

BENJAMIN GILL

Associate Professor
Virginia Polytechnic Institute and State University
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EDUCATION

PhD. Geological Sciences, University of California, Riverside, 2009.

B.S. Geological Sciences, Magna Cum Laude (with Departmental Honors), University of Missouri, Columbia, Missouri, 2004.

PROFESSIONAL EXPERIENCE

2018 – present	Associate Professor, Virginia Polytechnic Institute and University
2012 - 2018	Assistant Professor, Virginia Polytechnic Institute and University
2011 - 2012	Postdoctoral Fellow, Harvard University
2009 - 2011	Visiting Postdoctoral Fellow, Harvard University
2005 -2009	Teaching Assistant and Research Assistant, University of California-Riverside
2004-2005	Teaching Assistant and Research Assistant, University of Missouri

ACADEMIC HONORS AND AWARDS

- Virginia Tech Scholar of the Week, 2/14/2016
- Kavli Fellow, selected 2015
- Agouron Postdoctoral Fellowship, 2009-2011
- Blanchard Fellowship, UC-Riverside, 2009
- Geochemical Society Travel Grant, 2009
- Geological Society of America Travel Grant, 2007
- Department of Earth Science Fellowship, UC-Riverside, 2006
- Phi Beta Kappa, inducted 2004
- Geological Society of America Travel Grant, 2004
- Clayton H. Johnson Memorial Scholarship, University of Missouri, 2003
- Boyd Scholarship, University of Missouri, 2002-2004
- McNutt Scholarship, University of Missouri-Rolla 2000-2001

PUBLICATIONS

* = graduate student advisee, primary advisor

† = graduate student advisee, committee member

‡ = supervised post doc/researcher

^ = VT stable isotope facility user

In review, accepted, and in press - Copies of these manuscripts available upon request.

71. Nolan, M.^{†^}, Xiao, S., **Gill, B.C.**, Reid, R., Schwid, M.^{†^}, (*in review*). Enigmatic provenance of carbonate clasts in Cryogenian glacial diamictite of the Nantuo Formation in South China. *Precambrian Research*
70. Riegler, M.S.^{†^}, **Gill, B.C.**, Stocker, M.R., (*in review*). Stable isotope ratios accurately delineate trophic structure and aridity in extant squamates: implications for ecology and paleobiology. *Proceedings B*.
69. Kozik, N., **Gill, B.C.**, Owens, J.D., Lyons, T.W., Young, S. (*in press*) Geochemical records reveal protracted and differential marine redox change associated with Late Ordovician climate and mass extinctions. *AGU Advances* DOI: [10.1029/2021AV000563](https://doi.org/10.1029/2021AV000563)
68. Sendula, E.^{†^}, **Gill, B.C.**, Rimstidt, J.D., Lowenstein, T.K., Weldeghebriel, M.F., García-Veigas, J., Bodnar, R.J., (*in review*) Redox conditions in Late Permian seawater based on trace element ratios in fluid inclusions in halite from the Polish Zechstein Basin. *Chemical Geology*
67. Pruss, S.B., Zhang, J.Z., Tosca, N.J., **Gill, B.C.**, (*in review*). Fossil preservation by vivianite and other iron-bearing minerals in the lower-middle Cambrian Carrara Formation provide taphonomic constraints on the marine environment. *Palaeogeography, Palaeoclimatology, Palaeoecology*

2022

66. Caruthers, A.H, Marroquin, S.^{*}, Gröcke, D., Golding, M., Aberhan, M., Them, T.R., Trabucho-Alexandre, J. Veenma, Y.[†], Owens, J.D., McRoberts, C., Friedman, R., Trop, J., Szucs, D., Palfy, J., **Gill, B.C.**, (2022). New evidence for long duration Rhaetian Stage and regional differences in carbon cycle perturbations at the Triassic-Jurassic transition from a Panthalassan succession (Wrangell Mountains, Alaska). *Earth and Planetary Science Letters* 577, 117262.
DOI: [10.1016/j.epsl.2021.117262](https://doi.org/10.1016/j.epsl.2021.117262)

2021

65. **Gill, B.C.**, Dahl, T.W., Hammarlund, E.U., LeRoy, M.A.^{*}, Gordon, G.W., Canfield, D.E., Anbar, A.D., Lyons, T.W., (2021). Redox dynamics of later Cambrian oceans. *Palaeogeography, Palaeoclimatology, Palaeoecology* 581, 110623. DOI: [10.1016/j.palaeo.2021.110623](https://doi.org/10.1016/j.palaeo.2021.110623)
64. Sperling, E.A., Melchin, M.J., Fraser, T., Stockey, R.G., Farrell, U.C., Bhajan, L., Brunoir, T.N., Cole, D.B., **Gill, B.C.**, Lenz, A., Loydell, D.K., Malinowski, J., Miller, A.J., Plaza-Torres, S., Bock, B., Rooney, A.D., Tecklenburg, S.A., Vogel, J.M., Planavsky, N.J., Strauss, J.V., (2021). A long-term record of early to mid-Paleozoic marine redox change. *Science Advances* 7, eabf4382.
DOI: [10.1126/sciadv.abf4382](https://doi.org/10.1126/sciadv.abf4382)

63. DePaolis, J.M.[†], Dura, T., MacInnes, B., Ely, L.L., Cisternas, M., Carvajal, M., Tang, H., Fritz, H.M., Mizobe, C., Wesson, R.L., Figueroa, G., Brennan, N., Horton, B.P., Pilarczyk, J.E., Corbett, D.R., **Gill, B.C.**, Weiss, R., (2021). Stratigraphic evidence of two historical tsunamis on the semi-arid coast of north-central Chile. *Quaternary Science Reviews* 266, 107052. DOI: [10.1016/j.quascirev.2021.107052](https://doi.org/10.1016/j.quascirev.2021.107052)
62. Dodd, M.S., Zhang, Z., Li, C., Algeo, T.J., Lyons, T.W., Hardisty, D.S., Loyd, S.J., Meyer, D.L., **Gill, B.C.**, Shi, W., Wang, W., (2021). Development of carbonate-associated phosphate (CAP) as a proxy for reconstructing ancient ocean phosphate levels. *Geochimica et Cosmochimica Acta* 301, 48–69. DOI: [10.1016/j.gca.2021.02.038](https://doi.org/10.1016/j.gca.2021.02.038)
61. Farrell, Ú.C., Samawi, R., Anjanappa, S., Klykov, R., Adeboye, O.O., Agic, H., Ahm, A.-S.C., Boag, T.H., Bowyer, F., Brocks, J.J., Brunoir, T.N., Canfield, D.E., Chen, X., Cheng, M., Clarkson, M.O., Cole, D.B., Cordie, D.R., Crockford, P.W., Cui, H., Dahl, T.W., Mouro, L.D., Dewing, K., Dornbos, S.Q., Drabon, N., Dumoulin, J.A., Emmings, J.F., Endriga, C.R., Fraser, T.A., Gaines, R.R., Gaschnig, R.M., Gibson, T.M., Gilleaudeau, G.J., **Gill, B.C.**, Goldberg, K., Guilbaud, R., Halverson, G.P., Hammarlund, E.U., Hantsoo, K.G., Henderson, M.A., Hodgskiss, M.S.W., Horner, T.J., Husson, J.M., Johnson, B., Kabanov, P., Keller, C.B., Kimmig, J., Kipp, M.A., Knoll, A.H., Kreitsmann, T., Kunzmann, M., Kurzweil, F., LeRoy, M.A.* , Li, C., Lipp, A.G., Loydell, D.K., Lu, X., Macdonald, F.A., Magnall, J.M., Mänd, K., Mehra, A., Melchin, M.J., Miller, A.J., Mills, N.T., Mwinde, C.N., O'Connell, B., Och, L.M., Ossa, F.O., Pagès, A., Paiste, K., Partin, C.A., Peters, S.E., Petrov, P., Playter, T.L., Plaza-Torres, S., Porter, S.M., Poulton, S.W., Pruss, S.B., Richoz, S., Ritzer, S.R., Rooney, A.D., Sahoo, S.K., Schoepfer, S.D., Sclafani, J.A., Shen, Y., Shorttle, O., Slotznick, S.P., Smith, E.F., Spinks, S., Stockey, R.G., Strauss, J.V., Stüeken, E.E., Tecklenburg, S., Thomson, D., Tosca, N.J., Uhlein, G.J., Vizcaíno, M.N., Wang, H., White, T., Wilby, P.R., Woltz, C.R., Wood, R.A., Xiang, L., Yurchenko, I.A., Zhang, T., Planavsky, N.J., Lau, K.V., Johnston, D.T., Sperling, E.A., (2021). The Sedimentary Geochemistry and Paleoenvironments Project. *Geobiology* 19, 545–556. DOI: [10.1111/gbi.12462](https://doi.org/10.1111/gbi.12462)
60. LeRoy, M.A.* , **Gill, B.C.**, Sperling, E.A., McKenzie, N.R., Park, T.-Y.S., (2021). Variable redox conditions as an evolutionary driver? A multi-basin comparison of redox in the middle and later Cambrian oceans (Drumian-Paibian). *Palaeogeography, Palaeoclimatology, Palaeoecology* 566, 110209. DOI: [10.1016/j.palaeo.2020.110209](https://doi.org/10.1016/j.palaeo.2020.110209)

2020

59. Okubo, J.[^], Klyukin, Y.I., Warren, D.V., Sublett, M., Bodnar, R.J., **Gill, B.C.**, Xiao, S., (2020). Hydrothermal influence on barite precipitates in the basal Ediacaran Sete Lagoas cap dolostone, São Francisco Craton, central Brazil. *Precambrian Research* 340, 105628. DOI: [10.1016/j.precamres.2020.105628](https://doi.org/10.1016/j.precamres.2020.105628)
58. Shen, J., Feng, Q., Algeo, T.J., Liu, J., Zhou, C., Wei, W., Liu, J., Them, T.R., **Gill, B.C.**, Chen, J., (2020). Sedimentary host phases of mercury (Hg) and implications for use of Hg as a volcanic proxy. *Earth and Planetary Science Letters* 543, 116333. DOI: [10.1016/j.epsl.2020.116333](https://doi.org/10.1016/j.epsl.2020.116333)
57. Strauss, J.V., Fraser, T., Melchin, M.J., Allen, T.J., Malinowski, J., Feng, X., Taylor, J.F., Day, J., **Gill, B.C.**, Sperling, E.A., (2020). The Road River Group of northern Yukon, Canada: Early Paleozoic deep-water sedimentation within the Great American Carbonate Bank. *Canadian Journal of Earth Sciences* 57, 1193-1219 DOI: [10.1139/cjes-2020-0017](https://doi.org/10.1139/cjes-2020-0017)

56. Dellinger, M., West, A.J., Planavsky, N.J., Hardisty, D., **Gill, B.C.**, Kalderon-Asael, B., Asael, D., Croissant, T., Swart, P.K., (2020). The effects of diagenesis on Li isotope ratios of shallow marine carbonates. *American Journal of Science* 320, 150-184. DOI: [10.2475/02.2020.03](https://doi.org/10.2475/02.2020.03)
55. Li, Y.-X., **Gill, B.C.**, Montañez, I.P., Ma, L., LeRoy, M.A.*, Kodama, K.P. (2020). Obliquity-paced redox fluctuations during Cretaceous Oceanic Anoxic Event 2 (OAE2) revealed by a mineral magnetic proxy. *Palaeogeography, Palaeoclimatology, Palaeoecology* 538, 109465. DOI: [10.1016/j.palaeo.2019.109465](https://doi.org/10.1016/j.palaeo.2019.109465)

2019

54. Liu, Z. Horton, D., Tabor, C., Sageman, B., Percival, L., **Gill, B.**, Selby, D., (2019). Climate perturbations of the Paleocene-Eocene Thermal Maximum driven by comet Impact and volcanism. *Geophysical Research Letters* 46, 14798-14806. DOI: [10.1029/2019GL084818](https://doi.org/10.1029/2019GL084818)
53. Dahl, T.W., Connelly, James, Li, D., Kouchinsky, A., **Gill, B.C.**, Porter, S., Maloof, A., Bizzarro, M., (2019). Atmosphere-ocean oxygen and productivity dynamics during early animal radiations. *Proceedings of the National Academy of Science* 116, 19352–19361. DOI: [10.1073/pnas.1901178116](https://doi.org/10.1073/pnas.1901178116)
52. Chen, Y.[^], Diamond, C.W., Stüeken, E.E., **Gill, B.C.**, Zhang, F., Bates, S.M., Chu, X., Ding, Y., Lyons, T.W., (2019). Coupled evolution of nitrogen cycling and chemocline dynamics on the Yangtze Block across the Ediacaran-Cambrian transition. *Geochimica et Cosmochimica Acta* 257, 243-265. DOI: [10.1016/j.gca.2019.05.017](https://doi.org/10.1016/j.gca.2019.05.017)
51. LeRoy, M.A.^{^*}, **Gill, B.C.**, (2019). Evidence for the development of local anoxia during the Cambrian SPICE event in eastern North America. *Geobiology* 17, 381-400. DOI: [10.1111/gbi.12334](https://doi.org/10.1111/gbi.12334)
50. Them, T.R.^{^*}, Jagoe, C., Caruthers, A.H., **Gill, B.C.**, Grasby, S., Gröcke, D.R. Yin, R., Owens, J.D., (2019). Mercury geochemistry reveals massive terrestrial disturbance during the Early Jurassic (Pliensbachian-Toarcian). *Earth and Planetary Science Letters* 507, 62-72. DOI: [10.1016/j.epsl.2018.11.029](https://doi.org/10.1016/j.epsl.2018.11.029)

2018

49. Schwarzenbach, E.M.^{^†}, Caddick, M.J., Petroff, M., **Gill, B.C.**, Cooperdock, E.H.G., Barnes, J.D., (2018). A window into sulphur and carbon cycling in subduction zones Sulphur and carbon cycling in the subduction zone mélange. *Scientific Reports* 8, 15517. DOI: [10.1038/s41598-018-33610-9](https://doi.org/10.1038/s41598-018-33610-9)
48. Isson, T.T., Love, G.D., Dupont, C.L., Reinhard, C.T., Zumberge, A., Asael, D., Gueguen, B., McCrow, J.P., **Gill, B.C.**, Owens, J.D., Rainbird, R.H., Rooney, A.D., Zhao, M.-Y., Stueeken, E.E., John, S.G., Lyons, T.W., Planavsky, N.J., (2018). Tracking the Rise of Eukaryotes to Ecological Dominance with Zinc Isotopes. *Geobiology* 16, 341-352. DOI: [10.1111/gbi.12289](https://doi.org/10.1111/gbi.12289)
47. Caruthers, A.H., Smith, P.L., Gröcke, D.R., **Gill, B.C.**, Them, T.R.^{*}, Trabucho Alexandre, J.P. (2018). Pliensbachian–Toarcian (Early Jurassic) Ammonoids from the Luning Embayment, West-Central Nevada, U.S.A. *Bulletins of American Paleontology* 393, 84.
46. Chen X., Romaniello S. J., Herrmann A. D., Hardisty D., **Gill B.C.**, Anbar, A.D., (2018) Diagenetic effects on uranium isotope fractionation in carbonate sediments from the Bahamas. *Geochimica et Cosmochimica Acta* 237, 294–311. DOI: [10.1016/j.gca.2018.06.026](https://doi.org/10.1016/j.gca.2018.06.026)

45. Hardisty, D.S., Lyons, T.W., Riedinger, N., Isson, T.T., Owens, J.D., Aller, R.C., Rye, D., Planavsky, N.J., Reinhard, C.T., **Gill, B.C.**, Masterson, A.L., Asael, D., Johnston, D.T., (2018) An evaluation of sedimentary molybdenum and iron as proxies for pore fluid paleoredox conditions. *American Journal of Science* 318, 527-556. DOI: [10.2475/05.2018.04](https://doi.org/10.2475/05.2018.04)
44. Lu, W., Ridgwell A., Thomas, E., Hardisty D.S., Luo, G., Algeo, T.J., Saltzman, M.R., **Gill, B.C.**, Shen, Y., Ling, H.-F., Edwards, C.T., Whalen, M.T., Zhou, X., Gutches, K.M., Jin, L., Rickaby, R.E.M., Jenkyns, H.C., Lyons T.W., Lenton, T.M., Kump, L.R., Lu, Z., (2018). Late inception of a resiliently oxygenated upper ocean. *Science* 361, 174–177. DOI: [10.1126/science.aar5372](https://doi.org/10.1126/science.aar5372)
43. Schwarzenbach, E.M.[‡], **Gill, B.C.**, Johnston, D.T., (2018a). Unraveling multiple phases of sulfur cycling during the alteration of ancient ultramafic oceanic lithosphere. *Geochimica et Cosmochimica Acta* 223, 279-299. DOI: [10.1016/j.gca.2017.12.006](https://doi.org/10.1016/j.gca.2017.12.006)
42. Them, T.R.[∗], **Gill, B.C.**, Caruthers, A.H., Gerhardt, A.M.[∗], Gröcke, D.R., Lyons, T.W., Marroquín, S.M.[∗], Nielsen, S.G., Trabucho Alexandre, J.P., Owens, J.D., (2018). Thallium isotopes reveal protracted anoxia associated with volcanism, carbon burial and extinction during the Toarcian (Early Jurassic). *Proceedings of the National Academy of Sciences* 115, 6596-6601. DOI: [10.1073/pnas.1803478115](https://doi.org/10.1073/pnas.1803478115)

2017

41. Xiao, S.[^], Bykova, N.[‡], Kovalick, A., **Gill, B.C.**, (2017). Stable carbon isotopes of sedimentary kerogens and carbonaceous macrofossils from the Ediacaran Miaohu Member in South China: Implications for stratigraphic correlation and source of sedimentary organic carbon. *Precambrian Research* 302, 171-179. DOI: [10.1016/j.precamres.2017.10.006](https://doi.org/10.1016/j.precamres.2017.10.006)
40. Bykova, N.[‡], **Gill, B.C.**, Grazhdankin, D., Rogov, V., Xiao, S., (2017). A geochemical study of the Ediacaran discoidal fossil *Aspidella* preserved in limestones: Implications for its taphonomy and paleoecology. *Geobiology* 15, 572-587. DOI: [10.1111/gbi.12240](https://doi.org/10.1111/gbi.12240)
39. Dahl, T.W.[^], Connelly, J.N., Kouchinsky, A., **Gill, B.C.**, Månsson, S.F.[^], Bizzarro, M. (2017). Reorganization of Earth's biogeochemical cycles briefly oxygenated the oceans 520 Myr ago. *Geochemical Perspectives Letters* 3, 210-220. DOI: [10.7185/geochemlet.1724](https://doi.org/10.7185/geochemlet.1724)
38. Dickson, A.J.[^], **Gill, B.C.**, Ruhl, M., Jenkyns, H.C., Porcelli, D., Idiz, E., Lyons, T.W., van den Boom, S.H.J.M., (2017). Molybdenum-isotope chemostratigraphy and paleogeography of the Toarcian Oceanic Anoxic Event (Early Jurassic). *Paleoceanography* 32, PA003048. DOI: [10.1002/2016PA003048](https://doi.org/10.1002/2016PA003048)
37. Hardisty, D.S., Lu, Z., Bekker, A., Diamond, C.W., **Gill, B.C.**, Jiang, G., Kah, L.C., Knoll, A.H., Loyd, S.J., Osburn, M.R., Planavsky, N.J., Wang, C., Zhou, X., Lyons, T.W., (2017). Perspectives on Proterozoic surface ocean redox from iodine contents in ancient and recent carbonate. *Earth and Planetary Science Letters* 463, 159–170. DOI: [10.1016/j.epsl.2017.01.032](https://doi.org/10.1016/j.epsl.2017.01.032)
36. Ma, B.[^], Cao, Y., Eriksson, K. A., Jia, Y., **Gill, B.C.**, (2017). Depositional and diagenetic controls on deeply-buried Eocene sublacustrine fan reservoirs in the Dongying Depression, Bohai Bay Basin, China. *Marine and Petroleum Geology* 82, 297–317. DOI: [10.1016/j.marpetgeo.2017.02.014](https://doi.org/10.1016/j.marpetgeo.2017.02.014)

35. Martindale, R.C.[^], Them, T. R.^{*}, **Gill, B. C.**, Marroquín, S.M.^{*}, Knoll, A.H., 2017. A new Early Jurassic (ca. 183 Ma) fossil Lagerstätte from Ya Ha Tinda, Alberta, Canada. *Geology* 45, 255-258. DOI: [10.1130/G38808.1](https://doi.org/10.1130/G38808.1)
34. Reinhard, C.T., Planavsky, N.J., **Gill, B.C.**, Ozaki, K., Robbins, L.J., Lyons, T.W., Fischer, W.W., Wang, C., Cole, Konhauser, K.O., 2017. Evolution of the global phosphorus cycle. *Nature* 541, 386–389. DOI: [10.1038/nature20772](https://doi.org/10.1038/nature20772)
33. Them, T.R.^{^*}, **Gill, B.C.**, Selby, D., Gröcke, D.R., Friedman, R.M., Owens, J.D., (2017). Evidence for rapid weathering response to climatic warming during the Toarcian Oceanic Anoxic Event. *Scientific Reports* 7, 5003. DOI: [10.1038/s41598-017-05307-y](https://doi.org/10.1038/s41598-017-05307-y)
32. Them, T. R.^{^*}, **Gill, B.C.**, Caruthers, A. H., Gröcke, D.R., Tulskey, E.T.^{*}, Martindale, R. C., Poulton, T.P., Smith, P.L., 2017. High-resolution carbon isotope records of the Toarcian Oceanic Anoxic Event (Early Jurassic) from North America and implications for the global drivers of the Toarcian carbon cycle. *Earth and Planetary Science Letters* 459, 118–126. DOI: [10.1016/j.epsl.2016.11.021](https://doi.org/10.1016/j.epsl.2016.11.021)
31. Wang, Z.[^], Wang, J., Kouketsu, Y., Bodnar, R.J., **Gill, B.C.**, Xiao, S., (2017). Raman geothermometry of carbonaceous material in the basal Ediacaran Doushantuo cap dolostone: the thermal history of extremely negative $\delta^{13}\text{C}$ signatures in the aftermath of the terminal Cryogenian snowball Earth glaciation. *Precambrian Geology* 298, 174-186. DOI: [10.1016/j.precamres.2017.06.013](https://doi.org/10.1016/j.precamres.2017.06.013)

2016

30. Gerhardt, A.M.^{^*}, **Gill, B.C.**, (2016). Elucidating the relationship between the later Cambrian end-Marjuman extinctions and SPICE Event. *Palaeogeography, Palaeoclimatology, Palaeoecology* 461, 362–373. DOI: [10.1016/j.palaeo.2016.08.031](https://doi.org/10.1016/j.palaeo.2016.08.031)
29. Ma, B.[^], Eriksson, K.A., Cao, Y., Jia, Y., Wang, Y., **Gill, B.C.**, (2016). Flow and related diagenetic processes in a rift basin: Evidence from the fourth member of the Eocene Shahejie Formation interval, Dongying depression, Bohai Bay Basin, China. *AAPG Bulletin* 100, 1633–1662. DOI: [10.1306/04211615207](https://doi.org/10.1306/04211615207)
28. Robbins, L. J., Lalonde, S. V., Planavsky, N. J., Partin, C. A., Reinhard, C. T., Kendall, B., Scott, C., Hardisty, D.S., **Gill, B.C.**, Alessi, D.S., Dupont, C.L., Saito, M.A., Crowe, S.A., Poulton, S.W., Bekker, A., Lyons, T.W., Konhauser, K.O., (2016). Trace elements at the intersection of marine biological and geochemical evolution. *Earth Science Reviews* 163, 323–348. DOI: [10.1016/j.earscirev.2016.10.013](https://doi.org/10.1016/j.earscirev.2016.10.013)
27. Schwarzenbach, E.M.^{^‡}, **Gill, B.C.**, Gazel, E., Madrigal, P., (2016). Sulfur and carbon geochemistry of the Santa Elena peridotites: Comparing oceanic and continental processes during peridotite alteration. *Lithos* 252-253, 92–108. DOI: [10.1016/j.lithos.2016.02.017](https://doi.org/10.1016/j.lithos.2016.02.017)
26. Wang, X., Planavsky, N. J., Reinhard, C. T., Zou, H., Ague, J. J., Wu, Y., **Gill, B.C.**, Schwarzenbach, E.M.[‡], Peucker-Ehrenbrink, B., (2016). Chromium isotope fractionation during subduction-related metamorphism, black shale weathering, and hydrothermal alteration. *Chemical Geology* 423, 19–33. DOI: [10.1016/j.chemgeo.2016.01.003](https://doi.org/10.1016/j.chemgeo.2016.01.003)

25. Young, S.A., **Gill, B.C.**, Edwards, C.T., Saltzman, M.R., Leslie, S.A., (2016). Middle–Late Ordovician (Darriwilian–Sandbian) decoupling of global sulfur and carbon cycles: Isotopic evidence from eastern and southern Laurentia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 458, 118–132. DOI: [10.1016/j.palaeo.2015.09.040](https://doi.org/10.1016/j.palaeo.2015.09.040)

2015

24. Rohrssen, M., **Gill, B.C.**, Love, G.D., (2015). Scarcity of the C-30 sterane biomarker, 24-n-propylcholestane, in Lower Paleozoic marine paleoenvironments. *Organic Geochemistry* 80, 1-7. DOI: [10.1016/j.orggeochem.2014.11.008](https://doi.org/10.1016/j.orggeochem.2014.11.008)
23. Sperling, E.A., Wolock, C.J., Morgan, A.S., **Gill, B. C.**, Kunzmann, M., Halverson, G.P., Macdonald, F.A., Knoll, A.H., Johnston, D.T., (2015). Statistical analysis of iron geochemical data suggests limited late Proterozoic oxygenation. *Nature* 523, 451–454. DOI: [10.1038/nature14589](https://doi.org/10.1038/nature14589)

2014

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INVITED SEMINARS

School of the Earth, Ocean and Environment, University of South Carolina, 2021
Department of Earth Sciences, Indiana University-Purdue University Indianapolis, 2018
Department of Geology and Environmental Science, University of Pittsburgh, 2018
Department of Earth & Planetary Sciences, Johns Hopkins University, 2017
Department of Earth, Ocean and Atmospheric Science, Florida State University, 2017
Department of Geology and Geophysics, Yale University, 2016
Department of Geology & Environmental Science, James Madison University, 2015
Department of Geological Sciences, University of Indiana, 2013
Department of Geology, University of Maryland, 2012
Geophysical Laboratory, Carnegie Institution for Science, 2012

INVITED CONFERENCE PRESENTATIONS

Gill, B.C., LeRoy, M.A.*, Gerhardt, A.*, Them, T.R.*, Owens, J.D., (2017). Deciphering the record of biologic and environmental change during the later Cambrian Steptoean Positive Carbon Isotope Excursion. GSA Annual Meeting, Seattle, Washington. *Geological Society of America Abstracts with Programs*. v.49, DOI: [10.1130/abs/2017AM-307842](https://doi.org/10.1130/abs/2017AM-307842)

Gill, B.C., Them II, T.R.*, Caruthers, A.H., (2015). The Global Record of the Toarcian Ocean Anoxic Event: Perspectives from the Eastern Panthalassic Ocean. 2015 Fall Meeting, AGU, San Francisco, California, (14-18 Dec). <https://agu.confex.com/agu/fm15/meetingapp.cgi/Paper/61433>

Gill, B.C., Lyons, T.W., Young, S.A., Kaljo, D., Saltzman, M.R., (2014). Sulfur isotope evidence for Late Ordovician ocean oxygenation: Implications for the drivers of the Hirnantian Extinction. GSA Annual Meeting, Vancouver British Columbia, Canada. *Geological Society of America Abstracts with Programs*. v.46, n.6, p.625. <https://gsa.confex.com/gsa/2014AM/webprogram/Paper250087.html>

Gill, B.C., Owens, J.D., Them, T.R.*, Jenkyns, H. C., Lyons, T.W., (2013). A refined investigation into the sulfur and iron cycles during the Toarcian OAE. AGU Annual Meeting, San Francisco.

Gill, B.C., Lyons, T.W., Young, S., Kaljo, D., Saltzman, M.R., (2012). Sulfate sulfur isotope stratigraphy reveals a record of ocean ventilation during the Latest Ordovician AGU Annual Meeting, San Francisco.

Gill, B.C., Lyons, T.W., Johnston, D.T., Saltzman, M.R., Knoll, A.H., (2012). Persistence of widespread marine anoxia after Neoproterozoic oxygenation and its effect on early animal evolution and fossil preservation. GSA Annual Meeting, Denver. *Geological Society of America Abstracts with Programs* v.44, n.7, p 221. <https://gsa.confex.com/gsa/2012AM/webprogram/Paper211774.html>

Gill, B.C., Lyons, T.W., Dahl, T., Saltzman, M., Gordon, G., Anbar, A., (2009). Multiple geochemical proxies reveal a Late Cambrian ocean anoxic event. 19th Annual Goldschmidt Conference, Davos, Switzerland *Geochimica et Cosmochimica Acta* v. 73. p A436. <https://goldschmidtabstracts.info/abstracts/abstractView?id=2009002993>

Gill, B.C., Lyons, T.W., Young, S., Kump, L., Saltzman, M., (2008). Geochemical Evidence for Widespread Reducing Ocean during the Middle to Late Cambrian. GSA, ASA-CSSA-SSSA, GCAGS, Joint Annual Meeting-Houston.

CONFERENCE ABSTRACTS

* = graduate student advisee, primary advisor

† = graduate student advisee, committee member

° = undergraduate advisee

‡ = supervised post doc/researcher

^ = VT stable isotope facility user

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GRANTS AND FUNDING

2020-2023	National Science Foundation (EAR- 2026926)	<i>Collaborative research: Multi-disciplinary investigation of the links between volcanism, marine redox, and mass extinction during the Late Triassic and Early Jurassic</i> PIs Gill, Caruthers (Western Michigan) and Owens (Florida State) Total Amount: \$ 213,873
2018-2021	Department of Energy (DE-FE0031576)	<i>Field Laboratory for Emerging Stacked Unconventional Plays (ESUP) in Central Appalachia</i> PIs Ripepi, Chen, Gill, Karmis, Keles, Radcliffe, Schlosser (all Virginia Tech) Total Amount: \$ 9,250,815
2019	Virginia Tech College of Science Dean's Discovery Fund	<i>New perspectives on the Triassic-Jurassic Mass Extinction Event.</i> PI Gill Total Amount: \$9,959
2018-2022	American Chemical Society (58805 ND)	<i>Investigation of Sulfur Transformations Associated with Magma Emplacement in Organic-Rich Sedimentary Rocks.</i> PI Gill and Co-I Caddick (both Virginia Tech) Total Amount: \$110,000
2013-2017	National Science Foundation (EAR-1324752)	<i>Collaborative Research: Deciphering the regional-versus-global aspects of the Toarcian (Jurassic) Oceanic Anoxic Event in North America.</i> PIs Gill and Formolo (U. of Tulsa) Amount: \$329,413
2013-2016	National Science Foundation (EAR-1324566).	<i>In-situ isotopic effects of serpentinization and identifying the controls on biological activity in serpentinites.</i> PIs Schwarzenbach and Gill (both Virginia Tech) Amount: \$149,454
2014-2015	National Science Foundation. (CBET-1440067)	<i>RAPID, Collaborative: Using geochemical signatures to evaluate the impact of a recent coal ash spill on trace elements in water and sediments of the Dan River.</i> PIs Schreiber, Gill, Michel (all Virginia Tech) and Derry (Cornell) Amount: \$25,499

GRADUATE STUDENTS ADVISED

<u>Student</u>	<u>Degree</u>	<u>Thesis/Dissertation Title</u>	<u>Graduation Date</u> <u>(*anticipated)</u>
Angela Gerhardt	Masters	<i>Carbon cycle changes during the end-Marjuman extinction in the Southern Appalachians</i>	2014
Theodore Them	PhD	<i>Assessing the global reach of the Toarcian Oceanic Anoxic Event</i>	2016
Samantha Ritzer	Masters	<i>An integrated geochemical and sedimentological analysis of a lacustrine Lagerstätten in the Triassic Cow Branch Formation of the Dan River Basin</i>	2016
Emma Tulskey	Masters	<i>The effects of contact metamorphism by diabase intrusion on the carbon and sulfur bearing phases in the siltstones of the Culpeper Basin</i>	2017
Selva Marroquín	PhD	<i>Evaluating redox cycling across the Toarcian Oceanic Anoxic Event with implications for paleo-environmental reconstructions and organic matter sulfurization</i>	2020
Mathew LeRoy	PhD	<i>Redox evolution of the oceans during the Earliest Paleozoic</i>	2022*
Yezi Yang	PhD	<i>The Laurentian records of the late early Cambrian extinctions</i>	2023*
Jonny Prouty	PhD	<i>Effects of contact metamorphism on the volatile budgets of Large Igneous Provinces</i>	2023*
Tara Putri	PhD	<i>Environmental changes during the Devonian mass extinctions</i>	2024*
Kayla McCabe	Masters	<i>Nitrogen cycling in the Panthalassic Ocean during the end-Triassic mass extinction event</i>	2023*
Amy Hagen	PhD	<i>Phosphorous cycling in the Panthalassic Ocean during the end-Triassic mass extinction event</i>	2027*

UNDERGRADUATE RESEARCHERS ADVISED

Michael Zigah	2019-present
Kayla McCabe	2019-2020
Brianna Miranda	2019-2020
Jordan Pritchard	2017-2020
Dalton Anderson	2017-2018
Alex Kovalick	2017
Jason Eng	2015 to 2017
Hannah Grove	2013 to 2015
Emma Tulskey	2104 to 2015
Ava Menza	2013 to 2014
Russell Wheeler	2013

HIGH SCHOOL RESEARCHERS ADVISED

Lizzie Dunsmore	2017
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TEACHING EXPERIENCE

Virginia Tech

- Aqueous Environmental Geochemistry (Fall Semesters 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021)
- Advanced Environmental Geochemistry (Fall Semesters 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021)
- Biogeochemical Cycles (Spring 2018)
- Carbonate Deposystems (Spring 2013, 2015, 2018, Fall 2021)
- Coastal Depositional Systems (Spring 2016)
- Earth's Dynamic Systems (Guest Lecturer – Fall Semesters 2016, 2017, 2018, 2019, 2020, 2021)
- Earth and Life Through Time (Spring 2014, 2015, 2017, 2020)
- Earth System History (Guest Lecturer – Fall Semesters 2018, 2019, 2021)
- Isotope Biogeochemistry (Spring 2021)
- Paleozoic Deposystems of the Appalachians (Spring 2014)
- Sedimentary Geology and Paleobiology Seminar (4 semesters)

Harvard University

- Historical Geobiology (Guest Lecturer – Spring 2010)
- Analytical and Field Methods in Geobiology (Teaching Assistant – Spring 2011)

University of California-Riverside

- The Earth System Laboratory (Teaching Assistant)
- Natural Hazards (Teaching Assistant)
- Low Temperature Geochemistry Laboratory (Teaching Assistant)

University of Missouri

- Introduction to Geology Laboratory (Teaching Assistant – Fall 2004)
- Introduction to Paleontology Laboratory (Teaching Assistant - Fall 2005)
- Earth Materials and Processes Laboratory (Teaching Assistant - Spring 2005)
- Oceanography Laboratory (Teaching Assistant - Spring 2005)

FIELDWORK

- Cambrian-Ordovician C&O Canal National Historic Park, Maryland, June and December 2021
- Upper Devonian, Eastern West Virginia, August 2021
- Rogersville Shale, Eastern Tennessee, August 2021
- Triassic and Jurassic of Nevada, May 2019
- Triassic and Jurassic of Wrangel Mountains, Alaska, July 2017, July 2018, July-August 2019
- Early Jurassic of Nevada, June 2014, May 2015
- Early Jurassic of Alberta, August 2013, July 2014, August 2015
- Late Cambrian Carbonates of Southwest Virginia and Tennessee, March 2013
- Late Cambrian Carbonates of Korea and North China, March 2011
- Long Island Sound, Connecticut, October 2010
- Wheeler Formation (Middle Cambrian), Utah, April 2010
- Early Jurassic Black Shales, Germany and the United Kingdom. July 2008
- Georgina (Late Cambrian) and MacArthur (Mesoproterozoic) Basins, Australia. June 2007
- Mahoney Lake, British Columbia. September 2006
- Paleozoic Carbonates, Great Basin, USA. June 2004, September 2005, September-October 2006
- Teepee Buttes Cretaceous Methane seeps, Colorado, USA. June 2005
- Florida Bay, Florida. August 2003

PROFESSIONAL SERVICE

- Session chair, the 2021 Geological Society of America Annual Meeting: *Integrative Approaches to Understanding Mesozoic Environmental and Biologic Perturbations*, October 9-13th, 2021 in Portland, Oregon
- Session chair, the 2019 Geological Society of America Southeastern Section Annual Meeting: *Reconstructing Paleo-Environmental Changes*, March 28-29th, 2019 in Charleston, South Carolina
- Conference theme co-chair, the 2018 Goldschmidt Conference: *Evolving Life and Environments Through Deep Time* Theme, August 11-27, 2018 in Boston, Massachusetts
- Session chair, the 2017 American Geophysical Union Annual Meeting: *Phanerozoic Graveyards: New Advances in the Study of Old Extinction Events*, December 11-15, 2017 in New Orleans, Louisiana
- Co-convenor and co-organizer of the Society for Sedimentary Geology Research Conference: *Oceanic Anoxic Events (OAEs)* October 31 to November 7, 2016
- Session chair Geological Society of America: *Excursions, Extinctions, and Environmental Change: New Advances in Geochemical Tools Linked to Critical Intervals of Environmental and Biotic Change in Earth History*. Denver, Colorado, September 27, 2016.
- Theme co-chair at the V.M. Goldschmidt Conference 2015 in Prague, Czech Republic: *Evolution of Earth's Environment*
- Session chair Goldschmidt Conference 2015: *Revolutions of the Paleozoic*. Prague, Czech Republic
- Panelist for NASA's Astrobiology and Habitable Worlds Programs

- Co-organizer of the “Advent of Complex Life and the Neoproterozoic-Cambrian Transition” Geobiology Symposium. Harvard, 2010
- Co-organizer of the 3rd Annual Southern California Geobiology Symposium 2006
- Reviewer for following Journals:
 - *Cambridge Elements*
 - *Chemical Geology*
 - *Earth and Planetary Science Letters*
 - *Geochemistry Geophysics Geosystems*
 - *Geochimica et Cosmochimica Acta*
 - *Geobiology*
 - *Geology*
 - *Gondwana Research*
 - *Global and Planetary Change*
 - *Journal of African Earth Sciences*
 - *Nature*
 - *Nature Geoscience*
 - *Naturwissen*
 - *Palaeogeography, Palaeoclimatology, Palaeoecology*
 - *Paleoceanography*
 - *Precambrian Research*
 - *Proceedings of the National Academy of Science*
 - *Science Advances*
 - *Sedimentology*
 - *The Depositional Record*
- Adhoc proposal reviewer for the National Science Foundation; American Chemical Society Petroleum Research Fund; Netherlands Organization for Scientific Research

PROFESSIONAL AFFILIATIONS

- American Association for the Advancement of Science
- American Chemical Society
- American Geophysical Union
- Geochemical Society
- Geological Society of America
- International Association of Sedimentologists
- Society for Sedimentary Geology