

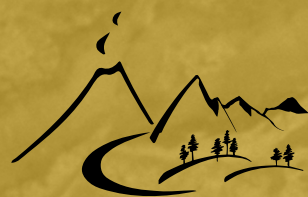


FALL 2012

PROFILE

Inside

growth
traditions
students
research
outreach
alumni
field work
faculty
awards
history



GEOLOGY / GEOPHYSICS



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FROM THE DEPARTMENT HEAD

Greetings from the main office. I write this having just returned from our first alumni event held in Denver for many a year. The event, cosponsored by the UW Foundation, was a huge success. Several faculty joined about 65 alumni at the Marriott Hotel in downtown Denver for the evening. **Don Boyd** presented a short history of the Department with his usual dry wit. Guests included Sam Knight's daughter, Eleanor, and her husband William Keefer, well known author of USGS publications on the geology of Wyoming. Also present was Nick Ferris, the discoverer of the evidence of the Ferris diatreme, the first of several in the state-line group. Thanks to all of those attending! We hope to hold more similar events in the future, including one in Houston.

Another recent major event is the award of a very large grant to UW from NSF to fund the Wyoming Center for Environmental Hydrology and Geophysics (WyCEHG). This grant, funded under the EPSCoR program, totals \$20 million dollars and was spearheaded by **Steve Holbrook** of our department and two other faculty on campus. The grant will cover the cost of developing a major new geophysics facility, FINSE, within the Department. The facility will be acquiring much new geophysical equipment designed to provide high-resolution images of the shallowest parts of the crust, where the interaction of water and biology dominates. In addition, at least two new faculty positions in hydrogeophysics will likely be created through this grant. Several faculty in the Department are involved in the project.

An upcoming event of note is the reopening of the Geology Museum this January. After approximately \$1 million dollars of renovation, the museum looks gorgeous. Over the years the museum had become a time capsule of the museum as it was in Sam Knight's day. Gone now are the asbestos-laden checkerboard tiles, the fluorescent lighting and the dated displays. Newly installed are more fully immersive displays containing scenes from key geologic periods. The museum has been enlarged to allow space for traveling displays, a viewing area where visitors can watch fossil preparation, videos highlighting geologic history of Wyoming and the Rocky Mountain region, and a new second entrance that opens out to Sam Knight's *T-rex* life-size representation. Old favorites, Big Al and Knight's carefully reconstructed *Apatosaurus* are still there, along with other newly mounted specimens. Dramatic new lighting highlights the entire experience. Certainly if you are in the region you should make an effort to drop by and see it.

The faculty has also increased over the past year with the addition of **Brandon McElroy**. He comes here from the University of Texas by way of the U.S. Geological Survey. Brandon's specialty is process sedimentology in both fluvial and deep marine environments. As part of his start up, he is building experimental facilities to study sediment transport as well as equipping a pontoon boat to study modern sedimentation in large rivers, lakes, and reservoirs.

As always, please drop us a line when you get the chance. We like to hear from our alumni to find out what you are up to. Also, if you know of other alumni who might not be on our mailing list, please send along that contact information as well. ❖

DEPARTMENT NEWS

UW Receives Biggest-Ever Research Grant to Study Water

A plan to research what may be the single most important set of issues for Wyoming and the Intermountain West has brought the University of Wyoming the single largest grant in its history.

The \$20 million, five-year grant from the National Science Foundation (NSF) to Wyoming's EPSCoR (Experimental Program to Stimulate Competitive Research) office will set the stage for wide-ranging research into one of the state's precious resources: water.

This highly interdisciplinary award, bringing together researchers and educators from four UW colleges and 11 departments, is led cooperatively by three principal investigators: Anne Sylvester, a professor in Molecular Biology; **Steve Holbrook**, professor in Geology and Geophysics; and Scott Miller, an associate professor in Ecosystem Science and Management.

The grant was announced today (July 13) by Denise Barnes, acting head of NSF's EPSCoR program. EPSCoR supports efforts to enhance research, science and mathematics education, and workforce development. The only two other states receiving Research Infrastructure Improvement (RII) Track-1 awards in the competitive program were Alaska and Utah.

"These RII awards provide resources to fortify the physical, human and cyber infrastructure that lays the groundwork for competitive research," Barnes says. "Each project is statewide in

scope and rich in complexity. Each blends the research talent of individual researchers, institutions and organizations with the development of a diverse, STEM-enabled workforce necessary to enhance and sustain research competitiveness and catalyze knowledge-based economic development."

UW's previous record research award was a \$16.9 million grant from the National Institutes of Health for biomedical research in 2009.

"There's nothing more central to the future of life in Wyoming and the West than water," says Bill Gern, UW vice president for research and economic development. "This award will allow for unprecedented levels of research into our hydrological systems, above ground and below, so we have a better understanding of how they respond to changes."

Those changes include pine beetle outbreaks, which could alter snowpack melt rates and affect late-season streamflows and groundwater recharge; climate variability, which has already been shown to have wide-ranging impacts on water resources; and shifts in land use, such as oil and gas development, says Miller, a hydrologist.

The award will fund the establishment of the Wyoming Center for Hydrology and Geophysics (WyCEHG) at UW. It provides for four new faculty positions, two facility managers, two information technology positions and a variety of graduate and undergraduate research opportunities.

In addition to funding for new positions, the grant will pay for acquisition of scientific equipment, including streamflow and groundwater measurement devices. Much of that equipment will be portable, allowing for temporary field installations around the state.

Wyoming community colleges are part of the effort, which will include collaboration with multiple state and federal agencies and the Wind River Tribal College. In addition, at least three private firms have agreed to provide summer internship opportunities for students in exchange for use of WyCEHG equipment.

"We'll be building research infrastructure for the entire state and bringing new technology to the region," says Sylvester, the molecular biology professor who also heads Wyoming EPSCoR. "As the only research university in the state, we recognize and embrace our responsibility to conduct statewide research consistent with the state's needs."

Educational outreach also is a major component of the program, and will include work with high school and community college teachers around the state. For example, Wyoming EPSCoR plans to cooperate with the Teton Science Schools to offer teacher training workshops on water issues. And a series of town-hall meetings is planned around the state to seek public input on water issues.

The new \$20 million grant to Wyoming EPSCoR dovetails with a separate \$6 million, three-year award from NSF to a regional research project involving UW, Brigham Young



Professor Steve Holbrook says UW research merging hydrology and geophysics will be sustained long after the five-year project.

University, the University of Utah and Utah State University. That grant, announced in November, is intended to develop a better understanding of the interconnectivity of natural and human water resources systems—a critical environmental sustainability problem facing the West.

That earlier award focused on allowing researchers to develop high-performance computer modeling and computational resources to simulate and study how factors such as population growth, shifting land uses and climate variability will affect water storage and availability.

Both projects are boosted by UW's association with the NCAR-Wyoming Supercomputing Center (NWSC) that is nearing completion in Cheyenne. Slated to come on line later this year, the computer will enable the simulation of the hydrologic processes in greater detail, accounting more comprehensively for variability in topography, land cover, geology and water management infrastructure. That will lead to improvements in predictions needed to better plan and manage water resources. NWSC is being developed in partnership with the National Center for Atmospheric Research, UW, the state of Wyoming, Cheyenne LEADS, the Wyoming Business Council and Cheyenne Light, Fuel and Power.

Creation of WyCEHG is expected to launch a variety of research projects—and bring in additional grant funding for those projects—in what is a transformational opportunity for UW, Holbrook says.

"We expect to sustain high levels of research merging hydrology and geophysics long after the end of the five years of the grant," Holbrook says. ❖

Po Chen to Be First UW Professor to Use Supercomputer

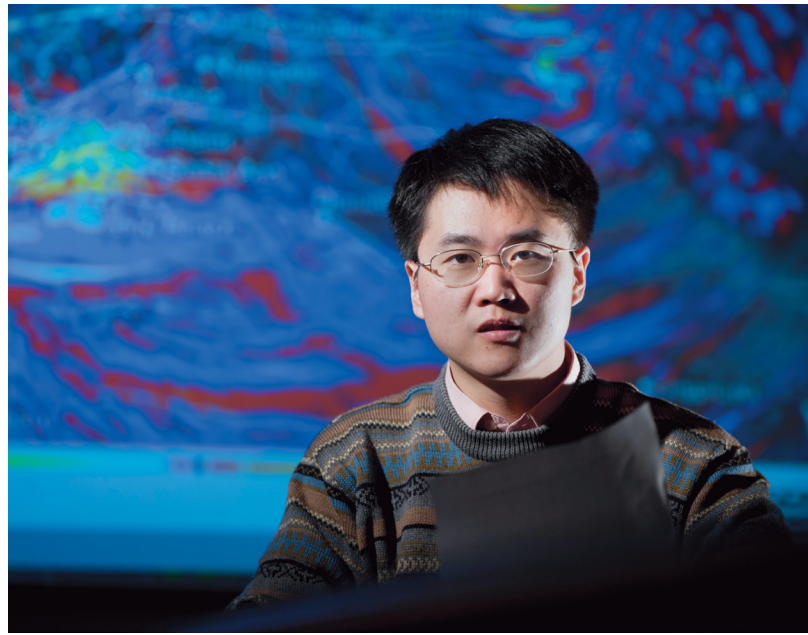


One day, **Po Chen** may be referenced in the Wyoming Almanac. For now, he's likely the envy of many of his fellow University of Wyoming researchers.

Chen, a professor of geology and geophysics in UW's School of Energy Resources, will make history of sorts when he becomes the first UW faculty member to conduct research at the NCAR-Wyoming Supercomputing Center (NWSC). NCAR is now conducting final tests on the \$30 million supercomputer, before it is officially launched for use.

"What I've heard is we can access it (supercomputer) in two and a half weeks," says Chen, who will model a detailed, physics-based seismic hazard map of the state of California for the Southern California Earthquake Center (SCEC).

The goal of the research, which Chen says is often referred to as "Cyber Shake," is to identify areas with high-seismic hazards in the Golden State. Such information can help communities there strengthen their current building codes; assist the insurance industry in setting rates based on an area's hazard level; and possibly save lives.



Po Chen, a professor of geology and geophysics in UW's School of Energy Resources, will make history of sorts when he becomes the first UW faculty member to conduct research at the NCAR-Wyoming Supercomputing Center (NWSC).

While the data are being collected by researchers at SCEC and the University of Southern California, Chen and his team of three doctoral and two masters' students will create the 3-D computer model to use on the supercomputer in Cheyenne.

Chen described some of the current seismic maps as "empirical," with many entailing small areas—roughly only a few square kilometers around fault areas.

"Many people think areas close to fault traces are the most dangerous. This may not be true," Chen says. "Reverberations of geological structures beneath the surface can have large effects on where ground shaking will be the strongest. This often occurs in thick sedimentary basins.

"For some regions, building codes may not be sufficient. For other regions, communities may not have to update their codes," Chen says. "This (modeling) will potentially provide more accurate seismic hazard maps for earthquake engineering in California. I think this research will have a long-lasting effect on how buildings are constructed in California and will affect the home insurance industry."

Select company

As part of an NCAR contest, seven projects nationwide were chosen to use the supercomputer for the Accelerated Scientific Discovery (ASD) initiative, says Bryan Shader, UW's special assistant to the vice president for research and economic development and a professor of mathematics. ASD is essentially the opportunity—before the facility is in full use by multiple groups of researchers—to use the supercomputer and test its full capabilities, much like a photographer testing out a new camera to see what new subtleties in color and crispness can be achieved.



DEPARTMENT NEWS CONT.

"You essentially give one person or group the opportunity to use the entire new resource at one time," Shader says.

"A rigorous process was used to select projects that promised the possibility of significant new discoveries from what is one of the world's premier supercomputers," says Bill Gern, UW's vice president for research and economic development. "The unique environment at NWSC—coupling the use of very large data sets and a peta-scale computer—will produce important new knowledge about the Earth's natural systems."

"This is probably one of the more practical research projects," Chen says. "It will have some impact on human life."

Later this fall, Chen and other UW faculty members will simultaneously conduct their own computational science research projects on the supercomputer. The National Science Foundation initially chose seven UW projects that will be led by university faculty and use approximately 27 million core hours on the supercomputer.

The NWSC is the result of a partnership among the National Center for Atmospheric Research (NCAR); the University of Wyoming; the State of Wyoming; Cheyenne LEADS; the Wyoming Business Council; Cheyenne Light, Fuel and Power; and the University Corporation for Atmospheric Research. NCAR is sponsored by NSF.

The NWSC will contain some of the world's most powerful supercomputers (1.5 petaflops, which is equal to 1.5 quadrillion computer operations per second) dedicated to improving scientific understanding of climate change, severe weather, air quality and other vital atmospheric science and geo-science topics. The center also will house premier data storage (11 petabytes) and an archival facility that holds irreplaceable historical climate records and other information.

NCAR officials now are testing the supercomputer and readying it for the NWSC open house, scheduled noon- 4 p.m. Monday, Oct. 15, in Cheyenne's North Range Business Park. The NWSC also will include an interactive visitors' center, which will be unveiled at the open house. ❖

Nature Publishes Former UW Doctoral Student's Paper on Global Warming Event 55 Million Years Ago

A significant global warming event that occurred 55 million years ago witnessed increased carbon dioxide levels, and altered precipitation, vegetation and sediment accumulation patterns—all of which contributed to rivers becoming deeper, wider and more mobile in western Colorado, according to a University of Wyoming doctoral student.

Brady Foreman's paper, titled "Fluvial Response to Abrupt Global Warming at the Paleocene-Eocene Boundary," was published by Nature today (Oct. 24). **Mark Clementz**, an associate professor of geology and geophysics, assisted Foreman with lab work, while **Paul Heller**, department head and professor of geology and geophysics, assisted in the collection of field data.

"Brady's work is significant in that it shows how abrupt climate change can impact not only biological communities on land, but also the physical processes that shape the environment around them," Clementz says. "He's provided a bar that other researchers can use to evaluate whether changes they observe in the sedimentary record may have resulted from similar episodes of climate change in the past."

Since 2008, Foreman has studied the Piceance Creek Basin, an area of rock formations noted for its red and pink bands that mark ancient soil development. The rock formations are located along I-70, east of Grand Junction, Colo., and west of Rifle, Colo. The research is part of his doctoral dissertation.

"In my field of geology—stratigraphy—there are a lot of questions about how climate and mountain-building events affect rivers on 10,000- or 100,000-year time scales," Foreman says. "This particular time period was probably the most abrupt climate change event in the past 65 million years."

The event, called the Paleocene-Eocene Thermal Maximum (PETM), occurred 55 million years ago. It was associated with rapid global warming, profound changes in ecosystems and massive additions of carbon into the atmosphere. Global temperatures rose approximately 11 degrees Fahrenheit over a period of approximately 200,000 years from the late Paleocene to the early Eocene epochs.

"There has been a very fair amount of interest in this period as an analog for current global warming," Foreman says. "Many features are similar to what's going on today."

"You see changes in vegetation, evolution and extinction, and ocean chemistry (with this event) that are all similar to what people predict is going to happen in the future," he continues. "With this perspective, we can see how rivers reacted to increased CO₂ levels. We can see this without human modification of water ways. We can see how the rivers would naturally react. It gives you a sense of the magnitudes of baseline changes for rivers." The Piceance Creek Basin's rock formation is distinguished by its red and pink bands.

An increase in carbon dioxide levels and temperature changed ocean currents and atmospheric circulation during that event, Foreman says. As a result, those changes impacted the level of rainfall, seasonal distribution of the rain, and plant growth in the Piceance Creek Basin.

"Based on circumstantial evidence of near-shore marine records, my hypothesis was we should see some sort of change

in behavior of the rivers, size of the channels and the grain size (of sediment) deposited,” Foreman says.

Based on his observations of rock strata in the basin, increased rainfall surged down the mountain into the basin. Coarse sediment was transported far downstream in large, deep rivers that frequently breached their banks and flooded the surrounding lowlands. Excess sediment and changes in flow conditions likely altered river movement within the basin, allowing rivers to “jump position” more frequently and efficiently fill the basin, Foreman says.

Change in fluvial deposition (the river’s behavior) in this region persisted long after the period of elevated atmospheric carbon dioxide, according to Foreman’s study.

“If you look at the near-shore marine records, this increased terrestrial clay export and river run-off,” says Foreman, who recently became a post-doctoral researcher at the University of Minnesota. “With few exceptions, no one had looked at the river deposits directly to determine how rivers reacted to this event.”

“So much of our understanding of how rivers respond to these sorts of changes is based on models and simulations,” Clementz says. “Here, we have a record of a natural experiment that occurred about 55 million years ago, which provided Brady the perfect opportunity to test how rivers really respond to periods of abrupt climate change.” ❖

UW Geology Publication Marks 50 Years

In the world of geology, Wyoming is a mecca of sorts.

It offers a geological history that goes back more than 4 billion years, from the enormous uplifts of ancient rocks in the Wind River Mountains to the much more recent thrusts in western Wyoming. There’s the active hydrothermal system in Yellowstone National Park. World-renowned formations and exposures are accessible across the state’s wide-open spaces. And geology plays a big role in the state’s minerals-based economy.

“It’s a great place to be a geologist, a great place to take students for field trips,” says longtime University of Wyoming Geology Professor **Art Snoke**. “Within just an hour of Laramie, you can see absolutely fabulous geology.”

So, it’s no surprise that the UW Department of Geology and Geophysics has long been considered one of the university’s best programs. With a strong national and international reputation, the department attracts post-doctoral researchers from around the world, and large numbers of scholars apply for its rare faculty openings.

Further evidence of the department’s prominence is that it publishes UW’s only peer-reviewed scientific journal, *Rocky Mountain Geology*. The semiannual publication, this year marking its 50th anniversary, is recognized as the premier journal for research on the geology of the Rockies.



From left, retired Professor Jay Lillegraven, Professor Art Snoke and Managing Editor Brendon Orr—who comprise the editorial board of *Rocky Mountain Geology*—examine maps in preparation for an upcoming edition of the scientific journal. *Rocky Mountain Geology*, the only peer-reviewed scientific journal published by the University of Wyoming, marks 50 years of publication this year.

“It’s a sign of the high profile of geoscience at the University of Wyoming and its national recognition,” says UW Vice President for Special Projects **Carol Frost**, also a faculty member in the Department of Geology and Geophysics. “Very few universities are publishing internationally recognized scholarly journals. *Rocky Mountain Geology* fills a really important niche.”

The journal was first published in 1962, the brainchild of faculty member Ron Parker. It was called *Contributions to Geology*, with Parker as editor-in-chief and six other faculty members serving as co-editors. While it included papers on the geology of the Rockies, its topics were not limited to the region for its first three-plus decades.

In 1998, the name was changed to *Rocky Mountain Geology* as part of a complete makeover of the publication.

“We thought, ‘Well, we’re in the Rocky Mountains, and we publish a lot of papers about the region, so why not just take that name and focus on the Rocky Mountains?’ After that, things just fell into place,” says Snoke, who joined the journal’s editorial board that year and continues in that role today.

Other editorial board members are retired Professor **Jay Lillegraven** and Managing Editor **Brendon Orr**.

In 2004, *Rocky Mountain Geology* helped found GeoScience World, an online collection of 42 journals. That Internet association has dramatically increased *Rocky Mountain Geology*’s visibility, and has boosted the quality and diversity of submissions it receives, Orr says.

“We have an international reach, even though we’re kind of a targeted publication,” he says. “We still identify as a small

DEPARTMENT NEWS CONT.

fish in an ocean with much bigger fish, but we fill an important regional niche.”

The latest edition of *Rocky Mountain Geology* includes articles examining the South Fork Fault in northwest Wyoming, Triassic fossils in south-central Colorado and quartzite rock in central and northern Colorado. The work of UW researchers is published regularly, but submissions come from academics at a wide variety of institutions.

“I think it has improved a lot since the beginning,” says Lillegraven, who has helped edit *Rocky Mountain Geology* for 35 years. “The quality of the papers, as a whole, has improved markedly.”

Lillegraven, though retired since 2004, says he enjoys working on the journal. He and Snoke donate their time to edit *Rocky Mountain Geology*, as did longtime Professor Don Boyd until a couple of years ago.

“I feel that this is a way I can contribute to the discipline in some small way,” Lillegraven says. “Plus, I continue to learn from every paper that we deal with.”

While each edition of *Rocky Mountain Geology* usually includes papers on a variety of topics, sometimes the editors choose specific themes. Such was the case in 2010, when the fall issue was dedicated to the topic of carbon dioxide sequestration—a significant issue for Wyoming industry.

“The theme issues are good for us,” Snoke says. “When you have a group of papers on one theme, it attracts attention, leads to citations and gets people noticing the journal.”

Snoke and Lillegraven agree that publishing *Rocky Mountain Geology* contributes to the field of geology and UW’s research mission.

“I just think it’s something a research university should be doing—publishing original research that has been peer-reviewed,” Snoke says. “It’s just another manifestation of the strength we have in geology and geophysics.”


“It’s a way for the university, as a whole (and) at very minor expense financially, to contribute to the entire discipline of geology,” Lillegraven says. “And it brings attention to the school.”

The journal succeeds financially, in part, because of an endowment established by an anonymous donor. Subscriptions generate some money, but “if we didn’t have the endowment, we might be cutting it pretty close,” Snoke says. “The endowment has given us a certain amount of financial security.”

Orr says the day is coming when the journal is published only digitally—its affiliation with GeoScience World will assure continued wide distribution. But, for now, there is still demand for the printed product. In addition, issues from all 50 years are accessible online.

“I hope it continues well into the future,” Lillegraven says. “We’re doing everything we can to make it something the university can be proud of.” ❖

Department Notes

 In September, the 11th annual Rocky Mountain Rendezvous (RMR) was held at the Hilton Garden in Laramie, Wyo. 24 energy companies and over 350 students (a record number) from across the country attended the event. Video of the event is available on the Department’s YouTube channel at, www.youtube.com/UWGeology.

Faculty and students from the Department presented a record number of 55 papers at the 2012 American Geophysical Union (AGU) meeting in San Francisco, Cali.

Five members of the Department were also specifically invited to speak at the meeting, which is the largest worldwide conference in the geophysical sciences with nearly 20,000 Earth and space scientists, educators, students, and policy makers attending. Speakers included the filmmaker James Cameron, who recently just became the first human to reach Earth’s deepest abyss alone—and the only one to explore it in depth.

In June, Research Professor **Kevin Chamberlain** gave an invited keynote address at the 22nd Goldschmidt International Geochemistry conference held in Montreal, Canada, titled, “SIMS in-situ micro-baddeleyite U-Pb method for dating mafic rocks.” Senior Research Scientist **Susan Swapp** and Laboratory Technician III **Norbert Swoboda-Colberg** served as co-authors.

Associate Professor **Mike Cheadle** gave an invited talk at the annual AGU meeting in San Francisco titled, “The Death Throes of Ocean Core Complexes: Examples from the Mid-Cayman Spreading Centre.”

In May, Associate Professor **Ken Dueker**, along with graduate student Steve Hansen (Phd), had an article published in the journal *Earth and Planetary Science Letters*, titled, “Hot mantle upwelling across the 660 beneath Yellowstone.”

In July, Professor **Steve Holbrook** sailed as Chief Scientist aboard the R/V *Marcus Langseth* to conduct a seismic survey of the Cascadia subduction zone off of the coast Washington State. The data will inform seismic hazard analysis in the Pacific Northwest.

In July, Professor **Barbara John** received a grant from the National Science Foundation in the amount of \$400,024. The grant will fund the U.S.-located portion of a collaborative field, laboratory, and experimental research project with colleagues from Ohio University, the University of Tromsø (Norway), and the University of Basel (Switzerland), titled, “Collaborative Research: Constraints on Initiation of Low-Angle Normal Faults Within the Seismogenic Regime.”

In September, Associate Professor **John Kaszuba** and alumnus Curtis Chopping had an article published in *Chemical Geology* titled, “Supercritical carbon dioxide–brine–rock reactions in the Madison Limestone of Southwest Wyoming: An experimental investigation of a sulfur-rich natural carbon dioxide reservoir.”

Senior Lecturer **Randi Martinsen** is currently standing for President-Elect of the American Association of Petroleum Geologists (AAPG), the largest international professional geological society. If elected, Martinsen will serve as President-Elect for 2013–2014 and President 2014–2015.

In June, Assistant Professor **Clifford Riebe** was awarded a National Science Foundation (NSF) grant in the amount of \$55,560. The award will help to support a research project titled, “Collaborative Research: Beryllium-10 in detrital magnetite as a new tool in erosion and weathering studies.”

Riebe also received a NSF grant in the amount of \$86,714 to help support ongoing research at the Southern Sierra Critical Zone Observatory. The award is part of a larger, \$1,000,000 grant, titled “Critical Zone Observatory: Snowline processes in the southern Sierra Nevada,” which will support cross-disciplinary research by coPis at 6 other institutions besides UW.

Riebe also had an article published in the journal *Earth Surface Processes and Landforms*, titled, “Quantifying effects of deep and near-surface chemical erosion on cosmogenic nuclides in soils, saprolite, and sediment.”

In June, Associate Professor **Kenneth Sims** received a grant from the National Science Foundation in the amount of \$571,068. The award will help to fund a collaborative research project with New Mexico Tech, titled, “Collaborative Research: A geochemical study of the nature and evolution of mantle upwelling beneath Ross Island and its relationship to tectonics in the West Antarctic Rift System.” The grant will also help to cover a research expedition to Antarctica for field work on Ross Island, including Mt. Erebus, Mt. Terror, and Mt. Bird.

At 12,448 feet, Erebus is Antarctica’s second highest and most active volcano, and the largest of four volcanoes that form Ross Island. Located on the western half of the island, Erebus is considered part of the Ross Sea rift system. It has had continuous eruption activity since at least 1972.

“It’s unique. We know it’s continuing to form with this active lava lake,” Sims says of Erebus. “It’s very well structured and its composition is different. It required a large amount of crystallization to get to this stage. It is one of only three volcanoes worldwide with a permanent lava lake.”

Sims hopes to determine whether Erebus is a hot mantle plume, a hypothesis in which convection in the lower mantle, or crust layer, moves heat from the Earth’s core to its surface in the form of narrow, rising columns.

This summer and fall, Sims also had three articles published in the American Geophysical Union journal *Geochemistry, Geophysics, Geosystems*, in the *Journal of Radioanalytical and Nuclear Chemistry* and in the *Journal of Petrology*.

In October, Assistant Professor **Ye Zhang** received a grant in the amount of \$490,761 from the U.S. Department of Energy to help fund her research project titled, “Model Complexity in Geological Carbon Sequestration: A Response Surface Based Uncertainty Analysis.” ♦

Alumni Notes

A lumna **Catherine Campbell** (MS, 2007) recently received the *Distinguished Service* award from the Rocky Mountain Association of Geologists (RMAG). She has been very active in organizing a “Young Professionals” group of geoscientists in the Denver, Colo. area and is also a member of the American Association of Petroleum Geologists (AAPG) Imperial Barrel Award Committee.

Alumnus **Gene L. Del Mauro** (MS, 1953) has been enjoying retirement since 2000 and spending time with his family, including two twin-boy grandsons born in November, 2010. He is currently writing a book covering his World War II experiences with General D. MacArthur’s aviation engineer regiment, titled, *Destiny SW Pacific/Far East—A WW II Soldier’s Personal Odyssey*. Del Mauro is also looking forward to the renovation of the Geological Museum.

Alumnus **Tyler Powers** (BS, 2010) is the featured writer of an article in the October issue of *Earth* magazine published by the American Geoscience Institute (AGI). The article, titled “The Bakken Boom and the New Wild West – A Young Geologist’s Perspective,” is the start of a casual series of articles written by recent geoscience graduates about their early experiences in the workforce. To download and read the article in PDF format, visit geology.uwyo.edu/sites/images/alumni/October2012EARTH.pdf.

Alumnus **Orion Skinner** (BS, 1980, MS 1982) recently received the RMAG *Outstanding Explorer* award in recognition of his discoveries of the “Pronghorn” and “Lewis and Clark” oil fields within the Bakken Petroleum System.

Alumnus **J. R. “Digger” Smith** (BS, 1956, MA 1958) is currently serving as president of Nabors Oil and Gas, a wholly-owned subsidiary of Nabors Industries, where he has participated in oil and gas projects throughout North and South America. He was recently inducted into the Rocky Mountain Oil and Gas Hall of Fame.

Obituaries

Alumnus **Sanford Glen (Sam) Andrew** (BS 1953) died peacefully at home on August 16, 2012. He was born to Glen and Anna Andrew on February 14, 1933 in Green Forest, Arkansas.

He had a successful career with Marathon Oil and Gas before retiring in 1992. In 1993, UW chose Sam as a ‘Distinguished Alumnus’ credited with significant world oil finds. International travel was part of Sam’s job, but after retirement he and his wife Nanci, continued traveling, up the Panama Canal, along the eastern coast of the U.S., in the Mediterranean Sea, the Caribbean and to Ireland. ♦





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LARAMIE, WY 82072
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PROFILE

a semi-annual publication
of the
University of Wyoming
Department of
Geology and Geophysics

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Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, religion, sex, national origin, disability, age, veteran status, sexual orientation, or political belief.



A detailed look at deformed granitoids in the Mojave Desert – Aztec Wash, Eldorado Mountains, southern Nevada. Spring break field course, “Magmatism and Extension in the southern Basin and Range.” From left to right: Graduate students Deirdre Ratigan, Tyler Brown, Lynsey Spaeth, Jacob Carnes, Lauren Colwell, Jesse Hahm, Karri Siccadd, and undergraduate student Stephen Prosser.