

Maureen E. Raymo

Department of Earth Sciences
Boston University
685 Commonwealth Avenue, Boston MA 02215

Phone: 617-353-4009
Fax: 617-353-3290
email: raymo@bu.edu
<http://www.moraymo.us>

Education

1982 Sc.B. Geology, Brown University (Providence, RI)
1985 M.A. Geology, Columbia University (New York, NY)
1988 M. Phil. Geology, Columbia University (New York, NY)
1989 Ph.D. Geology, Columbia University (New York, NY)

Thesis title: "Pliocene-Pleistocene paleoceanography of the North Atlantic Ocean: Nature and causes of climate variations on 10^4 - 10^6 year time scales" (advisor: W. F. Ruddiman)

Research Interests

Paleoclimatology, paleoceanography, isotope geochemistry, climate modeling, and the connections between plate tectonics, orbital insolation, the global carbon cycle and climate.

Research/Teaching Positions

Research Professor, Dept. of Earth Sciences, Boston University, 2003-present
Research Associate Professor, Dept. of Earth Sciences, Boston University, 2000-2003
Adjunct Scientist, Woods Hole Oceanographic Institute, 2001-2007
Associate Professor, Dept. Earth, Atmospheric, and Planetary Sciences, MIT, 1997-2000
Assistant Professor, Dept. Earth, Atmospheric, and Planetary Sciences, MIT, 1992-1997
Assistant Professor, Dept. Geology and Geophysics, University of California, Berkeley, 1991-1992
Adjunct Associate Research Scientist, Lamont-Doherty Geological Observatory, 1989-1994
Associate Scientist, Geology Dept., University of Melbourne, Australia, 1989-1990
Visiting Research Fellow, Meteorology Dept., University of Melbourne, Australia, 1989-1990
Graduate Research Assistant, LDGO and Dept. of Geology, Columbia University, 1983-1989
Research Assistant, Lamont-Doherty Geological Observatory, 1982-1983
Undergraduate Research Assistant, Geology Department, Brown University, 1979-1982

Honors/Awards

Bausch and Lomb Science Award, 1978
Sigma Xi, elected 1989
National Young Investigator Award, National Science Foundation, 1992
Cecil and Ida Green Career Development Chair, MIT, 1993
Joint Oceanographic Institutions/USSAC Distinguished Lecturer, 1994-1995
Robert L. and Bettie P. Cody Award in Ocean Sciences, Scripps Institution of Oceanography, 2002
Discover Magazine, 50 Most Important Women in Science, November 2002
John Simon Guggenheim Fellow, 2003-2004
Emiliani Lecture, American Geophysical Union, Fall 2005
Fellow, American Association Advancement Science, elected 2007

Professional Affiliations

American Geophysical Union, Geological Society of America, American Physical Society, AAAS.

Selected Invited Lectures

Invited speaker, 3rd International Conference on Paleoceanography, Cambridge, England, 1989
Keynote Address, Chapman Conference on Tectonics and Topography, Snowbird, UT, 1992
Invited speaker, "Frontiers of Physical Sciences" Symposium, AAAS Ann. Meet., Boston, 1993
Invited speaker, "Fifth Annual Symposium on Frontiers of Science", National Academy of Sciences, Irvine, CA, 1993
Invited speaker, National Academy of Sciences 131st Annual Meeting, Washington, D.C., 1994
Invited speaker, 5th International Conference on Paleoceanography, Halifax, Canada, 1995
Mountain Research Center Distinguished Lecturer, Montana State University, 1996
Invited speaker, "The Bicentennial Conference: Charles Lyell and James Hutton", Roy. Soc. of Edinburgh, Edinburgh, 1997
Invited speaker, "Fifty Years of Ocean Discovery-NSF", National Academy of Sciences, Washington, D.C., 1998
Inaugural Lecturer, WISE Public Lecture Series, Syracuse University, 1998
Distinguished Visiting Lecturer, Spring 2002 Series, College of Sciences, Old Dominion University, 2002
Invited speaker, "Future Challenges for Marine Sciences in Canada - 40th Anniversary Symposium", Bedford Institute of Oceanography, 2002.
Keynote Speaker, GEODAZE 2005, Univ. of Arizona, April 2005.
2005 Snee Graduate Organization Guest Geologist, Cornell University, Oct. 2005.
Rochester Institute of Technology, College of Science Distinguished Speaker, May, 2006.
John Wesley Powell Memorial Lecture, SWARM-AAAS, 2006.
Marjory Stoneman Douglas Lecture, Wellesley College, April 10th, 2007.
Keynote Speaker, Goldschmidt Conference, Cologne, Germany, Aug. 24, 2007.
London Quaternary Lectures, Royal Holloway, Univ. of London, February 27, 2008.
Keynote Speaker, EPICA Open Science Conference, Nov. 10-13th, Venice, Italy

Selected Professional Activities

Shipboard Paleontologist, Leg 108, R/V *Resolution*, Ocean Drilling Program, 1986
Committee member of "Pliocene Time Scale Working Group" of the International Union of Geological Sciences Subcommittee on Neogene Stratigraphy, 1991
Member, JOIDES Ocean History Panel, 1992-1994
Chairman, ODP Detailed Planning Group, North Atlantic-Arctic Gateways, 1993
Editorial Board, *Geology*, 1993-1998
Visiting Committee, Dept. of Earth and Planetary Sciences, Harvard University, 1993-1999
Comm. on Paleoceanography and Paleoclimatology, American Geophysical Union, 1994-1999
NSF, Marine Geology and Geophysics proposal review panels, 1995, 1997, 2007, 2009
Co-chief Scientist, Leg 162, R/V *Resolution*, Ocean Drilling Program, 1995
Member, ODP Detailed Planning Group, Blake-Burmuda Rise Drilling, 1996
Member, NSF FUMAGES Working Group on Climate and the Sediment Record, 1996
Member, JOIDES Science Committee (SCICOM), 1997-1999
Visiting Committee, Monterey Bay Aquarium Research Institute, 1999

Session Chair, Conference of Multiple Platform Exploration (COMPLEX), Vancouver May 25-29th, 1999
Editor Search Committee, *Paleoceanography*, 2000
Electorate Nominating Committee of the AAAS Section on Geology and Geography, 2001-2004 (Committee Chair, 2003-2004).
Macelwane Medal Committee, AGU, 2002-2004
Program Review Committee, Earth System History (ESH), NSF 2006.
Scientific Steering Committee, IODP Topical Symposium Program, 2006-07.
Vice-Chair/Chair-elect, IODP SASEC (Science Advisory Structure Executive Committee of the Integrated Ocean Drilling Program), 2007-present

Symposia and Meetings Organized and Convened

Tectonic History and Climatic Impact of Himalayan/Tibetan Uplift, Special Session, Fall AGU (w/ P. Molnar), 1991
Global Change Symposium, Goldschmidt Conference, May 8-10, Reston VA (w/ M. Pavich), 1992
Conference on Uplift, Erosion and Climate Conference, LDEO, Nov. 9-10 (w/ W. Broecker), 1992
New Perspectives on the 100 Kyr Climate Cycle, Special Session, Fall AGU (w/ S. Clemens), 1996
Leg 162 Post-cruise Scientific Meeting, Long Island, Bahamas, March 17-20th, 1997
The Timing and Oceanographic Consequences of the Closing of the Panama Isthmus Conference, LDEO, October 13-14 (w/ W. Broecker and P. de Menocal), 1997
Discussion panel, Cenozoic Climate Change, 6th International Conference on Paleoceanography, Lisbon, Aug. 23-28th (w/ W. Berger), 1998

Departmental Lectures

Monash University, Australia, 1989; Melbourne University, Australia, 1989; MIT, September, 1989; UC-Berkeley, 1990; UF-Gainesville, 1990; Michigan State, Lansing, 1990; UNC-Chapel Hill, 1990; Washington University, MO, 1990; Contra Costa College, Richmond CA, March 2, 1991; Cal State-Hayward, 1991; UC-Santa Cruz, 1991; Lawrence Livermore Labs, 1991; University of Colorado at Boulder, November 6th, 1991; INSTAAR-Boulder, November 7th, 1991; MIT, 1991; Harvard University, December 18th, 1991; UC-Santa Barbara, February 7th, 1992; California Institute of Technology, February 24th, 1992; UC-Berkeley, Soil Science Department, April 22nd, 1992; Scripps Institution of Oceanography, May 1st, 1992; Brown University, February 25th, 1993; Pennsylvania State University, April 6th, 1993; University of Massachusetts, Amherst, May 7th, 1993; NASA Goddard Space Flight Center, June 16th, 1993; University of Michigan-Ann Arbor, September 26th, 1993; Boston Bay Group, Cambridge, MA, October 20th, 1993; Knight Fellows lecture, MIT, October 29th, 1993; Univ. of Rhode Island (GSO), April 22nd, 1994; WHOI, August 11th, 1994; Dickinson College, JOI/USSAC Distinguished Lecturer, October 28th, 1994; Vanderbilt University, JOI/USSAC Distinguished Lecturer, March 16th, 1995; Fairfield College, March 30th, 1995; Lamont-Doherty Earth Observatory, March 31st, 1995; Appalachian State College, JOI/USSAC Distinguished Lecturer, April 18th, 1995; Dartmouth College, May 12th, 1995; University of Iowa, October 20th, 1995; Mountain Research Center Distinguished Lecture, Montana State University, Feb. 22nd, 1996; Yale University, October 7th, 1996; University of Washington, Seattle, December 4th, 1996; WHOI Geodynamics Seminar, March, 1997; Knight Fellows lecture, MIT, November 5th, 1997; Univ. of Rhode Island (GSO), April 17th, 1998; Boston College, April 23rd, 1998; University of Miami, April 24th, 1998; Duke University, April 30th, 1998; Rice University, September 24th, 1998; Boston University, October 19th, 1998; University of Kansas, Lawrence, October 22nd, 1998; University of Illinois, Urbana, October 23rd, 1998; University of South Florida, St. Petersburg, November 20th, 1998; Brown University, December 15th, 1998; Lamont-Doherty Earth Observatory, January 8th,

1999; Syracuse University, WISE Public Lecture Series, Inaugural lecturer, March 8th, 1999; Scripps Institution of Oceanography, March 17th, 1999; University of Washington, Seattle, April 14th, 1999; University of Washington, Seattle, April 15th, 1999; University of Michigan, Ann Arbor, April 16th, 1999; University of Indiana, Dept. of Physics, Bloomington, November 15th, 2000; University of Massachusetts, Boston, Dept. of Biology, March 2nd, 2001; Five College Lecture Series, Hampshire College, March 7th, 2001; Scripps Institution of Oceanography, January 24th, 2002; Scripps Institution of Oceanography, Public Lecture, January 25th, 2002; Distinguished Visiting Lecturer, College of Sciences, Old Dominion Univ., April 16th (2 talks), 2002; University of California, Santa Cruz, May 9th, 2002; Stanford University, May 10th, 2002; Los Alamos National Laboratory, Frontiers in Geoscience Colloquium, July 11th, 2002; Princeton University, March 10th, 2003; Lamont Doherty Earth Observatory, March 11th, 2003; Rutgers University, March 12th, 2003; Bentley College, October 18th, 2004; Harvard University, Oct. 25th, 2005; Brown University, March 13th, 2006; Bentley College, Oct. 10th, 2006; Lamont Doherty Earth Observatory, Nov. 3rd, 2006; Graduate School of Oceanography, URI, Nov. 29th, 2006; Center for Space Physics, Boston U., Nov. 30th, 2006; Bates College, March 23rd, 2007; Rice Univ. Oct. 11th, 2007; Bentley College, Oct. 22, 2007; Institute de Physique du Globe, Paris, Oct. 16th, 2008; Lamont Doherty Earth Observatory, Dec. 2nd, 2008; Univ. of Miami, Rosenstiel School of Marine and Atmospheric Science, Feb. 20th, 2009; WHOI, Geodynamics Seminar, Feb. 26th.

Students/Post-docs

Post-doc

Lorraine Lisiecki Ph.D., Brown U., 2005

Primary Advisor or Co-Advisor

Kristina Faul Undergraduate Thesis, MIT, 1993
 Kristina Dahl Undergraduate Thesis, BU, 1999
 Darrel Coles S.M., MIT, 1999
 Brigitte Brunelle Undergraduate Thesis, BU, 2002
 Susan Carter MIT/WHOI
 Kerim Nisancioglu Ph.D., MIT, 2004
 Benjamin Costanza M.A., B.U., 2007

Graduate Generals Project Advisor

MaryAnn Schlegel S.M., MIT/WHOI, 1998
 Michael Horowitz S.M., MIT/WHOI, 1999
 Kirsten Laarkamp Ph.D., MIT/WHOI, 2000
 Mark Behn Ph.D., MIT/WHOI, 2002
 Amy Draut Ph.D., MIT/WHOI, 2003

Thesis Committees

Kevin Walsh Ph.D., Univ. of Melbourne, 1994
 Chris Forest Ph.D., MIT, 1996
 Meg Coleman Ph.D., MIT, 1996
 Susan Alderman S.M., MIT-WHOI, 1996
 Gerard Roe Ph.D., MIT, 1999
 Robert Ackert Ph.D., MIT-WHOI, 2000
 Lorraine Lisiecki Ph.D., Brown U., 2005

Julia Becker	Ph.D., Utrecht U., 2005
Kira Lawrence	Ph.D., Brown U., 2006
Sindia Sodian	Ph.D., Rutgers U., 2007

Undergraduate Research Project Advisor

Chelle Gentemann	MIT, Fall 1992
Alexandra Weeks	Wellesley College, Spring 1993-Spring 94
Rosanna Yuen	MIT, Summer 1994
Meiling Pan	MIT, Fall 93 - Spring 95
Janelle Brown	MIT, Fall 94-IAP 95
Jessica Walko	MIT, Fall 94 - Spring 96
Helen Hsu	MIT, Spring 95- Spring 96
Amanda Breed	Wellesley High School, Spring 1996
Patricia Bradshaw	Willamette University, Summer 1996
Claudette Reyez	U. Puerto Rico, Summer 1996
Veronica Vieira	MIT, Spring 96-Summer 98
Mike Barboza	MIT, Fall 97
Nina Kutsuzawa	MIT, Spring 97-IAP 98
Susan Lang	MIT, IAP 98-Spring 98
Atreyee Gupta	MIT, Summer 98-Spring 99
Helena Fu	MIT, Fall 98
Jennifer Stout	MIT, Fall 98-Spring 99
Jennifer Szlosek	MIT, IAP 99-Spring 99
April Deet	MIT, Summer 99-Spring 00
Alexandra Molnar	MIT, Summer 99-Spring 00
Brigitte Brunelle	BU, 2001-2002
Greer Dolby	BU, Fall 2006-2008
Drew Fetterman	BU, summer 2006-Winter 2007
Kelley Rabjohns	BU, fall 2007-2008
Claire Archer	BU, summer 2008
Nicole Khan	BU, fall 2008
Paula Smith	BU, spring 2009

Collaborations with Graduate Students from other Universities:

Robert Huber, University of Bremen, Germany

Published paper: Huber, R., Meggers, H., Baumann, K.-H. , M. E. Raymo, and R. Heinrich (2000) Shell size variation of the planktonic foraminifer *Neogloboquadrina pachyderma* sin. in the Norwegian-Greenland Sea during the last 1.3 Myrs: Implications for paleoceanographic reconstructions. *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 160, p. 193-212.

Andrew Ridgwell, University of East Anglia, Great Britain

Published paper: Ridgwell, A.J., A.J. Watson, and M. E. Raymo (1999) Is the spectral signature of the 100 kyr glacial cycle consistent with a Milankovitch origin? *Paleoceanography*, v. 14, p. 437-440.

Gary Dwyer, Duke University

Published paper: Dwyer, G. S., T. Cronin, P. Baker, M.E. Raymo, H. Dowsett, and T. Correge (1995) North Atlantic deep water temperature evolution during late Pliocene and late Quaternary climatic cycles. *Science*, v. 270, p. 1347-1351.

Sang Min Hyun, University of Tokyo, Japan

Published paper: Hyun, S., J. Ortiz, M. E. Raymo, and A. Taira (1999) Low-frequency oscillations in Site 983 sediments: relationships between carbonate and productivity proxies. *Scientific Results of the Ocean Drilling Prog.*, v. 162, p. 197-207.

Julia Becker, Utrecht U., Netherlands

Published paper: Becker, J., L.J. Lourens and M.E. Raymo (2006) High-frequency climate linkages between the North Atlantic and the Mediterranean during marine oxygen isotope stage 100 (MIS100), *Paleoceanography*, v. 21, PA3002, doi:10.1029/2005PA001168.

Lorraine Lisiecki, Brown U.

Published paper: Lisiecki, L.E. and M.E. Raymo (2005) A Plio-Pleistocene stack of 57 globally distributed benthic $\delta^{18}O$ records, *Paleoceanography*, 20, PA1003, doi:10.1029/2004PA001071.

Kira Lawrence, Brown U.

Published Paper: High Amplitude Variations in North Atlantic Sea Surface Temperature during the Early Pliocene Warm Period (2009) *Paleoceanography*, v. 24, PA2218, doi:10.1029/2008PA001669.

Samuel Nunez-Ricardo, Univ. of Concepcion, Chile

Paper in preparation: Milankovitch-scale variability of stable carbon and oxygen isotopes of planktic and benthic foraminifers off northern Chile (25°S) during the last 1 Myr

Classroom Teaching Experience

Geologic Record of Climate Change (U. of Melbourne, 1990)
Sedimentation and Stratigraphy (U. of Melbourne, 1990)
The Global Carbon Cycle (UC-Berkeley, 1991)
Geologic Record of Climate Change (UC-Berkeley, 1991)
Climate Change (Freshman seminar, MIT, 1993, 1994, 1995, 1996, 1997)
Climate Change: Past, Present, and Future (MIT, 1993, 1996)
Pre-Pleistocene Paleoceanography (MIT, 1993, 1995)
Special Topics In Paleoceanography (MIT, 1994, 1999)
Marine Geology and Geophysics (MIT, co-taught 1994, 1995, 1996, 1997, 1998)
Climate Physics and Chemistry (MIT, co-taught 1996, 1997, 1998, 1999)
Experimental Oceanography at Woods Hole (MIT, co-taught 1997)
Field Oceanography (taught at the Caribbean Marine Research Center, MIT, 1998, 1999)

Outreach and other educational activities

Geology book for general audience:

“Written In Stone - a Geological History of the Northeastern United States”, coauthored with my father, has recently been released in a revised 3rd edition by Black Dome Press. This book has been continuously in bookstores since 1989 and is used in high school and college curriculums across the Northeast. It was recently on the Bates College summer reading list.

“Compresses billions of years into a slim, lively narrative” *Yankee Magazine*

“Hard to put down....truly an adventure” *Bookpage (New England Edition)*

Science film features:

1995	BBC <i>Horizon</i> Series, “Tibet: The Ice Mother”
1995	DSR <i>Abenteuer Wissenschaft</i> , “Tibet Teil 1 und 2” (Adventure Science: Tibet Part 1 and 2), German Public Television
1996	WGBH <i>Nova</i> Series, “Cracking the Ice Age”
1998	BBC “Earth Story: Winds of Change”
ongoing	Permanent film exhibit in Natural History Museum, London
ongoing	Open University lecture film series

“Maureen Raymo is probably best known by the public for her science film features. Her work on climate change and climate modeling with regard to why we have ice ages was featured in 4 films with general distribution.”

Radio/print/on-line interviews:

Numerous national and international radio interviews (including “Quirks and Quarks”, Canadian Broadcasting Corp. Radio’s National Science Program, “Equinox” Science Radio with David Suzuki, “Science Now” BBC Radio 4, and the “Earth & Sky” Radio Series.); a *Compuserve* open forum sponsored by *U.S. News and World Report* that allowed the public to communicate with scientists on a research expedition via email; numerous popular science articles including three cover stories (“Great Science Mysteries–What Causes Ice Ages” in *U.S. News and World Report*, August 1997; “Roof of the World: How the Himalayas change our climate”, in *Earth*, July, 1993; and “Did Tibet Cool the World?” in *New Scientist*, July 3, 1993); featured in “*What do you want to be?*”, *Explore Earth Science*, a book published by Sally Ride Science.

ELHI/civic outreach:

Consultant on a number of educational publications including *The Teacher-Friendly Guide to the Geology of the Northeastern U.S.* by J. Ansley as well as interactive CDs developed by the Ocean Drilling Program for use by high school and college students; numerous lectures on climate science to elementary, high school, and civic groups; the LR04 stack and timescale of Lisiecki and Raymo [2005] has been widely adopted as the standard representation of the climate history of the last 5 million years and is reproduced in numerous educational and science resource outlets including the textbooks.

Publication Statistics

H-index = 25¹ Average Citations per Item = 70 Erdős No. = 5²

Ten Most Highly Cited Publications (ISI Web of Knowledge)

Raymo, M.E. and W.F. Ruddiman, 1992, Tectonic forcing of late Cenozoic climate. *Nature*, 359, 117-122. (times cited = 605)

Imbrie, J., A. Berger, E.A. Boyle, S.C. Clemens, A. Duffy, W.R. Howard, G. Kukla, J. Kutzbach, D.G. Martinson, A. McIntyre, A.C. Mix, B. Molino, J.J. Morley, L.C. Peterson, N.G. Pisias, W.L. Prell, M.E. Raymo, N.J. Shackleton, and J.R. Toggweiler, 1993, On the Structure and Origin of major glaciation cycles. 2. The 100,000-year cycle. *Paleoceanography*, 8, 699-736. (times cited = 360)

Raymo, M.E., W.F. Ruddiman, and P.N. Froelich, 1988, Influence of late Cenozoic mountain building on ocean geochemical cycles. *Geology*, 16, 649-653. (times cited = 320)

Raymo, M.E., W.F. Ruddiman, J. Backman, B.M. Clement, and D.G. Martinson, 1989, Late Pliocene variation in Northern Hemisphere ice sheets and North Atlantic deep circulation. *Paleoceanography*, 4, 413-446. (times cited = 254)

Berggren, W., F. Hilgen, C. Langereis, D. Kent, J. Obradovich, I. Raffi, M.E. Raymo and N.J. Shackleton, 1995, Late Neogene chronology: New perspectives in high resolution stratigraphy. *Geol. Soc. Amer. Bull.*, 107, 1272-1287. (times cited = 215)

Lisiecki L. and M. Raymo, 2005, A Plio-Pleistocene stack of 57 globally distributed benthic $\delta^{18}\text{O}$ records, *Paleoceanography*, 20, PA1003, doi:10.1029/2004PA001071 (times cited = 195)

Ruddiman, W.F., M. Raymo, and A. McIntyre, 1986, Matuyama 41,000-year cycles: North Atlantic Ocean and northern hemisphere ice sheets. *Earth and Planetary Science Letters*, 80, 117-129. (times cited = 186)

Raymo, M.E., W.F. Ruddiman, N.J. Shackleton, and D. Oppo, 1990, Evolution of Atlantic-Pacific $\delta^{13}\text{C}$ gradients over the last 2.5 m.y. *Earth and Planetary Science Letters*, 97, 353-368. (times cited = 178)

Raymo, M.E., 1997, The timing of major climate terminations. *Paleoceanography*, 12, 577-585. (times cited = 123)

Raymo, M.E., 1994, The initiation of Northern Hemisphere glaciation. *Annual Reviews of Earth and Planetary Science*, 22, 353-383. (times cited = 118)

¹ http://en.wikipedia.org/wiki/Hirsch_number Note: On ISI Web of Science many of my papers are missing including Imbrie et al. 1992, *Paleoceanography*, Ruddiman et al. 1989, *Paleoceanography*, Hansen et al., 2008 *JOAS*, Raymo et al. 1992 *Paleoceanography* among others.

² http://en.wikipedia.org/wiki/Erd%C5%91s_number