LSU | Center for Energy Studies

Fall 2012 *Newsletter*

Coastal Communities Outlook Focus of $1.5 Million NSF Research Project

A multi-disciplinary team from LSU has been awarded a $1.5 million National Science Foundation grant to research the long-term prospects for coastal communities where land loss, subsidence, sea-level rise, flooding, hurricanes and oil spills have had a major impact for years. Research will focus on the Lower Mississippi River Basin in Louisiana. David Dismukes is one of the co-principal investigators on the project. He and other CES researchers will examine the impact of subsidence, land-loss, and sea-level rise on energy infrastructure, how those geo-physical changes increase infrastructure development and restoration costs, and how various incentive and financial structures can be modeled to reconcile and/or leverage potentially differing public and private environmental damage mitigation strategies.

Nina Lam, professor in the Department of Environmental Sciences, is the principal investigator. Co-principal investigators are Kam-biu Liu and Victor Rivera-Monroy, Department of Oceanography and Coastal Science; Margaret Reams, Department of Environmental Sciences; and Yi-Jun Xu, School of Renewable Natural Resources. David Dismukes, CES associate executive director, will provide economic analyses for the project.

Research will focus on areas north of Lake Pontchartrain and compare them to areas south of the lake. The economy and population have grown in the northern part of the study area over the past decade, while the southern part surrounding New Orleans has faced population and economic decline. The findings from the study will be used to help policymakers determine the best way to preserve much of the coast and its communities.

Development along the north shore of Lake Pontchartrain.

Decline along the south shore of Lake Pontchartrain.

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Highlights:

Coastal Communities Outlook project 1
Rotunda events 2
Kaiser Nominated 4
Louisiana Geological Survey 4
Fall Fest 7

CMI Event Commemorates 20 Years of Coastal Research Collaboration

On April 23, the Center for Energy Studies and the School of the Coast & Environment hosted the Coastal Marine Institute 20th Anniversary Symposium, celebrating two decades of collaboration between LSU, the Bureau of Ocean Energy Management (BOEM; formerly the Minerals Management Service), and the State of Louisiana. The event showcased projects and recognized the achievements of CMI researchers, who have advanced our understanding of the impacts of outer-continental shelf energy exploration and production on the natural environments, as well as on the socio-economic health of coastal Louisiana. The event included retrospectives by principal investigators on 20 years of valuable research; discussions on current offshore energy trends and ideas for solving energy issues facing Louisiana; and perspectives on the future of the offshore energy industry, specifically Louisiana's oil, gas, and marine minerals resources. Through CMI, more than $26 million in research contracts have been awarded to researchers at LSU, LUMCON, UNO, and ULL—producing pivotal and foundational research, as well as positively affecting the scholarly development of more than 100 graduate and undergraduate students.

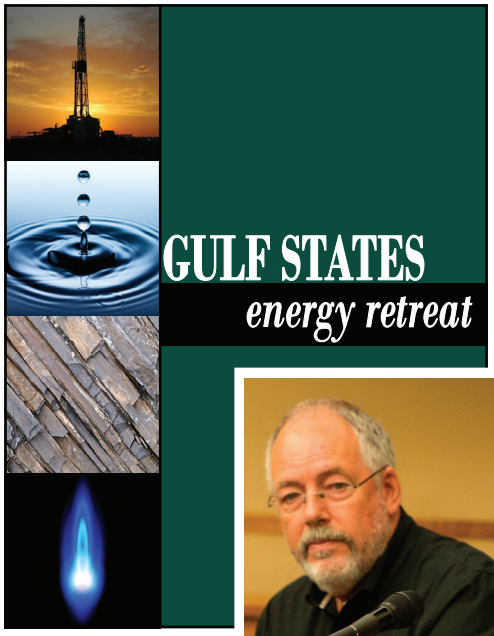
CES and the School of the Coast & Environment hosted the Coastal Marine Institute 20th Anniversary Symposium and expo on April 23.

Video Highlights Center's CMI Projects

In conjunction with the Coastal Marine Institute 20th Anniversary event, the Center for Energy Studies prepared a video showcasing important projects funded by the CMI, including "Environmental and Safety Risks of an Expanding Role for Independents on the Gulf of Mexico OCS," "Outer-Continental Shelf-Related Infrastructure Fact Book," and "Idle Iron in the Gulf of Mexico." The video was later expanded to include more general information about the center.

The video was produced by Red Six Media, LLC, a tenant of LSU's Louisiana Business and Technology Center business incubator. The Center thanks Dan Borné, director of the Louisiana Chemical Association, for serving as narrator.

The video is available for viewing at www.enrg.lsu.edu



Nicole Duarte, a partner with Jones Walker, moderated a Gulf States Energy Retreat roundtable discussion of issues related to water acquisition, resource allocation, and new research on the impact of fracking operations.

Fracking, Environmental Issues Focus of Gulf States Energy Retreat

Technological advances in drilling and related environmental issues were the topics of the Gulf States Energy Retreat, presented by the Center for Energy Studies and Jones Walker law firm, June 20 and 21, at the Dalton J. Woods Auditorium. Experts in mineral law, drilling technology, and water and environmental issues related to horizontal drilling discussed the controversial topic of how hydraulic fracturing impacts the environment and how those impacts might be measured and reported.

Speakers included Patrick Martin, former Campanile Professor of Mineral Law at the LSU Law Center and director of the Louisiana Mineral Law Institute; Charles G. "Chip" Groat, founding president and CEO of the Water Institute of the Gulf, director of the Center for International Energy and Environmental Policy, and associate director of the Energy Institute at The University of Texas at Austin; and Chuck Duginski, Chesapeake Energy Corp., district manager -- Haynesville Shale.

Presentations from the Gulf States Energy Retreat, are available at http://www.enrg.lsu.edu/Conferences/gser2012/presentations.html

At the request of the Consulate General of Israel, CES hosted David Faraggi, Rector for the University of Haifa, in February. Faraggi met with LSU faculty and staff regarding multi-disciplinary research on hydrocarbons and the energy industry.

Rector for the University of Haifa Visits Center

On February 14, CES hosted David Faraggi, Rector of the University of Haifa at Mt. Carmel in Israel, at a meeting to discuss the recent natural gas discoveries in Israel's Mediterranean Exclusive Economic Zone (EEZ), the mission of the University of Haifa, and the Leon H. Charney School of Marine Sciences and its efforts to establish a multi-disciplinary research center dedicated to the sustainable development of Israel's hydrocarbon industry. Faraggi explained that the center would comprise experts in marine geosciences, law, economics, policy, planning, marine biology, and archeology. To learn about LSU's efforts in multi-disciplinary research in energy, Faraggi spoke with faculty and staff representing CES, Louisiana Geological Survey, the School of the Coast and Environment, the LSU Law Center, the Cain Department of Chemical Engineering, and the Ourso College of Business. Topics included plans for funding of the center, potential training and qualification programs to support the industry, and the potential for "bi-national" research agreements and collaboration.

Kaiser Nominated for Eni Award

Mark Kaiser, CES professor and director of Research and Development, has been nominated for an Eni Award 2013. The Eni Award is an annual honor "created to develop better use of renewable energy, promote environmental research, and encourage new generations of researchers." Lorenzo Messagi, scientific secretariat for the Eni Award, solicited Kaiser's candidature. The winner of the award, who will be announced in April 2013, will receive a specially struck gold medal from the Italian State Mint and €200,000. Eni is an Italian energy company involved in exploration, production, transportation, and marketing for oil and gas.

Louisiana Geological Survey Update

LGS in AAPG *Explorer*

An article in the October 2012 issue of the American Association of Petroleum Geologists (or AAPG) *Explorer* publication cites the Louisiana Geological Survey's 1997 study of the Tuscaloosa Marine Shale (or TMS) as having originated interest in the play. Describing the TMS play as a "long-tantalizing yet elusive" drilling zone for oil, the article describes how ongoing high oil prices make the TMS a "sleeping giant" in this era of horizontal drilling and multi-stage hydraulic fracturing. The article provides an update on production in the shale play: 13 completions reported, well costs in the range of $13 to $15 million, and average total vertical depth of about 12,500 feet. Successful development of the TMS play is expected to greatly increase revenues to the state and substantially increase the number of jobs in the area.

The LGS study, "An Unproven Unconventional Seven Billion Barrel Oil Resource - the Tuscaloosa Marine Shale," can be viewed online at http://www.lgs.lsu.edu/deploy/uploads/Tuscaloosa%20Marine%20Shale.pdf

The January 2012 edition of the *Explorer* featured Chacko John, Louisiana Geological Survey director, state geologist and research professor, discussing the U.S. Department of Energy's research program on geopressured-geothermal resources. LGS, along with all 50 states, is participating in a three-year, DOE-funded project

to compile a National Geothermal Data System (NGDS), which will make data available to companies that seek to develop geothermal energy resources. The article recognizes LGS's previous work in geothermal energy along the Gulf Coast, including a DOE-funded program from 1975 to 1992 that gathered geological, engineering, environmental and economic information to determine the viability of development of the resource. John said the current interest in alternative energy sources indicates that now may be the appropriate time to pursue geopressured-geothermal resource development.

To view the article, go to http://www.aapg.org/explorer/2012/01jan/hot_water0112.cfm?zbrandid=4051&zidType=CH&zid=9557021&zsubscriberId=1001006817&zbdom=http://aapg.informz.net

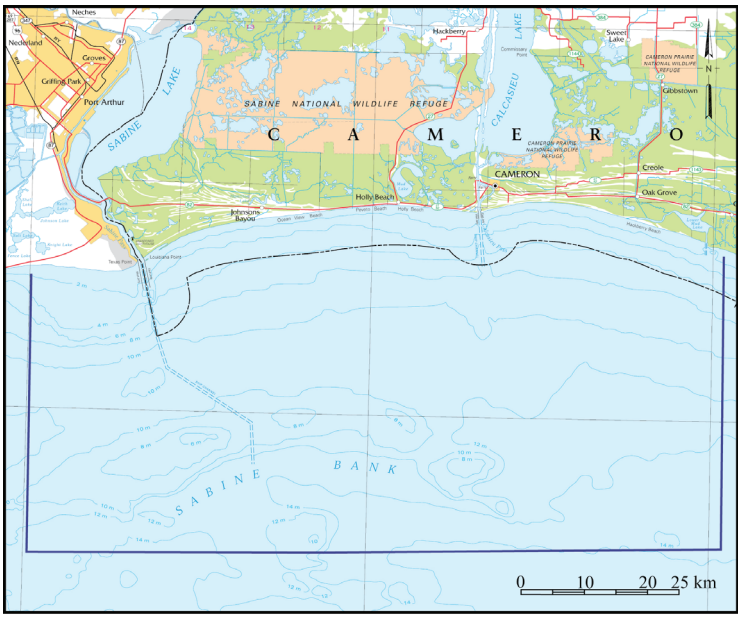
The *Explorer* is distributed internationally to members of the AAPG. Founded in 1917, the AAPG is currently the world's largest professional geological society.

LGS to Update Louisiana Coastal Zone Map

The Louisiana Geological Survey, Cartographic Section, has been awarded a contract with the Louisiana Department of Natural Resources, Office of Coastal Management, to update the Louisiana Coastal Zone Map. Act No. 588 of House Bill No. 656 Regular Session 2012, enacts R.S. 49:214.34(C). "... to redraw the coastal zone boundary; to provide relative to determination of fastlands within the coastal zone; to provide relative to required coastal use permits within the coastal zone; and to provide for related matters." The map was carefully prepared by LGS cartographers and has been sent to the lithographer for map production. 4,000 copies have been ordered and will be available by December 2012 (January 2013 at latest). Copies can be ordered through the LaDNR, Office of Coastal Management.

Preservation Potential of Prehistoric Cultural Resources and Sand Resources Subject of BOEM Study

The Louisiana Geological Survey has entered a cooperative agreement from the Bureau of Ocean Energy Management (BOEM), Bureau of Safety and Environmental Enforcement (BSEE) to investigate possible sand resources and possible archeological sites in the Louisiana state waters in the Outer Continental Shelf. "Late Quaternary Stream and Estuarine Systems to Holocene Sea Level Rise on the OCS Louisiana and Mississippi: Preservation Potential of Prehistoric Cultural Resources and Sand Resources" is a two year $450,669.00 (obligated amount $225,000.00 for year 1) project with Paul Heinrich as Principal Investigator. The project will examine responses of late quaternary stream and estuarine systems to Holocene sea level rise. The objectives of the study are to develop a geophysical and geologic database for the study area, to develop geologic/stratigraphic models, develop a predictive model for paleo-landscape preservation potential, and to evaluate sand resources of paleo-fluvial channel fills within the study area. An understanding of these processes can result in the evaluation and refinement of models used to predict cultural and non fuel mineral resources within deltaic environments. A fully functional Geographic Information System (GIS) will be developed from all collected geospatial data. These data will be archived with the National Oceanographic Data Center (NODC) and the National Environmental Satellite, Data, and Information Service (NESDIS). The project is expected to be complete by September 30, 2014.

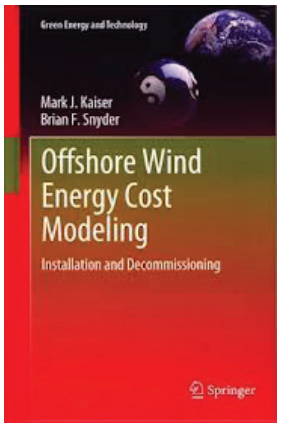


Map of Southwest Louisiana study area. Excerpt from Official Map of Louisiana, Louisiana Department of Transportation and Development.

Minerals Processing Research Update

F. Carl Knopf, Robert D. & Adele Anding Professor of Chemical Engineering and Minerals Processing Division (or MPRD) associate director, M. Shafi Syed, Ph.D. student, and Kerry M. Dooley, BASF Professor of Chemical Engineering, presented a paper on results from their research on large-scale industrial energy production at the annual meeting of the American Institute of Chemical Engineers in Pittsburgh, October 28 - November 2, titled "Modeling Water Injected Gas Turbines - Performance and Emissions."

Ralph W. Pike, MPRD director, chaired two technical sessions on sustainable development at the 2nd World Congress on Sustainable Engineering in Pittsburgh, October 28 - November 2, titled "Sustainable Fuel from Renewable Resources" and "Sustainable Chemicals: Advances in Innovative Processes." Pike also continued as a Scientific Advisory Committee Member of the Texas Hazardous Waste Research Center and reviewed grant applications at the annual meeting in August 2012.



Kaiser, Snyder Publish Book

Mark Kaiser and Brian Snyder, research associate, have co-authored the book *Offshore Wind Energy Cost Modeling: Installation and Decommissioning*. Part of Springer's *Green Energy and Technology* series, the book provides a methodological framework to determine installation and decommissioning costs, and reviews existing processes and systems used in the offshore wind industry. The detailed treatment of the key principles in offshore wind development is enhanced by clear visual aids and data tables. *Offshore Wind Energy Cost Modeling* serves as a key resource for readers interested in the offshore wind industry, particularly the technical and economic aspects of installation and decommissioning.

Dismukes Discusses Advanced Technologies of Coal, Nuclear at Manhattan Institute

David Dismukes, CES associate executive director, participated in a Manhattan Institute panel discussion titled "Keeping the Lights On: What Role for Coal and Nuclear" March 1 at the Princeton Club in New York City. Dismukes explained that, in the U.S., adding nuclear capacity would be much more expensive than coal or gas. Nuclear would cost several thousand dollars per kilowatt of installed capacity versus closer to $1,000/KW for coal or gas. Dismukes said that natural gas is the "safest play" for building a new power plant but cautioned that overbuilding gas-fired infrastructure could trigger eventual gas price increases over the longer term.

To view the full panel discussion, visit the Manhattan Institute's website at http://www.manhattan-institute.org/video/index.htm?c=030212CEPEp2

CES, Michigan State University Institute of Public Utilities Partner for Regulatory Training

David Dismukes has spent the past several months working closely with the Michigan State University Institute of Public Utilities (IPU) in developing and offering training and continuing education courses for state utility regulators and other regulatory professionals on a host of emerging issues impacting electric and natural gas utilities. Dismukes has developed and taught courses on energy demand forecasting, modeling and statistics; revenue decoupling, energy efficiency, renewable energy; and infrastructure investment and utility expense riders. He presented the courses at IPU-sponsored events including the IPU's Advanced Regulatory Studies Program, on-site training seminars for the Michigan Public Service Commission and the New Mexico Public Regulatory Commission staff, and most recently, and on-site training seminar for both the Indiana Utility Regulatory Commission staff and the staff of the Indiana Utility Consumer Counselor.

Lewis, Snead Retire

CES's longtime administrative specialist Ann Lewis and LGS cartographer John Snead retired within the past year. Lewis, who retired after 31 years of service to the state, was honored with a party January 19. Current and former coworkers honored Ann with an LSU wristwatch, hors d'oeuvres, cake and punch.

Snead, who retired from the Louisiana Geological Survey September 28 after 33 years of service, returned to work October 3 to work part-time for the Survey.

We thank both Lewis and Snead for their service and wish them well in retirement.

Ann Lewis (left) and Barbara Kavanaugh celebrate Lewis's retirement in January.

John Snead, Louisiana Geological Survey, retired in September with 33 years of service.

CES at Fall Fest

On Friday, September 14, LSU celebrated its annual "welcome back" to the campus with Fall Fest 2012. More than 8,000 students, faculty, and staff walk through the quad annually to listen to the Golden Band from Tigerland, enjoy free food and drinks, and visit information tables hosted by University departments. At the CES table this year, visitors learned about Louisiana Geological Survey's discovery of the meteor crater in St. Helena Parish and the role of the LSU Radiation Safety Office on campus.

Kathy Perry, CES research associate, distributed LGS postcards, maps, and bookmarks to passersby at the 2012 Fall Fest in the LSU Quadrangle September 14.

RSO's Charlie Wilson spoke with visitors about campus radiation safety at Fall Fest 2012.

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*The **Center for Energy Studies** conducts, encourages, and facilitates research and analysis to address energy-related problems or issues affecting Louisiana's economy, environment, and citizenry. Whether conducted by its staff or by others it supports, the Center's goal is to provide a balanced, objective, and timely treatment of issues with potentially important consequences for Louisiana.*

The CES Newsletter is published by the Center for Energy Studies at Louisiana State University.

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