

# 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 160 publications in peer-reviewed international journals/books (see <http://www.earth.ox.ac.uk/mather>, the maximum 5 selected for REF2021 submission). Citation summary: >6900 Scopus citations, >800 per year since 2021; 11 papers with >100 citations; **h-index 59/52/49** (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)

- 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)

- 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

- 8 postdoctoral scientists/independent research fellows previously mentored, 5 of whom now have faculty jobs.
- Current mentor to 5 postdoctoral scientists.
- Supervision of PhD (17 completed, 5 current) and 4<sup>th</sup> year undergraduate masters student projects (28 completed, 2 current).
- My PhD/masters students regularly win department (e.g., 2008, 2011 & 2016: Güralp prize for graduate study), national (e.g., 2017: VMSG Willy Aspinall award, 2017 & 2012: Geologists' Association Tupper Prize for the best undergraduate student in Geology or Earth Sciences, 2022 & 2016: VMSG winter meeting student presentation awards) and international awards (2014: NSF GeoPRISMS, 2012 winner and 2011 finalist: Best Environment and Earth Science Student for The European Science, Engineering & Technology Undergraduate Student of the Year Awards).
- Undergraduate lecturing: 1<sup>st</sup> year Chemistry, 3<sup>rd</sup> and 4<sup>th</sup> year Volcanology. Small group tutorials and field teaching. Admissions interviewing 2006-present.
- I have acted as an assessor for Prelims and Finals every year since joining Oxford. I was a prelims examiner in 2012 and chair of prelims in 2013.

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

- 2022: NHK World – Japan TV Direct Talk '[Understanding Volcanoes](#)'
- 2022: '[A life volcanic](#)' A blog contributed as part of marking the 40<sup>th</sup> 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**