

Richard G. Stockey

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Education

- 2022 **PhD Geological Sciences, Stanford University**
Geological Sciences Department, Stanford University
Advisor: Erik Sperling
- 2016 **MSci Natural Sciences**
University of Cambridge
Advisor: Alexandra Turchyn (*Part III Geological Sciences*)
- 2015 **BA (Hons) Natural Sciences**
University of Cambridge

Employment

- 2022- **Lecturer in Palaeobiology**
School of Ocean and Earth Sciences, University of Southampton

Professional Service Roles

- 2023- Vice-Chair, Earth System Science Group of the Geological Society of London
Held jointly with Dr. Ross Anderson, Oxford Museum of Natural History
- 2024- Geoscience Recruitment and Outreach Coordinator
School of Ocean and Earth Science, University of Southampton

Grants and Awards

- 2021 Centennial Teaching Assistant Award, Geological Sciences, Stanford University
- 2019 NASA Astrobiology Early Career Collaboration Award
- 2019 GSA Graduate Student Research Grant
- 2019 Lawrence W. Funkhouser Grant, AAPG Foundation Grants-in-Aid Program
- 2017 McGee-Levorson Research Grant, Stanford University
- 2015 Friends of the Sedgwick Museum Student Prize
- 2015 Worts Travelling Scholars Fund Award, University of Cambridge
- 2014 Worts Travelling Scholars Fund Award, University of Cambridge
- 2014 David Thompson Award, University of Cambridge

Co-written major grants

- 2019 NSF grant EAR-1922966 “Moving from correlation to mechanism: testing the role of temperature and oxygen change in the Great Ordovician Biodiversification Event”
(\$297,897 – Co-written with PI Erik Sperling to fund PhD research)

Publications

- 16) **Stockey, R.G.**, Cole, D.B, Farrell, U.C., Agić, H., Boag, T.H., Brocks, J.J., Canfield, D.E., Cheng, M., Crockford, P.W., Cui, H., Dahl, T.W., Del Mouro, L., Dewing, K., Dornbos, S.Q., Emmings, J.F., Gaines, R.R., Gibson, T.M., Gill, B.C., Gilleaudeau, G.J., Goldberg, K., Guilbaud, R., Halverson, G., Hammarlund, E.U., Hantsoo, K., Henderson, M.A., Henderson, C.M., Hodgskiss, M.S.W., Jarrett, A.J.M., Johnston, D.T., Kabanov, P., Kimmig, J., Knoll, A.H., Kunzmann, M., LeRoy, M.A., Li, C., Loydell, D.K., Macdonald, F.A., Magnall, J.M., Mills, N.T., Och, L.M., O’Connell, B., Pagès, A., Peters, S.E., Porter, S.M., Poulton, S.W., Ritzer, S.R., Rooney, A.D., Schoepfer, S., Smith, E.F., Strauss, J.V., Uhlein, G.J., White, T., Wood, R.A., Woltz, C.R., Yurchenko, I., Planavsky, N.J., Sperling, E.A. (2024) Sustained increases in atmospheric oxygen and marine productivity in the Neoproterozoic and Paleozoic eras. *Nature Geoscience*, 17, 667–674. doi: 10.1038/s41561-024-01479-1.
- 15) Inglis, G.N., Bhatia, R., Evans, D., Zhu, J., Müller, W., Matthey, D., Thornalley, D.J., **Stockey, R.G.**, Wade, B.S., (2023), Surface ocean cooling in the Eocene North Atlantic coincides with declining atmospheric CO₂. *Geophysical Research Letters*, 50(24), e2023GL105448. doi: 10.1029/2023GL105448.
- 14) Pohl, A., **Stockey, R.G.**, Dai, X., Yohler, R., Le Hir, G., Hülse, D., Brayard, A., Finnegan, S. and Ridgwell, A. (2023), Why the Early Paleozoic was intrinsically prone to marine extinction. *Science Advances*, 9(35), eadg7679. Doi: 10.1126/sciadv.adg7679.
- 13) Sperling, EA, Boag, TH, Duncan, MI, Endriga, C, Marquez, JA, Mills, DB, Monarrez, PM, Sclafani, JA, **Stockey, RG**, Payne, JL (2022), Breathless through time: oxygen and animals through Earth’s history, *The Biological Bulletin*, 243(2), 184-206.
- 12) Pohl, A, Ridgwell, A, **Stockey, RG**, Thomazo, C, Keane, A, Vennin, E, Scotese, C (2022), Continental configuration controls ocean oxygenation during the Phanerozoic, *Nature*, 608, 523-527. doi: 10.1038/s41586-022-05018-z.
- 11) Liu, M, Chen, D, Jiang, L, **Stockey, RG**, Asael, D, Zhang, B, Liu, K, Yang, X, Yan, D, Planavsky, NJ (2022), Oceanic anoxia and extinction in the latest Ordovician, *Earth and Planetary Science Letters*, 588, 117553. doi: 10.1016/j.epsl.2022.117553.
- 10) Zhang, F, **Stockey, RG**, Xiao, S, Shen, S, Dahl, TW, Wei, G, Cao, M, Li, Z, Kang, J, Cui, Y, Anbar, AD, Planavsky, NJ (2022), Uranium isotope evidence for extensive shallow water anoxia in the early Tonian oceans, *Earth and Planetary Science Letters*, 583, 117437. doi: 10.1016/j.epsl.2022.117437
- 9) Pohl, A, Lu, Z, Lu, W, **Stockey, RG**, Elrick, M, Li, M, Desrochers, A, Shen, Y, He, R, Finnegan, S, Ridgwell, A (2021) Vertical decoupling in Late Ordovician anoxia due to reorganization of ocean circulation, *Nature Geoscience*, 14(11), 868-873. doi: 10.1038/s41561-021-00843-9
- 8) **Stockey, RG**, Pohl, A, Ridgwell, A, Finnegan, S, Sperling, EA (2021), Decreasing Phanerozoic extinction intensity as a consequence of Earth surface oxygenation and metazoan ecophysiology, *Proceedings of the National Academy of Sciences*, 118(41). doi: 10.1073/pnas.2101900118

7) Sperling, EA, Melchin, M, Fraser, T, **Stockey, RG**, Farrell, U, Bhajan, L, Browne, T, Cole, D, Gill, B, Lenz, A, Loydell, D, Malinowski, J, Miller, A, Plaza-Torres, S, Rodewald[†], B, Rooney, A, Tecklenburg, S, Vogel[†], J, Planavsky, NJ, Strauss, J (2021), A long-term record of early to mid-Paleozoic marine redox change, *Science Advances*, 7(28), eabf4382. doi: 10.1126/sciadv.abf4382

[†]Undergraduate mentee

6) Farrell, UC, and 102 authors including **Stockey, RG** (2021), The Sedimentary Geochemistry and Paleoenvironments Project. *Geobiology*, 19, 545-556. doi: 10.1111/gbi.12462

5) Boag, TH*, Gearty, W*, **Stockey, RG*** (2021), Metabolic tradeoffs control biodiversity gradients through geological time, *Current Biology*, 31(13), 2906–2913. doi: 10.1016/j.cub.2021.04.021

***Equally contributing author**

4) Wei, G, Planavsky, NJ, He, T, Zhang, F, **Stockey, RG**, Cole, DB, Lin, Y, Ling, H (2021), Global marine redox evolution from the late Neoproterozoic to the early Paleozoic constrained by the integration of Mo and U isotope records, *Earth Science Reviews*, 214, 103506. doi: 10.1016/j.earscirev.2021.103506

3) **Stockey, RG**, Cole, DB, Planavsky, NJ, Loydell, DK, Frýda, J, Sperling, EA (2020), Persistent global marine euxinia in the early Silurian, *Nature Communications*, 11(1), 1804. doi: 10.1038/s41467-020-15400-y

2) Boag, TH, **Stockey, RG**, Elder, L, Hull, P, Sperling, EA (2018), Oxygen, temperature and the deep-marine stenothermal cradle of Ediacaran evolution, *Proceedings of the Royal Society B*, 285(1893), 20181724. doi: 10.1098/rspb.2018.1724

1) Sperling, EA & **Stockey, RG** (2018), The temporal and environmental context of early animal evolution: considering all the ingredients of an “explosion”, *Integrative and Comparative Biology*, 58(4), 605-622. doi: 10.1093/icb/icy088

Mentoring

Current PhD students (primary supervisor): Przemyslaw Gruszka

Current PhD students (co-supervisor): Sayon Beura, Alfred Wilson
+ Applications to 2 additional fully funded PhD projects currently pending

Completed MSci project students: Aspen Sartin (Geophysics MSci, 2024)

Completed BSc project students: Alex Bevernage (Biology with Marine Biology BSc, 2024)

Pre-2022 mentoring experience

2019-21 Graduate Teaching Mentor, Geological Sciences, Stanford University
2018 Undergraduate Research Mentor, Jacqueline Vogel (Stanford University)
2018 Undergraduate Research Mentor, Beatrice Rodewald (Vanderbilt University)

Teaching

University of Southampton

- 2024 Module Coordinator and Lecturer, SOES 1009 Coevolution of Life and Earth
2023 Guest Lecturer, SOES 1009 The Living Earth (4 lectures)
2023 Instructor, SOES 2034 Spain Geoscience Field Course

Stanford University

- 2022 Guest Lecturer, GEOLSCI 135/235 Sedimentary Geochemistry and Analysis
Lecture on trace metal isotopes and biogeochemical mass balance models
2020 Teaching Assistant, GEOLSCI 1 Introduction to Geology
2019 Head Teaching Assistant, GEOLSCI 1 Introduction to Geology
2018 Guest Lecturer, GEOLSCI 135/235 Sedimentary Geochemistry and Analysis
Lecture on the implications of Cambrian geochemical and fossil records
2018 Head Teaching Assistant, GS1 Introduction to Geology
2017 Teaching Assistant, GS4 Coevolution of Earth and Life
Guest lecture on radioisotopic constraints on the age of the Earth
2017 Head Teaching Assistant, GS1 Introduction to Geology

Invited presentations

Stockey, RG (2024) Earth Systems Palaeobiology: using climate models to better understand the habitats of marine animals through geologic time, Sedgwick Club Talk, *University of Cambridge*

Stockey, RG (2023) Earth Systems Palaeobiology: using climate models to better understand the habitats of marine animals through geologic time, PalaeoClub Seminar, *University of Oxford*

Stockey, RG (2022) [Earth] Systems Paleobiology: Reconstructing the Lives of Ancient Marine Animals Through the Bad Times and the Good, *Gordon Research Conference in Geobiology: The Processes of Geobiological Evolution on a Living Planet (Ventura, California)*

Stockey, RG (2021) Decreasing Phanerozoic extinction intensity as a consequence of Earth surface oxygenation and metazoan ecophysiology, *University of California Museum of Paleontology (University of California, Berkeley)*

Stockey, RG (2021) Multiple increases in atmospheric oxygen and marine productivity through the Neoproterozoic and Paleozoic, *Virtual Seminar for Precambrian Geology – in Using ‘bigger data’ to illuminate Earth history (the Sedimentary Geochemistry and Paleoenvironments Project)* by Sperling, EA, Lipp A, **Stockey RG**

Stockey, RG (2021) Deconvolving sedimentary records of Neoproterozoic-Paleozoic ocean-atmosphere oxygenation, *Sedimentary Geochemistry and Paleoenvironments Project – quarterly group meeting of international research consortium*

Stockey, RG (2019) Testing the role of environmental change in early Paleozoic extinctions and radiations, *Department of Earth & Planetary Sciences, Yale University*

Recent first author conference presentations

Phanerozoic ocean biogeochemistry and marine biodiversity in space and time **Stockey, RG**, Mills, B.J.W., Saupe, E.E., Monarrez, P., Gruszka, P., Pohl, A., Montiero, F., Xie, Y., Vervoort, P., Inglis, G., Gernon, T., Hülse, D., Ridgwell, A., Lunt, D. (2024) *Life and Planet, Annual meeting of the Earth System Science Group of the Geological Society of London. London* (Poster)

Stockey, RG, Saupe, E.E., Mills, B.J.W., Pohl, A. (2023) Mass extinctions and close calls: Using experimental Earth system and ecophysiological modelling to understand what makes catastrophic extinction and deoxygenation events, *Geological Society of America Annual Meeting, Pittsburgh* (Talk)

Stockey, RG, Saupe, E.E., Mills, B.J.W., Pohl, A. (2023) Mass extinctions and close calls: Using experimental Earth system and ecophysiological modelling to understand what makes catastrophic extinction and deoxygenation events, *Life and Planet, Annual meeting of the Earth System Science Group of the Geological Society of London. London* (Talk)

Stockey, RG, Cole, DB, Farrell, UC, SGP Trace Metal Working Group, Planavsky, NJ, Sperling, EA (2022), Multiple increases in atmospheric oxygen and marine productivity through the Neoproterozoic and Palaeozoic, *Palaeontological Association Annual Meeting, Cork* (Talk)

Stockey, RG, Cole, DB, Planavsky, NJ, Farrell, UC, Sperling, EA, SGP Trace Metal Working Group (2021), Multiple increases in atmospheric oxygen and marine productivity through the Neoproterozoic and Paleozoic, *Geological Society of America Annual Meeting, Portland* (Talk)

Stockey, RG, Pohl, A, Ridgwell, A, Finnegan, S, Sperling, EA (2020), Decreasing Phanerozoic extinction intensity is a predictable consequence of Earth surface oxygenation and metazoan ecophysiology, *Palaeontological Association Annual Meeting* (Talk)

Stockey, RG, Pohl, A, Ridgwell, A, Finnegan, S, Sperling, EA (2020), Decreasing Phanerozoic extinction intensity is a predictable consequence of Earth surface oxygenation and metazoan ecophysiology, *Geological Society of America Annual Meeting* (Talk)

Professional Service

Convener: Life and Planet Conference 2024
Annual meeting of the Earth System Science Group of the Geological Society of London

Life and Planet Conference 2023
Annual meeting of the Earth System Science Group of the Geological Society of London

The Evolution of Early Phanerozoic Oceans: A Geobiological Perspective
Topical Session T86 – Geological Society of America Annual Meeting 2021

Reviewer: American Journal of Science, Geobiology, Geology, Geochimica et Cosmochimica Acta, Nature Communications, Nature Ecology and Evolution, Science Advances, Scientific Reports

Proposal reviewer: NASA Exobiology

Committees: University of Southampton Geoscience Curriculum Working Group
Search Committee for University of Southampton Lecturer in Geoscience
Search Committee for University of Southampton Lecturer in Climate
NERC Pushing the Frontiers Bid Enhancement Committee, University of Southampton

Professional Development

2023-4 Postgraduate Certificate in Academic Practice
University of Southampton

2019 Diversity & Inclusion in the Geosciences (10-week graduate course EARTH 203)
Included authoring and presenting a proposal for a 'SE3 Inclusive Teaching Initiative', in addition to readings, discussions and trainings related to DEI issues in the geosciences

2019 Community Earth System Model (CESM) Workshop, AGU 2019

2018 Introduction to Statistical Learning (10-week graduate course STATS 216v)
Graduate-level statistical learning course with T. Hastie and R. Tibshirani

Outreach and Institutional Service

2024 Southampton International Boat Show
Fossils to Supercomputers: 21st century palaeontology for everyone

2024 Lyme Regis Fossil Festival
Fossils to Supercomputers: 21st century palaeontology for everyone

2024 Southampton Science and Engineering Festival
Fossils to Supercomputers: 21st century palaeontology for everyone

2024-2022 Coordinator of University of Southampton Geoscience Outreach and Recruitment Program
Convener of Stanford Earth Teach the Teachers SkillShare workshop series
Lead Convener: Decolonizing the Syllabus

2020 Convener of Stanford Earth Teach the Teachers SkillShare workshop series
Lead Convener: Goal-oriented Assessments and Grading

2020 Stanford Earth Scientific Communication Graphic Design Team member

2020 Stanford Earth Young Investigators Program volunteer

2019 Lead Convener for Stanford Earth SkillShare
Navigating Teaching Assistant/Faculty Expectations

2018-2019 GeoKids volunteer
Stanford Earth elementary school outreach program

2015-16 President, Sedgwick Club, University of Cambridge
Organizing seminars, alumni events and student conference for student geology society

Extended Field Experience

2019 Bamfield Marine Sciences Centre, BC, Canada – Respiratory physiology of deepwater crinoid *Florometra serratissima*. 2 weeks

2018 Ibex Area, Utah – Geochemical sampling of Upper Cambrian to Middle Ordovician carbonates. 1 week

2017 Ediacaran stratigraphy of the Cariboo Mountains, BC, Canada – Integrated stratigraphy and geochemical sampling of Cunningham & Yankee Bell Formations. 2 weeks

- 2017 Road River Group, Yukon, Canada – Integrated stratigraphy and geochemical sampling of Cambrian-Ordovician shale sequences. *2 weeks*
- 2017 Ibex Area, Utah – Geochemical sampling of Early Ordovician carbonates and bedding plane surveys of Ordovician trilobites. *2 weeks*
- 2014 Paleoproterozoic sedimentary geology and regional metamorphism of NE Utö, Sweden – environmental reconstructions of ~1.9Ga marine sedimentary environments, generation and analysis of structural data associated with the Utö Shear Zone, and mapping of sedimentary and igneous units of various metamorphic grades. *5 weeks*
- 2012-2016 Geological field courses with University of Cambridge
Mapping – Isle of Skye, Scotland *10 days*; Cumbria, England *12 days*
General structural geology and sedimentology – Sorbas Basin, Spain *8 days*; Central Greece *8 days*; Dorset & Cornwall, England *10 days*; Isle of Arran, Scotland *8 days*
- 2012-2014 Ecological field courses with University of Cambridge
Marine ecology – Devon, England *1 week*; Forest ecology – Surrey, England *1 week*