David T. Johnston

Professor of Earth and Planetary Sciences
Co-Director of Graduate Studies
Department of Earth and Planetary Sciences,
Harvard University, 20 Oxford Street,
Cambridge, MA 02043, USA
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citations: 6174
h- index: 44
i-10 index: 54

Education

University of Maryland 2002-2007
Ph.D., Geology, Advisor: James Farquhar
Thesis: Sulfur isotope fractionation in biological systems

Bates College 1998-2002
Thesis: Applying a Leopoldian land ethic to the issue of wolf reintroduction in the Adirondack Park

Professional Experience

Professor of Earth and Planetary Sciences 2016 -
Harvard University, Department of Earth and Planetary Sciences

John L. Loeb Associate Professor of Natural Sciences 2014-2016
Harvard University, Department of Earth and Planetary Sciences

Associate Professor 2013-2014
Harvard University, Department of Earth and Planetary Sciences

Assistant Professor 2009-2013
Harvard University, Department of Earth and Planetary Sciences

Microbial Science Initiative (MSI) Fellow 2007-2009
Harvard University, Department of Organismic and Evolutionary Biology

Visiting Research Scientist 2003, 2005
University of Southern Denmark, Institute of Biology

Academic Awards

GSA Outstanding Contribution Award in Geobiology	2013
SLOAN Research Fellow, Ocean Sciences	2013
F.W. Clarke Medal	2012
Star Family award in Advising, nominee	2012-2014
NSF EAR CAREER Award	2011
Microbial Science Initiative Fellow, Harvard University	2007
Univ. of Maryland, Graduate School, Deans Dissertation Fellowship	2006
Geochemical Society Graduate student travel award, Goldschmidt	2006
International School of Aquatic Sciences (SOAS) student travel award	2003-2005
International School of Aquatic Sciences (SOAS) Graduate Scholarship	2003, 2005
Univ. of Maryland, Dept. of Geology, Field Scholarship	2004
NASA Astrobiology Institute Research scholarship	2004

Professional University Service

President, Geobiology Society	2020 -
Advisory Board for Dean of Science, F.A.S.	2018 -
Executive Committee, Geobiology Society	2015-2020 -
Chair, Faculty Search, Dept. of E.P.S.	2018
Chair, Senior Administrative Search, Dept. of E.P.S.	2020
Chair, Committee on Diversity, Inclusion, and Belonging, Dept. of E.P.S.	2018 -
Co-Chair, Graduate Studies Committee, Dept. of E.P.S.	2012 - 2019
Chair, Graduate Studies Committee, Dept. of E.P.S.	2020

Publications: * denotes student or post-doc contributions

in review

- I. Halevy, D.T. Johnston, D. Fike, R. Bryant, A.V. Turchyn, M. SelaAdler, V. Pasquier, C. Wenk, G. Claypool: Sedimentary parameters control the sulfur isotope composition of marine pyrite, Science, in revision.
- F.L. Liljestrand*, A.Hania, M. Girodano, D.T. Johnston: The triple oxygen isotope composition of cultured diatoms, L and O, in review.
- L.M. Ward*, D. T. Johnston, P.M. Shih: Phanerozoic Radiation of Ammonia Oxidizing Bacteria, Geobiology, in revision.

2020

72. F.L. Liljestrand*, A.H. Knoll, N.J. Tosca, P.A. Cohen, F.A. Macdonald, Y. Peng, D.T. Johnston: The triple oxygen isotope composition of Precambrian chert, EPSL 537 (2020): 116167.

71. J.D. Hemingway*, H. Olson*, A.V. Turchyn, E.T. Tipper, D.T. Johnston: Triple oxygen isotope insight into terrestrrial pyrite weathering, Proceedings of the National Academy of Sciences 117.14 (2020): 7650-7657.

70. T. Laakso*, E.S. Sperling, D.T. Johnston, A.H. Knoll: Ediacaran reorganization of the marine phosphorus cycle, Proceedings of the National Academy of Sciences 117.22 (2020): 11961-11967.

69. D. Smith*, A. Bradley, D. Johnston, D. Fike, Isotopic fractionation associated with sulfate import and activation by Desulfovibrio vulgaris str. Hildenborough, Frontiers in microbiology 11 (2020).

68. T. Laakso*, A.R. Waldeck*, F.A. Macdonald, D.T. Johnston: Volcanic controls on seawater sulfate over the past 120 million years, Proceedings of the National Academy of Sciences 117.35 (2020): 21118-21124.

67. E. Bertran*, A.R. Waldeck*, B.A. Wing, I. Halevy, W.D. Leavitt, A.S. Bradley, D.T. Johnston: A mechanistic understanding of oxygen isotope effects during microbial sulfate reduction, The ISME journal (2020): 1-12.

66. F.L. Liljestrand*, F.A. Macdonald, T. Laakso*, D. Schrag, D.T. Johnston Anomalous carbon cycling in the aftermath of the Marinoan Snowball Earth, Geobiology, Geobiology 18.4 (2020): 476-485.

2019

65. A.R. Waldeck, B. Cowie, E. Bertran, B.A. Wing, I. Halevy, D.T. Johnston: Deciphering the atmospheric signal in marine sulfate oxygen isotope composition, EPSL, 522, 12-19.

64. P. Crockford, B.A. Wing, A. Paytan, K.K. Bitterwolf, J.A. Hayles, J. Middleton, A.S. Ahm, D.T. Johnston, F. Caxito, G. Uhlein,, G.P. Halverson, B. Eickmann, T.J. Horner: Barium-isotopic constraints on the origin of post-Marinoan barites, EPSL, 519, 234-244.

2018

63. A.L. Masterson*, M. J. Alperin, W. Berelson, D.T. Johnston (2018) Multiple sulfur isotopic insights into sulfur cycling within anoxic sediments of the California-Mexican margin: Alfonso Basin. American Journal of Science, 205, 331-359. doi: 10.1016/j.gca.2017.02.020

62. E.M. Schwarzenbach, B. C. Gill,, D.T. Johnston (2018) Unraveling multiple phases of sulfur cycling during the alteration of ancient ultramafic oceanic lithopshere. Geochimica et Cosmochimica Acta, 223, 279-299. doi: 10.1016/j.gca.2017.12.006.

61. D.S. Hardisty, T.W. Lyons, N. Riedinger, T.T. Isson, J.D. Owens, R.C. Aller, D.M. Rye, D. M., N. J. Planavsky, C.T. Reinhard, B.C. Gill, A.L. Masterson, D. Asael, D.T. Johnston (2018). An Evaluation of Sedimentary Molybdenum and Iron as Proxies for Pore Fluid Paleoredox Conditions. American Journal of Science, 318 (5), 527-556.

60. E. Bertran, W.D. Leavitt, A. Pèllerin, G.M. Zane, J.D. Wall, D.T. Johnston, B. A. Wing (2018) Deconstructing the dissimilatory sulfate reduction pathway: Isotope fractionation of a mutant unable to grow on sulfate. Frontiers in Microbiology, 9, 310-315.

2017

59. M.L. Gomes*, D.T. Johnston (2017) Oxygen and sulfur isotopes in sulfate in modern euxinic systems with implications for evaluating the extent of euxinia in ancient oceans. Geochimica et Cosmochimica Acta, 205, 331-359. doi: 10.1016/j.gca.2017.02.020

58. A.J. Miller*, J.V. Strauss, JV, G.P. Halverson, F.A. Macdonald, D.T. Johnston, E.A. Sperling (2017) Tracking the onset of Phanerozoic-style redox-sensitive trace metal enrichments: New results from basal Ediacaran post-glacial strata in NW Canada. Chemical Geology, 457, 24-37. doi:10.1016/j.chemgeo.2017.03.010.

2016

57. B.R. Cowie,D.T. Johnston (2016) High-precision measurement and standard calibration of triple oxygen isotopic compositions (delta O-18, Delta ' O-17) of sulfate by F-2 laser fluorination. Chemical Geology, 440, 50-59. doi: 10.1016/j.chemgeo.2016.07.003.

56. W.D. Leavitt, S.S. Venceslau, I.A.C. Pereira, D.T. Johnston, A.S. Bradley (2016) Fractionation of sulfur and hydrogen isotopes in Desulfovibrio vulgaris with perturbed DsrC expression. FEMS Microbiology Letters, 363, 20. doi:10.1093/femsle/fnw226.

55. A.L. Masterson, B.A. Wing, A. Paytan, J. Farquhar, D.T. Johnston (2016) The minor sulfur isotope composition of Cretaceous and Cenozoic seawater sulfate. Paleooceanography, 31, 6, 779-788. doi: 10.1002/2016PA002945.

54. E.A. Sperling, C. Carbone, J.V. Strauss, D.T. Johnston, G.M Narbonne, F.A. Macdonald (2016) Oxygen, facies, and secular controls on the appearance of Cryogenian and Ediacaran body and trace fossils in the Mackenzie Mountains of northwestern Canada. GSAB 128, 3-4, 558-575. doi:10.1130/B31329.1

53. P.W. Crockford, B.R. Cowie*, D.T. Johnston, P.F. Hoffman, I. Sugiyama, A. Pellerin, T. H. Bui, J. Hayles, G.P. Halverson, F. A. Macdonald, B.A. Wing (2016) Triple oxygen and multiple sulfur isotope constraints on the evolution of the post-Marinoan sulfur cycle. Earth and Planetary Science Letters, 435, 74-83. doi: 10.1016/j.epsl.2015.12.017.

2015

52. W.D. Leavitt*, A.S. Bradley*, A.A. Santos, I.A.C. Pereira, D.T. Johnston (2015) Sulfur Isotope Effects of Dissimilatory Sulfite Reductase. Frontiers in Microbiology, Special Issue on *Microbial connections between the subsurface sulfur cycle and other elemental cycles* doi: 10.3389/fmicb.2015.01392.

51. A.A. Santos, S.S. Venceslau, F. Grein, W.D. Leavitt*, C. Dahl, D.T. Johnston, I.A.C. Pereira (2015) A protein tri-sulfide is a key metabolite in dissimilatory sulfate reduction. Science.

50. E.A. Sperling*, C.J. Wolock, A.S. Morgan*, B.C. Gill*, M. Kunzmann, G.P. Halverson, F.A. Macdonald, A.H. Knoll, D.T. Johnston (2015) Statistical analysis of iron geochemical data suggests limited late Proterozoic oxygenation. Nature, 523, 451-453. doi:10.1038/nature14589.

49. L.G. Tarhan, M.L. Droser, D.T. Johnston, N. Planavsky (2015) Protracted Development of Bioturbation through the Early Palaeozoic Era. Nature Geoscience, 8, 865-868. doi: 10.1038/ngeo2537.

48. A.S. Bradley*, W.D. Leavitt*, M. Schmidt*, A.H. Knoll, P.R. Girguis, D.T. Johnston (2015) Patterns of sulfur isotope fractionation during Microbial Sulfate Reduction. 15, 1-11. Geobiology, doi: 10.1111/gbi.12149.

47. C.M. Hansel, C.J. Lentini, Y. Tang, D.T. Johnston, S.D. Wankel, P.M. Jardine (2015) Dominance of sulfur-fueled iron oxide reduction in low-sulfate freshwater sediments. ISME Journal, 15, 1-13. doi: 10.1038/ismej.2015.50.

46. S.A.F. Darroch, E.A. Sperling*, T. Boag, Rachel A. Racicot, S.J. Mason, A.S. Morgan*, S. Tweedt, P. Myrow, D.T. Johnston, D.H. Erwin, M. Laflamme (2015) Biotic replacement and mass extinction of the Ediacara biota. Proceedings. Biological Sciences. The Royal Society; 282, 814.

45. K.L. Frank*, K.L. Rogers, D.R. Rogers, D.T. Johnston, P.R. Girguis (2015) Key factors influencing rates of heterotrophic sulfate reduction in hydrothermal massive sulfide deposits. Frontiers in Microbiology. doi: 10.3389/fmicb.2015.01449

44. P.M. Myrow, D. Cole*, D.T. Johnston*, D.A. Fike, A. Hakim (2015) Passive transgression: remarkable preservation and spatial distribution of uppermost Devonian (Famennian) marginal and nearshore marine facies and fauna of western Laurentia. PALAIOS, 30, 490-502. doi:10.2110/palo.2014.102.1.

43. E.A. Sperling*, C. Carbone, J.V. Strauss, D.T. Johnston, G.M. Narbonne, F.A. Macdonald (2015) Oxygen, facies, and the secular controls on the appearance of Cryogenic and Ediacaran body and trace fossils in the Mackenzie Mountains of northwest Canada. GSA Bulletin. B31329.1. doi:10.1130/B31329.1

2014

42. D.T. Johnston, B.C. Gill*, A.L. Masterson*, E. Beirne, K.L. Casciotti, A.N. Knapp, W. Berelson (2014) Placing an upper limit on cryptic marine sulphur cycling. Nature, 513, 530-533. doi:10.1038/nature13698.

41. W.D. Leavitt*, R. Cummins*, M.L. Schmidt*, M.S. Sim, S. Ono, A.S. Bradley*, D.T. Johnston (2014) Multiple sulfur isotope signatures of sulfite and thiosulfate reduction by the model dissimilatory sulfate reducer, Desulfovibrio alaskensis str. G20. Frontiers in Microbiology, 591, 1-16. doi: 10.3389/fmicb.2014.00591.

40. J.R. Creveling*, A.H. Knoll, D.T. Johnston (2014) Taphonomy of Cambrian Phosphatic small shelly fossils. Palaios, 295-308.

39. T. Ushikubo, K.H. Williford, J. Farquhar, D.T. Johnston, M.J. VanKrenendonk, J.W. Valley (2014) Development of in situ sulfur four-isotope analysis with multiple Faraday cup detectors by SIMS and application to pyrite grains in a Paleoproterozoic glaciogenic sandstone. Chemical Geology, 383(2014), 86-99. doi:10.1016/j.chemgeo.2014.06.006.

38. E.A. Sperling*, A.D. Rooney, L. Hays, V.N. Sergeev, N.G. Vorob'eva, N.D. Sergeeva, D. Selby, D.T. Johnston, A. H. Knoll (2014) Redox heterogeneity of subsurface waters in the Mesoproterozoic ocean. Geobiology, 12(5), 373-386. doi: 10.1111/gbi.12091.

37. R. Tostevin, A.V. Turchyn, J. Farquhar, D.T. Johnston, D.L. Eldridge, J.K.B. Bishop, M. McIlvin (2014) Multiple sulfur isotope constraints on the modern sulfur cycle. Earth and Planetary Science Letters, 396, 14-21. doi:10.1016/j.epsl.2014.03.057.

36. J.R. Creveling*, D.T. Johnston, S.W. Poulton, B. Kotrc, C. Marz, D.P. Schrag, A.H. Knoll (2014) Phosphorus sources for phosphatic Cambrian carbonates. GSA Bulletin, 126, 145-163. doi:10.1130/B30819.1.

35. M. Ghisalberti, D.A. Gold, M. Laflamme, M.E. Clapham, G.M. Narbonne, R.E. Summons, D.T. Johnston, D.K. Jacobs (2014) Canopy Flow Analysis Reveals the Advantage of Size in the Oldest Communities of Multicellular Eukaryotes. Current Biology, 24, 1-5. doi:10.1016/j.cub.2013.12.01.

2013

34. W.D. Leavitt*, A.S. Bradley*, I. Halevy, D.T. Johnston (2013). Influence of sulfate reduction rates on the Phanerozoic sulfur isotope record. Proceedings of the National Academy of Science. 110(28), 11244-11249. doi: 10.1073/pnas.1218874110.

33. S.D. Wankel*, A.S. Bradley*, D.L. Eldridge, D.T. Johnston (2013) Determination and application of the equilibrium oxygen isotope effect between water and sulfite. Geochimica et Cosmochimica Acta, 125, 694-711, doi:10.1016/j.gca.2013.08.039.

32. E.S. Sperling*, G.P. Halverson, F.A. Macdonald, A.H. Knoll, D. T. Johnston (2013) A basin redox transect at the dawn of animal life. Earth and Planetary Sciences Letters. 371-372, 143-155. doi:10.1016/j.epsl.2013.04.003.

31. D.T. Johnston, S.W. Poulton, N.J. Tosca, T. O'Brien*, G.P. Halverson, D.P. Schrag, F.A. Macdonald (2013) Searching for an oxygenation event in the fossiliferous Ediacaran of northwest Canada. Chemical Geology, 362, 273-286. doi:10.1016/j.chemgeo.2013.08.046.

30. F. A. Macdonald, J. V. Strauss, E. A. Sperling*, D. T. Johnston, G. P. Halverson, T. Petach, G. M. Narbonne, M. Kunzman, D. P. Schrag, J. A. Higgins (2013) The stratigraphic relationship between the Shuram carbon isotope excursion, the oxygenation of Neoproterozoic oceans and the first appearance of the Ediacara biota and bilaterian trace fossils in northwest Canada. Chemical Geology, 362, 250-272. doi:10.1016/j.chemgeo.2013.05.032.

29. D.P. Schrag, J.A. Higgins, F.A. Macdonald, D.T. Johnston (2013) Authigenic carbonate and the history of the global carbon cycle. Science, 339(6119), 540-543. doi:10.1126/science.1229578.

2012

28. D.T. Johnston, S.W. Poulton, T. Goldberg, V.N. Sergeev, V. Podkovyrov, N. Vorob'eva, A. Bekker, A.H. Knoll (2012) Late Ediacaran redox stability and metazoan evolution. Earth and Planetary Science Letters, 335-336, 25-35. doi:10.1016/j.epsl.2012.05.010.

27. D.T. Johnston, F. A. Macdonald, B.C. Gill*, P.F. Hoffman, D.P. Schrag (2012) Uncovering the Neoproterozoic carbon cycle. Nature, 483, 320-323. doi:10.1038/nature10854.

26. D.T. Johnston, W.W. Fischer (2012) Stable Isotope Geobiology, In Fundamentals of Geology, (1st ed., Vol 14, pp.250-268). West Sussex, UK: Wiley-Blackwell.

25. S.D. Wankel*, M.M. Adams, D.T. Johnston, C.M. Hansel, S.B. Joye, P. R. Girguis (2012) Anaerobic methane oxidation in metalliferous hydrothermal sediments: influence on carbon flux and decoupling from sulfate reduction. Environmental Microbiology, 14(10), 2726-2740. doi:10.1111/j.1462-2920.2012.02825.

2011

24. D.T. Johnston (2011) Multiple sulfur isotopes and the evolution of Earth's surface sulfur cycle. Earth Science Reviews, 106(1-2), 161-183. doi:10.1016/j.earscirev.2011.02.003.

23. A.S. Bradley*, W.D. Leavitt*, D.T. Johnston (2011) Revisiting the dissimilatory sulfate reduction pathway. Geobiology, 9(5), 446-457. doi:10.1111/j.1472-4669.2011.00292.

22. E. Tziperman, I. Halevy, D.T. Johnston, A.H. Knoll, D.P. Schrag (2011) Biologically induced initiation of Neoproterozoic snowball-earth events. Proceedings of the National Academy of Sciences USA, 108(37), 15091-15096. doi: 10.1073/pnas.1016361108.

21. N.J. Tosca, F.A. Macdonald, J.V. Strauss, D.T. Johnston, A.H. Knoll (2011) Sedimentary talc in Neoproterozoic carbonate successions. Earth and Planetary Science Letters, 306(1-2), 11-22. doi:10.1016/j.epsl.2011.03.041.

2010

20. D.T. Johnston (2010) Touring the biogeochemical landscape of a sulfur-fueled world. Elements, 6, 101-106. doi:10.2113/gselements.6.2.101.

19. A.H. Knoll, D.T. Johnston (2010) The big picture: a tripartite view of life and environments through time. In In Search of the Causes of Evolution: From Field Observations to Mechanisms, (pp. 7-24). Princeton: Princeton University Press.

18. J.P. Wilson, W.W. Fischer, D.T. Johnston, A.H. Knoll, J.P. Grotzinger, M.R. Walter, N.J. McNaughton, M. Simon, J. Abelson, D.P. Schrag, R.E. Summons, A. Allwood, M. Andres, C. Gammon, J. Garvin, S. Rashby, M. Schweizer, W. A. Watters (2010) Geobiology of the Late Paleoproterozoic Duck Creek Formation (had-Dolomite, 1.8 Ga), Western Australia. Precambrian Research, 179(1-4), 135-149. doi:10.1016/j.precamres.2010.02.019.

17. F.A. Macdonald, M.D. Schmitz, J.L. Crowley, C.F. Roots, D.S. Jones, A.C. Maloof, J.V. Strauss, P.A. Cohen, D.T. Johnston, D.P. Schrag (2010) Calibrating the Cryogenian. Science, 327(5970) 1241-1243. doi:10.1126/science.1183325.

16. I. Halevy, D.T. Johnston, D.P. Schrag (2010) Explaining the structure of the Archean mass-independent sulfur isotope record. Science, 329(5988), 204-207. doi:10.1126/science.1190298.

15. D.T. Johnston, S.W. Poulton, C. Dehler, S. Porter, J. Husson*, D.E. Canfield, A.H. Knoll (2010) An emerging picture of Neoproterozoic ocean chemistry: Insights from the Chuar Group, Grand Canyon, USA. Earth and Planetary Science Letters, 290(1-2), 64-73. doi:10.1016/j.epsl.2009.11.059.

14. N.J. Tosca, D.T. Johnston, A. Mushegian*, D.H. Rothman, R.E. Summons, A.H. Knoll (2010) Clay mineralogy, organic carbon burial, and redox evolution in Proterozoic oceans. Geochimica et Cosmochimica Acta, 74(5), 1579-1592. doi:10.1016/j.gca.2009.12.001.

2009

13. D.T. Johnston, F. Wolfe-Simon, A. Pearson, A.H. Knoll (2009) Anoxygenic photosynthesis modulates Proterozoic oxygen and sustained earth's middle age. Proceedings of the National Academy of Sciences USA, 106(40), 16925-16929. doi:10.1073/pnas.0909248106.

12. J.A. Mikucki, A. Pearson, D.T. Johnston, A.V. Turchyn, J. Farquhar, D.P. Schrag, A.N. Anbar, J.C. Priscu, P.A. Lee (2009) A contemporary, microbially-maintained, subglacial ferrous ocean. Science, 324(5925), 397-400. doi:10.1126/science.1167350.

11. A.L. Zerkle, J. Farquhar, D.T. Johnston, R.P. Cox, D.E. Canfield (2009) Fractionation of multiple sulfur isotopes during phototrophic oxidation of sulfide and elemental sulfur by the green sulfur bacterium. Geochimica et Cosmochimica Acta, 73(2), 291-306. doi:10.1016/j.gca.2008.10.027.

2008

10. D.T. Johnston, J. Farquhar, K.S. Habicht, D.E. Canfield (2008) Sulfur isotopes and the search for life: strategies for identifying sulfur metabolisms in the rock record and beyond. Geobiology, 6(5), 425-435. doi:10.1111/j.1472-4669.2008.00171.

9. D.T. Johnston, R.E. Summons, Y. Shen, A.J. Kaufman, A.L. Masterson, J. Farquhar, D.E. Canfield (2008) Sulfur isotope biogeochemistry of the Proterozoic McArthur Basin. Geochimica et Cosmochimica Acta, 72, 4278-4290. doi:10.1016/j.gca.2008.06.004.

8. P.F. Hoffman, J.W. Crowley, D.T. Johnston, D.S. Jones, D.P. Schrag (2008) Snowball Prevention Questioned. Nature, 456, E7. doi:10.1038/nature07655.

7. S.D. Domagal-Goldman, J.F. Kasting, D.T. Johnston, J. Farquhar (2008) Organic haze, glaciations and multiple sulfur isotopes in the Mid-Archean Era. Earth and Planetary Science Letters, 269(1-2), 29-40. doi:10.1016/j.epsl.2008.01.040.

6. J. Farquhar, D.E. Canfield, A.L. Masterson, H. Bao, D.T. Johnston (2008) Sulfur and oxygen isotope study of sulfate reduction in experiments with natural populations from Fællestrand, Denmark. Geochimica et Cosmochimica Acta, 72(12), 2805-2821. doi:10.1016/j.gca.2008.03.013.

5. J. Farquhar, D.T. Johnston (2008) The oxygen cycle of the terrestrial planets: Insights into the Processing and History of Oxygen in Surface Environments. Reviews in Mineralogy and Geochemistry, 68(1), 463-492. doi:10.2138/rmg.2008.68.16.

2007

4. D.T. Johnston, J. Farquhar, D.E. Canfield, (2007) Sulfur isotope insights into microbial sulfate reduction: When microbes meet models. Geochimica et Cosmochimica Acta, 71(16), 3929-3947, DOI: 10.1016/j.gca.2007.05.008.

3. J. Farquhar, M. Peters, D.T. Johnston, H. Strauss, A.L. Masterson, U. Wiechert, A.J. Kaufman (2007) Isotopic evidence for Mesoarchean anoxia and changing atmospheric sulfur chemistry. Nature, 449, 706-709. doi:10.1038/nature06202.

2. J. Farquhar, D.T. Johnston, B.A. Wing (2007) Implications of conservation of mass effects on mass-dependent isotope fractionations: Influence of network structure on sulfur isotope phase space of dissimilatory sulfate reduction. Geochimica et Cosmochimica Acta, 71(24), 5862-5875, doi:10.1016/j.gca.2007.08.028.

1. A.J. Kaufman, D.T. Johnston, J. Farquhar, A.L. Masterson, T.W. Lyons, S. Bates, A. Anbar, G.L. Arnold, J. Garvin, R. Buick (2007) Late Archean Biospheric Oxygenation and Atmospheric Evolution. Science, 317(5846), 1900-1903. doi:10.1126/science.1138700.

2006

0. D.T. Johnston, S.W. Poulton, P.W. Fralick, B.A. Wing, D.E. Canfield, J. Farquhar (2006) Evolution of the oceanic sulfur cycle at the end of the Paleoproterozoic. Geochimica et Cosmochimica Acta, 70, 5723-5739. doi:10.1016/j.gca..2006.08.001.

0. S. Ono, B.A. Wing, D.T. Johnston, J. Farquhar, D. Rumble (2006) Mass-dependent Fractionation of Quadruple Stable Sulfur Isotope System as a New Tracer of Sulfur Biogeochemical Cycles. Geochimica et Cosmochimica Acta, 70(9), 2238-2252. doi:0.1016/j.gca.2006.01.022.

2005

0. D.T. Johnston, B.A. Wing, J. Farquhar, A.J. Kaufman, H. Strauss, T.W. Lyons, L.C. Kah, D.E. Canfield (2005) Active microbial sulfur disproportionation in the Mesoproterozoic. Science, 310(5753), 1477-1479. doi:10.1126/science.1117824.

0. D.T. Johnston, J. Farquhar, B.A. Wing, A.J. Kaufman, D.E. Canfield, K.S. Habicht (2005) Multiple sulfur isotope fractionations in biological systems: a case study with sulfate reducers and sulfur disproportionators. American Journal of Science, 305(6-8), 645-660. doi:10.2475/ajs.305.6-8.645.

2003

0. J. Farquhar, D.T. Johnston, B.A. Wing, K.S. Habicht, D.E. Canfield, S. Airieau, and M. H. Thiemens (2003) Multiple sulfur isotopic interpretations of biosynthetic pathways: Implications for biological signatures in the sulfur isotope record. Geobiology, 1(1), 27-36. doi:10.1046/j.1472-4669.2003.00007.

Presentations (*invited)

2019

31. D. T. Johnston* *et al.* The sulfur isotope composition of sedimentary sulfides. Royal Society of London

2018

30. D. T. Johnston* *et al.* The role of rivers in setting the marine ^{17}O. Fall AGU, Washington D.C.

29. D. T. Johnston* *et al.* Controls on the $\delta^{34}S$ of sedimentary pyrite. Goldschmidt, Boston MA.

28. D. T. Johnston* *et al.* The information within ^{17}O of sulfate: a look at the modern. International Symposium of Isotopomers, Baton Rouge LA.

2015

27. D. T. Johnston* *et al.* Insights gained through the O-isotopic composition of sulfate (past and present). EMBO conference, Denmark

26. D. T. Johnston* *et al.* Microbial cycling, oxidative weathering, and the triple oxygen isotope consequences for marine sulfate. Fall AGU, San Fransisco California

25. D. T. Johnston* *et al.* Evidence for low levels of atmospheric oxygen in the Paleozoic. National GSA, Baltimore

24. D. T. Johnston* *et al.* The triple oxygen isotope composition of marine sulfate. Goldschmidt conference, Prague

2014

23. D. T. Johnston* *et al.* The information richness of Phanerozoic sulfur isotope records. Agouron Institute meeting on the sulfur cycle

22. D. T. Johnston* *et al.* Extracting environmental information from Phanerozoic sulfur isotope records. Goldschmidt conference, Sacramento California

21. D. T. Johnston* *et al.* Constraints on the cryptic marine sulfur cycle. Goldschmidt conference, Sacramento California

20. D. T. Johnston *et al.* Toward an in situ test of the cryptic sulfur cycle. Ocean Sciences, Honolulu Hawaii

2013

19. D. T. Johnston* *et al.* The Neoproterozoic sulfur cycle. Goldschmidt conference, Florence Italy

18. D. T. Johnston *et al.* Putting a speed limit on the cryptic sulfur cycle. Goldschmidt conference, Florence Italy

2012

17. D. T. Johnston* *et al.* Searching for an Ediacaran oxygenation event. Geological Society of London Fermor Meeting

16. D. T. Johnston* (*F.W. Clarke Award Ceremony*) Sulfate reduction as the storyteller of Earth history. Goldschmidt conference, Montreal Canada

15. D. T. Johnston* *et al.* Calibrating dissimilatory sulfate reduction. EMBO conference, Netherlands

14. D. T. Johnston* *et al.* (Plenary) The evolution of biogeochemical cycles through Earth history. American Society of Microbiology

13. D. T. Johnston* *et al.* Sulfate reducers as the storytellers of Earth's evolution. Microbial Sciences Initiative annual symposium. Cambridge, MA.

12. D. T. Johnston* *et al.* DOC and the Neoproterozoic carbon cycle. Ocean Sciences, Salt Lake City Utah

11. D. T. Johnston* *et al.* Experimentally probing the sources and controls on isotopic fractionation in a sulfate reducing bacteria. Isotopes in Biological and Chemical Sciences Gordon Conference, Galveston Texas

2011

10. D. T. Johnston* *et al.* A revised history of Earth's second oxygenation. Chemical Oceanography Gordon Research Conference, Proctor Academy

2010

9. D. T. Johnston* *et al.* The true Neoproterozoic carbon cycle. National GSA, Denver Colorado

8. D. T. Johnston* *et al.* Understanding Ediacaran Environmental Change. Goldschmidt conference, Knoxville Tennessee

2008

7. D. T. Johnston* *et al.* Insight into early Neoproterozoic ocean chemistry. Fall AGU, San Fransisco California

2006

6. D. T. Johnston* *et al.* The fractionation potential of sulfate reducing bacteria. Fall AGU, San Fransisco California

5. D. T. Johnston* *et al.* The character of the Mesoproterozoic sulfur cycle. Goldschmidt Conference, Moscow Idaho

4. D. T. Johnston* *et al.* Active sulfur disproportionation in the Mesoproterozoic. Spring regional AGU, Baltimore Maryland

3. D. T. Johnston* *et al.* Evolution of the late Paleoproterozoic oceanic sulfur cycle, NASA AbSciCon, Washington D.C.

2005

2. D. T. Johnston* *et al.* Active sulfur disproportionation in the Mesoproterozoic. Goldschmidt Conference, Copenhagen Denmark

1. D. T. Johnston* *et al.* Implication of multiple sulfur isotopes for biological systems, Fall AGU, San Fransisco California

University seminars

- 2019: Massachusetts Institute of Technology, Florida State University, University of Tennessee, University of California, Santa Barbara
- 2017: Bigelow Labs
- 2016: ETH Zurich
- 2015: Cambridge University, Virginia Tech, Princeton University, Marine Biological Labs, Syracuse University, University of North Carolina Chapel Hill
- 2014: Brown University, Massachusetts Institute of Technology (x2), Weizmann Institute
- 2013: Yale University
- 2012: Massachusetts Institute of Technology, University of Texas El Paso, Pennsylvania State University, University of Toronto
- 2011: University of Vermont, McGill University, Johns Hopkins University
- 2010: American Museum of Natural History, Rutgers University
- 2008: Harvard University
- 2007: California Institute of Technology, Yale University, Carnegie Institute of Washington: Geophysical Laboratory, Arizona State University, University of Southern California, Washington University, University of Michigan, University of Washington
- 2006: Max Planck Institute for Marine Microbiology; Southern Denmark University; Massachusetts Institute of Technology
- 2005 Carnegie Institute of Washington: Geophysical Laboratory, Southern Denmark University

Abstracts

Author on research presented at: AGU 2002, 2003, 2006-19; LPSC 2003; Goldschmidt 2003-7, 9-19; GSA 2005-6, 8, 10-18: AbSciCon 2004, 2006: ACS 2005: Gordon Research conferences on: Chemical Oceanography 2011, 13, 15, 19; Isotope effects 2011; Geobiology 2016.

Geobiology short courses and workshops

- EMBO workshop on sulfur metabolism, Spring 2013, 2015, 2018
- Anoxygenic photosynthetic ecosystems (APE) meeting, Syracuse NY, October 2010.
- Frontiers in Geobiology Workshop, Academy of Sciences: Gottingen, Germany, October 2007

- Agouron Institute, Advanced Geobiology Field course (Western Australia), June 2007.
- University of Southern California, Wrigley Institute, Agouron Institute sponsored International Geobiology course, summer 2006.
- International School of Aquatic Sciences (SOAS), Southern Denmark University, Microbial Ecology. May, 2003.

Memberships

American Mineralogical Society, American Geophysical Union (AGU), Geological Society of America (GSA), Geochemical Society, Geobiological Society

Teaching experience

- EPS 53 Marine Geochemistry, Fall, 2018
- EPS 56 The History of Earth and Life (with Knoll), Spring, 2013-19
- EPS 107 Environmental Geochemistry (with Mukhopadhyay), Spring 2010
- EPS 186 Low Temperature Geochemistry 1; Introduction to biogeochemical cycles, Fall 2010, 2012, 2014, 2016
- EPS 189 Analytical methods in Geobiology, Spring, 2011, 2013, Fall 2013, Spring 2016
- EPS 286 Advanced Biogeochemistry I (with Pearson), Fall, 2011, 2013, 2016, 2017
- EPS 287 Advanced Biogeochemistry II (with Pearson), Spring, 2012
- EPS 207 Geochemical Oceanography (with Schrag), Spring 2014
- Instructor, Agouron / Wrigley Institute International Geobiology short course, 2011-16
- *Guest Lectures* EPS 8, 182, 210, 242, 287
- *Graduate Teaching Assistant* University of Maryland, Department of Geology, GEOL 110, Physical Geology, 2004
- *Lectures given in:* University of Maryland, Dept. of O.A.S.; The Carbon Cycle and Climate (METO 658A). Honors Program; Life on Earth (HONRS 289F). University of Maryland, Dept. of Geology; The Solar System (GEOL 279W), Principles of Geochemistry (GEOL 445), Principle of Biogeochemistry (GEOL 636), Biogeochemical cycle (GEOL 789F). Massachusetts Institute of Technology, EAPS; Biogeochemistry of sulfur (EAPS 12.491)

Advising (current, *graduated*)

- Primary PhD advisor for:
  - *W. Leavitt (2014), A. Masterson (2016), E. Bertran (2019), F. Liljestrand (2019),* A. Waldeck, H. Olson, E. Hughes.
- PhD committee member for:
  - *S. Pederson, H. Close, K. Dennis, P. Cohen, J. Creveling, T. Laakso, J. Strauss, M. Adams (OEB), S. Hurley, U Bold, E. Wilkes, J. Cohen (OEB)*
- Post-doctoral mentor for:
  - *B. Gill (Virginia Tech), A. Bradley (Washington University), S. Wankel (WHOI), V. Cummings (McGill), E. Sperling (Stanford), K. Bergman (MIT), B. Cowie (industry), M. Gomes*, J. Hemingway, L. Ward, K. Sutherland
- Undergraduate thesis mentor for:
  - (2011) Renata Cummins; (2012) Tor O'Brien; (2013) Esther Kennedy; (2014) Alex Morgan; (2015) Joe Schaffer, Kalina Grabb: (2018) Hanon McShea, Matt Miller: (2019) Matt Moody
- Undergraduates working in the lab
  - (2009) Jaemin Jang, (2010) Renata Cummins, Tor O'Brien, Esther Kennedy, Leah Tsao (Northeastern), Emily Northrop (Haverford College), Adrienne Hoarfrost (Dartmouth College), (2011) Renata Cummins, Tor O'Brien, Esther Kennedy, Nicholas Waldo, Gustavo Resendiz, Martin Richard (Haverford College), Caleb Birchard (Colorado College), Devon Cole (Colorado College) (2012) Esther Kennedy, Alex Morgan, Nick Waldo, Gustavo Resendiz, Devon Cole (Colorado College) (2013) Alex Morgan, Joe Schaffer, Kalina Grabb, Cecilia Sanders, Charles Wolock (2014) Kalina Grabb, Cecilia Sanders, Alyssa Chan, Sidni Frederick, Austin Miller (Colorado College) (2015) Kalina Grabb, Alyssa Chan, Alyssa Mehta (2016 (2017) Hanon McShea, Matt Moody, Matt Miller (2018) Hanon McShea, Madison Goldberg, Matt Moody (2019) Madison Goldberg
- High school students working in the lab
  - Liam Conway-Pearson (Boston Latin), Madeleine Higgins (Boston Latin), Weiquan Mai (Boston Latin)

Editorial boards

- Editor; Geobiology.
- Editorial Board member: Earth and Planetary Science Letters, Geobiology

- Associate Editor, Geochimica et Cosmochimica Acta (2012-2017), Frontiers (2015-)

Organizer/convener

- Sessions: AGU 2008, 2014; Goldschmidt 2010, 2014
- NASA Exobiology Review panel chair, May 2011, July 2012. Mars Fundamental Research program chair 2013
- Theme Organizer, Goldschmidt 2012.

Major collaborators

- Marc Alperin (UNC), Will Berelson (USC), Alex Bradley (Washington U.), Don Canfield (S. Denmark U.), Ines Cardosa Periera (ITQB Portugal), Karen Casciotti (Stanford U.), Galen Halverson (McGill U.), Paul Hoffman (U. Victoria), Tim Lyons (UC Riverside), Francis Macdonald (UC Santa Barbara), Paul Myrow (Colorado College), Shuhei Ono (MIT), Simon Poulton (Leeds U.), Roger Summons (MIT), Lidya Tarhan (Yale), Nick Tosca (Oxford), Boswell Wing (U. Colorado, Boulder)