

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

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**ROFFS™ OCEANOGRAPHIC ANALYSIS FOR THE DEEPWATER HORIZON OIL SPILL AREA
UPDATED MONDAY 05 JULY 2010 (16:00 HRS)**

See enclosed PDF analysis as the graphics are enclosed. We were able to see a portion of the ocean conditions in the eastern Gulf of Mexico using a combination of satellite imagery from yesterday and today (Sunday and Monday) for the first time in a week. Although the conditions have changed as expected after not seeing the ocean in a week using infrared sst° imagery or ocean color/chlorophyll imagery, the ocean features have progressed as we had forecasted. We continue to produce these analyses on a daily basis for the RV "Nancy Foster" which is on a cruise to research the separation between the Loop Current and the Loop Current eddy "Franklin". Based on the current ocean conditions we would suggest the "Nancy Foster" concentrate on the area between 84°30'W & 85°30'W and 23°30'N & 25°00'N based on its association with the separation between the Loop Current (to the east/southeast) and eddy "Franklin" (to the west/northwest). After studying and following the ocean conditions for the past two days, it does not appear as if there is any transport of water between the Loop Current and eddy "Franklin". This is best seen by looking at the band of cooler upwelled water being pulled from the Yucatan Peninsula area and northeastward to near 84°45'W & 24°30'N which is then pulled northwestward towards 85°15'W & 25°15'N before being pulled back southwestward towards the counter-clockwise rotating eddy centered near 86°30'W & 22°45'N. It does appear as if this band of cooler water and the waters associated with it are separating the Loop Current and eddy "Franklin".

With this in mind, we cannot be sure as to where the center of the Loop Current eddy "Franklin" currently occurs. We will re-evaluate its position again tomorrow provided that we are able to observe the ocean conditions clearly in this area. Also, although we do see an overall counter-clockwise circulation centered west/southwest of Tampa (centered near 86°10'W & 27°30'N) we have lost the center of circulation of the eddy we had been following for some time southwest of Tampa. We will also re-evaluate this circulation again tomorrow. It does continue to appear, however; that the majority of the "WOM" (water/oil mixture) associated with the eddy southwest of Tampa is being pulled southward to near 86°20'W & 25°00'N and then around the perimeter of eddy "Franklin" which is good news for Florida and the Florida Keys. Also good news for the Florida Keys is the fact that the Gulf Stream remains relatively far offshore in this area with the Gulf Stream occurring closer to the reef line in the northeastern keys compared to the southwestern keys.

East/northeast of eddy "Franklin", we do see some circulation to the north and northeast particularly near 85°15'W & 25°00'N. This circulation appears to be pulling the northern edge of the Loop Current water northward towards 25°00'N between 84°00'-84°30'W. This also suggests that some of the "WOM" is being transported northeastward into and towards the feature centered near 85°00'W & 26°00'N, which would mean that some of it is moving southeastward with the current from 84°00'W & 25°00'N to 82°30'W & 24°00'N and towards the area offshore of the Florida Keys and into the Gulf Stream. Please keep in mind that there have been no reports of confirmed tar balls in the Florida Keys or along the east coast of the U.S.

Westward, we have received confirmed reports of tar balls associated with the Deepwater Horizon oil spill that have reached the Galveston, TX area. The current wind situation in the eastern Gulf of Mexico with relatively strong winds (15-20+ knots) out of the southeast/east-southeast support this movement of oil and also the movement of oil into and towards the Mississippi Sound/Mississippi River Delta area and away from the Florida Panhandle.

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 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/>). 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>).

