

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

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**ROFFS™ OCEANOGRAPHIC ANALYSIS FOR THE DEEPWATER HORIZON OIL SPILL AREA
UPDATED TUESDAY 22 JUNE 2010 (14:00 HRS) PUBLIC VERSION**

See enclosed PDF analysis as the graphic is enclosed. We continue to monitor the conditions in the Gulf of Mexico and east coast of Florida. In today's update we are using satellite data from the have combined infrared and ocean color data from June 19-22, 2010 with emphasis on what we were able to see today to provide the background image and ocean frontal analysis. Due to the lack of repeat satellite coverage when using the synthetic aperture radar (SAR) data we have combined June 17-22, 2010 data to provide a more complete view of the distribution of the surface oil shown in olive green color. The flow of the water has been derived from sequential image analysis which is in agreement with the many ocean buoys that are drifting in the currents. See NOAA's AOML website for more drifter information (<http://www.aoml.noaa.gov/phod/dhos/drifters.php>), as well as, Horizon Marine's site (http://www.horizonmarine.com/bp_buoys/). We have included maps of the drifters which verify our analyses. We have changed some labels on the main oceanographic oil graphic. We have stamped the initials "WOM" in the areas that there is likely to be some water-oil-dispersant mixture at the surface and subsurface of the ocean. We have outlined in grey the tendril that we have maintained visual contact with the water masses without major interruption. The WOM is the water in some dilute form that originated at the Deepwater Horizon oil spill site. There probably is more surface oil in the Mississippi Sound area that we have not identified due to a combination of cloud interference, lack of sun glint, and lack of SAR imagery.

The surface oil has spread to the Big Bend area of Florida near 85°00'W & 29°30'-40'N. Based on the southward flow of the water we anticipate that the surface oil will move relatively slowly southward over the west Florida continental shelf until it reaches the area (approximately near 84°00'W & 26°30'N) where the influence of the Loop Current eddy "Franklin" will increase the oil's southward velocity. When the oil reaches the area near the northern boundary of the Loop Current (near 84°00'W & 24°30'N) it appears that some of the oil will move eastward into the Florida Current and Gulf Stream, as well as, westward around the Loop Current eddy "Franklin." The drifter buoys have shown this path as well. Some of the oil that will be moving over the west Florida continental shelf could move to the Florida Bay area as a function of the winds in that zone.

The area southwest of Tampa, FL centered near 85°45'W & 27°15'N is the center of circulation of a counter-clockwise rotating eddy. We have had substantial cloud interference over the last five days and we are not certain what happened to the eddy that was centered southeast of this new center of circulation. It is possible that the original eddy degenerated and is moving southeastward around the Loop Current eddy. The drifter buoy data show that the main circulation of the present eddy. This general area has been shown to have surface oil, globs and tar balls by researchers (NOAA_AOML, CIMAS, RSMAS) on the RV Walton Smith. The motion of this eddy along with the currents related to the Loop Current eddy are pulling the surface oil from the general area near 88°15'W & 27°45'N in a southeastward direction toward 86°00'W & 26°15'N. This motion will help keep the surface oil from moving as far westward as it has eastward. There is also offshore motion in the area centered south of Louisiana near 89°30'W & 28°00'N.

Note that the water-oil-dispersant mixture has moved in a clockwise direction around the Loop Current eddy to at least as far as 86°30'W & 25°45'N. This motion has been verified by the drifting buoys. For the drifting buoys to exactly track the path of the WOM there would have to be several buoys deployed in this water.

We have followed the dilute WOM into the Florida Current from the Florida Keys to the Gulf Stream. A dilute portion of this water has been followed in the Gulf Stream to as far north as Jacksonville, FL. We have not received any confirmed reports of any surface oil sheen or tar balls in any form in the Gulf Stream. We are currently in the turtle mating and nesting season along the Florida east coast and the importance of any oil – dispersant mixture can not be understated. Boaters in all areas should keep a keen eye open for any pollution in this area and all areas.

Remember that every fishing trip is important to use our ROFFS™ Fishing Oceanographic Analyses to help you find concentrations of fish, as well as, turtles, birds, and marine mammals.

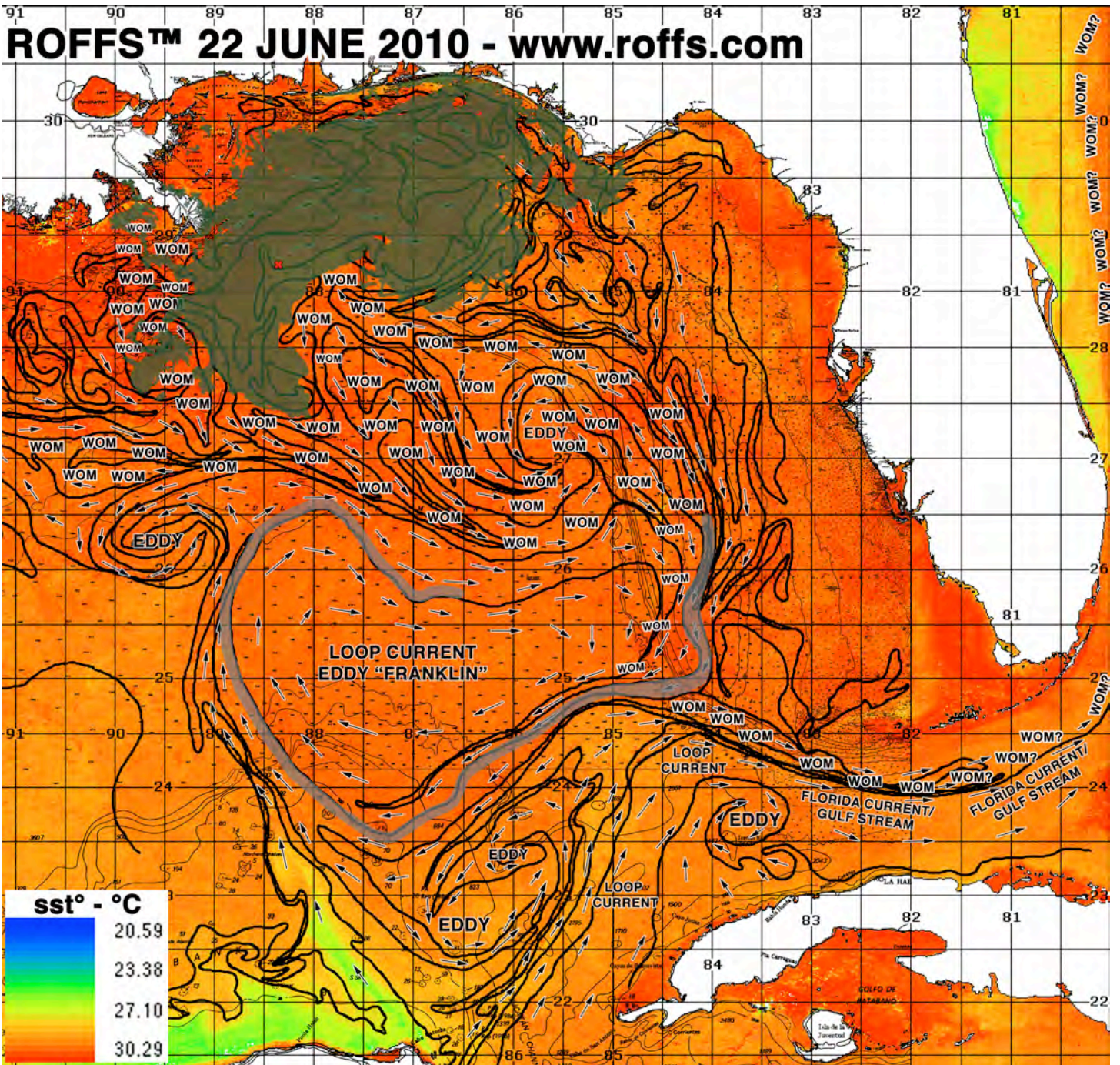
EDITORS NOTE:

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, as well as, ecosystem research 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 IMAERS 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/>). We have many years of experience 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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