Wallace Broecker, 87, Dies; Sounded Early Warning on Climate Change

Dr. Wallace S. Broecker in 2010. His research into the oceans, the atmosphere and the planet's ice gave him a deep understanding of global warming — a term he helped establish in the popular imagination. Bruce Gilbert, via Lamont-Doherty Earth Observatory

By John Schwartz

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Dr. Wallace S. Broecker, one of the first scientists to sound the alarm about climate change and the researcher who popularized the term "global warming," died on Monday in Manhattan. He was 87.

His death, at a hospital, was announced by Columbia University's Lamont-Doherty Earth Observatory, his academic home for 67 years. It said the cause was congestive heart failure.

Dr. Broecker, a geologist by training whose questing mind led him to rove from field to field, had an uncanny ability to draw a comprehensive understanding of the Earth's climate system from research into the oceans, the atmosphere, the planet's ice and more.

He gave early warning of a planetary crisis if humans continued to spew carbon dioxide into the atmosphere. He published a landmark scientific paper in 1975 that asked in its title, "Climatic Change: Are We on the Brink of a Pronounced Global Warming?"

A blunt man, Dr. Broecker (pronounced "broker") had a knack for phrasemaking. He was fond of saying, "The climate system is an angry beast and we are poking it with sticks." He meant that the climate is unpredictable, sensitive to small changes and susceptible to major shifts with startling speed.

He also coined the term "the global conveyor" for the important ocean currents that circulate warm water around the globe; that phrase, too, remains in use today.

Dr. Broecker pioneered techniques using carbon isotopes and other trace elements to map the world's ocean currents; those techniques made their way into an expanding body of knowledge in many other fields, even archaeology.

He suggested that radical climate swings could result in regional periods of cold weather if those warmth-bringing streams of ocean water were disrupted, as occurred in Europe with the most recent ice age, about 12,000 years ago. Hollywood distorted that theory into horror fare in the 2004 film "The Day After Tomorrow," about a sudden, catastrophic onslaught of ice age conditions.

He sought not only to warn the world about the risks of climate change, but also to propose solutions. He argued to colleagues and to Congress that the world

had to reduce its use of fossil fuels.

Pessimism about whether people would act to limit carbon dioxide emissions in time led him to search for ways to remove them from the atmosphere, and even to change the degree to which the atmosphere reflects light, through a kind of global dimmer switch to counteract the warming trend.

Dr. Broecker is best known for his “Climatic Change” paper in 1975. In it he noted that while the global climate had been experiencing a natural cycle of cooling, he predicted that planetary temperatures would soon begin to rise because of the accumulation of carbon dioxide in the atmosphere. In 1976, they obligingly did, and the warming curve has correlated well with his projections.

He based the predictions, however, on a simplified model of the climate system, and he later realized, as he wrote in 2017, that some of his analysis had been flawed. He would later write a follow-up paper stating that, as accurate as his prediction turned out to be, “It was dumb luck.”

Still, the link between carbon dioxide and climate change, first suggested by researchers in the 19th century, has only grown more clear. NASA announced this month that 2018 was the fourth-warmest year since the advent of accurate record-keeping some 140 years ago. The five warmest years in recorded history have been the last five, and 18 of the 19 warmest years have occurred since 2001.

Dr. Broecker, center, aboard the research vessel RV Melville in the Pacific Ocean around 1973. He coined the term “the global conveyor” for the important ocean currents that circulate warm water around the globe. via Lamont-Doherty Earth Observatory

Dr. Broecker could be combative and even curmudgeonly, recalled Michael E. Mann, a climate scientist at Pennsylvania State University. “He was quite opinionated and often fought hard to make his scientific interpretations the prevailing doctrine,” he said.

Calling him a “true Renaissance man” who had generated discoveries in a wide range of fields, Dr. Mann said Dr. Broecker had “held his competitors to a high standard by expressing honest skepticism and demanding convincing arguments and evidence.”

Wallace Smith Broecker was born on Nov. 29, 1931, and grew up in the Chicago suburb of Oak Park, Ill., the second of five children of Wallace and Edith (Smith) Broecker. His father ran a gas station; his mother was a homemaker.

His parents, evangelical Christians, sent Wallace to Wheaton College, a Christian liberal arts school in Illinois, where he met Grace Carder, whom he married in 1952. She died in 2007.

They had six children, five of whom survive him: Sandra Broecker, Cynthia Kennedy, Kathleen Wilson, Scott Broecker and Cheryl Keyes. In 2009, Dr. Broecker married Elizabeth Clark, who had worked with him in his laboratory; she also survives him, as do his sisters Judith Redekop and Bonnie Chapin, seven grandchildren and seven great-grandchildren.

At Wheaton, he planned to become an actuary, but a friend helped him land an internship at what became the Lamont-Doherty Earth Observatory at Columbia. It was there that he fell in love with scientific instruments and carbon dating, the technique that helps researchers determine the ages of materials that are tens of thousands of years old. He decided to transfer to Columbia from Wheaton.

He went on to earn a bachelor's degree in physics and a Ph.D. in geology there and to join Columbia's faculty in 1959.

Throughout his career, Dr. Broecker worked through problems with a pencil and paper, avoiding computers. He was dyslexic, and had staffers retype his manuscripts and emails, said Ms. Clark, who helped edit his papers. "He said he needed the pencil and paper because that's how he thought," she said in an interview.

The author of more than 500 research papers and some 17 books, Dr. Broecker received many science awards, including the National Medal of Science from President Bill Clinton in 1996.

Prize money was often attached to the honors, his daughter Ms. Kennedy said, but he plowed most of it back into his research. "Money was never important to my father," she said.

She said that his travels for research had kept him away from home much of the time, but that when he was home he had kept things lively, with treasure hunts in the house and croquet in the yard.

Though he was often referred to as the "grandfather of climate science" or the "father of global warming," Dr. Broecker disdained such titles, which he said were better deserved by others. He even offered $200 to anyone who could find the phrase "global warming" used before he published his 1975 paper.

Some occurrences were found, but his usage had made the phrase stick. Still, he wrote, "It is my hope that the title 'Father of Global Warming' does not appear on my tombstone."

In any case, there will be no tombstone, Ms. Clark said. Instead, she intends to comply with his wishes that on her next ocean research trip, a colleague, Dr. Sidney R. Hemming, scatter his ashes at sea.

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