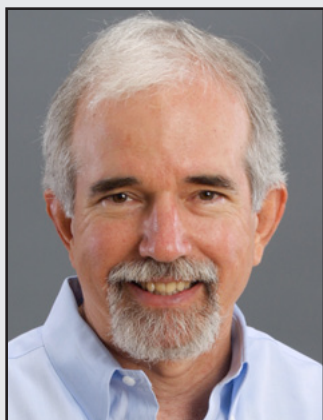


2011 MEDALS & AWARDS

O.E. MEINZER AWARD

Presented to
Graham E. Fogg



Graham E. Fogg
University of California, Davis

Citation by Christopher T. Green and Edward A. Sudicky

We present the 2011 O.E. Meinzer Award to Graham E. Fogg in recognition of his pioneering work on solute transport in complex geologic media. Graham has more than 30 years of experience researching and teaching about topics that include, among others, regional physical hydrogeology, contaminant hydrogeology, geostatistics and stratigraphic modeling, and groundwater/surface water interactions. Graham has produced a large body of impactful papers, from which the award committee recognized three seminal papers as having significantly advanced the science.

Graham's career has been devoted to developing fundamental theory and widely applied methods related to the role of complex geology in hydrogeology. While at the Bureau of Economic Geology from 1978–1989, he identified continuity and interconnectedness of high conductivity zones as critical factors affecting fluid and solute transport in complex aquifers, and he recognized the need for geostatistical and stochastic methods to study these factors (Fogg, 1986, *Water Resources Research*, v. 22, p. 679–694). In 1989, Graham began teaching and mentoring graduate students at University of California, Davis. His research group made important advances toward developing the tools needed to better simulate transport processes in complex aquifers, including methods to simulate complex geological features

from readily available sources such as core logs (Carl and Fogg, 1996, *Mathematical Geology*, v. 28, p. 453–476) and random walk particle tracking methods to avoid numerical dispersion in simulations of solute transport in complex media with sharp interfaces (LaBolle, Fogg, and Tompson, 1996, *Water Resources Research*, v. 32, p. 583–593). These key advances led to a cascade of publications that have shined light on transport processes such as diffusion limitations to contaminant recovery, convolution of groundwater ages and age-tracer concentrations, anomalous dispersion and tailing of concentrations, and stable isotope fractionation. Graham's broad knowledge and substantial contributions to hydrogeology have gained him a very strong international reputation and the respect of fellow scientists. Above all, he is a dedicated, sharing colleague with the highest level of integrity.

Response by Graham E. Fogg

Thank you Lenny Konikow, Chris Green and Ed Sudicky for those kind words. It is quite overwhelming to join the list of illustrious O.E. Meinzer Awardees. I would like to thank the Geological Society of America, the Hydrogeology Division, and those who wrote letters of support for bestowing on me the honor. When the phone call came from Ed Harvey notifying me of the good news, I literally almost fell off my chair! It was a total surprise, which made it all the sweeter.

No one gets to this point without a lot of help, and in my case I feel extraordinarily lucky to have been supported by an incredible collection of people, especially family, mentors and students. First and foremost I owe thanks to my family, which has supported me through thick and thin, and pulled more patience and wisdom out of me than I knew I had. From the bottom of my heart, thank you Karen Burow, and Paul, Dana and Carson.

Four extraordinary, mind-bogglingly different mentors taught and influenced me profoundly. While I was a wayward Junior at the University of New Hampshire, Francis Hall first lit up my interest in hydrogeology and helped put me on a path to graduate school. At University of Arizona I had the amazing fortune to be put through the paces both by both Shlomo Neuman and John Harshbarger. Shlomo has the unusual quality of being both a brilliant theoretician and gifted teacher. My modeling foundations and appreciation for the role of basic research in hydrogeology came largely from him. John

Harshbarger, 'big John', was the opposite of Shlomo—a nuts and bolts hydrogeologist with emphasis on the 'geo'—and with an intimidating, demanding style that both scared the hell out of us students and motivated us to pursue practical, imaginative solutions to problems when the equations did not quite work.

Then it was on to the Bureau of Economic Geology at The University of Texas at Austin and into a totally different school of thought. It was there, while brainstorming about transport of radionuclides that Charlie Kreidler kept dropping pearls of wisdom about the absence of modern geology in hydrogeology and especially about the unrealized potential of depositional systems science. This led to my early attempts at incorporating geology more realistically into 3D models in the early 80's. It was then that I realized the importance of connectivity as a means of simplifying the seemingly intractable heterogeneity problem.

That research, and related efforts helped me accumulate quite a list of research ideas that set me up for my next job as a Professor at UC Davis. I knew I had a bag full of ideas for dissertations and theses when I arrived at Davis in 1989, but had no idea whether I would get students who were interested in doing the work. And my goodness, did that ever work out! The later work cited in this award is predominantly due to two remarkable Ph.D. students, Steve Carle and Eric LaBolle; and in truth, their creativity remolded my earlier ideas into something far greater and unanticipated. In the early 1990's in my lab while Steve Carle was rewriting the 'book' on geostatistics for facies modeling, Eric LaBolle was developing the first transport modeling algorithm capable of doing justice to actual 3D geologic heterogeneity, and then in walked Gary Weissmann to close the loop regarding geologic processes and groundwater quality sustainability. I really owe so much to Steve and Eric as well as to Gary and an outstanding lineup of other gifted students.

Lastly, a word of advice to our younger brethren. I think the late Steve Jobs said it well, and this has worked well for me even though it did not really kick in until later in my career: "Don't let the noise of others' opinions drown out your own inner voice. And most important, have the courage to follow your heart and intuition." In other words, decide in your head and gut what you think or what you think is the right path, and never give up; and of course, never stop listening. Thank you very much!