View from the Chair, Christopher Justice

The Fall Semester has gone by so quickly, however in looking back to the summer, much has been accomplished, as you will see from this newsletter. In terms of shaping the Department, we have been successful in attracting two senior Associate Professors to our Faculty in the area of Geographic Information Science (GIS). The University hiring process is long and arduous for all involved and we are now going through the tenure process, even though they both already have tenure in peer institutions. Disengaging from a department in an orderly fashion is also a process and as a result they will be joining us in the Fall of next year, helping to build our new Center for Geographic Information Science. We are fortunate to have their signed acceptances, as in response to a serious budget shortfall the University has just implemented a freeze on state-supported hires and a halt on discretionary spending. We have also been told to expect additional budget cuts beyond those imposed last year. Our new Dean, Gregory Ball, has arrived at a very difficult time but is extremely supportive of the Department, the new hires and our research at the intersection of the social and natural sciences. For our academic program we initiated our new BS/MS Program this semester and launched our new Minor in Remote Sensing. With help from the College, Tatiana Loboda was successful in securing support though the University’s MPower Program, for a new research collaboration on GIS in medicine and public health, with the University of Maryland, Baltimore. At the end of this semester, Bob Crossgrove will retire after 14 years as Assistant Director of Academic Affairs. Bob is a favorite of all graduate students who have entered our program and we would like to thank him for his kind spirit and outstanding service to the Department. The big news this semester was the selection by NASA of Ralph Dubayah’s proposal to put a vegetation laser...
instrument on the International Space Station. This heavily competed proposal strengthens our collaboration with the Goddard Space Flight Center and brings our visibility as a leader in satellite remote sensing to a new height. Contributing to our continued cooperation with NASA, Eric Kasischke has taken a 50% visiting scientist position (IPA) at NASA Headquarters. On a personal note, following in the footsteps of former Chairs John Townshend, Sam Goward and Adjunct Professor Jim Tucker, to receive the prestigious NASA/DOI Pecora Award has given me pause for reflection on the incredible contribution that our Department has made and continues to make at the national level to the field of satellite remote sensing.

While 2014 is on pace to being the warmest year globally since record keeping began in the 19th century, the recent U.S.-China Climate Accord and subsequent COP20 Draft Text Agreement offer new signs of the international community coming together to address climate change. Meanwhile, earlier this fall the WWF reported that global animal populations have halved over just the last 40 years, suggesting yet another dimension of the impacts of human activity on the Earth system in need of addressing. In the context of these and other major current events, GEOG is leading in relevant research activities. First and foremost, GEDI Lidar (Dubayah) was selected as a new mission by NASA to obtain measurements of forest structure from space sufficient to enable the first global high resolution maps of forest biomass. The Science Team Leadership of the congressionally directed NASA Carbon Monitoring System was recompeted and rewarded along with a new proposal to extend high resolution carbon mapping and modeling to regional scales (Hurtt). Four researchers were selected to participate on the NASA Suomi NPP Science Team (Giglio, Schroeder, Justice and Vermote). Justice was also selected as the VIIRS Land Science Team Lead. The Global Land Cover Facility produced a new global high resolution map of forest cover and change from 1990-2000 (Kim, Sexton, Noojipady, Huang, Anand, Channan, Feng, Townshend). Five grants were awarded to the new Geosimulation Research Lab (Torrens). Two Primary Investigators (Silva and Sedano) were jointly awarded a NSF CNH grant to investigate the dynamic interactions among economic development, urbanization and forest degradation. In all, eleven department researchers were selected as University Research Leaders (Dubayah, Hansen, Hurtt, Izaurralde, Justice, Kasischke, Loboda, Nagol, Potapov, Wang and Yeo). With all this activity, GEOG moved up from the 12th grant earning academic department on campus to 3rd, and is again the top grant earning department in BSOS. In the process, GEOG generated $6.15 in external grants for every $1.00 in state funding it receives. There is so much more we could do. As Research Director, the volume and excitement of research in the department are growing fast and have never been higher. What’s more, we are leveraging all of this research to find new and exciting opportunities in education, evidenced by an October 31st Washington Post article highlighting UMD-Goddard programs including the Joint Global Carbon Cycle Center that offer students “out of this world opportunities.” Research faculty are a vital part of our department, and we are pleased to welcome new members of our research faculty: Konstantinos Chalvatizis, Fengming Hui, Ruibo Han, Xi Li, Ashwan Reddy, Cristina Saras-sa, Zhen Song, Weixia Yin, Qin Dai, Hongya Zhang and Maureen Kelly.
Soy is taking an increasing role in the global economy, food system, and environment. The prices South American farmers will get for their crops is dependent upon how the North American crops did the previous season and vice versa, yet most cropland area estimates from the opposite hemisphere are only available after planting season. The earlier and more accurate area estimates available, the better able farmers will be to make smart, informed decisions on which crops are the most profitable. Biodiversity also continues to be lost to deforestation for the development of large scale monocrop agriculture in many places, reinforcing the need for prompt, accurate, and reliable agricultural area estimates. For these reasons, PhD candidate LeeAnn King and Dr. Matt Hansen are researching different methodologies for creating timely, accurate area estimates for soy as a prototype for crop specific cultivated area estimates.

As a part of this study, King led a team from Hansen’s group conducting field validation in the midwestern United States. 18 blocks were selected in a stratified random sample and within each block a random sample of 25 points within agriculture were visited. Data on crop type and health along with GPS coordinates and pictures were collected using GeoODK, an open source platform created by faculty research assistant Jon Nordling. King and interns Alex Rodriguez and Elvis Herrera took the swampy southern route into Mississippi and Arkansas, while faculty research assistant Amy Hudson and interns Byron Marroquin and Modibo Haidara took the northern route into Minnesota. In all, data were collected on 450 fields in 10 different states.

Field validation in the United States is used to confirm the utility of this validation method in other countries with large scale agriculture. The U.S. maps are also assessed for accuracy against outside data sets and internal maps made from high spatial resolution remote sensing imagery. The accuracy assessment results show a strong agreement between all products for previous years, indicating that this method is suitable for area estimation in landscapes with large scale agriculture.
In today’s globalized world, national, regional and local economies are deeply embedded in global supply chain networks. Globally distributed production activities are key drivers behind environmental change imposing stress on ecosystems across spatial scales. Environmental footprinting has made good progress over the last two decades in analyzing environmental pressures from consumption activities. However, it has only recently started to appreciate the importance of the spatial dimension as a new research frontier for calculating environmental implications.

Drs. Klaus Hubacek, Kuishuang Feng and Naijun Zhou recently proposed a conceptual framework and modeling approach that establishes a link from local activities in one part of the world to environmental impacts in remote distances. The paper, entitled “Teleconnecting consumption to environmental impacts at multiple spatial scales – research frontiers in environmental footprinting,” has recently been published in the Journal Industrial Ecology.

Hubacek et al. use the concept of teleconnections to describe the remote (spatial) linkages between consumption embedded in its local context and remote environmental impacts. Originally, the term has been used in atmospheric sciences to describe interdependencies and relationships between climate phenomena over large distances. The Figure shows how consumption activities in different areas of Washington, DC contribute to water scarcity across the globe. Through a global environmental trade model, virtual water flows are traced along global supply chains to the locale of extraction.

The team raised two sets of research questions. One set of research questions is related to issues arising when tracing resource and pollution flows generated from consumption activities across the supply chain in space, a requirement to move from environmental accounting to [cont. on p. 5]
environmental impact estimates. Another set of questions is related to the fact that we still have a very limited understanding of what drives peoples’ consumption activities, the ultimate trigger of these environmental impacts.

The authors outlined a research agenda to better understand how lifestyles and local consumption activities are shaped by locational factors, such as the physical environment, social networks, and geodemographics, and how these translate into environmental impacts across the world. The agenda is inspired by big data and facilitated by a number of new and initially “strange” data sources that have come online recently. These not only help improve model robustness, but also allow for new modeling approaches with higher demands on data mining, computation, and data organization. Coupled with increasing computing power, more complex models can support decision making on a much more detailed level, tracing the consequences on the global environment and assigning responsibilities.


GEOG Endorses College Summer Research Initiative

Professor Matt Hansen participated in UMD’s College of Behavioral and Social Sciences (BSOS) Summer Research Initiative and guided four scholars (below, left to right) - Elivs Herrera, Modibo Haidara, Alexandra Rodrigues and Byron Marroquin - during the summer of 2014. All scholars learned data classification and visualization techniques, which they utilized to conduct their own research under the guidance of Hansen, Peter Potapov and research associates and FRAs within Hansen’s group.

The SRI program was created in 1999 by the BSOS Dean’s office to encourage and enhance the diversity of scholars working in the social and behavioral science fields.
Imagery from NASA’s MODIS satellite and a recent field visit by Catherine Nakalembe reveal widespread crop failure in Moroto, Karamoja, this year. The local communities of subsistence farmers grow grain fed with minimal to no inputs. “We prepare the land in February, plant in March and wait for rain.” Rainfall in the region is erratic, weather forecasts are often inaccurate and there are no irrigation systems. Failed rains and “change in seasons” are the root cause of widespread crop failure and irreversible environmental destruction in the region.

A team lead by the University of Maryland visited the region during a field study in Moroto district from August 25 - September 9, 2014. Working with ESIPPS International Limited and the District Agricultural Officer Mr. John Olinga, the team found evidence of widespread crop failure in more than 70% at randomly selected locations in Rupa and Naduget sub-county. In July, time series of satellite data from Maryland’s Global Agriculture Monitoring System (GLAM) based on NASA’s MODIS satellite data indicated below average vegetation conditions (left) already long before the field visit. Late August to early harvesting time for sorghum, maize and beans - all staples in the region.

“The farmers tilled and sowed their land end of February expecting rain in the third week of March, unfortunately the rainfall started abruptly for 1-2 days in March…. nothing until the third week of May. Farmers waited and struggled digging the ground but the rain didn’t arrive. Meager rains in June were not enough to

Compared growing season conditions in August 2014 to average

GLAM System data indicates below average conditions for most of East Africa. The areas shaded brown above, indicate below average condition. The figure to right is a closer look at the vegetation condition from early in the growing season. By April vegetation condition fell below average, a critical time in the growing season. The images below show the various conditions – September 2014
support crop growth and in most parts of Rupa the sorghum is completely dry. Some of the crops recovered due to the rain in September, however, this critical rainfall happened far too late in the season. Farmers were supposed to be harvesting, but most of the sorghum had not even flowered. Serious food shortages were expected in Rupa and parts of Tapac, Nadunget and Katikekile sub-counties in Moroto district. This year some farmers have planted and replanted up to 3 times in some cases but the crop failure is widespread,” Olinga John, District Production Officer of Moroto, reported.

A common survival strategy for drought years such as this is the sale of livestock; however, the entire northeastern region of Uganda is under quarantine due to an outbreak of Foot and Mouth Disease, which has affected a large number of animals in the region. Though the majority of the farmers cite animal sales as a livelihood alternative, this is not an option this year. Hence, the challenges to farmers and the whole population this year are enormous.

Although farmers agree that the rain season was “abnormal,” they continue to follow the same cropping calendar and have very little trust in weather forecasts. UMD is conducting research to develop an agriculture monitoring system for sites in Tanzania and Moroto District under the STARS project (Spurring a Transformation for Agriculture through Remote Sensing). STARS is led by the University of Twente in The Netherlands, and aims to identify how earth observation data products may help improve current information and decision support systems in the smallholder economies of sub-Saharan Africa and South Asia.

With such a system in place, tailored to the local geography and farmer needs, early warning can be timelier and crop condition can be tracked at little to no cost by local governments.
This summer Martha Geores had an educational adventure in Uganda setting up a Global Change Institute associated with Stawa University, and teaching about global change in area schools and universities. Teach and Tour recruits U.S. professors (and students) to share their knowledge and to learn about Uganda. Assertive children were everywhere. The young ones didn’t speak English, but an inflatable globe, a map and pictures of President Obama and various places in the United States told half the story while a guided tour of the students’ favorite places told the other half. Being in the villages was a humbling experience. There is life after Power Point. Helping teachers use the environment as their curriculum was both a challenge and an adventure.

In the secondary schools, the students readily engaged in discussions about global climate change and the complexity of the problem. They already knew the basics and the concept of climate debt. We discussed how they could be leaders in building a new framework for influencing policies, not just on climate change, but also on the broader issues of global change. Teaching young students about global change builds their capacity to be global citizens.

Stawa University is on a mission to educate students in Uganda from primary school through University; thus, they have established schools throughout the country. At the main campus in Kampala, there is a strong agricultural program, which partially supports the University with farm products. Their programs in communication, political science, and business are very strong.

The Global Change Institute is a partnership between the professors who participate in Teach and Tour and the faculty at Stawa. Students are excited about the Institute and a core group has formed to get it off the ground. In order to build the curriculum of the Global Change Institute, we ask the Teach and Tour professors to emphasize global change issues within their specialties when they teach in Uganda. They will actually be teaching as part of the Global Change Institute and interacting with the Stawa Faculty regarding global change.

No presentation about Teach and Tour would be complete without a tour. For a cultural geographer, being there was like being in a candy store. There were so many rich experiences: riding down streets that seemed more like skiing moguls, bursting on whole neighborhoods on those pathways, buying lunch when traffic stopped, and checking out the stalls/shops are all fodder for future lectures. The question of how anyone could make a profit in the stalls was met with a puzzled look –"We get what we need" - reality check!

Murchison National Park was a wonderful place to see the animals, but the ultimate geographer’s experience didn’t involve animals. It was standing in the water at the Source of the Nile River. Teach and Tour Sojourners can always use adventuresome teachers.
In July of this year, a group of Department researchers performed fieldwork in the Yucatan Peninsula, Mexico. The global 30-m map published by Hansen et al. (2013) identified forest loss between the years 2000-2012 in the peninsula. Based on the observations from this product, the purpose of the trip was to identify the proportion of Yucatan forests which have been converted to cropland (industrial and smallholder), pastureland, or left to regenerate post clearing. To do so, they applied a two stage sampling approach. The study area included the three Mexican states of Yucatan, Campeche and Quintana Roo. This region was then broken into 6x6 km blocks, from which they randomly selected 20 sample blocks containing >5% mapped forest loss. In each block they selected 5 primary samples (pixels of forest loss) and a number of back-up samples to replace primary ones in the event an area was inaccessible. The aim of the field teams was to identify the post-disturbance land use within the loss patches containing primary sample pixels.

One field team (Peter Potapov, Yamile Talero, Alexandra Tyukavina) visited sample blocks in the western half of the peninsula, while the other team (Matthew Hansen, Jacob Noel, Allison Gost and Alexander Krylov) surveyed the eastern blocks (see the map). Each team was accompanied by a local forestry expert. The group covered hundreds of kilometers in the car and on foot, driving along narrow dirt roads, hiking through thick shrubs under the scorching sun, climbing over fences within pastures and talking to local farmers. The eastern team had an encounter with a jaguar, which, fortunately for the frightened animal, was brief. While the primary goal was identifying post-disturbance land use, as true geographers, they couldn’t pass up exploring the ancient pyramids of Uxmal and Chichen Itza, the beautiful beaches of the Gulf of Mexico and the Caribbean, and diving into the cold waters of the famous sinkholes (“cenotes”).

Photos: (left) Location of sample blocks (red) and field routes of the two teams (blue/purple). (above) Jacob Noel in a field recently cleared by fire, and a corn field at an abandoned hacienda.
Associate Research Professor Wilfrid Schroeder helped coordinate a field experiment on 18-29 August 2014 in Kruger National Park, South Africa, in order to validate new satellite active fire detection products and promote capacity building in the region. Associate Research Professor Louis Giglio and Assistant Research Professor Evan Ellicott complemented the UMD team of fire scientists engaged in that exercise. The initiative was sponsored by the Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) global change System for Analysis, Research and Training (START) program, and included 12 fire scientists from the U.S., the U.K., Germany and Brazil in addition to 12 fire practitioners from seven different Southern African countries.

Fire research began formally in the Kruger National Park with the establishment in 1954 of an experiment to test the effects of fire on Savannah vegetation. That experiment continues until today, and has since evolved incorporating diverse fire science applications. During the August experiment, multiple small (7ha) prescribed fires were implemented across a set of plots showing variable rate of intervention (one, two and three-year burns). Fires were ignited observing the overpass times of four different satellite sensors (Terra and Aqua MODIS, S-NPP/VIIRS, and Germany’s TET-1). Coincident fire energetics and fuel load data were acquired using a suite of ground and airborne instrumentation and methods, including the deployment of manned and unmanned (remote-controlled) aircraft. Intensive sampling was also performed over 50’50m sub-plots using high-accuracy ground LIDAR systems in order to properly characterize the vegetation structure on each burn plot.

A training workshop included a one-day lecture followed by three days of hands-on fieldwork activities during which regional fire practitioners were introduced to fire-management best practices along with different data sampling techniques.
Graduate Candidates Katelyn Dolan and Laura Duncanson (pictured right) along with Professor Ralph Dubayah presented at the 6th International ForestSat Conference November 4-7th, in Riva del Garda, Italy. The conference focuses on new developments and applications of remote sensing and GIS tools for monitoring, mapping and modeling forest systems. The meeting provided a platform for presentation and discussion on the integration of earth observations with other geo-spatial applications and traditional forest sciences. Dolan presented on her research tracking spatial and temporal patterns of forest disturbance within and between geographically distinct regions of the U.S. using 25 years of annual Landsat imagery. Duncanson showcased her work on mapping forest allometric variability and the implications on allometric scaling theory and biomass mapping. Dubayah gave two talks: the first was on high resolution carbon estimation using remote sensing and ecosystem modeling over the state of Maryland, a project part of NASAs Carbon Modeling System. His second presentation highlighted the newly funded Global Ecosystem Dynamics Investigation (GEDI) lidar which will provide high resolution observations of forest vertical structure from space. GEDI is planned for deployment in 2018 on the International Space Station.

“We are living in an increasingly interconnected global society, where natural systems are changing at unprecedented rates, our actions are no longer confined to political boundaries and neither should our science be. Having the opportunity to talk with an international group of scientists passionate about forest science was amazing,” said Dolan about the importance of attending and presenting at an international conference. “ForestSat is my favorite conference to attend because it is still relatively small with active participation from researchers around the globe. There is a great sense of community at the conference, and for an early career scientist, the connections made both during and after conference hours are incredibly beneficial. The coolest thing about Forestsat is that not only do you meet world leaders in the field, but you get to know them, and most of them are fun, interesting people. Whether over hiking coffee breaks, or post-conference beers, the connections I’ve made at Forestsat have been some of the best I’ve made during my PhD. There simply isn’t time or opportunity to meet people the same way at a bigger conference,” said Duncanson who also attended the 5th International ForestSat in Corvallis, OR. Both Dolan and Duncanson received the University’s Jacob Goldhaber Travel Award and matching departmental grant to help offset the costs of presenting their research internationally.
The Re Orienting Gender: Geographies of Resistance, Agency, Violence and Desire in Asia international conference took place November 19-21, 2014. The conference was hosted by the Department of Geography at the University of Delhi (DU).

Invited papers were presented by Indian and international delegates, including Pattie Kewer, a University of Maryland Affiliate who received her Ph.D. from the Department in December 2012. Her paper, “Spatial Contexts and Counterintuitive Educational Success in India: A Case Study,” was taken from her dissertation research and was co-authored by her doctoral advisor, Dr. Martha Geores.

The paper has been included in the conference Proceedings, which was edited by Dr. Anindita Datta of DU’s Department of Geography and released at the beginning of the conference. As Dr. Datta, the convenor of the conference, states in her introduction to the volume: “The papers each in their own way seek to ‘re-orient’ the geographies of gender through a focus on understandings of gender and space in a specifically Asian context.” She adds that the paper themes “...can be broadly categorized into those engaging with the everyday geographies of resistance, agency, violence and desire; religion, culture and patriarchal control in urban spaces; violence and agency in different areas of well-being and finally with the geographies of agency and desire in real and imagined spaces.”

In addition to the paper presentations, a workshop on “Feminist Methodology and Emerging Research on Gender” was also conducted. The emphasis of the workshop was on interacting with early career researchers attending the workshop sessions.

The conference received support from various scholarly organizations. These included the Indian Council of Social Science Research (ICSSR), the Indian National Science Academy (INSA), the International Geographical Union (IGU), the IGU Gender and Geography Commission, and the Swedish South Asian Studies Network (SASNET).

This was the second Geography and Gender in Asia international conference hosted by the University of Delhi. The first, Contextualising Geographical Approaches to Studying Gender in Asia, was held in 2010. Here, Kewer presented a paper, “Social Spaces Enabling Girls’ Education in India: An Outsider’s Study,” which described her planned dissertation research at the University of Maryland.
UMD and Vietnam National University Sign MOU

On July 7, 2014, a Memorandum of Understanding (MOU) between Vietnam National University (Hanoi) and the University of Maryland was signed by VNU President Phung Xuan Nha and Ross Lewin (UMD Associate Vice President, UMD). The MOU formalizes a research collaboration between VNU University of Engineering and Technology and the Department of Geographical Sciences, UMD. Chris Justice (Department of Geographical Sciences) and Mengxue Li (BSOS Deans Office) attended. The collaboration was initiated following a visit to the Department from the former VNU President Mai Trong Nhuan in 2011. Since the initial visit we have installed the UMD MODIS-based Fire Monitoring (FIRMS) at VNU and VNU is installing a MODIS/NPP Ground Station. VNU is seeking to expand the research collaboration in the interdisciplinary areas of land use change monitoring, disaster management (fire and flooding), air quality monitoring and climate change adaptation. This MOU will help the partners secure national and international funding for extending the collaboration.

Alumni Joins the U.S. Forest Service International Program as the Philippines Climate Fellow

Dr. Amanda Whitehurst (UMD GEOG class of 2014) recently began her position as the Philippine Climate Fellow for the U.S. Forest Service International Program. Her goal is to work with the Philippine government to support REDD+ readiness efforts, primarily through technical assistance towards forest mapping and carbon monitoring. Currently based in Manila, Whitehurst is working closely with the National Mapping and Resource Information Authority (NAMRIA) to increase the agency’s remote sensing capacity and improve current land-cover mapping protocols. She is also coordinating with the Forest Management Bureau on forest-monitoring projects, including addressing the need to monitor National Greening Program sites, totaling over 1.5 million hectares, via remote sensing. This position includes participating in the Philippines-U.S. Science and Technology Agreement Climate Change and Disaster Resilience working group, which connects researchers in the Philippines with partners in the U.S. on projects relating to climate change issues, including the impacts on forestry and agriculture.
GEOG Sweeps National NASA Competition

The Department of Geographical Sciences (GEOG) was unusually successful in having four researchers selected in the recent national competition to join the NASA Suomi NPP Science Team. Dr. Louis Giglio (Associate Research Professor) was selected for Development of a Suomi NPP VIIRS Global Burned Area Earth System Data Record. Dr. Wilfrid Schroeder (Associate Research Professor) was selected for "S-NPP/VIIRS Active Fire Algorithm and Data Record Development and Refinement." Drs. Chris Justice (Professor and Chairman) and Inbal Becker-Reshef (Assistant Research Professor) were selected to develop "Agricultural Monitoring Applications of VIIRS Data." Justice was also selected as the Land Discipline Leader. Dr. Eric Vermote (Adjunct Professor and Physical Scientist at NASA-GSFC) was selected for the "Development of the VIIRS Climate Quality Surface Reflectance Product Suite."

Vermote’s team includes GEOG’s Dr. Jean Claude Roger (Research Professor) and Dr. Martin Claverie (Research Associate).

The Suomi NPP polar orbiting satellite was named after a pioneering scientist in the development of weather satellites. The Visible Infrared Imager Radiometer Suite (VIIRS) instrument on board the satellite provides operational continuity for the NASA EOS Moderate Resolution Imaging Spectroradiometer (MODIS) instrument. GEOG researchers have been instrumental in the development of science products from the NASA MODIS instrument and will continue their research in the framework of the Suomi NPP Mission. The global products generated from these instruments play an important role in NASA’s Earth System Science Program and more generally in Global Change Research.

Nordling Selected as Esri Student of the Year

Jon Nordling (MPS/GIS student) was interviewed by Esri Education Representative, David DiBiase (left). Nordling, who was selected as the Esri Development Center (EDC) 2014 Student of the Year, discusses the EDC, how Esri software assists GIS students with their studies and how such tools can be utilized in ongoing projects. Nordling advocates the use of GIS tools in policy-making – to make a visual impact and influence decision-makers – as a means of solving global problems.
The GEDI (Global Ecosystem Dynamics Investigation) Lidar instrument was selected by NASA as part of the Earth Ventures Instrument program for $94 million. It will be deployed on the International Space Station where it joins a growing suite of instruments providing key observations of the Earth’s environment. GEDI Lidar is led by the University of Maryland in strong collaboration with NASA Goddard Spaceflight Center (GSFC). GSFC is the world leader in laser-based remote sensing and will be responsible for constructing and delivering the instrument. GSFC earth scientists will also participate in the development of the mission and analysis of the science data.

Ralph Dubayah is the Principal Investigator of the mission. He is joined at UMD by several Co-Investigators, including Professors Matt Hansen, George Hurtt, and Research Assistant Professor Anu Swatantran. In addition, other Co-Investigators are participating from Woods Hole Research Center, the U.S. Forest Service, and Brown University. GEDI also has collaborations in place with the German Space Agency, the European Space Agency, the Canadian Forest Service, the U.S. Geological Survey, NASA Jet Propulsion Laboratory, UMass Boston, the World Wildlife Fund, and Conservation International. Scheduled for deployment on the ISS in 2019, data from GEDI will be used create a variety of products, include canopy height and structure, forest carbon and carbon change. In addition, these data will be used to drive global ecosystem models to assess the impacts of changes in land use on atmospheric carbon under various climate change scenarios.

Jie Zhang and Jon Nordling were selected to participate in the 3-month Young Scientists Summer Program (YSSP) at the International Institute of Applied Systems Analysis (IIASA) located in Schloss Laxenburg, near Vienna, Austria, from June through August, 2014.

IIASA is a leading international research organization which uses advanced systems analysis to conduct policy-oriented and interdisciplinary research on energy & climate change, food & water, poverty & equity and their main drivers; thus, providing insight and guidance to policymakers worldwide. Both Zhang and Nordling were awarded fellowships from the U.S. National Member Organization [continued on page 16...]

Young Scientists Summer Program at IIASA, Austria
to work closely with scientists at IIASA’s Ecosystems Services and Management Program during the 3-month YSSP. This program provides the young researchers a great opportunity to advance and broaden their research topics and form connections by working in IIASA’s interdisciplinary and international research environment.

Registration for the 2015 cohort is currently open—the deadline is January 12th.

After nearly 15 years with the Department, Robert Crossgrove, Assistant Director of Academic Programs, will retire as of January 1, 2015.

Shortly after Bob joined the Department, he noticed a void at the Department level and immediately took to developing various systems and programs related to the monitoring and processing of graduate students. Though he worked primarily with graduate students and related issues, he has also been involved with the undergraduate program in terms of course and instructor scheduling, as well as teaching assistant (TA) assignment. Moreover, he was effective in dealing with Campus to ensure the Department’s space (e.g. classrooms) in LeFrak Hall were protected. Bob was also instrumental in developing systems to provide GEOG and the University with data on the functioning of the Department.

Bob has been an invaluable member of the Department and although we will miss him, we all wish him well. Best of luck to you Mr. Crossgrove!
Hawks on three! One, two, three... Gooo Hawks! In an effort to have a ball (and maybe even a volleyball), faculty and students from the Hartwick research building rallied to start the first departmental campus-wide intramural sports team. The Hawks compete against other student and faculty/staff teams in friendly, often laidback games on campus which are officiated by student referees. Beginning this past summer with 4 vs 4 co-ed sand volleyball, the Hartwick Hawks were led by team captain and FRA Amy Hudson to a winning season not only on the court, but also in the workplace. FRA Katie McGaughey said intramural sports are “a great way to collaborate outside of the workplace and make new friends.”

What started out as a simple way to exert energy quickly evolved into a growing team of geographers united through sports. The Hawks successfully completed a 6 vs 6 soccer season in September with the team roster growing by over 100%! There’s also been a figurative bridge built between Hartwick and Lefrak now with undergraduate and graduate students, and faculty all participating. Most recently the team played in the 7 vs 7 flag football league with participation from over 16 students, FRAs and professors! The Hawks hope to gain even more geographers in the future and welcome all to participate.

The team maintains a humorous and energetic spirit. On the field the Hartwick Hawks are known by other intramural teams for our echoing hawk caws best emulating the call of a red-tailed hawk, or injured crow, depending on the subjective interpretation of the listener. An excerpt from the team’s webpage best captures this: “The Hartwick Hawk is the only animal greater than a hawk. An average Hartwick Hawk is omnipresent on the court, present on both sides of the net. On one side of the net the Hartwick Hawks have a quadruple threat: physical presence, mental over-presence, spiritual presence and Christmas presents. On the other side the Hartwick Hawks boast a mental and spiritual presence. No team can resist the power of the Hartwick Hawks.”
In the summer of 2014, Shunlin Liang and Mila Zlatic had a successful research program in China with nine undergraduate students. For 22 days they worked with the students and gave them opportunities to experience firsthand the consequences of fast urbanization in China. They visited urban planning exhibition halls in both Beijing and Shanghai and attended lectures offered by faculty at ADREM, BNU and ECNU on disaster reduction research, select topics in human geography, and how GIS and remote sensing are applied in research. Students visited numerous national agencies (e.g. Institute of Remote Sensing and Digital Earth, Aerospace Town, Chinese Academy of Sciences, China Center for Resources Satellite Data and Applications, etc.). There, students had the opportunity to learn and discuss applications of geographical methods in science. They conducted a survey among the floating population in a ‘hutong’ and urban villages in Beijing. They took a bullet train from Beijing to Shanghai, and discussed new inner and intra city transportation developments. Moreover, they had the opportunity to join BNU/ECNU students on their regular annual field research study program to Dongshan in South China. There, UMD students worked hand in hand with Chinese students on various research topics including researching the geographical landscape, historical development of Dongshan district, industrial land use development, local structure of the city hierarchy, migration pattern of the floating population recently arriving in the area, potential of development e-business environment in the countryside, and impact of the bullet train on the development of the Suzue industrial park. The students got to know each other, exchanged their study experiences, and made new friends.

Throughout the journey, the students were introduced to cultural landmarks in China. They visited the Great Wall and Ming dynasty tombs, Summer Palace, Olympic Village, Forbidden City, Tiananmen Square, Temple of Heaven, and National museum of Art in Beijing, and the Yuyuan gardens, the Bund along the Huangpu River, Maritime museum, and Jing’an Temple in Shanghai. They were given ample opportunity to taste Chinese cuisine from every region visited.

Since then, four students have been accepted into the five year BS/MS program offered by the Department for the first time to the top undergraduate students majoring in geography or GIS. This fall, eight students from the summer program are continuing to study urbanization issues of China, and they defended their honors thesis’ at the end of the semester. Finally, they will prepare their research results for papers and posters to be presented at the AAG meeting in April 2015, as well as other national and regional conferences. This year’s Study Abroad Program in China was indeed a great success!
During this holiday season, consider supporting the Department of Geographical Sciences at the University of Maryland!

Please visit our Department’s homepage at www.geog.umd.edu and click on the “Give to GEOG” icon. There, you will find multiple funds and their functions to which your generous contributions can be directed, depending on how you would like them to be utilized.

Please keep in mind that much of the student experience - including research operations and our study abroad program - cannot be maintained without your donations, so make them count!

GEOG wishes you a warm holiday season!!