

Darcy Medal Introduction for Demetris Koutsoyiannis

23 April 2009

by Tim Cohn

United States Geological Survey

Thank you, Alberto!

Hydrologists, EGU Members, Friends: Welcome! Thank you for coming to this event.

Dear Demetris:

First, let me say: It is an honor and a privilege to be here today to introduce you as recipient of EGU's 2009 Darcy Medal.

I cannot think of a more appropriate and fitting recipient.

I would like to take a moment to explain why.

As we all know, Demetris has worked on many practical and theoretical problems including:

- Frequency analysis of extreme events,
- Trend analysis,
- Disaggregation modeling,
- Characterization of rainfall data,
- Evaluation of model reliability and robustness,
- Coupling of hydrologic models,
- The role of entropy in hydrologic systems, and, most recently and importantly,
- Interpretation of time series corresponding to long-memory processes.

He has published fundamental research in over 70 papers in peer-reviewed international journals, 3 books, and hundreds of other articles.

Demetris's greatest scientific contribution, in my opinion, has been in techniques for quantifying uncertainty associated with

complex stochastic processes. His work on long memory is remarkable both for its intellectual elegance and for its practical significance. He has made long-memory -- which is, I believe, an essential component of all large and complex systems -- accessible. Recognizing and understanding uncertainty is critical for addressing some of the most pressing problems facing the world today.

However, to understand why this particular award is so appropriate, one must really go back to the beginning, to Henry Philibert Gaspard Darcy, who lends his name to this Medal.

Darcy was a practical man, an engineer, born in Dijon in 1803 and educated at *Ecole Polytechnique* and the *Ecole des Ponts et Chaussees*. Darcy built real water systems, with real aqueducts and real pipes.

Yet, Darcy encountered challenges, and these led him to develop new theory and tools – to find a deeper understanding:

As a result, today we have, among other things, Darcy's law, and the modern pitot tube.

The point I am trying to make is *not* that Darcy was *both* a practitioner and a theorist. No! Rather, Darcy exhibited a *duality*: to be a great practical engineer, he also had to be a great theorist.

And it is in this *duality* that Demetris shares much with Darcy.

Demetris teaches, by example, to celebrate duality, to look past such false conflicts as:

- Stochastics versus Physics
- Science versus Engineering;
- Models versus Data
- Research versus Teaching
- Respect versus Debate; and above all,
- Work versus Play

Demetris *unifies*. He comfortably views the world from multiple perspectives. He digs to the deepest level using *all* tools

available, and, where needed, he develops new ones. Always with rigor; always careful to avoid Procrustean solutions.

In this way, Demetris continues to make a huge contribution to our field. At the same time, he is always cheerfully approachable and ready to help with any problem.

I would like to make one last comment: Demetris's command of English is an inspiration to all of us. The playful title of his lecture this evening: "A Random Walk on Water" – simultaneously evokes the technical, scriptural, philosophical and practical aspects of our discipline. What a joyful celebration of language!

On behalf of Harry Lins, who helped prepare the nomination package, myself, and the EGU, let me say: Congratulations to Demetris Koutsoyiannis, a most deserving recipient of this year's Darcy Medal.

Thank you!