Dear all

Four items for you this week:

- A Queensland Water Modelling Network Workshop next Thursday

- A PhD research opportunity at the University of New South Wales

- A call for papers for two special issues that will be hosted by Socio-Environmental Systems Modelling (SESMO)

- A reminder about the call for nominations for 2020 MSSANZ Fellows

If you would like something included in this digest please email it to office@mssanz.org.au
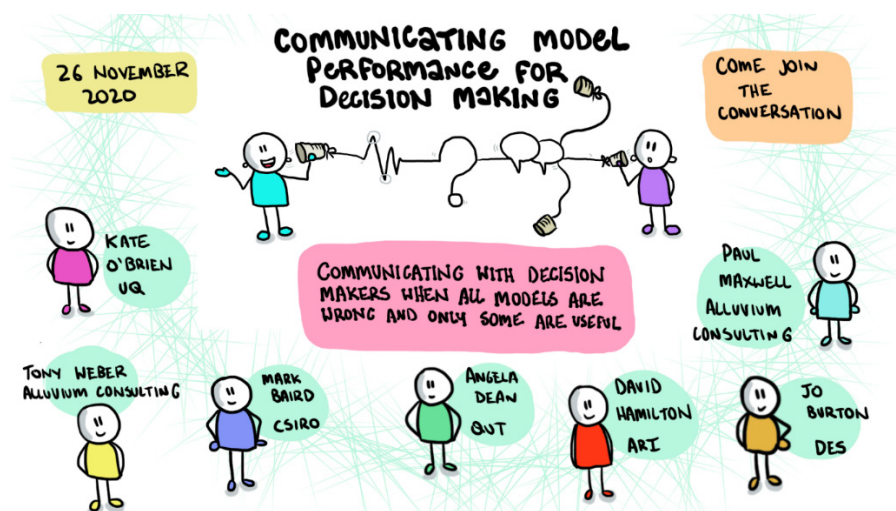
kind regards, Karen

Queensland Water Modelling Network Workshop
Thursday 26 November 12-1:30 pm AEST (Queensland time)

Communicating model performance for decision making

Models are developed and applied to support decision-making. The problem is, all models are wrong, and only some are useful. How do you clearly communicate what your model can and can't do for decision-makers? In this LiveStream event, our panellists use their experience in the water sector to discuss how to reduce the risk of having a good model dismissed as useless, a bad model hailed as a success, or a useful model applied in the wrong ways. This panel discussion will follow a similar format to ABC's "Q&A", with panellists including Kate O'Brien (Associate Professor in Chemical and Environmental Engineering UQ), Tony Weber (Alluvium Consulting), David Hamilton (Deputy Director of the Australian Rivers Institute), Mark Baird (CSIRO Coastal Biogeochemical Modelling team lead), Angela Dean (QUT), Jo Burton (DES) and Paul Maxwell (Alluvium Consulting).

Registration: https://www.eventbrite.com.au/e/communicating-model-performance-for-decision-making-tickets-128371447455

For further details, contact Kate O'Brien k.obrien@uq.edu.au or Matthew Adams mp.adams@qut.edu.au

PhD research Opportunity at University of New South Wales

Research topic: Developing simulation models to analyse the potential impacts of emerging technologies on collective capabilities under uncertainty

The University of New South Wales is looking for a PhD candidate from the fields of operations research, systems science or other related fields such as computer science. Applicants **must hold** an Australian citizenship at the time of application.

See more information in the PDF file attached.

If you have any questions, please contact Associate Professor Sondoss Elsawah (s.elsawah@unsw.edu.au).

Call for papers for SESMO

This is a call for papers for two special issues that will be hosted by SESMO on "***Resilience of complex coupled Socio-Technical-Environmental systems through the modeling lens***" and "***Large-scale behavioural models of land use change***".

SESMO (Socio-Environmental Systems Modelling) is an open-access, community-driven journal that aims to progress our understanding, learning and decision making on major socio-environmental issues using advances in model-grounded processes that engage with institutional and governance contexts, cross-sectoral and scale challenges, and stakeholder perspectives.

Special Issue: Resilience of complex coupled Socio-Technical-Environmental systems through the modeling lens

Guest Editors: Tatiana Filatova (4TU.RE), Tina Comes (4TU.RE), Christoph Hoelscher (FRS), and Juliet Mian (RS)

The goal of this Special Issue is to bring together cutting-edge research and international practice to offer insights into the latest scientific modeling methods, gaps, challenges and opportunities and best practice examples relating to operationalizing resilience across a range of STE applications. This Special Issue focuses on the modeling aspects across a range of methods (simulation, optimization, data analytics & machine learning, and analytical, statistical, conceptual or participatory modeling) or the use of models for supporting a dialog among practitioners and policy-makers. Case-study oriented, methodological and review articles contributing to the following themes are of particular interest:

- Urban resilience;
- Resilience of agricultural systems;
- Water: clean water and sanitations, flood risk and resilience;
- Energy, particularly the energy transition;
- Resilience of smart and interlinked transportation and mobility systems;
- Business, organizational, logistics and supply chain networks resilience;
- Climate-resilient development of STE systems in light of transformations;
- Resilience and decision-making & planning under uncertainty;
- Data analytics and machine learning to understand social resilience;
- Distributional and ethical aspects of resilience.

We especially welcome contributions that (1) form inter-and transdisciplinary alliances, (2) combine applications across scales, sectors and disciplines (e.g. water-food-energy nexus, mitigation-adaptation nexus), or (3) actively apply resilience concepts in practice. The suggested topics provide a guideline of the scope but should not serve as a limitation. Hence, if you have an idea for a paper that raises an important issue related to the resilience of coupled Socio-Technical-Environmental systems, please contact the Guest Editors (4tu-re-secretariat@utwente.nl) by Dec 14 2020.

Expected deadline for full submission: April/May 2021. For more info
see: https://sesmo.org/announcement/view/20

Special Issue: Large-scale behavioural models of land use change

Guest editors:
Calum Brown, Karlsruhe Institute of Technology; Tatiana Filatova, University of Twente; Birgit Müller, Helmholtz Centre for Environmental Research – UFZ; Derek Robinson, University of Waterloo
For this Special Issue, we welcome contributions dedicated to the better understanding and modelling of temporal or spatial scales in land use dynamics. These contributions can present theoretical or empirical analyses, methodological contributions, or relevant model developments, and will together build towards a robust agenda for future research in this field. Articles in the Special Issue could focus on:

- Case study-based empirical research on land use dynamics, explicitly tackling different social scales;
- Methodological contributions on the investigation and modelling of cross-scale dynamics (up-scaling and down-scaling methods);
- Modelling of land use dynamics across scales and at large (continental-global) scales accounting for human agency;
- New methods to link models covering different scales and human or natural systems;
- Approaches to integrate behaviourally rich representation of human agency in large-scale models;
- Representation of an interplay between individual decisions and social institutions (formal or informal) in land use change models;
- Up-scaling of heterogeneity of individual decision strategies and local institutional contexts from case studies to larger geographical scales;

The Special Issue is supported by the joint GLP/AIMES Working Group on large scale behavioural models of land use change (https://glp.earth/how-we-work/working-groups/large-scale-behavioural-models-land-use-change) and the Human Dimensions Focus Research Group of the CSDMS (https://csdms.colorado.edu/wiki/Anthropocene_Focus_Research_Group)

Expected deadline: end of June 2021. For more information
see: https://sesmo.org/announcement/view/21

Call for nominations for 2020 Fellows of the Modelling and Simulation Society of Australia and New Zealand (MSSANZ)

The closing date for nominations is next Thursday 26 November.

The person nominated for a Fellowship should have provided 'unselfish dedication to promoting the aims of the Society, and for significant contribution to modelling and simulation'. In other words, service to the Society is the key factor in selecting Fellows, with a good publication track record also necessary.

Any member of the Society can nominate another member as a Fellow, with another member of the Society to second that nomination. Self-nominations are not permitted. Nominations will be reviewed by the Awards Committee who make recommendations to the Executive for ratification. **Nominations, consisting of a CV and short supporting statement, should be submitted to awards@mssanz.org.au which is a confidential email address only viewed by members of the Awards Committee.**

PhD research Opportunity at University of New South Wales

Research topic: **Developing simulation models to analyse the potential impacts of emerging technologies on collective capabilities under uncertainty**

We are looking for a PhD candidate from the fields of operations research, systems science or other related fields such as computer science. Applicants **must hold** an Australian citizenship at the time of application.

The first round of evaluating the Expressions of Interests (EOIs) will start on the **15th December 2020**, but we still welcome EOIs after this date and until the position is filled. The commencement of enrolment will be discussed with the successful candidate.

We offer an opportunity to work on an interdisciplinary research project in partnership with Defence Science and Technology Group (DSTG), and a prestigious top-up scholarship of **AUD $15,000** per **year** for up to 3.5 years.

PhD Research Project Description

The design of Australia's defence force constitutes a complex decision problem with high levels of uncertainty involving multiple interdependent factors that change over time. One key factor focuses on evaluating the impact of new, emerging technologies under different and evolving operational conditions. In such contexts, decision making can be supported and enhanced by building quantitative simulation models representing experts' assumptions about the causal relationships and feedback effects at work in the system. Once developed, the simulation model(s) can help assess the potential contributions of new technologies to operational effectiveness, identify unintended consequences, assess systemic risks, and devise plans to exploit opportunities and mitigate risks. This interdisciplinary research project aims to develop a model-based learning methodology to support decision makers with the analytical methods needed to address these challenges. The development and use of a library of system dynamics simulation models, within a multi-method research design, will be central to the research. The simulation models will enable evaluation of a range of different defence-oriented technological concepts across a set of selected operational contexts (focussed on tactical land warfare). In addition, the modelling methodology will provide the design principles to guide the use of system dynamics models within a multi-method approach to analyse the broader class of problems encompassing the evaluation of emerging technologies under uncertainty.

Keywords: System Dynamics, simulation modelling, computational modelling, multi-method, defence, emerging technologies

Description of Ideal Candidate Skills and Experiences

- A Bachelor of system science, operations research, systems engineering, or related fields such as computer science, with first class honours or equivalent (e.g. Bachelor + Master by Research/Master by Coursework + publications).
- Demonstrated experience with statistical and computational analysis is essential.

- Demonstrated background in simulation modelling (in general) and system dynamics (in particular) is highly desirable.
- Self-motivation and curiosity to work in an inter-disciplinary area and cross-institutional research environment.
- Ability to work in a team and strive for research excellence.
- Excellent oral and written communication skills.

Supervision team

The joint-supervision team will consist of two leading academics and an analyst from the Defence Science and Technology Group: Professor Shayne Gary, Associate Professor Sondoss Elsawah and Dr Matthew Richmond. The supervisory team possesses a strong research track record of applying systems modelling across different applications, including defence; as well as extensive experience in applying operations analysis and modelling support to future land force design (i.e. in direct support of Army Headquarters). The team has extensive experience disseminating research results via peer-reviewed publications, and will guide and support the candidate to access relevant subject matter experts and to publish & develop a solid basis for future career development.

To apply, please send the following documents in an email to: s.elsawah@unsw.edu.au.

- A recent CV
- An expression of interest document explaining why you are interested in this specific opportunity and how you meet the required skills and experience. It would be helpful to include information about the relevant courses/training you have completed.

If you have any questions, please contact Associate Professor Sondoss Elsawah (s.elsawah@unsw.edu.au).