

# FIFTH NATIONAL CLIMATE ASSESSMENT

## *Chapter 21 | Northeast*

Dr. Jessica Whitehead, Institute for Coastal Adaptation and Resilience

Old Dominion University



# U.S. Global Change Research Program

The U.S. Global Change Research Program (USGCRP) was mandated by Congress in the Global Change Research Act of 1990 (P.L. 101-606), “to assist the Nation and the world to **understand, assess, predict** and **respond** to human-induced and natural process of global change”



# Legislative Origins for the National Climate Assessment

*Global Change Research Act of 1990, Section 106:*

Not less frequently than every 4 years [USGCRP] shall prepare and submit to the President and Congress an assessment which:

- **Integrates, evaluates, and interprets** the findings of [USGCRP] and discusses the scientific **uncertainties** associated with such findings
- Analyzes the effects of global change on the **natural environment, agriculture, energy production and use, land and water resources, transportation, human health and welfare, human social systems, and biological diversity**
- Analyzes **current trends** in global change, both human- induced and natural, and **projects major trends** for the subsequent 25 to 100 years

# National Climate Assessment Basics

- **Evaluates** a wide range of scientific and technical inputs from diverse and authoritative sources. **Applies best expert judgment** to characterize certainty.
- **Relevant for policy** and decision-making but **does not prescribe** specific policy interventions or advocate for a particular viewpoint.
- Assesses a **range of potential impacts**, helping decision-makers better identify risks that could be avoided or reduced
- Fully **compliant** with the Global Change Research Act (GCRA) and other applicable laws and policies
- Provides multiple opportunities for **public engagement**
- Employs an **extensive review** process

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\* New chapters or features highlighted in blue

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- Adaptation
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### Focus on...

- **Compound Extreme Events**
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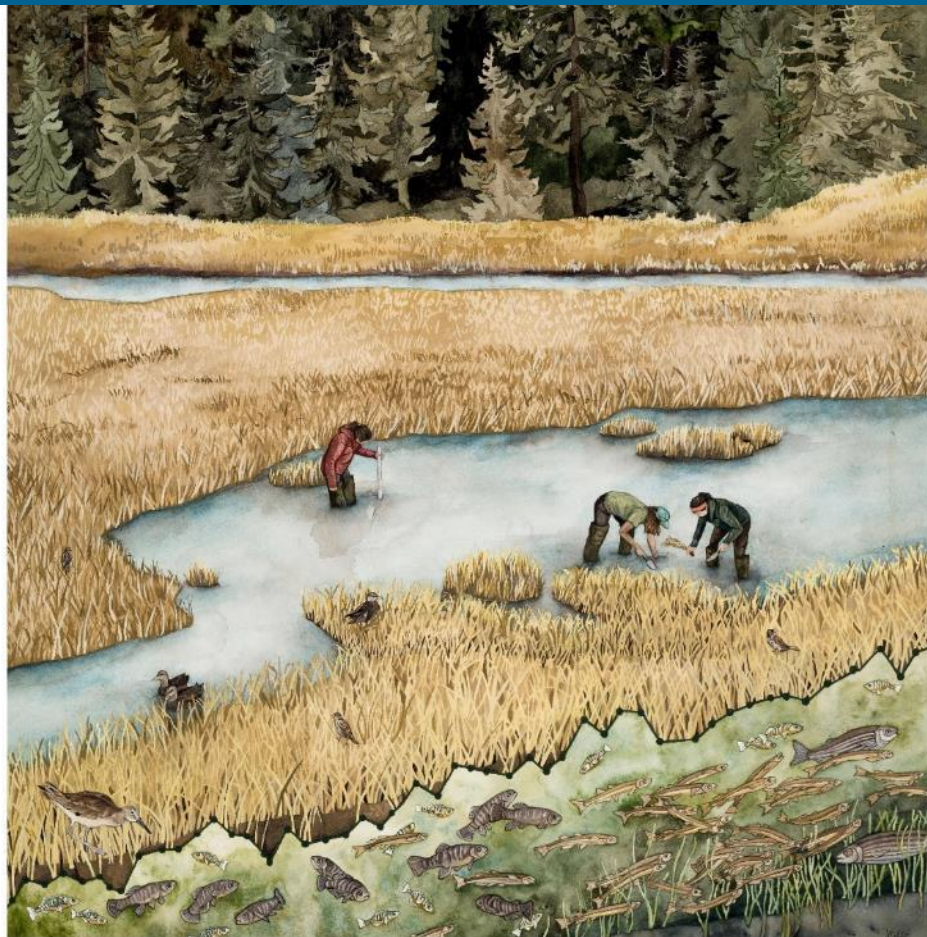
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# FIFTH NATIONAL CLIMATE ASSESSMENT

## 21 - Northeast Chapter

Jessica Whitehead, Erin Lane, Melissa Finucane, and Mark Bove



# Chapter Team

## Federal Coordinating Lead Author

**Ellen L. Mccray**, NOAA National Centers for Environmental Information

## Chapter Lead

**Jessica C. Whitehead**, Old Dominion University, Institute for Coastal Adaptation and Resilience

## Chapter Authors

**Erin D. Lane**, USDA Forest Service, Northeast Climate Hub

**Lisa Kerr**, Gulf of Maine Research Institute

**Melissa L. Finucane**, Union of Concerned Scientists

**David R. Reidmiller**, Gulf of Maine Research Institute

Mark C. Bove, Munich Reinsurance America Inc.

**Franco A. Montalto**, Drexel University, Department of Civil, Architectural, and Environmental Engineering

**Shaun O'Rourke**, Quantified Ventures

**Daniel A. Zarrilli**, Columbia University

**Paulinus Chigbu**, University of Maryland Eastern Shore

**Casey C. Thornbrugh**, United South and Eastern Tribes Inc., Northeast and Southeast Climate Adaptation Science Centers

**Enrique N. Curchitser**, Rutgers University

**James G. Hunter**, Morgan State University

**Kevin Law**, Marshall University

## Technical Contributors

**Jay Bhatt**, Drexel University

**Carlos Calvo-Hernandez**, RAND Corporation

**Adam A. Kemberling**, Gulf of Maine Research Institute

**Zhaoxiong Li**, Drexel University

## Review Editor

**Katherine D. Cann**, Rutgers University

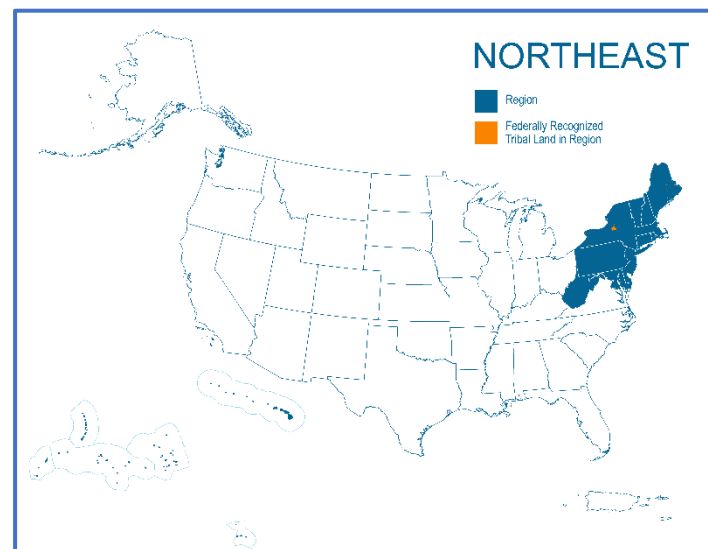
## USGCRP Coordinators

**Joshua Hernandez**, US Global Change Research Program / ICF

**Christopher W. Avery**, US Global Change Research Program / ICF

# Key Takeaways from NCA5: Northeast

1. Chronic impacts of extreme weather are shaping adaptation and mitigation efforts.
2. Ocean and coastal impacts are driving adaptation to climate change.
3. Disproportionate impacts highlight the importance of equitable policy choices.
4. Climate action plans are now being implemented.
5. Implementation of climate plans depends on adequate financing.





KEY  
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# 21.1

## Chronic impacts of extreme weather are shaping adaptation and mitigation efforts.

The Northeast continues to be confronted with extreme weather, most notably extreme precipitation—which has caused problematic flooding across the region—and heatwaves.

Trends in Extreme Precipitation in the Northeast

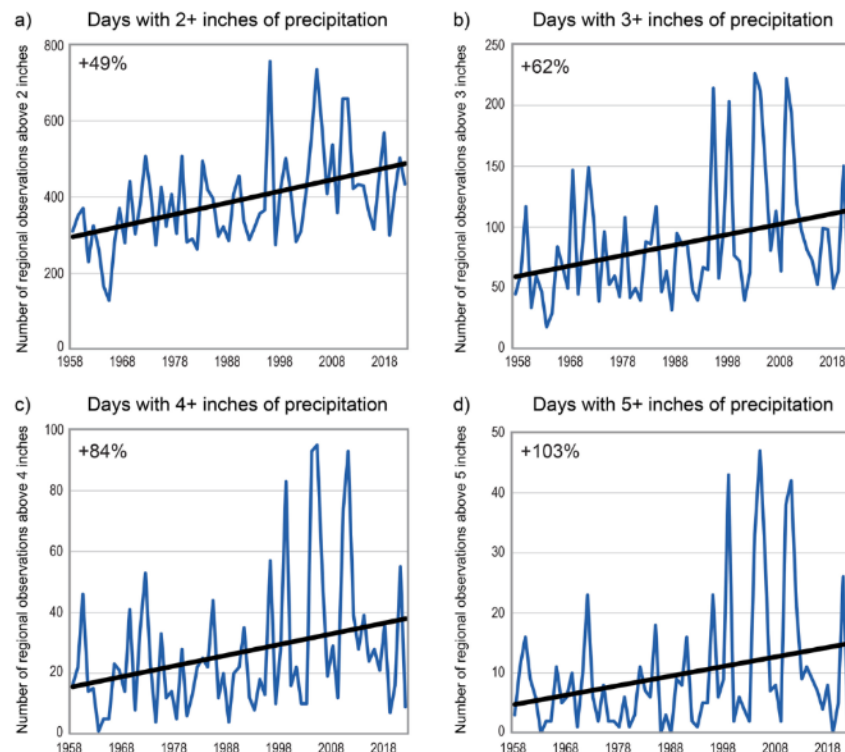


Figure 21.1. The number of daily events in the Northeast with precipitation totals equal to or exceeding 2, 3, 4, and 5 inches has increased (KM 21.1).

KEY  
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21.1

# Chronic impacts of extreme weather are shaping adaptation and mitigation efforts.

Climate adaptation and mitigation efforts, including nature-based solutions, have increased across the region, with a focus on emissions reductions, carbon sequestration, and resilience building.

Examples of State and Local Responses to Extreme Weather

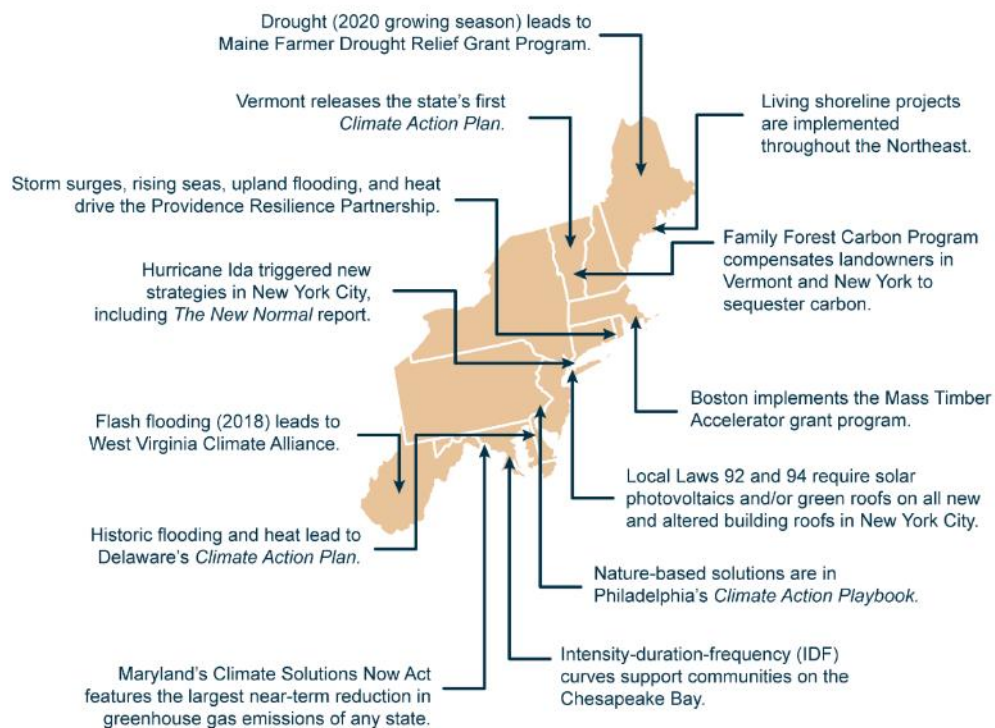


Figure 2.1.2. Northeastern states and cities have adopted a range of plans, programs, and policies in response to extreme weather, many of which include nature-based strategies (KM21.1).

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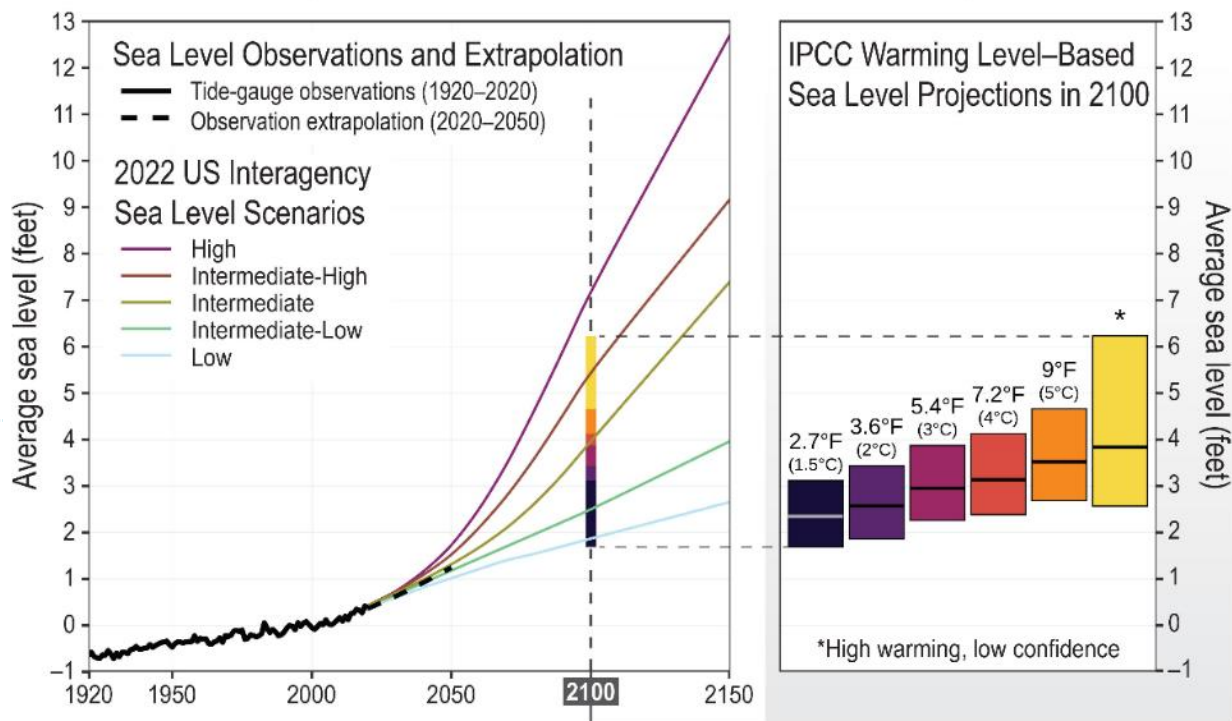
9.1

# Coastal Hazards Are Increasing Due to Accelerating Sea Level Rise and Changing Storm Patterns.

An 11-inch average rise along the contiguous US coastline is expected by 2050 (relative to 2020), with a likely range of 9–13 inches. After 2050 regional variations continue to vary, with SLR higher along the Atlantic but greatest along the Gulf Coast for the Intermediate scenario.

By 2050 under the Intermediate scenario, a flood regime shift will occur with minor, moderate, and major coastal flood frequencies increasing 5-10 times in many regions relative to 2020.

### Accelerating Relative Sea Level Rise in the Contiguous US



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21.2

Ocean and coastal impacts are driving adaptation to climate change.

Ocean and coastal habitats in the Northeast are experiencing changes that are unprecedented in recorded history, including ocean warming, marine heatwaves, sea level rise, and ocean acidification.

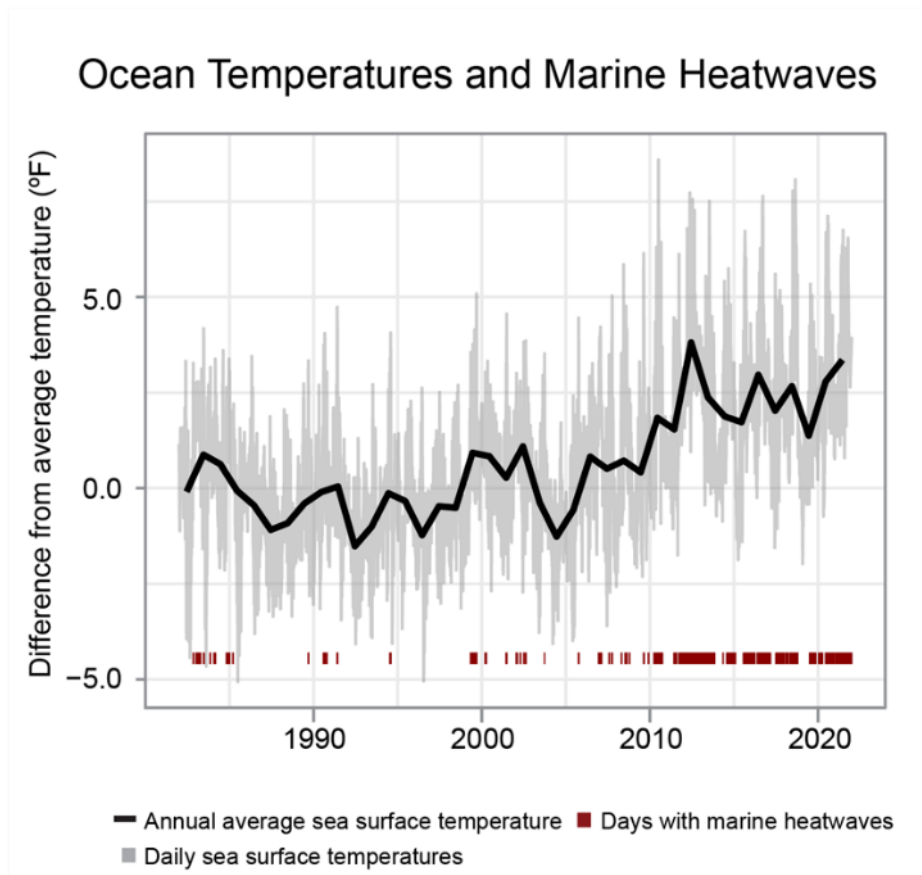


Figure 21.4. Oceans are growing warmer and marine heatwaves are more frequent, which is impacting marine ecosystems in the Northeast (KM21.2).

KEY  
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# 21.2

## Ocean and coastal impacts are driving adaptation to climate change.

Resulting shifts in distribution, productivity, and seasonal timing of life-cycle events of living marine resources in the Northeast have spurred adaptation efforts, such as coastal wetland restoration and changes in fishing behavior.

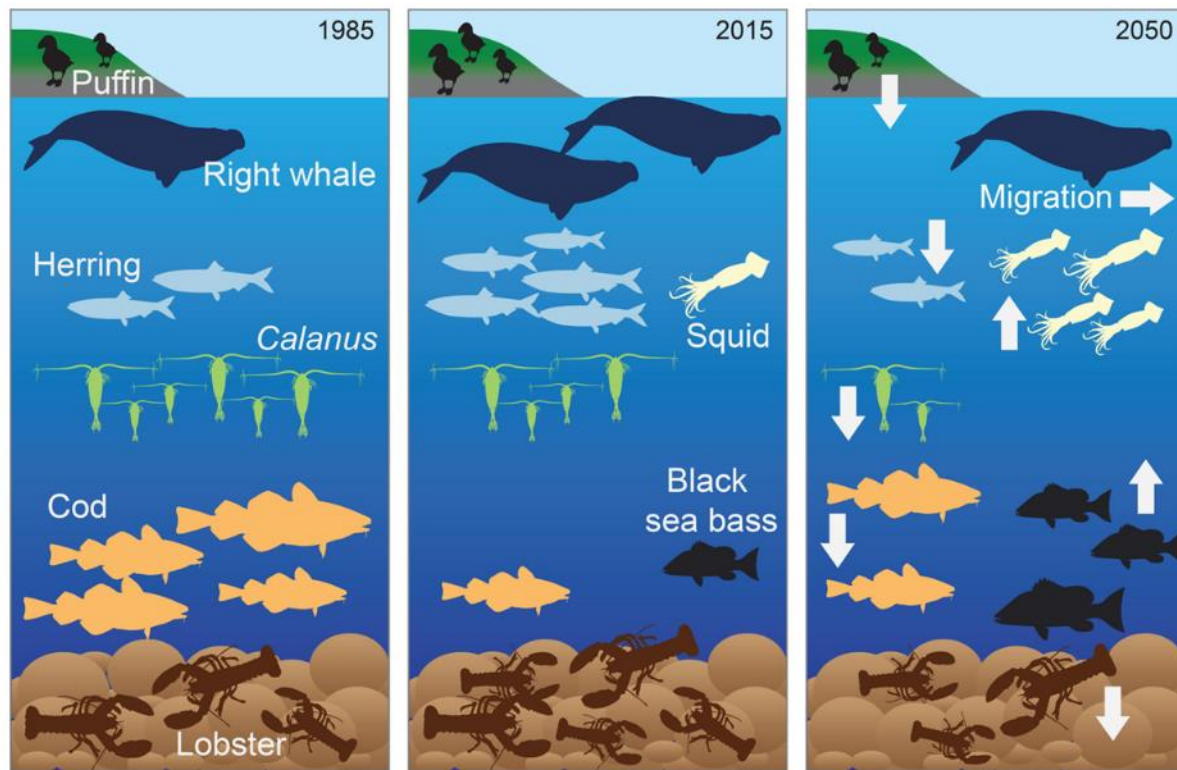
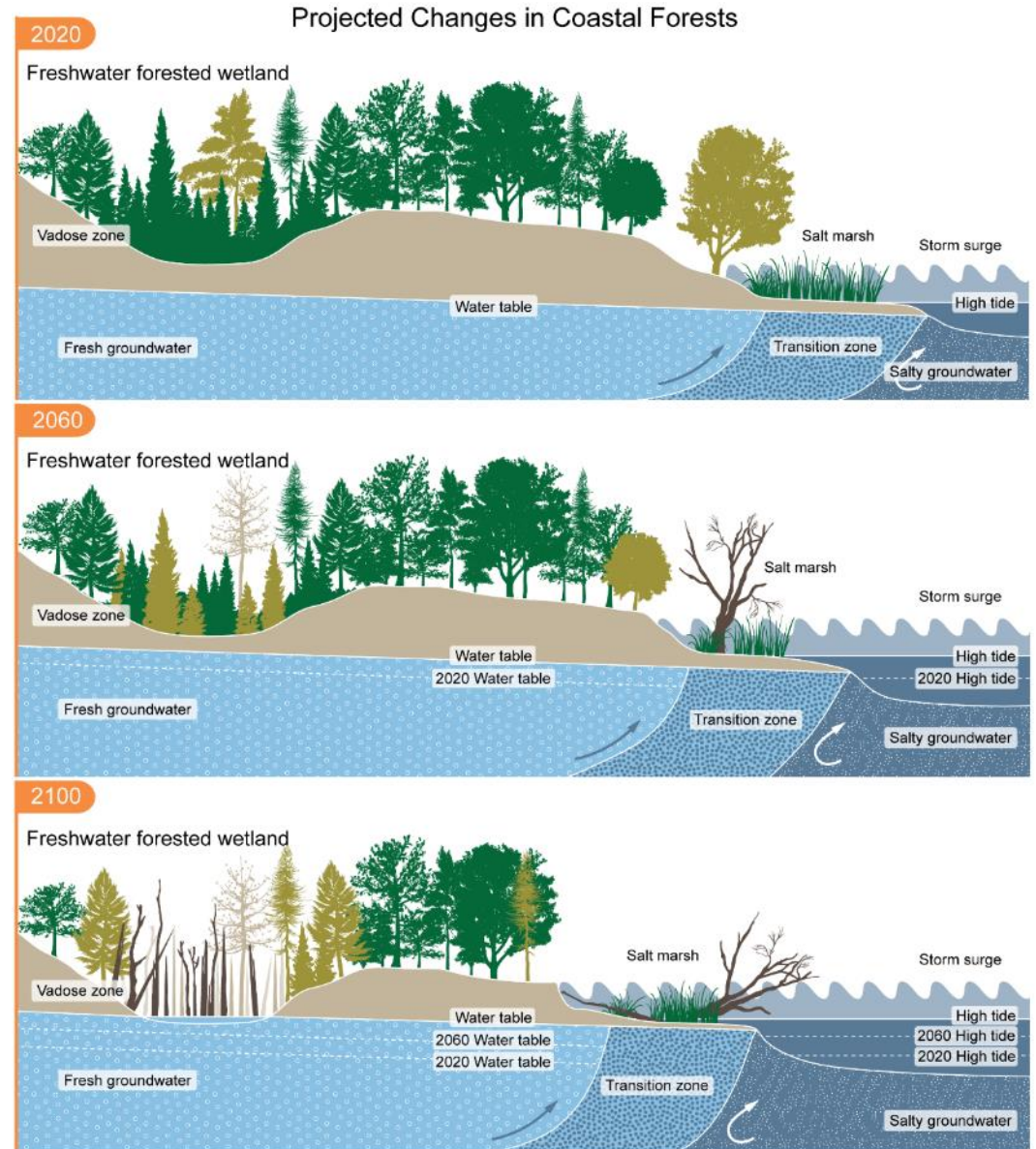


Figure 21.5. Shifts in Gulf of Maine species abundance and composition are expected to continue (KM 21.2).

**Figure 21.7. Rising sea levels kill trees and transform coastal forests into marshes, damaging vital ecosystems and the services they provide to the community.**



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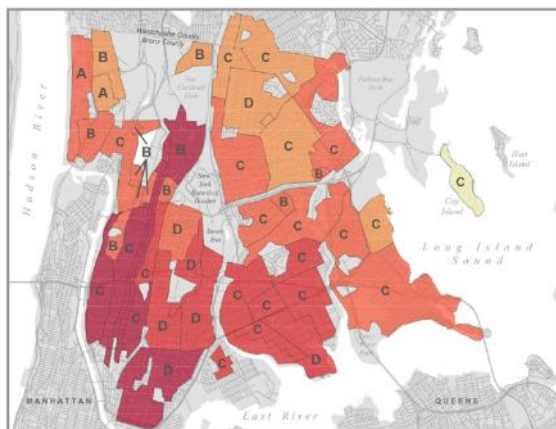
# 21.3

## Climate change impacts in the Northeast do not affect everyone equally.

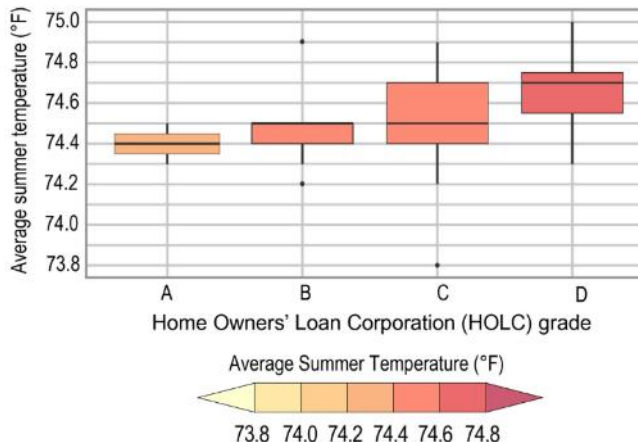
Disproportionate impacts among certain communities in the Northeast, notably including racial and ethnic minorities, people of lower socioeconomic status, and older adults, highlight the importance of equitable policy choices.

Local level efforts to improve equity in climate adaptation are improving, but still uneven throughout the Northeast.

a) Average summer temperature and HOLC grades



b) Average summer temperature by HOLC rating



**Figure 21.8. Average summer temperatures are generally higher in historically redlined neighborhoods in the Bronx, New York (KM 21.3).**

KEY  
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21.4

# Climate action plans are now being implemented.

Almost every state in the region has conducted or updated a climate impact assessment, developed a comprehensive climate action plan, and enacted climate-related laws since 2018.

Innovative approaches to transparent, inclusive, and equitable processes around climate action are being embraced by Tribes, municipalities, and states. Although ambitious emissions reduction targets have been put forward, meeting these goals is expected to be challenging.

Table 21.1: Recent Climate Planning and Action Among States and Tribal Nations in the Northeast

The table is a compilation of state and selected Tribal climate impact assessments and action plans, alongside illustrative climate-related laws, since 2018.

State	Climate Impact Assessment	Climate Action Plan	Climate-Related Laws
Maine	<p>Scientific Assessment of Climate Change and Its Effects in Maine <a href="#">↗<sup>196</sup></a></p> <p>Maine Climate Science Update 2021 <a href="#">↗<sup>197</sup></a></p>	<p>Maine Won't Wait <a href="#">↗<sup>198</sup></a></p>	<p>An Act to Analyze the Impact of Sea Level Rise <a href="#">↗<sup>199</sup></a></p> <p>An Act to Implement Agency Recommendations Relating to Sea Level Rise and Climate Resilience <a href="#">↗<sup>200</sup></a></p> <p>An Act to Establish a Pilot Program to Encourage Climate Education in Maine Public Schools <a href="#">↗<sup>201</sup></a></p>
New Hampshire	<p>New Hampshire Climate Assessment 2021 <a href="#">↗<sup>202</sup></a></p>	<p>N/A</p> <p>(The state has a pre-2018 climate action plan <a href="#">↗<sup>203</sup></a>)</p>	<p>An Act Establishing a Coastal Resilience and Economic Development Program <a href="#">↗<sup>204</sup></a></p>
Vermont	<p>Vermont Climate Assessment 2020 <a href="#">↗<sup>205</sup></a></p>	<p>Initial Vermont Climate Action Plan <a href="#">↗<sup>206</sup></a></p>	<p>Global Warming Solutions Act <a href="#">↗<sup>207</sup></a></p>
Massachusetts	<p>Massachusetts Climate Change Assessment <a href="#">↗<sup>208</sup></a></p>	<p>Massachusetts Clean Energy and Climate Plan for 2025 and 2030 <a href="#">↗<sup>209</sup></a></p>	<p>An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy <a href="#">↗<sup>210</sup></a></p>

Find the full Table 21.1:

<https://nca2023.globalchange.gov/chapter/21/#table-21-1>



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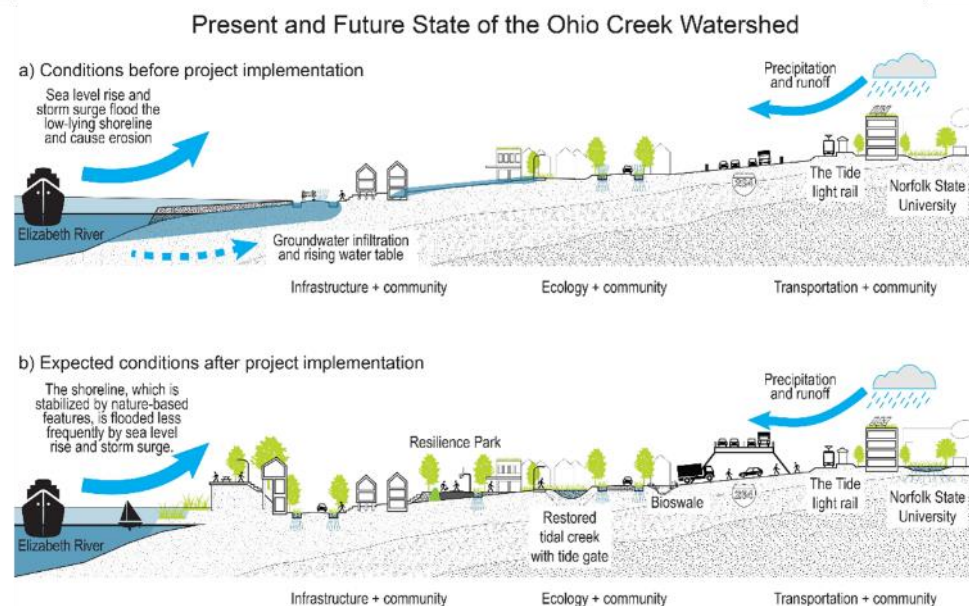
9.3

# Adaptation Reduces Risk and Provides Additional Benefits for Coastal Communities.

Adaptations include a suite of strategies to address root causes of vulnerability, consider diverse needs and center equity, and accumulate incremental steps or facilitate fundamental system shifts to transform coastal communities in ways they still thrive and maintain a relationship with the coast.

Nature-based strategies reduce temporary flooding but may provide modest benefits in preventing permanent inundation from SLR. Pairing NBS with planned relocation provides protection from flooding by moving communities out of harm's way while re-establishing natural floodplain risk-reduction benefits of coastal ecosystems.

## Adaptation Reduces Risk and Provides Additional Benefits for Coastal Communities



KEY  
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21.5

Northeast action to address climate change is happening, but the degree of implementation relies on available funding.

Options for financing mitigation and adaption efforts have expanded in recent years, providing households, communities, and businesses with more options for responding to climate change.

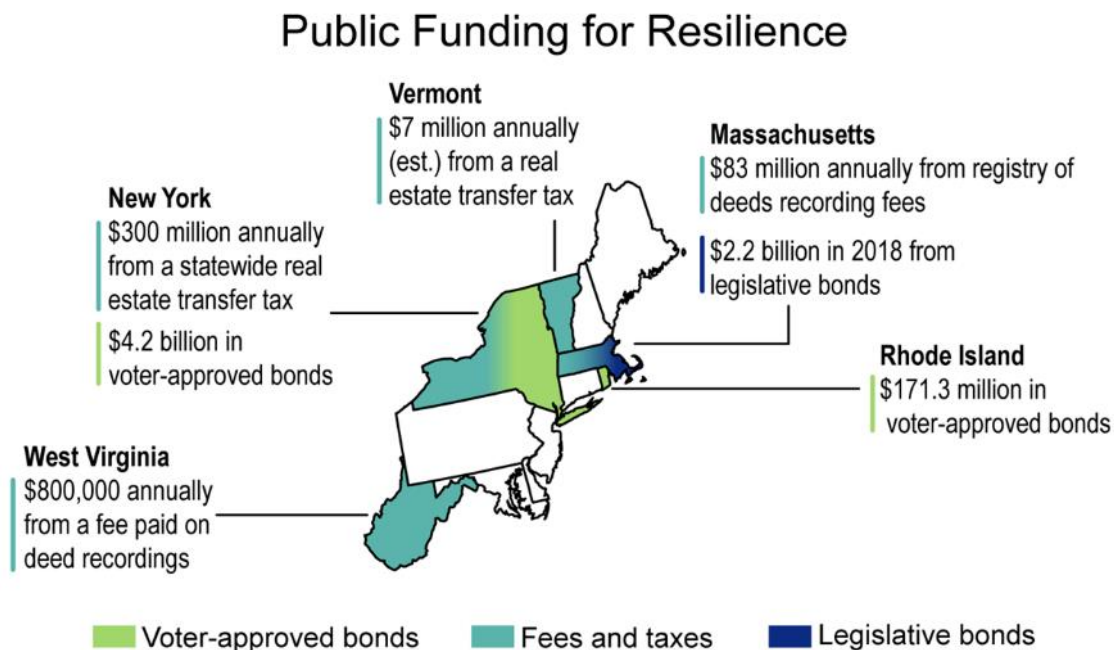


Figure 21.10. Northeastern states provide funding for resilience efforts in a number of ways (KM 21.5).

# NCA5 Resources

- View All Report Downloads
- Download Report-in-Brief PDF
- Download All Report Figures (.zip)
- Order Printed Materials



	DOWNLOAD	PDF	PDF (ESPAÑOL)	CHAPTER HANDOUT	FIGURES	SLIDES
Report Downloads	Full Report		-	-		-
	Overview			-		
	Report in Brief		-	-	-	-
Chapter Downloads	Front Matter			-		-
	1: Overview			-		
	2: Climate Trends					
	3: Earth Systems Processes					
	4: Water					
	5: Energy Supply, Delivery, and Demand					
	6: Land Cover and Land-Use Change					
	7: Forests					



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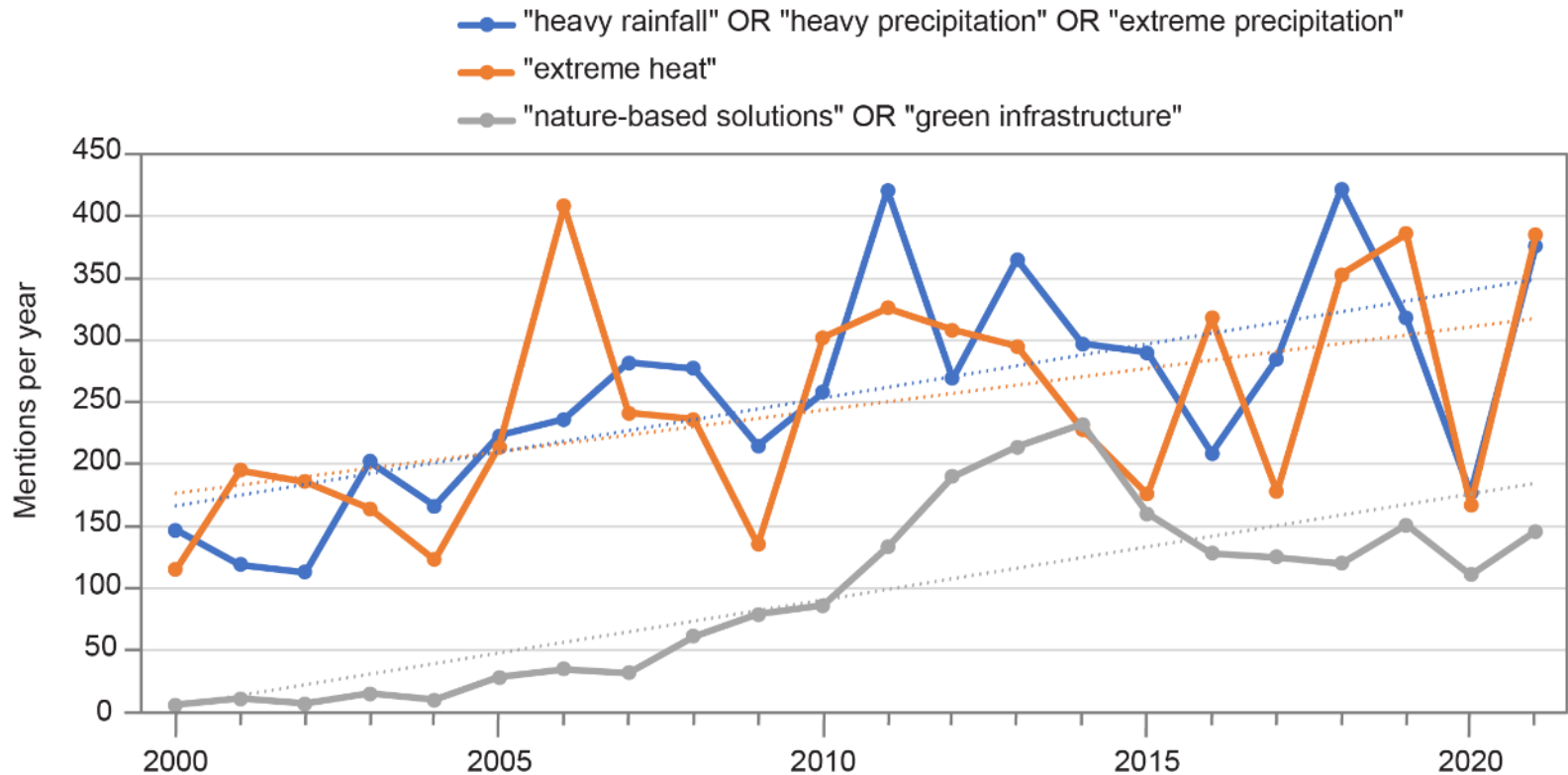
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## Northeast US Newspaper Mentions of Extreme Weather and Nature-Based Solutions



**Figure 21.3. Mentions of extreme weather events and nature-based solutions are increasing across Northeast media.**

KEY  
MESSAGE

# 21.5

Northeast action to address climate change is happening, but the degree of implementation relies on available funding.

Many at-risk homeowners lack adequate flood insurance coverage. Although the public sector remains the primary source of funding for adaptation, private capital has started to invest in a variety of mitigation and adaptation projects.

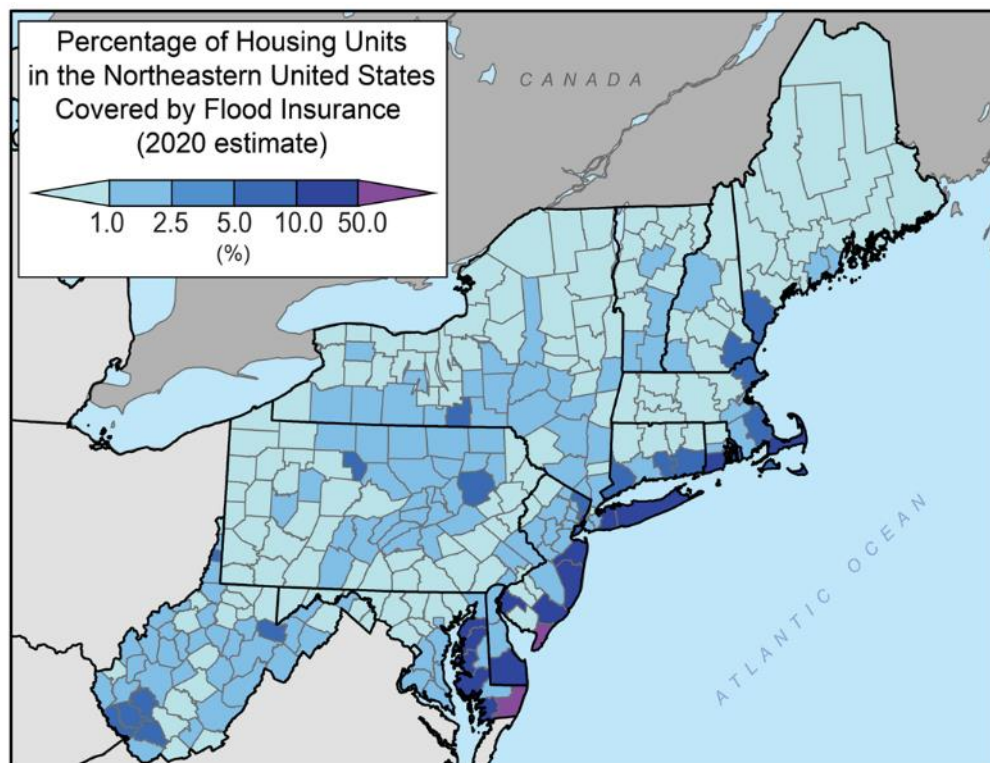


Figure 21.9. Many Northeast households and communities risk financial hardship from a lack of flood insurance coverage (KM 21.5).