

# Jeremy Christopher Williams

Assistant Professor of Geology • (330) 672-1459 • JWILL243@KENT.EDU

## EDUCATION

- B.S. Marine and Environmental Science, 2008  
Hampton University, Hampton, VA, USA
- M.S. Environmental Science, 2011  
Department of Environmental, Earth, and Ocean Science  
University of Massachusetts Boston, Boston, MA, USA  
Thesis: The Impact of Modern Weathering on the Geochemistry of a Neo-Tethyan Permo-Triassic Section.
- Ph.D. Environmental Science, Ph.D., 2014  
School for the Environment  
University of Massachusetts Boston, Boston, MA, USA  
Dissertation: Black Shales of the Neo-Tethys: The Geochemical Record and the End-Permian Crisis
- Post Doctorate School of Earth Sciences, Jan, 2014-December 2015  
The Ohio State University, Columbus, OH, USA

## HONORS, AWARDS, AND FUNDING

- 2016 Deep Carbon Observatory American Geosciences Institute  
Diversity Grant- \$4,500
- 2012 Environmental, Earth, and Ocean Sciences (EEOS) Research  
Fellowship Award- \$5,000
- 2011 Environmental, Earth, and Ocean Sciences (EEOS) Summer  
Assistantship Award- \$5,000
- 2009-2010 NSF GK12 Watershed Integrated Sciences Partnership (WISP)  
Fellowship, University of Massachusetts Boston- \$30,000
- 2009 Student Fellow, Indo-US Bilateral Permian-Triassic Boundary  
Workshop
- 2008-2013 Southern Region Education Board Doctoral Fellowship (SREB)-  
5 year award, \$15,000/year

## PUBLICATIONS

Brookfield, M.E., Algeo T.J., Hannigan, R., **Williams, J.C.**, and Bhatt G.M. Shaken.  
2013. Stirred: Seismites and Tsuamites at the Permian-Triassic Boundary, Guryul  
Ravine, Kashmir, India. *PALAIOS*, 2(8): 568-582

Cuoco, E., Tedesco, D., Poreda, R. J., **Williams, J. C.**, De Francesco, S., Balagizi, C.,  
Darrah, T. H. 2013. Impact of volcanic plume emissions on rain water chemistry during  
the January 2010 Nyamuragira eruptive event: implications for essential potable water  
resources. *Journal of Hazardous Materials*, 244-245(15): 570-581.

**Williams, J.C.,** Basu, A.R., Bhagarva, O.N., Ahluwalia, A.D., and Hannigan, R.E. 2012. Resolving original signature from a sea of overprint-The geochemistry of the Gungri Shale (Upper Permian, Spiti Valley, India). *Chemical Geology*, 324: 59-72.

Alizai, A., Carter, A., Clift, P. D., VanLaningham, S., **Williams, J.C.,** and Kumar, R. 2011. Sediment provenance, reworking and transport processes in the Indus River by U–Pb dating of detrital zircon grains. *Global and Planetary Change*, 76(1-2): 33-55.

*Manuscript In Review*

Darrah, T.H., Jackson, R., Warner, N., Meuhlenbachs, K., **Williams, J.,** Whyte C., Poreda, R., Vengosh, A. Geochemical evidence for fugitive gas contamination and associated water quality changes in drinking-water wells from Parker County, Texas. Submitted to *Environmental Science and Technology*

Darrah, T.H., Tassi, F., **Williams, J.C.,** Tedesco, D., Vaselli, O., Poreda, R.J. Gas chemistry of the Tendaho Graben in the Afar region of the East African Rift. Submitted to *Chemical Geology*.

*Invited*

**Williams, J.C.,** Darrah, T.H Review: Black Shales and Rare Earth Elements. *Earth Science Reviews* submission in June 2016

*Manuscripts In Pending*

**Williams, J.C.,** Darrah, T.H., Etienne, E.D., Stebbins A.G., Brookfield, M.E., Hannigan, R. A stable isotopic (C, N, and S) reconstruction of the Neo-Tethys paleoenvironment at Spiti Valley during the end-Permian extinction. In preparation for *Journal of Asian Earth Sciences*

**Williams, J.C.,** Darrah, T.H., A.G., Stebbins A.G., Brookfield, M., Hannigan, R. Trace metal geochemistry of the Neo-Tethys Ocean during the Permian-Triassic Extinction. In Preparation for *Chemical Geology*

**Williams, J.C,** Stebbins, A.G., Brookfield, M. E., Sudar, M.N, Jovanović, D., Kolar-Jurkovšek, T., Jurkovšek, B., Hannigan, R., Algeo, T.J. Geochemistry of a newly-discovered Permo-Triassic boundary section at Sitka Glavarica, Jadar block, Serbia. In Preparation for *Chemical Geology*

**RESEARCH EXPERIENCE**

Spring 2014-Fall 2015 **The Ohio State University,** Columbus, OH

**Responsibilities:** Reconstructing the paleo-environment, post depositional deformation, and fluid migration processes of the Marcellus Formation using geochemical techniques. Tracking natural and stray gas contamination in the Eagle Ford Shale Basin.

- Fall 2009-Fall 2013 **University of Massachusetts-Boston**, Boston, MA  
 Responsibility: Reconstructing the depositional paleo-environment of the Paleo-Tethys and Neo-Tethys during the Permian-Triassic Extinction using geochemical proxies and light stable isotopes. Identify post-depositional effects using major and trace elements.
- Fall 2008 **Arkansas State University**, Jonesboro, AR  
 Responsibilities: Use kriging techniques to map out groundwater quality in ArcGIS for the Memphis metro area from 1930-2008.
- Summer 2008 **Arkansas State University**, Jonesboro, AR Accelerated Research in Environmental Sciences Program (ARISE)  
 Responsibilities: Performed water quality analyses on the Tyronza river in northeastern Arkansas to assess the influence of agriculture land use on a tributary.
- Summer 2007 **University of Toledo**, Toledo, OH 43606  
 Environmental Science REU Program  
 Responsibilities: Used remote sensing and GIS techniques to assess the influence of land use and land cover on western Lake Erie watersheds in northwestern Ohio.

### **TEACHING EXPERIENCE**

- Spring 2012, 2013 **Instructor:** EEOS 210- Earth System Dynamics, *University of Massachusetts Boston*  
 Responsibilities: Taught a 50 minute class three days a week and weekly 2.5 hour lab section. Developed lecture and laboratory materials. Integrated experiential and discovery learning pedagogies.
- Fall 2010, 2012 **Teaching Assistant:** EEOS 347- Mineralogy and Petrology *University of Massachusetts Boston*  
 Responsibilities: Assist in teaching undergraduates about the basic concept of mineralogy, petrology, and Earth's history. Responsible for laboratory section and activities, field trip coordination, preparation and grading of exams, homework, and labs.
- Fall 2012 **Teaching Assistant:** EEOS 203 Field Trip, *University of Massachusetts Boston*  
 Responsibilities: Led undergraduate students on a field trip, teaching them about the geologic evolution of northern MA and NH. Trained students in field petrology and mineralogy including field note taking, mapping, etc.
- Summer 2011, 2012 **Graduate Assistant:** AP Environmental Science Bridge Program, *University of Massachusetts Boston*  
 Responsibilities: Assisted high school teachers in teaching environmental science to high school students in a week long intensive collegiate atmosphere, where students are taught basic environmental science concepts and learn research field techniques.

- Spring 2011      **Teaching Assistant:** EEOS-210L Earth System Dynamic Lab,  
*University of Massachusetts Boston*  
Responsibilities: Taught two 3 hour weekly lab where major topics covered were identification of minerals and rocks, stratigraphy, structural geology, glacial geology, fluvial, and historical geology.
- 2009-2010      **NSF GK12 Fellow:** *University of Massachusetts Boston*  
Responsibilities: Assisted in elementary school classroom, grade levels 4<sup>th</sup> and 5<sup>th</sup>, as a research scientist. Aiding the teacher and students in teaching science with an emphasis on environmental science, exposing students to different field and research techniques related to environmental science.

### **RELEVANT WORK EXPERIENCE**

- 2006      **Environmental Resource Management**, Kennesaw, GA  
Internship, June 2006-August 2006  
Responsibilities: Data management for hazardous sites, generates reports for progress in hazardous site remediation and recommendation for hazardous site clean-up.

### **INVITED PRESENTATIONS**

- 2015      **Williams, J.C.** Paleoenvironments of the Permian-Triassic extinction: Through the scope of geochemistry. Palmer Geology Lecture Series, The Department of Geology, Kent State University, Kent, OH, January 16 (oral)

### **PRESENTATIONS**

- 2015      **Williams, J.C.**, Darrah, T. H., Poreda, S., Whyte, C., Stebbins, A.G., Hannigan, R. Are Union Springs and Oatka Creek members of the Marcellus Formation formed under different depositional conditions? Geological Society Annual Meeting, Baltimore, MD, USA, November 1-4 (oral)
- 2015      Stebbins, A., Algeo, T., Hart, R., Krystyn, L., **Williams, J.**, Brookfield, M., Hannigan, R. The early Triassic sulfur isotope curve of seawater sulfate from marine carbonates in the Neo-Tethys. Goldschmidt Conference 2015 Meeting, Prague, Czech Republic, August 16-21 (oral)
- 2015      Harrington, J., Muehlenbachs, K., Whyte, C., **Williams, J.C.**, Darrah, T. Integrating noble gas and compound-specific stable isotopes to characterize the generation and migration of oil-associated gases and H<sub>2</sub>S in the Eagle Ford shale of Texas, USA. Goldschmidt Conference 2015 Meeting, Prague, Czech Republic, August 16-21 (oral)
- 2015      Hart, R., Stebbins, A., Brookfield, M., **Williams, J.**, Hannigan, R. Characterizing the end-Permian mass extinction in the neo-Tethys through organic geochemistry. Goldschmidt Conference 2015 Meeting, Prague, Czech Republic, August 16-21 (oral)

- 2014 **Williams, J.C.**, Darrah, T. H., Koons, R., Hannigan, R. The paleoenvironment of the Marcellus Formation: Implication for understanding the origin of unconventional oil and gas reservoirs. Geological Society Annual Meeting, Vancouver, British Columbia, Canada, October 19-22 (oral)
- 2014 Brouman, H., Darrah, T.H., **Williams, J.C.**, Olesik, J., Poreda, R. Noble gas geochemistry of the Marcellus Shale Formation: A prospecting tool for hydrocarbon gas migration. Geological Society Annual Meeting, Vancouver, British Columbia, Canada, October 19-22 (oral)
- 2014 Santistevan, A., Algeo, T.J., Hannigan, R., **Williams, J.C.** The role of the Siberian Traps in the Permian-Triassic Extinction: Analysis through chemical fingerprinting of marine sediments using rare earth elements (REEs). Geological Society Annual Meeting, Vancouver, British Columbia, Canada, October 19-22 (oral)
- 2014 **Williams, J.C.**, Darrah, T.H., Johannesson, K, Stebbins, A.G, Hannigan, R. Rare earth elements as a proxy for redox conditions in black shales? Goldschmidt Conference 2014 Meeting, Sacramento, CA June 8-13 (oral)
- 2014 Darrah, T.H., **Williams, J.C.** Understanding the trace element composition of modern human bone. Goldschmidt Conference 2014 Meeting, Sacramento, CA June 8-13 (oral)
- 2013 **Williams, J.C.**, Stebbins, A., Sudar, M., Jovanovic, D., Brookfield, M., Algeo, T., Berman, M., Hannigan, R. The geochemistry of a newly discovered permo-triassic section in Serbia: A tale of catastrophic events. American Geophysical Union (AGU) Fall 2013 Meeting, San Francisco, CA, December 9-13 (poster)
- 2013 Brookfield, M., Algeo, T., Hannigan, R., **Williams, J.C.**, Bhat, G.M. The great end Permian tsunamis: recognition, extent and generation. American Geophysical Union (AGU) Fall 2013 Meeting, San Francisco, CA, December 9-13 (poster)
- 2013 Stebbins, A., Holmes, S., Fernandes, M., **Williams, J.C.**, Hannigan, R. Utilizing pyritic  $\delta^{34}\text{S}$  to characterize the depositional conditions of the Neo-Tethys in the late Permian. American Geophysical Union (AGU) Fall 2013 Meeting, San Francisco, CA, December 9-13 (oral)
- 2013 **Williams, J.C.**, Sudar, M., Jovanovic, D., Brookfield, M.E. Geochemistry and sedimentology of a new Permo-Triassic boundary section in Serbia. International Geoscience Program (IGCP) 572 World Summit on P-Tr Mass Extinction and Climate Change, Wuhan, China June 14. (oral)
- 2013 Stebbins, A., Fernandes, G., **Williams, J.C.**, Hannigan, R. Utilizing C-S-Fe systematics to determine bottom water oxygenation conditions of the Neo-Tethys. International Geoscience Program (IGCP) 572 World Summit on P-Tr Mass Extinction and Climate Change, Wuhan, China, June 14. (oral)
- 2013 **Williams, J.C.**, Hannigan, R., Basu, A. R., Ghosh, N., Brookfield, M.E., Stebbins, A. Episodic changes in the geochemical record of the Late Permian : Spiti Valley, Himachal Pradesh, Himalaya. International

- Geoscience Program (IGCP) 572 World Summit on P-Tr Mass Extinction and Climate Change, Wuhan, China, June 13. (oral)
- 2013 Santistevan, F., Algeo, T. J., Hannigan, R., **Williams, J.C.** The role of the Siberian Traps in the Permian-Triassic mass extinction: Analysis through chemical fingerprinting of marine sediments using rare earth elements (REEs). Geological Society of America North-Central Section 47<sup>th</sup> Annual Meeting, Kalamazoo, MI, May 2. (oral)
- 2012 Etienne, E.D., Hannigan, R, **Williams, J.C.** Accounting for variations of delta-13-c isotopic record at the Lingti Permian-Triassic Section. Geological Society of America Annual Meeting, Charlotte, NC, Nov 6. (poster)
- 2012 **Williams, J.C.**, Hannigan, R., Basu, A. R., Ghosh, N., Brookfield, M., Etienne, E.D. Using stable light isotopes to identify environmental changes in the Neo-Tethys ocean during the Permian-Triassic Extinction. Geological Society of America Annual Meeting, Charlotte, NC, Nov 4. (oral)
- 2012 **Williams, J.C.**, Hannigan, R., Basu, A.R., Ghosh, N., Brookfield, M. Accounting for Post-Depositional Effects on a Neo-Tethyan Permian-Triassic Section in the Himalayan Mountains. Goldschmidt Conference, Montreal, QC, Canada, June 28. (oral)
- 2011 **Williams, J.C.**, Basu, A.R., Bhagarva, O.N., Ahluwalia, A.D., Hannigan, R. A paleo-environmental analysis of the Attargoo Permo-Triassic Section: a neo-Tethyan section. XVII International Congress on the Carboniferous and Permian, Perth, Australia, July 6 (oral)
- 2011 Brookfield, M. E., Hannigan R., Algeo, T., **Williams, J.C.** Sedimentology and geochemistry of the Permo-Triassic boundary section at Guryul Ravine, Kashmir, India; a comparison of the with the Texas Cretaceous-Tertiary boundary section. XVII International Congress on the Carboniferous and Permian, Perth, Australia, July 5 (oral)
- 2010 **Williams, J.C.**, Ripley-Daniels, H.S. Science Enrichment: Bridging the gap between elementary school science and graduate research scientist. NSF Graduate Stem Fellows in K-12 Education Annual Conference, Washington D.C., March 27 (poster)
- 2009 **Williams, J.C.**, Layton, A., Kammler, B., Polk, A., Shelton, J., Gray, K. Assessing the impacts of humans on the Tyronza River: A human agriculturally dominated watershed. American Society of Limnology and Oceanography (ASLO) Aquatic Science Meeting, Nice, France January 27, 2009 (oral)
- 2008 **Williams, J.C.**, Czajkowski, K., Hayase, R. Impacts of land cover and usage on water quality in western Lake Erie watersheds. American Society of Limnology and Oceanography (ASLO) Ocean Science Meeting, Orlando, FL March 5 (poster)

### **DOCTORAL MENTOR**

Dr. Robyn Hannigan (University of Massachusetts Boston)

## **POST-DOCTORAL MENTOR**

Dr. Thomas H. Darrah (The Ohio State University)

## **COLLABORATORS**

Arun Ahluwalia (Panjab University), Thomas Algeo (University of Cincinnati), Anwar Alizai (Geological Survey of Pakistan), Charles Balagizi (Goma Volcanic Observatory), Asish Basu (University of Texas Arlington), Ghulam Bhatt (Jammu University), Michael Brookfield (University of Massachusetts Boston), Andrew Carter (University College London), Peter Clift (Louisiana State University), Emilio Cuoco (Second University of Napoli), Thomas Darrah (Ohio State University), Stefano Francesco (Second University of Napoli), Karmen Fio (University of Zagreb), Janos Haas (Eötvös University), Robyn Hannigan (University of Massachusetts Boston), Kinga Hips (Eötvös University), Divna Jovanović (Geological Institute of Serbia), Ravindra Kumar (Clovers Water Garden), Robert Poreda (University of Rochester), Haven Ripley-Daniels (Boston Public School), Jansenka Sermac (University of Zagreb), Milan Sudar (University of Belgrade), Dario Tedesco (Second University of Napoli), Sam VanLaningham (University of Alaska, Fairbanks), Paul Wignall (University of Leeds), Ariunchimeg Yarinjil (Geological Survey of Mongolia)

## **MENTORING**

Rachel Koons- 2014, Undergraduate, The Ohio State University

Hanna Brouman-2014, Shell Undergraduate Research Experience (SURE) Student, The Ohio State University

Michael Berman- 2013, Undergraduate, University of Massachusetts Boston

Silverio Conte- 2013, Undergraduate, University of Massachusetts Boston

Edward Etienne- 2012, Coastal Research in Environmental Science and Technology (CREST) Research Experience for Undergraduates (REU) Student, University of Hawaii at Manoa

Han Nguyen-2011, Boston Harbor Green Ambassador High School Apprentice

## **EXPERTISE**

### **Modeling**

SPSS

Minitab

ArcGIS

### **Data Collection/Sample Preparation**

Sample preparation for ED-XRF analysis

Rock and biological sample preparation for ICP-MS analysis

Sample preparation for stable isotopes (C, N, S)

Loss on Ignition

### **Analytical**

X-Ray Fluorescence Spectrometer (XRF)

Inductively Coupled Plasma Mass Spectrometry (ICP-MS)  
Elemental Analyzer (EA)  
Isotope Ratio Mass Spectrometry (IRMS)  
Mercury Analyzer  
HELIX SFT Split Flight Tube Noble Gas Spectrometer

**CURRENT FIELD AREAS**

Seneca Quarry, Seneca Falls, NY  
Spiti Valley, Himachal Pradesh, India  
Guryul Ravine, Kashmir and Jammu, India  
Karavanke Mountains, Slovenia  
Velebit Mountains, Croatia  
Jadar River Valley, Serbia  
Gobi Desert, Mongolia  
Buk Mountains, Hungary

**PROFESSIONAL SERVICE**

2013 U.S. Delegate to the International Geoscience Program (IGCP) 572 World Summit on P-Tr Mass Extinction and Climate Change, Wuhan, China  
June 13-15  
2011 U.S. Delegate to the 17<sup>th</sup> International Congress on the Carboniferous and Permian (ICCP), Perth, Australia, July 3-8

**PROFESSIONAL MEMBERSHIPS**

Geological Society of America (GSA)  
Geochemical Society  
American Geophysical Union (AGU)  
Deep Carbon Observatory