

PROF. TAMSIN A. 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 main research interests centre on the science behind volcanoes and volcanic behaviour. My motivation is to understand volcanoes as (a) natural hazards, (b) a key planetary scale process throughout geological time, playing a key role in change but vital for maintaining habitability and (c) natural resources (e.g., geothermal power and the development of ore deposits). I use techniques including Earth Observation, remote and direct measurements of volcanic gas/aerosol, field mapping and petrological and geochemical analysis. I have also studied the emissions from an oil depot fire (Buncefield 2005) and am generally interested in the global mercury cycle as well as other biogeochemical cycles.

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

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**, Brussels. 3-month internship, DG Environment.

2000 **BBC Science** (London) 8-week internship, 1999 **BBC Natural History** 6-week internship.

Publications

Over 135 publications in peer-reviewed international journals/monographs, listed: <http://www.earth.ox.ac.uk/mather> (>4000 Scopus citations, >450 in 2017, 2018 & 2019, **h-index 44/38/37** Google Scholar/Scopus/WoS)

Examples of professional activities and panel membership/leadership

- International Continental Drilling Program: member Science Advisory Group (2019-2022)
- Elected to **board of Directors**, the Geochemical Society, USA (2017-2019)
- **NERC Science Board/Committee** (2017-2021): 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
- **Athena SWAN renewal lead**, Earth Sciences Oxford (2016)
- **University of Oxford Personnel Committee member** (2015-2019)
- 2014-present: **Co-editor in chief** *Earth and Planetary Science Letters*
- American Geophysical Union (AGU)'s Committee on International Participation (2014–2019)

- **Management committee** 5-year £8M programme (*Volatiles, Geodynamics & Solid Earth Controls on the Habitable Planet*) following membership of lead writing team.
- **Deputy director** (volcanoes) NERC Centre for Observation & Modelling of Earthquakes, Volcanoes & Tectonics (COMET) executive (2013-2019)
- **External member professorial appointments/promotions committees** (2018: Munich, Germany; 2017 St Andrews, Scotland; 2016: Utrecht, Netherlands)

Examples of recent Strategy and Policy work

- Advised Foreign and Commonwealth Office in support of their counter proliferation efforts (July 2011, April 2016)
- Hosted and presented to the Japanese Council for Science, Technology and Innovation, Cabinet Office, Government of Japan, January 2016
- A short [video](#) about the broader societal impact of our work on mercury
- Invited participant UK Government Cabinet Office workshop and expert elicitation on 'Effusive Eruption Source Characterisation' May 2012, London.
- 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 UNEP) on unknowns and uncertainties in the natural mercury inventory (May 2011) in preparation for the Minamata Convention

Recent funding

- 2019: - **UK PI NSFGEO-NERC grant**: 'Sulfur Cycling at Subduction Zones' £300k (UK budget)
- 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 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)
- 2016: - **Co-I NERC Global Challenges** 'Unseen but not unfelt: resilience to persistent volcanic emissions (UNRESP)' - £170k, - led by Ilyinskaya (Leeds)
 - **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)
 - **Oxford PI and WP leader NERC large grant** 'Rift Volcanism: Past, Present and Future' £443k (Oxford) – led by Whaler (Edinburgh) and Biggs (Bristol)
 - **Co-I, NERC urgency grant** 'Source and longevity of sulphur in Icelandic flood basalt eruption plumes' - (£65k) [completed].

Mentoring, student supervision and teaching

- I have mentored 7 postdoctoral scientist/independent research fellows, 5 of whom now have faculty jobs elsewhere.
- Supervision of PhD (14 completed, 6 current) and 4th year undergraduate masters student projects (24 completed).
- Undergraduate lecturing 1st year Chemistry and 3rd and 4th year Volcanology.

Recent examples of international invited talks and convening

- 2019: - **Theme Chair** Volcanoes, Goldschmidt 2019 Barcelona, Spain
 - 2 invited talks Conférence Universitaire de Suisse Occidentale Workshop Geneva, Switzerland
- 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
- 2016: - **Theme Chair** Volcanoes, Goldschmidt 2016, Yokohama, Japan
- **Invited speaker** EGU General assembly, Vienna, Austria 2016
- 2015: - **Invited speaker**, Smithsonian Institute, National Museum of Natural History, Washington DC, USA, October 2015
- 2014: - **Invited speaker and session convener** Fall AGU meeting San Francisco USA.
- **Invited speaker**, Ludwig-Maximilians-Universität/Technische Universität München, Munich, Germany, joint seminar series 'Frontiers in Earth sciences', 27 June 2014.

Outreach and press engagement - recent highlights include:

- Speaker for international women's day, Main Building Ministry of Defence, London, March 2019
 - Speaker at Dippy In-Depth event (Ulster Museum in partnership with the NI Science Festival) Earth - November 2018
 - New Scientist Live, London September 2018
 - Expert contributor [Mars Diary](#) (free primary STEM programme, UK Space Agency) April 2018
 - BBC Radio 4 '[The Infinite Monkey Cage](#)' February 2018
 - Oxford Science Blog: [Living with volcanic gases](#), January 2018
 - BBC Radio 4 '[The Life Scientific](#)' May 2017
 - Science essay for children's book '[George and the Blue Moon](#)' Lucy and Stephen Hawking, 2016
 - BBC World Service [The Forum](#), July 2016
 - BBC Radio 4, [Costing the Earth](#), March 2015,
 - NASA [video](#) about our work on the effects of volcanic emissions on clouds
 - London Volcano - public event at the Natural History Museum, London, 9-13 June 2014. >2000 school children visited, >15,000 visitors to whole event. 8000 page views on blog site (to which I contributed a blog on volcanic lightning)
 - Soapbox Science [event](#), South Bank London (22 July)
 - BBC audio [slideshow](#) and talk at Cheltenham Science Festival (June 2011)
- I regularly give schools talks and public lectures to local geology groups**