

NICHOLAS D. BARBER

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Department of Earth and Planetary Science ◊ McGill University

🌐<https://github.com/ndb38/> 🌐<https://volcannick.com>

EDUCATION

Department of Earth Sciences September 2018 - September 2022
University of Cambridge, Cambridge UK
PhD in Earth Sciences - Supervisor Prof. Marie Edmonds

Department of Biodiversity, Earth and Environmental Science September 2013 - June 2018
Drexel University, Philadelphia, PA, USA
Bachelor of Science (B.S.) in Geoscience - Minor in Chemistry

APPOINTMENTS

Department of Earth and Planetary Sciences September 2022 - Present
McGill University, Montreal, QC, Canada
Wares Postdoctoral Research Fellow - Faculty Host Prof. Kim Berlo

PUBLICATIONS

Published Articles

2022: **Barber, N.D.**, Edmonds, M., Jenner, F., Williams, H. *Global Ba/Nb systematics in arc magmas reflect the depths of mineral dehydration in subducted slabs*. *Geology* 2022; doi: <https://doi.org/10.1130/G50447.1>

2022: Handini, E., Warmada, I.W., Hasenaka, T., **Barber, N.D.**, Shibata, T. *Geochemistry of arc alkaline magmatism of Java Island, Sunda Arc: a statistical review*. *IOP Conference Series: Earth and Environmental Science*, 2022; doi: <https://doi.org/10.1088/1755-1315/1071/1/012013>

2022: Virtanen, V.J., Heinonen, J.S., **Barber, N.D.**, Molnár, F. *Complex Effects of Assimilation on Sulfide Saturation Revealed by Modeling with the Magma Chamber Simulator: A Case Study on the Duluth Complex, Minnesota, USA*. *Economic Geology* 2022; doi: <https://doi.org/10.5382/econgeo.4917>

2021: **Barber, N.D.**, Edmonds, M., Jenner, F., Audétat, A., Williams, H., 2021. *Amphibole control on copper systematics in arcs: Insights from the analysis of global datasets*. *Geochimica et Cosmochimica Acta* 2021; 307, 192–211. doi: <https://doi.org/10.1016/j.gca.2021.05.034>

Manuscripts Submitted/In Review

Handini E., Hasenaka T., Shibata T., **Barber N.D.**, Mori Y., Harijoko A. *Lateral variation of slab-derived fluid in a cold subduction zone*. Submitted to *Progress in Earth and Planetary Sciences* July 2022.

Invited Reviews

Marthe Klöcking, Lesley Wyborn, Kerstin A Lehnert, Bryant Ware, Alexander M Prent, Lucia Profeta, Fabian Kohlmann, Wayne Noble, Ian Bruno, Sarah Lambert...**Nicholas D. Barber**...Jo Whelan, Tengfei Zhou. *Community recommendations for geochemical data, services and analytical capabilities in the 21st century*. Invited review in preparation *Geochimica et Cosmochimica Acta*; due October 24th, 2022.

GRANTS

2022: **EXCITE TNA** access funded for M.A.G.I.C.: Magmatic Architecture and Geology of the Ijen Caldera Complex. Total value, including instrument time, travel, and accommodations = \$5,000 USD

2022: **Wares postdoctoral independent research fellowship** at McGill University. Total value = \$110,000 CAD.

PROFESSIONAL COMMUNICATIONS

Oral presentations

- 2022: **Barber, N.D.**, Edmonds, M., Jenner, F., and Williams, H. *Integrated Insights into Global Subducting Slab Dehydration from Arc Magmas*. Goldschmidt Conference (Virtual), Hawai'i
- 2021: **Barber, N.D.**, Edmonds, M., Jenner, F., and Williams, H. *Global Slab Dehydration Recorded in Arc Magmas*. AGU Fall Meeting, New Orleans.
- 2021: **Barber, N.D.**, Baldwin, S.B., Edmonds, M., Harijoko, A., Wibowo, H.E. *Monogenetic Scoria Cones as Windows into Transrustal Mush*. Goldschmidt Conference (Virtual), Lyons
- 2020: **Barber, N.D.**, Edmonds, M., Jenner, F., Williams, H., and Audetat, A. *A Big Data Perspective on the Behaviour of Copper in Arc Magmas*. Goldschmidt Conference (Virtual)
- 2020: **Barber, N.D.**, Edmonds, M., and Jenner, F. (2020). *Systematics of Chalcophile Metals in Volcanic Arcs : A Global Perspective*. Volcano-Magmatic Studies Group Meeting (VMSG) Meeting
- 2019: Vanderkluisen, L., Carey, E., **Barber, N.D.**, Jay, A., Self, S., Mittal, T., and Renne, P.R. *Validity of the Deccan Chemostratigraphy and Extent of Deccan Formations Beyond the Western Ghats (India)*. AGU Fall Meeting
- 2019: **Barber, N.D.**, Jay, A., Vanderkluisen, L., and Carey, E. *Large Igneous Provinces and Environmental Change: Applying GIS to Estimate Total Deccan Lava Volumes*. Janet Watson Deep Carbon Meeting.
- 2018: Vanderkluisen, L., **Barber, N.D.**, Jay, A., and Carey, E. *Pre- & Post-Erosional Estimates of Deccan Lava Volumes*. AGU Fall Meeting
- 2017: Vanderkluisen, L., **Barber, N.D.**, Wolosyznek, S. O'Connor, M., Mittal, T., Sealing, C.R., Sprain, C.J., and P.R. Renne. *Statistical Analysis of Deccan Basalt Geochemistry: An Updated Look at Deccan Chemostratigraphy*. AGU

Graduate Seminars

- 2020: **Barber, N.D.**, Edmonds, M.E., Jenner, F., Williams, H.W., and Audetat, A. *Global Systematics of Copper in Arc Magmas*. EGU Geochemistry, Mineralogy, Petrology, & Volcanology (GMPV) ECR Seminar
- 2020: **Barber, N.D.**, Edmonds, M.E., Harijoko, A., Wibowo, H.E., Williams, H.W., Marliyani, G., Jenner, F., and Handini, E. *Volcanoes: Earth's Copper Factories*. Churchill College Postgraduate Seminar.

Conference Posters

- 2022: **Barber, N.D.**, Handini, E., Edmonds, E., Jenner, F., Hammond, S., and Williams, H. *Redox, sulfide, and magmatic controls on Java's volcanic metal systematics*. Understanding fO_2 in Geoscience. Trieste, Italy.
- 2021: **Barber, N.D.**, Edmonds, M., Handini, E., Jenner, F., Harijoko, A., Wibowo, H.E. *Intraplate vs. Subduction Signals in the Sunda Back-Arc: Petrology and Geochemistry of Pulau Bawean, Java, Indonesia*. VMSG Meeting.
- 2020: **Barber, N.D.**, Edmonds, M., Jenner, F., Audétat, A., Williams, H. *Global Systematics of Copper in Arc Magmas Using a Big Data Approach*. AGU Fall Meeting
- 2020: Handini, E., Hasenaka, T., Sano, T., Shibata, T., **Barber, N.D.**, Setiawan, N.I. *Heterogeneity of subducting Indian ocean plate and its implication to Sundar-arc magmas geochemical systematics*. AGU Fall Meeting
- 2020: Baldwin, S.L., **Barber, N.D.**, Edmonds, M., Harijoko, A., and Wibowo, H.E. *Magma Mixing and Monogenetic Volcanism at Slamet Volcano and Mount Loyang, Indonesia*. VMSG Meeting
- 2019: **Barber, N.D.**, Jay, A., Vanderkluisen, L., and Carey, E. *Applying Geographic Information Systems to Estimate Pre- and Post-Erosional Deccan Lava Volumes*. VMSG Meeting
- 2017: **Barber, N.D.**, Jay, A., and Vanderkluisen, L. *Using Geographic Information Systems to Refine Estimates of Deccan Lava Flow Volumes (India)*. IAVCEI International Meeting.

Other

- 2022: Participant - **Second National Conference: Justice in Geoscience**. Virtual.

AWARDS & HONORS

- 2022: **Outstanding Student Presentation Award** from American Geophysical Union (AGU). Value: \$100
- 2019: **Pressland Bursary** for **Intensive Foreign Language Fieldwork - Indonesian**. Value: £1,000
- 2019: Geological Society of London **Daniel Pidgeon Fieldwork Scholarship**. Value: £1,000
- 2019: **Shell-Churchill Research Prize** for **Best Postgraduate Student Research Proposal**. Value: £3,000
- 2018: **Gates-Cambridge Scholarship**. Value: £70,000
- 2018: **Fulbright Study/Research Grant for Indonesia** (Declined to pursue PhD)
- 2018: National Science Foundation **Graduate Research Fellowship** - Honourable Mention

2016: NOAA [Ernest F. Hollings Scholarship](#). Value: \$10,000

2016: [Goldwater Scholarship](#). Value: \$10,000

TEACHING EXPERIENCE

October 2022: **Invited Lecturer** for upper-level undergraduate Petrology course, Drexel University, USA.
April 2022: **Field Safety Coordinator** on 1st year student field trip to Arran, Scotland.
March 2022: **Economic Geology Lecturer** on 4th year student field trip to SE Spain.
March 2022: **Assistant Field Trip Leader** on 1st Year student field trip to Keton, England.
2020 to Present: **Invited Lecturer**. [GIS for Geoscientists Virtual Workshop](#). McGill, UCL, [VMSG](#)
2020 to Present: **GIS Lecturer** for 3rd Year Earth Science undergrad Practical Skills Course
2019 to 2021: **Jesus College Supervisor**. Led weekly small-group [supervisions](#) for 1st year students
2019 to 2020: **Masters Thesis Supervisor**. S.L. Baldwin: *Magma Mixing at Mt. Slamet & Loyang Volcanoes*.
2019 to 2022: **Teaching Lab Demonstrator** for 2nd year Earth Science - Mineralogy & Petrology
2019 to 2021: **Field Demonstrator** on 1st Year trip to [Arran](#). Focus on Physical Geology and Tectonics
2018 to 2022: **Teaching Lab Demonstrator** for 1st year Earth Science: Paleobiology, Solid Earth, Climate
August 2018: **Field Assistant** on high school student field school in Yellowstone National Park

Total Teaching Time Since 2018: > **400 Hours**

RESEARCH EXPERIENCE

Modeling: Geostatistics, Cartography, Geospatial data management with ArcMap and QGIS (6+ years advanced GIS experience). 4+ years application of Python to petrological, geospatial, and geochemical modeling studies. Volcano deformation modeling (tilt datasets) with MATLAB.

Microanalysis: Raman Spectroscopy (Cambridge), Electron Microprobe Analysis (Cambridge), Scanning Electron Microscopy (Cambridge), and Secondary Ion Mass Spectrometry (Edinburgh). Focused on melt inclusions

Sample Preparation: Co-managed a hard-rock sample preparation facility at Cambridge, specializing in melt inclusions, grain mounts, thin sections. Experience with rock saws and Saphir polishing rigs. Trained 10+ students on use of Zeiss microscopes and Saphir polishing equipment

International Collaboration: Negotiated a five-year Memorandum of Understanding between Cambridge and Universitas Gadjah Mada (Indonesia) to facilitate a 6-week sampling campaign of volcanoes in Java. Independent collaborations with University of Helsinki

PROFESSIONAL SERVICE

2021 to Present: Peer Reviewer — **Earth and Planetary Science Letters**, **G-Cubed**, and **Journal of Petrology**
2021 to Present: Organizing Committee — [Volcanology Reading Rendezvous Journal Club](#) - Discussion Group
2021 to 2022: Acting Chair — **Equality, Diversity, and Inclusivity (EDI) Working Group**, CamEarthSci
2020 to 2021: Co-Chair — **Cambridge Volcanology Seminars**.
2020 to 2022: Organizing Committee — [Geoscience in Context](#) Seminar Series
2019 to 2022: Grad Student Rep — **EDI Committee**. Department of Earth Science, Cambridge
2019 to 2022: Student Manager — **Sample Prep. Lab** Department of Earth Sciences, Cambridge
2019 to 2022: Grad Student Rep. — **Postgrad. Affairs Committee**, Department of Earth Sciences, Cambridge.
2019 to 2021: Treasurer — **Postgrad. Student Association** (MCR), Churchill College, Cambridge

OUTREACH

September 2022: **Guest Speaker** on volcanoes for a 4th grade class in Idaho for [Skype a Scientist](#).
September 2022: **Invited Speaker** for [Cambridgeshire Geological Society](#) speaker series. Histon, UK
April 2022: **Public Outreach Volunteer** for [Earth Clinic](#) event hosted at the Sedgwick Museum
2019 to 2022: **Student Ambassador** — Earth Science on [Cambridge Open Days](#)
March 2019: **Science Ambassador** (Volcanology) — Cambridge Super Science Saturday
2018 to Present: **Pen Pal** — [Letters to a Pre-Scientist](#) Program.

MEDIA

- 2021: **Blog post** — [Arran 2021: reporting on the successes of running a field trip in Covid-times](#)
2020: **Blog post** — [Research in Lockdown: Fieldwork Disrupted](#)
2018: **Podcast appearance** — [Pop! The Question - Season 1 Episode 6 "This Thing is Gonna Blow"](#)

PROFESSIONAL CERTIFICATIONS

- 2021: **Advanced QGIS & Google Earth Engine** Certifications; [Spatial Thoughts](#)
2021: **Associate Fellow** of the [UK Higher Education Academy](#).
2019: **Bahasa Indonesian** — CEFR Level B2, or ACTFL Level Intermediate. INCULS, Universitas Gadjah Mada

KEY TECHNICAL SKILLS

- Languages:** English (Native), Bahasa Indonesia (Intermediate)
Analytical: Raman Spectroscopy, Electron Microprobe (EPMA), Scanning Electron Microscopy (SEM), Secondary Ion Mass Spectrometry (SIMS), Solution ICPMS, Melt Inclusion Prep.
Programming: Python, R, MATLAB, MySQL, LaTeX, Git, Jupyter Suite
Software & Tools: **Geospatial:** QGIS 3.14, ArcMap 10.5, ArcScene, Google Earth Engine
Other: MELTS, Office 365 Suite, Inkscape, Moodle (equivalent of BBLearn)

PROFESSIONAL SOCIETIES

- 2022 to Present: **Postdoctoral Affiliate** — GEOTOP Network (Québec, Canada)
2020 to Present: **Student Member** — American Geophysical Union
2019 to Present: **Fellow** — Geological Society of London
2018 to Present: **Student Member** — Mineralogical Society of America
2018 to Present: **Student Member** — Mineralogical Society of Great Britain and Ireland
2018 to Present: **Student Member** — Cambridge Philosophical Society