

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

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**ROFFS™ OCEANOGRAPHIC ANALYSIS FOR THE DEEPWATER HORIZON OIL SPILL AREA
UPDATED WEDNESDAY 02 JUNE 2010 (17:00 HRS)**

See enclosed PDF analysis as the graphic is enclosed. Additional materials can be found on our website (<http://www.roffs.com/>). We continue to monitor the distribution and movements of the oil and oil-water-dispersant mixture from infrared, RGB, visible and synthetic aperture radar (SAR). Today it was more challenging to outline some of the water mass boundaries south of Louisiana due to cloud interference. The olive green colored areas are the surface oil seen in either RGB or SAR imagery from the last few days as we did not have useful imagery today. The grey colored shapes represent the surface area of the water-oil-dispersant mixture that we have been tracking since the first day of the oil spill. The tendrils of oil that were observed yesterday from the SAR image that provided secondary confirmation that the water-oil-dispersant mixture has been pushed southeastward from the area west of Naples, FL and extends from 84°00'W & 26°00'N to 85°45'W & 24°20'N. This tendril of oil appears likely to turn eastward in the area near 85°45'W & 24°00'N within the next 24-48 hours. This 1-2 mile wide band of oil-water-dispersant mixture extends to the eddy that is west of Tampa, FL. On site reports from fishermen indicate that some of this water looked like "bilge water" from the inside of a boat.

The forming Loop Current eddy was named Eddy Franklin after Benjamin Franklin by Horizon Marine, Inc. The naming of large Loop Current eddies is an oceanographic tradition by oil industry oceanographers. Each day we observe more evidence (e.g. NOAA's and Horizon Marine's drifting buoys) of a closed circulation and today we see a limb of Loop Current water turning westward from the area near 86°30'W & 25°00'N to 87°00'W & 24°30'N that is likely to become the outer ring of the eddy system. However, the relatively cooler water centered near 85°45'W & 24°00'N that is rotating in a counter-clockwise direction has moved southeastward today. We have placed another QuickTime™ movie loop on the ROFFS™ website (www.roffs.com) that includes the infrared satellite imagery (in greytone) from May 21 to June 02, 2010 that covers the area from the eastern Gulf of Mexico to the east coast of Florida to show the motions of the water. The warmer water is a darker shade. We did not put a land mask over Florida or Cuba. One can also see a clockwise rotating eddy north of Cuba that is pulling this cooler water eastward over the last several days. After watching the movie loop several times (until your eyes are used to the imagery) one should be able to see this southeastern motion of this cooler water. This suggests to us that while the "eddy" has closed circulation, it does not have separation from the Loop Current at this time. If the eddy continues to form it appears that the pool of oil-water-dispersants that occur in and around the eddy (centered near 85°40'W & 27°10'N) west of Tampa, FL is likely to follow the new limb of Loop Current water (near 86°30'W & 25°00'N to 87°00'W & 24°30'N). This remains to be seen as the eddy is a dynamic ocean circulation system.

From the movie loop one can also see the flow of water from the Cape San Blas – Apalachicola area (approximately near 85°15'W & 29°45'N) to the Florida Bay north of the Florida Keys (82°00'W & 25°00'N). This is the general flow of water on the west Florida continental shelf and provides a pathway for the oil that now occurs by the Florida panhandle (Pensacola, FL) to flow southward along the west Florida shelf after it moves farther eastward. While not of immediate consequence for the present oil situation, be sure to observe the motion of the Gulf Stream through the Florida Keys and up the Florida east coast. Note how the Gulf Stream meanders between the northern Florida Keys – Miami area and Bimini, Bahamas, as well as, the relatively small eddies and filaments of water along the Florida east coast. Notice the connectivity from the Gulf of Mexico to the east coast of Florida as well.

If you decide to use this analysis or the images contained within, please give credit to ROFFS™ and see more of our daily coverage here <http://www.roffs.com/>.

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 intervention, 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 infrared, 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 European Space Agency (ESA), CSTARS at the University of Miami, as well as, 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>).

