Climate Change

Flooding in Dearborn Heights

What is climate change?

Climate change is a long-term shift in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed effects that are synonymous with the term. Changes observed in Earth's climate since the early 20th century are primarily driven by human activities, particularly fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth's atmosphere, raising Earth's average surface temperature. (NASA)

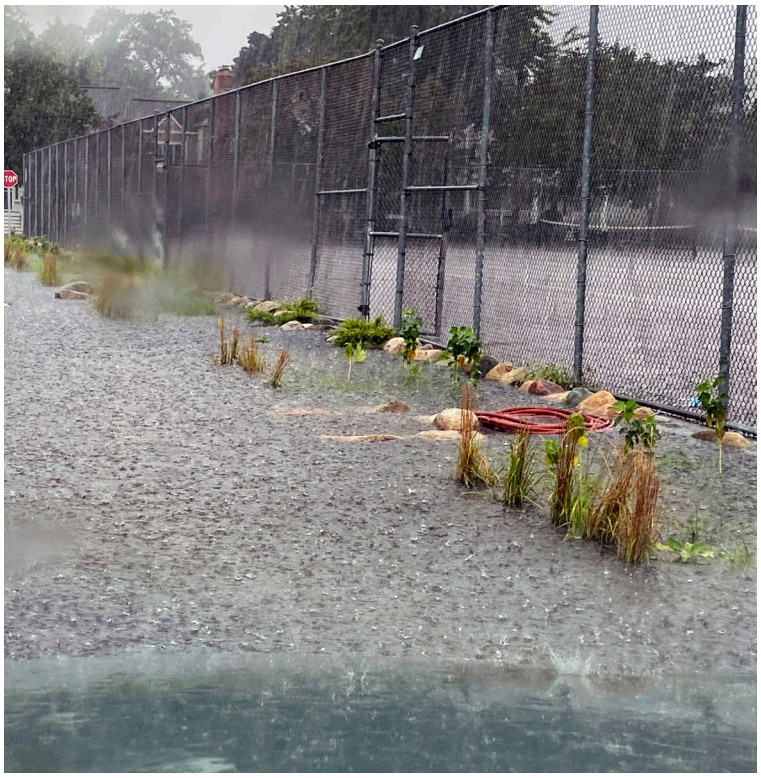
What is the problem with climate change?

The answers lie in defining what are climate disruptions and how they are caused:

FLOODING— Climate change may cause river floods to become larger or more frequent than they used to be in some places yet become smaller and less frequent in other places. As warmer temperatures cause more water to evaporate from the land and oceans, changes in the size and frequency of heavy precipitation events may in turn affect the size and frequency of river flooding. Changes in streamflow, the timing of snowmelt, and the amount of snowpack that accumulates in the winter can also affect flood patterns. (EPA)

"HEAVY PRECIPITATION" refers to instances during which the amount of rain or snow experienced in a location substantially exceeds what is normal, especially when it happens in a very short period of time. What constitutes a period of heavy precipitation varies according to location and season. Climate change can affect the intensity and frequency of precipitation. Warmer oceans increase the amount of water that evaporates into the air. When more moisture-laden air moves over land or converges into a storm system, it can produce more intense precipitation. The potential impacts of heavy precipitation include an increase in flood risk, soil erosion, and crop damage due to heavy rains—which in turn can lead to injuries, drownings, and other flooding-related effects on health. In addition, runoff from precipitation can impair water quality as pollutants deposited on land wash into water bodies.

WATER LEVELS— In recent years, warmer surface water temperatures in the Great Lakes have contributed to lower water levels by increasing rates of evaporation and causing lake ice to form later than usual, which extends the season for evaporation. Lower water levels in the Great Lakes forced ships to reduce their cargo



Heavy rain fills rain gardens and floods a tennis court and parking lot

tonnage by 5 to 8 percent between 1997 and 2000, which increased shipping costs. Lower water levels can also affect water supplies, the usability of infrastructure such as docks and piers, and shoreline ecosystems. These types of disruptions from low water levels are expected to continue as the climate changes. Another possible effect of warmer water, reduced ice cover, and increased evaporation is a corresponding increase in precipitation over nearby land, especially "lake effect" snow. Rising water temperatures are also expected to expand the ranges of and give new advantages to some invasive species such as the zebra mussel, and to encourage the growth of certain waterborne bacteria that can make people ill.

DAM FAILURE— The Rouge River watershed has several operating dams that are aging and at risk of failure with the increase in severe weather events and heavy precipitation.

How does Friends of the Rouge help?

Friends of the Rouge acknowledges that the impacts of climate change affect everyone, but especially our underserved communities and communities of color. Severe floods in 2014 and 2021 affected Detroit and south and east Dearborn residents more than other areas. Residents here have few resources to deal with flooded cars and basements and loss of furnaces and appliances. The older urban areas of the watershed are at the downstream end and are forced to contend with water coming in from all of the communities upstream. Development in upstream communities adds more stormwater to the system by increasing the number of impervious surfaces such as roads, driveways, and roofs, and often reducing tree canopy coverage to clear the way for new developments. Our underserved communities often lack access to green spaces such as parks that would assist with flood control, and are on combined sewer systems that discharge raw sewage into the river each time it rains.

Friends of the Rouge offers workshops, training programs and opportunities for residents, municipalities and other institutions like churches to design and install rain gardens and other green infrastructure to mitigate flooding. We also are working to plant trees, especially in underserved communities which tend to have fewer parks, trees, and green space.

What can you do to mitigate the effects of climate change on communities?

Officials can work to develop land protection policies to preserve undeveloped land in headwater areas, prohibit building in floodplains, and plan development based on projections of an increasing number of heavy precipitation events. They can also encourage ordinances or support initiatives that create or preserve "green infrastructure" such as native plantings (rain or pollinator gardens) and trees, and work to support pollution input reductions by separating combined sewers in our underserved communities. Our underserved communities do not have a wealthy tax base to pull from, and additional resources are necessary to assist in providing these crucial, and very expensive, infrastructure updates.