

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

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ROFFS™ OCEANOGRAPHIC ANALYSIS FOR THE DEEPWATER HORIZON OIL SPILL AREA UPDATED FRIDAY 14 MAY 2010 (16:00 HRS)

See enclosed PDF analysis as the graphic is enclosed. Higher resolution graphics are available. Today we were not able to see the oil due to the clouds. However, we were able to see the counter-clockwise eddy centered near 85°25'W & 25°00'N which continues to move westward. The western boundary of the eddy has moved approximately 10 miles westward in the last 24 hours and is pushing the eastern side of the Loop Current in a westward direction. This is of interest because as the eastern side of the Loop Current moves farther west, then the chances of a large, enclosed, clockwise rotating Loop Current eddy will increase substantially. Such an eddy would act to pull the oil and oil-water mixture to its outer boundary and pull it around the eddy and not toward the Florida Keys. All of this remains to be seen.

We remind you that we have seen the oil that exists in an olive green-brown color. The area shown in grey is the water that originated from the oil spill area which we have tracked since the first oil spill occurred. In the tendril shaped filament along 28°30'N (south of the Mississippi delta) there have been some patches of oil seen by flying aircraft confirming the presence of oil. We believe that there is an abnormal substance in the water along 88°00'W & 28°00'-27°30'N that is likely to have caused irregular measurements of the "water" temperature in that area. This substance is likely to be a mixture of water, tar balls and dispersants. We have not been able to see a surface discoloration or sheen of the oil in the areas shown as gray with question marks. However, when surface oil ages it loses its sheen and becomes less detectable or undetectable from aircraft and satellite (visible, RGB and SAR) observations. As the oil ages it forms tar balls of different sizes and densities that travel with the surrounding water masses. For this reason we continue to track the water masses that originated from the oil spill area. While some people have tried to downplay this substance as a minor disturbance, we do not agree with that attitude. **Clearly the tar ball – dispersant substance is not health food for the environment and living marine resources including fish, corals, birds, turtles, as well as, marine and terrestrial mammals.**

The areas shown in grey should be sampled by scientists from the government, academia and private industry. Special equipment, sampling procedures and laboratory analyses are needed to evaluate what is in the water column from the water directly under the spill including the areas shown in grey. Water samples should be taken at different depths from the surface to the bottom, nets should be pulled to capture oil and affected organisms, and acoustic measurements taken. When all the data are integrated it should allow for a characterization of the conditions under the surface of the water. An evaluation of the effects of this spill on the ecosystem can then begin.

The subsurface oil-tar ball-dispersant mixture is of both immediate concern and long-term concern. Just because one does not see it or smell it does not mean it is not dangerous. It is possible that sunken oil will be stirred upwards by changing currents especially as a result of tropical and other storms. Also long-term, low exposure to oil and petroleum by-products have been shown to be hazardous to the environment, marine life, and people as well.

We continue to believe that the water shown in grey will continue to move in the direction that it has been moving all week as indicated by the arrows. Some of the oil will move with wind forcing. However, presently the currents offshore are the dominant force in moving the oil-water mixture as we have seen and as verified by satellite tracked drifter buoys.

EDITORS NOTE:

While we have been conducting these analyses as a civic duty and as an exercise in technology transfer, we would like to be contracted to do this to support cleanup, restoration, and litigation efforts. If you plan to use these reports including the graphics you must give ROFFS™ full credit for this work. ROFFS™ would be appreciative if you would copy this analysis to others who may be interested in our efforts. At ROFFS™ we have been mapping the distribution and movements of the oil from the Deepwater Horizon spill from satellites since the explosion. Basically we are using a host of U.S. (NOAA and NASA) and European (ESA) satellites with a variety of spectral (infrared, near infra-red, visible, RGB and synthetic aperture radar) and spatial resolutions (300 meter to 1 KM) to see the oil. The MODIS satellite data are being received from the University of South Florida IMaRS and the synthetic radar (SAR) imagery is being received from the CSTARS at the University of Miami and also from the NASA's Jet Propulsion Laboratory. We manipulate and integrate these data at ROFFS™ and the analyses are ROFFS™ expert interpretations of the satellite imagery along with other data such as winds, sea surface temperature, currents, and in-situ reports. We routinely discuss our results with several academic and non-academic oceanographers.

We use a plethora of techniques to remove or reduce the effect of clouds and satellite angle, as well as, to manipulate the satellite data to understand the ocean circulation patterns associated with the oil's motion. We focus our efforts on the offshore segment of the oil. Sequential image analysis allows us to visualize the motion. The red "X" indicates the site of the Deepwater Horizon spill area.

We have been deriving these analyses on a daily basis and posting them to our website (<http://www.roffs.com/deepwaterhorizon.html>). We have many years of conducting similar analyses. For example we mapped the plume coming from the New Orleans area after Hurricanes Katrina and Rita (<http://www.roffs.com/katrina.htm>).

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