

2004 HYDROLOGY SECTION AWARD

CITATION OF YORAM RUBIN

Yoram Rubin, Professor of Civil and Environmental Engineering at the University of California at Berkeley, is a leading researcher in contemporary hydrology.

Starting from 1987, Yoram has published a considerable body of important articles, primarily in WRR, that have contributed tremendously to the emerging field of stochastic modeling of flow and transport in the subsurface of which (in the words of Prof. Gedeon Dagan's nomination) "*he must be viewed as one of its architects*". His research dealt with: transport of solutes within heterogeneous formations, the solution of the inverse problem, flow modeling, impact of non-stationarity and unsteadiness of mean flow on transport, transport of reactive solutes, risk assessment, flow and transport in the unsaturated zone or in formations of bimodal structure. Applied mathematical problems, like the generation of random fields, or the upscaling of conductivity and macrodispersivity, need also be mentioned in this context. The highly original works have always addressed central problems of hydrologic modeling, on both fundamental and applied levels, as recognized by the considerable impact in the ISI citation index (more than 1000 citations).

While Yoram is one of the few leading contributors to theory, he has played in the last years a unique role in applying stochastic modeling to field problems. This is one of the most pressing needs of contemporary hydrology; while theory has made great headways there is a serious lag in applying it to real life problems. Such an enterprise requires strong familiarity with theory and with practical aspects. His results in this area are generally seen as a great success.

The coronation of these research activities is the publication of the book "Applied Stochastic Hydrogeology", Oxford University Press, 2003. The book was recommended in a recent EOS review as an "*indispensable tool for students and professionals as well*".

Yoram Rubin's leading role in hydrologic science is also shown by his recent, groundbreaking work on the use of geophysical field techniques (seismic, ground penetrating radar) in order to characterize the hydraulic properties of the subsurface. Indeed, one of the main obstacles to analysis and prediction of flow and transport at field scale is the lack of data on spatial distribution of underlying properties. The use of nonintrusive geophysical methods proves therefore a most promising one, provided the field measurements can be used in a rational manner to identify hydraulic properties. His pioneering article with Mavko and Harris (WRR, 1992) can be regarded as one of the starting points of a new discipline that has since expanded tremendously. His recent work on characterization of soil properties and moisture content by geophysical methods is of great significance to many areas where most pressing research demands are perceived, like in agricultural engineering and in soil-atmosphere interactions.

Moreover, besides advising a large number of graduate students and developing strong international links also through a stream of postdoctoral fellows, Yoram has devoted time and energy to the hydrologic community by his serving in various committees, international teaching and editorships.

For his outstanding contributions to hydrologic science, education and practice I am therefore proud to present the most highly deserving recipient of the 2004 hydrology section award, Yoram Rubin - *Andrea Rinaldo, Università di Padova, Italy*