Session #1: Creating Context: Broome's Climate Future

Hosted by: The Broome County Planning Department

September 15th, 2023

BROOME COUNTY
DEPARTMENT OF PLANNING – BUILDING OUR FUTURE

JOHNSON CITY
Incorporated 1892
New York

CCE BROOME

SOUTHERN TIER 8
ACTIVE REGIONAL NOW

The Sustainable Broome Lunch & Learn Panelist Series is…

- a new sustainability education initiative centered around providing workshop-like sessions on an almost bimonthly basis that to bring together community members and experts in the sustainability and resiliency spaces across the County

- sessions will have a main sustainability focus area where guest speakers will present relevant projects, programs, research, and/or opportunities

- our goal is to provide local information about what is happening right in our backyard, how to get involved in sustainability efforts throughout our communities, and what steps each municipality and community member can take to decrease their impact on our interconnected-climate systems

Tentative Session Topics

- Southern Tier Energy Systems
- Clean Energy Economies
- Green Buildings
- Solid Waste Management
- Flood Resiliency
- Sustainable Food Systems
- Land Conservation
- Smart Growth
- Transportation

Are other topics or presenters you would like us to include?

Weather & Climate Trends

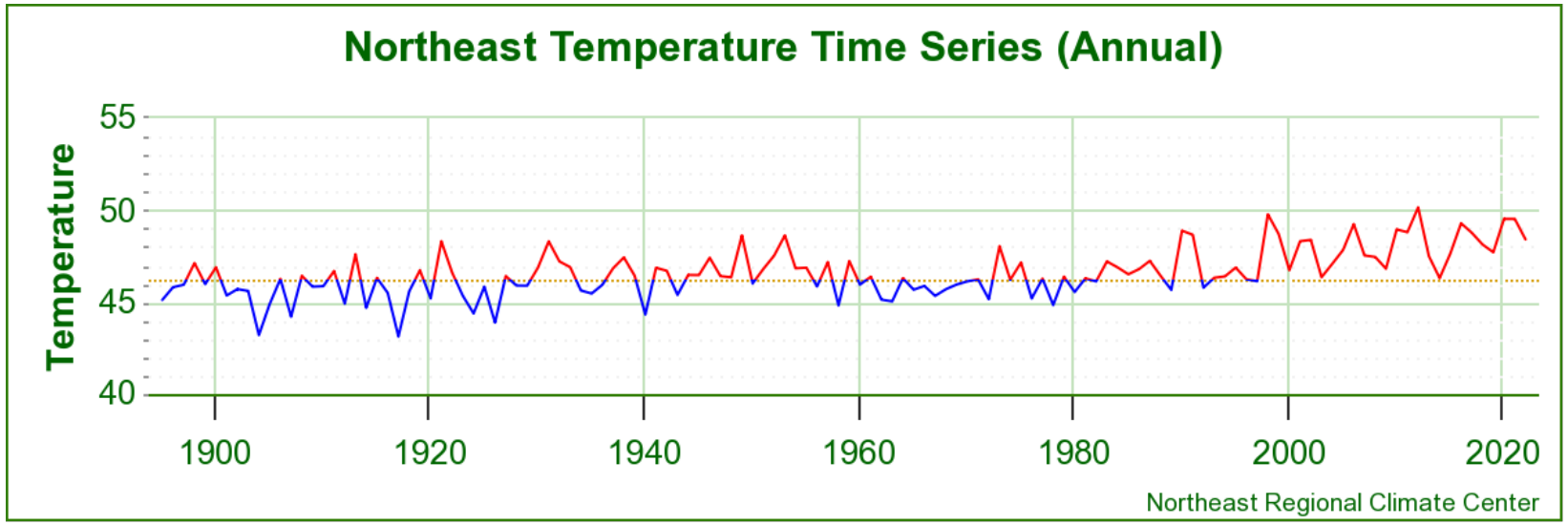
Jessica Spaccio

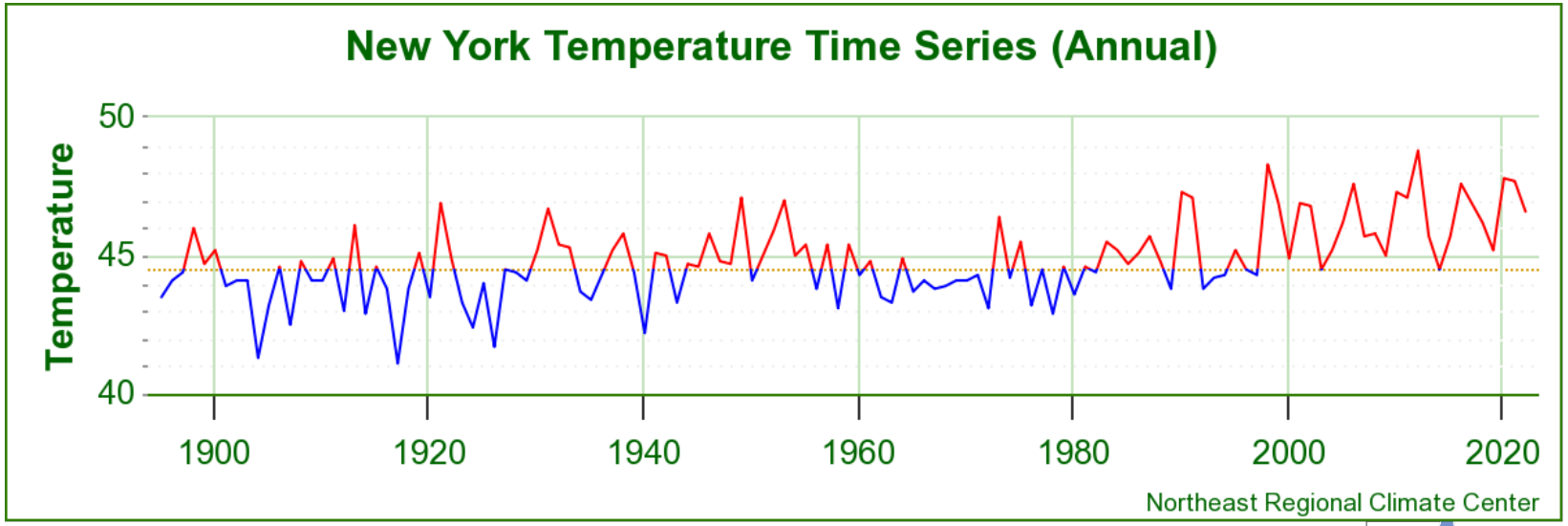
Climatologist

NOAA, Northeast Regional Climate Center at Cornell University

Northeast Regional Climate Center

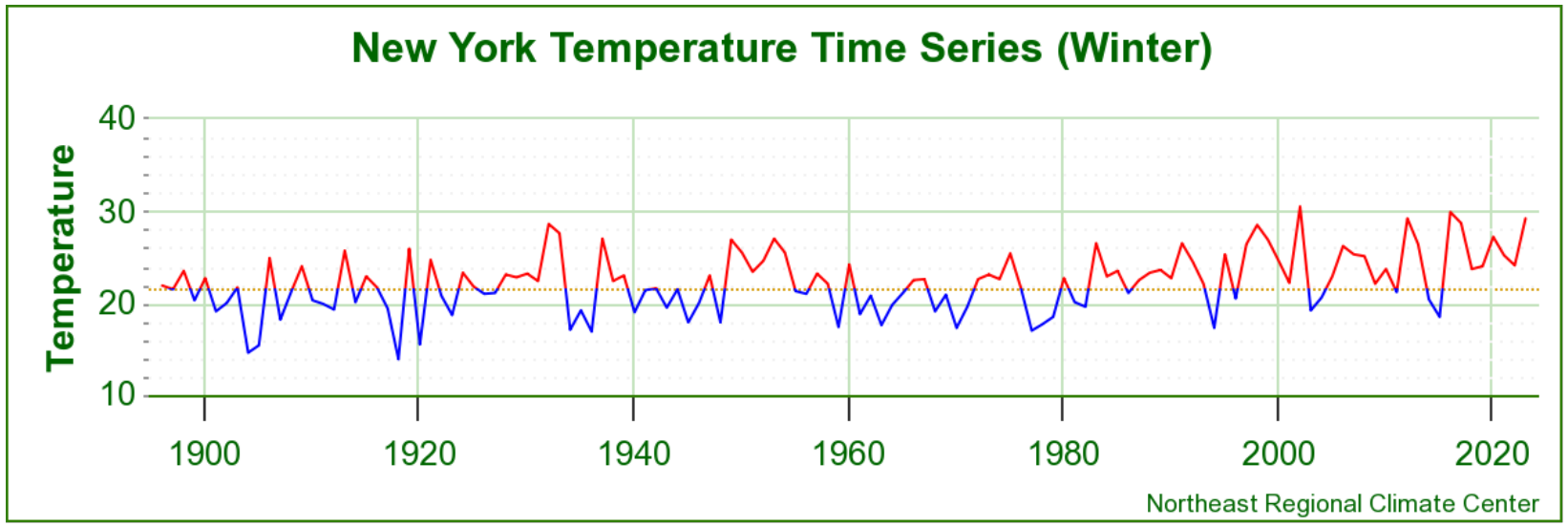
Temperature Trends

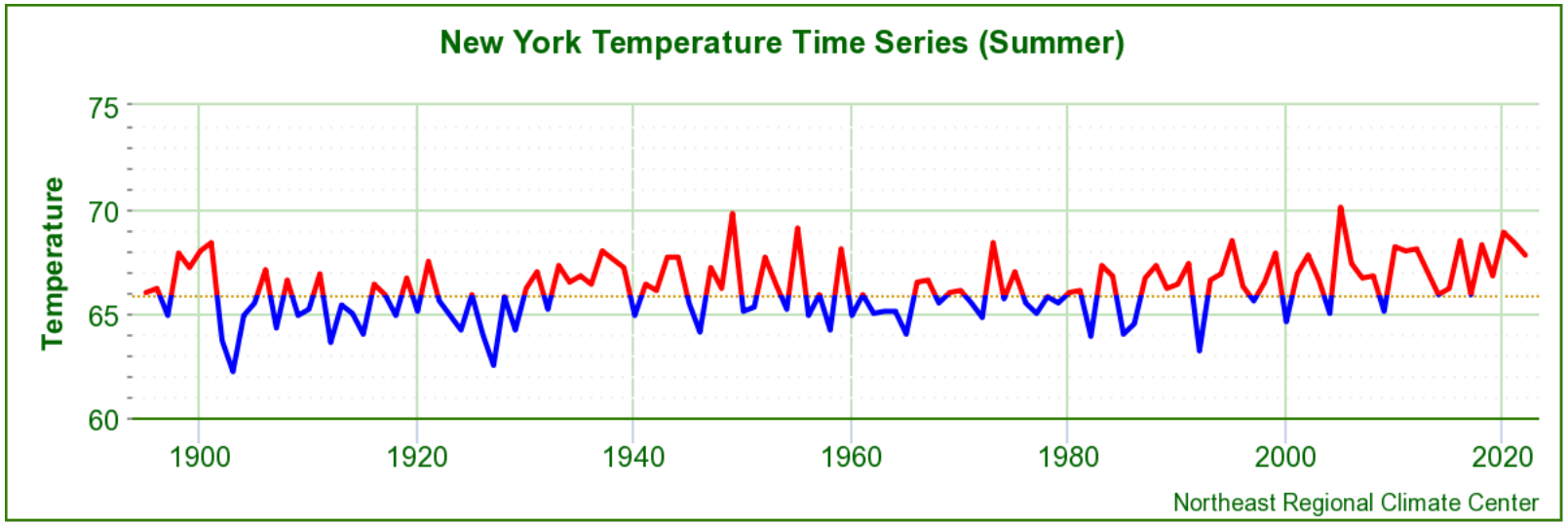




Northeast Regional Climate Center

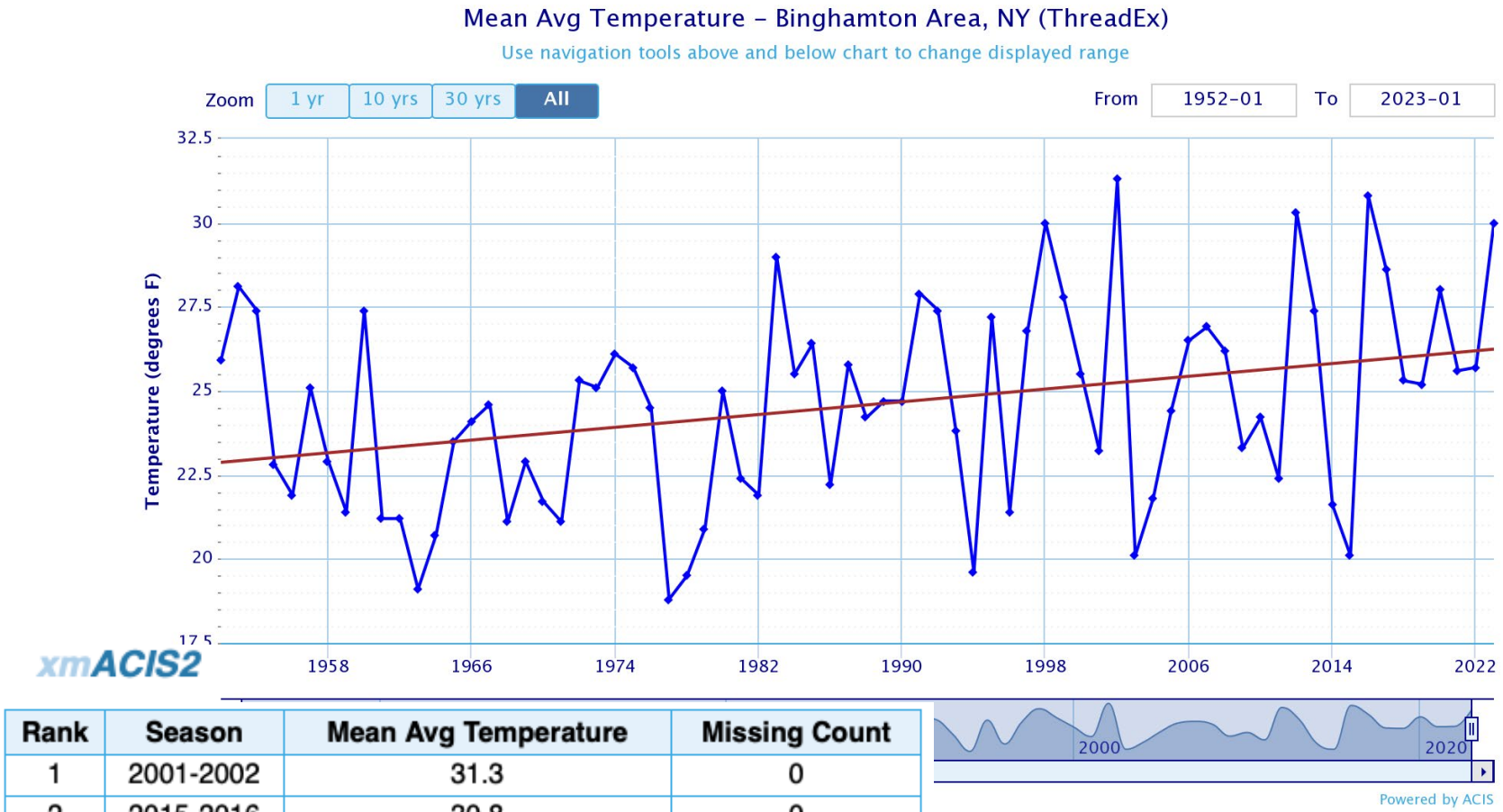
Temperature Trends





Northeast Regional Climate Center

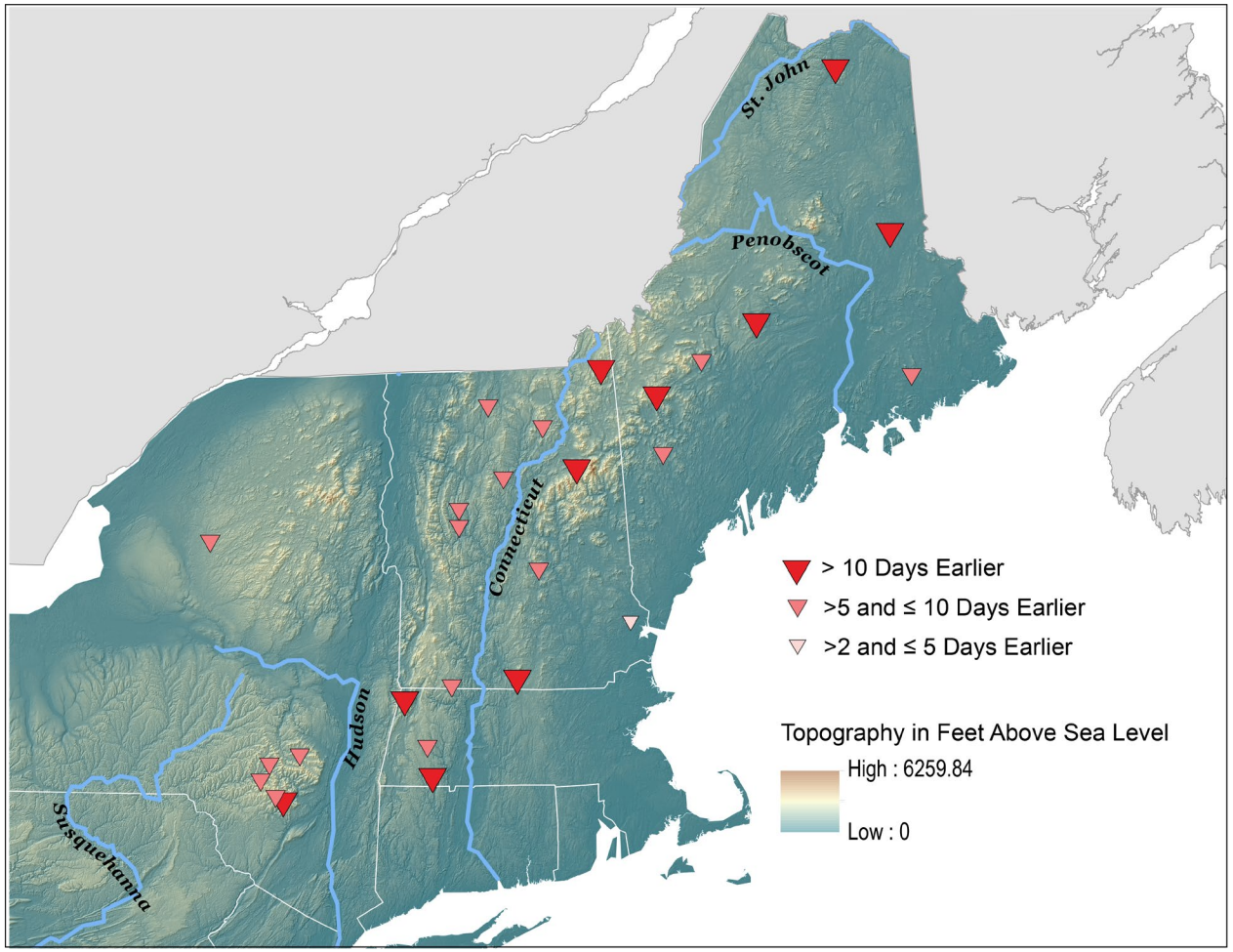
Binghamton Winter Temperatures
Dec/Jan/Feb



Rank	Season	Mean Avg Temperature	Missing Count
1	2001-2002	31.3	0
2	2015-2016	30.8	0
3	2011-2012	30.3	0
4	2022-2023	30.0	0
-	1997-1998	30.0	0
6	1982-1983	29.0	0
7	2016-2017	28.6	0
8	1952-1953	28.1	0
9	2019-2020	28.0	0
10	1990-1991	27.9	0

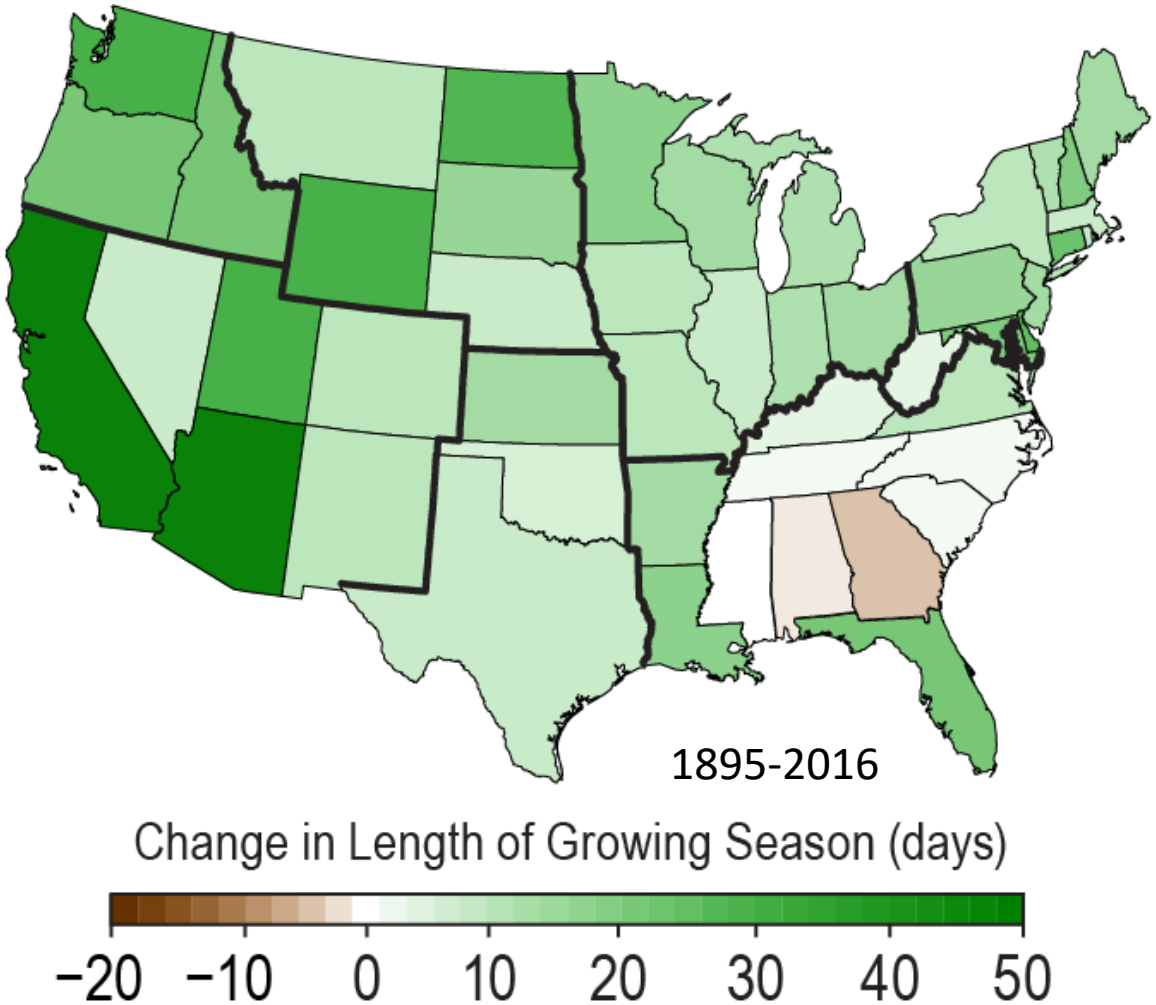
Northeast Regional Climate Center

Historical Changes in the Timing of Snowmelt-Related Streamflow



Northeast Regional Climate Center

Growing Season Trends



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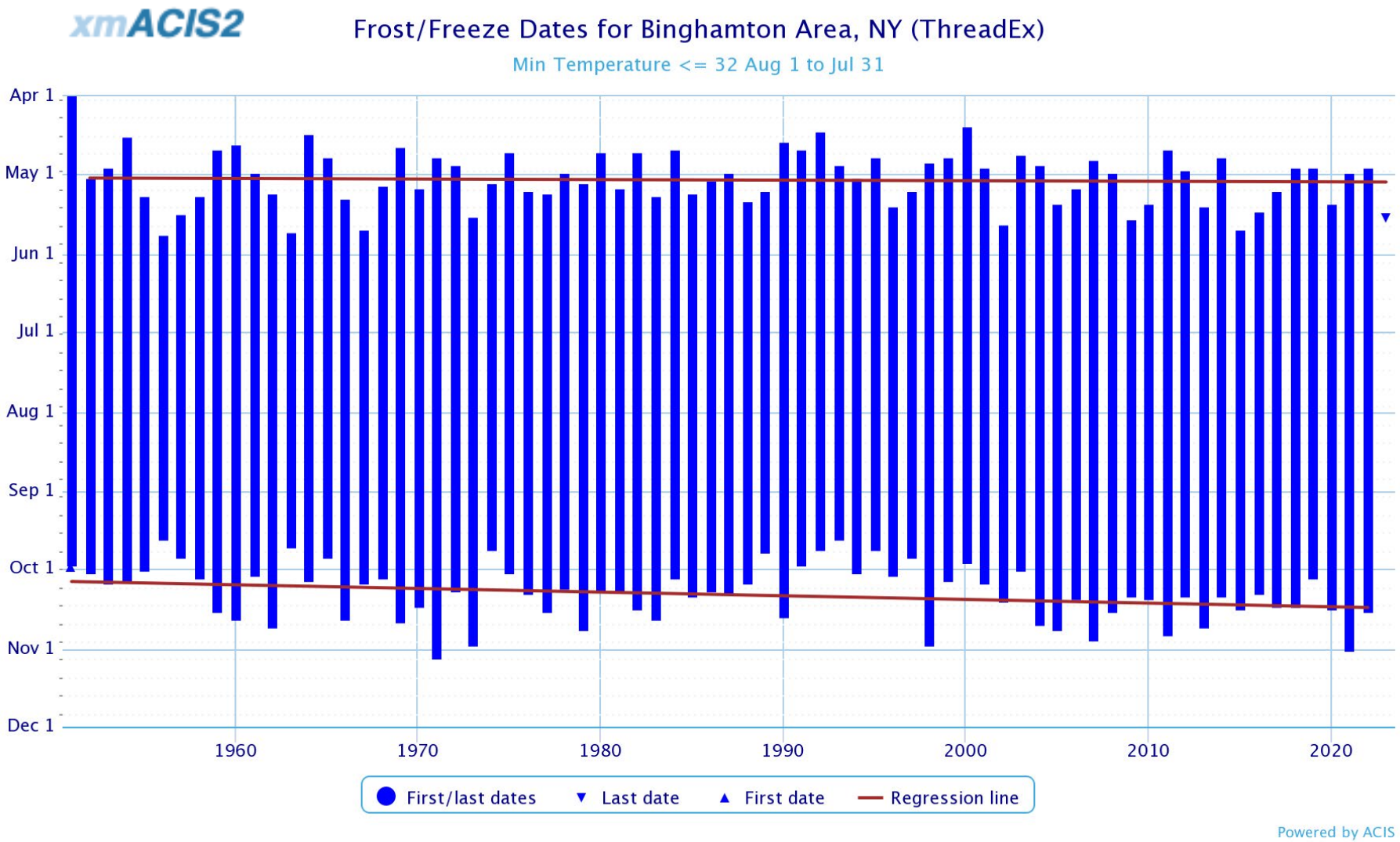
Growing Season Trends

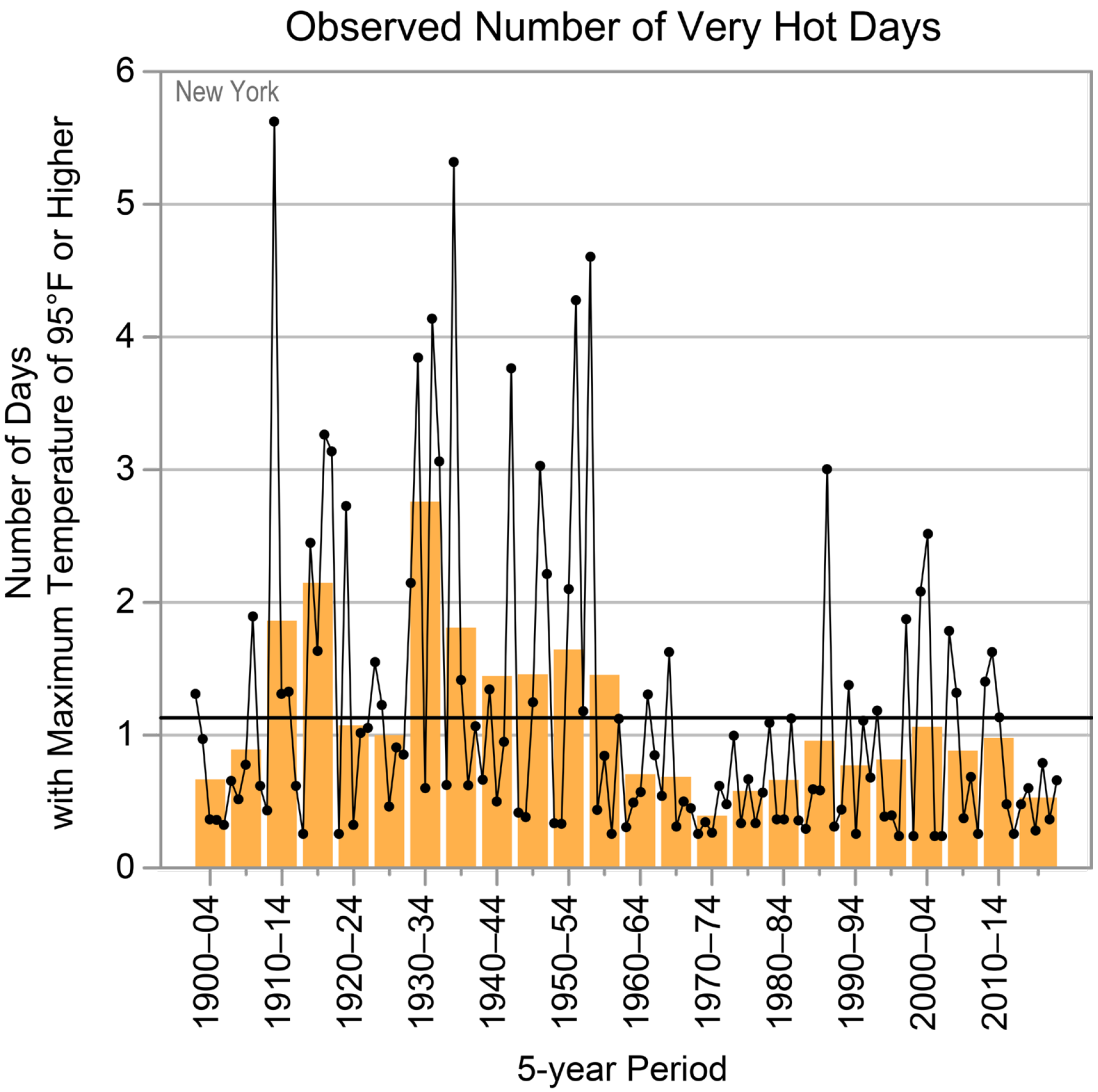


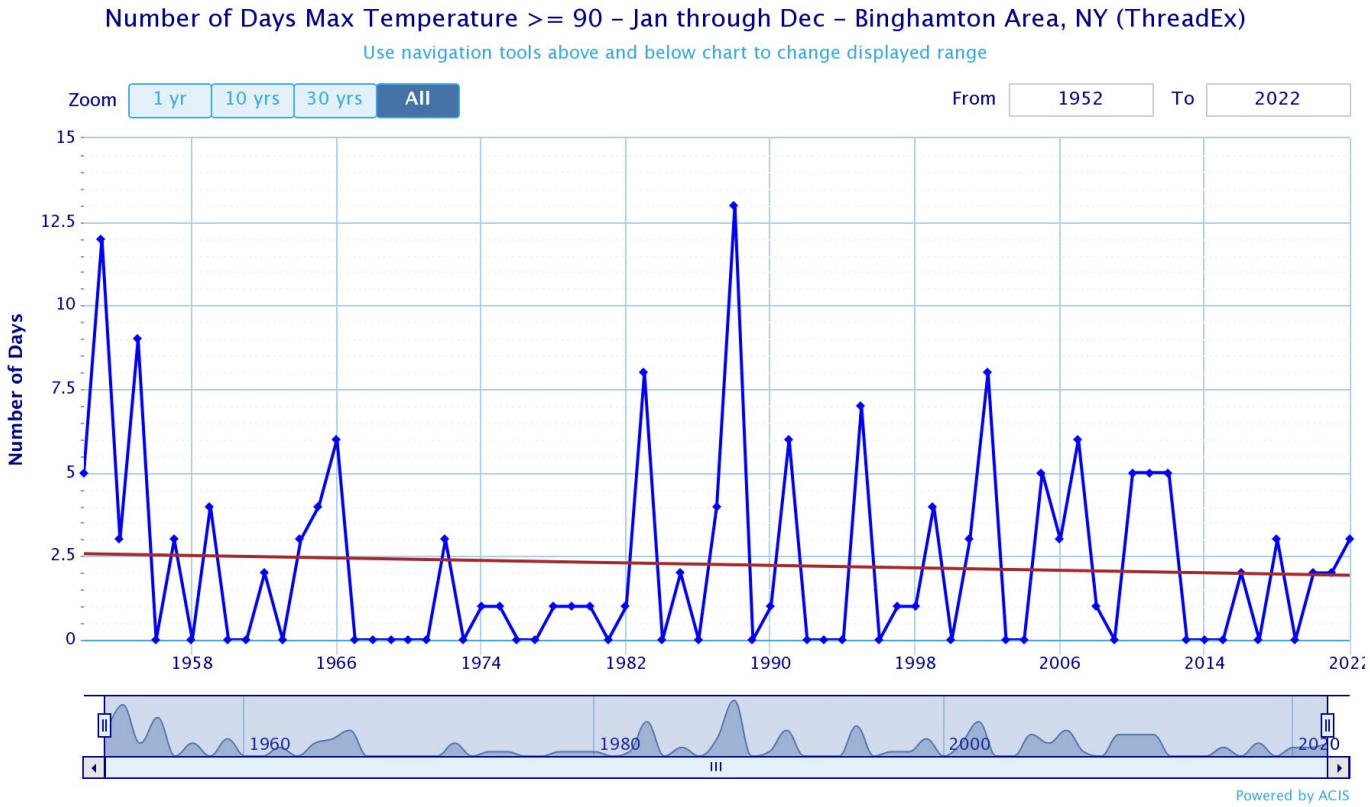
Last Spring Frost: May 2 => May 4

First Fall Frost: Oct 5 => Oct 15

Northeast Regional Climate Center

Extreme Heat





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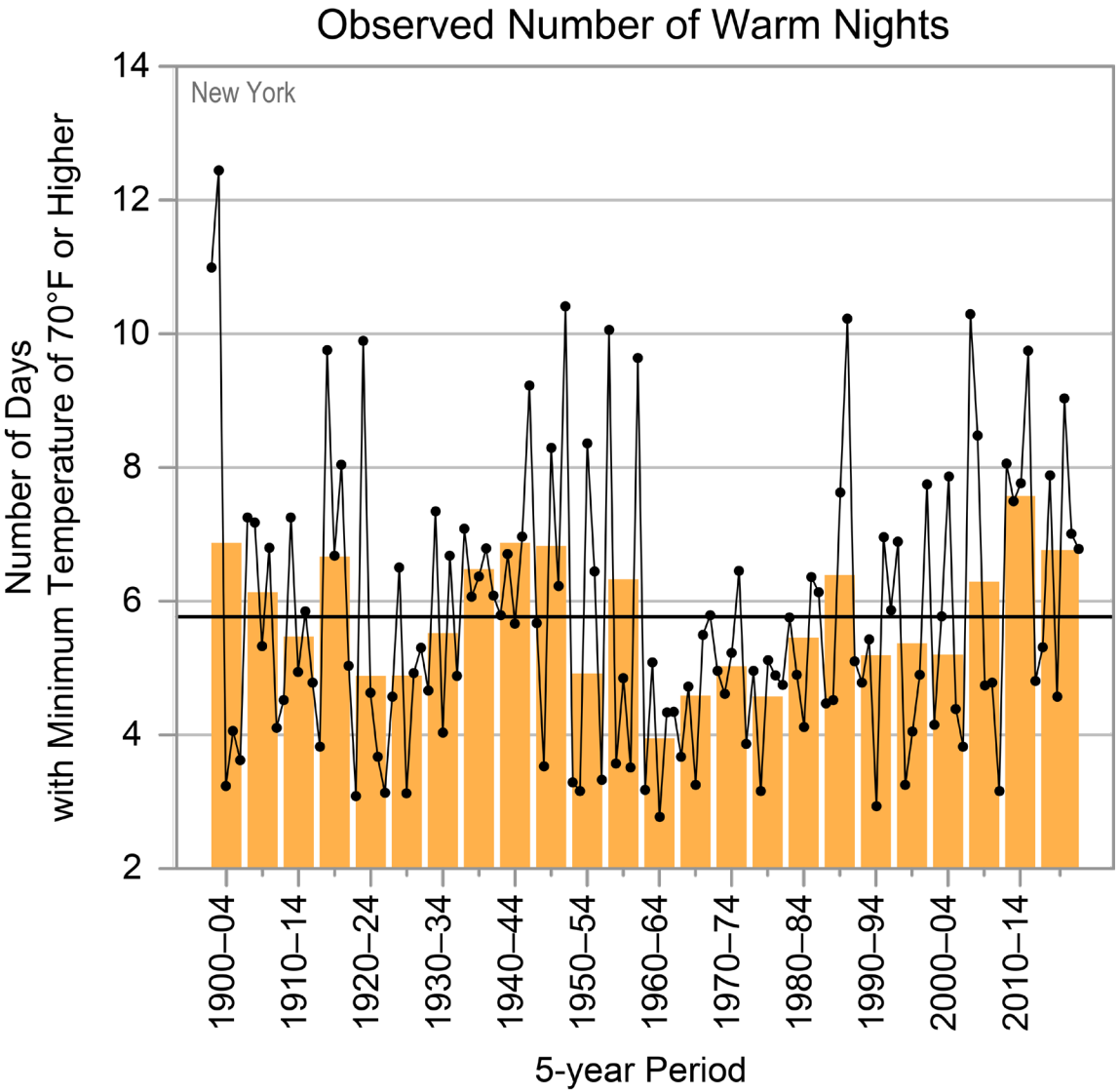

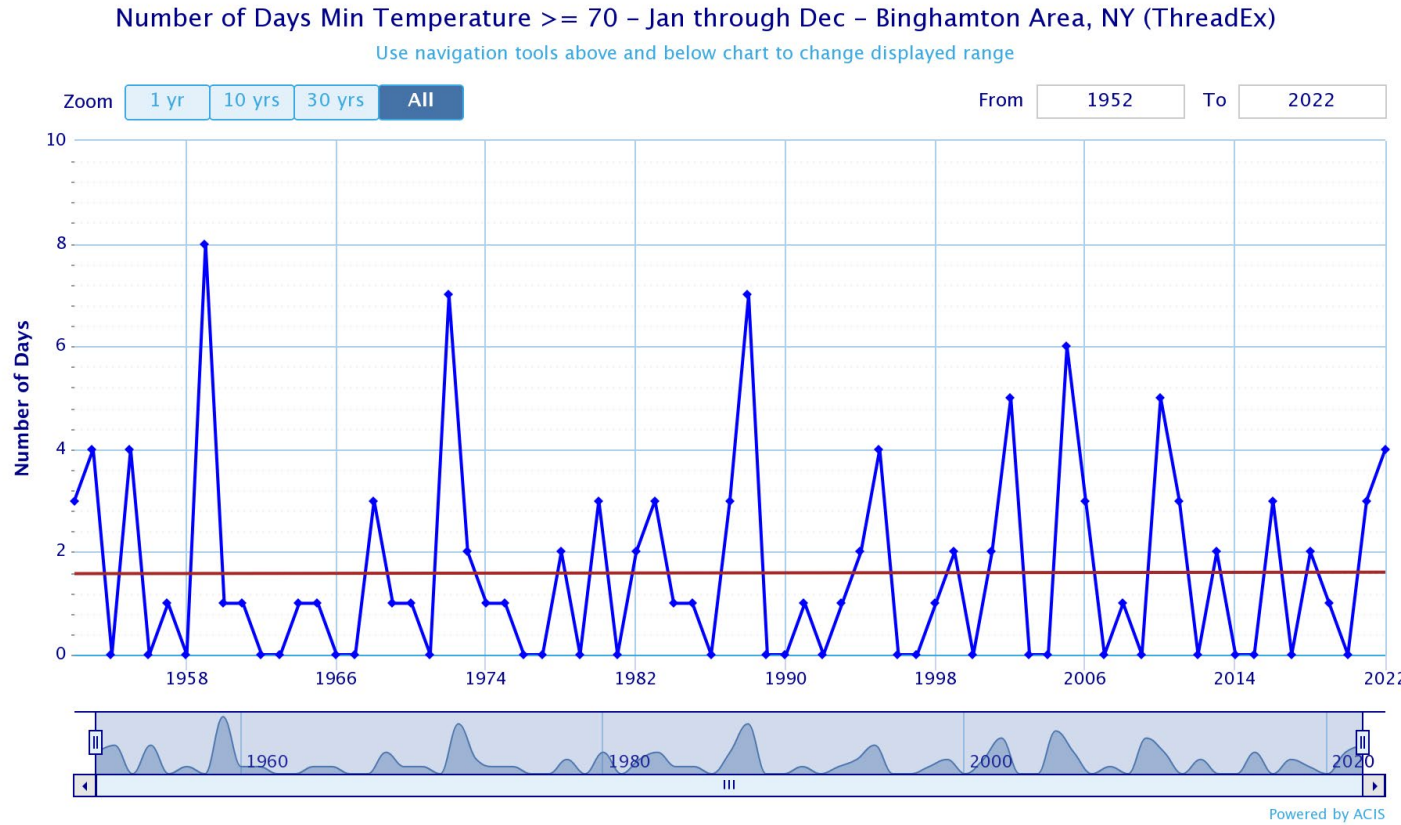

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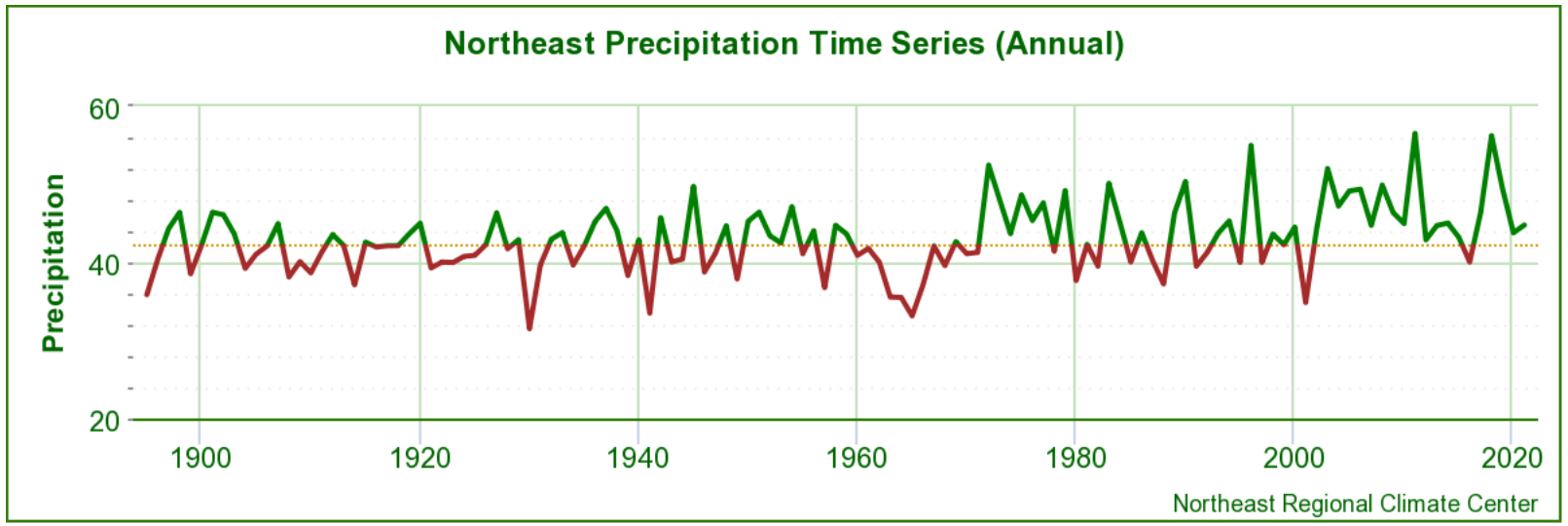
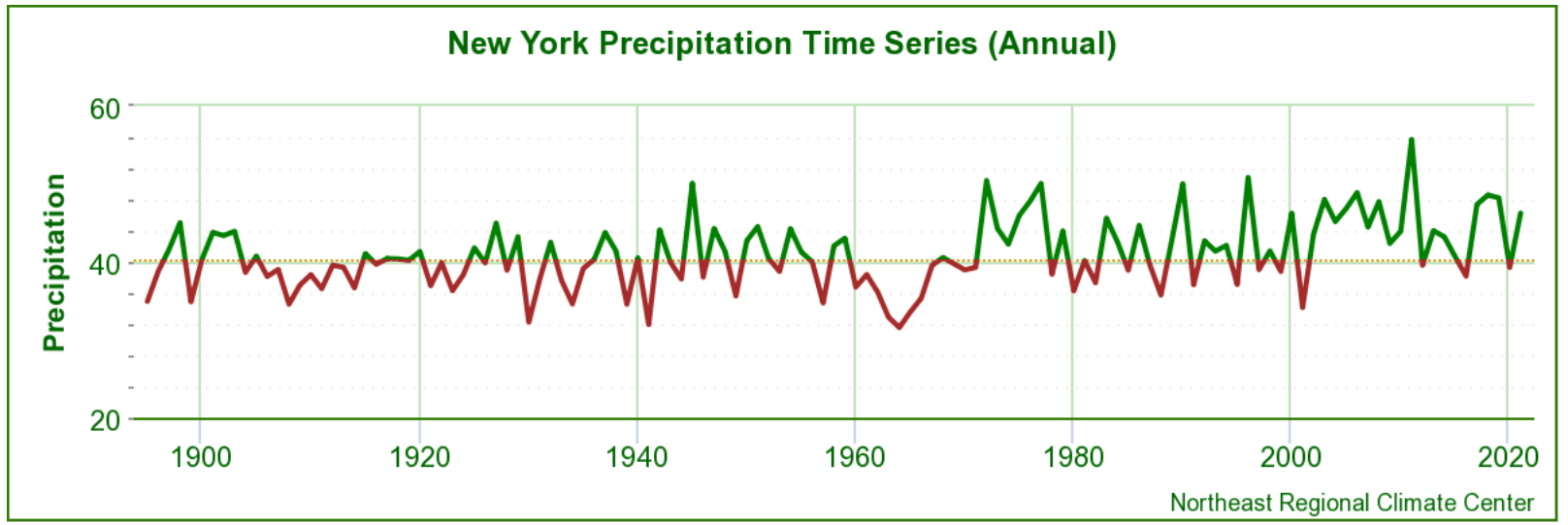
Precipitation Trends





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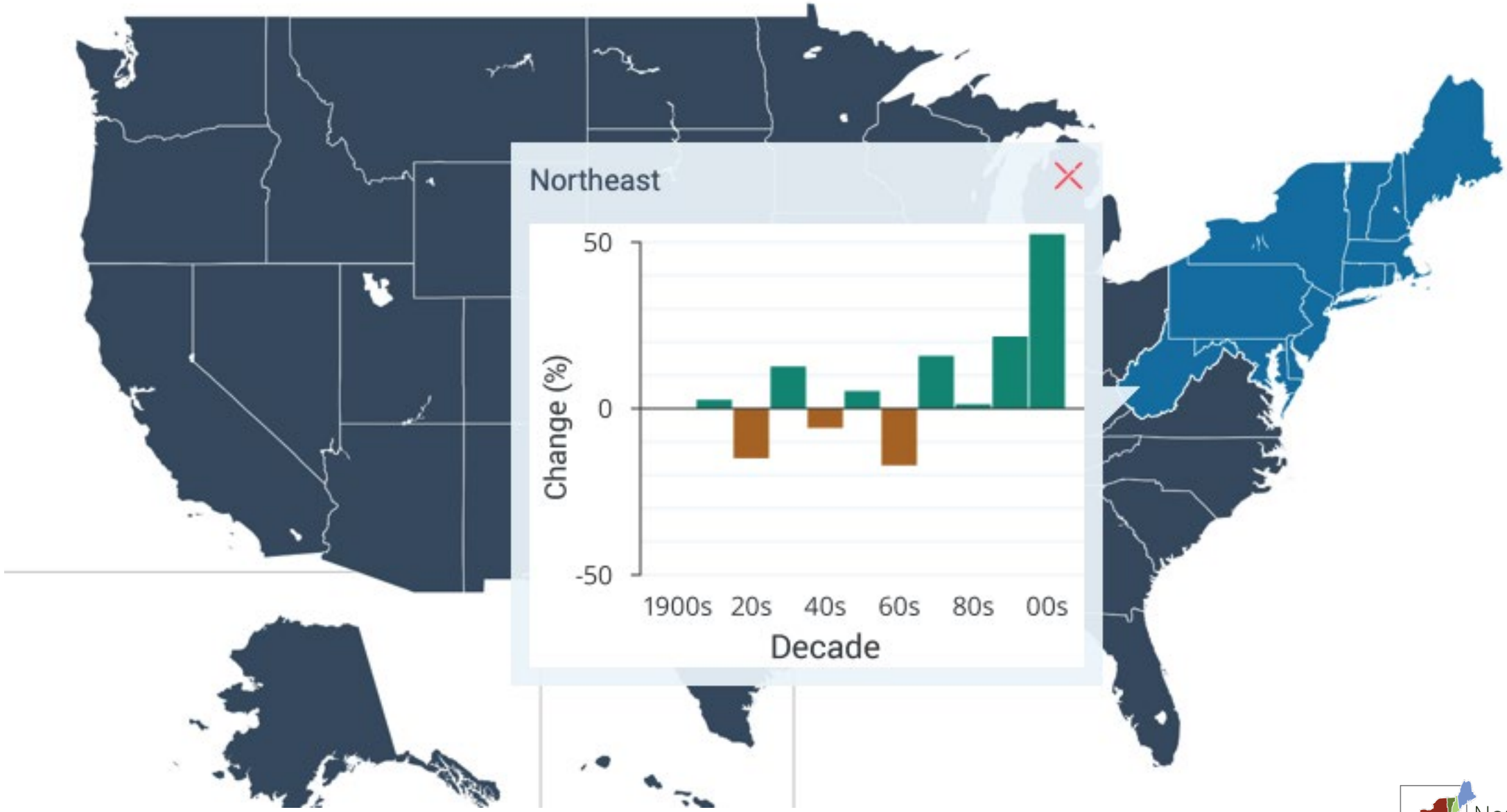
Heavy Downpours Increasing

Heaviest 1% of daily events



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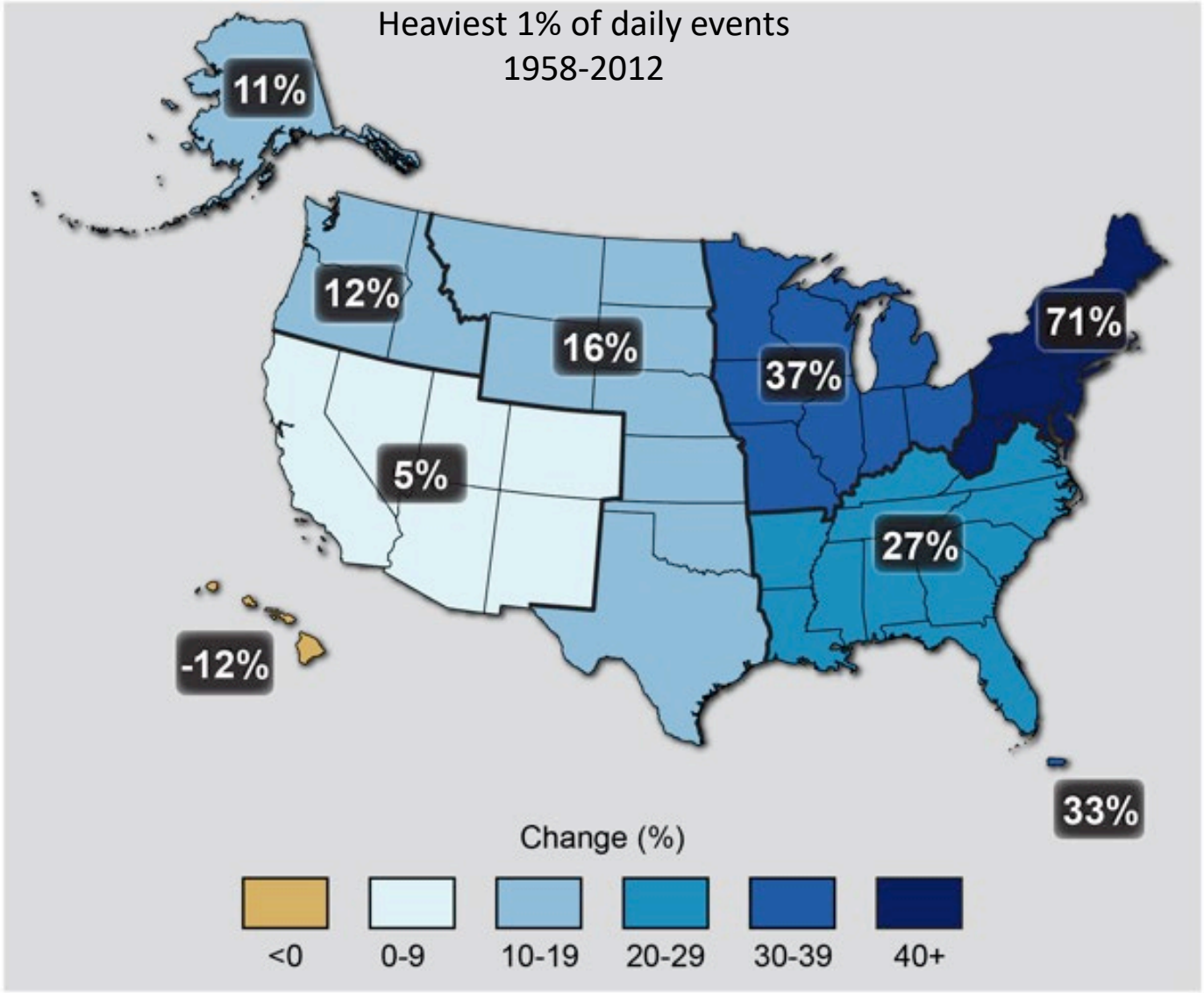
Observed Change in Very Heavy Precipitation



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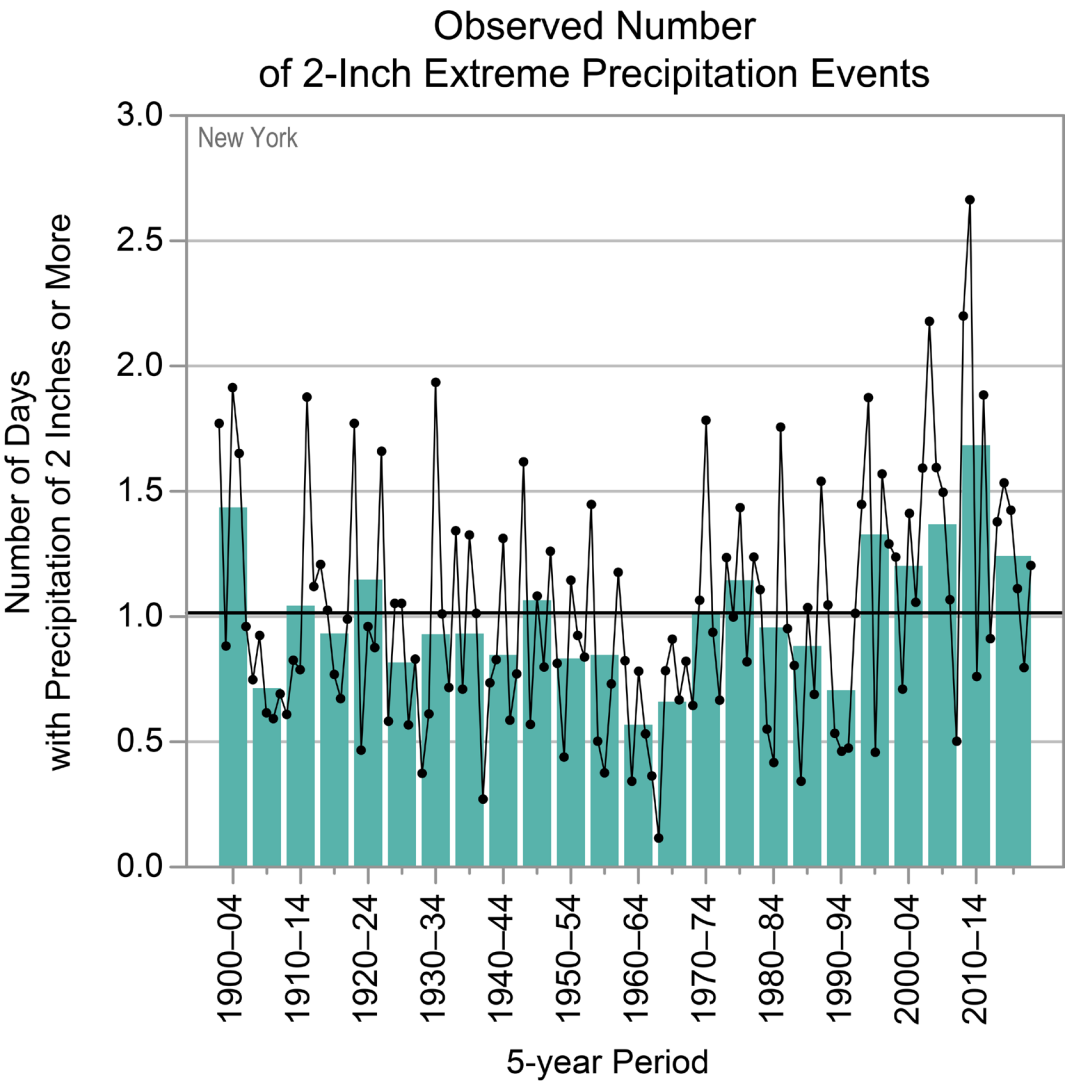
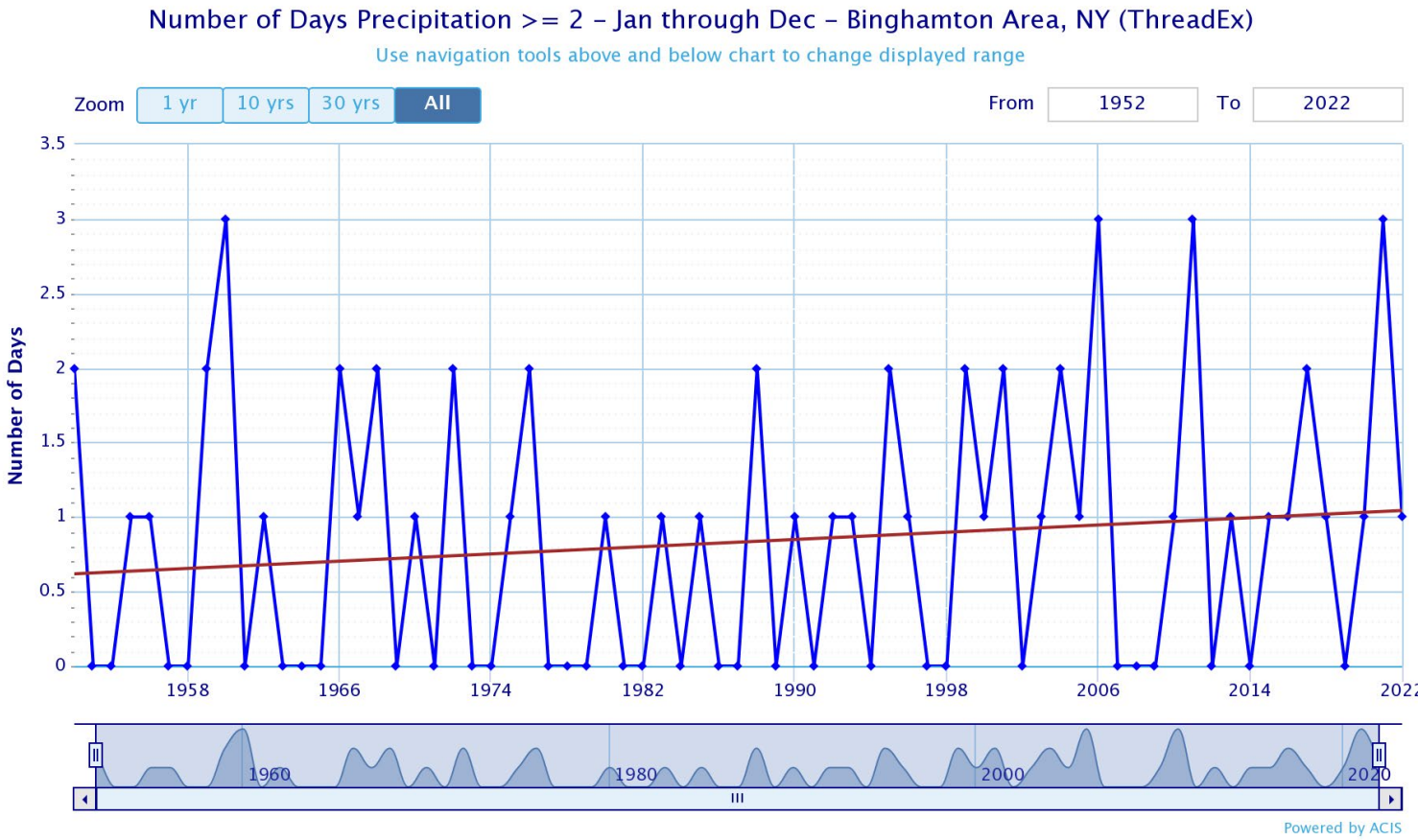
Extreme Precipitation





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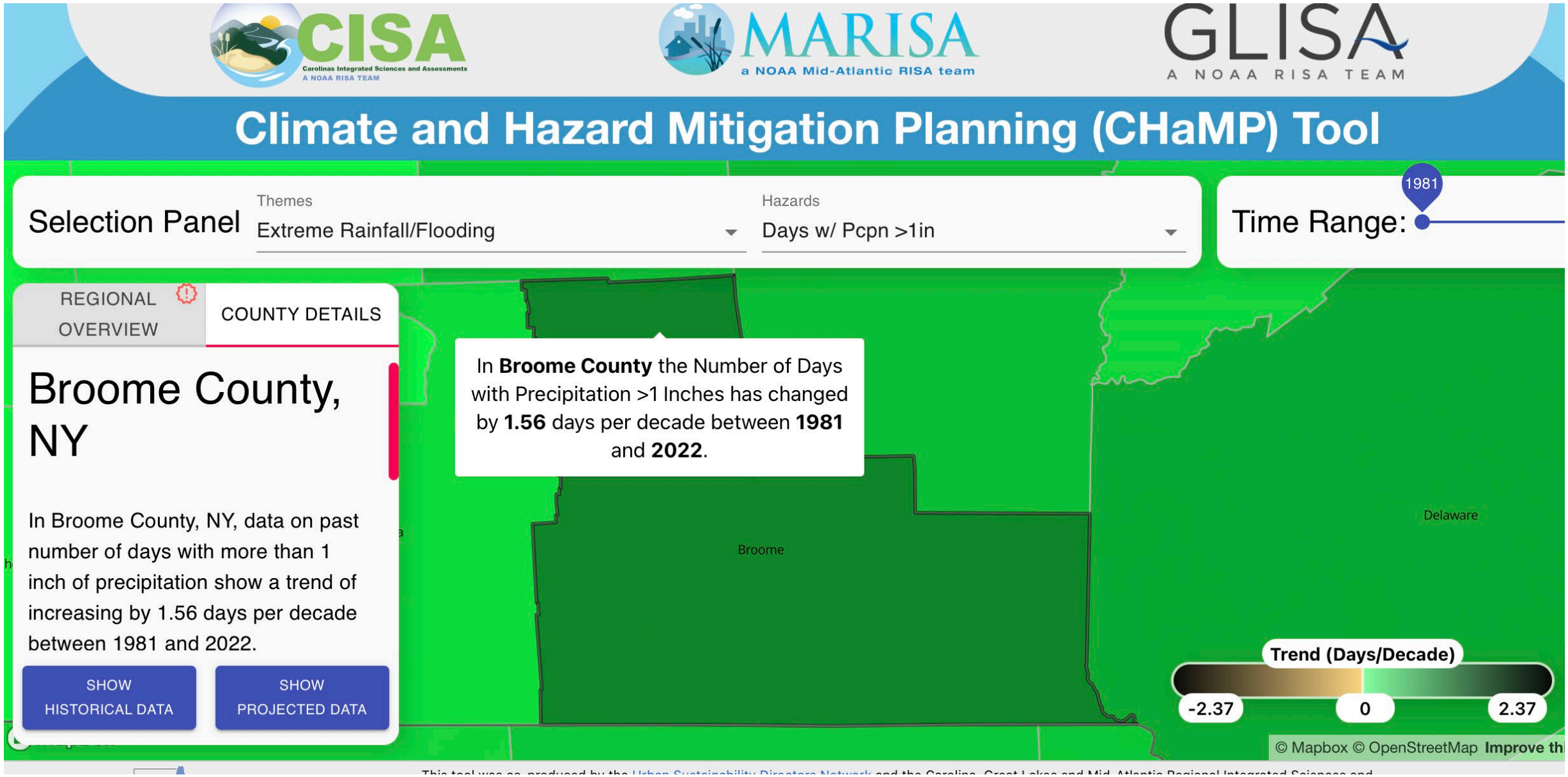
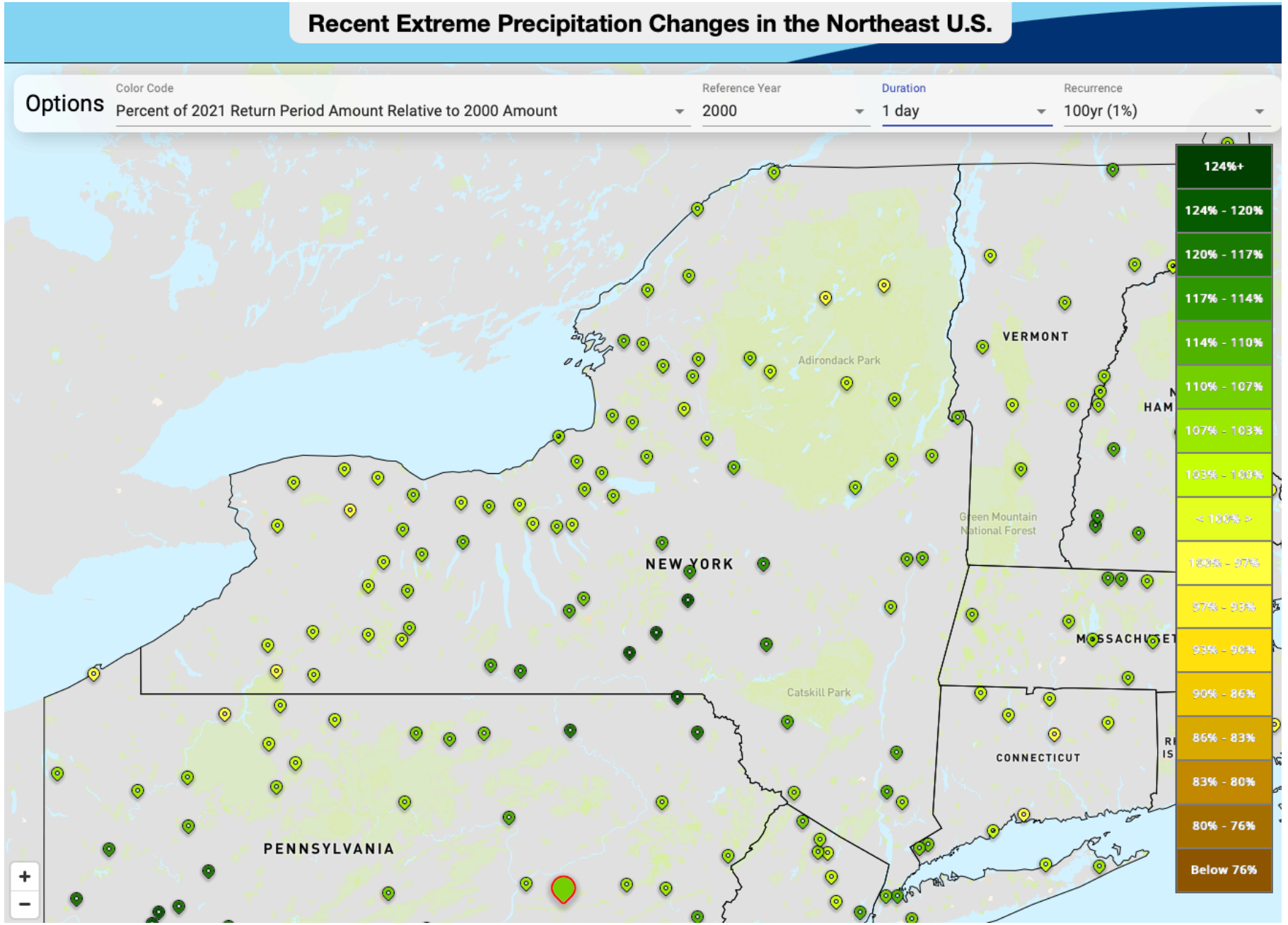

CISA
Carolinas Integrated Sciences and Assessments
A NOAA RISA TEAM
MARISA
a NOAA Mid-Atlantic RISA team
GLISA
A NOAA RISA TEAM
Climate and Hazard Mitigation Planning (CHaMP) Tool
Selection Panel
Themes
Extreme Rainfall/Flooding
Hazards
Days w/ Pcpn >1in
Time Range:
1981
REGIONAL OVERVIEW
COUNTY DETAILS
Broome County, NY
In Broome County, NY, data on past number of days with more than 1 inch of precipitation show a trend of increasing by 1.56 days per decade between 1981 and 2022.
SHOW HISTORICAL DATA
SHOW PROJECTED DATA
In Broome County the Number of Days with Precipitation >1 Inches has changed by 1.56 days per decade between 1981 and 2022.
Broome
Delaware
Trend (Days/Decade)
-2.37
0
2.37
© Mapbox © OpenStreetMap Improve th

Recent Extreme Precipitation Changes in the Northeast U.S.



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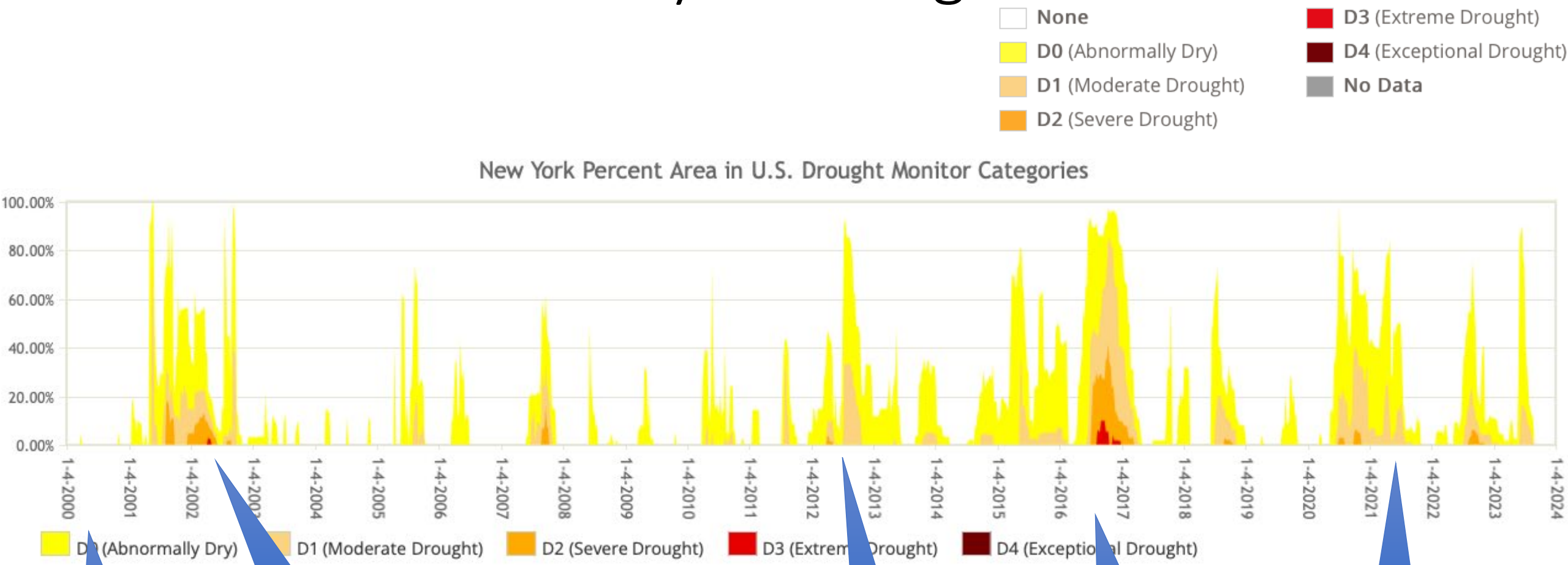
History of Drought



DM began in 2000

Drought of 2002

2012

2016-2017

2021

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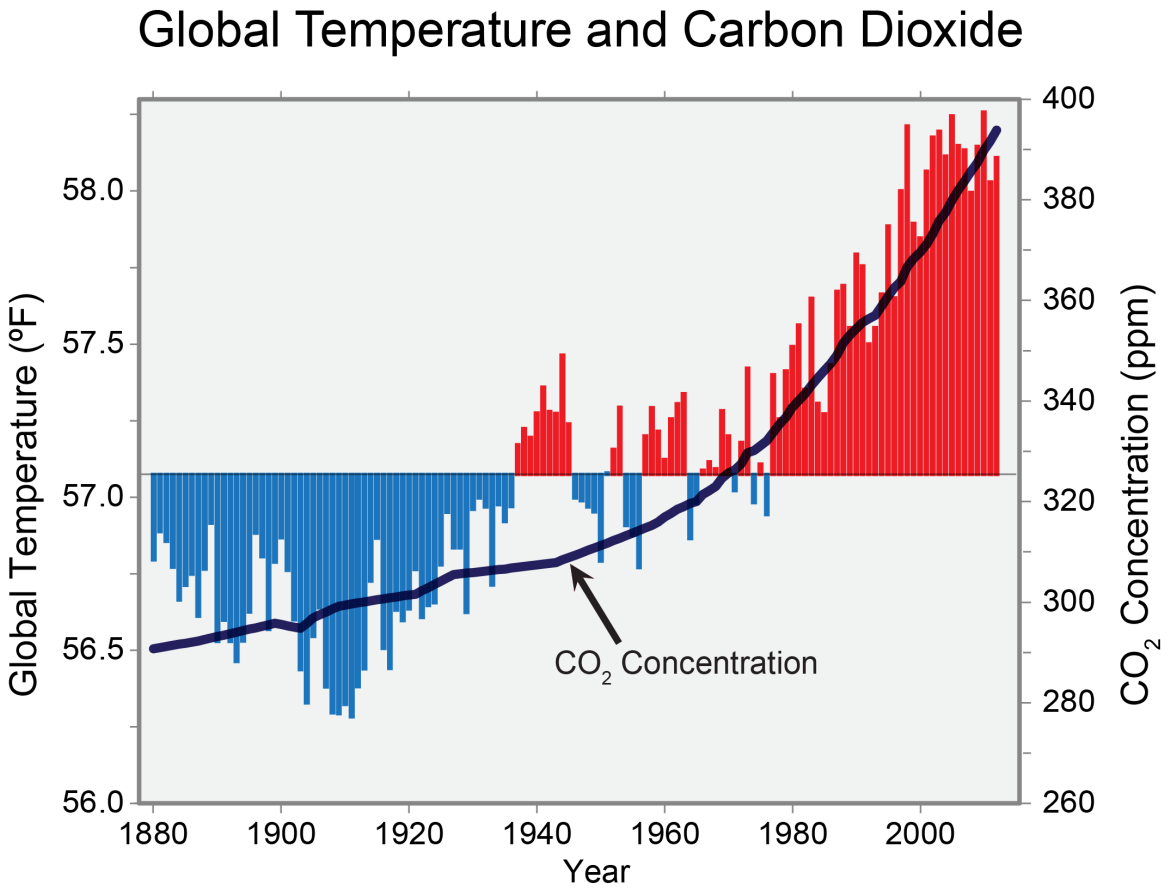
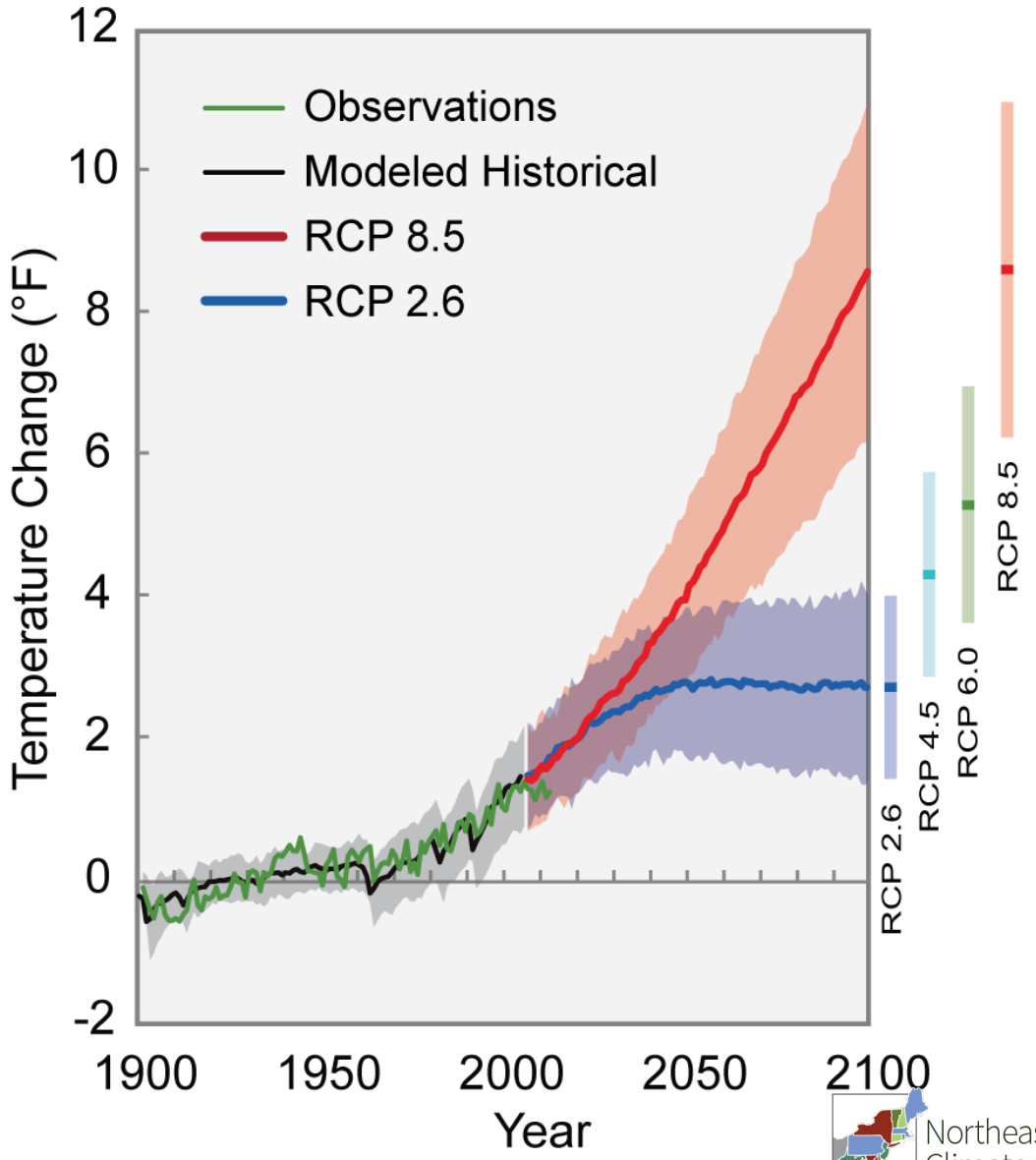
So What Does the FUTURE Hold ?

Northeast Regional Climate Center

Projected Global Temperature Changes





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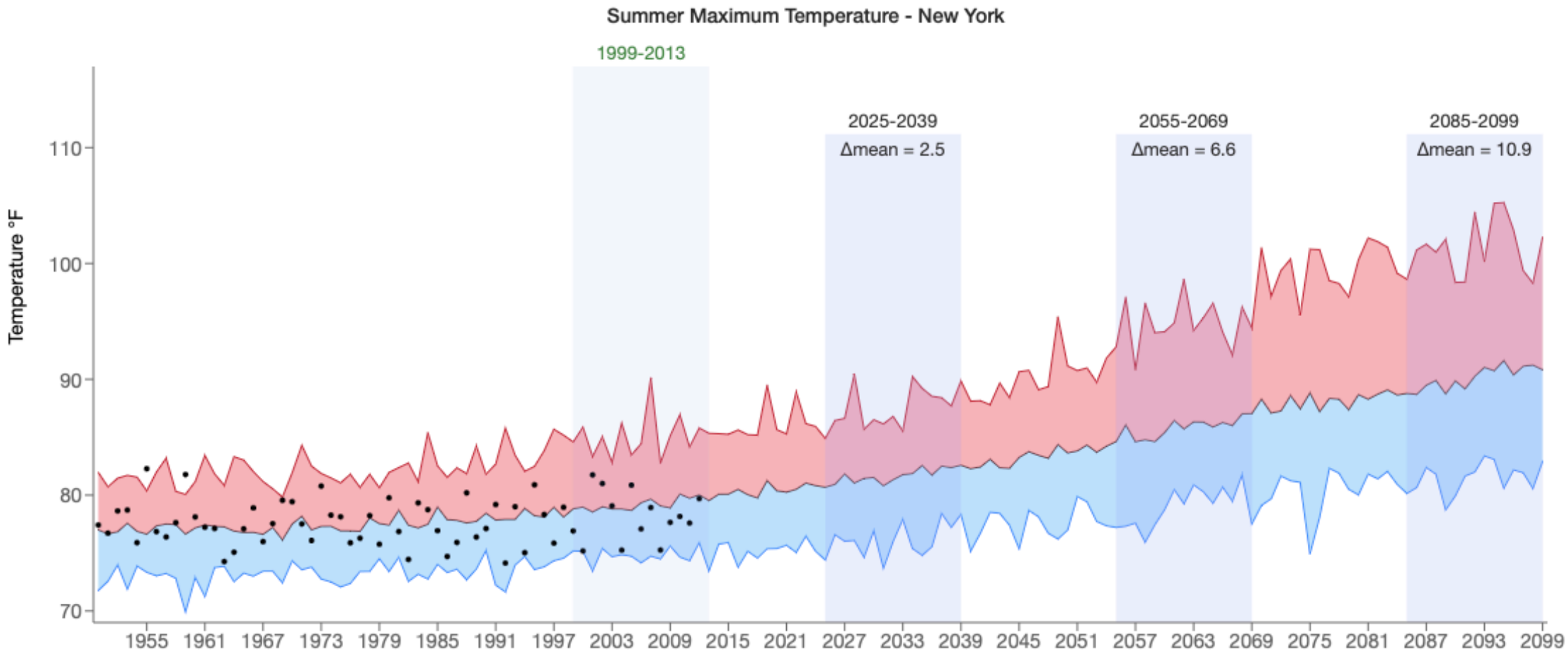
Temperature Projections

Higher Emissions



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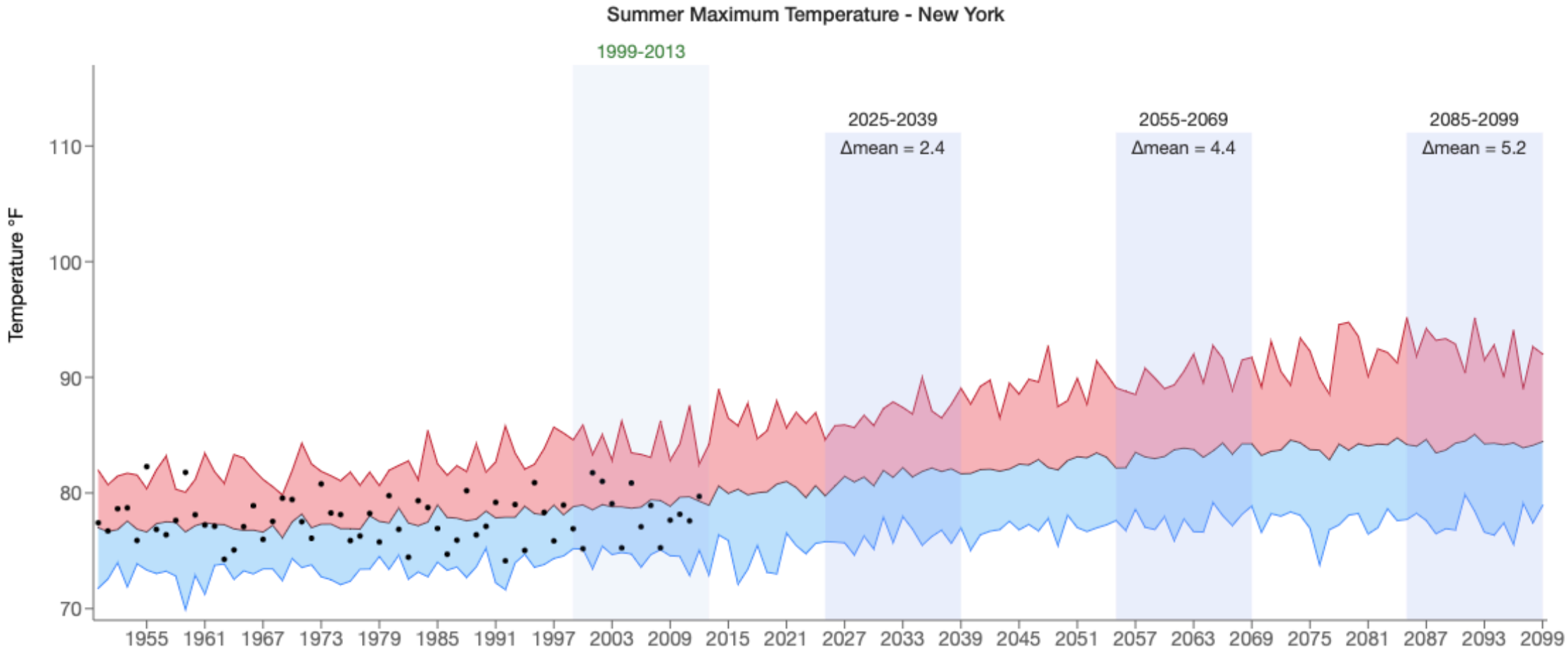
Temperature Projections

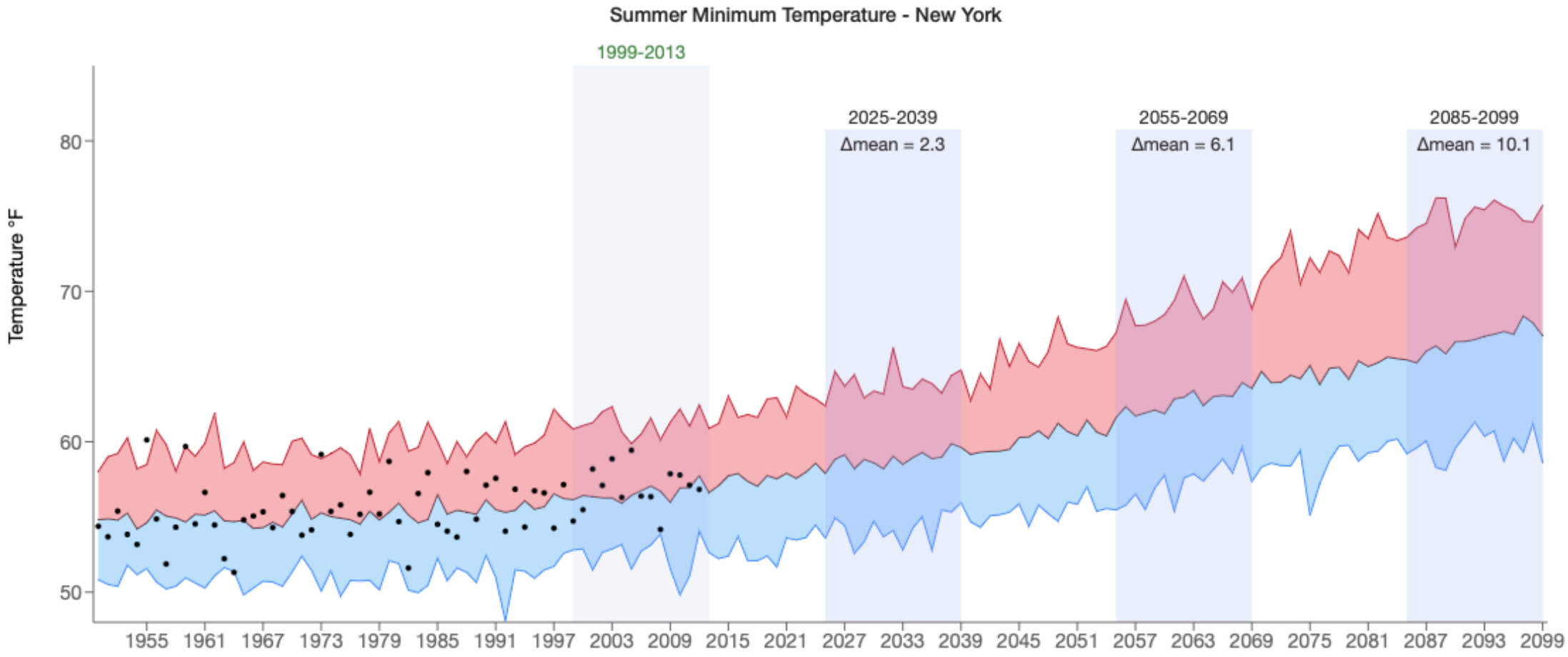
Lower Emissions



Northeast Regional Climate Center

Temperature Projections

Higher Emissions



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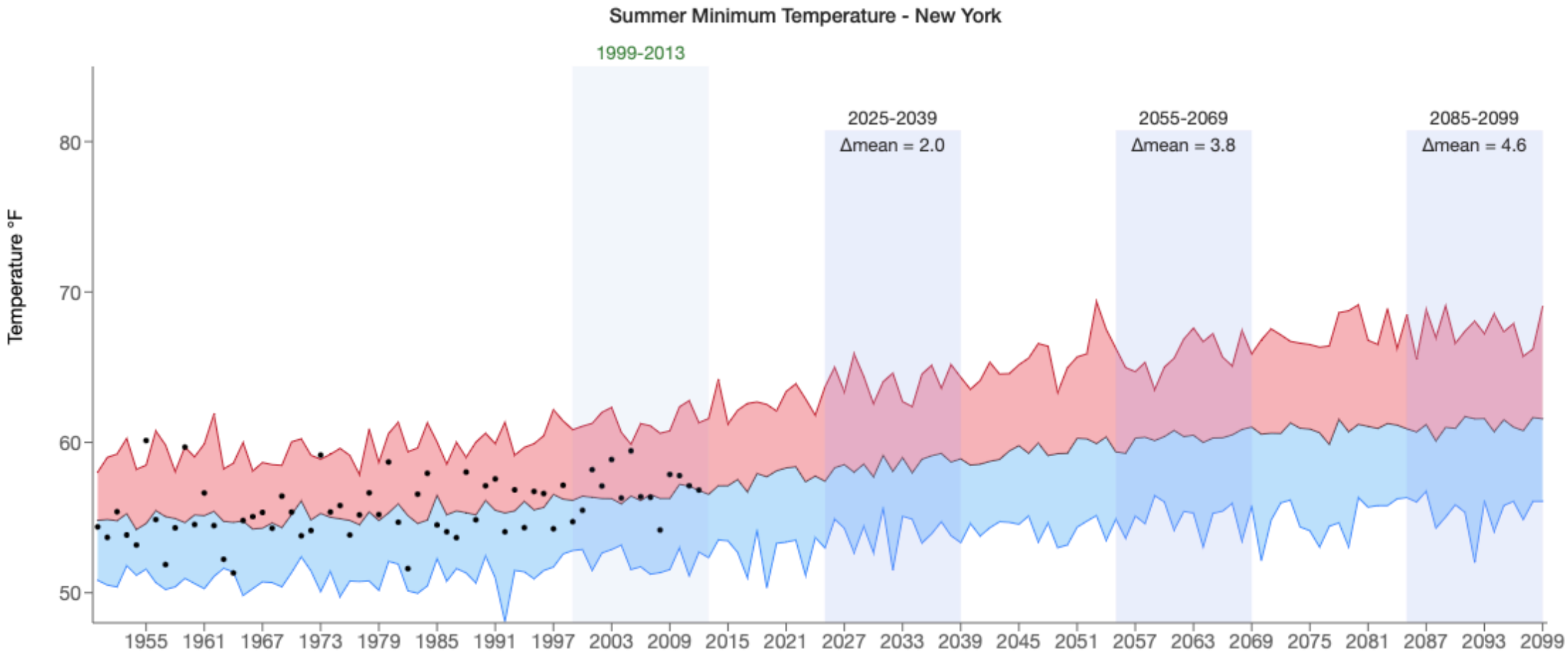
Temperature Projections

Lower Emissions



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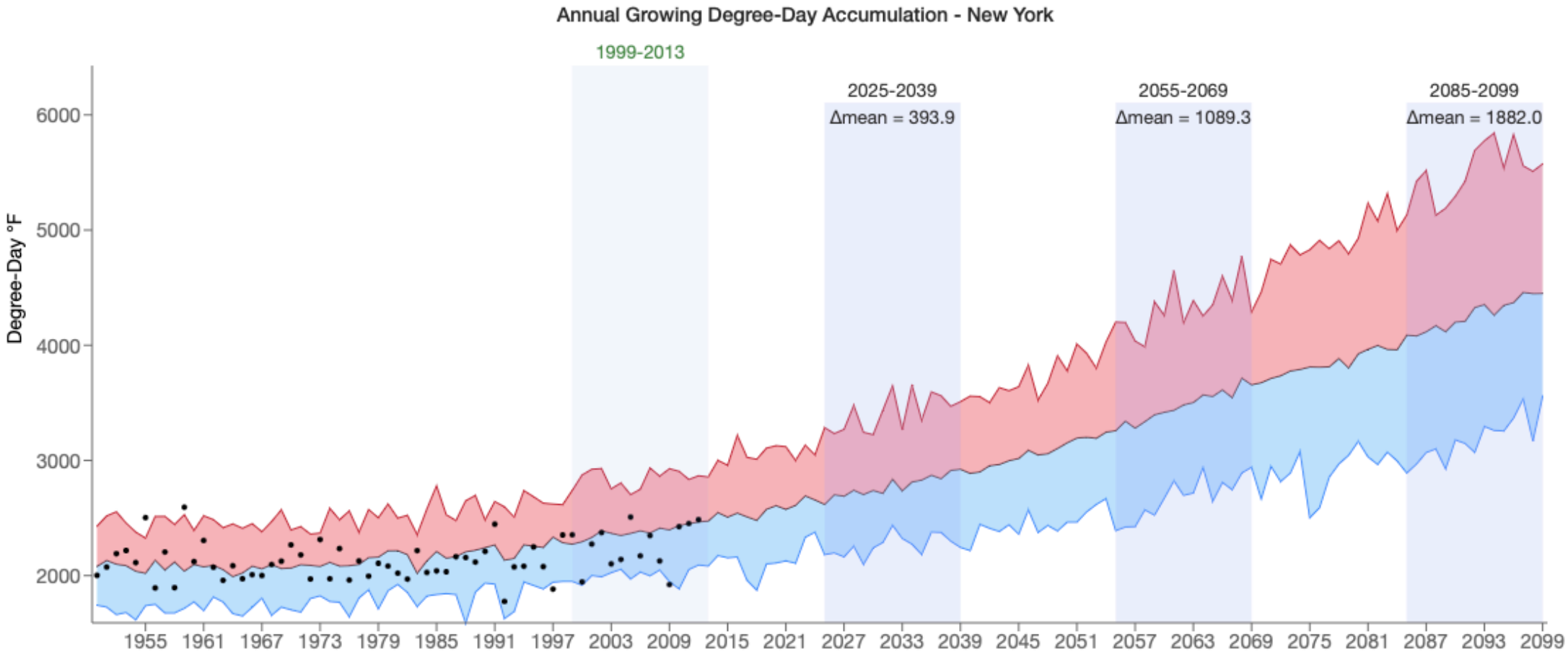
GDD Projections

Higher Emissions



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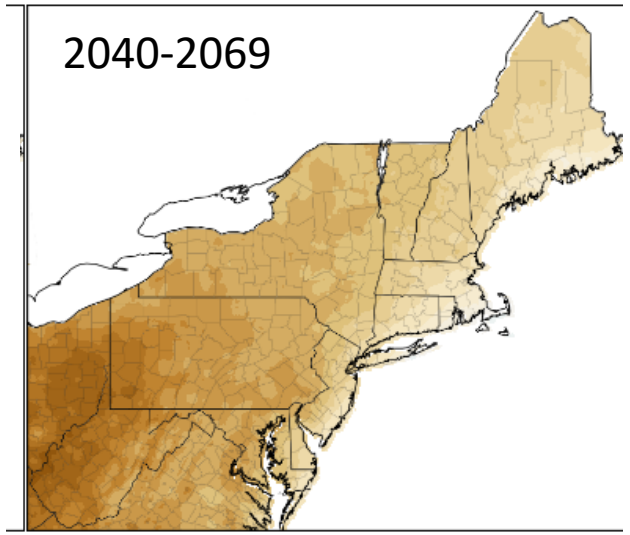
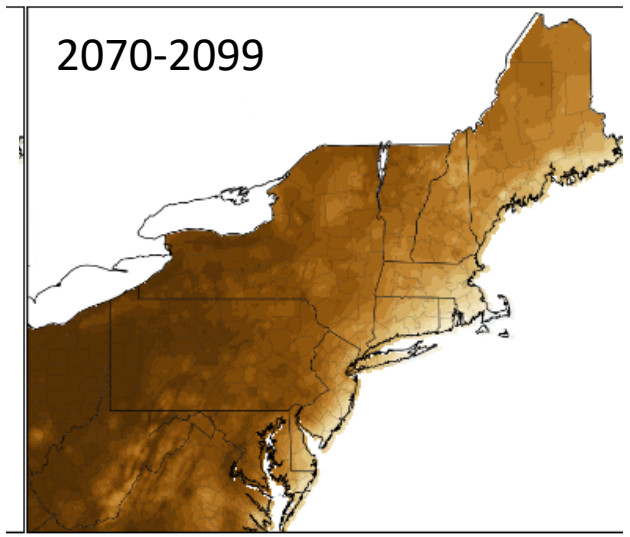
Summer RH High Emissions

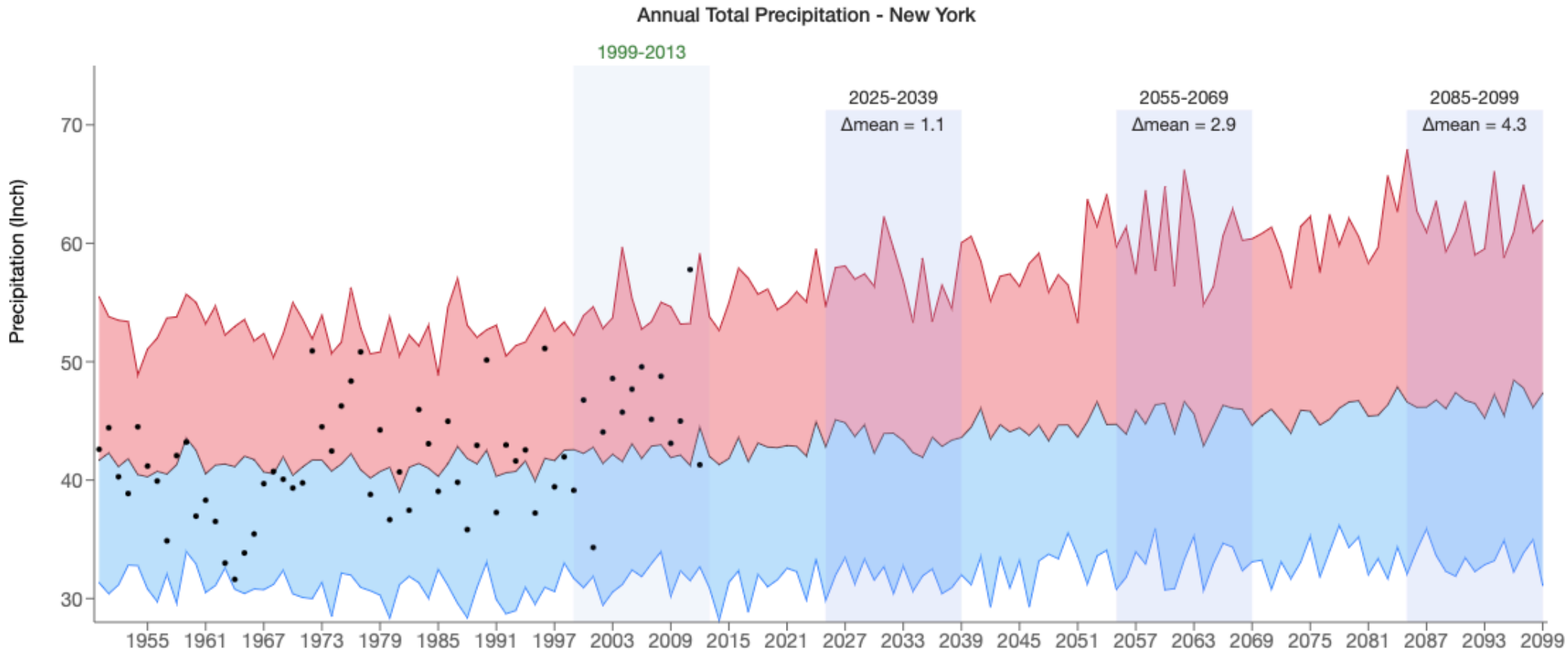




Northeast Regional Climate Center

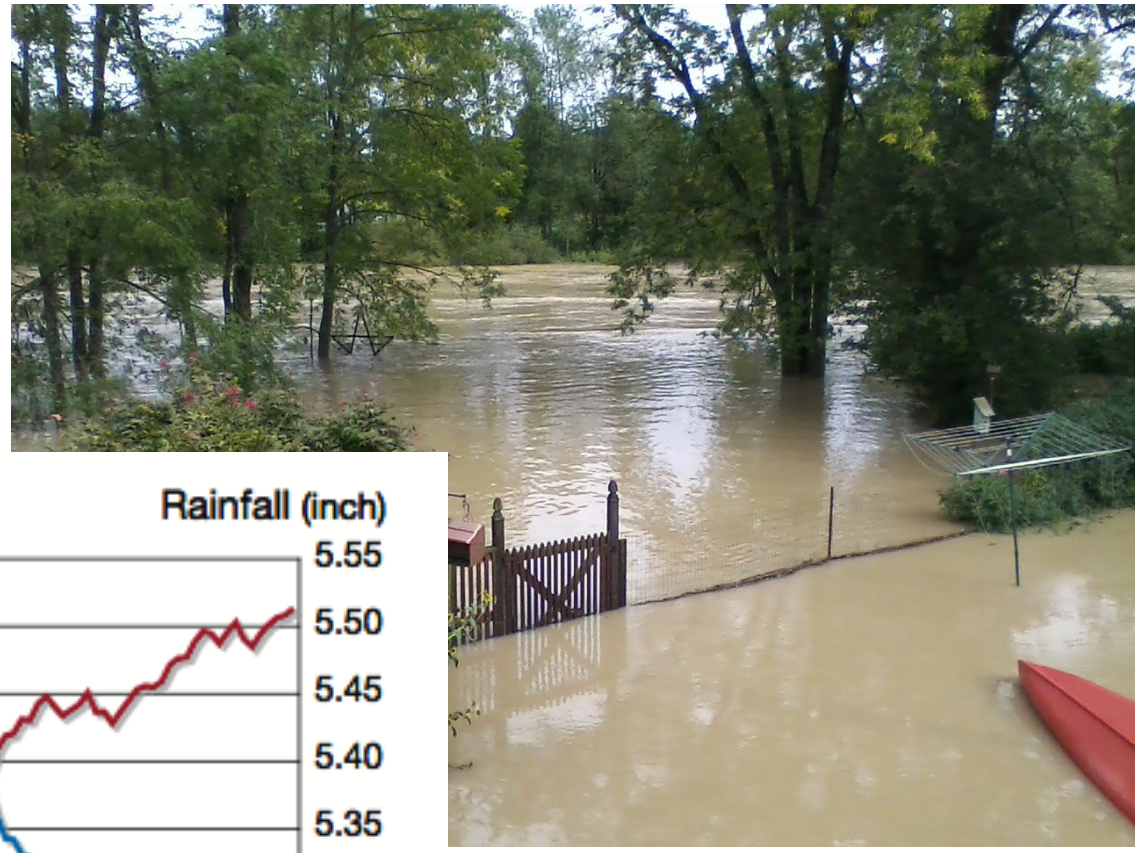
Precipitation Projections

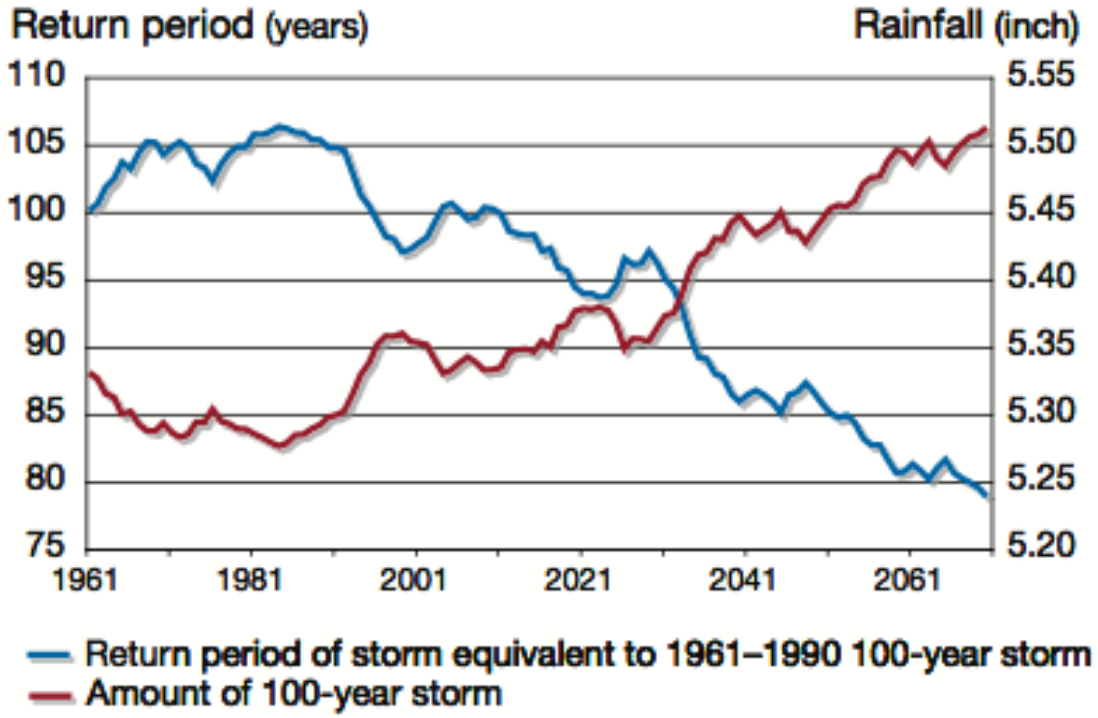
Higher Emissions



Northeast Regional Climate Center

Projected Rainfall & Frequency of 100-year storm





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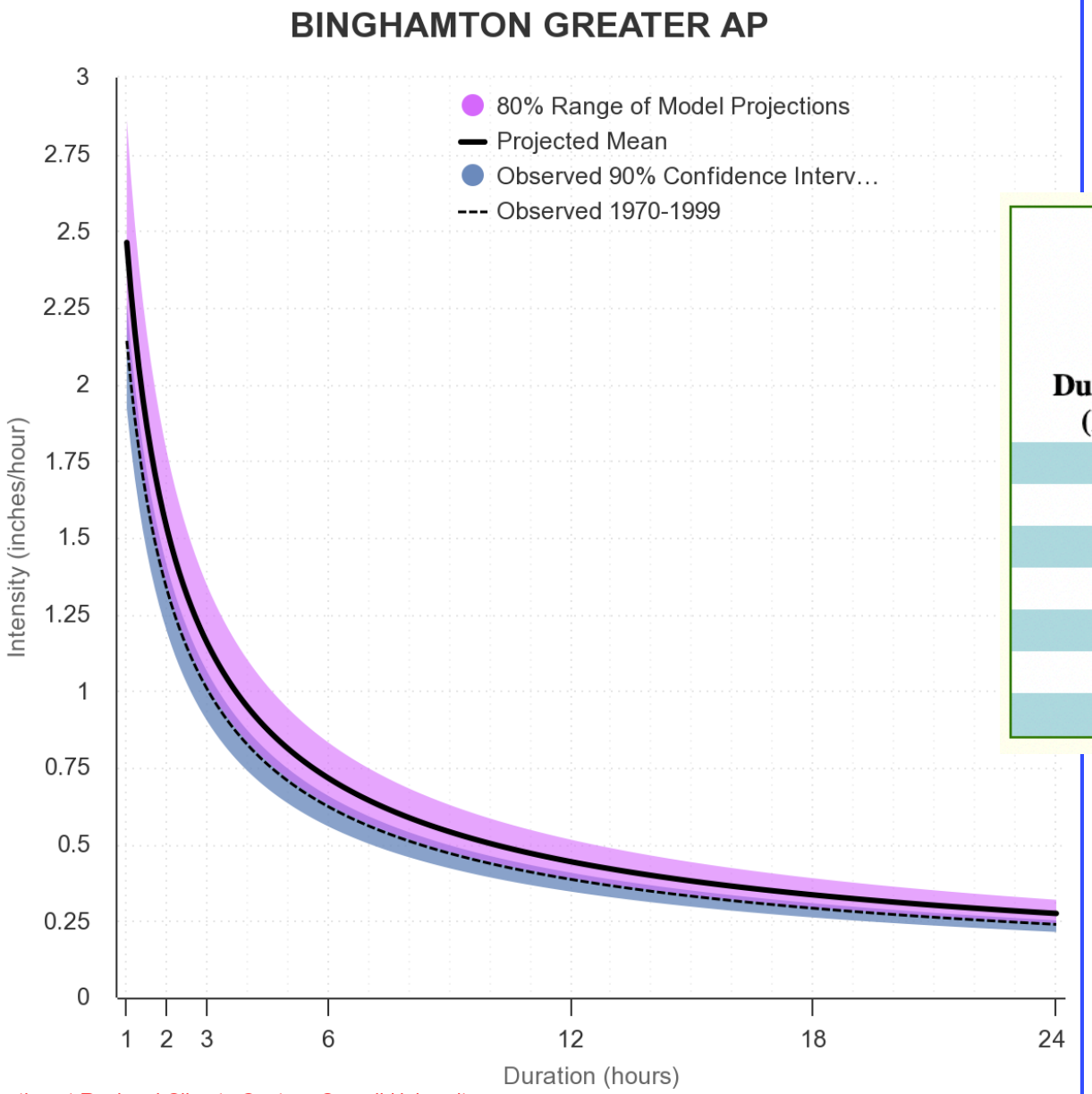
Precipitation Projections

Intensity Duration Frequency Curves: 100-yr Return Period
RCP 8.5 Projection 2040-2069 vs. Observed (1970-1999)



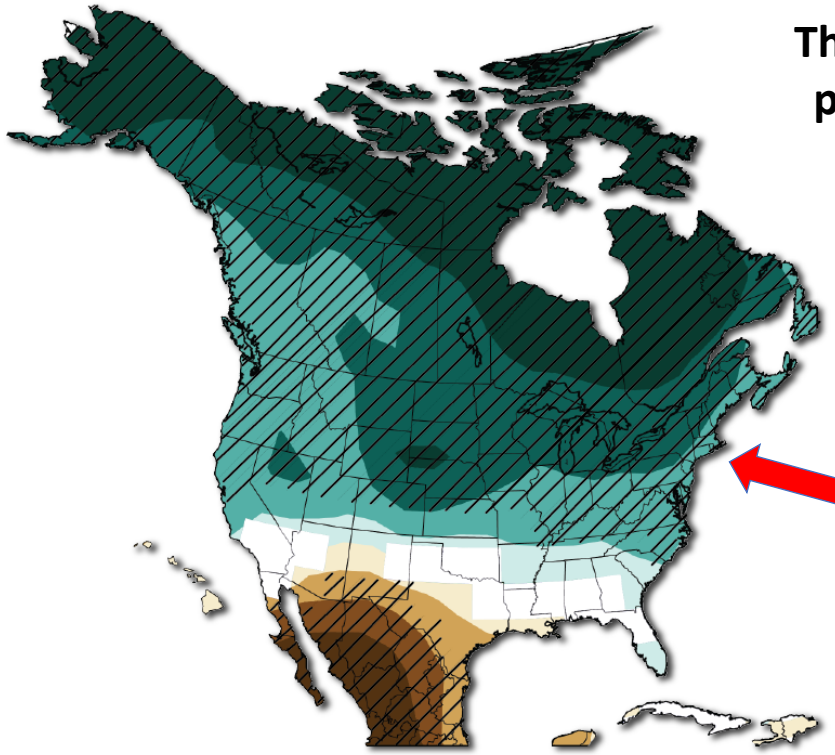
Northeast Regional Climate Center - Cornell University

Duration (hrs)	Projected 2040-2069 Intensity Ensemble Member			Observed 1970-1999 Intensity with Confidence Interval (CI) Bounds		
	10th	Mean	90th	Low CI	Mean	High CI
1	2.17	2.46	2.86	1.92	2.14	2.26
2	1.34	1.53	1.77	1.19	1.33	1.40
3	1.01	1.15	1.34	0.90	1.00	1.06
6	0.63	0.71	0.83	0.56	0.62	0.66
12	0.39	0.44	0.51	0.35	0.39	0.41
18	0.29	0.33	0.39	0.26	0.29	0.31
24	0.24	0.27	0.32	0.21	0.24	0.25

Continued Emissions Increases (RCP 8.5)

Projected change in seasonal precipitation for 2071-2099 (compared to 1970-1999)

Winter



The northern part of the U.S. is projected to see more winter precipitation.

20-30% increase for NY

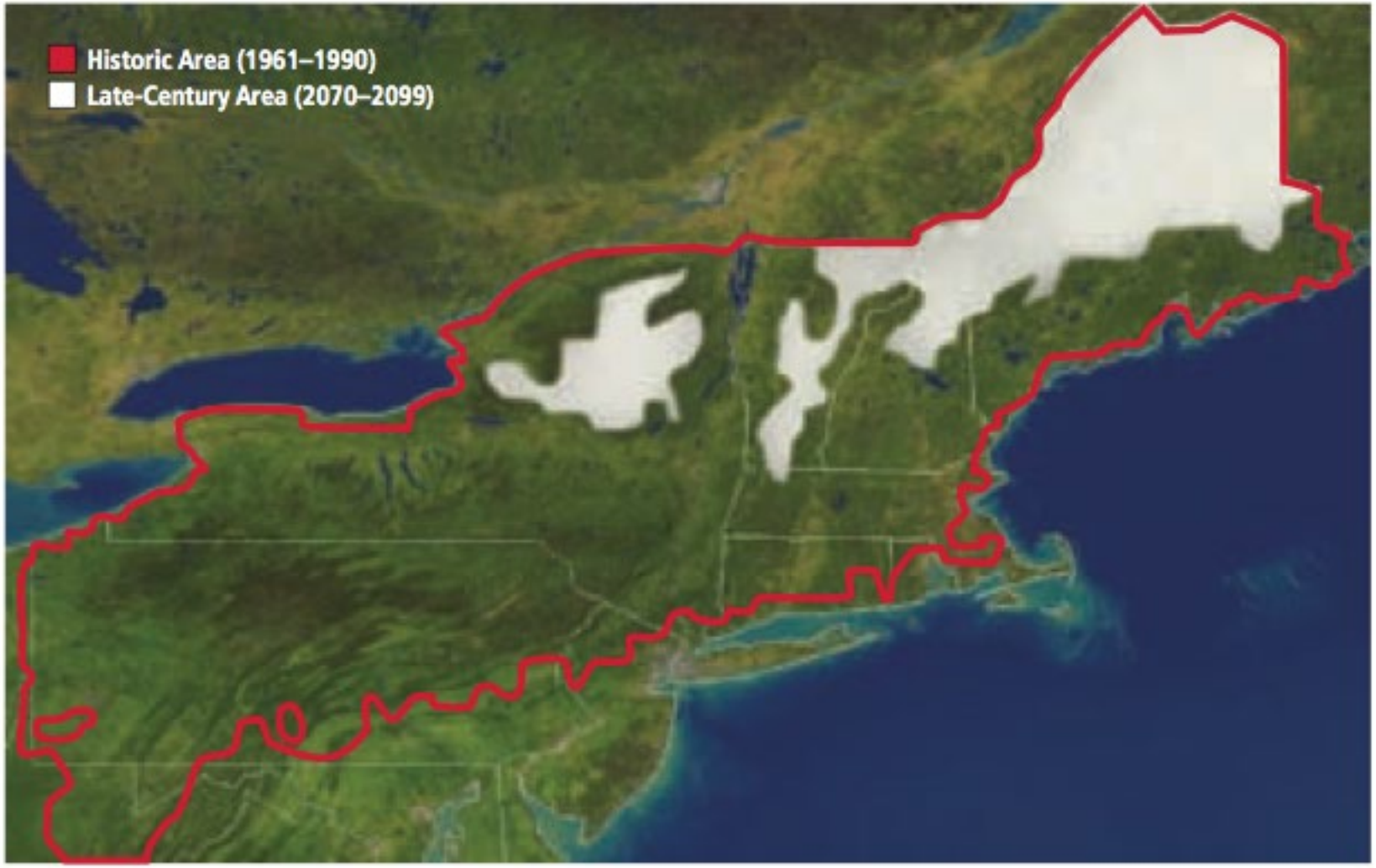
Precipitation Change (%)

-30 -20 -10 0 10 20 30

Northeast Regional Climate Center

Area with Snow Cover for at least 30 days

Under high emissions scenario



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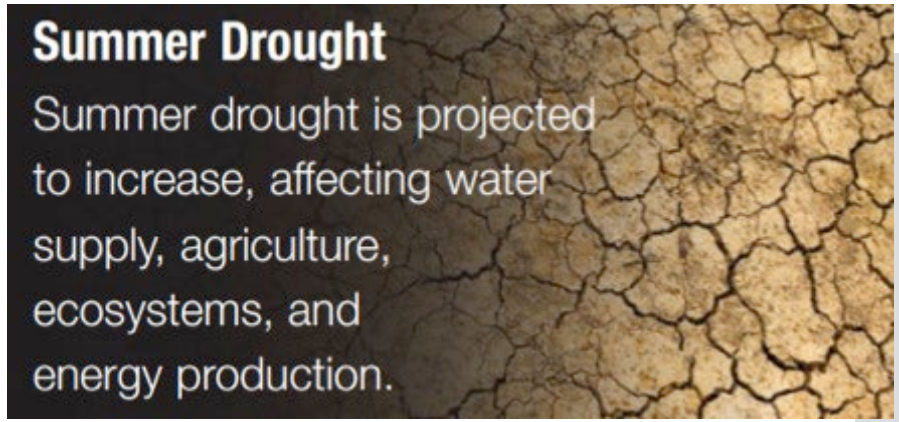
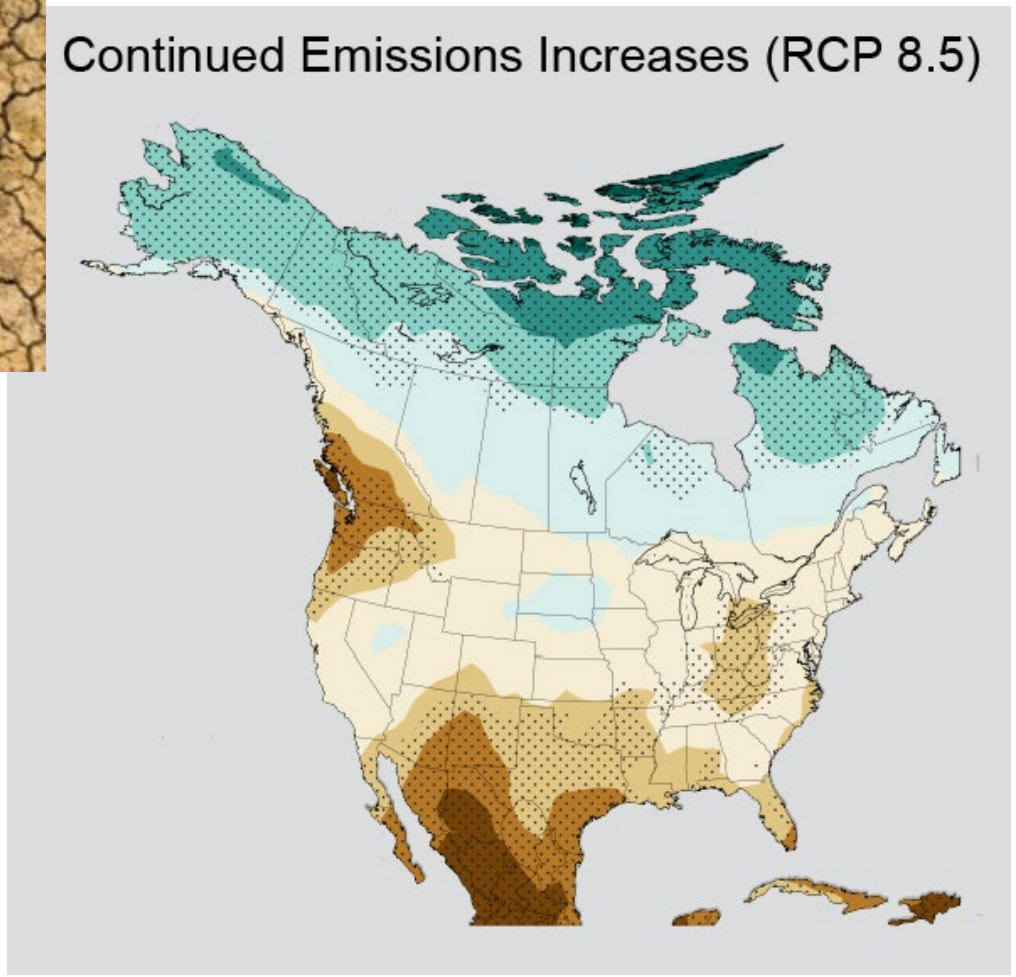


Changes in Consecutive Dry Days



Variable soil water availability due to changes in seasonal precipitation.

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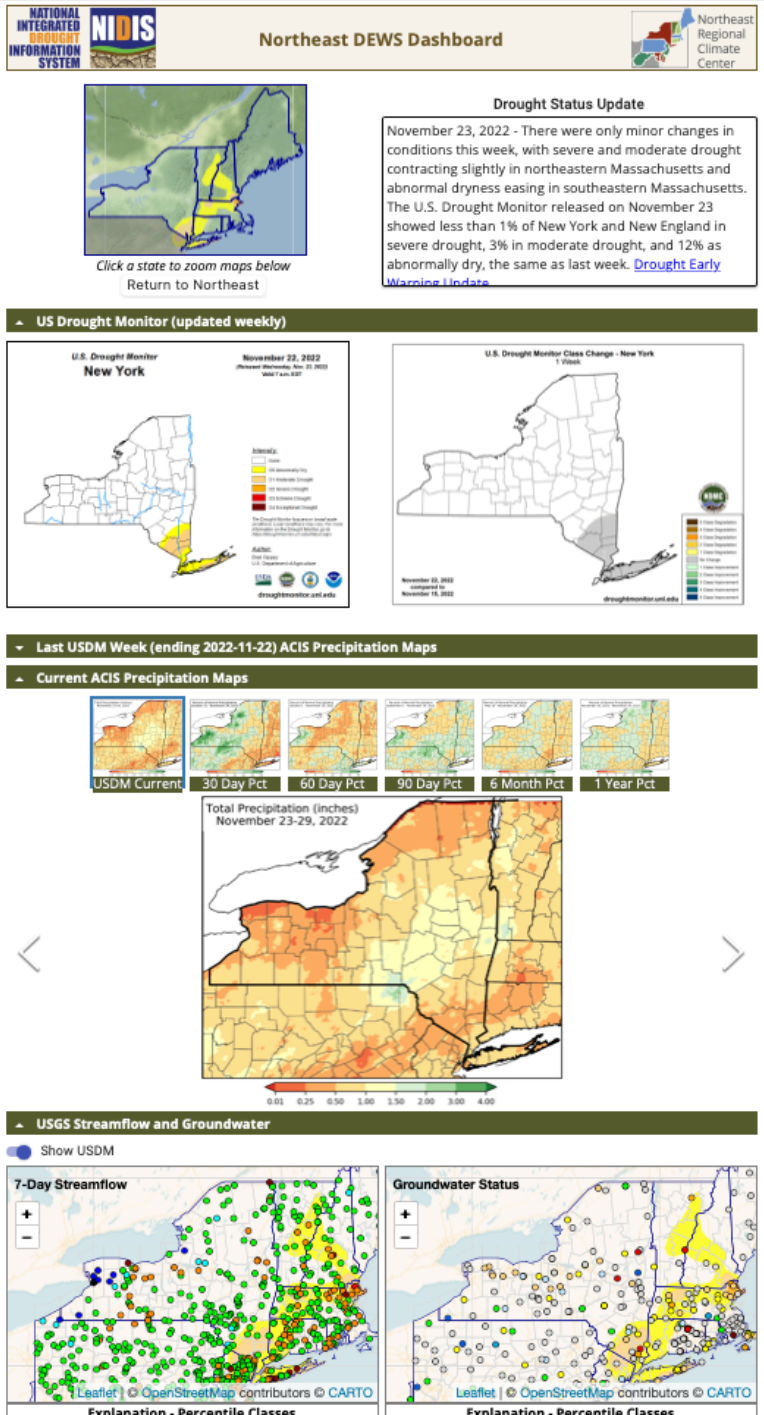
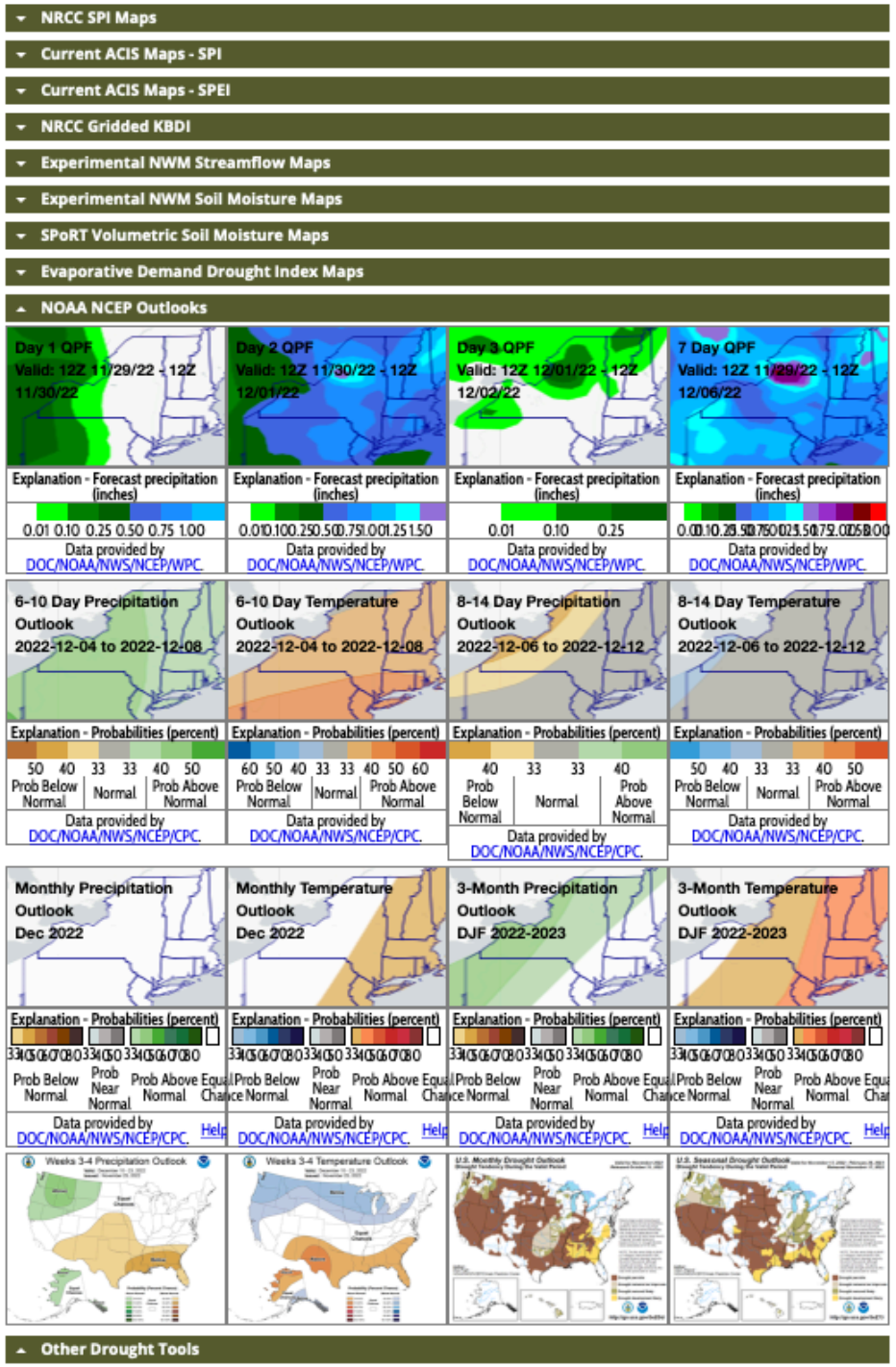


http://nedews.nrcc.cornell.edu

Northeast Regional Climate Center

- Drought Monitor
- Precipitation
- Streamflow & Groundwater
- Drought indices
- Outlooks

http://nedews.nrcc.cornell.edu



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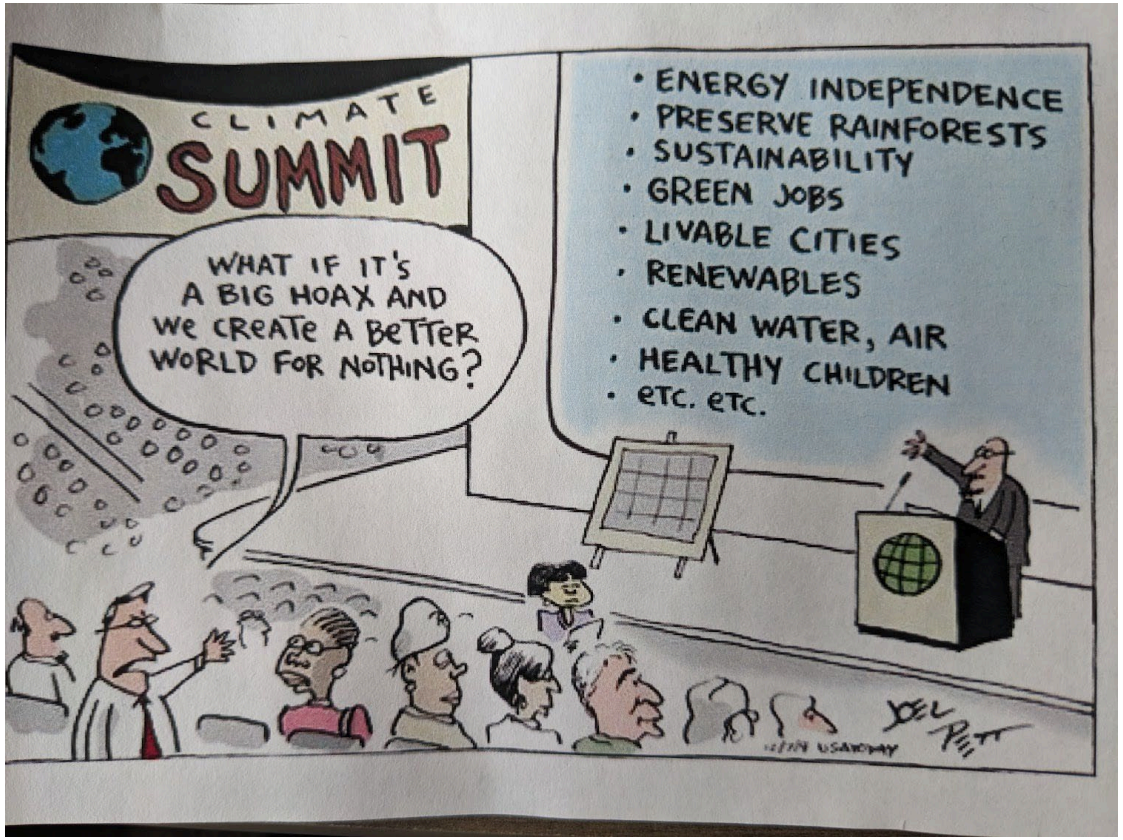
Questions?



Jessica Spaccio, Northeast Regional Climate Center

jlr98@cornell.edu

Northeast Regional Climate Center


Binghamton 2 Degrees
What will Binghamton look like under two degrees of warming
and what can we do now to prepare?

Binghamton 2 Degrees

What will Binghamton look like under two degrees of warming and what can we do now to prepare?

Source: BingUNews


LOVE

Envisioning Binghamton under two degrees of warming: Floods, Refugees, and Art

Floods: Will floods be more frequent and intense? How can we mitigate or prepare for them?

Refugees: Will Binghamton attract climate refugees from the coast and other regions? What will they do? Where will they go? How can we integrate them into our community for mutual benefit?

Art: Can we use art to envision life in Binghamton under two degrees of warming? Can we use it to prepare our hearts?

An Earth Month panel of Binghamton faculty, April 13, 2023

Source: Author

Max Pensky (Philosophy and I-GMAP) on climate refugees:

I can tell you about how climate change is a threat multiplier in places like the Sahel in Africa, where we know a good deal about what other kinds of push factors that climate change multiplies. We don't yet know very much about the push factors that climate change combines with in the United States.

Leslie Heywood (English and Creative Writing) on art and envisioning:

Creative activities like writing stories and poems, creating video essays, documentaries, dance, theater; all of these are participatory activities. [T]hey are one of our best hopes for facilitating some kind of climate change mitigation in local settings. Because these activities are what help us imagine not "what is," but "what if."

Monica Adams (Social Work) on advocacy around food:

[Saying] the City of Binghamton needs to do something to make food affordable for these people who are poor, that's going to fall on some deaf ears. [...] But if we talk about the price of food in a broader context of advocating with regard to climate change, then when we talk about floods, when we talk about catastrophic climate events that wipe out crops, that impacts the cost of food for all of us.

Peter Knuepfer (Earth Sciences) on Binghamton floods:

If you look over the last fifty years, over the last hundred years, over the last hundred and fifty years, [...] the frequency and intensity of floods has demonstrably increased. [If you look at a representative] 1% event, or one-in-a-hundred-year flood, you would predict that fifty years ago, it would be a certain size. How you would predict that today based on increased numbers of floods at large magnitudes, you would increase that size by about twenty or thirty percent.

Barry Brenton (Civic Engagement and Anthropology) on changing demographics:

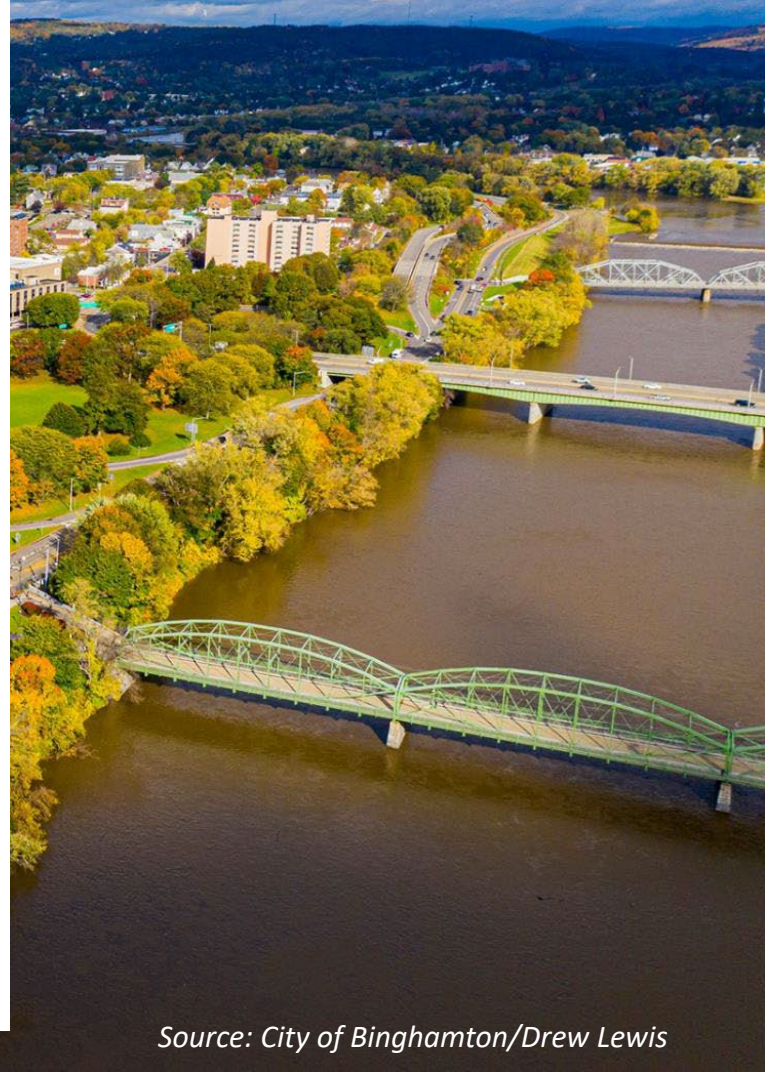
Right now, a lot of the hotels [in greater Binghamton] are filled with people who are displaced from New York City where they can't find housing.[...] There are food services up and down Vestal Parkway but people aren't connected to that, so you get these hotels filled with people with no access to food.

Hiroki Sayama (SSIE and CoCo) on system survivability:

From [... a] complex systems/systems science [perspective], the importance of diversity is the key for the survival of any kind of system. In this case, diversity could mean [...] diversity of approaches, diversity of ideas, diversity of models. [...] ***If we just grab on to "the right answer" I bet we will most likely fail*** *[emphasis added]. If we collectively try to grapple the same problem with multiple approaches, that will give a much, much higher chance that the community will survive.*

Mission of the Binghamton 2 Degrees Initiative

- Strive to answer the fundamental question of “What will Binghamton look like under two degrees of warming and what can we do now to prepare?”
- Make climate change present and pressing under the hypothesis it will help activate practical, local solutions;
- Help Binghamton thrive under two degrees of warming;
- Coordinate, facilitate, foster, and support education, research, and creative activities around the mission; and
- Share the 2 Degrees approach with other communities.



Source: City of Binghamton/Drew Lewis

Two types of Binghamton 2 Degrees events:

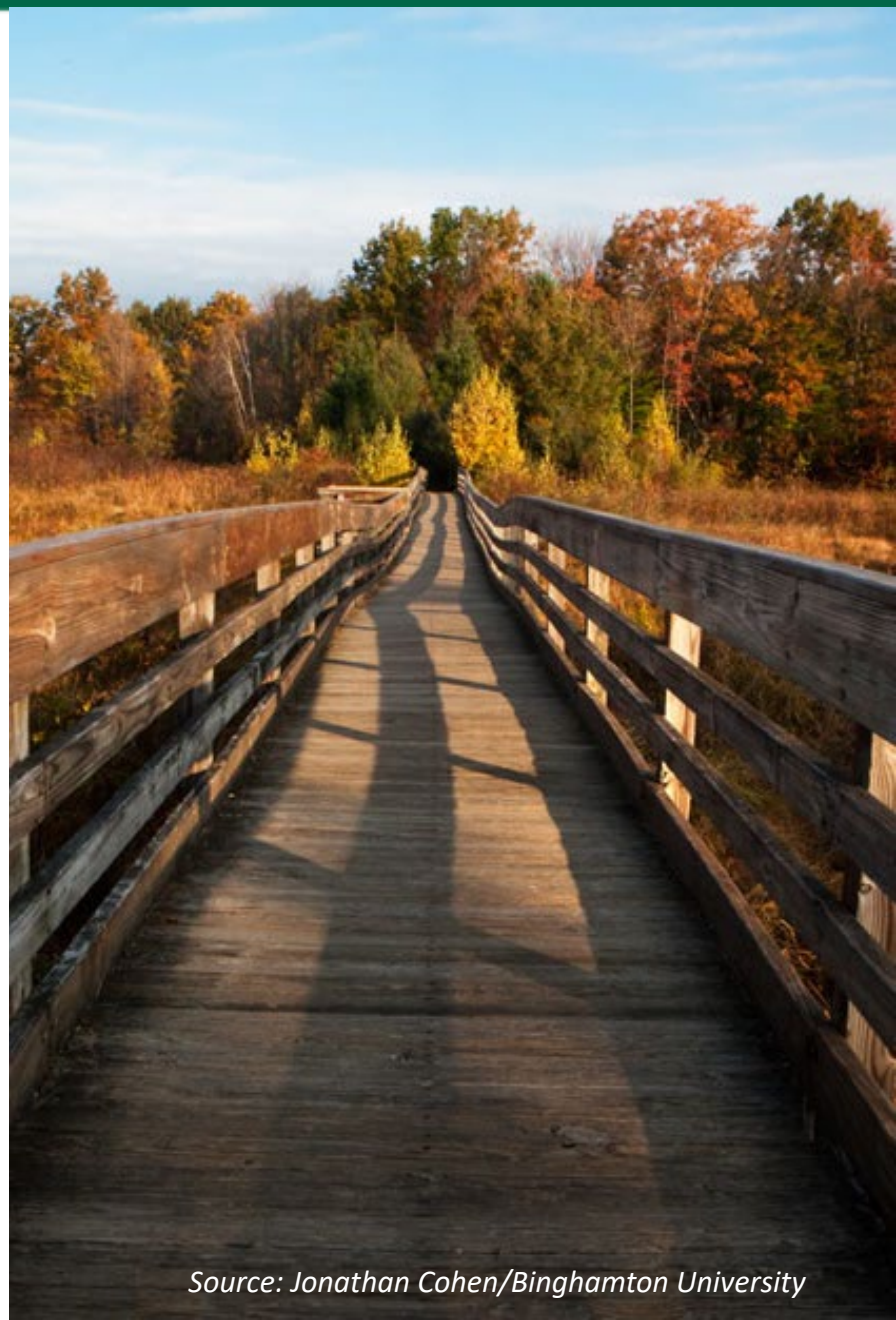
1) **Public/Outward-facing/Participatory Events**

   * Communication, education, engagement, marketing

2) **Data, Modeling, Prediction, and Understanding:**

   Research and Creative Activity Working Groups

   * Building our own understanding



Source: Jonathan Cohen/Binghamton University

Public/Outward-facing/Participatory Events

Six Topic Months:

- **Sept: Climate Science**
- **Oct: Food**
- **Nov: Health**
- **Feb: Energy**
- **Mar: Floods and other Disasters**
- **Apr: Housing and Refugees**

Image from "All We Can Save."

Examples of coordinated monthly events:

- **Panels for community and campus engagement**
- **Binghamton 2 Degrees: Live at Confluence Park art and music festival about climate change**
- **Creative activities: Theater, music**
- **"Experiential Events" like altering food options or adjusting the temperature of buildings**
- **Designated departmental academic speakers**
- **Campus/community events**
- **The 1MW carbon tracking app for the university and the community**
- **Competitions between dorms/buildings**
- **Student data/modeling, policy, and creative activity competitions**

Data, Modeling, Prediction, and Understanding:
Research and Creative Activity Working Groups

Working groups can:

- Gather local data (surveys, direct measurement, etc.)
- Share data
- Develop models
- Seek grants
- Produce creative activities
- Produce academic conferences, papers, books, exhibitions
- Contribute to the 2 Degrees guide for other communities

Working groups for:

- Microgrids with low carbon energy production and storage
- Evaluating the hypothesis that making climate change present and pressing will help activate practical, local solutions
- Local food systems
- Housing
- Flood mitigation
- Disease and health
- Refugees
- Biodiversity and biodiversity loss
- Information and communication (and misinformation)
- …

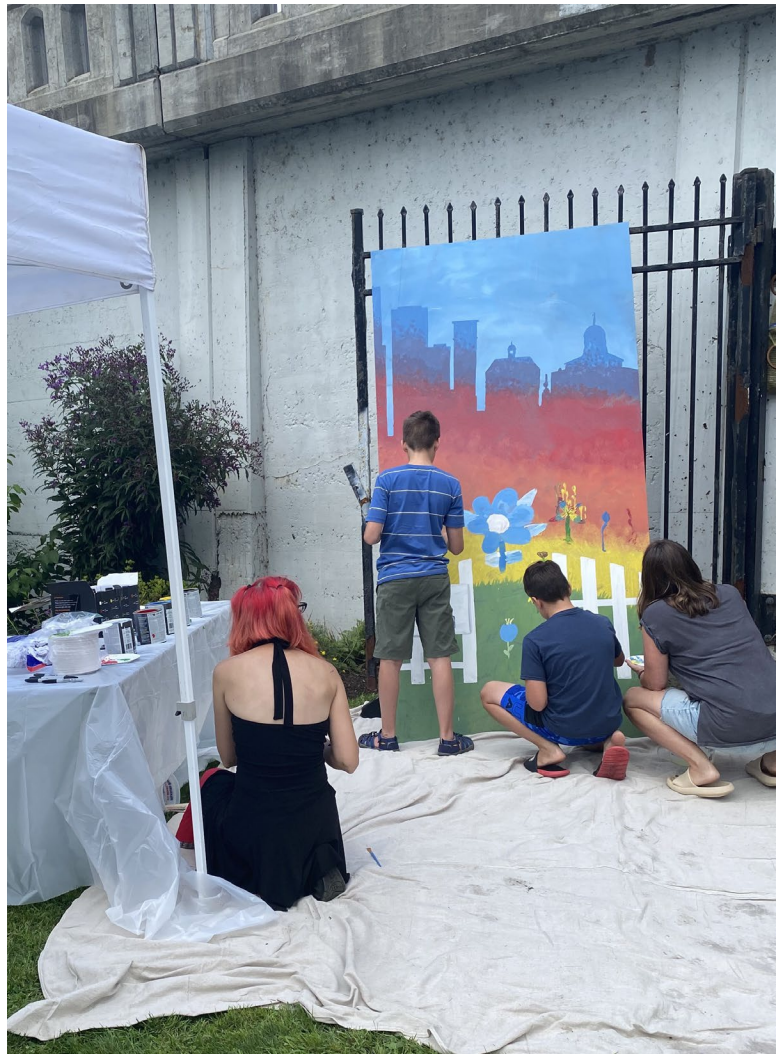
Events:

Art, Science, Engagement


BINGHAMTON
2°
TWODEGREES
A local arts & music festival about climate change & you.
LIVE at Confluence Park
AUGUST 26, 2023

Art Exhibits

Participatory Art and Writing



Interactive Tabling with Partner Organizations

Artists and Musicians

12 NEWS YOUR WEATHER AUTHORITY

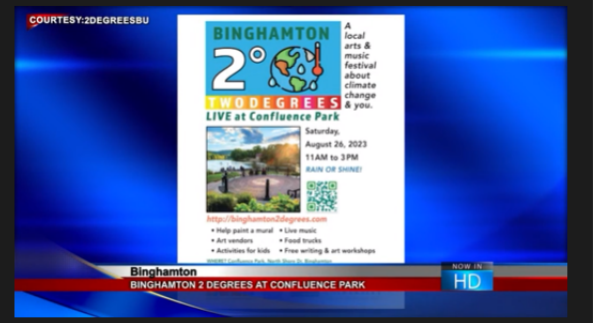
News Weather Sports Around the Tiers Watch Community Calendar Cont

‘Binghamton 2 Degrees’ to host fest climate change affects in city

Williams Toyota Sports Desk | Local Business | Contests | Community | Jobs

hamton 2 Degrees at ence Park

8 PM EDT
58 PM EDT



H) Binghamton University is hosting a free event tomorrow in
n addressing climate change through science and the arts.

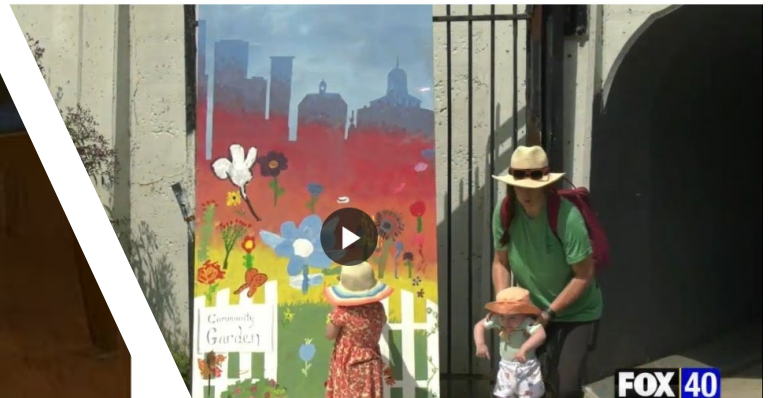
FOX 40

NEWS SPORTS WEATHER COMMUNITY CONTACT U

NEWS

Binghamton 2 Degrees Hosts First Festival at onfluence Park

August 26th 2023, 5:29 PM EDT
Saturday, August 26th 2023, 8:03 PM EDT
White



What is 1 Million Women?

“I believe a million women will tell a million more and lead a million communities."
- Natalie Isaacs, 1 Million Women founder

- Founded by Natalie Isaacs in Australia
- Pledge of 1 Million Women (1MW) to reduce 1 ton of carbon from their footprint
- Small steps to reduce food waste or energy consumption can make a big difference
- Climate action doesn’t have to be grandiose; anyone can do it
- You don’t have to be a person in power to create change

1M Ready Campaign

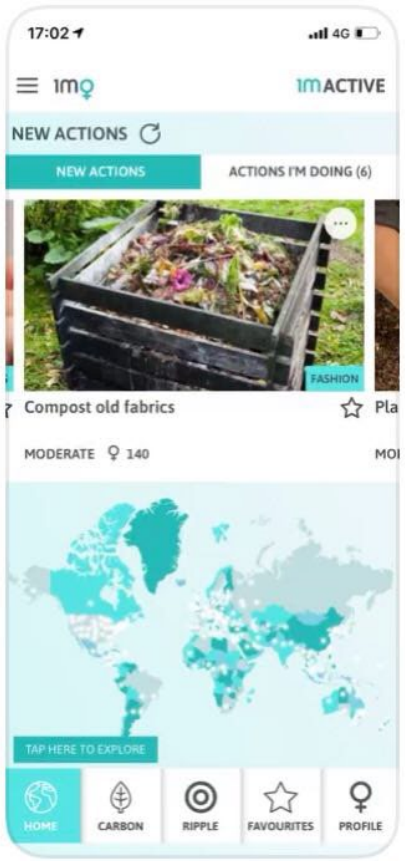
https://www.1millionwomen.com.au/

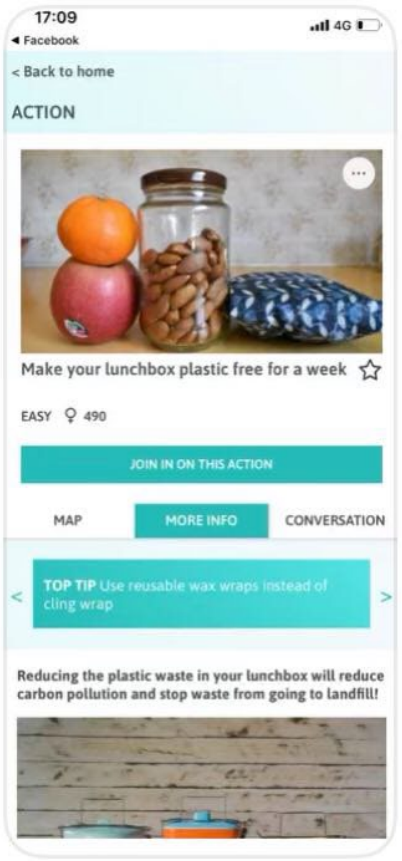
1MW at Binghamton!

Kaschak Institute
SOCIAL JUSTICE FOR WOMEN AND GIRLS

”WE ARE WOMEN AND GIRLS FROM EVERY CORNER OF THE PLANET BUILDING A LIFESTYLE REVOLUTION TO SOLVE THE CLIMATE CRISIS.
No matter whether you are a climate warrior or a beginner, the power of this app is to show in real-time our collective impact when we all act together”

The App





- Collaboration of the Kaschak Institute, Binghamton 2 Degrees, Sustainable Communities, Office of Sustainability, the Center for Civic Engagement, etc. with 1 Million Women
- Launch of the 1MW app and the 1MReady Campaign in the US here at Binghamton University
- Simple way for everyone to get involved and work towards a healthy climate
- Recruitment of student ambassadors to spread the word and get as many people as possible involved in the launch in February

Partners

Local Cultural Institutions such as the Roberson Museum and Science Center, and the Broome County Arts Council

Student Organizations such as the Citizen's Climate Lobby and Zero Hour

University Departments, Programs, Offices such as ENVI, Public Health, the Sustainability Hub, Ofc of Emergency Mgmt

University Research Centers such as Sustainable Communities; Citizenship, Rights, and Belonging; Health Sciences; Smart Energy; Data Science; CoCo

Local Government such as City of Binghamton Parks and Recreation

Roberson Museum. Source: Pipe Dream

Next event

Binghamton 2 Degrees: The Science Behind Climate Change and our Emotions Surrounding It

When: September 27 (Wednesday), 6pm to 7:30pm
Where: ITC Symposium Hall
Speakers: Molly Patterson, Adriane Lam, and Kirsten Prior
Workshop Leader: Leslie Heywood

https://binghamton2degrees.com/events/Sept27_2023.html

Binghamton 2 Degrees

What will Binghamton look like under two degrees of warming and what can we do now to prepare?

Our mission:

- Strive to answer the fundamental question above;
- Make climate change present and pressing under the hypothesis it will help activate practical, local solutions;
- Help Binghamton thrive under two degrees of warming;
- Coordinate, facilitate, foster, and support education, research, and creative activities around the mission; and
- Share the 2 Degrees approach with other communities.


Session #1
Sustainable Broome Lunch & Learn Panelist Series
Drones Over Broome

Break Time

NOAA NEST
A Northeast Safe and Thriving for All

Exploring Climate Migration to the Rustbelt

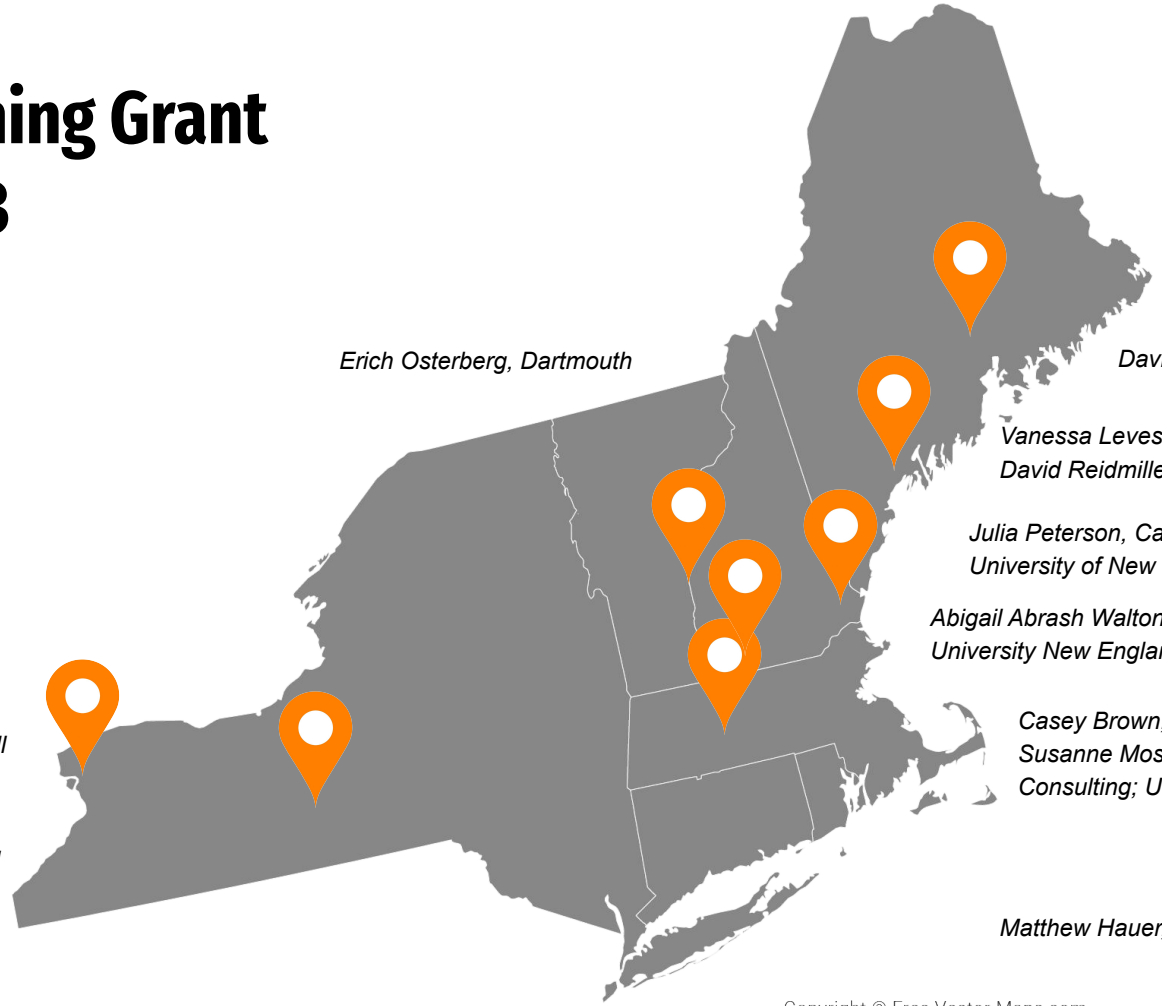
Linda Shi, Lauren Oertel, Rachel Renders | Cornell University | 9.15.2023

Land Acknowledgement

Cornell University is located on the traditional homelands of the Gayogo̱hó:nǫ̀ʔ (the Cayuga Nation). The Gayogo̱hó:nǫ̀ʔ are members of the Haudenosaunee Confederacy, an alliance of six sovereign Nations with a historic and contemporary presence on this land. The Confederacy precedes the establishment of Cornell University, New York state, and the United States of America. We acknowledge the painful history of Gayogo̱hó:nǫ̀ʔ dispossession, and honor the ongoing connection of Gayogo̱hó:nǫ̀ʔ people, past and present, to these lands and waters.

This land acknowledgment has been reviewed and approved by the traditional Gayogo̱hó:nǫ̀ʔ leadership.

CAP Planning Grant 2022-2023



Erich Osterberg, Dartmouth

David Hart, University of Maine

Vanessa Levesque, University of Southern Maine
David Reidmiller, Gulf of Maine Research Institute

Julia Peterson, Cameron Wake, Lisa Wise, University of New Hampshire

Abigail Abrash Walton, Christa Daniels, Antioch University New England

Casey Brown, UMass-Amherst
Susanne Moser, Susanne Moser Research & Consulting; UMass-Amherst, Antioch University

Russell Weaver, Cornell

Shorna Allred, Linda Shi, Scott Steinschneider, Cornell (Andrew Epps, Lauren Oertel, Rachel Renders, student assistants)

Matthew Hauer, Florida State University

Climate Change: Predicted Impact

Forbes HOME

Home Improvement › Features › 30% Of Americans Cite Climate Change As A Motivator To Move In 2023

Advertiser Disclosure

30% Of Americans Cite Climate Change As A Motivator To Move In 2023

By Samantha Allen
Editor

Updated: Nov 17, 2022, 10:05pm

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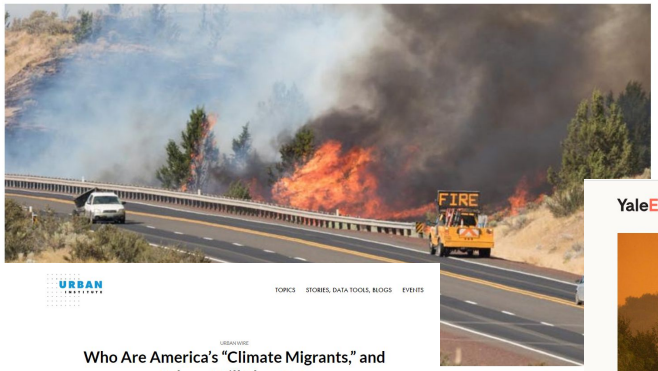

URBAN INSTITUTE

TOPICS STORIES, DATA TOOLS, BLOGS EVENTS

URBAN WIRE

Who Are America's "Climate Migrants," and Where Will They Go?

Carlos Martin
October 22, 2019

ADAPTATION

Climate migration is already happening — for homeowners who can afford it

PUBLISHED THU, SEP 16 2021·7:30 AM EDT | UPDATED THU, SEP 16 2021·8:59 AM EDT

Salvador Rodriguez
@SAL19

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YaleEnvironment360 *Published at the Yale School of the Environment*

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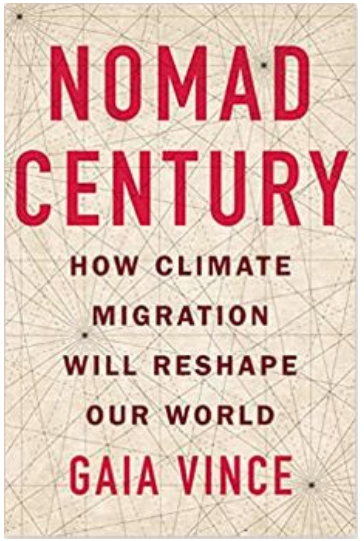
The Springs Fire encroaching on a house in Camarillo, California in 2013. DAVID MCNEW / GETTY IMAGES

As Climate Fears Mount, Some in U.S. Are Deciding to Relocate

As wildfires worsen and sea levels rise, a small but growing number of Americans are choosing to move to places such as New England or the Appalachian Mountains that are seen as safe havens from climate change. Researchers say this phenomenon will intensify in the coming decades.

BY JON HURDLE · MARCH 24, 2022



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05:24

Interior Maine could be a viable climate refuge — but is it ready to host potential refugees?

July 21, 2022 | By Fred Bever, Maine Public Radio

As many regions of the United States endure the extreme effects of climate change, some scientists believe interior Maine could be a refuge. But is the state ready for an influx of climate refugees?

Fred Bever of Maine Public Radio reports.

The great climate migration has started. Are Bay State communities ready?

Massachusetts inland communities will become havens for people fleeing rising seas and temperatures — whether they plan for it or not.

By **The Editorial Board** Updated November 13, 2022, 4:00 a.m.

The Boston Globe

04-28-22

Buffalo wants to become a climate haven. Is that even possible?

It's impossible to avoid the effects of climate change completely. But some cities are starting to think about how to prepare for the worst of it.

[Photos: DenisTangneyJr/Getty Images, Felix Mittermeier/Unsplash]

Are 'Climate Refugees' Coming to New England? 2020 Data Sure Seems to Say So

Solaflect Energy

VT Residential Property Sales to Out-of-State Buyers

Search in table

Page 1 of 17

0 25M 132M

	Town	Sales	2017	2018	2019	2020
1	Stowe	156 176	84.7M	104.2M	66.8M	132.1M
2	Ludlow	142 219	44.7M	65.4M	75M	97.9M
3	Dover	126 230	38M	37M	32.6M	72.7M
4	Stratton	63 104	31.4M	29.9M	31.5M	65.4M
5	Wilmington	96 137	37.6M	19.4M	21.3M	53.8M
6	Woodstock	48 71	37.9M	21.8M	28.7M	53M
7	Warren	104 142	23.2M	25M	29M	49.3M
8	Winhall	48 110	20.1M	23.8M	24.8M	49.2M
9	Manchester	39 92	16.1M	22.9M	25.3M	46M
10	Killington	140 158	27.5M	31.8M	43.5M	43.9M

Source: Vermont Center for Geographic Information

Research Questions

Goals

01	What forms of climate migration exist in the region and to what extent do existing adaptation research, policies, plans, and projects address these issues?	Reveal the equity tradeoffs and tensions created by climate change and climate-exacerbated migration
02	How do social differences shape vulnerability to and perceptions of climate migration?	Surface opportunities for solidarity across social difference
03	What regional governance gaps inhibit efforts to support climate migration that is just and equitable? How might a regional science-policy/practice network meet these gaps?	Create a network of networks poised to co-create research and planning processes that support transformative adaptation

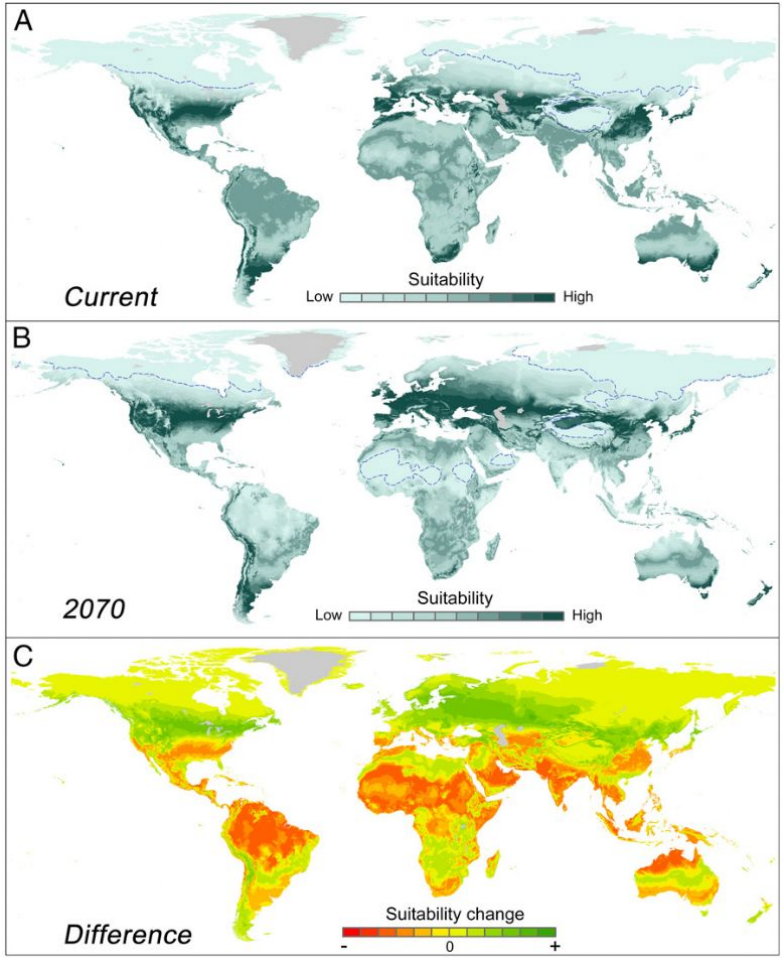
01 Who moves to / within Northeast and why?

02 What impacts have migrants had to the region and its localities?

03 Case Studies & Lessons Learned

04 Predicted impact of climate change on where people live

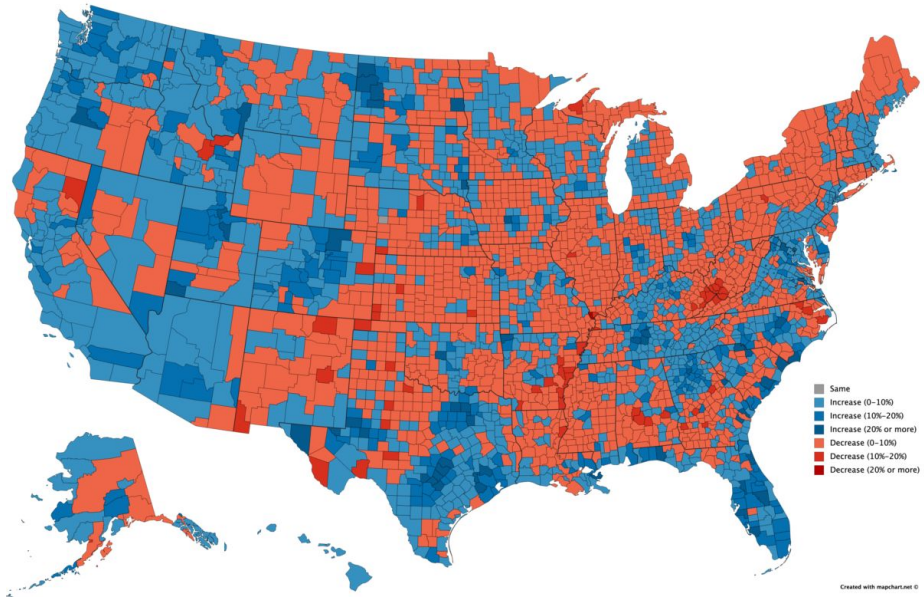
What is the state of research about climate migration?



Demographic + Climate Projections

Xu, C., Kohler, T. A., Lenton, T. M., Svenning, J.-C., & Scheffer, M. (2020). Future of the human climate niche. *Proceedings of the National Academy of Sciences*, *117*(21), 11350–11355.

Population Change 2010-2018



https://www.visualcapitalist.com/u-s-population-change-by-county-2010-2018/

EPA County Resilience Index

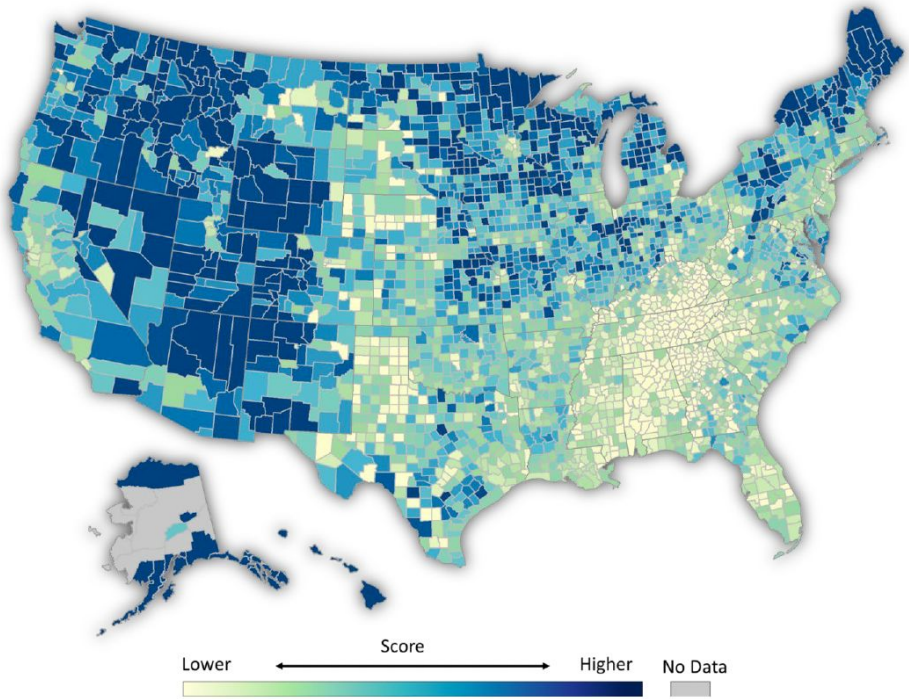
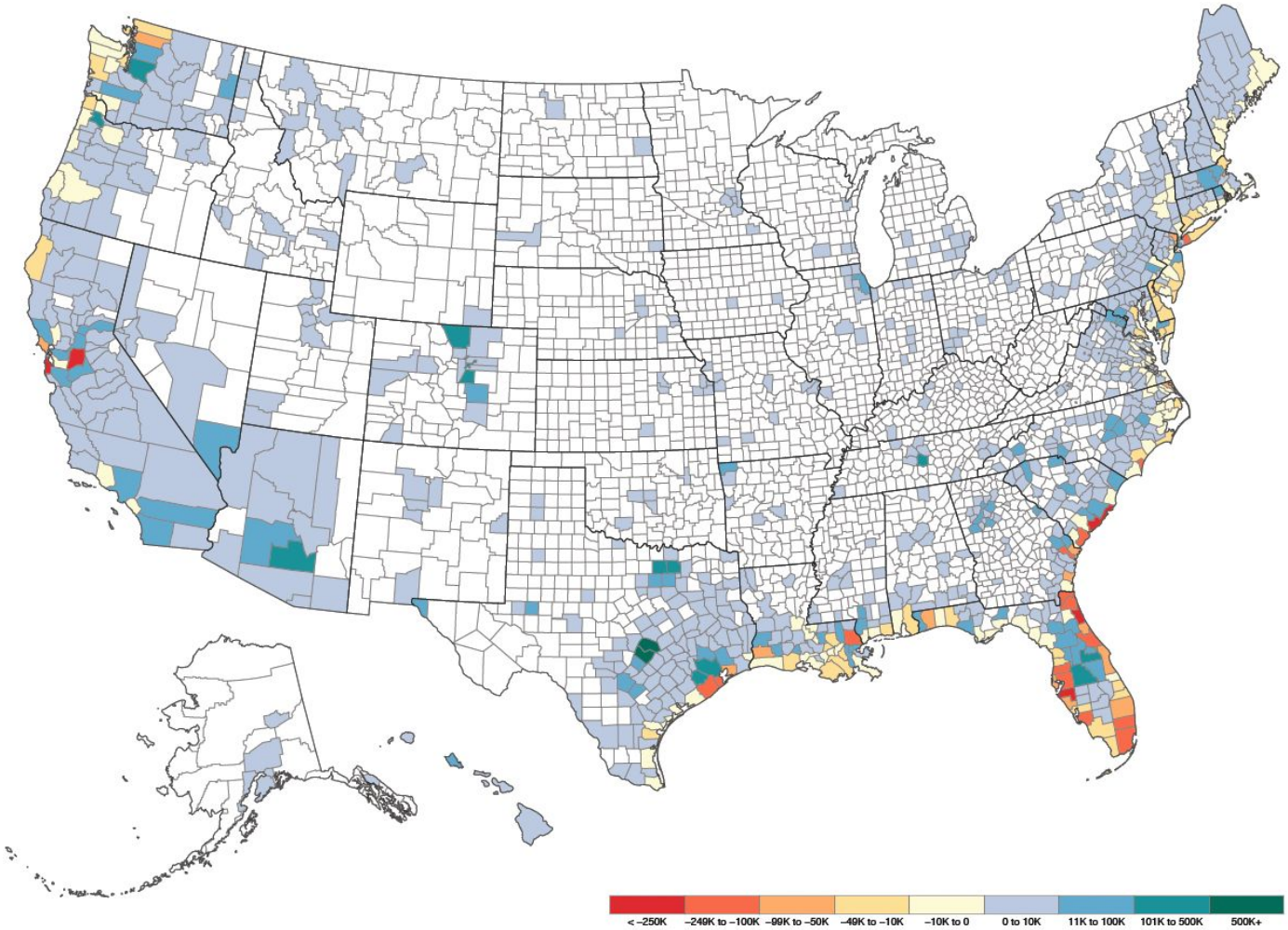


Figure E-2. Map showing distribution of final CRSI Scores across the U.S. (2000-2015). Darker colors indicate higher resilience scores; lighter colors indicate lower resilience scores.

Summers, J., et al. (2020). *Development of a Cumulative Resilience Screening Index for Natural Hazards: An Assessment of Resilience to Acute Meteorological Events and Selected Natural Hazards.* U.S. EPA.



Hauer, M. E., Jacobs, S., & Kulp, S. A. (under review). Climate Migration Amplifies Demographic Change and Population Aging. *Proceedings of the National Academy of Sciences*.

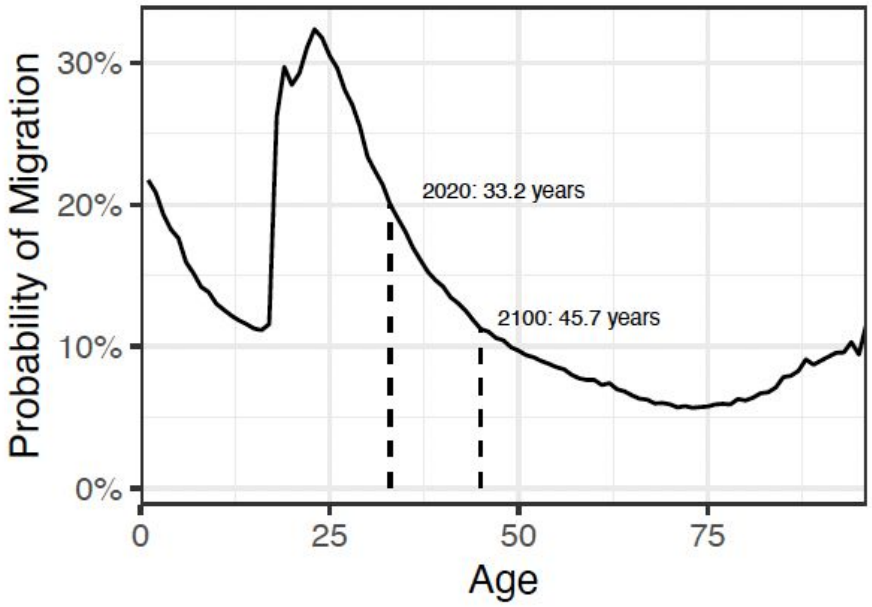
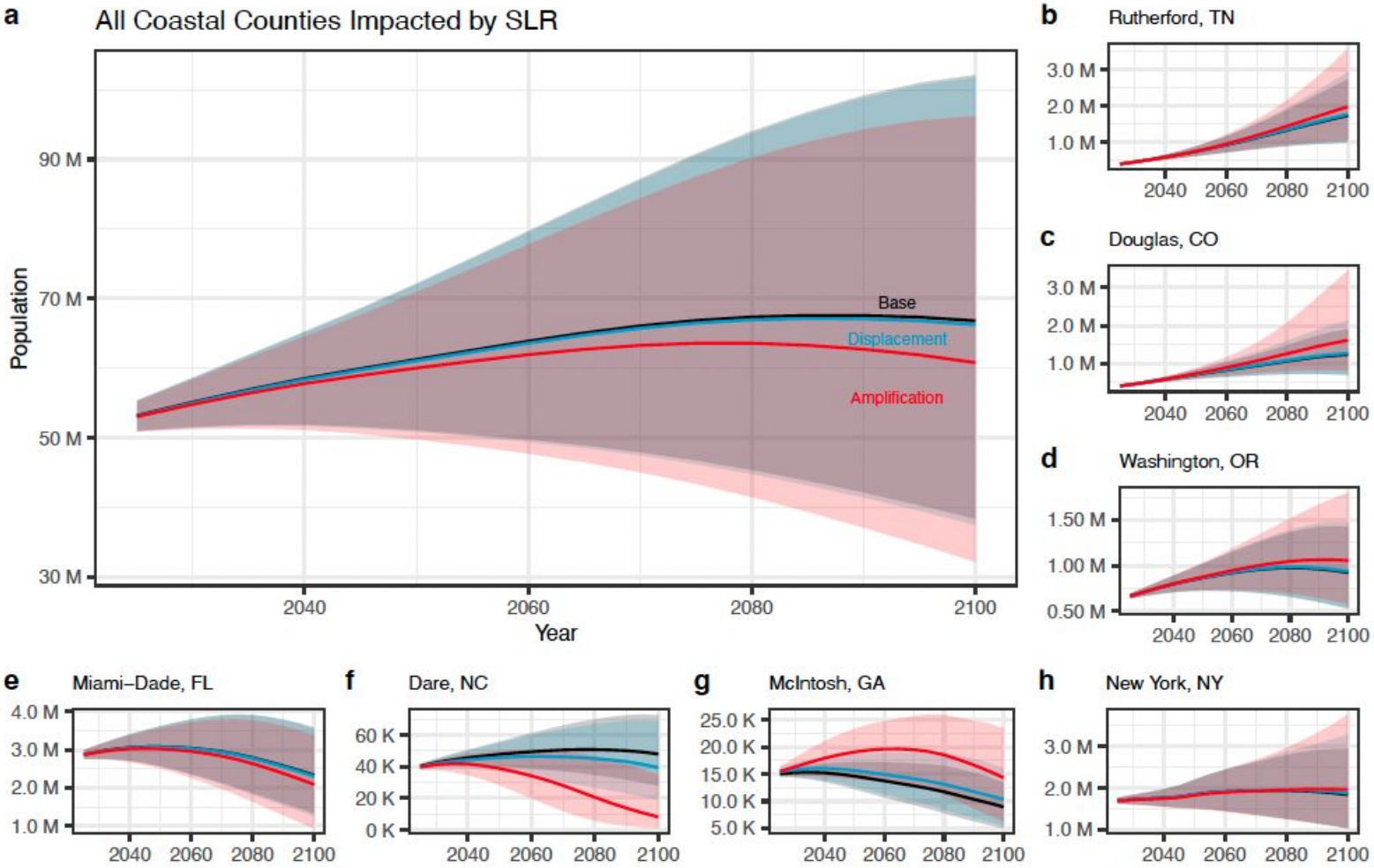


Fig. 1. The classic probability of Migrating by Age and Median Age in 2020 and 2100 for the whole United States. Dashed vertical lines are median ages in 2020 and 2100. Median age based on Shared Socioeconomic Pathway 2 (25). Figure generated using IPUMS-USA data (26). Barring any additional information, this curve suggests that migration will lessen as the US population ages this century.

Hauer, M. E., Jacobs, S., & Kulp, S. A. (under review). Climate Migration Amplifies Demographic Change and Population Aging. *Proceedings of the National Academy of Sciences*.



Hauer, M. E., Jacobs, S., & Kulp, S. A. (under review). Climate Migration Amplifies Demographic Change and Population Aging. *Proceedings of the National Academy of Sciences*.

Emerging research: Receiving communities

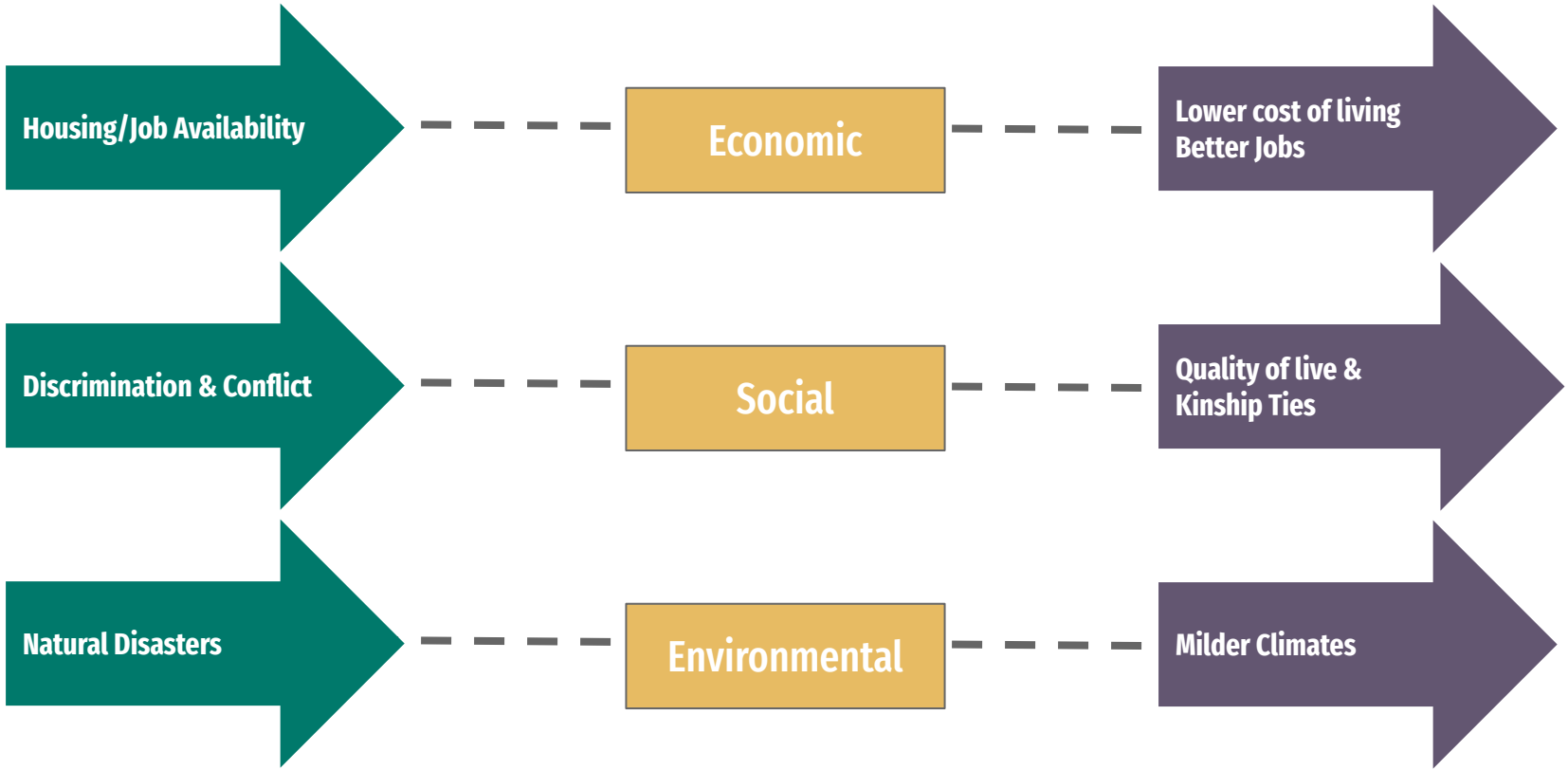
- We don't track disaster migration
- Most people who take a buyout or who relocate post-disaster do not move far
- Pandemic: higher income workers moved to smaller cities and towns
- 2021 census population: 68% of large urban counties lost population and 81% of exurban counties gained population
- Much to learn from studies of immigrant integration, economic development efforts

Teicher, H. M., & Marchman, P. (2023). Integration as Adaptation: Advancing Research and Practice for Inclusive Climate Receiving Communities. *Journal of the American Planning Association*, *0*(0), 1–20.

(Some) Types of Movers

01	Refugees & Asylum Seekers	Multiple moves	Costly services	“Why them, not us?”	Unable to work
02	Amenity Movers & Second Home Owners	One stop / Part time	Typically wealthier	Support local economy	Greater income disparities
03	Employment Opportunities	Full time	Working class	Relies on and supports local economy	Relies on employment growth

Why Do People Move?



Slide credit: Andrew Epps
MRP '23 Cornell University

Most research on individual movers

Forbes HOME

Home Improvement › Features › 30% Of Americans Cite Climate Change As A Motivator To Move In 2023 — Advertiser Disclosure

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By Samantha Allen
Editor

Updated: Nov 17, 2022, 10:05pm

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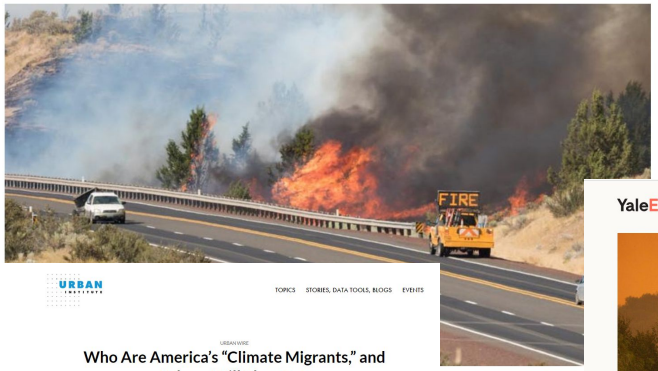

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Salvador Rodriguez
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The Springs Fire encroaching on a house in Camarillo, California in 2013. DAVID MCNEW / GETTY IMAGES

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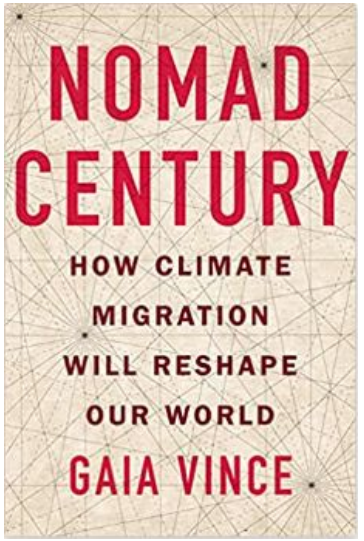

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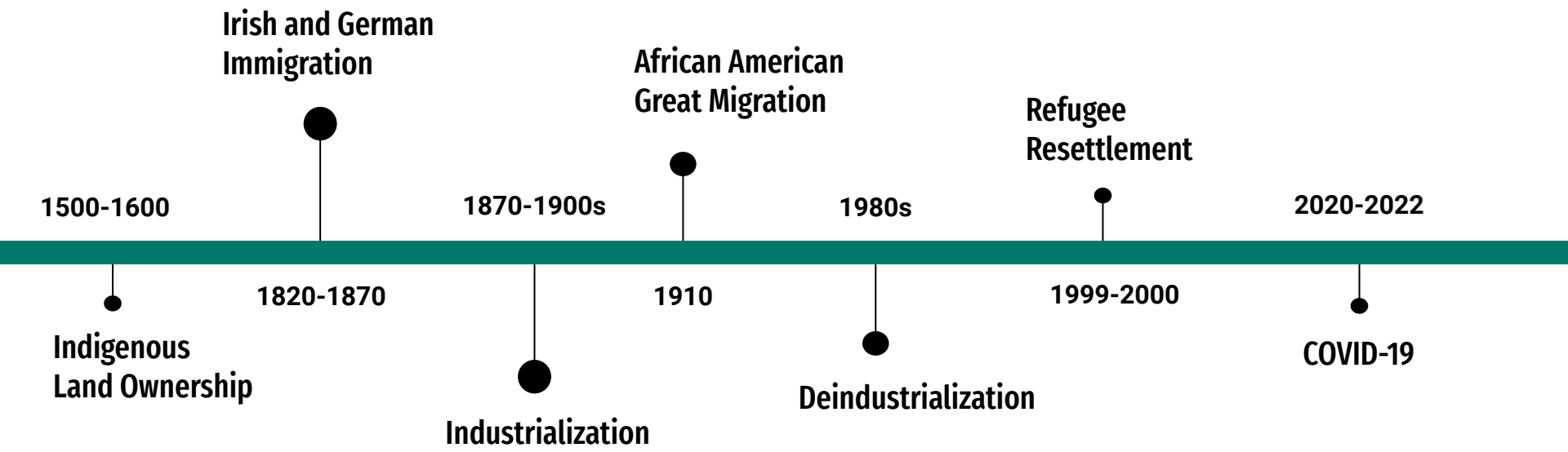
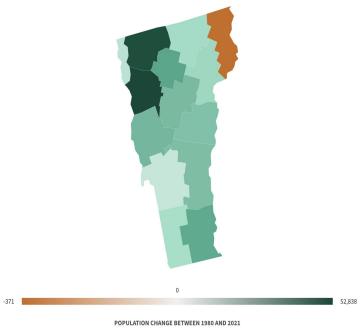
What has characterized the experience of migration in the Northeast?

Major Migration Events in New York

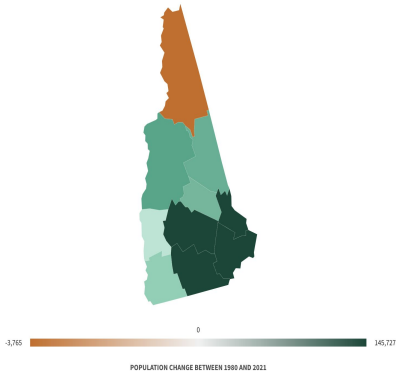


Migration is a Lifeline for Northeastern Communities

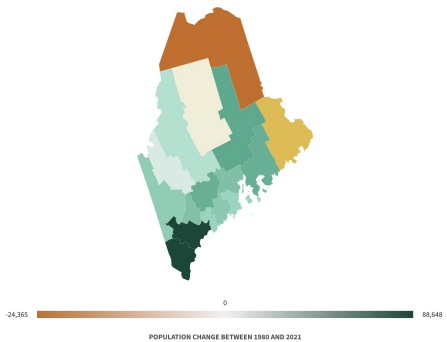
Vermont



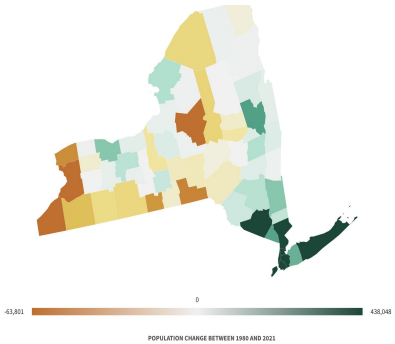
New Hampshire



Maine



New York



Population Change between 1980 and 2021

- Pop. Loss
- Largest Pop. Gain

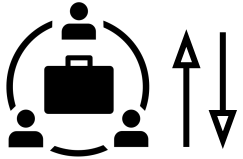
Domestic Migration:

Movement of populations that occurs during specified periods of time within the United States

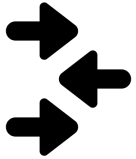
Challenges Receiving Communities Face

Displacement of local populations

Housing



Economic opportunities



Culture Clashes

All of these are challenges communities are currently dealing with and they will only be exacerbated by climate change

Case Study: Rochester

Puerto Rican in-migration mid-20th century & post-Hurricane Maria 2017

Economic opportunities, family ties, and political factors in 1960's were leading factors

Eventual successes

- Housing assistance
- Donations and fundraisers
- Language and education
- Job training and employment assistance

Puerto Rican Festival
Hector Pagan

The Children's School of Rochester

Case Study: Buffalo

Refugee in-migration in the late 20th and early 21st century

Refugee resettlement programs in Buffalo brought refugees from Southeast Asia, the Balkans, and the Middle East

“Refugee Renaissance”

Byaombe Swedy, assembles at Buffalo Wire Works
By Joed Viera

Maung Maung makes dim sum
By Jamie Germano

Case Study: Utica

Recent refugee in-migration

Refugee resettlement programs in Utica brought refugees from Myanmar, Somalia, and Syria

Successes:

- Increased demand for housing
- Job training programs
- English language and education programs
- “Welcoming City” initiative

Community education program for refugees
By The Center

Htay Oo Win at his grocery store
By Syracuse.com

	Displacement	Housing Improvement	Economic Opportunity	Cultural Clashes
Industrialization	✗	✗	✓	✓
African American Great Migration	✗	✗	✓	✓
Covid-19	✓	✗	✗	✓
Utica	✗	✓	✓	✓
Rochester	✗	✓	✓	✓
Buffalo	✗	✓	✓	✓

Migration Events

Case Studies

Takeaways

01

Climate migration is uncertain and difficult to project.
Communities have **agency** in how much to attract or resist in-migration.

02

In-migration inevitably creates tensions between existing working class residents, international refugees, wealthier amenity migrants. Cultural, class, religious, and **social differences underlie conflicts over jobs, housing, and land use, but are rarely discussed in planning**.

03

The region can learn from each other's experiences with retaining residents and attracting and living with in-migrants. Very little is known about migration programs' effectiveness and impact.

THANK YOU!

If you have follow up questions please feel free to reach out to:

Linda Shi - lindashi@cornell.edu - on NEST

Russell Weaver - rcweaver@cornell.edu - on PPG

Savings, Health & Comfort

Learn how to take advantage of Federal, New York State and utility incentives

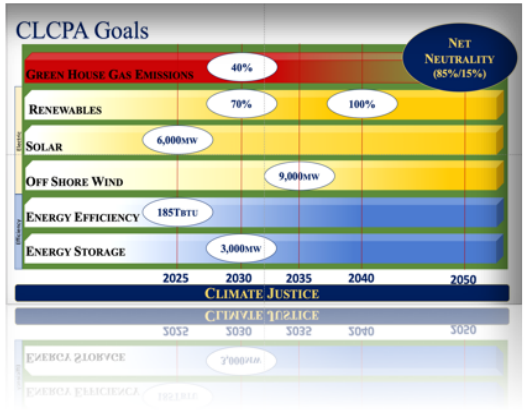
The Climate Reality Project®
NEW YORK STATE COALITION

Diane Stefani
Climate Reality Leader

Transformational Investment in Clean Energy, American Infrastructure and Jobs

NYS Legislation

Effective January 1,2020



Federal Level

New Administration is off and running…

IRA

Inflation Reduction Act

$369B for Climate Solutions

The 3 Uncles

BIL

BiPartisan Infrastructure Law

$1.2T for Infrastructure, Transportation, Public Transit, etc.

CHIP

US Chips and Science Act

$280B for Advanced Manufacturing and Research

The Climate Reality Project
New York State Coalition

Main Sources Of Greenhouse Gases in NYS

New York must reduce GHG emissions 85% by 2050

NEW YORK STATE | Department of Environmental Conservation

BUILDINGS

32%

TRANSPORTATION

28%

ELECTRICITY

13%

WASTE

12%

INDUSTRY

9%

AGRICULTURE

6%

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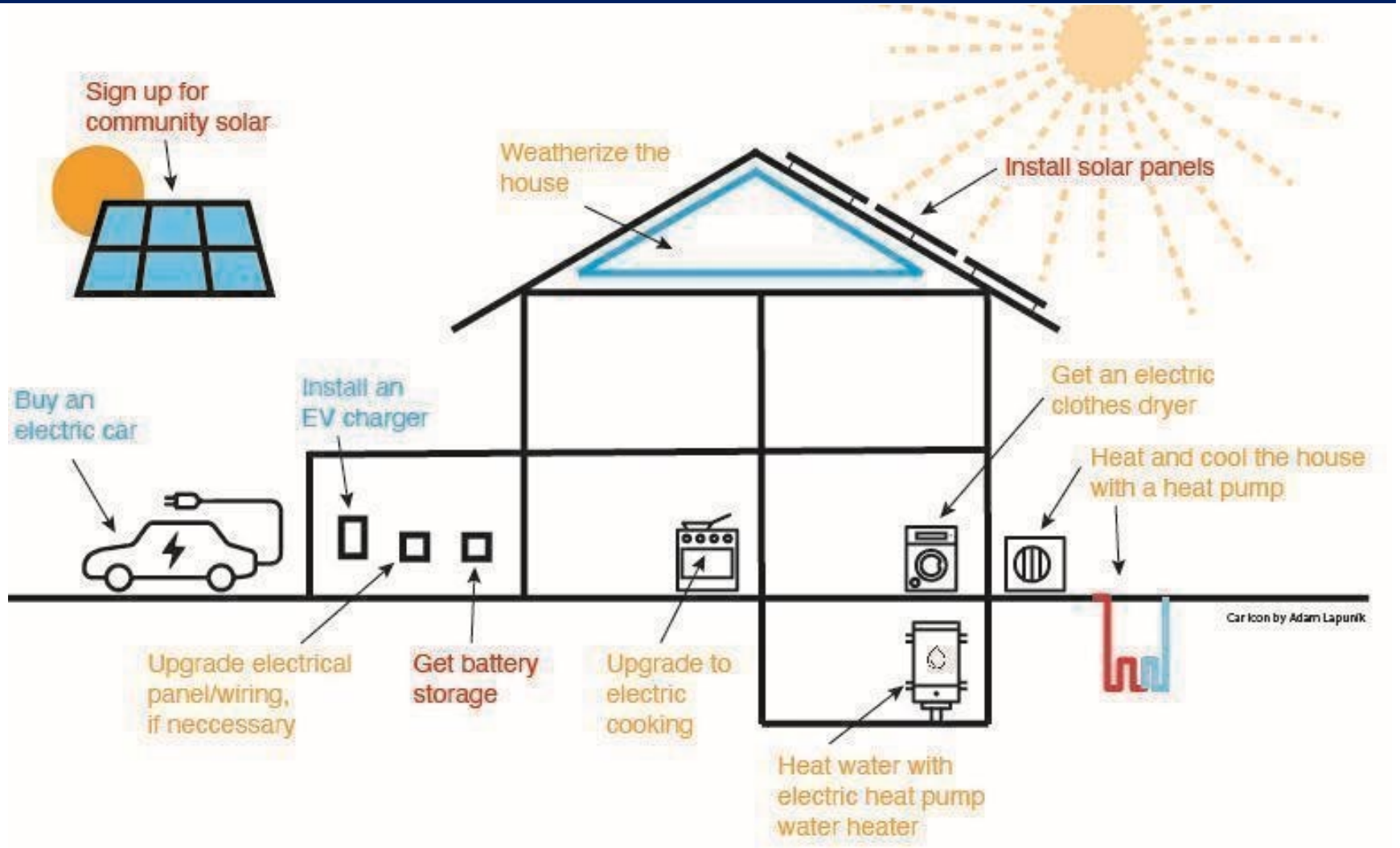
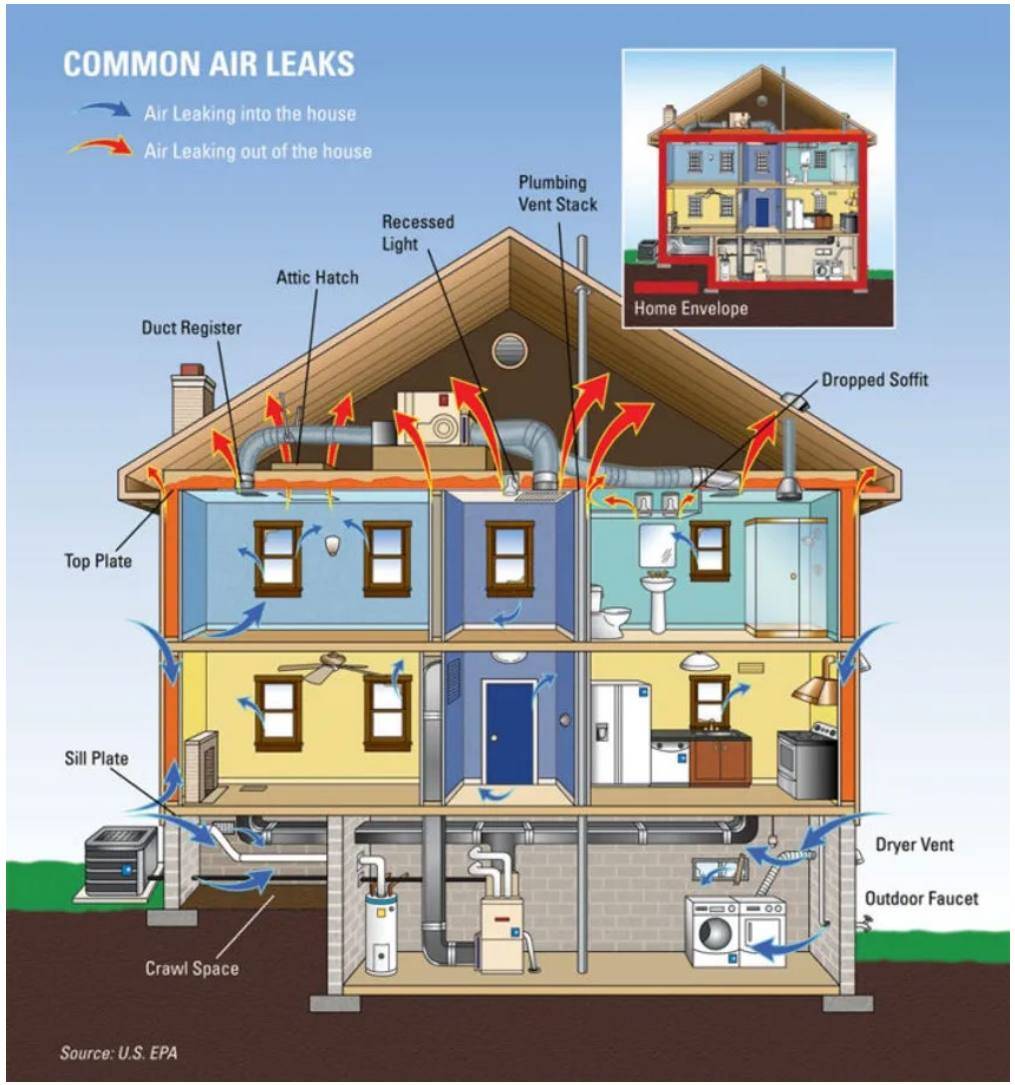
11 Ways to Be More Efficient and Less Wasteful

The Efficient Eleven	
1	Community Solar
2	Weatherize
3	Electric panel & wiring
4	Space Heating
5	Water Heating
6	Clothes Drying
7	Cooking
8	Electric Vehicle
9	EV Charging
10	Residential Solar
11	Battery Storage



Get a *free* energy audit!

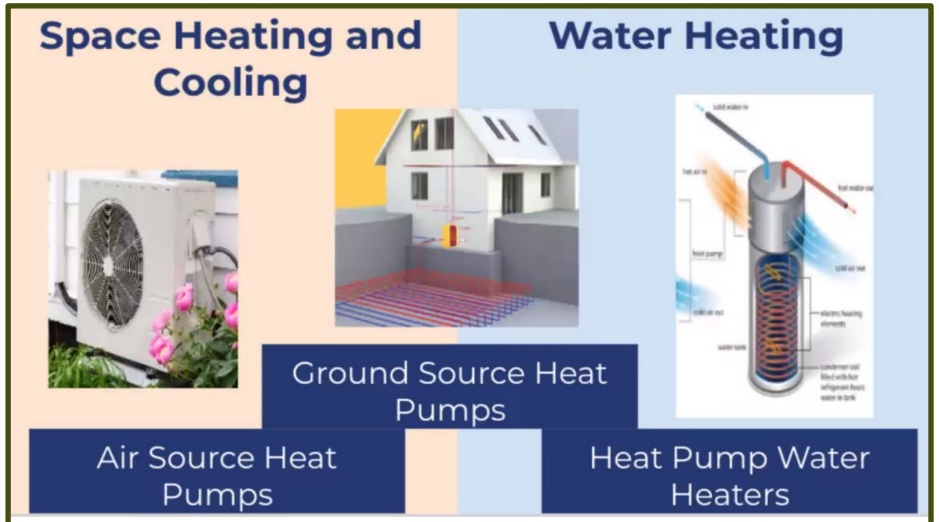


This is an essential step in making a long term heating and cooling plan for your home!

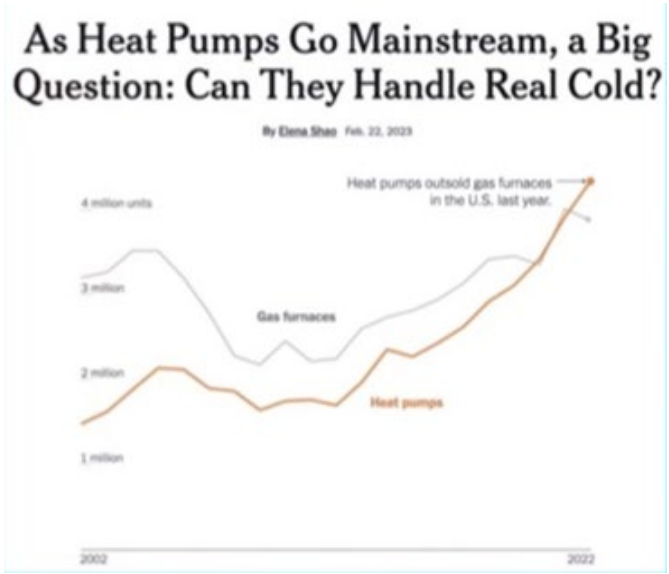
- Find out *exactly* where you are wasting energy.
- Get your home weatherized to reduce costly energy waste and improve the comfort of your home.
- There are a wide variety of IRA, New York State, and utility incentives available to help!
- Start here to find resources: https://www.nyserda.ny.gov/All-Programs/Residential-Energy-Assessment-Programs

The Climate Reality Project
New York State Coalition

Heat pump fact sheet



- HPs move heat as opposed to creating heat. Thus, they are more efficient AND can act as ACs.
- They are used for space and water heating (also clothes drying!)
- Geothermal HPs are more efficient but cost more up front than ASHPs



Modern cold climate air source heat pumps work well in Northern climates.

- Heat pumps outsold gas furnaces in the U.S. last year!
- One out of six homes in Maine now use heat pumps.
- Heat pumps are the primary heating source in Norway.

Don't be misled by:

- *Fossil fuel propaganda that they don't work in our climate.*
- *Contractors not up to date on heat pump technology.*

Renters

Renters can access all transport and solar incentives highlighted in this presentation.

Most home weatherization and electrification incentives are also available, check:

https://www.nyserda.ny.gov/All-Programs/Inflation-Reduction-Act

Consider Working With Your Landlord

- Let your landlord know about the IRA incentives.
- Encourage them to make changes.

Portable Equipment Options

You can purchase portable equipment:

- Inexpensive portable induction cooktops are available for under $100.
- Inverter window ACs use 1/3 to 1/2 the electricity of regular units.
- If your heating is not provided by the landlord to the whole building, efficient portable heat pump window units are also available at local big box stores.

Get the right contractors

- It is critical to work with a contractor experienced at installing current technology.
- NYSERDA certifies Clean Heat program contractors. You can find the list here.
- Other advice in choosing a contractor is to
  - Get three quotes on all major projects and tell them that you are getting three quotes
  - The quotes will give you options on how to proceed and useful insight into the contractors
  - Ensure that equipment meets efficiency standards
  - Ensure that all rebates are included

Some notes on federal tax credits and rebates

Federal Tax credits:

- Are in effect from this tax year through 2032.
- There are annual limits on credits for many categories, but the credits "reset" every year.
- So, you can split projects over more than one year to maximize the credits.
- There are no limits on total federal income tax credits given.
- *Consult a tax advisor before making decisions involving tax credits as the rules are complex.*

Federal Rebates:

- Administered by the state based on federal rules and will be available late 2023/early 2024. EV tax credits are available now and will be available as a rebate at the point of sale starting in 2024.
  - Ensure that rebates are included in your invoice before you commit to a project.
  - Funds for rebates are limited and could be used up quickly if not replenished.

Disclaimer: This deck provides an overview of certain IRA tax provisions for general informational purposes only and is not itself tax guidance. We strongly recommend consulting a tax professional to review your personal situation before making decisions related to the material presented here.

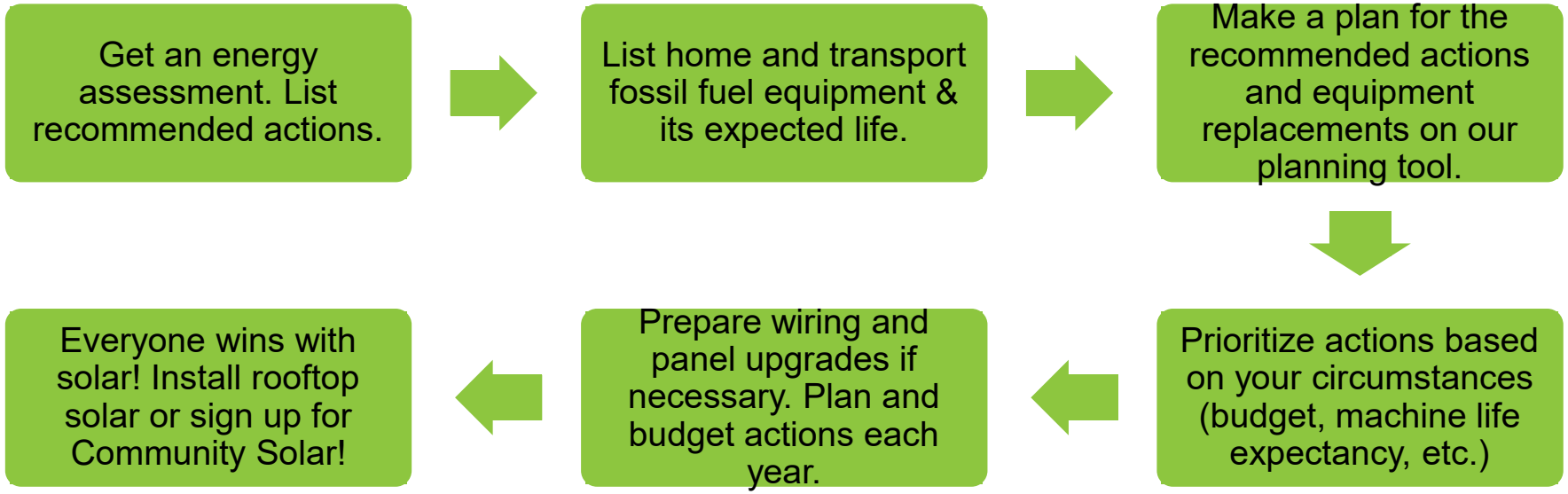
Incentives to Electrify

Notes:
§AMI = Area Median Income
** 25C provides households a 30% tax credit for an electrical panel upgrade, capped at $600: If it's upgraded in conjunction with another upgrade like a heat pump, it may be covered uncapped (25D).*
*** In 2023, the electric vehicle incentives will be accessible as tax credits. Starting in 2024, these incentives will be transferable to dealerships in exchange for upfront discounts.*
**** Not every household will be eligible for every incentive: product standards, income limits, and other eligibility requirements apply. For more information on the incentives, check out our calculator.*
***** Capital projects can avoid sales tax in New York State under certain circumstances*
****** NYS Weatherization Assisted Home Performance and NY EmPower are income tested.*

Federal & New York Incentives			US			New York		
			Upfront Rebate - LI <80% AMI§	Upfront Rebate - MI 80-150% AMI§	Tax Credit	Program	Rebate	Tax Credit ****
1	Electricity	Clean electricity				Community Solar (5-10%)		
2	Home	Weatherization	100% up to $1,600	50% up to $1,600	30% up to $1,200 per year (25C)			
			Whole House Rebate Program up to $8,000 - rules not issued			REAP Assessment Comfort Home Assisted Home Perf. NY EmPower ConEd Weatherization		
3	Home	Electrical wiring (pre-wire outlets early!)	100% up to $2,500	50% up to $2,500				
		Electrical panel (if under 100-amps)	100% up to $4,000	50% up to $4,000	30% up to $600 (25C) or 30% uncapped (25D) *			
4	Home	Air Source Heat pump	100% up to $8,000	50% up to $8,000	30% up to $2,000 per year (25C)		Clean Heat (by utility) Significant $ per BTU	
4 5	Home	Geothermal heat pump			30% uncapped (25D)		Clean Heat (by utility) Significant $ per BTU	25% up to $5,000
5	Home	Heat pump water heater	$100% up to $1,750	50% up to $1,750	30% up to $2,000 (25C)		Clean Heat (by utility) $700 - $1,000	
6	Home	Electric/induction stove	100% up to $840	50% up to $840				
7	Home	Heat pump clothes dryer	100% up to $840	50% up to $840				
	Home	Other				Utility TOU Utility Demand Response Utility Marketplaces NYS Financing Sealed		
8	Transport	New EV			$7,500 (30D) **			Clean Drive: $500 - $2,000
		Used EV			30% up to $4,000 (25E) **			
9	Transport	EV Charger			30% up to $1,000 in rural & LI Communities (30C)	Utility EV Charging		
10	Electricity	Residential solar			30% uncapped (25D)		NYSERDA NY-Sun	25% up to $5,000
11	Electricity	Battery Storage			30% uncapped (25D)			

Planning helps you tackle this multi-step project

- Over the next decade most of us will need to replace some of our heating and cooling equipment, appliances or a vehicle.
- The IRA, NY State & utilities offer significant financial incentives to replace such items with more efficient electrified ones that are usually cheaper up front and cheaper to run.
- To take advantage of these incentives, it's best to create a plan!



Individual planning worksheet

Factors to consider	1. Community solar	Home energy audit	2. Weatherization	3. Electric Panel & Wiring	4. Heat pump space heating	5. Heat pump water heating	6. Electric (induction) cooking	7. Electric (heat pump) clothes drying	8. Electric Vehicle	9. EV Charger	10. Residential Solar	11. Battery Storage
Do I have control over this as a renter/homeowner/co-op or condo owner?												
Benefits of making this change												
Electrical Upgrade Required? *					At Install	Maybe	Yes (non-portable units)	Maybe		Yes	At Install	
Usual life in years *				20-25	15-20	10-15	13-15	10-13	20-25	10-15	20-30	5-15
Is the appliance or system near the end of its life?												
Federal incentives available to me												
State incentives available to me												
Utility incentives available to me												
Cost compared to fossil fuel alternative												
Anticipated Date to begin making this change												

*Source: [Rewiring America Electrification Planning Chart]

Join The Climate Reality Project!

- The Climate Reality Project was founded in 2006 by former VP Al Gore to teach people how to educate about the climate crisis and to organize to take action.
- There are about 50,000 trained leaders around the world and about 2,000 in New York.

Ways to get involved:

- Join a chapter here.
- Join the next training here.
- Want to help spread the word on electrification? Join Our Climate moment here.

Questions?

Resources

Resources:

- RA's "IRA Savings Calculator": https://www.rewiringamerica.org/app/ira-calculator
- RA's "Guide to the Inflation Reduction Act": https://www.rewiringamerica.org/IRAguide
- RA's "Electrifying Everything in Your Home": https://www.rewiringamerica.org/electrify-home-guide
- All NYSERDA Programs: https://www.nyserda.ny.gov/All-Programs
- NY guide to IRA savings: https://www.nyserda.ny.gov/Featured-Stories/NYS-Guide-to-Inflation-Reduction-Act-Savings
- Energy Star Appliances: https://www.energystar.gov/products/most_efficient
- DOE Energy Saver Guide: https://www.energy.gov/sites/default/files/2022-08/energy-saver-guide-2022.pdf
- Area Median Income: https://www.huduser.gov/portal/datasets/il/il2023/2023summary.odn

Support Organizations:

- NYSERDA Regional Clean Energy Hubs: https://www.nyserda.ny.gov/All-Programs/Regional-Clean-Energy-Hubs
- Free NYCP Energy Coaches: https://nyforcleanpower.org/cleanenergycoaching/
- NYC Accelerator: https://accelerator.nyc

Partner Sustainability Work Overview and Discussion

The Broome County Planning Department

The Village of Johnson City Planning Department

Southern Tier 8 Regional Board

BROOME COUNTY
DEPARTMENT OF PLANNING – BUILDING OUR FUTURE

JOHNSON CITY
Incorporated 1892
New York

CCE BROOME

SOUTHERN TIER 8
ACTIVE REGIONAL NOW

Tentative Session Topics

- Southern Tier Energy Systems
- Clean Energy Economies
- Green Buildings
- Solid Waste Management
- Flood Resiliency
- Sustainable Food Systems
- Land Conservation
- Smart Growth
- Transportation

Are other topics or presenters you would like us to include?