

Job Title: Senior Research Scientist **ORCID:** [0000-0002-3587-837X](https://orcid.org/0000-0002-3587-837X)
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Employment & Research Experience

- 2024 – 2026 **Natural Environment Research Council (NERC) Knowledge Exchange Fellow**
Currently, I am the holder of a prestigious NERC knowledge exchange fellowship to integrate Earth observation data into the Met Office's air quality forecast system to improve pollution predictions for the public but also stakeholders (e.g. Defra).
- 2021 – 2023 **European Space Agency – Climate Change Initiative Fellow**
My ESA-CCI fellowship focussed on generating a consistent harmonised satellite dataset of lower tropospheric ozone and exploiting an Earth system model (UKESM) to quantify long-term trends in ozone and interactions with climate.
- 2015 - 2020 **Research Scientist, National Centre for Earth Observation (NCEO), Leeds**
This involved using models and satellite observations to study important atmosphere-biosphere interactions to help quantify their influence on global/regional air quality (e.g. wildfire emissions on surface pollutant concentrations).
- 2011 - 2015 **PhD Student, UK Met Office, Exeter**
As part of my CASE-funded PhD project in Leeds I spent extended periods at the Met Office working in the Air Quality Group.

Qualifications

- 2011 - 2015 **PhD** in Air Quality Modelling and Satellite Observations – University of Leeds, UK
Thesis title: “*The meteorological and chemical processes influencing UK air quality investigated using satellite observations and modelling*”. Supervised by Prof Martyn Chipperfield (University of Leeds) and Dr Nick Savage (Met Office).
- 2007 - 2011 **Masters of Science (MSci) – Meteorology and Oceanography (1st class honours)**
University of East Anglia, UK.

Research Interests

- Earth observation (EO) of global and regional air quality (AQ).
- Atmospheric modelling of air pollutants (e.g. ozone and nitrogen dioxide).
- Model evaluation and development using EO atmospheric composition data.
- UK AQ observed from space (e.g. long-term trends, the 2018 Saddleworth Moor fires).

Selected Peer-Reviewed Publications

Pope, R. J., Rap, A., Pimlott, M. A., et al.: Quantifying the tropospheric ozone radiative effect and its evolution in the satellite era. *Atmos. Chem. Phys.*, doi:10.5194/acp-24-3613-2024, 2024.

Pope, R.J., Kelly, R., Marais, E.A., et al.: Exploiting satellite measurements to explore uncertainties in UK bottom-up NO_x emission estimates. *Atmos. Chem. Phys.*, doi:10.5194/acp-22-4323-2022, 2022.

Pope, R. J., Arnold, S. R., Chipperfield, M. P., et al.: Substantial increases in Eastern Amazon and Cerrado biomass burning-sourced tropospheric ozone, *Geophys. Res. Letts.*, doi:10.1029/2019GL084143, 2020.

Pope, R. J., Arnold, S. R., Chipperfield, M. P., et al.: Widespread changes in UK air quality observed from space, *Atmos. Sci. Letts.*, doi:10.1002/asl.817, 2018.

Pope, R. J., Marsham, J. H., Knippertz, P., et al.: Identifying errors in dust models from data assimilation. *Geophys. Res. Letts.*, doi:10.1002/2016GL070621, 2016.

Pope, R.J., Butt, E.W., Chipperfield, M.P., et al.: The impact of synoptic weather on UK surface ozone and implications for premature mortality, *Env. Res. Letts.*, doi:10.1088/1748-9326/11/12/124004, 2016.

Pope, R.J., Savage, N. H., Chipperfield, M. P., Arnold, S. R., and Osborn, T. J.: The influence of synoptic weather regimes on UK air quality: Analysis of satellite column NO₂, *Atmos. Sci. Letts.*, doi:10.1002/asl2.492, 2014.

I act as a reviewer for multiple journals including Atmospheric Environment, Atmospheric Chemistry and Physics, Nature Geoscience and Environmental Research Letters.

Teaching, Supervising & Funding

Lecturing: I lecture on the University of Leeds undergraduate modules “SOEE3190 Earth Observations from Space” and “SOEE3431 Atmospheric Pollution: Causes, Impact and Regulation” on detection of atmospheric composition, clouds and UK AQ from space. I also lead a computing practical on satellite air quality for PhD students in the SENSE CDT cohort.

Supervision: Supervise(d)/co-supervise(d) eight PhD students and three MRes students based at Leeds and/or other UK universities. I have led the supervision of four Leeds undergraduate final year projects (two receiving awards for their dissertations).

Funding: NERC KEF and ESA CCI fellowships were funded at approximately £232,000 and €105,000, respectively. PhD co-funding from NCEO was approximately £50,000. Co-researcher on a successful bid (£150,000), funded by the UK Department for Environment, Food and Rural Affairs (DEFRA), to use satellite data to derive top-down UK NO_x emissions for verification of official bottom-up inventories. Also obtained funding for six summer student placements (2016-2021) investigating topics such as weather-AQ interactions, power station plume modelling and quantification of transboundary pollution sources.

Leadership Experience

- Provide primary supervision of PhD and MRes students.
- Lead/co-lead on successfully funded fellowship calls and projects.
- Previously led inter-departmental seminar series, organised an NCEO Young Scientist Conference (2014) and participated in departmental management activities.

Technical Skills

Atmospheric Chemistry Modelling Skills

Extensive experience of:

- Running global/regional atmospheric chemistry models on supercomputing platforms.
- Coding model subroutines (Fortran) and altering the setup of the model.
- Processing/analysing large model and observational datasets in numerous file formats.

General Computing Skills

High proficiency in:

- Unix/Linux and Windows operating systems.
- IDL programming language and data visualisation.
- Latex document generation software.
- Microsoft Office software.

Referees

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