



CoHemis... Update

Overcoming through cooperation

Founded with the sponsorship of the National Science Foundation (NSF)
Sponsored by the President's Office of the University of Puerto Rico and Mayagüez Campus

2007

University of Puerto Rico at Mayagüez

Vol. 16 No. 1

UNICA MEETING

The Association of Caribbean Universities and Research Institutes (La Asociación de Universidades e Institutos de Investigación del Caribe - UNICA) was founded in 1967 to increase cooperation between research centers in the Caribbean. This independent volunteer organization meets with high ranking officials (President, Chancellor, etc.) from Caribbean universities that participate in the Annual Meeting, the Association's supreme authority under the leadership of an elected President. The General Secretary administers the Association's daily affairs and the Executive Committee meets twice a year. UNICA facilitates academic contacts and collaborative projects as well as initiates projects that unite institutions and academics throughout the region. It also provides support for the regionalization of higher education in the Caribbean while ensuring local cultural history remains intact. UNICA anticipates the demands of the XXI century and accepts the challenges of helping a multi-national, multi-lingual and multi-cultural



The fortieth UNICA conference was translated simultaneously into English, Spanish and French.

continues in page 3

SciTeCC 2007

On October 25, 2007 the Center for Hemispherical Cooperation (CoHemis) held its Second Congress on Science and Technology (SciTeCC) in the Auditorium of the Biology Department at UPRM. The theme of SciTeCC 2007 was: **Bioprospecting: "From the Environment, to Synthetic Biology, to Technology-Based Enterprises:** Unraveling a universe of microbial life with novel activities and potential applications." The speakers were Dr. Tamas Torok, Researcher at the Lawrence Berkeley National Laboratory, California; Dr. Joseph Vogel, Professor in the Economics Department of UPR-Río Piedras; Dr. José A. Cruz, Professor in the UPRM College of Business Administration; and Dr. Carlos Ríos-Velázquez, Professor and Researcher in the Biology Department of UPRM. The congress revolved around the impacts and applications of discovering or developing functions and/or activities relevant to different environments

continues in page 4

ACEER

Growing dependence on fossil fuels and increased global energy demands have prompted countries to think about renewable energy. So CoHemis, as a founding member, has joined the educational efforts of the Community Alliance for Education in Renewable Energy (ACEER in Spanish). This non-profit organization focuses on educating citizens on energy issues in Puerto Rico and the planet while responding to the needs of residential, commercial, industrial and governmental consumers with renewable and sustainable energy solutions. ACEER is nurtured by an array of volunteers and organizations working in different community, ecological, civic, commercial, industrial, professional and academic sectors. In the near future we hope this organization will work closely with state and municipal governments to ensure efficient energy generation and consumption.

continues in page 12

IN THIS EDITION: INTEC 2007 Talent Fair ♦ Fifteen Years of Research at the Mayagüez Bay ♦ UNICA Assembly ♦ Olé RUM Project ♦ Visit to the University of Cádiz, Spain ♦ Learning Factory, Guayaquil, Ecuador ♦ ACEER Conferences ♦ First USDA-CSREES Meeting

COHEMIS CONSORTIUM: It's a network of institutions, universities, laboratories and other organizations that are united to the UPRM by means of agreements to collaborate in activities about science and technology. At the moment, the CoHemis Consortium consists of 49 institutions of the Hemisphere Occidental and Spain. This section is for publishing events related to the members of the consortium. If your institution is member and wishes to publish an article in future editions, please send the request to cohemis@ece.uprm.edu.

INTEC Talent Fair 2007

The Technological Institute of Santo Domingo (INTEC) held its Second Talent Fair from August 22 - 25, 2007. This institute located in the Dominican Republic has been part of the CoHemis consortium since 1991 when CoHemis was first created. The purpose of this fair was to offer professional and educational graduate opportunities to its students. CoHemis coordinated the participation of UPRM, under the direction of Dr. Anand Sharma, Director of Graduate Studies and Mrs. Yamarie Hernández, CoHemis Coordinator. Throughout the display Dr. Sharma and Yamarie oriented students on credit requirements, admission processes, financial assistance and other UPRM related matters. This visit also allowed CoHemis to reestablish collaborative links with INTEC in order to carry out future mutually beneficial activities. Therefore, the coordinator met with Dr. Indhira De Jesús, Dean of Engineering and our CoHemis consortium contact. She also met with other institutional officials. In the near future we hope to visit other members of our consortium to continue the efforts started almost 15 years ago.

Background photo:
Yamarie Hernández Bonet and Dr. Anand Sharma

Visit from the University of Bio Bio, Chile

From December 5 - 9, 2007 four delegates from the University of Bio Bio, Chile visited UPRM: Peter Backhouse, Dean of Engineering, Verónica Lazcano, Head of Civil Engineering Studies, Gastón Hernández, Director of Mechanical Engineering and Milton Ramírez, Director of Industrial Engineering. The purpose of their site visit to UPRM was to become familiar with research being carried out at their respective departments, to discuss the possibility of developing joint projects, and to develop doctoral and masters plans for young academics and recently graduated engineers to access tuition scholarships and obtain other financial assistance. They met with Dr. Jorge I. Vélez Arocho, Chancellor, Dr. Ramón Vázquez Espinosa, Dean of Engineering, Dr. Rodolfo Romañach, Director of Chemistry Graduate Program, Dr. Lourdes Rosario, Graduate Program Coordinator, Prof. Ismael Pagán Trinidad, Director of Civil Engineering and Dr. Barbot, Associate Dean of Arts and Sciences.

Students from Kutztown carry out teacher practicum at UPRM

Two students from the University of Kutztown carried out their teaching practicum ("Student Teaching Practicum II") in Puerto Rico the fall of 2007 thanks to a collaborative agreement through the CoHemis consortium between the Teacher Preparation Program (PPM in Spanish) at the University of Puerto Rico at Mayagüez (UPRM) and the University of Kutztown in Pennsylvania.

The student-teachers participating in this experience were Mr. David Farina from Applied Science and Mr. Justin Raffauf from Biology. This UPR-Kutztown educational experience was carried out in the Antillas Consolidated School System of the Department of Defense, at Ramey Base in Aguadilla, Puerto Rico.

At this practicum center, these student teachers had the opportunity to observe classes at diverse academic levels, offer courses, and get involved in other activities such as tutorials and field trips. This practicum was supervised by Dr. Carlos Ríos-Velázquez, Co-director of CoHemis, who completed his PPM at UPRM during his undergraduate studies, has a teaching certificate in Science from Puerto Rico's Department of Education and has supervised PPM-UPRM practicum experiences for seven years.

These students not only experienced the teaching-learning process at Ramey School, but also participated in PPM program activities at UPRM, shared experiences with other student-teachers in the program and observed the practicum experience of Puerto Ricans in other classrooms.

Mr. Farina and Mr. Raffauf described this program as enriching on many levels, educational as well as personal and cultural; explaining how this experience will help their professional performance since their schools include a large number of Hispanic students. This experience is currently being evaluated by other education centers, in order to repeat this experience and to serve as a model between UPRM and other education centers belonging to the CoHemis consortium.



These student teachers worked at the Ramey Base School in Aguadilla, Puerto Rico for 8 weeks.

UPRM hosted the 40th annual conference of UNICA (from page 1)



García Padilla addresses the audience after taking over as President of UNICA.

region. Thirty-seven universities and institutions are currently members of UNICA, including the University of Puerto Rico (UPR). UNICA celebrated its forty year anniversary by holding its annual conference from November 14-16, 2007 at the Mayaguez Campus of the University of Puerto Rico (UPRM). The Office of the President of UPR coordinated the overall activity but the efforts at UPRM were coordinated by CoHemis. Presidents and Chancellors from 40 university and research institutions throughout the Caribbean region participated in the event which was simultaneously translated into Spanish, English and French.

The theme of the event was “Academic Mobility: Tool for Integrating Universities in the Caribbean” (“La Movilidad Académica: Instrumento de la Integración Universitaria del Caribe”). Without a doubt this subject promises to provide tools to the Caribbean to coordinate the exchange of knowledge that can no longer be delayed between professors, researchers and students. This conference proposed UNICA as the organizing body to facilitate this exchange in the Caribbean.

The President of UPR, Antonio García Padilla, stepped forward as president of the organization. A resolution was also approved to facilitate the integration of academic networks in the Caribbean, promote cooperation of teaching resources, as well as student exchanges where equivalent grades and credits, and recognition of qualifications between participating universities will be acknowledged.

García Padilla stated that during his two year presidency at UNICA, he plans to press on projects

contained in the organizations agreement of academic mobility. This institutional policy will include the transfer of students, professors and researchers at institutes of higher education within UNICA.

The President of UPR declared “academic mobility is an investment toward building a Caribbean that understands itself and towns that understand each other today and in the future.” The movement of students and professors benefits education, culture and the development of countries in the region.

“academic mobility is an investment towards increased current and future understanding in the Caribbean and its towns”



Dr. Radhamés Mejía, Mr. Antonio García Padilla, Esq. and Dr. Jorge I. Vélez Arocho in discussion during one of the conference sessions.

Meanwhile UPRM’s Chancellor, Dr. Jorge Iván Vélez Arocho, underlined the importance of this celebration at UPRM as an opportunity to fortify mobility in the Caribbean strongly and effectively. It was at UPRM, after all, that four decades ago the first UNICA general meeting was held.

The Director of CoHemis, Dr. Fernando Gilbes Santaella, emphasized that CoHemis was also celebrating its sixteenth anniversary and outlined the similarities and objectives of each organization. During a presentation of gifts from CoHemis to the incoming and departing presidents of UNICA, Dr. Gilbes declared, “In this place, on this date, sixteen years ago, a group of delegates from various countries in this hemisphere founded CoHemis with a mission similar to UNICA.

The conference was attended by presidents and chancellors from 40 universities and research institutes throughout the Caribbean.



SciTeCC 2007 (from page 1)

in bioprospecting and the field of synthetic biology, and the use of these fields to solve problems. How to turn these important discoveries into prototypes for economic development and problems related to the issue of intellectual property were also discussed.

The congress included a poster session on research being carried out in Puerto Rico involving the discovery or application of bioprospecting, and an educational workshop was offered to K-12 to university level on using synthetic biology tools and bioprospecting concepts to solve problems.

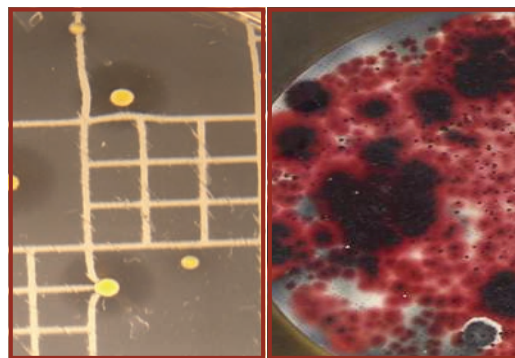


Dr. Tamas Torok, Researcher for the National Laboratories in Lawrence Berkeley, California, was the main speaker of SciTeCC 2007

Similar to last year, students and faculty from an assortment of educational centers on the Island were presented at SciTeCC 2007. So we met one of our most important objective: to serve as a platform to develop networks of communication and collaboration in science and education.

This activity was transmitted live via webcast so it could be shared by all members of the CoHemis consortium throughout the hemisphere.

Website: cacique.uprm.edu/scitecc



Dr. Tamas Torok, Researcher for the National Laboratories in Lawrence Berkeley, California, was the main speaker of SciTeCC 2007

CoHemis joins the CaRA efforts

We could say that the only thing Caribbean countries share is the ocean. Therefore it is extremely important to develop strategies to understand and preserve marine resources throughout the region. Keeping this in mind, the United States began a movement to increase security of the nation's oceans and coasts, as well as to improve the management and sustainable use of marine resources. To carry out this task, eleven regional associations were created to be assisted by the National Oceanic and Atmospheric Administration (NOAA). The Regional Caribbean Association (CaRA) was established in 2005 as part of this effort, to set up an integrated regional coastal observation system.

CaRA's main objectives are to: improve Caribbean weather forecasting, protect and restore marine ecosystems resourcefully, and to optimize the security and efficiency of naval operations in the area. CaRA is operated by the Research and Development Center at the Mayagüez Campus of the University of Puerto Rico (UPRM)

in collaboration with the University of the US Virgin Islands. This organization was made official on December 4, 2007 through a collaborative agreement between UPRM, the Department of Natural and Environmental Resources (DNER), the government and the University of the US Virgin Islands.



From left to right: Dr. LaVerne E. Ragster, President of the University of the Virgin Islands; UPRM Chancellor, Dr. Jorge Iván Vélez Arocho; Secretary of DRNA, Javier Vélez Arocho; and Barbara Petersen, Virgin Islands Government Administrator signs the collaboration agreement.

During CaRA's first general meeting carried out in San Juan the Chancellor of UPRM, Dr. Jorge Iván Vélez Arocho, signed the agreement and stated that "decisions based on information gathered from precise data and research is essential to work effectively with complex systems. This initiative will establish and fortify our platform to manage Caribbean coasts together. Our institution sincerely supports this project". The agreement was endorsed by the Chancellor, the Secretary of DNER Javier Vélez Arocho, Dr. LaVerne E. Ragster, President of the University of the Virgin Islands and Barbara Petersen, Administrator of St. Thomas

(continues on page 8)

Fifteen years of research at Mayagüez Bay

Mayagüez Bay has served as a natural laboratory for the development of a long list of research sponsored by diverse state and federal agencies, including NSF, NASA, NOAA, USGS, EPA, and Puerto Rico's Department of Natural and Environmental Resources. Three rivers discharge into the bay (Añasco, Yaguez, and Guanajibo). These rivers carry large amounts of sediment and nutrients during heavy rain periods that can last from August until November. This discharge is reduced during dry months (January through May) but benthic marine material is still brought to the surface by the strong currents produced by cold fronts reaching us from the northern hemisphere. Additionally, Puerto Rico's Aqueduct and Sewer Authority discharges products from their water treatment plant to the bay. Water treatment procedures have changed throughout the years as have the effects of these processes on the bay.

These processes have been studied by an extensive list of professors and students from the University of Puerto Rico at Mayagüez (UPRM) over the last fifteen years. In the early 1990's NASA sponsored a project in the bay to understand the relationship between terrestrial and oceanic processes through remote sensing. However due to technological limitations at the time this project went unfinished. Recently, however, with new sensors and increased scientific understanding NASA and NOAA have sponsored new projects to continue the work started fifteen years ago. The application of remote sensing and geographic information systems to understand processes that relate the earth to the ocean is now a reality, though this attempt is just beginning.

By the end of the 1990's CoHemis and Puerto Rico's Water Resources Institute began a collaborative project to study the Mayagüez Bay watershed with funds provided by the EPA. This project was unique in that it included the participation of an assortment of public groups to select proposals, evaluate projects, and provide recommendations. This helped ensure scientific studies where in tune with the region's needs. Despite the scientific information we have collected on Mayagüez Bay and the important results that were produced by this research, the dissemination of this information has been limited. Most work remains in scientific journals or stored in thesis binders somewhere in UPRM's library, difficult to access by the public. Therefore CoHemis decided to organize a symposium about Mayagüez Bay to focus on oceanographic research carried out in the bay over the last fifteen years.

continues on page 13

Remote Sensing Symposium in Costa Rica

One of the priority areas for CoHemis is Remote Sensing and Dr. Fernando Gilbes Santaella was invited to chair a technical session about the application of this tool in marine ecosystems studies during the 32nd International Symposium on Remote Sensing of the Environment. This symposium took place in San José, Costa Rica, on June 25-29 of 2007 and over 500 people from around the World attended it. Other plenary and technical sessions covered Global Earth Observations Systems of Systems (GEOSS), terrestrial ecosystems, human health, natural disasters, Lidar applications, data analysis and modeling, Earth observations advances, sensor systems, unmanned vehicle systems, biodiversity, hyperspectral data analyses, energy, climate, weather, water cycle, agriculture, and education. The symposium also had several poster sessions of these topics.

The marine technical session chaired by Dr. Gilbes was focused on coral reefs and algal bloom monitoring. Five oral talks were presented and three of those were related with research work made in the University of Puerto Rico at Mayagüez (UPRM). The first talk was given by Damaris Torres Pullitza, a former graduate student of the UPRM-Department of Geology. The work presented by Damaris was titled "Comparing Methods And Sensors For Coral Reef Habitat Mapping In South Florida, USA" and it was part of her master thesis that finished under supervision of Dr. Gilbes. She is currently working with a related project in Costa Rica as assistant researcher of the Institute of Marine Remote Sensing from the University of South Florida. Another lecturer in this session was Dr. Liane

Guild from NASA Ames Research Center and she presented the work titled "NASA Airborne AVIRIS And DCS Remote Sensing Of Coral Reefs". This collaborative work between NASA and UPRM involved field activities for sensor validation that were made in Puerto Rico by Dr. Guild, Dr. Roy Armstrong from the UPRM-Department of Marine Sciences, and Dr. Gilbes. The last presentation of the session was offered by Dr. Miguel Vélez Reyes, a professor in the UPRM-Department of Electrical and Computing Engineering. His talk was titled "Comparison Of Methods For Unmixing Of Hyperspectral Imagery In Litoral Zones" and covered part of Dr. Vélez's work in the Center for Subsurface Sensing and Imaging Systems (CenSSIS). All these presentations reflect the large active research taking place at UPRM in environmental remote sensing.

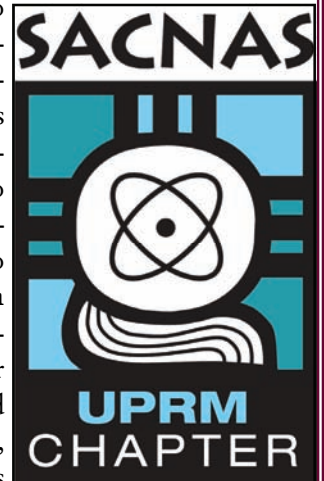
continues on page 8

Speakers who presented work being carried out at UPRM.

*Top: Damaris Torres, Geology graduate
Middle: Dr. Liane Guild, NASA researcher
Bottom: Dr. Miguel Vélez, Electrical Engineering*

Student organization SACNAS UPR-Mayagüez

In order to provide students at the Mayagüez Campus of the University of Puerto Rico with opportunities to participate in research activities, enrich their experiences and foster diversity, CoHemis became involved



Official logo

in developing and connecting a student chapter at the University of Mayagüez to the Society for Advancement of Chicanos and Native Americans in Science (SACNAS).

SACNAS's mission is to foster and stimulate Chicano/Latino and Native American students to reach graduate school, to obtain degrees necessary to carry out scientific research, develop leadership and reach careers in education at all levels.

Members of SACNAS can attend the National Convention, where seminars, workshops and mentoring are provided on how to become successful at graduate level, and where members also present their research orally or in poster sessions. The UPRM-SACNAS chapter has two advisors; one a Co-Hemis staff member, and the other a UPRM professor.

The current SACNAS chapter advisors at UPRM are Dr. Carlos Ríos-Velázquez, Co-Director of CoHemis and Dr. Omar Colón from the Mathematics Department at UPRM. This year's President was Miss Karen Díaz a student from the Biology program. The chapter was formally announced at the National SACNAS Convention in Kansas City, USA.

continues on page 14



Photos of the participants of the Summer Camp BETTeR-IC 2007



2nd Biotechnology Summer Camp for Teachers and Students

For the second consecutive summer, the Center for Hemispherical Cooperation organized a teacher and student summer camp titled: Biotechnology for Educational Training in Teams through Research and Interdisciplinary centers (BETTeR-IC), hosted by the Learning Science and Mathematics Alliance (AIACiMa in Spanish). Twenty-eight high school students participated in this camp, as well as four teachers from the Teacher Preparation Program at the University of Puerto Rico, Mayagüez (UPRM), four international teachers, three of these UPRM science graduates and one teacher representing the Provincial Institute of Middle Schools and the Faculty of Applied, Physical and Natural Sciences from the University of Cordoba in Argentina.

Educational teams of seven students, one PPM teacher, one international teacher and one student mentor from the Industrial Biotechnology program, attended workshops and presentations given by fifteen professors and researchers from a variety of university centers in Puerto Rico, on topics including: nanotechnology, genetic engineering, ethics, bioprospecting, synthetic biology and other branches of biotechnology.

Participating teachers also participated in workshops on planning, team work and scientific fair projects. Similar to the process last fall, students presented posters while participating teachers presented an educational unit on one of the four interdisciplinary topics discussed: ethics and chemistry, engineering, marine biotechnology and business, and the fourth topic centered on microbacterial, environmental and plant biotechnology. Presentations were held in a virtual classroom with participating students playing the part of pupils during the class.

A panel on education in Latin America was also organized as part of the activities included in BETTeR-IC to discuss education models, and the experiences of teaching and learning in varied countries and cultures. With the main theme "Learning Biotechnology Actively as a Team", this camp provided participants with new educational and professional alternatives, in particular educational experiences to facilitate classroom learning and team work.



SUMMER CAMP BETTeR-IC 2007

CoHemis joins the CaRA efforts *(from page 4)*



CaRA's First General Assembly, from right to left, Secretary of DNER, Javier Vélez Arocho; Chancellor UPRM, Jorge Iván Vélez Arocho; Barbara Petersen, Virgin Islands Government Administrator; Jorge Corredor, Marine Science Professor UPRM; LaVerne E. Ragster, President of the University of the Virgin Islands and Julio M. Morell, Principal Investigator of CaRA. Behind, Professor Roy Watlington, Project Co-Researcher of the University of the Virgin Islands.

(government of the US Virgin Islands). NOAA and the interagency OCEAN.US among other organizations also sponsor this initiative. Other organizations, including CoHemis, took advantage of this event to offer letters of intent. The Director of CoHemis, Dr. Fernando Gilbes Santaella, participated in the activity and also signed the letter. He added "as an oceanographer I understand the importance of this effort and how necessary it is for this work to be carried out by CaRA. Our Center, which has a consortium of 49 institutions, including many in the Caribbean, will be available to provide assistance and support as required. We wish you the best of luck..."

Remote Sensing Symposium in Costa Rica *(from page 6)*

CoHemis is fully committed with promoting and transferring this important technology. Therefore, Dr. Gilbes took the opportunity of this trip to contact people working in this field from the Universidad de Costa Rica, a member of the CoHemis Consortium. During the symposium he met Ms. Ana Fonseca, a researcher from the "Centro de Investigación en Ciencias del Mar y Limnología" (CIMAR). Ms. Fonseca is working, among other projects, with the application of remote sensing to coral reefs management in Costa Rica. Her work is an example on how this technology is being applied in that country for sustainable development, another key topic for CoHemis. Because of her research experience, Dr. Gilbes invited her to visit UPRM and participate in the annual meeting of Remote Sensing and Geographic Information Systems organized by CoHemis in Puerto Rico. She was very pleased with the invitation and they both agreed in seeking the necessary funding to make it possible. This collaboration between CoHemis and CIMAR could help to promote other educational and research activities between UPRM and UCR, as stated in our actual memorandum of understanding.

Products generated by CaRA will be used by sectors related to marine systems, including commercial, recreational and research navigation, as well as state and federal agencies in need of assistance to manage resources. "All users, recreational, commercial, academic or governmental, will have access to oceanic data gathered and distributed by CaRA", stated Julio Morell. Two websites contain information relevant to the project:

<http://cara.uprm.edu>

<http://caricoos.org>

Accreditation Workshop in República Dominicana and Ecuador



Dr. Miguel J. Escala, Chancellor of INTEC and Dr. Jorge I. Vélez Arocho, Chancellor of UPRM.

Santo Domingo, Dominican Republic

CoHemis coordinated two workshops at the Santo Domingo Institute of Technology (INTEC), March 15 - 16, 2007. Mrs. Lueny Morell, Director of Latin American University Relations from Hewlett Packard, in conjunction with Dr. John Lamancusa, Director of the Learning Factory at the University of Pennsylvania, US, offered the first part of a workshop focused on innovation and reform of the Engineering curriculum. The workshop was entitled "Bringing the Gap between How We Teach and the Practice of Engineering". They returned to the Dominican Republic on April 2-3, 2007 to present the second part of the workshop on Quality Guarantee and the Accreditation of Engineering Schools, "The Importance of QA and Accreditation to Achieve Excellence". Dr. Miguel J. Escala, Chancellor of INTEC and Dr. Indhira de Jesús, Dean of Engineering hosted and coordinated both workshops.

continues on page 13

First meeting of USDA-CSREES

Molecular studies have demonstrated that 1% of microorganisms can be cultivated, leaving 99% these as an invaluable source of new microbial groups that can be used in biomedical applications. Emerging science and technology including Geomicrobiology, which studies the impact of microorganisms in different geological environments, and Metagenomics, which studies total genomes in a community and their interactions, have facilitated the study and analysis of various environments.

In order to study the potential of soils in Puerto Rico, primarily in forests, and to prepare a generation of scientists to work in this area, the first meeting of researchers and students involved in "Geomicrobiological and Metagenomic Studies of Puerto Rican Soils" (GeMS) was held at the University of Puerto Rico at Mayaguez from September 21-22, 2007. This event was hosted by the Cooperative State Research, Education and Extension Service (CSREES) of the US Department of Agriculture. (USDA).

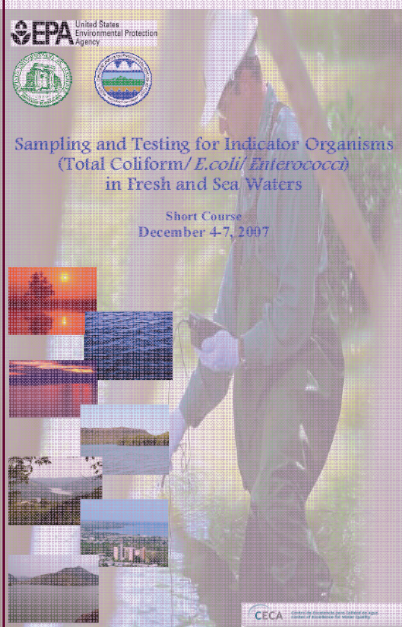
The proposal is to combine these emerging sciences in an effort to conserve natural resources, particularly our forests, and actively disseminate this information from K-12 to university levels. This important project includes collaborators from various universities in Puerto Rico and the US, including other USDA agencies such as the Forestry Service. During this first meeting students heard presentations focused on metagenomics, geomicrobiology, conservation, forests, soils and services offered by participating USDA agencies.

Furthermore participants attended workshops on how to generate metagenomic libraries of soil samples. Scientific forums on these topics will soon be developed as will opportunities for members of the CoHemis consortium to train in these new technologies. Webpage: www.cohemis.uprm.edu/gemspr

Photos from top to bottom: group attending talks and workshops; speaker Mrs. Aleida Ruiz Aulet, USDA Service APHIS; and the project's official logo.



Water Quality course (CECA)



From December 4-7, 2007 a course on "Sampling and Testing for Fecal Coliform and Enterococci in Fresh and Sea Waters" was offered at UPRM. This course was part of an arrangement between the UPRM, the Pan American Health Organization (PAHO), and the US Environmental Protection Agency (USEPA) to establish a Center for Excellence in Water Quality (CECA in Spanish). The point of the center is to provide education and training to countries in Latin America and the Caribbean on methods and technology to tackle water quality concerns.

This short course covered techniques on how to collect water samples (superficial, recreational, underground, and potable), and how to store, transport, manage, analyze and particularly

how to detect and count important bacterial indicators of water quality such as coniforms, fecal coliforms, and enterococci. A first course was delivered initially at UPRM by EPA staff in January 2007. A second course from December 4-7 was delivered by UPRM faculty and staff, and observed by EPA. Dr. Carlos Ríos-Velázquez participated and helped organize both courses.

Professionals from Antigua, Belize, Trinidad and Tobago, St. Lucia and Puerto Rico took part in this course. The participants evaluated the course as excellent and with active participation. Further information can be obtained on the Institute of Water Resources and Environmental Research at Puerto Rico's website (www.ece.uprm.edu/prwre/ceca) or by writing to prwre-ri@uprm.edu.

Specialist from Costa Rica presents at fifth PRYSIG meeting



A group of specialists listened attentively to the speakers.

Technological advances produce new and improved research tools to facilitate our understanding of natural and man-induced processes. Remote Sensing and Geographic Information Systems are examples of such tools. CoHemis has taken on the task of disseminating and promoting these tools to increase our understanding of their abilities and to increase their use. Rapid changes on our planet require the use of tools and procedures to study, monitor and plan more efficiently. Remote Sensing and Geographic Information Systems allow us to improve our management of scientific to political information.

Following its tradition of the last four years, CoHemis held its fifth national Remote Sensing and Geographic Information Systems reunion (PRYSIG 2007). Original projects were presented at this event and different groups of community participated and benefited from this important exchange of ideas. The workshops offered were designed used available tools to provide a hands-on experience and offer credits for continued education. The objectives of PRYSIG 2007 were to:

1. Continue the education process we began in 2003.
2. Unite specialists from academia, government and private industry.
3. Disseminate information for those interested in these themes.
4. Serve as a forum to exchange ideas, develop cooperative projects and coordinate projects carried out in Puerto Rico.

The program consisted of ten conferences that covered recent projects. These included new internet databases

using ArcIMS, hyperspectral remote sensing, photogrammetry, and the environmental and social application of these tools, among others. An addition, for the first time the event included a presentation on the "Environmental Application of Geographic Information Systems and Remote Sensors in Costa Rica" from a specialist in Costa Rica. CoHemis and the Universidad de Costa Rica (UCR), member of our consortium, joined forces to bring Ms. Ana C. Fonseca Escalante researcher from the "Centro de Investigación en Ciencias del Mar y Limnología" (CIMAR) to PRYSIG 2007.

CIMAR is a multidisciplinary scientific research unit assigned to the Vice-Rectoría of Research at UCR. The scientific group is composed of specialists from the university's various academic units. Since 1979 this center has carried out research on Costa Rica's aquatic ecosystems, with an emphasis on aquatic biodiversity and processes related to sustainability, including the evaluation of environmental pollution, studies on environmental impact and prospecting non-traditional resources. These scientists have produced a great deal of the scientific information available on the Gulf of Nicoya, Gulf Dulce, coral reefs, mangroves and freshwater systems in the country. The center provides facilities that graduate students from UCR and other universities in the country can use to carry out graduate and postgraduate studies. As in the case of Ana

Fonseca, who specialized in the ecology of coral reefs and geoinformatics. Ana Fonseca describes her participation in PRYSIG 2007:

"My stay in Puerto Rico was rewarding. I received a warm and respectful reception and I felt like an important part of the team. The workshop exceeded my expectations. I had an opportunity to present information about Costa Rica to an attentive and engaged audience. I learnt a lot from the other interesting work that was presented and I met many welcoming people in the same line of work. I spoke about the work we are doing at CIMAR and UCR and probed collaborative opportunities between the universities. The workshop was instructive and refreshing. Overall the activity was well organized, pleasant and entertaining. My congratulations and thanks to the organizers for this invitation."

present information about Costa Rica to an attentive and engaged audience. I learnt a lot from the other interesting work that was presented and I met many welcoming people in the same line of work. I spoke about the work we are doing at CIMAR and UCR and probed collaborative opportunities between the universities. The workshop was instructive and refreshing. Overall the activity was well organized, pleasant and entertaining. My congratulations and thanks to the organizers for this invitation."

Website PRYSIG 2007: cacique.uprm.edu/prysig

Website UCR: www.ucr.ac.cr

Website CIMAR: www.cimar.ucr.ac.cr



Dr. Aurelio Castro offered the GIS workshop.

Cádiz joins Olé RUM

The Program of Studies in Spain has been so successful that the University of Puerto Rico continues its efforts to increase the number of universities that welcome our students. The University of Cádiz (UCA) recently joined this list. This University, set on the coast, was founded in 1979 following a long historical process of education in this city influenced by local shipping and commercial activities. UCA has four campuses on the peninsula: the Campus of Cádiz, Campus of the Bahía de Algeciras, Jerez de la Frontera and Río San Pedro in Puerto Real. The University offers careers in Business Science, Medicine, Marine Science and various Engineering specialties.

As we have done with other universities included in our Study in Spain project (Olé-RUM), CoHemis planned a trip to Cádiz to visit UCA and meet staff at the Office of International Relations. On this occasion Mrs. Yamarie Hernández-Bonet visited UCA on behalf of CoHemis. An annual trip to Spain is carried out to follow up our agreements with Spanish universities and meet with UPRM students currently studying there. This trip took place from April 14-21, 2007. The visit to UCA allowed us to become familiar with the educational environment, courses and administration. According to Yamarie, "This University will offer our students a pleasant environment. For students that cannot leave the sand and sun, Cádiz is a good option". After visiting Cádiz we can add it to our Olé-RUM project orientation to encourage students to consider this destination.

The city of Cádiz is relatively easy to visit from anywhere in the world. Once you reach Madrid you take a train or fly to Jerez de la Frontera. From there you can take a bus or train to the city of Cádiz. You can access the old city through the roman arched walls of San Carlos, a walled city similar to many Spanish buildings in the new world. From the Paseo de la Alameda Apodaca, in front of Genovés Park, you will see a spectacular view of the bay. "The walkways, cafes, restaurants, places of interest like



Yamarie Hernández visited this coastal city in Spain.

Caleta beach, San Sebastian Fort, walls, sand and sun, and narrow cobble-stoned streets make you feel at home" stated Yamarie upon her return. "Local people are easy to approach, they are talkative like us so you can learn more about the city through them" she illustrates. For more information about UCA and its academic program visit their website at www.uca.es.

Grants Awarded

We would like to congratulate students of the Olé RUM Study in Spain project that have received important grants as a result of their studies that will help them during their semester in Spain. Angélica Santiago from the Hispanic Studies and Psychology Department received the Center for Studies in Latin America (CEAL) Grant, the Special 150 Anniversary Grant from the University of Puerto Rico and the Santander Grant.



Angélica Santiago

Sergio Ortiz-Ortiz from the Biology Department received the Pfizer Grant awarded by Pfizer Pharmaceutical Puerto Rico to students in science who maintain an excellent academic average. He also received the Benjamin A. Gilman International Grant awarded by the US State Department, the Department of Education and Cultural Affairs and the Institute of International Education.

Alberto J. Goyco De Vera, a third year psychology student, received the Sánchez Hanna Grant awarded to students from particular towns in the north of Puerto Rico.



A view of the streets of Cádiz.

Community Alliance for Education in Renewable Energy (ACEER) *(from page 1)*



Collage of photos taken of activities during various ACEER conferences

As a member of the organizing committee, CoHemis helped program and deliver four conferences at the Mayagüez Cultural Center in 2007. There were aimed at an assorted audience and included exhibits and demonstrations on renewable energy. This series continues in 2008 culminating with the CoHemis International Conference of Green Communities to be held at the University of Puerto Rico, Mayagüez (UPRM) from June 18-20.

The first conference titled “Reducing the cost and consumption of energy on the Planet and in Puerto Rico” was presented February 3, 2007. Over 300 people participated in this event including government representatives and the Director of Puerto Rico’s Electric Power Authority. An array of citizens was in attendance. Six speakers spoke on the vast potential of renewable energy to assist the economies of Puerto Rico and other countries. Topics included: decreased energy consumption and costs in other countries, the economic state of the power sector in Puerto Rico, production of energy in Puerto Rico, current legal structure and future

options to reduce energy consumption and costs on the island. “Generating Electricity with Solar Energy” was the topic of the second conference held April 21, 2007. Dr. José Herrero Rueda from the Research Center for Energy, Environment and Technology (CIEMAT in Spanish) from Spain was our guest speaker. He spoke on the “Potential of Photovoltaic Solar Energy in Spain”. Various solar energy users in Puerto Rico spoke about their experiences with solar technology during this talk. In addition, solar equipment companies exhibited their products at the Plaza in Mayagüez and oriented the public on costs and installation.

The third conference offered August 18, 2007 covered “Generating Electricity with Wind Energy”. Enrique Soria Lascorz, also from CIEMAT in Spain, spoke on the “Current Situation of Eolic Energy”. Other professors at UPRM also spoke on eolic energy. The event closed with an interesting debate on the topic when questions posed by the public were answered by presenters.

“Generating Energy with Biofuels” was the focus of the fourth conference held November 10, 2007. Once again hundreds of people from various sectors of the community attended this conference demonstrating the interest our town has in renewable energy. The potential of using used oil (as biofuel) for transportation was discussed. The information generated by these conferences can have a global impact; therefore CoHemis is hosting the ACEER website in order to expand the educational capacity of these activities. Please visit our website for information on ACEER conferences, alliance groups, educational material, legal matters and other links related to energy at: <http://cacique.uprm.edu/accer>

IN THE NEXT EDITION: CoHemis International Conference of Green Communities ◊ 6th PRYSIG Conference ◊ 3rd Summer Camp BETTeR-IC ◊ ACEER ◊ 2nd USDA-CSREES Meeting ◊ Industrial Biotechnology Symposium ◊ SACNAS UPRM - Chapter Initiation

Fifteen years of research at Mayagüez Bay *(from page 5)*

This activity was carried out March 16, 2006 as part of CoHemis' fifteenth year anniversary. The symposium took place at the Eugene Francis Hall at UPRM, a wide assortment of groups from the community was present and it was dedicated to Captain Dennis Corales. Captain Corales began his employment as a laboratory and field technician with the Marine Biology Division of the Puerto Rico Nuclear Center in 1972. Between 1975 and 1976 this center changed its mission and became the Center for Energy and Environmental Studies. Dennis continued his work with the Marine Biology Division where he was in charge of aquatic operations, piloting boats and managing sampling equipment. He worked with a long list of researchers. He was later transferred to the Marine Science Department at UPRM where he became Captain of the Research Vessel Sultana. Meanwhile he also worked part-time for the US Fish and Wildlife Service in Cabo Rojo, a position he still maintains and enjoys today. He took his last trip to Mayagüez Bay as captain of the Sultana on December 6, 2005, the year he retired from UPRM.



A group of researchers thank Captain Corales and relate their study and research experiences with him.

The symposium, consisting of twelve presentations, was divided into four sections: background and general characteristics, plankton dynamics, optical properties, and remote sensing. Many well-known Puerto Rican researchers were present at this activity including Dr. Vance P. Vicente, Dr. Juan G. González, Dr. José M. López, Dr. Jorge R. García, and Dr. Jorge Capella. Previous and current graduate students from UPRM also presented results of their theses research at the bay. This symposium truly demonstrated how much we have advanced in our understanding of the Mayagüez Bay over the last fifteen years. Participants suggested more activities such as these are needed to promote an understanding of our coastal waters. Speakers agreed to publish their findings in a book to be edited by CoHemis. Further information on this symposium can be found on our website.

Accreditation Workshop in República Dominicana and Ecuador *(from page 8)*

Guayaquil, Ecuador

A workshop on "The Importance of QA Accreditation to Achieve Excellence" was carried out at the Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil, Ecuador from September 12-14, 2007 by Mrs. Lueny Morell, Dr. Jorge I. Vélez Arocho and Dr. Pedro Resto, Director of the Office of Continued Improvement and Assessment at UPRM. During his visit to Guayaquil, Dr. Jorge I. Vélez Arocho, signed an agreement between ESPOL and UPRM.



Dr. Moisés Pacle Galárraga, Chancellor of ESPOL and Dr. Jorge I. Vélez Arocho, Chancellor of UPRM, signed an agreement between ESPOL and UPRM.

International Students: Realizing a dream to return to Colombia



Roger H. Valle Molinares

Roger H. Valle Molinares is from Barranquilla, Colombia and has accomplished at thirty years of age what many dream but few dare. Through dedication and sacrifice in this foreign land, Roger, has been able to balance graduate studies, his family (his wife Claudia Tapia is also a graduate student in Biology), and three small children.

Roger studied Biology at the Universidad del Atlántico, in Colombia, and just completed his master's degree in the Biology Department at UPRM. He chose to study at UPRM because he wanted to pursue his studies somewhere with research profiles compatible with his expectations and interests. "I became involved in research when I was an undergraduate and since then I wanted to continue graduate studies in science. Some of my undergraduate professors graduated from the UPR system and their research and teaching practices speak very highly of this university", explains Roger.

Roger says Puerto Ricans have been very hospitable during his time in Puerto Rico, and the surroundings are similar to his home town Barranquilla, also located on the coast in a tropical climate. However, the education system at UPR is very different from Colombia. "At UPR each semester you have the flexibility to decide which courses you want to take, in Colombia once you register in a career you know exactly which courses you will take each semester until your studies are complete".

When we asked Roger if he would like to stay in Puerto Rico, he replied "this is truly a beautiful country, but I have longed to return to my country since I left. One of my dreams is to teach at the University where I completed my bachelor's degree in Biology and Chemistry. Few students there have access to resources and, like myself, they must work hard to achieve their goals. I would like to help others achieve the dreams they may believe unachievable.

The friends Roger has made here have been the best part of the experience "They accepted me as their own and helped me in times of need without expecting anything in return. My friends are the best. If I had to recommend UPRM I would say it is one of the best universities in Puerto Rico and the human spirit here is crucial to surviving the distance between you and your family". Roger encourages students from UPR to visit his country Colombia: "there are beautiful places, a walled city, Cartagena, and a national park with untouched beaches and indigenous cultures that are still preserved. The doors are open to anyone that wants to visit".

Student Organization SACNAS UPR-Mayagüez *(from page 6)*

During their first semester in session, the SACNAS UPRM board developed presentations and workshops on emotional intelligence, developing leadership and teamwork, giving effective oral presentations, criteria to consider when applying to graduate school, choosing a university or research laboratory, among others. Additionally, the chapter has been involved directly with the University's Institute for Community Development where they provide support, including mentorship, to various communities in Puerto Rico. Further information on the activities of SAC-NAS can be found at <http://www.sacnas.org/>.

Dr. Fernando Gilbes Santaella and Dr. Carlos Ríos Velázquez, Directors of CoHemis, participated in the first SACNAS UPRM chapter meeting.





CoHemis was created to promote and facilitate the development of human resources, technology and programs that help organize research and educational initiatives in science and engineering to benefit countries in the western hemisphere. To accomplish this mission we focus our efforts on different priority areas, one of which is sustainable development. For this reason CoHemis presents:

CoHemis International Conference on Green Communities (CICGC)

June 18 – 20, 2008

The Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Science (CoHemis) will celebrate the *International Conference on Green Communities* (CICGC) next **June 18-20, 2008** at the University of Puerto Rico, Mayagüez Campus.

Important engineering, scientific, societal and educational issues of green communities will be presented and discussed by well-known international experts in these fields. For additional information about how to participate or submit abstracts, visit the conference web page at <http://green.uprm.edu>.

Over 300 participants from different countries are expected to attend this event; including many from the 49 organizations members of the CoHemis Consortium around the World. The conference will have simultaneous translation in English and Spanish.

Some of the main topics that will be covered are: the Leadership in Energy and Environmental Design (LEED) Certification, Engineering and Architecture Strategies, Waste Management and Recycling, Water Management, Energy Conservation, Transportation, Green Universities, Buildings and Homes, Public Policy, among others. Continuing education contact hours will be available for participants.

green.uprm.edu

THE OTHER SIDE OF COHEMIS



We work hard but also take time to enjoy and share

About us CoHemis... Al Día

CoHemis... Up date is the informative bulletin for the Center for Hemispherical Cooperation in Research and Education in Engineering and Applied Science (CoHemis). The center is hosted by the Office of the President of Puerto Rico and the University of Puerto Rico at Mayagüez. It is published in English and Spanish and is delivered free of charge to organizations and individuals that contribute to the cooperation, education, evaluation or technological research in the Americas.

Editing and Set Up:

Johanna V. Dávila Vélez
Writing and Edition:
 Carlos Ríos Velázquez
 Fernando Gilbes Santaella
 Yamarie Hernández Bonet
 Johanna V. Dávila Vélez
 Zoraida Arroyo Figueroa
 Oficina de Prensa del RUM

Photos:

CoHemis staff
 Oficina de Prensa del RUM

Translations:

Gail Ross
 Fernando Gilbes Santaella
 Carlos Ríos Velázquez

Johanna V. Dávila Vélez
Co-Direction of CoHemis:
 Fernando Gilbes Santaella
 Carlos Ríos Velázquez
Coordinator:
 Yamarie Hernández Bonet
Administrative Personnel:
 Zoraida Arroyo Figueroa
 Johanna V. Dávila Vélez
Students:
 Zoriel Ester Salado
 Annette Ortiz
 Amarylis Vélez
 María Emilia Vidal
Mailing Address:
 P.O. Box 9034

Mayagüez, PR 00681
Physical Address:
 Office102, Main Building
 Research and Development Center
 Hwy. 108 Km. 1 Miradero
 Mayagüez, PR 00680
Telephone:
 1-787-265-6380 (direct line)
 1-787-832-4040 (RUM directory)
 Exts. 2207, 3755
Fax:
 1-787-265-6340
E-mail Address:
cohemis@ece.uprm.edu
Website:
cohemis.uprm.edu

