

Dear all

Happy new year to everyone. Here is the first weekly digest for 2022.

- The call for abstracts is open for the biennial iEMSS (International Environmental Modelling and Software society) conference in Brussels, July 4-8, 2022  
The session *Reusable building blocks for agent-based models of social-environmental systems* may be of particular interest, further details below
- A paper outlining further detail of an abstract from the Big Data analytics for smart cities session at MODSIM2021 has been published in the Journal of Sensor and Actuator Networks – *Sentiment Analysis of Social Survey Data for Local City Councils*  
<https://www.mdpi.com/2224-2708/11/1/7/htm>.
- QUT has a PhD scholarship available for *Mathematical modelling of regime shifts in Antarctica*, closing date is 25 February, see <https://www.qut.edu.au/research/study-with-us/student-topics/topics/mathematical-modelling-of-regime-shifts-in-antarctica> for details.
- If you would like to provide feedback to help us with planning for MODSIM2023 and have not yet done so, please fill in this google form – <https://forms.gle/2Bmuo3JG65zmnNK1A>. This is open to all members regardless of whether you attended in 2021.

If you would like something included in this digest, please email it to [office@mssanz.org.au](mailto:office@mssanz.org.au)

Kind regards, Karen

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## Reusable building blocks for agent-based models of social-environmental systems session at iEMSS 2022

Dear all,

Volker Grimm, Uta Berger and I are organizing a session at the biennial iEMSS (International Environmental Modelling and Software society) conference in Brussels, July 4-8, 2022 - <https://www.iemss2022.com/>

Reusable building blocks for agent-based models of social-environmental systems  
<https://www.iemss2022.com/sessions/iEMSS%202022/view-37>

Agent-based models (ABM) of socio-environmental systems (SES), representing the behavior of organisms, human actors, or institutions, are usually fully developed from scratch. This is inefficient and leads to incoherent model designs, with multiple variations of how the same types of agents' decisions are coded. Making ABMs open access is a major step towards transparency and reusability, but in practice long, complex, case- or problem-dependent computational codes are rarely reused. This hinders development of robust and effective SES ABM applications, that are well aligned with micro-level behavioral, social and ecological theories at the agent level and with the general system level theories. It is therefore important to adopt the strategy from other modelling communities to build a repository of reusable building blocks (RBB). This would help agent-based modelers to focus their energy and creativity on missing parts, and scientists without computer science background to efficiently assemble powerful simulation SES ABMs and concentrate on their particular research questions. RBBs are submodels of certain behaviors and processes which are likely to be important for many ABMs in a given discipline or application, for example foraging in ecology, farming

decisions in land use models, or households' decisions to install solar panels. An open access library of commonly used RBBs could rely on a solid theoretical microfoundations for agents rules of actions and interactions, be tested in different empirical SES contexts, and improve evolutionary over time. Established RBBs would have known properties, be well-tested by the community, and be reusable in different contexts. For this, they would need to be uploaded to repositories providing: source code, written model description, specification of required context, executable demonstration, and reports of tests and example applications. Also, RBB standards should be developed. For this session, we welcome contributions of specific candidate RBBs and of methodological considerations regarding the modular development of ABMs, including standardization of uploads, web-based resources, version control, incentives for uploading as well as pros and cons of using RBBs for theory development and advancing ABM applications for SES.

Call for abstracts is open now, <https://www.iemss2022.com/conference/iEMSS%202022/call-for-abstracts> , deadline is Feb 15.

We hope that you are interested in contributing! If you have questions, please let us know. And please forward this to colleagues who might be interested.

Best regards,

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