

MSSANZ

NEWSLETTER



MODSIM2019 CONGRESS

Supporting evidence-based decision making: the role of modelling and simulation

National Convention Centre in Canberra

Sunday 1 to Friday 6 December 2019

Congress Convenor: Sondoss El Sawah (UNSW Canberra)

<https://www.mssanz.org.au/modsim2019/index.html>

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MSSANZ aims to promote, develop and assist in the study of all areas of modelling and simulation.

The society's main activity is organising the MODSIM biennial conferences on modelling and simulation (the first in 1974). These conferences are highly regarded and well attended and attract strong student representation through the award of student prizes and subsidised registration.



Program Committee Report on MODSIM2019

Planning for the congress is underway. ASOR (the Australian Society for Operations Research) and DORS (the DST Group led Defence Operations Research Symposium) will again be joining us at MODSIM2019. The over-arching theme of MODSIM2019 is how to use modelling and simulation approaches to support evidence-based decision making.

In addition to the traditional modelling and simulation papers in diverse areas, papers will explore the conference theme from a wide spectrum of disciplinary perspectives organized in different streams. Papers can take a number of approaches including: quantitative and qualitative modelling as well as stakeholder engagement techniques. We encourage innovative approaches using novel modelling objectives. Special themes of the conference will include pragmatic policy evaluation, scenario modelling of uncertain futures under climate change, resource constraints, and conflicting objectives.

We are also ramping up the number of our optional Wednesday workshops for this MODSIM and have invited members to set up Special Interest Groups and nominate for a workshop. The workshops are intended as a collegiate vehicle for discussing and developing thematic research and/or teaching ideas which lead to publication and wide adoption.

Sondoss, Julia and Tony

MODSIM2019 CONGRESS

Supporting evidence-based decision making: the role of modelling and simulation

National Convention Centre in Canberra

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Organising Committee

Associate Professor Mike Ryan (Chair)
Mr Arvind Chandran (Secretary)
Dr Sondoss Elsawah
Dr Julia Piantadosi
Mrs Onelia Croke
Mr Bob Cechet
Associate Professor Barry Croke
Dr Simon Dunstall
Associate Professor Robert Niven
Associate Professor Jason Sharples
Dr Simon Watt
Ms Trudy Green

Program Committee Chairs

Dr Sondoss Elsawah
Dr Julia Piantadosi
Professor Tony Jakeman

Key Dates

Submission of full papers OR extended abstracts: 31 July 2019

Notification of acceptance, rejection and any revisions: 30 August 2019

Submission of revised papers: 4 October 2019

Early bird registration: 30 August 2019

All presenting authors to be registered: 4 October 2019

Last day to register: 22 November 2019

<http://www.mssanz.org.au/modsim2019/dates.html>

MODSIM 2019 Streams

Applied and computational mathematics

Stream leader: Barry Croke

ASOR – Operations research

Stream leader: Simon Dunstall

Biological systems

Stream leaders: Malcom McPhee and David Mayer

Computer science and engineering

Stream leaders: Tim Peterson and Nicholas Car

DORS – Defence and homeland security modelling

Stream leaders: Arvind Chandran and Paul Gaertner

Economics and finance

Stream leaders: Michael McAleer and Chia-Lin Chang

Energy, integrated infrastructure and urban planning

Stream leaders: John Boland and Pascal Perez

Environment and ecology

Stream leaders: Andre Zerger, Brett Bryan and Grant Hamilton

Global change and natural hazards

Stream leaders: Jason Evans and Christoph Rudiger

Health informatics

Stream leaders: Louise Freebairn and Irene Hudson

Participatory decision making and modelling social systems

Stream leaders: Greg Summerell and Oz Sahin

Water Resources

Stream leaders: Francis Chiew and Jai Vaze

Organising Committee

Program Committee

Key Dates

MODSIM 2019 Streams

Two presentation types will be featured at the conference: oral or poster.

For either presentation type, authors can choose whether to submit a full paper or an extended abstract.

For further information see:

<http://www.mssanz.org.au/modsim2019/instructions.html>





President's Report

Next week I will send an email to all members inviting them to nominate a colleague for a Biennial Medal or an Early Career Research Excellence Award. A Biennial Medal is the highest award that the Society bestows, and I strongly encourage you to nominate a worthy colleague. We are also pleased to acknowledge the achievements of our early career researchers (people within 7 years of receiving their PhD), and I encourage you to nominate one of your colleagues for this award also. These will be awarded at the conference dinner at MODSIM 2019 in Canberra. I'd also like to offer my congratulations to the eight very worthy recipients who became Fellows in 2018 (see later in this newsletter for details).

Please also get on your bike and submit a full paper or extended abstract for MODSIM 2019. Unlike previous years, you do not need to submit an expression of interest first, so ensure you get your submission in before the 31 July deadline or you might miss out. We are expecting an expanded poster session this year, so please consider whether your work might be better presented as a poster rather than as an oral. To give everyone a chance to present, delegates will be limited to one oral with a subsequent presentation to be given as a poster.

Best regards,

David Post
MSSANZ President

President's Report

Treasurer's Report

Dear All,

A major activity of MSSANZ during the 2017-18 financial year was finalising the expenses and revenues for MODSIM2017 congress held in Hobart in December 2017. The other main activity has been to pay various expenses for the MODSIM2019 congress. MSSANZ remains in a strong financial position in 2018-19.

The profit made in the 2017-18 financial year was due to registrations and sponsorships for MODSIM 2017. The society still maintains its regular income sources, mainly the interest gained from our 'sinking fund' term deposit and business online saver account. As of the 2018 AGM, the total assets held in December were sufficient to meet payments until late 2019. By this time we will be receiving income from MODSIM 2019 conference registrations.

The 2017-2018 budget has been fully audited by Les Ellis and Associates Pty.

Please contact me via email (barry.croke@anu.edu.au) if you wish view the Society's financial statements or to discuss any aspect of the financial management of MSSANZ.

Barry Croke
MSSANZ Treasurer

Treasurer's Report



Tourism Tasmania Visual Library: <http://visuals.tourismtasmania.com.au>



Report on MODSIM2017/22nd International Congress on Modelling and Simulation Grand Chancellor Hotel, Hobart, 3 December to 8 December 2017.

Report on MODSIM2017



Hobart was the location of the 22nd International Congress on Modelling and Simulation (MODSIM 2017). The Congress was held at the Grand Chancellor Hotel, from 3 December to 8 December 2017. It was held jointly with the 25th National Conference of the Australian Society for Operations Research (ASOR) and the DST Group led Defence Operations Research Symposium (DORS 2017). The theme was "Managing cumulative risks through model-based processes".

The Congress was attended by 687 delegates, including 141 students and participants from 27 countries; we had a particularly strong representation of researchers from China. Over 500 contributed talks were presented across a programme of nine parallel sessions, covering a wide range of topics in Applied and computational mathematics; Biological systems; Computer science and engineering; Defence and homeland security modelling; Economics and finance; Energy, integrated infrastructure and urban modelling; Environment and ecology; Health informatics; Global change and natural hazards; Operations research (ASOR); Participatory decision making and modelling social systems; and Water resources. The full program and abstracts are available at <https://www.mssanz.org.au/modsim2017/index.html>.

For the first time, delegates were able to participate in a poster session. 80 posters were displayed throughout the week and featured on the Tuesday afternoon. Respondents to our post-conference survey overwhelmingly supported holding the poster session at MODSIM2019 (80% Yes, 5% No and 15% No preference).

The Congress featured four plenary talks addressing the conference theme of cumulative risk for domains of sustainable management of marine and coastal ecosystems, exploratory modelling, environment finance, and healthcare modelling. Many thanks to the Program Committee for their work in selecting the speakers. This year's plenary speakers were Dr Beth Fulton (CSIRO), Associate Professor Jan Kwakkel, Delft University of Technology (The Netherlands), Professors Tom Smith and Martine Linnenluecke (Macquarie University) and Professor Leonid Churilov, The University of Melbourne and RMIT University. Following the success of the inaugural mid-career plenaries at MODSIM2015, the rebadged *President's invited plenary for mid-career researchers* were given by Associate Professor Lucy Marshall and Associate Professor Shawn Laffan, both from UNSW. Speaker bio's and their talks are at <https://www.mssanz.org.au/modsim2017/plenary.html>.

On the social front, delegates braved the wintry welcome Hobart provided to attend the opening session and plenary talk on Sunday. This was followed by the welcome reception held in Grand Chancellor. The Congress dinner on Thursday evening saw a night of musical entertainment, good food and company, and the presentation of awards to outstanding researchers in various stages of their careers.

Report on MODSIM2017

2017 Biennial Medallists

Dr Beth Fulton, CSIRO, Australia

Beth leads the marine ecosystem modelling and risk assessment group at CSIRO Oceans & Atmosphere in Hobart. The models developed by her team place equal attention to biophysical and human components of marine and coastal ecosystems. They underpin CSIRO's research into sustainably managing potentially competing uses of marine environments and adaptation to global change and have been used to consider effective means of conserving and monitoring marine ecosystem. Beth is also an Adjunct Professor at the Centre for Marine Socioecology, University of Tasmania where she collaboratively explores sustainable options for the blue economy with students and other researchers.

Professor Craig Simmons, Flinders University, Australia

Craig is a leading groundwater scientist and has been widely recognised for his national and international contributions to groundwater science, science leadership, education and policy reform. His research and teaching awards include the Anton Hales Medal awarded by the Australian Academy of Science and an Australian Award for University Teaching. He was named the 2015 South Australian Scientist of the Year, the 2017 Australian Water Professional of the Year and the 2017 Convocation Medallist of Flinders University. Craig has served as an Editor and Associate Editor for numerous major international journals including Water Resources Research, and the Hydrogeology Journal, Groundwater.

Dr Lu Zhang, University of Melbourne, Australia

Lu is a Senior Principal Research Scientist and Team Leader at CSIRO Land and Water in Australia. He is also Honorary Professor at the China Agricultural University and Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences. He has considerable experience in catchment hydrology, vegetation-water relationships, salt and water balance modelling and ecohydrology. His research has had significant impact on international science and the Australia water industry. He has led major projects for the Murray-Darling Basin Commission, CRC for Catchment Hydrology, Land and Water Australia, Australian Greenhouse Office, ACIAR, and WfHC. Lu collaborates widely with colleagues from CSIRO, Australian universities, and overseas research institutes and universities.

Biennial Medals

1. In every odd-numbered year, to coincide with the Biennial Congress, the Society may confer a limited number of Biennial Medals for 'exceptional research contributions to modelling and simulation, and for promoting the aims of the Society'.
2. Biennial Medallists automatically become Fellows of the Society, and are entitled to use the postnominal 'FMSSANZ'.
3. Any member of the Society may be nominated for a Biennial Medal. The proposer and seconder must be members of the Society. Self-nomination is not permitted.
4. Written nominations should be sent directly to the President of the Society at least three months before the Biennial Congress, and should be accompanied by a written statement and a curriculum vitae of the nominee.
5. Nominations will be reviewed by the Awards Committee who will make recommendations to the Management Committee for ratification.



2017 Biennial Medallists

Dr Beth Fulton



Professor Craig Simmons



Dr Lu Zhang



2017 Early Career Research Excellence Awards

Dr Joseph Guillaume, Australian National University, Australia: In 2014, Joseph completed his PhD at the Australian National University and until recently was a researcher in the Water & Development Research Group at Aalto University, Finland. In April, he commenced his ARC DECRA at the ANU. Joseph's research interests cover uncertainty in model-based science and decision support, the role of uncertain predictions and models in global and local water resource management, the use of visualisation, optimisation, boundary critique and resilience for exploration of uncertainty, evaluation of environmental watering and irrigation efficiency measures under uncertainty, and hydrological model assessment and development.

Dr Chang Huang, Northwest University, China: Huang is an Associate Professor at the Northwest University, China. His research has been recognised in China with his receiving a Talent Fostering grant from the Natural Science Foundation of China. He collaborates widely with Australian and Chinese colleagues on a range of research topics, and is dedicated to advancing and communicating his science. His research focuses on remote sensing, GIScience, and flood inundation modelling. He actively contributes to the international science community as author and prolific reviewer. He has been active within the Society since 2013 as presenter, session organiser and reviewer of MODSIM conference papers. MODSIM has allowed him to broaden his science reach and interests.

Dr Fiona Johnson, University of New South Wales, Australia: Fiona completed her PhD (Civil Engineering) at UNSW, Sydney, receiving the 2011 Malcolm Chaikin prize for Research Excellence at UNSW for the best PhD in her engineering cohort. She worked at the Australian Bureau of Meteorology, helping develop design Intensity-Frequency-Duration relationships for Australia. In 2012, Fiona returned to UNSW as Lecturer Civil and Environmental Engineering. Her research interests cover extreme rainfalls (spatial models, future changes, multi duration relationships), climate model evaluation and applications for water resources projects, improved flood forecasting methods and humanitarian engineering.

Ms Jin Teng, CSIRO Land and Water, Australia: Jin joined CSIRO Land and Water in May 2009 as a Senior Research Scientist. Prior to joining CSIRO, Ms Teng worked as a Senior Climate Modeller for the New South Wales Department of Water and Energy. She has extensive experience in the fields of hydrology, climatology and environmental science. Her primary research areas include hydroclimate modelling, flood inundation modelling, and surface hydrological modelling. She is a member of AGU, EGU, IAHR, MSSANZ and IAHS, and has a sustained strong publication record, high citations and adoption of her science by peers. Jin received the prestigious Women in Research Citation Award 2016 awarded to her by Thomson Reuters.

Dr Yongqiang Zhang, Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Science, China: Until early 2019, Yongqiang led the catchment hydrology team in CSIRO Land and Water. Prior to joining CSIRO, Yongqiang was an Alexander Von Humboldt Fellow in Germany and Eco-Frontier Fellow in Japan. A prolific author in high impact journals, he is internationally recognised for his expertise in catchment hydrology, hydrological modelling and large-scale water and energy balance. Yongqiang is an Associate Editor of Journal of Hydrology. He has led MODSIM sessions on catchment modelling, global water and energy balance, and evapotranspiration estimation for the past several MODSIM conferences.



2017 ECRE awards

Dr Joseph Guillaume



Dr Chang Huang



Dr Fiona Johnson



Ms Jin Teng



Dr Yongqiang Zhang





MODSIM 2017 Student Awards for Presentations

Congratulations to all the awardees!!!

Anna Cresswell, CSIRO, Australia, received her award for a paper titled 'A functional-structural coral model'.

<https://www.mssanz.org.au/modsim2017/B2/cresswell.pdf>

Jordan Pitt, Australian National University, Australia received his award for a paper titled 'Importance of Dispersion for Shoaling Waves'.

<https://www.mssanz.org.au/modsim2017/L12/pitt.pdf>

Jonas Schwaab, Institute for Spatial and Landscape Planning, ETH Zürich, Switzerland received his award for a paper titled 'How to choose the right planning horizon? Using multiobjective optimization to support urban planning.' <https://www.mssanz.org.au/modsim2017/F1/schwaab.pdf>

Hamish Stevens-Bullmore, Lincoln University, New Zealand received his Student Award for a paper titled 'A local sensitivity analysis of Ca²⁺-calmodulin binding and its influence over PP1 activity'.

<https://www.mssanz.org.au/modsim2017/C6/stevensbullmore.pdf>

Elizabeth Trevenen, University of Western Australia, received her Student Award for her paper 'A simulation model for exploring the effects of plant-soil feedbacks on the resilience of plant communities'.

<https://www.mssanz.org.au/modsim2017/B3/trevenen.pdf>

MODSIM 2017 Student Awards for Excellent Paper and Presentation

1. In every odd-numbered year, to coincide with the Biennial Congress, the Society may confer multiple Student Awards for Excellent Paper and Presentation.
2. The Convenor of the Biennial Congress and the President will appoint a Student Awards Committee for the Congress.
3. Nomination and selection procedure for Student Awards are determined by the Student Awards Committee, in consultation with the Management Committee.

MODSIM 2019 Student Awards Information

Students planning to attend the MODSIM 2019 conference can find more information on Student Awards on our conference website at

<https://mssanz.org.au/modsim2019/students.html>



2018 Fellows

Dr Freeman Cook, Freeman Cook and Associates Pty Ltd, Australia and New Zealand: Dr Freeman Cook is an Environmental Physicist specialising in fluid transport, namely the development of measurement and modelling techniques of fluid transport in the natural environment. He started his research career in the DSIR Soil Bureau in New Zealand, before moving across the ditch in 1991 to join CSIRO Environmental Mechanics as a Research Scientist, until recently when he made the decision to form his own consulting company. Freeman has published in excess of 250 journal papers, book chapters, conference papers and reports. He has attended every MODSIM conference since 2001 and has contributed much to the society, particularly as a session organiser over the last decade.

Dr Dean Holzworth, CSIRO, Australia: Dean leads the software engineering team for the Agricultural Production Systems Simulator (APSIM) and currently chairs the Reference Panel of the APSIM Initiative (AI), a multi-organisation, unincorporated Joint Venture overseeing all APSIM development. His skills in managing / coordinating developers from six organisations around the world, his in-depth knowledge of APSIM's software and of farming systems, have helped shape APSIM's significant impact with researchers and farmers worldwide. Dean first attended a MODSIM congress in 1991 and has been a regular attendee since 2005. Since 2011 he has increasingly acted as a session organiser within the Biological Systems stream. Dean recently joined the Environmental Modelling and Software Editorial Board in 2018.

Professor Irene Hudson, RMIT University, Australia: Irene has attended every MODSIM conference since her first in 2003, and stepped up to convening sessions, 2007 to 2011. In 2013, the Society started a Health Stream, and Irene took the role as the convenor of that Stream. It started with a bang, with 5 sessions and 17 papers, and since then the stream has grown in diversity with a wider range of institutions and agencies choosing to attend this conference. Irene is currently Professor of Statistics and Data Analytics, at RMIT Department of Mathematical Sciences, College of Science, Engineering and Health. Her research interests are extensive, with international reputation, publications and student supervision in developing and applying methods to climate change, longitudinal trajectory modelling, time series, epidemiology, brain imaging, psychometrics, biomedical engineering, health metrics, randomised control trial, aggregate data, biomarker method and many fields of informatics, including chemo-informatics, bioinformatics and health informatics.

Dr Shawn Laffan, University of New South Wales, Australia: Shawn's research interests are in the fields of GIS and spatial data analysis, with particular focus on the analysis of biodiversity, modelling of disease outbreaks in animal populations and terrain analysis. His research has been published in peer reviewed international journals, books and conference proceedings since 2001 (119 in print or press), as well as presented at national and international conferences (>70). Attending MODSIM since 2003, Shawn has been a session organiser for every MODSIM congress since 2007.

The MSSANZ president emails the Society members a call for nomination for both Biennial Medallists (odd years) and MSSANZ Fellows (even years). When these call for nominations happen, we strongly encourage members to nominate colleagues whom they consider to be worthy of the awards. More information is available at <http://www.mssanz.org.au/awards/criteria.html>.



2018 Fellows

Dr Freeman Cook



Dr Dean Holzworth



Professor Irene Hudson



Associate Professor
Shawn Laffan





2018 Fellows

Dr Stefan Reis



Dr Stefan Reis, Centre for Ecology and Hydrology (CEH), United Kingdom: Stefan currently heads up the Atmospheric Chemistry and Effects science area of CEH. His research focuses on the integrated modelling and assessment of impacts of air pollution and climate change on human health and ecosystems. His involvement with MODSIM has come through our international 'sister', the International Environmental Modelling Software Society (iEMSs). Travelling from the United Kingdom, he has attended five MODSIMs since 2007. He has organised sessions and supported the Student Awards Committee at each congress and has been active in promoting MSSANZ internationally, as evidenced by colleagues from his institution and others attending several of our conferences. He established links between MSSANZ and the Integrated Assessment Society (TIAS) and is an editor for the Environmental Modelling and Software journal.

Dr Valerie Snow



Dr Valerie Snow, AgResearch Ltd, New Zealand: Val has attended all MODSIM conferences since 2005 and has been a session organiser within the Biological Systems stream since 2013. She has contributed to the development of the simulation model APSIM over the last 24 years advancing aspects of APSIM through the application of Dr Snow's early soil physics training to simulation model development and more recently improving its capabilities in modelling grazed systems. Throughout Dr Snow's career she has been involved (formally and informally) as it evolved from a closed-source largely in-house modelling system to an open-source community model and Dr Snow has been active in promoting its usage. Dr Snow has been on the Editorial Board of Environmental Modelling and Software since 2015 and has been co-Editor-in-Chief of Agricultural Systems since 2017.

Dr Greg Summerell



Dr Greg Summerell, New South Wales Office of Environment and Heritage, Australia: Greg's support of MODSIM started as a delegate in the early 2001, and by 2007 he was co-convening terrain analysis and spatial modelling sessions with John Gallant and Trevor Dowling. This theme is now mainstreamed into many sessions within the Water Resources, Environment and Computer Sciences streams. More recently, reflecting his role as a senior manager within the NSW Office of Environment and Heritage, Greg has turned his attention to the social dimension of science – how science engages with the public and decision-makers. What started off as a few papers in the Participatory and Social Modelling (P&SM) stream in 2015 by people associated with OEH projects now has its own session and a flourishing community. In 2018, Greg accepted the role of co-coordinator of the P&SM stream.

Professor Jeffrey Walker



Professor Jeffrey Walker, Monash University, Australia: Jeff is the Head of the Department of Civil and Environmental Engineering at Monash. His contributions to hydrologic remote sensing, modelling and model-data assimilation – and his leadership and contributions to the modelling and simulation enterprise in general – are evidenced by recognition of his being a world leader in the area of remote sensing and land surface model-data assimilation. Jeff first attended the MODSIM conference and has been a session organiser in every congress, bar one since, 2009.

The MSSANZ Fellowships recognise the dedication of the awardees to promoting the aims of the Society as well as for their contributions to modelling and simulation. We warmly thank all of the 2018 Fellows for their contributions to the congresses and the Society over the years.