August 25th | 2010

Ryan Chouest Cruise 12 Cumulative Report

Period covered: 2158 08/13/2010 -0220 08/23/2010

928.213 - Nautical miles covered

Vessel science party:

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Cumulative Cruise notes:

The *Ryan Chouest* cruised about 928 nautical miles, from 08/13/10 to 08/23/10, for the completion of Cruise 12. The complete route is shown in Figure 1. The main objective of this cruise is to monitor the surface and shallow water quality along the coast of the Gulf of Mexico.

08/13
The first leg of this cruise began at Venice. It followed a coastal transect west, traveled around the Mississippi delta, then headed north to begin the trace along the coastlines of Alabama and western Florida.

08/14
The ship continued on the planned route eastward along the coastal transect towards and across the western coast of Florida (Figure 1, Track through 8/15).

08/15
The *Ryan Chouest* remained on the planned cruise 12 route, following along the coastal transect towards and across western coast of Alabama and Florida. Forecasts indicated the return of Tropical Depression 5 and strengthening seas. In response to the forecasts, the underway pump was removed from the water and we sailed back to Theodore.

08/18
The *Ryan Chouest* vessel departed from Theodore and returned back to the previous point we left off and resumed the underwater sensor data collection. We continued along the coastal transect towards and across the western coast of Florida rejoining the previous Cruise 2 track along the gulf coastlines of Alabama and west Florida.

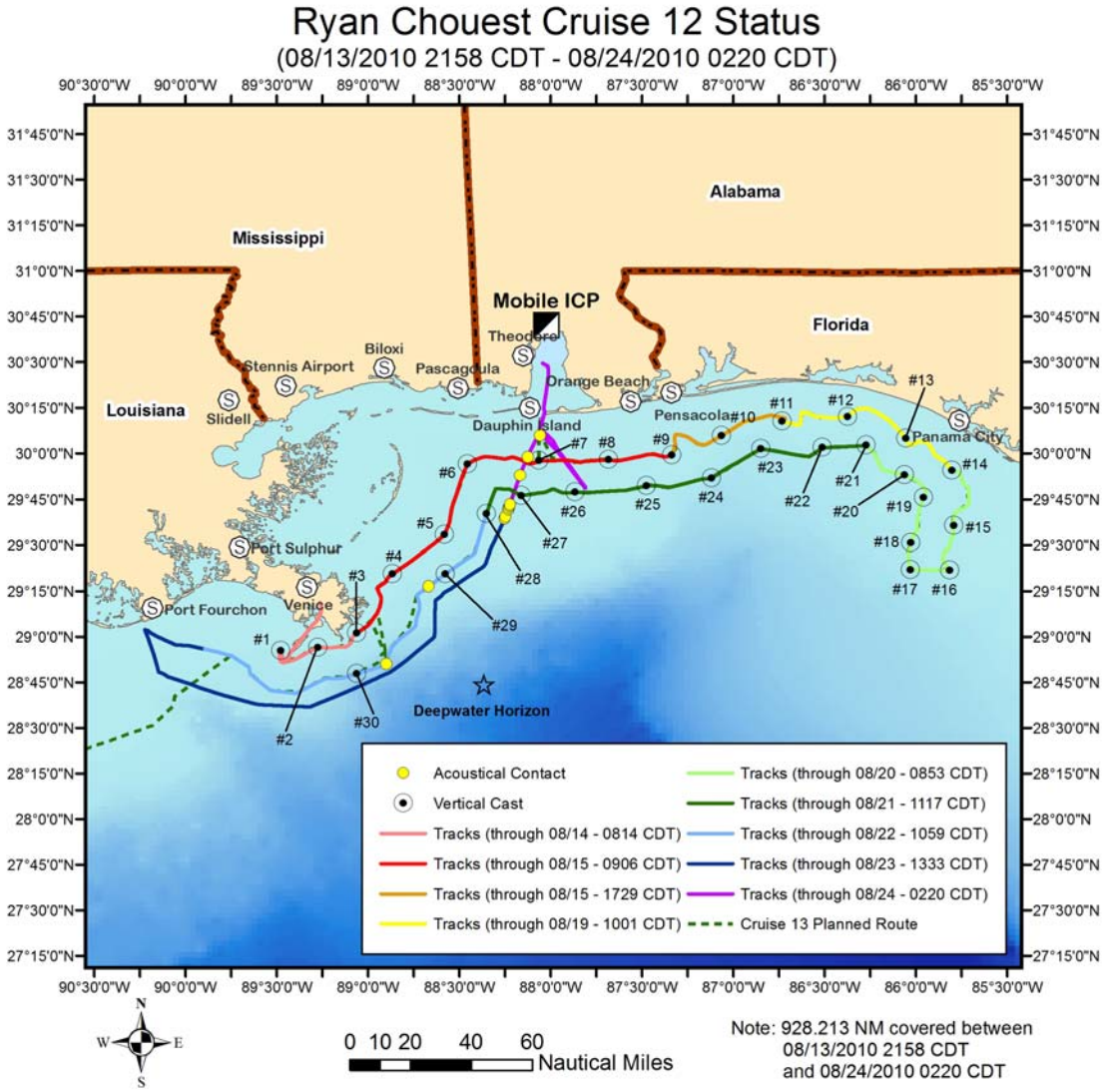

Figure 1: Planned and actual route course of the Ryan Chouest cruise 12 plotted between 08/13 – 08/24. The bull's-eye represents vertical cast locations. The yellow filled dots represent recorded acoustical contacts.

08/19

The Ryan Chouest sailed on the planned cruise 12 route. We travelled along the coastal transect towards and across the western coast of Florida rejoining the previous Cruise 2 track along the gulf coastlines of Alabama and west Florida.

08/20

The ship, Ryan Chouest, headed west towards the Louisiana coastline deploying vertical cast every 20 nm with the echo sounder survey and underway fluorometry pump system.

08/21

The *Ryan Chouest* continues to follow the planned cruise 12 route heading west towards the Louisiana coastline. The vertical cast system is waiting to be rewired and re taped so no vertical casts were undertaken during this period.

08/22
The *Ryan Chouest* completed the planned cruise 12 route and headed towards Theodore.
The ship docked in Theodore on the morning of 08/23/10 and the vessel was resupplied and a crew change took place.

The hydrocarbon sensor array and echo sounder were operated smoothly throughout the period. In this report we present a detailed summary of results of the cruise 12.

Science results and preliminary interpretation:

Fluorometry results

Fluorometry measurements indicate very low to lower-medium inferred hydrocarbon concentrations for the Chelsea, Trios sensors (Figures 2-3). In most places baseline levels were measured by the Chelsea and Trios fluorometers. The Trios sensor, however, detected slightly higher than baseline levels in Mobile Bay and across the Mississippi passes. In contrast, the Contros sensor showed medium levels of inferred hydrocarbons throughout the cruise track. The inconsistency between sensors and the low signal to noise ratio problem continues to be a problem for the Contros sensor, resulting in the suspended usage of the Contros sensor pending instrument change out.

Whilst the fluorometry results were low there are small trends within the data (not shown).

Surface Observations

Surface observations were generally rare. Exceptions in surface observations include the identification of three distinct areas of sargassum located in the Mississippi birdfoot delta and along the coast of Alabama. These were observed from 08/15-08/16. On the evening of August 19th, relatively dense, closely spaced convergence lines with an apparent surface sheen were noticed. We turned back to examine the surface conditions and observed abundant white particles which resembled styrophoam beads. We collected surface samples for GCMS and also retrieved a bucket of water for closer inspection. Several small white particles were collected and then examined under a binocular dissecting microscope. These flat, tear drop shaped particles were 3-4 mm in length, transparent to slightly opaque, and had a honeycomb surface texture with an attached stem, perhaps composed of soft cartilagenous material. We hypothesize that these particles are planktonic and may have been shed from dispersed egg cases, although further examination is required onshore. After closer inspection of the surface water, we observed abundant schools of small fish feeding around the white particles. The surface observation in general appears to be biological in origin with no obvious hydrocarbon sheen observed, but we await GCMS analysis of the water samples for confirmation. Unfortunately, we were unable to photograph the surface clearly.

EK-60 Echosounder results

During the cruise there were a total of 11 echo sounder contacts identified (Figures 34-41).
The first two acoustic contacts were found during the reporting period of 8/21 to 8/22. The first echo sounder contact was in shallow water and is likely of biological origin (Figure 34). The second contact is a natural methane seep in deeper water in front of the Mississippi River delta. The same seep was

observed during cruise 11 (Figure 35; see also daily report for August 5th, Contact_08042010_220048). Besides already being in the vicinity of the seep, our reasons for returning to this location were to determine if it could easily be located a second time on a single pass, and also to determine if it was still active 17 days later. Our successful attempt suggests that not only are some of these features easily reaquired, but also that they are active over relatively longer periods of time. Therefore, some of the seeps found by the *Ryan Chouest* may be suitable candidates for future missions and more detailed study.
The remaining acoustic contacts identified were found during the trip back to Theodore. Most were described as bottom to mid surface contacts, with the precise origin of these contacts being unknown.

Vertical casts

30 fluorometry/CTD casts were taken during this report period (Figures 1, Figures 4-33). Overall the sensor readings are in the lower range of the average sensor outputs indicating low levels of Hydrocarbon outputs. The Chelsea and the Trios show slightly increased responses to waters close to the sea surface. The AW2 and the temperature probe both show more apparent increases than the fluorometers. The readings from the fluorometer, the AW2 and the temperature probe follow the same trend along the water column with sensor readings reaching maximum at surface. The dissolved oxygen, on the other hand, displays an opposite trend of lower reading to the surface water than the bottom water. The conductivities are relatively constant along the water columns.
The missing methane concentration values are due to the invalid results returned based on the calculations using the formula provided by the manufacture (Figures 15-33). The invalid values might be because that the actual water temperature falls outside of the range of the calibration temperature (0-20 degree centigrade), hence a new calibration formula (curve) is required in order to predict the actual methane concentration.
The concentration of naphthalene plus is obtained by adding up the concentrations of all detectable poly aromatic hydrocarbons from GCMS in the collected water samples. The average naphthalene plus concentrations lie in the range of 0.15-0.30 ppb. (The data has not been corrected by deducting the background noise from the vertical cast hose.)
There are generally good correlations between the fluorometer readings and the concentration of naphthalene plus as evidenced by the same trend of the plots. However exceptions exist for Cast #4, #6, #10, #17, 18, #19, #30 where the plots show opposite trend. One possible explanation for this would be the interference from surface chlorophylls.

Science Operations:

Fluorometer measurements were logged and observations of sea-surface conditions were made throughout the cruise. Vertical fluorometry and CTD casts sample the upper 30 m and are taken approximately every 20 nautical miles. We continue to perform liquid-liquid extractions on seawater samples and analyze the extracted material by GCMS. The EK-60 echo sounder is continuously collecting data to evaluate the seabed and water column for methane seeps.

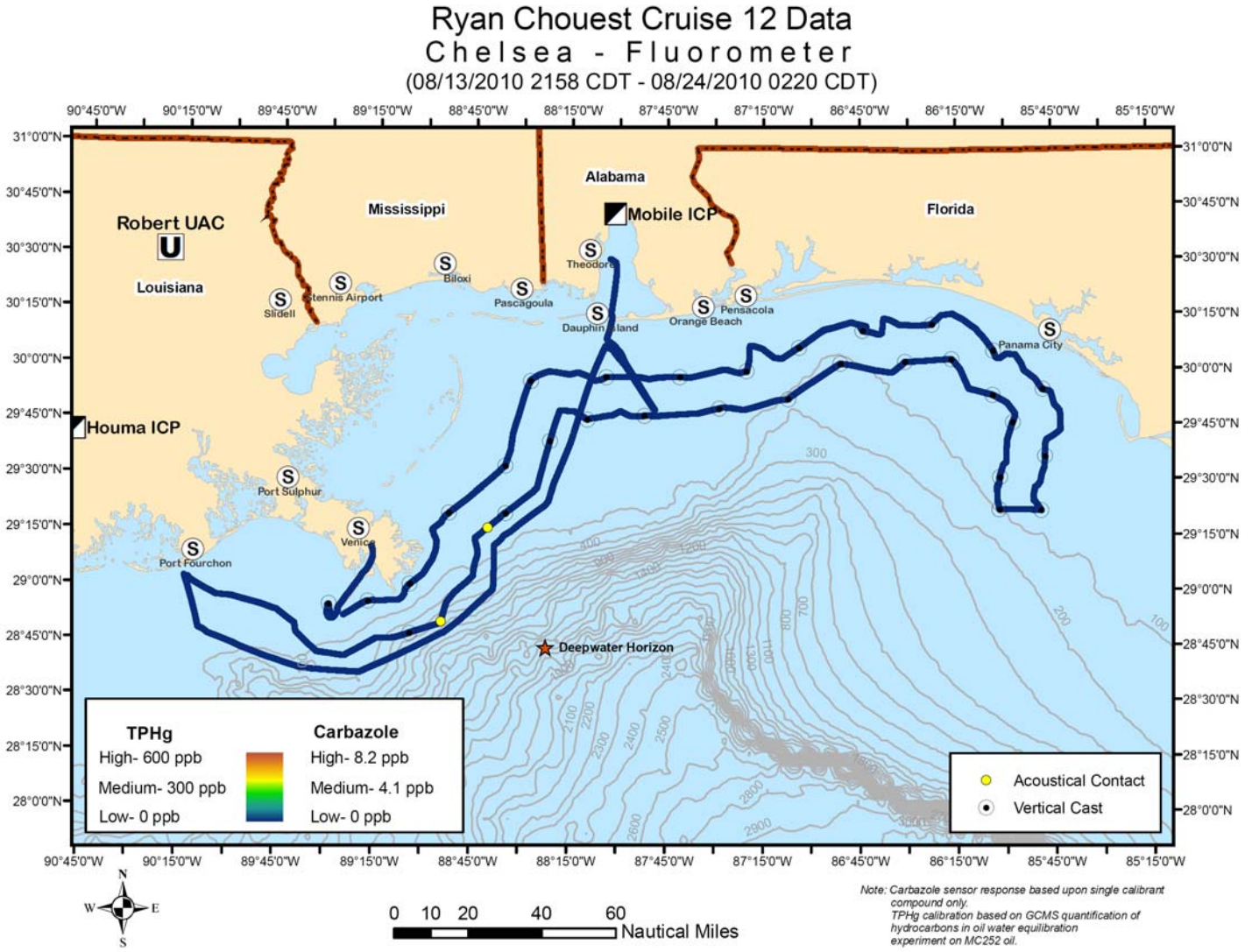

Figure 2. Chelsea fluorometer results plotted with location on cruise track 12. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 12 Data

Trios - Fluorometer

(08/13/2010 2158 CDT - 08/24/2010 0220 CDT)

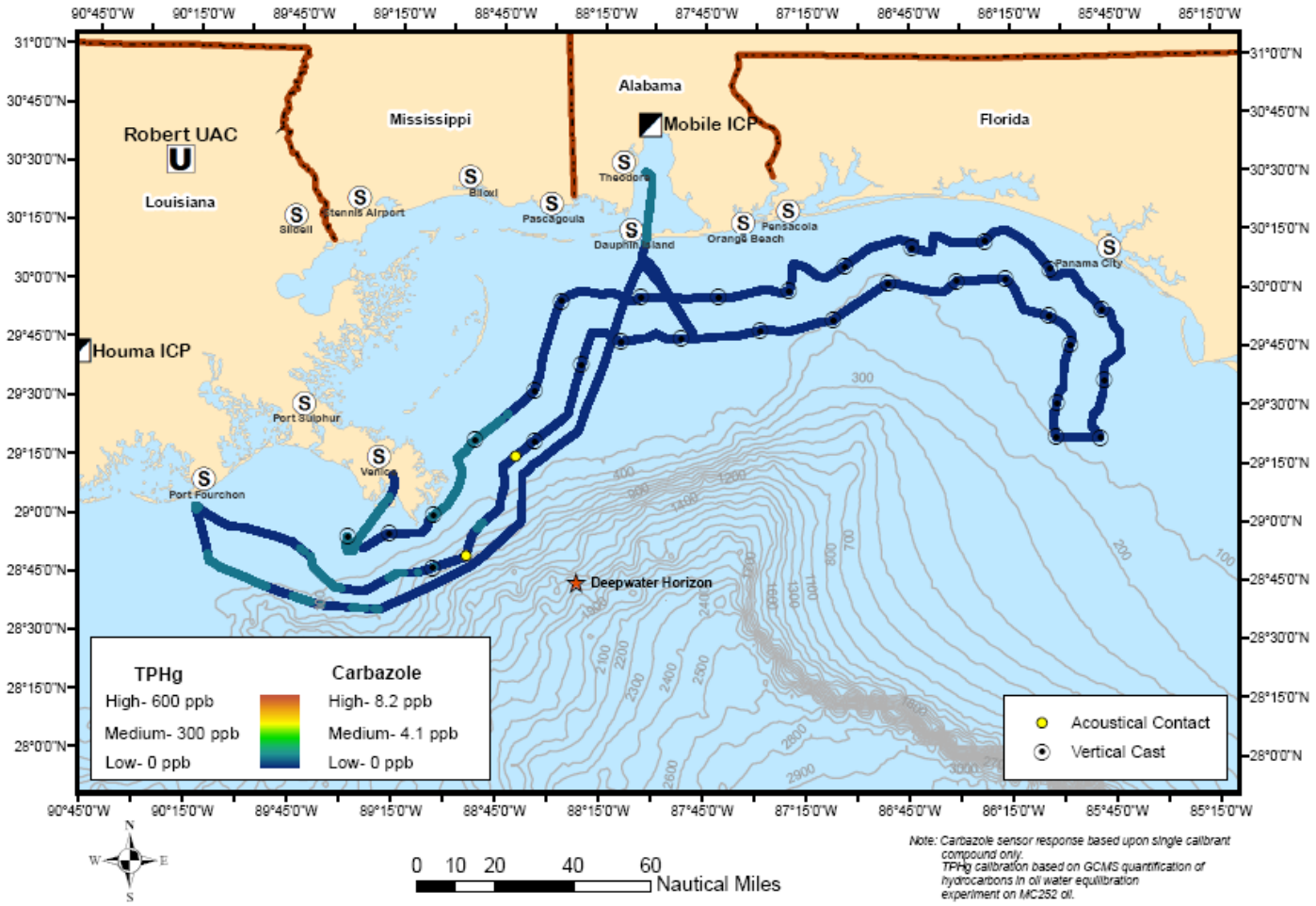

Figure 3. Trios fluorometer results plotted with location on cruise track 12. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

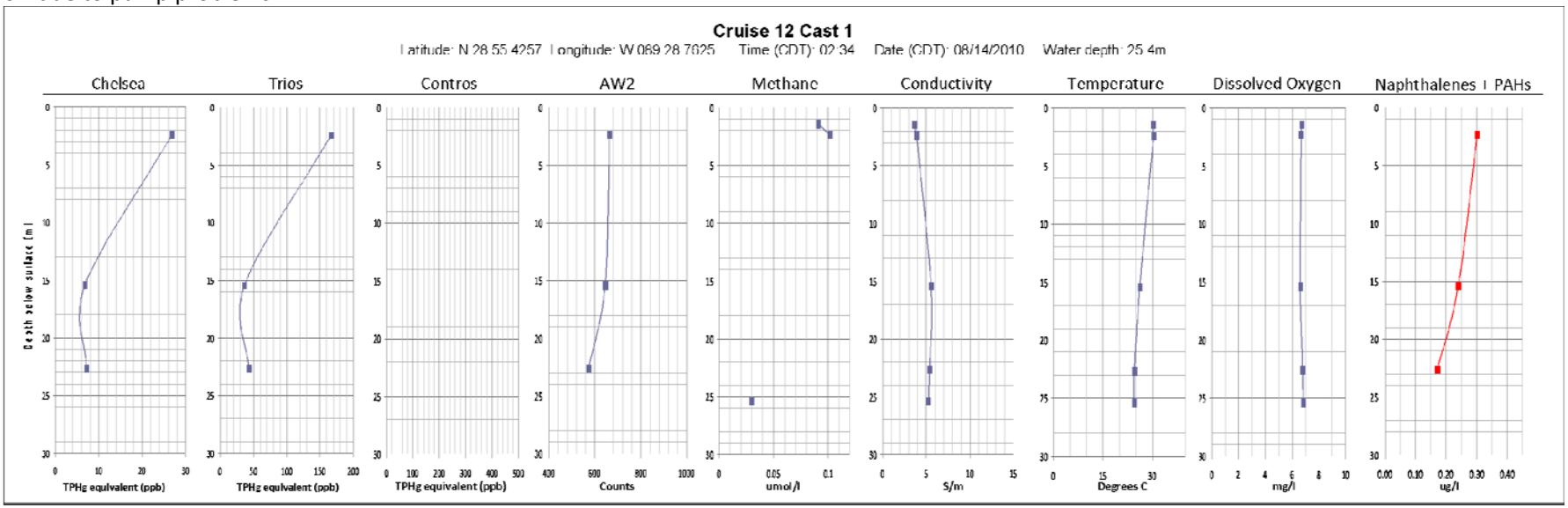

Figure 4. The results obtained for Cruise 12 vertical cast 1 down to23 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

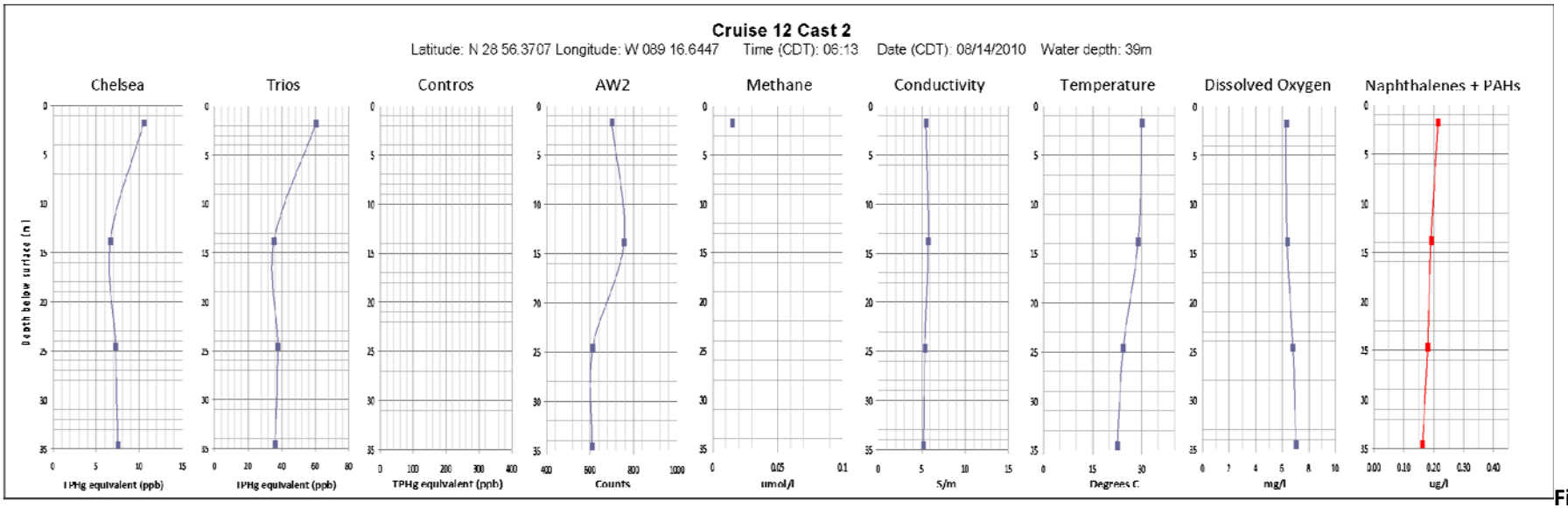

Figure 5. Fluorometer results obtained for the first leg of Cruise 12, 8/14/10, vertical cast 2 down to 35 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface. Note questionable data obtained from the Contros sensor.

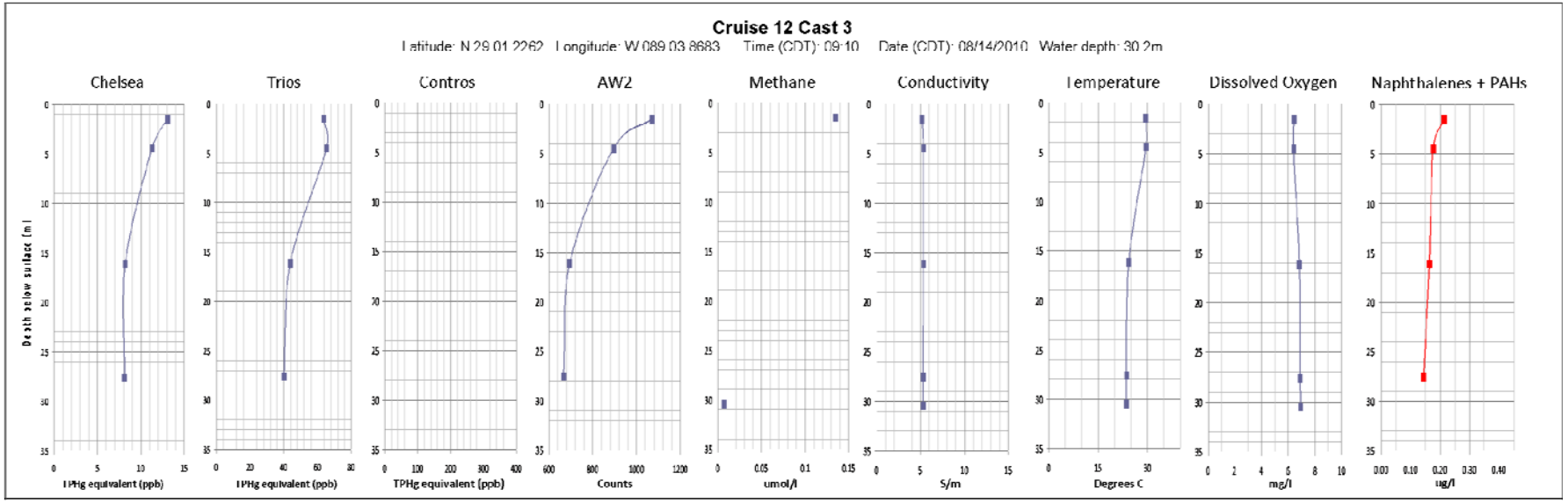

Figure6. The results obtained for Cruise 12 vertical cast 3 (#3-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

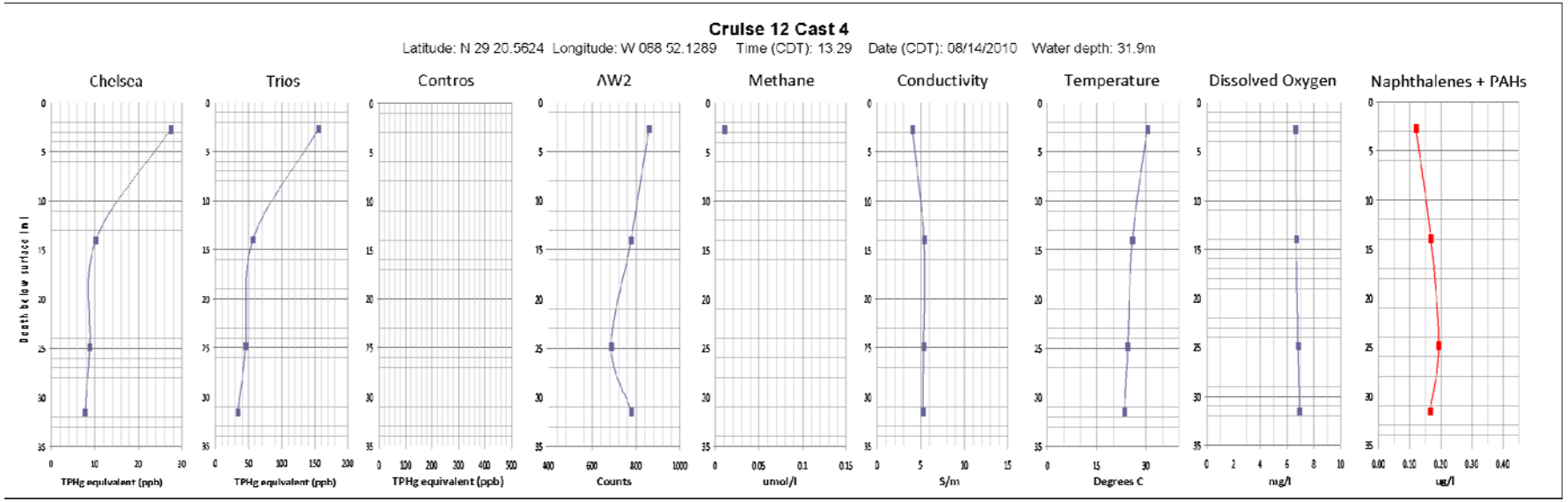

Figure 7. The results obtained for Cruise 12 vertical cast 3 (#4-C12) down to 32 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

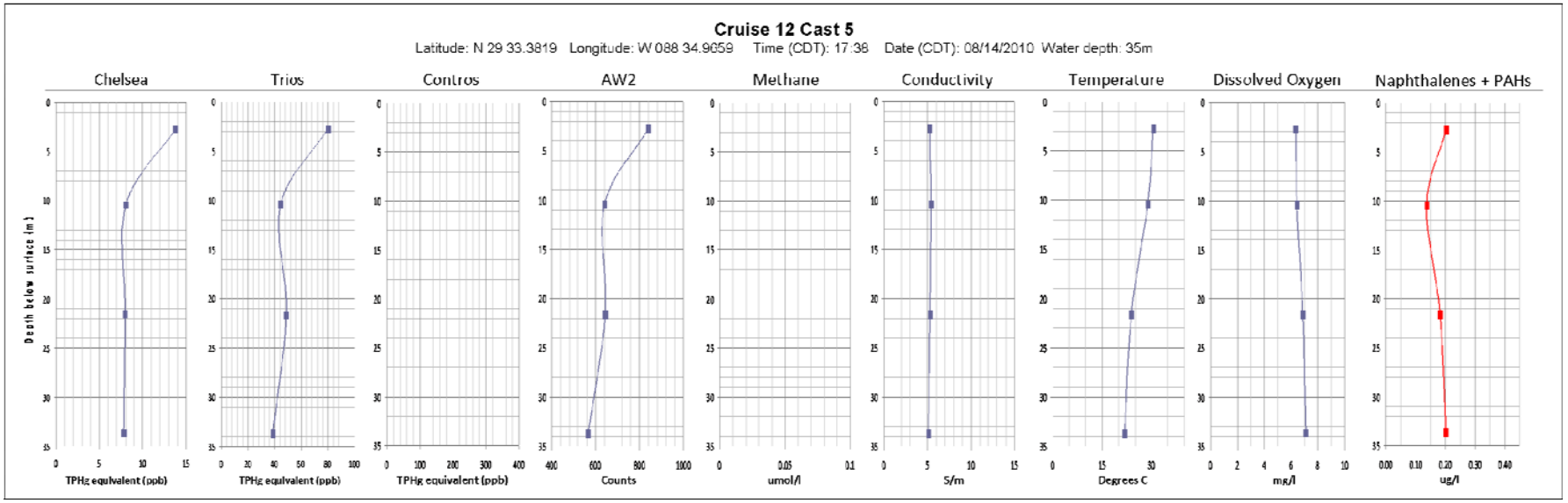

Figure 8. The results obtained for Cruise 12 vertical cast 3 (#5-C12) down to 34 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

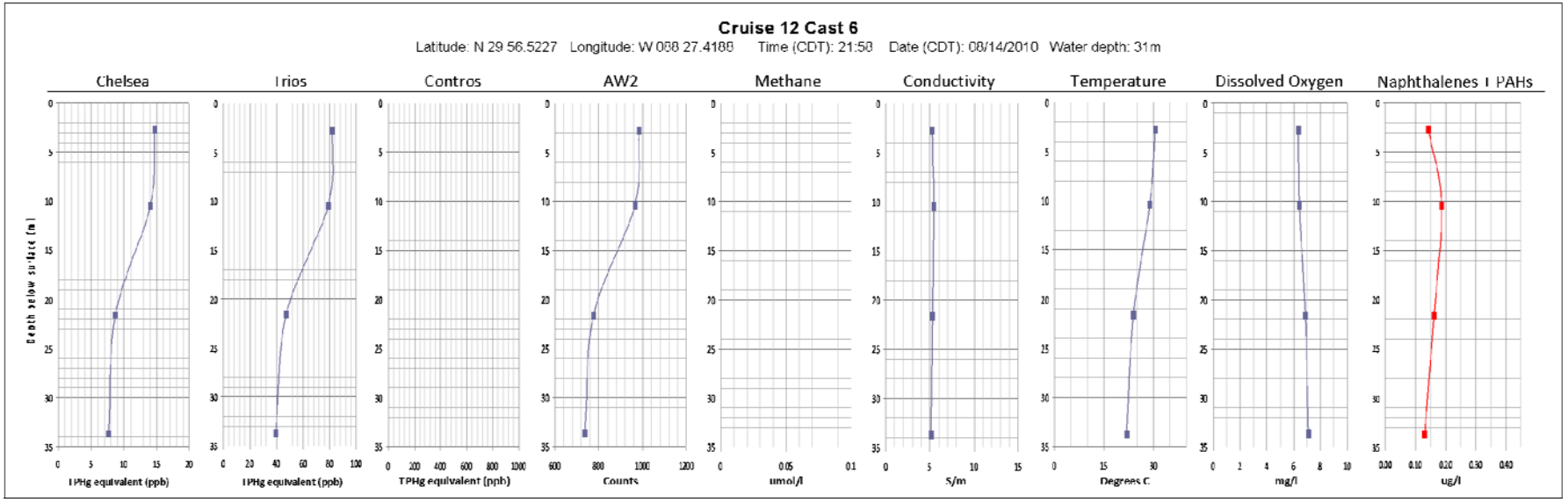

Figure 9. The results obtained for Cruise 12 vertical cast 3 (#6-C12) down to 34 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

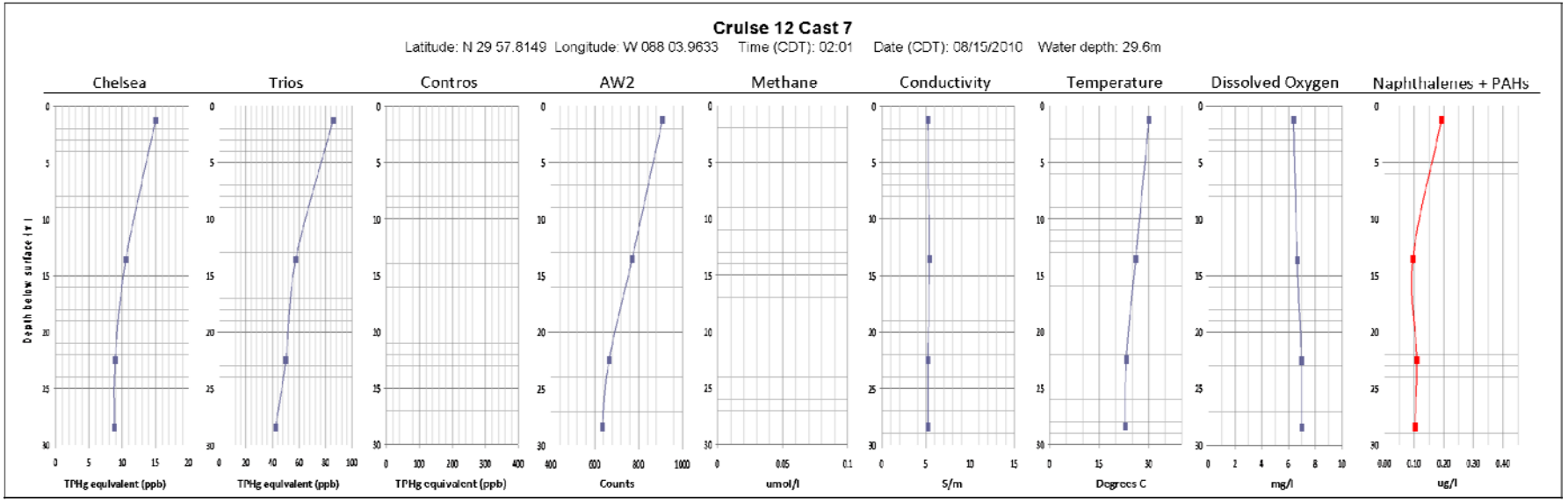

Figure 10. The results obtained for Cruise 12 vertical cast 3 (#7-C12) down to 29 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

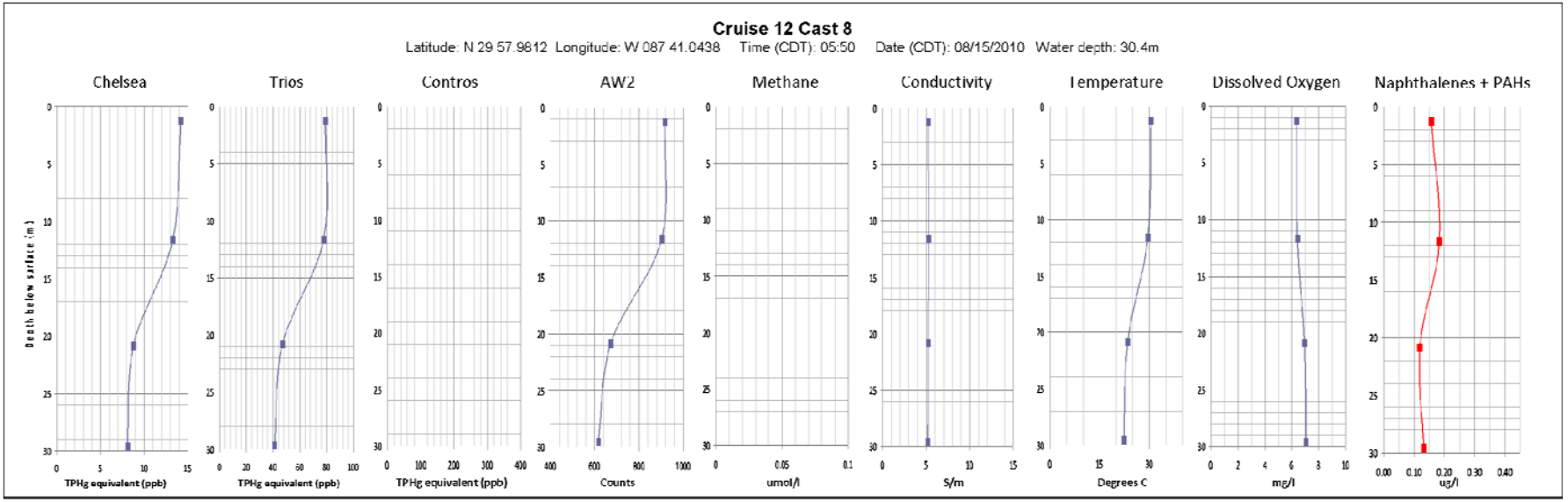

Figure 11. The results obtained for Cruise 12 vertical cast 3 (#8-C12) down to 30 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

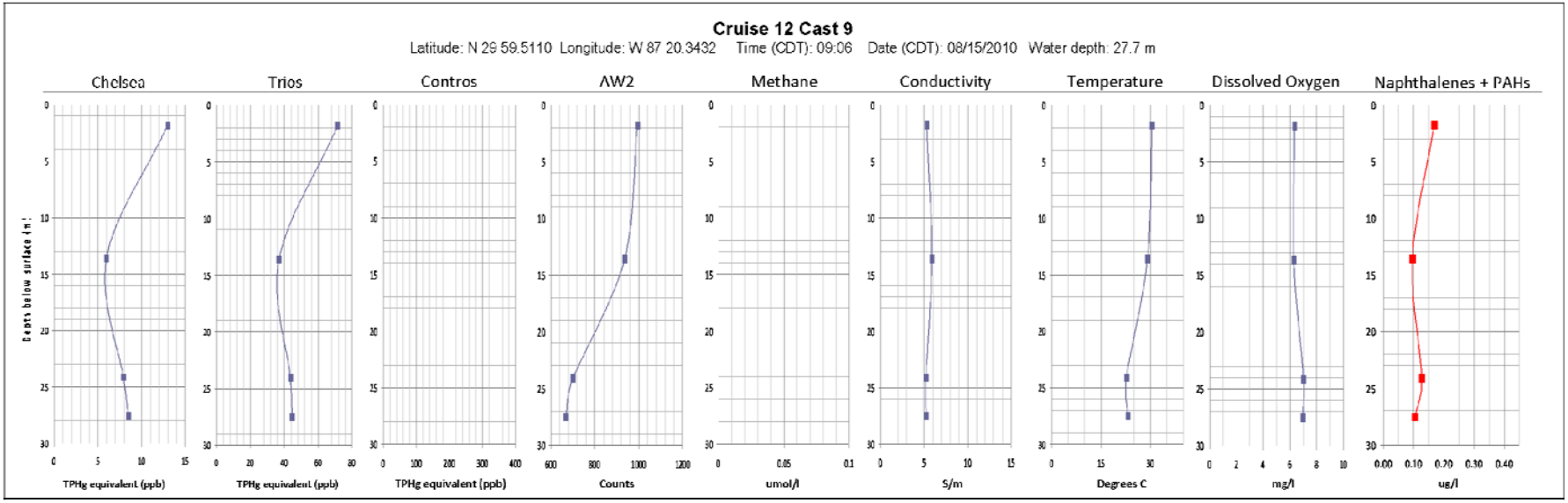

Figure 12. The results obtained for Cruise 12 vertical cast 9 (#9-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

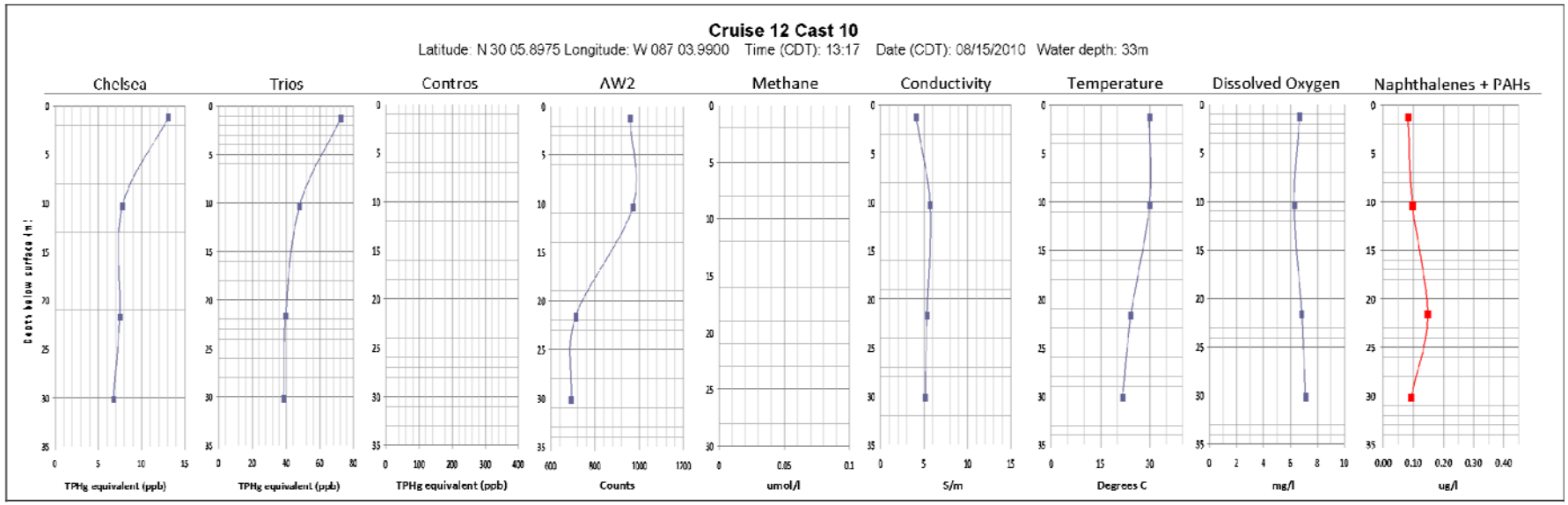

Figure 13. The results obtained for Cruise 12 vertical cast 10 (#10-C12) down to 30 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

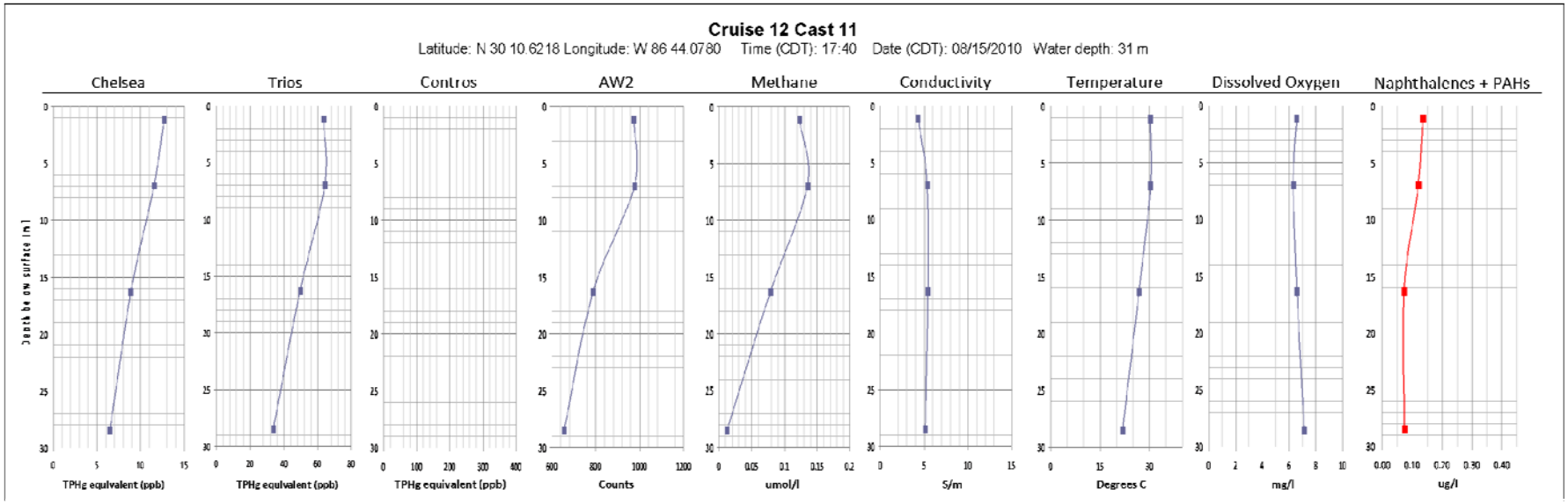

Figure 14. The results obtained for Cruise 12 vertical cast 11 (#11-C12) down to 29 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

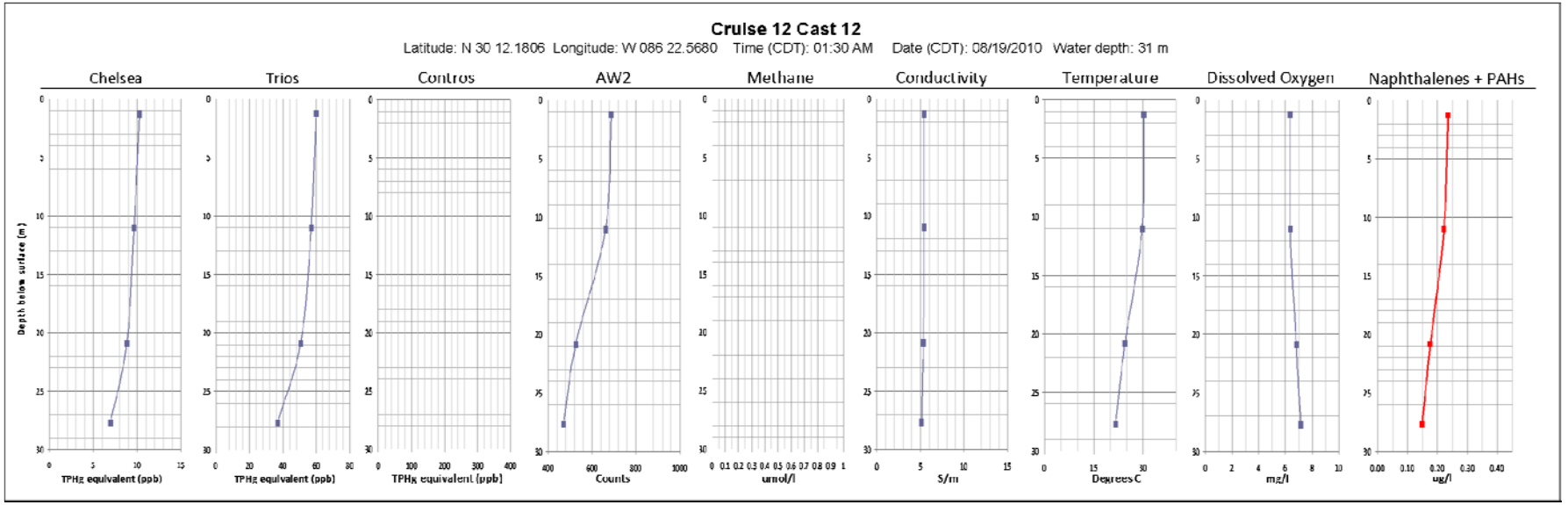

Figure 15. The results obtained for Cruise 12 vertical cast 12 (#12-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

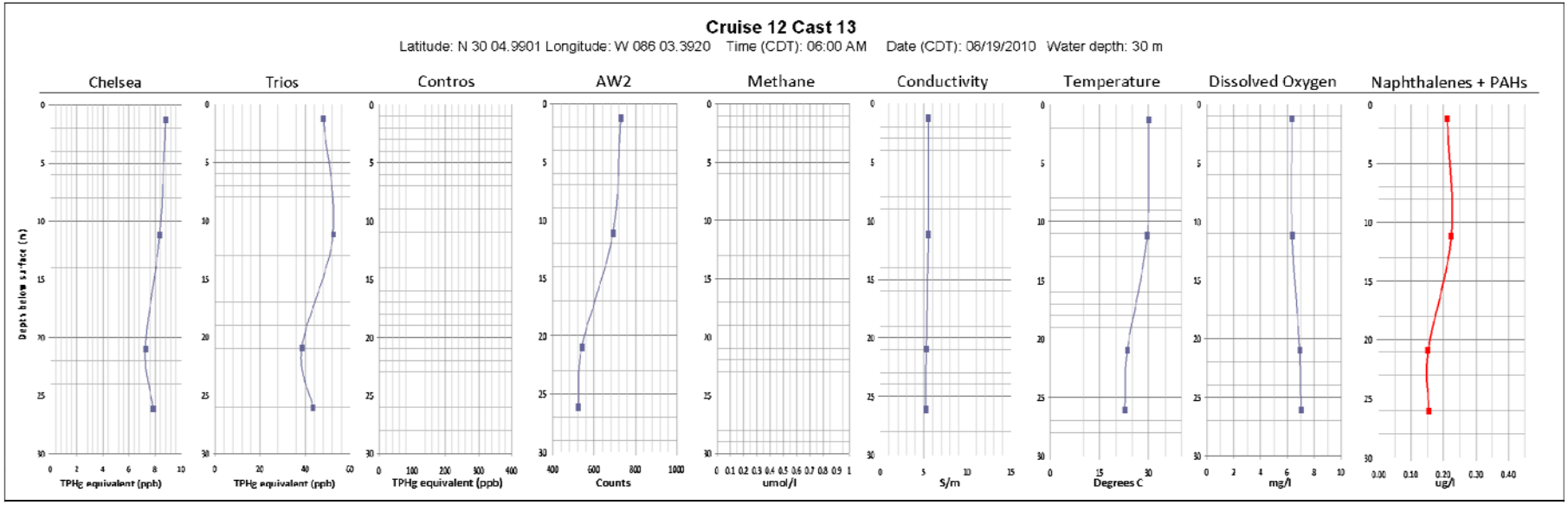

Figure 16. The results obtained for Cruise 12 vertical cast 13 (#13-C12) down to 26 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

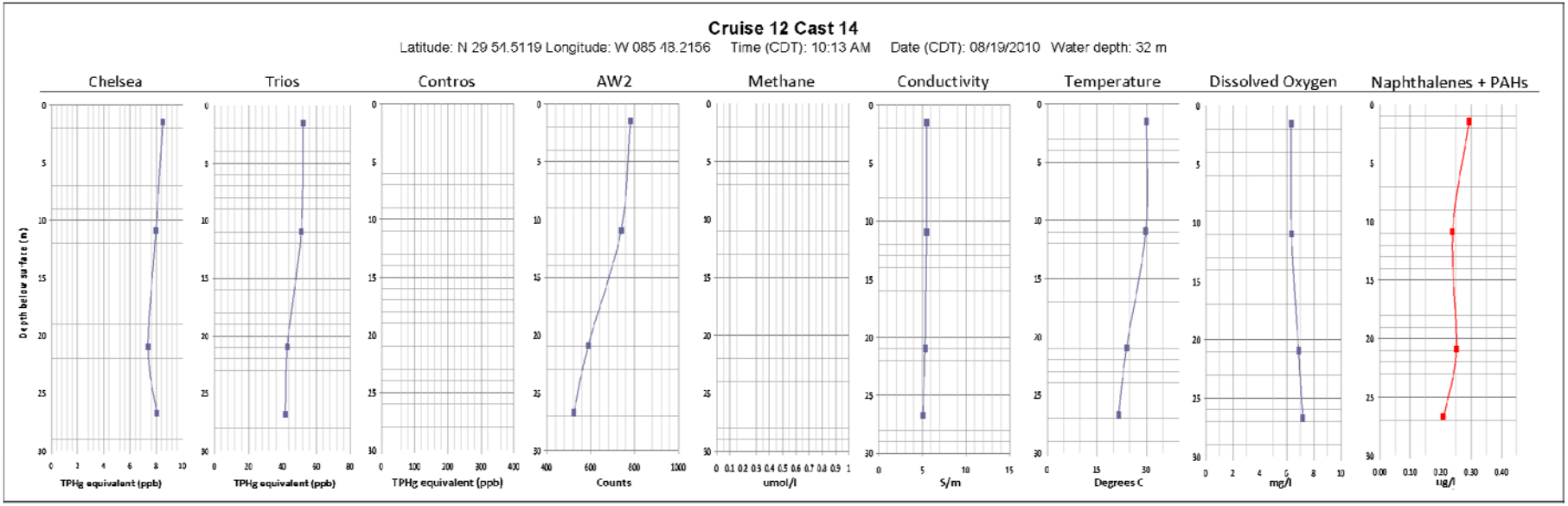

Figure 17. The results obtained for Cruise 12 vertical cast 14 (#14-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

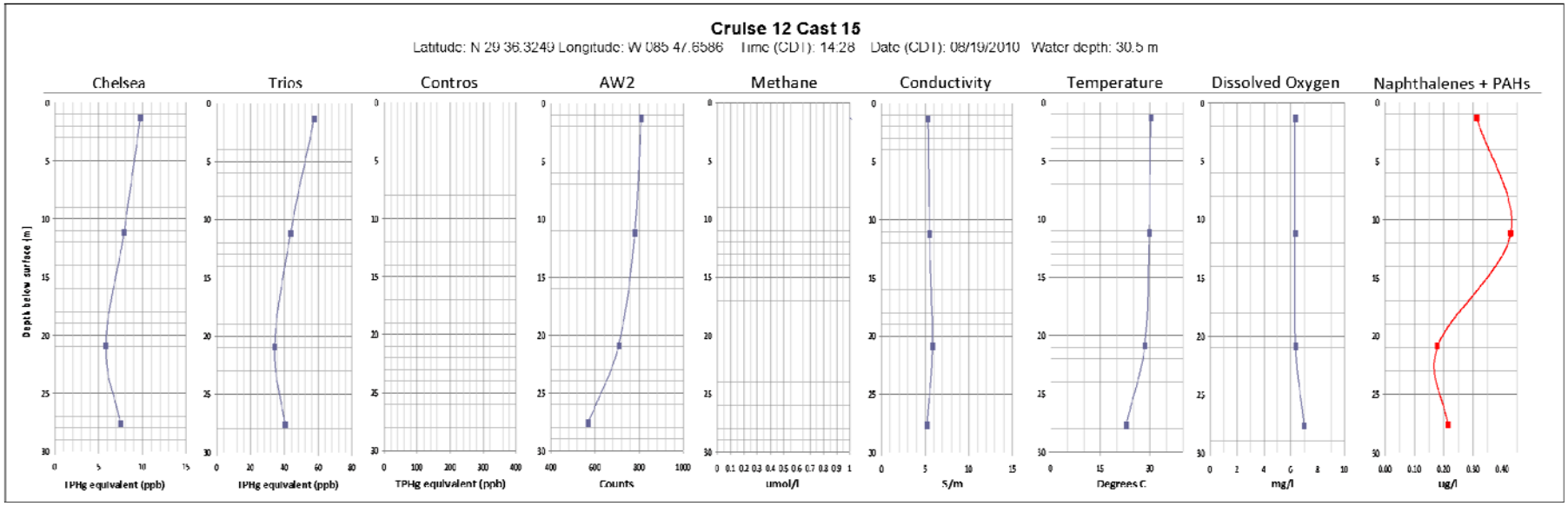

Figure 18. The results obtained for Cruise 12 vertical cast 15 (#15-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurement were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

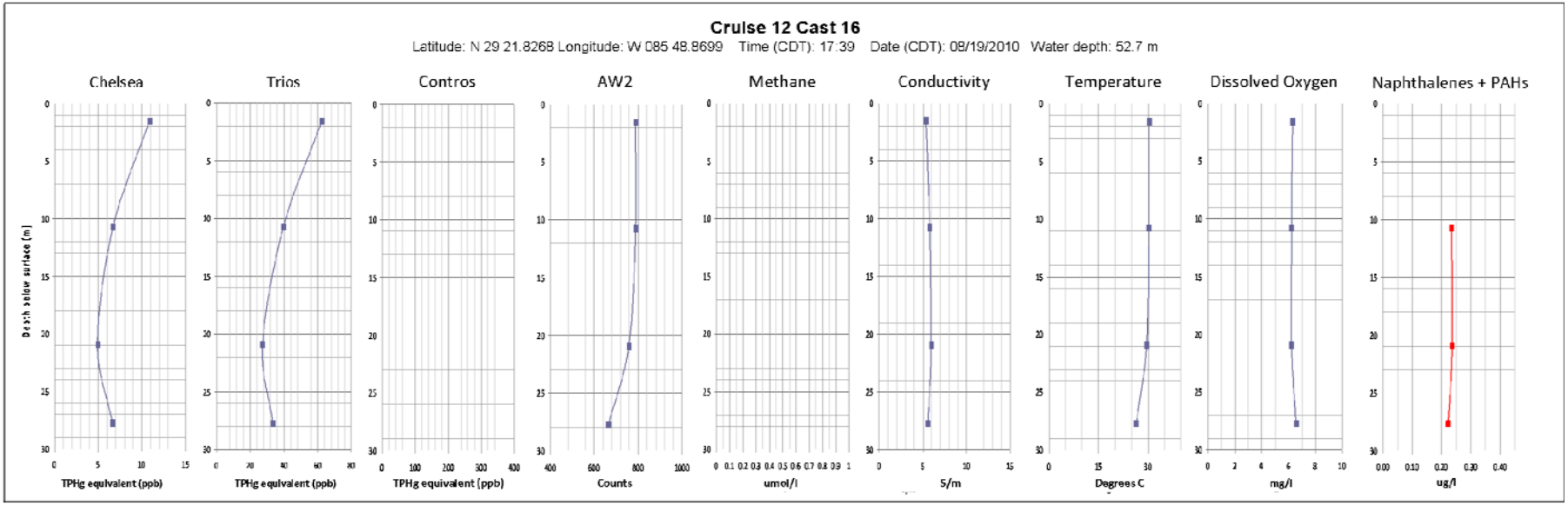

Figure 19. The results obtained for Cruise 12 vertical cast 16 (#16-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

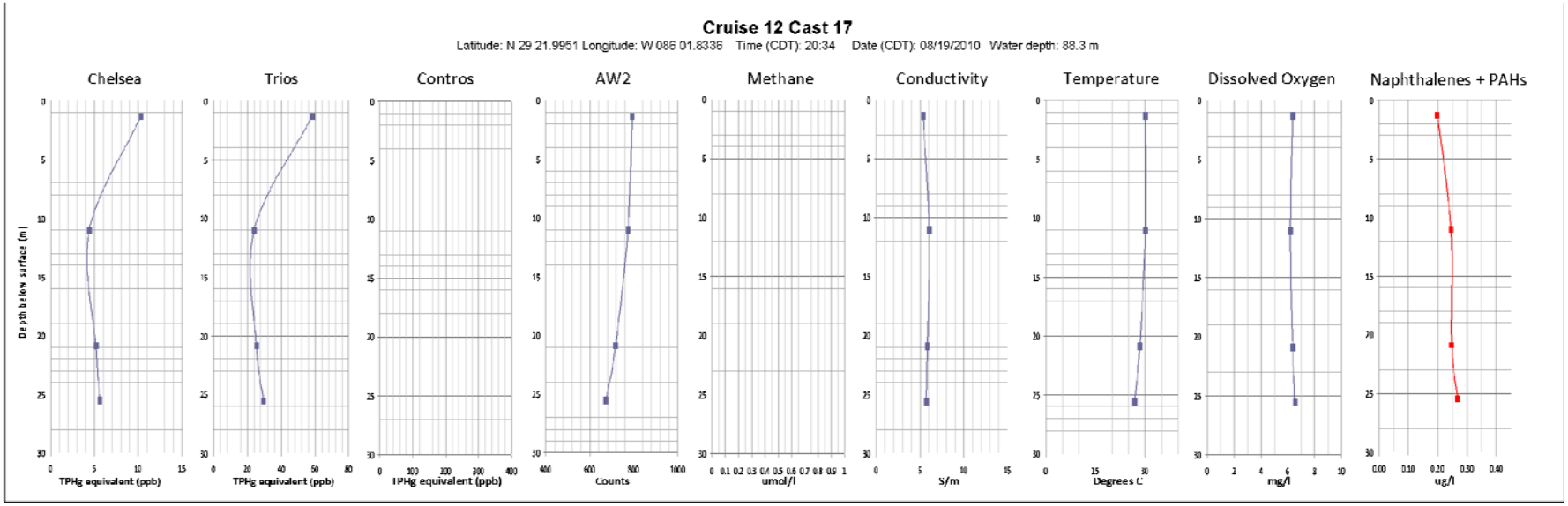

Figure 20. The results obtained for Cruise 12 vertical cast 17 (#17-C12) down to 25 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

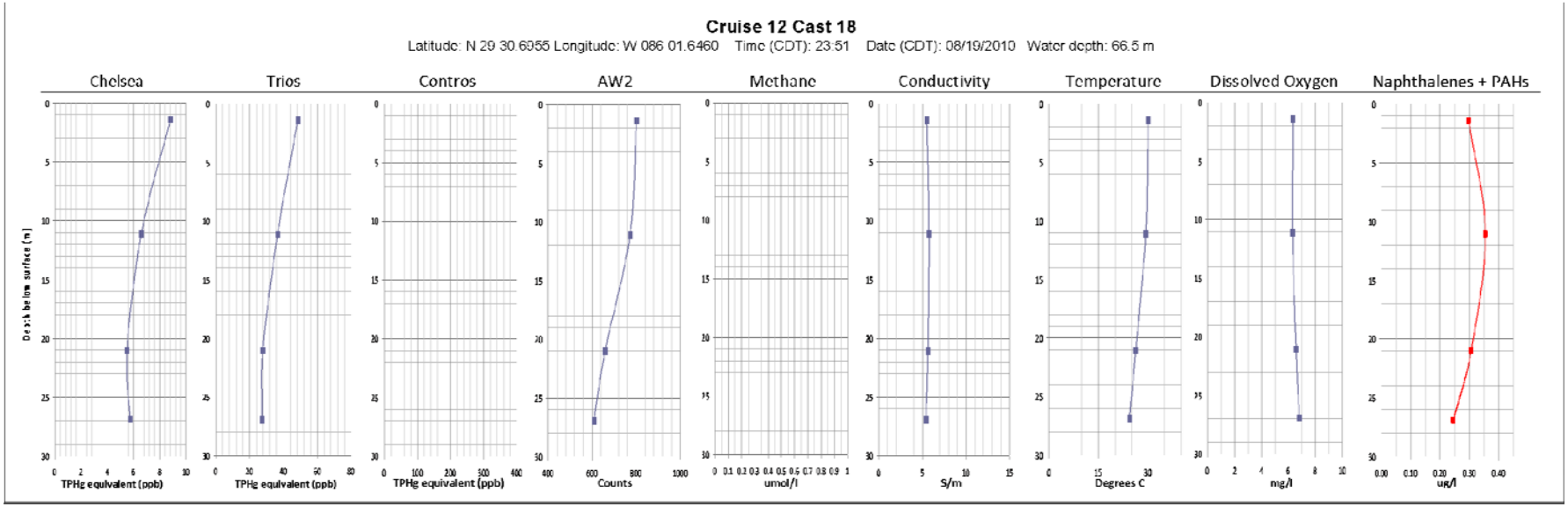

Figure 21. The results obtained for Cruise 12 vertical cast 18 (#18-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

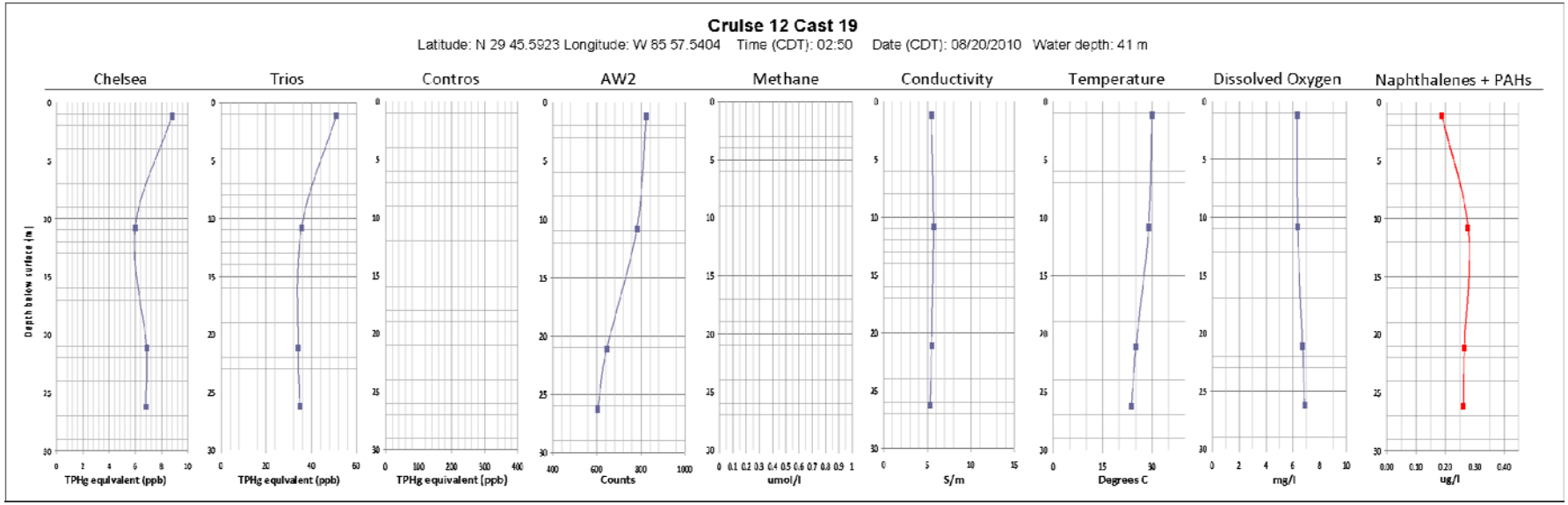

Figure 22. The results obtained for Cruise 12 vertical cast 19 (#19-C12) down to 26 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

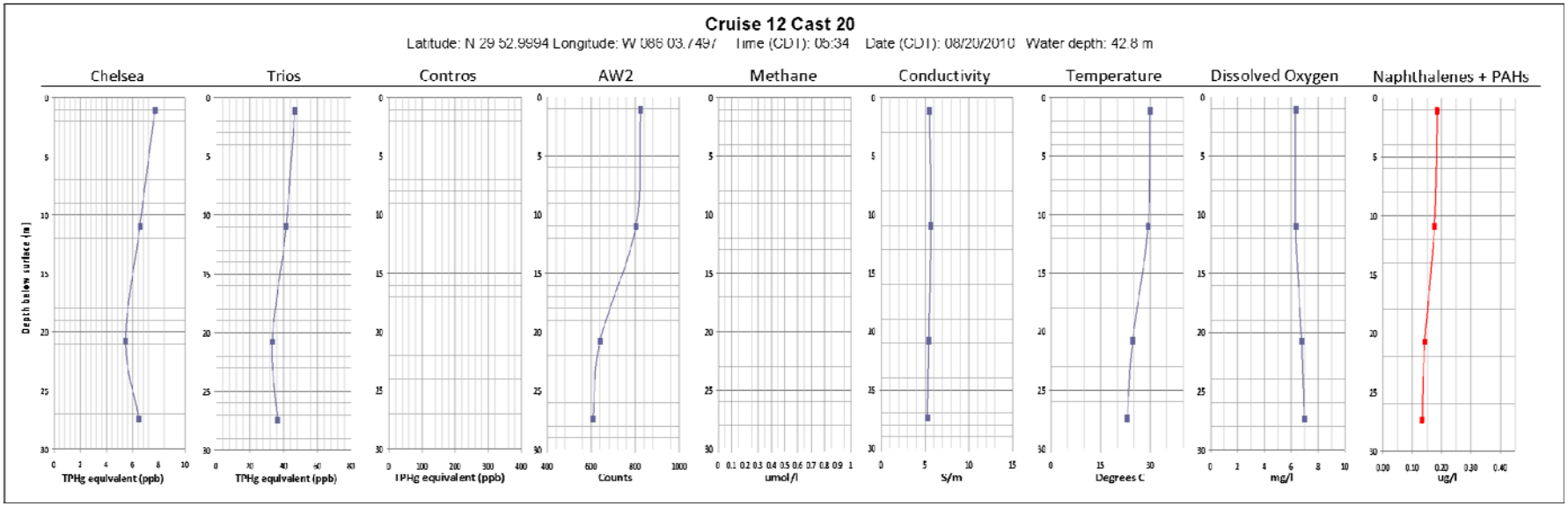

Figure 23. The results obtained for Cruise 12 vertical cast 12 (#20-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

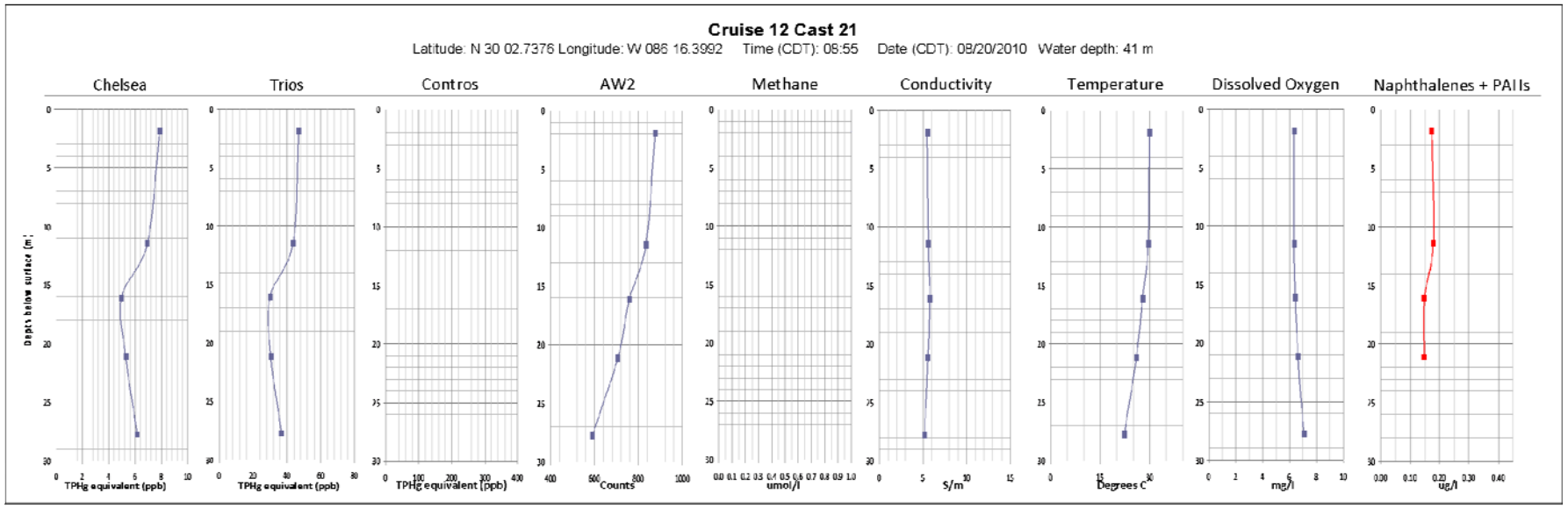

Figure 24. The results obtained for Cruise 12 vertical cast 21 (#21-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

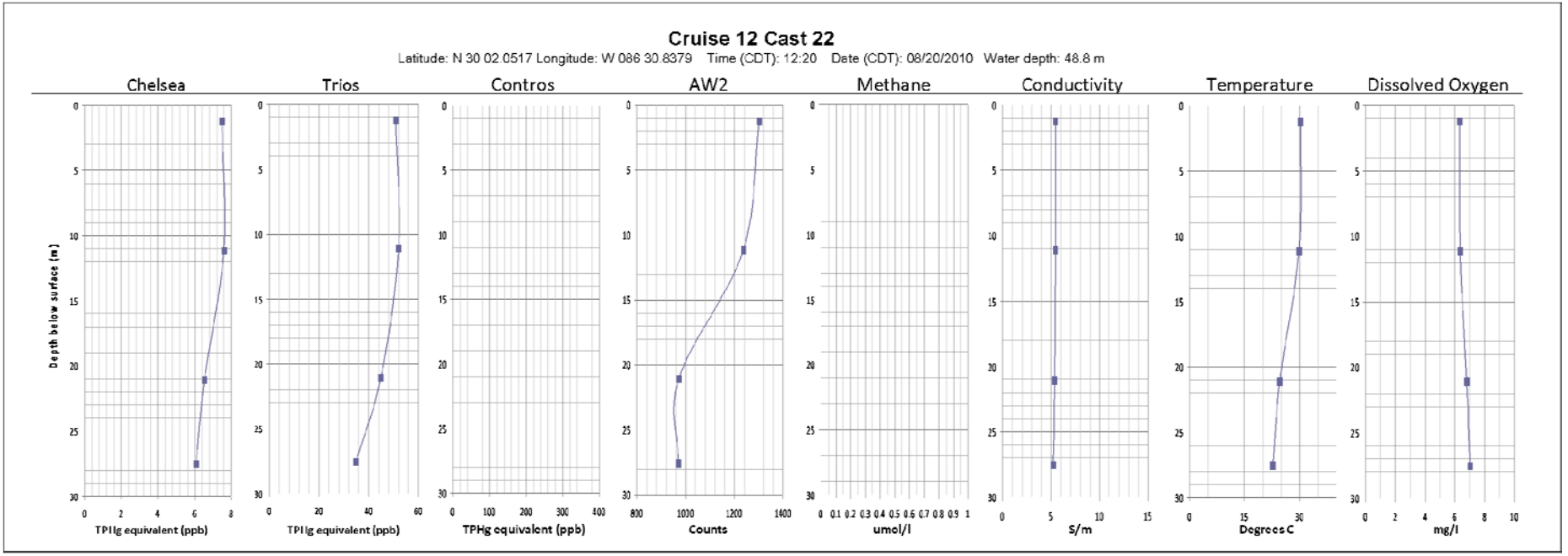

Figure 25. The results obtained for Cruise 12 vertical cast 22 (#22-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

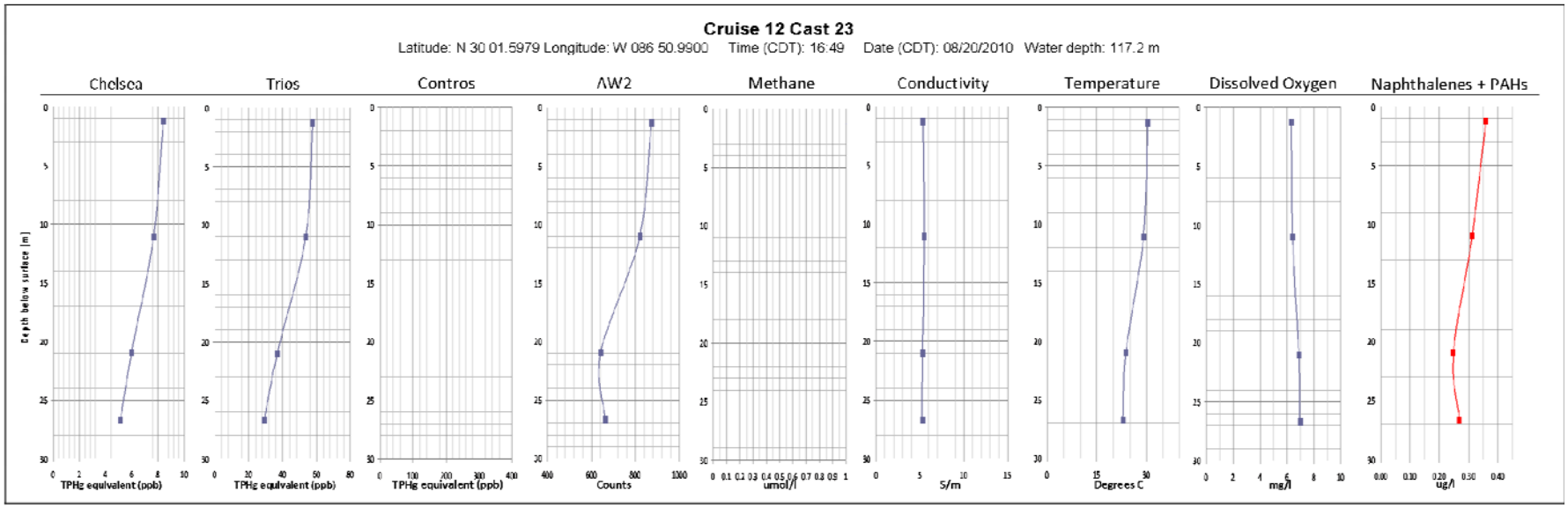

Figure 26. The results obtained for Cruise 12 vertical cast 23 (#23-C12) down to 25 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

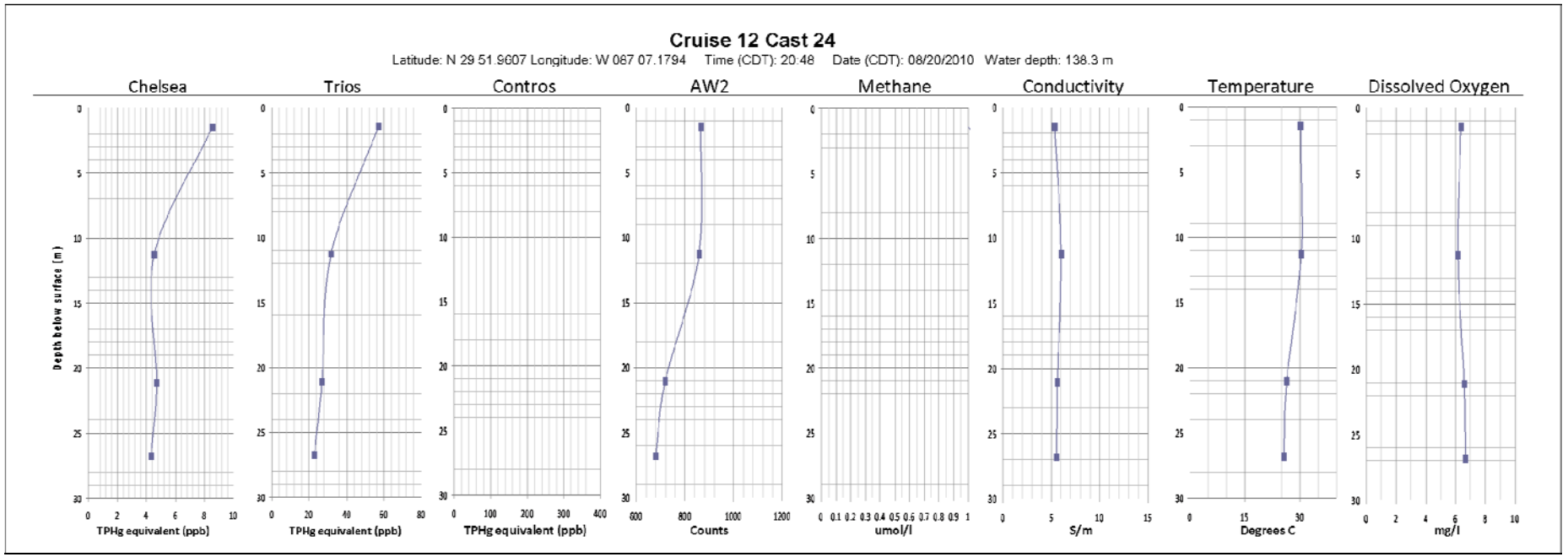

Figure 27. The results obtained for Cruise 12 vertical cast 24(#24-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

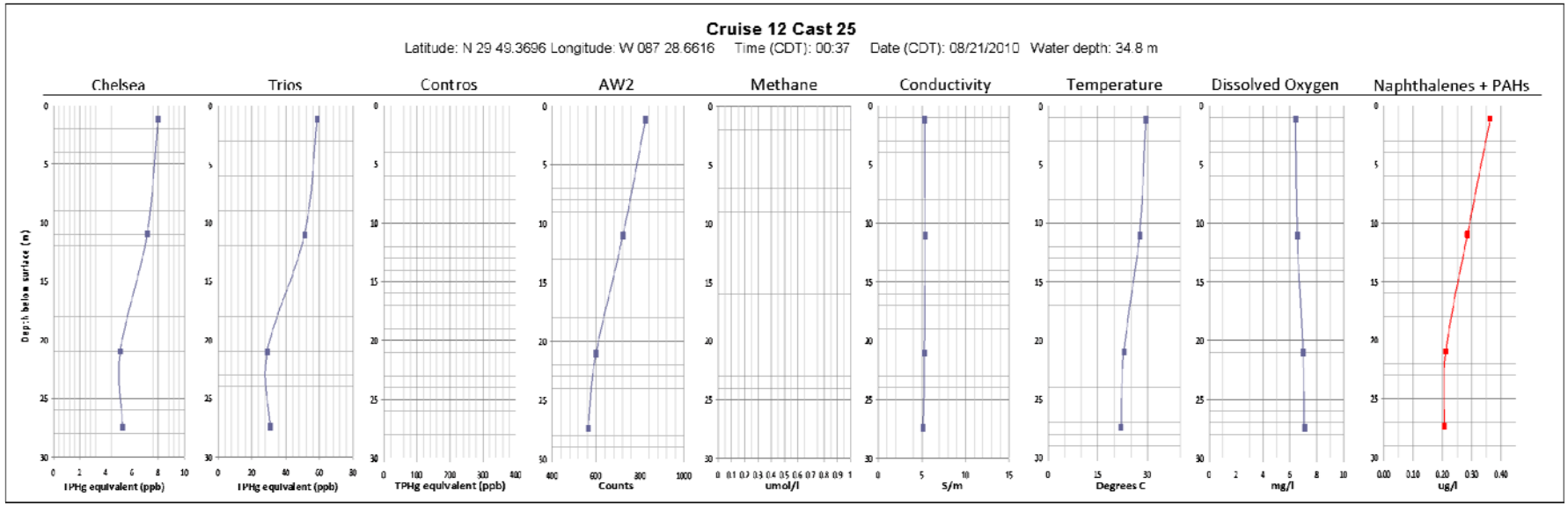

Figure 28. The results obtained for Cruise 12 vertical cast 25 (#25-C12) down to 26 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

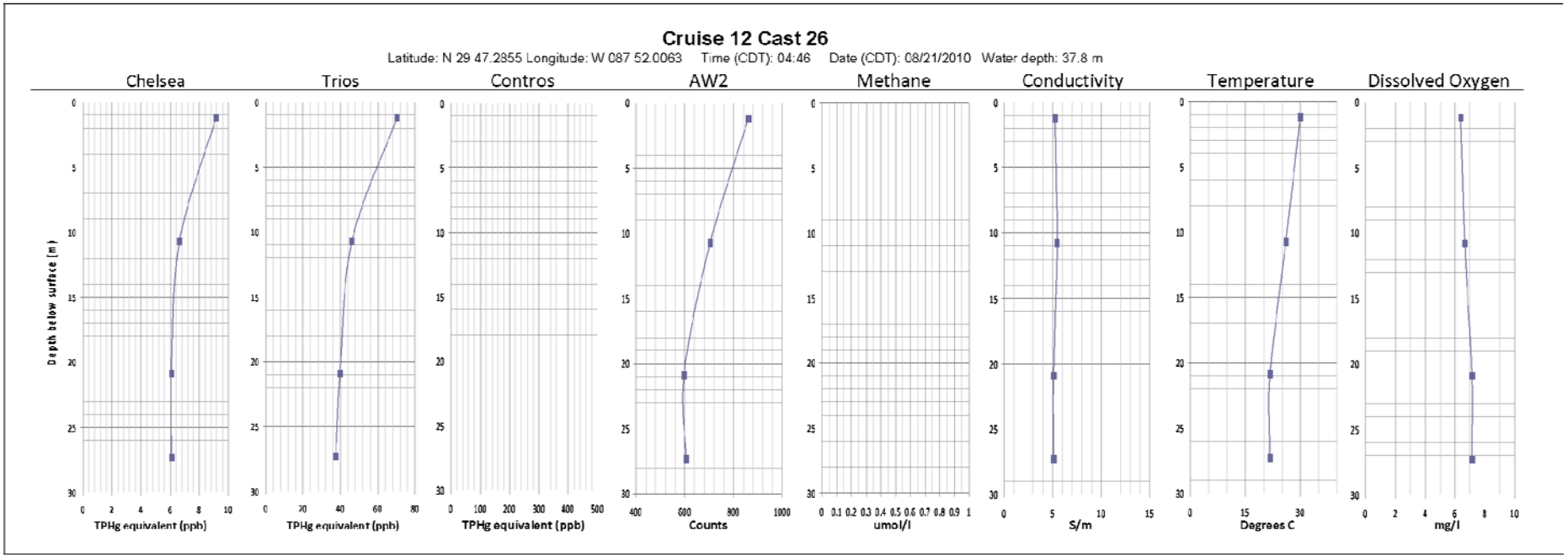

Figure 29. The results obtained for Cruise 12 vertical cast 26 (#26-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

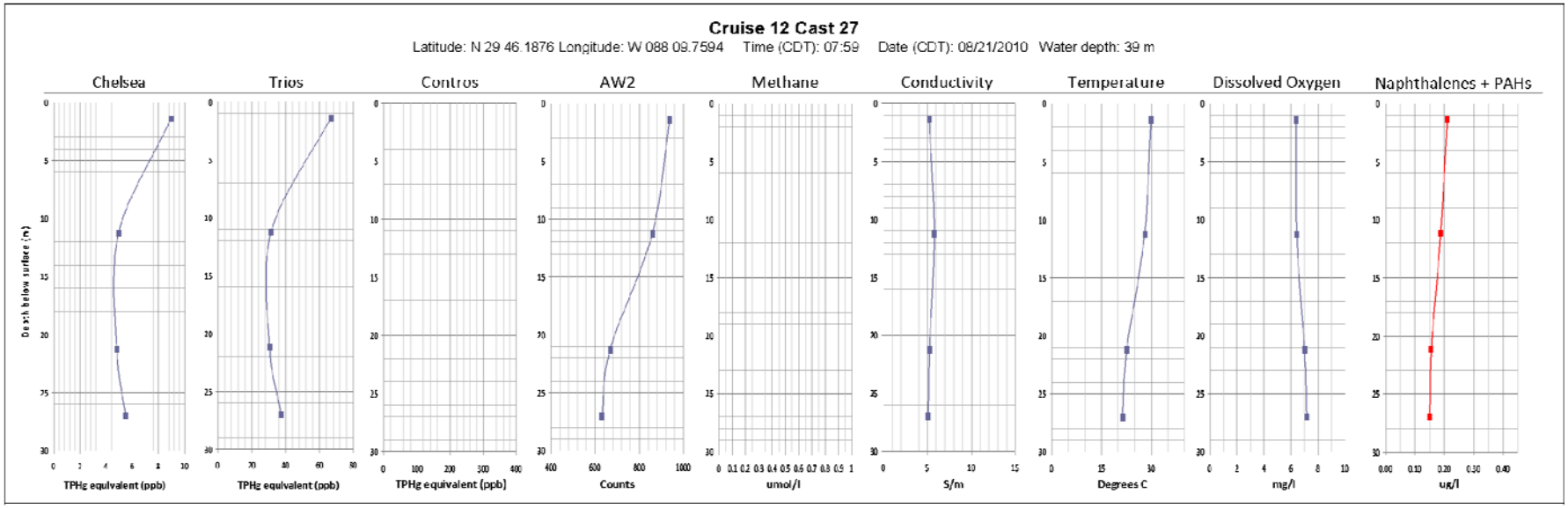

Figure 30. The results obtained for Cruise 12 vertical cast 27 (#27-C12) down to 27 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

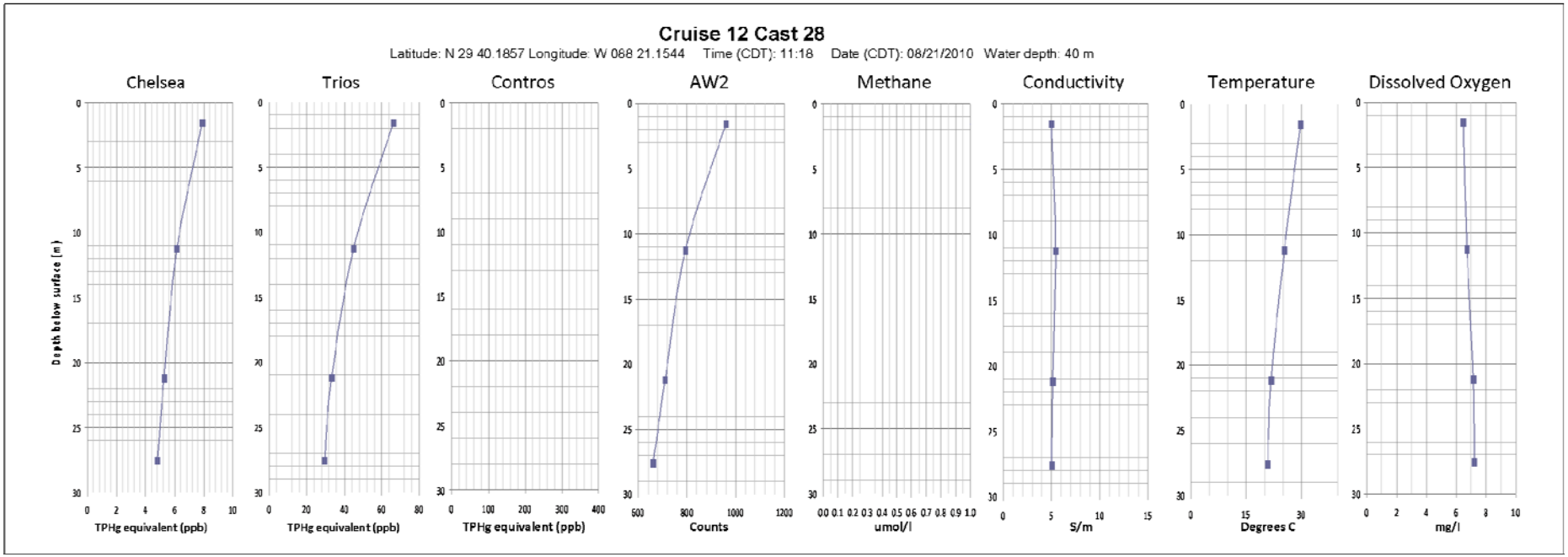

Figure 31. The results obtained for Cruise 12 vertical cast 28 (#28-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

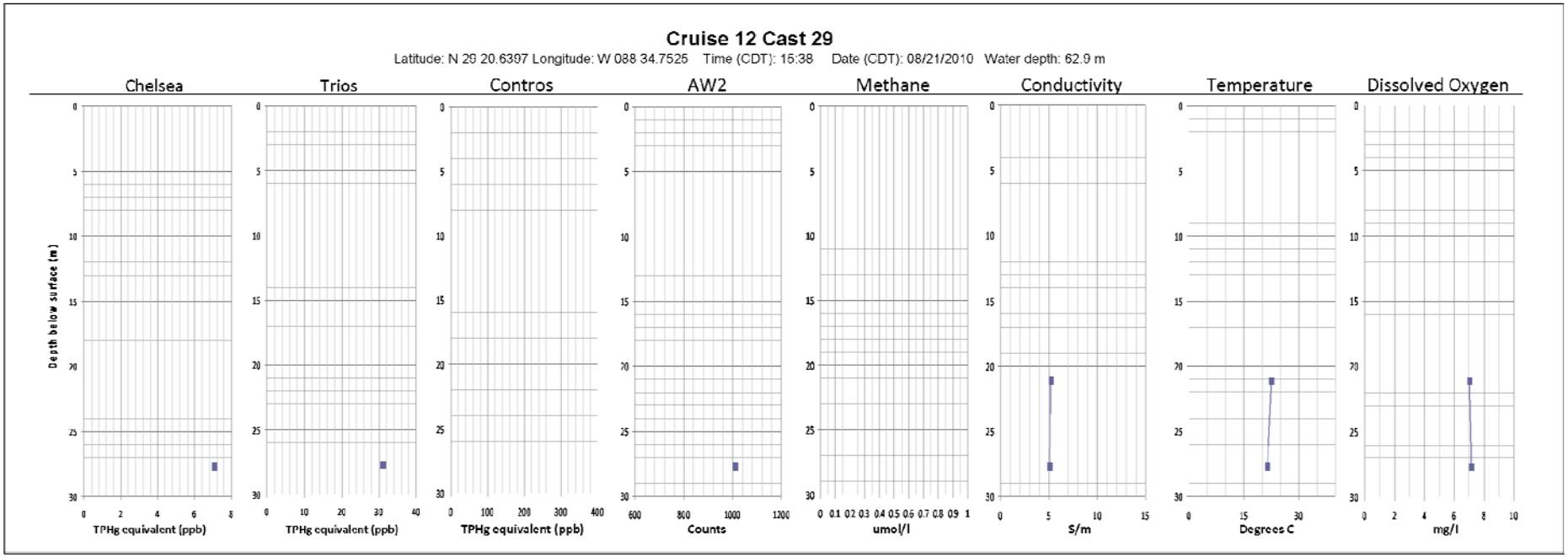

Figure 32. The results obtained for Cruise 12 vertical cast 29 (#23-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

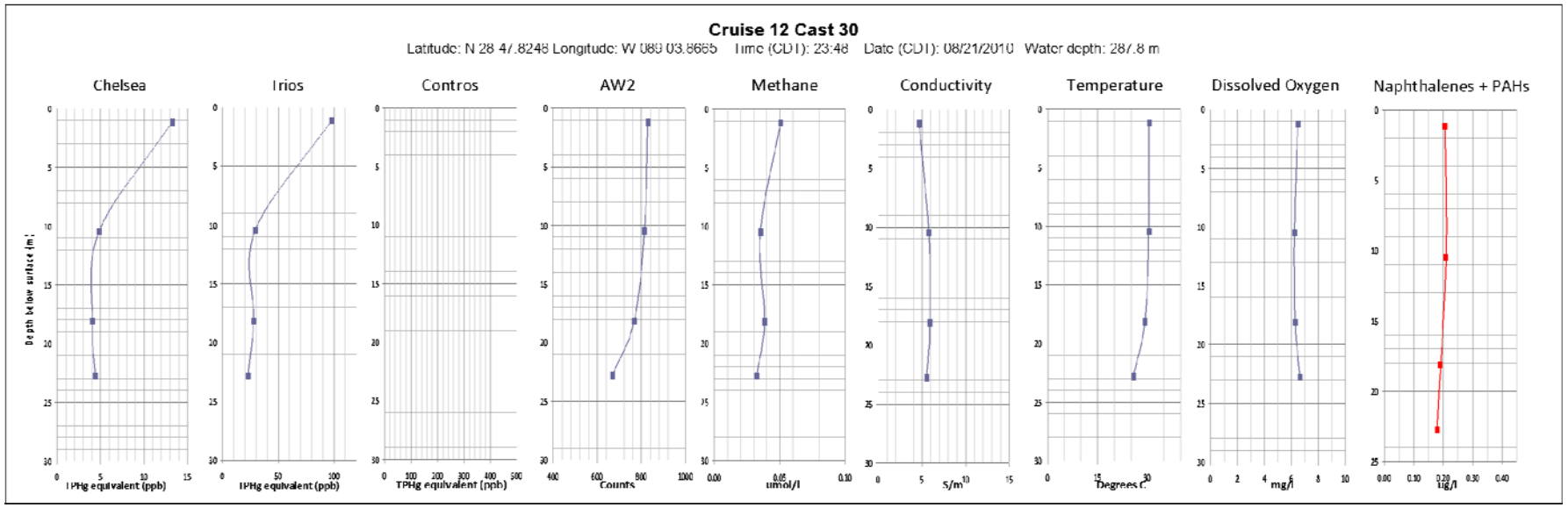

Figure 33. The results obtained for Cruise 12 vertical cast 30(#30-C12) down to 23 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained from a SBE 19+ system and oxygen sensor attached to the submersible pump used to draw the water into the sensor tank on the surface.

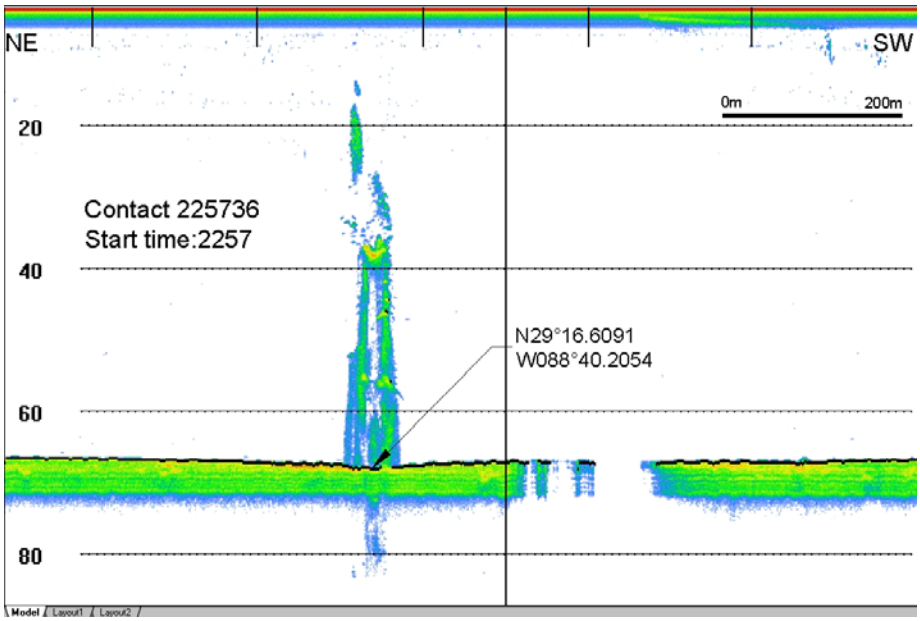

Figure 34. Contact_08212010_225736. Description: Probably biological. Time (CDT): 08/21/2010 1757hrs Location: 29° 16.6091N; 88° 40.2054W. Depth displayed: 16.95m to 66.80m.

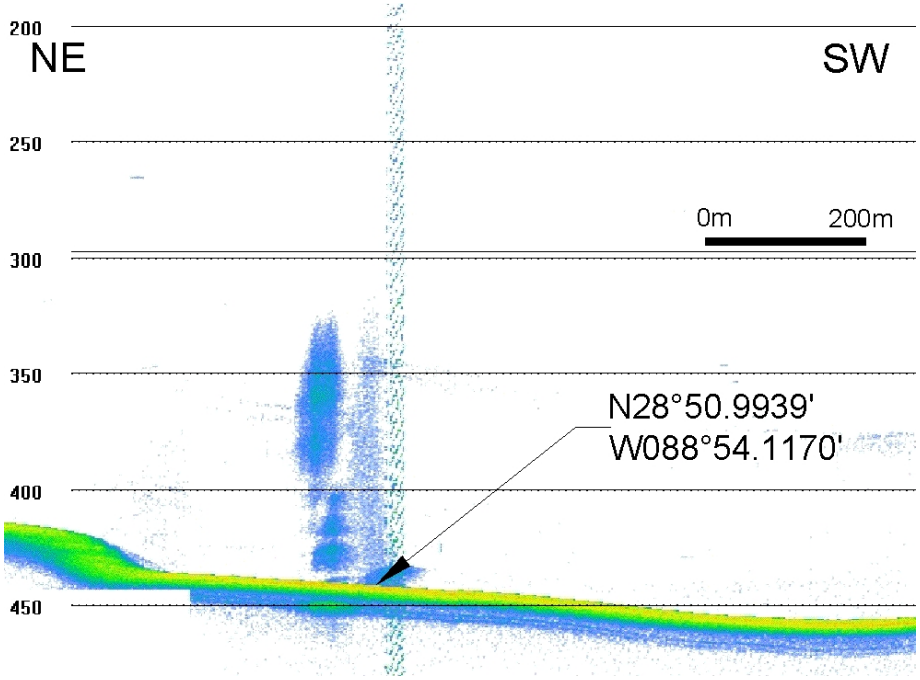

Figure 35. Contact__**08222010_031645**. Description: Seafloor to midwater previously investigated as a seep (see Contact_08042010_220048 in daily report for 08-05-2010). Time (CDT): 08/21/2010 2216hrs Location: 28° 50.9939N; 88° 54.1170W. Depth displayed: 301.92m to 439.89m. The vertical blue line that extends from the top to the bottom of the figure is an artifact in the data.

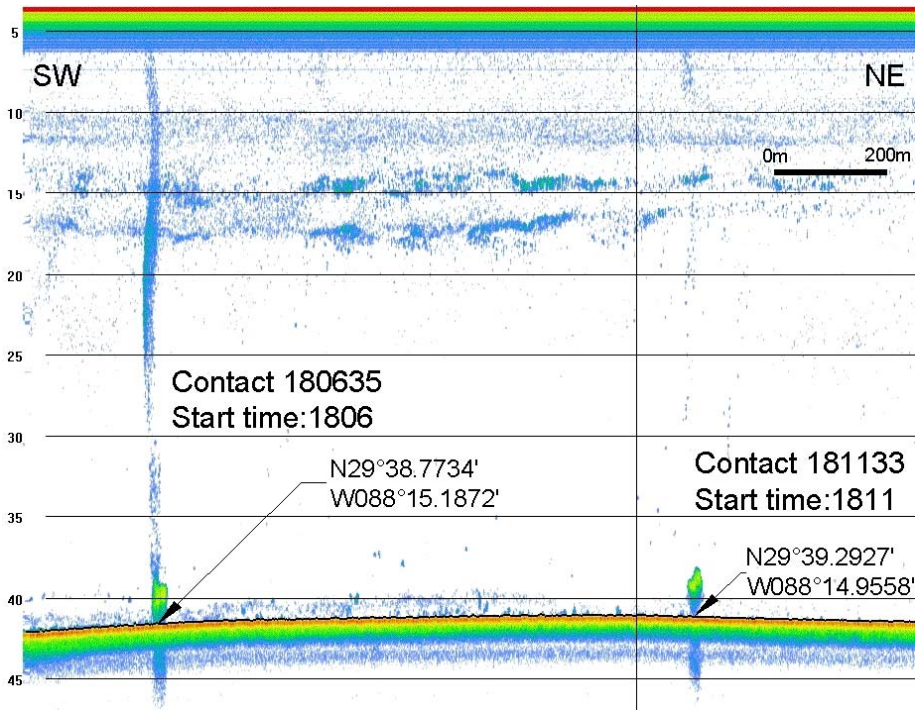

Figure 36. a) Contact_08232010_180635. Description: Bottom to surface contact. Time (CDT): 08/23/2010 1306hrs Location: 29° 64.59003N; 88° 25.32638W. Depth displayed: 5.40m to 40.99m. b) Contact_08232010_181133. Description: Bottom contact with pattern on surface. Time (CDT): 08/23/2010 1311hrs Location: 29° 65.47106N; 88° 24.93381W. Depth displayed: 5.07m to 40.65m.

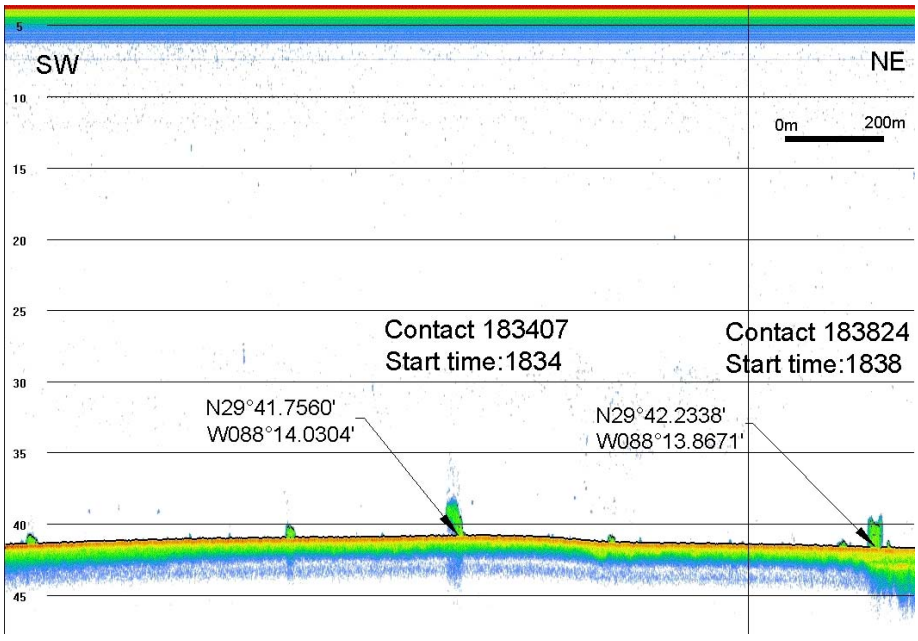

Figure 37 : a) Contact_08232010_183407. Description: Bottom contact. Time (CDT): 08/23/2010 1334hrs Location: 29° 69.57837N; 88° 23.38932W. Depth displayed: 34.91m to 40.48m. b) Contact_08232010_183824. Description: Bottom contact. Time (CDT): 08/23/2010 1338hrs Location: 29° 70.37526N; 88° 23.11674W. Depth displayed: 39.30.07m to 41.49m.

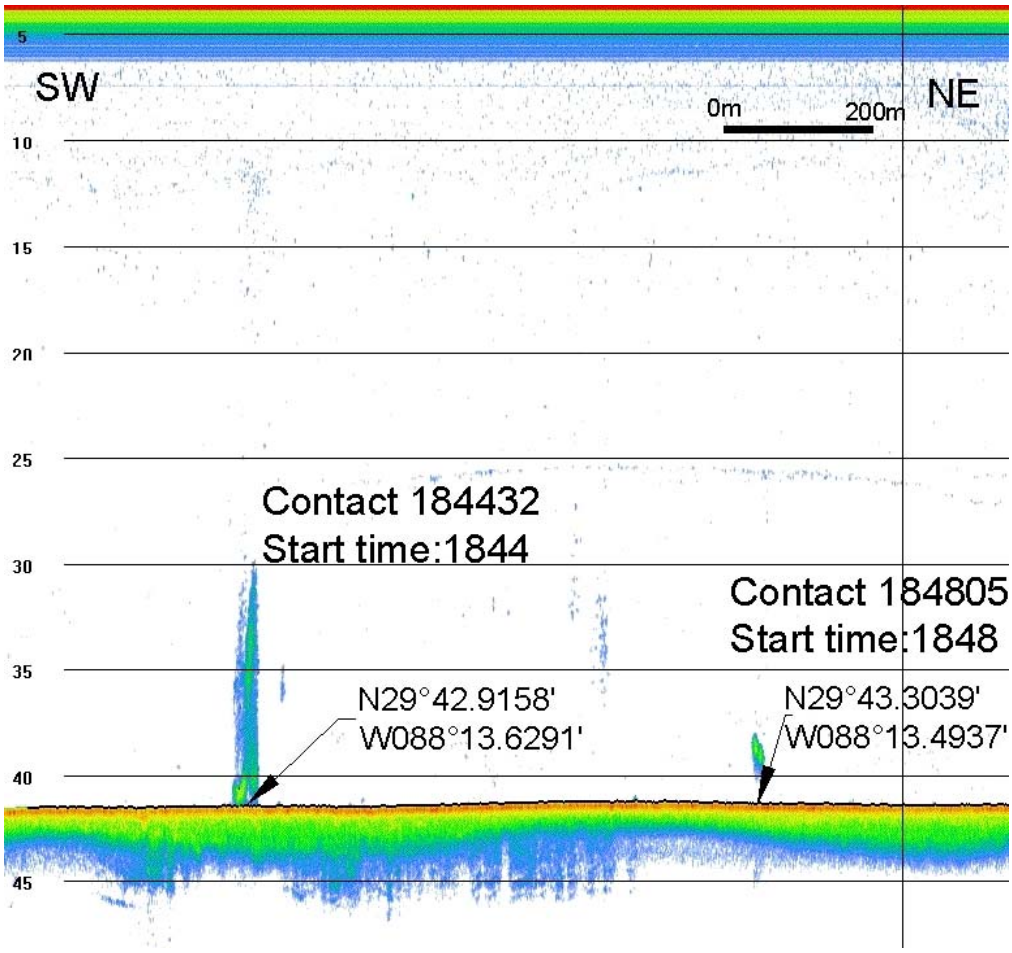

Figure 38: a) Contact_08232010_184432. Description: Bottom to midwater contact with trail to surface. Time (CDT): 08/23/2010 1344hrs Location: 29° 71.50831N; 88° 22.72145W. Depth displayed: 27.50m to 41.15m. b) Contact_08232010_184805. Description: Near bottom contact with trail to midwater. Time (CDT): 08/23/2010 1348hrs Location: 29° 72.18225N; 88° 22.48642W. Depth displayed: 37.61m to 39.31m.

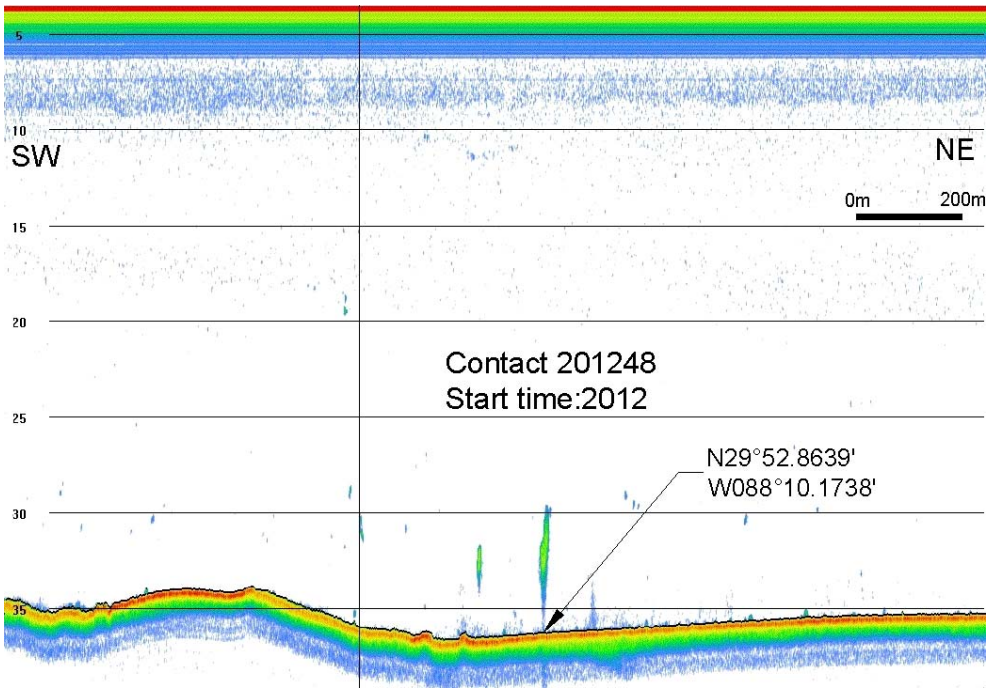

Figure 39: Contact_08232010_201248. Description: Bottom contact. Time (CDT): 08/23/2010 1612hrs Location: 29° 88.09681N; 88° 16.959932W. Depth displayed: 29.55m to 36.35m.

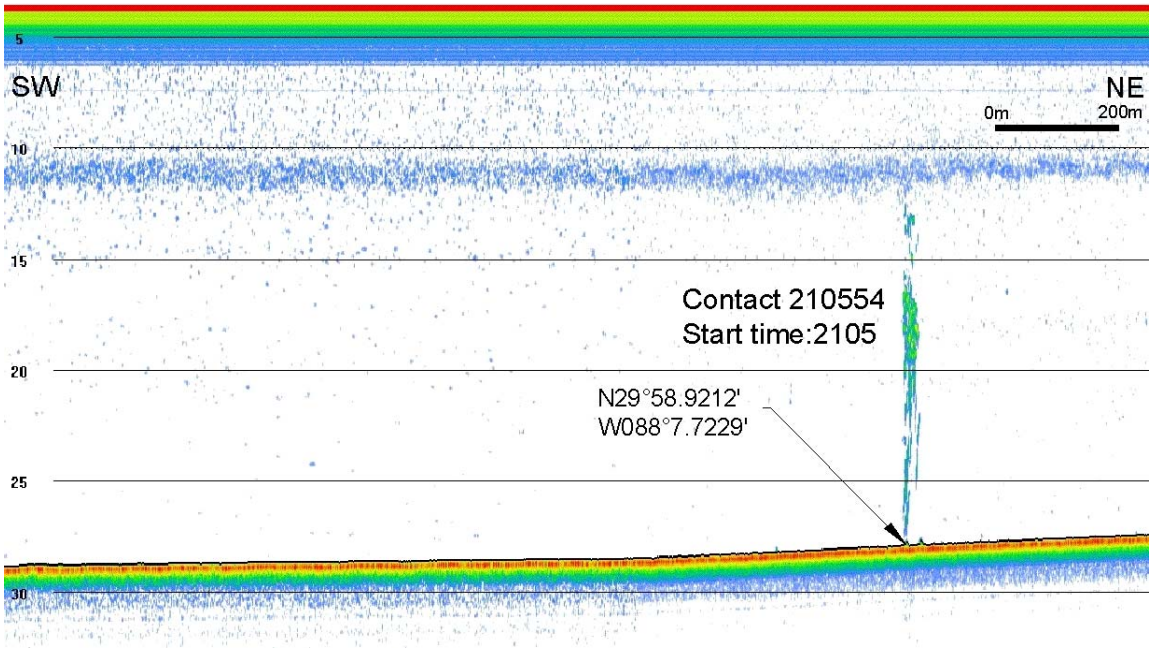

Figure 40: Contact_08232010_210554. Description: Bottom to midwater contact. Time (CDT): 08/23/2010 1605hrs Location: 29° 98.19442N; 88° 12.87506W. Depth displayed: 11.96m to 27.64m.

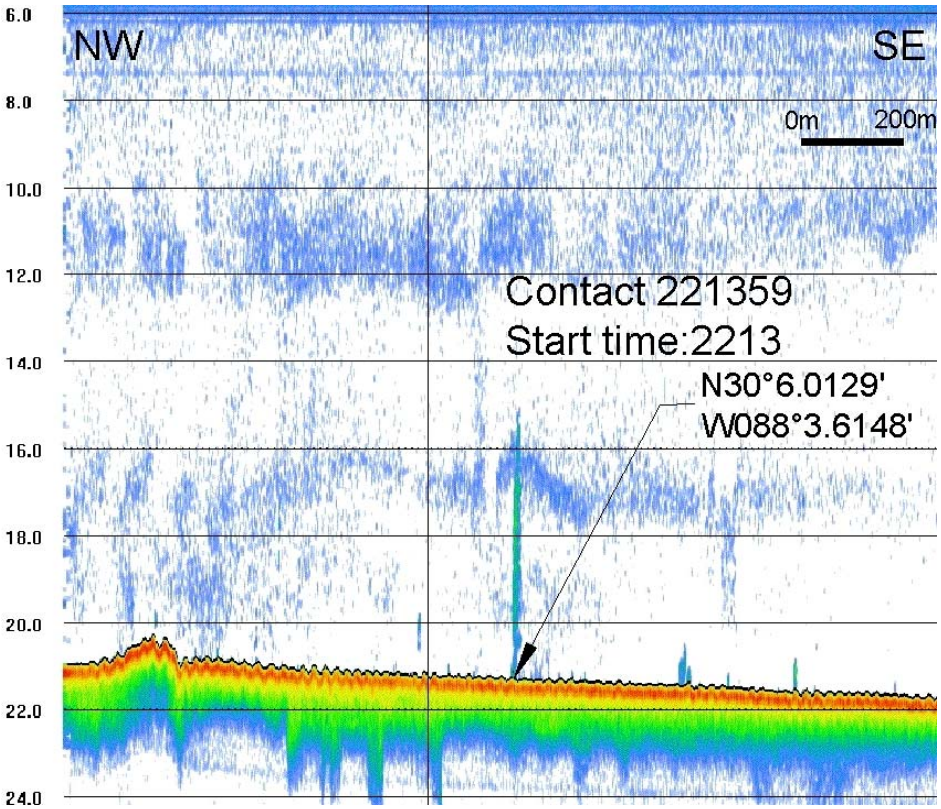

Figure 41: Contact_08232010_221359. Description: Bottom to midwater contact. Time (CDT): 08/23/2010 1713hrs Location: 30° 10.02596N; 88° 06.02960W. Depth displayed: 15.29m to 21.17m.

Problems/operational issues:

During cruise 12 there were minimal operational problems.
08/18
A leak was detected on the fuel pump on the generator unit that supplies the C&C container. As a precaution, the unit was shut down and the survey personnel were relocated to the bridge.
The new science team had problem connecting to the internet and the problem was fixed by resetting the bridge router by the Stratas technical support.

08/20
The ship had to accelerate to pass through the shipping lane when entering waters south of port Theodore. We temporally shut down the underway pump and resumed after passing the area.

08/21
The vertical cast pump shorted out due to that sea water diffused through from the cable connections and has been replaced. We are waiting for the epoxy to cure, which should be Monday afternoon.

08/23
During the final entry into Theodore on 08/24/10, the ship's captain was informed of a onshore ammonia leak, causing the ship to return to sea (See 8/24 cruise track on Figure 1) and await further information concerning time of re-entry into the port.

Planned activities for next 24 hours and next cruise:

The Ryan Chouest docked in port at Theodore for scheduled media event for the Water gliders and cruise up-date, a crew change, and groceries delivery. We will be setting out to sea on 08/26 for cruise 13. There are two main objectives planned for Cruise 13. The first objective is to deploy two satellite-controlled, unmanned vehicles, known as Wave Gliders, and the second objective is to arrive at Port Fouchon by Tuesday, 08/31/10 to outfit the ship with the CTD . When the CTD is installed we will attempt to follow a survey grid to complete several transect across the southeastern portion of the gulf.

Figure 36. Planned route for cruise 13 between 08/26/2010 – 09/1/2010 of the Ryan Chouest.

Selected Photos:

No photographs were taken over the cruise period.

Full crew list before crew change:

William A. Smith	MASTER	Brian Corley	Mate
Robert Thompson	ENG	Craig Lyons	ENG
Eduardo Zepeda	A/B	Patrick Cousin	A/B
Mark Harmon	A/B	Arthur Triggs	O/S
Elijah Benjamin	OS	Roderick Baker	OS/Cook
Lawrence Febo	BP	Gui de Almeida	Entrix
Xiubin Qi	CSIRO	Stephane Armand	CSIRO
Andy Revill	CSIRO	Brett Bundick	C&C
Charlotte Stalvies	CSIRO	Mathew Baham	C&C
Tim MacEwan	C&C	Jay Ridgeway	C&C
Bobby Patrick	C&C	Ben Autin	C-Port
Braden Wilson	C-Port		