



CEA-CREST Quarterly

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LSAMP Bridges to the Doctorate grant awarded to Cal State L.A.



From left: Carlos Gutierrez, MORE Programs Director, Margaret Jefferson, LSAMP Program Director, Carlos Robles, CEA-CREST Program Director.

CEA-CREST director **Carlos Robles** joined forces with **Carlos Gutierrez** of CSULA's Minority Opportunities in Research (MORE) program, and **Margaret Jefferson** of CSULA's Louis Stokes Alliance for Minority Participation (LSAMP) program to bring to CSULA one of the most prestigious Master's fellowships in the sciences. The LSAMP Bridges to the Doctorate (LSAMP-BD) will support 12 students in earning their Master's of Science degrees in preparation for entrance into Ph.D. programs. Each participant will receive \$30,000 per year in financial support.

The first LSAMP-BD supplement of this kind was awarded to San Francisco State University in 2003. This year, CSULA was chosen based on the success of CEA-CREST and MORE in placing traditionally underrepresented students into Ph.D. pro-

grams in the sciences. Both programs have worked collaboratively to bring LSAMP-BD students into their communities. The joint effort means that CEA-CREST and MORE will cooperate and integrate together as never before.

LSAMP-BD participants will attend the weekly CEA-CREST and MORE seminar series; celebrate in CEA-CREST's Fall Social and contribute to the Annual Environmental Science Conference. Students will also be encouraged to visit MORE's writing support office for assistance with prospectus and/or thesis production. A series of workshops developed specifically for the students will address research ethics, GRE preparation, and Ph.D. career options.

Water quality research partnership in the San Diego Creek-Upper Newport Bay watershed

CEA-CREST faculty and students form a vital part of a key partnership in a prominent water quality research initiative in San Diego Creek-Upper Newport Bay Watershed, Orange



County, CA. Professors **Barry Hibbs** and **Hong-Lie Qiu** head CEA-CREST's efforts in the partnership, which includes UC Riverside, UCLA and various agencies.



by contributing funding and human resources. Workshops and seminars are held throughout the year to keep participants abreast of ongoing water quality efforts.

California's

Proposition 13 contract authorizes Hibbs and his students and the Santa Ana Regional Water Quality Control Board (SARWQB) to carry out combined water quality efforts. Hibbs has teamed with Tom Meixner of UC Riverside, SARWQB, and the Irvine Ranch Water District to study selenium and nutrient speciation and removal processes in San Joaquin Marsh Preserve, a water quality treatment wetland and wildlife sanctuary in the San Diego Creek/Upper Newport Bay watershed.



The Watershed extends from the foothills of the Santa Ana Mountains to Upper Newport Bay. Prior to development, much of the region was a large marshy wetland. The marsh was drained in the late 1800s to permit livestock grazing and irrigated agriculture. Most of the agricultural lands have been displaced by urban growth.

Several water quality problems are vestiges of historical land use practices; including nutrient, trace element, and pesticide contamination of soils and shallow groundwater. Contaminated groundwater and soils flow into creeks and streams that drain into Upper Newport Bay, a registered ecological preserve. Several threatened and endangered species reside in the Bay. The water quality problems in the upper part of the watershed are being mediated through land-use controls, and engineered/natural treatment technologies.

The partners work together by sharing information and data for planning purposes, and



This work involves year-round analysis of pollutant loading and removal processes in the marsh, 24 hour boat work to study diurnal speciation processes in the marsh, and sampling of groundwater monitoring wells to characterize interrelationships between the marsh and underlying groundwater. The project will culminate in the development of a three-dimensional surfacewater/groundwater planning model for simulating watershed dynamics.

Under the direction of Hibbs, CEA-CREST students have completed four Master's theses based on San Diego Creek-Upper Newport Bay Watershed.

Congratulations graduates



Ling Cao graduated with a B.S. in Biology, summer 2004. She currently does spatial model analyses of intertidal zonation in **Robert Desharnais'** lab. In fall 2004, Cao begins the M.S. program in biology

and will continue research with Desharnais but will proceed onto a more complex multi-dimensional model system to analyze the same spatial models but using more mathematical variables.



Scarleth Ramirez graduated with a B.S. in Civil Engineering from CSULA, summer 2004. She will begin a full-time position with BP in Chicago, the largest oil and gas producer and

one of the largest gasoline retailers in the United States. She plans to pursue an M.S., fully supported by BP, and possibly a Ph.D.



Roman Barco graduated with a B.S. in Biology, winter 2004. As a CEA-CREST graduate fellow, he works under the mentorship of **Tina Salmassi** and will also join **Crist**

Khachikian's lab. Barco plans to work in the applied microbiology field because he is extremely interested in the idea that microorganisms can be beneficial to humankind in ways that have yet to be discovered.



Noe Ramos graduated with a B.S. in Chemistry from CSULA, spring 2004. A researcher in **Krishna Foster's** atmospheric chemistry lab, he will begin the M.S. in hydrogeology program in fall 2004 as a LSAMP-BD fellow.

Ramos will continue work in Foster's lab under the supervision of assistant professor of geology, **Laura Rademacher**. He would like to eventually pursue a Ph.D. in environmental science.



Andrew Moyes graduated with a M.S. in Biology, winter 2004. As a CEA-CREST Bridges doctoral candidate in the University of Utah's biology program, Moyes measures below-ground respira-

tion in the Utah desert and the local Wasatch Mountains. He also uses stable isotopes to determine if the nitrogen in plants in a Colorado River wetland can be traced to seeping ammonium from a nearby uranium mine tailings pile. After the Ph.D., Moyes plans to teach at the university level and work in government or consulting.



James Walker will graduate with a M.S. in Hydrogeology, fall 2004. He plans to work in the environmental consulting industry; and hopes for a full-time position immediately after

graduation. He plans to pursue a career in environmental geology, and will continue his education part-time.

Welcome aboard



Carole Bartel (graduate, geology) was admitted to CEA-CREST fall 2004 and is working with Barry Hibbs. She graduated in spring 2004 from USC with a BS in geology and a minor in chemistry. She worked in USC's geochemistry lab studying radon emanation rates in sea water, mud and sand. During her last semester at USC she established her individual research project studying emanation rates of sand in the area between Palos Verdes and Malibu, CA. After completing the Master's program at Cal State L.A., Bartel plans to work for an environmental consulting firm and later pursue a Ph.D. in geology.

We wish you the best, Ted Crovello



Ted Crovello, retired dean of graduate studies, played a positive role in the establishment of CEA-CREST at CSULA. Always supportive and committed to CEA-CREST, Crovello demonstrated a continuous advocacy of the program by providing valuable guidance, participating in all of CEA-CREST's efforts and events, and attending the annual CREST meeting at the National Science Foundation's headquarters in Washington, D.C. "All of this takes significant work and resources but, it's worth it because I believe in the program and what it can do for our campus, which really means that I believe in its faculty and staff and in what they and CEA-CREST can do and are doing for our students," stated Crovello.

In reviewing Crovello's contribution, CEA-CREST program director, **Carlos Robles** notes, "Ted provided numerous contacts to build a nexus of allies. His advice and political expertise proved invaluable in negotiations with off-campus partners; and in the sometimes combative arena of peer-review and site visits, he has been a staunch defender of the CEA-CREST program. Such support emboldens our efforts on behalf of diversity in academia."

Crovello left CSULA during summer 2004 to pursue other interests and spend more time with his family. "Although he has retired, I will continue to enjoy his council and friendship," says Robles. We wish Ted the best of luck and success in all he does.

CEA-CREST
 California State University, Los Angeles
 5151 State University Drive, BS 140
 Los Angeles, CA 90032-8970
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Prepared by: Maria de Lourdes Pelaez

For comments, questions or more information, please contact:

CEA-CREST

Phone: 323-343-5799

FAX: 323-343-5795

E-mail: ceacrest@calstatela.edu

Web Site: <http://cea-crest.calstatela.edu>

Faculty spotlight: Laura Rademacher



Laura Rademacher joined Cal State L.A.'s Geological Sciences faculty in fall 2003. Her research primarily focuses on environmental problems with an emphasis on hydrologic issues. Her research

group uses environmental tracers present in Earth systems to address these hydrologic issues.

Q: Why did you choose this field?

A: My passion for the environment led me to geology and hydrology. Very few people know they want to be geologists at a young age, and I was no exception. But, after taking numerous courses in geology, hydrology, and environmental science, I realized that these were preparing me with the problem solving skills and knowledge of the Earth necessary to successfully deal with the environmental problems that face us today and in the future.

Q: What are your current research projects?

A: Currently, my group is researching the effects of wildfire on flooding and water quality in Southern California. Students use environmental tracers to look at changes in the soils, groundwater, and stream water. In other studies, we are trying to quantify the role of groundwater in the global carbon cycle and the impact of increasing carbon dioxide levels in the atmosphere on chemical weathering in the subsurface. We are also developing new techniques for understanding the biogeochemical cycles of uranium.

Q: What do you like best about your work?

A: The best parts of my research include working in the field, working with interested students, and the feeling that our research plays a vital role in understanding how the Earth works.

Q: What is the future of your research?

A: As clean water becomes more and more scarce around the world, highly trained Earth scientists and hydrologists will need creative approaches to answer environmental questions. The future of my research lies in developing new techniques to address these environmental problems and improve our understanding of how Earth's systems are connected. This future will require a continued expansion of interdisciplinary research, particularly when it comes to the environment.

Q: What is your mentoring philosophy?

A: Every student has a unique background and a unique set of needs, and my mentoring philosophy addresses these differences. I try to work with each student to accommodate his/her individual needs. Most students in my research group will develop research projects that include field, laboratory, and often modeling components. Students and I talk regularly about their future plans and how we can ensure that the experiences they have as a part of CEA-CREST and CSULA will help them reach their goals.

Q: What can you tell us about your CEA-CREST students?

A: Currently, I have one undergraduate CEA-CREST student in my lab, **Rose Santilena** (or "Rosie" as she prefers). She is helping out with my group's study of the impacts of wildfires in Southern California. Rosie has been a strong asset to our group. Through her studies of changes in stream water chemistry, she has actively been involved in both field and laboratory work. Rosie has been a pleasure to work with because she is dedicated to the environment and is always asking great questions. In addition, she is actively involved in helping other students in our group working on the impacts of wildfire; and is becoming an expert in numerous hydrologic techniques.

Undergraduate student: Rose Santilena



Q: Why did you come to Cal State L.A.?

A: I came to CSULA because it is close to home and affordable. I also liked the new buildings on campus.



Rose Santilena taking water temperature at City Creek in the San Bernardino Forest.

Q: Why did you choose this field?

A: I chose geology because I have always liked the sciences, and have always been interested in gems, minerals, and rocks.

Q: What is your goal?

A: My goal is to get my B.S. and M.S. in geology, and save up enough money so that I can travel around the world studying geological places of interest.



Rose Santilena sampling water at City Creek in the San Bernardino Forest.

Q: What can you tell us about your advisor?

A: Dr. Laura Rademacher is a very patient and knowledgeable advisor who has really helped me learn about chemical reactions in ground water. She has helped me a lot in my study of the effects of wildfires in the San Bernardino Forest and the changes in stream water.



Santilena testing pH levels of water from City Creek in the San Bernardino Forest.