Climate Change and Rhode Island

Fact Sheet #2

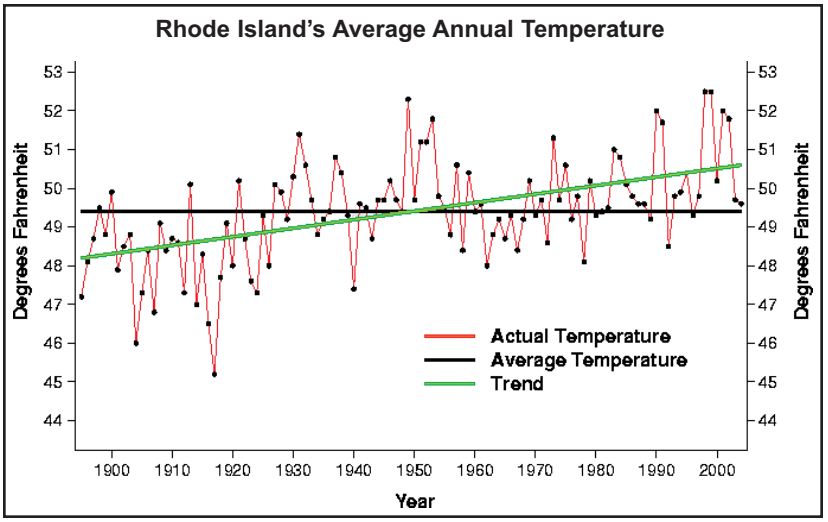
WARNING SIGNS

Rhode Island's climate is changing. While weather and climate are extremely variable, the indicators below provide clear evidence that Rhode Island is warmer and wetter than it was a century ago. This trend, especially prominent in the last 30 years, seems to be accelerating and may have profound impacts on our economy, our environment, our health and our quality of life. Although more research is needed to better understand the changing climate and its impact on the state, climate change due to global warming is a phenomenon that Rhode Islanders will have to take action on in the coming decades. The indicators below show how our climate is changing.

It's Warmer

Temperature is one of the most frequently used indicators of climate change and has been recorded at numerous stations in Rhode Island by the National Oceanographic and Atmospheric Administration.

Since 1899, the temperature in Rhode Island has risen by 2.3 degrees F, the most dramatic rise in the Northeast. The temperature in Providence has risen 3.3 degrees F over the same period. If emissions of greenhouse gases continue to go up as expected, it is likely that our temperature will increase another 2 to 6 degrees F in the next 100 years *(EPA Climate Change and RI)*.



It's Wetter

When clouds become too heavy with moisture, they fall to the ground as rain, snow, sleet, hail, and freezing rain. Ecological systems in Rhode Island depend on precipitation for hydration, replenishment of underground water sources and for growing crops. An increase in global surface temperatures will very likely lead to changes in precipitation.

Over the past century, annual precipitation in Rhode Island has increased by more than 11 inches or 28% (*NOAA NCDC Data)*.

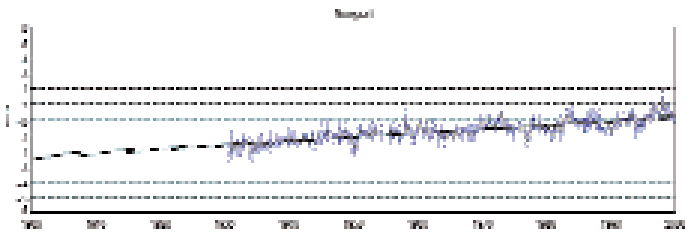
More precipitation may result in more severe flooding events and increase property damage, such as occurred here on Callahan School Road, Harrisville, RI on October 15, 2005.

The Sea Is Rising

Mean sea level is defined as the average height of the surface of the sea for all stages of the tide over a certain amount of time. For the past 150 years, mean sea level has been monitored at Providence and Newport, RI. From these records, it is clear that the sea level has risen due to a combination of natural processes and human actions. Changes in sea level can contribute to erosion and saltwater contamination of freshwater ecosystems and water sources. Also, as sea level rises, thousands of RI citizens who live along Rhode Island's 440 miles of coastline could be forced to adapt or re-locate. Warmer temperatures in the future will likely further melt continental glaciers and contribute to the thermal expansion of ocean water, raising worldwide sea level even further.

Newport has seen an average mean sea level trend increase of 7 inches per century (*NOAA*). A current scenario suggests that if sea level rises approximately 12.4 inches in the next century, 604 acres of Rhode Island's coasts will be lost (Brown University Study). If global temperatures continue to increase, sea level will follow closely, putting all of RI's coastal areas at risk.

Mean Sea Level Trend - Newport, Rhode Island

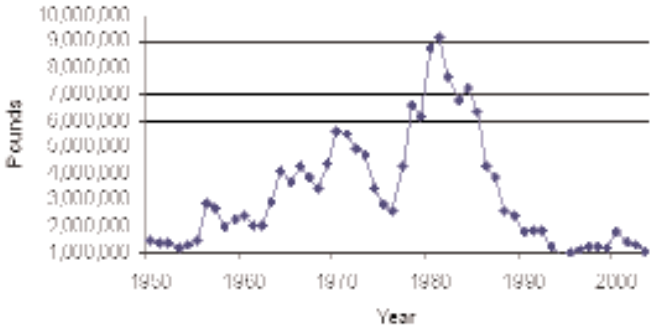


The mean sea level trend is 2.57 millimeters/year (0.84 feet/century) with a standard error of 0.11 mm/yr based on monthly mean sea level data from 1930 to 1999.

The Ocean Is Warmer

Since 1979, global sea temperatures have risen 0.3 degrees F every 10 years (*NOAA)*. For the past 40 years, Narragansett Bay has seen a 1-degree rise in temperature per decade (*New England Regional Assessment, EPA)*. In the winter alone, RI's coastal temperatures have increased 3 degrees F from 1960 to 1990 (*New England Regional Assessment, EPA*).

Winter Flounder Landings - Rhode Island 1950-2003



As bay temperatures have increased, winter flounder abundances have been in decline for the past 25 years. Since 1981, winter flounder landings have dropped from more than 9 million pounds to well less than 2 million pounds annually, a loss of roughly $2 million per year to RI fisheries (*Narragansett Bay Journal*). Lobsters have also been in decline since 2001, and rising sea temperatures may play a part in the rapid loss of lobster landings. A continual rise in sea temperatures will have unknown effects on marine fisheries that could further stress an already hurting industry.

Learn More!

Clean Air-Cool Planet and the Climate Change Research Center at the University of New Hampshire recently released their *Northeast Indicators of Climate Change 2005* report; using data on a dozen physical and biological occurrences in New York and New England, it shows dramatic regional changes. Visit their website at http://www.cleanair-coolplanet.org/.