The Coastal Waters Consortium Presents:

Project Spotlight

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What is the topic of your research with the CWC?
Assessing impacts of the Macondo oil spill on Louisiana salt marshes using remote sensing. Remote sensing is the scanning of the earth by satellite or high-flying aircraft in order to obtain information about it.

What methods are you using to answer your questions?
My study uses spaceborne sensors mounted on satellites and airborne sensors mounted on aircrafts to assess impacts of the oil spill. The remote sensing data collected is then used to find the Normalized Difference Vegetation Index (NDVI). The NDVI is then used to determine the health of the marsh plants.

What results have you gotten so far?
I have developed a low-cost method using data from the Landsat satellites for long-term post-Macondo oil spill monitoring for Louisiana salt marshes. The Landsat data are freely available and offer a regular and continuous records of the Earth ecosystems. The satellites have been collecting data on each site every 16 days since the 1970s. Therefore, the Landsat data, combined with relevant environmental information and statistics, allow routine long-term monitoring of the marshes over the entire coast with minimal cost.

Did any of these results surprise you?
I am very excited about the method developed. Measuring impacts of the oil intrusion on the marsh plants along the coast is challenging for field studies due to logistical and financial restrictions. The method developed in my study offers a low-cost approach for routine post-oil spill monitoring of the marshes. If also offers a useful tool for a wide range of scientist.

What are the next steps in your research?
I will use this method to examine the impacts of the oil spill on marshes in Barataria Bay (one of the areas most severely impacted by the oil spill). I will use Landsat satellite data to establish pre-oil spill baselines and post-oil spill monitoring records. I also plan to use AVIRIS airborne data to support the Landsat results.

What are the "big picture" implications of your study?
Marsh plants are an important part of the salt marsh ecosystem. The results from this study may provide valuable information on the conditions of the entire ecosystem. In addition, this method is useful for post-event monitoring of other disasters such as hurricanes. Therefore, my study could contribute to the academic communities of coastal ecology, remote sensing, and disaster management. It would also be important to coastal environmental management by offering scientific resources to the public and to decision makers.

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