

Geography Connection

University of Utah Department of Geography

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Geography Skills Crucial to the Mission of the Wasatch Front Regional Council

Within the Salt Lake Valley, there is a variety of agencies seeking the expertise of geographers, environmental specialists, spatial analysts and GIS professionals. Among these agencies, the Wasatch Front Regional Council (WFRC) is the transportation planning agency for the Wasatch Front Urban Region. Over the years the WFRC has hired and relied upon U of U Geography graduates to devise and implement important transportation planning efforts.



L-R

Scott Festin,
Eloise Thomson,
Suzie Swim,
LaNiece Davenport & Val John Halford

The WFRC is represented by 18 elected officials chosen from Davis, Weber, Salt Lake, Morgan, and Tooele Counties for the planning and development of all regionally significant highway and public transit capacity expansion projects. Current projects include the 2011-2040 Regional Transportation Plan (RTP) and the 2012-2017 Transportation Improvement Program (TIP), which have been specifically designed to aid the development process of an overarching project: The Wasatch Choice for 2040 Vision for the growth and development of the Wasatch Front.

Implemented in 2005, the Vision addresses the most pressing planning issue facing the Salt Lake Valley: the doubling of population along the Wasatch Front by 2040. It became apparent that business as usual in terms of highway and transit development would no longer be sufficient; the projected growth would begin to vastly outstrip financial and physical abilities to build new capacity in the traditional fashion.

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Connections to the U of U Geography Department—

VALARM, LLC - <http://www.valarm.net/>

- Someone steals your camera bag/guitar/motorcycle
- Your A/C breaks down and your servers are overheating
- You want to gather real time environmental data using external sensors such as: temperature, humidity, soil moisture content, GHG emissions, industrial pollutants, and incoming solar insolation
- Your vacant home is freezing and the pipes are about to burst
- The humidity in your greenhouse drops and your orchids are drying up
- Your refrigerator breaks and your beer gets warm
- You want to track a person or vehicle recording route, stops, velocity.

These situations and a deep knowledge of geospatial science and technology has led Edward Pultar and his brother Lorenzo to create a southern California

technology start up firm – VALARM, LLC “Versatile

Asset Locator And Remote Monitor.” Originally

Valarm was conceived as an affordable and accessible theft-prevention and vehicle tracking system. Today,

Valarm has evolved into a general purpose platform for remote environmental monitoring, mobile data acquisition,



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The leadership of the Regional Council determined that a sustainable plan to maximize the value of existing resources is needed to meet the challenges of rapid population growth. The Regional Council partnered with its sister agencies, the Mountainland Association of Governments and Envision Utah, in conducting an in-depth review of the most efficient and sustainable patterns for future growth while maintaining and preserving a high quality of life. Utilizing an extensive outreach and modeling process, provisions from the Vision focus growth in urban centers, connecting various centers with high capacity transportation facilities such as TRAX and FrontRunner.

In order to successfully implement such an extensive and impactful strategy, the WFRC relies on a group of dedicated individuals educated in a variety of concepts and skills including spatial sampling, data gathering, spatial analysis, cartographic presentation and geographic information systems development and usage to support essential components of the Vision, RTP, and TIP projects. Current WFRC employees who are U of U Geography graduates include:

Scott Festin, Planner: Duties include Demographic Analysis, GIS, and Information Technology

Eloise Thomson, Planner: Duties include GIS and Data analysis

Suzie Swim, GIS Technician: Duties include GIS and Website Administrator

LaNiece Davenport, Regional Planner: Duties include CDBG Coordinator, Green Infrastructure, and Project Manager

Val John Halford, Transportation Planner: Duties include Regional Transportation Plan, Local Government Support, and Project Manager.

The WFRC's employees' education, skills and experience acquired from the University of Utah and other institutions have allowed the Regional Council to successfully implement projects to meet the challenges of a growing region, optimizing mobility and accessibility at an unprecedented level within the Wasatch Front Region.

All transportation and growth related needs identified as part of the RTP process are evaluated and analyzed using

geographic locational information in the context of demographic projections and future land use. The WFRC's planning staff is charged with developing various transportation infrastructure development scenarios (models) to meet the needs of rapid population growth within the Greater Salt Lake region. Such scenarios are tested using sophisticated travel demand and air quality models to determine which elements of the various plans perform the best in terms of cost effectiveness, congestion mitigation, travel demand reduction, air quality, accident reduction, and several other measures. In carrying out these operations, WFRC seeks individuals with strong analytical skills--those who yearn for finding solutions to real world problems through data gathering and research, quantitative analyses, and modeling--relying heavily on applied geography, land use planning and GIS. The WFRC utilizes a number of modeling software package, including a land-use modeling package known as Urban Sim (renamed OPUS) for testing growth scenarios in the Vision project as well as participating in the development of the Envision Tomorrow Plus (ET+) software, a model form based zoning code that will allow for more flexibility in planning for urban centers and other transit oriented developments for optimal land-use choices. Along with strong analytical skills, the WFRC strongly emphasizes a need of excellent written and oral communication skills. The Council works closely with other organizations, clients, representatives, among others, where communication is imperative for the planning, development, implementation, and presentation of transportation projects.

Current projects taken on by the Wasatch Front Regional Council are long term solutions to contemporary transportation issues in the Greater Salt Lake region. As these transportation strategies take effect, geography professionals will be in high demand for the drafting, revising and modeling of the Vision, RTP and TIP projects. The WFRC is committed to establishing proactive solutions to real world problems. The level of commitment and strong skill set provided by the WFRC staff have made notable and positive differences along the Wasatch Front.

Article and photos by **Val Halford**, WFRC and **Vy Nguyen**, master's student, Department of Geography.

(Continued from page 1- VALARM, LLC)

and asset/vehicle tracking. Valarm is in start up mode, with a partnership with ESRI in their Startup and Emerging Business Program. Currently, Valarm has customers in Europe, Australia, Brazil and the U.S.



Edward Pultar (left in photograph) received two Bachelor's degrees in Geography and Computer Science with a minor in Math from the University of Utah. His Master's degree in Geography is also from the University of Utah. His U of U mentors and advisors were Drs. Tom Cova, Harvey Miller, and Phil Dennison, who are still inspirational to him to this day. Ed stated, **“I am very thankful for all of the many opportunities and the geographic educational experiences that the U of U Geography Department provided me. The 6 years at the U assisted me greatly in my career path, since the GIS and programming skills learned at Utah prepared me well for my role as founder, president, and Geographic Information Scientist at Valarm, LLC.**

After the U of U, Ed went on for his Ph.D. at the University of California, Santa Barbara. While working toward his PhD, Edward was awarded the Dangermond GIS Fellowship and interned at Google, where he worked on the Google Earth product. In 2011, Edward received his PhD in Geography from UCSB. Immediately after receiving his PhD, he spent a year in Spain as a visiting professor of GIS for the Erasmus Mundus program at Universitat Jaume I where he taught technology courses in English and Spanish.

In addition to his job writing software for Valarm, Edward is a faculty member at the University of Southern California in the Spatial Sciences Institute. Lorenzo (right in photograph) has been developing software since 1995 and has built major systems for Ford Motor Company,

DaimlerChrysler, R.L. Polk, ADP, IBM, Qualcomm, Movielink/Blockbuster, ESPN, and Yokohama Tire.

The Valarm system can be used to track almost anything via GPS and to monitor almost any environment via networked sensors. Commercial fleet managers use Valarm as a vehicle or container-tracking device with additional sensor information. Scientists and hobbyists use it as a remote environmental monitor or data acquisition platform. Consumer applications include use as a motion-sensing or sound-sensing, GPS-tracking, anti-theft alarm and tracking device, or property monitoring.

Valarm also integrates with externally connected sensor hardware (via USB or Bluetooth) to record environmental and/or mechanical factors including, but not limited to, temperature, lumens, voltage, barometric pressure, humidity, presence of volatile organic compounds or other gases, and the status of vehicle OBDII or OBD2 sensors (on-board diagnostics), including engine efficiency/workload, throttle position, coolant temperature, fuel consumption, and more. The Valarm-equipped Android device can immediately distribute configurable alerts via SMS/text, email, or the web. Valarm is the Sensor Web. Valarm is a powerful research and data collection tool due to its full integration of mobile phone sensors: GPS, accelerometer, light sensor, microphone, camera.



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end of this letter for your
convenience. Thank you!**

Faculty Affairs



Back L-R: Yehua Dennis Wei, Simon Brewer, Phil Dennison, Andrea Brunelle, Harvey Miller, Mitchell Power & Kevin Henry
Front L-R: George Hepner, Tom Cova, Kathleen Nicoll, Rick Forster, Kathryn Grace, Phoebe McNeally & Steve Farber

Simon Brewer: Simon works with records of climate change and ecosystem response over broad time and spatial scales. He is currently finishing an NSF funded project to model vegetation changes for North America over the last 21,000 years, and has recently presented results from this project at international meetings in Japan and China, as well as three journal articles, including a paper describing some of the theory underlying this research in *Trends in Ecology and Evolution*. He is currently working on a paper comparing the output of climate models to evidence of past climatic changes, and is using this experience in a new class (Climate Change Impacts) examining our knowledge of future climate change, its impacts and the potential for adaptation or mitigation of these changes. Outside work, he can be found supporting Real Salt Lake, swimming and cycling.

Andrea Brunelle: Andrea is a paleoecologist who studies environmental change with a focus on climate change and past ecosystem disturbances such as fire and bark beetle outbreaks. Much of her work has land-management implications. Her geographical areas of interest include the intermountain west and the American southwest (including northern Mexico). Andrea took a group of students to northern Baja California, Mexico for field work in December 2012 and is teaching her Costa Rica study abroad class this May.

Larry Coats: Having grown up in the Four Corners

region of the desert southwest, I have always been fascinated with the natural scenery that surrounds us, so graduate studies in Geography were a logical addition to my knowledge of landscape processes and deep history. I consider my research efforts a result of my intense curiosity about the land that I love so much, and the climates, biota, and people who preceded in this region us by millennia. My focus is reconstructing past environments of desert landscapes, utilizing a variety of archives that preserve information about the past (packrat middens, sediment and alluvium, paleontology and archaeology). Current projects I'm engaged in include ongoing efforts to decipher paleoenvironments in Range Creek Canyon to inform archaeological investigations of Fremont occupations (1200 to 700 years ago), and completion of a project in a unique desert environment- the Victoria Land Coast of the Ross Sea, Antarctica. I currently teach three regularly-offered classes in Geography: *GEOG 3310 Introduction to Natural Hazards*, *GEOG 3205/5205 Regional and Global Climates*, and *GEOG 3270/5270 Biogeography- Global Patterns of Life*, and a summer field class *GEOG 5712 Paleo Field Methods*. I occasionally teach *GEOG 1000 Earth Environments*, *GEOG 5280/6280 Quaternary Environments*, and will be introducing a new general interest class, *GEOG 1750 Geography of Skiing*, most likely in the Spring 2014.

Tom Cova: Tom's research interests are hazards, transportation, and GIS with a particular focus on wildfire evacuation. Last year he presented a talk at the 2012 Annual Meeting of the AAG in New York on "Protective Action Triggers" which provided an overview of the research he's been doing with Phil Dennison. He also attended an NSF meeting in Boston to present on the same topic, as well as the annual Natural Hazards Workshop in Boulder, Colorado. He teaches Introduction to GIS in addition to GIS & Python, the Geography of Disasters, and a seminar on Hazards Geography. He is Chair of the AAG Hazards, Disasters & Risks Specialty Group, and he likes to hike, bike, ski and travel, depending on the time of year.

Phil Dennison: Phil and his grad students have been working on several research projects, including remote measurement of fuel moisture, vegetation recovery after

fire, climate factors related to fire, and trace gas detection in hyperspectral data. Phil is also collaborating with Tom Cova on a project investigating protective action triggers for wildfires, and will soon start a new project on vegetation species mapping for NASA's HypsIRI preparatory campaign that will acquire hyperspectral data over large areas of California. After taking a sabbatical last academic year, Phil is once again the department's graduate director. He had a busy fall semester teaching his intro remote sensing and environmental optics classes and presenting at NGA, NASA, and fire ecology conferences. In his free time, Phil has become addicted to trying to maximize his mileage in his new electric car.

Elizabeth Dudley-Murphy: Elizabeth is Adjunct Associate Professor in the Geography Dept., originally from northern Chile in the Atacama Desert, where she was born and raised. She received her PhD from the Geography Dept. in 1996 and since then has been working with the Energy & Geoscience Institute (EGI). She has been teaching GIS in the Civil and Environmental Engineering Department for several years, where she co-taught with her colleague Greg Nash, also a graduate of the U of U Geography Dept. This year Elizabeth began teaching our Intro to GIS class (3140-90) completely online in Canvas. Besides GIS, Elizabeth also teaches three other online classes for the Geography Department and is the faculty representative at the University of Utah for the School for Field Studies, Environmental Field Studies Abroad Program that is based in Salem, Massachusetts. Her research interests include the application of remote sensing and GIS for urban and vegetation analysis - specifically the urban forest. She is working with colleagues to develop new methods based on high spatial resolution imagery for characterizing the urban forest in the Salt Lake Valley. At EGI Elizabeth has provided GIS and Remote Sensing support for projects in Antarctica, Indonesia and the Raft River area in Idaho.

Steven Farber: Steven is a transportation geographer interested in the relationship between urban spatial structure and peoples' daily behaviors. This year he was awarded a grant from the National Institute for Transportation and Communities to study social equity concerns surrounding the Utah Transit Authority's shift to distance-based fares for bus and TRAX service. He became a board member of the Transportation Geography Specialty

Group at the AAG, and was appointed as a member of the Transportation Research Board committee on Social and Economic Factors. Steven presented his work at the TRB, the AAG, and GIScience meetings this year, and conducted international collaborative work with colleagues in Spain, Chile and Belgium. Within the department, Steven created and taught a course on Advanced Spatial Analysis (GEOG 5020) and chaired a graduate workshop devoted to data modeling. Most recently, he has received a College of Social and Behavioral Sciences Innovative Teaching Award to "flip" Geographical Analysis (GEOG 3020). Flipping will place the lectures for the course online, reserving in-class time for collaborative problem solving and just-in-time delivery of course content.

Rick Forster: Rick has been conducting research in glaciology and remote sensing related to climate change. During a research expedition to the Greenland Ice Sheet his graduate students discovered a buried water aquifer within the snow near the surface of the ice sheet that persists throughout the winter. This discovery implies a portion of the meltwater from the ice sheet is being stored in the snow rather than contributing directly to sea level rise. Rick and a graduate student from the geography department along with a two glaciologist from NASA will revisit one of the buried water sites in April 2013 to make additional measurements to estimate to the volume of water being stored. Rick's research group is also studying the snow accumulation rates on the Greenland and Antarctic ice sheets, Alaskan glacier velocities, snow covered area estimates in mountainous terrain, effects of dust on snow melt, and density changes in snow during spring melt episodes. Rick's group will be moving into the new physical geography laboratory area in Research Park during the spring semester.

Kevin A. Henry: Kevin is a medical and health geographer whose main research interests focus on the application of geospatial and epidemiological approaches for investigating neighborhood environments and geographic accessibility on health outcomes (e.g., pre-term birth, cancer, infectious disease, obesity). Last year he presented research on geographic disparities in breast cancer screening and stage at diagnosis at the Annual Meeting of the AAG (Association of American Geographers) in New York and was also invited to speak about his work on geographic imputation at the ESRI International Geospatial Geocoding

Conference at ESRI's campus in Redlands California. Also during the past year, Kevin and colleagues at Huntsman Cancer Institute and BYU (Brigham Young University) Health Sciences completed a study examining the effects of geographic factors on adherence to colorectal cancer screening and differences in screening use among familial risk groups. The work was recently published in the journal, "Clinical Gastroenterology and Hepatology". Additionally, this past December his proposal to add questions about radon awareness and household testing to the State of Utah's annual statewide BRFSS (Behavioral Risk Factor Surveillance System) survey was approved. Later this year Kevin and his graduate students will take the lead on analyzing these data. Kevin teaches GIS for Environmental and Public Health, Medical Geography, Human Geography and Spatial Epidemiology.

George Hepner: George is a professor and serving his third year as chair of the department. He specializes in land use analysis, GIS, and the geography of terrorism. His recent research funding includes a continuation of funding from USEPA for Southwest Consortium for Environmental Research and Policy (SCERP), Bureau of Land Management and British Gas International. He has a recent publication with current graduate student, Yuan Zhang. The Geography of International Terrorism: An Introduction to the Spaces and Places of Violent Non-state Groups, co-authored with Rich Medina, is expected to be published in Spring, 2013. He is leading the U of U initiative for a US Geospatial Intelligence Foundation (<http://usgif.org/>) certificate in GEOINT. Several students are expected to receive the certification in the next year.

Phoebe McNeally: Phoebe is the Director of the DIGIT Lab at the University of Utah. Her research interests include geographic information science, geographic visualization, spatial decision support systems, and snow science. The diversity of the DIGIT Lab projects provides interesting challenges and unique opportunities to develop a variety of geospatial solutions. Phoebe presented her work with the Snowbird Ski Patrol on developing an interactive web-based mapping approach for snow safety control operations at the International Snow Science Workshop in Anchorage, Alaska in September. This research is also being highlighted in the Canadian Avalanche Association's Avalanche Review. Phoebe is very excited to be

teaching the Capstone in GIS/Remote Sensing course again this Spring providing students an opportunity to build on their technical skills and work directly with local GIS/Remote Sensing Professionals.

Kathleen Nicoll: In 2012, Kathleen continued to work with colleagues in Turkey and on research in southern Africa and in the Great Salt Lake region. The book she co-edited "Climates, Landscapes and Civilizations" was published in December by the American Geophysical Union Press, just in time to abate the Mayan apocalypse. Recent publications include papers about dust storm meteorology and wind dynamics of Utah in the journals Atmospheric Environment and Geomorphology, among others related to themes in archaeological geology. For the past four years, Kathleen has served on the Joint Program Technical Committee that plans the annual meeting of the Geological Society of America. She is happy to turn over that role in 2013, and to take on new challenges as part of the Executive Committee of the IAGD, the International Advisory for Geoscience Diversity (<http://www.theiagd.org/>), which works to improve access to the geosciences for persons with disabilities and promote communities of research, instruction and student support. Kathleen was recently appointed to the Editorial Board of the Journal of Archaeology.

Mitchell Power: Mitchell holds a joint appointment with Geography and the Natural History Museum of Utah. Mitchell finished with moving the museum's herbarium collection this last year into the new Natural History Museum of Utah. As Curator of the Garrett Herbarium and Assistant Professor in Geography, his interests include botany, paleoecology, biogeography, fire history, and paleoclimatology. The museum's plant collection is currently being interrogated for evidence of climate change. The plant collection contains thousands of specimens from the intermountain west collected over 100 years ago. He and his students have been exploring this plant collection for evidence of changes to spring flowering time related to recent climate changes in spring temperatures and moisture in the last few decades. This past year he spent the summer conducting plant surveys and collecting sediment cores in the Uinta Mountains. This Ashley National Forest-funded research explores ecological response to past wildfires along the south slope of the Uinta Mountains. Last fall Mitchell participated in a

PAGES-INQUA funded workshop in Bogota, Colombia to explore millennial-scale changes in tropical ecosystems of the Amazon Basin. He also travelled to Montpellier, France in December to participate in the PhD defense of Beregere Leys on *Facteurs explicatifs de la dynamique des végétations au cours de l'Holocène en système montagnard méditerranéen et Alpin : climat et perturbation du feu*. Mitchell continues to balance his time with international research, including recent publications on paleoenvironments in French Guiana and the Neotropics, as well as his interests in understanding ecological legacies of the Intermountain West.

Vincent V. Salomonson: Vince is a Research Professor--Adjunct Faculty. He retired from NASA/Goddard Space Flight Center in 2005 and then joined the department. Since being with the department he has worked on various aspects related to the operation of the Moderate Resolution Imaging Spectroradiometer (MODIS) that has been operating on the NASA Terra and Aqua missions since 1999 and 2002 respectively. That work has been supported by two NASA grants. One supported his continuing as the MODIS Science Team Leader up to early 2009. The second grant started in 2010 and continues through the present and provides support of various kinds to the MODIS Project Scientist along with some research applying an established subset of MODIS observations over the Great Salt Lake Basin. He recently provided an article for the upcoming Encyclopedia for Remote Sensing being published by Springer entitled "Remote Sensing, Historical Perspective" and served as a section editor for that encyclopedia. Additionally he recently completed a chapter in a new book soon to be published by Springer on "Satellite-Based Applications on Climate Change." The chapter is entitled: "MODIS Instrument Characteristics, Performance, and Data for Climate Studies."

Auxiliary and Associate Instructors

Jon Allred	Jason Berry
T.C. Christensen	Tom Hale
Val John Halford	Ralph Patterson
Pam Perlich	Kenneth Petersen
Ingrid Weinbauer	

New Faculty

Kathryn Grace: Kathryn is a population geographer and her research primarily focuses on fertility, food insecurity and the health of women and children in sub-Saharan Africa and Central America. She enjoys the challenge of combining remotely sensed data with population/health data to examine various health and population outcomes. She has enjoyed her first year at the U where she has taught population geography and a business course on global economic development/geography. She's looking forward to a busy summer spending time with her family collecting data and exploring Burkina Faso and hopefully getting some time for exploring more of Utah.



New Graduate Students



Back L-R: Delanie Farnham, Kaila McDonald, Kaitlin Barklow, Ryan Bares, Vy Nguyen, Liwei Fu, Han Li
Front L-R: Michael Freeman, Seth Bogle, Michael Ryba, Ben Ritter, Jessica Castleton, Corey Unger, Kenneth Dudley, Neal Dombrowski

Ryan Bares: Ryan is a first year graduate student working with Andrea Burnelle. He is originally from northern Utah but moved to Salt Lake in 2005 to get his undergraduate degrees from the U of U in Geography and Environmental Studies. After graduating, Ryan spent a year traveling the western United States and Canada

climbing and skiing. Once that period of freedom came to an end he took a job working as a technician in a stable isotope ecology lab in the biology department at the U. This experience stoked his interest in how we can apply stable isotopes to paleoecological questions and produce new proxies and methods to help answer questions of past changes in climate. He was fortunate enough to receive a Graduate Assistances from the Range Creek project to conduct research looking at the potential of applying stable carbon isotopes as an additional variable in developing chronologies in species prone to false ring anomalies.

Kaitlin Barklow: Kaitlin is a masters student in the Geographic Information Science program. Originally from Minnesota, she has been working in Salt Lake City as an environmental scientist for the last six years and loves the quick access to some of the best skiing and mountain biking in the world! When she's not out playing in the mountains, Kaitlin enjoys reading, photography, and spending time with family. Professionally, she has worked as the lead environmental scientist on the Libby Asbestos Superfund site, one of the largest and most contentious Superfund sites in the country.

Seth Bogle: Seth grew up in a small community east of Atlanta. Since moving to Utah, he has developed a keen interest in sustainable agriculture and the local food movement. Seth's research interests include the application of remote sensing in areas of agriculture and food security. Similarly, his personal interests include gardening and visiting farmers markets. In the fall of 2012 Seth received a teaching assistantship in Cartography taught by Ingrid Weinbauer. This spring he is beginning a research assistantship directed by Dr. Kathryn Grace studying food security within Africa.

Jessica Castleton: Jessica is a Utah native. Growing up in Utah's dynamic environment led to an interest in identifying and increasing awareness of Utah's geologic hazards. This interest has led to the pursuit of a MS degree in the geography department to explore in depth community awareness, adaptation, and resilience as well as methods of decreasing variability in hazard identification. She enjoys running, cycling, cross country skiing, paddling, live music, traveling, and long road trips.

Kenneth Dudley: Kenneth graduated from the University of Utah with degrees in Environmental and Sustainability Studies B.S., Japanese B.A., and Geography B.S. in Decem-

ber 2011. Kenneth was born and raised in Salt Lake City Utah. He participated in a one year study abroad program in Japan where he discovered a profound interest in man-nature relationships and geographic differences between areas. One of his favorite pastimes is camping and hiking in southern Utah. His favorite place is Capitol Reef National Park. In his spare time he enjoys studying Japanese and watching Japanese television. Kenneth studies the use of remote sensing to identify plant species and species level characteristics. He is interested in the use of remote sensed imagery in tracking and assessing invasive species distribution and vegetation responses to climate change.

Delanie Farnham: Delanie grew up in Sacramento, California and graduated with her Bachelor of Art's degree in Human Geography from California State University of Sacramento. Currently, she is a first year graduate student with research interests in hazards, food security, and population geography. She received a teaching assistantship in Fall 2012 for the Population Geography course and was awarded the College of Social and Behavioral Science Honor Roll Scholarship. This semester she has received a teaching assistantship for the Earth Environments and Global Change course and a research assistantship position working with Professor Hepner. Additionally, she is a grader in the geography department. Her hobbies include hiking, camping, traveling, and playing with her dogs. She plans on graduating with a Master of Science degree in Spring 2014.

Mike Freeman: Mike was born and raised in the small town of Green River, Wyoming. After graduating high school, Mike moved to Salt Lake City to attend the University of Utah and to ski Utah's deep snow. After completing his bachelor's degree in Geography, he was hired by the U.S. Geological Survey as a Hydrologic Technician. Over the last 5 years, Mike has been involved with numerous hydrologic studies involving the Great Salt Lake of Utah. The unique hydrology of the Great Salt Lake inspired Mike to return to school to pursue his master's degree. Mike plans to use three-dimensional modeling techniques to better understand the flow dynamics across the railroad causeway that divides the Great Salt Lake. Funding for the project is provided by the Utah Department of Natural Resources and the U.S. Geological Survey. When Mike is not at work or at school, he enjoys mountain biking single track, skiing Utah's 'Greatest

Snow on Earth' and getting lost for multiple days with his backpack in the Wind River Mountains.



Andrea Brunelle & students- research group coring wetlands in northern Baja, Mexico December, 2012
L-R Kelsey Howard, Vanessa Chavez, Andrea Brunelle & Jenn Watt

Liwei Fu: Liwei is pursuing a Master's of Geography at the University of Utah. She comes from Wuhan, one of the central cities in China. She earned a bachelor of science degree in sensing back in China.

Her research interests focus on studying the use of transportation, in particular, the interaction between individuals and the impact of individuals on the whole system. She is also interested in the applications of Geographic Information Systems and remote sensing technologies. Liwei has far-ranging hobbies. She enjoys sports and outdoor recreation. She is into swimming, playing badminton and table tennis. She is also developing new interests in hiking and skiing. She spent most of her holidays travelling both in her hometown and in the states. Other relaxations include books, pop and classic music and television shows. She also has some experiences in playing the piano in her childhood, which results in her special interest in piano music and symphony.

Han Li: Han is a new PhD student coming from China. His hometown is in Anhui Province, Tongling city, the smallest city by Yangtze River. Before moving to Salt Lake City, he finished his master's degree in Ohio. His research interest is in urban geography and economic geography, with his current research regarding modeling urbanization in Yangtze River Delta. His master's thesis is about modeling gentrification in Chicago from 1990 to 2000 on census tract level. Working as a teaching assistant, he is in charge of GEOG 1010, including sections 010 and 090. Han is a fan of the NY Knicks and AC Milan, and is good at badminton. He also is following some TV series, such as The Big Bang Theory, Grey's Anatomy and Chicago Fire.

Kaila McDonald: Kaila is a current geography Master's stu-

dent whose primary interests focus on geographic accessibility to health services and the relationship between air quality and birth outcomes. Last year she was invited by the student group from Pennsylvania State University to present her idea of mapping parties at the AAG (Association of American Geographers) annual conference in New York. Also, last year she worked with Dr. Henry on a book chapter that will be part of a new health GIS book that will be published in 2013. Kaila is presently working as a research assistant for Dr. Henry, as a graduate assistant, and is helping with several studies examining geographic disparities in breast and colorectal cancer screening and state at diagnosis.

Vy Nguyen: Vy is a first year graduate student pursuing a master's of science in geography. She graduated from Westminster College of Salt Lake City with a bachelor's of art in environmental studies, being the first in her family to obtain a college degree as a first generation American. With an environmental studies background, her interest lies in sustainable systems and transportation studies, also being the focus of her master's thesis. In her spare time away from school, Vy enjoys a variety of activities ranging from outdoor recreation, watching and participating in sporting events, traveling and exploring new places and cultures, and cooking elaborate meals for her family and friends.

Benjamin Ritter: Ben is a first year Master's student in the department of geography. He moved here last July from South-central Pennsylvania with his fiancé Fontina, where they were both born and raised. His research interests include GIS and Public Transportation. He graduated from Shippensburg University in Pennsylvania in December 2011 with a Bachelor's Degree in Geography with a concentration in GIS, and a minor in history. He currently works in the DIGIT Lab 20 hours a week as a graduate assistant/GIS analyst. He has presented his research at several professional meetings, including two Pennsylvania Geographical Society (PGS) annual meetings, as well as the annual AAG meeting in 2011 when it was held in Seattle Washington. He is a huge ice hockey fan (when it is actually played) and his favorite team is the Pittsburgh Penguins. He also enjoys skiing, hiking, tennis, and among other outdoor activities. He is also a bit of a nerd and enjoys

everything technical, from programming to web design. He is excited to further his education at the University of Utah and knows that it will open a lot of doors in his future.

Michael Ryba: Michael is a new Master's student and is thrilled to be working with the wonderful group of faculty, staff, and students here at the U. Originally from Bennington, Vermont, Michael grew up playing in the Adirondacks and Green Mountains, where he graduated *magna cum laude* from Middlebury College in 2011. His thesis research here will likely focus on the impacts of climate change on migration patterns and urbanization in Latin America. He is delighted to be working on this project under the guidance of his advisor, Kathryn Grace. In addition, Michael works in the DIGIT Lab and is very excited to be a part of that team. When not toiling away in OSH, Michael enjoys exploring the streets and the wilds of Utah and the West on foot, wheels, skis and snowshoes, and through yoga and dance.

ALUMNI

Chuck Sensiba, Esq.: After receiving a B.S. in Geography from the University of Utah in 1995, I worked as a GIS administrator with Kennecott Utah Copper for a couple of years before enrolling at the University of Colorado School of Law.



Since entering the legal profession in 1999, my practice has focused on environmental and natural resources issues related to the development and authorization of renewable energy projects. As a partner in the law firm of Van Ness Feldman, LLP in Washington, DC, I have been fortunate to work on numerous energy projects throughout the United States, ranging from Endangered Species Act issues concerning the American eel along Eastern Seaboard and Gulf of Mexico, to traditional cultural properties issues in California arising under the National Historic Preservation Act. Currently, I am part of a team supporting the State of Alaska's proposal to construct a new, large hydroelectric facility along the Susitna River in South Central Alaska—an initiative that seeks to construct the largest non-federal dam in the United States in over 40 years.

In all this work, my background and training in geography and GIS has been invaluable. My understanding of GIS

principles (and fluency in the rather unique industry terminology) enhances communication with GIS professionals in our joint effort to analyze spatial data, produce reports, and prepare presentation materials that best advocate for clients' interests and meet regulatory requirements. A proper understanding of assumptions and limitations of spatial data, moreover, helps avoid regulatory pitfalls and identify potential analytical flaws. In my experience, GIS has emerged as an essential tool for analyzing environmental effects, as required for any major federal licensing or permitting action under the National Environmental Policy Act or comparable state law requirement. I am very fortunate to have received such a foundational education in these principles at the University of Utah.

On a more personal note, my wife and I are elated that our oldest daughter has selected to return to her Salt Lake City roots (where she was born when we were undergraduates) to attend the University of Utah beginning fall 2013. Although she had many options both here on the East Coast and in the West, she wisely decided to become a Ute!

U-Geography Recent Graduates

RECENT GRADUATES

Jim Davis, Greg Fryer, Eric Martineau, Ryo Michishita, Julie Miller, Ashley Powell



Back L-R: Eric Martineau, Richard Forster, George Hepner, Phil Dennison, Greg Fryer, Julie Miller
Front L-R: Ryo Michishita, Tom Cova, Ashley Powell, Jim Davis, Phoebe McNeally

Scholarships/Awards

Continuing Student Awards

*Marc Werrett Healy
Kelsey Eileen Jolley
Sean Casey Reid
Cameron Tucker Snyder*

Merrill K. Ridd Scholarship

Samuel Golden Taylor

CSBS Graduate Honor Roll Scholarship

Delanie Farnham

NGA Student Program

Brandon Thiel

National Geographic Intern

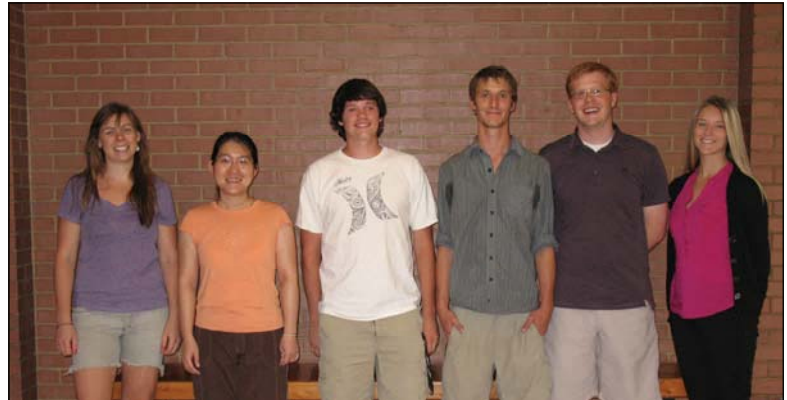
Paris Walker Latham

University Teaching Assistantship

Tim Edgar

Graduate Research Fellowship

Hao Huang



L-R: Paris Latham, Hao Huang, Sean Reid, Sam Taylor, Marc Healy, Delanie Farnham



L-R: Yoshi Tracy (**Don Currey 2012**), Tim Edgar, Brandon Thiel



NASA ESSF Fellowship

Chateaubriand Scholarship

Clement Miede

Merrill Ridd Scholarship

Samuel G. Taylor: Sam plans to complete dual B.S. degrees in Geography and Environmental and Sustainability Studies in May 2013. He hopes to further his education with a Master's Degree in Earth Science focusing in Hydrology and then continue on for a Ph.D.

We would like to extend a big THANK YOU to Dr. Merrill K. Ridd, Richard Warnick and the many donors that have contributed to the Merrill K. Ridd Scholarship over the past several years. Your generosity has helped a deserving undergraduate student with a financial award of \$1,000 per year beginning fall semester, 2010. This year, due to an additional larger donation, we were able to increase the award to \$1,500. The scholarship is a wonderful way to honor Dr. Merrill K. Ridd's accomplishments as a professor and his passion for undergraduate student education. If you would like to make a contribution, details are located on the last page of this newsletter.



Currey Scholarship 2013

Mike Freeman: Mike is studying the impacts of modifications to the causeway barrier in the Great Salt Lake. Mike plans to use his Donald R. Currey Graduate Scholarship to pay for 4 tritium dates which are essential for calibrating the hydrodynamic model he is using as part of his thesis research.

Vachel Carter: Vachel is working in the Uintas looking at mountain pine beetle outbreaks, dwarf mistletoe disease centers and fire. She will be reconstructing a Holocene (10,000 year) record of these disturbances to understand their natural range of variability and will use her Donald R. Currey Scholarship to pay for an AMS date to build a chronology for that work.

Brittany Gold: Brittany's research consists of measuring seasonal snowpack properties for hydrology and avalanche forecasting. Brittany plans to use her Donald R. Currey Graduate Scholarship to acquire a piece of equipment to help her take snowpack measurements.

Ran Meng: Ran is studying the remote detection of tamarisk mortality after repeat defoliation by the Northern Tamarisk Beetle near the Colorado and Green Rivers in eastern Utah. Ran plans to use the Donald R. Currey Graduate Scholarship funds for field related expenses to visit his study sites to collect and verify data.

We would like to extend a big THANK YOU to Stan Currey and the many donors that have contributed to the Donald R. Currey Graduate Research Scholarship over the past several years. Your generosity has helped many graduate students with field related expenses necessary to complete their thesis and dissertation research projects. This is a wonderful honor to Donald R. Currey's memory. If you would like to make a contribution to this scholarship, details are located on the last page of this newsletter.



L-R: Ran Meng, Vachel Carter, Brittany Gold & Mike Freeman

CNTH

Center for Natural & Technological Hazards

The mission of the Center for Natural and Technological Hazards (CNTH) is to develop and implement a research, educational and outreach program focused on natural and human-induced hazards. CNTH was founded in 1990 by then Chair of Geography George Hepner (d^éj^à vu?), Fred May from the Utah Division of Comprehensive Emergency Management (now the Division of Emergency Management) and the legendary Don Currey. It is currently directed by Tom Cova and Phil Dennison.

In the 1990-2000 timeframe, the focus of the Center was primarily undergraduate education, and a number of those graduates are emergency managers in and around Utah and the Mountain West. One of the most well-known is Ryan Pietramali who serves as Risk Analysis Branch Chief for FEMA Region VIII and was instrumental in getting the U's Disaster Resilient University (DRU) grant awarded, but there are many others. In the 2000-2010 timeframe, CNTH added a significant research thrust, and its national profile is much higher both from the publication of journal articles as well as presentations by graduate students at many national meetings and workshops. One recent alumna who is making a name for herself in disaster research circles is Laura Siebeneck, an Assistant Professor at the University of North Texas in the Department of public Administration.

CNTH serves as a hub for all hazards-related projects in the Department from floods to terrorism, but the primary projects taking these days are an NSF-funded one to study Protective Action Triggers (PATs) and a project from the Utah Division of Emergency Management (DEM!) to update Utah's statewide hazard mitigation plan. Triggers are thresholds, often geographic, that are set by emergency managers to determine when action should be taken. A common example is to recommend that a community be evacuated if a wildfire crosses a ridgeline, and this just happened last summer for 30,000 people in the Waldo Canyon Fire in Colorado Springs. Dapeng Li and James Arnold are currently working

on the Trigger grant, where Dapeng's research focuses on agent-based modeling of wildfire spread and evacuation traffic flows, and James is working on a new method for predicting wildfire evacuations across the fire season. One recent graduate of the Center is Eric Martineau who was working on the Utah Hazard Mitigation Project, but another alum of the Department, Brad Bartholomew, "stole" him and he now works for Utah's Division of Emergency Management behind the Capitol. Eric's master's thesis was on Earthquake Risk Perception and Preparedness in Salt Lake City, where he did a mail-out survey to examine the risk perception and preparedness levels of Salt Lake City residents. Greg Fryer is another recent graduate who now works as an Incident Commander (IC) for the Bureau of Land Management. Greg was advised by Phil and the focus of his project was trigger points for wildland firefighters. This work was of an exceptional quality, and is in revision for the International Journal of Wildland Fire (IJWF).

Forster Ice Core & Nicoll Geomorphology Labs



Stay tuned for an update
on our new digs!



GPWG Lab

The Power Paleocology Lab and Garrett Herbarium at the Natural History Museum of Utah and in the Department of Geography have work with modern and fossil plant materials collected from around the world. The Power lab has been busy moving from the old museum to the new Natural History Museum. The new facility includes wet labs and dry labs for plant studies and state-of-the-art climate controlled storage collection space for housing the 130,000 plant specimens of the Garrett Herbarium. Members of the Power lab continue collecting, archiving and managing the plant collections as well as working on the global charcoal database (GCD), an archive now containing over 1000 sedimentary-based fire history records from around the globe. The charcoal database is now available through the Global Palaeofire Working Group web page (gpwg.org) and through the National Oceanic and Atmospheric Administration paleo archives. The fire database provides a key tool for exploring past changes in global biogeochemical cycling, climate forcing, and ecosystem responses to global change. The Power lab is also engaged in collection-based and field-based surveys documenting changes in plant phenology in Utah. Warming spring temperatures are causing many flower's to blossom early, and records archived in the Garrett Herbarium are providing critical insights for exploring these changes. Students working in the Power lab are currently participating in research projects from the western U.S., Caribbean, Europe and the Neotropics.

RED Lab

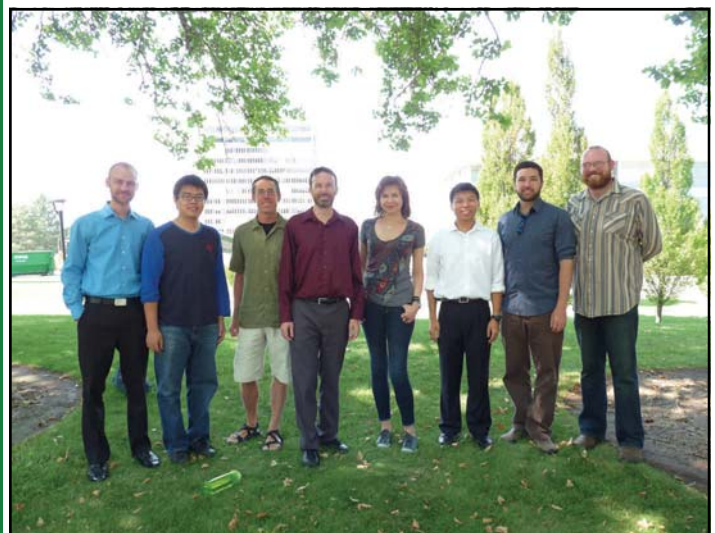


It's been an interesting year for The RED (Records of Environment and Disturbance) Lab. We were moved out of our old lab space in August 2012 and have been temporarily working out of a space in engineering while they remodeled our new lab over in Research Park. We are now located in the Paradigm II building. It was hard to say goodbye to our old space, but the new space is big, bright and has free parking! We are continuing our research on past environments in desert wetlands, long-term records of bark beetle outbreaks, and the paleoenvironment of Range Creek Canyon among other projects. A lab research focus remains on addressing the utility of paleoenvironmental reconstructions in land management.

URSA Lab

URSA: Graduate students in the Utah Remote Sensing Applications (URSA) Lab have racked up some impressive accomplishments over the last year. Greg Fryer completed his Master's on evacuation triggers for firefighters, and Ashley Powell completed her Master's on relationships between fire, climate, and population in central Uganda. Ph.D. student Yi Qi spent more than four months in Missoula, Montana collecting field data and working at the U.S. Forest Service Fire Lab. Yi sampled fuel moisture in lodgepole pine and sagebrush, and collected field and lab spectra using URSA's new ASD full range spectrometer. Two students presented their research at the International Fire Ecology and Management Congress in Portland, Oregon. Ph.D. student Ran Meng presented his analysis of vegetation change in response to repeated burning in southern California. Master's student James Arnold gave a presentation showing how precipitation and drought stress affect fire danger in the Great Basin and Colorado Plateau. Ran, Yi, and URSA alum Scott Matheson had lead-authored papers published in 2012. Phil and Scott were also authors on a paper that reviews the use of remote sensing

for oil spill response, an effort that evolved out of work that the two did on the 2010 Deepwater Horizon oil spill in the Gulf of Mexico. More information on URSA Lab projects can be found at <http://ursa.utah.edu>



L-R: James Arnold (Masters), Ran Meng (Ph.D.), Tim Edgar (Ph.D.), Phil Dennison (Lab Director), Iryna Danilina (Postdoc), Yi Qi (Ph.D.), Kenneth Dudley (Masters), Seth Bogle (Masters).
Not shown: Chris Balzotti (Ph.D.)

Masters of Science in Geography Information Science

The Department of Geography took the wraps off a new Master's of Science in Geographic Information Science at the beginning of spring semester. The program is designed for professionals, and can be completed in four semesters with a total of 35 credits of coursework. The degree requirements include graduate-level courses such as Spatial Statistics, Geocomputation, Spatial Modeling, and Dr. Phoebe McNeally's Capstone in GIS course. The Department will also be developing two new courses for the MSGIS program: GIS Project Management and Web GIS. Kaitlin Barklow, Brendan Duffy, Curtis Olson, and Deb Traver make up the first cohort of MSGIS student, and started taking classes spring semester. Over the next several semesters, each student will be assembling a portfolio of their coursework to present at the end of their final semester. More information on the MSGIS can be found at <http://geog.utah.edu/graduate/msgisindex.php>

New Course: Capstone in GIS

The GIS / Remote Sensing Capstone course had a very successful first year in 2012 and is off to an exciting start this semester. The course provides students with the opportunity to apply their GIS/Remote Sensing skills and knowledge to real-world GIS/Remote Sensing projects in the community. Students, working in small teams, are provided locally sponsored GIS/Remote Sensing projects which take them through the GIS/Remote Sensing project life cycle from conception to completion. Local projects have been sponsored by Azteca Systems/City of Herriman, Salt Lake City Public Utilities, Utah's Automated Geographic Reference Center, Utah Geological Survey, Utah's Department of Natural Resources Division of Parks and Recreation, USDA Natural Resources Conservation Service, and the USFS Remote Sensing Application Center/RedCastle Resources Inc. Thank you to all the project sponsors for supporting the Capstone course and providing our students with a wonderful learning experience to start their professional careers with.

GIS Day/Geography Awareness Week

Geography Awareness Week and GIS day are annual, internationally recognized events that promote the many exciting activities and careers Geographers are associated with, including GIS, urban-economic systems and earth system sciences. Geography Awareness Week is a very important week to the department because it recruits potential Geography majors, as well as demonstrates the many career opportunities that exist for geography majors after graduation. This years Geography Awareness Week took place November 12-16, 2012.

Activities began on Monday with a **careers workshop** conducted by **Esther Worker, manager for ESRI**, the world's leading GIS software firm. Students learned about the wide varieties of careers available to those with a GIS background as well as general information on how to find a job. On Tuesday, **Dr. Rick Forster**, from our very own department, spoke at our brown bag luncheon. The title of his presentation was "Discovery of new climate change effects on the Greenland Icesheet," in which Rick discussed the exciting and ongoing research he and his students have conducted in Greenland.

On Wednesday, GIS Day, there was a career panel discussion consisting of four panelists: **Tom Zumbado from SLC Planning**



and Development; Tom Toronto from Tom Toronto GIS Consulting; Becky Hjelm from UDOT; Matt Peters from AGRC. On Thursday, **Dr. Shaowen Wang** from the University of Illinois at Urbana-Champaign presented. The title of his presentation was "An Integration Vision and Roadmap for CyberGIS," in which Shaowen discussed the advances, science and applications of CyberGIS. Thursday evening, students were invited to the SYRCL Wild & Scenic Film festival that the Environmental and Sustainability department hosted.

On Friday, **Dr. Chris Justice**, from the University of Maryland, was our keynote colloquium speaker. The title of his presentation was "Monitoring the Fire Planet." Dr. Justice's research interests are Satellite-based fire monitoring, Satellite-based agriculture monitoring, Land Use and Land Cover change, and Global Change research.

S.A.C. News

The Geography Club, Gamma Theta Upsilon Honors Society University of Utah Alpha Epsilon Chapter (GTU), and Student Advisory Committee (SAC) have kicked off another year with some new faces. Vachel Carter is now the Graduate SAC Chair with Sean Reid as Undergraduate SAC Chair. They did an outstanding job organizing this year's Geography Awareness Week. There are also new faces within GTU and Geography Club; Mike Mortensen was elected President of GTU and Geography club with Curtis Olson as Vice President. They are currently working on a new MUSE Internship that will allow a student to organize student service learning projects. These projects will be geared towards creating a volunteer force that will collect datasets, create maps, and complete spatial analysis projects for organizations who do not or cannot acquire this information on their own. This will allow students participating in these service projects to gain real world experience as well as allow others outside the geography department to gain more of an understanding of what geography is all about. These "Mapping Parties" will be very volunteer based and will allow anyone to participate. So in the near future be on the lookout for opportunities to take part in this great new program.

To get more information on upcoming events regarding GTU and Geography Club you can stop by the Geography Departments Main Office in OSH 270 or join the Departments mailing list for email updates. Regular emails are sent out concerning beneficial opportunities within the department.

Gifts to the Department 2012

We wish to thank the following individuals for their generous donations!

Kaila McDonald
 Dr. Richard C. Company, Jr.
 Gary E. Christenson
 Brian Haslam
 Jiajun Liu & Tong Zheng

Jack B. Rickards
 Merrill K. and Codele C. Ridd
 Albert G. Voegeli
 David C. Wheeler, III
 Scott and Daphne White

David & Margie Wilkins

Emeritus Faculty

Donald R. Currey (Deceased)	Albert L. Fisher
James W. King	Thomas Kontuly
Chung-Myun Lee	Roger M. McCoy
Merrill K. Ridd	Leroy H. Wullstein

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These are difficult times for a state university.

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- If you have ideas and time to devote to improving our department
- If you have a desire to support the department and the students financially
- If you want to support financially and participate in our Fall picnic or Spring awards activity

Contact me george.hepner@geog.utah.edu



We have appreciated your generous donations in the past. Please consider taking this opportunity to donate to our scholarship funds. Be sure to indicate which fund you would like your donation directed to.

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We look forward to hearing from you!

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Merrill Ridd Scholarship Fund for Undergraduates \$ _____

Donald Currey Scholarship Fund for Graduate Students \$ _____

Roger McCoy Student Assistance Endowment Fund \$ _____

Other (please specify) _____

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