

## CURRICULUM VITAE

### Noel Cressie FAA

Director, Centre for Environmental Informatics  
National Institute for Applied Statistics Research Australia (NIASRA)

Distinguished Professor  
School of Mathematics and Applied Statistics

University of Wollongong

### Address

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### Education

1972, B.Sc. with 1st class honours, University of Western Australia

1973, M.A., Princeton University

1975, Ph.D., Princeton University

### Honors and Special Awards

Class President and Valedictorian, 1967 (John Curtin High School)

Weatherburn Prize in Mathematics, 1968; Convocation Prize in Mathematics, 1969; Shell Final Year Scholarship, 1970; H. C. Levey Memorial Prize in Mathematics, 1971 (University of Western Australia)

Fulbright Award, 1972; Hackett Studentship, (University of Western Australia) and Princeton Graduate Research Assistantship, 1972-1975 (Princeton University)

Elected Member of International Statistical Institute, 1984

American Statistical Association/National Science Foundation/Census Fellow, 1985-1986

Elected Fellow of American Statistical Association (ASA), 1986

Elected Fellow of Institute of Mathematical Statistics (IMS), 1988

Distinguished Professor in Liberal Arts and Sciences, Iowa State University, 1993-1998

Distinguished Achievement Medal, ASA Section on Statistics and the Environment, 1993

Twentieth Century Distinguished Service Award in Environmental Statistics, 1999

Distinguished Professor of Mathematical and Physical Sciences, The Ohio State University, 2004-2012

Distinguished University Scholar, The Ohio State University, 2006

CMIS Visiting Senior Research Fellow, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia, 2007

Named a Fellow of Spatial Econometrics Association, 2008

Distinguished Visiting Scientist, CSIRO, 2009 and 2011

R.A. Fisher Award and Lectureship, Committee of Presidents of Statistical Societies (COPSS), 2009

IBM Faculty Award, 2009

Named a Science Team member for NASA's OCO-2 Mission, 2011-present

Recipient (with co-author, Christopher K. Wikle) of the 2011 PROSE Award in the Mathematics category, for the book "Statistics for Spatio-Temporal Data" by N. Cressie and C.K. Wikle (2011), published by John Wiley and Sons. (The PROSE awards, for PROfessional and Scholarly Excellence, are given by the Association of American Publishers, the national trade association of the US book publishing industry.)

Distinguished Visiting Scientist, Jet Propulsion Laboratory, 2013-2017

Recipient (with co-author, Christopher K. Wikle) of the 2013 DeGroot Book Prize for "Statistics for Spatio-Temporal Data" published in 2011 by John Wiley and Sons. (The DeGroot Prize is awarded every two years by the International Society for Bayesian Analysis.)

CSIRO Adjunct Fellow in Data61, CSIRO, 2014-2019

Named a Distinguished Professor, University of Wollongong, 2014-present

Awarded the Pitman Medal by the Statistical Society of Australia, 2014

The 1993 book, "Statistics for Spatial Data, rev. edn" by Noel Cressie, inducted into the Wiley Classics Library, 2015

Awarded (with co-authors) the Wilcoxon Award for best practical applications paper appearing in the 2014 issues of *Technometrics*, 2015

Barnett Award for Excellence in Environmental Statistics, Royal Statistical Society, 2016

Best Statistics Paper Award (co-winner), School of Mathematics and Applied Statistics, University of Wollongong, 2016

Matheron Award and Lectureship, International Association for Mathematical Geosciences, 2017

SPAIG (Statistical Partnerships among Academe, Industry, and Government) Award from the ASA; co-awardee as part of the University of Missouri Node of the NSF-Census Research Network in the USA, 2017

Elected a Fellow of the Australian Academy of Science, 2018

Awarded the Moyall Medal, Macquarie University, Australia, 2018

Recipient (with co-authors, Christopher K. Wikle and Andrew Zammit-Mangion) of the Taylor and Francis Award, Outstanding Reference/Monograph in the Science and Medical category, for the book "Spatio-Temporal Statistics with R" published in 2019 by CRC/Chapman and Hall.

Scopus h-index: currently 47

### **Special Invited Lectures**

American Statistical Association General Methodology Invited Lecture, Joint Statistical Meetings, San Francisco, CA, 1987

Technometrics Invited Paper (with M. O. Grondona), American Society for Quality Control, Fall Technical Conference, Lexington, KY, 1991

Keynote Speaker, Second International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Fort Collins, CO, 1996

Distinguished Lecturer, Computer and Information Technology Institute, Rice University, Houston, TX, 1996

Keynote Speaker, 50th Anniversary Conference, International Biometric Society, British Region, Edinburgh, Scotland, 1998

Keynote Address, Conference on Environmetrics, Gold Coast, Queensland, Australia, 1998

Conferencia Magistrale, Foro Nacional de Estadística, Monterrey, Mexico, 1998

Mitchell Lecturer, University of Glasgow, Glasgow, Scotland, 1999

Keynote Speaker, GIS en Waarachtig! Symposium Statistische Software 1999, Utrecht, Netherlands, 1999

Keynote Speaker, Workshop on Spatial Information and Data Analysis, Statistical Society of Australia, Perth, Western Australia, 1999

Keynote Speaker, Applied Statistics Week, Department of Statistics, University of Missouri, Columbia, MO, 2001

WNAR Presidential Address, Annual Meeting, Vancouver, Canada, 2001

Keynote Speaker, First Spanish Workshop on Spatio-Temporal Modeling of Environmental Processes (METMA I), Castellon, Spain, 2001

J. Stuart Hunter Lecture, The International Environmetrics Society Annual Conference, Genoa, Italy, 2002

Keynote Speaker, Conference on Spatial Statistics, ASA Section on Statistics and the Environment, Seattle, WA, 2002

Keynote Speaker, 2003 IEEE Workshop on Statistical Signal Processing, St. Louis, MO, 2003

Keynote Speaker, 2004 Graybill Conference, Department of Statistics, Colorado State University, Fort Collins, CO, 2004

Keynote Speaker, 2006 White Conference on Mastering the Data Explosion in the Earth and Environmental Sciences, Australian Academy of Science, Canberra, Australia

Dan and Carole Burack President's Distinguished Lecturer, University of Vermont, Burlington, VT, 2006

Keynote Speaker, Third Spanish Workshop on Spatio-Temporal Modeling of Environmental Processes (METMA III), Pamplona, Spain, 2006

Principal Lecturer, 32nd Spring Lecture Series (5 lectures), University of Arkansas, Fayetteville, AR, 2007

Keynote Speaker, First Global Workshop on High Resolution Digital Soil Sensing and Mapping, Sydney, Australia, 2008

R.A. Fisher Lecture, Joint Statistical Meetings, Washington, DC, 2009

Keynote Speaker, International Symposium in Statistics, St John's, Newfoundland, Canada, 2009

Shumway Lecture, University of California at Davis, Davis, CA, 2009

MBI Colloquium Speaker, The Ohio State University, Columbus, OH, 2009

Keynote Speaker, International Workshop on Spatio-Temporal Modeling (METMA V), Santiago de Compostella, Spain, 2010

Keynote Speaker, SAMSI Spatial Transition Workshop, Research Triangle Park, NC, 2010

Keynote Speaker, Australian Statistical Conference, Fremantle, Western Australia, 2010

Keynote Speaker, Spatial Statistics 2011, Enschede, The Netherlands, 2011

Keynote Speaker, Fifth World Conference of the Spatial Econometrics Association, Toulouse, France, 2011

Keynote Speaker, GIScience 2012 International Conference, Columbus, OH, 2012

Keynote Speaker, Marine Biogeochemical Data Assimilation Symposium, Hobart, Tasmania, 2013

Keynote Speaker, Conference on Frontiers in Methodological and Applied Statistics: A Celebration of 50 years, University of Missouri, Columbia, MO, 2013

E.A. Cornish Lecture, Statistical Society of Australia, South Australia Branch, Adelaide, Australia, 2013

Knibbs Lecture, Statistical Society of Australia, Canberra Branch, Canberra, Australia, 2014

Keynote Speaker, Geodesign Summit, Esri, Redlands, CA, 2015

Keynote Speaker (Barnett Lecture), Royal Statistical Society International Conference, Manchester, UK, 2016

Matheron Lecture, International Association for Mathematical Geosciences 2017 Conference, Perth, Australia, 2017  
 Belz Lecture, Statistical Society of Australia, Victoria Branch, Melbourne, Australia, 2017  
 New Fellow Presentation, Australian Academy of Science, Canberra, ACT, Australia, 2018  
 Moyal Lecture, Department of Mathematics and Statistics, Macquarie University, Sydney, Australia, 2018  
 President's Invited Lecture 2019, The International Environmentrics Society, World Statistics Congress, Kuala Lumpur, Malaysia, 2019  
 Santaló Lecture, Complutense University, Madrid, Spain, 2019  
 Inaugural Seminar, Data Analytics for Resources and Environments (DARE), University of Sydney, Australia, 2020

## Professional Experience

### *Permanent Appointments:*

2/1976-9/1983      Lecturer (2/1976-3/1980) and Senior Lecturer (3/1980- 9/1983), The Flinders University of South Australia, Adelaide, Australia  
 9/1983-11/1998    Professor of Statistics, Iowa State University (ISU), Ames, IA, USA  
 5/1993-11/1998    Distinguished Professor in Liberal Arts and Sciences, ISU, Ames, IA, USA  
 12/1998-10/2012   Professor of Statistics, The Ohio State University (OSU), Columbus, OH, USA  
 1/1999-10/2012    Director, Program in Spatial Statistics and Environmental Statistics, Department of Statistics, OSU, Columbus, OH, USA  
 5/2004-10/2012    Distinguished Professor of Mathematical and Physical Sciences, OSU, Columbus, OH, USA  
 1/2010-present     Affiliate, Jet Propulsion Laboratory (NASA), Pasadena, CA, USA  
 11/2012-present    Professor and Director, Centre for Environmental Informatics, National Institute for Applied Statistics Research Australia (NIASRA), University of Wollongong, New South Wales, Australia  
 2/2013-present     Adjunct Professor, Department of Statistics, University of Missouri, Columbia, MO, USA  
 1/2014-present     Distinguished Professor, University of Wollongong, New South Wales, Australia

### *Visiting Positions:*

1975            (5 months)    Professeur Associé, Centre de Morphologie Mathématique, Fontainebleau, France  
 1975-1976    (5 months)    Lecturer, Imperial College, University of London, UK  
 1977-1978    (2 months)    Visiting Professor, Centre de Morphologie Mathématique, Fontainebleau, France  
 1978-1979    (3 months)    Visiting Scientist, National Research Institute of Mathematical Sciences, Pretoria, South Africa  
 1980            (5 months)    Visiting Scientist, National Research Institute of Mathematical Sciences, Pretoria, South Africa  
 1980-1981    (5 months)    Visiting Research Scientist, Educational Testing Service, Princeton, NJ  
 1981            (1 month)     Visiting Professor, Katholieke Universiteit, Nijmegen, The Netherlands  
 1982            (2 months)    Visiting Professor, Université de Provence, Marseilles, France  
 1984            (1 month)     Visiting Professor, University of Cambridge, England  
 1985-1986    (8 months)    ASA/NSF/Census Fellow, Bureau of the Census, Washington, DC  
 1991            (5 months)    Visiting Fellow, Centre for Mathematics and its Applications, Australian National University, Canberra, Australia  
 1991            (5 months)    Visiting Scholar, Department of Statistics, Stanford University, Stanford, CA

1995	(3 months)	Visiting Professor, Department of Statistics, The Ohio State University, Columbus, OH
1999	(3 months)	Visiting Professor, Center for Research in Economics and Statistics, INSEE, Paris, France
2002-2004	(2 months)	Visiting Professor, Université de Toulouse 1, Toulouse, France
2004-2005	(1 month)	Visiting Professor, Université de Paris Sud, Orsay, France
2007	(1 month)	Visiting Professor, Université de Paris 1 (Sorbonne), France
2007-2008	(6 months)	CMIS Visiting Senior Research Fellow, CSIRO, Australia
2010	(3 months)	Visiting Scientist, Statistical and Applied Mathematical Sciences Institute (SAMSI)
2011	(3 months)	Distinguished Visiting Scientist, Office of the Chief Executive, CSIRO, Australia
2013-2017	(4 years)	Distinguished Visiting Scientist, Jet Propulsion Laboratory, NASA, Pasadena, CA
2014	(1 month)	Visiting Professor, Université de Paris Ouest, Nanterre, France

*Teaching:*

Estimation Theory (Masters), Imperial College, London, 1975

Statistics for Engineers (2nd year), Imperial College, London, 1975

Robustness and Data Analysis (4th year), Flinders University, Australia, 1976-1977, 1983

Honours Seminar (4th year), Flinders University, Australia, 1982-1983

Estimation and Hypothesis Testing (3rd year), Flinders University, Australia, 1976-1977

Linear Models (3rd year), Flinders University, Australia, 1976-1979, 1982

Multivariate Models and Time Series (3rd year), Flinders University, Australia, 1979

Random Variables (3rd year), Flinders University, Australia, 1981, 1983

Statistics Reading Course (3rd year), Flinders University, Australia, 1981

Statistics for Sociologists (3rd year), Flinders University, Australia, 1979

Probability and Statistics II (2nd year), Flinders University, Australia, 1977-1980

Probability (2nd year), Flinders University, Australia, 1981

Introductory Statistics (2nd year), Flinders University, Australia, 1976, 1979, 1982-1983

Graphical and Computational Statistics (1st year), Flinders University, Australia, 1983

Stat 643, Theory of Estimation and Testing of Hypotheses (Ph.D.), Iowa State University, 1984, 1986, 1988, 1989, 1992, 1994

Stat 606, Spatial Statistics (Ph.D.), Iowa State University, 1984, 1986, 1988, 1990, 1992, 1994, 1997

Stat 590, Robust Statistics (Masters), Iowa State University, 1985

Stat 544, Bayesian Decision Theory (Masters), Iowa State University, 1990, 1992, 1994

Stat 543, Theory of Probability and Statistics (Masters), Iowa State University, 1984, 1987, 1989

Stat 505, Environmental Statistics (Masters), Iowa State University, 1996, 1998

Stat 101, Principles of Statistics (Undergraduate service course), Iowa State University, 1985, 1993

Stat 829, Spatial Statistics (Ph.D.), The Ohio State University, 1995, 1999, 2001, 2003, 2005, 2007, 2008, 2010, 2012

Stat 694, Group Studies: Introduction to Spatial Statistics (Masters), The Ohio State University, 2009

Stat 662, Environmental Statistics (Masters), The Ohio State University, 2000, 2002, 2004, 2012

Stat 621, Statistical Theory II (Masters), The Ohio State University, 2011

Stat 135, Elementary Statistics (Undergraduate service course), The Ohio State University, 2000

Stat 904, Statistical Consulting (Honours; guest lectures), University of Wollongong, 2016 - present

Math 100, Introduction to Mathematics (Undergraduate, guest lectures), University of Wollongong, 2018 - present

*Research Supervision:*

Senior Research Fellow, A. Zammit-Mangion, University of Wollongong, 2014-2017

Postdoctoral Fellow, N. H. Chan, US Census Bureau, 1985-1986

Postdoctoral Fellow, J. Symanzik; Iowa State University, 1997-1998

Postdoctoral Fellow, A. Mugglin; The Ohio State University, 1999-2000

Postdoctoral Fellow, B. Hrafnkelsson; The Ohio State University, 1999-2000

Postdoctoral Fellow, D. Wendt, The Ohio State University, 2000-2001

Postdoctoral Fellow, J. Kornak, The Ohio State University, 2002-2003

Postdoctoral Fellow, C. Huang, The Ohio State University, 2005-2007

Postdoctoral Fellow, S. LaDeau, The Ohio State University, 2006-2008

Postdoctoral Fellow, R. Wang, The Ohio State University, 2012-2013

Postdoctoral Fellow, S. Burden, University of Wollongong, 2013-2016

Postdoctoral Fellow, B. Zhang, University of Wollongong, 2015-2018

Postdoctoral Fellow, M. Bertolacci, University of Wollongong, 2019-2022

Ph.D. Student, T. Read; "Choosing a goodness-of-fit test," Flinders University, Australia, 1982

Ph.D. Student, C. Gotway; "Inference from spatial processes," Iowa State University, 1989

Ph.D. Student, M. Grondona; "Estimation and design with correlated observations," Iowa State University, 1989

Ph.D. Student, N. Nanayakkara; "Heteroskedasticity-robust estimation of means," Iowa State University, 1989

Ph.D. Student, J. Biele; "Sample-size-optimal Bayesian schemes in sequential sampling," Iowa State University, 1990

Ph.D. Student, S. Rathbun; "Estimation and statistical inference for space-time point processes," Iowa State University, 1990

Ph.D. Student, F. Medak; "Hierarchical testing using the power-divergence family of statistics," Iowa State University, 1991

Ph.D. Student, J. Ver Hoef (Co Major Professor); "Statistical analysis of spatial pattern in ecological data," Iowa State University, 1991

Ph.D. Student, J. Helterbrand (Co Major Professor); "Spatial dependence models and image analysis," Iowa State University, 1993

Ph.D. Student, A. Cannon (Co Major Professor); "Signal detection using categorical temporal data," Iowa State University, 1994

Ph.D. Student, C. Wikle (Co Major Professor); "Spatio-temporal statistical models with applications to atmospheric processes," Iowa State University, 1996

Ph.D. Student, J. Lee (Co Major Professor); "Specification of dependence structures and simulation-based estimation for conditionally specified statistical models," Iowa State University, 1997

Ph.D. Student, H. Huang; “Spatial modeling using graphical Markov models and wavelets,” Iowa State University, 1997

Ph.D. Student, J. Aldworth; “Spatial prediction, spatial sampling, and measurement error,” Iowa State University, 1998

Ph.D. Student, J. Gabrosek; “The effect of locational uncertainty in geostatistics,” Iowa State University, 1999

Ph.D. Student, J. Zhu (Co Major Professor); “Asymptotic inference for spatial cumulative distribution function,” Iowa State University, 2000

Ph.D. Student, G. Johannesson; “Multi-resolution statistical modeling in space and time with application to remote sensing of the environment,” The Ohio State University, 2003

Ph.D. Student, M. Pavlicova (Co Major Professor); “Thresholding FMRI images,” The Ohio State University, 2004

Ph.D. Student, J. Zhang (Co Major Professor); “Loss function approaches to predict a spatial quantile and its exceedance region,” The Ohio State University, 2007

Ph.D. Student, H. Li (Co Major Professor); “Approximate profile likelihood estimation for spatial-dependence parameters,” The Ohio State University, 2007

Ph.D. Student, E.L. Kang; “Reduced-dimension hierarchical statistical models for spatial and spatio-temporal data,” The Ohio State University, 2009

Ph.D. Student, M. Katzfuss; “Hierarchical spatial and spatio-temporal modeling of massive datasets, with application to global mapping of CO<sub>2</sub>,” The Ohio State University, 2011

Ph.D. Student, L. Zhuang; “Bayesian dynamical modeling of count data,” The Ohio State University, 2011

Ph.D. Student, A. Sengupta; “Empirical hierarchical modeling and predictive inference for big, spatial, discrete, and continuous data,” The Ohio State University, 2012

Ph.D. Student, J. Bradley (Co Major Professor); “Selection of predictors and estimators in spatial statistics,” The Ohio State University, 2013

Ph.D. Student, Quan Vu; “TBD,” under supervision, University of Wollongong

Ph.D. Student, Alan Pearse; “TBD,” under supervision, University of Wollongong

Ph.D. Student, Mathew Sainsbury-Dale; “TBD,” under supervision, University of Wollongong

  

Masters Student, T. Borders; Iowa State University, 1985

Masters Student, M. Bryan; Iowa State University, 1985

Masters Student, R. Zakaria; Iowa State University, 1985

Masters Student, C. Gotway; Iowa State University, 1986

Masters Student, M. Grondona; Iowa State University, 1987

Masters Student, S. Rathbun; Iowa State University, 1987

Masters Student, R. Parker; Iowa State University, 1990

Masters Student, M. Hartfield; Iowa State University, 1993

Masters Student, H. Huang; Iowa State University, 1994

Masters Student (by thesis), J. Majure; “A spatio-temporal statistical model of pollutant concentrations in surface waters,” Iowa State University, 1995

Masters Student, Y. Rao (Co Major Professor); The Ohio State University, 2003

Masters Student, N. Verzelen (Co Major Professor); Université Paris-Sud, 2005

Masters Student (by thesis), G. Davies; “Statistical modelling and analysis of Pacific sea surface temperatures,” University

of Wollongong, 2018

Masters Student (by thesis), D. Pesu; “Sensitivity of Optimal Estimation (OE) satellite retrievals based on a linear forward model,” under supervision, University of Wollongong, 2020 (expected)

Honours Thesis, M. Borkent; Flinders University, 1983

Honours Thesis, G. Glonek; Flinders University, 1983

## **Service**

### *Professional offices held:*

Vice President, South Australian Branch, Statistical Society of Australia, 1978-1979

President, South Australian Branch, Statistical Society of Australia, 1979-1980

Secretary/Treasurer, American Statistical Association Section on Statistical Computing, 1990

Committee on Fellows, American Statistical Association Section on Statistical Graphics, 1990-1992 (Chair, 1992)

Member, Publications Committee, American Statistical Association Section on Statistics and the Environment, 1991-1993

Member, Committee on Symposia and Conferences, American Statistical Association Section on Statistics and the Environment, 1991-1993

Elected to the faculty of Ecology and Evolutionary Biology Program, Iowa State University, 1995-1998

Chair Elect, American Statistical Association (ASA) Section on Statistics and the Environment, 1997

Chair, ASA Section on Statistics and the Environment, 1998

Past Chair, ASA Section on Statistics and the Environment, 1999

Member, ASA Advisory Committee on Climate Change, 2011-2017

Member, Census Scientific Advisory Committee, US Census Bureau, 2011-2017

Member, COPSS Fisher Award Selection Committee, 2015, 2017-2020

Member, Selection Committee, Abdel El-Shaarawi Early Career Researcher Award, The International Environmetrics Society, 2017-2019

Member, Selection Committee, Esri/ISI Student Poster Competition, International Statistical Institute, 2018-2019

Member, Sectional Committee 1: Mathematical Sciences, Australian Academy of Science, 2019-2022

### *Editorial duties:*

Associate Editor, Theory and Methods, *Journal of the American Statistical Association*, 1984-1988, 2002-2005

Editorial Board, *Chemometrics and Intelligent Laboratory Systems*, 1986-1997

Associate Editor, *Journal of Statistical Planning and Inference*, 1992-1997

Editorial Board, *Statistical Inference for Stochastic Processes*, 2000-2005

Advisory Board, Wiley Book Series in Probability and Statistics, 1996-present

Editorial Advisory Board, *Environmetrics*, 2000-2010

Editorial Board, *Statistics Surveys*, 2005-present

Editorial Board, *Mathematical Geosciences*, 2007-2016

Advisory Editor, *Mathematical Geosciences*, 2017-present



Associate Editor, *Journal of Environmental Statistics*, 2008-present

Associate Editor, *Environmetrics*, 2010-present

Guest Editor, special issue on Time Series in the Environmental Sciences, *Journal of Time Series Analysis*, 2010-2011

Associate Editor, *Spatial Statistics*, 2012-present

Guest Editor, submission to *Proceedings of the National Academy of Sciences*, 2013

Designate Senior Associate Editor, *Environmetrics*, 2014-present

Associate Editor, *Journal of Spatial Econometrics*, 2019-present

*Scientific committees and affiliations:*

Organizer and Chairman, Invited Paper Session on “Statistics of Spatial Data,” American Statistical Association Annual Meeting, Chicago, IL, 1986

Member, Scientific Committee, Third International Geostatistics Congress, Avignon, France, 1988

Member, Organizing Committee, Institute for Mathematics and its Applications Summer Program: Robustness, Diagnostics, Computing, and Graphics in Statistics, Minneapolis, MN, 1989

Organizer and Chairman, Invited Paper Session on “Statistics for Spatial Data,” Institute of Mathematical Statistics Spring Meeting, Baltimore, MD, 1990

Co-organizer and Co-editor of Spatial Statistics Section of the First International Conference/Workshop on Integrating GIS and Environmental Modeling, Boulder, CO, 1991

Organizer and Chairman, Invited Paper Session on “Inference for Spatial Processes,” Institute of Mathematical Statistics Spring Meeting, Cincinnati, OH, 1992

Member, Scientific Committee, International Workshop on Statistics of Spatial Processes, Bari, Italy, 1993

Organizer, Invited Paper Session on “Statistics for Spatial Data,” American Statistical Association Annual Meeting, San Francisco, CA, 1993

Member, Program Committee, Computing Science and Statistics, 27th Symposium on the Interface, Pittsburgh, PA, 1995

Organizer, Invited Paper Session on “Spatial Statistics for Environmental Data,” 27th Symposium on the Interface, Pittsburgh, PA, 1995

Member, Science Advisory Board, Second International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Fort Collins, CO, 1996

Member, Scientific Committee, First European Conference on Geostatistics for Environmental Applications, Lisbon, Portugal, 1996

Member, Scientific Program Committee of the Bernoulli Society, 51st International Statistical Institute Session, Istanbul, Turkey, 1997

Elected Vice-Chairman of World Health Organization Workshop on Disease Mapping and Risk Assessment for Public Health Decision Making, Rome, Italy, 1997

Member, Science Advisory Board, Third International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Quebec City, Canada, 1998

Member, Scientific Committee, Second European Conference on Geostatistics for Environmental Applications, geoENV98, Valencia, Spain, 1998

Organizer, Invited Paper Session on “Spatial Methodology for Minefield Detection,” American Statistical Association Annual Meeting, Baltimore, MD, 1999

Member, Steering Committee, International Conference on Discrete Global Grids, Santa Barbara, CA, 2000

Member, Science Advisory Board, Fourth International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences, Amsterdam, The Netherlands, 2000

Organizer, Workshop on Hierarchical Modeling in Environmental Statistics, Columbus, OH, 2000

Organizer, Short Course on Bayesian Hierarchical Statistics, Columbus, OH, 2000

Member, Program Committee, First International Conference on Geographic Information Science (GIScience 2000), Savannah, GA, 2000

Member, RSS2001 Conference Committee, Royal Statistical Society, Glasgow, Scotland, 2001

Organizer, Invited Paper Meeting on “Spatial Statistical Modeling with Environmental Applications,” International Statistical Institute, 53rd Session, Seoul, Korea, 2001

Member, Scientific Advisory Committee, Accuracy 2002 Symposium, Melbourne, Australia, 2002

Member, Program Committee, 34th Symposium on the Interface of Computer Science and Statistics, Montreal, Canada, 2002

Organizer, Invited Paper Session on “Spatial Statistics,” 34th Symposium on the Interface of Computer Science and Statistics, Montreal, Canada, 2002

Member, Scientific Program Advisory Group, Australian Statistical Conference, 2002-2008

Member, Program Committee, Second International Conference on GIScience 2002, Boulder, CO, 2002

Organizer, Invited Paper Session on “Spatio-Temporal Modeling,” International Conference on Environmental Statistics and Health, Santiago de Compostella, Spain, 2003

Member, Scientific Committee, International Workshop in Applied Probability, Piraeus, Greece, 2004

Member, Organizing Committee, Fifth European Conference on Geostatistics for Environmental Applications, Neuchatel, Switzerland, 2004

Member, Program Committee, Third International Conference on GIScience, College Park, MD, 2004

Member, Ambassador Program, 55th Session of the International Statistical Institute, Sydney, Australia, 2005

Organizer, Invited Paper Session on “Bayesian Hierarchical Modeling of Exposure Pathways,” American Statistical Association Annual Meeting, Seattle, WA, 2006

Chair, Program Committee, Uncertainty in Ecological Analysis Workshop, Mathematical Biosciences Institute, The Ohio State University, Columbus, OH, 2006

Member, Scientific Committee, 9th World Meeting of the International Society for Bayesian Analysis, Hamilton Island, Australia, 2007-2008

Member, International Advisory Board, 10th European Conference in Image Analysis and Stereology, Milan, Italy, 2008-2009

Affiliate, Institute for Sensing Systems, The Ohio State University, Columbus, OH, 2007-2012

Affiliate, Olentangy River Wetland Research Park, The Ohio State University, Columbus, OH, 2008-2012

Program Leader, SAMSI Program on Space-Time Analysis for Environmental Mapping, Epidemiology, and Climate Change, SAMSI, Research Triangle Park, NC, 2008-2010

Member, Scientific Committee, The International Environmetrics Society (TIES) 2012 Meeting, Hyderabad, India, 2010-2012

Member, Scientific Committee, Ninth Geostatistical Conference on Environmental Applications, geoENV2012, Valencia, Spain, 2011-2012

Chair, Organizing Committee, SSES Conference on Spatial and Environmental Statistics, The Ohio State University, Columbus, OH, 2012

Affiliate, Section 398, Science Data Understanding, Jet Propulsion Laboratory, Pasadena, CA, 2013-present

Organizer, Invited Paper Session on “Research Themes at the National Institute for Applied Statistics Research Australia (NIASRA),” 2014 Australian Statistical Conference (ASC2014), Sydney, Australia, 2013-2014

Member, Scientific Committee, The International Environmetrics Society (TIES) 2014 Meeting, Guangzhou, China, 2014

Co-organizer and Chairman, Invited Paper Session on “Statistical Inference with Dependent Data,” ISI Regional Statistics Conference, Kuala Lumpur, Malaysia, 2014

Member, Scientific Committee, 2016 Spatial Econometrics Association Conference, Rome, Italy, 2015-2016

Member, Program Committee, Australian Statistical Conference 2016, Canberra, Australia, 2015-2016

Co-organizer, 2016 Workshop on Spatial and Spatio-Temporal Design and Analysis for Official Statistics, Columbia, MO, 2015-2016

Organizer, Invited Paper Session on “Accounting for Statistical Dependence in Socio-Economic Data,” World Statistics Congress – ISI2017, Marrakech, Morocco, 2016-2017

Member, Scientific Committee, 2017 Conference of the International Association for Mathematical Geosciences, Fremantle, Australia, 2016-2017

Member, Scientific Program Committee, Australian Statistical Conference 2018, Melbourne, Australia, 2016-2018

*National and international advisory committees:*

Member, American Statistical Association Committee on Energy Statistics, an advisory body to the US Energy Information Administration, 1988-1990

Member, American Statistical Association’s Review Committee for the Environmental Protection Agency’s EMAP (Environmental Monitoring and Assessment Program), 1989-1994

Member, National Research Council’s Panel on Spatial Statistics and Digital Image Processing, 1990

Member, Advisory Committee, National Science Foundation Geophysical Statistics Project at National Center for Atmospheric Research, 1995-2001 (Chair, 2001)

Member, National Science Foundation Review Panel on Knowledge and Distributed Intelligence (KDI), 1998

Member, Review Panel of Biometry Division, Institut National de Recherche Agronomique, France, 2002

Member, Scientific Advisory Committee, US EPA grant on Statistical Survey Design and Analysis for Aquatic Resources, Colorado State University and Oregon State University, 2002-2005

Member, US EPA Science Advisory Board, Environmental Health Committee, 2003-2006

Member, Review Panel of Biostatistical Methods and Research Design Study Section, National Institutes of Health, 2004

Member, US EPA Science Advisory Board, Exposure and Human Health Committee, 2006-2009

Member, Census Scientific Advisory Committee, US Census Bureau, 2011-2017

Member, NASA OCO-2 Science Team, Jet Propulsion Laboratory, 2011-present

Member, Australia Antarctic Science Council, Australian Antarctic Division, 2019-2022

*University service:*

Member and chair of various committees (including promotion and tenure, search, program review, graduate examination,

curriculum) at the departmental, college, and university level. Significant past committee service has been with regard to establishing and maintaining a strong Geographic Information System (GIS) facility at Iowa State University; planning and directing the Program in Spatial Statistics and Environmental Statistics (SSES) at The Ohio State University (OSU); member of the OSU Biostatistics Advisory Committee, 2004-2012; member of the OSU Distinguished Scholar Award Committee, 2006-2009; OSU Arts and Sciences College Senator representing the Department of Statistics, 2006-2009, 2010-2012; Foundation Director of the Centre for Environmental Informatics (CEI) at the University of Wollongong (UOW), 2102; Chair of UOW Statistical Science Lecture Committee, 2018-present

*Reviewing:*

Reviewer of manuscripts for *Acta Biotheoretica*, *Advances in Applied Probability*, *Advances in Statistical Climatology, Meteorology, and Oceanography*, *American Journal of Epidemiology*, *American Statistician*, *Annals of Applied Statistics*, *Annals of the Institute of Statistical Mathematics*, *Annals of Probability*, *Annals of Statistics*, *Applied Mathematics and Optimization*, *Applied Statistics*, *Astrophysical Journal*, *Australian and New Zealand Journal of Statistics*, *Bernoulli*, *Biometrics*, *Biometrika*, *Canadian Journal of Statistics*, *Cancer Research*, *Chemometrics and Intelligent Laboratory Systems*, *Compte Rendu de l'Academie des Sciences (France)*, *Computational Statistics and Data Analysis*, *Computers and Geosciences*, *Cogent Geoscience*, *Ecology*, *Econometrica*, *Environmetrics*, *European Journal of Soil Science*, *Forest Science*, *Freshwater Biology*, *Geoderma*, *Geographical Analysis*, *Geoscientific Model Development*, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, *IEEE Transactions on Geoscience and Remote Sensing*, *IEEE Transactions on Information Theory*, *IEEE Transactions on Signal Processing*, *IEEE Transactions on Vehicular Technology*, *International Journal of Remote Sensing*, *International Regional Science Review*, *International Statistical Review*, *Journal of Agricultural, Biological and Environmental Statistics*, *Journal of the American Statistical Association*, *Journal of Applied Probability*, *Journal of Applied Statistics*, *Journal of Computational and Graphical Statistics*, *Journal of Contaminant Hydrology*, *Journal of Econometrics*, *Journal of Environmental Economics and Management*, *Journal of Geophysical Research*, *Journal of Hydrology*, *Journal of the Indian Society of Agricultural Statistics*, *Journal of the Italian Statistical Society*, *Journal of Multivariate Analysis*, *Journal of Official Statistics*, *Journal of Precision Agriculture*, *Journal of the Royal Statistical Society*, *Journal of Statistical Planning and Inference*, *Journal of Statistical Software*, *Journal of Time Series Analysis*, *Landscape Ecology*, *Linear Algebra and its Applications*, *Mathematical Geology*, *Mathematical Geosciences*, *Metrika*, *Papers in Regional Science*, *Pattern Recognition*, *Perceptual and Motor Skills Psychological Reports*, *Proceedings of the American Mathematical Society*, *Proceedings of the National Academy of Sciences*, *Psychometrika*, *Regional Science and Urban Economics*, *Scandinavian Journal of Statistics*, *Science Advances*, *Soil Science Society of America Journal*, *Spatial Statistics*, *Statistica Neerlandica*, *Statistica Sinica*, *Statistical Inference for Stochastic Processes*, *Statistical Methods and Applications*, *Statistical Science*, *Statistics*, *Statistics and Computing*, *Statistics and Probability Letters*, *Statistics in Medicine*, *Statistics Surveys*, *Stochastic Environmental Research and Risk Assessment*, *Stochastic Models*, *Technometrics*, *Test*, *Vegetatio*, *Water Resources Research*, *WIREs*

Reviewer of articles for *Mathematical Reviews* and *Zentralblatt für Mathematik*

Reviewer of research proposals for National Science Foundation, National Institutes of Health, National Aeronautics and Space Administration, National Security Agency, Air Force Office of Scientific Research, Army Research Office, Environmental Protection Agency, Guggenheim Foundation, Natural Sciences and Engineering Research Council of Canada, U.K. Science and Engineering Research Council, Scottish Office, Australian Research Council, Iowa Academy of Sciences, M.J. Murdock Charitable Trust, MONTS (Montana University System), Swiss National Science Foundation, Hong Kong Research Grants Council, Austrian Science Foundation, Israel Science Foundation, Royal Society of New Zealand, Australian Academy of Technological Sciences and Engineering, Agence National de Recherche (France), Fondecyt (Chilean National Science and Technology Commission)

Reviewer of US National Research Council Reports

Reviewer in the External Review Program of the Statistical and Psychometric Services Division, Educational Testing Service, 1985

Reviewer of promotion and tenure cases for various Australian, U.S., and other universities, 1986-present

External Examiner for Ph.D. theses presented to Australian National University, 1978, 1980; Latrobe University, 1981; Macquarie University, 1983, 1986; University of the Witwatersrand, 1995; University of Western Australia, 1997, 1999, 2001; University of Montreal, 2000; University of Wageningen, 2002; University of Toulouse, 2005; University of Newcastle, 2006; University of Paris, 2007; University of Toulouse, 2009; University of Paris, 2011, University of Montpellier, 2020

External Examiner for Masters thesis presented to University of Western Australia, 2018

#### *Statistical consulting:*

Many research problems from other disciplines have a statistical component. I have been consultant statistician on: design and analysis of breast cancer trials (Medicine), sampling English syntax from various books (Humanities), an urban study of the activities of West Lakes residents (Geography), change of styles of French authors through the 18th, 19th and 20th Centuries (Humanities), a comparison of swabs used in surgery (Medicine), an analysis of tree varieties (Biology), a comparison of delinquency among males and females in South Australia (Sociology), linear regression problems (Chemistry), pancreatic islet transplantation in diabetic rats (Medicine), muscle-tissue excitation (Medicine), tumor growth curves (Medicine), a study of left-handedness (Psychology), investigating mother-infant interaction (Education), detecting chemotaxis in neutrophils (Medicine), studying the needs of nurses' education in South Australia (Education), causes of absenteeism in high schools (Education), prediction of student numbers (Administration), elective colon surgery trials (Medicine), analysis of call numbers (Library), psychosomatic aspects in rheumatoid arthritis (Medicine), drug effectiveness for asthmatics (Medicine), in vitro fertilization (Medicine), somatotype rating of sportsmen and sportswomen (Education), estimating seal populations (Biology), spatial analysis of soil-water infiltration (Agriculture), point-pattern analysis of behavioral sequences (Veterinary Medicine), point-of-purchase study (Economics), defining the market area of meat-packing plants (Economics), perception of women's business clothing (Textiles and Clothing), parent-offspring mixture models (Genetics), teenage body satisfaction (Textiles and Clothing), simulating reacting turbulent flow (Chemical Engineering), generalized least squares fitting with constraints (Electrical Engineering), management of Gopher tortoises (Animal Ecology), spatial analysis of farmland salinity (Agriculture), quality of health care (Public Health), doctor-level estimation of prescriptions (Pharmaceutics), spatial design of integrated circuit manufacturing (Manufacturing Design), toxic waste-site characterization (Environmental Science), prediction of snow-water equivalent (Hydrology), contamination of water by agricultural waste (Environmental Science), spatial pattern of soybean infestation (Plant Pathology), estimation of finish parameters (Optical Engineering), optimal spacing of ice-core locations in Antarctica (Glaciology), precision agriculture (Agriculture), statistical modeling of geophysical processes (Atmospheric Sciences), remote sensing of vegetation and soils to assess agricultural production (Agriculture), prawn stock assessment in Spencer Gulf (Fisheries), design of aerosol-volume-closure experiments (Atmospheric Physics), wetland construction (Agricultural Engineering), locations of logjams on a river (Natural Resources), classification of compounds from mass-spectrogram data (Chemistry), spatial distribution of racoon rabies (Epidemiology), design of a study of wetland characteristics (Natural Resources), analysis of surface-water run-off into waters of the Great Barrier Reef (Hydrology), statistical design and analysis of NEON: National Ecological Observatory Network (Ecology), rural versus urban access to child mental health services in Ohio (Sociology), control charting of probabilities (Integrated Systems Engineering), tests for clustering of Type 1 and Type 2 neurons (Computer Science and Engineering), mapping for marine rescue (Marine Safety), spatio-temporal statistics in operations analysis (Defense), spatial modeling of paleo data from Antarctic moss (Biology), geodesign (Urban Planning), prediction of the age of stone tools (Archeology), design of micro-meteorological experiments to determine effect of logging in NSW forests (Environmental Management), treatment and mortality outcome of Type 2 diabetes (Endocrinologist)

#### **Current Research Interests**

Theory and applications of spatial and spatio-temporal stochastic models; Bayes and empirical-Bayes methods for hierarchical statistical models; environmental informatics; statistical remote sensing

#### **Research Experience (amounts shown do not include University cost share)**

Joint Principal Investigator, Australian Research Grants Scheme; "Project Forecast," 1977-1982 (A\$65,000)

Principal Investigator, Flinders University Research Budget; “Project Robustness,” 1983 (A\$5,000)

Principal Investigator, Iowa State University (NIH); “Modelling Tumor Growth,” 1984 (\$2,500)

Principal Investigator, National Science Foundation; “Spatial Statistics,” 1985-1987 (\$36,000)

Principal Investigator, Bureau of the Census; “Robustness of Regression Estimates of Decennial Census Coverage Error,” 1986 (\$8,000)

Principal Investigator, Bureau of the Census; “Robustness of Empirical Bayes Estimators of Decennial Census Coverage Error,” 1986-1987 (\$9,500)

Principal Investigator, Bureau of the Census; “Quantile Estimators of Decennial Census Coverage Error,” 1987-1988 (\$15,500)

Principal Investigator, National Science Foundation; “Statistics of Spatial Data,” 1987-1989 (\$105,000)

Principal Investigator, Bureau of the Census; “Empirical Bayes Estimation of Undercount: Effects of Misweighting,” 1988-1989 (\$28,000)

Principal Investigator, National Science Foundation; “Statistics for Spatial Data,” 1989-1990 (\$15,000)

Principal Investigator, Bureau of the Census; “Weighted Smoothing of Estimated Undercount,” 1989-1990 (\$31,000)

Principal Investigator, Bureau of the Census; “Estimation of Model Variance in Empirical Bayes Smoothing,” 1990-1991 (\$19,000)

Principal Investigator, National Science Foundation; “Statistics for Spatial Data,” 1990-1992 (\$86,000)

Principal Investigator, Iowa State University (Carver Grant); “Digital Image Analysis Using Spatial Statistics,” 1992 (\$14,000)

Principal Investigator, Ames Laboratory; “Change of Support Spatial Statistics Predictions,” 1992 (\$13,000)

Principal Investigator, Texas Institute of Applied Environmental Research, Tarleton State University, Texas; “Spatial Statistics for Livestock and the Environment: A National Pilot Project,” 1992-1993 (\$20,000)

Principal Investigator (with J. L. Davidson as Co PI), National Science Foundation and National Security Agency; “Spatial Statistics with Image Algebra,” 1992-1994 (\$170,000)

Principal Investigator (with J. L. Davidson as Co PI), Office of Naval Research; “Spatial Stochastic Processes with Image Algebra,” 1992-1995 (\$251,000)

Principal Investigator (with D. H. Cook, M. S. Kaiser, S. N. Lahiri, J. J. Majure, and M.J. Daniels as Co PIs), Environmental Protection Agency; “Spatial Statistics Research Applied to Resource Monitoring Programs,” 1994-1999 (\$897,726)

Principal Investigator (with J. L. Davidson as Co PI), Office of Naval Research; “Inference for Spatial Stochastic Processes,” 1995-1998 (\$449,616)

Co-Principal Investigator (with D. L. Isaacson as PI and 6 other Co PIs), National Science Foundation; “Computing Equipment to Support Research in Statistics,” 1997-1998 (\$64,211)

Co-Principal Investigator (with H.S. Stern as PI), National Institutes of Health; “Inference for Extremes in Disease Maps of Small Areas,” 1998-2000 (\$70,936)

Principal Investigator, Office of Naval Research; “Statistical Inference for Change-of-Aperture Problems in Command and Control,” 1999-2002 (\$499,606)

Principal Investigator (with L.M. Berliner and C.K. Wikle as Co PIs), National Science Foundation/Environmental Protection Agency; “Hierarchical Statistical Analysis of Global and Regional Environmental Data,” 1999-2002 (\$325,000)

Principal Investigator, Environmental Protection Agency; “Workshop on Hierarchical Modeling in Environmental Statistics,” 2000 (\$15,020)

Principal Investigator, Office of Naval Research; “Spatial Statistics for Command and Control,” 2001-2004 (\$482,851)

Principal Investigator, San Diego State University Foundation and The Ohio State University Research Foundation; “Statistical Methods for Integration, Interpretation and Management of Command and Control (C2) Information,” 2002-2003 (\$45,000)

Principal Investigator (with L. M. Berliner and K. C. Jezek as Co-PIs), National Science Foundation; “Dynamics of Ice Streams: A Physical Statistical Approach,” 2002-2006 (\$366,525)

Principal Investigator, Commonwealth Scientific and Industrial Research Organization, Australia; “Prediction of Nonlinear Spatio-Temporal Functionals,” 2003-2004 (\$11,351)

Principal Investigator, Environmental Protection Agency/American Chemistry Council; “From Sources to Biomarkers: A Hierarchical Bayesian Approach for Human Exposure Modeling,” 2004-2009 (\$526,986)

Principal Investigator, Office of Naval Research; “Optimal Mapping when Datasets are Massive,” 2004-2007 (\$342,478)

Co-Principal Investigator (with T. Hsing as PI), Oak Ridge National Laboratories; “Statistical Analysis of Spatio-Temporal Models with Application to Sensor Networks,” 2005-2007 (\$120,000)

Principal Investigator, National Science Foundation; “Spatial Prediction of Surfaces in the Presence of Uncertainty,” 2007-2009 (\$110,000)

Principal Investigator, National Center for Atmospheric Research; “Spatial Random Effects and Multiresolution Lattice Models,” 2008-2009 (\$40,997)

Principal Investigator, Office of Naval Research; “Uncertainties on Networks,” 2008-2011 (\$302,904)

Co-Principal Investigator (with A. Michalak, U. Michigan, as PI), National Aeronautics and Space Administration (NASA); “Mapping Global CO<sub>2</sub>: Development and Application of Geostatistical Algorithms for Gap Filling and Uncertainty Assessment for the Orbiting Carbon Observatory,” 2008-2011 (\$807,562; OSU subcontract: \$246,181)

Co-Principal Investigator (with A. Braverman, JPL, as PI), NASA; “Geostatistical Data Fusion for Remote Sensing Applications,” 2009-2012 (\$1,257,850; OSU subcontract: \$365,228)

IBM Faculty Award; “Bayesian Spatio-Temporal Analysis of Very Large Datasets,” 2009-2010 (\$5,000)

Principal Investigator, Jet Propulsion Laboratory, NASA; “Statistical Properties of OCO-2 Retrievals,” 2010-2011 (\$142,912)

Principal Investigator, Naval Surface Warfare Center Dahlgren Division, Department of the Navy; “Spatio-Temporal Statistical Methods,” 2011 (\$64,623)

Co-Principal Investigator (with A. Braverman, JPL, as PI), NASA; “Likelihood-Based Quantification of Agreement between Climate Model Output and NASA Data Records,” 2011-2015 (\$1,329,700; OSU subcontract: \$229,274)

Co-Principal Investigator (with S. Holan, U. Missouri, as PI), NSF; “NCRN-MN: Improving the Interpretability and Usability of the American Community Survey through Hierarchical Multiscale Spatio-Temporal Statistical Models,” 2011-2016 (\$2,854,170; OSU subcontract: \$727,200)

Principal Investigator, JPL; “Assessment of Statistical Properties of Atmospheric InfraRed Sounder (AIRS) CO<sub>2</sub> Retrievals,” 2011-2012 (\$50,000)

Co-Principal Investigator (with A. Braverman, JPL, as PI), NASA; “Multivariate Data Fusion and Uncertainty Quantification for Remote Sensing,” 2012-2015 (\$1,496,280; Cressie subcontract: \$400,776)

Principal Investigator, NASA; “Precisions and Accuracies of Estimated XCO<sub>2</sub> for the OCO-2 Mission,” and Science Team member of NASA OCO-2 Mission, 2013-2017 (\$208,002)

Chief Investigator, CSIRO (Flagship Project); “Addressing the Reduction of GHG Emissions from Agriculture and Forestry Production through Outcomes Delivered from the Statistical Sciences,” 2013-2014 (AU\$50,000)

Chief Investigator, Australian Research Council Discovery Project; “Spatio-Temporal Statistics and its Application to Remote Sensing,” 2015-2018 (AU\$402,500)

Manager of Australian Bureau of Statistics contract (N. Cressie and A. Zammit-Mangion Co Investigators); “Spatio-

Temporal Small Area Estimation,” 2017-2018 (AU\$70,000)

OCO-2 Science Team member, NASA; “Spatial Statistical Analysis of OCO-2 Data,” 2018-present (AU\$0)

Chief (and lead) Investigator, Australian Research Council Discovery Project; “Bayesian Inversion and Computation Applied to Atmospheric Flux Fields,” 2019-2022 (AU\$505,000)

Chief Investigator, Special Research Initiative, Australian Research Council; “Securing Antarctica’s Environmental Future,” led by Monash University, 2020-2027 (Total: AU\$36,000,000)

### **Professional Affiliations**

American Statistical Association

Australian Academy of Science

Institute of Mathematical Statistics

International Association for Mathematical Geosciences

International Society for Bayesian Analysis

International Statistical Institute

Royal Statistical Society

Spatial Econometrics Association

Statistical Society of Australia

The International Environmetrics Society



## Professional Activities (for 2017, 2018, 2019, 2020)

### 2017

January	Invited presentation (via WebEx) to National Academy of Sciences discussion (of Yield Models for the National Agricultural Statistics Services), Washington DC, USA; “Fusing satellite data”
February	Invited Speaker at Frontiers in Social Statistics Methodology Workshop, Sydney, Australia; “Spatial modelling of multivariate socio-economic data”
March	Presented Al Kindi Lectures at King Abdullah University of Science and Technology (KAUST), Jeddah, Saudi Arabia; “The carbon club”; and “A conditional approach to multivariate spatial modelling” Participated in Climate Science Day, US Congress, Washington DC, USA Attended NASA OCO-2 Science Team Meeting and gave speed talk on CO <sub>2</sub> -flux research, Pasadena, CA, USA Participated in US Census Bureau’s Scientific Advisory Committee Meeting, Suitland, MD, USA
April	Co-authored two invited papers at European Geophysical Union (EGU) General Assembly 2017, Vienna, Austria; (with A. Zammit-Mangion et al.) “Global CO <sub>2</sub> flux inversions from remote-sensing data with systematic errors using hierarchical statistical models”; (with D. Wright et al.) “The Ecological Marine Units as a framework for collaborative data exploration, distribution, and knowledge building” Participated in NSF-Census Research Network Spring Meeting, US Census Bureau, Suitland, MD, USA
May	Presented an invited seminar (with A. Zammit-Mangion) at Australian Bureau of Statistics, Belconnen, ACT, Australia; “A conditional approach to multivariate spatial covariance models” Invited seminar speaker, Institute of Statistical Science, Academia Sinica, Taipei, Taiwan; “The Carbon Club: Measuring and mapping carbon dioxide from remote sensing satellite data” Presented an invited paper at Symposium on Complex Data Analysis, Hsinchu, Taiwan; “A conditional approach to multivariate spatial modelling”
July	Presented Keynote Address, International Conference on Robust Statistics 2017, University of Wollongong, Australia; “Robust statistical methods in the geosciences” Presented an invited paper (with co-authors R. McDonald and A. Zammit-Mangion) at Small Area Estimation Conference, SAE 2017, Paris, France; “A spatial conditional approach to modelling unemployment and poverty in the counties of Missouri”
August	Presented an invited paper at Opening Workshop of SAMSI’s year-long Program on Mathematical and Statistical Methods for Climate and Earth System (CLIM), Research Triangle, NC, USA; “A bird’s-eye view of statistics for remote sensing data”
September	Presented Keynote Address (Matheron Lecture), International Association of Mathematical Geosciences 2017 Conference, Fremantle, Australia; “A conditional approach to multivariate geostatistics”
October	Attended NASA OCO-2 Science Team Meeting and gave two speed talks, one on modelling spatial dependence of OCO-2 retrievals and other on statistical approaches to generate Level 3 products Presented the Belz Lecture to Statistical Society of Australia, Victorian Branch, Melbourne. “A bird’s-eye view of statistics for remote sensing data”
November	Presented Keynote Address, ANU Research School of Finance, Actuarial Studies and Applied Statistics 2017 Summer Camp, Murrumbidgee, NSW; “A bird’s-eye view of statistics for remote sensing

data”

## 2018

- March Attended NASA OCO-2 Science Team Meeting and gave an invited plenary talk in a session on Uncertainty Quantification, Pasadena, CA, “Optimal aggregation and minimum uncertainty: Weighted aggregation of retrievals”
- April Presented an invited paper at Workshop on Forecasting from Complexity, Institute for Mathematics and its Applications, Minneapolis, MN, “Inference for spatio-temporal changes of Arctic sea ice”
- May Invited seminar speaker, Washington Statistical Society, Washington DC; “Inference for count data”  
New Fellow Presentation at 2018 Science at the Shine Dome Conference, Australian Academy of Science, Canberra, ACT, Australia; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”
- June Invited seminar speaker (with A. Zammit Mangion) at Australian Bureau of Statistics, Belconnen, ACT, Australia; “Small area estimation of labour force unemployment using a spatio-temporal Bayesian hierarchical model”  
Invited seminar speaker in NIASRA Seminar Series, University of Wollongong, Australia; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”
- July Presented an invited paper at Joint Statistical Meetings, Vancouver, BC, Canada; “Traversing the space-time cube”
- August Presented a contributed paper at Australian Statistical Conference 2018, Melbourne, Australia; “Optimally weighted aggregations of satellite remote sensing data”
- September Attended IAOS-OECD 2018 Conference, International Association of Official Statistics, Paris, France
- November Presented Moyal Lecture (and received Moyal Medal), Macquarie University, Sydney, Australia; “Statistics, mathematics, and rocket science”  
Invited seminar speaker, Curtin Institute for Computation, Curtin University, Perth, Australia; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”  
Invited speaker at CIRM Conference on Bayesian Statistics in the Big Data Era, Luminy, France; “Inference for spatio-temporal changes of Arctic sea ice”

## 2019

- March Invited speaker, Spatio-Temporal Statistics Reading Group, University of Missouri, Columbia, MO; “False discovery rates to detect signals from incomplete, spatially aggregated data”  
Presented an invited paper at OCO-2 Uncertainty Quantification Breakout Meeting, Caltech, Pasadena, CA; “ False discovery rates to detect signals from incomplete, spatially aggregated data”
- April Invited seminar speaker, School of Mathematics and Statistics, University of Sydney, Australia; “Inference for spatio-temporal changes of Arctic sea ice”  
Co-presented a 1.5-day short course (with A. Zammit-Mangion) for Centre for Environmental Informatics, University of Wollongong, Sydney, Australia; “Spatio-temporal statistics with R”
- May Invited seminar speaker, Department of Mathematics, University of Montpellier, France; “Inference for spatio-temporal changes of sea ice”  
Presented a contributed paper at Bayes2019, Lyon, France; “Bayesian forecasting of infectious diseases with SIRS models”

July	Presented an invited paper at International Workshop on Spatial Statistics, Creswick Campus of University of Melbourne, Australia; “Inference for spatio-temporal changes of Arctic sea ice”  Presented an invited paper (with A Zammit-Mangion) at 2019 Joint Statistical Meetings, Denver, CO, USA; “Global CO2 flux inversions from remote-sensing data with systematic errors using hierarchical statistical models”
August	Presented an invited paper at World Statistics Congress 2019, Kuala Lumpur, Malaysia; “Inference for spatio-temporal changes of Arctic sea ice”; also TIES President’s Invited Lecture; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”; also invited discussion of International Prize in Statistics Lecture, “Prediction, Estimation, and Attribution” by Bradley Efron
September	Invited webinar speaker, Statistical Society of Australia; “Inference for spatio-temporal changes of Arctic sea ice”  Presented a half-day short course at Université de Pau et Pays de l’Adour; “Spatio-Temporal Statistics with R”; also invited seminar speaker; “The role of satellite data in making Bayesian inference on carbon dioxide fluxes”
October	Santaló Lecture, School of Mathematics, Complutense University, Madrid, Spain; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”; also invited seminar speaker at School of Mathematics; “The spatio-temporal random effects model: An application to remote sensing”
December	Presented an invited paper at Fifth Workshop on High-Dimensional Statistical Analysis, Academia Sinica, Taipei, Taiwan; “Atmospheric carbon and the statistical science of measuring, mapping, and uncertainty quantification”

## 2020

February	Inaugural seminar, speaker at Data Analytics for Resources and Environments (DARE) Centre, University of Sydney, Australia; “Physical-statistical modelling in the space-time cube”
May	Co-authored invited paper with A. Barkhordarian, K. Bowman, J. Jewell, and J. Baehr at EGU2020: Sharing Geoscience Online; “Emergent constraints on global carbon-climate feedback from regional atmospheric aridity”

## **Publications: Noel Cressie**

### *Books:*

*Goodness-of-Fit Statistics for Discrete Multivariate Data*, by Timothy R. C. Read and **Noel A. C. Cressie**. Springer, New York, NY, 1988 (211 pp.).

*Statistics for Spatial Data*, by **Noel A. C. Cressie**. Wiley, New York, NY, 1991 (900 pp.). Revised edition: Wiley, New York, NY, 1993 (900 pp.). Paperback edition in the Wiley Classics Library: Wiley, Hoboken, NJ, 2015 (900 pp.).

*Statistics for Spatio-Temporal Data*, by **Noel Cressie** and Christopher K. Wikle. Wiley, Hoboken, NJ, 2011 (588 pp.).

*Spatio-Temporal Statistics with R*, by Christopher K. Wikle, Andrew Zammit-Mangion, and **Noel Cressie**. CRC/Chapman and Hall, Boca Raton, FL, 2019 (380 pp.).

### *Refereed Articles:*

#### **1974**

**Cressie, N.** (1974). A two-dimensional random walk in the presence of a partially reflecting barrier. *Journal of Applied Probability*, **11**, 199-205.

#### **1975**

**Cressie, N.** (1975). A note on the behaviour of the stable distributions for small index  $\alpha$ . *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete*, **33**, 61-64.

Lord, F. M. and **Cressie, N.** (1975). An empirical Bayes procedure for finding an interval estimate. *Sankhyā B*, **37**, 1-9.

#### **1976**

**Cressie, N.** (1976). On the logarithms of high-order spacings. *Biometrika*, **63**, 343-355.

#### **1977**

**Cressie, N.** (1977). On some properties of the scan statistic on the circle and the line. *Journal of Applied Probability*, **14**, 272-283.

**Cressie, N.** (1977). The minimum of higher order gaps. *Australian Journal of Statistics*, **19**, 132-143.

#### **1978**

**Cressie, N.** (1978). A strong limit theorem for random sets. *Advances in Applied Probability (Supplement)*, **10**, 36-46.

**Cressie, N.** (1978). Power results for tests based on high-order gaps. *Biometrika*, **65**, 214-218.

**Cressie, N.** (1978). The exponential and power data transformations. *The Statistician*, **27**, 57-60.

**Cressie, N.** (1978). Estimation of the integral of a stochastic process. *Bulletin of the Australian Mathematical Society*, **18**, 83-93.

**Cressie, N.** (1978). A finely tuned continuity correction. *Annals of the Institute of Statistical Mathematics*, **30**, 435-442.

**Cressie, N.** (1978). Testing for the equality of two binomial proportions. *Annals of the Institute of Statistical Mathematics*, **30**, 421-427.

**Cressie, N. A. C.** (1978). Removing nonadditivity from two-way tables with one observation per cell. *Biometrics*, **34**, 505-513.

**1979**

- Cressie, N.** (1979). A central limit theorem for random sets. *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete*, **49**, 37-47.
- Cressie, N.** (1979). An optimal statistic based on higher order gaps. *Biometrika*, **66**, 619-627.
- Cressie, N.** (1979). A quick and easy empirical Bayes estimate of true scores. *Sankhyā B*, **41**, 101-108.
- Cressie, N. A. C.** and Keightley, D. D. (1979). The underlying structure of the direct linear plot with application to the analysis of hormone-receptor interactions. *Journal of Steroid Biochemistry*, **11**, 1173-1180.

**1980**

- Cressie, N.** (1980). Relaxing assumptions in the one sample t-test. *Australian Journal of Statistics*, **22**, 143-153.
- Cressie, N.** (1980). M-estimation in the presence of unequal scale. *Statistica Neerlandica*, **34**, 19-32.
- Cressie, N.** (1980). The asymptotic distribution of the scan statistic under uniformity. *Annals of Probability*, **8**, 828-840.
- Cressie, N.** and Hawkins, D. M. (1980). Robust estimation of the variogram: I. *Journal of the International Association for Mathematical Geology*, **12**, 115-125.
- Keightley, D. D. and **Cressie, N. A. C.** (1980). The Woolf plot is more reliable than the Scatchard plot in analysing data from hormone receptor assays. *Journal of Steroid Biochemistry*, **13**, 1317-1323.

**1981**

- Cressie, N.** (1981). Transformations and the jackknife. *Journal of the Royal Statistical Society, Series B*, **43**, 177-182.
- Cressie, N.** and Davis, R. W. (1981). The supremum distribution of another Gaussian process. *Journal of Applied Probability*, **18**, 131-138.
- Cressie, N.**, Davis, A. S., Folks, J. L., and Policello, G. E. II. (1981). The moment-generating function and negative integer moments. *American Statistician*, **35**, 148-150.
- Cressie, N. A. C.** and Keightley, D. D. (1981). Analysing data from hormone-receptor assays. *Biometrics*, **37**, 235-249.

**1982**

- Cressie, N.** (1982). A useful empirical Bayes identity. *Annals of Statistics*, **10**, 625-629.
- Cressie, N.** (1982). Playing safe with misweighted means. *Journal of the American Statistical Association*, **77**, 754-759.
- Cressie, N.** (1982). Empirical Bayes estimation for discrete distributions. *South African Statistical Journal*, **16**, 25-37.

**1983**

- Cressie, N.** (1983). Solving extrema problems in statistics by weighted sums. *The Mathematical Scientist*, **8**, 103-113.
- Cressie, N.** and Holland, P. W. (1983). Characterizing the manifest probabilities of latent trait models. *Psychometrika*, **48**, 129-141.
- Keightley, D. D., Fisher, R. J., and **Cressie, N. A. C.** (1983). Properties and interpretation of the Woolf and Scatchard plots in analysing data from steroid receptor assays. *Journal of Steroid Biochemistry*, **19**, 1407-1412.

**1984**

- Cressie, N.** (1984). Towards resistant geostatistics, in *Geostatistics for Natural Resources Characterization*, Part 1, eds G. Verly et al. Reidel, Dordrecht, NL, 21-44.
- Cressie, N.** and Glonek, G. (1984). Median based covariogram estimators reduce bias. *Statistics and Probability Letters*, **2**, 299-304.
- Cressie, N.** and Read, T. R. C. (1984). Multinomial goodness-of-fit tests. *Journal of the Royal Statistical Society, Series B*, **46**, 440-464.
- Cressie, N. A. C.**, Sheffield, L. J., and Whitford, H. J. (1984). Use of the one sample t-test in the real world. *Journal of Chronic Diseases*, **37**, 107-114.
- Hawkins, D. M. and **Cressie, N.** (1984). Robust kriging - a proposal. *Journal of the International Association for Mathematical Geology*, **16**, 3-18.

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