

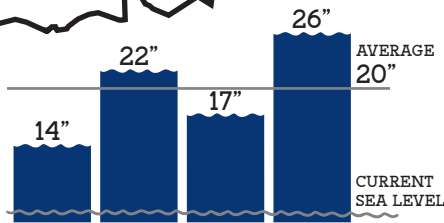
Appendix K:
CIRCA Climate Change Fact Sheets

SEA LEVEL RISE & COASTAL FLOODING IN CONNECTICUT

Information from the Governor's Council on Climate Change

1. Sea level is expected to rise by up to 20 inches by 2050, and to continue increasing after that.
2. Small changes in mean sea level have a big impact on the frequency of flooding.
3. Areas that experience flooding every few years now should expect flooding multiple times a year by 2050.

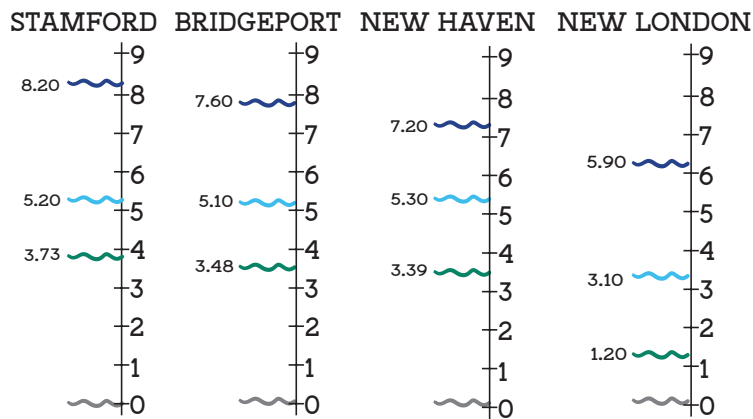
Four ways of estimating future sea level were averaged to develop the 20" by 2050 planning guidance.



FLOODING WATER LEVELS IN CT NOW

- MAJOR FLOODING
- MINOR FLOODING
- MEAN HIGHER-HIGH WATER
- CURRENT SEA LEVEL

Current water level benchmarks from Long Island Sound tide gages. Vertical axis scale is in feet and referenced to the North Atlantic Vertical Datum of 1988. More extreme water levels are located further west. For values in 2050 add 20" (1.66').

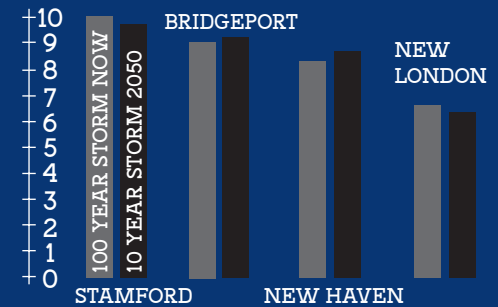


More detailed information is in the *Sea Level Rise in Connecticut Report*, which is available here: <https://circa.uconn.edu/sea-level-rise/references>

resilientconnecticut.uconn.edu

Return intervals describe the frequency and severity of a storm by giving the average time between flood events. For instance, in Stamford a storm with 10' storm surge has a return interval of 100 years.

With up to 20" of sea level rise, storms with a 100 year return interval now will have a 10 year return interval in 2050. Vertical axis scale is in feet.



Sea Level Rise Predictions: Consequences & Flood Risk:

Connecticut is expected to experience up to 20" of sea level rise by 2050, leading to greater frequency of flooding from tides and storms. Small changes in mean sea level have a big impact on the frequency and severity of flooding.

With 20" of sea level rise, what we experience today as a 4.5' storm surge will occur up to ten times more often in 2050. Some areas that flood once every 10 years will likely flood every 2 years. Chronic flooding will be a challenge for neighborhoods, roads, and areas affected in the past.

Coastal residents could expect:

- Higher cost of living
- Greater property damage risk
- More highway and road closures
- Inaccessibility to and higher maintenance costs for critical infrastructure

Individual towns are beginning to plan for coastal and inland impacts of climate change, as well as coordinated regional efforts that are underway. Some current actions include the Governor's Council on Climate Change; Multi-jurisdictional Hazard Mitigation Planning by Regional Councils of Governments; and Resilient Connecticut.

Planning for communities, infrastructure, and human health should consider the 2050 planning guidance, acceptable levels of risk, and strategies that do not increase exposure of public investment to flooding. Future development plans should consider "resilient corridors," as well as high ground that will be inherently resilient to future sea level rise

Resilient Connecticut is an initiative charged with creating a regional adaptation plan for Fairfield and New Haven counties by coordinating actions between local and regional stakeholders. The project includes coordination and planning with state agencies, policy recommendations, and strategies that use up-to-date monitoring and science based regional risk assessments to inform pilot projects.

Over the coming years, estimates will be revisited and updated with the most recent data and models.

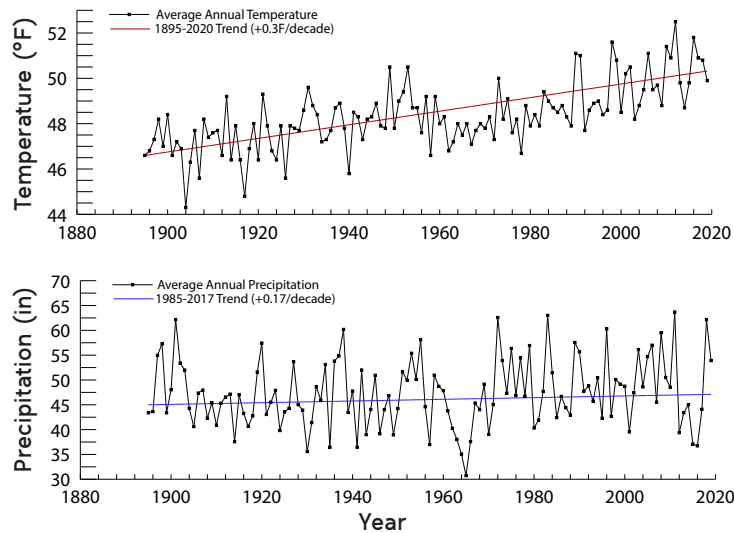


RISING TEMPERATURES & PRECIPITATION IN CONNECTICUT

Information from the Governor's Council on Climate Change

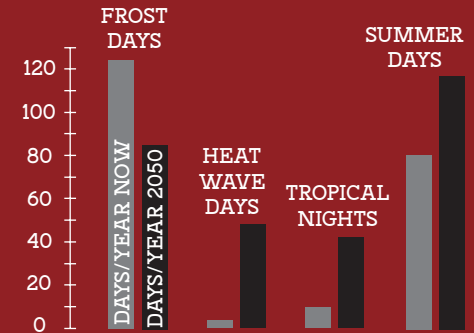
1. By 2050, average temperatures are expected to increase about 5°F, with increases thereafter dependent on emissions choices now.
2. Average precipitation is expected to increase about 8% (4 inches/year).
3. Indices of hot weather, summer drought, and extreme precipitation, are expected to increase.

TEMPERATURE & PRECIPITATION RECORD FOR CT SINCE 1895



Indices are tools used to track trends and projections in local climate. Extreme Indices help quantify impacts of a warming climate on weather measurements. Many of these common indices have been increasing due to climate change.

Annual counts of certain indices (defined below) in CT are to the right. Gray bars indicate today's and black 2050 values.



Current Trends:

Since 1895, Connecticut's annual average temperature has been increasing by 0.3°F per decade, or 3°F warmer in 2020. Seasonal averages have also been increasing, with winter experiencing the greatest increase. Observations show more warming along the southern coast and eastern half of the state.

Precipitation across Connecticut has been increasing by 0.17 inches per decade since 1985, with the largest increases in fall.

Predictions:

According to high CO₂ emission scenarios (RCP 8.5) for the future, average temperatures in Connecticut are predicted to rise 5°F (± 1°F) by 2050 and continue rising thereafter. The largest temperature increase is expected in summer and fall.

In the same scenario, average annual precipitation is expected to increase about 8% (4 inches per year), with much occurring in winter and spring. In a warmer Connecticut, precipitation will increase because of evaporation and the water cycle.

Present & Future Extreme Indices:

Heat/Cold Indices:

- Frost Days (annual number of days when the daily minimum is below 32°F) to drop from 124 to 85.
- Heat Wave Days (6 or more consecutive days with daily maximum temperature above the 90th percentile.) to rise from 4 to 48.
- Tropical Nights (annual number of days when the daily minimum is above 68°F) to rise from 10 to 40.
- Summer Days (annual number of days when the daily maximum temperature is above 77°F) to rise from 81 to 118.
- Number of Days above 90°F (annual number of days with maximum temperatures above the threshold value) to rise from 5 to 25.

Wet/Dry Indices:

- Number of days with more than 1 inch of precipitation to rise from 12 to 14.
- Number of heavy precipitation days to rise from 3 to 5.
- Fraction of heavy precipitation to rise from 15% to 20%.
- Maximum 1-day precipitation to rise (27%) from 2.8 to 3.5 inches.
- Maximum 5-day precipitation to rise (20%) from 4.5 to 5.4 inches.



More detailed information is in the Connecticut Physical Climate Science Assessment Report which is available here: <https://circa.uconn.edu/ct-climate-science>

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