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Cold truth

It's time to act on climate change

By Donald J. Wuebbles and Nancy C. Tuchman

May 31, 2013

The times they are a-changin'. A little over a year ago, Chicagoans experienced an excessively hot spring — our warmest March on record. This year, the start to spring felt less like summer and more like an extended winter. Though domestic atmospheric measurements of carbon dioxide just hit the 400 parts per million mark and summer cyclone season is just around the corner, cool-to-mild temperatures might make one wonder, "Where is global warming?"

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As scientists that think a lot about climate and sustainability, our work focuses on answering similar fundamental questions. How can local cooling coincide with global warming? How can past data, like the heat wave from last spring, help us understand future weather events? How can we, as a city and region, work to build a more sustainable future? To answer these questions, we rely on existing, comprehensive, peer-reviewed science.

The Earth is a dynamic system. Our local climate is influenced by a multitude of factors — things we see directly, like local hydrology and topography. There are also things that aren't apparent to our immediate experience, like midaltitude atmospheric waves and the Earth's rotational axis. The movement of air around our globe has an extraordinary impact on our local weather. Disturbances to this complex system, such as those caused by increased amounts of heat-trapping gases, can cause dramatic shifts in local weather patterns. These shifts can lead to increased extreme weather events, and can also force surface temperatures to behave in unexpected ways. In other words, spring can be hot in 2012, cool in 2013, and the climate can still be changing overall toward a warmer climate.

Though climate change can produce counterintuitive local weather patterns, the regional impacts are much clearer to comprehend. As our climate continues to change, the Midwest will face a mixture of obstacles and opportunities. A warmer climate and increased carbon dioxide levels could increase our agricultural growing season and extend commercial navigation on the Great Lakes.

The same climate is also predicted to increase the number of droughts that will look a lot like last summer's, heat

waves that will look a lot like last spring's and floods that will look a lot like those that deluged us in April. Our future may hold declining beach health, worsening water quality, shifts in recreational fish species, and more concerns about allergies, asthma and heat-related illnesses. Taken together, the Midwest will likely face more losses than gains, with human and ecosystem health potentially facing the lion's share of the burden.

Fortunately, our region is poised to be a global leader in minimizing the human contribution to climate change. The Midwest has an energy-intensive economy, with our green-house gas emissions being 20 percent above the national average. By creating carbon standards for existing sources and shifting to a clean, renewable energy-based economy, we can drastically reduce our regional contribution to global climate change.

As a hub for freight and passenger rail, we can become a national and global example for how efficient trains can minimize pollution and increase goods movement. Finally, as the home of world-renowned institutions of higher learning, we can educate and guide our youth to become involved, knowledgeable citizens who understand the value of linking science and policy, and that economic growth and environmental progress can be attained together.

Hot or cold, spring is a season for change and rebirth. No matter the temperature outside, now's the time to make the Midwest a change leader.

Donald J. Wuebbles is a professor of atmospheric science at the University of Illinois. Nancy C. Tuchman is the founding director of the Institute of Environmental Sustainability at Loyola University Chicago.

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