


**IOWA**

# IFC UPDATE

RESEARCH AND ACTIVITIES AT THE IOWA FLOOD CENTER **SPRING 2023**



## IFC expands flood monitoring network

Page 4



The Iowa Flood Center (IFC) is part of the University of Iowa's College of Engineering and is the nation's only academic research center devoted solely to flooding. The IFC develops critical tools and information that community leaders, decision-makers, and individuals depend on to help them understand and reduce their flood risks.

# IFC supports national effort to improve water management



"The IFC's unique tools and outreach activities will go a long way toward helping to ensure CIROH's success."

STEVEN BURIAN, CIROH EXECUTIVE DIRECTOR

The Iowa Flood Center will support a new research center—the Center for Hydrologic Development (CHD)—that is designed to improve the country's ability to predict and manage water-related hazards.

Funding for the center comes from the new \$360 million Cooperative Institute for Research to Operations in Hydrology (CIROH) housed at the University of Alabama and funded by the National Oceanic and Atmospheric Administration (NOAA). The UI expects up to \$21 million from CIROH in the first five years.

Larry Weber, professor of civil and environmental engineering and director of the new research center, expects CHD to play a critical role in helping the National



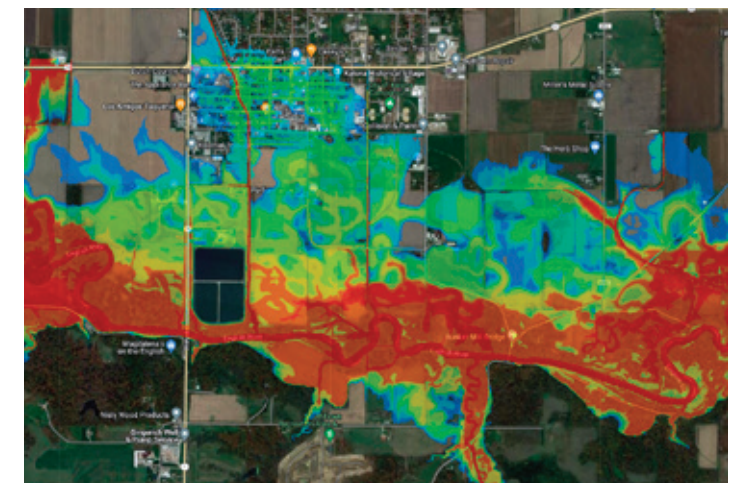
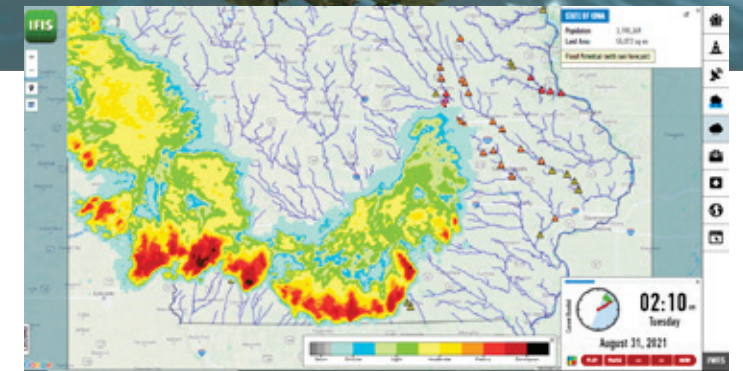
The Iowa Flood Center hosted CIROH Executive Director Steven Burian to exchange ideas and discuss opportunities to accelerate research and education and outreach to build resilience to water-related challenges. Of the nearly 30 CIROH members and partners, the University of Iowa was the first in-person visit. A media event to announce the new Center for Hydrologic Development was held during the meeting.



Weather Service achieve its goal of a water and weather-ready nation. "The new Center for Hydrologic Development will build on the work of the Iowa Flood Center and provide a mechanism for researchers and students to expand flood center innovations beyond Iowa," said Weber, who is also co-founder of the Iowa Flood Center.

CHD will focus on several key areas of research supporting CIROH's commitment to advance the forecasting of floods, droughts, and water quality to improve decision-making. The new center will support a team of graduate students and post-doctoral scholars seeking experience in cutting-edge hydrology and informatics research.

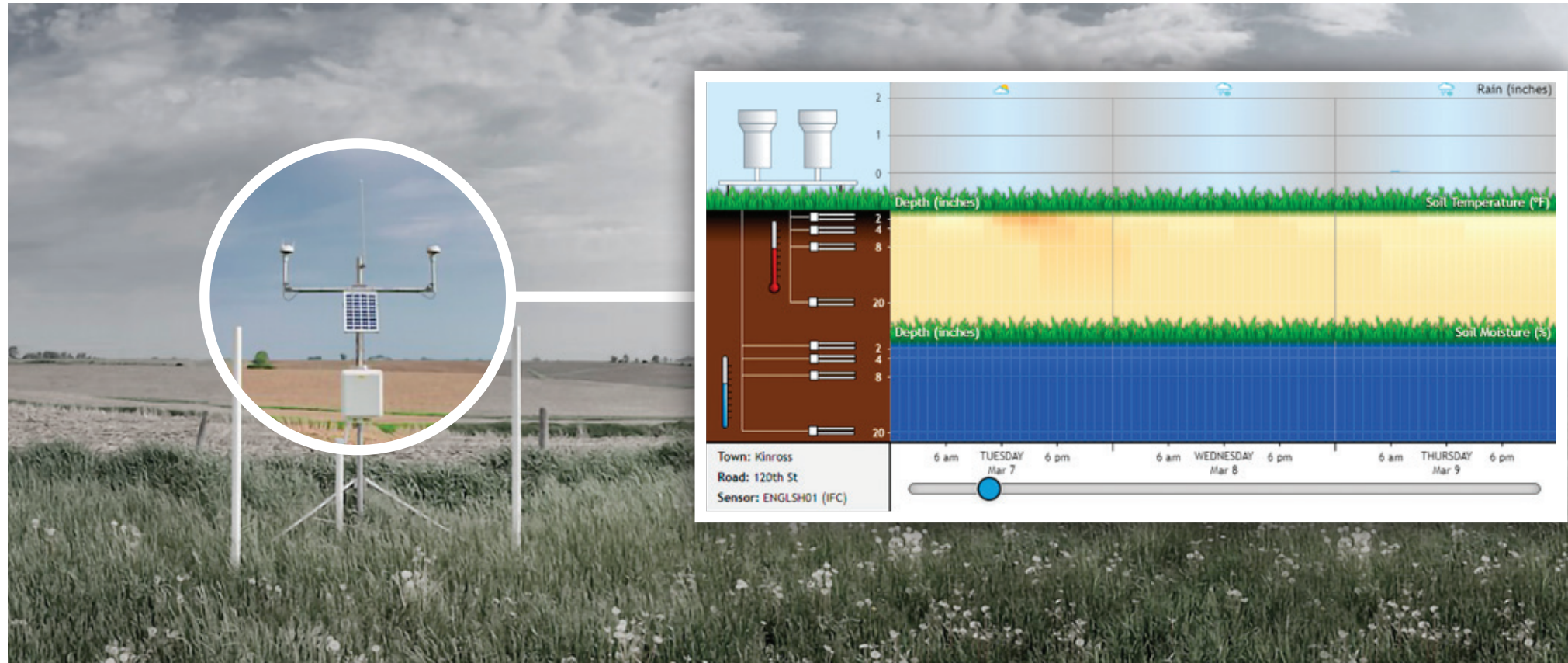
Leveraging IFC's expertise in hydroinformatics (water information systems), the Center for Hydrologic Development will help NOAA advance web-based visualizations of critical water-related data. IFC's innovations like the Iowa Flood Information System will serve to fast-track the wide-scale implementation of new tools developed by CHD for CIROH. "We have this unique opportunity because of the vision and leadership of the Iowa Legislature in establishing the flood center in 2009," said Witold Krajewski, professor of civil and environmental engineering and director of the Iowa Flood Center. "The new Center for Hydrologic Development will ensure Iowa remains a national leader in hydrologic research and education."





“The hydrologic stations will provide another level of information to support the emergency management network to protect people, critical infrastructure, and the environment. We consider this an important priority for Iowa.”

**JOHN BENSON, IOWA DEPARTMENT OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT DIRECTOR**



## IFC News



IFC Co-founders Larry Weber and Witold Krajewski met with Congresswoman Ashley Hinson and American Flood Coalition partners to discuss innovative flood resilience programming in the city of Dubuque.



IFC enjoyed hosting a group of agency representatives and water resource professionals with the Monroe County Climate Change Task Force from Wisconsin. The group visited Iowa to learn more about how to replicate IFC's approach to reducing flood risk, including monitoring, hydrologic modeling, and technology developments.

# Iowa Flood Center receives \$1 million for Eastern Iowa



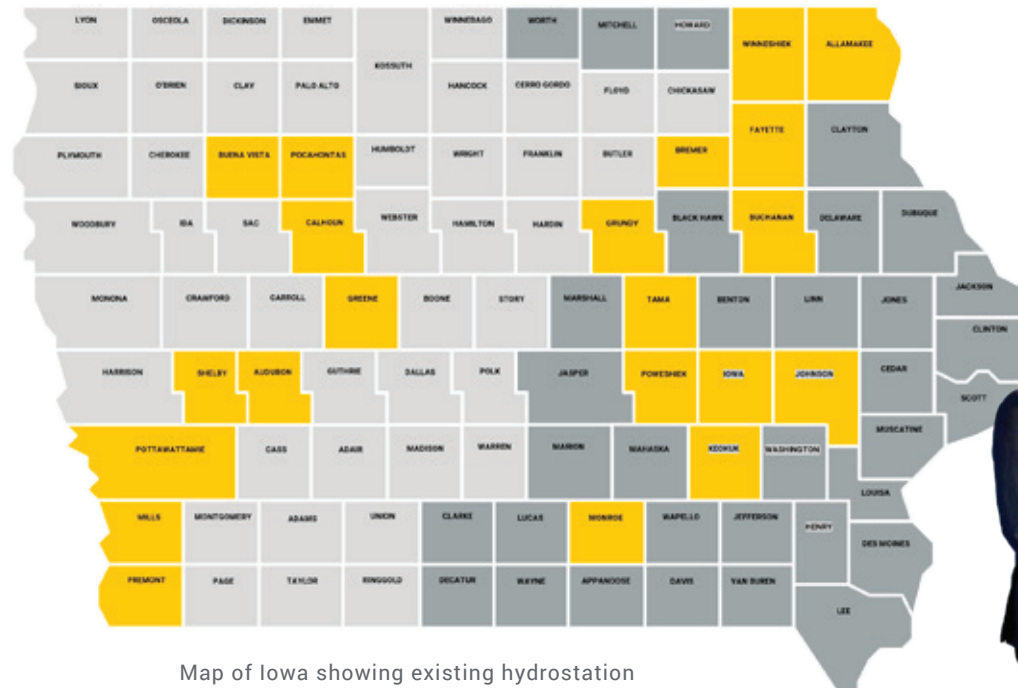
Matt Russell (second from left), state executive director of the Iowa Farm Service Agency, joins a tour of UI research projects at the Johnson County Poor Farm.

The Iowa Flood Center will receive \$1 million through Congress's Community Project Funding package to expand flood and drought monitoring, watershed management, and forecasting services. IFC's proposal was heavily championed by Congresswoman Ashley Hinson and Congresswoman Mariannette Miller-Meeks and will serve their Congressional Districts (Districts 1 and 2) in Eastern Iowa.

The funding will support the installation of additional hydrostations throughout the Lower Cedar River and Maquoketa River watersheds to collect data and monitor hydrologic conditions in real-time. The IFC will develop a detailed hydrologic assessment and online visualization system for each watershed to guide water resource management, planning, and conservation implementation activities. The project builds off the framework

of the successful IFC-led \$97 million Iowa Watershed Approach program and will bring together local watershed stakeholders to improve community flood resilience and increase mitigation efforts.

The funding will also support the expansion of IFC's hydrostation network by adding 30 new stations; one in each county that does not currently have one. This brings the IFC's hydrostation network to 50 locations, halfway to its goal of deploying one in every Iowa county. The hydrostations measure rainfall, soil moisture and temperature conditions, and groundwater levels in shallow wells. Data collected are publicly available on the IFC-developed Iowa Flood Information System online tool that communicates real-time information about stream levels, flood alerts and forecasts, and hydrologic conditions for the entire state.



Map of Iowa showing existing hydrostation locations (yellow) by county and proposed hydrostation locations in Eastern Iowa (dark gray).



Mayor Quentin Hart with the city of Waterloo and former Mayor John Lundell with the city of Coralville represented Iowa at the American Flood Coalition's Mayors Summit in Washington, D.C. Thank you for sharing your leadership, expertise, and experiences addressing flood risks with other community leaders across the country!



# Celebrating the Iowa Watershed Approach



On June 14, 2022, more than one hundred people from five states joined a final celebration of the Iowa Watershed Approach project for a tour near Vinton, Iowa, to view flood mitigation projects. Attendees included officials from the U.S. Department of Housing and Urban Development—the IWA’s funding source—, water resource professionals, federal and state agency staff, engineers, contractors, agribusinesses, landowners, media, and the public.

“Really impressed with the state of Iowa and their work here, with all the different cities, to establish these watershed-based approaches,” said Kevin Bush, former deputy assistant secretary for grant programs for HUD. “Disasters don’t respect administrative boundaries, and I think it’s one of the bright spots where we can work together regardless of what party you are.”

The day was spent reflecting on IWA’s successes and discussing how to advance the program. Flood reduction benefits at the local level for individual projects like ponds and wetlands averaged a 65% peak flow reduction. However, cumulative benefits at the watershed scale showed significant continued investments are needed to have a meaningful downstream impact. Additionally, as the IWA ends, watershed management authorities (WMAs) across the state are left with limited resources to continue working together to address flooding and water quality challenges. The WMAs are a critical resource for strategic and effective watershed management in Iowa to promote collaborative decision-making that has a meaningful impact. To keep the momentum from the IWA moving forward, the WMAs need sustainable and reliable funding to support a project coordinator, assist with administrative costs, and continue to implement flood mitigation strategies.



## IWA program highlights:

- 704 flood mitigation practices installed
- \$40 million invested in conservation
- 8 state and national awards
- 300 housing units retrofitted in the Bee Branch Watershed to be more flood resilient
- 30 conference presentations
- 150+ watershed management authority meetings
- 17 field days and watershed tours
- 112 media articles and videos highlighting the program
- 3 new watershed management authorities established through IWA

➔ For more information:  
[www.iowawatershedapproach.org](http://www.iowawatershedapproach.org)



## Student Spotlight



**Kaleb Young:** Kaleb Young, a PhD student in civil and environmental engineering at the Iowa Flood Center, focused his research on helping the small community of Riverton in southwest Iowa address its local flood challenges. Using the Hydrologic Engineering Center’s River Analysis System (HEC-RAS) model, Young looked at different scenarios to alleviate flood risks on Riverton Road located near the confluence of the East and West Nishnabotna Rivers. Dangerous water levels have completely inundated the area at least 20 times over the last decade, which resulted in a death and underlines the importance of Young’s work. His efforts helped secure technical assistance support from the Federal Emergency Management Agency to further investigate flood challenges in the community. Outside of his academic pursuits, Young is an All-American wrestler for the Iowa Hawkeyes.



**Lily Kraft:** During the spring of 2019, severe flooding across the Midwest caused widespread damage to communities along the Missouri and Mississippi River basins. While it is known that flood magnitude and economic damages are often related, little work exists to examine these factors simultaneously. Lily Kraft’s research looks at hydrologic and socio-economic factors of the 2019 flood to improve the understanding of realized impacts to individuals, households, and communities. As a PhD student in civil and environmental engineering, Kraft’s work supports the IFC’s mission by helping to identify people most vulnerable to flooding.

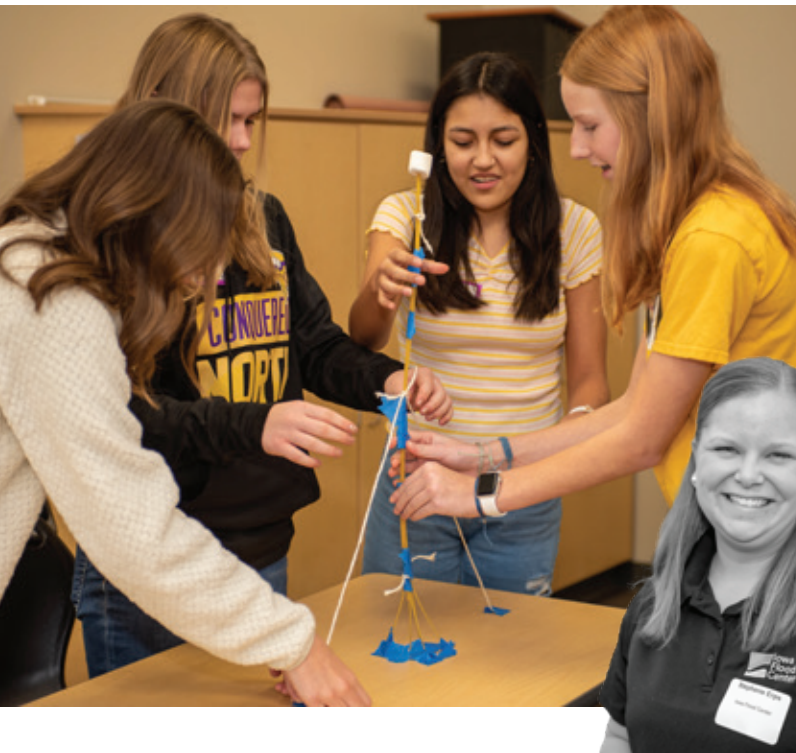


**Riley Post:** Can little ponds fight big floods? That was the title of Riley Post’s Three Minute Thesis Competition where he was declared the winner out of 12 other University of Iowa graduate student finalists. Working on his third University of Iowa degree towards his PhD in civil and environmental engineering, Post’s research focuses on flood mitigation using distributed storage systems of small farm ponds. Prior to joining the Iowa Flood Center, Post worked as a water resource engineer for the US Army Corps of Engineers as a lead reservoir operator for flood control in Iowa.





**FOR THE FIRST** outreach event to kick off 2023, the Iowa Flood Center engaged with 5th-8th grade students from West Branch for a morning focused on engineering MythBusters and educating students about watersheds and flooding. Stephanie Erps, a graduate student at IFC, combines her background in education with promoting watershed-based concepts by aligning the flood center's outreach and educational programming with the Next Generation Science Standards. "I like to introduce the students to key concepts and then see what ideas or solutions they come up with," said Erps. "It's



really satisfying to see what students discover on their own using IFC tools like the flood information system and table-top watershed model."

Last year, the IFC team participated in more than 75 outreach activities, including county fairs, STEAM (Science, Technology, Engineering, Arts, and Mathematics) festivals, public meetings, webinars, and legislative events, connecting with thousands of Iowans of all ages from across the state. Through these activities, the IFC is helping to educate the next generation and improve flood resilience to future disasters.

"It's really satisfying to see what students discover on their own using IFC tools like the flood information system and table-top watershed model."

**STEPHANIE ERPS, IFC GRADUATE STUDENT**



## Iowa Flood Information System (IFIS)

### Reliable Information

IFIS is a free, user-friendly online application that helps Iowans prepare for flooding. IFIS displays up-to-the-minute community-specific information, including:

- Real-time stream levels at nearly 300 locations in Iowa;
- Flood alerts and forecasts for more than 1,000 Iowa communities;
- Weather conditions including current, future, and past rainfall accumulations;
- Statewide flood map coverage for all 99 counties; and
- Scenario-based flood inundation maps for dozens of communities.

→ For more information [ifis.iowafloodcenter.org](https://ifis.iowafloodcenter.org)



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