

Influence of Debris Flows on Habitats of the Colorado River Ecosystem in Grand Canyon, Arizona

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In the Colorado River ecosystem of Grand Canyon, relations between aquatic and terrestrial habitats, and mainstem channel morphology are controlled by regional faulting, bedrock lithology, and interactions between tributary debris flows and mainstem fluvial processes. Between Lakes Powell and Mead, 94% of the mainstem is modified by hillslope processes that maintain relatively stable fan-eddy complexes (FECs). Mainstem channel width is mostly controlled by erosional characteristics of bedrock at river level, while the spacing of FECs is fault controlled. Other FEC attributes, such as mainstem constriction, fan-shape, size, height, and particle-size/lithologic composition, are controlled by key lithologies in source areas above river level, the frequency and magnitude of debris flows and reworking river floods, and mainstem geometry. Of 600 tributaries that produce Grand Canyon debris flows, 418 (70%) support FECs. However, only 177 (29%) create turbulent, whitewater rapids. The extent that fine sediment is stored as sandbars in FECs controls shoreline-habitat distribution. Coarsened lag sediments composed of mostly limestone boulders on alluvial fans, maintain stable aquatic habitats (recirculating eddies) consistently used by adult native fishes, and provide substrate for benthic macro invertebrates. Channel width and fan spacing-height relations control the size and distribution of eddy habitats, the distribution of vegetated and highly irregular shoreline-habitat, and mainstem-flow characteristics at varying stages during floods.

Measurements of key FEC attributes below Glen Canyon Dam indicate eleven distinct geomorphic, physical-habitat reaches. Reaches 2 through 11 are dominated by debris-flow and river-reworking interactions (hillslope/fluvial interface). Factors controlling these interactions, combined with the relative positions and influences of the Paria and Little Colorado Rivers, physically limit suitable habitats for Grand Canyon's native, endangered fishes.

The endangered humpback chub (*Gila cypha*) is a big river, warm water, cyprinid indigenous to the steep canyon regions of the Colorado River Basin. Of nine mainstem aggregations remaining in Grand Canyon, four are associated with FEC-dominated reaches (geomorphic reaches 4 and 7), four with seasonally-warmed tributaries, and two with warm springs; the largest, is associated with a warmed tributary set in the middle of a FEC-dominated reach. Radio telemetry studies reveal a high fidelity by adult chubs for mainstem reaches less than 2 km long, and selection for low-velocity vortices near separation and reattachment points within large eddies. These FEC habitats allow for an energy-efficient resting and feeding strategy that may have become increasingly important since flow and temperature regimes were modified by Glen Canyon Dam. Also, backwaters related to FEC-controlled sandbar patterns provide sheltered, productive, warmed, nursery habitats used by some warm-water fishes. Hence, maintenance of the largest of six populations of humpback chub in existence is critically linked to interactions between fluvial processes of this large river and debris flows from its lowest-order, bedrock tributaries.

Fall Meeting call

reversing state. Presentations are solicited which present data and models on the nature of the field during these supercycles, including secular variation, paleointensity, and the presence or absence of reversal events.

Conveners: John Tarduno, Department of Earth and Environmental Sciences, University of Rochester, Rochester, NY 14627, Phone: 716-275-2410, E-mail: john@skyline.earth.rochester.edu

GP03 Tectonics of Asia: Kinematic History From Precambrian to Present (Joint with G, T)

This is a broadly conceived session integrating research from geodesy, geology, paleomagnetism, seismology, and tectonics to obtain a clearer understanding of the paleogeography, amalgamation, and continuing deformation of the lithospheric blocks and crustal terranes that comprise Asia.

Conveners: Xixi Zhao, Institute of Tectonics, University of California, Santa Cruz, CA 95064, Fax: 408-459-3074, E-mail: xzhao@earthsci.ucsc.edu; Clark Burchfiel, Massachusetts Institute of Technology, Cambridge, MA 02139; and Rob Coe, Institute of Tectonics, University of California, Santa Cruz, CA 95064, Phone: 408-459-2393, Fax: 408-459-3074, E-mail: rcoe@earthsci.ucsc.edu

GP04 True Polar Wander, Paleomagnetism, and Mantle Convection (Joint with SED1, T)

True polar wander is the slow, secular shift of the entire solid Earth, relative to its rotation axis, in response to Earth's changing distribution of mass. Recent dynamical models for true polar wander have turned to the processes that drive polar wander over millions of years or longer, a timescale that depends critically on observations from paleomagnetism and plate reconstructions relative to the hotspots. This session is aimed at bringing together workers from several disciplines including paleomagnetism, plate reconstructions, mantle dynamics, and geodesy. We especially encourage contributions in two areas: (1) the dynamical processes responsible for true polar wander over millions of years or longer and (2) the paleomagnetic and plate reconstruction record of true polar wander.

Conveners: Richard G. Gordon, Department of Geology and Geophysics, Rice University, Houston, TX 77005, Phone: 713-285-5279, E-mail: rgg@geophysics.rice.edu; and Mark Richards, Department of Geology and Geophysics, University of California, Berkeley, CA 94720, E-mail: mark@seismo.berkeley.edu

GP05 Ash-Flow Tuffs: Correlation and Emplacement (Joint with V)

Advances in field studies and analytical techniques have greatly improved understanding of the emplacement of ash-flow tuffs in the last decade. Improvements in correlation of separated sections by magnetic properties and isotopic methods and by mineralogical, chemical, and petrologic characteristics have played a major role in these advances. This session invites contributions on ash-flow studies of all kinds to promote a cross-disciplinary exchange of ideas on analysis and interpretation of ash-flow tuffs.

Conveners: William D. MacDonald, Department of Geology, State University of New York, Binghamton, NY 13902-6000, Phone: 607-737-2863, Fax: 607-737-2288, E-mail: wmacdon@binghamton.edu; and Laurie L. Brown, Department of Geology, Morrill Science Center, University of Massachusetts, Amherst, MA 01003, Phone: 413-545-0245, E-mail: lbrown@geo.um

Hydrology

H01 Glaciers and Ice Sheets

The Earth's ice masses play a dual role with respect to climate. First, they respond dynamically to environmental change and are a significant part of the global climate system. Second, they preserve a record of those changes in their surrounding geology and within the morphology and chemistry of the ice itself. This special session on glaciers and ice sheets will focus on research related to the Earth's land ice masses, that is, their recent history, current dynamics, interaction with local geology, and their response to climate change. As a complement to the Union session on the Greenland ice sheet, papers are solicited that deal with the ice of Antarctica and of alpine glaciers and ice caps. Please remember to send abstract to both AGU and the session convener.

Conveners: Peter U. Clark, Department of Geosciences, Oregon State University, Corvallis, OR 97331, Phone: 541-737-1247, Fax: 541-737-1200, E-mail: clarkp@ucs.orst.edu; Urs H. Fischer, Laboratory of Hydraulics, Hydrology and Glaciology, ETH-Zentrum, Zurich, Switzerland, Phone: +41-1-632-4162, E-mail: ufischer@waw.bawm.ethz.ch; and Neal Iverson, Department of Geological and Atmospheric Sciences, 253 Science I, Iowa State University, Ames, IA 50011, Phone: 515-294-4477

H02 Fast Glacial Flow

Ten years after publication of the seminal special issue of the *Journal of Geophysical Research* on fast glacial flow, the importance of this topic remains vital to studies ranging from identifying the fundamental controls on ice dynamics to the interaction of past and present glaciers and ice sheets with the global climate system. The purpose of this session is to highlight new, interdisciplinary advances in understanding mechanisms of fast glacial flow as well as in understanding the importance of such behavior to regional and global climate change. Abstracts are solicited on developments ranging from obser-

vation to quantifying the role of fast glacial flow in the global climate system. Please remember to send abstract to both AGU and the session convener.

Conveners: Robert Jacobel, Department of Physics, St. Olaf College, Northfield, MN 55057, Phone: 507-646-3124, Fax: 507-646-3968, E-mail: jacobel@stolaf.edu; and Ted Scambos, National Snow and Ice Data Center, University of Colorado, Boulder, CO 80309-0449, Phone: 303-492-1113, Fax: 303-492-2468, E-mail: teds@icehouse.colorado.edu

H03 Periglacial Processes: A Special Session in Honor of Linc Washburn

The need to improve our ability to predict diverse effects of current and anticipated global change in polar regions has recently added considerably to the interest in understanding surficial systems in these regions. A special session devoted to periglacial processes is most timely because of this increasing interest, combined with the growing availability of instrumentation for use in the field and laboratory and advances in modeling particular processes and their interactions. This session is dedicated to Linc Washburn, who has contributed immensely to the field of periglacial geomorphology through his research, his publications, and his personal qualities. He has inspired, encouraged, and aided researchers and organizations worldwide. His exemplary work and inspiration continue. Abstracts dealing with any aspect of surficial processes in cold regions are welcome, and because of Dr. Washburn's own interests in geomorphic issues, abstracts addressing these are particularly encouraged. Please remember to send abstract to both AGU and the session convener.

Conveners: Bernard Hallett, University of Washington, Quaternary Research Center, Box 351360, Seattle, WA 98195-1360, Phone: 206-685-2409, Fax: 206-543-3836, E-mail: hallett@u.washington.edu

H04 Integrated Study of Regional Climate and Hydrology in Basin-Scale Field Experiments (Joint with A)

Understanding of basin-scale climatic and hydrologic responses to various natural and human forcings is crucial to weather forecasting, rainfall runoff prediction, optimization of water resources, pollution control, and perhaps to global change study. Despite the significance of past research, large gaps exist in our understanding of responses of climatic and hydrologic systems in large river basins and in our efforts to couple climate models with hydrologic models. Integrated systematic study is necessary to understand such interaction between climate, human activities, ecology, and hydrology in large-scale drainage basins, such as the Susquehanna River Basin. The purpose of this session is to provide a forum for scientists from various fields to present results related to this topic. Abstracts are solicited on integrated studies of coupled regional climate and mesoscale models; remote sensing application and data assimilation for climatic and hydrologic models; surface water and groundwater investigations; soil hydrologic modeling; geochemistry simulation; and most importantly, the interaction between climate, land surface, surface water, and groundwater in large river basins. Please remember to send abstract to both AGU and the session convener.

Conveners: Zhongbo Yu, Earth System Science Center, Pennsylvania State University, 248 Deike Building, University Park, PA 16802, Phone: 814-865-1781, Fax: 814-865-3191, E-mail: yu@essc.psu.edu; and Eric J. Barron, Earth System Science Center, Pennsylvania State University, 248 Deike Building, University Park, PA 16802, Phone: 814-865-1619, Fax: 814-865-3191, E-mail: eric@essc.psu.edu

H05 Observations and Modeling of Land Surface Hydrological Processes (Joint with A)

There have been numerous studies in recent years to understand land surface hydrological processes. These include approaches such as the use of observations from field experiments to study the dynamics of land surface behavior; numerical modeling of the evolution of land surface response to solar heating and precipitation; the comparison of simulations to observed quantities from field experiments, and the use of satellite remote sensing data to both drive and validate hydrological models. It is widely believed that the combination of field observations and satellite data with hydrological models will produce improved estimates of hydrologic fluxes and energy budgets. This session will explore this concept through examination of a broad range of topics including water and energy budgets, soil moisture, runoff, streamflow, surface temperature, and latent, sensible, ground heat, and net radiation fluxes. Papers dealing with any one or a combination of the above topics are invited for this special session. Please remember to send abstract to both AGU and the session convener.

Conveners: Venkataraman Lakshmi, Code 910.4, NASA/GSFC, Greenbelt, MD 20771, Phone: 301-286-9040; Fax: 301-286-1757, E-mail: venka@spectra.gsfc.nasa.gov; and John D. Albertson, Department of Environmental Sciences, Clark Hall, University of Virginia, Charlottesville, VA 22903, Phone: 804-924-7241, Fax: 804-982-2137, E-mail: jdalbertson@virginia.edu

H06 Measurements and Models of Transfer Processes Within the Soil-Vegetation-Atmosphere Continuum (Joint with A)

The "greening" of hydrologic, regional climate, and general circulation models requires detailed understanding of transfer mechanisms within the soil-vegetation-atmosphere continuum. This session concentrates on linkages between physical and biophysical processes that regulate energy, momentum,

and moisture fluxes, and the resulting effects on the global climate system. Please remember to send abstract to both AGU and the session convener.

Conveners: Gabriel Katul, School of the Environment, Box 90328, Duke University, Durham, NC 27708-0328, Phone: 919-613-8033, E-mail: gaby@duke.edu; and Richard Cuenca, Bioscience Engineering, Oregon State University, Corvallis, OR 97331, Phone: 541-737-6307, E-mail: cuencarh@bre.orst.edu

H07 BOREAS: Results From Remote Sensing (Joint with A)

The Boreal Ecosystem-Atmosphere Study (BOREAS) was held in the boreal forest of central Canada from 1993 through 1996 to study the exchange of water, energy, carbon, and nutrients within the boreal ecosystem. BOREAS combined field measurements with a host of aircraft and satellite observations to measure and analyze the multiscale processes that occur in the boreal forest. A major goal of the project was to use remotely sensed observations to study the biosphere from the leaf and canopy levels to regional areas with an emphasis on vegetation, snow, and soil properties as well as water, energy, and carbon fluxes. At a special session for BOREAS held at AGU's Spring 1995 meeting, preliminary results have been made to understand scaling of processes and the importance of the boreal forest to the climate system. This session will focus on the results obtained from surface-based, aircraft, and satellite remotely sensed observations during the BOREAS field study. Presentations are sought from all aspects of remote sensing explored at BOREAS. Please remember to send abstract to both AGU and the session convener.

Conveners: Kevin Czajkowski, Department of Geography, University of Maryland, College Park, MD 20742, Phone: 301-405-1218, E-mail: kc124@umail.umd.edu; and K. Jon Ranson, NASA/GSFC, Code 923, Greenbelt, MD 20771, Phone: 301-286-4041, Fax: 301-286-1757, E-mail: jon.ranson@gsfc.nasa.gov

H08 Operational Remotely Sensed Data for Hydrology and Climate Studies (Joint with A)

Remote sensing provides valuable information for monitoring and modeling the hydrology, physical climate, and land surface state of the Earth system. Past and current operational remote sensing systems, such as GOES, AVHRR, TOVS, SSM, and various Landsat instruments, now have acquired records that in some cases span 20 years. However, the use of such data is not widespread among end users in the hydrologic community. One of the major reasons for this is a general lack of information about such data: What data are available from which sensors? At what spatial and temporal resolutions? For which geographic areas? How are these observations used to derive variables of interest? This session will present a series of invited and contributed talks describing current and future (including EOS-era) operational remote sensing data sets. Contributions are encouraged that will inform the general community on the characteristics, benefits, and limitations of these data as well as their use in hydrological and climatological applications. Please remember to send abstract to both AGU and the session convener.

Conveners: Ralph Dubayah, Department of Geography, University of Maryland, College Park, MD 20742, Phone: 301-405-4069, Fax: 301-314-9299, E-mail: rdubayah@geog.umd.edu; Eric Wood, Department of Civil Engineering, Princeton University, Princeton, NJ 08544, Phone: 609-258-4675, Fax: 609-258-2799, E-mail: ewood@princeton.edu; and Thomas Schmugge, USDA/ARS Hydrology Lab, Bldg 007-BARC West, Beltsville, MD 20705-2350, Phone: 301-504-8554, Fax: 301-504-8931, E-mail: schmugge@hydrolab.arsusda.gov

H09 Impacts of Land Use on the Hydrologic-Geomorphic Responses of Watersheds

Considerable research effort has focused on evaluating the effect of land use changes, such as forest management, on watershed hydrology and geomorphology. Attempts are made to minimize possible adverse impacts and maintain the biodiversity and sustainability of natural systems. This session will summarize recent findings that examine the impacts of land use on the hydrologic and geomorphic responses of watersheds. Results from various approaches will be presented, including field studies of paired experimental/manipulated watersheds, plot studies, and lumped and physically based, spatially distributed models. Please remember to send abstract to both AGU and the session convener.

Conveners: Jianfan Duan, UC-LNLL, P.O. Box 808, L-256, Livermore, CA 94550, Phone: 510-422-5710, Fax: 510-422-6388, E-mail: duan@lnll.gov; and Mark Wigmosta, Pacific Northwest National Laboratory, P.O. Box 999, Richland WA 99352, Phone: 509-372-6238, Fax: 509-372-6089, E-mail: ms_wigmosta@pnl.gov

H10 1997 Floods in North America (Joint with A, OS)

Catastrophic flooding occurred in many regions of North America in 1997. This session solicits papers on all aspects of the 1997 floods, ranging from the atmospheric and ocean circulation that may have been responsible for setting up the causative

mechanisms, to the resulting hydrologic effects (e.g., flooding). Papers on other geophysical events (e.g., landslides) related to or triggered by the flooding of precipitation are also solicited. Questions of interest include the following: Are these floods unique random events? How did water reservoir structures (levees, dams, reservoirs) affect the flooding? Is there evidence of long-term trends or cycles in flooding? Please remember to send abstract to both AGU and the session convener.

Conveners: John Schaake, Office of Hydrologic Research, National Weather Service, Silver Spring, MD 20910, Phone: 301-713-1660, Fax: 301-713-1051, E-mail: john.schaake@noaa.gov; and Miller Nolan, USGS, 345 Middlefield Road, Menlo Park, CA 94025, Phone: 415-329-4419, Fax: 415-329-4463, E-mail: kmolan@usgs.gov

H11 Subresolution Approaches in Distributed Snow Modeling

Seasonal snowpacks comprise a major part of the annual water budget over wide regions and strongly influence land surface feedback to the atmosphere through radiation and sensible and latent heat exchanges. For example, snow plays a dominant role in the spatial and temporal variation of surface albedo over much of the subarctic and temperate latitudes, affecting land-atmosphere interactions. Snow cover characteristics vary with land cover, terrain position, and season and can be frequently discontinuous at scales below modeling resolutions. Developers of large-scale weather and climate models have recognized the importance of subresolution effects, such as partial snow cover, and its relationship to albedo. Various subgrid parameterization schemes for snow's influence on hydrology and feedback to the atmosphere have resulted. Subgrid variability also presents a problem in distributed hydrologic models, but less development has occurred here. This constitutes a problem for rigorous snow modeling over heterogeneous landscapes at almost any spatial scale. This session seeks to engage discussion of approaches to parameterizing snow processes important at scales smaller than model cell size. We anticipate presentations on field validation or measurement, as well as model formulations. Please remember to send abstract to both AGU and the session convener.

Conveners: Bert Davis, Cold Regions Research and Engineering Laboratory, 72 Lyme Road, Hanover, NH 03755-1290, Phone: 603-646-4219, Fax: 603-646-4397, E-mail: bert@hanover-crrl.army.mil; and Don Cline, National Operational Hydrologic Remote Sensing Center, National Weather Service, 1735 Lake Drive West, Chanhassen, MN 55317-8582, Phone: 612-361-6634, Fax: 612-361-6610 ext. 252, E-mail: cline@nohrc.nws.gov

H12 Geophysical Flows and Sediment Transport: A Special Session in Honor of J. Dungan Smith (Joint with OS)

This session celebrates the past, present, and future research of J. Dungan Smith and his many coworkers. In a line of "bigging" of science into ever smaller subdisciplines with ever narrower fields of vision, Smith's research spans the full range of possibilities in the areas of geophysical flows, sediment transport, and resulting morphology, including river dynamics, continental shelf processes, debris flows, and turbidity currents. His combination of physical insight and insistence on rigor of analysis has provided guidance to a new generation of researchers. This session is intended to bring together a broad spectrum of researchers concerned with geophysical flows and sediment transport processes in both natural and subaqueous settings. Emphasis is to be placed on the underlying similarities of process governing seemingly disparate phenomena. Please remember to send abstract to both AGU and the session convener.

Conveners: Gary Parker, St. Anthony Falls Laboratory, Mississippi River at 3rd Ave., Minneapolis, MN 55414, Phone: 612-627-4012, Fax: 612-627-4609, E-mail: park002@maroon.tc.umn.edu; and Chris Paola, Department of Geology and Geophysics, University of Minnesota, Pillsbury Hall, Minneapolis, MN 55455, Phone: 612-624-8025, Fax: 612-625-3819, E-mail: cpaola@maroon.tc.umn.edu

H13 Hillslope and Fluvial Processes

The recent rise in water-related resource management activities, such as restoring watersheds and river reaches to predevelopment states, has given rise to renewed interest in the need to understand the dynamics of and interactions among geomorphic, geologic, and ecological processes. To high-level recent insights, this session focuses on hillslope and fluvial processes with an emphasis on the styles and mechanics of interactions between hillslopes and channels and the linkages among geomorphic processes and tectonic and biological processes/systems. Student and poster submissions are especially encouraged. Please remember to send abstract to both AGU and the session convener.

Conveners: David Montgomery, Department of Geological Sciences, Box 351310, University of Washington, Seattle, WA 98195-1310, Phone: 206-685-2560, Fax: 206-543-3836, E-mail: dave@bigdir.geology.washington.edu; and Leif Mertes, Department of Geography, University of California, Santa Barbara, CA 93106-4060, E-mail: leal@geog.ucsb.edu

H14 Bedrock Rivers

How do rivers carve into rock, and how do landscapes respond to that incision? The development of river longitudinal profiles in bedrock is not well understood, inhibiting our ability to model landscape evolution and to investigate such problems as the linkage between tectonics and topography.

Fall Meeting call (cont. on next page)



Final Call for Papers and Descriptions



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1997 Fall Meeting

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Program

This meeting provides an outstanding opportunity for researchers, teachers, students, and consultants to review the latest issues affecting the Earth, the planets, and their environment in space.

You may contribute to the success of this meeting by submitting an abstract and attending the presentations. This meeting will cover topics in all areas of geophysical sciences, and therefore contributed abstracts on any topic in geophysics are encouraged. Because of the close ties between many aspects of geophysics, special efforts will be made to facilitate sessions involving multiple sections. These include the scheduling of Union sessions and the joint sponsorship of sessions by multiple sections.

Don't miss this opportunity to attend scientific sessions targeting your specific needs and interests and to meeting with your colleagues to review the latest developments in your field.

1997 Fall Meeting Program Committee

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Volcanology, Geochemistry, and Petrology (V), Joaquin Ruiz, University of Arizona, Department of Geoscience, Tucson, AZ 85721, Phone: 520-621-4827, Fax: 520-621-2676, E-mail: jruiz@geo.arizona.edu

Mineral and Rock Physics: The sections C, T, and V are including a member of the Mineral and Rock Physics Technical Committee to assist in planning some sessions. Pamela C. Burnley is a subcommittee member for these sections and will be organizing sessions related specifically to rock and mineral physics: Pamela C. Burnley, CIRC, Campus Box 216, University of Colorado, Boulder, CO 80309, Phone: 303-492-5615, Fax: 303-492-1149, E-mail: burnley@colorado.edu

Something for Students

We encourage students to participate in this meeting by submitting an abstract and attending presentations. AGU offers Outstanding Student Paper awards. All first-author students presenting a paper are eligible to win. Winners receive a certificate and have their photograph and bio published in *Eos*.

The AGU Student Travel Grant Program offers travel funds to a select number of AGU student members who are presenting a paper at the meeting and whose research is not supported by a grant or contract. In addition to reimbursement of advance registration fees (preregistration deadline is November 7, 1997), students in the United States may receive up to \$250 and students outside the United States may receive up to \$500. For more information and an application, please

contact Wynetta Singhatheh by E-mail: wsinghatheh@kosmos.agu.org or call 1-800-966-2481, ext. 310, or 1-202-939-3223.

Students also receive a reduced registration fee to AGU meetings; AGU student members receive further discounts. To request an AGU membership application and information, E-mail: service@kosmos.agu.org or call 1-800-966-2481 or +1-202-462-6900.

Something for Everyone

In addition to providing an exciting scientific program and excellent networking opportunities, the 1997 Fall Meeting will offer these benefits:

- **Job Center and Career Planning Workshop** to enhance job-hunting skills and strategies.
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- **Section Events** for increased contacts with your colleagues.
- **Honors Ceremony** to pay tribute to the 1997 AGU medalists and fellows.
- **Geophysical Information for Teachers (GIFT) Workshop**.
- **Exhibits** including AGU Books and Products.
- **Press Briefings and Media Workshops** providing opportunities to communicate science to a wider audience.

Abstract Submissions

Please note that abstracts submitted by postal/express mail and by e-mail have an earlier deadline than abstracts submitted using the Interactive Web Form. Abstracts submitted by postal/express mail and by e-mail are due at AGU Headquarters by August 27, 1997. The deadline for submitting abstracts using the Interactive Web Form is September 3, 1997 at 11:59 P.M.

Abstracts may be submitted either by mail or electronically, via e-mail or the World Wide Web.

Electronic submissions are highly recommended:

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- Avoid time-consuming, tedious preparation of your abstract for e-mail submission
- Extended abstract submission deadline—deadline for Interactive Abstract Submissions is September 3, 1997

Important Abstract Policies

1. Abstracts submitted by postal/express mail or by e-mail must be received at AGU Headquarters no later than August 27, 1997. Abstracts submitted using the Interactive Web Form must be received at AGU Headquarters no later than September 3, 1997 at 11:59 P.M. Abstracts received after this deadline will be returned without consideration. Send mail submissions (original and two copies) to 1997 Fall Meeting, American Geophysical Union, 2000 Florida Ave., NW, Washington, DC 20009.
2. Abstracts must be submitted in English.

3. Abstracts must be in the proper format, including text, title, and complete author information.

4. AGU staff cannot make any changes or corrections to abstracts. Proofread your abstract prior to submission. Abstracts received are considered final copy.

5. Abstracts must be accompanied by submittal payment. Abstracts submitted by the Interactive Web Form and by mail may be accompanied by a credit card number or a purchase order with complete billing information. Abstracts submitted by e-mail can only be paid for with a credit card. The abstract submission fee is nonrefundable, including duplicate submissions (please do not submit your abstract to AGU more than once).

6. Abstracts will not be accepted by fax or telecopy.

7. Abstracts may only be submitted by: (1) AGU members; (2) submission is sponsored by a member of AGU or; (3) accompanied by an AGU membership application (with payment).

8. For AGU National Meetings, a person as first author may submit only one contributed paper for consideration by the Program Committee for inclusion in the program (see section Education Special Sessions below for the only exception to this rule). An appropriate member of the Program Committee may invite one additional first-authored abstract from the first author of a contributed abstract. Invitation of any additional first-authored abstracts by the same person requires prior approval by the National Meetings Chairman.

9. Abstracts submitted electronically will receive a confirmation by e-mail. Verification of receipt will also be available via the AGU Web Site, <http://www.agu.org>, beginning August 28, 1997. Those without access to the World Wide Web may contact AGU after September 10, 1997, for confirmation of receipt.

10. Submission of an abstract carries with it the obligation to present the paper in the mode of presentation (oral or poster) and on the day and time assigned by the Program Committee. Abstracts will be scheduled Monday through Friday. Your paper could be scheduled on any day of the week. Once scheduled, presentations may NOT be moved. (Please make your airline and hotel reservations accordingly.)

11. Acceptance letters will be mailed to the corresponding author in mid-October 1997.

12. All accepted abstracts will be published in *Eos*. Submission of an abstract for the meeting is presumed to carry with it permission for AGU to reproduce the abstract in *Eos*, the AGU Web Site, meeting programs, and reports related to the meeting. It is also presumed to permit the free copying of the abstract. Although *Eos* is a copyrighted publication, authors are not required to transfer copyright for abstracts submitted to meetings. Copyright, where it exists, will be reserved by the authors.

13. If you are submitting an abstract to a special session, in addition to sending your abstract with payment to AGU, you must also send a copy of your abstract to the special session convener.

Education Special Sessions

The AGU Committee on Education and Human Resources (CEHR) and the Fall Program Committee have developed a number of education special sessions for this year's meeting. Authors submitting abstracts to one of the Edu-

Fall Meeting call (cont. on page 2)