

Kira Trillium Lawrence

*Lafayette College, Department of Geology and Environmental Geosciences,
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EDUCATION

Brown University, Providence, RI

- Ph.D., Geological Sciences (May 2006)
Thesis Title: Characterizing the Plio-Pleistocene Evolution of Sea Surface Conditions Using the Alkenone Organic Proxy
Advisor: Dr. Timothy Herbert, Paleoclimatology and Paleoceanography
- M.Sc. Geological Sciences (May 2003)
Thesis: No Significant Late Quaternary Sea Surface Warming in the Western Coral Sea: Implications for the Growth of the Australian Great Barrier Reef

University of California - Santa Cruz, Santa Cruz, CA

- M.S. Earth Sciences (August 2001)
Thesis: Terrestrial Climatic Response to Precessional Orbital Forcing in the Eocene
Advisor: Dr. Lisa C. Sloan, Paleoclimatology

Dartmouth College, Hanover, NH

- A.B. Earth Sciences, Summa Cum Laude (June 1996)
Honors Thesis: An Analysis of Factors Influencing Pixel Brightness Values in Satellite Imagery
Advisor: Dr. Richard W. Birnie, Remote Sensing

PROFESSIONAL EXPERIENCE

Lafayette College, Department of Geology and Environmental Geosciences

- Assistant Professor (2006–present)
- Courses Taught: Geology 115 – Earth’s Climate: Past, Present, and Future; Geology 205 – Oceanography; VAST290 Seminar – Climate Change: The Facts, The Issue and The Long-Term View; Geology 315 – Paleoclimatology and Paleoceanography

Brown University, Department of Geological Sciences

- Teaching & Research Assistant (2001–2006)
- Lab Instructor: Earth System History; Sedimentology and Stratigraphy; Estuarine Oceanography

University of California - Santa Cruz, Earth Sciences Department

- Teaching & Research Assistant (1999–2001)
- Lab Instructor: Geomorphology; Sedimentology and Stratigraphy

The Woods Hole Research Center, Woods Hole, MA

- Research Assistant (1997–1999)

Worcester Academy, Worcester, MA

- Faculty Member, Athletic Coach (1996–1997)
- Courses Taught: Earth Science; Pre-Algebra

US Geologic Survey, Reston, VA

- NAGT Intern (Summer 1996)

Dartmouth College, Earth Sciences Department

- Undergraduate Teaching and Research Assistant (1995–1996)
- Lab Assistant: Introduction to Earth Sciences

Dartmouth College, Physics Department

- Undergraduate Curriculum Assistant (1993–1994)

RESEARCH INTERESTS

Paleoclimatology and Paleoceanography, Earth Systems History, Influence of Milankovitch Cycles on Late Cenozoic Climate, Glaciation of the Northern Hemisphere, Alkenone Paleothermometry, Past Ocean Productivity.

HONORS AND AWARDS

- Finalist for the Lafayette College Student Government Superior Teaching Award (2006-2007)
- Sigma Xi Outstanding Graduate Student Award (Spring 2006)
- Brown University Dissertation Fellowship (Spring 2006)
- Brown University Presidential Award for Excellence in Teaching—*awarded annually to two Brown Graduate Students* (2005)
- Brown University Sheridan Center for Teaching in Higher Education Academic Teaching Certificate (2005)
- Gretchen L. Blechschmidt Award—*awarded annually by GSA to one female student pursuing a research project in biostratigraphy and/or paleoceanography* (2004)
- Geological Society of America Outstanding Student Research Award (2004)
- National Science Foundation Fellow (2000-2003)
- UC Santa Cruz Earth Science Department Outstanding TA Award (1999-2000)
- Honorable Mention National Science Foundation Fellowship (1999)
- Dartmouth College Chapter of Phi Beta Kappa (1996)
- Dartmouth College Department of Earth Sciences High Honors (1996)
- New Hampshire NASA Space Grant Fellow (1996)
- Dartmouth Women's Basketball Larry Levitt Leadership Award (1994, 1996)

RESEARCH GRANTS

- National Science Foundation OCE-0623310 (October 2006 – October 2009) “*High Latitude Temperature and Biological Responses to Plio-Pleistocene Global Change*” (\$96,660).
- Geological Society of America Research Grant (2004) Grant#: 7725-04 “*Evolution of Pliocene Atlantic Meridional Temperature Gradients.*” \$2500
- Evolving Earth Foundation Student Research Grant (2003) “*The Pliocene Climate Transition: A North Atlantic Perspective.*” \$3000
- Geological Society of America Research Grant (2003) Grant#: 7447-03 “*Evolution of Sea Surface Temperatures in the Eastern Equatorial Pacific During the Pliocene Climate Transition.*” \$2500

PUBLICATIONS (PEER-REVIEWED):

Lawrence, K.T., Herbert, T.D., Brown, C.M., Raymo, M.E. and A.M. Haywood (*in prep for submission to Paleooceanography*). High Amplitude Variations in North Atlantic Sea Surface Temperature during the Early Pliocene Warm Period.

Caissie, B.E., Brigham-Grette, J., **Lawrence, K.T.** and T.D. Herbert. (*in prep for submission to Paleooceanography*). Deglaciation to Holocene Sea Surface Conditions at Umnak Plateau, Bearing Sea as Inferred by Diatom, Alkenone and Stable Isotope Records.

Ruggieri, E., Herbert, T.D., **Lawrence, K.T.** and C.E. Lawrence (*submitted to Paleooceanography November 2007*) The Change Point Method for Detecting Regime Shifts in Paleoclimatic Time Series: Application to Plio-Pleistocene.

Lawrence, K.T., T.D. Herbert, P.S. Dekens, and A.C. Ravelo. 2007. The Application of Alkenone Paleothermometry to the Study of Plio-Pleistocene Climate. In Williams, M., Haywood, A.M., Gregory F.J. and D.N. Schmidt (eds) “*Deep Time Perspectives on Climate Change: Marrying the Signal from Computer Models and Biological Proxies.*” The Micropalaeontological Society Special Publications. The Geological Society, London, 539-562.

Ravelo, A.C., K. Billups, P.S. Dekens, T.D. Herbert, & **K.T. Lawrence**. 2007. Onto the Ice Ages: Proxy Evidence for the onset of Northern Hemisphere Glaciation. In Williams, M., Haywood, A.M., Gregory F.J. and D.N. Schmidt (eds) “*Deep Time Perspectives on Climate Change: Marrying the Signal from Computer Models and Biological Proxies.*” The Micropalaeontological Society Special Publications. The Geological Society, London, 563-573.

Lawrence, K.T., Z. Liu, and T.D. Herbert. 2006. Evolution of the Eastern Tropical Pacific Through Plio-Pleistocene Glaciation. *Science*, 312:79-83.

Lawrence, K.T., and T.D. Herbert. 2005. Late Quaternary Sea Surface Temperatures in the Western Coral Sea: Implications for the Growth of the Australian Great Barrier Reef. *Geology*, 33: 677-680.

Lawrence, K.T., L.C. Sloan, and J.O. Sewall. 2003. Terrestrial climatic response to precessional orbital forcing in the Eocene. In Wing, S.L., Gingerich, P.D., Schmitz, B., and Thomas, E. ed., *GSA Special Paper 369: Causes and Consequences of Globally Warm Climates in the Early Paleogene* 65-77.

Houghton, R.A., **K.T. Lawrence**, J.L. Hackler, and S. Brown. 2001. The spatial distribution of forest biomass in the Brazilian Amazon: a comparison of estimates. *Global Change Biology*, 7: 731-746.

Houghton, R.A., J.L. Hackler, and **K.T. Lawrence**. 2000. Changes in terrestrial carbon storage in the United States. 2: The role of fire and fire management. *Global Ecology and Biogeography*, 9:145-170.

Houghton, R.A., D.L. Skole, C.A. Nobre, J.L. Hackler, **K.T. Lawrence**, and W.H. Chomentowski. 2000. Annual fluxes of carbon from deforestation and regrowth in the Brazilian Amazon. *Nature*, 403:301-304.

Houghton, R.A., J.L. Hackler, and **K.T. Lawrence**. 1999. The US carbon budget: contributions from land-use change. *Science*, 285:574-578.

OTHER PUBLICATIONS AND PRESENTATIONS

Lawrence, K.T., Cleaveland, LC, Mulligan, AB, and T.D. Herbert. 2007, INVITED - Zonal and Meridional Sea Surface Temperature Gradients and Orbital Variability During the Plio-Pleistocene Transition. *Eos, Transactions, American Geophysical Union*, 88 (52), *Fall Meeting Supplement, Abstract PP51E-02*.

Herbert, T.D., Cleaveland, LC, Liu, Z. and **K.T. Lawrence**. 2007. Synchronization of Glacial-Interglacial SST changes in the Tropical Oceans: Evidence for Amplification of Climate Sensitivity by Carbon Dioxide Over the Past 2.7Ma. *Eos, Transactions, American Geophysical Union*, 88 (52), *Fall Meeting Supplement, Abstract U51B-07*.

Lawrence, K.T. December 2007. Into the Icehouse: Northern Hemisphere Glaciation Sea Surface Perspective. Invited talk Scripps Institute of Oceanography, La Jolla, California.

Lawrence, K.T. September 2007. Into the Icehouse: What Ocean Algae Tell Us About the Glaciation of the Northern Hemisphere. Invited talk, Department of Biology Bioconnections Series, Lafayette College, Easton, PA.

Lawrence, K.T. May 2007. North Atlantic Sea Surface Conditions During the Plio-Pleistocene Transition: High Variability, Dramatic Cooling, and Crashing Productivity. Invited talk Geochemistry Group, Rutgers University, New Brunswick, NJ.

Lawrence, K.T., T.D. Herbert, and Z. Liu. 2006. INVITED - Evolution of the Eastern Tropical Pacific Through Plio-Pleistocene Glaciation. *Eos, Transactions, American Geophysical Union*, 87 (52), *Fall Meeting Supplement, Abstract PP12A-02*.

Lawrence, K.T., T.D. Herbert, C.M. Brown, M.E. Raymo, and A.M. Haywood. 2006. North Atlantic Sea Surface Conditions During the Plio-Pleistocene Transition: High Variability, Dramatic Cooling, and Crashing Productivity. *Eos, Transactions, American Geophysical Union*, 87 (52), *Fall Meeting Supplement, Abstract PP31A-1721*.

Cassie, B.E., J. Brigham-Grette, **K.T. Lawrence**, and M.S. Cook. 2006. Rising Temperatures, Shrinking Ice: The Deglaciation in the Bering Sea Based on Diatoms, Alkenones, and Oxygen Isotopes. *Institute of Arctic and Alpine Research (INSTAAR) 36th International Arctic Workshop, Programs and Abstracts*, p.44-46.

M.M. Robinson, H.J. Dowsett, G.S. Dwyer, and **K.T. Lawrence**. 2006. Mid-Pliocene Sea Surface Temperature Estimation Using Multiple Proxies. *Eos, Transactions, American Geophysical Union*, 87 (52), *Fall Meeting Supplement, Abstract PP12A-02*.

Cassie, B.E., J. Brigham-Grette, **K.T. Lawrence**, and M.S. Cook. 2006. Rising Temperatures, Shrinking Ice: The Deglaciation in the Bering Sea Based on Diatoms, Alkenones, and Oxygen Isotopes. *Institute of Arctic and Alpine Research (INSTAAR) 36th International Arctic Workshop, Programs and Abstracts*, p.44-46.

Lawrence, K.T., L.C. Cleaveland, A.B. Mulligan, and T.D. Herbert. 2005. Plio-Pleistocene Ocean Productivity: A Story of Interbasin Symmetry. *Eos, Transactions, American Geophysical Union*, 86 (52), *Fall Meeting Supplement, Abstract PP34B-06*.

Lawrence, K.T., Z. Liu, L.C. Cleaveland, T.D. Herbert and M.E. Raymo. 2005. A Spatial Perspective on Plio-Pleistocene Ocean Cooling. *GSA Earth System Processes 2, Conference Volume, Abstract 50-4*.

Lawrence, K.T., Z. Liu, T.D. Herbert, and M.E. Raymo. 2005. High and Low Latitude Linkages During the Plio-Pleistocene Transition. *Northeast GSA Abstracts with Programs 37 (1). Abstract 82159*.

Lawrence K.T., Z. Liu, and T.D. Herbert. 2004. High Latitude and Tropical Climates Linked Prior to the Onset of Northern Hemisphere Glaciation: Evidence From the Eastern Tropical Pacific *Eos, Transactions, American Geophysical Union*, 85 (47), *Fall Meeting Supplement, Abstract PP23A-1397*.

Lawrence K.T., Z. Liu, and T.D. Herbert. 2004. High Latitude and Tropical Climates Linked Before the Onset of Northern Hemisphere Glaciation. Presented at a meeting on "The Pliocene Paradox", GFDL, Forrestal Campus, Princeton University.

Lawrence, K.T., Z. Liu, and T.D. Herbert. 2003. A Tropical Climate Puzzle: Plio-Pleistocene Obliquity-Dominated Temperature and Productivity Records From the Eastern Equatorial Pacific. *Eos, Transactions, American Geophysical Union*, 84 (46), *Fall Meeting Supplement, Abstract U12B-04*.

Lawrence, K.T. and T.D. Herbert. 2003. Evolution of Eastern Equatorial Pacific Sea Surface Temperatures During The Pliocene Climate Transition. *GSA Abstracts with Programs Volume 35 (6)*.

Lawrence, K.T., L.C. Sloan and J.O. Sewall. 2001. Eocene Terrestrial Climatic Response to Precessional Orbital Forcing: Implications for Interpretation of the Geological Record. *Climate and Biota of the Early Paleogene Abstract Volume 1*: 56.

Lawrence, K.T., L.C. Sloan, and J.O. Sewall. 2000. Terrestrial Climatic Response to Topographic and Orbital Forcing in the Eocene. *Eos, Transactions, American Geophysical Union, 81 (48), Fall Meeting Supplement, Abstract OS11C-03*.

Lawrence, K.T. 1998. The Warming of the Earth – A Beginner’s Guide to Understanding the Issue of Global Warming.
<http://www.whrc.org/globalwarming/warmingearth.htm>

ACADEMIC SERVICE

- Co Chair American Geophysical Union Session “The Pliocene Warm Interval: A Test Bed for Future Warming” AGU Fall Meeting 2007, San Francisco, CA.
- Member Lafayette College Faculty Committee on Athletics (2007-2008)
- Referee for: Marine Geology, The Micropalaeontological Society, The National Science Foundation, National Environmental Research Council (UK)
- Lafayette College Geology Department Graduate School Advisor
- Organizer of Brown University Geological Sciences Graduate Professional Development Seminars (2004-2006)
- Reader for Brown University Undergraduate Honors Theses
- Graduate Student Representative to Brown University Geological Sciences faculty meetings (2003-05)
- Organizer of Brown University Earth System History Lunch Seminar Series (Spring 2002)

PROFESSIONAL MEMBERSHIPS

- Geological Society of America (2001- Present)
- American Geophysical Union (1999 - Present)
- Sigma Xi Scientific Research Society (1996 - Present)