

Curriculum Vita

Greg Michalski

Residence: 834 Main St, A, Lafayette, IN. 47901

University Address: Department of Earth and Atmospheric Sciences, Purdue University
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Education

1998 B.S. Environmental Chemistry, University of California, San Diego
2001 M.S. Chemistry, University of California, San Diego
2003 Ph.D., Chemistry, University of California, San Diego

Positions held

2011-present Associate Professor, Purdue University
2005- 2011 Assistant Professor, Purdue University
2003-2005 Post Doctoral Research Chemist, University of California, San Diego
1998-2003 Research/Teaching assistant, University of California, San Diego
1998-1999 Teaching assistant, University of California, San Diego

Research Interests

Stable isotope geochemistry, Physical Chemistry of Isotope Fractionations, Paleoclimatology, Isotopes in Atmospheric Chemistry, Evolution of Planetary Atmospheres, Global Nitrogen, Sulfur and Carbon Cycling, Desert Paleosols as Paleoclimate Proxies.

Peer reviewed Papers, Chapters and Reports.

Walters W.W., H. Fang, and G. Michalski. (2018) Summertime diurnal variations in the isotopic composition of atmospheric nitrogen dioxide at a small midwestern United States city. *Atmospheric Environment*. Volume 179, Pages 1–11
<https://doi.org/10.1016/j.atmosenv.2018.01.047>

Wang, F., B. Bowen, J. Soe., and G. Michalski (2018), Laboratory and field characterization of visible to near-infrared spectral reflectance of nitrate minerals from the Atacama Desert, Chile, and implications for Mars. *American Mineralogist*, Volume 103, pages 197–206

Wang, F., G. Michalski, H. Luo, and M. Caffee (2017), Role of biological soil crusts in affecting soil evolution and salt geochemistry in hyper-arid Atacama Desert, Chile, *Geoderma*, 307, 54-64, doi:10.1016/j.geoderma.2017.07.035.

Soomro, F., T. Rafique, G. Michalski, S. A. Ali, S. Naseem, and M. U. Khan (2017), Occurrence and delineation of high nitrate contamination in the groundwater of Mithi sub-district, Thar Desert, Pakistan, *Environmental Earth Sciences*, 76(10), doi:10.1007/s12665-017-6663-0.

- Xia, X. H., T. Liu, Z. F. Yang, G. Michalski, S. D. Liu, Z. M. Jia, and S. Zhang (2017), Enhanced nitrogen loss from rivers through coupled nitrification-denitrification caused by suspended sediment, *Science of the Total Environment*, 579, 47-59, doi:10.1016/j.scitotenv.2016.10.181.
- Walters, W. W., and G. Michalski (2016), Ab initio study of nitrogen and position-specific oxygen kinetic isotope effects in the $\text{NO} + \text{O}_3$ reaction, *Journal of Chemical Physics*, 145(22), doi:10.1063/1.4968562. (1 citation)
- X. Xinghui, T. Liu, Z. Yang, G. Michalski, S. Liu, Z. Jia, S. Zhang (2016) Enhanced nitrogen loss from rivers through coupled nitrification-denitrification caused by suspended sediment. *Sci. of the Total Envir.* (In Press), Corrected Proof, Available online 18 November 2016
- J.C. Chang . J. Shulmeister . C. Woodward, G. Michalski (2016) Can stable oxygen and hydrogen isotopes from Australian subfossil Chironomus head capsules be used as proxies for past temperature change? *J Paleolimnol* (In press, published online) DOI 10.1007/s10933-016-9920-4
- Y.Pan, S. Tian, D. Liu, Y. Fang, X. Zhu, Q. Zhang, B. Zheng, G. Michalski, and Y. Wang (2016) Fossil Fuel Combustion-Related Emissions Dominate Atmospheric Ammonia Sources during Severe Haze Episodes. *Envir. Sci. & Tech.*, 50 (15), 8049-8056
- R. A. Lybrand, J.G. Bockheim, W. Ge, R.C. Grahama, S.R. Hlohowskyj, G. Michalski, J.S. Prellwitz, J.A. Rech, F. Wang, D.R. Parker (2016) Nitrate, perchlorate, and iodate co-occur in coast and inland deserts on Earth. *Chemical Geology (In Press)*
<http://dx.doi.org/10.1016/j.chemgeo.2016.05.023>
- W.W. Walters, G. Michalski (2016) Theoretical calculation of oxygen equilibrium isotope fractionation factors involving various NO_y molecules, OH, and H_2O and its implications for isotope variations in atmospheric nitrate *Geochimica et Cosmochimica Acta*, 191, 89-101.
- W. B. Lyons, K. Deuerling, K. A. Welch, S. A. Welch, G. Michalski, W. W. Walters, U. Nielsen, D. H. Wall, I. Hogg & B. J. Adams (2016) The Soil Geochemistry in the Beardmore Glacier Region, Antarctica: Implications for Terrestrial Ecosystem. *Scientific Reports*, 6, Article number: 26189 doi:10.1038/srep26189
- Walters, W.W., Simonini, D.S. Michalski, G. Nitrogen isotope exchange between NO and NO_2 and its implications for $\delta^{15}\text{N}$ variations in tropospheric NO_x and atmospheric nitrate (2015) *Geophys. Res. Lettrs.*, 2016 Vol. 43, 440–448 DOI: 10.1002/2015GL066438
- Wang, F. Wensheng Ge, Hao Luo, Ji-Hye Seo, Greg Michalski Oxygen-17 anomaly in soil nitrate: A new precipitation proxy for desert landscapes (2015) *Earth and Planetary Sci. Letters*, vol. 438, Pages 103–111 2016
- Guerrieri R., Vangelova E. I., Michalski G., Heaton T. H. E. and Mencuccini M. (2015) Isotopic evidence for the occurrence of biological nitrification and nitrogen deposition processing in forest canopies. *Glob. Chang. Biol.* 21, 4613–4626.

- Michalski G., Kolanowski M. and Riha K. M. (2015) Oxygen and nitrogen isotopic composition of nitrate in commercial fertilizers, nitric acid, and reagent salts. *Isotopes Environ. Health Stud.* 51, 382–391.
- Walters W. W., Goodwin S. R. and Michalski G. (2015) Nitrogen Stable Isotope Composition ($\delta^{15}\text{N}$) of Vehicle-Emitted NO_x. *Environ. Sci. Technol.* 49, 2278–2285.
- Walters W. W. and Michalski G. (2015) Theoretical calculation of nitrogen isotope equilibrium exchange fractionation factors for various NO_y molecules. *Geochim. Cosmochim. Acta* 164, 284–297.
- Walters W. W., Tharp B. D., Fang H., Kozak B. J. and Michalski G. (2015) Nitrogen Isotope Composition of Thermally Produced NO_x from Various Fossil-Fuel Combustion Sources. *Environ. Sci. Technol.* 49, 11363–11371.
- Wang F., Michalski G., Seo J.-H., Granger D. E., Lifton N. and Caffee M. (2015) Beryllium-10 concentrations in the hyper-arid soils in the Atacama Desert, Chile: Implications for arid soil formation rates and El Niño driven changes in Pliocene precipitation. *Geochim. Cosmochim. Acta* 160, 227–242.
- Bhattacharya S.K., Savarino, J., Michalski, G. and Liang M.C. (2014) A new feature in the internal heavy isotope distribution in ozone. *J. Chem. Phys.*, 141(13)
- Hale, R. L., L. Turnbull, S. Earl, N. Grimm, K. Riha, G. Michalski, K. A. Lohse and D. Childers, Sources and Transport of Nitrogen in Arid Urban Watersheds, *Environ. Sci. Tech.*, 48(11), 6211-6219, 2014.
- Wang, F., G. Michalski, J. H. Seo and W. S. Ge, Geochemical, isotopic, and mineralogical constraints on atmospheric deposition in the hyper-arid Atacama Desert, Chile, *Geochim. Cosmochim. Acta*, 135, 29-48, 2014.
- Riha, K.M.**, G. Erika L. Gallo, E., Lohse, K.A., Brooks, P.D., and Meixner, T., High atmospheric nitrate and reduced nitrogen turnover in semi-arid urban catchments. *Ecosystems* 2014, 17(8), 1309-1325 (2014)
- Liu, T., F. Wang, G. Michalski, X. H. Xia and S. D. Liu, Using N-15, O-17, and O-18 To Determine Nitrate Sources in the Yellow River, China, *Environ. Sci. Tech.*, 47(23), 13412-13421, 2013.
- Lybrand, R. A., G. Michalski, R. C. Graham and D. R. Parker, The geochemical associations of nitrate and naturally formed perchlorate in the Mojave Desert, California, USA, *Geochim. Cosmochim. Acta*, 104(0), 136-147, 2013.
- Dejwakh, N. R., Meixner, T., Michalski, G., & McIntosh, J. (2012) Using ¹⁷O to Investigate Nitrate Sources and Sinks in a Semi-Arid Groundwater System *Environ. Sci. Tech.* 46, 745-751.
- Costa, A. W., Michalski, G., Schauer, A. J., Alexander, B., Steig, E. J., & Shepson, P. B. (2011) Analysis of atmospheric inputs of nitrate to a temperate forest ecosystem from $\Delta^{17}\text{O}$ isotope ratio measurements *Geophys. Res. Lett.* 38.

- *Michalski, G., S. Earman, **C. Dahman**, R. L. Hershey and T. Mihevc, Multiple isotope forensics of nitrate in a wild horse poisoning incident, *Forensic Science International*, 198(1-3), 103-109, 2010.
- *Michalski, G. and S. K. Bhattacharya, The role of symmetry in the mass independent isotope effect in ozone., *Proceedings of the National Academy of Sciences*, 106 (14), 5593-5496, 2009.
- *Michalski, G., Purification procedure for $\delta^{15}\text{N}$, $\delta^{18}\text{O}$, $\Delta^{17}\text{O}$ analysis of nitrate., *International Journal of Environmental Analytical Chemistry*, 89(6), 2009.
- *Hernandez-Ramirez, G., S. M. Brouder, D. R. Smith, G. E. Van Scoyoc and G. Michalski, Nitrous Oxide Production in an Eastern Corn Belt Soil: Sources and Redox Range, *Soil Science Society of America Journal*, 73(4), 1182-1191, 2009.
- *Michalski, G., **M. Kasem**, J. A. Rech, S. Adieu, W. S. Showers, B. Genna and M. Thiemens, Uncertainties in the oxygen isotopic composition of barium sulfate induced by coprecipitation of nitrate, *Rapid Communications in Mass Spectrometry*., 22(19), 2971-2976, 2008.
- *Earman, S., R. L. Hershey, G. Michalski, **C. Dahman** and T. Mihevc, Results and Discussion of Chemical Data from Samples Collected February 2008 at the Cactus Flat Watering Hole, Nevada Test and Training Range , *Desert Research Institute, Nevada System of Higher Education*, 2008.
- *Ewing, S. A., W. Yang, D. J. DePaolo, G. Michalski, C. Kendall, B. W. Stewart, M. Thiemens and R. Amundson, Non-biological fractionation of stable Ca isotopes in soils of the Atacama Desert, Chile, *Geochimica Cosmochimica Acta*, 72, 1096-1110, 2008.
- *Amundson, R., S. A. Ewing, G. Michalski, M. Thiemens, C. Kendall, K. Nishiizumi, C. McKay and G. Chong, The climatic and biotic thresholds on soil elemental cycling along an and to hyperarid rainfall gradient, *Geochimica Cosmochimica Acta*, 71, 22, 2007.
- *Ewing, S. A., G. Michalski, M. Thiemens, R. C. Quinn, J. L. Macalady, S. Kohl, S. D. Wankel, C. Kendall, C. P. McKay and R. Amundson, Rainfall limit of the N cycle on Earth, *Global Biogeochemical Cycles*, 21(3), 2007.
- *Michalski, G. and M. Thiemens, *The Use of Multi-Isotope Ratio Measurements as a New and Unique Technique to Resolve NO_x Transformation, Transport and Nitrate Deposition in Lake Tahoe.*, California Air Resources Board, 2007.
- *Rech, J. A., B. S. Currie, G. Michalski and A. M. Cowan, Neogene climate change and uplift in the Atacama Desert, Chile, *Geology*, 34(9), 761-764, 2006.
- *Jost, R., G. Michalski and M. Thiemens, Comparison of rovibronic density of asymmetric versus symmetric NO₂ isotopologues at dissociation threshold: Broken symmetry effects, *Journal of Chemical Physics*, 123(5), 2005.
- *Michalski, G., J. G. Bockheim, C. Kendall and M. Thiemens, Isotopic composition of Antarctic Dry Valley nitrate: Implications for NO_y sources and cycling in Antarctica, *Geophysical Research Letters*, 32(13), 2005.

- *Michalski, G., J. K. Böhlke and M. H. Thiemens, Long Term Atmospheric Deposition as the Source of Nitrate and Other Salts in the Atacama Desert, Chile: New Evidence from Mass-Independent Oxygen Isotopic Compositions, *Cosmochimica Acta*, 68, 4023-4038, 2004a.
- *Michalski, G., R. Jost, D. Sugny, M. Joyeux and M. Thiemens, Dissociation energies of six NO₂ isotopologues by laser induced fluorescence and zero point energy of some triatomic molecules, *Journal of Chemical Physics*, 121(15), 7153-7161, 2004b.
- Chang, C. C. Y., S. R. Silva, C. Kendall, G. Michalski, S. Wankel and K. L. Casciotti, Preparation and analysis of nitrogen-bearing compounds in water for stable isotope ratio measurement, in *Handbook of Stable Isotope Analytical Techniques*, v 1, edited by P. A. DeGroot, pp. 305-347, Elsevier, Amsterdam, 2004c.
- *Michalski, G., T. Meixner, M. Fenn, L. Hernandez, A. Sirulnik, E. Allen and M. Thiemens, Tracing atmospheric nitrate deposition in a complex semiarid ecosystem using $\Delta^{17}\text{O}$, *Environmental Science and Technology*, 38(7), 2175-2181, 2004d.
- *Michalski, G., Z. Scott, M. Kabling and M. Thiemens, First Measurements and Modeling of $\Delta^{17}\text{O}$ in Atmospheric Nitrate, *Geophysical Research Letters*, 30(16), (1870), 2003.
- *Michalski, G., J. Savarino, J. K. Böhlke and M. Thiemens, Determination of the total oxygen isotopic composition of nitrate and the calibration of a $\Delta^{17}\text{O}$ nitrate reference material, *Analytical Chemistry*, 74(19), 4989-4993, 2002.
- *Bao, H., G. M. Michalski and M. H. Thiemens, Sulfate oxygen-17 anomalies in desert varnishes *Geochimica Cosmochimica Acta*, 65(13), 2029-2036, 2001.

Book Chapter

Michalski, G., **Mase, D.** and Bhattacharya, S.K., Oxygen Isotopes in Atmospheric Nitrate. **Chapter** *Environmental Isotope Geochemistry Handbook*, Elsevier. (2010)

Current Funding

\$105,000 US Agency for International Development, National Academy of Sciences *Assessing the cause of groundwater nitrate pollution in Pakistan and the development of environmental chemistry research and curriculum at Abdul Wali Khan University*. PI Michalski

\$300,000. National Science Foundation. REU Site: Analyze This: Analytical Chemistry Applied to Interdisciplinary Research. PI Michalski.

\$50,000. Purdue University Laboratory & University Core Facility Research Equipment Program. PI Michalski

\$11,000 Purdue University. Study abroad: Coral reef research in Belize. PI Michalski

\$10,000 International Atomic Energy Agency. Isotopes to Study Nitrogen Pollution and Eutrophication of Rivers and Lakes. PI Michalski

Previous funding

National Geographic Society Exploration Grant (8776-10). "The origin of the nitrate deposits in the Turfan-Hami basin, Xinjiang, China." 03/15/2010. **\$15,800**

NSF-EAR [0929981](#) (sole Investigator) *Development of New Instrumentation (Early Career): Laser Decomposition Isotope Interface (LADII)- Total Isotope Analysis of Nanomolar Amounts of Sulfate and Nitrate* Purdue University, 02/23/2009. **\$83,171**

NSF-EAR [0922114](#) (sole Investigator) *A new regional paleo-precipitation proxy: oxygen isotopes in desert nitrate* Purdue University 01/16/2009. **\$371,048**

NSF-DEB [0918708](#) (Principle Investigator) *Collaborative Research: Impacts of urbanization on nitrogen biogeochemistry in xeric ecosystems* Purdue University 01/08/2009. **\$289,031** (Purdue University) (\$856,000 total)

NSF-AGS [0856274](#) (sole Investigator) *Using Oxygen Isotopes to Constrain Ozone Sources and Sinks* Purdue University 09/29/2008. **\$299,748**

Purdue Research Foundation- Graduate fellowship support - **\$30,000**

Showalter Trust (PI) *Where Does Nitrate Come From and Where Does It Go? – A Novel Isotopic Analysis of Nitrate Loading in Groundwater and Surface Runoff in Indiana Watersheds.* \$75,000

Visiting Indian and Chinese Scholars grant. Purdue University International program \$10,000

Purdue Research Foundation- Exploration and origin of the nitrate mineral deposits in Turfan region of China.- \$8,000,

Purdue Research Foundation- International Travel Grant - International Symposium on Isotopomers, Tokyo Japan. \$ 1,000

C. Invited Lectures

University of Illinois at Chicago, Chicago, Ill. April 28 2010. *Understanding acid rain, climate, earth and planetary atmospheres and biologic turnover of nitrogen using multiple stable isotope approaches.*

University of Wisconsin, Madison, WI. April 23 2010. *Understanding acid rain, climate, earth and planetary atmospheres and biologic turnover of nitrogen using multiple stable isotope approaches.*

University of Illinois, Champaign-Urbana, Ill. April 16 2010. *Understanding acid rain, climate, earth and planetary atmospheres and biologic turnover of nitrogen using multiple stable isotope approaches.*

China University of Geosciences, Beijing, China March 17, 2010. *Using stable isotopes for understanding the role of atmospheric chemistry in soil formation in arid regions: Implications for paleoclimate and the surface of Mars*

Beijing Normal University, Beijing, China, March 18, 2010. *Multiple stable isotope approach to understanding the nitrogen cycle.*

Carnegie Institute Geophysical Laboratory, Washington D.C., MD. Feb. 2, 2010, *Using oxygen isotope anomalies in nitrate to understand chemistry, climate and nitrogen cycling.*

University of Arizona, Tucson AZ. Feb. 5, 2010. *Multiple isotopes in nitrate for understanding nitrogen cycling and its connection to water availability.*

Wright State University, Dayton, OH., 2009. *Isotopes in the Biogeochemical Cycling of Nitrogen: From Acid Rain to Climate Change to Gunpowder!*

4th International Symposium on Isotopomers. Tokyo, Japan. 2008. *Multiple Isotope Forensics on Nitrate in the 2007 Poisoning of Wild Horses in southern Nevada*

Czech Geological Survey, Prague, Czech Republic, May 12, 2008. *Using oxygen isotope anomalies in nitrate to understand chemistry, climate and nitrogen cycling*

Meeting of the Association of Isotope Geochemists. Cape Town, South Africa. 2007. *Theory and Applications of ¹⁷O anomalies in Biogeochemistry.*

Bucknell University, Lewisburg, PA., 2006. *Isotopes in the Biogeochemical Cycling of Nitrogen: From Acid Rain to Climate Change to Gunpowder!*

Purdue University, Department of Chemistry, West Lafayette, IN. 2006. *The Chemistry of "Anomalous" Isotope Effects: Their Use in Physical, Organic, and Biogeological Chemical Systems*

3rd International Symposium on Isotopomers, La Jolla, Ca. 2006. *Using $\Delta^{17}O$ in Nitrate for Understanding Nitrogen Cycling on a Watershed Scale,*

Biogeomon, Global Biogeochemistry Conference. Santa Cruz, CA 2006. *Using $\Delta^{17}O$ in Nitrate for Understanding Nitrogen Cycling on a Watershed Scale*

Lafayette College, Easton, PA., 2006. *Isotopes in the Biogeochemical Cycling of Nitrogen: From Acid Rain to Climate Change to Gunpowder!*

Purdue University, Department of Agronomy, West Lafayette, IN. 2006. *Using multiple stable isotopes in understanding the biogeochemistry of the nitrogen cycle.*

Ohio State University, Bryd Polar Center, Columbus OH., May 12, 2006. *Oxygen and Nitrogen Isotopes in Nitrate: Understanding Past and Present Biogeochemical Cycling of Nitrogen.*

Indiana Department of Environmental Management. Indianapolis, IN. Nov. 11, 2006. *Using stable isotope to understand particulate nitrate formation.*

Dickenson College, Carlisle, PA., 2006. *Isotopes in the Biogeochemical Cycling of Nitrogen: From Acid Rain to Climate Change to Gunpowder!*

American Geophysical Union, San Francisco, CA. 2004. *Stable Isotope Constraints on N Deposition and Cycling in Lake Tahoe.*

California Air Resources Board, Sacramento CA, 2004. *Isotopic Analysis of NO_3^- in Lake Tahoe: Source Constraints on Nutrient Fluxes.*

Purdue University, Department of Earth and Atmospheric Sciences, West Lafayette, IN. 2004. *Using multiple stable isotopes in understanding the biogeochemistry of the nitrogen cycle.*

US Geological Survey, Reston VA., 2002. *Mass independent isotope effects in atmospheric nitrate.*

Joseph Fourier University, Grenoble, France, 2002. *From Molecules to Solar Systems: Understanding Mass Independent Fractionations.*

Princeton University, Princeton NJ., 2001. *Anomalous ^{17}O isotope compositions in atmospheric nitrate.*

Teaching Interests

Stable isotope biogeochemistry- lecture/lab
Atmospheric Chemistry- grad/undergraduate
Biogeochemistry- grad/undergraduate
Undergraduate research
Seminar in current issues in biogeochemistry

Honors

National Science Foundation Doctoral Enhancement Award, 2002

Research Advising and Mentoring

Current Graduate Students

Ben Wilkens, PhD.
Huan Fang, PhD.
Jianghanyang Li, PhD.

Past Graduate Students

Wendell Walters, Earth, Atmospheric, and Planetary Sciences - PhD.
Tanya Katzman, - Chemistry - PhD.
David Mase - Earth and Atmospheric Sciences, MS. student
Krystin Riha - Ecological Sciences and Engineering -PhD student

Lindsey Edenburn - Chemistry - MS student
Fan Wang - Earth and Atmospheric Sciences, - PhD. student
Dan McMahon - Earth and Atmospheric Sciences, MS student
Michael King - Earth and Atmospheric Sciences MS student

Undergraduate research assistants

Daniel Curtis - Chemistry
Christa Dahman - Chemistry
Ben Nault - Chemistry
Patrick O'Keefe - Chemistry
Katie Guggenheim - Chemistry
Katie Jochime - Chemistry
Daniel McMahon - Chemistry
Fuhe Xu - Computer Engineering (SURF)
Ashley Wittrig - Chemistry
Sylvia Hong (Chem)
Ji-Hye Seo (Chem)
Vicky Sehwatha (Computer Science- SURF)
David Geng - Chemistry
Michelle Kasem - Chemistry
Helen Waldschmidt - Chemistry
Micjelle Kolanowski
Greg Kline – Chemistry
Gabby Buck – Chemistry
Nur Abd Rani - Chemistry
Esther Youn- Chemistry
Stanford Goodwin -Chemistry
Huan Fang-EAPS
Damian Simonini- Chemistry
Matthew Davis- Chemistry
Dominic Sanchez- Chemistry
Nicholas W Seager- Health Sciences
Mingyu Zhang – agronomy
Samual Kim - biochemistry
Mark Fisher –chemistry
Mingyu Liu – EAPS
Lexi Scorzelli – Monmouth College

Collaborators

Katherine Lohse - University of Arizona
Tom Meixner - University of Arizona
Paul Brooks - University of Arizona
Nancy Grimm - Arizona State University
Dave Parker - University of California, Riverside
Bill Showers - North Carolina State University
Wensheng Ge - China Geosciences University, Beijing

Jason Rech - Miami University, Ohio
Jennifer McIntosh - University of Arizona

Graduate and Postdoctoral Advisor

Professor Mark Thiemens, Dean of Physical Science, University of California, San Diego

Doctoral Dissertation: University of California, San Diego, Department of Chemistry and Biochemistry

Isotopic Studies of Nitrate and Nitrogen Dioxide: Atmospheric and Biosphere N Cycling.

Mentoring in Undergraduate Research Activities

Founder of Journal of Purdue Undergraduate Research. <http://docs.lib.purdue.edu/jpur/>

Chair Faculty Advisory and Editorial Board Journal of Purdue Undergraduate Research.

Principle Investigator, National Science Foundation Research Experience for Undergraduates.

SEEDS - American Chemical Society's - Summer research program for underprivileged high school students - 3 students, Summer 2009.

Purdue University Summer Undergraduate Research Fellowships (SURF) - 2009

Purdue Undergraduate Research experience- 15 students over 3 years

2000-2004 Summer Training Academy for Research in the Sciences (STARS).
<http://ogsr.ucsd.edu/stars/> One on one research mentoring with minority and female science undergraduates interested in attending graduate school. One to two students each summer.

2002-2004 California Alliance for Minority Participation in Science, Engineering and Mathematics Program (CAMP) One on one research mentoring with minority and female science undergraduates interested in attending graduate school. One student each summer.

2000-2004 Summer Training Academy for Research in the Sciences (STARS).
<http://ogsr.ucsd.edu/stars/> One on one research mentoring with minority and female science undergraduates interested in attending graduate school. One to two students each summer.

2000-2004 Undergraduate Research, single quarter research for chemistry undergrads. One on one mentoring and guidance in formal laboratory research 1-2 students per year.

2002-2004 California Alliance for Minority Participation in Science, Engineering and Mathematics Program (CAMP) One on one research mentoring with minority and female science undergraduates interested in attending graduate school. One student each summer.

Field Research Experience

Turpan-Hami Basin, northwestern China. Soil survey and sample collection of regional nitrate deposits. Collaboration with China Geosciences University, Beijing. 2010-present.

Atacama Desert, Chile. Soil and salt collection. Collaboration with Prof. Jason Rech, Miami University, Ohio. 2004, 2005, 2007, 2009

Death Valley and Mojave Desert. Soil, playa, and salt lake samples for anions. Biogeochemistry of desert soils. 2006-present

R/V Atlantis, Woods Hole and Scripps Institute of Oceanography, Methane hydrate research, Oregon coast, 1998.

R/V New Horizon, CalfCOFI research leg, southern California Pacific bight; nutrient, chlorophyll and salinity sampling, aerosol collection. 1999

Mojave Desert/ Death Valley, California. Soil and rock varnish collections, collaboration with Prof. Huming Bao, Louisiana State University. 2000

McMurdo Dry Valleys, Victoria Land Antarctica. Soil survey. Collaboration with Prof. Dave Marchant, Boston University and Prof. Huming Bao, LSU. 2002

Lake Tahoe, California. Monthly water collection and analysis of isotopes in dissolved nutrients. Collaboration with the Tahoe Research Group, University of California, Davis., 2004