
September 6th | 2010

Ryan Chouest daily data transmission and report

Period covered: 0921 hrs 09/05/2010 – 0855 hrs 09/06/2010

83.275 - Nautical miles covered

Vessel science party:

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Cruise notes:

The *Ryan Chouest* continued along the planned cruise 14 route towards the location for CTD cast #3 and #4. (Figure 1). A clover leaf pattern was conducted over the location of CTD cast site #4 to characterise the seep. We continued to collect underway fluorometry pump and echo sounder survey data.

Science results and preliminary interpretation:

Fluorometry results

The Chelsea sensor indicates low levels and the Trios sensor medium to low levels of inferred hydrocarbons concentrations through the reporting period (Figures 2 and 3).

Surface Observations

There were sightings of schools of fish and squid.

EK-60 Echo sounder results

One major contact was identified. To further define the contact we surveyed it from different directions in a 'clover leaf' pattern during this cruise. Figure 4 to Figure 11 show the echo sounder images obtained when the *Ryan Chouest* approached the potential natural seep from different angles after establishing its location. The plume from the contact extended from the bottom straight to ~100m water depth and diminished. A 3D image of the contact is being constructed from the information collected.

CTD Casts

Two CTD test casts were completed during this report period (Figure 1, Figure 12 and Figure 13). CTD test cast #3 in 1370 m of water and CTD cast #4 in 440 m of water. The Chelsea fluorometer and a methane sensor were also attached to the CTD carousel to provide real time chemical information.

Cast#3 was performed at W088 40.795 N28 30.269, with the aim to decide the existence of deep water Hydrocarbon plume. At ~1100m depth a PAH fluorometer maximum and a dissolved oxygen minimum peaks were shown in the vertical profiles, which may suggest the existence of the deep water hydrocarbons (Figure 12). . It is worth noting that the CDOM fluorometer did not display any notable changes at the ~1100 depth. Water samples were collected at 1360m, 1190m, 1125m and 1000m for further GCMS analysis to decide the concentration of the PAH they may contain.

Cast #4 was conducted at W088 40.801 N 28 30.266. The objective of it was to verify the potential natural seeps found during Cruise 11 and assess their potential contribution to the surface CDOM fluorometry anomaly. Once the location of contact was established the ship was carefully adjusted so that the CTD platform is directly on top of the "plume" detected by the echo sounder system. The plume shown in the echo sounder image did not trigger notable response in the CDOM and PAH fluorometers (Figure 13). Water samples were collected at 350m, 340m, 285m 200m and 130m for further GCMS analysis.

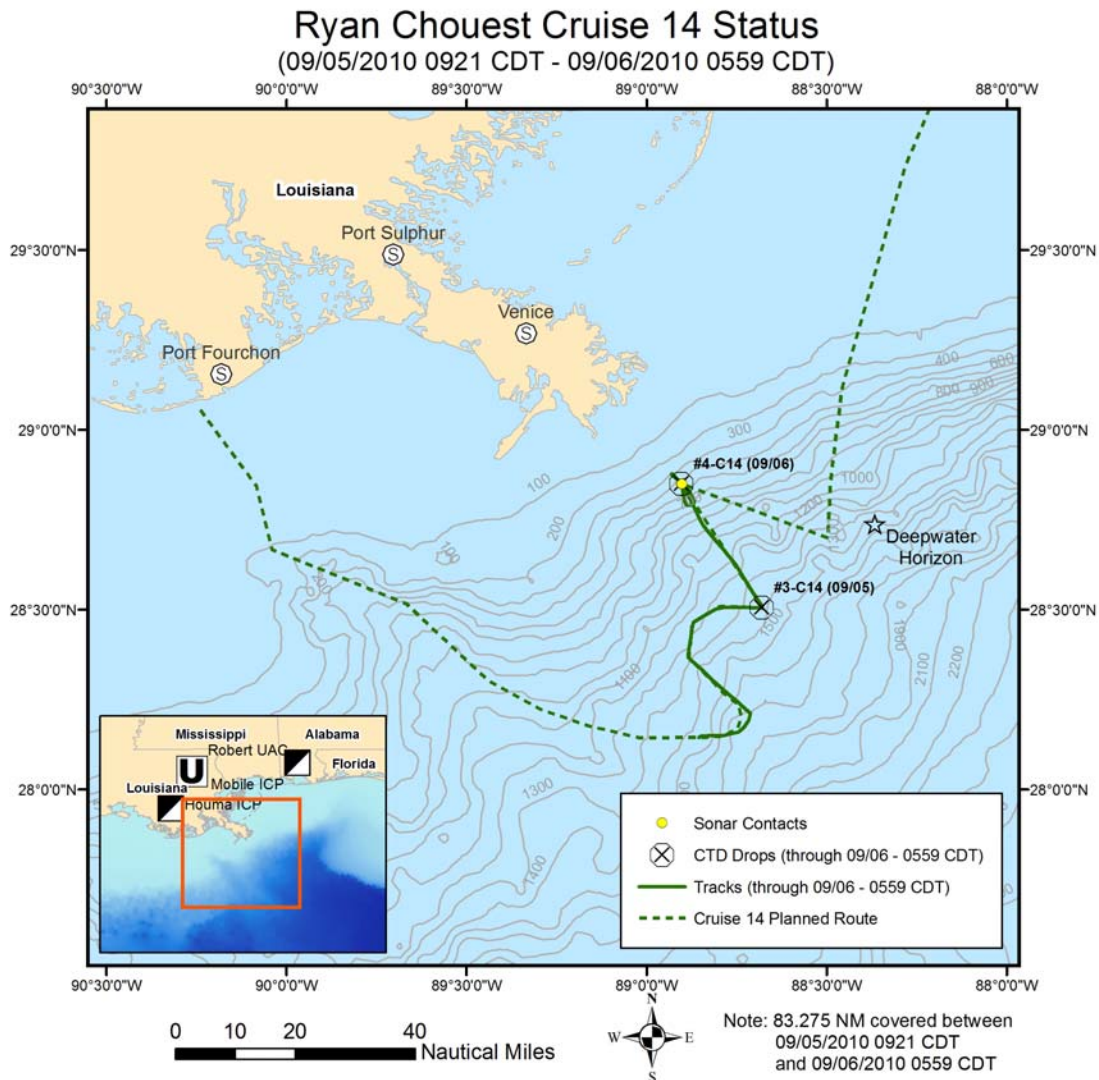


Figure 1: Track through planned route for Cruise 14 from 09/05/2010 – 09/06/2010.

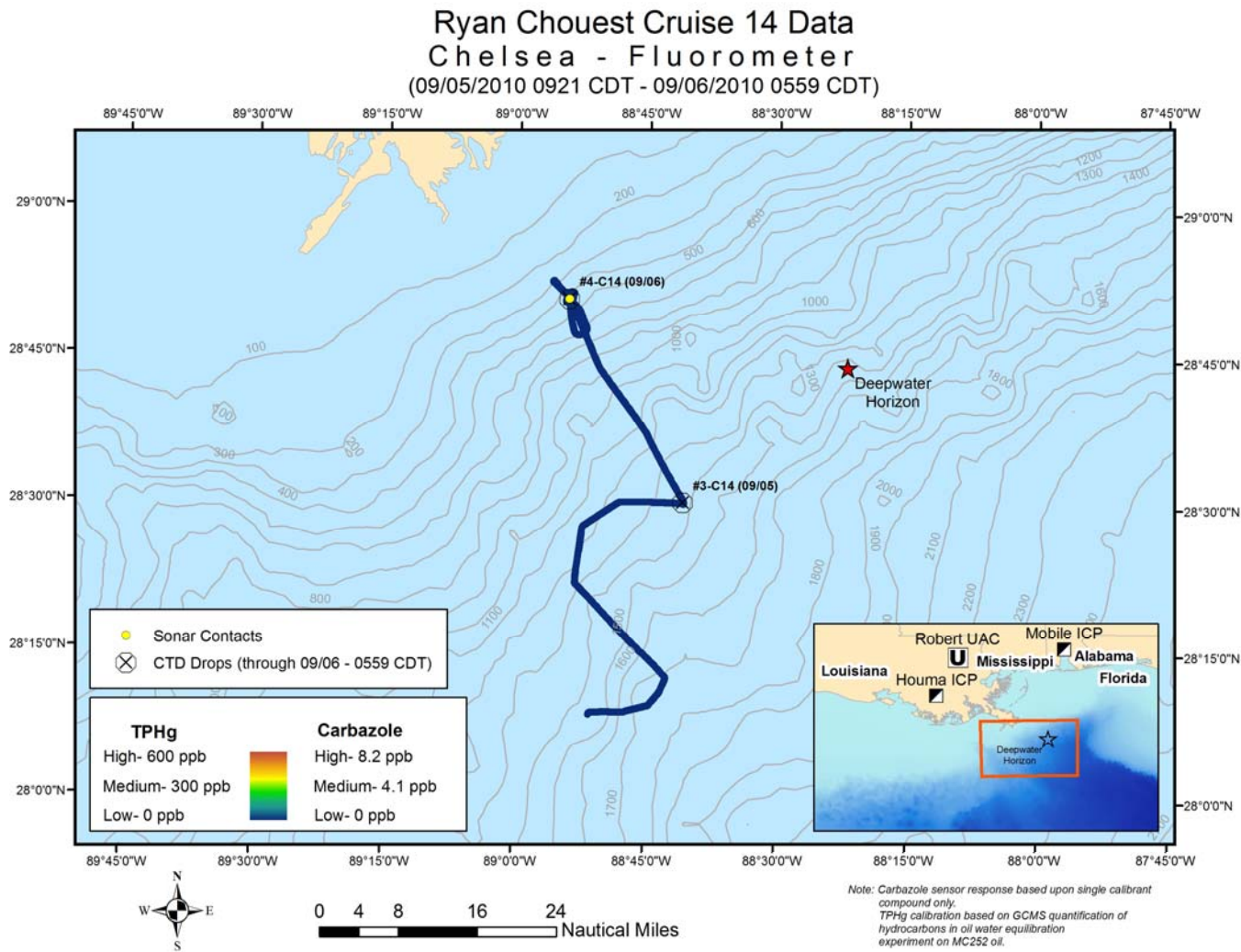


Figure 2. Chelsea fluorometer results plotted with location on cruise track 14. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems. Purple lines represent depth contours of 100 m intervals.

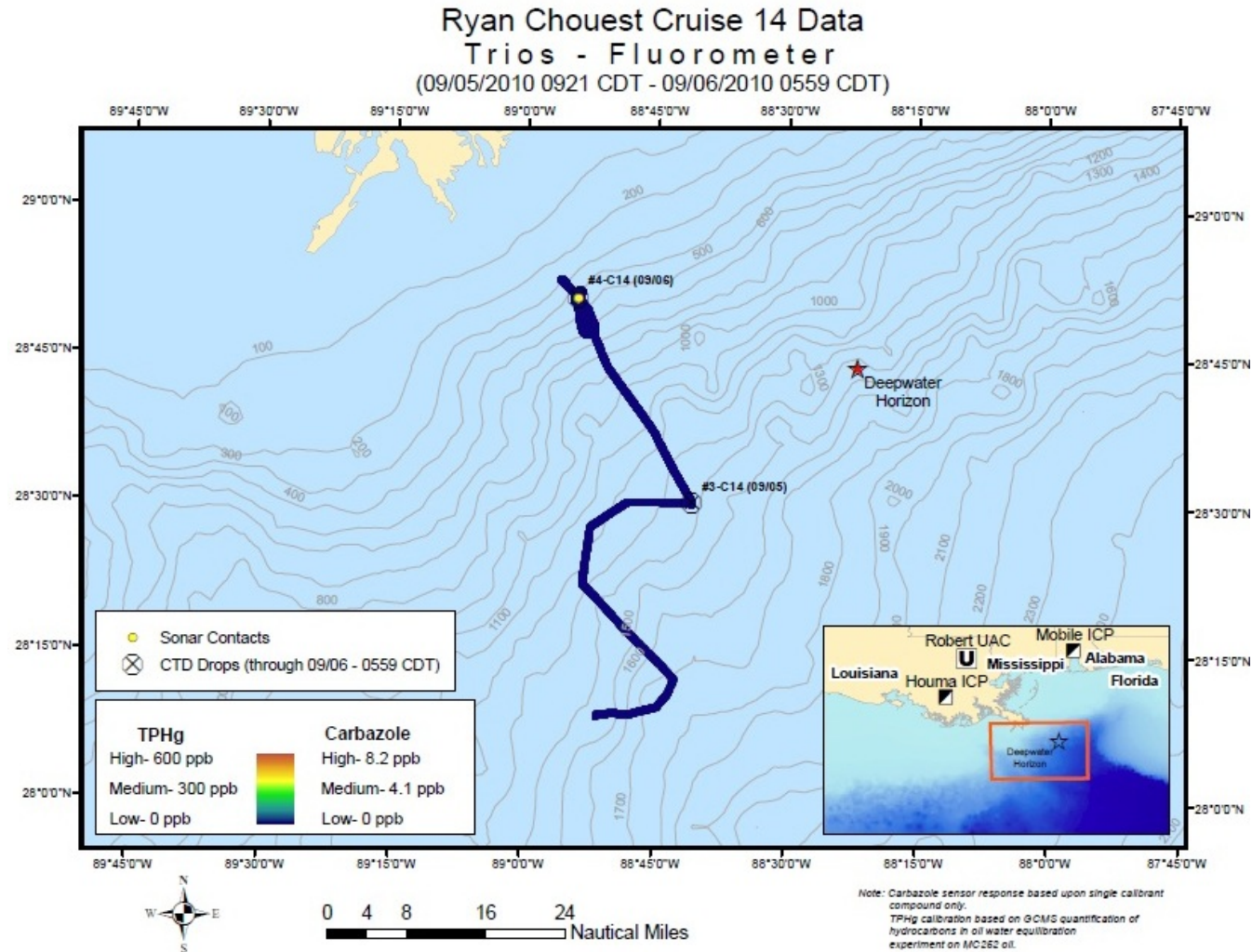


Figure 3. Trios fluorometer results plotted with location on cruise track 14. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems. Purple lines represent depth contours of 100 m intervals.

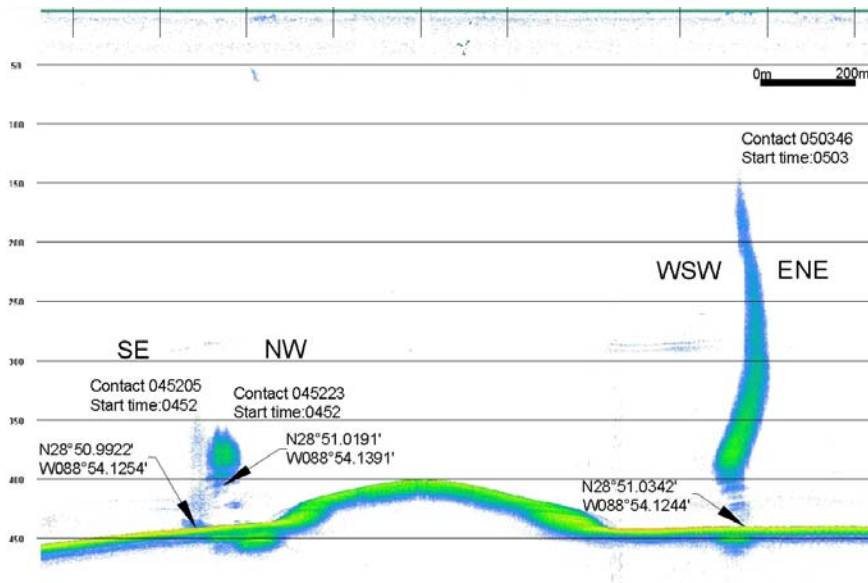


Figure 4. This line is oriented initially from Southeast on the left to Northwest and then Westsouthwest to Eastnortheast. a) Contact_09062010_045205. Description: Bottom contact. Time (CST): 09/05/2010 23:52:05. Location: 28° 50.9922N, 88° 54.1254W. Depth: 344.5m to 443.5m. b) Contact_09062010_045223. Description: Near bottom contact. Time (CST): 09/05/2010 23:52:23. Location: 28° 51.0191N; 88° 54.1391W. 357.5m to 410.5m. c) Contact_09062010_050346. Description: Bottom to midwater contact. Time (CST): 09/06/2010 00:03:46. Location: 28° 54.1244N, 88° 54.1244W. Depth: 126.0m to 437.2m

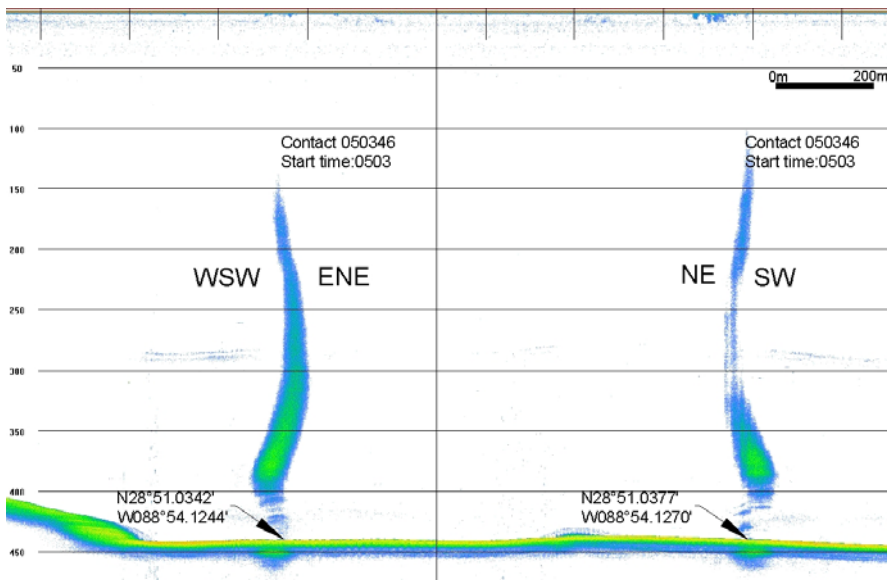


Figure 5. This line is oriented initially from Westsouthwest on the left to Eastnortheast and then Northeast to Southwest. a) Contact_09062010_050346. Description: Bottom to midwater contact. Time (CST): 09/06/2010 00:03:46. Location: 28° 51.0342N, 88° 54.1244W. Depth: 126.0m to 437.2m. b) Contact_09062010_051224. Description: Bottom to midwater contact. Time (CST): 09/06/2010 00:12:24. Location: 28° 51.0377N; 88° 54.1270W. Depth: 93.5m to 438.9m.

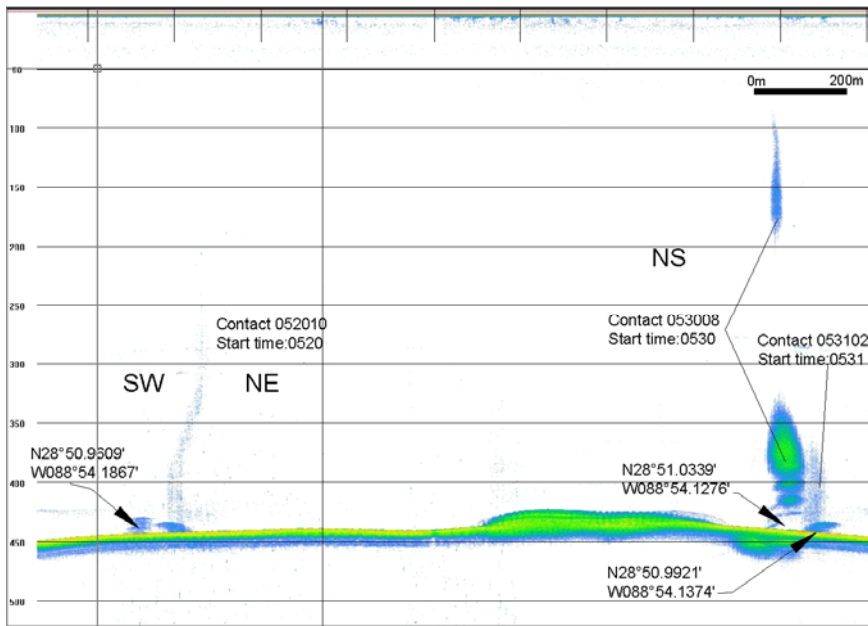


Figure 6. This line is oriented initially from Southwest on the left to Northeast. a) Contact_09062010_052010. Description: Bottom contact. Time (CST): 09/06/2010 00:20:10. Location: 28° 50.9690N, 88° 54.1867W. Depth: 426.9m to 441.1m. b) Contact_09062010_053008. Description: Near bottom contact. Time (CST): 09/06/2010 00:30:08. Location: 28° 51.0339N; 88° 54.1276W. 86.3m to 432.0. c) Contact_09062010_053102. Description: Bottom contact. Time (CST): 09/06/2010 00:31:02. Location: 28° 54.9921N, 88° 54.1374W. Depth: 359.1m to 440.4.

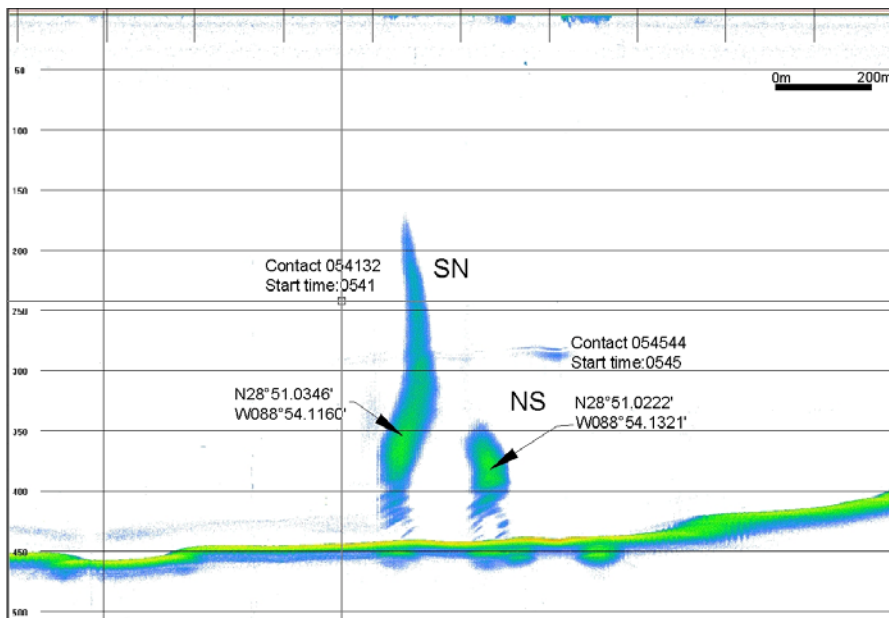


Figure 7. This line is oriented from Southnorth on the left to Northsouth. a) Contact_09062010_054132. Description: Bottom contact. Time (CST): 09/06/2010 00:41:32. Location: 28° 51.0346N, 88° 54.1160W. Depth: 166m to 440.5m. b) Contact_09062010_054544. Description: Bottom contact. Time (CST): 09/06/2010 00:45:44. Location: 28° 51.0222N; 88° 54.1321W. 212.3m to 438.8m.

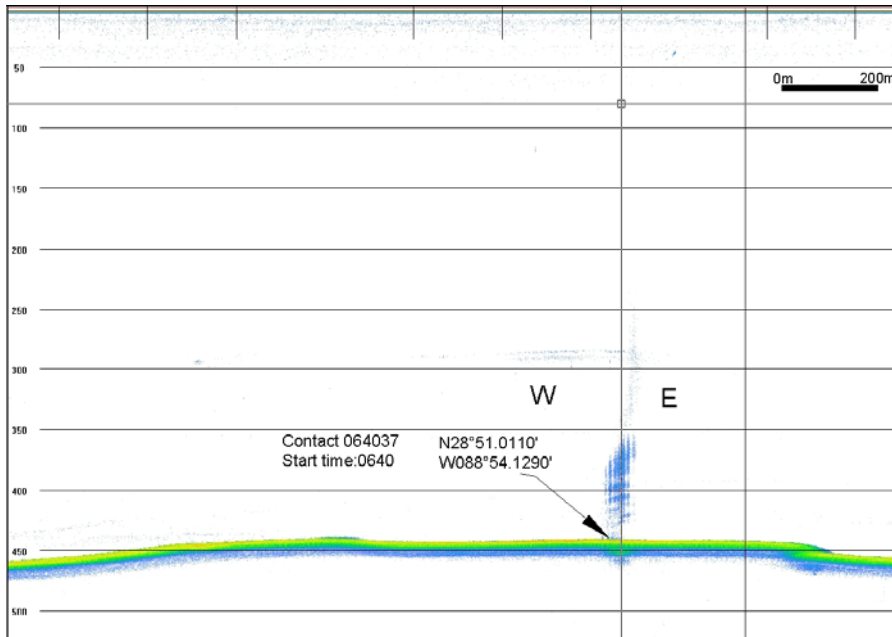


Figure 8. This line is oriented from West on the left to East. a) Contact_09062010_064037. Description: Bottom to midwater contact. Time (CST): 09/06/2010 01:40:37. Location: 28° 51.0110N, 88° 54.1290W. Depth: 159.6m to 437.2m.

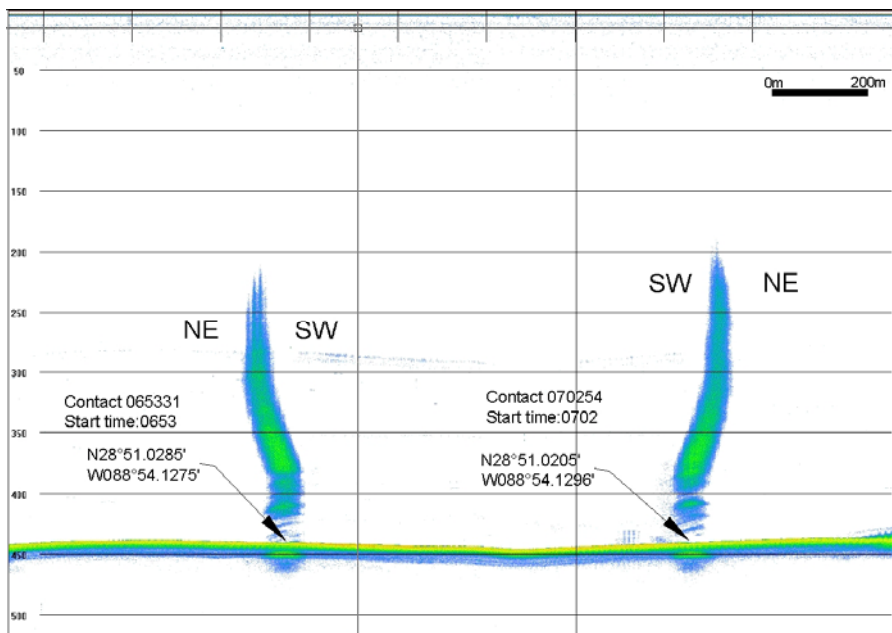


Figure 9. This line is oriented initially from Northeast on the left to Southwest and then from Southwest to Northeast. a) Contact_09062010_065331. Description: Bottom to midwater contact. Time (CST): 09/06/2010 01:53:31. Location: 28° 51.0285N, 88° 54.1275W. 208.3m to 437.7m. b) Contact_09062010_070254. Description: Bottom to midwater contact. Time (CST): 09/06/2010 02:02:54 Location: 28° 51.0205N; 88° 54.1296W. 182.7m to 437.5m.

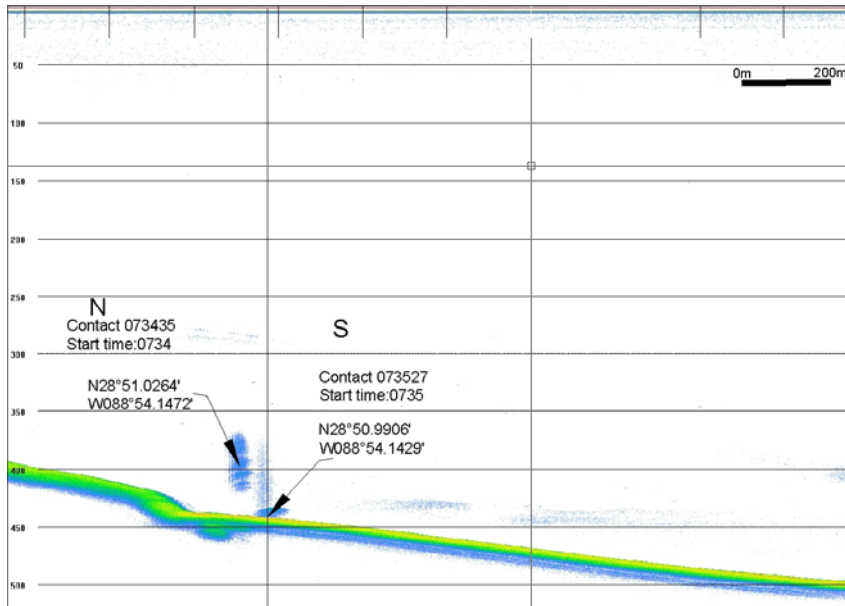


Figure 10. This line is oriented from North on the left to South. a) Contact_09062010_073435. Description: Near bottom contact. Time (CST): 09/06/2010 02:34:35. Location: 28° 51.0264N, 88° 54.1472W. 365.1m to 420.6m. b) Contact_09062010_073527. Description: Bottom contact. Time (CST): 09/06/2010 02:35:27. Location: 28° 50.9906N; 88° 54.1429W. Depth: 364.1m to 441.5m.

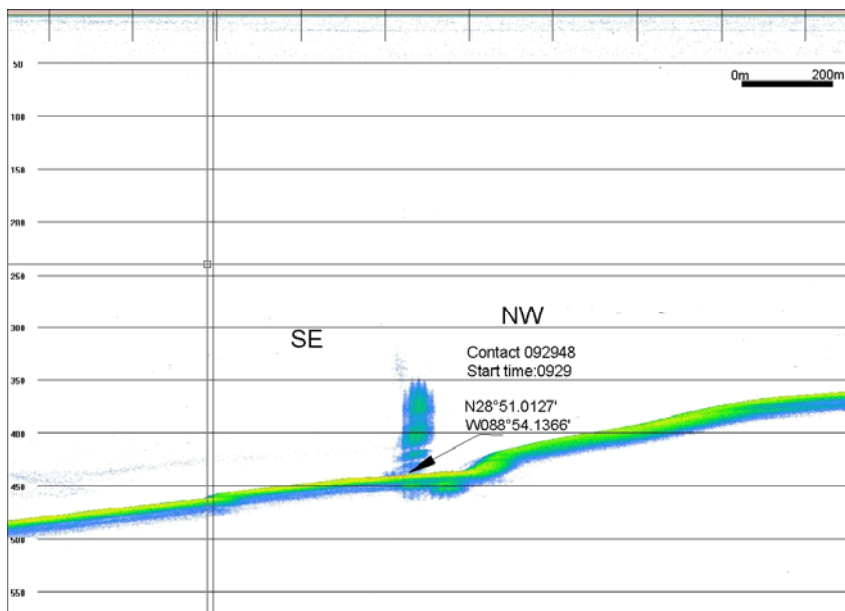


Figure 11. This line is oriented from Southeast on the left to Northwest. a) Contact_09062010_092948. Description: Bottom contact. Time (CST): 09/06/2010 04:29:48. Location: 28° 51.0127N, 88° 54.1366W. Depth: 312m to 435.3m.

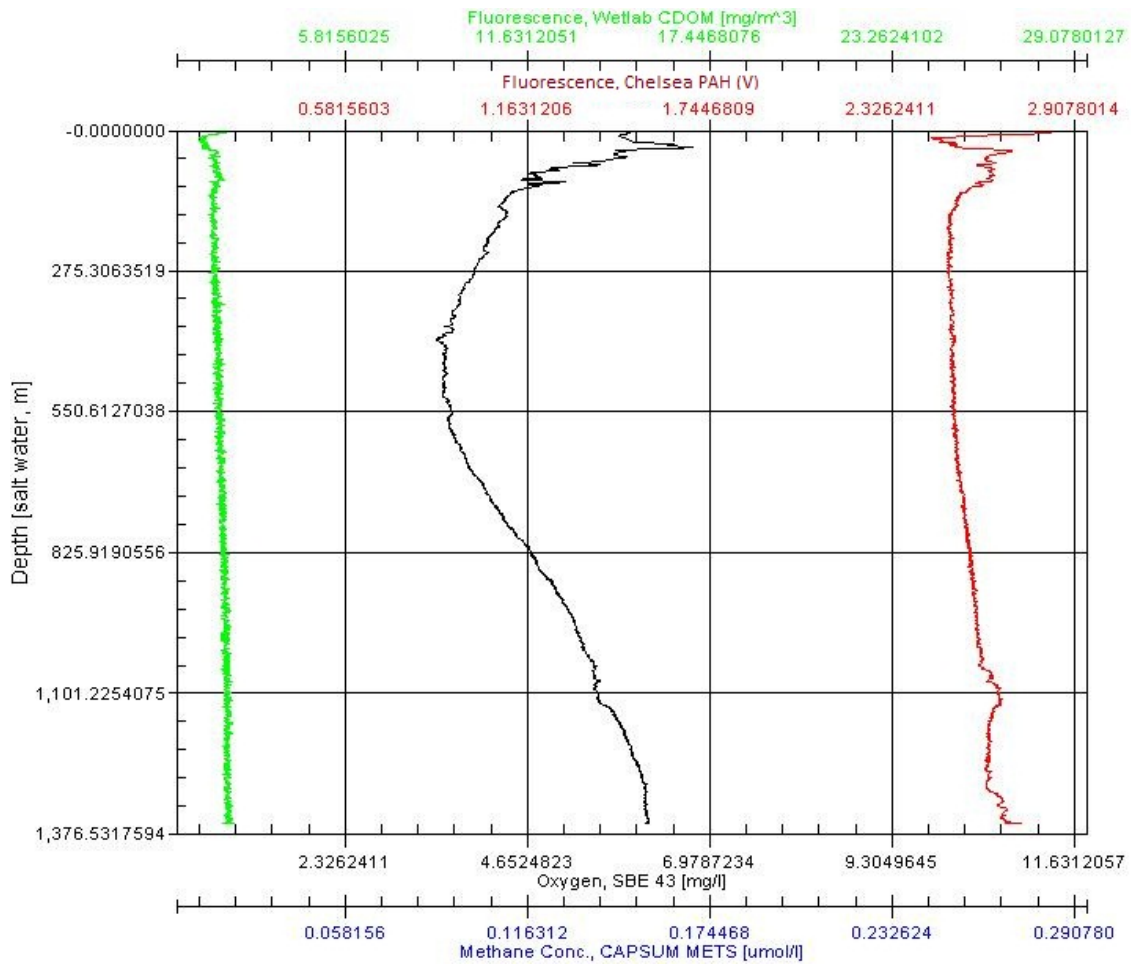


Figure 12. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 14 CTD cast 3 down to 1300 m. Water samples were collected at 1360m, 1190m, 1125m and 1000m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

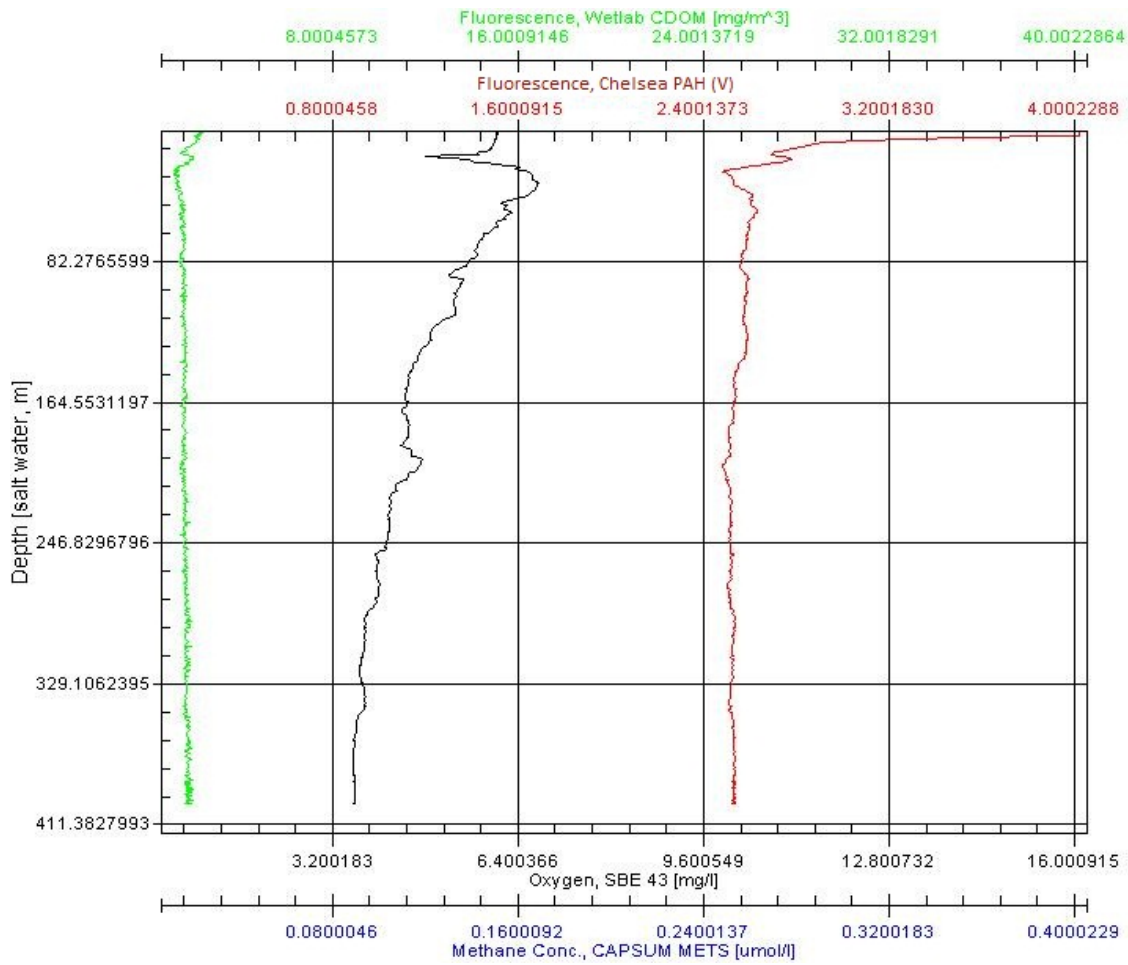


Figure 13. CDOM fluorescence, PAH fluorescence, dissolved oxygen, and methane concentration profiles. The results were obtained for Cruise 14 CTD cast 4 down to 400 m. Water samples were collected at 350m, 340m, 285m 200m and 130m. Temperature, conductivity and water depth measurements were also recorded from a SBE 19+ system.

Science Operations:

Observations of sea-surface conditions were made throughout. CTD cast data was collected from two completed casts. The EK-60 echo sounder is continuously collecting data to evaluate the seabed and water column for possible seeps. We continue to analyse water samples using the GCMS.

Problems/operational issues:

No valid results can be obtained from the methane sensor mounted on CTD. We are in communication with the manufacture and SEABIRD to obtain an underwater battery for the power supply of the Contros methane sensor.

Selected Photographs:

No photographs were taken during the reporting period.

Planned activities for next 24 hours:

The Ryan Chouest will continue on its cruise 14 track to re-establish two other previously found potential natural seep sites, drop CTD cast on top of them and collect water samples based on the sensors' vertical profile.

Full Crew List:

Rebecca Tedford	BP	William Smith	MASTER
Eric Houston	BP	Brian Corley	Mate
Brett Bundick	C&C	Mark Harmon	A/B
Mathew Baham	C&C	Ricky Matherne	A/B
Bobby Patrick	C&C	Robert Thompson	ENG
Tim MacEwen	C&C	Patric Cousin	A/B
Craig Smith	C&C	Trever Dorics	A/B
Emily Burke	C&C	Kevin Hartley	Qmed
Xiubin Qi	CSIRO	Jason Bednarski	A/B/Cook
Charlotte Staivies	CSIRO	Steve Morgan	O/S
Andy Revill	CSIRO	Josh Chauffe	Crane Op
Stephane Armand	CSIRO	Larry Luke	Crane Op
Curtis Walker	Entrix		
Collen Fanelli	NOAA		

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