Research team finds evidence of oil residue in Gulf two years after BP spill

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(Phys.org) —Oil residue remained in the Gulf of Mexico two years after the Deepwater Horizon oil spill, according to a study headed by a University of Florida professor.

A team lead by professor Thomas S. Bianchi, who holds the Jon and Beverly Thompson Endowed Chair of Geological Sciences, analyzed water samples taken from Gulf waters in 2012 and concluded that dispersants intended to speed the breakup of the oil and hasten its decomposition appear to have enhanced the oil's solubility in water, resulting in a shift in the optical properties of the oil and its degradation into smaller hydrocarbon molecules.

Bianchi and researchers from three other universities examined samples

collected from the deep Gulf region around the 2010 spill, looking for evidence of a chemical signature. While other researchers have concluded that hydrocarbons in deep Gulf waters resulting from the explosion no longer are detectible by standard chemical analyses, the UF team found evidence that some of the oil had been converted into a different pool of molecules that also were part of the natural ecosystem. Research findings were published Aug. 19 in the journal *Environmental Science and Technology*.

"This finding was quite interesting since all other studies to date continue to find no evidence of any oil at these depths in the Gulf," Bianchi said. "What has happened here is that while there are no longer any oil molecules present, they are now disguised in the seawater's natural carbon pool as degraded fluorescent components."

Bianchi likens the formation of these naturally occurring dissolved organic molecules, known as colored dissolved organic matter, or CDOM, to how one makes tea, a process in which colored organic molecules are leached into water from a source of organic matter more commonly known as tea leaves.

"All of the plants and animals living in the Gulf are potential sources of these molecules," Bianchi said. "The reason the Gulf is clear and not colored is because there are many more molecules that do not have a fluorescent signature than those that do."

Further work is needed to determine what long-term effects the molecules will have on the Gulf's ecology, Bianchi said. The next step for Bianchi and his team is to use high resolution mass spectrometry to better identify the molecules associated with these fluorescent signatures in the CDOM.

"This is information that did not exist previously, and it will prove

invaluable if and when another deep water oil catastrophe occurs," Bianchi said.

Provided by University of Florida