

July 27th | 2010

Ryan Chouest daily data transmission and report

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Period covered: 1035 07/26/2010 -1054 07/27/2010

129.916 - Nautical miles covered

Cruise notes:

Cruise 10 continues to monitor surface conditions near the incident site for oil slicks. We are also focused on the completion of surface detection of hydrocarbons with the Hydrocarbon Sensor Array (HSA) and bottom and water column acoustical profiling for natural methane seeps (Figures 1a and 1b). In this report, we present acoustical evidence for an active methane seep in MC294.

Science results and preliminary interpretation:

Fluorometry results

Fluorometry measurements are low to lower-medium for the Chelsea, Trios, and Contros sensors (Figures 2-4). Baseline or close to baseline levels were measured by the Chelsea and Trios fluorometers for the entire route traveled. The Contros fluorometry data show low to medium level values throughout the route surveyed (Figure 4).

Contros HydroC Methane Sensor

No detectable levels of methane were recorded over the route traveled.

Surface Observations

Surface sheens, convergence lines, and seaweed are the only surface features observed over the route shown in Figure 1a.

EK-60 Echosounder results

The Ryan Chouset is outfitted with a single transducer EK-60 echosounder operating at 38KHz and a beam footprint of 7°. At a depth of 1400m, the beam footprint is ~172m wide ($\tan 7^\circ \times \text{water depth}$). As such, we planned the survey lines at ~152m apart to allow enough overlap to fully survey the seabed (Figure 1b).

Evidence for a currently active methane seep was found on two separate survey lines in a Northwest-Southeast direction shown in Figures 5 and 6. The acoustical contact begins at 700m and extends downward as a slightly wavy vertical feature to the seabed at 1370m water depth. The width of the vertical feature varies from a tapered tip to slightly wider towards the base (see also Figures 7 and 8). The absence of the plume extending to the sea surface is likely due to the gas dissolving into the water. Although the location of this seep is adjacent to other seeps reported in the area (Figure 1b), this seep is distinct from them. We did not observe any other similar midwater seep features along the surveyed grid. In addition the sensor did not show any increase in response above the site. However the plume at depth and its surface expression may be offset by some distance due to current activity. We will present a coupled bathymetry-echosounder-fluorometry data figure in the cruise summary to investigate the relationship between the methane seep column and its possible surface slick expression.

Science Operations:

Fluorometer measurements were logged and observations of sea-surface conditions were made throughout the period. Two new sensors were added to the HSA and include a Contros HydroC methane sensor and a dissolved volatile organic compounds sensor. We are in the early stages of testing the methane sensor and need to optimize its incorporation into the equipment. The volatile organic compounds sensor is in use but may require additional calibration. We continue to perform liquid-liquid extractions on seawater samples and analyze the extracted material by GCMS. The EK-60 echosounder is continuously collecting data to evaluate the seabed and water column for methane seeps.

Planned versus actual route taken cruise 10:

Ryan Chouset Cruise 10 Route Status

(07/26/2010 1035 CDT - 07/27/2010 1054 CDT)

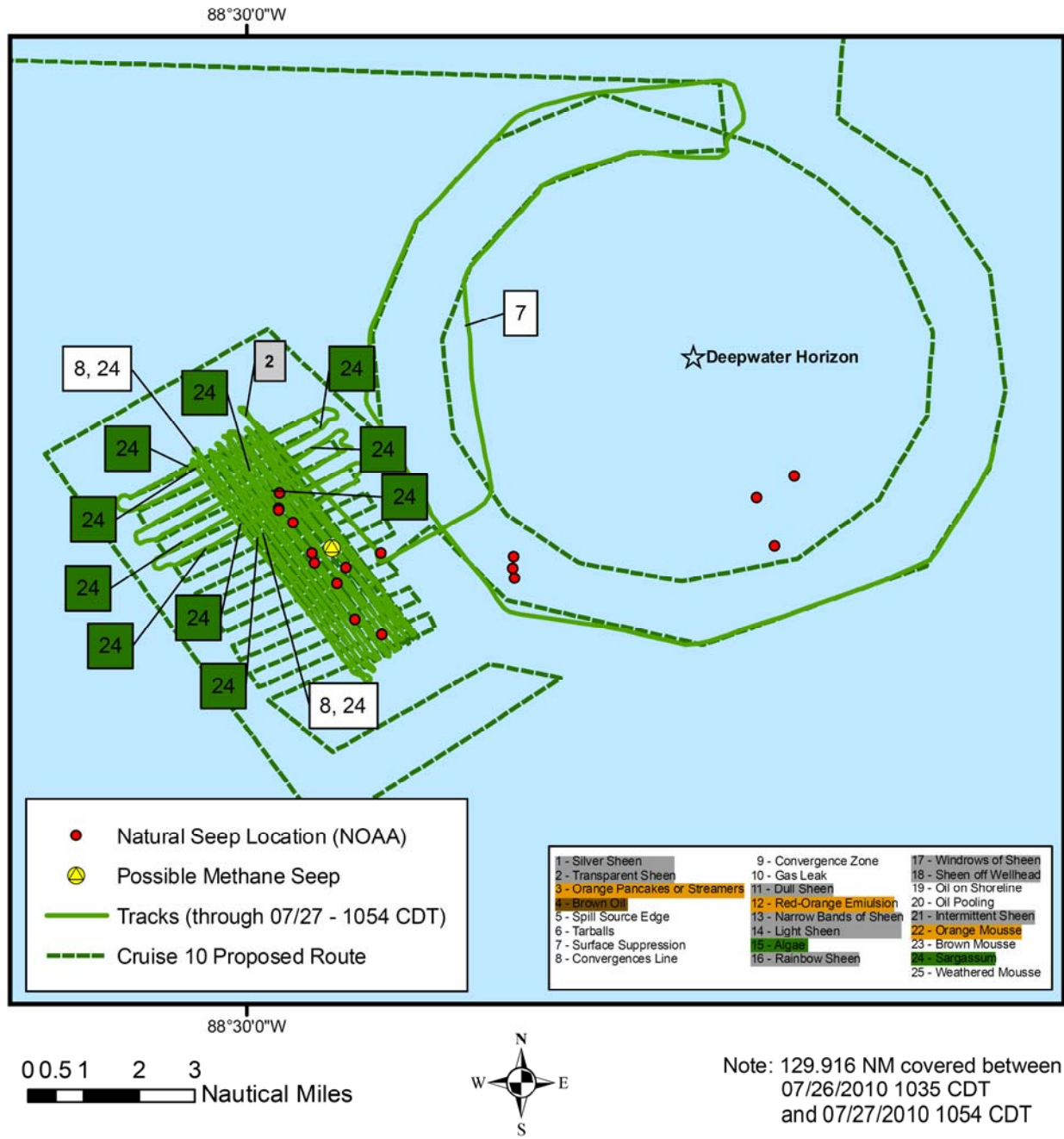


Figure 1a: Planned versus actual route course plotted between 07/26 – 07/27. Purple shaded area represents outline extent of the slick from 07/26 ERMA composite.

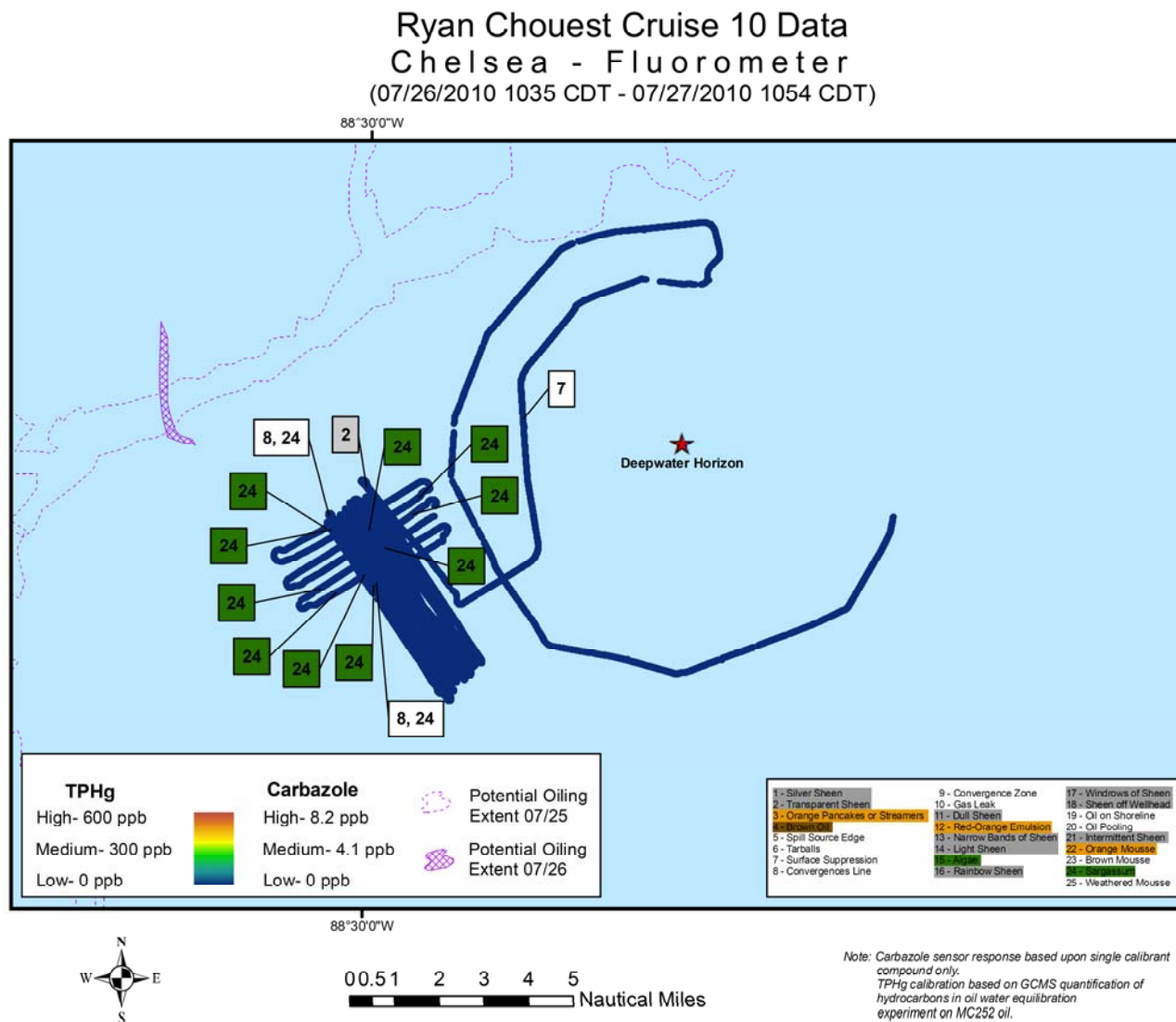


Figure 2. Chelsea fluorometer results plotted with location on cruise track 10. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouset Cruise 10 Data Contros - Fluorometer (07/26/2010 1035 CDT - 07/27/2010 1054 CDT)

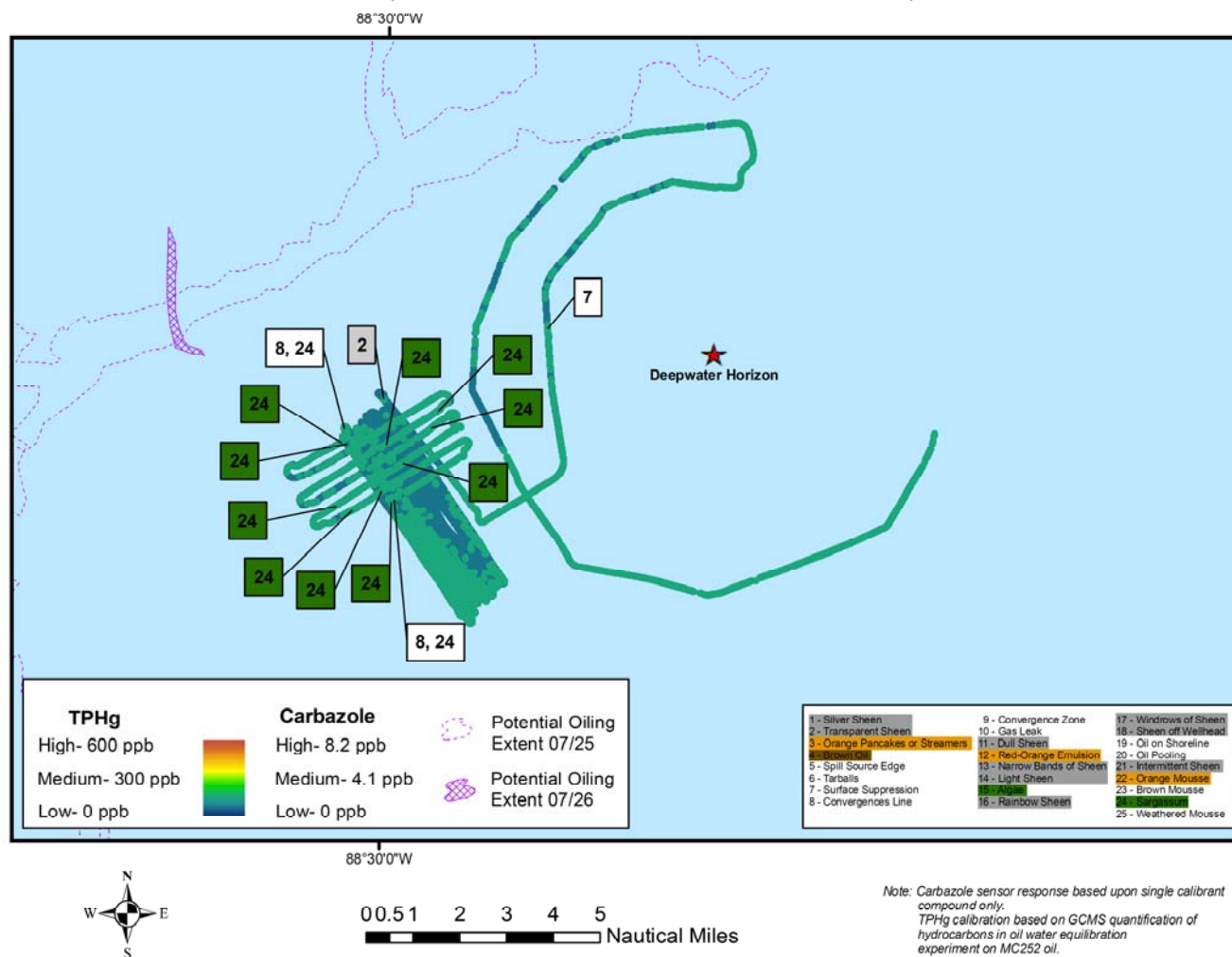


Figure 4. Contros fluorometer results plotted with location on cruise track 10. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Echosounder Results:

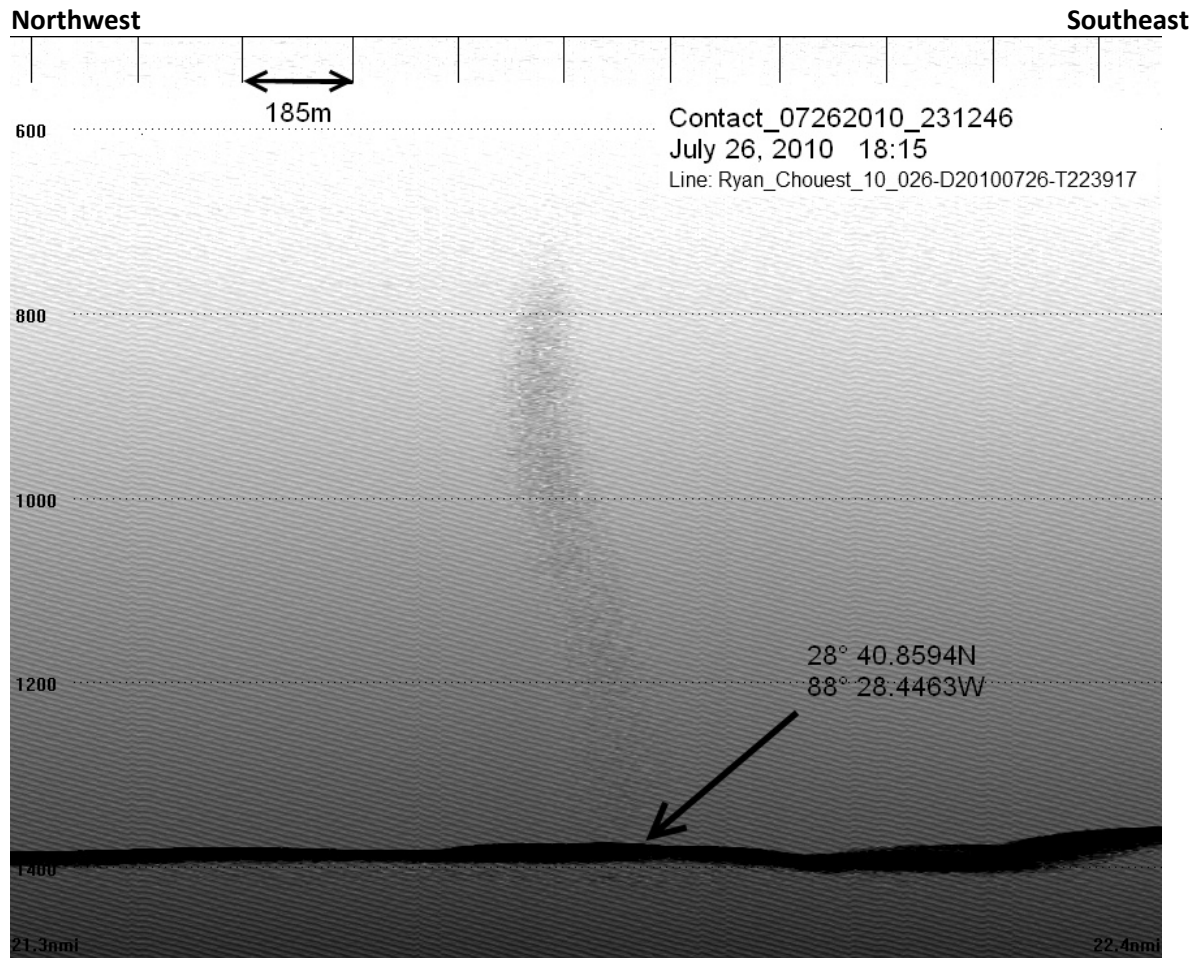


Figure 5. Two-dimensional view of possible methane seep located in MC294 adjacent to a cluster of seeps previously detected seeps by the NOAA R/V's Gunter and Thomas Jefferson. This line is oriented from Northwest on the left to Southeast on the right.

Description: Possible deep-water seep, same target as Contact_0727010_000624

Time (UTC): 07/26/2010 23:15:28

Location: 28° 40.8594N; 88° 28.4463W

Depth: 700m to 1370m

Southeast

Northwest

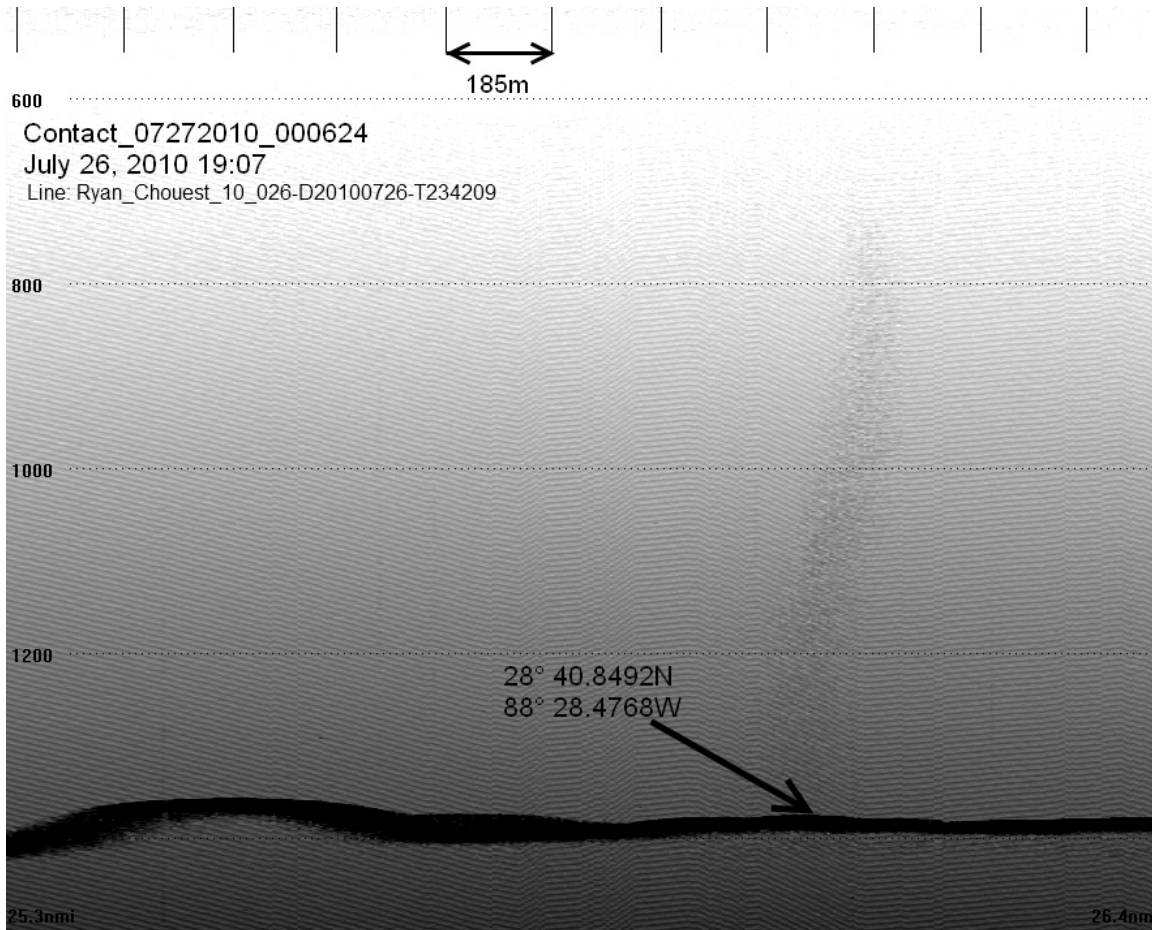


Figure 6. Same acoustical contact in Figure 5 from a different orientation. This line is oriented from Southeast on the left to Northwest on the right.

Description: Possible deep-water seep, same target as Contact_0726010_231246

Time (UTC): 07/27/2010 00:07:15

Location: 28° 40.8594N; 88° 28.4463W

Depth: 700m to 1370m

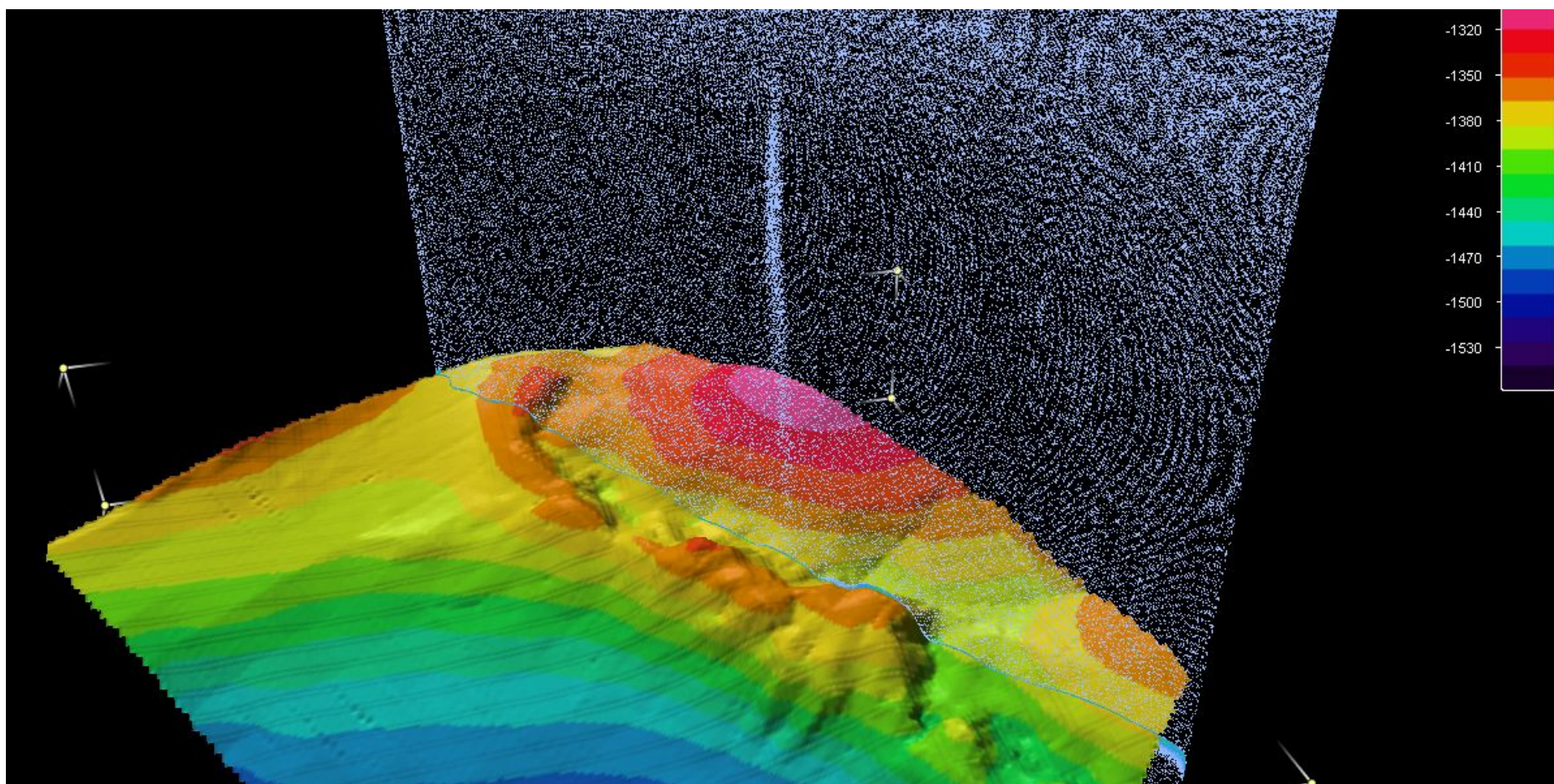


Figure 7. Three-dimensional view of bathymetric data and possible methane seep. Data contoured and compiled in Fledermouse.

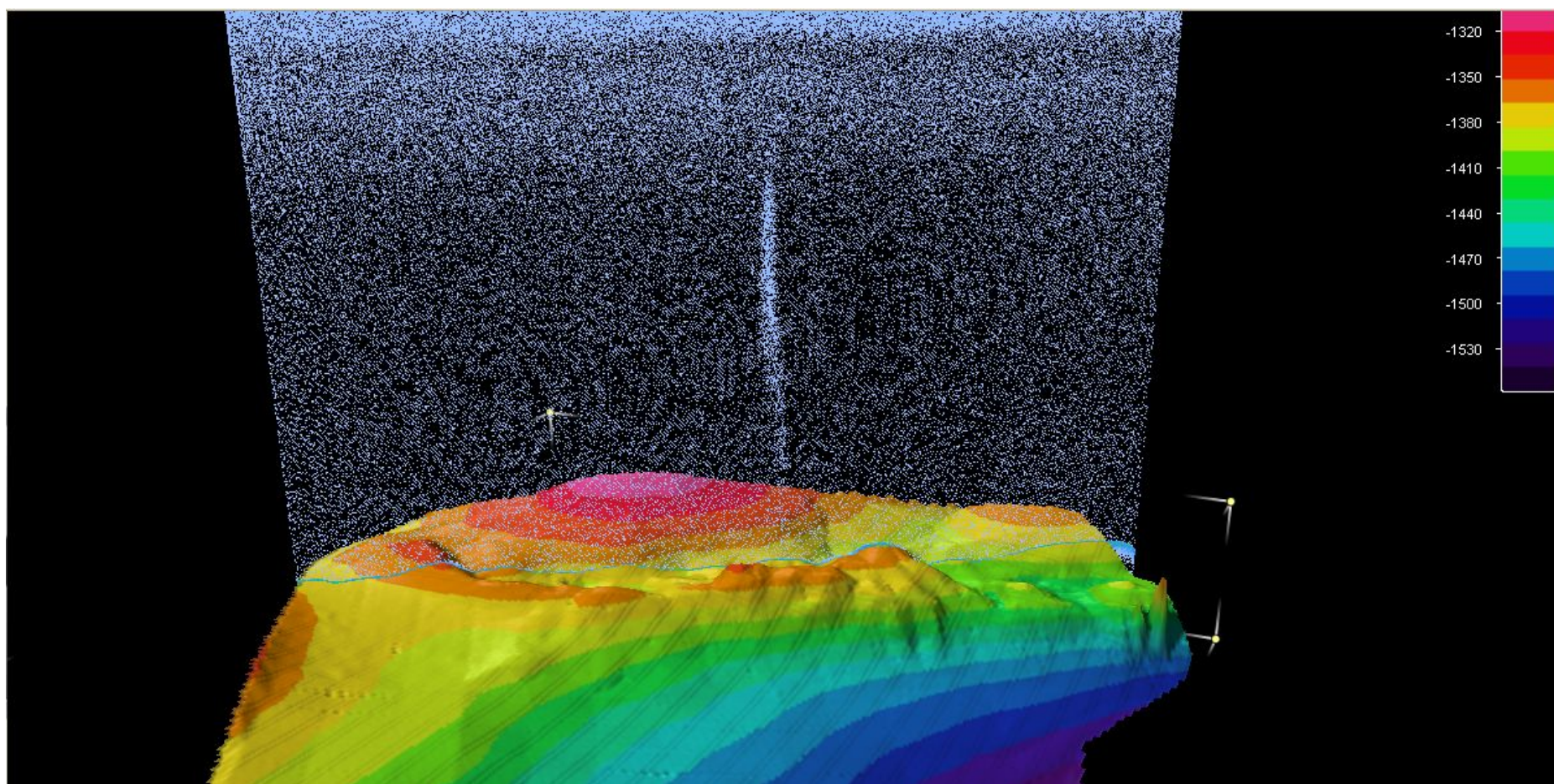


Figure 8. Three-dimensional view of bathymetric data and possible methane seep. Data contoured and compiled in Fledermouse.

Problems/operational issues:

(Includes items up to report submission time)

There are no problems or operational issues at this time.

Planned activities for next 24 hours:

The Ryan Chouest will arrive in Port Fourchon at ~1500 hrs Wednesday for crew change and reprovisioning.

Selected Photos:

No photographs were taken over the cruise period.