



Climate Science and Law for Judges:

Applying Attribution: Impacts of Climate Attribution Science on Tort Litigation

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I. Introduction

Climate attribution science can be defined broadly as the scientific study and estimation of causal responsibility for the drivers and impacts of climate change. Distinguishing the different types of attribution may benefit judges as the number of climate change lawsuits in the United States continues to grow. Several related, but distinct questions arise within the field of climate attribution:

- (1) *Warming Attribution*: To what extent are observed and projected changes in the global climate system attributable to human activities as a whole?
- (2) *Source Attribution*: What portion of climate change and its impacts can be attributed to the choices and actions of specific individuals, companies, nations, or other separately identifiable human sources?
- (3) *Impact and Event Attribution*: To what extent has climate change caused or increased the likelihood of various impacts on social and natural systems, including extreme events such as hurricanes, wildfires, droughts, and floods?

Scientists and researchers are improving their capacity to answer all these questions with specificity and confidence.¹ Their work is beginning to affect the extent to which the public and policymakers perceive climate change as an urgent problem. These developments also have significant implications for climate change litigation. Over time, the science of climate change and its attendant harms will influence judicial reasoning and practice.

To some extent, it already has. Take *warming attribution* as an example. Within the scientific community, warming attribution is the most straightforward form of attribution. The Intergovernmental Panel on Climate Change (IPCC) has concluded that “[i]t is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred.”² The role of warming attribution in climate change litigation is also straightforward, albeit highly significant. When the empirical reality of human-caused climate change is at issue within a lawsuit—such as when climate impacts are asserted to establish injury for purposes of standing or when the adequacy of an environmental impact statement is challenged because it fails to consider a project’s greenhouse gas emissions—courts are asked to accept as an evidentiary matter the epistemic veracity of climate science. As the cases discussed in Box 1 illustrate, such judicial acceptance can occur without necessarily dictating results in the underlying legal action.

¹ For a detailed discussion of recent innovations in modeling and attribution science, please refer to the module on Drawing the Causal Chain. The present chapter is focused on the potential tort litigation impacts of scientific advancements rather than extensive discussion of the advancements themselves.

² INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: SUMMARY FOR POLICYMAKERS 4 (2021) (emphasis added).

The litigation impacts of the other categories of climate attribution science—*source, impact, and event attribution*—are more speculative and will be the focus of this discussion. While touching briefly on constitutional law claims, this piece primarily addresses tort claims arising under state law in the United States (although, as will be seen below, many of the most prominent state-law climate suits have been unsuccessfully removed to federal court by defendants, thereby delaying state judges’ engagement with the suits).³ This subject matter and geographic limitation is regrettable, as much

Box 1: Supreme Court Acknowledgment of Warming Attribution

Two U.S. Supreme Court opinions illustrate the Court’s continued adherence to the central finding of warming attribution, notwithstanding arguable shifts in the Court’s position with respect to agency authority to address climate change.

- ***Massachusetts v. EPA***, 549 U.S. 497, 505 (2007): In the second sentence of the Supreme Court’s majority opinion in *Massachusetts v. EPA*—the first Supreme Court opinion to directly address climate change—Justice John Paul Stevens pointedly emphasized that warming attribution is accepted by “[r]espected scientists.” Because the legitimacy of courts is premised on independence and responsiveness to reason and evidence, the Court’s acceptance of core climate science findings in this manner offered potential to carry weight within larger societal and political discussions concerning the reality and significance of climate change. Given the continuing challenge of effectively communicating that reality and significance to laypeople, securing such independent judicial affirmations of climate science fundamentals remains a significant motivating factor behind much climate change litigation.
- ***West Virginia v. EPA***, 597 U.S. ___, 31 (2022): Importantly, courts may accept the premise of warming attribution without requiring them to rule in favor of pro-climate action litigants. It is of course possible for a litigant to be right about science but advance a losing legal argument. In *West Virginia v. EPA*, Chief Justice John Roberts held for the majority that the U.S. Environmental Protection Agency lacked statutory authority to devise the disputed emissions reduction system for power plants, but nevertheless wrote in the final paragraph of the opinion, “Capping carbon dioxide emissions . . . may be a sensible ‘solution to the crisis of the day’” (citing *New York v. United States*, 505 U.S. 144, 187 (1992)). In other words, the scientific reality that climate change must be addressed by reducing emissions may have begun to transcend legal and political disagreement.

more could be said about how courts around the world are beginning to grapple with the challenge that climate change poses to the rule of law and judicial self-understanding. Still, even the humble subject of U.S. tort law will appear rather profound when refracted through a changed atmosphere.

II. Source Attribution

The most high-profile climate change tort suits in the United States seek to hold major fossil fuel companies responsible for present and anticipated costs relating to climate change. These lawsuits allege public nuisance and related state-law claims, arguing the fossil fuel industry has known for decades that its products contribute to global climate change, while simultaneously foiling government action through misrepresentation, deceit, and aggressive lobbying tactics. The plaintiffs

³ For a more comprehensive treatment of the interface between law and climate change attribution science, see Michael Burger et al., *The Law and Science of Climate Change Attribution*, 45 COLUM. J. ENV’T L. 57 (2020).

in these cases have included governments, such as cities and states,⁴ as well as private plaintiffs, such as a fishing industry trade group.⁵ To prevail on a public nuisance claim, plaintiffs must show that defendants unreasonably interfered with a right common to the general public via instrumentalities controlled by the defendants. A variety of doctrinal questions arise from the attempt to configure climate change as a public nuisance, including the question of whether a “climate system capable of sustaining human life” is a right common to the general public.⁶ In this part, we focus on the scientific question of whether fossil fuel defendants control the relevant instrumentalities causing climate change. This control question directly implicates the source attribution field of study.

The legal theory underpinning “carbon majors” suits has changed over time. The early suits, filed in the 2000s, led with federal common-law claims. Those suits failed after the Supreme Court determined in *American Electric Power Co v. Connecticut* that federal common-law actions were displaced by the federal Clean Air Act (CAA), which, in *Massachusetts v. EPA*, had been interpreted to govern greenhouse gas emissions as air pollutants.⁷ The more recent suits allege state-law claims since the preemptive effect of the CAA on such claims remains an open question. The new suits also seek to capitalize on factual developments in two key areas of potential relevance to industry liability. First, a series of academic and journalistic investigations uncovered substantial evidence regarding the extent of the fossil fuel industry’s long-standing internal knowledge of climate change science and the human impact of greenhouse gas emissions.⁸ Second, just as scientific understanding and precision of harm attribution developed over time for areas of litigation such as asbestos and tobacco, the fields of climate source and impact attribution have developed such that plaintiffs can now portray fossil fuel defendants as being responsible for human-caused warming, slow-onset impacts, and even specific climate-related events with a precision previously unavailable.⁹

⁴ Compl., *City of Imperial Beach v. Chevron Corp.*, No. C17-01227 (Cal. Super. Ct. July 17, 2017); Compl., *Cnty. of Marin v. Chevron Corp.*, No. CIV1702586 (Cal. Super. Ct. July 17, 2017); Compl., *Cnty. of San Mateo v. Chevron Corp.*, No. 17CIV03222 (Cal. Super. Ct. July 17, 2017); Compl., *Cnty. of Santa Cruz v. Chevron Corp.*, No. 17CV03242 (Cal. Super. Ct. July 17, 2017).

⁵ Compl., *Pac. Coast Fed’n of Fishermen’s Ass’ns, Inc. v. Chevron Corp.*, No. CGC-18-571285 (Cal. Super. Ct. Nov. 14, 2018).

⁶ The quoted phrase comes from *Juliana v. United States*, 947 F.3d 1159, 1165 (2020), a case in which plaintiffs seek to establish the right as a matter of federal constitutional law.

⁷ *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410 (2011). Also relevant is *Native Vill. of Kivalina v. ExxonMobil Corp.*, 663 F. Supp. 2d 863 (N.D. Cal. 2009), *aff’d*, 696 F.3d 849 (9th Cir. 2012) (holding that the Clean Air Act displaces a federal common law suit for damages as well as injunctive relief of the kind sought in *American Electric Power*). A third case had been dismissed earlier on the grounds that plaintiffs lacked standing and that their claims presented non-justiciable political questions. *Comer v. Murphy Oil USA, Inc.*, No. 1:05CV436(LG)(RHW), 2007 WL 6942285 (S.D. Miss. Aug. 30, 2007), *rev’d*, 585 F.3d 855 (5th Cir. 2009), *vacated and reh’g en banc granted*, 598 F.3d 208 (5th Cir. 2010), *appeal dismissed*, 607 F.3d 1049 (5th Cir. 2010) (declining to reinstate the panel opinion). A fourth also was dismissed on political question grounds. *California v. Gen. Motors Corp.*, No. C06-05755 MJJ, 2007 WL 2726871 (N.D. Cal. Sept. 17, 2007).

⁸ *E.g.*, NEELA BANERJEE ET AL., *INSIDE CLIMATE NEWS, EXXON: THE ROAD NOT TAKEN* (2015).

⁹ Rupert F. Stuart-Smith et al., *Filling the Evidentiary Gap in Climate Litigation*, 11 NATURE CLIMATE CHANGE 651 (2021); Geetanjali Ganguly, Joana Setzer & Veerle Heyvaert, *If at First You Don’t Succeed: Suing Corporations for Climate Change*, 38 OXFORD J. LEGAL STUD. 841 (2018). For instance, source attribution studies can aid plaintiffs with respect

To date, state-law climate nuisance suits have been mired in disputes over venue and other preliminary and procedural matters. Fossil fuel defendants have uniformly sought to remove to federal court despite the new wave of complaints asserting exclusively state-law claims.¹⁰ Defendants anticipate a friendlier reception in federal court because of stringent Article III requirements on standing and justiciability,¹¹ making it challenging for plaintiffs to reach the substantive phases of litigation. Many of the carbon majors lawsuits involve strategic considerations about shifting societal perceptions of a deeply entrenched industry by focusing less on the harms it causes and more on the alleged callousness of those who profit by its prevalence. This tactic worked well for plaintiffs in historical anti-tobacco litigation, but similar success for climate change plaintiffs would require them to reach the discovery and trial phases of litigation.

In addition to its procedural benefits, defendants also tend to prefer federal court due to a perception that federal judges are more likely to view state tort law as an inappropriate body of law to bring to bear on climate change. One case that avoided venue squabbles appears to confirm this perception. In *City of New York v. Chevron Corp.*,¹² a panel of U.S. Court of Appeals for the Second Circuit judges addressed state tort law claims that were filed initially in federal court by the city of New York against five multinational oil companies seeking damages for harms and expenses suffered by the city due to climate change. The panel first held that “[g]lobal warming presents a uniquely international problem of national concern” that can only be addressed by federal or international law, rather than state common law.¹³ The panel then held that federal common law is displaced by the CAA, even when a litigant merely pursues a claim for damages rather than injunctive relief as had been sought in *Connecticut v. American Electric Power Co.* Central to the court’s reasoning was a concern that the plaintiff had ulterior policy motives in bringing suit: “Is this a clash over regulating worldwide greenhouse gas emissions and slowing global climate change, or is it a more modest litigation akin to a product liability suit . . . ?”¹⁴ The court’s twin holdings have the effect of precluding entirely the application of judge-made law—i.e., federal or state tort law—in the Second Circuit to challenge activities which generate greenhouse gas emissions.

to standing analysis, such as by helping to show that a litigant’s alleged injuries are “fairly traceable” to the actions of defendants. *See, e.g., Connecticut v. American Electric Power*, 582 F.3d 309, 345-347 (2d Cir. 2009), *overruled on other grounds*. For more in-depth discussion of standing analysis, see the Climate Litigation Overview and Procedural Techniques modules.

¹⁰ Federal appellate courts have broad jurisdiction to review district court denials of removal orders. *BP P.L.C. v. Mayor and City Council of Balt.*, 141 S. Ct. 1532 (2021) (holding that when appellate federal courts have proper jurisdiction to review denial of a removal order under the limited grounds of 28 U.S.C. §1447(d) they can review all grounds listed for denying removal in a district court’s order). Appellate courts may of course still deny removal. *Bd. of Cnty. Comm’rs of Boulder Cnty. v. Suncor Energy (U.S.A.) Inc.*, 2022 WL 363986 (10th Cir. 2022) (affirming denial of the fossil fuel defendants’ removal attempt on all grounds asserted).

¹¹ *See, e.g., Juliana*, 947 F.3d. at 1169-75.

¹² 993 F.3d 81 (2d Cir. 2021).

¹³ *Id.* at 85-86.

¹⁴ *Id.* at 91.

Maintaining the availability of tort adjudication would enable those who are suffering climate-related harm and those who have contributed to that harm to face one another through tort law's mediating and dignifying discourse of mutual accountability. It would clarify through reasoned and evidence-based analysis whether the duty to avoid creating or contributing to a nuisance extends to emissions of greenhouse gases—thus providing clarity to potential tortfeasors about the scope of their obligations to others. Indeed, rather than counseling against common-law adjudication, the complexity and enormity of the climate change problem might be seen to counsel in its favor, simply in order that baseline norms of responsibility—whatever their content—may be more clearly specified as public and private actors embark on what undoubtedly will be a centuries-long struggle to deal with greenhouse gas emissions and their impacts. Finally, adjudication of climate nuisance plaintiffs' tort claims on the merits would ensure the continued availability and operation of tort law as a critical forum for the articulation of public understandings of acceptable behavior. In so doing, it would afford courts an opportunity to raise for the political branches the aspects of climate change that implicate tort law's rights and responsibilities, but that exceed the capacity of common-law adjudication when viewed from the perspective of “solving” policy problems.¹⁵

Nor would adjudication of climate tort suits prove judicially unmanageable, for tort law contains ample doctrinal resources with which to manage even an unfathomably vast and politically vexing issue such as climate change.¹⁶ This should not be surprising, given that public law concepts such as the modern elements of standing doctrine were built largely from private law analogues that have long existed within tort law itself. For instance, the special injury rule, which requires plaintiffs in public nuisance suits to demonstrate harm distinct from that suffered by the general public, works to ensure plaintiffs have an adequate personal stake in the dispute to distinguish it from a generalized political grievance. Failure to acknowledge the common law's resources in this respect can lead to a curtailment of judicial responsibility.¹⁷ In an opinion rejecting federal and state common-law claims brought by North Carolina against the Tennessee Valley Authority and other entities for transboundary air pollution, a U.S. Court of Appeals for the Fourth Circuit panel dismissed nuisance law as lacking “any manageable criteria.”¹⁸ Yet, the panel offered as an alternative ground for dismissal a rule from Alabama and Tennessee tort jurisprudence holding that heavily regulated and permitted activities cannot as matter of law constitute public nuisances. Thus, within the very

¹⁵ Benjamin Ewing & Douglas A. Kysar, *Prods and Pleas: Limited Government in an Era of Unlimited Harm*, 121 YALE L.J. 350 (2011).

¹⁶ Douglas A Kysar, *What Climate Change Can Do About Tort Law*, 41 ENV'T L. 1 (2011).

¹⁷ Lee A. Albert, *Standing to Challenge Administrative Action: An Inadequate Surrogate for Claim for Relief*, 83 YALE L.J. 441 (1974). Lee Albert writes, “[O]ne cannot transform substantive rules of law, elements of a cause of action, into procedural or preliminary principles of access to a court. The natural common law method simply reveals that rules of standing are an integral part of a claim for relief.”

¹⁸ *North Carolina ex rel. Cooper v. Tenn. Valley Auth.*, 615 F.3d 291, 302 (4th Cir. 2010). Also relevant are *New Eng. Legal Found. v. Costle*, 666 F.2d 30, 33 (2d Cir. 1981) (“Courts traditionally have been reluctant to enjoin as a public nuisance activities which have been considered and specifically authorized by the government.”); and RESTATEMENT (SECOND) OF TORTS §821B cmt. f. (“Although it would be a nuisance at common law, conduct that is fully authorized by statute, ordinance or administrative regulation does not subject the actor to tort liability.”).

body of law disparaged as unprincipled by the Fourth Circuit panel rested a principled doctrine responding precisely to the panel's concerns.

If one or more of the carbon majors suits ever reaches the merits, a critical contested element will be how to assign and apportion liability, given the vast number of actors who might be considered to have “caused” climate change. This is where the field of source attribution comes in. A number of research groups are dedicating time and attention to determining which entities are responsible for which percentages of historical greenhouse gas emissions.¹⁹ A groundbreaking study, for instance, concluded that nearly two-thirds of carbon dioxide emitted since the 1750s can be traced to the 90 largest fossil fuel and cement producers, most of which still operate today.²⁰ A study using a similar methodological approach concluded that more than half of ocean acidification can be traced to the 88 largest industrial carbon producers.²¹ Though its members have not yet been named as defendants in climate change lawsuits, the heavily concentrated industrial animal agriculture industry also has been subjected to source attribution analysis. Researchers estimate that the five largest global meat and dairy companies collectively are responsible for more annual greenhouse gas emissions than Exxon, Shell, or BP; 20 companies contribute more annual emissions together than Germany, Canada, Australia, the United Kingdom, or France.²²

Source attribution studies on corporate conduct take anthropogenic climate change—a collective action problem of breath-taking scale—and reduce it from a problem caused by several billion past and present human individuals to one driven by a few dozen companies. As such, they make climate change appear to be more amenable to traditional tort law adjudication. Multiple defendant cases are a familiar challenge in tort law, especially in the context of environmental harm, and the common law has developed a variety of methods for handling them. To begin with, it is clear that any contribution to a pollution nuisance above a *de minimis* threshold can give rise to damages liability or injunctive relief, notwithstanding the presence of numerous other contributors.²³ Moreover, many courts have held that, where apportionment among contributors is infeasible, plaintiffs may hold defendants jointly and severally liable or may shift the burden of proof onto defendants to disaggregate their respective contributions.²⁴ Of course, the legal importance of source attribution

¹⁹ *E.g.*, *Carbon Majors*, CLIMATE ACCOUNTABILITY INST., <https://climateaccountability.org/carbonmajors.html> (last visited Nov. 30, 2022).

²⁰ Richard Heede, *Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854-2010*, 122 CLIMATIC CHANGE 229 (2014).

²¹ Rachel Licker et al., *Attributing Ocean Acidification to Major Carbon Producers*, 14 ENV'T RSCH. LETTERS 124060 (2019); see also Brenda Ekwurzel et al., *The Rise in Global Atmospheric CO₂, Surface Temperature, and Sea Level From Emissions Traced to Major Carbon Producers*, 144 CLIMATIC CHANGE 579 (2017).

²² *Emissions Impossible*, INST. FOR AGRIC. AND TRADE POL'Y Figure 5 (July 18, 2018), <https://www.iatp.org/emissions-impossible>.

²³ RESTATEMENT (SECOND) OF TORTS §840E (1965) (stating with respect to both private and public nuisance that “the fact that other persons contribute to a nuisance is not a bar to the defendant’s liability for his own contribution”).

²⁴ RESTATEMENT (SECOND) OF TORTS §875 (1965) (“[E]ach of two or more persons whose tortious conduct is a legal cause of a single and indivisible harm to the injured party is subject to liability to the injured party for the entire harm.”); *id.* at §433B(2) (“Where the tortious conduct of two or more actors has combined to bring about harm to the plaintiff,

studies is precisely that they make disaggregation of responsibility for climate change appear to be feasible. Thus, if courts were persuaded by source attribution studies, they could utilize the field's calculations of emissions responsibilities as a basis for apportioning damages for climate-caused harms. The approach would be analytically similar to market share apportionment, which has been utilized, for example, in groundwater contamination scenarios involving large numbers of defendants.²⁵ Rather than relying on market share as the basis for allocation, courts simply could rely upon the metric of historical and continuing responsibility for greenhouse gas emissions.²⁶

But will courts find the source attribution characterization of climate responsibility to be persuasive? Some analysts contend that climate change plaintiffs will meet with more success in the courtroom simply by “[f]illing the evidentiary gap” with up-to-date attribution science.²⁷ Source attribution studies, however, raise normative questions that distinguish them from other categories of attribution science.²⁸ A critical matter of judgment concerns whether fossil fuel defendants should be held accountable for emissions occurring in the entirety of their company value chain or only for emissions more directly under their control. Within the emerging field of corporate climate reporting, emissions from owned or controlled sources such as oil and gas production equipment are considered Scope 1 emissions. Greenhouse gas releases attributable to purchased electricity, heating and cooling, and other energy services consumed by a reporting company are considered Scope 2 emissions. All other indirect emissions occurring along a company's value chain are considered Scope 3 emissions, including those releases that occur when an end-user burns coal to run their power plant or gas to drive their car. For fossil fuel companies, Scope 3 emissions are especially significant since the vast majority of their total related emissions fall into this category. The question arises whether those emissions should be attributed to fossil fuel defendants rather than to their customers or to the government that authorized and supported their production.²⁹

Some published opinions in the climate litigation space appear to recognize this attribution conundrum. In *City of New York v. Chevron*, the panel noted pointedly that “every single person who uses gas and electricity—whether in travelling by bus, cab, Uber, or jitney, or in receiving home

and one or more of the actors seeks to limit his liability on the ground that the harm is capable of apportionment among them, the burden of proof as to the apportionment is upon each such actor.”)

²⁵ *State v. Exxon Mobil Corp.*, 126 A.3d 266 (N.H. 2015); *Suffolk Cnty. Water Auth. v. Dow Chemical Co.*, 44 Misc.3d 569, 987 N.Y.S.2d 819 (Sup. Ct. 2014); *In re Methyl Tertiary Butyl Ether (MTBE)*, 175 F. Supp. 2d 593 (S.D.N.Y. 2001).

²⁶ This approach is being taken by a Peruvian farmer who has sued a German electric utility seeking proportionate damages due to the utility's contribution to climate change and the melting of glaciers in the Andes which will harm the farmer and his town. *Lliuya v. RWE AG, VG Essen* 15.12.2016 (2 O 285/15) (Germany). *See also* Burger et al., *The Law and Science of Climate Attribution*, *supra* note 3, at 238-39, discussing market share and related proportionate liability approaches in the context of climate change attribution science.

²⁷ Stuart-Smith et al., *Filling the Evidentiary Gap in Climate Litigation*, *supra* note 9.

²⁸ Burger et al., *The Law and Science of Climate Attribution*, *supra* note 3, at 76.

²⁹ *See, e.g.*, Friederike E.L. Otto et al., *Assigning Historic Responsibility for Extreme Weather Events*, 7 NATURE CLIMATE CHANGE 757 (2017) (disaggregating historical responsibility for an extreme climate event by national and regional governments, rather than companies).

deliveries via FedEx, Amazon, or UPS—contributes to global warming.”³⁰ The court seemed to be asking why the city of New York singled out five multinational oil companies for climate responsibility when all humans have been participating in the fossil fuel economy that those companies enable. All humans are indeed embedded in systems that give rise to greenhouse gas emissions, and the United States government at the highest levels has promoted and supported these existing energy systems. Why are the corporate carbon majors more causally responsible for climate change than the governments that authorize and subsidize their activities, the manufacturers of vehicles, equipment, and other products that utilize fossil fuels, or the consumers and other end-users who benefit from them?³¹

Plaintiffs in the carbon majors lawsuits have at least two possible responses to this question.³² First, plaintiffs have aimed to present evidence of fraudulent and deceptive practices by the fossil fuel defendants in order to lessen the perceived causal responsibility of end-users and lawmakers. Just as smokers may be seen as less responsible for the health hazards of tobacco use in light of industry efforts to manipulate public awareness and government policy, carbon majors plaintiffs hope to portray Scope 3 emissions as the natural and proximate effect of manipulative behavior by the fossil fuel industry. Indeed, climate change lawsuits premised on shareholder or consumer fraud might circumvent entirely this source attribution conundrum by focusing on harms caused directly by industry deception, rather than harms caused by industry contributions to climate change.³³ Whether sounding in fraud or public nuisance, in either case the litigation strategy will depend critically on the narrative that industry defendants “concealed and/or misrepresented the dangers associated with the burning of fossil fuels despite having been aware of those dangers for decades.”³⁴

Second, plaintiffs may take a more pragmatic turn and draw on existing examples in the environmental context to demonstrate the potential for a liability-based response to the question of how to marshal capital toward underfunded environmental needs. Most notably, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) established the liability scheme known as Superfund,³⁵ which requires parties responsible for hazardous waste releases to pay cleanup costs and other associated damages. Superfund casts an extraordinarily wide net when

³⁰ 993 F.3d at 86; *see also* *Native Vill. of Kivalina v. ExxonMobil Corp.*, 663 F. Supp. 2d 863, 876-77 (N.D. Cal. 2009), *aff'd*, 696 F.3d 849 (9th Cir. 2012).

³¹ Burger et al., *The Law and Science of Climate Attribution*, *supra* note 3, at 133-34.

³² David Hunter & James Salzman, *Negligence in the Air: The Duty of Care in Climate Change Litigation*, 155 U. PA. L. REV. 1741 (2007).

³³ *People by James v. Exxon Mobil Corp.*, 119 N.Y.S.3d 829 (N.Y. Sup. 2019) (determining that the New York State Attorney General failed to show by a preponderance of the evidence that defendant Exxon Mobil had materially misled investors with regard to the company’s climate change risks and disclosures). It bears noting that plaintiffs in investor or consumer fraud litigation still would need to demonstrate a causal link between defendant’s alleged misconduct and a harm suffered by the plaintiffs. In most cases, this harm would take the form of economic loss occasioned by the fraud (e.g., a price premium paid for a product with misrepresented environmental attributes, a stock loss following revelation of deceptively concealed company climate risk) rather than harm from climate change impacts directly.

³⁴ *Bd. of Cty. Comm’rs of Boulder Cty. v. Suncor Energy (U.S.A.) Inc.*, 2022 WL 363986 (10th Cir. 2022).

³⁵ U.S. ENVIRONMENTAL PROTECTION AGENCY, *Superfund Liability* (last updated July 25, 2022), <https://www.epa.gov/enforcement/superfund-liability>.

defining responsible parties, including: (1) people and entities currently in control of a relevant facility, even if they were not in control at the time of hazardous waste release; (2) people and entities who were in control of a relevant facility at the time of hazardous waste release; (3) people and entities who arranged the transport and disposal of hazardous waste; and (4) transporting parties who chose the location for hazardous waste disposal. Superfund liability is joint and several when the harm caused by multiple parties cannot be disaggregated. The aim of the statute is to look broadly through a hazardous material's value chain, including past and present property owners, producers, storers, and transporters, in order to identify a deep pocket that can help remediate a dangerously contaminated site. Notably, although Superfund was established by congressional statute, lawmakers drew heavily from common-law tort principles when crafting the liability scheme.

To date, most courts addressing climate change lawsuits have expressed concern that the actions raise deep and divisive policy questions better resolved by the legislative and executive branches. Though often framed in terms of standing, preemption, or displacement, rather than the political question doctrine, the common sentiment is that, however grave the climate crisis, “the plaintiffs’ impressive case for redress must be presented to the political branches of government.”³⁶ The Superfund analogy offers an alternative way of understanding the relief being sought by climate change plaintiffs. In the carbon majors suits, plaintiffs disclaim any intent to use the judicial process to effectuate a greenhouse gas regulatory regime. Instead, they seek compensation for expenses stemming from the impacts of climate change and the need to adapt to those impacts. From the plaintiffs’ perspective, the fossil fuel defendants’ causal role in contributing to the harm marks them as potentially responsible parties who should help shoulder the massive public costs of climate change. Because Superfund was modelled on common-law principles, plaintiffs might argue courts need not wait for legislation in order to apply those same principles to the climate change context.

Whether courts will find persuasive the carbon majors plaintiffs’ characterization of their lawsuits is an open question. The returns to date suggest a great deal of skepticism, at least among federal judges. As the cases slowly make their way back to state court, however, plaintiffs remain hopeful that at least some judges will see the actions as good old-fashioned tort suits, despite the extraordinary factual backdrop of climate change. As one state judge put it when denying a motion to dismiss on preemption grounds in the city of Honolulu’s climate nuisance suit: “This is an unprecedented case for any court, let alone a state court trial judge. But it is still a tort case.”³⁷ In the next part, we ask how will tort suits that really *are* old-fashioned change as the impacts of climate change become ever more pronounced and pervasive.

³⁶ *Juliana*, 947 F.3d at 1165.

³⁷ *City & Cnty. of Honolulu and BWS v. Sunoco, LP et al.*, Civ. No. 1CCV-20-0000380 (Haw. 1st Cir. Ct. Feb. 22, 2022), Ruling on Defendants’ Motion to Dismiss for Failure to State a Claim (motion filed 6/2/21; Dkt. 347).

III. Impact Attribution

A central premise of American tort law is that actors hold a duty of care to guard against the reasonably foreseeable risks of their conduct. What constitutes “reasonable care” changes as the world does. For example, walking down the middle of a road might not have been unreasonable at a time before widespread use of motor vehicles, but it would certainly be considered unreasonable now. Putting aside the ultimate question of who bears liability for causing climate change, important insights can be gained by asking how the reality and severity of climate change will affect more garden-variety claims of wrongful behavior. The IPCC has recently summarized the “unequivocal” evidence that humans have warmed the planet by at least 1.1° Celsius (approximately 2° Fahrenheit) since the Industrial Revolution, as well as the myriad harmful impacts that we know have resulted and will result from that warming.³⁸ Impact attribution studies demonstrate with great confidence the likelihood that climate change is leading to increased heat waves, ocean warming, glacier loss, rising sea levels, flood events, droughts, more intense hurricanes, wildfires, and other harmful effects. As the state of climate attribution science grows in certainty, coverage, and detail, it becomes increasingly likely that, to avoid liability under tort law, actors will need to take account of climate change and its impacts in their decisions and actions. Climate change will expand the scope of reasonably foreseeable risks.

For instance, in the wake of the deadly collapse of a 12-story condominium building near Miami Beach in 2021, investigators and regulators focused on the potential role of climate change in making such disasters more likely. Sea-level rise, saltwater intrusion, flooding, and extreme weather combine to stress the structural integrity of coastal buildings. Under standard principles of premises liability, property owners owe a duty of care to invitees and licensees that includes guarding against hazardous conditions that the owner could discover through reasonably careful investigation. Though case law has yet to develop on this point, such investigation at present arguably includes consideration of how the present and foreseeable impacts of climate change threaten the safety of properties. In 2016, Miami-Dade County commissioned a comprehensive assessment of flooding and saltwater intrusion risks posed by anticipated sea-level rise, concluding that many billions of dollars’ worth of property were vulnerable to loss under current projections.³⁹ To fulfill a standard of reasonable care, owners and operators might need to evaluate whether to reinforce, modify, or abandon their properties before disaster strikes.

In addition to premises liability, one can easily imagine the law of professional malpractice evolving to include consideration of climate-related risks as a routine aspect of exercising professional judgment. For instance, a lawsuit currently pending against Exxon challenges the company *not* for its direct contributions to climate change, but for failing to comply with “good engineering practices”

³⁸ INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2021: THE PHYSICAL SCIENCE BASIS (2021), <https://www.ipcc.ch/report/ar6/wg1/>.

³⁹ MIAMI-DADE CNTY., REPORT ON FLOODING AND SALT WATER INTRUSION: FINAL REPORT FOR RESOLUTION R-48-15 IN SUPPORT OF THE SEA LEVEL RISE TASK FORCE FINAL RECOMMENDATIONS (2016), <https://www.miamidade.gov/green/library/sea-level-rise-flooding-saltwater-intrusion.pdf>.

under the Clean Water Act.⁴⁰ The plaintiff, Conservation Law Foundation, alleges Exxon failed to consider climate change impacts in its stormwater pollution prevention plan for the company's petroleum storage and distribution terminal in Everett, Massachusetts, despite having taken steps to secure other company-owned property such as offshore drilling equipment in light of anticipated climate impacts. As a result of this dual standard within Exxon, the lawsuit alleges, the Everett terminal is vulnerable to climate-related flooding and toxic chemical releases that will harm surrounding poor and minority neighborhoods.

Such "failure-to-adapt"⁴¹ claims could also begin to be made under tort law against engineers, architects, planners, and others whose professional expertise concerns the built environment. Notably, it would not be a defense in any such malpractice action that the defendant relied on building codes, floodplain maps, or other official records that have not been updated to take account of present and projected impacts of climate change. In 2014, for instance, an Illinois insurance company filed suit against several municipalities arguing that the municipality's failure to consider foreseeable climate-related heavy precipitation events in their stormwater management plans led to excess flooding payouts owed to the company's policyholders.⁴² The inadequacy of historical data such as rainfall records as a basis for future planning is now widely understood. Indeed, state and local governments are struggling mightily with the challenge of updating their infrastructure to ensure climate resiliency while having recourse only to government climate and weather records that are not only purely retrospective in orientation, but also in some cases decades out of date.

Lawyers, accountants, investment managers, and other financial professionals might also begin to incur liability for failing to incorporate climate impacts into their relevant areas of professional judgment. An intriguing example comes from Australia, where a worker sued his pension fund, arguing that the fund's managers failed to provide information about and prudently guard against threats posed by climate change to the long-term value of the fund's investments.⁴³ The fund settled by adopting new climate risk disclosure practices, committing to a net zero emissions target by the year 2050 for its portfolio, and agreeing in a statement that "[c]limate change is a material, direct and current financial risk to the . . . fund across many risk categories, including investment, market, reputational, strategic, governance and third-party risks."⁴⁴ As regulators and institutional investors around the world move toward a regime of more formalized and extensive climate change risk disclosure obligations for companies, the role of litigation in policing the adequacy and veracity of

⁴⁰ Conservation Law Found., Inc. v. Exxon Mobil Corporation, 578 F. Supp. 3d 119 (D. Mass. 2021) (refusing to dismiss suit on standing or mootness grounds).

⁴¹ Burger et al., *The Law and Science of Climate Attribution*, *supra* note 3, at 216.

⁴² Illinois Farmers Ins. Co. v. Metro. Water Reclamation Dist. of Greater Chi., No. 14-CV-03251 (N.D. Ill. 2014); Illinois Farmers Ins. Co. v. Cnty. of Lake, No. 14L281 (Ill. Cir. Ct. 2014); Illinois Farmers Ins. Co. v. Cnty. of McHenry, No. 2014LA116 (Ill. Cir. Ct., 2014); Illinois Farmers Ins. Co. v. Cnty. of Will, No. 14L00314 (Ill. Cir. Ct. 2014); Illinois Farmers Ins. Co. v. Cnty. of DuPage, No. 2014L00385 (Ill. Cir. Ct. 2014).

⁴³ McVeigh v. Retail Employees Superannuation Trust [2019] FCA 14 (17 January 2019) (Austl.).

⁴⁴ The settlement agreement resulted in a public statement from the fund. Press Release, Rest, Statement from Rest (Nov. 2, 2020), http://climatecasechart.com/wp-content/uploads/sites/16/non-us-case-documents/2020/20201102_NSD13332018_settlement-agreement.pdf.

such disclosures will become significant. Companies—and, in some cases, their professional advisors—may face liability to investors, consumers, and others who rely on inadequate or misleading climate risk disclosures.

Premises liability and professional malpractice are but two examples of a broader phenomenon: The manner in which courts assess all tort duties will potentially be impacted by the fact that we live in an era of elevated risk due to climate change. Learned Hand famously conceptualized the duty of care in negligence law as a function of three variables: “if the probability be called P; the injury L; and the burden, B; liability depends upon whether B is less than L multiplied by P: i.e., whether B [is] less than PL.”⁴⁵ In many areas of relevance to tort law, climate change is raising both the probability of an adverse event (P) and the magnitude of harm if the event occurs (L). For instance, consider the problem of wildfires in the American West, which have increased significantly in scale and duration, due in large part to climate-related impacts such as heat, drought, and lightning increases. As a result, both the P and the L associated with activities that might lead to fire outbreaks have increased, leading to a larger set of “burdens” (B) that defendants arguably must incur to avoid having their conduct deemed negligent.

Indeed, it is possible to imagine climate impacts shifting the risk level (PL) associated with an activity so significantly that the activity becomes seen as “abnormally dangerous,” and therefore appropriately subjected to a standard of strict liability rather than negligence. The Restatement (Third) of Torts: Physical & Emotional Harm provides in §20(b) that an abnormally dangerous activity exists when:

- (1) the activity creates a foreseeable and highly significant risk of physical harm even when reasonable care is exercised by all actors; and
- (2) the activity is not one of common usage.

Returning to the wildfire example, one might ask what kinds of activities might come to be seen as abnormally dangerous in the future, given the significant fire risk they pose even when reasonable care is undertaken. Fireworks displays, for instance, are not typically subjected to strict liability at present given the assumption that they can be undertaken safely through reasonable care.⁴⁶ Might that assumption change in the future, at least for states heavily threatened by wildfires? What about campfires and cigarette smoking, which may have been in “common usage” at one point in such areas but have become increasingly shunned as unnecessary fire hazards?

The point is not to answer such questions at present, but to begin to locate them on the horizon and to consider them as examples of a wider dawning of climate change awareness that will impact tort law in coming decades. Whatever may become of the high-profile climate liability suits that seek to hold fossil fuel companies or governments responsible for causing climate change, the pervasiveness

⁴⁵ United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947).

⁴⁶ See, e.g., Toms v. Calvary Assembly of God, Inc., 132 A.3d 866 (Md. 2016).

of climate impacts will ensure that the tort system must grapple with how to adapt individual duties of care in a world of collective recklessness.

IV. Event Attribution

Of particular challenge in tort law's reckoning with climate change will be events of vast destructive scope.⁴⁷ On the one hand, climate modeling is becoming ever more precise and rapid, allowing scientists to conclude extreme event attribution analyses within days of a potentially climate-related event's occurrence.⁴⁸ For instance, when severe flooding struck Western Europe in the summer of 2021, scientists working in the World Weather Attribution network were able to quickly estimate that anthropogenic climate change made the event 1.2 to 9 times more likely to have occurred.⁴⁹ More dramatically, extreme heat events in Siberia during 2020 and the Pacific Northwest of the United States and Canada were found by scientists to have been virtually impossible without the influence of human-caused climate change.⁵⁰ Given tort law's preponderance of the evidence causation standard—which asks whether challenged conduct was more likely than not to have caused a harm—such scientific attribution analyses are almost tailor-made to support legal attribution of an extreme event to anthropogenic climate change.

On the other hand, such analyses leave in place the source attribution problem discussed above in Part II, for they only identify “humanity” as the causal agent behind an extreme climate-related event, rather than some legally accountable sub-group of humanity. Even where an individual defendant *is* identifiable as the causal culprit behind an event of mass loss, tort law has been reluctant to hold defendants responsible for the outsized consequences of their shortcomings.

A prominent example is the case of *Strauss v. Belle Realty Co.*,⁵¹ which arose from a massive electricity blackout suffered by New York City in the summer of 1977. After a lightning bolt struck a Consolidated Edison (ConEdison) transmission tower, a damaged relay prevented the affected line from re-opening, thus choking off one of the largest conduits to New York City.⁵² The faulty relay was followed by a series of faulty responses on the part of ConEdison, ultimately resulting in a two-day blackout that inflicted massive harm on New York City and its residents. Among those injured

⁴⁷ Portions of this part draw from R. Henry Weaver & Douglas A. Kysar, *Courting Disaster: Climate Change and the Adjudication of Catastrophe*, 93 NOTRE DAME L. REV. 295 (2017).

⁴⁸ Isabelle Gerretsen, *Timeline: How the Science Linking Climate Change to Extreme Weather Took Off*, CLIMATE HOME NEWS (Apr. 8, 2021), <https://www.climatechangenews.com/2021/08/04/timeline-science-linking-climate-change-extreme-weather-took-off/>.

⁴⁹ FRANK KREIENKAMP ET AL., WORLD WEATHER ATTRIBUTION, RAPID ATTRIBUTION OF HEAVY RAINFALL EVENTS LEADING TO THE SEVERE FLOODING IN WESTERN EUROPE DURING JULY 2021 2 (2021).

⁵⁰ Quirin Schiermeier, *Climate Change Made North America's Deadly Heatwave 150 Times More Likely*, NATURE (July 8, 2021), <https://doi.org/10.1038/d41586-021-01869-0>; Andrew Ciavarella et al., *Prolonged Siberian Heat of 2020 Almost Impossible Without Human Influence*, 166 CLIMATIC CHANGE (2021), doi.org/10.1007/s10584-021-03052-w.

⁵¹ 482 N.E.2d 34, 35 (N.Y. 1985).

⁵² *Id.* at 37.

was 77-year-old Julius Strauss who ran out of water in his apartment building in Queens, which was supplied by an electric pump.⁵³ Strauss fell and sustained severe injuries as he attempted to descend an unlit stairwell to fetch water from the basement of his building. Strauss brought suit against his landlord and ConEdison. Although straightforward on its face, Strauss's lawsuit seemed to rattle the New York Court of Appeals. Since earlier litigation had established ConEdison's negligence,⁵⁴ the court in *Strauss* had only to decide the extent of the utility's liability. In a remarkably candid opinion, the Court of Appeals dismissed the complaint "[o]n public policy grounds."⁵⁵ That is, in the face of "liability which could obviously be enormous," the court made a decision not "strictly governed by tort or contract law principles."⁵⁶ What exactly did the judges of the Court of Appeals fear? A dissenter pointed out that ConEdison could easily distribute any costs among its consumers in the form of higher rates.⁵⁷ In response, the majority alluded only vaguely to "the societal consequences of rampant liability."⁵⁸

Turnabout is fair play, as the saying goes, and ConEdison received its due nearly a quarter century later when disaster again struck New York City. Seeking to recover damages for its electricity substation which was destroyed after the 7 World Trade Center building collapsed during the 9/11 tragedy, ConEdison alleged that the building had been negligently designed because applicable safety codes dictated that such structures should be able to withstand uncontrolled burning without collapse.⁵⁹ The appellate panel, however, fixated on the fact that the particular fires at issue on 9/11 had been caused by an unprecedented terrorist attack on the nearby Twin Towers. Indeed, the court likened the events to a "a fire triggered by a nuclear attack on lower Manhattan," clearly implying that ordinary rules of negligence liability would be suspended in such an event.⁶⁰ Although formally holding that ConEdison's claim failed "to raise a genuine issue of fact as to whether defendants' negligence was the cause-in-fact of Con Ed's injury,"⁶¹ the majority's decision appears to have been driven primarily by a sense that tort law was usurped by "the unprecedented etiology and severity of the cataclysm that engulfed lower Manhattan on September 11, 2001."⁶²

Judicial hesitancy in the face of such massive, unimaginable events is understandable. But climate change raises the prospect of catastrophe that becomes *routinized* and therefore in need of being incorporated into the ordinary operations of law. Eighteen of the 20 largest wildfires recorded in California history have happened in the most recent two decades, with nine happening in the most

⁵³ *Id.* at 35.

⁵⁴ *Food Pageant, Inc. v. Consolidated Edison Co.*, 429 N.E.2d 738 (N.Y. 1981); *Koch v. Consolidated Edison Co. of New York*, 468 N.E.2d 1 (N.Y. 1984).

⁵⁵ *Strauss*, 482 N.E.2d at 35.

⁵⁶ *Id.* at 35.

⁵⁷ *Id.* at 39 (Meyer, J., dissenting).

⁵⁸ *Id.* at 38.

⁵⁹ *Aegis Ins. Servs., Inc. v. 7 World Trade Co., L.P.*, 737 F.3d 166 (2d Cir. 2013).

⁶⁰ *Id.* at 179-80.

⁶¹ *Id.* at 179.

⁶² *Id.* at 180.

recent two years.⁶³ Each of the previous seven years have established new records for ocean temperature,⁶⁴ a critical reason why hurricanes are increasing in intensity and impact.⁶⁵ In 2017, Hurricane Harvey dropped as much as 60 inches of rain on Houston, causing damage to more than 200,000 homes and \$125 billion in total losses.⁶⁶ In 2021, at least 50 people died when the remnants of Hurricane Ida overwhelmed urban stormwater drainage systems in the Northeast.⁶⁷ According to the National Oceanic and Atmospheric Administration, the United States in 2021 experienced 20 separate billion-dollar climate and weather disasters, second only in number to the record-setting year of 2020. Reflecting on historical trends, the agency noted that “[i]t is concerning that 2021 was another year in a series of years where we had a high frequency, a high cost, and large diversity of extreme events that affect people’s lives and livelihoods—concerning because it hints that the extremely high activity of recent years is becoming the new normal.”⁶⁸

Negligence attends such tragedies, even if the role of climate change seems to overwhelm individual human agency. In Houston, for instance, city planners relied on rainfall records that were two decades old prior to Hurricane Harvey, despite clear awareness that urban flooding events had been rising for years.⁶⁹ Tort law typically requires defendants to take reasonable actions based on reasonably attainable information in order to avoid liability. Yet, even when defendants do behave unreasonably in ways that cause or contribute to harm, other doctrines may serve to limit their exposure to liability, especially in the case of massive harm (Box 2).

In each of the cases examined in this part, plausible paths of reasoning were available to the deciding judges that would have enabled tort law to continue to apply, notwithstanding the intimidating factual backdrop of catastrophe. Looking forward, there will be judicial opportunities to engage tort law’s norm-articulating function, as the problems associated with climate change are driven in substantial part by an absence of shared norms of responsibility over the stewardship of global commons like the atmosphere. Put plainly, the world’s greatest collective action problem stems from the assumption that no law, policy, or principle prevents the dumping of waste into the sky. Now, as the sky has begun striking back, we face a similar normative vacuum when addressing responsibility

⁶³ CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION, *Top 20 Largest California Wildfires* (Oct. 24, 2022), https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf.

⁶⁴ Kisei R. Tanaka & Kyle S. Van Houtan, *The Recent Normalization of Historical Marine Heat Extremes*, 1 PLOS CLIMATE (2022).

⁶⁵ Kerry Emanuel, *Atlantic Tropical Cyclones Downscaled From Climate Reanalyses Show Increasing Activity Over Past 150 Years*, 12 NATURE COMMUN. 7027 (2021).

⁶⁶ Monique Welch, *Hurricane Harvey by the Numbers: 5 Years Later, See the Storm’s Lasting Toll on Houston*, HOUS. CHRON. (Aug. 23, 2022), <https://www.houstonchronicle.com/news/houston-weather/hurricanes/article/harvey-by-the-numbers-17384825.php#photo-22831555>.

⁶⁷ *Hurricane Ida Death Toll in the U.S. Northeast Rises to at Least 50 Victims*, REUTERS (Sept. 5, 2021), <https://www.cnn.com/2021/09/05/hurricane-ida-death-toll-in-the-us-northeast-rises-to-at-least-50-victims.html>.

⁶⁸ Adam B. Smith, *2021 U.S. Billion-Dollar Weather and Climate Disasters in Historical Context*, NOAA, <https://www.climate.gov/news-features/blogs/beyond-data/2021-us-billion-dollar-weather-and-climate-disasters-historical>.

⁶⁹ U.S. GLOBAL CHANGE RESEARCH PROGRAM, CLIMATE SCIENCE SPECIAL REPORT: NCA4 VOLUME I (2017), Chapter 2: Our Changing Climate, Figure 2.6, <https://nca2018.globalchange.gov/chapter/2/>.

Box 2: After the Storm: Post-Katrina Attempts to Attribute Responsibility for Loss

Two cases arising from the 2005 aftermath of Hurricane Katrina illustrate how climate-related tort law claims may fail, despite defendants' presumed contributions to harm.

- **Barasich v. Columbia Gulf Transmission Co.**, 467 F. Supp. 2d 676 (E.D. La. 2006): Residents of southern Louisiana sought damages for personal injury and property loss, alleging that the defendant corporations had destroyed millions of acres of marshland through their dredging and drilling operations, thus decimating a crucial protective barrier against storm surge. The court held that the plaintiffs failed to state a claim of negligence under Louisiana law. The court proffered multiple reasons for its decision, all of which focused on notions of proximity. For instance, it narrowly construed the principle that trespass liability lies only among "neighbors" in Louisiana, viewing the plaintiffs as distant strangers to the defendants, whose activities had nevertheless powerfully shaped the entire coastal environment of the Gulf. Likewise, in fixing the orbit of duty for purposes of negligence, the court emphasized that the defendants "were physically and proximately remote from plaintiffs or their property." *Barasich*, 467 F.2d at 693.
- **In re Katrina Canal Breaches Litig.**, 696 F.3d 436 (5th Cir. 2012): Plaintiffs sued the U.S. Army Corps of Engineers for negligently constructing and maintaining the Mississippi River-Gulf Outlet ("MR-GO") canal, which "greatly aggravated the storm's effects on the city and its environs." *Katrina Canal Breaches*, 696 F.3d at 441. As one might expect, the case turned on the question of sovereign immunity. The Flood Control Act of 1928 had immunized the federal government from liability for most flood damages in order to promote levee construction. That court held that, although the Flood Control Act did not bar recovery, the Corps was separately immunized by the discretionary-function exception to the Federal Tort Claims Act. The Corps built New Orleans' defenses to protect against a "standard project hurricane" that severely understated the actual risk facing the city. Yet, from the perspective of tort law and the sovereign's prerogative to maintain its immunity, this history of arguable negligence creates no binding duty.

for the suffering induced by climate disasters. Confronted by that vacuum, tort law could—as it has for centuries in the Anglo-American legal tradition—play a role in the development and enunciation of norms of responsibility. The role need not be decisive, and legislatures can always choose to revise or repeal common-law pronouncements within constitutional limitations.⁷⁰ But, given the scope and scale of the problem, active judicial engagement with the challenge of developing norms of responsibility in the climate change space will become increasingly called for.

V. Conclusion

Even in the most optimistic scenario of climate change mitigation, we are destined—for at least the next three decades and likely much longer—to have continued warming with accompanying, mostly negative, impacts. Climate attribution science plays an important role in the question of who bears responsibility. This question will remain contested and is unlikely to be met with definitive judicial resolution in the United States. But our duties of care and regard for one another in an era of routine, predictable, and extreme harm will necessarily evolve. Whether by choice or by necessity, we will become accustomed to judging care in a reckless world.

⁷⁰ John C.P. Goldberg, *The Constitutional Status of Tort Law: Due Process and the Right to a Law for the Redress of Wrongs*, 115 YALE L.J. 524 (2005).