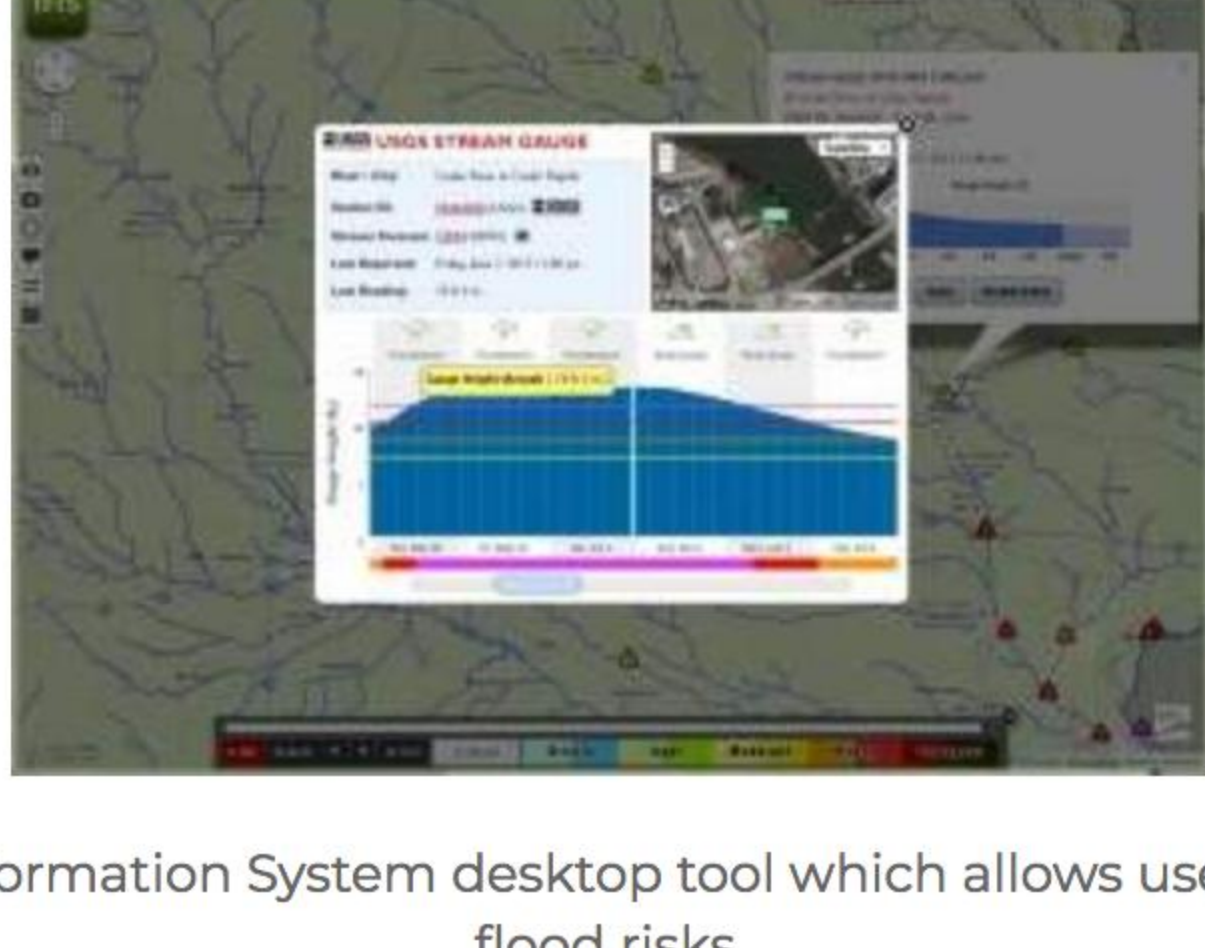


Iowa Flood Center working to make information more available to the public

Iowa Flood Center has become a focal point for modeling flood data, making it available



A screenshot of the Iowa Flood Information System desktop tool which allows users to find information on potential flood risks.

IOWA CITY -- As floodwaters began to rise along the Iowa and Cedar Rivers last week, researchers with the Iowa Flood Center jumped at the chance to make sure government entities and people living in flood-prone areas were aware of the data available to them.

Born out of the flood in 2008 — when researchers realized they didn't have a state, or national flood center to conduct flood research — the Iowa Flood Center has become a focal point for collecting more accurate data on flooding conditions, researching ways that catastrophic flooding events might be reduced in the future, and making that data available to the public in a more tangible way.

Much of that data is then put together in one interactive application, which can be used as a decision-making tool for communities that rest in flood-prone areas.

Iowa Flood Information System (IFIS)

[The Iowa Flood Information System](#), funded by the the state in 2009, serves as a central node for most of the data the Iowa Flood Center is collecting, as well as an interactive decision-making tool for people who might be located in flood-prone areas. Available both on the web and on a mobile device, the Iowa Flood Information System provides the public access to information on flooding conditions, forecasts, visualizations of where flood waters could go and inundation maps for over 500 communities throughout the state.

"When you look at our mission and goal, we're here to serve the state and we feel like the best way to get our information out there is to put it out in a way that's easy to understand, easy to get at, so IFIS is kind of our master of that," said Carmen Langel, managing director of the Iowa Flood Center.

With the Iowa Flood Information System, people who live near a flood plain or other waterway no longer have to rely solely on the National Weather Service for information on whether or not they need to evacuate, or prepare for severe flooding conditions. Langel said the interactive tool allows people to look at what's happening in the flood plain upstream from where they live and determine whether a recent storm affected that watershed, while also overlaying precipitation and rain gauges that can help users determine whether or not a storm might impact their home in the form of a flood.

"We don't make decisions for anybody, we just provide information that was lacking in 2008," said Iowa Flood Center Director Witold Krajewski. "Providing people with better information, I can speculate would have saved some money. So this system integrates our activities and our findings but it, of course, stops short of making decisions for people."

Langel said the recent flooding event has helped validate the work the Iowa Flood Center is doing, adding at least 7,000 people logged on to the Iowa Flood Information System over the last week in order to get more information on how rainfall and flooding could affect their area.

Government officials with Iowa City and Coralville used the program last week as heavy rain led to concern that water could breach the spillway at Coralville Lake, causing significant flooding downstream. Though Cedar Rapids officials already had a similar model in place for monitoring the Cedar River, officials said the program has been helpful for residents and business owners.

"Obviously we were thankful the floods didn't crest as high as they were going to, but we felt really good knowing people had more resources to look at and make more informed decisions," Langel said.

The most recent flooding has also helped the center ensure their equipment is working properly, as well as providing precipitation data for a few of their other ongoing projects, like IFloods.

The Center, which received \$1.5 million in state funding in Fiscal Year 2013, has several other ongoing projects, including:

Iowa Flood Studies (IFloodS)

In a collaboration with NASA, the Iowa Flood Center is in the process of developing algorithms that could allow researchers to measure precipitation, using remote sensing tools such as satellites and radar, to calculate precipitation that hits the ground.

This research would allow scientists to gather global precipitation data from a satellite, rather than requiring the installment rain gauges all over the world. As part of the mission, the center and other researchers who have joined the project, will also be placing instruments that measure rainfall throughout northeastern Iowa this spring to collect data.

Once the algorithms are complete, NASA, in 2014, is expected to launch a new satellite that will measure global precipitation. The project is funded by NASA.

Iowa Watersheds Project

With funding from the U.S. Department of Housing and Development, the Center is also working to conduct research aimed at reducing flood damage through the use and study of flood mitigation projects along the Upper Cedar River, Turkey River, Soap Creek and Chequest Creek, and Middle Raccoon River.

Researchers on the project, which is expected to be complete in 2017, are studying what types of flood mitigation efforts would be most likely to reduce flood damage downstream, as well as where those projects would need to be placed to be most effective. Langel said researchers will collect data on the area both before and after the flood mitigation efforts — such as dams, farm retention ponds, buffer strips, smaller levees and creating more wetlands — are constructed, which will allow them to measure how much the efforts impact flooding conditions.

"We've got a lot of farmers that have done sediment retention practices, but haven't actually gone out and done a lot of measurements before and after they were constructed to see okay, how much good did it really do," Langel said.

She added that this research could, one day, allow researchers to figure out whether the construction of flood mitigation structures, or how many flood mitigation structures would be necessary to build in order to reduce the effects of floods similar to the flood in 2008.

Statewide Floodplain Maps

In partnership with the Iowa Department of Natural Resources, the Center is also working to create new 100 and 500-year flood plain maps.

Though some counties throughout the state had flood plain maps prior to 2008, Langel said many of the maps were created during the 1960s and 70s and need to be updated using more accurate technology. The Center is also creating new floodplain maps for 85 of Iowa's 99 counties, which were declared Presidential Disaster Areas following the 2008 floods using light detection and ranging data collected by the DNR.

Those maps will include all streams in the state that drain at least one square mile, and will follow guidelines established by the Federal Emergency Management Agency. As they are complete, they will be available on the Iowa Flood Information System webpage. This project is funded by the Iowa DNR and the U.S. Department of Housing and Urban Development.

Community-based Flood Inundation Maps

Also available on the Iowa Flood Information System web page, the Center has created interactive flood inundation maps for select communities — including Cedar Rapids, Iowa City, Ames, Cedar Falls/Waterloo, Charles City, Des Moines, Elkader, Hills, Mason City and Spencer — that present flood forecasting information in a way that the community is more easily able to understand.

"The idea is that when you have a flood, it's not going to flood right at the 100-year level or the 500-year level, it's going to go somewhere in between and we want people to be able to look at the forecast or hear the forecast and go look at the maps," Langel said. "So you can actually plug in that the National Weather Service is predicting a flood crest of 25 feet, well, what does that mean? This shows you what 25 feet means."

Based off of computer models, these maps predict how flood waters could travel through urban areas and allow users to look at where the flood waters could go under different conditions. These maps are meant to help people make decisions and are not official FEMA maps.

Stream Stage Sensors

Following the floods of 2008, the researchers realized there was a need to expand monitoring efforts along the state's rivers. Through the Stream Stage Sensor project, the Center has developed a statewide network of sensors that measure the height of streams and transmit the data directly to the Iowa Flood Information System, which is available in real-time.

The Center's sensors, which supplement those that have already been put in place by the U.S. Geological Survey, are placed on the side of bridges and measure the amount of space between the sensor and the water. The project is funded by the state, the Iowa DNR and the Iowa Department of Transportation.

Future

Though Krajewski said the Center hasn't figured out how to stop floods just yet, he said he feels the research the Center is doing to measure and predict flooding conditions, paired with the research being done to see how different mitigation efforts could prevent flooding conditions downstream are important steps in the right direction.

"I hope I don't have to convince anyone about the importance of the work, if you consider the flood of 2008 that caused the state billions of dollars," Krajewski said. "We cannot stop these floods just yet, but we can be better prepared."

Likewise, Langel said she is glad the public has become more aware of the data available to them.

"We've had an outstanding response, and it's nice to see those tools being utilized because if they aren't helping the public if the public doesn't know about them," she said.

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