Taking Action: Preserving the MN Climate & Health Program

Kristin Raab, Director, MN Climate & Health Program

Supervisor, EIA Unit, EH Division

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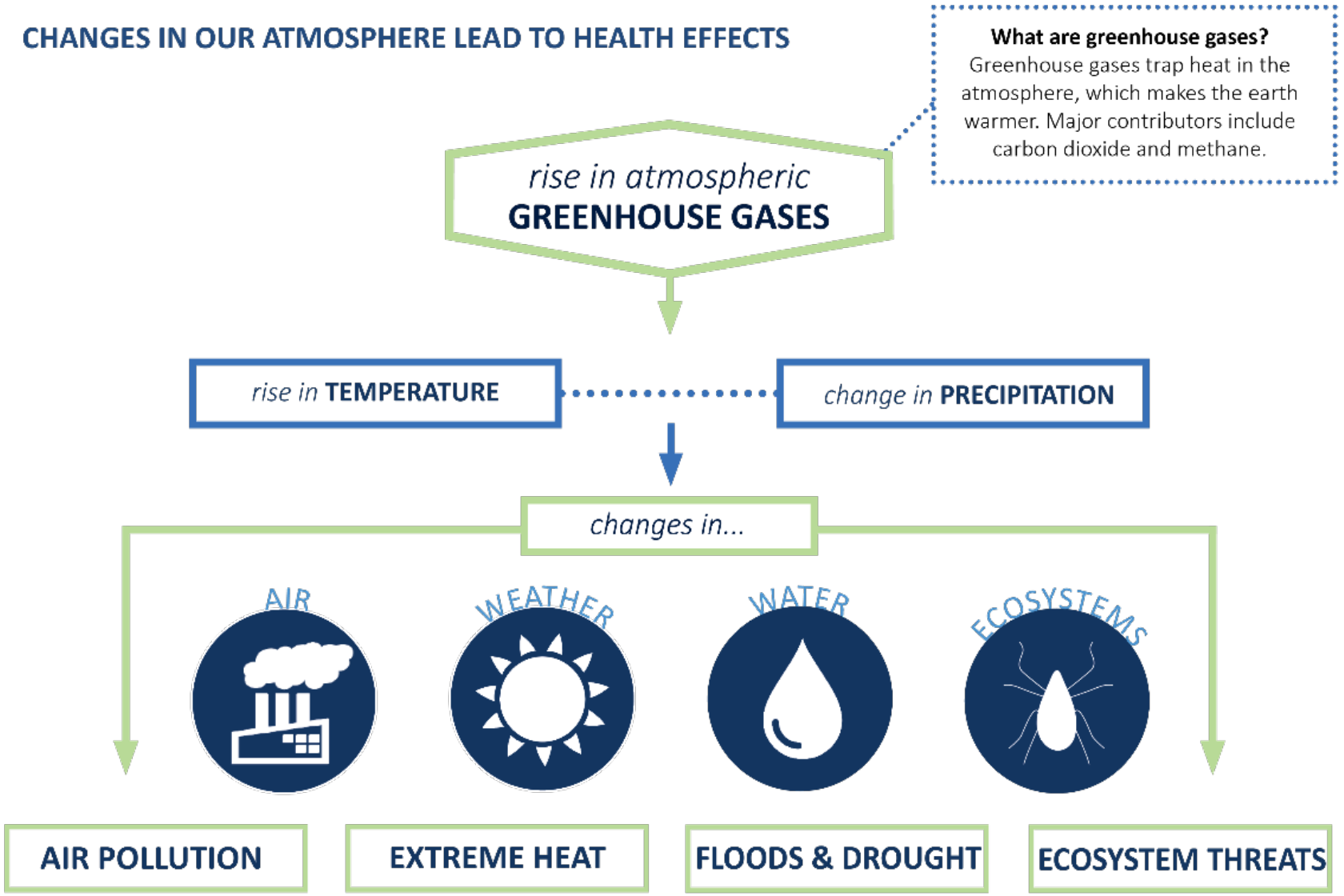
health.mn.gov/climate/climatechange

Climate and Health are Linked



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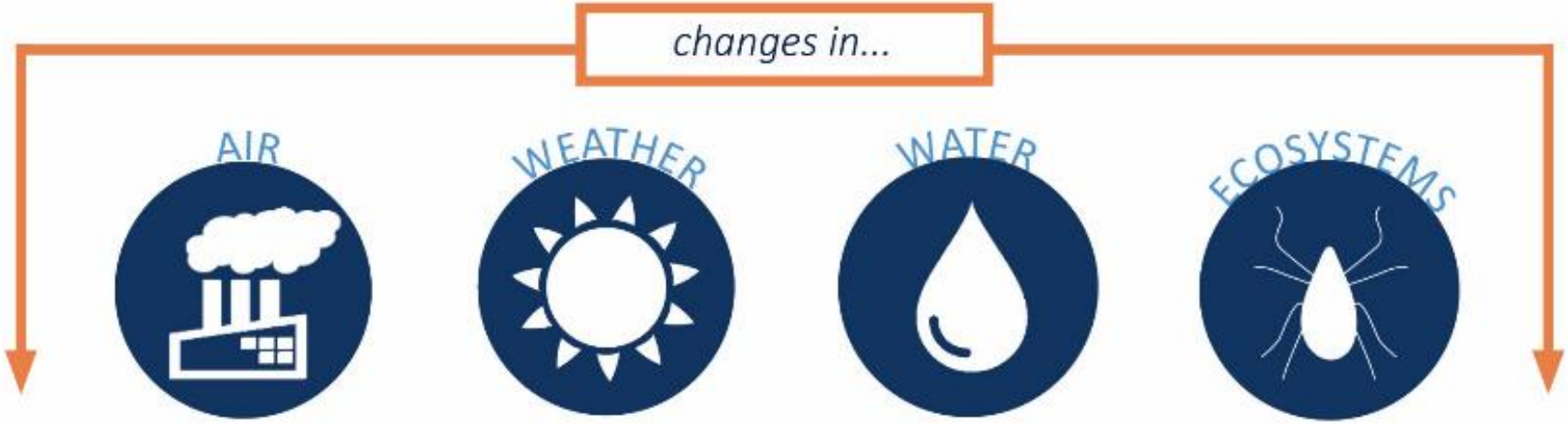
Continued: Climate and Health Are Linked



AIR POLLUTION

Direct effects
- » Initiate or worsen respiratory, cardiovascular and other diseases

Indirect effects
- » Reduced visibility
- » Reduced productivity at work or school
- » Degradation of crops and water bodies

EXTREME HEAT

Direct effects
- » Heat stress and illness
- » Worsening of pre-existing conditions
- » Heat-related mortality

Indirect effects
- » Infrastructure failures
- » Strain on essential services
- » Disruption to key social networks

FLOOD & DROUGHT

Direct effects
- » Mental stress
- » Waterborne disease
- » Drowning and injuries

Indirect effects
- » Respiratory ailments
- » Disruption to economic and social networks
- » Strain on essential services
- » Wildfires

ECOSYSTEM THREATS

Direct effects
- » West Nile virus
- » Lyme disease
- » Liver, respiratory, nervous, skin disorders (from harmful algal blooms)

Indirect effects
- » Threats to livelihood
- » Financial strains

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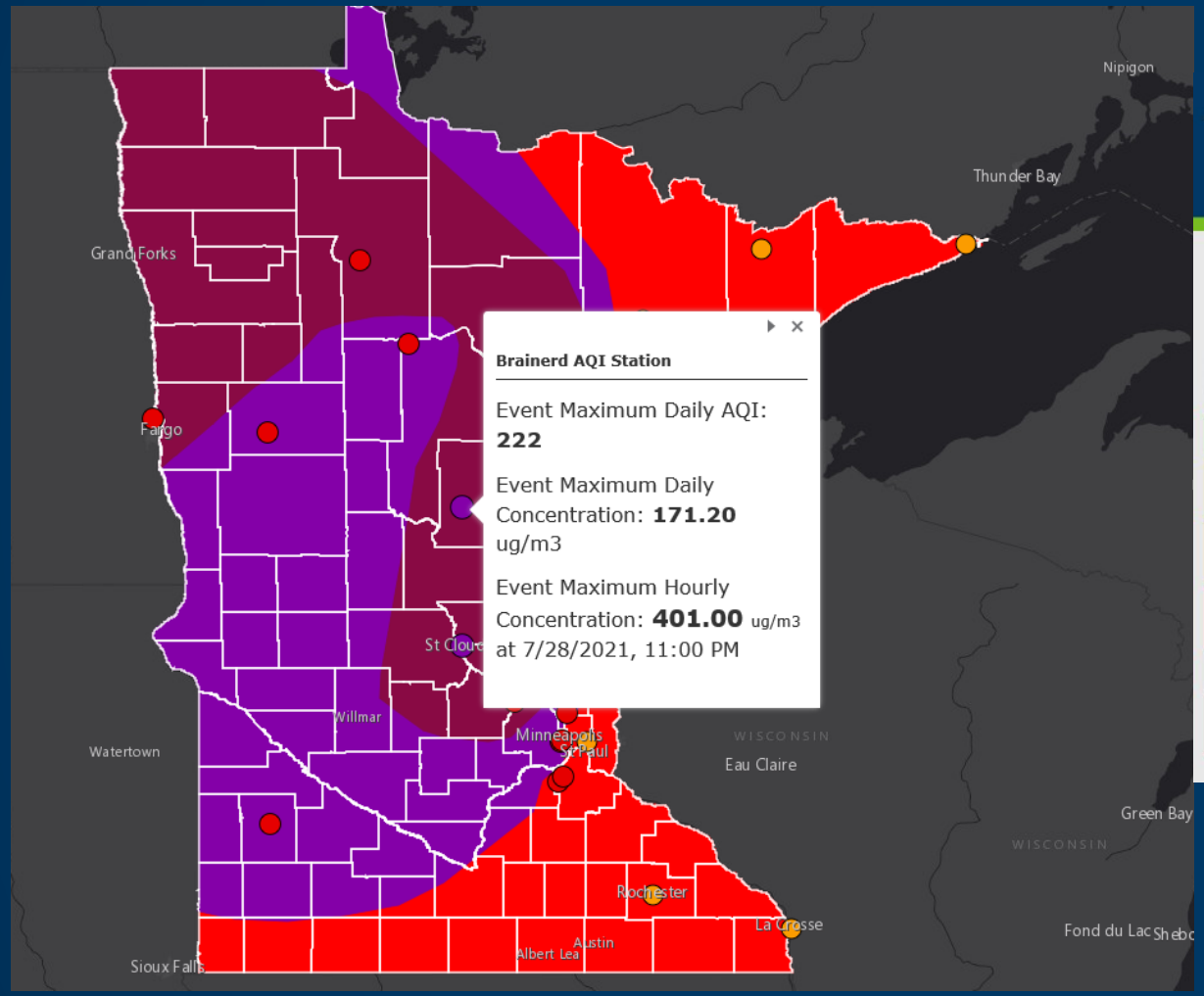
Unprecedented Air Quality Event: July 28-Aug 6, 2021



The Air Quality Index (AQI)

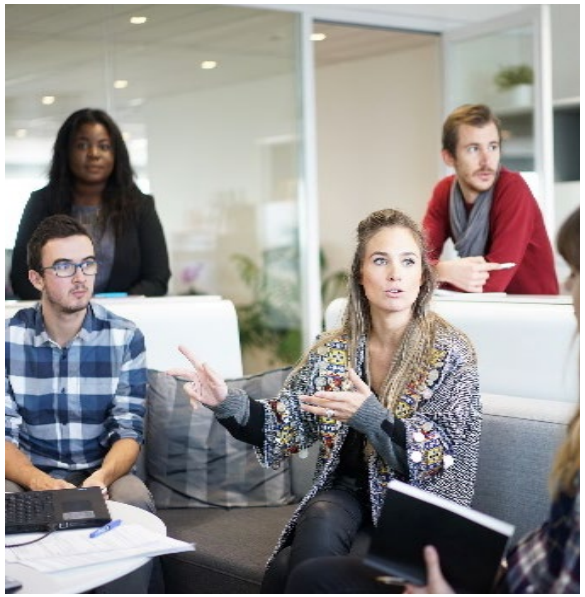
Air Quality Index (AQI) Colors and Category Description

Daily AQI Color	Levels of Concern	Values of Index	Description of Air Quality
Green	Good	0 to 50	Air quality is satisfactory, and air pollution poses little or no risk.
Yellow	Moderate	51 to 100	Air quality is acceptable. However, there may be a risk for some people, particularly those who are unusually sensitive to air pollution.
Orange	Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is less likely to be affected.
Red	Unhealthy	151 to 200	Some members of the general public may experience health effects; members of sensitive groups may experience more serious health effects.
Purple	Very Unhealthy	201 to 300	Health alert: The risk of health effects is increased for everyone.
Maroon	Hazardous	301 and higher	Health warning of emergency conditions: everyone is more likely to be affected.

From US EPA: https://www.airnow.gov/aqi/aqi-basics/

MINNESOTA POLLUTION CONTROL AGENCY

MN Climate & Health Program Highlights



Education

Resources/ tools

Data Analysis

Climate & Health Educational Campaign

Resources/Tools for Planning

https://maps.umn.edu/climatehealthtool/heat_app/

Heat Vulnerability in Minnesota

This pilot tool is intended to help city/county planners, emergency managers, and public health professionals assess community vulnerability to extreme heat. The tool helps visualize datasets that contribute to a community's vulnerability, including sensitivity (i.e., demographic, socio-economic, health, and environmental variables) and exposure (i.e., temperature-related variables). Variables can be mapped individually or layered to develop a composite score.

Get started by exploring the pre-loaded data below and then look at the data of most interest to your community. Pre-loaded sensitivity data show the change in projected population from 2018 to 2050 for three age groups at highest risk for heat-related illness in Minnesota. A composite score of the variables is determined by dividing each variable into quartiles from 1 to 4 (1-lowest to 4-highest) and then summing the quartiles across the variables. For example, in this case, a score of 12 means that the county is at the highest ranking for each variable, suggesting an increased risk for health impacts related to heat compared to other counties. Pre-loaded exposure data shows projected number of cooling degree days for 2050, which is used as a proxy to estimate cooling needs for buildings.

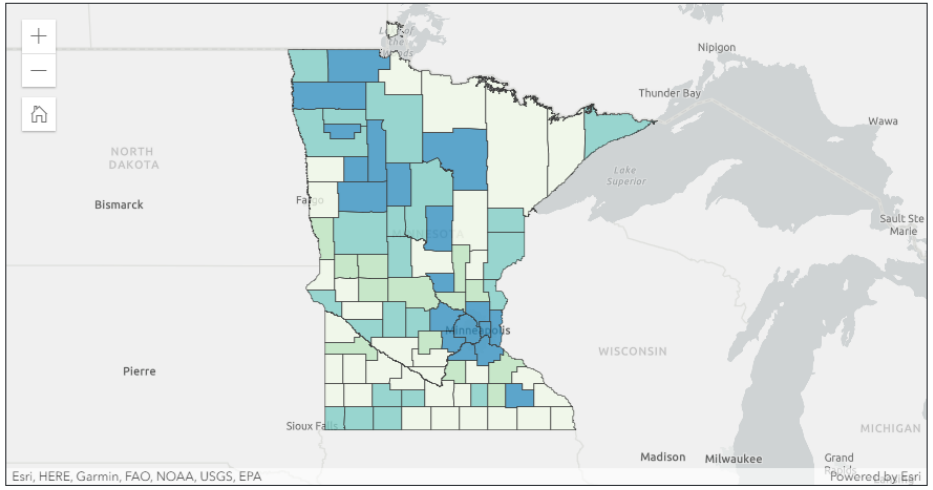
Many of the sensitivity variables come from the America Community Survey (ACS) and Esri. ACS and Esri use different methods for calculating their estimates, and thus, population estimates for each dataset are shown in the pop-up boxes. The data dictionary provides detailed information on the source of each variable and in some cases how it was calculated.

Interested in learning more? Read our User Guide, and check out our Model Heat Vulnerability Assessment for Ramsey County for an illustration of how to package the maps and data into a stakeholder report.

1) Select study area: Minnesota **2) Select spatial resolution:** Counties

Sensitivity

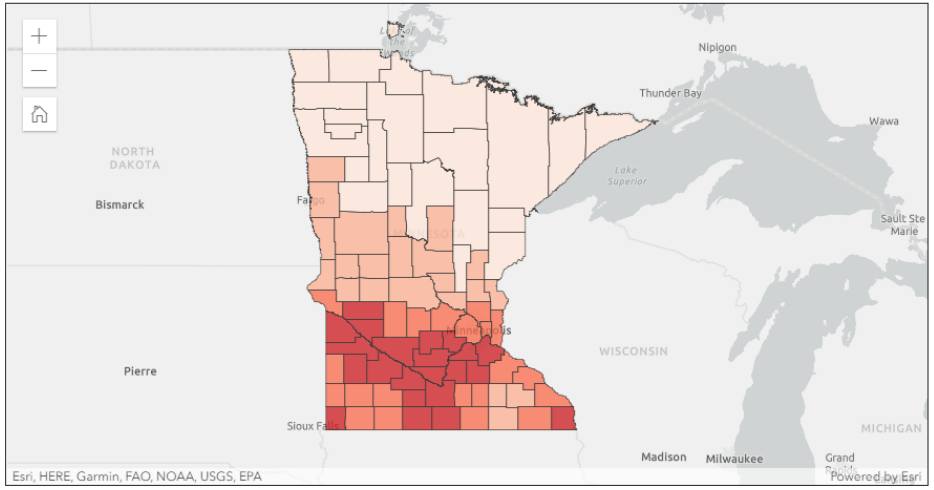
Select Variables



Composite Sensitivity Score

Exposure

Select Variables



Composite Exposure Score

Resources/Tools: HSEM Climate & Health Data Profiles

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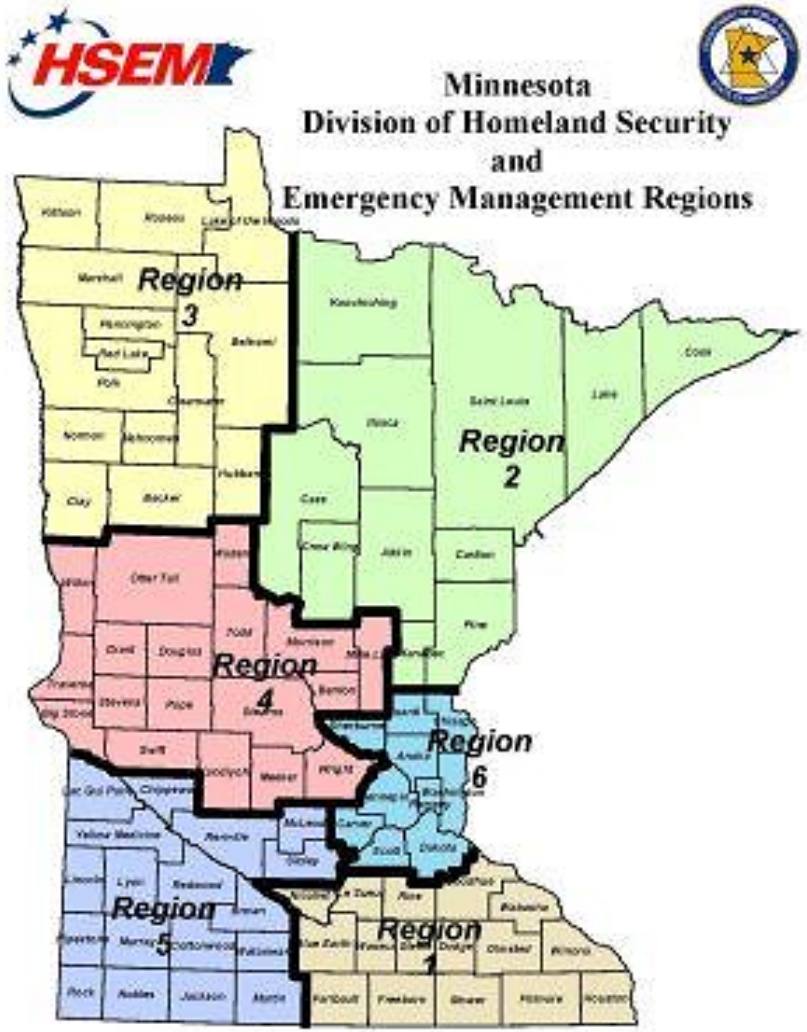
Hennepin EMERGENCY MANAGEMENT

Advancing Health & Disaster Resiliency in Minnesota

CO-PRODUCING CLIMATE & HEALTH INFORMATION FOR THE EMERGENCY MANAGEMENT SECTOR

UPDATED 01/26/2022



Minnesota HSEM Climate & Health Data Profiles

REGION 3 CASE STUDY: KEY IMPACTS

It is nearly impossible to capture all the various impacts from a natural disaster. These impacts broadly include costly infrastructure damage, disrupted utility service, prolonged work and school absences, acute physical injury and persistent strains on mental health, on scales ranging from the community to the household to the individual.

The extensive damage experienced by Minnesota from the 2012 drought is difficult to capture in a single cost estimate. Considered the most extensive drought to impact the U.S. since the 1930s, the 2012 drought was estimated to have cost affected states together approximately 33 billion dollars, including revenue loss from crop failure.

The following are just a few examples of the adverse impacts on HSEM Region 3 communities from the 2012 drought:

AGRICULTURE LOSSES: Crop yields in Northwest and Southwest Minnesota were 10-20% below expected yields.

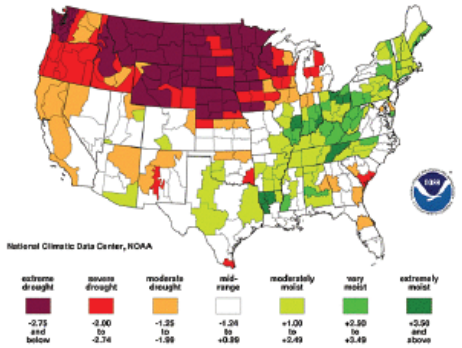
WATER LEVELS: Water levels fell in response to dry, hot weather. Unusually warm lake water temperatures were also deemed responsible for some fish kills. The U.S. Geological Survey (USGS) and Minnesota Department of Natural Resources (MNDNR) reported extremely low stream discharge values in late September, in some cases approaching the lowest on record.

WILDFIRE: Numerous wildfires emerged in part from widespread drought conditions, including eight fires in Roseau County and an especially large fire near Red Lake. At least 16 local fire departments and state and federal fire crews were mobilized to fight the fires, yet at least 55,000 acres were burned and a number of homes and outbuildings were lost.

PERMIT SUSPENSION: To safeguard water availability, the MNDNR suspended 16 surface water appropriation permits across the state, including a mining operation, golf courses, a sugar processing plant, and other public and private sector entities. By the end of October, roughly 50 surface water appropriation permits had been suspended by the MNDNR.

DEPLETED WELL WATER: A number of complaints were filed with the state when private wells went dry. Neighboring production wells were suspected of amplifying the problems related to the drought.

STRICTER REGULATIONS: For the first time, Minnesota state regulators plan to experiment with stricter rules that will require some local communities to allocate water.



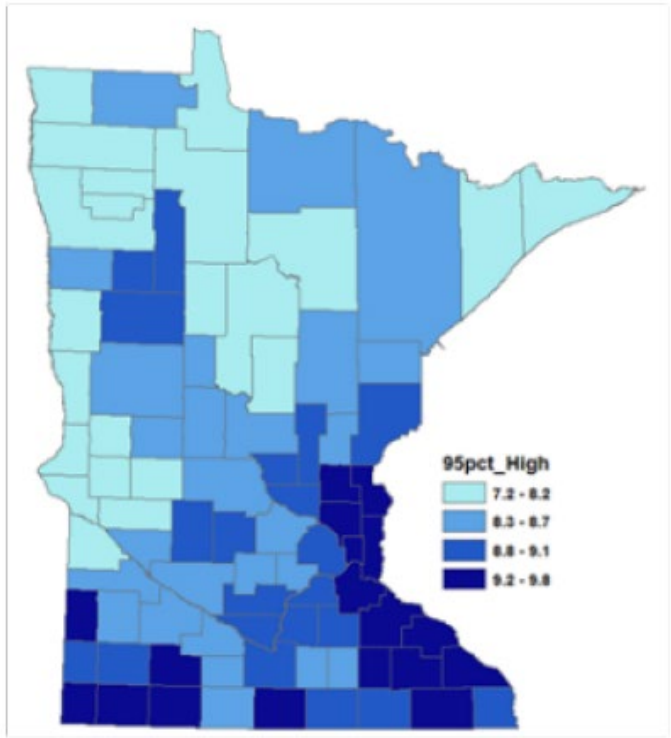
U.S. Drought Conditions for September 2012 based on Palmer Z Index(NOAA, 2012)

The 2012 drought was estimated to have cost affected states together approximately 33 billion dollars, including revenue loss from crop failure.

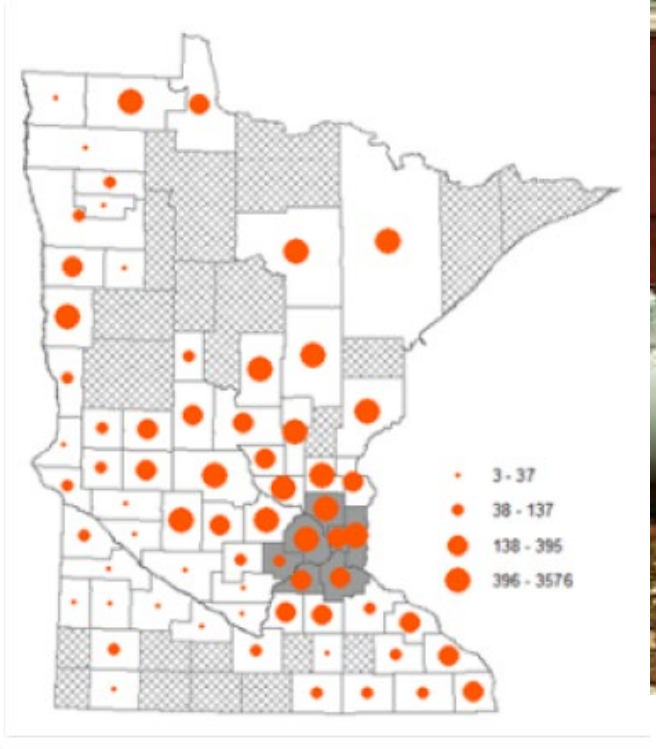
Top: Farm fields (Mark Steil, 2012)
Bottom left: Dry ground (Pexels, 2018)
Bottom right: Dry well (Mark Steil, 2012)

Data Analysis: understanding impacts of extreme precipitation

Precipitation projection data 2050-2074
(USGS RCP8.5 emission scenario)



Private wells in floodplain
(MN Well Index and DNR DFIRM Maps)



Governor’s Proposal

- Climate Resiliency: The Governor recommends an investment to increase the resiliency of Minnesota and its communities to extreme climate events, such as increasingly heavy precipitation, flooding, extreme heat, wildfire smoke, and invasive pests. Activities include a combination of financial and technical assistance and data analysis to implement, strengthen, evaluate, and track public health resiliency efforts in the face of climate change across the state, with a focus on private and public water systems. Grants would be available to local communities to facilitate planning and response actions, technical assistance, data analysis, and evaluation.

- General Expenditures $1,977 $1,977

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Thank you!