

Minnesota's Changing Climate



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Minnesotans are concerned & want to see action

60%

of
Minnesotans

would like to see an **increase in the use of wind, solar, and other renewable energy** to power homes and businesses.

64%

of
Minnesotans

think we **should prepare for climate change** by preserving & conserving our state's **grasslands, forests, and wetlands**.

83%

of
Minnesotans

think **local, state and municipal governments are responsible** for addressing climate change in the state.

Source: UMN MCAP, CFANS, Caravan Climate Opinion Poll, Sept. 2022



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Climate Change - State of the Science

It's us.

It's here.

We've committed to change.

The more we emit, the worse it gets.

We must reduce risks through adaptation.

We still choose, but there's no time to waste.



Sources: IPCC, 2021, 2022; NCA5, 2023



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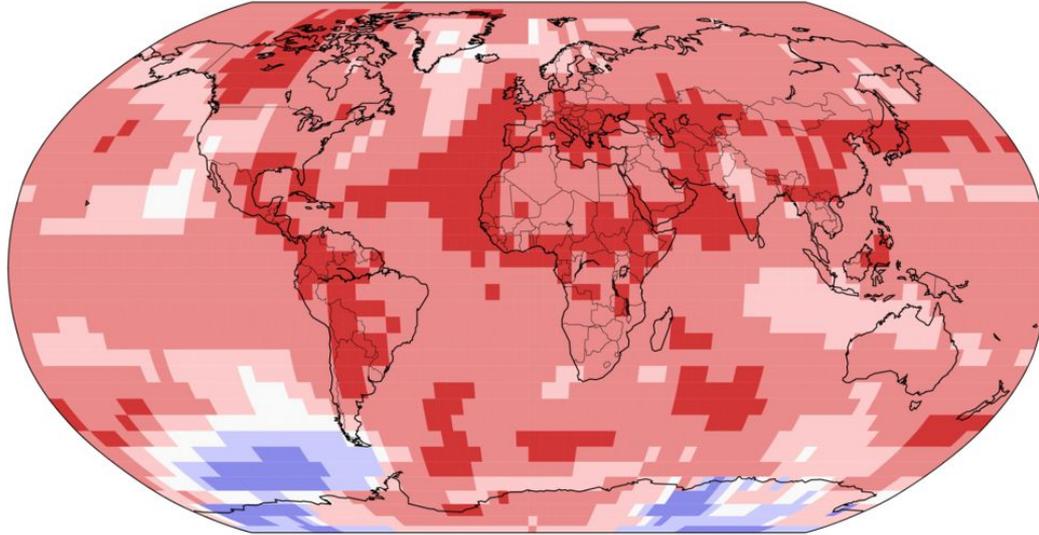
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2023 - An Exceptional Year

Land & Ocean Temperature Percentiles Jan–Dec 2023

NOAA's National Centers for Environmental Information

Data Source: NOAA GlobalTemp v5.1.0–20240108



Record Coldest

Much Cooler than Average

Cooler than Average

Near Average

Warmer than Average

Much Warmer than Average

Record Warmest

2023 was the warmest year since records began in 1850

- 2023 was **2.12°F above** the 20th century average
- **28 confirmed weather/climate disaster events** with losses exceeding \$1 billion in 2023. *The 1980–2023 annual average is 8.5 events. **The most recent 5 year average is 20.4 events.***

Source: NOAA, 2024

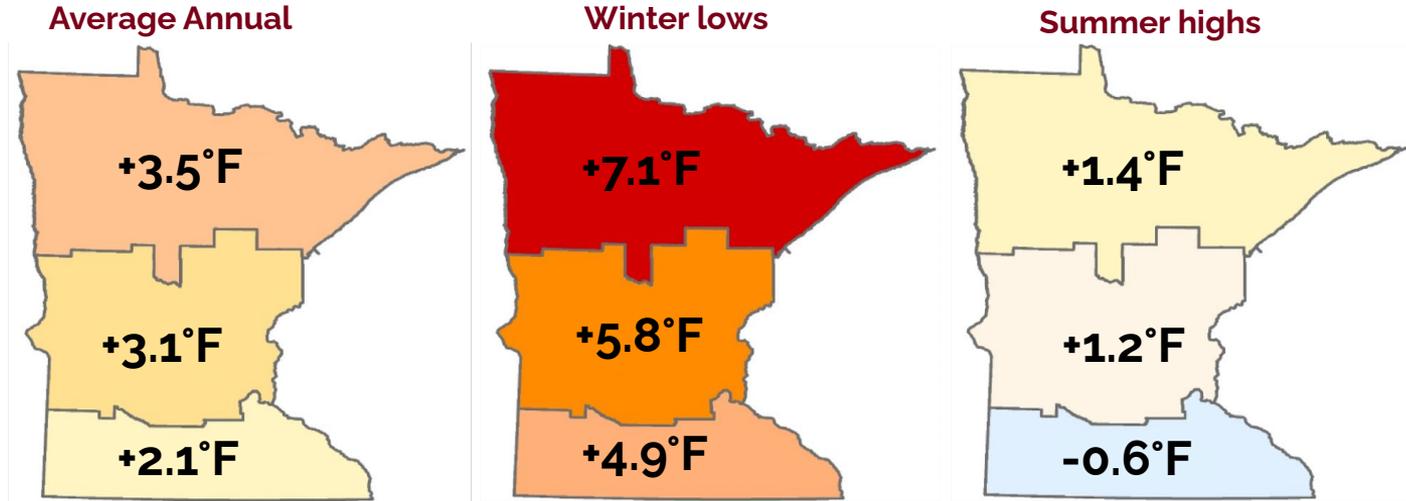


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A Warming Minnesota

Observed Temperature Change (1895-2023)



Minnesota's average annual temperature has increased by 2.9°F since 1895

Data: MN DNR, 2024



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Minnesota is getting **warmer** & **wetter**



**10 wettest &
warmest years on
record all
occurred after
1997**



**Observed 13%
increase in the
heaviest rainfall
of the year**



**Growing season
has lengthened
by ~2 weeks
since 1950**

Data: MN DNR, NCA4 Midwest Chapter



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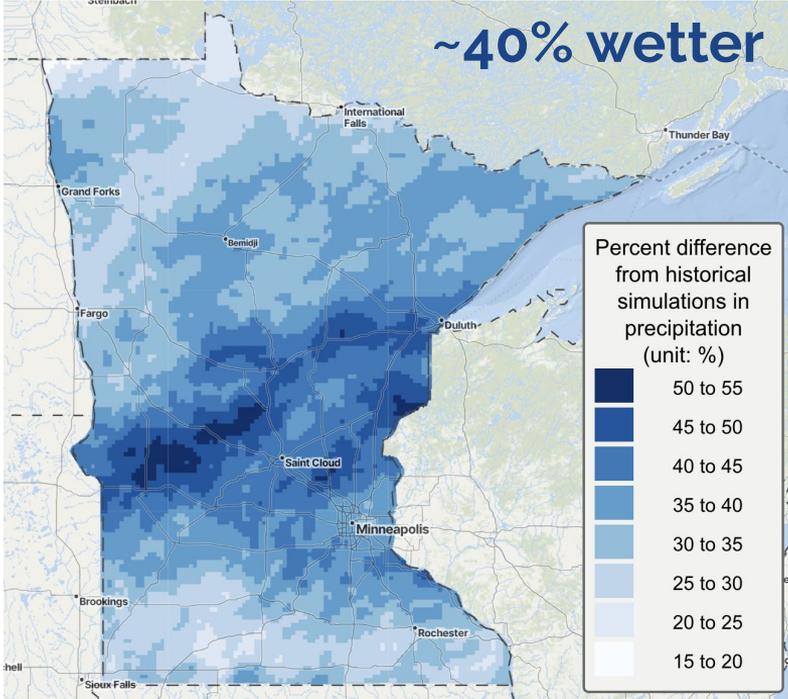
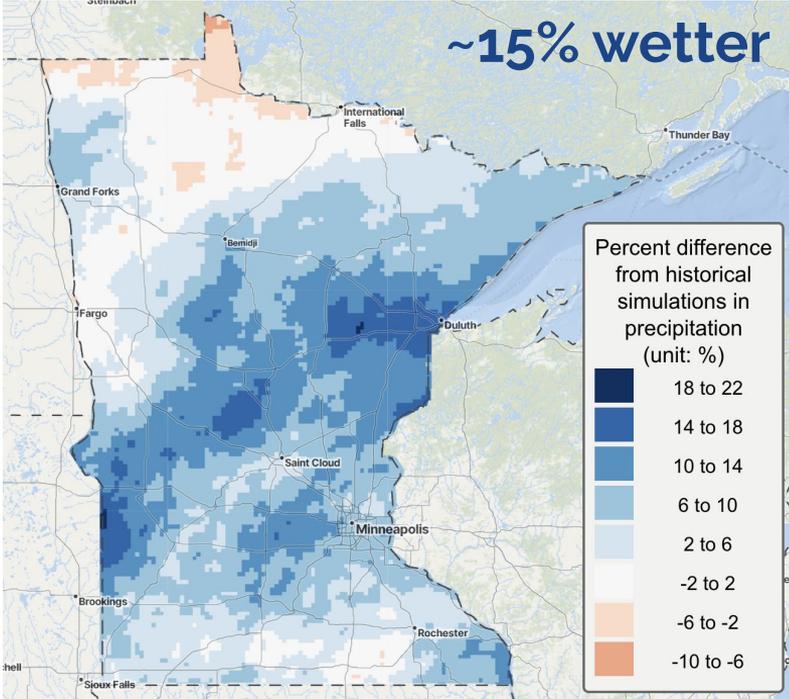


Increasing precipitation has elevated overall flood risk, causing disruption to transportation, damage to property and infrastructure, and increasing risks for human health.

Average percent change in spring precipitation

Mid-century (2040-2059)

End-of-century (2080-2099)



high emissions (SSP585); relative to 1995-2014

Data: UMN Climate Adaptation Partnership, 2024

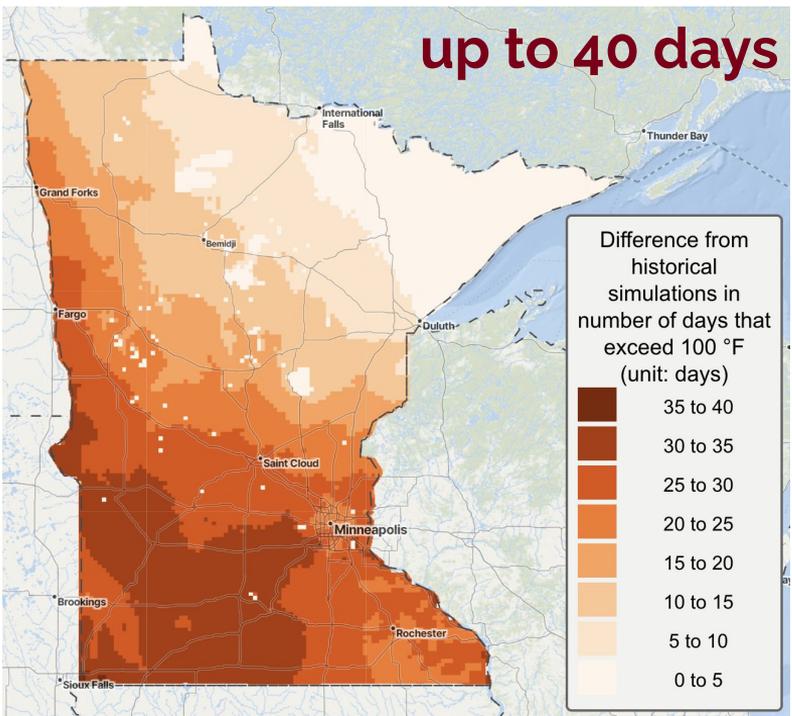
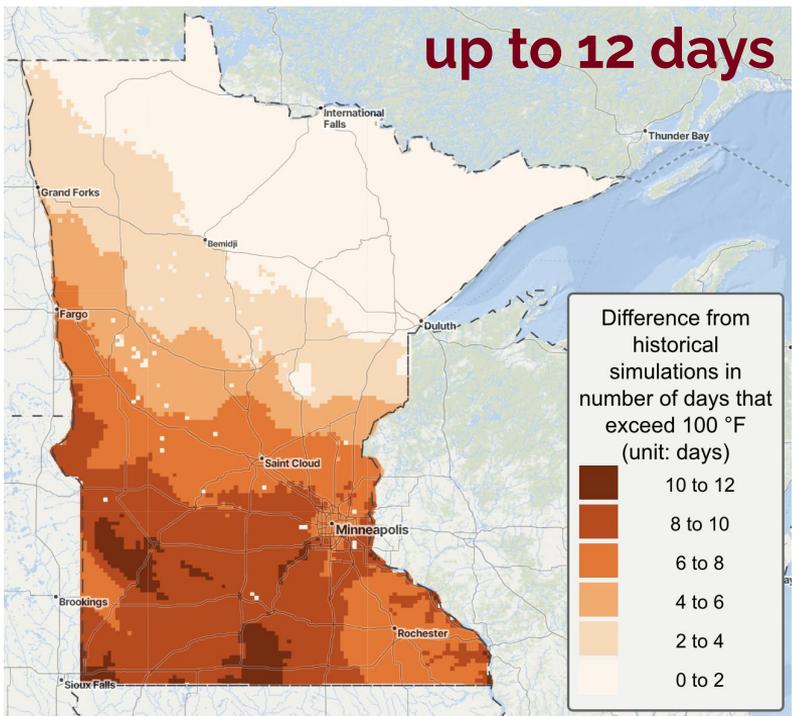
Extreme heat impacts human health, the economy, and creates material stress on roads and buildings, water systems, and other critical infrastructure.



Number of days per year exceeding 100°F

Mid-century (2040-2059)

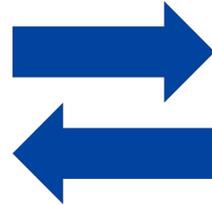
End-of-century (2080-2099)



high emissions (SSP585); relative to 1995-2014

Data: UMN Climate Adaptation Partnership, 2024

Across the Midwest, transitions from wet to dry extremes



are happening **more quickly** and
more frequently.

Photos: UMN Extension; Data: www.drought.gov

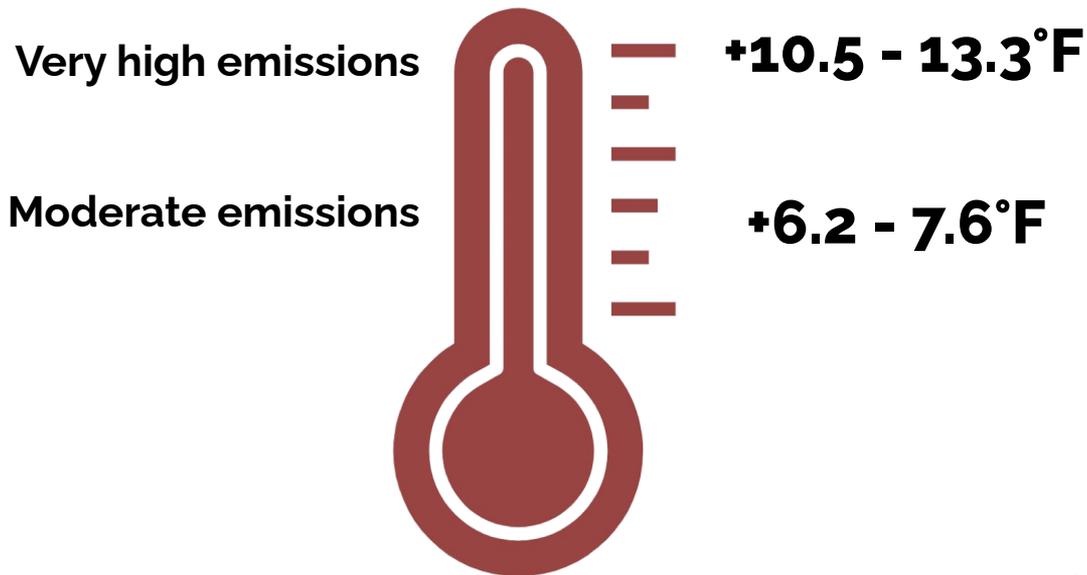


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The more we emit, the worse it gets.

Compared to 1995–2014, Minnesota's average daily temperature at the end of the century is very likely to be higher by:



Data: [UMN Climate Adaptation Partnership, 2024](#)



Risk reduction & management with climate change



Effective climate risk reduction **requires investments in mitigation and adaptation.** It also requires **consideration of climate risk** in planning & policy.

Resiliency gap modified from UCS, 2016

Every increment of warming matters.



Every action matters.

NCA5, 2023; Photos: UMN Extension & H. Roop