GEOBULLETIN
MARCH 5TH, 2010

GeoBulletin is distributed weekly, by E-mail. Contributions are requested! If you have a news item, a request, an announcement etc. email it to geodept@geology.wisc.edu or leave it at the office, Room 236 by Noon on Monday.

Weeks Lecture

Speaker list - Winter/Spring 2010

Date	Speaker	Faculty sponsor	
Mar. 5	Carrick Eggleston	SAHAI	CONFIRMED
Mar. 17/18	Scott Tyler	WANG	CONFIRMED
Mar. 19	Chris Pearson		
Apr. 9	OPEN		
Apr. 16	John Craddock	GOODWIN	CONFIRMED
Apr. 23	OPEN		
Apr. 30	BOV/spring banquet		
May 7	Emily Brodsky	FEIGL	CONFIRMED

****

WEEKS LECTURE

PROF. CARRICK EGGLESTON

Dept. of Geology and Geophysics
University of Wyoming

Friday, March 5th, 3:30 PM. Weeks Hall, Room 140

How can bacteria respire using rocks?

Metal-reducing bacteria have been much studied over the past several decades because they are potentially useful in bioremediation - but also because it is thought that they represent what may have been one of the first respiratory pathways to have evolved and because they drive iron redox cycling worldwide. The combination of abiotic photochemical and biological effects on iron cycling has profound implications for the early Earth and continues to be globally important today. Metal-reducing bacteria can respire organic matter using electron-accepting minerals, generally those containing Fe(III) or Mn(IV). This process involves redox enzymes containing heme groups and

known as cytochromes. Such enzymes frequently operate through redox-linked conformation change; the molecule acts as a biomechanical energy transducer. In this presentation, we briefly review the mechanics of bacterial electron transfer to minerals. With this background, we'll look at microbial fuel cell results highlighting the central role of certain outer-membrane cytochromes in electron transfer to semiconducting oxides and then examine evidence that these enzymes, adsorbed to oxide surfaces, undergo substantial density change upon reduction or oxidation. This likely indicates the importance of redox-linked conformation change in enzyme operation at the oxide surface. The manner in which minerals and enzymes interact to modulate electron transfer (among other things) is one example of a fascinating area of study in life-mineral interaction.

****

PROF. SCOTT TYLER

Department of Geologic Sciences and Engineering
University of Nevada, Reno

Wednesday, March 17th, 1:20 PM. Weeks Hall, Room 140

Distributed Temperature Sensing: A Transformative Technology in Water Resources and Ecology

Temperature represents a fundamental variable in almost every hydrodynamic, ecological or ecohydrologic study that can be imagined. Whether thermal energy represents a fundamental driver of processes, or is being used to trace fluxes of water, solutes and nutrients, measurement at high spatial AND temporal resolution has not been possible. While remote sensing can provide high spatial resolution, temporal resolution is limited without tremendous cost. Point sensors can provide high temporal resolution, and with the development of low cost self organizing sensor systems, the cost for spatial resolution has decline somewhat.

Fortunately, advances in Raman spectra fiber optic distributed temperature sensing (DTS) now allow for the measurement of temperature over kilometer scales at meter resolution, the measurement at temporal scales of 0.1-0.3 Hz; all at temperature resolutions of less than 0.05 ^{o}C. DTS has been described as a "transformative" technology in hydrology and ecology as it can provide granularity of data that has never been seen before. In this talk, applications ranging from stream/groundwater dynamics, air and water circulation cave environments as the use of DTS to measure snow dominated landscapes will be presented. In this talk, the basic theory of operation will be presented, along with several recent hydrologic applications to demonstrate the information capacity of the emerging technology.

PROF. SCOTT TYLER

Department of Geologic Sciences and Engineering
University of Nevada, Reno

Thursday, March 18th- Noon, Weeks Hall, Room 140

Theory and Application of Distributed Temperature Sensing to Hydrology: Operational Aspects of DTS

Starting in early 2010, the Center for Transformative Environmental Monitoring Programs (CTEMPs) will offer field deployable distributed temperature sensing systems (DTS) to the earth sciences community for research and education. In this talk, we begin with an overview of the theoretical aspects of both distributed temperature and distributed strain (acoustic) sensing. For hydrologic applications, we typically require higher precision and accuracy than existing industrial applications of DTS which has led to some disappointments, and fortunately more recently, advances in both instrument resolution and data interpretation. Techniques appropriate for the hydrologic and earth sciences community for deployment, calibration and interpretation will be presented in a roundtable format. Finally, the operational aspects of the CTEMPs will be discussed and opportunities for collaboration investigated.

****

2010 Geologic Photo Contest

Sponsored by the Undergraduate Geo Club

What:

A photo contest for you to show off that plethora of geology related photos to people who actually care.

Who can participate:

Anyone and everyone

How long does this go on:

Submissions must be in by April 25th 2010

Official Rules:

You may only enter 2 photos per category, ten photos total. All submissions must have the accompanying information:

Name of photographer, Category, Subject (what are you or who are you photographing), When, Where the photo was taken.

Categories:

- Close up of geologic feature
- Black and White
- Group Photo
- Landscape
- Other – geology related – (Lab photos)

***How to Submit a photo:**

Please submit all photos electronically through e-mail. Please only submit one e-mail per category which can contain both submissions for that category. Please title the Subject line of your e-mail with your last name and the category in which you would like to submit. Make sure you have all the accompanying information with your submission (Name of photographer, Category, Subject (what are you or who are you photographing), When & Where.). This information can either be in the body of the e-mail or in an attached text file. We will not accept submissions without this information (have to give credit where credit is due). Submissions can be sent either to Reba Heiden at rmheiden@wisc.edu or Lynsey Spaeth at lspaeth@wisc.edu.

Prizes:

At the end of the semester, all photos will be displayed publicly in Weeks Hall and will be judged based on category criteria through a voting process held in the beginning of May.

Prizes are yet to be determined; however winning photos will be combined into an annual calendar or poster calendar and sold for the holiday season through GeoClub. Winners will receive a calendar at no cost.

*Prize donations, for the contest, will be greatly appreciated.

***Please be aware that by submitting a photo you agree to the public display and free usage of the photo by the UW Undergrad GeoClub.**

****

JOB OPENINGS

- Postdoctoral Research Seismologist - Hawaiian Volcano Observatory
- Baylor University, anticipate a postdoctoral researcher position starting June 2010
- Postdoctoral Fellow in stable isotope analysis of tree-rings
- Research Fellow: Geochemical and Isotopic Tracers of Groundwater-Surface Water Interaction -School of Geosciences, Monash University(Melbourne Australia)
- Seismology faculty - Saint Louis University -Department of Earth and Atmospheric Sciences - Position Available, Fall 2010
- Surface Scientist - Description -The Surface Analysis Laboratory Team within Micron Technology utilizes a wide range of state-of-the-art surface analysis metrologies to support R&D and production activities world-wide
- The Departments of Geological Sciences and Science Education at Central Washington University invite applications for a full-time, tenure-track position at the Assistant/Associate Professor.
- Volcano Seismologist, Montserrat Volcano Observatory
- Summer of Applied Geophysical Experience (SAGE) 2010 -The SAGE program is a three-week graduate and advanced undergraduate course of instruction and research in exploration geophysics based in Santa Fe, New Mexico, USA
- Electron Microprobe Technician (SENCR-MIC) - The Southeastern North Carolina Regional Microanalytical and Imaging Center (SENCR-MIC), a collaborative research center between Fayetteville State University and the University of North Carolina at Pembroke, is seeking applications for a Laboratory/Research Technician

JOB OPENINGS

Postdoctoral Research Seismologist - Hawaiian Volcano Observatory

Postdoctoral fellow, Center for the Study of Active Volcanoes (CSAV), UH Hilo (HI, USA), one-year appointment, to begin May 1, 2010, with renewal dependent on performance and availability of funds. The incumbent will be based at the United States Geological Survey's Hawaiian Volcano Observatory (HVO).

We seek a motivated individual to work with the HVO seismic group on a range of possible seismic/volcanic research projects that will integrate with and compliment ongoing HVO research topics and cataloging of seismic volcanic activity. These include, but are not limited to, identifying and characterizing volcanic tremor sources, real-time quantification of station quality and network status, algorithms for real-time earthquake location, joint infrasound and seismic processing, and imaging techniques to constrain three-dimensional seismological structure using broadband and short-period seismic data. HVO's ongoing seismic network upgrades will provide the opportunity to assist in the design and installation of new seismic stations and communication networks that are critical for real-time seismic data monitoring.

Qualifications: Ph. D. in geophysics. Experience with real-time seismic data processing systems, earthquake cataloging, digital signal processing, data visualization, or seismic imaging and tomographic techniques strongly desired. Experience with field deployment of digital seismic networks and the ability to participate in field station visits (e.g., able to lift and carry batteries, equipment, etc.) is also desired.

The position offers a stipend of $5000/mo to qualified individuals. To apply: Please submit letter of application,

resume, and documentation of status of Ph.D. degree along with names of three professional references to: Dr. Donald Thomas, CSAV, University of Hawai`i at Hilo, 200 W. Kawili St., Hilo, HI 96720-4096 (dthomas@soest.hawaii.edu).

For additional information please contact: Dr. Donald Thomas (dthomas@soest.hawaii.edu), Dr. James Kauahikaua (jimk@usgs.gov), or Dr. Paul Okubo (pokubo@usgs.gov).

This position announcement will remain open until filled.

****

Baylor University, anticipate a postdoctoral researcher position starting June 2010. Postdoctoral researcher will collaborate with Dr. Sascha Usenko (analytical chemistry) and Dr. Boris Lau (environmental engineering) studying the fate and transport of emerging contaminants in aquatic systems. Highly motivated candidates with a PhD degree in relevant science and/or engineering disciplines will be considered. Successful applicants must possess a strong publication record and excellent English communication skills. Qualified applicant will be funded with competitive stipend, benefits, and travel support to attend professional meetings. The duration of this position is one year, with the possibility of renewal, contingent upon performance and funding availability. Review of applicants will continue until the position is filled. However, full consideration will be given to those applications submitted by March 31, 2010.

Baylor University is a private university located in Waco, Texas. Chartered in 1845, it is the oldest university in Texas. Ranked among the top 100 national universities, the University is classified by the Carnegie Foundation as research university with high research activity. It provides access and training to state-of-the art research facilities situated in the newly opened $103 million Baylor Sciences Building (www.baylor.edu/bsb). The postdoc will be part of a multidisciplinary team of environmental engineers, ecologists, geoscientists, toxicologists and microbiologists from a newly formed Institute of Ecology, Earth, and Environmental Sciences (www.baylor.edu/tieees).

Please apply at https://jobs.baylor.edu

Baylor is a Baptist university affiliated with the Baptist General Convention of Texas. As an Affirmative Action/Equal Employment Opportunity employer, Baylor encourages minorities, women, veterans, and persons with disabilities to apply

****

Postdoctoral Fellow in stable isotope analysis of tree-rings
With the project we aim to better understand stable isotope variations in tree-rings from extreme locations (near elevational and northern tree-lines). While mainly statistical methods have been used for climate reconstruction so far, it is understood that a correct representation of the isotope fractionation steps in trees can result in more reliable climate reconstruction. With this goal the successful candidate will be involved in lab- and field-work as well as evaluation and modeling of isotope data of various ecosystem compartments from soil to leaf to stem. Compound-specific isotope analysis will be applied to investigate fractionation steps within the plant and improve the understanding of the climatic information contained in various stem components.
Your profile -You have a PhD in physics, chemistry or environmental sciences and have worked with stable isotopes as a tool to decipher past climate signals from tree-rings or other archives. You have practical knowledge of isotope analysis as well as experience with data analysis and isotope models. Experience in compound-specific isotope analysis is a bonus.
For further information please contact: matthias.saurer@psi.ch or rolf.siegwolf@psi.ch

****

Research Fellow: Geochemical and Isotopic Tracers of Groundwater-Surface Water Interaction
School of Geosciences, Monash University (Melbourne Australia)
A three year Postdoctoral Fellowship in the School of Geosciences, Monash University (Melbourne Australia) is available immediately as part of the National Centre for Groundwater Research and Training (NCGRT). The research involves the study of groundwater-surface water interaction and environmental issues in a coastal environment (coastal lakes, rivers, estuaries) at a range of temporal and spatial scales using a variety of geochemical and isotopic tracers (including major ions, stable isotopes,

and radiogenic isotopes) coupled with physical hydrogeology. The project involves several staff members and students at Monash University and elsewhere in the NGCRT and offers ample opportunity for collaborative work. The aims of the broader project are to quantify the water balance in the coastal environment, to better understand nutrient and metal cycling in the intertidal zone, to assess issues associated with acid sulfate soil generation, and to assess the impacts of future environmental or landuse change on the groundwater and surface water.

The successful applicant will have a PhD and experience in the application of isotopic and geochemical tracers to understand hydrological processes. They will also have experience in designing and carrying out field sampling programs, evidence of the ability to carry out collaborative research, good publication record relative to experience, and good communication skills.

Remuneration package: $78,828 - $93,609 pa Level B (includes employer superannuation of 9%)

This role is a full-time position, however flexible working arrangements may be negotiated. Monash offers a range of professional development programs, support for research, study and overseas work, generous maternity leave and flexible work arrangements.

Enquiries to ian.cartwright@sci.monash.edu.au (please be careful and not reply to the ISOGEOCHEM list)

****

Seismology faculty - Saint Louis University -Department of Earth and Atmospheric Sciences - Position Available, Fall 2010

Assistant or Associate Professor, Seismology**.** Saint Louis University, a Catholic, Jesuit institution dedicated to student learning, research, health care, and services, invites applications for a tenure-track faculty position in the Department of Earth and Atmospheric Sciences (EAS), to begin in the Fall semester 2010.

We seek a person with a Ph.D in geophysics or related earth science who will contribute to the growth of undergraduate and graduate programs in geosciences. A commitment to integrate teaching excellence with an active, externally funded research program is essential. Research interests should be in the general field of seismology and complement existing faculty expertise in EAS. We encourage applicants whose research is in one or more of the areas of global seismology, regional seismology (including regional seismic networks), or exploration geophysics. It is possible that a highly qualified person can be hired at the Associate Professor level.

The Department offers undergraduate and graduate degrees to the PhD level in Geophysics and Meteorology, undergraduate and MS degrees in Geology, and undergraduate degrees in Environmental Science and Environmental Studies. For more details, visit the EAS website at www.eas.slu.edu
All applications must be made online at http://jobs.slu.edu and must include a cover letter, curriculum vitae, a two-page statement of teaching, research and professional goals, and the names and complete contact information of at least four references. Review of applications will begin immediately and continue until the position is filled. Further inquiries may be sent to geosearch@eas.slu.edu

Saint Louis University is an Affirmative Action, Equal Opportunity Employer (AA/EOE), and encourages nomination and application of women and minorities.

****

Surface Scientist - BOI22399 Description -The Surface Analysis Laboratory Team within Micron Technology utilizes a wide range of state-of-the-art surface analysis metrologies to support R&D and production activities world-wide. Additionally, the laboratory is involved with development activities to maintain the metrology capability available to the Micron community at the highest possible level.
As a Surface Scientist at Micron, you will be responsible for performing surface analyses in support of Micron activities and collaborating with other Micron team members on a variety of R&D and production related projects.
Your responsibilities will include, but are not limited to, the following:

- Using good judgment, initiative, flexibility, and problem solving skills to deal with a wide range of routine and non-routine situations.
- Driving improvement in process and/or equipment changes.

- Developing and implementing new strategies and procedures as they relate processes and equipment in surface analysis.
- Researching, gathering, and analyzing information related to specific assignments within your technical discipline. Recommending process or equipment changes to improve lab metrics.
- Interpreting results and conducting quantitative analyses.
- Interpreting results of new or modified equipment or processes.
- Supporting manufacturing requests as needed using a variety of analytical metrologies, primarily utilizing XRD, XRR, XPS, and TOF-SIMS.
- Establishing clear and strong lines of communication allowing a quick response to customer requirements.
- Interacting positively within the group and with other organizations.
- Constant and consistent communication with customers as well as their lead regarding projects, procedures, troubleshooting methods, etc.
- Demonstrating proficient knowledge of data collection and analyses to contribute to group objectives.
- Contributing to the fulfillment of group objectives.
- Executing projects within guidelines defined by management.
- Regularly reviewing data and direction with supervisor.
- Demonstrating sound data analysis and judgment.
- Presenting reports and findings with appropriate conclusions and recommendations.

Qualifications
Successful candidates for this position will have:

- Knowledge of structural and chemical analysis through coursework or experience.
- Hands-on experience with X-ray diffraction. (Preferred)
- Knowledge of and experience with computer programming, Matlab and Visual Basic experience preferred.
- The ability to thrive in both an individual and team-based work environment.
- The ability to be self-motivated and take ownership of assigned projects.
- An aptitude and interest in instrument repair and maintenance.
- Excellent computer application skills, particularly with Microsoft Office and instrument control software.
- The ability to work in a flexible manner that allows for changes in assignments and priorities depending upon the identified needs of the laboratory.

Education:
Bachelor of Science Degree in Chemistry, Physics, or Material Science, Masters Degree strongly preferred
Job : Chemistry
Primary Location : North America-US-Idaho-Boise
Relocation Provided : Yes

****

The Departments of Geological Sciences and Science Education at Central Washington University invite applications for a full-time, tenure-track position at the Assistant/Associate Professor level beginning September 16, 2010. The faculty member will hold a joint appointment between the two departments. Responsibilities include teaching science methods and appropriate geological sciences courses and developing a program of scholarship that incorporates undergraduate and Master-level graduate students. Applicants in all disciplines of research in geological sciences are invited to apply. A Ph.D. in Geological Sciences or closely related field with experience/potential for developing science education programs OR a Ph.D.in Science Education with coursework equivalent to a Masterâ¤s Degree in Geological Sciences is required. For more information visit www.geology.cwu.edu or www.cwu.edu/~scied. To apply go to https://jobs.cwu.edu. Screening begins 3/19/10 and continues until position is filled. Central Washington University is located in Ellensburg, population 17,000, which provides one of the finest living environments in the Pacific Northwest. AA/EOE/Title IX Institution.

****

****

Volcano Seismologist, Montserrat Volcano Observatory -From: Richard Robertson Richard.Robertson@sta.uwi.edu
****

The Seismic Research Centre (www.uwiseismic.com) seeks a volcano seismologist to join the volcano monitoring team at the Montserrat Volcano Observatory (www.mvo.ms). The successful candidate will be responsible for leading the monitoring and research efforts at the MVO in the area of seismology.

Qualifications are listed at http://sta.uwi.edu/jobs/details.asp?view=&id=570&fontSize=, and include experience in seismology and seismic monitoring, authorship of scientific publications, and contributions that have advanced the field of volcano seismology. Completion of a Ph.D. is desirable, but not required. The post is offered on a three year fixed term, full-time basis with the option of extension.

Applicants should follow the procedure outlined at http://sta.uwi.edu/jobs/procedure.asp?fontSize= to be considered. If you have additional questions about the position, please contact Richard Robertson at 868-662-4659 or email: Richard.Robertson@sta.uwi.edu.

****

Summer of Applied Geophysical Experience (SAGE) 2010 -The SAGE program is a three-week graduate and advanced undergraduate course of instruction and research in exploration geophysics based in Santa Fe, New Mexico, USA. We acquire, process and interpret reflection/refraction seismic, MT/EM, GPR, gravity & magnetics data at a shallow archeological site and at the sedimentary basin scale in the Rio Grande rift. The Los Alamos branch of the Institute of Geophysics and Planetary Physics (IGPP) is sponsoring SAGE for its 28th year. The core program (all students) will be held Sunday, June 20 (arrival on Saturday, June 19), through Sunday, July 11, 2010. The
cost will be $450, of which $100 is due with the application. International applicants: please e-mail georgia@lanl.gov for payment instructions.
We particularly encourage applications from qualified:
1) students who are U. S. citizens or Permanent Residents (PR) who will have completed their *junior* year and the requisite physics and math before SAGE,
2) U. S. *graduate* students in all stages of their careers, and
3) International students and Professionals.
Continued support from the U. S. **National Science Foundation Research**
Experience for Undergraduates (REU) program will allow us to extend SAGE extra days for undergraduate students who are U. S. citizens/PR. For students qualifying as US/PR undergraduates, SAGE will begin on Thursday, June 17 (arrival on Wednesday, June 16). For these students, stipend and travel support will be automatic if accepted, and the $450 fee will be waived. For *all* students, SAGE will extend through evening dinner on Sunday, July 11, 2010. Departure will be Monday morning, July 12, for most students.
Students should have a quantitative background and some introduction to geophysics, though they need not be geophysics majors. We particularly welcome math/physics majors and other students considering careers in geophysics. As an example, students should have successfully completed a minimum of one year (two semesters or three quarters) of physics (through Electricity & Magnetism) and a minimum of three semesters of calculus (four preferred). Structural geology and/or introductory geophysics are recommended but not required.
Please note that the application deadline for SAGE 2010 is 5:00 PM MDT on Friday, March 26. Evaluations will begin the following week. We require a letter of interest, two references, proof of insurance, and complete transcripts (informal OK). **See the SAGE web site for application and reference forms, and more detailed information.**
If you have questions or need more information, please call the IGPP office at (505) 663-5291 or e-mail Georgia georgia@lanl.gov. For further details and a description of the program, please refer to http://www.sage.lanl.gov.

****

Electron Microprobe Technician (SENCR-MIC) - The Southeastern North Carolina Regional Microanalytical and Imaging Center (SENCR-MIC), a collaborative research center between Fayetteville State University and the University of North Carolina at Pembroke, is seeking applications for a Laboratory/Research Technician. The successful candidate will be responsible for training and scheduling users on the center's new JEOL JXA 8530F Hyperprobe and JSM 6510 LV-SEM as well as the day to day operations of the center. The successful candidate will also teach courses relating to use of the instrument and have the opportunity to conduct independent research, time permitting.

Qualifications: Master's degree (PhD preferred) in geological sciences, material sciences, chemical engineering or related field. Experience in electron microprobe analysis is preferred. The successful candidate must possess outstanding oral and written communication skills.

For additional information on the facility see: www.sencr-mic.org. To apply, complete the online application process (https://jobs.uncfsu.edu) by electronically submitting a cover letter, CV, statement of research interests and the names/address of three references (PDF required). For questions about the position, contact Dr. Steven Singletary, ssingletary@uncfsu.edu, 910.672.2079.Review of applications will begin on March 31, 2010 and continue until the position is filled. FSU is an AA/EOE.

****

********** HAVE A GREAT WEEKEND**********