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RIP RAPP ARCHAEOLOGICAL GEOLOGY AWARD

Presented to
William I. Woods

William I. Woods
University of Kansas

Citation by William Doolittle

The Geological Society of America presents its 2013 Rip Rapp Archaeological Geology Award to William I. Woods. Over the course of four decades "Bill," as he is known to friends and colleagues, amassed a record of distinguished research that not only blurs the line between geology and archaeology, but between soil science and geomorphology, and geography and anthropology. And, he has done so on three continents.

He began his career as a student in Wisconsin studying climate-soil associations, moved on to Germany where he studied chemical analyses of soils on medieval archaeological sites, and then returned to the US to establish his career. Exactly where, when, and how Bill transformed from a student to a professional is as unclear as the boundaries of the disciplines he transcends. Suffice it to say his work is both multi- and inter-disciplinary.

Bill has made significant contributions in earth science and archaeology working for years at Cahokia in the Midwest, with an eye toward understanding environmental dynamics as evident in the flooding and sedimentation sequences, deforestation, and agriculture. At the Amalucan site in Mexico he unraveled the nuances of a complex ancient water control system buried under more than a meter of sediment. His work in the Maya Mountains of Belize involved assessment of soils and geomorphology in areas of terraced agriculture, and his geoarchaeological research in Belgium contributed to understanding motte-and-bailey sites.

For the past 20 years, Bill has been involved in research on terras pretas, or dark earths of Amazonia. Working with scholars from the Brazil, Europe, and the US, he was instrumental in discovering that these soils are anthropogenic, and living—regenerating themselves. And, as they had sustained large populations in times past, they are capable of sustaining large populations today. Because of Bill, geology through archaeology now has a direct bearing on future agricultural and economic development.

The author of seven books, more than 120 articles and chapters in geological and archaeological journals, and countless site reports, William I. Woods is a most worthy recipient of the Rip Rapp Award.

Response by William I. Woods

From Troy to Minnesota and many points in between George "Rip" Rapp, Jr. has for decades been at the forefront of geoarchaeological research. His many contributions have literally transformed geoarchaeology from a seldom employed novelty to an essential component of all thorough archaeological investigations. I certainly was familiar with Rip's work, but did not have the opportunity to meet him until the 1986 Penrose Conference on Archaeological Geology. A total of 57 of us met on St. Simon's Island for five days in December. Rip's boundless energy and encyclopedic familiarity with all of the many topics presented in the papers and discussions that occurred during our fieldtrips was essential to the success of the conference.

To be a part of this group was essential for my professional and personal development and I was most pleased when Norm Herz nominated me for membership in the GSA. I immediately jumped at the chance and have reaped the benefits of this relationship many times over. I did not ever expect though that I would be chosen to receive the Geological Society of America's 2013 Rip Rapp Archaeological Geology Award. Thank you Rip and all those who supported me for consideration for this most prestigious award.

I am both most honored and quite humbled by becoming a member of such an august group of recipients. None of us can truly say that we have made our advances on our own though. Mentors, colleagues, and friends and family have contributed immensely to my career achievements and my deepest appreciation is extended to all of you. Please excuse me for not mentioning you all by name, but know that I have not forgotten your contributions and you are in my heart.

It has been a great road to travel. I have been most fortunate to be able to pursue a profession I love, get funding for interesting projects, work with a marvelous group of fellow scholars, and continue to engage in new experiences and to learn. Thank you, my fellow geoarchaeologists for making this life possible.

GILBERT H. CADY AWARD

Presented to Fariborz Goodarzi

Fariborz Goodarzi
University of Calgary

Citation by Thomas Gentzis

Dr. Fariborz (Fari) Goodarzi obtained his BS degree from the University of Tehran in 1963, his MS from the University of Newcastle-Upon-Tyne, England, in 1971, and a PhD from the same university in 1975. Since then, he held the following positions: Assistant Professor and then Head, Department of Mineral Engineering, Isfahan University of Technology (1975-1979); Dean, Faculty of Materials, Arya-Mehr University of Technology (1979-1980), and Research Scientist, Natural Resources Canada (1982-2008). He has been a UNDP expert since 1981and represented Canada at the International Energy Agency since 1998. He served as an Adjunct Professor of Geology at four Canadian universities from 1984 to 2010.

During his lustrous career, Dr. Goodarzi has received a variety of awards, including the Government of Canada Award of Excellence in Executive Leadership, the ICCP Rheinhardt Thiessen Medal, the CSCOP Hacquebard Award, the AAPG Vincent E. Nelson Memorial Award, and an induction to the Royal Society of Canada.

Dr. Goodarzi was the Geological Survey of Canada's most senior research scientist who made significant and lasting contributions that can be described as a triangle whose base is coal and sedimentary organic petrology and chemistry sciences, and the sides comprise fossil fuels and energy resources as well as environmental sciences. He has been a selfless leader in building a coal expertise network around the world. In Canada, he has gained the respect and support of experts in all levels of government, industry, and academia.

Dr. Goodarzi has supervised and mentored an impressive list of students to advanced degrees in earth sciences. He has a quality that many leading scientists lack: he is a great educator and mentor. His PhD and MS students are eminent scientists. His high standing in the international scientific community is shown by the invitations to serve as visiting scholar in highly regarded academic institutions. Such invitations are testimony to his outstanding research output. As one of the most eminent scientist of the 20th century, Professor William S. Fyfe said: "We knew more about the rocks on the Moon than about trace elements in coal" before Dr. Goodarzi's valuable contributions to fossil fuel science.

Response by Fariborz Goodarzi

Ladies and GentlemanCongratulations to the Geological Society of America for their 125th Anniversary. Indeed, it is a great honor to receive the Gilbert Cady Award-Coal Division of such a venerable society. I thank Dr. Thomas Gentzis for nominating me, and Brian Cardot, Clause Diesel, Shimon Feinstein, Frank Huggins, Maria Mastarles, Jingle Ruppert, Hamed Sanei and Eileen Van-der Flier–Keller for their support. I am humbled to be nominated by these eminent scientists from around the world.

I also share this award with and thank my wife Margaret for her patience and understanding. Even though I am the recipient of this medal, in reality it is also awarded collectively to my friends and colleagues and to those research teams I have been a part of. I decided to become coal scientist and organic petrologist because it is fascinating subject, touching upon the exploration, exploitation and utilization of energy (fossil fuels), by using coal fragments as a measure of environmental and human health and much more. Organic petrology includes relating the nature of char in fly ash to captured mercury and the extent of ancient forest fires by analyzing the char content in peat. The subject is so enticing that one does not feel the passing of time!Coal science going to stay with us for a long time, given the vast reserves of coal in both Canada and United States that are used in both steel and energy industries. Indeed, new sources for coking coal are required for Asian markets. The production of energy from coal will continue and most likely is not going diminish by 2050 as predicted, assisted by new technologies such as underground gasification and generation of gas using bacteria. I thank the Geological Society of America for this prestigious award, which is truly a great honour.

E.B. BURWELL, JR. AWARD

Presented to
Luis Gonzalez de Vallejo and Mercedes Ferrer

Luis Gonzalez de Vallejo
Universidad Complutense de Madrid

Mercedes Ferrer
Geological Survey of Spain

Citation by Paul M. Santi

Geological Engineering was selected for this award because we expect it to be the new standard for engineering geology and geological engineering education. It is sophisticated enough to give senior undergraduates and graduate students an in-depth knowledge of these subjects, yet clear enough that lower level students or individuals from other fields can understand the critical concepts. Furthermore, the treatment is deep enough that the book serves as an excellent reference manual for practitioners.

The book carefully balances descriptive text, quantitative techniques for analysis, and tabulated data showing example parameter ranges and methods of evaluation. There are hundreds of beautiful full-color diagrams, maps, and photographs. Each chapter has an excellent reference list to guide further reading.

The book is divided into four sections of escalating integration of information. Part 1 covers fundamentals, with chapters introducing geological engineering, soil mechanics, rock mechanics, and hydrogeology. Part 2 focuses on methods, explaining how we get data in geological engineering, with chapters on site investigation, rock mass characterization, and engineering geological mapping. Part 3 moves to applications, where the deeper integration of geology and engineering is brilliantly demonstrated through chapters on foundations, slopes, tunnels, dams, and other earth structures. Finally, Part 4 continues this integration, but covering specific hazards of landslides and seismicity that warrant more detailed treatment, followed by a final chapter on prevention of geological hazards.

The field of engineering geology occupies the treacherous ground between the more descriptive and abstract ideas in geology and the more prescribed and consistent approaches needed in engineering. Geological Engineering will impress users from both sides.

Between them, the authors have written over 200 papers and research reports, as well as five books. Luis Gonzalez de Vallejo is a Professor of Geological Engineering at the Complutense University of Madrid and Mercedes Ferrer is an Associate Lecturer on Rock Mechanics at the same university and a Senior Research Officer at the Geological Survey of Spain.

Response by Luis Gonzalez de Vallejo

On behalf of my colleague Mercedes Ferrer and I, I would like to thank the Award Committee and the Environmental and Engineering Geology Division of the GSA for giving us the honor of receiving the E.B. Burwell Jr. Award, named in memory of the esteemed founder member of this Division. We also like to thank Dr. Paul Santi for his kind words in his citation.

When we received the wonderful news stating our book was given this award, we were both surprised and elated.

The book was first written in Spanish in the early 2000's to provide our MSc students studying course in engineering geology with a general and basic textbook, that also could be used by practitioners. At the beginning of the 80's, when I started to teach engineering geology at Complutense University of Madrid – the biggest university in Spain – this discipline was not part of the curriculum. Today, over 300 students are currently taking BSc and MSc courses in engineering geology at this university.

A large scale plan of new infrastructures throughout Spain was developed in the early 90`s. The country is the second most mountainous in Europe, and therefore the engineering geological conditions had an important role in both the design and excavation of tunnels, and other large projects including dams, nuclear power plants and radioactive waste disposal facilities.

The geological hazards have historically produced considerable economic issues for Spain, floods, earthquakes and landslides are fairly commonplace. The study of these types of geo-hazards developed greatly during the last few decades, now it is compulsory for any large project to undertake such studies.

I have been very fortunate in having had the opportunity to participate in many projects and hazard analysis; this has allowed me to experience first-hand the engineering geological principles that have later been used to teach the engineering geologists of the future.

My co-author Mercedes also has vast experience on geological hazards and rock mechanics research projects both in Spain and Latin America.

The book is the culmination of our professional and teaching experiences. The down side is the not inconsiderable time it has taken for us to compile and write it, any of you considering writing a book be warned.

The book could never have been written without help and assistance from many of our colleagues and friends who have contributed in many different ways, we owe them a huge gratitude. I would like to mention Mike de Freitas from Imperial College London who revised the manuscripts. We thank to our enthusiastic editors of the Spanish and English editions of the book for their continual support, in particular to Janjaap Blom from Taylor and Francis - CRC Press.

I would like to take this opportunity again to thank you all very much.

OUTSTANDING CONTRIBUTIONS TO GEOINFORMATICS AWARD

Presented to
Clifford A. Jacobs

Clifford A. Jacobs
National Science Foundation

Citation by Tim Killeen and Lee Allison

In 2009, the atmospheric sciences community recognized Clifford Jacobs as "one of the giants" for his contributions during his then 25 years at the National Science Foundation. Since then, he has gone on to engage the broader Earth science community with his vision and leadership.

Cliff Jacobs has done more than anyone else to envision, develop and sustain high-performing, enterprise-level, community-owned, community-managed and community-serving cyberinfrastructure for the geosciences in the United States. Cliff has demonstrated both fabulous intellectual leadership and wonderfully effective and persistent management skills in this regard and it is most fitting for him to receive this notable recognition from the Geological Society of America.

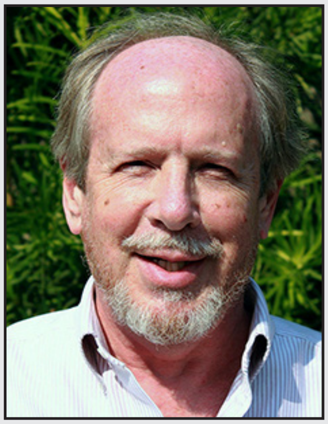
Cliff served as the NSF program manager for the National Center for Atmospheric Research for a period of two decades and was a driving force behind the continuous modernization and upgrading of the NCAR supercomputer system which has served generations of university researchers well and supported the development of world-class community models for both weather and climate prediction for decades. It was also Cliff's vision to establish and nurture the UCAR UNIDATA program (now involving more than 250 institutions) more than 25 years ago, providing leadership community tools to access, visualize and exchange data sets. One of the products of this work was the NetCDF standard, now used worldwide. He has been a true pioneer in what is now referred to data-enabled science and engineering - long before it became fashionable. Through his patient, calm and purposeful leadership from the NSF, Cliff was able to shape UNIDATA into the major community asset it is today. More recently, Cliff Jacobs has been the intellectual leader for NSF's innovative EarthCube program. Cliff led the design team that created the novel management and funding structure for EarthCube – one that stresses open source, open architecture, and resolutely community-based design. Cliff Jacobs' contributions have been primarily made "behind the scenes" at NSF, but those closest to process attest to the level of knowledge, professionalism, tenacity, and dedication that he has brought to the entire geosciences community. We all owe him a debt of gratitude.

Response by Clifford A. Jacobs

I am honored and deeply appreciative of the recognition this award bestows. My accomplishments, so generous outlined in the citation, were inspired by the geosciences community. They have demonstrated an unwavering devotion to the advancement of science through creativity and dedicated endeavors, with the level of resourcefulness that is the envy of other disciplines. My contribution lies solely in guiding and harnessing the intellectual capacity of researchers, cyber-technologists, and educators to bring to fruition a continually improving milieu for the studying of the Earth system. Along the way, I have been educated by the best and brightest in the science and engineering communities and developed a sincere admiration for their intellect, devotion, and insight gained from experience. Working at the National Science Foundation has offered me the privilege of being exposed to, and enriched by, the national and international research enterprise. That knowledge provided me with the opportunity to be an integrator of ideas and accomplishments of the Geoinformatics community.

GEORGE P. WOOLLARD AWARD

Presented to
Peter Bird



Peter Bird
University of California at Los Angeles (emeritus)

Citation by Eugene D. Humphries

Peter Bird, throughout his career, has considered the physical workings of orogeny with an obvious joy in the effort to understand, a sense for the fundamental expressed in geologic specifics, and with a clarity of insight. As one of the most influential geodynamicists of our time, we all know of his work; and beyond what we know, there are important works in diverse areas you may not know. Peter's focus on addressing real orogenies and actual geological activity with geophysical methods makes him especially suited for this award.

We now discuss the delamination process routinely, without reflecting on the imagination required to associate regional patterns of uplift with deep-lithosphere convective instability, or to see the consistency of the delamination style of lithosphere loss in the geologic record. Peter has been the primary voice for lithospheric delamination, both in the creation of the idea and in its early quantitative development. Peter has been a prominent and successful modeler of active deformation kinematics and dynamics in California, the western U.S., the eastern and western Mediterranean, the greater Himalaya, Alaska, and more recently the whole Earth. This work it typified by integrating fault, stress, geodetic and seismic data in a rigorous manner. He has been a persuasive, quantitative and rigorous arguer that faults are weak, from a regional geodynamic point of view. He is the most trusted resource for understanding the deformation and state of stress during the Laramide orogeny. And he makes available open source code that has been frequently used for lithospheric finite element modeling, and for plate boundaries, among other things.

I hope this doesn't read simply that Peter was in the thick of important work. He often is the one who both introduced fundamental ideas, and who persisted in the scientific conversations about these ideas, thereby being central in defining and establishing them into our cultural understanding. And he has done so with honesty and integrity, and with a restrained exuberance and humility. For all these reasons, it gives me pleasure to see Peter receive the George Woollard Award.

Response by Peter Bird

First, my thanks to Gene Humphreys for his kind words, and to Audrey Huerta and all others who made this possible. I am pleased to be associated with the name of George Woollard because I learned about his work on gravity and crustal structure very early, in an undergraduate class by Francis Birch, and I have always considered both of them to be masters of the clear view of the big picture. I am also pleased to join the distinguished company of previous Woollard awardees; they have all been leaders, and many of them showed their abilities more quickly than I did. I am also touched to receive this validation of a decision I made 41 years ago: to make my career in the fruitful valley between the great ranges of Geology and Geophysics.

I had a lot of help in getting to this pleasant niche. My father introduced me to quantitative science, but also took me hiking up all the White Mountains of New Hampshire. My undergraduate advisor, Ray Siever, was a sedimentologist who gave us lectures on mantle convection because he saw it as the wave of the future. My graduate advisor Nafi Toksöz built a research program on the tectonics of continental collisions from funding associated with the technical geophysical issue of seismic discrimination. And, very fortunately, I came to interview at UCLA in 1976 just as the former departments of Geology and Geophysics were merging, and looking for a symbolic faculty bridge.

The greatest satisfaction I have had in research has come from the pursuit of flaky ideas. Worrying about the history and uplift of the Colorado Plateau led to the idea that mantle convection can reach into the lithosphere, through the process I called delamination. I am pleased to see that this concept has been useful to others: in explaining anorogenic unconformities, anorogenic granites, metamorphism, and the petrologic profile of continental crust (which, of course, was a great concern of Woollard's). Later, I heard from Herb Helmstaedt, Bill Dickinson, and Walter Snyder the idea that the Laramide orogeny was driven by horizontal subduction. Happily, I found that both dynamical forward modeling and geologic inverse modeling showed all the expected consequences of this primal cause to be recorded in the geology. I now consider this to be the fundamental fact about the Tertiary history of the western United States. (It is instructive to find that George Woollard was also there ahead of us, writing in 1938 that gravity data indicates the Bighorn Range was formed by lateral compression.) If I may presume to give any advice to younger generations, it would be, "Always give a flaky idea a fair trial, unless and until it conflicts with data. If you don't, you may miss out on a great ride!"

BIGGS AWARD FOR EXCELLENCE IN EARTH SCIENCE TEACHING

Presented to
John G. Van Hoesen

John G. Van Hoesen
Green Mountain College

Citation by James Harding

My colleague, Dr. John Van Hoesen is the 2013 Biggs Award winner for Excellence in Earth Science Education. Having known and worked closely with John over the past ten years, I am delighted to be asked to provide his citation. John's Bachelor of Science degree at SUNY-Albany and his Master's and Ph.D. in Geoscience from UNLV provide the backdrop and framework for his expertise. John has served his profession field and academic institutions through a number of efforts including Associate Editor for the Journal of Geoscience Education, recipient of a Fulbright Scholar Award, Full Member of Sigma Xi, and multiple community-based service projects. All of these achievements and endeavors, while impressive and noteworthy, manage only to paint a rather sterile picture of the sort of professional and educator that John has become.

Teaching at a small school, like Green Mountain College, requires faculty to wear many hats. To this end, John is not only our geologist, but he is our GIS specialist, a distance educator, and leader of innovative technology in the classroom. Students quickly recognize that John is unique among the faculty in that his experience with social media, YouTube, and other interactive forms of technology serve to enrich the learning experience. On more than one occasion, John has been the de-facto tech support person for students (and faculty!) wrestling with some technology related problem. While this suggests that John's strength is in technology, it is but one strength. He is as deeply committed to bringing good science into the classroom and asking the students to always do their best work.

John has taught across the suite of geology-focused courses (Introduction, Sed/Strat, Soils, Geomorphology, Hydrology), but he also regularly teaches classes in our general education curriculum including one focused on the history of scientific thought (Dimensions of Nature). Finally John has developed and carved out a number of classes that serve other academic programs across campus. These courses, each with a basis in earth science have proven to be quite popular, no doubt due to John's approach to both the material and his engaging presence in the classroom. Specifically, courses in Natural Disasters, Geology in Film, and Climate Dynamics consistently max-out their enrollments.

I have co-taught courses with John on two separate occasions. In each of these instances, John demanded of the students that they not merely accept what we were teaching them, but that they ask why and probe for deeper answers and understanding. One of these joint ventures involved a three-week field class touring a number of national parks and geologic sites throughout Arizona, Utah, Wyoming, and Nevada. It was clear that students were awed by the landscapes and natural features—not often seen by students from New England. However, the real value to these students was sharing this intensive field class with John teaching in his element and seeing his passions first-hand.

The opportunities for students to achieve excellence extend beyond the boundaries and confines of the classroom though. John has supervised and mentored many students in directed research, independent studies, and internships. He has co-authored articles with undergraduates, shepherded students to present at professional association meetings, and guided them towards assistantships in graduate school and career opportunities. In short, John's work with students is built on asking them to strive for improvement and to think beyond the grade in a class. One of the student references for this award recounted a story whereby the student told John that he was going to quit school and join the US Navy, to which John responded, "Well, that would be a waste of talent." This focused and honest response sent the student into some soul searching and ultimately on the path to a graduate degree in geology.

Care, insistence on excellence, and earnest encouragement are really the bases behind John's success as a teacher. His academic training, research and applied experiences, and continuing his own learning are all important to understand what goes into making someone an excellent teacher. But the real texture to this excellence is the impact that we make on students' lives. John continues to do this both within and beyond the classroom. I have been personally grateful and professionally enriched to count Dr. Van Hoesen among my colleagues and friends. I know this award is well-deserved—congratulations!

Response by John G. Van Hoesen

I would like to express my gratitude to the Geoscience Education Division for selecting me as this year's recipient of the Biggs Award for Excellence in Earth Science Teaching. As well as Dr. Jim Harding for nominating me and the students who wrote letters of support: Desiree, Dave, Jenna, John, James, Amanda, Cody, Marli, and Barbara. I am humbled by the prospect of joining such a distinguished group of educators, who inspire me to continue learning and experimenting as an instructor myself.

Many people have encouraged and fostered my interest in the natural world while also forcing me to confront my assumptions. My father, in making the decision not to pour concrete over a beautiful exposure of Devonian limestone, which would become the basement floor I explored as a child and sparked my initial interest in geology. In addition, he modeled healthy skepticism that set the foundation for my growth as a scientist. My 10th grade Biology teacher, Bonnie Saine, purchased additional specimens for dissection and spent countless hours after school teaching me the value of careful observation. Dr. John Delano at the University of New York, Albany exuded an infectious passion for geology that inspired me to produce my best work. Dr. Brenda Buck - my master's advisor at the University of Nevada, Las Vegas relentlessly worked to help improve my writing. Dr. Fred Bacchuber -- also at UNLV -- taught me how to individualize instruction and was most influential in how I approach teaching as a profession. But without question I have learned the most from my students, and I see each class as a truly symbiotic learning environment, in which we teach one another.

There is no better environment for this kind of teaching than in the field, where my students and I may confront a new hand-sample, outcrop or exposure that forces us to integrate observations with definitions and guiding principles. This underscores one of the primary goals I have for every course: to instill an appreciation for the power of observation to better inform what David Leveson described as the 'major prize' – those intimate experiences with the natural world wrapped in a new understanding and appreciation for its origin. Profound experiences in the field can be complemented by classroom instruction, and I have been grateful for the support and professional development opportunities through the UNLV Teaching and Learning Center's Graduate Professional Development Program, the SERC On the Cutting Edge Program, and the School of Rock Program administered by Ocean Leadership. These opportunities informed both my basic teaching practices but also taught me how to better integrate relevant technology, and a variety of exercises and datasets that hopefully provide students with a more genuine learning experience.

For me, this award does not attest to my accomplishments; instead, it reminds me to strive more earnestly on behalf of my students, to remain open-minded to new approaches and ideas, while at the same time maintaining a commitment to landscape analysis – in the spirit of Louis Agassiz, I hope that above all I have taught people to observe.

MARY C. RABBIT HISTORY OF GEOLOGY AWARD

Presented to
Leonard Gilchrist Wilson

Leonard G. Wilson
University of Minnesota (emeritus)

Citation by Robert H. Dott

I am honored to present to the Division Professor Leonard G. Wilson, Emeritus Professor and Head of the Department of the History of Medicine of the University of Minnesota to receive the 2013 Mary C. Rabbit Award for his outstanding contributions to the history of geology.

Leonard is a native of Canada. He studied at Toronto, then London, and wisely chose the University of Wisconsin for the Ph.D., which he received in 1958. He has held positions at UC-Berkeley, Cornell, Yale and Minnesota, where he retired in 1998. Leonard Wilson has published extensively in the history of biology and medicine, but is best known to geologists for his biographical studies of Charles Lyell represented in three books and several articles.

Not surprisingly, it was Charles Lyell who brought us together. Our Division's 1990 awardee, Gordon Y. Craig of Edinburgh University, presented me as Chair of the Division a copy of Lyell's handwritten notes for a lecture Number 9, which had been presented in Philadelphia in 1842. I mistakenly thought this an important find, but, alas, soon learned that twelve lectures had been presented and had been summarized in a newspaper account. Leonard cheered me up by urging that I do a study of all of Lyell's American lectures and offered to share copies of handwritten notes for all lectures. Moreover, in recent years, we have been together at several meetings dedicated to Lyell. Notable were the 1995 international meeting on Volcanoes and History, which included a field trip on Mount Etna, and the 1997 symposium celebrating the 200th anniversary of the death of Hutton and birth of Lyell. Besides the hallowed ground of Siccar Point, we visited Kinnordy, Scottish seat of the Lyell family where Leonard prepared a fine exhibit from the Kinnordy archives.

Besides his principal interest in Charles Lyell's geology, Leonard's publications include the emergence in the United States of science in general as well as geology, the antiquity of man, the species question, Archibald Geikie and the elevation of Scotland, and Lord Kelvin's estimates of the age of the Earth.

Leonard Wilson is one of the few professional historians of science who have reached across the unfortunate gap between professionally trained historians of science and practicing scientists interested in history. Furthermore, he has attended field trips and made excursions on his own to places important to his research. His career demonstrates the great value of such interactions.

Response by Leonard G. Wilson

It is an honor to receive the Mary C. Rabbitt Award and thereby to join the illustrious succession of recipients of that award. They began with Claude Albritton, who just fifty years ago organized a symposium on the principle of uniformity in geology for the seventy-fifth anniversary meeting of the Geological Society of America, held at New York City in November 1963. At the invitation of Claude Abritton, I participated in that symposium.

At the beginning of the symposium volume, which Albritton edited, he included conflicting statements about geological uniformity by various authors including the Dutch theologian Reijer Hooykaas. Hooykaas wrote that uniformity is not "a rule established after comparison of facts, but a methodological principle, preceding the observation of facts." Albritton was troubled by Hooykaas's opinion. It may have been a reason why he organized a symposium on uniformity. What Hooykaas wrote was just the opposite of the truth. The observation of many facts preceded Charles Lyell's development of the principle of uniformity in geology and sustained that principle thereafter.

In 1963 my work on Charles Lyell was at an early stage, but I knew already that Lyell's confidence in the continuity of the geological past with the present was based upon extensive field observation. In his Principles of Geology, published in 1830, and in eleven subsequent editions, Lyell introduced a profound change in geological thought. Most geologists then thought that the geological past was marked by violent change, in contrast to the relative calm of the modern world. Lyell demonstrated that the present earth was undergoing constant change and that slow relentless changes had occurred throughout the geological past. The earth was in a constant state of dynamic activity.

Lyell's view of earth history grew out of his observations. In Scottish lakes he observed modern limestones of a type previously thought to occur only among Tertiary strata. In central France, he saw that volcanic eruptions had occurred there at intervals over long periods of time. Older than the volcanic rocks was a fresh-water formation of laminated marls, the paper-thin layer separated by myriads of the fossil crustacean Cypris, accumulated in former lakes over many thousands of years. From his familiarity with the life of ponds in the New Forest of Hampshire, and of lakes in Scotland, Lyell recognized not only Cypris but also Caddis fly larva cases and the green alga Chara as regular inhabitants of fresh water.

In Sicily, Lyell was astounded by a hard limestone containing only casts of shells, overlying a soft blue marl full of fossil shells of living Mediterranean species. The ancient-appearing limestone was actually younger than the blue marl. Furthermore, the present marine life of the Mediterranean was older than the rocks of Sicily and they in turn were older than the great mass of the volcano of Etna, which rose above them.

From such observations, Lyell perceived earth history as extending back through an endless vista of past time.

Today the earth is calculated to be some 4,650 million years old. Throughout almost all of that time, the earth, though constantly active, has remained remarkably stable. In 1987 the geologist E. G. Nisbet commented: "the Archaean ocean was not necessarily hotter than today. In fact, it is one of the most remarkable aspects of life on Earth that the surface temperature has remained within the stability field of liquid water for perhaps 4 x 109 years — uniformity indeed!" Since Nisbet wrote, the discovery in Greenland, northwestern Canada, and western Australia of sedimentary rocks even older than those he knew has further lengthened the time in which liquid water has existed on the earth's surface.

Throughout his life, Lyell sought analogies between former geological features and their modern counterparts. In 1842 he was fascinated by the formation of rain-drop impressions at low tide on the tidal flats of the Bay of Fundy in Nova Scotia.

When a shower of rain falls, the highest portion of the mud-covered flat is usually too hard to receive any impressions, while that recently uncovered by the tide near the water's edge is too soft. Between these areas a zone occurs almost as smooth and even as a looking glass, on which every drop forms a cavity ... and if the shower be transient, these pits retain their shape, being dried by the sun....

Rain-drop impressions thus evoked a vision of sun and wind and large drops of rain from a passing cloud falling on an ancient beach at low tide. After Lyell drew attention to rain-drop impressions, William Redfield found them in Triassic strata in New Jersey and Richard Brown in Carboniferous strata in Cape Breton Island.

The exact observation of such facts as rain-drop impressions illuminated the similarity of the geological past to the present. That similarity was the basis for Charles Lyell's confidence in the uniformity of the geological past with the present.

O.E. MEINZER AWARD

Presented to
Chunmiao Zheng

Chunmiao Zheng
University of Alabama

Citation by Mary P. Anderson

The 2013 O.E. Meinzer Award is presented to Chunmiao Zheng for contributions to understanding and quantifying solute transport in groundwater. His landmark modeling code MT3DMS (Zheng, C., and P.P. Wang, 1999, Contract Report SERDP-99-1, U.S. Army Engineer Research and Development Center, Vicksburg, MS, 169 pp.) is a boon to researchers and has fundamentally transformed the groundwater consulting industry by providing an open-access, user-friendly platform to construct reliable transport models. Moreover, the availability of MT3DMS motivated others to develop biochemical and geochemical reaction modules (e. g. RT3D, PHT3D) that link with MT3DMS to simulate complex multi-species bio/geo- chemical reactions. Furthermore, MT3DMS has been adapted as a heat transport code and is the building block for SEAWAT, a USGS supported code for simulating density-dependent transport in groundwater.

Chunmiao is also recognized for his textbook *Applied Contaminant Transport Modeling*, first published in 1995 and now in a 2nd edition (Zheng, C., and G.D. Bennett, 2002, John Wiley & Sons, New York, 621 pp.). This popular textbook provides comprehensive treatment of the fundamentals of transport modeling and is extremely well written, presenting material with exceptional clarity and at a level accessible to both students and experienced practitioners.

Chunmiao was born in 1962 in Fuzhou, China. He received the B.S. in geology from Chengdu College of Geology (now Chengdu University of Technology) and came to the United States in 1984, receiving the PhD in Hydrogeology from the University of Wisconsin-Madison in 1988. There he developed an interest in writing codes for solute transport. After graduation he worked for S.S. Papadopulos & Associates, Inc. where he honed his modeling skills. In 1993, he joined the faculty in geological sciences at the University of Alabama, where he was named the Lindahl Endowed Professor. Starting in 2006, he began making professional visits to his native China and currently is a Chair Professor at Peking University where he founded and directs the Center for Water Research.

Chunmiao is extremely generous, freely giving his time to mentoring students, helping colleagues, and serving on numerous editorial and advisory committees for professional societies and governmental agencies in the U.S., China, and internationally.

Response by Chunmiao Zheng

Thank you, Mary, for the most generous citation and very kind words. I am deeply honored and grateful to receive the 2013 O.E. Meinzer Award. When I saw a letter in my mailbox from the Geological Society of America in May, I thought it must be another reminder to renew my GSA membership. After I realized it was to notify me of the O.E. Meinzer Award, I was ecstatic and overwhelmed. The thought that I will join the illustrious list of former Meinzer awardees was truly humbling. I wish to express my sincerest gratitude to the GSA, the Hydrogeology Division, and the Meinzer Award Committee for presenting me this tremendous honor.

In June I was fortunate to meet József Tóth in Beijing where he was to attend a workshop commemorating the 50th anniversary of the publication of his landmark papers on regional groundwater flow system analysis for which he received the inaugural Meinzer Award in 1965. It seems fitting that the earliest and the latest Meinzer award recipients for the past 50 years shall meet for the first time in China, where the problems of water scarcity and groundwater contamination will confront the hydrogeologists in China and beyond for the next 50 years.

Let me look back at the events that led to the two publications cited for this award. After I graduated from Chengdu College of Geology in China (now Chengdu University of Technology) in 1983, I received a Chinese government scholarship to study at the University of Wisconsin-Madison with Mary Anderson. I recall that a few days after I arrived at UW in December 1984, Mary hosted a big welcome party for me at her home. That was the first cultural shock to me as I never imagined a famous professor would do something like that for a new graduate student from China! When it was time to choose a thesis topic, Mary and I thought I should study, with financial support from Ken Bradbury at Wisconsin Geological and Natural History Survey, how shallow agricultural drainage ditches affect the patterns of groundwater flow around those ditches in the context of managing agricultural chemicals in the shallow aquifer.

At that time, the USGS groundwater flow model, MODFLOW, was just released. I was applying it to my research very effectively. However, I needed something more, that is, a tool that would allow me to visualize the flow patterns and calculate the flow paths under transient conditions. There was still no particle tracking code for use with MODFLOW then. I was very appreciative that Mary would support me to develop one despite my very limited programming skills. That effort led to PATH3D, which came out around the same time as MODPATH, as two particle tracking companions for MODFLOW but with different computational algorithms.

After I graduated from UW-Madison, Charlie Andrews gave me the first job at S.S. Papadopulos & Associates, Inc. for my industrial practical training. While there, working on remedial investigation and feasibility studies at Superfund sites, I needed a solute transport model that would allow me to simulate 3D contaminant concentration distributions based on the flow solutions of MODFLOW. Since there was nothing available for that purpose at that time, I decided to expand the scope of PATH3D to accommodate dispersion and reactions in addition to advection. My work was inspired by the MOC2D code by Lenny Konikow and John Bredehoeft. The result was the MT3D code released in the early 1990s. The release would not have been possible without a grant from the U.S. Environmental Protection Agency for which Stavros Papadopulos was directly responsible. During the "darkest hours" of which I struggled to make the code work, Charlie Andrews provided the steady support and guidance without which MT3D would never have materialized. Gordon Bennett, who had just retired from the USGS and joined SSPA at that time, edited the MT3D manual thoroughly, as he did for the MODFLOW manual while he was still at the USGS. Other SSPA colleagues, including Remy Hennet and Steve Larson, influenced me deeply with their passions and innovations for solving real-world problems.

After I left SSPA to take on a faculty position in the Department of Geological Sciences at the University of Alabama, I was fortunate to be able to obtain necessary funding from the Army Corps of Engineers to significantly enhance MT3D with new solvers and new features, which became what was known as MT3DMS for multi-species transport. The support of Mark Dortch at the Army Corps of Engineers was critical to the realization of MT3DMS. Also, MT3DMS benefitted greatly from my two mathematician colleagues at Alabama. Patrick Wang, as co-author, programmed the TVD algorithm, while T.Z. Mai provided the general conjugate-gradient matrix solver.

The first edition of the book "Applied Contaminant Transport Modeling" came out of my desire to provide a more comprehensive treatment of the concepts, techniques and case studies in solute transport modeling beyond the MT3DMS manual. I was fortunate to be able to count on Gordon Bennett again as my co-author. The writing of that book would overwhelm me at times, as I was still an assistant professor trying to earn tenure at Alabama. I remain extremely grateful to my colleagues and administrators at Alabama, especially Harold Stowell, Rona Donahoe, Ernie Mancini and Bob Olin, for providing me the supportive and nurturing environment to succeed.

In more recent years, I have become more of a field experimentalist by working at long-term tracer research sites such as the MADE site and the Hanford site. This line of work has given me a deeper appreciation for complexity of aquifer heterogeneity, both physically and chemically, and provided new inspiration for enhancements and improvements to the MT3DMS code, which, in turn, would be immediately available for applications by practitioners and researchers. I have benefitted immensely from my close collaboration with many colleagues, especially Steve Gorelick, Fred Molz, Jim Butler, Dave Hyndman, Henning Prommer, Chongxuan Liu and John Zachara. Several of my students and post-docs have also contributed significantly to the research program, including Erin Feehley, Gaisheng Liu, Marco Bianchi, and Rui Ma.

As I started to work in China more and more since 2006 on large-scale watershed ecohydrological research and national groundwater contamination assessment programs, I have received great support from my colleagues and administrators at Peking University and Chinese Academy of Sciences, especially Dongxiao Zhang, Shiyi Chen, Honglang Xiao, and Guodong Cheng. Two of my Ph.D. students from Alabama, Jie Liu and Guoliang Cao, also joined me at Peking to help me get things started and rolling. Some of you likely still remember my 2009 Birdsall-Dreiss Lecture tour in which I talked about the challenges that China was facing in securing a sustainable water future. Despite many obstacles, I find it very exciting and rewarding to tackle hydrogeological problems in a country with a fifth of the global population and only seven percent of the planet's water resources. I have and continue to welcome many of my friends and colleagues to visit me in China. I know Don Siegel was thrilled when he was finally able to teach his Chinese cooking lessons to his Chinese audience, while Steve Gorelick and Prabhakar Clement finally had the opportunity to enjoy authentic Peking Duck this past summer. At the other end of the spectrum, Mary Anderson preferred to enjoy Peking Opera during her visit.

In closing, let me echo John Bredehoeft, the 1975 Meinzer awardee, in stressing the important role of modeling in hydrogeological studies, when he stated that he could not understand any hydrogeologist who does not model. Conversely, I also understand the comment by Karsten Pruess, the 2006 Meinzer awardee and developer of the TOUGH2 code, when he said he considered himself a skeptic of modeling. There is no substitute for modeling as an incredibly powerful tool for understanding complex processes and their interactions. But modeling is not an end in itself, rather a means to understand and improve conceptualization of a hydrological system. We should never stop modeling, but we should never model for the sake of modeling.

Finally, in the tradition of Steve Gorelick and John Wilson, let me make a small contribution to the science of hydrogeology by proposing a new index. Some of you might remember in his citation for John Wilson's Meinzer award in 1996 that Steve proposed the "Wilson index", i.e., the ratio of the number of original ideas to the number of actual papers published. John scored the perfect 100 as a man of ideas. In his response, John proposed the "Gorelick index", i.e., the ratio of the number of gourmet meals to the number of conference days times 100. Steve scored 100, too, as a connoisseur of fine food. Notwithstanding the suspicion of self-promotion, I will name my contribution the "Zheng index", i.e., the ratio of the number of people who have helped you to the number of Meinzer awards you have won. My score of the "Zheng index" is also at 100, as I can easily give you the names of 100 people who have helped me in so many ways along my path to today's acceptance of this momentous award. Last but not least, let me thank my family, my wife Hualin and my children Lisa, Amy and Tony, for their support, sacrifice, and inspiration. Without them I would not be standing here today to accept this incredible recognition. Thank you all very much.

ISRAEL C. RUSSELL AWARD

Presented to
Kevin M. Bohacs

Kevin M. Bohacs
ExxonMobil Upstream Research Co.

Citation by
Elizabeth H. Gierlowski-Kordesch

I nominate Dr. Kevin M. Bohacs for the Israel C. Russell Award for excellence in limnogeology through research, teaching, and service. Kevin has worked for ExxonMobil since receiving his PhD, and he has been a great teacher, an amazing researcher, and a tireless volunteer in service to limnogeology and society at large. He is a gentleman scientist who has contributed so much to the understanding of lakes and their basins, in addition to other geologic topics, such as the deposition of shales and mudstones, or simply mudrocks, as well as models for coal depositional patterns and sandstone reservoir exploration. If you have ever been in the field with him, you know that the force is with him as he observes and interprets the rocks. His light saber must be somewhere in his well-stocked backpack, along with his shovel, compass, camera, acid bottle, rock hammer, measuring tape, etc. His opinion is well respected by academics and industry professionals alike because he has seen SO MUCH all over the world with his 30+ years of experience.

Kevin's service to GSA involves his work with the Limnogeology Division. He was there when it all started back in 2001 and was part of the executive committee until he stepped down as past chair. With his help, three core workshops were organized for the annual GSA meetings since he knows that good geologists need to see lots of rocks. His support of all of the Division's activities, including the funding of student research over the past decade, has been exemplary. But Kevin not only has volunteered his time to GSA, he has also dedicated his efforts to activities at AAPG, SEPM, and the IAL (International Association of Limnogeology). He has done it all – serving on various committees, encouraging students, publishing books and papers, and convening meetings or sessions. His service to the field of limnogeology, and geology in general, has been extensive. Not only does he aid the geologic community in these organizations, but Kevin also offers his services to society in general as a boy scout leader and a Red Cross volunteer. Maybe he is even a superhero in disguise – Bruce Wayne step aside! The give-away is the bow tie!

Kevin spends time teaching out in the field with his industry colleagues on their many field trips. But, more importantly, Kevin runs courses teaching academics and industry colleagues about safety in the field. He even has served as a distinguished lecturer for the Petroleum Exploration Society of Australia and spent time teaching short courses to university students. And, at AAPG meetings, he is always there to give an encouraging word to students at the ExxonMobil student breakfast event every year. Dr. Bohacs has certainly spread his wisdom on geologic concepts around the world and to Mars! Most recently he has been consulting at NASA on lake formation on Mars!

And, I must say, I have learned a lot from Kevin about how lakes work as well. With his many colleagues at ExxonMobil, including fellow limnogeologist Alan Carroll, a new lake basin model using sequence stratigraphy was formulated, recognizing three major types of lake basins: underfilled, balanced-filled, and overfilled. This is as big an event as the establishment of sequence stratigraphy itself. If you check the abstracts for the first International Limnogeology Congress held in Copenhagen Denmark back in 1995, Alan and Kevin had an abstract entitled "A stratigraphic classification of lake types and hydrocarbon source potential: balancing climatic and tectonic controls". This is when the lake revolution was evolving. It did take a while to catch on, but it has refined our ideas on how lakes work and has explained much about the pattern of lake deposits through time. This is the model that has helped to establish limnogeology as a science and probably helped Kevin and Alan find lots of oil as well. Even biodiversity and trace fossil patterns can be explained using this lake model. The contribution by Kevin as well as Alan to the science of limnogeology is quite significant. I always look at a lake deposit nowadays and think "what lake type would Kevin and Alan classify this lake and why?". Their model supports all old and new data so far, two decades and counting!

So, this nomination recognizes the great accomplishments and achievements of Dr. Kevin M. Bohacs in research, teaching, and service in limnogeology, geology in general, as well as in the community at large. He will certainly continue to do great stuff and I am honored to be able to give Kevin recognition for his life's work. He is most deserving of this award.

Response by Kevin M. Bohacs

Thank you for this great honor. First, I am proud of our Division - how it has grown and prospered, awarding student research grants and professional career recognition. Second, I am thankful to all the lake people who welcomed me into the greater community. The first live sedimentary rocks that I met in outcrop were lacustrine. (I grew up in southwestern Connecticut on sillimanite-grade rocks.) My first formal sedimentary introduction was at UConn, where Professor Randy Steinen had us describe practically every lacustrine outcrop in the Hartford basin and introduced me to the variety of lake deposits, how to look at both the coarse and fine-grained strata, and the importance of trace fossils—arguably, I started where paleo-ichnology started, on the trackways studied by Hitchcock in the 19th century.

After I joined Exxon Production Research Company, I worked with petroleum geochemists, investigating the sedimentology and stratigraphy of hydrocarbon source rocks. As part of that, I started studying the Green River Formation (GRF) with Ken Stanley and George Grabowski, Jr. During 30+ years of exploring its manifold mysteries, the GRF taught us much and launched us into lake studies around the world, through Africa, China, Azerbaijan, Germany, Madagascar, Libya, Brazil, and, of course, beautiful Rock Springs, Wyoming. Along the way, I met many great researchers and made numerous valued friends: Beth Gierlowski-Kordesch, Lisa Parks, Tim Demko, Dave Reynolds, Chris Scholz, Tom Johnson, Paul Buchheim, Kerry Kelts, Mike Talbot, Andy Cohen, Mike Smith, and Dave Finkelstein, among many others. When Alan Carroll joined Exxon and we compared our complementary worldwide experiences across the Phanerozoic, it became clear that there were some fundamental, repeated patterns which needed explaining, but gave us predictive capabilities. Further investigations and conceptualizing resulted in our publications on the Lake-Basin-Type model which has proven quite useful for a range of applications, from source-rock prediction to vertebrate evolution—and even to evaluating landing sites for the Mars Science Lab rover.

Lake strata were a natural laboratory not only for advancing our understanding of hydrocarbon systems but also for developing a wide variety of insights into the sedimentary record. Several big themes came through this work: (i) it is important to appreciate and examine modern systems through the geological filter and determine which products of which processes are preserved in the rock record, and (ii) integration of a wide range of physical, biological, and chemical attributes is essential.

I thank Exxon's management who had the vision to support and encourage our work through many ups and downs, because we were able to translate our fundamental understanding into practical guidelines for effective, efficient, and environmentally safe exploration and extraction. Even more essential support came from my wife Susan, who enthusiastically encouraged me and tolerated my expeditionary absences.

Finally, I am greatly honored to receive this award for work that resulted from collaboration with many hardworking and smart people and that I was selected by a group of those smart people who really understand and appreciate our work.

DISTINGUISHED GEOLOGICAL CAREER AWARD (MGPV DIVISION)

Presented to
Gerhard Wörner

Gerhard Wörner
Georg August Universität Göttingen

Citation by Russell S. Harmon

The recipient of the Mineralogy, Geochemistry, Petrology, and Volcanology Division Distinguished Geological Career Award is Professor Gerhard Wörner, Director of the Department of Geochemistry of the Geosciences Center in the George August University in Göttingen, Germany. This honor is richly deserved as Gerd, more than anyone else I know practicing in the profession today, has put into practice the all of criteria for this award. Not only has he made important contributions in each of the research fields of the Division - mineralogy, geochemistry, petrology, and volcanology, the very broad and sophisticated analytical approaches that he has employed to address specific questions of geologic importance have always been based on a multidisciplinary, field-based foundation in which the problem under consideration is cast in the framework of the Earth as a natural laboratory. Back in 1986, Gerd joined our NSF project to study the effects of thickened continental crust on the subduction zone magmatism of the Central Andes. I quickly learned that he has the particular knack of 'reading the rocks' – the essential talent for a field geologist, and his approach to any geological problem or project is to quickly develop a working conceptual model that is then tested by rigorous fieldwork, evaluated from the perspective of all available geological information, and examined through the lenses of geochemical and isotopic analysis. This was demonstrated to me again over the past decade in the more challenging environment of the vegetation-covered humid tropics when Gerd joined an effort to map and understand the arc magmatism of central Panama.

Gerd received his geological training in Germany, studying with two of the most eminent earth scientists of the country – petrologist Werner Schreyer and volcanologist Hans Ulrich Schmincke. From 1979 to 1980, as recipient of a scholarship from the Study Foundation of the German People, he studied in the United States with the USGS, briefly visiting MIT and the Lamont Doherty Geological Observatory. He was working with the USGS volcanology group at Mt. St. Helens at the time of the May 18 eruption in1980. Following his PhD on the Laacher See magma chamber, Gerd received post-doctoral fellowships from the Heinrich Hertz Foundation and later the German Science Foundation that provided the opportunity to learn radiogenic isotope geochemistry with Alan Zindler at Lamont. In between, as a researcher at Bochum University, Gerd was responsible for the German Science Foundation 'Mt. Melbourne Project', during which he led a small field party that mapped and subsequently undertook a mineralogical, petrological, and geochemical study of the Mt. Melbourne Volcanic Field in North Victoria Land, Antarctica. Following a faculty appointment at the University of Mainz, Gerd was selected in 1993 to be the Professor of Geochemistry and Director of the Geochemistry Institute of the Georg-August University of Göttingen, a position previously held by V. M. Goldschmidt and K.-H. Wedepohl amongst others. Gerd's research has been honoured with the V.M. Goldschmidt Prize of the German Mineralogical Society in 1988, the Albert Maucher Prize of the German Science Foundation in 1989, the Leibniz Prize of the German Science Foundation in 1997 - which is the highest science award in Germany, and induction as a member of the Academy of Sciences of Göttingen in 2006.

Over the course of his career, Gerd's research has focused on physical volcanology; magmatism in continental rifts and at convergent plate boundaries in the Andes, Central America, and Kamchatka; the evolution of magmatic systems - from the crystal to the orogenic scale; and the interaction between tectonic and magmatic processes in orogenic belts. This breadth of Gerd's research is demonstrated in the diverse set of his current research projects, which include studies of the time-space variation in magma composition during the evolution of magmas in convergent plate margin settings; the interplay between tectonics, climate, geomorphology, and magmatism in the Central Andes; and trace element and parent-daughter isotope fractionation during ultra-high pressure metamorphic dehydration.

But, it has been the High Andes of South America that has been Gerd's primary field area and geological laboratory for most of the last 30 years, resulting in more than 35 published papers on Andean volcanology, geology, geomorphology and climatology, and it is this body of research which forms the foundation for this well-deserved award. Congratulations Gerd!

As a footnote, it also must be said that Gerd is simply an all-out "nice guy". He is truly collaborative at all levels. He is also supportive and generous with his time, particularly with young researchers, and his contribution to mentoring the next generation of earth scientists should not be overlooked.

Response by Gerhard Wörner

This award came as a complete surprise and the citation leaves me totally flattered. Being surrounded by many colleagues and friends that would have equally deserved such distinction is a humbling experience and makes you ask : How did I get here, what could it be to have been considered for such merit, and who helped you to become what you are ?

Russ mentioned that the Central Andes and the Atacama Desert are my favourite geological playgrounds. He is right, and he is also the person whom I owe everything to have been invited and introduced to this marvellous place of geological wonders.

When I do field work in the Central Andes, climbing and sampling volcanoes sometimes close to 6000 meters, crossing rivers down in some of the deepest canyons in the world , supported only by a rope, to sample Tertiary sediments for their provenance, or taking sections through Miocene lake sediments to understand the interplay of uplift and volcanism I still feel like the little boy that I was in small-town Germany. My parents allowed me to explore the forests and mountains before I was even able to ride a bicycle, I could not have been older than six years. Yet, my forested and pastured playground at that time was already some 25 km^2 in size. Today, counting just the Central Andes, this playground has increased significantly to something like 200.000 km2. Apparently, I have made some progress. The first times, however, I got to see some real rocks was during summer holidays in the Alps with my parents when I was seven. The car returned home filled with my first samples, against my fathers concerns not to overload the vehicle but secretly allowed to be placed below the seats by my mother. So I started my rock collection, which also has grown significantly over the years.

This early interest, much supported by my parents, resulted in my choice to study mineralogy. This is a major that until a decade ago has been kept well separate from the geology curriculum in German university education, a separation that I never understood and later tried helping to overcome.

Hans-Ulrich Schmincke became my PhD supervisor in Bochum and that choice has put me on a track towards field-based volcanology and igneous petrology that I still follow today. Hans e supported me in many ways and I can still feel the momentum that I gained from him. The study of Laacher See volcano that Hans Ulrich offered me to do as a PhD project turned out to be an important step into the scientific arena for me. At the time, research in zoned magma systems was a hot topicand I found myself and my work in the middle of a lot of attention. This I realized during my first visit to the US in 1979/1980 working at the USGS with Tom Wright. There I met and was very impressed by Bob Smith and it was when he got all excited about my first PhD results on chemical zonation that I realized that I was after something really interesting.

As in real life and in any career, chance and fortune is a decisive factor, but these early advisors and many others, from which I learned my trade, have put me in the position to take chances and to benefit from fortune.

One of these chance moments came an evening over beers near the Laacher See Volcano with Russ Harmon. I had been to Antarctica and I had told him that this had been one of my dreams. “So, what’s your new dream ?”, he asked. “To go to the Central Andes and study volcanoes”, I replied. Next thing was that he invited me to join field work the following year. I had no idea that he was involved in the Andes nor did I realize what promise this offer would hold for my further career.

I really enjoyed working in Central America, Kamchatka, and—of course—Antarctica. All these field regions have been atrtractive to me for a particular scientific issue and have proven to result in interesting studies with other colleagues. However, much more than any of these other field areas, the Central Andes and the Atacama Desert have caught my fascination, scientifically as well as for the aesthetical volcanoes and desert landscapes. This part of the world is an open book of geological wonders and exciting research. I found myself comfortable to explore the desert, the volcanoes more than 5000 m high and valleys 3000 m deep. Living and working in such a field area for many weeks at a time, and almost every year, since this first field campaign in 1986 lead by Russ, gives you a unique perspective on how the Earth works. That is also why I myself tried to invite many colleagues and friends to join me in later years. These colleagues provided their insights from their own research fields. Every year, we would return with students to the area, equipped with more insights from our laboratory results on composition, origin and evolution of the magmas, more radiometric ages, and more ideas what to investigate next. This combination of a fascinating field area, many excellent colleagues and quite a number of good students was the ferment from which I could extract more and more insights for myself about the geological evolution of the Andes. We started with reconstructing the history and magma evolution of Andean volcanoes at Parinacota in a project lead by Russ. With Jon Davidson I did most of the high altitude work and with him I shared my first experiences working in this environment. It became obvious very early, that the thickening of the Andean crust through time and its compositional variation through space had a major impact on the evolution and composition of Andean magmas. Isotopic data were instrumental in constraining assimilation and here Steve Moorbath has played an important role in the early days. A major „milestone“ was reached with Mirian Mamani’s thesis, published in 2008 and 2010 and our Andean Data Base that gives an easy, map-based access to the compiled data, and which can be found on our website (http://andes.gzg.geo.uni-goettingen.de/). But we haven’t finished yet, and this gives me an excuse to return to northern Chile and Southern Peru as often as I possibly can. Trying to understand the magmatic evolution in the Andes you cannot help start looking into the history of crustal thickening, tectonic uplift, valley incision and the record of orogenic uplift and denudation that can be found in lake sediments and the hundreds of meters of conglomerates on the western Andean margin. On the other hand, small scale chemical zonation in phenoyrysts caught my attention in order to understand the architecture and history of magmatic systems and the processes occuring just prior to eruption. Through this we also hope to address the question of what causes the changing magmatic regimes in Andean volcanoes. Catherine Ginibre was the PhD student that opened this avenue of study for us.

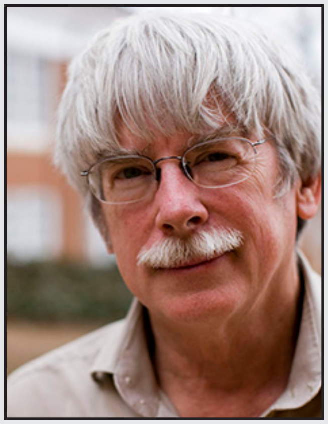
On all these and other aspects I was privileged to collaborate with several additional colleagues, including cheerful Leo Lopez-Escobar in the field, Brad Singer for dating, Alan Zindler for isotope analyses, Hartmut Seyfried, Reinhard Gaupp, Hilmar von Eynatten, and Thierry Sempere to understand the sedimentary archives of uplift, Jean Claude Thouret introduced me to southern Peru, increased my playground significantly, and was instrumental in reconstructing the valley history in the deepest canyons of the world. I have had many good students and I am happy to see them and others to take off in different directions, ask new scientific questions, apply more sophisticated analytical tools, and thus helping me to learn more about my favourate field area. John Hora is the present post doc in my group, working on Parinacota. He is producing new and exiting ideas and insights into its evolution. It seems that I can’t stop loving this volcano. Now, a new PhD student is applying state-of-the art remote sensing tools to trace out ignimbrites and alteration zones, all in GIS. Another is digging into the P-T evolution of Andean magmas. It is actually a surprisingly pleasant experience to see your students and postdocs do something that you couldn’t possibly do yourself. My benefit is to learn more about my favourate field area the easy way.

Learning more is what it is all about. One day, after already 20 years of study, I found myself after a few days of field mapping standing alone on a high cliff. I had a view past the Coastal Cordillera to the Pacific Ocean some 3000 m below and the High Cordillera with its volcanoes peaking 6000 m behind. This is the best place musing about the past 25 Million years that had shaped this magnificent landscape and its geological history. What great a fortune I have had to study and understand it well with all its details and facets. This is also a place to which I take my students to share this unique experience.

It is a great privilege to be a geologist and to have supportive colleagues, good students and the analytical means to investigate rocks and minerals (all funded by tax payer’s money) and to study the evolution of our Earth. Since this is also so much fun, adventurous and greatly satisfying, the honour of this award comes as a very thick icing on that cake. The award leaves me humbled and grateful to my teachers, colleagues, students, and friends that have supported me so much over these years.

G. K. GILBERT AWARD

Presented to
Alan D. Howard



Alan D. Howard
University of Virginia

Citation by William E. Dietrich

Alan Howard has been a pioneer in quantitative earth and planetary surface processes for the past 50 years. He has written seminal papers on karst, channel network development, dune transport, river meandering, floodplain formation, alluvial fan evolution, river incision into bedrock, soil transport, groundwater seepage erosion, and even the growth of ice pinnacles on Jupiter's moon Callisto. In one of the most cited papers in the geomorphology, Alan presented a model that coupled for the first time advective, diffusive and threshold controlled processes to predict controls on the evolution of three-dimensional landscapes under various boundary conditions. Alan's publications have stimulated and guided generations of geomorphologists. Starting in the 1970's, he brought these insights and quantitative skills to the challenging problem of deciphering the planetary surfaces of our solar system, especially Mars, as these landscapes became progressively more revealed through better spacecraft imaging. The recurrent theme in his work has been to explore what the geomorphology can tell us about the climate history and landscape evolution of Mars and other planetary bodies.

The climate history of Mars is a challenging and controversial problem, but Alan's experience and insight has led to strong, quantitative findings. Initially exploring the polar caps of Mars, he moved to channel networks and the role of groundwater seepage versus rainfall-runoff cut channels. He introduced a numerical model to explore Mars landscape evolution (with impact processes) and made it freely available for others to use. With his students and collaborators he has shown, among many other findings, that the geomorphology indicates the likely existence of a relatively warm, wet early Mars. The studies of Alan and his colleagues conclude that the end of the era of heavy bombardment was accompanied by widespread, intense fluvial activity that dissected the cratered highlands. Perhaps a few hundred-million years later, local, large alluvial fans formed on crater walls and shallow mid-latitude valleys developed, in colder, perhaps snow-melt driven environment. Alan, with his collaborators, has taken their discoveries of Martian meandering channels and alluvial fans back to earth and initiated research programs to determine controlling mechanisms. He has recognized that the Mars discoveries, in effect, revealed fundamental knowledge gaps in our understanding of these ubiquitous geomorphic features here on Earth. Alan's publications are characterized by depth, detail, quantitative analysis, and great insight. His collaborators on these publications are numerous, and, especially in his planetary science papers, these colleagues have frequently been young scientists, several of whom have subsequently established their own significant research programs.

Everyone who has had the pleasure to know and work with him has felt Alan's inclusive generosity, his great experience and knowledge, and his contagious joy of discovery in planetary science. His selection as the recipient of the Geological Society of America G. K. Gilbert Award is perfect. Alan cut his research teeth in the Gilbert country of the southwestern United States and took that experience to other planets, bringing us discoveries that both reveal planetary histories and generate new questions about the geomorphology of earth. Alan Howard has been a "great engine of research" these past 50 years, and for his numerous stimulating papers in planetary science he is honored with the Geological Society of America G. K. Gilbert award of 2013.

Response by Alan D. Howard

There are few disciplines in which the paradigm of an intrepid lone scientist exploring uncharted territory is less apropos than in planetary science. First I must thank the citizens and representatives of our country for thinking that the then barely visible hunks of dirt, ice and gas orbiting throughout the Solar System were worthy of study. I have brought my training in geomorphology to bear in my planetary work, and I am indebted to my advisors Reds Wolman and Charlie Hunt for instilling the ethic of relentlessly questioning the landscape to tease out its secrets and providing the opportunity to literally trail G. K. Gilbert's giant footsteps through the Henry Mountains.

My entry into planetary science was unintentional. As Mariner 9 was approaching Mars, Steve Dwornik, the director of the planetary geology program at NASA, actively recruited universities to participate in planetary research, and Bob Dolan and I took the bait. I have been involved to a greater or lesser degree in martian planetary research through the exciting days of Viking, the long dry period until the mid-90's, and now the wealth of planetary data during recent years. Steve Dwornik also provided the means for new planetary scientists like me to enter the field through an extended summer workshop at JPL and USGS Flagstaff, and, for several years, the command performances at his yearly meetings.

For the exciting planetary data I acknowledge the nearly uncountable cadre of engineers and scientists who have conceived, planned, and operated the missions. In particular, I am indebted to whoever targeted the high resolution Viking imaging of the northern polar cap of Mars and the NASA Goddard scientists who conceived the Mars Orbiter Laser Altimeter, which has revolutionized quantitative martian geomorphology.

I thank the graduate students who have worked with me over the years on planetary topics, some of whom I had to entice, and some, like Bob Craddock, Ross Irwin, Sharon Wilson and Yo Matsubara, tracked me down despite my pessimism (during the lean years) about the future of planetary science. I am particularly indebted to Jeff Moore, who sought me out for a long journey of collaboration, counteracted my tendency to lollygag, and more recently has beamed me to contemplate the icy worlds of the outer Solar System. I have had the privilege of participating in a community of some of the most brilliant scientists of our age and collaborating with several of them through the years. My wife, Marlowe, has provided a loving environment that has supported my research throughout the years. Finally, I am grateful to those individuals who have considered my planetary research to be worthy of the G. K. Gilbert Award.

KIRK BRYAN AWARD

Presented to Kyle House, Philip Pearthree, and Michael Perkins

For 2008 GSA Special Paper:
Late Cenozoic Drainage History of the Southwestern Great Basin and Lower Colorado River Region: Geologic and Biotic Perspectives.

Kyle House
Nevada Bureau of Mines and Geology

Philip Pearthree
Arizona Geological Survey

Michael Perkins
University of Utah

Citation by Gordon E. Grant and Jim O'Connor

Years ago, while lecturing his Geomorphology class, Reds Wolman sternly admonished us with the injunction that he had received from his advisor, Kirk Bryan: "I never want to catch any of you running away from a flood!" Both Bryan and Wolman would be proud of this year's recipients of the Kirk Bryan Award: Kyle House, Philip Pearthree, and Michael Perkins for their 2008 GSA Special Paper: *Late Cenozoic Drainage History of the Southwestern Great Basin and Lower Colorado River Region: Geologic and Biotic Perspectives.* For the authors of this paper have not only raced towards a flood, they've discovered several new ones, and used this and other evidence to paint an insightful, dramatic, and compelling story about the evolution of the lower Colorado River. Their work is a testimony to how careful field mapping and stratigraphy can lead to profound insights into Earth's history. They leverage new observations against long-standing but incompatible models of how the Colorado River established a through-going passage to the Gulf of California. Observations are weighed against models until a compelling scenario of downstream-directed integration by basin filling and catastrophic spilling remains the only hypothesis standing. Though focused on a specific place, this report has great significance both for understanding landscapes of the Colorado Plateau and southern Basin and Range Provinces, and interpreting general mechanisms of drainage integration. . Cogently written and beautifully illustrated, the paper is a model for how to use the particular to illuminate broad insights into surficial processes,

We've known for some time that the Colorado River traversed the Colorado Plateau by the mid Tertiary, but how it finally connected to the sea through the lower Colorado River valley in the Pliocene was unknown. Two main hypotheses have been proposed: (1) subsidence, marine incursion, and headward tributary erosion captured the Colorado River; and (2) downstream directed integration by lake spillover ultimately led the Colorado River to the Gulf of California. House and colleagues show that the distribution, sedimentology and geochoronology of deposits in Cottonwood and Mohave Valleys reveal a history of late Miocene closed basins accumulating locally derived sediments, only to be cataclysmically inundated by water as divides were breached, and far-travelled sediments of Colorado River provenance arrived. They reinterpret evidence for marine incursion as indicating a series of freshwater lakes, fed by the Colorado River, stair-stepping through tectonic basins to the Gulf. This conclusion has wide relevance, not only to understanding late Cenozoic landforms of the southwestern U.S., including the Grand Canyon, but also interpreting processes of drainage integration worldwide.

The paper also illustrates how a field study, undertaken with open eyes and broad peripheral vision, can, with a bit of luck, advance understanding of the Earth's history. Multiple working hypotheses are tested against field evidence. The landscape's history is revealed as a sequence of contingent events. Process-based mechanisms bring order to the field evidence. Floods are embraced. There is a palpable sense of joy of discovery throughout. It's clearly a distinguished geomorphic contribution worthy of the Kirk Bryan Award.

Response by Kyle House and Phil Pearthree

Thank you, Gordon Grant, for your kind words, for nominating our paper, and for your enthusiastic interest in the development of these ideas over the last several years. It is an inspiration to know that our efforts have piqued the curious mind and garnered the professional respect of an esteemed colleague.

It is with great surprise, and humility that I accept this award for my coauthors and myself. To be honored in this way and by this organization is truly a peak professional moment for each of us.

There are many colleagues we would each like to thank, but first, the essentials: our parents, spouses, kids, and other major players in our lives who have borne shades of financial and familial burden created by our intense interest in studying and roaming the American desert for all these years--and for accepting the fact that such roaming will continue for as long as we can manage.

Phil and I share a common academic heritage in geoscience education at the University of Arizona and we have worked together for nearly 25 years. It is fitting that we should share an award like this, though surprising to us both that we would ever qualify for one. For this honor, we owe tremendous gratitude to our common mentors: Vic Baker and Bill Bull. Together, they created a huge and uniquely complementary influence on our approach to geology. In short, Vic Baker schooled us to think big; to look for anomalies in the landscape and in the conventional wisdom; and to not shy from seemingly outrageous or genuinely iconoclastic ideas; and Bill also taught us to think big but also to appreciate the simple elegance of fluvial geomorphic systems; to spend as much time in the field as possible; and to create geologic maps of our study areas to see if the story really holds up.

Phil and I also want to thank our colleagues: John Bell, Jim Faulds, and Alan Ramelli of the Nevada Bureau of Mines and Geology; Jon Spencer of the Arizona Geological Survey; Jon Patchett, Bill Dickinson, and Andy Cohen of the University of Arizona; Becky Dorsey of the University of Oregon; Karl Karlstrom and Laura Crossey of the University of New Mexico; and Sue Beard, Keith Howard, Dave Miller, Jim O'Connor, and Marith Reheis of the U.S. Geological Survey for their insights, skepticism, and enthusiasm in the early development of our ideas.

This paper is the outcome of an ongoing geologic mapping project of the lower Colorado River corridor. As professional geologic mappers we are dedicated to the idea that regional geologic problems can be characterized by studying the perfect section, but that such site-specific observations can only be understood in their appropriate geologic and geomorphic contexts through mapping. Geologic mapping provides essential spatial context to understanding regional geologic history. Geochronology is essential to all mapping projects, and the addition of Mike Perkins to our small team ensured that we could place the geologic and geomorphic relationships that we found in a viable chronological context. The tephra ages determined through Mike's careful efforts provided vital age constraints on deposits that chronicle the initial development and early evolution of the lower Colorado River, greatly narrowing the window of time in which a series of dry desert valleys became hosts to huge lakes and then to a major through-flowing river.

The physical evidence that we found in our mapping combined with age-controls afforded by key, tephra-bearing deposits in the greater map area is the award-winning combination here. Thus, this award recognizes the value of geologic mapping and serendipitous discoveries only begotten by related fieldwork…lots of fieldwork.

Our paper presents an interpretation of the history of the river that involves a simple model of river integration along a descending chain of spilling lakes; it challenges a long-standing and decidedly more complex model involving a sequence of subsidence, marine incursion, headward erosion, drainage capture, uplift, and river progradation and aggradation. The findings and ideas in our paper came on the heels of a novel geochemical argument for spilling lakes published by Jon Spencer and Jon Patchett in 1997. Their work gained some traction in the geoscience community, but was contentious nonetheless. There is stark proof of such contention. Notably, a 2001 workshop volume on 'Colorado River Origin and Evolution' specifically relegated two papers using geomorphic arguments to build on the spilling-lake theme to a section entitled: 'Selected Theories and Speculation'. Evidently they were considered amongst the few papers in the volume that involved speculation. Of course, what they involved were new ideas that challenged conventional thinking. Ironically, what very few workshop participants and contributors knew at that time was that we had just discovered the key physical evidence attesting to the veracity of the spilling-lake model in a 'golden section' behind a casino in Laughlin, Nevada.

Of course, as is often the case, the spilling-lake idea isn't new. The eminent geologist Eliot Blackwelder first proposed a spilling-lake origin for the same reach of the Colorado River on geomorphic grounds in the early 1930s. Nonetheless, the complex marine incursion-headward erosion-stream capture-uplift-river progradation model was subsequently developed by others and came to dominate conventional wisdom for decades. In contrast, the spilling-lake model has received considerably more scrutiny in considerably less time, all in the face of more robust evidence in its favor.

That final point about greater and earlier scrutiny on the 'new model' is actually a particularly satisfying one, because it reflects positively on how science should work. We are extremely proud to have been recognized for doing good science that contributes towards greater understanding of the evolution of one of the Earth's great rivers.

Response by Mike Perkins:

When I received a letter last May from George Davis, the recent president of the G.S.A., I was both surprised and honored to learn that I, along with colleagues Phil Pearthree and Kyle House, had received the Kirk Bryan Award. This award recognizes our investigation of the inception of the lower Colorado River.

My role in this investigation was the analysis and correlation of three key tephra in Pliocene units of the lower Colorado River area. Using electron microprobe analyses of the glass shard fraction of these tephra I was able to match them with tephra in the University of Utah's Late Cenozoic tephra database. This database was assembled by myself and my colleagues Frank Brown, Barbara Nash, and Steve Williams at the University of Utah with assistance from Andrei Sarna-Wojcicki at the United States Geological Survey in Menlo Park.

My comparison of the analyses of the Colorado tephra with those in the Utah database clearly support correlations with the Wolverine Creek Tuff, the Olson Ranch Tuff ("lower Nomlaki Tuff"), and the Nomlaki Tuff. The first of these tephra is a Yellowstone Hotspot tephra with a source in the eastern Snake River Plains. The other two tephra have likely sources in the Lassen Peak, California area.

With the geochronological information in the Utah database I was able to assign ages to the three tephra as follows : 5.65 ± 0.05 Ma (40Ar/39Ar age) for the Wolverine Tuff; 4.1 ± 0.2 Ma (interpolation age estimate) for the "Lower Nomlaki Tuff"/Olsen Ranch Tuff; and 3.27 ± 0.07 Ma (interpolation age estimate) for the Nomlaki Tuff

In closing, I wish to thank the Kirk Bryan Award selection committee for honoring both myself and my colleagues with this award.

LAURENCE L. SLOSS AWARD

Presented to
J. Fred Read

J. Fred Read
Virginia Tech (emeritus)

Citation by "John P. Grotzinger and Isabel P. Montanez"

Fred Read has made original and lasting contributions to the carbonate domain of sedimentary geology, building from his seminal PhD work on the modern carbonate platforms sediments of Shark Bay, Western Australia.

Throughout his career, Fred's meticulous field studies of Paleozoic and Mesozoic carbonate rocks in the Appalachians, Cordillera, and parts of Europe have collectively transformed our understanding of the evolution of continental margin carbonate platforms. Synthesis papers in AAPG Bulletin and the Decade of North American Geology set the pace in the 1980s for others to follow for the past three decades. With his students always by his side, his lab group was able to provide clear evidence for the separation of tectonic, eustatic, and climatic influences on patterns of carbonate facies distribution.

This work was done simultaneously with a complimentary focus on understanding patterns of diagenesis at the regional scale of carbonates platforms. Pioneering work that integrated petrographic, geochemical and fluid inclusion studies, provided the foundation for this definitive research on reconstructing fluid-flow regimes in regional paleo-aquifers and mapping dolomitization fronts at regional- to basin-scales.

During the late 1980s and 1990s, this work evolved into an attempt to elucidate the mechanisms of high-frequency cyclicity in carbonates. Research into ancient climates, the search for fossil fuels, diagenesis, chemostratigraphy, and sequence stratigraphy, all are based in the fundamentals of the carbonate cycle - a basic depositional unit recognized by Fred early in his career. Read's lab was the first to exploit numerical simulation as a tool to untangle the effects of tectonics versus sea level and climatic effects. These early studies showed clearly the effects of varying amplitude of eustatic drivers, leading to an objective basis to differentiate "greenhouse" from "icehouse", as well as transitional, states of ancient climate. Building on this body of work, the field of quantitative cyclostratigraphy exploded, field studies were refocused using explicit criteria and predictive searches for particular suites of sedimentary structures, stratal stacking patterns, and impacts of early diagenesis.

Anyone who worked in Fred's lab had the pleasure of working with a brilliant, fun-loving, and thoughtful advisor. And much of Fred's work in stratigraphy was inspired by Larry Sloss's own efforts. Larry was very familiar with Fred's early work and would have been impressed with Fred's accomplishments, and delighted to see Fred receive this award.

Response by J. F. Read

I would like to thank the Awards Committee for this honor, along with Isabel and John for nominating me. I would like to acknowledge all my former students, who made the Virginia Tech Carbonate Lab a great place to work and who subsequently have been remarkably successful. I would also like to acknowledge Pauline and my daughter Stephanie.

I am indebted to Brian Logan, University of Western Australia, who in 1967 took me into the marine program, studying the modern and Pleistocene carbonates, Shark Bay, following Graham Davies. Visits by Paul Hoffman and Eric Mountjoy made a lasting impression with their basin-wide approaches to carbonate facies. In 1970, Brian and West Australian Petroleum set up a post-doc for me on the classic Devonian back-reef of the Canning Basin. The many stacked cycles were an eye opener after the 3 carbonate cycles of Shark Bay.

Don Bloss and Bob Ginsburg were instrumental in getting me from Australia to Virginia Tech, which provided a superb situation for me, located on the very thick pile of Paleozoic carbonates. Lawrie Hardie (Johns Hopkins), Ken Walker (University of Tennessee) and their students provided a really stimulating environment during our joint field trips, which were well lubricated and not lacking in strong opinions. The Geosciences faculty at Virginia Tech, provided a top-class learning environment for me and my students. Sitting in on their graduate courses greatly broadened my perspective.

My students however provided me with the greatest education, herding me through the Paleozoic rocks of the U.S, the Early Proterozoic of Canada, the Cenozoic of the Carolina Coastal Plain, and the Mesozoic of Eastern Europe and the Middle East. A harsh review of one of our early papers coupled with an invitation (with Ken Eriksson) to the Paris IGC in the late 70's stimulated me to put together the paper on carbonate platform models for Tectonophysics and subsequently the AAPG Bulletin building on the work of Jim Wilson, Wayne Ahr and others. Our studies coincided with the blossoming of sequence stratigraphy, pioneered by Larry Sloss, Peter Vail and his co-workers, and this led to our high resolution studies of carbonate platforms. It also led to our attempts at modeling cyclic sequences. Rob Matthews text, which touched on the origin of Pleistocene cycles, got us thinking about how orbital forcing might have affected the carbonate record.

Early on, we also initiated studies on regional calcite cement patterns and then near-surface and burial dolomite diagenesis. In all of these, we took a regional approach, with geochemistry tied to detailed petrography and early attempts at understanding the basin-wide flow systems involved. Over the last few years we have been interested in applying high resolution studies and chemostratigraphy to subsurface carbonates, involving some of the giant fields of the Middle East.

The U.S. has been a marvelous place to work, the students have been exceptional, and I would like to acknowledge the great collegiality I have experienced here from everyone, even when we heatedly disagreed. Thank you all.

STRUCTURAL GEOLOGY & TECTONICS CAREER CONTRIBUTION AWARD

Presented to
Peter J. Hudleston

Peter J. Hudleston
University of Minnesota

Citation by Basil Tikoff

It is my honor and privilege to provide the citation for Peter J. Hudleston, who is the 2013 recipient of the Career contribution award from the SG&T Division of GSA. Peter is an internationally known and respected scientific researcher, for contributions on folding, ice deformation, shear zones, extracting rheological information from naturally deformed rocks, and transpression. While this list might seem disparate, there are traits that hold this work together: a very high level of integrity, thoroughness, creativity, and fairness. Those same traits also describe Peter as a person and his interactions at both a professional and personal level.

In some sense, Peter is an accidental geologist. He was born in Osterley, Middlesex in 1944. There is not much in his childhood that would indicate a career in geology. In the U.K. system, which requires that you pick a subject in order to admitted to a university, Peter chose geology although he admittedly knew little about it. Peter did both his undergraduate and PhD work at Imperial College, London, working with John Ramsay for the advanced degree. Peter went on to do a 1-year postdoc with Hans Ramberg at Uppsala University. He then accepted a 1-year appointment at the University of Minnesota, sight unseen and at late notice, fully intent on returning to the UK immediately afterward. During that time, he met his future wife Bronwen, and that — as they say — was that. He has spent his entire academic career at the University of Minnesota, including 10 years as Head of the School of Earth Sciences and 12 years as the Associate Dean for Student Affairs in the College of Science and Engineering. It is remarkable that Peter remained active in research despite these significant administrative duties.

Peter's scientific work has returned time and again to folding. His early work concentrated on determining folding mechanisms from fold geometry and strain patterns. His PhD work devised a new way to classify folds using Fourier analysis. Early in his professional career, because Minnesota wasn't cold enough, he went to the Canadian Arctic to study the flow and mechanics of glacial ice. Through this work, he was able to bridge the disciplines of structural geology and glaciology, by understanding the connection between the flow of ice and the resultant structures and fabrics. While folds and ice flow might seem like strange bedfellows, they both independently led Peter to an important topic: How can the rheology of naturally deformed rocks be determined from direct observations? Peter and his colleagues have used novel approaches to elucidate rheological parameters - such as stress exponent and effective viscosity contrast - from the geometry and strain patterns of geological structures. Peter has also made major contributions to our understanding of shear zones by recognizing that they require three-dimensional treatment as a necessary consequence of the geometry of observed shear zone networks. His documentation of deformation in the Vermilion District of northern Minnesota provided a critical early example of transpressional deformation and emphasized the importance of horizontal tectonism in the Archean. Despite the theoretical nature of the topics he studied, Peter was always an active field geologist at heart. His work was always based on the information that naturally deformed rocks provided.

Peter has taught classes in structural geology and related topics at the University of Minnesota for 43 years, from 1970 to the present. His clear intellect, warmth, humility, and fairness have inspired many students – including a number of undergraduates - to further their careers in geology. In his time at the University of Minnesota, Peter has had 18 PhD students and 11 Masters students complete their degrees with his supervision. Although it was often a struggle to keep pace with his long strides — both physically and intellectually — he was always very supportive of all of his students, regardless of gender or background. To be one of Peter's research students was to be given the privilege of intellectual freedom, a model of integrity, and gentle guidance when needed.

In addition to his research contributions, Peter has also been a contributor to, and statesman for the Structural Geology and Tectonics community, both in North America and internationally. His service to our field may be best exemplified by his work as an editor for the Journal of Structural Geology for 15 years. Often working with the head editor Sue Treagus, he was a stabilizing force for that publication. As an editor, Peter handled hundreds of papers and had a reputation for his fairness and helpfulness, especially to junior researchers and non-native English speaking scientists. A particularly illuminating example involved a manuscript that was originally rejected by the Journal of Structural Geology based on peer reviews, with Peter acting as the editor. An independent third party suggested to Peter that he had made an error, and that the manuscript was really a fundamental contribution. Peter re-read the manuscript, realized that the reviewers were not fair, and wrote the author of the rejected manuscript admitting that he has possibly made a mistake. The idea of doing the right thing, rather than worrying about status or ego, exemplifies Peter's approach to both scientific and personal interactions.

Speaking for myself, Peter has always been a source of inspiration for his uniformly and consistently high level of scientific and personal integrity. He thinks critically and deeply about a problem, clearly articulates his ideas but doesn't insist on them, is extremely fair in his attribution of others' contributions, and has never placed himself at the center of attention. Most importantly, perhaps, he has produced work of uncompromisingly high quality. In all he has done, both scientifically and personally, he has done it very well and with understated but undeniable class. Please join me in recognizing Peter Hudleston as the 2013 GSA SG&T division Career Contribution award winner of 2013.

Response by Peter J. Hudleston

Thank you, Basil, for your kind words. I am truly honored and most grateful to our division of the society for presenting me with its career award. I must say I feel somewhat guilty standing here, because, well ... just look at the list of previous awardees. These are people who have defined our discipline over the past fifty years. This is august company! I have been fortunate to know most of them and to have had two as close mentors.

As Basil mentioned, I found geology more or less accidentally, choosing it because it sounded like an interesting way of combining science with an excuse to be in the open air, which of course it is! It was serendipity that took me into geology, and it was John Ramsay who lit the light of structural geology for me when I was an undergraduate at Imperial College. John did this with his enthusiasm and his wonderfully clear lectures, embellished by illustrations on the blackboard of what can only be described as artwork. My first course in structural geology was not from John, however, but rather from Gilbert Wilson, who had been John's teacher. Gilbert seemed then ancient and venerable, but in fact was about my age now. He was a key figure in the emergence of structural geology as a distinct discipline. A plausible case can be made that Gilbert carried the seeds of modern structural geology to Europe from Wisconsin, taking what he learned there from Van Hise, Leith and Mead.

Imperial College in the 1960s was a great place for structural geology, with a highly interactive group of structurally inclined undergrads, postgrads, and post docs. It included the first groups of students in the Ramsay/Neville Price MSc course in structure. There were many field trips to the Alps and Scotland and animated discussions over tea and beer – in different places and at different times of day. The group included the infectiously enthusiastic Dave Elliott. Dave was a bubbling source of ideas and a great influence on me. In Uppsala, I learned a lot from Hans Ramberg, another enthusiastic and irrepressible individual who had excellent physical intuition and could make seemingly any kind of structure in his lab using gravity as the driving force. He taught his course in English for my benefit, but would revert to Norwegian every time he dimmed the lights to show slides.

Then to Minnesota, which, as Garrison Keillor might say, is a pretty good place to be. So I stayed. I have had fine students who are now friends and colleagues. They have challenged me and kept me on my toes. Many are here this evening. I've also had great colleagues, including Christian Teyssier, whom I was lucky enough to encourage to come to Minnesota to take on structural geology while I was in departmental and later college administration. Christian, together with Donna Whitney, have ensured through STAMP — the same acronym as the session at this meeting - that we maintain a vibrant group in structure and tectonics in the department.

In my career, I have operated mostly at the S end of the S&T spectrum, with occasional forays towards the T. It was John Ramsay who got me interested in folds, the subject of my thesis, and I have been magnetically drawn back to them ever since. Part of their appeal, I am sure, is aesthetic. Folds, especially in crystalline rocks, are beautiful things. Folds in fact led me to ice — a fine example of a crystalline rock — thanks to my colleague Roger Hooke, who returned from Baffin Island with enticing pictures of recumbent folds in an ice cliff. How could I not go to check them out? It was also folds of enigmatic vergence in a greenstone belt that sparked my interest in Archean structure and tectonics.

As in my discovering geology in the first place, there has been much serendipity in the choice of problems I have worked on. They have, however, all involved some combination of theory, analog or digital modeling, and fieldwork. In my work on folding, I have relied heavily on the theoretical underpinnings provided by others, especially Ray Fletcher.

I must mention my work as an editor for the Journal of Structural Geology. I joined the small team of editors in 1983 and 'stayed' for fifteen years. It was especially satisfying to work with Paul Hancock, the founding editor, and then with Sue Treagus, who succeeded Paul as chief editor. Both were sticklers for detail and kept a tight ship, as many here will know. Authors and editors all knew where they stood with Sue!

It is interesting to see how our discipline has changed with time. Certain topics come into prominence and then fade to become part of the fabric of the discipline and taken for granted, such as strain analysis, which was the in-thing when I was a student. What is impressive is the extent to which structural geology today is integrated with geochronology, geochemistry, petrology, geophysics and more to tackle big problems at multiple scales. This is producing fantastic results and portends well for the future.

My piece of all this has been small, but it has been most satisfying. I am grateful for having had the opportunities and freedom to work on interesting topics, in neat places, and with great colleagues and students. I could not have done this, however, without a stable home base, and I am most grateful to my wife, Bronwen, for providing that and for giving me unwavering support.

To the Geology Society of America and the Division of Structural Geology and Tectonics, once again, thank you for this great honor.