

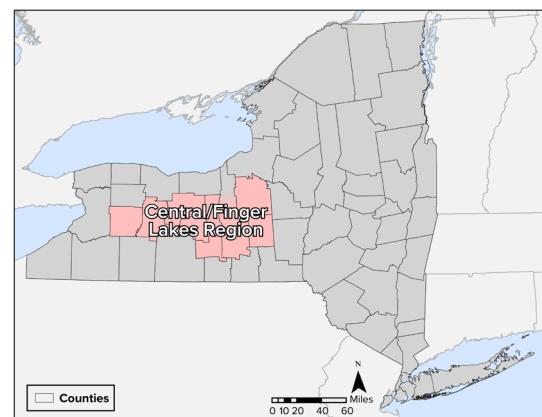
Climate Impact Spotlight: The Central/Finger Lakes Region



The New York State Climate Impacts Assessment provides accessible and relevant information on the impacts of climate change across New York State, helping all New Yorkers make climate-smart decisions. This fact sheet summarizes how the climate is changing in the Central/Finger Lakes region and how these changes will affect some of the features that make this region unique.

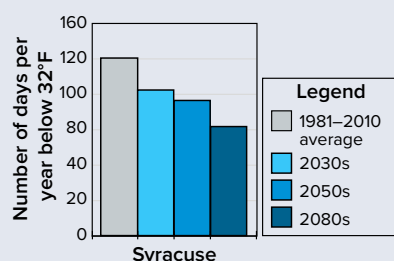
The Central/Finger Lakes Region's Changing Climate

Average temperatures are projected to increase in all seasons across all regions of New York State. Averaged over the entire year, temperatures in the Central/Finger Lakes region are projected to increase between 4.6°F and 6.4°F by the 2050s and between 5.9°F and 10.5°F by the 2080s, compared with the 1981–2010 average.



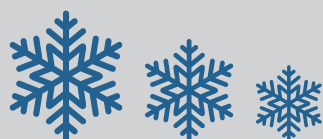
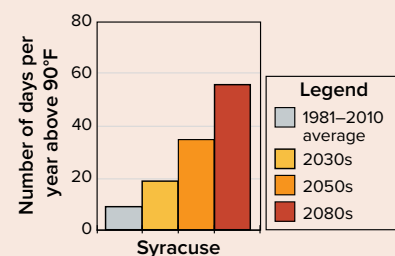
- **Decrease in very cold days.** For example, Syracuse has historically experienced an average of 134 days per year below freezing (32°F). These cold days are expected to become less common. By the middle of this century (the 2050s), Syracuse is projected to have only 78 to 110 days below freezing per year, and by the end of this century (the 2080s), it is projected to have only 56 to 89 days below freezing per year.
- **Increase in extremely hot days.** Syracuse has historically experienced an average of 9 days per year over 90°F. This number is projected to increase to 24 to 42 days per year by the middle of this century and to 35 to 70 days per year by the end of this century.
- **More lake-effect snowfall in the short term, but less snowfall in the long term.** Many parts of this region experience lake-effect snow coming off the Great Lakes. There is potential for lake-effect snowfall in the region to increase in the short term as warmer water and decreased ice cover allow more water to evaporate from the lakes and then fall as snow. However, over the long term, more of this precipitation is likely to fall as rain. In Syracuse, winter precipitation has increasingly fallen as rain rather than as snow since 1949 due to warmer temperatures.
- **Increasing surface water temperatures.** Warmer air temperatures lead to increasing surface water temperatures in the Finger Lakes and other waters throughout the region. Oneida Lake, for example, is projected to see surface water temperatures increase by 6.7°F by the end of the century. Some of the lakes in the region will see increasing differences between surface and deep-water temperatures, known as thermal stratification. Stratification prevents the water from mixing and can change water chemistry and harm aquatic life.

Projections of future climate change depend on the world's future emissions of heat-trapping greenhouse gases. Some of the projections discussed here present a range of numbers, based on those future emissions.



Decrease
in very
cold days

Increase
in very
hot days



Decrease
in snowfall

Increase
in surface water temperatures



Example Climate Impacts to Some Important Regional Features

Climate Change and Wine Production

The Finger Lakes create a microclimate ideal for growing certain types of grapes, making New York one of the country's top wine-producing states. The region's award-winning wines come from European grape varieties, which are especially vulnerable to changes in temperature and precipitation. Warming temperatures in late winter and early spring can cause grapevines and other fruit crops to blossom early. A late spring frost can then damage flowers and cause crop failure. This is a major concern for wine growers in the region, who have experienced large crop losses in recent years. As temperatures rise, some growers might be able to shift to different grape varieties, though replacing mature grapevines can require a substantial investment of money and time.



Vineyards in the Central/Finger Lakes region could experience losses from temperature changes and extreme events.

Effects of Warming Temperatures on Apples and Dairy Production

The Central/Finger Lakes region is a significant producer of apples and dairy products. As with grapes, "false spring" warming can cause apples to blossom too early, making them vulnerable to frost damage. For example, in early March 2012, unusually warm temperatures followed by several frost events caused extensive damage to New York State's fruit crops, with apple growers across the state reporting economic losses of up to 80%. Additionally, high temperatures and humidity can lead to heat stress in dairy cows, which reduces the amount of milk they produce. In severe cases, heat stress can harm cows' health. Warming summer temperatures could make heat stress an increasing concern in the region. Dairy farmers can reduce heat stress by upgrading facilities with better ventilation and cooling mechanisms, including fans and sprinklers.



Harmful algae blooms have appeared in Skaneateles Lake in recent years, impacting water quality and recreation. Photo by Abby Roller.

Harmful Algal Blooms in the Finger Lakes

The Finger Lakes are generally known for good water quality, which supports recreation, drinking water, and healthy ecosystems. However, warmer lake temperatures and increased runoff from heavy rainfall can harm water quality by creating conditions for cyanobacteria and algae to thrive. Algal blooms occur in warm, nutrient-rich waters, and some are labeled "harmful" when they produce toxic compounds. Harmful algal blooms can create health risks from fishing or swimming. These risks could reduce incomes for local businesses that depend on fishing, boating, and other water-related activities.

Wastewater System Overflows and Upgrades

Syracuse is one of several urban areas in New York State that operate combined sewer systems, which collect stormwater and sewage into one system and send it to a facility that treats the combined wastewater before discharging it into a body of water. During heavy rainfall or snowmelt events, large amounts of water can exceed the system's capacity, causing the system to overflow and release untreated wastewater into nearby water bodies. These events, known as combined sewer overflows (CSOs), are a pollution concern for surrounding communities and ecosystems. Changing rainfall patterns and extreme events could cause CSOs to become more common. In recent years, Onondaga County has completed more than 250 projects to reduce CSOs. While infrastructure updates can often be very expensive, the county has managed to keep costs down by combining small and large wastewater infrastructure upgrades with other construction projects, like street repaving or highway reconstruction. In addition, the Onondaga Nation has worked with the county and other partners to add green infrastructure solutions that help prevent CSOs into Onondaga Creek, which feeds into Onondaga Lake.

Learn More

Explore the New York State Climate Impacts Assessment at <https://nysclimateimpacts.org>.

