techniques to assimilate these observations are immature. Innovative global models, such as the Navy Coastal Ocean Model (NCOM) that have high-resolution capability in the surface layers, will take full advantage of the GHRSST-PP data streams in an effort to address these issues. Other applications consider the application of GHRSST-PP in tropical storm prediction and the implications of bringing short-term (3–5 years) satellite data sets in and out of the climate record. The feedback generated by the experiments will improve GHRSST-PP products and services and aid in its transition from a demonstration system to an operational system.

The third GHRSST-PP workshop demonstrated that the project is mature with a clear user demand and marked an important waypoint on the route to its successful implementation. Publication of comprehensive workshop proceedings is now in preparation that will be available at http://www.ghrsst-pp.org/documents together with other GHRSST-PP documents and technical papers. Future developments include establishing an international GHRSST-PP project office, sponsored by the European Space Agency, at the Met Office, U.K., in September 2003. This will significantly enhance the coordination and development of GHRSST-PP activities that include a large number of partner organizations. The GHRSST-PP is an open project and those having an interest in using GHRSST-PP data products or participating in the project in any way are encouraged to contact the GHRSST-PP Science Team using the information found on the project Web page or, alternatively, via e-mail to the GHRSST-PP science Team Chair (Craig.Donlon@jrc.it).

The next GHRSST-PP workshop will be hosted at the Jet Propulsion Laboratory, Pasadena California, in late 2003. The third international workshop of the GHRSST-PP was held 2–4 December 2002.

—CRAIG DONLON, Institute for Environment and Sustainability, Inland and Marine Waters Unit, Ispra, Italy

SECTION NEWS

HYDROLOGY

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Sudicky Receives 2002 Hydrology Award

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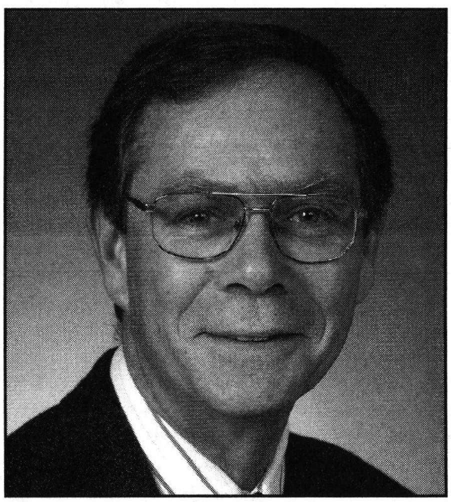
Edward Sudicky received the Hydrology Award at the 2002 Fall Meeting in San Francisco, California, last December. The award recognizes outstanding contributions to the science of hydrology.

Citation

"It is with great pleasure that I introduce this year's recipient of the Hydrology Award, Dr. Edward A. Sudicky, of the University of Waterloo. Ed is a world leader in the development and applications of groundwater models. He has had an immense impact on the field, single-handedly pushing it forward in areas of porous medium heterogeneity and mass transport in porous and fractured media. Ed is an extraordinarily innovative and productive scientist.

"Ed was graduated with his Ph.D. from the University of Waterloo in 1983 and joined the faculty in the Department of Earth Sciences shortly thereafter. He rose through the ranks to professor and served the university as chair of his department from 1997 to 2000. He is presently the associate dean for research in the Faculty of Science. Ed is a Fellow of the Union and a recipient of the O. E. Meinzer Award from the Geological Society of America.



"Ed has contributed significantly to understanding flow and transport processes in porous and fractured media and to the development of new modeling approaches. His large body of published work is evidence of these scholarly accomplishments, which are exceptional in terms of their quality and innovation. Most of the papers he has published appear in leading scientific journals like *Water Resources Research*, *Journal of Contaminant Hydrology*, and *Advances in Water Resources*. His work also has been recognized by ISI as being extraordinary in terms of the number of citations that it has received.

"One long-term objective of Dr. Sudicky's research has been to improve understanding of how heterogeneity in the material properties of geologic systems influences organic and inorganic chemical contaminant plumes, from small to large time and distance scales. Ed was a pioneer in field studies that used highly instrumented natural gradient tracer tests to understand field-scale transport processes. This work and emerging theory helped to pave the way for a host of follow-on studies that revolutionized knowledge of dispersion and reactive mass transport. His research is distinguished by a unique blend of theory and practicality and the integration of geology, geostatistics, and mathematics.

"Ed, his students, and his colleagues have been a major force in the development of new computer simulation tools to study complex problems. This work continues to define the state of the art in groundwater modeling. For example, work with his students contributed to the development of new numerical and statistical methods and refinements in methods to accommodate complexities. His more recent work opened up fractured rock for more rigorous investigation using three-dimensional models that incorporate significant matrix effects. With a new generation of students, Ed remains hard at work looking at problems of the evolution of karst conduit systems, rainfall/runoff problems in large watersheds, and fracture-matrix flow in unsaturated systems.

"Ed views his work as an exploration of physical and chemical processes in groundwater. He is a proponent of models, not as ends in themselves, but as powerful tools to study processes and phenomena. His work is a wonderful balance between methodological improvements and the development of fundamental scientific ideas in hydrology.

"The Hydrology Award is given for 'outstanding contributions to the science of hydrology.' Dr. John Wilson in his letter of support for Ed's nomination summed up his contributions this way:

'Dr. Sudicky has set the standard for his generation. No other person of contemporary age has influenced the field of hydrology as much. Everywhere I travel, his contributions are known and deeply appreciated.'

"Those who are familiar with Ed's work will be pleased that the committee has recognized his enormous scientific contributions."

—FRANK W. SCHWARTZ, The Ohio State University, Columbus

Response

"Thank you very much, Frank, for those kind words, and thanks to the Hydrology Award Committee for selecting me for this coveted honor. Upon examining the list of prior recipients of the AGU Hydrology Award, I was completely humbled. I believe that credit should be given where credit is due; hence, it would not be proper for me to accept this award without recognizing the major contributions of my past and current graduate students. I am indebted to the 30 or so students I have had the pleasure of working with over the past 18 years, because it is their research accomplishments from which I have benefitted.

"A simple tracer test I carried out in 1978 during the very early days of hydrogeological studies at Borden, Canada, was the start of my research career. It formed the basis of my M.Sc. thesis on dispersion under the tutelage of John Cherry. This tracer test was not originally designed with a goal of demonstrating scale-dependent dispersion, although it is what grew out of the observations. In fact, I had no idea what to expect. The concept of 'scale-dependent' dispersion was just appearing on the radar screen, at least in the mainstream literature. In hindsight, I think the conclusions I drew from this tracer test concerning the effect of subsurface heterogeneity on solute mixing had more to do with serendipity than they did with following the scientific method in a formal way, starting with a clearly defined hypothesis a priori. I want to again thank Frank, who over the years taught me the value of persistence and critical thought, to always keep the 'big picture' in mind, and to follow one's intuition even if it is contrary to commonly accepted scientific beliefs.

"As an undergraduate in civil/structural engineering, I soon became disenchanted with designing beams. My coursework then migrated toward water resources systems, mainly surface water, which I found to be much more fulfilling and challenging because of the uncertainly associated with natural systems. Then, in my senior undergraduate years, I enrolled in a course on groundwater hydrogeology. It was a topic I knew very little about, and Bob Farvolden in the Earth Sciences Department was offering it. Bob was an amazing and inspirational lecturer, and I learned from him that there was even more uncertainty associated with this field of groundwater. In fact, Bob would deduct marks from an assignment if you calculated and reported a hydraulic conductivity value with more than two significant figures. This course was followed by summer jobs doing research for John Cherry, Emil Frind, and Bob Gillham. I'll never forget my first summer job with John. He asked me to set up and run a 2-D finite element model, in those days using punched cards, for a variety of cases to illustrate the effects of geologic layers and lenses on subsurface advective flow paths. I spent three solid months manually tracing particle paths from one finite element to the next with tracing paper, a calculator, and printouts of velocity vectors. The product of this tedious exercise led to Figure 9.8 in Freeze and Cherry's classic text, *Groundwater*, and an offer to do a master's degree with John. A Ph.D. with Emil Frind followed later because it was clear that I needed to upgrade my modeling skills.

"Upon completing my Ph.D. in 1983, a time when sophisticated 3-D stochastic transport theories were emerging to explain scale-dependent dispersion, I thought it would be a useful exercise to go back into the field at Borden and test whether these theories made sense. Following the Waterloo tradition of sampling overkill, many hundreds of permeability measurements were taken from numerous cores, analyzed geostatistically, and the results inserted into theoretical expressions to predict dispersion parameters. The outcome of this exercise proved to be fruitful from several perspectives. Stochastic macrodispersion theory seemed to make sense, it motivated other researchers to further test the theory at other sites, and the recognition it somehow brought me led to a faculty position at Waterloo in 1985. The latter point was particularly important because my wife, Nina, kept reminding me that I had her and four young daughters to support and no real job.

"As Frank has indicated, my research has largely been an exploration of physical and chemical processes in groundwater, and I have used models extensively to study them. While I am a proponent of models, I indeed feel it is critically important to keep at least one foot firmly planted in the field, or in the lab, where new theories and understandings are put to the test. In 1887, T. H. Huxley stated, 'The known is finite, the unknown is infinite; intellectually we stand on an islet in the midst of an illimitable ocean of inexplicability. Our business in every generation is to reclaim a little more land.' I hope the work of my students and me has at least reclaimed a small parcel of this land. Thank you AGU, colleagues, and friends for this honor. It is deeply appreciated."

—EDWARD A. SUDICKY, University of Waterloo, Canada