

CoMSES Digest: Summer 2023

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Editor's Note

Since our humble beginnings in 2007 as OpenABM, the CoMSES Net team has been working to help facilitate model reuse and interoperability in service of building useful computational models more reliably and efficiently. We began with a basic model archive where scientists and researchers could share their code, documentation, and data. Over the years we've added services like [peer review and permanent URLs / DOIs for models](#), provided [educational content and training materials](#) to promote good practices for computational modeling, and continued to enhance our [computational model library](#) to stay on the forefront of open and transparent computational science alongside open science initiatives like ORCID (<https://orcid.org>), the Research Organization Registry (<https://ror.org>), DataCite (<https://datacite.org>), the FAIR Principles for Research Software (FAIR4RS), CodeMeta (<https://codemeta.github.io>), and the Consortium of Scientific Software Registries and Repositories (<https://scicodes.net>).

Although there is now widespread consensus among the scientific community regarding the importance of transparently and FAIRly sharing code, documentation, and all the other digital assets needed to run a given computational model, there has still been limited progress in model reuse and interoperability. Fresh initiatives to establish [Reusable Building Blocks \(RBBs\)](#) for computational modeling are promising but require sustained effort from practitioners to properly document and submit their RBBs, review them, and support those who would use them in new models. The (scientific) software world has long held "software reuse" as a strongly desired and important outcome (e.g., [Plug-and-Play Macroscopes](#)), envisioning large scale models composed of well-tested model components. Researchers and practitioners should be able to discover, evaluate and select model components and combine and validate their integrated logics against the pitfalls of Voinov and Shugart's "[Integronsters](#)". The unfortunate truth though is we are still quite a ways off from having a menu of swappable, reusable computational methods in the social-ecological simulation sciences. Perhaps Tolstoy's [Anna Karenina principle](#) offers a marginally useful analogy, "All successful integrated models are alike; each unsuccessful model integration is unsuccessful in its own way".

So what are the alike attributes of a successful model integration beyond carefully documenting your model component's inputs, outputs, and assumptions? Let us know what you think in our [RBB forums](#), our initial [GitHub RBB template repository](#) or drop us a private note at <https://comses.net/about/contact> and we'll compile all of your suggestions (appropriately credited of course!) in an update in the next newsletter.

Best regards,
Allen Lee, Kelly Claborn, and Manuela Vanegas Ferro
CoMSES.Net Guest Editors, Arizona State University

CoMSES News

Introducing: The Make Models FAIR Curriculum

Imagine a world where models are available to build upon. You do not have to build from scratch and painstakingly try to figure out how published papers are getting the presented results. To achieve this utopian world, models have to be findable, accessible, interoperable, and reusable (FAIR). With the newly launched <https://tobefair.org> Initiative, we seek to contribute to moving towards this world.

We think it is important to train the next generation of computational modelers so they can incorporate the FAIR principles in their practice(projects/research). To facilitate the introduction of this topic within the different computational modeling courses led by our colleagues, we

developed a comprehensive curriculum for a student group project. You can access the curriculum in [this Google Doc](#). The curriculum provides a flexible framework where the objectives, learning outcomes and proposed schedule are outlined and can be adapted to each course's goals and structure.

By participating in this project, your students will have the opportunity to learn the basic principles of making models FAIR, gain hands-on experience with GitHub as a collaborative tool for group projects, and develop valuable coding skills through code replication and modification.

CoMSES Site Updates

CoMSES Net has undergone a major overhaul to the client-side portion of the site. While the majority of these changes operate under the hood, you will notice alterations to the look and feel of certain pages as well as more significant upgrades such as the new model archiving and release editor interface. The next time you archive a model or create a new release for an existing model you will find a new user interface that streamlines each step in the process from uploading files to managing collaborators. In addition to these minor graphical changes, this upgrade is aimed at boosting performance and laying a stable foundation for future improvements and new features. Some of the forthcoming changes you can expect to see include enhanced search capabilities across the model library and the rest of the site, a revised peer review and DOI assignment process, and more user interface improvements.

We are also grateful for the assistance of several undergraduate developers who helped to launch a new [metrics page](#) that displays CoMSES usage statistics since our inception. This page includes data on CoMSES membership as well as model submissions and interactions all displayed in interactive charts. Our student developers are now working on integrating machine learning and natural language processing modules into the CoMSES Science Gateway to help our curators deduplicate tags, perform spam detection, and more.

Please let us know what you think about the site improvements, and if you encounter any bugs or other issues please report them to us at <https://comses.net/about/contact> or by directly emailing us at support@comses.net.

Update your CoMSES Profile!

Please consider keeping the CoMSES community informed by updating your user account on CoMSES.Net! Let fellow researchers and modelers get to know you by including a biography, research interests, and/or institutional affiliation. Visit your [CoMSES.Net user account](#) to edit your profile and link it to GitHub and ORCID! As always, feel free to join the conversation by visiting the Forums tab or by starting a discussion on a specific model, event, or job posting.

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

[Social Simulation Conference 2023 \(SSC23\)](#)
Dates: September 4-8, 2023

The Social Simulation Conference 2023 will be organized by the MRC/CSO Social and Public Health Sciences Unit at the University of Glasgow, 4-8th September 2023. The conference is one of the key activities of the European Social Simulation Association (ESSA) to promote social simulation and computational social science in Europe and elsewhere.

This year's special theme will be Social Simulation and Public Health with focus on the areas of Health Inequalities, Simulation and Evidence and Simulation for Policy.

[ESSA Summer School in Social Simulation](#)
Dates: August 28 - September 1, 2023
Submission Deadline: July 28, 2023

The European Social Simulation Association's official 2023 Summer School will be held at The James Hutton Institute's Craigiebuckler campus in Aberdeen, Scotland in the week before the Social Simulation Conference in Glasgow. The theme for the summer school is 'Agent-Based Modelling for Wicked Problems'.

The introductory course is aimed at postgraduate students, early career researchers and analysts from academia, industry and policy, regardless of disciplinary background or specialism. No prior experience with agent-based modelling is required. A maximum of 30 participants will be accepted, who will work in small teams as part of the training, though individual exercises will also feature in the course.

Model Library

Newly Reviewed

Seven models passed CoMSES's [peer review process](#) this quarter! Some are still unpublished while their companion publications undergo journal peer review; others are currently under review by CoMSES. Published include the following models:

- [SIM-VOLATILE](#) is a technology adoption model at the population level. It is in the frame of the circular economy, and there are three adoption/investment scenarios to explore. (Siavash Farahbakhsh)
- [Modern Wage Dynamics](#) is a generative model of coupled economic production and allocation systems. Each simulation describes a series of interactions between a single aggregate firm and a set of households. (J Applegate)
- [LUCID: Land Use Competition In Drylands](#) is a stylized model of a smallholder farming system, illustrating how competition between pastoralism and crop cultivation can affect livelihoods of households. (Gunnar Dressler, Birgit Müller, Lance Robinson)
- [A Computational Simulation for Task Allocation Influencing Performance in the Team System](#) aims to simulate the whole process of task allocation, task execution and evaluation in the team system. (Shaoni Wang)
- [SWIRS Spread of a Woody Invader in Riparian Systems](#) simulates the spatio-temporal spread of the woody invader *Gleditsia triacanthos* in the riparian forest of the National Park Esteros de Farrapos e Islas del Río Uruguay. (Beatriz Sosa, Moira Zellner, Carlos Andrés Chiale)

New Model Uploads

Twenty-one 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:

- exploring opinion dynamics and polarization processes through the [simulation of protest emergence](#) in a country with an independence movement
- illustrating the dynamics of [international capital flows](#)
- presenting a [socio-epistemic model of science](#) to observe what determines the creation and diffusion of mental models in the scientific community
- testing the effects of two [intervention scenarios on carbon storage and revenue](#) in an existing forestland management system in the Olympic Peninsula, Washington
- developing an understanding of how the [coupled demographic dynamics of herds and households](#) constrain the growth of livestock populations in pastoral systems

Most Downloaded Models

Published models were downloaded a total of 2,637 times this quarter, across 660 unique codebases. Here are the top five:

1. [The Hawk-Dove Game](#) by Kristin Crouse (164 downloads)
2. [Fertility Tradeoffs](#) by Kristin Crouse (157 downloads)
3. [Talent vs Luck: the role of randomness in success and failure](#) by Alessandro Pluchino, Alessio Emanuele Biondo, and Andrea Rapisarda (27 downloads)
4. [Modeling financial networks based on interpersonal trust](#) by Anna Klabunde and Michael Roos (23 downloads)
5. [Virus Transmission with Super-spreaders](#) by J Applegate (23 downloads)



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