

Research indicates 60-year decline in groundwater levels across US

March 31 2014, by Margo Weiss

The Columbia Water Center, part of the Earth Institute at Columbia University, announced today the release of a new white paper, "Assessment of Groundwater Level Trends across the United States," that analyzes long-term groundwater trends across the United States. The study found that historic groundwater levels have declined across much of the country over the last 60 years, suggesting that current groundwater management is broadly unsustainable. The paper was released as part of the Water Center's new "America's Water Initiative."

According to Tess Russo, a postdoctoral fellow and lead author, her research took a different approach from most previous national studies of [groundwater](#) by using historic well records rather than computer models to assess long-term trends of [groundwater depletion](#). "Many of the other broad assessments of groundwater depletion or changes in groundwater levels across the country have been based on modeling studies," says Russo. "Those studies tend to aggregate model results of individual aquifer systems, or use a combination of field observations and recharge estimates."

In addition to being a broad wake-up call for the entire nation to reassess its approach to groundwater use, according to Russo, the study could be used to inform future, smaller scale studies that target hot spots to better understand the dynamics of extraction and recharge so as to manage [water](#) use more sustainably. The study found that in addition to well-known areas in Central California and the Great Plains that suffer from severe groundwater depletion, numerous wells had seen long-term water

level declines in the Lower Mississippi, the Atlantic Coast and the southeastern part of the country.

The study was conducted as part of the Columbia Water Center's "America's Water Initiative," a program that aims to support a network of academic institutions, government agencies, and private businesses to determine a research agenda for developing and implementing innovative management solutions, new technologies, and new policies to inform water management improvements in the US.

According to Russo, who has played a lead role in developing the program, "America's Water" is the first attempt to address water challenges in the United States from a national perspective. "The US is due for a paradigm shift, and we are building a group of people who are knowledgeable of the problems, capable of developing innovative solutions, and positioned to implement new practices," she says. "We're not proposing a single set of regulations for the country – that wouldn't work, we understand the local nature of water issues. However, in order to improve the way we manage and finance water systems locally, we have to start with a comprehensive assessment of utilities, financing, technology evaluation, efficiency, and environmental sustainability of current practices. The Columbia Water Center has begun doing this, and will use results to inform future research needed to refine water-related best practices."

Previous papers written as part of the initiative include an analysis that highlighted rising water rates, deteriorating infrastructure and the growing debt of many utilities across the country, and a study that exposed the lack of sustainable water use throughout much of the country. Future planned releases include a paper on green infrastructure and a case study of water use and infrastructure in San Diego.

The initiative has received support from Veolia Water North America, a

leading global water services operator and engineering firm. Veolia Water North America and the Columbia Water Center were two of the founding members of the Executive Committee of Growing Blue, a web-based information platform initiated by Veolia to raise awareness and provide resources for decision makers in regard to the water-growth nexus.

According to Ed Pinero, Veolia Water North America's Chief Sustainability Officer, "Veolia felt that leveraging the expertise of Columbia would provide excellent research and analysis of key issues," in particular "how rates relate to specific parameters as well as how climate change and drought impact water resources and availability." This kind of information, he adds, "is very useful to decision makers, especially municipal leaders who are trying to do as much as they can with limited finances.

"Simply raising rates indefinitely is not a solution to repair our aging infrastructure. The Columbia Water Center work has demonstrated that we need innovative approaches to resource management and utility financing if we hope to get ahead of the problem. Business as usual will no longer be satisfactory."

More information: The white paper is available online: [water.columbia.edu/files/2014/ ... WhitePaper FINAL.pdf](http://water.columbia.edu/files/2014/.../WhitePaper_FINAL.pdf)

Provided by Columbia University

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