

CLIMATE CHANGE IN VERMONT

OVERVIEW

Human-caused increases in greenhouse gas emissions are changing the climate, globally, and in Vermont. Vermont is getting warmer and wetter. The average annual temperature has increased by 3.6° F (2.0°C) since 1900, with winters warming faster than summers. Average annual precipitation increased by 7.3 inches since 1900, and heavy precipitation days occur 40% more often today compared to the 1900s. Heavy precipitation periods are increasingly interrupted by dry spells, creating a cycle of floods and droughts. Daily life in Vermont is rapidly changing with climate trends, requiring adaptation across all sectors. Vermonters can use evidence of climate change across the state to develop plans and actions to protect the social, economic, and environmental well-being of people, communities, and ecosystems.


+3.6°F

in annual average temperature since 1900s


+4.6°F

in winter average temperature since 1900s


15 days/year

when temperatures exceed 90°F (Southeast division; 2020–2024)


2.5x

faster winter warming in high elevation areas compared to the rest of the state


+7.3 inches

in annual average precipitation since 1900s

EXTREME HEAT ON THE RISE

Vermont is warmer than ever due to climate change (Figure 1). While often considered a climate refuge due to its higher latitude and mountainous terrain, the state is not impervious to the warming effects of climate change. Vermont's annual average temperature increased 3.6°F (2.0°C) since 1900. Winter is warming more rapidly than summer: winter temperatures increased by 4.6°F (2.6°C) since 1900, the number of days below 0°F (-18°C) decreased by over 16 days and the number of days above 50°F (10°C) has more than doubled. The rate of warming is also increasing: annual temperatures increased 0.3°F/decade (0.2°C/decade) in the last 65 years and increased 0.8°F/decade (0.4°C/decade) in the last 35 years, almost tripling.

Climate Variables Total Change (1900-2024)

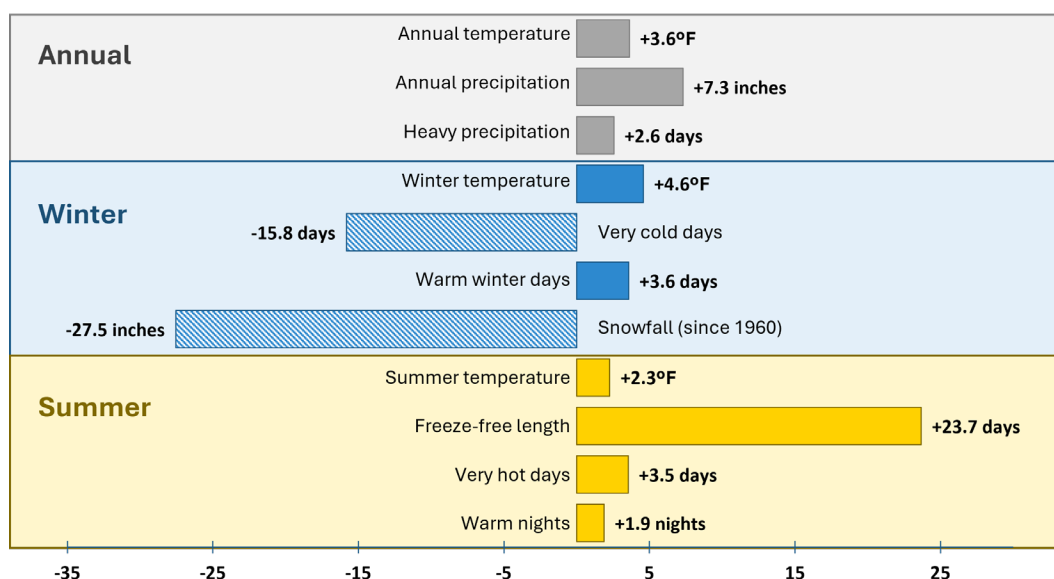


Figure 1 Total Change in Vermont 1900-2024
calculated by subtracting the metric's first decade average (1900–1909) from the most recent average (2020–2024)

Source: NOAA Regional Climate Centers (2026)

PRECIPITATION

Vermont is wetter since 1900, but precipitation trends are more unpredictable in recent decades (Figure 1). In comparison to the early 1900s, the 2020s have had a 20% increase in annual rainfall with the last five years swinging between wet and dry years. Although the average was 43.1 inches/year (1,095 mm/year), individual years ranged from the notably dry 2020 (34.5 inches; 876 mm) and 2021 (39.0 inches; 991 mm) to the exceptionally wet 2023 (52.1 inches; 1,323 mm), the second wettest year on record. Both winter and summer seasons are wetter. Vermont winters have less snow but more rain, shifting the ratio of winter precipitation falling as snow (Figure 2). Summer precipitation has increased by 2.6 inches (66.0 mm) since 1900, with increasing variability that is most noticeable in recent swings from historic floods (2023, 2024) to historic drought (2025; Figure 1).

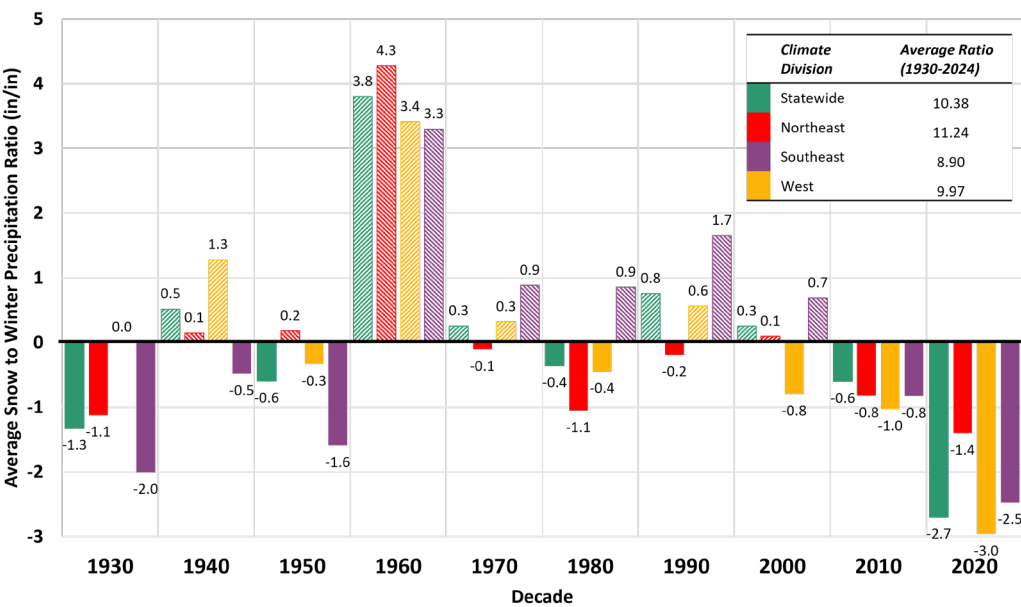


Figure 2 Ratio of cumulative snow (in) to winter precipitation (in) statewide and by climate division in Vermont

Source: NOAA Regional Climate Centers (2026)

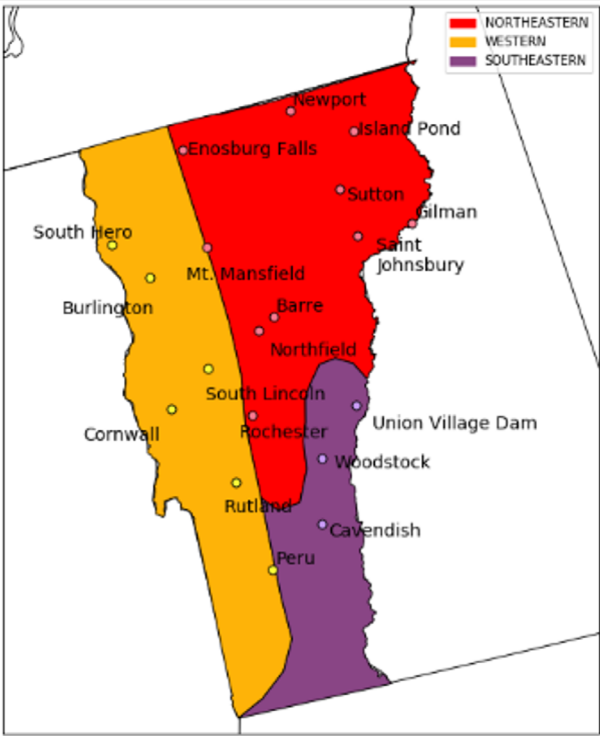
Note: Each bar represents the average ratio within each decade displayed as it diverts away from the long-term average ratio (1930–2024; primary x-axis) which varies by division and is displayed in the table. Decadal ratios above the long-term average are striped, and those below are solid filled. Each ratio represents how many inches of snow fell compared to every 1 inch of all liquid equivalent precipitation during winter months (Dec/Jan/Feb)

DIFFERENCES ACROSS THE STATE

Climate change impacts are experienced differently across the state. The National Weather Service (NWS) splits the state into three climate divisions based on their climate, dominant agricultural products, and drainage basins: Northeastern, Western, and Southeastern (Figure 3). The unique geophysical attributes of these divisions, like high elevation and large lakes, contribute to the differences in their climate impacts, such as inequivalent warming and precipitation trends. Southeastern Vermont experienced the greatest annual, summer, and winter temperature increases from 1900–2024. Of the three divisions, the Northeastern had the strongest increasing precipitation trend since the 1900s.

Figure 3 Vermont station locations, climate divisions (as defined by the National Weather Service), and the cities nearest the station locations

Source: NOAA Regional Climate Centers (2026)



EXTREME WEATHER

In addition to warmer and wetter conditions, Vermont’s extreme weather events are becoming more frequent and intense. Of the 19 “Billion-Dollar Weather and Climate Disasters” events that have impacted Vermont since 1980, four of those have been since 2022. Since 1958, annual precipitation falling during extreme storm events has increased by 70%. With increasing trends of wet conditions, there is a weakening trend in declining dry conditions (Figure 4). While percent areas with abnormally dry conditions have decreased 3.1% per decade since 1900, this trend lessens to just -0.1% per decade since 1990. Drought conditions in 2025 were the most severe on record since 2000, with 100% of the state under drought conditions on September 16, 2025. This is in stark contrast to Vermont’s summer flooding in 2023 and 2024.

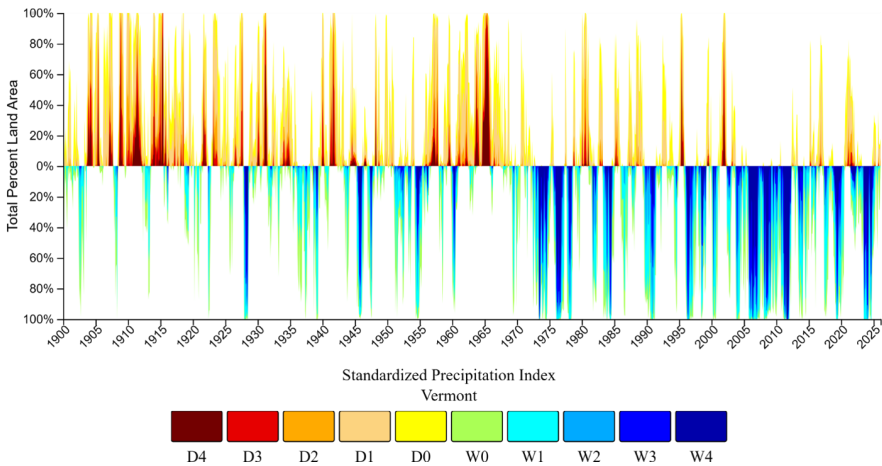


Figure 4 Percent of land area (%) in Vermont with wet and dry conditions based on the Standard Precipitation Index (1900–2025)

Source: National Integrated Drought Information System (2026)

Note: Dry conditions are classified from D0 (abnormally dry) to (exceptional drought) and wet conditions are classified from W0 (abnormally wet) to W4 (exceptionally wet)

WHAT’S CHANGED SINCE 2020

Trends documented in Vermont Climate Assessment (VCA) 2025 are largely consistent with those in VCA 2020. Increasing precipitation and warmer temperatures are still observed in the updated analysis, but the past five years reflect the increasing variability in these metrics. VCA 2025 goes into more detail on extreme weather events, including floods, droughts, and windstorms occurring since the last publication. New to VCA 2025 are analyses of humidity and wind trends. Annual average absolute humidity measures are increasing significantly across all seasons, except spring (Figure 5). Annual average minimum and maximum humidities are also increasing since 1940. For wind, average wind speeds remain relatively stable, but extreme wind events or shifting wind directions could become more intense under climate change.

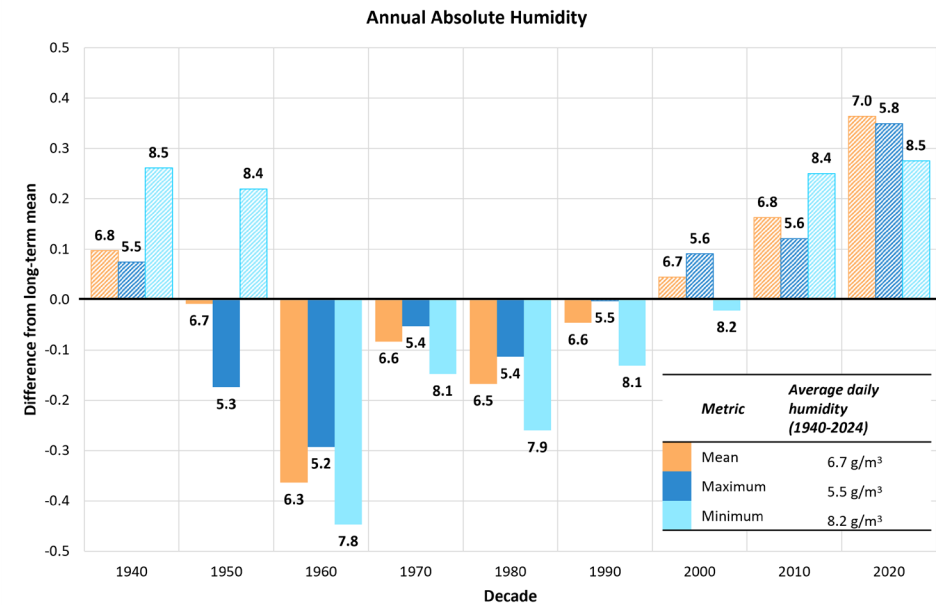


Figure 5 Decadal average daily absolute humidity (g/m3) in Vermont, across 3 metrics (mean, maximum, and minimum) compared to the long-term average 1940–2024

Source: Copernicus Climate Change Service (2026)

Note: Each bar represents mean, maximum, or minimum humidity within each decade displayed as it diverts away from the long-term values (1940–2024; primary x-axis) which varies by metric and is displayed in the table. Decadal values above the long-term values are striped, and those below are solid filled