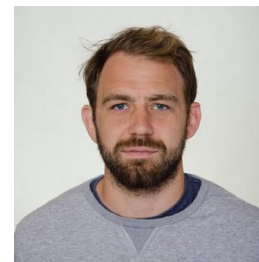


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Research overview

I am an oceanographer and climate scientist. My research is concerned with understanding how climate-relevant tracers, such as heat and carbon dioxide, are taken up by, stored within, and transported around the ocean. This is achieved by a combination of atmosphere-ocean exchange, the large-scale ocean circulation, turbulent ocean dynamics, and biogeochemical processes. I'm interested in understanding the impact of these processes on the marine environment as well as Earth's climate more broadly. I use a host of tools in my research, including large-scale numerical simulations, process models, theoretical ideas, trajectory analysis, and ocean observations.

Qualifications

Doctor of Philosophy, Lagrangian Perspectives on Ocean Ventilation, University of Oxford
Award Date: 7 Dec 2017

Master in Science, University of Leeds
Award Date: 1 Sept 2012

Master of Mathematics, Newcastle University
Award Date: 1 Jul 2010

Employment

UKRI Future Leaders Fellow

School of Earth & Environmental Sciences
University of St Andrews
St Andrews, United Kingdom
17 Sept 2022 → 16 Sept 2026

Research outputs

The GFDL-CM4X Climate Model hierarchy, part I: model description and thermal properties

Griffies, S. M., Adcroft, A., Beadling, R. L., Bushuk, M., Chang, C., Drake, H. F., Dussin, R., Hallberg, R. W., Hurlin, W. J., Khatri, H., Krasting, J. P., Lobo, M., MacGilchrist, G. A., Reichl, B. G., Sane, A., Sergienko, O., Sonnewald, M., Steinberg, J. M., Tesdal, J. & Thomas, M. & 8 others, Turner, K. E., Ward, M. L., Winton, M., Zadeh, N., Zanna, L., Zhang, R., Zhang, W. & Zhao, M., 18 Oct 2025, In: Journal of Advances in Modeling Earth Systems. 17, 10, p. 1-58 58 p., e2024MS004861.

The GFDL-CM4X Climate Model hierarchy, part II: case studies

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Steric sea level rise and relationships with model drift and water mass representation in GFDL CM4 and ESM4

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Future priorities for observing the dynamics of the Southern Ocean

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Ross Gyre variability modulates oceanic heat supply toward the West Antarctic continental shelf

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