



**Professor Simon O'Doherty**  
**B.Sc.(C.N.A.A.), M.Sc., Ph.D.(Bristol)**

Professor of Atmospheric Chemistry

Office W329b  
School of Chemistry,  
Cantock's Close, Bristol BS8 1TS  
([See a map](#))

+44 (0) 117 928 9186

+44 (0) 117 331 7042

[s.odoherty@bristol.ac.uk](mailto:s.odoherty@bristol.ac.uk)

## Summary

My main area of research is concerned with the global growth of Montreal Protocol gases or gases that are involved in stratospheric ozone depletion (CFCs, HCFCs, halons) and the Kyoto gases or gases that are involved in global warming (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>, NF<sub>3</sub>, HFCs and PFCs). Measurement of these key compounds is vital in obtaining a greater understanding of the processes involved in Climate Change and Ozone Depletion. This internationally recognised work is funded by Department of Business Energy & Industrial Strategy (BEIS), the Irish Environmental Protection Agency (EPA), the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA).

As a member of the Advanced Global Gases Experiment (AGAGE) team, I am principal scientist in charge of two of the five core-AGAGE research stations (Ireland and Barbados). AGAGE is one of only two groups in the world making ground based global measurements of these compounds. This area of research has expanded in recent years with national and EU funded projects such as SOGE, SOGE-A, UK-SOLAS, Eurohydros, InGOS, GAUGE and MOYA.

I lead the UK DECC Network. This network incorporates a range of novel measurement approaches, and is a collaboration between the Universities of Bristol, East Anglia, and the UK Met. Office (<http://www.metoffice.gov.uk/research/monitoring/atmospheric-trends/>)

Other areas of research include the development of equipment for monitoring a wide variety of other ozone precursor compounds, which play an important role in issues of public health and urban/rural pollution assessments. The group has also gained great expertise in the area of tracer release experiments. The transport and dispersion of pollutants has enormous implications for the environment on urban, regional and global scales. On urban scales, local emissions of pollutants can directly impact on the health of the inhabitants, while chemical changes and deposition during transport can have more widespread regional effects.

## Biography

I have been part of the School of Chemistry at the University of Bristol since 1986 initially as a student then as a member of staff. Over the past 20+ years I have helped establish a world leading research group working in the field of Atmospheric Chemistry. I have developed novel instrumentation (as part of the AGAGE project) that allows analysis of a range of atmospherically important gases regulated under the Montreal and Kyoto Protocols. This instrumentation has been installed into a number of remote research stations around the world (Mace Head, Ireland; Cape Grim, Tasmania; Jungfraujoeh, Switzerland; Ny Alesund, Norway, Mt. Cimone, Italy, Cape Point, South Africa.

## Keywords

- Greenhouse Gas (GHG) and Ozone Depletion measurements
- GHG emissions verification

## Memberships

## Organisations

[School of Chemistry](#)

## Chemistry staff

- [Chemistry academic staff](#)

## Research sections

- [Physical and Theoretical Chemistry](#)

## Recent publications

- White, ED, Rigby, M, Lunt, MF, Smallman, TL, Comyn-Platt, E, Manning, AJ, Ganesan, AL, O'Doherty, S, Stavert, AR, Stanley, K, Williams, M, Levy, P, Ramonet, M, Forster, GL, Manning, AC & Palmer, PI, 2019, '[Quantifying the UK's carbon dioxide flux: an atmospheric inverse modelling approach using a regional measurement network](#)'. *Atmospheric Chemistry and Physics*, vol 19., pp. 4345-4365
- 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
- Hossaini, R, Atlas, E, Dhomse, SS, Chipperfield, MP, Bernath, PF, Fernando, AM, Mühle, J, Leeson, AA, Montzka, SA, Feng, W, Harrison, JJ, Krummel, P, Vollmer, MK, Reimann, S, O'Doherty, S, Young, D, Maione, M, Arduini, J & Lunder, CR, 2019, '[Recent Trends in Stratospheric Chlorine From Very Short-Lived Substances](#)'. *Journal of Geophysical Research: Atmospheres*.
- Derwent, RG, Simmonds, PG, O'Doherty, SJ, Manning, AJ & Spain, TG, 2019, '[A 24-year record of high-frequency, in situ, observations of hydrogen at the Atmospheric Research Station at Mace Head, Ireland](#)'. *Atmospheric Environment*, vol 203., pp. 28-34
- Pison, I, Berchet, A, Saunois, M, Bousquet, P, Broquet, G, Conil, S, Delmotte, M, Ganesan, A, Laurent, O, Martin, D, O'Doherty, S, Ramonet, M, Spain, TG, Vermeulen, A & Kwok, CY, 2018, '[How a European network may help with estimating methane emissions on the French national scale](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 3779-3798
- 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
- Bergamaschi, P, Karstens, U, Manning, AJ, Saunois, M, Tsuruta, A, Berchet, A, Vermeulen, AT, Arnold, T, Janssens-Maenhout, G, Hammer, S, Levin, I, Schmidt, M, Ramonet, M, Lopez, M, Lavric, J, Aalto, T, Chen, H, Feist, DG, Gerbig, C, Haszpra, L, Hermansen, O, Manca, G, Moncrieff, J, Meinhardt, F, Necki, J, Galkowski, M, O'Doherty, S, Paramonova, N, Scheeren, HA, Steinbacher, M & Dlugokencky, E, 2018, '[Inverse modelling of European CH<sub>4</sub> emissions during 2006-2012 using different inverse models and reassessed atmospheric observations](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 901-920
- 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
- Adcock, KE, Reeves, CE, Gooch, LJ, Elvidge, EL, Ashfold, MJ, Brenninkmeijer, CA, Chou, C, Fraser, PJ, Langenfelds, RL, Hanif, NM, O'Doherty, S, Oram, DE, Ou-Yang, CF, Phang, SM, Abu Samah, A, Röckmann, T, Sturges, WT & Laube, JC, 2018, '[Continued increase of CFC-113a \(CCI3CF3\) mixing ratios in the global atmosphere: Emissions, occurrence and potential sources](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 4737-4751
- Stanley, KM, Grant, A, O'Doherty, S, Young, D, Manning, AJ, Stavert, AR, Spain, TG, Salameh, PK, Harth, CM, Simmonds, PG, Sturges, WT, Oram, DE & Derwent, RG, 2018, '[Greenhouse gas measurements from a UK network of tall towers: Technical description and first results](#)'. *Atmospheric Measurement Techniques*, vol 11., pp. 1437-1458
- Wells, KC, Millet, DB, Bousseres, N, Henze, DK, Griffis, TJ, Chaliyakunnel, S, Dlugokencky, EJ, Saikawa, E, Xiang, G, Prinn, RG, O'Doherty, S, Young, D, Weiss, RF, Dutton, GS, Elkins, JW, Krummel, PB, Langenfelds, R & Steele, LP, 2018, '[Top-down constraints on global N<sub>2</sub>O emissions at optimal resolution: Application of a new dimension reduction technique](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 735-756
- 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 \(CHF<sub>3</sub>\) and the link to HCFC-22 \(CHClF<sub>2</sub>\) production](#)'. *Atmospheric Chemistry and Physics*, vol 18., pp. 4153-4169

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