PROFESSOR TAMSIN ALICE MATHER

Department of Earth Sciences, University of Oxford,
South Parks Road, Oxford OX1 3AN, UK.
Tel.: +44 (0)1865 282125;
Tamsin.Mather@earth.ox.ac.uk

My research vision centres on volcanoes in a broad sense and is motivated by understanding them as hazards, resources and agents of environmental change or maintenance on the local to planetary-scale. I draw on data from the rock record, field and satellite observations/measurements and modelling approaches. Most of my work is Earth-focussed but I have also worked to better understand processes on Mars, Venus and beyond.

Post-doctoral employment *(Maternity leave: June-December 2007 and January-July 2010)*

2014–present: **Professor of Earth Sciences,** University of Oxford**.**
2006–2014: **Lecturer/Academic Fellow** in Physics & Chemistry of the Earth and Environment, Dept of Earth Sciences, University of Oxford & Fellow, University College.
2005–2009: **Royal Society Dorothy Hodgkin research fellow**, awarded at Cambridge and moved to Oxford (Volcanic volatile emissions: from lithosphere to atmosphere)
2005: **NERC fellow Parliamentary Office of Science and Technology** (Report title: Carbon capture and storage)

Education and Qualifications

2001–2004: **Ph.D.**, Dept of Earth Sciences, University of Cambridge, 'Near-source chemistry of tropospheric volcanic plumes'. NERC funded. **Awarded December 2004.**
1999–2000: **M.Phil.** (History and Philosophy of Science), University of Cambridge. **Distinction.**
1995–1999: **M.Sci.** Chemistry (Natural Sciences), University of Cambridge. **First class.**

Recent honours and Awards

2022: Appointed **Geochemistry Fellow** (by the US-based and European societies upon outstanding scientists who have made a major contribution to the field), nominated by colleagues in Italy, France, US and UK, cited as *'one of the most influential geochemists worldwide'*.
2021: Elected to the **Academia Europaea** (nominated by a colleague in Germany)
2021: Appointed as a **Turing Fellow** at The Alan Turing Institute for data science and AI
2018: **Royal Society Rosalind Franklin Award and Lecture**
2018: Royal Astronomical Society Group Achievement Award in Geophysics for COMET
2015: **UK Mineralogical Society Distinguished Lecturer** academic year 2015/6.
2014: **Lloyds Science of Risk Prize** (for Biggs et al., 2014 paper)
2010: **Philip Leverhulme prize** (£70k) – national award for outstanding early-career researchers
2008: **UNESCO/L'Oréal UK & Ireland Women in Science** (£15k) –early-career researchers

Prior employment experience

2001: **European Commission**, 3-month internship, DG Environment, Brussels, Belgium
2000-2001: 6-month position as English language teacher for business, Berlin, Germany
2000: **BBC Science** (London) 8-week internship; 1999: **BBC Natural History** 6-week internship.

Publications and editorial work

Over 175 publications in peer-reviewed international journals/books (see http://www.earth.ox.ac.uk/mather, the maximum 5 selected for REF2021 submission). Citation summary: >7,900 Scopus citations, >800 per year since 2021; 14 papers with >100 citations; ***h*-index 62/55/52 (**Google Scholar/Scopus/WoS).

2014-2019: **Co-editor in chief** *Earth and Planetary Science Letters*, leading journal for researchers across the entire Earth and planetary sciences community. I handled about 120 papers per year
2013-2016: Geochemistry section editor for *Elsevier Reference Module Earth Systems and Environmental Sciences*

2013: Editor *Remote-sensing of volcanoes and volcanic processes: integrating observation and modelling*. D.M. Pyle, **T.A. Mather** and J. Biggs (eds). Geological Society Special Publication 380.

International invited talks and convening, recent examples (>10 international invitations since 2018)

2024: - **Chair of the Science Committee, Goldschmidt, Chicago USA**; Session convener Cities on volcanoes, Antigua, Guatemala; Session proponent, EGU, Venice, Austria
2023: - **Session convener**, Goldschmidt, Lyon, France 2022: - **Invited international seminars**: University of Southern Florida, USA, (virtual), University of Oslo, Norway & **keynote** for Centre for Earth Evolution and Dynamics symposium, Norway
2021: - **Science Committee** and **invited keynote speaker**, Goldschmidt, virtually 'in' France
- **Invited keynote speaker**, virtual EGU General assembly
2020: - **Virtual department seminars**: Monash and ANU Universities, Australia, June 2020. (90+ attended from 7 Australian Universities); University of Southern California, USA, May 2020.
2019: - **Theme Chair** Volcanoes, Goldschmidt 2019 Barcelona, Spain
- **Invited talks** at Switzerland PhD Workshop Geneva; Halogens workshop, Sorbonne University, France; Department seminar Trinity College Dublin, Ireland
2018: - **Invited keynote speaker**: Gordon Research Conference 'Deep Carbon Science in the Context of Geologic Time' Rhode Island, USA
- **Invited keynote speaker**: AGU Chapman conference on large silicic systems, Chile
2017: - **Science Program Committee**, Deep Carbon Observatory International Science Meeting, Scotland
- Invited speaker PhD student summer school, Erlangen, Germany
2016: - **Theme Chair** Volcanoes, Goldschmidt 2016, Yokohama, Japan
- **Invited speaker** European Geosciences Union (EGU) General assembly, Vienna, Austria
2015: - **Invited speaker,** Smithsonian Institute, National Museum of Natural History, Washington DC, USA
- **Invited speaker** Fall American Geophysical Union (AGU) meeting, San Francisco, USA

Recent funding (>£2.5M since 2018)

2023: - **Co-I NSF/NERC grant** After the cataclysm: cryptic degassing and delayed global recovery in the wake of Large Igneous Province volcanism
- **Co-I Oxford Martin Programme** on Rethinking Natural Resources (£1M)
2021: - **PI NERC IODP Moratorium Award** 'Violent release of thermogenic gases as a driver in the Paleogene climate & carbon cycle?' £50k
- Oxford PI Fondation Philippe Wiener-Maurice Anspach, Belgium 'The Magmatic Evolution of Geothermally Active Volcanoes in Ethiopia' £8.5k
2019: - **Royal Society International Exchanges** 2019 Cost Share (NSFC) Eruption of continental flood basalts and a link with end-Permian mass extinction: From the mantle to atmosphere £12k, co-applicant Qin Wang (Nanjing University, China)
- **UK PI NSFGEO-NERC grant**: 'Sulfur Cycling at Subduction Zones' £300k (UK budget), NSF lead Terry Plank (Lamont-Doherty Earth Observatory, NY, USA)
2018: - **ERC consolidator grant** (V-ECHO): 'Revealing hidden volcanic triggers for global environmental change events in Earth's geological past using mercury (Hg)' €2M
- **Oxford PI and WP leader NERC highlight topic** 'Volcanic plume understanding and forecasting: Integrating remote-sensing, in-situ observations and models (V-PLUS)' £1.5M (total) – led by Anja Schmidt (Cambridge)
2017: - **Co-I NERC Global Challenges, International Innovation Follow-on** 'Integration of air quality monitoring in Nicaragua's national hazard monitoring system (UNRESP-OPS)' - £125k - led by Ilyinskaya (Leeds) *[completed]*.
2016: - **Co-I NERC Global Challenges** 'Unseen but not unfelt: resilience to persistent volcanic emissions (UNRESP)' - £170k, - led by Ilyinskaya (Leeds) *[completed]*.
- **Co-I NERC Global Challenges** 'Harnessing 'citizen science' to reinforce resilience to environmental disasters: creating an evidence base and community of practice' - £159k
2015: - **Co-I NERC urgency grant** 'Impacts of the Calbuco eruption, Chile' - £64k *[completed]*.
2014: - **Co-leader NERC Theme Action consortium** 'Mantle volatiles: processes, reservoirs and fluxes' £1.7M (Oxford) *[completed]*.

- **Oxford PI and WP leader NERC large grant** 'Rift Volcanism: Past, Present and Future' £443k (Oxford) – led by Whaler (Edinburgh) and Biggs (Bristol) *[completed]*.
- **Co-I, NERC urgency grant** 'Source and longevity of sulphur in Icelandic flood basalt eruption plumes' - (£65k) *[completed]*.

Examples of leadership and other professional activities: within Oxford

- University College Oxford **fellow for Equality Diversity and Inclusion** (2021-)
- **University of Oxford Committee to Review Donations** (2020-2024)
- **Associate Head of Department** (Research), Department of Earth Sciences, Oxford (2020-) including co-leading REF2021 department impact
- MPLS Research forum (2022-)
- Oxford Space Research Network Steering Group (2021-)
- Joint Appointments Panel (2017-2019)
- EJRA committee (2015-2019)
- **Athena SWAN renewal lead**, Earth Sciences Oxford (2016), part of team for 2011 submission
- **University of Oxford Personnel Committee member** (2015-2019)
- **Numerous appointments panels** for my department and MPLS including Chair of Geology/Geophysics 2011/2019

Examples of leadership and other professional activities: external to Oxford

- **Chair of the Volcanic and Magmatic Studies Group**: a joint special interest group of the Mineralogical Society of Great Britain & Ireland & the Geological Society of London (2022-2025)
- **Turing Institute** and Data61 (Australia) environmental and sustainability focus group (2022-)
- **American Geophysical Union** Bowen Award committee (2021-2024)
- **International Continental Drilling Program**: member Science Advisory Group (2019-2022)
- External REF assessor for Hull (2019)
- **NERC Science Board/Committee** (2017-2021) including additional tasks: NERC Science Committee recruitment panel 2019, Panel member NERC IODP subscription renewal assessment 2018; Chaired evaluation of the UK IODP subscription 2018; Chaired evaluation of NERC's NC-large research infrastructure (BAS ships and FAAM aircraft) 2017/18
- **The Geochemical Society, USA**, elected to board of Directors, (2017-2019)
- **American Geophysical Union** (AGU)'s Committee on International Participation (2014–2019)
- **Management committee** 5-year £8M NERC programme (*Volatiles, Geodynamics & Solid Earth Controls on the Habitable Planet)* 2014-2021, following co-leading strategic programme bid.
- **Deputy director** (volcanoes) NERC Centre for Observation & Modelling of Earthquakes, Volcanoes & Tectonics (COMET) executive (2013-2019)
- **External for academic appointments/promotions:** (2022: EOS, Singapore; 2021: Monash, Australia; 2020: Trinity College Dublin, Ireland; 2021/2018: Munich, Germany; 2017 St Andrews, Scotland and Michigan Technological University, USA; 2016: Utrecht, Netherlands)
- Reviewer/examiner for >90 papers, proposals for UKRI, ERC, funders in Switzerland, Germany, Iceland, France, USA, Canada and New Zealand and 7 PhD thesis in UK, Norway, France, Italy and Spain.

Examples of recent Strategy, Government and Policy work

- Further recent examples available upon request
- Advisory board of **Two Magnolias: venture capital** fund investing in businesses solving problems in sustainability and human health (2022 onwards)
- **Police Science Council** member: independent challenge and advice to ensure that all areas of policing remain at the forefront the latest science and technology developments (2022-2025)
- **Foreign and Commonwealth Office** advised on counter proliferation efforts (2011, 2016)
- Hosted and presented to the Japanese Council for Science, Technology and Innovation, **Cabinet Office, Government of Japan** (2016)
- Co-lead a **REF 2014 impact case study** about the broader societal impact of work on mercury
- Invited participant **UK Government Cabinet Office workshop** and expert elicitation on 'Effusive Eruption Source Characterisation' (2012)

- Organised a 2-day international workshop on *Natural Emissions, Global Change and the Global Mercury Cycle* in Oxford, **to produce a policy briefing for the UK government and UN Environment Programme** on unknowns and uncertainties in the natural mercury inventory (2011) in preparation for the Minamata Convention

Mentoring, student supervision and teaching

- 10 postdoctoral scientists/independent research fellows previously mentored, 7 of whom now have faculty jobs. Current mentor/PI to 3 postdoctoral scientists.
- Supervision of PhD (19 completed, 5 current) and 4th year undergraduate masters student projects (30 completed, 1 current).
- Undergraduate lecturing: 1st year Chemistry, 3rd and 4th year Volcanology. Small group tutorials and field teaching. Admissions interviewing 2006-present.

Wider interest scientific talks, outreach and press engagement - recent highlights include:

- 2024: Debut non-fiction book ADVENTURES IN VOLCANOLAND published by Abacus (UK) in April and Hanover Square Press (US) in June. Starred reviews in in Kirkus and the Library Journal.
- 2023: **BBC Radio 4** 'The Infinite Monkey Cage'; **BBC2 TV/iplayer & PBS(USA)** Earth (Inferno)
- 2022: NHK World – Japan TV Direct Talk 'Understanding Volcanoes'
- 2022: 'A life volcanic' A blog contributed as part of marking the 40th anniversary of the admission of women to St John's College, Cambridge.
- 2022: Consultant Cope Disaster Campions 'Volcanoes' empowering children in disaster risk reduction
- 2022: Consultant 'Tara Binns: Visionary Volcanologist', Collins Big Cat book supporting every primary child on their reading journey from phonics to fluency
- 2021: Imperial College London annual Peter Lindsay Memorial Lecture 2021
- 2020: Lecture to Royal Philosophical Society of Glasgow, the first digital presentation in 218 years of existence!
- 2020: Nailing Science, (https://www.youtube.com/watch?v=dJEOhsp45vk) >12.9k views
- 2020: Eruptions, Emissions and Enigmas as part of the 2020 Darwin College Cambridge Lecture Series: Enigmas
- 2020: Project leader 'Your Science Out There' video and teaching resources for learners of all ages and to promote women in science, launched to celebrate International Day of Women and Girls in Science. >145k views on YouTube as of September 2021
- 2019: Speaker for international women's day, Main Building, Ministry of Defence, London
- 2019: Invited Geological Society Public lecture for the 'Year of Carbon' 'Volcanoes and past climate - adventures with deep carbon' London
- 2018: Speaker at Dippy In-Depth event (Northern Ireland Science Festival at Ulster Museum)
- 2018: New Scientist Live, London
- 2018: Expert contributor Mars Diary, free primary STEM programme, UK Space Agency
- 2018: BBC Radio 4 'The Infinite Monkey Cage'
- 2018: Oxford and European Geosciences Unions Science Blogs: Living with volcanic gases
- 2017: BBC Radio 4 'The Life Scientific'
- 2016: Science essay for children's book 'George and the Blue Moon' Lucy and Stephen Hawking
- 2016: BBC World Service The Forum (July 2016)
- 2015: BBC Radio 4, Costing the Earth (March 2015)
- 2014: NASA video about our work on the effects of volcanic emissions on clouds
- 2014: London Volcano - public event at the Natural History Museum, London. >2k school children visited, >15k visitors to whole event. 8k page views on blog site (to which I contributed a blog on volcanic lightning)

Regular school talks and public lectures to, for example, local geology groups and UNIQ summer school and college access events