

# Newsletter

# Center for GeoHazards Studies

Fall, 2011

## Special points of interest:

### STUDENTS:

Interested in becoming more involved?

E-mail Sarah Ogburn at [seogburn@buffalo.edu](mailto:seogburn@buffalo.edu) to learn about the student committee.

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## Letter from the Director



Field team on the summit of a small volcano in the Lunar Crater Volcanic Field, Nevada, where we are studying a variety of issues related to volcanic fields that will ultimately aid in hazard assessments.

From left to right: Liz Widom (Miami University, Ohio), Greg Valentine (UB), Dave Kuentz (Miami Univ., Ohio), Caco Cortes (UB), Peter Johnson (UB MS student), Dayana Schonwalder (UB PhD student), Fara Ra-soazanamparany (Miami Univ. PhD student), and Jamal Amin (UB MS student).

The Center for Geohazards Studies (CGS) has been very busy since the last Newsletter.

Ph.D. student **Sarah Ogburn** received a \$2,000 research grant from CGS which she is using to build a flume for experiments on ash cloud generation from pyroclastic flows. The next call for student research proposals will be during the Spring 2012 semester, and it is open to all graduate students at UB who are working on some aspect – be it science, engineering, management, planning, or other fields – with the aim of improving our understanding of natural hazards and how to mitigate them. **Applicants must be registered members of CGS.**

**Shana DiCamillo** was hired as the Administrative Lead for CGS. Shana came on board in May 2011, and is helping greatly with planning, communications, administration, and logistics of Center-related activities.

A workshop titled “Probabilistic Analysis of Volcanic Hazards,” led by members **Eliza Calder** (Geology) and **Dean Bruce Pitman** (Mathematics) was convened at UB in May, and brought together researchers from around the world to share their work and develop strategies for future research in this important topic.

A CGS-sponsored workshop in September 2010 led to publication of a front-page article in **Eos**, the weekly newsletter of the American Geophysical Union. The article describes initial plans to develop a user facility for large-scale experiments on volcanic processes.

## Letter from the Director, *cont.*

The CGS project **VHub**, which is establishing a cyberinfrastructure for online collaboration in volcanology and volcanic risk mitigation (see **vhub.org**), sponsored a workshop in Melbourne, Australia, on the use of vhub.org tools and capabilities. About 38 international researchers participated in this workshop.

Sarah Ogburn (see previous page) has joined the CGS Advisory Committee to help us build a stronger connection with the student population at UB, and has begun a series of interactions with students from several departments to develop a plan. I encourage both undergraduate and graduate students to contact her at [seogburn@buffalo.edu](mailto:seogburn@buffalo.edu) if you have ideas and are interested in participating.

The new academic year promises to be an exciting one as CGS continues its mission to **nucleate and facilitate interdisciplinary research and training aimed at understanding and mitigating geological hazards**. Be on the lookout for CGS seminar and workshop announcements, as well as the request for proposals for graduate student research grants.

As always, please contact me or [Shana DiCamillo](#) with ideas and suggestions; or if you are looking for potential interdisciplinary connections for ongoing or future research.

Greg Valentine,  
Director

## Faculty Research Update

By Dr. Jun Zhuang

This past semester has provided excellent results for the Industrial Engineering team working on disaster research, culminating in two publications this summer! **Dr. Jun Zhuang**, an assistant professor in the UB Industrial and Systems Engineering Department, and **John Coles**, a PhD Student and Graduate Fellow of the National Science Foundation teamed up with Texas A&M University to help improve the state of disaster relief in two separate studies.

The first study analyzed the changing scene of disaster response and recovery and how it has resulted in a rapid increase in the number of private organizations emerging to assist in the wake of such catastrophes. In this project we proposed an approach to support and guide decision makers in emergency environments by helping them to select and develop relationships to improve resource utilization and project outcomes in the wake of a disaster. Using game theory, we provided an initial approach for the development of a decision support framework for emergency managers entering a disaster environment.



PhD student, John Coles

## Faculty Research Update, *cont.*

The second study explored the disaster response and recovery efforts following the January 12<sup>th</sup>, 2010 Haitian earthquake through the eyes of 18 different relief agencies. Funded by the **National Science Foundation RAPID Program** (Grant #1034730 and #1034740), this paper explored the concepts of cooperation, mutual understanding, and connectivity among agencies responding to the earthquake. Of the agencies interviewed, it was found that agencies that had no partnerships or presence in Haiti prior to the earthquake were the most likely to build new clinics, orphanages, and schools. Additionally, we found that agencies were more likely to develop new partnerships from new contacts rather than dormant contacts. This study hopes to increase understanding and applicability of research in disaster relief networks by providing a new perspective into how agencies work together.

### Recent Publications:

Coles, J. and J. Zhuang (2011) "Decisions in Disaster Recovery Operations: A Game Theoretic Perspective on Organization Cooperation," *Journal of Homeland Security and Emergency Management*. Vol. 8: Iss. 1, Article 35.

Coles, J., J. Zhuang and J. Yates (2011). "Case Study in Disaster Relief: A descriptive analysis of agency partnerships in the aftermath of the January 12<sup>th</sup>, 2010 Haitian earthquake," *Socio-Economic Planning Sciences*: Forthcoming.

## Student Research Update

My name is **Sarah Ogburn**, and I am a PhD student in geology at UB. I grew up in Louisville, Kentucky and received a dual B.S. in Geology and Biological Anthropology from Duke University. I began my Master's degree in volcanology with **Dr. Eliza Calder** at UB in 2006. During this time, I first traveled to my main field site, the tiny Caribbean island of Montserrat in the Lesser Antilles.

Soufrière Hills Volcano has been erupting since 1995, and the eruption is characterized by lava-dome growth, vulcanian explosions, lahars, and pyroclastic flows.

I interned at the Montserrat Volcano Observatory and fell in love with little island. My Master's project involved computational modeling of very large pyroclastic flows directed towards inhabited areas in order to investigate a 'worst-case' hazards scenario for the island.

My current PhD continues my work on Montserrat and focuses on the mobility of pyroclastic flows and surges and seeks to reconcile field data with experimental and computational analogs. I have also done field work at Lascar Volcano, Chile; and interned for four months at the British Geological Survey in Edinburgh, Scotland as part of my ongoing IGERT Fellowship in GI Science. Currently, I am involved in the Focused Research Group in the Prediction and Risk of Extreme Events with colleagues from my undergraduate alma mater, Duke University. This work involves statisticians, mathematicians, and computer modelers in order to model and predict extreme natural hazards, particularly pyroclastic flows. Recently, I received the Center for Geohazards Student Research Grant and used the money to build a flume for granular flow experiments.

As the new student member of the Center for Geohazards Studies advisory committee, I am working on student outreach, and encourage all interested students to apply for membership to the Center. As members, students are eligible for this year's Student Research Grant, will receive updates about seminars and workshops, and can participate in a range of other Center activities and research projects.



Sarah Ogburn at Safety First at Poas Volcano, Costa Rica



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Send your research  
updates to [Shana  
DiCamillo](#) to be  
included in the next  
newsletter or e-blast!

*Have changes to your employment, research  
interests, or contact information? Let us know at  
[geohaz@buffalo.edu](mailto:geohaz@buffalo.edu).*

Center for



# GeoHazards Studies

The *Center for GeoHazards Studies* seeks to decrease harmful societal effects of natural phenomena such as volcanic eruptions, landslides, mudflows, and avalanches through research, service, and education. Our team of scientists and engineers works together with social scientists, urban planners and public health researchers to evaluate the broader harmful impact of hazardous natural phenomena. One of our principal goals is to integrate analyses of various mass flows related to natural disasters on human infrastructure and ecosystems in order to evaluate approaches that could lead to a reduction of injury and death.

**Special thanks to:**

**Board of Directors:**

*Charles Connor, University of South Florida  
Bernard Hubbard, U.S. Geological Survey  
William Rose, Michigan Technological University*

**Advisory Committee Members:**

*Marcus Bursik, University at Buffalo  
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