

## Mapping the Landscape of Southwestern Louisiana

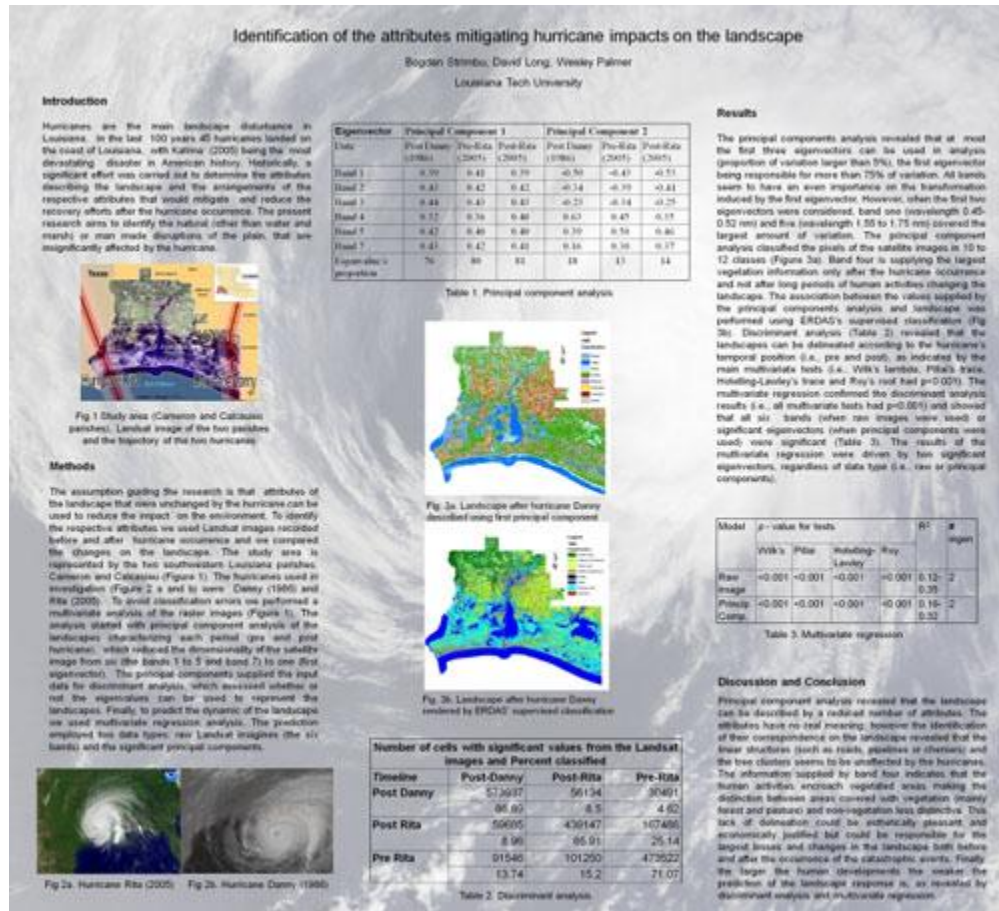
Hurricanes are the natural catastrophes responsible for the landscape change in southwestern Louisiana. In the last 50 years more than 10 hurricanes landed between Lafayette, Louisiana and Sabine Pass, Texas, the largest event on record being hurricane Rita (Fig.1). Hurricane Rita also held the record for the most intense tropical cyclone ever observed in the Gulf of Mexico.



**Figure 1. Landing of Hurricane Rita**

In 2008 University of Louisiana System funded a project aimed at the identification of the main attributes that could help reduce and mitigate the negative impact of hurricanes on the landscape. Additionally, the project developed a set of possible evolutions of the southern Louisiana landscape having hurricanes as the main transformer. The project developed as a service learning exercise involved students from Louisiana Tech University and faculty from McNeese State University and Louisiana Tech University. The findings of the project were presented at two conferences, one local (Louisiana Academy of Sciences Annual meeting) and one international [International Association of Landscape Ecology (IALE) conference]. The IALE conference, held in Snowbird, Utah, on April 13-16, 2009, gathered some of the most prestigious landscape level modelers from North America and Asia. The IALE conferences have significant analytical components, considering that the input data is usually obtained by manipulating remote sensing images (such as aerial photos, LANDSAT, QuickBird or Lidar). The team of professors responsible for the development of the project succeeded in presenting a poster at the US-IALE

conference (Fig.2), which identified the main landscape attributes that contribute to the landscape stability throughout time.



Louisiana Tech University was represented at the conference by Assistant Professor, Bogdan Strimbu (project's PI) and two of his students, Matthew Dillon and Bengaman Nyegaard (graduates of the Forestry program in Spring 2009) (Fig. 3 and 4).



**Figure 3. Students, Bengaman Nyegaard (left) and Matt Dillon (right) at US - IALE conference, Snowbird, Utah**



**Figure 4. Assistant Professor, Bogdan Strimbu and student, Matthew Dillon with the poster at the conference**

Participation at the US-IALE conference had three objectives. First, the projects findings needed peer assessment, and the poster offered a excellent opportunity to discuss some of the theoretical aspects of the model used to analyze the landscape changes under natural disturbances. Secondly, the College of Applied and Natural Sciences, especially the Forestry and GIS programs, started the development of a new approach in the analysis of the areas with reduced geomorphologic energy (i. e., flat areas), an approach that placed Louisiana Tech University in the circuit of universities performing advanced research in landscape dynamics. Third, the students participating in the project had the opportunity to work with some of the most advanced

analytical tools currently used in landscape investigations (such as ArcGIS, Land Change Modeler and SAS); therefore, acquiring and enhancing skills that would prepare them for the future, and to see interesting ecosystems within the United States. To this end, while in Utah, the students spent one day and visited some of the most relevant ecosystems surrounding Salt Lake City (such as alpine or high elevation spruce-fir forests at Alta (Fig. 5) and saline marshes and big sagebrush communities on Antelope Island (Fig. 6).



**Figure 5. High elevation spruce - fir forests at Alta, Utah.**



**Figure 6. Typical shore landscape on the Antelope Island**

To complete the exposure of the students to the variety of landscapes present in Utah, the last day was dedicated to the study of the forest ecosystems from two national forests (Uinta and Manti-La Sal) and the wildlife from the Utah Lake, the largest natural freshwater lake in Utah (Fig. 7).



**Figure 7. Ducks on the Lake Utah**