Quaternary Times

The American Quaternary Association 22nd Biennial Meeting

The 22nd biennial meeting of the American Quaternary Association will be held in the Duluth Entertainment and Convention Center (DECC), on the shores of beautiful Lake Superior, hosted by the Department of Geological Sciences and the Large Lakes Observatory, University of Minnesota Duluth, June 21-24, 2012.

See the meeting website for more details:
http://www.cce.umn.edu/American-Quaternary-Association-Meeting/index.html

From floods to droughts: Water, climate variability, and their impacts in the Holocene

Fresh water is a vital resource and a critical component of the Earth System. The Duluth AMQUA meeting, located on the shores of Lake Superior, provides an ideal opportunity for the American Quaternary community to consider the roles water has played in the warm world of the Holocene—and could play in the future. Because the availability of water remains one of the largest uncertainties about the future, Quaternary research provides a vital perspective on the patterns and processes of hydroclimatic change, and related impacts in ecological, geomorphic, and cultural systems. Key questions will be discussed:

- What is our current understanding of Holocene climate variability—particularly with respect to moisture?
- How have important processes, including glacial meltwater drainage, ocean circulation, monsoon dynamics, and land surface-atmosphere interactions, contributed to such variability?
- What ecological, geomorphic, and cultural impacts were generated?
- What unique perspectives do large lakes, such as Lake Superior and similar lakes around the world, provide?

The plenary sessions will provide both data and modeling perspectives on these questions while tapping into the diversity of the broad Quaternary community. Talks will incorporate perspectives on climate, geomorphology, paleoecology, and archeology.

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The view from the moraine: the President's message
by STEVE JACKSON

Advice to a Young Quaternarist

In fall of 1979 I came across an essay by an eminent biologist, Peter Medawar, titled "Advice to a young scientist[1]." Being a young scientist at the time, I gave it a read. Much of it stuck with me, particularly Medawar's observation that if you want to make important discoveries, you should study important problems. I reread his essay this summer. Although some parts are quaint, it stands up well after three decades. And it makes me mindful of my generation's obligations to those just starting their careers.

Something that's very much on my mind these days is the kind of professional environment today's young scientists confront. For the past couple of years, much of the world has been in economic doldrums, with signs of returning recession. Universities and science agencies are being whacked with budget cuts and hiring freezes. And the recent debt-ceiling deal in the USA is likely to constrain federal science funding, and will have cascading effects on state governments and ultimately state universities and agencies. Although the outlook is less dire for Canada and some other countries, economic and political effects may ripple across borders.

All this calls forth painful memories. I hit the job market, Ph.D. in hand, in 1983, a time of economic recession and broad funding cuts for universities and research. Post-docs were few, and faculty positions were scarce and highly competitive. I recall applying for a position in forest ecology that received nearly 200 applications, and it wasn't unusual for broadly described positions in ecology to attract 400 or more applicants. I spent a couple of years in temporary teaching positions, and at one point was forced to choose between a post-doc in a prestigious lab and a temporary faculty position that was scheduled to become permanent. I took a chance and accepted the faculty position. After a few months, it got lopped in a budget cut, and I spent a lean year in Pocatello living on savings and unemployment benefits, writing proposals, manuscripts, and job applications (but also learning to ski and getting to know my future life-partner). One proposal panned out, yielding an NSF Post-doctoral Fellowship in Environmental Biology, which put my career back on track. I landed my first secure faculty position seven years after getting my Ph.D.

My story is not unique; many promising scientists of my generation had similar experiences, and many switched paths, often reluctantly, to non-scientific careers. I bring all this up because I'm concerned that the scientific job market may become as ugly as, or perhaps even uglier than, the one we faced in the 1980s. I offer a few thoughts for graduate students and post-docs who face these uncertainties.

Explore alternatives. Right now, you're very likely undergoing an intense socialization process directing you toward an academic career. As one 1980s-era commentator put it, you're currently a "larval professor." If you're bent on an academic career, that's fine, but I advise you to hedge your bets by investigating alternative paths (see below). Your advisors may view anything short of a tenure-track professorship as a professional failure. If that's the case, ignore them (quietly). Your primary responsibility is to develop your career in a rewarding direction, not to advance your advisor's career. Remember: your advisor's already got a career. You don't. *continued on page 14*

Interview: Don Grayson Elected to National Academy of Sciences

—Connie Millar, USDA Forest Service, Pacific Southwest Research Station, Albany, CA, USA

Donald K. Grayson, a University of Washington (UW) anthropology faculty member since 1975, was elected to the National Academy of Sciences in May 2011. Grayson joined the UW Department of Anthropology in 1975 as an assistant professor and became a full professor in 1983. He received his doctorate in anthropology from the University of Oregon in 1973, and has long focused research on paleoclimates and their influence on vertebrate fauna of the Great Basin, including Great Basin mountains.

In central Utah, Donald Grayson kneels next to a woven model of the western North American diminutive pronghorn, which became extinct about 11,000 years ago. *Photo*: David B. Madsen

In addition to many scientific papers, Grayson has authored four books. The most recent of these is an extensively revised (and re-titled) edition of *The Great Basin; A Natural Prehistory*, which describes the environmental and human history of the American West, centering on the mountains of Nevada and adjacent regions.

In early summer, I had the pleasure of Don's company on a trip to re-survey historic sites of American pika (*Ochotona princeps*) in northern California.

Connie: What key concepts would you like our mountain-climate science community to consider from your research career in Great Basin climate and related ecological sciences?

Don: From the beginning of my career, one of my prime concerns has been to provide fine-scale, long-term histories of mammals within local environmental contexts, including both the climates and the people of those environments. The LTER [Long Term Ecological Research] Network's 2011 Strategic Plan notes that "many ecological phenomena change at decadal to century and longer time scales, and it is essential to maintain experiments and observations across periods appropriate to these scales," but LTER sites span decades, not centuries. Archaeological and paleontological data might not be as well-controlled chronologically, but, when properly retrieved and analyzed, they can provide information on mammal and plant species abundances and distributions that span thousands of years; the longest Great Basin sequence I have been fortunate enough to study covers some 11,000 years. No LTER can do that. In addition, there are no LTER sites in either the Great Basin or in southwestern France, where I have also worked, but archaeological and paleontological sequences spanning vast amounts of time are rich in both areas. I wouldn't have either the nerve or the knowledge to suggest key concepts to mountain-climate scientists, because I am a consumer, not a producer, of the kind of understanding they provide. For mountain biologists, though, I want to stress how rich our understanding of plant and animal histories in the Great Basin has become as a result of the extraction and analysis of archaeological and paleontological data, and to become familiar with that understanding if your interests are in biogeography. Had I been asked to address my thoughts to an archeological community, my answer would have been quite different. While I get frustrated by ecologists who know little in depth about the past, while often pretending they do, I get equally frustrated by archaeologists who pretend they know about ecology but don't. These archaeologists often complain that their work is not taken into account by ecologists, but if ecologists were to read that work, they would be astonished by the lack of biological sophistication that it shows.

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GRADUATE STUDENT CORNER: *Tripti Bhattacharya, University of California, Berkeley*

Mexico offers a fascinating setting in which to study paleoclimatology and paleoecology. The country contains a wide variety of environments, from tropical forest to desert, and its location between the Atlantic and Pacific Oceans means that processes in both these ocean basins significantly influence regional climate. Mexico's prehistory also offers a rich record of human-environment interactions, as it was the center of several pre-Columbian civilizations as well as an important site of crop domestication. As a second-year Ph.D. student in the Quaternary Paleoecology Lab at U.C. Berkeley, my research seeks to clarify past climatic changes in central Mexico and the impacts of these changes on past human societies. My approach focuses on combining multi-proxy evidence of past environmental change and modern climatic data.

Sampling a test pit on a dry lake bed in northern Mexico. Photo by R. Byrne.

I am currently working on two sediment cores obtained from maar lakes in Mexico, which offer insights into environmental change at different temporal resolutions. One core, from the Trans-Mexican Volcanic Belt, is an approximately 4000-year high-resolution laminated record. Another core, which we took this past summer in the state of San Luis Potosi, may stretch through the Holocene, although we have not yet established a reliable chronology. I hope to complement these two records with one more core from a maar lake site in northern Mexico. Analyzing cores from different sites may help me make inferences about the spatial extents of various climatic or anthropogenically induced environmental changes. We are beginning to analyze each core for pollen, loss on ignition, stable isotopes, and elemental chemistry.

Another aspect of my project focuses on the modern climate dynamics of Mexico, since a good understanding of modern climatic processes may aid interpretation of proxy evidence. I am using meteorological station data from across Mexico, in combination with model output and reanalysis products, to investigate the large-scale climatic processes that best correlate with inter-annual climate variability in central Mexico.

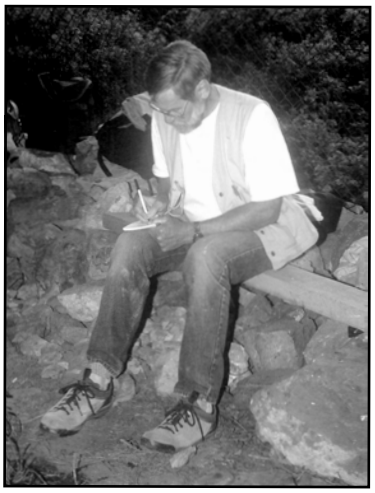
Elucidating the environmental history of Mexico can be difficult, especially because of the challenge of disentangling the influence of climate on landscapes from the environmental signature of anthropogenic land-use. My first year of graduate school has been challenging because of the need to formulate a project and learn the basics of research. On the other hand, it has also been an incredibly stimulating experience in which I continually learn of new approaches applicable to my research and the broader field of paleoecology.

William R. Farrand (1931–2011)

William Farrand, who passed away on March 22, 2011, was America's foremost cave and rockshelter geoarcheologist and *doyen* of Great Lakes Pleistocene geology. He applied his scientific rigor, meticulous analytical methods, clear-headed objectivity, and commitment to intensive fieldwork to the study and publication of several of the most important Paleolithic excavations to be conducted in Western Europe and the Near East by American prehistorians during the last third of the twentieth century. But Bill Farrand was also a major player in the Pleistocene geology of the Great Lakes region; his publication list includes entries on such classic stratigraphy as the Port Huron, Two Creeks, and Valders as well as early work on isostatic rebound. Lakes Superior and Erie were as much his "beat" as the Périgord, Mount Carmel, the Argolid, or Cantabria. He was trained by James Zumberge in glacial geology at the University of Michigan. One of Farrand's first major publications was on "frozen mammoths and modern geology." James Griffin got Bill involved in the study of early human settlement of the Lake Superior region during his dissertation, thus beginning a long career in the environment of prehistoric hunter-gatherers.

Before Michigan, Bill had received his B.S. (1955) and M.S. (1956) degrees from Ohio State with Richard Goldthwait, and after Michigan he had a post-doc at Columbia's Lamont Geological Observatory, where he worked with Wally Broecker, followed by stints in the early 1960s as an assistant professor at Columbia and another post-doc at the Université de Strasbourg. He returned to Michigan in 1965, rising through the ranks to professor of geology in 1974.

Bill Farrand helped found the American Quaternary Association (AMQUA) and served a



term as AMQUA President (1994-1996). He also chaired the U.S. National Committee for INQUA (International Union for Quaternary Research), served on the editorial boards of several journals, and helped organize the Archeological Division of the Geological Society of America. A dedicated internationalist with deep roots in France and the Eastern Mediterranean, Farrand also made important contributions to the Quaternary geology of the classic Ice Age landscapes in the U.S. upper Midwest, several of which he mapped for the US Geological Survey. He was a true interdisciplinary scientist, seeking genuine dialogue with archeologists and other collaborators.

Tough but humane, critical but understanding, Midwestern but international, Bill Farrand was a complex individual—an organized, professional scientist, and a lover of life who will be very much missed by Quaternarists in the many lands where he worked and contributed so much to our understanding of the Ice Age world.

—Lawrence Guy Straus
University of New Mexico

Shortened version of obituary published in the Journal of Anthropological Research vol. 67(2):161–163 (2011).

INQUA TRAVEL GRANTS AWARDED

Earlier this year, the U.S. National Committee for INQUA (USNC/INQUA) organized a travel fellowship grant for U.S. early career scientists involved in Quaternary science research to present their work at the XVIII Congress of the International Union for Quaternary Research (INQUA), held in Bern, Switzerland, on July 20–27, 2011.

Funding for the program was generously provided not only by the National Science Foundation, but also by AMQUA.

A total of 62 complete applications were received, and 13 full fellowships and 5 partial fellowships were granted to 18 early career scientists: Yarrow Axford (Northwestern University), Benjamin Clegg (University of Illinois at Urbana-Champaign), Alan Condron (University of Massachusetts Amherst), Juan Luis Garcia (University of Maine), Jacquelyn Gill (University of Wisconsin-Madison), Robert Hatfield (Oregon State University), Marc Hijma (Tulane University), Virginia Iglesias (Montana State University), Teresa Krause (Montana State University), Darren Larsen (INSTAAR/University of Colorado, Boulder and the University of Iceland), Henry Loope (University of Wisconsin-Madison), Shaun Marcott (Oregon State University), David McWethy (Montana State University), Jesse Morris (University of Utah), Summer Praetorius (Oregon State University), Kurt Refsnider (University of Colorado, Boulder), Rebecca Schwendler (National Trust for Historic Preservation), and Jeremy Shakun (Boston University & Woods Hole Oceanographic Institution).

In conjunction with the Congress, the USNC/INQUA organized a mentoring dinner for the awardees at the Altes Tramdepot restaurant in Bern, where the early career scientists were able to network and meet members of the U.S. National Committee. Allan Ashworth talked about the Union as its vice president; Cathy Whitlock, chair of the USNC/INQUA, talked about function and activities of the committee; and Eric Grimm, as past president of AMQUA, talked about the organization and its role.

Some of the many highlights the awardees listed when describing their impressions after the Congress were: meeting foreign colleagues and potential collaborators, discussing their dissertation research with distinguished members of the international community, exposure to current international research, unique international perspective on similar research topics, and networking for collaborative opportunities and career development.

"Many of the world's top Quaternary scientists and Quaternary research programs are based outside of the U.S., so it makes a big difference in terms of being on top of the cutting edge science—and also making connections and even initiating collaborations with scientists from foreign institutions."

"...the more perspective I am able to garner during the early stages of my career will be important later when advising and mentoring become greater responsibilities. [...] it is much easier to see how regionally based research questions fit into the global-scale picture at a

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RESEARCH REPORT: Brownies from Bark Bay Slough: Buried basal peat reveals a progressive submergence of the south shore of Lake Superior

—Shi-Yong Yu and Steven M. Colman, *Large Lakes Observatory, University of Minnesota Duluth, 2205 East 5th Street, Duluth, MN 55812*

The Laurentian Great Lakes are a chain of water bodies formed in Precambrian and Paleozoic structural valleys along a topographical gradient descending toward the North Atlantic, draining the middle of the continent and providing a waterway for commercial transportation. Of these five lakes, Superior, Huron, and Michigan are the three largest. Recent work revealed that the breaching of a sandy end-moraine dam at the southeastern corner of Lake Superior about 9300 years ago led to a confluence of these lakes; but nowadays Lake Superior is separated from the others. It is not clear when such a drastic change in the hydrological regime occurred and how it evolved with time. Also, subsequent and ongoing coastal erosion and wetland loss along the south shore of Lake Superior require placing instrumental data in a geological context to better understand the long-term rate of lake-level rise and the threat to coastal communities.

Bark Bay Slough looking north. Behind the wooded and sandy spit are the open waters of Lake Superior. Photo by A. Lingwall.

Drilling through the 60-cm-thick ice at the surface of Bark Bay Slough. Photo by M. Du.

We tackle these questions through high-resolution, lake-level studies along the south shore of the Superior basin. Unlike previous approaches, we focus on dating the landward encroachment of marsh basal peat. The semi-enclosed Bark Bay Slough appears to be one of the best sites for reconstructing past lake-level changes. Longshore transport of sandy materials led to the development of a spit extending into the Bark Bay, which in turn gave birth to the slough and provided a protected setting for marsh colonization. Additionally, the relatively small amplitude of yearly lake-level fluctuation (ca. 0.4 m) enables us to reconstruct past lake-level changes with a narrow altitudinal error. We conducted detailed stratigraphical reconnaissance and sampling during the winter of 2011. The frozen lake surface provided not only a natural and stable platform for the coring, but also an elevation benchmark (i.e. 183.5 m IGLD85) against which past lake levels can be determined precisely.

Our fieldwork reveals that postglacial sediment in the slough is composed of four distinct units. The basal unit is red, fine outwash sand, which is overlain by a very thin, dark-gray, weakly developed paleosol, indicating a stabilization of the landscape following the initial lake-level rise. A thick layer of dark-brown fibrous peat occurs above the paleosol, resulting from continuous lake-level rise and the drowning of the marsh. The uppermost unit is a plant mat, reflecting extremely high productivity in the slough. Dating samples from the base of the peat layer situated at different depths may provide a powerful constraint on the timing of the separation of Superior from the other Great Lakes, and also casts new light on the isostatic adjustment, controlled by upper mantle dynamics, in this cratonic area.

Acknowledgments: Funding was provided by the National Science Foundation (OCE-0623607), and fieldwork was supported by LacCore, University of Minnesota Twin Cities. We thank Wisconsin Department of Natural Resources for allowing us to access and sample in the Bark Bay Slough.

RESEARCH REPORT: Reconstructing late-Quaternary climate variability in the tropical Andes

—Gordon Bromley, *Lamont-Doherty Earth Observatory, 61 Route 9W, Palisades, NY 10964*

Late glacial moraines at Laguna Aricoma

The tropics form the heart of the planet's central heating system and are the principal source of atmospheric water vapor. However, the exact role of the tropics in global climate is far from certain, as is the likely response of this region to ongoing climate warming. We are working to decipher the timing and magnitude of past tropical climate events, such as the last glacial maximum (LGM), in order to better understand both the full range of tropical climate variability and low-high latitude relationships. Specifically, our objective is to construct accurate and precise records of late-Quaternary glacier fluctuations—as a proxy for climate variability—in the tropical Andes, with particular focus on the LGM, the glacial termination, and the Holocene transition. We employ a glacial-geologic approach, comprising detailed geomorphic mapping and surface-exposure dating of glacial deposits in the Peruvian Andes. Of particular interest is whether the steep climate gradients inherent to the Andes caused regionally different responses to these events. Therefore, we are investigating sites in both the humid and arid Andes.

Sampling an erratic boulder at Minas Tira

In June and July of this year, our field team (Gordon Bromley, Lamont-Doherty Earth Observatory; Kurt Rademaker, University of Maine; and Matthew Hegland, Pacific Lutheran University) carried out the first of two NSF-funded seasons in the southern Peruvian Andes. The focus this year was the Cordillera Carabaya on the humid, eastern end of the transect, a region we'd first visited in 2009. Unbeknownst to us, the approach this year would be complicated by anomalously wintery weather and the sporadic roadblocks of anti-mining demonstrations. Having finally reached the Cordillera Carabaya, we spent almost five weeks at Laguna Aricoma and Minas Tira mapping intricate series of moraines spanning the LGM-Holocene period and collecting samples from granitic boulders for ^{10}Be dating. In all, we have close to 100 boulder samples that are now at Lamont being prepared for measurement at the Lawrence Livermore accelerator. In addition, we extracted three sediment cores from moraine-dammed bogs at Laguna Aricoma. Having made it to Maine intact, these cores will now be used to provide additional radiocarbon constraint of the glacier record as well as local hydrologic information.

To close out the season, and escape the incessant wind-driven snow in the eastern Andes, we visited the Cordillera Ampato, north of Arequipa, as part of a side project concerned with improving the precision of surface-exposure methods at low latitudes. This work involved collecting samples from independently dated lava flows on Nevados Ampato and Sabancaya, and further north at Mina Arcata. Hardly surprising, the crux of this particular work was not hammering away at boulders at 5000 m elevation but explaining to the mine owners the reason for our visit.

RESEARCH REPORT: Ongoing tree-ring research with ancient wood around the Great Lakes

—Irina P. Panyushkina (ipanyush@email.arizona.edu) and Steven W. Leavitt (sleavitt@u.arizona.edu)

The Great Lakes area has provided a multitude of geological circumstances that have favored the preservation of ancient wood in glacial, alluvial, organic (peat), aeolian, and lacustrine deposits. Availability of wood then allows development of "floating" tree-ring chronologies, which, although not part of an absolutely dated, continuous tree-ring series to present, are anchored in time by radiocarbon dating and more-accurate radiocarbon "wiggle matching." With well-replicated ring-width and microanatomical "event" chronologies, it is possible to infer inter-annual variability of paleoenvironment and to provide perspectives on paleoecology, which would bear on plants, humans, and megafauna.

Elm River, MI

To improve our understanding of the natural history in this area using dendrochronology methods, we have been developing such chronologies for much of the past eight years with the invaluable support of two NSF grants. Wood has been accumulated from over two dozen sites, provided by colleagues or by our own collections at the sites. Our current effort is particularly focused on how environmental variability evolved during the period from about 14 to 6 ka as the region underwent instabilities during deglaciation with numerous abrupt climate shifts related to the Older Dryas event, Intra-Allerod cool period, Younger Dryas event, and others. Among notable accomplishments are identification of a Younger Dryas-age forest in northwest Indiana and dendrochronological investigation of Two Creeks-age wood at the type locality and other sites.

This summer's field campaign in May and June was especially productive, with collections at sites in Michigan (Upper Peninsula and Lower), Wisconsin, Illinois, and New York. Locations with mammoth/mastodon finds turned out to be a particularly fruitful source of wood, usually dating at greater than 12,000 ka. By the end of the summer, we hope to have some samples collected from the bottom of Lake Huron.

Fish Creek, NY

We are actively seeking wood from additional sites, and we encourage people to contact us about newly discovered sites or other sites about which we are not already aware.

We invite those further interested to view our project website, http://greatlakes.ltrr.arizona.edu/. The website in under development with intent to feature research, sites, and the numerous collaborators who have helped us thus far.

A short course is planned for late next May for upper-level undergraduate students interested in paleo-studies. The course will include lecture, hands-on elements, and a short field trip(s), with units on geologic history, palynology, fossil fauna, wood identification, dendrochronology, radiocarbon and other dating methods, and more, related to the Pleistocene-Holocene transition in the Great Lakes region. We invite prospective students to contact us with their interest.

This work is supported by NSF P2C2 #AGS-1003483

AMQUA COUNCIL MEMBER PROFILES

EDITORS NOTE: We omitted the Geohistory councilors from our list in the Spring 2011 newsletter. Brent Ward and Alex Wolfe serve as the Geohistory councilors. They each will be profiled in an upcoming issue of *Quaternary Times*.

MARK BUSH

PALEOBIOLOGY COUNCILOR

Dr. Mark Bush studies Quaternary climate change and human impacts on Neotropical systems. Currently a professor in the Department of Biological Sciences at the Florida Institute of Technology, his undergraduate and graduate training were at the University of Hull, U.K., with post-doctoral experience at The Ohio State University, The Smithsonian Tropical Research Institute, and Duke University. He is a member of the editorial board of the Journal of Biogeography and is active in local conservation initiatives. He teaches courses in community ecology, plant biogeography, and conservation biology.

Bush's research emphasizes the use of fossil pollen, charcoal, and diatoms from lake sediments to provide multiproxy reconstructions of tropical settings. He has led >30 expeditions to raise sediment cores from remote locations. Current research emphasizes investigations of prior interglacials, Holocene ENSO patterns, and human impacts on the Andes, Amazon, and Galapagos. He has published >100 journal articles and 2 books.

KENNETH P. CANNON

ARCHAEOLOGY COUNCILOR

Kenneth P. Cannon, Master of Arts Anthropology, University of Tennessee (1989), Ph.D. Department of Geography, University of Nebraska-Lincoln (2008). His dissertation is titled *Prehistoric Biogeography of Holocene Bison in the Greater Yellowstone Ecosystem*. His research interests include hunter-gatherer adaptations to mountain environments, intermountain mammalian biogeography, environmental reconstruction, fire history and its effects on archaeological sites, the role of archaeology in ecosystem management, and obsidian utilization by hunter-gatherers in the intermountain west.

Cannon is the Director of USU Archeological Services, Inc., in Logan, Utah, and is a research assistant professor in the Anthropology Program at Utah State University. He serves as president of the Board of Directors for the Rocky Mountain Anthropological Association, on the research board for the Hudson-Meng site, Nebraska, and is VP for Government Affairs and Research for the Utah Professional Archaeological Council. Cannon is married to Molly Boeka Cannon, Director of the Spatial Data Collection, Analysis, and Visualization Lab at Utah State University. They have two very active boys, Brennan and Quincy, who have been in the field with their parents since they were knee-high to grasshoppers.

Prior to moving to Logan, Cannon was a project archaeologist with the National Park Service's Midwest Archaeological Center for over 20 years.

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Councilor Bios, continued from page 10
Cannon has supervised numerous archaeological projects investigating hunter-gatherer settlement and subsistence in the Greater Yellowstone Area and the Intermountain West. He has received numerous grants and private donations to continue his work in the region concerning the prehistoric use of obsidian, the ecology of prehistoric bison, and Quaternary mammalian biogeography. He is currently a co-PI on an NSF-MRI grant to develop a multi-scalar geospatial laboratory at USU. Along with Dr. Emily Jones, Cannon has been awarded a multi-year grant from the Bureau of Land Management to conduct investigations of climate change using faunal remains recovered from lava tubes along the Snake River Plain. Another recent project is the investigation of the Stinking Springs Rockshelter in Teton County, Wyoming, where he hopes to uncover a long-term record of mammalian remains.

Recent publications include an article on the application of prehistoric bison studies to modern bison management in *Great Plains Research* (2001); an edited volume with Dr. Lee Lyman titled *Zooarchaeology and Conservation Biology* (University of Utah Press 2004); with co-authors Dawn Bringelson and Molly Cannon (2004), a chapter on hunter-gatherer settlement in Jackson Hole in the book *Hunters and Gatherers in Theory and Archaeology*, edited by Dr. George Crothers (Center for Archaeological Investigations, Southern Illinois University); and a paper on high-altitude bison in *Arctic, Antarctic and Alpine Research* (2007). He is a co-author with Dr. Kenneth Pierce and others of a chapter on post-glacial inflation-deflation cycles along Yellowstone Lake in *U.S. Geological Survey Professional Paper 1717* (2007). He is a co-author of a paper titled "2010 Comparison of Fuzzy Clustering Methods and Their Applications to Geophysical Data" that appears in *Applied Computational Intelligence and Soft Computing* (2009). A short paper on early Holocene bison ecology appears in *Current Research in the Pleistocene* (2010). Cannon has also published book reviews in a wide range of journals including *Plains Anthropologist*, *The Quarterly Review of Biology*, and the *Utah Historical Quarterly.*

LUIS GONZÁLEZ

GEOCHRONOLOGY-GEOPHYSICS-GEOCHEMISTRY COUNCILOR

Dr. Luis A. González is professor and chair of the Department of Geology and director of the W.M. Keck Paleoenvironmental and Environmental Laboratory (KPESIL) at the University of Kansas. Dr. Gonzalez obtained his BS in Geology (1978) at the University of Puerto Rico at Mayagüez , and his MS (1981) and Ph.D. (1989) at the University of Michigan. His Ph.D. dissertation on the chemistry of cave fluids and speleothems served as the foundation for his paleoenvironmental and paleoclimatic studies. From 1989 through 2002 he resided at the University of Iowa, and through interactions with Dr. Richard Baker, Dr. Art Bettis, and his first MS student Jeffrey Dorale, he became interested in Quaternary research. At the University of Iowa, he was co-founder of the Environmental Sciences Program and director of the Paul H. Nelson Stable Isotope Laboratory. His primary research tools are stable isotope analysis, employing isotopic composition of carbonate minerals and organic matter as proxies for ancient climates and environments. His Quaternary research has focused mostly on the Holocene, with emphasis on speleothems. Early studies were centered in the North American Midwest (Iowa, Missouri,

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Councilor Bios, continued from page 11
Minnesota, Wisconsin), later branching to Nepal, and currently northern South America and the Caribbean. His research has been published in such journals as *Science*, *Holocene*, *Quaternary Research*, *Quaternary International*, and *Geology*. He teaches courses in stable isotope geochemistry, paleoclimatology, and a large introductory course on earthquakes and natural disasters. He is currently associate editor of *Geosphere*, a collaborating faculty of the University of Kansas C-Change program, and member of the organizing committee for "Sustaining our Planet, Powering the World" strategic initiative at the University of Kansas.

THOMAS MARCHITTO
MARINE GEOPROCESSES COUNCILOR

Dr. Tom Marchitto is an associate professor of geological sciences and a Fellow of the Institute of Arctic and Alpine Research at the University of Colorado, Boulder. He earned a BS in geology from Yale University in 1994, and completed his Ph.D. in marine geology in the Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program in 1999. After three-plus years as a postdoc and research scientist at the Lamont-Doherty Earth Observatory, Tom moved to Colorado in 2003. His main research interests lie in the field of Quaternary paleoceanography, specifically large-scale changes in ocean circulation and biogeochemistry that occur over orbital, millennial, and shorter timescales. Major variations in ocean circulation, from abyssal depths to the surface, are believed to have influenced climate via the transport of heat. The oceans also exert control over atmospheric levels of carbon dioxide, an important greenhouse gas. Such changes are reflected in the physical and chemical properties of seawater, including temperature, salinity, carbonate system parameters, and the concentrations of various nutrients. Tom mainly uses trace and minor elements in the shells of foraminifera as recorders of these properties. In Boulder he teaches courses in intro oceanography, marine chemistry, and paleoceanography.

BETTE OTTO-BLIESNER
PALEOCLIMATOLOGY COUNCILOR

Dr. Bette Otto-Bliesner is a senior scientist in the Climate and Global Dynamics Division at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. Before coming to NCAR, she was on the faculty of the Geology Department at the University of Texas at Arlington. Her research focuses on using computer-based models of Earth's climate to investigate past climate change and climate variability across a wide range of time scales and to enhance the credibility of future projections. She is particularly interested in climate change forced naturally over the glacial-interglacial cycles of the Quaternary. She received her degrees in meteorology from the University of Wisconsin-Madison. Dr. Otto-Bliesner was lead author on the Fourth Intergovernmental Panel on Climate Change (IPCC) assessment report, and is currently a lead author on the "Information from Paleoclimate Archives" chapter for the IPCC AR5. She serves as a councilor of AMQUA and co-chair of the International Geosphere-Biosphere Programme,

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Councilor Bios, continued from page 12
Past Global Changes Project (PAGES) and of the Community Earth System Model Paleoclimate Working Group. She has served on numerous national and international committees, including for the National Academy of Sciences, the American Geophysical Union, and the Paleoclimate Modeling Intercomparison Projects.

BRYAN SHUMAN

TERRESTRIAL GEOPROCESSES COUNCILOR

Dr. Bryan Shuman is an associate professor in the Department of Geology and Geophysics at the University of Wyoming. His work focuses on two central questions: How does the availability of water change over time as the result of climatic change; and what consequences do such hydroclimatic changes have on ecosystems? In particular, Shuman is interested in the patterns and processes of century- to millennial-scale hydroclimatic changes during the Holocene and their sometimes surprising ecosystem impacts. These time scales of variability, particularly during warm epochs such as the Holocene, need to be understood as a critical bridge between better understood changes at orbital and decadal-annual time-scales. The potential that the water supplies and ecosystems can shift to new states on centennial-scales has important implications for society. Shuman and his graduate students have pursued these interests through sediment-based reconstructions of Holocene lake levels and comparisons of such data with fossil pollen, sedimentary charcoal, and stable isotopic records, as well as climatic and ecological modeling results. Current projects are ongoing in the Bighorn and Beartooth Mountains of Wyoming, the Park Range of Colorado, and southern New England, and also include continental-to-global data syntheses.

Shuman obtained his degrees at Colorado College (BS '94) and Brown University (Ph.D., '01) before moving to the University of Oregon as a NOAA Climate and Global Change post-doc and then to the University of Minnesota as an assistant professor. In 2007 he moved to Laramie, Wyoming, where he has been involved in the creation of the Roy J. Shlemon Center for Quaternary Studies.

CONSERVATION PALEOBIOLOGY INITIATIVE

AMQUA members are invited to read, review, and comment on a brief report, "Conservation Paleobiology in the Coming Decades," stemming from an NSF-sponsored workshop held in June 2011. Several members of the AMQUA community participated in the workshop, and the initiative outlined in the document should be of interest to the AMQUA membership. The document can be viewed at www.conservationpaleobiology.org, and comments can be posted at that website until 15 November. A detailed white-paper from the workshop is in preparation and will be announced in the next AMQUA Newsletter. *–S.T. Jackson*

INQUA awards, continued from page 7
high-quality international meeting like INQUA. At some meetings I have attended in the U.S., it has been difficult to envision global climate/life patterns when only research from North America is presented, despite being discussed in the context of 'global' climate change."

All awardees reflected on the importance of financial support received from the sponsors who made this travel fellowship program possible, noting that otherwise they would have been unable to attend the Congress of the International Union for Quaternary Research. AMQUA's financial contribution to this travel fellowship grant organized by USNC/INQUA has made a remarkable and lasting difference.

President's Message, continued from page 2
Develop backup plans. You should have a clear plan for how you'll develop credentials to compete for the Job of Your Dreams. (If you don't, start today.) Whatever your primary objective, you should formulate a plan for at least one alternative route. That'll require some research and some flexibility (see below). Ph.D.-bearing scientists are employed in all sorts of positions in the nonacademic and nongovernmental sectors, and most of the ones I know are really happy doing what they do, even though it may not include scientific research. Rewards can include having tangible impacts on interesting and important real-world problems. Not all such scientists work insanely long hours.

Be flexible and creative. Pursuing a nontraditional career may require that you overcome a number of inertial forces, ranging from disapproval or disinterest on the part of mentors to your own comfort in an academic career trajectory. Even thinking about an alternative path entails some flexibility—you'll have to imagine multiple alternative futures for yourself. Start visualizing those futures now. And if you have the good fortune to continue on your most-desired path, you'll have more fun—and probably more impact—if you're creative and nimble along the way.

Publish your stuff. This goes without saying if you're looking at an academic path, but scientists working for federal and state agencies, NGOs, and the business sector all tell me that publications are important credentials, even for jobs that don't involve research. Published works show that you're capable of following through on something to the very end.

Develop "people" skills. Capitalize on opportunities to take courses, attend workshops, and gain experience in leadership, negotiation, management, and communication. Regardless of your career path, this is a "no-regrets" strategy. These kinds of skills will serve you well in academic as well as nonacademic settings, and many nonacademic employers are actively seeking scientists with well-developed people skills. They're in very short supply.

Create luck. You'll increase the likelihood of a lucky break simply by developing multiple skillsets, building your credentials in multiple dimensions (e.g., published papers *and* teaching experience or management skills). And you'll also benefit from diversified networking. Seek out people who are pursuing interesting careers, conventional and nonconventional. Find out how they got there, and let them know you're considering a similar path.

Don't take any advice for granted. This includes mine. The professional world is changing rapidly. I'm undoubtedly blind to many rising threats and opportunities, and I suspect that's the case for all of us mid-career and senior scientists. As Yogi Berra said, "The future ain't what it used to be."

"Get a few laughs and do the best you can." This quote from Will Rogers seems apt here. Seize the moment. Savor your experience in graduate school or your post-doc. You're getting paid to pursue new knowledge in a project of your own design. With a combination of skill, persistence, hard work, and good luck, you may get to do this for the rest of your working life. On the other hand, any number of realities and choices may divert you onto another path. Whatever happens, your current experience in thinking, doing, and writing will serve you well in the future. *continued on page 15*

President's Message, continued from page 14
Keep in touch. If you wind up in an academic or research career, keep your AMQUA membership active. If you pursue a nontraditional career, remember your roots. I want you to come back and network with the next generation of Quaternarists. They'll need your advice and perspectives.

I hope the outlook will be bright for whatever career you want to pursue, and that my advice might help make it brighter. Peter Medawar observed that scientists are innately optimistic, because we believe that problems (at least scientific ones) are soluble. But of course scientists are also realists; we deal with the world as it's delivered to us, not as we wish it to be. So it behooves us to face potentially brutal facts about the future. If some of you choose not to, or are unable to, continue as scientists, remember that the world needs scientifically trained people working outside the sciences—in law, policy, education, business, management, journalism, the arts, and even politics! Your scientific experience can help you make a real difference in the world.

I wish you the best of luck in pursuing a rewarding career. In an ideal world, you might not need it. In this world, though, a little good luck won't hurt.

[1]Peter B. Medawar. 1979. Advice to a young scientist. *Harper's Magazine* (September 1979), pp. 39–46.

Grayson interview, continued from page 3
Connie: What do you feel are the most important mountain-climate research questions currently facing scientists who work in the Great Basin ecoregion?

Don: I have to opt out of this one; I am mainly grateful to mountain-climate researchers for generating the knowledge critical for my own work. I would, though, point out that there are very few archaeological faunas known from high elevations in the Great Basin. As a result, should mountain scientists come across potentially important sites (caves and rockshelters are the obvious candidates), it would be good to carefully note their locations and report them to appropriate members of the archaeological community. Wouldn't it be great, for instance, to have a deep biotic sequence from, say, 3500 m, on any Great Basin mountain range?

Connie: What advice or recommendations can you offer graduate students and young scientists as they embark on careers in mountain-climate sciences of western North America?

Don: Be thoroughly interdisciplinary. Learn everything you can learn about all relevant disciplines; don't pretend to know what you don't know. Devise your own research rather than letting your advisor dictate what your research is to be. Have fun.

Connie: What are you most proud of in your career?

Don: My students.

Reprinted with permission from *Mountain Views, the Newsletter of the Consortium for Integrated Climate Research in Western Mountains, vol. 5, no. 2, August 2011.*

NOTICES

• Over 4000 titles from the National Academies Press are now available as PDFs, free of charge. See the following website for additional information: http://bit.ly/lfR5FD

• TO 'COSMO'-NAUTS AND 'OSL'-EPHANTS: Ph.D. opportunity on Egyptian Quaternary sediments

See papers below for context of Quaternary sediments of a paradisacal locality in the middle of Egypt. This sequence, with formations more numerous and better exposed than anywhere in the Western Desert, and representing orbitally driven climate changes over possibly 600 ka, badly needs chronological control.

Each of seven Pleistocene formations contain eolian quartz grains incorporated from the broader regional surface environment, but none are of eolian origin. Modern sand dunes, not among the above seven, are abundantly available for checks on OSL doses etc. Chert fragments, residual from deflated host formations, are varnished, but may reward "cosmo" analyses.

Ph.D. dissertation could handle the entire sequence, MSc 1 or 2 formations.

Anyone interested? I am retired and prohibited by my doctor to travel to Egypt, but I can advise on logistics, sample sites, and provide topo maps at 1:100,000, photocopied airphotos, and you can look at Google Earth (centered at 25.5 deg N, 29 deg E). Two weeks will suffice for reconnaissance; best climatically Jan to Mar; accommodation probably changed (expanded) a lot since my last visit, but see WWW - "Egypt-New Valley-Tourism"; vehicle rental advice from American Center for Oriental Research (Cairo) and embassy.

Contact: Ian Brookes, ibrookes@yorku.ca

References:

Brookes, I. A. 1993: Geomorphology and Quaternary Geology of the Dakhla Oasis Region, Egypt. *Quat. Sci. Revs.* 12:529–552.

Brookes, I. A. 2010: Spatially variable sedimentary responses to orbitally driven pluvial climate during Marine Oxygen Isotope stage 5.1, Dakhla Oasis region, Egypt. *Quat. Res.* 74(2):252–264. doi:10.1016/j.yqres.2010.05.001\

2011 AMQUA Distinguished Career Award. *Call for Nominations*

Nominations are being solicited for the 2011 AMQUA Distinguished Career Award. The award recognizes a Quaternary scientist who has contributed significantly and continuously to the advancement of North American Quaternary science in any discipline. This award is the highest one made by AMQUA and truly honors someone with a lifetime commitment to Quaternary science. We encourage everyone to consider and nominate those senior scientists who have made significant contributions. The nominee does not have to be a member of AMQUA. Posthumous nominations will not be considered. The winner of the award will receive a bronze sculpture and recognition at the 2012 Biennial Meeting. The award will be announced on the AMQUA website, listserve, and newsletter. Nomination packages should include: (1) a nomination letter outlining the nominee's accomplishments and contributions; and (2) a copy of a recent CV. All nominees are retained as candidates for five years. Please send your nominations no later than 1 December 2011 to Steve Jackson, AMQUA President, at: jackson@ uwyo.edu. Please use "AMQUA Distinguished Career nomination" as the subject line in your message.

AWARDS

- Jim Teller (Department of Geological Sciences, University of Manitoba, Winnipeg) and John Westgate (Department of Geology, University of Toronto) were recipients of the 2011 W.A. Johnston Meda, the highest award of the Canadian Quaternary Association (CANQUA), for excellence in Quaternary science.
- Simon Goring (currently at the University of Wisconsin, Madison) was awarded the 2011 Aleksis Dreimanis Doctoral Scholarship by CANQUA.

PASSINGS

- Archaeologist Lewis Binford passed away on April 11th, 2011. He was 79.

COMMENTS ABOUT OR CONTRIBUTIONS TO THE NEWSLETTER?

The newsletter has been sent as both hard and electronic copies. To opt out of the hard copy, please send an e-mail to Jessica Blois (blois@wisc.edu).

If you have suggestions for content or something to contribute to the newsletter, be it a short announcement or a lengthier research report, please contact either Jessica Blois or Dolly Freidel.

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AMQUA 2012, continued from page 1

AMQUA 2012 Schedule Overview:
June 21: Pre-meeting field trip and Opening Mixer
June 22–24: Meeting Days 1–3
June 24–25: Post-meeting field trip
TBD: Teachers Workshop

Tentative proposal for plenary sessions:

- Day 1: Morning—The role of glacial meltwater: Data and model perspectives
- Day 1: Afternoon—A large lake perspective on Holocene environmental change
- Day 2: Morning—Floods, ENSO, and hurricanes
- Day 2: Afternoon—Patterns and impacts of Holocene droughts
- Day 3: Morning—Mapping and modeling Holocene hydroclimatic variability and ecosystem responses

Local organizing committee:
Steve Colman, chair (scolman@d.umn.edu)

Program committee:
Bryan Shuman, chair (bshuman@uwyo.edu)

UPCOMING MEETINGS

October 9–12, 2011

Geological Society of America Annual Meeting, Minneapolis, MN

November 2–5, 2011

Society of Vertebrate Paleontologists Annual Meeting, Las Vegas, NV

December 5–9, 2011

American Geophysical Union Annual Meeting, San Francisco, CA

June 22–24, 2012

American Quaternary Association Biennial Meeting, Duluth, MN

January 9–12, 2013

International Biogeography Society 6th International Conference, Miami, FL

If you know of any meetings that should be included in the next issue of Quaternary Times*, please e-mail the editors.*

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