

CURRICULUM VITAE

April 15, 2012

RONALD G. PRINN

Education:

University of Auckland, New Zealand;
B.Sc. in Chemistry and Pure and Applied Mathematics 1967
University of Auckland, New Zealand;
M.Sc. with first class honors in Chemistry 1968
Massachusetts Institute of Technology;
Sc.D. in Chemistry 1971

Professional Positions:

NASA Graduate Assistant, MIT Department of Chemistry 1970–71
Assistant Professor, MIT Department of Meteorology 1971–76
Faculty resident, Baker House, MIT 1974–77
Associate Professor, MIT Department of Meteorology
and Physical Oceanography 1976–82
Visiting Associate Professor, Caltech, Division of
Geological and Planetary Sciences 1981
Professor, MIT Department of Meteorology and Physical Oceanography 1982–83
Professor, MIT Department of Earth, Atmospheric,
and Planetary Sciences 1983–1992
Inaugural Director, MIT Center for Global Change Science 1990–present
Inaugural Co-Director, MIT Joint Program on the Science and Policy
of Global Change 1991–present
TEPCO Professor of Atmospheric Chemistry, MIT 1993–present
Head, Department of Earth, Atmospheric and Planetary Sciences, MIT 1998–2003

Honors:

University of New Zealand Junior Scholar 1964, 65, 66
University of New Zealand Fowlds Prize for the most distinguished
student in the faculty of science 1967
University of New Zealand Postgraduate Scholar in Science 1968
American Geophysical Union James B. Macelwane Medal for
significant contributions to the Geophysical Sciences by
a young scientist of outstanding ability 1981
Elected a Fellow of the American Geophysical Union 1981
V.I. Vernadsky Memorial Lecturer, V.I. Vernadsky Institute,
USSR Academy of Sciences 1984
Energy Journal Best Paper Award 1997
Elected a Fellow of the American Association for the
Advancement of Science 2001

Academic Summary

Professor Prinn currently teaches four subjects in Atmospheric and Climate Sciences at MIT: “Atmospheric Physics and Chemistry” (12.806G, 12.306U), “Atmospheric Radiation” (12.815G), “Experimental Atmospheric Chemistry” (12.335U/12.835G) and “Global Climate Change: Economics, Science and Policy” (12.848G/12.348U). In the past he has taught courses in “Global Change Science”, “Physical Meteorology”, “Chemistry and Dynamics of Upper Atmospheres”, “A guided Tour of the Planets”, and “Atmospheric Chemistry and Radiation”. He served as a freshman advisor from 1971 to 1976 and as a faculty resident at Baker House from 1974 to 1977. He currently directs the MIT Center for Global Change Science and co-directs the MIT Joint Program on the Science and Policy of Global Change. He is a member of the MIT Environmental Research Council and the Editorial Board of the MIT Faculty Newsletter, and a past member of the Editorial Board of the MIT Press and the Executive Committee of the MIT Council on the Global Environment. He is a past member of MIT’s J.R. Killian Award Selection Committee, MIT’s Committee on Graduate School Policy, and MIT’s Committee on Toxic Chemicals. He headed the Department of Earth, Atmospheric and Planetary Sciences from 1998 to 2003.

Graduate Advising

Completed Doctoral Students: Matthew Alvarado, Robert Boldi, Mary Anne Carroll, Yu-Han Chen, Jason Cohen, Dale Durran, Neil Donahue, Amram Golombek, John Graham, Baskhar Gunturu, Dana Hartley, Elke Hodson, Jin Huang, Gary Kleiman, Yuexin Liu, Don Lucas, Natalie Mahowald, Jay Olaguer, Wenwei Pan, Arnico Panday, Stephanie Shaw, Michelle Sprengnether, Donnan Steele, Xue Xiao.

Completed Masters Students: Kevin Gurney, Gary Holian, Chris Jensen, Michael Katz, Michael Kirkish, Ryan Merkin, Gary Moore, Jay Olaguer, Robert Posey, Debra Weisenstein, Brenda Walker.

Current Graduate Students: Timothy Cronin, Anita Ganesan, Diane Ivy, Eunjee Lee, Laura Meredith, Katherine Potter, Katherine Saad, Lin Sun.

Research Summary

Dr. Prinn’s principal research interests involve the chemistry, dynamics and physics of the atmospheres of the Earth and other planets, and the chemical evolution of atmospheres. Dr. Prinn is currently Principal Investigator on a wide range of projects in atmospheric chemistry, biogeochemistry, planetary science, climate science, and integrated assessment of science and policy regarding climate change. Support for these projects currently comes from several U.S. Federal agencies (DOE, DOT, EPA, FAA, NASA, NSF), national and international industrial sponsors (Alstom Power, American Electric Power, A.P. Moeller-Maersk, AREVA, Bank of America Merrill Lynch, BP, Cargill, Chevron, Chinastone Energy Fund, CONCAWE & Europia, ConocoPhillips, Constellation Energy Group, Deutsche Bank, DONG Energy, Duke Energy, EPRI, Electricité de France, Eni, Exelon, Exxon Mobil, Ford Motor Company, GDF SUEZ, Iberdrola Generation, J-Power, Marathon Oil, Murphy Oil, NRG Energy, Oglethorpe Power, Repsol, RWE Power, Shell Petroleum, Southern Company, Statoil, Suncor Energy, Tennessee Valley Authority, Tokyo Electric Power Company, Total, Toyota Motor North America, Vattenfall), the Centro Mario Molina, the Norwegian Ministry of Petroleum and Energy, and the J. Unger Vetlesen Foundation. He is PI or Co-PI on grants or recurring gifts from these various sources with expenditures totaling about \$10 million per year (FY 2010).

Principal Research Accomplishments

Principal Investigator and leader, Advanced Global Atmospheric Gases Experiment (AGAGE) and its predecessors (ALE, GAGE) in which the rates of increase of the concentrations of the trace gases involved in the greenhouse effect and ozone depletion have been measured continuously over the

- globe since 1978. Among other accomplishments, AGAGE has established the global and hemispheric concentrations and long-term trends of the hydroxyl radical (OH).
- Pioneering the use of inverse methods, which use the above measurements and two or 3-dimensional models to determine trace gas emissions and understand atmospheric chemical processes.
- Developed with colleagues the first comprehensive global 3-dimensional dynamical-chemical-radiative model of the ozone layer and applied it to elucidating the effects of supersonic aircraft on ozone.
- Developed with colleagues a unique integrated global system model coupling models of economics, climate dynamics, physics and chemistry, and terrestrial and oceanic ecosystems, and applied it to assessment of uncertainty in climate predictions and analysis of climate policies.
- Chemical evolution of atmospheres: proposed the concept of transport-induced kinetic inhibition to explain the gaseous composition of giant planets and circumsolar disc; elucidated photochemistry of sulfur and chlorine compounds on Venus and phosphorus and sulfur compounds on Jupiter; proposed with colleagues the acid-rain hypothesis for selective extinctions at the Cretaceous-Tertiary boundary; co-author with J. Lewis of *Planets and Their Atmospheres: Origin and Evolution* (Academic Press).
- Made significant contributions to the development of national and international scientific research programs in global change (International Global Atmospheric Chemistry Program, International Geosphere-Biosphere Program).

Advisory Activities

Dr. Prinn is a member of the editorial board of the *International Journal of Environment and Pollution*. He has previously served as Editor for atmospheric sciences for *EOS* (AGU), Associate Editor of *Global Biogeochemical Cycles* (AGU), and Associate Editor for the *Journal of Geophysical Research: Atmospheres* (AGU). He has served or is currently serving on the following scientific advisory committees:

UCAR University Relations Committee	1974–1977
NASA Outer Planetary Probes Science Study Group	1974–1975
DOT/CIAP Panel on the Perturbed Stratosphere	1975
NASA Terrestrial Planets Science Study Group	1976–1977
AGU Planetology Section Nominations Committee	1977–1978
NAS/NRC Committee on Planetary and Lunar Exploration	1977–1981
IUGG/IAMAP International Commission on Planetary Atmospheres and their Evolution	1978–1995
NASA Advisory Council Innovation Subcommittee	1979
NAS/NRC Space Science Board	1981–1984
Chairman, NAS/NRC Committee on Earth Sciences	1982–1984
NASA Steering Committee for the Global Habitability Study	1982
NASA Biogenic Elements Science Study Group	1981–1982
NASA/SSEC Working Group for Terrestrial Planet Atmospheres	1982
UCAR Scientific Programs Evaluation Committee Panel for Review of NCAR Atmospheric Chemistry and Aeronomy Division	1983
NASA University Relations Study Group	1983–1985
American Meteorology Society Committee on Atmospheric Chemistry	1983–1986
NASA Earth System Sciences Committee	1983–1987
NAS/NRC US Committee for an International Geosphere-Biosphere Program	1984–1986
NAS/NRC/SSB Task Group on Earth Sciences	1985–1986
Co-chairman, NSF/NASA/NOAA Global Tropospheric Chemistry Program Plan Steering Committee	1984–1986
NAS/NRC/COSEPUP Research Briefing Panel on Remote Sensing of the Earth	1985
NASA Space and Earth Sciences Computing Center Steering Committee	1986–1987

AGU Committee of Fellows	1986–1988
AGU Committee on Earth as a System	1986–1988
NAS/NRC Committee on Atmospheric Chemistry	1987–1989
NAS/NRC Committee on Mars Sample Return	1987–1989
IUGG/IAMAP International Commission on Atmospheric Chemistry and Global Pollution	1987–1995
Inaugural Chairman, IGBP/IAMAP International Global Atmospheric Chemistry (IGAC) Project Steering Committee	1988–1995
NAS/NRC Committee on Cooperation with the USSR in Planetary Science	1989
ICSU/IGBP Special Committee	1989–1990
NAS/NRC US National Committee for SCOPE	1990–1992
NASA Space Science and Applications Advisory Committee	1990–1992
ICSU/IGBP Scientific Committee	1990–1995
NASA Network for Detection of Atmospheric Composition Change Steering Committee	1990–present
Chair Elect/Chair/Retiring Chair, AAAS Atmospheric and Hydrospheric Sciences	1998–2001
AAAS Council	2000-2001

Workshops and Assessments

Dr. Prinn has also participated in the following studies/workshops/assessments which produced published proceedings:

1975	NASA Workshop	<i>The Stratosphere, 1975–1980</i>
1975	DOT/CIAP Workshop	<i>The Stratosphere Perturbed by Propulsion Effluents</i>
1977	NASA/JPL Workshop	<i>The Dynamics of Earth and Planetary Atmospheres</i>
1978	NAS/SSB Workshop	<i>Comets, Asteroids, and Dust</i>
1979	NASA Workshop	<i>The Stratosphere: Present and Future</i>
1980	NASA Workshop	<i>Vibrational-Rotational Spectroscopy for Planetary Atmospheres</i>
1982	NASA Workshop	<i>Global Habitability</i>
1983	NAS/NRC Workshop	<i>International Geosphere-Biosphere Program</i>
1987	Dahlem Konferenzen	<i>The Changing Atmosphere</i>
1988	UCAR/OIES Workshop	<i>Trace Gases and the Biosphere</i>
1990	UCAR/OIES Workshop	<i>Earth System Modeling</i>
1990	WCRP Workshop	<i>Global Tracer Transport Modeling</i>
1992	Chair, NATO Advanced Research Workshop	<i>Biogeochemical Ocean-Atmosphere Transfers</i>
1993	Chair, First IGAC Scientific Conference	<i>Atmospheric Biospheric Chemistry</i>
1994	UCAR/OIES Global Change Institute	<i>Integrated Assessment Modeling</i>
1998	Lead Author, WMO/UNEP	<i>Scientific Assessment of Ozone Layer Depletion: 1998</i>
2001	IGBP Workshop	<i>Nonlinear Responses to Global Environmental Change</i>
2003	ICSU/SCOPE/IGBP/WCRP	<i>Global Carbon Project</i>
2006	Lead Author, IPCC	<i>Climate Change: 2007: The Science Basis</i>
2006	Coauthor, WMO/UNEP	<i>Scientific Assessment of Ozone Depletion: 2008</i>

AAAS	American Association for the Advancement of Science	NAS	National Academy of Sciences
AGU	American Geophysical Union	NASA	National Aeronautics and Space Administration
IAMAP	International Association of Meteorology and Atmospheric Physics	NRC	National Research Council
ICSU	International Council of Scientific Unions	SCOPE	Scientific Committee on Problems of the Environment
IGBP	International Geosphere-Biosphere Programme	UCAR	University Corporation for Atmospheric Research
IPCC	Intergovernmental Panel on Climate Change	UNEP	United Nations Environment Program
IUGG	International Union of Geodesy and Geophysics	WMO	World Meteorological Organization
JPL	Jet Propulsion Laboratory	WCRP	World Climate Research Programme

1. PUBLICATIONS

- Lewis, J.S. and **R.G. Prinn**, Jupiter's clouds: structure and composition, *Science*, **169**, 472–473, 1970.
- Prinn, R.G.**, UV radiative transfer and photolysis in Jupiter's atmosphere, *Icarus*, **13**, 424–436, 1970.
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- Prinn, R.G.**, Photochemistry of HCl and other minor constituents in the atmosphere of Venus, *J. Atmos. Sci.*, **28**, 1058–1068, 1971.
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- Prinn, R.G.**, The atmospheres of Uranus and Neptune: a review, *Planetary and Space Science*, **21**, 1601–1603, 1973.
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- Prinn, R.G.**, and J.S. Lewis, Uranus atmosphere: structure and composition, *Astrophys. J.*, **179**, 333–342, 1973.
- Pilcher, C.B., **R.G. Prinn**, and T.B. McCord, Spectroscopy of Jupiter: 3200–11,200 Å, *J. Atmos. Sci.*, **30**, 302–307, 1973.
- Lewis, J.S. and **R.G. Prinn**, Titan revisited. *Comments Astrophys. and Space Phys.*, **5**, 1–7, 1973.
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- Prinn, R.G.**, and J.S. Lewis, Phosphine on Jupiter and implications for the Great Red Spot, *Science*, **190**, 274–276, 1975.
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- Prinn, R.G.**, F.N. Alyea, and D.M. Cunnold, The impact of stratospheric variability on measurement programs for minor constituents, *Bull. Amer. Met. Soc.*, **57**, 686–694, 1976.
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- Cohen, J. B., C. Wang, **R.G. Prinn**, The Impact of Detailed Urban-Scale Processing on the Aerosol Direct Effect and its Impacts on the Climate, Abstract B11J-05, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
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- Lee, E., C. A. Schlosser, **R.G. Prinn**, Impacts of wind-dispersed seed availability on the estimation of natural vegetation distributions to climate scenarios for the 21st century, Abstract GC23C-0936 *Poster*, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
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- Rigby, Matthew L., Jens Muhle, Benjamin R Miller, **Ronald G Prinn**, Paul B Krummel, Paul Steele, Paul J. Fraser, Peter Salameh, Christina M Harth, Ray F Weiss, Brian R Grealley, Simon O'Doherty, Peter Simmonds, Martin K. Vollmer, Stefan Reimann, Jooil Kim, Kyung-Ryul Kim, Hsiang-Jui Wang, Jos G.J. Olivier, Edward J. Dlugokencky, Geoffrey S. Dutton, Brad David Hall, James W. Elkins, History of Atmospheric SF6 Emissions from 1973 to 2008, Abstract A43D-0278 *Poster*, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Webster, M. D.; J. M. Reilly; S. Paltsev; A. P. Sokolov; C. Wang; **R.G. Prinn**, Risk Management Framework for Incorporating Climate Impacts into Policy Analysis, Abstract U23C-06, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Prinn, R.**, P. Heimbach, M. Rigby, S. Dutkiewicz, J.M. Melillo, J.M. Reilly, D.W. Kicklighter and C. Waugh, 2011: A Strategy for a Global Observing System for Verification of National Greenhouse Gas Emissions. MIT Global Change Report 200, June, 92 p.
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- Saikawa, E., C.A. Schlosser and **R.G. Prinn**, 2011: Process Modeling of Global Soil Nitrous Oxide Emissions. MIT Global Change Joint Program, Report 206, September, 28 p.
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- Lee, E., CA. Schlosser, X. Gao, **R.G. Prinn**, 2011: Impacts of Seed Dispersal on Future Vegetation Structure under Changing Climates, American Geophysical Union Fall Mtg. (San Francisco, Dec. 5-9), *Eos Trans.*, Abstract B43F -0362.
- Meredith, L.K., J. McLaren, R. Commane, J.W. Munger, **R.G. Prinn**, S.C. Wofsy, A.D. Richardson, 2011: Fluxes of H₂, COS, and CO₂ across a temperate forest snowpack driven by below snow soil microbial processes, American Geophysical Union Fall Mtg. (San Francisco, Dec. 5-9), *Eos Trans.*, Abstract B33F-0539.
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Rigby, M.L., A.J. Manning, **R.G. Prinn**, 2011: Simultaneous Regional and Global Trace Gas Emissions Using Eulerian and Lagrangian Chemical Transport Models, American Geophysical Union Fall Mtg. (San Francisco, Dec. 5-9), *Eos Trans.*, Abstract A53E-01.

Saikawa, E., C.A. Schlosser, M.L. Rigby, **R.G. Prinn**, R.F. Weiss, P. Fraser, P.B. Krummel, P. Steele, S.J. O'Doherty, P. Simmonds, E.J. Dlugokencky, J.W. Elkins, G.S. Dutton, B.D. Hall, Y. Tohjima, T. Machida, T. Nakazawa, S. Aoki, K. Ishijima, 2011: Global N₂O emissions – with a focus on natural soil, American Geophysical Union Fall Mtg. (San Francisco, Dec. 5-9), *Eos Trans.*, Abstract B44A-06.

3. SELECTED RECENT INVITED LECTURES

“Atmospheric Composition and Climate Change”, presentation at MIT Club of Nevada, University of Nevada, Las Vegas, Nevada, 30 January 2001

“Environment and Global Change”, presentation at the 25th Anniversary of the White House Office of Science and Technology Policy Symposium. MIT, 1 May 2001

“Significant Changes in Atmospheric OH over the past 22 Years”, presentation to Climate Conference at Universiteit Utrecht, Utrecht, Netherlands, 23 August 2001

“Human Impact on air chemistry and quality”, presentation to Revelle Climate Policy Program Meeting at Scripps Institution of Oceanography, 10 September 2001

“Predicting Future Climate Change: Science, Economics, Technology, and Social Science”, Presentation at the IPIECA Symposium on Long-Term Carbon and Energy Management: Issues and Approaches, Cambridge, MA, 15 October 2001

“Is the oxidizing capability of the atmosphere decreasing?”, presentation to Yale University Department of Geology and Geophysics, , New Haven, CT., 23 October 2001

“Verification of Emissions by Inverse Modelling”, presentation at the Third International Symposium on Non-CO₂ Greenhouse Gases (NCGG), Maastricht, The Netherlands, 22 January 2002

“Climate, Change: Uncertainty and Policy Implications”, presentation at Alliance for Global Sustainability Symposium, San Juan, Costa Rica, 21 March 2002

“Atmospheric and Biospheric Traumas caused by Great Impacts”, MIT-MASS Seminar, 18 April 2002

“Climate Change: Integrating Science, Economics and Policy under Uncertainty”, presentation at Cambridge-MIT Distinguished Lecture Broadcast, Cambridge, MA, 24 April 2002.

“Is the Cleansing Capacity of the Atmosphere Changing”, presentation at CEEPR-MIT Energy and Environmental Policy Workshop, 2 May 2002

“The AGAGE Program: Global and Regional Trends in Trace Gases and Inferred Emissions and OH Trends”, presentation to NIES, Tsukuba, Japan, 20 May 2002

“From Complex Science to Contentious Policy: Lessons from Global Warming”, opening session presentation at Technology Day (organized by the MIT Alumni Association), Cambridge, MA, 8 June 2002

- “Climate Change: State of Science and Implications for Policy” presentation at the 17th World Petroleum Congress, Rio De Janeiro, Brazil, 2 September 2002
- “Climate Change and Climate-ecosystem Interactions”, presentation at SUNY, Stonybrook, NY, 11 September 2002
- “Detection of OH Trends”, presentation at IGAC-VII and CACGP-X Symposium, Crete, 20 September 2002
- “Is the cleansing capacity of the atmosphere changing?” Graduate School of Oceanography seminar at University of Rhode Island, Narragansett, RI, 2 October 2002
- “Climate Change and Climate-Ecosystem Interaction”, The 2002 Harris Lecture at Texas A&M University, 8 October 2002
- “Climate Change: From uncertain Science to Contentious Policy”, Soil and Crop Sciences seminar at Texas A&M University, 9 October 2002
- “AGAGE Trace Gas Measurements from 1978-2002 and Implications for Atmospheric Chemistry”, presentation at Harvard Atmospheric Chemistry Seminar, Cambridge, MA, 25 October 2002
- “Global Warming: From Complex Science to Contentious Policy”, MIT on the Road presentation, Detroit, MI, 2 November 2002
- “Climate Change: Uncertainty and Linkages to Urban Air Pollution”, CICERO - Univ. Oslo, Norway, 22 October 2002
- “Climate Change: Complexities and Uncertainties”, Symposium on Climate Change, Cosmo CAIXA, Museo de la Ciencia, Madrid, Spain, 20 March 2003
- “Climate Change: Complexities and Uncertainties”, Plenary Lecture, 5th International Conference on Environmental Future, ETH, Zurich, Switzerland, 23 March 2003
- “Recent Developments and Issues in Climate Change Science”, EPRI Global Change Research Seminar, Arlington, VA, 28 May 2003
- “Climate Change: Complexities and Uncertainties”, MIT Knight Science Journalism Lecture Series, 2 April 2003
- “Climate Change: From Uncertain Science to Contentious Policy”, The Boston Group Seminar, 16 April 2003
- “Atmospheric Chemical Change, Air Pollution, and Climate”, Union Lecture, 23rd General Assembly of IUGG, Sapporo, Japan, 3 July 2003
- “Ensemble Climate Predictions using a Global Model Coupling Economics, Chemistry, Climate Dynamics and Ecosystems”, Ecosystems Center, Marine Biology Laboratory, Woods Hole, MA, 16 December 2003.
- “Estimation of trace gas fluxes by inverse modeling”, invited talk, AGU Fall Meeting, San Francisco, CA, 12 December 2003.
- “Is the Cleansing Capacity of the Atmosphere (OH Concentration) Changing?” invited talk, Presidential Symposium on the Chemistry of Global Climate Change, 226th Annual American Chemical Society Meeting, New York, 8 September 2003.
- “Biocomplexity: Feedbacks Between Ecosystems and the Climate System” presentation to the National Science Foundation Biocomplexity in the Environment Awardees Meeting, Arlington, Virginia, 16 September 2003.
- “Global Warming: Complex Science to Contentious Policy”, MIT Club, Portland, OR, 12 January 2004.
- “Global Warming”, MIT Knight Science Journalist Lecture Series, 3 March 2004.
- “Interaction of Climate Change with Regional Air Quality”, invited lecture, EPRI Ninth Annual Global Change Seminar, Washington, D.C., 3 June 2004.
- “Air pollution control: effects on climate”, XXII MIT Global Change Forum, Venice, Italy, 10 June 2004.

- “Climate Change: Past, present and future”, invited lecture, Cambiamenti Climatici Scenari e Politiche, Ateneo Veneto/FEEM, Venice, Italy, 8 June 2004.
- “Climate Change: Integrating Science, Economics and Policy”, The tenth C.H.B. Priestley Lecture, CSIRO, Aspendale, Australia, 6 December, 2004.
- “Determination of methane emissions by region and generating process using inverse methods”, invited lecture, AGU Fall Meeting, 17 December, 2004.
- “Integrated Assessment using a Global Model coupling Economics, Chemistry, Climate Dynamics and Ecosystems”, invited lecture, German National Colloquium on Global Change Research, Berlin, 23 November 2004.
- “Interactions between Air Pollution and Climate”, invited Multimedia lecture, EPRI Environmental Conference, Monterey, CA, 14 February 2005.
- “Climate Change: Integrating Science, Economics and Policy”, EPRI Global Change Committee, Monterey, CA, 15 February 2005.
- “Climate Change Science”, invited lecture, Meet The Scientists Program, Museum of Science, Boston, 11 February 2005.
- “Climate and Air Quality: Integration of Science and Policy”, Invited talk, EPRI Workshop on interactions of climate change and regional air quality”, Washington D.C., 27 April 2005.
- “Global Warming”, Invited keynote address, 50th Reunion of the MIT Class of 1955, MIT, 3 June 2005.
- “Climate and Air Quality: Integration of Science and Policy”, invited lecture, Gwangju Institute of Science and Technology, Gwangju, Korea, 14 June 2005.
- “Climate Change: Integration of Science, Economics, and Policy”, Keynote lecture, Tenth Anniversary GIST Symposium on Science, Technology and Policy for Sustainability, Gwangju, Korea, 15 June 2005.
- “Uncertainties in climate forecasts: Coupled modeling of the economics and natural components of the Earth System”, invited keynote lecture, First Workshop, International Postdoctoral Scientist Network for Earth System Science, Breckenridge, CO, 24 June 2005.
- “Integrated View of Emission Scenarios: Probabilities, observational tests and feedbacks with other issues”, invited talk, IPCC Workshop on New Emission Scenarios, IIASA, Laxenburg, Austria, 29 June 2005.
- “Uncertainties in climate forecasts: Coupled modelling of the economic and natural components of the Earth System”, invited talk, TEPCO Symposium, Tokyo, Japan, 1 September 2005.
- “Understanding atmosphere-biosphere interactions: Lessons from an Integrated Global System Model and Inverse Modeling”, invited talk, NAS/NRC, Irvine, CA, 30 September 2005.
- “Climate Change: Past, Present, and Future”, invited talk, 1st TOTAL University Symposium, MIT, 16 November 2005.
- “Effects of Air Pollution Control on Climate”, invited talk, 4th CONCAWE Symposium, Brussels, Belgium, 1 December 2005.
- “Climate Change: Past, Present and Future”, invited talk, ELIAS, MIT, Cambridge, MA, March 6, 2006.
- “Integration of the Science and Economics of Climate Change”, invited talk, Climate Change and Governance Conference, Wellington, New Zealand, March 28, 2006.
- “Integrating the Science and Economics of Climate Change and the Role of the Ocean”, invited lecture, CSIRO Marine and Atmospheric Research Center, Hobart, Tasmania, April 6, 2006.
- “Integrating the Issues of Energy and Environment”, MIT Energy Forum, Cambridge, MA, May 3, 2006.

- “Sustaining a Habitable Earth: Lessons from Climate Change”, invited lecture, University of Michigan, Ann Arbor, May 22, 2006.
- “Is the self-cleaning capability of the atmosphere (OH concentration) changing?”, invited lecture, University of Michigan, Ann Arbor, May 23, 2006.
- “Climate Change: Forecasts and Lowering Risks”, invited talk, TOTAL University Symposium, Paris, France, June 13, 2006.
- “Climate and Energy: Uncertainties in Forecasts and the Problems of Scale”, invited talk, MIT Energy Course, Cambridge, MA, June 15, 2006.
- “Climate Change: Integration of Science and Energy Policy”, invited talk, b-TEC/MIT Symposium, Barcelona, Spain, June 19, 2006.
- “Forecasting Climate Change and Evaluating Policy”, invited Plenary Lecture, International Building Performance Simulation Association, 2nd national conference, Simbuild 2006, Cambridge MA, August 3, 2006.
- “How good are climate forecasts?”, Environmental Business Council Seminar, invited talk, Boston MA, Sept. 12, 2006.
- “Developments in Climate Science”, invited talk, TOTAL-MIT-FRANCE Seminar, Cambridge MA, Nov. 13, 2006.
- “How the Global Environment impacts America: The Science of the Issue”, Invited Lecture and Discussion with the Newly Elected Members of Congress, Kennedy School, Harvard Univ., Cambridge MA, Nov. 30, 2006.
- “Climate change: A growing scientific impetus for policy”, Invited Oral Testimony to the Committee on Ways and Means, Hearing on Energy and Tax Policy, U.S. House of Representatives, Washington D.C., Feb. 28, 2007.
- “Global Climate: State of Science”, Invited Lecture, EPRI Environment Sector Council Meeting, San Francisco CA, March 8, 2007.
- “The Global Climate Machine: How Climate Works”, Knight Science Journalism “Great Global Crisis Boot Camp”, Cambridge MA, March 21, 2007.
- “Sustaining a Habitable Earth: Lessons from Climate Change”, Invited Plenary Lecture, Presidential Symposium, Sustainability: A World View, American Chemical Society, 233rd National Meeting, Chicago IL, Mar. 25, 2007.
- “Integrated Assessment of Global Climate Change”, Invited Seminar, Harvard University, Cambridge MA, April 27, 2007.
- “Some recent scientific results from the Advanced Global Atmospheric Gases Experiment (AGAGE) network”, NOAA Earth System Research Laboratory, Global Monitoring Division Annual Meeting, Boulder CO, May 2, 2007.
- “Recent global changes in greenhouse gases: how much and why?”, MIT Earth Systems Initiative, Invited Seminar, Cambridge MA, May 7, 2007.
- “Geo-engineering: Comments with a focus on effects of reducing solar radiative forcing”, presentation to 26th MIT Global Change Forum, Cambridge MA, June 21, 2007.
- “OH From Methyl Chloroform: Recent Results, Future Use & Alternatives”, Max Planck Institute for Chemistry, Global OH Workshop, Mainz, Germany, June 25, 2007.
- “The Climate Machine: Past, Present & Future”, Invited Lecture, Kapitan Khlebnikov Expedition, Siberian Arctic, 10 July 2007.

- “The Greenhouse Gamble: The Economics And Politics Of Climate”, Invited Lecture, Kapitan Khlebnikov Expedition, Siberian Arctic, July 14, 2007.
- “Arctic Climate: Now & 30 To 100 Years From Now”, Invited Lecture, Kapitan Khlebnikov Expedition, Siberian Arctic, 16 July 2007.
- “Climate: State Of Science With A Focus On The 2007 Intergovernmental Assessment”, Keynote Address, National Conference of State Legislatures, Boston MA, August 7, 2007.
- “Climate & Energy: Past, Present & Future”, Rocky Mountain Natural Gas Strategy Conference & Investment Forum, Keynote Address, Denver CO, 14 August 2007.
- “Global Climate Change: Science, Economics And Policy”, Keynote Address, Mount Washington Observatory Symposium for Air & Climate, Mt. Washington NH, 7 September 2007.
- “Global Climate Change: Science, Economics And Policy”, Invited Talk, MIT Class of 1950, Annapolis, MD, 25 September 2007.
- “Climate Change: Science, Economics And Policy”, Invited Talk, Imperial College of London Centenary Meeting, Cambridge, MA, 26 September 2007.
- “Anthropogenic Climate Change: Science, Economics And Policy”, Invited Talk, Earth System Revolutions Symposium, ESI/CGCS, MIT, Cambridge MA, 9 October, 2007.
- “Climate Change: Science, Economics And Policy”, Presentation To The Knight Science Journalism Fellows, MIT, Cambridge MA, 11 October, 2007.
- “Climate Change: A Growing Scientific Impetus For Policy”, Presentation To Southern Company Joint Board Forum, ATLANTA GA, 15 October, 2007.
- “Climate Change Science, Economics And Policy In The USA”, Keynote Address, Universite Total Seminar, Houston TX, October 22, 2007.
- “Climate Change: A Growing Scientific Impetus For Policy”, Plenary Lecture, Committee On Economic Development Of Australia, Symposium On Climate Change, Sydney, Australia, 15 November, 2007.
- “Climate Change: Science, Economics And Policy”, Invited University Lecture, Worcester Polytechnic Institute, Worcester MA, December 10, 2007.
- “Hydroxyl Radical Determination From Methyl Chloroform: Current Utility And Future Viability”, Invited Lecture, AGU Fall Meeting, San Francisco CA, December 14, 2007.
- “Climate Change: Science, Economics And Policy,” invited seminar, MIT Club of Washington, Kenwood Country Club, Baltimore MD, January 15, 2008.
- “Future Energy Options: Timetable for Action, Needed Scales and Implications, and Land Conversion For Bio-fuels,” invited presentation, CERAWEEK, Climate Change and Clean Energy Summit, Houston TX, February 11, 2008.
- “Climate Change: Science, Economics And Policy,” invited talk, MIT Focus On Climate Change Seminar Series, Cambridge MA, February 12, 2008.
- “Climate Change: Integrating Science, Economics and Policy,” invited talk, U.S. Geological Survey (USGS)-MIT First Global Climate Change Conference, MIT, March 5, 2008.
- “Environmental Implications of Wind and Solar Power at Very Large Scales”, invited talk, Twenty-seventh MIT Global Change Forum, Arlington, VA, March 28, 2008.
- “Geo-Engineering: At Best a Last Resort, At Worst a Diversion with Dangerous Unintended Consequences?”, invited talk, European Geophysical Union Great Geo-Engineering Debate, Vienna, Austria, April 15, 2008.
- “Climate Change: State of the Science, and Implications for Economics and Policy”, invited Plenary Presentation, KPMG 2008 Global Energy Conference, Houston, TX, May 21, 2008.

- “Climate Change: State of the Science, and the Needed Actions for Mitigation and Adaptation”, invited talk, Université Total: Ethical, Environmental and Social Responsibilities Conference, Calgary, Canada, May 29, 2008.
- “Climate Change: State of the Science, and Implications for Economics, Policy and Natural Gas”, invited Plenary presentation, COGA Natural Gas Strategy Conference and Investment Forum, Denver, CO, July 9, 2008.
- “Climate Change: State of the Science, and Implications for Economics and Policy”, invited talk, Symposium on Renewable Energy: Capturing the Sun, MIT, Cambridge, MA, August 4, 2008.
- “Climate Change: Causes, Forecasts and Impacts,” invited presentation to Inaugural Energy Fellows Symposium, MIT, Cambridge MA, September 22, 2008.
- “Climate Change: State of the Science, and Implications for Economics, Technology and Policy,” invited keynote address, Ontario Society of Professional Engineers, Symposium on Engineering in a Climate of Change, Ontario Science Center, Toronto, October 16, 2008.
- “Current Estimates of Climate Change Risk: Results from recent MIT ensemble forecasts with and without stabilization policies”, invited talk, 28th MIT Global Change Forum, Cambridge MA, October 30, 2008.
- “Climate Change: Causes, Forecasts, Impacts & New Energy at Scale,” presentation to Université Total Symposium, MIT, Cambridge, MA, November 11, 2008.
- “Recent Global Changes in Greenhouse Gases: How much and why?”, invited lecture, S.U.N.Y Stonybrook, NY, November 19, 2008.
- “The Future of Energy: Climate Change & New Energy Systems to Mitigate its Impacts,” invited presentation to Total Symposium, Marseilles, France, November 20, 2008.
- “Current and Future Emissions and Concentrations of Trace Gases Impacting the Stratosphere,” Invited lecture, AGU Fall Meeting, San Francisco, CA, December 15, 2008.
- “Climate change: Integrating Science, and Economics,” Invited Union Lecture, AGU Fall Meeting, San Francisco, CA, December 22, 2008.
- “The climate machine: Past, present and future”, Invited Lecture, Clipper Odyssey Expedition, New Zealand, January 18, 2009.
- “The greenhouse gamble: The economics & politics of climate”, Invited Lecture, Clipper Odyssey Expedition, New Zealand, January 22, 2009.
- “USA, New Zealand and other regional climates up to 100 years from now”, Invited Lecture, Clipper Odyssey Expedition, New Zealand, January 23, 2009.
- “Climate change: Integrating science, economics, technology and policy”, Invited Lecture, MIT Lincoln Laboratory, February 13, 2009.
- “The future of wind power as a source of energy in the world”, Invited Lecture, Rutgers Energy Institute Fourth Annual Energy Symposium, Rutgers University, NJ, May 6, 2009.
- “Optimal source/sink estimation using measurements, process models & 3D global circulation models”, Invited Lecture, Symposium on the Greenhouse Gas Information System, DOE Sandia National Laboratory, Albuquerque, NM, May 21, 2009.
- “21st Century Climate Change: Warmer Forecasts”, Invited Lecture, Boston Society of Civil Engineers, Boston, MA, May 14, 2009.
- “New MIT Forecasts of 21st Century Climate Change”, Invited Lecture, Cambridge City Hall Energy Forum, Cambridge, MA, April 30, 2009.

- “Probabilistic Forecasts for 21st Century Climate Based on Uncertainties in Emissions”, Invited Talk, European Geophysical Union Annual Meeting, Vienna, Austria, April 23, 2009.
- “Climate change: integrating science, economics, technology and policy”, Invited Talk, Carbon Markets USA Symposium, Washington DC, September 21, 2009.
- “Climate Change Science, Economics, Technology and Policy: Implications for future Energy & High Technology Industries”, Keynote Address, EPOCH-ILP Workshop, Taipei, Taiwan, October 12, 2009.
- “Climate Change Science, Economics, Technology and Policy: Implications for future Energy Producers & Users”, Invited Talk, ILP Special Meeting, Bangkok, Thailand, October 15, 2009.
- “Climate Change: Implications for Developing Countries & their Industries”, Invited Lecture, ILP Members Workshop, Manila, Philippines, October 13, 2009.
- “The Great Climate-Gate Debate”, Panelist, MIT, Thursday, December 10, 2009.
- “Climate Change: Integrating Science, Economics, Technology and Policy”, Invited Opening Lecture, KFAS-Kuwait Center Conference, Kuwait City, January 18, 2010.
- “Climate Change Science, Economics, Technology and Policy: Implications for future Energy, Agriculture and High Technology Industries, Invited Lecture, MIT in Japan Conference, Keidanren Kaikan, Tokyo, January 22, 2010.
- “Arctic Warming: Risks for Methane Emissions, Sea Ice Loss & Oceanic Overturn”, Invited Lecture, The Cambridge Forum, Cambridge, MA, January 28, 2010.
- “Climate Change; Integrating Science, Economics, Technology and Policy”, Invited Seminar, Boston University, February 26, 2010.
- “Advances in Natural Systems Representation in the MIT Integrated Global System Model (IGSM)”, Presentation to DOE Integrated Assessment Workshop, March 29, 2010.
- “Climate Change: Challenging Science, Economics, Technology and Policy”, MIT Alumni Day Keynote Lecture, June 4, 2010.
- “Climate Change: Challenging Science, Economics, Technology and Policy”, Bank of America Merrill Lynch Clean Tech at MIT Day, June 16, 2010.
- “Climate Change: Challenging Science, Technology and Policy”, Invited Lecture, Cornell Earth & Atmospheric Sciences Fall Seminar Series, September 15, 2010.
- “Climate Change: Impacts and Policy”, MIT Energy Futures Conference, Principality of Monaco, September 23, 2010.
- “Climate Change: State of the Science, Forecasts & New Energy at Scale”, Invited Lecture, MIT-IEEJ Energy & Global Change Workshop, Tokyo, September 30, 2010.
- “Optimal Source/Sink Estimation using Measurements, Process Models & 3D Global Circulation Models”, Invited seminar, Tokyo Institute of Technology, Yokohama, Japan, October 1, 2010.
- “Assessing Metrics and Simplified Aviation Climate Impact Models.” Presentation at DOT-FAA-ACCRI PIs Meeting, Constitution Center, Washington, D.C., November 18, 2010.
- “Toward a Comprehensive Earth System Model”, Invited Lecture, Sackler Colloquium: Fostering Advances in Inter-Disciplinary Climate Science, National Academy of Sciences, Washington, D.C., April 1, 2011.
- “Climate Forcing and Climate Change in the Amazon Region and the Globe.” Presentation at Conferencia Brazil-MIT, Cambridge, MA, April 15, 2011.
- “The Science of Climate Change”, Presentation at MIT-China Low Carbon Leadership Program, Cambridge, MA, April 19, 2011.

- “Rethinking Climate Change: The Next 100 Years”, Presentation at MIT Panel “Rethinking Climate Change”, Colloquium for Earth Week, April 21, 2011.
- “Why Do We Need Earth System Models?” Presentation at Forum France-MIT, Paris, France, June 29, 2011.
- “Hot Issues in Climate Science,” Sponsors’ Webinar Series #1, MIT Joint Program on the Science and Policy of Global Change, September 15, 2011.
- “Potential Climatic Impacts and Reliability of Large-Scale Onshore and Offshore Wind Farms”, Presentation to DOE’s Climate and Earth System Modeling Principal Investigators’ Meeting, Washington, D.C., September 21, 2011.
- “Climate Policy: Why Are We Waiting?” Presentation at Knight Science Journalism Event, “Climate Change: When Policymakers Fail”, MIT, October 4, 2011.
- “Climate Change: Current Trends, Forecasts and Implications for Economics and Policy.” Invited Seminar, National Institute for Environmental Studies, Tsukuba, Ibaraki, Japan, October 25, 2011.
- “Climate Change: Current Trends, Forecast and Policy,” Invited Seminar at Tokyo Institute of Technology, Yokohama, Japan, October 26, 2011.
- “Advanced Global Atmospheric Gases Experiment (AGAGE): An NDACC Cooperating Network”, Presentation at 20th Anniversary Symposium of Network for the Detection of Atmospheric Composition Change, Reunion Island, November 10, 2011.
- “The Science of Global Climate Change”, Presentation at MIT-China Low Carbon Leadership Program, Cambridge, MA, December 5, 2011.
- “Climate Change”, Presentation at MIT Environmental Research Forum, Cambridge, MA, December 15, 2011.
- "Climate Change: Challenging Science, Technology, Economics and Policy", Collins Lecture, Massachusetts General Hospital, Boston, MA, December 20, 2011.
- “Development and Application of Earth System Models,” Seminar at CSIRO MAR, Melbourne, NSW, Australia, February 20, 2012.
- “Development of Earth System Models and Application to Climate Policy”, Seminar at Victoria University & NIWA, Wellington, New Zealand, February 23, 2012.
- “Uncertainties in Global Change Modeling” and “The MIT Integrated Global Systems Modeling Experience”, Invited talks, MIT-Vale Technological Institute International Workshop on Global Change and Sustainability, Belém, Pará, Brasil, March 7 and 8, 2012.