Richard G. Stockey

School of Ocean and Earth Sciences, University of Southampton
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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

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 Named 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 my PhD research)

Publications

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), 000-000.

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

In preparation manuscripts

Stockey, RG, Cole, DB, Farrell, UC, SGP Trace Metal Working Group, Planavsky, NJ, Sperling, EA (*in prep*), Multiple increases in atmospheric oxygen and marine productivity through the Neoproterozoic and Paleozoic

Zhang, F*, **Stockey RG***, Planavsky, NJ, Finnegan, S, Sperling, EA, Na, L, Edwards, C, Deng, Y, Goldberg, S, Saltzman, M, Dahl, T, Bergmann, K, Wei, G, Zhang, H, Kröger, B, Hopkins, M, Pohl, A, Ridgwell, A, Cui, Y, Fan, J, Shen, S (*in prep*), Persistent deep oceanic anoxia during the Great Ordovician Biodiversification Event
***Equally contributing author**

Teaching

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, Stanford University
2019	Head Teaching Assistant, GEOLSCI 1 Introduction to Geology, Stanford University
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, Stanford University
2017	Teaching Assistant, GS4 Coevolution of Earth and Life, Stanford University *Guest lecture on radioisotopic constraints on the age of the Earth*
2017	Head Teaching Assistant, GS1 Introduction to Geology, Stanford University

Mentoring

2021	Graduate Teaching Mentor, Geological Sciences, Stanford University
2020	Graduate Teaching Mentor, Geological Sciences, Stanford University
2019	Graduate Teaching Mentor, Geological Sciences, Stanford University
2018	Undergraduate Research Mentor, Jacqueline Vogel (Stanford University) Project title: *Understanding the Early Paleozoic redox landscape: New evidence from the black shale record of Yukon, Canada* Student poster presentation at AGU Fall Meeting 2018
2018	Undergraduate Research Mentor, Beatrice Rodewald (Vanderbilt University) Project title: *The black shale record of the Ordovician radiation: New insights into redox change from the Road River Group of Yukon, Canada* Student poster presentation at Geological Society of America Annual Meeting 2018

Invited presentations

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*

First author conference presentations

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)

Stockey RG, Sperling EA, Farrell U, Planavsky NJ, SGP Trace Metal Working Group (2020), Neoproterozoic-Paleozoic Redox-Sensitive Trace Metal Records: Oxygenation, Not As We Know It, *Geological Society of America Annual Meeting* (Talk)

Stockey RG, Zhang, F, Planavsky, NJ, Fan, J, Na, L, Finnegan, S, Edwards, C, Goldberg, S, Saltzman, M, Dahl, T, Bergmann, K, Sperling, EA, Zhang, H, Cui, Y, Wang, X, Shen, S (2020), On ocean anoxia and the onset of the Great Ordovician Biodiversification Event, *Annual Meeting of IGCP 653 - Zooming in on the GOBE*

Stockey RG, Sperling EA, Farrell U, Planavsky NJ, SGP Trace Metal Working Group (2020), Neoproterozoic-Paleozoic Redox-Sensitive Trace Metal Records: Oxygenation, Not As We Know It, *Goldschmidt* (Talk)

Stockey, RG (2020) Animal-environment interactions in deep time: modeling the oceanographic and physiological implications of the geochemical record, *University California, Riverside* – as part of cGENIE modeling community symposium and workshop

Stockey, RG, Finnegan, S, Ridgwell, A, Sperling, EA (2020), Decreasing Phanerozoic extinction intensity is a predictable consequence of Earth surface oxygenation and metazoan ecophysiology, *Ocean Sciences Meeting, San Diego* (Talk)

Stockey, RG, Finnegan, S, Ridgwell, A, Sperling, EA (2019), The ecophysiological implications of Earth surface oxygen for early Paleozoic biodiversity, *AGU Fall Meeting, San Francisco* (Talk)

Stockey, RG, Finnegan, S, Sperling, EA (2019), Moving from correlation to mechanism: testing the role of oxygen and temperature change in the Great Ordovician Biodiversification Event, *North American Paleontological Convention, Riverside* (Talk)

Stockey, RG, Finnegan, S, Sperling, EA (2019), Moving from correlation to mechanism: testing the role of oxygen and temperature change in the Great Ordovician Biodiversification Event, *Geobiology Society Conference, Banff* (Poster)

Stockey, RG & Sperling, EA (2018), The ecophysiological implications of early Palaeozoic climate models, *Palaeontological Association Annual Meeting, Bristol* (Poster)

Stockey, RG, Cole, D, Planavsky, NJ, Loydell, DK, Frýda, J, Sperling, EA (2018), Persistent global marine anoxia in the early Silurian, *Goldschmidt, Boston* (Talk)

Stockey, RG & Sperling, EA (2018), How well do environmental parameters preserved in the geologic record describe benthic ecological niches?, *Society of Integrative & Comparative Biology Annual Meeting, San Francisco* (Poster)

Stockey, RG & Sperling, EA (2017), How well do environmental parameters preserved in the geologic record describe benthic ecological niches?, *Palaeontological Association Annual Meeting, London* (Poster)

Stockey, RG, Loydell, DK, Frýda, J, Sperling, EA (2017), A transient redox perturbation in the early Silurian, *Geological Society of America Annual Meeting, Seattle* (Poster)

Stockey, RG & Sperling, EA (2017), Reconstructing benthic ecological niches in deep time, *Geobiology Society Conference, Banff* (Poster)

Stockey, RG & Smith, M (2016), Trophic Dynamics in the Burgess Shale: re-evaluating the community ecology of the Greater Phyllopod Bed through biovolumentrics and taphonomy, *Palaeontological Association Annual Meeting, Lyon* (Poster)

Professional Service

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

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

Professional Development

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

2022 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 Progam 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

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*

Professional Affiliations

2019- Member, American Geophysical Union
2017- Member, Sedimentary Geochemistry and Paleoenvironments Project
2016- Member, Palaeontological Association
2016- Member, Geological Society of America