

Engaging land-use stakeholders is model behavior

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Taking land-use models out of the lab for a test drive with the people who live the models gives scientists a new way to develop possible future scenarios.

James Millington, a former post-doctoral researcher at Michigan State University's Center for Systems Integration and [Sustainability](#) (CSIS) and now a Leverhulme Early Career Fellow at King's College in London, has paired the relatively new use of agent-based land-use modeling with follow-up interviews with the stakeholders in those areas.

The article "Participatory evaluation of agent-based land-use models" has been published in the *Journal of Land Use Science*.

"We're looking at a more participatory way of doing science – democratic science," Millington said. "These models are representations of our theories of the world - it's important to check how they relate back to the real world. That's the real value of this approach. You get out of the lab and into the real world and see how people react to how you've represented their activity in the model."

Agent-based modeling of land-use change has been around about a decade, making its traditional use fairly brief. Scientists are searching for more effective applications.

In this project, Millington, along with David Demeritt of King's College London Department of Geography and Raúl Romero-Calcerrada of the

School of Experimental Science and Technology, Rey Juan Carlos University, Madrid, Spain, developed agent-based land-use models of a traditional mixed-use farming landscape west of Madrid to understand how land use change might influence and interact with wildfire regimes.

According to the paper, "The model represents two 'types' of land-use decision-making agents with differing attitudes towards the reasons to farm; 'commercial' agents that are perfectly economically rational, and 'traditional' agents that represent part time or 'traditional' farmers who manage their land because of its cultural, rather than economic, value."

Millington and his colleagues then took the resulting simulations to the farmers, explaining to them how it was used and its projections to get their feedback.

In this case, the group was small and the farmers had strongly held, somewhat down-beat views on farming's future in the area. In other words, they were more content sticking with their own opinions than exploring the alternative possibilities the models offered.

But Millington said the possibilities of bringing agent-based modeling to the people is tantalizing.

"This isn't necessarily about using the model to find the 'right' decision, it's a means of going through the decision-making process to find out what could happen," he said. "We can say 'look at how your activities can affect the landscapes.' They can see how they have an effect on the land, and see how it might play out over time scales they find hard to envision otherwise. The advantage is you are engaging more with the people who are making the decisions themselves."

Provided by Michigan State University

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