

Environmental and Water Resources Engineering Seminar Series

Date: Friday, October 14, 2016 | Time: 12-1 pm | Location: 223 Jarvis Hall



Seminar Title

Managing the Financial Risks of Water Scarcity: Modeling Coupled Human-Natural Systems

Abstract

Hydrologic variability often gives rise to substantial fluctuations in the costs and revenues of both the public and private sector actors. The financial instability that results can be very disruptive and thereby influence decision making in a number of ways. Understanding the nature of the financial risks posed in terms of both their frequency and severity requires integrated modeling of the natural and human systems involved. Once these risks have been characterized, strategies can be designed for managing these risks, strategies composed of physical measures (e.g., reservoirs) and financial instruments (e.g., contingency funds, index insurance). Example analyses from several different economic sectors will be presented, including urban water utilities, hydropower generators and commercial (inland) shipping. Results suggest that environmental financial risk can often be substantially reduced through the use of innovative financial instruments. Mitigation of these risks can lead to more efficient management of hydrologic uncertainties, while also having the potential to promote more sustainable behavior.

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Biosketch

Dr. Characklis is a Professor of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill. His primary research interests involve developing solutions to environmental engineering challenges through interdisciplinary systems-based approaches that integrate consideration of both engineering and economic principles. Specific areas of interest include the developing more cost-effective urban water systems, understanding water-energy linkages/tradeoffs and formulating innovative strategies for managing environmental financial risks. Dr. Characklis also serves as Director of the Center for Watershed Science and Management within the UNC Institute for the Environment. He is also an Editor with the journal *Hydrology and Earth Systems Sciences*, and a former Associate Editor with *Water Resources Research*. Dr. Characklis just completed a term as President of the Association of Environmental Engineering and Science Professors (AEESP). In 2011, he was selected as a Leopold Environmental Leadership Fellow by the Woods Institute at Stanford University. Prior to joining UNC, Dr. Characklis spent two years as Director of Resource Development and Management at Azurix Corp. (a division of Enron Corp.), where his responsibilities centered around assessing the technical and financial merits of water supply development projects throughout the U. S., including most of the western states. Before entering the private sector, he spent two years in Washington, D.C. as a fellow with the U.S. National Academy of Engineering where he co-authored a study on industrial environmental performance metrics for U.S. manufacturers and conducted work related to market-based reform of environmental policy. Dr. Characklis holds a Ph.D. and an M.S. in Environmental Science and Engineering from Rice University and a B.S. in Materials Science and Engineering from Johns Hopkins University.