Dr Chris Smith

Vrije Universiteit Brussel (Belgium); IIASA (Austria)
T2.51, Pleinlaan 2, 1050 Brussels, Belgium
+32 492 88 62 89 | email | bluesky | website | orcid | scholar

I am a physical climate scientist with more than 10 years' experience, working at the interface of Earth System modelling and scenario projections. Presently, I am best known as the developer of the FaIR reduced-complexity climate model that was used extensively in the 2018 IPCC Special Report on Global Warming of 1.5°C, the IPCC Sixth Assessment (AR6) Working Group I (WG1) and Working Group III (WG3) reports, and several high-impact academic and policy outputs. I was a key contributor to the Reduced Model Intercomparison Project (RCMIP) that benchmarked the performance of emulators for use in the IPCC AR6. I am also a central part of the team that annually updates IPCC WG1 physical climate assessments based on new data (the Indicators of Global Climate Change project).

During the AR6 cycle I spent 12 months at IIASA, supporting delivery of the IPCC AR6 WG3 report and Scenarios Database. Using FaIR, I was part of the team that produced climate projections from over 1800 emissions pathways. I continue to be a Guest Research Scholar at IIASA, developing infrastructure for updating emissions scenarios and climate knowledge on at least an annual basis that will contribute directly to the IPCC AR7 and Global Stocktake under the Scenarios Compass Initiative. In recent years, I have developed expertise in integrated assessment modelling, economics and econometrics, crossing disciplines and building networks between the physical and social sciences.

The other major strand of my research is the Earth's energy budget and radiative forcing. I led and contributed to several important papers analysing the radiative forcing from CMIP6 era models, forming a critical component of the radiative forcing assessments in IPCC AR6 WG1. I am heavily involved in the design and delivery of the Coupled Model Intercomparison Project Phase 7 (CMIP7), having served as a member of the Strategic Ensemble Design Task Team, a current co-chair of the Radiative Forcing Model Intercomparison Project (RFMIP), and an advisory board member to the Scenario Model Intercomparison Project (ScenarioMIP).

Career experience

2024–	Senior Scientist, Department of Water & Climate, Vrije Universiteit Brussel, Brussels, Belgium
2023–2024	Climate Mitigation Expert Scientist, UK Met Office
2020–	Guest Research Scholar, International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria
2015–2024	Senior Research Fellow, School of Earth and Environment, University of Leeds

Prizes and recognition

2025	Highlight talk, EGU 2025 *Updated IPCC emissions scenarios no longer limit warming to 1.5°C*
2024	Stanford/Elsevier Top 2% Scientists 2024
2023	Winner of the Societal Impact Award, UK Natural Environment Research Council
2018–2022	Coordinating Lead Author, Lead Author, Chapter Scientist and Contributing Author in several roles across three reports of the Intergovernmental Panel on Climate Change (Sixth Assessment Report (AR6) Working Group 1, AR6 Working Group 3, and Special Report on Global Warming of 1.5°C)
2016	Outstanding reviewer contribution award, Renewable Energy journal

Research funding

2024–2028 Principal Investigator, HYWAY, Horizon Europe (consortium €4.6m)
2024–2027 Work Package Leader, Climate Scenarios Compass Initiative (led by IIASA), Bezos Earth Fund (consortium €2.2m)
2024–2026 Co-Investigator, MAGICA (led by U. Leeds), UK Natural Environment Research Council (consortium £1m)
2024–2026 Co-Investigator, Contrail assessment of future aircraft and propulsion architectures (led by U. Southampton), UK Natural Environment Research Council (consortium £1m)
2023–2026 Principal Investigator & Work Package leader, WorldTrans, Horizon Europe (consortium €5m)
2023–2026 Steering committee member, TRIFECTA, Norwegian Research Council
2020–2024 Individual Fellowship, NERC-IIASA Collaborative Research Fellowship, Natural Environment Research Council (£390k)
2017–2019 Co-Investigator, CAMS74, Copernicus Atmosphere Monitoring Service radiative forcing products (£101k)

Student and postdoctoral supervision

2023– Postdoctoral supervisor, Chris Wells, University of Leeds (WorldTrans)
2023– Lead PhD supervisor, Alejandro Romero Prieto, University of Leeds (PANORAMA Doctoral Training Programme, supported by Met Office CASE partner) *Efficient models for climate mitigation and adaptation*
2023– PhD Co-supervisor, Magali Verkerk, U. Exeter *Volcano-climate interactions*
2023– PhD Co-supervisor, Xinran Liu, U. Leeds *Net-zero policy in China*
2023–2024 MRes supervisor, Yongyao Liang, U. Leeds *Attribution of 2023's record temperature*
2019–2024 Seven MSc and undergraduate dissertation students at U. Leeds, two co-authored publications [32, 79]

Leadership and professional activities

2024–2025 Scenarios Forum 2025 (hosted by University of Leeds); part of winning bid team, and member of Scientific Steering Council and organizational committee
2023–2025 External reviewer for three individual and team research proposals in Switzerland, Canada and the US
2023– Co-chair, Radiative Forcing Model Intercomparison Project (RFMIP) for CMIP7
2023– Committee member, CACTI (Composition Air-quality Climate inTeractions Initiative)
2023–2024 External examiner for two PhD thesis defences in Canada and France
2022–2024 Task Team Member, CMIP7 Strategic Ensemble Design Task Team
2021– External consultant on applications of reduced complexity climate models for high-profile clients including national governments
2021 Panel member at COP26 IPCC side event, Glasgow, UK
2020– Convenor of European Geosciences Union sessions on climate modelling, climate emulation, economics, atmospheric chemistry, and air pollution.
2019 Scientific expert, British High Commission Malaysia Communicating Climate Science initiative, Malaysia

Media and outreach

2025 Press conference: "Hot takes & policy quakes: When geoscience meets social science", European Geosciences Union, Vienna, Austria *On the feasibility of current scenarios to limit warming to 1.5°C*
2024 Press conference: United Nations Framework Convention on Climate Change (UNFCCC) SBSTA60, Bonn, Germany *Indicators of Global Climate Change: Annual updates to IPCC climate system assessments*
2024 The Nation Kenya (TV interview) *Solutions for climate change mitigation*

2023 Today Programme (live radio interview), BBC Radio 4 *Northern Hemisphere 2023 heatwave*
2022 TVP Poland news channel (live TV interview) *Climate impacts of NordStream gas pipeline leak*
2022 Newsnight (TV interview), BBC 2 *UK summer heatwave*
2018 Sky News (live TV interview) *IPCC Special Report on 1.5°C*
2018– Several interviews on local radio and for newspapers in the UK, US, Germany, Austria, Australia, France, Norway, Sweden, Canada and Belgium. Examples include BBC, CNN, New York Times, Washington Post, The Guardian

Invited conference talks, workshops and panels

2025 ESA Living Planet Symposium panel discussion, Vienna, Austria
2024 Climate economics conference, Zürich, Switzerland
2024 Econometric Models of Climate Change, Cambridge, UK
2024 European Space Agency TRUTHS mission launch, Didcot, UK
2024– Transient Climate Response to Emissions workshops (Bristol, UK; Vienna, Austria)
2023 Workshop on new modelling framework for climate mitigation, Paris, France
2023 Gordon Research Conference on Radiation and Climate, Maine, USA
2023 Climate emulator workshop, Vienna, Austria
2022 Global Warming Levels workshop, Reading, UK
2022 Institute for Mathematical and Statistical Innovation, Chicago, USA
2022 Platform for Advanced Scientific Computing Conference, Basel, Switzerland
2020 Institute of Physics, London, UK
2018 American Geophysical Union Fall Meeting, Washington DC, USA
2017– PDRMIP, TriMIPathlon & CACTI workshops (Imperial College, UK; IPSL, France; Princeton, US; Kiel, Germany; and online)

Invited institutional seminars

2025 University of Oslo, Norway
2025 Yonsei University, Seoul, South Korea
2024 Vrije Universiteit Brussel, Belgium
2024 Beijing Institute of Technology, China
2024 University of Oslo, Norway
2022 University of Zürich, Switzerland
2022 BOKU, Vienna, Austria
2021 University of Cambridge, UK
2020 Energy Meteorology Group, University of Reading, UK
2019 CICERO, Oslo, Norway
2019 Imperial College, London, UK
2019 University of East Anglia, Norwich, UK
2018 Geophysical Fluid Dynamics Laboratory (GFDL), Princeton, New Jersey, USA
2018 University of Manchester, UK

Visiting scientist positions

2025– Delft University of Technology, Delft, Netherlands
2025– Met Office Hadley Centre, Exeter, UK
2024– Priestley Centre for Climate Futures, Leeds, UK
2024 CICERO, Oslo, Norway

Teaching experience

2025 Introduction to Physical Climate Change, UCLouvain, Belgium

2018–2024 National Centre for Atmospheric Science PhD Introduction *one-week intensive course for new PhD students from around the UK.* I delivered a lecture and practical session using a simple climate model demonstrating radiative forcing and the Earth's climate response.

2018–2021 Climate Change & Environmental Policy, University of Leeds, UK *One-semester (22 teaching hours) course on the physical climate system aimed at social scientists.* I was module leader in 2020–21, and adapted the course substantially to maintain student interest and engagement due to shifting teaching activities online during the Covid-19 pandemic. Nominated by my students for an Inspiring Teaching Award in 2019.

2016–2021 ad-hoc lecturing in the School of Earth & Environment at University of Leeds, UK *climate-related undergraduate courses.* Topics including climate mitigation scenarios, radiative forcing, the carbon cycle, geoengineering and sustainable food systems.

2013–2015 Module demonstrator, School of Mechanical Engineering, University of Leeds, UK *Thermofluids laboratory practicals*

Education, qualifications, and previous career history

2011–2015 Integrated MSc and PhD in Low Carbon Technologies, School of Chemical and Process Engineering, University of Leeds, UK

2008–2011 International tax, Deloitte, Nottingham, UK

2004–2008 Bachelor and Master of Mathematics (MMath), University of Nottingham, UK

Publications

Reports

Intergovernmental Panel on Climate Change (IPCC)

Coordinating Lead Author

- AR6 Working Group 1 Annex III, *Tables of Historical and Projected Well-mixed Greenhouse Gas Mixing Ratios and Effective Radiative Forcing of All Climate Forcers* (Dentener, Hall, **Smith** et al., 2021)

Lead Author

- AR6 Working Group 1 Chapter 7 Supplementary Material *The Earth's Energy Budget, Climate Feedbacks and Climate Sensitivity* (**Smith** et al. 2021)

Chapter Scientist

- AR6 Working Group 1 Chapter 7 (2021)
- Special Report on 1.5°C Chapter 2 (2018)

Contributing Author

- AR6 Working Group 3 Chapter 3 (2022)
- AR6 Working Group 1 Summary for Policymakers (2021)
- AR6 Working Group 1 Chapter 2 (2021)
- AR6 Working Group 1 Chapter 4 (2021)
- AR6 Working Group 1 Chapter 6 (2021)
- AR6 Working Group 1 Chapter 7 (2021)
- Special Report on 1.5°C Chapter 1 (2018)

Technical Reports

- Targets for effective climate mitigation governance in the UK. Climate Evidence Unit, Leeds, 2024.
- What will climate change cost the UK? A study of climate risks, impacts and mitigation for the net-zero transition. London School of Economics, London, 2022.

Peer-reviewed journal articles

98 total peer-reviewed, 5 in Nature/Science, h-index 42* (Google Scholar), > 9000 citations*.
https://orcid.org/0000-0003-0599-4633
*adjusted to account for peer-reviewed journal articles only

Accepted

1. Munday G, Jones CD, Steinert NJ, Mathison C, Burke EJ, Smith C, Huntingford C, Varney RM, Wiltshire AJ (accepted). **Risks of unavoidable impacts on forests at 1.5°C with and without overshoot**. Nature Climate Change.

2025

2. Chim MM, Aubry T, **Smith C**, Schmidt A, 2025. Neglecting future sporadic eruptions underestimates climate uncertainty. Communications Earth and Environment, 6, 236, DOI 10.1038/s43247-025-02208-1 (open access)
3. Pelz S, Ganti G, Lamboll R, Grant L, **Smith C**, Pachauri S, Rogelj J, Riahi K, Thiery W, Gidden MJ, 2025. Using net-zero carbon debt to track overshoot responsibility. PNAS, 122 (13) e2409316122, DOI 10.1073/pnas.2409316122 (open access)
4. Mathison CT, Burke E, Kovacs E, Munday G, Huntingford C, Jones C, **Smith CJ**, Steinert N, Wiltshire A, Gohar L, Varney R, 2025. A rapid application emissions-to-impacts tool for scenario assessment: Probabilistic Regional Impacts from Model patterns and Emissions (PRIME). Geoscientific Model Development, 18, 1785–1808, DOI 10.5194/gmd-18-1785-2025 (open access)

5. Storelvmo T, Yuan M, Leirvik T, Alterskjær K, Phillips PCB, **Smith C**, 2025. Assessing the robustness and implications of econometric estimates of climate sensitivity. Environmental Research Letters, 20, 024055, DOI 10.1088/1748-9326/adabfc (open access)
6. Pfleiderer P, Frölicher TL, Kropf CF, Lamboll RD, Lejeune Q, Lourenço TC, Moussion F, McCaughey J W, Quilcaille Y, Rogelj J, Sanderson B, Schuster L, Sillmann J, **Smith C**, Theokritoff E, Schleusser C-F, 2025. Reversal of the impact chain for actionable climate information. Nature Geoscience, DOI 10.1038/s41561-024-01597-w
7. Tsutsui J and **Smith C**, 2025. Revisiting two-layer energy balance models for climate assessment. Environmental Research Letters, 20, 014059, DOI 10.1088/1748-9326/ad9ec5 (open access)

2024

8. **Smith C**, Cummins D, Fredriksen H-B, Nicholls Z, Meinshausen M, Allen M, Jenkins S, Leach N, Mathison C, Partanen A-I, 2024. fair-calibrate v1.4.1: calibration, constraining and validation of the FaIR simple climate model for reliable future climate projections. Geoscientific Model Development, 17, 8569–8592, DOI 10.5194/gmd-17-8569-2024 (open access)
9. Friedlingstein P, Artaxo P, Gallego Sala A V, Jia G, Jones C, Kawamiya M, Loisel J, Loutre M-F, Rehfeld K, Rovere A, **Smith C**, Séférian R, Van Der Wel N, Ziegler E, 2024. Earth system responses to different levels of greenhouse gas emissions mitigation. Frontiers in Climate, 6, 1480208, DOI 10.3389/fclim.2024.1480208 (open access)
10. Sanderson BM, Booth BBB, Dunne J, Eyring V, Fisher RA, Friedlingstein P, Gidden, MJ, Hajima T, Jones CD, Jones C, King A, Koven CD, Lawrence DM, Lowe J, Mengis N, Peters GP, Rogelj J, **Smith C**, Snyder AC, Simpson IR, Swann ALS, Tebaldi C, Ilyina T, Schleussner C-F, Seferian R, Samset BH, van Vuuren D, Zaehle S. The need for carbon emissions-driven climate projections in CMIP7. Geoscientific Model Development, 17, 8141–8172, DOI 10.5194/gmd-17-8141-2024 (open access)
11. Allen RJ, Zhao X, Randles CA, Kramer RJ, Samset BH, **Smith CJ**. Present-Day Methane Shortwave Absorption Mutes Surface Warming and Wetting Relative to Preindustrial Conditions, Atmospheric Chemistry and Physics, 24, 11207–11226, DOI 10.5194/acp-24-11207-2024 (open access)
12. Schleussner C-F, Ganti G, Lejeune Q, Zhu B, Pfleiderer P, Prütz R, Ciais P, Frölicher T, Fuss S, Gasser T, Gidden MJ, Kropf CM, Lacroix F, Lamboll R, Martyr-Koller R, Maussion F, McCaughey JW, Meinshausen M, Mengel M, Nicholls Z, Quilcaille Y, Sanderson B, Seneviratne S, Sillmann J, **Smith CJ**, Steinert NJ, Theokritoff E, Warren R, Price J, Rogelj J. Overconfidence in climate overshoot. Nature, 634, 366–373, DOI 10.1038/s41586-024-08020-9.
13. Quaas J, Andrews T, Bellouin N, Block K, Boucher O, Ceppi P, Dagan G, Doktorowski S, Eichholz HM, Forster P, Goren T, Gryspeerdt E, Hodnebrog Ø, Jia H, Kramer R, Lange C, Maycock AC, Mülmenstädt J, Myhre G, O'Connor FM, Pincus R, Samset BH, Senf F, Shine KP, **Smith C**, Stjern C, Takemura T, Toll V, Wall CJ. Adjustment to climate perturbations – mechanisms, implications, observational constraints. AGU Advances, 5, e2023AV001144, DOI 10.1029/2023AV001144 (open access).
14. Sarofim M, **Smith CJ**, Malek P, McDuffie E, Hartin C, Lay C, McGrath S. High radiative forcing climate scenario relevance analyzed with a ten-million-member ensemble. Nature Communications, 15 (8185), DOI 10.1038/s41467-024-52437-9 (open access)
15. **Smith C** and Mathison C, 2024. How much methane removal is required to avoid overshooting 1.5°C? Environmental Research Letters, 19, 074044, DOI 10.1088/1748-9326/ad5853 (open access)
16. Myhre G, Byrom RE, Andrews T, Forster PM, **Smith CJ**, 2024. Efficacy of climate forcings in transient CMIP6 simulations. Frontiers in Climate, 6, DOI 10.3389/fclim.2024.1397358 (open access)
17. Forster PM, **Smith C**, Walsh T, Lamb WF, Lamboll R, Hall B, Hauser M, Ribes A, Rosen D, Gillett NP, Palmer MD, Rogelj J, von Schuckmann K, Trewin B, Allen M, Andrew R, Betts RA, Borger A,

Boyer T, Broersma JA, Buontempo C, Burgess S, Cagnazzo C, Cheng L, Friedlingstein P, Gettelman A, Gütschow J, Ishii M, Jenkins S, Lan X, Morice C, Mühle J, Kadow C, Kennedy J, Killick RE, Krummel PB, Minx JC, Myhre G, Naik V, Peters GP, Pirani A, Pongratz J, Schleussner C-F, Seneviratne SI, Szopa S, Thorne P, Kovilakam MVM, Majamäki E, Jalkanen J-P, van Marle M, Hoesly RM, Rohde R, Schumacher D, van der Werf G, Vose R, Zickfeld K, Zhang X, Masson-Delmotte V, Zhai P, 2024. Indicators of Global Climate Change 2023: annual update of key indicators of the state of the climate system and human influence, Earth System Science Data, 16, 2625–2658, 10.5194/essd-16-2625-2024 (open access)

18. Meinshausen M, Schleussner C-F, Beyer K, Bodeker G, Boucher O, Canadell JG, Daniel JS, Diongue-Niang A, Driouech F, Fischer E, Forster P, Grose M, Hansen G, Hausfather Z, Ilyina T, Kikstra JS, Kimutai J, King AD, Lee J-Y, Lennard C, Lissner T, Nauels A, Peters GP, Pirani A, Plattner G-K, Pörtner H, Rogelj J, Rojas M, Roy J, Samset BH, Sanderson BM, Séférian R, Seneviratne S, **Smith CJ**, Szopa S, Thomas A, Urge-Vorsatz D, Velders GJM, Yokohata T, Ziehn T, Nicholls Z, 2024. A perspective on the next generation of Earth system model scenarios: towards representative emission pathways (REPs), Geoscientific Model Development, 17, 4533–4559, 10.5194/gmd-17-4533-2024 (open access)

19. Fiedler S, Naik V, O'Connor FM, **Smith CJ**, Griffiths P, Kramer RJ, Takemura T, Allen RJ, Im U, Kasoar M, Modak A, Turnock S, Voulgarakis A, Watson-Parris D, Westervelt DM, Wilcox LJ, Zhao A, Collins WJ, Schulz M, Myhre G, Forster PM, 2024. Interactions between atmospheric composition and climate change—progress in understanding and future opportunities from AerChemMIP, PDRMIP, and RFMIP, Geoscientific Model Development, 17, 2387-2417, DOI 10.5194/gmd-17-2387-2024 (open access)

20. Weber JM, King JA, Abraham NL, Grosvenor DP, **Smith CJ**, Shin YM, Lawrence P, Roe S, Beerling DJ, Val Martin M, 2024. Chemistry-albedo feedbacks offset up to a third of forestation's CO_2 removal benefits, Science, 383 (6685), 860–864, DOI 10.1126/science.adg6196

2023

21. Kopp RE, Garner GG, Hermans THJ, Jha S, Kumar P, Reedy A, Slangen ABA, Turilli M, Edwards TL, Gregory JM, Koubbe G, Levermann A, Merzky A, Nowicki S, Palmer MD, **Smith C**, 2023. The Framework for Assessing Changes To Sea-level (FACTS) v1.0: a platform for characterizing parametric and structural uncertainty in future global, relative, and extreme sea-level change, Geoscientific Model Development, 16, 7461–7489, DOI 10.5194/gmd-16-7461-2023 (open access)

22. Lamboll R, Nicholls ZRJ, **Smith CJ**, Kikstra JS, Byers E, Rogelj J, 2023. Assessing the size and uncertainty of remaining carbon budgets. Nature Climate Change, DOI 10.1038/s41558-023-01848-5 (open access)

23. Linke O, Quaas J, Baumer F, Becker S, Chylik J, Dahlke S, Ehrlich A, Handorf D, Jacobi C, Kalesse-Los H, Lelli L, Mehrdad S, Neggers RAJ, Riebold J, Saavedra Garfias P, Schnierstein N, Shupe MD, **Smith C**, Spreen G, Verneuil B, Vinjamuri KS, Vountas M, and Wendisch M, 2023. Constraints on simulated past Arctic amplification and lapse rate feedback from observations, Atmospheric Chemistry and Physics, 23, 9963–9992, DOI 10.5194/acp-23-9963-2023 (open access)

24. **Smith CJ**, Al Khourdajie A, Yang P, Folini D, 2023. Climate uncertainty impacts on optimal mitigation pathways and social cost of carbon, Environmental Research Letters, 18(9), 094024, DOI 10.1088/1748-9326/acedc6 (open access)

25. Zelinka MD, **Smith CJ**, Qin Y, Taylor KE, 2023. Comparison of methods to estimate aerosol effective radiative forcings in climate models, Atmospheric Chemistry and Physics, 23, 8879-8898, DOI 10.5194/acp-23-8879-2023 (open access)

26. Fiedler S, van Noije T, **Smith CJ**, Boucher O, Dufresne J-L, Kirkevåg A, Olivié D, Pinto R, Reerink, T, Sima A, Schulz M, 2023. Historical Changes and Reasons for Model Differences in Anthropogenic Aerosol Forcing in CMIP6. Geophysical Research Letters, 50(15), e2023GL10484, DOI 10.1029/2023GL104848

27. Forster PM, **Smith CJ**, Walsh T, Lamb WF, Lamboll R, Hauser M, Ribes A, Rosen D, Gillett N, Palmer MD, Rogelj J, von Schuckmann K, Seneviratne SI, Trewin B, Zhang X, Allen M, Andrew R, Birt A, Borger A, Boyer T, Broersma JA, Cheng L, Dentener F, Friedlingstein P, Gutiérrez JM, Gütschow J, Hall B, Ishii M, Jenkins S, Lan X, Lee J-Y, Morice C, Kadow C, Kennedy J, Killick R, Minx JC, Naik V, Peters GP, Pirani A, Pongratz J, Schleussner C-F, Szopa S, Thorne P, Rohde R, Rojas Corradi M, Schumacher D, Vose R, Zickfeld K, Masson-Delmotte V, Zhai P, 2023. Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence. Earth System Science Data, 15, 2295–2327, DOI 10.5194/essd-15-2295-2023

28. Cael BB, Bloch-Johnson J, Ceppi P, Fredriksen H-B, Goodwin P, Gregory JM, **Smith CJ**, Williams RG, 2023. Energy budget diagnosis of changing climate feedback. Science Advances, 9(16), eadf9302, DOI 10.1126/sciadv.adf9302

29. Allen RJ, Zhao X, Randles CA, Kramer RJ, Samset BH, **Smith CJ**, 2023. Surface warming and wetting due to methane's long-wave radiative effects muted by short-wave absorption. Nature Geoscience, DOI 10.1038/s41561-023-01144-z

30. Fredriksen H-B, **Smith CJ**, Modak A, Rugenstein M, 2023. 21st Century Scenario Forcing Increases More for CMIP6 Than CMIP5 Models. Geophysical Research Letters, 50, e2023GL102916, DOI 10.1029/2023GL102916

31. Sigmond M, Polvani LM, Fyfe JC, **Smith CJ**, Cole JNS, England MR, 2023. Large contribution of ozone-depleting substances to global and Arctic warming in the late 20th century. Geophysical Research Letters, 50, e2022GL100563, DOI 10.1029/2022GL100563

32. Rainard M, **Smith CJ**, Pachauri S, 2023. Gender equality and climate change mitigation: Are women a secret weapon? Frontiers in Climate, 5, DOI 10.3389/fclim.2023.946712

33. Floess E, Grieshop A, Puzzolo E, Pope D, Leach N, **Smith CJ**, Gill-Wiehl A, Landesman K, Bailis R, 2023. Scaling up gas and electric cooking in low- and middle-income countries: climate threat or mitigation strategy with co-benefits? Environmental Research Letters, 18(3) 034010, DOI 10.1088/1748-9326/acb501

34. Ganti G, Gidden MJ, **Smith CJ**, Fyson C, Nauels A, Riahi K, Schleußner CF, 2023. Uncompensated claims to fair emission space risk putting Paris Agreement goals out of reach. Environmental Research Letters, 18(2), 024040, DOI 10.1088/1748-9326/acb502

35. Jenkins S, **Smith C**, Allen M, Grainger D, 2023. Tonga eruption increases chance of temporary surface temperature anomaly above 1.5 °C. Nature Climate Change, 13, 127-129, DOI 10.1038/s41558-022-01568-2

2022

36. Kikstra JS, Nicholls ZRJ, **Smith CJ**, Lewis J, Lamboll RD, Byers E, Sandstad M, Meinshausen M, Gidden MJ, Rogelj J, Kriegler E, Peters GP, Fuglestvedt JS, Skeie RB, Samset BH, Wienpahl L, van Vuuren DP, van der Wijst, K-I, Al Khourdajie A, Forster PM, Reisinger A, Schaeffer R, Riahi K, 2022. The IPCC Sixth Assessment Report WGIII climate assessment of mitigation pathways: from emissions to global temperatures. Geoscientific Model Development, 15, 9075-9109, DOI 10.5194/gmd-15-9075-2022

37. **Smith CJ** and Gasser T, 2022. Modeling the non-CO2 contribution to climate change. One Earth, 5(12) 1330-1335, DOI 10.1016/j.oneear.2022.11.007

38. Watson-Parris D and **Smith CJ**, 2022. Large uncertainty in future warming due to aerosol forcing. Nature Climate Change 12 1111-1113. DOI 10.1038/s41558-022-01516-0

39. Wiltshire A, Bernie D, Gohar L, Lowe J, Mathison C, **Smith C**, 2022. Post COP26: does the 1.5°C climate target remain alive? Weather, 77(12) 412-417, DOI 10.1002/wea.4331

40. Nicholls Z, Meinshausen M, Lewis J, **Smith CJ**, Forster PM, Fuglestvedt JS, Rogelj J, Kikstra JS, Riahi K, Byers E, 2022. Changes in IPCC scenario assessment emulators between SR1.5 and AR6 unraveled. Geophysical Research Letters, 49, e2022GL099788. DOI 10.1029/2022GL099788

41. Quaas J, Jia H, **Smith C**, Albright AL, Aas W, Bellouin N, Boucher O, Doutriaux-Boucher M, Forster PM, Grosvenor D, Jenkins S, Klimont Z, Loeb NG, Ma X, Naik V, Paulot F, Stier P, Wild M, Myhre G, Schulz M, 2022. Robust evidence for reversal of the trend in aerosol effective climate forcing. Atmospheric Chemistry and Physics, 22, 12221–12239. DOI 10.5194/acp-22-12221-2022
42. Brecha RJ, Ganti G, Lamboll RD, Nicholls Z, Hare B, Lewis J, Meinshausen M, Schaeffer M, **Smith CJ**, Gidden MJ, 2022. Institutional decarbonization scenarios evaluated against the Paris Agreement 1.5°C goal. Nature Communications, 13, 4304. DOI 10.1038/s41467-022-31734-1
43. Purohit P, Höglund-Isaksson L, Borgford-Parnell N, Klimont Z, **Smith CJ**, 2022. The key role of propane in a sustainable cooling sector. PNAS, 119 (34) e2206131119. DOI 10.1073/pnas.2206131119
44. Jackson LS, Maycock AC, Andrews T, Fredriksen, H-B, **Smith CJ**, Forster PM, 2022. Errors in simple climate model emulations of past and future global temperature change. Geophysical Research Letters, 49, e2022GL098808. DOI 10.1029/2022GL098808
45. Dvorak MT, Armour KC, Frierson DMW, Proistosescu C, Baker MB, **Smith CJ**, 2022. Estimating the timing of geophysical commitment to 1.5 and 2.0°C of global warming. Nature Climate Change, DOI doi.org/10.1038/s41558-022-01372-y
46. Myhre G, Samset B, Forster PM, Hodnebrog Ø, Sandstad M, Mohr CW, Sillmann J, Stjern C, Andrews T, Boucher O, Faluvegi G, Iversen T, Lamarque J-F, Kasoar M, Kirkevåg A, Kramer R, Liu L, Mülmenstädt J, Olivié D, Quaas J, Richardson TB, Shawki D, Shindell D, **Smith C**, Stier P, Tang T, Takemura T, Voulgarakis A, Watson-Parris D, 2022. Scientific data from precipitation driver response model intercomparison project. Scientific Data, 9 (123). DOI 10.1038/s41597-022-01194-9 (open access)
47. Fewster RE, Morris PJ, Ivanovic R, Swindles GT, Peregon AM, **Smith CJ**, 2022. Imminent loss of climate space for permafrost peatlands in Europe and Western Siberia. Nature Climate Change, DOI 10.1038/s41558-022-01296-7
48. Mitchell DM, Stone EJ, Andrews OD, Bamber JL, Bingham RJ, Browse J, Henry M, MacLeod DM, Morten JM, Sauter CA, **Smith CJ**, Thomas J, Thomson SI, and the Bristol CMIP6 Data Hackathon Participants, 2022. The Bristol CMIP6 Data Hackathon. Weather, DOI 10.1002/wea.4161
49. Scott K, **Smith CJ**, Lowe JA, Garcia-Carreras, L, 2022. Demand vs supply-side approaches to mitigation: What final energy demand assumptions are made to meet 1.5 and 2 °C targets? Global Environmental Change, DOI 10.1016/j.gloenvcha.2021.102448
50. Lyon C, Saupe EE., **Smith CJ**, Hill DJ, Beckerman AP, Stringer LC, Marchant R, McKay J, Burke A, O'Higgins P, Dunhill AM, Allen BJ, Riel-Salvatore J, Aze T, 2021. Climate change research and action must look beyond 2100. Global Change Biology, 28, 349–361. DOI 10.1111/gcb.15871

2021

51. Dong Y, Armour KC, Proistosescu C, Andrews T, Battisti DS, Forster PM, Paynter D, **Smith CJ**, Shiogama H, 2021. Biased Estimates of Equilibrium Climate Sensitivity and Transient Climate Response Derived From Historical CMIP6 Simulations. Geophysical Research Letters, 48, e2021GL095778, DOI 10.1029/2021GL095778
52. Trascasa-Castro P, **Smith CJ**, 2021. What can we do to address climate change? Frontiers for Young Minds 9, 672894, DOI 10.3389/frym.2021.672854
53. **Smith CJ,** Forster PM, 2021. Suppressed late-20th Century warming in CMIP6 models explained by forcing and feedbacks. Geophysical Research Letters, 48, e2021GL094948. DOI 10.1029/2021GL094948
54. **Smith CJ**, Harris G, Palmer M, Bellouin N, Myhre G, Schulz M, Golaz J-C, Ringer M, Storelvmo T, Forster P, 2021. Energy Budget Constraints on the Time History of Aerosol Forcing and Climate Sensitivity, Journal of Geophysical Research Atmospheres, 126, e2020JD033622, DOI 10.1029/2020JD033622

55. Huppmann D, Gidden MJ, Nicholls Z, Hörsch J, Burandt T, Fricko O, Byers E, Kikstra J, Brinkerink M, Budzinski M, Maczek F, Zwickl-Bernhard S, Welder L, Francisco Álvarez Quispe E, **Smith CJ**, 2021. Analysis and visualisation of integrated assessment and macro-energy scenarios. Open Research Europe 1, 74. DOI 10.12688/openreseurope.13633.2

56. Nicholls Z, Meinshausen M, Lewis J, Rojas Corradi M, Dorheim K, Gasser T, Gieseke R, Hope AP, Leach NJ, McBride LA, Quilcaille Y, Rogelj J, Salawitch RJ, Samset BH, Sandstad M, Shiklomanov A, Skeie RB, **Smith CJ**, Smith SJ, Su X, Tsutsui J, Vega-Westhoff B, Woodard DL, 2021. Reduced Complexity Model Intercomparison Project Phase 2: Synthesising Earth system knowledge for probabilistic climate projections. Earth's Future, 9, e2020EF001900, DOI 10.1029/2020EF001900

57. Leach, NJ, Jenkins, S, Nicholls, Z, Smith, CJ, Lynch, J, Cain, M, Walsh, T, Wu, B, Tsutsui, J, and Allen, MR, 2021. FaIRv2.0.0: a generalised impulse-response model for climate uncertainty and future scenario exploration, Geoscientific Model Development, 14, 3007-3036, DOI 10.5194/gmd-14-3007-2021

58. Edwards TL, Nowicki S, Marzeion B, Hock R, Goelzer H, Seroussi H, Jourdain NC, Slater DA, Turner FE, **Smith CJ**, McKenna CM, Simon E, Abe-Ouchi A, Gregory JM, Larour E, Lipscomb WH, Payne AJ, Shepherd A, Agosta C, Alexander P, Albrecht T, Anderson B, Asay-Davis X, Aschwanden A, Barthel A, Bliss A, Calov R, Chambers C, Champollion N, Choi Y, Cullather R, Cuzzone J, Dumas C, Felikson D, Fettweis X, Fujita K, Galton-Fenzi BK, Gladstone R, Golledge NR, Greve R, Hattermann T, Hoffman MJ, Humbert A, Huss M, Huybrechts P, Immerzeel W, Kleiner T, Kraaijenbrink P, Le clec'h S, Lee V, Leguy GR, Little CM, Lowry DP, Malles J-H, Martin DF, Maussion F, Morlighem M, O'Neill JF, Nias I, Pattyn F, Pelle T, Price SF, Quiquet A, Radić V, Reese R, Rounce DR, Rückamp M, Sakai A, Shafer C, Schlegel N-J, Shannon S, Smith RS, Straneo F, Sun S, Tarasov L, Trusel LD, Van Breedam J, van de Wal R, van den Broeke M, Winkelmann R, Zekollari H, Zhao C, Zhang T, Zwinger T, 2021. Projected land ice contributions to twenty-first-century sea level rise. Nature 593, 74–82. DOI 10.1038/s41586-021-03302-y

59. Kramer RJ, He H, Soden BJ, Oreopoulos L, Myhre G, Forster PM, **Smith CJ**, 2021. Observational evidence of increasing global radiative forcing. Geophysical Research Letters, 48, e2020GL091585. DOI 10.1029/2020GL091585

60. Maycock AC, **Smith CJ**, Rap A, Rutherford O, 2021. On the structure of instantaneous radiative forcing kernels for greenhouse gases. Journal of the Atmospheric Sciences 78, 3, 949–965. DOI 10.1175/JAS-D-19-0267.1

61. Dow W, Maycock AC, Lofverstrom M, **Smith CJ**, 2021. The effect of anthropogenic aerosols on the Aleutian Low. Journal of Climate 34, 5, 1725–1741. DOI 10.1175/JCLI-D-20-0423.1

62. Andrews, T, **Smith, CJ**, Myhre, G, Forster, PM, Chadwick, R, Ackerley, D, 2021. Effective radiative forcing in a GCM with fixed surface temperatures. Journal of Geophysical Research: Atmospheres, 126, e2020JD033880. DOI 10.1029/2020JD033880

63. Thornhill G, Collins W, Olivié D, Archibald A, Bauer S, Checa-Garcia R, Fiedler S, Folberth G, Gjermundsen A, Horowitz L, Lamarque J-F, Michou M, Mulcahy J, Nabat P, Naik V, O'Connor FM, Paulot F, Schulz M, Scott CE, Seferian R, **Smith C**, Takemura T, Tilmes S, and Weber J, 2021. Climate-driven chemistry and aerosol feedbacks in CMIP6 Earth system models, Atmos Chem Phys 21, 1105–1126, DOI 10.5194/acp-21-1105-2021

64. Thornhill GD, Collins WJ, Kramer RJ, Olivié D, Skeie RB, O'Connor FM, Abraham NL, Checa-Garcia R, Bauer SE, Deushi M, Emmons LK, Forster PM, Horowitz LW, Johnson B, Keeble J, Lamarque J-F, Michou M, Mills MJ, Mulcahy JP, Myhre G, Nabat P, Naik V, Oshima N, Schulz M, **Smith CJ**, Takemura T, Tilmes S, Wu T, Zeng G, Zhang J, 2021. Effective radiative forcing from emissions of reactive gases and aerosols – a multi-model comparison. Atmos Chem Phys, 21, 853–874, DOI 10.5194/acp-21-853-2021

65. Matthews HD, Tokarska KB, Rogelj J, **Smith CJ**, MacDougall AH, Haustein K, Mengis N, Sippel S, Forster PM, Knutti R, 2021. An integrated approach to quantifying uncertainties in the remaining carbon budget. Commun Earth Environ 2, 7, DOI 10.1038/s43247-020-00064-9

66. McKenna CM, Maycock AC, Forster PM, **Smith CJ**, Tokarska KB, 2021. Stringent mitigation substantially reduces risk of unprecedented near-term warming rates. Nature Climate Change, 11, 126–131, DOI 10.1038/s41558-020-00957-9

2020

67. Hodnebrog Ø, Myhre G, Kramer RJ, Shine KP, Andrews T, Faluvegi G, Kasoar M, Kirkevåg A, Lamarque J-F, Mülmenstädt J, Olivié D, Samset BH, Shindell D, **Smith CJ**, Takemura T, Voulgarakis A, 2020. The effect of rapid adjustments to halocarbons and N2O on radiative forcing, npj Climate and Atmospheric Science. 3, 43, DOI 10.1038/s41612-020-00150-x
68. Nicholls ZRJ, Meinshausen M, Lewis J, Gieseke R, Dommenget D, Dorheim K, Fan C-S, Fuglestvedt JS, Gasser T, Golüke U, Goodwin P, Hartin C, Hope AP, Kriegler E, Leach NJ, Marchegiani D, McBride LA, Quilcaille Y, Rogelj J, Salawitch RJ, Samset BH, Sandstad M, Shiklomanov AN, Skeie RB, **Smith CJ**, Smith S, Tanaka K, Tsutsui J, and Xie Z 2020. Reduced Complexity Model Intercomparison Project Phase 1: introduction and evaluation of global-mean temperature response, Geoscientific Model Development, 13, 11, 5175–5190, DOI 10.5194/gmd-13-5175-2020
69. Marshall LR, **Smith CJ**, Forster PM, Aubry TJ, Andrews T, and Schmidt A, 2020. Large Variations in Volcanic Aerosol Forcing Efficiency Due to Eruption Source Parameters and Rapid Adjustments, Geophysical Research Letters, 47, e2020GL090241, DOI 10.1029/2020GL090241
70. **Smith CJ**, Kramer RJ, and Sima A, 2020. The HadGEM3-GA7.1 radiative kernel: the importance of a well-resolved stratosphere, Earth System Science Data, 12, 2157–2168, DOI 10.5194/essd-12-2157-2020
71. **Smith CJ**, Kramer RJ, Myhre G, Alterskjær K, Collins W, Sima A, Boucher O, Dufresne J-L, Nabat P, Michou M, Yukimoto S, Cole J, Paynter D, Shiogama H, O'Connor FM, Robertson E, Wiltshire A, Andrews T, Hannay C, Miller R, Nazarenko L, Kirkevåg A, Olivié D, Fiedler S, Lewinschal A, Mackallah C, Dix M, Pincus R, and Forster PM, 2020. Effective radiative forcing and adjustments in CMIP6 models, Atmospheric Chemistry and Physics, 20, 9591–9618, DOI 10.5194/acp-20-9591-2020
72. Forster PM, Forster HI, Evans MJ, Gidden MJ, Jones CD, Keller CA, Lamboll RD, Le Quéré C, Rogelj J, Rosen D, Schleussner CF, Richardson TB, **Smith CJ** and Turnock S, 2020. Current and future global climate impacts resulting from COVID-19. Nature Climate Change, 10, 913–919, DOI 10.1038/s41558-020-0883-0
73. Bellouin N, Davies W, Shine KP, Quaas J, Mülmenstädt J, Forster PM, **Smith C**, Lee L, Regayre L, Brasseur G, Sudarchikova N, Bouarar I, Boucher O, and Myhre G, 2020. Radiative forcing of climate change from the Copernicus reanalysis of atmospheric composition, Earth System Science Data, 12, 1649–1677, DOI 10.5194/essd-12-1649-2020
74. Dittus A, Hawkins E, Wilcox LJ, Sutton RT, **Smith CJ**, Andrews MB, and Forster PM 2020. Sensitivity of Historical Climate Simulations to Uncertain Aerosol Forcing, 2020. Geophysical Research Letters, 47, DOI 10.1029/2019GL085806
75. Watson-Parris D, Bellouin N, Deaconu L, Schutgens N, Yoshioka M, Regayre LA, Pringle KJ, Johnson, JS, **Smith CJ**, Carslaw KS and Stier P, 2020. Constraining uncertainty in aerosol direct forcing, Geophysical Research Letters, 47, 10.1029/2020GL087141
76. Tokarska KB, Stolpe MB, Sippel S, Fischer EM, **Smith CJ**, Lehner F and Knutti R, 2020. Past warming trend constrains future warming in CMIP6 models, Science Advances, 6, 12, 10.1126/sciadv.aaz9549
77. Forster PM, Maycock AC, McKenna CM and **Smith CJ**, 2020. Latest climate models confirm need for urgent mitigation. Nature Climate Change, 10, 7–10, 10.1038/s41558-019-0660-0

2019

78. Richardson TB, Forster PM, **Smith CJ**, Maycock AC, Wood T, Andrews T, Boucher O, Faluvegi G, Fläschner D, Hodnebrog Ø, Kasoar M, Kirkevåg A, Lamarque J-F, Mülmenstädt J, Myhre G, Olivié D, Portmann RW, Samset BH, Shawki D, Shindell D, Stier P, Takemura T, Voulgarakis A, and

Watson-Parris D 2019. Efficacy of climate forcings in PDRMIP models. Journal of Geophysical Research: Atmospheres, 124, 12824–12844, DOI 10.1029/2019JD030581

79. Denison S, Forster PM and **Smith CJ**, 2019. Guidance on emissions metrics for nationally determined contributions under the Paris Agreement. Environmental Research Letters, 14, 12, DOI 10.1088/1748-9326/ab4df4
80. Shindell D and **Smith CJ**, 2019. Climate and air-quality benefits of a realistic phase-out of fossil fuels. Nature, 573, 408–411, DOI 10.1038/s41586-019-1554-z
81. Rogelj J, Forster PM, Kriegler E, **Smith CJ** and Séférian R, 2019. A framework to estimate and track remaining carbon budgets for stringent climate targets. Nature, 571, 335–342, DOI 10.1038/s41586-019-1368-z
82. Stjern CW, Lund MT, Samset BH, Myhre G, Forster PM, Andrews T, Boucher O, Faluvegi G, Fläschner D, Iversen T. Kasoar M, Kharin V, Kirkevåg A, Lamarque J-F, Olivié D, Richardson T, Sand M, Shawki D, Shindell D, **Smith CJ**, Takemura T, Voulgarakis A, 2019. Arctic amplification response to individual climate drivers. Journal of Geophysical Research: Atmospheres, 124, 6698–6717, DOI 10.1029/2018JD029726
83. Allen RJ, Amiri-Farahani A, Lamarque J-F, **Smith C**, Shindell D, Hassan T, Chung CE, 2019. Observationally constrained aerosol–cloud semi-direct effects. npj Climate and Atmospheric Science, 2, 16, DOI 10.1038/s41612-019-0073-9
84. Tang T, Shindell D, Faluvegi G, Myhre G, Olivié D, Voulgarakis A, Kasoar M, Andrews T, Boucher O, Forster PM, Hodnebrog Ø, Iversen T, Kirkevåg A, Lamarque JF, Richardson T, Samset BH, Stjern CW, Takemura T, **Smith C** 2019. Comparison of Effective Radiative Forcing Calculations Using Multiple Methods, Drivers, and Models. Journal of Geophysical Research: Atmospheres, 124, 4382–4394, DOI 10.1029/2018JD030188
85. **Smith CJ,** Forster PM, Allen M, Fuglestvedt J, Millar RJ, Rogelj J, Zickfeld K. 2019. Current fossil fuel infrastructure does not yet limit us to 1.5°C warming. Nature Communications, 10, 101, DOI 10.1038/s41467-018-07999-w

2018

86. Myhre G, Kramer RJ, **Smith CJ**, Hodnebrog Ø, Forster P, Soden BJ, Samset BH, Stjern CW, Andrews T, Boucher O, Faluvegi G, Fläschner D, Kasoar M, Kirkevåg A, Lamarque J-F, Olivié D, Richardson T, Shindell D, Stier P, Takemura T, Voulgarakis A, Watson-Parris D, 2018. Quantifying the Importance of Rapid Adjustments for Global Precipitation Changes. Geophysical Research Letters, 45, 11399–11405, DOI 10.1029/2018GL079474
87. **Smith CJ**, Kramer R, Myhre G, Forster PM, Soden B, Andrews T, Boucher O, Faluvegi G, Fläschner D, Hodnebrog Ø, Kasoar M, Kharin V, Kirkevåg A, Lamarque J-F, Mülmenstädt J, Olivié D, Richardson T, Samset BH, Shindell D, Stier P, Takemura T, Voulgarakis A, Watson-Parris D, 2018. Understanding Rapid Adjustments to Diverse Forcing Agents. Geophysical Research Letters, 45, 12023–12031, DOI 10.1029/2018GL079826
88. **Smith CJ**, Forster PM, Allen M, Leach N, Millar RJ, Passerello GA, Regayre LA, 2018. FAIR v1.3: A simple emissions-based impulse response and carbon cycle model. Geosci. Model Dev., 11, 2273–2297, DOI 10.5194/gmd-11-2273-2018
89. Samset BH, Sand M, **Smith CJ**, Bauer SE, Forster PM, Fuglestvedt JS, Osprey S, Schleussner C-F, 2018. Climate Impacts From a Removal of Anthropogenic Aerosol Emissions. Geophys. Res. Lett., 45, 1020–1029, DOI 10.1002/2017GL076079

2017

90. Stjern CW, Samset BH, Myhre G, Forster PM, Hodnebrog O, Andrews T, Boucher O, Faluvegi G, Iversen T, Kasoar M, Kharin V, Kirkevag A, Lamarque JF, Olivie D, Richardson TB, Shawki D, Shindell D, Smith CJ, Takemura T, Voulgarakis A, 2017. Rapid adjustments cause weak surface temperature response to increased black carbon concentrations. J. Geophys. Res.-Atmos. 122, 11462–11481, DOI 10.1002/2017JD027326

91. **Smith, CJ**, Crook JA, Crook R, Jackson LS, Osprey SM, Forster PM, 2017. Impacts of Stratospheric Sulfate Geoengineering on Global Solar Photovoltaic and Concentrating Solar Power Resource. J. Appl. Meteorol. Climatol. 56, 1483–1497, DOI 10.1175/JAMC-D-16-0298.1
92. **Smith, CJ**, Bright JM, Crook R, 2017. Cloud cover effect of clear-sky index distributions and differences between human and automatic cloud observations. Solar Energy 144, 10–21, DOI 10.1016/j.solener.2016.12.055
93. Kovács T, Feng W, Totterdill A, Plane JMC, Dhomse S, Gómez-Martín JC, Stiller GP, Haenel FJ, **Smith C**, Forster PM, García RR, Marsh DR, Chipperfield MP, 2017. Determination of the atmospheric lifetime and global warming potential of sulfur hexafluoride using a three-dimensional model. Atmospheric Chemistry and Physics 17, 883–898, DOI 10.5194/acp-17-883-2017

2016

94. Forster PM, Richardson T, Maycock AC, **Smith CJ**, Samset BH, Myhre G, Andrews T, Pincus R, Schulz M, 2016. Recommendations for diagnosing effective radiative forcing from climate models for CMIP6, J. Geophys. Res. Atmos., 121, 12460–12475, DOI: 10.1002/2016JD025320
95. Totterdill, A, Kovács T, Feng W, Dhomse S, **Smith CJ**, Gómez-Martín JC, Chipperfield MP, Forster PM, Plane JMC, 2016. Atmospheric lifetimes, infrared absorption spectra, radiative forcings and global warming potentials of NF3 and CF_3CF_2Cl (CFC-115), Atmos. Chem. Phys., 16, 11451–11463, DOI 10.5194/acp-16-11451-2016
96. **Smith CJ**, Forster PM, Crook R, 2016. An all-sky radiative transfer method to predict optimal tilt and azimuth angle of a solar collector. Solar Energy 123, 88–101, DOI 10.1016/j.solener.2015.11.013

Pre-2016

97. Bright JM, **Smith CJ**, Taylor PG, Crook R, 2015. Stochastic generation of synthetic minutely irradiance time series derived from mean hourly weather observation data. Solar Energy 115, 229–242, DOI 10.1016/j.solener.2015.02.032
98. **Smith CJ**, Forster PM, Crook R, 2014. Global analysis of photovoltaic energy output enhanced by phase change material cooling. Applied Energy 126, 21–28, DOI 10.1016/j.apenergy.2014.03.083