



# QUATERNARY GEOLOGIST AND GEOMORPHOLOGIST

Newsletter of the Quaternary Geology and Geomorphology Division

<http://rock.geosociety.org/qgg>

Spring 2002

Volume 43, Number 1



"You really have to sneak up on these mimas if you want to see them" - Deborah Harden and students

Index		GSA Student Research Awards	14
2001-2002 Division Officers and Panel Members	2	Announcements	14
Message from Chair	3	Upcoming Meetings	16
Division Awards	5	Division Business: Minutes and Report to Council	19

## 2001-2002 QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION OFFICERS AND PANEL MEMBERS

**Officers** 6 Members; Chair, 1 year; First Vice-Chair, 1 year; Second Vice-Chair, 1 year; Secretary, 2 years; Treasurer, 2 years; and, effective November, 2000, the Newsletter Editor/Webmaster, 2 years)

**Management Board** 8 Members; consists of the Division officers and the Chair of the preceding year; also includes the Historian as an ex officio member

**\*Chair:**

Deborah R. Harden  
Department of Geology  
San Jose State University  
San Jose, CA 95192-0102  
harden@geosun1.sjsu.edu

**\*First Vice-Chair:**

J. Steven Kite  
Department of Geology and Geography  
West Virginia University  
425 White Hall  
Morgantown, WV 26506-6300  
jkite@wvu.edu

**\*Second Vice-Chair:**

Ellen E. Wohl  
Department of Earth Resources  
Colorado State University  
Fort Collins, CO 80523-1482  
ellenw@cnr.colostate.edu

**\*\*Secretary:**

Alan R. Nelson  
US Geological Survey, MS 966  
Federal Center  
PO Box 25046  
Denver, CO 80225-0046  
anelson@usgs.gov

**\*\*\*Treasurer:**

Scott F. Burns  
Department of Geology  
Portland State University  
PO Box 751  
Portland, OR 97207-0751  
burnss@pdx.edu

**\*\*\*Newsletter Editor/Web Manager:**

William C. Johnson  
Dept of Geography  
University of Kansas  
1475 Jayhawk Boulevard, Room 213  
Lawrence, KS 66045-7613  
wcj@ku.edu

**Past Chair:**

R. Craig Kochel  
Bucknell University  
Dept Geology  
Lewisburg, PA 17837-2086  
kochel@bucknell.edu

\* A one-year term of office which shall begin immediately following the annual business meeting at which their election is announced and extend through the next annual business meeting.

\*\* Second year of a second 2-year term.

\*\*\* First year of a second 2-year term.

**Panel Members**

Kathy Haller, Richard Whittecar, Darrell Kaufman, Carrie Patterson, Grant Meyer, David Dethier

**Historian:**

(Appointed by the Chair in consultation with the Management Board)

Richard F. Madole  
Scientist Emeritus, USGS  
3075 Fremont Street  
Boulder, CO 80304-2848  
madole@usgs.gov

**2002 JTPC Representatives:**

Deborah R. Harden  
Department of Geology  
San Jose State University

San Jose, CA 95192-0102  
harden@geosun1.sjsu.edu

and

J. Steven Kite  
Department of Geology and Geography  
West Virginia University  
425 White Hall  
Morgantown, WV 26506-6300  
jkite@wvu.edu

**GSA Councilor/Division Liaison  
Representative** (Appointed by the President)  
Arthur R. (Art) Green  
ExxonMobil Exploration Company  
233 Benmar Dr  
Houston, TX 77060-2501  
arthur.r.green@exxonmobil.com

## MESSAGE FROM THE CHAIR

**G**reetings to all QG&G members. So far, it's been truly humbling to interact with such a talented, productive and energetic group. I see Division members pursuing innovative research, mentoring outstanding QG&G students, participating in policy decisions, reaching out to other scientists, teachers, and the public - and last, but not least, contributing to Division vitality (see below).

The 2001 Boston Annual Meeting was smaller than the past few annual meetings, partly because of the September 11 events. In all, over 200 papers were presented in oral and poster sessions sponsored by QG&G, and our Division was well represented with a number of excellent special sessions. These included "The Watershed Within," "America's Coastal Crisis," "Erosion of Non-Lithified Sediments," and "Quaternary Stratigraphy in Glaciated Terrains - Techniques and Tools." The varied titles of these sessions give you a hint of the breadth of our members' interests. My per-

sonal highlights were the invited talks of our three Division award winners: Victor Baker (Don J. Easterbrook Distinguished Scientist), Nicholas Lancaster (Farouk El-Baz Award Recipient), and Richard Iverson (Kirk Bryan Award Recipient). I encourage all of you to make a special effort to attend this year's talks by Division honorees in Denver. QG&G also had excellent field trip opportunities, ranging from nearby Boston Harbor to New Hampshire's White Mountains to coastal Maine.

The upcoming Denver annual meeting will be filled with opportunities for Division members. QG&G will be sponsoring or co-sponsoring 13 Pardee or topical sessions, at least one short course, and a field trip, in addition to our "regular" QG&G sessions. I extend my heartfelt thanks to all the members who proposed activities. The abstract submission deadline for the annual meeting is July 16. Based on what I have seen to date, our bounty of offerings may result in some session conflicts, especially with the new Sunday-Wednesday format, but we officers are doing our best to arrange the best program possible. The new GSA annual meeting schedule is Sunday-Wednesday for technical sessions! Our QG&G awards ceremony and reception will remain in its traditional spot on Tuesday evening and will keep the streamlined format of the past two years - hope to see you all there.

The endowments for our Division awards remain GSA's highest, a position that allows us to encourage and reward achievements in Quaternary geology and geomorphology. We continue to gradually increase the awards for students receiving the J. Hoover Mackin and Arthur D. Howard awards. Thanks to the generosity and foresight of their creators, the Farouk El-Baz Award for Desert Research and the Don J. Easterbrook Distinguished Scientist Award provide QG&G additional unique opportunities to recognize the outstanding work of our colleagues.

As Craig Kochel pointed out last year, the Division officers are attempting to increase the funds that can be awarded for the Kirk Bryan and Distinguished Career Awards in order to make award checks more commensurate with the prestige of these awards. Checks awarded with the KBA (awarded since 1958) from its endowment fund rarely cover the winner's expenses of attending the annual meeting. No endowment exists for the DCA (established in 1986), but each year Division officers offer the winner a check from the general Division budget to cover a small part of the expenses of attending the annual meeting. If you are moved to make a donation for either award, please earmark your gifts to GSA specifically for either the Kirk Bryan Memorial Fund, or for the QG&G Division budget to be used for the Distinguished Career Award. Anyone willing to donate the initial \$25K needed to start an endowment fund for the Distinguished Career Award, please step forward!

**Deadlines** for nominations for the Farouk El-Baz, Don J. Easterbrook, and Distinguished Career awards are **April 1**. Guidelines and instructions are available on the Division website at: <http://rock.geosociety.org/qgg/index.htm>. I'd like to make a special plea to Division members for DCA nominations. We have so many deserving colleagues that we should never have a year with no nominations, as happened last year. Pause for a minute to contemplate all your teachers, mentors, and professional supporters, and think about nominating one of them for the DCA. Consider the regrets you might have if you procrastinate too long.

Division membership took a big dip in 2001, partly because the GSA membership renewal option that allowed us to renew our GSA membership for 2 years did not allow renewal of

QG&G memberships for two years. Our numbers have now rebounded almost to the 2000 levels; please be sure to renew your Division membership **every** year. QGG currently has about 1330 members and remains the second largest GSA division. The Division provides some very important, if behind-the-scene services, other than this newsletter. One of these is the management board's participation in organizing the annual meeting.

In addition to GSA activities, our members are active in a variety of activities and organizations. It's daunting just to read the Geomorphlist emails! A few highlights of interest to QGG members include the 2003 INQUA conference, the Fall 2002 Binghamton symposium "Dams and Geomorphology," and activities associated with IAG's "Year of the Mountain."

At last year's Management Board meeting, the issue of 2-year officer terms was raised. While this may sound good for Division continuity, imagine the response from potential officers who would face an 8-year cycle!! Could we be more organized, pro-

ductive, and effective as a Division? Absolutely, and what we **really** need is the **participation of more of you**. Please contact any of the Division officers if you'd like to help: this could include nominating people for awards (see above), organizing annual meeting events, serving as a Division panel member, providing suggestions for improvement and expansion of Division activities, contributing to newsletters or the web site, or a host of other possibilities.

Landscapes have certainly been in the news during the past 6 months, as I'm sure the QGG community has recognized. During the fall, "scenery" of Afghanistan was the subject of an

---

*"When I recently asked at the high school science awards, "Is it uphill or downhill from the middle school to the high school campus?" only those without drivers' licenses answered with certainty."*

---

intense hunt for clues to locating terrorists, and this month, Utah's mountains are the beautiful backdrops for the Winter Olympics. But are we the only ones who notice? Most of our fellow citizens, at least here in urban, tech-oriented, and car-happy California, are literally out of touch with the natural landscape. When I recently asked at the high school science awards, "Is it uphill or downhill from the middle school to the high school campus?" only those without drivers' licenses answered with certainty. Most of us believe that understanding the landscape is an important part of many socially relevant issues; for example, reducing risk from natural hazards and evaluating global change. In my opinion, an appreciation of the landscape, even if only as distantly viewed from the morning gridlock, is probably also fundamental to our sanity. I would encourage all of us to share our experiences and understanding with our non-QGG communities. And, for a more poetic point of view, check out the Cambridge Forum series on "Ecological Imagination" ([www.cambridgeforum.org](http://www.cambridgeforum.org) or on NPR broadcasts).

With best wishes for a successful year, and with thanks for all your help,

Deborah Harden, Chair

## QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION AWARDS

Some members requested that the summary of Division awards be reproduced in the newsletter again; here they are.

### KIRK BRYAN AWARD

The Kirk Bryan Award, established in 1951, is given to the author or authors of a published paper of distinction advancing the science of Quaternary geology, geomorphology, or a related field.

The 2001 award was presented to **Richard M. Iverson** (Cascades Volcano Observatory, U.S.G.S.) for *The Physics of Debris Flows*, in *Reviews of Geophysics*, v. 35, no. 3, p. 245-296.

### *Citation by Gary A. Smith and John E. Costa*

Iowa is not a location well known for the study of debris flow or other forms of rapid mass movements. But Iowa was the home and Iowa State University was the site of the undergraduate education of the scientist who has probably made the greatest contribution to understanding the dynamics of debris flows, which are among the deadliest and costliest of processes studied by geomorphologists. Dick Iverson went on to complete two M.S. degrees and a Ph.D. in applied earth sciences at Stanford University in 1984. His training was outstanding, and his intellect even more so. Nurtured in the wake of the unprecedented size and variety of mass flow processes associated with the May 1980 eruption of Mount St. Helens, Washington, Dick initiated a U.S. Geological Survey (USGS) research program to understand the linkage between the sedimentological and geomorphological field expressions of huge debris avalanches and debris flows, and the physical processes that could produce these features. For this, Dick needed careful field observations, theoretical models that linked soil mechanics and fluid mechanics, small-scale laboratory and field experiments, and eventually, controlled, field-scale laboratory experiments in which a variety of parameters could be systematically altered. He accomplished all of these, and the outcome is the paper we honor today.

Regrettably, many geologists approach their field research qualitatively and without rigorous physical understanding of the processes they study. Dick has worked hard to change traditional textbook views. "Physics of Debris Flows" is a landmark contribution to the field and a testimony to his grasp of fluid and solid dynamics and cleverness as a field-scale

experimentalist. Dick had combined observations of active flows, study of resulting deposits, thorough consideration of relevant theoretical arguments, and experiments in diverse fields (including those far removed from earth science) to modernize and quantify what debris flows are, how they move, and how they deposit their load. Key to his studies was the establishment of the USGS field-scale debris-flow flume in the H.J. Andrews Experimental Forest, near Blue River, Oregon. Experiments there by Dick and colleagues have substantially expanded understanding of debris-flow initiation, dynamics, transport, and deposition, and identification of the critical variables affecting these phenomena.

"Physics of Debris Flows" is drawn substantially from Dick's own work as well as being a remarkable and succinct integration of relevant theoretical and experimental results reported by other researchers. He has separated wheat from chaff while explaining the merits of the former and weakness of the latter, and he has intergraded diverse results into coherent pictures without simplifying debris-flow processes. Most important, Dick developed a new, simple model for debris-flow motion that will serve as a foundation for future developments. His approach recognizes the need to account for both solid and fluid forces, whereas past models have emphasized one or the other.

Dick Iverson's "Physics of Debris Flows" is worthy of the Kirk Bryan Award for several reasons: It is remarkably well written, despite being quantitatively rigorous and astonishingly wide in breadth, and presents a new model for debris-flow motion; it emphasizes the need for surficial geologists to understand the link between field observation and the quantifiable underlying physical basis for the observed processes; and it substantially

advances our understanding and focuses future research objectives regarding debris flows—a dynamic surficial process that is both threatening as a hazard and important to interpreting many aspects of past environments.

#### **Response by Richard M. Iverson**

Thank you, John and Gary, for your kind citation. I feel very fortunate to have my work honored in this way. Four factors served as catalysts for studying debris flows and building the USGS debris-flow flume. One was a widely perceived need for improved mathematical models of debris flows and for data to motivate and test such models. Another was a legacy of frustration wrought by numerous

---

*"Geomorphology is nearly unique among geological sciences because it deals mostly with phenomena that are accessible to direct measurements and manipulation experiments."*

---

attempts to collect high-resolution, real-time data in the field. (These attempts revealed that natural debris flows have an alarming appetite for electronic instrumentation, consumed either plain or garnished with cables and data loggers.) The third-catalyst was my participation in controlled, large-scale landslide experiments in Japan—an experience that prompted dreams of similarly controlled

experiments with debris flows. The fourth was the presence of two key people. John Costa, my boss in 1988 when I formally proposed the debris-flow flume, provided unwavering support that was crucial because enthusiasm for the project was not universal. Rick LaHusen participated in the flume project from its earliest stages, and his electromechanical wizardry turned my harebrained ideas into functional measurement systems.

The good fortune that propelled the flume project reminds me of a quote written on a card I've kept on my desk for 15 years: "Concerning all acts of initiative and creation, there is one elementary truth, the ignorance of which kills countless ideas and splendid

plans: that the moment one definitely commits, then providence moves, too. All sorts of things occur to help one that would never otherwise have occurred. A whole stream of events issues from the decision, raising in one's favor all manner of unforeseen incidents, meetings and material assistance which no man could have dreamed would have come his way. "Whatever you do or dream you can, begin it. Boldness has genius, power, and magic in it. Begin it now."

This quote is commonly attributed to Johann Goethe (1749-1832), although scholars of German literature caution that Goethe's authorship is not an unequivocal fact. In any event, Goethe was not only a fine writer but also a geologist and physicist, and I favor the hypothesis that he both wrote this passage and had scientists in mind at the time.

That brings me to a second topic, which is the linkage between geomorphology and science in general. Geomorphology is nearly unique among geological sciences because it deals mostly with phenomena that are accessible to direct measurements and manipulation experiments. Furthermore, the conservation laws of classical physics provide a solid framework for building and testing geomorphological models.

Why apply classical physics to geomorphology? It's admittedly difficult to abstract geomorphic phenomena in experiments and formalize them with mathematics, and such efforts might be viewed as unnecessary if inferences about the origin of landforms are the ultimate goal. In my view, a further goal of geomorphology is to structure our knowledge of Earth's surface within the framework of physical laws that govern all natural phenomena. Such structuring is possible because, in the words of Richard Feynman (1918-1988), "Nature uses only the longest threads to weave her patterns, so each small piece of her fabric reveals the organization of the entire tapestry." Geomorphology examines one small piece of the fabric of nature, and within geomorphology experiments and models of

debris flows have a modest aim: to gain a clear view of a thread or two that connects with a greater whole. Thank you for honoring this type of work with the Kirk Bryan Award.

### **DON J. EASTERBROOK DISTINGUISHED SCIENTIST AWARD**

The Easterbrook Distinguished Scientist Award, established in 1999, is presented to an individual who has shown unusual excellence in published research, as demonstrated by a single paper of exceptional merit or a series of papers that have substantially increased knowledge in Quaternary geology or geomorphology.

The 2001 award was presented to **Victor R. Baker**, University of Arizona.

#### *Citation by Jim O'Connor*

It is my privilege and honor to present the Donald J. Easterbrook Distinguished Scientist Award to Dr. Victor R. Baker, University of Arizona, for his substantial contribution to Quaternary geology and geomorphology in the field of fluvial paleohydrology. Fluvial paleohydrology, or "paleoflood hydrology" as termed in a 1982 Science paper with R.C. Kochel, involves the quantitative reconstruction of past hydrologic conditions from geologic, topographic, biologic, and pedogenic evidence. Vic Baker essentially founded this important discipline within the field of Quaternary geology and geomorphology, and over the last 30 years with students and colleagues in a variety of fields, has applied these techniques to many fundamental issues of earth and planetary science.

Paleoflood hydrology is rooted in the application of fluid mechanic principles to understanding geologic evidence of past flow conditions, first developed in Vic's Ph.D. thesis on the Missoula Floods and published as a GSA Special Paper in 1973. The power of

such a marriage between classic engineering approaches to hydraulics problems and geologic approaches of stratigraphy, mapping, and geochronology to understanding landscapes became immediately evident, resulting in substantially increased understanding of Missoula flood processes. Moreover, the approach was soon recognized to be as scaleless and timeless as the imagination can allow; and Vic's imagination has few bounds. Paleohydrologic techniques for reconstructing past flow have been used to decipher the flood hydraulics and erosional and depositional processes for the tremendous Pleistocene ice-dam failures of North America and Asia. Paleoflood hydrology has furnished insights on bedrock erosion processes, alluvial river dynamics, and landscape evolution for rivers and streams on nearly every continent. Paleoflood hydrology has also been used to investigate the relations between flood frequency, magnitude, and decadal- to century-scale climate variability in temperate and tropical environments. In conjunction with colleagues in civil engineering and water resources, techniques have been developed

to leverage chronologic and magnitude information for past floods gleaned from paleohydrologic studies into significantly more robust estimates of the frequency of extreme and rare floods. Such techniques are now commonly applied in risk assessments for critical facilities such as nuclear reactors, nuclear waste repositories, and river dams. A career-long application has been the study of Mars, where techniques of paleoflood hydrology have quantified discharges on Mars, forming a keystone of current models of Martian landscape evolution and now a focus of the U.S. Space Program. More recent forays have involved Venus.

An important aspect of Vic's overall

contribution has been that he has bridged earth science disciplines as well as the gap between science and society, recognizing and forcefully promoting the broad scientific and societal importance of applying real geologic data to earth science problems. He has repeatedly pointed out the value of "letting the earth speak" in talks and papers. But much more importantly and surely with great difficulty, he has continuously reached out to scientists, engineers, planners and philosophers, with data and pen, facilitating tremendous progress in the arena that motivates our discipline—the application of earth science understanding to the betterment of humanity. For these specific contributions to the field of Quaternary geology and geomorphology, as

well as the wider geoscience community, I can think of no more deserving recipient of the Easterbrook Distinguished Scientist Award than Victor R. Baker.

#### **Response by Victor R. Baker**

Science, as a process, requires a community. It was an Earth scientist, William Whewell, who first gave that community its name: scientists.

Though awards, as in this case, arise through the generous acts of individuals, they really apply more to groups than to the specific honorees. Certainly whatever accomplishments might be associated with my name are in actuality the products of community realization, actualization, and confirmation. Given limited time, I cannot do justice to all who contributed to the journey celebrated this evening, so these brief remarks will merely provide examples of a multitude, to whom I apologize for any lack of specific acknowledgement.

One starts with family, and my wife of 34 years, Pauline, shared remote camps from the Siberian taiga to the Australian bush, cultural "experiences" in Africa and India, deserts,

---

*“He has continuously reached out to scientists, engineers, planners and philosophers, with data and pen, facilitating tremendous progress in the arena that motivates our discipline.”*

---

jungles, and savannas--all in the quest for signs of Earth's greatest cataclysmic floods. Her love and support provided the bulwark for whatever I have accomplished. Our two boys shared in various foreign adventures, not always gleefully, but with acceptance and ultimately personal growth that may have been even contributed to their own successes. My parents tolerated a preschooler who picked up rocks and announced his career choice--geologist--when more conventional children aspired to a more respectable career.

Every scientist is part of an intellectual heritage, and that heritage influences them in ways so subtle that they themselves are often unaware of its importance. In my own heritage I was immensely fortunate. First, as an undergraduate, I was introduced to geomorphology in 1965 by the lively lectures of Rowl Twidale, then a visiting professor at Rensselaer Polytechnic Institute. In the late 1960s, my Ph.D. advisor, Bill Bradley at The University of Colorado, showed the way to excellence in the field-oriented aspects of both Quaternary geology and geomorphology. Both Bill and another of my close Colorado mentors, Pete Birkeland, derive their intellectual heritage from perhaps the greatest lineage of surficial geologists. Their advisors and mentors were Arthur Howard and J. Hoover Mackin, names well known to the GSA Quaternary Geology and Geomorphology Division. Both Howard and Mackin were supervised by Douglas Johnson at Columbia University, and Johnson was the avid follower/student of William Morris Davis. Davis, in turn, was supervised by Nathaniel Southgate Shaler, who founded both the geology and geography programs at Harvard University. Shaler was the student of Louis Agassiz, who brought the European tradition of Earth science to America. Agassiz had as his mentor

Baron Georges Cuvier, that greatest of all catastrophic geologists. See how it all comes around!

There are many others who greatly influenced my early career. Of course, the late "Doc" Bretz was both an inspiration and a resource. It was my immense pleasure, not only to work with him, but also to prepare his nomination for the GSA Penrose Medal, which was finally awarded to him in 1980--just prior to his death and over a half century after the major research for which he is famous. The late Ken Fahnstock provided excellent advice and support in regard to my Ph.D. research on the Missoula Floods, and Stan Schumm also provided an early influence on my research.

As a young, rather frightened assistant professor at The University of Texas at Austin in the early 1970s, I met the late Johnny Moss, then on sabbatical, who provided much wise advice. Dusty Ritter was also an early collaborator in my work. My predecessor in geomorphology at Texas had been J. Hoover Mackin (more of that heritage again), and he left important clues that influ-

enced my subsequent work on bedrock streams and paleofloods. These were topics that Mackin wanted studied in regard to a feud he was having in the late 1960s with Luna Leopold and Reds Wolman on important issues in fluvial geomorphology. My subsequent work along Mackin's line of fluvial geomorphological inquiry probably led to the response that I remember from my first meeting with Luna Leopold at a conference in the mid-1970s. "Ah, Baker," I recall Luna saying, "I don't really understand what it is you are doing." That statement told me that I certainly wasn't following the then current fluvial geomorphological paradigm! Despite this paradigm-breaking, Reds Wolman became a great friend (even Luna may now be accepting). Sometimes I

---

*"Every scientist is part of an intellectual heritage, and that heritage influences them in ways so subtle that they themselves are often unaware of its importance."*

---

even get numbered among the numerous offspring of the Wolman extended intellectual family, which is certainly the closest that we have to a new heritage in surficial geomorphology perhaps rivaling the one that I described above. Of course, Reds probably harbors the suspicion that my work has been directed at disputing many of the extremely important concepts introduced by his own research. In defense, I would remind him of Neils Bohr's definition of great ideas in science: while the opposite of a mediocre idea in science is a triviality, the opposite of a great idea is another great idea.

Before I reveal too many secrets on how to be creative in science, or else lead too many young geomorphologists astray from potentially respectable careers, depending on your point of view, I want to acknowledge the real recipients of this award. As we all know, it is not professors who do the work of science; it is graduate students and postdoctoral scholars. In this regard, I have been fortunate enough to supervise (lead astray) 55 of the former and a dozen or so of the latter. I will not have time to name them all! In regard to this award, I wish to heartily thank Jim O'Connor, both for his excellent citation and for his substantial participation in the work that led to this occasion. Craig Kochel and Peter Patton were key participants in my early paleoflood studies. The later work in this area was ably advanced by Lisa Ely, Katie Hirschboeck, Kyle House, Ted Mellis, and Bob Webb, among others. Collaborators have included Geoff Pickup, Yehouda Enzel, Vishwas Kale, Gerardo Benito, Paul Komar, Asher Shick, Noam Greenbaum, Jerry Stedinger, and Alexei Rudoy. My planetary studies have involved even more students and collaborators (one paper has over fifty names on it). My planetary diversion was completely serendipitous. In 1971 I was hired at The University of Texas at Austin to teach and do research in environmental geology. Then in 1973 the Mariner 9 spacecraft returned absolutely remarkable vidicon images of the Martian sur-

face. Thanks to another young researcher at Texas, Pete Schultz, I got access to the images and I also met Daniel Milton of the Mariner 9 imaging team. Danny and I collaborated on a 1974 paper comparing cataclysmic flood features on Earth and Mars. The late Hal Masursky was also a big help in this early Mars flood work. After 28 years or so, we have still not resolved all the controversies for the floods on Mars, which is all the better for NASA grant funding!

It is indeed a great pleasure to thank the GSA Quaternary Geology and Geomorphology Division for its conferring of the Don J. Easterbrook Distinguished Scientist Award. I can't think of a better venue or a better society from which to receive this recognition. GSA has always been my overwhelming favorite as a scientific meeting. Perhaps I can close with one last bit of provocative advice to young geomorphologists (with some apologies to Karl Marx): hypothesize outrageously, you have nothing to lose but your paradigms.

### **FAROUK EL-BAZ AWARD FOR DESERT RESEARCH**

The Farouk El-Baz Research Award, established in 1999, is given annually for outstanding work in the field of warm desert research by earth scientists; it is intended to encourage and reward arid land studies.

The 2001 award was presented to **Nicholas Lancaster**, Desert Research Institute.

#### ***Citation by Marith Reheis and Daniel Muhs***

The Farouk El-Baz Award was established to reward a body of outstanding work in the field of desert research by an earth scientist. Dan Muhs and I are delighted to present this year's award to a very worthy recipient, Nick Lancaster. Nick has made outstanding contributions to the field of desert geomorphology, especially in the study of dune sys-

tems and aeolian processes. Developed over a career of more than 25 years, these contributions include landmark concepts in eolian process studies and dune development, as well as definitive papers on the climate history and geomorphic-sedimentologic response to climate change in numerous areas around the world. He is without doubt the leading authority in the world on aeolian dunes. His research on linear and star dunes has been fundamental to our understanding of the origin and development of these forms, as well as their relationship to sand sea development. Lancaster's work is largely empirically based with a very strong field component that demonstrates innovative and logical thinking. As a result, he is one of the outstanding scientists who bridge the gap between desert geomorphology and eolian process science. An example of this is his development of the Dune Mobility Index, a simple but powerful numerical method that uses readily obtainable data on wind speed, precipitation, and evapotranspiration to evaluate the current and potential wind-erosion and sand-transporting capacity of a given study site. The Dune Mobility Index is widely used by researchers around the world to evaluate the stability of areas affected by wind erosion, to forecast the potential effects of changes in climate and land use, and to estimate past climate conditions that created stratigraphic records of sand transport.

During most of his career, Nick has worked in desert landscapes throughout the world. Presumably this was a reaction to growing up in England. He fled the British Isles after 6 years as a student at Cambridge and must have reveled in being warm and dry for the first time in his life! He worked as a professor and researcher in southern Africa for ten years, where his early research was in the Namib and Kalahari Deserts of Namibia and Botswana and

parts of South Africa. Nick made important contributions to our understanding of dune geomorphology and Quaternary paleoclimatic history of this region with his detailed work on linear dunes, pans, and paleolake deposits. He then adopted the North American deserts, moving first to Arizona State University and then to the Desert Research Institute and adjunct faculty at the University of Nevada, Reno. He made the first serious studies of the Gran Desierto sand sea in northwestern Mexico, the largest dune field in the Sonoran Desert. Nick moved north into the Mojave Desert of California and Nevada and has done exemplary work on the origins and dynamics of dune systems in this region, particularly the Kelso Dunes. His work here extends from the use of satellite imagery for determination of dune origins to the first use of luminescence dating methods for late Quaternary dune history. His remote sensing expertise has allowed him to study deserts on other worlds as well. Nick studied the basaltic dunes and eolian processes of Martian deserts with comparisons to terrestrial

deserts. He continues to work in the Namib and Mojave Deserts, but is expanding his explorations of deserts on the northern margin of the Sahara, in Tunisia, and in the cold desert environment of Antarctica. Perhaps this new field was in reaction to his participation in the filming of a documentary by the BBC in the Egyptian Desert in July, which would have tested the faith of the most passionate of desert lovers.

In addition to his outstanding publication record, Nick has won several other prestigious national and international research awards including Outstanding Faculty Member, University of Nevada; Gladys Cole Geomorphology Research Award, Geological Society of America; Dandini Gold Medal for Science, Desert Research Institute; and the

---

*“Nick has the rare combination of physical endurance, intellectual rigor, and infectious enthusiasm that clearly mark him as a leader.”*

---

Distinguished Career Award, Geomorphology Research Group, Association of American Geographers.

Nick has the rare combination of physical endurance, intellectual rigor, and infectious enthusiasm that clearly mark him as a leader. We and many others have certainly worked hard to keep up with him in the field; perhaps it's wearing sandals instead of field boots that allows him to stay ahead! His career is distinguished by a long history of warm collaboration with numerous colleagues around the world as well as generous contributions to student research. Nick Lancaster is a great ideas person. His research has impacted on the discipline and on deserts across five continents. It will continue to do so for a long while yet.

#### **Response by Nicholas Lancaster**

It is a great honor for me to be standing here and to accept the El-Baz Award for Desert Research from the Division and GSA. I would like to express my thanks to Dr El-Baz for supporting desert research in this way and for contributing to the study of what an eminent British geomorphologist (Ron Cooke) once called "the Empty Quarter" of geomorphology. I would also like to thank the Division for selecting me for this award and to Marith Reheis and Dan Muhs (who unfortunately cannot be here tonight) for putting together the citation, which is extremely generous in its spirit.

I think that it is fair to say that I have had a lot of fun and intellectual stimulation doing desert geomorphology, especially when I have been working on dunes. Some of my colleagues and collaborators have not thought similarly. There have been occasions of augering to 10 m depth in 90° temperatures and also at night. Climbing dunes, especially through the separated flow and grainfall of a

dune slip face is another example of the perils of dune process geomorphology. Process geomorphology on dunes can only be done when the wind is blowing, when conditions are not always pleasant, but any discomfort beats the many hours of waiting around for the wind to blow!

In the course of my career, there have been a number of individuals who have acted as mentors at different times. For example, Dick Grove of the University of Cambridge, was one of the first people to recognize the existence of vegetation-stabilized dunes many tens and hundreds of kilometers south of the present margin of the Sahara in west Africa. As my PhD supervisor Dick led me to the Kalahari and

introduced me to a world that, as Marith has said, was very different from England. I bought a Land Rover and set off into some very remote parts of the Kalahari, with very little experience of driving anywhere, and certainly not through deep sand. After suffering a broken windshield within a few hundred kilometers of starting, things got much better. One of the things I did learn from this

experience was how to fix a Land Rover and that is something that has gone with me ever since. Another important person was Peter Tyson of the University of the Witwatersrand in South Africa, who acted as an important catalyst by suggesting that I go to Namibia to look at real active linear dunes as a contrast to the vegetated dunes that I had been studying in the Kalahari. That visit, in early 1979, completely changed my view of desert geomorphology, and caused me to change from a focus on the Quaternary history of desert regions to the study of active dunes and aeolian processes. Mary Seely of the Desert Research Foundation of Namibia was kind enough to offer me a post-doctoral position at the research station at Gobabeb, where I stayed for three years.

---

*"It is difficult to do cutting-edge research on your own now, and many people have played a very important role in my research, a role that is increasing in importance as time goes on."*

---

*continued on page 13*

# Ballot

## FOR THE ELECTION OF OFFICERS OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION FOR 2002-2003

See candidates' biographies on pages 14 and 15

The slate of officers for the Division is submitted herewith. Please vote by checking the appropriate box OR by writing in the name of your nominee in the space provided. Biographical data for nominees is listed on the attached sheets. The election results will be announced by e-mail and at the business meeting of the Division in Denver, Colorado, in October.

Your ballot must be returned to GSA, no later than 30 July 2002, and must be signed in the space provided on the reverse side to constitute a valid ballot. You may vote online instead at <http://rock.geosociety.org/balloting/quaternary.asp>

**Chair**, one-year term (vote for one candidate):

Steve Kite ( )

Write In \_\_\_\_\_ ( )

**First Vice-Chair**, one-year term (vote for one candidate):

Ellen Wohl ( )

Write \_\_\_\_\_ ( )

**Second Vice-Chair**, one-year term (vote for one candidate):

Ann Gillespie ( )

Robert Morse ( )

**Secretary**, two-year term (vote for one candidate):

Janet Slate ( )

Write In \_\_\_\_\_ ( )

**For Members of the Panel**, two-year term  
(vote for **three** candidates)

Mike Blum ( )

Joe Mason ( )

Doug Clark ( )

Dorothy Sack ( )

Jon Major ( )

Kelin Whipple ( )

Fold On Line and Tape Closed

---

place  
stamp  
here

Geological Society of America  
PO Box 9140  
Boulder, CO 80301

Division ballot

---

Fold On Line and Tape Closed

\_\_\_\_\_  
Name (print)

\_\_\_\_\_  
GSA member number

\_\_\_\_\_  
signature

continued from page 12

These years were some of the most productive and influential in my career, and I was fortunate to be living and working in the Namib at a time when there were several other geomorphologists (e.g. John Ward, Ian Livingston) active in the area. Ron Greeley of Arizona State University was instrumental in bringing me to the United States and opened my eyes to very different ways of looking at aeolian processes, including those on the planet Mars. Another very important person in the development of my career was Dusty Ritter, the recipient of a Distinguished Career Award from this Division several years ago. Dusty brought me to Reno and gave me a home at the Desert Research Institute, where he has been extremely supportive over the years. I thank all of these individuals for their support over the years.

I must also acknowledge the people with whom I have collaborated over the years. It is just not possible in the modern era of research to do what people like Ralph A. Bagnold (the true hero and founder of aeolian process research) were able to do supremely well on their own. It is difficult to do cutting-edge research on your own now, and many people have played a very important role in my research, a role that is increasing in importance as time goes on. The collaboration that I have had with Gary Kocurek of the University of Texas at Austin, has continued for many years, and we have been in the field on numerous occasions. Gary has provided me with many insights, not least of which is the perspective of the rock record of aeolian deposits. A very important part of my collaboration has been with Bill Nickling of the University of Guelph and Cheryl McKenna Neuman of Trent University in Canada. Bill's expertise in instrumentation has enabled us to go into new areas of dune process research, something that I could never have done on my own. This has been backed up by Cheryl McKenna Neuman's abilities and expertise in the realms of quantitative analysis and modeling. I have done a lot of work with luminescence dating, especially in the Mojave Desert. I think that luminescence dating has been one of the most important

developments in understanding the nature and timing of aeolian activity in drylands. I would like to thank Ann Wintle, Michèle Clarke, and Helen Rendell for their support and for the hard work of actually running the luminescence samples. We are now collaborating with Ashok Singhvi from India to expand the understanding of dune history in Mauritania and the Arabian Gulf areas. I thank them all. Finally, I want to thank Charlie Bristow of the University of London, for his expertise in using ground penetrating radar to understand the internal sedimentary structures of dunes and thereby providing a new way to link modern process studies to the deposits of dunes.

Once again, I thank you all for your support and for making it possible for me to stand here and accept the El-Baz Award for Desert Research. I look forward to many more years of desert dune research. Thank you very much.

#### **GSA GLADYS W. COLE MEMORIAL AWARD**

The Gladys W. Cole Award, established in 1980, provides support for investigations of geomorphology of semiarid and arid terrains in the United States and Mexico.

The 2001 award was presented to **Dorothy Sack**, Ohio University

## See ballot insert

## Bios

FOR THE ELECTION OF OFFICERS OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION FOR 2002-2003

**Clark, Douglas H.** Glacial geology, geomorphology, Quaternary paleoclimatology. Educ.: Stanford Univ, BS 83, MS 85; Univ. of Washington, Ph.D. 95. Prof. Exp.: Geologist, Earth Sciences Associates, 1986-1989; Research Associate, Univ. of Washington, 95-96; Asst. Prof., Indiana U.-Purdue U. Indianapolis, 96-98; Asst. Prof., Western Washington Univ., 98-present. Memberships: GSA - QG&G, AMQUA, AGU, FOP, IAHS, Sigma Xi (WWU Chapter President, 2001-present). Research: Geomorphic and paleoclimate records in alpine glacial and lacustrine deposits, alpine landscape evolution, slope stability. Mailing address: Geology Department, 516 High St., Western Washington University, Bellingham, WA 98225-9080; dhclark@cc.wvu.edu; <http://www.ac.wvu.edu/~geology/>

**Thorson, Robert M.** Quaternary stratigraphy, geomorphology, neotectonics, archaeological geology. Education: Bemidji State University (Minnesota), B.S. Earth Science Teaching, 1973; Univ. of Alaska, Fairbanks, M.S. Geology, 1975; Univ. of Washington, Seattle, Ph.D. Geology, 1979. Professional Experience: Geologist, U.S. Geological Survey, 1975-1980, Branches of Earthquake Hazards, Alaskan Geology, Western Env. Geology, and Puget Sound Earth Sciences App. Project; Asst. Professor, Univ. of Wisconsin (Oshkosh), 1979; Asst. Professor, Univ. of Alaska, Fairbanks, 1980-1984; Founding Director, Alaska Quaternary Center, 1983-1984; Assoc. Professor and Prof., Univ. of Connecticut (Dept. of Geology & Geophysics and Dept. Anth.), 1984-pres; Profesor Visitante de Obras Civiles, Universidad Tecnica Federico Santa Maria, Valparaiso, Chile, 1979. Memberships: GSA (Chair, Archaeological Geology Division, 1986); AGU; AAAS; Connecticut Academy of Arts and Sciences (Elected). Fellowships: Yale Univ., Visiting Faculty Fellow, 1990; Dartmouth College, Visiting Scholar, 1992; Fulbright Scholar, 1999, Servicio Nacional de Geologia y Minería, Providencia, Santiago, Chile. Awards (non-univ.) Smithsonian Institution Notable Book, 1998 (Stone Wall Secrets). Research: Glacial Tectonics, paleoseismicity, human-disturbed landscapes, paleoclimatology, stone walls as landforms, late glacial and deglacial stratigraphy in Alaska, Washington, New England, and Chile. Mailing address: Dept. Geology & Geophysics, U-2045, Univ. of Connecticut, Storrs, CT 06269-2045; thorson@geol.uconn.edu.

**Kite, Steven J.** Geomorphology, Quaternary geology. James Madison Univ., B.S., 1976, Univ. of Maine, Orono, M.S. 1979; Univ. of Wisconsin, Madison, Ph.D., 1983; Professional Experience: Instr., James Madison Univ., 1978-80, Asst.-Assoc. Prof., WEST VIRGINIA UNIV., 1983-date; Memberships: GSA (QGG Secretary 1994-98, treasurer 1998-99, 2nd vice chair 2000-2001), AMQUA, AAG, WV Arch. Soc., Southeastern FOP (executive officer 1987-date); Research: Late Cenozoic history of the Appalachian Mountains, paleohydrology of the Ohio River basin, sedimentology & geomorphology of debris flows & related events; Mailing Address: Dept. of Geology & Geography, West Virginia Univ., Morgantown, WV 26506-6300; jkite@wvu.edu; <http://www.geo.wvu.edu/~kite/>

**Slate, Janet L.** Quaternary geology, soils & paleosols, arid-lands geomorphology. Education: Humboldt State Univ., Arcata, Calif., B.S., 1981; Univ. of Arizona, M.S., 1985; Univ. of Colorado, Ph.D., 1992. Professional Experience: Geologist, USGS, Menlo Park, Calif., 1981-83, 1984, 1985-87; Postdoc, Assoc. Western Univ./NORCUS, Hanford, Wash., and Los Alamos, N.M., 1992-1995; Research Geologist, USGS, Denver, CO, 1996-present. Memberships: GSA, AGU, AMQUA, Colo. Scientific Society. Research: surficial process geology of the Desert Southwest including Quaternary stratigraphy and geochronology. Mailing address: U.S. Geological Survey, Box 25046, MS 913, Denver, CO 80225; jslate@usgs.gov

**Sack, Dorothy.** Geomorphology, Quaternary paleolakes, history of geomorphology. Education: B.A. 1977 San Diego State University; M.S. 1981 and Ph.D. 1988 University of Utah. Prof. Exp.: 1988-94 Assistant Professor, University of Wisconsin-Madison; 1994-present Associate Professor, Ohio University. Memberships/Service: GSA (History of Geology Division nominating committee member/chair 1998-01); AMQUA; HESS (treasurer 1995-01); AAG (Coastal and Marine Specialty Group secretary-treasurer-newsletter editor 1995-98); NCGE; Earth Sciences History (editorial board 1995-present). Research: Lake Bonneville geomorphology, sedimentology, and chronology; arid lands geomorphology; off-road vehicle impacts; G.K. Gilbert; 19th and 20th century American geomorphology. Awards: Mackin, GSA Research, Gladys W. Cole, Ohio U. teaching. Address: Dept of Geography, 122 Clippinger Labs, Ohio University, Athens, OH, 45701; sack@ohio.edu; <http://oak.cats.ohiou.edu/~sack/>

**Mason, Joseph A.** Geomorphology, Quaternary geology, soils. Educ.: Univ. of Wisc.-Stevens Point, B. S., 1989; Univ. of Minnesota, M. S., 1992; Univ. of Wisc.-Madison, Ph. D. 1995. Prof. Exp.: Asst. Prof., N. Illinois Univ., 1995-97; Asst.

Prof./Research Geologist, Univ. of Nebraska – Lincoln, 1997-present. Memberships: GSA, AGU, AAG, SSSA, AMQUA. Prof. Service: Abstract coordinator, 7th International Conference on Fluvial Sedimentology. Awards: J. H. Mackin Grant. Research: Eolian and hillslope geomorphology, loess stratigraphy, pedology/paleopedology (particularly in loess), landscape evolution, geomorphic response to climate change. Mailing Address: CSD, Univ. of Nebraska-Lincoln, 113 Nebraska Hall, Lincoln, NE 68588; [jmason2@unl.edu](mailto:jmason2@unl.edu), <http://csd.unl.edu/csd/staff/mason/jam.html>.

**Major, Jon J.** Geomorphology, hydrology, sedimentology. Education: Univ. Dayton, BS 1980; Penn State, MS 1984; Univ. Washington, PhD 1996. Professional Experience: Geologist, USGS, 1983-1989; Hydrologist, USGS, 1989-1997; Research Hydrologist, USGS, 1997-present. Memberships: GSA (Fellow), AGU, IAVCEI. Professional service: GSA Bull. Assoc. Editor, 2000-present; member of theses committees. Awards: GSA E.B. Burwell Award, 1991; U.S. Dept. Interior Award for Excellence of Service, 1991; Univ. Dayton Alumni Award for Professional Excellence, 1999. Research: Hydrologic hazards at volcanoes, geomorphic and hydrologic response to volcanic eruption, experimental analysis of debris-flow deposition, rheological analysis of natural sediment slurries. Mailing address: U.S. Geological Survey, Cascades Volcano Observatory, 1300 SE Cardinal Court, Bldg 10, Vancouver, WA 98683; [jjmajor@usgs.gov](mailto:jjmajor@usgs.gov).

**Whipple, K.X.** Surface processes, tectonic geomorphology. Educ.: U.C. Berkeley, A.B. 1985, Univ. Washington, M.S. 1989, Univ. Washington, Ph.D. 1994; Professional Experience: Postdoc, Univ. Minnesota, 1994-1995, Asst. - Assoc. Prof., Massachusetts Institute of Technology, 1995-present; Memberships: GSA, AGU; Prof. Service: Geology Editorial Board, 1996-1998, AGU Erosion and Sedimentation Committee, 1997-present, Tectonics Associate Editor, 2000-present, JGR-Solid Earth Associate Editor, 2001-present; Research: Bedrock channel incision processes (California, Nepal, China), Glacial erosion and landforms (Western US, New Zealand), Neotectonics (Nepal, China), Dynamics of landscape evolution in tectonically active mountain belts; Mailing Address: Dept. of Earth, Atmospheric and Planetary Sciences, Rm 54-1016, MIT, Cambridge, MA 02139; Email: [kxw@mit.edu](mailto:kxw@mit.edu).

**Gillespie, Alan R.** Quaternary geology, glacial geology, remote sensing, geochronology. Educ.: Stanford, BS 69; Caltech, MS 76, PhD 82. Prof. Exp.: Mmbr. Tech. Staff, Jet Propulsion Lab, NASA/Caltech 1970-1987; Research Prof., Univ. Washington 1987-1997, Prof., Univ. Washington 1997-

present (Director, Keck Remote Sensing Lab 1995-present), Int. Director, Div. Earth & Ecosystem Sci., Desert Research Inst., NV 1999-2000, Distinguished Visiting Scientist, JPL 1997-1999; Memberships: GSA, AGU, AMQUA. Prof. service: Quaternary Research, Editor/Assoc Editor 1996-present, Geology, Editorial Board 1988-1991, JGR, Assoc. Editor 1993-1995, Remote Sensing of Environment, Editorial Board 1999-present; Board of Directors, Epigraphic Society 1996-present, Damdin Da Intellectual Development Fund (Mongolia) 2000-present; GSA Quat. Geol. Geomorph. panel 1992-1994, member Science team US/Japanese NASA/ASTER satellite program, 1993-present; adjunct Prof, Humboldt State Univ 1988-present; helped organize and conduct field trips for FOP, GSA, short courses, workshops, etc. Research: glacial geology/history of Sierra Nevada and Central Asia, remote-sensing theory & application, archaeoastronomy. Mailing address: Dept. Earth & Space Sci 351310, Univ. Washington, Seattle, WA 98195-1310, USA, [alan@oz.geology.washington.edu](mailto:alan@oz.geology.washington.edu).

**Wohl, Ellen E.** Fluvial geomorphology, Quaternary fluvial paleohydrology. Educ: Arizona State Univ., BS, 84; Univ. of Arizona, PhD, 88. Prof. Exp.: Assist. Prof., Colorado State Univ., 89-95, Assoc. Prof., Colorado State Univ., 95-00, Prof., Colorado State Univ., 00-present. Memberships: GSA (Fellow), AGU. Prof. service: GSA Bull Assoc Ed, 1998-present; Geomorphology Assoc Ed, 1996-present; Water Resources Research, Assoc Ed, 2001-present; GSA QG&G Division panel member, 1997. Awards: Gladys Cole Memorial Award, GSA, 1992; G.K. Gilbert Award, Assoc Am Geog, 1999. Research: hydraulics, sediment transport, channel geometry, physical-biological interactions, and human impacts of mountain rivers and bedrock channels. Mailing address: Dept. of Earth Resources, Colorado State University, Ft. Collins, CO 80523; [ellenw@cnr.colostate.edu](mailto:ellenw@cnr.colostate.edu).

**Blum, Mike** *bio not available*

## STUDENT AWARDS

### J. HOOVER MACKIN RESEARCH AWARD

The J. Hoover Mackin Research Award, established in 1974, provides support for graduate (Ph.D.) research in Quaternary geology or geomorphology.

The 2001 award was presented to **Kyle Nichols**, University of Vermont, *Quantifying desert piedmont process rates using in situ-produced cosmogenic  $^{10}\text{Be}$  and  $^{26}\text{Al}$ .*

The 2001 Honorable Mention was presented to **Jennifer Pierce**, University of New Mexico, *Holocene variations in fire frequency and sedimentation rates in the Idaho Batholith: implications for the role of climate change.*

### ARTHUR D. HOWARD RESEARCH AWARD

The Arthur D. Howard Award, established in 1992, provides support for graduate (M.S.) research in Quaternary geology or geomorphology.

The 2001 award was presented to **Matt Anders**, Utah State University *Quaternary stratigraphy and landscape evolution of eastern Grand Canyon.*

The 2001 Honorable Mention was presented to **Kurt Frankel**, Lehigh University *Post-Laramide tectono-geomorphic evolution of Sierra Nacimiento, southern Rocky Mountains.*

### GSA ROBERT K. FAHNESTOCK MEMORIAL RESEARCH AWARD

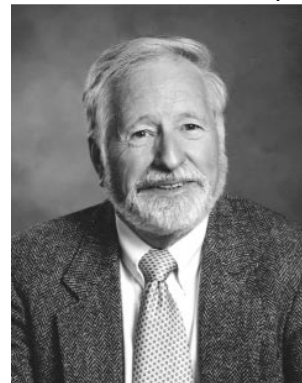
The Robert K. Fahnestock Award is presented to the student with the best application in the field of sediment transport or related aspects of fluvial geomorphology.

The 2001 award was presented to **Martin W. Doyle**, Purdue University

*Mechanisms, rates, and magnitudes of channel adjustments following catastrophic disturbances.*

## ANNOUNCEMENTS

Governor General Adrienne Clarkson recently announced the appointment of Nat Rutter as an Officer of the Order of Canada. He is a University Professor Emeritus, Earth and Atmospheric Sciences, and presently Associate Dean of Science (Interdisciplinary) at the University of Alberta. He is a leading geologist of the Quaternary Period, the study of the earth over the last two and half million years.



After graduating with a PhD from the University of Alberta, he began his career as a research scientist with the Geological Survey of Canada, and then as an Environmental Advisor with the National Energy Board. For the past 25 years he was with the Department of Geology (now Department of Earth and Atmospheric Sciences), where he was chairman from 1980 to 1989. In his research, he advocates the interdisciplinary approach in solving geological problems, which has resulted in major discoveries in dating methods, glaciation and past climate change. He has more than 200 publications to his credit. His large number of graduate students have gone on to play important roles in his field throughout Canada.

Dr. Rutter has headed numerous national and international organizations, such as the first Canadian President of the International Union for Quaternary Research, the world's preeminent Quaternary organization. He was a member of UNESCO's geological scientific board, the International Council of Scientific Union's Committee on Past Global Changes, and is founding editor of the scientific journal "Quaternary International". He has been recognized by his peers by receiving numerous

awards and medals including Fellowship in the Royal Society of Canada, Honorary Professorship in the Chinese Academy of Sciences, and recently an honorary Doctorate of Science from the University of Alaska, where he received his Master's degree.

- Contributed by Linda Christensen  
(linda.christensen@ualberta.ca)

### **GSA CORDILLERAN SECTION**

We are writing to call your attention to a 4-day field trip and short course on active tectonics in the Olympic Mountains and adjacent areas, to be held as part of the GSA Cordilleran Section meeting in Corvallis, Oregon, on May 9-12, 2002. The announcements are given below. The deadline to sign-up for the field trips is April 5. You can find out more at <http://terra.geo.orst.edu/users/gsa2002> or [http://www.geosociety.org/sectdiv/cord/02cd\\_ft.htm](http://www.geosociety.org/sectdiv/cord/02cd_ft.htm)

The trip will highlight recent research on offset coastal features and uplifted river terraces on the western side of the Olympic Peninsula. The relevant papers are Pazzaglia and Brandon (2001, *AJS*) and Batt et al. (2001, *JGR*). PDF copies are at:

[http://www.geology.yale.edu/~markb/Eprints/Pazzaglia\\_and\\_Brandon2001.pdf](http://www.geology.yale.edu/~markb/Eprints/Pazzaglia_and_Brandon2001.pdf)

[http://www.geology.yale.edu/~markb/Eprints/Batt\\_et\\_al2001.pdf](http://www.geology.yale.edu/~markb/Eprints/Batt_et_al2001.pdf)

The field trip includes a 1-day workshop on fluvial geomorphology as a tool for the study of active tectonics, and ~2 days in the field looking at uplifted fluvial terraces in the Clearwater drainage. We will review evidence that indicates that this part of the Cascadia forearc high is at steady state (i.e. erosion rates = rock uplift rates) on time scales > ~50 k.y. Four days allotted for the field trip include transportation to and from Corvallis. Details follow below from the GSA website.

1. Fluvial Record of Plate-Boundary

Deformation in the Olympic Mountains. Noon (Corvallis), 2 p.m. (Portland airport). Thurs.-Sun, May 9-12. Frank Pazzaglia, Lehigh University, (610) 758-3667; Mark Brandon, Yale University; Karl Wegmann, Washington Dept. of Natural Resources. Max.: 30; cost: \$315 (3B, 4L, 4R, 3D, 3N, vans, lodge). The Clearwater drainage on the western slope of the Olympic Peninsula preserves a flight of Pleistocene to Holocene fluvial terraces favorably oriented to document river incision parallel to the plate-convergence direction of the Cascadia Subduction Zone. The field trip and short course will focus on the terraces: their genesis, age, and subsequent river incision. Participants will learn about how geomorphology is used to understand tectonic processes in an actively deforming subduction wedge.

- Contributed by Frank Pazzaglia

### **NEW SOIL SCIENCE JOURNAL**

The Soil Science Society of America is publishing a new journal this fall called **Vadose Zone Journal**. I would like to promote our new journal to members of GSA.

- Contributed by Keith Schlesinger  
(kschlesinger@agronomy.org)

### **INTERNATIONAL ASSOCIATION OF GEOMORPHOLOGISTS (IAG)**

The IAG Newsletter no. 19 (1/2002) is now available at <http://www.geomorph.org>.

### **AMERICAN ASSOCIATION OF STRATIGRAPHIC PALYNOLOGISTS**

The American Association of Stratigraphic Palynologists is pleased to announce that it is now possible to search past issues of Palynology and the AASP issues of Geosciences and Man by author, title, and keywords.

[www.palynology.org/contnet/palynology](http://www.palynology.org/contnet/palynology)

## QUATERNARY SCIENCE REVIEWS

The first issue this year (v.21, nos. 1-3) is devoted to a series of 31 papers on the topic "Ice Sheets and Sea Level of the Last Glacial Maximum."

[www.elsevier.com/inca/publications/store/6/3/6](http://www.elsevier.com/inca/publications/store/6/3/6)

## GEOMORPHOLOGY CD-ROM

The CD-ROM of geomorphological images is now ready! We sold 65 at the AAG last week and raised over \$1,500 for the GSG student research fund. There are 870 quality images on this CD and it should serve as a good teaching resource for faculty and students.

If you would like to order your copy please mail a cheque for \$25 US, made payable to the "Geomorphology Specialty Group", to:

Dr. Mike Slattery  
Dept. of Geology  
PO Box 298830  
Texas Christian University  
Fort Worth, TX 76129

## UPCOMING MEETINGS

### 2002

- **9th International Symposium on the Interaction between Sediments and Water**

May 5-10, Banff Spring Hotel, Alberta, Canada. The symposium, held every three years, explores issues concerning aspects of freshwater and marine systems and their sediments.

[www.wsc.monash.edu.au/iasws/ninthconference.html](http://www.wsc.monash.edu.au/iasws/ninthconference.html)

- **Geological Association of Canada and Canadian Geomorphological Research Group**

May 26-29, Saskatoon, Saskatchewan  
[www.usask.ca/geology/sask2002](http://www.usask.ca/geology/sask2002)

- **American Geophysical Union 2002 Spring Meeting**

May 28-31, Washington, D.C.

[www.agu.org](http://www.agu.org)

- **Erosion and Sedimentation Transport Measurement: Technological and Methodological Advances Workshop**

June 19-21, Oslo, Norway

[www.cig.ensmp.fr/~iahs](http://www.cig.ensmp.fr/~iahs)

- **10th International Conference on Luminescence and Electron Spin Resonance Dating**

June 24-28, University of Nevada-Reno, Reno, Nevada.

[www.dri.edu/DEES/LED2002/led2002-home.html](http://www.dri.edu/DEES/LED2002/led2002-home.html)

- **International Association of Geomorphologists (IAG) Symposium on the Relationships between Man and the Mountain Environment in Terms of Geomorphological Hazards and Human Impact In Europe**

July 14, Vorarlberg, Austria

[www.geomorph.org](http://www.geomorph.org)

- **International Conference on Wind Erosion and Aeolian processes**

July 22-25, Texas Tech University, Lubbock, Texas.

Session topics will include fundamental aeolian processes, instrumentation/measurement in the field and lab, modeling, coordinated field studies, environmental impacts and erosion control, and landforms and aeolian paleoenvironments.

[www.lbk.ars.usda.gov/wewc/icar5/icar5.html](http://www.lbk.ars.usda.gov/wewc/icar5/icar5.html)

- **American Quaternary Association—17th Biennial Meeting**

August 8-11, Anchorage, Alaska.

The conference theme is Environmental change and human migration in the North Pacific Rim. Conference field trips run August 5-7 and 11-13.

[www4.nau.edu/amqua](http://www4.nau.edu/amqua)

- **17th World Conference of Soil Science August 14-21, Bangkok, Thailand.**

The main focal points of the symposium are to increase understanding of the genesis of arid and semi-arid soils—especially the formation of calcic, gypsic, and salt horizons; their use in paleoclimatic reconstructions and archaeological interpretations; find solutions to management problems; and to better understand their role in the carbon cycle.

- **Holocene Environmental Catastrophes and Recovery**

August 29-September 2, Brunel University, London.

[www.brunel.ac.uk/depts/geo/Catastrophes](http://www.brunel.ac.uk/depts/geo/Catastrophes)

- **International Symposium on the Structure, Function and management of Fluvial Sedimentary Systems**

September 2-6, Alice Springs, Northern Territories, Australia

[www.lake.canberra.edu.au/~iahs2002](http://www.lake.canberra.edu.au/~iahs2002)

- **Binghamton International Geomorphology Symposium**

October 12-13, Bloomsburg University, Bloomsburg, Pennsylvania

<http://planetx.bloomu.edu/~geog/inghamton2002>

- **International Conference on Palaeofloods, Historical Data & Climatic Variability: Applications in Flood Risk Management**

October 16-19, University of Barcelona, Barcelona, Spain

[www.cma.csic.es/dpts/suelos/hidro/phefra/index.htm](http://www.cma.csic.es/dpts/suelos/hidro/phefra/index.htm)

- **Climate Changes, Active Tectonics and Related Geomorphic Effects in High Mountain Belts and Plateaux/Geomorphology, Quaternary Geology and Natural Hazards in Tropical Highland**

December 9-10/12, Addis Ababa, Ethiopia.

[www.aigeo.unina.it](http://www.aigeo.unina.it)

## 2003

- **International Union for Quaternary Research (INQUA)**

July 23-31, Reno Hilton Resort & Conference Center, Reno, Nevada.

[www.dri.edu/DEES/INQUA2003/inqua\\_home.htm](http://www.dri.edu/DEES/INQUA2003/inqua_home.htm)

- **Geomorphic Hazards: Towards the prevention of disasters**

October 27 - November 2, Mexico City, Mexico.

<http://www.smg.igeograf.unam.mx>

## 2002 GSA MEETING IN DENVER—TOPICAL SESSIONS

The following are those technical sessions which may be of interest to the membership. See GSA TODAY (April 2002) for a complete listing and descriptions.

T1 Application of GIS and Remote Sensing to Archaeological Geology

T2 Nature, Effects, and Control of Groundwater at Archaeological Sites

T3 Obsidian Sources and the Distribution of Archaeological Sites from These Sources

T5 Wetlands Paleoecology Through Time

T9 Mining in the Twenty-First Century: Meeting the Environmental Challenges

T13 Case studies in Landslide Problem Solving, Landslide Monitoring, and Alarm Methodology: In Honor of David J. Varnes

T14 Integrated Studies of the Effects of Abandoned Mines on the Environment

T15 Decay and Conservation of Stone Buildings and Monuments

T16 Evaporite Karst and Engineering and Environmental Problems in the United States

T17 Expansive Bedrock—A primary Engineering Geologic Hazard of Colorado's Front Range Urban Corridor

T18 Geohazards and Transportation Routes

T19 Groundwater and Hardrock Mining

T20 Man as a Geologic Agent: In Honor of George Kiersch

T21 Remote Sensing and Geographic

Information Systems in the New Millennium:  
 Their use in Environmental and Engineering  
 Geology  
 T22 Rumbling in Below the Radar:  
 Earthquake Hazards in Areas Where Seismic  
 Potential is Underrecognized  
 T25 Modern and Ancient Tidal Flats Reflecting  
 Environmental and Climate Changes for Past  
 and Future  
 T27 From Geochemistry of the Geosphere,  
 Atmosphere, and Cosmos to Forensic  
 Environmental Geochemistry: A Tribute to Ian  
 Kaplan  
 T28 Geochemical and Mineralogical Records  
 from Ancient Lake Sediments  
 T29 Sources, Transport, Fate, and Toxicology  
 of Trace  
 Elements in the Environment: A Tribute to  
 Gunter Faure  
 T32 Magnetic Mapping of North American  
 Geology (Posters)  
 T33 New Views of Extensional Basins and  
 Related Volcanic Fields using Geophysics and  
 Remote Sensing  
 T38 Geology in the National  
 Parks: Research, Mapping, Education and  
 Interpretation  
 T44 New Heights in Geoscience Information:  
 Access and Technology  
 T45 Implementing Geoinformatics for  
 Knowledge Integration and Decision  
 Management  
 T47 Advances in Karst Modeling (Posters)  
 T48 Application of Biological and  
 Hydrochemical Tracers in Groundwater Quality  
 Investigations  
 T56 Groundwater Depletion and  
 Overexploitation: A Global Problem  
 T57 Hydrogeologic Framework and Basin  
 Hydrology of the Desert Southwestern United  
 States  
 T58 Hydrogeology and Water Resources of  
 the High Plains Aquifer: Issues for Public  
 Policy Over the Next 50 Years  
 T60 Rivers in Karst: Processes and  
 Applications  
 T61 The Platte River Basin of Colorado,  
 Nebraska, and Wyoming: Where Geology,

Hydrology, Endangered Species, People, and  
 Politics Attempt to Coexist  
 of Subsurface Organic Contaminants in  
 Heterogeneous Chemical or Physical Settings  
 T66 Fate, Transport, and Treatment of  
 Pollutants from Municipal Solid Waste Landfills  
 T67 Watershed Processes Within Tropical  
 Montane Catchments  
 T68 Yucca Mountain Update: Recent  
 Advances from Scientific Investigations of the  
 Unsaturated Zone  
 T71 Feedback in Earth Systems—  
 Determining System Response to Perturbation  
 through Observations and Modeling  
 T72 Geologic Records of Paleoelevation  
 T74 Isotopic and Elemental Tracers of Late  
 Quaternary Climate Change  
 T75 Paleosols and Phanerozoic Climate:  
 Geochemistry to Trace Fossils  
 T77 Advances in the Fossil Record of Insects  
 and Terrestrial Arthropods  
 T86 Chesapeake Bay Impact Structure:  
 Geology, Geophysics, and Geohydrology of  
 America's Largest Crater  
 T87 Drilling into Impact Structures:  
 Petrology, Geochemistry, and Geophysics  
 T88 Early Mars  
 T89 Impact Stratigraphy  
 T90 Terrestrial Approaches to Extraterrestrial  
 Problems and Vice Versa  
 T92 Effective Communication and/or  
 Partnership Among Geoscientists, the Public,  
 and Policy Makers: Case Studies  
 T93 Hydrogeology in Developing Countries:  
 Opportunities and Challenges  
 T94 Injecting Geoscience Into Public Policy:  
 Strategies That Work  
 T95 Whetting the Appetite of Politicians:  
 Water Issues in the American West  
 T97 Geoecology—The Emergence of an Old  
 Concept to Solve Problems in the 21st  
 Century  
 T98 Geological and Ecological Responses to  
 Landscape Disturbances (Posters)  
 T99 Geology, Biogeochemistry, and Ecology:  
 a New Synthesis for Arid Landscape  
 Processes

T100 Geomorphic Impacts of Wildfire  
 T101 Interdisciplinary Approaches to Understanding Soil and Vadose Zone Hydrology of Saprolite: Integration of Hydrogeology, Sedimentology, Geomorphology, Pedology and Biology  
 T102 Post-Laramide Uplift and Erosion of the Rocky Mountains and Colorado Plateau  
 T103 Quaternary Sciences from Land to Sea: In Honor of John T. Andrews  
 T104 Quaternary Stratigraphy and the Glacial Environment: In Honor of Ernest H. Muller  
 T105 Response of Dryland Geomorphic Systems to Climate Change and Variability  
 T106 Remotely Sensed Data for Geologic and Environmental Studies  
 T110 Tectonics, Climate Change, and the Late Cenozoic Evolution of the Rocky Mountains, Colorado Plateau, and Western Great Plains  
 T111 Detrital Thermochronology—Dating of Exhumation and Landscape Evolution in Mountain Belts  
 T123 Tectonic Modeling Applied to the Characterization and Evaluation of Yucca Mountain as a National Nuclear Waste Repository Site: Concepts, Methods, and Hazard Analyses at Local and Regional Scales  
 T127 The Role of the Earth Sciences in Fostering Global Equity and Stability

## **DIVISION BUSINESS: MINUTES AND REPORT TO COUNCIL**

Geological Society of America  
 Quaternary Geology and Geomorphology Division  
 Minutes of the Management Board Meeting  
 Sunday, November 4, 2001  
 and  
 2002 Annual Report to GSA Council

Attending:

**Craig Kochel**, Chair  
**Debbie Harden**, 1st Vice-Chair  
**Steve Kite**, 2nd Vice-Chair  
**Ellen Wohl**, 2nd Vice Chair-Elect  
**Alan Nelson**, Secretary  
**Scott Burns**, Treasurer  
**Bill Johnson**, Newsletter/Website Editor

2001-2003 Panel: **Rich Whittecar**

2000-2002 Panel: **Grant Meyer, Dave Dethier**

1999-2001 Panel(retiring): **Peter Knuepfer**

QG&G Council Rep: **Steve Wells**

The following topics were discussed:

### **1. Electronic election nomination and balloting process** (Alan Nelson)

Present electronic procedure is working, but the Treasurer will try to obtain more nominations during the reception following the Awards Ceremony (attempt was successful).

Proposal that paper ballots be eliminated in 2002 was withdrawn, when Bill Johnson reported that as many as 212 members have asked not to receive regular email from the Division, and so would not know where to access an electronic ballot.

Possible two-year terms for all officers to provide more institutional memory for the division was discussed but judged impractical because of the required 8-year commitment for some officers that 2-year terms would imply.

### **2. GSA policy on number of "official" Division awards** (Craig Kochel, Alan Nelson)

Steve Wells will suggest to Council that all four

major QG&G awards be given equal status in terms of publicity, citations printed in GSA Today, etc.

### 3. **Treasurer's Report** (Scott Burns)

Explanation of the new GSA fiscal year, 1 Jul 2001.

Although the Division had planned to set the amount of each of the many Division awards at this meeting, this could not be accomplished because GSA headquarters could not provide up-to-date information about the various funds that endow the awards.

Through much exchange of email this past summer, the procedure for payment of the Easterbrook Scientist's research expenses was resolved to everyone's satisfaction.

It was agreed that the cost of refreshments and room for the MB meeting was excessive (\$500). In the future, only a room in the hotel will be reserved for the meeting (only water provided). Priorities for future use of surplus funds in the Division budget are: (1) pay for registration of student award winners, and (2) increase travel allowance for DCA winner to \$800-1000.

### 4. **Division Apathy** (Craig Kochel)

Despite participation in Division affairs by only a third to a quarter as many members as in previous decades (12-15%), the MB agreed to finally stop worrying about it. Other divisions have the same problem. No nominations have been received for two years from the membership for the DCA despite many tens of suitable nominees.

### 5. **New schedule for Annual Meeting in 2002** (Craig Kochel)

The 2002 MB Meeting will be at 6PM on Sunday. The Awards Ceremony will remain on Tuesday at 7PM, the last night of the meeting with the new schedule.

### 6. **Appointment to serve on GSA Committee on External Awards** (Craig Kochel)

Peter Knuepfer graciously volunteered for this task.

### 7. **Secretary's Report** (Alan Nelson)

2001 Election Results:

The percentage of returned ballots (12%) was apparently lower than the 15% of last year, possibly because we forgot to print the ballot in the March newsletter. In 1996-1997 return rates were 23-27%. A blast email asking those who preferred a paper ballot to request one from the Secretary yielded only two requests. All other voters used the electronic ballot form on the GSA web site.

Chair: **Deborah R. Harden** (write-in for Aleister Crowley)

1st Vice-Chair: **J. Steven Kite** (write-ins for Ross Powell and Oscar Wilde)

2nd Vice-Chair: **Ellen Wohl**

Treasurer: **Scott Burns** (write-ins for Thom Davis and Alan Greenspan)

Newsletter Editor/Webmaster: **William C. Johnson** (write-in for Bill Gates)

2001-2003 Panel: **Kathy Haller, G. Richard Whittecar, Darrell Kaufman**

Special thanks to other QG&G candidates: Giff Miller, Kyle House, John Ritter, and Geoff Seltzer. And thanks to Barb Mieras for arranging the web site balloting and tallying the ballots.

2001-2002 Nominating Committee (Chair, Peter Clark)

Six individuals for 3 Panelist positions (nominations by web site form or email)

Two individuals for 2nd Vice-Chair

One individual for Secretary (two-year term)

Membership:

Contrasting with its steady growth over the past decade, in 2001 Division membership dipped to 1156 from a high of 1429 in 2000. Part of the problem is that many members

who paid 2-year GSA dues in 1999 (to cover through 2001) inadvertently didn't also double up their Division dues, so their Division memberships lapsed at the end of 2000. Other divisions lost similar percentages. We hope that everyone who was a member in 1999 will pay 2002 dues.

#### **Kirk Bryan Award**

**Richard M. Iverson**, Cascades Volcano Observatory, U.S. Geological Survey (\$1500, plaque)

For: Iverson, Richard, 1997, The physics of debris flows: Reviews of Geophysics, v. 35, no. 3, p. 245-296.

Gary Smith and John Costa, Citationists

Special thanks to this year's Panel: Art Bettis, Dave Dethier, Peter Knuepfer, Marith Reheis, Carrie Patterson, and Grant Meyer.

#### **GSA Gladys W. Cole Memorial Research Grant** (\$11,500)

**Dorothy Sack**, Ohio University, Middle transgressive phase of Lake Bonneville—A comprehensive basinwide analysis

#### **8. Newsletter Editor/Webmaster's Report** (Bill Johnson)

Bill Johnson and Alan Nelson will work with Rich Madole to develop a QG&G history section on Division web site. A first priority will be to scan all available newsletters.

A program has been purchased that will convert the thousands of Division email messages to several standard text formats for archiving. Costs of the web site are insignificant.

#### **9. Second Vice-Chair's Report** (Steve Kite)

Procedures for selecting this year's winners went more smoothly than ever with two clear winners. Potential conflicts of interest on the evaluation committee were easily avoided.

#### **J. Hoover Mackin Award** (\$2200, plaque)

**Kyle Nichols**, Ph.D. candidate, Univ. of Vermont (Paul Bierman), *Quantifying desert*

*piedmont process rates using in situ-produced cosmogenic 10-Be and 26-Al*

#### **J. Hoover Mackin Award Honorable Mention** (plaque)

**Jennifer Pierce**, Ph.D. candidate, Univ. of New Mexico (Grant Meyer), *Holocene variations in fire frequency and sedimentation rates in the Idaho Batholith: Implications for the role of climate change*

#### **Arthur D. Howard Award** (\$2200, plaque)

**Matt Anders**, M.S. candidate, Utah State University (Joel Pederson), *Quaternary stratigraphy and landscape evolution of the eastern Grand Canyon*

#### **Arthur D. Howard Award Honorable Mention** (plaque)

**Kurt Frankel**, M.S. candidate, Lehigh University (Frank Pazzaglia), *Post-Laramide tectono-geomorphic evolution of Sierra Nacimiento, southern Rocky Mts.*

Special thanks to this year's Panel: Steve Kite, Debbie Harden, Joel Pederson, Jim Spotilla, Ellen Wohl, Craig Kochel, Steve Taylor, and Susan Millar.

#### **10. First Vice-Chair's Report** (Debbie Harden)

No Distinguished Career Award in 2001!

#### **Farouk El-Baz Award** (\$10,000, plaque)

**Nicholas Lancaster**, Desert Research Institute - Reno

Dan Muhs and Marith Reheis, Citationists  
Four nominations were received this year, including some from outside the U.S.

Thanks to this year's selection committee: Les McFadden (Chair), Alan Gillespie, and Jerry Miller.

#### Plans for 2002 Meeting

2002 JTPC Reps (Harden and Kite)

Pardee proposals, fieldtrip proposals.

11. **Chair's Report** (Craig Kochel)

**Donald J. Easterbrook Distinguished Scientist Award:**

**Victor R. Baker**, University of Arizona  
(grant amount dependent on winner's proposal, up to \$25,000 for 2001 awardee, plaque)  
Jim O'Connor, Citationist

Special thanks to the nominating committee: Craig Kochel, Peter Birkeland, and Alan Howard

Yet another special thanks to this year's Panel for helping to set the standards for this new award: Dave Dethier (EDSA Committee Chair), Peter Knuepfer, Art Bettis, Marith Reheis, Carrie Patterson, and Grant Meyer.

Report on Division Chairs' Meetings – Boulder

and Boston

Report on Joint Technical Program Committee Fieldtrip costs reduced if Division selected only certain support items from GSA.

The Division can only sponsor theme sessions that it knows about in advance.

12. **Adjournment** 9:45 P.M.