



In summer 2015, Iowa Flood Center research staff and students Chad Drake, Chi Chi Choi, Mohamed ElSaadani, and Felipe Quintero were invited to the National Water Center's National Flood Interoperability Experiment (NFIE) to contribute to the development of a national flood forecast system. IFC students demonstrated the Iowa Flood Information System (IFIS), which conveys hydrologic and meteorologic data to serve as a reference for a national system.



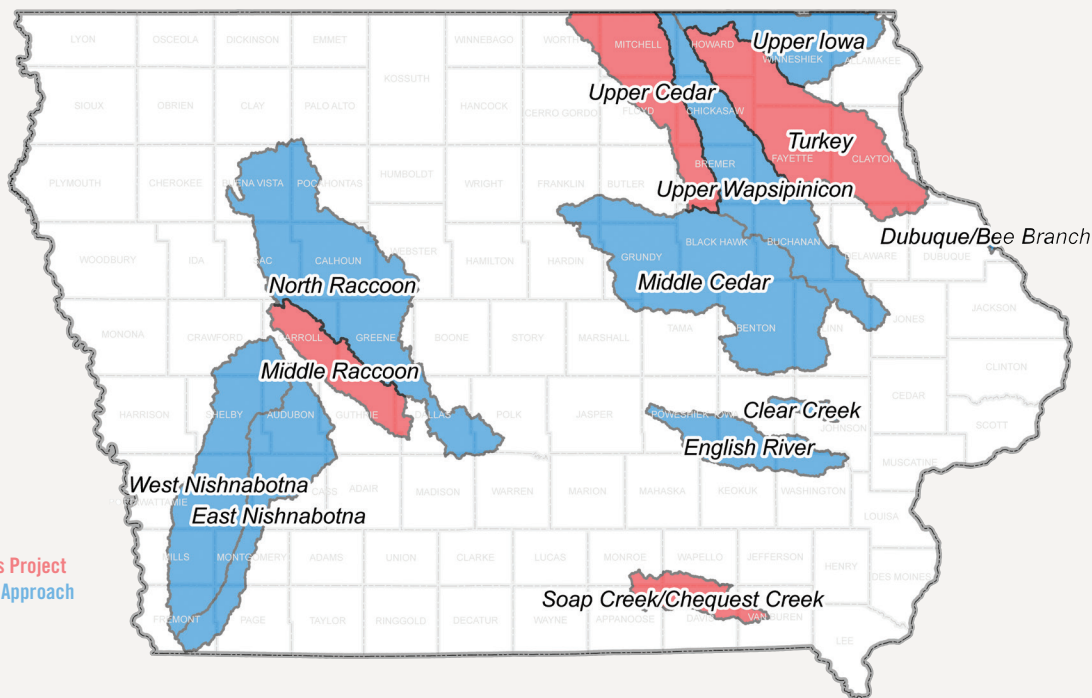
# IFC UPDATE



AN UPDATE ON THE RESEARCH AND ACTIVITIES AT THE IOWA FLOOD CENTER

SPRING 2016

## Watershed Project Secures \$96.9M for Iowa



**THE IOWA FLOOD CENTER (IFC)** helped secure a \$96.877M grant for a statewide watershed improvement project from the U.S. Department of Housing and Urban Development (HUD). The Iowa Watershed Approach (IWA), a massive collaborative effort, brings Iowans together to address factors that contribute to floods. Other partners include: Iowa Economic Development Authority; Iowa Homeland Security and Emergency Management; all three regents' universities; Iowa Department of Agriculture and Land Stewardship; Iowa Department of Natural Resources; City of Dubuque; and many more.

The five-year grant will address needs in nine watersheds (see map). Each will form a Watershed Management Authority, develop a hydrologic assessment and watershed plan, and implement conservation practices to reduce downstream flooding and to improve water quality during and after floods.

The IWA builds on the success of IFC's original HUD-funded Iowa Watersheds Project (2010–16), which concludes this year with the completion of constructed conservation practices such as farm ponds and wetlands to manage runoff and reduce downstream flood damage.

The IWA represents a vision for Iowa's future and will serve as a model for other communities. This program is not only about Iowans helping Iowans, but also about demonstrating their commitment to agricultural stewardship, the environment, their neighbors, and the future.

**For more information, visit [www.iowafloodcenter.org](http://www.iowafloodcenter.org). A full list of partners is available at <http://www.iihr.uiowa.edu/hud-award/>.**



# December Floods Drench Midwest

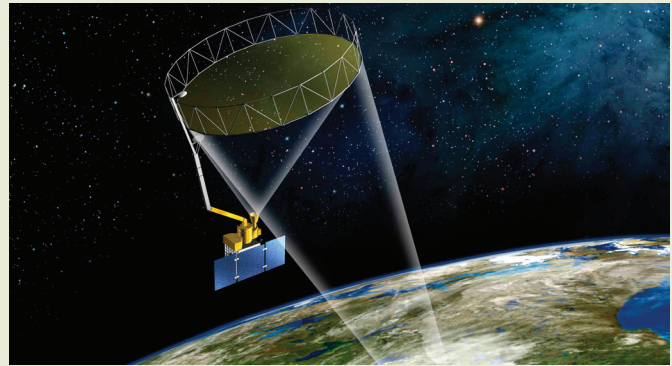
A series of rare winter rainstorms in late 2015 caused more than 100 flood alerts in Iowa. The floodwaters surged downstream, where flooding in Missouri, Illinois, and Arkansas forced thousands to abandon their homes and more than 20 people lost their lives.

Iowans are used to unpredictable weather, but widespread winter flooding is worrisome. How can we cope with increasingly extreme weather?

Thanks to the Iowa Flood Center (IFC), Iowans have information to help them prepare for and live with flooding. The Iowa Flood Information System (IFIS) offers free online tools to help users understand flood risks. The IFC's expanding statewide network offers real-time information on precipitation, soil moisture, soil temperature, and stream stage. IFIS also provides information on current flood conditions, flood forecasts, watershed data, and more.



Photos courtesy of FEMA.



### IFC and NASA to Study Soil Moisture

The Iowa Flood Center has been invited to participate in a NASA field experiment this year that will focus on soil moisture data gathered by the SMAP satellite. IFC researchers, working with colleagues at Iowa State University, will validate satellite data by deploying instrumentation in the south fork of the Iowa River. Researchers hope to learn the effects of vegetation on satellite soil moisture data. The campaign will first analyze satellite data from the end of May through early June, when crops are small. In August, when crops are fully developed, researchers will take another look at soil moisture conditions.



To access IFIS, visit [www.iowafloodcenter.org](http://www.iowafloodcenter.org) and click on the IFIS link in the upper right. Users can also watch a brief IFIS tutorial.



### Flood Inundation Mapping

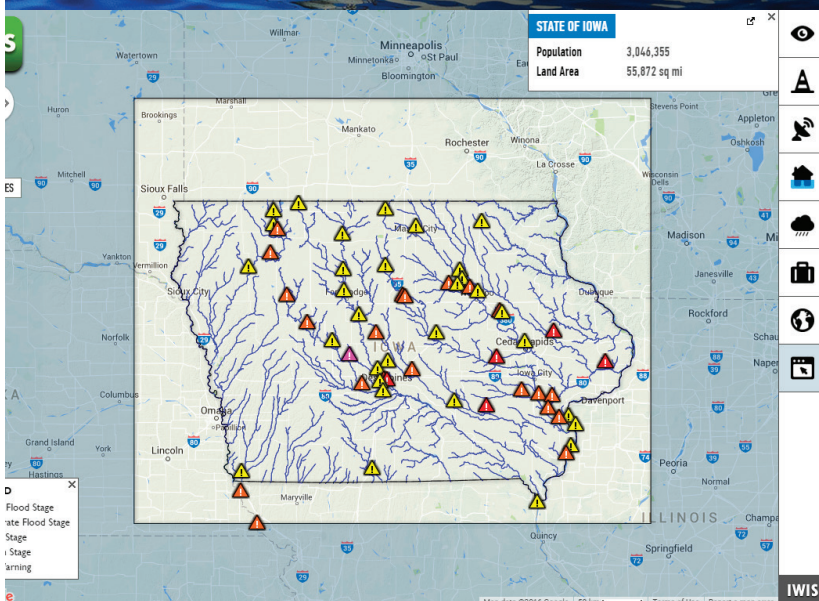
Many Iowans can now access online maps that show how floodwaters could affect their homes and businesses, thanks to the Iowa Flood Center's (IFC) flood inundation mapping project.

IFC Water Resources Engineer Dan Gilles says the team is mapping major Iowa communities situated along rivers that are most threatened by flooding. The maps, available online through the Iowa Flood Information System (IFIS), give users a resource to better understand forecasted flood predictions.

Maps are available for Ames, Cedar Rapids, Charles City, Columbus Junction, Des Moines, Elkader, Hills, Humboldt, Independence, Iowa City, Kalona, Maquoketa, Mason City, Monticello, Ottumwa, Red Oak, Rock Rapids, Rock Valley, Spencer, Waverly, and Waterloo.

The IFC has also created draft flood hazard maps that show the one-percent (100-year) annual flood boundary and 0.2-percent annual (500-year) floodplain boundaries. Draft Flood Hazard Map data are not regulatory and should only be used for review, outreach, and planning purposes.

To view the maps, visit <http://ifis.iowafloodcenter.org> and click on "launch IFIS."



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**IFIS**

## Iowa Flood Information System (IFIS)

IFIS is a free, easy-to-use online application that helps Iowans prepare for flooding. Based on Google Maps, IFIS displays up-to-the-minute community-specific information on rainfall, stream levels, and more, including:

- Real-time stream levels at nearly 250 locations in Iowa;
- Current flood warnings and stream forecasts;
- Weather conditions displaying current and past rainfall accumulations; and
- Flood inundation maps for select communities (see previous page)

To access IFIS, go to <http://ifis.iowafloodcenter.org> and click on "launch IFIS."



## Twitter-based Flood App

The IFC has developed a new social media flood prediction, preparedness, and response system on Twitter. IFIS Flood Alerts will offer another layer of information on the Iowa Flood Information System (IFIS), an online platform for flood-related data. IIHR Assistant Research Engineer Ibrahim Demir, a specialist in hydroinformatics, says the new "crowdsourcing" approach uses flood-related keywords to fill in flood data from regions missed by stream sensors. Hashtags such as #IAFlood or #FloodHelp could help emergency response teams reach those in need faster. The new system will go live on IFIS in early 2016 before the flood season begins.

Be sure to follow the Iowa Flood Center on Twitter @IFIS and @IFISFloodAlerts!

"I hope to provide inspiration for them to want to continue to investigate flooding and rivers."

— IFC Engineer Tony Loeser

# The Moment of Discovery



As the Iowa Flood Center grows in stature across Iowa, IFC researchers and staff have received many invitations to visit schools, STEM (Science, Technology, Engineering and Math) festivals, and other public meetings to share information about the resources and community-specific tools available at the IFC with individuals and communities across the state.

IFC Engineer Tony Loeser frequently hits the road with the center's interactive watershed model. "I enjoy sharing the moment of discovery," Loeser says. He hopes students will take away an understanding of what a watershed is and how changes in a watershed affect how a river responds to rainfall. Students also learn what causes flooding, how to be prepared, and how to make safe decisions.

In 2015, the IFC participated in the Iowa State Fair, attended eight science/STEM festivals (reaching hundreds if not thousands of K-12 students), hosted three tours for student groups, offered a job shadow opportunity, and visited four schools. The IFC is committed to reaching out to Iowans statewide to help improve flood awareness and preparedness.

