Ted is a specialist in large-scale atmospheric dynamics and circulation and its role in climate change, including extreme events. He has published over 275 peer-reviewed articles on atmospheric and climate science, which have been cited over 17,000 times with an H-index of 66 (WoS). Ted has held leadership roles in international scientific assessments of climate (IPCC) and stratospheric ozone (WMO/UNEP), and in the World Climate Research Programme (WCRP); was Chief Editor of the Journal of the Atmospheric Sciences (the premiere journal in fundamental aspects of atmospheric science) from 2001-2005; co-authored the US National Academy of Sciences report on Extreme Weather Events and Climate Change Attribution (2016); and chaired the Science Review Group of the Met Office Hadley Centre (2017-2021). He was elected Fellow of the Royal Society in 2016. Ted's recent research has pioneered a 'storyline' approach to representing the deep uncertainty in aspects of climate change related to atmospheric circulation, including extreme events. This has motivated him to begin engaging with stakeholders (e.g. on drought risk), and in inter-disciplinary collaborations (with philosophers of science, psychologists, and an anthropologist). He currently co-chairs the WCRP's Lighthouse Activity 'My Climate Risk'.

Personal information

Full Name: THEODORE GORDON SHEPHERD

Address: Department of Meteorology, University of Reading, Earley Gate, U.K.

Web page: http://www.met.reading.ac.uk/~sj903980/Home.html

Degrees

Honours B.Sc. (with Distinction) in Mathematics & Physics, University of Toronto, June 1979

Ph.D. in Meteorology, Massachusetts Institute of Technology, September 1984

Employment

Postdoctoral Research Associate, Applied Mathematics and Theoretical Physics, University of Cambridge, 1984-1988 (Supervisor: Michael E. McIntyre)

Assistant, Associate, and Full Professor, Physics, University of Toronto, 1988-2012 (Associate Chair, Graduate Studies, Physics, 2005-2010)

Grantham Professor of Climate Science, Meteorology, University of Reading, 2012-present (0.7 FTE since 2022) (Research Division Leader for Climate, 2015-2020)

Senior Scientist, Jülich Supercomputing Centre, Forschungszentrum Jülich, Germany (0.3 FTE), 2022-present

Selected Funding Summary

Sole Principal Investigator for approximately CAD 17.5M in research grant support from 1988-2012 (no overheads or PI time so would be roughly equivalent to £20M in the UK)

ERC Advanced Grant, 2014-2020 (€2.5M) "Understanding the atmospheric circulation response to climate change"

Reading PI for EU H2020 grant (Bart van den Hurk, PI), 2019-2023 (€400k to UoR), "Remote Climate Effects and their Impact on European sustainability, Policy and Trade" (RECEIPT)"

Reading PI for NERC Directed Grant (James Screen, PI), 2020-2023 (£257,031 to UoR), "ArctiCONNECT"

Reading PI for EU H2020 grant (Robert Vautard, PI), 2021-2025 (€455k to UoR), "Extreme Events: Artificial Intelligence for Detection and Attribution" (XAIDA)

Impact Summary (in addition to publication statistics mentioned in narrative text)

165 invited conference talks (plus 65 invitations declined), 170 invited departmental seminars

28 invited lectures or short courses at summer schools, etc.

Completed 17 PhD's at Toronto and 7 PhD's at Reading (all as primary supervisor); remotely co-supervised completed PhD's at Imperial College London, Hamburg and Buenos Aires

Supervised over 20 post-doctoral fellows and Research Associates at Toronto, and 14 post-doctoral fellows at Reading

Relevant Recent Publications

Shepherd, T.G., 2014. Atmospheric circulation as a source of uncertainty in climate change projections. *Nature Geosci*., **7**, 703–708.

Trenberth, K.E., Fasullo, J.T. and Shepherd, T.G., 2015. Attribution of climate extreme events. *Nature Climate Change*, **5**, 725–730.

Shepherd, T.G., 2016. A common framework for approaches to extreme event attribution. *Curr. Clim. Change Rep*., **2**, 28–38.

Zappa, G. and Shepherd, T.G., 2017. Storylines of atmospheric circulation change for European regional climate impact assessment. *J. Clim.*, **30**, 6561–6577.

Shepherd, T.G., and 18 others, 2018. Storylines: an alternative approach to representing uncertainty in physical aspects of climate change. *Climatic Change*, **151**, 555–571.

Shepherd, T.G., 2019. Storyline approach to the construction of regional climate change information. *Proc. R. Soc. A*, **475**, 20190013.

Lloyd, E.A. and Shepherd, T.G., 2020. Environmental catastrophes, climate change, and attribution. *Ann. NY Acad. Sci*., **1469**, 105–124.

Mindlin, J., Shepherd, T.G., Vera, C., Osman, M., Zappa, G., Lee, R.W. and Hodges, K.I., 2020. Storyline description of Southern Hemisphere midlatitude circulation and precipitation response to greenhouse gas forcing. *Clim. Dyn*., **54**, 4399–4421.

Kretschmer, M., Adams, S.V., Arribas, A., Prudden, R., Robinson, N., Saggioro, E. and Shepherd, T.G., 2021. Quantifying causal pathways of teleconnections. *Bull. Amer. Meteor. Soc.*, **102**, E2247–E2263.

Zappa, G., Bevacqua, E. and Shepherd, T.G., 2021. Communicating potentially large but non-robust changes in multi-model projections of future climate. *Int. J. Clim*., **41**, 3657–3669.

Shepherd, T.G., 2021. Bringing physical reasoning into statistical practice in climate-change science. *Climatic Change*, **169**, 2.

Falkena, S.K.J., de Wiljes, J., Weisheimer, A. and Shepherd, T.G., 2022. Detection of interannual ensemble forecast signals over the North Atlantic and Europe using atmospheric circulation regimes. *Quart. J. Roy. Meteor. Soc*., **148**, 434–453.

Rodrigues, R.R. and Shepherd, T.G., 2022. Small is Beautiful: Climate-change science as if people mattered. *PNAS Nexus*, **1**, pgac009.

Jain, S., Scaife, A.A., Shepherd, T.G., Deser, C., Dunstone, N., Schmidt, G.A., Trenberth, K.E. and Turkington, T., 2023. Importance of internal variability for climate model assessment. *npj Clim. Atmos. Sci*., **6**, 68.

Lloyd, E.A. and Shepherd, T.G., 2023. Foundations of attribution in climate-change science. *Env. Res. Clim*., **2**, 035014.

Falkena, S.K.J., de Wiljes, J., Weisheimer, A. and Shepherd, T.G., 2023. A Bayesian approach to atmospheric circulation regime assignment. *J. Clim*., **36**, 8619–8636.