

GeoGraffiti

Department of Geography Newsletter

Fall 2006

Dr. Goward Receives 2006 USGS John Wesley Powell Award

On November 9, Dr. Goward received the John Wesley Powell Award from the U.S. Geological Survey (USGS) for having made significant contributions to the advancement of the USGS mission. The John Wesley Powell Award recognizes an individual or group, not employed by the USGS, whose contributions to the agency's objectives and mission are noteworthy. John Wesley Powell, the second director of the USGS, was a distinguished scientist responsible for setting the high standards that govern the USGS today. The award honors Dr. Goward as a "leading researcher, educator and partner [of the USGS mission]" who has "helped the Geography Discipline plan for the next generation of earth observing satellites." His "role as educator and scientist has extended the mission of the USGS in the area of applications of remote sensing data sets and has brought attention to the value of the remote sensing and USGS data to the public and science communities."



Grads Spend Summer in Field Work and Internships

The Russian Far East: Fires, Tigers, and Forests

By *Tatiana Loboda*. This September I reached the great divide in my PhD student career. For some people this divide comes after advancing to candidacy – pre- and post-proposal defense life. But for me it was always the FIELD WORK. Don't get me wrong, I was nervous before the proposal defense... Well, everybody is! But when I got the "congratulations, you are now an ABD" from my advisor, I realized that my fate was sealed and I had to face the unthinkable – namely the field work (by myself!) in the Russian Far East. My PhD project is aimed at developing a re-



motely sensed data driven model of fire threat to the Amur tiger – a highly endangered species. The Russian Far East provides large contiguous and relatively pristine areas of boreal/temperate forests which can support a large predator like the Amur tiger. The Sikhote-Alin Nature reserve – one of my field work sites – was designated by UNESCO as a world heritage site (photo above). In fact the entire area of the Sikhote-Alin Mountains is the only known region in the world with a sustainable meta-population of a highly endangered animal. This area is now experiencing a lot of pressure from both anthropogenic activity (primarily logging) and natural disasters (mainly fires). The resource managers of these forests are always caught between the need for economic development of the region and the protection of this unique ecosystem. My Fire Threat Model is designed to provide a tool for resource

managers that will allow them to evaluate the current and future threat of fire to the tiger habitat and to play out different fire related management scenarios. So my field work primarily was intended to get field observations of fire impact and vegetation recovery within the Amur tiger habitat for model parameterization. Additionally, I wanted to get some data for the accuracy assessment of the burned area product I developed for the area. I was able to accomplish this, and now on to the completion of my dissertation!

Validation for Analysis of Agricultural Burning

By *Jessica McCarty*. This summer I and M.A. student Mark Sherwood recently completed field work in Washington and Idaho (August 21 - 25, 2006). During this field campaign, we investigated burned spring wheat and bluegrass fields, with the assistance of Dr. Steve Van Vleet of the Washington State University Ag Extension Program. This field work included using 1 km MODIS

Active Fire Detections to identify illegally burned wheat fields in eastern Washington. GPS locations of crop types and burned area were collected as well (photo at right). We also completed interviews with state air quality officials about the quantity of burn permits to be issued to wheat farmers in Washington through the end of the fall harvest.



Crop residue, plant stubble that is left after harvest, is commonly burned by American farmers. Burning the stubble allows farmers to quickly plant their next crop and is a good tool for eliminating insects and disease from their fields, which can lead to less herbicide and pesticide use. Almost every major agricultural region in the contiguous U.S. experiences burning: the rice and sugarcane fields of the Southeast, the wheat and corn belts of the Midwest, the Central Valley of California, and the wheat regions

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of the Interior Pacific Northwest. Agricultural burning impacts both local and regional air quality and has been linked to increased asthma and pulmonary infections. Due to its negative impact on air quality, states have begun to both monitor and regulate agricultural burning, including states like Washington and Florida. This work will be used to complete my doctoral dissertation.

Summer Internship with NOAA

By Wilfrid Schroeder. The summer of '06 was extremely busy for me, a Geography PhD candidate. I engaged in a nine-week internship with NOAA to help the Satellite Analysis Branch (SAB) located in Camp Springs, MD, evaluate the performance of their Hazard Mapping System (HMS) for the Conterminous United States. The HMS system provides near real time information on vegetation fires throughout the U.S. and is based on input data from automated active fire products and on visual interpretation of remote sensing imagery by a team of analysts. I was responsible for conducting the first validation study of the HMS system using 30m resolution Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data which provides a precise location of active fires. In total, over 100 different locations covered by ASTER scenes were used to validate the fire detections produced from the coarser resolution, MODIS/Terra and the GOES East and West imager sensor data. The study revealed that both NASA's MODIS fire product (MOD14) and University of Wisconsin's GOES Automated Biomass Burning Algorithm (ABBA) are performing well for the U.S. with low commission errors reported (2% average for both sensors). ①

Desertification Conference Held in Israel

In November 2006, Dr. Steve Prince, Dr. Uriel Safriel, and Inbal Reshef, participated in the international conference titled "Deserts and Desertification: Challenges and Opportunities" sponsored by the UN Convention to Combat Desertification (UNCCD) and by the Blaustein Institutes for Desert Research, Ben Gurion University, held in Sde Boqer, Israel. The conference fo-

cused on three main themes: drivers of desertification and policy interventions, opportunities in the drylands, and models for sustainable development in drylands.

Dr. Uriel Safriel, currently on sabbatical in the Geography Department and Israel's national UNCCD focal point, and former director of the Blaustein Institute, chaired the international advisory committee and delivered two of the plenary speeches. Dr.



Prince chaired the session on remote sensing technologies and presented on multiple ecosystem stable states, and on mapping large-area land degradation in semi-arid southern Africa. Inbal Reshef presented on agricultural drought monitoring in drylands using moderate resolution satellite data as part of the NASA/USDA-FAS Global Agriculture Monitoring (GLAM) Project, led by Dr. Chris Justice.

The Negev Desert setting in southern Israel allowed for a number of organized trips to see first-hand, progress in local efforts to combat desertification. These included trips to desert fish farms—which are more water-efficient than growing crops; to the Yatir forest on the edge of the desert—Israel's largest man-planted forest; to a water desalinization plant, and to Avdat—an ancient Nabatean city founded in the First century BCE where desert agriculture provided its means of subsistence. For more information on the conference: <http://www.desertopportunities.org>. ①

Conference on Environment Held in Beijing

The US Federation of Earth System Information Partners has brought together groups from a wide diversity of backgrounds, including government agencies and laboratories, Universities, not-for profits and commercial entities to meet their shared goals of improving the distribution and sharing of environmental information and services. The joint workshop, held in Beijing Normal

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Alumni Notes

Douglas Fuller (PhD 1994) has been named Chair of the Department of Geography and Regional Studies (UM GRS) at the University of Miami (Florida). Fuller joined the faculty at UM in 2003 after six years as a faculty member at George Washington University in Washington, DC. The UM GRS Department consists of nine full-time faculty and offers Bachelor's and Master's degrees in Geography. In addition to his upcoming duties as Chair (to begin next academic year), Fuller will continue to pursue his research on deforestation, remote sensing, and biogeography.

Charles E. Harne (BS 1967), now retired, spent his career of 35 years at the CIA (imagery analyst), Department of the Interior, and the Bureau of Land Management (geographic sciences program manager). He also spent 6 years as a member of the US Board on Geographic Names/Domestic Names Committee.

Emilie (Barbee) Kawas (BS 1971) retired from a career with the United Nations and is currently living in Venice, FL.

Deborah Metzger (PhD 1998) assistant professor in the Environmental, Earth and Ocean Sciences (EEOS) Department at University of Massachusetts, presented "The Locations of Employment Services and Unemployed People with Disabilities" at the Society for Disability Studies annual conference in Washington, DC, on June 15, 2006. Dr. Alberto Giordano, Department of Geography at Texas State University-San Marcos was co-author.

Joseph B. Thomas, Jr. (MA 1990; PhD 1994) is currently head of the US Navy's Cultural Resources Office, responsible for historic preservation, archaeology, and interaction with Native American tribes.

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University, Oct 23-25, 2006, brought together leading members of the US Earth Science Information Partnership who met with Chinese colleagues and discussed the possibilities for and benefits of the creation of a comparable Chinese entity. The honorary Chair of the workshop was Minister Guanhua Xu, Chinese Ministry of Science and Technology, and the co-chairs were Prof. John Townshend, Department Chair, and Prof. Peijun Shi, Vice President of Beijing Normal University. Dr. Shunlin Liang of this Department was also in the Organizing Committee and participated in this event. ①



Department Notes

Laser Sensors Used in Search for Ivory-Billed Woodpecker. Drs. Ralph Dubayah, Michelle Hofton, and researchers from NASA Goddard Space Flight Center are imaging areas of habitat suitable for the ivory-billed woodpecker, the largest and most regal member of the woodpecker family, which may still survive some 60 years after it was thought to have gone extinct. The team completed two weeks of flights over delta regions of the



lower Mississippi River using an aircraft carrying NASA's Laser Vegetation Imaging Sensor. They are now working to analyze the data taken during the flights and translate it into maps of canopy cover, biomass and other measures of forest structure that

will be used to identify areas where ivory-billed woodpeckers are most likely to be found.

Cropland Expansion Affects Amazon Deforestation Dynamics. PhD candidate Douglas Morton and Dr. Ruth DeFries led a recent study in the state of Mato Grosso in the southern Brazilian Amazon, which was published in the *Proceedings of the National Academy of Sciences*. It reports an increasing amount of cleared forest is being used for cropland instead of pasture, contrary to claims that cropland expansion happens only on areas previously cleared for ranching.

Department Welcomes Visiting Lecturer from Sudan.

This fall, Mohamed Elgamri A. Elmanan Ibrahim, a lecturer from the College of Forestry and Range Science at Sudan University of Science and Technology is working with Dr. Simon Trigg using remotely sensed data to map burned areas, develop fire history and to assess fuel load in a fire-prone region of Al-baja, 200 km south of Khartoum. Results from this study will form the basis of fire management policies for Sudan, which are currently lacking despite the prevalence of wildland fires in the country.



The Geography of the Southern Caribbean. Following on the heels of a successful summer course on the Geography of Puerto Rico, alumnus Joe Trocino and Dr. Martha Geores will

lead a winterterm course in January 2007 on the Geography of the Southern Caribbean. The 10-day course will include boarding a Windjammer Tall Ship, the *S.V. Yankee Clipper* for a seven-day sail/study of the remarkable Grenadines.

Interactive Mapping Display. During summer 2006, geography lecturer Catherine Carter and graduate assistant Janet Nackoney collaborated with the Indianapolis Children's Museum to create an interactive computer tool educating youth about current threats to forest elephant habitat in central Africa. Using Macro-media Flash code, Dr. Carter programmed an animated representation of forest elephant movement from telemetry data collected in central Africa by the Wildlife Conservation Society. She customized an interactive display which allows the user to view concurrent map layers of biological suitability for elephant habitat as well as threats posed by human activities.

The tool is currently featured at a computer kiosk as part of the Indianapolis Children's Museum exhibit on biologist Mike Fay and his "Megatransect" work in central Africa. The larger exhibit is part of an eight-year traveling exhibit titled "Maps: Tools for Adventure," in collaboration with the National Geographic Society. The exhibit will arrive at the National Geographic Society Museum in Washington, DC in spring 2007. More information on the exhibit can be found online at: http://www.childrensmuseum.org/special_exhibits/maps/index.html ①

Dr. Yeo Joins Faculty

The Department welcomed Dr. In-Young Yeo to the faculty this fall. Dr. Yeo received her B.S. in Civil and Environmental Engineering from Seattle University, M.S. in Civil and Environmental Engineering from the Ohio State University (OSU), and Ph.D. in City and Regional Planning from OSU. She also studied in the field of GIS and Mapping from the Geodetic Science, OSU. Prior to joining the University of Maryland, she taught in the Department of City and Regional Planning, Cornell University, as a visiting assistant professor. Her Ph.D. dissertation was supported by the NOAA Graduate Fellowship and Environmental Policy Initiative at OSU.

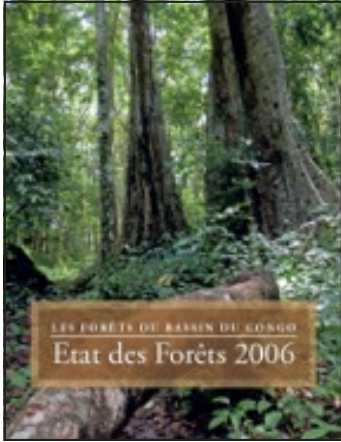


Dr. Yeo's broad interests lie in understanding the human-environmental interactions and characterizing their spatial dynamics. She studies the cross-scale transboundary environmental problems and develops a conceptual modeling framework for better spatial decision making and policy. Environmental simulation models, spatial optimization, and Geographic Information Systems are used to integrate various spatial data and analyze different spatial systems. Her recent works focus on investigating the impacts of locational land-use changes on watershed hydrology and delineating optimal land use patterns. She is also interested in quantifying the impacts of environmental quality on human health and studying the spatio-temporal scales of such analysis.

In addition to her academic interests, Dr. Yeo is a faculty advisor for the Geography Club/GTU.

The Forests of the Congo Basin: A Preliminary Assessment

The CARPE team from the Department of Geography served on the Editorial Board for the recent publication entitled "The Forests of the Congo Basin: A Preliminary Assessment." The report, published in on January 15, 2005, contributes to the objectives of the Congo Basin Forest Partnership (CBFP). It represents




the first in a series of reports planned to disseminate results from monitoring the tropical forest of the Congo basin. The report was compiled by key partners the Central African Regional Program for the Environment (CARPE), including members from the US State Department, USAID, US Forest service, Smithsonian Institution, World Resources Institute, Wildlife Conservation Society, World Wildlife Fund, Conservation International, and the

African Wildlife Foundation. This report highlights the unique plight of the Congo Basin Forest. Because there is not much objective information on the condition and extent of the vast natural resource of the Congo Basin, it has been difficult for decision-makers and stakeholders to develop an international plan of action. The report provides information that is vital for the CBFP

partners to gauge the effectiveness of their efforts and to prioritize actions for efficient use of scarce conservation resources. The report recognizes the need to reverse the trend of accelerating deforestation and outlines some of the initiatives that are being taken by CARPE and CBFP partners to achieve this. English and French versions of this preliminary report are available at: <http://carpe.umd.edu/Plone/resources/sof>.

A subsequent report, more detailed and broader in scope, is currently under production. This "State of the Forest" report is an effort to pool information from all available sources in one document. This report is not intended to be a scientific document in the usual sense, but rather should serve to foster dialog among the partners, build capacity in the region to monitor the resource base, and to serve as an inspiration for present and future partners. As the experience grows, the "State of the Forest" will evolve to consider specific challenges and thematic topics.

The English version of "The Forests of the Congo Basin: State of the Forest 2006" will be available in January 2007. The French version is already available at the CARPE website: <http://carpe.umd.edu/Plone/resources/sof>. 

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