

Curriculum Vitae

Thomas John Crowley

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BUSINESS ADDRESS

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PERSONAL INFORMATION

Birth Date: January 26, 1948
Birth Place: Kearny, New Jersey
Citizenship: United States
Spouse: Gabriele Hegerl (2/1/97)
Children: Michael (born 8/29/00), John (born 2/27/03)

EDUCATION

1969 B.A., Geology, Marietta College, Marietta, Ohio (Minors: English and Mathematics)
1971 M.S., Geological Sciences, Brown University, Providence, Rhode Island
1976 Ph.D., Geological Sciences (marine geology), Brown University, Providence, Rhode Island. (Dissertation: Fluctuations of the Eastern North Atlantic Gyre During the Last 150,000 Years). Adviser: John Imbrie

RESEARCH INTERESTS

History and modeling of past climates; effect of climate change on the biosphere; past carbon-cycle variations; utilization of paleoclimate data to validate climate models and as a reference scale for future climate change projections; Pleistocene oceanography; paleo-ocean modeling; decadal-centennial scale climate variability; climate projections for nuclear waste disposal site; late Holocene volcanism; effect of sea level rise on coastal processes.

EMPLOYMENT HISTORY

School of Geosciences, University of Edinburgh, Professor of Geosciences and Director, Scottish Alliance for Geosciences and the Environment (SAGES), August 2007 to present. Responsibilities involve coordinating environmental research activities among different Scottish universities and assistance in educational outreach and knowledge transfer.

Department of Earth and Ocean Sciences, Duke University, Durham, North Carolina, Nicholas Professor of Earth Systems Science, August 2001 to July 2007.

Department of Oceanography, Texas A&M University, College Station, Texas, Professor of Oceanography and Deputy Director, Texas Center for Climate Studies, June 1996 to July 2001 (Deputy Dept. Head, July 1998 to June 1999).

Department of Oceanography, Texas A&M University, College Station, Texas, Senior Research Scientist and Deputy Director, Texas Center for Climate Studies, October 1993 to May 1996.

Applied Research Corporation, Landover, Maryland, Senior Scientist, November 1987 to September 1993. Supervisor of College Station, Texas, branch (ARC Technologies). Responsibilities include office management, proposal writing, fiscal planning, co-supervision of DOE grant on climate projections for high-level nuclear waste storage site; research activities in paleoclimatology (modeling and data analysis).

NASA/Goddard Space Flight Center, Greenbelt, Maryland, National Research Council Fellow, February, 1986 to October, 1987. Fellowship in Climate and Radiation Branch.

Climate Dynamics Program, National Science Foundation, Director, July 1983 to January 1986. Activities included evaluation of proposals, documentation of award decisions, appropriation of budget resources, cooperation on NSF, NAS, and interagency activities, and supervision of two personnel.

Department of Physics, University of Missouri, St. Louis, Assistant Professor of Geology, August 1979 to June 1983.

U.S. Navy/Chapman College PACE (Program for Afloat College Education), USS New Orleans, USS Truxtun, USS Somers, USS Parsons, USS Kitty Hawk: Pacific and Indian Oceans. Lecturer, (oceanography, geology, mathematics), January 1978 to August 1979. Activities involved teaching college-level courses on U.S. Navy vessels deployed overseas

Brown University, Providence, Rhode Island, Teaching and Research Assistant, 1969 to 1975. Activities involved thesis research on ocean circulation changes during the last ice age.

Pennzoil Petroleum, Vienna, West Virginia, Laboratory Assistant, 1967-1968.

E.I Dupont, Washington, West Virginia, summer employee, 1966 & 1968.

PROFESSIONAL ACTIVITIES

Societies (through 2008: Geological Society of America, American Association for the Advancement of Science, American Geophysical Union, American Meteorological Society). Reviewer, Intergovernmental Panel for Climate Change (IPCC) Chapter on Paleoclimatology (April, 2005); Member, NCAR Community Climate Model Advisory Board (3/02-3/07); Member, National Center for Atmospheric Research (NCAR) Review team for Climate and Global Dynamics Division (10/01); Chair, Ocean Drilling Program Planning Group for Tectonics and Climate (11/97-11/98); Member, UNOLS (University/National Oceanographic Laboratory Systems) Fleet Improvement Committee (9/96 to 4/99); Member, NSF Advisory Panel on Marine Earth System History (10/97 to 9/99 and also 1990); Member, Ocean History Panel, Ocean Drilling Program (1/95 - 1/97); Chair, American Geophysical Union (AGU) Committee on Paleoceanography and Paleoclimatology (7/94 - 6/96); Member, AGU Committee on Global Change (10/00-10/02); Member, Working Group on Intergovernmental Panel for Climate Change 1995 Update (1/94 to 10/95); Advisory Panel, NOAA Paleoclimatology Program (6/91-1/95); Member, Nat. Res. Council Working Group on Earth System History and Modeling for the Global Change Program (4/89 - 3/90); Lecturer, Les Houches (France) Summer School on Modeling the Earth's Climate and its Variability (7/97); Lecturer, NATO Advanced Study Institute on Physically Based Modelling of Climate and Climate Change (Erice, Sicily, 5/86); Visiting Scientist, Max-Planck-Institut für Meteorologie, Hamburg, Germany (1988-1997); Member, U. S. Delegation of Bilateral Working Group on Historical Climate Change in China, Beijing and Xian, China (5/85); Co-organizer, US-China Bilateral Meeting on Historical Climate Change in China (10/87); Member, U. S. Ice-Core Working Group (2/87 - 6/88); Associate Editor, *Paleoceanography* (1/89 - 8/00); Editorial Board, *Quaternary Science Reviews* (10/00 - present); Editorial Board, *Palaeoclimates: Data and Modelling* (9/92 - 1999); Editorial Board, *Palaeogeography, Palaeoclimatology, Palaeoecology* (5/86 - present); Member, Committee on Climate, Amer. Meteorol. Soc. (1/87-1/89); Co-convenor, 4th Conf. on Climate Variations, Amer. Meteorol. Soc. (3/87); Special Session Organizer, Geol. Soc. Amer. Ann. Mtg. (1985), Amer. Geophys. Union (1989, 1993, 1995, 1997, 2001); Associate Scientist, R/V *Knorr*, equatorial Atlantic (10/84); Associate Scientist, R/V *Eastward*, western N. Atlantic (6/80); Assistant Scientist, R/V *Vema*, Canary Islands to Iceland to Norway (6/72-8/72).

HONORS AND AWARDS

National Research Council senior fellowship, NASA/Goddard Space Flight Center (1986)
American Geophysical Union Excellence in Reviewing award for *Paleoceanography* (1994)
Texas A&M University Association of Former Students Distinguished Faculty Achievement Award in Research (2001)
Foreign Member, *Academia Europaea* (2001)
Nicholas Professor of Earth System Sciences, Duke University (2001)
Richard F. Flint lecturer, Yale University (2001)
Eminent Lecture Series, Univ. of South Florida School of Marine Sciences (2005)
H. Burr Steinbach Visiting Scholar, Woods Hole Oceanographic Institution (2005)

PUBLICATIONS

Peer-Reviewed Papers

1. CLIMAP Project Members, 1976. The surface of the ice-age earth, *Science* 191, 1131-1137.
2. Crowley, T. J., 1981. Temperature and circulation changes in the eastern North Atlantic during the last 150,000 years: Evidence from the planktonic foraminiferal record, *Marine Micropaleontology* 6, 97-129.
3. Crowley, T. J., 1983. Calcium carbonate preservation patterns in the central North Atlantic during the last 150,000 years, *Marine Geology* 51, 1-14.
4. Crowley, T. J., 1983-1984. Depth-dependent carbonate dissolution changes in the eastern North Atlantic during the last 170,000 years, *Marine Geology* 54, M25-M31.
5. Crowley, T. J., 1983. The geologic record of climatic change, *Reviews of Geophysics and Space Physics* 21, 828-877.
6. Crowley, T. J. and R. K. Matthews, 1983. Isotope-plankton comparisons in a late Quaternary core with a stable temperature history, *Geology* 11, 275-278.
7. Crowley, T. J., 1984. Atmospheric circulation patterns during glacial inception: A possible candidate, *Quaternary Research* 21, 105-110.
8. North, G. R., and T. J. Crowley, 1985. Application of a seasonal climate model to Cenozoic glaciation, *Journal of the Geological Society (London)* 142, 475-482.
9. Crowley, T. J., D. A. Short, J. G. Mengel, and G. R. North, 1986. Role of seasonality in the evolution of climate during the last 100 million years, *Science* 231, 579-584.
10. Curry, W. B. and T. J. Crowley, 1987. The $\delta^{13}\text{C}$ of equatorial Atlantic surface waters: Implications for ice age pCO_2 levels, *Paleoceanography* 2, 489-517.
11. Crowley, T. J., J. G. Mengel, and D. A. Short, 1987. Gondwanaland's seasonal cycle, *Nature* 329, 803-807.
12. Crowley, T. J. and G. R. North, 1988. Abrupt climate change and extinction events in earth history, *Science* 240, 996-1002.
13. Crowley, T. J., and C. L. Parkinson, 1988. Late Pleistocene variations in Antarctic sea ice I: Effect of orbital insolation changes, *Climate Dynamics* 3, 85-91.
14. Crowley, T. J., and C. L. Parkinson, 1988. Late Pleistocene variations in Antarctic sea ice II: Effect of interhemispheric deep-ocean heat exchange, *Climate Dynamics* 3, 93-103.

15. Crowley, T. J., and S. Häkkinen, 1988. A new mechanism for decreasing NADW productions rates in the Pleistocene, *Paleoceanography* 3, 249-258.
16. Zhang, J. and T. J. Crowley, 1989. Historical climate records in China and reconstruction of past climates (1470-1970), *Journal of Climate* 2, 833-849.
17. Crowley, T. J., W. T. Hyde, and D. A. Short, 1989. Seasonal cycle variations on the supercontinent of Pangaea, *Geology* 17, 457-460.
18. Hyde, W. T., T. J. Crowley, K.-Y. Kim, and G. R. North, 1989. Comparison of GCM and energy balance model simulations of seasonal temperature changes, 18,000 B.P. to present, *Journal of Climate* 2, 864-887.
19. Crowley, T. J., 1990. Are there any satisfactory geologic analogs for a future greenhouse warming?, *Journal of Climate* 3, 1282-1292.
20. Crowley, T. J. and G. R. North, 1990. Modeling onset of glaciation, *Annals of Glaciology* 14, 39-42.
21. Hyde, W. T., K.-Y. Kim, T. J. Crowley and G. R. North, 1990. On the relation between polar continentality and climate: Studies with a nonlinear seasonal energy balance model. *Journal of Geophysical Research* 95, 18,653-18,668.
22. Maier-Reimer, E., U. Mikolajewicz, and T. J. Crowley, 1990. Ocean general circulation model sensitivity experiment with an open Central American isthmus, *Paleoceanography* 5, 349-366.
23. Crowley, T. J., 1991. Ice-age carbon, *Nature* 352, 575-576.
24. Crowley, T. J., 1991. Ice-age methane variations, *Nature* 353, 122-123.
25. Crowley, T. J., 1991. Modeling Pliocene warmth, *Quaternary Science Reviews* 10, 275-282.
26. Crowley, T. J., 1991. Past CO₂ changes and tropical sea surface temperatures, *Paleoceanography* 6, 387-394.
27. Baum, S. K., and T. J. Crowley, 1991. Seasonal snowline instability in a climate model with realistic geography: Application to Carboniferous (~300 Ma) glaciation, *Geophysical Research Letters* 18, 1719-1722.
28. Crowley, T. J., and S. K. Baum, 1991. Estimating Carboniferous sea level fluctuations from Gondwanan ice extent, *Geology* 19, 975-977.
29. Crowley, T. J., and S. K. Baum, 1991. Toward reconciliation of Late Ordovician

- (~440 Ma) glaciation with very high CO₂ levels, *Journal of Geophysical Research* 96, 22597-22610.
30. Crowley, J. T., S. K. Baum, and W. T. Hyde, 1991. Climate model comparison of Gondwanan and Laurentide glaciations, *Journal of Geophysical Research* 96, 9217-9226.
 31. Newton, H. J., G. R. North, and T. J. Crowley, 1991. Forecasting global ice volume, *Journal of Time Series Analysis* 12, 255-265.
 32. Short, D. A., J. G. Mengel, T. J. Crowley, W. T. Hyde, and G. R. North, 1991. Filtering of Milankovitch cycles by earth's geography, *Quaternary Research* 35, 157-173.
 33. Crowley, T. J., 1992. North Atlantic deep water cools the southern hemisphere, *Paleoceanography* 7, 489-497.
 34. Crowley, T. J., and S. K. Baum, 1992. Modeling late Paleozoic glaciation, *Geology* 20, 507-510.
 35. Crowley, T. J., and K. -Y. Kim, 1992. Complementary roles of orbital insolation and North Atlantic deep water during late Pleistocene interglacials, *Paleoceanography* 7, 521-528.
 36. Crowley, T. J., S. K. Baum, and W. T. Hyde, 1992. Milankovitch fluctuations on supercontinents, *Geophysical Research Letters* 19, 793-796.
 37. Crowley, T. J., K.-Y. Kim, J. G. Mengel, and D. A. Short, 1992. Modeling 100,000 year climate fluctuations in pre-Pleistocene time series, *Science* 255, 705-707.
 38. Crowley, T. J., 1993. Climate change on tectonic time scales, *Tectonophysics* 222, 277-294.
 39. Crowley, T. J., 1993. Geological assessment of the greenhouse effect, *Bulletin of the American Meteorological Society* 74, 2363-2373.
 40. Crowley, T. J., and S. K. Baum, 1993. Effect of decreased solar luminosity on late Precambrian ice extent, *Journal of Geophysical Research* 98, 16,723-16,732.
 41. Crowley, T. J., and K.-Y. Kim, 1993. Towards development of a strategy for determining the origin of decadal-centennial scale climate variability, *Quaternary Science Reviews* 12, 375-385.

42. Crowley, T. J., S. K. Baum, and K.-Y. Kim, 1993. General circulation model sensitivity experiments with pole-centered supercontinents, *Journal of Geophysical Research* 98, 8793-8800.
43. Crowley, T. J., T. A. Crute, and N. R. Smith, 1993. Reassessment of Crete (Greenland) ice core acidity/volcanism link to climate change, *Geophysical Research Letters* 20, 209-212.
44. Crowley, T. J., K.-J. Yip, and S. K. Baum, 1993. Milankovitch cycles and Carboniferous climate, *Geophysical Research Letters*, 20, 1175-1178.
45. Mikolajewicz, E. Maier-Reimer, T. J. Crowley, and K.-Y. Kim, 1993. Effect of Drake and Panamanian gateways on the circulation of an ocean model, *Paleoceanography* 8, 409-426.
46. Quinn, T. M., F. W. Taylor and T. J. Crowley, 1993. A 173 year stable isotope record from a tropical South Pacific coral, *Quaternary Science Reviews* 12, 407-418.
47. Crowley, T. J., 1994. Potential reconciliation of Devils Hole and deep-sea Pleistocene chronologies, *Paleoceanography* 9, 1-5.
48. Crowley, T. J. 1994. Pleistocene temperature changes, *Nature* 371, 664.
49. Crowley, T. J., and S. K. Baum, 1994. General circulation model study of late Carboniferous interglacial climates, *Palaeoclimates: Data and Modelling* 1, 3-21.
50. Crowley, T. J., and K.-Y. Kim, 1994. Milankovitch forcing of the last interglacial sea level, *Science* 265, 1566-1568.
51. K.-Y. Kim and T. J. Crowley, 1994. Modeling the climate effect of unrestricted greenhouse emissions over the next 10,000 years, *Geophysical Research Letters* 21, 681-684.
52. Crowley, T. J., S. K. Baum, and K.-J. Yip, 1994. Snowline instability in a general circulation model: Application to Carboniferous glaciation, *Climate Dynamics* 10, 363-376.
53. Crowley, T. J., K.-J. Yip, and S. K. Baum, 1994. Effect of altered Arctic sea ice and Greenland ice sheet cover on the climate of the GENESIS general circulation model, *Global and Planetary Change* 9, 275-288.
54. Crowley, T. J., 1995. Ice age terrestrial carbon changes revisited, *Global Biogeochemical Cycles* 9, 377-389.
55. Crowley, T. J., and S. K. Baum, 1995. Is the Greenland ice sheet bistable? *Paleoceanography* 10, 357-363.
56. Crowley, T. J., and S. K. Baum, 1995. Reconciling Late Ordovician (440 Ma) glaciation with very high (14X) CO₂ levels, *Journal of Geophysical Research* 100, 1093-1101.

57. Crowley, T. J., and K.-Y. Kim, 1995. Comparison of longterm greenhouse projections with the geologic record, *Geophysical Research Letters* 22, 933-936.
58. Slowey, N. C. and T. J. Crowley, 1995. Interdecadal variability of Northern Hemisphere circulation recorded by Gulf of Mexico corals, *Geophysical Research Letters* 22, 2345-2348.
59. Crowley, T. J., 1996. Pliocene climates: The nature of the problem, *Marine Micropaleontology* 27, 3-12.
60. Crowley, T. J., 1996. Remembrance of things past: Greenhouse lessons from the geologic record, *Consequences* 2, 3-12.
61. Crowley, T. J., and K.-Y. Kim, 1996. Comparison of proxy records of climate change and solar forcing, *Geophysical Research Letters* 23, 359-362.
62. Crowley, T. J., K.-J. Yip, S. K. Baum, and S. B. Moore, 1996. Modeling Carboniferous coal formation, *Palaeoclimates: Data and Modelling* 2, 159-177.
63. Quinn, T. M., F. W. Taylor, T. J. Crowley, and S. M. Link, 1996. Evaluation of sampling resolution in coral stable isotope records: A case study using records from New Caledonia and Tarawa, *Paleoceanography* 11, 529-542.
64. Quinn, T. M., T. J. Crowley, and F. W. Taylor, 1996. New stable isotope results from a 173-year coral record from Espiritu Santo, Vanuatu, *Geophysical Research Letters*, 23, 3413-3416.
65. Sloan, L. Cirbus, T. J. Crowley, and D. Pollard, 1996. Modeling the Middle Pliocene climate with the NCAR GENESIS general circulation model, *Marine Micropaleontology* 27, 51-61.
66. Crowley, T. J., and S. K. Baum, 1997. Effect of vegetation on an ice-age climate model simulation, *Journal of Geophysical Research* 102, 16,463-16,480.
67. Heinze, C., and T. J. Crowley, 1997. Sedimentary response to ocean gateway circulation changes, *Paleoceanography*, 2, 742-754.
68. Mikolajewicz, U., and T. J. Crowley, 1997. Response of a coupled ocean/energy balance model to restricted flow through the central American isthmus, *Paleoceanography*, 12, 429-441.
69. Crowley, T. J., T. M. Quinn, and F. W. Taylor, 1997. Evidence for a volcanic cooling signal in a 335 year coral record from New Caledonia, *Paleoceanography* 12, 633-639.

70. Cubasch, U., R. Voss, G. C. Hegerl, J. Waszkewitz, and T. J. Crowley, 1997. Simulation of the influence of solar radiation variations on the global climate with an ocean-atmosphere general circulation model, *Climate Dynamics* 13, 757-767.
71. Mikolajewicz, U., T. J. Crowley, A. Schiller, and R. Voss, 1997. Modelling teleconnections between the North Atlantic and North Pacific during the Younger Dryas, *Nature* 387, 384-387.
72. Kim, S.-J., T. J. Crowley, and A. Stössel, 1998. Local orbital forcing of Antarctic temperature change during the last interglacial, *Science* 280, 728-730.
73. Montoya, M., T. J. Crowley, and H. von Storch, 1998. Temperature at the last interglacial simulated by a coupled ocean-atmosphere climate model. *Paleoceanography* 13, 170-177.
74. Quinn, T. M., F. W. Taylor, and T. J. Crowley, C. Henin, P. Joannot, and Y. Join, 1998. A multcentury coral stable isotope record from New Caledonia, *Paleoceanography* 13, 412-426.
75. Valdes, P. J., and T. J. Crowley, 1998. A climate model intercomparison for the Carboniferous. *Palaeoclimates: Data and Modelling* 2, 219-238.
76. Crowley, T. J., 1999. Correlating high-frequency climate variations, *Paleoceanography* 14, 271-272.
77. Crowley, T. J., and K.-Y. Kim, 1999. Modeling the forced response to climate change over the last six centuries, *Geophysical Research Letters* 26, 1901-1904.
78. Crowley, T. J., T. M. Quinn, and W. T. Hyde, 1999. Validation of coral temperature calibrations, *Paleoceanography* 14, 605-615.
79. Hyde, W. T., T. J. Crowley, L. Tarasov, and W. R. Peltier, 1999. The Pangean ice age: Studies with a coupled climate-ice sheet model. *Climate Dynamics* 15, 619-629.
80. Crowley, T. J., 2000. Causes of climate change over the last 1000 years. *Science* 289, 270-277.
81. Crowley, T. J., 2000. CLIMAP SSTs re-revisited, *Climate Dynamics* 16, 241-245.
82. Crowley, T.J., and Lowery, T.S., 2000. How warm was the Medieval warm period? *Ambio* 29, 51-54.
83. Hyde, W.T., and Crowley, T.J., 2000. Probability of future climatically significant volcanic eruptions, *Journal of Climate*, 13, 1445-1450.

84. Hyde, W.T., Crowley, T.J., Baum, S.K., and Peltier, R.D., 2000. Neoproterozoic "Snowball Earth" simulations with a coupled climate/ice sheet model. *Nature*, 405, 425-430.
85. Kim, S.-J., and Crowley, T.J., 2000. Increased Pliocene North Atlantic Deep Water – Cause or consequence of Pliocene warming? *Paleoceanography*, 15, 451-455.
86. Montoya, M., H. von Storch, and T. J. Crowley, 2000. Climate simulation for 125,000 years ago with a coupled ocean-atmosphere general circulation model, *Journal of Climate*, 13, 1057-1072.
87. Crowley, T.J., Hyde, W. T., and Peltier, 2001. W. R., CO₂ levels required for deglaciation of a "near-snowball" Earth, *Geophysical Research Letters*, 28, 283-286.
88. Baum, S.K., and T.J. Crowley, 2001. GCM response to Late Precambrian (~600 Ma) glaciation. *Geophysical Research Letters*, 28, 583-586.
89. Crowley, T.J., and Berner, R.A., 2001. CO₂ and climate change. *Science (Perspectives)*, 292, 780-781.
90. Sloan, L.S., Huber, M., Crowley, T.J., Sewall, J., Baum, S.K., and Ewing, A., 2001. Effect of sea surface temperature configurations on model simulations of "equable" climate in the Early Eocene. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 167, 321-335.
91. Crowley, T.J., 2002. Cycles, cycles everywhere, *Science (Perspectives)*, 295, 1473-1474.
92. Hyde, W.T., and Crowley, T.J., 2002, Stochastic forcing of Pleistocene ice sheets: Implications for the origin of millennial-scale climate oscillations. *Paleoceanography* 17 (no. 4, 19-1 to 19-8), 1067, doi:10.1029/2001PA000669, 2002.
93. Hegerl, G.C., T.J. Crowley, S.K. Baum, K.-Y. Kim, and W.T. Hyde, 2003, Detection of volcanic, solar, and greenhouse signals in paleo-reconstructions of Northern Hemisphere temperature, *Geophysical Research Letters*, 30 (no. 5, 46-1 to 46-4), 1242, doi:10.1029/2002GL0166335, 2003.
94. Crowley, T.J., S.K. Baum, K.-Y. Kim, G.C. Hegerl, and W.T. Hyde, 2003, Modeling ocean heat content changes during the last millennium, *Geophysical Research Letters*, 30 (no. 18, CLM 3-1 to 3-4), 1932, doi:10.1029/2003GL017801, 2003.
95. Baum, S.K., and T.J. Crowley, 2003, The snow/ice instability as a mechanism for rapid climate change: A Neoproterozoic Snowball Earth model example, *Geophysical Research Letters*, 30 (no. 20, CLM 1-1 to 1-4), 2030, doi:10.1029/2003GL017333, 2003.

96. Mann, M., C. Amman, R. Bradley, K. Briffa, P. Jones, T. Osborn, T. Crowley, M. Hughes, M. Oppenheimer, J. Overpeck, S. Rutherford, K. Trenberth, and T. Wigley, 2003, On past temperatures and anomalous late-20th century warmth, *Eos (Forum)*, 84, 256-258.
97. Weber, S.L., T.J. Crowley, G. van der Schrier, 2004, Solar irradiance forcing of centennial climate variability: Linear and nonlinear responses in a coupled model. *Climate Dynamics*, 22, 539-552.
98. Ballantyne, A.P., M. Lavine, T.J. Crowley, P. Baker, 2005, Meta-analysis of tropical surface temperatures during the Last Glacial Maximum, *Geophysical Research Letters*, L05712, doi:10.1029/2004GL021217.
99. Goosse, H., T.J. Crowley, E. Zorita, C.M. Amman, H. Renssen, E. Driesschart, 2005, Modelling the climate of the last millennium: What causes the differences between simulations?, *Geophysical Research Letters*, 32, L06710, doi:10.1029/2005GL022368.
100. IDAG (International Ad Hoc Detection and Attribution Group); T. Barnett, T. Crowley, N. Gillett, K. Hasselmann, G. Hegerl, P. Jones, J. Kiehl, B. Santer, R. Schnur, K. Taylor, S. Tett, P. Stott, and F. Zwiers), 2005, Detecting and attributing external influences on the climate system: A review of recent advances. *Journal of Climate*, 18, 1291-1314.
101. Hegerl, G.C., T.J. Crowley, W.T. Hyde, and D. Frame, 2006, Constraints on climate sensitivity from temperature reconstructions of the last millennium, *Nature*, 440, 1029-1032.
102. Hyde, W.T., E.L. Grossman, T.J. Crowley, D. Pollard, and C.R. Scotese, 2006, Siberian glaciation as a constraint on Permo-Carboniferous CO₂ levels. *Geology*, 34, 421-424.
103. Quinn T. M., F. W. Taylor, T. J. Crowley, 2006. Coral-based climate variability in the Western Pacific Warm Pool since 1867, *J. Geophys. Res.*, 111, C11006, doi:10.1029/2005JC003243.
104. Slott, J. M., A. B. Murray, A. D. Ashton, and T. J. Crowley, 2006. Coastline responses to changing storm patterns, *Geophys. Res. Lett.*, 33, L18404, doi:10.1029/2006GL027445.
105. Hegerl, G.C., T.J.Crowley, M. Allen, W.T. Hyde, H. Pollack, J. Smerdon, and E. Zorita, 2007. Detecting anthropogenic warming in a new 1500 yr climate reconstruction with high variability, *Journal of Climate*, 20, 650-666.

106. Tett., S.F.B., R. Betts, T.J. Crowley, J. Gregory, T.C. Johns, A. Jones, T.J. Osborn, E. Ostrom, D.L. Roberts, M.J. Woodage, 2007. The impact of natural and anthropogenic forcing on climate and hydrology since 1550, *Climate Dynamics*, 28, 3-34.
107. Kim, S.J., T.J. Crowley, D.J. Erickson, B. Govindaswamy, P.B. Duffy, and B.-Y. Lee, 2008. High resolution climate simulation of the last glacial maximum, *Climate Dynamics*, 31, 1-16.
108. Crowley, T.J., and W.T. Hyde, 2008. Transient nature of late-Pleistocene climate change. *Nature*, 456, 226-230.

Books

109. Crowley, T. J. and G. R. North, 1991. *Paleoclimatology*, Oxford University Press, New York, 339 pp. (republished in softbound with an addendum, 1996).
110. Crowley, T. J. and K. C. Burke (Eds.), 1998. *Tectonic Boundary Conditions for Climate Reconstructions*, Oxford University Press, 285 pp.

Book Chapters

111. McIntyre, A., N. Kipp, with A. W. H. Bé, T. J. Crowley, T. Kellogg, J. V. Gardner, W. Prell, and W. F. Ruddiman, 1976. The glacial North Atlantic 18,000 years ago: A CLIMAP reconstruction. In: *Investigations of Late Quaternary Paleoceanography and Paleoclimatology*, R. M. Cline and J. D. Hays (Eds.), Geological Society of America Memoir 145, 45-76.
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113. Crowley, T. J., 1988. Paleoclimate modelling. In: *Physically-Based Modelling and Simulation of Climate and Climate Change*, M. E. Schlesinger (Ed.), D. Reidel, Dordrecht, The Netherlands, pp. 883-949.
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125. Crowley, T.J., 2008, Climate change, causes, in V. Gornitz (Ed.), *Encyclopedia of Palaeoclimatology and Ancient Environments*, Kluwer, Dordrecht, The Netherlands, pp 164-173.

Edited Issues

126. Crowley, T. J. (Guest Editor), 1990. Paleo-Ocean Modeling, special issue, *Paleoceanography* 5, 297-457.

Submitted

127. Crowley, T.J., B. Vinther, E. Castellano, and R. Udisti, A reconstruction of global volcanism for the last 6000 years (*Quaternary Science Reviews*).

In Preparation

128. Crowley, T.J., G. Zielinski, R. Udisti, K. Kreutz, W. Hyde, E. Castellano, Direct calibration of ice core sulphate data with Mt. Pinatubo satellite aerosol optical depth estimates (to be submitted to *Climate Dynamics*).
129. Unterman, M., T.J. Crowley, K. Hodges, S.-J. Kim, and D. Erickson, Paleometeorology: Visualizing ice-age dynamics at the synoptic level. (to be submitted to *Earth Interactions*).

Technical Reports

- Crowley, T. J., and M. K. Howard, 1990. Testing the sun-climate connection with paleoclimate data, *Climate Impact of Solar Variability*, K. H. Schatten and A. Arking (Eds.), NASA Conference Publication 3086, pp. 81-89, NASA/GSFC, Greenbelt, Md.
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Additional Contributions (letters, replies, comments, etc)

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- Crowley, T.J., 2001. Global cooperation, *New York Times (Letters)*, Oct. 31.
- Crowley, T.J., 2003. When did global warming start? (Invited commentary on article by W.F. Ruddiman), *Climate Change*. 61, 259-260.
- Crowley, T.J., 2005. Raising the ante on the greenhouse climate debate. Forum piece, *EOS* (Trans. Amer. Geophys. Union), v.86 (July 12), p. 262.
- Crowley, T.J., 2005. Climate changes mirror global warming. *The Herald Sun* (Durham, N.C.), (Dec. 28), Editorial page "Other Voices" contribution.
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- Crowley, T.J., 2008. Response to “Climate chaos is inevitable”. Letter, *The Guardian* (17 June).
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Reviews of Books and Journals

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- Ghazi, A. (Ed.), Paleoclimatic Research and Models, D. Reidel Pub. Co., 205 pp. *Science* 227, 745-746 (1985).
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- Bradley, R. S., and P. D. Jones, 1992, Climate Since A.D. 1500, Routledge, 679 pp., *Dynamics of Atmosphere and Oceans*, (1993).
- Trenberth, K., (Ed.), 1992, Climate System Modeling, Cambridge University Press, 788 pp., *Global and Planetary Change*, 9, 309-310 (1994).
- Diaz, H. and V. Markgraf, (Eds.), El Nino (Historical and Paleoclimatic Aspects of the Southern Oscillation), Cambridge University Press, 476 pp., *Dynamics of Atmospheres and Oceans*, (1993).
- Allen, J. R. L., B. J. Hoskins, B. W. Sellwood, R. A. Spicer and P. J. Valdes, (Eds.), 1994, Palaeoclimates and their Modelling, Chapman & Hall, London, 140 pp., *Sedimentary Geology* (1994).
- Moore, T. G., 1999, Climate of Fear (Why We Shouldn't Worry About Global Warming), Cato Institute Press, *Climatic Change*, 42, 475-483.
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- Weart, S.R., 2003, The Discovery of Global Warming, Harvard Univ. Press, *Science*, 304, 685-686 (2004).

Presentations (excluding workshops) * = number of presentations

Abdul Salaam Center for Theoretical Physics – 2nd International conference on Regional Climate Change

American Association for the Advancement of Science (Washington, DC briefing)

American Association of Petroleum Geologists

American Geophysical Union (38)*

American Meteorological Society Annual Meeting (5)*

James Baker School of Public Policy, Rice University

University of Bern, Switzerland

University of Bremen

University of California - Santa Cruz

Chapman Conference on the Carbon Cycle

University of Chicago

Dahlem Conference on Past Climates

Dalhousie University

Duke University

European Geophysical Society

University of East Anglia

University of Edinburgh

Exxon-Mobil Research Center

University of Florence

Free University of Berlin

Geological Society of America Annual Meeting (9)*

Geological Society of London (200th Anniversary Symposium)

German Institute for Coastal Research (GKSS), Lauenberg, Germany

Gordon Conference on Radiation and Climate

Hadley Centre for Climate Studies (2)

University of Hamburg

Harvard University

Heat Transfer Research Institute

University of Houston

Second International Conference on Micropaleontology

International Conferences on Paleoceanography (3)*

International Glaciological Society Annual Meeting

International Meeting on High Level Radioactive Waste Management

International Quaternary Association (2)*

University of Kiel (2)*

Lamont Doherty Earth Observatory (3)*

Lawrence Livermore National Laboratory

Les Houches Lecture Series on Climate Change

Marine Geological Institute (GEOMAR) Kiel, Germany

Massachusetts Institute of Technology

Max Planck Institut für Meteorologie (11)*

University of Michigan (2)

Presentations (continued)

University of Minnesota
University of Missouri – St. Louis
NASA/Goddard Space Flight Center (2)*
NATO Meetings (3)*
NOAA/Geophysical Fluid Dynamics Laboratory
National Center for Atmospheric Research (2)
Nils Bohr Institute
Fifth North American Paleontological Convention
University of North Carolina (Ecology, Geology)
Northwestern University (2)*
Ohio State University
Potsdam Institute for Climate Studies (PIK)
Rice University (2)*
Royal Dutch Meteorological Institute
Royal Swedish Academy of Sciences (symposium on past climates)
Univ. of South Florida
Scottish Alliance for Marine Sciences
St. Louis University
Swiss Global Change Day (2004)
Swiss NCCR Climate Summer School, August 2005, Grindelwald,
Texas A&M University (12)*
U.S. Congress, House Subcommittee on Energy and Commerce (July 19, 2006)
University of Southern California
University of South Florida
University of Texas - Arlington (2)*
University of Texas (3)*
University of Virginia
University of Washington
U.S. Congress, House Subcommittee on Energy hearing.
U. S. Global Change Research Program Capitol Hill Briefings (2)
Washington University in St. Louis
University of Wisconsin (2)
Woods Hole Oceanographic Institution (4)
Yale University (2)

Courses Taught (and number of times)

Brown University (as graduate student):

Oceanography (1)

U. S. Navy/Chapman College PACE Program
(Program for Afloat College Education):

Oceanography (4)

Physical Geology (4)

Algebra (4)

University of Missouri - St. Louis:

Physical Geology (5)

Historical Geology (4)

Oceanography (3)

Texas A&M University:

Climate Change (1)

Paleoclimatology (2)

Oceanography (1)

Global Change (3)

Decadal Climate Change (1)

Duke University

Climate Change (3)

Paleoclimatology (1)

Coastal Response to (1)

Sea Level Rise

Climate System (2)

Adv. Topics in (1)

Paleoclimatology

Global Warming (1)

Climate Change Policy (1)

Graduate students supervised:

Chenxin Li (1999-2000)

Amy Bratcher (2000)

Junhua Liu (2002-2008) -- S. Pacific climate/paleoclimate studies

S. Obrochta (2004-2008) -- millennial variability in marine cores

M. Untermann (2004-2009) -- high resolution modeling of the last ice age

University Committees (useful)

Duke University Committee on Appointment, Tenure, and Promotion (2003-2006)

GRANTS AND CONTRACTS AWARDED

NSF-Climate Dynamics ATM-8722145	2/88-5/90	\$146,826
"Paleoclimate experiments with a Seasonal Climate Model"		
NSF-Climate Dynamics ATM-9002808	6/90-11/93	\$312,503
"Paleoclimate experiments with a Seasonal Climate Model"		
NSF-Marine Geology and Geophysics Program OCE-911579;OCE-9396279	11/91-4/94	\$100,038
"Effect of Cenozoic Ocean Gateway Changes on the Ocean Circulation"		
NSF-Solar Terrestrial Program ATM-9115507; ATM-9496001	12/91-5/95	\$110,000
"Testing the sun-climate connection with Paleoclimate data and models"		
Battelle Pacific Northwest Laboratory 017113-A-B1	6/90-2/93	\$232,156
"Global Atmospheric Modeling" (Co-PI with G. North)		
Battelle Pacific Northwest Laboratory 88484-A-B1	4/93-9/93	\$62,302
"Global Atmospheric Modeling"		
NSF-Climate Dynamics ATM-9224833; ATM-9396320	6/93-5/96	\$328,169
"Climate Change on Tectonic Time Scales"		
NOAA - Climate and Global Change Program NA36GP0546	10/93-9/95	\$54,863
"Little Ice Age Coral Records from the Tropical South Pacific"		

National Institute for Global Environmental Change (NIGEC)/DOE TUL-033-95/96	9/95-8/98	\$212,839
"Utilizing Paleoclimate Data to Constrain System Response to Carbon Dioxide Increases"		
NSF-Climate Dynamics ATM-9529109	5/96-4/99	\$345,000
"Comparative Study of Phanerozoic Glaciations"		
NSF-Climate Dynamics SC96191-A (Co-PI with L. Sloan, UC-Santa Cruz)	8/96-7/98	\$19,369
"Investigating a Possible New Source of Modeling Error for Estimates of Continental Surface Temperatures in Paleoclimate Studies (subcontract to The University of California-Santa Cruz)"		
NSF-Antarctic Sciences (Geology) OPP-9615011	1/97-12/99	\$224,921
"Modeling Paleozoic glaciations"		
NSF-Marine Geology OCE-9616977	2/97-1/00	\$202,900
"Modeling late Cenozoic changes in the ocean circulation"		
NOAA - Climate and Global Change Program GC96-075A	6/97-5/99	\$45,755
"Calibration of western South Pacific coral isotope records"		
NSF - Earth System History Program ESH-9700373	9/15/97-8/31/99	\$71,826
"History of the core of the Western Pacific Warm Pool"		
NSF - Paleoclimatology Program ATM-9817560	5//01/99-4/30/03	\$530,000
"Comparative study of Phanerozoic climates"		

NOAA Office of Global Change NA96GP0415	9/01/99-8/31/02	\$325,929
“Seasonal model and detection studies of climate change over the last six centuries”		
NSF-Antarctic Geosciences OPP-9909187	1/01/00-12/31/02	\$215,000
“Modeling Pre-Pleistocene Glaciations” (with W. Hyde)		
NSF-Paleoclimatology (ATM-000545)	8/1/00-7/31/02	\$103,100
"A Partnership in Modeling Earth System History" (TAMU and Duke subcontracts of larger project, funded through Penn State, E. Barron, PI)		
NOAA Office of Global Change	01/01/03-12/31/05	\$330,000
“Seasonal model and detection studies of climate change over the last millennium”		
Joint Oceanographic Institutions	06/01/05-08/31/06	\$ 20,863
Steven Obrochta Thomas Crowley		
“Millennial Scale Variability and Heinrich Events During the Penultimate Glaciation” (support for graduate student)		
NSF-Biocomplexity	07/01/05-06/30/10	\$ 36,000
“Coupling Human and Natural Influences on Coastline Evolution as Climate Changes” (TC component of support in a \$1.2 million grant to A.B. Murray et al (Duke)		
NSF-Climate Dynamics	06/01/07-12/31/07	\$36,060
“South Pacific SST Oscillations and Climate”		