The Second Worst Flooding in Iowa History That You Probably Didn't Read About

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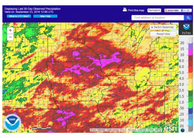
"No news is good news" was a take-home message from heavy rains that soaked Northern Iowa in late September, raising river levels to their second highest mark ever. Thanks to proactive work of emergency responders, community leaders, flood scientists and eager volunteers, there were not damages on the scale of other recent deadly floods in Louisiana and North Carolina.

However, the increasing intensity and frequency of heavy rainfall means that the damages escaped this time around should not lead to complacency. Rather, even more proactive planning will be required, particularly in agricultural areas, in order to prevent future floods from making headlines.

What happened in Iowa and what can we learn from it?



Heavy rainfall in late September deluged parts of the Upper Midwest, including Northern Iowa where 10-15 inches rain fell over several weeks. Image: weather.gov

The story started with storms across the Upper Midwest, an area all too familiar with heavy rainfall, between September 21 and 23. These deluges dumped upwards of five inches of rain—per day—in different areas of the region, overwhelming the river systems. Parts of Northern Iowa received 10-15 inches of rain throughout the month of September, which is 300-400% above normal or about a third of the region's annual rainfall (in a month!). A major cause for concern came with a flood forecast that the Cedar River at Cedar Rapids would crest at its second highest level ever just a few days later.

This was traumatic *déjà vu* for residents of Cedar Rapids, Iowa's second largest city. The top crest of the river came in 2008, when thousands of people lost their homes and billions of dollars in overall damages impacted the city in a profound way. So when the second largest flood forecast was released, people sprung into action; thousands of volunteers lined the streets of Cedar Rapids to move sand bags and prepare temporary flood reinforcements to protect against rising waters. Roads closed and thousands of people evacuated. After floodwaters reached the city, several hundred homes were impacted, and FEMA estimated damage costs to be in the $22 million range; no small amount, considering how much worse it might have been without a swifter emergency response.

"Something I had never seen before and may never see again"

Eric Christianson, a friend of mine who works in Cedar Rapids for Matthew 25, a neighborhood non-profit organization, shared some of his observations with me in the whirlwind of days leading up to and after the flooding. He is the organization's Urban Farm Production Manager, and along with volunteers, he and colleagues had to swiftly move everything out of their headquarters, given their location just a few blocks from the river. He reflected on how much worse things might have been if not for the incredible efforts of the community, and that many carry the scars of the 2008 flooding.

> *"The farm (and the surrounding houses) would have had several feet of water had the levees failed. It would have destroyed what was left of some of these neighborhoods. Many residents told me if they got flooded again that there was no way they were coming back. Incredibly as you've heard the temporary flood protection held. There was certainly some damage and a lot of basements including ours were flooded from sub surface flow. Water was shooting out from the walls for at least a week after the crest. Still there was never more than 6 inches or so in our basement.*
>
> *"For me it was an example of government working exactly how it is supposed to. It was really inspiring how much volunteers and city workers were able to accomplish. Seeing so many people working together for a common cause on that scale is something I had never seen before and may never see again."*

Proactive forecasting is one element of the success story

I recently spoke with Dr. Witold Krajewski, Director of the Iowa Flood Center (IFC) based at the University of Iowa, who shared details of their impressive forecasting efforts during the event. IFC maintains an extensive network of sensors that provide real-time data for the Iowa Flood Information System (IFIS), an interactive Google Maps-based platform with river level data and flood alerts for more than 1,000 communities in the state. It was so popular shortly before the Cedar River crested, in fact, that demand for information crashed the server. Contrast this to the 2008 flooding, when the Iowa Flood Center did not even exist (it was founded by state legislation in 2009, after the multi-billion dollar flooding), and it is clear that they are providing critical information when it's needed most.

Downtown Cedar Rapids in June of 2008. Iowa Flood Center Director Dr. Witold Krajewski reminded me that there was an element of good fortune that significantly separates the 2016 flooding from 2008. This year, the rain fell in a relatively short period, compared to 2008 when showers persisted over several weeks. Photo credit: Don Bokcer,USGS/Flickr.

More proactive landscape management is a part of the solution

No doubt this is an impressive story of emergency response, flood forecasting and communities working together. It is still, however, more a "crisis mode" story than one of longer-term prevention. Planning proactively requires improved soil and crop upstream management, more than piling the sand bags or constructing temporary floodwalls. The increasing frequency and intensity of events necessitates that we look to more holistic, non-emergency responses.

Some of this is already underway in the region. Dr. Krajewski also shared that the Iowa Flood Center is a partner in a major project to research upstream soil and land management as flood mitigation, funded by the Department of Housing and Urban Development. Another large effort, funded by the Department of Agriculture's Regional Conservation Partnership Program, represents a multi-stakeholder project including farm and urban groups. That effort is evaluating how best agricultural management, such as increased used of cover crops and strategically placed wetlands upstream, can improve water quality and water quantity (a project that Secretary Vilsack recently visited to meet with local leaders). The idea with these projects is that through improved soil management, upstream landscapes can provide ecological adaptation.

As I've previously written, my current research is focused on how a shift to more ecological agriculture can help reduce climate risks. My preliminary findings suggest that practices that keep the soil covered 365 days a year, such as growing perennial crops instead of annual crops, make a big difference. I've found that these practices significantly improve the soil's sponge-like properties, so that water remains in the soil instead of running off into local waterways or flooding fields. I've also found that the addition of perennial practices and improved grazing management can increase infiltration rates, the speed with which water enters the soil, by 2-3 times. That could have a big impact when we think about increased frequency of days with multiple inches of rain.

We can be more proactive in flood planning to include the most vulnerable populations

Often lost in these headlines of emergencies are the sobering stats of how climate risks like floods disproportionately impact those without the capacity to cope; low-income communities and communities of color. All the more reason we ought to make our landscapes more resilient to protect all members of our communities.

There is good news in this lesser news-making story from Iowa: emergency response prevented the worst impacts from occurring and there are proactive programs underway to improve land and soil management upstream. However, as a community leader articulately penned in an Op-Ed, flooding need not be an emergency. Climate change necessitates that we continue to proactively plan and dedicate the needed funds to ensure that future floods miss the headlines or, even better, are not major flooding events at all.

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