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CHEEC leads partnership on new Iowa drinking water well information system

By: Darrin Thompson © June 19, 2019

The University of Iowa Center for Health Effects of Environmental Contamination (CHEEC), in collaboration with the UI Hydroinformatics Lab (UIHI Lab) and the Iowa Geological Survey (IGS), has developed an information system to assist the management of private wells in Iowa.

The Iowa Well Forecasting System (IWFOs) is a publicly accessible web platform that allows users to view spatial information regarding groundwater aquifer depths and groundwater quality in Iowa. Developed by Civil and Environmental Engineering Assistant Professor Ibrahim Demir and graduate student Muhammed Sit of the UIHI Lab (<https://hydroinformatics.uiowa.edu/>)—with support from Rick Langel of IGS—IWFOs integrates publicly available data on well geology from the IGS database GeoSam with water quality data from the Private Well Tracking System (PWTS) that is managed by the Iowa Department of Natural Resources.

The Iowa Well Forecasting Systems, IWFOs, is available at:
<https://www.iijhr.uiowa.edu/igs/wellforecasting/>

The IWFOs was designed as a public resource for well users. Aquifer and water quality information can be used to make decisions during well construction to ensure a safe drinking water supply. The IGS has a tradition of providing this information, called a well forecast, to the public. But, well forecasts are only available during normal business hours.

“IWFOs uses many of the same datasets that the IGS uses in producing well forecasts,” Langel said. “However, IWFOs is available 24/7. Well contractors and homeowners can access geologic and water quality information at any Iowa location and make decisions necessary to create a safe drinking water supply at their leisure.”

IWFOs allows users to explore the state of Iowa and select the potential location of a new well. Using available information from adjacent wells, the user is then provided estimates regarding the depths of the different subsurface aquifers at that location.

“The system analyzes data from nearby wells and provides top ten nearest well triangulation with relevant aquifer information out of millions of combinations under a second,” said Demir, who directs the UIHI Lab.

The user is also able to explore the levels of nitrate, arsenic and bacteria present in nearby wells.

“There is a wealth of private well water quality data available in Iowa as a result of testing conducted through the state’s Grants to Counties program,” said CHEEC Director David Cwiertny, a professor of Civil and Environmental Engineering at Iowa. “We wanted to make this data more readily accessible to all Iowans, not only to better inform the installation of new wells but to also increase awareness about the quality of Iowa’s groundwater, which provides drinking water for about 60 percent of all Iowans. That includes roughly 300,000 or so that rely on water from private wells.”

CHEEC supports and conducts environmental health research relating to environmental toxins. Its mission is ‘to determine the levels of environmental contamination which can be specifically associated with human health effects’. The development of IWFOs aligns with two priorities for CHEEC, increasing access to publicly available data through interactive platforms and student training and professional development.

A member of the UIHI Lab, Sit was the first CHEEC Data Fellowship recipient, a new program created to support and enhance CHEEC’s longstanding role in maintaining databases of environmental quality for use in public health research.

“For CHEEC, IWFOs is a win-win,” Cwiertny said. “We get to provide what we hope will be a valuable resource to the State of Iowa, while supporting the training and professional development of graduate students that will go on to become leaders in ‘big data’ and emerging fields like environmental informatics.”

For more information, visit <https://cheec.uiowa.edu> or email cheec@uiowa.edu.

CHEEC is part of the University of Iowa Office of the Vice President for Research, which provides researchers and scholars with resources, guidance, and inspiration to secure funding, collaborate, innovate, and forge frontiers of discovery that benefit everyone. More at <http://research.uiowa.edu>, and on Twitter: [@DaretoDiscover](https://twitter.com/DaretoDiscover).

Media Note: Media interested in interviewing IWFOs developers or arranging to shoot photos should contact Strategic Communications Director Stephen Pradarelli in the Office of the Vice President for Research at 319-384-1282 or stephen-pradarelli@uiowa.edu.

Tags:

Center for Health Effects of Environmental Contamination, water quality, State of Iowa, drinking water, resources

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