Benjamin David Santer

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Professional Addresses

Woods Hole Oceanographic Institution, Physical Oceanography Department
Woods Hole Road, Woods Hole, MA 02543

Joint Institute for Regional Earth System Science & Engineering
University of California at Los Angeles
4242 Young Hall, 607 Charles E. Young Drive East

Los Angeles, CA 90095-7228

Date and Place of Birth

June 3, 1955, Washington DC

Education

Ph.D., 1987, Climatology, Climatic Research Unit, University of East Anglia, Norwich, UK

NATO Research Studentship, 1977, Chemical Oceanography, University of East Anglia, Norwich, UK

B.Sc. (First Class Honors), 1976, Environmental Sciences, University of East Anglia, Norwich, UK

Dissertation

Regional Validation of General Circulation Models (Supervisor: Prof. T.M.L. Wigley)

Research Statement

Ben Santer is a climate scientist. He uses pattern recognition methods pioneered by Klaus Hasselmann to study natural and human "fingerprints" in observed climate records. Santer's early research with surface and atmospheric temperature contributed to the historic 1995 conclusion of the Intergovernmental Panel on Climate Change: "*the balance of evidence suggests a discernible human influence on global climate*". Santer served as lead author of the chapter which reached the "*discernible human influence*" finding – an experience that was dramatized in the play KYOTO.[1] Since 1995, Santer has identified human fingerprints in water vapor, ocean heat content, the seasonal cycle of tropospheric temperature, and many other aspects of climate. In addition to his research, he cares deeply about the communication of climate science to a wide range of audiences. He writes essays and opinion pieces for *Scientific American* and *The Hill*, has testified in front of Congress, and has appeared on "*Late Night with Seth Meyers*".

Honors and Awards

2024 John J. Carty Award, U.S. National Academy of Sciences[2,3]

2024 Carl-Gustaf Rossby Medal, American Meteorological Society[4]

2023 The Stephen H. Schneider Award for Outstanding Climate Science Communication, Climate One[5,6]

[1] https://www.nature.com/articles/d41586-024-02251-6
[2] https://www.nasonline.org/programs/awards/2024-awards/Santer.html
[3] https://www.independentnews.com/news/livermore_news/santer-eminent-climate-scientist-wins-nas-award/article_202bdb00-c0b4-11ee-a2bf-efc7cef7bb5f.html
[4] https://en.wikipedia.org/wiki/Carl-Gustaf_Rossby_Research_Medal
[5] https://www.climateone.org/audio/ben-santer-2023-schneider-award-winner
[6] https://www.independentnews.com/news/livermore_news/former-lab-scientist-honored-with-climate-communication-award/article_03b6008c-a53d-11ee-998a-8b84a888cb95.html

2022 Fowler Distinguished Scholar in Residence, Woods Hole Oceanographic Institution[7]

2022 Houghton lectures, M.I.T.[8]

2020 Bert Bolin Award and Lecture, American Geophysical Union

2019 Doctor of Science (Sc.D.), honoris causa, University of East Anglia

2019 Sigma Xi William Procter Prize for Scientific Achievement[9]

2017 Inclusion of B.D. Santer *et al*., *Nature*, 1996 ("*A search for human influences on the thermal structure of the atmosphere*") in "Timeline: The history of climate modelling"[10]

2017 Elected Fellow of American Meteorological Society

2017 Presentation of 2017 Tourtellotte lecture, Kalamazoo College

2016 Excellence in Reviewing Award, *Geophysical Research Letters*

2016 Climate Generation, ClimateGen-10 Climate Scientist Award

2016 Excellence in Publication Award, Basic Science category, Lawrence Livermore National Laboratory (for B.D. Santer, S. Solomon, C. Bonfils, M.D. Zelinka, J.F. Painter, F. Beltran, J.C. Fyfe, G. Johannesson, C. Mears, D.A. Ridley, J.-P. Vernier, and F.J. Wentz, *Geophysical Research Letters*, 2015: "*Observed multi-variable climate signals of late 20th and early 21st century volcanic activity"*)

2016 Presentation of Third Yanai Lecture, UCLA[11]

2013 Presentation of 2013 Plummer Lecture, Georgia State University

2011 Distinguished Member of Technical Staff, Lawrence Livermore National Laboratory

2011 Elected member of US National Academy of Sciences

2011 Elected Fellow of American Geophysical Union

2009 Presentation of 16th Charles and Thomas Lauritsen lecture, California Institute of Technology

2008 Science and Technology Award, Lawrence Livermore National Laboratory ("*for key contributors to the Scientific Assessment Reports of the Intergovernmental Panel on Climate Change*")

2008 Lectureship, Dan and Carole Burack President's Distinguished Lecture Series, University of Vermont (for academic year 2008-2009)

2008 Inclusion of the 1995 *Climate Dynamics* paper by B.D. Santer *et al*. ("*Towards the detection and attribution of an anthropogenic effect on climate*") as one of 21 "*landmark studies*" in "*Climate Change and Anthropogenic Greenhouse Warming: A Selection of Key Articles, 1824-1995*", a compilation produced by the US National Science Digital Library[12]

2007 Contributor to all five Scientific Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC); as Convening Lead Author of the chapter on "*Detection of Climatic Change, and Attribution of Causes*" (in 1995), and as Contributing Author to a total of six chapters in the 1990, 2001, 2007, and 2013 Reports. The IPCC was awarded the 2007 Nobel Peace Prize (jointly with Al Gore) for its efforts to "*build up and disseminate greater knowledge about man-made climate change*"

2007 Selection as "*highly cited author in the field of global warming*" by Essential Science Indicators[13]

2005 Distinguished Scientist Fellowship, US Dept. of Energy, Office of Biological and Environmental Research

2003 Editors' Citation for Excellence in Refereeing, *Geophysical Research Letters*

2003 Edward Teller Fellowship, Lawrence Livermore National Laboratory

2002 Ernest Orlando Lawrence Award (for Environmental Science and Technology), US Dept. of Energy

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[7] https://www.whoi.edu/fowler-center-ocean-climate/scholar-in-residence/

[8] http://paocweb.mit.edu/events/houghton-lectures

[9] https://www.sigmaxi.org/programs/prizes-awards/william-procter/award-winner/ben-santer

[10] https://www.carbonbrief.org/timeline-history-climate-modelling

[11] https://www.atmos.ucla.edu/yanai

[12] http://wiki.nsdl.org/index.php/PALE:ClassicArticles/GlobalWarming

[13] http://www.esi-topics.com/nhp/2007/january-07-BenjaminDSanter.html

2002 Editors' Citation for Excellence in Refereeing, *Journal of Geophysical Research (Atmospheres)*

2001 Outstanding Scientific Paper Award, US Dept. of Commerce, Environmental Research Laboratories, National Oceanic and Atmospheric Administration (for D.J. Gaffen, B.D. Santer, J.S. Boyle, J.R. Christy, N.E. Graham and R.J. Ross, *Science*, 2000: "*Multi-decadal changes in the vertical structure of the tropical troposphere*")

2000 Inclusion in "*Scientists at Work: Profiles of Today's Groundbreaking Scientists from Science Times*" (edited by Laura Chang)

1998 John D. and Catherine T. MacArthur Fellowship

1998 Norbert Gerbier–MUMM International Award, World Meteorological Organization (for B.D. Santer *et al*., *Nature*, 1996: "*A search for human influences on the thermal structure of the atmosphere*")

1997 Outstanding Scientific Paper Award, US Dept. of Commerce, Environmental Research Laboratories, National Oceanic and Atmospheric Administration. (for B.D. Santer *et al*., *Nature*, 1996: "*A search for human influences on the thermal structure of the atmosphere*")

1975 Project prize, best undergraduate research project, School of Environmental Sciences, University of East Anglia

1974 Ford Travel Scholarship

Professional Employment and Research Projects

2022- Fowler Distinguished Scholar in Residence, Woods Hole Oceanographic Institution (WHOI); Adjunct Scientist in Physical Oceanography at WHOI

2021- Visiting Researcher at Joint Institute for Regional Earth System Science & Engineering, UCLA

2019-2020 Co-Director of the Program for Climate Model Diagnosis and Intercomparison (PCMDI) Earth System Model Evaluation Project

1992–2021 Atmospheric Scientist, Physical and Life Sciences Directorate, Lawrence Livermore National Laboratory, Livermore, CA (statistical methods in climate model validation, climate-change detection and attribution studies, supervision of post-docs)

1987-1992 Post-doc and Research Scientist, Max-Planck Institute for Meteorology, Hamburg, Germany (detection of human-caused climate change, analysis of equilibrium and transient response to CO_2 forcing, paleoclimate studies, model validation and intercomparison, supervision of graduate students)

1983-1987 Research Associate, Climatic Research Unit, University of East Anglia, Norwich, UK. Employed under research contracts with the US Department of Energy and Lawrence Livermore National Laboratory (validation of climate model control run results using Monte Carlo techniques, use of model data in climate impact analysis, quality control of observed surface temperature data, teaching)

1980-1983 Project Engineer in the Department of New Technologies, Air Pollution and Climatology Section, Dornier System GmbH, Friedrichshafen, Germany. Employed under research contracts with the European Community, Federal German Ministry for Research and Technology, Federal German Environmental Agency and NATO (impacts of greenhouse-gas-induced climate change, comparison of ambient air quality legislation in NATO countries, satellite measurement of meteorological parameters, technical translations)

1978-1979 Junior Research Associate, University of East Anglia, School of Environmental Sciences, Norwich, UK (investigation of eutrophication in the Norfolk Broads)

Professional Affiliations

American Geophysical Union, American Meteorological Society, Sigma Xi

Highlights of Professional Activities

1990 Contributor to Chapter 8 ("*Detection of the Greenhouse Effect in the Observations*") of 1990 First Assessment Report of the Intergovernmental Panel on Climate Change

1/1992 Expert witness at German Bundestag Enquete Commission Hearings on Greenhouse-Gas-Induced Climate Change, Jan. 16-17, Bonn, Germany

1992-1993 Consultant to Battelle Pacific Northwest Laboratory. Provided technical assistance in the development of a research strategy for detecting climate change due to anthropogenic emissions of greenhouse gases

1994-1995 Convening Lead Author for Chapter 8 ("*Detection of Climatic Change, and Attribution of Causes*") of 1995 Second Assessment Report of the Intergovernmental Panel on Climate Change

1995-1998 Member of Climate Variability and Predictability (CLIVAR) Numerical Experimentation Group (NEG-2)

1995-2001 Member of Science Advisory Panel for NOAA "Climate Change, Data and Detection" Program

1996– Editorial board, Climatic Change

1999-2000 Member of National Research Council panel on "Reconciling Observations of Temperature Change"

2000-2001 Contributing Author to Chapter 12 ("*Detection of Climate Change, and Attribution of Causes*") of 2001 Third Assessment Report of the Intergovernmental Panel on Climate Change

2001-2004 Member of Climate Modeling Advisory Panel, Goddard Institute for Space Studies

2003-2009 Co-Chair of Climate Change Working Group, Community Climate System Model

2003-2008 Member of Science Review Group, Hadley Centre for Climate Prediction and Research

2003-2007 Member of Scientific Steering Committee, NCAR Community Climate System Model

2004-2006 Convening Lead Author, Chapter 5 of US Climate Change Science Program Report on "*Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences*"

2006-2007 Contributing Author to Chapter 1 ("*Historical Overview of Climate Change Science*"), Chapter 9 ("*Understanding and Attributing Climate Change*") and Chapter 10 ("*Global Climate Projections*") of 2007 Fourth Assessment Report of the Intergovernmental Panel on Climate Change

2008-2009 Lead Author, "Global Climate Change" section of Unified Synthesis Product, US Climate Change Science Program

5/2010 Testimony before House Select Committee on Energy Independence and Global Warming (hearing on "*Climate Science in the Political Arena*")

11/2010 Testimony before House Committee on Science and Technology, Subcommittee on Energy and Environment (hearing on "*A Rational Discussion of Climate Change: The Science, the Evidence, the Response*")

11/2011 Congressional briefing, House Committee on Natural Resources, Nov. 14, 2011

2011–2019 Member of jury, Stephen Schneider Award for Climate Science Communication

2012–2024 Member of the Board of Directors, National Center for Science Education

2012-2013 Member of drafting committee, American Geophysical Union position statement on climate change

2013-2014 Member, UK Royal Society/US National Academy of Sciences committee for drafting of joint position statement on climate change

1/2014 Presenter to American Physical Society (APS) sub-committee charged with reviewing/updating official APS position statement on climate change

2015–2017 Member, American Geophysical Union James B. Macelwane Medal Committee

2015–2023 Member of the Advisory Board, Climate Generation

2016– Member of the Board of Directors, Juneau Icefield Research Program

6/2017 Participation in "Climate Roundtable", House Science, Space, and Technology Committee of the U.S. Congress; also briefing of U.S. Senators; June 20, 2017

3/2020– Member of the Board of Directors, Union of Concerned Scientists

4/2020 Led Section 64 response to "Objections to the nominating biography for Michael Mann", U.S. National Academy of Sciences Annual Meeting

2021-2022 Member, American Geophysical Union Global and Environmental Change Early Career Award Committee and Schneider, Tyndall, Sellers, and Bolin Award Committees

2024- Member, American Meteorological Society Atmospheric Research Awards Committee

Peer-Reviewed Publications[14]

1985

1 **Santer, B.D.**, 1985: The use of general circulation models in climate impact analysis - a preliminary study of the impacts of a CO_2-induced climatic change on western European agriculture. *Climatic Change*, **7**, 71-93

1990

2 Mikolajewicz, U., **B.D. Santer**, and E. Maier-Reimer, 1990: Ocean response to greenhouse warming. *Nature*, **345**, 589-593

3 **Santer, B.D.**, and T.M.L. Wigley, 1990: Regional validation of means, variances and spatial patterns in GCM control runs. *Journal of Geophysical Research*, **95**, 829-850

4 Wigley, T.M.L., and **B.D. Santer**, 1990: Statistical comparison of spatial fields in model validation, perturbation, and predictability experiments. *Journal of Geophysical Research*, **95**, 851-865

1991

5 Lautenschlager, M., and **B.D. Santer**, 1991: Atmospheric response to a hypothetical Tibetan ice-sheet. *Journal of Climate*, **4**, 386-394

1992

6 Cubasch, U., K. Hasselmann, H. Höck, E. Maier-Reimer, U. Mikolajewicz, **B.D. Santer**, and R. Sausen, 1992: Time-dependent greenhouse warming computations with a coupled ocean-atmosphere model. *Climate Dynamics*, **8**, 55-69

1993

7 **Santer, B.D.**, T.M.L. Wigley, and P.D. Jones, 1993: Correlation methods in fingerprint detection studies. *Climate Dynamics*, 8, 265-276

1994

8 **Santer, B.D.**, W. Brüggemann, U. Cubasch, K. Hasselmann, H. Höck, E. Maier-Reimer, and U. Mikolajewicz, 1994: Signal-to-noise analysis of time-dependent greenhouse warming experiments. Part 1: Pattern analysis. *Climate Dynamics*, **9**, 267-285

9 Cubasch, U., **B.D. Santer**, A. Hellbach, G. Hegerl, H. Höck, E. Maier-Reimer, U. Mikolajewicz, A. Stössel, and R. Voss, 1994: Monte Carlo climate change forecasts with a global coupled ocean-atmosphere model. *Climate Dynamics*, **10**, 1-19

10 Lal, M., U. Cubasch, and **B.D. Santer**, 1994: Effect of global warming on Indian monsoon simulated with a coupled ocean-atmosphere general circulation model. *Current Science*, **66**, 430-438

1995

11 **Santer, B.D.**, U. Mikolajewicz, W. Brüggemann, U. Cubasch, K. Hasselmann, H. Höck, E. Maier-Reimer, and T.M.L. Wigley, 1995: Ocean variability and its influence on the detectability of greenhouse warming signals. *Journal of Geophysical Research*, **100**, 10693-10725

12 **Santer, B.D.**, K.E. Taylor, T.M.L. Wigley, J.E. Penner, P.D. Jones, and U. Cubasch, 1995: Towards the detection and attribution of an anthropogenic effect on climate. *Climate Dynamics*, **12**, 77-100

13 Cubasch, U., **B.D. Santer**, and G.C. Hegerl, 1995: Klimamodelle - wo stehen wir? *Physikalische Blätter*, **51**, 269-276

[14]Current h-index and total number of times cited = 77 and 30,682 (Google Scholar).

14 Cubasch, U., G. Hegerl, A. Hellbach, H. Höck, U. Mikolajewicz, **B.D. Santer**, and R. Voss, 1995: A climate change simulation starting at an early time of industrialization. *Climate Dynamics*, **11**, 71-84

1996

15 Barnett, T.P., **B.D. Santer**, P.D. Jones, R.S. Bradley, and K.R. Briffa, 1996: Estimates of low frequency natural variability in near-surface air temperature. *The Holocene*, **6**, 255-263

16 Hegerl, G.C., H.v. Storch, K. Hasselmann, **B.D. Santer**, U. Cubasch, and P.D. Jones, 1996: Detecting anthropogenic climate change with an optimal fingerprint method. *Journal of Climate*, **9**, 2281-2306

17 **Santer, B.D.**, K.E. Taylor, T.M.L. Wigley, T.C. Johns, P.D. Jones, D.J. Karoly, J.F.B. Mitchell, A.H. Oort, J.E. Penner, V. Ramaswamy, M.D. Schwarzkopf, R.J. Stouffer, and S. Tett, 1996: A search for human influences on the thermal structure of the atmosphere. *Nature*, **382**, 39-46

18 **Santer, B.D.**, K.E. Taylor, T.M.L. Wigley, T.C. Johns, P.D. Jones, D.J. Karoly, J.F.B. Mitchell, A.H. Oort, J.E. Penner, V. Ramaswamy, M.D. Schwarzkopf, R.J. Stouffer, S. Tett, J.S. Boyle, and D.E. Parker, 1996: Human effect on global climate? *Nature*, **384**, 523-524

19 **Santer, B.D.**, T.M.L. Wigley, T.P. Barnett, and E. Anyamba, 1996: Detection of Climate Change, and Attribution of Causes, in *Climate Change 1995: The Science of Climate Change*, edited by J.T. Houghton, L.G. Meira Filho, B.A. Callander, N. Harris, A. Kattenberg and K. Maskell, Cambridge University Press, Cambridge, 407-443

20 Wigley, T.M.L., **B.D. Santer**, J.F.B. Mitchell, and R.J. Charlson, 1996: Climate change report. *Science*, **271**, 1481-1482

1997

21 Jones, P.D., T.J. Osborn, T.M.L. Wigley, P.M. Kelly, and **B.D. Santer**, 1997: Comparison between the microwave sounding unit temperature record and the surface temperature record from 1979 to 1996: Real differences or potential discontinuities? *Journal of Geophysical Research*, **102**, 30135-30145

1998

22 Barnett, T.P., G.C. Hegerl, **B.D. Santer**, and K.E. Taylor, 1998: The potential effect of GCM uncertainties and internal atmospheric variability on greenhouse signal detection. *Journal of Climate*, **11**, 659-675

23 Wigley, T.M.L., R.L. Smith, and **B.D. Santer**, 1998: Anthropogenic influence on the autocorrelation structure of hemispheric-mean temperatures. *Science*, **282**, 1676-1679

24 Wigley, T.M.L., P.J. Jaumann, **B.D. Santer**, and K.E. Taylor, 1998: Relative detectability of greenhouse-gas and aerosol climate change signals. *Climate Dynamics*, **14**, 781-790

1999

25 Barnett, T.P., M. Chelliah, K. Hasselmann, G.C. Hegerl, P.D. Jones, E. Rasmusson, C. Ropelewski, and **B.D. Santer**, 1999: Detection and attribution of recent climate change: A status report. *Bulletin of the American Meteorological Society*, **80**, 2631-2659

26 Gates, W.L., J.S. Boyle, C. Covey, C.G. Dease, C.M. Doutriaux, R.S. Drach, M. Fiorino, P.J. Gleckler, J.J. Hnilo, S.M. Marlais, T.J. Phillips, G.L. Potter, **B.D. Santer**, K.R. Sperber, K.E. Taylor, and D.N. Williams, 1999: An overview of the results of the Atmospheric Model Intercomparison Project (AMIP I). *Bulletin of the American Meteorological Society*, **80**, 29-55

27 **Santer, B.D.**, J.J. Hnilo, J.S. Boyle, C. Doutriaux, M. Fiorino, D.E. Parker, K.E. Taylor, and T.M.L. Wigley, 1999: Uncertainties in observationally-based estimates of temperature change in the free atmosphere. *Journal of Geophysical Research*, **104**, 6305-6333

28 M.I. Hoffert, K. Caldeira, C. Covey, P.B. Duffy and **B.D. Santer**, 1999: Solar variability and the Earth's climate. *Nature*, **401**, 764

29 Wigley, T.M.L., R.L. Smith, and **B.D. Santer**, 1999: The autocorrelation function and human influences on climate. Response to comment by Tsonis and Elsner, *Science*, **285**, 495a

2000

30 Gaffen, D.J., **B.D. Santer**, J.S. Boyle, J.R. Christy, N.E. Graham and R.J. Ross, 2000: Multi-decadal changes in the vertical structure of the tropical troposphere. *Science*, **287**, 1242-1245

31 National Research Council, 2000: *Reconciling observations of global temperature change*. National Academy Press, Washington, DC, 85 pp

32 **Santer, B.D.**, and T.M.L. Wigley, 2000: Reply to S. Fred Singer. *EOS*, *Transactions, American Geophysical Union,* **81**, 35,40

33 **Santer, B.D.**, T.M.L. Wigley, J.S. Boyle, D.J. Gaffen, J.J. Hnilo, D. Nychka, D.E. Parker, and K.E. Taylor, 2000: Statistical significance of trend differences in layer-average temperature time series. *Journal of Geophysical Research*, **105**, 7337-7356

34 **Santer, B.D.**, T.M.L. Wigley, D.J. Gaffen, L. Bengtsson, C. Doutriaux, J.S. Boyle, M. Esch, J.J. Hnilo, P.D. Jones, G.A. Meehl, E. Roeckner, K.E. Taylor and M.F. Wehner, 2000: Interpreting differential temperature trends at the surface and in the lower troposphere. *Science*, **287**, 1227-1232

35 Wigley, T.M.L., **B.D. Santer**, and K.E. Taylor, 2000: Correlation approaches to detection. *Geophysical Research Letters*, **27**, 2973-2976

2001

36 Duffy, P.B., C. Doutriaux, I.K. Fodor, and **B.D. Santer**, 2001: Effect of missing data on estimates of near-surface temperature change since 1900. *Journal of Climate*, **14**, 2809-2814

37 Govindasamy, B., K.E. Taylor, P.B. Duffy, **B.D. Santer**, A.S. Grossman and K.E. Grant, 2001: Limitations of the equivalent CO_2 approximation in climate change experiments. *Journal of Geophysical Research*, **106**, 22593-22603

38 **Santer, B.D.**, T.M.L. Wigley, C. Doutriaux, J.S. Boyle, J.E. Hansen, P.D. Jones, G.A. Meehl, E. Roeckner, S. Sengupta, and K.E. Taylor, 2001: Accounting for the effects of volcanoes and ENSO in comparisons of modeled and observed temperature trends. *Journal of Geophysical Research*, **106**, 28033-28059

2002

39 Hansen, J., M. Sato, L. Nazarenko, R. Ruedy, A. Lacis, D. Koch, I. Tegen, T. Hall, D. Shindell, **B.D. Santer**, P. Stone, T. Novakov, L. Thomason, R. Wang, Y. Wang, D. Jacob, S. Hollandsworth, L. Bishop, J. Logan, A. Thompson, R. Stolarski, J. Lean, R. Willson, S. Levitus, J. Antonov, N. Rayner, D. Parker, and J. Christy, 2002: Climate forcings in GISS SI2000 simulations. *Journal of Geophysical Research* **107(D18)**, 4347, doi:10.1029/2001JD001143

2003

40 **Santer, B.D.**, R. Sausen, T.M.L. Wigley, J.S. Boyle, K. AchutaRao, C. Doutriaux, J.E. Hansen, G.A. Meehl, E. Roeckner, R. Ruedy, G. Schmidt, and K.E. Taylor, 2003: Behavior of tropopause height and atmospheric temperature in models, reanalyses, and observations: Decadal changes. *Journal of Geophysical Research*, **108(D1)**, 4002, doi:10.1029/2002JD002258

41 **Santer, B.D.**, T.M.L. Wigley, G.A. Meehl, M.F. Wehner, C. Mears, M. Schabel, F.J. Wentz, C. Ammann, J. Arblaster, T. Bettge, W.M. Washington, K.E. Taylor, J.S. Boyle, W. Brüggemann, and C. Doutriaux, 2003: Influence of satellite data uncertainties on the detection of externally-forced climate change. *Science*, **300**, 1280-1284

42 **Santer, B.D.**, M.F. Wehner, T.M.L. Wigley, R. Sausen, G.A. Meehl, K.E. Taylor, C. Ammann, J. Arblaster, W.M. Washington, J.S. Boyle, and W. Brüggemann, 2003: Contributions of anthropogenic and natural forcing to recent tropopause height changes. *Science*, **301**, 479-483

43 **Santer, B.D.**, T.M.L. Wigley, G.A. Meehl, M.F. Wehner, C. Mears, M. Schabel, F.J. Wentz, C. Ammann, J. Arblaster, T. Bettge, W.M. Washington, K.E. Taylor, J.S. Boyle, W. Brüggemann, and C. Doutriaux, 2003: Response to J.R. Christy and R.W. Spencer. *Science*, **301**, 1047-1049

44 Sausen, R., and **B.D. Santer**, 2003: Use of changes in tropopause height to detect human influences on climate. *Meteorologische Zeitschrift*, **12**, 131-136

45 Smith, R.L., T.M.L. Wigley and **B.D. Santer**, 2003: A bivariate time series approach to anthropogenic trend detection in hemispheric mean temperatures. *Journal of Climate*, **16**, 1228-1240

2004

46 Gillett, N.P., **B.D. Santer**, and A.J. Weaver, 2004: Quantifying the influence of stratospheric cooling on satellite-derived tropospheric temperature trends. *Nature*, **432**, doi:10.1038/nature03209

47 **Santer, B.D.**, T.M.L. Wigley, A. Simmons, P. Kållberg, G. Kelly, S. Uppala, C. Ammann, J.S. Boyle, W. Brüggemann, C. Doutriaux, M. Fiorino, C. Mears, G.A. Meehl, R. Sausen, K.E. Taylor, W.M. Washington, M.F. Wehner, and F.J. Wentz, 2004: Identification of anthropogenic climate change using a second-generation reanalysis. *Journal of Geophysical Research*, **109**, doi:10.1029/2004JD005075

48 **Santer, B.D.**, M.F. Wehner, T.M.L. Wigley, R. Sausen, G.A. Meehl, K.E. Taylor, C. Ammann, J. Arblaster, W.M. Washington, J.S. Boyle, and W. Brüggemann, 2004: Response to comment on "Contributions of anthropogenic and natural forcing to recent tropopause height changes". *Science*, **303**, 1771c

2005

49 Barnett, T.P., F. Zwiers, G. Hegerl, M. Allen, T. Crowley, N. Gillett, K. Hasselmann, P.D. Jones, **B.D. Santer**, R. Schnur, P. Stott, K.E. Taylor, and S.F.B. Tett, 2005: Detecting and attributing external influences on the climate system: A review of recent advances. *Journal of Climate*, **18**, 1291-1314

50 Barnett, T.P., D. Pierce, K. AchutaRao, P. Gleckler, **B.D. Santer**, J. Gregory, and W. Washington, 2005: Penetration of human-induced warming signal into the world's oceans. *Science*, **309**, 284-287

51 Eyring, V., N.R.P. Harris, M. Rex, T.G. Shepherd, D.W. Fahey, G.T. Amanatidis, J. Austin, M.P. Chipperfield, M. Dameris, P.M. de F. Forster, A. Gettleman, H.F. Graf, T. Nagashima, P.A. Newman, S. Pawson, M.J. Prather, J.A. Pyle, R.J. Salawitch, **B.D. Santer**, and D.W. Waugh, 2005: A strategy for process-oriented validation of coupled chemistry-climate models. *Bulletin of the American Meteorological Society*, **86**, 1117-1133

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63 **Santer, B.D.**, 2018: Studying climate change in one of the grandest classrooms in the world.
https://blogs.scientificamerican.com/observations/studying-climate-change-in-one-of-the-grandest-classrooms-in-the-world/

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65 **Santer, B.D**., 2018: President Ozymandias.
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66 **Santer, B.D.**, 2018: Testing our assumptions.
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67 **Santer, B.D.**, 2019: Ultima Thule, the Cold War, and Trump's Wall.
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68 **Santer, B.D.**, 2019: How to deal with chaos in climate and politics.
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69 **Santer, B.D.**, 2019: Rock-climbing, climate science and leadership.
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70 **Santer, B.D.**, 2019: Lessons on nature and politics at the California seaside.
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71 **Santer, B.D.**, 2019: How do we know that human activities have affected global climate?
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2020

72 **Santer, B.D.**, 2020: Scientist Ben Santer finds climate 'hope' in 2020.
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73 **Santer, B.D.**, 2020: The peril and power of following the evidence.
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74 **Santer, B.D.**, 2020: How COVID-19 is like climate change.

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75 H. Jacoby, R. Richels, G. Yohe, and **B.D. Santer**, 2020: Can a pandemic aid the fight against global warming? https://thehill.com/opinion/energy-environment/498145-can-a-pandemic-aid-the-fight-against-global-warming

76 **Santer, B.D.**, 2020: The things we've lost in the pandemic. https://blogs.scientificamerican.com/observations/the-things-weve-lost-in-the-pandemic/

77 R. Richels, H. Jacoby, G. Yohe, and **B.D. Santer**, 2020: We cannot ignore the links between COVID-19 and the warming planet. https://thehill.com/opinion/energy-environment/499604-we-cannot-ignore-the-links-between-covid-19-and-the-warming-planet?rnd=1590527443

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79 R. Richels, H. Jacoby, G. Yohe, and **B.D. Santer**, 2020: The Trump administration cooks the climate change numbers once again. https://thehill.com/opinion/energy-environment/507929-the-trump-administration-cooks-the-climate-change-numbers-once

80 R.J. Weymann, **B.D. Santer**, and C.F. Manski, 2020: Science and scientific expertise are more important than ever. https://www.scientificamerican.com/article/science-and-scientific-expertise-are-more-important-than-ever/

81 **B.D. Santer**, 2020: An open letter to Joe Biden. https://www.scientificamerican.com/article/an-open-letter-to-joe-biden1/

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82 **B.D. Santer**, 2021: The Mahnmal. https://i-heart-climate-voices.medium.com/essay-the-severe-consequences-of-ignoring-the-science-b5c18fcb0ab1

83 **B.D. Santer**, 2021: Why scientists shouldn't heed calls to "Stay in our Lane". https://blog.ucsusa.org/science-blogger/why-scientists-shouldnt-heed-calls-to-stay-in-our-lane

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84 **B.D. Santer**, 2021: Climate denialism has no place at LLNL. https://blog.ucsusa.org/science-blogger/climate-denialism-no-place-at-lawrence-livermore-laboratory/

85 **B.D. Santer**, 2021: How do climate scientists study the causes of climate change? https://thehill.com/opinion/energy-environment/564722-how-do-climate-scientists-study-the-causes-of-climate-change

86 **B.D. Santer**, 2021: How IPCC went from 'not proven' that we cause climate change in 1990 to 'we are guilty' in 2021. https://thehill.com/opinion/energy-environment/567678-how-ipcc-went-from-not-proven-that-we-cause-climate-change-in-1990

87 **B.D. Santer**, 2021: Ben Santer on 'separating' and his 'small part' in understanding of climate science. https://yaleclimateconnections.org/2021/10/ben-santer-on-separating-and-his-small-part-in-understanding-of-climate-science/

88 **B.D. Santer**, 2021: The climate disconnect. https://thehill.com/opinion/energy-environment/586711-the-climate-disconnect

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89 **B.D. Santer**, 2022: Strategic ambiguity. https://blog.ucsusa.org/guest-commentary/strategic-ambiguity/

90 **B.D. Santer**, 2022: Why teach climate science?

https://ncse.ngo/why-teach-climate-science

91 **B.D. Santer**, 2022: Our shared climate responsibility. https://thehill.com/opinion/energy-environment/3530342-our-shared-climate-responsibility/

92 **B.D. Santer**, 2022: Climate science just lost a visionary pioneer: Larry Gates. https://thehill.com/opinion/energy-environment/3544731-climate-science-just-lost-a-visionary-pioneer-larry-gates/

93 **B.D. Santer**, 2022: Inflation Reduction Act is a ray of light in the darkness of climate ignorance. https://thehill.com/opinion/energy-environment/3611329-inflation-reduction-act-is-a-ray-of-light-in-the-darkness-of-climate-ignorance/

94 **B.D. Santer**, 2022: Climate change and bomb cyclones: What do we know? https://thehill.com/opinion/energy-environment/3789933-climate-change-and-bomb-cyclones-what-do-we-know/

2023

95 **B.D. Santer**, 2023: A tale of two Ramaswamys. https://thehill.com/opinion/energy-environment/4169694-a-tale-of-two-ramaswamys/

96 **B.D. Santer**, Henry Jacoby, Richard Richels, and Gary Yohe 2023: We need to learn more about climate tipping points. https://thehill.com/opinion/energy-environment/4329106-tipping-into-the-danger-zone-we-need-to-learn-more-about-climate-tipping-points-now/

97 Richard Richels, Henry Jacoby, **B.D. Santer**, and Gary Yohe, 2023: Don't let the Heritage Foundation's denialism 'Mandate' drive our climate agenda. https://thehill.com/opinion/energy-environment/4336135-dont-let-the-heritage-foundations-denialism-mandate-drive-our-climate-agenda/

2024

98 **B.D. Santer**, Henry Jacoby, Richard Richels, and Gary Yohe, 2024: We don't need to repeat the Trump experiment. https://thehill.com/opinion/campaign/4431527-we-dont-need-to-repeat-the-trump-experiment/

99 **B.D. Santer**, 2024: Kyoto tells us how humanity can come together on climate change. https://www.scientificamerican.com/article/kyoto-tells-us-how-humanity-can-come-together-on-climate-change/

100 **B.D. Santer**, 2024: A discernible human influence on global climate. *British Journalism Review*. https://bjr.org.uk/the-papers-tried-to-take-me-down/

Lectures and selected conferences

	1982	
1	**July**	Participant, Second International School of Climatology on "Climate and Energy: Carbon Dioxide". Erice, Sicily
	1983	
2	**September**	Invited participant, UNEP/ICSU/WMO Study Conference on "CO_2 and the Biosphere". Villach, Austria
3	**October**	Invited participant, Federal German Climatology Conference, Bad Sooden-Allendorf, Germany
	1984	
4	**October**	Participant, Ninth Annual Climate Diagnostics Workshop, Corvallis, OR
	1986	
5	**June**	Participant, NATO Advanced Study Institute on "Physically-Based Modelling and Simulation of Climate and Climatic Change", Erice, Sicily
6	**October**	Invited participant, Conference on "Man and Climate: Anthropogenic Influences on Atmosphere and Climate", Loccum, Germany
7	**December**	Invited lecturer, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria. "Regional validation of General Circulation Models of the atmosphere: The application of Preisendorfer and Barnett Monte Carlo techniques"
	1987	
8	**March**	Invited lecturer, Max-Planck-Institut für Meteorologie, Hamburg, Germany: "Regional validation of GCMs using Preisendorfer and Barnett Monte Carlo techniques"
9	**June**	Invited lecturer, Hooke Institute for Atmospheric Research, Oxford, UK: "Regional validation of GCMs using Preisendorfer and Barnett Monte Carlo techniques"
	1988	
10	**September**	Participant, Workshop on Systematic Errors in Models of the Atmosphere, Toronto, Canada: "Regional validation of means, variances, and spatial patterns in GCM control runs"
11	**December**	Invited lecturer, German-French Society for Science and Technology, Munich, Germany: "CO_2 - Die suche nach dem Signal" ("CO_2 - The search for the signal")
	1989	
12	**February**	Participant, Workshop on Development of Regional Climate Scenarios for Impact Assessment, IIASA, Laxenburg, Austria
13	**May**	Invited lecturer, DOE Workshop on Greenhouse-Gas-Induced Climatic Change, Amherst, MA: "Multivariate methods for the detection of greenhouse-gas-induced climatic change"
14	**May**	Invited lecturer, Climate System Research Program, Texas A&M University, College Station, TX: "Multivariate methods for the detection of greenhouse-gas-induced climatic change"
15	**August**	Participant, EPA Scenarios Advisory Meeting, NCAR, Boulder, CO: "Developing climate scenarios from GCM equilibrium results"
16	**September**	Participant, First International Conference on Modelling of Global Climate Change and Variability, Hamburg, Germany: "An attempt to detect the greenhouse-gas signal in a GCM equilibrium simulation"
	1990	
17	**January**	Participant, IPCC Workshop on Comparison of Transient Simulations with Observations, NASA, Washington DC
18	**February**	Invited lecturer, Humboldt Universität, East Berlin: "An attempt to detect the greenhouse-gas signal in GCM equilibrium simulations"
19	**August**	Invited lecturer, Electric Power Research Institute, Palo Alto, CA: "Ocean response to greenhouse warming"
20	**August**	Invited lecturer, Lawrence Livermore National Laboratory, Livermore, CA: "Recent research activities at the Max-Planck Institute for Meteorology in Hamburg"
21	**August**	Invited lecturer, University of Arizona, Tree Ring Laboratory, Tucson, AZ: "Ocean response to greenhouse warming"

22 **October** Participant, 15th Annual Climate Diagnostics Workshop, Asheville, NC: "Coupled model simulation of the transient response to greenhouse gas forcing"

23 **November** Invited lecturer, Commission of the European Community Workshop on Socio-Economic Effects of Climate Change in Europe, Brussels, Belgium: "Changes in climate and sea level"

1991

25 **November** Invited lecturer, First Demetra Meeting on Climate Variability and Global Change, Chianciano Terme, Italy: "Selecting components of a greenhouse-gas fingerprint"

26 **December** Participant, Dahlem Workshop on Global Changes in the Perspective of the Past, Berlin, Germany

1992

27 **January** Invited lecturer, Freie Universität Berlin, Germany: "Signal-to-noise analysis of transient greenhouse warming experiments"

28 **April** Invited lecturer, Dept. of Statistics, North Carolina State University, Raleigh, NC: "Signal-to-noise analysis of transient greenhouse warming experiments"

29 **April** Invited lecturer, Lawrence Livermore National Laboratory, Livermore, CA: "Signal-to-noise analysis of transient greenhouse warming experiments"

30 **June** Invited lecturer, Fifth International Conference on Statistical Climatology, Toronto, Canada: "Orthogonality of signal and noise in time-dependent greenhouse warming experiments"

31 **September** Participant, Second International Conference on Modelling of Global Climate Change and Variability, Hamburg, Germany: "Orthogonality of signal and noise in time-dependent greenhouse warming experiments"

32 **October** Participant, Conference on Agricultural Dimensions of Global Climate Change, Cornell University, Ithaca, NY: "Issues in detection of climate change using General Circulation Models"

1993

33 **January** Invited lecturer, Climate System Research Program, Texas A&M University, College Station, TX: "Application of optimal detection methods to time-dependent greenhouse warming experiments"

34 **August** Invited lecturer, Max-Planck-Institut für Meteorologie, Hamburg, Germany: "Estimates of detection time for ocean greenhouse warming signals"

35 **October** Invited lecturer, Goddard Space Flight Center, Greenbelt, MD: "Signal-to-noise analysis of time-dependent greenhouse warming experiments"

1994

36 **March** Invited lecturer, Max-Planck-Institut für Meteorologie, Hamburg, Germany: "Are sulfate aerosols masking a greenhouse warming signal?"

37 **March** Invited lecturer, National Research Council Board on Atmospheric Sciences and Climate, Irvine, CA: "Are sulfate aerosols masking a greenhouse warming signal?"

38 **June** Invited lecturer, Bureau of Meteorology Research Centre, Melbourne, Australia: "Detecting sulfate aerosol and CO_2 signals in the observed temperature record"

39 **July** Invited lecturer, 12th Conference of the Australian Statistical Society, Melbourne, Australia: "Statistical methods in climate change detection studies"

40 **July** Invited lecturer, Commonwealth Scientific and Industrial Research Organization, Division of Atmospheric Research, Melbourne, Australia: "Statistical methods in climate change detection studies"

41 **July** Invited lecturer, Workshop on Studies of Observed and Modelled Climate Variations, Cooperative Research Centre for Southern Hemisphere Meteorology, Melbourne, Australia: "An Introduction to COMPARE - the use of Monte Carlo methods in model validation and for assessing significance in climate change experiments"

42 **July** Invited lecturer, NCAR Colloquium on Statistical Methods in Atmospheric Sciences, Boulder, CO: "Fingerprint methods in climate change detection studies"

43 **September** Organizer, IPCC Workshop on "Detection of Climate Change, and Attribution of Causes", Livermore, CA

44 **October** Participant, Workshop on Global Coupled General Circulation Models, Scripps Institution of Oceanography, La Jolla, CA

45 **November** Participant, First IPCC Lead Authors' Drafting Meeting, Sigtuna, Sweden

1995

46 **January** Invited lecturer, Conference on the "Global Climate Observing System", Asheville, NC

47 **March** Participant, Second IPCC Lead Authors' Drafting Meeting, Brighton, UK

48 **May** Participant, First International AMIP Scientific Conference, Monterey, CA: "Statistical Evaluation of AMIP Model Performance"

49 **June** Geophysical Fluid Dynamics Laboratory, Princeton, NJ: "Have sulfate aerosols masked regional-scale features of a greenhouse warming signal?"

50 **July** International Union of Geodesy and Geophysics, Boulder, CO: "An overview of recent multivariate climate change detection studies"

51 **July** Participant, Third IPCC Lead Authors' Drafting Meeting, Asheville, NC

52 **September** Third International Conference on Modelling of Global Climate Change and Variability, Hamburg, Germany: "Have sulfate aerosols masked regional-scale features of a greenhouse warming signal?"

53 **September** First International Science Conference on Global Analysis, Interpretation, and Modelling, Garmisch-Partenkirchen, Germany: "The search for a model-predicted signal in observed records of temperature change"

54 **November** University of Washington, Seattle, WA: "The search for a model-predicted temperature-change signal in observed records of temperature change"

55 **November** Fifth Session of Working Group I of the Intergovernmental Panel on Climate Change, Madrid, Spain: "Detection of climate change and attribution of causes"

56 **November** World Meteorological Organization Training Seminar on Climate Change Issues, Madrid, Spain: "Climate change detection and attribution"

57 **December** Hadley Centre for Climate Prediction and Research, Bracknell, United Kingdom: "A search for the human influence on the thermal structure of the atmosphere"

58 **December** Hadley Centre for Climate Prediction and Research, Bracknell, United Kingdom: "Statistical evaluation of AMIP model performance"

1996

59 **January** Seventy-Sixth Annual Meeting of American Meteorological Society, Atlanta, GA: "Detection of climate change and attribution of causes"

60 **February** American Association for the Advancement of Science, 1996 Annual Meeting, Baltimore, MD: "Towards detection and attribution of anthropogenic climate change"

61 **February** Environmental Programs Scientific Advisory Committee, Lawrence Livermore National Lab, Livermore, CA: "Detection of anthropogenic climate change"

62 **March** Seventeenth Session, Joint Scientific Committee of the World Climate Research Programme, Toulouse, France: "Detection of anthropogenic climate change"

63 **May** Invited seminar, US Global Change Research Program, Washington, DC: "The search for a fingerprint of human activities in observed climate records"

64 **July** Environmental Programs Director's Review, Lawrence Livermore National Lab, Livermore, CA: "The search for a fingerprint of human activities in observed climate records"

65 **August** Participant, Aspen Global Change Institute, Aspen, CO: "Detection and attribution assessment in IPCC proceedings, and the nightmare media aftermath"

66 **November** Invited lecture, Muskie Symposium on the Environment and International Affairs, Bates College, Lewiston, ME: "The search for an anthropogenic signal: have human activities influenced global climate?"

1997

67 **April** Keynote speaker, Tandy Technology Scholars Awards Ceremony, New Orleans, LA: "The search for a fingerprint of human activities in global climate records"

68 **April** Invited lecture, Fifth US-Dutch International Symposium on Air Pollution in the 21st Century, Noordwijk, Holland: "Detection of climate change and attribution of causes"

69 **May** Lecture to Energy Directorate Advisory Committee, Lawrence Livermore National Laboratory, Livermore, CA: "The search for a human-induced signal in observed climate records"

70 **May** Invited lecture, Lawrence Berkeley National Laboratory, Berkeley, CA: "The search for a human-induced signal in observed climate records"

71	**June**	Invited lecture, Climate System Model Workshop, Breckenridge, CO: "Uncertainties in estimates of 'observed' atmospheric temperature change: Implications for climate-change detection studies"
72	**August**	Invited lecture, Conference on the World Climate Research Programme: Achievements, Benefits and Challenges, Geneva, Switzerland: "Detection of climate change and attribution of causes"
73	**September**	Invited lecture, Union of Concerned Scientists, Science Summit on Climate Change, Washington DC: "Climate change detection – The discernibility of a human signal"
74	**November**	Invited lecture, ICF Program, Lawrence Livermore National Laboratory, Livermore, CA: "The discernibility of a human-induced signal in observed climate records"
75	**November**	Invited lecture, Stanislaus Environment Education Project, Modesto, CA: "Global warming: natural or human-induced?"
76	**December**	Invited lecture, American Geophysical Union, San Francisco, CA: "Physical interpretation of differences between near-surface and lower tropospheric temperature trends in the NCEP and ERA reanalyses"
77	**December**	Invited lecture, American Geophysical Union, San Francisco, CA: "Uncertainties in 'observational' estimates of temperature change in the free atmosphere"
	1998	
78	**January**	Lecture, Joint Institute for Study of Atmosphere and Oceans, Seattle, WA: "Physical interpretation of differences between near-surface and lower tropospheric temperature trends in the NCEP and ERA reanalyses"
79	**January**	Colloquium, Dept. of Atmospheric Sciences, Univ. of Washington, Seattle, WA: "Uncertainties in 'observational' estimates of temperature change in the free atmosphere"
80	**February**	Inaugural lecture, Environmental Studies Program, Bates College, Lewiston, ME: "Climate change: natural or human-induced?"
81	**February**	Public lecture, Bates College, Lewiston, ME: "A personal perspective on political reaction to the IPCC's 'discernible human influence' conclusion"
82	**March**	Invited lecture, Euroclivar "Beyond Discernibility" meeting, Hadley Centre, Bracknell, UK: "Uncertainties in 'observational' estimates of temperature change in the free atmosphere"
83	**March**	Invited lecture, Symposium on Understanding Climate Change (in Honor of Syukuro Manabe), Princeton, NJ: "Uncertainties in 'observational' estimates of temperature change in the free atmosphere"
84	**May**	Invited lecture, Physics Dept., University of California at Davis, Davis, CA: "Climate change: natural or human-induced?"
85	**May**	Invited lecture, Pacific Union College, Angwin, CA: "Climate change: natural or human-induced?"
	1999	
86	**January**	Invited lecture, Explorers Club, San Francisco, CA: "Climate change: natural or human induced?"
87	**May**	Invited lecture, Global Climate Change Science Workshop, California Energy Commission, Sacramento, CA: "Climate change – natural or human-induced?"
88	**May**	Lecture, Earth and Environmental Sciences Directorate Science Advisory Committee, Lawrence Livermore National Lab, Livermore, CA. "Interpreting differences between temperature changes at the Earth's surface and in the lower troposphere"
89	**June**	Keynote speaker, Conference on Global Climate Change, Trieste, Italy: "Interpreting differences between temperature changes at the Earth's surface and in the lower troposphere"
90	**July**	Lecture, International Union of Geophysics and Geodesy, Birmingham, UK: "Interpreting differences between temperature changes at the Earth's surface and in the lower troposphere"
91	**August**	Invited lecture, Dept. of Atmospheric Sciences, Univ. of Washington, Seattle, WA: "Interpreting differences between temperature changes at the Earth's surface and in the lower troposphere"
92	**October**	Invited lecture, Northern California Geological Society, Orinda, CA: "Climate change: natural or human induced?"
	2000	
93	**April**	Invited lecture, Valley Study Group, Pleasanton, CA: "Climate change: natural or human induced?"
94	**November**	Invited lecture, University of California at Davis, Davis, CA: "Accounting for the effects of volcanoes and ENSO in comparisons of modeled and observed temperature trends"

95 **December** Invited lecture, American Geophysical Union, San Francisco, CA: "A brief history of Chapter 8 of the IPCC's Second Assessment Report"

2001

100 **January** Invited lecture, Workshop on Enhancing Caribbean Climate Data Collection and Processing Capability, University of the West Indies, Mona, Jamaica: "Projections of climate change in the Caribbean Basin from General Circulation Models"

101 **January** Keynote address, Pure and Applied Science Conference, University of the West Indies, Mona, Jamaica: "Climate change: Natural or human-induced?"

102 **February** Invited lecture, University of Michigan, Dept. of Atmospheric, Oceanic and Space Sciences, Ann Arbor, MI: "Accounting for volcano and ENSO effects in comparisons of modeled and observed temperature trends"

103 **February** Keynote address, Doctoral Student Conference, Yale University, New Haven, CT: "Investigating the causes of climate change"

104 **March** Presentation, Valley Montessori School, Livermore, CA: "Volcanoes, and what they tell us"

105 **May** Invited lecture, American Geophysical Union Spring Meeting, Boston, MA: "Accounting for volcano and ENSO effects in comparisons of modeled and observed temperature trends"

106 **September** Invited lecture, US Dept. of Energy Pollution Prevention Award Ceremony, Oakland, CA: "Studying the causes of climate change"

107 **October** Presentation, US Dept. of Energy Climate Change Prediction Program, San Diego, CA: "Detection and attribution research at PCMDI"

108 **November** Participant, Climate Modeling Advisory Panel, Goddard Institute for Space Studies, New York, NY

2002

109 **June** Invited lecture, Geophysical Fluid Dynamics Laboratory, Princeton, NJ: "Using tropopause height changes to identify human effects on global climate"

110 **July** Lecture, Community Climate System Model Workshop, Breckenridge, CO: "Diagnosis of tropopause height behavior in PCM climate-change experiments"

111 **August** Invited lecture, Energy Modeling Forum, Workshop on Climate-change Impacts and Integrated Assessment VIII, Snowmass, CO: "Model verification and instrumental climate records"

112 **August** Invited lecture, Lawrence Berkeley National Laboratory, Berkeley, CA: "Model evaluation research at PCMDI"

113 **September** Invited lecture, National Climatic Data Center, Asheville, NC: "Model evaluation research at PCMDI"

114 **October** Invited lecture, 10th Anniversary Kuehnast Lecture Program, University of Minnesota, Minneapolis, MN: "Studying the nature and causes of climate change"

115 **October** Acceptance speech, E.O. Lawrence Award Ceremony, National Academy of Sciences, Washington DC

116 **December** Invited talk, Planning Workshop, US Climate Change Science Program, Washington DC: "Resolution of disparities in tropospheric temperature records"

117 **December** Invited talk, Director's Distinguished Lecture Series, Lawrence Livermore National Laboratory, Livermore, CA: "A brief history of climate-change detection research at the Program for Climate Model Diagnosis and Intercomparison"

2003

118 **January** Invited talk, University of California President's Council Meeting, Lawrence Livermore National Laboratory, Livermore, CA: "A brief history of climate-change detection research at the Program for Climate Model Diagnosis and Intercomparison"

119 **February** Invited talk, Neyman lecture series, Dept. of Statistics, University of California at Berkeley, Berkeley, CA: "Some statistical issues relevant to the detection of human-induced climate change"

120 **March** Invited talk, CosmoCaixa Foundation, Madrid, Spain: "Una discussion sobre el Cambio Climático" ("Understanding the causes of climate change")

121 **April** Invited talk, Energy and Environment Directorate Review Committee, Lawrence Livermore National Laboratory, Livermore, CA: "A brief history of climate-change detection research at the Program for Climate Model Diagnosis and Intercomparison"

122 **April** Invited "Earth Day" lecture, Lawrence Livermore National Laboratory, Livermore, CA: "Recent developments in climate-change detection and attribution research"

123 **April** Invited talk, Lamont-Doherty Earth Observatory, Palisades, NY: "Has the troposphere warmed over the satellite era?"

124 **April** Lecture, *ad hoc* Detection Group, Duke University, Durham, NC: "Summary of recent detection and attribution research at PCMDI"

125 **June** Invited talk, Statistical and Applied Mathematical Sciences Institute, Boulder, CO: "Some statistical issues relevant to the detection of human-induced climate change"

126 **June** Lecture, Community Climate System Model Workshop, Breckenridge, CO: "Contributions of anthropogenic and natural forcing to recent tropopause height changes"

127 **July** Invited lecture, Gordon Conference on Solar Radiation and Climate, Colby-Sawyer College, New London, NH: "Recent developments in climate-change detection and attribution research"

128 **July** Invited lecture, IRCCSI/SNRI/CEC Societal Impacts Workshop, Tenaya Lodge, CA: "A brief history of climate-change detection research at PCMDI"

129 **August** Invited lecture, World Federation of Scientists, 30th Session of International Seminars on Planetary Emergencies, Erice, Sicily: "New fingerprints of human effects on climate"

130 **October** Invited lecture, Workshop on Vertical Temperature Trends, National Climatic Data Center, Asheville, NC: "Assessing consistency between simulated and observed atmospheric temperature trends"

131 **November** Invited lecture, Workshop on Process-Oriented Validation of Coupled Chemistry-Climate Models, Garmisch-Partenkirchen, Germany: "Statistical methods in model evaluation"

132 **December** Lecture, Valley Montessori School, Livermore, CA: "Why should we care about climate change?"

2004

133 **January** Invited lecture, Environmental Science and Engineering Seminar Series, California Institute of Technology, Pasadena, CA: "Are changes in tropopause height a fingerprint of human effects on climate?"

134 **January** Invited lecture, Environmental Science and Engineering Department, California Institute of Technology, Pasadena, CA: "A brief history of Chapter 8 of the IPCC's Second Assessment Report"

135 **February** Invited lecture, Climate and Energy Funders Group and Consultative Group on Biodiversity, Funders Strategy Meeting on Climate Change and Energy, Golden Gate Club, San Francisco, CA: "Climate change: Emerging science, and challenges for funding agencies"

136 **March** Invited lecture, NASA/Goddard Space Flight Center Seminar Series, Greenbelt, MD: "Changes in tropopause height and atmospheric temperature in a second-generation reanalysis"

137 **April** Invited lecture, Haagen-Smit Symposium on Climate Change, Lake Arrowhead, CA: "Climate change detection and attribution: A personal view of the emerging science"

138 **April** Lecture, *ad hoc* detection group, Oxford University, Oxford, UK: "An update on recent detection and attribution activities at PCMDI"

139 **June** Invited lecture, Ninth Electric Power Research Institute Global Change Research Seminar, Washington DC: "Climate change detection and attribution: A personal view of the emerging science"

140 **June** Invited lecture, First Annual Conference on Climate Change, Sacramento, CA: "Climate change detection and attribution: A personal view of the emerging science"

141 **June** Invited lecture, American Association for the Advancement of Science, Pacific Division, Symposium of Future Climate Change: Implications for Western Environments, Utah State University, Logan, UT: "Changes in tropopause height: A new fingerprint of human effects on climate"

142 **July** Lecture, 9th Annual CCSM Workshop, Climate Change Working Group Meeting, Santa Fe, NM: "Detecting climate change fingerprints against total natural variability noise"

143 **August** Invited lecture, 129th American Association of Physics Teachers Annual Meeting, Sacramento, CA: "Fossil fuels and global warming concerns"

144 **August** Invited lecture, 3rd SPARC General Assembly, Victoria, British Columbia, Canada: "Are recent tropopause height changes a useful fingerprint of human effects on climate?"

145 **August** Invited lecture, Conference on "Hydrogen - Fueling the Clean Air Future", Palm Desert, CA: "Recent developments in climate change detection and attribution research"

146 **September** Invited lecture, Symposium on "Climate Change: Past, Present and Future", University of Iceland, Reykjavik, Iceland: "Identifying human influences on global climate" (Presentation to Carl XVI Gustaf, King of Sweden)

147 **September** Lecture, Workshop on Vertical Temperature Trends, Hadley Centre for Climate Prediction and Research, Exeter, UK: "Identification of anthropogenic climate change using a second-generation reanalysis"

148 **September** Invited presentation to public meeting of California Environmental Protection Agency Air Resources Board, Los Angeles, CA: "Recent developments in climate change detection and attribution research"

149 **October** Invited lecture, International Sustainability Days Conference, Stanford University, Palo Alto, CA: "New developments in climate science: Progress in detection and attribution research"

150 **October** Presentation, Science Team Meeting of US D.O.E. Climate Change Prediction Program, Seattle, WA: "Progress in detection and attribution of climate change: Results from the *ad hoc* Detection and Attribution Group"

151 **December** Invited lecture, Energy and Environment Colloquium, Lawrence Livermore National Laboratory, Livermore, CA: "Identifying human effects on global climate"

2005

152 **February** Invited lecture, Whole Earth Systems Conference (in celebration of Steve Schneider's 60th birthday), Stanford University, Palo Alto, CA: "What does 'D&A' (detection and attribution) evidence tell us?"

153 **February** Invited lecture, Annual Meeting, American Association for the Advancement of Science, Washington DC: "What does 'D&A' (detection and attribution) evidence tell us?"

154 **February** Presentation to National Research Council Review Panel, Chicago, IL: "Overview of Chapter 5 of US Climate Change Science Plan Report on "Temperature Trends in the Lower Atmosphere: Steps for Understanding and Reconciling Differences"

155 **March** Invited talk, Energy and Environment Directorate Review Committee, Lawrence Livermore National Laboratory, Livermore, CA: "An update on surface/troposphere temperature reconciliation"

156 **April** Invited lecture, Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL: "Tropical lapse rates: A constraint on uncertainties in MSU and radiosonde estimates of tropospheric temperature change?"

157 **June** Invited lecture, Electric Power Research Institute 10th Annual Global Change Research Seminar, Washington DC: "Reconciling climate observations"

158 **June** Invited lecture, 10th Annual Community Climate System Model Workshop, Breckenridge, CO: "The IPCC historical forcing runs: PCMDI analyses of an ensemble of opportunity"

159 **September** Invited lecture, Second Annual Climate Change Research Conference, Sacramento, CA: "Has the troposphere warmed since 1979?"

160 **September** Invited lecture, 2005 World Sustainable Building Conference, Tokyo, Japan: "Scientific aspects of the climate system and climate change"

161 **October** Invited lecture, 2005 Chemistry-Climate Modeling Workshop, Boulder, CO: "Overview of the IPCC climate simulations and assessment needs"

162 **November** Presentation to University of California Regent Norman J. Pattiz, Lawrence Livermore National Lab, Livermore, CA: "Climate change research at LLNL"

163 **December** Presentation to Bernard Bigot, French High Commissioner of Atomic Energy, Lawrence Livermore National Lab, Livermore, CA: "Climate change research at LLNL"

164 **December** Invited presentation, Acterra, Palo Alto, CA: "Global warming: What we know and what's being done about it"

2006

165 **January** Invited lecture, University of Texas, Institute for Geophysics, Austin, TX: "Causes of ocean surface temperature changes in Atlantic and Pacific tropical cyclogenesis regions"

166 **January** Invited lecture, University of Texas, Dept. of Physics, Austin, TX: "The case for a human influence on global climate"

167 **March** Invited lecture, Canadian CLIVAR Network Workshop, Victoria, Canada. "Temperature changes in the free atmosphere: Confronting models with data, and data with models"

168 **March** Lecture, Fairlands Elementary School, Pleasanton, CA: "Why should we care about climate change?"

169 **April** Invited lecture, Cornerstone Research, Menlo Park, CA: "Identifying human influences on global climate"

170 **May** Public briefing on Synthesis and Assessment Product 1.1 of the US Climate Change Science Plan, US Department of Commerce, Washington, DC: "Chapter 5: How well can the observed vertical temperature changes be reconciled with our understanding of the causes of these changes?"

171 **May** Invited lecture, Stanford University, Palo Alto, CA: "Identifying human influences on global climate: A personal perspective on detection and attribution studies"

172 **June** Lecture, 11th Annual Community Climate System Model Workshop, Breckenridge, CO: "Causes of ocean surface temperature changes in Atlantic and Pacific tropical cyclogenesis regions"

173 **August** Invited lecture, International Workshop on Countermeasures to Urban Heat Islands, Tokyo, Japan. "Global climate change: Possible implications for urban environments"

174 **September** Keynote speech, Third Annual Climate Change Research Conference, Sacramento, CA: "Recent advances in detection and attribution studies"

175 **September** Invited lecture, University of California President's Council on Laboratory Affairs, Livermore, CA: "Causes of ocean surface temperature changes in hurricane formation regions"

176 **October** Invited lecture, 2006 Lecture Series on Global Climate Change, Seymour Center at Long Marine Laboratory, Santa Cruz, CA: "Identifying human influences on global climate"

177 **November** Presentation to PCMDI Advisory Committee, Livermore, CA: "Detection and attribution research at PCMDI: Recent highlights, and challenges for the future"

178 **November** Presentation to Athenian School Applied Science Class, Livermore, CA: "Identifying human influences on global climate"

179 **November** Invited lecture, Purdue Climate Change Research Center Distinguished Lecture Series, Purdue University, IN. "Identifying human influences on global climate"

2007

180 **January** Invited lecture, Faculty Resources Network Workshop on "Global Warming: Science, Policy, Curriculum". University of the Sacred Heart, San Juan, Puerto Rico, "Global Climate Change I: Foundations"

181 **January** Invited lecture, Faculty Resources Network Workshop on "Global Warming: Science, Policy, Curriculum". University of the Sacred Heart, San Juan, Puerto Rico, "Global Climate Change II: Current research"

182 **January** Presentation to Symposium on "Climate Change in the Caribbean", University of Puerto Rico-Rio Piedras, Puerto Rico. "Projections of climate change in the Caribbean Basin from global circulation models"

183 **January** Invited lecture, American Meteorological Society's Environmental Science Seminar Series, Washington DC: "The case for a human effect on global climate: How do we know that human activities are important?"

184 **February** Presentation to Dr. David L. Goodstein, Vice-Provost, California Institute of Technology, Lawrence Livermore National Lab, Livermore, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

185 **February** Invited lecture, Unitarian Universalist Church, Palo Alto, CA: "Identifying human influences on global climate"

186 **March** Presentation to Susan Hackwood, Executive Director, California Council on Science and Technology, Lawrence Livermore National Lab, Livermore, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

187 **March** Presentation to Environmental Risk Assessment Class, University of San Francisco, San Francisco, CA: "Uncertainties in climate model simulations"

188 **April** Lecture, Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL: "Identification of human-induced changes in atmospheric moisture content"

189 **April** Invited presentation, Earth Day Symposium, The Athenian School, Danville, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

190 **April** Invited lecture, Mathematical Sciences Research Institute, Symposium on Climate Change, Berkeley, CA: "Identifying human-induced climate change: An example"

191 **May** Presentation to US Dept. of Energy Livermore Site Office, Lawrence Livermore National Laboratory, Livermore, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

192 **May** Invited presentation, Electric Power Research Institute 12th Global Climate Change Research Seminar, Washington DC: "Recent work on detection and attribution"

193 **June** Invited presentation, Valley Study Group, Pleasanton, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

194 **June** Lecture, 12th Annual Community Climate System Model Workshop, Breckenridge, CO: "Identification of human-induced changes in atmospheric moisture content"

195 **June** Invited presentation, US State Dept. Conference on "Risky Climate: Disaster Preparedness and Foreign Policy in the 21st Century", Arlington, VA: "Building confidence in projections of future climate change"

196 **August** Keynote speech, Consortium on Climate, Energy, Environment at Lawrence Livermore National Laboratory (C-CELL), Livermore, CA: "Identifying human influences on global climate: How do we know that human activities are important?"

197 **September** Invited presentation, News Executives Roundtable: Covering Climate Change. Graduate School of Business, Stanford University, Stanford, CA: "How do scientists know human activities are influencing the global climate?"

198 **September** Presentation, Fourth Annual California Climate Change Conference, Sacramento, CA: "Identification of human-induced changes in atmospheric moisture content"

199 **September** Keynote speech, 2007 Grantham Prize Seminar on the State of Environmental Journalism, Metcalf Institute for Marine and Environmental Reporting, University of Rhode Island, Narragansett, RI: "Causes of recent climate change, and the climatic shape of things to come"

200 **September** Invited talk, Climate Change and Policies: Economic Impacts on Energy Producers in the Western US, San Ramon, CA: "How do we know that human activities influence global climate?"

201 **September** Presentation to 9th grade "Forensic Science" class, Granada High School, Livermore, CA: "Global warming: Whodunnit?"

202 **October** Invited talk, American Statistical Association Workshop on "A Statistical Consensus on Global Warming", Boulder, CO: "Detection and attribution of climate change"

203 **October** Invited lecture, American Meteorological Society's Environmental Science Seminar Series, Washington DC: "Identifying human-caused changes in atmospheric moisture content"

204 **November** Invited lecture, Stanford Linear Accelerator Center Colloquium Series, Menlo Park, CA: "How do we know that human activities have influenced global climate?"

205 **December** Keynote speech, Annual Meeting of Pew Fellows Program in Marine Conservation, Morro Bay, CA: "The search for a human-caused climate change signal in the world's oceans"

2008

206 **January** Presentation to Annual Meeting of International Detection and Attribution Group, Boulder, CO: "Human-induced changes in the hydrological cycle of the Western US"

207 **January** Presentation to Annual Meeting of International Detection and Attribution Group, Boulder, CO: "Detection and attribution research at PCMDI: Research activities and future work"

208 **March** Invited lecture, 2008 American Physical Society Meeting, New Orleans, LA: "Objective methods for detecting climate change and attributing causes"

209 **March** Invited lecture, University of Michigan, Ann Arbor, MI: "How do we know that human activities have influenced global climate?"

210 **April** Invited lecture, Miami Science Museum FYI Lecture Series, Miami, FL: "Effects of human activity on global climate change: What do we know, and how do we know it?"

211 **April** Keynote lecture, Second Annual Electric Aircraft Symposium, San Francisco, CA: "How do we know that human activities have influenced global climate?"

212 **April** Presentation to Global Security Directorate Review Committee, Lawrence Livermore National Laboratory, Livermore, CA: "The history and future of climate change research at LLNL"

213 **May** Fourth Fred Keeley lecture on Environmental Policy (previous lecturers: Bruce Babbitt, Paul Ehrlich, and Jane Lubchenko), University of California at Santa Cruz, Santa Cruz, CA: "Climate fingerprints: How do we know human activities have influenced global climate change?"

214 **May** Presentation to Chemistry, Materials, Earth and Life Sciences Directorate Review Committee, Lawrence Livermore National Laboratory, Livermore, CA: "The history and future of climate change research at LLNL"

215 **July** Invited lecture, University of Adelaide, Adelaide, Australia: "How do we know that human activities have influenced global climate?"

216 **July** Invited presentation, Energy Modeling Forum, Snowmass, CO: "Making use of climate information from large multi-model archives: Lessons for integrated assessment?"

217 **September** Presentation, Fifth Annual California Climate Change Conference, Sacramento, CA: "Including model quality information in detection and attribution studies: One model, one vote?"

218 **November** Lecture, Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL: "Including model quality information in detection and attribution studies: One model, one vote?"

2009

219 **January** Invited lecture, Marine Geology and Geophysics Seminar, Oregon State University, Corvallis, OR: "Including model quality information in detection and attribution studies: One model, one vote?"

220 **January** Invited lecture, Geosciences/College of Oceanic and Atmospheric Sciences "Global Climate Change" lecture series, Oregon State University, Corvallis, OR: "How do we know that human activities have influenced global climate?"

221 **January** Invited lecture, Laboratory Energy Research and Development Working Group, Washington DC: "Consistency of modeled and observed temperature trends in the tropical troposphere".

222 **February** Presentation to University of Vermont Statistics Journal Club, Burlington, VT: "Consistency of modeled and observed temperature trends in the tropical troposphere"

223 **February** Invited lecture, University of Vermont, Burlington, VT: "Including model quality information in detection and attribution studies: One model, one vote?"

224 **February** Dan and Carole Burack Distinguished Lecture Series, University of Vermont, Burlington, VT: "How do we know that human activities have influenced global climate?"

225 **February** Invited lecture, Earth Science Seminar Series, Jet Propulsion Laboratory, Pasadena, CA: "Including model quality information in detection and attribution studies: One model, one vote?"

226 **February** Invited lecture, Environmental Science and Engineering Seminar Series, California Institute of Technology, Pasadena, CA: "Including model quality information in detection and attribution studies: One model, one vote?"

227 **February** 16th Charles and Thomas Lauritsen Memorial Lecture, California Institute of Technology, Pasadena, CA: "How do we know that human activities have influenced global climate?" (Previous lecturers: Aage Bohr, Sir Fred Hoyle, Luis W. Alvarez, Victor F. Weisskopf, John Archibald Wheeler, Sir Denys Wilkinson, Frank Press, Steven Weinberg, Hans A. Bethe, Edwin H. Land, Sir Martin Rees, Richard L. Garwin, Sidney Drell, Ken Deffeyes, and Matthew R. Simmons)

228 **March** Invited lecture, Berkeley Atmospheric Science Center Seminar Series, University of California at Berkeley, Berkeley, CA: "Including model quality information in detection and attribution studies: One model, one vote?"

229 **April** Invited lecture, 20th Anniversary Symposium, Program for Climate Model Diagnosis and Intercomparison, Bethesda, MD: "The history and future of climate change detection and attribution research"

230 **April** After-dinner lecture, W.L. Gates Symposium, Bethesda, MD: "Larry Gates, the founding of PCMDI, and the rise of the MIPs"

231 **April** Invited lecture, Climate Change Science Workshop, Field Museum, Chicago, IL: "Human influence? How do we know?"

232 **April** Invited lecture, Third Annual CAFE Electric Aircraft Symposium, Hiller Aviation Museum, San Carlos, CA: "Current update on climate science"

233 **April** Invited talk, "All Hands on Green" Conference and Green Jobs Expo, City College of San Francisco, San Francisco, CA: "Current update on climate science"

234 **May** Invited lecture, Environmental Risk Management Course, University of San Francisco, San Francisco, CA: "Living with uncertainties in climate models: Lessons from the CMIP-3 archive"

235 **May** Invited lecture, Environmental Forum, Woods Institute for the Environment, Stanford University, Palo Alto, CA: "The MSU debate, climate auditing, and the Freedom of Information Act"

236 **June** Lecture, Wigley Symposium, National Center for Atmospheric Research, Boulder, CO: "Scientific adventures with Tom: Detecting human-induced climate change, and the great MSU debate"

237 **July** Invited lecture, Statistics Department, Stanford University, Palo Alto, CA: "The history and future of climate change detection and attribution research"

238 **September** Invited lecture, Workshop on Climate Feedbacks and Future Remote Sensing Observation, Keck Institute for Space Studies, Pasadena, CA: "Observational constraints on the water vapor feedback: A search for the Hall effect"

239 **September** Invited lecture, Keck Institute for Space Studies, Pasadena, CA: "The MSU debate, climate auditing, and the Freedom of Information Act"

240 **September** Invited talk, Rotary Club, Livermore, CA: "Current update on climate science"

241 **September** Invited presentation to the Board of Directors, Apache Corporation, Denver, CO: "How do we know that human activities have influenced global climate?"

242 **September** Lecture, Working Group on Coupled Modeling, Cavallo Point, Sausalito, CA: "The International Detection and Attribution Group (IDAG)"

243 **October** Invited remote lecture, Texas A&M University, College Station, TX: "The MSU debate, climate auditing, and the Freedom of Information Act"

244 **December** Invited lecture, American Geophysical Union Fall Meeting, San Francisco, CA: "Global climate change impacts in the United States: Summary of the 'Global Climate Change' chapter"

245 **December** Invited lecture, American Geophysical Union Fall Meeting, San Francisco, CA: "Incorporating model quality information in detection and attribution studies"

2010

246 **January** Invited lecture, Director's Distinguished Lecture Series, Lawrence Livermore National Lab, Livermore, CA: "The MSU debate, climate auditing, and the Freedom of Information Act"

247 **January** Keynote lecture, IPCC Expert Meeting on "Assessing and Combining Multi-Model Climate Projections", Boulder, CO: "The difficulties involved in identifying the 'best' model from a large, multi-model archive"

248 **February** Invited lecture, Continuing Studies Class on the Copenhagen Meeting, Stanford University, Palo Alto, California: "The MSU debate, climate auditing, and the Freedom of Information Act"

249 **April** Invited lecture, UC Berkeley Law School, Berkeley, CA: "The MSU debate, climate auditing, and the Freedom of Information Act"

250 **May** Invited lecture, Workshop on Climate Change Science for Broadcast Meteorologists and Weathercasters, Rosenstiel School for Marine and Atmospheric Sciences, Miami, FL: "The scientific evidence for a 'discernible human influence' on global climate"

251 **August** Presentation to Dr. William F. Brinkman, Director, US Dept. of Energy Office of Science, Lawrence Livermore National Lab, Livermore, CA: "Climate change detection and attribution"

252 **August** Invited presentation, Bay Area Air Quality Management District Climate Change Forum, San Francisco, CA: "A tribute to Stephen H. Schneider"

253 **September** Invited presentation, Workshop on "Current Challenges in Computing: Climate Modeling", Napa, CA: "On the difficulty of separating forcing and response errors in model evaluation studies"

254 **September** 18th Annual Lecture, Kuehnast Lecture Series, University of Minnesota, Chaska, MN: "The strengths and weaknesses of different climate models: Providing guidance to policymakers and impact analysts"

255 **September** Keynote presentation, Climate Adaptation Summit, University of Minnesota, Chaska, MN: "Which climate model is best?"

256 **October** Invited presentation, Workshop on "The Interface of Science, Technology & Security: Areas of Most Concern, Now and Ahead", Asia-Pacific Center for Security Studies, Honolulu, HI: "Climate change in the 21st century: Areas of concern"

257 **October** Invited presentation, the California Council on Science and Technology and the National Academy of Sciences, Joint Meeting on "Trust and Accountability in Science and Technology", the Beckman Center, Irvine, CA: "What climate models can and cannot do"

258 **October** Invited lecture, Stanford University, Palo Alto, CA: "On the difficulty of separating forcing and response errors in model evaluation studies"

259 **October** Invited presentation, Third METamorphosis Conference, Chevron, San Ramon, CA: "The scientific basis for a discernible human influence on global climate"

260 **November** Invited panel discussion (with Noah Diffenbaugh), Climate One, The Commonwealth Club, San Francisco, CA: "Science as a contact sport"

261 **November** Invited lecture, Distinguished Scientist Seminar Series, Earth Sciences Division, Lawrence Berkeley National Laboratory, Berkeley, CA: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

262 **November** Invited lecture, class on "Introduction to Environmental Science and Policy", University of California at Davis, Davis, CA: "A personal perspective on key issues in climate science"

263 **December** Invited lecture, American Geophysical Union Fall Meeting, Session on "Predictive Modeling and Uncertainty Quantification for Systematic Evaluation of Climate Models and Data-Guided enhancements of Regional Climate

Projections", San Francisco, CA: "Interpreting the latitudinal structure of differences between modeled and observed temperature trends"

264 **December** Invited lecture, American Geophysical Union Fall Meeting, Session on "Climate Change Adaptation: Education and Communication", San Francisco, CA: "Can models replicate observed temperature trends over the past decade?"

2011

265 **January** Invited lecture, Department of Atmospheric and Oceanic Science Seminar Series, University of California at Los Angeles, Los Angeles, CA: "Understanding the causes of differences between modeled and observed temperature trends"

266 **February** Invited lecture, Phi Beta Kappa Northern California Association, 25th Asilomar Conference, Asilomar, CA: "The scientific basis for a "discernible human influence" on global climate"

267 **March** Invited lecture, American Physical Society, Physics of Sustainable Energy Conference, University of California at Berkeley, Berkeley, CA: "Studying the causes of recent climate change"

268 **March** Invited talk, Leadership Summit on Climate Science Communication, The Pew Charitable Trusts, Washington DC: "The environment of climate science communication"

269 **April** Invited talk, George Washington Carver Middle School, Miami, FL: "How scientists study the causes of climate change"

270 **April** Invited talk, CAFE Electric Aircraft Symposium V, Santa Rosa, CA: "Climate science: An update"

271 **May** Invited talk, IEEE Oakland/East Bay Life Members Affinity Group, Dublin, CA: "How do we know that human activities have affected global climate?"

272 **June** Invited talk, Industrial Advisory Board Meeting, Lawrence Livermore National Laboratory, Livermore, CA: "The scientific evidence for a "discernible human influence" on global climate"

273 **July** Invited talk, Institutional Education Committee Lecture Series, Lawrence Livermore National Laboratory, Livermore, CA: "Studying the nature and causes of climate change"

274 **July** Invited lecture (Museum Talk), Bohemian Grove, Monte Rio, CA: "The causes of recent climate change: Separating fact from fiction"

275 **August** Invited talk, 2011 Stephen Henry Schneider Symposium, Boulder, CO: "Steve Schneider and the genesis of the 'balance of evidence' statement"

276 **August** Invited talk, 2012-2012 Program on Uncertainty Quantification: Climate Modeling Workshop, Pleasanton, CA: "Accounting for signal and noise uncertainties in multi-model detection and attribution studies"

277 **September** Presentation, US Dept. of Energy Climate and Earth System Modeling Principal Investigators' Meeting, Washington DC: "Separating signal and noise in atmospheric temperature changes: The importance of timescale"

278 **September** Invited lecture, Frontiers in Global Change Research Lecture Series, Pacific Northwest National Laboratory, Richland, WA: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

279 **October** Invited lecture, Climate and National Security Speaker Series, Sandia National Laboratory, Albuquerque, NM: "Studying the causes of 20th century climate change, and areas of concern for the 21st century"

280 **October** Invited lecture, CERES Science Team Meeting, Lawrence Livermore National Laboratory, Livermore, CA: "Muted tropospheric warming since 1998: 'Evidence of absence' of a human effect on global climate?"

281 **October** Invited lecture, Rawlins Environmental Literacy Lecture Series, California State University Chico, Chico, CA: "The causes of recent climate change: Separating fact from fiction"

282 **October** Sixth Annual Carolina Climate Change Seminar, University of North Carolina, Chapel Hill, NC: "The scientific evidence for a 'discernible human influence' on global climate"

283 **October** Technical Seminar, University of North Carolina, Chapel Hill, NC: "Separating signal and noise in atmospheric temperature changes: The importance of timescale"

284 **November** Invited lecture, Symposium for Professor Klaus Hasselmann, Hamburg, Germany: "Klaus Hasselmann's 'discernible influence' on climate change detection and attribution research"

285 **November** Invited presentation, House Natural Resources Committee, Washington DC, Nov. 14: "A brief introduction to the scientific evidence for a 'discernible human influence' on global climate"

286 **November** Invited lecture, Pacific Club Distinguished Lecture Series (co-sponsored by World Affairs Council), Newport Beach, CA: "How do we know that human activities have affected global climate?"

287 **December** Invited lecture, American Geophysical Union Fall Meeting, San Francisco, CA: "Assessing the reliability of model-based estimates of high- and low-frequency variability"

288 **December** Stephen Schneider Global Environmental Change Lecture, American Geophysical Union Fall Meeting, San Francisco, CA: "A tribute to Stephen H. Schneider and an example of setting the scientific record straight"

289 **December** Invited lecture, American Geophysical Union Fall Meeting, San Francisco, CA: "Atmospheric temperature changes in CMIP-5 simulations of forced and unforced climate change"

2012

290 **February** Invited lecture, Climate Reality Project, Berkeley, CA: "How do we know that human activities have affected global climate?"

291 **March** Invited lecture, Unitarian Universalist Church and Acterra, Palo Alto, CA: "The causes of recent climate change: Separating fact from fiction"

292 **April** Invited lecture, Distinguished Lecture Series, Scientific Computing and Imaging Institute, University of Utah, Salt Lake City, UT: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

293 **April** Lecture, American Security Project, Lawrence Livermore National Lab, Livermore, CA: "Climate change research at LLNL: Studying causes and identifying areas of concern"

294 **April** Invited lecture, Cornerstone Research, Menlo Park, CA: "The causes of recent climate change: Separating fact from fiction"

295 **May** Presentation to Thomas and Susan d'Aquino, Lawrence Livermore National Lab, Livermore, CA: "Climate change research at LLNL: Studying causes and identifying areas of concern"

296 **May** Invited lecture, California Air Pollution Control Officers Association Spring Membership Meeting, Squaw Valley, CA: "The case for a discernible human influence on global climate"

297 **May** Invited lecture, Environmental Forum, Woods Institute for the Environment, Stanford University, Palo Alto, CA: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

298 **May** Invited lecture, Workshop on "Frontiers in the Detection and Attribution of Climate Change", Banff International Research Station, Banff, Canada: "Identifying a discernible human influence on global climate: A personal perspective on the application of the Hasselmann fingerprint method"

299 **June** Invited lecture, Geophysical Fluid Dynamics Laboratory Seminar Series, Princeton, NJ: "Identifying human influence on atmospheric temperature: Are results robust to current uncertainties?"

300 **August** Invited lecture, Juneau Icefield Research Program, Camp 18, Juneau Icefield, AK: "The causes of recent climate change: Separating fact from fiction"

301 **August** Invited lecture, Juneau Icefield Research Program, Camp 18, Juneau Icefield, AK: "The genesis of the 'balance of evidence' statement in the 1995 IPCC Second Assessment Report"

302 **August** Invited lecture, Juneau Icefield Research Program, Camp 18, Juneau Icefield, AK: "The MSU debate, climate auditing, and the Freedom of Information Act"

303 **September** Invited lecture, Earth, Atmospheric, and Planetary Sciences Department Lecture Series, Massachusetts Institute of Technology, Cambridge, MA: "Identifying human influence on atmospheric temperature: Are results robust to current uncertainties?"

304 **October** Invited lecture, Workshop on Climate Science for Minnesota Broadcast Meteorologists, Science Museum of Minnesota, St. Paul, MN: "Attribution: How do we know there is a human influence on global climate?"

305 **October** Invited lecture, U.C. Davis John Muir Institute of the Environment, Davis, CA: "How do we know there is a human influence on global climate?"

306 **October** Invited lecture, Sierra Nevada College, School for Environmental Sciences, Incline Village, NV: How do we know there is a human influence on global climate?"

307 **November** Invited presentation, Missile Defense Agency, Lawrence Livermore National Lab, Livermore, CA: "Climate change detection and attribution"

308 **December** Invited presentation, American Geophysical Union Fall Meeting, San Francisco, CA: "Identifying human influence on atmospheric temperature: Are results robust to current uncertainties?"

2013

309 **January** Remote presentation to Statistical and Applied Mathematical Sciences Institute, Research Triangle Park, NC: "Identifying human influence on atmospheric temperature: Are results robust to current uncertainties?"

310 **January** Invited lecture, Amador Fire Safe Council, Jackson, CA: How do we know there is a human influence on global climate?"

311 **February** Invited lecture, University of California at Berkeley, Geography 171 Class ("Climate of the World"), Berkeley, CA: "How do we know there is a human influence on global climate?"

312 **February** AEED seminar, Lawrence Livermore National Laboratory, Livermore, CA: "Human and natural influences on the changing thermal structure of the atmosphere"

313 **March** 2013 Plummer Lecture, Georgia State University, Atlanta, GA: "The search for human 'fingerprints' in observed records of climate change"

314 **March** Invited lecture, Geosciences Department, Georgia State University, Atlanta, GA: "Exploring the causes of changes in the thermal structure of the atmosphere"

315 **March** Invited lecture, Climate Smart-Agriculture: Global Science Conference, University of California at Davis, Davis, CA: "How do we know it's us?"

316 **April** Invited lecture, Climate Change, Water and Society (IGERT) First Annual Workshop, Sacramento, CA: "The search for human fingerprints in observed records of climate change"

317 **April** Invited lecture, Principia College, Elsah, IL: "How do we know it's us?"

318 **April** Invited lecture, Oak Ridge National Laboratory, Oak Ridge, TN: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

319: **April** Invited lecture, Climate Change Science Institute, Oak Ridge National Laboratory, Oak Ridge, TN: "Human and natural influences on the changing thermal structure of the atmosphere"

320 **May** Lecture, Atmospheric Seminar Series, Lawrence Livermore National Laboratory, Livermore, CA: "The recent 'warming hiatus': Scientific surprise or expected behavior?"

321 **June** Lecture, Defense Science Study Group, Lawrence Livermore National Laboratory, Livermore, CA: "Climate fingerprinting research at LLNL"

322 **July** Invited plenary lecture, 2013 Annual Meeting of the Society for Industrial and Applied Mathematics, San Diego, CA: "The search for a human influence on the changing thermal structure of the atmosphere"

323 **August** Invited lecture, 2013 Joint Statistical Meetings, Session on Climate Change Detection and Attribution, Montréal, Canada: "Identifying human influences on atmospheric temperature: Are results robust to uncertainties?"

324 **August** Invited lecture, Third Workshop on Understanding Climate Change from Data, Northwestern University, Evanston, IL: "The search for a human influence on the changing thermal structure of the atmosphere"

325 **September** Invited lecture, Workshop on Climate Change Science for Southwestern Broadcast Meteorologists and Weathercasters, University of Arizona, Tucson, AZ: "Causation and attribution: Human influence? Natural? How do scientists know?"

326 **November** Invited "Breakfast Club" lecture, the Jonathan Club, Los Angeles, CA: "The ultimate detective story: Identifying human fingerprints in observed records of climate change"

327 **November** Invited lecture, Dept. of Soil, Water, and Climate, University of Minnesota, St. Paul Campus, MN: "Volcanic masking of human-caused warming"

328 **December** Invited lecture, American Geophysical Union Fall Meeting, session on "Remote Sensing of Earth System Variability and Change", San Francisco, CA: "Human and natural influences on the changing thermal structure of the atmosphere"

2014

329 **January** Invited presentation to American Physical Society sub-committee charged with reviewing/updating APS position statement on climate change (together with Isaac Held, Bill Collins, Judy Curry, John Christy, and Dick Lindzen). Center for Urban Science and Progress, New York University, New York, NY: "Detection and attribution evidence, and the recent "stasis": Input to the American Physical Society climate change workshop"

330 **February** Invited presentation, University of St. Thomas, St. Paul, MN: "A discernible human influence on global climate"

331 **February** Invited presentation, New York City/Long Island Chapter of the American Meteorological Society, Columbia University, New York, NY: "A life in climate science: From identification of a 'discernible human influence' on climate to identification of the 'top ten' climate models"

332 **February** Invited presentation, Lamont-Doherty Earth Observatory, Palisades, NY: "Volcanic contribution to decadal changes in tropospheric temperature"

333 **March** Invited presentation, Conference "Climate Science and Policy Through the Looking Glass", University of California at Santa Cruz, Santa Cruz, CA (untitled)

334 **March** Invited presentation, Claremont McKenna College, Marian Miner Cook Athenaeum, Claremont, CA: "The evidence for a discernible human influence on global climate"

335 **March** Invited presentation, W.M. Keck Science Center, Claremont McKenna College, Claremont, CA: "Volcanic contribution to the recent warming hiatus"

336 **March** Invited presentation, evening on "Climate Change and Water in California", Robert Mondavi Institute for Wine and Food Science, University of California at Davis, Davis, CA: "The scientific evidence for a discernible human influence on climate"

337 **March** Invited presentation, Pacific Northwest Association for College Physics, Spokane Falls Community College, Spokane, WA: "Detection and attribution evidence, and the recent "stasis": Input to the American Physical Society climate change workshop"

338 **April** Invited presentation, US National Academy of Sciences, session on "Climate Change Science and Climate Impacts", Washington DC: "Discussion of NAS/Royal Society report on Climate Change: Evidence and Causes"

339 **May** Invited presentation, Giannini Foundation of Agricultural Economics, meeting on "Climate Change: Challenges to California's Agriculture and Natural Resources", The California Museum, Sacramento, CA: "The science of climate change: Implications for California"

340 **May** Invited presentation, 2014 Institute for Complex Adaptive Matter Annual Conference, University of California at Davis, Davis, CA: "Frontiers in understanding human and natural impacts on the climate"

341 **May** Invited presentation, Northern California Science + Skepticism Conference ("SkeptiCal-14"), Oakland, CA: "A discernible human influence on global climate"

342 **June** Invited lecture, Earth, Atmospheric, and Planetary Sciences Department Lecture Series, Massachusetts Institute of Technology, Cambridge, MA: "Fingerprinting with the vertical structure of atmospheric temperature change, and the volcanic contribution to the warming hiatus"

343 **July** Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "The evidence for a discernible human influence on global climate"

344 **July** Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "The genesis of the 'balance of evidence' statement in the 1995 IPCC Second Assessment Report"

345 **July** Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "The volcanic contribution to the warming hiatus"

346 **July** Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "How do we evaluate global climate models?"

347 **July** Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "Fingerprints in the sky: Identifying human influences on the vertical structure of atmospheric temperature"

348 **August** Invited lecture, Understanding Global Change Summer Institute, University of California at Berkeley, Berkeley, CA: "A discernible human influence on global climate"

349 **August** Invited lecture, DHS briefing, Lawrence Livermore National Laboratory, Livermore, CA: "A discernible human influence on global climate"

350 **September** Invited lecture, Surface Hydrology class (CE203), University of California at Berkeley, Berkeley, CA: "Fingerprints in the sky: Identifying human influences on the vertical structure of atmospheric temperature"

351 **September** Invited lecture, Climates of the World class (GEOG171), University of California at Berkeley, Berkeley, CA: "The evidence for a discernible human influence on global climate"

352 **September** Invited presentation to the University of California Regents, Committee on Oversight of the Dept. of Energy Laboratories, University of California at San Francisco, San Francisco, CA: "Using climate change detection and attribution methods to study the causes of drought"

353 **September** Invited presentation to the Belizean Grove/TARA, Lawrence Livermore National Laboratory, Livermore, CA: "Identifying human effects on global climate"

354 **September** Lecture, Dept. of Soil, Water, and Climate, University of Minnesota, St. Paul Campus, MN: "An update on the contribution of early 21st century volcanic activity to the warming hiatus"

355 **October** Invited lecture, Distinguished Speakers Series, Dept. of Earth and Climate Sciences, San Francisco State University, San Francisco, CA: "The evidence for a discernible human influence on global climate"

356 **October** Invited lecture, Yale Physics Club, Yale University Dept. of Physics, New Haven, CT: "Human Effects on Global Climate: Scientific Evidence Provided to the American Physical Society"

357 **October** Presentation to Far West Section of the American Physical Society, University of Nevada, Reno, NV. Atmospheric Science panel: "Climate science careers for physicists"

358 **November** Invited lecture, Class on "Climate Change: An Earth Systems Perspective", Stanford University, Stanford, CA: "Fingerprints in the sky: Identifying human influences on the vertical structure of atmospheric temperature"

359 **December** Presentation to Hugo van Meijenfeldt, Consul General, Kingdom of the Netherlands (at Lawrence Livermore National Laboratory, Livermore, CA): "Identifying human influences on global climate"

360 **December** Presentation to David Hochschild, Commissioner, California Energy Commission (at Lawrence Livermore National Laboratory, Livermore, CA): "Identifying human influences on global climate"

361 **December** Invited presentation, American Geophysical Union Fall Meeting, San Francisco, CA. Session U52A ("Understanding why people reject sound scientific information and how scientists can respond"): "After the storm: Lessons learned from the IPCC's discernible human influence finding"

2015

362 **January** Invited participant, UC Davis-Mars Symposium, Panel on "Solving agriculture's greatest challenges", University of California at Davis, CA

363 **January** Presentation to meeting of International Detection and Attribution Group (IDAG), National Center for Atmospheric Research, Boulder, CO: "Observed multi-variable signals of late 20th and early 21st century volcanic activity"

364 **February** Presentation to CMIP6 Workshop, College Park, MD: "The benefit of model intercomparison projects: The perspective of a D&A practitioner"

365 **April** Invited presentation, SPARC Temperature Trends Group, Victoria, Canada: "Observed multi-variable signals of late 20th and early 21st century volcanic activity"

366 **May** Invited lecture, Earth, Atmospheric, and Planetary Sciences Department Lecture Series, Massachusetts Institute of Technology, Cambridge, MA: "Observed multi-variable signals of late 20th and early 21st century volcanic activity"

367 **June** Invited lecture, Physics Colloquium, Dept. of Physics, University of California at Davis, Davis, CA: "Observed multi-variable signals of late 20th and early 21st century volcanic activity"

368 **June** Invited lecture, American Meteorological Society Short Course on "Weather and Climate in Times of Change", Raleigh, NC: "The 'warming hiatus': A teachable moment"

369 **June** Keynote lecture, "Confronting Climate Change: Science, Education, and Solutions", Science Museum of Minnesota, Minneapolis, MN: "Climate change science: Looking back 20 years, and looking into the future"

370 **June** Remote lecture, Georgetown University Emergency and Disaster Management Graduate Class: "The evidence for a discernible human influence on global climate"

371 **June** Invited lecture, International Union of Geodesy and Geophysics, session on Weather and Climate Effects of Volcanic Eruptions, Prague, Czech Republic: "Observed multi-variable signals of late 20th and early 21st century volcanic activity"

372 **August** Lecture, LLNL Triennial Climate Scientific Focus Area Review, Rockville, MD: "Detection and attribution research"

373 **September** Invited lecture, Climates of the World class (GEOG171), University of California at Berkeley, Berkeley, CA: "The evidence for a discernible human influence on global climate"

374 **October** Invited lecture, Fall 2015 Seminar Series, Department of Earth Sciences, University of Minnesota, Minneapolis, MN: "Human effects on global climate: Scientific evidence provided to the American Physical Society"

375 **October** Invited lecture, Department of Earth Sciences, University of Minnesota, Minneapolis, MN: "Climatic effects of early 21st century volcanic eruptions"

376 **October** Presentation to US DOE Team Lead Meeting, Bethesda, MD: "Detection and attribution research at PCMDI: Accomplishments and plans"

377 **October** Invited lecture, Stanford University, Graduate class on "Climate Science: An Earth Systems Perspective", Palo Alto, CA: "Vertical fingerprinting, and the volcanic contribution to the recent 'pause' in warming"

378	**October**	Invited lecture, Livermore First Presbyterian Church, Livermore, CA: "Issues of our dawning future: Global climate change"
379	**November**	Invited presentation, GFDL's 60th Anniversary Symposium, Princeton, NJ: "GFDL's discernible influence on climate change detection and attribution research"
380	**November**	Invited presentation, St. Mark's Episcopal Church, Minneapolis, MN: "Climate change science: Looking back 20 years, and looking into the future"
	2016	
381	**January**	Plenary lecture, American Association of Physics Teachers winter meeting, New Orleans, LA: "Evidence for human effects on global climate"[23]
382	**January**	Invited talk, session on Climate Change, American Association of Physics Teachers winter meeting, New Orleans, LA: "Volcanic effects on climate in the late 20th and early 21st centuries"
383	**February**	Lecture, University of Arizona, Tucson, AZ: "Volcanic effects on climate in the late 20th and early 21st centuries"
384	**March**	Invited lecture, Changemaker Speaker Series, Principia College, Elsah, IL: "Climate change science: Looking back 20 years, and looking into the future"
385	**March**	Invited lecture, Introduction to Sustainability Class, Principia College, Elsah, IL: "Evidence for a discernible human influence on global climate"
386	**March**	Invited lecture, Environmental Economics Class, Principia College, Elsah, IL: "Genesis of the balance of evidence statement in the 1995 IPCC Second Assessment Report"
387	**March**	Keynote lecture, Society of Physics Students, Zone 18 Meeting, California State University Fresno, CA: "The scientific evidence for a discernible human influence on global climate"
388	**March**	Lecture, Class on The Science and Politics of Global Warming, University of Minnesota, Minneapolis, MN: "The scientific evidence for a discernible human influence on global climate"
389	**March**	Lecture, Class on Climate Change: Myths, Mysteries, and Uncertainties, University of Minnesota, Minneapolis, MN: "Climate change science: Looking back 20 years, and looking into the future"
390	**April**	Invited lecture, Deutsches Zentrum für Luft- und Raumfahrt and United Nations Office for Outer Space Affairs, Conference on Challenges for Atmospheric Research, Cologne, Germany: "Use of satellite measurements of atmospheric temperature and water vapor in climate change detection and attribution studies"
391	**April**	Lecture, GEOS 443, Texas A&M University, College Station, TX: "The genesis of the balance of evidence statement in the 1995 IPCC Second Assessment Report"
392	**April**	Invited lecture, Atmospheric Sciences Department, Texas A&M University, College Station, TX: "Climate change: Data or Dogma?"
393	**May**	Invited lecture, Dept. of Atmospheric and Oceanic Sciences, UCLA, Los Angeles, CA: "A scientific response to the 'Data or Dogma?' hearing"
394	**May**	Third Annual Yanai lecture, UCLA, Los Angeles, CA: "Fingerprinting the climate system"
395	**May**	Invited lecture, Sustainable Aviation Symposium, Redwood City, CA: "Climate change: Data or Dogma?"
396	**May**	Remote lecture, Georgetown University Emergency and Disaster Management Graduate Class: "The evidence for a discernible human influence on global climate"
397	**May**	Remarks made at annual meeting of Chevron shareholders (as legal proxy for UBS Financial Services, Inc.), San Ramon, CA
398	**June**	Invited lecture, Ron Stouffer Symposium, Geophysical Fluid Dynamics Laboratory, Princeton, NJ: "Climate change detection and attribution"
399	**June**	Invited lecture, 44th AMS Conference on Broadcast Meteorology, Austin, TX: "Fingerprinting the climate system"
400	**June**	Keynote speech, Summer Institute for Climate Change Education, Macalester College, Minneapolis, MN: "Fingerprinting the climate system"
401	**June**	Invited lecture, 66th Lindau Nobel Laureate Meeting, Lindau, Germany: "Using big data to study climate change"
402	**July**	Invited lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "Climate change science: A personal perspective on lessons learned"

[23]Video of presentation available at: https://www.youtube.com/watch?v=OOtbFyAUMTU

403 **July** Lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "How do we evaluate global climate models?"

404 **August** Invited lecture, CMIP-6 tutorial, National Center for Atmospheric Research, Boulder, CO: "Making sense of differences between simulated and observed historical climate change"

405 **August** Invited lecture, Sons in Retirement Branch 121, Livermore, CA: "Climate change science: A personal perspective on lessons learned"

406 **August** Invited lecture, IBM Research Almaden, San Jose, CA: "Fingerprinting the climate system"

407 **September** Keynote speech, Workshop on Occultations for Probing Atmosphere and Climate, Leibnitz, Austria: "Comparing atmospheric temperature trends and variability in climate models and satellite observations"

408 **October** Lecture, Fundraiser for Juneau Icefield Research Program, Milwaukee, WI: "Climate change science: A personal perspective on lessons learned".

2017

409 **January** Principal lecturer, Winter Seminar Series, Faculty Resource Network, American College of Greece, Athens, Greece: "Global Climate Change: Science, Economics, Migration" (a total of 8 lectures).

410 **January** Invited lecture, ALLETE Board of Directors meeting, Minneapolis, MN: "The evidence for a discernible human influence on global climate"

411 **February** Invited lecture, Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change"

412 **February** Invited lecture, Rosenstiel School of Marine and Atmospheric Sciences, Miami, FL: "Fingerprinting the climate system"

413 **February** Invited lecture, Manhattan College, New York, NY: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change

414 **April** Invited lecture, Sons in Retirement, San Ramon, CA: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change"

415 **April** Invited lecture, NASA/Goddard Space Flight Center Scientific Colloquium, Greenbelt, MD: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change"

416 **April** Invited lecture, "Climate Matters" Workshop, NASA/Goddard Space Flight Center, Greenbelt, MD, "What satellite data tell us about global warming"

417 **May** 2017 Tourtellotte lecture, Kalamazoo College, Kalamazoo, MI: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change"

418 **May** Invited lecture, Sandia Science and Engineering Seminar Series, Livermore, CA: "Lessons learned after the 1995 'discernible human influence' finding of the Intergovernmental Panel on Climate Change"

419 **June** Invited presentation, public forum on "Climate Change in the Age of Alternative Facts", University of Minnesota, MN

420 **July** Lecture, Juneau Icefield Research Program, Camp 10, Juneau Icefield, AK: "Climate change science: A personal perspective on lessons learned"

421 **July** Presentation to selected members of Young Presidents' Organization, Juneau, AK: "Climate change in the age of alternative facts"

422 **July** Invited presentation, Aspen Global Change Institute Workshop on "Earth System Model evaluation to Improve Process Understanding", Aspen, CO: "Satellite data uncertainties: Impact on detection and attribution results"

423 **August** Walter Orr Roberts Memorial Lecture, Aspen, CO: "How a sentence changed climate science: Lessons learned from the 1995 climate report"[24]

424 **October** Invited presentation, Livermore Rotary Club, Livermore, CA: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

425 **October** Invited presentation, Granada High School, Livermore, CA: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

[24]Video of presentation available at: https://www.agci.org/event/17s2wor

426 **December** Invited presentation, American Geophysical Union Fall Meeting, Session on Interpretation and Uncertainty in Climate, Earth System, Integrated Assessment, and Impact Models and Observations, New Orleans, LA: "Scientific uncertainties in climate change detection and attribution studies"

2018

427 **January** Invited presentation (The Three Tenors of Climate Change), Skidmore College, Saratoga Springs, NY: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

428 **February** Invited presentation, Berkeley Atmospheric Science Center Symposium, Berkeley, CA: "Atmospheric temperature changes: Evidence for or against human effects on global climate?"

429 **February** Invited presentation, Orange County Cal Alumni Club and Center for Civility and Democratic Engagement, Orange, CA: "The sentence that changed the world"

430 **March** Invited presentation, AGU Chapman Conference on "Stratospheric aerosol in the post-Pinatubo era: Processes, interactions, and importance", Puerto de la Cruz, Tenerife, Spain: "Identifying the climate signals of late 20th and early 21st century eruptions"

431 **March** Invited public lecture, Rae Dorough Speaker Series, Bankhead Theater, Livermore, CA: "Fingerprinting the climate system"

432 **April** Invited lecture, Earth, Ocean, and Atmospheric Sciences, Oregon State University, Corvallis, OR: "Fingerprinting the climate system"

433 **April** Invited lecture, Earth, Atmospheric, and Planetary Sciences Department Lecture Series, Massachusetts Institute of Technology, Cambridge, MA: "Separating signal and noise: The case of tropospheric temperature"

434 **May** Invited lecture, Carnegie Mellon University, Center for Climate and Energy Decision Making, Pittsburgh, PA: "Fingerprinting the climate system: The case of tropospheric temperature"

435 **May** Invited presentation (The Three Tenors of Climate Change), The University Club, Milwaukee, WI: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

436 **May** Invited participant in panel discussion on climate science and the Intergovernmental Panel on Climate Change, German Consulate, San Francisco, CA

437 **June** Invited lecturer, Faculty Resource Network 2018 Summer Seminar Series, New York University, New York, NY: "Separating the signal from the noise: The science and the communication of climate change" (8 lectures in total)

438 **July** Invited lecture, Juneau Icefield Research Program, Camp 18, Juneau Icefield, AK: "Fingerprinting the climate system"

439 **September** Invited lecture, Deutsche Bank Group, Talks on Environmental, Social, and Corporate Governance, San Francisco, CA: "Climate science: Looking back 40 years and understanding future risks"

440 **September** Invited lecture, Danville Sycamore Valley Rotary Club, Danville, CA: "Climate science: Looking back 40 years and understanding future risks"

441 **October** Invited presentation, Joaquin Moraga Middle School, Moraga, CA: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

442 **October** Invited presentation (The Three Tenors of Climate Change), Salt Lake City, UT: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

2019

443 **January** Invited participant in Council on Strategic Risks Third Workshop on climate nuclear, and security affairs, Washington DC.

444 **January** Invited lecture, University of California at Irvine Earth System Science Dept. Seminar, Irvine, CA: "Fingerprinting the climate system" (LLNL Ambassador Lecture Series)

445 **February** Remote presentation, Climate Literacy Webinar to middle school educators, "Evidence of the factors that have caused the rise in global temperatures over the past century"

446 **March** Remote presentation, course on "Turning misinformation into educational opportunities", George Mason University, Fairfax, VA: "State of the Climate"

447 **March** Invited presentation, Livermore Rotary Club, Livermore, CA: "Climate science: Looking back 40 years and understanding future risks"

448 **March** Remote lecture, Intel Platform Performance Brown Bag Speaker Series, Santa Clara, CA: "Fingerprinting the climate system"

449 **April** Invited presentation to "Band of Angels", Energy and Environment Special Interest Group, Mountain View, CA: "Fingerprinting the climate system"

450 **May** Invited presentation (The Three Tenors of Climate Change), Great Lakes Center for the Arts, Petoskey, MI: "How a sentence changed climate science: Lessons learned from the 1995 climate report"[25]

451 **May** Invited lecture, Stanford University EE Computer Systems Colloquium, Palo Alto, CA: "Fingerprinting the climate system"

452 **June** Invited lecture, M.I.T. Club of Northern California, Palo Alto, CA: "Fingerprinting the climate system"

453 **July** Invited presentation (The Three Tenors of Climate Change), Three Lakes, WI: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

454 **July** Invited presentation (The Three Tenors of Climate Change), Milwaukee, WI: "How a sentence changed climate science: Lessons learned from the 1995 climate report"

455 **July** Invited lecture, U.S. CLIVAR Large Ensembles Workshop, Boulder, CO: "Using LICE in climate change fingerprint studies".

456 **August** Invited lecture, Hertz Foundation Summer Workshop, University of California at Los Angeles, CA: "Fingerprinting the climate system"

457 **October** Invited lecture, Principia College, "Modern Climate Change" class, Elsah, IL: "Human and natural influences on the climate system"

458 **October** Invited public lecture, Alton, IL: "Finding and using your voice: Lessons learned from life and the 1995 climate report"

459 **November** Invited presentation, Granada High School, Livermore, CA: "Finding and using your voice: Lessons learned from life and the 1995 climate report"

460 **November** Invited presentation, University of California at Davis, Dept. of Chemical Engineering, Davis, CA: "Fingerprinting the climate system" (LLNL Ambassador Lecture Series)

461 **November** Invited presentation, University of California at Davis, Dept. of Chemical Engineering, Davis, CA: "How a sentence changed climate science: Lessons learned from the 1995 climate report" (LLNL Ambassador Lecture Series)

462 **November** Invited presentation, 2019 Sigma Xi Meeting and Student Research Conference, Madison, WI: "How a sentence changed climate science" (Procter Prize lecture)

463 **November** Invited presentation, University of California at Santa Barbara, Dept. of Geography, Santa Barbara, CA: "Fingerprinting the climate system" (LLNL Ambassador Lecture Series)

464 **December** Invited presentation, American Geophysical Union Fall Meeting, session on "Atmospheric Sciences: From the Past into the Future", San Francisco, CA: "Fingerprinting the climate system"

2020

465 **January** Invited lecture, American Meteorological Society 100th Annual Meeting, Symposium honoring Prof. Susan Solomon, Boston, MA: "Adventures in signal detection with Susan Solomon"

466 **April** Invited presentation (virtual), repeat of American Geophysical Union Fall Meeting lecture, session on "Atmospheric Sciences: From the Past into the Future", San Francisco, CA: "Fingerprinting the climate system"

467 **September** Invited lecture (virtual), San Joaquin County Office of Education, Climate Change Summit on "Climate Change on Earth: Past, Present and Future": "Fingerprinting the climate system"

468 **October** Invited lecture (virtual), New Jersey Institute of Technology, Murray Center for Women in Technology, colloquium on "Climate Now – Finding Hope in Change: "How a sentence changed climate science"

469 **November** Presentation (virtual), CESM2 Large Ensembles workshop: "Changes in the seasonal cycle of atmospheric temperature in the CESM1 and CESM2 large ensembles"

470 **December** Keynote lecture (virtual), workshop on "Exploring California Climate Change Connections", California Environmental Protection Agency Office of Environmental Health Hazard Assessment: "A discernible human influence on global climate: Personal reflections on progress since the 1995 IPCC finding"

471 **December** Bolin Lecture (virtual), American Geophysical Union Fall Meeting: "Revisiting the IPCC's 1995 'Discernible human influence' finding: History and lessons learned"

[25]Video of presentation available at: https://www.youtube.com/watch?v=CCVzUJ6f2OQ

2021

472 **January** Invited lecture (virtual), Climate-Safe California: "Climate science: An update"

473 **January** Invited lecture (virtual), M.I.T. Club of Northern California: "Fingerprints of climate change"

474 **February** Keynote lecture (virtual), Winter School 2021, University of Graz, Austria, "Decision making under uncertainty": "Fingerprinting the climate system"

475 **February** Invited lecture (virtual), National Academies of Science, Engineering, and Medicine, Workshop on "Emerging areas of science, engineering, and medicine for the courts: "Evidence for the courts: Emerging issues in climate science"

476 **February** Lecture (virtual), Union of Concerned Scientists Board meeting: "Fingerprinting the climate system"

477 **February** Lecture (virtual), CESM2 Large Ensembles Workshop: "An update on the analysis of the CESM2 Large Ensemble"

478 **March** Invited lecture (virtual), E.P.A. Brown bag lecture: "Fingerprinting the climate system"

479 **April** Invited lecture (virtual), Atmospheric Science Department Seminar Series, Colorado State University: "Fingerprinting the climate system"

480 **April** Invited lecture (virtual), University of Maine Glaciology class: "Fingerprinting the climate system"

481 **April** Invited lecture (virtual), LLNL-Las Positas College Science Seminar Series: "Fingerprinting the climate system"

482 **May** Invited lecture (virtual), National Judicial College: "Evidence for the courts: Emerging issues in climate science".

483 **June** Invited lecture (virtual), Granada High School, Livermore, CA: "How a sentence changed climate science".

484 **June** Lecture (virtual), Juneau Icefield Research Program, Juneau, AK: "Fingerprinting the climate system"

485 **October** Lecture (virtual), Citizens Climate Lobby: "Fingerprinting the climate system"

486 **November** Lecture (virtual), Electric Power Research Institute: "Fingerprinting the climate system"

487 **December** Lecture (virtual), Hayward Rotary Club, Hayward, CA: "Fingerprinting the climate system"

2022

488 **January** Invited lecture (virtual), Operation Sierra Storm, Lake Tahoe, CA: "Fingerprinting the climate system"

489 **January** Invited lecture (virtual), Institute for Complex Adaptive Matter Week of Science 2022, University of California at Davis, Davis, CA: "Remarks to ICAM panel"

490 **January** Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 4 to Class on "Earth's Climate: Past, Present, and Future"[26]

491 **February** Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 5 to Class on "Earth's Climate: Past, Present, and Future"

492 **February** Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 6 to Class on "Earth's Climate: Past, Present, and Future"

493 **February** Invited lecture (virtual), University of California at Los Angeles, "Climate Change and Modeling" class, Los Angeles, CA: "Fingerprinting the climate system"

494 **March** Invited lecture (virtual), University of Colorado at Boulder, Boulder, CA: "Fingerprinting the climate system"

495 **March** Invited lecture (virtual), Oregon Chapter of the American Association of Physics Teachers, University of Oregon, Eugene, OR: "Fingerprinting climate change and the 2021 Nobel in physics"

496 **March** Invited lecture, National Judicial College, course on "Judicial Leaders in Climate Science", Reno, NV: "Introduction to climate science"

497 **April** Invited lecture, M.I.T. Joint Program on the Science and Policy of Global Change, Massachusetts Institute of Technology, Cambridge, MA: "Defending the science of detection and attribution"

498 **April** Houghton lecture, Massachusetts Institute of Technology, Cambridge, MA: "Fingerprinting the climate system"

499 **April** Houghton lecture, Massachusetts Institute of Technology, Cambridge, MA: "Kicking the tires: Are findings of unequivocal human fingerprints robust to uncertainties?

500 **April** Houghton lecture, Massachusetts Institute of Technology, Cambridge, MA: "Volcanic Effects on Climate: From El Chichón to "Moderate" Early 21st Century Eruptions**"**

501 **April** Invited Physical Oceanography seminar, Woods Hole Oceanographic Institution, Woods Hole, MA: "Fingerprinting the climate system"

[26] https://olli.sou.edu/olliatsou/course/course.aspx?C=2490&pc=59&mc=57&sc=0

502	**April**	Invited talk, Kilmarnock Community Library, Kilmarnock, VA: "From Ideology to Unambiguous Science: Using "Fingerprinting" to Study the Climate System"
503	**May**	Lecture (virtual), SPARC ATC Workshop, Helsinki, Finland: "Water vapor and temperature trends in simulations and observations"
504	**June**	Invited talk (virtual), 50th Anniversary of Climatic Research Unit, University of East Anglia, Norwich, UK: "Fingerprinting the Climate System"
505	**July**	Invited talk (virtual), Polar STEM conference, Juneau, AK: "Fingerprinting the climate system"
506	**September**	Keynote lecture, OPAC-IROWG Meeting, Seggau, Austria: "Atmospheric temperature change: Recent advances and open issues"
507	**September**	Invited talk, The National Judicial College, Judicial Renaissance II, Seoul, South Korea: "Challenges of uncertainties: Climate Change"
508	**October**	Invited talk, Physical Oceanography Department, Woods Hole Oceanographic Institution, Woods Hole, MA: "Atmospheric temperature change: Recent advances and open issues"
509	**October**	Invited talk, Woods Hole Oceanographic Institution, Woods Hole, MA: "The Genesis of the IPCC's 1995 'Discernible Human Influence' finding"
	2023	
510	**February**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 4 to Class on "Earth's Climate: Past, Present, and Future"[27]
511	**February**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 5 to Class on "Earth's Climate: Past, Present, and Future"
512	**February**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 6 to Class on "Earth's Climate: Past, Present, and Future"
513	**May**	Invited talk, Atmosphere-Oceans-Climate seminar series, University of East Anglia, Norwich, UK: "Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"
514	**June**	Lecture (virtual), Ashby Village Science and Ideas Group, Berkeley, CA: "Fingerprinting the climate system"
515	**June**	Keynote lecture, California Judicial Council Environmental Summit, Sacramento, CA: "Fingerprinting the climate system"
516	**July**	Lecture (virtual), Citizens Climate Lobby: "Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"
517	**September**	Invited lecture, Atmospheric Science Department, University of Utah, Salt Lake City, UT: "Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"
518	**October**	Invited public lecture, University of Utah, Salt Lake City, UT: "Fingerprinting the climate system"
519	**October**	Lecture, Atmospheric Science Department, University of Utah, Salt Lake City, UT: "Not just ancient history: Lessons learned from the 1995 IPCC Report"
	2024	
520	**January**	Lecture, Annual Meeting of the American Meteorological Society, Baltimore, MD: "Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"
521	**January**	Keynote speaker, Annual Meeting of the American Meteorological Society, session on "From Changing Temperatures to Changing Extreme Events: Advances in Attribution Science", Baltimore, MD: "A brief history of attribution science"[28]
522	**January**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 4 to Class on "Earth's Climate: Past, Present, and Future"
523	**February**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 5 to Class on "Earth's Climate: Past, Present, and Future"
524	**February**	Lecture (virtual), Osher Lifelong Learning Institute, Southern Oregon University, Lecture 6 to Class on "Earth's Climate: Past, Present, and Future"

[27] https://olli.sou.edu/olliatsou/course/course.aspx?C=2490&pc=59&mc=57&sc=0
[28] https://ams.confex.com/ams/104ANNUAL/meetingapp.cgi/Session/67594

525 **March** Invited lecture, Meeting on Judicial Leaders in Climate Science, National Judicial College, Reno, NV: "Human and natural influences on climate"

526 **March** Invited lecture, Meeting on Judicial Leaders in Climate Science, National Judicial College, Reno, NV: "Fingerprinting the climate system"

527 **April** Lecture, Woods Hole Oceanographic Institution Advancement Team Meeting, Woods Hole, MA: "Fingerprinting the climate system"

528 **May** Invited talk, Woods Hole Oceanographic Institution President's Council Meeting, New York, NY

529 **June** Invited lecture (virtual), annual conference on Coupling Energetics and Dynamics of Atmospheric Regions (CEDAR), "Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"

530 **September** Keynote lecture, Wellcome Workshop on Guidelines for Detection and Attribution of Climate Change Impacts on Human Health, London, UK: "A brief history of attribution science"

531 **October** Invited lecture, Atmospheric Sciences Dept., University of Washington, Seattle, WA: "Fingerprinting the climate system"

532 **November** Lecture, Rutgers University, Dept. of Environmental Science, New Brunswick, NJ: ""Exceptional stratospheric contribution to human fingerprints on atmospheric temperature"

533 **November** Keynote lecture, Rutgers Climate and Energy Institute, Symposium on "Signals: Communicating Climate Understanding and Action", New Brunswick, NJ: "Fingerprinting the climate system"

Selected media activities

	2012	
1	**December**	Appearance on "Generation Anthropocene": http://web.stanford.edu/group/anthropocene/cgi-bin/wordpress/balance-of-evidence-revisited/
	2015	
2	**January**	Appearance on "Climate One": https://www.youtube.com/watch?v=rS2RhDhQVkg
	2016	
3	**December**	Article in Los Angeles Times: http://www.latimes.com/politics/la-pol-ca-climate-scientists-donald-trump-20161230-story.html
	2017	
4	**January**	Appearance on National Public Radio "All Things Considered" show: http://www.npr.org/2017/01/05/508408514/climate-scientist-pens-open-letter-to-president-elect-trump
5	**February**	Appearance on "Late Night with Seth Meyers" show: https://www.mediamatters.org/donald-trump/seth-meyers-hosts-climate-scientist-rebut-ignorance-donald-trump-and-ted-cruz
6	**March**	Appearance on CBS national news: http://www.msn.com/en-us/video/news/climate-scientist-worries-about-intimidation-lack-of-funding/vi-BByZ4Oq
7	**April**	Appearance on PRX "IdeaSphere: A Platform for Today's Voices". See "Science under attack, part 2": https://www.prx.org/series/32323-ideasphere-a-platform-for-today-s-voices
8	**June**	Appearance on Canadian Broadcast Company, "Quirks and Quarks": http://www.cbc.ca/radio/quirks/trump-exits-paris-accord-finding-genes-linked-to-intelligence-and-more-1.4143218/trump-ignores-most-of-the-world-and-all-of-the-science-1.4143267
9	**June**	Opening remarks, "Climate Round Table" discussion in Congress, June 20, 2017: https://youtu.be/7j_dgysb8kY
10	**June**	Video of "Change in the Age of Alternative Facts", University of Minnesota, June 26, 2017: https://mediahub.umn.edu/preview/26623b6c23a0a13
11	**July**	"Standing up for Science." Interview in Diablo Magazine, available at: http://www.diablomag.com/July-2017/Q-A-with-Lawrence-Livermore-National-Laboratory-Scientist-Ben-Santer/
12	**July**	"The sentence that changed science: Climate researcher shares insights". Interview with Aspen Public Radio: http://aspenpublicradio.org/post/sentence-changed-science-climate-researcher-shares-insights#stream/0
13	**August**	Interview with "The Lift": https://vimeo.com/228395864?ref=em-v-share
14	**November**	Podcast, "A Climate Fingerprinter Fights On": https://soundcloud.com/gotscience/episode-20-a-climate-fingerprinter-fights-on
	2018	
15	**March**	Profile in Mercury News: https://www.mercurynews.com/2018/03/17/climate-scientist-ben-santer-battles-trickle-down-ignorance/

2019

16 **February** Appearance on Climate One, Commonwealth Club, San Francisco "If global warming exists, why is it so cold outside?":
https://climateone.org/video/data-data-everywhere
https://climateone.org/video/tracking-fingerprints-climate-change

17 **March** Defense One Radio. Climate change versus the U.S. military:
https://www.stitcher.com/s?eid=59748859 or https://open.spotify.com/episode/5Zjzuw4H3XLu7IpUGTB5rR

18 **September** Climate One, Commonwealth Club, San Francisco. My climate story: Ben Santer:
https://www.climateone.org/audio/my-climate-story-ben-santer

19 **October** National Center for Science Education. In Evidence We Trust:
https://www.youtube.com/watch?v=Ccr7WJNFXu8

2020

20 **April** Living on Earth. Reflecting on 50 years of Earth Day:
https://www.loe.org/shows/segments.html?programID=20-P13-00017&segmentID=1

21 **July** How they made us doubt everything (Episode 5):
https://www.bbc.co.uk/sounds/play/m000l8fb

2021

22 **March** Muffled:
https://www.viddler.com/v/be509386

23 **April** Geoversiv – Earth Intelligence. Dr. Benjamin Santer (Part I):
https://www.buzzsprout.com/1240949/8432431-dr-benjamin-santer-episode-025

24 **May** Geoversiv – Earth Intelligence. Dr. Benjamin Santer (Part II):
https://www.buzzsprout.com/1240949/8432564-dr-benjamin-santer-part-ii-episode-026

25 **October** The Atlantic. The key insight that defined 50 years of climate science:
https://www.theatlantic.com/science/archive/2021/10/first-climatologist-win-nobel-prize-physics/620431/

2022

26 **April** Smoking Guns:
https://www.bbc.co.uk/programmes/m0016814

27 **April** PBS Frontline, "The Power of Big Oil":
https://www.pbs.org/wgbh/frontline/film/the-power-of-big-oil/

28 **May** British radio play captures '90s attacks on Ben Santer:
https://www.independentnews.com/news/regional_and_ca/british-radio-play-captures-90s-attacks-on-ben-santer/article_397d5bea-cd3d-11ec-8aea-7f6da6939473.html

2023

29 **July** Swiss Public Radio. The history of climate deniers:
https://www.srf.ch/wissen/klimaerwaermung/bremser-des-klimaschutzes-die-geschichte-der-klimaleugner

30 **October** Wilkes Center for Climate Science and Policy. Four lessons from Ben Santer:
https://wilkescenter.utah.edu/podcast/four-lessons-from-ben-santer/

31 **December** Appearance on Climate One at the Commonwealth Club as part of the 2023 Schneider Award ceremony:

2024

32 **September** Oceanus:
https://www.whoi.edu/oceanus/feature/ben-santer-climate-fingerprinting-fowler-climate-crisis/

Non-Scientific Publications

Santer, B.D., 1990: In the Crevasse, in One Step in the Clouds, edited by A. Salkeld and R. Smith, Hodder and Stoughton, London, UK, 109-118

Santer, B.D., 1995: Plastering Holes, in *Reflections of Light*, edited by C. Sullivan and J.L. Esterby, The National Library of Poetry, Watermark Press, Owings Mills, MD, page 416

Interests

Rock-climbing, mountaineering, poetry, marathon running, playing the guitar

Selection of Alpine climbs

Cascades, United States
Mt. Rainier; Mt. St. Helens; Mt. Adams; Sloan Peak; Mt. Shuksan (via Hourglass Route); Chair Peak; The Tooth; Three-Fingered Jack

Enchantments, United States
West Ridge of Prussik Peak; Dragontail; Little Annapurna

Yosemite and Tuolumne Meadows, United States
Leaning Tower (via Leaning Tower Traverse); Cathedral Peak (via South-East Buttress)

Alaska, United States
Taku B (Juneau Icefield)

Switzerland
Mönch (Bernese Oberland); Piz Badile (via North Ridge; Bregaglia); Piz Bernina (via the Bianco Ridge; Bregaglia); Gletschhorn (via South Ridge; Urner Alps); Freiheit (via South Face; Appenzeller Alps); Altmann (Appenzeller Alps)

France
Aiguille du Midi-Aiguille du Plan Traverse (French Alps); Aiguille d'Argentiere (via the Milieu Glacier; French Alps); Aiguille de l'M (via North-North East Ridge; French Alps)

Italy
Cima Presanella (Dolomites)

Austria
Roggalspitze via Roggalkante (Lechtaler Alps); Zimba (Rätikon)

Nepal
Participation in 1986 Lampertheimer Himalayan expedition to Ama Dablam and Kangtega

Rock-climbing routes

Yosemite (California, USA); Tuolumne Meadows (California, USA); Pinnacles National Park (California, USA); Lover's Leap (California, USA); Joshua Tree National Park (California, USA); Smith Rock (Oregon, USA), Peshastin Pinnacles

(Washington, USA); Cottonwood Canyon (Utah, USA); Red Rock Canyon (Nevada, USA), Lake District (UK); Peak District (UK); Snowdonia (UK); Gower Peninsula (UK); Danube Valley (Germany); Kreuzberge (Appenzeller Alps, Switzerland)

Marathons

Frankfurt, Munich, New York, Portland, Vancouver. Also completed the Engadin ski-marathon