Sep 16th, 4:40 PM - 5:00 PM

Identifying Participatory Modeling Best Practices through Statistical Review of Case Studies

Emily Bondank

iEMSs International Congress on Environmental Modelling and Software

10th International Congress on Environmental Modelling and Software
Brussels, Belgium, Ann van Griensven, Jiri Nossent, Daniel P. Ames (Eds.)
https://scholarsarchive.byu.edu/iemssconference/2020/

Identifying Participatory Modeling Best Practices through Statistical Review of Case Studies

Killion, AK[a], Bondank, EN[b], Hedelin, B[c], Gray, S[d], Woehlke, S[e], Marzloff MP[f], Kolagani, N[g], Singletary, L[h], Jordan, R[d], BenDor, T[i], Glynn, P[j], Singer, A[d], Zellner, M[k], Giabbanelli, P[l], Jetter, A[m], Máñez Costa, M[n], Hämäläinen, RP[o]

[a]School for Environment and Sustainability, University of Michigan, Ann Arbor, Michigan, USA (killion@umich.edu)
[b]School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, Arizona, USA (ebondank@asu.edu)
[c]Department of Political, Historical, Religious and Cultural Studies, Centre for Climate and Safety, Karlstad University, Sweden
[d]Department of Community Sustainability, Michigan State University, Michigan, USA
[e]Department of Anthropology, University of Maryland, College Park, Maryland, USA
[f]Coastal Ecosystem Dynamics Research Department, Institut Français de Recherche pour l'Exploitation de la Mer, Brest, France
[g]Indian Institute of Information Technology (IIIT) Chittoor, Sri City, Andhra Pradesh, India
[h]Department of Economics, University of Nevada, Reno, Nevada, USA
[i]Department of City and Regional Planning, University of North Carolina at Chapel Hill, North Carolina, USA
[j]U.S. Geological Survey, Reston, Virginia, USA
[k]Department of Urban Planning & Policy, Institute for Environmental Science and Policy, University of Illinois at Chicago, Chicago, Illinois, USA
[l]Department of Computer Science and Software Engineering, Miami University, Oxford, Ohio, USA
[m]Department of Engineering and Technology Management, Portland State University, Portland, Oregon, USA
[n]Climate and Economics Department, Climate Service Center Germany, Hamburg, Germany
[o]Systems Analysis Laboratory, Aalto University School of Science, Systems Analysis Laboratory, Aalto, Finland

Abstract: The participatory modeling field has grown quickly and new applications are continuing to be developed. A recent review of participatory modeling case studies has identified that various forms of the practice exist (e.g., different ways to identify participants, define problems, include values, manage power dynamics, etc.), and that practices can generate very important positive outcomes such as knowledge integration, learning, and uncertainty management. However, results found that not all approaches were successful in achieving objectives. The uncertainty in successful practices may discourage practitioners from using this approach and limits future advances in participatory modeling. Therefore, knowing which characteristics are associated with positive outcomes can inform future practices and increase utilization. To address this gap, we collected data from 157 participatory modeling case studies in the peer-reviewed literature and used a random forest model to identify attributes associated with positive outcomes. We present results from this analysis and share insights in how these findings can inform planning and use of different types of participatory processes.

***Keywords**:* participatory modelling; random forest; Best Practices