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Loop Current Destabilizes, Lowering Gulf Oil Spill's Threat to Fla. -- for Now

By PAUL VOSEN of Published: May 20, 2010

A large rotating cyclone of cold water is pushing into the southern body of the Gulf of Mexico's Loop Current and now appears likely to destabilize or even sever the current and the oil it contains from its connection to Florida, scientists said today.

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While the BP PLC oil spill has begun to enter the current, a powerful stream that could transport a small part of the slick to the Florida Keys in about a week, there are also signs that less oil -- at least on the surface -- has taken the turn south that was feared.



Over the past weeks, small ocean flows spinning off the body of the Loop Current, known as cyclones or eddies, have pushed and prodded the Gulf slick. In particular, one counterclockwise eddy east of the oil's main body has determinedly dragged the crude toward the main current, resulting in its current entrainment (Greenwire, May 18).

However, imagery today has shown that, while filaments of oil have escaped into the current, "the main pool of oil is remaining up there in the eddy" and not progressing south, said Mitch Roffer, an oceanographer at the scientific consulting firm ROFFS.

More importantly, Roffer said, satellite shots this morning showed that an eddy farther south along the Florida coast is expanding in size and strength. That cyclone appears likely to destabilize or even sever the Loop Current, greatly reducing the oil threat to the Florida Keys and beyond, he said.

"If it forms, it's going to pull a lot of the oil away from Florida," Roffer said. There are no guarantees, he added, "but it looks very likely that this is forming."

Such a beheading is common to the current, which becomes more unstable as it pushes deeper into the Gulf of Mexico. Typically, a forceful counterclockwise cyclone near southwest Florida "punches through the Loop Current," severing the flow from its connection to the Atlantic, said Nan Walker, the director of the Earth Scan Lab at Louisiana State University's School of the Coast and Environment.

"It looks like that kind of scenario is imminent." Walker said.

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After a severing, the warm rotating water of the Loop Current's head -- called a "ring" -- begins to flow west toward Texas. But the ring can dawdle, too, and sometimes reattaches with the main current. Such fluctuations defy forecasting and remain an active area of research ([Greenwire](#), May 5).

"At this stage, it's a watch and waiting game," Walker said.

Loop rings tend to survive for about six months as they drift toward Texas, said Frank Muller-Karger, a professor of biological oceanography at the University of South Florida. Scientists have little idea how much oil could be captured by such a ring and pulled westward.

Even if the large southeastern eddy does not sever the current, it could capture oil that would have otherwise made its way to the Florida Keys, said Villy Kourafalou, a Gulf of Mexico modeler at the University of Miami's Rosenstiel School of Marine and Atmospheric Science.

'Impossible to predict'

It is too soon for East Coast residents to breathe a sigh of relief, however. Oil is still bobbing 120 miles off Tampa's coast, captured in the northern eddy, and before the Loop Current expires -- if it does -- it could still surge north and entrain more of the oil, Walker said. Or it could be caught in a ring and flow westward.

The oil tendrils -- which federal officials have called a "sheen" -- are extremely visible on satellite imagery, suggesting to Walker that there is heavier oil present in the northern eddy than has been suggested. The government may be employing some "wishful thinking" when they call it a sheen, she said.

Also, there is little certainty about how much oil has been captured by the Loop Current in deeper waters. Since much of the oil has been broken up by dispersants and is unlikely to reach the surface, it will tend to spread sideways through the Gulf, Muller-Karger said.

"Just the same we see at the surface, where the oil is being entrained into the Loop Current, I can imagine that the same thing is happening at depth, that oil is being entrained and moving around and spreading with these currents," he said. "Now what the impact is? It's impossible to predict."

"Based on the size of the plume and the estimates that we're hearing of what is being injected at the bottom, this is a very large problem," Muller-Karger added.

The deep ocean is not a complete unknown, and oceanographers are working with the government to model how the oil may be spreading, Kourafalou said.

"We know that there are counterflows and counter-rotating eddies ... and we know that circulation is much slower," she said. "Some data sets exist and have allowed the study of basic underlying dynamics. What does not exist is a comprehensive, sustained, observational system."

While the Loop Current may be headed toward a severing, that will not stop oil from slowly spreading across the Gulf, especially when the hurricanes begin to hit, Walker said. Some of the oil is almost certain to affect countries like Cuba and Mexico, Muller-Karger added.

"This is a problem," he said, "that we'll have to deal with for years, as opposed to months."

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