

## Factsheet: Cities Impacts and Adaptation Tool (CIAT)

Climate change is already impacting the Great Lakes region and cities are beginning to plan ahead to prepare themselves for bigger impacts in the future. But what changes can they expect and what can they do to adapt to these changes? The Great Lakes Adaptation Assessment for Cities (GLAA-C) project has created the Cities Impacts and Adaptation Tool (CIAT) to provide decision makers at the municipal level with the data they need to begin planning for a changing climate.

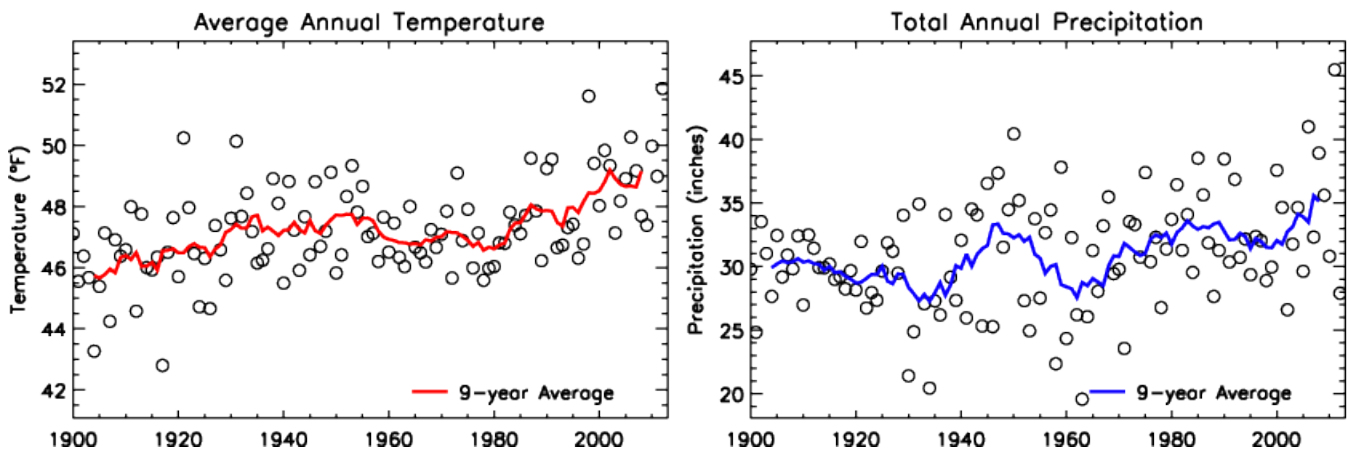


### What is the CIAT?

The Cities Impacts and Adaptation Tool (CIAT) is an online climate adaptation planning support tool for decision makers at the municipal level in the Great Lakes region. It provides usable local-scale data such as demographic and socioeconomic data from the Canadian and US Census, current and projected climate trends, and adaptation strategies pulled from existing municipal planning documents from across North America. It also identifies a unique set of “climate peer” cities, or cities whose current climate matches your city’s projected climate, through an interactive map interface.

### Climate Trends

The CIAT provides both current and projected climate trends at the climate division scale.<sup>1</sup> To show how climate change has already affected the Great Lakes Region, the CIAT compares current seasonal and annual average temperature and precipitation for the period 1981-2010 to previous averages from 1951-1980. Additionally, we include mid-century climate model projections for the period 2041-2070 to show how your climate may continue to change in the future.



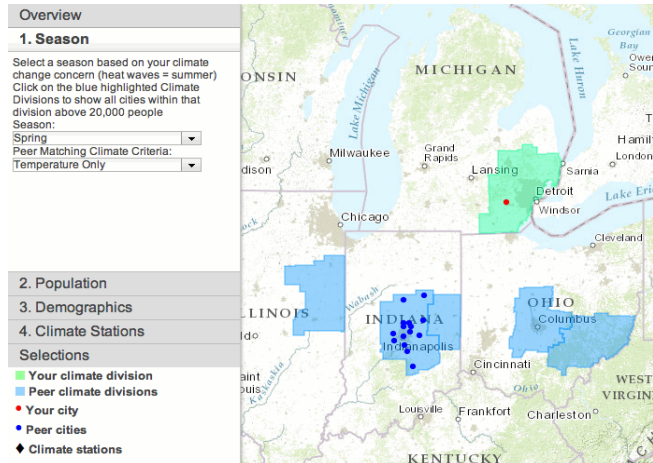
<sup>1</sup> Climate divisions are regional zones of similar climate consisting of historical climate observations categorized by the National Oceanic and Atmospheric Administration (NOAA). Each climate division denotes a specific range of both temperature and precipitation, which we can define as a local climate. These divisions are generally small groups of counties, which makes them a scale small enough to reflect a local climate, but large enough to include a number of observations high enough to represent a statistically sound record, as well as to contain several cities within each division.

### Climate Stations

For more precise information, the CIAT also provides climate station data for the Great Lakes Region. This includes average seasonal temperature and precipitation data at the city level, as well as information on days per year with extreme heat or precipitation. The seasonal averages are important for everyday operation, but it is important to plan for extremes whenever possible, as these events are the most harmful to human health and city infrastructure and recovery can be expensive. The CIAT matches this data to your city’s nearest climate station for easy comparison.

### Climate Peer Network

To help users better understand what their city’s projected climate might look like, the tool also generates “climate peers.” After clicking on the “View Map” button in the tool, users are taken to an interactive map in which climate peer divisions and cities are highlighted in blue. Climate peers are identified through a comparison process that involves comparing the primary city’s projected climate (2041-2070) to current climate conditions of other cities (current climate is based on an observed 30-year average from 1981-2010). Cities whose current climates are similar to the primary city’s future climates are identified as “climate peers” in the interactive map part of the tool. Users can further refine the list of climate peer cities identified by using seasonal, socioeconomic and demographic data filters to find cities that are most similar to theirs.



The CIAT identifies peer cities to help provide practitioners a strategic way to search for examples of how other cities with similar climates (in this case, similar to their future climate) manage their budgets, invest in infrastructure, and plan for their maintenance operations. After using the tool to identify useful climate peer cities, practitioners can either look at publicly available information about peer cities or they contact them directly to learn first-hand about the challenges and opportunities their climate peer cities face, particularly as they relate to climate conditions.

### Adaptation Strategies

In order to provide usable on-the-ground solutions to your climate adaptation concerns, the CIAT also includes a searchable database of over 500 unique adaptation strategies pulled from 53 existing municipal plans, ranging from climate action plans to hazard mitigation and stormwater plans, from 24 cities across the US and Canada. You can search this database by several criteria, including by climate impact and region. The CIAT also contains links to each plan so you may further explore any strategy in a greater context.

For questions about the tool or to discuss further development and/or possible collaboration, please contact [ciat-help@umich.edu](mailto:ciat-help@umich.edu).

**Cities Impacts and Adaptation Tool**  
**Website Link:**

[graham.umich.edu/climate/ciat](http://graham.umich.edu/climate/ciat)