DEO Message

Dear Alum:

After more than a decade of service, Professor Marc Armstrong decided to step down as chair of the department. During his tenure as chair the department: refined its core mission around the theme of human and environment interaction informed by GIScience; gained six outstanding new faculty; competed successfully for external research funds; strengthened ties across campus; and enhanced our standing within the university and the discipline at large. As a result, the department is strong and focused. We are very grateful to Marc for his hard work and dedication to the department. It is also apparent that the College of Liberal Arts and Sciences values Marc’s work, as he postponed a well-earned sabbatical to act as interim chair of two other departments, Communication Studies and Cinema and Comparative Literature. Please drop Marc an email and thank him for the great job he did steering the department into the 21st century.

It is now my pleasure to present to you the department’s semiannual newsletter. For those of you who do not know me, my name is Dave Bennett, and I assumed the position of department chair this summer. I am, like you, a Geography@UI alum, and like some of you, I am a native Iowan. When you have a chance visit my webpage at http://www.uiowa.edu/~geog/faculty/bennett.

In the following newsletter you will read about our accomplishments, but let me share a few of this year’s highlights with you here:

Professor Ramanathan Sugumaran (a.k.a. Sugu) joined us from our Regents’ partner to the north, the University of Northern Iowa. Sugu brings with him a wealth of experience in teaching and research and we are delighted to have him here at UI.

We are very excited about our new interdisciplinary major in Environmental Policy and Planning. The focus of this program is on the role that humans play in environmental problem solving. Political Science and Anthropology collaborate with us in this effort.

The department continues to attract great undergraduates who travel worldwide to make the planet a better place. You can read about some of these students in the Undergraduate Student Spotlight and Meet an Alum sections.

We are now in our second year of our NSF funded IGERT PhD program, referred to as “GEEMaP.” You will meet some of our outstanding “IGERT trainees” in the Graduate Student Spotlight.

Raj’s India Winterim program continues to grow. He has now taken more than 500 students on his annual trip, all returning with extraordinary tales and a significant intercultural experience.

Finally, we continue to compete successfully for research grants on a variety of topics important to society and science. For more detail on some of these, please read the examples in the Current Faculty Projects inset box.

In sum, we are proud of our accomplishments and I hope you are proud to be an alumnus of Geography@UI too.

Funding does, however, remain a significant challenge. You can help. Through a donation to your department you can reach out to students in the program and enrich their overall experience so that 1) an undergraduate student can afford a study abroad course, 2) a graduate student can present his or her research at a conference, or 3) our department could bring a noted scholar to campus to present at the annual Rex Honey Speaker Series or the James Lindberg seminar. Please contribute today by visiting, http://www.givetoiowa.org/geography.

And thank you.

David Bennett, Professor and Chair, Department of Geography
New Faculty

Dr. Ramanathan Sugumaran joined the Geography department as a full professor in the Fall of 2012. He obtained his Ph.D. in Geography from the University of Edinburgh, United Kingdom. Dr. Sugumaran has over twenty years of research experience in the theory and application of Geographical Information Science (GIScience) to solve real-world problems, particularly in the area of understanding complex human-environmental interactions. Some of the recent research focuses include hyperspectral and thermal image processing, LiDAR data processing using High Performance Computing, and spatio-temporal modeling using GIS & spatial decision support systems (SDSS).

Sugumaran is also currently serving as a director of the Iowa Space Grant Consortium, which is a part of the NASA national space grant consortium. The major goal of ISGC is to coordinate and improve Iowa's future in aerospace science and technology and to stimulate aerospace research, education and outreach activities throughout the state.

Current Faculty Projects

Tracing the Link between MRSA and CAFO’s

Margaret Carrel is working with faculty in the College of Public Health’s Department of Epidemiology and the VA’s Center for Comprehensive Access & Delivery Research to explore the potential relationship between Methicillin-resistant Staphylococcus aureus (MRSA) diagnosis at the time of admission to the VA Hospital and residence near confined animal feeding operations (CAFOs) in Iowa. Undergraduate geography major, Austin Dunn, is being funded by the Iowa Center for Research by Undergraduates to participate in this research. Carrel is also working with faculty in Epidemiology to understand spatial patterns of MRSA versus drug-susceptible Staphylococcus aureus in Iowa.

Policy-Relevant Watershed Research in the Dominican Republic

Heather Sander and Geography Ph.D. student Jerry Mount are working with Riverside Technology, Inc. on a project contracted through the USAID-The Nature Conservancy Environmental Protection Program. This project aims to assess the hydrological water balance and sediment loads of the Yaque del Norte, Nizao, Haina, and Ozama Watersheds in the Dominican Republic as a function of land use under alternate policy and climate change scenarios. The results of this study will provide scientific information to decision-makers, allowing them to implement the policies that most benefit individuals invested in the watershed, considering climate change adaptation.

Promoting Access to Remote Sensing Data in Iowa

Ramanathan Sugumaran oversees a five-year project funded by USGS/AmericaView. IowaView is an affiliate member of the AmericaView Consortium, a nation-wide partnership between the U.S. Geological Survey and the AmericaView Consortium. The mission of IowaView is to build partnerships and infrastructure in Iowa to facilitate the availability, timely distribution, and utilization of remote sensing data to the community in Iowa. In addition, it also demonstrates and documents the benefits of remote sensing education, research, and outreach activities to local decision-makers.

Using Ontologies for Geolocating Features

Kathleen Stewart, assisted by Geography Ph.D. students Emily White and Junchuan Fan, is investigating the role of ontologies to support semantic reasoning about features distinguishable in overhead and ground-based imagery in order to aid geo-locating the images. The ontology models a range of features including hydrography, surface geology, land cover, plants, and features from the built environment.

Stewart is also involved with other University of Iowa departments. Currently she is working with colleagues in the Carver College of Medicine and Pedram Gharani, a Geography MA student, on estimating spatial access to infertility care for UIHC IVF clinics. She is also developing a GIS-based flood evacuation information system for the University of Iowa. Ph.D. students Shane Hubbard and Junchuan Fan are working on this web-based real-time decision support system. Stewart and Marc Linderman are collaborating with The University of Iowa Office of Sustainability on a project to determine potential locations for biomass fuels as a potential fuel source for the University. Undergraduate student Austin Bell is assisting with mapping tasks for this project.
The Integrative Graduate Education and Research Training (IGERT) program is funded by a grant entitled “Geoinformatics for Environmental and Energy Modeling and Prediction (GEEMaP).” The objective of the GEEMaP project is to train Ph.D. students in core geoinformatics areas (e.g., geographic information science, spatiotemporal statistics, remote sensing, and dynamic simulation) and to provide research experience. The Department of Geography currently has three graduate students in the program.

First-year IGERT graduate student Cristina Munoz has centered her research interest around community vulnerability and resilience to natural hazards and toxic hazards using methods that incorporate the social and physical sciences. Munoz also has a keen interest in applied research such as community-based participatory research (CBPR) and how it may enhance quantitative analysis when appropriate. Her mentor is Eric Tate with whom she has completed research on flood vulnerability/resilience/sustainability indicators, assessment of uncertainty and sensitivity in geospatial models, and GIS modeling for flood hazard mitigation.

Patrick Bitterman, a second-year Ph.D. student in Geography, is a trainee in the University’s IGERT program. Bitterman’s research focus is on modeling social-ecological systems, with an emphasis on tradeoffs between system resilience and sustainability, as well as changes in system states due to climate change, resource depletion, and economic perturbations. His other interests include urban–rural linkages, social equity, and uneven development and resource distribution given low-growth, post-fossil fuel economic scenarios. Bitterman has also been involved in an NSF Coupled Natural Human Systems grant, titled People, Water, and Climate: Adaptation and Resilience in Agricultural Watersheds. With general direction from the grant’s principal investigator, Dave Bennett, Bitterman has created an agent-based model that links agricultural land use decisions at the individual scale to a number of environmental, social, and economic dimensions. His future work includes using extensions of this model to operationalize resilience theory and search for thresholds within the system that, when crossed, cause the social-ecological system to transition to a qualitatively different regime. Furthermore, the model will provide insight into which policy initiatives can be put into place to increase sustainability without imperiling system resilience. Bitterman wishes to generalize the process to create a framework by which other systems can be modeled and critical social and environmental thresholds can be discovered within various geographic contexts.

Jonathan Goergen is a Ph.D. student in the Department of Geography and IGERT Trainee for the interdisciplinary GEEMaP program. The GEEMaP program brings together students and faculty from the departments of Geography, Civil and Environmental Engineering, Computer Science, Statistics, Biostatistics and Industrial Engineering. Having a strong interest in the intersection of mitigation and adaptation to anthropogenic climate change, the applied framework of the GEEMaP IGERT program provided an excellent opportunity for Goergen to pursue his interests.

Goergen is working under the direction of Kathleen Stewart and is focusing the use of GIS to better model and understand the relationship between urban morphology and extreme heat events. Goergen’s research includes the development of an algorithm that processes LiDAR (Light Detection And Ranging) data into continuous sky view factor maps. He plans on improving this algorithm over the upcoming year and demonstrating possible applications for its use. The goal of this research fits into Goergen’s general research interests by giving insight into how society might adapt to climate change and particularly how we will cope with the increased frequency and intensity of extreme heat events.
Geography undergraduates Austin Dunn and Julia Reynolds, were both awarded Stanley Undergraduate Scholarships for International Research from The Department of Geography.

With the generous support of the Stanley-UI Support Organization and the Joan and Oscar Lara Family, undergraduate senior Austin Dunn traveled to Lilongwe, Malawi over the summer to conduct research and volunteer with a local non-profit organization. Dunn’s research entailed photographs and interviews with various stakeholders in agriculture and food security in Malawi, including subsistence farmers, non-governmental organizations, agribusinesses and government officials. The research will form the basis of Dunn’s Senior Creative Project in International Studies, which will take form as a photoessay that explores mainstream and alternative agricultural narratives in Malawi and how they are shaped by various institutions.

During his seven-week stay, Dunn lived in housing provided by the Kusamala Institute of Agriculture and Ecology and volunteered on their demonstration farm, showcasing ecological solutions for food, nutrition and environment security. Dunn gained invaluable hands-on experience in sustainable agriculture while working on various projects on the farm, including vegetable production, animal management, medicinal gardening, composting and organic pest management. The Kusamala Institute also provided connections with local communities, where Dunn was able to further learn about local perceptions of environment, agriculture and nutrition.

Dunn’s research exposed two key narratives of subsistence agriculture and food security in Malawi: the conventional narrative, shaped by colonial agricultural policies, neoliberal market reform and current government subsidies, revolves around chemical-intensive maize monocultures and consequently maize-heavy diets; while an alternative narrative, shaped by non-governmental organizations, small government initiatives and ecologically-aware farmers, seeks to establish ecological farming systems, grow a wide variety of foods and natural medicines, and improve the quality of the local environment.

Undergraduate senior Julia Reynolds spent seven weeks this past summer researching and studying abroad in the Dominican Republic. The CIC Dominican Republic Health, Nutrition, and the Environment program provided Reynolds the opportunity to live for three weeks each in two distinct communities—an urban area and the rural countryside—with a host family. During her time there, Reynolds researched the local food cultures in two communities. She was especially interested in determining the status of the nutrition transition that has plagued the Dominican Republic as a result of foreign trade agreements with the United States.

Reynolds collected local narratives of personal food consumption and perceptions of changes in food culture from community members. She also conducted participant-observation in the homes of her host families on how food was prepared. The results of her research showed that both communities experienced a change in local food cultures. In general, local diets shifted away from a natural diet of local produce and meats toward higher consumption of foreign and processed animal-derived foods. Highlights of the research project included learning how to fish and make homemade cheese, trying fresh coconut, and picking mangos and avocados from the trees.

This research project will serve as the basis for Reynolds’ senior honors thesis to complete her International Studies major. Global issues of food consumption and policy are of special interest to her, and she plans to return to the Dominican Republic before the spring semester to further develop her research on food production in the rural community. Reynolds is especially grateful for the Joan and Oscar Lara Scholarship and the Stanley Scholarship for helping to provide this incredible opportunity abroad.
This year the Board of Regents approved a new major in Environmental Policy and Planning (EPP) to be administered by the Department of Geography. Students can draw from a variety of topics including geography, anthropology, political science and economics. This multi-disciplinary approach permits students to focus on the human dimensions of environmental issues from multiple perspectives. The major has two main tracks: a policy track with more coursework in political science, and a planning track with more coursework in geography and planning. EPP is offered both as a BA and as a BS with an emphasis on GIS and statistics in the latter. Details on the new major are available on the Environmental Policy and Planning (EPP) webpage.

The India Winterim Study Abroad Program

The India Winterim program is an intensive, three-week field-based program and is open to students of all majors. The program provides students with the opportunity to learn from and directly interact with leading social entrepreneurs, non-profit organizations and academic institutions within the diverse cultural, socioeconomic, and geographic mosaic that is India.

Through the India Winterim program, students participate in one of 13 courses exploring a wide variety of topics related to Entrepreneurship, Performing Arts, Engineering, Nursing, Education, Urban and Regional Planning, Physical Therapy, Social Work, Water Resource Management, Art History, Social Justice and Law, Journalism and much more. Each course is led by a University of Iowa professor. This program has grown significantly since it began in 2006. Through the ever-expanding course content, undergraduate, graduate, and non-degree seeking students work and study in conjunction with world-class NGOs and academic institutions in learning about poverty alleviation and promotion of environmental awareness, human rights and public health.

Professor Rajagopal of The Department of Geography is the founder and director of The India Winterim program which began in 2006. Since then, over 540 students and faculty have benefited by participating in the program. It is currently managed by International Programs, in collaboration with the Division of Continuing Education and The Department of Geography.

This year, so far, we have over 210 students who have applied to go on the program. Students can find more information, including an application, here: http://study-abroad.uiowa.edu/programs/details/index.php?crse=197 and http://www.uiowa.edu/~geog/india/.
**Meet An Alum**

*Riley Gardam, Co-owner, Needle Analytics*  
*Geography, 2012*

Riley Gardam is a University of Iowa Geography Department graduate who started a business along with fellow student, Jacob Langenfeld, shortly after graduating this past May. Gardam grew up in Des Moines, where she worked alongside her parents in their family business manufacturing biodegradable packing material and fire-starters from used corrugated cardboard (much to the dismay of those packing peanut manufacturers). As her senior year at Iowa drew to a close she began to realize the value of GIS in business and began plotting the creation of Needle Analytics. She approached undergraduate Langenfeld with the idea and offered him the role of co-president. And so, on one very humid day in May, within hours of the Gardam family locking the doors and signing the papers to close their business after seven years of operation, they signed their own papers, declaring the start of Needle Analytics - a data visualization firm specializing in interactive visualizations for internal and external use, as well as GIS consulting services. Since its inception, Needle Analytics has won several grants for a compelling business plan presentation, including the Iowa Center's for Enterprise competition, the Merle Volding Business Plan competition and were honored to place as finalists in this year's Technology Association of Iowa Innovation Expo. Gardam will present this year at the Iowa Women of Innovation Conference, to be held in Des Moines, IA. For more information on Needle Analytics, please e-mail Langenfeld at jacob.langenfeld@needleanalytics.net or Gardam at riley.gardam@needleanalytics.net

We would like to hear from you, consider contributing to the *Meet An Alum* section. You can e-mail us at geographynews@uiowa.edu

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To support the Rex Honey Speaker Series, please contact professor Gerard Rushton at gerard-rushton@uiowa.edu or (319) 335-0162.

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