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New Report: Climate Change Has Extreme Rain Storms in Michigan Trending Way Up

Report details 128% increase in big storms over last half-century in highly populated Southern Michigan, greater increases to come in future

CHICAGO (December 4, 2014) – The kind of deluges that flooded Detroit this year and Grand Rapids last year are part of a 50-year trend of increasingly frequent extreme storms in Michigan, according to a new study released today by the Rocky Mountain Climate Organization (RMCO) and the Natural Resources Defense Council (NRDC). Big storms, leading to big floods, are occurring with increasing frequency in the Great Lakes State, with incidences of the most severe downpours nearly doubling over the last half century statewide—and becoming even more acute in southern Michigan, home to most of the state’s population, the report finds.

“The report digs deep into the data to confirm something most Michiganders already guessed—dangerous, extreme storms are on the rise across the state,” said Stephen Saunders, the president of the Rocky Mountain Climate Organization and the report’s lead author. “Global studies already show climate change driving more extreme precipitation, and now we’ve documented how great the increase has been in Michigan, where aging infrastructure makes the resulting floods even worse.”

The report documents an 89 percent increase in the annual frequency of extreme precipitation events—defined as 2 inches or more in a day—across the state over the last 50 years. The data is further broken out regionally, with storms having increased by 62% in the Upper Peninsula; 42% in northern portions of the Lower Peninsula; and a whopping 128% in southern Michigan, home to most of Michigan’s residents.

Among recent extreme storms in Michigan are an August 2014 storm that deluged Detroit with up to six inches of rainfall in eight hours and widespread April 2013 storms of more than two inches of rainfall in a day. Both storms caused major flooding that prompted federal disaster designations, and the Detroit flooding led to about \$1.1 billion in damages.

“As Michigan faces more of these big storms, there is a lot to be done in shifting the state to clean energy, supporting the historic Clean Power Plan to slash carbon emissions and rebuilding overburdened water infrastructure,” said Theo Spencer of NRDC. “On the bright side, more renewables and more infrastructure projects mean more jobs in Michigan.”

[*“Extreme Storms in Michigan”*](#) is based on an analysis of daily precipitation records from 37 weather stations over 50 years. It is the most comprehensive analysis yet of daily precipitation trends in Michigan, and by including data through 2013 has the most recent data of any analysis of precipitation in the Midwest.

The report also presents projections that the frequency of extreme storms in Michigan will continue

increasing as the climate changes, with larger increases expected if future emissions of heat-trapping pollution are not limited and smaller increases if they are.

Intense storms overwhelm communities where infrastructure intended to capture these deluges cannot keep up, leading not only to property losses from flooding but also to contamination of water supplies, wells, rivers and the Great Lakes. Michigan is particularly vulnerable to extreme storms due to a heavy reliance on combined sewer systems, an older type of system that carries both storm water and sewage in the same pipes. Michigan has 46 combined sewer systems, the third-largest total in the nation. Combined sewer systems are designed to overflow when storm water exceed their capacities, discharging untreated sewage and storm water directly to nearby water bodies. These combined sewer overflows (CSOs) can spread untreated human and industrial wastes, and people can become sick by drinking or being exposed to the contaminated water.

“We’ve been deferring infrastructure investment for too long across the country, but now it’s clear that our water systems simply weren’t designed to handle the volumes of water these storms are dumping—updates are needed before we are all swamped,” said NRDC’s Spencer. “Investment in hard infrastructure has helped slow the problem in some cities like Detroit and Lansing—but far more has to be done; including adding more green infrastructure like porous pavement, green roofs and bioswales.”

The report includes a new analysis of combined sewer overflows, finding that 76 percent of the worst incidents resulted from storms of two inches or more per day—the extreme storms tracked in the report’s precipitation analysis. Of the largest recent CSOs from each of 17 combined sewer systems in Michigan having overflows, 13 were associated with two inches or more of precipitation in a day. This illustrates the importance of extreme storms in driving CSOs and threatening the health of the people of Michigan.

The study also notes that private drinking water wells are at risk from flooding, and that more people in Michigan rely on them than in any other state -- over one million households. Floodwater can contain contaminants from sewage systems like fecal coliform and E. coli, as well as fertilizers, pesticides, and other chemicals.

The report highlights recommended actions to help address the issue including:

- Support of the U.S. Environmental Protection Agency’s proposed Clean Power Plan, which would empower the State of Michigan to create its own plan to reduce carbon emissions from its power plant fleet—the largest source of pollution driving climate change in the United States. Part of such a sensible plan would include investing more heavily in renewable energy and increased energy efficiency measures.
- Overcoming barriers to investment in energy efficiency to lower emission-reduction costs, starting now. Comprehensive state and local government actions to assess vulnerabilities to increased flooding—including public health and safety—and to undertake climate change preparedness actions to reduce those risks. Though not highlighted in the report, NRDC is currently working to pass legislation to help Michigan get 30% of its power from renewable sources, double investment in energy efficiency and reform the way utilities are compensated so that they can maintain a reliable grid while embracing efficiency and clean distributed generation. Governor Snyder has endorsed these concepts.
- Working with state and local governments to ensure that green infrastructure techniques are fully incorporated into infrastructure capital planning projects. Green infrastructure solutions,

such as green roofs, street trees and rain gardens, literally capture rain where it falls, helping prevent flooding and providing communities with greater resiliency to these ferocious storms.

The report is available online at http://www.rockymountainclimate.org/reports_7.htm

Report authors were joined by a University of Michigan researcher and Grand Rapids Mayor George Heartwell on a telebriefing describing the report earlier today. Audio recordings of that presentation are available upon request.

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The Rocky Mountain Climate Organization (RMCO) works to reduce climate disruption and its impacts. Visit <http://www.rockymountainclimate.org> to learn more.

The Natural Resources Defense Council (NRDC) is an international nonprofit environmental organization with more than 1.4 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Bozeman, MT, and Beijing. Visit us at www.nrdc.org and follow us on Twitter [@NRDC](https://twitter.com/NRDC).