

G E O P H Y S I C I S T S

Honors

PAGE 489

Walter Alvarez, professor of geology at the University of California, Berkeley, has received the Vetlesen Prize, which many people consider to be the Earth sciences' equivalent of a Nobel prize. The citation notes, "Research conducted and inspired by Walter Alvarez has changed the way we view the history of the Earth. For more than a century the dominant view of how Earth evolved was one of 'uniformitarianism'—a slow, gentle change caused by processes observable today. [His] work proved that major catastrophic events can shape the evolution of our planet." The \$250,000 award is funded by the G. Unger Vetlesen Foundation and administered by Lamont-Doherty Earth Observatory, part of Columbia University's Earth Institute.

Won-Young Kim, a senior scientist at Columbia University's Lamont-Doherty Earth Observatory and chief scientist for the Lamont Cooperative Seismic Network, received the Jesuit Seismological Association Award from the Seismological Society of America

(SSA) for his work on wide-ranging questions both local and global. Among other things, he has assessed earthquake hazards in New York City and beyond, developed methods of monitoring nuclear bomb tests, and clarified the sequence of events during the terrorist attacks of September 11, 2001. The award is administered by SSA's Eastern Section and has no formal connection to the Catholic Jesuit order of priests.

Several AGU members were honored by the Geological Society of America (GSA) at its annual meeting in October. **Richard B. Alley**, Evan Pugh Professor of Geosciences at Pennsylvania State University, received the GSA Public Service Award for contributions that have enhanced the public's understanding of Earth sciences and served decision makers in the application of scientific information in public affairs. **Kenneth A. Farley**, W. M. Keck Foundation professor and chair of the Geological and Planetary Sciences Division at California Institute of Technology, received the Arthur L. Day Medal for outstanding distinction in contributing to geologic knowledge through the application of physics and chemistry to the solution of geologic problems. **Paul A. Kapp**, assistant professor at the University of Arizona, received the Young Scientist Award (consisting of the

gold Donath Medal and a cash prize) for outstanding original research marking a major advance in the Earth sciences. **Lorraine E. Lisecki**, University of California, Santa Barbara, received the Subaru Outstanding Woman in Science Award for her contributions to computational approaches to the comparison and interpretation of paleoclimate records.

Also at the GSA meeting, **Roy J. Shlemon**, Roy J. Shlemon & Associates, Inc., Newport Beach, Calif., was honored with GSA's President's Medal for his support of the organization's Shlemon Mentor Program in Applied Geology. **George A. Thompson**, professor emeritus in the Department of Geophysics at Stanford University, California, and an early leader in the areas of geodynamics and tectonic evolution of the western United States, received the Penrose Medal in recognition of outstanding original work that marks a major advance in the science of geology. **Lisa D. White**, associate dean of graduate studies and professor of geology at San Francisco State University, California, received the Bromery Award for the Minorities. White coordinates the SF-ROCKS program (Reaching Out to Communities and Kids with Science in San Francisco), which aims to connect urban youth with Earth, environmental, and atmospheric sciences.

MEETING

Advancing the Emerging Field of Hydropedology

First International Conference on Hydropedology; University Park, Pennsylvania, 28–31 July 2008

PAGE 490

Both soil science and hydrology are at a critical threshold of exploring breakthroughs. Synergies are expected by bridging classical pedology with soil physics, hydrology, geomorphology, and other related bio- and geo-sciences to address complex soil and water interactions across spatiotemporal scales. Holistic study of the Earth's critical zone (i.e., the critical interface between the surficial solid Earth and its fluid envelopes, which ranges from the top of vegetation to the bottom of aquifers) demands interdisciplinary systems approaches to tackle a wide array of environmental, ecological, agricultural, geological, and natural resource issues of societal importance.

In this spirit, and aiming to advance the emerging field of hydropedology, the first international conference on hydropedology was held at Pennsylvania State University (Penn State) with the theme "Water and Soil: Key to Sustaining the Earth's Critical Zone." The International Union of Soil Sciences'

Working Group on Hydropedology organized this meeting, with main sponsorships from the U.S. Department of Agriculture's National Research Initiative and Penn State.

The conference attracted 145 participants from 20 countries. A number of leading scientists from diverse fields presented their perspectives on various hydropedologic issues. The conference began with five invited keynote presentations that summed up overarching goals. The subsequent presentations were grouped into (1) emerging concepts and theories; (2) frontiers of integrated and multiscale models; (3) advanced monitoring, sensing, mapping, and visualization of the subsurface; (4) integrated studies of the critical zone; and (5) cutting-edge applications. Poster sessions, breakout discussions, and evening specials were also included. The fourth-day field trip included a visit to the Shale Hills Critical Zone Observatory, a visit to Kepler Farm to see precision agriculture practices in relation to hydropedology, a look at Penn State's long-operating

"living filter" (which uses natural soils for filtering treated wastewater), and a tour of a site that shows the impacts of exposed geological pyrite on water quality.

Through presentations and discussion, it became clear that the main goal of hydropedology is to understand interactive hydrologic and pedologic processes across scales and their impacts on biogeochemical cycling and ecological functioning. Two fundamental questions are (1) How do soil architecture and the distribution of soils over the landscape exert a first-order control on hydrologic processes and the associated biogeochemical and ecological dynamics? (2) How does landscape water, and the associated transport of energy, chemicals, and sediment by flowing water, influence soil genesis, evolution, variability, and functions?

An initiative to foster a global alliance for monitoring, mapping, and modeling the critical zone was proposed, calling for a networked long-term recording of our land's "blood pressure," temperature, respiration, and other vital signs of global land change. While often hidden underfoot, soils are fundamental to the Earth's ecosystems and the sustainability of human society. Therefore, serious efforts must be taken to monitor soil change and its diverse functions over space and time.

The conference contributed to the International Year of Planet Earth celebration. A book and a special issue of two journals will publish selected papers. A DVD containing the conference presentations,

posters, videotapes, and photos will be produced. The second such conference is planned for 2012 in Germany. Between now and then, a dedicated Web site (<http://hydropedology.psu.edu/>) will be used to maintain communications to the community.

The full text of this meeting report can be found in the electronic supplement to this *Eos* issue (http://www.agu.org/eos_elec/).

—HENRY LIN and KAMINI SINGHA, Pennsylvania State University, University Park; E-mail: henrylin@psu.edu; DAVID CHITTLEBOROUGH, University of

Adelaide, Adelaide, South Australia, Australia; HANS-JOERG VOGEL, Helmholtz Centre for Environmental Research (UFZ), Halle, Germany; and SACHA MOONEY, University of Nottingham, Nottingham, U.K.

BOOK REVIEW

Integrated River Basin Management Through Decentralization



Karin E. Kemper, William Blomquist, and Ariel Dinar, Editors
Springer; 2007; xxi + 262 pp.; ISBN 978-3-540-28354-6; \$129.

PAGE 492

In international circles, advocacy of integrated water resource management is often based on the Dublin Principles of the 1992 International Conference on Water and the Environment. Those principles include (1) the understanding that freshwater is a finite and vulnerable resource, (2) a participatory approach to water management, (3) an emphasis on the role of women in water management, and (4) the recognition of water as an economic good. In 2000, the Global Water Partnership (GWP) developed an interpretative understanding of the Dublin Principles. The GWP described the participatory approach as (1) real participation, (2) participation as more than consultation, (3) achieving consensus, (4) creating participatory mechanisms and capacity, and (5) involvement and decisions at the lowest appropriate level. Advocacy of increased participation and local decision making stems from observance of a history of centralized decision making and inadequate attention to local needs and resources, which have resulted in ineffective water management and water use.

The practice of advocating the development of integrated and local participation at the river basin level has progressed without a determination of whether this model is working. The World Bank, in conjunction with partners, set out to chronicle the decentralization and local participation model. *Integrated River Basin Management Through Decentralization* documents the research and findings—the most comprehensive examination of this topic to date. The study, moreover, contributes to understanding three critical development and poverty reduction issues: (1) water management, (2) the links between sustainable natural resources management and infrastructure, and (3) participatory decision making.

The first three chapters in this 12-chapter book provide an overview, a summary of the comparative analysis of eight case studies, and a summary of determinants of

decentralized water management. The next eight chapters address the eight case studies. Each of the case study chapters is presented in the same format, facilitating readability and comparisons across river basins. The concluding chapter sums up major findings and identifies further areas of research. The book is edited and in part written by three recognized experts in institutional development and water management. They are joined by local experts who possess good working knowledge and experience in the basins that form the case studies.

The overall study itself was undertaken in a tiered approach: (1) a literature review, (2) a survey of river basin organizations, including a statistical analysis of survey results, and (3) qualitative case studies. The literature review provided the basis upon which an analytical framework was developed to generate hypotheses that subsequently could be tested in river basin management. The study thus contains an analytic and robust basis for its findings.

In collaboration with the International Network of Basin Organizations, the authors identified 197 river basin organizations worldwide. Transboundary river basin organizations were excluded from the survey, as they involve additional cross-boundary factors and are the subject of separate programs and research. Of the 197 surveys, 103 responses were received, and upon review, 83 were retained in the data set for analysis. The book presents a summary of the statistical model, while a separate World Bank working paper (A. Dinar et al., *Decentralization of river basin management: A global analysis, 2005*) provides details of the model. The model tested hypotheses using variables addressing (1) contextual factors and initial conditions, (2) characteristics of the decentralization process, (3) central-local government relationships and capacities, and (4) basin-level institutional arrangements.

The eight case study river basins were carefully chosen to represent the spectrum of issues confronted in river basin management,

as well as countries at different levels of development: Murray-Darling (Australia), Alto Tietê (Brazil), Jaguaribe (Brazil), Fraser (Canada), Tárcoles (Costa Rica), Brantes (Indonesia), Warta (Poland), and Guadalquivir (Spain). The selected basins do not, however, reflect spatial representation, as there are no case studies in Africa or mainland Asia.

The book's main findings can be summed up as follows: (1) Decentralization and participation take time, (2) one-size frameworks or processes do not work, because local conditions must be considered, (3) possibilities exist nearly everywhere to improve water management through decentralization and participation, and (4) shared responsibility among central and local governments is essential. Interestingly, most of the core findings were prevalent in river basins regardless of the level of development within the country and the basin. Also, exclusive top-down initiation of decentralization reform generally was found to be detrimental to the success of the decentralization process.

The editors assume a familiarity with several topics, and the book provides little orientation or explanation of terms or concepts, which would aid readers unfamiliar with the international literature. Moreover, considering the range of topics touched upon, the rich literature on water resource management that has been produced in recent years, and that eight case studies are contained in the book, there is a paucity of citations to point readers to external literature. The editors do, however, provide a supplementary list of reading beyond literature cited in the text.

Another shortcoming is the lack of a thorough discussion of the benefits of decentralization as well as the potential detrimental aspects of decentralization. Also lacking in the book is a clear distinction of the benefits of the integration of activities and organizations (i.e., integrated water resources management) versus decentralization at the river basin and subbasin levels. Observations in the book tend to describe the two together. Perhaps it is difficult to isolate and evaluate the contribution of one from the other, a possible area for further research.

Despite these minor shortcomings, the book and underlying analytical framework are comprehensive and a must read for those interested in understanding the dynamics of decentralization, increased participation, and the role of integration in progressive, modern water management.

—MATTHEW D. DAVIS, CAL Engineering Management, Auckland City, New Zealand, and WAI Institute, Davis, Calif.; E-mail: mddavisnz@yahoo.co.nz