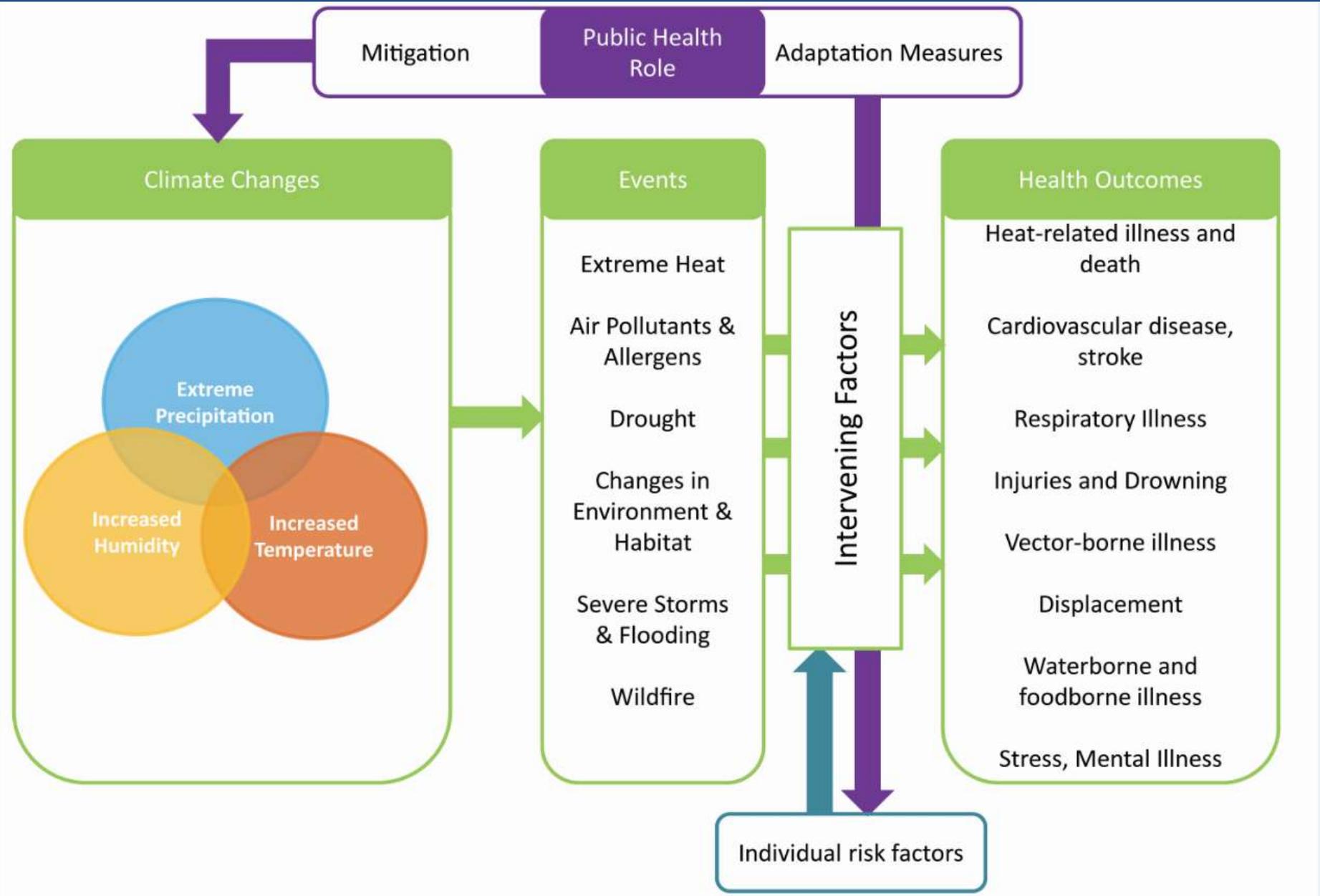


# Study of temperature-related disease burden for the Twin Cities population

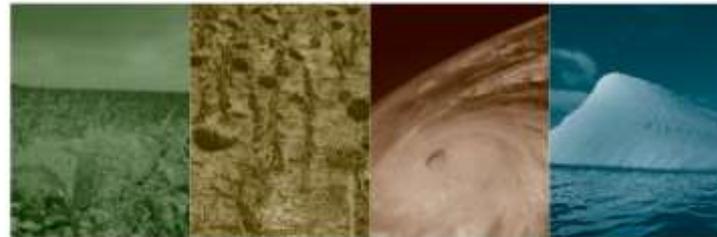
**Brenda Hoppe, PhD**

National Association of Health Data Organizations conference  
October 28, 2016



# Projecting Climate-Related Disease Burden:

## A Guide for Health Departments



### Climate and Health Technical Report Series

Climate and Health Program,  
Centers for Disease Control and Prevention

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Figure 3. The elements of a causal pathway and their relationship.



# Why Extreme Heat?

- **More immediate link between cause and effect**
- **Attention-grabbing events (Chicago 1995)**
- **Associations in one population aren't necessarily true for others**
- **NWS/health agency interest in making existing alert systems evidence-based**

# Why Minnesota?

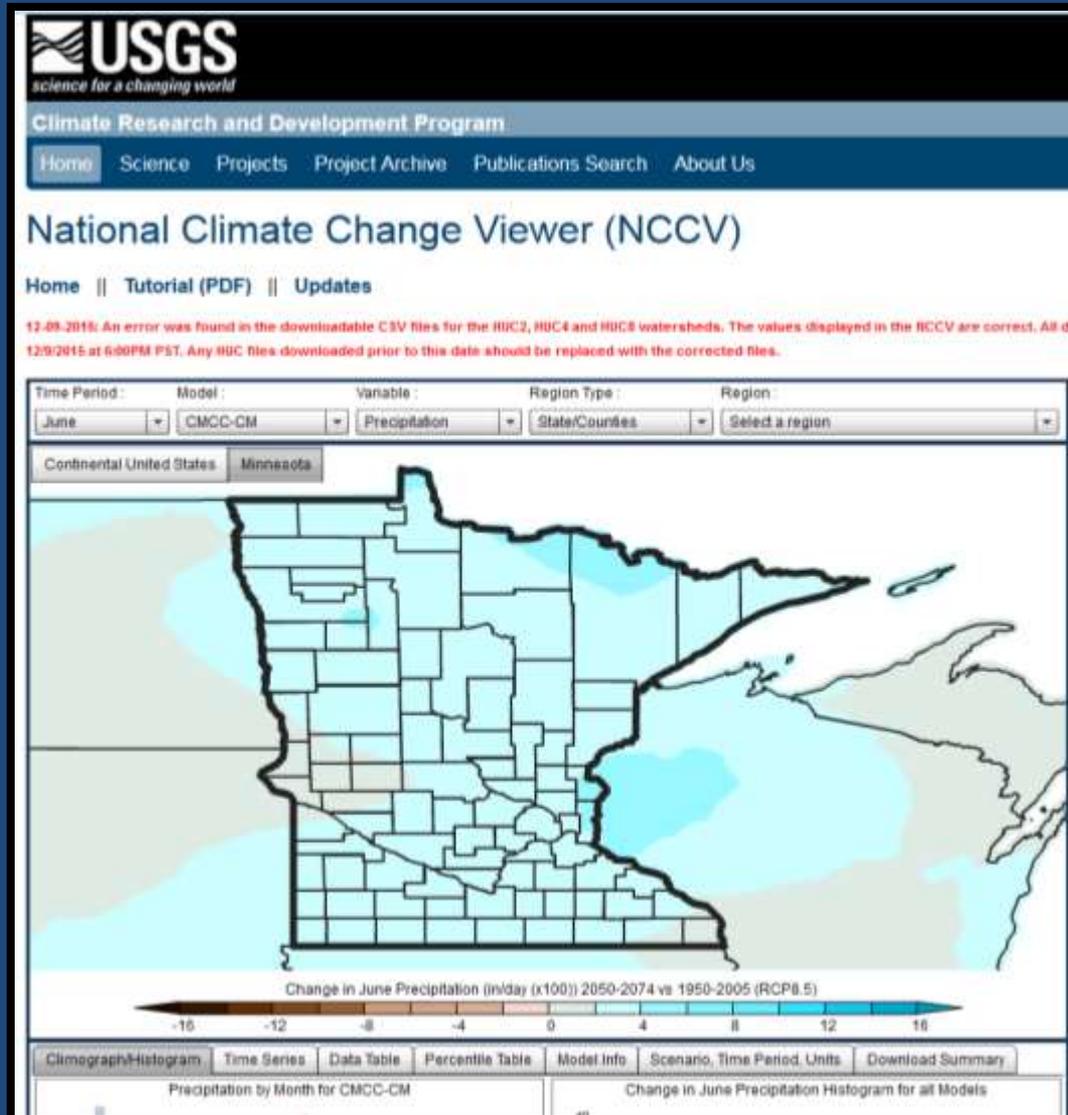
- **Approached by NWS staff interested in vetting alert criteria with health data**
- **Interest aligned with funding priorities**
- **We're MDH!**
- **All-season analysis: will cold burden offset heat burden?**



# Temperature-related morbidity

- **5.3% of total ED visits are attributable to ambient temperature**
  - 4.99% cold
  - 0.34% heat
- **Given current climate models, by end of century total significant cold events will decrease slightly, while heat will increase significantly**
- **Under this scenario, EDV for cold events will decrease to 4.3% while heat will increase to 0.45%**
- **Assessed 4 disease groups: CV, respiratory, renal, and diabetes**
  - Renal is only group affected by both heat and cold events
  - Rest appear only associated with cold

# Next step: Projections!



**Thank you!**

Brenda Hoppe, PhD

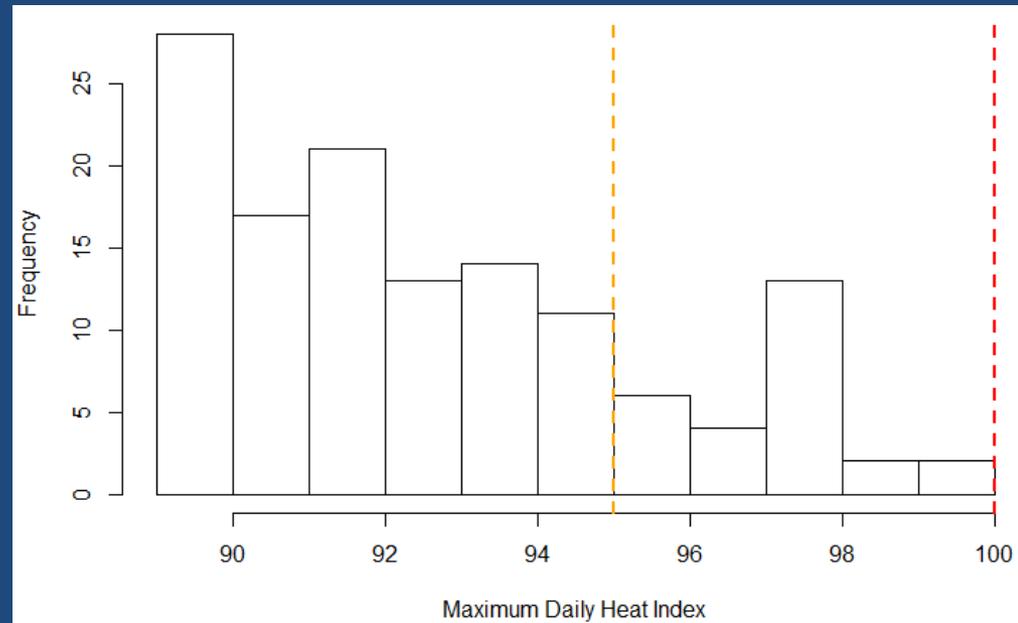
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# Research Question: How's the current heat threshold used by the national weather service?

Depending on the level of heat warning, there are two threshold available in the metropolitan area, 95° and 100°F (Heat Index). Over the course of 8 years, the 95°F threshold has been crossed 48 times. The 100°F has been crossed 18 times.

According to the exposure response function, moderate heat events significantly increased the RR of all-cause EVD. At heat extremes, the increased RR is not significant. We hypothesize that people take sufficient precaution during these days.



Based on the set up of this model, the 100°F threshold does not capture any one of the risky event over the course of 8 years. The 95°F threshold capture 22.90% of the total risky events. It does not imply that 100+°F are not risky. It merely implies that given the current system, those risks may have been reduced by the NWS warning system or other intervention alternatives.