

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

***Period covered: 1531 hrs 06/26/2010- 1321 hrs 06/27/2010***

***114.759 - Nautical miles covered***

## **Vessel science party:**

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## **Cruise notes:**

We sailed on the cruise track shown in Figure 1. This cruise track deviated from that originally planned taking a more Southerly route in order to visit the previous R/V Weatherbird CTD site (29° 02 N, 88° W) and whilst in the area we took the opportunity to operate the hydrocarbon sensor array sensor system whilst circling the Deepwater Horizon incident site spill site. We are now back on our planned east west transect.

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

### Fluorometry results

All three fluorometry sensors show very consistent results over the cruise track shown in Figures 2-4. Sensor readings are very low and near baseline values on the region of the track outside of the potential oiling fingerprint and increase to their highest values NW of the Deepwater Horizon incident site. Fluorometry based inferred hydrocarbon concentrations, from calibrations made on GCMS quantified TPHg, correlate well with the potential oiling footprint for 6/26. Although it appears that the values are not significantly higher around the incident site compared to regions to the NE, it is due to scaling problems on the maps. The color scaling on the maps is insufficiently granular to be able to see the detail between ~230 and ~400ppb of TPHg (the approximate difference between the values encountered in the North East quadrant and the results obtained at the spill site). Future mapping of the sensor response data will use a smaller range of concentration in order to display sensor response granularity.

The sensor responses from close to the incident represent the highest values thus far on the Ryan Chouest scientific expedition. Although the fluorometers detected their highest values close to the spill

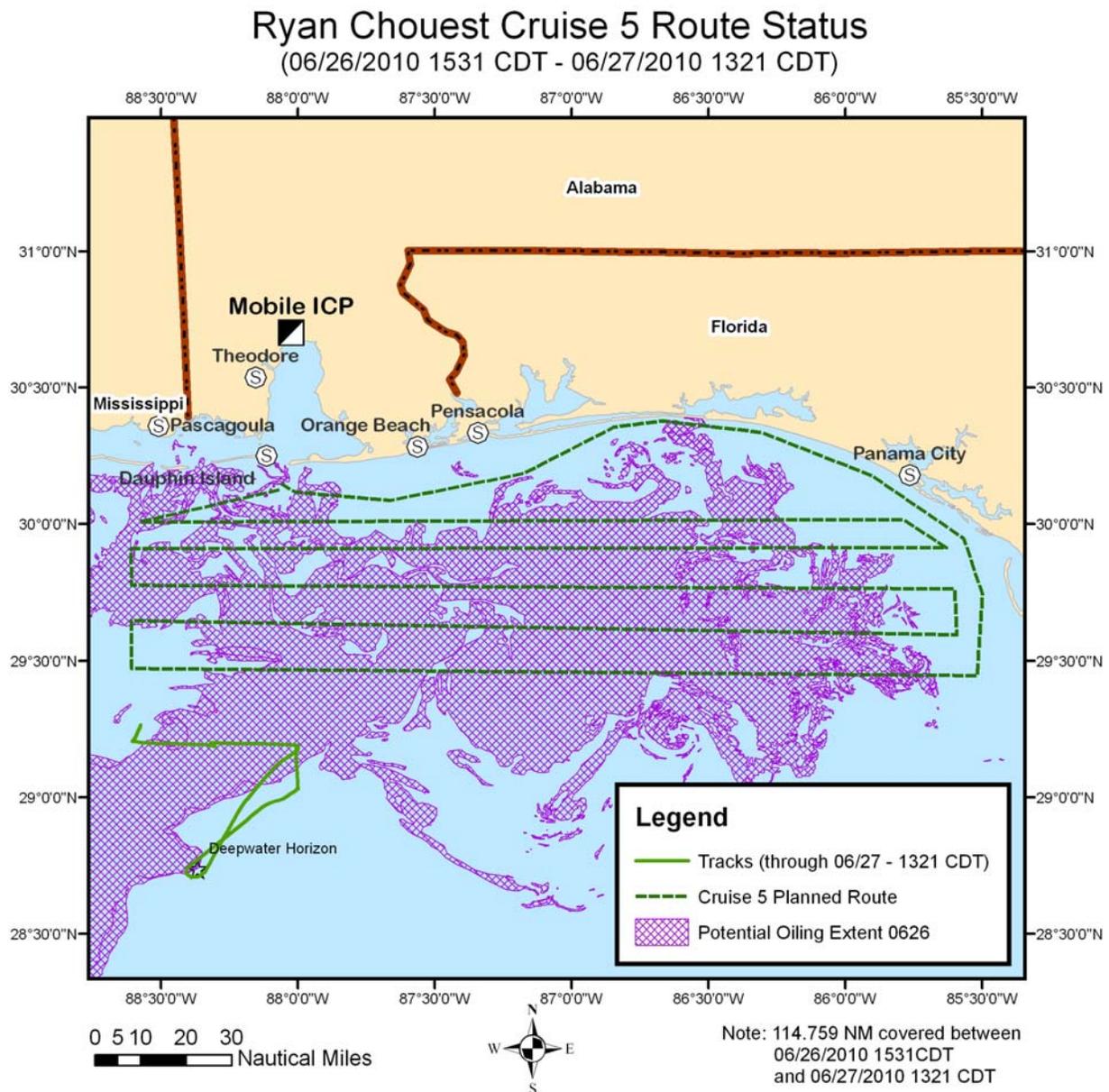
site, they did not detect TPHg concentration at levels exceeding 0.5ppm based on our previous sensor calibration using SPE extraction followed by GCMS analysis.

### Surface Observations

Sea surface oil slick observations include convergence lines with dense patches of seaweed and surface sheens (Photographs 1). The surface sheens observed included light and rainbow sheens, which were oftentimes very subtle and could be discerned only with careful examination of calm water (Photograph 2). We also observed streamers of orange mousse with dense patches of mousse (Photographs 3-5).

Results from the casts and water sample analysis will be presented in the final cruise 5 report.

### Planned versus actual route taken for cruise 5:

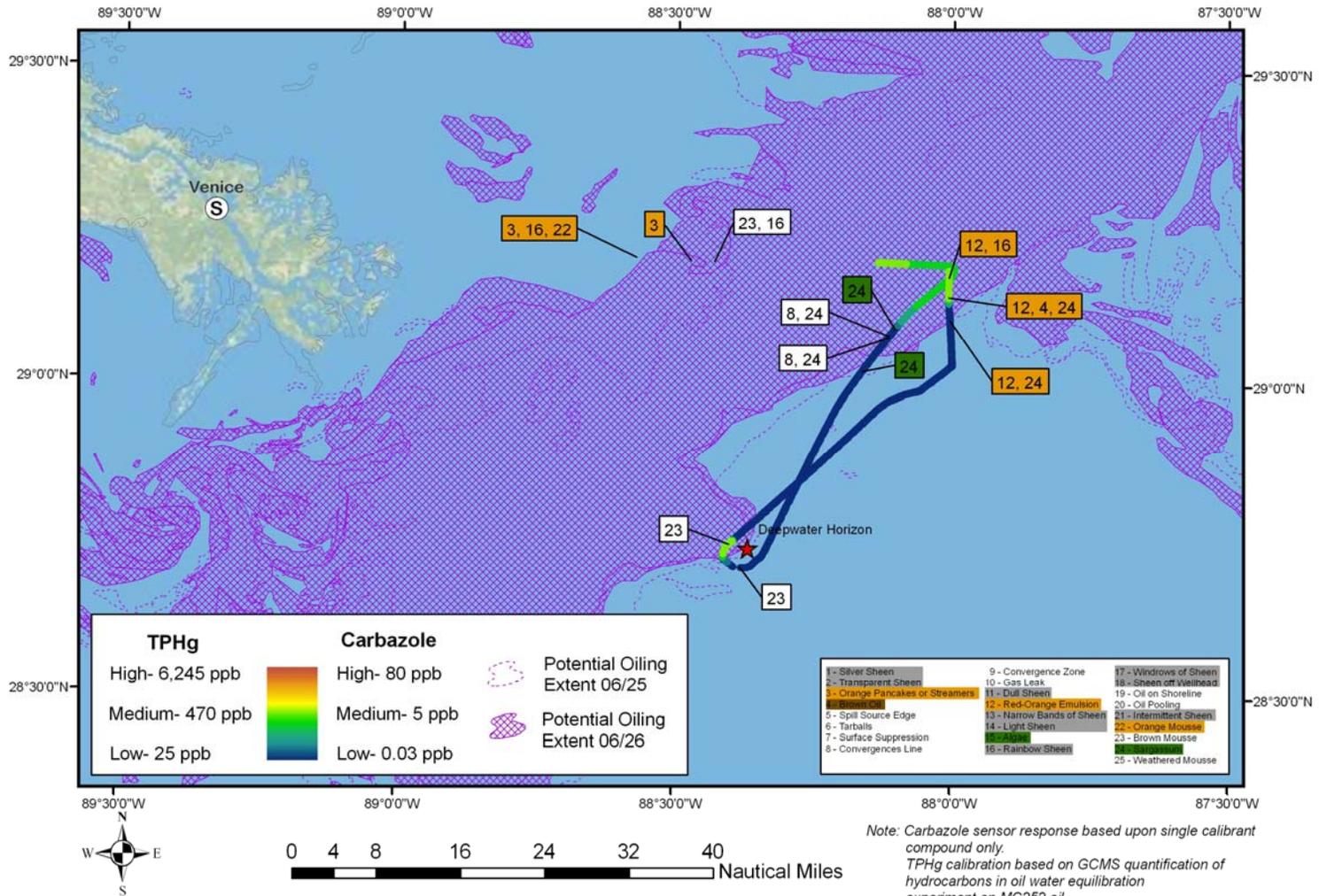


**Figure 1:** Planned versus actual route course plotted between 06/26/2010 –06/27/2010. Purple shaded area represents outline extent of the slick from 06/26 ERMA composite.

## **Vessel science operations:**

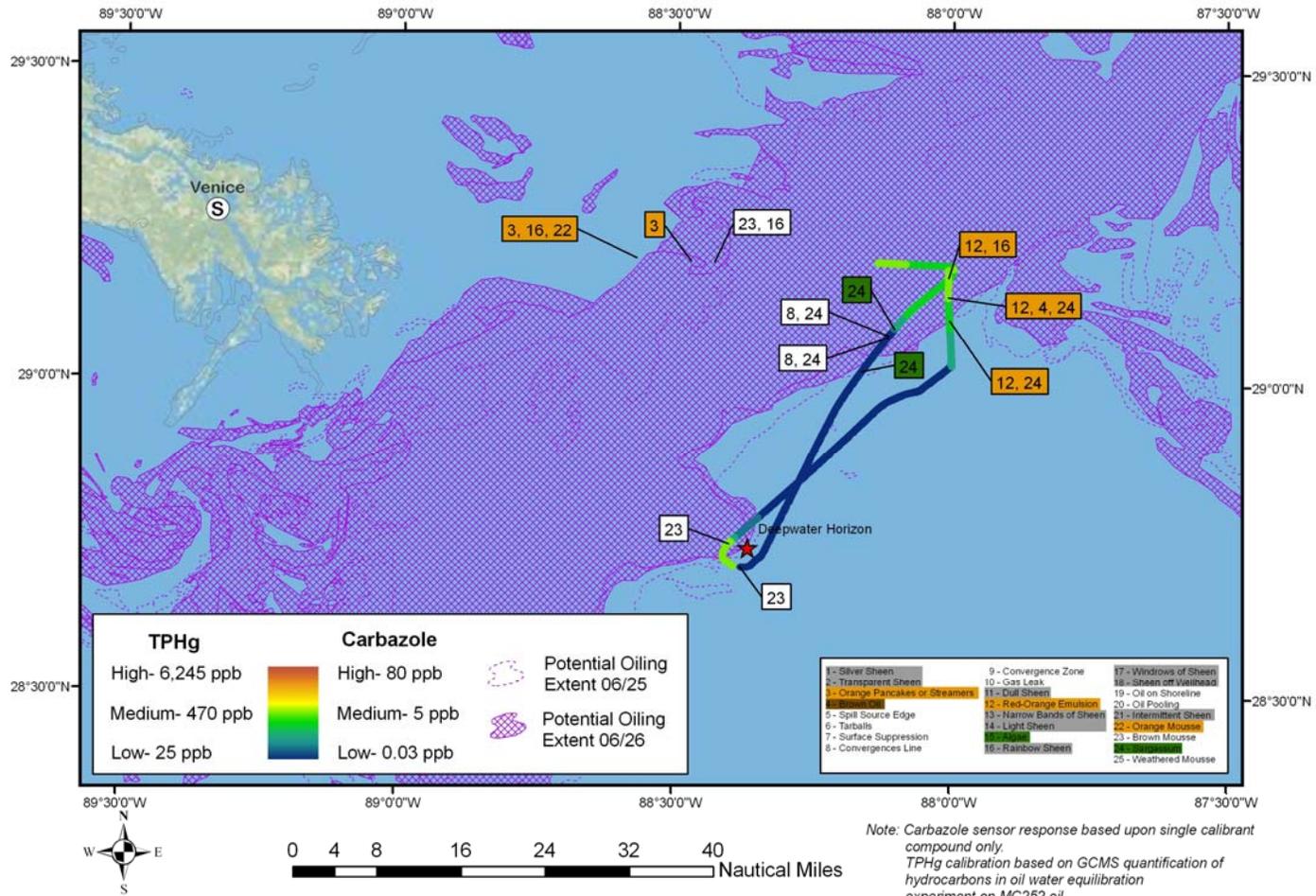
Fluorometer measurements were logged and observations sea-surface conditions were made throughout the majority of the period. The vertical cast system was operated to a maximum depth of 120m at three cast sites (Site 1: 29° 11.2883N 88° 00.1609W, Site 2 (R/V Weatherbird site) 29° 02.0157N, 88° 00.002W, Site 3: 29° 12.46N 88° 36.108). in addition water samples were taken at 5 mile spacing's between the R/V Weatherbird site and the incident site. Other water and surface samples have been taken during the 24 hour period when features of interest were encountered. We continue to perform liquid-liquid extractions on seawater samples/mousses and analyze the extracted material by GCMS.

Ryan Chouest Cruise 5 Data  
 Chelsea - Fluorometer  
 (06/26/2010 1531 CDT - 06/27/2010 1321 CDT)



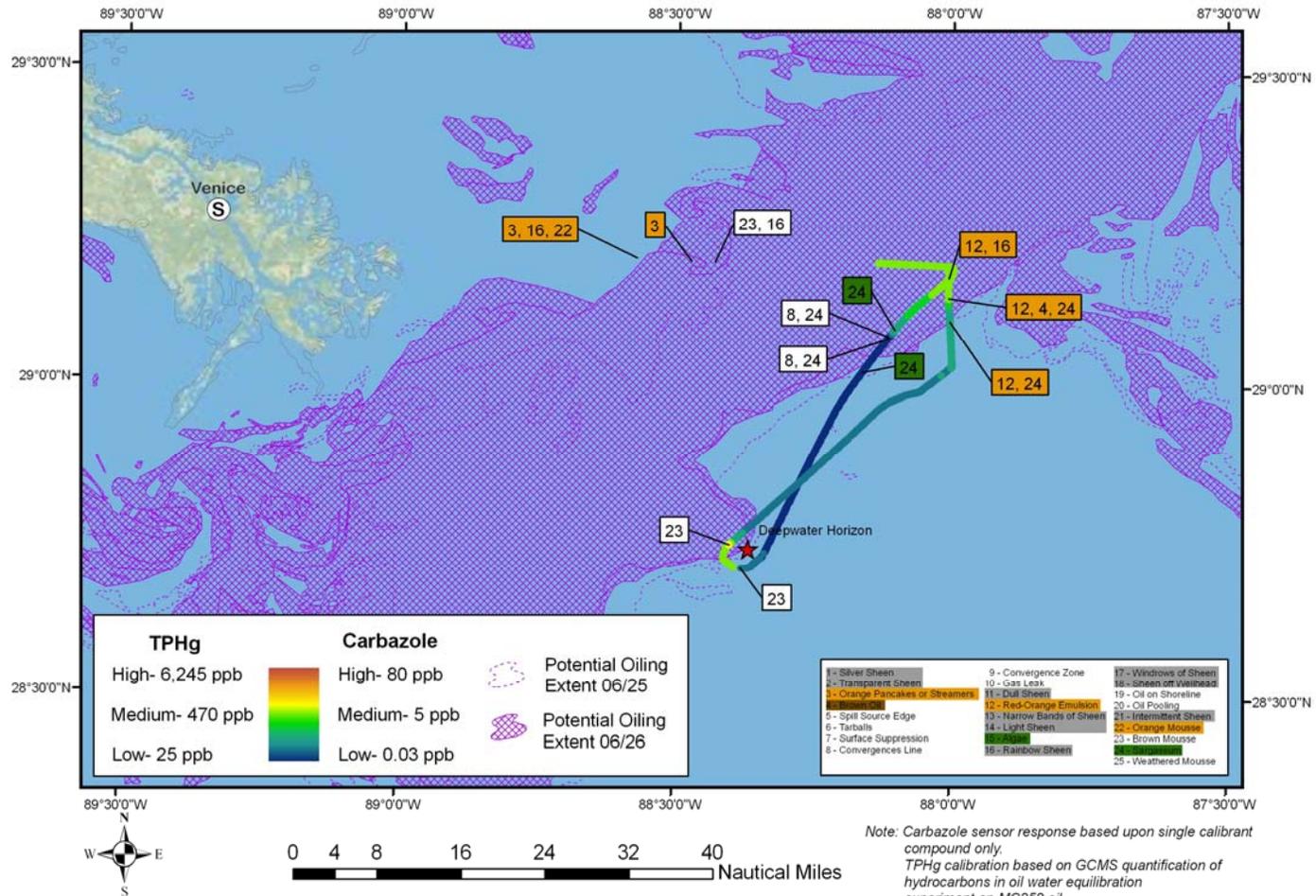
**Figure 2.** Chelsea fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 5 Data  
 Trios - Fluorometer  
 (06/26/2010 1531 CDT - 06/27/2010 1321 CDT)



**Figure 3.** Trios fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 5 Data  
 Contros - Fluorometer  
 (06/26/2010 1531 CDT - 06/27/2010 1321 CDT)



**Figure 4.** Contros fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

## Problems/operational issues:

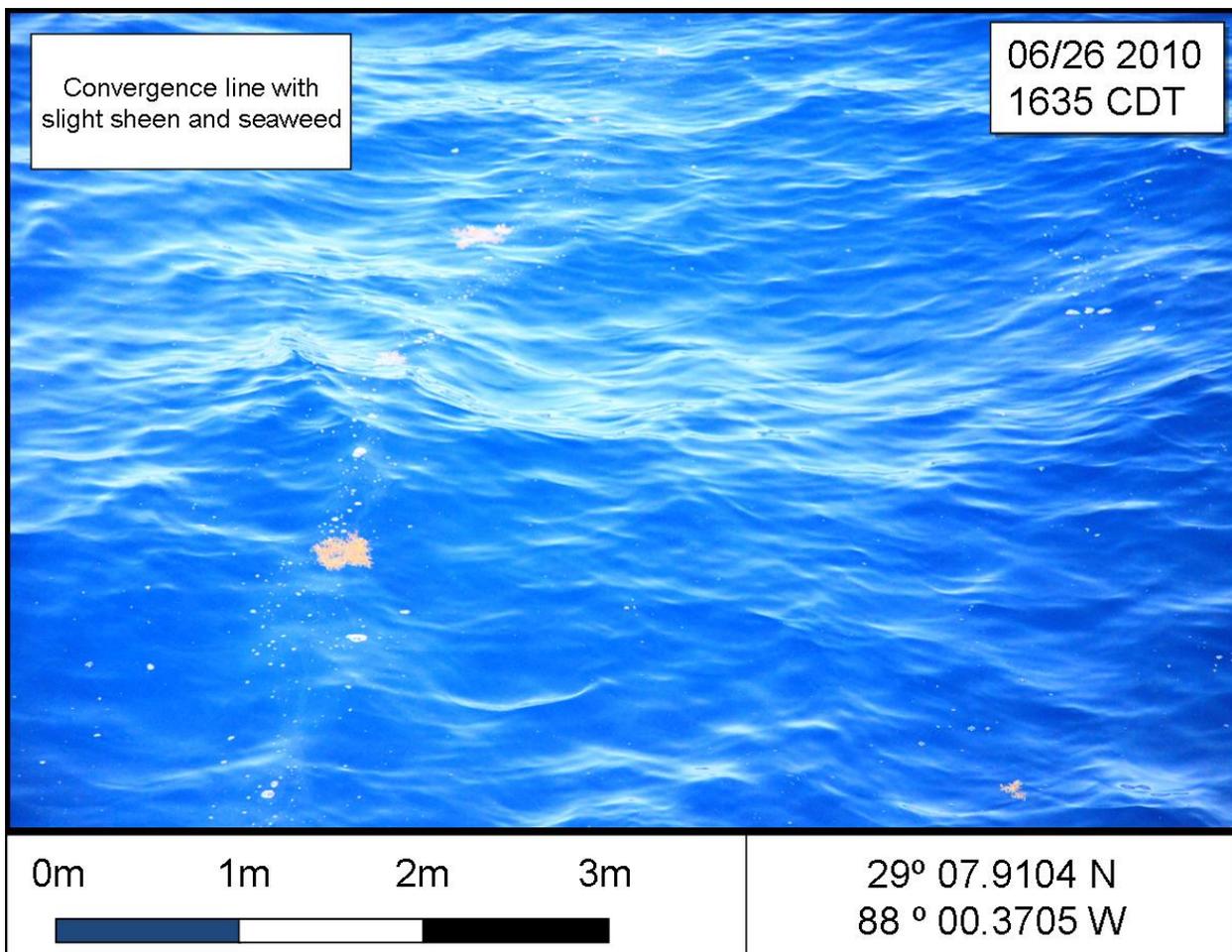
(Includes items up to report submission time)

During vertical water sampling, the hose and electrical lines slipped out of the new wheel block and becoming wedged between the wheel and the metal block. This occurred several times and was caused by strong currents pulling the hose away from the ship. The Captain tried to keep the vessel correctly oriented using dynamic positioning, but the currents were too strong. We also had a submersible pump for the underway sensor fail this morning, which is why we do not have full data coverage across the slick as shown in Figures 2-4, this pump was exchanged for the pump used for the casts in order to continue to collect surface track data. The operational problems have caused a significant delay to our cruise and as such in order to keep to a scheduled arrival at Theodore of 6 am on Wednesday 30<sup>th</sup> June we will modify the planned route eliminating one of the East-West return transects.

## Planned activities for next 24 hours:

We are sailing the planned cruise track. We will not deploy any further vertical casts on cruise 5.

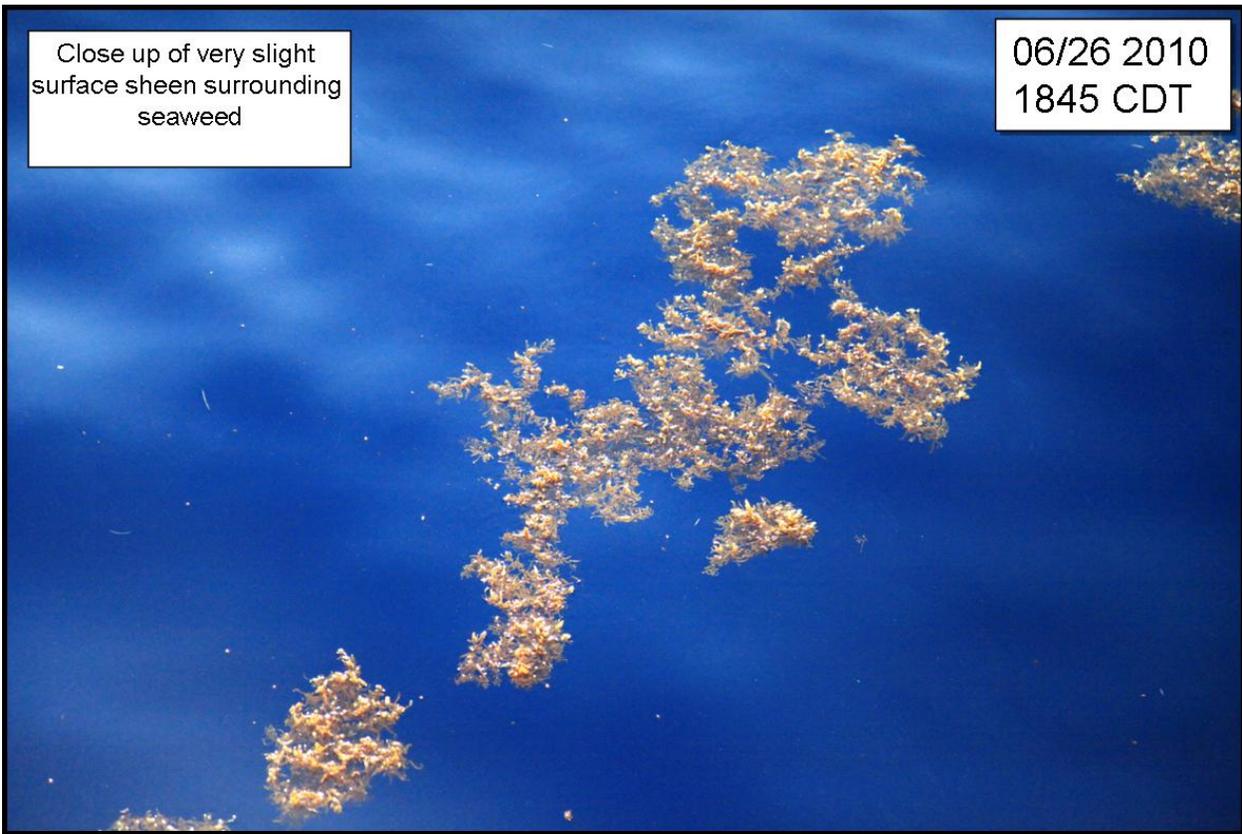
## Selected Photographs:



Photograph 1. Convergence line characterized by seaweed and slight surface sheen.

Close up of very slight  
surface sheen surrounding  
seaweed

06/26 2010  
1845 CDT



0m

0.25m

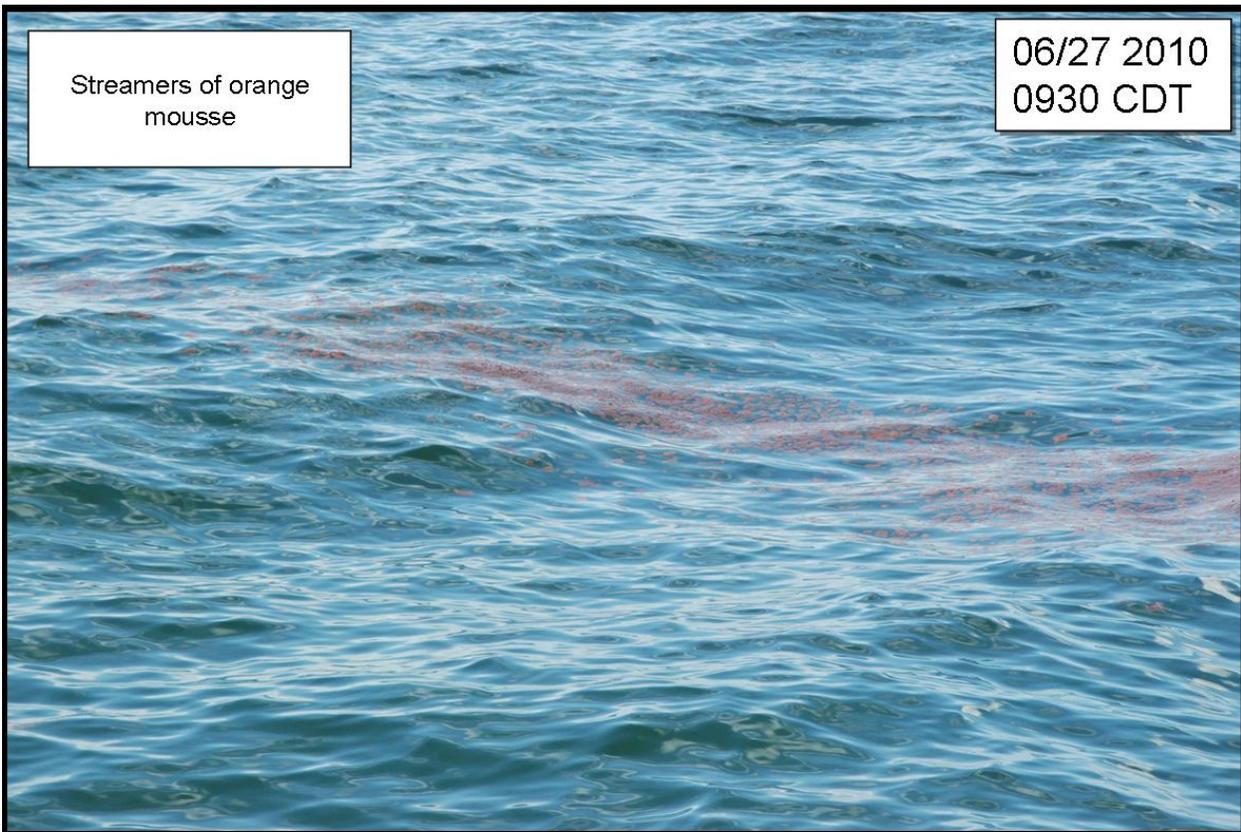


29 ° 02.0184 N  
88 ° 00.0037 W

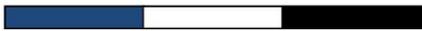
Photograph 2. Close-up of seaweed that is surrounded by subtle wavy lines of surface sheen.

Streamers of orange  
mousse

06/27 2010  
0930 CDT



0m 1m 2m 3m

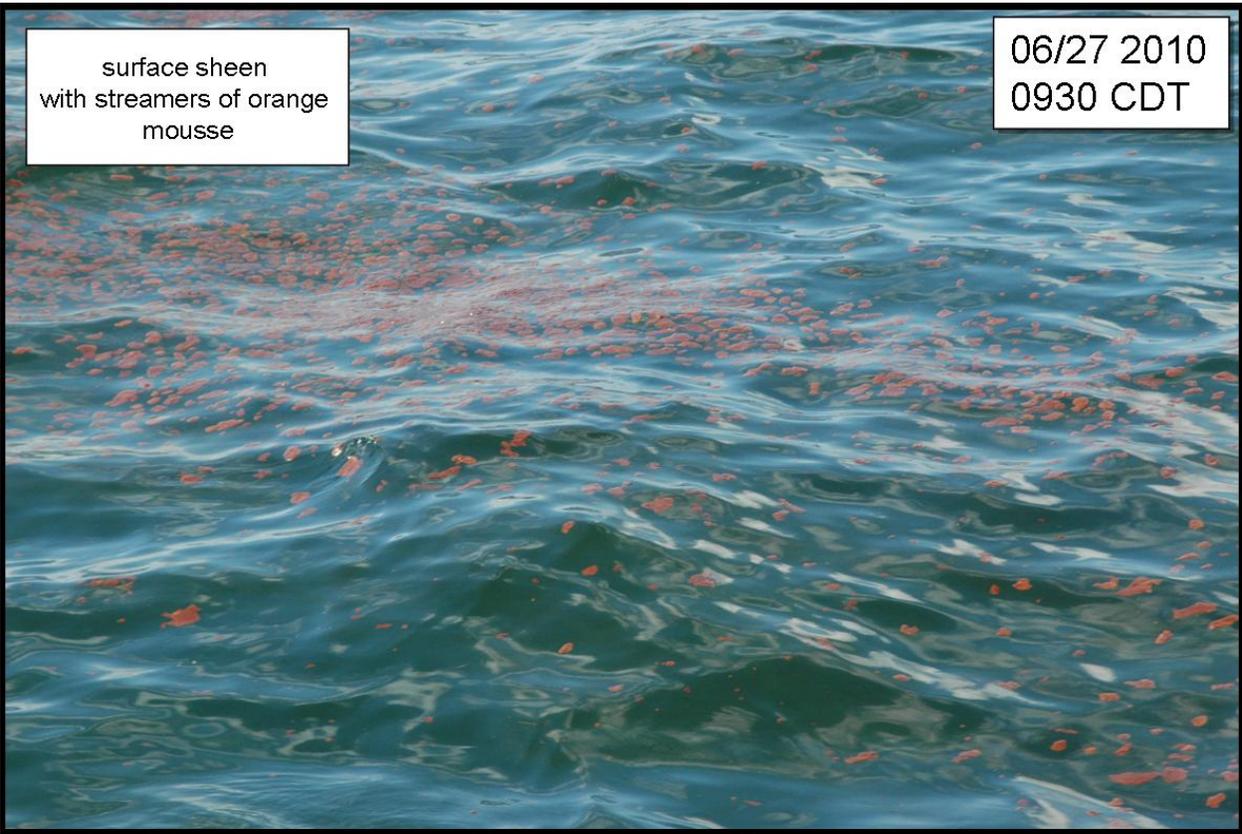


29 ° 11.8151 N  
88 ° 28.5351 W

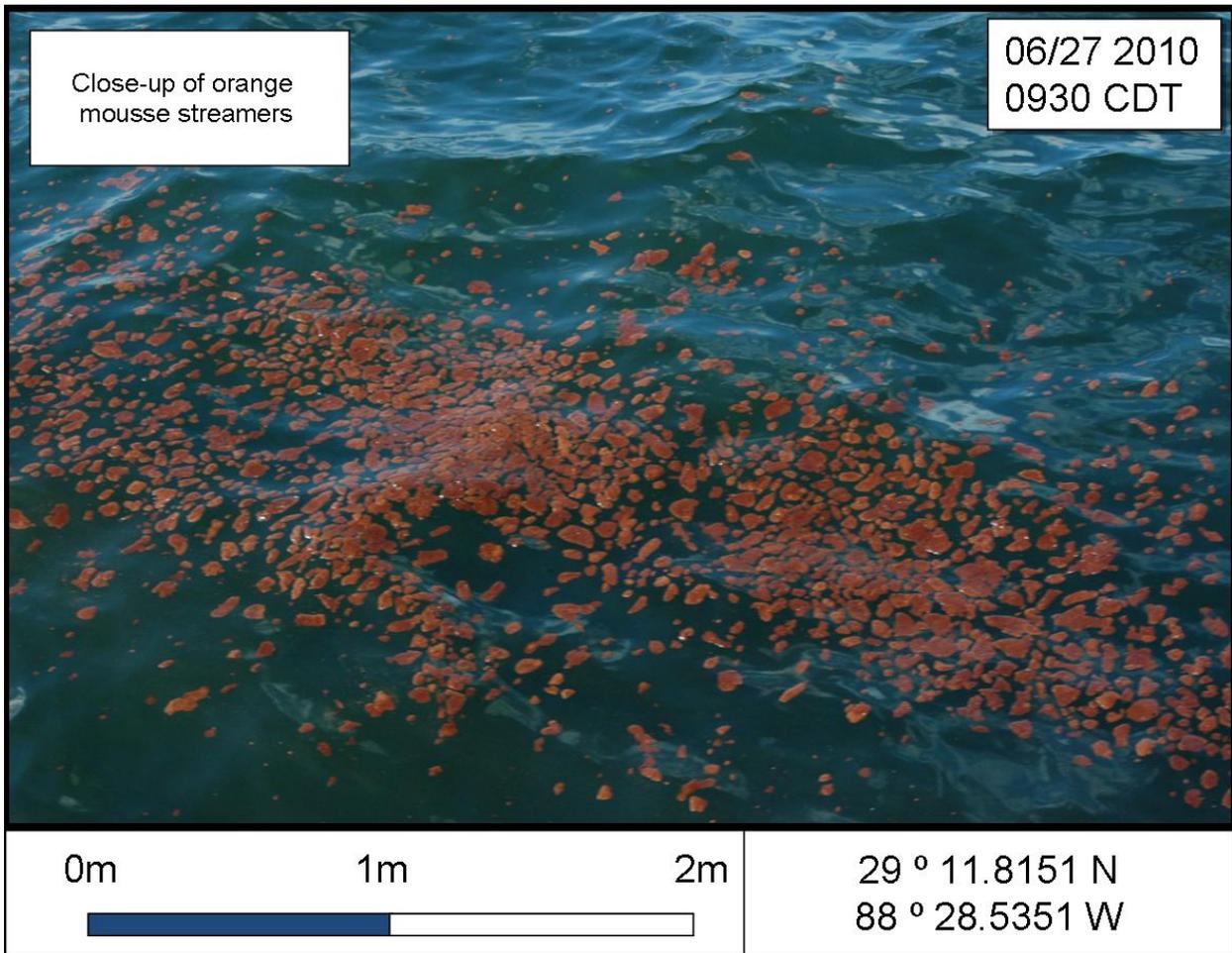
Photograph 3. Streamers of dense orange mousse.

surface sheen  
with streamers of orange  
mousse

06/27 2010  
0930 CDT



Photograph 4. Streamers of relatively dense orange mousse and surrounded by a surface sheen.



Photograph 5. Close-up of dense orange mousse distributed in streamer lines.

## Full Crew List:

William A. Smith	MASTER
Demarco Jones	A/B
Elijah Benjamin	O/S RIG
Jon Cheney	Capt.
Brian Corley	Mate
Eduardo Zepeda	A/B
Mark Harmon	A/B
Samuel Nwosu	QMED
Craig Lyons	CHIEF ENG.
Emma Crooke	CSIRO
Xiubin Qi	CSIRO
Stephane Armand	CSIRO
David Fuentes	CSIRO
Andrew Ross	CSIRO
Lawrence Febo	BP
Guilherme De Almeida	Entrix
Brian Harmon	C&C
Greg Richard	C&C
Roderick Baker	OS/COOK
Brandon Wilson	C-PORT
Ben Autin	C-PORT