

# **Ryan Chouest daily data transmission and report**

***Period covered: 1429hrs 06/22/2010-1912hrs 06/23/2010***

***197.869 - Nautical miles covered***

***858.34 – Cruise 4 Cumulative nautical miles covered***

## **Vessel science party:**

Andrew Ross ([Andrew.Ross@csiro.au](mailto:Andrew.Ross@csiro.au))  
Emma Crooke ([Emma.Crooke@csiro.au](mailto:Emma.Crooke@csiro.au))  
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Xiubin Qi\* ([Xuibin.Qi@csiro.au](mailto:Xuibin.Qi@csiro.au))  
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Guilherme de Almeida ([gdealmeida@entrix.com](mailto:gdealmeida@entrix.com))

\*Joined crew at 1900hrs on 06/23/2010

## **Contact details:**

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## **Cruise notes:**

Since 1427hrs 06/22/2010 we have sailed on the course as planned and arrived in port Theodore at 1830hrs (Figure 1). This transect of cruise 4 was ~198 nautical miles but we have surveyed over 850 nautical miles during cruise 4 (Figure 1b). Since our arrival, we have taken on an extra 20,000 gallons of fuel so that ship has sufficient range in the event that we are diverted elsewhere by a potential storm. This is required by policy of Edison Chouest. Also the engines underwent routine maintenance and essential science supplies were delivered to the ship and a further compliment of two additional CSIRO scientists and two C & C technology marine surveyor specialists have joined the vessel.

## **Science results and preliminary interpretation:**

### Fluorometry results

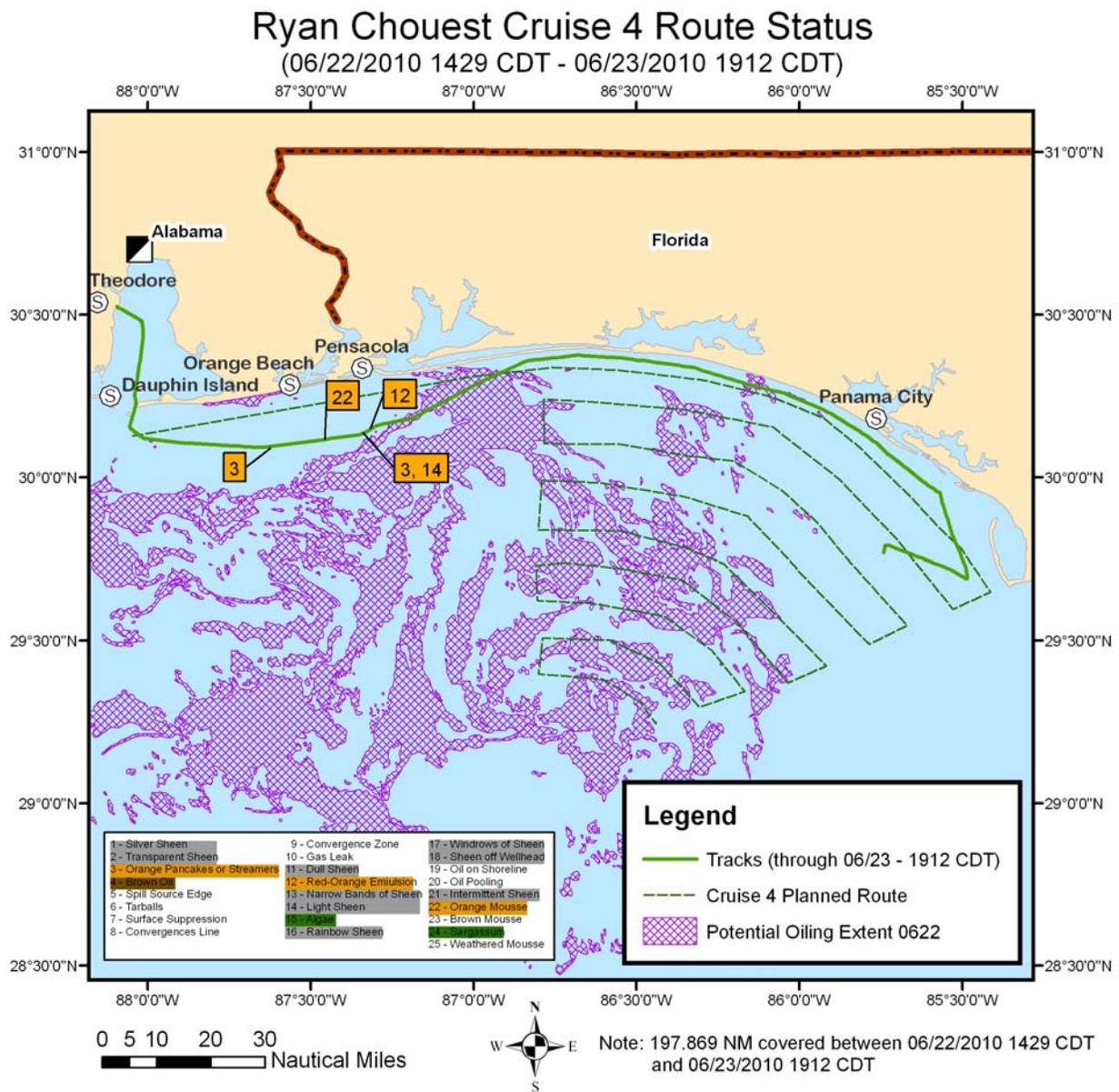
Fluorometry measurements for all three sensors show low to medium inferred hydrocarbon concentrations and generally increase to medium levels towards Panama City. All three sensors gave similar results and exhibit medium levels from Panama City and along the coastline transect until reaching Theodore, Alabama (Figures 2-4). The sensors have now been calibrated with a dissolved hydrocarbon equilibrated water. The hydrocarbon equilibrated water was prepared by a slow stirring method previously described. A layer of oil is placed on top of a partially water filled bottle containing vertically placed glass tube which has its end a few millimeters from the bottom of the bottle and magnetic stirrer bar. The water is stirred with the magnetic stirrer bar on low rotation for 48 hours in

order to allow full equilibration between the water and oil above. Once complete the water is drawn out from the bottle via the glass tube with a pipette and in this case was extracted using the SPE methodology and then subsequently analyzed and quantified by GCMS to obtain the Total Petroleum Hydrocarbons dissolved fraction (TPHg). The oil used for this calibration was the MC252 oil. The sensors are calibrated by a serial addition of the hydrocarbon equilibrated water into a known volume of water in a calibration cell to build a calibration curve of each sensors response. Both the original single compound carbazole and TPHg calibrations are shown on the same scale for reference in the figures showing sensor response.

### Surface Observations

Surface observations noted were light surface sheens and mostly small pieces of orange mousse (Photo 1). However, we also noted a region with relatively common orange mousse pancakes with many up to 0.5m in diameter (Photographs 1 and 2; see also Figure 1).

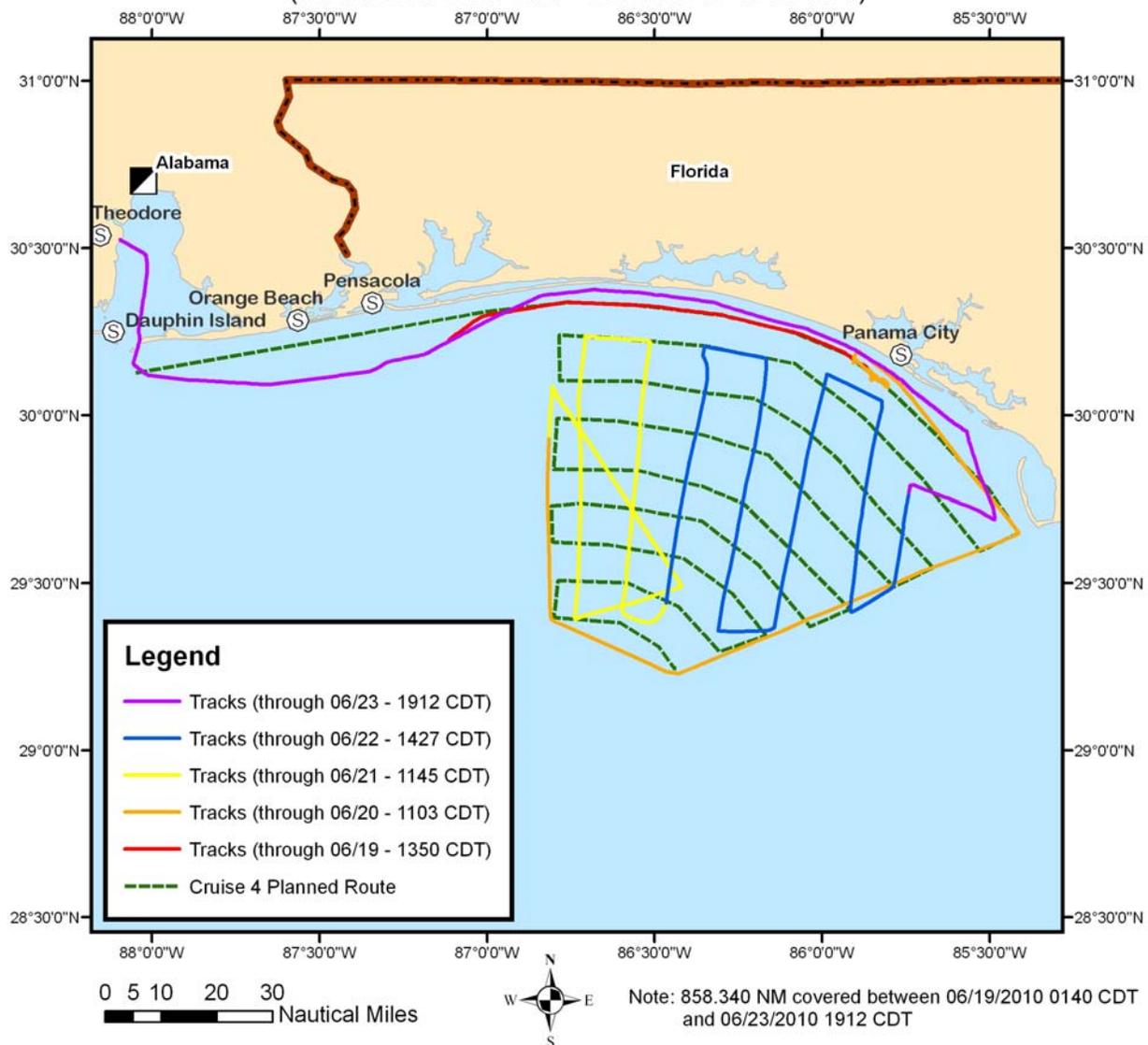
**Planned versus actual route taken for cruise 4:**



**Figure 1:** Planned versus actual route course plotted between 06/22/2010 –06/23/2010. Purple shaded area represents outline extent of the slick from 06/22 ERMA composite.

## Ryan Chouest Cruise 4 Route Status

(06/19/2010 0140 CDT - 06/23/2010 1912 CDT)



**Figure 1b.** Cumulative planned versus actual route course plotted between 06/19/2010 –06/23/2010.

### Vessel science operations:

We continued to log fluorometer measurements and observe/photo document sea-surface conditions until reaching port. We picked up the two CSIRO scientists Xiubin Qi and Stephane Armand. Xiubin will replace Andy Ross and Stephane will replace David Fuentes next Wednesday. We also have two C&C GPS surveyors on board who will record ship track information and monitor the sea surface oil slick conditions. The Jib crane was outfitted with pulley wheels on the block to reduce stress on the hose and electrical wires during descent and ascent. We also now have >500' of continuous reinforced electrical wire for the 150m hose and pump assembly. We will rig up this equipment tomorrow.

Ryan Chouest Cruise 4 Data  
 Chelsea - Fluorometer  
 (06/22/2010 1429 CDT - 06/23/2010 1912 CDT)

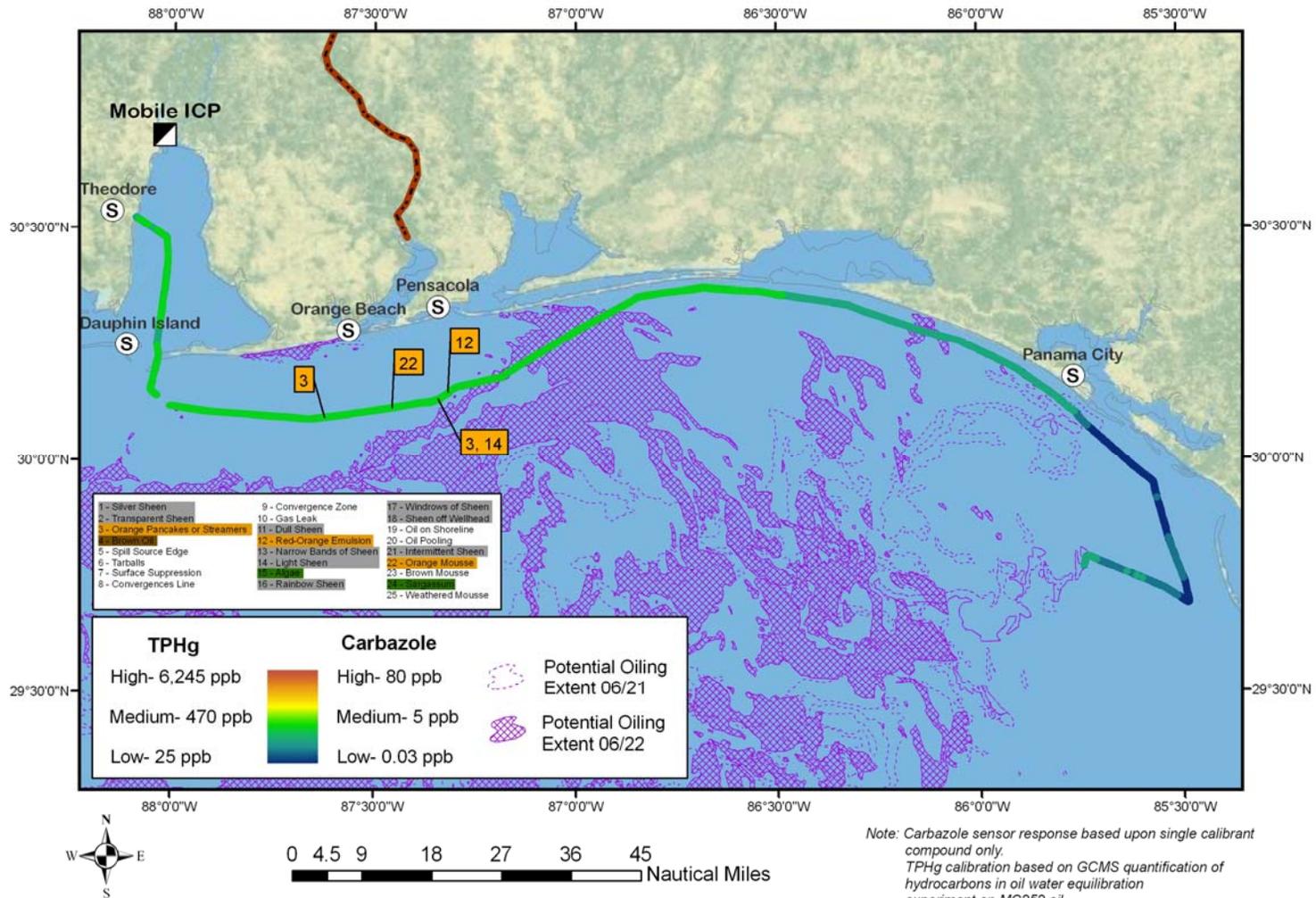
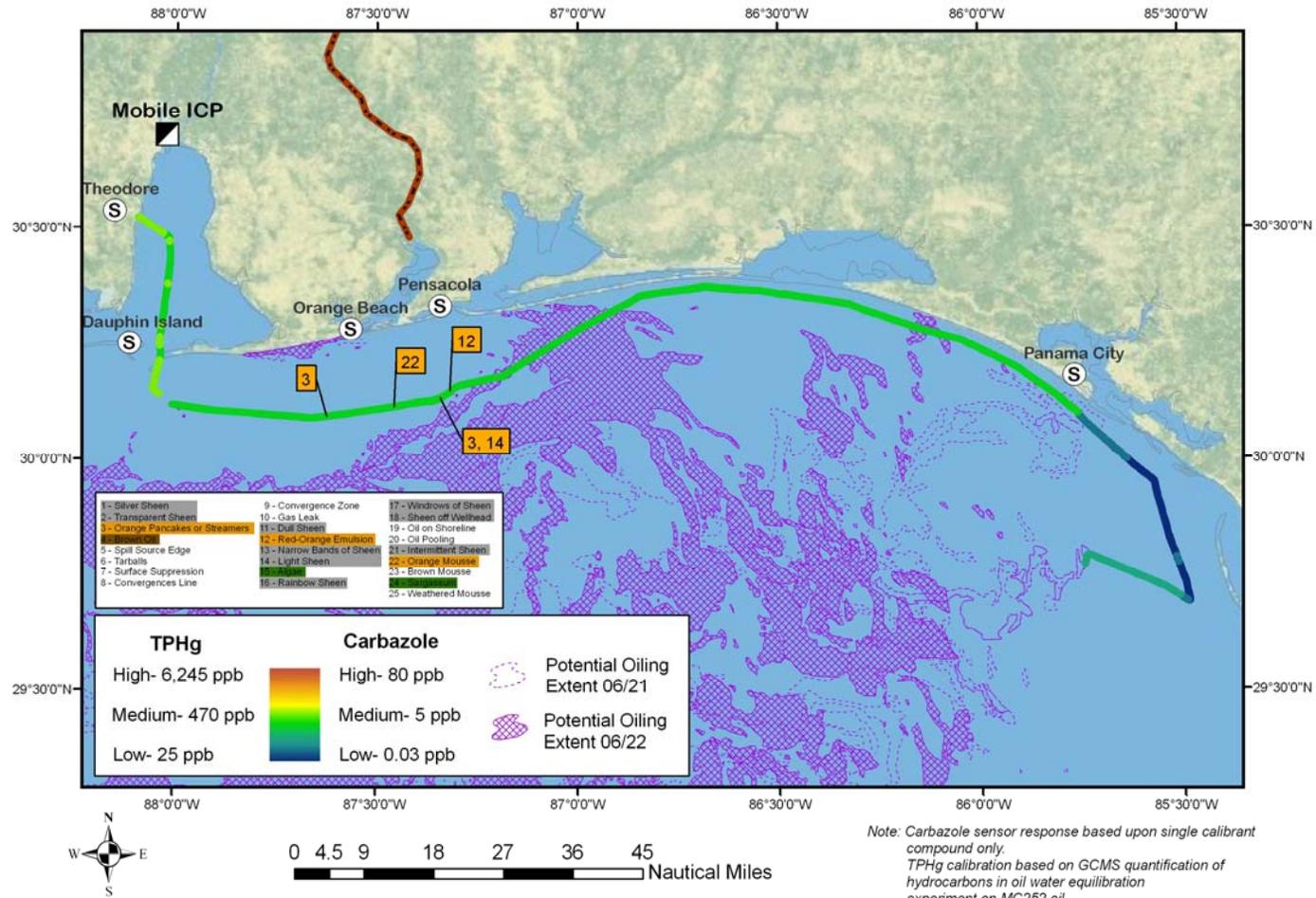


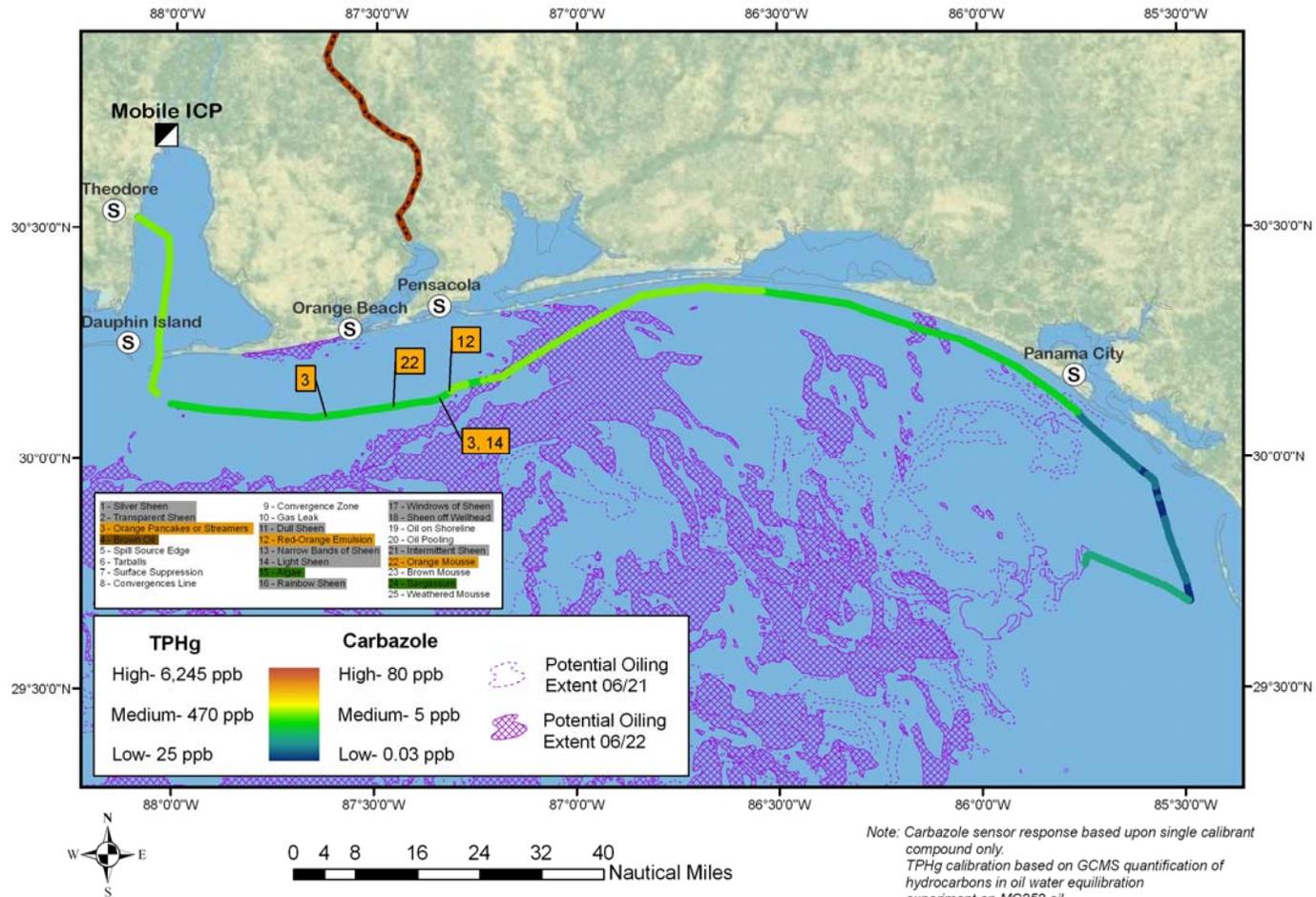
Figure 2. Chelsea fluorometer results plotted with location on cruise 4 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 4 Data  
 Trios- Fluorometer  
 (06/22/2010 1429 CDT - 06/23/2010 1912 CDT)



**Figure 3.** Trios fluorometer results plotted with location on cruise 4 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 4 Data  
 Contros- Fluorometer  
 (06/22/2010 1429 CDT - 06/23/2010 1912 CDT)



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

## Problems/operational issues:

(Includes items up to report submission time)

There are no problems at this time.

## Planned activities for next 24 hours:

We are sailing along the coast towards Port St. Joe. The next planned cruise track is shown below: We anticipate to reach Port Theodore early morning on Wednesday, 30<sup>th</sup> of June. The planned science activities are to test less weathered parts of the spill.

### Ryan Chouest Planned Cruise 5 Route

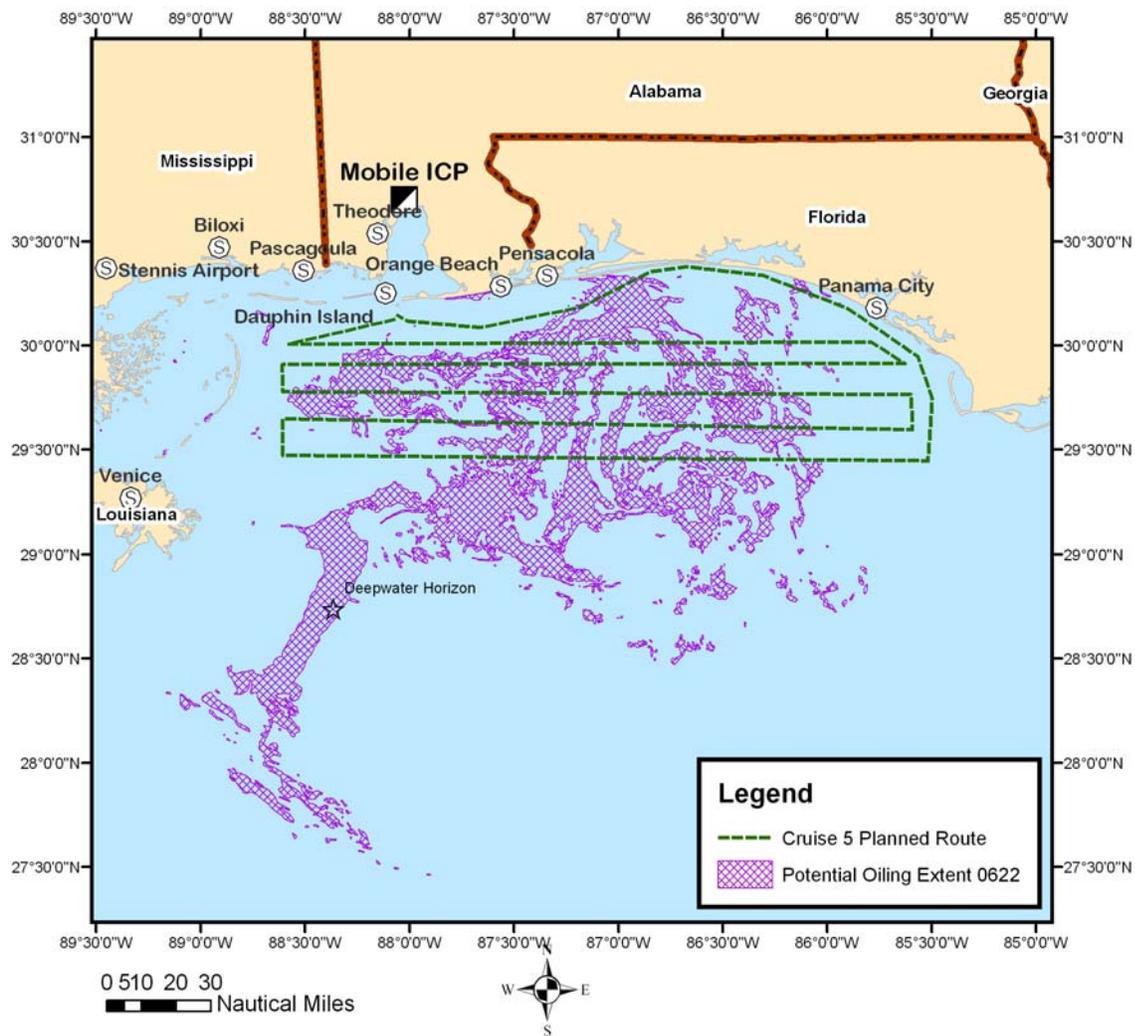
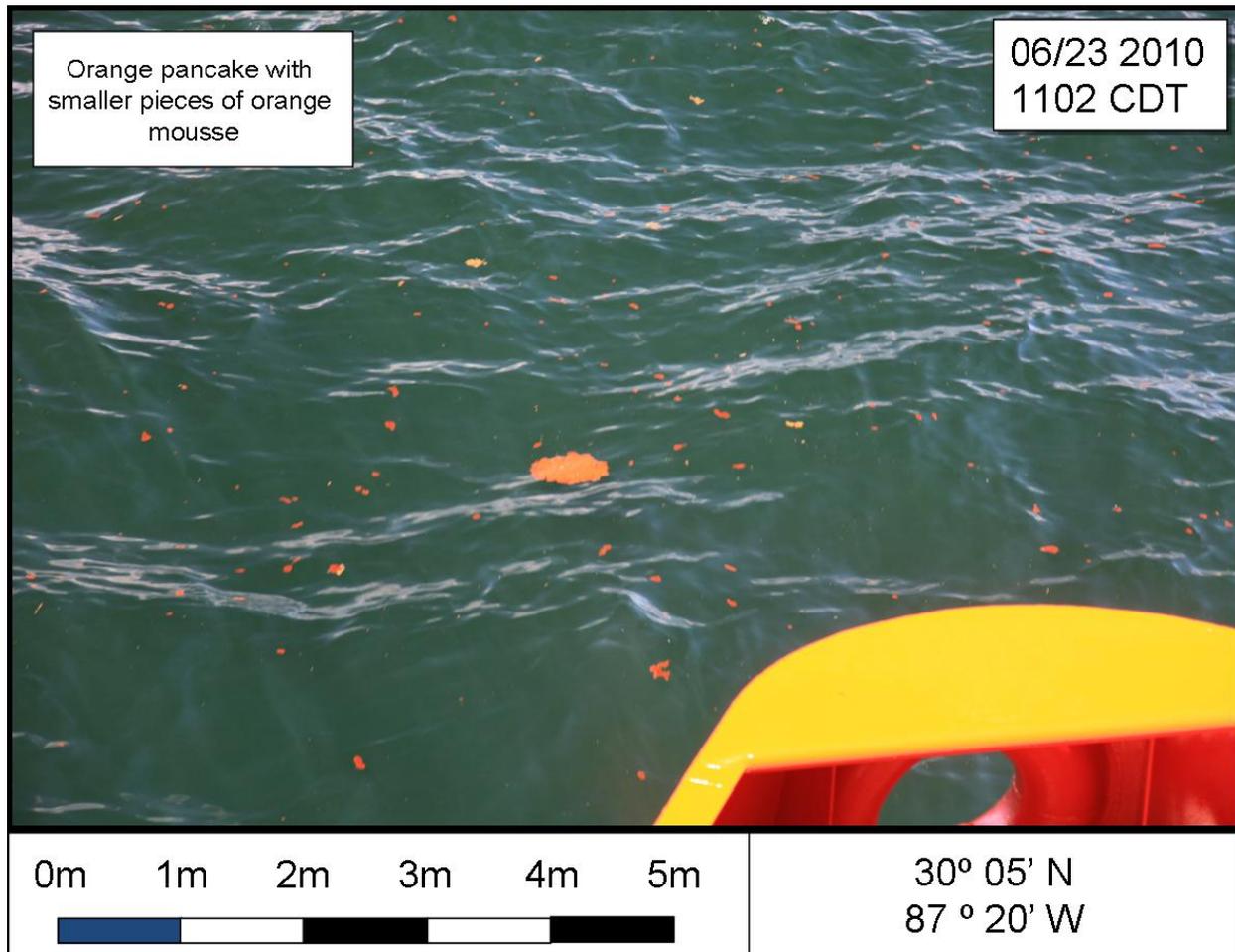
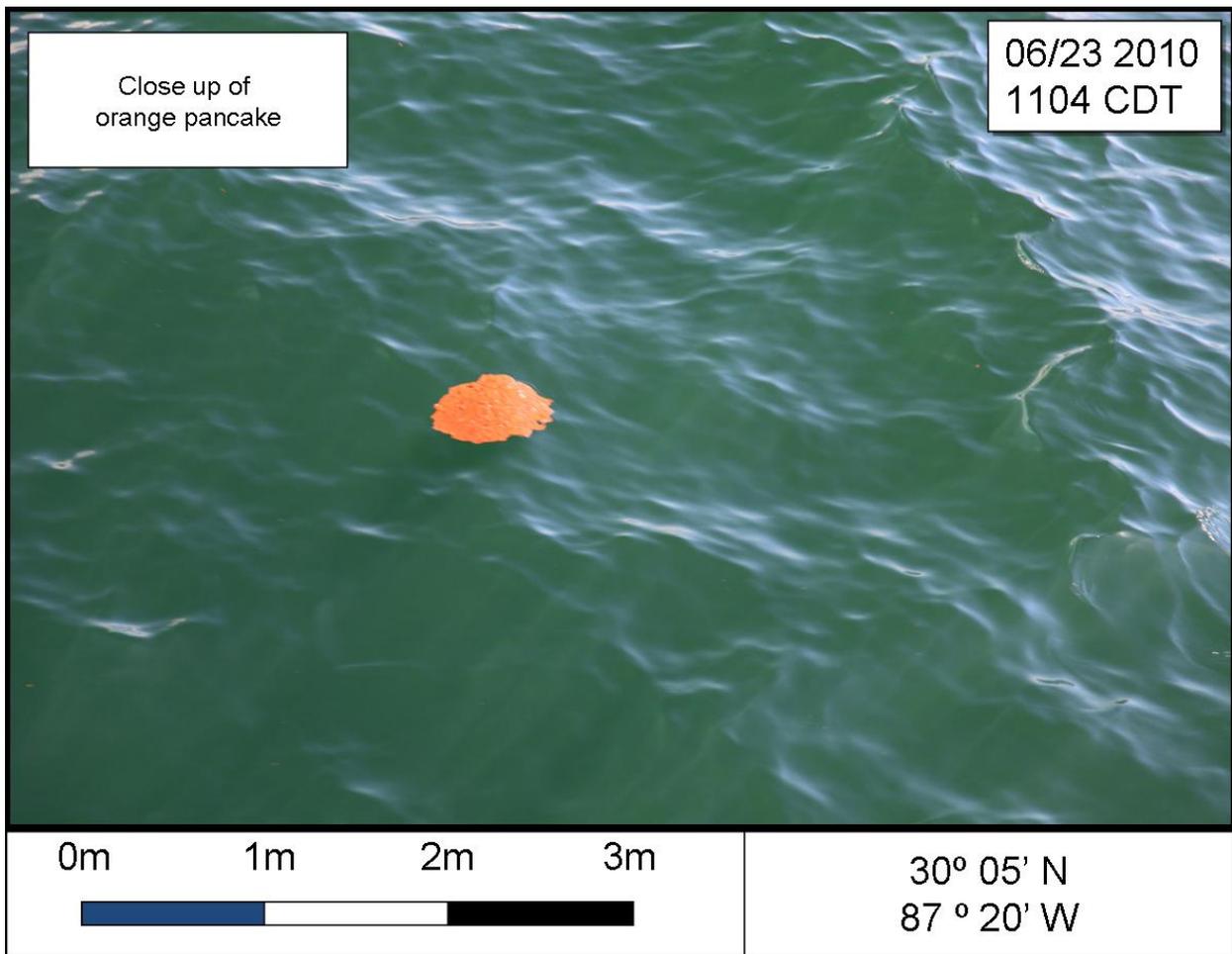


Figure 5. Planned route between 06/24/2010 \_06/30/2010 of the Ryan Chouest.

**Selected Photographs:**



Photograph 1. Orange pancake surrounded by smaller pieces of disseminated orange mousse. Pancakes were as large as 0.5 meters in diameter. This was the typical surface observation for the region labeled with slick type 3 in Figure 1.



Photograph 2. Close up of typical orange pancakes observed in parts of map transect labeled with slick type 3.