

Vermont Climate Assessment

At a Glance

2025



University
of Vermont

Gund Institute for Environment
Climate Measurements Center of Excellence



CMeC



THE BIG PICTURE

A changing climate is reshaping Vermont

Winters are warming, heavy rainfall is becoming more common, and climate impacts are reaching across the natural, social, and economic systems that sustain Vermont. The Vermont Climate Assessment (VCA) 2025 brings these changes into focus, showing what has changed, what is changing now, and what the impacts mean for Vermonters.



WARMER

Temperatures are rising with winter warming fastest

- Hotter summers
- Warmer winters
- Higher humidity



WETTER & MORE

EXTREME Precipitation is increasing affecting water quality and quantity

- Heavier rainfall
- More flooding
- Longer dry spells between storms



MORE VARIABLE

Seasons are shifting with greater uncertainty and extremes

- Less snow
- Earlier spring
- Changing growing conditions



FORESTS

Changing forest composition, more invasive species



WATER

Higher flood risk, poorer quality



FARMS

Shifting production timelines, livestock and crop stress



WILDLIFE

Habit shifts, biodiversity loss



HEALTH

Heat, air quality, disease risks



INFRASTRUCTURE

Widespread disaster damages, higher maintenance costs



RECREATION

Shift from winter to summer activities, loss of traditions, innovative adaptations



COMMUNITIES

Unequal burdens, high economic costs, greater capacity-building needed

Vermont is experiencing unprecedented weather extremes

BREAKING RECORDS, RAISING COSTS.

The last five years have set records for extreme weather in Vermont, including the highest average winter temperature, greatest frequency of warm winter days and highest single-day rainfall on record. Drought conditions in 2025 were the most severe recorded since 2000 when monitoring began. These increasingly extreme conditions are causing significant economic damage, including an estimated \$1 billion from the July 2023 and July 2024 floods.



**MORE THAN
1,000**

Homes rendered uninhabitable following the 2023 and 2024 floods

(Pictured Left)
Montpelier flooding
July, 2023

Records set since 2020:



The highest average winter temperature since 1900 (21.9°F)



The highest monthly average precipitation was recorded in Montpelier in July 2023 (12.1")



The highest frequency of warm winter days (when temperatures remain above 50°F) on record since 1900 (5.5 days/year)



The highest single day rainfall, 7.5–8.5" on July 30, 2024



The highest annual absolute humidity measures since the 1940s when records begin



The worst drought on record (2025) since monitoring began in 2000

Vermont's climate is getting warmer, wetter and more variable

A CLEAR TREND. AN ACCELERATING PACE.

Vermont's climate is changing at an accelerating pace. Average annual temperatures have increased by 3.6°F since 1900, while annual precipitation has increased by 20%. Heavy precipitation is becoming more frequent, but rainfall is also becoming more variable, with intense storms increasingly interrupted by dry spells and drought.

+3.6°F

Increase in average annual temperature since the 1900s



+7.3"

Increase in average annual precipitation since the 1900s



42%

More heavy precipitation days (24-hour periods with >1" precipitation) since the 1900s



These changes are already reshaping forests, water resources, wildlife, agriculture, and the seasons that Vermonters depend on.

Shifting seasons are transforming how Vermonters live, work, and play

CHANGES ON THE GROUND.

Vermont's seasons are changing, reshaping nearly every aspect of life. Shorter, less predictable winters threaten snow-dependent activities, while a longer but more variable growing season brings both opportunities and new challenges for farmers. Extreme heat, wildfire smoke and tick-and mosquito-borne diseases are also changing how Vermonters experience the outdoors.



24 Days

Increase in Vermont's growing season since 1900

\$2.2B

Value added to Vermont's economy from outdoor recreation in 2024 (4.7% of GDP)

>90%

Residents who recreate each year (20% nearly daily)

+4.6°F

Increase in average winter temperature since the 1900s

~25"

Decrease in annual snowfall since 1990

A hotter Vermont increases risks to people, farms, and infrastructure

HIGHER TEMPERATURES. GREATER VULNERABILITY.

Vermont is experiencing more extreme heat. The number of days above 90°F has doubled since 1900, while warmer nights and rising humidity can intensify health risks. Heat also affects agriculture and infrastructure, increasing heat stress in livestock, accelerating road deterioration, and driving up electricity demand.



Heat-related
health risks



Crop and livestock
losses



Dam, road and
utility damage

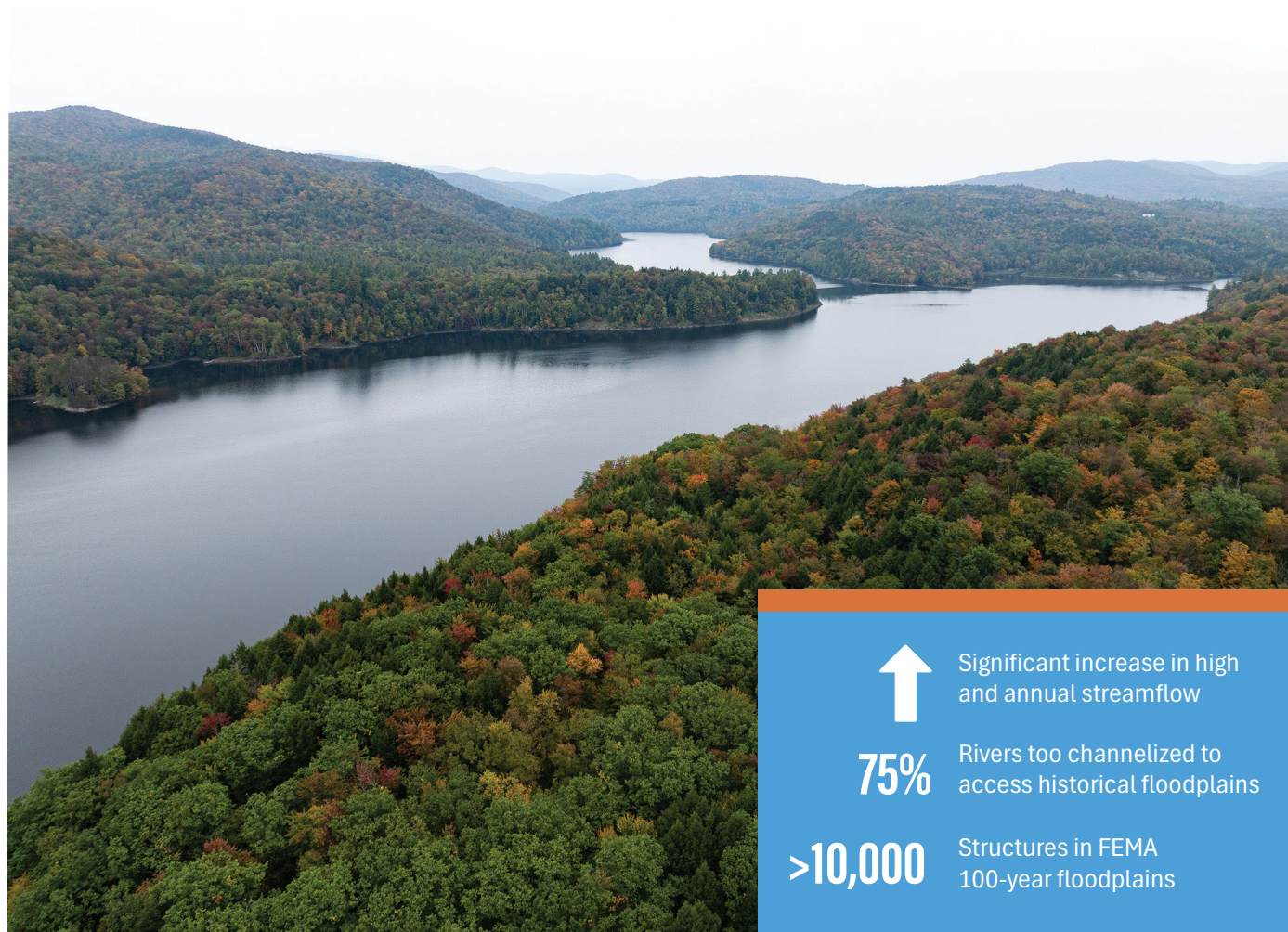


Water and food
insecurity

Water is a central challenge for Vermont, across all seasons and sectors

TOO MUCH. TOO LITTLE. LOWER QUALITY.

Climate change is reshaping Vermont's water resources, including how much water is available and how clean it is. Warmer winters and increased winter runoff contribute more nutrients to Lake Champlain, while heavier precipitation and limited access to natural floodplains increase flood risks for communities, infrastructure, and waterways.



Significant increase in high and annual streamflow

75%

Rivers too channelized to access historical floodplains

>10,000

Structures in FEMA 100-year floodplains

>\$600M

Spent on clean water projects between 2016–2024

Climate risks are interconnected and compounding—requiring action now

A MORE RESILIENT VERMONT IS POSSIBLE.

Flooding, extreme heat, wildfire smoke, water contamination, and infrastructure disruptions can overlap and amplify one another. Preparing for these interconnected risks requires coordinated planning and investment in Vermont's natural, physical, financial and social infrastructure.

WHAT VERMONT CAN DO



Building climate-resilient roads, bridges, power systems, housing, and schools



Enhancing flood-risk mapping and water-resource planning



Applying nature-based approaches to flooding and drought mitigation



Engaging in climate-adaptive forest management



Conserving land and protecting habitat



Promoting agricultural resilience investments and technical assistance



Expanding healthcare and social support capacity



Participating in energy planning that simultaneously addresses climate risk, greenhouse gas emissions, affordability, and equity



Incorporating environmental justice into planning and decision-making



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