Ryan Chouest daily data transmission and report

Period covered: 0858 hrs 07/01/2010-1017 hrs 07/02/2010

125 - Nautical miles of data coverage

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)
Tosin Majekodunmi (Tosin.Majekodunmi@bp.com)
Curtis Walker (cwalker@entrix.com)
Michael Griffin (Griffinmi09@students.ecu.edu)

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 left the port Theodore at ~1500hrs 07/01/2010 and sailed east along the planned route. This report covers the data collected from 1658 hrs 07/01/2010 to 1017hrs 07/02/2010. Effort has been devoted to ensure that the two pumps are restored to their normal functionally. Both pumps were rewired and the connection between the pump and the tubing were modified to minimise the tension on the power supply cable and the pump tubing. We deployed the underway pump at ~16:00hrs 07/01/2010 and retrieved it at 1836 due to strong swells and currents. We deployed the underway pump again at 2250hrs and had it running overnight and have yielded smooth operation so far.

Science results and preliminary interpretation:

Fluorometry results

The Chelsea, Trios, and Contros fluorometery data show relative low inferred hydrocarbon concentrations over the interval sampled (Figures 2-4). The initial cruise 6 track for the Chelsea data shows a higher medium level of concentration relative to Trios and Contros results. However, the Trios and Contros illustrate similar concentration levels (Figure 3 and 4).

Surface Observations

As of 1850 hrs on 07/01/2010, brown oil was spotted within silvery sheen on the surface. Additionally, we later observed orange brown mousse at 30°14’408N, 88°02’341W within proximity. Patches of seaweed aligned with the tide were also observed. Compared to previous transects, fewer oil slick spots were observed.

Geochemistry

The main focus of the geochemistry in the last few days has been to investigate ways of further improving the shipboard analyses, particularly:

- Increasing the sensitivity of analyses for dissolved components.
- Increasing extraction efficiency

We are now adopting a SIM method (Selected Ion Monitoring) which is more sensitive than the initially used full scan method. The new method is suitable for detection of aromatic compounds which are the primary components of dissolved hydrocarbons. A protocol has now been established and retention time documented for target compounds from a sample of the MC252 oil. We then analyzed the samples collected at (29°02.0011 N, 88° 00.0003 W) through a depth profile on June 26th under an area with observed surface mousse. The toluene/naphthalene concentration vs. depth plot clearly shows a decreasing concentration trend with increased depth for toluene and naphthalene. Note that we are still checking the collection system for possible contaminations and the plot with removed background will be presented in future report.

We are also investigating the possibility of doubling the solvent volume and then removing excess solvent via a passive evaporation (cf. the usual nitrogen blow down) to increase the extraction efficiency.

Vessel Science operations：

We logged fluorometer measurements and observed sea-surface conditions. We are investigating approaches to improve the shipboard analysis and used the new SIM method to re analyse the water samples collected previously.

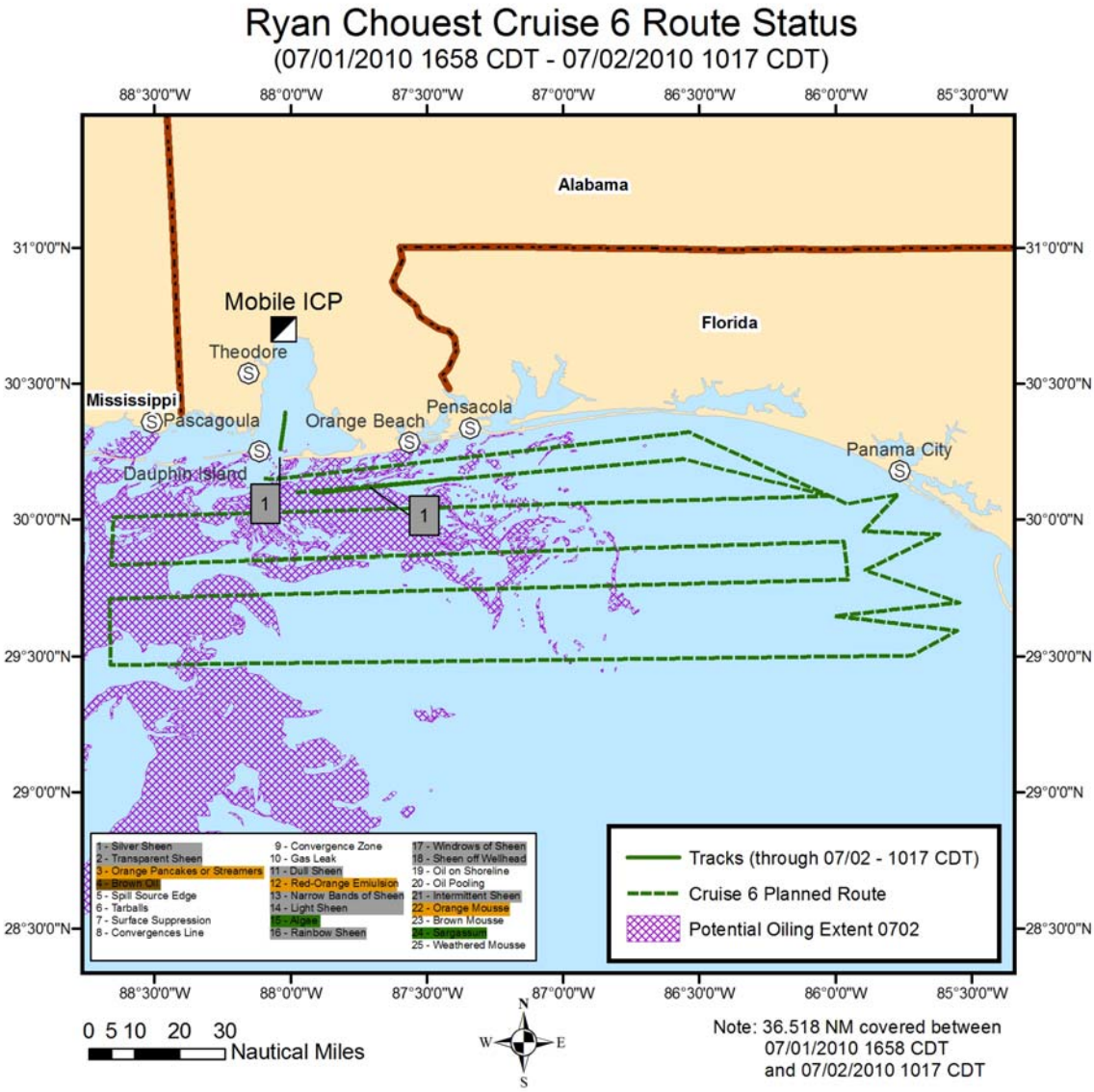

Figure 1: Planned course plotted for Cruise 6. Purple shaded area represents outline extent of the slick from 06/30 ERMA composite.

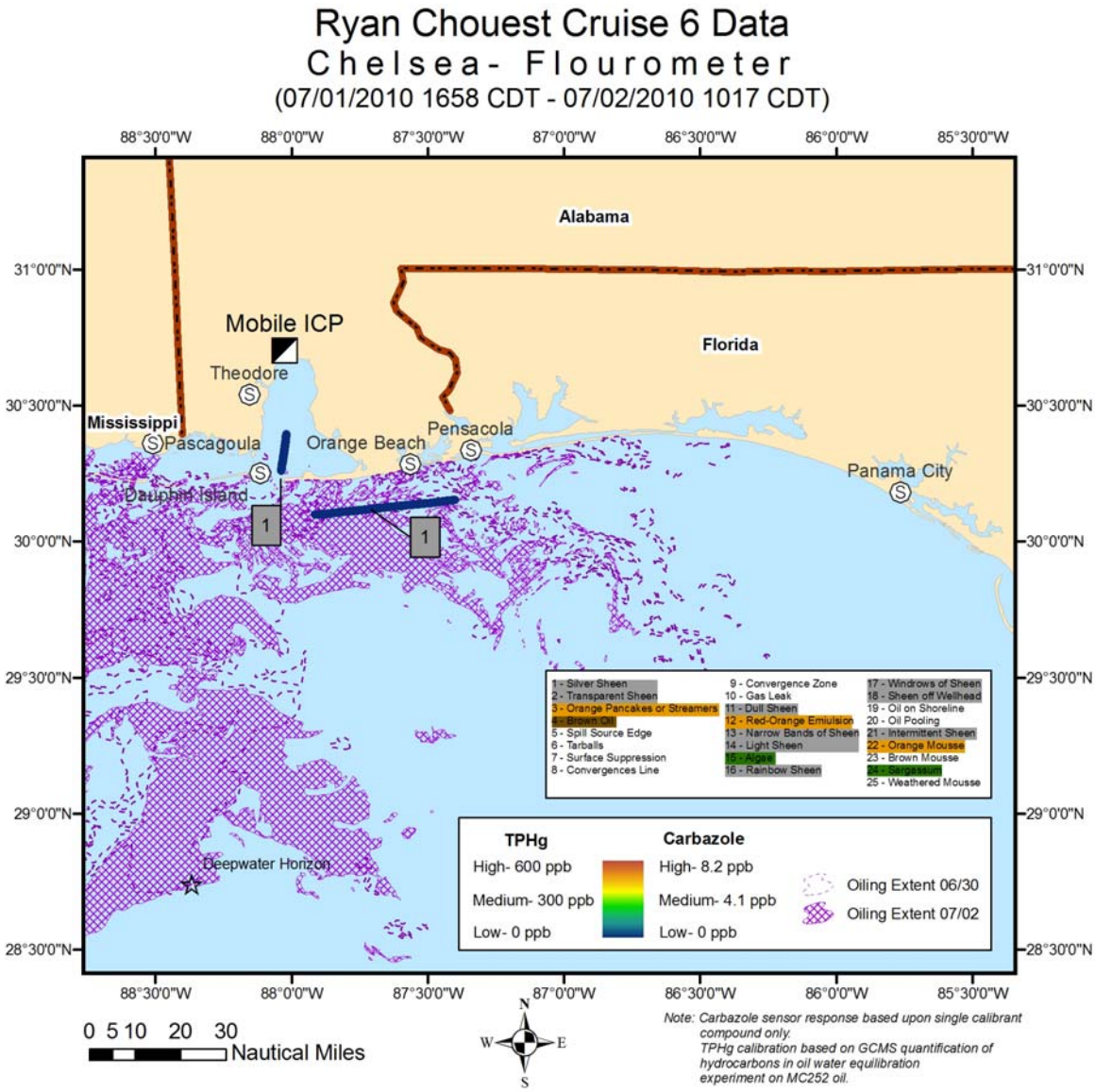

Figure 2. Chelsea fluorometer results plotted with location on cruise 6 track. Breaks in data are due to pump removal from water due to bad weather.

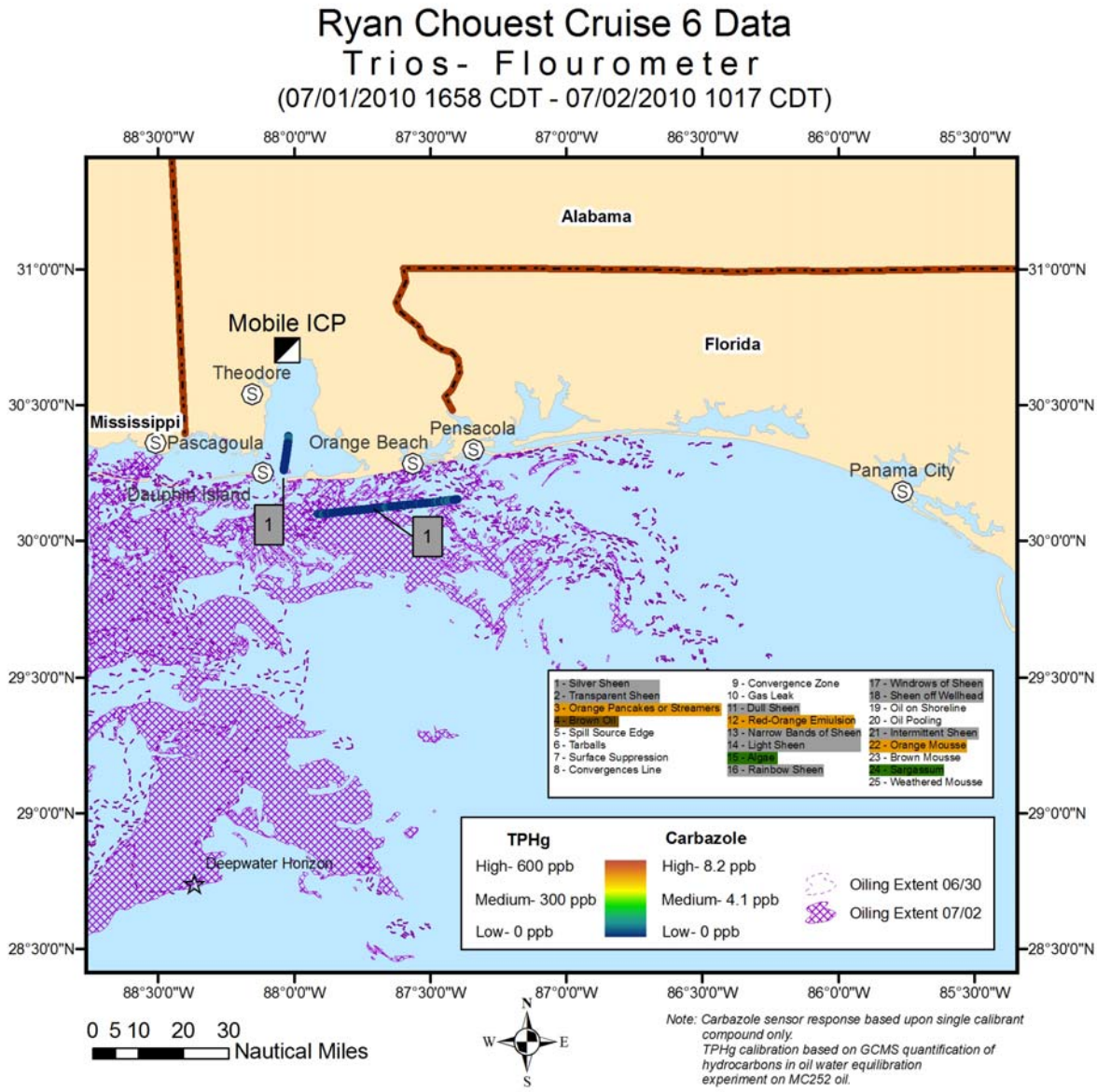

Figure 3. Trios fluorometer results plotted with location on cruise 6 track. Breaks in data occur when pump was removed from water due to bad weather.

.

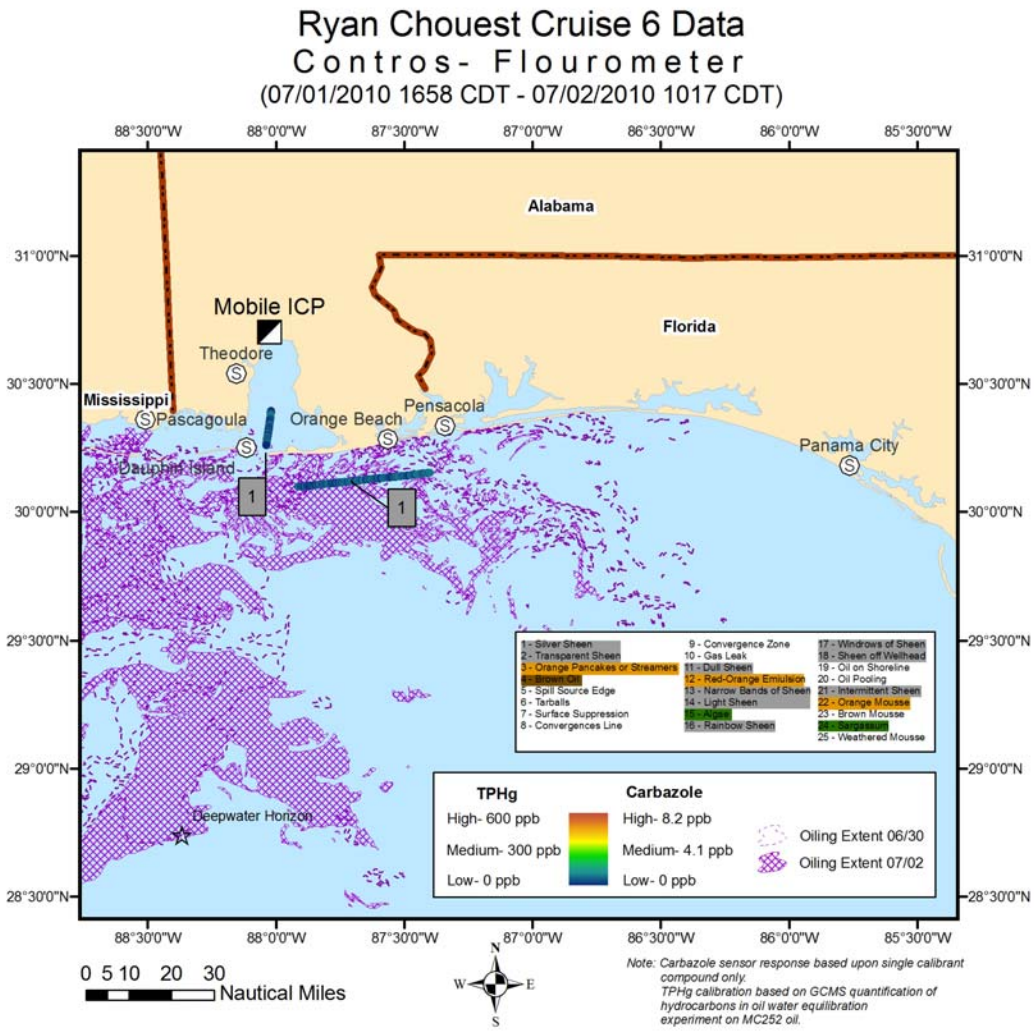

Figure 4. Contros fluorometer results plotted with location on cruise 6 track. Breaks in data occur when pump was removed from water due to bad weather.

Problems/operational issues:

GPS signal dropped off more frequently. The GPS unit is not placed outside the lab to improve the satellite reception.

Planned activities for next 24 hours:

Plans in place to follow planned route in Figure 1 and continue to collect shallow water samples.