UMD Geographers Stake Out New Territory

The planet’s climate and environment are changing rapidly, and this transformation could put humans at risk in ways that are hard to predict. The UMD Department of Geographical Sciences is using a variety of innovative approaches to examine these climate shifts. Its research goes far beyond merely mapping, and encompasses both the physical and social sciences, as well as environmental and climate policy.

This work is being noticed. The National Research Council ranked the department third in the nation, and a scientific paper published earlier this year found that the department was fourth most productive in the nation in terms of remote sensing research. It has 22 full-time research professors, and had $13 million in outside research funding in FY 2013—more than double the amount a decade ago. “The work we’re doing right here is making a real difference in how we understand human impacts on the planet,” says department Chair Chris Justice.

In November, Matthew Hansen and several colleagues published the first-ever detailed global map of global forest trends. In partnership with researchers at Google and the United States Geological Survey, the group developed a research tool that allows scientists, policymakers and the public to gauge the extent to which the world’s forests changed between 2000 and 2012. The work, which was published in Science, relied on more than 650,000 satellite images. It used high-powered computer technology to rapidly integrate this data into a single application, which is publicly available on the Web. Hansen and his colleagues found that over the 12-year period, the planet lost a total of 1.5 million square kilometers of forest.

Maryland researchers are also examining how declining world oil production may put crucial sectors of the U.S. economy at risk in coming decades. Klaus Hubacek and Kuishuang Feng, along with Christina Prell (sociology), analyzed how a range of industries use oil and oil-based products, and found that sectors such as chemical and plastic manufacturing, fertilizer production and air transport could be increasingly vulnerable as oil becomes less available and more expensive.

The university is also doing important work on how carbon is influencing climate. Last year, Maryland joined with NASA’s Goddard Space Flight Center to create the Joint Global Carbon Cycle Center, which will track the ebb and flow of carbon in the planet’s atmosphere. The center is being led by department Research Director George Hurtt. Professor Ralph Dubayah and his research team are also working on this issue, using laser sensing technology to find out more about the extent to which forests sequester and release carbon. They have created detailed maps of all the forests in Maryland, and have proposed to do the same for the entire planet.

Tatiana Loboda is using satellite data to gauge the extent to which fire is becoming a problem on Alaskan tundra. She has found that as the climate warms and dries, these areas are increasingly at risk of burning. Loboda is also analyzing how large wildfires in California contribute to respiratory problems of the state’s residents, and how wildfires in Russian forests affect carbon storage.

Justice and his colleagues are using new strategies to examine how climate influences worldwide agriculture. They have combined satellite and economic data to analyze links between severe droughts in the U.S., Russia and Australia and food prices and availability.

“Geographical Sciences is an astonishing success story,” says John Townshend, dean of the College of Behavioral and Social Sciences and former chairman of the Department of Geographical Sciences. “Its faculty publish in the world’s best journals, and their research has an enormous impact. For every $1 it receives from the state, the department raises $5 of competitive research grants. This leverage of state funding contributes directly to the Maryland economy.”

Chapman Enhances University Research Partnerships

As the University of Maryland continues its drive to become one of the country’s leading research institutions, it is working hard to attract more funding. To helpThat effort, the Division of Research recently named Eric Chapman as assistant vice president for research development. “Chapman will focus on connecting with federal agencies, corporations, research labs, medical centers and foundations to create new opportunities for Maryland researchers,” says Ken Gertz, associate vice president of research. “He’ll be a great asset for the UMD research community.” Chapman came to Maryland two years ago to be the deputy director of the Maryland Cybersecurity Center. In 2012, he became director of corporate and government relations for the College of Computer, Mathematical, and Natural Sciences. Prior to coming to College Park, he worked for five years on Capitol Hill as national security adviser for U.S. Sen. Barbara Mikulski (D-Md.).

UMD Conference Explores “the Future of the Past”

Today we are awash in information from smartphones, tablets, MP3 players, laptops, TV’s and myriad other digital devices. But even in the midst of this flood, enormous amounts of information—both from the past and the present—are at risk of being lost or forgotten.

The university’s Future of Information Alliance (FIA), an interdisciplinary effort to examine how we can harness so much information to improve our lives and the world, is also exploring how technology can help us learn more about preserving the past.

It hosted a weeklong series of programs last month in College Park and across downtown Washington to ask questions such as how technology can help researchers examine the past in novel ways, and how best to preserve digital material such as websites for future generations.

“This is a new way of thinking about history and preservation,” says FIA Co-director Allison Druin, School professor and chief futurist for the Division of Research.

Among the speakers were Dan Russell, Google’s director of user happiness, and G. Wayne Clough, secretary of the Smithsonian Institution.

The FIA works closely with those institutions as well as eight other partners: National Geographic, the Library of Congress, the National Archives, the Newseum, the National Park Service, the state of Maryland, the Barrie School, and WAMU 88.5, with support from the Robert W. Deutsch Foundation, and the University of Maryland.

Druin and Co-director Ira Chinoy, associate dean of the Philip Merrill College of Journalism, say the event succeeded in creating a lively conversation about the rapidly evolving relationship between technology, data and history and identifying opportunities for interdisciplinary collaboration and research.
Center to Focus On White-Collar Crime

For more than two decades, Sally Simpson has studied corporate crime—price fixing, bribery, fraud, environmental offenses and other malfeasance done both by and to companies. The professor of criminality and criminal justice has long believed that the topic doesn’t receive enough attention from researchers.

She is trying to remedy that as director of the university’s new Center for the Study of Business Ethics, Regulation, and Crime (C-BERC), a joint initiative of the Robert H. Smith School of Business and the Department of Criminality and Criminal Justice. It is the first academic venture in the country to examine the issue from the shared perspective of business and criminality.

The center’s goal is understand why corporations and employees break the law, and how to and how best to reduce or prevent this crime. “We still don’t know very much about why these crimes are committed, and how common they are,” she says.

Simpson’s own research focuses not on specific crimes, but on how corporate structure and economic and social environment contribute to white-collar crime. Simpson says C-BERC researchers will not only conduct research, but also work with companies and regulatory agencies to set up systems that discourage criminal behavior, and to identify such behavior before it spreads.

The center also has four associate directors, all from the Smith School: Stephen Loeb, Leigh Anenson, Gideon Mark and James Staihar.