

J. Kevin Pierce, Ph.D.

✉ kevinpi@uio.no

/ 🌐 jk-pierce.com

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Employment History

- 2023 – ···· ♦ **Postdoctoral Researcher**, Porelab, NTNU-UIO Porous Media Laboratory and The Njord Centre for Physics of the Earth, The University of Oslo.
- 2016 – 2022 ♦ **Doctoral Researcher**, Mountain Channel Hydraulic Experimental Lab, The University of British Columbia.
- 2014 – 2016 ♦ **Master Researcher**, Advanced Materials and Process Engineering Lab, The University of British Columbia.



Education

- 2016 – 2021 ♦ **Ph.D. University of British Columbia** in Physical Geography.
Thesis title: *The stochastic movements of individual streambed grains.*
Adviser: Marwan A. Hassan.
- 2014 – 2016 ♦ **M.Sc. University of British Columbia** in Condensed Matter Physics.
Thesis title: *Magnetic structure of chiral graphene nanoribbons.*
Adviser: Ian Affleck.


Research Output

Journal Articles

- 1 G. Linga, **J. K. Pierce**, M. Moura, J. Mathiesen, F. Renard, and T. Le Borgne, “Dynamic multiphase flow triggers chaotic mixing in porous media,” *arXiv preprint arXiv:2604.10382*, 2026. 📄 DOI: <https://doi.org/10.48550/arXiv.2604.10382>.
- 2 **J. K. Pierce**, T. Le Borgne, F. Renard, and G. Linga, “How pore-scale disorder controls fluid stretching in porous media,” *arXiv preprint arXiv:2604.02981*, 2026. 📄 DOI: <https://doi.org/10.48550/arXiv.2604.02981>.
- 3 J. F. Brodin, **J. K. Pierce**, P. Reis, P. A. Rikvold, M. Moura, M. Jankov, and K. J. Måløy, “Interface instability of two-phase flow in a three-dimensional porous medium,” *Physical Review Fluids*, vol. 10, p. 064 003, 6 Jun. 2025. 📄 DOI: <https://doi.org/10.1103/hm82-167x>.
- 4 M. A. Hassan, T. Xing, C. McDowell, **J. K. Pierce**, M. Turley, S. Leader-Cole, and E. Viparelli, “Vertical sorting of bed material in gravel-bed streams– insights from long-term observations in East Creek, British Columbia,” *Water Resources Research*, vol. 61, no. 10, e2025WR041119, 2025. 📄 DOI: <https://doi.org/10.1029/2025WR041119>.
- 5 M. A. Hassan, **J. K. Pierce**, and S. M. Chartrand, “Sediment storage and fluvial sediment transport linkages across an experimental flood sequence,” *Journal of Geophysical Research: Earth Surface*, vol. 129, no. 9, e2024JF007772, 2024. 📄 DOI: <https://doi.org/10.1029/2024JF007772>.
- 6 **J. K. Pierce**, “An advection-diffusion process with proportional resetting,” *arXiv preprint arXiv:2204.07215*, 2022. 📄 DOI: <https://doi.org/10.48550/arXiv.2204.07215>.
- 7 **J. K. Pierce**, M. A. Hassan, and R. M. L. Ferreira, “Probabilistic description of bedload fluxes from the aggregate dynamics of individual grains,” *Earth Surface Dynamics*, vol. 10, no. 4, pp. 817–832, 2022. 📄 DOI: <https://doi.org/10.5194/esurf-10-817-2022>.
- 8 **J. K. Pierce** and M. A. Hassan, “Back to Einstein: Burial-induced three-range diffusion in fluvial sediment transport,” *Geophysical Research Letters*, vol. 47, no. 15, e2020GL087440, 2020. 📄 DOI: <https://doi.org/10.1029/2020GL087440>.

- 9 **J. K. Pierce** and M. A. Hassan, "Joint stochastic bedload transport and bed elevation model: Variance regulation and power law rests," *Journal of Geophysical Research: Earth Surface*, vol. 125, no. 4, e2019JF005259, 2020.  DOI: <https://doi.org/10.1029/2019JF005259>.
- 10 J. D. Rowley, **J. K. Pierce**, A. T. Brant, L. E. Halliburton, N. C. Giles, P. G. Schunemann, and A. D. Bristow, "Broadband terahertz pulse emission from zngp2," *Opt. Lett.*, vol. 37, no. 5, pp. 788–790, Mar. 2012.  DOI: <https://doi.org/10.1364/OL.37.000788>.

International Talks

- 1 **J. K. Pierce**, M. Lamblin, T. Le Borgne, and G. Linga, "Enhanced mixing in dynamic multiphase flow through 3D porous media," Interpore Annual Meeting, 2026.
- 2 **J. K. Pierce**, M. Lamblin, T. Le Borgne, and G. Linga, "Dynamic multiphase flows enhance chaotic mixing in 3D porous media," 2nd Brittany Workshop on Flow and Transport in Porous Media, 2025.
- 3 **J. K. Pierce**, M. Lamblin, T. Le Borgne, and G. Linga, "Enhanced mixing in dynamic multiphase flow through 3D porous media," AGU Fall Meeting, H33I-03, 2025.
- 4 **J. K. Pierce**, T. Le Borgne, and G. Linga, "Experimental imaging of pore scale stretching and coalescence as drivers for solute mixing in porous media," EGU General Assembly, EGU24-5575, 2024.  DOI: <https://doi.org/10.5194/egusphere-egu24-5575>.
- 5 **J. K. Pierce**, T. Le Borgne, and G. Linga, "Impact of heterogeneity on solute mixing in porous media flows," Gordon Research Seminar on Flow and Transport in Permeable Media, 2024.
- 6 **J. K. Pierce** and G. Linga, "Impact of the solid structure on solute mixing in porous media flows," Symposium on flow through porous and fractured media, 2024.
- 7 **J. K. Pierce**, M. Moura, and G. Linga, "Impact of the solid structure on solute mixing in porous media flows," Fracture of materials, mechanics of confined granular Media, and complex flows in porous and fractured media, 2024.
- 8 **J. K. Pierce**, M. Moura, and G. Linga, "Chaotic mixing in two-dimensional unsteady porous media flow," Flow and Deformation Across Scales, 2024.
- 9 **J. K. Pierce**, M. A. Hassan, and R. M. Ferreira, "Progress in stochastic descriptions of fluid-driven sediment transport," Earthflows, 2023.
- 10 **J. K. Pierce** and G. Linga, "Chaos in flatland: Mixing in unsteady two dimensional porous media flow," EGU General Assembly, 2023.  DOI: <https://doi.org/10.5194/egusphere-egu23-11598>.
- 11 **J. K. Pierce**, M. Moura, and G. Linga, "Impact of the solid structure on solute mixing in porous media flow," Interpore Norway, 2023.
- 12 **J. K. Pierce** and M. A. Hassan, "Mechanistic-stochastic description of the bedload sediment flux," AGU General Assembly, EP43A-02, 2021.
- 13 **J. K. Pierce**, R. M. Ferreira, and M. A. Hassan, "Collisional langevin approach to bed load sediment velocity distributions," EGU General Assembly, EGU21-8141, 2020.  DOI: <https://doi.org/10.5194/egusphere-egu21-8148>.
- 14 **J. K. Pierce** and M. A. Hassan, "Back to Einstein: How to include trapping processes in fluvial diffusion models?" AGU Fall Meeting Abstracts, EP51B-02, 2019.

Meetings Organized

- 1 **J. K. Pierce** and P. Reis, *Connecting Flow and Transport Science to Societal Issues*, Gordon Research Seminar on flow and transport in permeable media, 2026 (forthcoming).
- 2 **J. K. Pierce**, P. Reis, S. Roman, and J. Jimenez-Martinez, *Cargese School on Flow and Transport in Porous and Fractured Media*, Intro course on solute mixing and flow velocimetry in microfluidics, 2024.