

IBM's weather forecasting technology to be put to use for irrigation, water conservation

April 30 2014, by Clint Thompson

Researchers in the University of Georgia College of Agricultural and Environmental Sciences are teaming up with IBM to work with farmers in Georgia's Lower Flint River Basin to enhance water efficiency by up to 20 percent.

The college and IBM are collaborating with the Flint River Partnership—which includes the Flint River Soil and Water Conservation District, the U.S. Department of Agriculture's Natural Resources Conservation Service and the Nature Conservancy—to help farmers make the best irrigation scheduling decisions in order to conserve water, improve crop yields and mitigate the impact of future droughts.

The Lower Flint River Basin is one of the most diverse and ecologically rich river systems in the Southeast. The area is also the epicenter of agriculture in Georgia: Its 27 counties contribute more than \$2 billion in farm-based revenue annually to the region's economy. Irrigation is central to production, and because of the area's unique hydrogeology, maximizing water conservation helps support sensitive habitat systems.

UGA faculty members George Vellidis, Wes Porter, Ian Flitcroft, Calvin Perry, Craig Kvien and John Snider have worked to develop the irrigation models and recruit farmers to test the new system.

"The UGA-CAES faculty have been working with the Flint River Partnership for a number of years to develop tools, techniques and

technologies to help growers improve the efficiency of agricultural water use," said Perry, who is superintendent of UGA's C.M. Stripling Irrigation Research Park in Camilla, Ga.

Stripling Irrigation Research Park has been the proving ground for many of these tools, he continued, and serves as a focal point for many of these research, Extension and outreach activities.

"Our job is to help farmers conserve water. Irrigation scheduling based on highly accurate weather forecasts and real-time field data will optimize decision making and consequently reduce resource use," said Marty McLendon, chairman of the Flint River Soil and Water Conservation District. "Having access to such forecasts and field data on a mobile platform makes the data relevant, so that we can make proactive irrigation scheduling decisions on the fly."

The Flint River Partnership is using IBM's Deep Thunder precision weather forecasting service to refine farmers' already successful irrigation models and [water conservation](#) practices. The added weather information will help farmers conserve more water and improve crop yields.

Because the forecasts will be available on mobile devices, farmers will have 24-hour access to critical weather information in conjunction with other relevant field data. The partnership also is offering farmers the use of IBM Softlayer to manage their field and weather data and automate irrigation recommendations.

UGA faculty have worked with the Flint River Partnership for many years on projects such as using variable-rate irrigation for precision water placement, the UGA Smart Sensor Array for monitoring soil moisture conditions and field mapping with Real Time Kinematic GPS, among others, Perry said. They also are "bringing in the UGA-led

Georgia Automated Environmental Monitoring Network to provide historic weather data for use in training the IBM Deep Thunder weather forecast system for localized, southwest Georgia conditions."

The integration of complex data streams generated by GPS-enabled farm equipment and in-field sensors with IBM's Deep Thunder weather forecasting technology delivered to mobile devices will provide 72-hours advance notice of weather in the Flint region, allowing farmers to be more prepared to make decisions on when to irrigate, plant, fertilize and deploy labor resources.

"Farming operations are highly sensitive to weather. In the U.S., that sensitivity is about \$15 billion per year," said Lloyd Treinish, distinguished engineer and chief scientist of IBM Research. "For example, the USDA estimates that 90 percent of crop losses are due to weather. In addition, improving efficiency in [irrigation](#) will reduce the impact in areas with limited [water](#) supplies. By better understanding and then predicting these [weather](#) effects, we can help mitigate these impacts.

"Innovators like the Flint River Partnership are showing how they can leverage IBM's advanced modeling and analytics to increase [crop yields](#). When we consider the need to increase food availability to a growing population, their leadership is helping to create a more sustainable approach to agriculture."

Provided by University of Georgia

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