Faculty Spotlight

**Professor George Malanson**, along with Dale Zimmerman (Statistics) and Dan Fagre (USGS), has been awarded a grant of $219,998 from NSF Geography and Spatial Sciences for the project "Multiscale Context for Change in Alpine Tundra" that began January 2012 and will run through 2014.

Alpine tundra is threatened by climate change because areas of low-temperature climates may be reduced globally. This study will provide a context for the response of alpine tundra in western North America to climate change by investigating the community structure of alpine tundra at multiple spatial scales. In addition, site conditions of soil and surficial conditions at fine scale, topographic measures at a middle scale, and climate variables (from interpolated datasets) at coarse scale will be examined. This research will advance understanding of biodiversity and community biogeography by testing hierarchical relations across spatial scales, inform National Park Service resource managers about possible future change in alpine tundra biodiversity, and contribute to the findings of a global alpine monitoring network.

**Professor Dave Bennett** is principal investigator for “People, Water, and Climate: Adaptation and Resilience in Agricultural Watersheds”, a NSF Coupled Natural and Human System grant. This is a four year $1,011,832 interdisciplinary grant. The research team includes Professors Nandita Basu, Marian Muste, Jerry Schnoor, and Andrew Kusiak (UI College of Engineering), Professor William Gutowski (Climatologist, Iowa State University), and Professor Silvia Secchi (Agricultural Economics, Southern Illinois University-Carbondale).

The aim of this research is to investigate how regional coupled natural and human systems respond to changes in climate, economic, and policy conditions that operate over large geographic and temporal scales. Researchers will explore these concepts in the Iowa-Cedar River Basin within a framework of sustainability, resilience, and adaptability to better understand the tradeoffs future generations might have to make among multiple and sometimes competing social and environmental objectives.

**Professors Dave Bennett, Marc Linderman, and Marc Armstrong** received $99,156 from the Iowa Alliance for Wind Innovation and Novel Development (IAWIND) to create an undergraduate wind energy certificate. This certificate program is being developed with co-principal investigators Pablo Carrica, Marian Muste, and Andrew Kusiak, professors in the College of Engineering. As part of this effort the Department of Geography will develop coursework that illustrates the use of geographic information systems in site selection and methods for the collection and analysis of wind data. Funds are also provided to acquire anemometers, field computers, and server technologies, and to develop coursework in the College of Engineering.

Website: plainswindeis.anl.gov
Graduate Student Spotlight

The University of Iowa geography graduate students focus on areas such as GIScience, environmental change, health geography and international development.

Kevin Matthews, Ph.D student, joined the department in the Fall of 2009. He presented work on the geographic distribution of colorectal cancer survival at the AAG Annual Conference in Seattle in 2011. He was awarded a full travel grant to the North American Association of Central Cancer Registries (NAACCR). Subsequently, he was invited to serve on their GIS Committee. He was also awarded a partial travel grant to present his research at the 2011 International Medical Geography Symposium in Durham, England.

He currently holds research assistant appointments in the Department of Geography and the Department of Family Medicine. In the Department of Geography, he works with Professor Gerard Rushton and manages a team of seven undergraduate students to verify whether the boundaries for school board elections are in compliance with Iowa state law and then to prepare voting district plans for districts that do not comply. In the Department of Family Medicine, he works for Dr. Barcey Levy, a colorectal cancer specialist. This work resulted in a presentation to the North American Primary Care Research Group Annual Meeting, “Ecologic Disparities in the Geographic Distribution of Colorectal Cancer Mortality”. For the Department of Family Medicine, he is in the beginning stages of updating the Iowa Cancer Maps on an online atlas of cancer in Iowa. The address is: www.uiowa.edu/iowacancermaps2/

His current research activities toward his degree include development of an algorithm to identify clusters of disease and spatial survival analysis. These will be the topics for his research paper and area paper, respectively.
Luke Juran, a Ph.D. student in the Department of Geography, was awarded a Fulbright grant in support of his dissertation research on post-disaster reconstruction. Luke spent six months conducting fieldwork on water and sanitation components of reconstruction after the 2004 tsunami in southeast India. Luke is particularly interested in the reconstruction framework that was operationalized by local governments, the roles reserved for governmental departments and aid organizations, and the outcomes of such processes. For his research, Luke examined 14 newly constructed settlements in two adjacent states and interviewed and completed water quality tests at more than 370 households. Furthermore, he held focus group discussions, met with key informants, and acquired primary documents. Through the lens of water, sewage, and drainage, Luke seeks to better understand how reconstruction is employed as a means to accelerate development, and moreover, whether the short-term goal of immediate water and sanitation recovery and the long-term goal of sustainable water and sanitation development conflict. As a project, he constructed a Water Poverty Index for each post-disaster settlement, and he is developing a novel model for reconstruction that considers the intersection of water and sanitation with local socio-physical attributes. During his free time, Luke organized water quality workshops in post-tsunami villages, gave presentations at local colleges, and met with government officials to share his data and suggestions.

Deng Ding is currently working on a Ph.D. and her research interest is to explore the complex and dynamic human-environment interactions in coupled biophysical, hydrological and socio-economical systems using simulation modeling approaches. Deng uses ecosystem and agricultural models (e.g. Biome-BGC, CENTURY, and DSSAT) to study the impacts of land use change on ecosystem productivity and the responses of crop yields to different management practices. Deng develops and uses an agent-based model to simulate farmers’ decisions on agricultural management practices in the Clear Creek watershed, Iowa. She works with researchers from geography, agro-economy, hydroscience and computer science in a project funded by NSF Cyber-Enabled Discovery and Innovation (CDI) Program. The team developed a model framework to integrate a soil-water model and an agent-based model to study the immediate environmental outcomes of farmers’ decision on land use management under different agricultural and environmental policy scenarios and market forces associated with biofuel production. Deng’s future work will involve uncertainty reduction and quantification by integrating remote sensing measurements into model simulations with the aid of data assimilation techniques.

Jamie Sanchagrin is a graduate student in the Department of Geography and is concurrently pursuing a joint Masters degree in the School of Urban and Regional Planning. She is interested in human-environment interactions and how planning and policies can be used to equitably and effectively reduce impacts on ecosystems. More specifically, she is interested in using mapping and modeling techniques to investigate how land use influences the delivery of ecosystem services, goods and services provided by natural systems that benefit humans and are important to well-being.

Jaime is currently working on a project with her advisor, Dr. Heather Sander, which, using an ecosystem services framework, looks specifically at urban environments with the goal of understanding and predicting ecosystem service delivery under alternative land use scenarios. In this project, she is using an approach that incorporates ecological, economic and social dimensions to produce policy-relevant information that will allow various stakeholders and decision-makers to direct urban growth in a more sustainable manner.
Undergraduate Student Spotlight

Geography undergraduate Asa Strong and ICIGO lead coordinator Jacob Langenfeld, presented posters at the Iowa Center for Research by Undergraduates (ICRU) Spring Undergraduate Research Festival held this semester.

Microtopography Effects on Vegetation in the Horseshoe Bend Floodplain

Work by Asa Strong

In this project, Asa examined how microtopography (small scale differences in surface elevation) affects the distribution of vegetation found in the Horseshoe Bend division of the Port Louisa National Wildlife Refuge in Louisa County, Iowa. To study this, he created an unsupervised classification of vegetation in Horseshoe Bend using remote sensing programs, aerial images, and LIDAR. He then compared the distribution of vegetation to the area’s hydrology. What Asa found was correlations between warm season grasses and higher elevations, native forbs and lower elevations, and shrubs and lower elevations. This information will aid management strategies at the wetland as they seek to increase biodiversity and decrease the abundance of unwanted vegetation. For example, shrub encroachment is one such vegetation change Port Louisa is trying to decrease. Asa’s research has shown this vegetation is found in lower elevations that experience frequent flooding. This will help them identify target areas that need additional management. Ultimately, Asa hopes his research will improve the ecosystem services provided, such as water purification, waterfowl habitat and carbon sequestration.

Riley Gardam and Jacob Langenfeld are the recipients of a cash prize through the Iowa Centers for Enterprise Challenge for their start-up business, Needle Analytics. Their new venture is a consulting firm that specializes in spatial and statistical analyses for small and midsized businesses. Gardam is co-President of the Undergraduate Geography Association (UGA) and Langenfeld is the lead coordinator for the Iowa Community Integrated Geography Organization (ICIGO), both intend to graduate this semester.

Urban Functions in Southeast Iowa: A Pilot Study of Central Places 1897 – 2012

Work by Jacob Langenfeld and Dr. Claire Pavlik

The purpose of this research was to conduct a pilot study of commercial activity change in Iowa’s urban centers. The specific objective was to identify how the provision of goods and services has changed in the Muscatine area in 1897-2012. This study was accomplished by utilizing city directories and phonebooks from the Iowa City branch of the Iowa State Historical Society that recorded the number of commercial establishments of four cities (Muscatine, West Liberty, Conesville, and Fruitland). The number and composition of establishments for each of these four cities in five different time periods (1897, 1914, 1971, 1985, and 2012) were measured and visualized in order to give an idea of where certain types of establishments were demanded and how that demand was affected over time.

The Daily Iowan and local TV affiliate KGAN covered stories on how ICIGO gathered data and created a map from some of the claims Stephen Bloom cited in his Atlantic article about Iowa. This map is one of many projects that ICIGO has undertaken in the past year that has provided a great undergraduate research experience. Click the link below to read The Daily Iowan article:

INDIA Winterim Study Abroad Program

INDIA Winterim is a three-week study abroad program, whereby participating students and faculty share, learn, and teach by directly interacting with the staff of leading entrepreneurial organizations within the cultural, socio-economic, environmental and geographical diversity that is India. While each course offered in the program is different, the weeks in India are typically devoted to learning about and developing solutions to real-world problems. Cultural immersion, performing arts, visits to monuments, environmental, medical, and social tourism are all a part of this milieu. More information can be accessed at the following address: http://www.uiowa.edu/~geog/india/

Professor Rajagopal of the Department of Geography is the founder and director of The INDIA Winterim program which began in 2006. Since then, over 500 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.

Below are a couple of comments from participants from the most recent INdIA Winterim:

“First of all, I would like to thank the Geography Department for the generous travel scholarship award for my India Winterim study travel; I wouldn’t have been able to go without it. I feel fortunate to have had this opportunity and wouldn’t have traded it for anything. On my return from India, friends and family have been asking about my trip and I have yet to come up with a concrete set of answers that does my experience justice. India is sensational in every sense of the word; to sum up all my remarkable memories would take forever. The hospitality of our hosts was unbelievably welcoming, as they generously introduced us to all that India has to offer. I am blessed to have been provided with such opportunities for growth. I gained a much deeper understanding and appreciation for the human condition, context, and culture, all in a short 3-week period.”

~Tessa Quintero, 2011-2012, Joan and Oscar Lara International Travel Award Recipient

“This winter break I had the unique privilege of studying in Kerala, India with the University of Iowa’s India Winterim Program. This trip was one of the best experiences of my life. Not only did I see some of the most beautiful places in the world, like the tea plantations on the top of the mountain ranges of the Western Ghats, I also saw some of the most shocking, upsetting things I’ve ever seen, like the poverty, trash, and pollution along the gravel roads. Through all of the ups and downs of this trip, there was never a time I was not learning. It didn’t matter whether it was formally taught at a lecture, or informally at a national park, each new experience was an opportunity for knowledge and growth. Though I have learned a lot about India over the last 3 1/2 years in college in the US, I learned more about India’s history, culture, and environment by being there. Being totally submerged in Indian culture allowed me to learn things beyond the classroom; there are some things that textbooks and even Google cannot provide. I will never forget the things I’ve seen, what I’ve learned, or the people I’ve met. I think everyone should travel and go outside their comfort zone; being uncomfortable and engaging in new experiences helps you grow not only as a student, but as a person as well. I’m so glad I had the opportunity to study in India, not only because this was a once in a life time opportunity, but because I know that I will take what I learned in India, apply it to my future endeavors, and make a difference in the world. I thank the Department of Geography for making this trip possible through a generous scholarship award.”

~ Colleen Chen, 2011-2012, Chad E. Smith International Travel Award Recipient.
Meet An Alum
Daniel Harpenau, GIS Technician, Heartland Technology Solutions
Geography, 2011

Daniel Harpenau is a GIS Technician who works at Heartland Technology Solutions in Ames, Iowa. Harpenau (Geography, B.A.) graduated in 2011 with an emphasis in GIS. At The University of Iowa, Harpenau enjoyed studying the spatial variability of many things, specifically the variability of wildlife across the state. Today he focuses on the variability in corn or bean fields. Through the usage of multilayered queries and comparison analysis, it is easy to see why certain areas of a field performed better than others. One of the most powerful analysis that can be used is a yield by hybrid comparison. This comparison uses yield data collected through combine yield monitoring systems and compares that data to planting data. This kind of information is very important when it comes to selecting corn hybrids or soybean varieties for future years. At HTS Harpenau’s main responsibility is the mapping of agronomic data. For HTS, he is also the company’s central Iowa technician which includes performing installations on tractors, combines and sprayers and planters, as well as monitoring customers grain management systems remotely. Guidance systems on tractors, which utilize GPS to automatically steer the tractor through the field, are the most frequent type of installation that he does. Harpenau enjoys the mix of office time and field time as well with this job. He recommends current students to look into a variety of different fields for employment after graduation because many of them are starting to utilize the power of GIS.

At The University of Iowa, we conduct research and teach students about social and biophysical systems, GIScience, and the events that shape the world in which we live. You can help our efforts, by contributing today at http://www.givetoiowa.org/geography

Your support is essential to help fund:
* Student Scholarships  * Speakers  * Student Travel & Research  * Student Organizations—ICIGO & UGA

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

E-mail: geographynews@uiowa.edu
Mail: The Department of Geography
The University of Iowa
316 Jessup Hall
Iowa City, Iowa  52242
Phone: (319) 335-0151
Fax: (319) 335-2725

Newsletter produced by the Geography Department
Contributors: Faculty, Undergraduate & Graduate Students and Alumni
Design: Cynthia Hernandez—Undergraduate Academic Coordinator

Visit us on the web: http://www.uiowa.edu/~geog

Visit the Geography Department when you’re in Iowa City!