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Florida TaxWatch | center for Competitive Florida

ECONOMIC COMMENTARY
A monthly look at Florida's Economy

Florida's Gulf Research Cooperation

For the past three years, 10 Florida universities and research institutions have been focused on researching the long-term effects of the BP oil spill on the Gulf of Mexico's marine life, environment, and public health. These institutions are working in conjunction with dozens of other U.S. and foreign universities, utilizing highly-skilled workers and state-of-the-art resources in order to provide independent assessments of the state of the Gulf following the spill. This month's *Economic Commentary* focuses on three Florida university-led entities' recent research findings and developments, and how these findings make our state stand out in the scientific arena.

The Gulf of Mexico Research Initiative

Soon after the April 2010 Deepwater Horizon oil spill, BP committed $500 million over ten years to fund an independent research program that would focus on studying the ecological impact of the spill. From this commitment, the Gulf of Mexico Research Initiative (GoMRI) was created. The GoMRI has given a grant of $112.5 million over three years to eight research consortia, each composed of several institutions. Each consortium has a lead institution and a specific project. Three out of the eight projects are led by the following Florida universities: Florida State University, University of South Florida, and University of Miami.

Florida State University

The Deep-C Consortium, led by the Florida State University (FSU), studies the connection between the deep water of the Gulf and its coast along the Florida Panhandle. This research will help improve responses to possible future spills by modeling how oil and oil dispersants are distributed throughout the Gulf after a spill, encompassing geomorphology, physical oceanography, geochemistry, and ecology, among others. The lead researchers for each discipline are from FSU, working with researchers from other Florida universities, such as the University of West Florida (UWF) and the University of South Florida (USF). The interdisciplinary nature promotes statewide collaboration to gain a better understanding of the physical characteristics, habitat, and chemical balances of the Gulf.

On April 2, 2013, FSU launched its newest marine research vessel: the RV Apalachee. The flagship of the fleet, this 64-foot vessel will allow FSU's Coastal & Marine Laboratory (FSUCML) to conduct experiments on-board in both wet and dry labs, as well as collecting sediment cores and other data.

FSU's flagship, the RV Apalachee © Florida State University

University of South Florida

The Center for Integrated Modeling and Analysis of the Gulf Ecosystem (C-IMAGE) consortium is led by the USF. Their research focuses on water circulation models and high pressure experiments to better predict the flow of water at deep levels of the Gulf, as well as research on the toxicology and DNA damage to different marine species.

USF also operates, through the Florida Institute of Oceanography, two research vessels: its flagship, the RV Weatherbird II, and the RV Bellows. In November of 2012—in collaboration with Deep-C—the RV Weatherbird II was used to successfully find natural oil seeps used as control sites to compare the effects of the spill. Alongside it, the 71-foot RV Bellows—which has been a part of researching Florida's coastlines for over 30 years—has also played a critical role in research.

University of Miami

In the same manner as Deep-C and C-IMAGE, the Consortium for Advanced Research of Hydrocarbon Transport in the Environment (CARTHE) is led by the University of Miami (UM). This consortium focuses on the atmospheric interaction with the ocean, including hurricanes and storms over oceans, examining how oil travels through these systems and its ultimate fate. This consortium collaborates with researchers statewide and nationally, including Florida International University. In March of 2012, researchers from CARTHE released a study in the *Proceedings of the National Academy of Sciences* titled 'Forecasting Sudden Changes in Environmental Pollution Patterns.'

The study uses a mathematical approach to forecasting the movement of water in the Gulf. Prior to this study, there were no reliable forecasts for such movements, making responses to those events much less effective. With these findings, CARTHE has contributed greatly to the accuracy of forecasting water movement within the Gulf of Mexico.

Early Findings of Research

Recently, the Deep-C consortium discovered that the "oil that came ashore triggered a bloom of bacteria that quickly consumed much of the oil compounds on Florida beaches." This means that some naturally-occurring microbes were found to be breaking down the oil more quickly than originally expected. More excitingly, researchers have discovered previously unknown species in the depths of the Gulf.

However, researchers' findings have also led to concerns for the health of the Gulf. Results indicate that some of the carbon released during the spill has entered the food chain, which may have some long-term effects. Researchers have also learned that that we cannot rely solely on dispersants and "oil-eating" microbes to clean up the Gulf, and these advancements in knowledge will help make possible more effective responses to any future incident that may occur off of our coast.

Outreach to Florida Students

All of the involved entities have outreach programs for high school through graduate-level students, educators, and the public who may be interested in marine studies. Deep-C offers internships for both undergraduate and graduate students in science, technology, engineering, and mathematics (STEM) fields.

Deep-C researcher Dr. Steve Morey demonstrating internal waves at the FSU Coastal and Marine Laboratory Open House

Conclusion

Despite the negative effects of the spill on Florida, the subsequent research has generated new insights into the physical, chemical, ecological, and atmospheric components of the Gulf of Mexico ecosystem.

Florida's leading scientists have been able to use, and further develop, their expertise on the physical oceanography, ecology, and chemistry of the Gulf of Mexico. The available outreach programs are beneficial to Florida's educational system by showing the tangible impacts of STEM fields, and making these tools available to students and educators. The long-term impact of these developments can help Florida become one of the world's foremost marine research environments, and improve our global competitiveness.

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