Is El Nino Caused by Climate Change?

El Nino and La Nina have been present for at least hundreds, and possibly millions, of years. They are not the result of climate change. However, studies are being done to see if climate change has any effect on the frequency and severity of El Nino and La Nina.

Where Can I Learn More?

NWS Louisville

http://www.crh.noaa.gov/lmk/

Climate Change Science Program

http://www.climatescience.gov

National Climatic Data Center

http://www.ncdc.noaa.gov

Intergovernmental Panel on Climate Change

http://www.ipcc.ch

Climate Prediction Center

http://www.cpc.ncep.noaa.gov

Midwest Regional Climate Center

http://mcc.sws.uiuc.edu/

Versailles, Kentucky. Photo by Steve Blake

Average Annual Temperature at Bowling Green, Kentucky W = Warmer Than Normal C = Colder Than Normal (normal is 57.2°)		
1984	56.4°	C
1985	56.2°	C
1986	57.6°	W
1987	57.3°	W
1988	55.7°	C
1989	56.8°	C
1990	59.6°	W
1991	59.2°	W
1992	57.1°	C
1993	57.1°	C
1994	57.5°	W
1998	60.0°	W
1999	59.1°	W
2000	57.1°	C
2001	58.0°	W
2002	58.8°	W
2003	56.9°	C
2004	57.8°	W
2005	58.2°	W
2006	58.5°	W

1995—1997 data unavailable

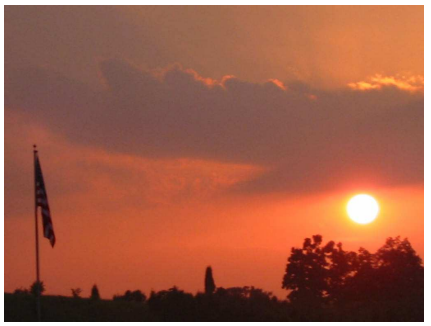
National Weather Service
http://weather.gov/bowlinggreen

6201 Theiler Lane
Louisville, Kentucky 40229

Phone: 502-969-8842
E-mail: w-lmk.webmaster@noaa.gov

National Weather Service

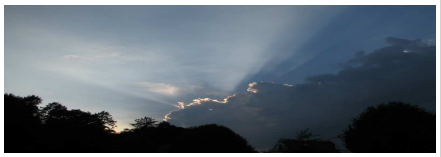
Climate Change



Lawrenceburg, Kentucky. Photo by Shawn Crowe.

What is climate change?

How will it affect our future?



Louisville, Kentucky. Photo by Chris Smallcomb.

National Weather Service
http://weather.gov/bowlinggreen

Tel: 502-969-8842

Is Our Climate Changing?

Southern Indiana. Photo by Chris Smallcomb.

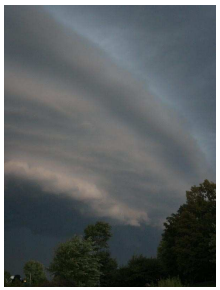
Our climate has become one of the most important issues of recent years. It has shaped public policy and affected how we do business. Knowing how climate change might impact humankind is of utmost significance.

What Is the Difference Between "Weather" and "Climate?"

Weather is the day-to-day behavior of temperature, precipitation, and other weather elements. Climate is the result of many years' worth of daily weather. Meteorologists study climate by looking at weather observations taken over about the past century, and paleometeorologists study ice cores and tree rings to learn how the climate has changed over the past several millennia.

What Is the Greenhouse Effect?

Without the Greenhouse Effect, life as we know it would not exist on Earth. Some gasses in the atmosphere, especially water vapor and carbon dioxide, absorb heat and radiate it downward, warming the planet's surface. The Greenhouse Effect is a good thing; the problem is how the concentrations of atmospheric gasses are altered by both human and natural influences.



Curby, Indiana. Photo by Wade Bell.

Carbon dioxide levels have increased since the Industrial Revolution, and are suspected to play a role in the potential for climate change.

Is the Climate Really Warming?

Although there are a few spots that have cooled slightly, much of the Earth is experiencing an increase in long-term average temperatures. The average global surface temperature has risen about one degree Fahrenheit over the past century, which is a much more rapid rise than in the previous several centuries. While climate change is completely normal, it is the degree and rate of climate change, and how much of it is attributable to human activity, that is under intense study.

Why Don't We Know for Sure What's Happening with Our Climate?

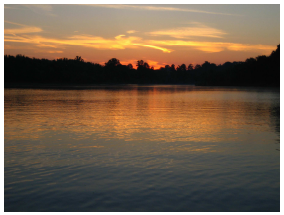
Climate is measured in terms of many centuries. Though estimations of what the atmosphere was like thousands of years ago are often gleaned by measuring gas concentrations in air bubbles trapped in polar or glacial ice cores, we only have about 125 years of reliable instrumental temperature data.

The atmosphere has undergone many changes, such as moving in and out of Ice Ages. It is not currently known how much of the recent observed climate change is caused by human activity, and how much is normal climate variability.

There are currently many ways in which to measure the atmosphere, including surface-based instruments, satellites, and weather balloons. Different researchers using different sources, and then interpreting the data in different ways, can result in several possible explanations of why the climate is changing.

Global Warming Versus Climate Change

The rate of warming is uneven across the globe, with a few locations, such as the southeastern United States, having possibly cooled a bit over the last hundred years. Thus, rather than using the term "global warming," the phrase "climate change" is more appropriate. However, when averaging temperatures over the entire globe, a warming trend is evident. 2006 was the warmest year ever recorded.



Meade County. Photo by Ron Hicks.

Elizabethtown, Kentucky. Photo by Tom Williams, Station 50 Images

So, if the Atmosphere <u>is</u> Warming, What's Going to Happen to Us?

We don't know. However, our uncertainty is not because of a lack of effort. Scientists the world over, from many different disciplines, are studying the problem of climate change.

Researchers use climate models to project what the future might hold for us. Climate prediction models, however, are highly dependent on accurate representation of the current atmosphere, which can be difficult. The models are also incredibly complex and require a great deal of computer processing. Changing one small variable in a model can result in a significantly different forecast.

The Intergovernmental Panel on Climate Change predicts that by 2100 the average global temperature will increase by 1.4 to 5.8 degrees Celsius. Due to uncertainty, that's quite a range. Plus, we don't know what effects increased temperature will have on cloud cover, rainfall patterns, sea ice extent, and the plethora of other meteorological variables that will be involved in this domino effect.

Milltown, Indiana. Photo by Angela Crecelius

Another variable is what future human actions, such as the amount of greenhouse gasses we pump into the atmosphere, will be.