

ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

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**ROFFS™ OCEANOGRAPHIC ANALYSIS FOR THE DEEPWATER HORIZON OIL SPILL AREA
UPDATED MONDAY 12 JULY 2010 (18:00 HRS)
PUBLIC ANALYSIS**

Today we were able to see the ocean using infrared sst° and ocean color (chlorophyll and RGB). In order to show the position of the surface oil, we have used a combination of SAR imagery, which shows seven days of data taken from July 6-12, 2010. The complex circulation north of the Yucatan Channel that we have been following since the middle of last week continues. The anti-cyclonic Eddy Franklin (centered approximately near 87°30'W & 25°45'N) continues to be influenced by the cyclonic eddy centered near 85°40'W & 24°45'N. The center of this feature appears to have been pulled substantially eastward from where we had observed it on Saturday; however the water associated with this feature continues to elongate and be pulled both eastward towards the cyclonic eddy centered near 84°15'W & 24°50'N while at the same time being pulled southwestward (as far as 87°30'W & 24°30'N) and attempting to pinch off eddy "Franklin". It remains to be seen if the majority of the water associated with this feature will continue around Eddy Franklin or move more eastward toward the Loop Current over the next several days to weeks. Southeastward, we continue to see some of the "WOM" water being pulled eastward along and towards the northwestern edge of the Loop Current by the two cyclonic eddies centered near 85°40'W & 24°45'N and 84°15'W & 24°50'N. As this motion continues, it remains to be seen if this "WOM" will be circulated north/northwestward into the eddies or more eastward into and towards the Loop Current. Currently it does appear as if the "WOM" that has reached 83°50'W & 24°35'N is being circulated more northwestward towards the eastern cyclonic eddy along with a piece of Loop Current water that was observed today between 83°30'W & 24°15'N and 84°30'W & 25°25'N that also appears to be circulating around the northeastern perimeter of this same eddy. It also appears as if a substantial pool of "WOM" is being circulated north/northwestward around the western cyclonic eddy.

The water south of the Deepwater Horizon site now appears to be moving more southward toward 88°00'-90°30'W between 28°30'N and 27°30'N, but then it continues to be pulled southeastward toward 87°00'-88°00'W & 27°00'N and towards and around Eddy Franklin. Today we have provided a second graphic, which shows areas where the convergence zones have remained stable for three days in opaque red and areas where the convergence zones have remained stable for four days in opaque purple. These areas highlighted in opaque red and purple are likely to contain the strongest convergence zones which are likely to contain a combination of oil (in areas where they overlap the water masses we have labeled with "WOM"), sargassum, fish, and bait. On your way southwestward from Tampa/St. Petersburg, FL, we would suggest that a good area to sample for surface and subsurface oil would be along the strong convergence zone from 84°00'W & 26°35'N to 84°30'W & 27°15'N and also from 84°55'W & 27°30'N to 85°15'W & 27°45'N where the water masses appear to have remained relatively stable for the past four days.

Continuing westward, we continue to monitor the currents associated with a cyclonic eddy centered near 85°30'W & 27°25'N and an anti-cyclonic eddy centered west of Naples near 84°40'W & 26°15'N. This is a classic "hammerhead" circulation that is pulling a relatively small portion of the WOM eastward to the Florida continental shelf edge and perhaps northward towards the northern eddy. This circulation is likely to persist for a few days at least. We would also suggest sampling the area where the convergence has remained stable for three days along the western edge of the northern eddy particularly from 85°40'W & 26°55'N to 86°30'W & 27°30'N. We also continue to believe the northern side of Eddy Franklin would be a good place to sample for oil in the surface and subsurface waters, particularly along the outlined convergence zones from 88°20'W & 26°30'N to 86°35'W & 26°45'N where the water mass boundaries have been relatively stationary during the last four days.

The surface oil (olive green color) appears to be more concentrated north and east of the Deepwater Horizon well site with some of it moving southward to the area near 88°10'W & 28°18'N along with the currents in this area. We were able to confirm the position of the surface oil particularly east and south of the Deepwater Horizon well site with this afternoon's MODIS visible RGB imagery.

EDITORS NOTE:

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 ESA. 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>).



