Louisiana EPSCoR
Experimental Program to Stimulate Competitive Research
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Louisiana Researchers Impacting NASA Aerospace Program

Researchers from seven Louisiana universities are impacting NASA's aerospace program through three major funded projects: developing systems to reduce single aircraft accidents; improving the monitoring of organic carbon deposited in the Gulf of Mexico; and enhancing the service life of materials for the space program.

The three teams of Louisiana investigators, who competed with researchers from 20 states, were awarded a three-year, $2.1 million NASA EPSCoR grant. With another $2.1 million from the Board of Regents Support Fund and contributions from participating institutions, funding totals $5.6 million. A two-year continuation is currently under review by NASA. Established in August 2001, the project involves over 80 faculty and students, partners at four NASA Centers, and the private sector. The project is led by Louisiana NASA Project Director John P. Wefel, a professor of physics at Louisiana State University and A&M College (LSU).

Aircraft Safety: Managing Control Upsets

In collaboration with NASA's Langley Research Center, a team led by LSU's Jorge L. Aravena, professor of computer and electrical engineering, is investigating two causes for single airplane failure that account for over 50 percent of fatal accidents: 1) loss of control and 2) controlled flight into terrain.

Team members, including investigators from the University of Louisiana at Lafayette, University of New Orleans, and LSU, are developing three types of equipment to counter these events:

instrumentation to detect sensor faults and increase instrument reliability; an early warning system to detect the onset of component failure early enough for corrective actions to be taken; and control systems that operate safely under conditions that would normally cause loss of control.

Controls on Optical Properties of Northern Gulf of Mexico Coastal Waters

A team of researchers led by Michael J. Dagg, a Louisiana Universities Marine Consortium biological sciences professor, is collaborating with NASA's Stennis Space Center to assess the optical properties of coastal waters. The team also includes researchers from Tulane University.

About 80 percent of the organic carbon burial in marine sediments occurs in deltaic shelves near the mouths of large rivers, so they are particularly important in the assessment of the global biogeochemical cycle of carbon. The only practical means of monitoring the pigmented organic particles (phytoplankton)—the major source of this carbon—is satellite-sensed "ocean color." As the optical properties of coastal waters involve a complex set of physical, chemical and biological interactions, the interpretation of remotely sensed data, especially in river-dominated coastal areas, is uncertain. *(continued on page 2)*

LA EPSCoR Unveils New Funding Opportunities

Links with Industry, Research Centers & National Labs
Provides faculty, post-docs and graduate students with funds to spend up to 12 weeks conducting research at a national lab, research center, or industrial facility.

Pilot Funding for New Research
Provides faculty with funds to explore new ideas and keep pace with cutting-edge techniques that can enable them to become more competitive in securing federal research grants.

For more detailed information, please visit **http://laregents.org**

LA NASA EPSCoR (continued)

Investigators have taken advantage of a valuable research resource in their own backyard – northern Gulf of Mexico coastal waters impacted by the Mississippi River – to refine calibrations for reflectance and surface chlorophyll concentrations and apply them to the satellite image database.

Improving the Pulsed Laser Deposition (PLD) of Hard Materials

In collaboration with NASA's Glenn Research Center, a team of researchers led by Tulane professor of chemistry Brent Koplitz is improving material performance using PLD. The team includes investigators from Dillard and Xavier Universities.

The wear on materials in space is a serious maintenance concern. PLD, a method of depositing microscopically thin layers of materials (thin films), is being employed by researchers to address two problems in the area of thin-film materials: the application of hard coatings such as silicon carbide and titanium carbide, and a generation of new classes of magneto resist films. Investigators are focusing on the capability to control and model the deposition process.

Noting that since launching the program in 1994, NASA EPSCoR has invested $5.8 million in Louisiana, matched by $5.4 million from the Board of Regents, Dr. Wefel said:

"Through NASA EPSCoR, Louisiana is establishing an important role in the nation's aerospace program, augmenting its high technology endeavors, and developing and strengthening long-term academic research enterprises that will make significant contributions to the research and technology priorities of NASA and the State."

Strengthening Collaborations with NASA

Louisiana NASA EPSCoR offers two subprograms designed to strengthen collaborations with NASA. They are:

- **STAR**, which awards funds for Louisiana researchers to facilitate or enhance contacts with researchers at NASA centers or headquarters.
- **DART**, which is competitive and awards seed grants to Louisiana researchers who have made a NASA contact and are ready to take the next step—initiating a small project. The investigator must be sponsored by or work with a NASA center researcher.

The RFPs are available at **http://laspace.lsu.edu/EPSCoR/2002/home.html**

Continuation of both programs is dependent upon the extension of the current NASA EPSCoR award.

Louisiana Engineering Deans Host Institute

Engineering deans from across the nation gathered in New Orleans in March for interesting discussions on the changing dimensions of engineering at the 2004 Engineering Deans Institute. Topics included the broadening of the scientific base to include the life sciences, the ability to design at the nanoscale, the expansion of industries to encompass the globe, and the ever-increasing complexity associated with sustainability.

Speakers at the three-day meeting came from NSF, academia, and industry. The conference was hosted by Louisiana's seven deans of engineering and was chaired by Dean Nick Altiero from Tulane University.

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