September 15th | 2010

Ryan Chouest Cruise 15 Cumulative Report

Period covered: 2033 09/09/2010 - 1756 09/14/2010

384.67 - Nautical miles covered

Vessel science party:

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Cumulative Cruise notes:

The *Ryan Chouest* cruised about 384.67 nautical miles, from 09/09/10 to 09/14/10, during cruise 15. The complete route is shown in Figure 1. No evidence of natural seeps was found during Cruise 15 at the sites selected for investigation. CTD data was collected from a total of eleven completed casts.

09/10
The *Ryan Chouest* followed the planned cruise 15 route leaving Port Theodore and heading Southwest towards MC252 to the first wave glider deployment site and then onward to the second wave glider site. The underway pump was deployed after reaching open sea outside Port Fouchon. Collection of the echo sounder survey data was continuous.

09/11
The *Ryan Chouest* followed the planned cruise 15 route after the launch of Glider 2 and transited Southeast to the first potential natural seep location Site 1 (LAD-023). Cast #1 was performed directly over Site 1. The Ryan Chouest then travelled south to explore two further natural seep locations Site 2 (DCS-052) and a known Weatherbird site (Site 3) and then Northeast to Site 4 (LAD-018). A rough grid pattern was used to investigate the possible seeps at Sites 2, 3 and 4 with the echosounder. Collection of underway fluorometer data was continuous.

09/12
The Ryan Chouest continued along the planned Cruise 15 route. Cast #2 was performed at Site 4 (LAD-018) before transiting Northwest to Site 5 (LAD-019) and Site 6 (LAD-022) and Southwest to Site 7(DCS-062) then South East to Site 8 (DCS-009). Echosound surveys were conducted at all sites using a rough grid or 'cloverleaf' pattern to try and identify the exact location of suspected seeps. Collection of underway flurometer data was continuous. Cast #3 was performed at Site 6.

09/13

The Ryan Chouest continued along the planned Cruise 15 route transiting Southeast to Site 9 (USCG-404) and South to Site 10 (DCS-025) where Cast #5 was performed. The Ryan Chouest then travelled overnight on a revised route plan NorthWest to Site 11 (Weatherbird site DSH08) where cast #6 was performed the following morning before transiting Northeast to Site 12 (Weatherbird site DSH-07). Echosounder surveys were conducted at all sites using a rough grid or 'cloverleaf' pattern to try and identify the exact location of suspected seeps. Collection of underway flurometer data was continuous with the exception of the overnight transit between Sites 10 and 11.

09/14

The Ryan Chouest continued along the revised Cruise 15 route transiting Northeast to Site 13 where Cast #8 was performed then Southeast to Site 14 (Weatherbird site PCB-06) where the vessel remained overnight before performing Cast #9. The Ryan Chouest then transited Southwest to Site 15 where Cast #10 was performed then West to Site 16 (Weatherbird site DSH-10) where Cast #11 was performed before embarking on the return journey to Port in Theodore. The echosounder was continually monitored to identify the presence of possible natural seeps. Collection of underway fluorometer data was discontinued at Site 14.

The underway pump, echo sounder and CTD cast equipment operated smoothly throughout the cruise period.

In this report we present a complete summary of the results of cruise 15.

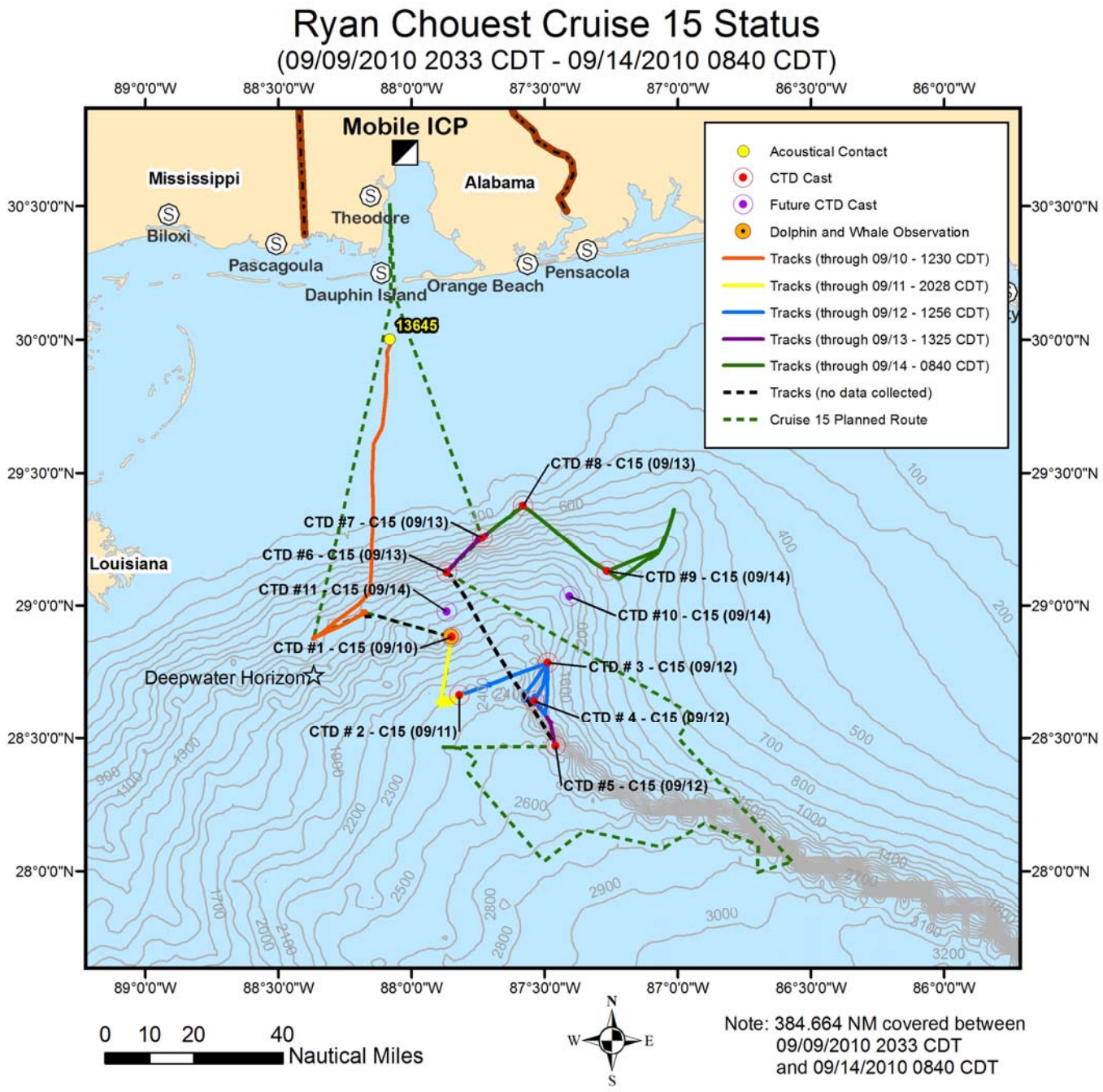

Figure 1: Planned and actual route course of the Ryan Chouest cruise 15 plotted between 09/09 – 09/14. The orange numbers represent CTD cast locations. The yellow numbers represent recorded acoustical contacts.

Science results and preliminary interpretation:

Chemical sensor results

The Chelsea and Trios sensors generally indicated low levels of inferred hydrocarbons concentrations through the reporting period (Figures 2 and 3). Plotting the fluorometers' responses by natural breaks revealed more variations with relative higher readings close to port Theodore and MC252 well site. It is worth noting that the AW2, a VOC sensor, showed higher readings along the fault of the DeSota Canyon (Figure 4).

Surface Observations

Dolphins were observed riding the ships bow wave during the transit to Site #1 (Photo 1). Clear waters were observed throughout the distance covered.

EK-60 Echosounder results

Only one echosounder contact was observed during this report period (Figure 1).

CTD casts

Eleven CTD casts were performed during Cruise 15.

One CTD cast was performed during the reporting period 09/10 to 09/11, Cast #1 (Figure 5) at (LAD-023, N28 52.818 W087 50.954) where a stepwise increase was shown in the Chelsea's "down" profile at 420m (Figure 5). This feature did not however reappear in the "up" profile. Water samples were collected at 1734m, 1480m, 1210m, 860m, 457m, 430m and 410m to cover the depths that displayed variations in responses from either the fluoromters or the Dissolved Oxygen sensor. Some spikes in the vertical profile of the PAH fluorometer were considered as noises from the sensor.

Three CTD casts were performed during the reporting period 09/11 to 09/12, Cast #2 (Figure 6) at Site 4 (LAD-018, N 28 39.756, W087 49.268), Cast #3 (Figure 7) at Site 6 (LAD-022, W087 29.284, N 28 47.060) and Cast #4 (Figure 8) at Site8 (DCS-009, N28 38.440, W087 32.303). No apparent features were observed except a small dip in the dissolved oxygen profile at 1329 water depth during Cast #3.

Three CTD casts were performed during the reporting period 09/12 to 09/13, Cast #5 (Figure 9) at Site 10 (DCS-025, N28 28.078 W87 27.518), Cast #6 (Figure 10) at Site 11 (Weatherbird site DSH-08, N29 07.364 W87 52.119) and Cast #7 (Figure 11) at Site 12 (Weatherbird site DSH-07, N29 15.213 W087 44.069). In Cast #5 a minor drop in the dissolved oxygen and a gradual increase in the output of the Chelsea fluoromters co occurred at ~1100m. The same feature also displayed in the vertical profiles of Cast # 6 at 980m water depth.

Four CTD casts were performed during the reporting period 09/13 to 09/14 Cast #8 (Figure 12) at Site 13 (N29 22.564 W087 34.932), Cast #9 (Figure 13) at Site 14 (Weatherbird site PCB-06, N29 07.700 W087 16.000), Cast #10 (Figure 14) at Site 15 (Weatherbird site PCB-07, N29 02.006 W087 24.399) and Cast #11 (Figure 15) at Site 16 (Weatherbird site DSH-07, N28 58.570 W087 52.101).
The vertical profiles of Cast #10 and Cast #11 share the same feature with a dissolved oxygen minimum and a step increase in the PAH fluoromters. The location of Cast #11 was suggested by chemical

oceanographer David Hollande where sediment samples collected were found to be fluorescent. Water samples were collected close to the sea bed for further GCMS and fluorescence analysis.

During CTD cast #10 at 1380m depth the niskin bottle was not fired successfully with the top cover still open when the CTD was brought up to the surface.

Wave Glider operations

Wave Glider 1 was launched at 0650 at (28.88284 N, 88.36595W) on a circular course with a radius of 10 NM from the Macondo well site. The glider is programmed to proceed on a counterclockwise course.

The Ryan Chouest remained within ½ NM of glider #1 for approximately 30 minutes after launch while telemetry and navigation were verified. The path taken by Glider #1 was then followed by the Ryan Chouest running the underway flourometry pump for 1 hour before leaving the Glider and continuing on a heading towards Glider #2 launch site.

During the this period and subsequent transit to the next launch location, the Ryan Chouest monitored the RADAR return from the active RADAR reflector on board the Wave Glider.

Wave Glider 2 was launched at 1112 at (28.88284 N, 88.36595W) on a circular course with a radius of 20 NM from the Macondo well site. The glider is programmed to proceed on a counterclockwise course.

The Ryan Chouest remained within ½ NM of the glider #2 for approximately 30 minutes after launch while telemetry and navigation were verified. The path taken by Glider 1 was then followed by the Ryan Chouest running the underway flourometry pump for 1 hour before leaving the Glider and continuing on the Cruise 15 planed route towards the DeSota Canyon area.

After deployment Wave Glider's #1 and #2 deviated from their planned circular courses. Further information along with Instrument data and operational notes is being provided in separate daily reports.

It is intended to inspect the Wave Glider systems approximately four weeks from the time of deployment. This will be scheduled for a future sailing of the Ryan Chouest.

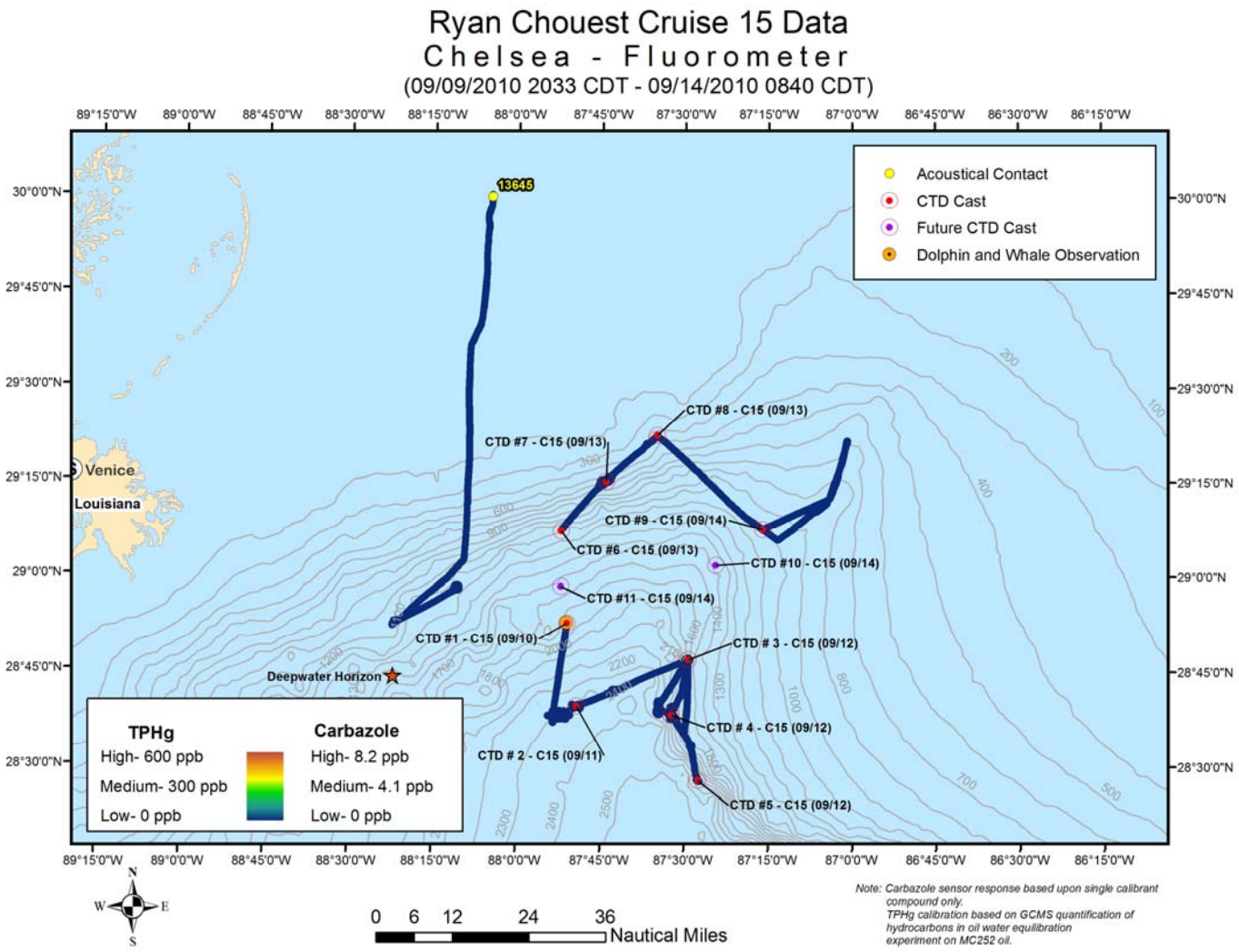

Figure 2A. Chelsea fluorometer results plotted with location on cruise track 15. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

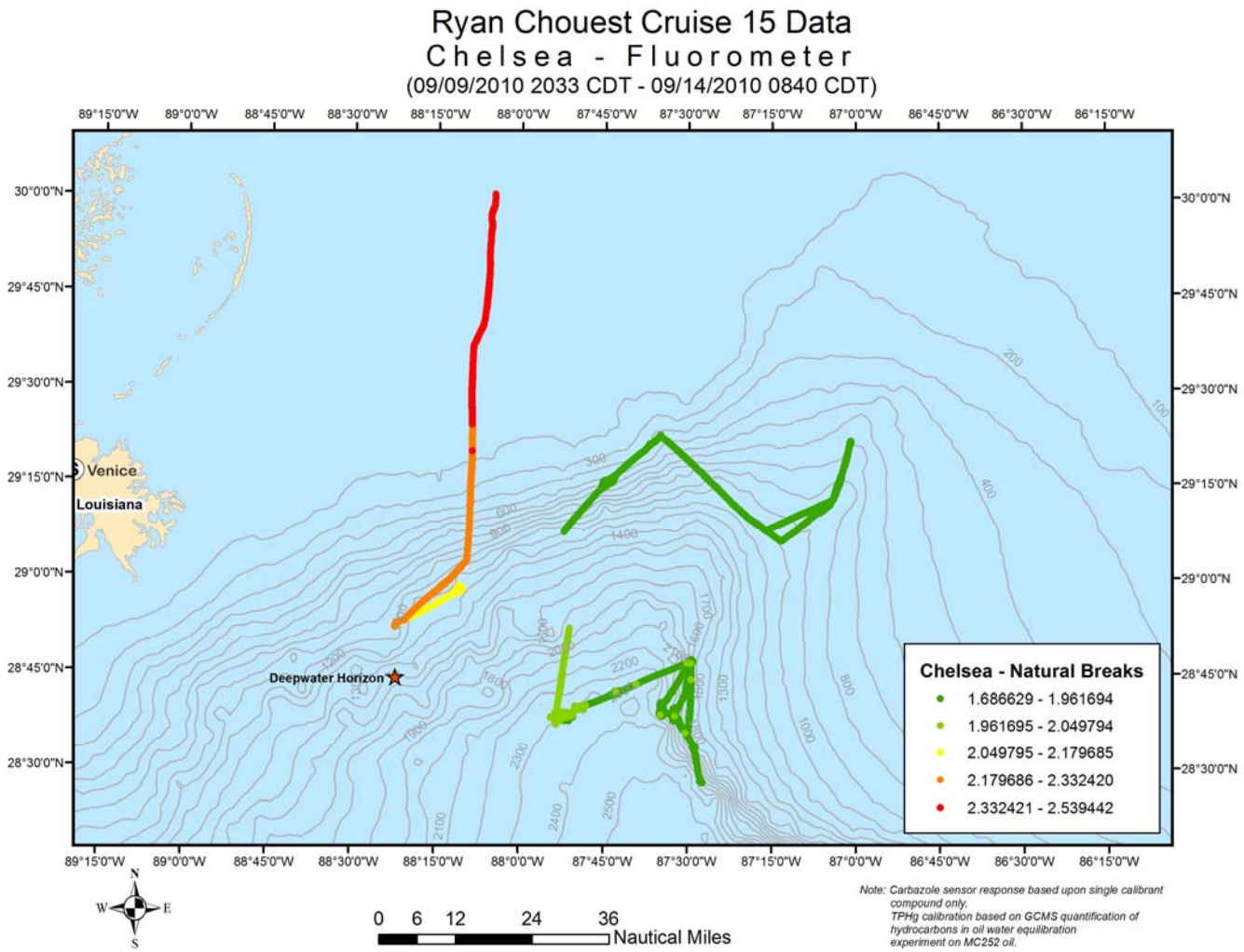

Figure 2B. Chelsea fluorometer results plotted with location on cruise track 15. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

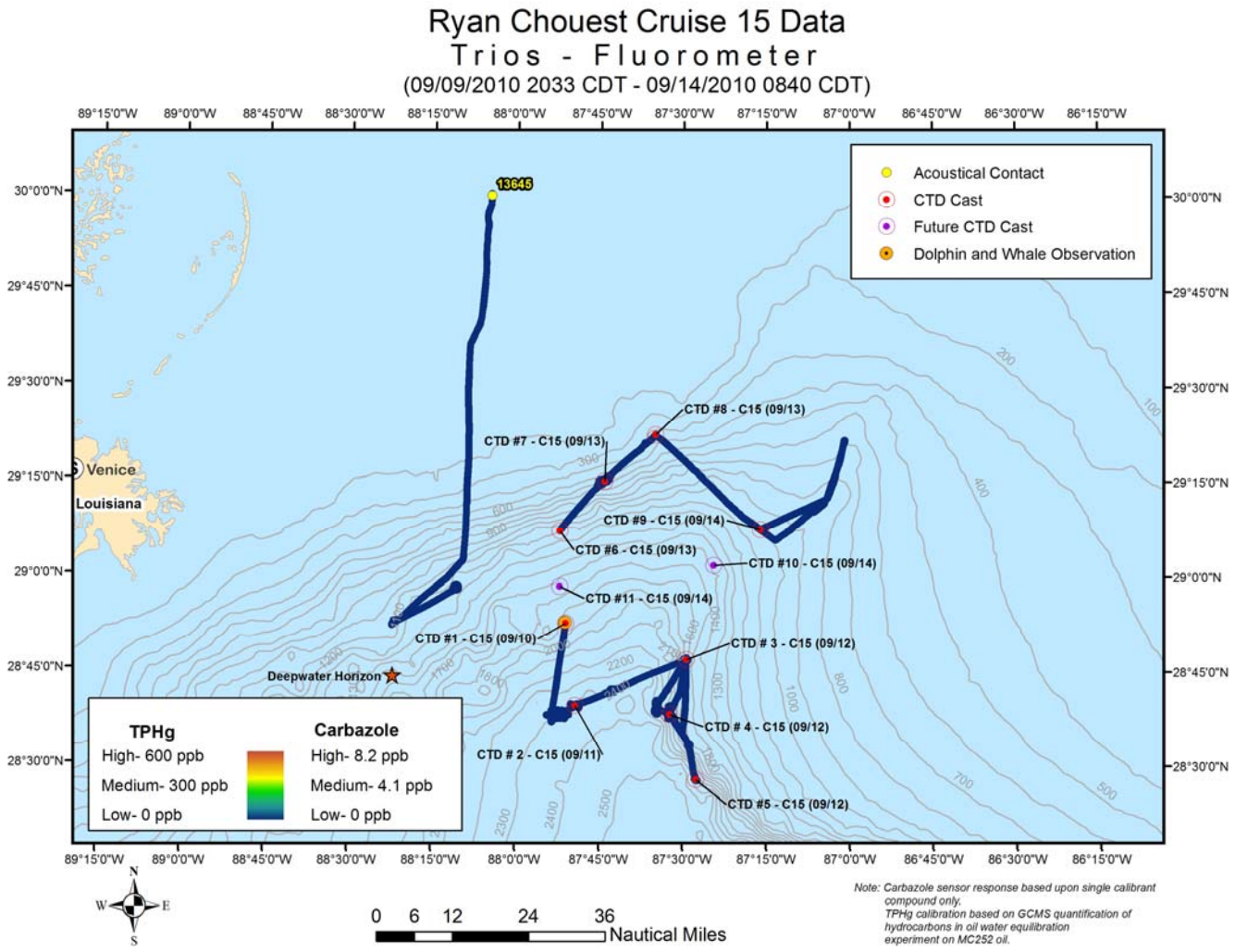

Figure 3A. Trios fluorometer results plotted with location on cruise track 15. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

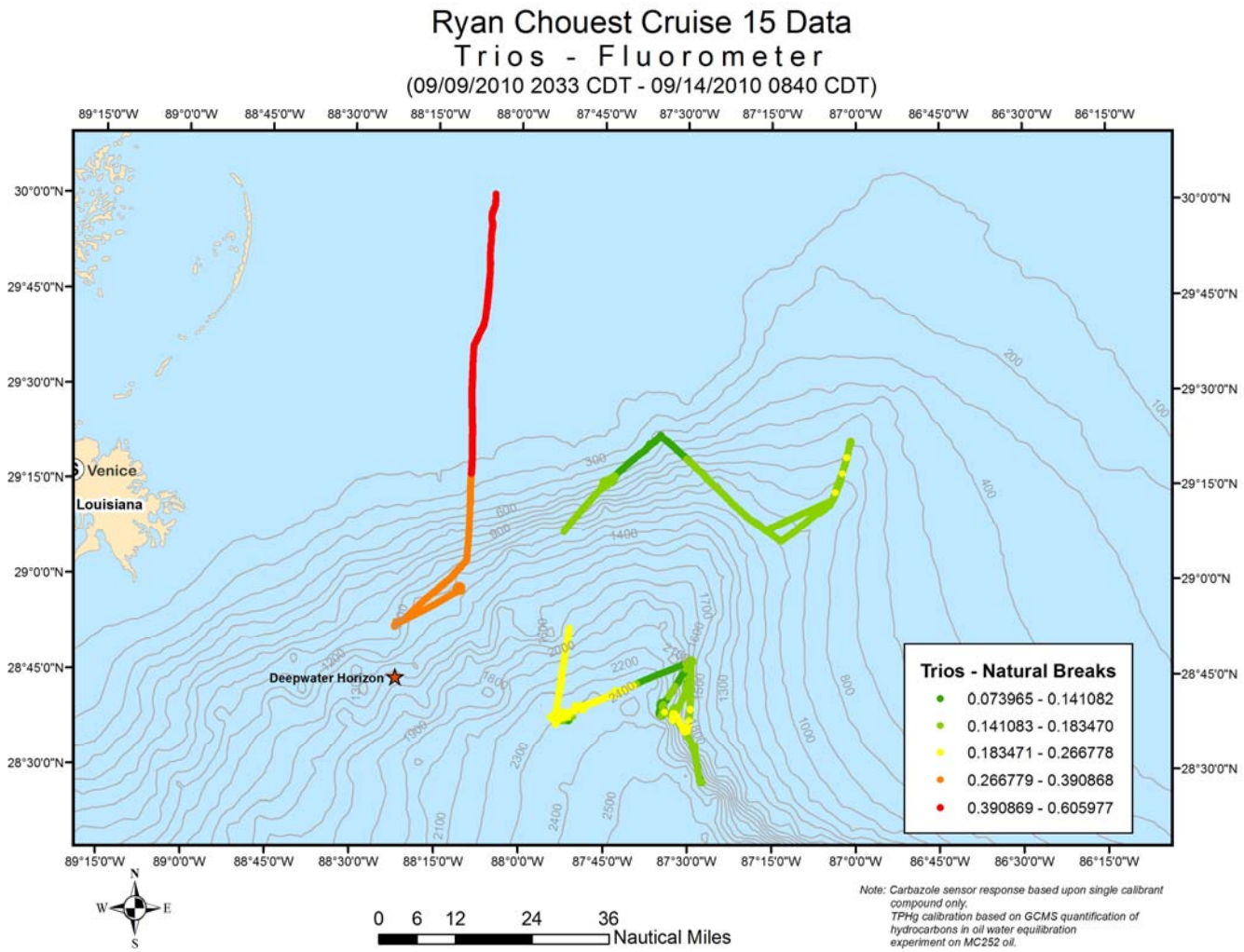

Figure 3B. Trios fluorometer results plotted with location on cruise track 15. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

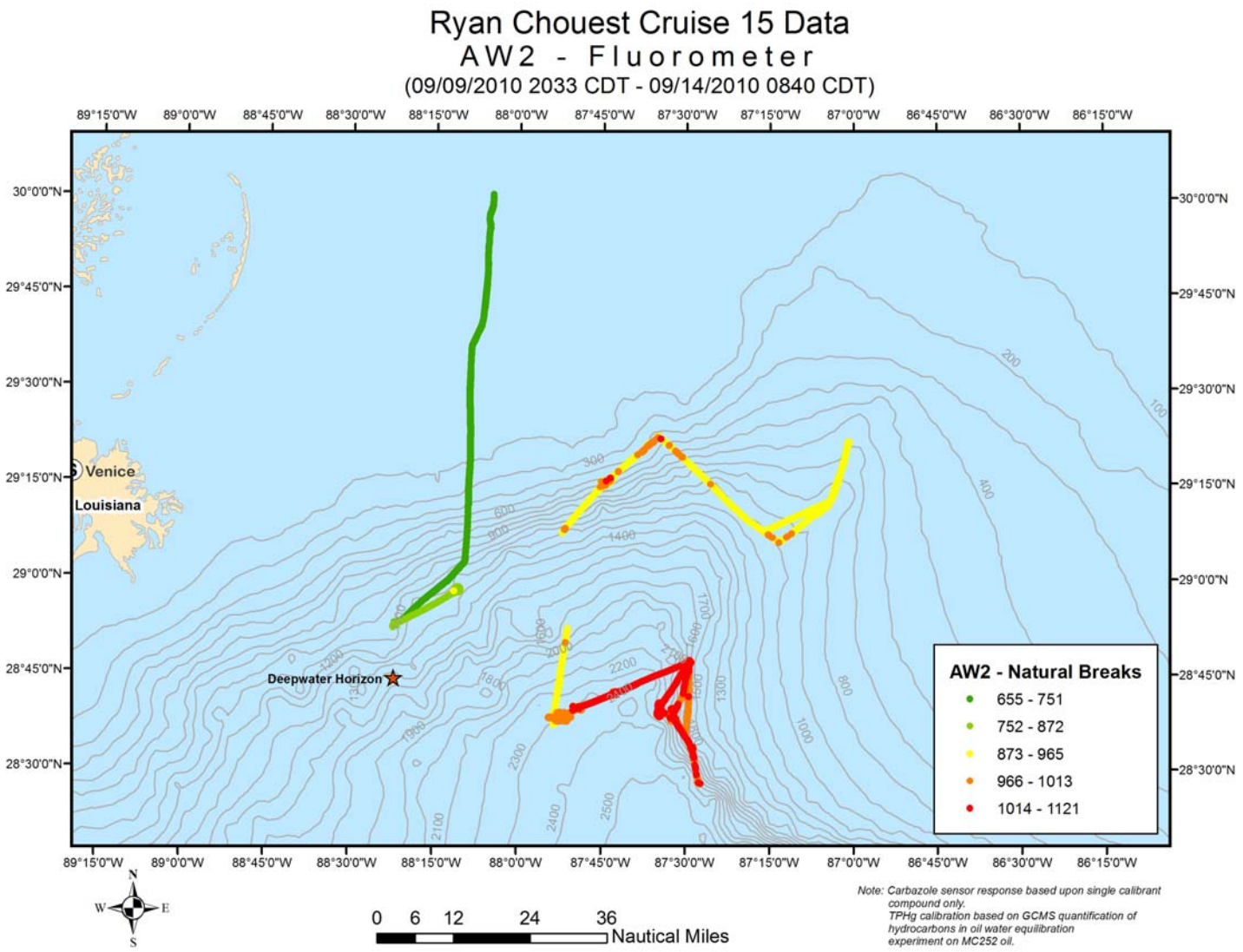

Figure 4. AW2 results plotted with location on cruise track 15. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

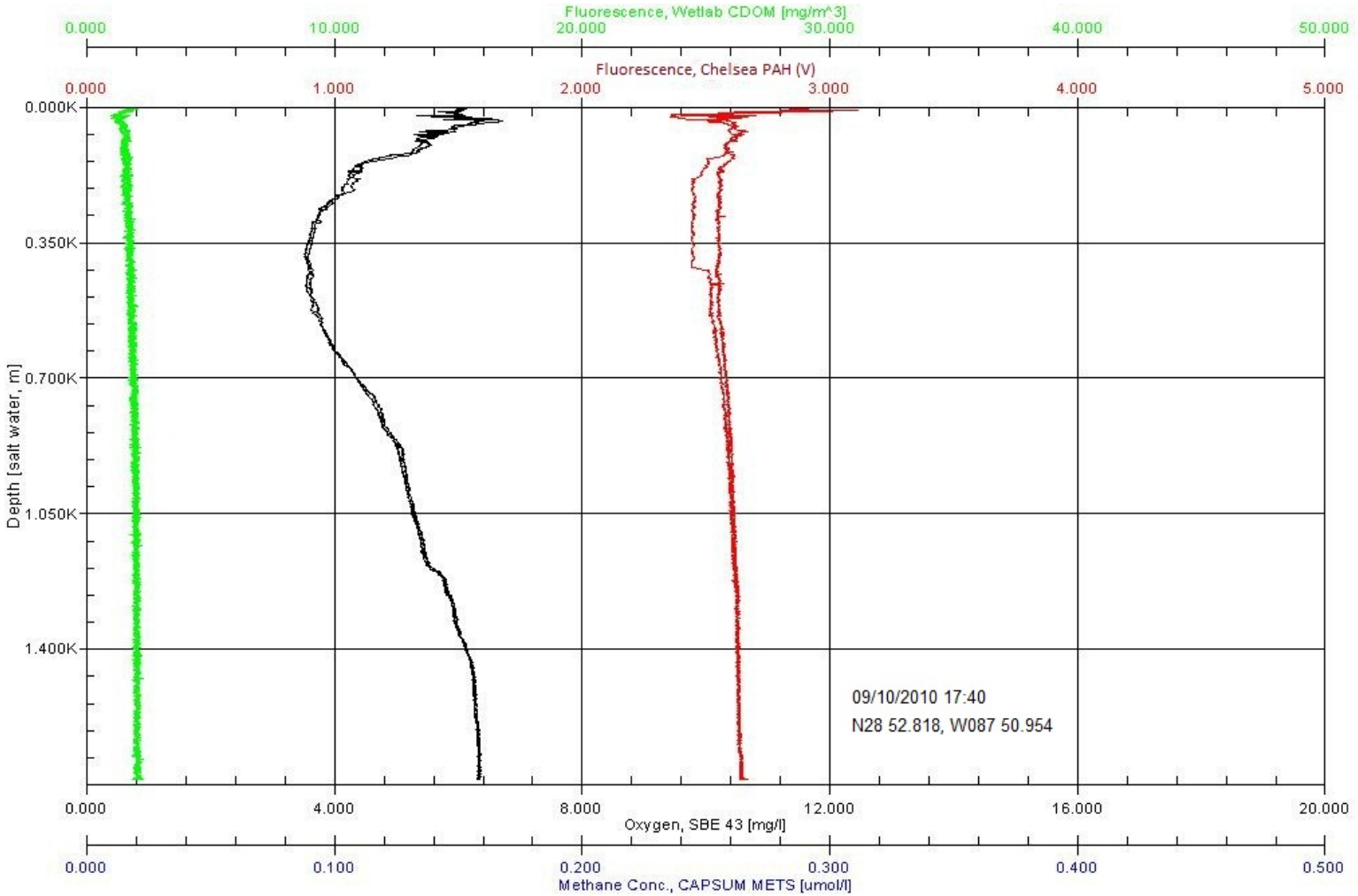

Figure 5. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 1 down to 1700 m. Water samples were collected at 1734m, 1480m, 1210m, 860m, 457m, 430m and 410m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

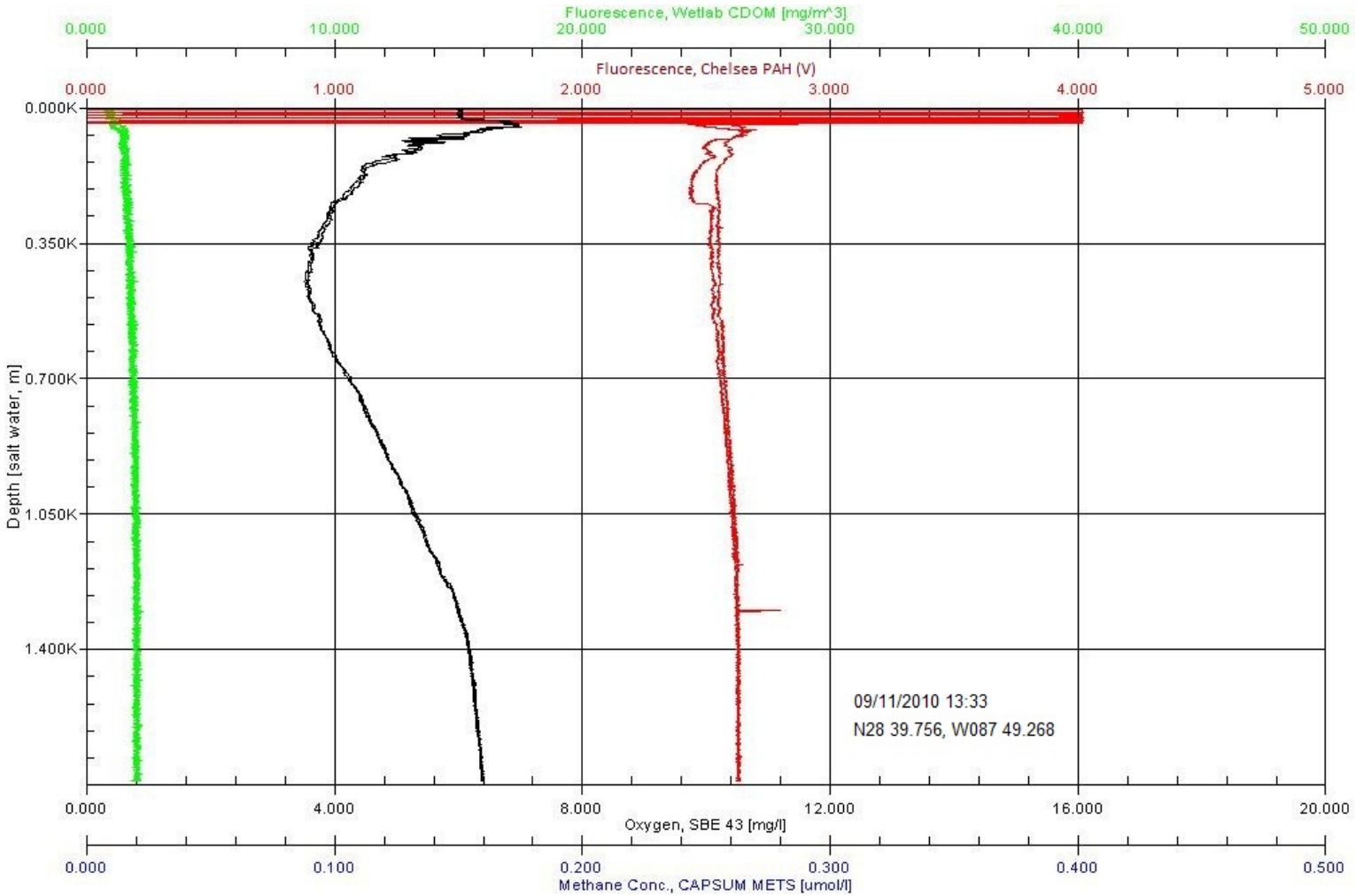

Figure 6. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 2 down to 1700 m. Water samples were collected at 1738m, 1130m, 265m and 235m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

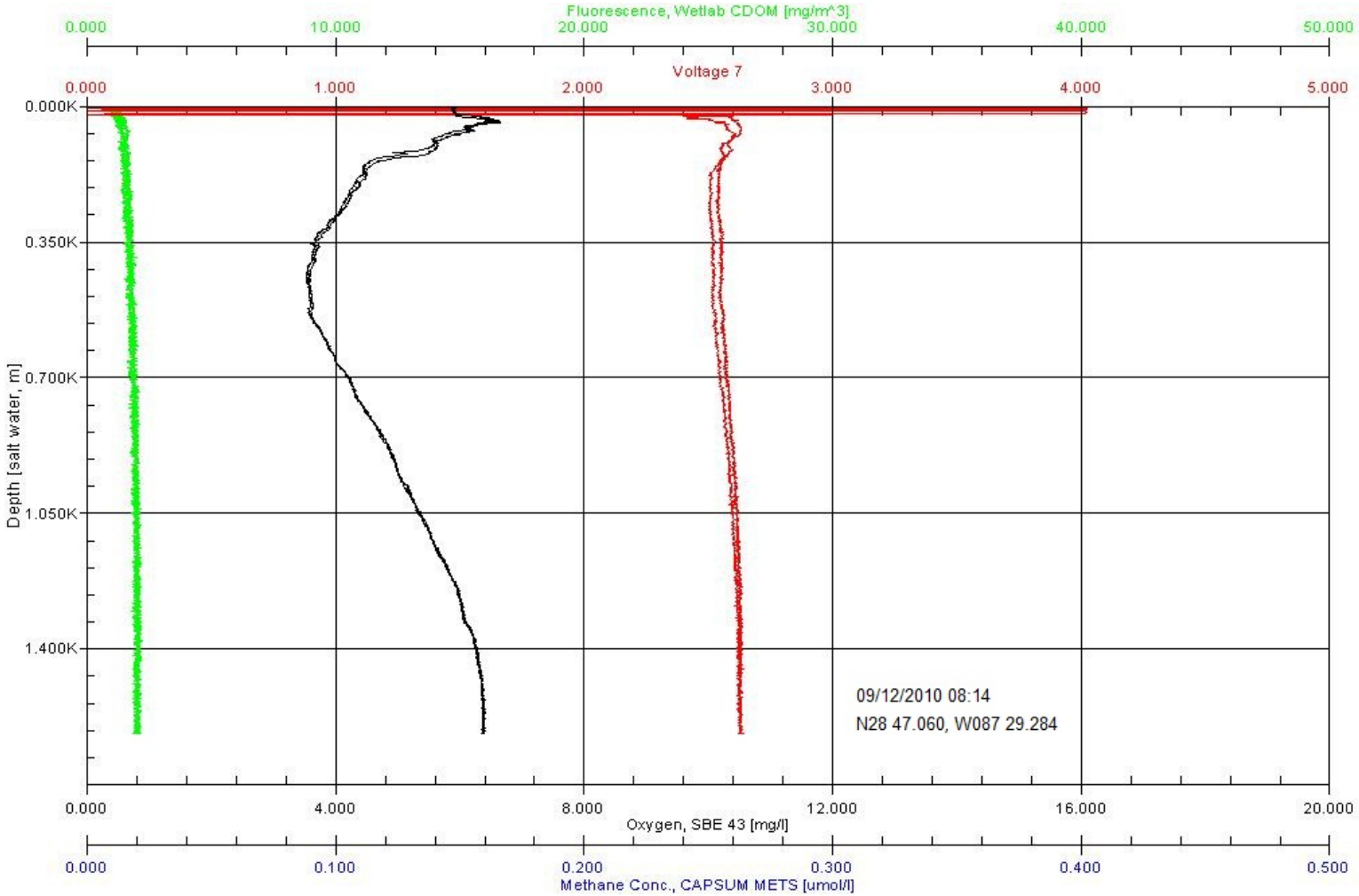

Figure 7. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 3 down to 1670 m. Water samples were collected at 1617m, 1339m, 1329m, 1319m and 446m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

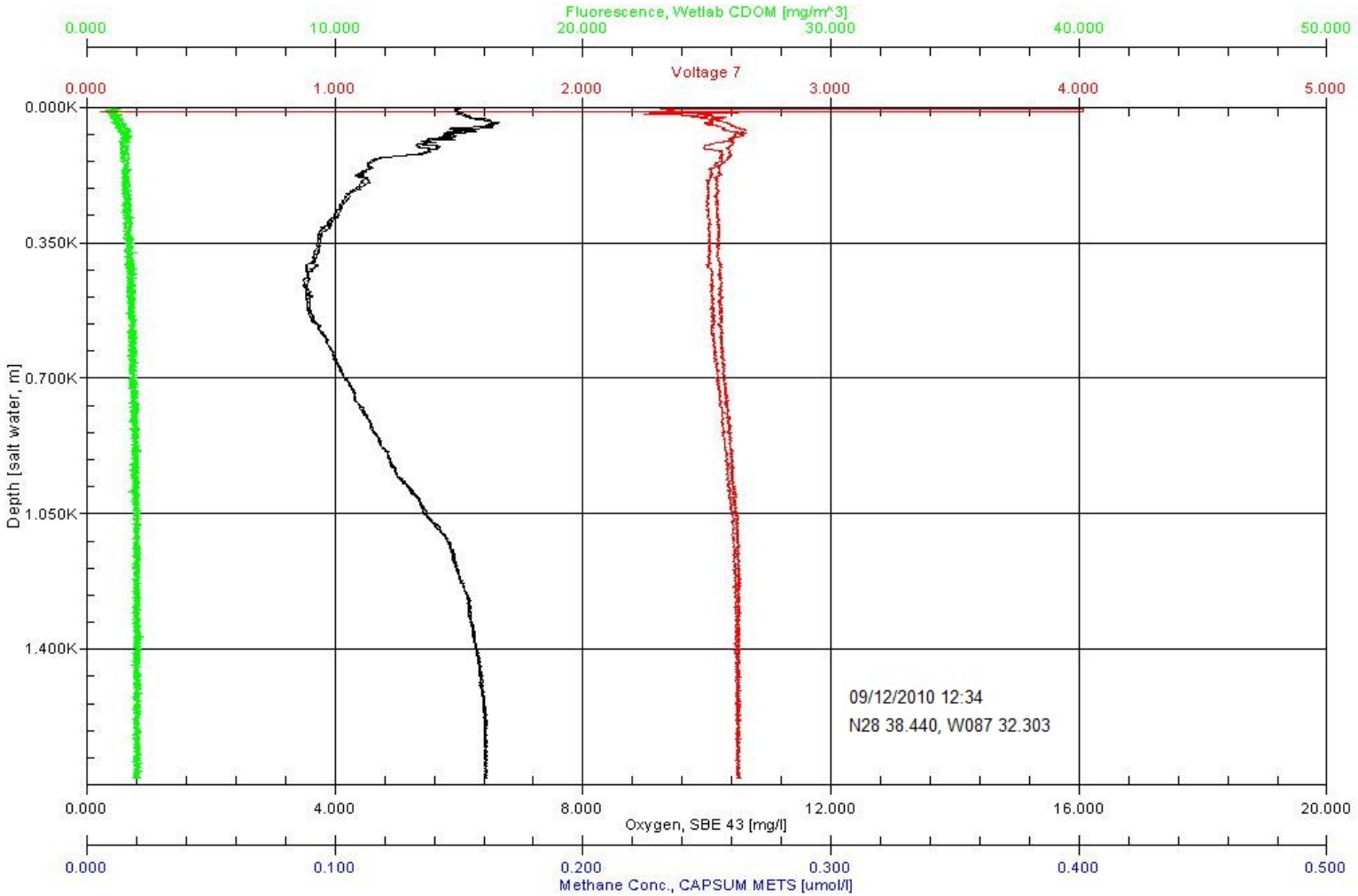

Figure 8. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 4 down to 1731m. Water samples were collected at 1731m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

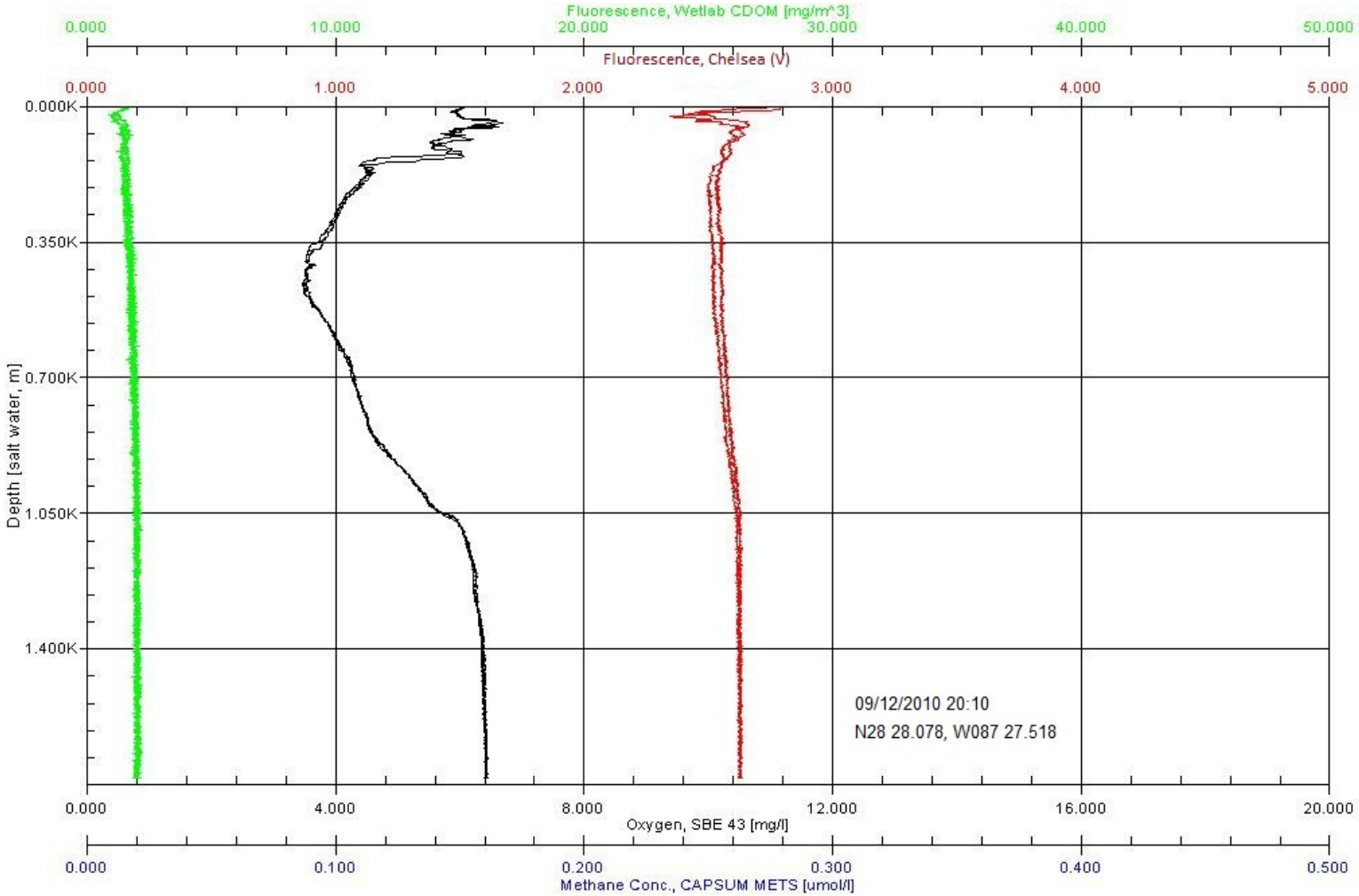

Figure 9. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 5 down to 1700 m. Water samples were collected at 1730m, 1100m, 850m and 630m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

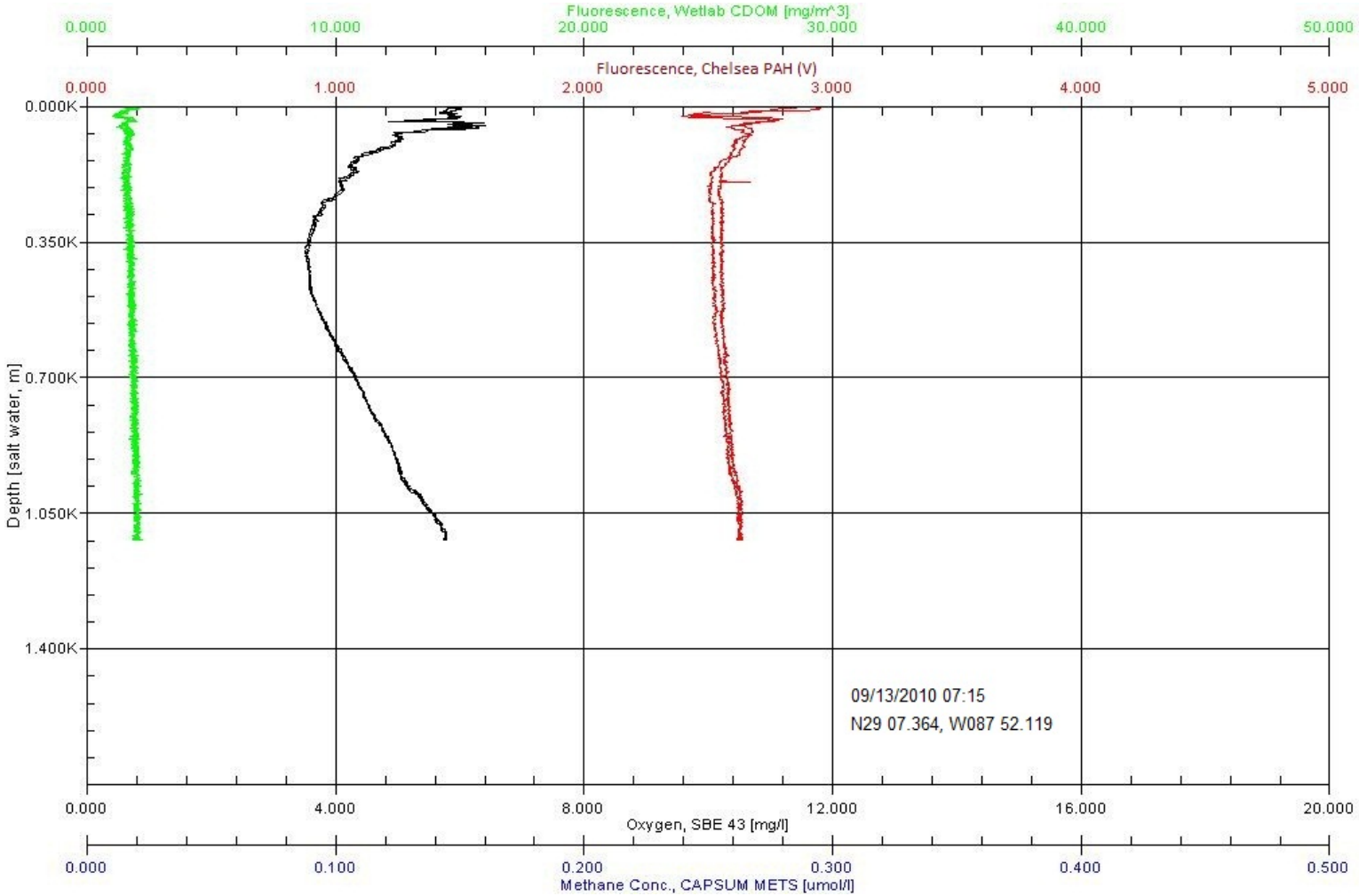

Figure 10. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 6 down to 1100 m. Water samples were collected at 1117m, 980m, 850m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

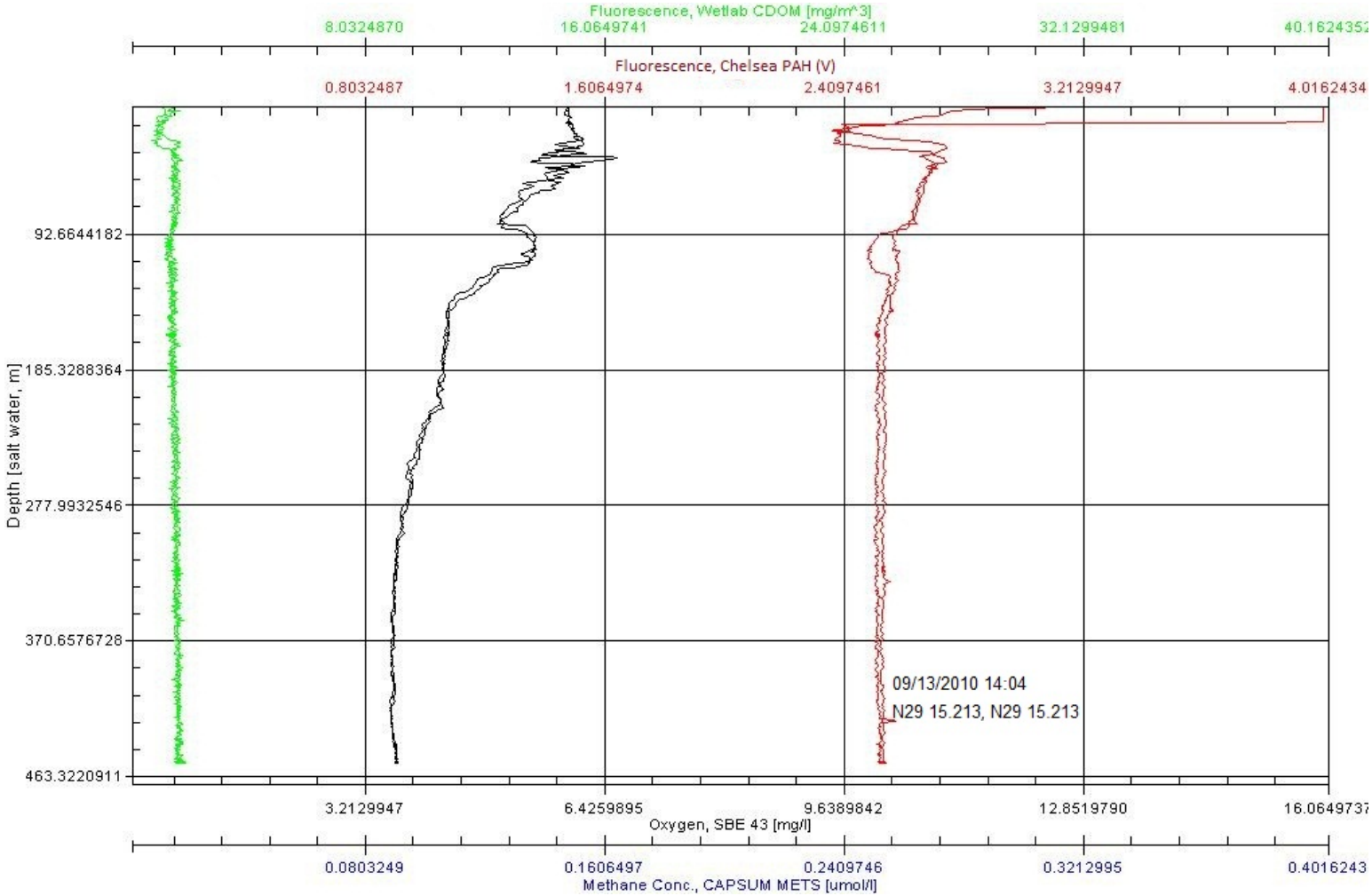

Figure 11. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 7 down to 450 m. Water samples were collected at 452m, 145m, 85m and 103m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

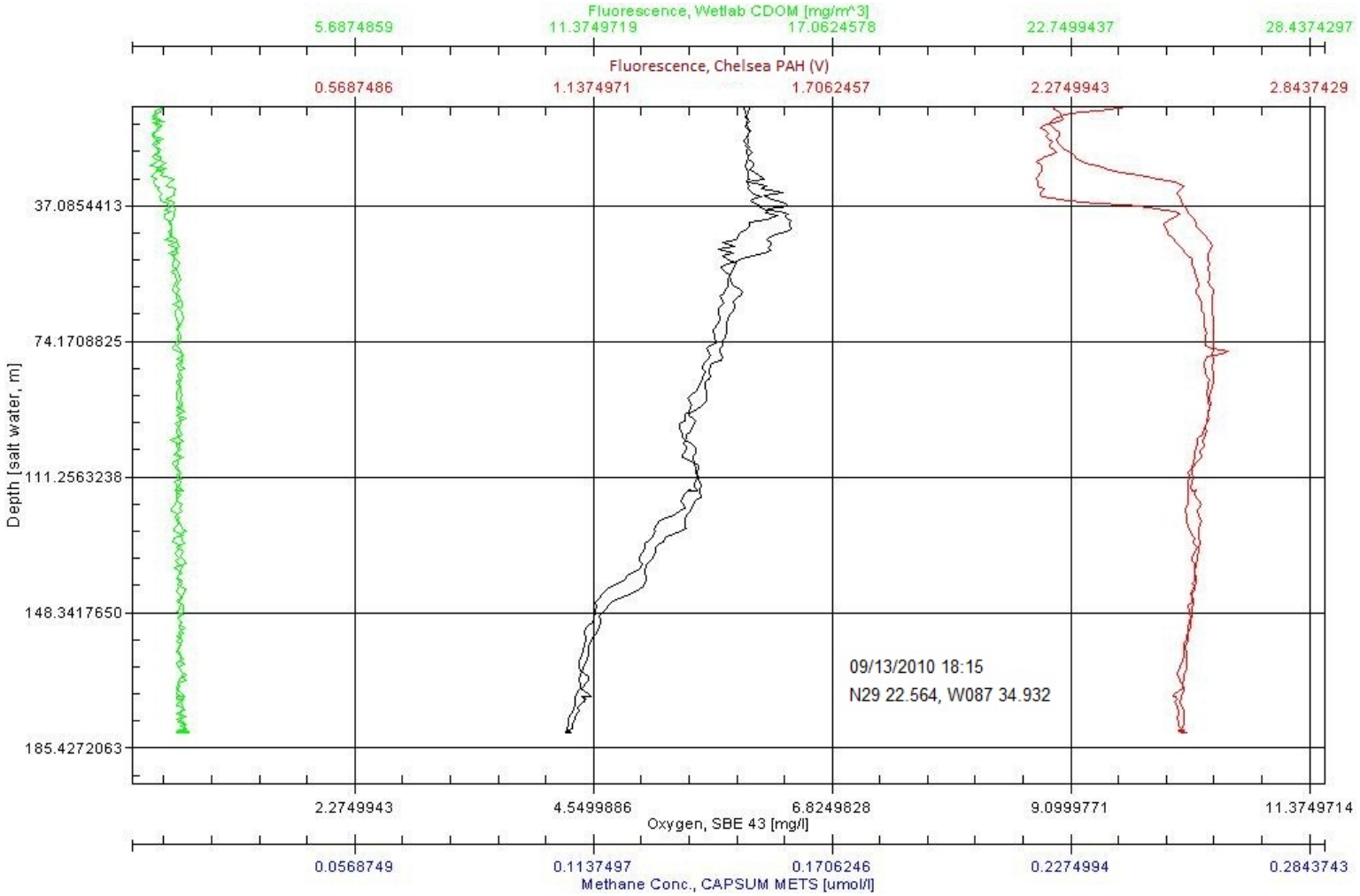

Figure 12. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 8 down to 180 m. Water samples were collected at 180m and 115m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

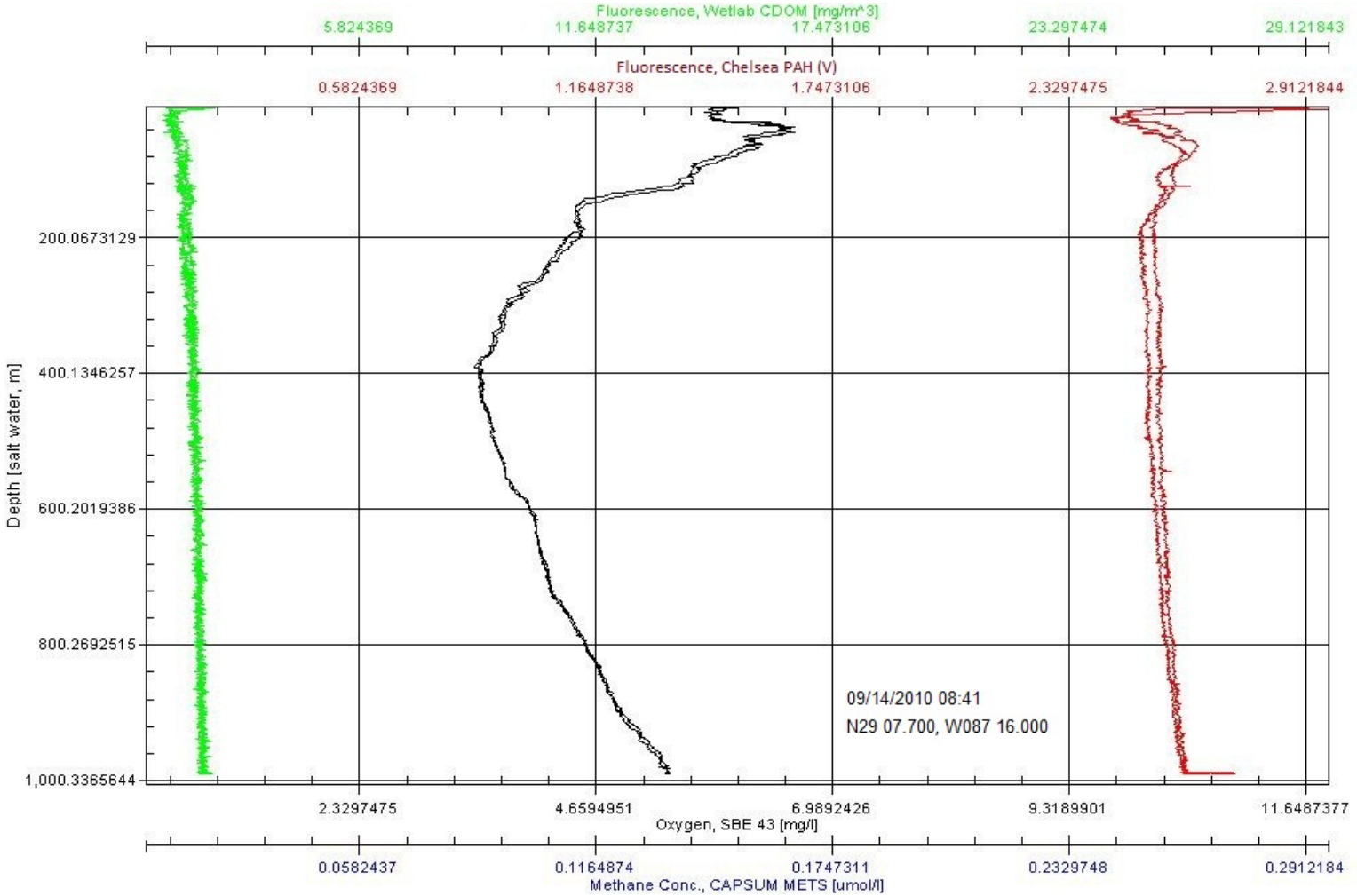

Figure 13. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 9 down to 1000 m. Water samples were collected at 989m and 720m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

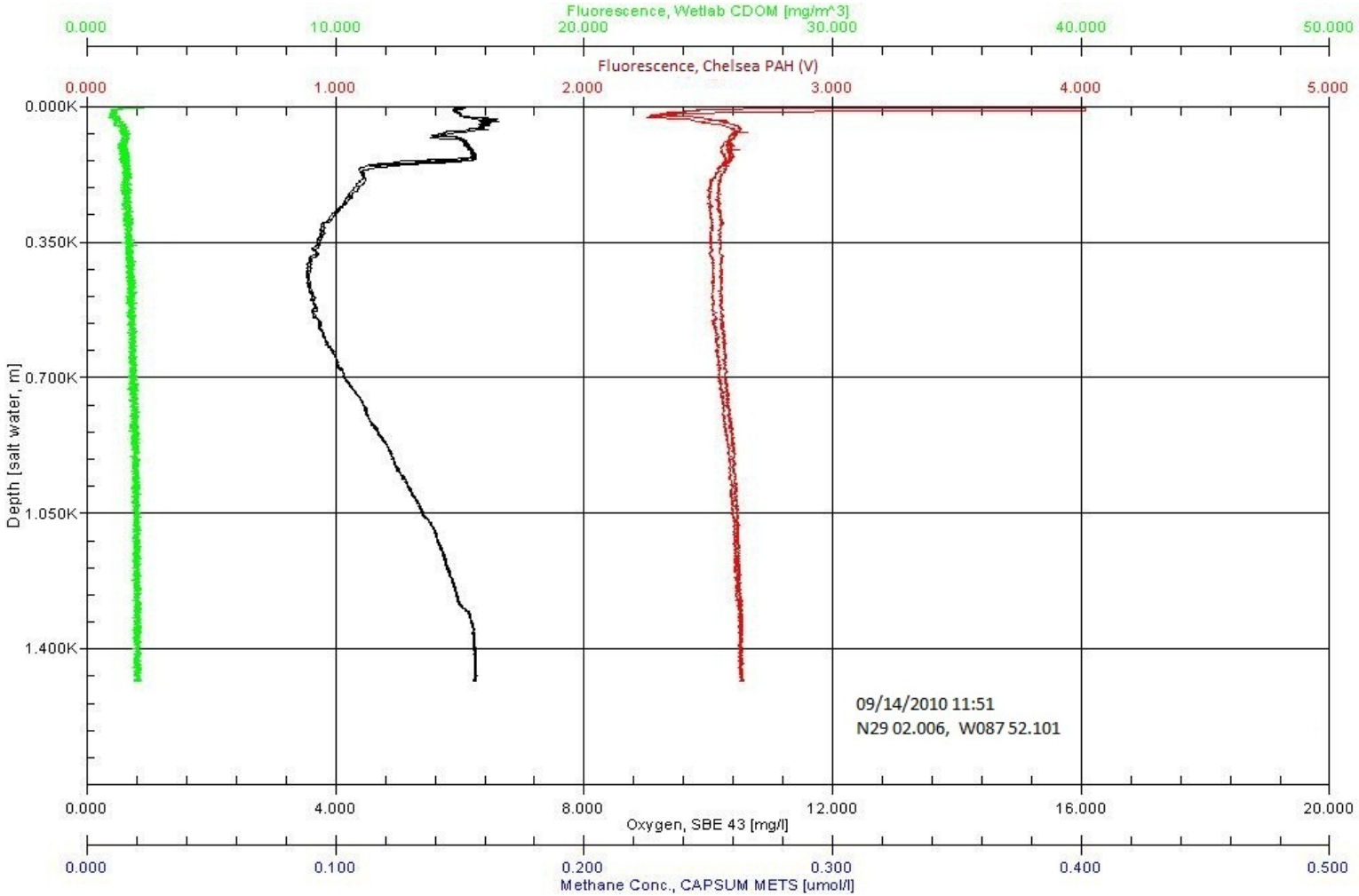

Figure 14. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 10 down to 1500 m. Water samples were collected at 1481m, 1380m and 1285m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

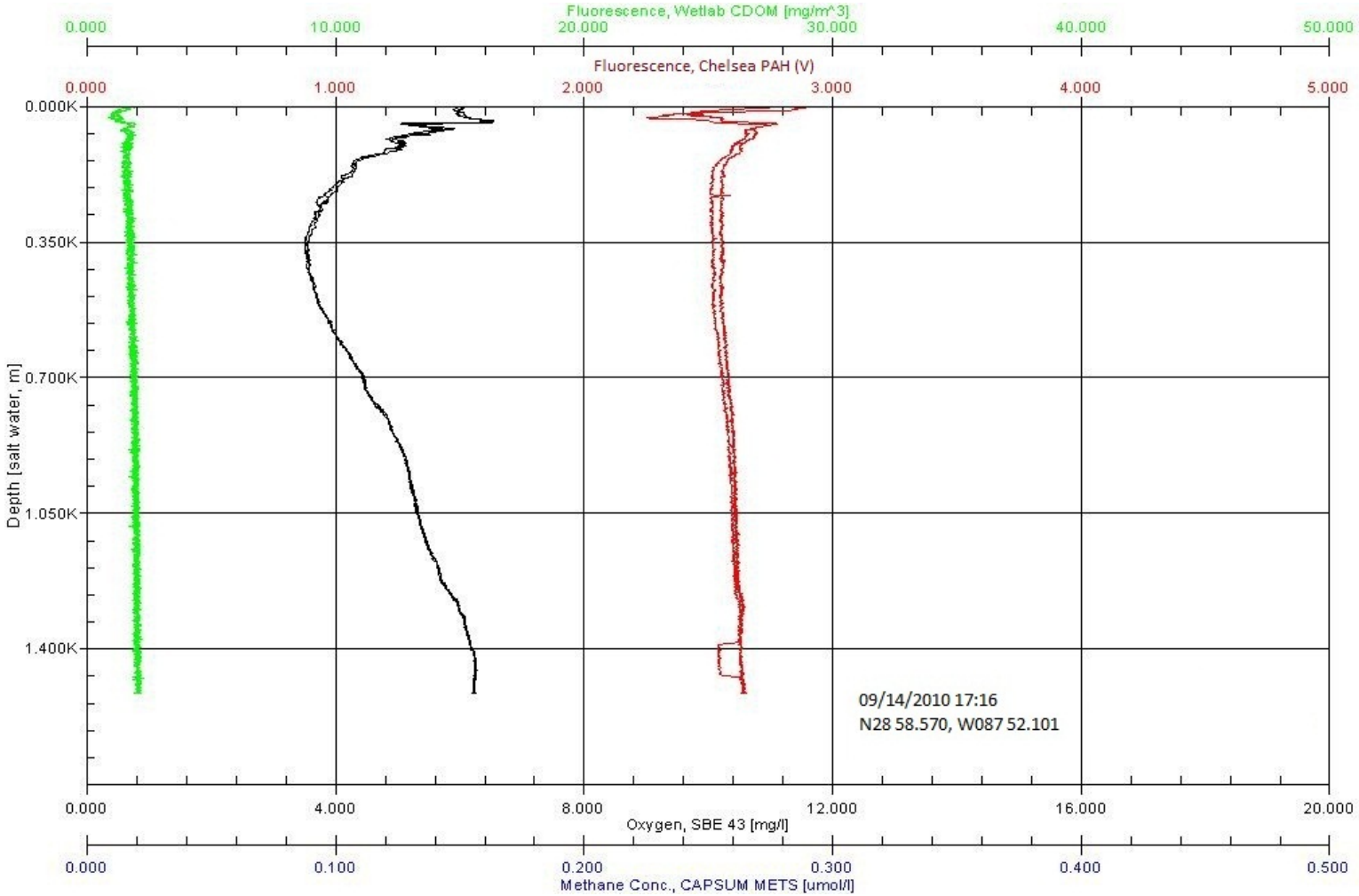

Figure 15. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 15 CTD cast 11 down to 1500 m. Water samples were collected at 1514m, 1440m, 1275m and 1228m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

Science Operations:

Observations of sea-surface conditions were made throughout the cruise. CTD cast data was collected from a total of eleven completed casts. The EK-60 echo sounder was continuously collecting data to evaluate the seabed and water column for possible seeps. However, no evidence of natural seeps was found during Cruise 15 at the sites selected for investigation.

Problems/operational issues:

No problems or operational issues are reported.

Selected Photographs:

Photo 1. Dolphins on the bow wave of the Ryan Chouest

Photo 2. Wave Gliders 1 & 2 on the deck of the Ryan Chouest

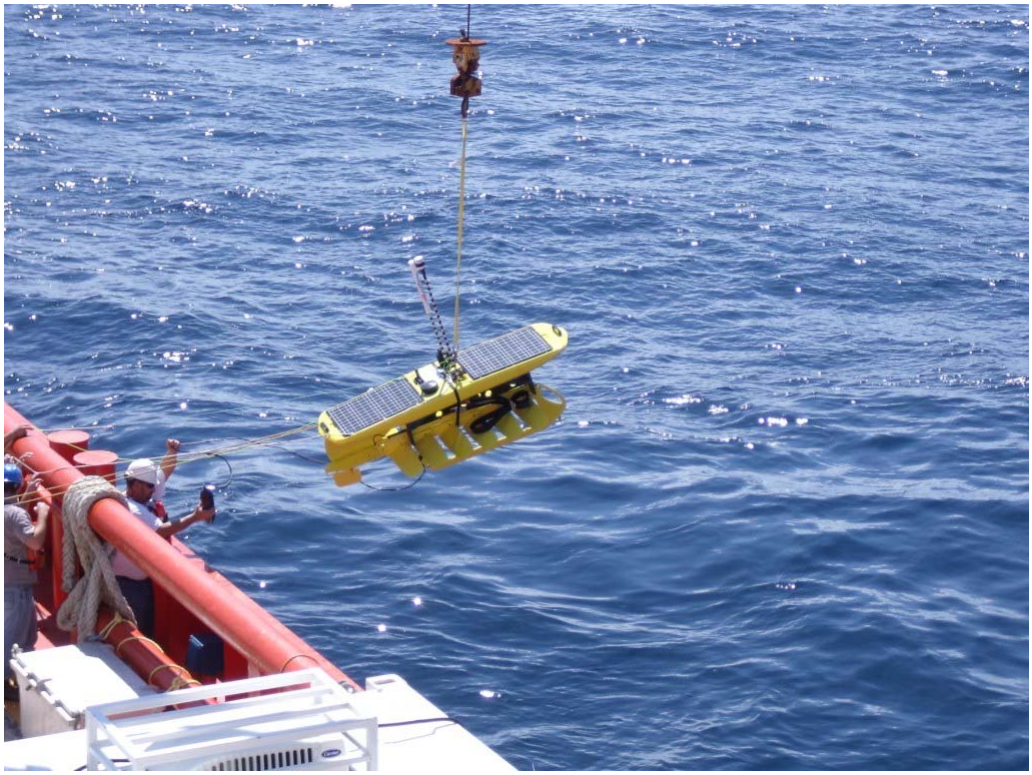

Photo 3. Launch of wave glider #2

Photo 4. Wave glider# 2 fully deployed

Planned activities for next 24 hours and next cruise:

The Ryan Chouest docked in port at Theodore for scheduled personnel and crew change, cruise up-date and groceries delivery. Two Wave Gliders were loaded on to the vessel for deployment during Cruise 15. which is scheduled to start on the 09/09. There are two main objectives planned for Cruise 15. The first objective is to deploy two satellite-controlled, unmanned vehicles, known as Wave Gliders, and the second objective is to survey natural seeps located in the Desota Canyon area located to the NE of the wellhead using the echosounder and CTD equipment. The collection of underway fluorometery data will be continuous throughout the duration of the Cruise.

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		