

Top Six Climate Change Impacts for Chicago

The following climate change impacts for Chicago were drawn and summarized from “High-Resolution Climate Projections: Connecting Global Change to Local Impacts,” a presentation given by Katharine Hayhoe, Research Associate Professor of Atmospheric Science at Texas Tech University and Expert Reviewer for the Intergovernmental Panel on Climate Change.¹

1. **Days over 95 degrees Fahrenheit:** under a high emissions scenario, the Midwest will experience ~45-85 days over 95° Fahrenheit (F) by the end of the century. (In comparison, the Chicago Climate Action Plan's high emissions scenario indicates that Chicago will experience 31 days over 95° F.)
2. **The winter and summer seasons are "migrating."** As the Midwest's climate changes, patterns will not be consistent across seasons. By the end of the century, winters could feel like Pittsburgh, PA and summers could feel like Knoxville, TN or, under high emissions, Baton Rouge, LA.
3. **Temperature: Winter will be warmer, and summer will be MUCH warmer as compared to the 1961-1990 average.**
 - Winters in 2040, (considering high & low emission scenarios), will be 2-3° Celsius (C) warmer, and in 2070, 3-5° C warmer. Summers in 2040 will be 3-5° C warmer and in 2070, 3.5-7.5° C warmer.
 - By 2085, there will be 450-1,200 heat-related Chicago metro-area deaths per year, (per the 6 million people residing in the Chicago-metro area).
4. **Precipitation: Periods of precipitation and dryness will be enhanced when they are least needed. Winter and spring will be wetter, and summer will be drier as compared to the 1961-1990 average.**
 - Spring and winter in 2040 will have 10-20% more precipitation events, and in 2070, 20-35% more precipitation events.
 - Summers in 2040 will have 5-10% less precipitation events and by 2070, 10-15% less precipitation events.
5. **Great Lake changes levels:** Although evaporation and precipitation are currently keeping Great Lakes levels stable, as we approach 2020, lake levels will begin to decrease by approximately ½ of a foot due to increased evaporation.
 - Although lake levels vary naturally from year to year, long-term trends can be discerned: under a high emissions scenario, the average level of Lake Michigan could decrease by up to 1.5 ft. by the end of this century. This drop would be caused by warmer temperatures and decreased ice cover, leading to more evaporation. (see http://www.chicagoclimataction.org/filebin/pdf/factsheets/Chicago_Water_Systems_Impacts_Fact_Sheet_June_2008.pdf)
6. **Plant Hardiness Zones:** The Midwest's Plant Hardiness Zones have shifted significantly and are projected to shift one-half to one full zone every 30 years.
 - Chicago's tree species are shifting from maple, ash, and birch to oak and hickory.
 - From 1990 to 2006, Northern Illinois shifted from Plant Hardiness Zone 5 to Zone 6, representing a 10° F range change in the lowest temperature of the year, (see <http://www.globalchange.gov/images/cir/pdf/midwest.pdf>).

¹ Katharine Hayhoe presented “High-Resolution Climate Projections: Connecting Global Change to Local Impacts” to City of Chicago Green Staff on May 12, 2010. All facts are taken from this presentation, except where noted