New study shows that oil from surface-spill slicks can sink to sea floor

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A first of its kind study that modeled oil slick weathering over time in a laboratory setting provides evidence that evaporation combined with sinking of the heavy components of surface-spill slicks can explain the presence of oil on the sea floor. This critical proof-of-concept addresses the ongoing controversy regarding the large amounts of oil found at the bottom of the Gulf of Mexico and will impact future oil slick modeling and clean-up strategies. The study is published in *Environmental Engineering Science*.

Christopher Clayton Stevens, Louis Thibodeaux, Edward Overton, et al., Louisiana State University, Baton Rouge, used laboratory-scale and mathematical modeling methods to show that after a certain amount of evaporation had taken place and the slick reached a critical density and it's buoyancy relative to the water changed. Droplets comprising heavy oil residues then formed underneath the slick, broke away, and sank to the sea floor.

In the article "Sea Surface Oil Slick Light Component Vaporization and Heavy Residue Sinking: Binary Mixture Theory and Experimental Proof of Concept," the researchers describe the theories and mechanisms underlying their models and the implications of their results.

"This paper provides evidence for an interesting new perspective on the fate of hydrocarbons after an oil spill, and may have significant implications for both modeling and remedial actions," says Domenico Grasso, PhD, Editor-in-Chief of *Environmental Engineering Science* and

Provost, University of Delaware.

More information: The article is available free on the *Environmental Engineering Science* website until August 8, 2015.

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