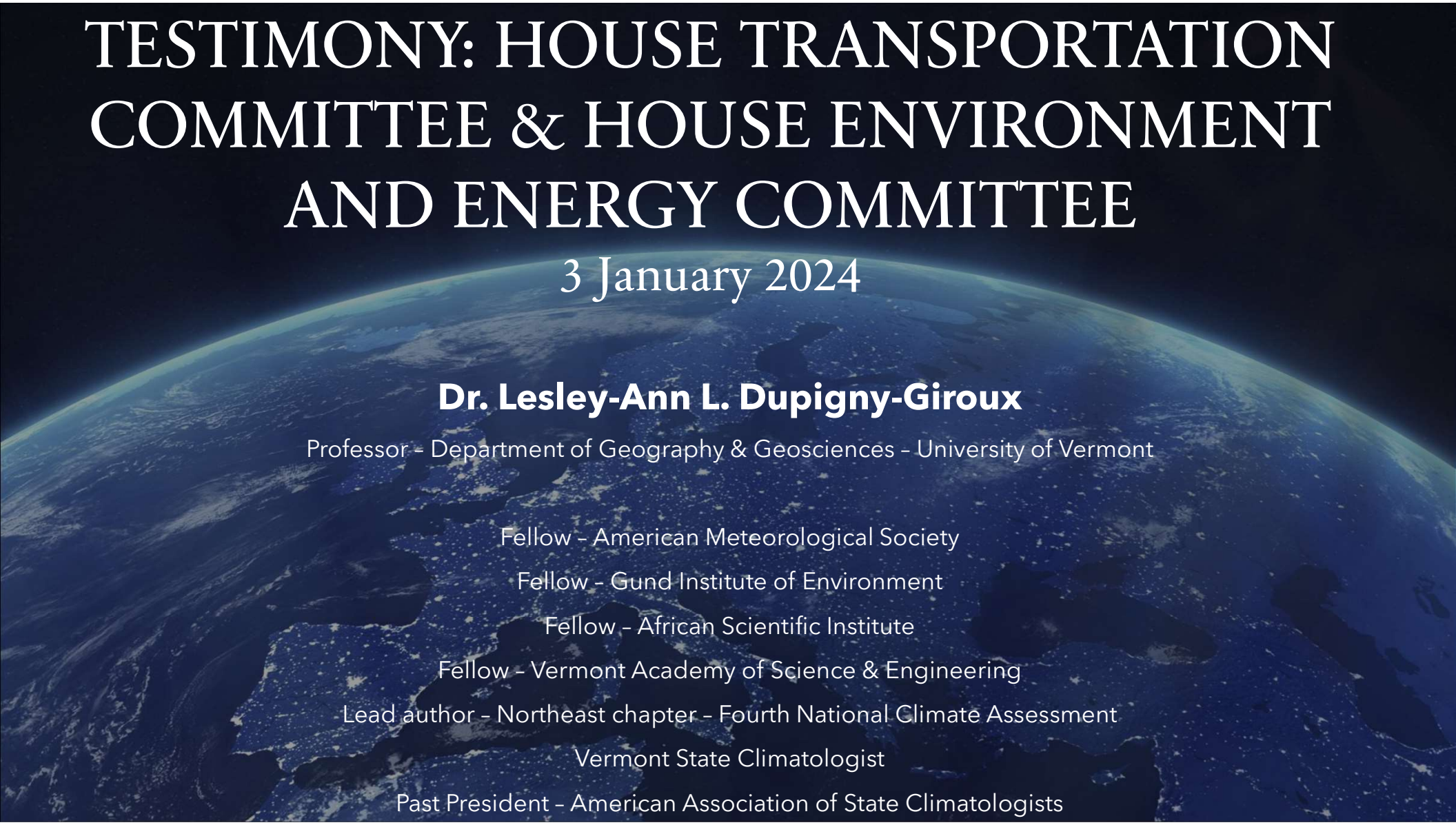


TESTIMONY: HOUSE TRANSPORTATION COMMITTEE & HOUSE ENVIRONMENT AND ENERGY COMMITTEE

3 January 2024

Dr. Lesley-Ann L. Dupigny-Giroux

Professor – Department of Geography & Geosciences – University of Vermont

Fellow – American Meteorological Society

Fellow – Gund Institute of Environment

Fellow – African Scientific Institute

Fellow – Vermont Academy of Science & Engineering

Lead author – Northeast chapter – Fourth National Climate Assessment

Vermont State Climatologist

Past President – American Association of State Climatologists

Our conversation today

natural hazards in Vermont

variability

- climate change AND climate variability

vulnerability

- human
- socioeconomic
- landscape

voice

- Who is at the ‘table’ & who is missing?

What sectors are vulnerable to climate change?

infrastructure

emergency management

human health

forestry

agriculture

tourism & recreation

Dr. L-A. Dupigny-Giroux

Hydroclimatic hazards in Vermont

severe storms

winter storms

drought

flooding

fires

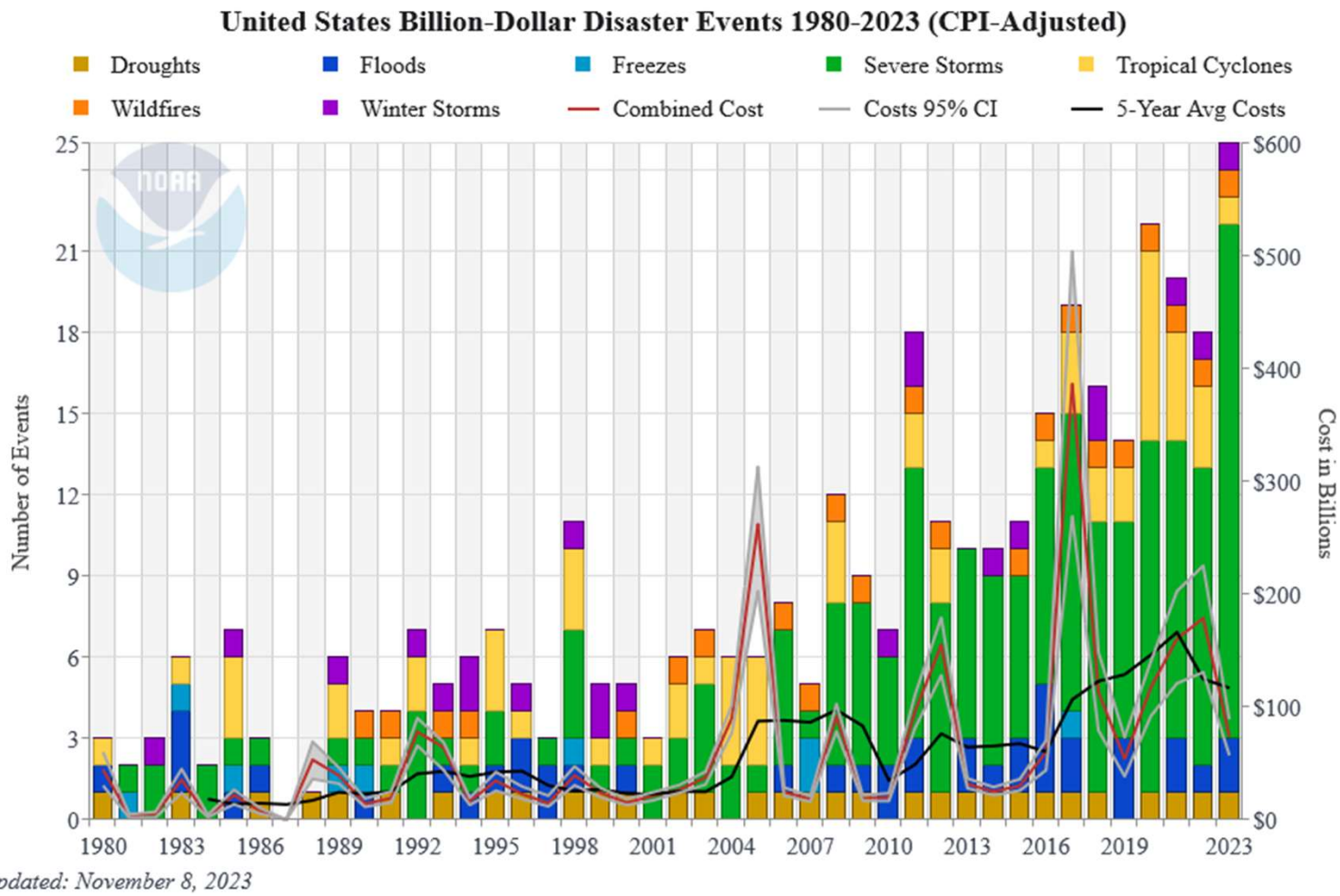
air pollution

temperature extremes

wind
- microbursts
- shirkshires

biotic
- insects
- disease

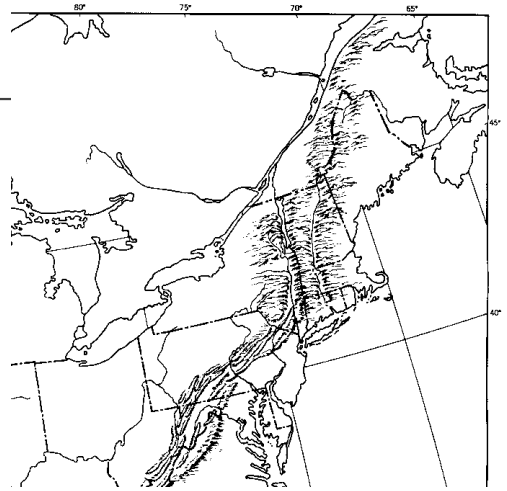
https://www.ncdc.noaa.gc
billions/time-series

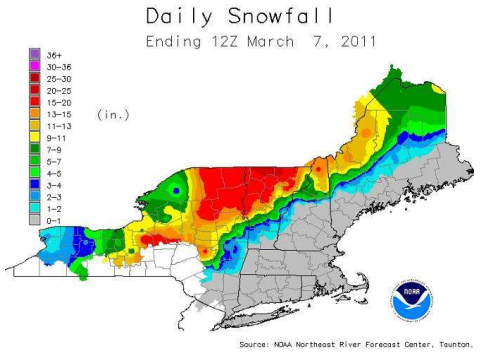


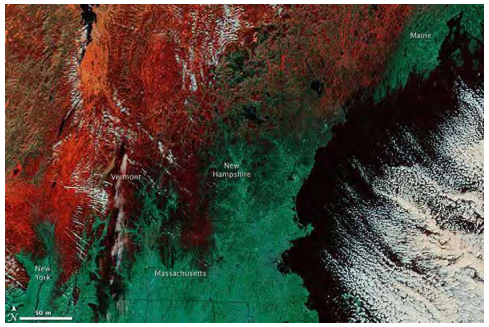
"In 2018, there were 14 separate billion-dollar weather and climate disaster events across the United States, with a total cost of $91 billion. The total cost over the last 3 years (2016-2018) exceeds **$450 billion**- averaging **$150 billion/year**. The total cost over the last 5 years (2014-2018) is approximately **$500 billion** - averaging **$100 billion/year**, as indicated by the black line below."

Why is Vermont so hazard-prone?

Topography plays a major influence







moisture diverted along the western flank of the Appalachian mountains

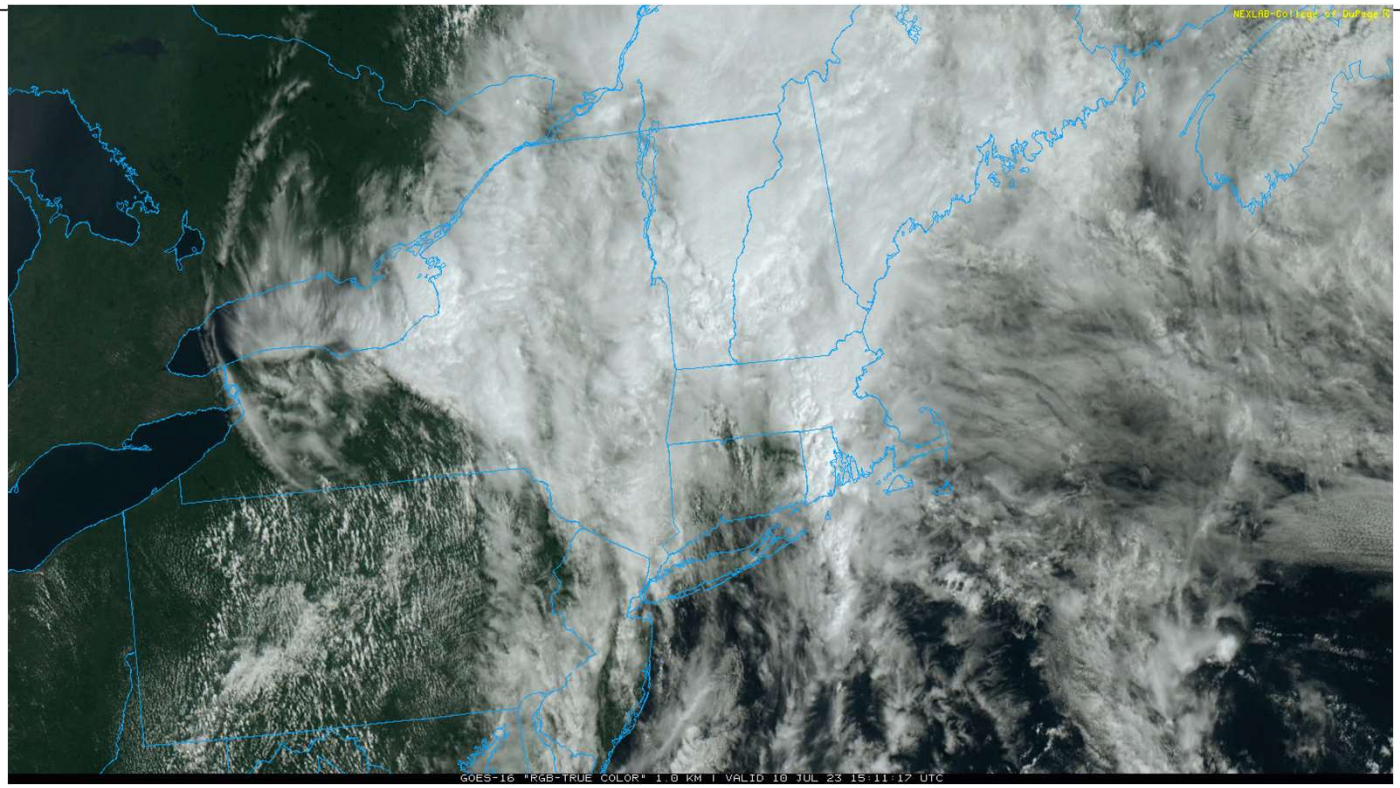
Green Mountains allow cold, dense air to accumulate in valleys

- Champlain
- St. Lawrence

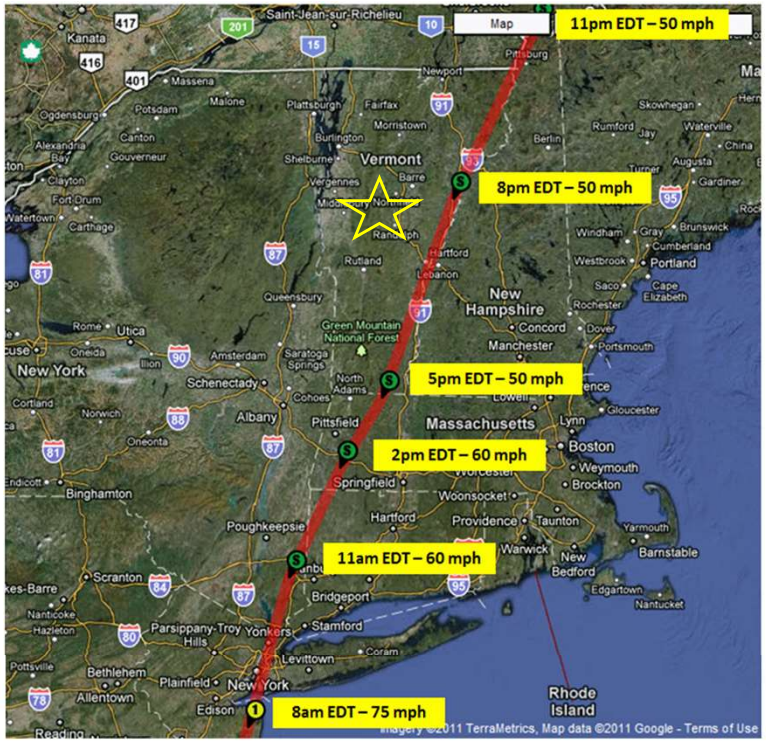
Dr. L-A. Dupigny-Giroux

New England ice storm 11-12 Dec 2008

10 July 2023



Irene's Path – 28 August 2011



COURTESY: PAUL SISSON (NWS/BTV) WWW.WEATHER.GOV/BTV LAKE CHAMPLAIN FLOOD CONFERENCE 4 JUNE 2012

IRENE 2011
Flood Aftermath
(Paul Sisson – NWS/BTV)

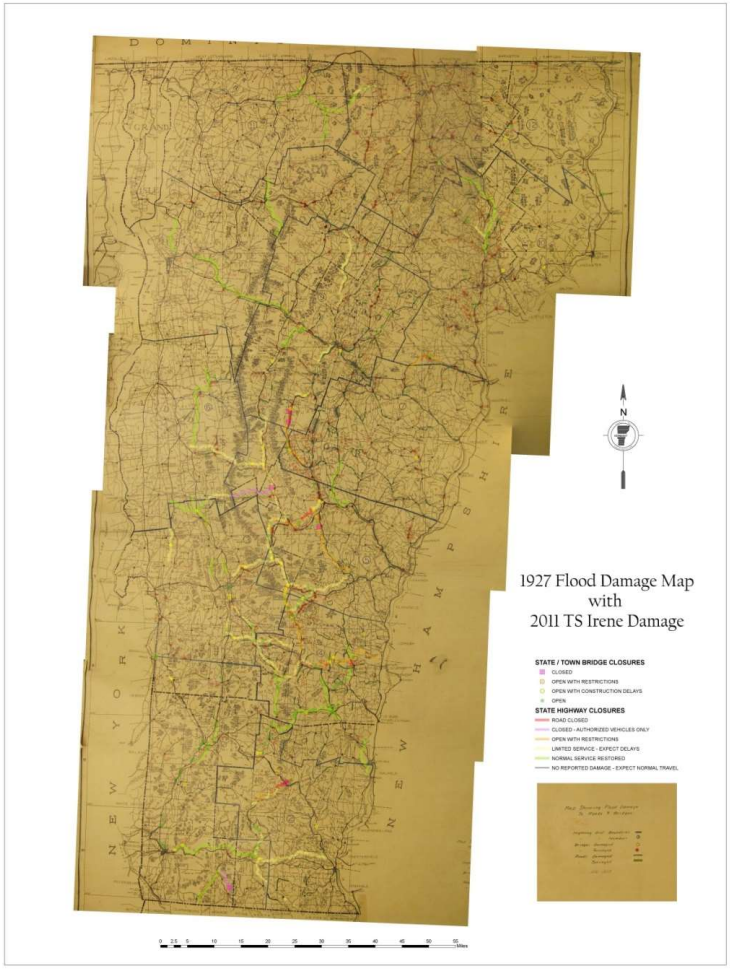




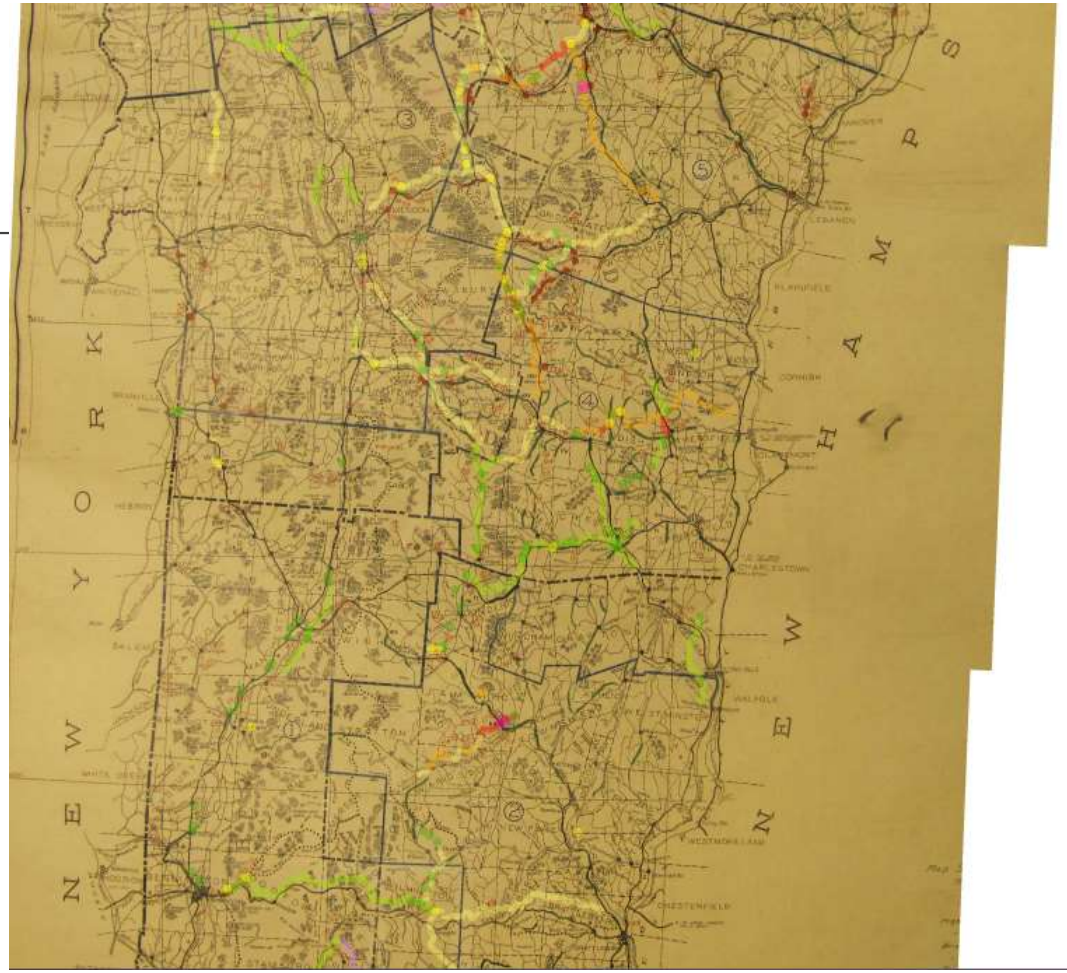




Photos courtesy of BTV Free Press and Mansfield Heliflight



Courtesy: Johnathan Croft, VTrans



1927 Flood Damage Map with 2011 TS Irene Damage

STATE / TOWN BRIDGE CLOSURES

- CLOSED
- OPEN WITH RESTRICTIONS
- OPEN WITH CONSTRUCTION DELAYS
- OPEN

STATE HIGHWAY CLOSURES

- ROAD CLOSED
- CLOSED - AUTHORIZED VEHICLES ONLY
- OPEN WITH RESTRICTIONS
- LIMITED SERVICE - EXPECT DELAYS
- NORMAL SERVICE RESTORED
- NO REPORTED DAMAGE - EXPECT NORMAL TRAVEL

Courtesy: Johnathan Croft, VTrans

Juxtaposition of rivers & roads takes a toll on infrastructure

Dr. L-A. Dupigny-Giroux

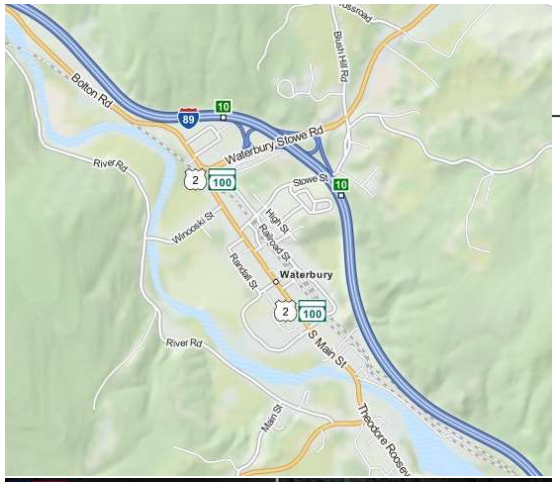


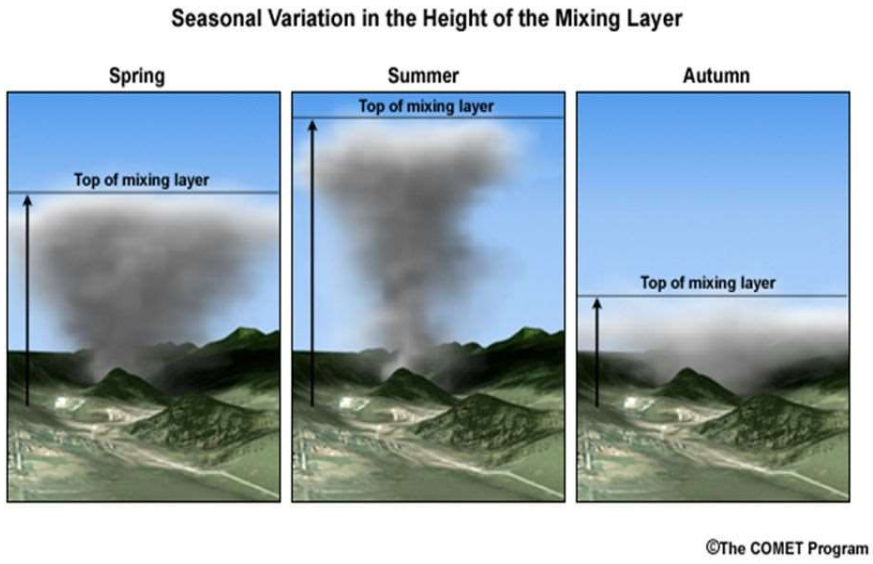
Photo credit: NWS/BTV

Montgomery flooding - July 1997

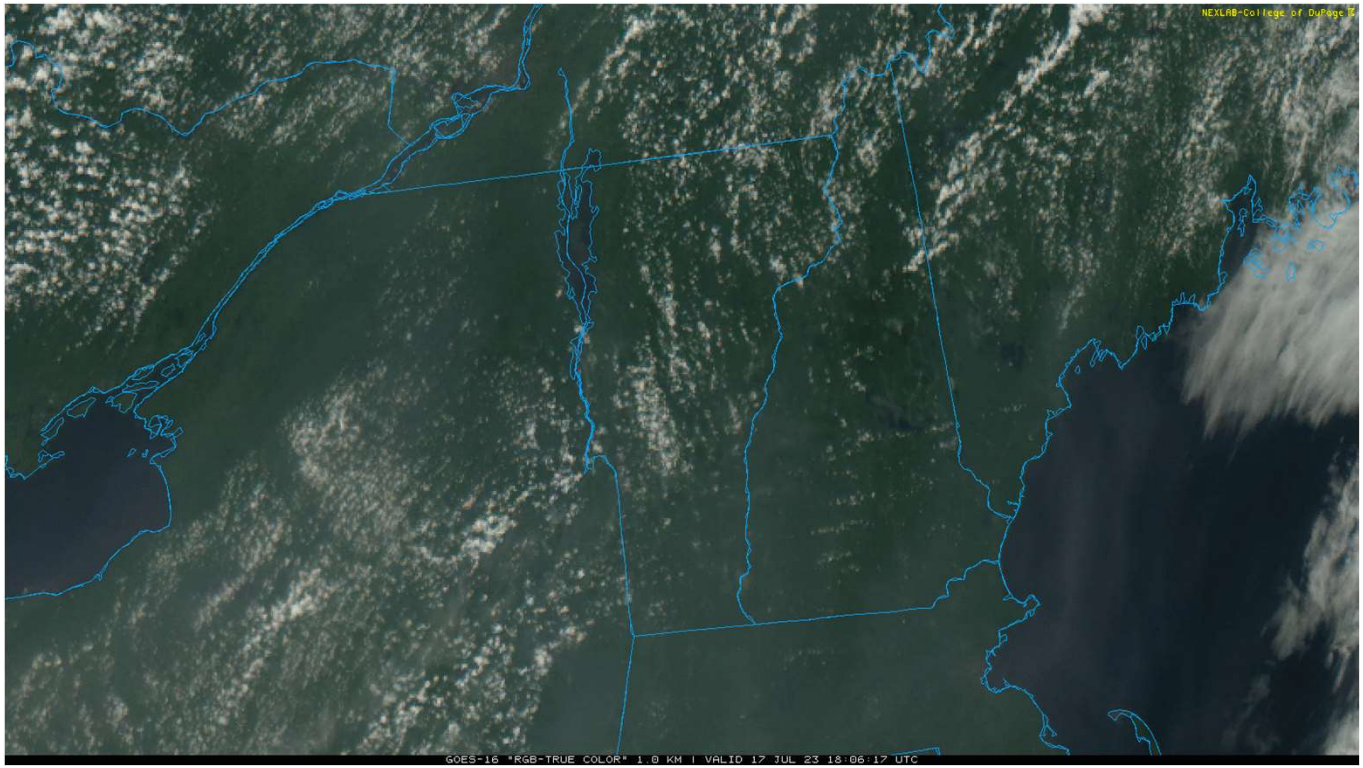
- repeat occurrences in preferred locations
  - Jay Peak, Route 100

Air quality

Our geography matters (Green Mountains)



Wildland fire smoke – 17 July 2023

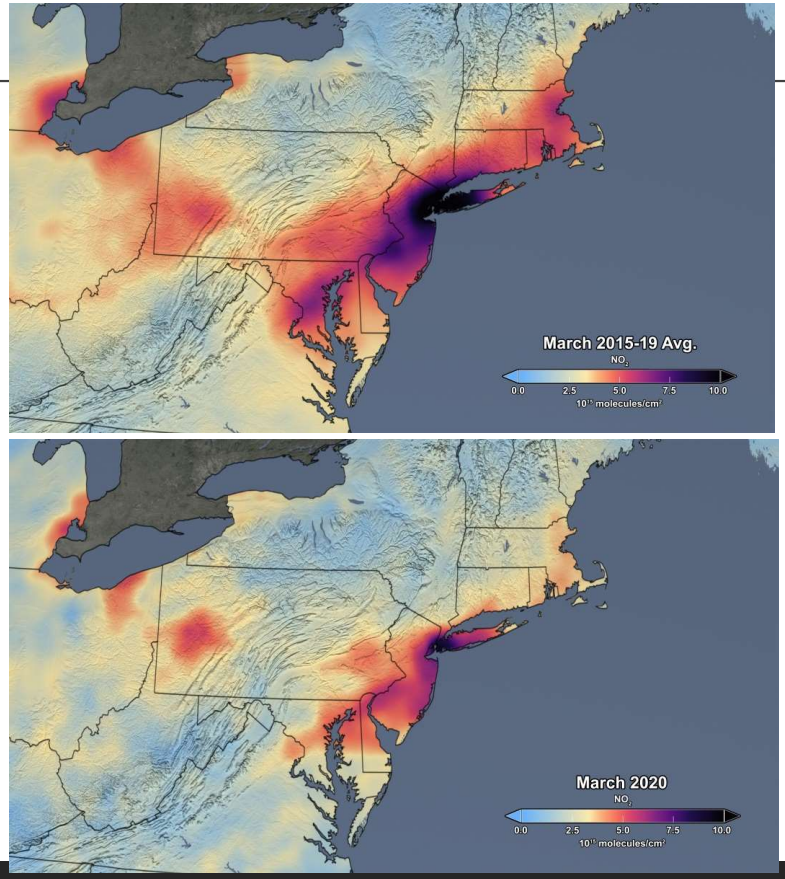


April 9, 2020

NASA Satellite Data Show 30 Percent Drop In Air Pollution Over Northeast U.S.

Over the past several weeks, NASA satellite measurements have revealed significant reductions in air pollution over the major metropolitan areas of the Northeast United States. Similar reductions have been observed in other regions of the world. These recent improvements in air quality have come at a high cost, as communities grapple with widespread lockdowns and shelter-in-place orders as a result of the spread of COVID-19.

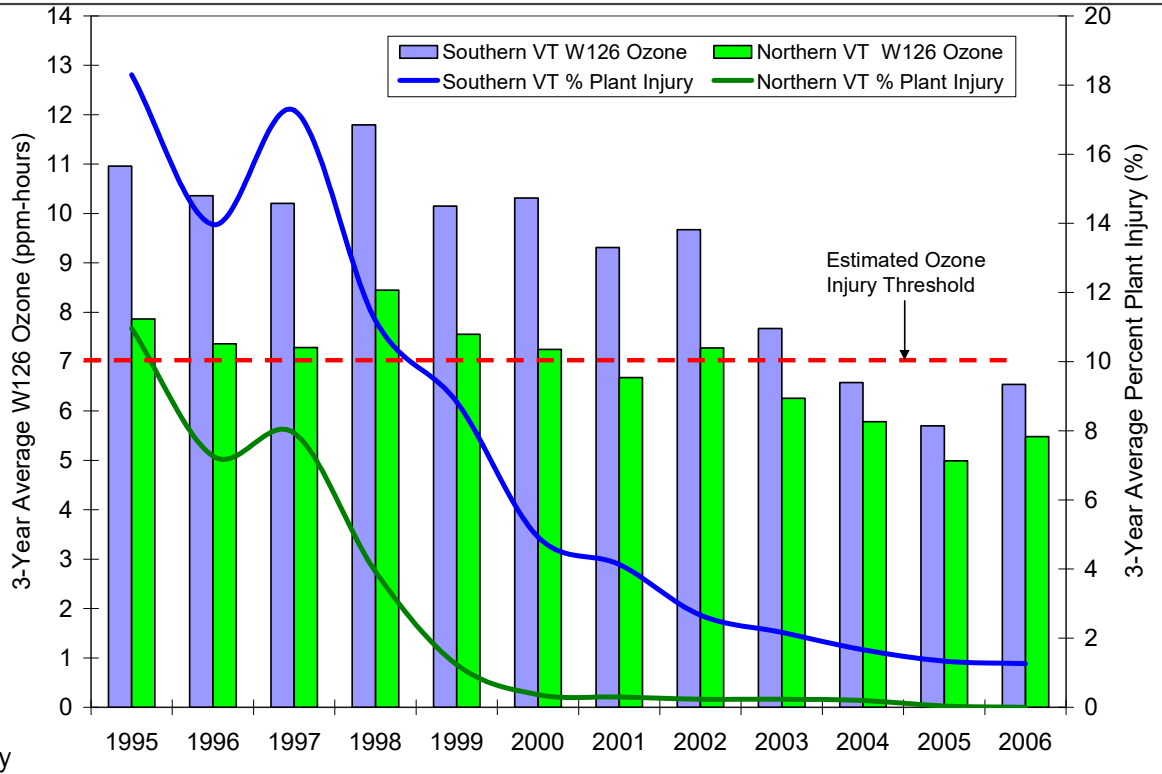
https://www.nasa.gov/feature/goddard/2020/drop-in-air-pollution-over-northeast



Courtesy: NASA OMI

"March 2020 shows the lowest monthly atmospheric nitrogen dioxide levels of any March during the OMI data record, which spans 2005 to the present. In fact, the data indicate that the nitrogen dioxide levels in March 2020 are about 30% lower on average across the region of the I-95 corridor from Washington, DC to Boston than when compared to the March mean of 2015-19. Further analysis will be required to rigorously quantify the amount of the change in nitrogen dioxide levels associated with changes in emissions versus natural variations in weather."

Three-Year Average Trends in Ozone Pollution & Plant Injury in Northern & Southern VT



Courtesy R. Poirot – VT ANR/Air Quality

Dr. L-A. Dupigny-Giroux

Human health

hot weather (87 °F)

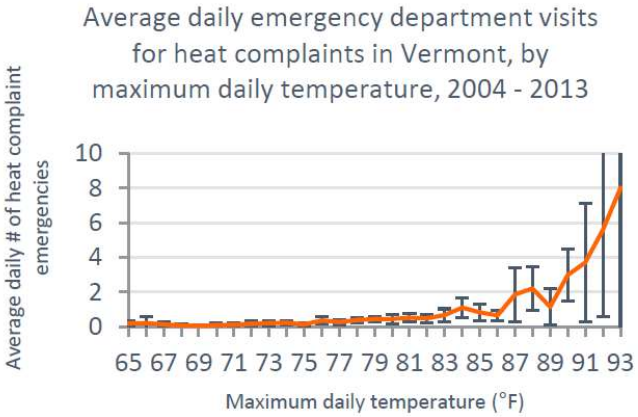
vulnerable populations

rising low temperatures

Lyme disease

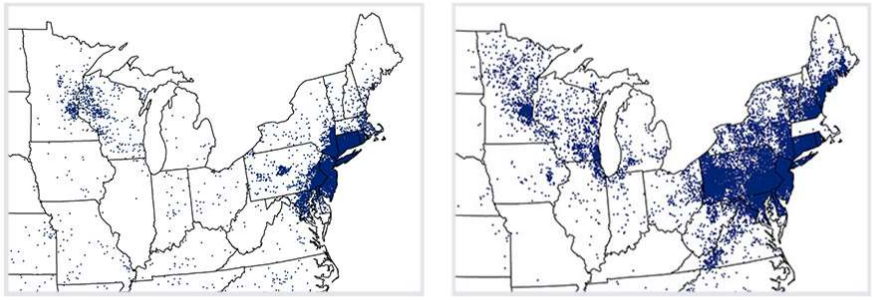
ground-level ozone

climate refugees



Data sources: temperature data - PRISM Climate Group, in partnership with the Vermont State Climate Office; emergency department data - Early Aberration Reporting System (EARS).

Reported Lyme Disease Cases in 1996 and 2018



1996 **2018**

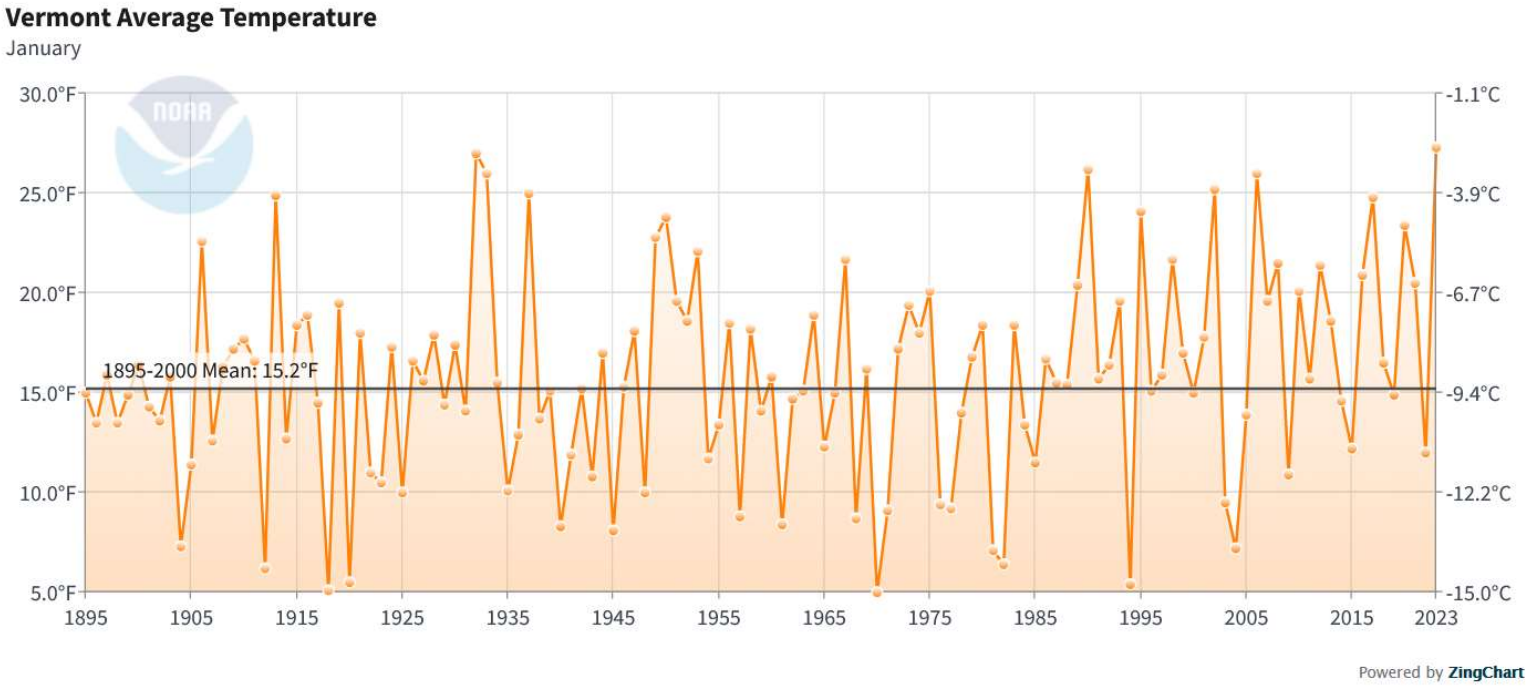
Data source: CDC (Centers for Disease Control and Prevention). 2019. Lyme disease maps: Historical data. Updated November 22, 2019. Accessed January 2021. www.cdc.gov/lyme/stats/maps.html.

For more information, visit U.S. EPA's "Climate Change Indicators in the United States" at www.epa.gov/climate-indicators.

https://www.epa.gov/sites/default/files/2021-04/lyme_download-map_2021.png

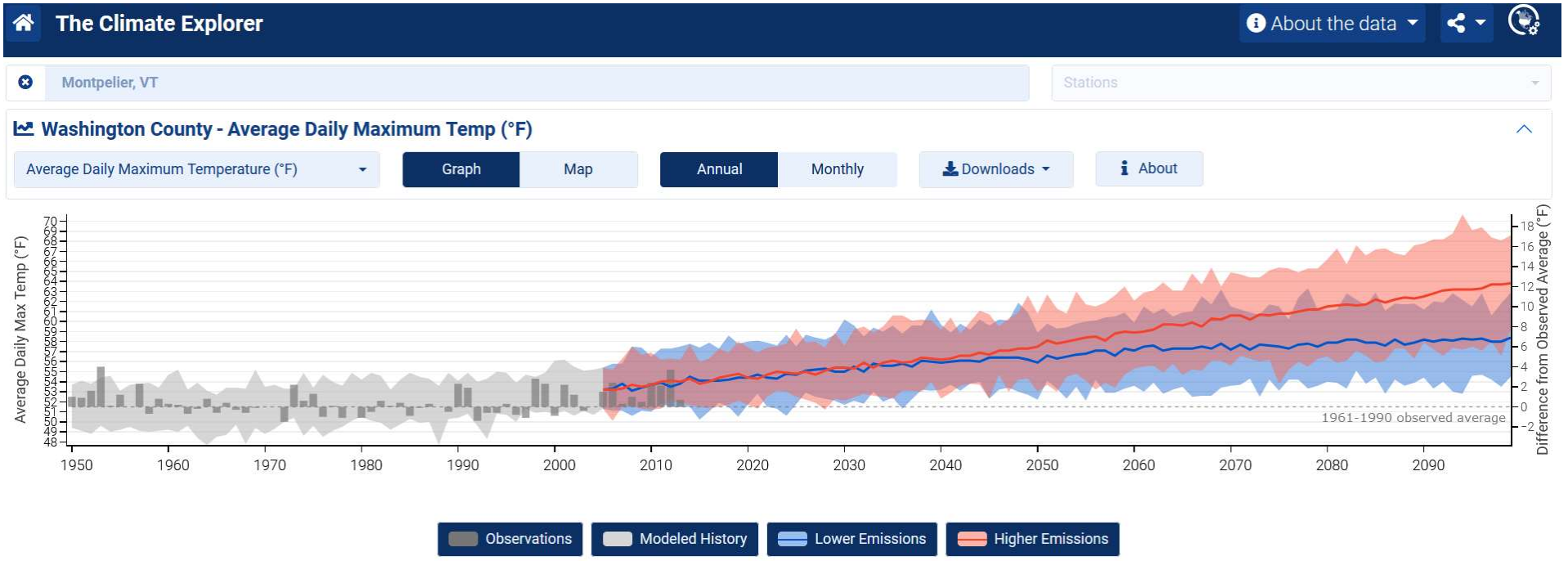
Warm AND cold temperatures are important

January 2023 was the warmest January since 1895



https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/statewide/time-series/43/tavg/1/1/1895-2023?base_prd=true&begbaseyear=1895&endbaseyear=2000

Climate change for Montpelier



https://crt-climate-explorer.nemac.org/

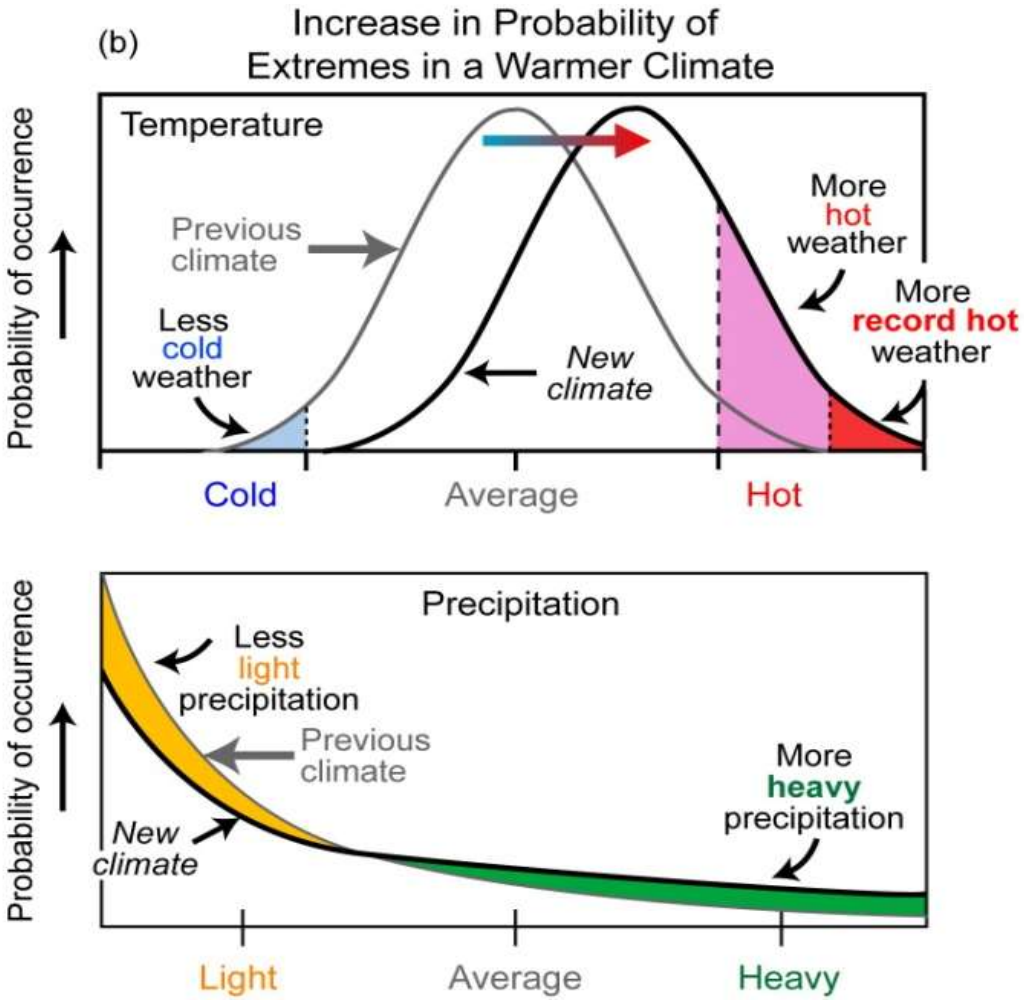
Photo credit: L-A. & M. Dupigny-Giroux

Backward spring

- low temperatures in January – June
- land-locked stations colder
- winter freeze/thaw cycles – predictor
- snow, freezing rain – April to June
- summer killing frosts
- summer drought
- NW flow

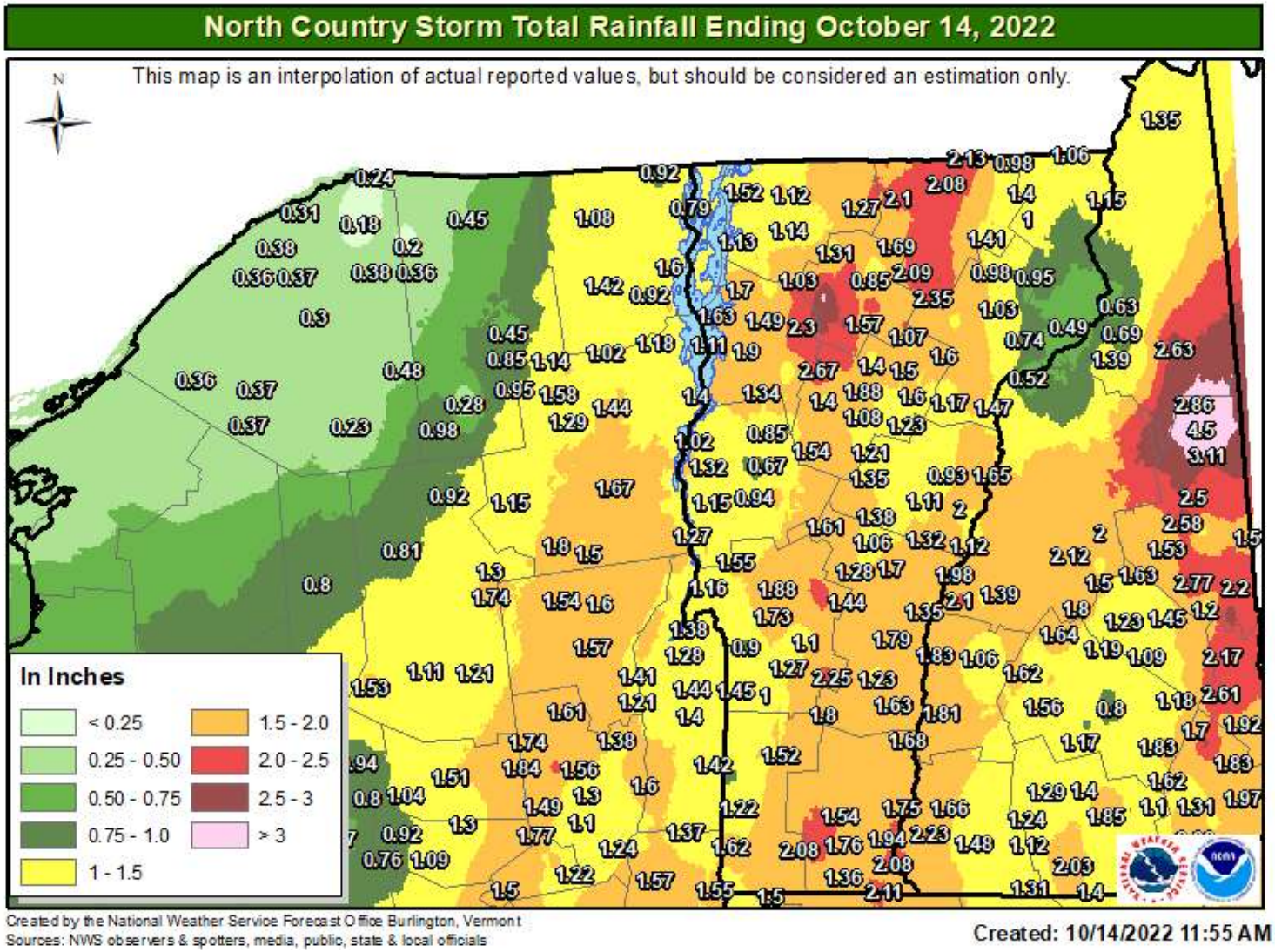
Dupigny-Giroux, L.-A. (2009) "Backward seasons, droughts and other bioclimatic indicators of variability," in Historical climate variability and impacts in North America, Lesley-Ann Dupigny-Giroux and Cary Mock (Editors), Springer Publishers, pp.231-250.


Too much moisture AND too little



A warmer world increases the probability of extreme events

Courtesy: David Herring, NOAA

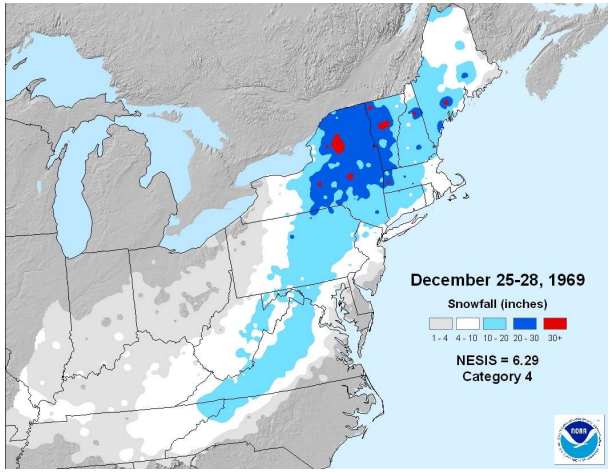

North Country Storm Total Rainfall Ending October 14, 2022
This map is an interpolation of actual reported values, but should be considered an estimation only.
N
In Inches
< 0.25
0.25 - 0.50
0.50 - 0.75
0.75 - 1.0
1 - 1.5
1.5 - 2.0
2.0 - 2.5
2.5 - 3
> 3
Created by the National Weather Service Forecast Office Burlington, Vermont
Sources: NWS observers & spotters, media, public, state & local officials
Created: 10/14/2022 11:55 AM

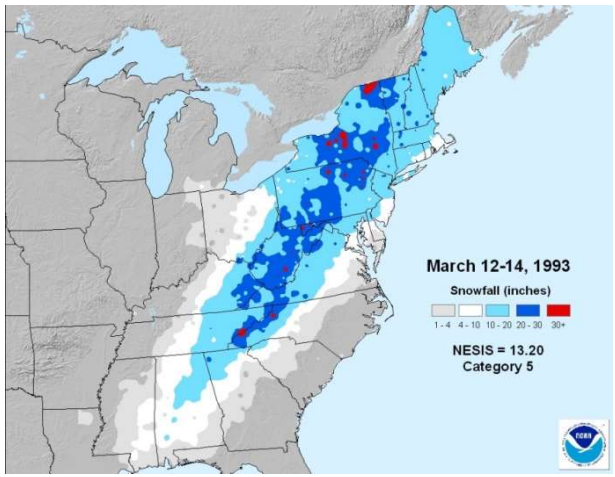
Northeast Snowfall Impact Scale (NESIS)

http://www.ncdc.noaa.gov/monitoring-content/snow-and-ice/rsi/nesis/19930312-19930314-13.20.jpg

Table 2: *Ranks 88 high-impact snowstorms that affected the Northeast urban corridor.*

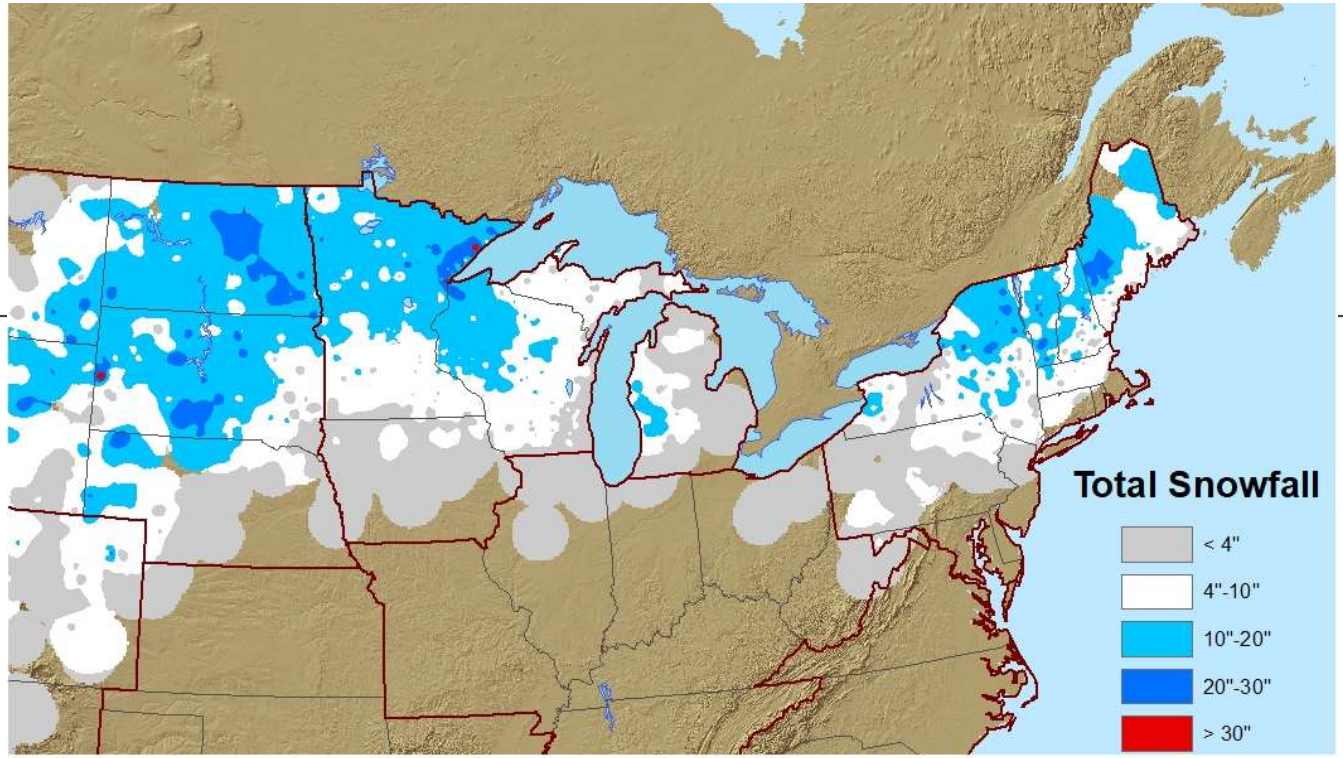
Rank	Start	End	NESIS	Category	Description	Map
1	1993-03-12	1993-03-14	13.20	5	Extreme	March 12-14, 1993
2	1996-01-06	1996-01-08	11.78	5	Extreme	January 6-8, 1996
3	1960-03-02	1960-03-05	8.77	4	Crippling	March 2-5, 1960
4	2022-12-13	2022-12-20	8.52	4	Crippling	December 13-20, 2022
5	2016-01-22	2016-01-24	7.66	4	Crippling	January 22-24, 2016
6	2003-02-15	2003-02-18	7.50	4	Crippling	February 15-18, 2003
7	1961-02-02	1961-02-05	7.06	4	Crippling	February 2-5, 1961
8	1964-01-11	1964-01-14	6.91	4	Crippling	January 11-14, 1964
9	2005-01-21	2005-01-24	6.80	4	Crippling	January 21-24, 2005
10	1978-01-19	1978-01-21	6.53	4	Crippling	January 19-21, 1978
11	1969-12-25	1969-12-28	6.29	4	Crippling	December 25-28, 1969
12	1983-02-10	1983-02-12	6.25	4	Crippling	February 10-12, 1983
13	1958-02-14	1958-02-17	6.25	4	Crippling	February 14-17, 1958
14	1966-01-29	1966-01-31	5.93	3	Major	January 29-31, 1966
15	1978-02-05	1978-02-07	5.78	3	Major	February 5-7, 1978
16	2007-02-12	2007-02-15	5.63	3	Major	February 12-15, 2007
17	2010-02-23	2010-02-28	5.46	3	Major	February 23-28, 2010
18	2015-01-29	2015-02-03	5.42	3	Major	January 29 - February 3, 2015
19	1987-01-21	1987-01-23	5.40	3	Major	January 21-23, 1987
20	1994-02-08	1994-02-12	5.39	3	Major	February 8-12, 1994
21	2011-01-09	2011-01-13	5.31	3	Major	January 9-13, 2011
22	2011-02-01	2011-02-03	5.30	3	Major	February 1-3, 2011
23	2014-02-11	2014-02-14	5.28	3	Major	February 11-14, 2014
24	2017-03-12	2017-03-15	5.03	3	Major	March 12-15, 2017
25	2021-01-30	2021-02-03	4.93	3	Major	January 30 - February 3, 2021
26	2010-12-24	2010-12-28	4.92	3	Major	December 24-28, 2010





www.weather.gov/btv

https://www.ncdc.noaa.gov/snow-and-ice/rsi/nesis



December 13 - 20, 2022
NESIS = 8.52
Category 4

National Centers for Environmental Information

https://www.ncei.noaa.gov/monitoring-content/snow-and-ice/rsi/nesis/20221213-20221220-8.52.jpg

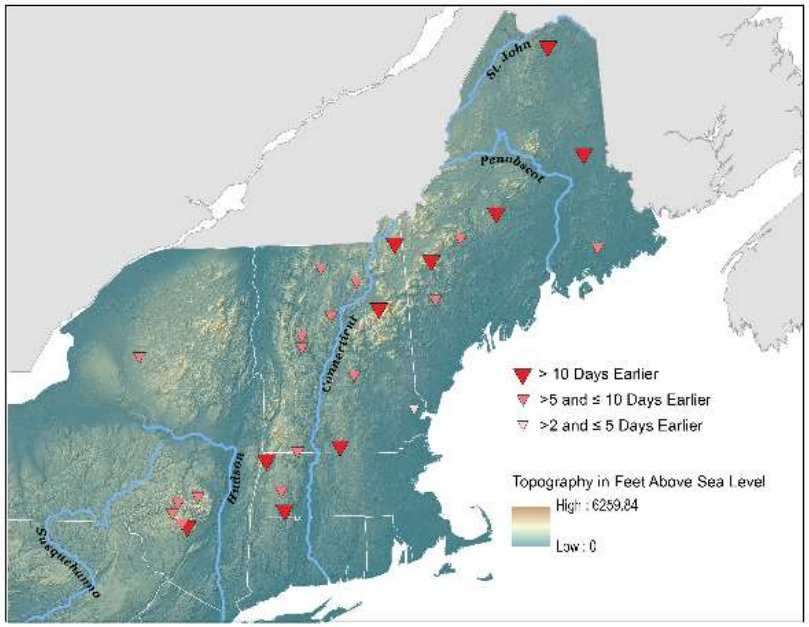


Fig. 18.2: Historical Changes in the Timing of Snowmelt-Related Streamflow

This map of part of the Northeast region shows consistently earlier snowmelt-related streamflow timing for rivers from 1960 to 2014. Each symbol represents the change for an individual river over the entire period. Changes in the timing of snowmelt potentially interfere with the reproduction of many aquatic species[113] and impact water-supply reservoir management because of higher winter flows and lower spring flows.[114] The timing of snowmelt-related streamflow in the Northeast is sensitive to small changes in air temperature. The average winter–spring air temperature increase of 1.67°F in the Northeast from 1940 to 2014 is thought to be the cause of average earlier streamflow timing of 7.7 days.[112] The timing of snowmelt-related streamflow is a valuable long-term indicator of winter–spring changes in the Northeast. *Source: adapted from Dudley et al. 2017;[112] Digital Elevation Model CGIAR–CSI (CGIAR Consortium for Spatial Information). Reprinted with permission from Elsevier.*

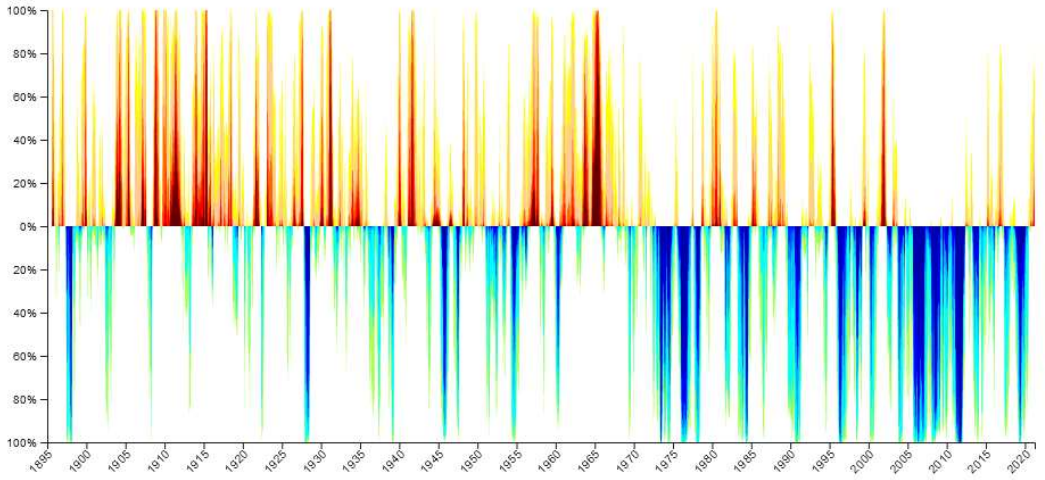
Droughts in Vermont - 1895 to present

Drought in Vermont from 2000–Present

The U.S. Drought Monitor started in 2000. Since 2000, the longest duration of drought (D1–D4) in Vermont lasted 45 weeks beginning on June 21, 2016, and ending on April 25, 2017. The most intense period of drought occurred the week of September 29, 2020, where D2 affected 29.39% of Vermont land.

2000 - Present (Weekly) | 1895 - Present (Monthly) | 0 - 2017 (Yearly) — Explore Historical Drought Maps

The Standardized Precipitation Index (SPI) is an index to characterize meteorological drought on a range of timescales, ranging from 1 to 72 months. The SPI is the number of standard deviations that observed cumulative precipitation deviates from the climatological average. NOAA's National Centers for Environmental Information produce the 9-month SPI values below on a monthly basis, going back to 1895. Learn more.



D0 D1 D2 D3 D4
W0 W1 W2 W3 W4

Click or hover on legend boxes to interact with the graph.

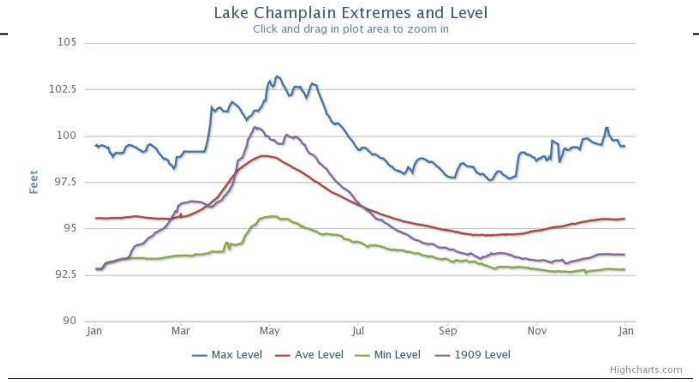
Time Period: All Time

Image | JSON | XML | CSV

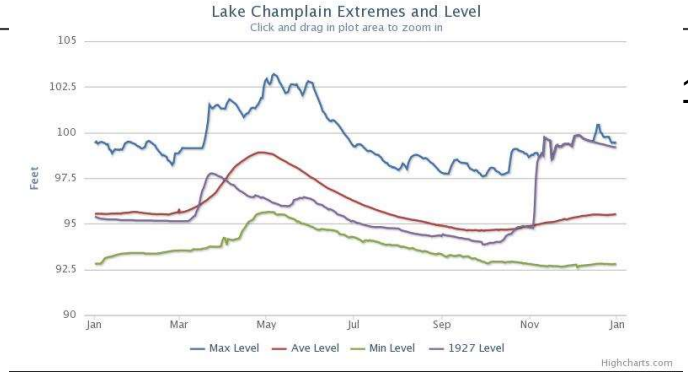
https://www.drought.gov/states/vermont

Floods & droughts

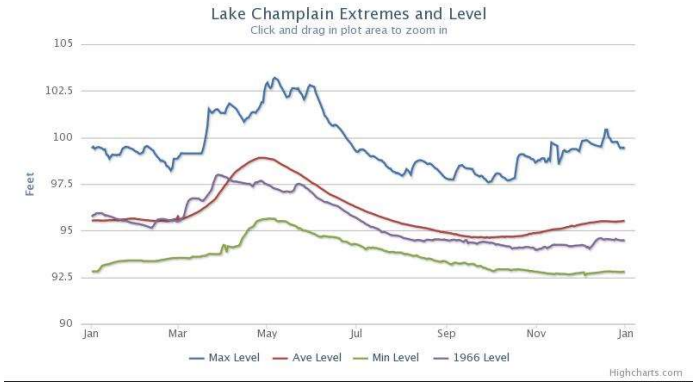
1909



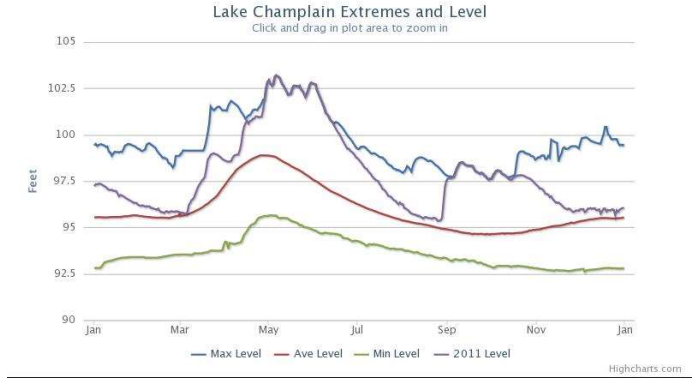
1927



1966

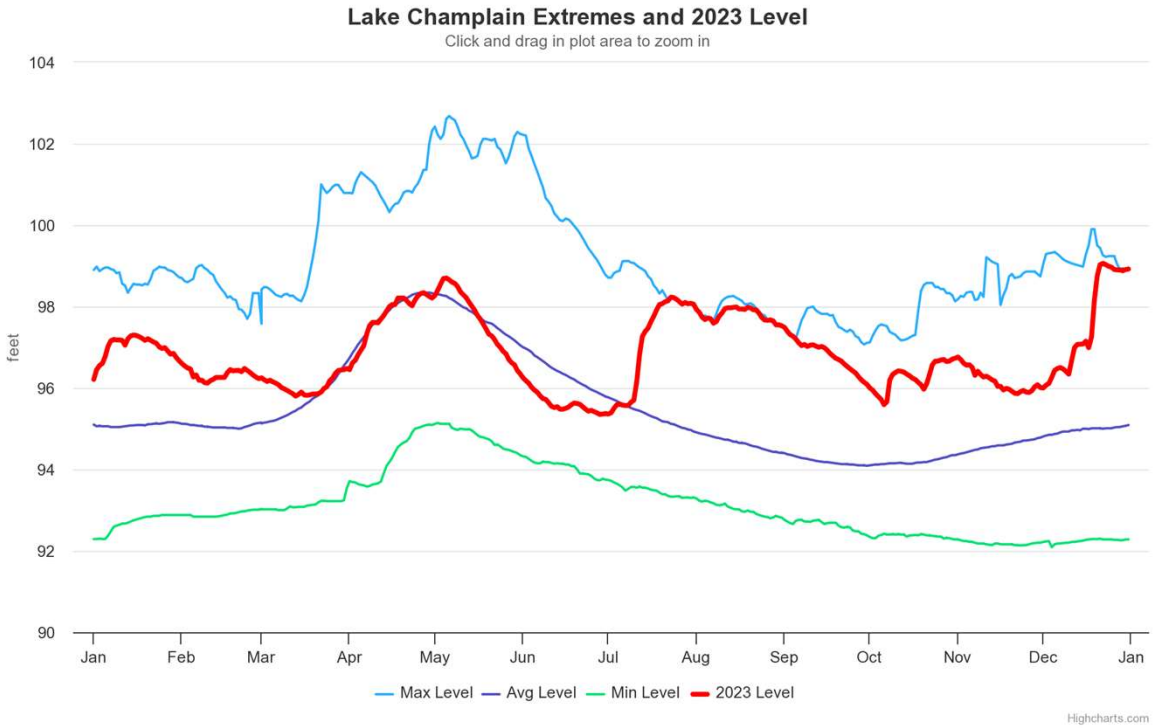


2011

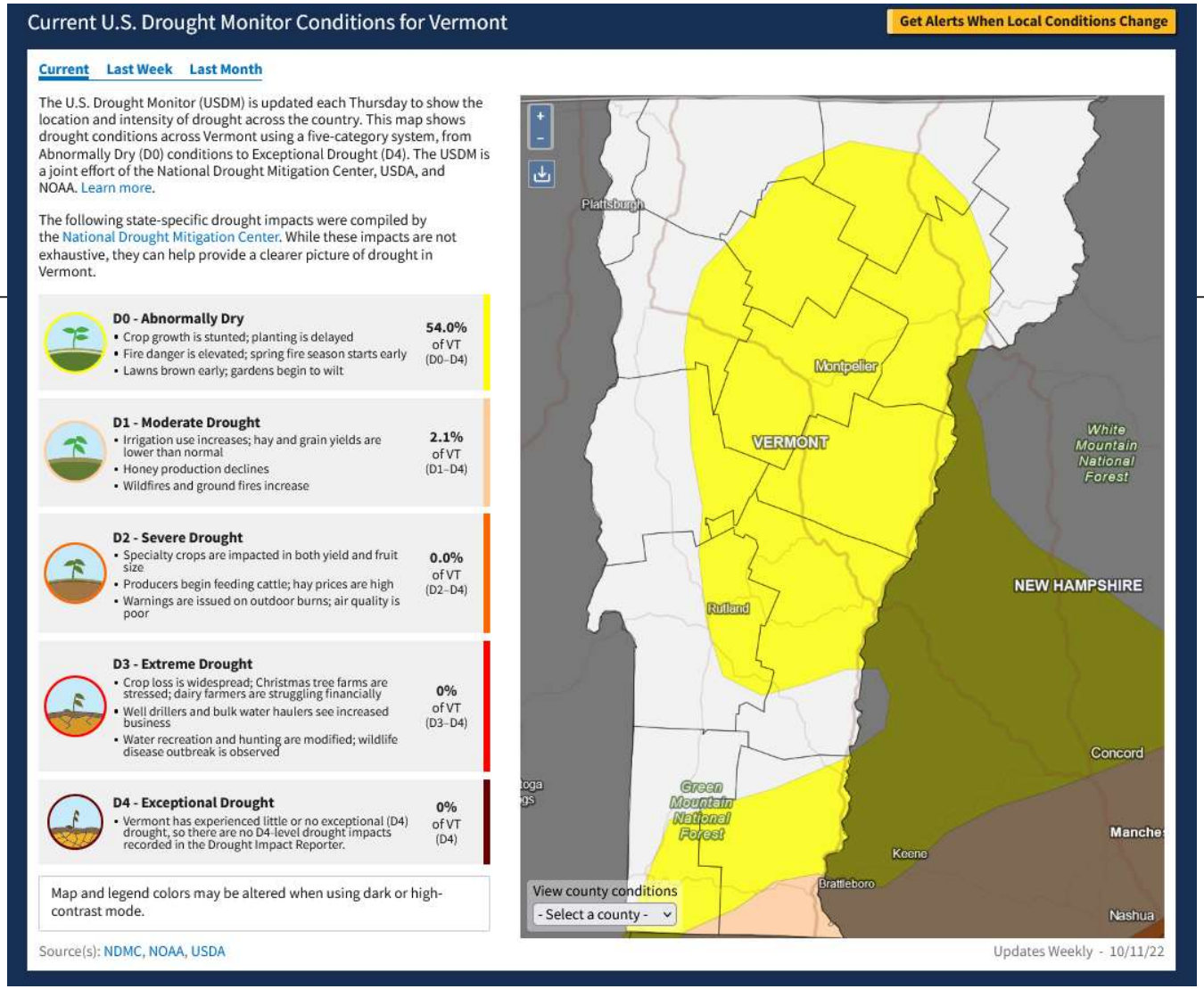


Courtesy: National Weather Service

Lake Champlain daily levels in 2023

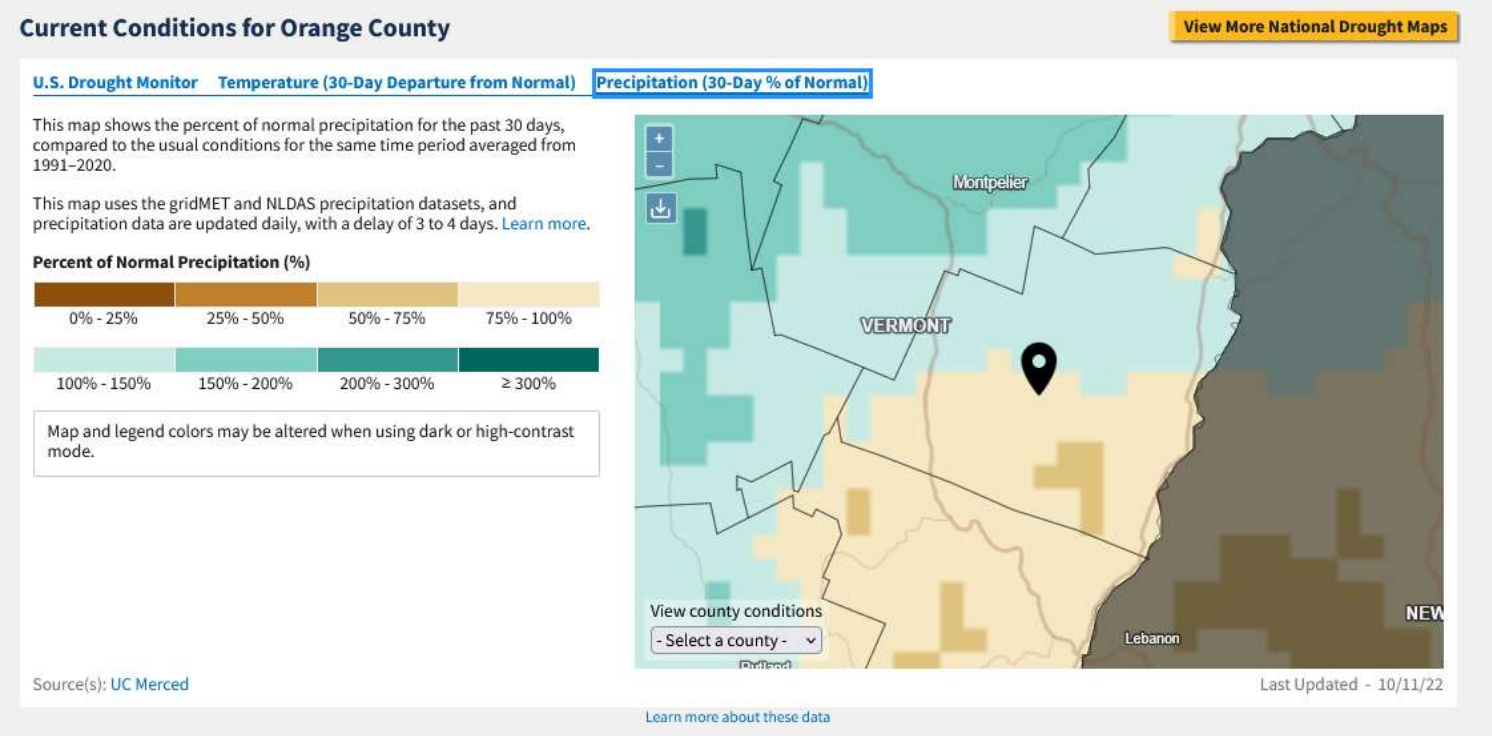


https://www.weather.gov/btv/lakeLevel?year=2023



https://www.drought.gov/states/vermont

Weather, climate and climate change are local



Fire Weather Concerns For Today

Burlington, VT
WEATHER FORECAST OFFICE

OVERVIEW:

- The combination of low relative humidity, gusty northwest winds, and dry fuels will create fire weather concerns over northern New York and the northwest, central, and southern portions of Vermont this afternoon and early evening.

TIMING	▪ The lowest relative humidity values and strongest northwest winds will occur between Noon and 7 PM Today.
HAZARDS & IMPACTS	▪ Any fires that were to start in these critical fire weather conditions could quickly get out of control and be difficult to contain. ***This applies to most areas outside of the Red Flag Warning as well.*** ▪ Follow state guidelines in Vermont regarding open burning and remember a Burn Ban exists in New York through May 14th, which means no open burning is allowed.
NWS ALERTS	▪ A Red Flag Warning is in effect for the western portions of Franklin, Chittenden, Addison, and Rutland counties in Vermont as well as all of Orange, Windsor, Bennington, and Windham counties of Vermont. The warning is valid from Noon until 7PM. Expect relative humidity values as low as 25 percent and northwest wind gusts in the 25 to 30 mph range.
POST-EVENT OUTLOOK	▪ We are anticipating an extended period of dry weather through the remainder of the week, which will help to further dry out the fuels. A gradual warming trend is expected, but winds will not be as strong as today and relative humidities not as low as today either.
NEXT BRIEFING	▪ This will be the last briefing unless conditions change.

https://fpr.vermont.gov/forest/wildland-fire/wildland-fire-seasons

VERMONT'S WILDLAND FIRE SEASONS

Every year wildand fires burn grass, brush, and forest fuels in Vermont. The majority of these fires burn in the spring. Occasionally, summer or fall fires occur in a dry year.

Spring Fire Season

Generally spring fire season begins shortly after snowmelt when weather conditions are favorable for drying wildland fuels, dead grasses, leaves and twigs. Clean-up after a long winter season generates a great deal of debris burning activity. Most Vermont wildland fires occur between the end of March and the beginning of June.

Southern counties, low-elevation areas, and exposed south-facing slopes generally experience dry conditions earlier during spring, while northern counties and higher elevations have dry conditions later in the season. During the spring fire season, access to fire areas can be extremely hampered due to mud conditions.

Spring is the time of year that most involves changing weather patterns. Low relative humidity and gusty winds, combined with dry fuel conditions and tough terrain, can make controlling wildland fires difficult and hazardous. Fortunately, spring fires seldom burn deeply into the ground litter, which makes clean up easier and less expensive.

Fire Season Transition from Spring to Summer

Fine dead fuels after snow melt dry quickly when exposed to sun, wind and low relative humidity.

Live vegetation mixes in and shades dead fuels from weather elements after green up.

Summer Fire Season

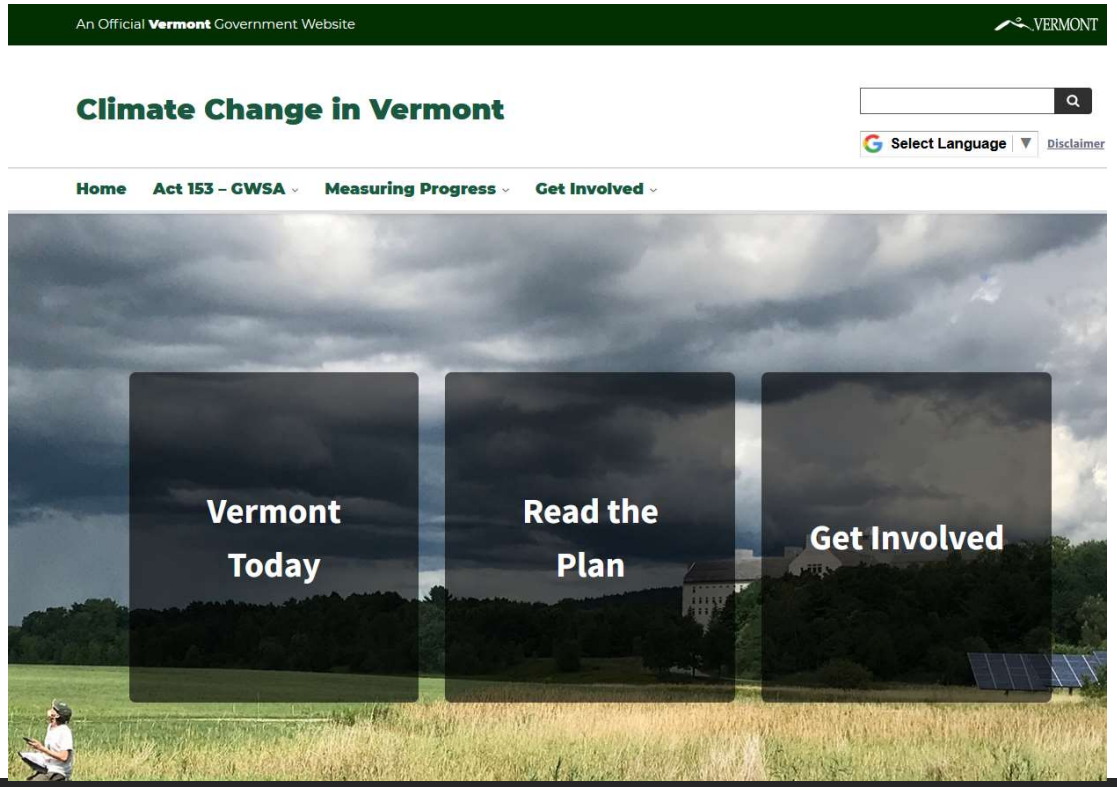
After green-up has occurred and the spring rainy periods have subsided, the summer months can become hot and dry. Even though wildland areas may look green and damp, the forest ground fuels and litter may be dry enough to sustain fire. Campfires, logging operations, and lightning are common causes of summer fires. Most summer fires occur from mid- to late August into September. Depending primarily on the amount of rain received, a summer fire season may or may not occur.

Photo: L-A. Dupigny-Giroux

2021 Vermont Climate Action Plan

https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%2012-1-21.pdf

Vermont Climate Action Plan



https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Guiding%20Principles%20for%20a%20Just%20Transition%20-%20Final%20Approved%208.2021.pdf

Just Transitions subcommittee

GUIDING PRINCIPLES
FOR A JUST TRANSITION

Vermont Climate Council, Just Transitions Subcommittee
August 2021

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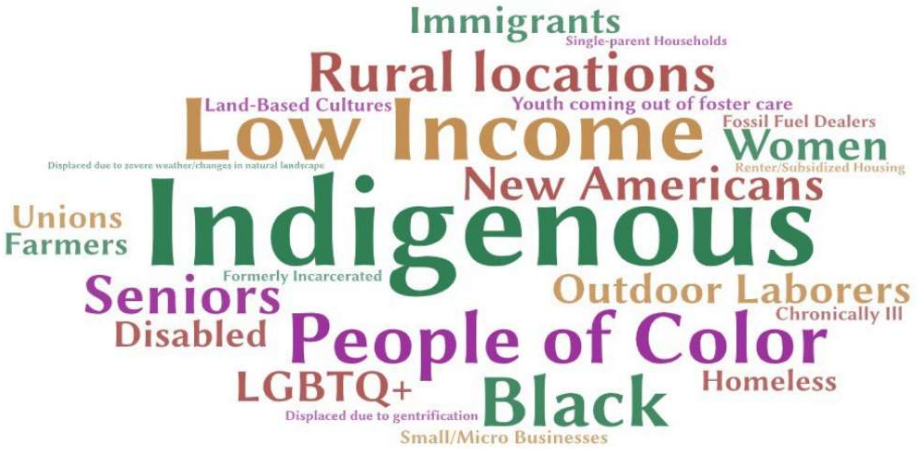
https://outside.vermont.gov/agency/anr/climatecouncil/Shared%20Documents/Guiding%20Principles%20PowerPoint.pdf

From Kiah Morris:

Vermont's Impacted & Frontline Communities

As global warming accelerates, the Council and its Subcommittees must engage with those on the "frontlines" of the climate crisis.

- Studies continue to show that low-income communities, indigenous peoples, and black and other communities of color are among those who are particularly vulnerable to the impacts of climate change.
- In addition, as industry and jobs transition away from greenhouse gas emissions and towards "greener" jobs and livelihoods, particular focus must be given to the labor sector.
- Finally, some Vermonters may also be necessarily focused on achieving immediate goals of food, shelter, safety and health, which can impact ability to focus on long-term adaptation to climate and economic changes.



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Vermont Climate Action Plan

Climate Change in Vermont

Lesley-Ann L. Dupigny-Giroux, Jason Shafer, Owen Pollio, Ken Jones

1.0 Preface

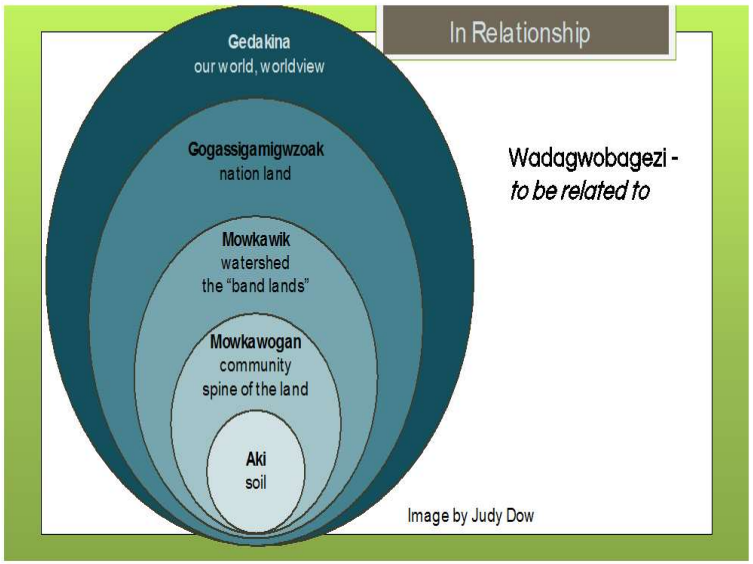
This section of the Climate Action Plan presents the drivers and processes of climate change in the Vermont by focusing on the natural hazards that affect multiple socioeconomic sectors and which directly influence on our resilience as a state. In presenting resilience through the dual lenses of inclusion and vulnerability (of peoples, the natural environment and human infrastructure), we honor Abenaki knowledges (Figure 1a) and all ways of knowing (Betts, 2021), as we seek to do no harm (Figure 1b).

For consistency with other state-level Climate Action Plans, this section used data and statistical methods developed in support of the Fifth National Climate Assessment (NCA5)[1] by the National Center for Environmental Information (NCEI), the Environmental Protection Agency (EPA) and the Northeast Regional Climate Center (NRCC). One such document is the 2021 Vermont State Climate Summary[2] which is included with permission as Appendix 1 and which will be released by NCEI by January 2022. County level climate projections of future thresholds were summarized from the NOAA Climate Explorer[3] and included in Appendix 1. Sectoral impacts of climate change across Vermont can be found in the 2021 Vermont Climate Assessment. Existing tools for monitoring and quantifying vulnerabilities will be woven throughout this section.

Abenaki scholar Judy Dow

We Are All Related

By Judy Dow



Mowkawogan represents the spine of the land. The Community is everything from insects, plants, birds, fish and humans, as well as those beings in between. The Community works to protect the land and keep the spine connected in every way. This connection of the spine will keep the soil strong to allow the place of birthing to continue to give birth and contribute to the health and well-being of the community. *Woigan* is the spine; *mowi* means "to move;" *mowkannoak* means "they travel in a group together;" and *mowigoboak* means "they stand together," or "they stand as a group." All of these words imply the community will move and stand strong together to protect *aki* (the soil). The community will work to protect and care for *aki* at all costs. After all, it is their place of birth.

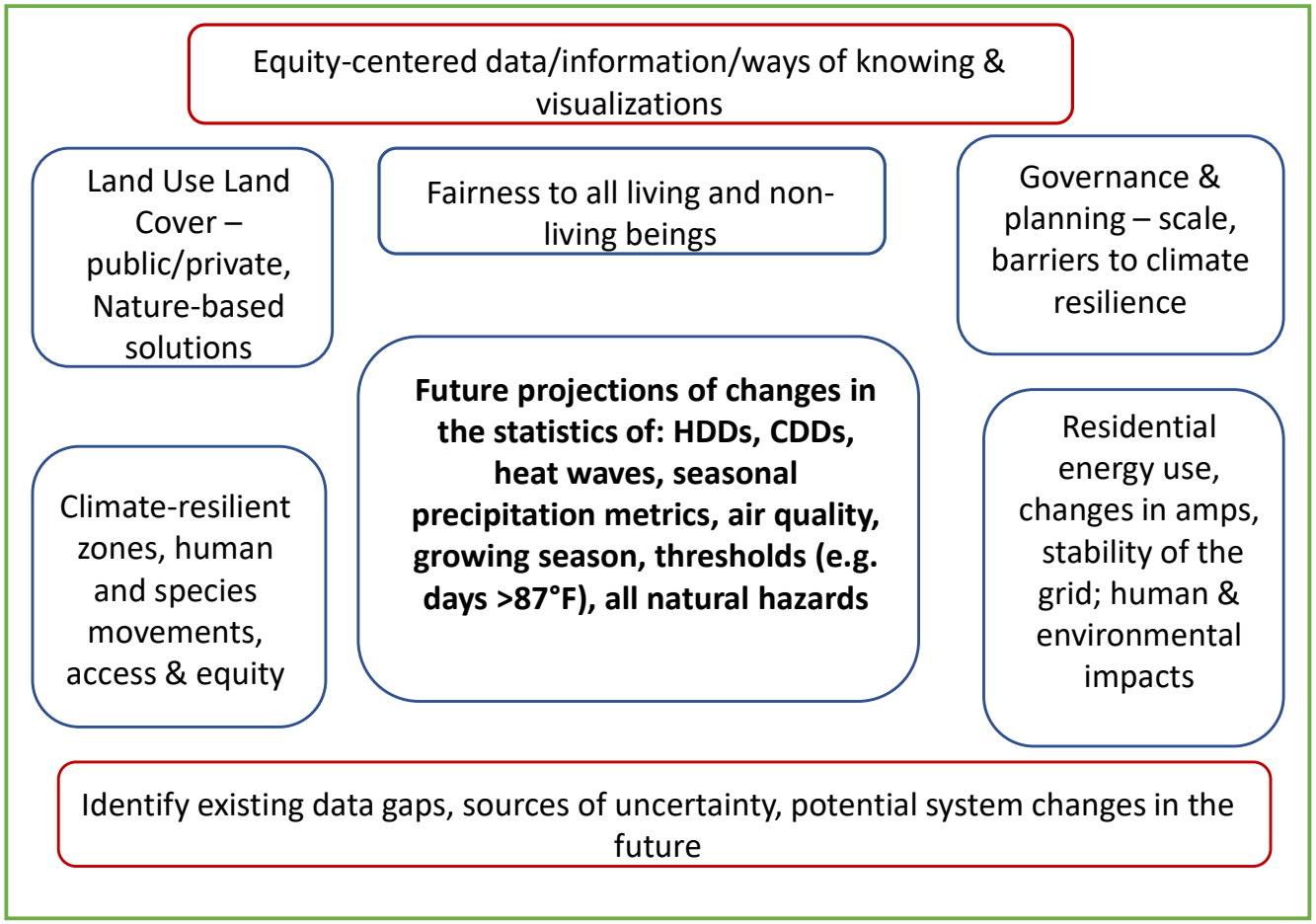
Mowkawik means the band's land. This is the place within which the community or band travels together to protect community and *aki*. This is the watershed, the place where the community works to protect the waters that feed the spine that loves and cares for *aki*. A community never stays in one place long enough to damage *aki* or *bakabagw* (clear water). The group moves throughout the watershed to preserve the clear water for the community. This is true conservation at its best.

Gogassigamigwzoak literally translates to "there are many families living together." This is the Nation, the place where everyone speaks the same language. Gogassomkwaki means so many thousands, referring to the many thousands of people that work to care for water, community, and aki. This is the place where *Mowkawogan* continues to grow.

Gedakina means our world or our worldview. This is the place where one will reach an understanding of the cycle of life within their own community and those of others. This is the place one reaches when they make connections to form new **relationships.** These new relations will learn together. It is their **responsibility** to show **respect** and **reverence** to *aki* and that *aki* is our relation. Once these values are learned, the community will know how to **reciprocate** to *aki* in a proper way. The community will now know *Wadagwobagezi*, we are all related to one another.

Submitted to the Vermont Climate Council – 26 April 2021

DO NO HARM – PEOPLES, COMMUNITIES, THE LAND



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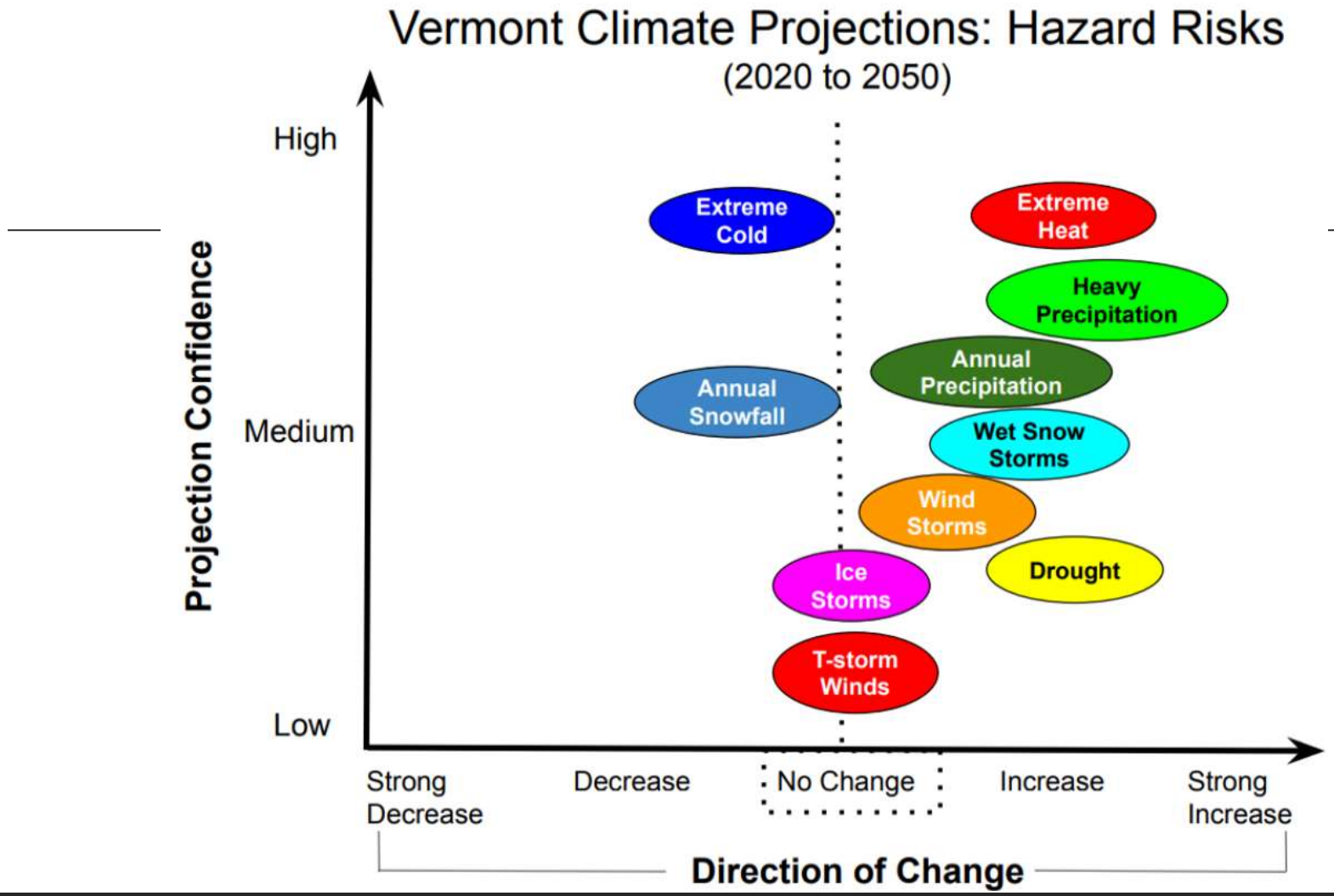
Originally created by L-A. L. Dupigny-Giroux for the Vermont Climate Council – June 2021

https://climatechange.vermont.gov/sites/climatecouncilsandbox/files/2021-12/Initial%20Climate%20Action%20Plan%20-%20Final%20-%2012-1-21.pdf



Dr. Jay Shafer, VT Climate Action Plan, 2021

https://nca2023.globalchange.gov/

Fifth National Climate Assessment

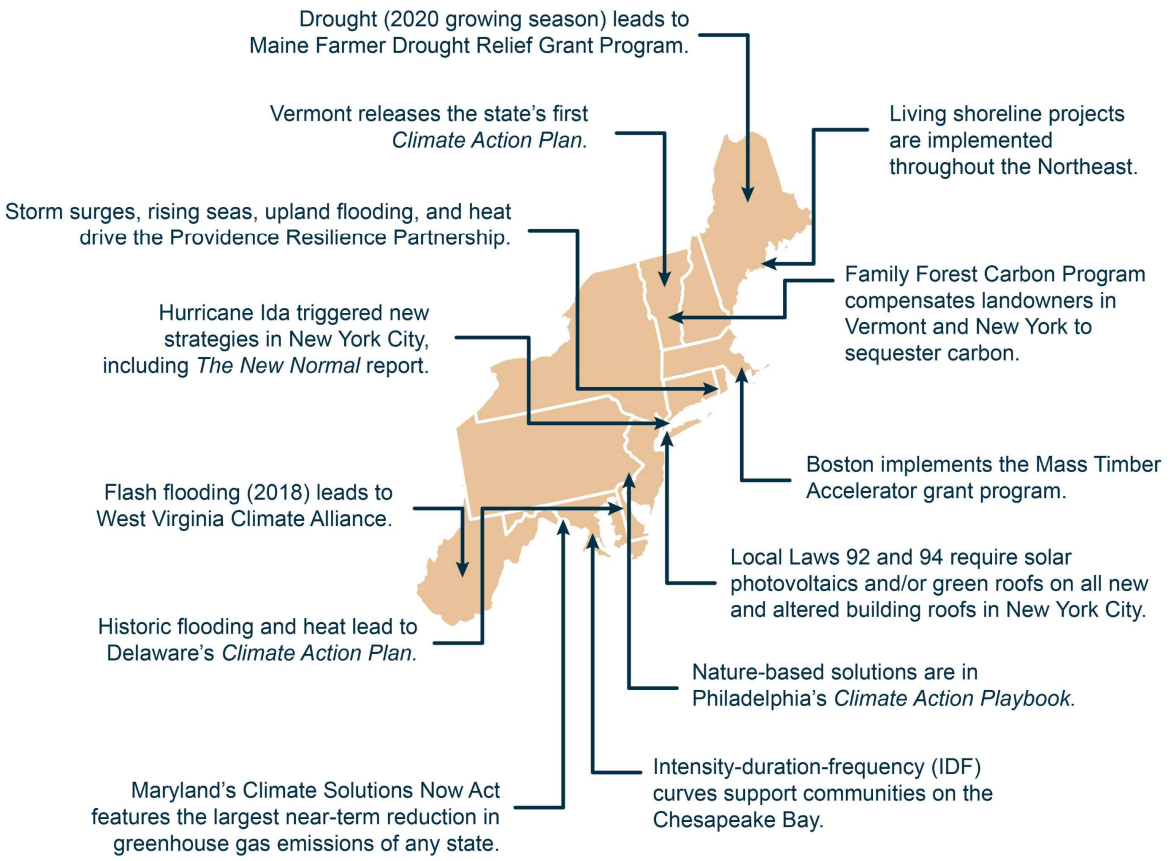
U.S. Global Change Research Program

https://nca2023.globalchange.gov/chapter/21/

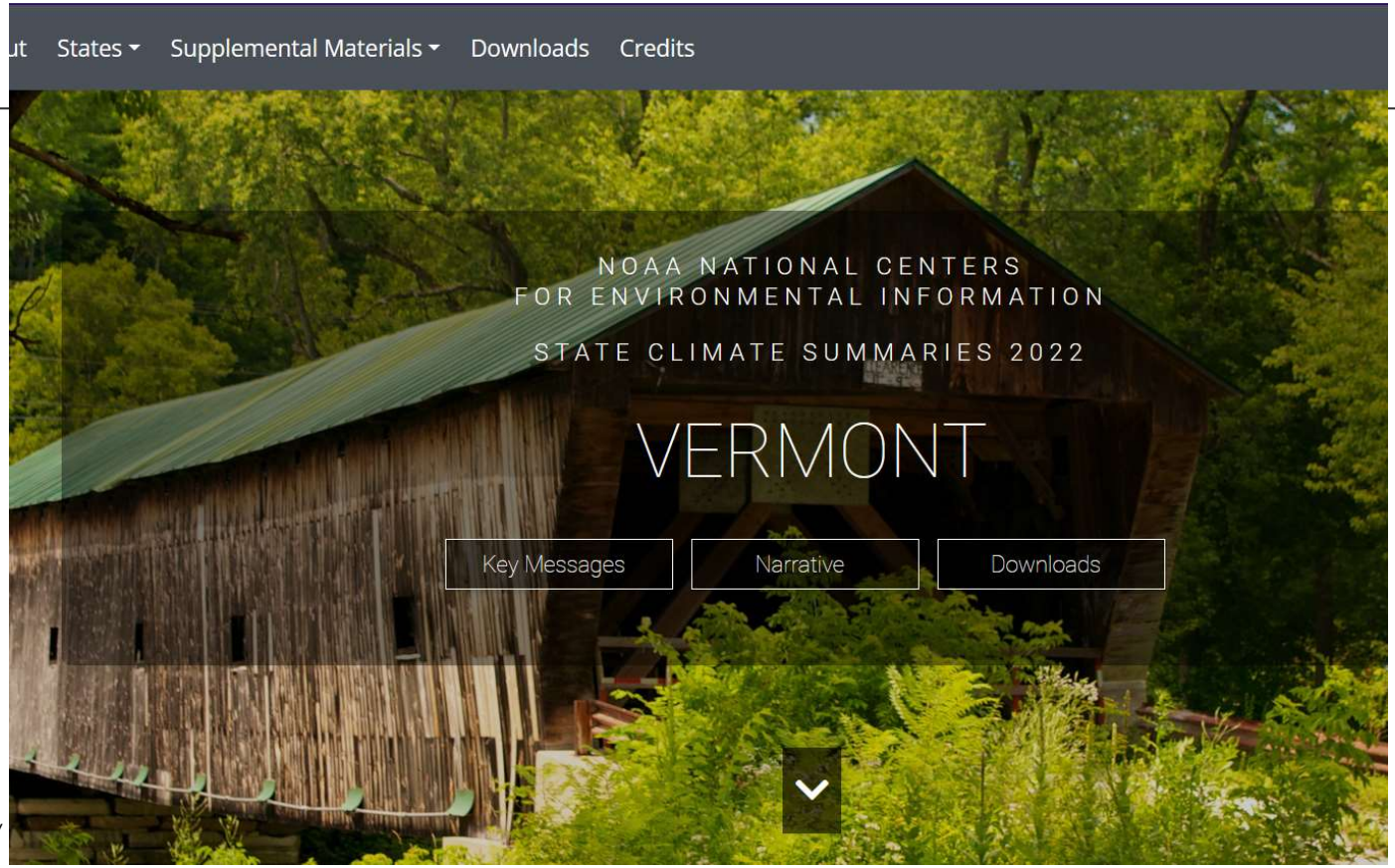
NCA5 NORTHEAST CHAPTER

21.2: Examples of State and Local Responses to Extreme Weather

Examples of State and Local Responses to Extreme Weather



NOAA State Climate Summary for Vermont



https://statesummaries.ncics.org/chapter/vt/

What can we do?

Dr. L-A. Dupigny-Giroux

Items for consideration - peoples

multi-jurisdictional approach

ensuring that ALL peoples are at the table from the beginning

changes in high heat, health impacts

in-migration (income levels, languages, cultures)

communal multi-use spaces in existing and planned communities – ease of access

connectivity of our biking networks (ease of access, safety)

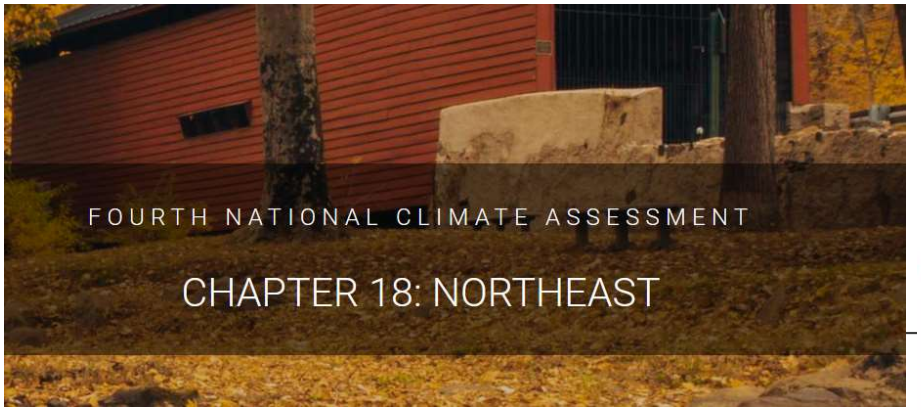
improvements to existing mass transit (routes, frequency, connectivity)

Items for consideration – the land

mixture of working lands and natural lands

preservation of our wetlands & nature-based solutions

active promotion of design projects that slow and filter runoff



FOURTH NATIONAL CLIMATE ASSESSMENT

CHAPTER 18: NORTHEAST

KEY MESSAGES

1 2 3 4 5

Key Message 1: Changing Seasons Affect Rural Ecosystems, Environments, and Economies

The seasonality of the Northeast is central to the region's sense of place and is an important driver of rural economies. Less distinct seasons with milder winter and earlier spring conditions (very high confidence) *are already altering ecosystems and environments* (high confidence) *in ways that adversely impact tourism* (very high confidence), *farming* (high confidence), *and forestry* (medium confidence). *The region's rural industries and livelihoods are at risk from further changes to forests, wildlife, snowpack, and streamflow* (likely).

Major uncertainties

Warmer fall temperatures affect senescence, fruit ripening, migration, and hibernation, but are less well studied in the region[98] and must be considered alongside other climatic factors such as drought. Projections for summer rainfall in the Northeast are uncertain,[4] but evaporative demand for surface moisture is expected to increase with projected increases in summer temperatures.[3,4] Water use is highest during the warm season;[141,400] how much this will affect water availability for agricultural use depends on the frequency and intensity of drought during the growing season.[302]

Items for consideration – the land

mixture of working lands and natural lands

preservation of our wetlands & nature-based solutions

active promotion of design projects that slow and filter runoff

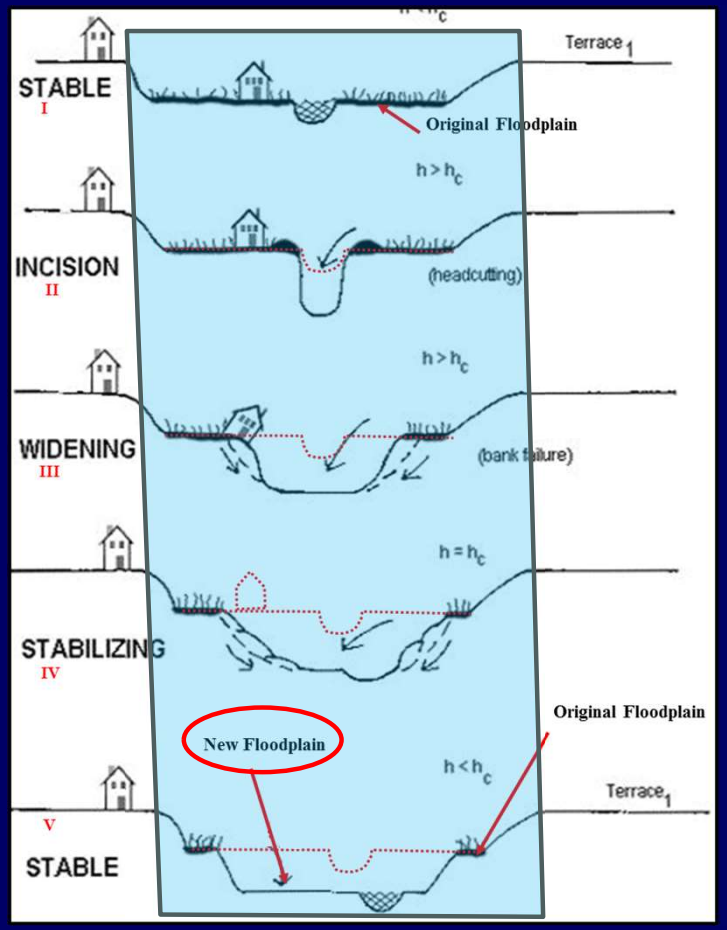
Erosion along historically channelized streams is the predominant form of road damage in VT

Courtesy: Mike Kline

Preserve new river-formed floodplains as much as possible, and the next flood will result in less erosion and downstream flooding.

Act 138 (2012) promotes the protection of River Corridors to reduce erosion and increase storage over time.

River Corridor means the land area adjacent to a river that is required to accommodate the dimensions, slope, planform, and buffer of the naturally stable channel and that is necessary for the natural maintenance or natural restoration of dynamic equilibrium conditions and for minimization of fluvial erosion hazards. 10 V.S.A. § 1422



River Corridor

Courtesy: Mike Kline

Recommendations/requests

1. Implementing priorities from the 2021 Climate Action Plan

2. Supporting the development of the Municipal Climate Toolkit & the Municipal Vulnerability Index

3. Supporting climate resilience and community engagement that are taking place across State of Vermont Agencies and Commissions

4. Prioritizing an all-hazards, systems approach to resource allocation

5. Statewide, all-agency (SOV & Federal) summit on lessons learned from 2023

Dr. L-A. Dupigny-Giroux

Budgetary requests for building climate resilience

1. Funding a Hazard Coordinator in the Office of the Vermont State Climatologist to work directly with towns and municipalities to enhance their capacity to better prepare for existing and future events $80,000

2. Funding a hazard internship program in the Office of the Vermont State Climatologist to serve as legislative liaisons and support the role of the Hazard Coordinator (above). $15,000

3. Funding the purchase of more rainfall measuring devices across the state so that a more complete picture of rainfall patterns is obtained. This can lead to better forecasts and ground checking. $25,000

4. Collaborating with the Research Futures group (UK) to disseminate the results of the Lessons Learned Summit to all Vermonters and beyond. $4000

Thank you!

For more information contact:

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