

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.
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ROFFS™ FISHERIES OCEANOGRAPHIC SPECIAL ANALYSIS
FOR THE DEEPWATER HORIZON OIL SPILL AREA (LAT./LONG.)
UPDATED WEDNESDAY 12 MAY 2010 UPDATED AT 19:00 HRS

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 continue to use 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 and map the location of the oil. This work is a collaborative effort with the University of Miami and the Florida Institute of Technology along with other oceanographic professionals (e.g. Schaudt.US). 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 receive some of the imagery used to provide these analyses (MODIS sea surface temperature and ocean color) from University of South Florida/IMaRS. 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>).

We continue to monitor the conditions this week and we have updated this analysis using this afternoon's satellite imagery. One must realize when evaluating visible (RGB) and synthetic aperture radar satellite imagery that the "visibility" of the oil is subject to effects of the angle of the satellite relative to the sun and Earth, as well as, shadow effects of clouds (RGB). Under some conditions the oil seems to disappear, but that is an effect of sun angle etc.

Over the past few days we have observed a dramatic change in the circulation of the Loop Current. We continue to follow the large counter-clockwise rotating eddy feature centered near 85°00'W & 25°15'N. This feature has been pushing the eastern wall of the Loop Current in a west/southwestward direction for the past few days. It appears from our calculations and observations that the eastern edge of the Loop Current near 85°50'W & 25°00'N has moved approximately 30 miles southwestward in the past five days. The west/southwestward motion of this eddy favors the formation of a large Loop Current eddy. Although the HYCOM model forecast suggests otherwise, the conflict between the model and our observations based on real time satellite imagery and sequential image analysis suggests that the continued study of this eddy and the Loop Current is warranted.

Today we have displayed the oil observed with the RGB – visible imagery in an olive – brown color. The grey area indicates where we suspect that surface oil and surface and subsurface oil – water by-products have moved to based on following the water masses associated with the relatively cooler temperatures that were upwelled from subsurface water by the oil and from ocean color imagery including the artifacts in the derived chlorophyll imagery. Our ROFFS analyses suggest that the offshore segments of the oil continue to move further offshore as pulled by several interacting current regimes. However, today it does appear as if its interaction with the Loop Current is degenerating the eddy centered near 88°05'W & 27°30'N causing some of the oil near 88°05'W & 27°07'N and 87°48'W & 27°48'N to be pulled east/southeastward towards the Loop Current. South of Louisiana, the area of suspected oil continues to be pulled in a clockwise direction around the main eddy which is centered today near 89°07'W & 27°48'N. Note that while we had seen the observed oil near 88°00'W & 28°00'N moving in a southwestward direction towards the eddy yesterday, it now appears that some of it near 87°55'W & 27°50'N is being pulled towards the Loop Current. Please note that yesterday we did receive several anomalous AXBT readings from University of Miami (RSMAS) and Nick Shay near 88°30'W & 28°24'N, 88°30'W & 28°00'N, and 88°30'W & 27°30'N. ROFFS is interpreting this as a confirmation of a contamination of oil at these locations.

Northeast of Desoto Canyon we continue to observe a counter-clockwise rotating eddy centered near 86°35'W & 29°30'N that continues to pull some of the observed oil near 87°45'W & 29°10'N and some of the suspected oil-water mixture in an eastward direction to near 86°25'W & 29°15-18'N. Although the eastern edge of this eddy appears to be pulling some of this oil/oil-water mixture in an inshore direction, the currents northward and eastward towards Cape San Blas are not supportive of moving the main portion of the oil towards the Florida Panhandle at the present time.

Westward, south/southwest of the South Pass, Louisiana area we observed a thin (3-5 mile wide band) of suspected oil/water mixture moving slowly westward. We are aware that this is a conflict of what we are observing in the ocean currents and we believe this slow westward motion is due to the current wind state in this area. We do not know how thick this piece of oil is or how long this motion will continue.

See enclosed PDF analysis as the graphic is enclosed. Higher resolution graphics are available.

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. ROFFS™ would be appreciative if you would copy this analysis to others who may be interested in our efforts.

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