

BULLETIN

Summer 2006

"American Institute of Hydrology, the Society for Registered/Certified Hydrologists"

Volume 24, Issue 2



CALL FOR PAPERS

Abstracts Wanted for 2007 Annual Conference

There is increasing recognition by governing agencies and industry, for the need of technical integration in water-resources planning and management. The AIH conference is intended to present an opportunity for scientists and managers in all water-related disciplines to gather and interact together. What kind of partnerships have been developed between hydrologists, engineers, geologists, chemists, biologists and other disciplines to develop current hydrology methods? What kinds of knowledge are required to make good hydrologic decisions and practice good science? What kinds of partnerships exist between the users of hydrologic information?

Some Proposed Themes Include:

- The Carbonate Aquifer System of Nevada/Utah
- Emerging Contaminants
- Hydrologic Effects Associated with Climate Change
- Lakes and Reservoirs
- Cooperative Conservation Efforts
- San Francisco Bay-Delta Program
- Klamath Basin Hydrologic Issues
- Integrating Modeling Concepts
- Adaptive Management
- Stream and Groundwater Interactions

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To participate in this conference and present a paper, please submit an abstract of no more than 200 words to AIH Headquarters. Abstracts for papers and posters are due **January 30, 2007**, but we would like a preliminary title for the presentation by **November 30, 2006**. Manuscripts are not mandatory, but will be due **April 30, 2007**. Abstracts will be printed as part of the meeting agenda. Proceedings will be published after the conference.

STUDENT PAPER / POSTER COMPETITION

The 2007 Annual Meeting & International Conference will feature a student paper and poster competition. Prize consist of \$1500 in scholarships. Awards will be presented for the best paper or poster presentation, to be judge by a panel of certified Professional Hydrologists at the conference. Only full time students, currently seeking a degree in hydrology or related fields may enter this competition. To enter the competition, please submit an abstract of no more than 200 words to AIH. Papers/Posters with multiple authors will equally share the prize; or by any other pre-arrangement, submitted in writing to AIH.

Abstracts will be printed as part of the meeting agenda. Posters and papers accepted for presentation at the conference have an expanded opportunity to be published in the conference proceedings published after the meeting.

If you would like to make a presentation, please contact AIH at 1-800-970-4244 or email aihydro@aol.com.

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Advertisement Rates are as follows:

SPACE	RATE	SIZE
1 page	\$595	9½ x 7½"
1/2 page	\$349	9½ x 3½" (1 column)
1/2 page	\$349	4½ x 7½" (1 banner)
1/4 page	\$199	4½ x 3½" (1/2 column)
1/8 page	\$125	2¼ x 3½" (1/4 column)

Advertisers agreeing to publish an ad in three consecutive issues will receive FREE publication in the fourth issue.

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PRESIDENT'S MESSAGE

I trust that all of our members are having a good and productive summer. Ballots have been counted and we offer our warmest congratulations to the following colleagues who will be serving AIH during the next two years (2007-08): Miguel Medina, of Duke University, President Elect; Stephan Nix, of the University of North Florida, Vice President for Academic Affairs; Allen Gookin, of Gookin Engineers, Vice President for Institute Development; Neven Kresic, of Malcolm Pirnie, Vice President for International Affairs; Bob Hordon, of Rutgers University, Treasurer; Emitt Witt, of the U.S. Geological Survey, General Secretary; Rolando Bravo, of Southern Illinois University, Board of Registration Chairman; and Doug Glysson, of the U.S. Geological Survey, Board of Registration Secretary. During the aforementioned period, Tony Laenen will be serving as President and I will be serving as Past President.

We had a successful 2006 Annual Meeting and International Conference in Baton Rouge during May 21-24, 2006, celebrating our 25th Anniversary. More than 120 attended the conference. Papers presented at the conference were published in two separate volumes edited by Vijay Singh and Jun Xu: "Coastal Hydrology and Processes" and "Coastal Environment and Water Quality." During the Awards Banquet, the Charles V. Theis Award was presented to Fred Molz, the Ray K. Linsley Award to Vijay Singh, and in recognition of the contributions made by the Founders, the Executive Committee on behalf of the membership of AIH presented a plaque of appreciation to Sandor Csallany, Roman Kanivetsky, and Alex Zaporozec. In addition, to recognize the important contributions to hydrology in the water quality discipline, the Executive Committee established the Robert Wetzel Water Quality Award. By establishing this award, AIH will honor future hydrologists for their work in the water quality discipline.

Our 2007 Annual Conference will be held in Reno, Nevada during April 22-25, 2007. The theme of the conference is "Integrated Watershed Management: Partnerships in Science, Planning, and Management." I encourage our membership to participate in the conference by submitting an abstract, organizing one or more sessions, or attending the conference and participating in the discussions. Preliminary presentation titles are due on November 30, 2006 and abstracts are due on January 31, 2007. All acceptable papers will be peer-reviewed and published.

Please do not hesitate to contact me or any members of the Executive Committee with suggestions on how to best serve your needs.

Miguel Marino
AIH President



EPILOG AIH 25-Year Anniversary Meeting Baton Rouge, Louisiana

More than 120 people attend the 25-year anniversary meeting of AIH, May 21-25, 2006, in Baton Rouge, Louisiana. The technical program was exceptional. Our loyal exhibitors were present and had new technologies to offer. The half-day field trip organized to visit many Katrina-damaged sites in New Orleans was fully booked. Those on the tour were impressed and astounded by the devastation.

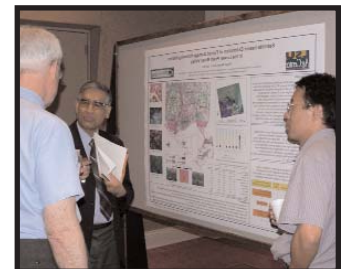
The meeting was organized to observe AIH's 25-years of service. The Founders and many of the charter members were in attendance to help celebrate this milestone. Two sessions were organized to present papers related to where AIH has come from and where we are going. The discussions were stimulating and challenging.

The highlight of the meeting was the awards ceremony and dinner. Fred Molz was awarded the C.V. Theis Award. V.P. Singh was awarded the R.K. Linsey award. The Founders - S. Csallany, A. Zaporozec and R. Kanivetsky - were recognized for their foresight and diligence in bringing AIH into existence.

Finally, AIH used this occasion to announce the creation of a new award to recognize hydrologists working in the water quality field. The new award is named after Robert G. Wetzel, to honor his enormous body of work in the water quality field. Dr. R. Marzolf presented the citation of Dr. Wetzel's work. Mrs. Wetzel and her son, Dr. Peter Wetzel, were present to dedicate the R.G. Wetzel Award.

If you did not attend this meeting, you missed a very interesting event. Please plan to come to Reno in 2007 and present a paper, moderate a session, join the technical discussions, earn PDC's for your recertification or simply network with your colleagues and friends. Support AIH and help make this a successful meeting.

Conference Photos by: Boris Smagin





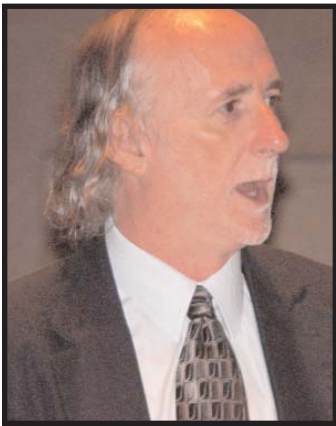
2006 AIH AWARDS

presented at the

AIH 25th Year Anniversary Meeting and International Conference
on Challenges in Coastal Hydrology and Water Quality
May 22, 2006, Baton Rouge, Louisiana

RAY K. LINSLEY AWARD

Citation By: Dr. James F. Cruise



It is my honor and pleasure to introduce Dr. Vijay P. Singh as the recipient of the 2006 Ray K. Linsley Award. Many outstanding hydrologists have received this award over the years, and Vijay represents a very worthy addition to this distinguished list. The Linsley award is presented to recognize an individual for outstanding contributions in surface water hydrology. I have known Vijay for the past

twenty years and I cannot think of an individual more deserving of this award than he.

He has personally worked in a number of disciplines encompassing a broad spectrum of water resources issues. He has made contributions in research, publications, teaching, and service among these disciplines. Vijay has made important contributions in the areas of physical hydrology, irrigation science, water quality, statistical analysis, communication theory, water resources systems, and river and dam hydraulics. He has published his research in more than 400 refereed articles published in over sixty separate scientific journals. He has written extensively on such interdisciplinary topics as global climate change and application of information systems theory. His articles have appeared not only in important hydrology journals such as *Water Resources Research*, *Hydrologic Processes*, *ASCE Journal of Hydrologic Engineering*, *ASCE Journal of Hydraulic Engineering*, *ASCE Journal of Engineering Mechanics*, *ASCE Journal of Environmental Engineering*, *ASCE Journal of Water Resources Planning and Management*, *Catena*, and *Journal of Hydrology*, but in such diverse journals as *Water, Air, and Pollution*, *Water Resources Management*, *Nordic Hydrology*, *Hydrological Sciences Journal*, and *Natural Hazards*.

Vijay received his B.S. degree with an emphasis on soil and

water technology from Pant College of Technology, India, his M.S. from University of Guelph, Ontario, Canada, and his Ph.D. from Colorado State University where he did his dissertation under David Woolhiser- himself a recipient of the Linsley Award. He began his academic career at New Mexico Institute of Mining and Technology before moving on as an Associate Research Professor at George Washington University. He then accepted a position as Associate Professor of Civil Engineering at Mississippi State University, and then as Professor of Civil Engineering at Louisiana State University. Most recently he has been the Arthur K. Barton Professor of Civil Engineering. While at LSU he has also served as Director of the Louisiana Water Resources Research Institute. He has recently announced his retirement from LSU and has accepted a distinguished chaired position at Texas A&M University.

As I said, Vijay has made important contributions in several areas of hydrology, but I would like to concentrate on three of them here. First, of course, is the subject of kinematic wave approximations in hydrologic modeling. Vijay studied this subject first hand at the knee of David Woolhiser at CSU. I believe the kinematic wave is his first love, and has continued to occupy his thoughts for the past thirty years or more. If I could summarize, I would say that his contributions in this area fall into three categories: refinement of the physical realism of the approach, error analysis, and extension of the theory into diverse applications. His early work on converging and diverging planes provided a unified framework by which the model could be applied to realistic basin topographic fields, and at spatial scales appropriate for intermediate level hydrologic modeling. He continued to make the approach more realistic through application on infiltrating planes and incorporation of spatial rainfall distributions. His work on error analysis has served to clarify the theory and place it in the context of other physically based modeling approaches. It is in no small measure due to the efforts of Vijay and his colleagues that the kinematic wave approximation is now included in most standard hydrologic modeling computer packages. And he continues to find new and novel applications of the theory, including irrigation modeling, snow melt processes, and solute movement within the vadose zone, to name just a few. He delights in nothing more than working out the full mathematical formulations of new applications of kinematic wave theory.

His extension of his kinematic wave work led him into his second area of great research contributions- irrigation science. Beginning with the application of kinematic wave modeling on infiltrating planes, Vijay continued on to develop a unified formulation incorporating both closed border and furrow irrigation. The theory is comprehensive in that it provides elegant solutions for the entire irrigation cycle, including advancing front (which is a shock), drying front (which is the locus of zero depth), and dynamic storage. The theory also describes the free boundary moving from the downstream

Continued on Page 5

end toward upstream when the irrigation duration is shorter than the time of advance. The kinematic wave theory has since been included in most irrigation books and monographs and in irrigation engineering instructions. In addition, Vijay and his students also developed systems based theories for irrigation modeling under different practical considerations. These theories deal with open borders and furrows, as well as closed borders and furrows. These contributions have enhanced the science of irrigation hydrology and have enriched the practice of irrigation technology.

The third area that I would like to mention is in development and application of the information theory of entropy to a wide range of water resources issues. Vijay has done more than any other single individual to educate professionals in the water resources field generally, and hydrologists in particular on this topic. He was one of the first physical scientists or engineers to become involved with the concept, and has worked tirelessly on it for over twenty years. He has developed entropy-based estimation methods for the parameters of most probability distributions used in hydrology. These estimates have many of the asymptotic properties of maximum likelihood estimates without the mathematical intractability that often accompanies MLE. Vijay has also demonstrated how the principle of maximum entropy can be employed to design data collection networks in a manner that will maximize the information content of the collected data. Design of rainfall collection systems is an outstanding example. Finally, he has demonstrated how the

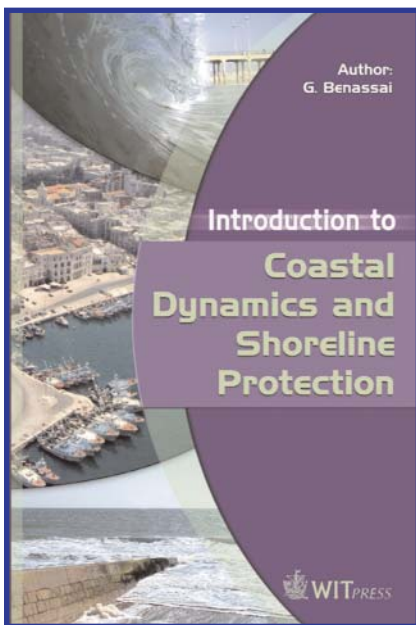
principle can be used to derive process responses in probabilistic space subject to real world boundary conditions and governing principles. Applications have included the derivation of velocity profiles in open channels, estimation of discharge at remote locations, and drawdown curves in confined aquifers.

Recently, Vijay has expanded his work into areas of great interest to practicing hydrologists and engineers. He has done important work on clarification of the NRCS curve number technique, placing it within its proper hydrologic context and identifying its basis and limitations. He has co-authored a book on the subject that is an invaluable aid to practicing hydrologists. He has also recently become active in investigations of the meteorological controls on hydrologic response at the basin scale. His work on the effects of individual storm movement and spatial scale on basin response is bearing fruitful results.

Over his career, Vijay has been very generous in sharing his knowledge and experience with the professional community at large, and not just other academics. Besides his journal articles, he has authored or co-authored 12 books and edited 42 others. His texts cover a variety of topics from basic hydraulics to physical hydrology - to snow hydrology- to water quality analysis. The books range from the advanced level suitable for graduate studies to the elementary level for undergraduates. His two-volume series on kinematic wave modeling is recognized as the definitive source on the

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Book Reviews



Introduction to Coastal Dynamics and Shoreline Protection

by G. Benassai

From WIT Press (<http://www.witpressusa.com/acatalog/1845640543.html>)

ISBN 1-84564-054-3

Price: US\$195.00/£115.00/Euros 172.50 (352 pages)

Billerica, MA. - This new book from WIT Press provides an integrated approach to coastal dynamics and shoreline protection, aided by the use of specific case studies. It was developed from lecture notes for a course in Coastal Dynamics and Shoreline Protection addressed to students of Environmental Sciences, and for this reason it is organized in such a way as to introduce the reader to the fundamental principles of the topics discussed in each chapter. The text introduces both undergraduate and graduate engineering students, as well as practicing engineers, to the different meteo-marine factors that influence coastal dynamics. Using practical and theoretical application, Introduction to Coastal Dynamics and Shoreline Protection explores factors such as winds, sea level variations, offshore waves (predicted and measured, regular and random), wave transformation and breaking as well as topics of sediment transport computation, beach profile and shoreline modeling and coastal protection systems.

Contents: Integrated approach to coastal dynamics; Beach morphology and sediment analysis; Linear wave analysis; Sea level variability; Random wave measurement and analysis; Short term wave prediction; Long term wave statistics; Wave transformation in the coastal zone; Sediment transport; Beach profile modeling; Shoreline modeling; Comparison and choice among alternative protection systems; Hydraulic design; Structural design; Beach fills.

WIT Press is a major publisher of engineering research. The company prides itself on providing information by leading researchers and scientists at the cutting edge of their specialties, enabling readers to remain at the forefront of scientific developments.

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method. In undergraduate education, he has authored a basic hydrology text and co-authored an introductory hydraulics text suitable for use by both engineering and non-engineering students. He has also written books for the practicing professional such as his texts on the NRCS Curve Number technique and on Water Resources Planning and Management. These texts are written with a multidisciplinary audience in mind and are meant to educate various sectors of the water community about the issues and problems faced by us all.

Vijay has also served an important mentoring role in the hydrologic community, not only for his many graduate students, but for younger academic colleagues as well. A quick perusal of his collaborators reveals the names of numerous young, inexperienced researchers who have benefited enormously from his tutelage. He has always been more than generous in his willingness to share his wisdom and knowledge with younger colleagues. But beyond that, I know from personal experience that he has willingly involved newly minted colleagues in his ongoing research projects and cooperated with them as co-authors on journal articles by which they could begin their academic careers on a positive note.

For many years, Vijay has served as Editor-in-Chief of the Water Science and Technology series for Kluwer Academic Publishers. In this role he has contributed greatly to the mutual understanding of issues among the many professionals working in the water resources field. Vijay has overseen the publication of more than 50 titles in this series. Although some volumes are devoted to technical subjects such as GIS or neural networks, the series has been more focused on texts that describe water resources issues in various parts of the world, including Africa, the Middle East, India, and the Arctic. Both rural and urban water issues have been covered in the series. The WST series has provided a wonderful forum for professionals from all over the world to become educated about important water resources issues.

Vijay has also contributed enormously to the hydrologic community through important service activities. For example, he has been a driving force in the AIH almost from its founding, serving as president of the body from 2001-2003. Vijay has also contributed in a number of other service capacities including editorial boards, conference organization, and as current Editor-in-Chief of the ASCE Journal of Hydrologic Engineering. He has also served on US national policy panels for the Department of Homeland Security and on NAFTA evaluation panels. Of particular note is his organization of a student exchange program between Canada, Mexico, and the United States. This program, funded by the U.S. Department of Education, is dedicated to increasing awareness of engineering issues faced by the three countries through educational exchange.

Dr. Vijay Singh has spent his long distinguished career in developing a multi-disciplinary framework to address water resources issues using the physical sciences, mathematics, statistics, and social sciences. He has pursued his goals through research, publishing, editorial work, teaching, and public service. I believe that everyone would agree that he has excelled in each of these areas. For this reason, I can think of no one who is more deserving of the Linsley Award than Dr. Vijay P. Singh.

RAY K. LINSLEY AWARD Acceptance by: Dr. Vijay P. Singh



Thank you Jim for your thoughtful, generous and gracious citation. I would like to take this opportunity to express my deep gratitude to the Awards Committee and the AIH Executive Committee for selecting me this year to receive the Ray K. Linsley Award. Receiving the award this year takes on an added significance for me, since AIH is celebrating its silver anniversary. I consider it a rare honor and privilege to have my name associated with Professor Linsley through the award. When I look at the past recipients, I cannot help but feel awed by their scientific accomplishments. I have known some of them personally, all of them by their contributions and two of them have been my teachers. Therefore joining this distinguished group has a special meaning for me.

In May, 1981, I organized an international symposium on rainfall-runoff modeling at Mississippi State University and invited Professor Linsley to give a keynote paper on the state-of-art of rainfall-runoff modeling and also give a banquet speech. He graciously agreed to do both. That was the first time I met Professor Linsley. I had been longing to meet him since 1966 when as a junior in my undergraduate engineering program in India I took a course in hydrology and used his book "Hydrology for Engineers." During my senior year I also had the privilege of using his two other books: Applied Hydrology and Water Resources Engineering. Meeting with Professor Linsley was a rare delight, for I found him to be extremely humble, soft spoken, and inspiring.

Professor Linsley was a giant in hydrology. He was and is known worldwide for his many contributions: books, guidance of students, research articles, and consulting work. His work in the area of watershed modeling has been one of the most inspiring contributions to me. In 1966 Norman H.

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Crawford and Professor Ray K. Linsley authored a report "Digital Simulation in Watershed Hydrology: Stanford Watershed Model IV" Technical Report 39, Stanford University. Crawford was Linsley's Ph.D. student and the report was his Ph.D. thesis. Crawford was honored with the Linsley Award in 1992. This model was a seminal contribution and is one of the most cited works in the hydrologic literature. This contribution has changed the landscape of watershed hydrology and has profoundly influenced many other disciplines, including environmental modeling, ecosystems modeling, hydraulic modeling, water resources planning and management. It is this work of Professor Linsley that inspired me to work in the watershed modeling area.

During the intervening period of 40 years watershed modeling come a long way and the technology of watershed modeling is far more sophisticated and versatile now than in 1966. Even the Stanford Watershed Model IV has undergone at least eight incarnations and its current version is HSPF Release 12 within the EPA BASINS system. Hundreds of other watershed models have since been developed in the United States and abroad but they all have been inspired by SWM. Software tools have been developed to facilitate watershed modeling by providing interactive capabilities for model input development, data storage and data analysis, model calibration, and model output analysis, including model accuracy assessment. Examples of such software tools related to HSPF alone are: ANNIE/WDM, HSPEXP, GenSen, BASINS, HSPFParm, WinHSPF, and WDMUtil. New data collection tools, such as remote sensing and space technology, digital terrain and elevation models, and chemical tracers are now available. Geographic information systems and database management systems permit processing of large quantities of data. As a result designing, calibrating, modifying, evaluating, and comparing watershed models are more easily accomplished. Information based techniques, such as artificial neural networks, genetic algorithms, fuzzy logic, and others, are now being embedded in watershed models. Watershed models corresponding to different scales are receiving much attention these days. Spatially distributed models incorporating spatial variability of watershed and input characteristics are being emphasized.

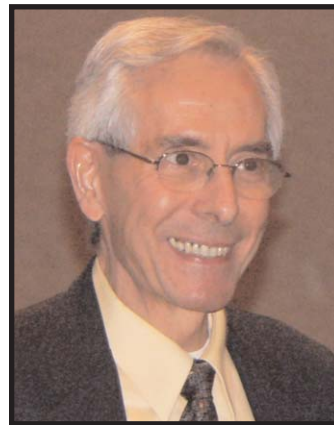
Mathematical models of watershed hydrology have now become accepted tools for the planning, development, design, operation and management of water resources projects. There is growing integration of these models with environmental and ecological management. The future of watershed modeling will be shaped by increasing societal demand for integrated environmental management, growing need for globalization by incorporation of biological, chemical and physical aspects of the hydrologic cycle. The models will have to be user friendly and be able to be interfaced with economic, social, political, administrative and judicial models. The models will have to be more global not only in terms of

spatial scale but also in terms of hydrologic as well as non-hydrologic details. The models will have to embrace rapid advances in data collection systems, information processing systems, and risk and reliability analyses. The models will have to be described in simple terms so that interpretation of their results will not be too exacting to the user. Although much progress has been achieved since the pioneering contribution of Professor Linsley in 1966, there is a long road ahead before the models will become household tools. We still have not been able to answer the basic question of which technology is better than which and under what conditions and how reliable the modeling technology is. The result is that there is vast chasm between theory and practice and the modeling technology developed decades ago is still in very much use in many parts of the world.

Before closing I would like to thank the many graduate students, postdoctoral fellows and colleagues from around the world that I have had the privilege of working with. I have learned far more from them than they perhaps have from me. They all have enriched my life in more than one way. Finally, my wife Anita and my children Vinay and Arti have been my life. They have been my strength, they have been my inspiration, and they have been my purpose in life. In a way this award belongs to them as much as it does to me.

C.V. THEIS AWARD

Citation By: Dr. Miguel Marino



The AIH C.V. Theis Award Committee recommends that the 2006 Award be given to Dr. Fred J. Molz, Professor in the Department of Environmental Engineering and Science at Clemson University for his contributions to ground water hydrology through research, teaching, consulting, and professional service.

Dr. Molz has made fundamental contributions to several areas of ground water hydrology related to water management in soils and aquifers and to the migration and processing of contaminants and other materials. His work is characterized by a rigorous application of fluid mechanics and thermodynamics to soil-plant interactions and to the saturated and variably saturated zones of heterogeneous aquifers. He uses theory and experiment as well as field surveys, and his work has influenced the fields of hydrology and aquifer development, soil physics, agronomy, ecology, and the evaluation of contaminated regolith. These influences

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Newly Certified Professionals

<u>Name</u>	<u>Certificate No.</u>
Daniel Lang Latham, New York	05-HG-1651
Charles Parrett Helena, Montana	05-H-1657
Darby Fuerst Monterey, California	05-H-1658
Scott Waltemeyer Albuquerque, New Mexico	05-H- 1660
John DeArment Missoula, Montana	05-H-1661
Thomas J. Osborne Billings, Montana	06-HGW-1662
Matthew P. Wickham Lakewood, Colorado	06-HG-1663
Song-Kai Yan Baton Rouge, Louisiana	06-H-1664
Morgan Ruark Charlotte, North Carolina	06-H-1665
Justin Ferris Palmer, Alaska	06-H-1666
Steven Deverel Davis, California	06-HGW-1667
David Bruner Eagen, Minnesota	06-HGW-1668
Brian Watson Atlanta, GA	06-H-1669

Associate and HIT

Brennon Schaefer St. Paul, Minnesota	06-HIT-045
Rober Thompson Davis, CA	06-HIT-046

Congratulations and Best Wishes!

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are documented by the citations to his publications as well as the syllabuses of his short courses and consulting activities. He has also co-authored the earliest (1971) textbook on the application of numerical methods in subsurface hydrology and a manual of practice for measuring hydraulic conductivity in heterogeneous materials (1990).

His earliest research in plant-soil interactions developed rigorous models of water migration in soils, roots, and plant tissues and of the extraction of water from soils by plants. The results were published in an extraordinarily diverse range of journals from hydrology, agronomy, soil science, and several biological fields. Some of these papers have become classics in both soil hydrology and plant physiology. There followed a period in which his team studied dispersion in aquifers and invested considerable effort in the interpretation of tracer tests. In the 1980s, a series of papers in *Water Resources Research* and *Ground Water* documented these studies. Characteristically, the work involved interpretation of field measurements, conceptual model development, mathematical analysis, and finally numerical simulation.

Molz went on to study a wide range of techniques for field investigation of the hydraulic and transport properties of aquifers, including tracers, slug tests, and flow meters as he gradually broadened his ideas and methods for characterizing the properties of the subsurface. His team mounted rigorously designed, detailed field experiments to separate horizontal and vertical transport, to measure the shapes of flow fields around sensors, and to refine the measurement techniques. These publications have been disseminated through a wide range of hydrological publications, including *Ground Water*, *Ground Water Monitoring and Remediation*, *Hydrological Processes*, and the *Journal of Hydrology*.

His concern for characterization of subsurface properties broadened into a wide range of conceptual and mathematical approaches, including geostatistical and facies-based geological methods. The papers produced by his team reflect not only his mathematical acumen but also his experience with modern instrumentation and with field measurements, and have been widely cited. An important component of his leadership in this new field was his convening of the 1998 AGU Chapman Conference on Fractal Scaling, Non-linear Dynamics and Chaos in Hydrologic Systems.

Molz has made a number of other contributions to the modeling of saturated, variably saturated, and surface flow, incorporating modern concepts of flow and the dual-domain and stochastic properties of both the surface and subsurface, and the transport and chemical and microbial processing of contaminants ranging from hydrocarbons to radionuclides. His research output continues to be both conceptually rich and relevant to a range of problems in ground water

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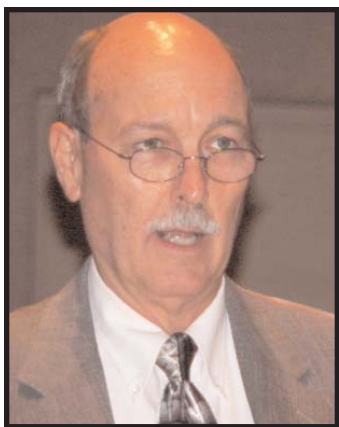
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hydrology. He has invested considerable effort in thinking about how to make practical computations of flow in highly diverse environments, in spite of the fact that many conceptual and logistical problems continue to challenge researchers.

Dr. Molz's research has been recognized through election as a Fellow of the American Geophysical Union in 2000, and by the Horton Award (1992) of the A.G.U Hydrology Section. He takes a leadership role in the Hydrology Section, recently chairing the Horton Award Committee, and serving on the Groundwater Committee and the Unsaturated Zone Committee, the Committee on AGU Strengths, Weaknesses and Opportunities, and the AGU Executive Committee.

In summary, we consider Dr. Molz to be an exemplary, active leader of modern ground water hydrology applied to environmental management, and it is the Institutes pleasure to honor him with the C.V. Theis Award.

C.V. THEIS AWARD Acceptance By: Dr. Fred Molz



It is an honor and a pleasure to have one's research accomplishments recognized by one's peers, so I humbly and with sincere gratitude accept the 2006 C.V. Theis Award from the American Institute of Hydrology. The award came as a complete surprise, and I would like to thank everyone involved in the selection process for thinking that I am worthy. Hydrology, especially

ground-water hydrology, has been a great field to be in during the last 40 years. It is an extremely broad and interdisciplinary field, where scientists, engineers and other professionals mix and work together in order to advance knowledge, develop and protect our water resources, and work toward a better life for all people. In accepting this award, I need to emphasize the terms "mix and work together", because without the help of my teachers, colleagues and students, I certainly would never have entered into consideration for the Theis Award. So perhaps a little history and thanks are in order.

After receiving my degree in physics from Drexel University in 1966, I knew I didn't want to continue with modern physics, which involved further study within several of the sub-fields of either quantum mechanics or general relativity. Things quickly got narrowed down to either hydrology or biophysics. Hydrology had three things going for it that were

hard to ignore for different reasons. I always had a natural interest in geology, at Drexel I took several electives in the Earth sciences taught by an inspiring professor named Irwin Remson, and studying hydrology allowed me to stay in the Philadelphia, PA, area and be near the woman, Mary Lee Clark, who ultimately consented to become my wife. So looking back, I now see that biophysics didn't have much of a chance. Lee and my two sons, Fred and Steve, always supported my work and through the years put up with a lot of my preoccupations. I also quickly made friends with a fellow student, George Hornberger, who was to become a life-long colleague. We were both nurtured at Drexel by Ron Drake and Ed Dohoney and of course Irwin Remson. When Dr. Remson moved to the Earth Sciences Department at Stanford University in 1968, George and I went with him. It was a great opportunity for both of us, and we got to work with some of the giants in the hydrology field, including Ray Linsley and Joe Franzini. I wasn't enough of an engineer to get an A in Dr. Linsley's hydrology course, and I will always remember the question from Dr. Franzini during my Ph.D. exam that I messed up. Towards the end of our stay at Stanford, George and I co-authored a book with Dr. Remson entitled, Numerical Methods in Subsurface Hydrology. I was the junior member of that team, and co-authoring a book at that time was a great learning experience. I certainly need to thank all my teachers and colleagues during that early part of my career.

After working with Jacob Rubin at the USGS office in Menlo Park, CA, during the summer after I received my Ph.D., I moved to Auburn, AL, to become an assistant professor of civil engineering at Auburn University. I didn't think that I would stay there all that long, but of course I ended up staying for 25 years. One of the reasons I chose Auburn, in addition to an excellent 12-month salary offer, was that I was attracted to the characteristics of the department head, Rex Rainer. Dr. Rainer was a business man who returned to academia after a number of highly successful years in the construction industry. He taught me a lot about dealing with and evaluating people, while encouraging me to range widely over my interdisciplinary interests. For a while I even had a joint appointment in the Department of Botany and Microbiology, where I worked with Betty Klepper and Curt Peterson on transport processes in plant tissue. During this time period I got to know the famous plant physiologist, John Boyer, and late in the seventies I would spend a summer working with him in his lab at the University of Illinois, Urbana. There we co-authored a paper entitled, "Growth-Induced Water Potentials in Plant Cells and Tissue" that was published in Plant Physiology. At the University of Illinois Computer Center, I remember walking into the men's room one evening while thinking deeply about a computer program that I was working on. After using the facilities, I was washing my hands when a lady walked in and began using the sink next to me. Looking over, I said, "Aren't you in the wrong bathroom?" Without losing a beat she replied, "Not unless I

Continued on Page 10

have been using the wrong room for the past 15 years." It was only then that I realized my mistake. I owe a great deal of gratitude to all of my colleagues in botany and plant physiology.

From the late seventies until I left Auburn University for Clemson University in 1995, most of my teaching and research was in subsurface hydrology. It started with field experiments devoted to thermal energy storage in aquifers, progressed to field studies of hydrodynamic dispersion and contaminant migration in aquifers, which included property measurement using non-standard methods such as the borehole flow-meter, moved into studies of surface and subsurface transport processes in wetlands, and ended with theoretical work aimed at a better understanding of natural heterogeneity using the mathematics of non-stationary stochastic processes with stationary increments. This latter field of mathematical statistics gives rise to what are known as stochastic fractals. During these Auburn years, I had the pleasure of working with another set of outstanding colleagues, including Jim Warman, the late Octay Güven, Jacob Dane, David Parr, Larry Benefield, Bill Wise and Joel Melville. We were fortunate to have a number of great students (Tom Jones, Duane Hampton, Peter Andersen, Ron Falta, Steve Nohrstedt, Mark Widdowson, Joel Hayworth, Jerry Boman, Ming-Hong Wen, Prab Clement and Hui Hai Liu) working with us. I owe a tremendous debt of gratitude to all of these individuals. In many ways, I think the students were more important than the research, illustrating the entwined nature of research and teaching.

With the more field-oriented and design-oriented work at Auburn, I also developed more of an appreciation of the need for and benefits of professional certifications of various types. (During undergraduate and graduate school, I didn't think much along these lines at all.) Opportunities also arose to do a limited amount of private consulting. For these reasons, I became registered as a professional engineer by the State of Alabama in 1978 and certified as a professional hydrogeologist by the American Institute of Hydrology in 1983. I feel that through the years there was a real benefit from being certified by these organizations.

In 1995 I retired from Auburn University for a variety of reasons, and moved "up the road" to Clemson University to accept a chaired position with joint appointments in the Environmental Engineering and Geological Sciences departments. After having received his Ph.D. under Jacob Dane at Auburn, and a national award from the Soil Science Society of America for his outstanding dissertation, Hui Hai Liu moved with me as a post-doctoral research associate. Hui Hai is a brilliant individual who has worked as a research scientist at the Lawrence Berkeley National Laboratory for the past 8 years or so. At Clemson, we began some serious theoretical studies of subsurface heterogeneity using fractal concepts. This led to further applications and analysis of the electro-

magnetic borehole flow-meter (EBF), as well as the development and application of the small-drill-hole gas mini-permeameter. In these endeavors I was again joined by outstanding colleagues and students. Ron Falta (now a professor at Clemson) dealt with simulation of multiphase flow, sedimentologist Jim Castle selected oil fields and outcrops and designed field studies of heterogeneity, Larry Murdoch, a geologist with an engineering bent, can build anything - including our first mini-permeameter probe, Greg Flach applied the EBF at the Savannah River site and worked on several modeling efforts, Michel Boufadel, now an associate professor at Temple University, joined us as a research assistant professor working on multifractals, while Dan Kaplan and Robert Fjeld performed tedious measurements and analysis of plutonium activities and transport chemistry in soils and field lysimeters. We were fortunate to have a group of truly outstanding Ph.D. students, which includes Cynthia Dinwiddie, Silong Lu, Alper Elci, Brian Powell, Inci Demirkanli, and Jianyong Guan. The fractal work and supporting measurement methodology culminated in a review article by Molz, Hari Rajaram and Silong Lu entitled, "Stochastic Fractal-Based Models of Heterogeneity in Subsurface Hydrology: Origins, Applications, Limitations and Future Research Questions" that was published recently in *Reviews of Geophysics*.

In my opinion, the key unanswered problems in subsurface hydrology revolve around conceptualizing natural heterogeneity: what is it, how does one measure heterogeneous properties in an unambiguous manner, can heterogeneity be understood and represented mathematically in a fundamental way? Is it possible to truly predict the future outcome of transport processes in natural porous media? After being introduced to the emerging field of "non-linear dynamics and chaos" in the late eighties, I began to feel that the answers, to the extent there are answers, would lie within the realm of non-linear dynamics and associated fractals, and I still suspect this is so. This led me and two of my more recent outstanding mathematical colleagues at the University of Nevada, Tom Kozubowski and Mark Meerschaert (now at the University of Otago in New Zealand), to develop a new stochastic fractal and call attention to potential similarities between the statistical analysis of velocity increments in turbulence (a known chaotic process) and $\log(K)$ increments in heterogeneous sediments. This was first mentioned in *Geophysical Research Letters* by Meerschaert, Kozubowski, Molz and Lu in an article entitled, "Fractional Laplace Model for Hydraulic Conductivity". This work, work on plutonium migration in the vadose zone and a study of matrix diffusion in fractured rock led by Hui Hai Liu is still on-going.

Most of the colleagues and students mentioned above, are those that I worked with closely, usually at the same university. However, there was also productive work and interaction from afar, especially with the rise of the internet. So if I didn't

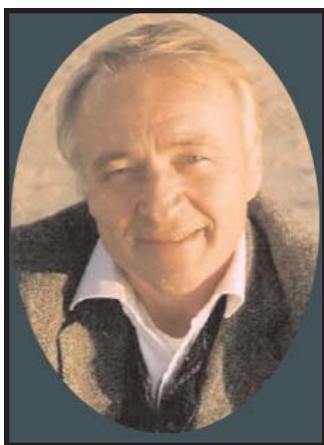
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2006 Awards - continued from Page 10

mention Chin Fu Tsang at LBNL, Chunmiao Zheng at the University of Alabama, Krzysztof Podgerski at Purdue University, Peter Huyakorn, Daniel Lavalley, Bill Waldrop and Doug James, I would be missing some vital people, and still many others should have been mentioned.

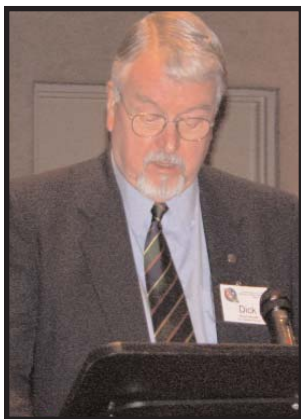
At the end of this year I plan to retire from Clemson University, but to continue working with students on various research projects. In that sense, the timing of this recognition couldn't be better, and I want to thank the American Institute of Hydrology again for this tremendous honor. You have made me a very happy person.

ROBERT G. WETZEL AWARD FOR EXCELLENCE IN WATER QUALITY



In 2006, The AIH created an award for Water Quality Hydrology, named for Robert G. Wetzel, in recognition for his pioneering work in this field. The new award was announced at the AIH 25th year Anniversary Conference with a citation presented by Richard Marzolf, a friend and colleague, who reviewed Dr. Wetzel's career. Recipients of the R.G. Wetzel Award will be selected in the coming years and will be recognized for their work at future AIH conferences.

ROBERT G. WETZEL AWARD Citation By Dr. Richard Marzolf, USGS



This award is in recognition of Robert G. Wetzel's outstanding contributions... as author, scholar, teacher, researcher, and societal servant... to the understanding of biological processes in nature that mediate the qualities of water in lakes, rivers, and streams.

Dr. Wetzel is internationally renowned for his authorship of

the popular and exhaustive textbook, *Limnology*, which first appeared in 1975. Its present, third, edition was published in 2001. He is known also for unflinching service to the International Society of Theoretical and Applied Limnology (SIL) for whose members he served as Executive Secretary and Treasurer for almost 40 years. Recently he has shown the leadership and energy as a co-editor to establish a series of volumes dedicated to reporting on the status of limnological knowledge in developing countries. Now comprised of five volumes, this series helps document the status of water as an essential human resource on a world-wide scale.

His research program has made original contributions to scientific understanding of the integral role of plants in aquatic ecosystems; the synthesis of organic matter through the uptake of essential and trace-element nutrients, the release of dissolved organic matter to surface waters, and the subsequent accumulation of humic substances, that has been useful to the hydrologic understanding and management of in surface waters. He showed that plant processes were involved in many chemical mass balances in water and that such biological control over water quality is inextricably linked to hydrologic processes that control water quantity. He mentored and supported dozens of graduate students and post-doctoral associates. Because of his text, his work for SIL, and the incredible energy and industrious attention that he devoted to everything he started, he has influenced the development of virtually every student of inland waters that is active in the world today.

Dr. Wetzel influenced has affected the way in which all hydrologists approach their methods of assessment. The American Institute of Hydrology is honored and proud to initiate this award for excellence in the study of water's qualities that will carry the name of Robert G. Wetzel.

The Award Plaque was accepted by Ms. Carol Wetzel, wife of Robert G. Wetzel



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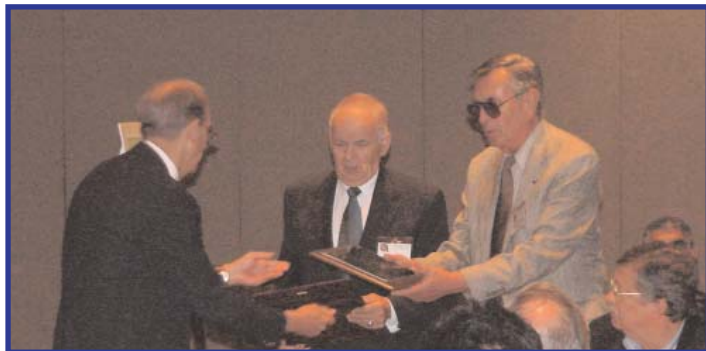
FOUNDER'S AWARD

In commemoration of the 25th year Anniversary, the Executive Committee chose to recognize the contributions made by the Founders and present a Plaque of Appreciation to the Founders Dr. Sandor C. Csallany, Dr. Roman A. Kanivetsky and Dr. Alexander Zaporozec. Dr. Roman Kanivetsky was not in attendance, but sent a short paper to be read in acceptance of the Plaque of Appreciation.

AIH after 25 years

Although 25 years of AIH is mile-stone for celebration, it is not a time for self-congratulation. Rather it is time for lessons and challenges ahead. During the 25 years of AIH there have been few successes and many failures. The biggest failure, in my opinion, is that the hydrology as a science and as a profession remains fragmented. This failure translates to low membership, lower recognition and acceptance, and lower impact on policy decisions in general.

Water is the blood of life. There are departments of civil/environmental/agricultural engineering, geology, forestry, biosystems, natural resources, environmental health and many more, where hydrologists are educated. And yet, there is no department of hydrology where hydrologists could develop the knowledge in unified and holistic way. Why? Because, hydrologists played and continue to play the second and utilitarian 'fiddle' to other professions. This means that each group is dealing with its own realm of physical framework. As a result, for example, the legislation is written separately for ground and surface water, although both of them are part of one system. This fragmentation of education leads to that



hydrologist cannot fully address the emerging complex societal needs. These examples show that the needed hydrologic knowledge is in crisis. We are approaching what we would call the "environmental age" - the epoch, where the human survival is at stake. Fundamental shift of paradigms in hydrology is needed to reflect the emerging societal needs. The educational system for hydrologists is at a cross- road. The present system was designed for "the industrial age", and not for the 21st century and beyond. Little systematic research exists on how to create institutions that would effectively harness the needed hydrologic knowledge.

I urge the Executive Committee to develop a vision for unification of hydrology as a profession and as a science. The first step would be to establish a high-priority committee with participation of academia, government and private sector to develop ideas and long-range strategy, as well as seek commitment from academic, state, and national institutions. Presently, many universities are going through the long-term restructuring and establishment of new, relevant organizational structures in environmental area to correspond to societal needs. That could be a good opportunity for AIH to get involved at the very initial stage in, or even lead, the establishment of well designed hydrology departments.



SEEKING VOLUNTEERS FOR 2007 RENO CONFERENCE

AIH is asking for volunteers to help with the 2007 Annual Meeting, April 22-25, 2007, in Reno, Nevada. We need volunteers to help as moderators for the technical sessions and judges for the poster and student papers.

INTERESTED?

Please call AIH at 1-800-970-4AIH , to volunteer your services.
We look forward to your participation in the meeting. Support AIH!

Job Postings

AIH will post job opportunities for hydrologists nationwide on our website. For more information and ad rates please contact AIH Headquarters at Aihydro@aol.com or call 770-384-1634.

Candidates looking for positions should frequently check our website for new opportunities.

www.aihydro.org

EXECUTIVE DIRECTOR American Geological Institute Washington, D.C. Area

The Search Committee invites applications for the position of Executive Director for the American Geological Institute (AGI). Interested applicants should be broadly educated scientists and science administrators who have demonstrated leadership and vision in the earth sciences; have an established record of success as an earth scientist; have proven senior management and budgetary experience and interpersonal skills; and have a record of success as a not-for-profit fundraiser. The applicants must have the ability to communicate effectively with the scientific community, academia, industry, government and the public.

A Ph.D. in an earth science or related discipline is required. The successful candidate must be willing to locate to the **Washington, D.C.** area and be prepared to maintain a demanding travel schedule.

The Executive Director conducts the affairs of the Institute, with direction from the Executive Committee, including administering all planning and standing policies, supervising AGI staff, and coordinating the various activities, projects, and programs of the Institute. The Executive Director maintains liaison relationships with the officers and administrators of AGI affiliated societies, with other geoscience and science-related organizations and with academia, government agencies, industry and the public.

Interested persons are invited to submit a resume, a letter stating qualifications, and a list of five references to the address shown below. Review of applications will begin **October 20, 2006**.

Chair, Search Committee
American Geological Institute
4220 King Street Alexandria, VA 22302

Applications and inquiries will receive confidential consideration. AGI is an equal opportunity employer.

ACCOUNT MANAGER Aon

Overview: Aon is a global leader in risk management, insurance and reinsurance brokerage, human capital and management consulting, and outsourcing with more than 55,000 employees in 600 offices. We integrate customized services, leverage expertise across industries and apply business knowledge to our clients' strategic goals. Aon helps clients anticipate how change intersects with opportunity. Each of our clients has unique business needs, so we have developed expertise for a complete range of business processes, products and industries. Aon's account and relationship managers form a comprehensive perspective of our clients' organizations, matching our expertise to their business strategy.

Minimum education required: Bachelors, Masters preferred. AIH certification a plus

Minimum work experience required: 4 years

Special skills required: Knowledge of flood modeling and/or hydrological engineering. Also, must have experience with Geographic Information Systems (GIS), such as ESRI or MapInfo applications. Experience with federal flood programs such as SLOSH or HAZUS is very beneficial. Should have experience in programming with higher level languages such as C#, C++, or Visual Basic; Matlab application skills will be considered also.

Description of duties & responsibilities: Coordinate with other scientists/ engineers, and other team members to build and maintain hydrological application to model flood peril to exposed properties. Must operate and evaluate available existing flood modeling programs, including SLOSH and HAZUS.

Duties include the following tasks: Research and development activities relating to the data collection, processing, and modeling of hydrological phenomenon to support catastrophe modeling activities for property and casualty insurance portfolios. Individual must work well with senior engineers/scientists and entire development team to produce cutting edge technologies for flood modeling applications. Individual will work with Geographic Information Systems (GIS) to collect and process large inventories of related data; along with other available modeling applications such as SLOSH and HAZUS. Background in application programming is a must (Fortran, C#, C++, VB, etc.), along with proven ability with MS Office (Word, Excel, Powerpoint, Access).

Benefits: Aon offers: Competitive Compensation, Exceptional Benefits, Continuing Education & Training, A Unique Internal Advancement Program, and Tremendous Potential with A Growing Worldwide Organization.

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Meetings, Conferences and Courses

Canadian Water Resources Association B.C. Branch Conference North American Lake Management Society

October 24-27, 2006
Vancouver, British Columbia

For more information contact: Conference Chair, Peter Morgan, Golder Associates, Ltd. at pmorgan@golder.com

NALMS 2006: Making Connections - People, Lakes, Watersheds

26th International Symposium of the North American Lake Management Society

Hosted by: Indiana Lakes Management Society
November 8-10, 2006
Indianapolis, Indiana

Indiana has a long and rich history in limnology and lakes. The last glaciers, some 10,000 years ago, covered the northern third of the state with natural lakes. There are virtually no natural lakes in the southern two-thirds of the state but there are plenty of impoundments. Indiana's 1400 lakes over 5 acres in size include 8 Corps of Engineers projects (10m700-acre Monroe Reservoir is the largest in the state) and Lake Wawasee, at 2,600 acres, the largest natural lake in the state.

It is in recognition of this rich history that the theme of the 2006 NALMS International Symposium is derived. This Symposium will emphasize connections between natural lakes and reservoirs; between watersheds and lakes; and, of course, between people and lakes.

The Call for Papers is now available and can be found on the conference website at <http://www.nalms.org/>.

This year's Indianapolis, Indiana venue, known as the "Crossroads of America" provides an easy connection from anywhere. Please visit <http://www.nalms.org/> for complete details and information as they become available:

Registration materials will be available in June.

AIH Annual Meeting & International Conference "Integrated Watershed Management: Partnerships in Science, Technology, and Planning"

April 22-25, 2007
Reno, Nevada

There is increasing recognition by governing agencies and industry, for the need of technical integration in water-resources planning and management. The AIH conference is intended to present an opportunity for scientists and managers in all water-related disciplines to gather and interact together. The conference will offer research and project case studies from all over the country, providing learning opportunities to all attendees. In addition to offering a wide range of technical topics, areas of social and legal interaction, and current interests will also be covered.

The conference will give a chance to discuss the effects of urbanization, agriculture, industry, forestry, etc. and the research done and needed to better define these effects. The conference will give a chance for managerial viewpoints of cities, factories, farmers, fisheries, foresters, etc. to answer questions on how technical problems are brought together and solved, and how management issues are decided between competing resources. What kind of partnerships have been developed between hydrologists, engineers, geologists, chemists, biologists and other disciplines to develop current hydrology methods? What kinds of knowledge are required to make good hydrologic decisions and practice good science? What kinds of partnerships exist between the users of hydrologic information?

Call for Papers

Preliminary presentation titles are due November 30, 2006. Abstracts are due January 31, 2007.

Please submit your 200 word abstract to AIHmedia@aol.com or AIH Headquarters at:

American Institute of Hydrology
300 Village Green Circle, Suite 201
Smyrna, GA 30080

Proposed Themes:

- The Carbonate Aquifer System of Nevada/Utah
- Emerging Contaminants
- Hydrologic Effects Associated with Climate Change
- Lakes and Reservoirs
- Cooperative Conservation Efforts
- San Francisco Bay-Delta Program
- Klamath Basin Hydrologic Issues
- Integrating Modeling Concepts
- Adaptive Management
- Stream and Groundwater Interactions

EXECUTIVE COMMITTEE RECOMMENDS CONSTITUTIONAL AMENDMENT

During the last 9 months, the Hydrologic Technician Certification Committee has been diligently planning the implementation of a program to include hydrologic technicians in our organization. This program is designed to certify the qualifications of those that are responsible for collecting, quality assuring, and compiling the data we use in our profession. The plan is to certify hydrologic technicians at three levels within each sub-discipline (water-quality, surface water, and ground water). Each level will have specific continuing education, experience, and testing requirements. These requirements were developed from a set of outlines compiled by members of the committee and vetted through industry, academia, and government.

After much planning by our committee, it is now time for the AIH membership to act. Below are two sections of an Article for amendment to our Constitution. Section 1 addresses the creation of a Technical Division to include hydrologic technician members, and Section 2 addresses the management of that Division. The AIH Executive Committee recommends that our Constitution be amended to create . Division status would be the most efficient way to include technicians in our organization and give them the autonomy they need to move forward and grow.

ARTICLE XX. TECHNICAL DIVISION

Section 1. Creation. The Institute may create a Technical Division to operate under separate by-laws and under the Institute's oversight. The mission of the Division will be to

qualify and certify Hydrologic Technicians. The process to create a Division must be voted by two-thirds or more affirmative vote of all votes received from voting Members, through a mail ballot. A vote by the Institute's Professional Membership on such a change, will use a time schedule and procedure determined by the Executive Committee, upon receipt and acceptance by the Institute of by-laws for the intended Division.

Section 2. Management. The Technical Division will elect a Management Committee to be composed of a Chairperson and elected officers as defined in Division Bylaws. The duties of the Division Management Committee shall be to accomplish the business of the Division as described in the Division Bylaws. The Chairperson of the Division will serve as a member of the Institute's Executive Committee as a representative of the Technical Division.

Within the next few weeks, you will receive a mail ballot from the Executive Director requesting your vote for or against the addition of this Article in the AIH Constitution. If you wish to have input, your immediate response is requested. Hydrologic Technician certification is an important step toward growing and adding value to the organization. If you have any questions about the Hydrologic Technician Certification program, please feel free to either call or email our headquarters or myself. Thank you for your support!

Emitt C. Witt, P.H.

General Secretary and

Chair, Hydrologic Technician Certification Committee

ecwitt@usgs.gov

573-308-3679 office

AIH Unveils a Hydrologic Technician Program

The Executive Committee of AIH has been working with a group of senior hydrologic technicians and hydrologists from various agencies to develop a program for hydrologic technician (HT) certification. Our goal is to have HT certification offered at 3 levels through our Institute by the end of 2007.

Why should AIH be concerned about hydrologic technician certification? The science of hydrology relies on good data to obtain valid conclusions. For a great part of data used by hydrologists, someone other than a hydrologist has collected the information in the field. Certification of technicians is a natural extension to professional certification and to the support of hydrology as a meaningful science. Public agencies and industry are concerned about the way data are collected with respect to standards and usability. They desire some way to define the competence of those employees that collect to data used in water-resource decision making.

AIH has formed a committee to develop a hydrologic technician certification process. It consists of AIH members, USGS technicians, and members from a water agency and a consultant firm. The committee has determined that as a start, there will be three categories of technician for surface-water, ground-water, and water-quality, similar to the professional categories. It has determined that there will be three levels for each category: 1. trainee, 2. journeyman, 3. senior. The testing will include concepts, skills, and safety commensurate with each level and category. There will be only the one test given for all categories at level 1, the trainee level. The committee has decided that it is important for all trainees to have a basic knowledge of the three components of hydrology. This overlap will not occur in the remaining two levels. Separate tests will be given for surface water, ground water, and water quality. The candidate for level 1 (trainee) will be required to have a minimum 1 year practical experience under the supervision of a professional hydrologist or senior level hydrologic technician or an Associate or Bachelor of Science degree with a minimum of 12 hours of water-related coursework. A journeyman level (2) will be required to have 5-years experience, and a senior level will be required to have 12-years experience. A journeyman will be required to have passed the trainee exam, and a senior will be required to have passed both the trainee and journeyman examinations. Applicants will be able to be certified in one or more categories.

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Email: AIHydro@aol.com Website: www.aihydro.org

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AIH Announces the Election Results for New Officers

Balloting of new Officers for the term 2007-2008, was closed on September 1, 2006. Ballots were then opened by the Teller Committee, AIH member Brian Watson . There was a total of 145 ballots received. Voters that were not eligible to cast a vote were eliminated from further consideration. These included members that are not in good standing and member categories not eligible to vote. These totaled 8 ballots.

The ballots accepted as official, totaled 137. Each candidate for office ran unopposed. The voting results are as follows:

President Elect: Miguel Medina, Duke University

Treasurer: Robert Hordon, Rutgers University

General Secretary: Emmitt Witt, U.S. Geological Survey

Vice President for Academic Affairs: Stephan Nix, University of North Florida

Vice President for Institute Development: Allen Gookin, Gookin Engineers, Inc.

Vice President International Affairs: Neven Kresic, Malcolm Pirnie, Inc.

The current President Elect assumes the Office of President. The new President is Antonius Laenen, Consultant. Also, The current President assumes the Office of Past President. The new Past President is Miguel Marino, University of California, Davis. The new officers will take office on January 1, 2007 and will serve until December 31, 2008.

Please contact and offer your support to the new officers. Moreover, pledge your active participation in helping AIH meet the many challenges we face.