



# Regional Highlights from *Global Climate Change Impacts in the United States*

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## Northeast

The annual average temperature in the Northeast has increased by 2°F since 1970, with winter temperatures rising twice this much. Warming has resulted in many other climate-related changes including more frequent very hot days, a longer growing season, an increase in heavy downpours, less winter precipitation falling as snow and more as rain, reduced snowpack, earlier break-up of winter ice on lakes and rivers, earlier spring snowmelt resulting in earlier peak river flows, rising sea surface temperatures, and rising sea level. These trends are projected to continue, with more dramatic changes under higher emissions scenarios compared to lower emissions scenarios. Some of the extensive climate-related changes projected for the region could significantly alter the region’s economy, landscape, character, and quality of life.

## Key Issues

**Extreme heat and declining air quality are likely to pose increasing problems for human health, especially in urban areas.**

By late this century under a higher emissions scenario, hot summer conditions would arrive three weeks earlier and last three weeks longer into fall. Cities that currently experience just a few days above 100°F each summer would average 20 such days per summer. Cities like Hartford and Philadelphia would average nearly 30 days over 100°F per summer. In addition, cities that now experience air quality problems would see those problems worsen with rising temperatures, if no additional controls were placed on ozone-causing pollutants.

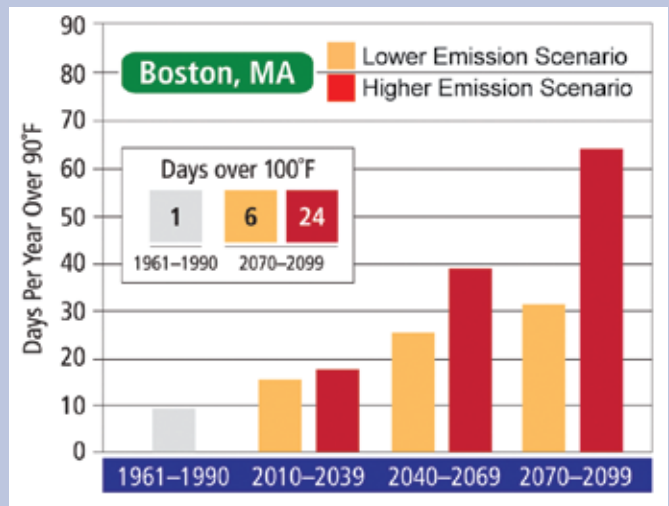
**Agricultural production, including dairy, fruit, and maple syrup, are likely to be adversely affected as favorable climates shift.**

Large portions of the Northeast are likely to become unsuitable for growing popular varieties of apples, blueberries, and cranberries under a higher emissions scenario. The climate conditions suitable for maple/ beech/birch forests are projected to shift dramatically northward, eventually leaving only a small portion of the Northeast with a maple sugar business and the colorful fall foliage that is part of the region’s iconic character.

### A note on the emissions scenarios

None of the emissions scenarios used in this report include any policies specifically designed to address climate change. All, including the lower emissions scenario, lead to increases in heat-trapping gas emissions for at least the next few decades, though at different rates.

Projected Days per Year over 90°F in Boston



The graph shows model projections of the number of summer days with temperatures over 90°F in Boston, Massachusetts, under lower and higher emissions scenarios. The inset shows projected days over 100°F.

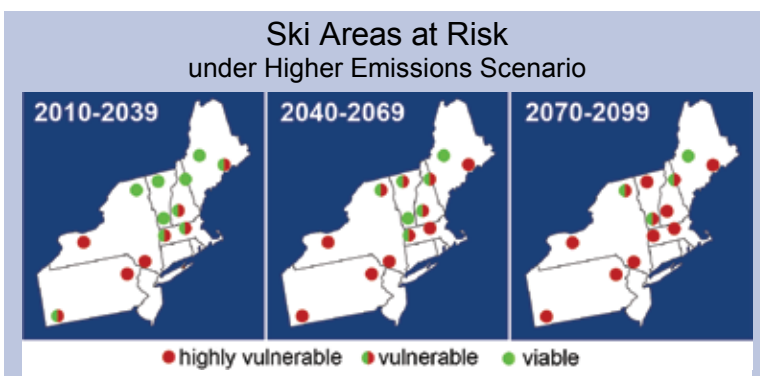
## Severe flooding due to sea-level rise and heavy downpours is likely to occur more frequently.

The densely populated coasts of the Northeast face substantial increases in the extent and frequency of storm surge, coastal flooding, erosion, property damage, and loss of wetlands. New York state alone has more than \$2.3 trillion in insured coastal property. Much of this coastline is exceptionally vulnerable to sea-level rise and related impacts.

## The center of lobster fisheries is projected to continue its northward shift and the cod fishery on Georges Bank is likely to be diminished.

Lobster catches in the southern part of the region have declined dramatically in the past decade, associated with a temperature-sensitive bacterial shell disease. Analyses also suggest that lobster survival and settlement in northern regions of the Gulf of Maine could increase under warmer conditions. Cod populations, also subject to overfishing and other stresses, are likely to be adversely affected as temperatures continue to rise.

## The projected reduction in snow cover will adversely affect winter recreation and the industries that rely upon it.



The ski resorts in the Northeast have three climate-related criteria that need to be met for them to remain viable: the average length of the ski season must be at least 100 days; there must be a good probability of being open during the lucrative winter holiday week between Christmas and the New Year; and there must be enough nights that are sufficiently cold to enable snowmaking operations. By these standards, only one area in the region (not surprisingly, the one located farthest north) is projected to be able to support viable ski resorts by the end of this century under a higher emissions scenario.

## Increased Flood Risk in New York City



The light blue area above depicts today's FEMA 100-year flood zone for the city (the area of the city that is expected to be flooded once every 100 years). With rising sea levels, a 100-year flood at the end of this century (not mapped here) is projected to inundate a far larger area of New York City, especially under the higher emissions scenario. Critical transportation infrastructure located in the Battery area of lower Manhattan could be flooded far more frequently unless protected. The increased likelihood of flooding is causing planners to look into building storm-surge barriers in New York Harbor to protect downtown New York City.

The length of the winter snow season would be cut in half across northern New York, Vermont, New Hampshire, and Maine, and reduced to just a week or two in southern parts of the region by late this century under a higher emissions scenario. Winter snow and ice sports, which contribute \$7.6 billion annually to the region's economy, will be particularly affected by warming.

The full report, including references for the material above, can be found online at:  
[www.globalchange.gov/usimpacts](http://www.globalchange.gov/usimpacts)

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