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# Climate Change Projections & Impacts KALAMAZOO, MICHIGAN



## LIKELY CLIMATE STRESSORS FOR KALAMAZOO



Higher average temperatures and more extreme heat



Increased winter and spring rainfall with drier summers



Greater proportion of winter precipitation falling as rain/freezing rain



Increased frequency/intensity of extreme precipitation, storms, and flooding




More frequent and/or more severe droughts



# Climate Explorer Projections



 About this site



## The Climate Explorer

Explore graphs and maps of historical and projected climate variables for any county in the contiguous United States.

**New!**

Climate projection charts are now available for boroughs in Alaska.

To get started, enter a county, city, or zip code



or choose from the following suggested cities:

New York City, NY

Los Angeles, CA

Chicago, IL

Phoenix, AZ

Houston, TX

Anchorage, AK

# Climate Explorer Projections



## The Climate Explorer

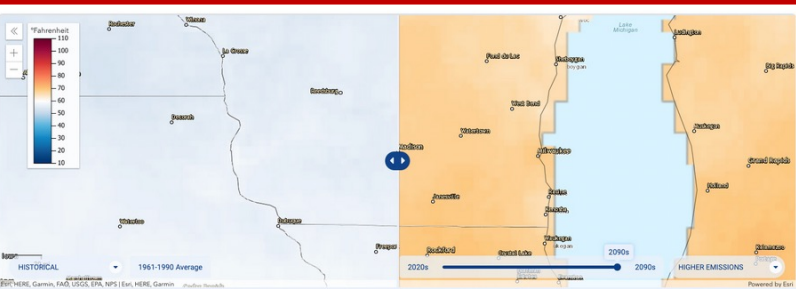
About the data ▾



Kalamazoo, MI



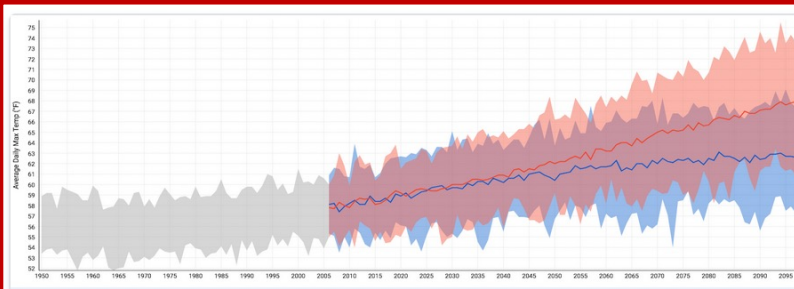
Select one of the following for **Kalamazoo County**



### Climate Maps



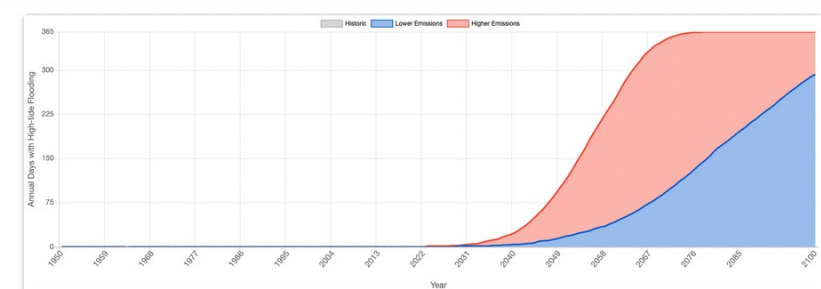
Compare past and projected future conditions in your county.



### Climate Graphs



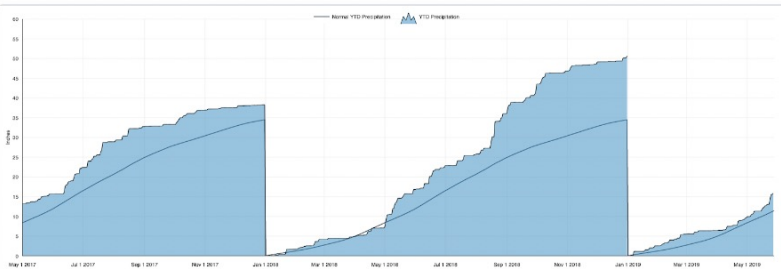
Check past and projected values for climate variables.



### High-Tide Flooding



Explore the number of days per year with high-tide floods.

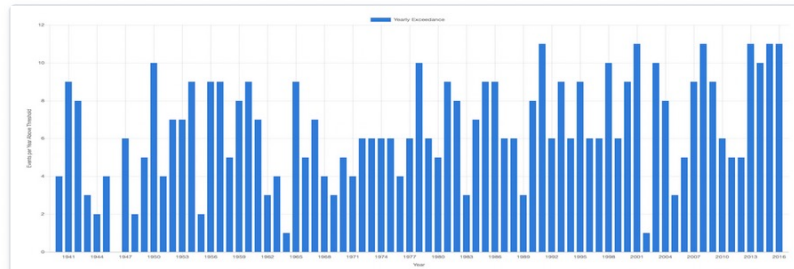


### Historical Weather Data



Compare observed daily weather to long-term climate.

Screenshot



### Historical Thresholds



Check how often temperature or precipitation has exceeded user-defined values.

### Ready to plan for resilience?



Resources from our partners can help you identify what matters to your community and evaluate how climate change could affect it:

- Check your exposure to extreme events such as wildfires and flooding
- Identify social vulnerabilities across urban areas
- Get step-by-step guidance for completing a vulnerability assessment or crafting an action plan.



# Climate Explorer Projections



The Climate Explorer

About the data ▾



Kalamazoo, MI

Stations ▾

Kalamazoo County - Average Daily Maximum Temp (°F)

Average Daily Maximum Temperature (°F) ▾

Graph

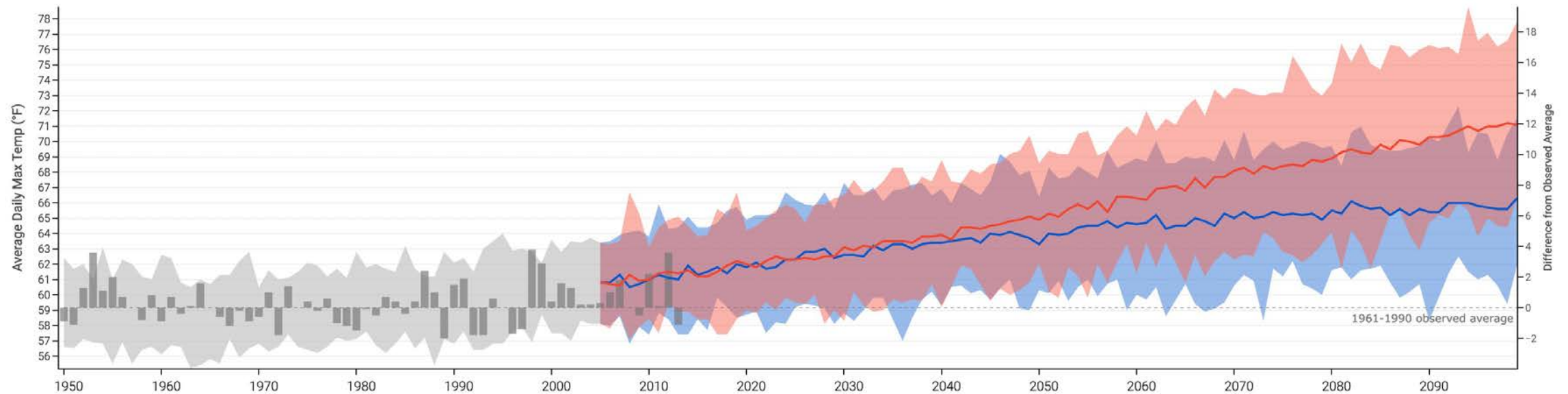
Map

Annual

Monthly

Downloads ▾

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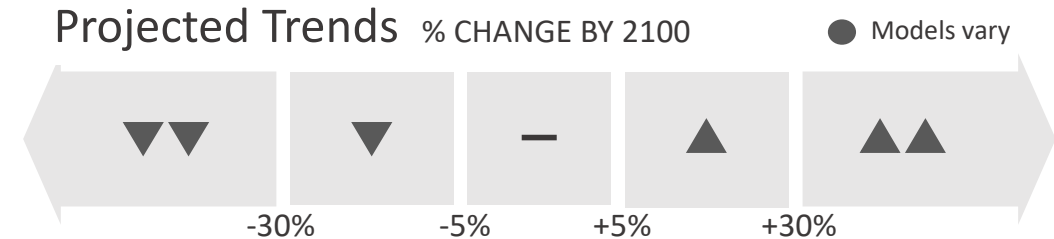
Take Action

# Important Considerations



## FACTORS TO CONSIDER:

- Trend direction ▲ ▼ –
- Magnitude of change
- Shifts in timing/variability



# Air Temperature



## HIGHER AVERAGE TEMPERATURES

- ▲ Minimum temperature  
+4.8°F by 2050; +11.1°F by 2100 (*historical: 39.1°F*)
- ▲ Maximum temperature  
+5.2°F by 2050; +11.6°F by 2100 (*historical: 59.2°F*)

## MORE EXTREME HEAT

- ▲▲ Days over 90°F  
+44.9 days by 2050; +90.9 days by 2100 (*historical: 10.2 days*)

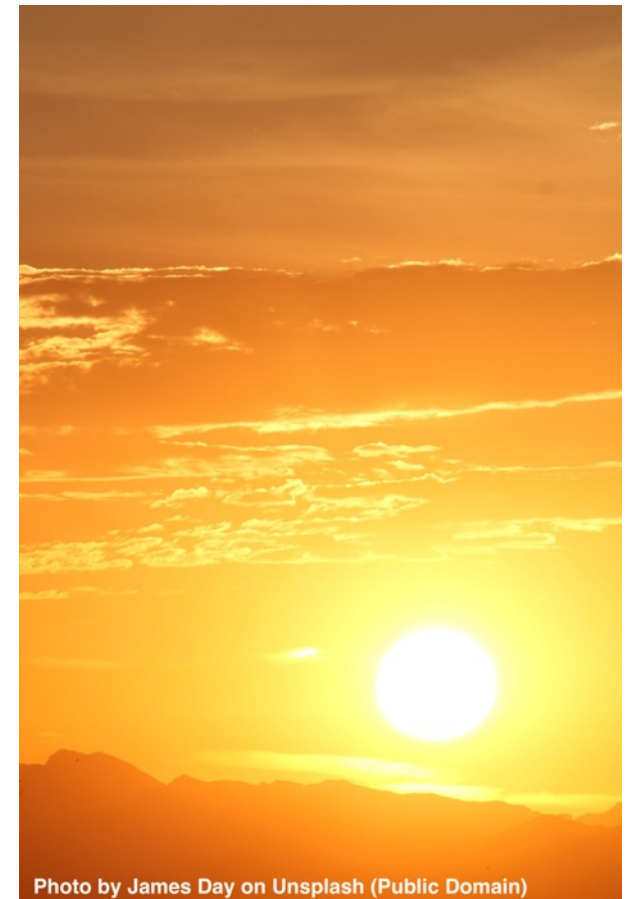
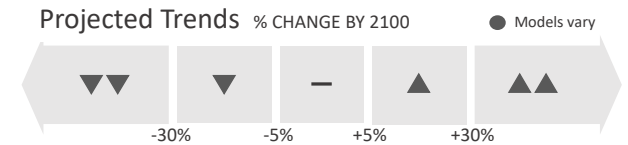


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# Precipitation (Rain & Snow)



## SHIFTS IN AMOUNT/TIMING OF RAINFALL

### ▲ Annual precipitation

+3.5% by 2050; 10.6% by 2100 (*historical: 36.9 in*)

- ▲▼ 20–30% increases in winter & spring precip, slight increases in fall, and decreases in summer

## REDUCED SNOWFALL

- ▼ Increased lake-effect snow since ~1900
- ▼ By 2100, more precipitation falling as rain or freezing rain rather than snow

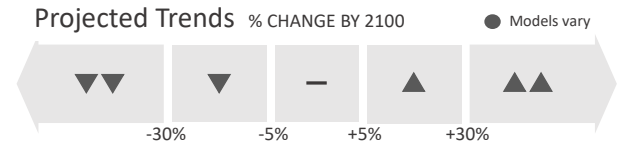


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# Extreme Precipitation, Storms, & Flooding

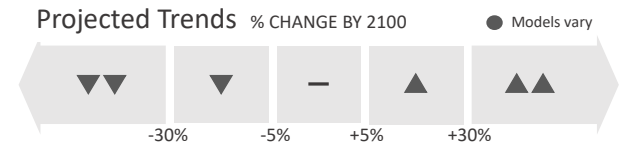


## MORE EXTREME PRECIPITATION

- ▲▲ 99<sup>th</sup> percentile daily precipitation total
  - +42% in the Midwest from 1958–2016
  - +40% additional increase by 2100
- ▲▲ 2-day events that exceed 5-year return interval
  - +150% increase by 2100

## INCREASED STORMS & FLOODING

- ▲ Increased likelihood of severe thunderstorms
  - +2.4 days per season by 2100
- ▲ Increased days supportive of tornadic storms



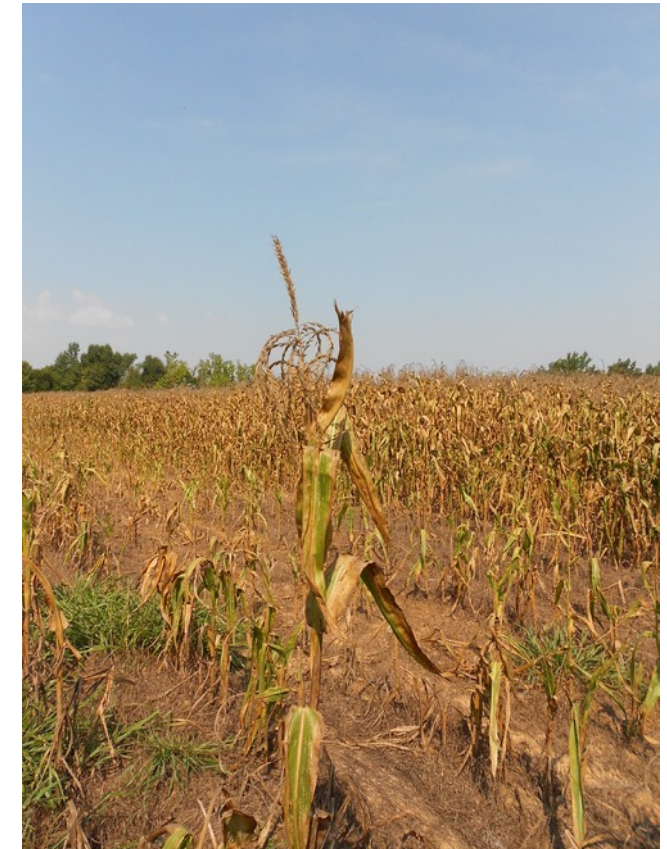
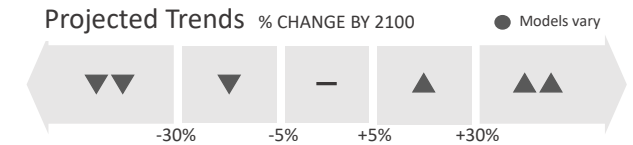


## INCREASED DROUGHT RISK

- ▲ Likely increase in prolonged periods of drought, particularly late in the century

**NEXT UP: How will these changes affect the 3 areas of interest chosen for this workshop?**

- **Examples! What other impacts can you think of?**





## Connected Communities

- Increased risk of damage to housing, roads, and other critical infrastructure (e.g., utilities) following extreme events
- Road blockages and loss of access following extreme events, impacting evacuation routes, emergency access, etc.
- Loss of electricity due to flooding or heat waves, limiting use of electric vehicles and impacting public transit
- Increased heat stress in developed areas, exacerbated by large areas of impervious surfaces and lack of vegetation





## Food Security & Agriculture

- Increased length of the growing season and potential increases in heat stress, disease, and pests, impacting crop growth
- Current crops may not be suited for new conditions, requiring changes in crops and equipment needed
- Economic impacts of crop failures and damage to agricultural operations following extreme events (e.g., floods), which may increase the cost of food
- Increased health risks for agricultural workers



## Habitat Conservation & Biodiversity

- Reduced growth and productivity of native vegetation
- Expansion of non-native invasive plants and insect pests as temperatures increase
- Increased soil erosion and nutrient runoff into rivers and streams during heavy rainfall, reducing water quality
- Increased concentration of contaminants and increased risk of algal blooms in water sources during hot/dry periods
- Increased risk of wildfire during severe droughts

# Questions?



Next step:  
*Group discussion of  
climate impacts!*



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