

GEOBULLETIN
SEP 18TH, 2009

Geobulletin is distributed weekly, by E-mail. Contributions are requested! Anything and everything (well almost) that you want to see in print. If you have a news item, a request, an announcement etc. email it to geodept@geology.wisc.edu. or leave it at the reception desk, Room 236 by noon on Mondays.

WEEKS LECTURE SCHEDULE DATES

Fall 2009

- Sept. 18 (F) – No Weeks Lecture
- Sept. 25 (NOON F) Ian Dalziel (SPONSOR: Basil)
- Sept. 25 (3:30 F) - Stephanie Prejean (SPONSOR : Cliff)

WEEKS LECTURE

DR. STEPHANIE PREJEAN
USGS ALASKA VOLCANO OBSERVATORY

Sept. 25th, Friday, 3:30 p.m., AB20 Weeks Hall

Lessons Learned from the 2008 Eruption of Kasatochi Volcano

In August 2008 an unmonitored, largely unstudied Alaskan volcano, Kasatochi, erupted catastrophically. This VEI 4 eruption ejected ash to altitudes of 60,000 feet and radically changed the landscape and ecology of the small island. Despite the lack of local monitoring networks and historical data, the Alaska Volcano Observatory successfully forecast the eruption based on an unusually vigorous pre-eruption earthquake swarm detected on the seismic network of nearby Great Sitkin Volcano. Here we outline a model for the pre-eruption swarm and describe new techniques to better monitor remote, historically dormant volcanoes.

Empirical studies have suggested that volcanic plume height scales with amplitude of co-eruptive ground shaking in the case of large eruptions, but a direct calculation of the expected wave amplitude based on physical models has not yet been successful. We combine existing fluid and solid mechanical models to relate volcanic plume height to short period seismic wave amplitudes observed in the far field. The method performs well in the case of the 2008 eruption of Kasatochi and holds promise for measuring ash hazards to aircraft in real time based on far-field seismic data alone.

GEOBULLETIN

SEP 18TH, 2009

Oct. 2 (F) - Charlie Bacon (SPONSOR: Clark)
Oct. 9 (F) - Russ Vreeland (SPONSOR: Eric)
Oct. 16 (F) - OPEN
Oct. 23 (F) - Chris Marone (SPONSOR: Harold)
Oct. 30 (F) - Lorraine Lisiecki (SPONSOR: Anders)
Nov. 6 (F) - Scott Tyler (SPONSOR: Herb)
Nov. 13 (F) - Rob DeConto (SPONSOR: Anders)
Nov. 20 (F) - OPEN
Nov. 27 (F) - THANKSGIVING
Dec. 4 (F) - OPEN
Dec. 11 - Prof. Charles Geiger of Kiel University

JOB OPENINGS

- **Part-time Undergraduate Research Assistant** - Planetary Science Institute and University of Wisconsin
- **Tenure-Track Assistant Professor** - Sedimentary Geology- Illinois State University
- **The 2-year position for an enthusiastic postdoctoral researcher** in the field of Organic and Isotope Geochemistry and Paleo-Climatology is located at MARUM - Center for Marine Environmental Sciences, Bremen, Germany
- **The Ph.D. position for a highly motivated student** with interest/background in the field of Earth System Modeling and Paleo-Climatology is available at the AWI - Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany
- **Sr. Scientist - Atmospheric Data Assimilation-** Candidate will contribute to scientific research and applications in the Global Modeling and Assimilation Office (GMAO) at the Goddard Space Flight Center
- **Support Scientist - Land Data Assimilation** - Applications Programmer/Support Scientist - To support the Global Modeling and Assimilation Office (GMAO) at the Goddard Space Flight Center.
- **Faculty Position -Energy Research: Fluids in Porous Media -Rice University -Department of Earth Science**

JOB OPENINGS

Part-time Undergraduate Research Assistant -Dr. Kimberly Kuhlman and Prof. Alan Carroll
Planetary Science Institute and University of Wisconsin - kim@psi.edu or carroll@geology.wisc.edu

We are looking for a student to assist with the characterization of particle size, shape and surface textures of terrestrial analog sediments using optical microscopy in preparation for the analysis of images returned from the Mars HandLens Imager (MAHLI) on the Mars Science Laboratory (MSL). The size and shape distributions of regolith particles contain a wealth of information concerning the history of geological processes and climate of Mars, such as wind and water activity that is expressed in sediment transport and soil processes such as cementation, percolation and chemical weathering. Size, shape and textural information will also shed light on the provenance of sediments and can potentially provide clues to clast composition, particularly when data are used in conjunction with data obtained using other techniques. The successful student will characterize particle size, shape and surface textures of terrestrial analog sediments using high-resolution optical microscopy and the image analysis software packages, ImagePro Plus and ImageJ. The particle descriptions will then be analyzed for grain size and shape distributions using a variety of well-known numerical techniques, including Fourier shape analysis.

Tenure-Track Assistant Professor-Sedimentary Geology-Illinois State University

The Department of Geography-Geology at Illinois State University seeks applications for a tenure-track position at the rank of **Assistant Professor** with expertise in **Sedimentary Geology**. The preferred starting date is August 16, 2010. A Ph.D. in Geology or closely related field is preferred, but ABD candidates who will finish the dissertation before the time of appointment will be considered.

GEOBULLETIN
SEP 18TH, 2009

The Department seeks candidates with a strong potential for scholarly research, publication, and teaching in Sedimentary Geology. The successful candidate will be an integrated scholar with a strong commitment to teaching at all levels including coursework in general education, intermediate courses in Sedimentary Geology, and advance courses in his/her area of expertise (e.g. exploration geophysics, basin analysis, etc.). The ability to mentor students in our MS program in Hydrogeology and to participate in the instruction of our summer field geology course is desirable. Research experience with emphasis in Paleozoic cratonic strata or Pleistocene glacial sediments is desirable. The potential for a significant startup package exists. Illinois State University is a research-intensive university with an annual enrollment of approximately 20,000 students. The university is located in the Bloomington-Normal metropolitan area of central Illinois with a population of approximately 150,000. The Department of Geography-Geology offers B.S./B.A. degrees in Geography, a B.S. degree in Geology, and an M.S. degree in Hydrogeology. Please send applications to Chair, Sedimentary Geology Search Committee, Department of Geography-Geology, Illinois State University, Normal, Illinois, 61790-4400, USA. Applications should include a cover letter, curriculum vita, statements outlining current and future research interests and teaching philosophy, three letters of recommendation, and all college and university transcripts. All materials must be received on or before **December 1, 2009**. No e-mail applications will be accepted. Inquiries about the application process should be directed to Dr. David Malone (dhmalon@ilstu.edu, 309-438-7643). Additional information about the department and the community can be found at www.geo.ilstu.edu. Filling this position is contingent upon budgetary approval. Illinois State University is an Affirmative Action University encouraging diversity.

The new project "*A new hydrogen-isotope approach to understand North African monsoon changes in the Holocene (HYDRACENE)*" funded in the framework of the DFG Priority program 'INTERDYNAMIK' aims at investigating the hydrological cycle of North-West Africa during abrupt climate changes in the Holocene by continental hydrologic reconstructions using **compound-specific hydrogen isotope analyses and atmospheric isotope modeling**. Within this interdisciplinary project, opportunities exist for a postdoctoral researcher and a Ph.D. student.

The 2-year position for an enthusiastic postdoctoral researcher in the field of Organic and Isotope Geochemistry and Paleo-Climatology is located at MARUM - Center for Marine Environmental Sciences, Bremen, Germany. The postdoctoral researcher will reconstruct continental hydrologic changes based on compound-specific hydrogen isotopes in plant lipids from high-resolution marine sediment cores. Linkages to oceanic climate changes will be examined by reconstructing ocean temperatures. In close collaboration with paleo-climate modelers detailed data-model comparison will be conducted. The full job advertisement can be found at:
<http://www.marum.de/en/Page6079.html#Section31262>

The Ph.D. position for a highly motivated student with interest/background in the field of Earth System Modeling and Paleo-Climatology is available at the AWI - Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany. The PhD candidate will perform simulations of Holocene climate evolution (hydrologic cycle, water isotopes, surface temperatures) using a state-of-the-art Earth System Model. The aim is the identification of forcing mechanisms responsible for climatic changes observed in newly derived proxy records. The successful applicant will be part of the Paleoclimate Dynamics Research Group which has a lively, active and international atmosphere. Further information can be found at:
http://www.awi.de/en/research/research_divisions/climate_science/paleoclimate_dynamics/

Requirements for postdoctoral researcher:

- Ph.D. in geosciences, chemistry, biology or related fields
- Hands-on experience in isotopic analyses of various sample materials
- Knowledge of atmospheric and biological isotope fractionation processes and experience in organic geochemical methods are a benefit
- Interest in Paleo-Climatology and Paleo-Climate modeling

Requirements for Ph.D. student:

GEOBULLETIN
SEP 18TH, 2009

- Academic qualification comparable to a German Diploma degree (e.g., a Master's degree including a written thesis) in a related discipline
- Proficiency in English (oral and written)
- Experience/interest in programming (preferably Fortran 90)

Starting date for both positions is January 2010 (negotiable). Duration of the postdoctoral research position is 24 months; the Ph.D. position will be funded for 36 months. An extension of the postdoctoral project by one year is intended. Salary and benefits will be according to the German employee scale TV-L 13 (postdoctoral researcher) and TV-L 13/2 (Ph.D. student).

Applications should include a CV, copies of relevant documents, publications if applicable, a statement describing research interests and experience, and contact information for two referees (postdoctoral researcher position only). Please only provide copies, as documents cannot be returned and will be destroyed after the application process.

The University of Bremen and AWI aim at an increase of the number of women in the scientific staff and therefore encourage women to apply.

In case of equal personal aptitudes and qualification priority will be given to disabled persons.

Application review begins October 10, 2009; the positions are open until filled. Applications and enquiries for the postdoctoral position should be directed to Dr. Enno Schefuß, preferentially by email (schefuss@uni-bremen.de).

Applications and enquiries for the Ph.D. position should be directed to Dr. Martin Werner, preferentially by email (martin.werner@awi.de).

Sr. Scientist - Atmospheric Data Assimilation

Job Description: Candidate will contribute to scientific research and applications in the Global Modeling and Assimilation Office (GMAO) at the Goddard Space Flight Center in Greenbelt, Maryland. Candidate will participate in the development and use of the GMAO's GEOS-5 atmospheric data assimilation system (ADAS) with potential involvement in many aspects of the program.

- * Development and experimentation involving the GMAO's 4dVAR data assimilation capabilities
- * Research, planning and development into capabilities to assimilate new types of satellite data, including atmospheric constituents, and in observing system evaluation studies.
- * Participation in ongoing projects to assess and improve the impact of observations in the ADAS. Duties may include setting up and running experiments with the ADAS, applying diagnostic tools including adjoint models to measure observation impact on analyses and forecasts, and analyzing results.
- * Participation in the development and testing of Observing System Simulation Experiments (OSSEs). Develop simulations of satellite instrument radiance data within the context of GMAO atmospheric model and data assimilation system applications.

Education: Requires a Ph.D. in Atmospheric Sciences, Physical Sciences or Mathematics.

Required Skills: Strong computational background and experience with large-scale computations and in code and script development in FORTRAN 90 and UNIX is required. Experience executing experimental runs in a high-performance computing environment is required. Solid background and previous hands-on experience in atmospheric modeling and/or data assimilation. Solid background with remotely sensed satellite data.

Desired Skills: Experience/understanding of adjoint methods; experience with CVS.

Support Scientist - Land Data Assimilation

Applications Programmer/Support Scientist - To support the Global Modeling and Assimilation Office (GMAO) at the Goddard Space Flight Center in Greenbelt, Maryland. Candidate will support land data assimilation research and development within the Sub-Seasonal to Decadal (SSD) group within the GMAO. Candidate will implement and test land assimilation capabilities under a variety of configurations including the ability to assimilate new types of satellite data.

Education: M.S. in Earth science, computer science, or mathematics. PHD desired.

GEOBULLETIN
SEP 18TH, 2009

Required Skills: Solid background in code and script development in FORTRAN90 and UNIX along with previous hands-on experience in Earth system (e.g., land surface) modeling or data assimilation. Experience with supercomputer systems and with large-scale land-surface or atmospheric computations.

Contact **Mark Dever** –*Recruiter-Aerotek CE*
2400 Research Blvd, Suite 120
Rockville, MD 20850
Tel: 301-315-1828
Fax: 301-315-1890

Faculty Position -Energy Research: Fluids in Porous Media -Rice University
Department of Earth Science

The Department of Earth Science at Rice University seeks an outstanding scientist at the junior level who studies the physical, chemical, or biological aspects of fluids in porous and fractured media with applications to energy resources or greenhouse-gas management. Specialties of interest include, but are not limited to, organic or aqueous geochemistry, reactive flow, rock properties, or geophysical imaging.

We particularly encourage applications from, and nominations of, women and minorities.

Successful candidates are expected to direct an active research program, supervise graduate research, and teach courses for undergraduate and graduate students. Details about the department and its facilities can be found at <http://earthscience.rice.edu>.

Applications received by November 15th, 2009, will receive fullest consideration.

Please send a CV, research and teaching statements, and names of five or more references to:

Search Committee Chair
Department of Earth Science, MS-126
Rice University, PO Box 1892
Houston, TX 77251-1892.

Rice is an equal opportunity affirmative action employer.

~ ~ ~ ~ ~ ~ ~ ~ **HAVE A GREAT WEEK END!** ~ ~ ~ ~ ~ ~ ~ ~

GEOBULLETIN
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