



Climate Change

PURDUE
EXTENSION

What Are We Preparing For?

What are the differences between climate change and variability?

One major argument against climate change is that what we are seeing is just normal variability in the climate. While this is in some ways very true, it is important to understand the fundamental difference between climate change and climate variability.

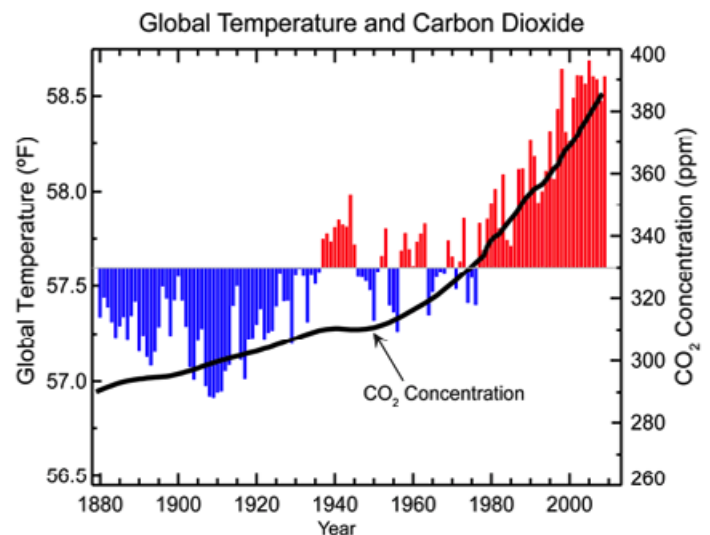
The climate of a region is determined by the weather that this region has experienced over its historical period of record. The climate normals typically used to describe long-term weather of locations are based on 30 years of data and updated every decade (e.g., 1971–2000, 1981–2010). Anything within or near that range is considered typical variability for that climate region. However, a persistent trend change over three or more decades is considered climate change. As you can see in Figure 1, the short-term oscillations can be attributed to climate variability, but the long-term trend is a result of climate change.

How will climate change affect seasons in the Midwest?

Overall in the Midwest, we can expect shorter, wetter winters and longer, hotter summers. Spring and fall will also be wetter, in general. This will effectively shorten the growing/planting season in agricultural areas. Overall, we will have a slight increase in precipitation, though more will fall as rain than snow. Worldwide snow cover will decrease by approximately 15% by 2100. Heavy rains will happen more frequently, resulting in greater flooding and damage. Since overall precipitation is only expected to increase slightly, more frequent, heavy precipitation may mean longer dry periods between rainfall events.

Where do we see signs of climate change today?

There are signs of climate change in every region of the world—from the polar ice cap in the North to the coral reefs in the equatorial regions and agricultural lands between. In the North, scientists are seeing ice sheets that have been frozen for thousands of years melting and breaking off. Coastlines are changing in Greenland, and rising sea levels threaten island nations. In agricultural regions, more frequent drought and flooding events are affecting crop yields. In the warm seas, human influences and rising carbon dioxide levels are destroying coral reefs. As Hughes, et al., state in their article for Science magazine, “The diversity, frequency, and scale of human impacts on coral reefs are increasing to the extent that reefs are threatened globally.



Projected increases in carbon dioxide and temperature over the next 50 years exceed the conditions under which coral reefs have flourished over the past half-million years.”

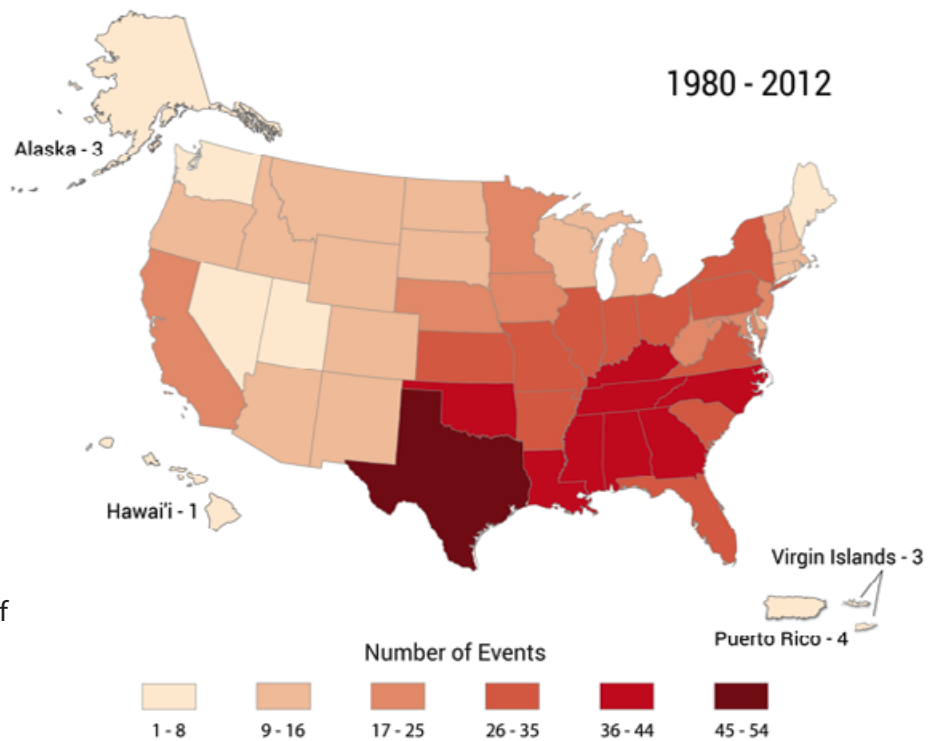
Who will be affected by these changes?

The answer is simple: everyone! This infographic from the National Climate Assessment, using data collected by NOAA shows the sheer magnitude of billion-dollar weather disasters in the United States. Changes in climate are anticipated to increase the frequency of these events.

What can we conclude?

Climate change is affecting people in the Midwest and throughout the world, and we can expect many changes in the years to come, if current trends continue. Every continent will experience changes in rainfall patterns and temperatures. However, the impacts of these changes may vary from minimal to severe, depending on location.

Billion Dollar Weather/Climate Disasters



Resources

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