August 22nd | 2010

Ryan Chouest daily data transmission and report

Period covered: *1217 hrs* 08/21/2010 – *1059 hrs* 08/22/2010

121.320 - Nautical miles covered

Vessel science party:

Xiubin Qi (Xiubin.Qi@csiro.au), Stephane Armand (Stephane.Armand@csiro.au), Andy Revill (Andy.Revill@csiro.au), Charlotte Stalvies (Charlotte.Stalvies@csiro.au), Lawrence Febo (Lawrence.Febo@bp.com) Guilherme de Almeida (gdealmeida@entrix.com), Tim MacEwan (tem@cctechnol.com), Brett Bundick (bbundick@cctechnol.com), David Duplechain (david.duplechain@cctechnol.com), Bobby Patrick (rdpatrick@cctechnol.com)

Contact details:

+ 1 337 761 9830 – Sat phone
+ 1 337-761-9830 – Broadband phone ship office 1
+ 1 337-761-9827 – Broadband phone ship office 2
+ 1 337-761-9826 - Broadband phone ship bridge

Cruise notes:

The *Ryan Chouest* sailed on the planned cruise 12 route and headed west towards the Lousiana coastline to continue with the vertical casts spaced every 20nm, the echo sounder survey, and the underway fluorometry pump system (Figure 1).

Science results and preliminary interpretation:

Fluorometry results

The Chelsea and Trios sensors indicate baseline to very low levels of inferred hydrocarbons concentrations through the reporting period (Figures 2 and 3). The Trios sensor data show three segments of slightly higher, but still low, inferred hydrocarbon concentrations in front of the mouth of the Mississippi River (Figure 4). Given the proximity of the data increases to fluvial outlets, these slightly elevated fluorometery measurements may be due to low levels of hydrocarbons discharged from the drainage basin. As previously discussed, the Contros data are not shown as the instrument needs servicing as the lamp reached the end of its useful life. We await a spare Contros sensor from the manufacturer.

Surface Observations

There are no new surface observations to report.

EK-60 Echosounder results

Two acoustic contacts were found during the reporting period (Figure 1). The first echo sounder contact was in shallow water and is likely of biological origin (Figure 7). 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 8; 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.

Vertical Casts

The results of three vertical fluorometry/CTD casts are presented in Figures 4 – 6.
During Cast #28 and Cast #29, all sensors show low level of hydrocarbon readings along the water column down to ~30m, while in Cast #30 the fluorometers show relatively high response close to sea surface compared to the surface readings of other casts. This is consistent with the underway subsurface data.
The incompleteness of the Cast #29 is due to the pump failure during the cast.

Planned route for cruise 12:

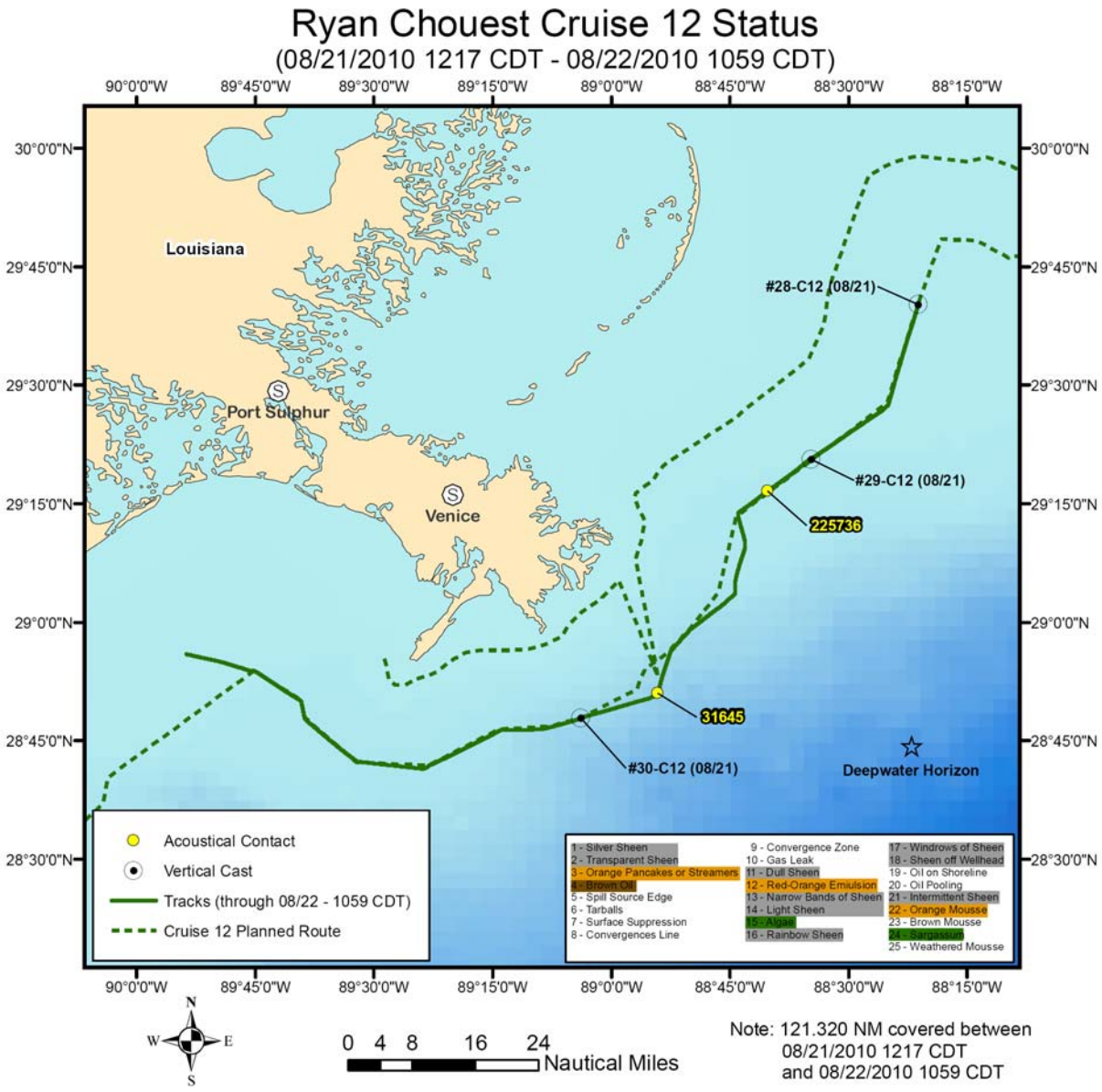

Figure 1: Planned route for cruise 12 versus the actual route plotted between 08/21/2010 – 08/22/2010.

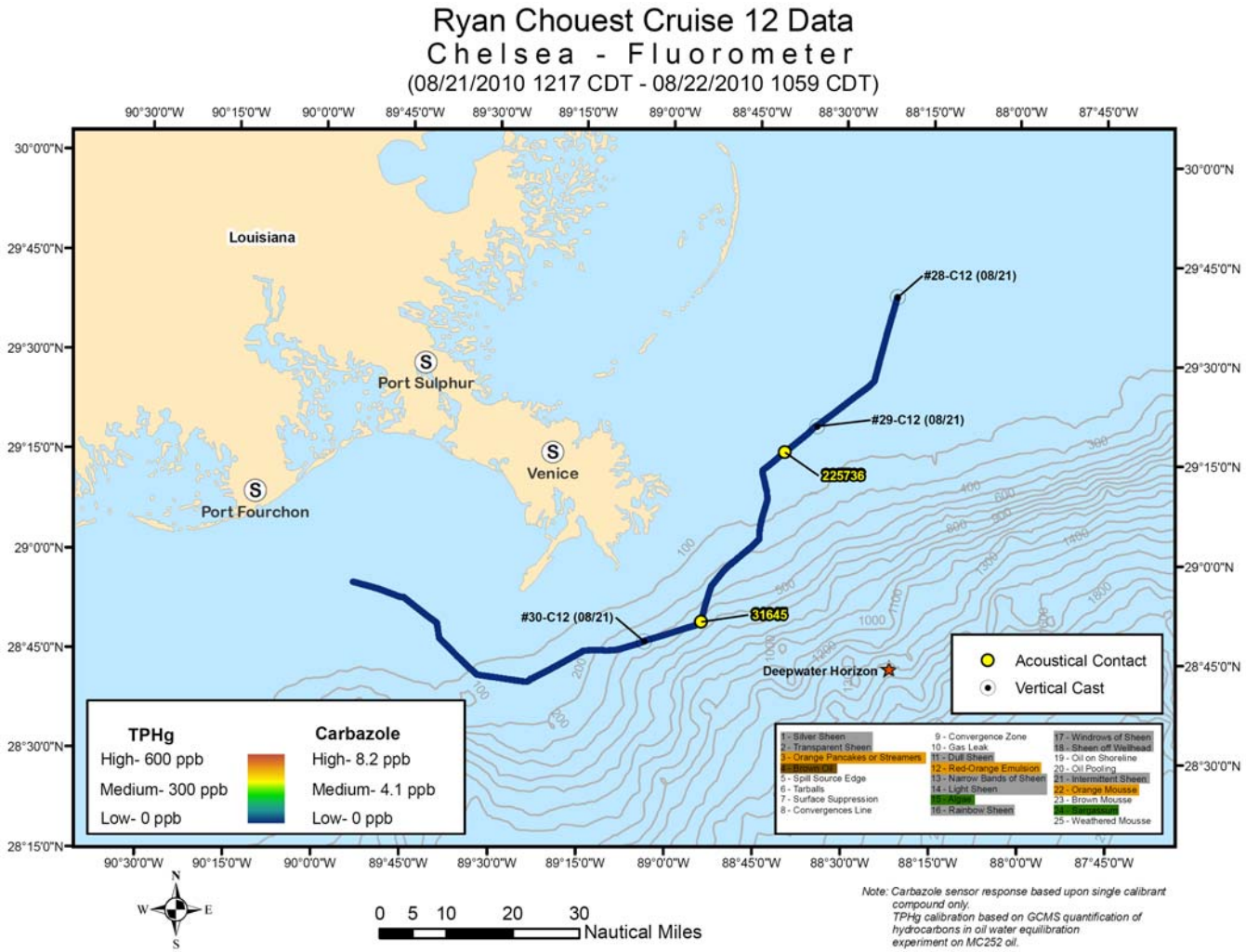

Figure 2. Chelsea fluorometer results plotted with location on cruise track 12. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems. Purple lines represent depth contours of 100 m intervals.

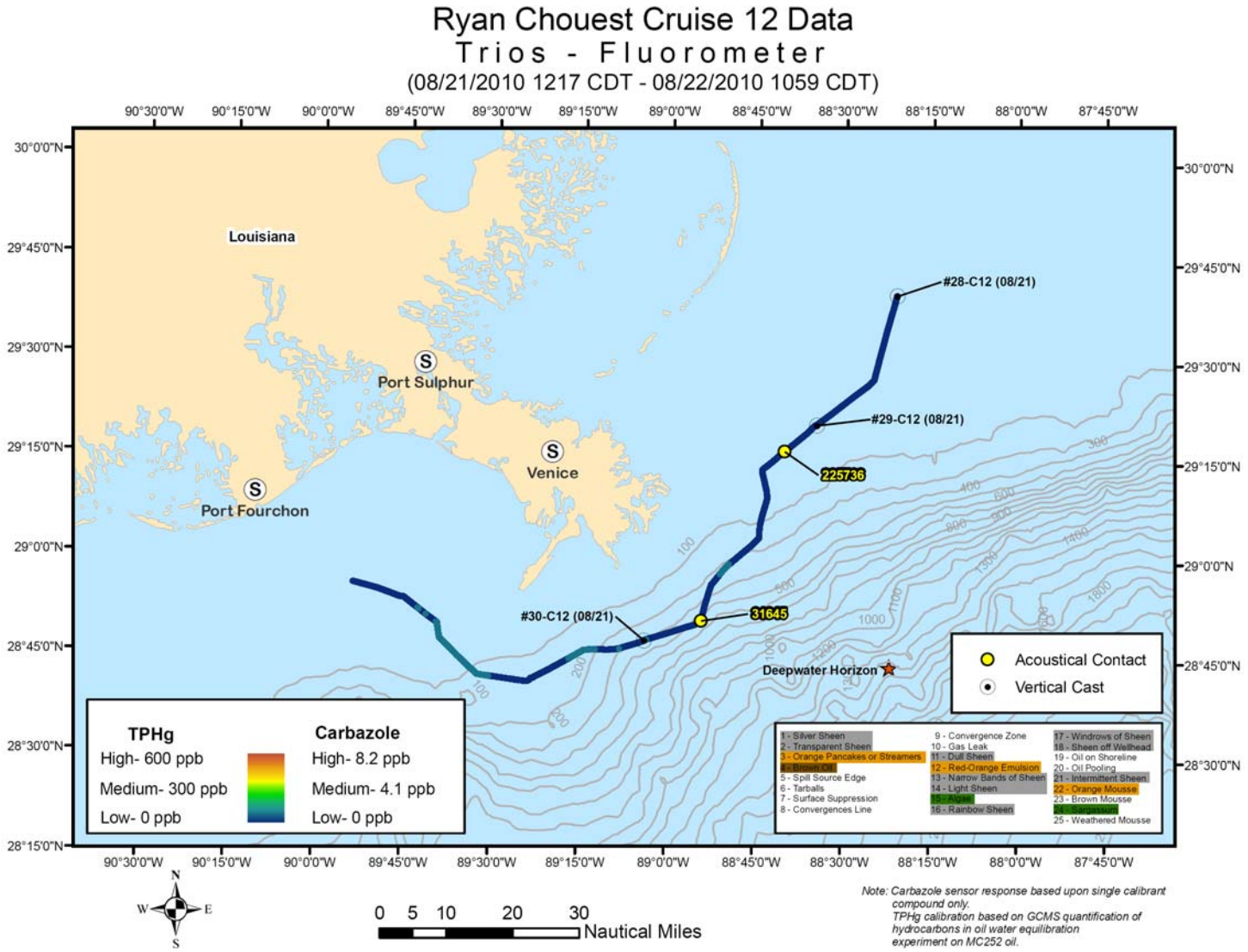

Figure 3. Trios fluorometer results plotted with location on cruise track 12. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems. Purple lines represent depth contours of 100 m intervals.

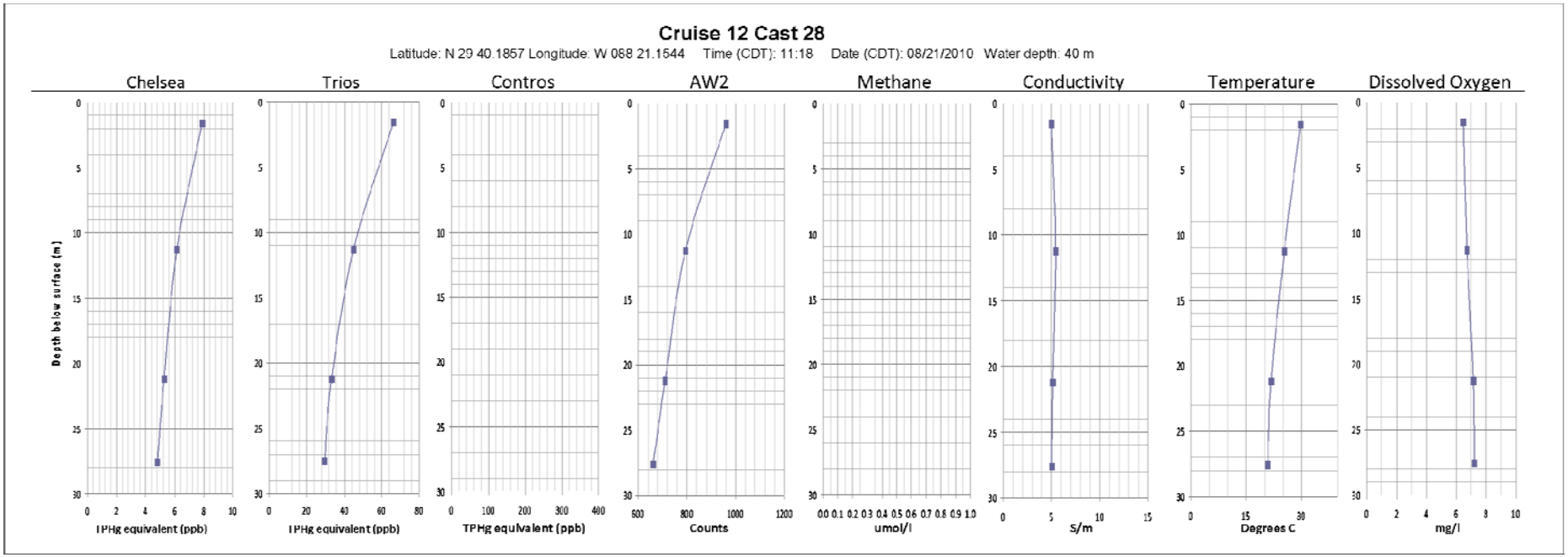

Figure 4. The results obtained for Cruise 12 vertical cast 28 (#28-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained 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.

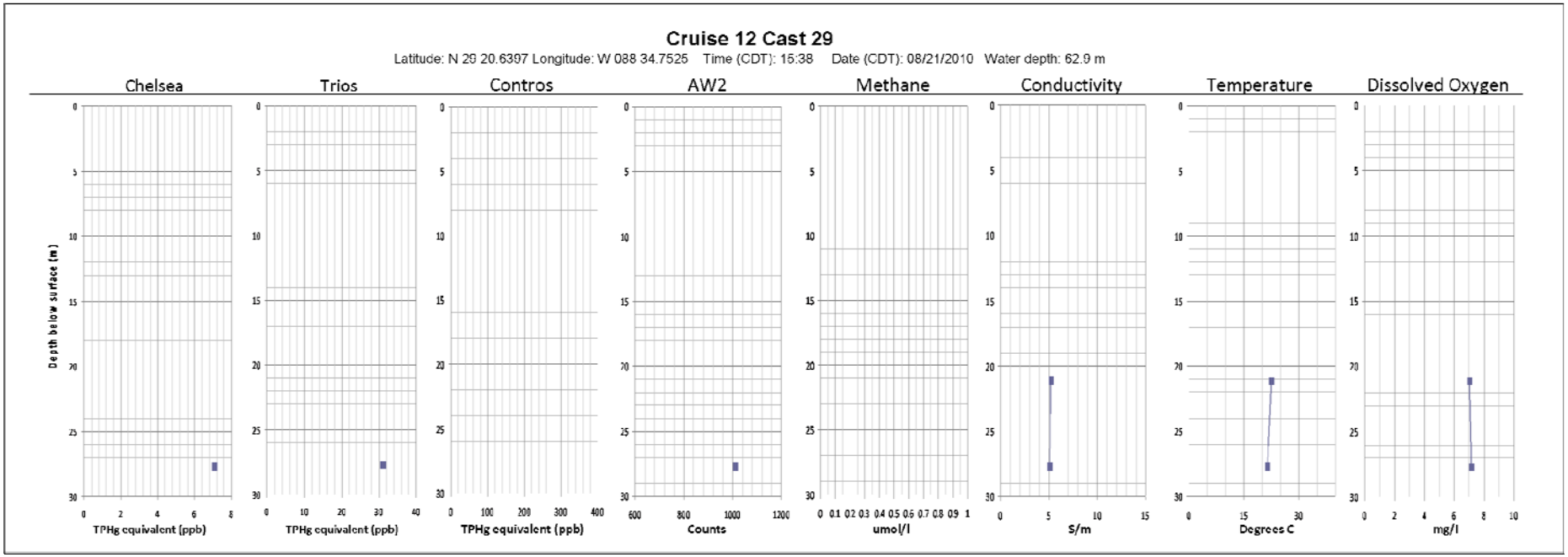

Figure 5. The results obtained for Cruise 12 vertical cast 29 (#23-C12) down to 28 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained 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.

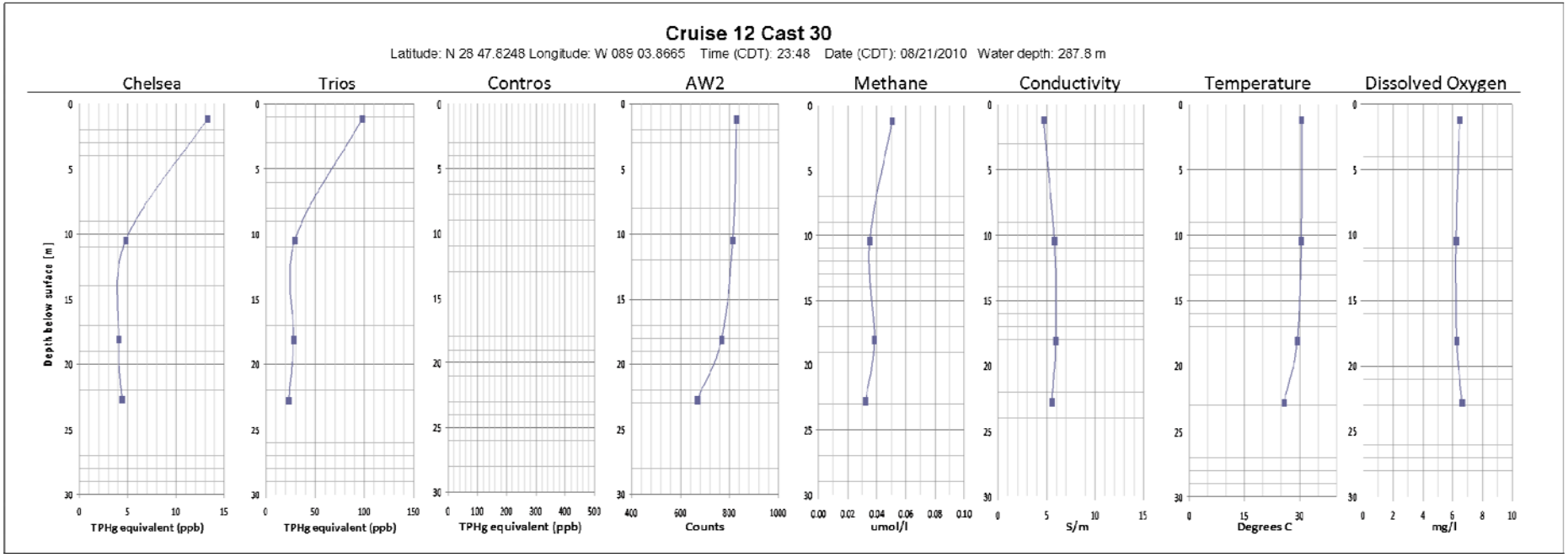

Figure 6. The results obtained for Cruise 12 vertical cast 30(#30-C12) down to 23 m. The sensor fluorometry results for the Chelsea, Trios and Contros sensors and water samples were obtained from waters pumped to the surface. Conductivity, temperature, depth and dissolved oxygen measurements were obtained 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.

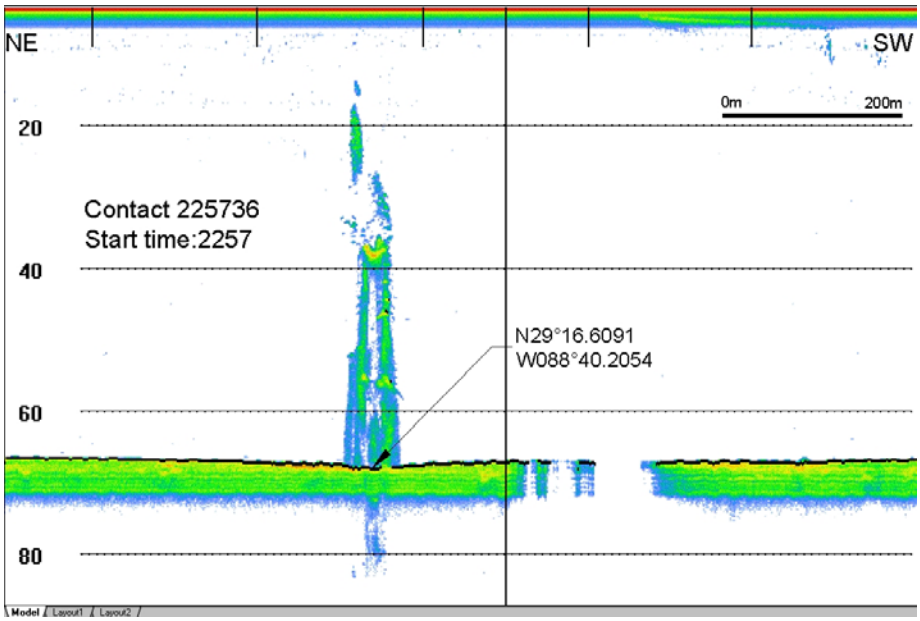

Figure 7. Contact_08212010_225736. Description: Probably biological. Time (CDT): 08/21/2010 1757hrs Location: 29° 16.6091N; 88° 40.2054W. Depth displayed: 16.95m to 66.80m.

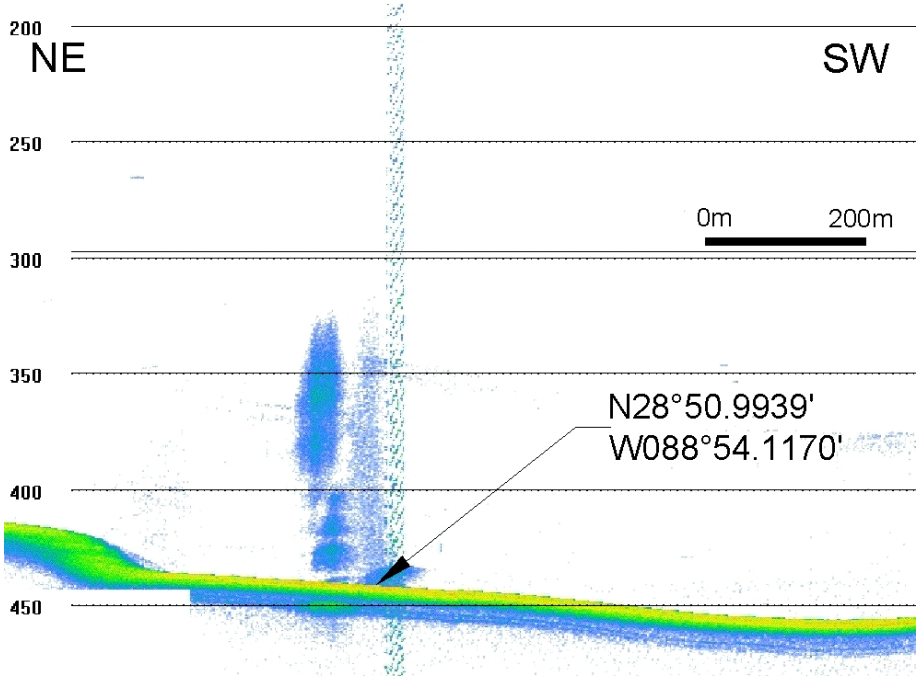

Figure 8. Contact__08222010_031645. Description: Seafloor to midwater previously investigated as a seep (see Contact_08042010_220048 in daily report for 08-05-2010). Time (CDT): 08/21/2010 2216hrs Location: 28° 50.9939N; 88° 54.1170W. Depth displayed: 301.92m to 439.89m. The vertical blue line that extends from the top to the bottom of the figure is an artifact in the data.

Science Operations:

Fluorometer measurements were logged for the majority of the period and observations of sea-surface conditions were made throughout. Vertical fluorometry and CTD casts were taken approximately every 20 nautical miles and sample the upper 30m. 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:

The vertical cast pump shorted out and has been repaired. We are waiting for the epoxy to cure, which should be Monday afternoon.

Selected Photographs:

No photographs were taken during the reporting period.

Planned activities for next 24 hours:

The *Ryan Chouest* has departed from Port Fourchon after taking on paint and engineering supplies unobtainable in Theodore. We will return to Theodore Monday evening to prepare the ship for the addition of wave gliders and make repairs to the generator that powers the C&C container.

Full Crew List:

William A. Smith	MASTER	Brian Corley	Mate
Craig Lyons	ENG	Robert Thompson	ENG
Elijah Benjamin	O/S	Arthur Triggs	O/S
Roderick Baker	OS/Cook	Patrick Anderson	A/B
Kile Blunt	A/B/Cook	Guilherme de Almeida	Entrix
Lawrence Febo	BP	Stephane Armand	CSIRO
Xiubin Qi	CSIRO	Charlotte Stalvies	CSIRO
Andy Revill	CSIRO	Bobby Patrick	C&C
Tim MacEwan	C&C	Ben Autin	C-Port
Brett Bundick	C&C	Braden Wilson	C-Port
David Duplechain	C&C		