



**Dr Matthew Rigby**  
**MSci(Cantab.), PhD(Lond.)**

Reader in Atmospheric Chemistry

**Area of research**

Understanding trends in atmospheric greenhouse gases

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**Summary**

My work focuses on developing methods for determining sources and sinks of greenhouse gases and ozone depleting substances. I carry out this work in collaboration with researchers around the world through the Advanced Global Atmospheric Gases Experiment ([AGAGE](#)), a global monitoring network that measures over 40 trace gases at high frequency and precision. I use models of atmospheric chemistry and transport to determine emissions and sinks of atmospheric gases using the AGAGE measurements. I am a co-I on the [GAUGE](#) consortium, part of NERC's [Greenhouse Gases and Feedbacks Programme](#), which aims to estimate the UK's greenhouse gas emissions in greater detail than has been possible before, and the NERC [MOYA](#) project, investigating the global methane budget. I am a lead author of the [2018 World Meteorological Organisation Scientific Assessment of Ozone Depletion](#).

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**Recent publications**

- Fang, X, Park, S, Saito, T, Tunnicliffe, R, Ganesan, AL, Rigby, M, Li, S, Yokouchi, Y, Fraser, PJ, Harth, CM, Krummel, PB, Mühle, J, O'Doherty, S, Salameh, PK, Simmonds, PG, Weiss, RF, Young, D, Lunt, MF, Manning, AJ, Gressent, A & Prinn, RG, 2019, '[Rapid increase in ozone-depleting chloroform emissions from China](#)'. *Nature Geoscience*, vol 12., pp. 89-93
- Montzka, SA, Dutton, GS, Yu, P, Ray, E, Portmann, RW, Daniel, JS, Kuijpers, L, Hall, BD, Mondeel, D, Siso, C, Nance, JD, Rigby, M, Manning, AJ, Hu, L, Moore, F, Miller, BR & Elkins, JW, 2018, '[An unexpected and persistent increase in global emissions of ozone-depleting CFC-11](#)'. *Nature*, vol 557., pp. 413-417
- Simmonds, PG, Rigby, M, McCulloch, A, Vollmer, MK, Henne, S, Mühle, J, O'Doherty, S, Manning, AJ, Krummel, PB, Fraser, PJ, Young, D, Weiss, RF, Salameh, PK, Harth, CM, Reimann, S, Trudinger, CM, Steele, LP, Wang, RH, Ivy, DJ, Prinn, RG, Mitrevski, B & Etheridge, DM, 2018, '[Recent increases in the atmospheric growth rate and emissions of HFC-23 \(CHF3\) and the link to HCFC-22 \(CHClF2\) production](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 4153-4169
- Prinn, RG, Weiss, RF, Arduini, J, Arnold, T, Dewitt, HL, Fraser, PJ, Ganesan, AL, Gasore, J, Harth, CM, Hermansen, O, Kim, J, Krummel, PB, Li, S, Loh, ZM, Lunder, CR, Maione, M, Manning, AJ, Miller, BR, Mitrevski, B, Mühle, J, O'Doherty, S, Park, S, Reimann, S, Rigby, M, Saito, T, Salameh, PK, Schmidt, R, Simmonds, PG, Steele, LP, Vollmer, MK, Wang, RH, Yao, B, Yokouchi, Y, Young, D & Zhou, L, 2018, '[History of chemically and radiatively important atmospheric gases from the Advanced Global Atmospheric Gases Experiment \(AGAGE\)](#)'. *Earth System Science Data*, vol 10., pp. 985-1018
- Palmer, PI, O'Doherty, S, Allen, G, Bower, K, Bösch, H, Chipperfield, MP, Connors, S, Dhomse, S, Feng, L, Finch, DP, Gallagher, MW, Gloor, E, Gonzi, S, Harris, NR, Helfter, C, Humpage, N, Kerridge, B, Knappett, D, Jones, RL, Le Breton, M, Lunt, MF, Manning, AJ, Matthiesen, S, Muller, JB, Mullinger, N, Nemitz, E, O'Shea, S, Parker, RJ, Percival, CJ, Pitt, J, Riddick, SN, Rigby, M, Sembhi, H, Siddans, R, Skelton, RL, Smith, P, Sonderfeld, H, Stanley, K, Stavert, AR, Wenger, A & others 2018, '[A measurement-based verification framework for UK greenhouse gas emissions: An overview of the Greenhouse gAs UK and Global Emissions \(GAUGE\) project](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 11753-11777
- Lunt, MF, Park, S, Li, S, Henne, S, Manning, AJ, Ganesan, AL, Simpson, IJ, Blake, DR, Liang, Q, O'Doherty, S, Harth, CM, Mühle, J, Salameh, PK, Weiss, RF, Krummel, PB, Fraser, PJ, Prinn, RG, Reimann, S & Rigby, M, 2018, '[Continued Emissions of the Ozone-Depleting Substance Carbon Tetrachloride From Eastern Asia](#)'. *Geophysical Research Letters*.
- Reimann, S, Elkins, JW, Fraser, PJ, Hall, BD, Kurylo, MJ, Mahieu, E, Montzka, SA, Prinn, RG, Rigby, M, Simmonds, PG & Weiss, RF, 2018, '[Observing the atmospheric evolution of ozone-depleting substances](#)'. *Comptes Rendus Géoscience*, vol 350., pp. 384-392
- Vollmer, MK, Young, D, Trudinger, CM, Mühle, J, Henne, S, Rigby, M, Park, S, Li, S, Guillevic, M, Mitrevski, B, Harth, CM, Miller, BR, Reimann, S, Yao, B, Steele, LP, Wyss, SA, Lunder, CR, Arduini, J, McCulloch, A, Wu, S, Rhee, TS, Wang, RHJ, Salameh, PK, Hermansen, O, Hill, M, Langenfelds, RL, Ivy, D, O'Doherty, S, Krummel, PB, Maione, M, Etheridge, DM, Zhou, L, Fraser, PJ, Prinn, RG, Weiss, RF & Simmonds, PG, 2018, '[Atmospheric histories and emissions of chlorofluorocarbons CFC-13 \(CClF3\), CFC-114 \(C2Cl2F4\), and CFC-115 \(C2ClF5\)](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 979-1002
- Ganesan, A, Stell, A, Gedney, N, Comyn-Platt, E, Hayman, GD, Rigby, M, Poulter, B & Hornibrook, E, 2018, '[Spatially-Resolved Isotopic Source Signatures of Wetland Methane Emissions](#)'. *Geophysical Research Letters*.
- Ganesan, A, Rigby, M, Lunt, M, Parker, RJ, Boesch, H, Goulding, N, Umezawa, T, Zahn, A, Chatterjee, A, Prinn, RG, Tiwari, Y, Schoot, Mvd & Krummel, PB, 2017, '[Atmospheric observations show accurate reporting and little growth in India's methane emissions](#)'. *Nature Communications*, vol 8.
- Rigby, M, Montzka, SA, Prinn, RG, White, JWC, Young, D, O'Doherty, S, Lunt, MF, Ganesan, AL, Manning, AJ, Simmonds, PG, Salameh, PK, Harth, CM, Mühle, J, Weiss, RF, Fraser, PJ, Steele, LP, Krummel, PB, McCulloch, A & Park, S, 2017, '[Role of atmospheric oxidation in recent methane growth](#)'. *Proceedings of the National Academy of Sciences of the United States of America*, vol 114., pp. 5373-5377
- Simmonds, PG, Rigby, M, McCulloch, A, O'Doherty, S, Young, D, Mühle, J, Krummel, PB, Steele, P, Fraser, PJ, Manning, AJ, Weiss, RF, Salameh, PK, Harth, CM, Wang, RHJ & Prinn, RG, 2017, '[Changing trends and emissions of hydrochlorofluorocarbons \(HCFCs\) and their hydrofluorocarbon \(HFCs\) replacements](#)'. *Atmospheric Chemistry and Physics*, vol 17., pp. 4641-4655

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