CoMSES Digest: Fall 2020

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Editor's Note

Welcome to the Autumn issue of CoMSES Digest. As I write this, Covid-19 continues to affect many places, some more intensely than others. It is fall, and in the U.S. and other places schools and universities are reopening, but there is a wide variation in whether classes are in-person, online, or a hybrid version of both. No one is sure what will work best, and many places are taking cautious steps forward and, not infrequently, prudent steps back.

The pandemic has been a reminder that local and global are connected in complex ways, and that modeling can- and must- play a role in how we understand and respond to new and challenging problems. Here in the U.S. we have had innumerable other reminders of this, and the paths forward for multiple related systems are not yet clear. If you are involved in modeling any aspect of this, it is a time that will test your skills.

As one minor but salient consquence of this, the Calendar of Events is lighter than at most times. It is, however, less provisional than in the preceding issues of the Digest; most conferences and course have by now decided whether they will continue online or only virtually. The ASU Winter School will be virtual, but the application deadline of **October 1st** remains real- see below for more information and instructions on how to apply.

Best,
John T. Murphy, CoMSES Digest Editor

CoMSES News

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

CoMSES Net is hosting its annual Winter School on Agent-Based Modelling and Social-Ecological Systems January 4-15, 2021 online.

Purpose of the Winter School

The overall aim of the winter school is that the participants will learn about the opportunities and challenges of agent-based modeling of social-ecological systems. Participants will engage intensely with a few comprehensive models, learn best practices in doing modeling in a team, and learn about the different modeling challenges across the various social and natural sciences.

Course Content

The winter school has two main components: 1) lectures and 2) project work. In addition, participants will present their own work in speed talks. Lectures will introduce participants to different concepts in the social and natural sciences critical for modeling social-ecological systems, such as human behavior, collective behavior, resilience, and land cover change. Students will also learn and use best practices to do modeling (reproducibility, model documentation, analysis of models) and how to work together in remote teams using Github. The participants will be introduced to various stylized agent-based models of actual research projects on social-ecological systems. Groups of participants will chose one of the models and adapt, expand, and analyze the model to better understand the impact of a particular assumptions on the overall

outcome of the social-ecological system. The models are written in NetLogo. Therefore, participants must be able to write NetLogo programming code.

Due to the COVID-19 situation we will hold a virtual Winter School, spread out over 2 weeks from **January 4-15, 2021**. The online live interactive component is kept at four hours a day, which will be during the morning in Arizona, USA (GMT -7). The first week focuses on lectures, training in best practices and the start of group projects. The second week focuses on group projects and the presentation of the results.

Application deadline: October 1, 2020

You can find more details and apply at https://complexity.asu.edu/winterschool

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Calendar of Events

Note that the calendar of events has been heavily disrupted; many events have been canceled, postponed, or converted to online-only. Please follow the links to the local event organizers for the latest information.

Upcoming Deadlines

Winter School on Agent-Based Modeling of Social-Ecological Systems
Online, January 4-15, 2021
Application Deadline: October 1, 2020
https://www.comses.net/events/584/

Conference on Complex Systems
Online, December 4-11
Abstract Submission: 10 October
https://www.comses.net/events/586/

Conferences and Workshops

The 34th annual European Simulation and Modelling Conference
October 21-23, 2020
Toulouse, France
https://www.comses.net/events/580/

Complex Networks 2020: Ninth International Conference on Complex Networks and Their Applications
December 1-3, 2020
Madrid, Spain
https://www.comses.net/events/583/

Conference on Complex Systems
Online, December 4-11
Abstract Submission: 10 October
https://www.comses.net/events/586/

Courses

Winter School on Agent-Based Modeling of Socio-Ecological Systems
Online, January 4-15, 2021
https://www.comses.net/events/584/

Model Library

Newly Reviewed

Four models passed CoMSES's peer review process: one on food sharing, two on animal population dynamics, and one on CoVID-19. CoMSES Net Peer Review is a community service provided by CoMSES Net members that verifies that a computational model's source code and documentation meets baseline standards. The model should be runnable, accompanied by sufficiently detailed narrative documentation, and have "clean", commented code (admittedly a fairly subjective criteria reliant on community norms). Peer reviewed models in the CoMSES Computational Model Library are eligible to receive a DOI which serves as the best method for model citation. Regardless of whether you submit your model for CoMSES Peer Review and receive a DOI, be sure to cite models in your publications!

- COMOKIT (version 1.0.1), a GAMA-based COVID-19 modeling toolkit by Alexis Drogoul, et al.
- Bighorn Sheep Population Dynamics (version 1.2.0), a NetLogo model simulating population dynamics of bighorn sheep in the Hell's Canyon region of Idaho by Aniruddha Belsare, et al.
- DogPopDy (version 1.0.0), a NetLogo model to assess and plan free-ranging dog population management programs that implement Animal

Birth Control by Aniruddha Belsare, et al.

- Vigilant sharing in a small-scale society (version 1.0.1), a NetLogo model that explores food distribution patterns that emerge in a small-scale non-agricultural group by Marcos Pinheiro

New Model Uploads

Twenty-five new models were uploaded, covering the now-expected range of topics: trade, social segregation, electric power transmission, and air pollution, among many others. One notable contribution was by a fellow graduate of the University of Arizona's archaeology program, Luke Premo, whose simulation of the impact of population size limits on continuous traits transmitted with copying error is one of 14 NetLogo models submitted. The remaining 11 models represented an array of platforms: Formal platforms included AnyLogic and Mason, plus models in Java, Python, Jupyter Notebooks, R, and a model using Repast + Protege.

You can find these and more of the most recently modified models at the CoMSES Model Library.

Most Downloaded Models

The most downloaded models this period included a newcomer that recorded the most downloads per period of any model in the Digest's history: MigrAgent, by Rocco Paolillo and Wander Jager, recorded 219 downloads, an increase of more than 35% more than the previous top performance (161). The falloff from the number 1 spot, however, was high, and the model in fifth place recorded fewer downloads than any other 5th place performance in over three years. Despite this the total for these 5 (641) was significantly higher than 2Q of this year (514), and the second highest ever, behind only 1Q of this year (654). The overall trend continues to show increasing use of the model library. All told, 800 different codebases were downloaded, for a total of over 6,500 accesses.

1. MigrAgent (version 1.2.0) by Rocco Paolillo and Wander Jager (219 downloads)
2. Modeling the Emergence of Riots (version 1.4.0) by Bianica Pires and Andrew Crooks (132 downloads)
3. MIOvCWD (version 1.0.0) by Aniruddha Belsare (116 downloads)
4. MedLanD Modeling Laboratory (version 1.1.0) by C Michael Barton, Isaac

Ullah, Gary Mayer, Sean Bergin, Hessam Sarjoughian, Helena Mitasova (93 downloads)

5. FlowLogo: An agent-based platform for simulating complex human-aquifer interactions in managed groundwater systems (version 1.0.0) by Juan Carlos Castilla-Rho (58 downloads)

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