

Project Spotlight



Dr. Mike Parsons

Professor
Director of the Coastal Watershed Institute
Florida Gulf Coast University

What is the topic of your research within the CWC?

My research focuses on benthic micro-algae (single-celled phytoplankton species) responses to the *Deepwater Horizon* oil spill. Specifically, I examine changes in diatom populations as preserved in the sediment record

What methods are you using to answer your questions?

For CWC we collected sediment cores from multiple locations in Terrebonne Bay and Barataria Bay marshes. From the sediment cores, the group determines the age of the sections down core (Gene Turner, LSU) and the hydrocarbon concentrations down core (Ed Overton, LSU). I am looking at preserved diatom shells, known as frustules, which are species specific and can be identified and enumerated to reconstruct their past populations. Changes in the diatoms may, or may not, parallel changes in hydrocarbon concentrations over time.

What results have you gotten thus far?

The overarching diatom project at Florida Gulf Coast University associated with the sediment cores is beginning, especially with the work of master's student Jeff Zingre. We have thousands of diatom samples from sediments to examine for specific responses to the *Deepwater Horizon* event. We also compared water column phytoplankton composition of multiple species in the northern Gulf of Mexico before and after the oil spill in the first phase of the Coastal Waters Consortium. We found differences in relative proportions of phytoplankton groups in relation to the timing of the oil spill.

Did any of these results surprise you?

With respect to the sediment cores, we find no surprises yet, but we are still in the process of looking for the oil signal and/or the response to the oil signal in the diatom communities.

What are the next steps in your research?

A few efforts come to mind for future studies:

- Determining which species found in the sediment cores could be indicator species of oil exposure.
- Using the diatom composition data compared to additional longer-term sediment records that go back to the beginning of oil exploration in the Louisiana estuaries. These data may provide insight into long-term responses to chronic exposure and possible resilience to acute events.

What are the "big picture" implications of your study?

Alterations in the sediment micro-algal composition and abundance can affect higher trophic levels. Larger organisms, such as snails, crabs and fish, feed on the benthic sediment

