Terence O'Kane PhD, MSc, BSc (Hons), MAustMS

Principal Research Scientist and Team Leader Geophysical Fluids,
Climate Science Centre
CSIRO Oceans and Atmosphere

CSIRO Oceans and Atmosphere,
3-4 Castray Esplanade, Battery Point 7004, Hobart, Australia

Ph Mobile: +61428567229

Email: terence.okane@csiro.au

Curriculum Vitae

Synopsis:

Terence O'Kane is principal research scientist at CSIRO's Oceans and Atmosphere Business Unit, Hobart, Australia where he currently leads the Geophysical Fluids team in the Climate Science Centre (CSC).

A particular focus of Terry's recent work has at the nexus of machine learning, dynamical systems, optimization methods for data driven reduced order modelling and analysing of high dimensional multiscale systems, with particular application to the climate system. Terry also publishes extensively on the statistical mechanics and dynamics of geophysical flows, for which he was awarded the 2013 JH Michell Medal, of the Australian and New Zealand Industrial and Applied Mathematical (ANZIAM) society. Terry has published over 90 peer reviewed publications including most recently in J. Fluid Mechanics, CHAOS, Communications in Applied Mathematics and Computer Science, Nature Communications in Earth and Environmental Science and the Journal for Advances in Modelling Earth Systems.

In 2012 Terry was awarded an Australian Research Council Future Fellow (2012-2016). During this period, he was also appointed as visiting scientist at Princeton University and held an adjunct appointment as Professor in mathematics at The University of Tasmania.

Internationally, Terry is a co-chair of the World Meteorological Society (WMO) committee for the World Climate Research Program Grand Challenge for Near Term Climate Prediction (WCRP GC-NTCP) and is on the panel for the WCRP Decadal Climate Prediction Project. O'Kane also serves on the two major national (Australian) assessment and allocation panels for supercomputing, namely, the National Computational Infrastructure (NCI) Australian Leadership in Computing Grant scheme assessment panel 2020 & 2021 and the National Merit Allocation Committee Scheme (NCMAS) 2019-2023.

Over the past 6 years Terry led CSC's Climate Forecasting team (11 research scientists), where he and his team developed the CSIRO Climate Analysis Forecast Ensemble (CAFÉ) system, the first operational decadal climate forecasting system in the Southern Hemisphere. Prior to this Terry was ensemble prediction scientist at the Bureau of Meteorology where he had primary responsibility for developing the Australian Global and Regional Ensemble Prediction System, adapted from the UK Met Office MOGREPS system, for short-range operational weather prediction.

Citizenship
Australian

Employment

- **2021-present: Team Leader - Geophysical Fluids,** Modelling the Earth Systems group, CSIRO Climate Science Centre
- **2017-2021: Team Leader - Climate Forecasting,** Climate Prediction group, CSIRO Climate Science Centre
- **2016-2017: Team Leader - Ocean Modelling,** ACCESS group, CSIRO Climate Science Centre

- **July 2016 to present: Principal Research Scientist** Centre for Australian Weather & Climate Research, CSIRO Oceans and Atmosphere, Hobart, Australia
- **January 2013 to December 2016** Australian Research Council Future Fellow (Full Professor)
- **2013 Visiting Scientist** Dept. Atmospheric and Oceanic Science, Princeton University, USA
- **September 2010 to July 2015: Senior Research Scientist** Centre for Australian Weather & Climate Research, CSIRO Marine & Atmospheric Research, Hobart, Australia
- **March 2009-September 2010: Research Scientist (indefinite appointment),** Centre for Australian Weather & Climate Research, CSIRO Marine & Atmospheric Research, Hobart, Australia
- **August 2007- March 2009: Ensemble Prediction Scientist (indefinite appointment),** Centre for Australian Weather & Climate Research, Bureau of Meteorology, Docklands, Melbourne, Australia
- **Nov 2006-August 2007: Research Fellow (5-year appointment),** Antarctic Climate & Ecosystems CRC / Quantitative Marine Sciences, University of Tasmania
- **2002-Nov 2006: CSIRO Emerging Science Postdoctoral Research Fellow**, CSIRO Marine and Atmospheric Research, Supervisors: Dr Jorgen Frederiksen (FAA) and Prof. David Karoly (FAA)

Education

- **2003: PhD (Monash University: Applied Mathematics)**

PhD Thesis Title: *"The statistical dynamics of geophysical flows"*
Thesis examiners:

  - Dr George Carnevale; Scripps Institution of Oceanography / University of California San Diego, USA
  - Dr Jackson Herring; National Centre for Atmospheric Research, Mesoscale and Microscale Meteorology Division, Boulder, Colorado, USA

- **1999: MSc (by Research) H1A 1st class (The University of Melbourne: Theoretical Physics)**
  Masters Thesis Title: *"Nonlinear processes in laser-atom interactions"*
  Thesis examiners:
  - Prof David Pegg; Griffith University, Physics Dept.
  - Dr Murray Hamilton; University of Adelaide, Physics Dept.
- **1996: BSc (Hons) H1A 1st class (La Trobe University: Pure & Applied Mathematics)**
  H1A for both course work and thesis.
  Honours Thesis Title: *"On proving the existence of the thermodynamic limit for Coulombic systems with periodic boundary conditions"*

Major Awards and appointments:

- **Partner Investigator ARC Australian Centre for Excellence in Antarctic Science (2021 – present)**
- **Associate Investigator ARC Centre of Excellence for Climate Extremes (2018-present)**
- Appointed to the **NCI Australian Leadership in Computing Grant scheme assessment panel 2020 & 2021.**
- Appointed to the **National Merit Allocation Committee Scheme (NCMAS) 2019-2023** for National Computational Infrastructure (NCI) Grants
- Appointed to the committee for **World Climate Research Program Decadal Climate Prediction Project (2019-present)** https://www.wcrp-climate.org/dcp-panel
- Co-chair of the committee for **World Climate Research Program Grand Challenge in Near Term Climate Prediction (WCRP NTCP) (2017-present)** https://www.wcrp-climate.org/grand-challenges/gc-near-term-climate-prediction
- **Adjunct Senior Research Scientist (2016 to present)** Institute for Antarctic and Marine Studies, University of Tasmania
- **Adjunct Professor (2013 to 2016)** in mathematics University of Tasmania
- **JH Michell Medal (2013) Australian Mathematical Society**: For "outstanding original contributions to difficult and important problems in applied mathematics". http://www.anziam.org.au/The+2013+JH+Michell+Medal
- **Australian Research Council Future Fello**w (July 2013—July 2016)
- Appointed **Visiting Scientist**, Dept. Atmospheric and Oceanic Science, **Princeton University**, USA, 2013

Scholarships, Grants and Awards

- CSIRO Machine Learning and Artificial Intelligence Future Science Platform (MLAI FSP) postdoc 2021-2023

- CSIRO Decadal Climate Forecast Project Postdoc 2019-2021 “Coupled data assimilation in the unstable subspace”
- E-research collaboration project ERRFP-811 “Inhomogeneous turbulence closures for application to problems in climate modelling” (x2 2018-2019)
- CSIRO Research Plus Postdoctoral Fellow Grant “Causality and predictability of climate extremes”
- CSIRO Climate Science Centre Decadal Prediction: Activity 1 – Coupled modelling and data assimilation ($1,200,000 per annum 2017-2027)
- NESP ESCC Hub Research Grant (2016-2018) Towards an ACCESS decadal prediction system ($AU 400,000).
- CSIRO Complex Systems Science Travel Grant (2015-2016)
- CSIRO Complex Systems Science Travel Grant (2014-2015)
- CSIRO Complex Systems Science Travel Grant (2012-2013)
- **ARC Future Fellowship (2012): The stability and predictability of the Southern-Hemisphere coupled ocean-atmosphere climate system ($AU 702,856)**
- Australian Climate Change Science Program: Ocean climate processes: Understanding ocean change and influence on global and Australian climate ($AU 1,000,000) (co-leaders B. Sloyan and S. Rintoul)
- Managing Climate Variability Program, Grains Research and Development Corporation: Improving Forecast Accuracy with improved Indian Ocean Initialization ($AU 206,000)
- Travel Grant, Clarendon Laboratory, University of Oxford (September 2011)
- Los Alamos National Laboratory travel grant (May-June 2011)
- Complex Systems Science travel grant (February 2011)
- OCE Postdoctoral Fellowship 2011 - Global warming impact on ENSO variability and predictability, (co-authors Dr Jorgen Frederiksen, Dr Carsten Frederiksen) ($AU 240,000)
- Los Alamos National Laboratory travel grant (August-September 2010)
- OCE Postdoctoral Fellowship 2009 - Subgrid Modelling for Climate Simulation and Prediction (co-authors Dr Jorgen Frederiksen, Dr Carsten Frederiksen) ($AU 240,000)
- British Council INYS grant (14,000 pounds sterling) to hold the CAWCR Workshop on Ensemble Prediction and Data Assimilation, 16-18 February, 2009 Melbourne, Australia (co-author Dr Peter Steinle)
- COSNet Travel Grant (2007)
- Best Unsolicited Presentation, Turbulence Track, 8th Asia-Pacific Complex Systems Conference, 2-5 July (2007)
- **Antarctic Climate & Ecosystems CRC Research Fellow, Academic Level B, 5 year appointment, (Nov 2006-)**
- **CSIRO Emerging Science Postdoctoral Research Fellowship: Ensemble prediction of atmospheric flows, Nov 2002- Nov 2006, (co-author Dr Jorgen Frederiksen)**
- CRC Southern Hemisphere Meteorology Scholarship (2000- Sept 2002)
- Monash Travelling Scholarship (2001)
- **Australian Postgraduate Award (1997-99)**
- Monash Graduate Award (1999)
- University of Melbourne Travelling Scholarship (1998)
- University of Melbourne Physics Departmental Scholarship (1998)

PhD Theses Examined

- B. Giggins, Stochastically Modified Bred Vectors, Accepted for Doctor of Philosophy, The University of Sydney, 2019
- S. C. Samarasekera, A Bayesian signal processing framework for dual polarized weather radar. Accepted for Doctor of Philosophy, The University of Melbourne, May 2016
- Robert Henry Woodham, “Predicting the oceanic mesoscale dynamics in the Australian region”, University of New South Wales at the Defence Force Academy, January 2012 Resubmitted 2013 and subsequently accepted 2014
- Meelis Juma Zidikheri “Dynamical Subgrid-scale Parameterizations for Quasi-geostrophic Flows using Direct Numerical Simulations”, Accepted for Doctor of Philosophy, The Australian National University, December 2007

PhD supervision

- Jiale Lou “Predictability of the Interdecadal Pacific Oscillation” University of Tasmania, Institute for Marine and Antarctic Studies: co-supervision with Professor Neil J. Holbrook (UTAS), Accepted for Doctor of Philosophy 2021

Post Doctoral supervision

- Dr Courtney Quinn: CSIRO Decadal Forecasting Project postdoctoral fellow
- Dr Dylan Harries: CSIRO ResearchPlus postdoctoral fellow
- Dr David Gwyther: (UTAS)
- Dr Tian Cong: CSIRO Machine Learning – Artificial Intelligence Future Science Platform postdoc
- Dr Xuhui Fan: CSIRO Machine Learning – Artificial Intelligence Future Science Platform postdoc

Professional Affiliations

- Member of the Australian Mathematical Society and ANZIAM.
- Member of the Society for Industrial and Applied Mathematics (SIAM)
- Member of the Australian Fluid Mechanics Society.
- Member of the Australian Complex Systems Network (COSNet)

Mentoring

- CSIRO mentor program: Stephanie Contardo
- CSIRO career development program: Lauren Stevens and Ben Schroeter

Feature articles

- **[94]** J.S. Frederiksen and **T.J. O'Kane** (2019) Advances in Engineering, Markovian inhomogeneous closures for turbulent geophysical flows https://advanceseng.com/markovian-inhomogeneous-closures-turbulent-geophysical-flows/

Peer reviewed publications

In review Journal Articles:

- **[95] T.J. O'Kane**, R. Fiedler, M.A.Collier and V. Kitsios (2021) Ocean model response to stochastically perturbed momentum fluxes (submitted J. Climate)
- **[94]** C. Quinn, **T.J. O'Kane** & D. Harries (2021) Systematic calculation of finite-time mixed singular vectors and characterization of error growth for persistent coherent atmospheric disturbances over Eurasia (submitted CHAOS)
- **[93]** L. Hermanson, et al (2021) WMO Global Annual to Decadal Climate Update: A prediction for 2021-2025 (submitted Bull. American Met. Soc.)
- **[92]** I. G. Watterson, **T.J. O'Kane**, V. Kitsios and M. A. Chamberlain (2021) Australian rainfall anomalies and Indo-Pacific Driver Indices: links and skill in two-year forecasts (submitted Journal of Southern Hemisphere Earth Systems Science)
- **[91]** M.A.Collier, **T.J. O'Kane**, V. Kitsios and P.A. Sandery (2021) **"**CSIRO CAFE-Submissions to the World Meteorological Organisation Operational Decadal Forecasts and the International Multi-Model Data Exchange" (submitted Journal of Southern Hemisphere Earth Systems Science)
- **[90]** E. Coughnan, E.J. Oliver, **T.J. O'Kane** and N.J. Holbrook (2021) Potential predictability of sea surface temperatures around Australia (submitted Climate Dynamics)

Books:

- **[89]** C. Franzke and **T.J. O'Kane** (2017) "Nonlinear and Stochastic Climate Dynamics" Cambridge University Press (ISBN: 9781107118140 468 pages)

Book Chapters:

- **[88]** I. Horenko, S. Gerber, **T.J. O'Kane**, J.S. Risbey and D. Monselesan (2017) On inference and validation of causality relations in climate teleconnections, (In Nonlinear and Stochastic Climate Dynamics.)
- **[87]** B.T. Nadiga and **T.J. O'Kane** (2017) Low-frequency regime transitions and predictability of regimes in a barotropic model, In Nonlinear and Stochastic Climate Dynamics, Cambridge University Press
- **[86]** J.S. Frederiksen, V. Kitsios, **T.J. O'Kane** and M. Zidikheri (2017) Stochastic subgrid modelling for geophysical and three-dimensional turbulence, In Nonlinear and Stochastic Climate Dynamics, Cambridge University Press

- **[85]** P.R. Oke & **T.J. O'Kane**, (2010), *Observing system design and assessment,* International Summer School for observing, assimilating and forecasting the ocean, International Summer School for observing, assimilating and forecasting the ocean, Operational Oceanography in the 21st Century, Eds G.B. Brassington & A. Schiller, Springer, 56 pages
- **[84] T.J. O'Kane**, & J.S. Frederiksen *"Ensemble prediction and the statistical dynamics of two-dimensional inhomogeneous flow regimes",* World Scientific Lecture Notes in Complex Systems Vol. 6, Frontiers in turbulence and coherent structures, International workshop on "Turbulence and Coherent Structures in Fluids, Plasmas and Granular Flows", 10-13 January (2007) The Australian National University, Canberra, pp355-394
- **[83]** J.S. Frederiksen & **T.J. O'Kane**, *"Turbulence closures and subgrid-scale parameterizations"*, World Scientific Lecture Notes in Complex Systems Vol. 6, Frontiers in turbulence and coherent structures, International workshop on "Turbulence and Coherent Structures in Fluids, Plasmas and Granular Flows", 10-13 January (2007) The Australian National University, Canberra, pp315-354
- **[82]** M. Zidikheri, J.S. Frederiksen & **T.J. O'Kane**, *"Multiple Equilibria and Mid-latitude Atmospheric Blocking: a re-examination",* World Scientific Lecture Notes in Complex Systems Vol. 6, Frontiers in turbulence and coherent structures, International workshop on "Turbulence and Coherent Structures in Fluids, Plasmas and Granular Flows", 10-13 January (2007) The Australian National University, Canberra, pp59-86

Published Journal Articles:

- **[81]** J. Lou, **T.J. O'Kane** & N.J. Holbrook (2021) Linking the Atmospheric Pacific-South American Mode with Oceanic Variability and Predictability (accepted Nature Communications in Earth and Environment)
- **[80]** I. Horenko, D. Rodrigues **T.J. O'Kane** and K. Everschor-Sitte (2021) Scalable detection of latent relations and their applications to magnetic imaging (accepted Commun. Appl. Math. Comput. Sci.)
- **[79]** C. Quinn, D. Harries and **T.J. O'Kane** (2021) Dynamical analysis of a reduced model for the North Atlantic Oscillation, J. Atmos. Sci., 78, https://doi.org/10.1175/JAS-D-20-0282.1
- **[78]** D. Harries and **T.J. O'Kane** (2021) Dynamic Bayesian Networks for Evaluation of Granger Causal Relationships in Climate Reanalyses**,** Journal of Advances in Modeling Earth Systems https://doi.org/10.1029/2020MS002442
- **[77] T. J. O'Kane**, P. A. Sandery, V. Kitsios, P. Sakov, M. A. Chamberlain, M. A. Collier, R. Fiedler, T. J. O'Kane, P. A. Sandery, V. Kitsios, P. Sakov, M. A. Chamberlain, M. A. Collier, R. Fiedler, T. S. Moore, C. C. Chapman, B. M. Sloyan, and R. J. Matear (2021) CAFE60v1: A 60-year large ensemble climate reanalysis. Part I: System design, model configuration and data assimilation. J. Climate 34, 5153--5169, DOI: https://doi.org/10.1175/JCLI-D-20-0974.1 Page(s): 1–48
- **[76] T. J. O'Kane,** P. A. Sandery, V. Kitsios, P. Sakov, M. A. Chamberlain, D. T. Squire, M. A. Collier, C. C. Chapman, R. Fiedler, D. Harries, T. S. Moore, D. Richardson, J. S. Risbey, B. J. E. Schroeter, S. Schroeter, B. M. Sloyan, C. Tozer, I. G. Watterson, A. Black, C. Quinn, and R. J. Matear (2021) CAFE60v1: A 60-year large ensemble climate reanalysis. Part II: Evaluation, J. Climate 34, 5171--5194 DOI: https://doi.org/10.1175/JCLI-D-20-0518.1
- **[75]** V. Kitsios, P.A. Sandery, **T.J. O'Kane**, R. Fiedler (2021) Ensemble Kalman filter parameter estimation for reduced biases in coupled general circulation models Journal of Advances in Modeling Earth Systems; Vol.13, Issue 2, DOI:10.1029/2020MS002252
- **[74] T.J. O'Kane,** V. Kitsios and M.A. Collier (2020) On the semi-annual formation of large-scale three-dimensional vortices at the stratopause. Geophys. Res. Lett. 48, e2020GL090072. https://doi.org/10.1029/2020GL090072
- **[73]** J. Lou, **T.J. O'Kane** and N.J. Holbrook (2021) A Linear Inverse Model of Tropical and South Pacific Climate Variability: Optimal structure and stochastic forcing, J. Climate, 34, 143—155, https://doi.org/10.1175/JCLI-D-19-0964.1
- **[72]** D. Harries and **T.J. O'Kane** (2020) Application of matrix factorization methods to climate data (in revision Nonlin. Processes Geophys., https://doi.org/10.5194/npg-2020-7)
- **[71]** C. Chapman, B. Sloyan, **T.J. O'Kane** & M. Chamberlain (2020) Decadal subtropical Indian Ocean variability and its climate influence J. Climate, 33, 6765—6791, https://doi.org/10.1175/jcli-d-19-0469.1
- **[70]** J. Lou, **T.J. O'Kane** & N.J. Holbrook (2020) A linear inverse model of Tropical and South Pacific seasonal predictability J. Climate, 33, 4537—4554, https://doi.org/10.1175/JCLI-D-19-0548.1
- **[69]** C. Quinn, **T.J. O'Kane** and V. Kitsios (2020) Application of local attractor dimension to reduced space strongly coupled data assimilation for chaotic multiscale systems. Nonlin. Processes Geophys., 27, 51–74, 2020 https://doi.org/10.5194/npg-27-51-2020

- **[68]** P.A. Sandery, **T.J. O'Kane**, V. Kitsios and P. Sakov (2020) State estimation of the climate system with the EnKF using variants of coupled data assimilation Mon. Wea. Rev., 148, 2411--2431
- **[67] T.J. O'Kane**, P.A. Sandery, V. Kitsios, R.J. Matear, T. Moore, J.S. Risbey, I. Watterson (2020) Enhanced ENSO prediction via augmentation of multi-model ensembles with initial thermocline perturbations. J. Climate, 33, pp2281--2293
- **[66]** V. Kitsios, **T.J. O'Kane** & N. Zagar (2019) "A reduced order theory of the Madden-Julian oscillation based on reanalysis normal mode coherences" J. Atmos. Sci., 76, pp2463--2480
- **[65]** J. Lou, N. Holbrook & **T.J. O'Kane** (2019) "South Pacific Decadal Climate Variability and Potential Predictability" J. Climate, 32, pp6051--6069
- **[64]** Stephen G. Penny, Santha Akella, Magdalena A. Balmaseda, Philip Browne, James A. Carton, Matthieu Chevallier, Francois Counillon, Catia Domingues, Sergey Frolov, Patrick Heimbach, Patrick Hogan, Ibrahim Hoteit, Doroteaciro Iovino, Patrick Laloyaux, Matthew J. Martin, Simona Masina, Andrew M. Moore, Patricia d. Rosnay, Dinand Schepers, Bernadette M. Sloyan, Andrea Storto, Aneesh Subramanian, SungHyun Nam, Frederic Vitart, Chunxue Yang, Yosuke Fujii, Hao Zuo, **Terence O'Kane**, Paul Sandery, Thomas Moore, Christopher C. Chapman (2019) Observational Needs for improving Ocean and Coupled Reanalysis, S2S Prediction, and Decadal Prediction (Frontiers in Marine Science)
- **[63]** J.S. Risbey, D.P. Monselesan, **T.J. O'Kane**, C.R. Tozer, M.J. Pook and P.T. Haymen (2019) "Synoptic and large-scale determinants of extreme Austral frost events" J. Applied Meteorology and Climatology, 58, pp1103--1124
- **[62]** K. Allen, K. J. Anchukaitis, M. G. Grose, E. R. Cook, J. S. Risbey, P. J. Baker, G. Lee, **T. J. O'Kane,** D. Monselesan, A. O'Grady, S. Larsen (2019) "Reconstructions of cool season temperature for far southeastern Australia", Climate Dynamics doi.org/10.1007/s00382-018-04602-2
- **[61]** Y. Kushnir and A. A. Scaife, R. Arritt, G. Balsamo, G. Boer, F. Doblas-Reyes, E. Hawkins, M. Kimoto, R.K. Kolli, A. Kumar, D. Matei, K. Matthes, W. A. Müller, **T.J. O'Kane**, J. Perlwitz, S. Power, M. Raphael, A. Shimpo, D. Smith, M. Tuma, and B. Wu (2019) "Towards operational predictions of near term climate" Nature Climate Change doi.org/10.1038/s41558-018-0359-7
- **[60] T.J. O'Kane**, P.A. Sandery, D.P. Monselesan, P. Sakov, M.A. Chamberlain, R.J. Matear, M.A. Collier, D.T. Squire & L. Stevens (2019) "Coupled data assimilation and ensemble initialization with application to multi-year ENSO prediction"**,** J. Climate, 32, 997—1024
- **[59]** J.S. Frederiksen & **T.J. O'Kane** (2019) "Markovian inhomogeneous closures for Rossby waves and turbulence over topography" (*J. Fluid Mech.* (2019), v*ol*. 858, *pp.* 45–70)
- **[58]** C. Tozer, J.S. Risbey, **T.J. O'Kane**, D.P. Monselesan and M. Pook (2018) "The relationship between waveguide mode forms in the Southern Hemisphere storm track and precipitation extremes over Tasmania", Mon. Wea. Rev (2018), 146, pp4201--4230
- **[57]** P.K. Dunstan, S.D. Foster, E. King, J.S. Risbey, **T.J. O'Kane**, D.P. Monselesan, A. Hobday, J. Hartog, and P. Thompson, (2018) Interactions in Global patterns of variation in Sea Surface Temperature and Chlorophyll A produce mesoscale unique states (Scientific Reports *(2018) 8:14624* | DOI:10.1038/s41598-018-33057-y)
- **[56]** D.E. Gwyther, **T.J. O'Kane**, B.K. Galton-Fenzi & D.P. Monselesan (2018) Intrinsic processes drive variability in basal melting of the Totten Glacier Ice Shelf (Nature Communications, 9:3141 | DOI: 10.1038/s41467-018-05618-2)
- **[55]** J.S. Risbey, M.R. Grose, D.P. Monselesan, **T.J. O'Kane**, S. Lewandowsky (2017) Transient response of the global mean warming rate and its spatial variation (Weather and Climate Extremes, 18, pp55--64, DOI: 10.1002/2017JD027222)
- **[54]** J.S. Risbey, **T.J. O'Kane**, D.P. Monselesan, C.L.E. Franzke, I. Horenko (2017) On the dynamics of austral heat waves (JGR Atmospheres 123, pp38--57 DOI: 10.1002/2017JD027222)
- **[53] T.J. O'Kane**, D. Monselesan, J. Risbey, I. Horenko & C. Franzke (2017) On memory, dimension, and atmospheric teleconnection patterns (Mathematics of Climate & Weather Forecasting 3, 1-27)
- **[52] T.J. O'Kane**, D.P. Monselesan and J.S. Risbey (2017) A multiscale re-examination of the Pacific South American pattern (Monthly Weather Review 145, 379-402)
- **[51] T.J. O'Kane**, D.P. Monselesan and C. Maes (2016) On the stability and spatio-temporal variance distribution of upper ocean salinity (JGR-Oceans J. Geophys. Res. Oceans, 121, doi:10.1002/2015JC011523.)
- **[50]** A.C.V. Freitas, J.S. Frederiksen, **T.J. O'Kane** and T. Ambrizzi (2016) Simulated austral winter response of the Hadley circulation and stationary Rossby wave propagation to a warming climate (Climate Dynamics DOI 10.1007/s00382-016-3356-4)

- **[49]** J. Salinger, A.J. Hobday, R. Matear, **T.J. O'Kane**, J.S. Risbey, J.P. Eveson, E.A Fulton, M. Feng, E.E. Plaganyi, E. Poloczanska, A. Marshall, P.A. Thompson (2016) Decadal-scale forecasting of climate drivers for marine applications. (Advances in Marine Biology, Vol. 74, Oxford: Academic Press, 2016, pp. 1-68)
- **[48]** E.C.J. Oliver, **T.J. O'Kane**, and N.J. Holbrook (2015), Projected changes to Tasman Sea eddies in a future climate, J. Geophys. Res. Oceans, 120, doi:10.1002/2015JC010993
- **[47] T.J. O'Kane**, J. Risbey, D. Monselesan, I. Horenko & C. Franzke (2015) On the dynamics of persistent states and their secular trends in the waveguides of the Southern Hemisphere troposphere, Climate Dynamics DOI 10.1007/s00382-015-2786-8
- **[46]** R. Matear, **T.J. O'Kane**, M. Chamberlain and J. Risbey (2015) Sources of heterogeneous variability and trends in Antarctic Sea Ice. Nature Communications DOI:10.1038/ncomms9656
- **[45]** B. Sloyan and **T.J. O'Kane** (2015) Drivers of decadal variability in the Tasman Sea. J. Geophys. Res. Oceans, 120, doi:10.1002/2014JC010550.
- **[44]** A.C.V. Freitas, J. S. Frederiksen, J. Whelan, **T.J. O'Kane** and T. Ambrizzi (2015), Observed and simulated inter-decadal changes in the structure of Southern Hemisphere large-scale circulation. Climate Dynamics DOI 10.1007/s00382-015-2519-z
- **[43]** C. Franzke, **T.J. O'Kane**, D. Monselesan, J. Risbey & I. Horenko (2015), Systematic Attribution of Observed Southern Hemispheric Circulation Trends to External Forcing and Internal Variability. Nonlin. Processes Geophys., 22, 513–525, doi:10.5194/npgd-2-675-2015.
- **[42] T. O'Kane**, R. Matear, M. Chamberlain, E. Oliver and N. Holbrook (2014), Storm tracks in the oceans of the southern hemisphere. (JGR Oceans 119 doi:10.1002/2014JC009990.)
- **[41]** C. Maes, N. Reul, D. Behringer and **T.J. O'Kane** (2014) The salinity signature of the equatorial Pacific cold tongue as revealed by the satellite SMOS mission, Geoscience Letters 2014, 1:17 http://www.geoscienceletters.com/content/1/1/17)
- **[40]** D. Monselesan, **T.J. O'Kane**, J. Risbey and J. Church (2014) Internal climate memory in observations and models. Geophys. Res. Lett., 42, doi:10.1002/2014GL062765.
- **[39]** J. Risbey, **T.J. O'Kane**, D. Monselesan, C. Franzke and I. Horenko, (2014) Metastability of Northern Hemisphere atmospheric teleconnections. J. Atmos. Sci. 72, pp35-54 DOI: 10.1175/JAS-D-14-0020.1
- **[38]** C.L.E. Franzke, **T.J. O'Kane**, J. Berner, P.D. Williams and V. Lucarini (2014) Stochastic Climate Theory and Modelling, WIRES Climate Change doi: 10.1002/wcc.318
- **[37]** C. Maes and **T.J. O'Kane** (2014) Upper ocean salinity stratification in the tropics as derived from N^2, the buoyancy frequency. (Mercator Newsletter #50 April 2014-15)
- **[36]** J.S. Risbey, S. Lewandowsky, C. Langlais, D.P. Monselesan, **T.J. O'Kane**, N. Oreskes (2014) Well estimated global surface warming in climate projections accounting for ENSO phase. (Nature Climate Change, 20 JULY 2014 | DOI: 10.1038/NCLIMATE2310)
- **[35] T. O'Kane**, R. Matear, M. Chamberlain & P. Oke (2014), ENSO regimes and the late 1970's climate regime shift: The role of synoptic weather and South Pacific ocean spiciness. (J. Comp. Phys., http://dx.doi.org/10.1016/j.jcp.2013.10.058)
- **[34]** C. Maes and **T. O'Kane** (2014) Seasonal variations of the upper ocean salinity stratification in the Tropics. JGR Oceans, 119, 1706--1722, doi:10.1002/2013JC009366
- **[33]** P. Sandery, **T. O'Kane** (2014) Coupled initialization in an ocean-atmosphere tropical cyclone prediction system. (Q. J. Roy. Met. Soc., Vol 140, Issue 7678, Part A pp82—95
- **[32]** A.C.V. Freitas, **T. J. O'Kane**, J. S. Frederiksen and T. Ambrizzi., (2013) Assessing the impacts of changes in the Hadley Circulation on stationary Rossby wave propagation (In Piantadosi, J., Anderssen, R.S. and Boland J. (eds) MODSIM2013, 20th International Congress on Modelling and Simulation. Modelling and Simulation Society of Australia and New Zealand, December 2013, pp2562--2568)
- **[31] T. O'Kane**, R. Matear, M. Chamberlain, J. Risbey, B. Sloyan & I. Horenko (2013) Decadal variability in an OGCM Southern Ocean: Intrinsic modes, forced modes and metastable states., (Ocean Modelling 69 (2013) 1–21)
- **[30] T.J. O'Kane**, J.S. Risbey, C. Franzke, I. Horenko & D. Monselesan (2013) Changes in the meta-stability of the mid-latitude Southern Hemisphere circulation and the utility of non-stationary cluster analysis and split flow blocking indices as diagnostic tools. (J. Atmos. Sci., 70 (3) pp 824-842)
- **[29]** J.S. Frederiksen, **T.J. O'Kane** & M. Zidikheri, (2013), *Stochastic closure based subgrid modeling for geophysical flows,* (Phil. Trans. Roy. Soc. A, 371, doi: 10.1098/rsta.2012.0166)
- **[28] T. O'Kane**, R. Matear, M. Chamberlain, J. Risbey, B. Sloyan & I. Horenko (2013) Low Frequency Variability in the Antarctic Circumpolar Current. (ANZIAM J C200-C216)
- **[27] T. O'Kane**, J. Risbey, C. Franzke, I. Horenko & D. Monselesan (2013) The meta-stability of the mid-latitude Southern Hemisphere circulation. (ANZIAM J. 54 C233-C249)
- **[26]** J.S. Frederiksen, **T.J. O'Kane** & M. Zidikheri, (2012), *Subgrid modeling for geophysical flows,* (Physica Scripta, 85, 068202 (29pp))

- **[25] T. O'Kane**, R. Matear, M. Chamberlain, J. Risbey, B. Sloyan, I. Horenko (2012) Southern Ocean Intrinsic and Forced Modes of Low Frequency Variability in an Ocean General Circulation Model, Proceedings of the 18th Australasian Fluid Mechanics Conference, pp26-30, Vol. 1
- **[24]** J.S. Risbey & **T.J. O'Kane**, (2011) Climatic Change, DOI 10.1077/s10584-011-0186-6 *Confronting ignorance in climate research*
- **[23] T.J. O'Kane**, P.R. Oke & P.A. Sandery, (2011) Ocean Modelling, 39, 251-266, *Predicting the East Australian Current.*
- **[22] T.J. O'Kane**, P.R. Oke & P.A. Sandery, (2011), *Ensemble prediction study of the East Australian current,* (Australian & New Zealand Industrial & Applied Mathematics Journal (ANZIAM), 52, C38-C55)
- **[21] T.J. O'Kane** & J.S. Frederiksen, (2010), *Vertex renormalization and regularization in geophysical flows,* Frontiers of Fundamental and computational Physics, Frontiers of Fundamental and computational Physics 10th International Symposium, American Institute of Physics Publishing, ISBN 978-0-7354-0793-0, pp191-195
- **[20] T.J. O'Kane** & J.S. Frederiksen, Physica Scripta, T142 (2010) 014042, *The application of statistical dynamical turbulence closure theory to data assimilation in geophysical flows.*
- **[19] T.J. O'Kane,** Australian Meteorological and Oceanographic Society, Special edition (ensemble prediction & data assimilation), (2010), 59, 1 Editor: T.J. O'Kane
- **[18] T.J. O'Kane**, J.S. Frederiksen, & M.R. Dix, Atmosphere-Ocean 47, 160-168 (2009), *On the relationship of the mean to transient kinetic energy spectra in the atmosphere.*
- **[17] T.J. O'Kane,** & J.S. Frederiksen, Physica Scripta T132: 014033, doi:10.1088/0031-8949/2008/T132/014033 (2008), *Statistical dynamical subgrid-scale parameterizations for geophysical flows,*
- **[16] T.J. O'Kane**, & J.S. Frederiksen, entropy, 10(4), pp684--721 (2008), *Comparison of statistical dynamical, square root and ensemble Kalman filters.*
- **[15]** J.S. Frederiksen & **T.J. O'Kane,** entropy, 10(4), pp635--683 (2008), *Entropy, closures & subgrid modelling.*
- **[14] T.J. O'Kane**, M. Naughton & Y. Xiao, ANZIAM J, 50, ppC308-C321 (2008), *AGREPS: The Australian Global & Regional Ensemble Prediction System.*
- **[13] T.J. O'Kane**, & J.S. Frederiksen, J. Atmos. Sci., 65, pp426-446 (2008), *A comparison of statistical dynamical and ensemble prediction methods during blocking,*
- **[12] T.J. O'Kane**, & J.S. Frederiksen, ANZIAM J., 48, C50-C68, (2007), *Ensemble prediction and the role of higher order moments in atmospheric regime transitions.*
- **[11]** J.S. Frederiksen & **T.J. O'Kane**, J. Fluid Mech., 539, pp137-165, (2005) *Inhomogeneous closure and statistical mechanics of Rossby wave turbulence.*
- **[10] T.J. O'Kane**, & J.S. Frederiksen, ANZIAM J., 46(E), ppC704-718, (2005) *The statistical dynamics of nonlinear wave-turbulence interactions in two-dimensional barotropic flow.*
- **[9] T.J. O'Kane**, & J.S. Frederiksen, J. Fluid Mech., 504, pp133-165, (2004) *The QDIA and regularized QDIA closures for inhomogeneous flow over topography.*
- **[8] T.J. O'Kane**, & J.S. Frederiksen, ANZIAM J, 45(E), ppC135-148, (2004) *A tractable inhomogeneous closure theory for flow over mean topography.*
- **[7] T.J. O'Kane**, & J.S. Frederiksen, ANZIAM J., 44(E), ppC569-C589, (2003), *Integro-differential closure equations for inhomogeneous turbulence.*
- **[6] T.J. O'Kane**, R.E. Scholten, M.R.Walkiewicz, & P.M. Farrell, Phys.Rev.A, 59, pp 4485-4493, (1999), *Nonlinear interactions of multi-level atoms with a near resonant standing wave.*
- **[5]** R.E. Scholten, **T.J. O'Kane**, T.R. Mackin, T.A. Hunt & P.M. Farrell, Aust.J.Phys., 52, pp 493-514, (1999), *Calculating trajectories for atoms in near resonant light fields.*

Theses:

- **[4] T.J. O'Kane** (2003) PhD Thesis (Monash University): *The statistical dynamics of geophysical flows: An investigation of two-dimensional turbulent flow over topography (201pages)* (published by LAP Lambert Academic Publishing, Germany)
- **[3] T.J. O'Kane** (1999) MSc Thesis (University of Melbourne): *Nonlinear processes in laser-atom interactions. (180 pages)*
- **[2] T.J. O'Kane** (1997) BSc (Hons) Thesis (LaTrobe University) *The thermodynamic limit for Coulombic systems.(87 pages)*

Consultancy Reports:

- **[1]** J. L. McGregor, K. C. Nguyen & **T.J. O'Kane**, (2006) "High-resolution climate-change projections for the Fitzroy basin", CSIRO Marine & Atmospheric Research consultancy report for the Climate Change and Adaptation Subcommittee of the Queensland Government.

Selected Recent Conference Proceedings:

1. SIAM Conference on Geosciences 2021 (GS21), June, Virtual online.
2. SIAM Conference on Mathematics for Planet Earth 2020, June 8-10 California, USA (invited)
3. 63rd Annual Meeting of the Australian Mathematics Society 2019 (keynote)
4. EGU General Assembly 7-12 April, 2019 Vienna
5. Seasonal to Decadal prediction conference, Boulder, Colorado 14th-19th Sept 2018
6. ICSHMO/AMOS 2018, UNSW Sydney
7. ANZIAM Feb 4-8 2018, Hobart
8. Turbulence, Mixing & Beyond, 14-18th August 2017, Abdus Salam International Centre for Theoretical Physics (ICTP) Trieste, Italy
9. Data assimilation – Abstracts of the tenth CAWCR Workshop 5-9 December 2016, Melbourne, Australia http://www.bom.gov.au/research/workshop/2016/2016-Annual-Workshop-Abstract-Book.pdf
10. Oberwolfach Seminar Series (with R. Klein, C. Hartmann & I. Horenko): Different Mathematical Perspectives on Description of Unresolved Scales in Multiscale Systems, 20-26th November 2016, https://www.mfo.de/occasion/1647a
11. INTRINSIC OCEAN VARIABILITY SCIENCE DAY, January 29th 2015, Maison Jean Kuntzmann, Saint Martin d'Hères campus, Grenoble, France
12. CAWCR 9th Annual Workshop, 19-22 October 2015, Bureau of Meteorology, Docklands, Melbourne
13. CoE Workshop Weather-Climate/Climate change connection: Wed. 11.11.2015, Monash University, Melbourne
14. GREENHOUSE 2015, Hobart, 27-13 October 2015
15. AMOS 2015, 15-17 July, Brisbane
16. European Geophysical Union, Vienna, 2014, 27 April – 2 May.
17. Australian and New Zealand Industrial and Applied Mathematics Conference, Rotorua 2-6 February, 2014
18. Australian Meteorological and Oceanographic Society National Conference 2014, 12-14 February, Hobart, Tamania
19. July 2013, Mathematics of Planet Earth, Melbourne, Bureau of Meteorology
20. AOGS2013 10th Annual Meeting 24-28 June, Brisbane
21. AMOS 19, February 11-13, 2013, Melbourne
22. Frontiers in computational physics: Modelling the earth system. 16-20th December 2012, Boulder, Colorado
23. Third CLIVAR Workshop on the Evaluation of ENSO Processes in Climate Models, Hobart, Australia, 21-23 January 2013
24. 18h Australian Fluid Mechanics Conference, 3-7 Dec., Launceston, Tasmania
25. 16h Biennial Computational Techniques and Applications Conference, CTAC2012, 23-26 Sept. Brisbane 2012 *Low Frequency Variability in the Antarctic Circumpolar Current*
26. 16h Biennial Computational Techniques and Applications Conference, CTAC2012, 23-26 Sept. Brisbane 2012 *The meta-stability of the mid-latitude Southern Hemisphere circulation.*
27. 10th International Conference on Southern Hemisphere Meteorology, Noumea, 23-27 April 2012
28. WGOMD-GSOP Workshop on decadal variability, predictability, and prediction: Understanding the role of the ocean, Predictability Of Low-Frequency Regime Transitions In A Stochastically Forced Model
29. AGU Fall Meeting 2011, *Predictability of Low-Frequency Regime Transitions in the Barotropic Vorticity Equation Driven by Weak Stochastic Forcing*
30. GODAE OceanView – GSOP – CLIVAR Workshop on Observing System Evaluation and Intercomparisons, 13-17 June 2011, University of California Santa Cruz (UCSC), California, USA
31. International Conference on Nature of Turbulence, 24-29 April, 2011, Santa Barbara, USA. *http://online.itp.ucsb.edu/online/turbulence11/frederiksen/*
32. IUGG Melbourne 2011, Earth on the edge: Science for a sustainable planet. 28th June-7 July, *Data assimilation for strongly nonlinear systems.*
33. 15th Biennial Computational techniques, CTAC2010, 28 Nov-1 Dec 2010, *"An ensemble prediction study of the East Australian Current".*
34. (2010) Dynamic Days Asia Pacific 6, mini-symposium "Stochastic Aspects of Dynamical Systems" UNSW July 12-14, *"Ensemble prediction systems in weather prediction"*
35. J.S. Frederiksen & **T.J. O'Kane,** 24th IUPAP International Conference on Statistical Physics, Convention , 19-23 July 2010, *Statistical mechanics of turbulence,*
36. J.S. Frederiksen & **T.J. O'Kane**, 24th IUPAP International Conference on Statistical Physics, Convention , 19-23 July 2010, *Statistical dynamical closure and stochastic modelling for general inhomogeneous turbulent flows,*

+ 40 others

Conference and Committee Organisation

1) SIAM GS21 Mini-symposium "Regime detection in climate processes" June 2021
2) SIAM Math for Planet Earth, June 2020, Orange County, California, (MPE20) mini-symposium "ensemble methods"
3) CSIRO MLAI FSP panel to appoint activity leader for "Model informed prediction".
4) CSIRO O&A High Performance Computing Working Group 2018-present
5) ANZIAM 2019: Invited speaker selection committee.
6) CAWCR Annual R&D Workshop and student summer school 2018: Ensemble methods: Nowcasting to climate change, http://www.bom.gov.au/research/workshop/2018/
7) Co-organiser National Environmental Science Program (NESP) Earth Systems Climate Chance (ESCC) Hub Science Symposium 2-6 July 2018
8) Chief Organiser NESP ESCC Hub Decadal Prediction Workshop 14-15th May 2018
9) Scientific Steering Committee of the World Climate Research Program (WCRP) Grand Challenge for Near term Climate Prediction (NTCP)
10) CAWCR Annual R&D Workshop and student summer school 2016: Data assimilation http://www.bom.gov.au/research/workshop/2016/
11) Organising Committee Australian Meteorological and Oceanographic Society National Conference 2014, 12-14 February, Hobart, Tasmania
12) Session Chair, Turbulence Mixing & Beyond International Conference, (TMB09), Abdus Salam Institute of Theoretical Physics, Trieste, 2009
13) Organising committee for the *CAWCR Workshop on Ensemble Prediction and Data Assimilation*, 16-18 February, 2009 Melbourne, Australia
14) Organising Committee for the Complex Systems Science Network (COSNet) Early Career Researcher *Workshop Mind games @ Kioloa: Real world problems complex systems solutions,* 11-14 November*,* 2008 ANU Kioloa Campus, South Coast NSW
15) Member of the CSIRO Early Career Scientist Steering Committee (Marine & Atmospheric Science) (2006)
16) Session Chair, Numerical models, Computational Techniques & Applications Conference (CTAC08), ANU, 2008
17) Session Chair, Magneto-hydrodynamics, Turbulence Mixing & Beyond International Conference, (TMBW07), Abdus Salam Institute of Theoretical Physics, Trieste, 2007

Selected Invited Speaker Engagements

- (keynote) Multi-annual to decadal climate predictability in the North-Atlantic sector, 20-22 September 2021, Workshop is a collaboration between the projects Blue-Action, ROADMAP and the Bjerknes Climate Prediction Unit, together with the CLIVAR Climate Dynamics Panel, the CLIVAR Atlantic Region Panel and CLIVAR Northern Oceans Region Panel.
- Australian Leadership Computing Symposium 2019
- (keynote) Australian Mathematical Society 2019, 3-6 December, Monash University
- (panel) Data61+LIVE 2019, Carriageworks, Sydney, 2-3 October 2019
- Workshop on Conservation Principles, Data, and Uncertainty in Atmosphere-Ocean Modelling, Potsdam, Griebnitzsee Campus, April 2-4 2019
- (keynote) International Coupled Data Assimilation Symposium, Qingdao, China, November 5-8, 2017
- Turbulent Mixing and Beyond, Sixth International Conference Tenth Anniversary Program, 14-18 August, 2017 the Abdus Salam International Centre for Theoretical Physics, Strada Costiera 11, Trieste, Italy
- AMOS/MSNZ Annual Conference 2017 and ANZCF 2017
- Mathematisches Forschungsinstitut Oberwolfach seminar series, Oberwolfach, Germany, November 20-26, 2016 "Different mathematical perspectives on description of unresolved scales in multiscale systems" with (R. Klein, C. Hartmann & I. Horenko)
- University of Hamburg 3 November 2016 TRR 181 Seminar "Statistical dynamical subgrid scale parameterization"
- Workshop on Atmospheric Blocking, University of Reading, April 6-8 2016
- UNSW Climate Change Center, seminar, October 2015
- Bureau of Meteorology, seminar November 2015
- CAWCR 9th Annual Workshop, 19-22 October 2015, Bureau of Meteorology, Docklands, Melbourne
- INTRINSIC OCEAN VARIABILITY SCIENCE DAY January 29th 2015 Maison Jean Kuntzmann, Saint Martin d'Hères campus
- Laboratoire de physique des oceans, LPO (Ifremer), aura lieu le séminaire scientifique du LPO, 2 february 2015, Brest, France

- (Plenary) ANZIAM 2014, 2nd-6th February, Rotorua, New Zealand
- 7th November 2013, Atmosphere/Ocean/Climate Dynamics Seminar Series, Yale University
- 1st November 2013 AOS Program Biogeochemistry Seminar, Princeton University
- October 2013 NOAA Seminar, Geophysical Fluid Dynamics Laboratory, Princeton
- 2nd October 2013, Faculty of Informatics, USI, Switzerland
- 26th September 2013, Faculty of Informatics, USI, Switzerland
- 23rd Sept. 2011, Atmospheric & Oceanic Physics Dept., Clarendon Laboratory, Oxford
- Turbulent Mixing and Beyond International Conference 2011, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
- CSIRO, Computational and Simulation Sciences Transformational Capability Platform, Annual Conference, 16-18th March, The Langham, Melbourne
- Dynamic Days Asia Pacific 2010, July 12-14
- Centre for Australian Weather & Climate Research (CAWCR) supervisory council, 13th August 2010
- National Centers for Environmental Prediction Environmental Modelling Centre Seminar, August 11 2009
- Turbulent Mixing and Beyond International Conference & Summer School, July 26-August 16 2009, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
- CAWCR Workshop on Ensemble Prediction & Data Assimilation, February 16-18 2009, Bureau of Meteorology, Docklands, Melbourne
- Turbulent Mixing and Beyond International Conference, August 18-26 2007, The Abdus Salam International Centre for Theoretical Physics, Trieste, Italy
- Applied mathematics seminar, 28th November 2006, University of Adelaide
- CSIRO/COSNet International workshop on "Turbulence and Coherent Structures in Fluids, Plasmas and Granular Flows", 10-13 January (2006) The Australian National University, Canberra
- Applied mathematics seminar, 21st November 2005, Griffith University, Queensland
- Applied mathematics seminar, University of Western Australia, 12th August (2005)
- Mechanical and Manufacturing Engineering Departmental Seminar, The University of Melbourne, 7th July (2004)
- School of Physics & Materials Engineering Departmental Seminar, Monash University, 18th March (2004)
- Australian Meteorological and Oceanographic Society: Symposium on Geophysical turbulence, Monash University, 4th April (2002)
- Institute Seminar, Aarhus University, Aarhus, Denmark, Sept (1998)
- Quantum Optics Colloquia, Blackett Laboratory, Imperial College, London, August, (1998)

Journal Editor

- American Geophysical Union, Journal of Advances in Modelling Earth Systems (associate editor)
- Australian Meteorological and Oceanographic Journal, Special Edition: Proceedings of the *CAWCR Workshop on Ensemble Prediction and Data Assimilation*
- The Open Journal of Modelling and Simulation
- Journal of Marine Science and Engineering (Physical Oceanography)
- Atmosphere (MDPI)
- Asia-Pacific Journal of Atmosphere Sciences (https://www.springer.com/journal/13143) on the theme "Extreme Weather and Climate Events: Dynamics, Predictability and Ensemble Simulations" (2021 in preparation).

Journal Reviewer

- Nature Climate Change
- Nature Geoscience
- Journal of Advances in Modeling Earth Systems
- Physical Review A & E
- Physica D
- Monthly Weather Review
- Journal of the Atmospheric Sciences
- Journal of Climate
- The Journal of Fluid Mechanics
- Science Reports
- Quarterly Journal of the Royal Meteorological Society
- Journal of Turbulence
- Australian and New Zealand Industrial and Applied Mathematics Journal

- World Scientific Lecture Series
- Transactions of the Royal Philosophical Society A
- Entropy
- Atmospheric Research
- Tellus A
- Oceanography
- Ocean Modelling
- Ocean Dynamics
- Climate Dynamics
- Journal of Geophysical Research (oceans and atmosphere)
- Geophysical Research Letters

Expert reviewer for the Australian Research Council, The Dutch Research Council (NWO), Netherlands Organisation for Scientific Research, the Austrian Academy of Science, and the National Science Foundation (USA).