Ryan Chouest daily data transmission and report

Period covered: 1350hrs 06/19/2010-1103hrs 06/20/2010

171.037 - Nautical miles covered

Vessel science party:

Andrew Ross (Andrew.Ross@csiro.au)
Emma Crooke (Emma.Crooke@csiro.au)
David Fuentes (David.Fuentes@csiro.au)
Lawrence Febo (Lawrence.Febo@bp.com)
Guilherme de Almeida (gdealmeida@entrix.com)

Contact details:

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

Cruise notes:

Since 1350 hrs 06/19/2010 we have sailed on the new course towards Port St. Joe as planned (Figure 1).

Science results and preliminary interpretation:

Data recorded from the three fluorometer sensors show low to medium inferred hydrocarbon concentrations in the studied transect. The Chelsea fluorometer exhibited the lowest concentrations of the three sensors, with a region of slightly elevated concentrations at ~29º 45' N, 86 º 50' W (Figure 2). The Chelsea data are lower on this cruise track than from previous tracks, despite traversing through a large oiling extent. The Chelsea fluorometer does show these trends however they are below the current scale. These unusually low values may be due to baseline drift or seawater matrix effects which are yet to be established. Further additional calibration of all of the sensors will occur tomorrow investigate the readings further. The Trios sensor recorded low to medium concentrations but generally in the lower to middle medium range of values (Figure 3). The pattern of increasing and decreasing fluorometer measurements is relatively consistent with the oiling extent for 06/19/2010. The Contros sensor shows the highest inferred concentrations of the three sensors (Figure 4), but there are very few changes in the pattern relative to the oiling extent. The Contros sensor shows the highest concentrations along the coastal transect.

We observed many areas affected by a very light transparent surface sheen and some places with small, dispersed pieces of orange mousse (Photo 1). Very thin transparent surface sheen was by far the most common type of oil slick observed (Photos 1-3). In some places, we observed Sargassum seaweed, which could be mistaken for brown mousse at first glance. A particularly interesting feature is the within slick variability shown in Photo 2. The different surface sheens are not the result of a cloud shadowing effect but probably slight differences in the thickness and/or concentrations of hydrocarbons in the surface

neuston layer. This pattern was a common feature in the near vicinity of this image and may be common throughout other areas affected by oil sheens.

Planned versus actual route taken for cruise 4:

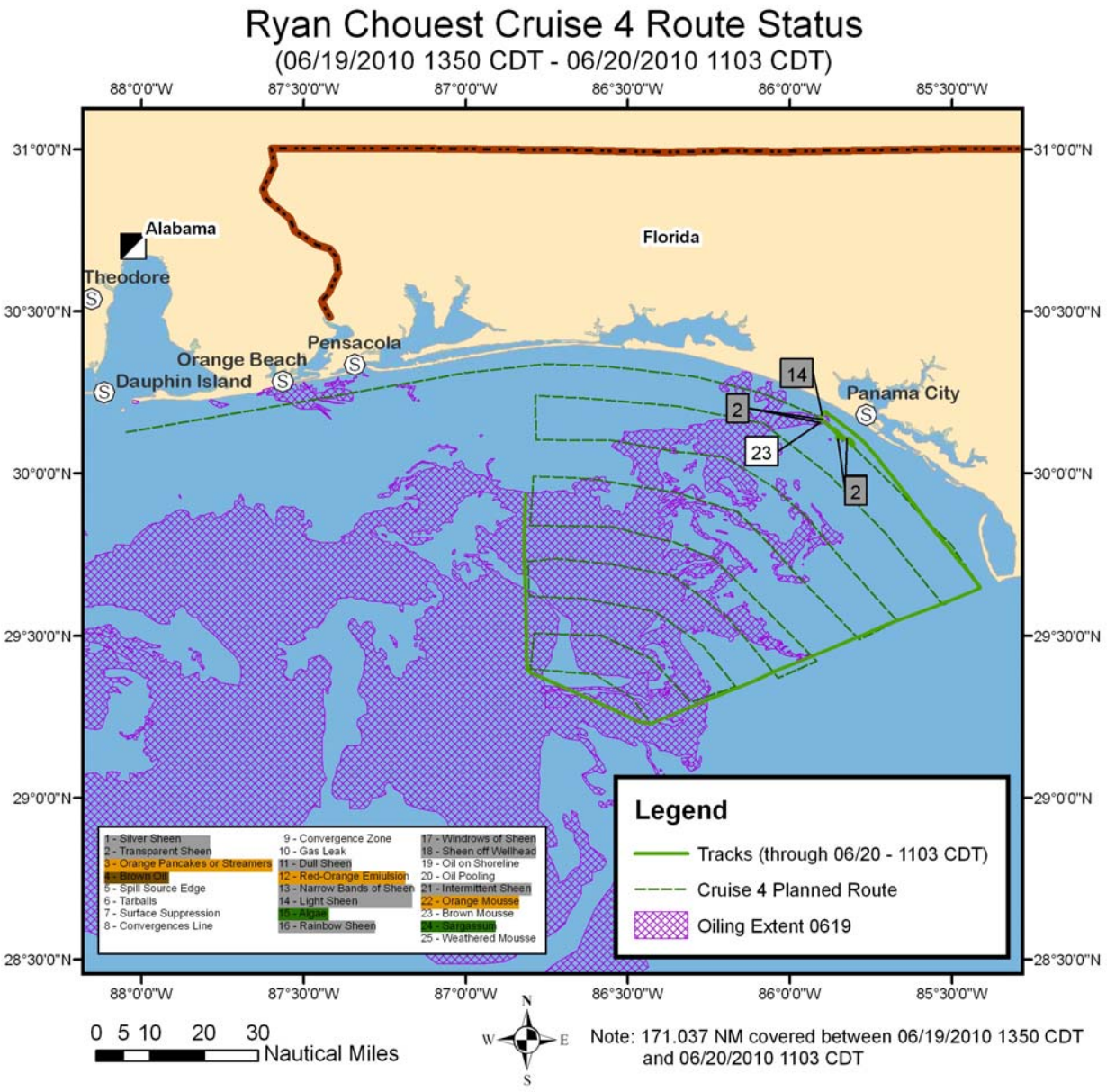

Figure 1: Planned versus actual route course plotted between 06/19/2010 –06/20/2010. Purple shaded area represents outline extent of the slick from 06/19 ERMA composite.

Vessel science operations:

We continued to log fluorometer measurements and observe/photo document sea-surface conditions. In addition we are collecting samples for onboard separation and GCMS analysis.

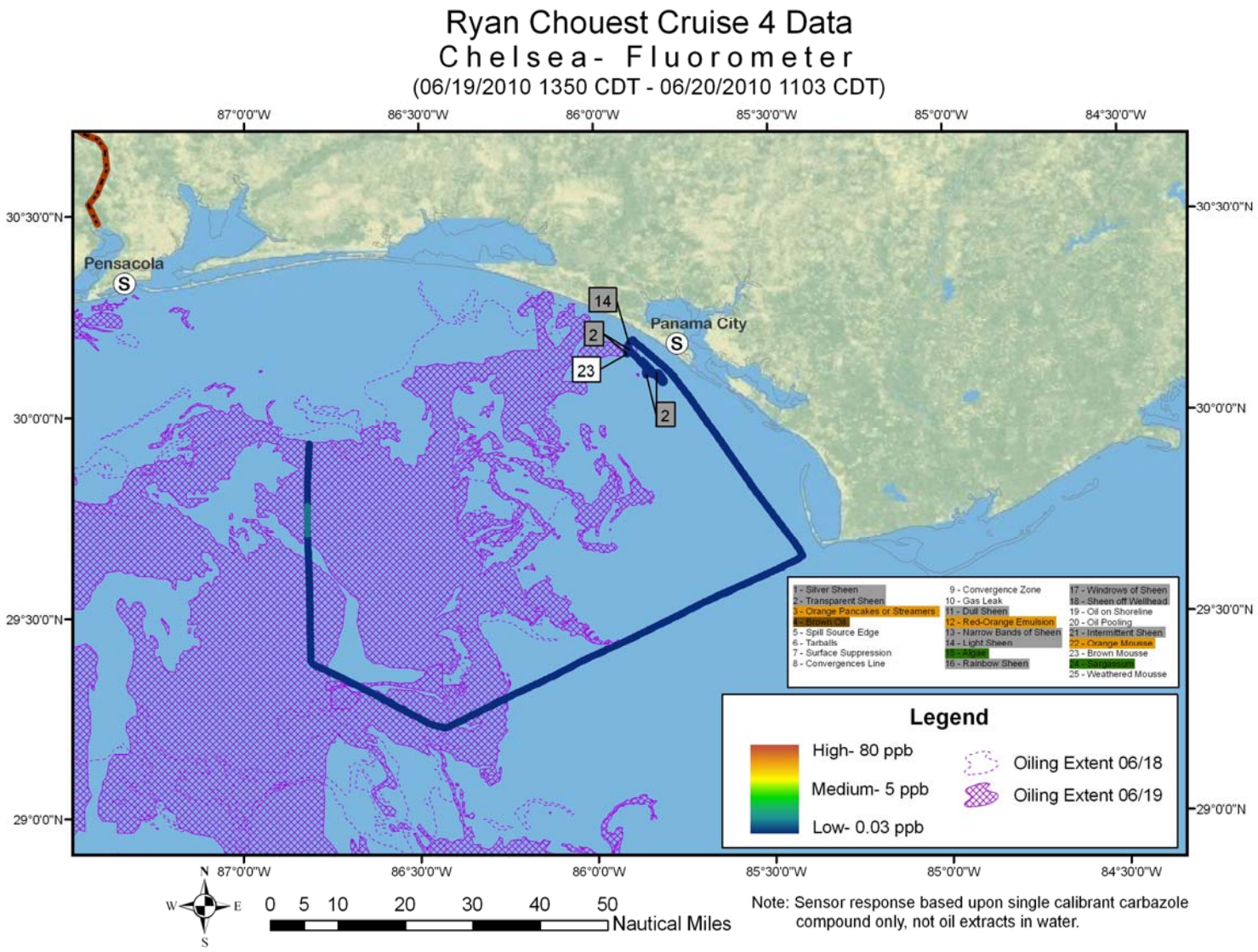

Figure 2. Chelsea fluorometer results plotted with location on cruise 4 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

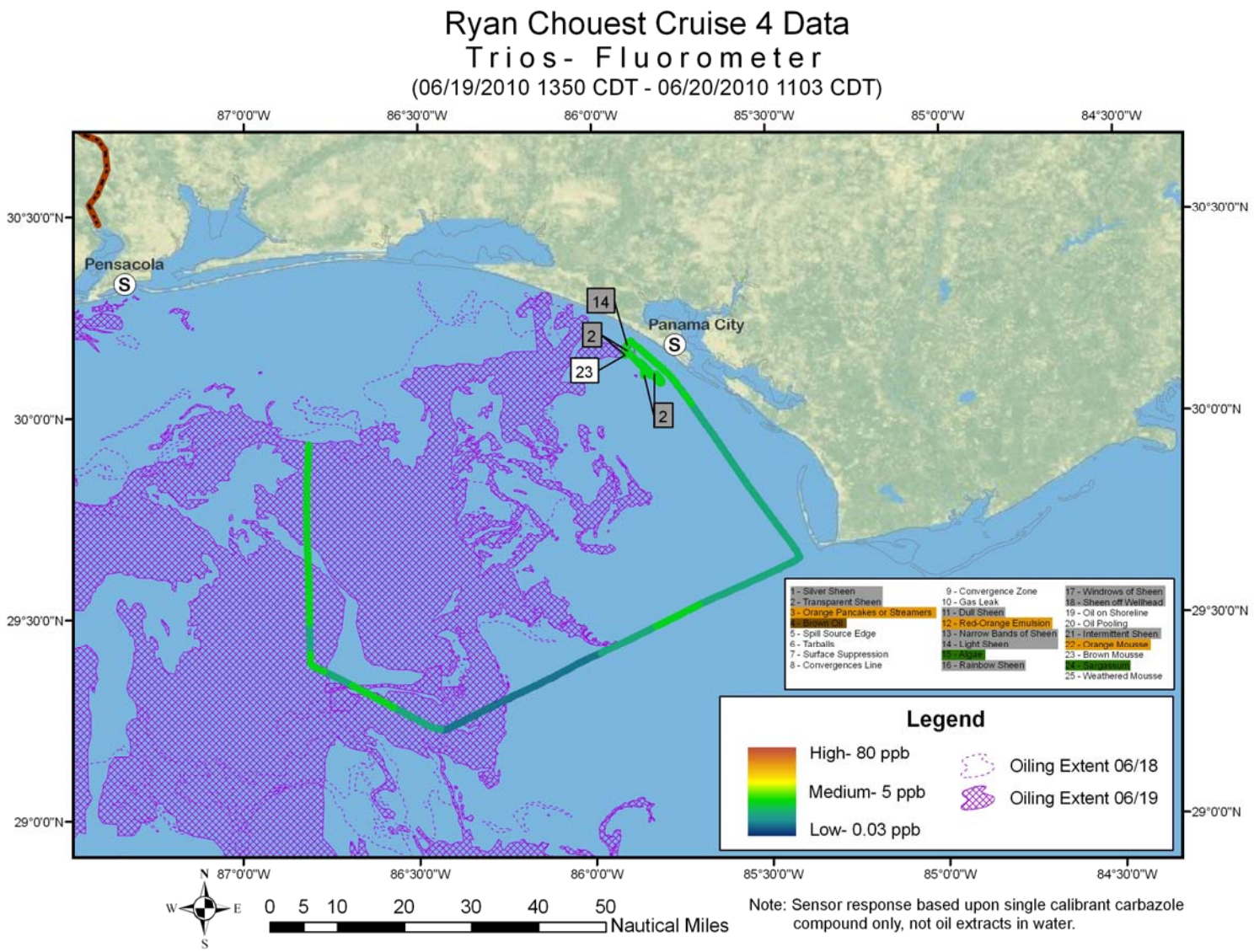

Figure 3. Trios fluorometer results plotted with location on cruise 4 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

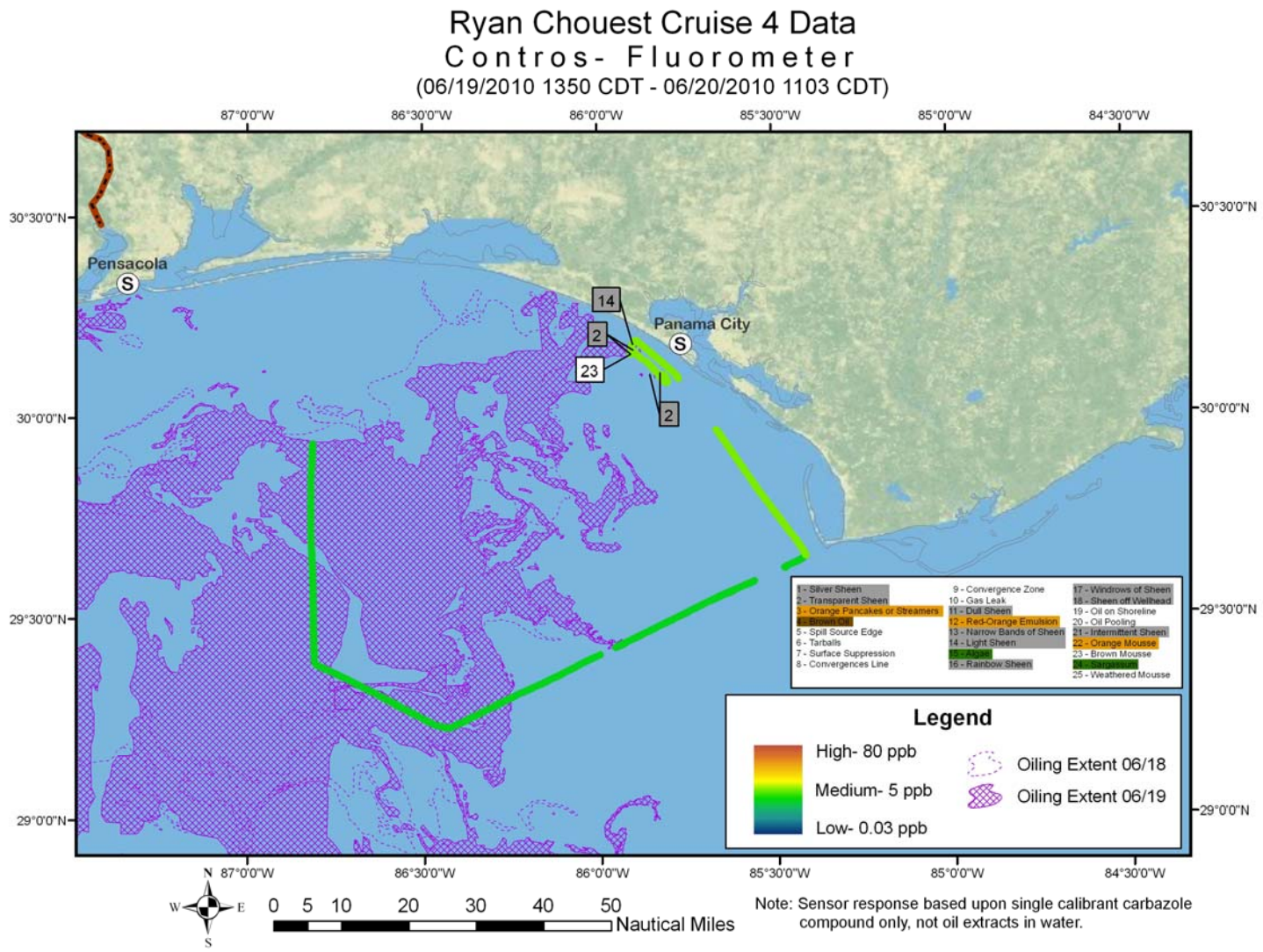

Figure 4. Contros fluorometer results plotted with location on cruise 4 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Problems/operational issues:

(Includes items up to report submission time)

The swivel block at the end of the jib crane swiveled too much and interfered with efficient unreeling the hose. Members of the crew removed it and welded it into a fixed, non-swiveling position. We unraveled the hose and reattached the electrical cord with sufficient slack to prevent the plugs from becoming detached during deep fluorometer casts. At 1700 hrs, we stopped the ship and deployed the hose and pump on a deep fluorometer system test with some success, but two problems did occur. First, almost all of the tape that attaches the electrical cord and winch wire to the hose tore during hose retrieval. However, all of the cable ties remained fastened. Secondly, one of the electrical cord connections was sheared as it was brought through the rollers on the jib as the hose was reeled in. On a positive note, the pump worked superbly on the way down and up until the electrical connection was severed. Further experiments using a shorter assembly will occur at other points in this cruise. However a sheathed EM cable should ideally be used for the deeper casts as it both takes the weight of the assembly and also provides the electrical connection to the pump. As such we are investigating a new electrical cable that may be obtained back in Theodore, Alabama.

Planned activities for next 24 hours:

We will continue to make transects NW to SE and collect water/mousse samples at suitable locations. Further trials of the casting system will occur in order to attempt to characterize the photic zone waters. Further sampling and geochemical testing will occur.

Selected Photos:

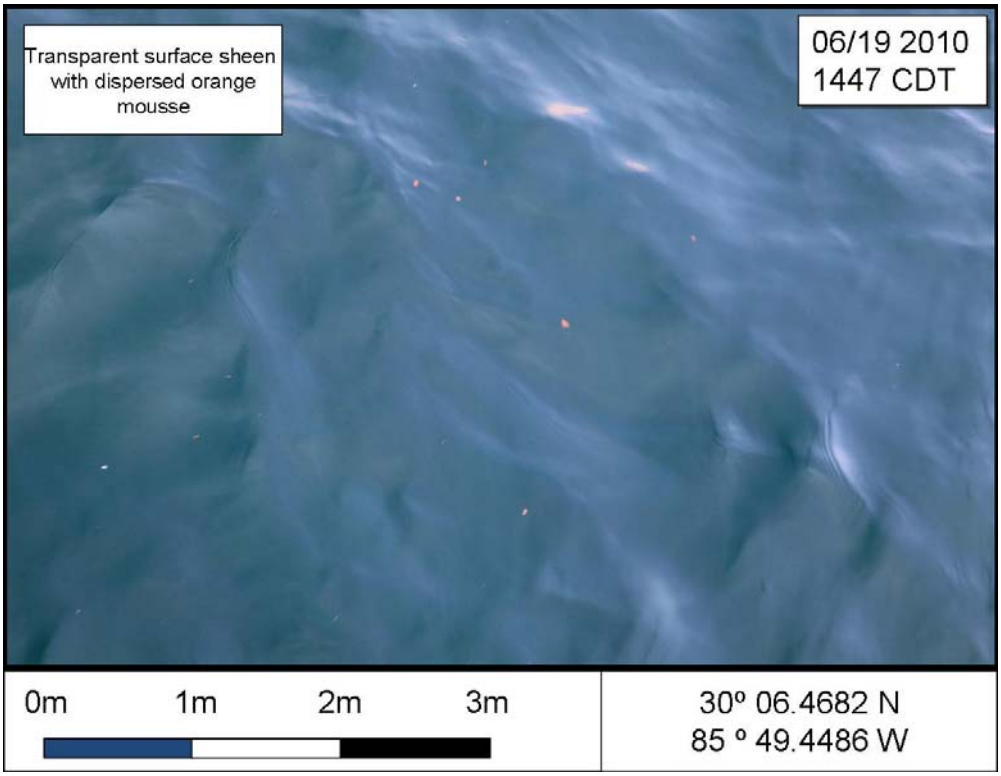

Photo 1. Transparent surface sheen with several noticable pieces of dispersed mousse approximately 1 to 7 cm in diameter.

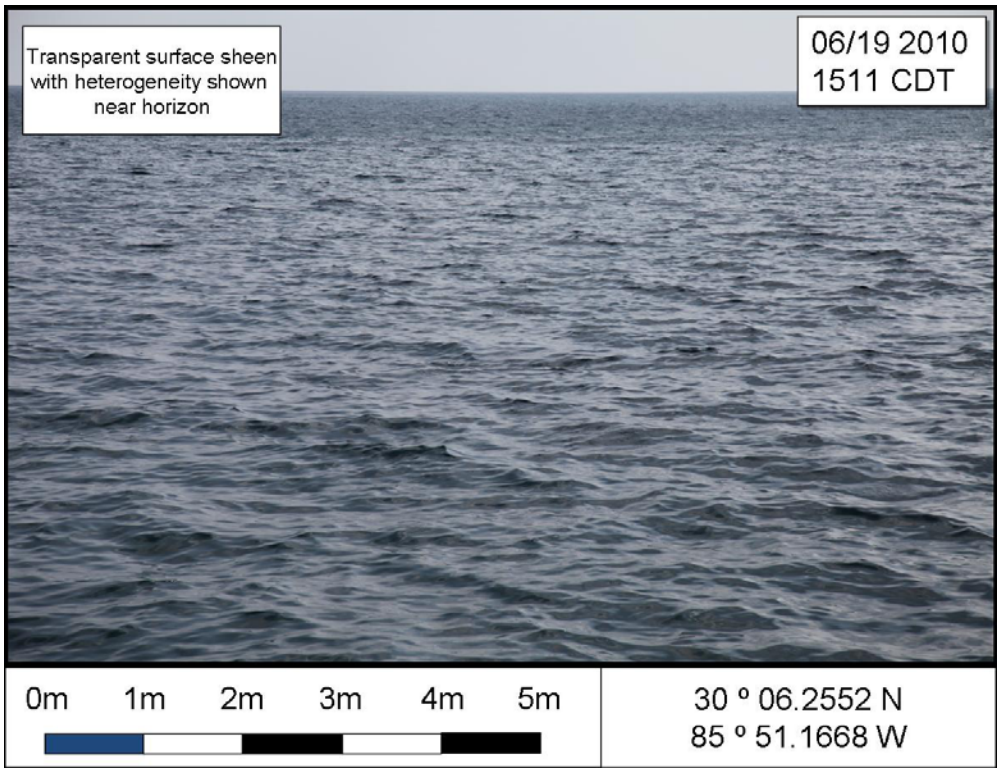

Photo 2. Transparent surface sheen with no observable mousse. Note the linear pattern near the horizon that shows differences in the ocean's surface reflectance from the observation point, which can be likely attributed to sheen variability.

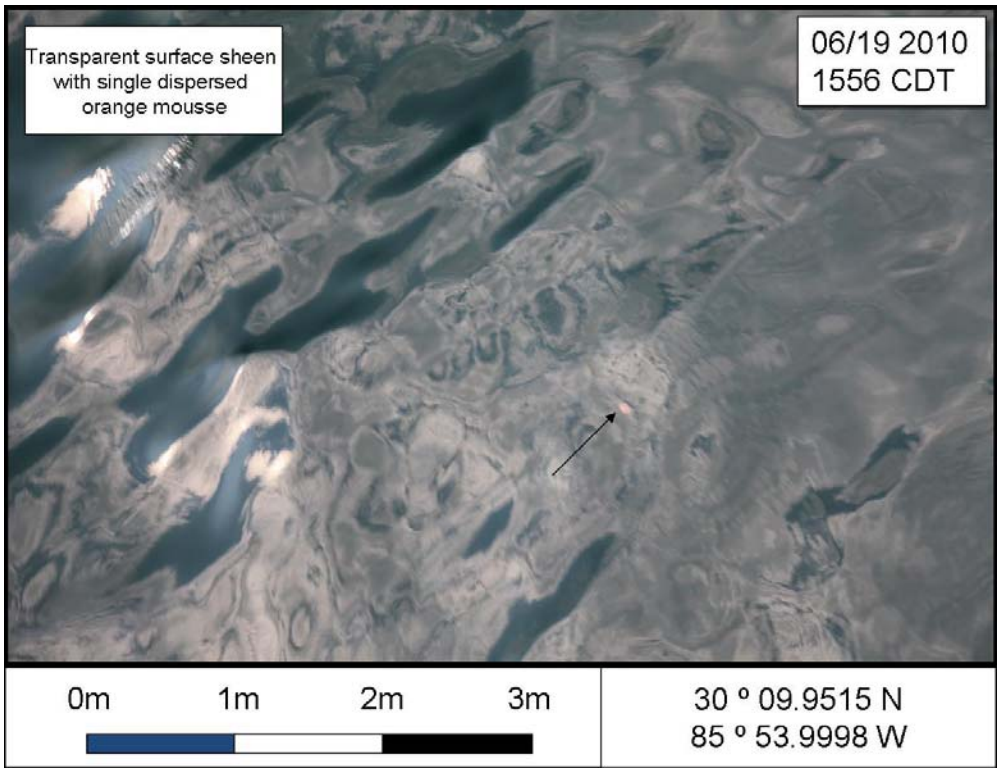

Photo 3. Transparent surface sheen with a single piece of orange mousse, approximately 4 to 5 cm in diameter. This image better illustrates the optical characteristics of transparent type sheens.