

2008 CESEP DISTINGUISHED LECTURE
Center for Experimental Study of Subsurface Environmental Processes
Colorado School of Mines

**The WATERS Network: Transforming Environmental Engineering
and Hydrologic and Earth Surface Science Research through an
Integrated Environmental Observing Network**

Friday, April 25, 2008
3:00 p.m.
CSM Student Center, Ballroom D



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Professor Jerry Schnoor is the Allen S. Henry Chair in Engineering and the Co-Director of the Center for Global and Regional Environmental Research at the University of Iowa. Jerry is a member of the National Academy of Engineering (elected in 1999) for his research using mathematical models in science policy decisions. He chaired the U.S. Environmental Protection Agency's ORD Board of Scientific Counselors, 2000-2004, and is a member of EPA's Science Advisory Board and the National Institutes of Health (NIH) National Advisory Environmental Health Sciences (NAEHS) Council. Schnoor is considered one of the founding fathers of phytoremediation, using plants to help clean the environment. He serves as Editor-in-Chief of the leading international environmental journal, *Environmental Science and Technology*; and his other research interests include water quality modeling, environmental observatories, sustainability and global change.

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Water is a vital resource for our society that is increasingly stressed by multiple demands of water supply, agriculture, industry, recreation, and ecosystem needs. Traditionally, water has been managed in a fragmented manner—for example, groundwater is treated separately from surface water, and standards for effluent discharge are often disconnected from quality required at downstream water intakes. Development of integrated research and management of water resources has been frequently stated as a goal, but knowledge gaps make this difficult to achieve. The WATERS and Environmental Research Systems (WATERS) Network Project Office, which is funded by the National Science Foundation Engineering and Geosciences Directorates, will provide an opportunity to advance our understanding of water as an integrated resource.

The WATERS Network will be an integrated real-time distributed observing system that will enable academic and government scientists, engineers, educators, and practitioners to advance effective analysis of our nation's water resources through the understanding of human interactions with water and the natural and built environment. It will transform our understanding of the Earth's water and related biogeochemical cycles across multiple spatial and temporal scales to enable forecasting and management of critical water processes affected by human activities. This presentation will summarize the overarching goals and science vision for the Network, including the justification for a national network. It will also discuss the conceptual design strategy for the overall network infrastructure and proposed experimental facilities and outline the proposed timeline for design and construction. Specific research examples of water quality dynamics from a test-bed at Clear Creek, a tributary of the Iowa River, will be provided.