Health and a Changing Climate

DESCRIPTION

Though often used interchangeably, "weather" and "climate" have different meanings. Weather reflects short-term conditions of the atmosphere; climate is the average daily weather for an extended period (usually 30 years or more) at a certain location.

Climate change is occurring in Minnesota and its impacts are affecting our state's environment, economy and communities. Government agencies across the state are concerned about the impacts of a changing climate on our natural resources, economy, health and quality of life, and are taking actions to address these emerging challenges.[1] Work on climate change can be categorized into two areas: mitigation and adaptation. The goal of mitigation is to limit the magnitude or progression of climate change by addressing the causes (such as greenhouse gas emissions), while adaptive approaches are actions taken to prepare for and respond to the effects of climate change on humans and natural systems. Without effective mitigation, humans and natural systems will find it increasingly difficult, if not impossible, to adapt.[2]

HOW WE ARE DOING

There are three pronounced trends in Minnesota and Ramsey County when it comes to climate change: it's becoming warmer and wetter; wintertime, nights and cold extremes are warming the fastest; and heavy and extreme rainfall is increasing and becoming more frequent.[3]

Since 2001, Minnesota has experienced 10 of its top 20 warmest years on record dating to 1895. Two of the state's top five warmest years have happened in the last five years: 2012 was the second-warmest year, and 2016 ranked as the fifth-warmest year. Since the start of the 20th century, the annual average temperature statewide has risen more than 2 degrees Fahrenheit, with most of the warming occurring in winter. In December-February, temperatures have risen about 4 degrees Fahrenheit (1896-2017). Minnesota's average temperature could rise 4 to 5 degrees Fahrenheit by the middle of the century (2041-2070) as compared to 1971-2000[4]. Both the long-term and recent rates of warming in Minnesota are faster than national and global trends.[5]

Annual average precipitation – rain and melted snow combined – is expected to increase, particularly in spring and winter. Decades of records show that the number of 3-inch rainfalls is steadily increasing. Simultaneously, droughts could become more intense due to warmer temperatures increasing the soil moisture loss in times of dry weather. Ice cover on Minnesota's lakes is building later than usual and melting sooner in spring. Poor air quality days could also become more numerous due to hotter temperatures, leading to the formation of ground-level ozone.[3]

Over the last several decades, the state has experienced substantial warming during winter and at night, with increased precipitation throughout the year, often from larger and more frequent heavy rainfall events. The heaviest snowstorms have also become larger, even as winter has warmed. These changes alone have damaged buildings and infrastructure,

Information to note

- Our weather is becoming warmer and wetter.
- Climate-related events affect individuals differently based on socioeconomic status, age and other factors.

[1]Adapting to Climate Change in Minnesota: 2017 Report of the Interagency Climate Adaptation Team. Minnesota Department of Health. https://www.pca.state.mn.us/sites/default/files/p-gen4-07c.pdf. Published May 2017. Accessed December 15, 2017.
[2]Responding to Climate Change. National Aeronautics and Space Administration. Global Climate Change: Vital Signs of the Planet. https://climate.nasa.gov/solutions/adaptation-mitigation/. Accessed April 30, 2018.
[3]Dolce C. Minnesota: Real Impacts in an Unexpected Place. The Weather Company. http://features.weather.com/us-climate-change/minnesota/. Published May 18, 2017. Accessed December 15, 2017.
[4]Pryor, S. C., D. Scavia, C. Downer, M. Gaden, L. Iverson, R. Nordstrom, J. Patz, and G. P. Robertson, 2014: Ch. 18: Midwest. Climate Change Impacts in the United States: The Third National Climate Assessment, J. M. Melillo, Terese (T.C.) Richmond, and G. W. Yohe, Eds., U.S. Global Change Research Program, 418-440. doi:10.7930/J0J1012N. https://nca2014.globalchange.gov/report/regions/midwest. Accessed June 20, 2018.
[5]National Oceanic and Atmospheric Administration. Climate at a Glance. NOAA climate.gov. https://www.climate.gov/maps-data. Accessed December 15, 2017.

limited recreational opportunities, altered our growing seasons, impacted natural resources, and affected the conditions of lakes, rivers, wetlands, and our groundwater aquifers that provide water for drinking and irrigation. The years and decades ahead are predicted to continue this trend and additional climatic changes.[6]

DISPARITIES

As climate change impacts factors like heat stress, air pollution, and affordable fresh food, reliance on strategies such as health care and air conditioning are likely to widen the mortality gap between the rich and poor, who do not have equal access to health care, clean air, or weatherized homes.[7]

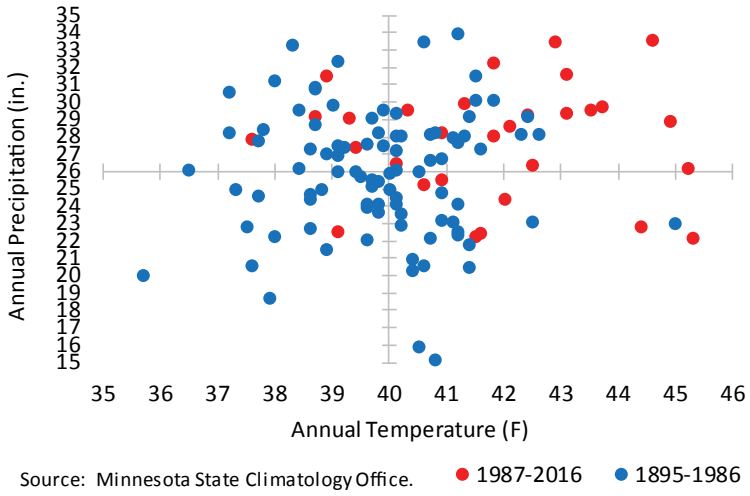
RISK FACTORS

Socio-economic status, education level, age, communication barriers, housing conditions and type of employment influence vulnerability. For example, those over 85 or under 5 years old, living in poverty, lacking access to air conditioning, and/or working outdoors are especially vulnerable to the effects of an extreme-heat event.

WHAT RAMSEY COUNTY GOVERNMENT IS DOING

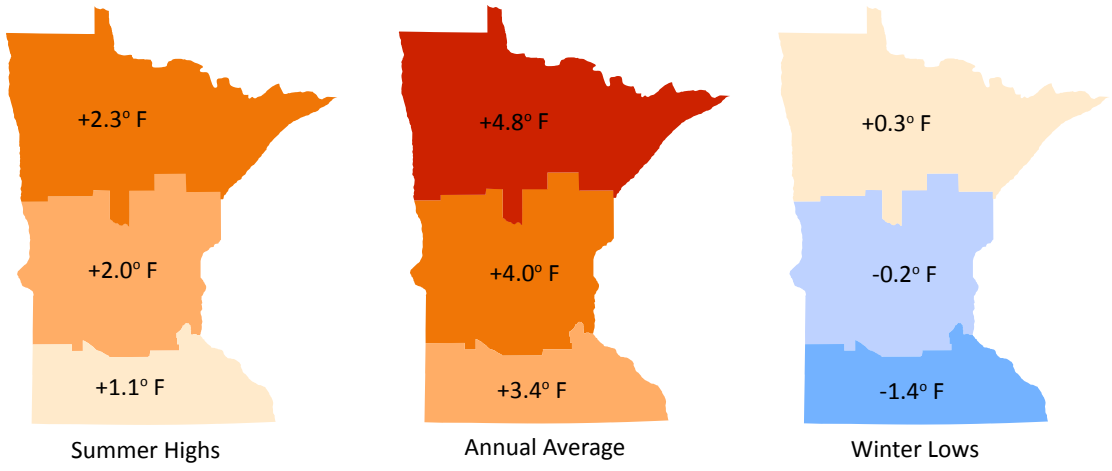
A climate change health vulnerability assessment was completed by Saint Paul – Ramsey County Public Health that describes: climate change trends, how these trends directly and indirectly affect human health, characteristics that increase individual vulnerability to the effects of climate change, and geographic regions of vulnerability in the county. Ramsey County will be working to develop community-based actions that can be implemented to address areas of vulnerability and increase resilience in the face of a changing climate.

Average Temperature and Precipitation, Minnesota



Source: Minnesota State Climatology Office.

Total Temperature Change, Minnesota, 1895 - 2015



Source: Minnesota State Climatology Office.

[6] Adapting to Climate Change in Minnesota: 2017 Report of the Interagency Climate Adaptation Team. Minnesota Department of Health. https://www.pca.state.mn.us/sites/default/files/p-gen4-07c.pdf. Published May 2017. Accessed December 15, 2017.

[7] Schwartz RM, Gillezeau CN, Liu B, Lieberman-Cribbin W, Taioli E. Longitudinal impact of hurricane Sandy exposure on mental health symptoms. Int. J. Environ. Res. Public Health. 2017; (9): pii: E957. doi: 10.3390/ijerph14090957. https://www.ncbi.nlm.nih.gov/pubmed/28837111. Accessed April 30, 2018.