

# New study will track how trade wars affect the Midwest

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A team of researchers who first proposed studying the effect a global trade war could have on the Midwest never imagined there would be an actual trade war underway as they conducted their research.

But as 2018 played out—and as the United States and China traded tariff after tariff this summer—the real-world applications of their research became more and more clear.

"Our farmers in the Midwest provide food throughout the world, so if we shut down that ability for them to send their goods all over the place—if we invoke tariffs and counter-tariffs—then that really affects the demand for what they produce," said Jeff Bielicki, an assistant professor of civil, environmental and geodetic engineering at The Ohio State University..

"And we wondered: How would that affect farming and land use issues and water and [energy systems](#) in the Midwest?"

Bielicki, who has a joint appointment in Ohio State's John Glenn College of Public Affairs, presented on the project on Dec. 14 at the annual meeting of the American Geophysical Union in Washington, D.C.

The goal of their work, which is funded through a 3-year, \$2.4 million grant from the National Science Foundation, is to build models that could show how various trade scenarios—from trade wars to trade alliances to other future scenarios—could affect the food, energy and

water supply coming from the Great Lakes region. The five-state area includes Wisconsin, Michigan, Illinois, Indiana and Ohio. The money is provided through Innovations at the Nexus of Food, Energy and Water Systems, a research partnership between the NSF and the U.S. Department of Agriculture.

The work brings together a team with extensive experience in quantitative and computational modeling, and social and behavioral sciences, including researchers from three colleges: Food, Agricultural and Environmental Sciences; Engineering; and the John Glenn College of Public Affairs.

The researchers are also working with farmers and others throughout the Great Lakes to formulate the questions that will serve as the foundations for this research.

The NSF announced the grant in September of 2017; the research team's work began in earnest in January.

"We're getting input from the agricultural sector, from state and regional policy organizations, from the energy sector, from people who are interested in water management, water utilities, water quality, who are engaged with Lake Erie and the other Great Lakes," said Elena Irwin, an environmental and land-use economist in Ohio State's Department of Agricultural, Environmental, and Development Economics. "So we've had three meetings so far in which we've shared the goals of our project and then really started to engage the stakeholder groups in helping us to formulate and refine the potential future scenarios that our research could address."

As they have held meetings and met with stakeholders across the region, a global trade war between the U.S. and China began brewing.

And as that trade war has played out this year, the team has seen some of its what-if scenarios come to life. Tariffs and counter-tariffs have led to a reduction in U.S. bilateral trade in agricultural commodities, especially in the Great Lakes region, where much of the corn and soybeans sent to China is produced. And because of tightly integrated supply chains, these effects could multiply and reverberate through multiple sectors of the economy. Consumers could suffer, too—as a result of U.S. tariffs—facing higher prices and a potential reduction in the availability of beef, fruits and vegetables.

In the longer run, said Irwin—who is also faculty director of the Sustainable and Resilient Discovery Themes Program—markets would adjust. For example, less global demand for corn and soybeans and reduced availability of imported fresh fruits and vegetables might provide an impetus for Great Lakes farmers to shift from commodity crops and allocate more land to produce fruits and vegetables for regional and U.S. markets. On the other hand, the decline in access to global markets could induce farmers to invest in non-food production, for example, in energy crops like solar or wind farms. They could also reduce the overall amount of land in agricultural production. In either case, these changes in land use would affect energy and water demands and, in turn, affect air and [water](#) quality through changes in greenhouse gas emissions and agricultural run-off.

The project will continue for the next three years, and the team is still building the models that will predict how future [trade](#) scenarios could affect Great Lakes farmers.

Provided by The Ohio State University

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