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SEVERE STORMS MAY BE THE "NEW NORMAL": BUT HOW DO LEGAL SYSTEMS REACT?

Norman A. Dupont

Science may be slow at forming a consensus: peer-reviewed articles followed by comments and efforts to replicate prior reported results can take years before a consensus is reached. But, the legal system is a laggard whose time to revise and adjust to a scientific consensus often takes decades, not just years.

1. Legal Reaction to Greenhouse Gases in General—A Multi-decade Response

A recent example is climate change. Climate scientists established the Intergovernmental Panel on Climate Change (IPCC) to explore the science of human contributions that modified the world's climate starting in 1988. By 1995 in its second report the IPCC confirmed that carbon dioxide discharges were a key factor in alteration of climate and noted that projections of sea level rises and other events suggested the potential for human activities to alter climate to an extent unprecedented in human history. Yet, it took four additional years to 1999 for a number of states and environmental organizations to petition the Environmental Protection Agency (EPA) to regulate greenhouse gases under its authority pursuant to the Clean Air Act. After four years of bureaucratic deliberation, EPA rejected the petition, asserting it lack authority to regulate such gases. A lawsuit ensured, but it took seven years from the date of the petition for the case to reach the U.S. Supreme Court, which in April 2007 issued an opinion in Massachusetts v. EPA, 549 U.S. 497 (2007), citing in part the IPCC's conclusion from 1995 and concluding that as a matter of law EPA did have the authority to regulate greenhouse gases. The Supreme Court's decision, however, did not end the legal and political debate on climate change. The Court itself merely remanded the case back to EPA to consider in light of its now apparent legal authority. Some nine years later after the Supreme Court's decision in *Massachusetts v. EPA*, the Republican party, in its platform on environmental and energy issues included a call for Congress to "to take quick action to prohibit the EPA from moving forward with new greenhouse gas regulations."

2. The New Norm—Storms of Increased Severity and Frequency

Putting aside the larger political controversy as to whether measures to reduce dependence on fossil fuels will (or will not) harm the economy in either the short term or the long term, however, is a more specific concern about legal delays in recognizing a scientific consensus on a more precise topic—the likelihood that the old "100-year flood" event due to rainfall (or other major storms such as hurricanes) is now become a mere once-in-20-year storm. This scientific concern is not new, indeed a prominent climate scientist, Michael MacCracken, in 2004 raised the possibility that "rising ocean temperatures may contribute to the ferocity of [future] hurricanes," a possibility that the majority of the U.S. Supreme Court in *Massachusetts v. EPA* called "eerily prescient" since it was authored a year before Hurricane Katrina. *Massachusetts v. EPA*, 549 U.S. at 522], n.18.

In 2011 the Union of Concerned Scientists noted that a warming earth led to an increased evaporation of ocean water into the atmosphere, which in turn created conditions "more favorable for heavier precipitation in the form of intense rain and snow storms." The Union concluded: "This pattern of intense rain and snow storms and periods of drought is becoming the *new normal* in our everyday weather as levels of heat-trapping gases in the atmosphere continue to rise." Union

of Concerned Scientists, "Is Global Warming Linked to Severe Weather? As Earth Warms, Powerful Storms Are Becoming the New Normal" (June 2011[available at: http://www.ucsusa.org/global_warming/science_and_impacts/impacts/global-warming-rain-snow-tornadoes.html#.V9b-4vkrKZU]
International news media, including the BBC, noted studies in the UK, which has rainfall records dating back to ten years before the Declaration of Independence (1766), that suggest that the recent spate of severe rainfall weather in that country is unprecedented, even if it cannot be specifically tied to climate change directly. "Met Office: Evidence 'Suggests Climate Change Link to Storms'" (BBC, Feb. 2014).

Scientists are careful to qualify that a single event, even a major storm or hurricane, cannot be simply attributed to "climate change" per se. But, an increasing body of scientific research suggests that there is a strong likelihood of increasing severe weather as we move into the future. S. Paige, "*Climate Change Exacerbates Some Extreme Weather*," Sci. Am., Sept. 2013.

3. The Legal Response (or Lack Thereof) to the New Norm

As previously noted, the legal system can and often does move slowly. It is geared toward precedent, a backwards-looking anchor, rather than toward new science and startling results. Whatever might be said of the Star Trek credo—"To boldly go where no man has gone before"—it is hardly something that judges mutter to themselves before issuing a decision. On the other hand, much of environmental law is structured to accommodate *potential* threats and concerns, not just current demonstrable problems. The federal Comprehensive Environmental Response, Compensation, and Liability Act statute, for example, includes within the definition of a "remedial action" for which a governmental (or private) entity can recover costs, "such actions as may be necessary taken in the event *of the threat of release* of hazardous substances into the environment, such actions as may be necessary to monitor, assess, and evaluate the release *or threat of release* of hazardous substances." 42 U.S.C. § 9601(22) (emphasis added). The congressional findings in support of the Clean Air Act specifically recite that ". . . [T]he growth in the amount and complexity of air pollution brought about by urbanization, industrial development, and the increasing use of motor vehicles, has resulted in *mounting dangers* to the public health and welfare. . . ." 42 U.S.C. § 7401(a)(2). This wording suggests concerning for "dangers," both current and future.

But, the legal system, even environmental portions of that system that do include provisions allowing EPA to regulate greenhouse gases and implications on climate, does not easily and directly coordinate with some of the by-products of climate change, such as severe storms. The National Oceanic and Atmosphere Administration (NOAA) is the federal agency most directly involved with weather, even though it is a branch of the U.S. Department of Commerce. The agency has published scientific reports on possible links between severe weather and climate change, such as: New Report Finds Human-Caused Climate Change Increased Severity of 2013 Heat Waves in Asia, Europe and Australia (Sept. 29, 2014), but it serves principally as a research entity, not an agency charged with oversight and enforcement of potentially sources of greenhouse gases.

The U.S. Geological Survey (USGS) is responsible for establishing the so-called 100-year floodplain maps, which really attempt to predict a flood (or other weather event) as having a probability of recurring within a 100-year interval. The USGS acknowledges that its statistical data need updating in light of recent events, and in one webpage the agency gives one recent example from the state of Washington of updated data showing an increased magnitude of a 1-in-100 chance flood. *USGS, Floods: Recurrence Intervals and 100-Year Floods.[available at: http://water.usgs.gov/edu/100yearflood.html* The USGS adjustments to statistical data on the probability of a once-in-a-100-year occurrence event are critically important

to floodplain maps and public and private insurance considerations. Indeed, according to a separate federal agency involved with emergency management and flood insurance, the Federal Emergency Management Agency (FEMA), areas at risk in the United States for flooding could increase by 45 percent by 2100, in large part due to climate change. Federal taxpayers support FEMA's National Flood Insurance Program, which will have to bear the costs of such losses over time.

Some larger municipal entities with economic resources have also begun to evaluate potential risks from severe storms and other climate-change related events. The New York City Panel on Climate Change issued its Climate Risk Information 2013 report explaining the potential dangers from both future severe storms and from sea level rise precipitated by climate change to the city. Municipal efforts in that city may already be under way, but it remains uncertain as to how other coastal cities with either fewer resources or less political will are planning for potential impacts due to severe storms located within what is currently a 100-year floodplain area.

Until a coordinated federal response to the potential hazard of severe storms caused by climate change happens, the only thing that is certain is litigation. Abbott and Rajotte's explain in "The Lawsuit Deadline for Flood Insurance Claims" (ABA State & Loal Gov't Law Section 2014) [available at: http://www.americanbar.org/publications/state_local_law_news/2013-14/spring/the_lawsuit_deadline_flood_insurance_claims.html]] that Hurricane Sandy, which devastated parts of New York, exposed serious flaws in the system for flood insurance. As the authors observed: "Sandy has revealed deep systemic breakdowns in the process for how flood insurance claims are supposed to be handled, and complex challenges remain for thousands of homeowners." As most environmental lawyers know, a "systemic breakdown" in a compensation system invites more, rather than less litigation.

The legal system is designed to be slow and deliberate with a strong bias for process arriving at a defined ultimate "truth." The world of science is data driven and focuses on the new and the emerging. Only time will tell if the law will ultimately catch up to the scientific evidence of climate changes provoking more severe weather episodes in today's world.

Norman A. Dupont *is a partner with the Ring Bender law firm with offices in Irvine, California, Portland, Oregon, and Pittsburgh, where he practices environmental law. He is a former chair and currently a member of the ABA Section of Environment, Energy, and Resources' Science and Technology Committee, and currently serves on the Section's Council.*