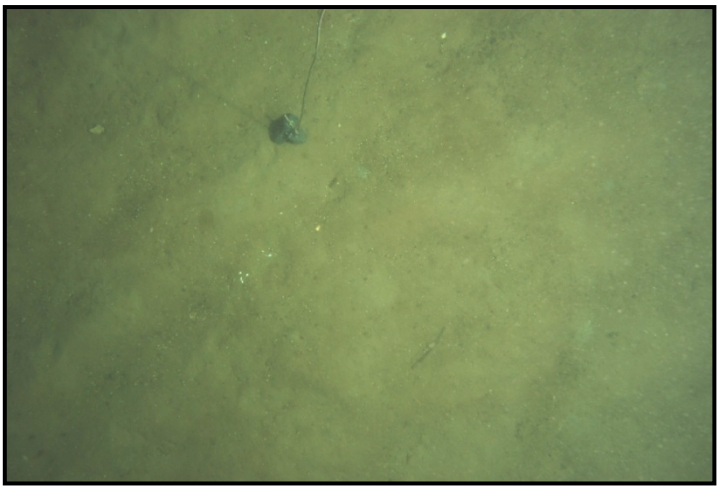
Station 34

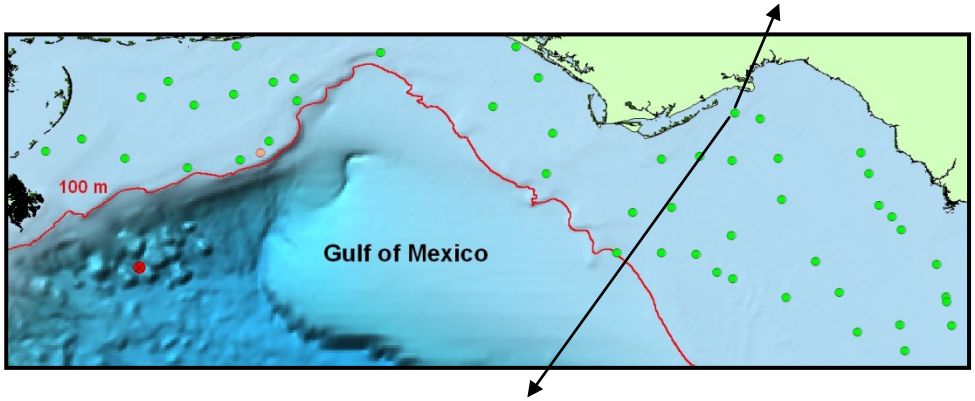


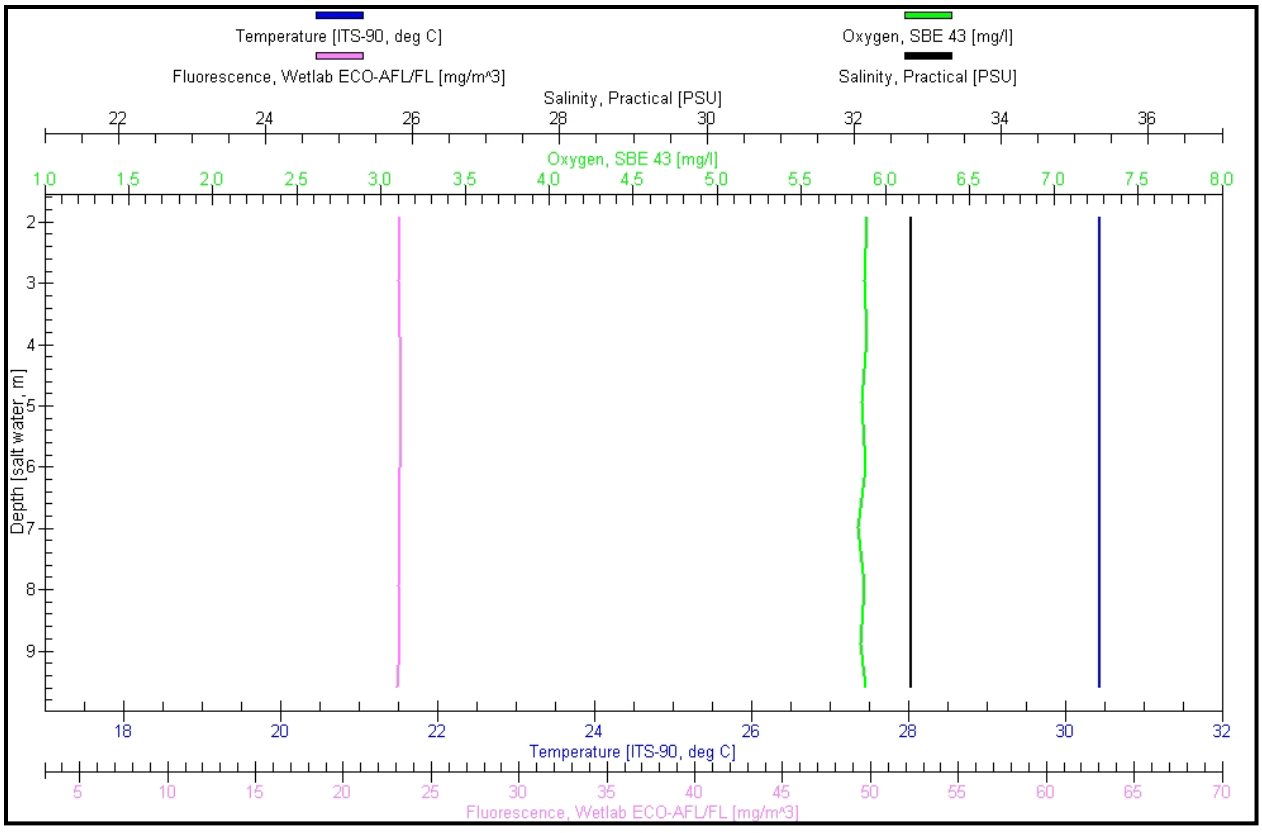

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

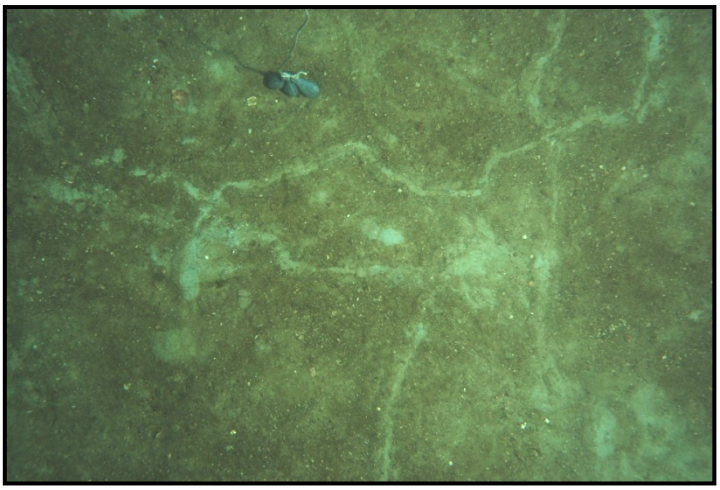
Station 35

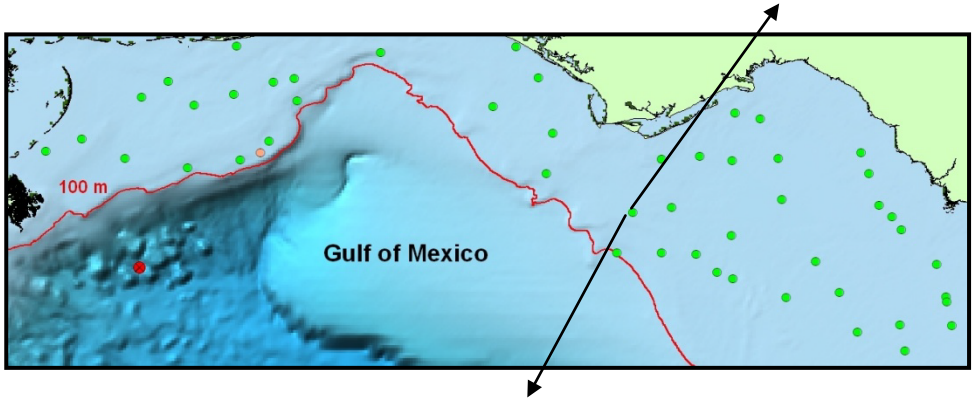


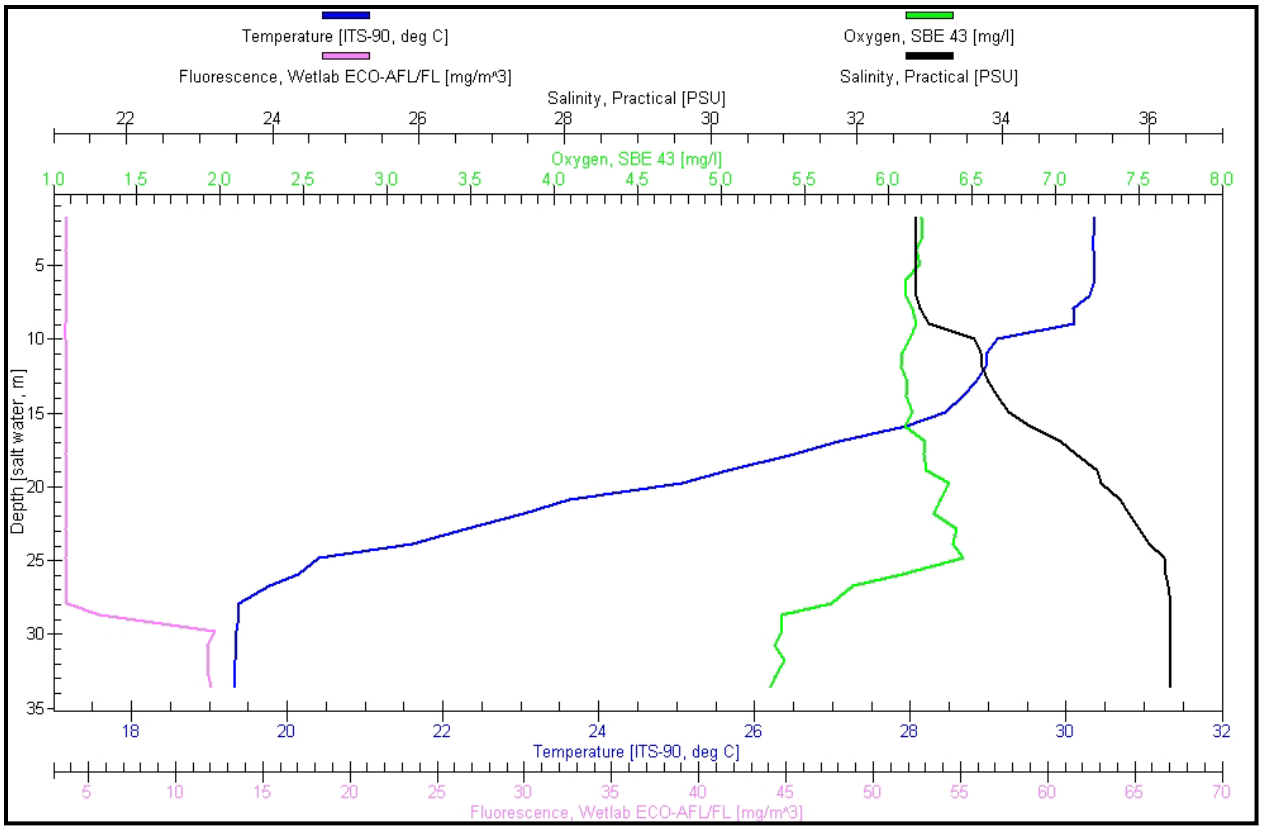

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

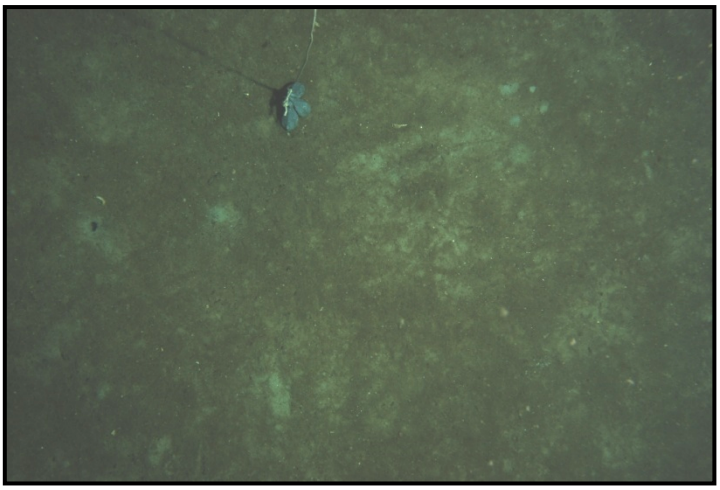
Station 36

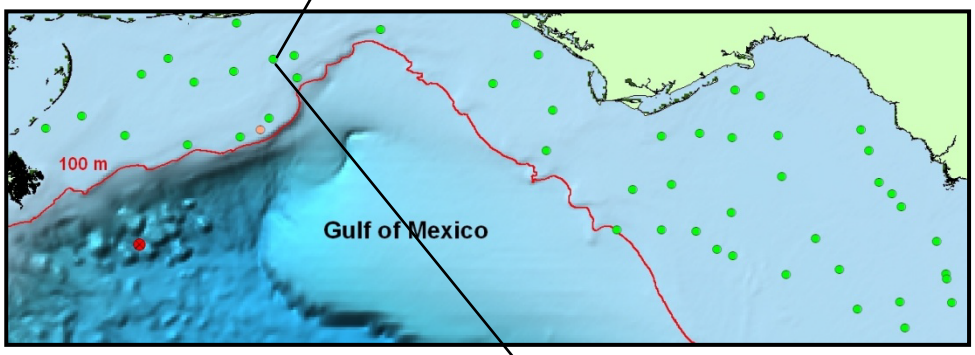


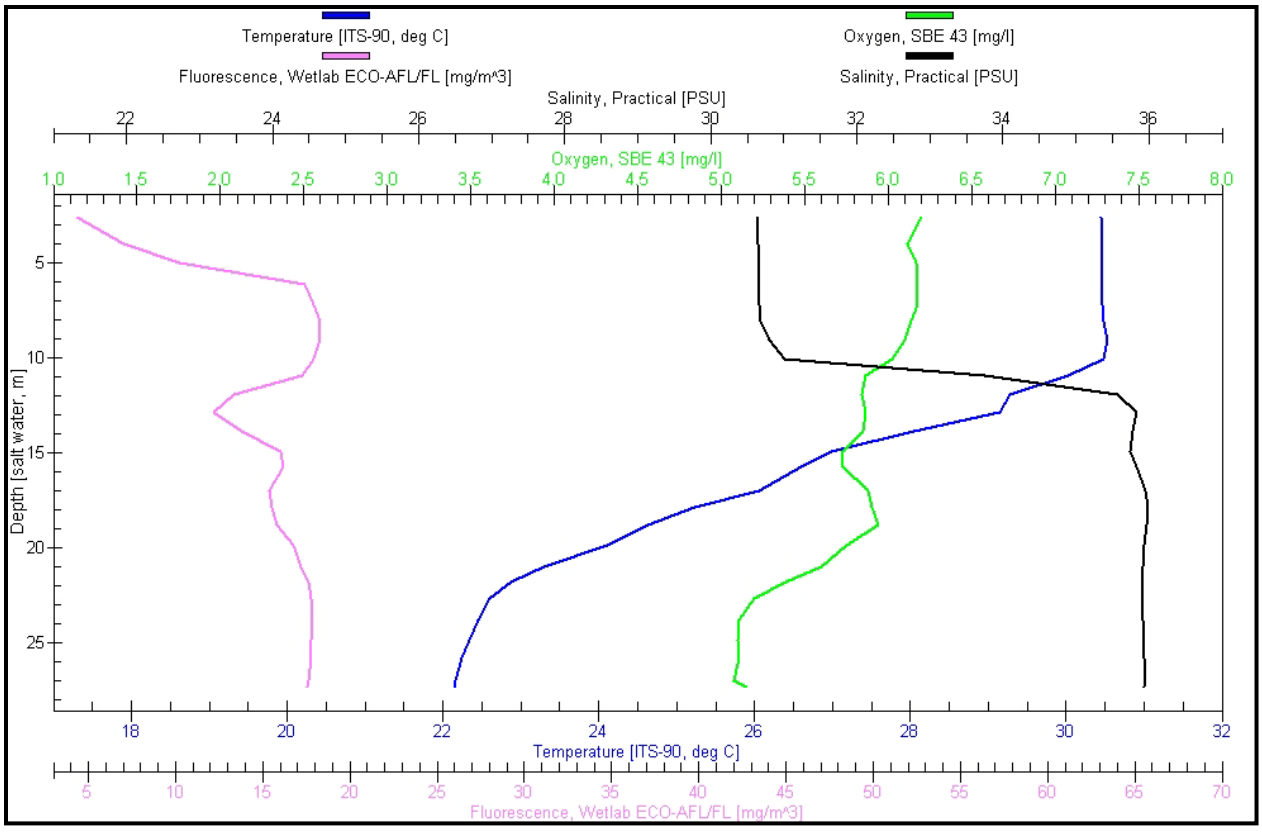

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30 35
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

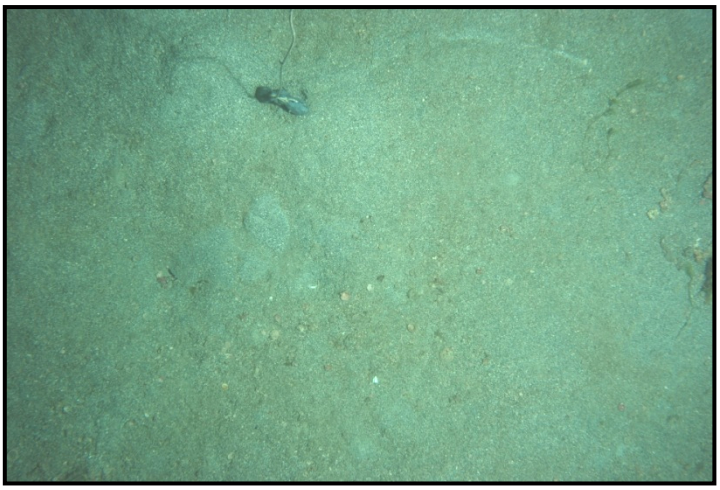
Station 37

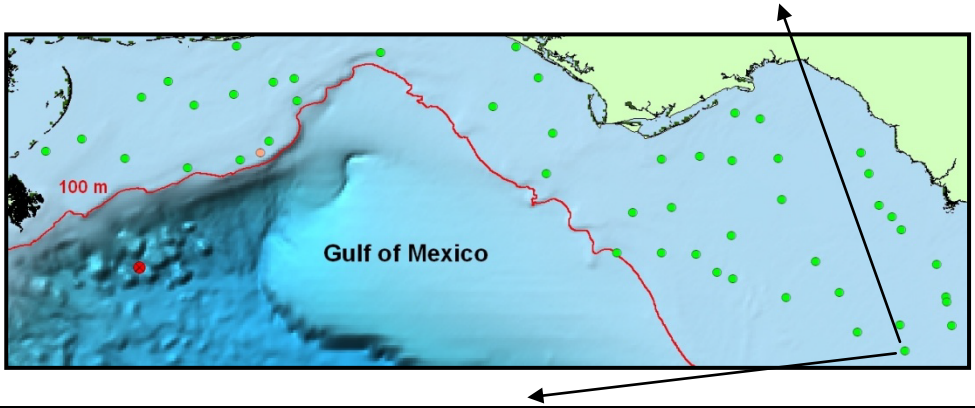


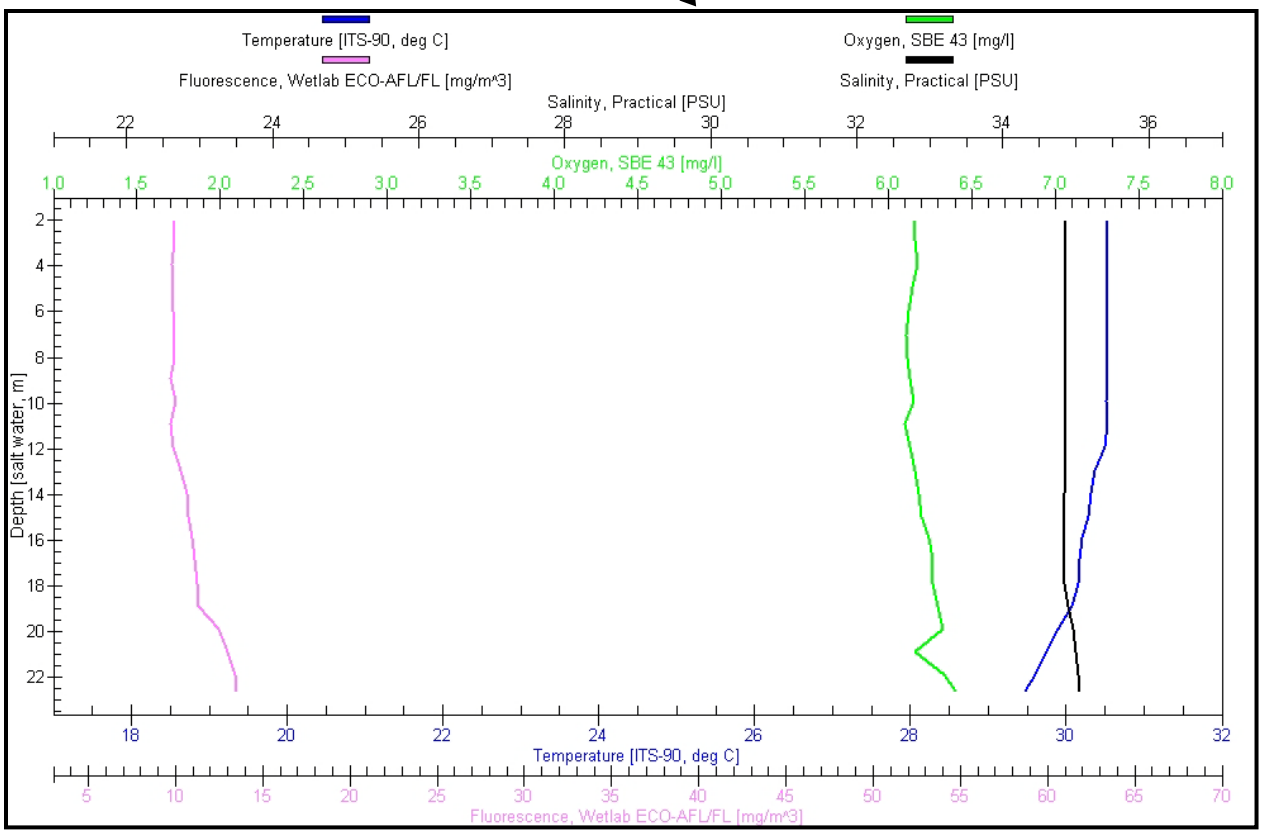

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

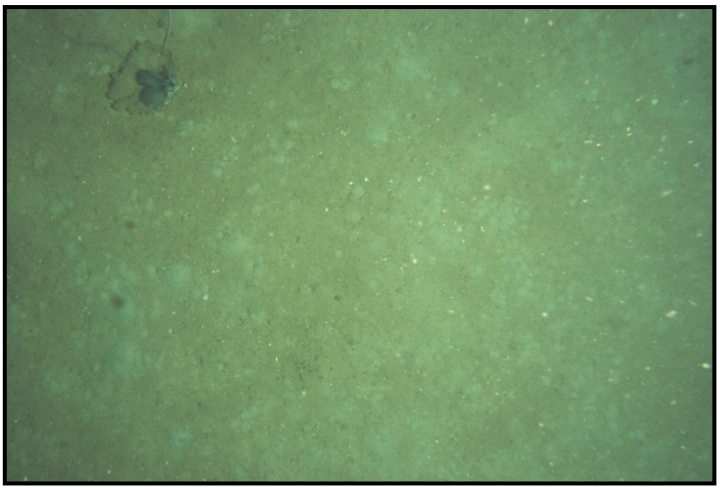
Station 38

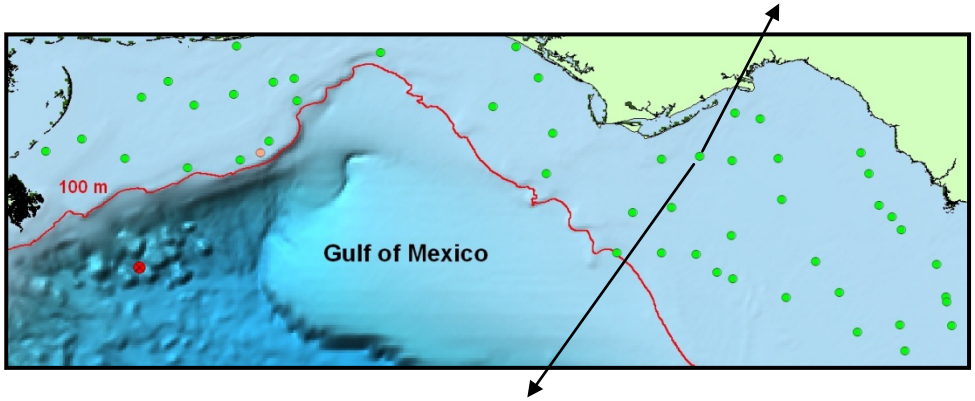


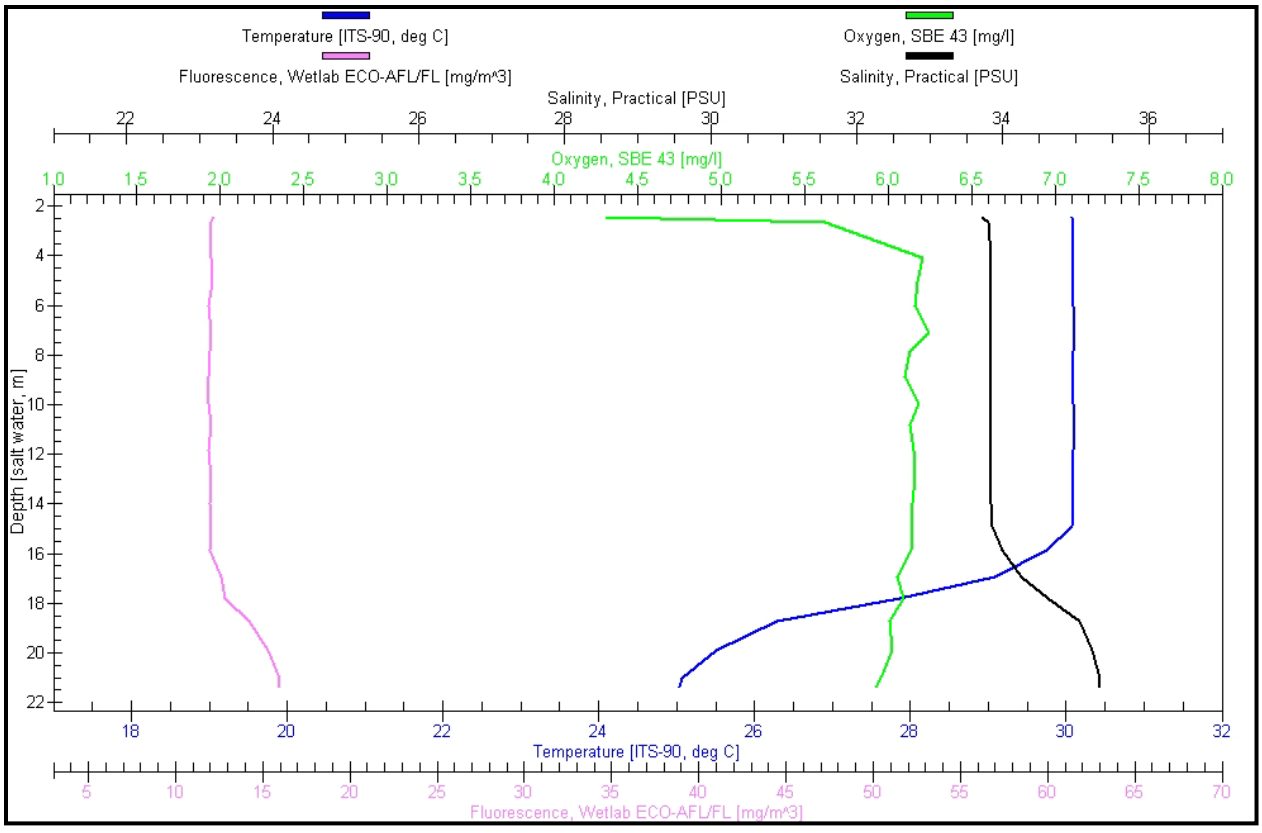

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20 22
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

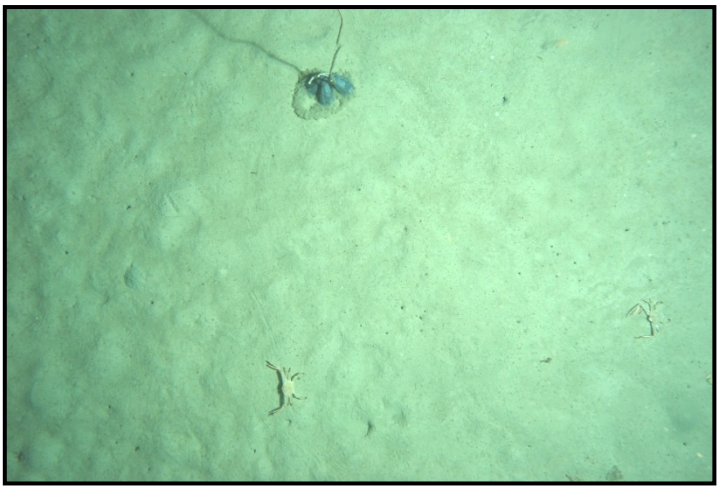
Station 39

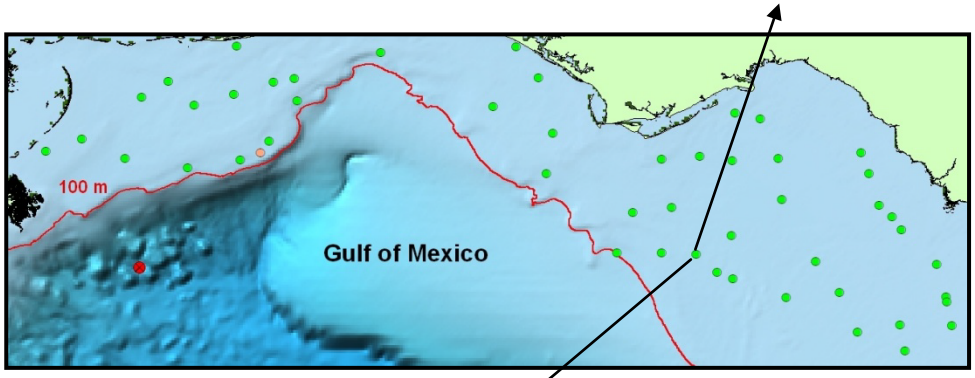


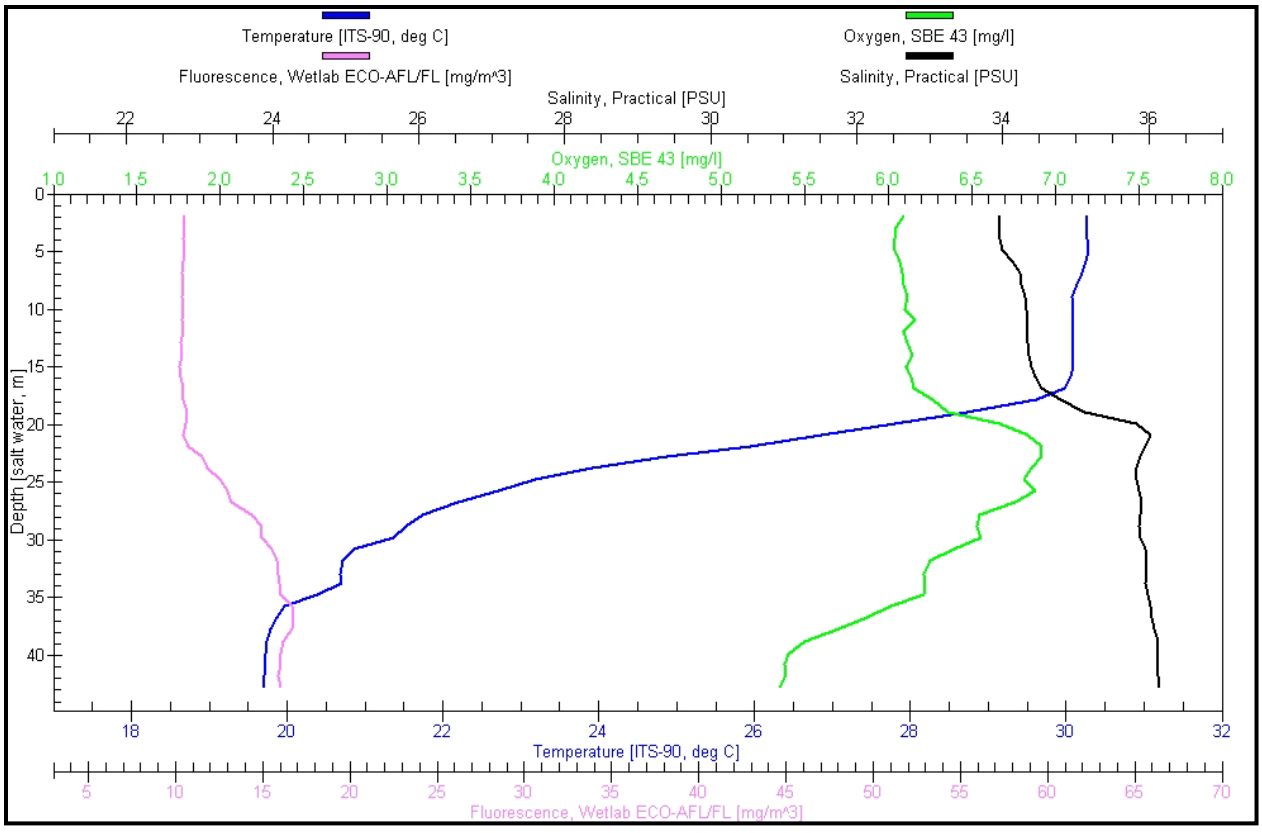

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20 22
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

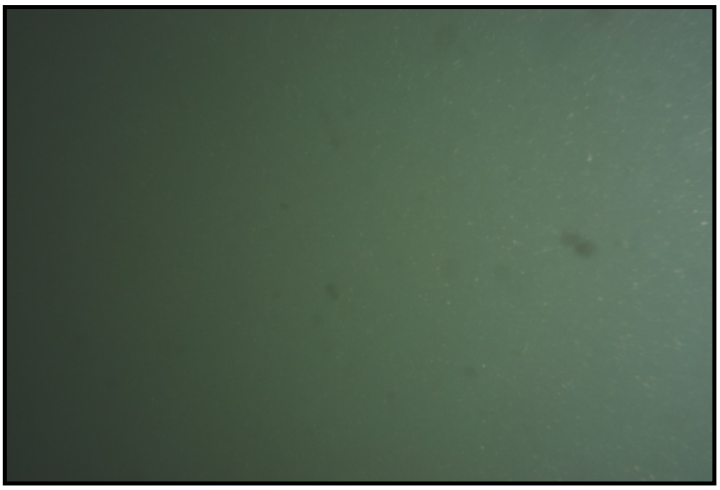
Station 40

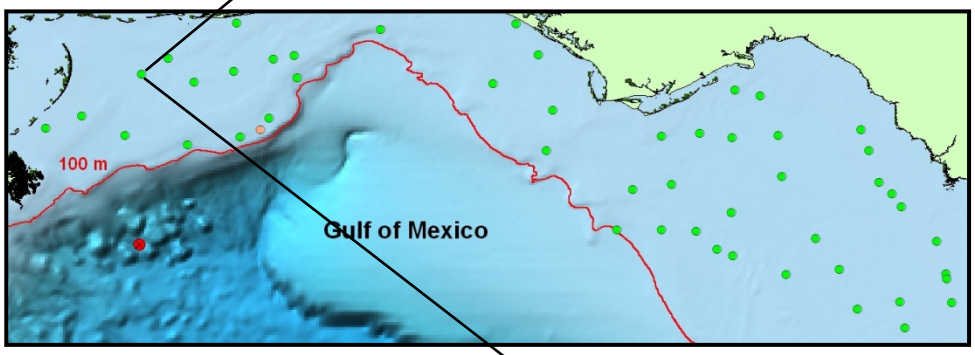


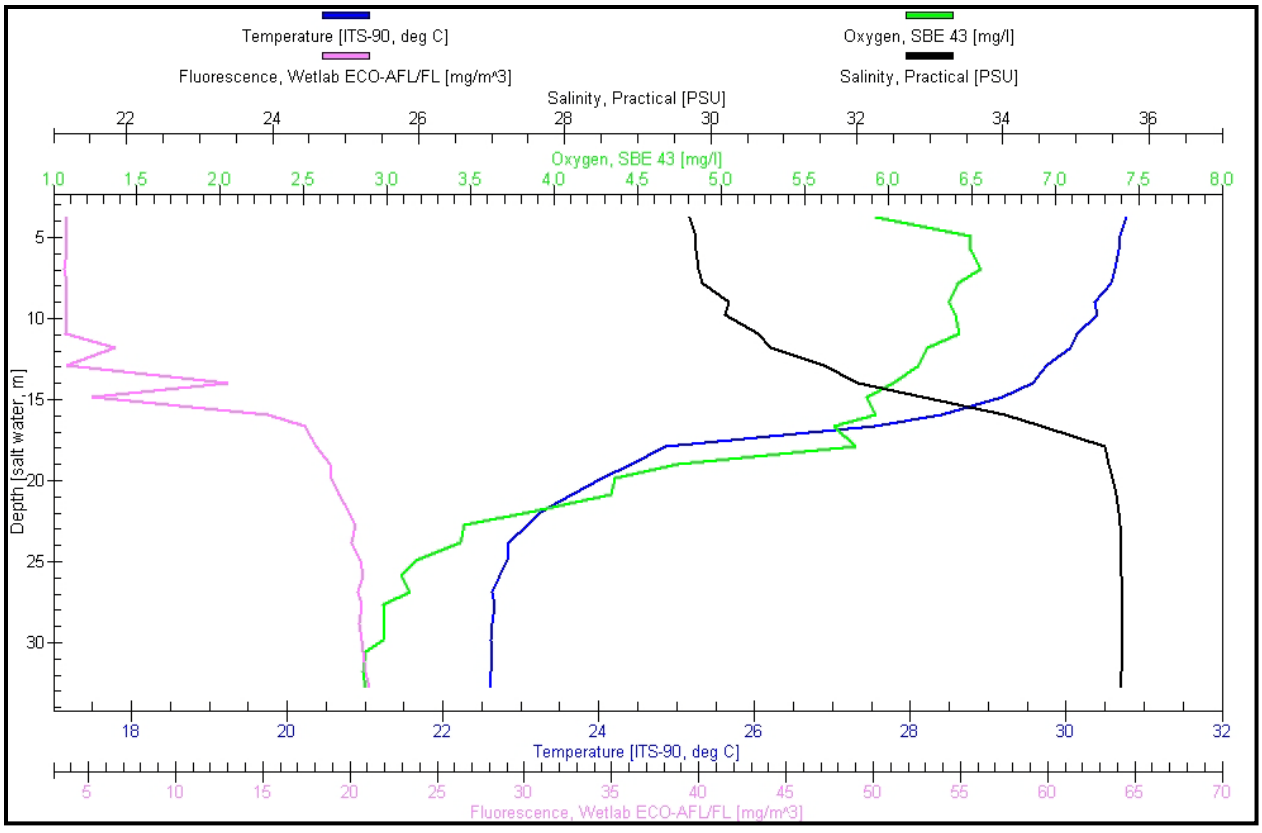

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

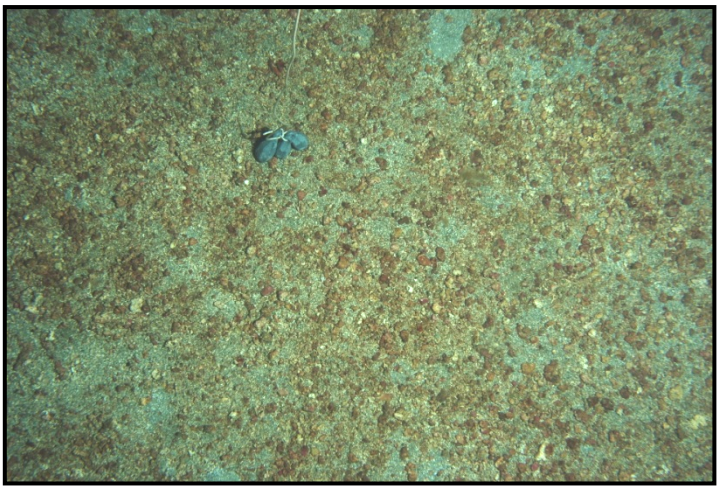
Station 41

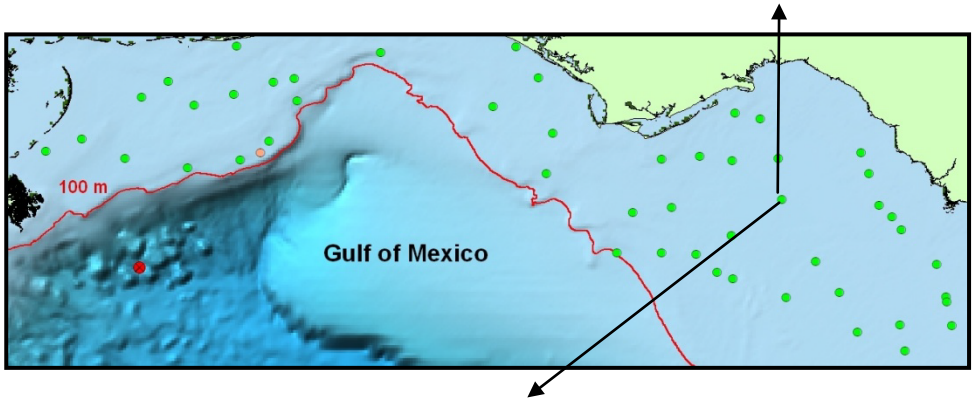


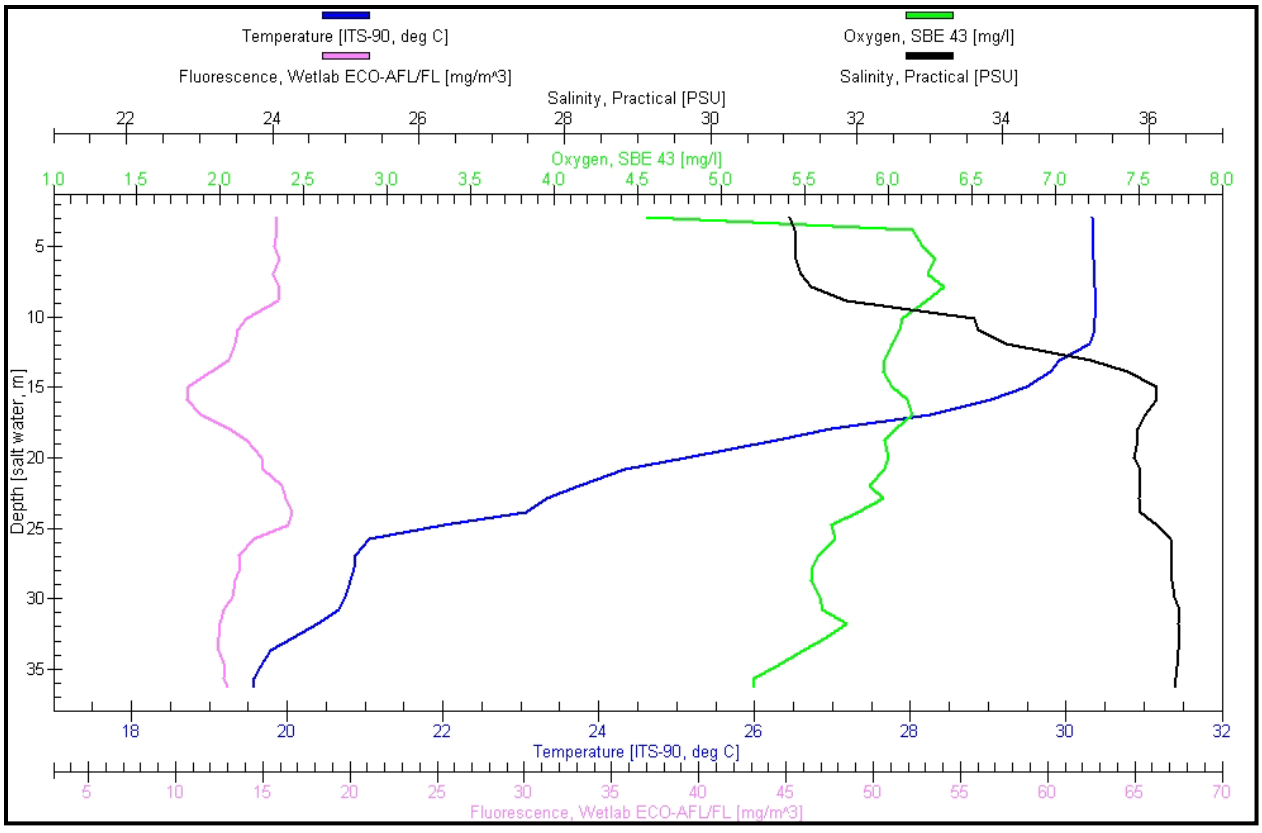

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

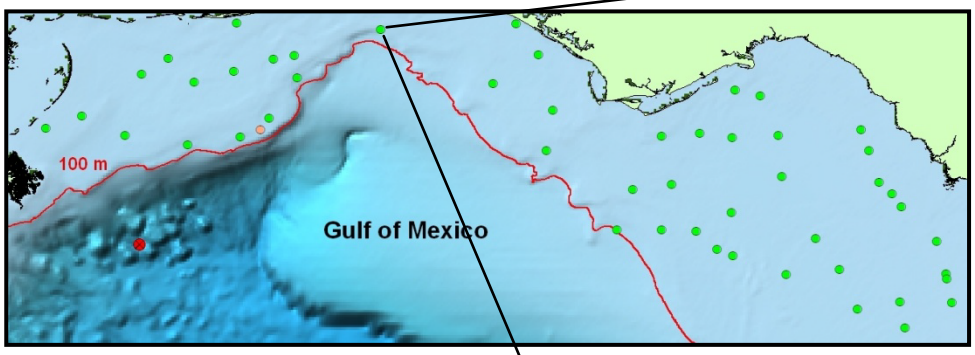
Station 42

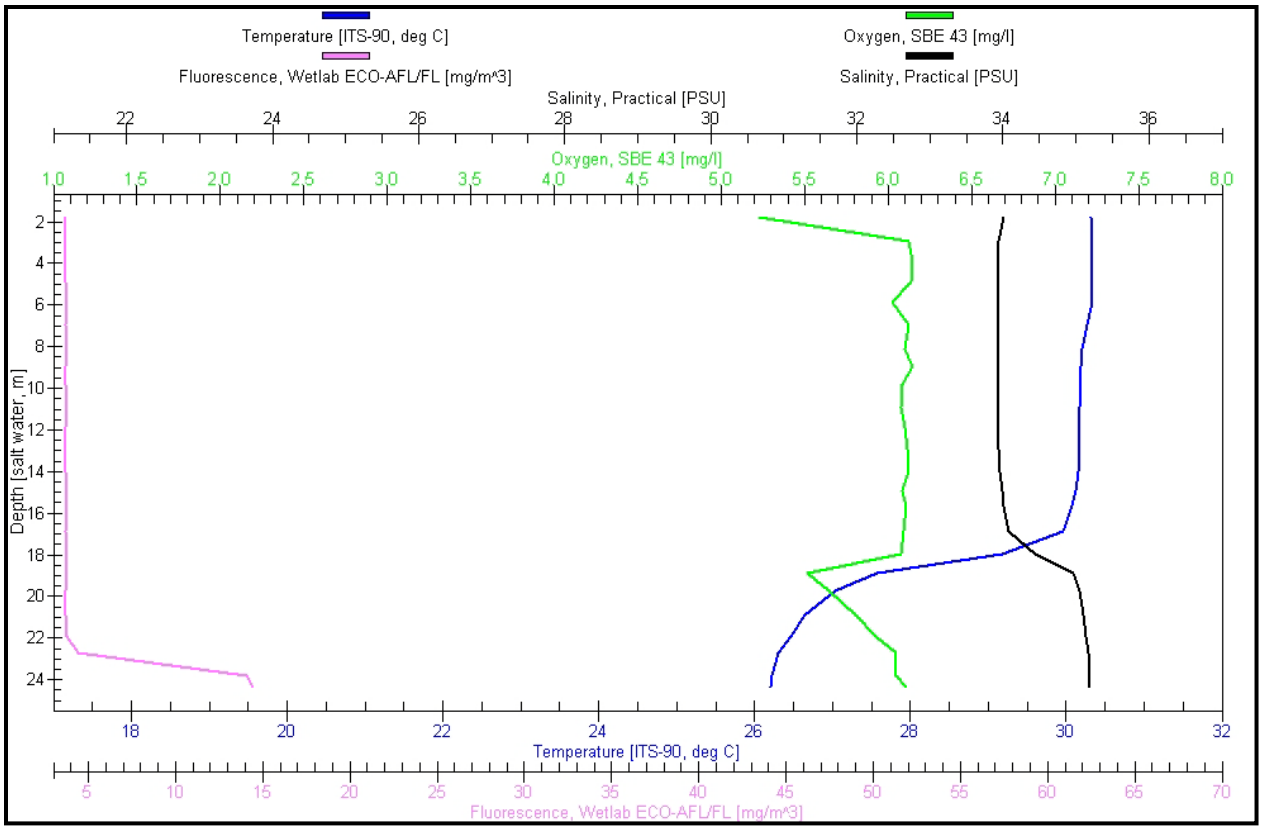



100 m
Gulf of Mexico

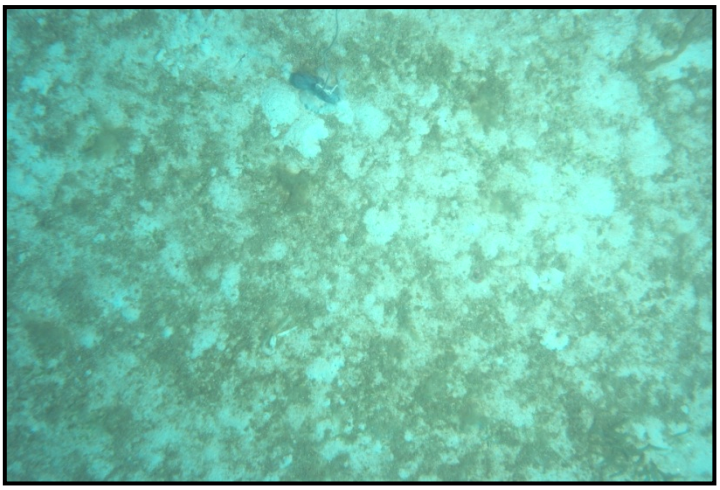

Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30 35
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

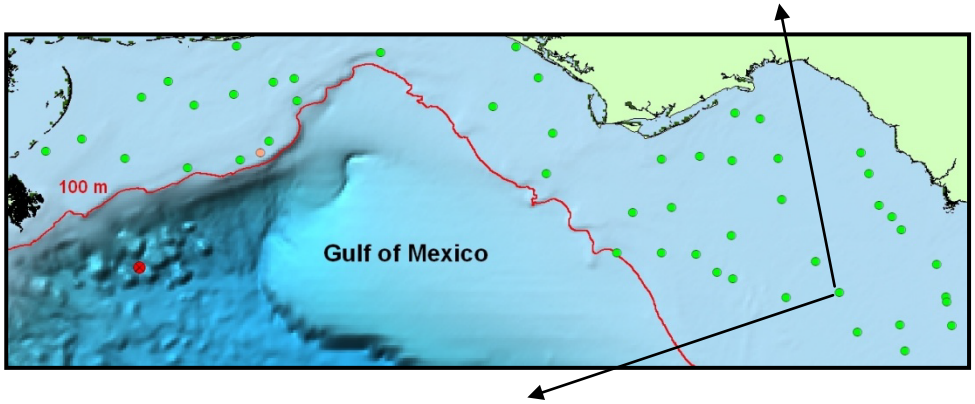
Station 43

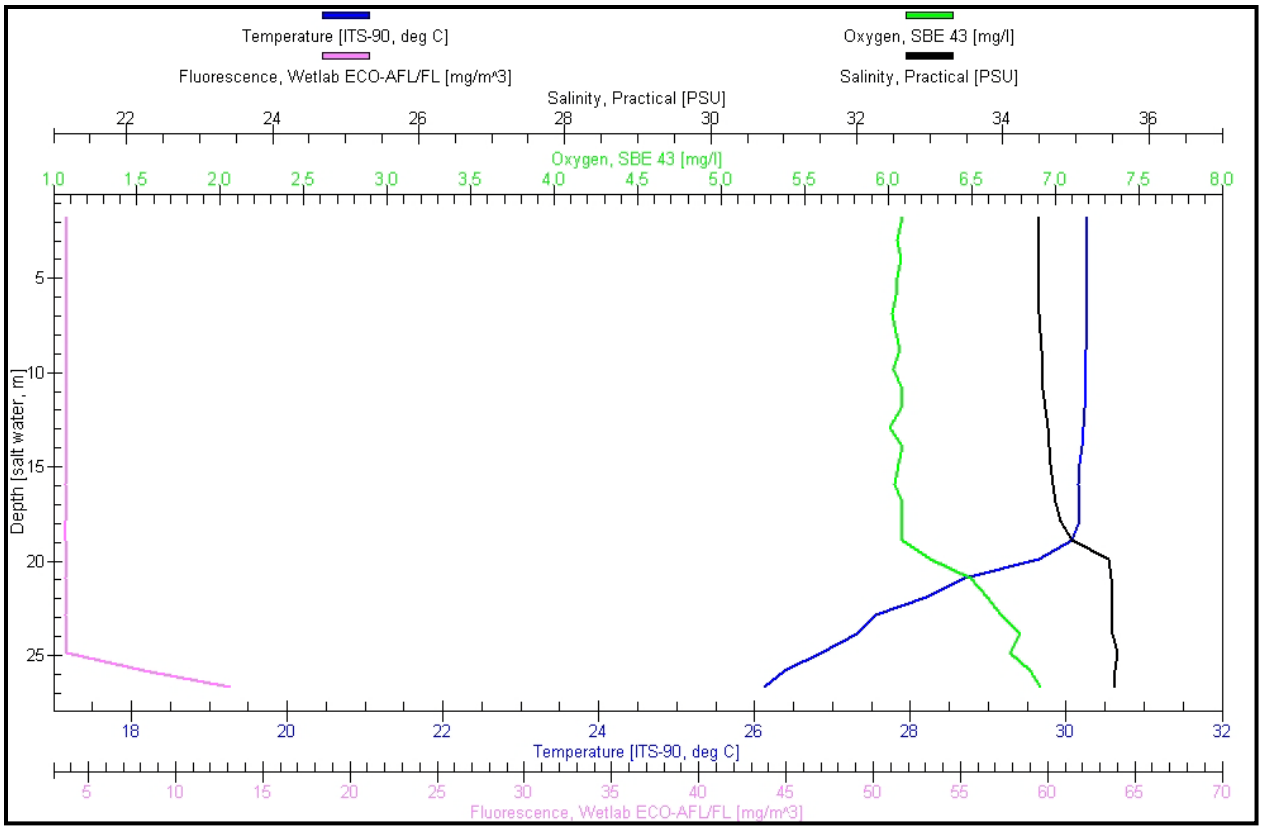

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 4 6 8 10 12 14 16 18 20 22 24
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

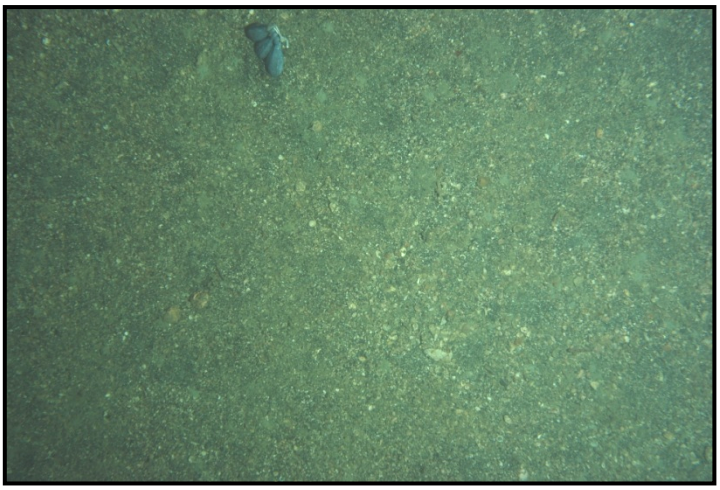
Station 44

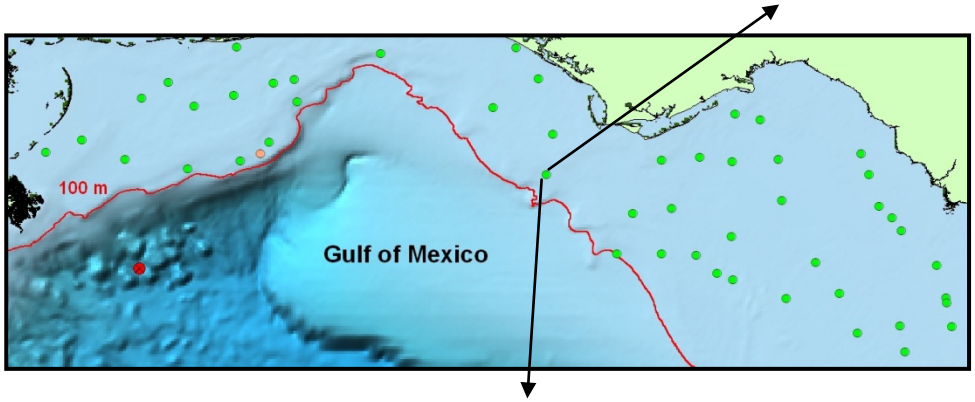


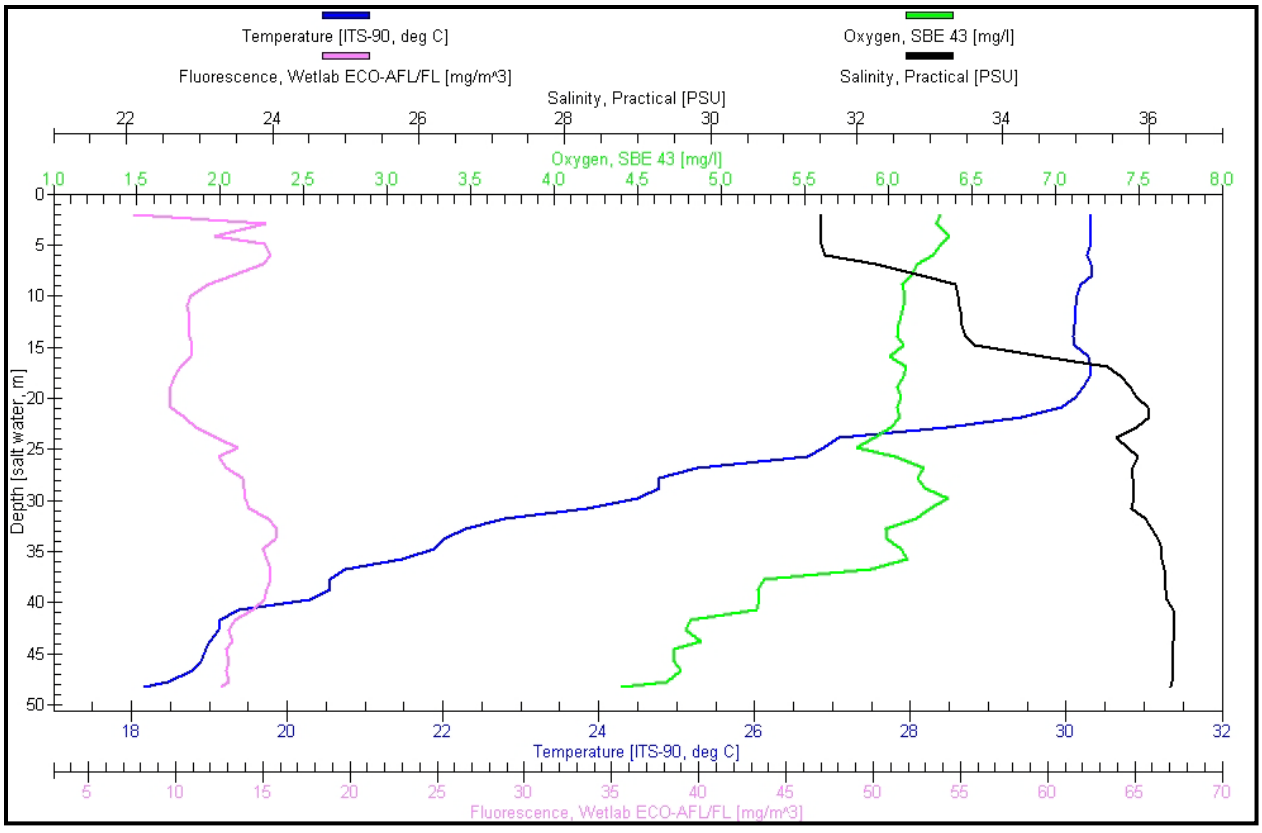

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

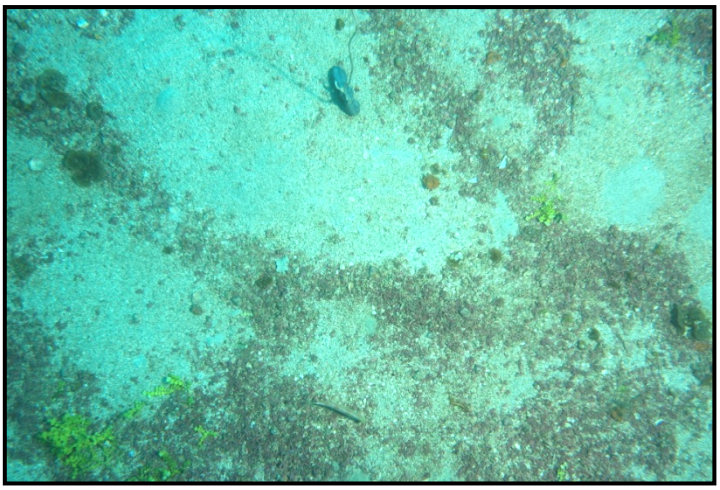
Station 45

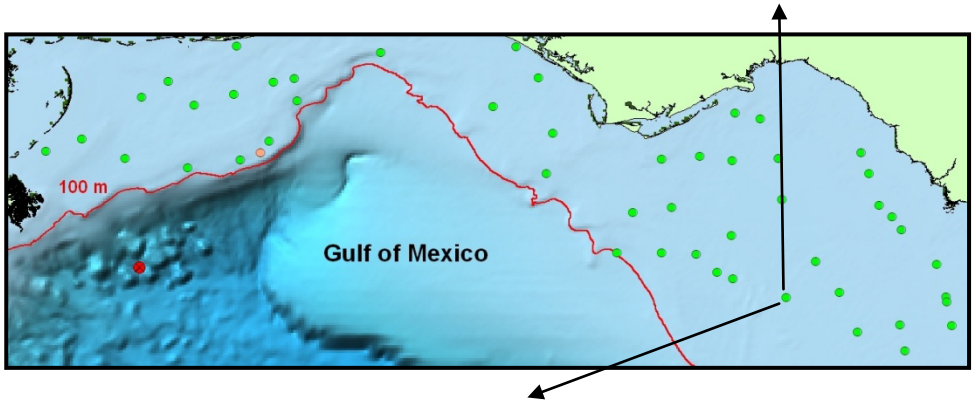


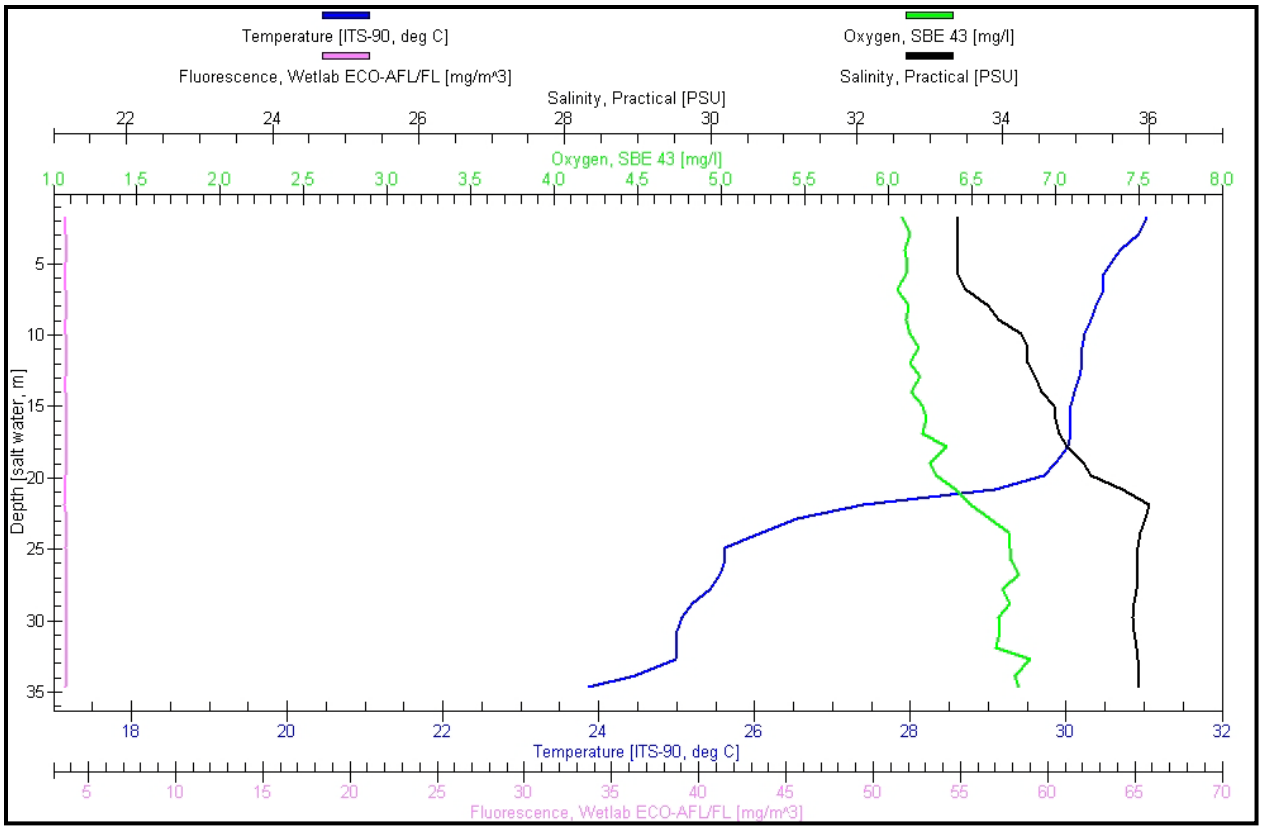

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 5 10 15 20 25 30 35 40 45 50
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

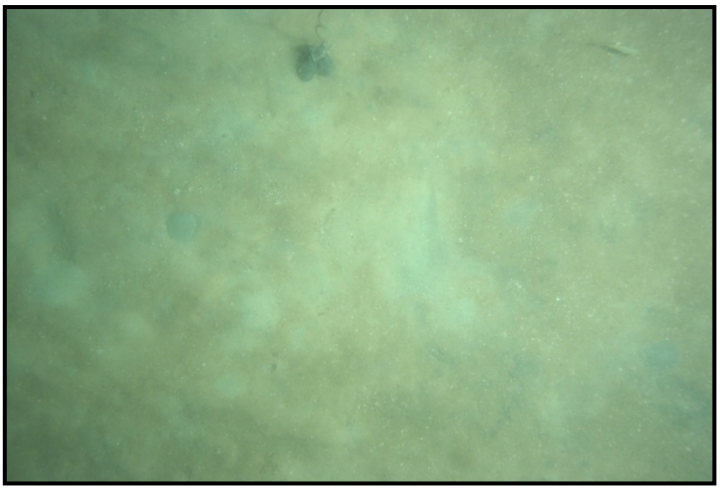
Station 46

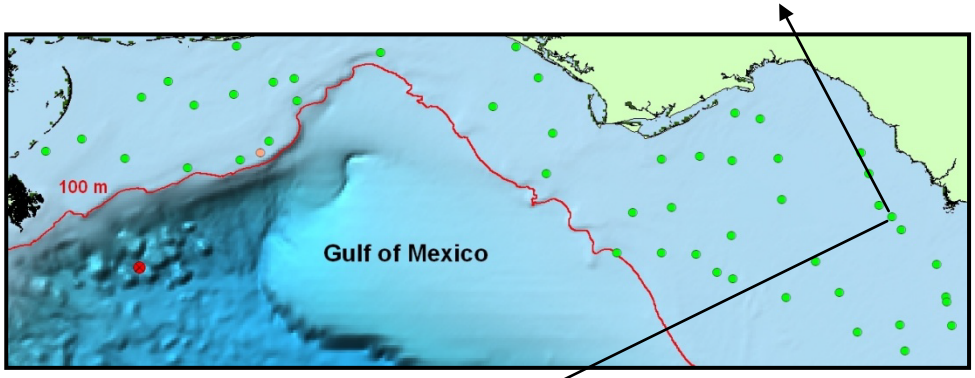


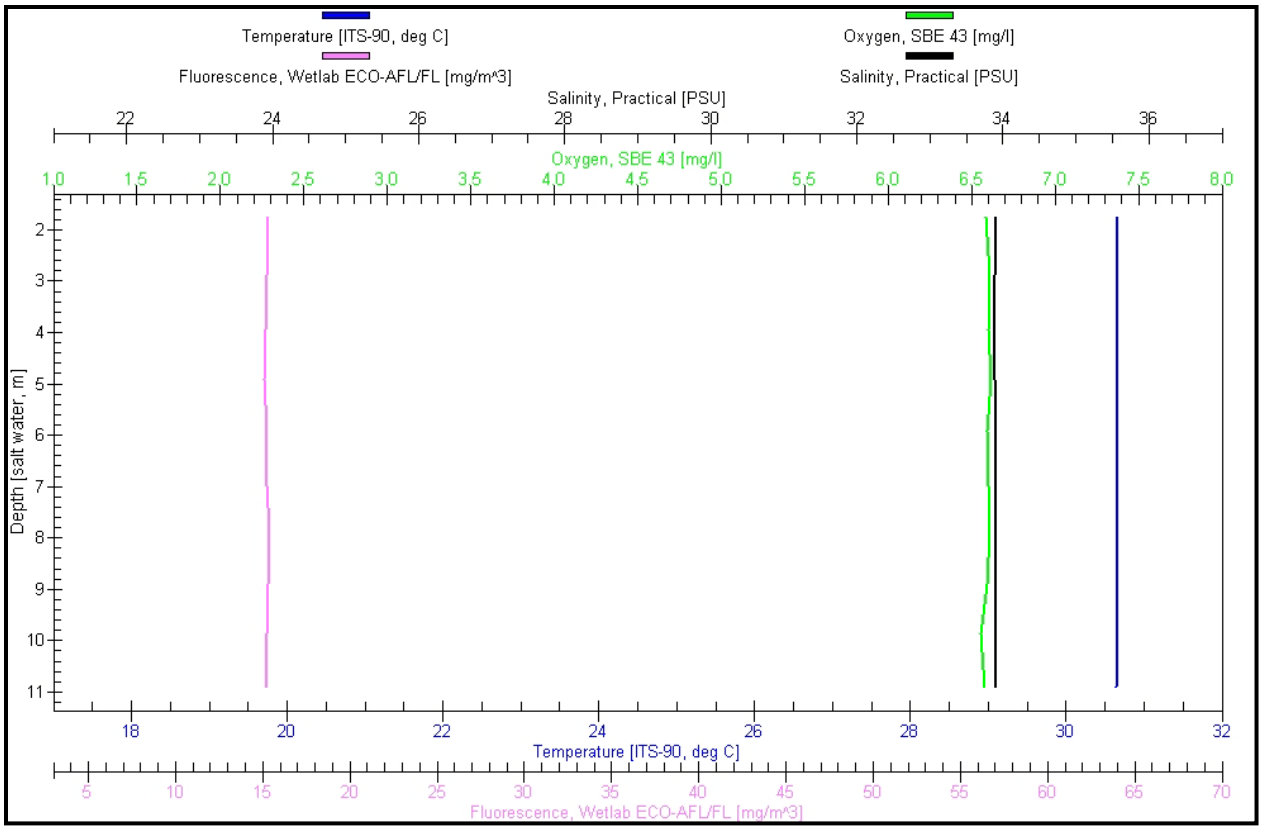

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30 35
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

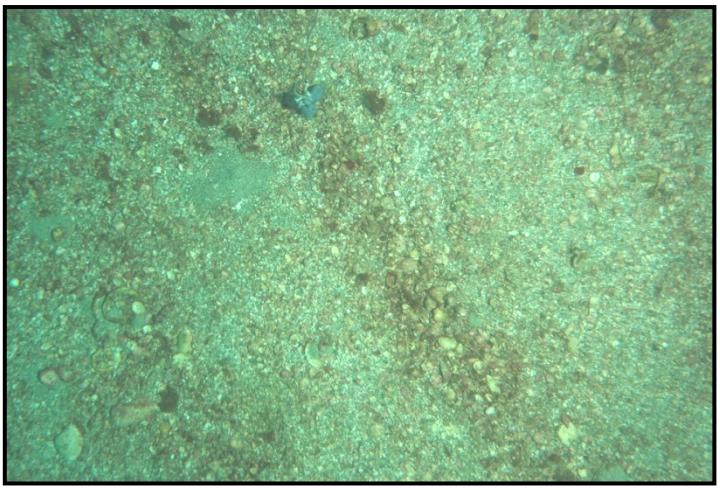
Station 47

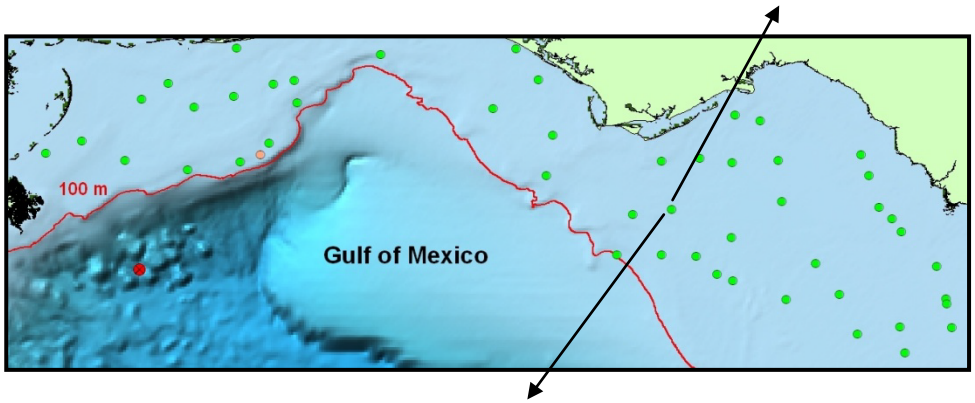


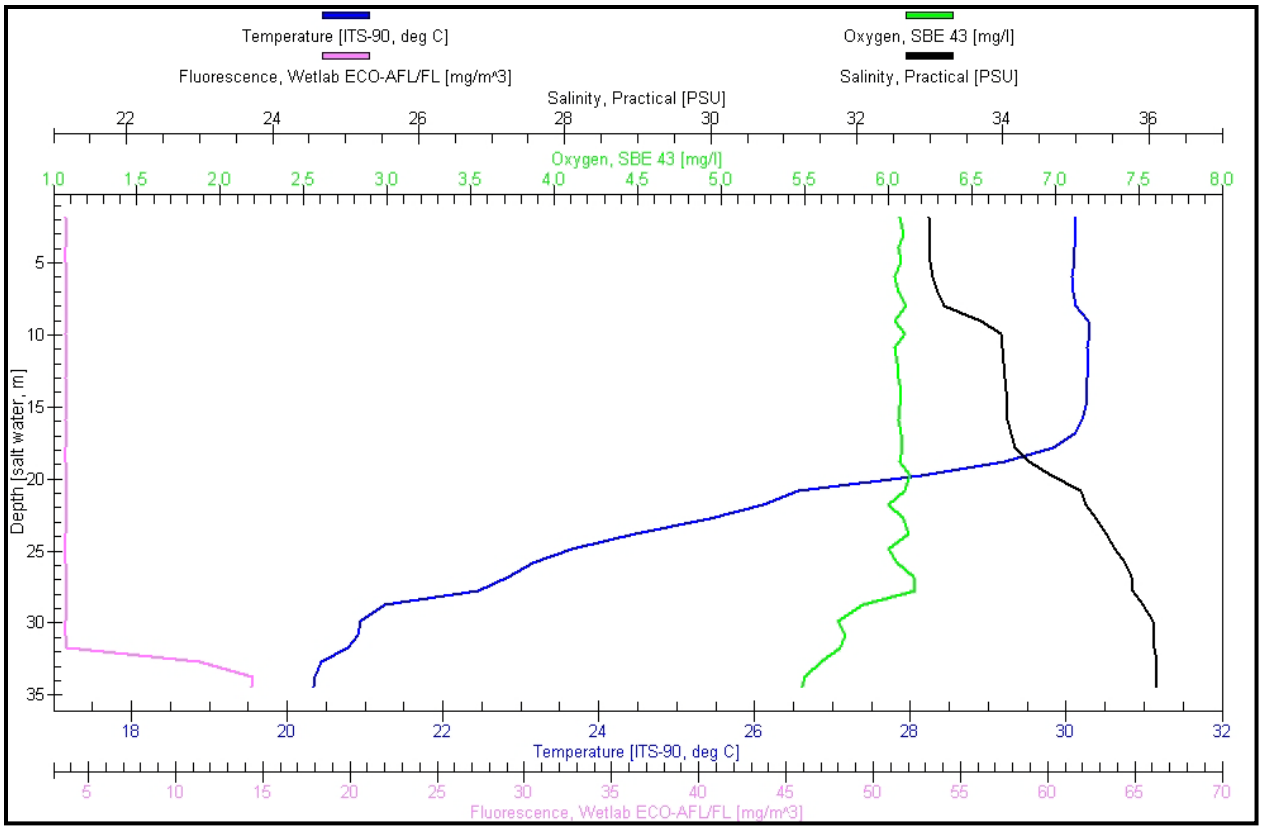

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10 11
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

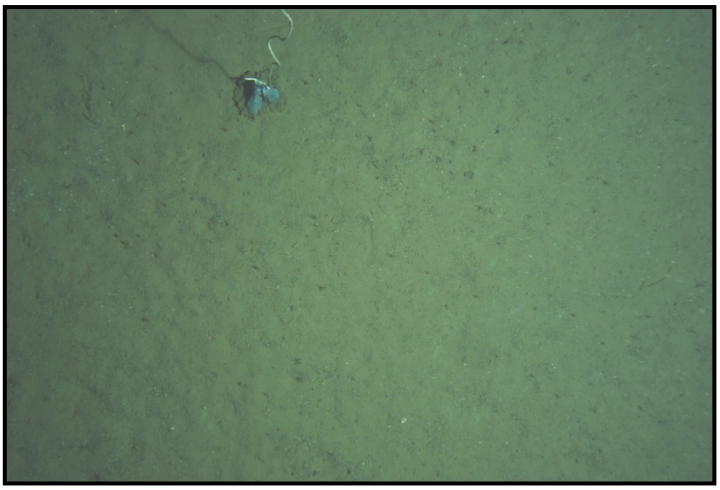
Station 48

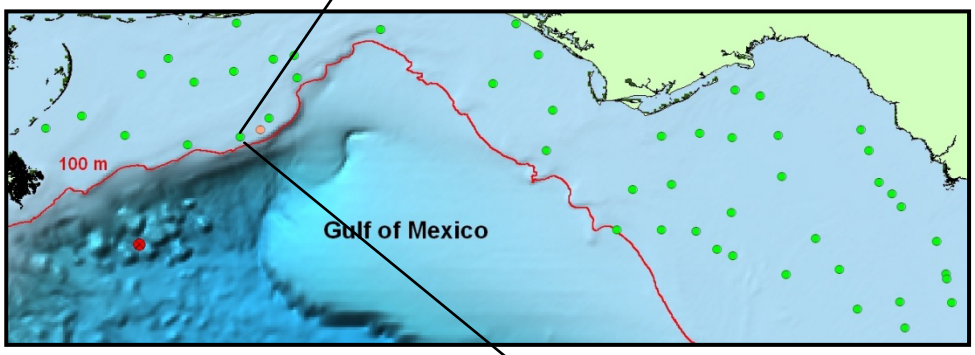


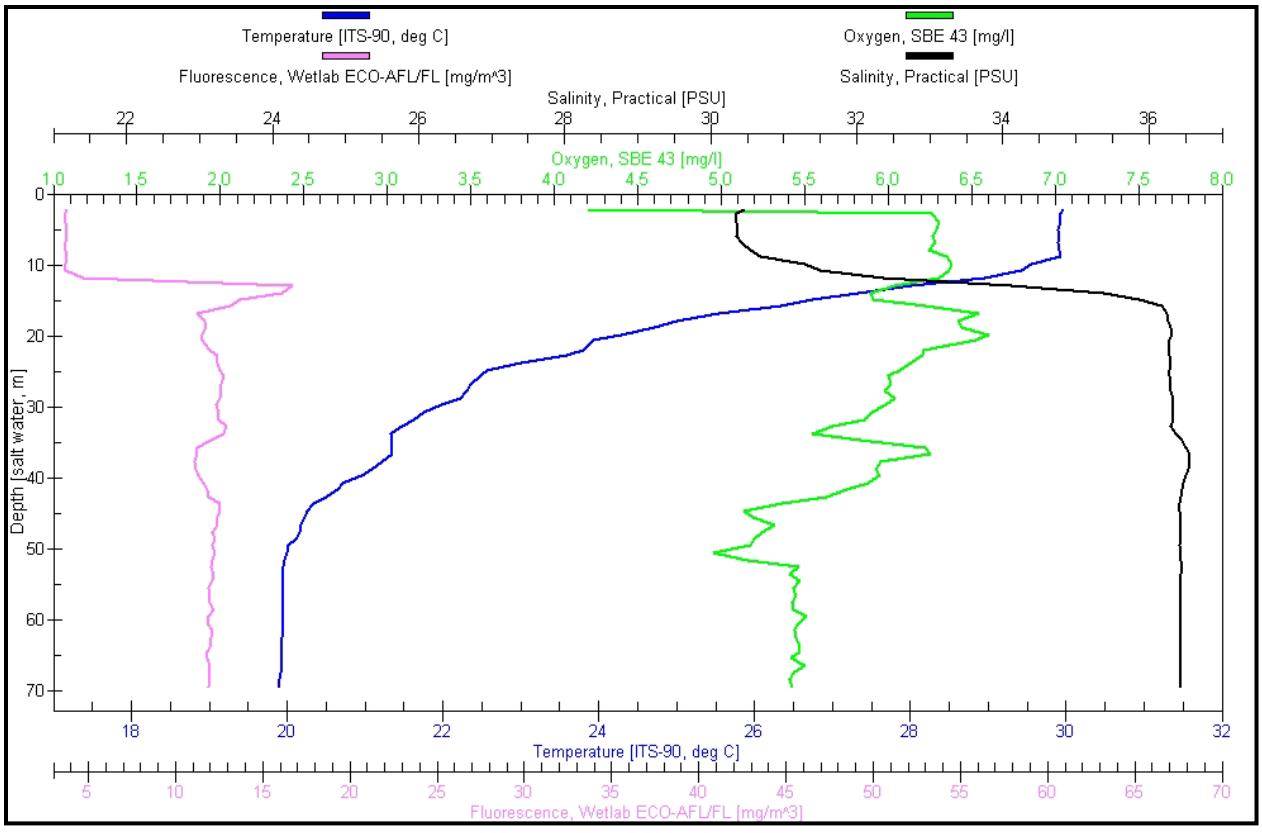

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
5 10 15 20 25 30 35
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

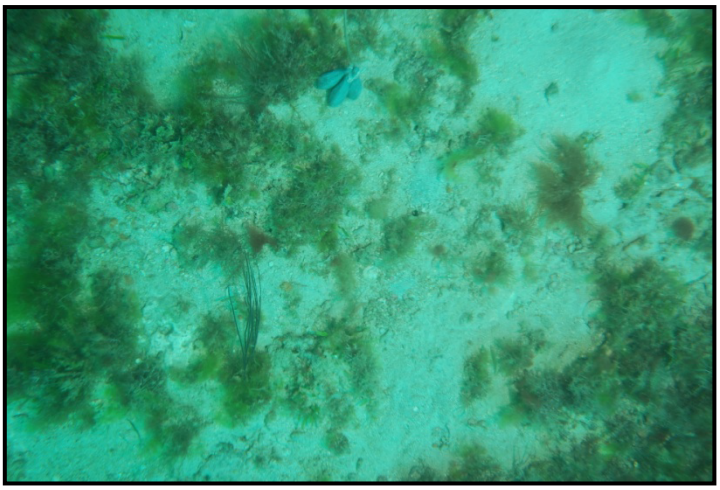
Station 49

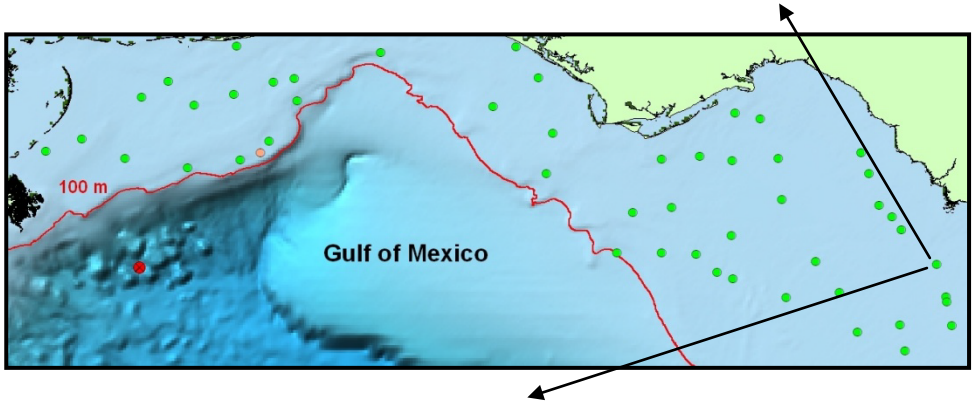


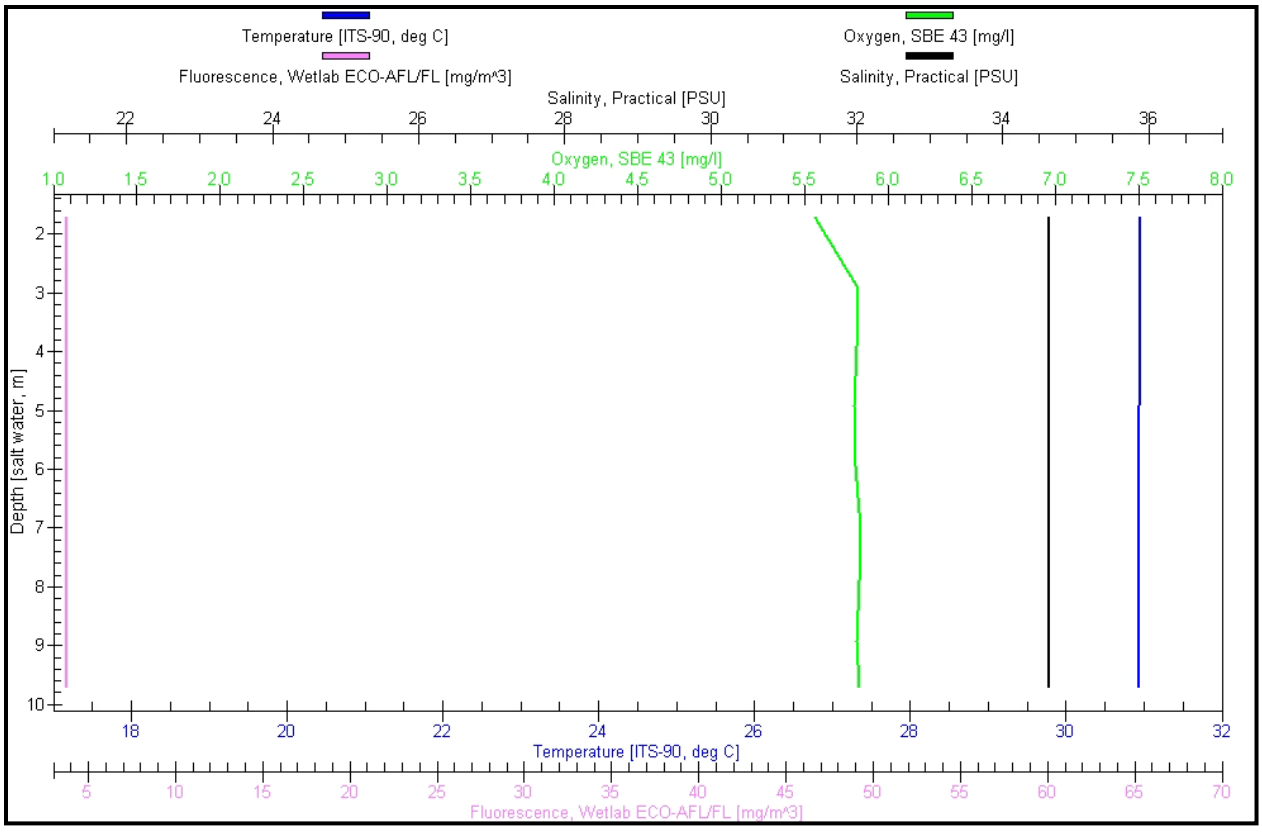

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Oxygen, SBE 43 [mg/l]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 10 20 30 40 50 60 70
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

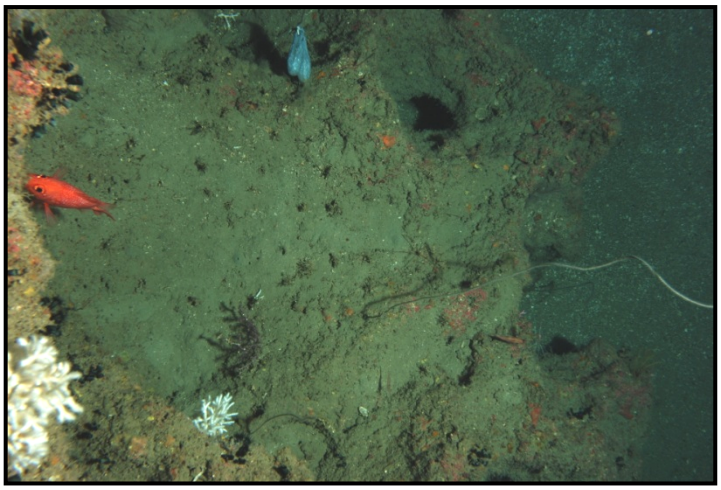
Station 50

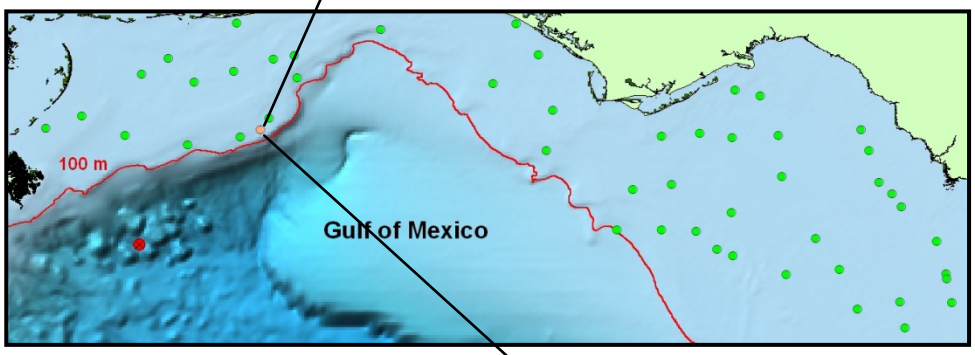


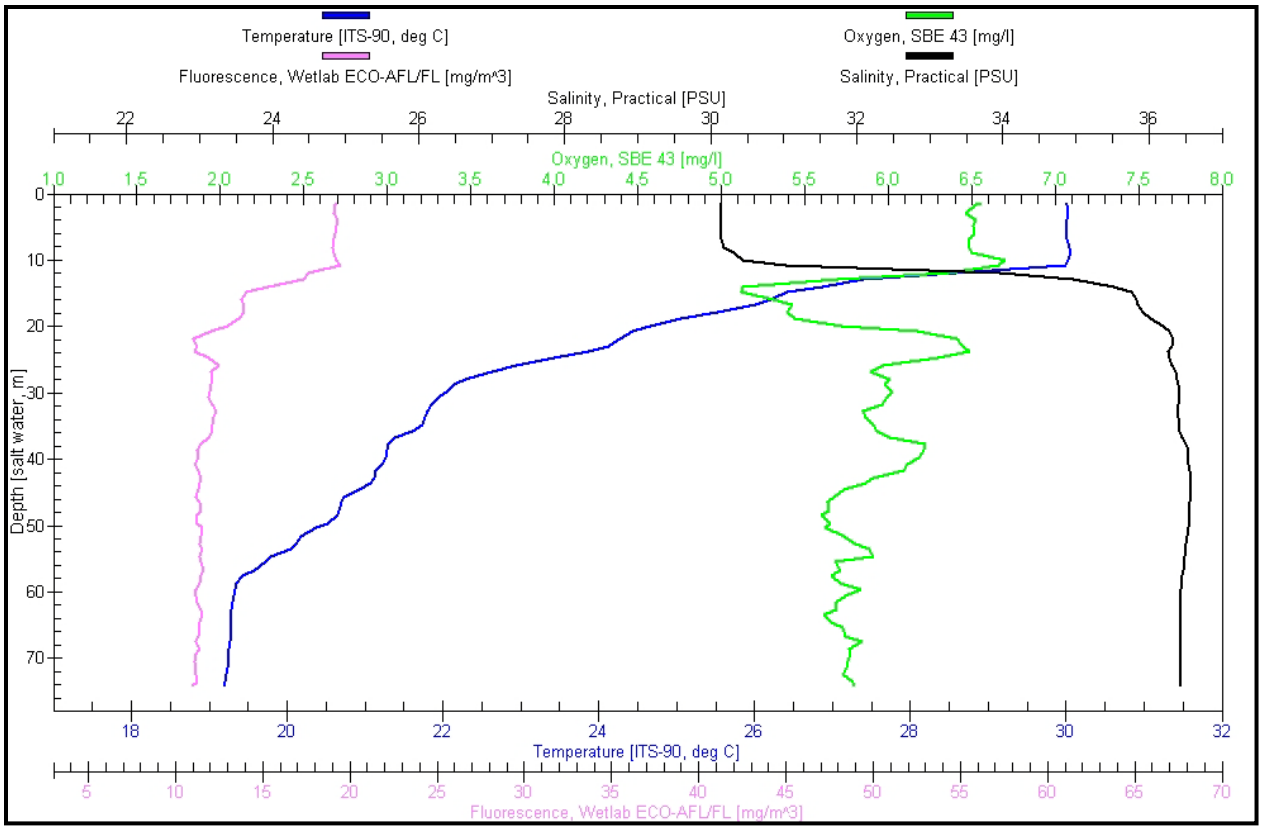

100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
2 3 4 5 6 7 8 9 10
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

Station RT1




100 m
Gulf of Mexico


Temperature [ITS-90, deg C]
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]
Oxygen, SBE 43 [mg/l]
Salinity, Practical [PSU]
Salinity, Practical [PSU]
22 24 26 28 30 32 34 36
Oxygen, SBE 43 [mg/l]
1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0
Depth [salt water, m]
0 10 20 30 40 50 60 70
18 20 22 24 26 28 30 32
Temperature [ITS-90, deg C]
5 10 15 20 25 30 35 40 45 50 55 60 65 70
Fluorescence, Wetlab ECO-AFL/FL [mg/m^3]

Appendix B

NF-10-09-RACOW fish collections by station and species

Appendix B. NF-10-09-RACOW fish collections by station and species.

Station	Species	Common Name	Number Collected	Selected for Analysis
EG10001	*Haemulon aurolineatum*	Tomtate	1	
EG10001	*Haemulon plumieri*	White Grunt	2	1
EG10001	*Orthropristis chrysoptera*	Pigfish	3	
EG10002	*Ophichthus gomesii*	Shrimp Eel	1	
EG10003	*Centropristis striata*	Black Sea Bass	1	1
EG10003	*Diplectrum formosum*	Sand Perch	3	1
EG10003	*Haemulon plumieri*	White Grunt	1	1
EG10003	*Orthropristis chrysoptera*	Pigfish	3	
EG10005	*Diplectrum formosum*	Sand Perch	9	1
EG10005	*Hemipteronotus novacula*	Pearly Razorfish	1	
EG10005	*Paralichthys lethostigma*	Southern Flounder	2	1
EG10007	*Diplectrum formosum*	Sand Perch	1	1
EG10009	*Calamus proridens*	Littlehead Porgy	3	1
EG10009	*Diplectrum formosum*	Sand Perch	2	1
EG10009	*Haemulon plumieri*	White Grunt	7	1
EG10010	*Arius felis*	Hardhead Catfish	6	
EG10012	*Centropristis philadelphica*	Rock Sea Bass	1	1
EG10013	*Diplectrum formosum*	Sand Perch	1	1
EG10014	*Diplectrum formosum*	Sand Perch	3	1
EG10015	*Diplectrum formosum*	Sand Perch	1	1
EG10015	*Haemulon aurolineatum*	Tomtate	1	
EG10015	*Rhombophites aurorubens*	Vermilian Snapper	2	1
EG10016	*Caulolatilus chrysops*	Goldface Tilefish	1	
EG10016	*Pristipomoides aquilonarias*	Wenchman	1	
EG10018	*Calamus proridens*	Littlehead Porgy	4	1
EG10018	*Diplectrum formosum*	Sand Perch	1	1
EG10018	*Paralichthys lethostigma*	Southern Flounder	1	1
EG10019	*Ophichthus ocellatus*	Palespotted Eel	1	
EG10020	*Diplectrum formosum*	Sand Perch	3	1
EG10022	*Syacium papillosum*	Dusky Flounder	1	1
EG10023	*Orthropristis chrysoptera*	Pigfish	1	
EG10025	*Gymnothorax saxicola*	Ocellated Morey	1	
EG10025	*Paraconger caudilimbatus*	Margintail Conger	1	
EG10026	*Calamus proridens*	Littlehead Porgy	3	1
EG10026	*Centropristis striata*	Black Sea Bass	1	1
EG10026	*Diplectrum formosum*	Sand Perch	3	1
EG10026	*Haemulon aurolineatum*	Tomtate	3	

Station	Species	Common Name	Number Collected	Selected for Analysis
EG10027	*Hemipteronotus splendens*	Pearly Razorfish	3	
EG10027	*Paralichthys lethostigma*	Southern Flounder	2	1
EG10028	*Calamus proridens*	Littlehead Porgy	1	1
EG10028	*Haemulon aurolineatum*	Tomtate	3	
EG10028	*Haemulon plumieri*	White Grunt	1	1
EG10028	*Lutjanus cyanopterus*	Cubera Snapper	1	
EG10028	*Rhombophites aurorubens*	Vermilian Snapper	2	1
EG10029	*Arius felis*	Hardhead Catfish	2	
EG10029	*Diplectrum formosum*	Sand Perch	6	1
EG10030	*Centropristis philadelphica*	Rock Sea Bass	1	1
EG10030	*Micropogonias undulatus*	Croaker	1	1
EG10032	*Micropogonias undulatus*	Croaker	2	1
EG10033	*Pagrus pagrus*	Red Porgy	1	1
EG10034	*Diplectrum formosum*	Sand Perch	3	1
EG10034	*Orthropristis chrysoptera*	Pigfish	1	
EG10036	*Paralichthys lethostigma*	Southern Flounder	3	1
EG10037	*Diplectrum formosum*	Sand Perch	1	1
EG10038	*Orthropristis chrysoptera*	Pigfish	1	
EG10039	*Gymnothorax saxicola*	Ocellated Morey	1	
EG10041	*Micropogonias undulatus*	Croaker	4	1
EG10042	*Haemulon aurolineatum*	Tomtate	3	
EG10042	*Pagrus pagrus*	Red Porgy	8	1
EG10042	*Paralichthys lethostigma*	Southern Flounder	1	1
EG10043	*Diplectrum formosum*	Sand Perch	2	1
EG10043	*Pagrus pagrus*	Red Porgy	3	1
EG10043	*Paralichthys lethostigma*	Southern Flounder	1	1
EG10043	*Rhombophites aurorubens*	Vermilian Snapper	1	1
EG10044	*Diplectrum formosum*	Sand Perch	2	1
EG10045	*Syacium papillosum*	Dusky Flounder	1	1
EG10046	*Diplectrum formosum*	Sand Perch	3	1
EG10050	*Calamus proridens*	Littlehead Porgy	2	1
EG10050	*Diplectrum formosum*	Sand Perch	1	1
EG10050	*Haemulon plumieri*	White Grunt	3	1
		Total	152	48

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