

Climate and Resources of the Eastern Hemisphere

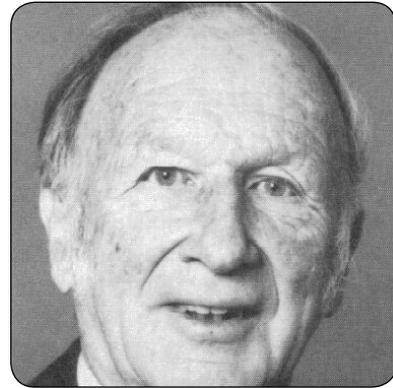
Biography

Edward Lorenz

1917–



HOW HE AFFECTED THE WORLD In the 1960s, Edward Lorenz studied weather patterns while working at the Massachusetts Institute of Technology (M.I.T.). One of his discoveries was the butterfly effect. It would change how meteorologists predicted the weather.



As you read the biography below, think about how Lorenz's curiosity helped him advance our understanding of weather and climate.

Have you ever wondered why **meteorologists** are wrong some of the time? Edward Lorenz's work helped explain why.

At M.I.T. Lorenz used a computer to **simulate** weather patterns. Lorenz created a software program to help make predictions about the weather. His program relied on **data** about changes in weather conditions, such as temperature and air pressure. After running his program, Lorenz analyzed his results. He thought he could now predict the future weather with accuracy.

One day, Lorenz decided to test his program again. This time, the results were slightly different than his first results. Lorenz was surprised by this—he had used the same computer, same program, and same data. Or had he?

Lorenz studied the data he had used more closely. He realized the data for the second test used numbers only up to the thousandth place (for example, 0.007). However, the original data had used numbers up to the millionth position (for example, 0.007268). These tiny differences in

VOCABULARY

meteorologists people who study weather

simulate create a representation or model

data information

data—such as 0.000268—made a huge difference in the results, or outcome.

Lorenz wrote a paper on his findings. He called it “Predictability: Does the Flap of a Butterfly’s Wings in Brazil Set off a Tornado in Texas?” From this title, comes the term “the butterfly effect.” This idea means that tiny changes in the beginning of a process can result in big changes in the outcome. So, for example, a slight change in air pressure could result in stormy weather later.

Lorenz’s butterfly effect helped explain why it was—and still is—so hard to predict the weather in advance. Many people now think that the butterfly effect holds true in other fields, such as history, economics, and geology. Can one person change the world?

WHAT DID YOU LEARN?

1. Recall What did Lorenz’s software program do?

2. Expressing and Supporting a Point of View How important do you think Lorenz’s discovery is to the field of meteorology? Why?

ACTIVITY

Do you think the butterfly effect holds true in other fields? Try to prove it! Choose a field of study you are interested in, such as history, biology, economics, or geography. Do a brief case study. Research a specific event, person, or place in that field. Then decide if the butterfly effect was true in your case study. Your goal is to figure out if a small change, minor event, or one person, led to a big change. Write your case study on a separate sheet of paper. Present your findings to your class.