

ARTS AND SCIENCES

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Clean Water: A 21ST-CENTURY DILEMMA

"Water is not just a science issue. Water is not just a policy issue. It's an issue that seeps across all other issues, whether social, economic, cultural, political, or legal."

—FARHANA SULTANA, ASSISTANT PROFESSOR OF GEOGRAPHY

Water Resources and Climate Change (cont'd)

Assistant Professor Gregory Hoke (Earth Sciences) compares variations in the molecular composition of modern rain, river waters, and soil temperature with information recorded in ancient sedimentary rock to reconstruct past physical and environmental conditions at the Earth's surface. His work takes him to the Andes Mountains of Chile and Argentina and to the Tibetan Plateau in China.

Assistant Professor Jason Fridley (Biology) studies how invasive species and other plants respond to global warming, especially to changes in rainfall patterns.

Professor Mark Ritchie's (Biology) research takes him to such places as the Serengeti plains in Africa and the high desert of Utah to study the effects of variations in rainfall on native and invading plants and animals, and how human-caused modifications of carbon dioxide and nitrogen in the air affect ecosystems.

Water Quality

Assistant Professor Laura Lautz (Earth Sciences) studies the interaction between streams and groundwater (see story, page 20) and how that relates to issues of contamination and overall water quality.

Associate Professor Jacob Bendix (Geography) researches river environments and how floods affect species diversity.

Zunli Lu, who will join the Department of Earth Sciences in January, is an expert on the global water cycle and ocean chemistry. He also studies the formation of methane ice crystals—the same crystals that clogged the “top hat” BP used in one of its failed attempts to plug the Gulf of Mexico oil spill earlier this year.

Assistant Professor Peng Gao (Geography) works in watershed hydrology and mathematical modeling.

Water Resources and Public Policy

Assistant Professor Farhana Sultana (Geography) uses water as a lens through which she looks at a variety of social issues, including power, public health, and gender (see story at right).

Origins of Water

Professor Suzanne Baldwin (Earth Sciences), who specializes in thermochronology and tectonics, works with the NASA-funded New York Center for Astrobiology at Rensselaer Polytechnic Institute (RPI) in Troy, N.Y. One of the projects involves experiments on minerals that may provide clues about the timescales for which water was present on Mars.



Farhana Sultana works with poor and struggling slum dwellers such as this woman, who is tapping water from a pipe in order to provide drinking water for her family.

WATER, CLASS, RACE, GENDER, AND SOCIAL JUSTICE

“TO ME, WATER IS THE BIGGEST ISSUE, BECAUSE IT LINKS ALL OTHER ISSUES IN SOME WAY or another,” says Assistant Professor of Geography Farhana Sultana. “It’s an environmental issue, but it is also connected to social, political, and economic issues. It’s about gender, class, and race.”

Nowhere is this more achingly clear than in Sultana’s native Bangladesh, a densely populated, fertile river delta prone to floods, where millions of poor people struggle daily for clean water to drink, bathe, and grow food. “Many of the acute water-related problems visible in the world manifest themselves in Bangladesh in very stark ways, such as water poisoning, floods, disasters, cyclones,” Sultana says. “I’ve worked in other places, but the problems are so much more critical in Bangladesh.”

Trained as a geologist and then a geographer, Sultana says that water has driven the flow of her life and career. Before earning her doctoral degree, Sultana spent three years managing a \$26 million environmental program for the United Nations in Bangladesh, where water was at the heart of virtually every project. Last March, Sultana organized the international Right to Water conference at Syracuse University; a book is forthcoming. She currently has two water research projects underway in Bangladesh.

“Urban Water Governance” explores how millions of people living in the slums of the capital city, Dhaka, acquire water. Some illegally tap the municipal system; others pay huge premiums to black marketers. Sultana is interested in water rights of the informal urban dweller and how the government is responding to growing water needs and crises. Her research focuses on a pilot project where the government is currently allowing a municipal pipeline to be brought into a large slum. “In the process of establishing tenuous rights to water, these people are carving out spaces to demand rights to be treated as citizens in the city,” Sultana says.

“Climate Change Adaptation Politics” focuses on the role water plays in how people adapt and eke out their lives in the face of climate change, especially in coastal areas of South Asia. “How do you deal with an increase in the number of uncertain storms, devastating floods, and severe droughts?” Sultana says. “These phenomena are already happening, and it’s getting worse across sites and scales. Climate change isn’t the future. It is now.”

—JIM REILLY