



Sunday, 5 December

2pm **Registration and information desk**  
*Cockle Bay Foyer, Level 3, ICC Sydney*

4pm **Newcomer icebreaker**  
*Cockle Bay Room, Level 3, ICC Sydney*

5pm **Welcome to MODSIM2021**  
*Cockle Bay Room, Level 3, ICC Sydney*

5:30pm **Plenary**  
*Cockle Bay Room, Level 3, ICC Sydney*

**Climate change and Australian vegetation: Where are we headed?**  
» Distinguished Professor Belinda Medlyn

6:15pm **Welcome reception**  
*Cockle Bay Room, Level 3, ICC Sydney*

Monday, 6 December

7:30am **Registration and information desk**  
*Foyer, Level 1, New Law Building*

8:45am **Opening session for MODSIM2021**  
*Eastern Avenue Auditorium, University of Sydney*

9:15am **Plenary**  
*Eastern Avenue Auditorium, University of Sydney*

**Anthropomorphic learning: Bridging behavioural science and data science to predict human behaviour**  
» Professor Ganna Pogrebn

10am **Morning tea**  
*Foyer, Level 1, New Law Building*

10:30am **M8. Defence force design and wargaming**  
*Room 024, New Law Building*  
Chaired by: Dr. Cayt Rowe and Dr. David Marlow

10:30am **KEYNOTE: A regret-based incremental elicitation for multi-criteria force design**  
» [Prof. Vicky Mak-Hau](#), Dr. Thang Cao, Prof. John Yearwood

11:10am **An evolutionary approach to balancing and disrupting real-time strategy games**  
» [Mr. Jacob Snell](#), Dr. Martin Masek, Dr. Chiou Peng Lam

11:30am **Invited paper: Analytic Wargaming to Inform Australian Defence Force Design**  
» [GPCAPT Philip Arms](#)

11:50am **Using causal models to evaluate Force Generation options**  
» [Mr. Denis Shine](#), Mrs. Julia Knoll, Dr. Thang Cao

12:10pm **Building blocks for a holistic framework for Integrated Air and Missile Defence**  
» [Dr. Sreeja Rajesh](#), Ms. Nikoleta Tomecko, Mr. Edward Dawson, Mr. Wayne Power

10:30am **L1. Catchment water quality modelling**  
*Room 104, New Law Building*  
Chaired by: Dr. Danlu GUO



Continued from **Monday, 6 December**

- 10:30am **Advances in long-term water quality monitoring through data fusion**  
 » Mr. Trung Dung Nguyen, Prof. Wei Xiang, Dr. Ulrike Bende-Michl, Dr. Zhen He, Dr. Rajalakshmi Rajasekaran
- 10:50am **How does riverine water quality vary across Australia? A continental synthesis of water chemistry states, export patterns and export regimes**  
 » Dr. Danlu GUO, Dr. Anna Lintern, Dr. Shuci LIU, Dr. Camille Minaudo, Dr. Kefeng Zhang, Dr. Rémi Dupas, Dr. Ulrike Bende-Michl, Dr. Clément Duvert
- 11:10am **Revised models for the proportion of suspended sediments in hillslope soil loss – an empirical understanding**  
 » Dr. Mark Silburn
- 11:30am **Can spatial weighting of land use data improve our ability to predict stream water quality?**  
 » Ms. Xiaoyan dai, Mr. Yiwen Xu, Mr. Junjie Li, Ms. Shuijing Zhu, Dr. Danlu GUO, Prof. J. Angus Webb
- 11:50am **Modelling stream salinity using a water-age based approach**  
 » Prof. Andrew Western, Ms. ZAHRA RIAZI, Dr. Ulrike Bende-Michl
- 10:30am **G3. Modelling of bushfire dynamics, fire weather, impact and risk**  
*Room 106, New Law Building*  
 Chaired by: Prof. Khalid Moinuddin
- 10:30am **Assessing the potential for pyrocumulonimbus occurrence using simple fire weather indices**  
 » Prof. Jason Sharples, Prof. Rick McRae
- 10:50am **Underpinning a new approach to predicting blow-up fire events**  
 » Prof. Rick McRae

- 11:10am **A water suppression model for wildfires**  
 » Dr. James Hilton, Dr. Andrew Sullivan, Dr. Matt Plucinski, Mr. William Swedosh
- 11:30am **Coupling vapour and capillary fluxes from the soil to predict surface fuel moisture content**  
 » Ms. Li Zhao
- 11:50am **Stochastic Modelling of Wind and its Implication for Wildfire Spread Predictions**  
 » Ms. Sahar Masoudian, Prof. Jason Sharples, Dr. Zlatko Jovanoski, Dr. Isaac Towers, Dr. Simon Watt
- 12:10pm **Invited paper: Application of neural networks to rate of spread estimation in shrublands**  
 » Dr. Rahul Wadhvani, Dr. Duncan Sutherland, Prof. Khalid Moinuddin, Prof. Jason Sharples
- 10:30am **14. Water modelling in 2050 – Futures and pathways**  
*Room 340, New Law Building*  
 Chaired by: Dr. Baihua Fu and Prof. Tony Jakeman
- 10:30am **National Hydrological projections for Australia: using storylines to communicate plausible future risk to water sensitive communities**  
 » Dr. Vjeko Matic, Dr. Ulrike Bende-Michl, Dr. Louise Wilson, Mrs. Annie Hogben, Dr. Pandora Hope, Dr. Zaved Khan, Dr. Alison Oke, Dr. Sri Srikanthan, Dr. Margot Turner
- 10:50am **Socioeconomic scenarios of water futures in the era of uncertainty and change**  
 » Dr. Baihua Fu, Dr. Wendy Merritt, Ms. Caroline Rosello, Dr. Serena Hamilton, Dr. Carina Wyborn, Dr. Joseph Guillaume, Ms. Jenny Riches, Ms. Sarah Stevens, Prof. Tony Jakeman
- 11:10am **What will industry 4.0 and irrigation modernisation mean for water modelling in 2050?**  
 » Mr. Sunail Hasnain, Prof. Tony Jakeman, Dr. Joseph Guillaume, Dr. Mohammad Ejaz Qureshi, Dr. Andrew Ross



Continued from **Monday, 6 December**

11:30am **Lessons from uncertainty management of the Basin Plan surface water Sustainable Diversion Limit**  
 » [Ms. Leila Noble](#), Dr. Joseph Guillaume, Dr. Carina Wyborn, Prof. Tony Jakeman

10:30am **A1. Computational statistics and data analysis**  
*Room 342, New Law Building*  
 Chaired by: Prof. Georgy Sofronov

10:30am **On optimal stopping problems with positive discounting rates and related Laplace transforms of first hitting times in models with geometric Brownian motions**  
 » [Dr. Pavel Gapeev](#)

10:50am **Invited paper: Simulating population-size-dependent birth-and-death processes using CUDA and piecewise approximations**  
 » Dr. Sophie Hautphenne, [Dr. Brendan Patch](#)

11:10am **Multi-way correspondence analysis approach to examine Nobel Prize data from 1901 to 2018**  
 » [Mr. Turki Alhuzali](#), Prof. Eric J Beh, Dr. Elizabeth Stojanovski

11:30am **The use of exponential smoothing (ES), Holts and Winter (HW) and ARIMA models in electricity price analysis**  
 » [Mr. Yasir Alsaedi](#), Mr. Gurudeo Anand Tularam

11:50am **Robust detection of statistically significant correlations in geophysical timeseries: A Monte Carlo method accounting for serial dependence and sampling uncertainty**  
 » [Mr. Matt Armstrong](#), Dr. Anthony Kiem, Prof. George Kuczera

12:10pm **Use of auxiliary information in estimation of the finite population mean: An exponential type of estimator**  
 » [Prof. Irene Hudson](#), Dr. Kalim Ullah, Dr. Salman Cheema, Dr. A. Khan, Dr. A. Abdur-R-Rahman, Dr. Z. Hussain

10:30am **B1. Pasture and native vegetation**  
*Room 344, New Law Building*  
 Chaired by: Mrs. Jo Owens and Dr. Malcolm McPhee

10:30am **Delivering and applying the Pasture API to regional farming systems**  
 » [Mr. Neville Herrmann](#), Dr. Dean Thomas, Dr. Patrick Mitchell

10:50am **Disentangling the effects of management and climate on perennial grass pastures and the degradation that follows multi-year droughts**  
 » [Mrs. Jo Owens](#), Dr. Greg McKeon, Dr. Peter O'Reagain, Mr. John Carter, Dr. Grant Fraser, Dr. Joe Scanlan

11:10am **Using GRASP to interpret soil and pasture nitrogen dynamics of subtropical sown pasture systems**  
 » [Dr. Alice Melland](#), Dr. Jeffrey Clewett, Mr. Colin Paton, Dr. Jochen Eberhard

11:30am **Modelling grassland foliage phenology responses to soil water availability**  
 » [Dr. Jinyan Yang](#), Dr. Belinda Medlyn, Dr. Craig Barton, Dr. Amber Churchill, Dr. Martin De Kauwe, Dr. Mingkai Jiang, Dr. ARJUNAN KRISHNANANTHASELVAN, Prof. David Tissue, Prof. Elise Pendall, Prof. Sally Power

11:50am **Preliminary results of parameterisation of DairyMod pasture model for tropical pasture; Brachiaria**  
 » [Mr. J.M.P Jayasinghe](#), Prof. Daniel J. Donaghy, Prof. K. G. Pembleton, Dr. David G. Barber, Dr. Thiagarajah Ramilan

10:30am **K12. Modelling and remote sensing of the soil-plant-atmosphere continuum for environmental benefits in cities**  
*Room 346, New Law Building*  
 Chaired by: Dr. Ray Marcos Martinez and Dr. Huade Guan

10:30am **Web-based analyses of urban heat, vegetation and vulnerable populations to inform urban planning**  
 » [Dr. Ray Marcos Martinez](#), Dr. Louise Ord, Dr. Sorada Tapsuwan, Ms. Jacqui Meyers



Continued from **Monday, 6 December**

- 10:50am **Optimizing the multiple hydro-environmental benefits of green infrastructures using relative performance evaluation methods**  
» [Prof. Ting Fong May Chui](#)
- 11:10am **Improving the Jarvis-type model with modified temperature and radiation functions for sap flow simulations**  
» [Dr. Hailong Wang](#), Dr. Huade Guan, Dr. Na Liu, Prof. Chris Soulsby, Prof. Doerthe Tetzlaffg, Prof. Xinping Zhang
- 11:30am **The cooling effect of vegetation evapotranspiration on urban heat island is more pronounced during nighttime and heat waves**  
» [Prof. Guoyu Qiu](#)
- 11:50am **Current and projected stocks of materials in Australian buildings and their environmental footprint**  
» Dr. Natthanij Soonsawad, [Dr. Ray Marcos Martinez](#), Dr. Heinz Schandl
- 12:10pm **Cooling Adelaide summers by enhanced passive stormwater infiltration**  
» [Dr. Huade Guan](#), Dr. Zijuan Deng, Prof. Roger Clay, Ms. Xanthia Gleeson, Mr. Yifei Zhou, Dr. Tim Johnson
- 10:30am **J6. Groundwater hydrology**  
*Room 440, New Law Building*  
Chaired by: Prof. Willem Vervoort and Dr. Tim Peterson
- 10:30am **Groundwater sensitivity to climate across Australia**  
» Ms. Xinyang Fan, [Dr. Tim Peterson](#), Dr. Benjamin Henley, Dr. Meenakshi Arora
- 10:50am **Bayesian groundwater vulnerability assessment**  
» [Ms. Nasrin Taghavi](#), Dr. Robert Niven, Dr. David Paull, Dr. Matthias Kramer

- 11:10am **Surface-groundwater causal interactions identified with convergent cross-mapping**  
» [Mr. Giancarlo Bonotto](#), Dr. Tim Peterson, Dr. Keirnan Fowler, Prof. Andrew Western
- 11:30am **Comparison of Darcy's law and Brinkman equation on saltwater intrusion simulations**  
» [Ms. Jingwei Yao](#), Prof. Hong Zhang
- 11:50am **Modelling stream depletion due to groundwater extraction with a lumped conceptual hydrological model**  
» [Mr. Michael Finger](#), Mr. Seker Mariyapillai
- 12:10pm **Mathematical modelling for calcite dissolution in a managed aquifer recharge system**  
» Mr. Philip Cole, Ms. Ruidi Yang, [Ms. Shurui Yi](#), Prof. John Boland, Prof. Bronwyn Hajek
- 10:30am **C3. Open distributed modelling**  
*Room 442, New Law Building*  
Chaired by: Dr. Louise Bruce and Dr. Songshan Yue
- 10:30am **Environmental Information Modelling: bringing sustainable development into the digital age**  
» [Dr. Louise Bruce](#), Mr. Philip Kindleysides
- 10:50am **Effects of ground-level ozone pollution on yield losses of winter wheat in the North China Plain**  
» [Dr. Hongquan Song](#)
- 11:10am **An action-based conceptual framework for the reproduction of geographic simulation processes**  
» [Ms. Zhiyi Zhu](#), Prof. Min Chen, Dr. Songshan Yue, Mr. Zaiyang Ma, Prof. Yongning Wen
- 11:30am **Study on sharing and reusing geographic simulation models in web environment**  
» [Mr. Kai Xu](#), Prof. Min Chen, Dr. Songshan Yue, Prof. Yongning Wen, Prof. Guonian Lu, Dr. Fengyuan Zhang, Dr. Jin Wang



Continued from **Monday, 6 December**

- 11:50am **A customizable process-based strategy for collaborative geographic analysis**  
 » [Mr. Zaiyang Ma](#), Prof. Min Chen, Dr. Songshan Yue, Ms. Zhiyi Zhu, Prof. Yongning Wen
- 12:10pm **Algorithms for diffusion and convection models implemented using open source libraries**  
 » [Dr. Elizabeth Mas-Hernandez](#), Mr. Eduardo Mancilla-Barría, Mr. Mauricio De la Torre, Dr. Stefan Berres
- 12:30pm **Lunch**  
*Foyer, Level 1, New Law Building*
- 1:30pm **M8. Defence force design and wargaming**  
*Room 024, New Law Building*  
 Chaired by: Dr. Niem Tri
- 1:30pm **Analytic approaches to understanding future Defence workforce needs**  
 » [Dr. Cayt Rowe](#), Mr. Adam Crockett, Mr. Steve Rohan-Jones, Mr. Shaffique Aljoorfri, Mr. Nicholas Tay, Dr. Andrew Coutts, Mr. Charles Bishop, Mr. Anthony Pay, Mr. William Sim, Ms. Verity Date, Mr. Jake Boyce
- 1:50pm **Adversarial Concept Exploration: Blending Adversarial Scenario Analysis and Concept Exploration**  
 » [Mr. Tristan Goss](#), Dr. Phong Nguyen, Ms. Maggie Tong, Dr. Sreeja Rajesh
- 2:10pm **An evaluation model and tool for Defence capability options**  
 » [Dr. Minh-Tuan Nguyen](#), Dr. Andrew Coutts, Ms. Jullia Knoll, Dr. Mathew Zuparic, Dr. James Peacock, Dr. Daniel Bilusich, Mr. Michael Galister, Mr. Kevin Johns
- 2:30pm **Visualisation Library: an accessible, extensible and customisable information visualisation suite for Defence Operations Research**  
 » [Ms. April Tieu](#), Ms. Rebecca Ong

- 2:50pm **Consideration of enabling and enterprise functions within Defence force design**  
 » [Mr. Jake Boyce](#), Mr. Nicholas Tay, Dr. Cayt Rowe
- 3:10pm **Exploring possible conformity effects in military experimentation: A pilot study**  
 » [Ms. Lauren Francis](#)
- 1:30pm **L1. Catchment water quality modelling**  
*Room 104, New Law Building*  
 Chaired by: Dr. Mark Silburn
- 1:30pm **Invited paper: Application of the improved catchment water quality plugin CLOE in eWater Source**  
 » [Mr. Joel Hall](#), Dr. Baihua Fu, Dr. Gayan Gunaratne
- 1:50pm **Catchment-coast modelling for conjunctive management of eutrophication risks in the Hauraki Gulf and its tributaries**  
 » [Dr. Sandy Elliott](#), Dr. Helen MacDonald, Dr. Linh Hoang, Dr. Christian Zammit, Ms. Manawa Huirama
- 2:10pm **Opportunistic Emulation of Computationally Expensive Simulations via Deep Learning**  
 » [Dr. Conrad Sanderson](#), Dr. Dan Pagendam, Mr. Brendan Power, Dr. Frederick BENNETT, Dr. Ross Darnell
- 2:30pm **Modelling to determine key drivers of water quality off sugarcane paddocks in the Great Barrier Reef catchment**  
 » [Mr. Brendan Power](#), Dr. Meleny Shaw, Dr. Maria Vilas, Dr. Marina Farr, Mr. Matthew Thompson, Mr. Mark Poggio
- 2:50pm **Characterising soil-surface nutrient excess to improve prediction of nutrient export from agricultural land**  
 » [Dr. Robert Sargent](#), Dr. Anna Lintern, Prof. Andrew Western, Prof. Perran Cook
- 1:30pm **G3. Modelling of bushfire dynamics, fire weather, impact and risk**  
*Room 106, New Law Building*  
 Chaired by: Prof. Jason Sharples



Continued from **Monday, 6 December**

- 1:30pm **Improvement of drag model for non-burning firebrand transport in Fire Dynamics Simulator**  
» [Dr. Rahul Wadhvani](#), [Dr. Duncan Sutherland](#), [Prof. Graham Thorpe](#), [Prof. Khalid Moinuddin](#)
- 1:50pm **Incorporating directionality in the modelling of firebreaks using a two-dimensional dynamic fire spread simulator**  
» [Mr. William Swedosh](#), [Dr. James Hilton](#)
- 2:10pm **Bushfire propagation speed: Combining the effects of wind and slope**  
» [Dr. Stefan Berres](#), [Mx. Noemí Cárcamo](#)
- 2:30pm **Modelling terrain for wildfire purposes**  
» [Prof. Rick McRae](#)
- 2:50pm **Spotfire Utilisation Project: Development of a mapping tool for regions prone to vorticity-driven lateral spread**  
» [Dr. Rachel Badlan](#), [Prof. Jason Sharples](#)
- 3:10pm **Pyrogenic potential model calibration from field-scale junction fire experiments**  
» [Ms. Sahar Masoudian](#), [Dr. Alex Filkov](#), [Prof. Jason Sharples](#), [Prof. Trent Penman](#), [Dr. James Hilton](#)
- 1:30pm **18. Social and organisational modelling**  
*Room 340, New Law Building*  
Chaired by: [Dr. Anthony Dekker](#)
- 1:30pm **'Him makeum walk straight': using simulation to explore Australian Aboriginal skin groups**  
» [Dr. Anthony Dekker](#)
- 1:50pm **The Lobster Game: Experiential learning of system dynamics through serious gaming**  
» [Dr. Russell Richards](#), [Mr. Ninad Jagdish](#)

- 2:10pm **Designing collaborative intelligence teams for agility in an envisioned command and control world**  
» [Ms. Rebecca Ong](#), [Dr. Neelam Naikar](#)
- 2:30pm **A discrete event simulation for modelling Aljamarat Bridge rituals and evacuation scenarios**  
» [Mr. Almoaid Owaidah](#), [Dr. Doina Olaru](#), [Prof. Mohammed Bennamoun](#), [Dr. Ferdous Sohel](#), [Dr. R. Nazim Khan](#)
- 2:50pm **Understanding Eurovision tele-voting through modelling**  
» [Dr. Anthony Dekker](#)
- 1:30pm **A1. Computational statistics and data analysis**  
*Room 342, New Law Building*  
Chaired by: [Prof. Georgy Sofronov](#)
- 1:30pm **Multipath measurements clustering of over-the-horizon radar based on affinity propagation**  
» [Mr. Xianglong Bai](#), [Prof. Zengfu Wang](#), [Prof. Hua Lan](#), [Prof. Quan Pan](#)
- 1:50pm **Estimating tail probabilities of random sums of scale mixture of phase-type random variables**  
» [Ms. Hui Yao](#), [Dr. Thomas Taimre](#)
- 2:10pm **LASSO-type regularization with nonparametric Bernstein copula estimation**  
» [Ms. Aixi Zhang](#), [Prof. Artem Prokhorov](#), [Prof. Peter Radchenko](#)
- 2:30pm **A change-point test for autoregressive processes using a harmonic mean P-value**  
» [Ms. Lijing Ma](#), [Prof. Georgy Sofronov](#)
- 2:50pm **Prior versus data: A new Bayesian method for fishery stock assessment**  
» [Mr. Yeming Lei](#), [Dr. Shijie Zhou](#), [Dr. Nan Ye](#)
- 3:10pm **Staff rostering at a blood donor centre**  
» [Mrs. Achini Erandi Madduma Wellalage](#), [Dr. Mark Fackrell](#), [Dr. Lele Zhang](#)



Continued from **Monday, 6 December**

- 1:30pm **B6. The measurement and modelling of current and future soil carbon stocks**  
*Room 344, New Law Building*  
 Chaired by: Dr. Bin Wang and Dr. Cathleen Waters
- 1:30pm **Invited paper: A nationally scalable approach to simulating soil organic carbon in agricultural landscapes**  
 » Ms. Kate Coelli, Dr. Senani Karunaratne, Dr. Jeff Baldock, Dr. Sabastine Ugbaje, Mr. Alexander Buzacott, Dr. Patrick Filippi, Dr. Stephen Cattle, Dr. Thomas Bishop
- 1:50pm **Modelling and mapping soil organic carbon stocks under future climate change in New South Wales**  
 » Dr. Bin Wang, Dr. Jonathan Gray, Dr. Cathleen Waters, Dr. Muhuddin Anwar, Dr. Susan Orgill, Prof. Annette Cowie, Dr. PUYU FENG, Dr. De Li Liu
- 2:10pm **Whole-soil profile carbon dynamics in response to climate change modulated by vertical carbon transport and the priming effect**  
 » Dr. Mingming Wang, Dr. Zhongkui Luo
- 2:30pm **Soil carbon sequestration potential with enhanced vegetation cover: digital soil maps for NSW**  
 » Dr. Jonathan Gray, Dr. Bin Wang, Dr. Cathleen Waters, Dr. Susan Orgill, Prof. Annette Cowie, Dr. Ee Ling Ng
- 2:50pm **Eco-geomorphic feedbacks and dynamics of soil carbon in coastal wetlands**  
 » Dr. Steven Sandi, Dr. Jose Rodriguez, Dr. Patricia Saco, Mr. Angelo Breda, Prof. Neil Saintilan
- 3:10pm **Integrating advanced knowledge of soil organic carbon stabilisation into carbon modelling**  
 » Dr. Yunying Fang

- 1:30pm **K1. Understanding hydroclimatological extremes**  
*Room 346, New Law Building*  
 Chaired by: Dr. Wenyan Wu and Dr. Conrad Wasko
- 1:30pm **Regional trends in flood event rainfall-runoff coefficients**  
 » Dr. Michelle Ho, Dr. Conrad Wasko, Dr. Elisabeth Vogel, Prof. Rory Nathan, Prof. Ashish Sharma
- 1:50pm **Changes in antecedent soil moisture under global warming shift flood timing**  
 » Dr. Conrad Wasko, Prof. Rory Nathan, Dr. Murray Peel
- 2:10pm **On the robustness of annual daily precipitation maxima estimates over Monsoon Asia**  
 » Mrs. Phuong Loan Nguyen, Dr. Margot Bador, Prof. Lisa V. Alexander, Prof. Todd P. Lane, Dr. Chris C. Funk
- 2:30pm **No 'hook' structures in extreme precipitation-temperature scaling**  
 » Mr. Johan Visser, Dr. Conrad Wasko, Prof. Ashish Sharma, Prof. Rory Nathan
- 2:50pm **What would happen to the local climate if irrigation was turned off in North-western India?**  
 » Ms. Huazhen Li, Dr. Min-Hui Lo, Prof. Dongryeol Ryu, Dr. Murray Peel, Prof. Yongqiang Zhang
- 3:10pm **A random forest approach to drought prediction in Australia**  
 » Dr. Abraham Gibson, Dr. Danielle Verdon-Kidd, Prof. Greg Hancock
- 1:30pm **J6. Groundwater hydrology / F2. Data analytics for applied environmental and hydraulic modelling**  
*Room 440, New Law Building*  
 Chaired by: Dr. Tim Peterson and Prof. Willem Vervoort and Prof. Amir H Gandomi
- 1:30pm **An investigation of the role of infiltrated stormwater on evapotranspiration**  
 » Mr. Abolfazl Poozan, Dr. Meenakshi Arora, Dr. Matthew Burns, Prof. Andrew Western



Continued from **Monday, 6 December**

- 1:50pm **Groundwater flow modelling of Al-Jizzi aquifer, Oman**  
» Mr. Javed Akhter, [Dr. Ahmad Sana](#), Dr. Syed Mohammed Tauseef
- 2:10pm **Wood damage detection and classification via contact ultrasonic testing and machine learning algorithms**  
» [Dr. Mohsen Mousavi](#), Prof. Amir H Gandomi
- 2:30pm **SINFERS: A Soil Inference System with automatic uncertainty propagation**  
» [Mr. José Padarian](#)
- 2:50pm **Structural condition monitoring under environmental and operational variations effect**  
» [Dr. Mohsen Mousavi](#), Prof. Amir H Gandomi
- 3:10pm **Characterising error in MODIS LAI products for eco-hydrological model calibration**  
» [Ms. Hui Zou](#), Prof. Lucy Marshall, Prof. Ashish Sharma, Dr. Yating Tang
- 1:30pm **C2. Workflows for productivity and commercialisation of modelling and simulation**  
*Room 442, New Law Building*  
Chaired by: Paul Cleary
- 1:30pm **Ergomechanic: A markerless motion capture and ergonomic assessment tool developed using the Workspace workflow engine**  
» [Dr. Raymond Cohen](#), Dr. Simon Harrison
- 1:50pm **Extending the capabilities of applications built using the Workspace architecture**  
» [Mr. Rajesh Subramanian](#), Mr. David Thomas, Dr. Sharen Cummins
- 2:10pm **Sandwiches vs. genes. Sharing data to maximise its value.**  
» [Mr. Matthew Wyse](#), Prof. Derek Baker

- 2:30pm **Implementing a fully homomorphic encrypted circuit in Workspace**  
» [Dr. Dang Quan Nguyen](#), Dr. Damien Watkins
- 2:50pm **Workspace Workflow Comparison**  
» [Ms. Nerolie Oakes](#), Mr. David Thomas
- 3:10pm **AeroDAQ: A Workspace based application**  
» [Ms. Nirupama Sankaranarayanan](#), Dr. Ruhi Humphries
- 3:30pm **Afternoon tea**  
*Foyer, Level 1, New Law Building*
- 4pm **M8. Defence force design and wargaming / M7. Modelling and simulation-based combat analysis**  
*Room 024, New Law Building*  
Chaired by: Dr. Cayt Rowe and Mr. Denis Shine
- 4pm **Portfolio optimisation and scheduling using temporal tolerances**  
» [Dr. Greg Calbert](#)
- 4:20pm **Crowdsourcing scenario linchpin variables**  
» [Dr. Richard de Rozario](#), Dr. Niem Tri
- 4:40pm **A layered meta-data approach to the design of joint experimentation data warehouse**  
» Dr. Li Jiang, [Dr. Maria Boyle](#), Mr. Kevin Johns, Dr. CHITRA MUNIYAPPAGOUNDER SUBRAMANIAN, Dr. Sanat Bista
- 5pm **Invited paper: Causality modelling of simulated temporally indexed events to construct a combat narrative**  
» [Ms. Junia Tiong](#), Dr. Belinda Chiera
- 5:20pm **Reconstructing Lanchester Warfare Models Through a Lagrangian Mechanics Lens**  
» [Mr. Joshua Gill](#), Dr. Andrew Gill, Ms. Jessica Penfold





Continued from **Monday, 6 December**

5:40pm **Bayesian parameter identification and coefficient estimation in combat models**  
» [Dr. Robert Niven](#)

4pm **L1. Catchment water quality modelling**  
*Room 104, New Law Building*  
Chaired by: Dr. Danlu GUO

4pm **Invited paper: Shifts in stream salinity during and after prolonged droughts: A Hidden Markov Modelling approach**  
» Ms. Natalie Kho, [Dr. Anna Lintern](#), Dr. Tim Peterson, Dr. Danlu GUO

4:20pm **Using mixed method design to quantify uncertainty in constituent load estimates**  
» [Dr. Baihua Fu](#), Dr. Joseph Guillaume, Dr. Ryan Turner, Mr. Alex Villa, Dr. Reinier Mann, Ms. Catherine Neelamraju, Mr. Rohan Wallace, Mr. Stephen Wallace, Dr. David Waters, Prof. Tony Jakeman

4:40pm **Evaluating the variation between daily and sub-daily sediment models under climate change at Cardinia**  
» [Ms. Lucy Goss](#), Dr. Lydia Cetin, Dr. Tony Ladson, Dr. Anna Lintern

5pm **Sensitivity analysis of a travel time distribution approach for modelling stream salinity**  
» [Ms. ZAHRA RIAZI](#), Prof. Andrew Western, Dr. Ulrike Bende-Michl

5:20pm **Estimating rainfall-runoff model parameters using the iterative ensemble smoother**  
» [Dr. Frederick Bennett](#), Dr. John Doherty

4pm **H1. COVID-19 simulation modelling - responding to a global crisis**  
*Room 106, New Law Building*  
Chaired by: Dr. Sheryl Chang

4pm **Modelling the third COVID-19 pandemic wave in Australia**  
» [Dr. Sheryl Chang](#), Dr. Oliver Cliff, Dr. Cameron Zachreson, Prof. Mikhail Prokopenko

4:20pm **An agent-based model of the spread of COVID-19 in West Java, Indonesia**  
» [Mr. Nishq Ravindranath](#), Dr. Vincent Lemiale, Dr. Rajius Idzalika

4:40pm **Modelling COVID-19 using a novel SEIR-e model**  
» [Ms. Tamara Tambyah](#), Dr. Matthew Testolin, Mr. Alexander Hill

5pm **Discrete event simulation of intensive care in NSW, Australia during the 2020 / 2021 COVID-19 pandemic**  
» [Dr. Danielle Currie](#), Mrs. Cindy Peng

5:20pm **Employment vulnerability of tourism workers during the COVID-19 pandemic - A global analysis**  
» [Dr. Ya-Yen Sun](#), Dr. Mengyu Li

5:40pm **Model-based machine learning to explore the nexus between COVID-19 and environmental factors in the United States**  
» [Prof. Irene Hudson](#), Dr. Salman Cheema

4pm **J10. High-resolution Earth observations in land surface modelling**  
*Room 340, New Law Building*  
Chaired by: Dr. Siyuan Tian and Prof. Jeff Walker and Dr. Luigi Renzullo

4pm **Soil moisture retrieval from multi-angular P-band radiometer observations**  
» [Dr. Xiaoling Wu](#), Prof. Jeff Walker, Dr. Nan Ye

4:20pm **Multi-frequency retrieval of soil moisture profile**  
» [Mr. Foad Brakhasi](#), Prof. Jeff Walker, Mr. Xiaoji Shen, Dr. Nan Ye, Dr. Xiaoling Wu, Dr. In-Young Yeo, Ms. Nithyapriya Boopathi, Ms. Richa Prajapati

4:40pm **P-band microwave remote sensing for improved soil moisture retrieval**  
» Mr. Xiaoji Shen, [Prof. Jeff Walker](#), Dr. Nan Ye, Dr. Xiaoling Wu



Continued from **Monday, 6 December**

5pm **Remotely sensed crop biomass model over wheat cropping field for assimilating Sentinel-2 imagery into a crop yield prediction model**

» [Ms. Shirui Hao](#), Prof. Dongryeol Ryu, Prof. Andrew Western, Dr. Eileen Perry, Dr. Heye Bogena, Prof. Harrie Jan Hendricks Franssen

5:20pm **Continental scale downscaling of AWRA-L analysed soil moisture using random forest regression**

» [Mr. Yi Yu](#), Dr. Luigi Renzullo, Dr. Siyuan Tian

5:40pm **High resolution soil moisture model calibration using Markov Chain Monte Carlo algorithm**

» [Mr. Dejun Cai](#), Dr. Luigi Renzullo

4pm **A1. Computational statistics and data analysis / A3. Mathematical tools for analysing model behaviour**

*Room 342, New Law Building*

Chaired by: Dr. Barry Croke and Prof. Georgy Sofronov

4pm **Model-based clustering with mclust R package: Multivariate assessment of mathematics performance of students in Qatar**

» [Mr. Ali Alzahrani](#), Prof. Eric J Beh, Dr. Elizabeth Stojanovski

4:20pm **A simplified approach to model performance assessment accounting for uncertainty**

» [Dr. Barry Croke](#)

4:40pm **The Pade-Laplace formalism for carbon and climate responses**

» [Dr. Ian Enting](#)

5pm **Identifying observational errors in the calibration of hydrologic models: the reordering strategy**

» [Dr. Xia Wu](#), Prof. Lucy Marshall, Prof. Ashish Sharma

5:20pm **Measuring the sensitivity of model inputs in childhood obesity modelling**

» [Mr. Simon Chiu](#), Dr. Louise Freebairn, Prof. Jo-An Occhipinti, Dr. Louise Baur, Dr. L.Kurt Kreuger

5:40pm **A robust wavelet-based bias correction approach for preserving climate change signal and correcting variability in climate model simulations**

» [Ms. Cilcia Kusumastuti](#), Dr. Ze Jiang, Dr. Rajeshwar Mehrotra, Prof. Ashish Sharma

4pm **B6. The measurement and modelling of current and future soil carbon stocks / B2. Advances in agent-based modelling in biological, ecological and agricultural systems**

*Room 344, New Law Building*

Chaired by: Dr. Bin Wang and Dr. Cathleen Waters

4pm **Soil organic carbon sustaining maize yields in China**

» Dr. PUYU FENG, Dr. Bin Wang, Dr. Matthew Harrison, Dr. Jing Wang, [Dr. Ke Liu](#), Dr. Mingxia Huang, Dr. Kelin Hu

4:20pm **Leguminous green manure has the potential for reducing the carbon footprint of crop production**

» [Dr. Zhiyuan Yao](#), Prof. Yajun Gao

4:40pm **Agent-Based Modelling to study the interactions in decision-making between environmental water managers, irrigators and water supply authorities in the Goulburn River catchment**

» [Ms. Lubna Meempatta](#), Prof. J. Angus Webb, Dr. Avril Horne, Prof. Michael J. Stewardson

5pm **Collective states in sub-elite female rugby 7s: A case study on two plays**

» [Mr. Hayden Koudela](#), Dr. Timothy Schaerf, Dr. Timothy Lathlean, Dr. Aron Murphy, Dr. Mitchell Welch



Continued from **Monday, 6 December**

- 5:20pm **Correlates between inferred rules of interaction and group-level statistics of collective motion in small shoals of fish under different predator threat scenarios**  
 » [Dr. Timothy Schaerf](#), Dr. Alexander Wilson, Dr. Mitchell Welch, Prof. Ashley Ward
- 5:40pm **Patterns of information transfer within collective movement simulation: Applications to sport**  
 » [Dr. Mitchell Welch](#), Dr. Timothy Schaerf
- 4pm **K1. Understanding hydroclimatological extremes / K7. Challenges and advances in continental-scale hydrological forecasting systems**  
*Room 346, New Law Building*  
 Chaired by: Dr. Qichun Yang and Dr. Wenyan Wu and Dr. Conrad Wasko and Dr. Julien Lerat and Dr. Andrea Sulis
- 4pm **Linking moisture transport and extreme precipitation in southeast Australia**  
 » [Dr. Chiara Holgate](#), Dr. Irina Rudeva, Dr. Ghyslaine Boschat, Dr. Acacia Pepler, Ms. Roseanna McKay, Dr. Pandora Hope
- 4:20pm **Seasonal reference crop evapotranspiration forecasting under a changing climate**  
 » [Dr. Qichun Yang](#), Prof. QJ Wang, Prof. Andrew Western, Dr. Wenyan Wu, Ms. Yawen Shao, Dr. Kirsti Hakala
- 4:40pm **Enhancing short-term reference crop evapotranspiration forecasting through bias-correcting input variables and calibrating anomalies**  
 » [Prof. QJ Wang](#), Dr. Qichun Yang, Dr. Kirsti Hakala
- 5pm **The impact of hydrological data assimilation on continental-scale short-term and seasonal soil moisture forecasts**  
 » [Mrs. Katayoon \(Katy\) Bahramian](#), Dr. Ashkan Shokri, Dr. Elisabeth Vogel, Dr. Robert Pipunic, Dr. Ali Azarnivand, Dr. Wendy Sharples

- 5:20pm **Continental-scale hydrological forecasts of soil moisture, runoff and evapotranspiration**  
 » [Dr. Christopher Pickett-Heaps](#), Dr. Elisabeth Vogel, Dr. Julien Lerat, Mr. Sean Loh, Mr. Aidan Griffiths, Mr. Vic Co Duong, Mrs. Katayoon (Katy) Bahramian, Dr. Zaved Khan, Dr. Ashkan Shokri, Dr. Andrew Frost, Dr. Debra Hudson, Dr. Morwenna Griffiths, Dr. Robert Pipunic, Mr. Patrick Sunter, Dr. Wendy Sharples
- 5:40pm **Enhancement of lightning strike forecasts using a machine learning approach**  
 » Mr. Daniel Gow, [Dr. Julien Lerat](#), Dr. Rob Warren, Dr. Ivor Blockley
- 4pm **F2. Data analytics for applied environmental and hydraulic modelling**  
*Room 440, New Law Building*  
 Chaired by: Prof. Amir H Gandomi
- 4pm **Developing calibration models for low-cost air-quality monitors**  
 » Ms. Charlene Lee, Ms. Gagandeep Kaur, Ms. Hanyi Wang, [Ms. Jingyi Zhao](#), Dr. Belinda Chiera, Mr. Terry Menadue, Mr. Alistair Walsh, Prof. Lesley Ward
- 4:20pm **Two-equation turbulence modelling of open channels**  
 » [Dr. Ahmad Sana](#)
- 4:40pm **Risk assessment of groundwater vulnerability using machine learning**  
 » Ms. Masoumeh Zare, [Dr. Mohammad Reza Nikoo](#), Prof. Amir H Gandomi
- 5pm **The estimation of multi-layer flash flows using machine learning systems**  
 » Mr. Foad Vosoughi, [Dr. Mohammad Reza Nikoo](#), Prof. Amir H Gandomi
- 5:20pm **Novel multi-objective optimization modeling for permeable breakwaters**  
 » Mr. Mostafa Gandomi, Dr. Mohammad Reza Nikoo, Mrs. Banafsheh Nematollahi, [Prof. Amir H Gandomi](#)



Continued from **Monday, 6 December**

- 4pm **G1. Modelling for action: Advancing climate resilience and adaptation**  
*Room 442, New Law Building*  
 Chaired by: Dr. Zaved Khan and Dr. Wendy Sharples
- 4pm **Modelling future changes in social vulnerability and bushfire risk**  
 » Ms. Evangeline Moore, Ms. Yasmin Zhar, Ms. Phillippa Radford, Ms. Molly O'Callaghan, Prof. Holger Maier, Dr. Graeme Riddell, Ms. Hedwig van Delden, Mr. Mike Wouters
- 4:20pm **Improving climate resilience of agricultural systems through the development of drought vulnerability curves**  
 » Dr. Iolanda Borzi, Dr. Beatrice Monteleone, Prof. Brunella Bonaccorso, Prof. Mario Martina
- 4:40pm **Scaling the intensity of tropical cyclones for hazard assessment**  
 » Mr. Craig Arthur
- 5pm **Coastal inundation modelling and adaptation assessment for the Bellarine Peninsula**  
 » Mr. Vihan Weeraratne, Dr. Raymond Cohen, Mr. Ralph Roob, Dr. Mahesh Prakash
- 5:20pm **Developing an Adaptive Evacuation Simulation Framework based on Agent Performance Dynamics**  
 » Ms. Therese Anne Rollan, Dr. Leorey Marquez, Dr. Caslon Chua
- 5:40pm **INDRA - Climate Resilience Platform for the City of Makassar**  
 » Mr. Vihan Weeraratne, Dr. Mahesh Prakash, Dr. Raymond Cohen, Dr. Nikhil Garg

**Tuesday, 7 December**

- 7:30am **Registration and information desk**  
*Foyer, Level 1, New Law Building*
- 8:15am **Platinum sponsor talk - eWater**  
*Eastern Avenue Auditorium, University of Sydney*
- 8:30am **Plenary**  
*Eastern Avenue Auditorium, University of Sydney*  
**Are our models keeping pace with the evolving data deluge?**  
 » Professor David Hamilton
- 9:15am **M7. Modelling and simulation-based combat analysis**  
*Room 024, New Law Building*  
 Chaired by: Mr. Tristan Goss
- 9:15am **A queueing theoretic approach for performance prediction of collaborative active protection systems**  
 » Dr. Graham Weinberg
- 9:35am **Determining performance limits for directed energy weapons in collaborative active protections systems**  
 » Dr. Graham Weinberg
- 9:55am **Towards efficient, dynamic and threat-aware path planning for combat simulation in COMBATXXI**  
 » Dr. Rowan Pivetta
- 10:15am **Integrating and automating a closed loop simulation capability to enable easier exploration of the parameter space**  
 » Mr. Stefanos Kiparoglou, Mr. Danny Coppola



Continued from **Tuesday, 7 December**

9:15am **I2. Practices, tools and methods to support model-based decision-making processes with stakeholders**

*Room 104, New Law Building*

Chaired by: Dr. Sondoss Elsayah

9:15am **How evolution of democracy can open new horizons for participatory modeling**

» [Prof. Alexey Voinov](#)

9:35am **Gamification of Discusoo: an online AI-based forum for serious discussions**

» [Ms. Elena Bakhanova](#)

9:55am **Participatory modelling for improving flood conditions in migration camps in Boko Haram area, Nigeria**

» [Ms. Eskedar Gebremedhin](#)

10:15am **Using stakeholder preferences to identify optimal land use configurations**

» [Ms. Andrea Kaim](#)

9:15am **J5. Advances and applications in decision making in the face of multiple plausible futures**

*Room 106, New Law Building*

Chaired by: Dr. Danlu GUO

9:15am **KEYNOTE: The challenges of modelling climate change impacts in non-linear water resources systems**

» [Dr. Fiona Johnson](#), Dr. Clare Stephens, Dr. Shengyang Chen, Mr. Martin Krogh, Dr. William Glamore

9:55am **Uncertainty, sensitivity and scenario analysis: how do they fit together?**

» [Prof. Holger Maier](#), Dr. Joseph Guillaume, Dr. Cameron McPhail, Prof. Seth Westra, Dr. Jan Kwakkel, Dr. Saman Razavi, Ms. Hedwig van Delden, Dr. Mark Thyer, Dr. Sam Culley, Prof. Tony Jakeman

10:15am

**Uncertain Futures website: building reference materials for decision making in the face of multiple plausible futures**

» [Dr. Joseph Guillaume](#), Dr. Sondoss Elsayah, Ms. Hannah Feldman, Dr. Baihua Fu, Prof. Tony Jakeman, Prof. Holger Maier, Ms. Caroline Rosello, Mr. Tony Weber, Dr. Fateme Zare

9:15am

**H5. Climate projections for health researchers. Discussion session.**

*Room 340, New Law Building*

9:15am

**A3. Mathematical tools for analysing model behaviour**

*Room 342, New Law Building*

Chaired by: Dr. Barry Croke

9:15am

**Invited paper: Beyond validation: assessing the legitimacy of artificial neural network models**

» Dr. Greer Humphrey, Prof. Holger Maier, [Dr. Wenyan Wu](#), Dr. Nick Mount, Prof. Graeme Dandy, Dr. Chris Dawson

9:35am

**Comparing the physics of 1D vs. 3D atmospheric models using their linearised responses**

» [Dr. Yi-Ling Hwong](#), Prof. Steven Sherwood, Dr. David Fuchs

9:55am

**Simulation and data analytics for a Defence workforce transition**

» [Ms. Katie Mortimer](#), Ms. Vivian Nguyen, Prof. Terrence Caelli, Mr. Brendan Hill

10:15am

**Simulated convection responses to temperature and moisture perturbations in large eddy simulations**

» [Dr. Timothy Raupach](#), Dr. Yi-Ling Hwong, Prof. Steven Sherwood

9:15am

**B4. Progress in modelling of biological systems**

*Room 344, New Law Building*

Chaired by: Mr. Dean Holzworth and Dr. Val Snow



Continued from **Tuesday, 7 December**

- 9:15am **Diuretic-based mitigations of leaching and nitrous oxide emissions from urine patches: scaling from patch to paddock**  
 » [Dr. Val Snow](#), Dr. Esther Meenken, Dr. Rogerio Cichota, Mr. Dean Holzworth, Dr. Robyn Dynes
- 9:35am **Operationalizing resilience as pathway diversity in a mosaic landscape**  
 » [Dr. Steven Lade](#), Dr. My Sellberg, Dr. Jan Kuiper, Dr. Erik Andersson
- 9:55am **Hungry hungry hoppers: multidimensional modelling of masticating morphs**  
 » [Mr. Fillipe Georgiou](#), Prof. Ngamta Thamwattana, Dr. Jerome Buhl, Dr. Edward Green, Dr. Bishnu Lamichhane
- 10:15am **Simulating organ biomass variability and carbohydrate distribution in perennial fruit crops**  
 » [Dr. junqi Zhu](#)
- 9:15am **G2. Projections of regional climate change: from modelling to applications**  
*Room 346, New Law Building*  
 Chaired by: Dr. Jason Evans
- 9:15am **CORDEX update**  
 » [Dr. Jason Evans](#), Dr. Marcus Thatcher
- 9:35am **RCM performance sensitive to land surface models**  
 » [Dr. Fei Ji](#), Dr. Giovanni Di Virgilio, Dr. Jason Evans, Dr. Nidhi Nishant, Dr. Christopher Thomas, Dr. Eugene Tam, Dr. Kathleen Beyer
- 9:55am **Added value of regional climate projections for Australia**  
 » [Dr. Christian Stassen](#), Dr. Marcus Thatcher, Dr. Chun-Hsu Su, Dr. Jason Evans, Mr. Benjamin Ng, Dr. Andrew Dowdy, Mr. Harvey Ye, Dr. Ian Watterson, Dr. Giovanni Di Virgilio, Dr. Peter Steinle

- 10:15am **How well do regional climate models maintain variable dependency**  
 » [Mr. Youngil Kim](#), Dr. Jason Evans, Prof. Ashish Sharma
- 9:15am **K8. Advancing knowledge of modelling and uncertainty for hazard mitigation**  
*Room 440, New Law Building*  
 Chaired by: Dr. Ulrike Bende-Michl and Dr. Santosh Aryal
- 9:15am **Comparison of connections between meteorological and hydrological droughts across the Murray-Darling Basin**  
 » [Dr. Santosh Aryal](#), Dr. Hongxing Zheng, Dr. Jorge Pena Arancibia, Dr. Yongqiang Zhang
- 9:35am **A consistency assessment of CMIP3 and CMIP5 projections in Western Australia: Implications for long-term water availability planning**  
 » [Dr. Margot Turner](#), Ms. Artemis Kitsios, Dr. Ulrike Bende-Michl, Dr. Pandora Hope, Dr. Alison Oke, Dr. Srikanthan, Dr. Vjeko Matic
- 9:55am **Reducing bias in streamflow projections generated using bias-corrected regional climate model rainfall**  
 » Dr. David Robertson, [Dr. Nick Potter](#), Dr. Francis Chiew
- 10:15am **Performance evaluation and regional drought characteristics diagnosis based on a novel drought index**  
 » [Dr. Muhammad Abrar Faiz](#), Dr. Yongqiang Zhang
- 9:15am **C4. Advanced modelling and simulation technologies**  
*Room 442, New Law Building*  
 Chaired by: Dr. Firouzeh Taghikhah
- 9:15am **An interaction of computer and human intelligence in agent based modelling**  
 » Dr. Firouzeh Taghikhah, [Prof. Alexey Voinov](#), Prof. Tatiana Filatova, Prof. Gary Polhill



Continued from **Tuesday, 7 December**

- 9:35am **Pump pressure tracking control of high-pressure pumping irrigation systems**  
 » Dr. Ye Wang, Mr. QI ZHAO, Prof. Erik Weyer, Dr. Wenyan Wu, Prof. Angus Simpson, Ms. Ailsa Willis
- 9:55am **Optimal design of water distribution systems incorporating behind-the-meter solar energy**  
 » Mr. QI ZHAO, Dr. Wenyan Wu, Prof. Angus Simpson, Ms. Ailsa Willis
- 10:15am **Towards a provenance-enabled, reproducible, and extensible machine learning platform by integrating databases, web services, containers, and code repositories in a loosely coupled manner**  
 » Mr. Ramneek Singh, Mr. Peter Wilson, Ms. Linda Gregory, Mr. Shane Seaton, Dr. Brendan Malone
- 10:35am **Morning tea**  
*Foyer, Level 1, New Law Building*
- 11:05am **M7. Modelling and simulation-based combat analysis**  
*Room 024, New Law Building*  
 Chaired by: Mr. Wayne Power
- 11:05am **Invited paper: Introducing Australian M&S-based Engagement Performance Analysis Community**  
 » Mr. Wayne Power, Mr. Tristan Goss
- 11:25am **Hierarchy of evidence: A methodology for interpreting and summarising the predicted performance of weapons**  
 » Mr. Wayne Power, Mr. Tristan Goss, Ms. Nikoleta Tomecko, Mr. Edward Dawson, Dr. Sreeja Rajesh
- 11:45am **OneWorld: Evolving an architecture for complex system representation in engagement simulation**  
 » Mr. Rian Armstrong, Mr. Phillip Mellen, Mr. Matthew Christie

- 12:05pm **Comet: A naval Combat Management System model for combat analysis**  
 » Dr. Simon Blaess, Mr. Matthew Christie, Mr. Josh Mitchell
- 12:25pm **Exploring and assessing data visualisation techniques for simulation-based engagement analysis**  
 » Dr. THO DO, Dr. Patrick van Bodegom, Mr. Phillip Mellen, Mr. Wayne Power
- 11:05am **I2. Practices, tools and methods to support model-based decision-making processes with stakeholders**  
*Room 104, New Law Building*  
 Chaired by: Prof. Nagesh Kolagani
- 11:05am **Maximising online participatory modelling processes and system dynamics software to enhance health policy decision-making: lessons learned during lockdown**  
 » Ms. Eileen Goldberg, Ms. Jacqueline Davison
- 11:25am **Understanding policy instrument interactions to support the adoption of eco-friendly farming practices in Great Barrier Reef catchments**  
 » Dr. Helen Mayfield, Dr. Rachel Eberhard, Dr. Christopher Baker, Dr. Umberto Baresi, Dr. Michael Bode, Dr. Anthea Coggan, Dr. Angela Dean, Dr. Felicity Deane, Dr. Evan Hamman, Dr. Diane Jarvis, Dr. Barton Loechel, Dr. Bruce Taylor, Ms. Lillian Stevens, Dr. Karen Vella, Dr. Kate Helmstedt
- 11:45am **Participatory modelling in socio-technical systems**  
 » Mr. Bryann Avendano
- 12:05pm **Participatory modeling for Artificial Intelligence**  
 » Dr. Gnana Bharathy
- 12:25pm **A systematic process for resolving model-data discrepancies (spoiler: the model isn't always the bad guy)**  
 » Dr. Kate O'Brien, Dr. Matthew P. Adams, Dr. Paul Maxwell, Dr. Felix Egger, Prof. Holger Maier, Dr. Maria Vilas



Continued from **Tuesday, 7 December**

11:05am **J5. Advances and applications in decision making in the face of multiple plausible futures**

*Room 106, New Law Building*

Chaired by: Dr. Joseph Guillaume

11:05am **Water security analysis of the Middle River supply system: a foreSIGHT application**

» Dr. Sam Culley, Prof. Seth Westra, Dr. Bree Bennett, Prof. Holger Maier, Mr. Jeffrey Newman, Dr. Leon Van Der Linden, Dr. Michelle Irvine

11:25am **A multi-modelling framework to stress-test water resource systems under change**

» Ms. Ruby Leigh, Dr. Matthew Knowling, Prof. Seth Westra, Dr. Bree Bennett, Dr. Aaron Zecchin, Prof. Holger Maier, Dr. Mark Thyer, Dr. David McInerney, Dr. Sam Culley, Dr. Michael Leonard, Dr. Anjana Devanand

11:45am **Integrated framework for rapid climate stress testing of river systems**

» Dr. Keirnan Fowler, Mrs. Natasha Ballis, Dr. Avril Horne, Mr. Andrew John, Prof. Rory Nathan, Dr. Murray Peel

12:05pm **Stress testing climate adaptation for environmental water in the Goulburn River, Victoria**

» Mr. Andrew John, Dr. Avril Horne, Prof. Rory Nathan, Dr. Keirnan Fowler, Prof. J. Angus Webb, Prof. Michael J. Stewardson

11:05am **M4. System dynamics applications in OR to support decision making under uncertainty**

*Room 340, New Law Building*

Chaired by: Dr. Sondoss Elsworth and Dr. Matthew Richmond and Prof. Shayne Gary

11:05am **Critical minerals and the Clean Energy Transition**

» Prof. William Grace

11:25am **A system dynamics based serious game for solar panel waste management**

» Dr. Hengky Salim, Prof. Rodney Stewart, Dr. Oz Sahin

11:45am **Military asset management and resource planning with system dynamics and optimization**

» Dr. Hasan Turan, Dr. Sondoss Elsworth

12:05pm **Agile, antifragile, AI-enabled command and control: The dynamics of survival in high-intensity conflicts**

» Mr. Jacob Simpson, Dr. Sondoss Elsworth

11:05am **A2. Computational fluid dynamics and its applications in fluid-structure interactions**

*Room 342, New Law Building*

Chaired by: Dr. Barry Croke and Dr. Methma Rajamuni

11:05am **Impact of a dispersed gas phase on radiative transfer**

» Dr. Felix Egger, Prof. Damien Batstone, Prof. Christopher DeGroot

11:25am **Convective flows in vegetated water bodies**

» Mr. Muhammadhn Khalid, Dr. Edoardo Daly, Prof. Murray Rudman

11:45am **An immersed boundary-regularised lattice Boltzmann method for acoustic simulations of FSI problems**

» Dr. Methma Rajamuni, Dr. Zhengliang Liu, Dr. Fang-Bao Tian

12:05pm **CFD solver validations for simulating passively pitching tandem wings in hovering flight**

» Dr. Qiuxiang Huang, Dr. Soudeh Mazharmanesh, Dr. Fang-Bao Tian, Prof. John Young, Prof. Joseph Lai, Dr. Sridhar Ravi

11:05am **B4. Progress in modelling of biological systems**

*Room 344, New Law Building*

Chaired by: Mr. Dean Holzworth and Dr. Val Snow and Dr. Malcolm McPhee





Continued from **Tuesday, 7 December**

- 11:05am **Should I trust that model?**  
» [Mr. Dean Holzworth](#), Dr. Val Snow, Dr. Neil Huth
- 11:05am **G6. Interactions of socio-economic systems and financial markets with weather and climate**  
*Room 346, New Law Building*  
Chaired by: Dr. Vassili Kitsios and Dr. Lurion De Mello
- 11:05am **A minimum-disruption approach to disaster analysis**  
» [Prof. Manfred Lenzen](#), Dr. Mengyu Li
- 11:25am **The Impacts of the El Niño–Southern Oscillation on Global Food Security: An Implied Volatility Approach**  
» [Mr. Hamid Yahyaei](#), Dr. Vassili Kitsios, Dr. Lurion De Mello
- 11:45am **Climate and its impact on the Australian critical care services**  
» [Dr. Eric Poon](#), Dr. Vassili Kitsios, Prof. David Pilcher, Prof. Rinaldo Bellomo, Prof. Jaishankar Raman
- 12:05pm **High-resolution Quantile-Quantile scaled climate scenario projections for Australia**  
» [Dr. Raktima Dey](#), Dr. Vassili Kitsios, Dr. Marcus Thatcher, Mr. Craig Heady, Mr. John Clarke
- 11:05am **F3. Transitions, participatory optimisation and data science for the environment**  
*Room 440, New Law Building*  
Chaired by: Dr. Firouzeh Taghikhah
- 11:05am **DAESim: A Dynamic Agro-Ecosystem Simulation Model**  
» [Dr. Firouzeh Taghikhah](#), Prof. Justin Borevitz, Prof. Robert Costanza, Prof. Alexey Voinov
- 11:25am **Towards characterising a landscape-scale environmental digital twin: what for?, who for? and how?**  
» [Ms. Susan Cuddy](#)

- 11:45am **The population dynamics of ecosystem engineers and habitat modification**  
» [Dr. Simon Watt](#), Dr. Zlatko Jovanoski, Dr. Isaac Towers, Dr. Rashed Saifuddin, Prof. Harvinder Sidhu
- 12:05pm **Enabling integrated modelling systems for environmental prediction at national scale**  
» [Dr. Alison Specht](#), Dr. Siddeswara Guru, Dr. Beryl Morris
- 12:25pm **A framework for engaging stakeholders in solving real-world water resources management problems**  
» Dr. Wenyan Wu, Prof. Holger Maier, [Prof. Graeme Dandy](#), Prof. Rosemary Leonard, Dr. Kathryn Bellette, Ms. Susan Cuddy, Dr. Shiroma Maheepala
- 11:05am **C1. Digital twins and mixed reality: Case studies and applications**  
*Room 442, New Law Building*  
Chaired by: Mr. Lachlan Hetherton
- 11:05am **Using Workspace to implement Digital Twins in the Mixed Reality Lab**  
» [Dr. Damien Watkins](#), Mr. Matt Bolger, Mr. Lachlan Hetherton, Mr. Zikai Zhang, Ms. Ping Xie, Dr. Simon Harrison, Dr. Raymond Cohen
- 11:25am **Mechanical digital twinning of the human body in the workplace for reduced injury risk and improved health**  
» [Dr. Simon Harrison](#), Dr. Raymond Cohen
- 11:45am **Digital twins as learning environments for catchment and water resource management**  
» [Dr. Joseph Guillaume](#), Mr. Angus Dunne, Dr. Laura Fisher, Mr. Niilo Gobius, Ms. Natasha Harvey, Dr. Wendy Merritt
- 12:05pm **Continuous monitoring of subsurface injections using tiltmeter sensors**  
» [Mr. Dane Kasperczyk](#), Dr. Dang Quan Nguyen
- 12:25pm **Boeing CST-100 Starliner Virtual Reality Demonstration**  
» [Mr. Gideon Mari](#)



Continued from **Tuesday, 7 December**

11:25am **Robust methods for the development of models of biological systems. Discussion session**  
*Room 344, New Law Building*  
 Chaired by: Dr. Malcolm McPhee and Mr. Dean Holzworth and Dr. Val Snow

12:45pm **Lunch**  
*Foyer, Level 1, New Law Building*

1:45pm **M7. Modelling and simulation-based combat analysis**  
*Room 024, New Law Building*  
 Chaired by: Andreanna Humphrey

1:45pm **The application of Goal Structuring Notation to modelling & simulation VV&A**  
 » [Mr. Jeremy Graham](#), Mr. Shan Atukorala

2:05pm **Verification, validation, and accreditation for models and simulations in the Australian Defence context**  
 » [Mr. Kerry Owen](#), Dr. Ripon K Chakraborty

2:25pm **Optimal location of launchers in a missile defence system**  
 » [Ms. Alexandra Reade](#), Mr. Nicholas Azzollini, Mr. Benjamin Babu, Mr. Jayden Rodda

2:45pm **A strategy for using cooperating missiles for missile defence**  
 » [Mrs. Maria Kapsis](#), Mr. Peter Pudney, Mr. Jorge Aarao, Mr. Warrick Miller, Mr. Gregory Freebairn

1:45pm **I2. Practices, tools and methods to support model-based decision-making processes with stakeholders**  
*Room 104, New Law Building*  
 Chaired by: Dr. Fateme Zare

1:45pm **Invited paper: Modelling and research to support climate adaptation in the Murray-Darling Basin**  
 » [Dr. David Post](#), Dr. David Robertson, Dr. Rebecca Lester, Dr. Francis Chiew

2:05pm **Identifying minimum information requirements to improve integrated model capabilities: lessons learned from Dynamic Adaptive Policy Pathways**  
 » [Ms. Caroline Rosello](#), Dr. Joseph Guillaume, Dr. Peter Taylor, Ms. Susan Cuddy, Dr. Carmel Pollino, Prof. Tony Jakeman

2:25pm **How thunderstorms appear in weather forecasts**  
 » Mr. Benjamin Price, [Dr. Michael Foley](#)

2:45pm **Solving constrained K-Markov decision processes**  
 » [Dr. Jonathan Ferrer Mestres](#), Dr. iadine Chades

1:45pm **J1. Ecohydrological modelling**  
*Room 106, New Law Building*  
 Chaired by: Dr. Patricia Saco

1:45pm **Monitoring riverine tree vegetation condition using in-situ evapotranspiration, remote sensing and machine learning**  
 » [Dr. Tanya Doody](#), Dr. Steve Gao, Dr. Jodie Pritchard, Mr. Micah Davies, Mr. Martin Nolan, Prof. Willem Vervoort

2:05pm **Investigations of environmental assessments in the Murrumbidgee River system using satellite imagery and floodplain hydraulic model**  
 » [Mr. Gurmeet Singh](#), Mr. Mark Powell, Ms. Richa Neupane

2:25pm **Ecohydrologic modelling in Australia: an application of RHESSys to a Mountain Ash catchment**  
 » [Dr. Clare Stephens](#), Prof. Lucy Marshall, Dr. Fiona Johnson, Prof. Larry Band, Dr. Martin De Kauwe, Dr. Anna Ukkola



Continued from **Tuesday, 7 December**

2:45pm **Modelling water fluxes across the Soil-Plant-Atmosphere Continuum using FETCH3**  
 » Mrs. Marcela Silva, Dr. Ashley Matheny, Dr. Valentijn Pauwels, Dr. Dimetre Triadis, Dr. Justine Missik, Dr. Gil Bohrer, Dr. Edoardo Daly

1:45pm **M4. System dynamics applications in OR to support decision making under uncertainty**  
*Room 340, New Law Building*  
 Chaired by: Dr. Sondoss Elsayah and Dr. Matthew Richmond and Prof. Shayne Gary

1:45pm **Model-Supported Case Study of 1999 East Timor Crisis**  
 » Prof. Shayne Gary, Dr. Ashley Stephens, Dr. Andrew Coutts, Dr. Matthew Richmond

2:05pm **System dynamics applications for defence combat modelling: preliminary insights from a literature exploration**  
 » Mr. Giovanni Cunico, Dr. Sondoss Elsayah, Prof. Shayne Gary, Dr. Thang Cao, Mr. Lesley Kosowski, Dr. Matthew Richmond

2:25pm **Operational effectiveness of future land combat teams: model conceptualisation**  
 » Dr. Matthew Richmond, Prof. Shayne Gary, Dr. Thang Cao, Mr. Dermot Blumson, Mr. Lesley Kosowski, Dr. Karlo Hock, Dr. Sondoss Elsayah, Mr. Nick Kempt

1:45pm **J13. River system modelling for water resources management: Advances and challenges**  
*Room 342, New Law Building*  
 Chaired by: Dr. Dushmanta Dutta and Mr. Richard Beecham and Ms. Rachel Blakers

1:45pm **Invited paper: Modelling farm-scale floodplain harvesting diversions in northern Murray-Darling Basin**  
 » Mr. Richard Beecham, Ms. Marina Sivkova, Dr. Linda Holz

2:05pm **Water security in the face of risky weather**  
 » Ms. Rachel Blakers, Mr. Nadir Loonat, Dr. Dushmanta Dutta, Mr. Richard Beecham

2:25pm **Applications of river system models to strategic planning for water security**  
 » Dr. Dushmanta Dutta, Mr. Aaron Trim, Mr. James Simpson, Mr. Richard Beecham, Mr. Mark Simons, Mr. Jeremy Kinley, Mr. Daniel Harris, Mr. Andrew Craig

2:45pm **Strategic economic assessment of infrastructure and policy changes within dynamic river systems**  
 » Mr. Nathan Taylor, Mr. Benjamin Carey, Mr. Kevin Roche

1:45pm **B3. Agricultural systems**  
*Room 344, New Law Building*  
 Chaired by: Dr. Malcolm McPhee

1:45pm **Invited paper: Random forest classification: A case study of dryland crop cover mapping in the Victorian Mallee using Sentinel-2A, Sentinel-3, and MODIS imagery**  
 » Dr. Sabah Sabaghy, Dr. Kathryn Sheffield, Mrs. Susan Robson

2:05pm **A simulation of greenhouse gas emissions intensity of high and low productivity sheep grazing systems**  
 » Dr. Malcolm McPhee, Ms. Clare Edwards, Mr. Steven Harden, Dr. Chris Guppy, Mr. Travis Naylor, Dr. Frances Philliips, Dr. Roger Hegarty

2:25pm **Carbon Farming Optimiser: application to grazing systems in SE Australia**  
 » Prof. Oscar Cacho, Dr. Aaron Simmons, Dr. Cathleen Waters

2:45pm **Considering unknown uncertainty in imperfect models: nitrogen mineralization as a case study**  
 » Dr. Maria Vilas, Dr. Frederick BENNETT, Dr. Kirsten Verburg, Dr. Matthew P. Adams



Continued from **Tuesday, 7 December**

1:45pm **G4. Risk of natural hazard in a changing climate: modelling, prediction and projection**

*Room 346, New Law Building*

Chaired by: Dr. Esther Zhu

1:45pm **Evaluation of soil moisture products to monitor drought in southeast Australia**

» [Dr. Esther Zhu](#), Dr. Anthony Clark, Dr. Jennifer Wurtzel, Mrs. Kim Broadfoot

2:05pm **Tropical cyclone-induced extreme winds in climate datasets: East coast of Australia**

» [Dr. Sam Bell](#), Dr. Savin Chand, Dr. Andrew Dowdy, Dr. Hamish Ramsay, Dr. Anil Deo, Dr. Chun-Hsu Su, Mr. Andrew Brown, Mr. Harvey Ye

2:25pm **Interacting climate modes modulate the supply of moisture for east Australian rainfall**

» [Dr. Chiara Holgate](#), Dr. Jason Evans, Dr. Andrea Taschetto, Dr. Alex Sen Gupta, Dr. Agus Santoso

2:45pm **Bias correction of climate projections for bushfire hazard mapping**

» [Dr. Durga Shrestha](#), Dr. David Robertson, Dr. Yong Song, Mr. Alessio Arena, Mr. Ben Leighton, Mr. William Swedosh, Ms. Kimberley Opie, Mr. Justin Leonard

1:45pm **N1. Microsimulation modelling for informing the solutions to Health, Tax and Demographic problems and policies**

*Room 440, New Law Building*

Chaired by: Dr. Rupendra Shrestha and Prof. Robert Tanton

1:45pm **Simulating the impact of Australian Capital Territory Electric Vehicle policy**

» Dr. Yogi Vidyattama, [Prof. Robert Tanton](#), Prof. Darren Sinclair, Dr. Jacki Schirmer, Dr. Brendan McCaffrie

2:05pm **Financial stress and the social security settings – an optimal modelling approach**

» [Mr. Ben Phillips](#)

2:25pm **Cost-effectiveness of genomic medicine for mitochondrial diseases**

» [Dr. Rupendra Shrestha](#), Prof. Deborah Schofield, Dr. Sameen Haque, Mr. Owen Tan, Ms. Katherine Lim, Dr. Karen Crawley, Prof. Carolyn Sue

2:45pm **Capturing the widespread ripple effects of familial intellectual disability and potential benefits of genomics**

» [Prof. Deborah Schofield](#), Mr. Owen Tan, Dr. Rupendra Shrestha, Ms. Sarah West, Ms. Jackie Boyle, Ms. Louise Christie, Ms. Melanie Leffler, Ms. Natalie Hart, Ms. Katherine Lim, Prof. Robert Tanton, Prof. Jinjing Li, Dr. Tony Roscioli, Dr. Mike Field

1:45pm **E3. Sustainable systems design**

*Room 442, New Law Building*

Chaired by: Prof. John Boland

1:45pm **Discrete event modeling and simulation of smart parking conflict management**

» [Mr. Antoine Dominici](#), Dr. Laurent Capocchi, Dr. Emmanuelle De Gentili, Prof. Jean-Francois Santucci

2:05pm **Improving transport investment planning in Vietnam**

» [Ms. Caroline Bruce](#), Dr. Chris Chilcott, Dr. Andrew Higgins, Mr. Stephen McFallan, Mr. Adam Mckeown, Dr. Liana William, Dr. Rodd Dyer, Ms. Nga Le, Mr. Huan Le

2:25pm **Mapping future transport passages for proposed shale gas development in NT: an application of TraNSIT**

» [Mr. Nicholas Smolanko](#), Ms. Caroline Bruce, Mr. Stephen McFallan, Dr. Andrew Higgins, Mr. Artiom Bondarenco, Mr. Adam Mckeown

3:05pm **Afternoon tea**

*Foyer, Level 1, New Law Building*



Continued from **Tuesday, 7 December**

**3:30pm M7. Modelling and simulation-based combat analysis**

*Room 024, New Law Building*

Chaired by: Tom Jacquier

**3:30pm Investigation of automation techniques and system representation for rapid analysis of missile defence scenarios**

» [Mr. Chris Butt](#), Dr. Ben Mashford, Dr. Kyll Schomberg, Mr. Matthew Boyall, Mr. Glen Looby

**3:50pm Command Professional Edition: Initial insights of a commercial military operational modelling and simulation tool**

» Ms. Sophie Hagley, Dr. Edward Lo, Dr. Peter Hoek, Mr. Andrew Donohoo, [Dr. James Peacock](#)

**4:10pm Strongly connected components for modelling of communications**

» [Mr. Jonathon Harms](#), Dr. Ameer Khan

**4:30pm The STELaRLab model for Modern, Rapid & Adaptive Operations Analysis**

» [Mr. Sam Thompson](#), Dr. Arnab Dasgupta, Dr. Scott Beinke, Dr. Dushy Tissa, Mr. Michael Turner, Mr. Kevin McDonald

**4:50pm An instance space analysis of combat simulations to understand the impact of force and information advantage on survival ratios**

» [Prof. Kate Smith-Miles](#), Dr. Sanat Bista, Dr. Li Jiang

**3:30pm I2. Practices, tools and methods to support model-based decision-making processes with stakeholders**

*Room 104, New Law Building*

Chaired by: Prof. Nagesh Kolagani

**3:30pm Towards a competency framework for participatory modeling: Identifying core competencies**

» [Dr. Sondoss Elsworth](#), Dr. Elena Bakhanova, Dr. Raimo Hämäläinen, Prof. Alexey Voinov

**3:50pm Design of experiment in participatory modelling**

» [Dr. Fateme Zare](#), Dr. Sondoss Elsworth

**4:10pm Mobilisation of a comprehensive multi-scale evaluation framework for participatory modelling to improve youth mental health policy, planning, and outcomes**

» [Ms. Grace Lee](#), Prof. Ian Hickie, Prof. Jo-An Occhipinti, Dr. Christine Song, Dr. Adam Skinner, Prof. Kenny Lawson, Dr. Louise Freebairn

**4:30pm Participatory system dynamics modelling of groundwater use in India**

» Mr. Pavan Kumar Matham, [Prof. Nagesh Kolagani](#), Dr. Supriya Pattanayak, Dr. Uma Shankari

**4:50pm Participatory social systems modeling**

» [Dr. Gnana Bharathy](#)

**3:30pm J1. Ecohydrological modelling**

*Room 106, New Law Building*

Chaired by: Dr. Edoardo Daly

**3:30pm The effect of population model choice and network topologies on extinction time patterns**

» [Ms. Erandathi Ekanayake](#), Prof. J. Angus Webb, Prof. Michael J. Stewardson

**3:50pm Assessing the effects of natural data variability on predictions of coastal wetland vulnerability in SE Australian**

» [Mr. Angelo Breda](#), Dr. Patricia Saco, Dr. Steven Sandi, Dr. Jose Rodriguez

**4:10pm Simulations of dryland wetlands to assess availability of habitat services**

» [Dr. Steven Sandi](#), Dr. Patricia Saco, Dr. Kelsey McDonough, Dr. Jose Rodriguez, Dr. Juan Quijano-Baron, Dr. Li Wen, Prof. Neil Saintilan



Continued from **Tuesday, 7 December**

4:30pm **Assessing waterbird breeding conditions using an emulator of wetland inundation regime**  
 » [Dr. Juan Quijano-Baron](#), Dr. Jose Rodriguez, Prof. George Kuczera, Dr. Patricia Saco, Dr. Steven Sandi, Mrs. Rebercca Carlier, Dr. Li Wen, Dr. Kelsey Mcdonough

3:30pm **J13. River system modelling for water resources management: Advances and challenges**  
*Room 342, New Law Building*  
 Chaired by: Dr. Dushmanta Dutta and Mr. Richard Beecham and Ms. Rachel Blakers

3:30pm **Peel River System Model: Using palaeo-stochastic climate to evaluate water security options in a catchment with high surface-groundwater interaction**  
 » [Mr. Michael Sugiyanto](#), Mr. Richard Beecham

3:50pm **Comparing suitability of two rainfall runoff models in a Victorian ephemeral catchment**  
 » [Ms. Ella Guthrie](#)

4:10pm **Improving catchment runoff estimates by ameliorating the impacts of SILO pluviometer data discontinuities through expanding the SILO reference database**  
 » [Dr. Lachlan Stewart](#), Dr. Stephen Jeffrey

4:30pm **Modelling in-stream nutrient processes under different streamflow regimes**  
 » [Mr. Donghwan Kim](#), Dr. Melanie Roberts, Dr. Jing Lu, Dr. David Roberts, Prof. David Hamilton

3:30pm **B3. Agricultural systems**  
*Room 344, New Law Building*  
 Chaired by: Dr. Malcolm McPhee

3:30pm **Modelling the benefits of using genomic tools to inform herd management decisions**  
 » [Dr. Adam Liedloff](#), Dr. Alison Laing, Dr. Sabine Schmoelzl, Mr. Brad Hine, Dr. Toni Reverter-Gomez, Dr. Laercio Porto Neto

3:50pm **Performance of the APSIM Classic-Wheat yield prediction: a review and meta-analysis**  
 » [Ms. Shirui Hao](#), Prof. Dongryeol Ryu, Prof. Andrew Western, Dr. Eileen Perry, Dr. Heye Bogena, Prof. Harrie Jan Hendricks Franssen

4:10pm **A decision support tool for environmental impact assessment in mariculture: An integrated modelling approach**  
 » [Dr. Gayan Gunaratne](#), Mr. Harrison Carmody, Mr. Jason Crisp, Ms. Emma McCall, Dr. Louise Bruce

3:30pm **L2. Modelling water treatment and water quality management systems**  
*Room 346, New Law Building*  
 Chaired by: Dr. Kefeng Zhang and Dr. Anna Lintern

3:30pm **KEYNOTE: Mitigation knowledge gaps: a call to arms**  
 » [Dr. Annette Semadeni-Davies](#), Dr. Sandy Elliott

4:10pm **Utility of remote sensing for understanding water quality changes in small urban waterbodies**  
 » [Ms. Shuang Liu](#), Dr. William Glamore, Dr. Bojan Tamburic, Dr. Fiona Johnson

4:30pm **A sensitivity analysis of a water quality model for a constructed wetland**  
 » [Dr. Melanie Roberts](#), Dr. Jing Lu, Dr. Emad Kavehei, Dr. Fernanda Adame

3:30pm **N1. Microsimulation modelling for informing the solutions to Health, Tax and Demographic problems and policies**  
*Room 440, New Law Building*  
 Chaired by: Dr. Rupendra Shrestha and Prof. Robert Tanton



Continued from **Tuesday, 7 December**

3:30pm **Modelling the ACT stamp duty and rates system using a housing microsimulation model**  
 » [Prof. Robert Tanton](#), Dr. Yogi Vidyattama, Prof. Jinjing Li, Dr. Hai Anh La

3:50pm **An economic-modelling framework to assess the impact of population-wide preconception carrier screening for genetic disease**  
 » [Dr. Evelyn Lee](#), Dr. Rupendra Shrestha, Prof. Deborah Schofield

4:10pm **Cost effectiveness analysis of precision medicine in childhood cancer**  
 » [Mr. Owen Tan](#), Prof. Deborah Schofield, Dr. Rupendra Shrestha

3:30pm **E3. Sustainable systems design**  
 Room 442, New Law Building  
 Chaired by: Prof. John Boland

3:30pm **Wave energy production in the Sardinia Western coast: current status and future prospects**  
 » [Dr. Andrea Sulis](#), Dr. Michael Henriksen, Dr. Peter N. Svendsen, Prof. S. Serreli

3:50pm **Impacts of groundwater and soil types on building ground-coupled heat loss**  
 » [Dr. Zhenggen REN](#), Ms. Melissa James, Dr. Dong Chen

4:10pm **CleanGrid – a 100% renewable power supply modelling platform for Australia**  
 » [Dr. Mengyu Li](#), Prof. Manfred Lenzen, Mr. Felix Keck

4:30pm **Probabilistic forecasting of wind and solar farm output**  
 » [Prof. John Boland](#), Dr. Sleiman Farah

4:50pm **Poster session**  
 Online through EventsAir platform

6pm **MSSANZ AGM**  
 Room 104, New Law Building

**Wednesday, 8 December**

7:30am **Registration and information desk**  
 Foyer, Level 1, New Law Building

8:15am **Platinum sponsor talk**  
 Eastern Avenue Auditorium, University of Sydney

8:30am **Plenary**  
 Eastern Avenue Auditorium, University of Sydney

**Unite and conquer: Overcoming decision paralysis and confusion in the face of a cloud of methods, models and metrics**  
 » Professor Holger Maier

9:15am **M9. General OR techniques and applications**  
 Room 024, New Law Building  
 Chaired by: Dr. David Marlow

9:15am **Invited paper: The use of technology foresight methods for emerging and disruptive technology assessment symposia**  
 » [Mrs. Patricia Dexter](#), Mr. Mark Burnett, Mr. Duncan Tailby

9:35am **Hybrid metaheuristics for channel scheduling**  
 » [Dr. Paul Corry](#), Prof. Christian Bierwirth

9:55am **The Open Maritime Traffic Analysis Dataset**  
 » [Dr. Martin Masek](#), Dr. Chiou Peng Lam, Mr. Travis Rybicki, Mr. Jacob Snell, Mr. Daniel Wheat, Mr. Luke Kelly, Dr. Damion Glassborow, Ms. Cheryl Smith-Gander



Continued from **Wednesday, 8 December**

10:15am **Nesting data-driven robust multi-objective decisions for integrated precinct-scale energy-water system planning**  
 » [Mr. Glauber Cardoso de Oliveira](#), Dr. Edoardo Bertone, Prof. Rodney Stewart

9:15am **K5. The future of hydrometeorological forecasting: uncertainty, advances and applications**  
*Room 104, New Law Building*  
 Chaired by: Dr. Julien Lerat

9:15am **Using short-term ensemble weather forecasts to evaluate irrigation decisions**  
 » [Dr. Danlu GUO](#), Prof. QJ Wang, Prof. Dongryeol Ryu, Dr. Qichun Yang, Mr. Peter Moller, Prof. Andrew Western

9:35am **Concurrently generated inter-annual ensemble forecasts of surface and groundwater availability**  
 » [Dr. David Robertson](#), Dr. Guobin Fu, Dr. Olga Barron, Mr. Geoff Hodgson, Dr. Andrew Schepen

9:55am **KEYNOTE: From hydro-climate model to services: case study of the AWRA modelling system**  
 » [Dr. Julien Lerat](#), Dr. Andrew Frost, Dr. Jai Vaze, Dr. Elisabeth Vogel, Dr. Wendy Sharples, Dr. Ulrike Bende-Michl, Dr. Justin Hughes, Mr. Shaun Kim

9:15am **H2. Data science and simulation modelling methods for health and mental health applications**  
*Room 106, New Law Building*  
 Chaired by: Dr. Louise Freebairn and Ms. Grace Lee

9:15am **Using participatory methods to develop place-based models for youth mental health systems**  
 » [Dr. Louise Freebairn](#), Prof. Jo-An Occhipinti, Dr. Christine Song, Ms. Samantha Huntley, Prof. Kenny Lawson, Ms. Grace Lee, Mr. Nicholas Ho, Mr. Simon Chiu, Dr. Adam Skinner, Mr. Samuel Hockey, Prof. Ian Hickie

9:35am **Prototyping, developing, and iterating a gamified survey to evaluate participatory systems modelling for youth mental health: Quality assurance pilot**  
 » [Ms. Grace Lee](#), Prof. Ian Hickie, Prof. Jo-An Occhipinti, Dr. Christine Song, Ms. Samantha Huntley, Dr. Adam Skinner, Prof. Kenny Lawson, Mr. Samuel Hockey, Dr. Louise Freebairn

9:55am **Closing the gender gap and improving Australia's mental health in the COVID-19 era**  
 » [Mr. Nicholas Ho](#), Dr. Adam Skinner, Dr. Louise Freebairn, Prof. Jo-An Occhipinti, Prof. Ian Hickie

10:15am **Modelling social and occupational outcomes for young people who attend early intervention mental health services**  
 » [Dr. Frank Iorfino](#), Dr. Ante Prodan, Dr. Mathew Varidel, Dr. Kirill Glavatskiy, Dr. Rehez Ahlip, Prof. Ian Hickie

9:15am **E2. Modelling and measuring the circular economy**  
*Room 340, New Law Building*  
 Chaired by: Dr. Tim Baynes

9:15am **Modelling the circularity of pastoral sheep and beef farms**  
 » [Dr. Vicki Burggraaf](#), Mr. Geoffrey Mercer

9:35am **Regional assessment of the circular economy: Data gaps**  
 » [Mr. Kyle Stevens](#), Prof. Will Rifkin

9:55am **A Waste and Recycling Input-Output Framework for concurrent monetary and physical flows accounting**  
 » [Dr. Tim Baynes](#), Dr. Jacob Fry

9:15am **G5. Flood and tsunami modelling: Techniques and applications**  
*Room 342, New Law Building*  
 Chaired by: Dr. Fazlul Karim and Dr. Jin Teng

9:15am **KEYNOTE: Generating two-monthly surface water images for the Murray-Darling Basin**  
 » [Dr. Catherine Ticehurst](#), Dr. Jin Teng, Dr. Ashmita Sengupta





Continued from **Wednesday, 8 December**

9:55am **Urban Land Use Land Cover extraction for catchment modelling using deep learning techniques**

» [Mr. Siming Gong](#), Prof. James Ball, Dr. Nic Surawski

10:15am **Two-monthly maximum water extent and depth maps revealing the inundation history in MDB**

» [Dr. Jin Teng](#), Dr. Catherine Ticehurst, Mr. Steve Marvanek, Mr. Dave Penton, Mr. Darren King, Mr. Andrew Freebairn, Dr. Ashmita Sengupta

9:15am **B8. Bioeconomic modelling of agricultural systems**

*Room 344, New Law Building*

Chaired by: Dr. Malcolm McPhee and Dr. Val Snow

9:15am **A bioeconomic model for the identification of sustainable grassland management strategies under climate change**

» [Ms. Andrea Kaim](#)

9:35am **Building responsive bio-economic models to replicate complex farm management decisions for mixed irrigation farming systems in southern NSW**

» [Mrs. Kim Broadfoot](#), Mr. Michael Cashen, Dr. Karl Behrendt, Dr. Anthony Clark, Mr. Phil Graham

9:55am **Changing crop management improves farm level productivity and profitability for smallholder farmers in northern India**

» [Dr. Yacob Beletse](#), Dr. Alison Laing, Mrs. Di Prestwidge, Dr. Mahesh Gathala, Dr. Nataraja Subash, Dr. Adam Liedloff

10:15am **The 'cause and effect' of water decisions: Generalizing water production functions for viticulture through biophysical simulation**

» [Dr. Matthew Knowling](#), Prof. Seth Westra, Dr. Bree Bennett, Dr. Bertram Ostendorf, Dr. Rob Walker, Dr. Anne Pellegrino, Dr. Everard Edwards, Dr. Cassandra Collins, Dr. Dylan Grigg, Dr. Vinay Pagay

9:15am **L2. Modelling water treatment and water quality management systems**

*Room 346, New Law Building*

Chaired by: Dr. Kefeng Zhang and Dr. Anna Lintern

9:15am **Evaluation of MUSIC for application in Singapore tropical climate**

» [Dr. Harsha Fowdar](#), Mr. Teck Heng Neo, Prof. Jiangyong Hu, Prof. David McCarthy

9:35am **A model based on DOC data for determination of alum dosing for drinking water treatment**

» [Mr. Hiua Daraei](#), Dr. John Awad, Dr. Edoardo Bertone, Prof. Rodney Stewart, Prof. Christopher Chow, Prof. Jinming Duan, Prof. John van Leeuwen

9:55am **Modelling of a five reactor Activated Sludge cascade process using ASM #1**

» [Dr. Simon Watt](#), Dr. Mark Nelson, Prof. Faisal Hai, Prof. Harvinder Sidhu

10:15am **The use of modelling in design of wastewater subsurface drip irrigation**

» [Prof. Freeman Cook](#), Mr. Peter Gearing, Ms. Sue Bennett, Mr. Roger Oakley

10:35am **Morning tea**

*Foyer, Level 1, New Law Building*

11:05am **M9. General OR techniques and applications**

*Room 024, New Law Building*

Chaired by: Dr. Sanath Darshana and Dr. David Marlow

11:05am **Using mixed integer-linear programming to manage a military aircraft fleet to life-of-type**

» [Dr. David Marlow](#), Prof. Robert Dell

11:25am **Measures to analyse sustainability in military workforce structures**

» [Mr. Cameron Pike](#), Prof. Bill Moran



Continued from **Wednesday, 8 December**

11:45am **Representing Defence Capability Portfolio as Set-Union Knapsack**  
» [Dr. Carlos Kuhn](#), Dr. Terry Weir, Dr. Greg Calbert, Dr. Ivan Garanovich

12:05pm **SPARC - A generic portfolio optimization and visualization tool**  
» [Ms. Carolyn Chen](#), Dr. Kendall Wheaton, Mr. Gregory van Bavel

12:25pm **Risks of AI: technical, ethical and existential**  
» [Mr. Jacob Koehler](#)

11:05am **K5. The future of hydrometeorological forecasting: uncertainty, advances and applications**  
*Room 104, New Law Building*  
Chaired by: Mr. James Bennett

11:05am **A convolutional neural network-based statistical post-processing method for precipitation forecasts**  
» [Dr. Wentao Li](#), Dr. Baoxiang Pan, Prof. Qingyun Duan, Prof. Jiangjiang Xia

11:25am **Extending a joint probability modelling approach for post-processing ensemble precipitation forecasts from numerical weather prediction models**  
» [Mr. Pengcheng Zhao](#), Prof. QJ Wang, Dr. Wenyan Wu, Dr. Qichun Yang

11:45am **Power transformation of variables for post-processing precipitation forecasts: regionally versus locally optimized parameter values**  
» [Ms. Yiliang Du](#), Prof. QJ Wang, Dr. Wenyan Wu, Dr. Qichun Yang

12:05pm **Flood forecasting with convective-scale ensembles in New Zealand: value of lagging forecasts**  
» [Dr. Celine Cattoen](#), Dr. Stuart Moore, Dr. Trevor Carey-Smith, Dr. Maria-Helena Ramos

12:25pm **Estimation of road closure risks along the Bruce highway using the AWRA-L water balance model**  
» [Dr. Elisabeth Vogel](#), Dr. Julien Lerat, Mr. Luke A. Gericke, Mr. Christopher A. Russell, Mr. Andrew Preece, Mr. Greg Stuart, Dr. Robert Pipunic, Dr. Zaved Khan, Dr. Chantal Donnelly

11:05am **H2. Data science and simulation modelling methods for health and mental health applications**  
*Room 106, New Law Building*  
Chaired by: Dr. Louise Freebairn and Ms. Grace Lee

11:05am **Functional components used in agent-based models of mental illness progression and intervention**  
» [Dr. Ante Prodan](#), Dr. Frank Iorfino, Dr. Kirill Glavatskiy, Dr. Mathew Varidel, Dr. Rehez Ahlip, Prof. Ian Hickie

11:25am **The role of embodied cognition in linguistic mental health analysis**  
» [Dr. David Kernot](#), Dr. Miranda Van Hooff, Dr. Ellie Lawrence-Wood, Dr. Leanne Glenny, Dr. Collette Snowden, Prof. Kerry Green, Dr. Catherine Son

11:45am **Health service utilisation and environmental influences in the Australian Capital Territory**  
» [Ms. Alexandra Raulli](#), Dr. Pramod Adhikari, Mr. Glenn Draper, Ms. Elizabeth Chalker, Mr. Warren Holroyd, Dr. L.Kurt Kreuger, Dr. Louise Freebairn

11:05am **K11. Long term changes in the hydrological cycle under a variable and changing climate**  
*Room 340, New Law Building*  
Chaired by: Dr. Margarita Saft

11:05am **Explaining rainfall runoff changes associated with the Millennium Drought**  
» [Dr. Keirnan Fowler](#), Dr. Murray Peel, Dr. Tim Peterson, Dr. Margarita Saft, Prof. Rory Nathan



Continued from **Wednesday, 8 December**

11:25am **Observation based gridded annual runoff estimates over Victoria, Australia**

» [Mrs. Hansini Gardiya Weligamage](#), Dr. Keirnan Fowler, Dr. Tim Peterson, Dr. Margarita Saft, Dr. Murray Peel

11:45am **Attributions of climatic characteristics on nonstationary rainfall-streamflow relationship in southeast Australia**

» [Dr. Guobin Fu](#), Dr. Francis Chiew, Dr. Hongxing Zheng, Dr. David Robertson, Dr. Nick Potter, Dr. Jin Teng, Dr. David Post, Dr. Steve Charles, Dr. Lu Zhang

12:05pm **Mapping additional streamflow decline due to shifts in catchment response during the Millennium Drought**

» [Dr. Margarita Saft](#), Dr. Murray Peel, Mr. Phillip Jordan, Mr. David Shepherd, Mr. Geoffrey Steendam, Ms. Rebecca Lett, Dr. Tim Peterson

12:25pm **Understanding shifts in evapotranspiration under a drying climate**

» [Mrs. Hansini Gardiya Weligamage](#), Dr. Keirnan Fowler, Dr. Tim Peterson, Dr. Margarita Saft, Prof. Dongryeol Ryu, Dr. Murray Peel

11:05am **G5. Flood and tsunami modelling: Techniques and applications**

*Room 342, New Law Building*

Chaired by: Dr. Catherine Ticehurst and Dr. Jin Teng

11:05am **From offshore to onshore probabilistic tsunami hazard assessment: Efficient Monte-Carlo sampling**

» [Dr. Gareth Davies](#)

11:25am **Probabilistic tsunami inundation assessment from a near-field earthquake source**

» [Dr. Kaya M Wilson](#), Dr. Gareth Davies

11:45am **Development of fast flood inundation emulator using deep learning with spatial reduction and reconstruction methods**

» [Ms. Yuerong Zhou](#), Dr. Wenyan Wu, Prof. Rory Nathan, Prof. QJ Wang

12:05pm **Modelling the impacts of bushfire on flood frequency and catchment sediment load**

» [Dr. Fazlul Karim](#), Dr. Tapas Biswas, Dr. Alex Sims, Dr. Klaus Joehnk

12:25pm **Invited paper: 2D hydrodynamic modelling for the Cooper Creek Floodplain**

» [Dr. Cherry May Mateo](#), Dr. Jai Vaze, Dr. Russell Crosbie, Mr. Shaun Kim, Mr. Steve Marvanek, Dr. Catherine Ticehurst

11:05am **B5. Sustainable and resilient agrifood value chains**

*Room 344, New Law Building*

Chaired by: Dr. Val Snow and Dr. Firouzeh Taghikhah

11:05am **KEYNOTE: Resilience of agri-food supply chains: Australian developments after a decade of supply and demand shocks**

» [Dr. Firouzeh Taghikhah](#), Prof. Alexey Voinov, Dr. Derek Baker, Dr. Stuart Mounter, Dr. Billy Sung, Dr. Micheal Rosemann, Dr. Moe Thander Wynn

11:45am **Impacts of localizing food system on farmers' livelihood resilience**

» Ms. Pei Shan Loo, [Mr. Furkan Önal](#)

12:05pm **A hybrid approach of water-related energy quantification of the food system**

» [Mr. K M Nazmul Islam](#), Prof. Steven Kenway, Dr. Marguerite Renouf, Dr. Thomas Wiedmann

12:25pm **Economically optimum N fertiliser decisions for rice cultivation in Sri Lanka: Does soil type matter?**

» [Mrs. Hemali kanthilanka](#), Prof. Bob Farquharson, Dr. Thiagarajah Ramilan, Prof. Jeevika Weerahewa

11:05am **L3. Water quality and ecological interactions in lakes, estuaries and coastal seas**

*Room 346, New Law Building*

Chaired by: Prof. Andrew Western



Continued from **Wednesday, 8 December**

11:05am **Invited paper: Modelling water quality for Lake Victoria: validating lake behaviour with satellite imagery**  
 » [Dr. Alicja Makarewicz](#), Mr. Jeffrey Newman, Dr. Rob Daly, Dr. Brooke Swaffer, Dr. Leon Van Der Linden

11:25am **An empirically based model of water mass balance and nutrient loads in Lake Tuggeranong**  
 » [Dr. Rodney Ubrihien](#), Prof. Fiona Dyer

11:45am **Modelling methane emissions from lakes and reservoirs: case study of Lake Kinneret**  
 » [Ms. Kamilla Kurucz](#), Dr. Matthew Hipsey, Dr. Peisheng Huang

12:05pm **Linking adaptive catchment and lake models in real-time to guide autonomous monitoring**  
 » [Mr. Nicholas Hutley](#), Mr. Nathaniel Deering, Dr. Alistair Grinham, Dr. Badin Gibbes, Dr. Simon Albert

12:25pm **A case study in the use of hydrodynamic and water quality modelling tools to support the digitisation of Environmental Impact Assessment**  
 » [Ms. Emma McCall](#), Dr. Louise Bruce

11:05am **M5. Design and analysis of simulation experiments**  
*Room 440, New Law Building*  
 Chaired by: Dr. Andrew Gill and Ms. Jessica Penfold

11:05am **Regression-based approaches for simulation meta-modelling in the presence of heterogeneity and correlation**  
 » [Mr. Len Patrick Dominic Garces](#), Dr. Timofei Bogomolov, Dr. Belinda Chiera

11:25am **Comparing experimental designs using an anti-ship missile defence exemplar**  
 » [Dr. Patrick van Bodegom](#), Mr. Phillip Mellen, Dr. THO DO

11:45am **Heteroscedasticity and correlation in linear regression**  
 » [Dr. Andrew Gill](#)

12:05pm **Closed-loop stochastic simulation: determining the number of replications and anomaly detection in the output metrics**  
 » [Dr. Lisa Blumson](#), Dr. Belinda Chiera

12:25pm **Factor screening for binary responses from combat simulations**  
 » Dr. Haydar Demirhan, Prof. Stelios Georgiou, [Dr. Andrew Gill](#), Dr. Stella Stylianou

12:45pm **Lunch**  
*Foyer, Level 1, New Law Building*

1:45pm **M9. General OR techniques and applications / M2. Simulation-based analysis in decision-making context**  
*Room 024, New Law Building*  
 Chaired by: Dr. Sanath Darshana and Dr. David Marlow and Dr. Hasan Turan

1:45pm **Forecasting sales with Bayesian networks: a case study of a supermarket product in the presence of promotions**  
 » [Mr. Muhammad Hamza](#), Dr. Mahdi Abolghasemi, Dr. Abraham Oshni Alvandi

2:05pm **Decision support to reduce the risks associated with combustible cladding fires**  
 » [Dr. Elena Tartaglia](#), Dr. Simon Dunstall, Dr. Carolyn Huston, Dr. Andreas Duenser, Dr. Ulrich Engelke

2:25pm **Optimisation of power system shutdown policies to reduce bushfire risk**  
 » [Dr. Simon Dunstall](#), Dr. Elena Tartaglia, Dr. Carolyn Huston, Dr. Alec Stephenson



Continued from **Wednesday, 8 December**

2:45pm **Real-time ensemble assimilation of image-based canopy data into a process-based model for improved vineyard forecasting, situational awareness and decision-making**

» [Dr. Matthew Knowling](#), Dr. Jeremy White, Dr. Cassandra Collins, Dr. Dylan Grigg, Prof. Seth Westra, Dr. Bertram Ostendorf, Dr. Bree Bennett, Dr. Ayman Alzraiee, Mr. Wayne Kiely, Dr. Vinay Pagay

3:05pm **Networks, synchronisation and fatigue: Modelling busy meeting schedules**

» [Mr. Takuma Adams](#), Dr. Alexander Kalloniatis

1:45pm **K5. The future of hydrometeorological forecasting: uncertainty, advances and applications**

*Room 104, New Law Building*  
Chaired by: Dr. Celine Cattoen

1:45pm **Inflow forecasting for hydro operations – the journey towards world's best practice**

» [Mr. Kim Robinson](#), Mr. James Bennett, Ms. Sarah Blundy, Dr. Prafulla Pokhrel, Dr. Andrew Schepen, Dr. Durga Shrestha, Mr. Mark Willis

2:05pm **Ensemble forecast-based dam release optimisation for controlled flooding**

» [Dr. Seline Ng](#), Dr. David Robertson, Mr. James Bennett

2:25pm **Invited paper: An improved trend-aware post-processing method for seasonal precipitation forecasts**

» [Ms. Yawen Shao](#), Prof. QJ Wang, Dr. Andrew Schepen, Prof. Dongryeol Ryu

2:45pm **Advances in subseasonal streamflow forecasting: An Overview**

» [Dr. Mark Thyer](#), Dr. David McInerney, Prof. Dmitri Kavetski, Mr. Richard Laugesen, Dr. Fitsum Woldemeskel, Dr. Narendra Tuteja, Prof. George Kuczera

3:05pm **A comparative study on 10 and 30-year simulation of CMIP5 decadal hindcast precipitation at catchment level**

» [Mr. Md Monowar Hossain](#), Dr. Nikhil Garg, Dr. A. H. M. Faisal Anwar, Dr. Mahesh Prakash, Dr. Mohammed Bari

1:45pm **J4. Hydrological/Water balance modelling for water services: impact and value**

*Room 106, New Law Building*

Chaired by: Dr. Andrew Frost and Dr. Ashkan Shokri and Dr. Jai Vaze

1:45pm **Invited paper: Recent learnings towards achieving high quality probabilistic predictions in practical applications of hydrological models**

» [Prof. Dmitri Kavetski](#), Dr. David McInerney, Mr. Jason Hunter, Dr. Mark Thyer

2:05pm **A method to calibrate daily rainfall-runoff models to monthly streamflow data**

» [Dr. Julien Lerat](#), Prof. Dmitri Kavetski, Dr. David McInerney, Dr. Mark Thyer

2:25pm **Downscaling remote sensing soil moisture assimilation models using data fusion and deep learning**

» [Dr. Ignacio Fuentes](#), Mr. José Padarian, Prof. Willem Vervoort

2:45pm **Impact of climate change and dynamic vegetation and soil conditions on water resources in a sub-tropical catchment in South-East Queensland, Australia**

» [Mr. Chao Deng](#), Prof. Hong Zhang, Prof. David Hamilton

3:05pm **Sewer pipe tree root choke prediction using AWRA-L**

» Dr. Andrew Frost, Dr. Ashkan Shokri, [Dr. Ali Azarnivand](#), Dr. Greg Keir, Dr. Mei Sun Yee, Mr. Luther Uthayakumaran

1:45pm **J9. Hydrologic non-stationarity and extrapolating models to predict the future**

*Room 340, New Law Building*

Chaired by: Mr. Shaun Kim



Continued from **Wednesday, 8 December**

- 1:45pm **Invited paper: Catchment may not recover from drought**  
» [Dr. Tim Peterson](#), Dr. Margarita Saft, Dr. Murray Peel, Mr. Andrew John
- 2:05pm **How sensitive are streamflow projections to shifts in rainfall runoff relationships?**  
» Dr. Keirnan Fowler, Dr. Avril Horne, Mr. Connor McCutcheon, Prof. Rory Nathan, [Dr. Murray Peel](#), Dr. Tim Peterson, Dr. Margarita Saft, Prof. Robert Wilby
- 2:25pm **Systematic investigation of hydrological non-stationarity for robust hydrological modelling**  
» [Dr. Hongxing Zheng](#), Dr. Francis Chiew, Dr. Guobin Fu, Dr. David Robertson
- 2:45pm **Modelling hydrologic non-stationarity for robust projections of water futures**  
» [Dr. Francis Chiew](#), Dr. Hongxing Zheng, Dr. David Robertson, Dr. Julien Lerat
- 3:05pm **Predicting runoff in a drier future with limited data: A case study**  
» [Dr. Justin Hughes](#), Mr. Bill Wang, Dr. Richard George
- 1:45pm **B5. Sustainable and resilient agrifood value chains / B7. Building spatially-explicit simulation models of biological systems**  
*Room 344, New Law Building*  
Chaired by: Dr. Val Snow and Dr. Hazel Parry and Dr. Alan Dorin and Dr. Firouzeh Taghikhah
- 1:45pm **Trade strategies to mitigate the global impact of regional wheat production shocks**  
» Mr. Peter Golding, Mr. Sam Kapadia, Ms. Stella Naylor, Mr. Jonty Schulz, [Prof. Holger Maier](#), Prof. Upmanu Lall, Dr. Marijn van der Velde

- 2:05pm **Using milk tanker pickup and weather data to quantify the impacts of heat stress on milk production in Australia**  
» [Dr. Rachele Meyer](#), Dr. Ann-Maree Graham, Dr. Graham Hepworth, Prof. Richard Eckard
- 2:25pm **Models and realities: Iterative refinement and understanding in agent-based models of honeybee perception and action**  
» [Dr. Alan Dorin](#), Dr. Tim Taylor, Dr. Adrian Dyer
- 2:45pm **Spatial modelling of cross-pollination in crop systems through multi-point honeybee tracking**  
» [Mr. Malika Nisal Ratnayake](#), Dr. Adrian Dyer, Dr. Alan Dorin
- 3:05pm **An analysis of the spatial distribution of Western Flower Thrips within strawberry polytunnels**  
» [Ms. Don Chathurika Kshanthi Amarathunga](#), Dr. Hazel Parry, Prof. John Grundy, Dr. Alan Dorin
- 1:45pm **L3. Water quality and ecological interactions in lakes, estuaries and coastal seas / L4. Modelling of erosion and sediment transport in catchments**  
*Room 346, New Law Building*  
Chaired by: Ms. Susan Cuddy and Prof. Andrew Western
- 1:45pm **Modelling purified recycled water inputs to Lake Wivenhoe, Queensland, Australia**  
» [Dr. Songyan Yu](#), Prof. David Hamilton, Dr. Badin Gibbes, Mr. Tony Weber, Dr. Marieke Frassl, Dr. Katrin Sturm, Dr. Cameron Veal
- 2:05pm **Integrated modelling assessment of nutrient cycling and water quality in the Peel-Harvey Estuary**  
» [Dr. Peisheng Huang](#), Dr. Matthew Hipsey, Mr. Brendan Busch, Mr. Karl Hennig
- 2:25pm **Solving the puzzle of mercury in Lake Macquarie: Using hydrodynamic modelling to understand sources of mercury from coal-fired power plants**  
» [Dr. Anna Lintern](#), Dr. Larissa Schneider, Mr. Maxwell Warren, Mr. Paul Winn, Mr. Lauri Myllyvirta, Dr. Sara Beavis, Dr. Bernd Gruber



Continued from **Wednesday, 8 December**

2:45pm **Modelling the fate and transport of trace elements from three ports in the marine coastal waters of the Abu Dhabi Emirate**  
 » Dr. Louise Bruce, Dr. Ala'a Rezeq, Dr. Rajan Anbiah, Dr. Michael Barry, Dr. Hamid Fanai, Mx. Kreshan Heera, Ms. Emma McCall, Dr. Kabir Suara, Mr. Kyle Woodborne, Mr. Mitchell Smith, Dr. Ian Teakle, Dr. Shaikha Al Hosani

3:05pm **Setting tolerable soil erosion and vegetation cover targets across New South Wales**  
 » Dr. Xihua Yang, Dr. John Leys, Dr. Jonathan Gray, Mr. Mingxi Zhang

1:45pm **F1. Network modelling for complicated problems: Dealing with uncertainty in network modelling for decision support**  
*Room 440, New Law Building*  
 Chaired by: Dr. Helen Mayfield

1:45pm **Keeping models as (un)certain as we are: ecological forecasts from process-based models calibrated to observed data using Bayesian inference**  
 » Dr. Gloria Monsalve-Bravo, Dr. Matthew P. Adams, Dr. Nicholas Dexter, Dr. Eve McDonald-Madden

2:05pm **Model selection and sloppiness in ecology**  
 » Ms. Sarah Vollert, Dr. Robert Salomone, Dr. Gloria Monsalve-Bravo, Dr. Matthew P. Adams, Dr. David Warne

2:25pm **Unpacking wicked health problems using Bayesian Network Modelling**  
 » Dr. Esther Onyango, Dr. Oz Sahin

2:45pm **Value-of-information analysis: A mathematical toolkit connecting models, monitoring and decision-making**  
 » Dr. Matthew P. Adams, Dr. Kate Helmstedt, Ms. Sarah Vollert, Dr. Ryan Heneghan, Dr. Michael Bode, Dr. Hui Xiao

3:05pm **Bayesian networks as a tool estimating the risk and benefits of COVID-19 vaccines**  
 » Dr. Helen Mayfield, Prof. Colleen Lau, Dr. Andrew Baird, Mr. Samuel Brown, Dr. Anoop Enjeti, Dr. John Litt, Ms. Jane Sinclair, Dr. Kirsty Short, Dr. Hassan Vally, Mr. Aapeli Vuorinen, Dr. Michael Waller, Prof. Kerrie Mengersen

3:30pm **Afternoon tea**  
*Foyer, Level 1, New Law Building*

4pm **M2. Simulation-based analysis in decision-making context**  
*Room 024, New Law Building*  
 Chaired by: Dr. Fatemeh Jalalvand

4pm **The closed loop military maintenance workforce: A simulation-based optimisation approach**  
 » Mr. Kurt Withers, Dr. Hasan Turan, Dr. Sanath Kahagalage, Dr. Sondoss Elsawah

4:20pm **MOOR: Model-based Offline Reinforcement Learning for Sustainable Fishery Management**  
 » Ms. Jun Ju, Dr. Hanna Kurniawati, Prof. Dirk Kroese, Dr. Nan Ye

4:40pm **Evaluating instruction quality across narrative modality using measures of real-time cognitive load**  
 » Dr. Shamus Smith, Dr. Karen Blackmore, Dr. Steven Wark, Dr. Marcin Nowina-Krowicki

5pm **A novel graph-theoretical approach to find a reduced set of Pareto optimal solutions for multi-objective optimisation problems: with a case study in defence capability management**  
 » Dr. Sanath Darshana, Dr. Hasan Turan, Dr. Fatemeh Jalalvand, Dr. Sondoss Elsawah

5:20pm **Literature review on medical evacuation in military**  
 » Dr. Sumana Biswas, Dr. Hasan Turan, Dr. Sondoss Elsawah



Continued from **Wednesday, 8 December**

5:40pm **A discrete-event simulation approach to improve the planning efficiency of the Australian Institute of Marine Science's Great Barrier Reef Long-Term Monitoring Program**  
» [Dr. Guvenc Dik](#), Dr. Paul Corry

4pm **K5. The future of hydrometeorological forecasting: uncertainty, advances and applications**  
*Room 104, New Law Building*  
Chaired by: Dr. Seline Ng

4pm **Invited paper: Improving sub-seasonal streamflow forecasts across flow regimes**  
» [Dr. David McLnerney](#), Dr. Mark Thyer, Prof. Dmitri Kavetski, Mr. Richard Laugesen, Dr. Fitsum Woldemeskel, Dr. Narendra Tuteja, Prof. George Kuczera

4:20pm **Using ensemble streamflow forecasts to improve seasonal determination outlooks and support irrigation decision making**  
» [Mr. Tristan Graham](#), Dr. Yating Tang, Prof. QJ Wang, Prof. Andrew Western, Dr. Wenyan Wu, Mr. Guy Ortlipp, Dr. Mark Bailey, Dr. Senlin Zhou, Dr. Kirsti Hakala, Dr. Qichun Zhou

4:40pm **Advanced wavelet-based variance transformation algorithms for ENSO forecasting over long lead times**  
» [Dr. Ze Jiang](#), Prof. Ashish Sharma, Dr. Fiona Johnson

5pm **Assessing the impact of Earth Observation and in-situ data assimilation on seasonal hydrological predictions**  
» [Dr. Jude Musuuza](#), Dr. Ilias Pechlivanidis

4pm **J4. Hydrological/Water balance modelling for water services: impact and value**  
*Room 106, New Law Building*  
Chaired by: Dr. Andrew Frost and Dr. Ashkan Shokri and Dr. Jai Vaze

4pm **Use cases of the Australian Water Resources Assessment Model (AWRA-L v7)**  
» [Dr. Andrew Frost](#), Dr. Greg Keir, Dr. Ashkan Shokri, Dr. Ali Azarnivand

4:20pm **Recent improvements to the Australian Water Resources Assessment Landscape Model (version 7)**  
» Dr. Andrew Frost, [Dr. Ashkan Shokri](#), Dr. Greg Keir, Mrs. Katayoon (Katy) Bahramian, Dr. Ali Azarnivand

4:40pm **Treatment of uncertainty for root cause analysis of leakage alarms in open water channels for agricultural water delivery infrastructure**  
» [Mr. Samuel Hutchinson](#), Dr. Joseph Guillaume

5pm **Assessment of flood risk predictions based on continental-scale hydrological forecast**  
» [Dr. Zaved Khan](#), Dr. Elisabeth Vogel, Dr. Julien Lerat, Mrs. Katayoon (Katy) Bahramian, Dr. Andrew Frost, Mr. Justin Robinson

5:20pm **The local influence of residential infill on the urban water flows: a multi-city analysis**  
» [Mr. Mojtaba Moravej](#), Prof. Steven Kenway, Dr. Marguerite Renouf, Dr. Christian Ulrich, Dr. Oscar Sainsbury, Prof. Nigel Bertram, Prof. Geoffrey London

5:40pm **IUWM principles incorporated model to improve urban water supply reliability in developing countries**  
» [Ms. Snigdha Mohapatra](#), Dr. Meenakshi Arora, Dr. Wenyan Wu, Mr. Manoj Tiwari

4pm **J9. Hydrologic non-stationarity and extrapolating models to predict the future**  
*Room 340, New Law Building*  
Chaired by: Dr. Justin Hughes

4pm **Non-stationary influences of climate drivers on low streamflow extremes**  
» [Ms. Pallavi Goswami](#), Dr. Tim Peterson, Dr. Arpita Mondal, Dr. Christoph Rüdiger





Continued from **Wednesday, 8 December**

- 4:20pm **Recent increase in Northern Australian streamflow unmatched over the past 600 years**  
» [Ms. Philippa Higgins](#), Dr. Jonathan Palmer, Dr. Mukund Rao, Dr. Martin Andersen, Prof. Chris Turney, Dr. Fiona Johnson
- 4:40pm **Spatial patterns in ecohydrologic response to climate change across a virtual catchment**  
» [Dr. Clare Stephens](#), Prof. Lucy Marshall, Dr. Fiona Johnson, Prof. Larry Band, Dr. Hoori Ajami, Dr. Laurence Lin
- 5pm **Modelling river transmission losses under changing hydrological regimes**  
» [Mr. Shaun Kim](#), Dr. Justin Hughes, Prof. Lucy Marshall, Dr. Cuan Petheram, Prof. Ashish Sharma, Dr. Jai Vaze, Dr. Russell Crosbie
- 5:20pm **A simple state-based approach to improve streamflow predictions under changing catchment conditions: An example application with IHACRES**  
» [Dr. Takuya Iwanaga](#), Dr. Barry Croke, Ms. Qian Wang, Prof. Tony Jakeman
- 4pm **K2. Hydroclimate in a changing climate**  
*Room 342, New Law Building*  
Chaired by: Sanaa Hobeichi and Dr. Chiara Holgate
- 4pm **Invited paper: How does salty snowfall in Antarctica help us understand Australian hydroclimate risk?**  
» [Ms. Danielle Udy](#), Dr. Tessa Vance, Dr. Anthony Kiem, Prof. Neil Holbrook
- 4:20pm **Comparison and interpretation of future streamflow projections from different climate projection products and hydrological impact modelling approaches**  
» Dr. Hongxing Zheng, [Dr. Francis Chiew](#), Dr. Steve Charles, Dr. Nick Potter, Dr. David Robertson, Dr. David Post, Mr. Joel Bailey, Mr. Geoffrey Steendam, Ms. Rebecca Lett, Dr. Marcus Thatcher, Dr. Fei Ji, Dr. Jozef Skytus

- 4:40pm **When there is less water when you need it most**  
» [Dr. Suresh Hettiarachchi](#), Dr. Conrad Wasko, Prof. Ashish Sharma
- 5pm **Investigating climate variabilities in Pan Third Pole based on CMIP6 predictions through Bayesian Model Averaging**  
» [Prof. Zhu Liu](#), Prof. Qingyun Duan, Ms. Xuewei Fan, Prof. Chiyuan Miao
- 5:20pm **Future rainfall distributions over Victoria, Australia under a changing climate**  
» [Dr. Surendra Rauniyar](#), Dr. Scott Power
- 5:40pm **More intense daily precipitation in CORDEX-SEA regional climate models than their forcing global climate models over Southeast Asia**  
» [Mrs. Phuong Loan Nguyen](#), Dr. Margot Bador, Prof. Lisa V. Alexander, Prof. Todd P. Lane, Prof. Thanh Ngo-Duc
- 4pm **B7. Building spatially-explicit simulation models of biological systems**  
*Room 344, New Law Building*  
Chaired by: Dr. Hazel Parry and Dr. Alan Dorin
- 4pm **Does memory help optimise fruit fly foraging at the landscape level?**  
» [Ms. Jaye Newman](#), Prof. Tony Clarke, Dr. Rehan Silva, Dr. Hazel Parry
- 4:20pm **Biosecurity and forestry pest modelling for the Green Triangle**  
» [Ms. Anna Weeks](#), Dr. Kathryn Sheffield, Mr. David Smith, Dr. John Weiss
- 4:40pm **Parametrisation and validation of a mechanistic individual-based distribution model for the red kite (*Milvus milvus*) in Switzerland**  
» [Mrs. Anne-Kathleen Malchow](#), Dr. Guillermo Fandos-Guzman, Dr. Urs Kormann, Dr. Martin Gruebler, Prof. Florian Hartig, Prof. Damaris Zurell



Continued from **Wednesday, 8 December**

5pm **Validating a spatially explicit bark beetle dispersal model with infestation patterns from a national park in Germany**  
 » [Mr. Bruno Walter Pietzsch](#), Mr. Felix Johannes Peter, Prof. Uta Berger

5:20pm **Invited paper: Using tracking data of animal movement: how to deal with personalities and contingencies?**  
 » [Prof. Volker Grimm](#)

4pm **L4. Modelling of erosion and sediment transport in catchments**  
*Room 346, New Law Building*  
 Chaired by: Ms. Susan Cuddy

4pm **Invited paper: Assessing performance of the MERGE model for simulating gully interventions**  
 » [Mr. Matthew Prentice](#), Mr. Mark Waud, Prof. David Hamilton, Dr. Melanie Roberts

4:20pm **Relative importance of hydrology optimization targets and sediment routine combinations towards calibration of a global sediment model**  
 » [Dr. Conrad Brendel](#), Dr. Alena Bartosova, Dr. Charlotta Pers

4:40pm **Calibration of a point scale model to the RUSLE**  
 » [Mr. Dan Rattray](#)

5pm **Using a numerical Landscape Evolution Model to assess long term erosional stability of tailings dams**  
 » [Prof. Greg Hancock](#), Prof. Tom Coulthard, Dr. Dimuth welivitiya

5:20pm **Application of a coupled soilscape-landform evolution model in assessing erosional stability of a post mining landform**  
 » [Dr. Dimuth Welivitiya](#), Prof. Greg Hancock

5:40pm **Use of high-resolution DEM for improving stream slope estimates and its effect on modelled fine sediment loads**  
 » [Mrs. Angela Pollett](#), Mr. Banti Fentie

4pm **M3. Intersection of machine learning and optimisation algorithms**  
*Room 440, New Law Building*  
 Chaired by: Dr. Jing Fu and Dr. Zahra HosseiniFard

4pm **Using machine learning models to predict the solutions for optimization problems**  
 » Dr. Mahdi Abolghasemi, [Prof. Babak Abbasi](#), Dr. Toktam Babaei, Dr. Zahra HosseiniFard

4:20pm **Joint optimization of privacy and communication cost for federated learning in IoT**  
 » [Ms. Yingxin Liu](#), Dr. Jingjin Wu

4:40pm **Blood units substitution decisions: a stochastic optimisation approach**  
 » [Dr. Zahra HosseiniFard](#), Prof. Babak Abbasi, Mr. Mostafa Khatami

5pm **Applying Neural Networks to conflate vector road datasets**  
 » [Mr. Artiom Bondarenko](#), Mr. Stephen McFallan, Dr. Andrew Higgins, Mr. Adam Mckeown, Ms. Caroline Bruce

5:20pm **Robustness of ML models in the classification of operational context simulated in network constrained environments**  
 » [Dr. Robert Davidson](#)

5:40pm **A large-scale multi-rider matching problem with renege passengers: single source case**  
 » [Dr. Jing Fu](#), Dr. Lele Zhang, Dr. Kai Huang, Dr. Zhiyuan Liu

7pm **Pre-dinner drinks**  
*Doltone House, Jones Bay Wharf, Level 3, 26032 Pirrama Road, Pyrmont*

7:30pm **Gala Awards Dinner**  
*Doltone House, Jones Bay Wharf, Level 3, 26032 Pirrama Road, Pyrmont*



## Thursday, 9 December

8am **Registration and information desk**  
*Foyer, Level 1, New Law Building*

8:15am **Platinum sponsor talk**  
*Eastern Avenue Auditorium, University of Sydney*

8:30am **President's Invited Plenary**  
*Eastern Avenue Auditorium, University of Sydney*

**Exploiting the exciting interface between mechanistic and statistical models**  
» Dr Matthew Adams

9:15am **M6. Big Data analytics for smart cities**  
*Room 024, New Law Building*  
Chaired by: Dr. Richard Watson

9:15am **The present and future of numerical environmental modelling**  
» [Dr. Peter Steinle](#)

9:35am **Sentiment analysis of social survey data for City of Casey**  
» [Dr. Peter Ryan](#), Dr. Richard Watson, Ms. Marianna Lepelaar

9:55am **Analysis of Victorian road accident environmental data**  
» Ms. Upuli Karunaratne, [Dr. Richard Watson](#), Dr. Peter Ryan

10:15am **Analysis of Australian weather data using Apache Storm**  
» [Dr. Richard Watson](#), Dr. Peter Ryan, Mr. Oscar Grimes, Mr. Quang Thuan Trinh, Mr. Vikrant Vaid, Ms. Shruthi Menon

9:15am **K4. Understanding ecohydrological processes and mechanism under changing environment**  
*Room 104, New Law Building*  
Chaired by: Dr. lina hao

9:15am **Spatial and temporal variability of carbon dioxide, methane and nitrous oxide emissions in a eutrophic shallow lake**  
» [Ms. guohua Li](#), Prof. Sheng Zhang, Prof. Lauri Arvola, Prof. Xiaohong Shi

9:35am **Non-stationarity of summer precipitation and its linkage with vegetation dynamics over a typical steppe in Inner Mongolia**  
» [Dr. Yixuan Wang](#), Prof. Limin Duan, Prof. Tingxi Liu, Prof. Yanyun Luo, Prof. Dongfang Li

9:55am **A method for determining the suitable scale of oasis and cultivated land based on ecological health assessment in arid area**  
» [Dr. lina hao](#), Prof. Xiaoling Su

10:15am **Ecohydrological model for grassland lacking historical measurements**  
» [Dr. Mingyang Li](#)

9:15am **J3. From whole of catchment to suburban lots - using eWater tools to inform water management decisions across all scales**  
*Room 106, New Law Building*  
Chaired by: Mr. Geoff Davis

9:15am **Source: a water resource modelling system for supply augmentation planning**  
» [Dr. Ashok Raut](#), Ms. Richa Neupane, Mr. Golam Kibria, Mr. Mahes Maheswaran

9:35am **Modelling Water for Rivers: A case study of Snowy Water in the River Murray, Australia**  
» [Dr. Jahangir Alam](#), Mr. Matthew Hardy, Mr. Alistair Korn



Continued from **Thursday, 9 December**

- 9:55am **Real-time water resource management using optimization methods and multi-criteria analysis, "Lake Baikal - Irkutsk Reservoir" case study**  
» [Dr. Alexander Buber](#), Dr. Mikhail Bolgov
- 10:15am **Recent enhancements to the Source platform and future priorities**  
» [Mr. Geoff Davis](#), Dr. Geoffrey Adams, Ms. Juanita Moolman
- 9:15am **J7. Challenges, new concepts and new methods for water resources management**  
*Room 340, New Law Building*  
Chaired by: Dr. Barry Croke and Dr. Jing Yang and Dr. Channa Rajanayaka
- 9:15am **An inclusive city water account by integrating multiple data sources for South-East Queensland (SEQ), Australia**  
» [Mr. K M Nazmul Islam](#), Dr. Steven Kenway, Dr. Marguerite Renouf, Dr. Thomas Wiedmann
- 9:35am **Modelling and prediction of turbidity in water**  
» [Dr. Parul Tiwari](#), Prof. Don Kulasiri, Prof. Sandhya Samarasinghe
- 9:55am **Reducing bias and improving accuracy of velocity index in tidal rivers with CEEMDAN filtered time series HADCP velocity**  
» [Mr. Stephen Wallace](#)
- 10:15am **Combining palaeoclimate data and stochastic modelling to improve water security**  
» [Mr. Matt Armstrong](#), Dr. Anthony Kiem, Prof. George Kuczera, Dr. Tessa Vance, Dr. Kathryn Allen
- 9:15am **K2. Hydroclimate in a changing climate / K3. Measurements and modeling of evapotranspiration in a changing climate**  
*Room 342, New Law Building*  
Chaired by: Dr. Santosh Aryal and Sanaa Hobeichi and Dr. Chiara Holgate

- 9:15am **National Hydrological projections for Australia: understanding risks to future water availability**  
» [Dr. Ulrike Bende-Michl](#), Dr. Louise Wilson, Dr. Elisabeth Vogel, Dr. Justin Peter, Dr. Wendy Sharples, Dr. Pandora Hope, Dr. Vjeko Matic, Dr. Sri Srikanthan, Dr. Margot Turner, Dr. Alison Oke, Dr. Zaved Khan, Mr. Jake Roussis, Mr. Vic Co Duong, Dr. Andrew Frost, Dr. Elisabetta Carrara
- 9:35am **Decreases in relative humidity with climate change**  
» Ms. Eleanor Denson, [Dr. Conrad Wasko](#), Dr. Murray Peel
- 9:55am **A generalized complementary principle approach with atmospheric stability corrections for estimating sub-daily evaporation**  
» [Dr. Lu Zhang](#), Dr. Shujing Qin, Prof. Wilfried Brutsaert
- 10:15am **Cutting-edge remote sensing to underpin water resource assessments**  
» [Dr. Jorge Pena Arancibia](#), Dr. Yingying Yu, Dr. Mobin Ahmad, Dr. Mohammed Mainuddin, Dr. Tim McVicar
- 9:15am **K6. Remote sensing for hydroclimate applications**  
*Room 344, New Law Building*  
Chaired by: Prof. Dongryeol Ryu and Dr. Seokhyeon Kim
- 9:15am **How does total precipitable water link to precipitation extremes?**  
» [Dr. Seokhyeon Kim](#), Prof. Ashish Sharma, Dr. Conrad Wasko, Prof. Rory Nathan
- 9:35am **Calibrating hydrologic models using surrogate streamflow in ungauged catchments**  
» [Ms. Hae Na Yoon](#), Prof. Lucy Marshall, Prof. Ashish Sharma, Dr. Seokhyeon Kim
- 9:55am **Geostatistical merging of weather radar data with a sparse rain gauge network in Queensland**  
» [Mr. Callum Sharp](#), Dr. Andrew Schepen, Dr. Sourav Das, Prof. Yvette Everingham



Continued from **Thursday, 9 December**

10:15am **High-resolution vegetation water content retrieval using Spaceborne C- and X-band Synthetic Aperture Radar**  
» [Prof. Dongryeol Ryu](#), Dr. Sun-Gu Lee

9:15am **J8. Modelling hydrological variability and change across spatio-temporal scales**  
*Room 346, New Law Building*  
Chaired by: Dr. Keirnan Fowler and Dr. Margarita Saft

9:15am **Accelerating development of the next generation of conceptual hydrological models to support decision-making under change**  
» [Dr. Mark Thyer](#), Prof. Hoshin Gupta, Prof. Seth Westra, Dr. David McInerney, Prof. Holger Maier, Prof. Dmitri Kavetski, Prof. Tony Jakeman, Dr. Barry Croke, Prof. Craig Simmons, Dr. Margaret Shanafield, Dr. Daniel Partington

9:35am **Invited paper: Modelling hydrological change due to wildfires**  
» [Dr. Daniel Partington](#), Dr. Mark Thyer, Dr. Margaret Shanafield, Dr. David McInerney, Prof. Seth Westra, Prof. Holger Maier, Prof. Craig Simmons, Dr. Barry Croke, Prof. Tony Jakeman, Prof. Hoshin Gupta, Prof. Dmitri Kavetski

9:55am **Do larger catchments respond different to forest cover change? Re-analysing global data sets**  
» [Prof. Willem Vervoort](#), Ms. Eliana Nervi, Prof. Jimena Alonso

10:15am **“Naïve” inclusion of diverse climates in calibration is not sufficient to improve model reliability under future climate uncertainty**  
» [Mr. Luca Trotter](#), Dr. Margarita Saft, Dr. Murray Peel, Dr. Keirnan Fowler

9:15am **Water quality modelling discussion forum**  
*Room 440, New Law Building*  
Chaired by: Ms. Susan Cuddy and Prof. Andrew Western and Dr. Danlu GUO and Dr. Anna Lintern and Dr. Lydia Cetin

9:15am **F5. Hybrid approaches to data-driven analysis towards explainable modelling and comprehensive systems in support of environmental sustainability**  
*Room 442, New Law Building*  
Chaired by: Prof. Peter Khaiter

9:15am **An ML-based study of extreme weather events incorporating seasonality factor**  
» Prof. Peter Khaiter, [Ms. Masooma Suleman](#)

9:35am **Data-driven approaches to rainfall nowcasting for application in hydrological modelling**  
» Prof. Marina Erechtkoukova, [Ms. Rim Mhedhbi](#)

9:55am **Data analytics approach to climate change studies**  
» Prof. Peter Khaiter, [Ms. Eshta Bhardwaj](#)

10:15am **Application of topic modelling to Integrated Water Resource Assessment domain**  
» [Prof. Marina Erechtkoukova](#), Mr. Akshay Kohli

10:35am **Morning tea**  
*Foyer, Level 1, New Law Building*

11am **M1. Supply chain management and logistics**  
*Room 024, New Law Building*  
Chaired by: Prof. Andreas Ernst and Dr. Saman Eskandarzadeh

11am **Assessing last mile delivery strategies – A hybrid solution approach**  
» [Mr. Juan Muriel](#), Dr. Lele Zhang, Dr. Jan Fransoo, Dr. Roberto Perez-Franco



Continued from **Thursday, 9 December**

- 11:20am **Freight train scheduling via decentralised multi-agent deep reinforcement learning**  
 » [Mr. Allan Bretas](#), Dr. Alexandre Mendes, Dr. Stephan Chalup, Mr. Martin Jackson, Dr. Riley Clement, Dr. Claudio Sanhueza
- 11:40am **Hydrogen bus route planning in regional Victoria**  
 » [Dr. Rasul Esmaeilbeigi](#), Prof. Vicky Mak-Hau, Dr. Guillermo Pineda Villavicencio, Dr. Julien Ugon
- 12pm **The Standard Refuelling Facility Expansion Problem: A case study in Australia**  
 » [Mr. Juan Calle](#), Dr. Roberto Perez-Franco, Prof. Vicky Mak-Hau, Mr. Danilo Abril, Mr. Daniel Rojas
- 12:20pm **The dial-a-ride problem in the case of a patient transportation system in Brazil**  
 » [Dr. Marcella Bernardo](#), Mr. André Luyde da Silva Souza, Dr. Mehrdad Amirghasemi, Dr. Johan Barthelemy, Prof. Pascal Perez
- 12:40pm **Tactical network planning for parcel delivery companies**  
 » [Dr. Saman Eskandarzadeh](#), Prof. Ben Fahimnia
- 11am **K4. Understanding ecohydrological processes and mechanism under changing environment**  
*Room 104, New Law Building*  
 Chaired by: Dr. lina hao
- 11am **Effects of animal grazing on vegetation biomass and soil moisture on a typical steppe in Inner Mongolia, China**  
 » [Ms. Xi Lin](#), Dr. Shengwei Zhang, Dr. Hongbin Zhao
- 11:20am **A comparative study of three stomatal conductance models for estimating evapotranspiration in a dune ecosystem in a semi-arid region**  
 » [Dr. Yongzhi Bao](#), Prof. Tingxi Liu, Prof. Limin Duan, Dr. Xin Tong

- 11:40am **Application of fusion of multi-source data in estimating biomass of grassland in Xilin River basin**  
 » [Dr. zhou yajun](#)
- 12pm **Carbon uptake and water vapor exchange in mobile sand dunes in semi-arid regions**  
 » [Dr. Li Xia](#)
- 12:20pm **Characteristics and environmental driving factors of water transformation in Inner Mongolia steppe watershed**  
 » [Dr. Fang Lijing](#), Prof. Gao Ruizhong
- 11am **J3. From whole of catchment to suburban lots – using eWater tools to inform water management decisions across all scales**  
*Room 106, New Law Building*  
 Chaired by: Mr. Geoff Davis
- 11am **An assessment framework for classifying determinants of household water consumption and their priorities for research and practice**  
 » Dr. Andrea Cominola, Ms. Lucy Preiss, [Dr. Mark Thyer](#), Prof. Holger Maier, Dr. Peter Prevos, Prof. Rodney Stewart, Prof. Andrea Castelletti
- 11:20am **Integrated modelling approach for sustainable water supply and demand planning**  
 » [Dr. Mukta Sapkota](#), Dr. Ashis Dey, Ms. Juanita Moolman, Dr. Jin Wang, Mr. Craig McTaggart, Ms. Joanna Lee
- 11:40am **Converting stormwater drain into a series of wetlands for stormwater water quality improvement**  
 » [Mr. Sandeep Choudhry](#), Prof. Ashok Sharma, Mr. Darren Coughlan
- 12pm **Victoria's journey to adoption of Source**  
 » [Dr. Uttam Manandhar](#), Mr. Michael Finger, Dr. Yong Li, Mr. Seker Mariyapillai
- 12:20pm **Barwon Darling and Lower Darling Source model development for the Western Weirs Project and beyond**  
 » [Dr. Hemantha Perera](#), Mr. Gurmeet Singh, Dr. Tahir Hameed



Continued from **Thursday, 9 December**

- 12:40pm **Water resource assessment in Afghanistan using eWater Source hydrological model**  
 » [Dr. Fazlul Karim](#), Mr. Dave Penton, Dr. Santosh Aryal, Dr. Shahriar Wahid
- 11am **J7. Challenges, new concepts and new methods for water resources management**  
*Room 340, New Law Building*  
 Chaired by: Dr. Barry Croke and Dr. Jing Yang and Dr. Channa Rajanayaka
- 11am **Invited paper: Adaptation of transboundary water management in the Amu Darya Basin to possible climate changes**  
 » [Prof. Weili Duan](#), Prof. Yaning Chen, Dr. Shan Zou
- 11:20am **Metamodelling “naturalised” groundwater levels across Greater Wellington region in New Zealand for groundwater management**  
 » [Dr. Jing Yang](#), Dr. Doug Booker, Dr. Channa Rajanayaka, Dr. Chris Daughney, Dr. Rebecca Morris, Dr. Mike Thompson
- 11:40am **Changes in flooding in highly glacierized catchments in the Tarim River Basin**  
 » [Dr. Gonghuan FANG](#), Prof. Zhi LI, Prof. Yaning Chen, Dr. Jing Yang, Dr. Charles Amory, Prof. Weili Duan, Dr. Yunqian Wang
- 12pm **An assessment of economic and environmental benefits of desilting village tanks in Sri Lanka: An application of linear programming**  
 » [Mrs. Dasuni Dayananda](#), Ms. Sumedha Dilhari, Prof. Jeevika Weerahewa
- 12:20pm **University and Water Authority collaboration in the Sardinia Water Plan: The role of generic simulation models**  
 » [Dr. Andrea Sulis](#), Mr. Paolo Botti, Mr. Mariano Pintus, Mr. ADRIANO RUIU, Mr. Luigi Zucca, Dr. Riccardo Zucca, Prof. Giovanni M. Sechi

- 12:40pm **Assessing uncertainty in large-scale hydrological and sediment modelling using nested domains under current and changing climate**  
 » [Dr. Alena Bartosova](#), Dr. Berit Arheimer, Dr. Alban de Lavenne, Dr. René Capell, Mr. Johan Strömqvist
- 11am **K3. Measurements and modeling of evapotranspiration in a changing climate**  
*Room 342, New Law Building*  
 Chaired by: Dr. Santosh Aryal
- 11am **Generation and delivery of gap-free Landsat-based monthly actual evapotranspiration for Australia using Google Earth Engine**  
 » Dr. Tim McVicar, Dr. Jamie Vleeshouwer, Dr. Tom Van Niel, Dr. Juan Guerschman, [Dr. Jorge Pena Arancibia](#), Dr. Yun Chen, Dr. Matt Stenson
- 11:20am **Bushfire impacts on evapotranspiration and water balances in southeast Australia**  
 » [Mr. Zhenwu Xu](#), Dr. Yongqiang Zhang
- 11:40am **Impact of climate change on key elements of water cycle in the Tianshan Mountains, Central Asia**  
 » [Prof. Yaning Chen](#), Dr. Gonghuan FANG, Prof. Zhi LI
- 12pm **Improving PML-V2 evapotranspiration estimates across China**  
 » Ms. Shaoyang He, [Dr. Yongqiang Zhang](#)
- 12:20pm **Fusion of high resolution remote sensing soil moisture data to better estimate evapotranspiration in China**  
 » [Dr. Peilin Song](#)
- 12:40pm **Spatial and temporal variations in land evapotranspiration across Tibetan Plateau during 1982–2016: Results from PML\_V2**  
 » [Dr. Ning Ma](#), Dr. Yongqiang Zhang
- 11am **K6. Remote sensing for hydroclimate applications**  
*Room 344, New Law Building*  
 Chaired by: Dr. Seokhyeon Kim and Yi Liu



Continued from **Thursday, 9 December**

11am **Modelling snowpack dynamics across mountain ranges with SAR data**

» [Ms. Nevenka Bulovic](#), Prof. Neil McIntyre, Dr. Fiona Johnson, Dr. Hans Lievens, Dr. Thomas Shaw, Prof. James McPhee, Dr. Simon Gascoin

11:20am **A bivariate filter for characterization of drying rates of satellite soil moisture drydowns**

» [Mr. Jhilam Sinha](#), Prof. Ashish Sharma, Prof. Lucy Marshall, Dr. Seokhyeon Kim

11:40am **An automatic system to estimate crop phenological dates with remote sensing: A case study in the southeast Australia**

» [Ms. Zitian Gao](#), Dr. Danlu GUO, Prof. Dongryeol Ryu, Prof. Andrew Western

12pm **Amazon rainforest canopy responses during the 2019 fire season based on multiple satellite observations**

» [Mrs. Huixian Zhang](#), Dr. Daniel Hagan, Dr. Ricardo Dalagnol

11am **J8. Modelling hydrological variability and change across spatio-temporal scales**

*Room 346, New Law Building*

Chaired by: Dr. Keirnan Fowler and Dr. Margarita Saft

11am **Calibrating continental-scale hydrological models to future climate conditions**

» [Dr. Wendy Sharples](#), Dr. Ashkan Shokri, Dr. Andrew Frost, Dr. Ulrike Bende-Michl, Dr. Louise Wilson, Mr. Stuart Baron-Hay

11:20am **Parametric uncertainty in the continental scale landscape modelling**

» [Dr. Ali Azarnivand](#), Dr. Wendy Sharples, Dr. Ulrike Bende-Michl, Dr. Ashkan Shokri, Dr. Andrew Frost, Mr. Stuart Baron-Hay

11:40am **Uncertainty analysis of moisture content modelling due to variability in physical and hydraulic soil properties**

» [Mr. Qazi Muqheet Amir](#), Dr. Federico Maggi, Dr. Chiara Pasut

12pm **A novel dynamic connectivity metric for complex floodplain wetlands**

» [Ms. Chi Nguyen](#), Dr. Edoardo Daly, Dr. Valentijn Pauwels

11am **F5. Hybrid approaches to data-driven analysis towards explainable modelling and comprehensive systems in support of environmental sustainability / F7. GIS and environmental modelling**

*Room 442, New Law Building*

Chaired by: Prof. Shawn Laffan and Prof. Peter Khaiter

11am **Improving seafood production through data science methods**

» Prof. Peter Khaiter, [Ms. Bahareh Teimouri Lotfabadi](#)

11:20am **Lessons learned using dSedNet plug-in within a water supply catchment for Greater Sydney**

» [Ms. Suraya Amini](#), Dr. Marlene Van Der Sterren, Mr. Jordan Pont, Mr. Andrew Freebairn

11:40am **Is Sydney really a 30-minute city? Using a door-to-door approach to evaluate policy aspirations**

» [Mrs. Lauren Del Rosario](#), Prof. Shawn Laffan, Dr. Eve Slavich, Prof. Christopher Pettit

12pm **Digital platforms deliver rapid assessments of Australian mega-fires on two bird species**

» Dr. Robert Clemens, [Prof. Shawn Laffan](#), Dr. Samantha Low-Choy, Prof. Brendan Mackey, Dr. Kristen Williams, Dr. Jenna Wraith

12:20pm **Simulating land use change in a long-term SSP2-4.5 scenario simulation to support regional landscape planning and policy design**

» [Mrs. Sonja Holler](#), Dr. Melvin Lippe, Dr. Olaf Conrad, Dr. Daniel Kübler, Prof. Jürgen Böhner, Dr. Sven Günter

12:40pm **Interpreting variable importance in multimethod research: Species distribution modelling for the Golden Bowerbird, in EcoCommons**

» [Dr. Samantha Low-Choy](#), Ms. Daniela Vasco, Dr. Robert Clemens, Dr. Douglas Kerlin





Continued from **Thursday, 9 December**

1pm      **Lunch**  
*Foyer, Level 1, New Law Building*

2pm      **Announcement of Student Awards and closing for MODSIM2021**  
*Room 104, New Law Building*

**Friday, 10 December**

9am      **Workshop and networking day**

9am      **ECR Event, Interdisciplinary research to solve real world problems**  
<https://mssanz.org.au/modsim2021/ecr.html>

**Promoting participatory modelling among stakeholders: methods, case studies and tools**  
*Exact time to be confirmed - <https://mssanz.org.au/modsim2021/workshops.html>*

**Note this workshop will be held on Thursday 9 December at 4:00pm**

H2020-SPACE projects in Australia  
<https://mssanz.org.au/modsim2021/workshops.html>