CoMSES Digest: Summer 2021

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Editor's Note

Summer is in full swing for us Arizonans with a record breaking heat wave alongside wildfires and a worsening drought across the United States West and Southwest. Computational modeling and simulation are critical pieces in our efforts to understand our rapidly changing world and discover adaptive solutions that meet the needs of our communities sustainably and equitably with evidence based policies. We are heartened by the work you all take part in and welcome your ideas and suggestions for how CoMSES Net can better serve you and your communities - please let us know via our contact form or Twitter.

The CoMSES Net team has been engaging with the joint Research Data

Alliance, FORCE11, and Research Software Alliance working groups to establish FAIR practices for research software - the first version is now available for community input until July 11th, 2021. If you have a stake in building research software and have thoughts on how to properly apply the FAIR data principles to research software, please take a look and see if there is anything we may have missed - your input is valuable and needed! We have also been working closely with the newly formed Consortium of Scientific Software Registries and Repositories to establish good practices for scientific software registries and repositories so look for content changes to CoMSES Net in the coming year to improve our formal policies and procedures.

And finally, we have two announcements regarding the upcoming 2022 CoMSES Winter School and updates from the Open Modeling Foundation - please share with any interested colleagues!

Best regards,
Allen Lee, CoMSES Net Co-Director and Interim Digest Editor

CoMSES News

CoMSES Winter School on Agent-Based Modeling of Social-Ecological Systems

Planned for January 17-28, 2022

Purpose of the Winter School

The winter school will teach participants about the opportunities and challenges of agent-based modeling of social-ecological systems. Participants will engage intensely with a few comprehensive agent-based models, learn best practices for modeling within a team, and learn how to successfully navigate modeling challenges across the social and natural sciences.

Content of the Course

The winter school has two primary components: lectures and group project work. Participants will also have the opportunity to present their own work in lightning talks. Lectures will introduce concepts in the social and natural sciences essential to modeling social-ecological systems including human behavior, collective behavior, resilience, and land cover change. Students will also learn and apply best practices for computational modeling with respect to

reproducibility, model documentation, analysis of models and how to collaborate effectively in remote teams using Git and GitHub. Participants will be introduced to various stylized agent-based models used in actual research projects on social-ecological systems. Participants will chose one of the models and form groups to adapt, expand, and analyze the model to better understand the impact of particular assumptions on the social-ecological system in question. All models are developed in NetLogo so **participants must be comfortable with reading and writing NetLogo code**.

Schedule
The 2022 Winter School will be be virtual once again like the 2021 Winter School, spread out over 2 weeks from January 17-28, 2022. The online live and interactive component will be kept at four hours a day during the morning of the Arizona, USA timezone (UTC-7). The first week will focus on lectures, hands-on training in best practices and the start of group projects. The second week will focus on group projects and presentation of results.

For more information and to submit your application by October 1, please visit https://complexity.asu.edu/cbie/winterschool

Open Modeling Foundation Update

Michael Barton, CoMSES Net Director

As we have mentioned in previous digests, CoMSES Net is coordinating an international consortium of organizations representing modeling scientists to develop and administer standards that support open, reproducible, and interoperable models: the Open Modeling Foundation (OMF) initiative. We've collaborated with the Community Surface Dynamics Modeling System (csdms.colorado.edu), Analysis and Integrated Modeling of the Earth System (aimesproject.org), and the Decision Support System for Agrotechnology Transfer (dssat.net) to hold a series of strategic planning workshops over the past two years to inform modeling organizations about the initiative and get input and suggestions.

At the beginning of June, we held the last of these workshops. A total of 67 modeling organizations, represented by 96 individual attendees have participated in these meetings. The three held over the past year have been online due to the Coronavirus pandemic. While complicating holding a meaningful in-person workshop, doing these online has opened up the

meetings to a broader audience and inspired us to test online platforms that could be used to support the kind of internationally distributed organization envisioned for the OMF.

The most important of these platforms is an open science gateway, based on GitHub. Here we have posted draft governance documents and documents outlining potential standards as a way to encourage discussion and input from the community. You can visit this gateway to follow the workshop discussions, suggestions in the issue tracker, and edits made to the posted documents in response to stakeholder input. There is a simple web front end to this gateway at https://openmodelingfoundation.org or you can go directly to the GitHub pages site at https://openmodelingfoundation.github.io.

In the most recent workshop we piloted the use of an OMF Discord server as an informal communications platform for anyone interested in participating in the OMF initiative. If you would like to join the server, please email omf@comses.net for an invite.

We hope to convene an organizational meeting before the end of the year for member organizations to adopt a governance charter and formally establish the OMF. We will continue to update the CoMSES.Net community about this important initiative for the future of transdisciplinary modeling science. If you have questions, concerns, or feedback, please don't hesitate to contact us at omf@comses.net.

Calendar of Events

Please follow the links to the local event organizers for the latest information or go to https://comses.net/events/ for a listing of all recent events. You can also subscribe to new events by following us on Twitter or subscribing to our RSS Events feed.

Upcoming Deadlines

MIT Solve Challenge: Resilient Ecosystems

Submissions due June 16, 2021

The MIT Solve community is looking for technology-based solutions that help communities restore, sustain, and benefit from resilient ecosystems.

https://www.comses.net/events/600/

Conferences and Workshops

2021 International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation

July 6-9, 2021

Online

SBP-BRiMS is a multidisciplinary conference with a selective single paper track and poster session. The conference also invites a small number of high quality tutorials and nationally recognized keynote speakers. The conference has grown out of two related meetings: SBP and BRiMS, which were co-located in previous years.

https://www.comses.net/events/603/

11th International Conference on Simulation and Modeling Methodologies, Technologies and Applications

July 7-9, 2021

Virtual event online

The purpose of the International Conference on Simulation and Modeling Methodologies, Technologies and Applications (SIMULTECH) is to bring together researchers and practitioners from various fields interested in the technological advances and application challenges in all fields of modeling and simulation.

https://www.comses.net/events/594/

Social Simulation Conference 2021

September 20-24, 2021

Virtual event online

This year's special theme will be "Social Simulation geared towards Post-Pandemic times", focused not only on questions raised by the current pandemic but also on future challenges related to economic recovery, such as localization, globalization, inequality, sustainable growth, and social changes induced by progressive digitalization, data availability and artificial intelligence.

https://www.comses.net/events/598/

Winter Simulation Conference 2021

December 13-15, 2021: Phoenix, Arizona (USA)

December 14-16, 2021: virtual event online

Conference Theme: Simulation for a Smart World: From Smart Devices to Smart Cities. The focus of WSC 2021 is on the design and innovation of smart cities through the use of simulation.
https://www.comses.net/events/595/

Courses

2021 Participatory Modeling Field School
August 16 - 19, 2021
Virtual event online
Registration deadline: August 06, 2021

The Participatory Modeling Field School features three and a half days of keynote addresses by leaders in the participatory modeling field and hands-on workshops on qualitative, semi-quantitative, and quantitative participatory modeling (PM) methods. Workshops are facilitated by faculty and community partners with extensive experience in community-based research and PM.

Come to the Field School to learn the key design elements of a successful PM project, and how to use various PM techniques to represent complex problems and gain insight into the actions that can be taken to address them.

https://www.comses.net/events/604/

Multi-platform International Summer School on Agent-Based Modelling & Simulation
Cirad, Montpellier (France)
October 4 - 15, 2021
Registration deadline: June 30, 2021

By taking part in this course, you will gain a modelling culture and learn the different skills required for building agent-based models (ABMs) applied to sociological, ecological, or socio-ecological systems. This is a multi-platform course that uses Cormas, GAMA, and NetLogo.

https://www.comses.net/events/602/

Model Library

Newly Reviewed

Six models passed CoMSES's peer review process this quarter. Some are still unpublished while their companion publications undergo journal peer review; published ones include the following models:

- *agent-based model studying money* examines the organization of money and its performative effects by following the communities designing so-called Complementary Currencies and engineering their markets (Juan Ocampo)
- *Industrial Symbiosis Network Implementation* explores the influence of actor behaviour, combined with environment and business model design, on the survival rates of Industrial Symbiosis Networks (ISN), and the cash flows of the agents. (Kasper Pieter Hendrik Lange, Gijsbert Korevaar, Igor Nikolic, Paulien Herder)
- *A Macroeconomic Model of a Closed Economy* demonstrates a mechanism in which the relative share of labor shifts between industries. (Ian Stuart)
- *collective action in urban community gardens* explores the dynamics of volunteer participation in urban community gardens, by combining behavioral theory and institutional theory (Arthur Feinberg, Elena Hooijschuur, Nicole Rogge, Amineh Ghorbani, Paulien Herder)
- *Are Countertrade credits as flexible and efficient as cash? A novel approach to reducing income inequality using countertrade methodology* explores the outcome space of counterbalance economics in Australian, UK, US, Swiss, and German economies with respect to GDP and Gini coefficients (Peter Malliaros)
- *AgentEx* aims to advance understanding of group processes for sustainable management of a common pool resource (CPR) in dynamic social-ecological environments. (Nanda Wijermans, Caroline Schill, Therese Lindahl, Maja Schlüter)

New Model Uploads

26 new models were published in the CoMSES Model Library on a wide variety of topics that illustrate the depth and breadth of our community. These include:

- A model of opinion dynamics based on formal argumentation: application to the diffusion of the vegetarian diet simulates the evolution of agent's opinions through their exchange of arguments. (Patrick Taillandier, Nicolas

Salliou, Rallou Thomopoulos)

- Social Consequences of Past Compound Events - Laacher See Eruption looks at the impact of the interaction between climate change trajectory and an extreme event, such as the Laacher See eruption, on the generational development of hunter-gatherer bands. (Kevin Su, Brennen Bouwmeester)
- Sea Bright, NJ Reconstruction of Hurricane Sandy implements a combined Protective Action Decision Model (PADM) and Protection Motivation Theory (PAM) model for human decision making regarding hazard mitigations. (Kim McEligot)
- Local extinctions, connectedness, and cultural evolution in structured populations is designed to address the following research question: How does the amount and topology of intergroup cultural transmission modulate the effect of local group extinction on selectively neutral cultural diversity in a geographically structured population? (Luke Premo)
- AIforGoodSimulator - Modeling Covid-19 Spread and Potential Interventions in Refugee Camps is a conceptualization of the Moria refugee camp, capturing the household demographics of refugees in the camp, a theoretical friendship network based on values, and an abstraction of their daily activities. (Shyaam Ramkumar, Woi Sok Oh)

These models and more can be discovered at the CoMSES Model Library - you can also keep up-to-date with newly published models on our Twitter and RSS feeds.

Most Downloaded Models

10,070 published models were downloaded this quarter, across 1349 unique codebases. Here are the top 5:

1. OMOLAND-CA: An Agent-Based Modeling of Rural Households' Adaptation to Climate Change by Atesmachew Hailegiorgis, Claudio Cioffi-Revilla, Andrew Crooks (160 downloads)
2. The Hawk-Dove Game by Kristin Crouse (124 downloads)
3. Fertility Tradeoffs by Kristin Crouse (90 downloads)
4. Increased costs of cooperation help cooperators in the long run by Paul Smaldino (88 downloads)
5. JuSt-Social COVID-19 by Jennifer Badham (76 downloads)

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