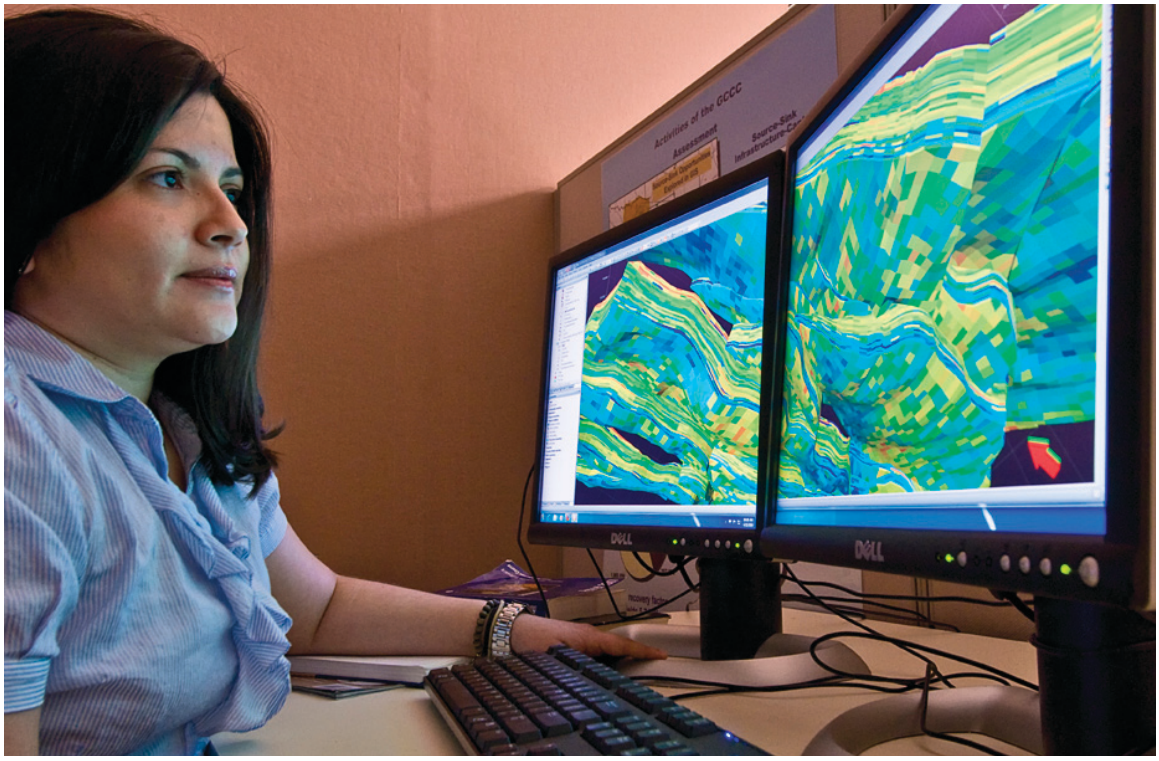
Energy and Earth Resources:

TECHNICAL BACKGROUND, BROAD GOALS POINT TOWARD WORK IN CARBON CAPTURE



Silvia Solano's interest in carbon sequestration was first sparked on a six-month internship in Tokyo. Her job at the Teikoku Oil Company was to conduct a computer simulation study of enhanced oil recovery (EOR) by CO_2 injection. The company was trying to increase production in an existing field and asked her to determine how much more oil could be recovered. In the process, she began reading about experiments combining EOR with carbon sequestration.

"I thought this was a win-win solution," she said. "You can reduce greenhouse emissions and increase oil recovery at the same time. It's good for the environment and industry."

Solano, who grew up in a small town in the state of Guárico, Venezuela, is a master's student in the Energy and Earth Resources (EER) graduate program at the Jackson School of Geosciences. EER prepares students for analytical and leadership positions in resource-related fields through training in engineering, geoscience, business, law and policy. The program gives students wide latitude in constructing their own curriculum.

"The EER program has been great," she said. "It has given me the freedom to choose classes that will help me the most with my research and career."

Solano is part of a research team conducting a large-scale test of carbon sequestration.

"I knew I wanted to learn more about economics, finance, energy policy and law because I have a very technical background,"

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Left: Solano is part of a $34 million Department of Energy funded research project evalutaing sequestration and monitoring strategies for long-term storage of carbon dioxide at Cranfield field in Mississippi. In this picture, an observation well is being drilled and fiberglass casing is waiting to be inserted and cemented inside the well. Right: During the annual Explore UT outreach event, Solano leads a game to explain to kids how much CO_2 is produced from daily life activities and the consequences of increased emissions.

she said. "Learning from these areas has helped me to obtain a broader understating of carbon capture and storage issues and of the oil and gas industry in general."

Solano is working with two scientists at the Jackson School's Bureau of Economic Geology, Susan Hovorka and Jean-Philippe Nicot, in a Department of Energy funded study of carbon sequestration in Cranfield, Mississippi. The team, based at the Bureau's Gulf Coast Carbon Center, is monitoring a site where more than a million tons of CO_2 will be injected 10,000 feet below ground. The geological structure at Cranfield comprises a four-way anticline overlying a deep salt dome that contains a large gas cap surrounded by an oil ring.

"I am trying to determine what impact the gas cap might have on the behavior of the injected CO_2," she said. "It's a sensitivity study based on computer reservoir simulations."

One of the best things about doing research at the Gulf Coast Carbon Center, she said, is that it's structured like an oil and gas company performing actual projects, giving students the opportunity to acquire professional experience.

"I love it," she said. "It's like working in industry again. You have very specific goals and your work has applications to the real world."

In 2000, Solano received a bachelor of science degree in chemical engineering from Universidad Simón Bolívar in Caracas, Venezuela. Soon after, she fulfilled her childhood dream of working in the oil-industry in her native country. She was part of a team of well-planning and drilling experts focused on tapping oil in often-inaccessible areas. During her two-year tenure as a well-cementing engineer at the Venezuelan national oil company, Petróleos de Venezuela (PDVSA), she mastered state-of-the-art technologies to secure wellbore integrity, maximizing the productive life of wells.

Next, she received the Japan-Interamerican Development Bank Scholarship, which provided a full ride for two years of graduate study at Waseda University in Tokyo, Japan. In 2005, she received a master of engineering, environmental engineering and mineral resources degree from Waseda.

In 2009, she received a $5,000 Association of International Petroleum Negotiators (AIPN) Scholarship, which helped defray the costs of graduate study at the University of Texas at Austin. She graduated with a master of arts degree in EER in August 2010.

Solano plans to continue doing carbon sequestration research at the Gulf Coast Carbon Center, but ultimately is interested in returning to industry in a position that allows her to apply her knowledge in petroleum engineering, but also integrates economic evaluation and risk assessment, especially related to environmental impact projects.

If you would like to talk to Silvia or other current students in Energy and Earth Resources, contact Jessica Smith, Graduate Coordinator, at jsmith@jsg.utexas.edu, 471-9875.