

GEOMORPHORUM

Newsletter of the Geomorphology Specialty Group of the Association of American Geographers

Issue No. 2, 2000

Bernard O. Bauer, editor

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FORWARD

GEOMORPHORUM is issued twice per year. Current and past issues are archived at <http://www.cla.sc.edu/geog/gsgdocs> through the generous efforts of [Allan James](#). If you forget the URL above, the web page is easily accessed by getting on the AAG web page (<http://www.aag.org/>), clicking on 'Specialty Groups,' and scrolling down to 'Geomorphology.'

The purpose of GEOMORPHORUM is to serve members of the Geomorphology Specialty Group (GSG), Association of American Geographers, by providing a forum for the exchange of ideas and news about geomorphology and related matters, and to foster improved communication within our community of scholars and affiliated professionals.

Individuals are encouraged to forward submissions to the Editor in so far as they improve understanding of the internal workings of our community, contribute to the health of geomorphology, adhere to standards of professional conduct, foster the spirit of collegial interaction, and satisfy the overall goals of the newsletter. News of new initiatives, recent appointments, promotions, research grants, and awards are acceptable, whereas advertisements for new faculty positions or graduate student opportunities at specific institutions are generally not (these are handled via other media, including *Geomorphologist* and the AAG Newsletter). Recent graduates (both Masters and Ph.D.) are invited to provide their name, thesis title, date examined, five descriptive key words, a list of related publications, and a contact address. Those attending or planning field meetings, conferences, or workshops are also encouraged to submit short reports. The Editor reserves the right to edit submissions as appropriate.

OFFICERS OF THE GSG 2000-2001

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GSG CHAIR'S FORUM by [Basil Gomez](#)

It was just over half a century ago (at an AAG annual meeting) that A.N. Strahler first publicly articulated his ideas on the quantitative treatment of process and form. Geomorphologists readily embraced the new paradigm. However, the essential point--that Strahler's dynamic approach to the study of landforms was predicated on an appreciation of both statistical analysis and mathematical methods--has taken time to register. The recent,

practically motivated shift in the emphasis of geomorphological enquiry has placed substantial weight on the acquisition and synthesis of data for the purpose of prediction and control. Causal explanations are not sufficiently utilitarian to fulfill the need for general accounts of landform development that both facilitate understanding and have predictive power, which is instead being met by mathematical models.

Controversy surrounding the role of mathematics in the Earth Sciences is not new. For example, the earliest applications of mathematical analysis to geological phenomenon presented a compelling challenge to Lyell's (1830-33) uniformitarian perspective on land surface sculpture. Principal commentators, such as William Hopkins, preferred the 'naked dignity of demonstrative truth' to 'vague and misty sublimity' (Hopkins, 1836, 365-6). In utilizing mathematical methods to provide accurate and uniform proofs of the effects of natural phenomena, they sought to advance geology and elevate it to a rank among the physical sciences (Smith, 1985). Strahler (1950, p. 209) was similarly motivated. Echoes of the argument that geological actions can be reduced to mathematical and geometrical laws, thus rendering them part of a global phenomenon rather than a local anomaly, also permeate the contemporary debate about scientific realism in geomorphology.

My concern is that geomorphologists in Geography departments throughout the USA are in danger of becoming disengaged from many of the fundamental intellectual issues with which they have traditionally been concerned because they lack mathematical skills. The problem will be exacerbated if mathematics continues to be excluded from the curriculum; acceptance of the new culture of calculation is a precursor to alleviating it. Thus, I contend that all geomorphologists should necessarily have an appreciation of basic mathematical methods. I also suggest that mathematics should be viewed in the same light as tools, such as remote sensing and geographic information systems, that are now generally applied throughout Physical Geography, and also afford us the opportunity to obtain new insights into the operation of biophysical systems at a variety of temporal and spatial scales.

Note that I take issue with the representation of scientific knowledge, rather than with the character of theory and its development. Thus

my advocacy of a more mathematical approach should not be misconstrued as an infatuation with the rouged lips of fashion. It arises from a basic proposition articulated by C.E. Thorn:

"Geographers with a mathematical training are at a distinct advantage over those who do not have one. This primarily stems from the access such training gives them to the main body of scientific literature, and the opportunity it offers to conduct their own research in a similar, or at least compatible fashion. However, the majority of geomorphologists still lack an adequate mathematical background. The net result is a divergence; in an already small community, two groups are developing using different languages. The mathematical group is able to understand the nonmathematical one, but the inverse is not true." (Thorn, 1988, p. 194)

A critical implication of Thorn's thesis is that if we fail to modify our perspective of the physical processes that sustain and transform the earth's surface we will become increasingly less able to comprehend the significant contributions that are made within geomorphology. A potentially deleterious consequence is that our students will appear to be inadequately trained by comparison with their peers who emerge, for example, from Geology departments, who they will inevitably encounter in the job market.

Mathematics incorporates a system of symbols and abstract terms that are unambiguous and expressly defined by their function in the context of the range of experience to which they apply. A fundamental requirement is, therefore, that the significance of these symbolic statements is understood. There is nothing sacrosanct about symbology (the system of notation adopted is typically determined by convention). Solving (translating) any equation at all simply requires that we are privy to the meaning of the constituent parameters. Similar acquired skills are required in the humanities. For example, the subject-verb-object sentence structure of English is not a universal condition, thus the accurate translation of German into English requires the knowledge that the latter is a subject-object-verb language. The ability to understand any mathematics is then predicated on the expectation that one is cognizant of the meaning of the symbols used to represent particular quantities (which will remain esoteric gibberish until formally defined, communicated, and understood). Some

knowledge of the tools of mathematical description and analysis is required.

Mathematical concepts and techniques are taught in order of increasing complexity, since in order to comprehend differential and integral calculus, a knowledge of functions and algebra is required (cf. Berlinski, 1998). Some basic expressions, such as the equation for a straight line, or precepts such as applying a function to a number have been widely used in geomorphology. The dissemination of more advanced mathematical knowledge, such as a fundamental understanding of partial differential equations, may lie beyond our pedagogical objectives. However, a basic understanding of many simpler concepts is necessarily required to comprehend statements that are outlined in numerical form. This includes the ability to manipulate simple expressions. Dimensional analysis, which builds on the intuitive notion that physically correct equations should be dimensionally balanced (homogeneous), is a case in point (Strahler, 1958). The property of dimensional homogeneity not only permits the consistency of an equation to be tested, it also imposes conditions on the quantities involved in a physical problem and provides evidence of the form of the relation connecting their magnitudes (cf. Shields, 1936). In the case of geomorphological applications, it also has the additional appeal of keeping spatial scale from complicating an analysis (cf. Church and Mark, 1980).

Geographers quite naturally subscribe to a range of views about the relevance of scientific method and of the utility of quantitative techniques and particular brands of theory. Though conscious of their historical imperatives and of the need to accentuate their concern with the physical environment with an appreciation of human activities, most geomorphologists subscribe to the view that their discipline is a field of natural science. No novel theoretical developments are required for geomorphologists in departments of Geography (or Geology) to continue to engage in productive research, but any individual's ability to advance understanding of (or communicate information about) the physical world may be constrained by their appreciation of mathematical methods. Indeed, a cursory perusal of the specialist journals forces one to conclude that some mathematical knowledge is now required to comprehend the literature of the discipline. From this perspective alone it seems desirable that all

geomorphologists should be familiar with the symbology of mathematics and with the common mathematical functions, as well as with the principles involved in manipulating simple expressions on which simple and subtle concepts such as dimensional analysis rely.

I emphasize that it is not my intent to imply that the study of landforms should be replaced with a tour of the calculus. In Geography departments, however, I perceive that the post-modern assault on objectivity is in danger of depriving geomorphologists of a fundamental tool. It would be an irrevocable pedagogical mistake for us not to resist the imposition of a dumbed-down culture in which even the simplest mathematics is viewed esoteric gibberish. Failure to do so will inevitably weaken our position with respect to cognate disciplines that encourage mathematical rigor, and may also serve to make our work less relevant to contemporary society.

Geomorphologists in Geography departments were remarkably prescient in their advocacy of statistical methods. It may prove more difficult for us to accept the new 'culture of calculation', and its elaboration may not be universally required or desirable since geomorphology, like all science, operates on a variety of levels. Nevertheless, to sustain an eclectic approach to the study of landforms, we need to ensure that indifference to mathematics does not inhibit understanding or translate into ignorance.

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4. Lyell, C., 1830-33, Principles of Geology, Being an Attempt to explain the Former Changes of the Earth's Surface by Reference to Causes now in Operation, 3 volumes, Edinburgh.
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9. Thorn, C.R., 1988, An Introduction to Theoretical Geomorphology, Unwin Hyman, Boston, 247 p.

GSG BUSINESS

1) GSG AWARDS [Calls for...]

The contact person for 2000/2001 GSG Awards to whom all correspondence (including complaints or bribes) should be addressed is: Mike O'Neill, USDA NRICGP, Mail Stop 2241, 1400 Independence Avenue, Washington D.C. 20250-241, Fax: +202 401-6071, moneill@intranet.reeusda.gov

GSG Graduate Student Research Awards

Each year the GSG awards two graduate student research grants to help cover the costs of data acquisition, field work, and laboratory analysis required to complete thesis research. The awards are \$200 to a Masters student and \$400 to a Ph.D. student. Student members of both the Association of American Geographers and the GSG are eligible. Students should submit THREE copies of (i) a research proposal approximately 5

pages in length, and (ii) two short letters of recommendation, before February 1.

The Grove Karl Gilbert Award for Excellence in Geomorphic Research

The Grove Karl Gilbert Award is presented to the author(s) of a significant contribution to the published research literature in geomorphology during the past three years. Only books, refereed journal articles, or monographs will be considered with an emphasis on refereed research articles. Nominations for the Grove Karl Gilbert Award remain active for two years. The nomination package should include (i) a copy of the relevant publication; (ii) a statement as to why the publication deserves the award, and (iii – optional) supporting letters from colleagues. These materials and any supporting documentation should be sent before February 1.

The Melvin G. Marcus Distinguished Career Award

The Melvin G. Marcus Distinguished Career Award is presented to an individual who has made significant contributions to geomorphology over his/her career. Nominations for the Melvin G. Marcus Distinguished Career Award remain active for two years. The nomination package should include: (i) a brief description of the candidate's contribution to geomorphology; (ii) a brief biographical sketch; (iii) a select bibliography; and (iv) three letters of support from colleagues. These materials and other supporting documentation should be sent before February 1.

2) GSG T-SHIRTS

A few years back, someone had the idea that the GSG should make T-shirts with the GSG logo available to its members. The primary motivation for doing this would be to raise much-needed funds for the GSG rather than improve the sartorial elegance of geomorphologists. Well, theory and practice often fail to consummate their relationship, and the idea appears to have been passed along the GSG hierarchy until it landed in the lap of the current Secretary-Treasurer. Some of you noticed an announcement to this effect in the last Geomorphorum and another across the Geomorphist, and a handful of you even expressed interest in purchasing said T-shirts. Unfortunately, a handful of purchases

does not a financial dynasty make. Apologies to those who placed orders and are expecting delivery of GSG T-shirts in New York. Perhaps we can re-visit this issue at the GSG Business Meeting.

3) AAG ANNUAL MEETING

The good news is that the Preliminary Program for the AAG Annual Meeting in New York (Feb 28 – March 3) is chock-full of interesting stuff for geomorphologists. The bad news is that there is so much stuff going on, that it will be impossible to attend everything. In order to help you with your planning, we have extracted all those paper sessions that might be of interest to geomorphologists, and have appended them to the bottom of this newsletter. Note that these were taken from the Preliminary Program, and some sessions are subject to change. Please check the Final Program when it becomes available on the AAG web page (<http://www.aag.org/>).

Please make every effort to support your colleagues presenting in paper sessions scheduled early in the morning, late in the afternoon, and on the last day of the conference.

******* OF SPECIAL NOTE *******

Blackwell Publishers' Lecture: Wednesday, February 28, 11:40 pm - 1:00 pm
(Sponsored by Geomorphology Specialty Group and Blackwell Publishers)
Organizer: Basil Gomez, Indiana State University
Speaker: Andrew S. Goudie, University of Oxford

GSG Business Meeting: Thursday, March 1, 6:40 pm - 8:00 pm

The recorded Minutes of the last GSG Business Meeting are available at <http://baby.indstate.edu/gomez/GSG2.html#Minutes>. Please take a moment to look them over before you depart for New York so that you can vote on them in an informed manner.

ANNOUNCE-MENTS

1) JOURNAL SUBSCRIPTION OPPORTUNITIES FOR GSG MEMBERS

Geomorphology - GSG members can subscribe to Geomorphology at a discounted rate of Dfl.184/US\$93 for Volumes 30-35. Subscription information may be obtained from Elsevier Science, Regional Sales Office, P.O. Box 945, New York, NY 10159-0945 (1-888-437-4636) usinfo-f@elsevier.com. Additional information can also be found at <http://www.elsevier.com/locate/geomorph>.

Earth Surface Processes & Landforms - GSG members may join the British Geomorphological Research Group (BGRG) <http://boris.qub.ac.uk/bgrg> at the overseas member rate of £35(\$57) for five years and thereby subscribe to Earth Surface Processes and Landforms at a discounted rate (£55(\$90)). The BGRG's membership secretary was John Wainwright (King's College London) john.wainwright@kcl.ac.uk. Subscription information may be obtained from John Wiley and Sons, Inc., Subscription Department, 605 Third Avenue, New York, NY 10158-0012 (212-850-6021) subinfo@wiley.com

2) JOURNAL NEWS

Annals of the AAG – Most of you are already aware that Basil Gomez was appointed as Editor, Environmental Sciences, Annals of the AAG. The appointment of a geomorphologist to this prominent position suggests certain opportunities and obligations for members of the GSG. Clearly, our manuscripts will be treated in a timely, professional manner and we are ensured of expert review by those most familiar with our research. At the same time, we should show our support for Basil and the Annals by submitting our highest quality manuscripts and by acting conscientiously when called upon to review manuscripts. The Annals is as much ours as anyone else's, and its successes or failures reflect upon us.

3) CONFERENCES and WORKSHOPS

DRYLAND CHANGE 2001 - An IGCP-413 and IGU COMLAND Conference, Upington, South Africa, 30 August- 2 September 2001

An international interdisciplinary conference exploring the nature of environmental change in drylands and opportunities for an improved

understanding of future changes and their impacts on dryland societies. The conference focuses on environmental change in drylands during the Quaternary period, on modern change including land degradation and the interactions between human actions and climatic variability, and understanding future change: its possible occurrence, impacts and mitigation.

Register online or by downloaded form at: <http://www.shef.ac.uk/~igcp413/> where full conference details are also provided. Interest in the conference has been considerable, so early registration is strongly advised.

GROUND PENETRATING RADAR IN SEDIMENTS: APPLICATIONS AND INTERPRETATION

British Sedimentology Research Group; The Geological Society of London and University College, London, England; August 20 & 21, 2001

Ground Penetrating Radar (GPR) is seeing increasing application in the fields of sedimentology and geomorphology. This international conference will be the first to bring together geologists, geomorphologists, geophysicists and engineers with an interest in the application and interpretation of GPR in sediments and sedimentary rocks. Contributions including case studies of sedimentary environments, sedimentary architecture, sandbody geometry, shallow subsurface stratigraphy and engineering applications are invited. Abstracts of not more than 350 words should be sent to the conference convenors by April 30th 2001, authors are requested to express a preference for poster or oral presentations. Poster presentations are encouraged and there will be a half-day devoted to poster presentations to be followed by the conference dinner in an adjacent room. The conference aims to bring together interdisciplinary scientists from around the world and will be held at. Refereed papers will be published.

Additional information is available at <http://www.geo.vu.nl/~damr/GPRconf2001/> Co-Chairs: Dr Charlie Bristow, Birbeck College, c.bristow@ucl.ac.uk; Dr Harry Jol, University of Wisconsin-Eau Claire, jolhm@uwec.edu

2001 INTERNATIONAL BINGHAMTON GEOMORPHOLOGY SYMPOSIUM: "Mountain

Geomorphology – Integrating Earth Systems

October 19-21, 2001, in Chapel Hill, North Carolina

The 32nd Binghamton Geomorphology Symposium is being organized by David R. Butler (db25@swt.edu), George P. Malanson (gm16@swt.edu), and Stephen J. Walsh (swalsh@email.unc.edu). Local arrangements are still being worked out, but it is anticipated that Registration and a Reception will be held the evening of Friday, October 19. Papers will be presented on October 20 and 21. A keynote lecture will be given by Peter Birkeland, recently retired from the Department of Geological Sciences, University of Colorado. A poster session will also be offered, with details concerning submittal of posters soon to be determined. Posters will be welcomed from throughout the Mountain Geomorphology community. Chapel Hill is served by most major airlines through flights to the Raleigh-Durham (RDU) airport. Additional details concerning the symposium will be posted on Geomorphlist and other relevant listservs as it becomes available. For additional information, please contact the organizers.

Keynote Address: Peter W. Birkeland, *"Integrating Soils and Geomorphology in Mountains – Examples from the Colorado Front Range and Southern Alps of New Zealand"*

Lithosphere Session: David M. Cruden, "The Shapes of Cold, High Mountains in Sedimentary Rocks"

Hugh Mills, "Influence of Bedrock on Topography, Regolith, and Surficial Processes in the Appalachians"

Forrest D. Wilkerson and Ginger L. Schmid, "Debris Flows in Glacier National Park, Montana: Geomorphology and Hazards" David Montgomery, Title To Be Announced

Hydrosphere Session: Ann Chin, "Step Pools in Mountain Streams;" Mark Fonstad, "Spatial Variation in the Power of Mountain Streams;" Carol Harden, "Hillslope Hydrology and Runoff in Three Disparate Mountain Environments;" Ellen Wohl and Sara Rathburn, "Predicting Fine-Sediment Dynamics Along a Pool-Riffle Mountain Channel;" Kevin Cornwell, Doug Norsby, and Richard Marston, "Drainage Characteristics and Sediment Transport on Nanga Parbat, Pakistan."

Biosphere Session: Francisco Perez, "Influence of Substrate on the Distribution of the Haleakala Silversword (Maui, Hawaii);" Ronald Dorn, "Variability in Weathering Associated with a Forest Fire, Tonto National Forest, Arizona;" Kevin Hall and Neil Lamont, "Relationships

Between Alpine Geomorphic Processes and the Impacts of Animals;" Matthew Bekker, David R. Butler, and George P. Malanson, "Lithologic, Structural, and Geomorphic Controls on Ribbon Forest Patterns;" Richard Marston, Jean-Paul Bravard, Jean-Luc Peiry, and Robert Moutard, "Impacts of Reforestation and Gravel Mining on the Malnant River, Haute-Savoie, French Alps."

Atmosphere Session: Daniel Fagre, "Climate Change and Glacial Recession in Glacier National Park, Montana: Stephen Evans and John Clague, Title To Be Announced

Techniques in Mountain Geomorphology

Session: Michael Bishop, John F. Shroder, Jr., and Radoslav Bonk, "Geomorphometric Analysis and Scale Dependence of Topography for Assessing Landforms and Erosion Dynamics in Mountain Environments;" Stephen J. Walsh and Daniel G. Brown, "Characterizing the Geomorphic Landscape of Glacier National Park, Montana, USA: Application of the GISc Perspective for Examining the Alpine Environment;" W. Andrew Marcus and Carl Legleiter, "High Spatial Resolution Hyperspectral Mapping of Mountain Stream Morphology and Depths"

LUMINESCENCE AND ELECTRON SPIN RESONANCE DATING

University of Nevada-Reno, Reno, Nevada, USA;
24-28 June, 2002.

The Desert Research Institute invites you to the 10th International Conference on Luminescence and Electron Spin Resonance Dating (LED 2002) All interested persons can access information at <http://www.dri.edu/DEES/LED2002/led2002-home.html> or at <mailto:%20LED2002@dri.edu>. Participants will be responsible for their own room reservation. SCIENTIFIC ORGANIZING COMMITTEE: Glenn Berger (Chair), Desert Research Institute, James Bischoff, U.S. Geological Survey, Rainer Grün, Australian National University, Michel Lamothe, Université du Québec à Montréal, Steve McKeever, University of Oklahoma, Jack Rink, McMaster University, Ann Wintle, University of Wales.

NEWS FROM MEMBERS

1) GEOMORPHOLOGY COMES TO KENTUCKY

The University of Kentucky Department of Geography has initiated a physical geography program specializing in geomorphology. Long recognized as a highly-ranked human geography program, the U.K. geography department in 1999 made a strategic decision to build a physical program of comparable quality, and in 2000 began implementing the program, with a focus on geomorphology and surficial processes.

The first university field camps in the U.S. in both geography and geology were in Kentucky. Physiography was the first geography course taught at the University of Kentucky. And, Kentucky landforms and landscapes such as Mammoth Cave and the sinkhole plain and the extraordinarily dissected Appalachians of eastern Kentucky have been instrumental in the development of several branches of geomorphology. Thus it was perhaps inevitable that the UK geography department would add a physical geography program focusing on geomorphology. While the department has always taught undergraduate physical geography courses, a physical geography research and graduate program is a new development. Jonathan Phillips came to Kentucky from Texas A&M in August, 2000 to begin the effort, and will be joined by Alice Turkington from Queen's University-Belfast in August 2001. A search for a third physical geography faculty position will take place in 2001. Phillips specializes in fluvial and soil geomorphology, pedology, and nonlinear dynamical systems applications in geosciences. Turkington's interests include weathering processes and urban geomorphology. Both have interests in broad issues of multiple causality, convergence, and divergence in landform and landscape evolution. The Department recently completed construction of a new physical geography laboratory, and is in the midst of pursuing possible development of interdisciplinary initiatives in surficial processes and GIS/remote sensing. For more information, visit the web site at <http://www.uky.edu/AS/Geography/dept/physical.htm>.

2) GEOMORPHOLOGY EVOLVES AT MICHIGAN STATE

Lake Quaternary landscape evolution is a growing focus in the Geography Department at Michigan

State University, where Randy Schaetzl and Alan Arbogast are developing what they hope will be one of the leading centers of field-based research in the great Lakes region. Geomorphologic research and teaching at MSU emphasizes the interactions between landforms, soils, and environmental change. Soils-based research is done within a geomorphological framework, while geomorphic research often utilizes soils and paleosols as indicators of landform age or the chronology of landscape evolution. Paleoenvironmental reconstruction is a significant component of our research, with the primary goal to determine the range of (paleo) environmental conditions within a region and how they affect landscapes. Within geomorphology, our program emphasizes a wide range of processes including soils, glacial, coastal, fluvial, and eolian. Glacial geomorphology focuses on the northern Great Lakes region, and often employs soils or surficial sediments to interpret the various glacial depositional environments, or to better understand the development/evolution of these landforms over time. We also have a focus on mapping of glacial landforms. Coastal geomorphology is centered on the shore of Lake Michigan and is associated with high resolution monitoring of shorezone processes and change using GPS and remote sensing. Work in fluvial geomorphology focuses on the investigation of the post-glacial history of watersheds and streams in Michigan by reconstructing the evolution of alluvial fills, terraces, and changes in stream characteristics.

A goal in this fluvial study is to integrate the influence of Holocene climate change into an understanding of river systems in Michigan, and to examine post-settlement adjustments. Eolian landscapes currently being studied include both coastal and inland dunes within Michigan, and dune fields on the Great Plains. In both areas, the aim is to determine the chronology of dune evolution and the variables that promote activation and/or stabilization of dunes. Thus, buried soils are frequently used as chronostratigraphic markers through radiocarbon dating. We are also developing an interest in dating eolian and outwash sands using optimally-stimulated luminescence. Within soils, the research emphasis is on soil genesis within a variety of geomorphologic contexts. Soil chronosequence and chronofunction work has been a strong part of the Department in the past. Work on pedoturbation and soil evolution continues to be a research topic of ongoing interest. Since soils are important keys to (paleo) sedimentologic environments, identification of these environments, through the use of soil maps

and other spatial data, are important components of our work. For example, we are currently using soils data to identify areas of eolian activity in Michigan, to understand some of the many aspects of glaciogenic depositional processes, and to decipher the glacial lake chronology, based on soils formed in probable glaciolacustrine sediments. Finally, we are very interested in the links between soils and vegetation in the upper Midwest. To learn more, see <http://www.geo.msu.edu/soils.html>.

3) GEOGRAPHY OF THE WEST FIELD CAMP

Oregon's Basin & Range and Cascade Volcanic provinces are miles and environments apart. The Basin & Range fault blocks lie in the semiarid cattle country of sparsely populated southeastern Oregon. Conversely, the high Cascade volcanoes tower over the humid, coniferous forest-cloaked Cascade Range and are within an hour's drive of much of Oregon's population. These distinct regions have in common public lands, wilderness designation, and rugged topography shaped by volcanism and extreme weather and climate.

The field camp involves exploration and research components. Students explore the biophysical, human, and resource geography east of the Cascade crest through field observation, discussion, presentations, and readings. Ultimately, students conduct intensive research at Steens Mountain in the Basin & Range and at Mount Hood in the northern Oregon Cascades. In the new Steens Mountain Wilderness, students: 1) inventory, map and assess the biophysical condition of backcountry campsites; and 2) create a geomorphic map. At the Mount Hood Wilderness, students survey and map the current, historic and Little Ice Age glacier termini. Through intensive research, students enhance critical thinking, field observation, topographic map analysis, airphoto interpretation, data collection, mapping, writing, and presentation skills.

When: 16 July-19 August 2001; Logistics: 1) travel in CWU vans; 2) van travel and backpack to Steens Mountain sites; 3) backpack to Mount Hood Wilderness sites; and 4) share in cooking & clean-up duties. Students may stay on-campus while in Ellensburg. Cost: \$1550 U.S. (est.) includes undergraduate tuition & fees, field food, camping, and transportation. Add ~\$380 for CWU graduate credit.

Info/Application: Contact Professor Lillquist via

US mail, e-mail, or the department web page for more information. To apply, submit: 1) brief application letter explaining why you wish to participate; 2) photocopy of college transcripts; and 3) faculty letter of recommendation. All application materials should be received by 1 May 2001 but later applications will be considered on a space available basis.

Dr. Karl Lillquist, Geography and Land Studies Department, Central Washington University, Ellensburg, WA 98926 USA, (509) 963-1188 * lillquis@cwu.edu * <http://www.cwu.edu/~geograph/>

4) NEW BOOK AVAILABLE

A new text, *An Annotated Guide to the Artwork of the United States Boundary Commission*, by Jerry E. Mueller (jmuel98132@aol.com), documents the artwork prepared during the years 1850-1853 under the direction of John Russell Bartlett, and describes some 250 images in pencil, sepia and wash, and watercolor. These drawings were prepared largely by Bartlett himself, although there are significant contributions from Henry Brown, Oscar Bessau, Harrison Eastman, Seth Eastman, and Henry Pratt. The images cover a wide variety of subjects on both sides of the US-Mexican border. Approximately 120 of the drawings have been reproduced in black and white on a series of 42 pages at the end of the book. Included in the introduction to the text is a discussion of the most important research findings related to the origin and attributes of the drawings. Also included are tables of all the woodcuts and lithographs found in Bartlett's *Personal Narrative of Exploration and Incidents in Texas, New Mexico, California, Sonora, and Chihuahua, connected with The United States and Mexican Boundary Commission*, during the years 1850, '51, '52, and '53, published in two volumes in 1854. Each figure in *Personal Narrative* is cross-listed in the tables to the corresponding drawing and artist of record presented in the *Annotated Guide*.

Why is this book of relevance to GSG members?

1. The artwork of 1850-1853 predates the era of reliable photography in the Southwest, and therefore represents (in most cases), the earliest graphic record of the borderland region. Included in the artwork are many landscape scenes: Texas Hill Country, Guadalupe Peak, Organ Mountains, Mimbres Mountains, Peloncillos, Chiricahuas, Sutter Buttes, etc., plus

rivers and valleys such as the Pecos, Salt, Gila, and Colorado.

2. The text discusses the attributes of each drawing, and where known, inferences with respect to environmental change. For example, Bartlett sketched and described the character (including geometry) of the Pecos River at Horsehead Crossing in 1850, to which I have added a brief description of the river's character today. There are several drawings from in and around the Yuma area that depict quite dramatically the confluence of the Colorado and Gila Rivers in 1852, a junction that today is much further north. Bartlett produced a sepia and wash of Napa Valley, also in 1852. I found his vantage point on Glass Mountain, but soon discovered that the scene today is obscured by both haze and a greater prevalence of woody vegetation, especially trees. The same situation applies to the New Almaden Quicksilver mining area that Bartlett sketched.

3. The text describes certain scenes recorded by Bartlett that are basically intact in the modern landscape. Others, such as several scenes of the Santa Rita Copper Mines, have been destroyed or obliterated by mining, and still others have been lost to urbanization. Bartlett's drawings of Casas Grandes in 1852 can be compared to the modern condition of the ruins to assess the rate of decay of the structure in the last 150 years.

4. The collection of drawings is a great source of illustrations for publications in the earth sciences. The New Mexico Bureau of Mines and the New Mexico Geological Society have both featured Bartlett scenes in their publications. The book incorporates Bartlett's brief geologic descriptions and interpretations. I find it interesting that he would call most rocks with visible quartz sandstone, even where he was dealing with granite, although he wasn't necessarily consistent on this matter. He has a great description of the geomorphic development of the terraces developed in limestone south of Fredericksburg Texas.

Copies of the Annotated Guide can be purchased, prepaid by check or money order, from the address below. It is spiral-bound and available in soft-cover, only. There are no complimentary, review, or desk copies. For non-residents of New Mexico, the cost per volume is \$34.00 plus \$3.50 postage and handling, for a total cost of \$37.50.

For residents of New Mexico, the cost per volume is \$34.00, plus \$3.50 postage and handling, plus \$2.00 New Mexico sales tax, for a total cost of \$39.50. Mail orders, with check or money order payable to GEM Enterprises, 4120 Tesota Drive, Las Cruces, NM 88011.

WHAT'S GOING ON AROUND US?

1) REFLECTIONS ON THE COMMITTEE ON GEOGRAPHY by Will Graf

The Committee on Geography (CoG) is the only disciplinary-defined committee in the National Research Council, the action arm of the National Academy of Sciences. The purpose of CoG is to provide input to the academies and to the federal government on all things geographic, including geomorphology. Because the committee reports to the Board on Earth Sciences and Resources, it directly interacts with typical earth science specialists ranging from geophysicists to economic geologists. There is considerable interest in geomorphology and geography in the academies and the federal government for two reasons. First, geomorphology is widely recognized as the interface science between the solid earth and the atmosphere, so that major issues such as global climate change have strong connections to the earth science community through geomorphology. Second, the earth science community seems to be struggling with the issue of making better connections to society and culture, and there is widespread opinion that geography may offer a conduit to the social sciences. Considerable work is still needed, both to educate the earth science community what geomorphology and geography have to offer, and to educate the geomorphologic and geographic communities about opportunities to meld science and policy. Hopefully, GSG members will rise to the occasion. Contact any member of the CoG and share your thoughts and ideas (<http://www4.nationalacademies.org/cger/besr.nsf/> and click on 'Standing Committees').

2) NSF's EARTH SYSTEM HISTORY PROGRAM by James Knox

INTRODUCTION - Earth System History (ESH) is a research initiative of the U.S. Global Change Research Program (USGCRP). It includes coordinated paleoscience programs supported by NSF Divisions of Atmospheric Sciences (ATM), Earth Sciences (EAR) and Ocean Sciences (OCE), as well as the Office of Polar Programs (OPP) and NOAA Office of Global Programs. As the paleoscience component of the US Global Change

Research Program (USGCRP), the emphasis of ESH is upon Earth's climate system. In this context, the term "Earth system" refers to the atmosphere and those components of the ocean, cryosphere, hydrosphere, and terrestrial systems that contribute or respond to climate conditions. ESH proposals need not focus purely upon climate per se, but it should be clear how the project will contribute to understanding climate related processes and system response.

The goal of ESH research is to understand the natural variability of the Earth system through records preserved in geo-biologic archives and to contribute to a comprehensive understanding of climate change with annual to millennial resolution, including the forcing mechanisms, interactions and feedbacks among its components.

AREAS OF SPECIAL EMPHASIS - The ESH Program invites proposals in the following areas of special emphasis.

- a. Paleoclimate Variability at Annual-Decadal Resolution: Proposals should address the collection and analysis of high-resolution time series to advance the study of patterns, processes, and causes of interannual to decade-scale climatic and environmental variability. Priorities within this area of emphasis are to define the full range of natural environmental and climatic variability, to understand how this variability is affected by changes in external forcing, and to focus on societally-relevant climate variability.
- b. Rapid Climate Change: Proposals should address the use of paleoclimate records to document the frequency, temporal resolution, and spatial extent of past rapid climate changes, particularly those that have occurred during interglacial warm periods such as the Holocene. The use of paleoclimate data in combination with modern climate dynamics, meteorology, and climate modeling is highly encouraged
- c. Extreme Warm Conditions: Proposals should address such issues as (a) improved characterization of intervals with

climates warmer than those of the present, (b) conceptual models to explain the origin and/or termination of warm states, and (c) the feedbacks that maintain global climate during a warm phase.

- d. Spatial Patterns of Climate Change. Proposals should address large-scale spatial aspects of climate change, particularly tropical-extratropical linkages and interhemispheric comparisons revealed in continuous marine and terrestrial records. Understanding spatial patterns of past climate changes, the degree of synchronicity or phasing between different areas, and the relation between low latitude and high latitude regions are critical aspects of paleoclimate studies and are necessary to test and improve climate models.
- e. Arctic Paleoclimate Studies. The sensitivity of the Arctic to climate change and the fundamental importance of the cryosphere as an influence on the climate system mandate special attention to Arctic paleoclimate research.
- f. Modeling of Past Change: Proposals should focus on the use of Earth system models to investigate the patterns, processes, and causes of past climatic and environmental change.

For all areas of emphasis, priority will be given to proposals that seek to use the record of past conditions to understand the dynamics of climate/Earth system processes or to integrate local/regional responses into the large-scale climate system.

ADDITIONAL INFORMATION - ESH is described more fully in National Science Program Announcement NSF 00-11 available at: <http://www.nsf.gov/cgi-bin/getpub?nsf0011>. ESH Program Managers are: David Verardo (dverardo@nsf.gov) and Richard Poore (rpoore@nsf.gov). The Deadline for proposal receipt is normally February 14th.

3) LINKS TO OTHER ORGANIZATIONS

[note from webmaster: these and many more links are on the GSG website at <http://www.cla.sc.edu/geog/gsgdocs/Links/links2>

[.htm](#) or go to the GSG home page:
<http://www.cla.sc.edu/geog/gsgdocs> and click
 "Connections" and "Links". A.James]
 American Geophysical Union -
<http://earth.agu.org/kosmos/homepage.html>
 Association of American Geographers -
<http://www.aag.org/>
 British Geomorphological Research Group -
<http://boris.qub.ac.uk/bgrg>
 Canadian Geomorphological Research
 Group -
<http://office.geog.uvic.ca/dept/cgrg/cgrg.htm>
 European Union of Geosciences -
<http://eost.u-strasbg.fr/EUG>
 Geological Society of America -
<http://www.geolsociety.org/>
 Geomorphology Speciality Group Homepage -
<http://www.cla.sc.edu/geog/gsgdocs>
 International Association of
 Geomorphologists -
<http://www.homepage.montana.edu/~ueswl/geomorphlist/index.htm>
 International Association of
 Sedimentologists - <http://www.blackwell-science.com/uk/society/ias>
 International Union for Quaternary
 Research - <http://inqua.nlh.no/>
 NSF – Geography and Regional Science -
<http://www.nsf.gov/sbe/bcs/geograph/start.htm>
 Quaternary Geology and Geomorphology
 Division – GSA - <http://www.ocean.odu.edu/>

**AAG ANNUAL MEETING - PAPER SESSIONS
 OF INTEREST TO GSG MEMBERS**

Wednesday, February 28 8:00 am - 9:40 am

3.1.27 Sediment Transport in Fluvial Systems I
 (Sponsored by Friends of Hydrology,
 Geomorphology and Water Resources Specialty
 Groups)
 Organizer: Michael C. Slattery, Texas Christian
 University
 Chair: Ramon J. Batalla, Universitat de Lleida
 8:00 Peng Gao, SUNY-Buffalo, Bedload
 Transport Resistance in Open-channel Flows on
 Mobile Beds
 8:20 Athol D. Abrahams, SUNY-Buffalo, A Bed-
 load Transport Equation for Sheet Flow

8:40 Ramon J. Batalla, Universitat de Lleida,
 Evacuating Particle Entrainment Methods in a
 Poorly Sorted Sandy Gravel-bed River
 9:00 Stephen Darby, University of Southampton,
 A Model of Flow, Sediment Transport and Bed
 Topography in Meander Bends with Erodible
 Banks
 9:20 Mark A. Fonstad, Arizona State University,
 The Instability of Classic Flood Assumptions: The
 Case of the 1999 Canadian River Headwaters
 Flood

Wednesday, February 28 10:00 am - 11:40 am

3.2.27 Sediment Transport in Fluvial Systems II
 (Sponsored by Geomorphology and Water
 Resources Specialty Groups, and Friends of
 Hydrology)
 Organizer: Michael C. Slattery, Texas Christian
 University
 Chair: Robert T. Pavlowsky, Southwest Missouri
 State University
 10:00 Dan Royall, University of Alabama,
 Hillslope Magnetism, Erosion, and Sediment
 Delivery in a Small Agricultural Basin
 10:20 Robert T. Pavlowsky, Southwest Missouri
 State University, Downstream Changes in Metal-
 Grainsize Relationships in Fluvial Sediments from
 Mined Watersheds
 10:40 Bernard O. Bauer, University of Southern
 California, Levee Erosion and Boat Wakes in the
 Sacramento River Delta, California
 11:00 Scott A. Lecce, East Carolina University,
 Sedimentation on the Tar River Floodplain During
 the Flood of 1999
 11:20 Michael C. Slattery, Texas Christian
 University, Palaeocompetence Flow
 Reconstruction on Alluvial Fans, Big Bend
 National Park, Texas

Wednesday, February 28 11:40 pm - 1:00 pm

3.L.20 Geomorphology Specialty Group, Blackwell
 Publishers' Lecture (Sponsored by
 Geomorphology Specialty Group and Blackwell
 Publishers)
 Organizer: Basil Gomez, Indiana State University
 11:40 Andrew S. Goudie, University of Oxford

Wednesday, February 28 1:00 pm - 2:40 pm

3.3.15 Geomorphology I
 Chair: Mike Applegarth, Arizona State University
 1:00 Michael Summerfield, University of

Edinburgh, Constraining Uplift Histories Using Geomorphic Data: Problems and Possibilities

1:20 Mandy Munro-Stasiuk, Kent State University, Subglacial Landforms in Southern Alberta, Canada: An Alternative Explanation

1:40 Paula Messina, San Jose State University, Using DGPS to Predict Mono Lake's Future

2:00 David S. Leigh, University of Georgia, Geomorphology and Land Cover as Indicators of Fishes in Piedmont Streams

2:20 Mike Applegarth, Arizona State University, Pediment Controls in the Sonoran Desert

3.3.27 Rock and Mineral Weathering I (Sponsored by Geomorphology Specialty Group)

Organizers: Steven J. Gordon, U.S. Air Force Academy, Charles E. Allen, University of Illinois
Chair: Steven J. Gordon, U.S. Air Force Academy

1:00 Patricia A. Warke, Queen's University of Belfast, To the Lighthouses: Factors Contributing to Post-automation Decay of Interior Granite Stonework in Three Offshore Lighthouses

1:20 Bernard J. Smith, Queen's University of Belfast, Those Who Pray Together Decay Together: The Decay of Sandstone Churches in Belfast

1:40 Alice V. Turkington, Queen's University of Belfast, Linking Short-term and Long-term Stone Decay in Belfast: Problems of Scale Issues

2:00 Joanne M. Curran, Queen's University of Belfast, The Use of Probe permeametry to Assess Surface Modification of Building Stone

2:20 Thomas R. Paradise, University of Arkansas, Importance of Sandstone Weathering Studies in Cultural Resource Management in Petra, Jordan

3.3.42 Poster Session: Nature and How She Enlightens Us

Wednesday, February 28 3:00 pm - 4:40 pm

3.4.27 Rock and Mineral Weathering II (Sponsored by Geomorphology Specialty Group)

Organizers: Steven J. Gordon, U.S. Air Force Academy, Charles E. Allen, University of Illinois
Chair: Charles E. Allen, University of Illinois

3:00 Gregory A. Pope, Monclair State University, "Millenium Cookies" to Measure Acid-Deposition and Weathering: Implementation, Outreach, and Education

3:20 Brandon J. Vogt, Arizona State University, A Non-Destructive Field Technique for Measuring Surface Roughness at Sub-millimeter Resolution

3:40 Ronald Dorn, Arizona State University, Variability in Weathering Associated with a Forest

Fire, Tonto National Forest, Arizona

4:00 Niccole Villa Cerveny, Arizona State University, Relationship Between Internal and External Weathering Characteristics of Detrital Quartz

4:20 Steven J. Gordon, U.S. Air Force Academy, Enhancement of Basaltic Glass Weathering Rate by Lichens, El Malpais National Monument, New Mexico, USA

Wednesday, February 28 5:00 pm - 6:40 pm

3.5.27 Rock and Mineral Weathering III (Sponsored by Geomorphology, Mountain Geography, and Cryosphere Specialty Groups)

Organizer: Steven J. Gordon, U.S. Air Force Academy, Charles E. Allen, University of Illinois
Chair: Alice V. Turkington, Queen's University-

Belfast

5:00 Sean Campbell, University of Arkansas, Modeling the Spatial Variability of Chemical Weathering Rates in Karkevagge, Swedish Labland

5:20 Charles E. Allen, University of Illinois, Weathering Regimes and Pedogenic Variability on Large Boulders in Karkevagge, Northern Sweden

5:40 Colin E. Thorn, Ground Temperature and Weathering on a Glacier Foreland, Storbeen, Jotunheimen, Norway

6:00 John C. Dixon, University of Arkansas, Rock Weathering Rates at the Soil Surface in an Arctic Alpine Environment

Thursday, March 1 8:00 am - 9:40 am

4.1.27 Dam Removal I (Sponsored by: Geomorphology, and Water Resources Specialty Groups)

Organizer: Patricia J. Beyer, Bloomsburg University of Pennsylvania

Chair: Patricia J. Beyer, Bloomsburg University of Pennsylvania

8:00 Molly Pohl, San Diego State University, Dam Removal and the Restoration of American Rivers: A National Census

8:20 William L. Graf, Arizona State University, Process Reversal for Rivers: Fluvial Restoration by Removal of Dams

8:40 Francis J. Magilligan, Dartmouth College, Hydrologic and Ecological Impacts of Flow Regulation by Dams in the Upper Connecticut River Corridor

9:00 Gordon E. Grant, USDA Forest Service, Some Perspectives on the Science and Policy Issues Underlying Dam Removal: How Much Do We Really Know?

9:20 Martin W. Doyle, Purdue University, A Conceptual Framework for Recovery of Fluvial Systems Following Dam Removal

Thursday, March 1 10:00 am - 11:40 am

4.2.27 Dam Removal II (Sponsored by: Geomorphology, and Water Resources Specialty Groups)

Organizer: Patricia J. Beyer, Bloomsburg University of Pennsylvania

Chair: Patricia J. Beyer, Bloomsburg University of Pennsylvania

10:00 Jo Beth Mullens, Keene State College, Developing a Dam Removal Evaluation Process: A Look At McGoldrick and Homestead Dams in New Hampshire

10:20 Suzanne Dallman, University of California Los Angeles, Environmental Policy and Development Conflicts in Malibu Creek Watershed

10:40 Eve Vogel, University of Oregon, Driving Ecosystem Management in the Lower Snake River: Ecological Bottom-Lines, Geography & Diverse Access To Policy

11:00 Rolf Sternberg, Montclair State University, Damming the River: Changing Nature

4.2.42 Poster Session: A Changing Earth and Its Effects on our Lives

Thursday, March 1 1:00 pm - 2:40 pm

4.3.26 Human Impacts in Geomorphology I (Sponsored by: Geomorphology Specialty Group) Organizers: Richard A. Marston, Oklahoma State University, Jonathan M. Harbor, Purdue University

Chairs: Richard A. Marston, Oklahoma State University, Jonathan M. Harbor, Purdue University

1:00 Michael Singer, University of California Berkeley, Analyzing Effects of Channel Boundary Restoration on Channel Morphology in the Lower Sacramento River, California

1:20 James Rasmussen, Montana State University, Comparing the Distribution of Large Woody Debris in Burned and Unburned Streams, Yellowstone National Park

1:40 Viva G. Nordberg, Effects of Population

Growth on Runoff, San Gabriel Valley, California
2:00 Richard A. Marston, Oklahoma State University, Geomorphic Adjustment of Reclaimed Channels and Hillslopes at a Surface Coal Mine in Northwest Colorado

2:20 Anne Chin, Texas A&M University, Urbanization and Adjustment of Ephemeral Stream Channels

4.3.27 Geomorphology II

Chair: Harry Jol, University of Wisconsin-Eau Claire

1:00 Forrest D. Wilkerson, Southwest Texas State University, Volumetric Measurements of Recent Debris Flows in Glacier National Park, Montana

1:15 Garry Leonard Running IV, University of Wisconsin-Eau Claire, Post-Glacial Geomorphology, Stratigraphy and

Paleoenvironmental History at Flint Stone Hill, Oak Lake Sandhills: Southwestern Manitoba

1:30 George A. Brook, University of Georgia, Climate and Human Activities in Southern Africa Since A.D. 500: Evidence from Botswana

Stalagmites

1:45 Feride Serefiddin, McMaster University, Paleoclimatic Interpretation of Three Speleothem Isotope Records from Reed's Cave in the Black Hills of South Dakota

2:00 Philip E. van Beynen, From the Sangamon to the Holocene: A Comparison of Five Speleothem Isotopic Records

2:15 Harry M. Jol, University of Wisconsin-Eau Claire, Ground Penetrating Radar Studies within the Cave of Letters: Geomorphology and Archaeology

Thursday, March 1 3:00 pm - 4:40 pm

4.4.26 Human Impacts on Geomorphology II (Sponsored by: Geomorphology Specialty Group) Organizers: Richard A. Marston, Oklahoma State University, Jonathan M. Harbor, Purdue University

Chairs: Richard A. Marston, Oklahoma State University, Jonathan M. Harbor, Purdue University

3:00 Ben Marsh, Bucknell University, Patterns of Landscape Degradation in Anatolia Since Roman Times

3:20 Carol Harden, University of Tennessee, The Global Extent of Geomorphic Change Resulting From Human Activity

3:40 Karl Nordstrom, Rutgers University, The Role of Geomorphology and Geomorphologists in Human-modified Landscapes: Insights from Investigations of Coastal Foredunes.

4:00 Bruce Rhoads, University of Illinois
Urbana-Champaign, Integrated Science and
Technology to Support Naturalization of Urban
Streams

4:20 Melinda Dawn Newell, University of Illinois,
The Influence of Large Woody Debris on Three-
Dimensional Flow Structure in a Low-Energy
Meandering Stream

4.4.39 Investigations of Floods, Landslides and Run-Off

Chair: Viva G. Nordberg, California State
University Los Angeles

3:00 Viva G. Nordberg, California State
University Los Angeles, Effects of Population
Growth on Runoff, San Gabriel Valley, California

3:20 Keith Douglass Warner, University of
California Santa Cruz, Dividing Waters: How
Physical Features Structure Political Conflict Over
Flood Control in California's Pajaro Valley

3:40 Heejun Chang, The Pennsylvania State
University, A Basin's Response to Environmental
Change: Impacts of Climate and Land Use
Change on Water Quality

4:00 Basil Gomez, Indiana State University,
Topographic Controls on Meltwater Dispersal
During Outburst Floods: Skeiðarársandur, Iceland

4:20 Fisch Hiu Yu Yau, Hong Kong University,
Natural Terrain Landslides and Drainage Network
Development in Hong Kong: A Geomorphological
Investigation

Thursday, March 1 5:00 pm - 6:40 pm

4.5.06 Coastal Geomorphology (Sponsored by:
Coastal and Marine, and Geomorphology
Specialty Groups)

Organizer: Paul A. Gares, East Carolina University
Chair: Jennifer Rahn, Baylor University

5:00 Diane Horn, Birkbeck College, Field
Measurements of Swash Hydrodynamics on Sand
and Gravel Beaches

5:20 Paul A. Gares, East Carolina University,
Analysis of Tropical Storm Overwash Along the
Outer Banks of North Carolina

5:40 James Allen, U.S.G.S., Sediment
Bypassing at Moriches Inlet and Downdrift Effects
Upon Fire Island National Seashore, NY

6:00 Dustin Mulvaney, New Jersey Institute of
Technology, Assessment of Human Activities on
Shoreline Change On Barrier Islands in New
Jersey

6:20 Jennifer Rahn, Baylor University, Barrier
Island Beach Anthropogeomorphology on
Florida's Panhandle Barrier Islands

Thursday, March 1 6:40 pm - 8:00 pm

4.6.14 Geomorphology Specialty Group Business
Meeting

Friday, March 2 8:00 am - 9:40 am

5.1.28 Aeolian Processes and Landforms I
(Sponsored by Geomorphology and Coastal and
Marine Specialty Groups)

Organizers: Christopher A. Houser, University of
Toronto, William G. Nickling, University of Guelph
Chairs: Christopher A. Houser, University of

Toronto, William G. Nickling, University of Guelph
8:00 Cheryl McKenna Neuman, Trent University,
Aeolian Saltation Threshold Effects of
Temperature and Humidity

8:15 Steven L. Namikas, Louisiana State
University, Bed Texture as a Control on Aeolian
Saltation

8:30 Damian Crawley, University of Guelph,
Drag Partition for Regularly-arrayed Rough
Surfaces

8:45 Nicholas Lancaster, Desert Research
Institute, Grainfall Patterns and Dune Morphology

9:00 Ian J. Walker, University of Victoria, Lee-
side Flow Deflection Over Transverse Aeolian
Dunes

9:15 Hiroshi Momiji, University College London,
Mathematical Modeling of Migrating Barchan
Dunes

Friday, March 2 10:00 am - 11:40 am

5.2.28 Aeolian Processes and Landforms II
(Sponsored by Geomorphology and Coastal and
Marine Specialty Groups)

Organizers: Christopher A. Houser, University of
Toronto, William G. Nickling, University of Guelph
Chairs: Christopher A. Houser, University of

Toronto, William G. Nickling, University of Guelph
10:00 William G. Nickling, University of Guelph,
Surface Controls on Dust Emissions, Owens (dry)
Lake, California

10:20 John A. Gillies, Desert Research Institute,
Sediment Flux Characteristics Observed at Owens
(dry) Lake, California

10:40 John G. Stout, United States Department of
Agriculture, Wind Erosion and Dust Trends in
the Southern High Plains of Texas

11:00 Aloys Bory, Columbia University, The

Provenance of Aeolian Dust in Polar Ice: Arid Source Areas and Transport Pathways
11:20 Brenda J. Buck, University of Nevada Las Vegas, Eolian Processes and Their Effects on Soil Genesis in New Mexico, West Texas, and Jordan

Friday, March 2 1:00 pm - 2:40 pm

5.3.22 Remote Sensing of River Environments I (Sponsored by Geomorphology Specialty Group)
Organizer: W. Andrew Marcus, Montana State University

Chair: W. Andrew Marcus, Montana State University

1:00 Stuart N. Lane, University of Leeds, Monitoring Active Be Level Change in Laboratory Flumes Using Close Range Digital

Photogrammetry

1:20 Jim H. Chandler, Loughborough University, Monitoring River Channel Change Using Terrestrial Oblique Digital Imagery and Automated Digital Photogrammetry

1:40 Patrice E. Carbonneau, University of Quebec, Cost Effective Non-metric Close Range Digital Photogrammetry and Its Application to a Study of Coarse Gravel Riverbeds

2:00 Richard Westaway, University of Cambridge, The Evolving Anatomy of a Gravel - Bed River

2:20 Christian E. Torgersen, Oregon State University, Airborne Remote Sensing of Spatial Patterns of stream Temperature and Riparian Condition in Oregon Rivers

5.3.36 Illustrated Paper Session: Human Impacts in Geomorphology (Sponsored by Geomorphology Specialty Group)
Organizers: Richard A. Marston, Oklahoma State University, Jon Harbor, Purdue University
Chairs: Jon Harbor, Purdue University, Richard A. Marston, Oklahoma State University

1:00 Kelly Frothingham, Buffalo State College, Linkages Between Geomorphological Variability and Ecological Conditions in Objectively Identified Pools and Riffles in the Embarras River, IL

1:05 April Gillilan, Oklahoma State University, Channel Changes of the Canadian River Adjacent to the Norman, Oklahoma, Landfill, 1936-1999

1:10 Randa N. Hope, Oklahoma State University, Heavy Metals in Fluvial Sediments of the Picher Mining Field, Northeast Oklahoma

1:15 Matthew L. Huhnke, Oklahoma State University, Urban Runoff and Landscape Erosion Due to Housing Developments

1:20 Maria Panfil, U.S. Geological Survey, Associations Between Land Use and Stream Habitat Conditions in the Ozarks of Missouri and

Arkansas

1:25 Kathleen M. Stuck, Oklahoma State University, Vulnerability of Surface and Groundwater to Nitrate Pollution from Confined Hog Operations, Oklahoma Panhandle

1:30 Brendan Belby, University of Illinois, Experimental Tests of a Pool-Riffle Design for Naturalizing Urban Streams

1:35 Stacey Porter, University of Illinois, Quantifying Hydraulic Habitat in Human-impacted Agricultural Streams, East Central Illinois

1:40 Scott C. Rayburg, University of Illinois, The Three Dimensional Bed and Flow Structure of Pool-Riffle Sequences in the Embarras River

Friday, March 2 3:00 pm - 4:40 pm

5.4.22 Remote Sensing of River Environments II (Sponsored by Geomorphology Specialty Group)
Organizer: W. Andrew Marcus, Montana State University

Chair: W. Andrew Marcus, Montana State University

3:00 W. Andrew Marcus, Montana State University, Evaluation of High Spatial Resolution Hyperspectral Imagery for Stream Mapping

3:20 Geoffrey H. Jacquez, BioMedware Inc., High Resolution Hyperspectral Imagery: The Identification of Pattern and Process in a Fluvial System

3:40 Carl J. Legleiter, Montana State University, Hyperspectral Stream Classification

4:00 Richard Aspinall, Montana State University, GIS Modeling of Rivers and Riparian Areas with Remotely Sensed Imagery

4:20 Barbara Rumsby, University of Hull, Quantifying Reach-Scale Morphological Change in a Braided River Using Global Positioning System (GPS) Survey and Airborne Remote Sensing Imagery

5.4.27 Mountains II: Interactions of Earth, Atmosphere, and Biota (Sponsored by Mountain Geography, Biogeography, Climate, and Geomorphology Specialty Groups)

Organizer: Donald A. Friend, Minnesota State University-Mankato

Chair: David Butler, Southwest Texas State University

3:00 Mark Welford, Georgia State University, Landslides, Earthquakes, and Tropical Montane Trees - a Possible Connection

3:15 David R. Butler, Southwest Texas State University, Exposed Solifluction Risers at Alpine Treeline and Possible Effects on Tree Advance

3:30 George P. Malanson, Southwest Texas State University, Variability of Soil Depth in

Alpine Tundra and Possible Effects on Tree Advance

3:45 Carmen de Jong, Free University of Berlin, Dynamics of Evaporation and Transpiration in the High Alpine Tundra - an Example from the Dirschma Valley, Switzerland

4:00 Ian McKendry, University of British Columbia, Interception of Trans-Pacific Air Pollution by the Western Cordillera: A Modeled Example

4:15 Alton Byers, The Mountain Institute, Historical and Contemporary Landscape Change in the Sagarmatha (Mt. Everest) National Park, Khumbu, Nepal

Friday, March 2 5:00 pm - 6:40 pm

5.5.14 Geomorphology III

Chair: Jeremy Dillon, University of Kansas

5:00 Douglas Faulkner, University of Wisconsin-Eau Claire, Late Quaternary Vertical Stability Along the Platte River in Southwestern Nebraska

5:20 Mel Neave, Frostburg State University, A Preliminary Assessment of Soil Seal Development on a Semiarid Bajada

5:40 Niccole Villa Cervený, Arizona State University, Relationship Between Internal and External Weathering Characteristics of Detrital Quartz

6:00 Tongxin Zhu, University of Minnesota-Duluth, Effects of Soil Moisture and Crusts on Runoff and Erosion on a Semi-arid Catchment

6:20 Jeremy S. Dillon, University of Kansas, Soils and Soil-forming Processes in a Cool, Dry Environment: Upper Green River Basin, Wyoming

5.5.22 Remote Sensing of River Environments III (Sponsored by Geomorphology Specialty Group)

Organizer: W. Andrew Marcus, Montana State University

Chair: W. Andrew Marcus, Montana State University

5:00 Basil Gomez, Indiana State University, Topographic Controls on Meltwater Dispersal During Outburst Floods: Skeioararsandur, Iceland

5:20 David C. Finnegan, Indiana State University, Using Laser Altimetry to Quantify Geomorphic Change Effected by Large-scale Flooding

5:40 Laurence C. Smith, University of California-Los Angeles, Net Topographic Impact of the 1996 Jokulhlaup, Iceland, from Synthetic Aperture Radar Interferometry

6:00 Morris Uebelacker, Central Washington University, Cultural Ecology of the Yakima River Floodplain

Saturday, March 3 8:00 am - 9:40 am

6.1.33 Soils in Cultural Context I: Western Asia (Sponsored by: Geomorphology and Cultural Ecology Specialty Groups)

Organizers: Tim Beach, Georgetown University, Nicholas Dunning, University of Cincinnati, Sheryl Luzzadder-Beach, George Mason University

Chair: Nicholas Dunning, University of Cincinnati
8:00 Timothy P. Beach, Georgetown University, Geoarchaeology at Kinet Hoyuk and Erosion in the Eastern Mediterranean

8:20 Sheryl Luzzadder-Beach, George Mason University, Elemental Prospecting and Geoarchaeology in Turkey and Mexico

8:40 Paul H. Lehman, University of Texas at Austin, Holocene Soil Development in the Heracleon Peninsula, Crimea, Ukraine: Climate Change or Human Impact?

9:00 Carlos E. Cordova, Oklahoma State University, Pollen Indicators of Natural and Anthropogenic Alteration of Soils in the Heracleon Peninsula, Crimea

Discussant: Don Sullivan, University of Denver

6.1.36 Illustrated Paper Session: Rainfall, Runoff and Sediment in Watersheds (Sponsored by: Climate, Geomorphology, and Water Resources Specialty Groups)

Organizers: Allan James, University of South Carolina, Greg Carbone, University of South Carolina

Chair: Allan James, University of South Carolina, Greg Carbone, University of South Carolina

8:00 Adam S. Grodek, University of Wisconsin Madison, Pre- and Post-Wetland Drainage Hydrology of a Small Agricultural Catchment, Southeastern Wisconsin

8:05 Ariel Terranova-Webb, Ohio Wesleyan University, The Effects of Spatial Land-Use Change on the Suspended Sediment Load of the Ottawa River and its Tributaries: A Study in Non-Point Source Pollution

8:10 Matthew Felton, Towson University, Mapping the Impervious Surfaces in the Chesapeake Bay Watershed

8:15 Paul F. Amato, San Francisco State University, Comparative Study of Discharge and Turbidity in Two Subwatersheds with Contrasting

Impervious Surface Area

- 8:20 Sean K. Carey, University of Saskatchewan, Hillslope Runoff Dynamics in a Subarctic Watershed, Yukon, Canada
- 8:25 Greg Carbone, University of South Carolina, Spatial and Temporal Character of Precipitation and Hydrologic Response in a Small Watershed
- 8:30 Allan James, University of South Carolina, Rainfall-Runoff Relations in a Paired Watershed Study: Exploding the Urban-Rural Dichotomy Myth
- 8:35 Patricia F. McDowell, University of Oregon, Stream Monitoring Protocols: What is Measured and Why?
- 8:40 Mohamed Elnour Yassen Ahmed, Universiti Kebangsaan Malaysia, Rainfall Variation and Trends in a Tropical Urban City: Case of Kuala Lumpur and Petaling Jaya, Malaysia

Saturday, March 3 10:00 am - 11:40 am

- 6.2.33 Soils in Cultural Context II: Northern Europe (Sponsored by: Geomorphology and Cultural Ecology Specialty Groups)
Organizers: Tim Beach, Georgetown University, Nicholas Dunning, University of Cincinnati, Sheryl Luzzadder-Beach, George Mason University
Chair: Dorothy Friedel, Sonoma State University, William I. Woods, Southern Illinois University Edwardsville
- 10:00 Ian A. Simpson, University of Stirling, Evidence of Early Cultivated Soils in Iceland and Their Role in Social Organization
- 10:20 Erika B.A. Guttman, University of Stirling, Long-Term Arable Land Management and Anthropogenic Soil Development in the Northern Isles of Scotland
- 10:40 W. Paul Adderley, University of Stirling, Historical Manuring Practices in Shetland, Scotland: A Cultural Ecology of Soil and Land Use
- 11:00 Amanda M. Thompson, University of Stirling, Modeling Soil and Pasture Degradation in Pre-Modern Iceland
Discussant: William I. Woods, Southern Illinois University Edwardsville

Saturday, March 3 2:00 pm - 3:40 pm

- 6.3.05 Techniques to Quantify Water Resources & Geomorphic Change
Chair: William Scott White, Fort Lewis College
- 2:00 Aondover Augustine Tarhule, University of Oklahoma, Application of Electrical Resistivity Method to map Shallow Alluvial Aquifers
- 2:20 William Scott White, Fort Lewis College, The Use of Geographic Visualization Techniques

- in the Analysis of a Large Scale Flooding Event
- 2:40 David C. Finnegan, Indiana State University, Using Laser Altimetry to Quantify Geomorphic Change Effected by Large-Scale Flooding
- 3:00 Shivaji Prasad, The University of Central Arkansas, Building an Object-Oriented Watershed Integrated Hydrological Model with GIS

- 6.3.33 Soils in Cultural Context III: Mesoamerica and Africa (Sponsored by: Geomorphology and Cultural Ecology Specialty Groups)
Organizers: Tim Beach, Georgetown University, Nicholas Dunning, University of Cincinnati
Chair: Sheryl Luzzadder-Beach, George Mason University
- 2:00 Nicholas Dunning, University of Cincinnati, Tim Beach, Georgetown University, Fruit of the Luum: Lowland Maya Soil Knowledge and Agricultural Practices
- 2:20 Richard E. Terry, Brigham Young University, An Ethnoarchaeological Study of Chemical Residues in the Floors and Soils of House Lots Near Aguateca, Guatemala
- 2:40 Steven J. Rainey, Augustana College, Traditional Farming Systems, Folk Soil Management, and Land Degradation in the Guatemalan Highlands
- 3:00 Dorothy E. Freidel, Sonoma State University, Changes in Coastal Morphology in Relation to Early Formative Populations on the Pacific Coast, Guatemala
- 3:20 Abe Goldman, University of Florida, Soil Fertility Decline and the Future of African Agriculture

Saturday, March 3 4:00 pm - 5:40 pm

- 6.4.02 Geomorphology IV
Chair: Jeffrey N. Peters, University of Oregon
- 4:00 Martin C. Roberge, Towson University, Bridge Design Along the Lower Salt River, Arizona
- 4:20 Joseph E. Garcia, Longwood College, Relationships Between Physical Factors and Benthic Invertebrate Community Characteristics in the Appomattox River, Virginia
- 4:40 Jeffrey N. Peters, University of Oregon, Spatial Variability and Controls of Bank Retreat in a Semi-Arid Drainage Basin in Southeastern Utah
- 5:00 Kathryn M. Riesenber, University of Missouri, Physical Implications of Motorized Vehicle Impact on the Mill Creek Canyon Watershed, Moab Utah
- 5:20 George L. Heritage, University of Salford, Reach Scale Sediment and Barform Dynamics

Over Two Unstable Multi-Thread Reaches of the Wandering Gravel-Bed River Nent, Cumbria, UK

6.4.33 Soils in Cultural Context IV: American West (Sponsored by Geomorphology and Cultural Ecology Specialty Groups)

Organizers: Tim Beach, Georgetown University, Nicholas Dunning, University of Cincinnati

Chair: Tim Beach, Georgetown University

4:00 Vance Holliday, University of Wisconsin-Madison, Pedogenic Clay Bands for Geoarchaeological Correlation and Dating, Southern High Plains

4:20 Kirk C. Anderson, Northern Arizona University, Soil Formation and Eolian Activity During the Holocene: Implications for Landscape Stability on the Kaibito Plateau, Navajo Nation, Arizona

4:40 Michael Stephen Droz, University of Oregon, Pluvial and Lacustrine Surficial Processes During the Mid-Holocene in the Northern Fort Rock Basin, Lake County Oregon

5:00 William G. Gartner, University of Wisconsin-Madison, Post Settlement Alluvium and the Archaeological Landscapes of Muscoda, Wisconsin

5:20 Deborah L. Elliott-Fisk, University of California-Davis, Viticultural Soils of California: A Changing Cultural Context for Site and Quality

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