

Ralph Keeling

Professor at UC San Diego

La Jolla, CA, US

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Biography

Keeling is a professor of geochemistry in the Geosciences Research Division of Scripps Institution of Oceanography at the UC San Diego. His research focuses on atmospheric composition, the carbon cycle, and climate change. He is considered a leading investigator of the global oxygen cycle known for precise measurements and analysis techniques. Keeling is also considered a leading global authority on carbon dioxide and the global greenhouse effect associated with emissions of the gas through human activities. He serves as director of the Scripps CO₂ Program, which maintains observations of atmospheric carbon dioxide records at the Mauna Loa Observatory in Hawaii, as well as other sampling stations throughout the world. The Mauna Loa record, also known as the Keeling Curve, was initiated in 1956. Daily updates of the atmospheric CO₂ concentration can be found at keelingcurve.ucsd.edu. Keeling developed his method for measuring atmospheric oxygen levels utilizing interferometry techniques in the laboratory. He began pioneering measurements of changes in atmospheric oxygen levels from air samples collected at stations around the world. The measurements continue at nine sampling stations, extending from Ellesmere Island in northern Canada over the equator to two Antarctic stations. Measurements from his group show that the atmosphere O₂ is decreasing at a small but measurable rate due primarily to the burning of fossil fuels. From 1991 to 2011, the atmosphere lost on average 19 out of every million O₂ molecules in the atmosphere. Establishing this rate was a milestone for improving our understanding of the processes controlling the buildup of CO₂ in the atmosphere. Born in La Jolla, Calif., Keeling received a B.S. in physics, summa cum laude, from Yale University, and a Ph.D. in applied physics from Harvard University. He previously served as a visiting scientist at the National Center for Atmospheric Research (NCAR). He completed postdoctoral fellowships at NCAR and Harvard. He received the Rosenstiel Award from the University of Miami's Rosenstiel School of Marine and Atmospheric Science, the Outstanding Publication Award from NCAR, and was an H. Burr Steinbach Scholar at Woods Hole Oceanographic Institution. He also was a Climate Center Visitor at Columbia University's Lamont-Doherty Earth Observatory. Keeling is a member of the American Geophysical Union.

Areas of Expertise

Atmospheric Gasses, Air-sea Gas Exchange, Atmospheric Oxygen, Paleoclimate and Climate Change, Global Carbon Cycle

Affiliations

Atmospheric Oxygen Research Group at SIO, Scripps CO₂ Program

Education

Harvard University
Ph.D. Applied Physics

Yale University
B.S Physics

Accomplishments

Humboldt Research Award
2009 In recognition of his career achievement

H. Burr Steinbach Visiting Scholar at Woods Hole Oceanographic Institution
1998 Woods Hole Oceanographic Institution

Rosenstiel Award
1992

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