

Gene Elden Likens

Professor Gene E. Likens is an ecologist best known for his discovery of acid rain in North America with colleagues, for co-founding of the internationally renowned Hubbard Brook Ecosystem Study and for founding the Institute of Ecosystem Studies, a leading, international ecological research and education center. Dr. Likens is an educator and advisor at state, national, and international levels. He has been an advisor to two governors in New York State and one in New Hampshire, as well as one U.S. President. He currently holds faculty positions at Yale, Cornell, Rutgers Universities, SUNY Albany, the University of Connecticut, and recently was awarded a Chair as Albert Einstein Professor from the Chinese Academy of Science and also named Honorary Professor at Jinan University, Guangzhou, China. Dr. Likens has been awarded ten Honorary doctoral Degrees. In addition to being elected a member of the prestigious U.S. National Academy of Sciences and the American Philosophical Society, Dr. Likens has been elected to membership in the American Academy of Arts and Sciences, the Royal Swedish Academy of Sciences, Royal Danish Academy of Sciences and Letters, Austrian Academy of Sciences, and an Honorary Member of the British Ecological Society. Dr. Likens was awarded the 2001 National Medal of Science, presented at The White House; and In 2003 was awarded the Blue Planet Prize (with F. H. Bormann) from the Asahi Glass Foundation, considered to be the Nobel Prize of Ecology. Among other awards, in 1993 Dr. Likens, with F. H. Bormann, was awarded the Tyler Prize, The World Prize for Environmental Achievement, and in 1994, he was the sole recipient of the Australia Prize for Science and Technology. Dr. Likens has served as President of the International Society of Theoretical and Applied Limnology, American Institute of Biological Sciences, Ecological Society of America, and American Society of Limnology and

Oceanography. Dr. Likens is the author, co-author or editor of 25 books and more than 600 scientific papers.

Biographical Sketch: Gene E. Likens

Address: Cary Institute of Ecosystem Studies
Box AB, Millbrook, New York 12545, USA
(845) 677-5343; Fax (845) 677-5976 [E-mail: likensg@caryinstitute.org]

Degrees Held:

Ph.D. (Zoology)	1962	Univ. of Wisconsin-Madison
M.S. (Zoology)	1959	Univ. of Wisconsin-Madison
B.S. (Biology)	1957	Manchester College

Honorary Degrees: Manchester College [D.Sc., 1979]; Rutgers University [D.Sc., 1985]; Plymouth State University, NH [D.Sc. 1989]; Miami University [D.Sc. 1990]; Union College [D. Humane Letters, 1991]; Institut für Bodenkultur, Vienna, Austria [Doctoral, H.C., 1992]; Marist College [D.Sc., 1993]; Wageningen Agricultural University, The Netherlands [D.Sc., 1998]; University of Connecticut [D.Sc., 2004]; Montclair State University [D.Sc. 2012]

Positions Held:

2007-present	Distinguished Senior Scientist, President Emeritus, Founding Director, Institute of Ecosystem Studies* [*institutional name change to Cary Institute of Ecosystem Studies, November 2007]
2005-present	Distinguished Research Professor, University of Connecticut
2003-present	Professor of Biology, University at Albany, State Univ. of New York
1983-present	Adjunct Professor, Dept. Ecology and Evol. Biology, Cornell Univ.
1984-present	Professor of Biology, Yale University
1985-present	Professor, Graduate Field of Ecology, Rutgers University
1983-2007	Distinguished Senior Scientist, Institute of Ecosystem Studies
1993-2007	President, Institute of Ecosystem Studies
1983-2007	Director, Institute of Ecosystem Studies
2000-2005	G. Evelyn Hutchinson Chair in Ecology, Institute of Ecosystem Studies
1983-1993	Vice President, The New York Botanical Garden
	Director, Mary Flagler Cary Arboretum
1969-1983	Associate Professor/Professor/Chairman, Charles A. Alexander Professor of Biological Sciences Section of Ecology and Systematics, Cornell University
1961-1969	Instructor/Assistant Professor/Associate Professor, Dartmouth College

Selected Honors:

2014	A.C. Redfield Lifetime Achievement Award, Association for the Sciences of Limnology and Oceanography
2008	CERF Fellowship, Australian National University, July 2008-Feb. 2009
2008	CSIRO Water for a Healthy Country Fellowship, January-May 2008
2006	Elected to American Philosophical Society
2003	Recipient, Blue Planet Prize, Asahi Glass Foundation, Tokyo, Japan
2001	Recipient, National Medal of Science
2001-2004	President, American Institute of Biological Sciences
2001-2007	President, Societas Internationalis Limnologiae

2000	Elected Exchange Fellow, Austrian Academy of Sciences
1995	Eminent Ecologist, Ecological Society of America
1995	Naumann-Thienemann Medal, Societas Internationalis Limnologiae
1994	Recipient, The 1994 Australia Prize for Science & Technology
1994	Elected Foreign Member, The Royal Danish Academy of Sciences and Letters
1993	Recipient, The Tyler Prize, The World Prize for Environmental Achievement
1991	Elected Honorary Member-British Ecological Society
1990	Distinguished Service Award, American Institute of Biological Sciences
1989	Recipient, First International ECI Prize in Limnetic Ecology, The Ecology Institute, Oldendorf-Luhe, Germany
1988	Elected Foreign Member, The Royal Swedish Academy of Sciences
1982	Charles A. Alexander Professor of Biological Sciences, Cornell University
1982	Recipient, First G.E. Hutchinson Award (American Society of Limnology and Oceanography)
1981-82	President, Ecological Society of America
1981	Elected to National Academy of Sciences
1980	USDA Forest Service 75th Anniversary Award
1979	Elected to American Academy of Arts & Sciences
1976-77	President, American Society of Limnology and Oceanography
1972-73	Guggenheim Fellowship

Selected Publications (from more than 600, including 25 books):

Likens, G. E., F. H. Bormann, N. M. Johnson, D. W. Fisher and R. S. Pierce. 1970. Effects of forest cutting and herbicide treatment on nutrient budgets in the Hubbard Brook watershed-ecosystem. *Ecol. Monogr.* 40(1):23-47.

- Science Citation Index and the Social Sciences Citation Index identified Likens et al. *Ecological Monographs* 40:23 [1970], as one of the most cited items in its field; Citation Classic in Current Contents 12(36):28, 1981

Likens, G. E., F. H. Bormann and N. M. Johnson. 1972. Acid rain. *Environment* 14(2):33-40.

Likens, G. E. and F. H. Bormann. 1974. Acid rain: a serious regional environmental problem. *Science* 184(4142):1176-1179.

Likens, G. E., F. H. Bormann, R. S. Pierce, J. S. Eaton and N. M. Johnson. 1977. Biogeochemistry of a Forested Ecosystem. Springer-Verlag New York Inc. 146 pp.

Bormann, F. H. and G. E. Likens. 1979. Pattern and Process in a Forested Ecosystem. Springer-Verlag New York Inc. 253 pp.

Likens, G. E. (ed.). 1985. An Ecosystem Approach to Aquatic Ecology: Mirror Lake and its Environment. Springer-Verlag New York Inc. 516 pp.

Likens, G. E. 1989. Some aspects of air pollution on terrestrial ecosystems and prospects for the future. *Ambio* 18:172-178.

- Likens, G. E. 1992. The Ecosystem Approach: Its Use and Abuse. Excellence in Ecology, Book 3. Ecology Institute, Oldendorf-Luhe, Germany. 166 pp.
- Likens, G. E., C. T. Driscoll and D. C. Buso. 1996. Long-term effects of acid rain: response and recovery of a forest ecosystem. *Science* 272:244-246.
- Likens, G. E., C. T. Driscoll, D. C. Buso, T. G. Siccama, C. E. Johnson, G. M. Lovett, T. J. Fahey, W. A. Reiners, D. F. Ryan, C. W. Martin and S. W. Bailey. 1998. The biogeochemistry of calcium at Hubbard Brook. *Biogeochemistry* 41(2):89-173.
- Wetzel, R. G. and G. E. Likens. 2000. Limnological Analyses. Third Edition. Springer-Verlag New York Inc. 429 pp.
- Likens, G. E., T. J. Butler and D. C. Buso. 2001. Long- and short-term changes in sulfate deposition: Effects of The 1990 Clean Air Act Amendments. *Biogeochemistry* 52(1):1-11.
- Likens, G. E., C. T. Driscoll, D. C. Buso, M. J. Mitchell, G. M. Lovett, S. W. Bailey, T. G. Siccama, W. A. Reiners and C. Alewell. 2002. The biogeochemistry of sulfur at Hubbard Brook. *Biogeochemistry* 60:235-316.
- Likens, G. E. 2004. Some perspectives on long-term biogeochemical research from the Hubbard Brook Ecosystem Study. *Ecology* 85(9):2355-2362.
- Macneale, K. H., B. L. Peckarsky and G. E. Likens. 2005. Stable isotopes identify dispersal patterns of stonefly populations living along stream corridors. *Freshwater Biology* 50:1117-1130.
- Likens, G. E. and D. C. Buso. 2006. Variation in streamwater chemistry throughout the Hubbard Brook Valley. *Biogeochemistry* 78:1-30.
- Likens, G. E. (Editor-in-Chief). 2009. Encyclopedia of Inland Waters. Elsevier: Oxford.
- Winter, T. C. and G. E. Likens (eds.). 2009. Mirror Lake: Interactions Among Air, Land and Water. University of California Press.
- Likens, G. E. and D. C. Buso. 2010. Long-term changes in streamwater chemistry following disturbance in the Hubbard Brook Experimental Forest, USA. *Verh. Internat. Verein. Limnol.* 30:1577-1581.
- Likens, G. E. and D. C. Buso. 2012. Dilution and the elusive baseline. *Environ. Sci. Tech.* 46(8):4382-4387. doi: 10.1021/es3000189
- Weathers, K. C., D. L. Strayer and G. E. Likens (eds.). 2013. Fundamentals of Ecosystem Science. Elsevier Academic Press. 312 pp. (available in Spanish)
- Likens, G. E. 2013. Biogeochemistry of a Forested Ecosystem, Third Edition. Springer. 208

pages.

McGuire, K. J., C. E. Torgersen, G. E. Likens, D. C. Buso, W. H. Lowe and S. W. Bailey. 2014. Network analysis reveals multiscale controls on streamwater chemistry. *Proc. Nat. Acad. Sci. USA* 111:7030-7035. doi: 10.1073/pnas.1404820111

Wilson, A. M. and G. E. Likens. 2015. Content Volatility of Scientific Topics in Wikipedia: A Cautionary Tale. *PLoS ONE* 10(8):e0134454 (altmetric score – 281). doi:10.1371/journal.pone.0134454

RESEARCH PROGRAM:

Dr. Likens' research interests are focused on long-term, multidisciplinary studies of forest, stream and lake ecosystems in the Hubbard Brook Experimental Forest in the White Mountains of New Hampshire. The objectives are to evaluate energy flow and biogeochemical fluxes for northern hardwood forest ecosystems and for a small lake. These studies, done in cooperation with students and colleagues from Cornell University, Yale University, Dartmouth College, USDA Forest Service, Syracuse University, USDI Geological Survey, etc., are designed to delineate the biological, physical, and chemical parameters, and to assess the biological implications of human alterations of these ecosystems (e.g. by clearcutting, fertilization or acid rain). Experimental manipulations of entire ecosystems are used to evaluate these questions. Limnological investigations evaluate the effect of air pollution, forest clearing, construction of an interstate highway and housing developments in the lake's watershed. He also studies effects of acid rain on natural ecosystems, evaluating the effect of human activities on historical changes in precipitation chemistry, the chemistry of precipitation in remote regions of the Southern Hemisphere, the chemistry of cloud water, and the ecology and biogeochemistry of aquatic ecosystems.